



EMC Test Report

Product Name: Smart Watch

Product Model: JPT-B19

Report Number: SYBH(Z-EMC) 20210626005001-1

FCC ID: 2ATEYJPT-B19

Reliability Laboratory of Huawei Technologies Co., Ltd.

(Global Compliance and Testing Center of Huawei Technologies Co., Ltd.)

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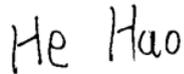
Applicant: Huawei Device Co., Ltd.
Address: No.2 of Xincheng Road, Songshan Lake Zone,
Dongguan, Guangdong 523808, People's Republic of
China

Date of Receipt Test Item: 2021-07-12

Start Date of Test: 2021-07-13

End Date of Test: 2021-08-07

Test Result: Pass

Prepared by (Test Engineer)	<u>2021-08-08</u> Date	<u>Peng Shaohua</u> Name	<u></u> Signature
Reviewed by (Test Engineer)	<u>2021-08-09</u> Date	<u>Rao Legian</u> Name	<u></u> Signature
Approved By (Lab Manager)	<u>2021-08-09</u> Date	<u>He Hao</u> Name	<u></u> Signature



Modification Record

No.	Last Report No.	Modification Description
1	NA	First report

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1 General Information

1.1 EUT Description

JPT-B19 is a smart watch, it can be communicated with mobile phone via Bluetooth. Watch also support alarm clock, intelligent user can judge the state of motion, scientific sleep monitoring, information assistance, heart rate monitoring, GPS functionalities and supports music playback and Bluetooth calling. The BT/WIFI frequency is 2.4GHz.

EUT Description	
Product Name	Smart Watch
Model Number	JPT-B19
TX Frequency	2.4G WIFI: 2412MHz to 2462MHz Bluetooth: 2402MHz to 2480MHz WPT: 110.5kHz to 148kHz NFC:13.56MHz
RX Frequency	2.4G WIFI: 2412MHz to 2462MHz Bluetooth: 2402MHz to 2480MHz BDS: 1176.45MHz/1561.098MHz Galileo: 1176.45MHz/1575.42MHz GLONASS: 1597MHz to 1607MHz GPS: 1176.45MHz/1575.42MHz WPT: 110.5kHz to 148kHz NFC:13.56MHz
SN	CSNTQ21627000009
HW Version	R2
SW Version	2.0.1.137
EUT Accessory	
Watch Wireless Charger	Manufacturer: Huawei Devices Co., Ltd. Model: CP81-1 Input voltage: 5V SN: 2102453063JV14249230
Li-polymer Battery	Manufacturer: Huawei Technologies Co., Ltd. (NVT/ lishen) Battery Model: HB532729ECW Capacity: 455mAh Rated Voltage:3.82V Charging Voltage: 4.40V

Remark 1: The above EUT's information is declared by manufacturer. Please refer to the specifications or user's manual for more detailed information.



1.2 Test Site Information

Test Site 1:	Reliability Laboratory of Huawei Technologies Co., Ltd. Global Compliance and Testing Center of Huawei Technologies Co., Ltd.
Test Site Location:	No.2, New City Avenue, Songshan Lake Sci. & Tech. Industry Park, Dongguan, 523808, P.R.C

1.3 Applied Standards

APPLIED STANDARD

47 CFR FCC Part 15, Subpart B

2 Summary of Results

Summary of Results				
Test Items	Test Mode	Performance Class & Required Performance Criteria	Result	Site
<u>Radiated Emissions</u> Enclosure Port	Mode 1~ Mode 2	CLASS B	Pass	Site1
<u>Conducted Emissions</u> <input type="checkbox"/> DC Power Port <input checked="" type="checkbox"/> AC Power Port <input type="checkbox"/> Telecommunication Ports	Mode 1~ Mode 2	CLASS B	Pass	Site1
Note: 1, Measurement taken is within the uncertainty of test system. 2, <input checked="" type="checkbox"/> The item has been tested; <input type="checkbox"/> The item has not been tested.				

