

FCC - TEST REPORT

Report Number : **68.950.20.0660.01** Date of Issue: **2020-09-11**

Model : **CP81-1**

Product Type : **Watch 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 Device Co., Ltd.**

Address : **No.2 of Xincheng Road, Songshan Lake Zone, 523808, Dongguan, Guangdong People's Republic OF CHINA**

Factory : **Lanto Electronic Ltd.**

Address : **No. 399 Baisheng RD, Jinxi Town, 215300 Kunshan City, Jiangsu Province, PEOPLE'S REPUBLIC OF CHINA**

Test Result : **Positive** **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
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Shenzhen 518052
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FCC Registration No.: 514049

No.:

3 Description of the Equipment Under Test

Product:	Watch Wireless Charger
Model no.:	CP81-1
FCC ID:	QISCP81-1
Rating:	5Vdc 2A Max supplied by an external adapter
RF Transmission Frequency:	110.5-148KHz
Antenna Type:	Litz Wire Coil
Antenna Gain:	0dBi
Description of the EUT:	The Equipment Under Test (EUT) is a wireless charger which operated at 110.5-148kHz.



4 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C 10-1-2019 Edition	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators

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



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	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§15.215	20dB bandwidth	13	Site 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§15.205	Restricted bands of operation	15	Site 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§15.209	Radiated emission	16	Site 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§15.203	Antenna requirement	See note 1		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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.



6 General Remarks

Remarks

This submittal(s) (test report) is intended for FCC ID: QISCP81-1, 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

■ - Performed

□ - **Not** Performed

The Equipment under Test

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

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

Sample Received Date: 2020-08-27

Testing Start Date: 2020-08-28

Testing End Date: 2020-09-11

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

Reviewed by:


John Zhi
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Prepared by:


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Project Engineer

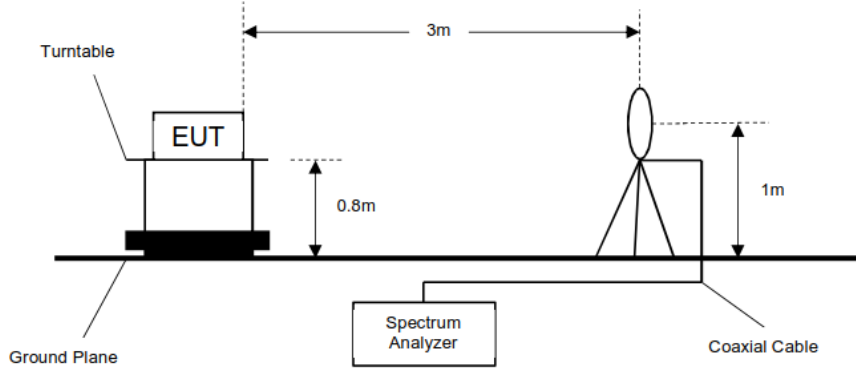
Tested by:


