

SCOPE OF ACCREDITATION TO ISO/IEC 17025-2005 & KS Q ISO/IEC 17025

HCT Co., Ltd.

74, 578-gil, Seoicheon-ro, Majang-myeon, Icheon-si, Gyungki-do, Korea 17383

Phone No : 82-31-645-6900, Fax : 82-31-645-6969, E-mail : cal@hct.co.kr

CALIBRATION

Valid To : Jan. 07. 2018

Accreditation No. : KC00-011(1/75)

In recognition of the successful completion of the KOLAS evaluation process,  
accreditation is granted to this laboratory to perform the following calibrations

Field Code	Measured Quantity Instrument or Gauge	on-site	Field Code	Measured Quantity Instrument or Gauge	on-site	Field Code	Measured Quantity Instrument or Gauge	on-site
102. Linear dimension			106. Various dimensional			30105	Time interval sources	Y
10201	Balls	N	10601	Inside/Outside/Gear tooth calipers, Caliper gauges	Y	30106	Time interval meters/ Stop watches/Timers	Y
10206	Dial/cylinder gauge testers	N				302. Velocity & revolution		
10209	End bars	N	10603	Cylinder/Bore gauges	Y	30201	Standard RPM generators	Y
10210	Extensometers, linear displacement transducers	Y	10604	Depth gauges, Depth micrometers	Y	30202	Contact type tachometers	Y
10211	Filler gauges	Y	10605	Dial/Digital gauges	Y	30203	Photo tachometers/ stroboscopes	Y
10213	Gap gauges	N						
10214	Gauge blocks, by comparison	N	10609	Micro indicators, Test indicators	Y	30205	Wow-flutter generators	Y
10216	Height gauges/measuring machines	Y	10610	Micrometer heads	N	30206	Wow-flutter meters	Y
10220	Standard measuring machines	Y	10611	3-point micrometers	Y	401. DC volatage & current		
10223	Electronic Micrometers	N	10612	Inside micrometers	Y	40101	DC ammeters	Y
10224	Height Micrometers, Riser blocks	N	10613	Outside micrometers	Y	40102	Transconductance amplifiers	Y
10227	Standard tape rules, peripheral gauges	N	10617	Standard sieves	N	40103	DC voltage/current calibrators	Y
10228	Cylindrical plug/pin gauges, Thread measuring wire gauges	Y	201. Mass			40104	Electrical temperature calibrators	Y
			20105	Counter beam balances	Y			
10229	Radius gauges	N	20108	Direct reading balances	Y	40105	DC current shunts	Y
10230	Cylindrical ring gauges	N	20109	Electric balances	Y	40106	Galvanometers/null detectors	Y
10232	Step gauges	N	20112	Platform scale balances	Y	40108	DC power supplies	Y
10233	Taper thickness gauges	N	20113	Spring scale balances	Y	40112	DC voltmeters	Y
10234	Ultrasonic thickness gauges	Y	20116	Weights	N	40113	Static/Ionic voltmeters	Y
10235	Ultrasonic/coating thickness specimens	N	202. Force			402. Resistance, Capacitance and Inductance		
10236	Coating thickness testers	Y	20202	Force measuring devices	N	40201	Capacitance bridges /indicators	Y
			20203	Tension/compression testing machines	Y			
103. Angle			20204	Push-pull gauges	N	40202	Decade capacitors	Y
10304	Bevel protractors	N	203. Torque			40204	Standard capacitors	Y
10311	Plate/square/electric levels	N	20302	Torque measuring devices	N	40205	Earth testers	Y
104. Form			20303	Torque wrenches/drivers	Y	40208	Inductors	Y
10404	Optical flats	Y	204. Pressure			40210	Insulation testers	Y
10405	Optical parallels	N	20406	Absolute pressure gauges	N	40211	Q-meters	Y
10407	Precision surface plates	Y	20409	Differential pressure gauges	Y	40213	Resistance bridges & Similar instruments	Y
10413	Straight rules	N	20411	Gauge pressure gauges	Y			
105. Complex geometry			20412	Pressure transducers/transmitters	Y	40214	Resistance meters	Y
10503	Contact coordinate measuring machines	Y	20413	Dial type vacuum gauges	Y	40215	Resistors	Y
10504	Non-contact coordinate measuring machines	Y	20414	Water Depth meters	Y	40217	Impedance bridges/LCR meters	Y
10511	Measuring microscopes, Profile projectors	Y	301. Time/frequency			403. AC voltage, current & power		
10512	Micro measuring microscopes	Y	30102	Frequency standards	N	40301	AC ammeters	Y
10525	Thread plug gauges	N	30103	General frequency sources	Y	40302	Clamp ammeters/voltmeters	Y
			30104	Frequency meters/counters	Y	40303	AC voltage/current calibrators	Y
						40305	AC current shunts	Y
						40310	Power factor meters	Y

Field Code	Item of calibration	on-site	Field Code	Item of calibration	on-site	Field Code	Item of calibration	on-site
40311	AC power meters	Y	40613	Electrostatic Discharge Generators	Y	50105	Thermal expansion thermometers ; bimetal, gas or liquid type	Y
40312	AC power supplies	Y			Y			
40313	Puncture/safety testers	Y	40614	EMC receivers	Y	50106	Thermocouples: noble metal, base metal, pure metal, special type, etc.	Y
40314	Power recorders	Y	40615	RF filters	Y			
40318	AC voltmeters		40616	RF impedance meters	Y			
404. Other DC & LF Measurements			40617	RF impulse generators	Y	50107	Temperature transducers	Y
40401	LF amplifiers	Y	40618	Line impedance stabilization networks ; LISN, CDN, ISN, etc.	Y			
40402	DC/LF attenuators	Y	40619	Coaxial standard mismatches	Y	502. Non contact thermometry		
40403	Multimeter calibrators	Y			40621	Mobile communication test sets	Y	50204
40404	Oscilloscope calibrators	Y	40622	Modulation meters	Y	503. Humidity		
40406	Video signal generators	Y			40623	Network analyzers	Y	50301
40407	Audio distortion analyzers/ meters	Y	40624	Noise figure meters	Y	50302	Relative humidity hygrometers; polimer thinfilm, hair, etc.	
40408	LF filters	Y	40625	Noise generators	Y			
40409	LF/Audio signal analyzers	Y	40626	Noise impulse simulators	Y			
40410	Line Frequency meters	Y	40635	RF power meters	Y	50304	Temperature humidity recorders ; Hygrothermograph , etc.	N
40411	Function generators	Y	40636	Diode power sensors	Y			
40412	Genescopes	Y	40637	Thermocouple Power sensors	Y	50305	Transducers; dew-point/ relative humidity	Y
40413	AC/DC high voltages volt meters	Y	40638	Pulse generators	Y			
40416	Leakage current testers	Y	40639	Radar test sets	Y	50306	Humidity generators; two-pressure,two-temperature , flow mixing humidity generator, constant temperature and humidity chamber, etc.	Y
40417	Electronic AC/DC loads	Y	40640	RF signal generators	Y			
40419	Analogue/Digital multimeters	Y	40641	RF spectrum analyzers	Y	50306	Humidity generators; two-pressure,two-temperature , flow mixing humidity generator, constant temperature and humidity chamber, etc.	Y
40420	Noise meters	Y	40643	Surge generators	Y			
40421	Oscilloscopes	Y	40645	RF terminations	Y	50306	Humidity generators; two-pressure,two-temperature , flow mixing humidity generator, constant temperature and humidity chamber, etc.	Y
40422	LF phase meters	Y	40646	Coaxial thermistor mounts	Y			
40423	Random wave generators	Y	40650	RF voltmeters	Y	50306	Humidity generators; two-pressure,two-temperature , flow mixing humidity generator, constant temperature and humidity chamber, etc.	Y
40424	Volt/Current recorders	Y	40651	Vector voltmeters	Y			
40425	Relay test sets	Y	40652	Field strength meters	Y	50306	Humidity generators; two-pressure,two-temperature , flow mixing humidity generator, constant temperature and humidity chamber, etc.	Y
40426	LF signal generators	Y	40653	AM/FM test sources	Y			
40427	LF spectrum analyzers	Y	40654	Dip simulators	Y	601. Sound in air		
40429	Sweep generators	Y	40703	Dipole antennas	N	60102	Sound Calibrators	Y
40432	Transistor curve tracers	Y			407. Field strength & antennas			60104
40433	Waveform analyzers	Y	40704	Loop antennas	N	60106	Sound level meters	Y
40434	AC/DC high voltage generators	Y	40705	Monopole antennas	N	603. Sound in air		
40435	AC/DC high voltage probes	Y	501. Contact thermometry			60301	Vibration calibrators	Y
40436	Logic analyzers	Y	50101	Temperature generators: ovens, furnaces, isothermal liquid baths, ice-point baths, dry-block calibrators	Y	60302	Vibration transducers	Y
40437	Telephone testers	Y	50102	Temperature indicators/ recorders/controllers, temperature calibrators	Y	60303	Vibration measuring instruments	Y
40438	Video signal analyzers	Y			406. Radio frequency measurements			701. Photometry
40601	RF amplifiers	Y	50103	Glass thermometers; liquid-in-glass, Beckmann	N	70101	Illuminance meters	Y
40602	Coaxial attenuators	Y			501. Contact thermometry			901. Chemical analysis
40605	Burst pulse generators	Y	50104	Resistance thermometers; SPRT, IPRT, thermistors,etc.	Y	90103	Gas analyzers	Y
40606	Attenuator calibrators	Y			406. Radio frequency measurements			901. Chemical analysis
40607	RF power meter calibrators	Y	50104	Resistance thermometers; SPRT, IPRT, thermistors,etc.	Y	901. Chemical analysis		
40608	EMC transducers ; current probes, absorbing clamps,etc.	Y			406. Radio frequency measurements			901. Chemical analysis
40610	Coaxial directional couplers/splitters	Y	406. Radio frequency measurements			901. Chemical analysis		

Note

1. This laboratory provides calibration services in permanent standard laboratory and at on-site.
2. Laboratory conducts on-site calibration should meet requirements of KOLAS-SR-008.
3. On-site calibration is allowed to items with marking 'Y', not allowed to items with marking 'N'.
4. Calibration and Measurement Capability (CMC) means capabilities provided by accredited calibration laboratories. It expresses the lowest uncertainty of measurement that can be achieved during a calibration. CMC normally is quoted as an expanded uncertainty at a coverage probability of 95%, which usually requires the use of a coverage factor of  $k=2$ .
5. Due to the calibration environment such as reference standards or customers' facilities, it is note that uncertainty of measurement on a calibration certificate may be expressed larger than CMC on scope of accreditation in general.

102. Linear dimension

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Balls	10201	(0 ~ 100) mm	$\sqrt{0.33^2+(0.011 \times I_0)^2}$ μm (unit of $I_0$ : mm)	Gauge blocks, Standard measuring machines /HCT-CS-223-10201
Dial/cylinder gauge testers	10206	(0 ~ 5) mm (5 ~ 25) mm (25 ~ 100) mm	0.13 μm 0.14 μm 0.23 μm	Gauge blocks, Electrical micrometer /HCT-CS-001-10206
End bars/ Micrometer Reference Bar	10209	(0 ~ 1 000) mm	$\sqrt{0.13^2+(0.002 \times I_0)^2}$ μm (unit of $I_0$ : mm)	Gauge blocks, Electrical micrometer /HCT-CS-183-10209
Extensometers, linear displacement transducers Extensometers	10210	(0 ~ 50) mm (50 ~ 100) mm (100 ~ 1 000) mm	$\sqrt{0.12^2+(0.002 \times I_0)^2}$ μm $\sqrt{0.76^2+(0.002 \times I_0)^2}$ μm $\sqrt{7.6^2+(0.002 \times I_0)^2}$ μm (unit of $I_0$ : mm)	Gauge blocks /HCT-CS-184-10210
Filler gauges	10211	(0.01 ~ 5) mm	0.36 μm	Bench Comparator /HCT-CS-002-10211
Gap gauges	10213	(1 ~ 300) mm	$\sqrt{1.9^2+(0.002 \times I_0)^2}$ μm (unit of $I_0$ : mm)	Gauge blocks /HCT-CS-003-10213
Gauge blocks, by comparison	10214	(0.5 ~ 100) mm	$\sqrt{73^2+(1.2 \times I_0)^2}$ nm (unit of $I_0$ : mm)	Gauge block comparators, Gauge blocks /HCT-CS-254-10214
Height gauges/measuring machines	10216	(0 ~ 1 000) mm	$\sqrt{1.0^2+(0.002 \times I_0)^2}$ μm (unit of $I_0$ : mm)	Gauge blocks /HCT-CS-005-10216
Standard measuring machines	10220	(0 ~ 500) mm	$\sqrt{0.25^2+(0.002 \times I_0)^2}$ μm (unit of $I_0$ : mm)	Gauge blocks, Long gauge blocks /HCT-CS-224-10220
Electronic Micrometers	10223	(0 ~ 0.02) mm (0.02 ~ 0.2) mm (0.2 ~ 2) mm	0.12 μm 0.21 μm 0.77 μm	Gauge blocks /HCT-CS-006-10223
Height micrometers, Riser blocks Height Micrometers Height micrometers, Blocks Head Riser blocks	10224	(0 ~ 610) mm (0 ~ 30) mm (0 ~ 600) mm	$\sqrt{1.0^2+(0.002 \times I_0)^2}$ μm (unit of $I_0$ : mm) $\sqrt{1.1^2+(0.002 \times I_0)^2}$ μm (unit of $I_0$ : mm) $\sqrt{1.0^2+(0.002 \times I_0)^2}$ μm (unit of $I_0$ : mm)	Gauge blocks, Electrical micrometer /HCT-CS-007-10224
Standard tape rules, peripheral gauges	10227	(0 ~ 7) m (7 ~ 14) m (14 ~ 20) m	$\sqrt{0.14^2+(0.007 \times I_0)^2}$ mm $\sqrt{0.29^2+(0.007 \times I_0)^2}$ mm $\sqrt{0.43^2+(0.007 \times I_0)^2}$ mm (unit of $I_0$ : mm)	Laser Measurement Machine /HCT-CS-241-10227
Cylindrical plug/pin gauges, Thread measuring wire gauges Cylindrical plug/pin gauge	10228	(0 ~ 100) mm	$\sqrt{0.34^2+(0.005 \times I_0)^2}$ μm (unit of $I_0$ : mm)	Bench Comparator /HCT-CS-008-10228
Radius gauges	10229	(0 ~ 50) mm	3.6 μm	Profile projectors /HCT-CS-225-10229
Cylindrical ring gauges	10230	(1 ~ 100) mm	$\sqrt{0.66^2+(0.009 \times I_0)^2}$ μm (unit of $I_0$ : mm)	Standard measuring machines Standard ring gauge /HCT-CS-226-10230
Step gauges	10232	(0 ~ 1 000) mm	$\sqrt{1.0^2+(0.002 \times I_0)^2}$ μm (unit of $I_0$ : mm)	Gauge blocks, Electrical micrometer /HCT-CS-009-10232

102. Linear dimension

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Taper thickness gauges	10233	(0.1 ~ 60) mm	2.8 μm	Profile projectors /HCT-CS-242-10233
Ultrasonic thickness gauges	10234	(0 ~ 100) mm	5.3 μm	Ultrasonic Tester Blocks /HCT-CS-243-10234
Ultrasonic/coating thickness specimens	10235	Coating (0 ~ 8) mm Ultrasonic (0 ~ 100) mm	1.3 μm $\sqrt{0.96^2+(0.004 \times I_0)^2}$ μm (unit of $I_0$ : mm)	Gauge blocks, Standard measuring machines Electronic micrometers /HCT-CS-227-10235
Coating thickness testers	10236	(0 ~ 0.25) mm (0.25 ~ 1.05) mm (1.05 ~ 3.7) mm (3.7 ~ 7.9) mm	0.6 μm 1.6 μm 7 μm 8 μm	Ultrasonic thickness specimens /HCT-CS-228-10236

103. Angle

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Bevel protractors	10304	Angle accuracy 0° ~ 90° 90° ~ 360° Angle of accessories 0° ~ 360°	1.3′ 2.2′ 2.4′	Angle, Profile projectors /HCT-CS-251-10304 /HCT-CS-251-10304
Plate/square/electric levels	10311	Angle ±200″ ±1 000″ ±2 000″ Squareness (0 ~ 300) mm Flatness 300 mm × 60 mm	0.3″ 0.5″ 0.9″ 2.2 μm 0.83 μm	Fine angle generators, Electronic micrometers Squareness testers /HCT-CS-252-10311

104. Form

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Optical flats	10404	∅ (10 ~ 130) mm	0.08 μm	Optical flats, /HCT-CS-229-10404
Optical parallels	10405	Flatness ∅ (10 ~ 30) mm Parallelism ∅ (10 ~ 30) mm	0.08 μm 0.06 μm	Optical flats, Gauge block comparators /HCT-CS-230-10405
Precision surface plates	10407	Area (0 ~ 2 500) cm <sup>2</sup> (2 500 ~ 5 000) cm <sup>2</sup> (5 000 ~ 10 000) cm <sup>2</sup> (10 000 ~ 15 000) cm <sup>2</sup> (15 000 ~ 30 000) cm <sup>2</sup> (30 000 ~ 60 000) cm <sup>2</sup>	0.7 μm 0.8 μm 1.0 μm 1.1 μm 1.5 μm 2.2 μm	Electric levels /HCT-CS-010-10407
Straight rules	10413	(0 ~ 3 000) mm	$\sqrt{0.14^2+(0.007 \times I_0)^2}$ mm (unit of $I_0$ : mm)	Laser Measurement Machine, Electronic micrometers, Squares, Filler gauges /HCT-CS-244-10413

105. Complex geometry

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Contact coordinate measuring machines Accuracy squareness straightness	10503	(0 ~ 600) mm (0 ~ 600) mm (0 ~ 600) mm	$\sqrt{0.53^2+(0.007 \times I_0)^2}$ μm (unit of $I_0$ : mm) 3.1 ′ 2.1 μm	Step gauges, Precision Square, Stragit rules /HCT-CS-011-10503
Non-contact coordinate measuring machines Accuracy	10504	(0 ~ 1 000) mm	$\sqrt{0.43^2+(0.006 \times I_0)^2}$ μm (unit of $I_0$ : mm)	Standard scale, Precision Square, / HCT-CS-012-10504
Measuring microscopes, Profile projectors Length accuracy Right angle accuracy magnification accuracy Squareness accuracy	10511	(0 ~ 300) mm (0 ~ 360) ° ×2 ~ ×100 (0 ~ 300) mm	$\sqrt{0.45^2+(0.0049 \times I_0)^2}$ μm (unit of $I_0$ : mm) 1.6 ′ $3.1 \times 10^{-4}$ 2.8 μm	Standard scale, Precision Square, /HCT-CS-013-10511
Micro measuring microscopes	10512	(0 ~ 50) mm	0.82 μm	Standard scale /HCT-CS-014-10512
Thread plug gauges External diameter Effective diameter Pitch Half angle	10525	(1 ~ 100) mm (1 ~ 100) mm (0.2 ~ 5.5) mm (0 ~ 45) °	0.60 μm 1.8 μm 1.6 μm 2.1 ′	Bench Micrometer Thread Measuring Wires Projectors/HCT-CS-016-10525

106. Various dimensional

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Inside/Outside/Gear tooth calipers, Caliper gauges Inside/Outside calipers	10601	(0 ~ 150) mm (150 ~ 1 500) mm	$\sqrt{3.8^2+(0.007 \times I_0)^2}$ μm $\sqrt{7.9^2+(0.007 \times I_0)^2}$ μm (unit of $I_0$ : mm)	Gauge blocks /HCT-CS-017-10601
Cylinder/Bore gauges Cylinder gauges Bore gauges	10603	(0 ~ 800) mm (0.5 ~ 18.5) mm	0.64 μm 0.76 μm	Dial gauges tester, Gauge blocks /HCT-CS-019-10603
Depth gauges, Depth micrometers Depth gauges	10604	(0 ~ 300) mm (300 ~ 1 000) mm	$\sqrt{0.85^2+(0.005 \times I_0)^2}$ μm $\sqrt{7.1^2+(0.005 \times I_0)^2}$ μm (unit of $I_0$ : mm)	Gauge blocks /HCT-CS-020-10604
Dial/Digital gauges	10605	(0 ~ 50) mm (50 ~ 150) mm	$\sqrt{0.11^2+(0.002 \times I_0)^2}$ μm $\sqrt{0.76^2+(0.002 \times I_0)^2}$ μm (unit of $I_0$ : mm)	Gauge blocks /HCT-CS-021-10605
Micro indicators, Test indicators Micro indicators Test indicators	10609	(0 ~ 2) mm (0 ~ 2) mm	0.46 μm 0.46 μm	Dial gauges tester / HCT-CS-022-10609
Micrometer heads	10610	(0 ~ 50) mm	0.75 μm	Gauge blocks, Electrical micrometer / HCT-CS-023-10610

106. Various dimensional

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
3-point micrometers	10611	(1 ~ 200) mm	1.8 μm	Standard ring gauge Precision surface plates /HCT-CS-231-10611
Inside micrometers	10612	(5 ~ 300) mm (300 ~ 1 500) mm	$\sqrt{1.6^2+(0.005 \times I_0)^2}$ μm $\sqrt{3.8^2+(0.005 \times I_0)^2}$ μm (unit of $I_0$ : mm)	Gauge blocks / HCT-CS-026-10612
Outside micrometers	10613	(0 ~ 25) mm (25 ~ 100) mm (100 ~ 1 000) mm (1 000 ~ 1 500) mm	$\sqrt{0.36^2+(0.005 \times I_0)^2}$ μm $\sqrt{0.78^2+(0.005 \times I_0)^2}$ μm $\sqrt{1.6^2+(0.005 \times I_0)^2}$ μm $\sqrt{2.6^2+(0.005 \times I_0)^2}$ μm (unit of $I_0$ : mm)	Gauge blocks / HCT-CS-027-10613
Standard sieves Wire rod diameter Sieve opening	10617	(0.01 ~ 8) mm (0.01 ~ 125) mm	1.9 μm 3.0 μm	Profile projectors /HCT-CS-232-10617
Welding gauges Length Angle	10620	(0 ~ 100) mm (0 ~ 90) °	10 μm 8.5 ′	Profile projectors /HCT-CS-246-10620

201. Mass

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Counter beam balances	20105	(0 ~ 311) g (311 ~ 2 610) g (2.61 ~ 20) kg	9.5 mg 82 mg 0.82 g	Standard weights /HCT-CS-233-20105
Direct reading balances	20108	(0 g ~ 160) g	0.19 mg	Weights/HCT-CS-031-20108
Electric balances	20109	(0 ~ 20) g (20 ~ 200) g (200 ~ 2000) g (2 ~ 26) kg (26 ~ 60) kg (60 ~ 100) kg (100 ~ 150) kg (150 ~ 200) kg (200 ~ 300) kg (300 ~ 600) kg	0.062 mg 0.19 mg 1.8 mg 21 mg 0.77 g 1.7 g 6.8 g 14 g 65 g 0.13 kg	Standard weights /HCT-CS-032-20109
Platform scale balances	20112	(0 ~ 20) kg (20 ~ 200) kg	1.2 g 0.058 kg	Standard weights /HCT-CS-234-20112
Spring scale balances	20113	(0 ~ 1) kg (1 ~ 2) kg (2 ~ 5) kg (5 ~ 10) kg (10 ~ 30) kg (30 ~ 50) kg	2.9 g 5.8 g 12 g 29 g 58 g 0.12 kg	Standard weights /HCT-CS-235-20113
Weights F1 class	20116	1 mg 2 mg 5 mg 10 mg 20 mg	4.7 μg 4.7 μg 4.7 μg 5.2 μg 5.2 μg	Weights, Balance /HCT-CS-033-20116

201. Mass

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
F1 class	20116	50 mg 100 mg 200 mg 500 mg 1 g 2 g 5 g 10 g 20 g 50 g 100 g 200 g 500 g 1 kg 2 kg 5 kg 10 kg 20 kg	5.9 μg 6.6 μg 7.4 μg 9.2 μg 11 μg 14 μg 17 μg 21 μg 27 μg 36 μg 55 μg 0.11 mg 0.30 mg 0.55 mg 1.1 mg 2.9 mg 5.5 mg 11 mg	

202. Force

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Force measuring devices Force	20202	(0.5 ~ 5) kN (5 ~ 10) kN (10 ~ 20) kN (20 ~ 50) kN (50 ~ 100) kN	$4.1 \times 10^{-5}$ $3.1 \times 10^{-4}$ $3.0 \times 10^{-4}$ $3.6 \times 10^{-4}$ $4.0 \times 10^{-4}$	hydraulic force standards, Deadweight force standards / HCT-CS-253-20202
Tension/compression testing machines Compression	20203	(0 ~ 10) N (10 ~ 20) N (20 ~ 50) N (50 ~ 100) N (100 ~ 200) N (200 ~ 500) N (500 ~ 1 000) N (1 ~ 2) kN (2 ~ 5) kN (5 ~ 10) kN (10 ~ 20) kN (20 ~ 50) kN (50 ~ 100) kN (100 ~ 200) kN	$7.5 \times 10^{-4}$ $6.0 \times 10^{-4}$ $1.5 \times 10^{-3}$ $6.7 \times 10^{-4}$ $8.3 \times 10^{-4}$ $1.2 \times 10^{-3}$ $8.3 \times 10^{-4}$ $6.2 \times 10^{-4}$ $6.1 \times 10^{-4}$ $8.3 \times 10^{-4}$ $6.0 \times 10^{-3}$ $6.5 \times 10^{-4}$ $8.7 \times 10^{-4}$ $9.1 \times 10^{-4}$	Electric force measuring devices /HCT-CS-236-20203
Tensile		(0 ~ 50) N (50 ~ 100) N (100 ~ 200) N (200 ~ 500) N (500 ~ 1 000) N (1 ~ 2) kN (2 ~ 5) kN (5 ~ 10) kN (10 ~ 20) kN (20 ~ 50) kN (50 ~ 100) kN (100 ~ 200) kN	$1.3 \times 10^{-3}$ $6.7 \times 10^{-4}$ $9.2 \times 10^{-4}$ $1.2 \times 10^{-3}$ $8.8 \times 10^{-4}$ $7.2 \times 10^{-4}$ $5.6 \times 10^{-4}$ $1.0 \times 10^{-3}$ $5.3 \times 10^{-3}$ $8.1 \times 10^{-4}$ $7.9 \times 10^{-4}$ $8.3 \times 10^{-4}$	

202. Force

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Push-Pull Gauges	20204	(0.2 ~ 50) N (50 ~ 1 000) N (1 000 ~ 2 000) N	$1.5 \times 10^{-3}$ $1.2 \times 10^{-3}$ $1.6 \times 10^{-3}$	Deadweight force standards, Weights /HCT-CS-034-20204

203. Torque

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Torque measuring devices	20302	(0.05 ~ 100) N · m	$7.1 \times 10^{-3}$	Weights, Torque arm /HCT-CS-036-20302
Torque wrenches/drivers	20303	(0.05 ~ 0.5) N · m (0.5 ~ 5) N · m (5 ~ 50) N · m (50 ~ 500) N · m (500 ~ 1 000) N · m	$1.4 \times 10^{-2}$ $5.3 \times 10^{-3}$ $6.0 \times 10^{-3}$ $4.4 \times 10^{-3}$ $5.0 \times 10^{-3}$	Torque testers /HCT-CS-037-20303

204. Pressure

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Absolute pressure gauges	20406	60 kPa ~ 7 Mpa	$1.2 \times 10^{-4}$	Pressure calibrators / HCT-CS-255-20406
Compound pressure gauges	20408	-92 kPa ~ 2 MPa	$1.7 \times 10^{-4}$	Pressure calibrators Dead weight tester / HCT-CS-215-20408
Differential pressure gauges Pneumatic	20409	(0 ~ 350) kPa (0.35 ~ 1) MPa	$2.2 \times 10^{-4}$ $1.3 \times 10^{-4}$	Pressure calibrators Dead weight tester / HCT-CS-188-20409
Gauge pressure gauges  Gauge pressure gauges, Pressure generators/controllers Pneumatic  Hydraulic  Recorders, pressure Pneumatic  Hydraulic	20411	(0 ~ 350) kPa (0.35 ~ 5) MPa (5 ~ 10) MPa (0.5 ~ 200) MPa  (0 ~ 350) kPa (0.35 ~ 5) MPa (5 ~ 10) MPa (0.5 ~ 200) MPa	$2.3 \times 10^{-4}$ $1.0 \times 10^{-4}$ $2.0 \times 10^{-4}$ $1.2 \times 10^{-4}$  $9.1 \times 10^{-4}$ $1.4 \times 10^{-3}$ $2.9 \times 10^{-3}$ $1.6 \times 10^{-3}$	Pressure calibrators Dead weight tester / HCT-CS-039-20411
Pressure transducers/transmitters Pneumatic  Hydraulic	20412	(0 ~ 350) kPa (0.35 ~ 5) MPa (5 ~ 10) MPa  (0.5 ~ 200) MPa	$2.5 \times 10^{-4}$ $2.5 \times 10^{-4}$ $2.5 \times 10^{-4}$  $2.2 \times 10^{-4}$	Pressure calibrators Dead weight tester / HCT-CS-169-20412
Dial type vacuum gauges	20413	(-92 ~ 0) kPa	$6.2 \times 10^{-4}$	Pressure calibrators / HCT-CS-216-20413
Water Depth meters	20414	(0 ~ 2) MPa	$1.2 \times 10^{-4}$	Pressure calibrators(PM620) /HCT-CS-245-20414



301. Time/frequency

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments	
Frequency standards Timebase Frequency	30102	100 kHz ~ 10 MHz	$4.5 \times 10^{-13}$	Atomic clock /HCT-CS-040-30102	
General frequency sources Timebase Frequency	30103	100 kHz ~ 100 MHz	$2.6 \times 10^{-12}$	Atomic clock /HCT-CS-041-30103	
Frequency meters/counters Input Frequency	30104	DC ~ 3 GHz 3 GHz ~ 40 GHz	$6.1 \times 10^{-12}$ 0.58 Hz	standard frequency, General frequency sources /HCT-CS-042-30104	
Timebase Frequency		100 kHz ~ 10 MHz	$2.6 \times 10^{-12}$		
Time interval sources Time interval	30105	0.1 ns ~ 1 ns	$5.8 \times 10^{-7}$	Frequency Counters /HCT-CS-043-30105	
		1 ns ~ 10 ns	$5.8 \times 10^{-7}$		
		10 ns ~ 100 ns	$5.8 \times 10^{-7}$		
		100 ns ~ 1 μs	$5.8 \times 10^{-7}$		
		1 μs ~ 10 μs	$5.8 \times 10^{-7}$		
		10 μs ~ 100 μs	$5.8 \times 10^{-7}$		
		100 μs ~ 1 ms	$5.8 \times 10^{-7}$		
		1 ms ~ 10 ms	$5.8 \times 10^{-7}$		
		10 ms ~ 100 ms	$5.8 \times 10^{-7}$		
		100 ms ~ 5 s	$5.8 \times 10^{-7}$		
		Frequency	0.1 Hz ~ 1 Hz		$5.8 \times 10^{-7}$
			1 Hz ~ 10 Hz		$5.8 \times 10^{-7}$
			10 Hz ~ 100 Hz		$5.8 \times 10^{-7}$
			100 Hz ~ 1 kHz		$5.8 \times 10^{-7}$
			1 kHz ~ 10 kHz		$5.8 \times 10^{-7}$
			10 kHz ~ 100 kHz		$5.8 \times 10^{-7}$
			100 kHz ~ 1 MHz		$5.8 \times 10^{-7}$
			1 MHz ~ 10 MHz		$5.8 \times 10^{-7}$
			10 MHz ~ 100 MHz		$5.8 \times 10^{-7}$
		100 MHz ~ 1 GHz	$5.8 \times 10^{-7}$		
Time interval meters/Stop watches /Timers	30106	1 ms ~ 86 400 s	$7.2 \times 10^{-8}$	Atomic clock / HCT-CS-044-30106	
Time Period		(1 ~ 10 000) s	$5.8 \times 10^{-6}$		

302. Velocity & revolution

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Standard RPM generators	30201	(1 ~ 1 000) min <sup>-1</sup>	$6.2 \times 10^{-2}$ min <sup>-1</sup>	Atomic clock /HCT-CS-045-30201
		(1 000 ~ 100 000) min <sup>-1</sup>	$6.2 \times 10^{-1}$ min <sup>-1</sup>	
Contact type tachometers	30202	(1 ~ 4 000) min <sup>-1</sup>	$6.1 \times 10^{-2}$ min <sup>-1</sup>	Atomic clock /HCT-CS-046-30202
Photo tachometers/stroboscopes	30203	(1 ~ 300) min <sup>-1</sup>	$6.2 \times 10^{-3}$ min <sup>-1</sup>	Atomic clock /HCT-CS-047-30203
		(300 ~ 6 000) min <sup>-1</sup>	$6.2 \times 10^{-2}$ min <sup>-1</sup>	
		(6 000 ~ 100 000) min <sup>-1</sup>	$6.2 \times 10^{-1}$ min <sup>-1</sup>	

302. Velocity & revolution

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Wow-flutter generators Wow-flutter Deflection	30205	0.01 % ~ 3 %	$1.9 \times 10^{-5}$	Atomic clock /HCT-CS-049-30205
Frequency		0.1 Hz ~ 99.99 kHz	$5.8 \times 10^{-4}$	
Level		100 mV ~ 10 V	$8.0 \times 10^{-3}$	
Wow-flutter meters Wow-flutter Deflection	30206	0.01 %	$2.4 \times 10^{-4}$	Wow-flutter measure /HCT-CS-050-30206
		0.03 %	$4.6 \times 10^{-4}$	
		0.1 %	$1.6 \times 10^{-3}$	
		0.3 %	$4.6 \times 10^{-3}$	
		1 %	$1.5 \times 10^{-2}$	
		3 %	$4.5 \times 10^{-2}$	
Input frequency		10 Hz 99.99 kHz	0.58 Hz 5.8 Hz	
Output frequency	3.00 kHz 3.15 kHz	0.58 Hz 0.58 Hz		
CCIR PULSE	10 ms ~ 100 ms	$1.5 \times 10^{-2}$		

401. DC volatage & current

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
DC ammeters DC Current	40101	(0 ~ 100) $\mu$ A	$1.5 \times 10^{-4}$	Current Calibrators, Multimeter calibrators / HCT-CS-051-40101
		(0.1 ~ 10) mA	$6.8 \times 10^{-5}$	
		(10 ~ 100) mA	$8.0 \times 10^{-5}$	
		(0.1 ~ 1) A	$1.2 \times 10^{-4}$	
		(1 ~ 10) A	$4.8 \times 10^{-4}$	
		(10 ~ 100) A	$4.7 \times 10^{-4}$	
DC Voltage	40102	(0 ~ 10) mV	$1.7 \times 10^{-4}$	Current shunts, Multimeter calibrators / HCT-CS-052-40102
		(10 ~ 100) mV	$9.5 \times 10^{-6}$	
		(0.1 ~ 10) V	$1.1 \times 10^{-5}$	
		(10 ~ 100) V	$1.2 \times 10^{-5}$	
		(100 ~ 1 000) V	$1.3 \times 10^{-5}$	
Transconductance amplifiers DC Current	40102	(0 ~ 1) A	$1.2 \times 10^{-4}$	Current shunts, Multimeter calibrators / HCT-CS-052-40102
		(1 ~ 10) A	$3.0 \times 10^{-4}$	
		(10 ~ 100) A	$5.8 \times 10^{-4}$	
AC Current		(DC ~ 100 Hz)		
		(0 ~ 100) A	$1.2 \times 10^{-3}$	
	(100 Hz ~ 1 kHz)			
	(0 ~ 100 ) A	$1.2 \times 10^{-3}$		

401. DC volatage & current

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
DC voltage/current calibrators DC Current Source          DC Voltage Source	40103	(0 ~ 1) mA (0 ~ -1) mA (1 ~ 10) mA (-1 ~ -10) mA (10 ~ 100) mA (-10 ~ -100) mA (0.1 ~ 1) A (-0.1 ~ -1) A (1 ~ 10) A (-1 ~ -10) A (10 ~ 100) A (0 ~ 100) mV (0 ~ -100) mV (0.1 ~ -1) V (-0.1 ~ -1) V (1 ~ 10) V (-1 V ~ -10) V (10 ~ 100) V (-10 ~ -100) V (100 ~ 1 000) V (-100 ~ -1 000) V	$1.4 \times 10^{-5}$ $1.4 \times 10^{-5}$ $1.6 \times 10^{-5}$ $1.6 \times 10^{-5}$ $4.9 \times 10^{-5}$ $4.9 \times 10^{-5}$ $2.2 \times 10^{-4}$ $2.2 \times 10^{-4}$ $5.0 \times 10^{-4}$ $5.0 \times 10^{-4}$ $5.8 \times 10^{-4}$ $8.1 \times 10^{-6}$ $8.1 \times 10^{-6}$ $7.2 \times 10^{-6}$ $7.2 \times 10^{-6}$ $7.2 \times 10^{-6}$ $7.2 \times 10^{-6}$ $8.0 \times 10^{-6}$ $8.0 \times 10^{-6}$ $8.1 \times 10^{-6}$ $8.1 \times 10^{-6}$	Current shunts Current shunts /HCT-CS-053-40103
Electrical temperature calibrators DC Current   DC Voltage    Resistance	40104	(0 ~1) mA (1 ~10) mA (10 ~ 20) mA (-10 ~ 0) mV (0 ~ 1) mV (1 ~ 10) mV (10 ~ 100) mV (0.1 ~ 1) V (0 ~ 10) Ω (10 ~ 100) Ω (0.1 ~ 1) kΩ (1 ~ 10) kΩ	$6.2 \times 10^{-5}$ $1.6 \times 10^{-5}$ $2.5 \times 10^{-4}$ $5.4 \times 10^{-5}$ $5.4 \times 10^{-4}$ $5.4 \times 10^{-5}$ $5.4 \times 10^{-6}$ $6.2 \times 10^{-5}$ $1.2 \times 10^{-5}$ $1.1 \times 10^{-5}$ $1.1 \times 10^{-5}$ $1.1 \times 10^{-5}$	Digital Multimeters /HCT-CS-205-40104
DC current shunts	40105	0.001 Ω (100 A) 0.01 Ω (20 A) 0.1 Ω (2 A) 1 Ω (200 mA) 10 Ω (20 mA) 100 Ω (2 mA) 1 000 Ω (0.2 mA)	$4.6 \times 10^{-4}$ $4.8 \times 10^{-4}$ $1.2 \times 10^{-4}$ $8.0 \times 10^{-5}$ $6.8 \times 10^{-5}$ $6.8 \times 10^{-5}$ $1.6 \times 10^{-4}$	Digital Multimeter, Multimeter calibrators, Current Calibrators/ HCT-CS-054-40105
Galvanometers/null detectors DC voltage	40106	(3 ~ 10) μV (10 ~ 30) μV (30 ~ 100) μV (100 ~ 300) μV 300 μV ~ 1 mV (1 ~ 3) mV (3 ~ 10) mV (10 ~ 30) mV (30 ~ 100) mV (100 ~ 300) mV 300 mV ~ 1 V	$6 \times 10^{-3}$ $1 \times 10^{-2}$ $6 \times 10^{-3}$ $1 \times 10^{-2}$ $6 \times 10^{-3}$ $1 \times 10^{-2}$ $6 \times 10^{-3}$ $1 \times 10^{-2}$ $6 \times 10^{-3}$ $1 \times 10^{-2}$ $6 \times 10^{-3}$	Multimeter calibrators, Current shunts /HCT-CS-247-40106

