



EMC Test Report

Product Name: Fixed Wireless Terminal

Model Number: F253; PCDH364SPC

Report No: SYBH(Z-EMC)077062012-2
FCC ID: QISF253

Reliability Laboratory of Huawei Technologies Co., Ltd.

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Applicant: Huawei Technologies Co., Ltd.
Address: Huawei Base, Bantian, Longgang District, Shenzhen
518129, P.R. China

Date of Receipt Test Item: Jun.15, 2012
Start Date of Test: Jun.15, 2012
End Date of Test: Jun.25, 2012

Test Result: Pass

Approved By (Lab Manager)	2012-06-26	Liuchunlin	<i>Liuchunlin</i>
	Date	Name	Signature

Operator	2012-06-26	Xiang Zaiji	<i>XiangZaiji</i>
	Date	Name	Signature

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1 General Information

1.1 EUT Description

EUT Description	
Product Name	Fixed Wireless Terminal
Model Number	F253; PCDH364SPC
Serials Number	G6B01A9260300378
TX Frequency	CDMA BC0: 824MHz To 849MHz CDMA BC1: 1850MHz To 1910MHz CDMA BC10: 816MHz To 824MHz
RX Frequency	CDMA BC0: 869MHz To 894MHz CDMA BC1: 1930MHz To 1990MHz CDMA BC10: 861MHz To 869MHz
HW Version	WL1F253I
SW Version	V100R001
EUT Accessory	
Adapter	Manufacturer: Huawei Technologies Co., Ltd. Adapter Model: CNR2260 Voltage Nominal: ~230V Input Voltage :100-240V ~50/60Hz, 0.25A Output Voltage:  12V 500mA Rated Power: 6W SN:TPIC312030031
Li-ion Battery	Manufacturer: Huawei Technologies Co., Ltd. Battery Model: HGB-15AAX3 Rated capacity: 1500mAh Nominal Voltage:  3.6V Charging Voltage:  4.2V SN:GRP11052701768
Li-ion Battery	Manufacturer: Huawei Technologies Co., Ltd. Battery Model: HGB-15AAX3 Rated capacity: 1500mAh Nominal Voltage:  3.6V Charging Voltage:  4.2V SN:HGY12060711947

Remark: The information of the EUT is declared by the manufacturer. Please refer to the specifications or user manual for details.

1.2 Test Site Information

Test Site:	RELIABILITY LABORATORY OF HUAWEI TECHNOLOGIES CO., LTD.
Test Site Location:	Bantian Longgang District Shenzhen, P.R. China

1.3 Applied Standards

APPLIED STANDARD

47 CFR FCC Part 15:2011, 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	Mode1	CLASS B	Pass	Site1
<u>Conducted Emissions</u> <input checked="" type="checkbox"/> DC Power Port <input checked="" type="checkbox"/> AC Power Port <input type="checkbox"/> Telecommunication Ports	Mode1 Mode2	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