Tree Zhan
Test Engineer

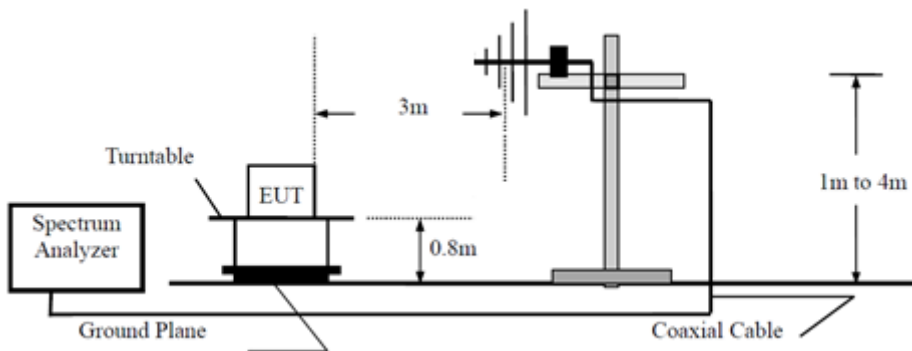
7 Test Setups

7.1 Radiated test setups

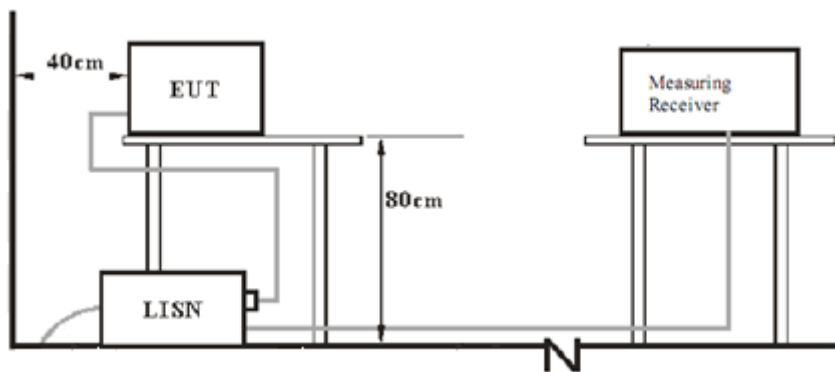
Below 30MHz



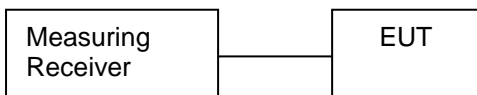
30MHz-1GHz



AC Power Line Conducted Emission test setups



7.2 Conducted RF test setups



8 Systems test configuration

Auxiliary Equipment Used during Test:

Description	Manufacturer	Model NO.	S/N
Wireless Watch	HUAWEI	HW-001	---
Adapter	HUAWEI	HW-050200C02	---

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

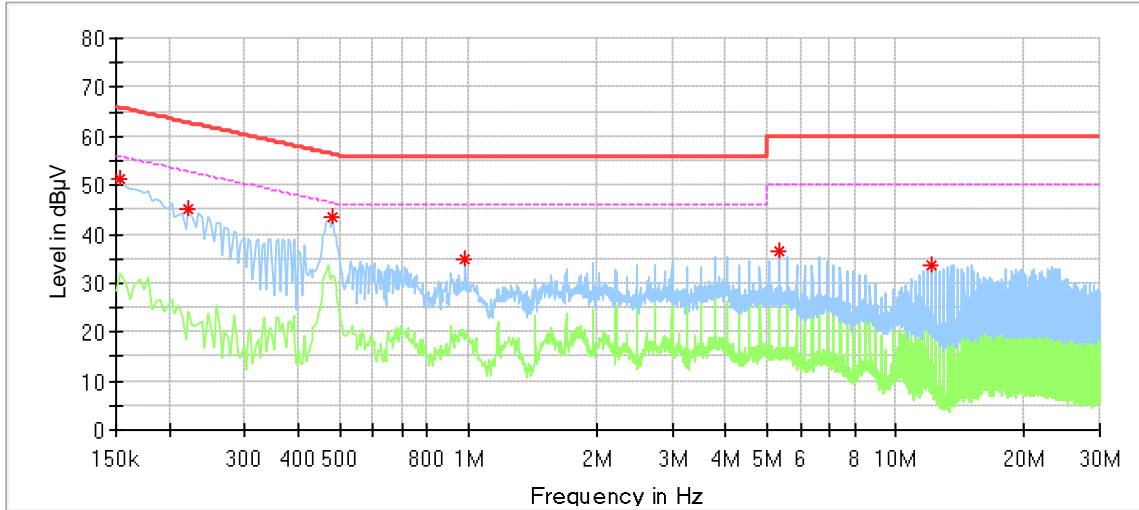
According to §15.207, conducted emissions limit as below:

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

*Decreasing linearly with logarithm of the frequency

Conducted Emission

Product Type : Watch Wireless Charger
 M/N : CP81-1
 Operating Condition : Charging Mode
 Test Specification : Line



Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.154000	51.29	---	65.78	14.49	L1	9.6
0.222000	45.14	---	62.74	17.60	L1	9.6
0.482000	43.54	---	56.31	12.76	L1	9.6
0.982000	34.77	---	56.00	21.23	L1	9.7
5.334000	36.36	---	60.00	23.64	L1	9.8
12.126000	33.54	---	60.00	26.46	L1	9.9

Remark:

