



EMC Test Report

Product Name: Smart Phone

Model Number: HUAWEI MT1-U06, MT1-U06

Report No: SYBH(Z-EMC)021012013 -2

FCC ID: QISMT1-U06N

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Applicant: Huawei Technologies Co., Ltd.
Address: Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C
Date of Receipt Test Item: Jan.06, 2013
Start Date of Test: Jan.06, 2013
End Date of Test: Feb.26, 2013
Test Result: Pass

**Approved By
(Lab Manager)**

2013-03-07
Date

Liu Chunlin
Name

Signature

**Operator
(Test Engineer)**

2013-03-07
Date

Zheng Ke
Name

Signature



Modification Record

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



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1 General Information

1.1 EUT Description

EUT Description	
Product Name	Smart Phone
Model Number	HUAWEI MT1-U06, MT1-U06
TX Frequency	GSM 850:824 MHz To 849 MHz GSM1900:1850MHz To 1910MHz WCDMA BAND II:1850 MHz To 1910 MHz WCDMA BAND IV:1710 MHz To 1755 MHz WCDMA BAND V: 824MHz To 849 MHz Bluetooth: 2400 MHz To 2483.5 MHz WIFI: 2400MHz To 2483.5MHz 5150MHz To 5350 MHz 5470MHz To 5725 MHz 5725MHz To 5825 MHz NFC:13.56MHz
RX Frequency	GSM850:869MHz To 894MHz GSM1900:1930MHz To 1990MHz WCDMA BAND II:1930 MHz To 1990 MHz WCDMA BAND IV:2210 MHz To 2155 MHz WCDMA BAND V: 869MHz To 894MHz Bluetooth: 2400MHz To 2483.5MHz WIFI: 2400MHz To 2483.5MHz 5150MHz To 5350 MHz 5470MHz To 5725 MHz 5725MHz To 5825 MHz NFC:13.56MHz GPS: 1575.42MHz;
S/N	1#
HW Version	HD1U9900M
SW Version	MT1-U06V100R001C00B104SP03
EUT Accessory	
Data cable	Data Cable USB A Male to Micro USB, shielded
Data cable	USB OTG Cable, shielded.
Adapter	Brand: HUAWEI Model: HW-050200U3W Input voltage: ~100-240V 50/60Hz 0.5A Output voltage: 5V  2A Rated Power: 10W S/N: HWHKAACD12100064; S/N:HWXQABCC2800009
Adapter	Brand: HUAWEI Model: HW-050200B3W Input voltage: ~100-240V 50/60Hz 0.5A Output voltage: 5V  2A Rated Power: 10W
Adapter	Brand: HUAWEI Model: HW-050200E3W Input voltage: ~100-240V 50/60Hz 0.5A Output voltage: 5V  2A



	Rated Power: 10W
Adapter	Brand: HUAWEI Model: HW-050200A3W Input voltage: ~100-240V 50/60Hz 0.5A Output voltage: 5V  2A Rated Power: 10W
Rechargeable Li-ion	Brand: HUAWEI Battery Model: HB496791EBC Rated capacity: 3900mAh Nominal Voltage:  +3.8V Charging Voltage:  +4.35V S/N: ATCCB23900000246
Rechargeable Li-ion	Brand: HUAWEI Battery Model: HB496791EAW Rated capacity: 3340mAh Nominal Voltage:  +3.7V Charging Voltage:  +4.2V S/N: SSCD225900000018

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



1.2 Test Site Information

Site 1:	RELIABILITY LABORATORY OF HUAWEI TECHNOLOGIES CO., LTD.
Test Site Location:	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C

1.3 Applied Standards

APPLIED STANDARD

47 CFR FCC Part 15:2012, 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 Mode 4 Mode 6 Mode 8~ Mode 11	CLASS B	Pass	Site1
<u>Conducted Emissions</u> ☒ AC Power Port	Mode 1~ Mode 5	CLASS B	Pass	Site1
Note: 1, Measurement taken is within the measurement uncertainty of measurement system. 2, ☒ The item has been tested; ☐ 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