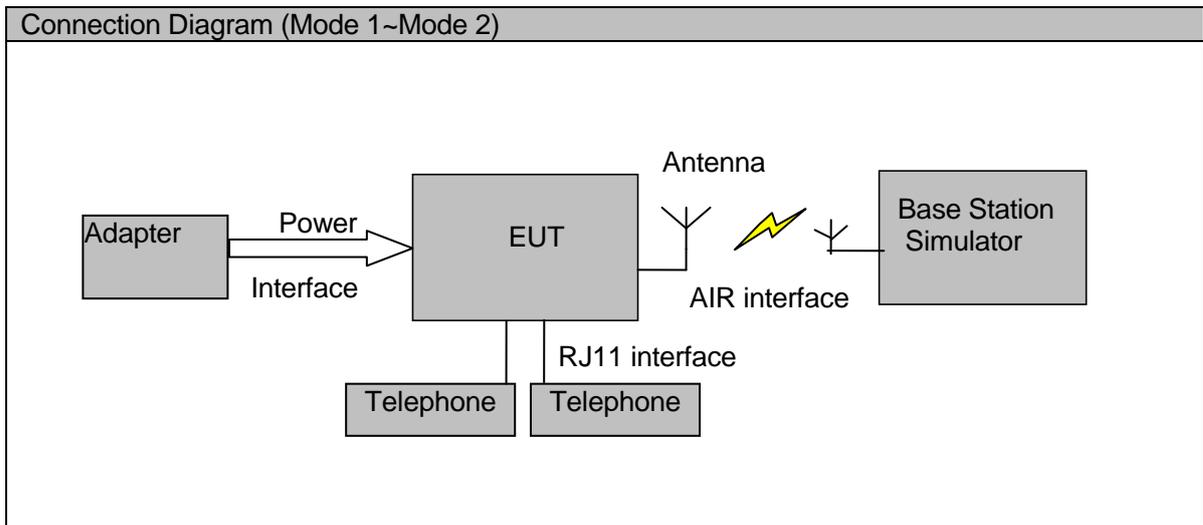
3.1 Test Mode

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:	EUT with Adapter + Idle
Mode 2:	EUT with Adapter +Traffic

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 Configurations of Test System



3.3 Cables Used during Test

Cable	Quantity	Length	Type of Cable
DC Power	1	1.5m	Unshielded
RJ11	2	<3m	Unshielded

3.4 Associated Equipment Used during Test

Name	Model	Manufacturer	S/N	Calibrated Deadline
Radio Communication Tester	CMU200	R&S	3607111817	2012-7-23
Telephone	HCD8166TSD	HUAWEI	/	N/A
Telephone	HCD8166TSD	HUAWEI	/	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 C63.4-2009. 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.

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

4.1.2 Test setup

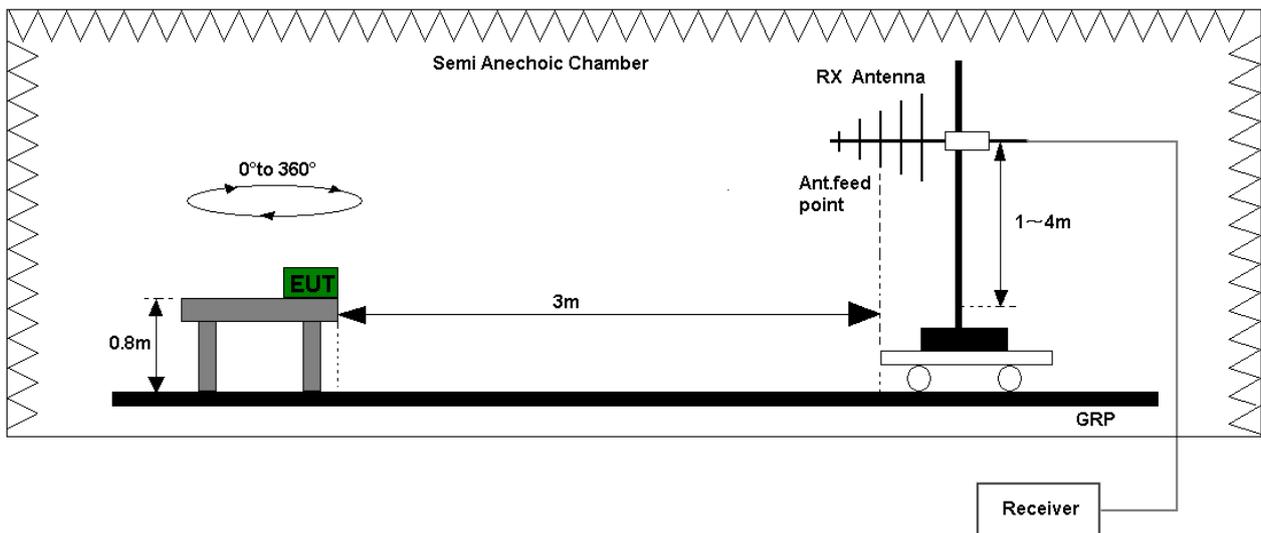


Figure 1. Test set-up of radiated disturbance(30MHz-1GHz)