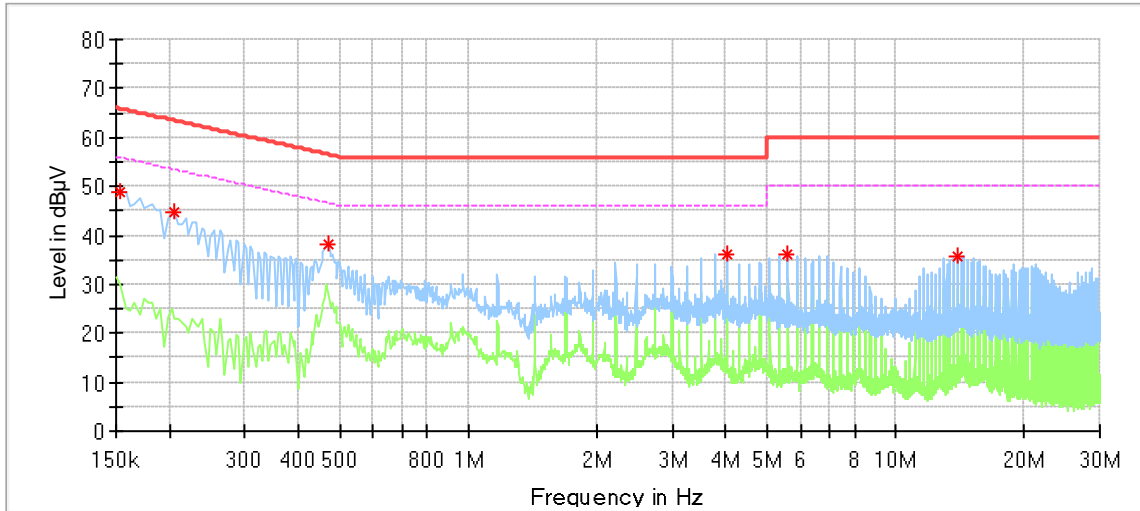
Level=Reading Level + Correction Factor

Correction Factor=Cable Loss + LISN Factor

(The Reading Level is recorded by software which is not shown in the sheet)

Conducted Emission

Product Type : Watch Wireless Charger
 M/N : CP81-1
 Operating Condition : Charging Mode
 Test Specification : Neutral



Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.154000	49.01	---	65.78	16.77	N	9.6
0.206000	44.68	---	63.37	18.69	N	9.6
0.470000	38.19	---	56.51	18.32	N	9.6
4.034000	36.20	---	56.00	19.80	N	9.7
5.598000	35.96	---	60.00	24.04	N	9.8
13.926000	35.72	---	60.00	24.28	N	9.9

Remark:

Level=Reading Level + Correction Factor

Correction Factor=Cable Loss + LISN Factor

(The Reading Level is recorded by software which is not shown in the sheet)

9.2 20 dB 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

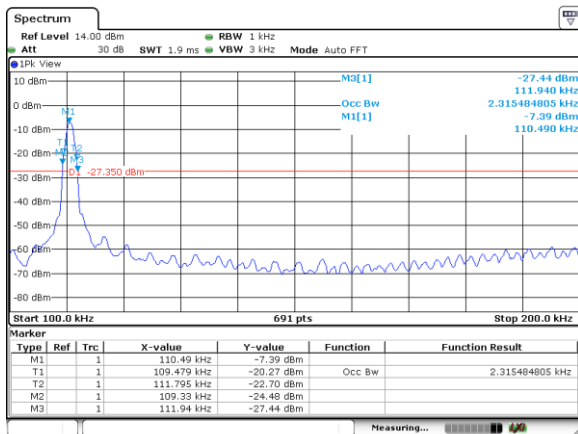
Limit [kHz]

No Limit

Test result

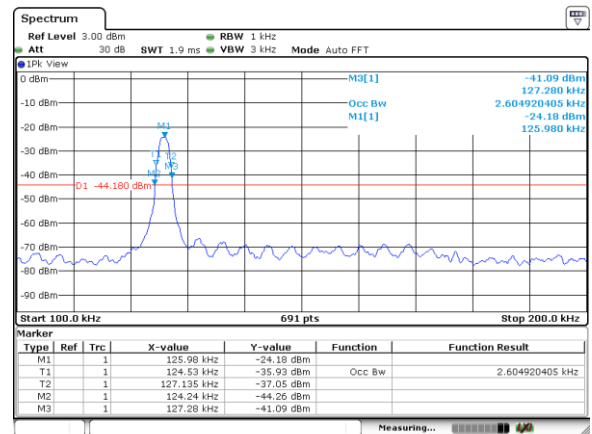
Frequency	20dB bandwidth	Result		Result
KHz	KHz	F _L (KHz)	F _H (KHz)	
110.49KHz	2.61	109.33	--	Pass
125.98KHz	3.04	--	127.28	Pass

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 placed 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 dB μ V/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(dB μ V/m)=Limit 300m(dB μ V/m)+40Log(300m/3m) (Below 30MHz)

Note 2: Limit 3m(dB μ V/m)=Limit 30m(dB μ V/m)+40Log(30m/3m) (Below 30MHz)