401. DC volatage & current

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
DC voltage	40106	(1 ~ 3) V (3 ~ 10) V (10 ~ 30) V (30 ~ 100) V (100 ~ 300) V (300 ~ 1 000) V	$1 \times 10^{-2}$ $6 \times 10^{-3}$ $1 \times 10^{-2}$ $6 \times 10^{-3}$ $1 \times 10^{-2}$ $6 \times 10^{-3}$	
DC power supplies  DC voltage   DC current	40108	(0 ~ 100) mV (0.1 ~ 1) V (1 ~ 10) V (10 ~ 100) V (100 ~ 1 000) V  (0 ~ 1) A (1 ~ 10) A (10 ~ 100) A (100 ~ 300) A (300 ~ 500) A	$8.2 \times 10^{-6}$ $7.2 \times 10^{-6}$ $7.2 \times 10^{-6}$ $8.0 \times 10^{-6}$ $8.1 \times 10^{-6}$  $1.2 \times 10^{-4}$ $3.0 \times 10^{-4}$ $5.8 \times 10^{-4}$ $1.6 \times 10^{-4}$ $1.5 \times 10^{-4}$	Digital Multimeter, Current shunts HCT-CS-057-40108
DC voltmeters  DC Current   DC Voltage	40112	(0 ~ 100) $\mu$ A (0.1 ~ 10) mA (10 ~ 100) mA (0.1 ~ 1) A (1 ~ 10) A (10 ~ 100) A  (0 ~ 10) mV (10 ~ 100) mV (0.1 ~ 10) V (10 ~ 100) V (100 ~ 1 000) V	$1.5 \times 10^{-4}$ $6.8 \times 10^{-5}$ $8.0 \times 10^{-5}$ $1.2 \times 10^{-4}$ $4.8 \times 10^{-4}$ $4.7 \times 10^{-4}$  $1.7 \times 10^{-4}$ $9.5 \times 10^{-6}$ $1.1 \times 10^{-5}$ $1.2 \times 10^{-5}$ $1.3 \times 10^{-5}$	Current Calibrators, Multimeter calibrators /HCT-CS-197-40112
Static/Ionic voltmeters Static Voltage (Positive)          Static Voltage (Negative)	40113	(0 ~ 100) V (100 ~ 500) V (0.5 ~ 1) kV (1 ~ 2) kV (2 ~ 3) kV (3 ~ 4) kV (4 ~ 5) kV (5 ~ 10) kV (10 ~ 20) kV (20 ~ 25) kV (25 ~ 30) kV  (0 ~ -100) V (-100 ~ -500) V (-0.5 ~ -1) kV (-1 ~ -2) kV (-2 ~ -3) kV (-3 ~ -4) kV (-4 ~ -5) kV (-5 ~ -10) kV (-10 ~ -15) kV (-15 ~ -20) kV (-20 ~ -25) kV (-25 ~ -30) kV	$6.0 \times 10^{-4}$ $1.2 \times 10^{-4}$ $6.2 \times 10^{-4}$ $4.7 \times 10^{-2}$ $3.2 \times 10^{-2}$ $2.5 \times 10^{-2}$ $2.1 \times 10^{-2}$ $6.0 \times 10^{-3}$ $4.0 \times 10^{-3}$ $3.6 \times 10^{-3}$ $3.0 \times 10^{-3}$  $6.2 \times 10^{-4}$ $1.2 \times 10^{-4}$ $6.2 \times 10^{-4}$ $4.7 \times 10^{-2}$ $3.2 \times 10^{-2}$ $2.5 \times 10^{-2}$ $2.1 \times 10^{-2}$ $6.0 \times 10^{-3}$ $4.0 \times 10^{-3}$ $3.5 \times 10^{-3}$ $2.8 \times 10^{-3}$ $2.3 \times 10^{-3}$	Multimeter calibrators, High voltage generators / HCT-CS-058-40113

402. Resistance, Capacitance and Inductance

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Capacitance bridges/indicators	40201			Standard capacitors / HCT-CS-059-40201
Frequency		DC ~ 100 kHz	5.8 mHz	
		100 kHz ~ 1 MHz	8.2 mHz	
AC Voltage		(0 ~ 100)mV		
		0.02 kHz	$2.7 \times 10^{-4}$	
		(0.02 ~ 1)kHz	$8.0 \times 10^{-5}$	
		(1 ~ 10)kHz	$1.8 \times 10^{-4}$	
		(10 ~ 100)kHz	$2.1 \times 10^{-4}$	
		(100 ~ 500)kHz	$6.1 \times 10^{-3}$	
		(0.5 ~ 1)MHz	$2.4 \times 10^{-1}$	
		(0.1 ~ 1)V		
		0.02 kHz	$6.0 \times 10^{-4}$	
		(0.02 ~ 10)kHz	$5.9 \times 10^{-4}$	
		(10 ~ 100)kHz	$2.0 \times 10^{-2}$	
		(0.1 ~ 1)MHz	$3.5 \times 10^{-2}$	
Capacitance		(0 pF ~ 1 pF)		
		DC ~ 1 MHz	0.76 fF	
		(1 pF ~ 10 pF)		
	DC ~ 1 MHz	3.6 fF		
	(10 pF ~ 100 pF)			
	DC ~ 1 MHz	36 fF		
	(100 pF ~ 1 000 pF)			
	DC ~ 1 kHz	0.36 pF		
	(1 nF ~ 10 nF)			
	DC ~ 100 kHz	0.82 pF		
	(10 nF ~ 100 nF)			
	DC ~ 100 kHz	8.2 pF		
	(100 nF ~ 1 μF)			
	DC ~ 10 kHz	0.11 nF		
	10 kHz ~ 100 kHz	0.13 nF		
Decade capacitors	40202	(1 kHz)		Capacitance bridges / HCT-CS-060-40202
		1 pF ~ 10 pF	$6.3 \times 10^{-6}$	
		10 pF ~ 100 pF	$1.4 \times 10^{-6}$	
		100 pF ~ 1 nF	$3.9 \times 10^{-6}$	
		1 nF ~ 10 nF	$4.3 \times 10^{-6}$	
		10 nF ~ 100 nF	$5.4 \times 10^{-6}$	
		100 nF ~ 1 μF	$2.4 \times 10^{-5}$	
Standard capacitors	40204	(1 kHz)		Capacitance bridges / HCT-CS-061-40204
		1 pF	5.0 aF	
		10 pF	15 aF	
		100 pF	0.17 fF	
		1 nF	3.9 fF	
		10 nF	43 fF	
		100 nF	0.54 pF	
		1 μF	24 pF	

402. Resistance, Capacitance and Inductance

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Earth testers Earth Tester	40205	0 mΩ ~ 100 mΩ 100 mΩ ~ 1 Ω 1 Ω ~ 10 Ω 10 Ω ~ 100 Ω 100 Ω ~ 1 kΩ 1 kΩ ~ 2 kΩ	$1.2 \times 10^{-2}$ $8.3 \times 10^{-3}$ $8.3 \times 10^{-4}$ $1.1 \times 10^{-4}$ $8.7 \times 10^{-5}$ $3.0 \times 10^{-4}$	Decade resistor, Standard resistance /HCT-CS-062-40205
voltage	(DC ~ 1 kHz) 0 V ~ 100 V 100 V ~ 600 V	$6.0 \times 10^{-4}$ $1.6 \times 10^{-4}$		
current	(DC ~ 1 kHz) 0 A ~ 60 A	$1.2 \times 10^{-3}$		
Inductors	40208	(1 kHz) 0.1 mH ~ 10 mH 0.01 H ~ 1 H	$6.2 \times 10^{-4}$ $2.1 \times 10^{-3}$	Impedance bridges / HCT-CS-063-40208
Insulation testers Resistance	40210	0 kΩ ~ 1 kΩ 1 kΩ ~ 1 MΩ 1 MΩ ~ 10 MΩ 10 MΩ ~ 100 MΩ 100 MΩ ~ 1 GΩ 1 GΩ ~ 10 GΩ 10 GΩ ~ 100 GΩ 100 GΩ ~ 1 TΩ	$6.2 \times 10^{-4}$ $8.6 \times 10^{-5}$ $1.5 \times 10^{-4}$ $1.8 \times 10^{-4}$ $4.4 \times 10^{-4}$ $8.5 \times 10^{-4}$ $2.6 \times 10^{-3}$ $7.0 \times 10^{-3}$	High resistance meters, Multimeter calibrators /HCT-CS-064-40210
Insulation voltage	0 V ~ 800 V 800 V ~ 9 kV	$7.3 \times 10^{-5}$ $6.2 \times 10^{-3}$		
voltage	(DC ~ 1 kHz) 0 V ~ 600 V	$1.6 \times 10^{-4}$		
Resistance	0 Ω ~ 100 Ω 100 Ω ~ 1 kΩ 1 kΩ ~ 100 kΩ	$1.1 \times 10^{-4}$ $8.7 \times 10^{-5}$ $8.4 \times 10^{-5}$		
Q-meters AC voltage	40211	DC ~ 1kHz 10 mV 100 mV 1 V 10 V	58 μV 0.58 mV 0.59 mV 5.9 mV	Frequency Counters, Digital Multimeters /HCT-CS-065-40211
Frequevcy	DC ~ 1 kHz 1 kHz ~ 10 kHz 10 kHz ~ 100 kHz 100 kHz ~ 1 MHz 1 MHz ~ 10 MHz 10 MHz ~ 100 MHz	$5.8 \times 10^{-6}$ $5.8 \times 10^{-7}$ $5.9 \times 10^{-8}$ $9.0 \times 10^{-9}$ $5.9 \times 10^{-8}$ $8.2 \times 10^{-8}$		

402. Resistance, Capacitance and Inductance

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Resistance bridges & Similar instruments	40213	0.01 Ω 0.01 ~ 0.1Ω 0.1 Ω ~ 1 Ω 1 Ω ~ 10 Ω 10 Ω ~ 100 Ω 100 Ω ~ 1 kΩ 1 kΩ ~ 10 kΩ 10 kΩ ~ 100 kΩ 100 kΩ ~ 1 MΩ 1 MΩ ~ 10 MΩ 10 MΩ ~ 100 MΩ	7.8 μ Ω 8.5 μ Ω 18 μ Ω 0.11 mΩ 0.91 mΩ 8.9 mΩ 89 mΩ 0.91 Ω 11 Ω 0.25 kΩ 16 kΩ	Standard resistance, Digital Multimeter /HCT-CS-066-40213
MEASURING ARM				
RATIO ARM		× 0.001 × 0.01 × 0.1 × 1 × 10 × 100 × 1 000	5.8×10 <sup>-8</sup> 5.8×10 <sup>-7</sup> 5.8×10 <sup>-6</sup> 5.8×10 <sup>-5</sup> 5.9×10 <sup>-4</sup> 6.1×10 <sup>-3</sup> 6.0×10 <sup>-2</sup>	
Resistance meters	40214	1 mΩ 10 mΩ 100 mΩ 1 Ω 1 Ω ~ 10 Ω 10 Ω ~ 100 Ω 0.1 kΩ ~ 1 kΩ 1 kΩ ~ 1 MΩ 1 MΩ ~ 10 MΩ 10 MΩ ~ 100 MΩ 100 MΩ ~ 1 GΩ 1 GΩ ~ 10 GΩ 10 GΩ ~ 100 GΩ 100 GΩ ~ 1 TΩ	0.25 μ Ω 1.2 μ Ω 0.69 μ Ω 3.3 μ Ω 8.3×10 <sup>-4</sup> 6.8×10 <sup>-5</sup> 6.5×10 <sup>-5</sup> 6.1×10 <sup>-5</sup> 1.4×10 <sup>-4</sup> 1.6×10 <sup>-4</sup> 4.4×10 <sup>-4</sup> 8.5×10 <sup>-4</sup> 2.6×10 <sup>-3</sup> 6.2×10 <sup>-3</sup>	Standard resistance, High resistance meters HCT-CS-067-40214
DC Resistance				
DC Resistance				
Frequency		DC ~ 1 kHz 1 kHz ~ 10 kHz 10 kHz ~ 100 kHz 100 kHz ~ 1 MHz	5.8×10 <sup>-6</sup> 5.8×10 <sup>-7</sup> 5.9×10 <sup>-8</sup> 8.2×10 <sup>-9</sup>	
AC Resistance		(DC ~ 1 kHz) 10 mV ~ 10 V	2.0×10 <sup>-4</sup>	
		(DC ~ 1 kHz) 1 Ω 10 Ω 100 Ω 1 kΩ 10 kΩ 100 kΩ	1.2 mΩ 3.7 mΩ 36 mΩ 0.36 Ω 3.6 Ω 36 Ω	

402. Resistance, Capacitance and Inductance

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Resistors	40215			Digital Multimeter / HCT-CS-068-40215
Standard Resistance(DC)		1 Ω 10 Ω 100 Ω 1 kΩ 10 kΩ 100 kΩ 1 MΩ 10 MΩ 100 MΩ 1 GΩ 10 GΩ	18 uΩ 0.18 mΩ 0.75 mΩ 7.5 mΩ 77 mΩ 1.2 Ω 20 Ω 0.22 kΩ 3.9 kΩ 0.13 MΩ 5.6 MΩ	
Standard Resistance(AC)		1 kHz 1 Ω 10 Ω 100 Ω 1 kΩ 10 kΩ 100 kΩ	1.2 mΩ 3.7 mΩ 36 mΩ 0.36 Ω 3.6 Ω 36 Ω	
Decade Resistance(DC)		0 mΩ ~ 10 mΩ 10 mΩ ~ 1 Ω 1 Ω ~ 10 Ω 10 Ω ~ 100 Ω 100 Ω ~ 10 kΩ 10 kΩ ~ 100 kΩ 100 kΩ ~ 1 MΩ 1 MΩ ~ 10 MΩ 10 MΩ ~100 MΩ 100 MΩ ~ 1 GΩ 1 GΩ ~ 10 GΩ 10 GΩ ~ 100 GΩ 100 GΩ ~ 1 TΩ	$1.0 \times 10^{-3}$ $2.0 \times 10^{-4}$ $9.0 \times 10^{-5}$ $9.1 \times 10^{-6}$ $8.9 \times 10^{-6}$ $9.1 \times 10^{-6}$ $1.1 \times 10^{-5}$ $2.5 \times 10^{-5}$ $3.8 \times 10^{-5}$ $1.6 \times 10^{-4}$ $1.9 \times 10^{-3}$ $8.0 \times 10^{-3}$ $4.0 \times 10^{-2}$	
Decade Resistance(AC)		1 kHz 100 mΩ ~ 1 Ω 1 Ω ~ 10 Ω 10 Ω ~ 100 kΩ	$1.7 \times 10^{-3}$ $1.2 \times 10^{-3}$ $6.9 \times 10^{-4}$	
Impedance bridges/LCR meters	40217			Counters, Standard Resistance, Capacitance, Digital Multimeters Inductance/HCT-CS-093-40217
Frequency		DC ~ 100 kHz 100 kHz ~ 1 MHz 1 MHz ~ 30 MHz	5.8 mHz 8.2 mHz 0.60 Hz	
AC voltage		(0 ~ 100)mV 0.02 kHz (0.02 ~ 1)kHz (1 ~ 10)kHz (10 ~ 100)kHz (100 ~ 500)kHz (0.5 ~ 1)MHz (0.1 ~ 1)V 0.02 kHz (0.02 ~ 10)kHz (10 ~ 100)kHz (0.1 ~ 1)MHz	$2.7 \times 10^{-4}$ $8.0 \times 10^{-5}$ $1.8 \times 10^{-4}$ $2.1 \times 10^{-4}$ $6.1 \times 10^{-3}$ $2.4 \times 10^{-1}$ $6.0 \times 10^{-4}$ $5.9 \times 10^{-4}$ $1.0 \times 10^{-3}$ $3.5 \times 10^{-2}$	



402. Resistance, Capacitance and Inductance

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
AC voltage	40217	(1 ~ 10)V		
		0.02 kHz	$5.8 \times 10^{-7}$	
		(0.02 ~ 10)kHz	$5.9 \times 10^{-7}$	
		(10 ~ 100)kHz	$1.0 \times 10^{-8}$	
		(0.1 ~ 1)MHz	$2.4 \times 10^{-5}$	
		(10 ~ 20)V		
		0.02 kHz	$5.0 \times 10^{-4}$	
		(0.02 ~ 10)kHz	$4.3 \times 10^{-4}$	
		(10 ~ 100)kHz	$4.6 \times 10^{-4}$	
		(0.1 ~ 1)MHz	$3.0 \times 10^{-3}$	
DC voltage		(0 ~ 100) mV	$8.0 \times 10^{-5}$	
		100 mV ~ 10 V	$5.8 \times 10^{-5}$	
		(10 ~ 40) V	$1.6 \times 10^{-5}$	
Resistance		DC ~ 1 kHz		
		0 Ω ~ 1 Ω	1.1 mΩ	
		1 Ω ~ 10 Ω	3.7 mΩ	
		10 Ω ~ 100 Ω	36 mΩ	
		100 Ω ~ 1 kΩ	0.35 Ω	
		1 kΩ ~ 10 kΩ	3.6 Ω	
		10 kΩ ~ 100 kΩ	36 Ω	
Capacitance		(0 pF ~ 1 pF)		
		DC ~ 1 MHz	0.76 fF	
		1 MHz ~ 2 MHz	0.78 fF	
		2 MHz ~ 3 MHz	0.86 fF	
		3 MHz ~ 4 MHz	0.98 fF	
		4 MHz ~ 5 MHz	1.2 fF	
		5 MHz ~ 10 MHz	2.6 fF	
		10 MHz ~ 13 MHz	3.8 fF	
		(1 pF ~ 10 pF)		
		DC ~ 5 MHz	3.6 fF	
		5 MHz ~ 10 MHz	3.8 fF	
		10 MHz ~ 13 MHz	3.9 fF	
		(10 pF ~ 100 pF)		
		DC ~ 4 MHz	36 fF	
		4 MHz ~ 5 MHz	38 fF	
		5 MHz ~ 10 MHz	49 fF	
		10 MHz ~ 13 MHz	61 fF	
		(100 pF ~ 1 000 pF)		
		DC ~ 1 MHz	0.36 pF	
		1 MHz ~ 2 MHz	0.38 pF	
		2 MHz ~ 3 MHz	0.45 pF	
		3 MHz ~ 4 MHz	0.57 pF	
		4 MHz ~ 5 MHz	0.72 pF	
		5 MHz ~ 10 MHz	2.0 pF	
		10 MHz ~ 13 MHz	3.0 pF	
		(1 nF ~ 10 nF)		
		DC ~ 100 kHz	0.82 pF	
		(10 nF ~ 100 nF)		
		DC ~ 100 kHz	8.2 pF	
		(100 nF ~ 1 μF)		
DC ~ 10 kHz	0.11 nF			
10 kHz ~ 100 kHz	0.13 nF			

402. Resistance, Capacitance and Inductance

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Inductance	40217	(DC ~ 1 kHz) 0 H ~ 100 uH 100 uH ~ 1 mH 1 mH ~ 10 mH 10 mH ~ 100 mH 100 mH ~ 1 H	19 nH 0.15 μH 1.5 μH 15 μH 0.15 mH	

403. AC voltage, current & power

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
AC ammeters AC Current	40301	(0 mA ~ 1 mA) 40 Hz ~ 1 kHz 1 kHz ~ 10 kHz	$2.2 \times 10^{-4}$ $2.8 \times 10^{-3}$	Multimeter calibrators / HCT-CS-070-40301
		(1 mA ~ 10 mA) 40 Hz ~ 1 kHz 1 kHz ~ 10 kHz	$2.2 \times 10^{-4}$ $2.8 \times 10^{-3}$	
		(10 mA ~ 100 mA) 40 Hz ~ 1 kHz 1 kHz ~ 10 kHz	$2.2 \times 10^{-4}$ $2.8 \times 10^{-3}$	
		(100 mA ~ 1 A) 40 Hz ~ 1 kHz 1 kHz ~ 10 kHz	$8.0 \times 10^{-4}$ $1.0 \times 10^{-2}$	
		(1 A ~ 10 A) 40 Hz ~ 1 kHz	$6.0 \times 10^{-4}$	
		(10 A ~ 19 A) 60 Hz ~ 100 Hz 100 Hz ~ 1 kHz	$1.8 \times 10^{-3}$ $2.1 \times 10^{-3}$	
		(19 A ~ 90 A) 60 Hz	$3.3 \times 10^{-3}$	
DC Voltage		(0 V ~ 10 V) 40 Hz ~ 10 kHz	$1.2 \times 10^{-4}$	
		(10 V ~ 30 V) 50 Hz ~ 10 kHz	$1.8 \times 10^{-4}$	
		(30 V ~ 75 V) 40 Hz ~ 10 kHz	$1.4 \times 10^{-4}$	
		(75 V ~ 150 V) 50 Hz ~ 1 kHz	$2.9 \times 10^{-4}$	
		(150 V ~ 300 V) 50 Hz ~ 1 kHz	$2.7 \times 10^{-4}$	
		(300 V ~ 750 V) 50 Hz ~ 1 kHz	$1.4 \times 10^{-4}$	

403. AC voltage, current & power

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Clamp ammeters/voltmeters	40302			Multimeter calibrators, Coil / HCT-CS-071-40302
DC voltage		0 mV ~ 100 mV	$7.0 \times 10^{-5}$	
		100 mV ~ 10 V	$6.3 \times 10^{-5}$	
		10 V ~ 1 000 V	$6.5 \times 10^{-5}$	
AC voltage		(0 mV ~ 100 mV)		
		40 Hz ~ 10 kHz	$2.7 \times 10^{-4}$	
		10 kHz ~ 20 kHz	$2.9 \times 10^{-4}$	
		20 kHz ~ 50 kHz	$5.1 \times 10^{-4}$	
		50 kHz ~ 100 kHz	$1.3 \times 10^{-3}$	
		(100 mV ~ 1 V)		
		40 Hz ~ 10 kHz	$2.5 \times 10^{-4}$	
		10 kHz ~ 20 kHz	$3.0 \times 10^{-4}$	
		20 kHz ~ 50 kHz	$4.1 \times 10^{-4}$	
		50 kHz ~ 100 kHz	$9.6 \times 10^{-4}$	
		(1 V ~ 10 V)		
		40 Hz ~ 10 kHz	$2.5 \times 10^{-4}$	
		10 kHz ~ 20 kHz	$3.5 \times 10^{-4}$	
		20 kHz ~ 50 kHz	$4.8 \times 10^{-4}$	
		50 kHz ~ 100 kHz	$1.2 \times 10^{-3}$	
		(10 V ~ 100 V)		
		50 Hz ~ 1 kHz	$2.5 \times 10^{-4}$	
		1 kHz ~ 10 kHz	$3.1 \times 10^{-4}$	
		10 kHz ~ 20 kHz	$3.7 \times 10^{-4}$	
		20 kHz ~ 50 kHz	$4.2 \times 10^{-4}$	
	50 kHz ~ 100 kHz	$2.9 \times 10^{-3}$		
DC current	(100 V ~ 1 000 V)			
	50 Hz ~ 10 kHz	$3.7 \times 10^{-4}$		
	0 mA ~ 1 mA	$6.4 \times 10^{-4}$		
	1 mA ~ 100 mA	$6.3 \times 10^{-4}$		
	100 mA ~ 1 A	$6.7 \times 10^{-4}$		
	1 A ~ 10 A	$8.8 \times 10^{-4}$		
	10 A ~ 50 A	$1.3 \times 10^{-3}$		
	50 A ~ 100 A	$7.7 \times 10^{-4}$		
	100 A ~ 500 A	$6.5 \times 10^{-4}$		
	500 A ~ 1 000 A	$1.4 \times 10^{-3}$		
AC current	(0 mA ~ 1 mA)			
	40 Hz ~ 1 kHz	$1.5 \times 10^{-3}$		
	1 kHz ~ 10 kHz	$6.2 \times 10^{-3}$		
	(1 mA ~ 10 mA)			
	40 Hz ~ 500 HZ	$1.4 \times 10^{-3}$		
	500 Hz ~ 1 kHz	$9.3 \times 10^{-4}$		
	1 kHz ~ 10 kHz	$2.7 \times 10^{-3}$		
	(10 mA ~ 100 mA)			
	40 Hz ~ 500 HZ	$1.4 \times 10^{-3}$		
	500 Hz ~ 1 kHz	$9.3 \times 10^{-4}$		
	1 kHz ~ 10 kHz	$4.0 \times 10^{-3}$		

403. AC voltage, current & power

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
AC current	40302	(100 mA ~ 1 A) 40 Hz ~ 500 HZ	$2.3 \times 10^{-3}$	
		500 Hz ~ 1 kHz	$9.3 \times 10^{-4}$	
		1 kHz ~ 10 kHz	$3.5 \times 10^{-2}$	
		(1 A ~ 10 A) 40 Hz ~ 1 kHz	$1.5 \times 10^{-3}$	
		(10 A ~ 100 A) 60 Hz	$2.6 \times 10^{-3}$	
		(100 A ~ 500 A) 60 Hz	$1.4 \times 10^{-3}$	
		(500 A ~ 900 A) 60 Hz	$1.9 \times 10^{-3}$	
		(500 A ~ 1 000 A) 60 Hz	$1.8 \times 10^{-3}$	
Resistance		0 Ω ~ 1 Ω	$8.2 \times 10^{-3}$	
		1 Ω ~ 10 Ω	$8.3 \times 10^{-4}$	
		10 Ω ~ 100 Ω	$7.0 \times 10^{-5}$	
		100 Ω ~ 1 kΩ	$8.9 \times 10^{-5}$	
		1 kΩ ~ 10 kΩ	$8.8 \times 10^{-5}$	
		10 kΩ ~ 100 kΩ	$6.6 \times 10^{-5}$	
	100 kΩ ~ 1 MΩ	$8.5 \times 10^{-5}$		
	1 MΩ ~ 10 MΩ	$2.2 \times 10^{-4}$		
	10 MΩ ~ 100 MΩ	$1.6 \times 10^{-4}$		
Current Coil (AC Ratio)	2	2	0.15 %	
		10	0.13 %	
		25	0.17 %	
		50	0.14 %	
Current Coil (DC Ratio)	2	2	0.14 %	
		10	0.07 %	
		25	0.13 %	
		50	0.08 %	
AC voltage/current calibrators AC voltage	40303	(0 mV~ 100 mV) DC ~ 55 Hz	$1.7 \times 10^{-4}$	Multimeters / HCT-CS-072-40303
		55 Hz ~ 300 Hz	$1.5 \times 10^{-4}$	
		300 Hz ~ 1 kHz	$1.4 \times 10^{-4}$	
		1 kHz ~ 10 kHz	$1.7 \times 10^{-4}$	
		10 kHz ~ 30 kHz	$4.4 \times 10^{-4}$	
		30 kHz ~ 100 kHz	$1.0 \times 10^{-3}$	
		(100 mV ~ 1 V) DC ~ 55 Hz	$1.2 \times 10^{-4}$	
		55 Hz ~ 300 Hz	$9.5 \times 10^{-5}$	
		300 Hz ~ 10 kHz	$1.2 \times 10^{-4}$	
		10 kHz ~ 30 kHz	$2.8 \times 10^{-4}$	
		30 kHz ~ 100 kHz	$8.1 \times 10^{-4}$	

403. AC voltage, current & power

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
AC voltage	40303	(1 V ~ 10 V)		
		DC ~ 55 Hz	$1.2 \times 10^{-4}$	
		55 Hz ~ 1 kHz	$9.6 \times 10^{-5}$	
		1 kHz ~ 10 kHz	$1.2 \times 10^{-4}$	
		10 kHz ~ 30 kHz	$2.8 \times 10^{-4}$	
		30 kHz ~ 100 kHz	$8.1 \times 10^{-4}$	
		(10 V ~ 100 V)		
		DC ~ 55 Hz	$1.2 \times 10^{-4}$	
		55 Hz ~ 300 Hz	$9.8 \times 10^{-5}$	
		300 Hz ~ 1 kHz	$9.9 \times 10^{-5}$	
		1 kHz ~ 10 kHz	$1.2 \times 10^{-4}$	
		10 kHz ~ 30 kHz	$2.8 \times 10^{-4}$	
		30 kHz ~ 60 kHz	$8.1 \times 10^{-4}$	
		60 kHz ~ 100 kHz	$8.2 \times 10^{-4}$	
AC Current		(100 V ~ 1 000 V)		
		DC ~ 55 Hz	$1.2 \times 10^{-4}$	
		55 Hz ~ 3 kHz	$1.4 \times 10^{-4}$	
		3 kHz ~ 10 kHz	$1.6 \times 10^{-4}$	
		(0 $\mu$ A ~ 100 $\mu$ A)		
		DC ~ 55 Hz	$5.3 \times 10^{-4}$	
		55 Hz ~ 1 kHz	$5.2 \times 10^{-4}$	
		1 kHz ~ 3 kHz	$5.5 \times 10^{-4}$	
		3 kHz ~ 10 kHz	$5.6 \times 10^{-4}$	
		(100 $\mu$ A ~ 1 mA)		
		DC ~ 55 Hz	$5.3 \times 10^{-4}$	
		55 Hz ~ 3 kHz	$5.2 \times 10^{-4}$	
		3 kHz ~ 10 kHz	$5.3 \times 10^{-4}$	
		(1 mA ~ 10 mA)		
		DC ~ 55 Hz	$5.3 \times 10^{-4}$	
		55 Hz ~ 1 kHz	$5.2 \times 10^{-4}$	
		1 kHz ~ 10 kHz	$5.3 \times 10^{-4}$	
		(10 mA ~ 100 mA)		
		DC ~ 55 Hz	$5.3 \times 10^{-4}$	
		55 Hz ~ 1 kHz	$5.2 \times 10^{-4}$	
		1 kHz ~ 10 kHz	$5.3 \times 10^{-4}$	
		(100 mA ~ 1 A)		
		DC ~ 300 Hz	$9.3 \times 10^{-4}$	
		300 Hz ~ 1 kHz	$9.2 \times 10^{-4}$	
		1 kHz ~ 3 kHz	$1.1 \times 10^{-3}$	
		3 kHz ~ 10 kHz	$1.2 \times 10^{-3}$	
		(1 A ~ 10 A)		
		DC ~ 1 kHz	$1.2 \times 10^{-3}$	
		1 kHz ~ 3 kHz	$6.0 \times 10^{-4}$	
		3 kHz ~ 10 kHz	$7.4 \times 10^{-4}$	
		(10 A ~ 50 A)		
		DC ~ 1 kHz	$1.2 \times 10^{-5}$	
		(50 A ~ 100 A)		
		DC ~ 1 kHz	$5.8 \times 10^{-6}$	



403. AC voltage, current & power

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
DC Power	40311	120 W ~ 480 W	$4.6 \times 10^{-4}$	
		480 W ~ 600 W	$6.9 \times 10^{-4}$	
		0.6 kW ~ 1.2 kW	$6.4 \times 10^{-4}$	
		1.2 kW ~ 20 kW	$1.2 \times 10^{-3}$	
Power Factor	(50 Hz ~ 60 Hz)	1	$1.2 \times 10^{-4}$	
		0.9	$2.9 \times 10^{-4}$	
		0.8	$2.3 \times 10^{-4}$	
		0.7	$2.2 \times 10^{-4}$	
		0.6	$2.3 \times 10^{-4}$	
		0.5	$2.6 \times 10^{-4}$	
		0.4	$3.1 \times 10^{-4}$	
		0.3	$4.0 \times 10^{-4}$	
		0.2	$5.8 \times 10^{-4}$	
		0.1	$1.2 \times 10^{-3}$	
AC Voltage	(40 Hz ~ 1 kHz)	0 V ~ 1 V	$1.2 \times 10^{-4}$	
		1 V ~ 2 V	$1.1 \times 10^{-4}$	
		2 V ~ 5 V	$1.3 \times 10^{-4}$	
		5 V ~ 10 V	$1.2 \times 10^{-4}$	
		10 V ~ 20 V	$1.1 \times 10^{-4}$	
		20 V ~ 50 V	$1.5 \times 10^{-4}$	
		50 V ~ 100 V	$1.4 \times 10^{-4}$	
		100 V ~ 200 V	$1.2 \times 10^{-4}$	
		200 V ~ 300 V	$2.1 \times 10^{-4}$	
		300 V ~ 500 V	$1.5 \times 10^{-4}$	
		500 V ~ 600 V	$1.4 \times 10^{-4}$	
		600 V ~ 1 000 V	$1.3 \times 10^{-4}$	
AC Current	(40 Hz ~ 1 kHz)	0 mA ~ 10 mA	$2.7 \times 10^{-4}$	
		10 mA ~ 20 mA	$2.2 \times 10^{-4}$	
		20 mA ~ 50 mA	$3.8 \times 10^{-4}$	
		50 mA ~ 100 mA	$2.9 \times 10^{-4}$	
		100 mA ~ 200 mA	$2.4 \times 10^{-4}$	
		200 mA ~ 500 mA	$1.2 \times 10^{-3}$	
		0.5 A ~ 1 A	$9.7 \times 10^{-4}$	
		1 A ~ 2 A	$9.0 \times 10^{-4}$	
		2 A ~ 5 A	$7.2 \times 10^{-4}$	
		5 A ~ 10 A	$6.0 \times 10^{-4}$	
		10 A ~ 20 A	$1.7 \times 10^{-3}$	
		20 A ~ 30 A	$5.7 \times 10^{-3}$	
30 A ~ 50 A	$4.1 \times 10^{-3}$			
DC Voltage		0 V ~ 1 V	$5.9 \times 10^{-5}$	
		1 V ~ 2 V	$3.1 \times 10^{-5}$	
		2 V ~ 5 V	$1.6 \times 10^{-5}$	
		5 V ~ 10 V	$5.9 \times 10^{-5}$	
		10 V ~ 20 V	$3.0 \times 10^{-5}$	
		20 V ~ 50 V	$1.8 \times 10^{-5}$	
		50 V ~ 60 V	$1.6 \times 10^{-5}$	
		60 V ~ 100 V	$5.9 \times 10^{-5}$	
		100 V ~ 150 V	$4.0 \times 10^{-5}$	
		150 V ~ 200 V	$3.1 \times 10^{-5}$	
200 V ~ 300 V	$2.6 \times 10^{-5}$			

403. AC voltage, current & power

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
DC Voltage	40311	300 V ~ 500 V	$1.9 \times 10^{-5}$	
		500 V ~ 600 V	$1.8 \times 10^{-5}$	
		600 V ~ 750 V	$1.6 \times 10^{-5}$	
		750 V ~ 1 000 V	$5.9 \times 10^{-5}$	
DC Current	40311	0 mA ~ 10 mA	$1.0 \times 10^{-4}$	
		10 mA ~ 20 mA	$8.1 \times 10^{-5}$	
		20 mA ~ 100 mA	$1.1 \times 10^{-4}$	
		100 mA ~ 200 mA	$9.1 \times 10^{-5}$	
		200 mA ~ 500 mA	$1.8 \times 10^{-4}$	
		0.5 A ~ 1 A	$1.6 \times 10^{-4}$	
		1 A ~ 2 A	$1.3 \times 10^{-4}$	
		2 A ~ 5 A	$5.3 \times 10^{-4}$	
		5 A ~ 10 A	$4.8 \times 10^{-4}$	
		10 A ~ 20 A	$1.2 \times 10^{-3}$	
		20 A ~ 30 A	$1.0 \times 10^{-3}$	
		30 A ~ 50 A	$7.0 \times 10^{-4}$	
Harmonic Voltage	40311	(50 Hz ~ 60 Hz)		
		0.5 %	$1.1 \times 10^{-1}$	
		0.5 % ~ 1 %	$5.3 \times 10^{-2}$	
		1 % ~ 3 %	$1.8 \times 10^{-2}$	
		3 % ~ 5 %	$1.1 \times 10^{-2}$	
		5 % ~ 10 %	$5.3 \times 10^{-3}$	
		10 % ~ 20 %	$2.7 \times 10^{-3}$	
Harmonic Current	40311	(50 Hz ~ 60 Hz)		
		0.5 %	$1.1 \times 10^{-1}$	
		0.5 ~ 1 %	$5.3 \times 10^{-2}$	
		1 % ~ 3 %	$1.8 \times 10^{-2}$	
		3 % ~ 5 %	$1.1 \times 10^{-2}$	
		5 % ~ 10 %	$5.3 \times 10^{-3}$	
		10 % ~ 20 %	$2.7 \times 10^{-3}$	
Frequency	40311	1 Hz ~ 20 Hz	$4.5 \times 10^{-4}$	
		20 Hz ~ 50 Hz	$1.6 \times 10^{-4}$	
		50 Hz ~ 60 Hz	$1.5 \times 10^{-4}$	
		60 Hz ~ 100 Hz	$1.4 \times 10^{-4}$	
		100 Hz ~ 200 Hz	$3.5 \times 10^{-4}$	
		200 Hz ~ 400 Hz	$2.0 \times 10^{-4}$	
		400 Hz ~ 600 Hz	$1.7 \times 10^{-4}$	
		600 Hz ~ 1 kHz	$1.4 \times 10^{-4}$	
Flicker $P_{st}$ 1 ~ 4000 cpm	40311	0 ~ 5	0.39 %	
$P_{inst.max}$ 0 ~ 1.5 Hz(Sinusoidal)	40311	0 ~ 5	0.18 %	
1.5 ~ 8.8 Hz(Sinusoidal)	40311	0 ~ 5	0.19 %	
8.8 ~ 20 Hz(Sinusoidal)	40311	0 ~ 5	0.21 %	
20 ~ 25 Hz(Sinusoidal)	40311	0 ~ 5	0.23 %	
25 ~ 33.333 Hz(Sinusoidal)	40311	0 ~ 5	0.26 %	
0 ~ 28 Hz(Square)	40311	0 ~ 5	0.23 %	
28 ~ 30.5 Hz(Square)	40311	0 ~ 5	1.00 %	
30.5 ~ 33.333 Hz(Square)	40311	0 ~ 5	0.23 %	
$P_{st}$ Range	40311	0 ~ 0.25	0.39 %	
	40311	0.25 ~ 0.5	0.41 %	



