FCC - TEST REPORT

Report Number	: 68.760.18.0480.01	Date of Issue:	August 6, 2018
Model	: CP60		
Product Type	: HUAWEI WIRELESS CHARGER		
Applicant	: Huawei Technologies Co., Ltd.		
Address	: Administration Building, Headquarters of Huawei Technologies Co.,		
	: Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C		
Manufacturer	: Huawei Technologies Co., Ltd.		
Address	: Administration Building, Headquarters of Huawei Technologies Co.,		
	: Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C		
Test Result	: n Positive o Negative		
Total pages including Appendices	: 18		

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1. Table of Contents

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2. Details about the Test Laboratory

Details about the Test Laboratory

Company name:	TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch Building 12&13, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Nanshan District, Shenzhen City, 518052, P. R. China
FCC Registration Number:	514049
IC Registration No.:	10320A
Telephone:	86 755 8828 6998
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3. Description of the Equipment Under Test

Product:	HUAWEI WIRELESS CHARGER
Model no.:	CP60
FCC ID:	QISCP60
Options and accessories:	Adapter and USB Cable
Rating:	5-12Vdc 2A Max supplied by an external adapter
Adapter information:	Manufacturer: Huawei Technologies Co., Ltd. Model: HW-100400U00 Input voltage:100-240V 50/60Hz 1.2A Output voltage:5V ⎓ 2A or 9V ⎓ 2A or 10V ⎓ 4A Max
RF Transmission Frequency:	111-148KHz
Antenna Type:	Integrated loop antenna
Description of the EUT:	The Equipment Under Test (EUT) is a wireless charger which operated at 111-148kHz.

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4. Summary of Test Standards

Test Standards	
FCC Part 18 10-1-17 Edition	Industrial, Scientific, and Medical equipment

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5. Summary of Test Results

Technical Requirements			
FCC Part 18 10-1-17 Edition			
Test Condition		Pages	Test Result
§18.307	Conducted emission AC power port	10	Pass
§18.301	Operating frequencies	--	N/A
§18.305	Field strength	13	Pass
§18.309	Frequency range	See note 2	Pass
§18.303	Prohibited frequency bands	See note 3	Pass

Note 1: N/A=Not Applicable.
Note 2: Because the highest frequency of the internal sources of the EUT is less than 108MHz, so the measurement only is made up to 1GHz.
Note 3: The fundamental frequency of this product is 111-148KHz. Outside the band specified of §18.303, it is considered sufficiently to comply with the provisions of this section.

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6. General Remarks

Remarks

This submittal(s) (test report) is intended for FCC ID: QISCP60, complies with FCC Part 18.

SUMMARY:

All tests according to the regulations cited on page 5 were

n - Performed

o - **Not** Performed

The Equipment under Test

n - **Fulfills** the general approval requirements.

o - **Does not** fulfill the general approval requirements.

Sample Received Date:	July 30, 2018
Testing Start Date:	August 1, 2018
Testing End Date:	August 2, 2018

- TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch -

Reviewed by:	Prepared by:	Tested by:
John Zhi	Alan Xiong	Tree Zhan
Project Manager	Project Engineer	Test Engineer

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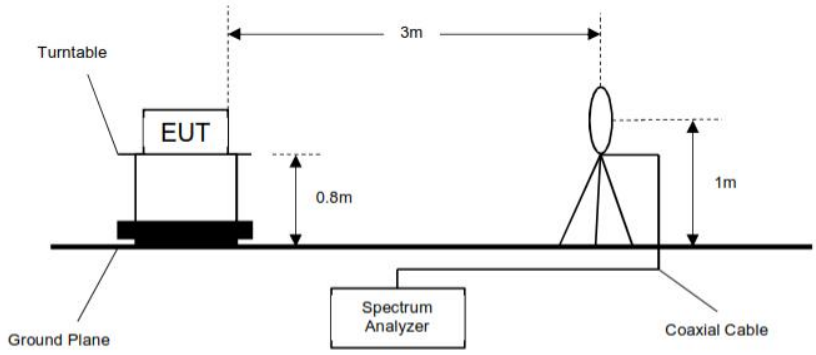
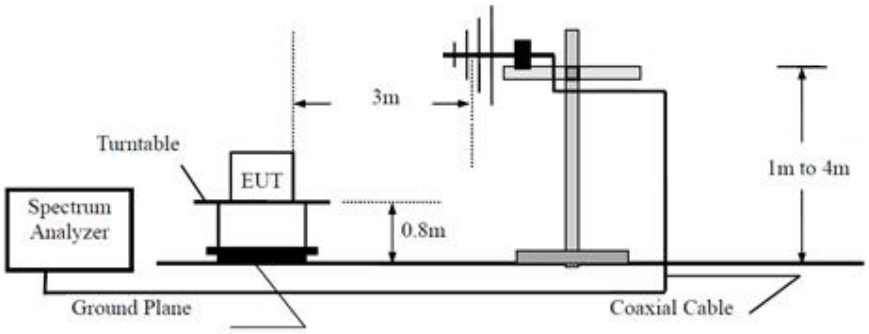
7. Test Setups

