



EMC Test Report

Product Name:

UMTS/GSM/GPRS/EDGE Mobile Phone with Bluetooth

Model Number:

HUAWEI U2805-5

Report No: SYBH(Z-EMC)030062013-2

FCC ID: QISU2805-5

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2. The laboratory has passed the accreditation by The American Association for Laboratory Accreditation (A2LA). The accreditation number is 2174.01.
3. The laboratory has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements. The site recognition number is 97456.
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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: Jun.24, 2013
Start Date of Test: Jun.24, 2013
End Date of Test: Jun.24, 2013
Test Result: Pass

Approved By
(Lab Manager)

2013-06-24
Date

Liu Chunlin
Name

Signature

Operator
(Test Engineer)

2013-06-24
Date

Kong Xiangdeng
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	UMTS/GSM/GPRS/EDGE Mobile Phone with Bluetooth
Model Number	HUAWEI U2805-5
TX Frequency	GSM850: 824MHz To 849MHz GSM1900: 1850MHz To 1910MHz WCDMA BAND II: 1850MHz To 1910MHz WCDMA BAND V: 824MHz To 849MHz Bluetooth: 2400MHz To 2483.5MHz
RX Frequency	GSM850: 869MHz To 894MHz GSM1900: 1930MHz To 1990MHz WCDMA BAND II: 1930MHz To 1990MHz WCDMA BAND V: 869MHz To 894MHz Bluetooth: 2400MHz To 2483.5MHz
S/N	T8B4TA1351000087
HW Version	GOODY-V1.0
SW Version	U2805-5V100R001C00B201SP07S
EUT Accessory	
Data cable	Data Cable USB A Male to Micro USB, shielded
Adapter	Brand: HUAWEI Model: HW-050055U1W(02220424) Input voltage: ~100-240V 50/60Hz 200mA Output voltage: 5V/550mA Rated Power: 2.75W S/N: TPACC0447999; S/N: HKAD11370380
Rechargeable Li-ion	Brand: HUAWEI Battery Model: HB5A3 Rated capacity: 1000mA Nominal Voltage:  +3.7V Charging Voltage:  +4.2V S/N: XYP1304010600119; S/N: FH1303051900756;

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 10	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

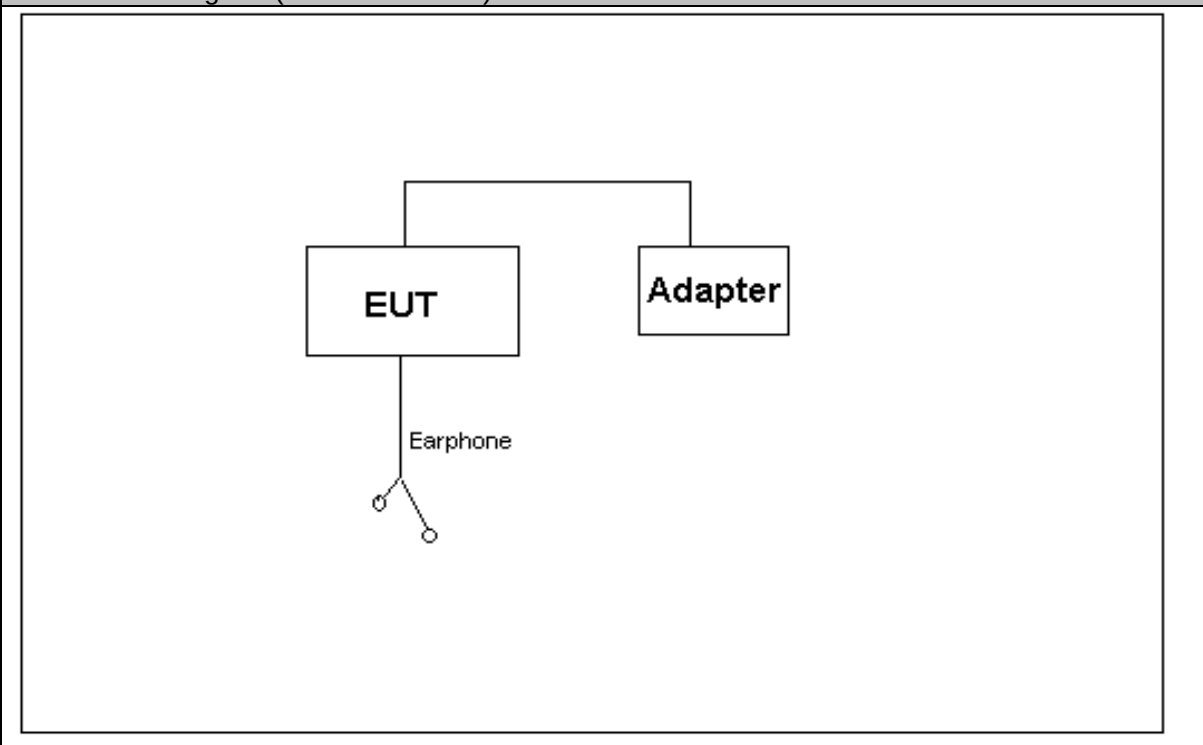
Huawei has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was in this test report and defined as below:

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

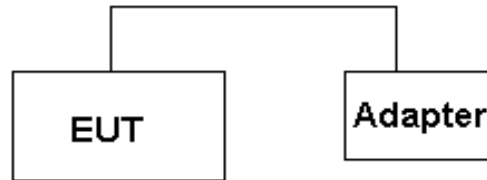
Remark: If there is more than one adapter, each one should be applied throughout the compliance test respectively, however, only the worst case will be recorded in this report.

3.2 Test System Configuration

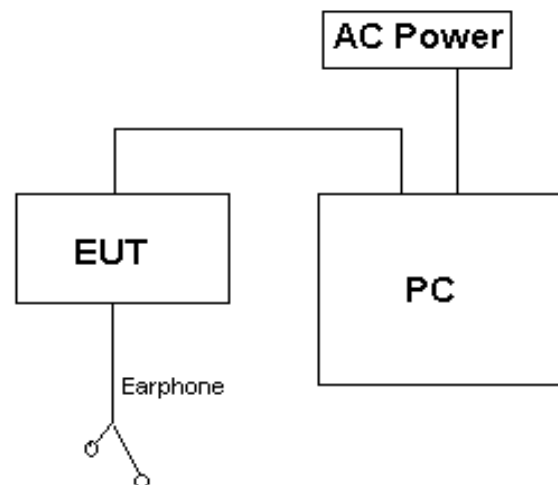
Connection Diagram (Mode 1~Mode 4)



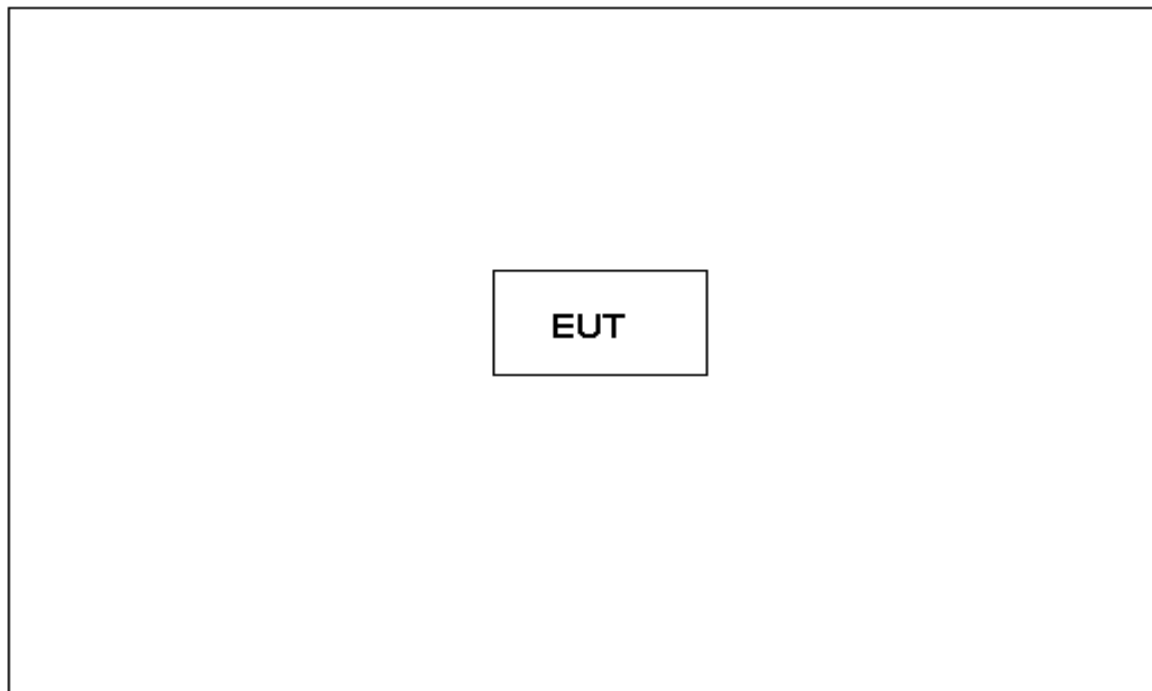
Connection Diagram (Mode 5)



