



EMC Test Report

Product Name: Vodafone Mobile Wi-Fi

Model Number: R205

Report No:SYBH(Z-EMC)025122011-2
FCC ID:QISR205

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1 General Information

1.1 EUT Description

EUT Description	
Product Name	Vodafone Mobile Wi-Fi
Model Number	R205
Serials Number	A7B01A11B0500440
TX Frequency	WCDMA850:824MHz To 849MHz; GSM850:824MHz To 849MHz; PCS1900:1850MHz To 1910MHz WIFI: 2400MHz To 2483.5MHz
RX Frequency	WCDMA850:869MHz To 894MHz; GSM850: 869MHz To 894MHz; PCS1900:1930MHz To 1990MHz WIFI: 2400MHz To 2483.5MHz
HW Version	CH1E586E
SW Version	21.341.00.04.11
EUT Accessory	
Data cable	Data Cable Usb A Male to Micro Usb 120cm,Black,
Adapter	Manufacturer: Huawei Technologies Co., Ltd. Model: HW-050100U1W Input Voltage :100-240V ~50/60Hz, 0.2A Output Voltage:  5.0V 1.0A SN: TPAB10372585 SN: HKAB81745964
Li-ion Battery	Manufacturer: Huawei Technologies Co., Ltd. Battery Model: HB4F1 Rated capacity: 1500mAh Nominal Voltage:  +3.7V Charging Voltage:  +4.2V SN: SCCA422HI1765604

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:	Bantian Longgang District Shenzhen, P.R. China

1.3 Applied Standard

APPLIED STANDARD

FCC 47 CFR FCC Part 15 SubpartB

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 Mode3	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	Mode1 Mode2	CLASS B	Pass	Site1
Note: 1, Measurement taken is within the measurement uncertainty of measurement system. 2, <input checked="" type="checkbox"/> The item has been tested; <input type="checkbox"/> The item has not been tested.				

