FCC - TEST REPORT

Report Number	: **68.950.18.0336.01**	Date of Issue:	**August 7, 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	: **19**		

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2 Details about the Test Laboratory

Details about the Test Laboratory
Test Site 1

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 518052 P.R. China
Telephone:	86 755 8828 6998
Fax:	86 755 828 5299
FCC Registration No.:	514049
IC Registration No.:	10320A

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 coil 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 15 Subpart C 10-1-2017 Edition	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators

All the test methods were according to ANSI C63.10 (2013).

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5 Summary of Test Results

Technical Requirements						
FCC Part 15 Subpart C						
Test Condition		Pages	Test Site	Test Result		
				Pass	Fail	N/A
§15.207	Conducted emission AC power port	10	Site 1	☒	☐	☐
--	20dB bandwidth	13	Site 1	☒	☐	☐
§15.205	Restricted bands of operation	13	Site 1	☒	☐	☐
§15.209	Radiated emission	14	Site 1	☒	☐	☐
§15.203	Antenna requirement	See note 1		☒	☐	☐

Note 1: The EUT uses an Integrated coil antenna, which gain is 0dBi. In accordance to §15.203, 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 Section 15.207, 15.209, 15.205 of the FCC Part 15, Subpart C rules.

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

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

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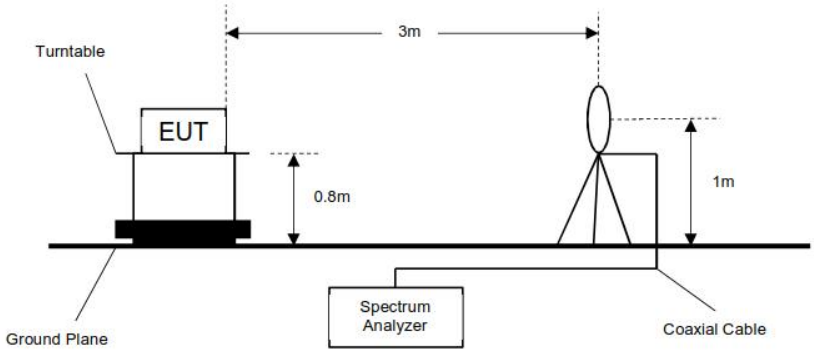
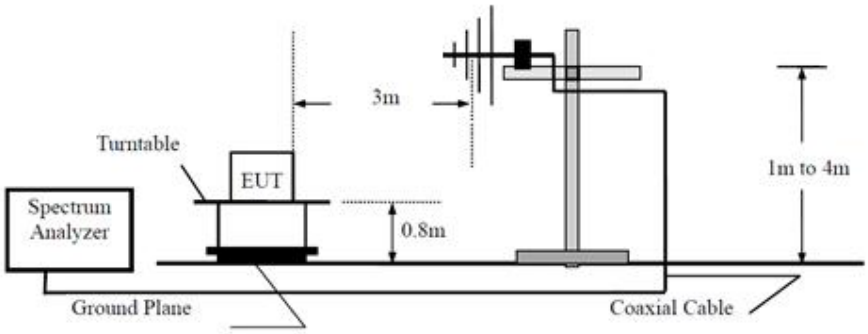
7 Test Setups