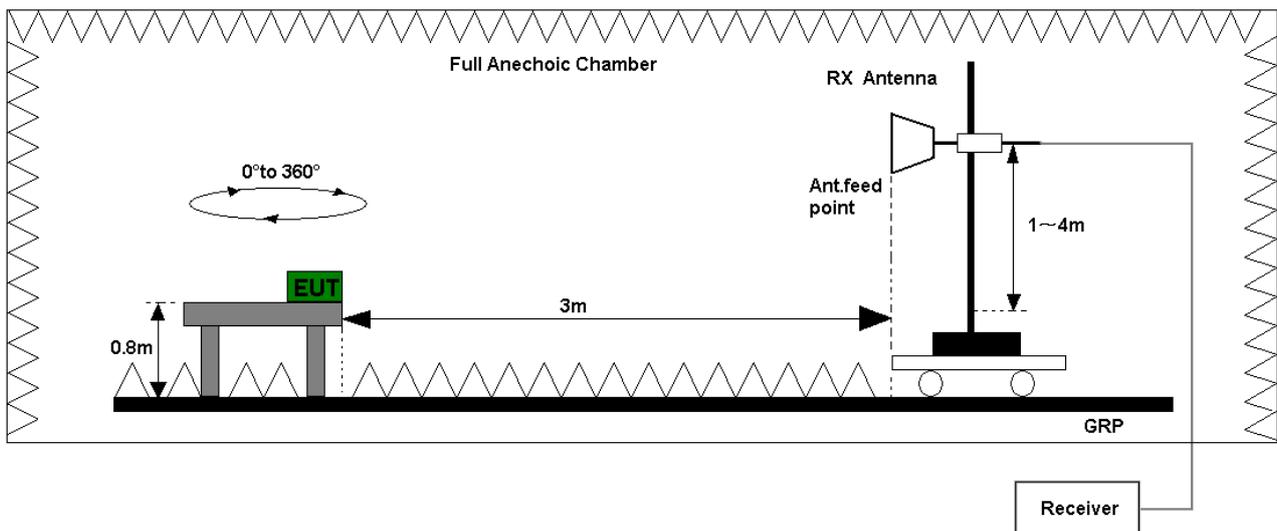


Figure 2. Test set-up of radiated disturbance(above 1GHz)

4.1.3 Test Results

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

Test Limits (Class B)				
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 150kHz to 30 MHz: 9 kHz;