3 System Configuration during EMC Test

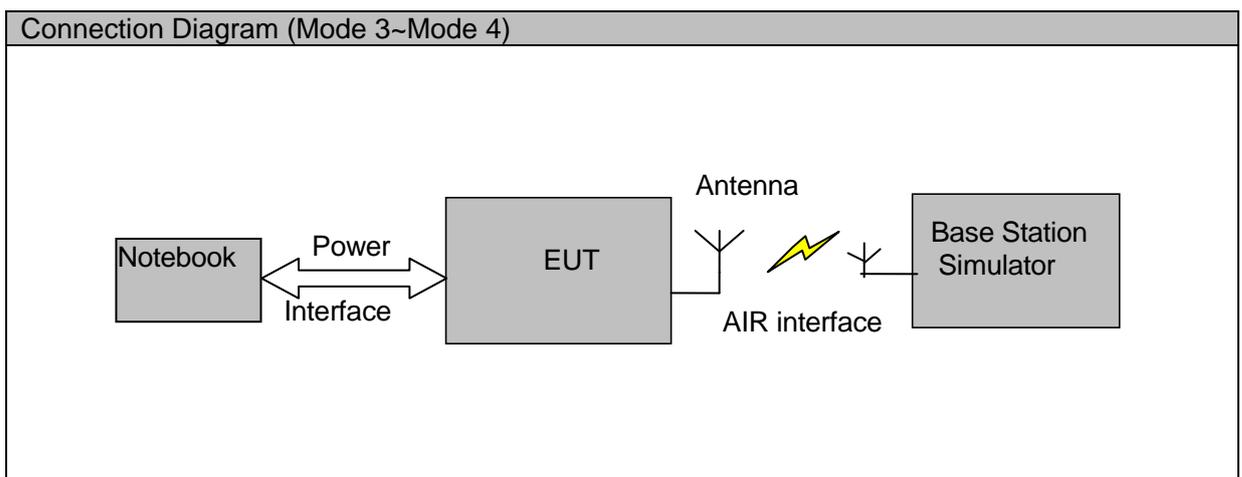
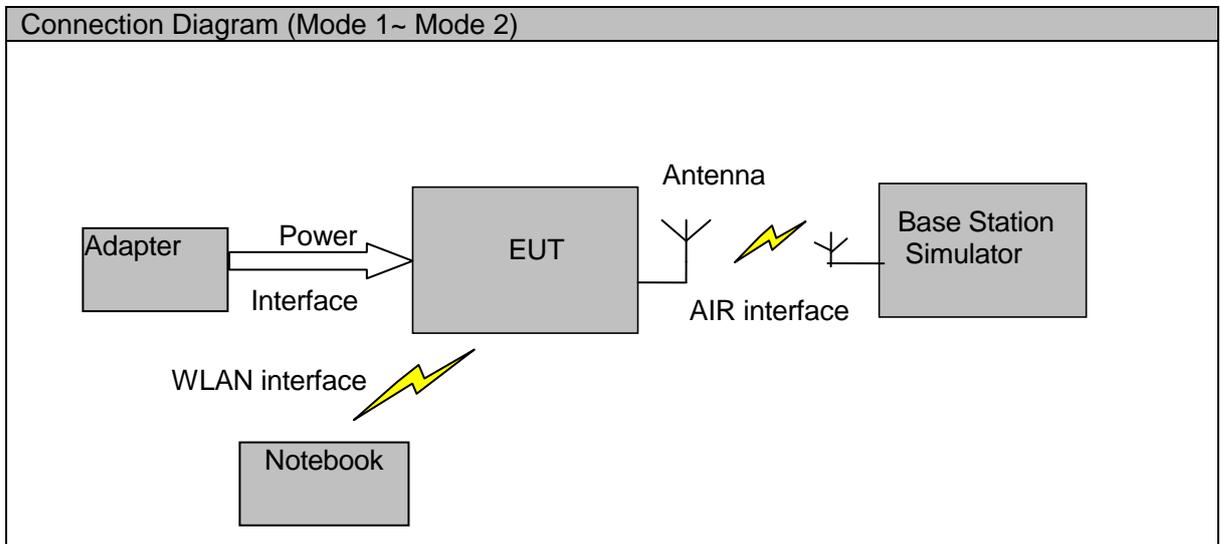
3.1 Test Mode

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:

Test Mode	
Mode 1:	Adapter+ Idle
Mode 2:	Adapter+Traffic
Mode 3:	USB Copy(EUT with PC) + Idle
Mode 4:	USB Copy(EUT with PC) + Traffic

Remark: When the EUT have multiple adapters, need separate test with multiple adapters . All test modes are performed, only the worst cases are recorded in this report.

3.2 Configurations of Test System



3.3 Cables Used during Test

Cable	Quantity	Length	Type of Cable
USB	1	120cm	shielded

3.4 Associated Equipment Used during Test

Name	Model	Manufacturer	S/N	Cal Date
Radio Communication Tester	CMU200	R&S	1117057	2011-9-4
Notebook	D81	DELL	3105083303	N/A

4 Electromagnetic Interference (EMI)

4.1 Radiated Disturbance 30MHz to 18GHz

Test Procedure

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

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 receive antenna has two polarizations V and H.