7.1 Radiated test setups

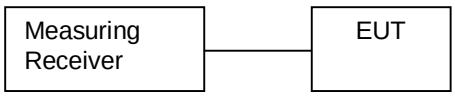
Below 30MHz



30MHz-1GHz



7.2 Conducted RF 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

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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 §15.207, 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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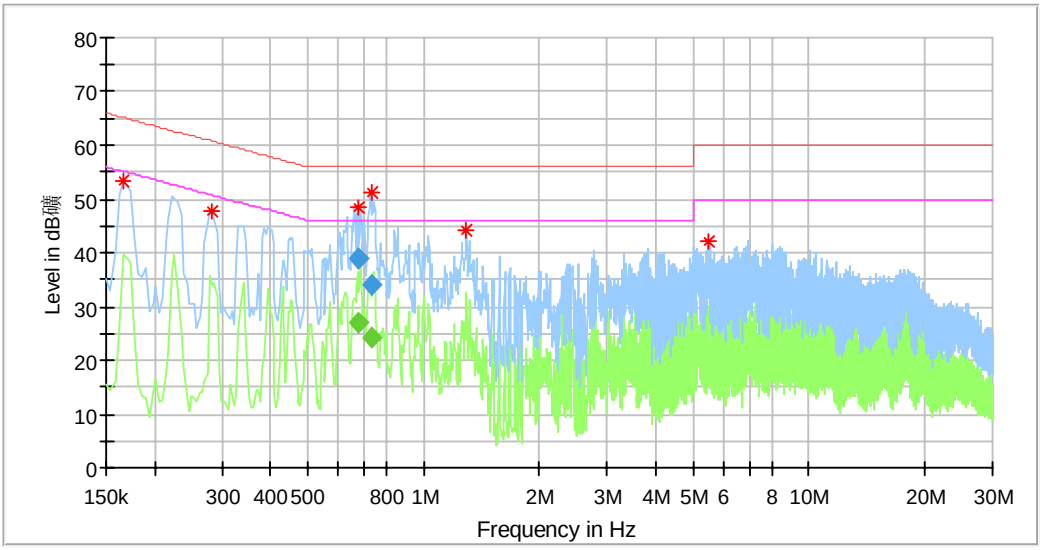
Conducted Emission

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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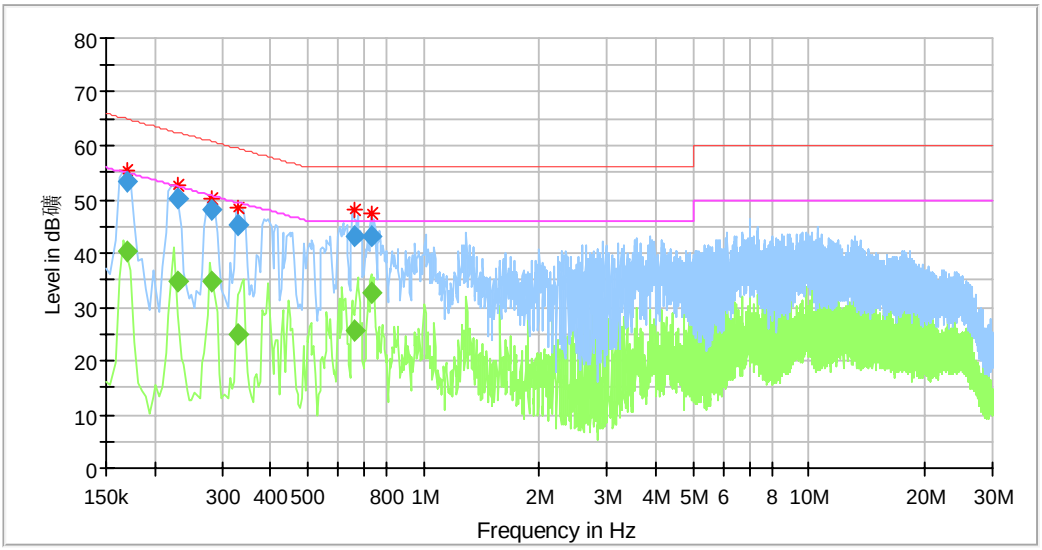
Conducted Emission

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 20 dB Bandwidth and 99% Occupied Bandwidth

Test Method

1. Use the following spectrum analyzer settings:
RBW=200Hz, VBW≥3RBW, Sweep = auto, Detector function = peak, Trace = max hold
2. Use the automatic bandwidth measurement capability of an instrument, may be employed using the X dB bandwidth mode with X set to 20 dB, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be ≥ 20 dB.
3. Allow the trace to stabilize, record the X dB Bandwidth value.