During the measurement, the environmental conditions complied with the range listed as below.

Item	Required
Ambient temperature	15°C ~ 35°C
Relative humidity	25% ~ 75%
Atmospheric pressure	86kPa ~ 106kPa

3 System Configuration during EMC Test

3.1 Test Mode

The EUT was configured, installed, arranged and operated in a manner consistent with typical application. The following mode(s) were applied during the compliance test.

Test Mode	
Mode 1:	WPT Wireless Charging (adaptor +Watch Wireless Charger+ Smart Watch)+ BT+ WIFI+ NFC+ GNSS
Mode 2:	WPT Wireless Charging (adaptor +Watch Wireless Charger+ Smart Watch)+ Music Playing+ Heart Rate Measurement

Remark:

- 1) If there is one kind of accessories with different models, each one should be applied throughout the compliance test respectively, however, only the worst case will be recorded in this report.
- 2) If EUT has more than one typical operation, only the worst test mode will be recorded in this report.

Worst Case:

Radiated Emission

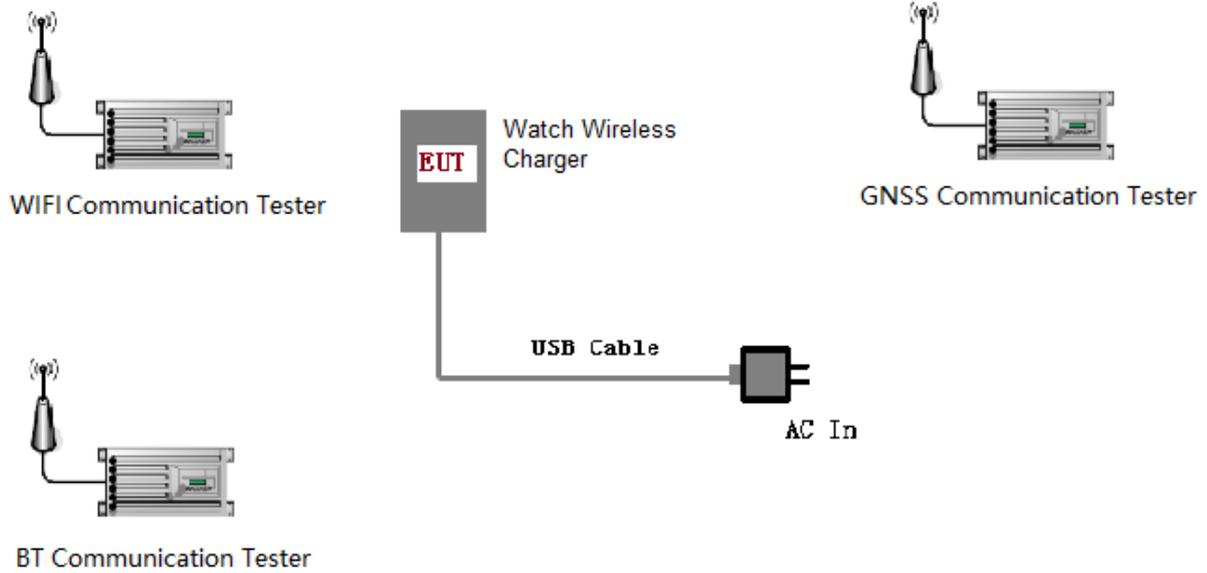
WPT Wireless Charging (adaptor +Watch Wireless Charger+ Smart Watch)+ Music Playing+ Heart Rate Measurement the result is the worst

Conducted Emission

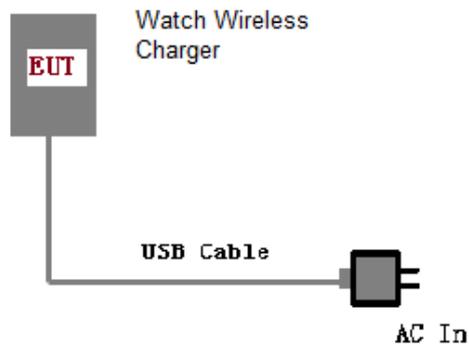
WPT Wireless Charging (adaptor +Watch Wireless Charger+ Smart Watch)+ BT+ WIFI+ NFC+ GNSS the result is the worst