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

4.2.2 Test Setup

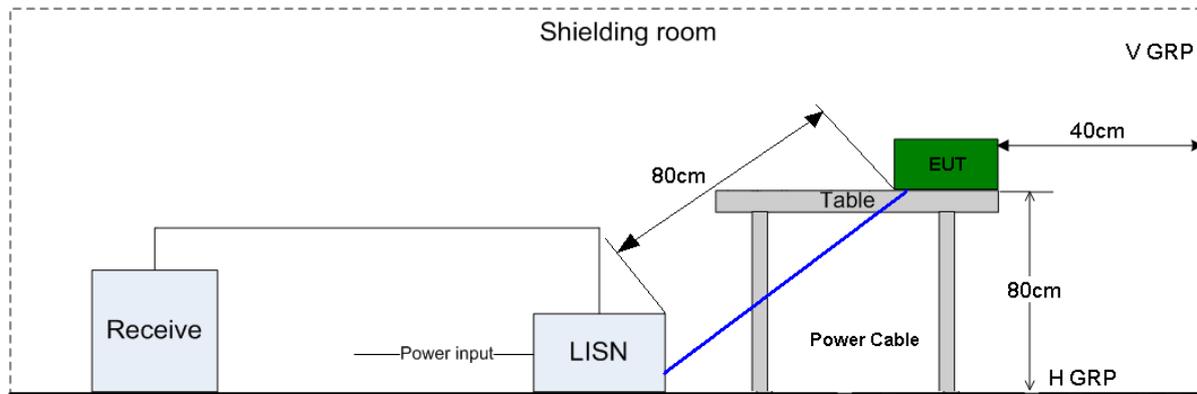


Figure 3. Test Set-up of conducted disturbance

4.2.3 Test Results

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

Refer to the section 7.2 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
RE/CE	EMI Test receiver	ESU26	100150	R&S	May.27, 2013
	EMI Test receiver	ESCI	101163	R&S	Mar.05, 2013
	Broadband Antenna	VULB 9163	9163-941	SCHWARZBECK	Jul.07, 2013
	Horn Antenna	HF906	10084	R&S	May.15, 2013
	Artificial Mains Network	ENV216	100382	R&S	Mar.21, 2013
Software Information					
Test Item	Software Name	Manufacturer		Version	
RE	ES-K1	R&S		1.7.1	
CE	EMC32	R&S		8.52.0	

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:

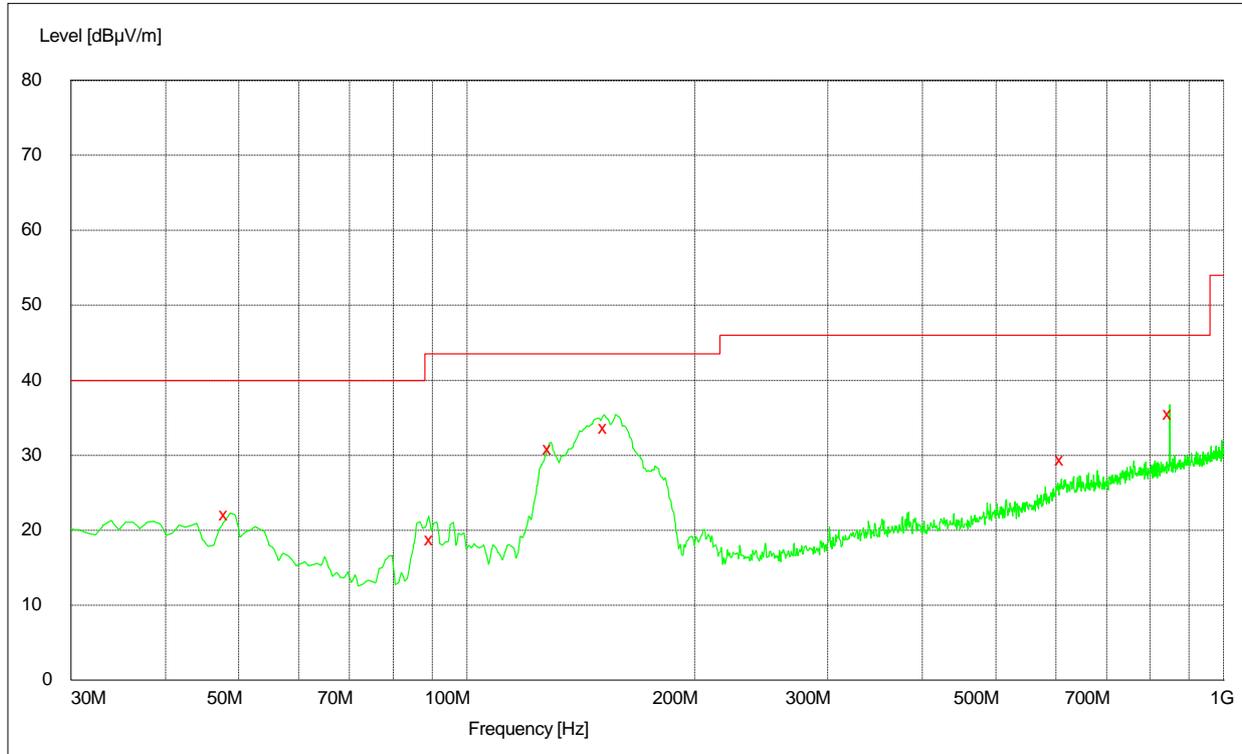
System Measurement Uncertainty		
Items	Extended Uncertainty	
RE(30MHz-1GHz)	Field strength (dB μ V/m)	U=4.1dB; k=2
RE(1GHz-18GHz)	Field strength (dB μ V/m)	U=5.1dB; k=2
CE	Disturbance Voltage (dB μ V)	U=2.6dB; k=2