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

Test setup

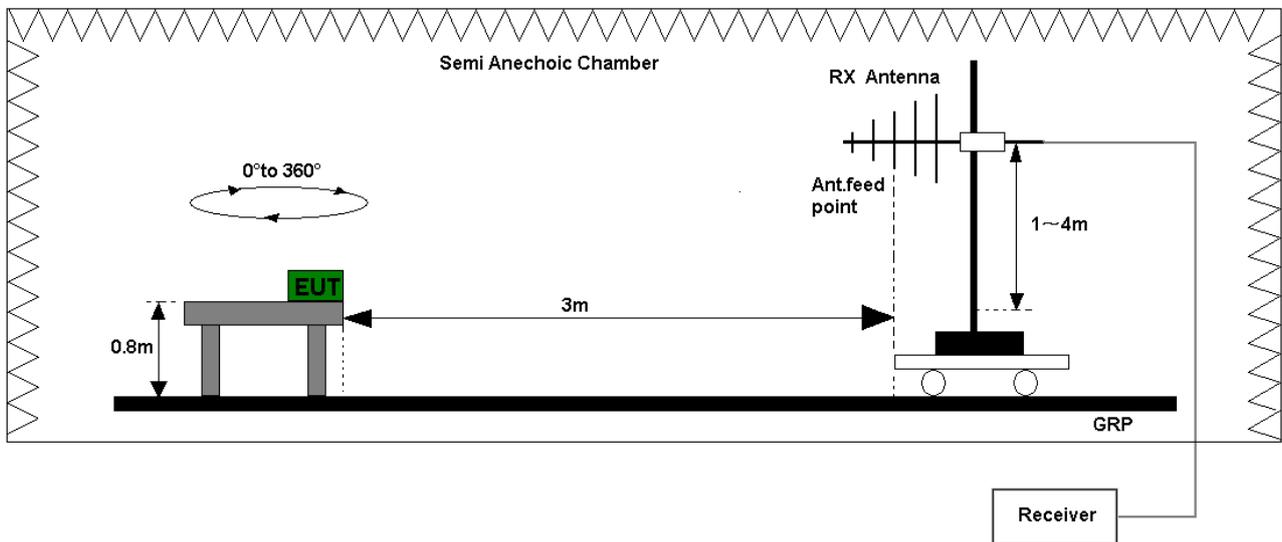


Figure 1. Test set-up of radiated disturbance(30MHz-1GHz)

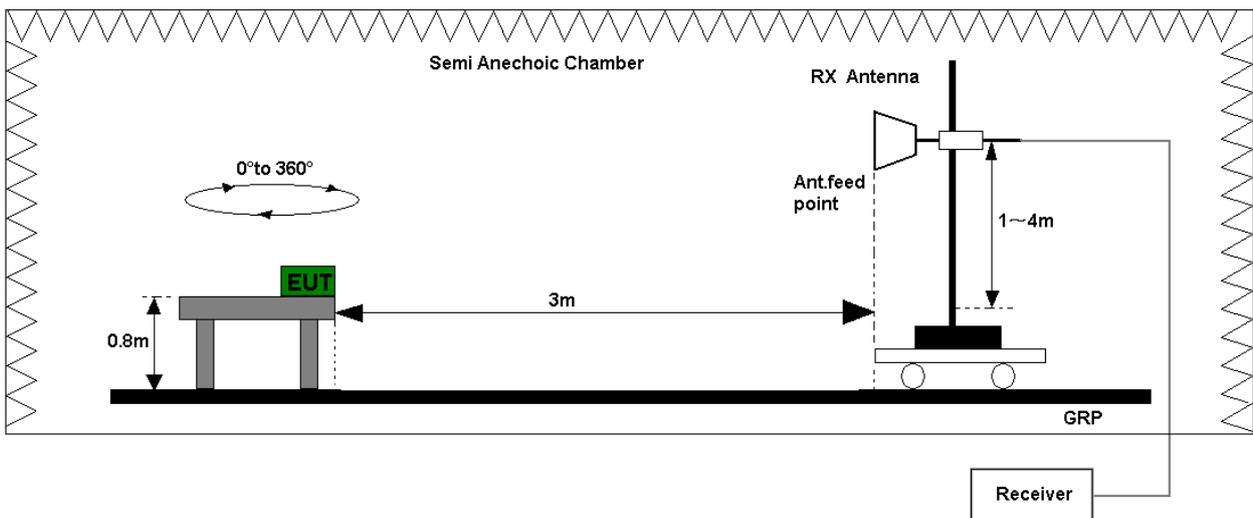


Figure 2. Test set-up of radiated disturbance(above 1GHz)

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

Test environment condition:

Performed Item	Item	Required	Actual
Radiated Emission	Ambient temperature	15°C~35°C	21.3°C
	Relative humidity	25%~75%	50.5%
	Atmospheric pressure	86 kPa~106kPa	100kPa

4.2 Conducted Disturbance 0.15 MHz to 30MHz

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 from LISN. The set-up and test methods were according to ANSI C63.4.