3.2 Test System Configuration

Connection Diagram (Mode 1)



Connection Diagram (Mode 2)





3.3 Cables Used during Test

Cable	Quantity	Length	Type of Cable
Charger Cable	1	<1m	Unshielded

3.4 Associated Equipment Used during Test

Name	Model	Manufacturer	S/N	Calibrated Deadline	Cal interval (month)
Radio Communication Tester	CMU200	R&S	117057	Jan. 29, 2022	12
Radio Communication Tester	CMU500	R&S	163743	Mar. 13, 2022	12
GSS7000 Signal Generator	GSS7000	Spirent	108	Nov. 10, 2021	12
Adaptor	HW-050200E01	HUAWEI	PC6812KB900190	N/A	N/A

4 Electromagnetic Interference (EMI)

4.1 Radiated Disturbance 30MHz to 18GHz

4.1.1 Test Procedure

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4dB according to the standards: ANSI C63.4-2014. The test distance was 3m. The set-up and test methods were according to ANSI C63.4-2014.

A preliminary scan and a final scan of the emissions were made from 30 MHz to 18 GHz by using test script of software; The emissions were measured using Quasi-Peak Detector (30MHz~1GHz) and AV/PK detector (above 1GHz). The maximal emission value was acquired by adjusting the antenna height, polarisation and turntable azimuth in accordance with the software setup. Normally, the height range of antenna was 1m to 4m. The azimuth range of turntable was 0° to 360°. The receiving antenna has two polarizations V and H.

Measurement bandwidth (RBW) for 30MHz to 1000 MHz: 120 kHz;

Measurement bandwidth (RBW) for 1000MHz to 18000 MHz: 1MHz;

EUT was configured in idle mode and the test performed at worst emission state.