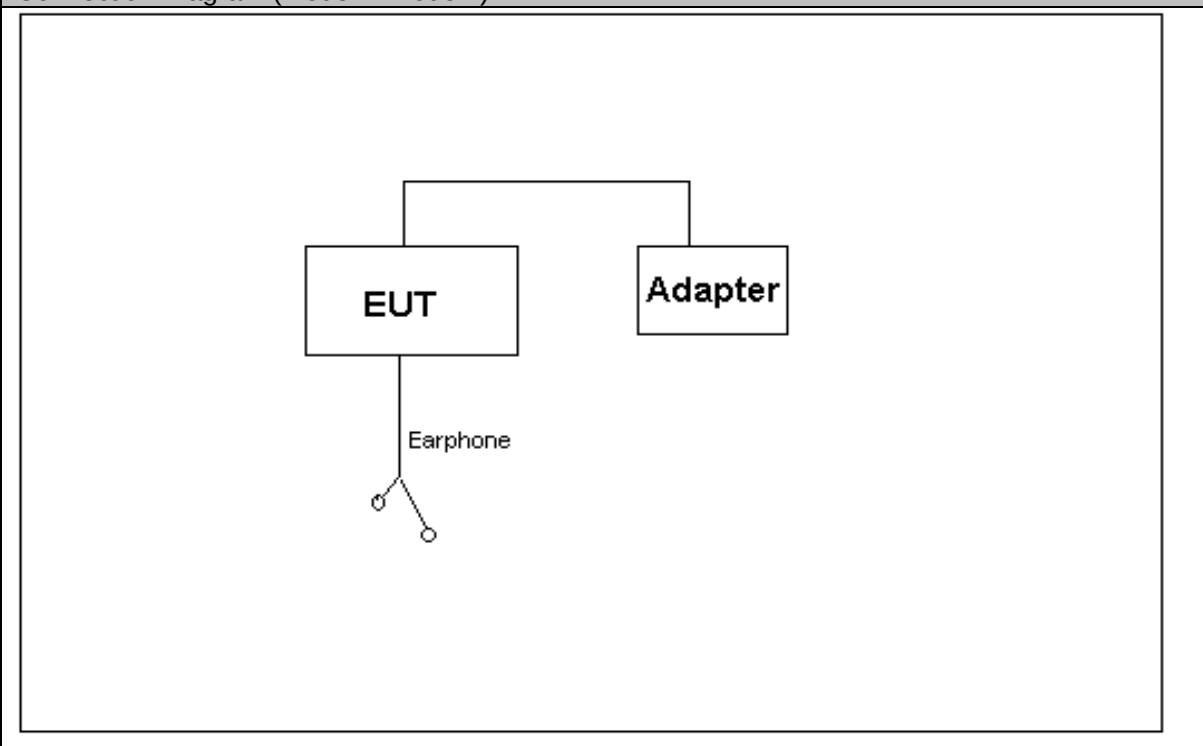
Huawei has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was in this test report and defined as below:

Test Mode	
Mode 1:	Adapter + earphone + Camera On + Idle
Mode 2:	Adapter + earphone + MP3 + Idle
Mode 3:	Adapter + earphone +Traffic
Mode 4:	Adapter + earphone + FM + Idle
Mode 5:	Adapter +Traffic
Mode 6:	Data Transmitting + earphone + Idle
Mode 7:	Traffic
Mode 8:	Camera On + earphone + Idle
Mode 9:	MP3 +Earphone + Idle
Mode 10:	FM + Earphone + Idle
Mode 11	USB Playing + Earphone + Idle

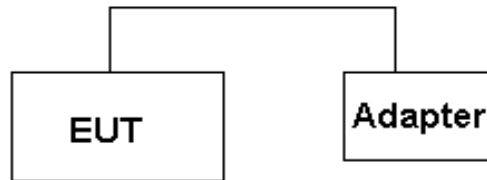
Remark: If there is more than one adapter, each one should be applied throughout the compliance test respectively, however, only the worst case will be recorded in this report.