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.

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

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

The Mobile Station was setup in the screened chamber and operated under nominal conditions.

Test Setup

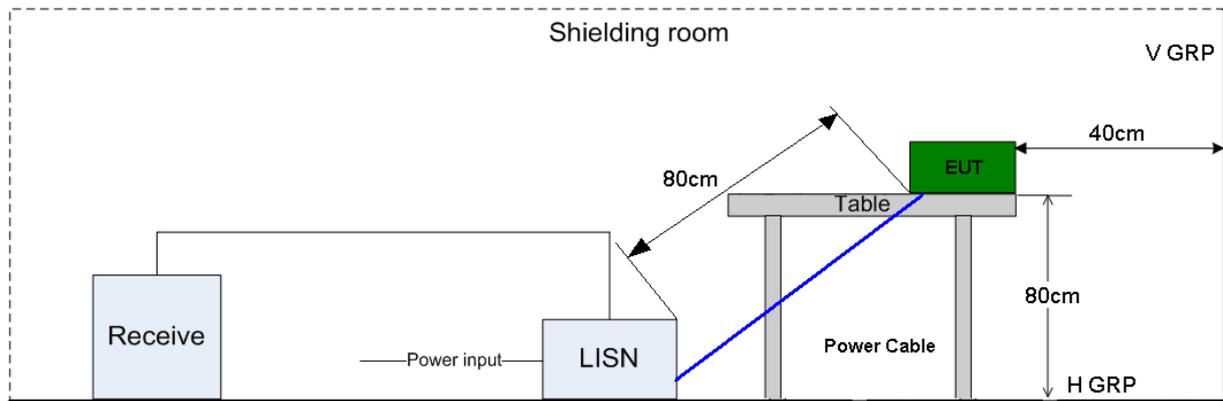


Figure 3. Test Set-up of conducted disturbance

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

Test environment condition:

Performed Item	Item	Required	Actual
Conducted Disturbance	Ambient temperature	15°C~35°C	22.5°C
	Relative humidity	25%~75%	52.5%
	Atmospheric pressure	86 kPa~106kPa	100kPa

5 Main Test Instruments

Main Test Equipments					
Test item	Test Instrument	Model	Manufacturer	Cal-Date	Cal Interval (month)
RE/CE	EMI Test receiver	ESU26	R&S	May.30, 2011	12
	Broadband Antenna	VULB 9163	SCHWARZBECK	May.16,2011	12
	Horn Antenna	HF906	R&S	May.16,2011	12
	Artificial Mains Network	ENV216	R&S	May.30, 2011	12
Software Information					
Test Item	Software Name	Manufacturer		Version	
RE/CE	ES-K1	R&S		1.7.1	