Limit

Limit [kHz]
No Limit

Test result

Frequency	20dB bandwidth	99% bandwidth	Result		Result
KHz	Hz	Hz	F_L (KHz)	F_H (KHz)	
111KHz	419.7	448.6	110.9	--	Pass
148KHz	538.1	543.2	--	148.4	Pass

The fundamental frequency is outside the restricted bands of 15.205 section.

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9.3 Radiated Emission Test

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 C63.10:

Limit

the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency MHz	Field Strength µ V/m	Field Strength dBµV/m	Detector	Measurement distance meters
0.009-0.490	2400/F(kHz)	48.5-13.8	QP	300
0.490-1.705	24000/F(kHz)	33.8-23.0	QP	30
1.705-30	30	29.5	QP	30
30-88	100	40	QP	3
88-216	150	43.5	QP	3
216-960	200	46	QP	3
960-1000	500	54	QP	3
Above 1000	500	54	AV	3
Above 1000	5000	74	PK	3

Note 1: Limit 3m(dBµV/m)=Limit 300m(dBµV/m)+40Log(300m/3m) (Below 30MHz)
Note 2: Limit 3m(dBµV/m)=Limit 30m(dBµV/m)+40Log(30m/3m) (Below 30MHz)

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Radiated emissions test (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	93.8	QP	37.33	19.7	Pass
	0.150	66.02	H	93.8	QP	27.78	19.7	Pass
	0.195	55.21	H	93.8	QP	38.59	19.7	Pass
	0.245	53.48	H	93.8	QP	40.32	19.7	Pass
	Other frequency	--	H	93.8	QP	--	--	Pass
	0.00900	54.62	V	93.8	QP	39.18	20.8	Pass
	0.149	57.41	V	93.8	QP	36.39	19.7	Pass
	0.150	62.10	V	93.8	QP	31.7	19.7	Pass
	0.0240	52.04	V	93.8	QP	41.76	20.0	Pass
	Other frequency	--	V	93.8	QP	--	--	Pass

Remark:

(1) "*" means the emission(s) appear within the restrict bands shall follow the requirement of section 15.205.

(2) Data of measurement within this frequency range shown "--" in the table above means the reading of emissions are the noise floor or attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(3) Above 1GHz: Corrector factor = Antenna Factor + Cable Loss- Amplifier Gain
Below 1GHz: Corrector factor = Antenna Factor + Cable Loss

(4) All tested frequencies comply for the strictest limit (93.8dBµV/m). so the test result can considered as Pass.

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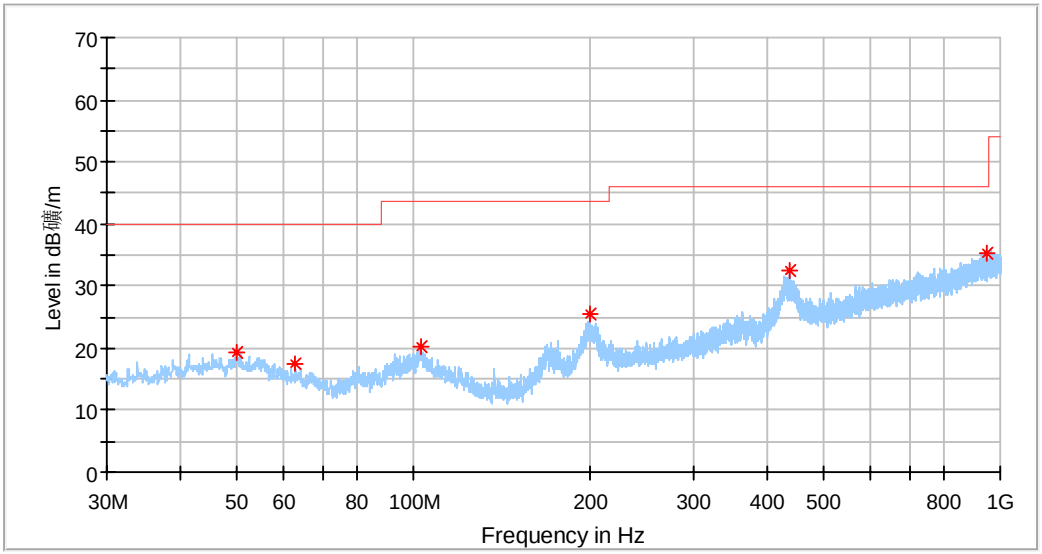
Radiated emissions test (30MHz-1000MHz)