4.1.2 Test setup

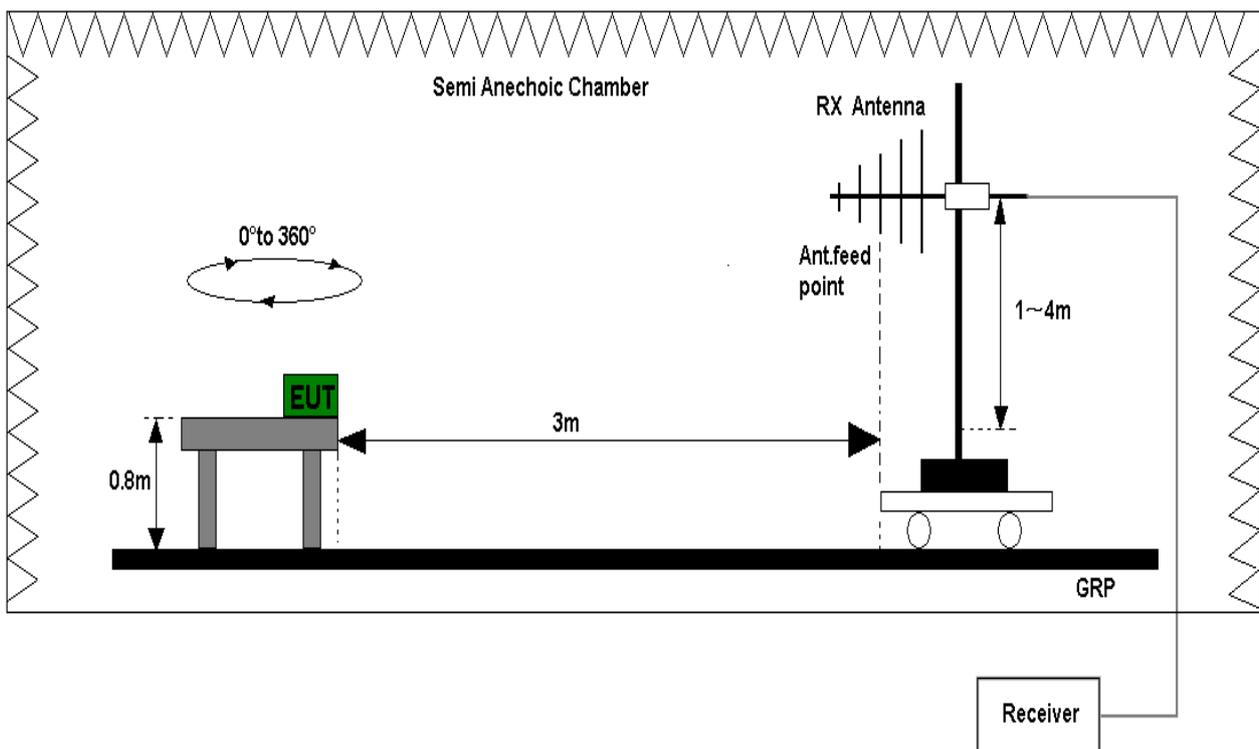


Figure 1. Test set-up of radiated disturbance(30MHz-1GHz)