3.2 Test System Configuration

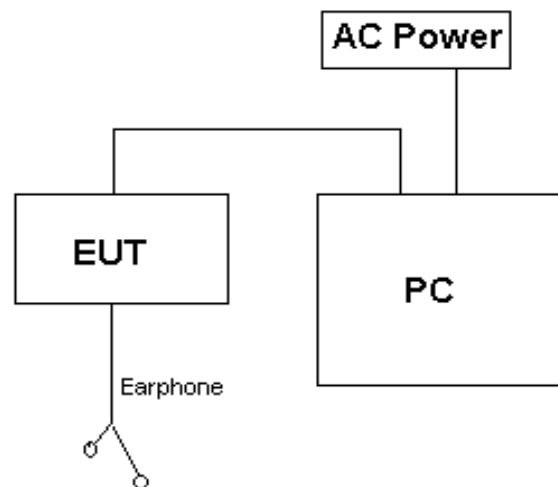
Connection Diagram (Mode 1~Mode 4)



Connection Diagram (Mode 5)



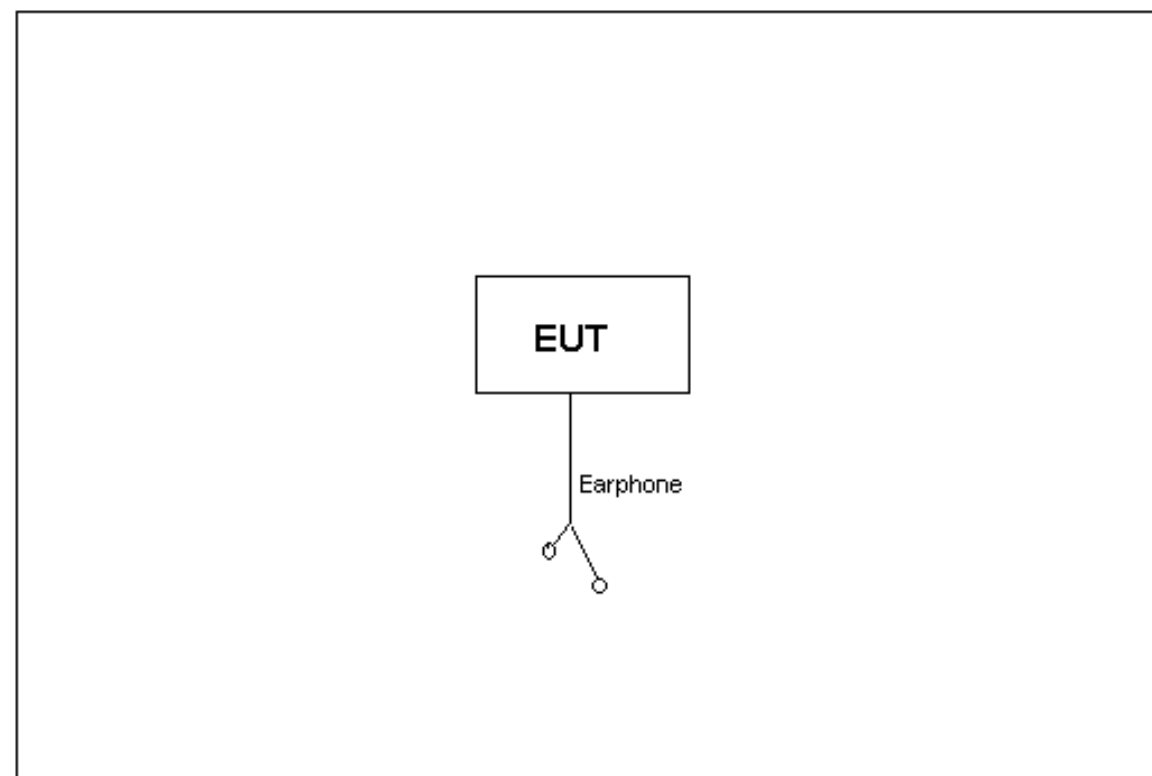
Connection Diagram (Mode 6)



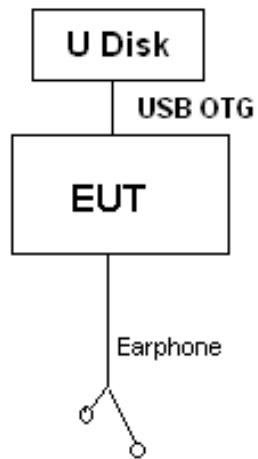
Connection Diagram (Mode 7)