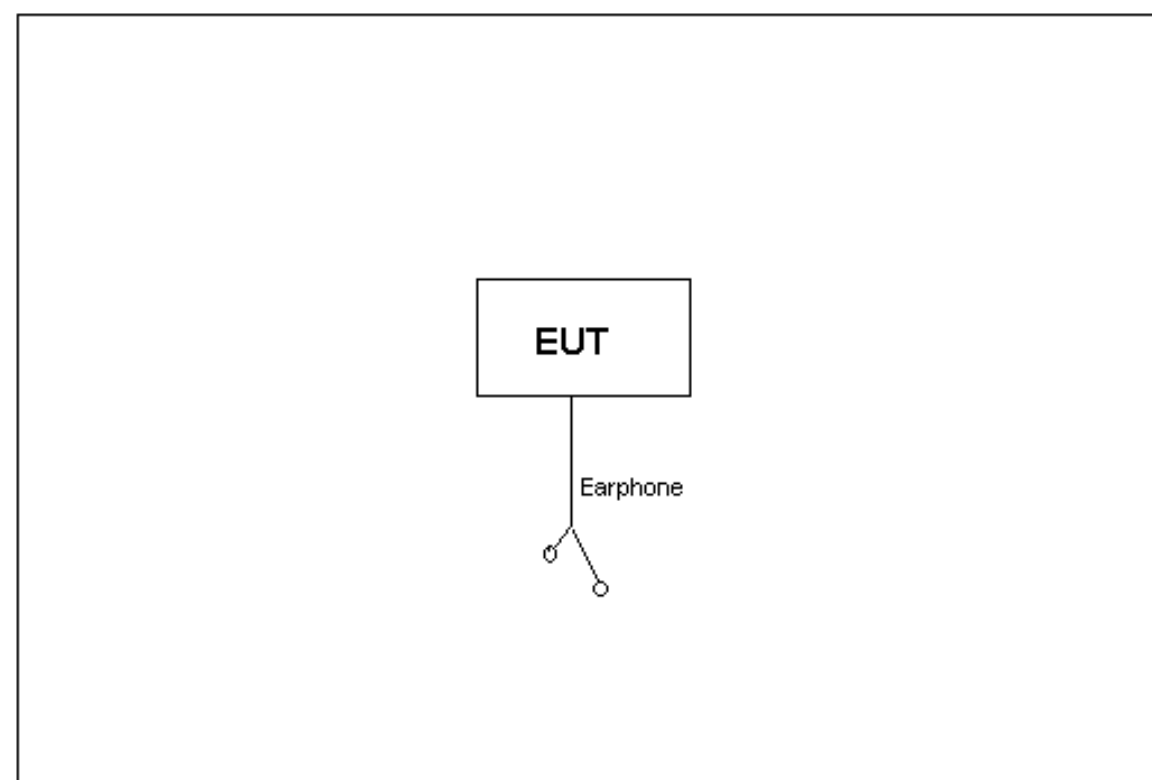
Connection Diagram (Mode 6)



Connection Diagram (Mode 7)



Connection Diagram (Mode 8~Mode 10)





3.3 Cables Used during Test

Cable	Quantity	Length	Type of Cable
USB	1	<3m	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	117385	2013-12-22	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