403. AC voltage, current & power

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
AC power supplies	40312	(0 mV ~ 100) mV		Multimeters / HCT-CS-076-40312
AC voltage		20 Hz ~ 1 kHz	$2.2 \times 10^{-4}$	
		1 kHz ~ 20 kHz	$4.7 \times 10^{-4}$	
		20 kHz ~ 50 kHz	$1.1 \times 10^{-3}$	
		50 kHz ~ 100 kHz	$1.2 \times 10^{-3}$	
		(100 mV ~ 1 V)		
		20 Hz ~ 1 kHz	$1.3 \times 10^{-4}$	
		1 kHz ~ 20 kHz	$2.9 \times 10^{-4}$	
		20 kHz ~ 100 kHz	$8.2 \times 10^{-4}$	
		(1 V ~ 10 V)		
		20 Hz ~ 1 kHz	$1.3 \times 10^{-4}$	
		1 kHz ~ 20 kHz	$2.9 \times 10^{-4}$	
		20 kHz ~ 100 kHz	$8.2 \times 10^{-4}$	
(10 V ~ 100 V)				
20 Hz ~ 1 kHz		$1.3 \times 10^{-4}$		
1 kHz ~ 20 kHz		$2.9 \times 10^{-4}$		
20 kHz ~ 50 kHz		$8.2 \times 10^{-4}$		
50 kHz ~ 100 kHz		$8.3 \times 10^{-4}$		
(100 V ~ 1 000 V)				
20 Hz ~ 1 kHz		$7.0 \times 10^{-4}$		
1 kHz ~ 20 kHz		$7.5 \times 10^{-4}$		
DC voltage		0 mV ~ 100 V	$6.9 \times 10^{-5}$	
		100 V ~ 1 000 V	$6.8 \times 10^{-4}$	
AC Current		(0 $\mu$ A ~ 100 $\mu$ A)		
		DC ~ 1 kHz	$5.3 \times 10^{-4}$	
		1 kHz ~ 10 kHz	$5.6 \times 10^{-4}$	
		(100 $\mu$ A ~ 1 mA)		
		DC ~ 55 Hz	$5.3 \times 10^{-4}$	
		55 Hz ~ 300 Hz	$5.2 \times 10^{-4}$	
		300 Hz ~ 10 kHz	$5.3 \times 10^{-4}$	
		(1 mA ~ 10 mA)		
		DC ~ 55 Hz	$5.3 \times 10^{-4}$	
		55 Hz ~ 1 kHz	$5.2 \times 10^{-4}$	
		1 kHz ~ 3 kHz	$5.3 \times 10^{-4}$	
		3 kHz ~ 10 kHz	$5.4 \times 10^{-4}$	
		(10 mA ~ 100 mA)		
		DC ~ 55 Hz	$5.3 \times 10^{-4}$	
		55 Hz ~ 1 kHz	$5.2 \times 10^{-4}$	
		1 kHz ~ 10 kHz	$5.3 \times 10^{-4}$	
		(100 mA ~ 1 A)		
		DC ~ 1 kHz	$9.3 \times 10^{-4}$	
		1 kHz ~ 3 kHz	$1.1 \times 10^{-3}$	
		3 kHz ~ 10 kHz	$1.2 \times 10^{-3}$	
		(1 A ~ 10 A)		
		DC ~ 1 kHz	$1.2 \times 10^{-3}$	
		1 kHz ~ 10 kHz	$3.2 \times 10^{-3}$	

403. AC voltage, current & power

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments	
AC Current	40312	(10 A ~ 45 A)	$1.3 \times 10^{-3}$		
		DC ~ 1 kHz			
DC Current		0 $\mu$ A ~ 1 mA			$6.2 \times 10^{-5}$
		1 mA ~ 10 mA			$6.3 \times 10^{-5}$
		10 mA ~ 100 mA			$7.8 \times 10^{-5}$
		100 mA ~ 1 A			$2.2 \times 10^{-4}$
		1 A ~ 10 A			$5.0 \times 10^{-4}$
Frequency	10 A ~ 100 A	$5.8 \times 10^{-4}$			
	DC ~ 20 Hz	$2.9 \times 10^{-7}$			
	20 ~ 100 kHz	$5.8 \times 10^{-7}$			
Puncture/safety testers	40313			High voltage voltmeters, Digital Multimeter / HCT-CS-077-40313	
AC voltage		0 kV ~ 1 kV			$2.0 \times 10^{-2}$
		1 kV ~ 2 kV			$1.5 \times 10^{-2}$
		2 kV ~ 4 kV			$1.3 \times 10^{-2}$
		4 kV ~ 9 kV			$1.2 \times 10^{-2}$
		9 kV ~ 10 kV			$1.6 \times 10^{-2}$
		10 kV ~ 20 kV			$1.5 \times 10^{-2}$
		20 kV ~ 70 kV			$1.6 \times 10^{-2}$
DC voltage		0 kV ~ 1 kV			$9.3 \times 10^{-3}$
		1 kV ~ 2 kV			$7.1 \times 10^{-3}$
		2 kV ~ 4 kV			$6.4 \times 10^{-3}$
		4 kV ~ 10 kV			$6.2 \times 10^{-3}$
		10 kV ~ 20 kV			$2.6 \times 10^{-3}$
		20 kV ~ 30 kV			$2.4 \times 10^{-3}$
		30 kV ~ 50 kV			$2.3 \times 10^{-3}$
		50 kV ~ 95 kV			$2.2 \times 10^{-3}$
AC Cutoff Current		0 mA ~ 0.5 mA			$1.3 \times 10^{-2}$
		0.5 mA ~ 2 mA			$1.4 \times 10^{-2}$
		2 mA ~ 5 mA			$1.3 \times 10^{-2}$
		5 mA ~ 10 mA			$1.4 \times 10^{-2}$
		10 mA ~ 20 mA			$3.1 \times 10^{-3}$
		20 mA ~ 50 mA			$1.3 \times 10^{-3}$
		50 mA ~ 100 mA			$5.8 \times 10^{-3}$
DC Cutoff Current		0 mA ~ 0.5 mA			$1.3 \times 10^{-2}$
		0.5 mA ~ 2 mA			$1.4 \times 10^{-2}$
		2 mA ~ 5 mA			$1.3 \times 10^{-2}$
		5 mA ~ 10 mA			$1.4 \times 10^{-2}$
		10 mA ~ 20 mA			$2.9 \times 10^{-3}$
		20 mA ~ 50 mA			$1.2 \times 10^{-3}$
		50 mA ~ 100 mA			$5.8 \times 10^{-3}$
Insulation Voltage		0 V ~ 300 V			$1.4 \times 10^{-5}$
		300 V ~ 800 V			$1.3 \times 10^{-5}$
		0.8 kV ~ 2 kV			$7.1 \times 10^{-3}$
	2 kV ~ 10 kV	$6.2 \times 10^{-3}$			
Insulation Resistance	0 k $\Omega$ ~ 1 k $\Omega$	$5.8 \times 10^{-4}$			
	1 k $\Omega$ ~ 10 k $\Omega$	$8.6 \times 10^{-5}$			
	10 k $\Omega$ ~ 100 k $\Omega$	$6.2 \times 10^{-5}$			
	0.1 M $\Omega$ ~ 1 M $\Omega$	$9.1 \times 10^{-5}$			
	1 M $\Omega$ ~ 10 M $\Omega$	$1.7 \times 10^{-4}$			
	10 M $\Omega$ ~ 100 M $\Omega$	$1.9 \times 10^{-4}$			
	0.1 G $\Omega$ ~ 1 G $\Omega$	$4.2 \times 10^{-4}$			
	1 G $\Omega$ ~ 10 G $\Omega$	$8.2 \times 10^{-4}$			
	10 G $\Omega$ ~ 100 G $\Omega$	$1.2 \times 10^{-3}$			

403. AC voltage, current & power

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Ground Bond AC Current	40313	(0 Hz ~ 100 Hz)		
		0 A ~ 2 A	$1.8 \times 10^{-3}$	
		2 A ~ 6 A	$1.4 \times 10^{-3}$	
		6 A ~ 10 A	$1.3 \times 10^{-3}$	
		10 A ~ 20 A	$1.7 \times 10^{-3}$	
		20 A ~ 30 A	$1.5 \times 10^{-3}$	
		30 A ~ 50 A	$1.4 \times 10^{-3}$	
		50 A ~ 60 A	$1.3 \times 10^{-3}$	
Ground Bond Resistance		0 mΩ ~ 500 mΩ	$1.7 \times 10^{-2}$	
Power recorders	40314			Power Calibrators, Multimeter calibrators / HCT-CS-078-40314
Power		P.F : 1		
		60 Hz		
		1 W ~ 10 W	$6.6 \times 10^{-4}$	
		10 W ~ 24 W	$4.0 \times 10^{-4}$	
		24 W ~ 48 W	$3.4 \times 10^{-4}$	
		48 W ~ 60 W	$3.3 \times 10^{-4}$	
		60 W ~ 120 W	$5.8 \times 10^{-4}$	
		120 W ~ 240 W	$4.0 \times 10^{-4}$	
		240 W ~ 600 W	$3.4 \times 10^{-4}$	
		600 W ~ 1.2 kW	$5.9 \times 10^{-4}$	
		1.2 kW ~ 2.4 kW	$4.1 \times 10^{-4}$	
		2.4 kW ~ 4.8 kW	$4.0 \times 10^{-4}$	
		4.8 kW ~ 6 kW	$3.5 \times 10^{-4}$	
		6 kW ~ 12 kW	$6.1 \times 10^{-4}$	
		12 kW ~ 24 kW	$6.0 \times 10^{-4}$	
		24 kW ~ 50 kW	$5.7 \times 10^{-4}$	
AC voltage		(40 Hz ~ 1 kHz)		
		1 V ~ 50 V	$1.8 \times 10^{-4}$	
		50 V ~ 100 V	$5.9 \times 10^{-4}$	
	100 V ~ 200 V	$3.1 \times 10^{-4}$		
	200 V ~ 300 V	$2.3 \times 10^{-4}$		
	300 V ~ 400 V	$1.9 \times 10^{-4}$		
AC Current	(40 Hz ~ 1 kHz)			
	0.1 A ~ 1 A	$1.1 \times 10^{-3}$		
	1 A ~ 2 A	$9.4 \times 10^{-4}$		
	2 A ~ 5 A	$5.9 \times 10^{-4}$		
	5 A ~ 10 A	$7.9 \times 10^{-4}$		
	10 A ~ 20 A	$1.0 \times 10^{-3}$		
	20 A ~ 50 A	$9.2 \times 10^{-4}$		
	50 A ~ 100 A	$1.1 \times 10^{-3}$		
	100 A ~ 200 A	$6.5 \times 10^{-4}$		
AC voltmeters	40318			Multimeter calibrators, Digital Multimeter / HCTD-CS-079-40318
AC voltage		(0 μV ~ 300 μV)		
		40 Hz ~ 20 kHz	$3.7 \times 10^{-2}$	
		20 kHz ~ 100 kHz	$4.2 \times 10^{-2}$	
		(300 μV ~ 1 mV)		
		40 Hz ~ 20 kHz	$1.1 \times 10^{-2}$	
	20 kHz ~ 100 kHz	$1.8 \times 10^{-2}$		

403. AC voltage, current & power

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
AC voltage	40318	(1 mV ~ 3 mV)		
		40 Hz ~ 20 kHz	$3.8 \times 10^{-3}$	
		20 kHz ~ 100 kHz	$4.5 \times 10^{-3}$	
		(3 mV ~ 10 mV)		
		40 Hz ~ 20 kHz	$1.2 \times 10^{-3}$	
		20 kHz ~ 50 kHz	$1.5 \times 10^{-3}$	
		50 kHz ~ 100 kHz	$1.6 \times 10^{-3}$	
		(10 mV ~ 30 mV)		
		40 Hz ~ 10 kHz	$4.4 \times 10^{-4}$	
		10 kHz ~ 20 kHz	$4.5 \times 10^{-4}$	
		20 kHz ~ 100 kHz	$7.3 \times 10^{-4}$	
		(30 mV ~ 100 mV)		
		40 Hz ~ 10 kHz	$1.8 \times 10^{-4}$	
		10 kHz ~ 20 kHz	$1.9 \times 10^{-4}$	
		20 kHz ~ 100 kHz	$4.6 \times 10^{-4}$	
		(100 mV ~ 300 mV)		
		40 Hz ~ 20 kHz	$2.1 \times 10^{-4}$	
		20 kHz ~ 50 kHz	$2.5 \times 10^{-4}$	
		50 kHz ~ 100 kHz	$2.7 \times 10^{-4}$	
		(300 mV ~ 1 V)		
		40 Hz ~ 20 kHz	$9.0 \times 10^{-5}$	
		20 kHz ~ 50 kHz	$1.3 \times 10^{-4}$	
		50 kHz ~ 100 kHz	$1.4 \times 10^{-4}$	
		(1 V ~ 3 V)		
		40 Hz ~ 20 kHz	$2.1 \times 10^{-4}$	
		20 kHz ~ 50 kHz	$2.5 \times 10^{-4}$	
		50 kHz ~ 100 kHz	$2.7 \times 10^{-4}$	
		(3 V ~ 10 V)		
40 Hz ~ 20 kHz	$9.0 \times 10^{-5}$			
20 kHz ~ 50 kHz	$1.3 \times 10^{-4}$			
50 kHz ~ 100 kHz	$1.4 \times 10^{-4}$			
(10 V ~ 30 V)				
40 Hz ~ 10 kHz	$1.6 \times 10^{-4}$			
10 kHz ~ 20 kHz	$2.0 \times 10^{-4}$			
20 kHz ~ 50 kHz	$3.0 \times 10^{-4}$			
50 kHz ~ 100 kHz	$3.5 \times 10^{-4}$			
(30 V ~ 100 V)				
40 Hz ~ 10 kHz	$8.0 \times 10^{-5}$			
10 kHz ~ 20 kHz	$1.0 \times 10^{-4}$			
20 kHz ~ 50 kHz	$1.8 \times 10^{-4}$			
50 kHz ~ 100 kHz	$1.9 \times 10^{-4}$			
(100 V ~ 300 V)				
40 Hz ~ 10 kHz	$2.3 \times 10^{-4}$			
(300 V ~ 1 000 V)				
40 Hz ~ 10 kHz	$3.8 \times 10^{-4}$			

403. AC voltage, current & power

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Frequency Response	40318	0 dB(0.774 6 V) 20 Hz ~ 100 kHz 100 kHz ~ 200 kHz	0.002 dB 0.005 dB	
Output Voltage		(0 V ~ 1 V) 100 Hz ~ 20 kHz 20 kHz ~ 50 kHz	$1.0 \times 10^{-3}$ $2.0 \times 10^{-3}$	

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
LF amplifiers Gain	40401	(DC ~ 1 kHz) 0 V ~ 1 V 1 V ~ 10 V 10 V ~ 100 V (1 kHz ~ 10 kHz) 0 V ~ 1 V 1 V ~ 10 V 10 V ~ 100 V (10 kHz ~ 100 kHz) 0 V ~ 1 V 1 V ~ 10 V 10 V ~ 100 V (DC ~ 1 kHz) 0 ~ 60 dB (1 kHz ~ 20 kHz) 0 ~ 60 dB (20 kHz ~ 100 kHz) 0 ~ 40 dB	$2.3 \times 10^{-4}$ $3.7 \times 10^{-4}$ $1.6 \times 10^{-4}$ $2.2 \times 10^{-4}$ $3.7 \times 10^{-4}$ $1.4 \times 10^{-4}$ $7.1 \times 10^{-4}$ $9.5 \times 10^{-4}$ $7.2 \times 10^{-4}$ 0.006 dB 0.007 dB 0.010 dB	Multimeter calibrators, Digital Multimeter /HCT-CS-181-40401
DC/LF attenuators Attenuator	40402	(20 Hz ~ 10 kHz) 0 dB ~ 30 dB 30 dB ~ 40 dB 40 dB ~ 50 dB 50 dB ~ 60 dB (10 ~ 20) kHz 0 dB ~ 30 dB 30 dB ~ 40 dB 40 dB ~ 50 dB 50 dB ~ 60 dB (20 ~ 100) kHz 0 dB ~ 30 dB 30 dB ~ 40 dB 40 dB ~ 50 dB 50 dB ~ 60 dB	0.006 dB 0.009 dB 0.022 dB 0.066 dB 0.008 dB 0.009 dB 0.021 dB 0.063 dB 0.01 dB 0.02 dB 0.03 dB 0.11 dB	Function Generator, Digital Multimeters /HCT-CS-081-40402
Multimeter calibrators DC Voltage	40403	0 mV ~ 100 mV -0 mV ~ -100 mV 100 mV ~ 1 V -100 mV ~ -1 V 1 V ~ 10 V -1 V ~ -10 V 10 V ~ 100 V	$2.3 \times 10^{-6}$ $2.3 \times 10^{-6}$ $2.3 \times 10^{-6}$ $2.3 \times 10^{-6}$ $2.3 \times 10^{-6}$ $2.3 \times 10^{-6}$ $2.3 \times 10^{-6}$	Standard cell, Standard resistance, Digital Multimeter /HCT-CS-082-40403

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
DC Voltage	40403	-10 V ~ -100 V	$2.3 \times 10^{-6}$	
		100 V ~ 1 000 V	$2.3 \times 10^{-6}$	
		-100 V ~ -1 000 V	$2.3 \times 10^{-6}$	
AC Voltage	40403	(DC ~ 10 Hz)		
		0 mV ~ 100 mV	$1.0 \times 10^{-4}$	
		100 mV ~ 1 V	$1.1 \times 10^{-4}$	
		1 V ~ 10 V	$8.1 \times 10^{-5}$	
		10 V ~ 100 V	$8.2 \times 10^{-5}$	
		(10 Hz ~ 40 Hz)		
		0 mV ~ 100 mV	$6.5 \times 10^{-5}$	
		100 mV ~ 1 V	$1.1 \times 10^{-4}$	
		1 V ~ 10 V	$5.3 \times 10^{-5}$	
		10 V ~ 100 V	$5.5 \times 10^{-5}$	
		100 V ~ 1 000 V	$5.0 \times 10^{-5}$	
		(40 Hz ~ 100 Hz)		
		0 mV ~ 100 mV	$6.5 \times 10^{-5}$	
		100 mV ~ 1 V	$1.1 \times 10^{-4}$	
		1 V ~ 10 V	$4.8 \times 10^{-5}$	
		10 V ~ 100 V	$5.0 \times 10^{-5}$	
		100 V ~ 1 000 V	$5.0 \times 10^{-5}$	
		(100 Hz ~ 500 Hz)		
		0 mV ~ 100 mV	$6.1 \times 10^{-5}$	
		100 mV ~ 1 V	$8.1 \times 10^{-5}$	
		1 V ~ 10 V	$4.8 \times 10^{-5}$	
		10 V ~ 100 V	$5.0 \times 10^{-5}$	
		100 V ~ 1 000 V	$5.0 \times 10^{-5}$	
		(500 Hz ~ 1 kHz)		
		0 mV ~ 100 mV	$6.1 \times 10^{-5}$	
		100 mV ~ 1 V	$8.1 \times 10^{-5}$	
		1 V ~ 10 V	$4.8 \times 10^{-5}$	
10 V ~ 100 V	$5.0 \times 10^{-5}$			
100 V ~ 1 000 V	$5.0 \times 10^{-5}$			
(1 kHz ~ 10 kHz)				
0 mV ~ 100 mV	$6.1 \times 10^{-5}$			
100 mV ~ 1 V	$5.2 \times 10^{-5}$			
1 V ~ 10 V	$4.8 \times 10^{-5}$			
10 V ~ 100 V	$5.0 \times 10^{-5}$			
(10 kHz ~ 20 kHz)				
0 mV ~ 100 mV	$6.1 \times 10^{-5}$			
100 mV ~ 1 V	$4.8 \times 10^{-5}$			
1 V ~ 10 V	$4.8 \times 10^{-5}$			
10 V ~ 100 V	$5.0 \times 10^{-5}$			
(20 kHz ~ 50 kHz)				
0 mV ~ 100 mV	$8.7 \times 10^{-5}$			
100 mV ~ 1 V	$4.8 \times 10^{-5}$			
1 V ~ 10 V	$5.0 \times 10^{-5}$			
10 V ~ 100 V	$5.6 \times 10^{-5}$			

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments	
AC Voltage	40403	(50 kHz ~ 100 kHz)			
		0 mV ~ 100 mV	$1.1 \times 10^{-4}$		
		100 mV ~ 1 V	$5.6 \times 10^{-5}$		
		1 V ~ 10 V	$8.9 \times 10^{-5}$		
		10 V ~ 100 V	$9.3 \times 10^{-5}$		
		(100 kHz~ 200 kHz)			
		0 mV ~ 100 mV	$3.0 \times 10^{-4}$		
		100 mV ~ 1 V	$1.2 \times 10^{-4}$		
		1 V ~ 10 V	$2.1 \times 10^{-4}$		
		(200 kHz~ 500 kHz)			
		0 mV ~ 100 mV	$4.7 \times 10^{-4}$		
		100 mV ~ 1 V	$1.2 \times 10^{-4}$		
		1 V ~ 10 V	$4.5 \times 10^{-4}$		
		(500 kHz~ 1 MHz)			
		0 mV ~ 100 mV	$1.2 \times 10^{-3}$		
100 mV ~ 1 V	$1.2 \times 10^{-4}$				
1 V ~ 10 V	$1.4 \times 10^{-3}$				
DC Current		0 $\mu$ A ~ 100 $\mu$ A	$3.3 \times 10^{-6}$		
		-0 $\mu$ A ~ -100 $\mu$ A	$3.3 \times 10^{-6}$		
		100 $\mu$ A ~ 1 mA	$3.3 \times 10^{-6}$		
		-100 $\mu$ A ~ -1 mA	$3.3 \times 10^{-6}$		
		1 mA ~ 10 mA	$5.7 \times 10^{-6}$		
		-1 mA ~ -10 mA	$5.7 \times 10^{-6}$		
		10 mA ~ 100 mA	$5.7 \times 10^{-6}$		
		-10 mA ~ -100 mA	$5.7 \times 10^{-6}$		
		100 mA ~ 1 A	$4.6 \times 10^{-6}$		
		-100 mA ~ -1 A	$4.6 \times 10^{-6}$		
		1 A ~ 10 A	$7.6 \times 10^{-5}$		
		-1 A ~ -10 A	$7.6 \times 10^{-5}$		
		10 A ~ 20 A	$2.1 \times 10^{-5}$		
		-10 A ~ -20 A	$2.1 \times 10^{-5}$		
		AC Current		(10 Hz)	
0 $\mu$ A ~ 100 $\mu$ A	$1.3 \times 10^{-3}$				
100 $\mu$ A ~ 1 mA	$1.3 \times 10^{-4}$				
1 mA ~ 10 mA	$1.1 \times 10^{-4}$				
10 mA ~ 100 mA	$1.1 \times 10^{-4}$				
100 mA ~ 1 A	$1.1 \times 10^{-4}$				
(10 Hz ~ 40 Hz)					
0 $\mu$ A ~ 100 $\mu$ A	$8.1 \times 10^{-4}$				
100 $\mu$ A ~ 1 mA	$8.4 \times 10^{-5}$				
1 mA ~ 10 mA	$6.8 \times 10^{-5}$				
10 mA ~ 100 mA	$6.8 \times 10^{-5}$				
100 mA ~ 1 A	$6.8 \times 10^{-5}$				
(40 Hz ~ 55 Hz)					
0 $\mu$ A ~ 100 $\mu$ A	$7.5 \times 10^{-4}$				
100 $\mu$ A ~ 1 mA	$7.8 \times 10^{-5}$				
1 mA ~ 10 mA	$6.3 \times 10^{-5}$				
10 mA ~ 100 mA	$6.3 \times 10^{-5}$				
100 mA ~ 1 A	$6.4 \times 10^{-5}$				
1 A ~ 10 A	$1.1 \times 10^{-4}$				
10 A ~ 20 A	$1.1 \times 10^{-4}$				

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
AC Current	40403	(55 Hz ~ 100 Hz)		
		0 $\mu$ A ~ 100 $\mu$ A	$7.5 \times 10^{-4}$	
		100 $\mu$ A ~ 1 mA	$7.8 \times 10^{-5}$	
		1 mA ~ 10 mA	$6.3 \times 10^{-5}$	
		10 mA ~ 100 mA	$6.3 \times 10^{-5}$	
		100 mA ~ 1 A	$6.4 \times 10^{-5}$	
		1 A ~ 10 A	$6.9 \times 10^{-5}$	
		10 A ~ 20 A	$6.8 \times 10^{-5}$	
		(100 Hz ~ 200 Hz)		
		0 $\mu$ A ~ 100 $\mu$ A	$7.5 \times 10^{-4}$	
		100 $\mu$ A ~ 1 mA	$7.8 \times 10^{-5}$	
		1 mA ~ 10 mA	$6.3 \times 10^{-5}$	
		10 mA ~ 100 mA	$6.3 \times 10^{-5}$	
		100 mA ~ 1 A	$6.4 \times 10^{-5}$	
		1 A ~ 10 A	$6.4 \times 10^{-5}$	
		10 A ~ 20 A	$6.4 \times 10^{-5}$	
		(200 Hz ~ 500 Hz)		
		0 $\mu$ A ~ 100 $\mu$ A	$7.5 \times 10^{-4}$	
		100 $\mu$ A ~ 1 mA	$7.8 \times 10^{-5}$	
		1 mA ~ 10 mA	$6.3 \times 10^{-5}$	
		10 mA ~ 100 mA	$6.3 \times 10^{-5}$	
		100 mA ~ 1 A	$6.4 \times 10^{-5}$	
		1 A ~ 10 A	$6.4 \times 10^{-5}$	
		10 A ~ 20 A	$6.4 \times 10^{-5}$	
		(500 Hz ~ 1 kHz)		
		0 $\mu$ A ~ 100 $\mu$ A	$7.5 \times 10^{-4}$	
		100 $\mu$ A ~ 1 mA	$7.8 \times 10^{-5}$	
		1 mA ~ 10 mA	$6.3 \times 10^{-5}$	
		10 mA ~ 100 mA	$6.3 \times 10^{-5}$	
		100 mA ~ 1 A	$6.4 \times 10^{-5}$	
		1 A ~ 10 A	$6.4 \times 10^{-5}$	
		10 A ~ 20 A	$6.4 \times 10^{-5}$	
		(1 kHz ~ 2 kHz)		
		0 $\mu$ A ~ 100 $\mu$ A	$7.5 \times 10^{-4}$	
		100 $\mu$ A ~ 1 mA	$7.8 \times 10^{-5}$	
		1 mA ~ 10 mA	$6.3 \times 10^{-5}$	
		10 mA ~ 100 mA	$6.3 \times 10^{-5}$	
		100 mA ~ 1 A	$6.4 \times 10^{-5}$	
		1 A ~ 10 A	$6.4 \times 10^{-5}$	
		10 A ~ 20 A	$6.4 \times 10^{-5}$	
		(2 kHz ~ 5 kHz)		
		0 $\mu$ A ~ 100 $\mu$ A	$7.5 \times 10^{-4}$	
		100 $\mu$ A ~ 1 mA	$7.8 \times 10^{-5}$	
		1 mA ~ 10 mA	$6.3 \times 10^{-5}$	
		10 mA ~ 100 mA	$6.3 \times 10^{-5}$	
		100 mA ~ 1 A	$6.4 \times 10^{-5}$	
		1 A ~ 10 A	$6.4 \times 10^{-5}$	
		10 A ~ 20 A	$6.4 \times 10^{-5}$	



404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
AC Current	40403	(5 kHz ~ 10 kHz) 0 μA ~ 100 μA 100 μA ~ 1 mA 1 mA ~ 10 mA 10 mA ~ 100 mA 100 mA ~ 1 A	$7.5 \times 10^{-4}$ $7.8 \times 10^{-5}$ $6.3 \times 10^{-5}$ $6.3 \times 10^{-5}$ $6.4 \times 10^{-5}$	
Resistance		0 Ω ~ 1 Ω 1 Ω ~ 10 Ω 10 Ω ~ 100 Ω 100 Ω ~ 1 kΩ 1 kΩ ~ 10 kΩ 10 kΩ ~ 100 kΩ 100 kΩ ~ 1 MΩ 1 MΩ ~ 10 MΩ 10 MΩ ~ 100 MΩ	$5.7 \times 10^{-6}$ $5.3 \times 10^{-6}$ $5.3 \times 10^{-6}$ $5.3 \times 10^{-6}$ $5.7 \times 10^{-6}$ $9.8 \times 10^{-6}$ $1.9 \times 10^{-5}$ $1.2 \times 10^{-5}$ $2.8 \times 10^{-5}$	
Oscilloscope calibrators DC voltage	40404	-200 V ~ -150 V -150 V ~ -100 V -100 V ~ -50 V -50 V ~ -25 V -25 V ~ -10 V -10 V ~ -5 V -5 V ~ -2.5 V -2.5 V ~ -1 V -1 V ~ 500 mV -500 mV ~ -250 mV -250 mV ~ -100 mV -100 mV ~ -50 mV -50 mV ~ -25 mV -25 mV ~ -10 mV -10 mV ~ -5 mV -5 mV ~ -2.5 mV -2.5 mV ~ 0 mV 0 mV ~ 2.5 mV 2.5 mV ~ 5 mV 5 mV ~ 10 mV 10 mV ~ 25 mV 25 mV ~ 50 mV 50 mV ~ 100 mV 100 mV ~ 250 mV 250 mV ~ 500 mV 500 mV ~ 1 V 1 V ~ 2.5 V 2.5 V ~ 5 V 5 V ~ 10 V 10 V ~ 25 V 25 V ~ 50 V 50 V ~ 100 V 100 V ~ 150 V 150 V ~ 200 V	$3.0 \times 10^{-5}$ $3.9 \times 10^{-5}$ $5.8 \times 10^{-5}$ $1.3 \times 10^{-5}$ $2.4 \times 10^{-5}$ $5.8 \times 10^{-5}$ $1.2 \times 10^{-5}$ $2.4 \times 10^{-5}$ $5.8 \times 10^{-5}$ $1.2 \times 10^{-5}$ $2.4 \times 10^{-5}$ $5.8 \times 10^{-5}$ $1.3 \times 10^{-5}$ $2.5 \times 10^{-5}$ $6.0 \times 10^{-5}$ $2.9 \times 10^{-5}$ $5.5 \times 10^{-5}$ $5.5 \times 10^{-5}$ $2.9 \times 10^{-5}$ $6.0 \times 10^{-5}$ $2.5 \times 10^{-5}$ $1.3 \times 10^{-5}$ $5.8 \times 10^{-5}$ $2.4 \times 10^{-5}$ $1.2 \times 10^{-5}$ $5.8 \times 10^{-5}$ $2.4 \times 10^{-5}$ $1.2 \times 10^{-5}$ $5.8 \times 10^{-5}$ $2.4 \times 10^{-5}$ $1.3 \times 10^{-5}$ $5.8 \times 10^{-5}$ $3.9 \times 10^{-5}$ $3.0 \times 10^{-5}$	Digital Multimeters, Counters, Powermeters / HCT-CS-083-40404

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Square wave voltage	40404	(1 kHz)		
		0 mV ~ 5 mV	$1.2 \times 10^{-3}$	
		5 mV ~ 10 mV	$7.3 \times 10^{-4}$	
		10 mV ~ 25 mV	$4.2 \times 10^{-4}$	
		25 mV ~ 50 mV	$3.3 \times 10^{-4}$	
		50 mV ~ 100 mV	$2.9 \times 10^{-4}$	
		100 mV ~ 250 mV	$2.5 \times 10^{-4}$	
		250 mV ~ 500 mV	$2.6 \times 10^{-4}$	
		500 mV ~ 1 V	$2.0 \times 10^{-4}$	
		1 V ~ 2.5 V	$1.6 \times 10^{-4}$	
		2.5 V ~ 5 V	$2.3 \times 10^{-4}$	
		5 V ~ 10 V	$2.0 \times 10^{-4}$	
		10 V ~ 25 V	$1.6 \times 10^{-4}$	
		25 V ~ 50 V	$2.3 \times 10^{-4}$	
		50 V ~ 100 V	$2.0 \times 10^{-4}$	
100 V ~ 130 V	$1.8 \times 10^{-4}$			
130 V ~ 200 V	$1.7 \times 10^{-4}$			
Edge Amplifier		(100 kHz)		
		0 mV ~ 10 mV	$6.2 \times 10^{-3}$	
		10 mV ~ 25 mV	$3.5 \times 10^{-3}$	
		25 mV ~ 50 mV	$2.5 \times 10^{-3}$	
		50 mV ~ 100 mV	$2.1 \times 10^{-3}$	
		100 mV ~ 250 mV	$1.8 \times 10^{-3}$	
		250 mV ~ 500 mV	$2.1 \times 10^{-3}$	
		500 mV ~ 1 V	$1.6 \times 10^{-3}$	
1 V ~ 2.5 V	$1.4 \times 10^{-3}$			
Edge Frequency		0 MHz ~ 10 MHz	$5.8 \times 10^{-8}$	
Edge Duty Cycle		50 %	$1.2 \times 10^{-3}$	
RF output levels (V : pp)		(0 ~ 2) GHz		
		(0.06 ~ 3) V	$1.0 \times 10^{-2}$	
		(2 ~ 6) GHz		
Time Mark		(0.06 ~ 1.2) V	$1.0 \times 10^{-2}$	
		0.1 ns ~ 5 ns	$5.8 \times 10^{-7}$	
		5 ns ~ 50 ns	$5.8 \times 10^{-6}$	
		50 ns ~ 500 ns	$5.8 \times 10^{-5}$	
		500 ns ~ 5 μs	$5.8 \times 10^{-7}$	
		5 μs ~ 50 μs	$5.8 \times 10^{-6}$	
		50 μs ~ 500 μs	$5.8 \times 10^{-5}$	
		500 μs ~ 5 ms	$5.8 \times 10^{-7}$	
		5 ms ~ 50 ms	$5.8 \times 10^{-6}$	
		50 ms ~ 500 ms	$5.8 \times 10^{-5}$	
		500 ms ~ 5 s	$5.8 \times 10^{-7}$	
		5 s ~ 20 s	$5.8 \times 10^{-6}$	
Frequency		1 mHz ~ 50 mHz	$5.8 \times 10^{-6}$	
		50 mHz ~ 500 mHz	$5.8 \times 10^{-5}$	
		500 mHz ~ 5 Hz	$5.8 \times 10^{-7}$	
		5 Hz ~ 50 Hz	$5.8 \times 10^{-6}$	
		50 Hz ~ 500 Hz	$5.8 \times 10^{-5}$	
		500 Hz ~ 5 kHz	$5.8 \times 10^{-7}$	
		5 kHz ~ 50 kHz	$5.8 \times 10^{-6}$	
		50 kHz ~ 500 kHz	$5.8 \times 10^{-5}$	
		500 kHz ~ 5 MHz	$5.8 \times 10^{-7}$	
		5 MHz ~ 50 MHz	$5.8 \times 10^{-6}$	
		50 MHz ~ 500 MHz	$5.8 \times 10^{-5}$	
500 MHz ~ 1.1 GHz	$5.8 \times 10^{-7}$			

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Video signal generators	40406			Counters,Digital Multimeter Oscilloscope /HCT-CS-084-40406
DOT Frequency		10 kHz ~ 1 000 MHz	$5.8 \times 10^{-7}$	
SYNC Frequency		50 Hz ~ 1 MHz	$5.8 \times 10^{-7}$	
SYNC WIDTH(Time)		1 $\mu$ s ~ 100 $\mu$ s	$1.2 \times 10^{-3}$	
Analog Video Level		(100 ~ 1 000) mV	$1.3 \times 10^{-2}$	
Analog Sync Level		1 V ~ 5 V	$1.3 \times 10^{-2}$	
Audio Level		(100 ~ 1 000) mV	$1.3 \times 10^{-2}$	
Digital Video Level		(100 ~ 1 000) mV	$1.3 \times 10^{-2}$	
S-Video Level		(100 ~ 1 000) mV	$1.3 \times 10^{-2}$	
Component Level		(100 ~ 1 000) mV	$1.3 \times 10^{-2}$	
Scart Video Level		(100 ~ 1 000) mV	$1.3 \times 10^{-2}$	
Scart Audio Level		(100 ~ 1 000) mV	$1.3 \times 10^{-2}$	
NTSC,PAL,SECAM H-Timing Test (Time)		0 ns ~ 300 ns	$3.8 \times 10^{-2}$	
(Level)		300 ns ~ 9 $\mu$ s	$1.4 \times 10^{-3}$	
		(50 ~ 1 000) mV	$6.7 \times 10^{-3}$	
NTSC,PAL,SECAM COLOR BAR (LUMINANCE Level)		(50 ~ 1 000) mV	$4.1 \times 10^{-3}$	
NTSC,PAL,SECAM COLOR BAR (CHROMINANCE Level)		(50 ~ 1 000) mV	$4.1 \times 10^{-3}$	
NTSC,PAL,SECAM COLOR BAR (CHROMINANCE Phase)		0 ° ~ 360 °	0.55 °	
RF Frequency		10 kHz ~ 1 000 MHz	$5.8 \times 10^{-7}$	
Sound Frequency		10 Hz ~ 1 MHz	$5.8 \times 10^{-7}$	
SUB CARRIER Frequency		NTSC 3.579 545 MHz	0.58 Hz	
		PAL 4.433 619 MHz	0.58 Hz	
Audio distortion analyzers/meters	40407			Multimeter calibrators /HCT-CS-085-40407
Input frequency		1 Hz ~ 1 MHz	$5.8 \times 10^{-5}$	
AC input levels		(1 mV ~ 100 mV)		
		DC ~ 20 kHz	$6.1 \times 10^{-4}$	
		20 kHz ~ 100 kHz	$7.4 \times 10^{-4}$	
		(100 mV ~ 1 V)		
		DC ~ 20 kHz	$5.9 \times 10^{-4}$	
		20 kHz ~ 100 kHz	$5.9 \times 10^{-4}$	
		(1 V ~ 10 V)		
		DC ~ 20 kHz	$5.9 \times 10^{-4}$	
		20 kHz ~ 100 kHz	$5.9 \times 10^{-4}$	
		(10 V ~ 100 V)		
		DC ~ 20 kHz	$5.9 \times 10^{-4}$	
		20 kHz ~ 100 kHz	$6.1 \times 10^{-4}$	

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
AC input levels	40407	(100 V ~ 300 V)		
		DC ~ 1 kHz	$3.0 \times 10^{-4}$	
AC input levels		1 kHz ~ 10 kHz	$3.3 \times 10^{-4}$	
		1 mV ~ 300 V	$5.8 \times 10^{-4}$	
Distortion factor		(20 Hz ~ 20 kHz)		
		-10 ~ -60 dB	0.31 dB	
		-60 ~ -70 dB	0.38 dB	
	-70 ~ -80 dB	0.55 dB		
	(20 Hz ~ 20 kHz)			
	0.001 ~ 0.01 %	$5.5 \times 10^{-2}$		
	0.01 ~ 30 %	$3.1 \times 10^{-2}$		
LF filters	40408			Spectrum/HCT-CS-087-40408
Frequency		30 Hz ~ 30 MHz	$5.8 \times 10^{-4}$	
Lever		20 Hz ~ 100 kHz	0.009 dB	
LF/Audio signal analyzers	40409			Digital Multimeter/ HCT-CS-088-40409
Output Frequency		1 Hz ~1 MHz	$5.8 \times 10^{-6}$	
Output level		(1 mV ~ 100 mV)		
		DC ~ 1 kHz	$1.9 \times 10^{-4}$	
		1 kHz ~ 20 kHz	$4.0 \times 10^{-4}$	
		20 kHz ~ 100 kHz	$9.3 \times 10^{-4}$	
		(100 mV ~ 1 V)		
		DC ~ 1 kHz	$1.5 \times 10^{-4}$	
		1 kHz ~ 20 kHz	$2.7 \times 10^{-4}$	
		20 kHz ~ 100 kHz	$7.1 \times 10^{-4}$	
		(1 V ~ 10 V)		
		DC ~ 1 kHz	$1.5 \times 10^{-4}$	
		1 kHz ~ 20 kHz	$2.6 \times 10^{-4}$	
		20 kHz ~ 100 kHz	$7.0 \times 10^{-4}$	
Output DC Offset		(10 V ~ 100 V)		
		DC ~ 1 kHz	$1.5 \times 10^{-4}$	
Output flatness		1 kHz ~ 20 kHz	$2.6 \times 10^{-4}$	
	20 kHz ~ 100 kHz	$7.1 \times 10^{-4}$		
	(10 ~ -10) dBm			
Output amplitude	DC ~ 20 kHz	0.007 dB		
	20 kHz ~ 50 kHz	0.009 dB		
	50 kHz ~ 100 kHz	0.010 dB		
Output impedace	(-10 ~ -30) dBm			
	DC ~ 20 kHz	0.007 dB		
	20 kHz ~ 50 kHz	0.011 dB		
AC input levels	50 kHz ~ 100 kHz	0.011 dB		
	(-30 ~ -40) dBm			
	DC ~ 20 kHz	0.011 dB		
	20 kHz ~ 50 kHz	0.017 dB		
	50 kHz ~ 100 kHz	0.017 dB		
Output DC Offset	- 20 V ~ 20 V	$5.8 \times 10^{-5}$		
Output flatness	20 Hz ~ 20 kHz	0.006 dB		
	20 kHz ~ 100 kHz	0.009 dB		