Product Type	:	HUAWEI WIRELESS CHARGER
M/N	:	CP60
Operating Condition	:	Quick Charging Mode
Test Specification	:	Horizontal
Comment	:	30MHz-1000MHz



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
50.006250	19.28	40.00	20.72	100.0	H	9.0	17.7
62.919375	17.51	40.00	22.49	100.0	H	9.0	15.8
102.810625	20.36	43.50	23.14	200.0	H	0.0	16.1
199.750000	25.62	43.50	17.88	200.0	H	69.0	16.2
436.430000	32.41	46.00	13.59	100.0	H	195.0	22.5
950.045000	35.36	46.00	10.64	100.0	H	61.0	31.0

Corrector factor = Antenna Factor + Cable Loss

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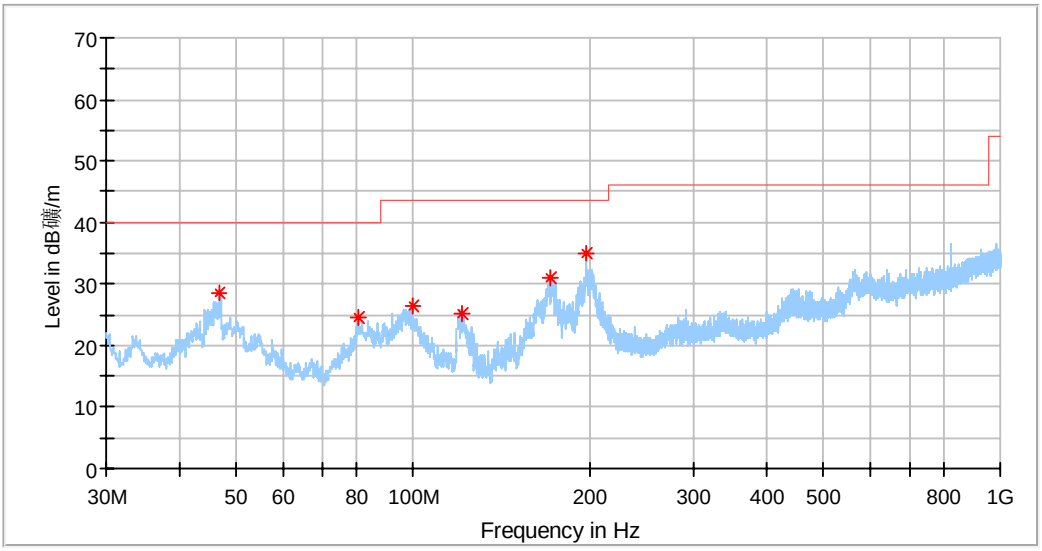
Product Type	:	HUAWEI WIRELESS CHARGER
M/N	:	CP60
Operating Condition	:	Quick Charging Mode
Test Specification	:	Vertical
Comment	:	30MHz-1000MHz



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
46.853750	28.58	40.00	11.42	100.0	V	38.0	18.0
80.500625	24.42	40.00	15.58	200.0	V	227.0	11.9
99.961250	26.29	43.50	17.21	100.0	V	218.0	16.4
120.998125	25.26	43.50	18.24	100.0	V	124.0	14.5
170.710625	31.13	43.50	12.37	100.0	V	109.0	13.9
196.900625	35.09	43.50	8.41	100.0	V	148.0	16.2

Corrector factor = Antenna Factor + Cable Loss

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10 Test Equipment List

List of Test Instruments

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 System Measurement 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	
Test 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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