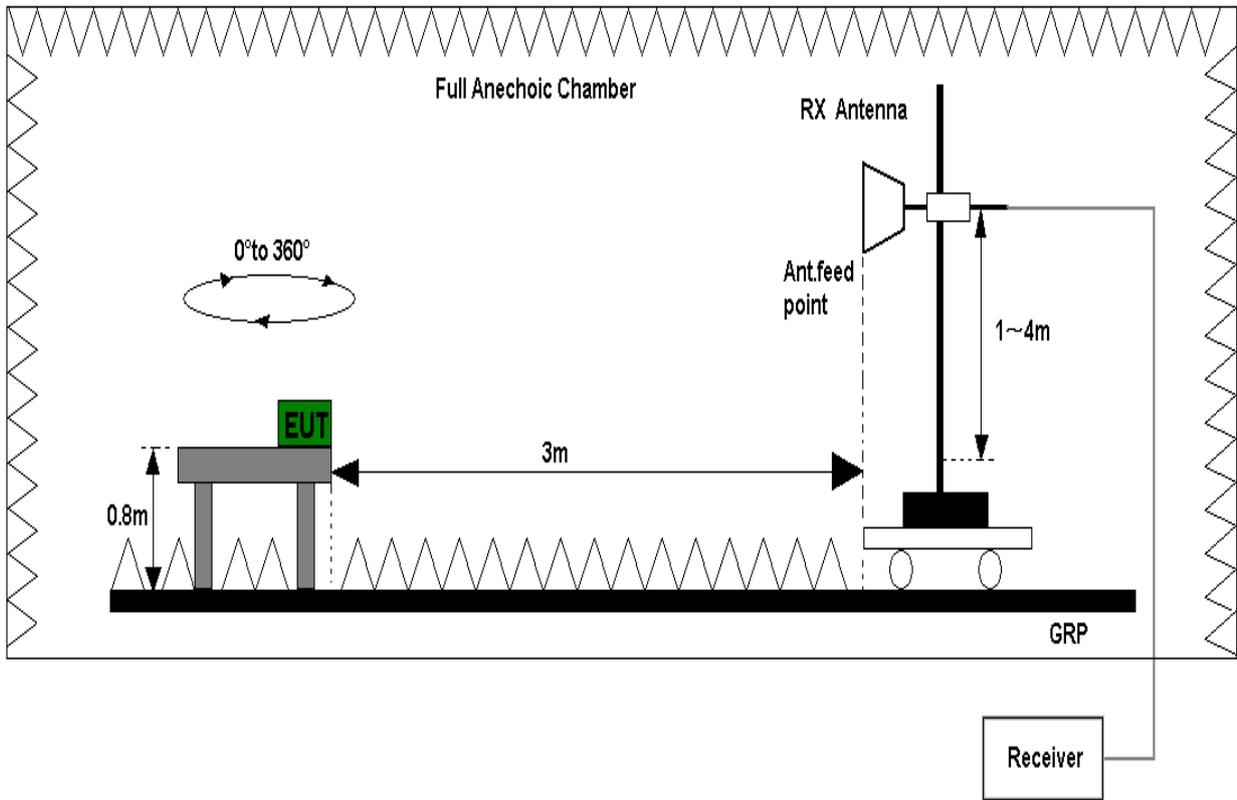


Figure 2. Test set-up of radiated disturbance(above 1GHz)

4.1.3 Test Results

The EUT has met the requirements for Radiated Emission of enclosure port.
 Refer to the section 7 of this report for test data.

FCC Test Limits (Class B)				
Frequency of Emission (MHz)	Radiated Limit			
	Unit(μ V/m) Quasi-peak		Unit(dB μ V/m) Quasi-peak	
30-88	100		40	
88-216	150		43.5	
216-960	200		46	
Above 960	500		54	
Above 1000	Unit(μ V/m)AV	Unit(μ V/m)PK	Unit(dB μ V/m)AV	Unit(dB μ V/m)PK
	500	5000	54	74

4.2 Conducted Disturbance 0.15 MHz to 30MHz

4.2.1 Test Procedure

The Table-top EUT was placed upon a non-metallic table 0.8 m above the horizontal metal reference ground plane. EUT was connected to LISN and LISN was connected to reference Ground Plane. EUT was 80cm away from LISN. The set-up and test methods were according to ANSI C63.4-2014. Conducted Disturbance at AC Port measurements were undertaken on the L and N Lines. The emissions were measured using a Quasi-Peak Detector and Average Detector.

EUT was communicated with the simulator through Air interface, the simulator controls the EUT to transmitter the maximum power which defined in specification of product. The EUT operated on the typical channel.

Measurement bandwidth (RBW) for 150 kHz to 30 MHz: 9 kHz;

The EUT was set in the shielded chamber and operated under nominal conditions.

4.2.2 Test Setup

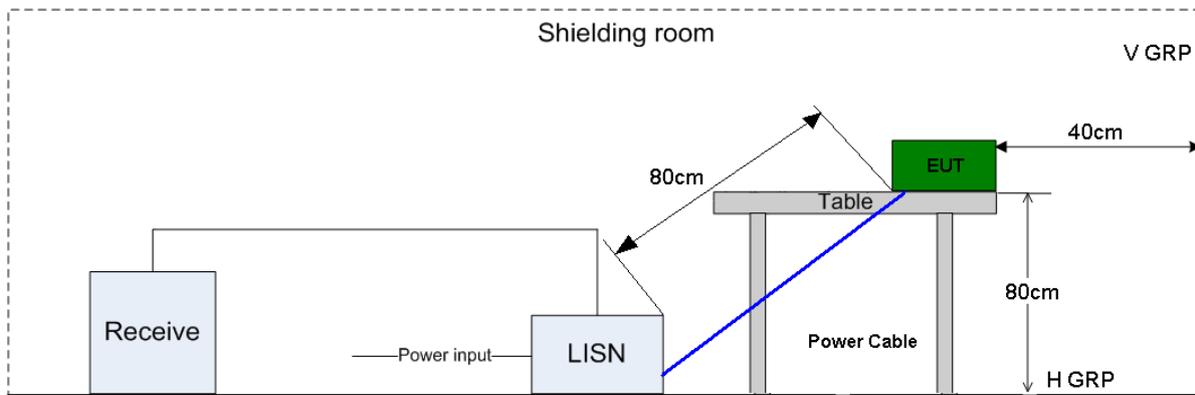


Figure 3. Test Set-up of conducted disturbance

4.2.3 Test Results

The EUT has met requirements for Conducted disturbance of power lines. Refer to the section 7 of this report for test data.