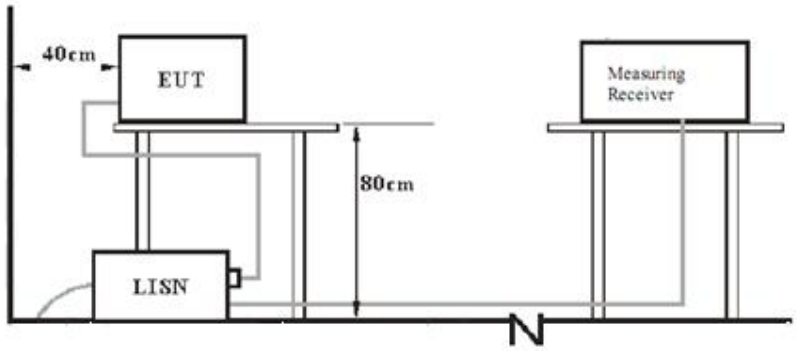
Below 30MHz



30MHz-1GHz



AC Power Line Conducted Emission test setups



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8. Systems test configuration

Auxiliary Equipment Used during Test:

Description	Manufacturer	Model NO.	S/N
Mobile Phone	HUAWEI	---	---

Description	Length	Shielded/unshielded	With / without ferrite
USB Cable	1.0m	Shielded	Without ferrite

9. Technical Requirement

9.1 Conducted Emission Test

Test Method

1. The EUT was placed on a table, which is 0.8m above ground plane
2. The power line of the EUT is connected to the AC mains through an Artificial Mains Network (A.M.N.).
3. Maximum procedure was performed to ensure EUT compliance
4. A EMI test receiver is used to test the emissions from both sides of AC line

Limit

According to §18.307, conducted emissions limit as below:

Frequency MHz	QP Limit dBµV	AV Limit dBµV
0.150-0.500	66-56*	56-46*
0.500-5	56	46
5-30	60	50

*Decreasing linearly with logarithm of the frequency

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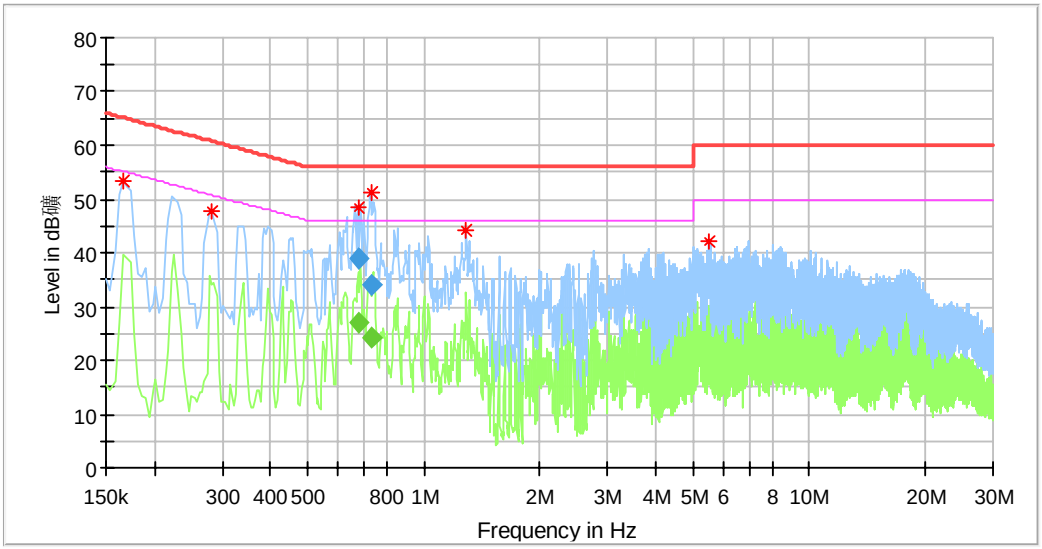
Conducted Emission