Radiated emissions test (9KHz-30MHz)

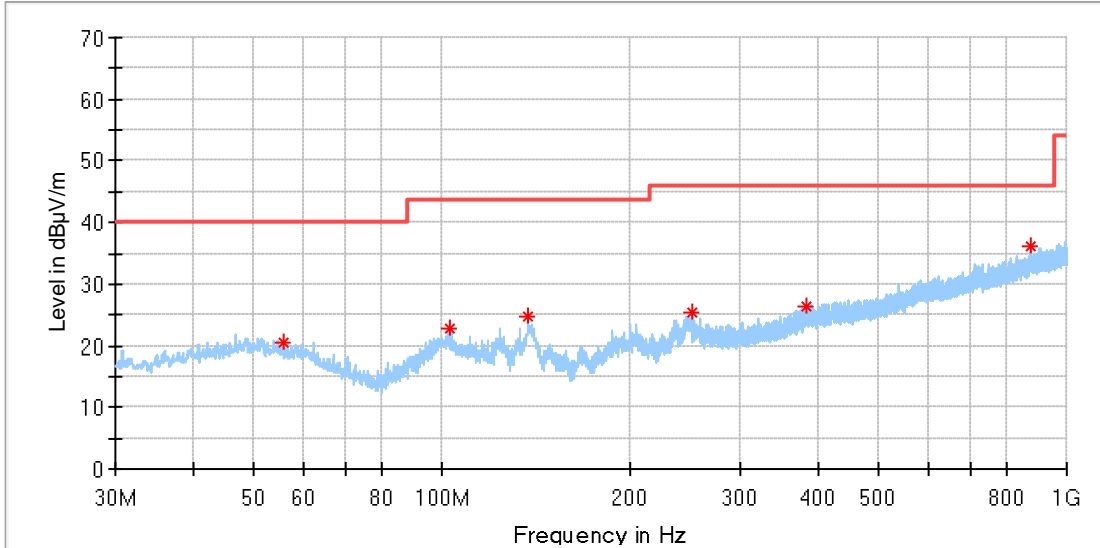
Frequency Band	Frequency	Emission Level	Polarization	Limit	Detector	Margin	Correct factor (dB)	Result
	MHz	dB μ V/m		dB μ V/m		dB μ V/m		
9KHz-30MHz	0.023993	56.49	H	93.8	QP	37.31	20	Pass
	0.026531	49.38	H	93.8	QP	44.42	20	Pass
	0.027612	52.74	H	93.8	QP	41.06	20	Pass
	0.039973	52.24	H	93.8	QP	41.56	20	Pass
	0.056000	50.42	H	93.8	QP	43.38	20	Pass
	0.127487*	47.75	H	93.8	QP	46.05	20	Pass
	0.133503*	65.18	H	93.8	QP	28.62	20	Pass
	0.133926*	63.56	H	93.8	QP	30.24	20	Pass
	Other frequency	--	H	93.8	QP	--	--	Pass
	0.022395	44.39	V	93.8	QP	49.41	20	Pass
	0.023993	49.13	V	93.8	QP	44.67	20	Pass
	0.026484	52.37	V	93.8	QP	41.43	20	Pass
	0.027612	54.79	V	93.8	QP	39.01	20	Pass
	0.055248	47.11	V	93.8	QP	46.69	20	Pass
	0.055953	44.58	V	93.8	QP	49.22	20	Pass
	0.132469*	57.20	V	93.8	QP	36.6	20	Pass

Remark:

- (1) "*" means the emission(s) appear within the working band 110.5-148KHz.
- (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 (93.8dB μ V/m). so the test result can considered as Pass.

Radiated emissions test (30MHz-1000MHz)

Model: CP81-1
 Test Mode: Charging Mode
 Test Voltage: AC 120V/60Hz



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
55.705000	20.65	40.00	19.35	200.0	H	0.0	18
102.628750	22.69	43.50	20.81	200.0	H	171.0	16
137.063750	24.82	43.50	18.68	200.0	H	163.0	13
250.856875	25.44	46.00	20.56	100.0	H	237.0	17
384.413750	26.39	46.00	19.61	100.0	H	31.0	21
877.476875	36.14	46.00	9.86	200.0	H	7.0	29