Test Limit of AC Power Port		
Frequency range	150kHz ~ 30MHz	
Frequency	Voltage limits	
	QP (dB μ V)	AV (dB μ V)
0.15MHz~0.5MHz	66-56	56-46
0.5MHz-5MHz	56	46
5MHz~30MHz	60	50



5 Main Test Instruments

Main Test Equipments						
Test item	Test Instrument	Model	S/N	Manufacturer	Calibrated Deadline	Cal interval
RE1	Horn Antenna	HF907	100391	R&S	Oct. 15, 2021	24
	EMI Test receiver	ESW44	101879	R&S	Jan. 30, 2022	12
RE2	Broadband Antenna	VULB 9163	9163-01303	SCHWARZB ECK	Aug. 10, 2022	24
	EMI Test receiver	ESW44	101878	R&S	Jan. 30, 2022	12
CE	EMI Test receiver	ESU26	100150	R&S	Nov. 05, 2021	12
	Artificial Mains Network	ENV216	100382	R&S	Jul. 20, 2022	12
Software Information						
Test Item	Software Name	Manufacturer		Version		
RE1	EMC32	R&S		V10.60.10		
RE2	EMC32	R&S		V10.60.20		
CE	EMC32	R&S		V9.25.0		

6 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		
Items	Extended Uncertainty	
RE2(30MHz-1GHz)	Field strength (dB μ V/m)	U=5.24dB; k=2
RE1(1GHz-18GHz)	Field strength (dB μ V/m)	U=4.68dB; k=2
CE	Disturbance Voltage (dB μ V)	U=2.3dB; k=2

7 Test Data and Graph

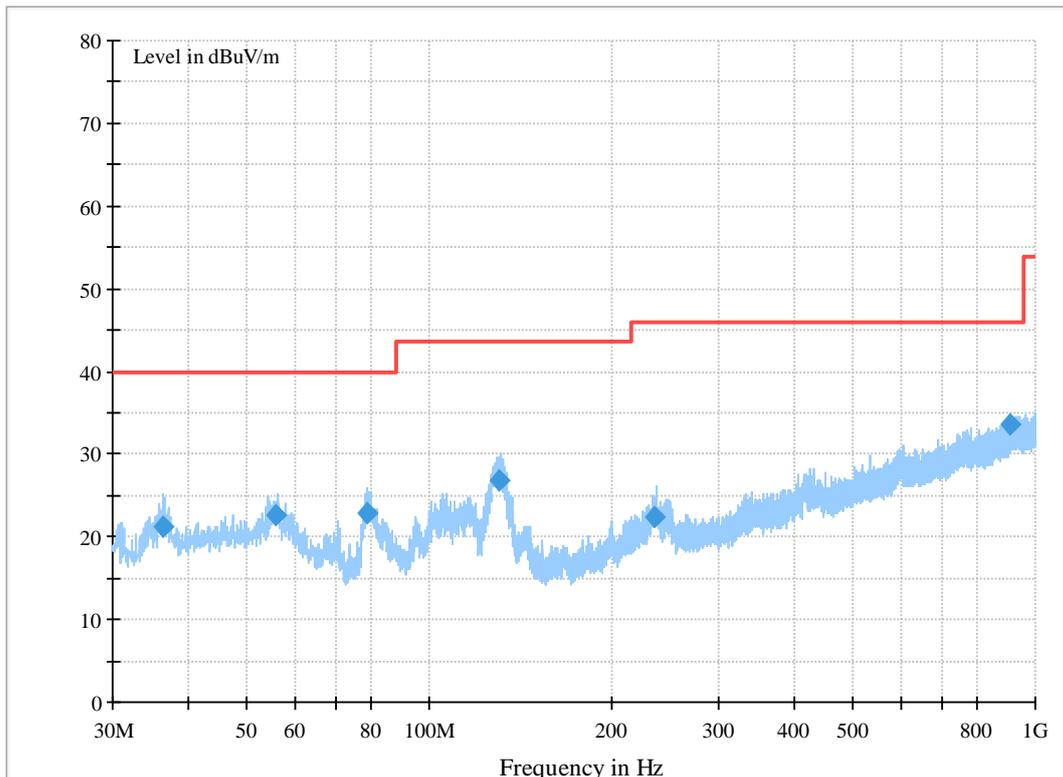
Only the worst test results were shown

7.1 Radiated Disturbance

7.1.1 30MHz~1GHz

Test Mode 2: WPT Wireless Charging (adaptor +Watch Wireless Charger+ Smart Watch)+ Music Playing+ Heart Rate Measurement