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments		
Output amplitude	40409	20 Hz ~ 1 kHz				
		(-10 ~ -20) dB	0.006 dB			
		(-20 ~ -40) dB	0.009 dB			
		(-40 ~ -60) dB	0.065 dB			
		(1 kHz ~ 100 kHz)				
		(-10 ~ -20) dB	0.011 dB			
		(-20 ~ -40) dB	0.015 dB			
		(-40 ~ -60) dB	0.10 dB			
Output impedace		(50 ~ 600) Ω	$1.2 \times 10^{-4}$			
Input frequency		1 Hz ~ 1 MHz	$5.8 \times 10^{-5}$			
AC input levels		(1 mV ~ 100 mV)				
		DC ~ 20 kHz	$2.5 \times 10^{-4}$			
		20 kHz ~ 100 kHz	$4.6 \times 10^{-4}$			
		100 mV ~ 1 V				
	DC ~ 20 kHz	$1.6 \times 10^{-4}$				
	20 kHz ~ 100 kHz	$1.5 \times 10^{-4}$				
	(1 V ~ 10 V)					
	DC ~ 20 kHz	$1.6 \times 10^{-4}$				
	20 kHz ~ 100 kHz	$1.4 \times 10^{-4}$				
	(10 V ~ 100 V)					
DC input levels	DC ~ 20 kHz	$1.2 \times 10^{-4}$				
	20 kHz ~ 100 kHz	$2.0 \times 10^{-4}$				
	(100 V ~ 300 V)					
	DC ~ 1 kHz	$2.3 \times 10^{-4}$				
Filter(weight,low,high pass etc.)	1 kHz ~ 10 kHz	$2.7 \times 10^{-4}$				
	1 mV ~ 300 V	$5.9 \times 10^{-5}$				
Distortion factor	400 Hz ~ 80 kHz	$1.9 \times 10^{-4}$				
	20 Hz ~ 20 kHz					
	(-10 ~ -60) dB	0.31 dB				
	(-60 ~ -70) dB	0.38 dB				
	(-70 ~ -80) dB	0.55 dB				
	20 Hz ~ 20 kHz					
	(0.001 ~ 0.01) %	$5.5 \times 10^{-2}$				
	(0.01 ~ 30) %	$3.1 \times 10^{-2}$				
Line Frequency meters	40410	40 Hz ~ 1 kHz	$5.8 \times 10^{-4}$	Multimeter calibrators /HCT-CS-179-40410		
Frequency						
Function generators	40411	1 mHz ~ 3 GHz	$5.8 \times 10^{-9}$	Counters,Digital Multimeter Measuring Receiver Oscilloscope /HCT-CS-089-40411		
Frequency						
Output level					(1 mV ~ 100 mV)	
					DC ~ 20 kHz	$4.0 \times 10^{-4}$
					20 kHz ~ 50 kHz	$9.3 \times 10^{-4}$
					50 kHz ~ 100 kHz	$9.3 \times 10^{-4}$
					100 kHz ~ 100 MHz	$1.4 \times 10^{-2}$
					(100 mV ~ 1 V)	
					20 Hz ~ 20 kHz	$2.7 \times 10^{-4}$
					20 kHz ~ 50 kHz	$7.0 \times 10^{-4}$
50 kHz ~ 100 kHz	$7.1 \times 10^{-4}$					
100 kHz ~ 100 MHz	$1.4 \times 10^{-2}$					

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Output level	40411	(1 V ~ 10 V) 20 Hz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz 100 kHz ~ 100 MHz (10 V ~ 100 V) 20 Hz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz (100 kHz ~ 100 MHz) -60 dBm ~ 20 dBm	$2.6 \times 10^{-4}$ $7.0 \times 10^{-4}$ $7.1 \times 10^{-4}$ $1.4 \times 10^{-2}$ $2.6 \times 10^{-4}$ $7.0 \times 10^{-4}$ $7.1 \times 10^{-4}$ 0.13 dB	
DC Offset		-20 V ~ 20 V	$5.8 \times 10^{-4}$	
Output flatness		10 Hz ~ 100 kHz 100 kHz ~ 1 GHz	0.011 dB 0.025 dB	
Distortion factor		20 Hz ~ 100 MHz	1.2 dB	
Output amplitude		(DC ~ 100 kHz) 0 dB ~ 40 dB 40 dB ~ 50 dB 50 dB ~ 60 dB	0.014 dB 0.034 dB 0.10 dB	
Rise/Fall Time		1 s ~ 100 ns 100 ns ~ 10 ns 10 ns ~ 1 ns	$1.2 \times 10^{-3}$ $1.3 \times 10^{-3}$ $5.9 \times 10^{-3}$	
AM Modulation		5 % ~ 99 %	$1.7 \times 10^{-2}$	
FM Modulation		9 kHz ~ 400 kHz	$1.2 \times 10^{-2}$	
Duty Cycle		1 % ~ 99 %	$5.8 \times 10^{-3}$ %	
Genescopes Vertical Gain	40412	100 mV ~ 10 V 10 V ~ 100 V	$1.2 \times 10^{-2}$ $1.2 \times 10^{-2}$	Oscilloscope calibrators / HCT-CS-110-40412
AC/DC high voltages volt meters DC voltage	40413	0 kV ~ 1 kV 1 kV ~ 5 kV 5 kV ~ 10 kV 10 kV ~ 20 kV 20 kV ~ 30 kV 30 kV ~ 40 kV 40 kV ~ 48 kV	$5.8 \times 10^{-3}$ $7.0 \times 10^{-3}$ $7.0 \times 10^{-3}$ $5.3 \times 10^{-3}$ $4.6 \times 10^{-3}$ $4.3 \times 10^{-3}$ $4.1 \times 10^{-3}$	High voltage generators / HCT-CS-092-40413
Leakage current testers AC Current	40416	0 $\mu$ A ~ 100 $\mu$ A 100 $\mu$ A ~ 300 $\mu$ A 300 $\mu$ A ~ 500 $\mu$ A 500 $\mu$ A ~ 1 mA 1 mA ~ 3 mA 3 mA ~ 5 mA 5 mA ~ 10 mA 10 mA ~ 30 mA 30 mA ~ 50 mA	$2.7 \times 10^{-3}$ $2.1 \times 10^{-3}$ $1.8 \times 10^{-3}$ $1.5 \times 10^{-3}$ $1.6 \times 10^{-3}$ $1.3 \times 10^{-3}$ $1.0 \times 10^{-3}$ $1.2 \times 10^{-3}$ $9.9 \times 10^{-4}$	Multimeter calibrators /HCT-CS-208-40416

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments			
DC current	40416	0 $\mu$ A ~ 10 $\mu$ A	$2.6 \times 10^{-3}$				
		10 $\mu$ A ~ 30 $\mu$ A	$9.6 \times 10^{-4}$				
		30 $\mu$ A ~ 50 $\mu$ A	$6.5 \times 10^{-4}$				
		50 $\mu$ A ~ 100 $\mu$ A	$7.0 \times 10^{-4}$				
		100 $\mu$ A ~ 300 $\mu$ A	$3.2 \times 10^{-4}$				
		300 $\mu$ A ~ 500 $\mu$ A	$1.2 \times 10^{-4}$				
		500 $\mu$ A ~ 1 mA	$6.0 \times 10^{-4}$				
		1 mA ~ 3 mA	$2.4 \times 10^{-4}$				
		3 mA ~ 5 mA	$2.1 \times 10^{-4}$				
		5 mA ~ 10 mA	$6.0 \times 10^{-3}$				
		10 mA ~ 30 mA	$2.4 \times 10^{-4}$				
		30 mA ~ 50 mA	$2.0 \times 10^{-4}$				
		AC voltage	40416		0 V ~ 1 V	$5.8 \times 10^{-2}$	
					1 V ~ 10 V	$5.8 \times 10^{-3}$	
					10 V ~ 100 V	$6.4 \times 10^{-4}$	
100 V ~ 200 V	$4.3 \times 10^{-4}$						
200 V ~ 300 V	$3.4 \times 10^{-4}$						
DC voltage	40416	0 V ~ 1 V	$5.8 \times 10^{-2}$				
		1 V ~ 10 V	$5.8 \times 10^{-3}$				
		10 V ~ 100 V	$5.8 \times 10^{-4}$				
		100 V ~ 200 V	$2.9 \times 10^{-4}$				
		200 V ~ 300 V	$1.9 \times 10^{-4}$				
Electronic AC/DC loads	40417			DC power supply, Current shunts, Digital Multimeter /HCT-CS-094-40417			
DC loads CV Mode	40417	0 mV ~ 100 mV	$1.4 \times 10^{-5}$				
		100 mV ~ 1 V	$7.0 \times 10^{-6}$				
		1 V ~ 10 V	$4.0 \times 10^{-6}$				
		10 V ~ 100 V	$6.7 \times 10^{-6}$				
		100 V ~ 1 000 V	$8.9 \times 10^{-6}$				
CC Mode	40417	0 mA ~ 100 mA	$1.2 \times 10^{-4}$				
		100 mA ~ 1 A	$1.2 \times 10^{-4}$				
		1 A ~ 10 A	$3.0 \times 10^{-4}$				
		10 A ~ 100 A	$5.8 \times 10^{-4}$				
		100 A ~ 200 A	$1.5 \times 10^{-4}$				
		200 A ~ 300 A	$1.5 \times 10^{-4}$				
		300 A ~ 400 A	$1.5 \times 10^{-4}$				
CR Mode	40417	0.01 m $\Omega$ ~ 100 m $\Omega$	$5.8 \times 10^{-4}$				
		100 m $\Omega$ ~ 1 $\Omega$	$3.0 \times 10^{-4}$				
		1 $\Omega$ ~ 10 $\Omega$	$1.2 \times 10^{-4}$				
		10 $\Omega$ ~ 100 $\Omega$	$1.2 \times 10^{-4}$				
AC Loads AC Load	40417	(DC ~ 60 Hz)					
		0 mV ~ 100 mV	$1.1 \times 10^{-4}$				
		100 mV ~ 1 V	$4.7 \times 10^{-5}$				
		1 V ~ 10 V	$4.7 \times 10^{-5}$				
		10 V ~ 100 V	$5.3 \times 10^{-5}$				
100 V ~ 500 V	$1.1 \times 10^{-4}$						
CC Mode	40417	(DC ~ 60 Hz)					
		0 mA ~ 100 mA	$1.2 \times 10^{-3}$				
		100 mA ~ 1 A	$1.2 \times 10^{-3}$				
		1 A ~ 10 A	$1.2 \times 10^{-3}$				

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Analogue/Digital multimeters DC voltage	40419	-1 000 V ~ -100 V	$8.9 \times 10^{-6}$	Multimeter calibrators /HCT-CS-095-40419
		-100 V ~ -10 V	$6.7 \times 10^{-6}$	
-10 V ~ -1 V		$3.9 \times 10^{-6}$		
-1 V ~ -100 mV		$7.0 \times 10^{-6}$		
-100 mV ~ 0 mV		$1.4 \times 10^{-5}$		
0 mV ~ 100 mV		$1.4 \times 10^{-5}$		
100 mV ~ 1 V		$7.0 \times 10^{-6}$		
1 V ~ 10 V		$3.9 \times 10^{-6}$		
10 V ~ 100 V		$6.7 \times 10^{-6}$		
100 V ~ 1 000 V		$8.9 \times 10^{-6}$		
DC current		-20 A ~ -10 A	$1.0 \times 10^{-3}$	
		-10 A ~ -1 A	$4.7 \times 10^{-4}$	
		-1 A ~ -100 mA	$1.2 \times 10^{-4}$	
		-100 mA ~ -10 mA	$4.7 \times 10^{-5}$	
		-10 mA ~ -1 mA	$5.3 \times 10^{-5}$	
		-1 mA ~ -100 $\mu$ A	$5.6 \times 10^{-5}$	
		-100 $\mu$ A ~ 0 $\mu$ A	$1.4 \times 10^{-4}$	
		0 $\mu$ A ~ 100 $\mu$ A	$1.4 \times 10^{-4}$	
		100 $\mu$ A ~ 1 mA	$5.6 \times 10^{-5}$	
		1 mA ~ 10 mA	$5.3 \times 10^{-5}$	
		10 mA ~ 100 mA	$4.7 \times 10^{-5}$	
		100 mA ~ 1 A	$1.2 \times 10^{-4}$	
		1 A ~ 10 A	$4.7 \times 10^{-4}$	
		10 A ~ 20 A	$1.0 \times 10^{-3}$	
Resistance		0 $\Omega$ ~ 100 $\Omega$	$4.0 \times 10^{-6}$	
		100 $\Omega$ ~ 1 k $\Omega$	$4.0 \times 10^{-6}$	
		1 k $\Omega$ ~ 10 k $\Omega$	$4.6 \times 10^{-6}$	
		10 k $\Omega$ ~ 100 k $\Omega$	$9.2 \times 10^{-6}$	
		100 k $\Omega$ ~ 1 M $\Omega$	$1.7 \times 10^{-5}$	
		1 M $\Omega$ ~ 10 M $\Omega$	$1.2 \times 10^{-5}$	
		10 M $\Omega$ ~ 100 M $\Omega$	$2.5 \times 10^{-5}$	
		100 M $\Omega$ ~ 1 G $\Omega$	$6.2 \times 10^{-4}$	
AC voltage		(1 mV ~ 100 mV)		
		40 Hz ~ 500 Hz	$1.1 \times 10^{-4}$	
		500 Hz ~ 1 kHz	$1.1 \times 10^{-4}$	
		1 kHz ~ 10 kHz	$1.1 \times 10^{-4}$	
		10 kHz ~ 20 kHz	$1.2 \times 10^{-4}$	
		20 kHz ~ 50 kHz	$1.7 \times 10^{-4}$	
		50 kHz ~ 100 kHz	$1.7 \times 10^{-4}$	
	40419		(100 mV ~ 1 V)	
			40 Hz ~ 500 Hz	$4.7 \times 10^{-5}$
			500 Hz ~ 1 kHz	$4.7 \times 10^{-5}$
			1 kHz ~ 10 kHz	$4.7 \times 10^{-5}$
			10 kHz ~ 20 kHz	$4.7 \times 10^{-5}$
			20 kHz ~ 50 kHz	$7.0 \times 10^{-5}$
			50 kHz ~ 100 kHz	$7.7 \times 10^{-5}$
AC voltage	40419	(1 V ~ 10 V)		
		40 Hz ~ 500 Hz	$4.7 \times 10^{-5}$	
		500 Hz ~ 1 kHz	$4.7 \times 10^{-5}$	
		1 kHz ~ 10 kHz	$4.7 \times 10^{-5}$	



404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
AC voltage	40419	(1 V ~ 10 V)		
		10 kHz ~ 20 kHz	$4.7 \times 10^{-5}$	
		20 kHz ~ 50 kHz	$7.0 \times 10^{-5}$	
		50 kHz ~ 100 kHz	$7.7 \times 10^{-5}$	
		(10 V ~ 100 V)		
		40 Hz ~ 500 Hz	$5.3 \times 10^{-5}$	
		500 Hz ~ 1 kHz	$5.3 \times 10^{-5}$	
		1 kHz ~ 10 kHz	$5.3 \times 10^{-5}$	
		10 kHz ~ 20 kHz	$6.1 \times 10^{-5}$	
		20 kHz ~ 50 kHz	$8.6 \times 10^{-5}$	
		50 kHz ~ 100 kHz	$9.9 \times 10^{-5}$	
		(100 V ~ 1 000 V)		
		40 Hz ~ 500 Hz	$1.1 \times 10^{-4}$	
		500 Hz ~ 1 kHz	$1.1 \times 10^{-4}$	
		1 kHz ~ 10 kHz	$1.1 \times 10^{-4}$	
10 kHz ~ 20 kHz	$1.6 \times 10^{-4}$			
AC current		(10 $\mu$ A ~ 100 $\mu$ A)		
		40 Hz ~ 500 Hz	$1.4 \times 10^{-4}$	
		500 Hz ~ 1 kHz	$1.4 \times 10^{-4}$	
		1 kHz ~ 5 kHz	$2.2 \times 10^{-4}$	
		5 kHz ~ 10 kHz	$2.2 \times 10^{-4}$	
		(100 $\mu$ A ~ 1 mA)		
		40 Hz ~ 500 Hz	$9.9 \times 10^{-5}$	
		500 Hz ~ 1 kHz	$9.9 \times 10^{-5}$	
		1 kHz ~ 5 kHz	$1.4 \times 10^{-4}$	
		5 kHz ~ 10 kHz	$1.4 \times 10^{-4}$	
		(1 mA ~ 10 mA)		
		40 Hz ~ 500 Hz	$9.9 \times 10^{-5}$	
		500 Hz ~ 1 kHz	$9.9 \times 10^{-5}$	
		1 kHz ~ 5 kHz	$1.4 \times 10^{-4}$	
		5 kHz ~ 10 kHz	$1.4 \times 10^{-4}$	
AC voltage		(10 mA ~ 100 mA)		
		40 Hz ~ 500 Hz	$1.1 \times 10^{-4}$	
		500 Hz ~ 1 kHz	$1.1 \times 10^{-4}$	
		1 kHz ~ 5 kHz	$1.5 \times 10^{-4}$	
		5 kHz ~ 10 kHz	$1.5 \times 10^{-4}$	
		(100 mA ~ 1 A)		
		40 Hz ~ 500 Hz	$2.4 \times 10^{-4}$	
		500 Hz ~ 1 kHz	$2.4 \times 10^{-4}$	
		1 kHz ~ 5 kHz	$3.4 \times 10^{-4}$	
		5 kHz ~ 10 kHz	$3.4 \times 10^{-4}$	
		(1 A ~ 10 A)		
		40 Hz ~ 500 Hz	$5.9 \times 10^{-4}$	
		500 Hz ~ 1 kHz	$5.9 \times 10^{-4}$	
		(10 A ~ 20 A)		
		40 Hz ~ 500 Hz	$7.4 \times 10^{-3}$	
500 Hz ~ 1 kHz	$7.4 \times 10^{-3}$			
Frequency		10 Hz ~ 10 MHz	$5.9 \times 10^{-6}$	

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Noise meters AC level(rms & Q-peak)	40420	(DC ~ 100 kHz) 1 mV ~ 100 mV 100 mV ~ 300 mV 300 mV ~ 1 V 1 V ~ 3 V 3 V ~ 10 V 10 V ~ 30 V 30 V ~ 100 V 100 V ~ 300 V	$1.5 \times 10^{-3}$ $1.9 \times 10^{-3}$ $1.4 \times 10^{-3}$ $1.9 \times 10^{-3}$ $1.4 \times 10^{-3}$ $2.0 \times 10^{-3}$ $1.5 \times 10^{-3}$ $1.9 \times 10^{-3}$	Multimeter calibrators /HCT-CS-097-40420
Weighting Filter		Filter(DIN/AUDIO, JIS A CCIR, CCIR/ARM)	$1.4 \times 10^{-3}$	
Frequency Response		(10 Hz ~ 100 kHz)	0.015 dB	
Oscilloscopes DC voltage	40421	0 mV ~ 5 mV 5 mV ~ 10 mV 10 mV ~ 25 mV 25 mV ~ 50 mV 50 mV ~ 100 mV 100 mV ~ 250 mV 250 mV ~ 500 mV 500 mV ~ 1 V 1 V ~ 25 V 25 V ~ 50 V 50 V ~ 100 V 100 V ~ 200 V	$6.1 \times 10^{-3}$ $3.2 \times 10^{-3}$ $1.5 \times 10^{-3}$ $8.7 \times 10^{-4}$ $5.8 \times 10^{-4}$ $4.1 \times 10^{-4}$ $3.5 \times 10^{-4}$ $3.3 \times 10^{-4}$ $3.0 \times 10^{-4}$ $2.9 \times 10^{-4}$ $3.0 \times 10^{-4}$ $2.9 \times 10^{-4}$	Oscilloscope calibrators, Multimeter calibrators RF signal genertators, Powermeters /HCT-CS-080-40421
Square wave voltage		(1 kHz) 0 mV ~ 5 mV 5 mV ~ 10 mV 10 mV ~ 25 mV 25 mV ~ 50 mV 50 mV ~ 250 mV 250 mV ~ 50 V 50 V ~ 100 V 100 V ~ 200 V	$3.7 \times 10^{-3}$ $2.4 \times 10^{-3}$ $1.7 \times 10^{-3}$ $1.5 \times 10^{-3}$ $1.3 \times 10^{-3}$ $1.2 \times 10^{-3}$ $2.3 \times 10^{-3}$ $2.1 \times 10^{-3}$	
Bandwidth Level		(50 kHz ~ 100 MHz) 12 mV ~ 3 V (100 MHz ~ 550 MHz) 12 mV ~ 3 V (550 MHz ~ 1.1 GHz) 12 mV ~ 3 V (1.1 GHz ~ 4 GHz) 12 mV ~ 3 V (4 GHz ~ 5 GHz) 12 mV ~ 3 V (5 GHz ~ 6 GHz) 12 mV ~ 3 V (6 GHz ~ 10 GHz) 12 mV ~ 3 V (10 GHz ~ 15 GHz) 12 mV ~ 3 V (15 GHz ~ 20 GHz) 12 mV ~ 3 V	$2.0 \times 10^{-2}$ $3.6 \times 10^{-2}$ $4.8 \times 10^{-2}$ $3.8 \times 10^{-2}$ $4.1 \times 10^{-2}$ $4.2 \times 10^{-2}$ $4.8 \times 10^{-2}$ $6.1 \times 10^{-2}$ $8.0 \times 10^{-2}$	

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Time Mark	40421	0.1 ns ~ 5 ns 5 ns ~ 50 ns 50 ns ~ 500 ns 500 ns ~ 5 μs 5 μs ~ 50 μs 50 μs ~ 500 μs 500 μs ~ 5 ms 5 ms ~ 50 ms 50 ms ~ 500 ms 500 ms ~ 5 s 5 s ~ 20 s	$6.0 \times 10^{-6}$ $6.0 \times 10^{-5}$ $6.0 \times 10^{-4}$ $6.0 \times 10^{-6}$ $6.0 \times 10^{-5}$ $6.0 \times 10^{-4}$ $6.0 \times 10^{-6}$ $6.0 \times 10^{-5}$ $6.0 \times 10^{-4}$ $6.0 \times 10^{-6}$ $5.9 \times 10^{-5}$	
Frequency		1 mHz ~ 500 mHz 500 mHz ~ 5 Hz 5 Hz ~ 50 Hz 50 Hz ~ 500 Hz 500 Hz ~ 5 kHz 5 kHz ~ 50 kHz 50 kHz ~ 500 kHz 500 kHz ~ 5 MHz 5 MHz ~ 50 MHz 50 MHz ~ 500 MHz 500 MHz ~ 1.0 GHz	$6.0 \times 10^{-4}$ $6.0 \times 10^{-6}$ $6.0 \times 10^{-5}$ $6.0 \times 10^{-4}$ $6.0 \times 10^{-6}$ $6.0 \times 10^{-5}$ $6.0 \times 10^{-4}$ $6.0 \times 10^{-6}$ $6.0 \times 10^{-5}$ $6.0 \times 10^{-4}$ $5.9 \times 10^{-6}$	
AC voltage		(50 Hz ~ 10 kHz) 1 mV ~ 10 mV 10 mV ~ 20 mV 20 mV ~ 50 mV 50 mV ~ 100 mV 100 mV ~ 200 mV 200 mV ~ 500 mV 500 mV ~ 1 V 1 V ~ 2 V 2 V ~ 5 V 5 V ~ 10 V 10 V ~ 20 V 20 V ~ 50 V 50 V ~ 100 V	$9.6 \times 10^{-4}$ $4.8 \times 10^{-4}$ $3.6 \times 10^{-4}$ $2.7 \times 10^{-4}$ $2.1 \times 10^{-4}$ $3.3 \times 10^{-4}$ $2.6 \times 10^{-4}$ $2.1 \times 10^{-4}$ $3.3 \times 10^{-4}$ $2.6 \times 10^{-4}$ $2.1 \times 10^{-4}$ $2.8 \times 10^{-4}$ $2.6 \times 10^{-4}$	
LF phase meters	40422	45 ~ 60 Hz (0 - 360) °	0.042 °	Calibrator / HCT-CS-217-40422
Random wave generators	40423	100 mHz ~ 350 MHz	$5.8 \times 10^{-9}$	Counters, Digital Multimeter Measuring Receiver, Oscilloscope /HCT-CS-098-40423
Output level		(1 mV ~ 100 mV) DC ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz 100 kHz ~ 100 MHz (100 mV ~ 1 V) 20 Hz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz 100 kHz ~ 100 MHz	$4.0 \times 10^{-4}$ $9.3 \times 10^{-4}$ $9.3 \times 10^{-4}$ $1.4 \times 10^{-2}$ $2.7 \times 10^{-4}$ $7.0 \times 10^{-4}$ $7.1 \times 10^{-4}$ $1.4 \times 10^{-2}$	

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Output level	40423	(1 V ~ 10 V) 20 Hz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz 100 kHz ~ 100 MHz (10 V ~ 100 V) 20 Hz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz (100 kHz ~ 100 MHz) -60 dBm ~ 20 dBm	$2.6 \times 10^{-4}$ $7.0 \times 10^{-4}$ $7.1 \times 10^{-4}$ $1.4 \times 10^{-2}$ $2.6 \times 10^{-4}$ $7.0 \times 10^{-4}$ $7.1 \times 10^{-4}$ 0.13 dB	
DC Offset		-20 V ~ 20 V	$5.8 \times 10^{-4}$	
Output flatness		(10 Hz ~ 100 kHz) (100 kHz ~ 350 MHz)	0.011 dB 0.025 dB	
Distortion factor		(20 Hz ~ 80 MHz)	1.2 dB	
Output amplitude		(DC ~ 100 kHz) 0 dB ~ 40 dB 40 dB ~ 50 dB 50 dB ~ 60 dB	0.014 dB 0.034 dB 0.10 dB	
Rise/Fall Time		1 s ~ 100 ns 100 ns ~ 10 ns 10 ns ~ 1 ns	$1.2 \times 10^{-3}$ $1.3 \times 10^{-3}$ $5.9 \times 10^{-3}$	
AM modulatoin		5 % ~ 99 %	$1.7 \times 10^{-2}$	
FM modulatoin		9 kHz ~ 400 kHz	$1.2 \times 10^{-2}$	
Duty Cycle		1 % ~ 99 %	$5.8 \times 10^{-3}$ %	
Volt/Current recorders	40424			Multimeter calibrators /HCT-CS-100-40424
DC voltage		0 mV ~ 1 mV 1 mV ~ 2 mV 2 mV ~ 5 mV 5 mV ~ 10 mV 10 mV ~ 20 mV 20 mV ~ 50 mV 50 mV ~ 100 mV 100 mV ~ 200 mV 200 mV ~ 500 mV 500 mV ~ 1 V 1 V ~ 2 V 2 V ~ 5 V 5 V ~ 10 V 10 V ~ 20 V 20 V ~ 50 V 50 V ~ 100 V 100 V ~ 200 V 200 V ~ 500 V 500 V ~ 1 000 V	$5.9 \times 10^{-4}$ $3.0 \times 10^{-4}$ $1.7 \times 10^{-4}$ $8.8 \times 10^{-5}$ $4.7 \times 10^{-5}$ $1.2 \times 10^{-4}$ $5.8 \times 10^{-5}$ $2.9 \times 10^{-5}$ $1.2 \times 10^{-4}$ $5.8 \times 10^{-5}$ $2.9 \times 10^{-5}$ $1.2 \times 10^{-4}$ $5.8 \times 10^{-5}$ $3.0 \times 10^{-5}$ $1.2 \times 10^{-4}$ $5.8 \times 10^{-5}$ $3.1 \times 10^{-5}$ $1.5 \times 10^{-5}$ $5.8 \times 10^{-5}$	
DC current		0 mA ~ 1 mA 1mA ~ 10 mA 10 mA ~ 100 mA 100 mA ~ 1 A	$5.8 \times 10^{-4}$ $5.8 \times 10^{-4}$ $5.8 \times 10^{-4}$ $5.9 \times 10^{-4}$	

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Relay test sets	40425			Multimeter, Current shunts /HCT-CS-218-40425
AC Voltage		(DC ~ 55 Hz) 0 mV ~ 100 mV 100 mV ~ 1 V 1 V ~ 10 V 10 V ~ 100 V 100 V ~ 1 000 V	$2.4 \times 10^{-4}$ $1.5 \times 10^{-4}$ $1.5 \times 10^{-4}$ $1.5 \times 10^{-4}$ $1.4 \times 10^{-4}$	
		(55 Hz ~ 300 Hz) 0 mV ~ 100 mV 100 mV ~ 1 V 1 V ~ 10 V 10 V ~ 100 V 100 V ~ 1 000 V	$1.5 \times 10^{-4}$ $1.1 \times 10^{-4}$ $1.1 \times 10^{-4}$ $1.1 \times 10^{-4}$ $1.6 \times 10^{-4}$	
		(300 Hz ~ 1 kHz) 0 mV ~ 100 mV 100 mV ~ 1 V 1 V ~ 10 V 10 V ~ 100 V 100 V ~ 1 000 V	$1.5 \times 10^{-4}$ $1.1 \times 10^{-4}$ $1.1 \times 10^{-4}$ $1.1 \times 10^{-4}$ $1.5 \times 10^{-4}$	
AC Current		(DC ~ 55 Hz) 0 mA ~ 10 mA 10 mA ~ 100 mA 100 mA ~ 1 A 1 A ~ 10 A	$1.2 \times 10^{-4}$ $1.2 \times 10^{-4}$ $1.2 \times 10^{-4}$ $1.8 \times 10^{-4}$	
		(55 Hz ~ 300 Hz) 0 mA ~ 10 mA 10 mA ~ 100 mA 100 mA ~ 1 A 1 A ~ 10 A	$7.1 \times 10^{-5}$ $7.1 \times 10^{-5}$ $7.7 \times 10^{-5}$ $1.4 \times 10^{-4}$	
		(300 Hz ~ 1 kHz) 0 mA ~ 10 mA 10 mA ~ 100 mA 100 mA ~ 1 A 1 A ~ 10 A	$7.1 \times 10^{-5}$ $7.1 \times 10^{-5}$ $7.1 \times 10^{-5}$ $1.1 \times 10^{-4}$	
		(DC ~ 1 kHz) 10 A ~ 20 A 20 A ~ 50 A 50 A ~ 100 A	$1.3 \times 10^{-3}$ $1.2 \times 10^{-3}$ $1.2 \times 10^{-3}$	
DC Voltage		0 mV ~ 100 mV 100 mV ~ 1 V 1 V ~ 5 V 5 V ~ 10 V 10 V ~ 100 V 100 V ~ 1 000 V	$5.8 \times 10^{-5}$ $5.8 \times 10^{-5}$ $1.2 \times 10^{-4}$ $5.8 \times 10^{-5}$ $5.8 \times 10^{-5}$ $5.8 \times 10^{-5}$	
DC Current		0 mA ~ 10 mA 10 mA ~ 100 mA 100 mA ~ 1 A 1 A ~ 10 A 10 A ~ 20 A 20 A ~ 50 A 50 A ~ 100 A	$6.0 \times 10^{-5}$ $7.3 \times 10^{-5}$ $2.2 \times 10^{-4}$ $4.8 \times 10^{-4}$ $6.5 \times 10^{-4}$ $6.0 \times 10^{-4}$ $5.9 \times 10^{-4}$	
Frequency		40 Hz ~ 1 kHz	$1.3 \times 10^{-4}$	

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
LF signal generators	40426			Digital Multimeter, Measuring Receiver, Counters, Oscilloscope /HCT-CS-101-40426
Frequency		100 mHz ~ 1 MHz	$5.8 \times 10^{-9}$	
Output level		(1 mV ~ 100 mV) DC ~ 20 kHz	$4.0 \times 10^{-4}$	
		20 kHz ~ 50 kHz	$9.3 \times 10^{-4}$	
		50 kHz ~ 100 kHz	$9.3 \times 10^{-4}$	
		100 kHz ~ 1 MHz	$1.4 \times 10^{-2}$	
		(100 mV ~ 1 V) 20 Hz ~ 20 kHz	$2.7 \times 10^{-4}$	
		20 kHz ~ 50 kHz	$7.0 \times 10^{-4}$	
		50 kHz ~ 100 kHz	$7.1 \times 10^{-4}$	
		100 kHz ~ 1 MHz	$1.4 \times 10^{-2}$	
		(1 V ~ 10 V) 20 Hz ~ 20 kHz	$2.6 \times 10^{-4}$	
		20 kHz ~ 50 kHz	$7.0 \times 10^{-4}$	
		50 kHz ~ 100 kHz	$7.1 \times 10^{-4}$	
		100 kHz ~ 1 MHz	$1.4 \times 10^{-2}$	
		(10 V ~ 100 V) 20 Hz ~ 20 kHz	$2.6 \times 10^{-4}$	
		20 kHz ~ 50 kHz	$7.0 \times 10^{-4}$	
		50 kHz ~ 1 kHz	$7.1 \times 10^{-4}$	
		(100 kHz ~ 1 MHz) -60 dBm ~ 20 dBm	0.13 dB	
DC Offset		-20 V ~ 20 V	$5.8 \times 10^{-4}$	
Output flatness		(10 Hz ~ 100 kHz)	0.011 dB	
		(100 kHz ~ 1 MHz)	0.025 dB	
Distortion factor		(20 Hz ~ 1 MHz)	1.2 dB	
Output amplitude		(DC ~ 100 kHz) 0 dB ~ 40 dB	0.014 dB	
		40 dB ~ 50 dB	0.034 dB	
		50 dB ~ 60 dB	0.10 dB	
Rise/Fall Time		1 s ~ 100 ns	$1.2 \times 10^{-3}$	
		100 ns ~ 10 ns	$1.3 \times 10^{-3}$	
		10 ns ~ 1 ns	$5.9 \times 10^{-3}$	
AM modulatoin		5 % ~ 99 %	$1.7 \times 10^{-2}$	
FM modulatoin		9 kHz ~ 400 kHz	$1.2 \times 10^{-2}$	
Duty Cycle		1 % ~ 99 %	$5.8 \times 10^{-3}$ %	
LF spectrum analyzers	40427			Signal Generators /HCT-CS-180-40427
Output frequency		1 Hz ~ 150 MHz	$5.8 \times 10^{-9}$	
Input Power		-30 dBm ~ 10 dBm	0.12 dB	
Frequency Response		-80 dB ~ -10 dB	0.12 dB	

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Sweep generators	40429			Digital Multimeter, Counters, Oscilloscope, Measuring Receiver /HCT-CS-102-40429
Frequency		100 mHz ~ 21 MHz	$5.8 \times 10^{-9}$	
Output level		(1 mV ~ 100 mV)		
		DC ~ 20 kHz	$4.0 \times 10^{-4}$	
		20 kHz ~ 50 kHz	$9.3 \times 10^{-4}$	
		50 kHz ~ 100 kHz	$9.3 \times 10^{-4}$	
		100 kHz ~ 21 MHz	$1.4 \times 10^{-2}$	
		(100 mV ~ 1 V)		
		20 Hz ~ 20 kHz	$2.7 \times 10^{-4}$	
		20 kHz ~ 50 kHz	$7.0 \times 10^{-4}$	
		50 kHz ~ 100 kHz	$7.1 \times 10^{-4}$	
		100 kHz ~ 21 MHz	$1.4 \times 10^{-2}$	
		(1 V ~ 10 V)		
		20 Hz ~ 20 kHz	$2.6 \times 10^{-4}$	
		20 kHz ~ 50 kHz	$7.0 \times 10^{-4}$	
		50 kHz ~ 100 kHz	$7.1 \times 10^{-4}$	
		100 kHz ~ 21 MHz	$1.4 \times 10^{-2}$	
		(10 V ~ 100 V)		
		20 Hz ~ 20 kHz	$2.6 \times 10^{-4}$	
		20 kHz ~ 50 kHz	$7.0 \times 10^{-4}$	
		50 kHz ~ 100 kHz	$7.1 \times 10^{-4}$	
DC Offset		-20 V ~ 20 V	$5.8 \times 10^{-4}$	
Output flatness		(10 Hz ~ 100 kHz)	0.011 dB	
		(100 kHz ~ 21 MHz)	0.025 dB	
Distortion factor		(20 Hz ~ 21 MHz)	1.2 dB	
Output amplitude		(DC ~ 100 kHz)		
		0 dB ~ 40 dB	0.014 dB	
		40 dB ~ 50 dB	0.034 dB	
		50 dB ~ 60 dB	0.10 dB	
Rise/Fall Time		1 s ~ 100 ns	$1.2 \times 10^{-3}$	
		100 ns ~ 10 ns	$1.3 \times 10^{-3}$	
		10 ns ~ 1 ns	$5.9 \times 10^{-3}$	
AM Modulation		5 % ~ 99 %	$1.7 \times 10^{-2}$	
FM Modulation		9 kHz ~ 400 kHz	$1.2 \times 10^{-2}$	
Duty Cycle		1 % ~ 99 %	$5.8 \times 10^{-3}$ %	