Product Type	:	HUAWEI WIRELESS CHARGER
M/N	:	CP60
Operating Condition	:	Charging Mode
Test Specification	:	Line
Comment	:	AC 120V/60Hz



Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.166000	53.33	---	65.16	11.83	L1	10.2
0.282000	47.65	---	60.76	13.11	L1	10.2
0.678500	---	26.98	46.00	19.02	L1	10.2
0.678500	38.86	---	56.00	17.14	L1	10.2
0.730500	---	24.30	46.00	21.70	L1	10.2
0.730500	34.18	---	56.00	21.82	L1	10.2
1.290000	44.14	---	56.00	11.86	L1	10.2
5.510000	42.28	---	60.00	17.72	L1	10.4

*Correct factor=cable loss + LISN factor

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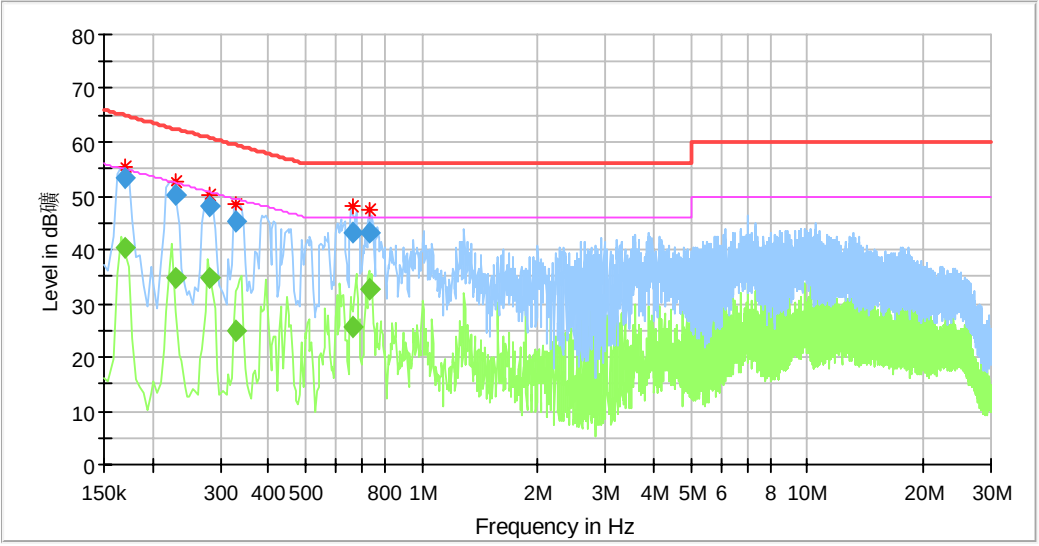
Conducted Emission

Product Type	:	HUAWEI WIRELESS CHARGER
M/N	:	CP60
Operating Condition	:	Charging Mode
Test Specification	:	Neutral
Comment	:	AC 120V/60Hz



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.169500	---	40.43	54.98	14.55	N	10.3
0.169500	53.48	---	64.98	11.50	N	10.3
0.229500	---	34.72	52.47	17.75	N	10.3
0.229500	50.31	---	62.47	12.16	N	10.3
0.281500	---	34.73	50.77	16.04	N	10.3
0.281500	48.09	---	60.77	12.68	N	10.3
0.329500	---	24.92	49.46	24.54	N	10.3
0.329500	45.13	---	59.46	14.33	N	10.3
0.658500	---	25.58	46.00	20.42	N	10.4
0.658500	43.23	---	56.00	12.77	N	10.4
0.729500	---	32.79	46.00	13.21	N	10.4
0.729500	43.15	---	56.00	12.85	N	10.4

*Correct factor=cable loss + LISN factor

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9.2 Radiated Emission Test for 9KHz-30MHz

Test Method

1: Field strength measurements are made in the frequency range of 9 kHz to 30 MHz using a calibrated loop antenna as specified in ANSI C63.4 clause 4.5.2, positioned with its plane vertical at the specified distance from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. The center of the loop shall be 1 m above the ground. This method is applicable for radiated radio-noise measurements from all units, cables, power cords, and interconnect cabling or wiring.
2: For certain applications, the loop antenna plane may also need to be positioned horizontally at the specified distance from the EUT.