Full



MEASUREMENT RESULT: QP Detector

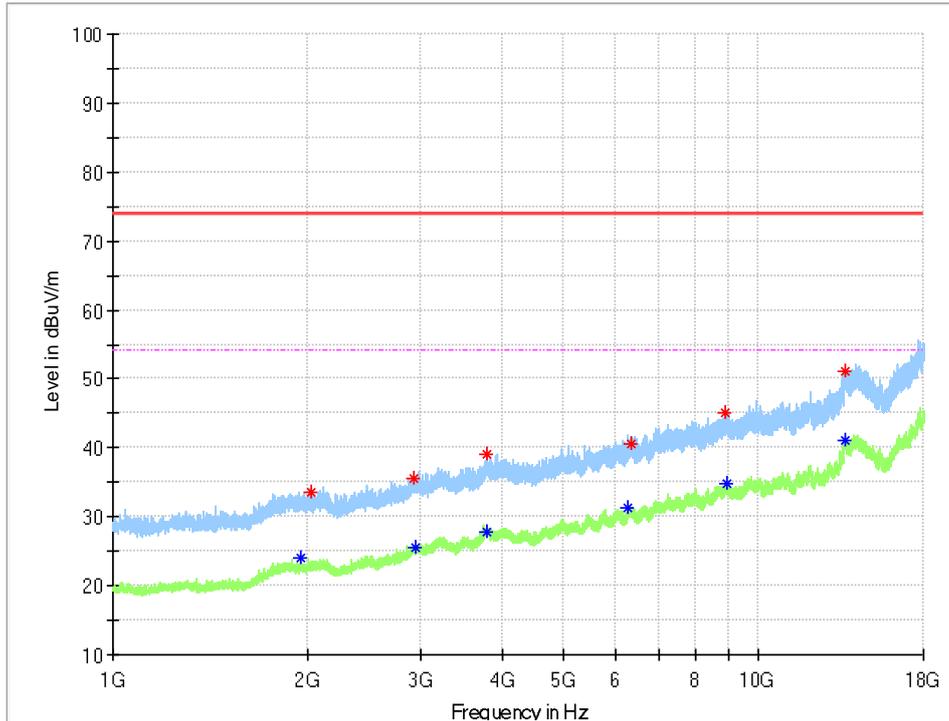
Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Height cm	Azimuth deg	Polarisation
36.372220	21.24	18.2	40.00	18.76	200.0	1.0	V
55.615280	22.66	19.7	40.00	17.34	200.0	200.0	V
78.788620	22.93	14.9	40.00	17.07	200.0	125.0	V
130.567580	26.74	18.1	43.50	16.76	101.0	155.0	V
235.764340	22.47	23.8	46.00	23.53	151.0	222.0	H
909.549360	33.62	27.4	46.00	12.38	100.0	213.0	H

Note:

Level =Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain)
 The reading level is calculated by software which is not shown in the sheet.