Connection Diagram (Mode 8~Mode 10)



Connection Diagram (Mode 11)





3.3 Cables Used during Test

Cable	Quantity	Length	Type of Cable
USB	1	<3m	Shielded
USB OTG	1	<1m	Shielded
Earphone	1	<3m	Unshielded

3.4 Associated Equipment Used during Test

Name	Model	Manufacturer	S/N	Calibrated Deadline	Cal interval (month)
Radio Communication Tester	CMU200	R&S	3607111924	2013-06-07	12
Notebook	X200	ThinkPad	31090403588	/	/

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 C63.4-2009. The test distance was 3m. The set-up and test methods were according to ANSI C63.4-2009.

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

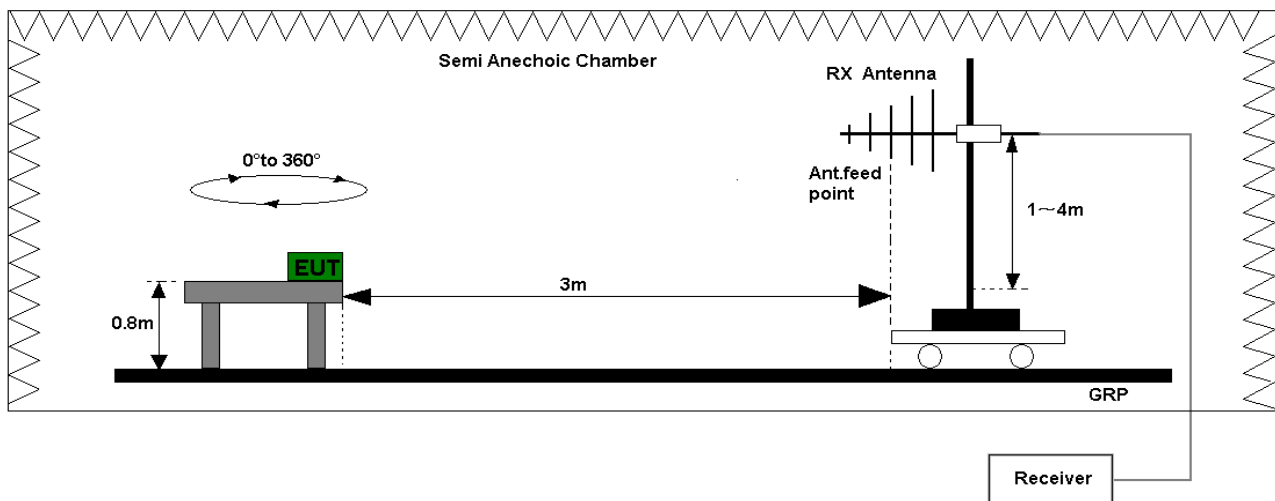


Figure 1. Test set-up of radiated disturbance(30MHz-1GHz)