7 Graph and Test Data

Only the worst test results were shown

7.1 Radiated Disturbance

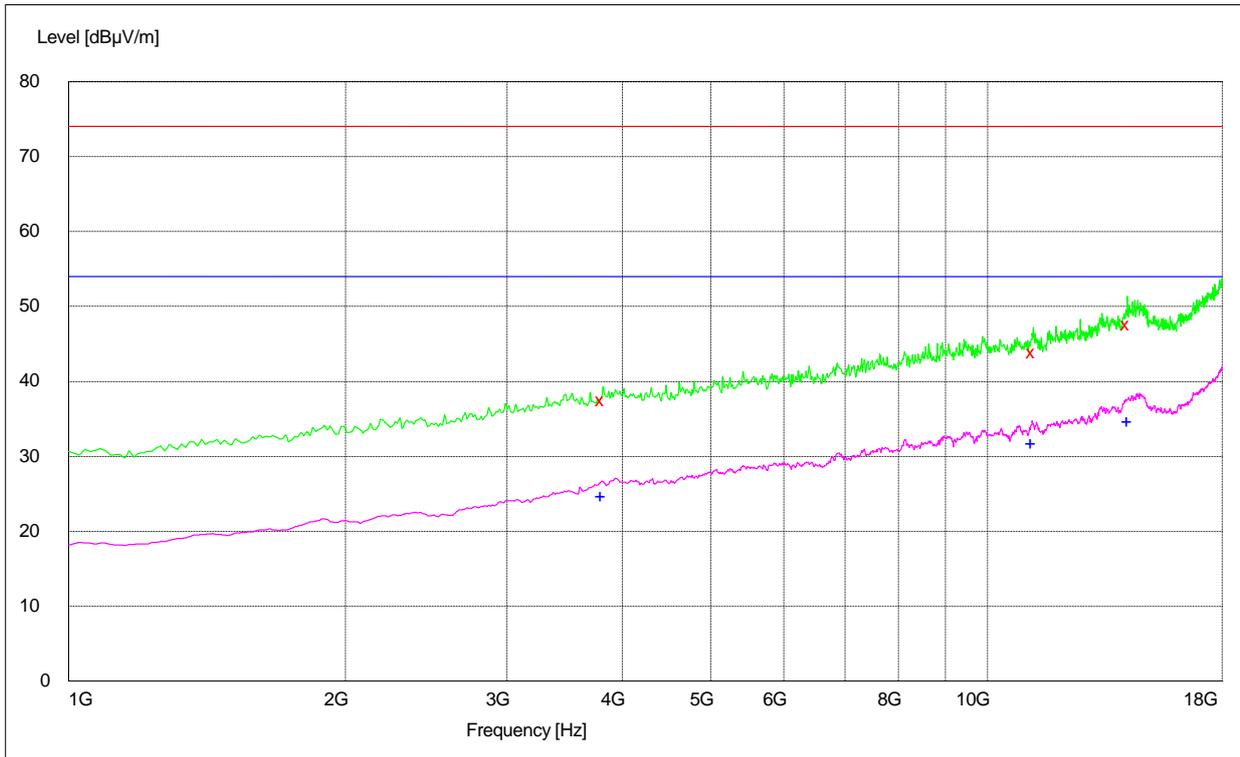
7.1.1 30MHz~1GHz



MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dBµV/m	Transducer dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation
48.120000	21.90	15.0	40.0	18.1	100.0	0.00	VERTICAL
89.820000	18.70	11.8	43.5	24.8	121.0	0.00	VERTICAL
129.000000	30.30	10.4	43.5	13.2	290.0	0.00	VERTICAL
152.580000	33.50	9.9	43.5	10.0	101.0	0.00	VERTICAL
612.120000	29.30	21.5	46.0	16.7	197.0	0.00	HORIZONTAL
848.820000	35.40	24.2	46.0	10.6	122.0	0.00	VERTICAL