7.1.2 1GHz~18GHz

Test Mode 2: WPT Wireless Charging (adaptor +Watch Wireless Charger+ Smart Watch)+ Music Playing+ Heart Rate Measurement



MEASUREMENT RESULT: PK Detector

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Height cm	Azimuth deg	Polarisation
2031.900000	33.53	-12.6	74	40.47	100	52	V
2925.533333	35.49	-11.1	74	38.51	100	128.0	H
3800.466667	39.09	-6.8	74	34.91	100	2.0	V
6351.600000	40.65	-0.2	74	33.35	100	178	V
8862.500000	45.08	9.1	74	28.92	100	296	V
13633.833333	51.03	15.5	74	22.97	100	166	H

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Height cm	Azimuth deg	Polarisation
1955.966667	23.98	-12.5	54	30.02	100	322	H
2936.300000	25.60	-10.9	54	28.40	100	19	V
3786.300000	27.73	-6.6	54	26.27	100	0	V
6270.566667	31.37	-2.4	54	22.63	100	166	H
8937.866667	34.74	11.1	54	19.26	100	59.0	V
13602.10000	41.18	15.6	54	12.82	100	257	H

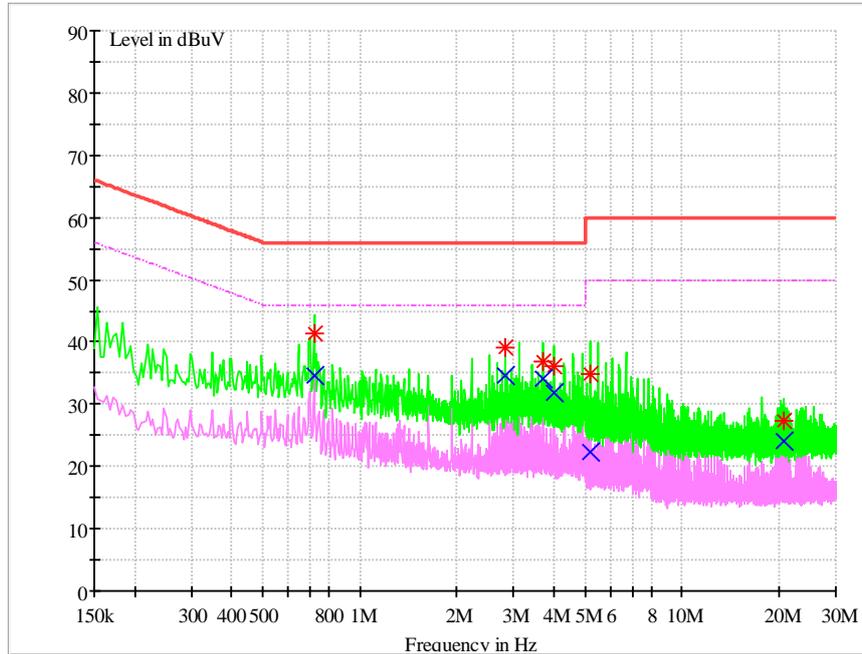
Note:

Level =Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain)
 The reading level is calculated by software which is not shown in the sheet.

7.2 Conducted Disturbance

7.2.1 AC Port Test Data

Test Mode 1: WPT Wireless Charging (adaptor +Watch Wireless Charger+ Smart Watch)+ BT+ WIFI+ NFC+ GNSS



MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dB μ V	Line	Transd dB	Margin dB	Limit dB μ V	PE
0.723599	41.25	L1	9.7	14.75	56.00	FLO
2.820262	39.04	L1	9.7	16.96	56.00	FLO
3.713327	36.93	N	9.7	19.07	56.00	FLO
4.007947	36.18	N	9.7	19.82	56.00	FLO
5.196288	34.91	N	9.7	25.09	60.00	FLO
20.705828	27.32	N	10.2	32.68	60.00	FLO

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dB μ V	Line	Transd dB	Margin dB	Limit dB μ V	PE
0.724444	34.54	N	9.7	11.46	46.00	FLO
2.822410	34.62	N	9.7	11.38	46.00	FLO
3.712249	33.98	N	9.7	12.02	46.00	FLO
4.010376	31.91	N	9.7	14.09	46.00	FLO
5.198038	22.36	N	9.9	27.64	50.00	FLO
20.657576	24.11	N	10.2	25.89	50.00	FLO

Note:

1, Level =Reading level by receiver + Transd (cable loss – correction factor)

The reading level is calculated by software which is not shown in the sheet.

2, Margin=Limit – Level

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