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Transistor curve tracers DC Voltage (SMU, Base/Emitter/Collector)	40432	-1 000 V ~ -200 V	$4.7 \times 10^{-6}$	Multimeter calibrators, Digital Multimeter /HCT-CS-103-40432
		-200 V ~ -100 V	$4.7 \times 10^{-6}$	
		-100 V ~ -10 V	$5.1 \times 10^{-6}$	
		-10 V ~ -1 V	$3.7 \times 10^{-6}$	
		-1 V ~ -0.1 V	$6.9 \times 10^{-6}$	
		-0.1 V ~ 0 V	$5.4 \times 10^{-6}$	
		0 V ~ 0.1 V	$5.4 \times 10^{-6}$	
		0.1 V ~ 1 V	$6.9 \times 10^{-6}$	
		1 V ~ 10 V	$3.7 \times 10^{-6}$	
		10 V ~ 100 V	$5.1 \times 10^{-6}$	
		100 V ~ 200 V	$4.7 \times 10^{-6}$	
		200 V ~ 1 000 V	$4.7 \times 10^{-6}$	
DC Voltage (VSU, Base/Emitter/Collector)	40432	-1 000 V ~ -200 V	$4.7 \times 10^{-6}$	Multimeter calibrators, Digital Multimeter /HCT-CS-103-40432
		-200 V ~ -100 V	$4.7 \times 10^{-6}$	
		-100 V ~ -10 V	$5.1 \times 10^{-6}$	
		-10 V ~ -1 V	$3.7 \times 10^{-6}$	
		-1 V ~ -0.1 V	$6.9 \times 10^{-6}$	
		-0.1 V ~ 0 V	$5.4 \times 10^{-6}$	
		0 V ~ 0.1 V	$5.4 \times 10^{-6}$	
		0.1 V ~ 1 V	$6.9 \times 10^{-6}$	
		1 V ~ 10 V	$3.7 \times 10^{-6}$	
		10 V ~ 100 V	$5.1 \times 10^{-6}$	
		100 V ~ 200 V	$4.7 \times 10^{-6}$	
		200 V ~ 1 000 V	$4.7 \times 10^{-6}$	
DC Voltage (VMU, Base/Emitter/Collector)	40432	-1 000 V ~ -200 V	$4.7 \times 10^{-6}$	Multimeter calibrators, Digital Multimeter /HCT-CS-103-40432
		-200 V ~ -100 V	$4.7 \times 10^{-6}$	
		-100 V ~ -10 V	$5.1 \times 10^{-6}$	
		-10 V ~ -1 V	$3.7 \times 10^{-6}$	
		-1 V ~ -0.1 V	$6.9 \times 10^{-6}$	
		-0.1 V ~ 0 V	$5.4 \times 10^{-6}$	
		0 V ~ 0.1 V	$5.4 \times 10^{-6}$	
		0.1 V ~ 1 V	$6.9 \times 10^{-6}$	
		1 V ~ 10 V	$3.7 \times 10^{-6}$	
		10 V ~ 100 V	$5.1 \times 10^{-6}$	
		100 V ~ 200 V	$4.7 \times 10^{-6}$	
		200 V ~ 1 000 V	$4.7 \times 10^{-6}$	
DC Current (SMU, Base/Emitter/Collector)	40432	-2 A ~ -1 A	$6.8 \times 10^{-4}$	Multimeter calibrators, Digital Multimeter /HCT-CS-103-40432
		-1 A ~ -100 mA	$3.8 \times 10^{-4}$	
		-100 mA ~ -10 mA	$4.7 \times 10^{-5}$	
		-10 mA ~ -1 mA	$1.4 \times 10^{-5}$	
		-1 mA ~ -100 uA	$1.3 \times 10^{-5}$	
		-100 uA ~ -10 uA	$1.3 \times 10^{-5}$	
		-10 uA ~ -1 uA	$5.4 \times 10^{-5}$	
		-1 uA ~ -100 nA	$4.7 \times 10^{-4}$	
		-100 nA ~ -10 nA	$2.4 \times 10^{-3}$	
		-10 nA ~ -1 nA	$2.4 \times 10^{-3}$	
		-1 nA ~ -100 pA	$5.8 \times 10^{-3}$	
		-100 pA ~ -10 pA	$1.2 \times 10^{-2}$	
		-10 pA ~ -1 pA	$1.2 \times 10^{-2}$	
		-1 pA ~ 0 pA	$1.5 \times 10^{-2}$	
		0 pA ~ 1 pA	$1.5 \times 10^{-2}$	
		1 pA ~ 10 pA	$1.2 \times 10^{-2}$	
		10 pA ~ 100 pA	$1.2 \times 10^{-2}$	



404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
DC Current (SMU, Base/Emitter/Collector)	40432	100 pA ~ 1 nA 1 nA ~ 10 nA 10 nA ~ 100 nA 100 nA ~ 1 uA 1 uA ~ 10 uA 10 uA ~ 100 uA 100 uA ~ 1 mA 1 mA ~ 10 mA 10 mA ~ 100 mA 100 mA ~ 1 A 1 A ~ 2 A	$5.8 \times 10^{-3}$ $2.4 \times 10^{-3}$ $2.4 \times 10^{-3}$ $4.7 \times 10^{-4}$ $5.4 \times 10^{-5}$ $1.3 \times 10^{-5}$ $1.3 \times 10^{-5}$ $1.4 \times 10^{-5}$ $4.7 \times 10^{-5}$ $3.8 \times 10^{-4}$ $6.8 \times 10^{-4}$	
Waveform analyzers Output Frequency Output level Output DC Offset Output Flatness Output amplitude Output Impedance Input Frequency	40433	1 Hz ~1 MHz  (1 mV ~ 100 mV) DC ~ 1 kHz 1 kHz ~ 20 kHz 20 kHz ~ 100 kHz  (100 mV ~ 1 V) DC ~ 1 kHz 1 kHz ~ 20 kHz 20 kHz ~ 100 kHz  (1 V ~ 10 V) DC ~ 1 kHz 1 kHz ~ 20 kHz 20 kHz ~ 100 kHz  (10 V ~ 100 V) DC ~ 1 kHz 1 kHz ~ 20 kHz 20 kHz ~ 100 kHz  - 20 V ~ 20 V  20 Hz ~ 20 kHz 20 kHz ~ 100 kHz  20 Hz ~ 1 kHz (-10 ~ -20) dB (-20 ~ -40) dB (-40 ~ -60) dB (1 kHz ~ 100 kHz) (-10 ~ -20) dB (-20 ~ -40) dB (-40 ~ -60) dB  (50 ~ 600) Ω  1 Hz ~ 1 MHz	$5.8 \times 10^{-6}$  $1.9 \times 10^{-4}$ $4.0 \times 10^{-4}$ $9.3 \times 10^{-4}$  $1.5 \times 10^{-4}$ $2.7 \times 10^{-4}$ $7.1 \times 10^{-4}$  $1.5 \times 10^{-4}$ $2.6 \times 10^{-4}$ $7.0 \times 10^{-4}$  $5.8 \times 10^{-5}$  0.006 dB 0.009 dB  0.006 dB 0.009 dB 0.065 dB 0.011 dB 0.015 dB 0.10 dB  $1.2 \times 10^{-4}$  $5.8 \times 10^{-5}$	Multimeter calibrators, Voltage calibrators Counters/HCT-CS-104-40433

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
AC Input Level	40433	(DC ~ 100 mV)		
		DC ~ 20 kHz	$2.5 \times 10^{-4}$	
		20 kHz ~ 100 kHz	$4.6 \times 10^{-4}$	
		100 mV ~ 1 V		
		DC ~ 20 kHz	$1.6 \times 10^{-4}$	
		20 kHz ~ 100 kHz	$1.5 \times 10^{-4}$	
		(1 V ~ 10 V)		
		DC ~ 20 kHz	$1.6 \times 10^{-4}$	
		20 kHz ~ 100 kHz	$1.4 \times 10^{-4}$	
		(10 V ~ 100 V)		
		DC ~ 20 kHz	$1.2 \times 10^{-4}$	
		20 kHz ~ 100 kHz	$2.0 \times 10^{-4}$	
		(100 V ~ 300 V)		
		DC ~ 1 kHz	$2.3 \times 10^{-4}$	
	1 kHz ~ 10 kHz	$2.7 \times 10^{-4}$		
DC Input Level	0 V ~ 300 V	$5.9 \times 10^{-5}$		
Filter(weight,low,high pass etc.)	400 Hz ~ 80 kHz	$1.9 \times 10^{-4}$		
Distortion factor	20 Hz ~ 20 kHz			
	(-10 ~ -60) dB	0.31 dB		
	(-60 ~ -70) dB	0.38 dB		
	(-70 ~ -80) dB	0.55 dB		
	20 Hz ~ 20 kHz			
	(0.001 ~ 0.01) %	$5.5 \times 10^{-2}$		
	(0.01 ~ 30) %	$3.1 \times 10^{-2}$		
AC/DC high voltage generators	40434			High voltage voltmeters /HCT-CS-055-40434
DC voltage		0 kV ~ 1 kV	$5.3 \times 10^{-6}$	
		1 kV ~ 10 kV	$2.2 \times 10^{-3}$	
		10 kV ~ 20 kV	$2.6 \times 10^{-3}$	
		20 kV ~ 30 kV	$2.4 \times 10^{-3}$	
		30 kV ~ 40 kV	$2.3 \times 10^{-3}$	
		40 kV ~ 50 kV	$2.3 \times 10^{-3}$	
		50 kV ~ 60 kV	$2.2 \times 10^{-3}$	
		60 kV ~ 70 kV	$2.2 \times 10^{-3}$	
		70 kV ~ 80 kV	$2.2 \times 10^{-3}$	
		80 kV ~ 90 kV	$2.2 \times 10^{-3}$	
		90 kV ~ 95 kV	$2.2 \times 10^{-3}$	
AC voltage		0.1 kV ~ 1 kV	$1.6 \times 10^{-4}$	
		1 kV ~ 10 kV	$1.5 \times 10^{-2}$	
		10 kV ~ 20 kV	$1.6 \times 10^{-2}$	
		20 kV ~ 30 kV	$1.5 \times 10^{-2}$	
		30 kV ~ 40 kV	$1.5 \times 10^{-2}$	
		40 kV ~ 50 kV	$1.5 \times 10^{-2}$	
		50 kV ~ 60 kV	$1.5 \times 10^{-2}$	
		60 kV ~ 70 kV	$1.6 \times 10^{-2}$	

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
AC/DC high voltage probes DC voltage	40435	-20 kV ~ -10 kV -10 kV ~ -1 kV -1 kV ~ -100 V -100 V ~ -10 V -10 V ~ -1 V -1 V ~ -0 V 0 V ~ 1 V 1 V ~ 10 V 10 V ~ 100 V 100 V ~ 1 kV 1 kV ~ 10 kV 10 kV ~ 20 kV 20 kV ~ 30 kV	$2.9 \times 10^{-4}$ $5.8 \times 10^{-4}$ $5.8 \times 10^{-4}$ $5.8 \times 10^{-4}$ $5.8 \times 10^{-4}$ $5.8 \times 10^{-4}$ $5.8 \times 10^{-4}$ $5.8 \times 10^{-4}$ $5.8 \times 10^{-4}$ $5.8 \times 10^{-4}$ $2.9 \times 10^{-4}$ $1.9 \times 10^{-3}$	High voltage source /HCT-CS-056-40435
AC voltage		(0 V ~ 1 V) 10 Hz ~ 50 Hz 50 Hz ~ 60 Hz 60 Hz ~ 1 kHz	$5.9 \times 10^{-4}$ $5.9 \times 10^{-4}$ $5.9 \times 10^{-4}$	
AC voltage		(1 V ~ 10 V) 10 Hz ~ 50 Hz 50 Hz ~ 60 Hz 60 Hz ~ 1 kHz	$5.9 \times 10^{-4}$ $5.9 \times 10^{-4}$ $5.9 \times 10^{-4}$	
		(10 V ~ 100 V) 10 Hz ~ 50 Hz 50 Hz ~ 60 Hz 60 Hz ~ 1 kHz	$5.9 \times 10^{-4}$ $5.9 \times 10^{-4}$ $5.9 \times 10^{-4}$	
		(100 V ~ 1 kV) 10 Hz ~ 50 Hz 50 Hz ~ 60 Hz 60 Hz ~ 1 kHz	$6.1 \times 10^{-4}$ $6.1 \times 10^{-4}$ $6.0 \times 10^{-4}$	
Logic analyzers Input voltage	40436	-10 V ~ 10 V	$6.0 \times 10^{-5}$	Multimeter calibrators /HCT-CS-201-40436
Telephone testers Frequency AC Amplitude	40437	1 Hz ~1 MHz (1 mV ~ 100 mV) 20 Hz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz (100 mV ~ 1 V) 20 Hz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz (1 V ~ 10 V) 20 Hz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz (10 V ~ 100 V) 20 Hz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz (100 V ~ 500 V) 100 Hz ~ 1 kHz	$5.8 \times 10^{-7}$ $1.9 \times 10^{-4}$ $4.0 \times 10^{-4}$ $9.3 \times 10^{-4}$ $1.2 \times 10^{-4}$ $2.7 \times 10^{-4}$ $7.1 \times 10^{-4}$ $1.5 \times 10^{-4}$ $2.6 \times 10^{-4}$ $7.0 \times 10^{-4}$ $1.5 \times 10^{-4}$ $2.6 \times 10^{-4}$ $7.1 \times 10^{-4}$ $1.2 \times 10^{-4}$	Counters, Digital Multimeter /HCT-CS-127-40437

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
AC Amplitude	40437	(20 dBm ~ -10 dBm) DC ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz (-10 ~ -30) dBm DC ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz (-30 ~ -40) dBm DC ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz	0.007 dB 0.009 dB 0.010 dB 0.007 dB 0.011 dB 0.011 dB 0.011 dB 0.011 dB 0.017 dB 0.017 dB	
Loop Current		1 mA ~ 100 mA 100 mA ~ 1 A	$5.8 \times 10^{-4}$ $6.1 \times 10^{-4}$	
DC Voltage		10 mV ~ 100 V 100 V ~ 500 V	$5.8 \times 10^{-4}$ $1.2 \times 10^{-4}$	
Dial Level		-39 dBm ~ 10 dBm	0.58 dB	
Resistance		50 $\Omega$ ~ 1 000 $\Omega$	$5.8 \times 10^{-4}$	
Video signal analyzers Video signal analyzers SQUARE WAVE level	40438	(0 ~ 100) mV (100 ~ 200) mV (200 ~ 300) mV (300 ~ 400) mV (400 ~ 500) mV (500 ~ 600) mV (600 ~ 1 000) mV	$1.5 \times 10^{-3}$ $1.3 \times 10^{-3}$ $1.2 \times 10^{-3}$ $1.9 \times 10^{-3}$ $1.6 \times 10^{-3}$ $1.5 \times 10^{-3}$ $9.8 \times 10^{-4}$	Video signal generators / HCT-CS-130-40438
SINE WAVE level		(0 ~ 100) mV (100 ~ 200) mV (200 ~ 300) mV (300 ~ 400) mV (400 ~ 500) mV (500 ~ 600) mV (600 ~ 700) mV (700 ~ 1 000) mV	$6.2 \times 10^{-2}$ $4.4 \times 10^{-2}$ $3.0 \times 10^{-2}$ $2.4 \times 10^{-2}$ $2.2 \times 10^{-2}$ $2.0 \times 10^{-2}$ $3.4 \times 10^{-2}$ $3.1 \times 10^{-2}$	
BURST Frequency		(3 ~ 5) MHz	$1.6 \times 10^{-7}$	
Vector scopes, Video signal monitors Color Bar Level(chrominance)		(0 ~ 100) mV (100 ~ 200) mV (200 ~ 300) mV (300 ~ 400) mV (400 ~ 800) mV (800 ~ 1 000) mV	$3.1 \times 10^{-2}$ $2.2 \times 10^{-2}$ $1.5 \times 10^{-2}$ $1.2 \times 10^{-2}$ $1.1 \times 10^{-2}$ $9.6 \times 10^{-3}$	
Color Bar phase		0 ° ~ 360 °	0.7 °	
Frequency		50 Hz ~ 10 MHz	$5.8 \times 10^{-5}$	

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Vertical Level	40438	(0 ~ 100) mV (100 ~ 200) mV (200 ~ 300) mV (300 ~ 400) mV (400 ~ 500) mV (500 ~ 600) mV (600 ~ 700) mV (700 ~ 800) mV (800 ~ 900) mV (900 ~ 1 000) mV	$2.1 \times 10^{-2}$ $1.4 \times 10^{-2}$ $8.3 \times 10^{-3}$ $6.2 \times 10^{-3}$ $4.9 \times 10^{-3}$ $4.0 \times 10^{-3}$ $3.3 \times 10^{-3}$ $2.9 \times 10^{-3}$ $2.6 \times 10^{-3}$ $2.3 \times 10^{-3}$	
Vertical Level(Response)		(50 kHz ~ 10 MHz) (0 ~ 100) mV (100 ~ 200) mV (200 ~ 300) mV (300 ~ 400) mV (400 ~ 500) mV (500 ~ 600) mV (600 ~ 700) mV (700 ~ 800) mV (800 ~ 900) mV (900 ~ 1 000) mV	$6.6 \times 10^{-2}$ $4.6 \times 10^{-2}$ $3.1 \times 10^{-2}$ $2.5 \times 10^{-2}$ $2.2 \times 10^{-2}$ $2.1 \times 10^{-2}$ $3.4 \times 10^{-2}$ $3.1 \times 10^{-2}$ $2.8 \times 10^{-2}$ $2.7 \times 10^{-2}$	

406. Radio frequency measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
RF amplifiers	40601	(5 Hz ~ 1 GHz) 0 dB ~ 30 dB 30 dB ~ 60 dB 60 dB ~ 90 dB  (1 GHz ~ 10 GHz) 0 dB ~ 30 dB 30 dB ~ 60 dB 60 dB ~ 90 dB  (10 GHz ~ 18 GHz) 0 dB ~ 30 dB 30 dB ~ 60 dB 60 dB ~ 90 dB  (18 GHz ~ 40 GHz) 0 dB ~ 30 dB 30 dB ~ 60 dB	0.08 dB 0.11 dB 0.24 dB  0.08 dB 0.11 dB 0.24 dB  0.15 dB 0.23 dB 0.60 dB  0.15 dB 0.23 dB	RF spectrum analyzer, Network analyzer / HCT-CS-105-40601
Harmonics		(9 kHz ~ 18 GHz) -100 dBc ~ 0 dBc	1.30 dB	

406. Radio frequency measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Coaxial attenuators Attenuation	40602	(9 kHz ~ 6 GHz) 0 dB ~ 30 dB 30 dB ~ 60 dB 60 dB ~ 90 dB 90 dB ~ 120 dB (6 GHz ~ 12 GHz) 0 dB ~ 30 dB 30 dB ~ 60 dB 60 dB ~ 90 dB 90 dB ~ 120 dB (12 GHz ~ 18 GHz) 0 dB ~ 30 dB 30 dB ~ 60 dB 60 dB ~ 90 dB 90 dB ~ 120 dB (18 GHz ~ 26.5 GHz) 0 dB ~ 30 dB 30 dB ~ 60 dB 60 dB ~ 90 dB 90 dB ~ 100 dB (26.5 GHz ~ 40 GHz) 0 dB ~ 30 dB 30 dB ~ 60 dB 60 dB ~ 80 dB	0.04 dB 0.07 dB 0.09 dB 0.12 dB 0.04 dB 0.07 dB 0.09 dB 0.25 dB 0.04 dB 0.07 dB 0.09 dB 0.74 dB 0.04 dB 0.07 dB 0.10 dB 0.25 dB 0.29 dB 1.24 dB 7.40 dB	Attenuator calibrator, Network analyzer, Calibration kit / HCT-CS-108-40602
Burst pulse generators Output Voltage Rise/Fall Time Pulse Width Repetition Frequency Duration Burst Rate Damped Oscillatory Wave Rise/Fall Time Oscillatory Frequency Repetition rate Duration Burst periode	40605	50 Ω 1 V ~ 4 kV -1 V ~ -4 kV 1 kΩ 1 V ~ 8 kV -1 V ~ -8 kV 1 ns ~ 10 ns 0.1 μs ~ 1 μs 10 ns ~ 100 ns 100 ns ~ 150 ns 1 kHz ~ 2.5 kHz 2.5 kHz ~ 5 kHz 100 kHz 10 μs ~ 50 μs 1 ms ~ 2 ms 2 ms ~ 10 ms 10 ms ~ 20 ms 50 ms ~ 100 ms 100 ms ~ 200 ms 200 ms ~ 300 ms 0.3 s ~ 1 s 1 ns ~ 5 ns 90 kHz ~ 100 kHz 0.5 MHz ~ 1 MHz 2 MHz ~ 3 MHz 9 MHz ~ 10 MHz 10 MHz ~ 30 MHz 90 MHz ~ 100 MHz 100 μs ~ 200 μs 40 ms ~ 50 ms 200 ms ~ 300 ms	$2.9 \times 10^{-2}$ $2.9 \times 10^{-2}$ $3.0 \times 10^{-2}$ $3.0 \times 10^{-2}$ $4.6 \times 10^{-3}$ $5.8 \times 10^{-3}$ $2.3 \times 10^{-3}$ $3.1 \times 10^{-3}$ $2.3 \times 10^{-4}$ $1.2 \times 10^{-4}$ $5.8 \times 10^{-4}$ $2.3 \times 10^{-3}$ $2.9 \times 10^{-3}$ $2.3 \times 10^{-3}$ $1.5 \times 10^{-3}$ $2.3 \times 10^{-3}$ $2.9 \times 10^{-3}$ $1.9 \times 10^{-3}$ $2.3 \times 10^{-3}$ $4.6 \times 10^{-3}$ $2.3 \times 10^{-3}$ $5.8 \times 10^{-3}$ $3.8 \times 10^{-3}$ $5.8 \times 10^{-3}$ $2.3 \times 10^{-3}$ $2.9 \times 10^{-3}$ $2.9 \times 10^{-3}$ $2.3 \times 10^{-3}$ $1.9 \times 10^{-3}$	Attenuator, Oscilloscope

406. Radio frequency measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Attenuator calibrators Attenuation measurement accuracy	40606	(9 kHz ~ 5 GHz) 0 dB ~ 120 dB  (5 GHz ~ 10 GHz) 0 dB ~ 120 dB  (10 GHz ~ 15 GHz) 0 dB ~ 120 dB  (15 GHz ~ 18 GHz) 0 dB ~ 120 dB	0.028 dB  0.040 dB  0.052 dB  0.070 dB	Standard attenuator / HCT-CS-175-40606
RF power meter calibrators Power range	40607	3 μW 10 μW 30 μW 100 μW 300 μW 1 mW 3 mW 10 mW 30 mW 100 mW	0.27 nW 0.44 nW 1.8 nW 2.9 nW 15 nW 0.02 μW 0.10 μW 0.18 μW 0.45 μW 2.5 μW	Digital multimeter / HCT-CS-166-40607
EMC transducers EMC transducers Transfer impedance  Absorbing clamps Insertion loss	40608	(5 Hz ~ 400 MHz) -66 dBΩ ~ 34 dBΩ (400 MHz ~ 3 GHz) -66 dBΩ ~ 34 dBΩ  (30 MHz ~ 1 GHz) 10 dB ~ 40 dB	0.55 dB  1.06 dB  1.8 dB	Network analyzer, Calibration kit / HCT-CS-167-40608 / HCT-CS-198-40608
Coaxial directional couplers /splitters Coupling Factor	40610	(9 kHz ~ 1 GHz) 0 dB ~ 10 dB 10 dB ~ 20 dB 20 dB ~ 30 dB 30 dB ~ 40 dB 40 dB ~ 50 dB 50 dB ~ 60 dB 60 dB ~ 70 dB 70 dB ~ 80 dB 80 dB ~ 100 dB  (1 GHz ~ 18 GHz) 0 dB ~ 10 dB 10 dB ~ 20 dB 20 dB ~ 30 dB 30 dB ~ 40 dB 40 dB ~ 50 dB 50 dB ~ 60 dB 60 dB ~ 70 dB 70 dB ~ 80 dB 80 dB ~ 100 dB	0.11 dB 0.12 dB 0.14 dB 0.17 dB 0.21 dB 0.30 dB 0.54 dB 1.27 dB 3.23 dB  0.11 dB 0.12 dB 0.13 dB 0.15 dB 0.20 dB 0.34 dB 0.72 dB 1.82 dB 4.65 dB	Network analyzer, Calibration kit / HCT-CS-110-40610

## 406. Radio frequency measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Coupling Factor	40610	(18 GHz ~ 26.5 GHz) 0 dB ~ 10 dB 10 dB ~ 20 dB 20 dB ~ 30 dB 30 dB ~ 40 dB 40 dB ~ 50 dB 50 dB ~ 60 dB 60 dB ~ 70 dB 70 dB ~ 80 dB 80 dB ~ 100 dB  (26.5 GHz ~ 40 GHz) 0 dB ~ 10 dB 10 dB ~ 20 dB 20 dB ~ 30 dB 30 dB ~ 40 dB 40 dB ~ 50 dB 50 dB ~ 60 dB 60 dB ~ 70 dB	0.21 dB 0.23 dB 0.24 dB 0.27 dB 0.35 dB 0.59 dB 1.28 dB 3.19 dB 7.56 dB  0.21 dB 0.23 dB 0.24 dB 0.29 dB 0.47 dB 1.13 dB 3.02 dB	
Electrostatic Discharge Generators Electrostatic Discharge Peak Current           T1 Current(30 ns ~ 65 ns)	40613	0 A ~ 7.5 A 7.5 A ~ 15 A 15 A ~ 22.5 A 22.5 A ~ 30 A 30 A ~ 45.0 A 45.0 A ~ 56.3 A 56.3 A ~ 75 A 75 A ~ 93.8 A 93.8 A ~ 150 A -0 A ~ -7.5 A -7.5 A ~ -15 A -15 A ~ -22.5 A -22.5 A ~ -30 A -30 A ~ -45.0 A -45.0 A ~ -56.3 A -56.3 A ~ -75 A -75 A ~ -93.8 A -93.8 A ~ -150 A 0 A ~ 4 A 4 A ~ 8 A 8 A ~ 12 A 12 A ~ 16 A 16 A ~ 20 A 20 A ~ 30 A 30 A ~ 40 A 40 A ~ 50 A 50 A ~ 80 A -0 A ~ -4 A -4 A ~ -8 A -8 A ~ -12 A -12 A ~ -16 A -16 A ~ -20 A -20 A ~ -30 A -30 A ~ -40 A -40 A ~ -50 A -50 A ~ -80 A	$3.1 \times 10^{-2}$ $2.1 \times 10^{-2}$ $3.1 \times 10^{-2}$ $2.3 \times 10^{-2}$ $2.9 \times 10^{-2}$ $3.7 \times 10^{-2}$ $3.3 \times 10^{-2}$ $3.1 \times 10^{-2}$ $3.7 \times 10^{-2}$ $3.1 \times 10^{-2}$ $2.1 \times 10^{-2}$ $3.1 \times 10^{-2}$ $2.3 \times 10^{-2}$ $2.9 \times 10^{-2}$ $3.7 \times 10^{-2}$ $3.3 \times 10^{-2}$ $3.1 \times 10^{-2}$ $3.7 \times 10^{-2}$ $5.3 \times 10^{-2}$ $3.0 \times 10^{-2}$ $5.0 \times 10^{-2}$ $3.8 \times 10^{-2}$ $4.6 \times 10^{-2}$ $6.0 \times 10^{-2}$ $4.8 \times 10^{-2}$ $4.0 \times 10^{-2}$ $5.7 \times 10^{-2}$ $5.3 \times 10^{-2}$ $3.0 \times 10^{-2}$ $5.0 \times 10^{-2}$ $3.8 \times 10^{-2}$ $4.6 \times 10^{-2}$ $6.0 \times 10^{-2}$ $4.8 \times 10^{-2}$ $4.0 \times 10^{-2}$ $5.7 \times 10^{-2}$	Electrostatic Discharge Measurement System, Oscilloscope / HCT-CS-111-40613



406. Radio frequency measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
T2 Current(60 ns ~ 130 ns)	40613	0 A ~ 2 A	$1.0 \times 10^{-1}$	
		2 A ~ 4 A	$5.3 \times 10^{-2}$	
		4 A ~ 6 A	$8.3 \times 10^{-2}$	
		6 A ~ 8 A	$6.3 \times 10^{-2}$	
		8 A ~ 10 A	$8.3 \times 10^{-2}$	
		10 A ~ 15 A	$1.1 \times 10^{-1}$	
		15 A ~ 20 A	$8.5 \times 10^{-2}$	
		20 A ~ 25 A	$6.8 \times 10^{-2}$	
		25 A ~ 40 A	$1.1 \times 10^{-1}$	
		-0 A ~ -2 A	$1.0 \times 10^{-1}$	
		-2 A ~ -4 A	$5.3 \times 10^{-2}$	
		-4 A ~ -6 A	$8.3 \times 10^{-2}$	
		-6 A ~ -8 A	$6.3 \times 10^{-2}$	
		-8 A ~ -10 A	$8.3 \times 10^{-2}$	
		-10 A ~ -15 A	$1.1 \times 10^{-1}$	
-15 A ~ -20 A	$8.5 \times 10^{-2}$			
-20 A ~ -25 A	$6.8 \times 10^{-2}$			
-25 A ~ -40 A	$1.1 \times 10^{-1}$			
T1 Current(180 ns ~ 400 ns)		0 A ~ 0.55 A	$7.3 \times 10^{-2}$	
		0.55 A ~ 1.10 A	$3.6 \times 10^{-2}$	
		1.10 A ~ 1.65 A	$6.1 \times 10^{-2}$	
		1.65 A ~ 2.20 A	$4.5 \times 10^{-2}$	
		2.20 A ~ 2.75 A	$9.1 \times 10^{-2}$	
		2.75 A ~ 4.13 A	$9.0 \times 10^{-2}$	
		4.13 A ~ 5.50 A	$6.9 \times 10^{-2}$	
		5.50 A ~ 6.88 A	$5.7 \times 10^{-2}$	
		6.88 A ~ 10.6 A	$6.4 \times 10^{-2}$	
		-0 A ~ -0.55 A	$7.3 \times 10^{-2}$	
		-0.55 A ~ -1.10 A	$3.6 \times 10^{-2}$	
		-1.10 A ~ -1.65 A	$6.1 \times 10^{-2}$	
		-1.65 A ~ -2.20 A	$4.5 \times 10^{-2}$	
		-2.20 A ~ -2.75 A	$9.1 \times 10^{-2}$	
		-2.75 A ~ -4.13 A	$9.0 \times 10^{-2}$	
-4.13 A ~ -5.50 A	$6.9 \times 10^{-2}$			
-5.50 A ~ -6.88 A	$5.7 \times 10^{-2}$			
-6.88 A ~ -10.6 A	$6.4 \times 10^{-2}$			
T2 Current(360 ns ~ 800 ns)		0 A ~ 0.30 A	$1.3 \times 10^{-1}$	
		0.30 A ~ 0.60 A	$6.7 \times 10^{-2}$	
		0.60 A ~ 0.90 A	$1.0 \times 10^{-1}$	
		0.90 A ~ 1.20 A	$7.5 \times 10^{-2}$	
		1.20 A ~ 1.50 A	$1.7 \times 10^{-1}$	
		1.50 A ~ 2.25 A	$1.6 \times 10^{-2}$	
		2.25 A ~ 3.00 A	$1.2 \times 10^{-1}$	
		3.00 A ~ 3.75 A	$9.6 \times 10^{-2}$	
		3.75 A ~ 5.90 A	$1.1 \times 10^{-1}$	
		-0 A ~ -0.30 A	$1.3 \times 10^{-1}$	
		-0.30 A ~ -0.60 A	$6.7 \times 10^{-2}$	
		-0.60 A ~ -0.90 A	$1.0 \times 10^{-1}$	
		-0.90 A ~ -1.20 A	$7.5 \times 10^{-2}$	
		-1.20 A ~ -1.50 A	$1.7 \times 10^{-1}$	
		-1.50 A ~ -2.25 A	$1.6 \times 10^{-2}$	
-2.25 A ~ -3.00 A	$1.2 \times 10^{-1}$			
-3.00 A ~ -3.75 A	$9.6 \times 10^{-2}$			
-3.75 A ~ -5.90 A	$1.1 \times 10^{-1}$			
Rise/Fall Time		0.5 ns ~ 1 ns	$3.7 \times 10^{-2}$	

406. Radio frequency measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
EMC receivers	40614			Calibration subgenerator Frequency standard, Power sensor, standard attenuator, Network analyzer, RF signal generator / HCT-CS-112-40614
Reference frequency		10 MHz ~ 1 GHz	$6.4 \times 10^{-11}$	
Reference level		(10 MHz ~ 1 GHz) 10 dBm ~ -30 dBm	0.12 dB	
Input impedance		(9 kHz ~ 1 GHz) 0 ~ 1	$4.8 \times 10^{-3}$	
Reflection coefficient		(1 GHz ~ 18 GHz) 0 ~ 1	$1.0 \times 10^{-2}$	
		(18 GHz ~ 40 GHz) 0 ~ 1	$2.3 \times 10^{-2}$	
Input frequency		9 kHz ~ 40 GHz	$5.8 \times 10^{-9}$	
Sinewave response		20 Hz ~ 1 GHz	0.12 dB	
		1 GHz ~ 10 GHz	0.15 dB	
		10 GHz ~ 18 GHz	0.18 dB	
		18 GHz ~ 40 GHz	0.24 dB	
Pulse response		9 kHz ~ 1 GHz	0.34 dB	
Repetition frequency response		9 kHz ~ 150 kHz	0.08 dB	
		150 kHz ~ 30 MHz	0.09 dB	
		30 MHz ~ 300 MHz	0.10 dB	
		300 MHz ~ 1 GHz	0.11 dB	
Overall selectivity		9 kHz ~ 1 GHz	0.07 dB	
IF rejection ratio		9 kHz ~ 40 GHz	0.18 dB	
Image frequency rejection ratio		9 kHz ~ 40 GHz	0.18 dB	
Other spurious response		9 kHz ~ 40 GHz	0.18 dB	
Intermodulation rejection		9 kHz ~ 40 GHz	0.18 dB	
Random noise		9 kHz ~ 40 GHz	0.03 dB	
Resolution bandwidth		10 Hz ~ 10 MHz	$1.3 \times 10^{-3}$	
RF filters	40615			Network analyzer, Calibration kit / HCT-CS-113-40615
Cutoff frequency		9 kHz ~ 26.5 GHz	$6.4 \times 10^{-7}$	
Insertion loss		(9 kHz ~ 1 GHz) 0 dB ~ 10 dB	0.11 dB	
		10 dB ~ 20 dB	0.12 dB	
		20 dB ~ 30 dB	0.14 dB	
		30 dB ~ 40 dB	0.17 dB	
		40 dB ~ 50 dB	0.21 dB	
		50 dB ~ 60 dB	0.30 dB	
		60 dB ~ 70 dB	0.54 dB	
		70 dB ~ 80 dB	1.27 dB	
		80 dB ~ 100 dB	3.23 dB	

406. Radio frequency measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Insertion loss	40615	(1 GHz ~ 18 GHz) 0 dB ~ 10 dB 10 dB ~ 20 dB 20 dB ~ 30 dB 30 dB ~ 40 dB 40 dB ~ 50 dB 50 dB ~ 60 dB 60 dB ~ 70 dB 70 dB ~ 80 dB 80 dB ~ 100 dB  (18 GHz ~ 26.5 GHz) 0 dB ~ 10 dB 10 dB ~ 20 dB 20 dB ~ 30 dB 30 dB ~ 40 dB 40 dB ~ 50 dB 50 dB ~ 60 dB 60 dB ~ 70 dB 70 dB ~ 80 dB 80 dB ~ 100 dB  (26.5 GHz ~ 40 GHz) 0 dB ~ 10 dB 10 dB ~ 20 dB 20 dB ~ 30 dB 30 dB ~ 40 dB 40 dB ~ 50 dB 50 dB ~ 60 dB 60 dB ~ 70 dB	0.11 dB 0.12 dB 0.13 dB 0.15 dB 0.20 dB 0.34 dB 0.72 dB 1.82 dB 4.65 dB  0.21 dB 0.23 dB 0.24 dB 0.27 dB 0.35 dB 0.59 dB 1.28 dB 3.19 dB 7.56 dB  0.21 dB 0.23 dB 0.24 dB 0.29 dB 0.47 dB 1.13 dB 3.02 dB	
RF impedance meters Output frequency Output level	40616	DC ~ 18 GHz  (9 kHz ~ 18 GHz) 30 dBm ~ 10 dBm 10 dBm ~ -30 dBm -30 dBm ~ -60 dBm -60 dBm ~ -100 dBm -100 dBm ~ -120 dBm	$6.4 \times 10^{-11}$  0.12 dB 0.12 dB 0.13 dB 0.15 dB 0.30 dB	Frequency standard, Measuring receiver / HCT-CS-176-40616
RF impulse generators Impulse Level	40617	9 kHz ~ 1 GHz	0.7 dB	RF spectrum analyzer / HCT-CS-248-40617
Line impedance stabilization networks LISN Impedance Phase angle Voltage division factor CDN Impedance Phase angle Voltage division factor	40618	9 kHz ~ 1 GHz 9 kHz ~ 1 GHz 9 kHz ~ 1 GHz  9 kHz ~ 1 GHz 9 kHz ~ 1 GHz 9 kHz ~ 1 GHz	$2.0 \times 10^{-2}$ 0.02 ° 0.12 dB  $2.0 \times 10^{-2}$ 0.02 ° 0.12 dB	Network analyzer,  Calibration kit / HCT-CS-114-40618 / HCT-CS-163-40618 / HCT-CS-199-40618 / HCT-CS-206-40618

406. Radio frequency measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
ISN Impedance Phase angle Voltage division factor Longitudinal conversion loss	40618	9 kHz ~ 1 GHz 9 kHz ~ 1 GHz 9 kHz ~ 1 GHz 9 kHz ~ 1 GHz	$2.0 \times 10^{-2}$ 0.02 ° 0.12 dB 0.27 dB	
EM clamp Insertion loss		9 kHz ~ 1 GHz	0.30 dB	
LISN Impedance Phase angle Voltage division factor		9 kHz ~ 1 GHz 9 kHz ~ 1 GHz 9 kHz ~ 1 GHz	$2.0 \times 10^{-2}$ 0.02 ° 0.12 dB	
CDN Impedance Phase angle Voltage division factor		9 kHz ~ 1 GHz 9 kHz ~ 1 GHz 9 kHz ~ 1 GHz	$2.0 \times 10^{-2}$ 0.02 ° 0.12 dB	
ISN Impedance Phase angle Voltage division factor Longitudinal conversion loss		9 kHz ~ 1 GHz 9 kHz ~ 1 GHz 9 kHz ~ 1 GHz 9 kHz ~ 1 GHz	$2.0 \times 10^{-2}$ 0.02 ° 0.12 dB 0.27 dB	
EM clamp Insertion loss		9 kHz ~ 1 GHz	0.30 dB	
Impedance converter Impedance Phase angle Attenuation		5 Hz ~ 3 GHz 5 Hz ~ 3 GHz 5 Hz ~ 3 GHz	$6.0 \times 10^{-3}$ 0.011 ° 0.13 dB	
Coaxial standard mismatches Reflection coefficients	40619	(9 kHz ~ 1 GHz) 0 ~ 1  (1 GHz ~ 18 GHz) 0 ~ 1	$4.8 \times 10^{-3}$   $1.0 \times 10^{-2}$	Network analyzer, Calibration kit / HCT-CS-174-40619
Mobile communication test sets Output frequency  Output level  Output amplitude modulation  Output frequency modulation  Output phase modulation	40621	DC ~ 18 GHz  (9 kHz ~ 18 GHz) 30 dBm ~ 10 dBm 10 dBm ~ -30 dBm -30 dBm ~ -60 dBm -60 dBm ~ -100 dBm -100 dBm ~ -120 dBm  (9 kHz ~ 18 GHz) 0 % ~ 100 %  (9 kHz ~ 18 GHz) 0 kHz ~ 400 kHz  (9 kHz ~ 18 GHz) 0 rad ~ 400 rad	$6.4 \times 10^{-11}$  0.12 dB 0.12 dB 0.13 dB 0.15 dB 0.30 dB  $1.7 \times 10^{-2}$  $1.2 \times 10^{-2}$  $1.2 \times 10^{-2}$	Frequency stanard, Power sensor, Measuring receiver RF spectrum analyzer / HCT-CS-115-40621

406. Radio frequency measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments			
Output modulation distortion	40621	(9 kHz ~ 18 GHz) 0 % ~ 100 %	$1.5 \times 10^{-1}$				
Harmonics		9 kHz ~ 5 GHz 5 GHz ~ 18 GHz	1.2 dB 1.5 dB				
Output AC voltage		(10 Hz ~ 25 kHz) 0 V ~ 10 V	$5.8 \times 10^{-5}$				
Output DC voltage		0 V ~ 10 V	$5.8 \times 10^{-5}$				
Input frequency		DC ~ 18 GHz	$6.4 \times 10^{-11}$				
Input level		(9 kHz ~ 18 GHz) 50 dBm ~ 10 dBm 10 dBm ~ -30 dBm -30 dBm ~ -60 dBm -60 dBm ~ -100 dBm -100 dBm ~ -120 dBm	0.12 dB 0.12 dB 0.13 dB 0.15 dB 0.30 dB				
Input amplitude modulation		(9 kHz ~ 18 GHz) 0 % ~ 100 %	$1.7 \times 10^{-2}$				
Input frequency modulation		(9 kHz ~ 18 GHz) 0 kHz ~ 400 kHz	$1.2 \times 10^{-2}$				
Input phase modulation		(9 kHz ~ 18 GHz) 0 rad ~ 400 rad	$1.2 \times 10^{-2}$				
Input modulation distortion		(9 kHz ~ 18 GHz) 0 % ~ 100 %	$1.5 \times 10^{-1}$				
Input AC voltage		(10 Hz ~ 25 kHz) 0 V ~ 10 V	$5.8 \times 10^{-5}$				
Input DC Voltage		0 V ~ 10 V	$5.8 \times 10^{-5}$				
Modulation meters		40622	Output frequency		DC ~ 18 GHz	$6.4 \times 10^{-11}$	Measuring receiver, AM/FM test source / HCT-CS-116-40622
Input amplitude modulation			(9 kHz ~ 18 GHz) 0 % ~ 100 %		$1.7 \times 10^{-2}$		
Input frequency modulation			(9 kHz ~ 18 GHz) 0 kHz ~ 400 kHz		$1.2 \times 10^{-2}$		
Input phase modulation	(9 kHz ~ 18 GHz) 0 rad ~ 400 rad		$1.2 \times 10^{-2}$				