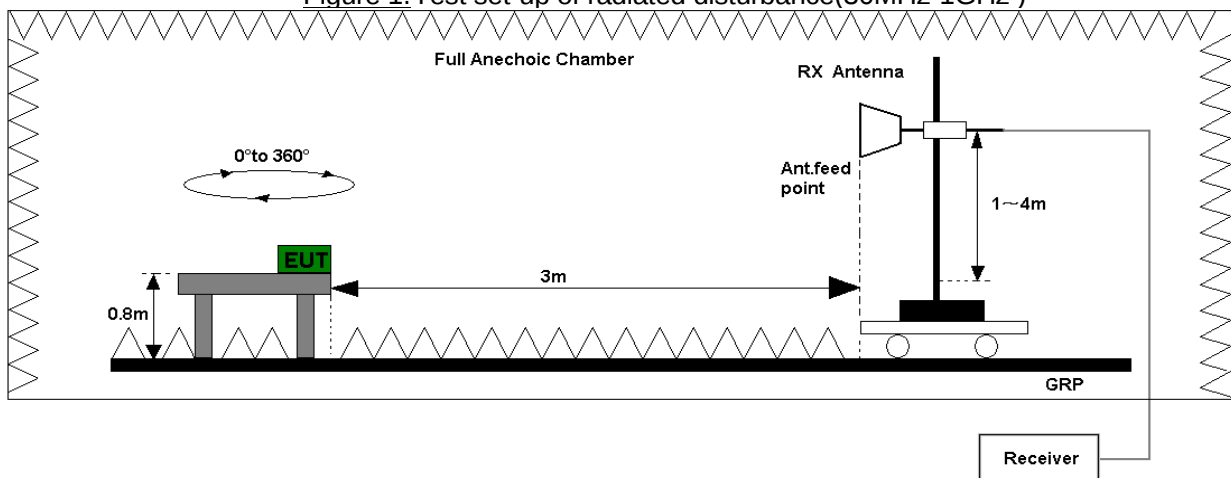


Figure 2. Test set-up of radiated disturbance(above 1GHz)



4.1.3 Test Results

The EUT has met the requirements for Radiated Emission of enclosure port.
The test data see section 7.1 of this report.

Test Limits				
Frequency of Emission (MHz)	Radiated Limit			
	Unit(μ V/m)		Unit(dB μ V/m)	
30-88	100		40	
88-216	150		43.5	
216-960	200		46	
Above 960	500		54	
Above 1000	AV	PK	AV	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 C63.4-2009. 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

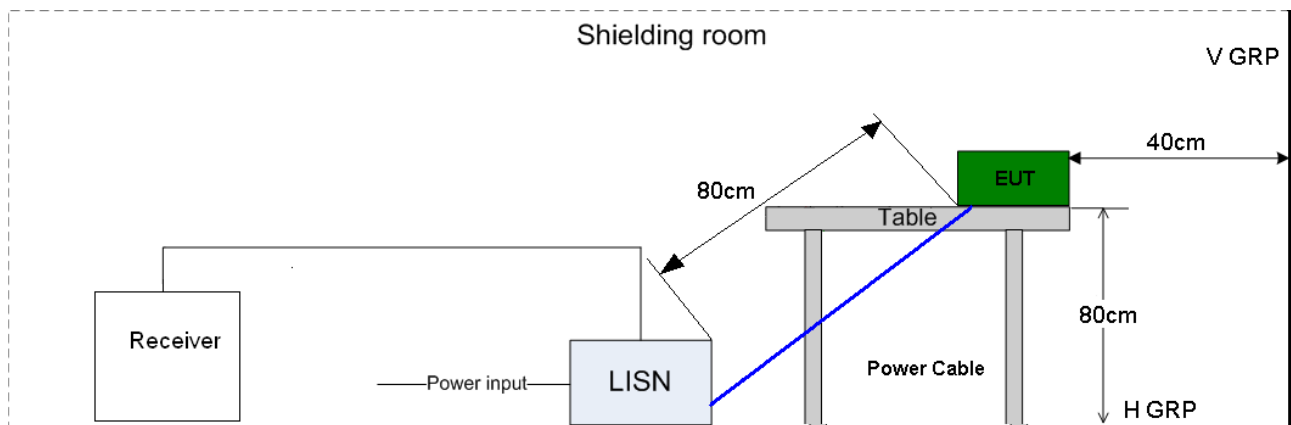


Figure 3. Test Set-up of conducted disturbance

4.2.3 Test Results

The EUT has met requirements for Conducted disturbance of power lines.

The test data see section 7.2 of this report.

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



5 Main Test Instruments

Main Test Equipments						
Test item	Test Instrument	Model	S/N	Manufacturer	Calibrated Deadline	Cal interval (month)
RE	EMI Test receiver	ESU26	100150	R&S	May.27, 2013	12
	Broadband Antenna	VULB 9163	9163-941	SCHWARZBECK	Jul.07, 2013	24
	Horn Antenna	HF906	100683	R&S	May.15, 2013	24
CE	EMI Test receiver	ESCI	101163	R&S	Jan. 28, 2014	12
	Artificial Mains Network	ENV216	100382	R&S	Jan. 28, 2014	12
Software Information						
Test Item	Software Name	Manufacturer		Version		
RE	ES-K1	R&S		1.7.1		
CE	EMC32	R&S		V8.52.0		