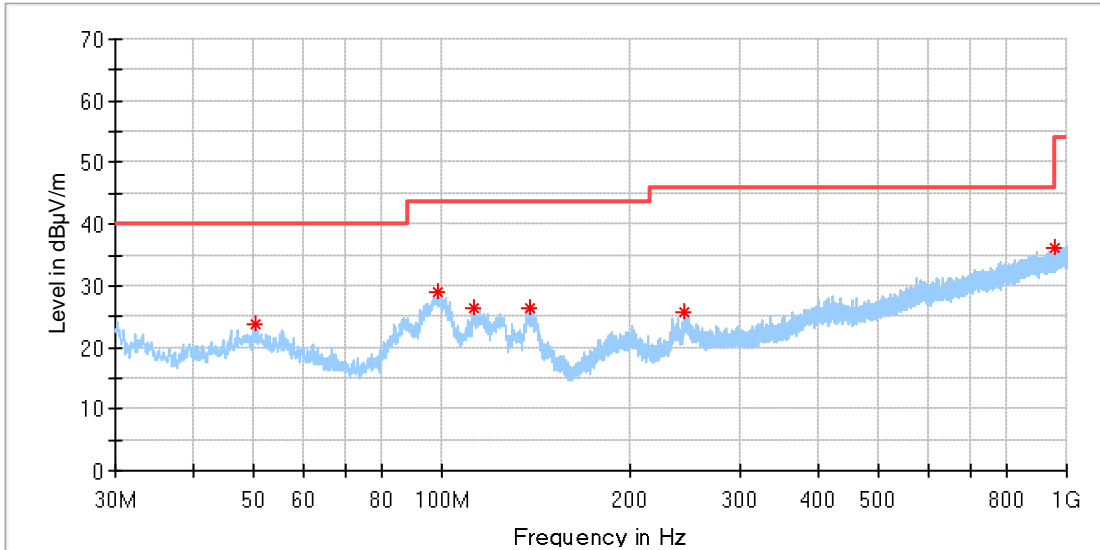
Remark:

Level=Reading Level + Correction Factor

Correction Factor=Antenna Factor + Cable Loss

(The Reading Level is recorded by software which is not shown in the sheet)

Model: CP81-1
 Test Mode: Charging Mode
 Test Voltage: AC 120V/60Hz



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
50.370000	23.65	40.00	16.35	200.0	V	222.0	18
98.324375	28.83	43.50	14.67	100.0	V	31.0	16
112.753125	26.27	43.50	17.23	100.0	V	123.0	15
138.155000	26.32	43.50	17.18	100.0	V	93.0	13
244.794375	25.71	46.00	20.29	200.0	V	142.0	17
959.078125	36.17	46.00	9.83	100.0	V	351.0	30

Remark:

Level=Reading Level + Correction Factor

Correction Factor=Antenna Factor + Cable Loss

(The Reading Level is recorded by software which is not shown in the sheet)

10 Test Equipment List

List of Test Instruments

Radiated Emission Test

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL INTERVAL (YEAR)	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 26	101269	1	2021-6-29
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9163	707	1	2021-8-4
Horn Antenna	Rohde & Schwarz	HF907	102294	1	2021-7-14
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100398		2021-9-2
Pre-amplifier	Rohde & Schwarz	SCU 18	102230	1	2021-6-21
Attenuator	Agilent	8491A	MY39264334	1	2021-6-21
3m Semi-anechoic chamber	TDK	9X6X6	----	3	2022-10-28
Test software	Rohde & Schwarz	EMC32	Version 9.15.00	N/A	N/A

Conducted Emission Test

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL INTERVAL (YEAR)	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 3	101782	1	2021-6-29
LISN	Rohde & Schwarz	ENV4200	100249	1	2021-6-12
LISN	Rohde & Schwarz	ENV432	101318	1	2021-6-12
LISN	Rohde & Schwarz	ENV216	100326	1	2021-6-12
Attenuator	Shanghai Huaxiang	TS2-26-3	080928189	1	2021-6-21
Test software	Rohde & Schwarz	EMC32	Version9.15.00	N/A	N/A

RF Conducted Test

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL INTERVAL (YEAR)	CAL. DUE DATE
Signal Analyzer	Rohde & Schwarz	FSV40	101030	1	2021-6-21



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 Radiated Emission in 3m chamber 9kHz-30MHz	4.76dB
Uncertainty for Radiated Emission in 3m chamber 30MHz-1000MHz	Horizontal: 5.12dB; Vertical: 5.10dB;
Uncertainty for Radiated Emission in 3m chamber 1000MHz-18000MHz	Horizontal: 5.01dB; Vertical: 5.00dB;
Uncertainty for Conducted Emission 150kHz-30MHz (for test using AMN ENV432 or ENV4200)	3.21dB