406. Radio frequency measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Network analyzers	40623			
Output frequency		DC ~ 40 GHz	$6.4 \times 10^{-11}$	Calibration kit, Power sensor Frequency standrad, Standard attenuator, Mismatch / HCT-CS-117-40623
Output level		(9 kHz ~ 18 GHz) 30 dBm ~ 10 dBm	0.12 dB	
		10 dBm ~ -30 dBm	0.12 dB	
		-30 dBm ~ -60 dBm	0.13 dB	
		-60 dBm ~ -100 dBm	0.15 dB	
		-100 dBm ~ -120 dBm	0.30 dB	
		(18 GHz ~ 40 GHz) 30 dBm ~ 10 dBm	0.17 dB	
		10 dBm ~ -30 dBm	0.14 dB	
Output level linearity		(9 kHz ~ 18 GHz) 20 dBm ~ -20 dBm	0.025 dB	
		-20 dBm ~ -40 dBm	0.064 dB	
		-40 dBm ~ -60 dBm	0.075 dB	
		-60 dBm ~ -80 dBm	0.086 dB	
		-80 dBm ~ -100 dBm	0.091 dB	
		-100 dBm ~ -120 dBm	0.290 dB	
		(18 GHz ~ 40 GHz) 20 dBm ~ -30 dBm	0.025 dB	
Magnitude dynamic accuracy		0 dB ~ 120 dB	0.028 dB	
Mismatch measurement		(9 kHz ~ 1 GHz) 0 ~ 1	$4.8 \times 10^{-3}$	
		(1 GHz ~ 18 GHz) 0 ~ 1	$1.0 \times 10^{-2}$	
Input impedance		(9 kHz ~ 1 GHz) 0 ~ 1	$4.8 \times 10^{-3}$	
		(1 GHz ~ 18 GHz) 0 ~ 1	$1.0 \times 10^{-2}$	
Crosstalk		30 kHz ~ 6 GHz	1.0 dB	
Directivity		30 kHz ~ 6 GHz	0.16 dB	
Source Match		30 kHz ~ 6 GHz	0.26 dB	
Load Match		30 kHz ~ 6 GHz	$7.6 \times 10^{-3}$	
Transmission Tracking		30 kHz ~ 6 GHz	$4.0 \times 10^{-3}$	
Reflection Tracking		30 kHz ~ 6 GHz	0.18 dB	

406. Radio frequency measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Noise figure meters	40624			
Output frequency		DC ~ 18 GHz	$6.4 \times 10^{-11}$	Frequency standard, RF signal generator, Noise source / HCT-CS-118-40624
Input frequency		9 kHz ~ 18 GHz	6 kHz	
Input impedance		(9 kHz ~ 1 GHz) 0 ~ 1	$4.8 \times 10^{-3}$	
Input impedance		(1 GHz ~ 18 GHz) 0 ~ 1	$1.0 \times 10^{-2}$	
Output DC voltage		0 V ~ 30 V	$1.5 \times 10^{-3}$	
Noise figure		10 MHz ~ 18 GHz	0.30 dB	
Noise figure range & accuracy		0 dB ~ 30 dB	0.07 dB	
Gain measurement uncertainty		-20 dB ~ 40 dB	0.12 dB	
Noise generators	40625			
Output frequency		DC ~ 18 GHz	$6.4 \times 10^{-11}$	RF spectrum generator / HCT-CS-177-40625
Output level		(9 kHz ~ 5 GHz) 30 dBm ~ -120 dBm	1.2 dB	
		(5 GHz ~ 18 GHz) 30 dBm ~ -120 dBm	1.5 dB	
Noise impulse simulators	40626			
Output Voltage		-5 kV ~ -4 kV	$4.1 \times 10^{-2}$	High Voltage Probe, Oscilloscope, Pulse Width measure /HCT-CS-119-40626
		-4 kV ~ -3 kV	$4.1 \times 10^{-2}$	
		-3 kV ~ -2 kV	$4.1 \times 10^{-2}$	
		-2 kV ~ -1 kV	$3.0 \times 10^{-2}$	
		-1 kV ~ -500 V	$3.0 \times 10^{-2}$	
		-500 V ~ -200 V	$3.0 \times 10^{-2}$	
		-200 V ~ -100 V	$3.0 \times 10^{-2}$	
		100 V ~ 200 V	$3.0 \times 10^{-2}$	
		200 V ~ 500 V	$3.0 \times 10^{-2}$	
		500 V ~ 1 kV	$3.0 \times 10^{-2}$	
		1 kV ~ 2 kV	$3.0 \times 10^{-2}$	
		2 kV ~ 3 kV	$4.1 \times 10^{-2}$	
		3 kV ~ 4 kV	$4.1 \times 10^{-2}$	
		4 kV ~ 5 kV	$4.1 \times 10^{-2}$	
Pulse Width		80 ns ~ 100 ns	$1.2 \times 10^{-2}$	
		800 ns ~ 1 $\mu$ s	$1.2 \times 10^{-2}$	
RF power meters	40635			
RF power meters				Range calibrator, Power sensor/ HCT-CS-120-40635
Output frequency		DC ~ 18 GHz	$6.4 \times 10^{-11}$	
Output level		(10 MHz ~ 300 MHz) 1 $\mu$ W ~ 100 mW	$5.6 \times 10^{-3}$	
Instrument accuracy		3 $\mu$ W ~ 100 mW	$1.3 \times 10^{-3}$	
Input level accuracy		(9 kHz ~ 18 GHz) 30 dBm ~ -80 dBm	0.15 dB	

406. Radio frequency measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments	
Input voltage	40635	(DC) 0 V ~ 400 V	$5.8 \times 10^{-5}$	RF calorimeter / HCT-CS-162-40635	
RF high power meters Calibration factor		(10 kHz ~ 220 MHz) 0 kW ~ 2.5 kW	$1.9 \times 10^{-2}$		
		(200 MHz ~ 1 GHz) 0 W ~ 100 W	$3.1 \times 10^{-2}$		
Diode power sensors Calibration factor	40636	(9 kHz ~ 1 GHz) 1 $\mu$ W ~ 100 mW	$1.7 \times 10^{-2}$	Coaxial thermistor mount, Power sensor / HCT-CS-121-40636	
		(1 GHz ~ 10 GHz) 1 $\mu$ W ~ 100 mW	$1.6 \times 10^{-2}$		
		(10 GHz ~ 18 GHz) 1 $\mu$ W ~ 100 mW	$2.1 \times 10^{-2}$		
		(18 GHz ~ 40 GHz) 1 $\mu$ W ~ 100 mW	$3.2 \times 10^{-2}$		
Thermocouple power sensors Calibration factor	40637	(9 kHz ~ 1 GHz) 1 $\mu$ W ~ 100 mW	$1.7 \times 10^{-2}$	Coaxial thermistor mount, Power sensor / HCT-CS-122-40637	
		(1 GHz ~ 10 GHz) 1 $\mu$ W ~ 100 mW	$1.6 \times 10^{-2}$		
		(10 GHz ~ 18 GHz) 1 $\mu$ W ~ 100 mW	$2.1 \times 10^{-2}$		
		(18 GHz ~ 40 GHz) 1 $\mu$ W ~ 100 mW	$3.2 \times 10^{-2}$		
Pulse generators	40638	Period	300 ps ~ 1 s	$5.8 \times 10^{-9}$	Frequency counters /HCT-CS-123-40646
		Delay	1 s ~ 100 ns	$1.2 \times 10^{-3}$	
			100 ns ~ 10 ns	$1.3 \times 10^{-3}$	
			10 ns ~ 1 ns	$5.9 \times 10^{-3}$	
		Double Pulse	1 s ~ 100 ns	$1.2 \times 10^{-3}$	
			100 ns ~ 10 ns	$1.3 \times 10^{-3}$	
			10 ns ~ 1 ns	$5.9 \times 10^{-3}$	
		Width	1 s ~ 100 ns	$1.2 \times 10^{-3}$	
			100 ns ~ 10 ns	$1.3 \times 10^{-3}$	
			10 ns ~ 1 ns	$5.9 \times 10^{-3}$	
		Transition Time	1 s ~ 100 ns	$1.2 \times 10^{-3}$	
			100 ns ~ 10 ns	$1.3 \times 10^{-3}$	
			10 ns ~ 1 ns	$5.9 \times 10^{-3}$	
	DC Level	10 mV ~ 100 V	$5.8 \times 10^{-4}$		
	Output Level	(1 mV ~ 100 mV)			
		20 Hz ~ 20 kHz	$7.0 \times 10^{-4}$		
		20 kHz ~ 50 kHz	$1.1 \times 10^{-3}$		
		50 kHz ~ 100 kHz	$1.1 \times 10^{-3}$		



406. Radio frequency measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Output Level	40638	(100 mV ~ 1 V) 20 Hz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz  (1 ~ 10) V 20 Hz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz  (10 ~ 100) V 20 Hz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz  (100 ~ 300) V DC ~ 1 kHz	$6.3 \times 10^{-4}$ $9.1 \times 10^{-4}$ $9.1 \times 10^{-4}$  $6.3 \times 10^{-4}$ $9.0 \times 10^{-4}$ $9.1 \times 10^{-4}$  $6.3 \times 10^{-4}$ $9.0 \times 10^{-4}$ $9.1 \times 10^{-4}$  $2.3 \times 10^{-4}$	
Radar test sets	40639	DC ~ 18 GHz	$6.4 \times 10^{-11}$	VOR/ILS signal calibrator, Frequency standard, Power sensor
Output frequency		DC ~ 18 GHz	$6.4 \times 10^{-11}$	
Output level		(9 kHz ~ 18 GHz) 30 dBm ~ 10 dBm 10 dBm ~ -30 dBm -30 dBm ~ -60 dBm -60 dBm ~ -100 dBm -100 dBm ~ -120 dBm	0.12 dB 0.12 dB 0.13 dB 0.15 dB 0.30 dB	/ HCT-CS-168-40639(RADAR) / HCT-CS-204-40639(SART) / HCT-CS-207-40639(AIS) / HCT-CS-209-40639(GMDSS) / HCT-CS-214-40639(EPIRB)
Harmonics		(9 kHz ~ 5 GHz) 0 dBc ~ -100 dBc (5 GHz ~ 18 GHz) 0 dBc ~ -100 dBc	1.2 dB 1.5 dB	
Output modulation signal level		(9 kHz ~ 18 GHz) 0 dBc ~ -100 dBc	1.3 dB	
Output amplitude modulation		(9 kHz ~ 18 GHz) 0 % ~ 100 %	$1.7 \times 10^{-2}$	
Output frequency modulation		(9 kHz ~ 18 GHz) 0 kHz ~ 800 kHz	$1.2 \times 10^{-2}$	
Output modulation distortion		(9 kHz ~ 18 GHz) 0 % ~ 100 %	$1.2 \times 10^{-2}$	
Phase		(9 kHz ~ 18 GHz) 0° ~ 360°	$1.2 \times 10^{-2}$	
DDM		100 kHz ~ 1.36 GHz	$3.0 \times 10^{-2}$	
SDM		100 kHz ~ 1.36 GHz	$3.0 \times 10^{-2}$	
VOR		100 kHz ~ 1.36 GHz	$3.0 \times 10^{-2}$	
Pulse width		1 ns ~ 10 ms	$2.3 \times 10^{-2}$	
Input frequency		9 kHz ~ 18 GHz	$5.8 \times 10^{-10}$	
Input level		(100 kHz ~ 1.36 GHz) 1 mW ~ 100 W	$1.9 \times 10^{-2}$	

406. Radio frequency measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
RF signal generators	40640	DC ~ 40 GHz	$6.4 \times 10^{-11}$	Measuring receiver, Power sensor, Frequency standard, RF spectrum analyzer, / HCT-CS-124-40640
Output frequency				
Absolute output level		(9 kHz ~ 18 GHz)		
		30 dBm ~ 10 dBm	0.12 dB	
		10 dBm ~ -30 dBm	0.12 dB	
		-30 dBm ~ -60 dBm	0.13 dB	
		-60 dBm ~ -100 dBm	0.15 dB	
		-100 dBm ~ -120 dBm	0.30 dB	
		(18 GHz ~ 40 GHz)		
		30 dBm ~ 10 dBm	0.17 dB	
		10 dBm ~ -30 dBm	0.14 dB	
Relative output level (reference to 0 dBm)		(9 kHz ~ 18 GHz)		
		0 dB ~ -20 dB	0.025 dB	
		-20 dB ~ -40 dB	0.064 dB	
	-40 dB ~ -60 dB	0.075 dB		
	-60 dB ~ -80 dB	0.086 dB		
	-80 dB ~ -100 dB	0.091 dB		
	-100 dB ~ -120 dB	0.290 dB		
	(18 GHz ~ 40 GHz)			
	0 dB ~ -30 dB	0.025 dB		
Output amplitude modulation	(9 kHz ~ 18 GHz)			
	0 % ~ 100 %	$1.7 \times 10^{-2}$		
Output frequency modulation	(9 kHz ~ 18 GHz)			
	0 kHz ~ 400 kHz	$1.2 \times 10^{-2}$		
Output Phase modulation	(9 kHz ~ 18 GHz)			
	0 rad ~ 400 rad	$1.2 \times 10^{-2}$		
Output modulation distortion	(9 kHz ~ 18 GHz)			
	0 % ~ 100 %	$1.2 \times 10^{-2}$		
Harmonics	(9 kHz ~ 5 GHz)			
	0 dBc ~ -100 dBc	1.2 dB		
	(5 GHz ~ 20 GHz)			
	0 dBc ~ -100 dBc	1.5 dB		
Pulse modulation				
Period	1 $\mu$ s ~ 1 s	$1.2 \times 10^{-3}$		
Width	1 $\mu$ s ~ 1 s	$1.2 \times 10^{-3}$		
RF spectrum analyzers	40641	10 MHz ~ 1 GHz	$6.4 \times 10^{-11}$	Power sensor, Frequency standard, Standard attenuator, RF signal generator / HCT-CS-125-40641
Reference frequency				
Reference level		(10 MHz ~ 1 GHz)		
		10 dBm ~ -30 dBm	0.12 dB	
Frequency readout	9 kHz ~ 40 GHz	$9.6 \times 10^{-4} \cdot \text{SPAN}$		
Marker frequency counter	9 kHz ~ 40 GHz	0.1 Hz		

406. Radio frequency measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Frequency span	40641	9 kHz ~ 40 GHz	$1.4 \times 10^{-3} \cdot \text{SPAN}$	
Resolution bandwidth		1 Hz ~ 500 MHz	$2.2 \times 10^{-3} \cdot \text{RBW}$	
Resolution bandwidth selectivity		1 Hz ~ 500 MHz	$1.0 \times 10^{-2}$	
Resolution bandwidth switching		1 Hz ~ 500 MHz	0.05 dB	
Input attenuator accuracy		0 dB ~ 100 dB	0.07 dB	
Scale fidelity		0 dB ~ 100 dB	0.07 dB	
Reference level accuracy		0 dB ~ 100 dB	0.07 dB	
Frequency response		20 Hz ~ 1 GHz	0.12 dB	
		1 GHz ~ 10 GHz	0.15 dB	
		10 GHz ~ 18 GHz	0.18 dB	
		18 GHz ~ 40 GHz	0.26 dB	
Noise level		9 kHz ~ 18 GHz	0.99 dB	
Input level		(1 kHz ~ 100 kHz) -60 dBV ~ 30 dBV	0.01 dB	
Surge generators	40643			Oscilloscope, Current Probe
Output Voltage		1 V ~ 500 V	$3.0 \times 10^{-2}$	
Voltage		0.5 kV ~ 1 kV	$3.1 \times 10^{-2}$	
		1 kV ~ 2 kV	$3.2 \times 10^{-2}$	
		2 kV ~ 4 kV	$3.5 \times 10^{-2}$	
		4 kV ~ 6 kV	$3.3 \times 10^{-2}$	
		6 kV ~ 20 kV	$4.1 \times 10^{-2}$	
		-1 V ~ -500 V	$3.0 \times 10^{-2}$	
		-0.5 kV ~ -1 kV	$3.1 \times 10^{-2}$	
		-1 kV ~ -2 kV	$3.2 \times 10^{-2}$	
		-2 kV ~ -4 kV	$3.5 \times 10^{-2}$	
		-4 kV ~ -6 kV	$3.3 \times 10^{-2}$	
		-6 kV ~ -20 kV	$4.1 \times 10^{-2}$	
Undershoot		0 V ~ 150 V	$5.3 \times 10^{-2}$	
		150 V ~ 600 V	$6.0 \times 10^{-2}$	
		0.6 kV ~ 1.2 kV	$5.8 \times 10^{-2}$	
		1.2 kV ~ 1.8 kV	$5.6 \times 10^{-2}$	
		1.8 kV ~ 2.4 kV	$6.3 \times 10^{-2}$	
		2.4 kV ~ 3.0 kV	$6.0 \times 10^{-2}$	
		3.0 kV ~ 4.5 kV	$5.8 \times 10^{-2}$	
		4.5 kV ~ 5.4 kV	$5.7 \times 10^{-2}$	
		5.4 kV ~ 6.0 kV	$5.8 \times 10^{-2}$	
		-0 V ~ -150 V	$5.3 \times 10^{-2}$	
		-150 V ~ -600 V	$6.0 \times 10^{-2}$	
		-0.6 kV ~ -1.2 kV	$5.8 \times 10^{-2}$	
		-1.2 kV ~ -1.8 kV	$5.6 \times 10^{-2}$	
		-1.8 kV ~ -2.4 kV	$6.3 \times 10^{-2}$	
		-2.4 kV ~ -3.0 kV	$6.0 \times 10^{-2}$	
		-3.0 kV ~ -4.5 kV	$5.8 \times 10^{-2}$	
		-4.5 kV ~ -5.4 kV	$5.7 \times 10^{-2}$	
		-5.4 kV ~ -6.0 kV	$5.8 \times 10^{-2}$	

406. Radio frequency measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Front Time	40643	0.1 μs ~ 1.6 μs	$1.0 \times 10^{-2}$	
		1.6 μs ~ 5 μs	$6.7 \times 10^{-3}$	
		5 μs ~ 30 μs	$1.1 \times 10^{-2}$	
Time to Half Value Time	40643	10 μs ~ 50 μs	$1.0 \times 10^{-2}$	
		50 μs ~ 700 μs	$7.1 \times 10^{-3}$	
		0.7 ms ~ 1 ms	$5.0 \times 10^{-3}$	
		1 ms ~ 2 ms	$1.0 \times 10^{-2}$	
		2 ms ~ 10 ms	$3.0 \times 10^{-3}$	
		10 ms ~ 40 ms	$5.0 \times 10^{-3}$	
		40 ms ~ 1.0 s	$3.0 \times 10^{-3}$	
		1.0 s ~ 3.0 s	$6.7 \times 10^{-3}$	
Output Current Current	40643	1 A ~ 20 A	$3.8 \times 10^{-2}$	
		20 A ~ 50 A	$3.7 \times 10^{-2}$	
		50 A ~ 100 A	$3.8 \times 10^{-2}$	
		100 A ~ 500 A	$3.7 \times 10^{-2}$	
		500 A ~ 2 000 A	$3.8 \times 10^{-2}$	
		2 000 A ~ 3 000 A	$3.7 \times 10^{-2}$	
		-1 A ~ -20 A	$3.8 \times 10^{-2}$	
		-20 A ~ -50 A	$3.7 \times 10^{-2}$	
		-50 A ~ -100 A	$3.8 \times 10^{-2}$	
		-100 A ~ -500 A	$3.7 \times 10^{-2}$	
		-500 A ~ -2 000 A	$3.8 \times 10^{-2}$	
		-2 000 A ~ -3 000 A	$3.7 \times 10^{-2}$	
		Undershoot	40643	
300 A ~ 900 A	$3.8 \times 10^{-2}$			
-0 A ~ -300 A	$4.0 \times 10^{-2}$			
-300 A ~ -900 A	$3.8 \times 10^{-2}$			
Front Time	40643	1 μs ~ 5 μs	$1.0 \times 10^{-2}$	
		5 μs ~ 10 μs	$7.8 \times 10^{-3}$	
Time to Half Value Time	40643	10 μs ~ 25 μs	$1.2 \times 10^{-2}$	
		25 μs ~ 50 μs	$8.3 \times 10^{-3}$	
Phase (220 V / 60 Hz)	40643	0 ms ~ 4.17 ms	$1.2 \times 10^{-2}$	
		4.17 ms ~ 8.33 ms	$6.0 \times 10^{-3}$	
		8.33 ms ~ 12.50 ms	$4.0 \times 10^{-3}$	
		12.50 ms ~ 16.67 ms	$3.0 \times 10^{-3}$	
(230 V / 50 Hz)	40643	0 ms ~ 5.00 ms	$1.0 \times 10^{-2}$	
		5.00 ms ~ 10.00 ms	$5.0 \times 10^{-3}$	
		10.00 ms ~ 15.00 ms	$3.3 \times 10^{-3}$	
		15.00 ms ~ 20.00 ms	$2.3 \times 10^{-3}$	
Surge generators(ISO7637) Rise/Fall Time	40643	1 ms ~ 5 ms	$6.0 \times 10^{-3}$	
		5 ms ~ 10 ms	$3.0 \times 10^{-3}$	
Damped Time Constant	40643	1 μs ~ 2.5 μs	$8.0 \times 10^{-3}$	
		1 ms ~ 2 ms	$1.5 \times 10^{-2}$	
		20 ms ~ 26 ms	$1.2 \times 10^{-2}$	
		26 ms ~ 60 ms	$1.7 \times 10^{-2}$	
		60 ms ~ 400 ms	$5.0 \times 10^{-3}$	

406. Radio frequency measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
DC Cut Time	40643	5 ms ~ 10 ms 100 ms ~ 120 ms 120 ms ~ 200 ms 200 ms ~ 300 ms 0.3 s ~ 1.0 s	$3.0 \times 10^{-3}$ $2.5 \times 10^{-3}$ $5.0 \times 10^{-3}$ $3.3 \times 10^{-3}$ $3.0 \times 10^{-3}$	
Pulse Width		2 $\mu$ s ~ 2.82 $\mu$ s 1 ms ~ 2 ms 50 ms ~ 100 ms 100 ms ~ 400 ms 0.4 s ~ 1.0 s 1.0 s ~ 2.0 s	$7.1 \times 10^{-3}$ $1.5 \times 10^{-2}$ $3.0 \times 10^{-3}$ $5.0 \times 10^{-3}$ $3.0 \times 10^{-3}$ $2.5 \times 10^{-3}$	
Surge generators(Oscillatory Wave) Rise/Fall Time		0.1 $\mu$ s ~ 0.5 $\mu$ s	$2.0 \times 10^{-2}$	
Pulse Width		1 $\mu$ s ~ 6.4 $\mu$ s 6.4 $\mu$ s ~ 10 $\mu$ s 10 $\mu$ s ~ 70 $\mu$ s 70 $\mu$ s ~ 500 $\mu$ s	$7.8 \times 10^{-3}$ $1.0 \times 10^{-2}$ $4.3 \times 10^{-3}$ $4.0 \times 10^{-3}$	
Frequency		1 kHz ~ 10 MHz 10 MHz ~ 30 MHz 30 MHz ~ 100 MHz	$6.0 \times 10^{-3}$ $2.0 \times 10^{-3}$ $5.8 \times 10^{-3}$	
RF terminations Reflection coefficients	40645	(5 Hz ~ 9 kHz) 0 ~ 1  (9 kHz ~ 1 GHz) 0 ~ 1  (1 GHz ~ 18 GHz) 0 ~ 1  (18 GHz ~ 40 GHz) 0 ~ 1	$4.4 \times 10^{-3}$   $4.8 \times 10^{-3}$   $1.0 \times 10^{-2}$   $1.3 \times 10^{-2}$	Network analyzer, Calibration kit / HCT-CS-128-40645
Coaxial thermistor mounts Calibration factor	40646	(10 MHz ~ 1 GHz) 1 $\mu$ W ~ 100 mW  (1 GHz ~ 10 GHz) 1 $\mu$ W ~ 100 mW  (10 GHz ~ 18 GHz) 1 $\mu$ W ~ 100 mW	$1.7 \times 10^{-2}$   $1.6 \times 10^{-2}$   $2.1 \times 10^{-2}$	Coaxial thermistor mount / HCT-CS-129-40646
RF voltmeters Input voltage	40650	(DC) 0 V ~ 400 V  (DC ~ 100 kHz) 0.1 mV ~ 10 V  (100 kHz ~ 1 GHz) 20 dBm ~ -120 dBm	$5.8 \times 10^{-5}$   $1.6 \times 10^{-4}$   0.15 dB	Meter calibrator, Power sensor / HCT-CS-133-40650

406. Radio frequency measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Vector voltmeters Input voltage	40651	(DC) 0 V ~ 400 V  (DC ~ 100 kHz) 0.1 mV ~ 10 V  (100 kHz ~ 1 GHz) 20 dBm ~ -120 dBm	$5.8 \times 10^{-5}$  $1.6 \times 10^{-4}$  0.15 dB	Meter calibrator, Power sensor / HCT-CS-173-40651
Field strength meters Input Frequency  Input Level	40652	9 kHz ~ 18 GHz  (9 kHz ~ 18 GHz) 30 dBm ~ 0 dBm 0 dBm ~ -30 dBm -30 dBm ~ -60 dBm -60 dBm ~ -90 dBm -90 dBm ~ -120 dBm	$5.8 \times 10^{-9}$  0.15 dB 0.13 dB 0.19 dB 0.24 dB 0.36 dB	Power sensor, Frequency standard / HCT-CS-200-40652
AM/FM test sources Output Frequency Vestigial FM Vestigial AM Distortion factor	40653	1 MHz ~ 1 GHz 50 Hz ~ 3 kHz 50 Hz ~ 3 kHz 12.5 kHz ~ 400 kHz	$6.4 \times 10^{-11}$ $2.0 \times 10^{-2}$ $2.0 \times 10^{-2}$ $4.0 \times 10^{-4}$	Measuring Receiver / HCT-CS-250-40653
Dip Simulators Output Voltage  Line Frequency  Dip&Up Voltage (50 Hz ~ 60 Hz) (1 V ~ 120 V) 0 % 1 % ~ 40 % 40 % ~ 70 % 70 % ~ 80 % 80 % ~ 120 %  (120 V ~ 220 V) 0 % 1 % ~ 40 % 40 % ~ 70 % 70 % ~ 80 % 80 % ~ 120 %  Dip&Up Voltage (50 Hz ~ 60 Hz) (220 V ~ 230 V) 0 % 1 % ~ 40 % 40 % ~ 70 % 70 % ~ 80 % 80 % ~ 120 %	40654	0 V ~ 100 V 100 V ~ 220 V 220 V ~ 230 V 230 V ~ 400 V  49 Hz ~ 51 Hz 59 Hz ~ 61 Hz  1 V ~ 10 V 10 V ~ 48 V 48 V ~ 84 V 84 V ~ 96 V 96 V ~ 144 V  1 V ~ 10 V 10 V ~ 88 V 88 V ~ 154 V 154 V ~ 176 V 176 V ~ 264 V  1 V ~ 10 V 10 V ~ 92 V 92 V ~ 161 V 161 V ~ 184 V 184 V ~ 276 V	$1.1 \times 10^{-3}$ $2.6 \times 10^{-3}$ $2.5 \times 10^{-3}$ $1.7 \times 10^{-3}$  $1.2 \times 10^{-4}$ $1.3 \times 10^{-4}$  $5.2 \times 10^{-1}$ $1.2 \times 10^{-1}$ $6.9 \times 10^{-2}$ $6.1 \times 10^{-2}$ $5.9 \times 10^{-2}$  $5.2 \times 10^{-1}$ $6.6 \times 10^{-2}$ $4.2 \times 10^{-2}$ $3.9 \times 10^{-2}$ $5.0 \times 10^{-2}$  $5.2 \times 10^{-1}$ $6.4 \times 10^{-2}$ $4.1 \times 10^{-2}$ $3.8 \times 10^{-2}$ $4.8 \times 10^{-2}$	Digital multimeters, Oscilloscope, High Voltage Probe /HCT-CS-202-40654

406. Radio frequency measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
(230 V ~ 380 V)	40654	1 V ~ 10 V	$1.0 \times 10^{-0}$	
0 %		10 V ~ 152 V	$8.0 \times 10^{-2}$	
1 % ~ 40 %		152 V ~ 266 V	$4.9 \times 10^{-2}$	
40 % ~ 70 %		266 V ~ 304 V	$4.4 \times 10^{-2}$	
70 % ~ 80 %		304 V ~ 456 V	$2.9 \times 10^{-2}$	
80 % ~ 120 %				
Dip&Up Period		5 ms ~ 20 ms	$1.0 \times 10^{-2}$	
		50 ms ~ 100 ms	$3.0 \times 10^{-3}$	
		100 ms ~ 200 ms	$5.0 \times 10^{-3}$	
		200 ms ~ 500 ms	$4.0 \times 10^{-3}$	
		500 ms ~ 1 s	$3.0 \times 10^{-3}$	
		1 s ~ 5 s	$4.0 \times 10^{-3}$	
		5 s ~ 10 s	$3.0 \times 10^{-3}$	
Phase (220.0 V, 60 Hz)		1 ms ~ 2.08 ms	$1.4 \times 10^{-2}$	
		2.08 ms ~ 4.17 ms	$7.2 \times 10^{-3}$	
	4.17 ms ~ 6.25 ms	$4.8 \times 10^{-3}$		
	6.25 ms ~ 8.33 ms	$3.6 \times 10^{-3}$		
	8.33 ms ~ 10.42 ms	$2.9 \times 10^{-3}$		
	10.42 ms ~ 12.50 ms	$2.4 \times 10^{-3}$		
	12.50 ms ~ 14.58 ms	$2.1 \times 10^{-3}$		
	14.58 ms ~ 16.67 ms	$1.8 \times 10^{-3}$		
(230.0 V, 50 Hz)				
	1 ms ~ 2.5 ms	$1.2 \times 10^{-2}$		
	2.5 ms ~ 5.0 ms	$6.0 \times 10^{-3}$		
	5.0 ms ~ 7.5 ms	$4.0 \times 10^{-3}$		
	7.5 ms ~ 10.0 ms	$3.0 \times 10^{-3}$		
	10.0 ms ~ 12.5 ms	$2.4 \times 10^{-3}$		
	12.5 ms ~ 15.0 ms	$2.0 \times 10^{-3}$		
	15.0 ms ~ 17.5 ms	$1.7 \times 10^{-3}$		
	17.5 ms ~ 20.0 ms	$1.5 \times 10^{-3}$		

407. Field strength & antennas

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Dipole antennas	40703			SAR calibration system
SAR E-field probe Conversion factor		800 MHz ~ 6 GHz	$12.8 \times 10^{-2}$	/ HCT-CS-106-40703
SAR Dipole antenna Return loss		300 MHz ~ 2 GHz	1.7 dB	/ HCT-CS-107-40703
		2 GHz ~ 6 GHz	2.2 dB	
Loop antennas	40704			Standard loop antenna
Antenna factor		20 Hz ~ 30 MHz	1.3 dB	/ HCT-CS-237-40704
Monopole antennas	40705			Network analyzer
Antenna factor		9 kHz ~ 30 MHz	1.4 dB	/ HCT-CS-238-40705

501. Contact thermometry

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Temperature generators: ovens, furnaces, isothermal liquid baths, ice-point baths, dry-block calibrators Dry-block calibrators Ice-point baths Isothermal liquid baths Furnaces Temperature controlled chambers/ovens	50101	(-80 ~ 420) °C 0 °C (-80 ~ 420) °C (250 ~ 1 100) °C (-80 ~ 250) °C	0.03 °C 0.03 °C 0.03 °C 0.9 °C 0.8 °C	Standard Thermometers  /HCT-CS-203-50101 /HCT-CS-210-50101 /HCT-CS-211-50101 /HCT-CS-212-50101 /HCT-CS-134-50101
Temperature indicators/recorders/ controllers, temperature calibrators Temperature indicators/recorders /controllers With Sensor Without Sensor Thermoelectric Type Resistance Type	50102	(-80 ~ 250) °C (250 ~ 420) °C (420 ~ 1 100) °C (-80 ~ 1 100) °C (-80 ~ 420) °C	0.03 °C 0.09 °C 0.6 °C 0.22 °C 0.13 °C	Standard Thermometers  /HCT-CS-135-50102  /HCT-CS-137-50102 /HCT-CS-139-50102
Glass thermometers; liquid-in-glass, Beckmann liquid-in-glass	50103	(-80 ~ 250) °C	0.041 °C	Standard Thermometer / HCT-CS-147-50103
Resistance thermometers; SPRT, IPRT, thermistors, etc. Resistance Type	50104	(-80 ~ 250) °C	0.045 °C	Standard Thermometers / HCT-CS-148-50104
Thermal expansion thermometers ; bimetal, gas or liquid type Bimetal	50105	(-80 ~ 250) °C	0.45 °C	Standard Thermometers / HCT-CS-149-50105
Thermocouples: noble metal, base metal, pure metal, special type, etc. Jewelry Thermocouple Nonmetal Thermocouple	50106	(0 ~ 1 100) °C (-80 ~ 250) °C (250 ~ 1 100) °C	1.2 °C 0.74 °C 2.5 °C	Standard Thermometers, Standard Thermocouples /HCT-CS-152-50106 /HCT-CS-151-50106
Temperature transducers	50107	(-80 ~ 250) °C	0.18 °C	Standard Thermometers / HCT-CS-170-50107

502. Non contact thermometry

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Standard radiation thermometers Temperature	50204	(0 ~ 50) °C (50 ~ 300) °C (300 ~ 500) °C (500 ~ 1 000) °C	1.2 °C 1.4 °C 1.5 °C 3.2 °C	Standard infrared thermometer, Black body source HCT-CS-222-50204



503. Humidity

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Dew-point hygrometers; mirror, alumina thinfilm, etc. Alumina thinfilm	50301	(5 ~ 95) % R.H.	1.6 % R.H.	Automatic Dewpoint Hygrometers /HCT-CS-154-50301
Relative humidity hygrometers; polimer thinfilm, , etc. Hair Humidity thermometry Polimer thinfilm Humidity thermometry	50302	(30.0 ~ 90.0) % R.H. (-20 ~ 50) °C  (5 ~ 95) % R.H. (-20 ~ 50) °C	4.1 % R.H. 0.84 °C  1.6 % R.H. 0.84 °C	Automatic Dewpoint Hygrometers, Standard Thermometers / HCT-CS-153-50302 / HCT-CS-156-50302
Temperature humidity recorders ; Hygrothermograph , etc. Humidity thermometry	50304	(30.0 ~ 90.0) % R.H. (-20 ~ 50) °C	3.1 % R.H 0.84 °C	Automatic Dewpoint Hygrometers /HCT-CS-157-50304
Transducers; dew-point/ relative humidity Relative humidity	50305	(9 ~ 95) % R.H.	2.5 % R.H	Automatic Dewpoint Hygrometers /HCT-CS-171-50305
Humidity generators;two-pressure, two-temperature, flow mixing humidity gererator, constant temperature and humidity chamber, etc. Flow mixing humidity gererator Constant temperature and humidity chamber Humidity thermometry	50306	(5 ~ 95) % R.H.  (25 ~ 95) % R.H.  (-80 ~ 250) °C	1.5 % R.H  3.2 % R.H.  0.8 °C	Automatic Dewpoint Hygrometers /HCT-CS-213-50306 Thinfilm hygrometers /HCT-CS-182-50306 Temperature indicators /HCT-CS-182-50306

601. Sound in air

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Sound Calibrator Acoustic calibrators  Piston phones	60102	(31.5 Hz) 94.0 dB ~ 114.0 dB  (63.0 Hz ~ 12 500 Hz) 94.0 dB ~ 114.0 dB  (250 Hz) 114.0 dB ~ 134.0 dB  (1 000 Hz) 94.0 dB ~ 134.0 dB	0.2 dB  0.1 dB  0.1 dB  0.1 dB	Acoustic calibrators /HCT-CS-195-60102
Piston phones	60104	(250 Hz) -50.00 dB ~ -20.00 dB	0.14 dB	Microphones Calibration System/HCT-CS-194-60104

601. Sound in air

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Sound level meters  Acoustic calibrators    3-port Coupler	60106	(125 Hz) 94.0 dB ~ 114.0 dB	0.3 dB	Acoustic calibrators / HCT-CS-158-60107    3-port Coupler / HCT-CS-158-60107
		(250 Hz ~ 4 000 Hz) 94.0 dB ~ 114.0 dB	0.2 dB	
		(8 000 Hz) 94.0 dB ~ 114.0 dB	0.3 dB	
		(125 Hz) 84.0 dB ~ 114.0 dB	0.3 dB	
		(160 Hz ~ 3 150 Hz) 84.0 dB ~ 114.0 dB	0.2 dB	
		(4 000 Hz ~ 8 000 Hz) 84.0 dB ~ 114.0 dB	0.3 dB	

603. Vibration

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments	
Vibration calibrators	60301	(20 ~ 1 250) Hz	$2.0 \times 10^{-2}$	Standard accelerometer / HCT-CS-219-60301	
Vibration transducers	60302	10 Hz	$3.3 \times 10^{-2}$	Standard accelerometer / HCT-CS-220-60302	
		(10 ~ 40) Hz	$1.9 \times 10^{-2}$		
		(40 ~ 1 250) Hz	$1.8 \times 10^{-2}$		
		(1 250 ~ 2 500) Hz	$2.1 \times 10^{-2}$		
		(2 500 ~ 5 000) Hz	$2.6 \times 10^{-2}$		
Vibration measuring instruments	60303	Acceleration	(20 ~ 630) Hz	$1.8 \times 10^{-2}$	Standard accelerometer / HCT-CS-221-60303
			(630 ~ 1 250) Hz	$1.9 \times 10^{-2}$	
			(1 250 ~ 2 500) Hz	$2.1 \times 10^{-2}$	
		Velocity	(20 ~ 315) Hz	$1.8 \times 10^{-2}$	
			(315 ~ 630) Hz	$1.9 \times 10^{-2}$	
			(630 ~ 1 250) Hz	$2.1 \times 10^{-2}$	
			(1 250 ~ 2 500) Hz	$2.8 \times 10^{-2}$	
		Displacement	20 Hz	$1.7 \times 10^{-2}$	
			(20 ~ 100) Hz	$1.6 \times 10^{-2}$	
			(100 ~ 160) Hz	$1.7 \times 10^{-2}$	
			(160 ~ 315) Hz	$2.3 \times 10^{-2}$	

701. Photometry

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Illuminance meters	70101	(80 ~ 2 000) Lux	3.5 %	Reference Illuminance meters /HCT-CS-159-70101

901. Chemical analysis

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Gas analyzers	90103			CRM
Oxygen(O <sub>2</sub> )		(0.2~10.2) %(mol/mol)	(0.07~0.21) %(mol/mol)	/ HCT-CS-164-90106
Carbon monoxide(CO)		(50~100) μmol/mol	(1.5~2.9) μmol/mol	/ HCT-CS-165-90106
Methane(CH <sub>4</sub> )		(1.25~2.50) %(mol/mol)	(0.05~0.04) %(mol/mol)	

SCOPE OF ACCREDITATION TO ISO/IEC 17025-2005 & KS Q ISO/IEC 17025

HCT Co., Ltd.  
 2091, Gyeongchung-daero, Janghowon-eup, Icheon-si, Gyeonggi-do, Korea, 17336  
 Phone No : 82-53-582-8525, Fax : 82-53-582-8526, E-mail : cal@hct.co.kr

CALIBRATION

Valid To : Jan. 07. 2018

Accreditation No. : KC00-011(1/2)

In recognition of the successful completion of the KOLAS evaluation process,  
 accreditation is granted to this laboratory to perform the following calibrations

Field Code	Measured Quantity Instrument or Gauge	on-site	Field Code	Measured Quantity Instrument or Gauge	on-site	Field Code	Measured Quantity Instrument or Gauge	on-site
106.	Various dimensional							
10615	Particle counters	Y						
10622	Particle dilution Systems	Y						

Note

1. This laboratory provides calibration services in permanent standard laboratory and at on-site.
2. Laboratory conducts on-site calibration should meet requirements of KOLAS-SR-008.
3. On-site calibration is allowed to items with marking 'Y', not allowed to items with marking 'N'.
4. Calibration and Measurement Capability (CMC) means capabilities provided by accredited calibration laboratories. It expresses the lowest uncertainty of measurement that can be achieved during a calibration. CMC normally is quoted as an expanded uncertainty at a coverage probability of 95%, which usually requires the use of a coverage factor of  $k=2$ .
5. Due to the calibration environment such as reference standards or customers' facilities, it is note that uncertainty of measurement on a calibration certificate may be expressed larger than CMC on scope of accreditation in general.