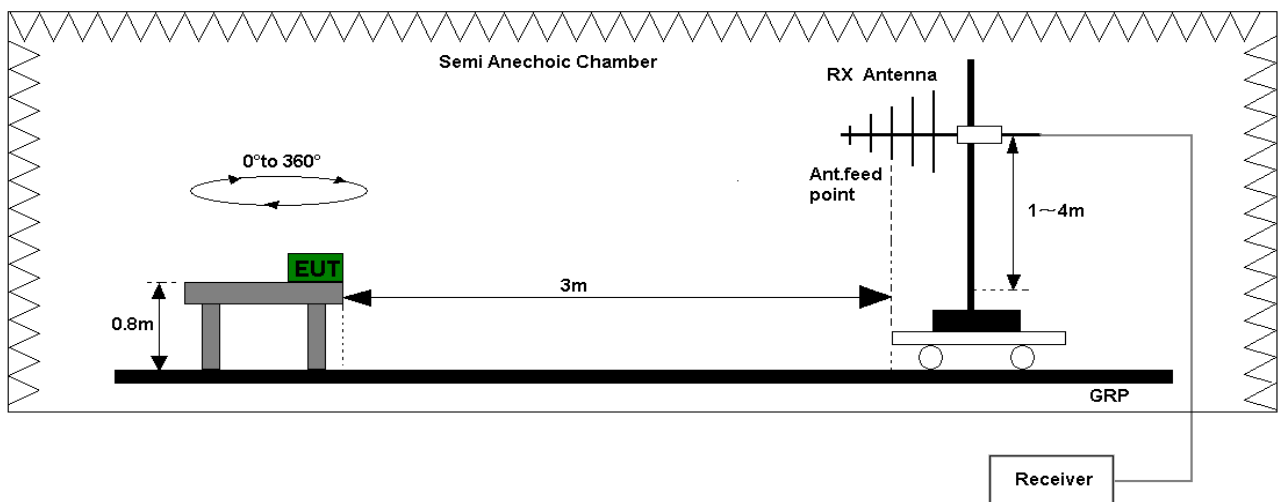


Figure 1. Test set-up of radiated disturbance(30MHz-1GHz)

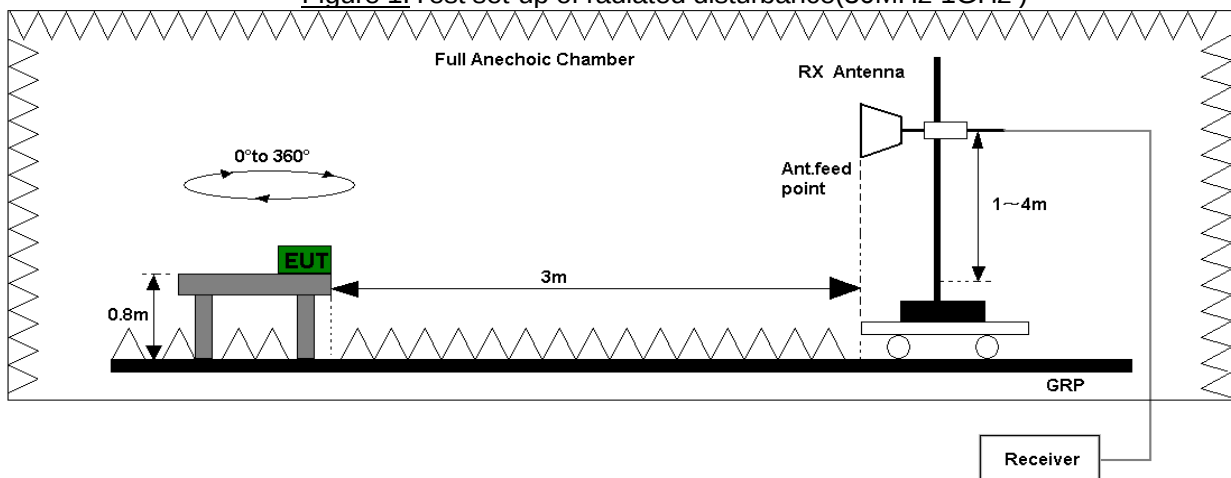


Figure 2. Test set-up of radiated disturbance(above 1GHz)