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
RE(30MHz-1GHz)	Field strength (dB μ V/m)	U=4.1dB; k=2
RE(1GHz-18GHz)	Field strength (dB μ V/m)	U=5.1dB; k=2
CE	Disturbance Voltage (dB μ V)	U=2.6dB; k=2

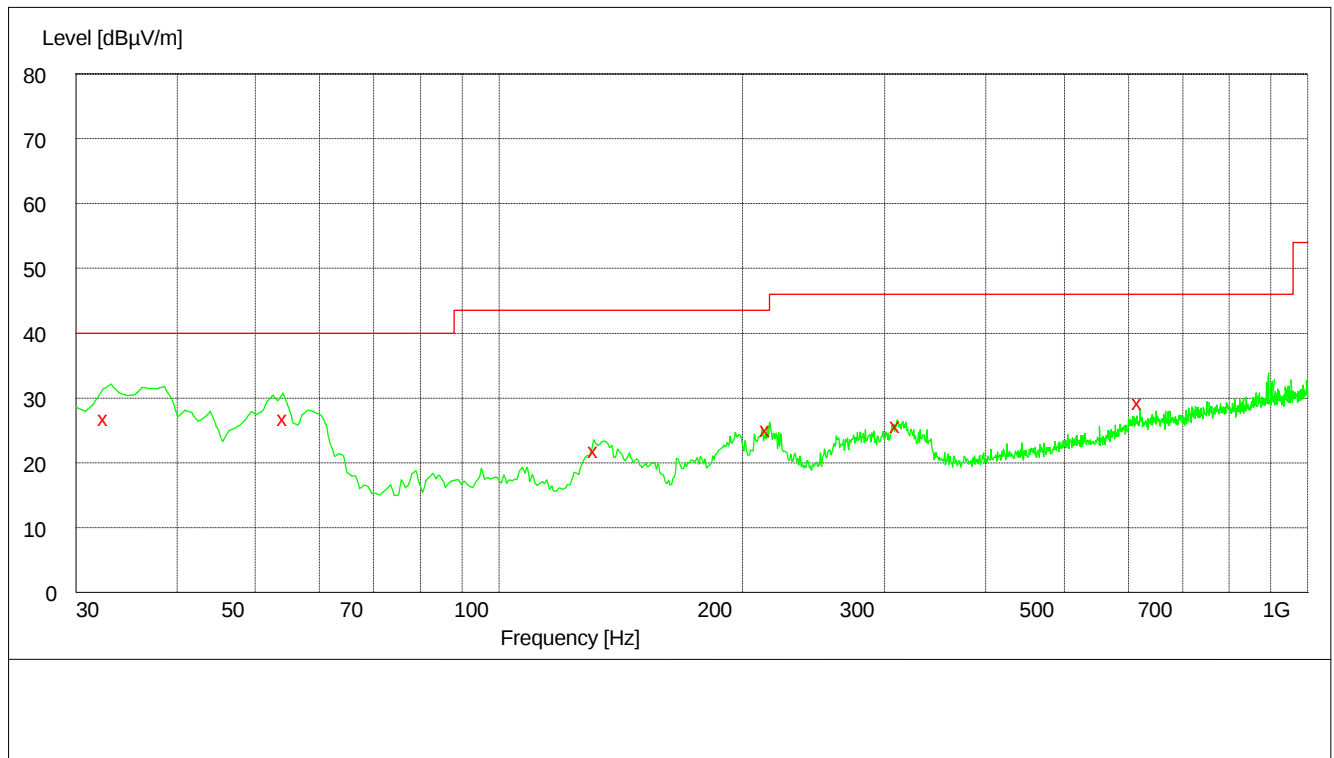


7 Test Data and Graph

Only the worst test result was shown in this report.