106. Various dimensional

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Particle Counters	10615			Standard Particle / HCT-CS-028-10615
Airbone particle counter				
Laser reference voltage		(0 ~ 10) V	$4.2 \times 10^{-3}$	
Flow rate		(0 ~ 100) L/min	$2.3 \times 10^{-2}$	
Threshold voltage		(0 ~ 6) V	$2.1 \times 10^{-3}$	
		(6 ~ 10) V	$4.2 \times 10^{-3}$	
Counting efficiency				
CPC		(0 ~ 1.0) $\mu\text{m}$	3.0 %	
OPC		(0.1 ~ 1.0) $\mu\text{m}$	4.7 %	
Liquid particle counter				/ HCT-CS-029-10615
Laser reference voltage		(0 ~ 10) V	$4.2 \times 10^{-3}$	
Flow rate		(0 ~ 28) mL/min	$4.0 \times 10^{-2}$	
		(28 ~ 300) mL/min	$3.7 \times 10^{-2}$	
Threshold voltage		(0 ~ 6) V	$2.1 \times 10^{-3}$	
		(6 ~ 10) V	$4.2 \times 10^{-3}$	
Particle dilution Systems	10622			ELECTRICAL PARTICLE SIZER, CPC /HCT-CS-256-10622
PCRF		(30 ~ 100) nm	$8.2 \times 10^{-2}$	

SCOPE OF ACCREDITATION TO ISO/IEC 17025-2005 & KS Q ISO/IEC 17025

HCT Co., Ltd.  
 46-17, Seongseogongdan-ro, Dalseo-gu, Daegu, Korea 42716  
 Phone No : 82-53-582-8525, Fax : 82-53-582-8526, E-mail : cal@hct.co.kr

CALIBRATION

Valid To : Jan. 07. 2018

Accreditation No. : KC00-011(1/23)

In recognition of the successful completion of the KOLAS evaluation process,  
 accreditation is granted to this laboratory to perform the following calibrations

Field Code	Measured Quantity Instrument or Gauge	on-site	Field Code	Measured Quantity Instrument or Gauge	on-site	Field Code	Measured Quantity Instrument or Gauge	on-site
401. DC volatage & current			406. RF measurements					
40101	DC ammeters	Y	40601	RF amplifiers	Y			
40103	DC voltage/current calibrators	Y	40602	Coaxial attenuators	Y			
			40605	Burst pulse generators	Y			
40105	DC current shunts	Y	40613	Electrostatic discharge	Y			
40108	DC power supplies	Y	40614	EMC receivers	Y			
40112	DC voltmeters	Y	40621	Mobile communication test set	Y			
			40622	Modulation meters	Y			
			40623	Network analyzers	Y			
402. Resistance, Capacitance and			501. Temperature					
40205	Earth testers	Y	40626	Noise impulse simulators	Y			
40210	Insulation testers	Y	40638	Pulse generators	Y			
40214	Resistance meters	Y	40640	RF signal generators	Y			
40215	Resistors	Y	40641	RF spectrum analyzers	Y			
40217	Impedance bridges/LCR meters	Y	40643	Surge generators	Y			
403. AC voltage, current & power			50101			Temperature generators: isothermal liquid baths, dry-block calibrators		
40301	AC ammeters	Y	50102			Temperature temperature calibrators		
40302	Clamp ammeters/voltmeters	Y	50104			Resistance thermometers; thermistors, etc.		
40311	AC power meters	Y	50107			Temperature transducers		
40312	AC power supplies	Y						
40313	Puncture/safety testers	Y						
40318	AC voltmeters	Y						
404.								
40402	DC/LF attenuators	Y						
40409	LF/Audio signal analyzers	Y						
40411	Function generators	Y						
40413	AC/DC high voltages volt	Y						
40417	Electronic AC/DC loads	Y						
40419	Analogue/Digital multimeters	Y						
40421	Oscilloscopes	Y						
40422	LF phase meters	Y						
40424	Volt/Current recorders	Y						
40426	LF signal generators	Y						
40429	Sweep generators	Y						
40432	Transistor curve tracers	Y						
40433	Waveform analyzers	Y						
40435	AC/DC high voltage probes	Y						

Note

1. This laboratory provides calibration services in permanent standard laboratory and at on-site.
2. Laboratory conducts on-site calibration should meet requirements of KOLAS-SR-008.
3. On-site calibration is allowed to items with marking 'Y', not allowed to items with marking 'N'.
4. Calibration and Measurement Capability (CMC) means capabilities provided by accredited calibration laboratories. It expresses the lowest uncertainty of measurement that can be achieved during a calibration. CMC normally is quoted as an expanded uncertainty at a coverage probability of 95%, which usually requires the use of a coverage factor of  $k=2$ .
5. Due to the calibration environment such as reference standards or customers' facilities, it is note that uncertainty of measurement on a calibration certificate may be expressed larger than CMC on scope of accreditation in general.

401. DC volatage & current

Measured Quantity Instrument or Gauge	Field Code	Range	CMC (The Confidence Level is about 95 %)	Comments
DC ammeters Current, DC	40101	(0 ~ 100) $\mu$ A (0.1 ~ 10) mA (10 ~ 100) mA (0.1 ~ 1) A (1 ~ 10) A (0 ~ -100) $\mu$ A (-0.1 ~ -10) mA (-10 ~ -100) mA (-0.1 ~ -1) A (-1 ~ -10) A	$1.5 \times 10^{-4}$ $6.8 \times 10^{-5}$ $8.0 \times 10^{-5}$ $1.2 \times 10^{-4}$ $4.8 \times 10^{-4}$ $1.5 \times 10^{-4}$ $6.8 \times 10^{-5}$ $8.0 \times 10^{-5}$ $1.2 \times 10^{-4}$ $4.8 \times 10^{-4}$	Current Calibrators, Multimeter calibrators / HCT-CS-051-40101
DC voltage/current calibrators Voltage, DC Current, DC	40103	(0 ~ 100) mV (0 ~ -100) mV (0.1 ~ -1) V (-0.1 ~ -1) V (1 ~ 10) V (-1 V ~ -10) V (10 ~ 100) V (-10 ~ -100) V (100 ~ 1 000) V (-100 ~ -1 000) V (0 ~ 1) mA (0 ~ -1) mA (1 ~ 10) mA (-1 ~ -10) mA (10 ~ 100) mA (-10 ~ -100) mA (0.1 ~ 1) A (-0.1 ~ -1) A (1 ~ 10) A (-1 ~ -10) A	$8.1 \times 10^{-6}$ $8.1 \times 10^{-6}$ $7.2 \times 10^{-6}$ $7.2 \times 10^{-6}$ $7.2 \times 10^{-6}$ $7.2 \times 10^{-6}$ $8.0 \times 10^{-6}$ $8.0 \times 10^{-6}$ $8.1 \times 10^{-6}$ $8.1 \times 10^{-6}$ $1.4 \times 10^{-5}$ $1.4 \times 10^{-5}$ $1.6 \times 10^{-5}$ $1.6 \times 10^{-5}$ $4.9 \times 10^{-5}$ $4.9 \times 10^{-5}$ $2.2 \times 10^{-4}$ $2.2 \times 10^{-4}$ $5.0 \times 10^{-4}$ $5.0 \times 10^{-4}$	Digital Multimeter, Current shunts /HCT-CS-053-40103
DC current shunts	40105	0.01 $\Omega$ (20 A) 0.1 $\Omega$ (2 A) 1 $\Omega$ (200 mA) 10 $\Omega$ (20 mA) 100 $\Omega$ (2 mA) 1 000 $\Omega$ (0.2 mA)	$4.8 \times 10^{-4}$ $1.2 \times 10^{-4}$ $8.0 \times 10^{-5}$ $6.8 \times 10^{-5}$ $6.8 \times 10^{-5}$ $1.6 \times 10^{-4}$	Digital Multimeter, Multimeter calibrators, Current Calibrators/ HCT-CS-054-40105
DC power supplies Voltage, DC Current, DC	40108	(0 ~ 100) mV (0.1 ~ 1) V (1 ~ 10) V (10 ~ 100) V (100 ~ 1 000) V (0 ~ 1) A (1 ~ 10) A (10 ~ 100) A	$8.2 \times 10^{-6}$ $7.2 \times 10^{-6}$ $7.2 \times 10^{-6}$ $8.0 \times 10^{-6}$ $8.1 \times 10^{-6}$ $1.2 \times 10^{-4}$ $3.0 \times 10^{-4}$ $5.8 \times 10^{-4}$	Digital Multimeter, Current shunts HCT-CS-057-40108
DC voltmeters DC Voltage	40112	(0 ~ 10) mV (10 ~ 100) mV (0.1 ~ 10) V (10 ~ 100) V (100 ~ 1 000) V (0 ~ -10) mV (-10 ~ -100) mV (-0.1 ~ -10) V (-10 ~ -100) V (-100 ~ -1 000) V	$1.0 \times 10^{-4}$ $1.7 \times 10^{-5}$ $1.1 \times 10^{-5}$ $1.2 \times 10^{-5}$ $1.3 \times 10^{-5}$ $1.0 \times 10^{-4}$ $1.7 \times 10^{-5}$ $1.1 \times 10^{-5}$ $1.2 \times 10^{-5}$ $1.3 \times 10^{-5}$	Current Calibrators, Multimeter calibrators /HCT-CS-197-40112

402. Resistance, Capacitance and Inductance

Measured Quantity Instrument or Gauge	Field Code	Range	CMC (The Confidence Level is about 95 %)	Comments
Earth testers  Earth Tester       Voltage, AC	40205	0 mΩ ~ 100 mΩ 100 mΩ ~ 1 Ω 1 Ω ~ 10 Ω 10 Ω ~ 100 Ω 100 Ω ~ 1 kΩ 1 kΩ ~ 2 kΩ (DC ~ 1 kHz) 0 V ~ 100 V 100 V ~ 600 V	$6.5 \times 10^{-3}$ $6.5 \times 10^{-4}$ $7.4 \times 10^{-5}$ $7.0 \times 10^{-5}$ $6.7 \times 10^{-6}$ $3.1 \times 10^{-5}$ $6.0 \times 10^{-4}$ $1.6 \times 10^{-4}$	Decade resistor, Standard resistance /HCT-CS-062-40205
Insulation testers  Insulation resistance     Insulation Voltage  Voltage  Resistance	40210	0 kΩ ~ 1 kΩ 1 kΩ ~ 100 kΩ 100 kΩ ~ 1 MΩ 1 MΩ ~ 10 MΩ 10 MΩ ~ 100 MΩ 100 MΩ ~ 1 GΩ 1 GΩ ~ 10 GΩ 10 GΩ ~ 100 GΩ 0 V ~ 800 V 800 V ~ 9 kV (DC ~ 1 kHz) 0 V ~ 600 V 0 Ω ~ 100 Ω 100 Ω ~ 1 kΩ 1 kΩ ~ 10 kΩ 10 kΩ ~ 100 kΩ	$6.2 \times 10^{-4}$ $6.7 \times 10^{-5}$ $6.9 \times 10^{-5}$ $8.0 \times 10^{-5}$ $1.8 \times 10^{-4}$ $4.4 \times 10^{-4}$ $8.5 \times 10^{-4}$ $2.6 \times 10^{-3}$ $7.3 \times 10^{-5}$ $6.2 \times 10^{-3}$ $1.6 \times 10^{-4}$ $6.7 \times 10^{-5}$ $6.4 \times 10^{-5}$ $6.4 \times 10^{-5}$ $6.4 \times 10^{-5}$	High resistance meters, Multimeter calibrators /HCT-CS-064-40210
Resistance meters  Resistance, DC       Frequency   Voltage, AC	40214	1 Ω ~ 10 Ω 10 Ω ~ 100 Ω 100 Ω ~ 100 kΩ 100 kΩ ~ 1 MΩ 1 MΩ ~ 10 MΩ 10 MΩ ~ 100 MΩ 100 MΩ ~ 1 GΩ 1 GΩ ~ 10 GΩ 10 GΩ ~ 100 GΩ 10 Hz ~ 10 kHz 10 kHz ~ 100 kHz 100 kHz ~ 1 MHz (DC ~ 1 kHz) 10 mV ~ 1 V 1 V ~ 10 V	$5.0 \times 10^{-5}$ $3.3 \times 10^{-5}$ $2.7 \times 10^{-5}$ $3.0 \times 10^{-5}$ $5.0 \times 10^{-5}$ $1.6 \times 10^{-4}$ $4.4 \times 10^{-4}$ $8.5 \times 10^{-4}$ $2.6 \times 10^{-3}$ $5.8 \times 10^{-7}$ $5.8 \times 10^{-8}$ $1.0 \times 10^{-9}$ $2.0 \times 10^{-4}$ $2.0 \times 10^{-4}$	Standard resistance, High resistance meters HCT-CS-067-40214
Resistors  Decade Resistor	40215	0 mΩ ~ 10 mΩ 10 mΩ ~ 1 Ω 1 Ω ~ 10 Ω 10 Ω ~ 100 Ω 100 Ω ~ 10 kΩ 10 kΩ ~ 100 kΩ 100 kΩ ~ 1 MΩ 1 MΩ ~ 10 MΩ 10 MΩ ~ 100 MΩ 100 MΩ ~ 1 GΩ	$1.0 \times 10^{-3}$ $2.0 \times 10^{-4}$ $9.0 \times 10^{-5}$ $9.1 \times 10^{-6}$ $9.0 \times 10^{-6}$ $9.1 \times 10^{-6}$ $1.1 \times 10^{-5}$ $2.5 \times 10^{-5}$ $3.8 \times 10^{-5}$ $1.6 \times 10^{-4}$	Digital Multimeter / HCT-CS-068-40215



402. Resistance, Capacitance and Inductance

Measured Quantity Instrument or Gauge	Field Code	Range	CMC (The Confidence Level is about 95 %)	Comments
Impedance bridges/LCR meters	40217			Counters, Standard Resistance, Capacitance, Digital Multimeters Inductance/HCT-CS-093-40217
Frequency		DC ~ 100 kHz	5.8 mHz	
		100 kHz ~ 1 MHz	8.2 mHz	
		1 MHz ~ 5 MHz	0.60 Hz	
Voltage, AC		(0 ~ 100) mV		
		0.04 kHz	$2.1 \times 10^{-4}$	
		(0.04 ~ 1) kHz	$2.0 \times 10^{-4}$	
		(1 ~ 10) kHz	$1.4 \times 10^{-4}$	
		(0.1 ~ 1)V		
		0.04 kHz	$5.9 \times 10^{-4}$	
		(0.04 ~ 1) kHz	$6.2 \times 10^{-4}$	
		(1 ~ 10) kHz	$1.2 \times 10^{-2}$	
		(1 ~ 10) V		
		(0.04 ~ 1) kHz	$5.8 \times 10^{-7}$	
		(1 ~ 10) kHz	$1.8 \times 10^{-6}$	
		(10 ~ 20) V		
		0.04 kHz	$5.0 \times 10^{-4}$	
		(0.04 ~ 10) kHz	$4.3 \times 10^{-4}$	
Voltage, DC		(0 ~ 100) mV	$8.0 \times 10^{-5}$	
		100 mV ~ 10 V	$5.8 \times 10^{-5}$	
		(10 ~ 40) V	$1.6 \times 10^{-5}$	
Resistance		1 kHz		
		0 Ω ~ 1 Ω	1.09 mΩ	
		1 Ω ~ 10 Ω	3.7 mΩ	
		10 Ω ~ 100 Ω	36 mΩ	
		100 Ω ~ 1 kΩ	0.35 Ω	
		1 kΩ ~ 10 kΩ	3.6 Ω	
		10 kΩ ~ 100 kΩ	36 Ω	
Capacitance	1 kHz			
	0 pF ~ 1 pF	0.49 fF		
	1 pF ~ 10 pF	3.6 fF		
	10 pF ~ 100 pF	36 fF		
	100 pF ~ 1 000 pF	0.36 pF		
	1 nF ~ 10 nF	0.82 pF		
	10 nF ~ 100 nF	11 pF		
	100 nF ~ 1 μF	89 pF		
Inductance	1 kHz			
	0 H ~ 100 uH	19 nH		
	100 uH ~ 1 mH	0.15 μH		
	1 mH ~ 10 mH	1.5 μH		
	10 mH ~ 100 mH	15 μH		
	100 mH ~ 1 H	0.15 mH		

403. AC voltage, current & power

Measured Quantity Instrument or Gauge	Field Code	Range	CMC (The Confidence Level is about 95 %)	Comments
AC ammeters AC Current	40301	(0 mA ~ 1 mA) 60 Hz ~ 1 kHz 1 kHz ~ 10 kHz  (1 mA ~ 10 mA) 60 Hz ~ 1 kHz 1 kHz ~ 10 kHz  (10 mA ~ 100 mA) 60 Hz ~ 1 kHz 1 kHz ~ 10 kHz  (100 mA ~ 1 A) 60 Hz ~ 1 kHz 1 kHz ~ 10 kHz  (1 A ~ 10 A) 60 Hz ~ 1 kHz	 $2.2 \times 10^{-4}$ $2.8 \times 10^{-3}$  $2.2 \times 10^{-4}$ $2.8 \times 10^{-3}$  $2.2 \times 10^{-4}$ $2.8 \times 10^{-3}$  $8.0 \times 10^{-4}$ $1.0 \times 10^{-2}$  $6.0 \times 10^{-4}$	Multimeter calibrators / HCT-CS-070-40301
Clamp ammeters/voltmeters Voltage, DC  Voltage, AC  Current, DC  Current, AC	40302	0 mV ~ 100 mV 100 mV ~ 10 V 10 V ~ 1 000 V  (0 mV ~ 100 mV) 60 Hz ~ 1 kHz (100 mV ~ 1 V) 60 Hz ~ 1 kHz (1 V ~ 10 V) 60 Hz ~ 1 kHz (10 V ~ 100 V) 60 Hz ~ 1 kHz (100 V ~ 1 000 V) 60 Hz ~ 1 kHz  0 mA ~ 1 mA 1 mA ~ 100 mA 100 mA ~ 1 A 1 A ~ 10 A 10 A ~ 50 A 50 A ~ 100 A 100 A ~ 500 A 500 A ~ 900 A  (0 mA ~ 1 mA) 60 Hz ~ 1 kHz (1 mA ~ 10 mA) 60 Hz ~ 1 kHz (10 mA ~ 100 mA) 60 Hz ~ 1 kHz (100 mA ~ 1 A) 60 Hz ~ 1 kHz (1 A ~ 10 A) 60 Hz ~ 1 kHz (10 A ~ 100 A) 60 Hz	$7.0 \times 10^{-5}$ $6.3 \times 10^{-5}$ $6.5 \times 10^{-5}$  $2.7 \times 10^{-4}$ $2.5 \times 10^{-4}$ $2.5 \times 10^{-4}$ $2.5 \times 10^{-4}$ $3.7 \times 10^{-4}$  $6.4 \times 10^{-4}$ $6.3 \times 10^{-4}$ $6.7 \times 10^{-4}$ $8.8 \times 10^{-4}$ $1.3 \times 10^{-3}$ $7.7 \times 10^{-4}$ $6.5 \times 10^{-4}$ $8.0 \times 10^{-4}$  $1.5 \times 10^{-3}$ $1.4 \times 10^{-3}$ $1.4 \times 10^{-3}$ $2.3 \times 10^{-3}$ $1.5 \times 10^{-3}$ $2.6 \times 10^{-3}$	Multimeter calibrators,Coil / HCT-CS-071-40302

403. AC voltage, current & power

Measured Quantity Instrument or Gauge	Field Code	Range	CMC (The Confidence Level is about 95 %)	Comments		
Current, AC	40302	(100 A ~ 500 A) 60 Hz	$1.4 \times 10^{-3}$			
Resistance		(500 A ~ 900 A) 60 Hz	$1.3 \times 10^{-3}$			
		0 Ω ~ 1 Ω	$6.4 \times 10^{-4}$			
		1 Ω ~ 10 Ω	$8.2 \times 10^{-5}$			
		10 Ω ~ 100 Ω	$7.0 \times 10^{-5}$			
		100 Ω ~ 10 kΩ	$7.7 \times 10^{-5}$			
		10 kΩ ~ 100 kΩ	$8.9 \times 10^{-5}$			
		100 kΩ ~ 1 MΩ	$1.5 \times 10^{-4}$			
1 MΩ ~ 10 MΩ	$7.7 \times 10^{-5}$					
AC power meters	40311	(40 ~ 800) Hz		Power Calibrators, Multimeter calibrators / HCT-CS-075-40311		
Power		(0.01 ~ 0.1) W			$7.0 \times 10^{-4}$	
		(0.1 ~ 1) W			$4.0 \times 10^{-4}$	
		(1 ~ 6) W			$3.2 \times 10^{-4}$	
		(6 ~ 12) W			$3.2 \times 10^{-4}$	
		(12 ~ 24) W			$3.2 \times 10^{-4}$	
		(24 ~ 48) W			$3.2 \times 10^{-4}$	
		(48 ~ 60) W			$3.2 \times 10^{-4}$	
		(60 ~ 120) W			$3.2 \times 10^{-4}$	
		(120 ~ 240) W			$3.2 \times 10^{-4}$	
		(240 ~ 480) W			$3.2 \times 10^{-4}$	
		(480 ~ 600) W			$3.2 \times 10^{-4}$	
		600 W ~ 1.2 kW			$3.3 \times 10^{-4}$	
		(1.2 ~ 2.4) kW			$3.4 \times 10^{-4}$	
		(2.4 ~ 4.8) kW			$3.8 \times 10^{-4}$	
		(4.8 ~ 6.0) kW			$3.4 \times 10^{-4}$	
(6.0 ~ 12) kW		$3.8 \times 10^{-4}$				
(12 ~ 24) kW		$5.5 \times 10^{-4}$				
(24 ~ 50) kW		$5.5 \times 10^{-4}$				
Factor		(40 ~ 800) Hz				
		1				$2.1 \times 10^{-4}$
		0.8				$2.8 \times 10^{-4}$
		0.6				$2.6 \times 10^{-4}$
		0.5				$2.6 \times 10^{-4}$
		0.4				$2.7 \times 10^{-4}$
		0.2				$3.6 \times 10^{-4}$
Voltage, AC		0.1			$6.2 \times 10^{-4}$	
		40 Hz ~ 1 kHz				
		(0 ~ 1) V				$1.3 \times 10^{-4}$
		(1 ~ 10) V				$1.2 \times 10^{-4}$
		(10 ~ 50) V				$1.3 \times 10^{-4}$
		(50 ~ 100) V				$1.4 \times 10^{-4}$
	(100 ~ 300) V	$1.3 \times 10^{-4}$				
	(300 ~ 500) V	$1.3 \times 10^{-4}$				
	(500 ~ 750) V	$1.2 \times 10^{-4}$				
	(750 ~ 1 000) V	$1.4 \times 10^{-4}$				
Voltage, DC	(0 ~ 1) V	$5.9 \times 10^{-5}$				
	(1 ~ 10) V	$1.4 \times 10^{-5}$				
	(10 ~ 50) V	$1.6 \times 10^{-5}$				
	(50 ~ 100) V	$5.9 \times 10^{-5}$				
	(100 ~ 300) V	$2.3 \times 10^{-5}$				
	(300 ~ 500) V	$1.7 \times 10^{-5}$				
	(500 ~ 750) V	$1.4 \times 10^{-5}$				
	(750 ~ 1 000) V	$5.9 \times 10^{-5}$				

403. AC voltage, current & power

Measured Quantity Instrument or Gauge	Field Code	Range	CMC (The Confidence Level is about 95 %)	Comments	
Current, AC	40311	40 Hz ~ 1 kHz			
		(0 ~ 10) mA	$2.7 \times 10^{-4}$		
		(10 ~ 50) mA	$3.3 \times 10^{-4}$		
		(50 ~ 200) mA	$2.7 \times 10^{-4}$		
		(200 ~ 500) mA	$1.0 \times 10^{-3}$		
		(0.5 ~ 1) A	$9.8 \times 10^{-4}$		
		(1 ~ 2) A	$9.5 \times 10^{-4}$		
		(2 ~ 5) A	$6.1 \times 10^{-4}$		
		(5 ~ 10) A	$6.0 \times 10^{-4}$		
		(10 ~ 20) A	$1.7 \times 10^{-3}$		
		(20 ~ 50) A	$9.7 \times 10^{-4}$		
		(50 ~ 100) A	$9.5 \times 10^{-4}$		
		(100 ~ 200) A	$6.2 \times 10^{-4}$		
		(200 ~ 500) A	$5.9 \times 10^{-4}$		
		(500 ~ 1 000) A	$1.7 \times 10^{-3}$		
Current, DC			(0 ~ 10) mA		$8.9 \times 10^{-5}$
			(10 ~ 50) mA		$8.9 \times 10^{-5}$
			(50 ~ 200) mA		$8.0 \times 10^{-5}$
			(200 ~ 500) mA		$1.5 \times 10^{-4}$
			(0.5 ~ 1) A		$1.4 \times 10^{-4}$
		(1 ~ 2) A	$1.2 \times 10^{-4}$		
		(2 ~ 5) A	$5.3 \times 10^{-4}$		
		(5 ~ 10) A	$4.8 \times 10^{-4}$		
		(10 ~ 20) A	$6.1 \times 10^{-4}$		
		(20 ~ 50) A	$1.3 \times 10^{-4}$		
		(50 ~ 100) A	$1.3 \times 10^{-4}$		
		(100 ~ 200) A	$5.6 \times 10^{-4}$		
		(200 ~ 500) A	$4.8 \times 10^{-4}$		
		(500 ~ 1 000) A	$6.1 \times 10^{-3}$		
AC power supplies	40312	(0 mV ~ 100) mV		Multimeters / HCT-CS-076-40312	
Voltage, AC		40 Hz ~ 1 kHz	$2.2 \times 10^{-4}$		
		1 kHz ~ 20 kHz	$4.7 \times 10^{-4}$		
		20 kHz ~ 50 kHz	$1.1 \times 10^{-3}$		
		50 kHz ~ 100 kHz	$1.2 \times 10^{-3}$		
		(100 mV ~ 1 V)			
		40 Hz ~ 1 kHz	$1.3 \times 10^{-4}$		
		1 kHz ~ 20 kHz	$2.9 \times 10^{-4}$		
		20 kHz ~ 100 kHz	$8.2 \times 10^{-4}$		
		(1 V ~ 10 V)			
		40 Hz ~ 1 kHz	$1.3 \times 10^{-4}$		
		1 kHz ~ 20 kHz	$2.9 \times 10^{-4}$		
		20 kHz ~ 100 kHz	$8.2 \times 10^{-4}$		
		(10 V ~ 100 V)			
		40 Hz ~ 1 kHz	$1.3 \times 10^{-4}$		
		1 kHz ~ 20 kHz	$2.9 \times 10^{-4}$		
		20 kHz ~ 50 kHz	$8.2 \times 10^{-4}$		
		50 kHz ~ 100 kHz	$8.3 \times 10^{-4}$		
	(100 V ~ 1 000 V)				
	40 Hz ~ 1 kHz	$7.0 \times 10^{-4}$			
	1 kHz ~ 20 kHz	$7.5 \times 10^{-4}$			
Voltage, DC		0 mV ~ 100 V	$6.9 \times 10^{-5}$		
		100 V ~ 1 000 V	$6.8 \times 10^{-4}$		

403. AC voltage, current & power

Measured Quantity Instrument or Gauge	Field Code	Range	CMC (The Confidence Level is about 95 %)	Comments		
Current, AC	40312	(0 $\mu$ A ~ 100 $\mu$ A)				
		60 Hz	$5.3 \times 10^{-4}$			
		(100 $\mu$ A ~ 1 mA)				
		60 Hz	$5.2 \times 10^{-4}$			
		(1 mA ~ 10 mA)				
		60 Hz	$5.2 \times 10^{-4}$			
		(10 mA ~ 100 mA)				
		60 Hz	$5.2 \times 10^{-4}$			
		(100 mA ~ 1 A)				
		60 Hz	$9.3 \times 10^{-4}$			
		Current, DC	40312	0 $\mu$ A ~ 1 mA	$6.2 \times 10^{-5}$	
				1 mA ~ 10 mA	$6.3 \times 10^{-5}$	
10 mA ~ 100 mA	$7.8 \times 10^{-5}$					
100 mA ~ 1 A	$2.2 \times 10^{-4}$					
Frequency	40312	DC ~ 20 Hz	$2.9 \times 10^{-7}$			
		20 ~ 100 kHz	$5.8 \times 10^{-7}$			
Puncture/safety testers	40313			High voltage voltmeters, Digital Multimeter / HCT-CS-077-40313		
Volatge, AC	40313	0 kV ~ 1 kV	$2.0 \times 10^{-2}$			
		1 kV ~ 2 kV	$1.5 \times 10^{-2}$			
		2 kV ~ 4 kV	$1.3 \times 10^{-2}$			
		4 kV ~ 9 kV	$1.2 \times 10^{-2}$			
		9 kV ~ 10 kV	$1.6 \times 10^{-2}$			
		10 kV ~ 20 kV	$1.5 \times 10^{-2}$			
		20 kV ~ 70 kV	$1.6 \times 10^{-2}$			
Volatge, DC	40313	0 kV ~ 1 kV	$9.3 \times 10^{-3}$			
		1 kV ~ 2 kV	$7.1 \times 10^{-3}$			
		2 kV ~ 4 kV	$6.4 \times 10^{-3}$			
		4 kV ~ 10 kV	$6.2 \times 10^{-3}$			
		10 kV ~ 20 kV	$2.6 \times 10^{-3}$			
		20 kV ~ 30 kV	$2.4 \times 10^{-3}$			
		30 kV ~ 50 kV	$2.3 \times 10^{-3}$			
Cutoff Current, AC	40313	0 mA ~ 0.5 mA	$1.3 \times 10^{-2}$			
		0.5 mA ~ 2 mA	$1.4 \times 10^{-2}$			
		2 mA ~ 5 mA	$1.3 \times 10^{-2}$			
		5 mA ~ 10 mA	$1.4 \times 10^{-2}$			
		10 mA ~ 20 mA	$3.1 \times 10^{-3}$			
		20 mA ~ 50 mA	$1.3 \times 10^{-3}$			
		50 mA ~ 100 mA	$5.8 \times 10^{-3}$			
Cutoff Current, DC	40313	0 mA ~ 0.5 mA	$1.3 \times 10^{-2}$			
		0.5 mA ~ 2 mA	$1.4 \times 10^{-2}$			
		2 mA ~ 5 mA	$1.3 \times 10^{-2}$			
		5 mA ~ 10 mA	$1.4 \times 10^{-2}$			
		10 mA ~ 20 mA	$2.9 \times 10^{-3}$			
		20 mA ~ 50 mA	$1.2 \times 10^{-3}$			
		50 mA ~ 100 mA	$5.8 \times 10^{-3}$			

403. AC voltage, current & power

Measured Quantity Instrument or Gauge	Field Code	Range	CMC (The Confidence Level is about 95 %)	Comments
AC voltmeters Voltage, AC	40318	(0 $\mu$ V ~ 300 $\mu$ V) 60 Hz ~ 20 kHz 20 kHz ~ 100 kHz	$3.7 \times 10^{-2}$ $4.2 \times 10^{-2}$	Multimeter calibrators, Digital Multimeter / HCTD-CS-079-40318
		(300 $\mu$ V ~ 1 mV) 60 Hz ~ 20 kHz 20 kHz ~ 100 kHz	$1.1 \times 10^{-2}$ $1.8 \times 10^{-2}$	
		(1 mV ~ 3 mV) 60 Hz ~ 20 kHz 20 kHz ~ 100 kHz	$3.8 \times 10^{-3}$ $4.5 \times 10^{-3}$	
		(3 mV ~ 10 mV) 60 Hz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz	$1.2 \times 10^{-3}$ $1.5 \times 10^{-3}$ $1.6 \times 10^{-3}$	
		(10 mV ~ 30 mV) 60 Hz ~ 10 kHz 10 kHz ~ 20 kHz 20 kHz ~ 100 kHz	$4.4 \times 10^{-4}$ $4.5 \times 10^{-4}$ $7.3 \times 10^{-4}$	
		(30 mV ~ 100 mV) 60 Hz ~ 10 kHz 10 kHz ~ 20 kHz 20 kHz ~ 100 kHz	$1.8 \times 10^{-4}$ $1.9 \times 10^{-4}$ $4.6 \times 10^{-4}$	
		(100 mV ~ 300 mV) 60 Hz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz	$2.1 \times 10^{-4}$ $2.5 \times 10^{-4}$ $2.7 \times 10^{-4}$	
		(300 mV ~ 1 V) 60 Hz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz	$9.0 \times 10^{-5}$ $1.3 \times 10^{-4}$ $1.4 \times 10^{-4}$	
		(1 V ~ 3 V) 60 Hz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz	$2.1 \times 10^{-4}$ $2.5 \times 10^{-4}$ $2.7 \times 10^{-4}$	
		(3 V ~ 10 V) 60 Hz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz	$9.0 \times 10^{-5}$ $1.3 \times 10^{-4}$ $1.4 \times 10^{-4}$	
		(10 V ~ 30 V) 60 Hz ~ 10 kHz 10 kHz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz	$1.6 \times 10^{-4}$ $2.0 \times 10^{-4}$ $3.0 \times 10^{-4}$ $3.5 \times 10^{-4}$	
		(30 V ~ 100 V) 60 Hz ~ 10 kHz 10 kHz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz	$8.0 \times 10^{-5}$ $1.0 \times 10^{-4}$ $1.8 \times 10^{-4}$ $1.9 \times 10^{-4}$	

403. AC voltage, current & power

Measured Quantity Instrument or Gauge	Field Code	Range	CMC (The Confidence Level is about 95 %)	Comments
Voltage, AC	40318	(100 V ~ 300 V) 60 Hz ~ 10 kHz	$2.3 \times 10^{-4}$	
Frequency Response		(300 V ~ 1 000 V) 60 Hz ~ 10 kHz	$3.8 \times 10^{-4}$	
Output Voltage		0 dB(0.774 6 V) 40 Hz ~ 100 kHz	0.002 dB	
		(0 V ~ 1 V) 100 Hz ~ 20 kHz 20 kHz ~ 50 kHz	$1.0 \times 10^{-3}$ $2.0 \times 10^{-3}$	

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field Code	Range	CMC (The Confidence Level is about 95 %)	Comments
DC/LF attenuators Attenuator	40402	(20 Hz ~ 10 kHz) 0 dB ~ 30 dB 30 dB ~ 40 dB 40 dB ~ 50 dB 50 dB ~ 60 dB (10 ~ 20) kHz 0 dB ~ 30 dB 30 dB ~ 40 dB 40 dB ~ 50 dB 50 dB ~ 60 dB (20 ~ 100) kHz 0 dB ~ 30 dB 30 dB ~ 40 dB 40 dB ~ 50 dB 50 dB ~ 60 dB	0.006 dB 0.009 dB 0.022 dB 0.066 dB 0.008 dB 0.009 dB 0.021 dB 0.063 dB 0.01 dB 0.02 dB 0.03 dB 0.11 dB	Function Generator, Digital Multimeters /HCT-CS-081-40402
LF/Audio signal analyzers Output Frequency Output Level Output DC Offset Output Flatness Output Attenuator	40409	1 Hz ~1 MHz (1 mV ~ 100 mV) DC ~ 1 kHz 1 kHz ~ 20 kHz 20 kHz ~ 100 kHz (100 mV ~ 1 V) DC ~ 1 kHz 1 kHz ~ 20 kHz 20 kHz ~ 100 kHz (1 V ~ 10 V) DC ~ 1 kHz 1 kHz ~ 20 kHz 20 kHz ~ 100 kHz (10 V ~ 100 V) DC ~ 1 kHz 1 kHz ~ 20 kHz 20 kHz ~ 100 kHz - 20 V ~ 20 V 20 Hz ~ 20 kHz 20 kHz ~ 100 kHz 20 Hz ~ 1 kHz	$5.8 \times 10^{-6}$ $1.9 \times 10^{-4}$ $4.0 \times 10^{-4}$ $9.3 \times 10^{-4}$ $1.5 \times 10^{-4}$ $2.7 \times 10^{-4}$ $7.1 \times 10^{-4}$ $1.5 \times 10^{-4}$ $2.6 \times 10^{-4}$ $7.0 \times 10^{-4}$ $1.5 \times 10^{-4}$ $2.6 \times 10^{-4}$ $7.1 \times 10^{-4}$ $5.8 \times 10^{-5}$ 0.006 dB 0.009 dB	디지털멀티미터/ HCT-CS-088-40409