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

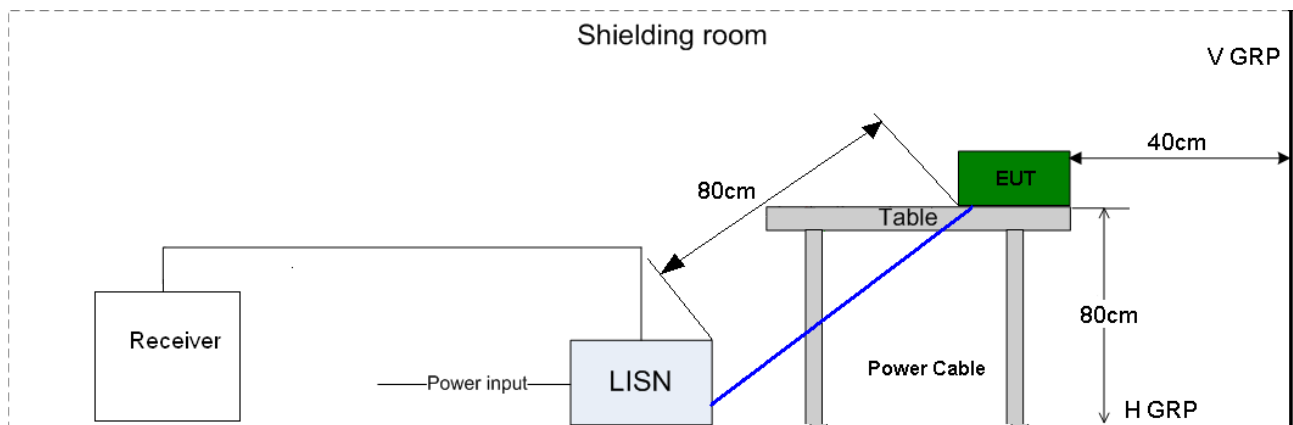


Figure 3. Test Set-up of conducted disturbance

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.14, 2014	12
	Broadband Antenna	VULB 9163	9163-491	SCHWARZ BECK	Feb..21, 2015	24
	Horn Antenna	HF906	100683	R&S	Feb.01, 2015	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 (dBμV/m)	U=4.1dB; k=2
RE(1GHz-18GHz)	Field strength (dBμV/m)	U=5.1dB; k=2
CE	Disturbance Voltage (dBμV)	U=2.6dB; k=2