Limits

According to §18.307, Field strength limit as below:

Equipment	Operating frequency	RF Power generated by equipment (watts)	Field strength limit (uV/m)	Distance (meters)
Any type unless otherwise specified (miscellaneous)	Any ISM frequency	Below 500 500 or more	25 25 × SQRT(power/500)	300 [1]300
	Any non-ISM frequency	Below 500 500 or more	15 15 × SQRT(power/500)	300 [1]300
Industrial heaters and RF stabilized arc welders	On or below 5,725 MHz Above 5,725 MHz	Any Any	10 ([2])	1,600 ([2])
Medical diathermy	Any ISM frequency Any non-ISM frequency	Any Any	25 15	300 300
Ultrasonic	Below 490 kHz	Below 500 500 or more	2,400/F(kHz) 2,400/F(kHz) × SQRT(power/500)	300 [3]300
	490 to 1,600 kHz Above 1,600 kHz	Any Any	24,000/F(kHz) 15	30 30
Induction cooking ranges	Below 90 kHz On or above 90 kHz	Any Any	1,500 300	[4]30 [4]30

[1]Field strength may not exceed 10 μV/m at 1600 meters. Consumer equipment operating below 1000 MHz is not permitted the increase in field strength otherwise permitted here for power over 500 watts.
[2]Reduced to the greatest extent possible.
[3]Field strength may not exceed 10 μV/m at 1600 meters. Consumer equipment is not permitted the increase in field strength otherwise permitted here for over 500 watts.
[4]Induction cooking ranges manufactured prior to February 1, 1980, shall be subject to the field strength limits for miscellaneous ISM equipment.

Note 1: Limit 3m(dBμV/m)=Limit 300m(dBμV/m)+40Log(300m/3m) (Below 30MHz)
Note 2: Limit 3m(dBμV/m)=Limit 300m(dBμV/m)+20Log(300m/3m) (Above 30MHz)
Note 3: this product is a wireless charger which operated at 111-148kHz. So, it belongs to miscellaneous with non-SIM frequency.

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Radiated Emission for 9KHz-30MHz

Product Type : HUAWEI WIRELESS CHARGER
M/N : CP60
Operating Condition : Charging Mode
Comment : 9KHz-30MHz

Frequency Band	Frequency	Emission Level	Polarization	Limit	Detector	Margin	Correct factor	Result
	MHz	dBµV/m		dBµV/m		dBµV/m	(dB)	
9KHz-30MHz	0.149	56.47	H	103.52	QP	47.03	19.7	Pass
	0.150	66.02	H	103.52	QP	37.48	19.7	Pass
	0.195	55.21	H	103.52	QP	48.29	19.7	Pass
	0.245	53.48	H	103.52	QP	50.02	19.7	Pass
	0.00900	54.62	V	103.52	QP	48.88	20.8	Pass
	0.149	57.41	V	103.52	QP	46.09	19.7	Pass
	0.150	62.10	V	103.52	QP	41.40	19.7	Pass
	0.0240	52.04	V	103.52	QP	51.46	20.0	Pass

Remark:
1) Corrector factor = Antenna Factor + Cable Loss
2) The worst case data were reported and no other spurious and harmonics emissions were reported greater than listed emission above table.

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9.3 Radiated Emission Test for 30MHz-1GHz

Test Method

1: The EUT was place on a turn table which is 0.8m above ground for below 1GHz at 3 meters chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

2: The EUT was set 3 meters away from the interference – receiving antenna, which was mounted on the top of a variable – height antenna tower.

3: The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

4: For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

5: Use the following spectrum analyzer settings According to C63.4:

Span = wide enough to capture the peak level of the in-band emission and all spurious
RBW = 100 KHz, VBW≥RBW for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.

Note:

1: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 KHz for Quasi-peak detection (QP) at frequency below 1GHz.

Limits

According to §18.307, Field strength limit as below:

Equipment	Operating frequency	RF Power generated by equipment (watts)	Field strength limit (μV/m)	Distance (meters)
Any type unless otherwise specified (miscellaneous)	Any ISM frequency	Below 500 500 or more	25 25 × SQRT(power/500)	300 [1]300
	Any non-ISM frequency	Below 500 500 or more	15 15 × SQRT(power/500)	300 [1]300
Industrial heaters and RF stabilized arc welders	On or below 5,725 MHz Above 5,725 MHz	Any Any	10 ([2])	1,600 ([2])
Medical diathermy	Any ISM frequency Any non-ISM frequency	Any Any	25 15	300 300
Ultrasonic	Below 490 kHz	Below 500 500 or more	2,400/F(kHz) 2,400/F(kHz) × SQRT(power/500)	300 [3]300
	490 to 1,600 kHz Above 1,600 kHz	Any Any	24,000/F(kHz) 15	30 30
Induction cooking ranges	Below 90 kHz On or above 90 kHz	Any Any	1,500 300	[4]30 [4]30