7.1 Radiated Disturbance

30MHz~1GHz



MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dBμV/m	Transducer dB	Limit dBμV/m	Margin dB	Height cm	Azimuth deg	Polarisation
32.640000	27.10	14.8	40.0	12.9	101.0	203.00	VERTICAL
54.360000	27.00	14.7	40.0	13.0	101.0	275.00	VERTICAL
131.700000	22.10	10.3	43.5	21.4	101.0	125.00	VERTICAL
214.800000	25.40	12.7	43.5	18.1	146.0	290.00	HORIZONTAL
311.100000	25.90	15.4	46.0	20.1	100.0	349.00	HORIZONTAL
620.400000	29.50	21.7	46.0	16.5	200.0	67.00	HORIZONTAL

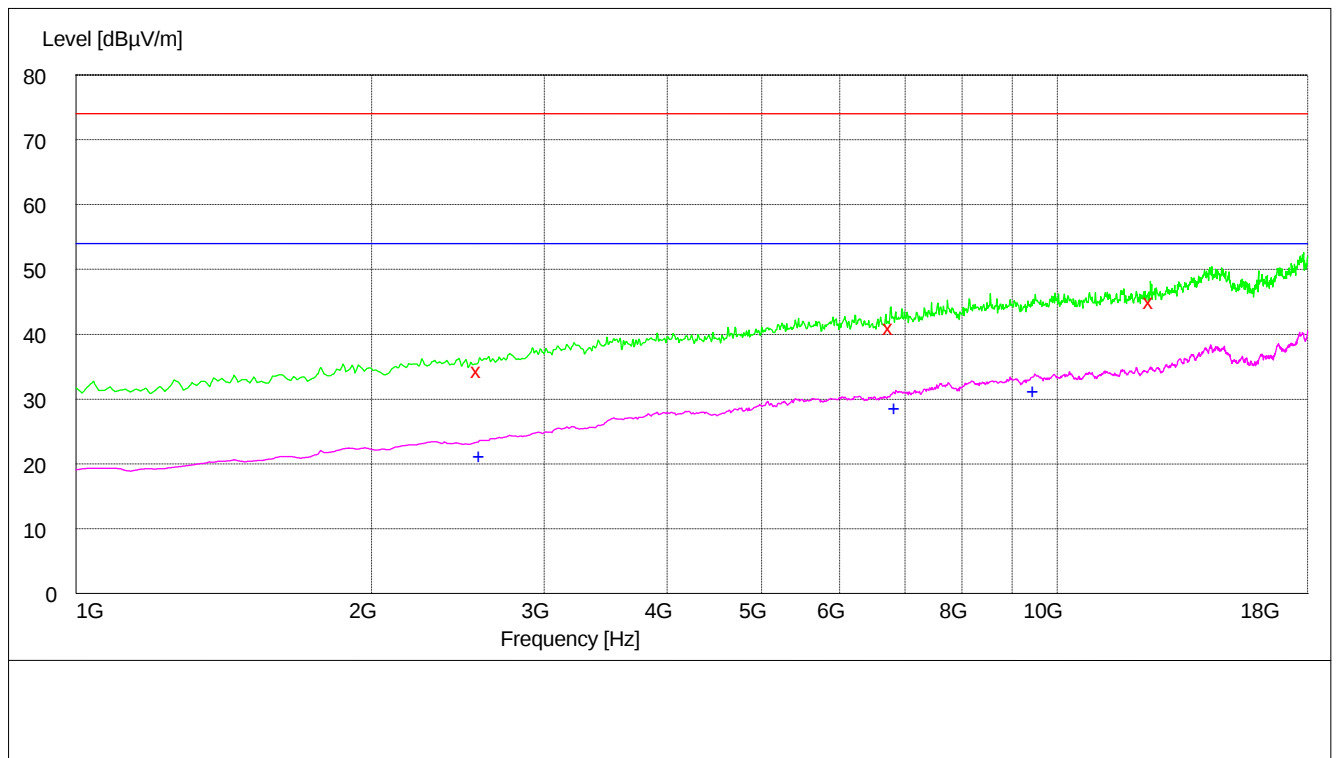
Note:

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.