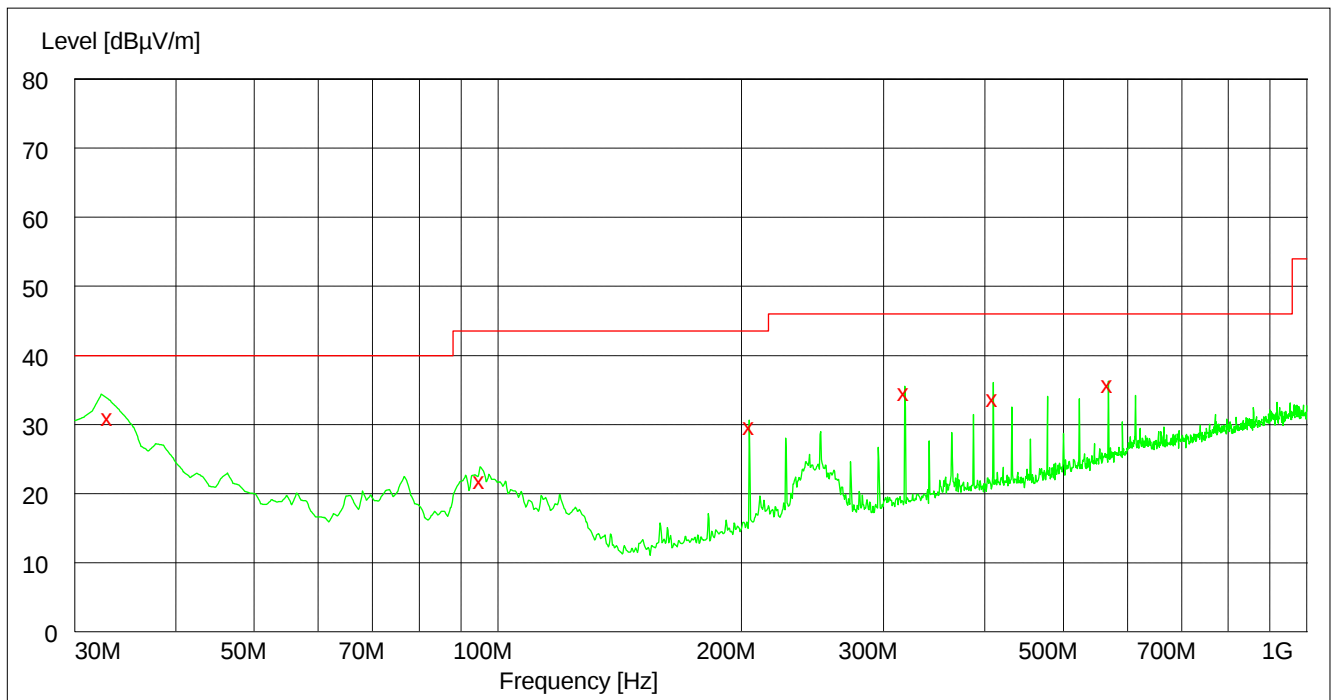


7 Test Data and Graph

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
33.060000	31.40	11.8	40.0	8.6	100.0	53.00	VERTICAL
95.340000	22.20	12.8	43.5	21.3	100.0	359.00	VERTICAL
205.500000	30.00	12.3	43.5	13.5	100.0	87.00	HORIZONTAL
319.260000	35.00	16.0	46.0	11.0	140.0	76.00	HORIZONTAL
410.220000	34.00	18.6	46.0	12.0	186.0	77.00	HORIZONTAL
569.400000	36.10	21.9	46.0	9.9	190.0	245.00	VERTICAL

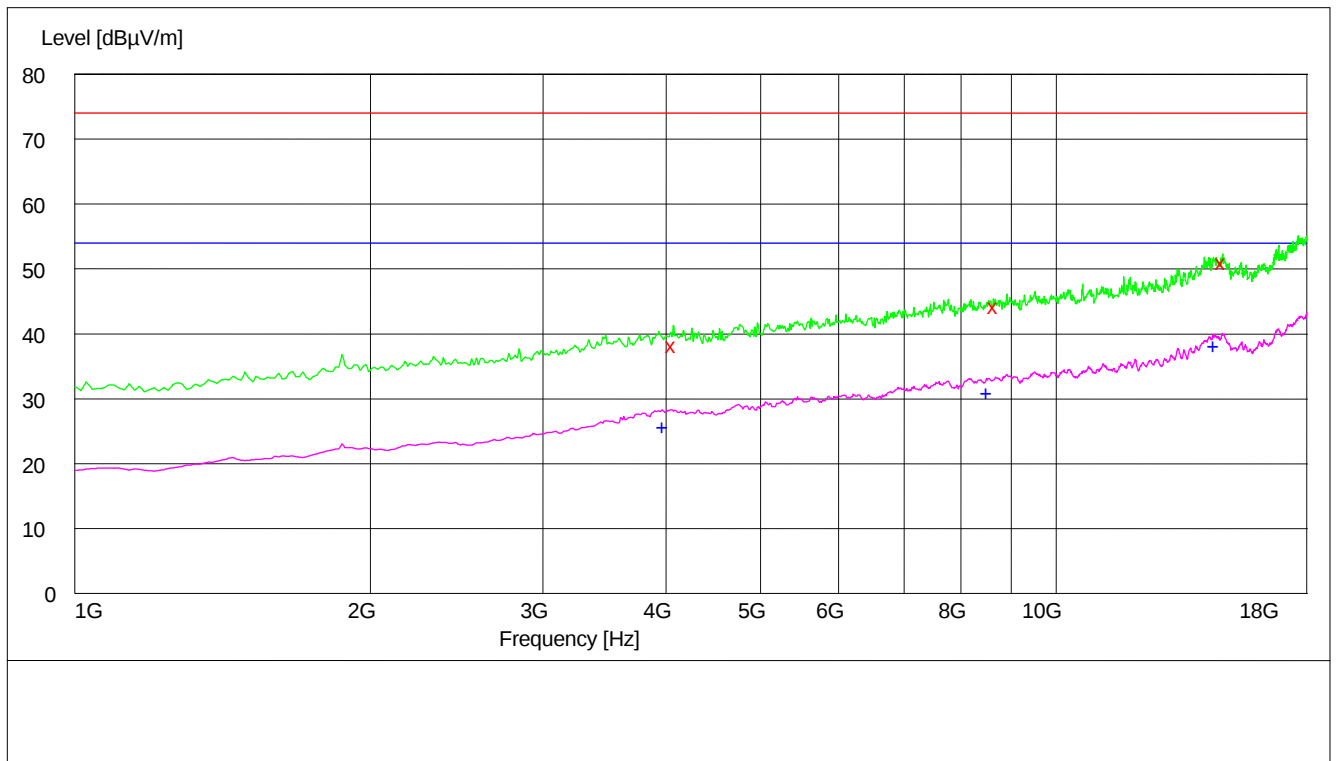
Note:

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
1735.900000	30.30	-11.9	74.0	43.7	100.0	45.00	VERTICAL
4219.700000	38.10	-3.6	74.0	35.9	135.0	24.00	HORIZONTAL
17747.100000	54.90	21.6	74.0	19.1	100.0	95.00	HORIZONTAL

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBμV/m	Transducer dB	Limit dBμV/m	Margin dB	Height cm	Azimuth deg	Polarisation
1982.200000	18.50	-10.6	54.0	35.5	140.0	127.00	HORIZONTAL
4079.700000	25.50	-3.5	54.0	28.5	150.0	14.00	VERTICAL
17994.000000	42.00	21.2	54.0	12.0	100.0	359.00	HORIZONTAL

Note:

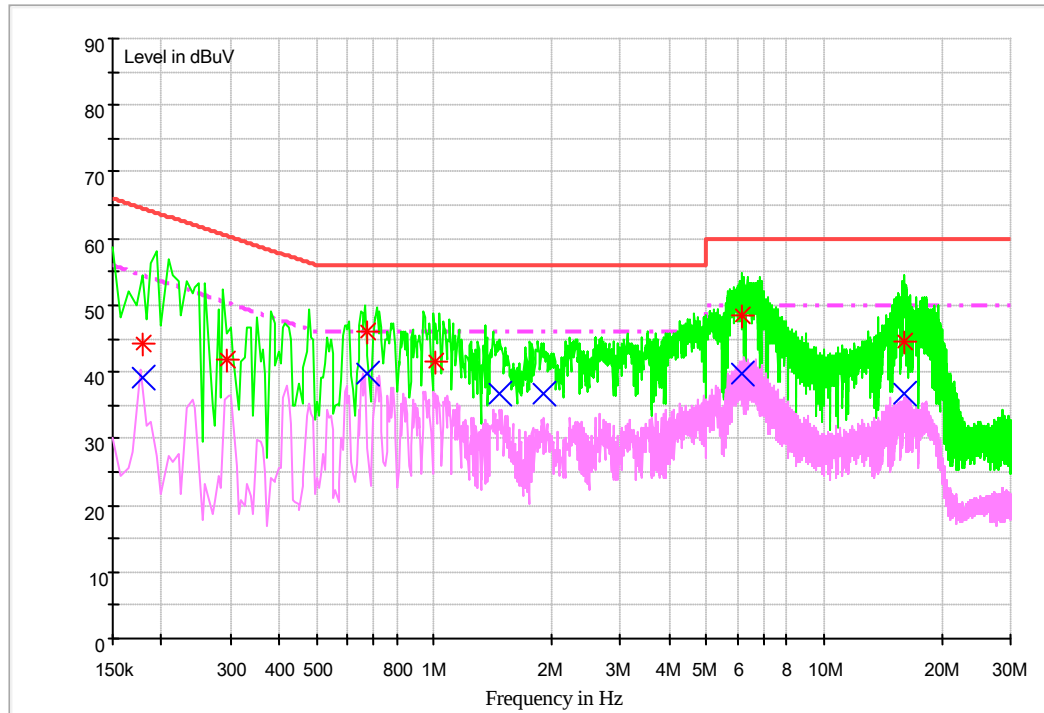
Level = Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain)

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
0.179364	44.3	N	9.7	20.2	64.5	FLO
0.295658	42.0	N	9.7	18.4	60.4	FLO
0.674989	46.2	N	9.7	9.8	56.0	FLO
1.009181	41.5	N	9.7	14.5	56.0	FLO
6.127744	48.3	N	9.8	11.7	60.0	FLO
16.075560	44.5	L1	10.0	15.5	60.0	FLO

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBμV	Line	Transd dB	Margin dB	Limit dBμV	PE
0.178928	39.2	N	9.7	15.3	54.5	FLO
0.673358	39.9	N	9.7	6.1	46.0	FLO
1.465388	36.7	N	9.7	9.3	46.0	FLO
1.902528	36.7	N	9.7	9.3	46.0	FLO
6.128531	39.6	N	9.8	10.4	50.0	FLO
16.077044	36.8	L1	10.0	13.2	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**-----