7.1.2 1GHz~18GHz



MEASUREMENT RESULT: PK Detector

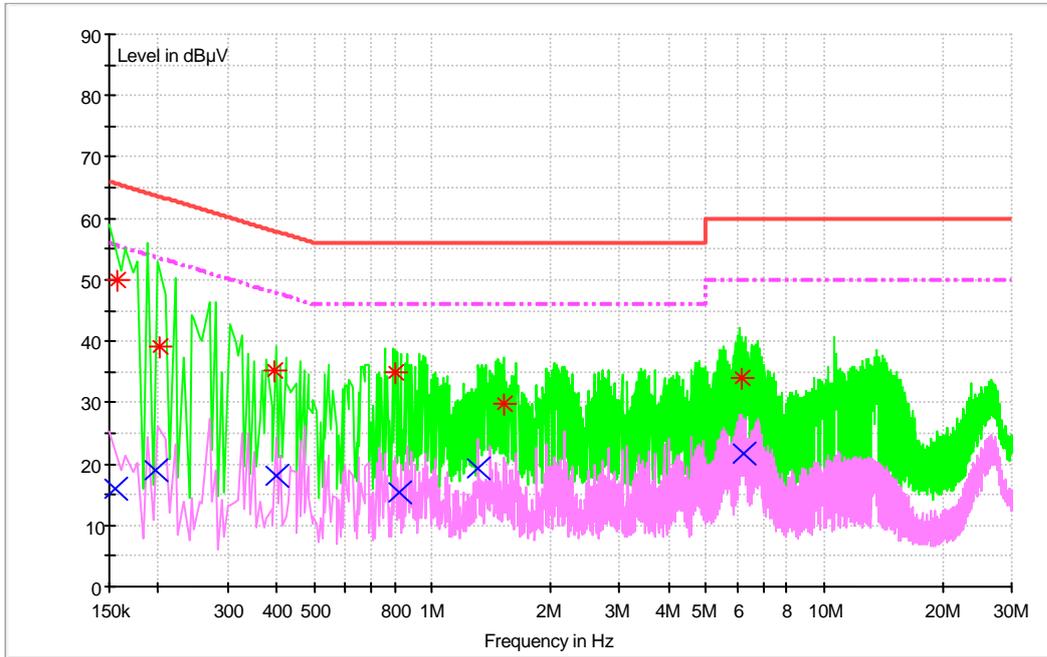
Frequency MHz	Level dBµV/m	Transducer dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation
3810.200000	37.40	-5.0	74.0	36.6	195.0	0.00	VERTICAL
11210.600000	43.70	10.0	74.0	30.3	115.0	314.00	VERTICAL
14201.600000	47.40	13.9	74.0	26.6	151.0	193.00	VERTICAL

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBµV/m	Transducer dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation
3807.700000	24.60	-5.0	54.0	29.4	199.0	196.00	HORIZONTAL
11192.900000	31.70	10.1	54.0	22.3	200.0	313.00	HORIZONTAL
14242.900000	34.60	14.1	54.0	19.4	195.0	360.00	HORIZONTAL

7.2 Conducted Disturbance

7.2.1 AC Port Test Data



MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dBµV	Transducer dB	Limit dBµV	Margin dB	Line	PE
0.157414	50.0	9.7	65.6	15.6	N	FLO
0.202035	39.1	9.7	63.5	24.4	L1	FLO
0.397662	35.3	9.7	57.9	22.6	N	FLO
0.804187	34.8	9.7	56.0	21.2	N	FLO
1.525136	29.9	9.7	56.0	26.1	N	FLO
6.144705	34.1	9.8	60.0	25.9	N	FLO

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBµV	Transducer dB	Limit dBµV	Margin dB	Line	PE
0.155580	15.8	9.7	55.7	39.9	N	FLO
0.197558	18.8	9.7	53.7	34.9	N	FLO
0.399248	18.1	9.7	47.9	29.8	N	FLO
0.820658	15.3	9.7	46.0	30.7	N	FLO
1.312631	19.4	9.7	46.0	26.6	N	FLO
6.187094	21.7	9.8	50.0	28.3	N	FLO

-----END-----