[1]Field strength may not exceed 10 μV/m at 1600 meters. Consumer equipment operating below 1000 MHz is not permitted the increase in field strength otherwise permitted here for power over 500 watts.
[2]Reduced to the greatest extent possible.
[3]Field strength may not exceed 10 μV/m at 1600 meters. Consumer equipment is not permitted the increase in field strength otherwise permitted here for over 500 watts.
[4]Induction cooking ranges manufactured prior to February 1, 1980, shall be subject to the field strength limits for miscellaneous ISM equipment.

Note 1: Limit 3m(dBμV/m)=Limit 300m(dBμV/m)+40Log(300m/3m) (Below 30MHz)
Note 2: Limit 3m(dBμV/m)=Limit 300m(dBμV/m)+20Log(300m/3m) (Above 30MHz)
Note 3: this product is a wireless charger which operated at 90kHz without data transmission. So, it belongs to miscellaneous with non-SIM frequency.

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Radiated Emission

Product Type : Wireless Quick Charger
M/N : CP60
Operating Condition : Charging Mode
Comment : 30-1000MHz

Frequency Band	Frequency	Emission Level	Polarization	Limit	Detector	Margin	Correct factor	Result
	MHz	dBµV/m		dBµV/m		dBµV/m	(dB)	
30MHz-1000MHz	50.006	19.28	H	63.52	QP	44.24	17.7	Pass
	62.919	17.51	H	63.52	QP	46.01	15.8	Pass
	102.811	20.36	H	63.52	QP	43.16	16.1	Pass
	199.750	25.62	H	63.52	QP	37.90	16.2	Pass
	436.430	32.41	H	63.52	QP	31.11	22.5	Pass
	950.045	35.36	H	63.52	QP	28.16	31.0	Pass
	46.854	28.58	V	63.52	QP	34.94	18.0	Pass
	80.501	24.42	V	63.52	QP	39.10	11.9	Pass
	99.961	26.29	V	63.52	QP	37.23	16.4	Pass
	120.998	25.26	V	63.52	QP	38.26	14.5	Pass
	170.711	31.13	V	63.52	QP	32.39	13.9	Pass
	196.901	35.09	V	63.52	QP	28.43	16.2	Pass

Remark:
1) Corrector factor = Antenna Factor + Cable Loss
2) The worst case data were reported and no other spurious and harmonics emissions were reported greater than listed emission above table.

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10. Test Equipment List

Radiated Emission Test

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 26	101269	2019-7-6
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9163	707	2019-7-6
Horn Antenna	Rohde & Schwarz	HF907	102294	2019-7-6
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100398	2019-7-6
Pre-amplifier	Rohde & Schwarz	SCU 18	102230	2019-7-6
Signal Generator	Rohde & Schwarz	SMY01	839369/005	2019-7-6
Attenuator	Agilent	8491A	MY39264334	2019-7-6
3m Semi-anechoic chamber	TDK	9X6X6	----	2020-7-7
Test software	Rohde & Schwarz	EMC32	Version 9.15.00	N/A

Conducted Emission Test

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 3	101782	2019-7-6
LISN	Rohde & Schwarz	ENV4200	100249	2019-7-6
LISN	Rohde & Schwarz	ENV432	101318	2019-7-6
LISN	Rohde & Schwarz	ENV216	100326	2019-7-6
ISN	Rohde & Schwarz	ENY81	100177	2019-7-6
ISN	Rohde & Schwarz	ENY81-CA6	101664	2019-7-6
High Voltage Probe	Rohde & Schwarz	TK9420(VT9420)	9420-584	2019-6-30
RF Current Probe	Rohde & Schwarz	EZ-17	100816	2019-6-30
Attenuator	Shanghai Huaxiang	TS2-26-3	080928189	2019-7-6
Test software	Rohde & Schwarz	EMC32	Version9.15.00	N/A

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11. Measurement System Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

System Measurement Uncertainty	
Items	**Extended Uncertainty**
Uncertainty for Conducted Emission 9kHz-150KHz	3.62dB
Uncertainty for Radiated Emission in 3m chamber 9KHz-30MHz	4.46dB
Uncertainty for Radiated Emission in 3m chamber 30MHz-1000MHz	Horizontal: 4.91dB; Vertical: 4.89dB;

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