1GHz~18GHz



MEASUREMENT RESULT: PK Detector

Frequency MHz	Level dBμV/m	Transducer dB	Limit dBμV/m	Margin dB	Height cm	Azimuth deg	Polarisation
2570.600000	34.70	-8.8	74.0	39.3	150.0	272.00	HORIZONTAL
6761.900000	41.30	1.3	74.0	32.7	119.0	269.00	HORIZONTAL
12454.700000	45.20	10.0	74.0	28.8	100.0	335.00	VERTICAL

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBμV/m	Transducer dB	Limit dBμV/m	Margin dB	Height cm	Azimuth deg	Polarisation
2586.200000	21.40	-8.7	54.0	32.6	141.0	296.00	HORIZONTAL
6849.500000	28.80	1.4	54.0	25.2	150.0	11.00	VERTICAL
9478.900000	31.30	5.7	54.0	22.7	111.0	248.00	HORIZONTAL

Note:

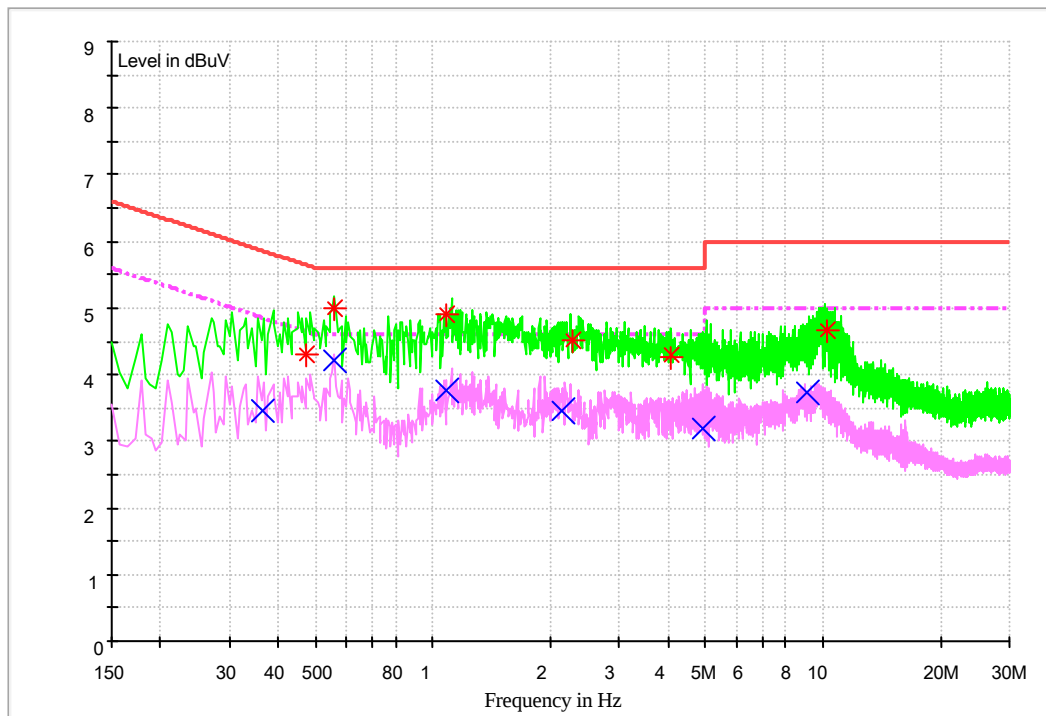
Level = Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain)

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



7.2 Conducted Disturbance

AC Port Test Data



MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dBμV	Line	Transd dB	Margin dB	Limit dBμV	PE
0.472905	43.1	L1	9.7	13.4	56.5	FLO
0.556121	50.1	L1	9.7	5.9	56.0	FLO
1.086042	49.1	L1	9.7	6.9	56.0	FLO
2.285385	46.0	N	9.7	10.0	56.0	FLO
4.047702	43.2	L1	9.8	12.8	56.0	FLO
10.203251	46.7	N	9.9	13.3	60.0	FLO

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBμV	Line	Transd dB	Margin dB	Limit dBμV	PE
0.365164	35.6	L1	9.7	13.0	48.6	FLO
0.554726	42.3	L1	9.7	3.7	46.0	FLO
1.084332	37.6	L1	9.7	8.4	46.0	FLO
2.159186	30.7	L1	9.7	15.3	46.0	FLO
4.940108	31.8	L1	9.8	14.2	46.0	FLO
9.064076	37.4	L1	9.9	12.6	50.0	FLO

Note:



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

-----**END**-----