6 System Measurement Uncertainty

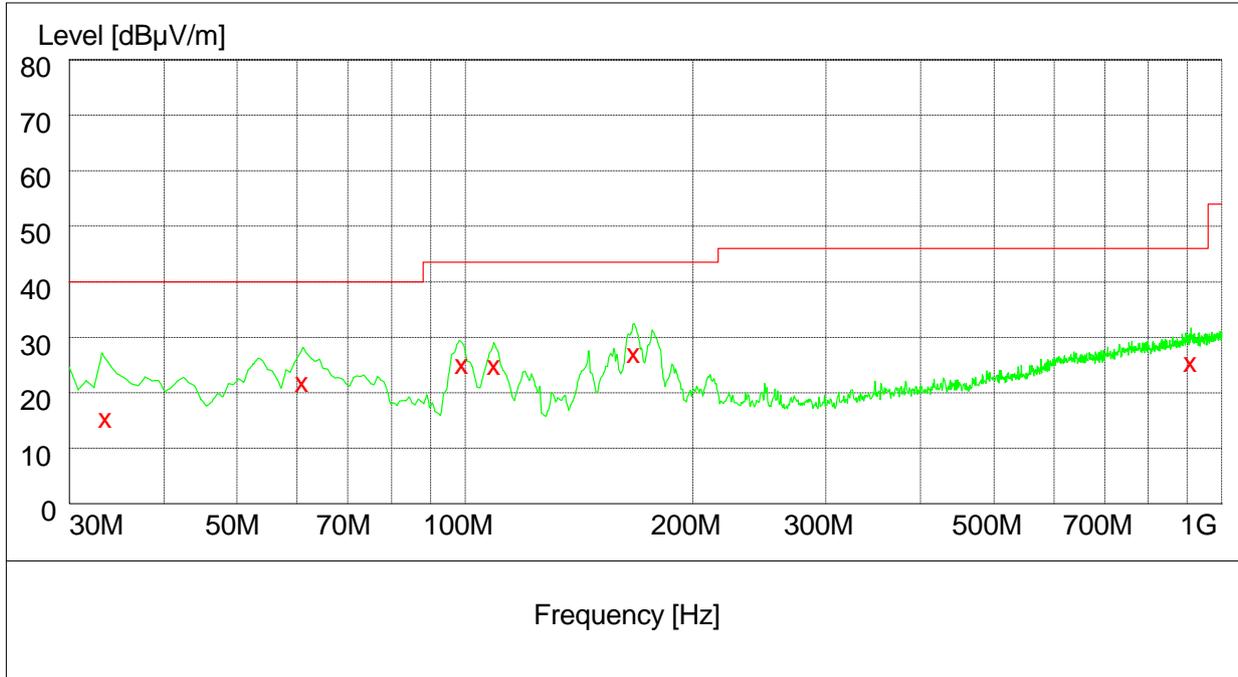
For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

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=4.1dB; k=2
CE	Disturbance Voltage (dB μ V)	U=3.4dB; k=2