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field Code	Range	CMC (The Confidence Level is about 95 %)	Comments
Output Attenuator	40409	(-10 ~ -20) dB (-20 ~ -40) dB (-40 ~ -60) dB (1 kHz ~ 100 kHz) (-10 ~ -20) dB (-20 ~ -40) dB (-40 ~ -60) dB	0.006 dB 0.009 dB 0.065 dB 0.011 dB 0.015 dB 0.10 dB	
Output impedace		(50 ~ 600) Ω	$1.2 \times 10^{-4}$	
Input Frequency		10 Hz ~ 1 MHz	$5.8 \times 10^{-5}$	
AC input levels		(1 mV ~ 100 mV) DC ~ 20 kHz 20 kHz ~ 100 kHz 100 mV ~ 1 V DC ~ 20 kHz 20 kHz ~ 100 kHz (1 V ~ 10 V) DC ~ 20 kHz 20 kHz ~ 100 kHz (10 V ~ 100 V) DC ~ 20 kHz 20 kHz ~ 100 kHz (100 V ~ 300 V) DC ~ 1 kHz 1 kHz ~ 10 kHz	$2.5 \times 10^{-4}$ $4.6 \times 10^{-4}$ $1.6 \times 10^{-4}$ $1.5 \times 10^{-4}$ $1.6 \times 10^{-4}$ $1.4 \times 10^{-4}$ $1.2 \times 10^{-4}$ $2.0 \times 10^{-4}$ $2.3 \times 10^{-4}$ $2.7 \times 10^{-4}$	
Filter(weight,low,high pass etc.)		400 Hz ~ 80 kHz	$1.9 \times 10^{-4}$	
Function generators	40411			Counters,Digital Multimeter, Measuring Receiver Oscilloscope /HCT-CS-089-40411
Output frequency		1 mHz ~ 250 MHz	$5.8 \times 10^{-9}$	
Output level		(1 mV ~ 100 mV) DC ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz 100 kHz ~ 100 MHz (100 mV ~ 1 V) 20 Hz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz 100 kHz ~ 100 MHz (1 V ~ 10 V) 20 Hz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz 100 kHz ~ 100 MHz (10 V ~ 100 V) 20 Hz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz (100 kHz ~ 100 MHz) -60 dBm ~ 0 dBm	$4.0 \times 10^{-4}$ $9.3 \times 10^{-4}$ $9.3 \times 10^{-4}$ $1.4 \times 10^{-2}$ $2.7 \times 10^{-4}$ $7.0 \times 10^{-4}$ $7.1 \times 10^{-4}$ $1.4 \times 10^{-2}$ $2.6 \times 10^{-4}$ $7.0 \times 10^{-4}$ $7.1 \times 10^{-4}$ $1.4 \times 10^{-2}$ $2.6 \times 10^{-4}$ $7.0 \times 10^{-4}$ $7.1 \times 10^{-4}$ $0.13$ dB	
Output DC offset		-20 V ~ 20 V	$5.8 \times 10^{-4}$	
Output flatness		10 Hz ~ 100 kHz 100 kHz ~ 100 MHz	0.011 dB 0.025 dB	



404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field Code	Range	CMC (The Confidence Level is about 95 %)	Comments			
Distortion	40411	20 Hz ~ 100 MHz	1.2 dB				
Rise/Fall time		1 ms ~ 100 ns	$1.2 \times 10^{-3}$				
		100 ns ~ 10 ns	$1.3 \times 10^{-3}$				
		10 ns ~ 1 ns	$5.9 \times 10^{-3}$				
AM Modulation		5 % ~ 99 %	$1.7 \times 10^{-2}$				
FM Modulation		9 kHz ~ 400 kHz	$1.2 \times 10^{-2}$				
AC/DC high voltages volt meters DC Voltage	40413	(0.2 ~ 1) kV (1 ~ 5) kV (5 ~ 10) kV (10 ~ 20) kV (20 ~ 30) kV (30 ~ 40) kV (40 ~ 50) kV	$5.8 \times 10^{-3}$ $1.2 \times 10^{-2}$ $1.2 \times 10^{-2}$ $1.2 \times 10^{-2}$ $1.5 \times 10^{-2}$ $1.5 \times 10^{-2}$ $1.5 \times 10^{-2}$	High voltage generators / HCT-CS-092-40413			
Electronic AC/DC loads	40417	CV Mode	0 mV~ 100 mV 100 mV ~ 1 V 1 V ~ 10 V 10 V ~ 100 V 100 V ~ 1 000 V	$1.4 \times 10^{-5}$ $7.0 \times 10^{-6}$ $4.0 \times 10^{-6}$ $6.7 \times 10^{-6}$ $8.9 \times 10^{-6}$	DC power supply, Current shunts, Digital Multimeter /HCT-CS-094-40417		
		CC Mode	0 mA ~ 100 mA 100 mA ~ 1 A 1 A ~ 10 A 10 A ~ 100 A	$1.2 \times 10^{-4}$ $1.2 \times 10^{-4}$ $3.0 \times 10^{-4}$ $5.8 \times 10^{-4}$			
		CR Mode	0.01 mΩ ~ 100 mΩ 100 mΩ ~ 1 Ω 1 Ω ~ 10 Ω 10 Ω ~ 100 Ω	$5.8 \times 10^{-4}$ $3.0 \times 10^{-4}$ $1.2 \times 10^{-4}$ $1.2 \times 10^{-4}$			
Analogue/Digital multimeters		40419	Voltage, DC	-1 000 V ~ -100 V -100 V ~ -10 V -10 V ~ -1 V -1 V ~ -100 mV -100 mV ~ 0 mV 0 mV ~ 100 mV 100 mV ~ 1 V 1 V ~ 10 V 10 V ~ 100 V 100 V ~ 1 000 V		$8.9 \times 10^{-6}$ $6.7 \times 10^{-6}$ $3.9 \times 10^{-6}$ $7.0 \times 10^{-6}$ $1.4 \times 10^{-5}$ $1.4 \times 10^{-5}$ $7.0 \times 10^{-6}$ $3.9 \times 10^{-6}$ $6.7 \times 10^{-6}$ $8.9 \times 10^{-6}$	Multimeter calibrators /HCT-CS-095-40419
			Current, DC	-20 A ~ -10 A -10 A ~ -1 A -1 A ~ -100 mA -100 mA ~ -10 mA -10 mA ~ -1 mA -1 mA ~ -100 μA -100 μA ~ 0 μA 0 μA ~ 100 μA 100 μA ~ 1 mA 1 mA ~ 10 mA 10 mA ~ 100 mA 100 mA ~ 1 A 1 A ~ 10 A		$1.0 \times 10^{-3}$ $4.7 \times 10^{-4}$ $1.2 \times 10^{-4}$ $4.7 \times 10^{-5}$ $5.3 \times 10^{-5}$ $5.6 \times 10^{-5}$ $1.4 \times 10^{-4}$ $1.4 \times 10^{-4}$ $5.6 \times 10^{-5}$ $5.3 \times 10^{-5}$ $4.7 \times 10^{-5}$ $1.2 \times 10^{-4}$ $4.7 \times 10^{-4}$	

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field Code	Range	CMC (The Confidence Level is about 95 %)	Comments
Resistance	40419	0 Ω ~ 100 Ω 100 Ω ~ 1 kΩ 1 kΩ ~ 10 kΩ 10 kΩ ~ 100 kΩ 100 kΩ ~ 1 MΩ 1 MΩ ~ 10 MΩ 10 MΩ ~ 100 MΩ 100 MΩ ~ 1 GΩ	$4.0 \times 10^{-6}$ $4.0 \times 10^{-6}$ $4.6 \times 10^{-6}$ $9.2 \times 10^{-6}$ $1.7 \times 10^{-5}$ $1.2 \times 10^{-5}$ $2.5 \times 10^{-5}$ $6.2 \times 10^{-4}$	
Voltage AC		(1 mV ~ 100 mV) 60 Hz ~ 500 Hz 500 Hz ~ 1 kHz 1 kHz ~ 10 kHz 10 kHz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz (100 mV ~ 1 V) 60 Hz ~ 500 Hz 500 Hz ~ 1 kHz 1 kHz ~ 10 kHz 10 kHz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz (1 V ~ 10 V) 60 Hz ~ 500 Hz 500 Hz ~ 1 kHz 1 kHz ~ 10 kHz 10 kHz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz (10 V ~ 100 V) 60 Hz ~ 500 Hz 500 Hz ~ 1 kHz 1 kHz ~ 10 kHz 10 kHz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz (100 V ~ 1 000 V) 60 Hz ~ 500 Hz 500 Hz ~ 1 kHz 1 kHz ~ 10 kHz 10 kHz ~ 20 kHz	$1.1 \times 10^{-4}$ $1.1 \times 10^{-4}$ $1.1 \times 10^{-4}$ $1.2 \times 10^{-4}$ $1.7 \times 10^{-4}$ $1.7 \times 10^{-4}$ $4.7 \times 10^{-5}$ $4.7 \times 10^{-5}$ $4.7 \times 10^{-5}$ $4.7 \times 10^{-5}$ $7.0 \times 10^{-5}$ $7.7 \times 10^{-5}$ $4.7 \times 10^{-5}$ $4.7 \times 10^{-5}$ $4.7 \times 10^{-5}$ $4.7 \times 10^{-5}$ $7.0 \times 10^{-5}$ $7.7 \times 10^{-5}$ $5.3 \times 10^{-5}$ $5.3 \times 10^{-5}$ $5.3 \times 10^{-5}$ $6.1 \times 10^{-5}$ $8.6 \times 10^{-5}$ $9.9 \times 10^{-5}$ $1.1 \times 10^{-4}$ $1.1 \times 10^{-4}$ $1.1 \times 10^{-4}$ $1.6 \times 10^{-4}$	
Current, AC		(10 μA ~ 100 μA) 60 Hz ~ 500 Hz 500 Hz ~ 1 kHz 1 kHz ~ 5 kHz 5 kHz ~ 10 kHz (100 μA ~ 1 mA) 60 Hz ~ 500 Hz 500 Hz ~ 1 kHz 1 kHz ~ 5 kHz 5 kHz ~ 10 kHz	$1.4 \times 10^{-4}$ $1.4 \times 10^{-4}$ $2.2 \times 10^{-4}$ $2.2 \times 10^{-4}$ $9.9 \times 10^{-5}$ $9.9 \times 10^{-5}$ $1.4 \times 10^{-4}$ $1.4 \times 10^{-4}$	

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field Code	Range	CMC (The Confidence Level is about 95 %)	Comments
Current, AC	40419	(1 mA ~ 10 mA) 60 Hz ~ 500 Hz 500 Hz ~ 1 kHz 1 kHz ~ 5 kHz 5 kHz ~ 10 kHz  (10 mA ~ 100 mA) 60 Hz ~ 500 Hz 500 Hz ~ 1 kHz 1 kHz ~ 5 kHz 5 kHz ~ 10 kHz  (100 mA ~ 1 A) 60 Hz ~ 500 Hz 500 Hz ~ 1 kHz 1 kHz ~ 5 kHz 5 kHz ~ 10 kHz  (1 A ~ 10 A) 60 Hz ~ 500 Hz 500 Hz ~ 1 kHz	 $9.9 \times 10^{-5}$ $9.9 \times 10^{-5}$ $1.4 \times 10^{-4}$ $1.4 \times 10^{-4}$  $1.1 \times 10^{-4}$ $1.1 \times 10^{-4}$ $1.5 \times 10^{-4}$ $1.5 \times 10^{-4}$  $2.4 \times 10^{-4}$ $2.4 \times 10^{-4}$ $3.4 \times 10^{-4}$ $3.4 \times 10^{-4}$  $5.9 \times 10^{-4}$ $5.9 \times 10^{-4}$	
Oscilloscopes  Voltage, DC          Square wave voltage          Bandwidth Level          Time mark	40421	0 mV ~ 5 mV 5 mV ~ 10 mV 10 mV ~ 25 mV 25 mV ~ 50 mV 50 mV ~ 100 mV 100 mV ~ 250 mV 250 mV ~ 500 mV 500 mV ~ 1 V 1 V ~ 25 V 25 V ~ 50 V 50 V ~ 100 V 100 V ~ 200 V  (1 kHz) 0 mV ~ 5 mV 5 mV ~ 10 mV 10 mV ~ 25 mV 25 mV ~ 50 mV 50 mV ~ 250 mV 250 mV ~ 50 V 50 V ~ 100 V  (50 kHz ~ 100 MHz) 12 mV ~ 3 V (100 MHz ~ 550 MHz) 12 mV ~ 3 V (550 MHz ~ 1.0 GHz) 12 mV ~ 3 V  10 ns ~ 50 ns 50 ns ~ 500 ns 500 ns ~ 5 μs 5 μs ~ 50 μs 50 μs ~ 500 μs 500 μs ~ 5 ms 5 ms ~ 50 ms 50 ms ~ 500 ms 500 ms ~ 1 s	 $6.1 \times 10^{-3}$ $3.2 \times 10^{-3}$ $1.5 \times 10^{-3}$ $8.7 \times 10^{-4}$ $5.8 \times 10^{-4}$ $4.1 \times 10^{-4}$ $3.5 \times 10^{-4}$ $3.3 \times 10^{-4}$ $3.0 \times 10^{-4}$ $2.9 \times 10^{-4}$ $3.0 \times 10^{-4}$ $2.9 \times 10^{-4}$  $3.7 \times 10^{-3}$ $2.4 \times 10^{-3}$ $1.7 \times 10^{-3}$ $1.5 \times 10^{-3}$ $1.3 \times 10^{-3}$ $1.2 \times 10^{-3}$ $2.3 \times 10^{-3}$  $2.0 \times 10^{-2}$ $3.6 \times 10^{-2}$ $4.8 \times 10^{-2}$  $6.0 \times 10^{-5}$ $6.0 \times 10^{-4}$ $6.0 \times 10^{-6}$ $6.0 \times 10^{-5}$ $6.0 \times 10^{-4}$ $6.0 \times 10^{-6}$ $6.0 \times 10^{-5}$ $6.0 \times 10^{-4}$ $6.0 \times 10^{-6}$	Oscilloscope calibrators, Multimeter calibrators RF signal generators, Powermeters /HCT-CS-080-40421

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field Code	Range	CMC (The Confidence Level is about 95 %)	Comments
LF phase meters Voltage, AC  Current, AC  Phase	40422	60 Hz (0 ~ 1) V (1 ~ 10) V (10 ~ 100) V (100 ~ 1 000) V 60 Hz (0 ~ 1) A (1 ~ 2) A (2 ~ 5) A (5 ~ 10) A 60 Hz (0 ~ 360)°	0.26 mV 2.5 mV 32 mV 0.36 V 0.70 mA 1.5 mA 6.2 mA 9.5 mA 0.013°	Phase Calibrator / HCT-CS-217-40422
Volt/Current recorders Voltage, DC  Current, DC	40424	0 mV ~ 1 mV 1 mV ~ 2 mV 2 mV ~ 5 mV 5 mV ~ 10 mV 10 mV ~ 20 mV 20 mV ~ 50 mV 50 mV ~ 100 mV 100 mV ~ 200 mV 200 mV ~ 500 mV 500 mV ~ 1 V 1 V ~ 2 V 2 V ~ 5 V 5 V ~ 10 V 10 V ~ 20 V 20 V ~ 50 V 50 V ~ 100 V 100 V ~ 200 V 0 mA ~ 1 mA 1mA ~ 10 mA 10 mA ~ 100 mA 100 mA ~ 1 A	$5.9 \times 10^{-4}$ $3.0 \times 10^{-4}$ $1.7 \times 10^{-4}$ $8.8 \times 10^{-5}$ $4.7 \times 10^{-5}$ $1.2 \times 10^{-4}$ $5.8 \times 10^{-5}$ $2.9 \times 10^{-5}$ $1.2 \times 10^{-4}$ $5.8 \times 10^{-5}$ $2.9 \times 10^{-5}$ $1.2 \times 10^{-4}$ $5.8 \times 10^{-5}$ $3.0 \times 10^{-5}$ $1.2 \times 10^{-4}$ $5.8 \times 10^{-5}$ $3.1 \times 10^{-5}$ $5.8 \times 10^{-4}$ $5.8 \times 10^{-4}$ $5.8 \times 10^{-4}$ $5.9 \times 10^{-4}$	Multimeter calibrators /HCT-CS-100-40424
LF signal generators Output frequency  Output level	40426	1 Hz ~ 1 MHz (1 ~ 10) MHz (10 ~ 250) MHz (1 mV ~ 100 mV) DC ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz (100 mV ~ 1 V) 20 Hz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz (1 V ~ 10 V) 20 Hz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 100 kHz (10 V ~ 100 V) 20 Hz ~ 20 kHz 20 kHz ~ 50 kHz 50 kHz ~ 1 kHz	$5.8 \times 10^{-9}$ 58 mHz 0.58 Hz  $4.0 \times 10^{-4}$ $9.3 \times 10^{-4}$ $9.3 \times 10^{-4}$  $2.7 \times 10^{-4}$ $7.0 \times 10^{-4}$ $7.1 \times 10^{-4}$  $2.6 \times 10^{-4}$ $7.0 \times 10^{-4}$ $7.1 \times 10^{-4}$  $2.6 \times 10^{-4}$ $7.0 \times 10^{-4}$ $7.1 \times 10^{-4}$	Counters,Digital Multimeter, Measuring Receiver, Oscilloscope /HCT-CS-101-40426



404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field Code	Range	CMC (The Confidence Level is about 95 %)	Comments
Step Generator mAx Offset Voltage	40432	0 mV ~ 500 mV 500 mV ~ 5 V 5 V ~ 20 V	$1.2 \times 10^{-3}$ $1.2 \times 10^{-4}$ $2.9 \times 10^{-4}$	
Waveform analyzers	40433			Multimeter calibrators, Voltage calibrators Counters/HCT-CS-104-40433
Output frequency		1 Hz ~1 MHz	$5.8 \times 10^{-6}$	
Output level		(1 mV ~ 100 mV) DC ~ 1 kHz	$1.9 \times 10^{-4}$	
		1 kHz ~ 20 kHz	$4.0 \times 10^{-4}$	
		20 kHz ~ 100 kHz	$9.3 \times 10^{-4}$	
Output level		(100 mV ~ 1 V) DC ~ 1 kHz	$1.5 \times 10^{-4}$	
		1 kHz ~ 20 kHz	$2.7 \times 10^{-4}$	
		20 kHz ~ 100 kHz	$7.1 \times 10^{-4}$	
		(1 V ~ 10 V) DC ~ 1 kHz	$1.5 \times 10^{-4}$	
		1 kHz ~ 20 kHz	$2.6 \times 10^{-4}$	
		20 kHz ~ 100 kHz	$7.0 \times 10^{-4}$	
		(10 V ~ 100 V) DC ~ 1 kHz	$1.5 \times 10^{-4}$	
		1 kHz ~ 20 kHz	$2.6 \times 10^{-4}$	
		20 kHz ~ 100 kHz	$7.1 \times 10^{-4}$	
Output DC offset		- 20 V ~ 20 V	$5.8 \times 10^{-5}$	
Output flatness		20 Hz ~ 20 kHz	0.006 dB	
		20 kHz ~ 100 kHz	0.009 dB	
Output impedance		(50 ~ 600) $\Omega$	$1.2 \times 10^{-4}$	
Input frequency		1 Hz ~ 1 MHz	$5.8 \times 10^{-5}$	
AC input Level		(DC ~ 100 mV) DC ~ 20 kHz	$2.5 \times 10^{-4}$	
		20 kHz ~ 100 kHz	$4.6 \times 10^{-4}$	
		100 mV ~ 1 V DC ~ 20 kHz	$1.6 \times 10^{-4}$	
		20 kHz ~ 100 kHz	$1.5 \times 10^{-4}$	
		(1 V ~ 10 V) DC ~ 20 kHz	$1.6 \times 10^{-4}$	
		20 kHz ~ 100 kHz	$1.4 \times 10^{-4}$	
		(10 V ~ 100 V) DC ~ 20 kHz	$1.2 \times 10^{-4}$	
		20 kHz ~ 100 kHz	$2.0 \times 10^{-4}$	
		(100 V ~ 300 V) DC ~ 1 kHz	$2.3 \times 10^{-4}$	
		1 kHz ~ 10 kHz	$2.7 \times 10^{-4}$	
AC input Level		0 V ~ 300 V	$5.9 \times 10^{-5}$	
Fillter(weight,low,high pass, etc)		400 Hz ~ 80 kHz	$1.9 \times 10^{-4}$	

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field Code	Range	CMC (The Confidence Level is about 95 %)	Comments
AC/DC high voltage probes Voltage, DC	40435	-15 kV ~ -10 kV	$2.9 \times 10^{-4}$	High voltage source /HCT-CS-056-40435
		-10 kV ~ -1 kV	$5.8 \times 10^{-4}$	
		-1 kV ~ -100 V	$5.8 \times 10^{-4}$	
		-100 V ~ -10 V	$5.8 \times 10^{-4}$	
		-10 V ~ -1 V	$5.8 \times 10^{-4}$	
		-1 V ~ -0 V	$5.8 \times 10^{-4}$	
		0 V ~ 1 V	$5.8 \times 10^{-4}$	
		1 V ~ 10 V	$5.8 \times 10^{-4}$	
		10 V ~ 100 V	$5.8 \times 10^{-4}$	
		100 V ~ 1 kV	$5.8 \times 10^{-4}$	
Voltage, AC		(0 V ~ 1 V)	$5.9 \times 10^{-4}$	
		60 Hz ~ 1 kHz		
		(1 V ~ 10 V)		
		60 Hz ~ 1 kHz	$5.9 \times 10^{-4}$	
	(10 V ~ 100 V)	$5.9 \times 10^{-4}$		
	60 Hz ~ 1 kHz			
	(100 V ~ 1 kV)	$6.0 \times 10^{-4}$		
	60 Hz ~ 1 kHz			

406. Radio frequency measurements

Measured Quantity Instrument or Gauge	Field Code	Range	CMC (The Confidence Level is about 95 %)	Comments
RF amplifiers Gain	40601	(30 kHz ~ 1 GHz)		RF spectrum analyzer, Network analyzer / HCT-CS-105-40601
		0 dB ~ 30 dB	0.08 dB	
		30 dB ~ 60 dB	0.11 dB	
		(1 GHz ~ 8 GHz)		
		0 dB ~ 30 dB	0.08 dB	
		30 dB ~ 60 dB	0.11 dB	
		(8 GHz ~ 18 GHz)		
Harmonics		0 dB ~ 30 dB	0.15 dB	
		(30 kHz ~ 18 GHz)		
		-100 dBc ~ 0 dBc	1.30 dB	
Coaxial attenuators Attenuation	40602	(30 kHz ~ 6 GHz)		Attenuator calibrator, Network analyzer, Calibration kit / HCT-CS-108-40602
		0 dB ~ 30 dB	0.04 dB	
		30 dB ~ 60 dB	0.07 dB	
		60 dB ~ 90 dB	0.09 dB	
		90 dB ~ 110 dB	0.12 dB	
		(6 GHz ~ 12 GHz)		
		0 dB ~ 30 dB	0.04 dB	
		30 dB ~ 60 dB	0.07 dB	
		60 dB ~ 90 dB	0.09 dB	
		90 dB ~ 110 dB	0.25 dB	
		(12 GHz ~ 18 GHz)		
		0 dB ~ 30 dB	0.04 dB	
		30 dB ~ 60 dB	0.07 dB	
		60 dB ~ 90 dB	0.09 dB	
	90 dB ~ 110 dB	0.74 dB		

406. Radio frequency measurements

Measured Quantity Instrument or Gauge	Field Code	Range	CMC (The Confidence Level is about 95 %)	Comments		
Burst pulse generators Output Voltage	40605	50 Ω		Attenuator, Oscilloscope / HCT-CS-109-40605		
		1 V ~ 4 kV	$2.9 \times 10^{-2}$			
		-1 V ~ -4 kV	$2.9 \times 10^{-2}$			
Rise/Fall Time		(1 ~ 10) ns	$4.6 \times 10^{-3}$			
Pulse Width		(10 ~ 100) ns	$2.3 \times 10^{-3}$			
Repetition Frequency		(1 ~ 2.5) kHz	$2.3 \times 10^{-4}$			
		(2.5 ~ 5) kHz	$1.2 \times 10^{-4}$			
	100 kHz	$5.8 \times 10^{-4}$				
Duration	(10 ~ 20) ms	$1.5 \times 10^{-3}$				
Burst Rate	100 ms ~ 200 ms	$2.9 \times 10^{-3}$				
	200 ms ~ 300 ms	$1.9 \times 10^{-3}$				
Electrostatic Discharge Generators Electrostatic Discharge Peak Current	40613	(0 ~ 7.5) A	$3.4 \times 10^{-2}$	Electrostatic Discharge Measurement System, Oscilloscope / HCT-CS-111-40613		
		(7.5 ~ 15) A	$3.4 \times 10^{-2}$			
		(15 ~ 22.5) A	$3.4 \times 10^{-2}$			
		(22.5 ~ 30) A	$3.4 \times 10^{-2}$			
		(30 ~ 40) A	$3.4 \times 10^{-2}$			
		(-0 ~ -7.5) A	$3.4 \times 10^{-2}$			
		(-7.5 ~ -15) A	$3.4 \times 10^{-2}$			
		(-15 ~ -22.5) A	$3.4 \times 10^{-2}$			
		(-22.5 ~ -30) A	$3.4 \times 10^{-2}$			
		(-30 ~ -40) A	$3.4 \times 10^{-2}$			
30 ns Current		(0 ~ 4) A	$3.5 \times 10^{-2}$			
		(4 ~ 8) A	$3.5 \times 10^{-2}$			
		(8 ~ 12) A	$3.5 \times 10^{-2}$			
		(12 ~ 16) A	$3.4 \times 10^{-2}$			
		(16 ~ 25) A	$3.4 \times 10^{-2}$			
		(-0 ~ -4) A	$3.5 \times 10^{-2}$			
		(-4 ~ -8) A	$3.5 \times 10^{-2}$			
		(-8 ~ -12) A	$3.5 \times 10^{-2}$			
		(-12 ~ -16) A	$3.4 \times 10^{-2}$			
		(-16 ~ -25) A	$3.4 \times 10^{-2}$			
60 ns Current		(0 ~ 2) A	$3.6 \times 10^{-2}$			
		(2 ~ 4) A	$3.7 \times 10^{-2}$			
		(4 ~ 6) A	$3.6 \times 10^{-2}$			
		(6 ~ 8) A	$3.5 \times 10^{-2}$			
		(8 ~ 15) A	$3.5 \times 10^{-2}$			
		(-0 ~ -2) A	$3.6 \times 10^{-2}$			
		(-2 ~ -4) A	$3.7 \times 10^{-2}$			
		(-4 ~ -6) A	$3.6 \times 10^{-2}$			
		(-6 ~ -8) A	$3.5 \times 10^{-2}$			
		(-8 ~ -15) A	$3.5 \times 10^{-2}$			
Rise/Fall Time		(0.6 ~ 1) ns	$8.1 \times 10^{-2}$			
EMC receivers Frequency Accuracy		40614	10 MHz ~ 1 GHz		$6.4 \times 10^{-11}$	Calibration pulse generator Frequency standard, Power sensor, RF signal generator standard attenuator, Network analyzer / HCT-CS-112-40614
Input Impedence			30 kHz ~ 1 GHz		$6.4 \times 10^{-2}$	
SWR	1 GHz ~ 18 GHz		$1.0 \times 10^{-1}$			



406. Radio frequency measurements

Measured Quantity Instrument or Gauge	Field Code	Range	CMC (The Confidence Level is about 95 %)	Comments
Frequency Response(CW)	40614	20 Hz ~ 1 GHz	0.12 dB	
		1 GHz ~ 10 GHz	0.15 dB	
		10 GHz ~ 18 GHz	0.18 dB	
Frequency Response(Pulse)		10 kHz ~ 1 GHz	0.34 dB	
Frequency Response, Repetition (CISPR Band)		10 kHz ~ 1 GHz	0.34 dB	
		(10 ~ 150) kHz	0.08 dB	
	150 kHz ~ 30 MHz	0.09 dB		
	(30 ~ 300) MHz	0.10 dB		
	300 MHz ~ 1 GHz	0.11 dB		
Selectivity	100 kHz ~ 1 GHz	0.07 dB		
Noise Level	DC ~ 18 GHz	0.03 dB		
Mobile communication test sets	40621	DC ~ 4 GHz	$6.4 \times 10^{-11}$	Frequency stanard, Power sensor, Measuring receiver RF spectrum analyzer / HCT-CS-115-40621
Frequency Output Level		10 MHz ~ 4 GHz		
		7 dBm ~ -30 dBm	0.12 dB	
		-30 dBm ~ -60 dBm	0.13 dB	
		-60 dBm ~ -100 dBm	0.15 dB	
		-100 dBm ~ -120 dBm	0.30 dB	
Input frequency modulation		(0 ~ 400) kHz	$1.2 \times 10^{-2}$	
Amplitude modulation		(0 ~ 100) %	$1.7 \times 10^{-2}$	
Audio AC Level		75 mV	$5.8 \times 10^{-5}$	
		700 mV	$5.8 \times 10^{-5}$	
	4 V	$5.8 \times 10^{-5}$		
Audio DC Level	1 V	$5.8 \times 10^{-5}$		
	4 V	$5.8 \times 10^{-5}$		
Modulation meters	40622	(9 kHz ~ 18 GHz)	$1.7 \times 10^{-2}$	Measuring receiver, AM/FM test source / HCT-CS-116-40622
Amplitude modulation		(0 ~ 99) %		
Frequency modulation		(9 kHz ~ 18 GHz)		
		(0 ~ 400) kHz	$1.2 \times 10^{-2}$	
Phase modulation		(9 kHz ~ 18 GHz)	$1.2 \times 10^{-2}$	
		(0 ~ 400) rad		
Network analyzers	40623	30 kHz ~ 18 GHz	$6.4 \times 10^{-11}$	Calibration kit, Power sensor Frequency standrad, Standard attenuator, Mismatch / HCT-CS-117-40623
Frequency				
Output power		(100 kHz ~ 18 GHz)		
		10 dBm ~ -30 dBm	0.12 dB	
		-30 dBm ~ -60 dBm	0.13 dB	
		-60 dBm ~ -70 dBm	0.15 dB	
Output power Linearity		(30 kHz ~ 18 GHz)		
		10 dBm ~ -20 dBm	0.025 dB	
		-20 dBm ~ -40 dBm	0.064 dB	
		-40 dBm ~ -60 dBm	0.075 dB	
	-60 dBm ~ -80 dBm	0.086 dB		
	-80 dBm ~ -90 dBm	0.091 dB		

406. Radio frequency measurements

Measured Quantity Instrument or Gauge	Field Code	Range	CMC (The Confidence Level is about 95 %)	Comments	
Directivity	40623	30 kHz ~ 6 GHz	0.16 dB		
Source Match		30 kHz ~ 6 GHz	0.26 dB		
Load Match		30 kHz ~ 6 GHz	$7.6 \times 10^{-3}$		
Transmission Tracking		30 kHz ~ 6 GHz	$4.0 \times 10^{-3}$		
Noise impulse simulators	40626			High Voltage Probe, Oscilloscope, Pulse Width measure /HCT-CS-119-40626	
Output Level		-5 kV ~ -4 kV	$4.1 \times 10^{-2}$		
		-4 kV ~ -3 kV	$4.1 \times 10^{-2}$		
		-3 kV ~ -2 kV	$4.1 \times 10^{-2}$		
		-2 kV ~ -1 kV	$3.0 \times 10^{-2}$		
		-1 kV ~ -500 V	$3.0 \times 10^{-2}$		
		-500 V ~ -200 V	$3.0 \times 10^{-2}$		
		-200 V ~ -100 V	$3.0 \times 10^{-2}$		
		100 V ~ 200 V	$3.0 \times 10^{-2}$		
		200 V ~ 500 V	$3.0 \times 10^{-2}$		
		500 V ~ 1 kV	$3.0 \times 10^{-2}$		
		1 kV ~ 2 kV	$3.0 \times 10^{-2}$		
		2 kV ~ 3 kV	$4.1 \times 10^{-2}$		
		3 kV ~ 4 kV	$4.1 \times 10^{-2}$		
		4 kV ~ 5 kV	$4.1 \times 10^{-2}$		
Pulse Width	80 ns ~ 100 ns	$1.2 \times 10^{-2}$			
	800 ns ~ 1 μs	$1.2 \times 10^{-2}$			
Pulse generators	40638			Frequency counters HCT-CS-123-40646	
Period		300 ps ~ 1 s	$5.8 \times 10^{-9}$		
		Delay	1 s ~ 100 ns		$1.2 \times 10^{-3}$
			100 ns ~ 10 ns		$1.3 \times 10^{-3}$
10 ns ~ 1 ns			$5.9 \times 10^{-3}$		
Double Pulse		1 s ~ 100 ns	$1.2 \times 10^{-3}$		
		100 ns ~ 10 ns	$1.3 \times 10^{-3}$		
		10 ns ~ 1 ns	$5.9 \times 10^{-3}$		
Width		1 s ~ 100 ns	$1.2 \times 10^{-3}$		
		100 ns ~ 10 ns	$1.3 \times 10^{-3}$		
		10 ns ~ 1 ns	$5.9 \times 10^{-3}$		
Transition Time		1 s ~ 100 ns	$1.2 \times 10^{-3}$		
		100 ns ~ 10 ns	$1.3 \times 10^{-3}$		
		10 ns ~ 1 ns	$5.9 \times 10^{-3}$		
DC Level		10 mV ~ 100 V	$5.8 \times 10^{-4}$		
RF signal generators	40640			Measuring receiver, Power sensor, Frequency standard, RF spectrum analyzer, / HCT-CS-124-40640	
Frequency Accuracy		DC ~ 18 GHz	$6.4 \times 10^{-11}$		
Relative output level (reference to 0 dBm)		(100 kHz ~ 18 GHz)			
		0 dB ~ -20 dB	0.025 dB		
		-20 dB ~ -40 dB	0.064 dB		
		-40 dB ~ -60 dB	0.075 dB		
		-60 dB ~ -80 dB	0.086 dB		
		-80 dB ~ -100 dB	0.091 dB		
		-100 dB ~ -120 dB	0.290 dB		

406. Radio frequency measurements

Measured Quantity Instrument or Gauge	Field Code	Range	CMC (The Confidence Level is about 95 %)	Comments
Absolute output level	40640	(2.5 MHz ~ 18 GHz)		
		20 dBm ~ 10 dBm	0.12 dB	
		10 dBm ~ -30 dBm	0.12 dB	
		-30 dBm ~ -60 dBm	0.13 dB	
Amplitude modulation		150 kHz ~ 18 GHz		
		(0 ~ 100) %	$1.7 \times 10^{-2}$	
Frequency modulation		150 kHz ~ 18 GHz		
	(0 ~ 400) kHz	$1.2 \times 10^{-2}$		
Phase modulation	150 kHz ~ 18 GHz			
	(0 ~ 400) rad	$1.2 \times 10^{-2}$		
Modulation distortion	150 kHz ~ 18 GHz			
	(0 ~ 100) %	$1.2 \times 10^{-2}$		
Harmonics	(30 kHz ~ 5 GHz)			
	0 dBc ~ -100 dBc	1.2 dB		
	(5 GHz ~ 18 GHz)			
	0 dBc ~ -100 dBc	1.5 dB		
RF spectrum analyzers	40641			Power sensor, Frequency standard, Standard attenuator RF signal generator / HCT-CS-125-40641
REF Frequency		DC ~ 1 GHz		
Reference level		(10 MHz ~ 1 GHz)		
		0 dBm ~ -30 dBm	0.12 dB	
Frequency Readout		DC ~ 18 GHz	$9.6 \times 10^{-4} \cdot \text{SPAN}$	
Marker frequency counter		DC ~ 18 GHz	1 Hz	
Frequency SPAN		DC ~ 18 GHz	$1.4 \times 10^{-3} \cdot \text{SPAN}$	
RBW Selectivity		1 Hz ~ 500 MHz	$1.0 \times 10^{-2}$	
RBW Switching Error		1 Hz ~ 500 MHz	0.05 dB	
INT ATT Switching		0 dB ~ 100 dB	0.07 dB	
Scale Fidelity		0 dB ~ 100 dB	0.07 dB	
Frequency Response		0 dB ~ 100 dB	0.07 dB	
Frequency Response	100 kHz ~ 1 GHz	0.12 dB		
	1 GHz ~ 10 GHz	0.15 dB		
	10 GHz ~ 18 GHz	0.18 dB		
Average Noise Level	DC ~ 18 GHz	0.99 dB		
Surge generators	40643			Oscilloscope, Current Probe High Voltage Probe /HCT-CS-126-40643
Output Voltage		1 V ~ 500 V	$3.0 \times 10^{-2}$	
Voltage		0.5 kV ~ 1 kV	$3.1 \times 10^{-2}$	
		1 kV ~ 2 kV	$3.2 \times 10^{-2}$	
		2 kV ~ 4 kV	$3.5 \times 10^{-2}$	
		4 kV ~ 6 kV	$3.3 \times 10^{-2}$	
		6 kV ~ 10 kV	$4.1 \times 10^{-2}$	
		-1 V ~ -500 V	$3.0 \times 10^{-2}$	
		-0.5 kV ~ -1 kV	$3.1 \times 10^{-2}$	
		-1 kV ~ -2 kV	$3.2 \times 10^{-2}$	
		-2 kV ~ -4 kV	$3.5 \times 10^{-2}$	
		-4 kV ~ -6 kV	$3.3 \times 10^{-2}$	
		-6 kV ~ -10 kV	$4.1 \times 10^{-2}$	

406. Radio frequency measurements

Measured Quantity Instrument or Gauge	Field Code	Range	CMC (The Confidence Level is about 95 %)	Comments
Front Time	40643	0.5 μs ~ 1.6 μs	$1.0 \times 10^{-2}$	
		1.6 μs ~ 5 μs	$6.7 \times 10^{-3}$	
		5 μs ~ 30 μs	$1.1 \times 10^{-2}$	
Time to Half Value		40 μs ~ 50 μs	$1.0 \times 10^{-2}$	
		50 μs ~ 700 μs	$7.1 \times 10^{-3}$	
		0.7 ms ~ 1 ms	$5.0 \times 10^{-3}$	
Output Current		50 A ~ 100 A	$3.8 \times 10^{-2}$	
Current		100 A ~ 500 A	$3.7 \times 10^{-2}$	
		500 A ~ 2 000 A	$3.8 \times 10^{-2}$	
		2 000 A ~ 3 000 A	$3.7 \times 10^{-2}$	
	-1 A ~ -20 A	$3.8 \times 10^{-2}$		
	-20 A ~ -50 A	$3.7 \times 10^{-2}$		
	-50 A ~ -100 A	$3.8 \times 10^{-2}$		
	-100 A ~ -500 A	$3.7 \times 10^{-2}$		
	-500 A ~ -2 000 A	$3.8 \times 10^{-2}$		
	-2 000 A ~ -3 000 A	$3.7 \times 10^{-2}$		
Front Time		5 μs ~ 10 μs	$7.8 \times 10^{-3}$	
Time to Half Value		10 μs ~ 25 μs	$1.2 \times 10^{-2}$	
		25 μs ~ 30 μs	$8.3 \times 10^{-3}$	

501. Contact thermometry

Measured Quantity Instrument or Gauge	Field Code	Range	CMC (The Confidence Level is about 95 %)	Comments
Temperature generators: ovens, furnaces, isothermAl liquid baths, ice-point baths, dry- block calibrators Temperature controlled chambers/ovens	50101	(-40 ~ 250) °C	0.81 °C	Standard Thermometers /HCT-CS-134-50101
Temperature indicators/recorders/controllers, temperature calibrators With Sensor	50102	(-40 ~ 250) °C	0.03 °C	Standard Thermometer/ HCTD-CS-039-50103 /HCT-CS-135-50102
Without Sensor		(250 ~ 350) °C	0.09 °C	/HCT-CS-137-50102
Thermoelectric Type		(-40 ~ 1 100) °C	0.22 °C	/HCT-CS-137-50102
Resistance Type		(-40 ~ 420) °C	0.13 °C	/HCT-CS-139-50102
Resistance thermometers; SPRT, IPRT, thermistors, etc Thermometers, resistance	50104	(-40 ~ 250) °C	0.045 °C	Standard Thermometer / HCT-CS-148-50104
Temperature transducers	50107	(-40 ~ 350) °C	0.18 °C	Standard Thermometer / HCT-CS-170-50107