7 Graph and Data of Emission Test

7.1 Radiated Disturbance

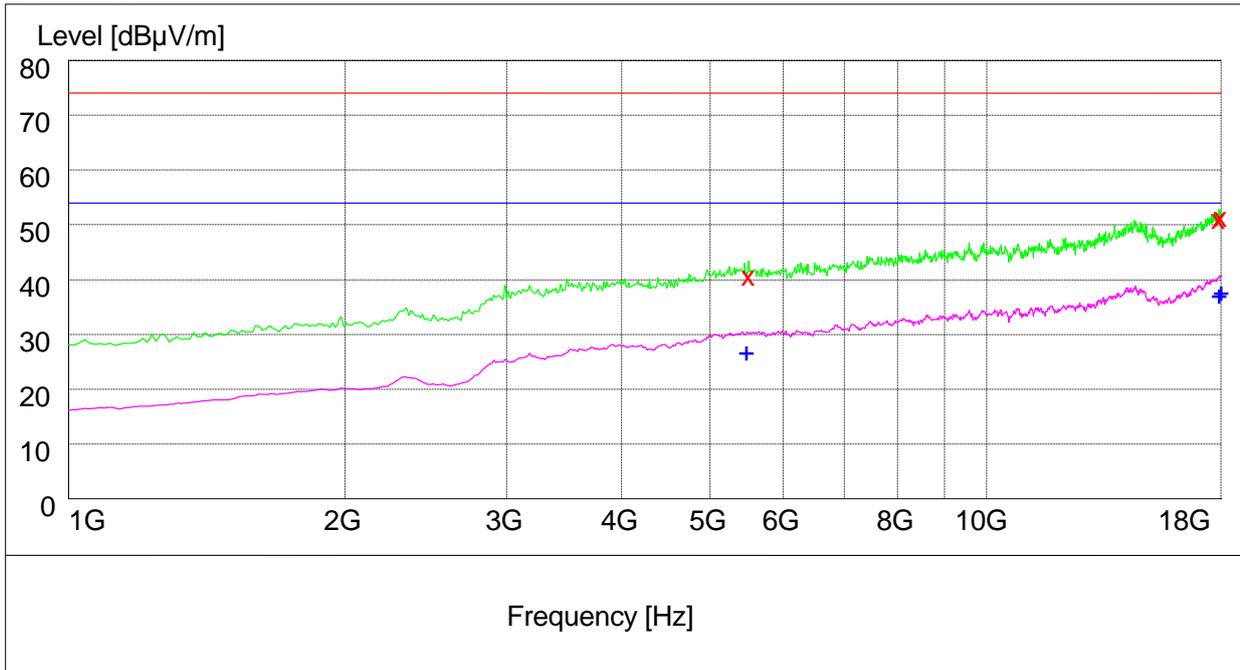
30MHz~1GHz



MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation
33.540000	16.80	11.7	40.0	23.2	112.0	86.00	VERTICAL
60.960000	22.60	11.9	40.0	17.4	100.0	247.00	VERTICAL
99.120000	26.40	13.0	43.5	17.1	101.0	100.00	VERTICAL
109.260000	26.30	12.3	43.5	17.2	100.0	95.00	VERTICAL
167.400000	28.50	9.9	43.5	15.0	100.0	176.00	VERTICAL
909.540000	26.80	26.2	46.0	19.2	131.0	324.00	HORIZONTAL

1GHz~18GHz



MEASUREMENT RESULT: PK Detector

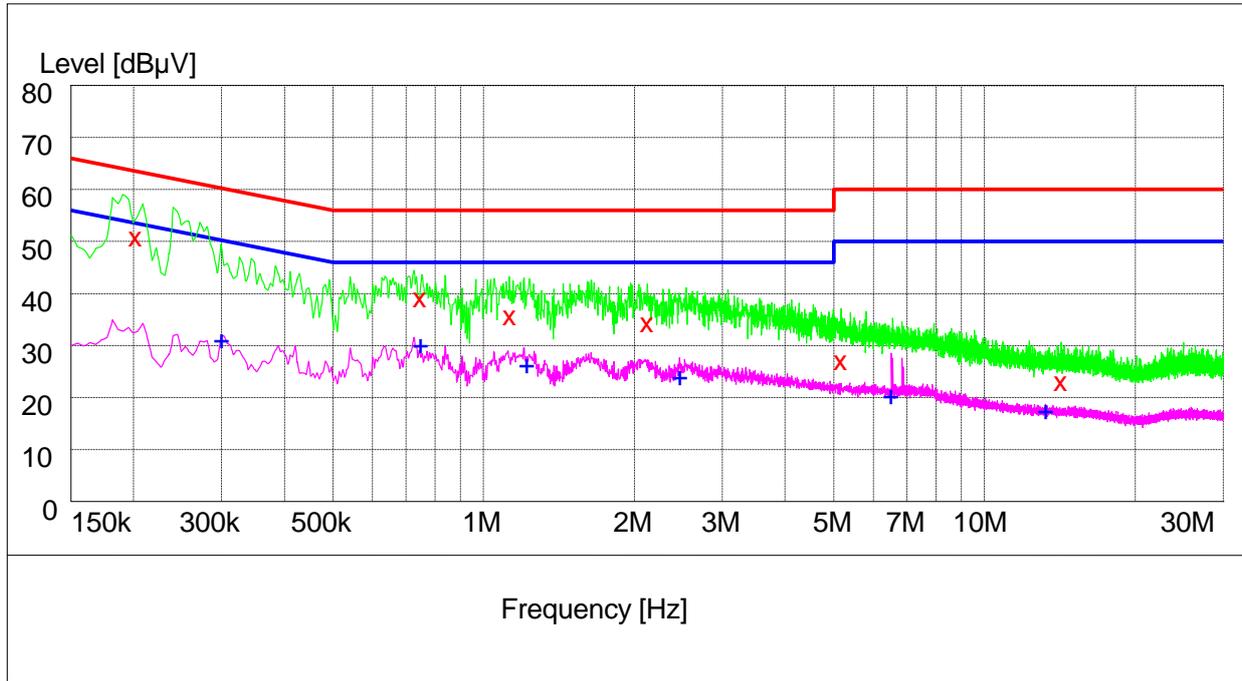
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation
5508.000000	41.20	-0.5	74.0	32.8	100.0	163.00	VERTICAL
17891.000000	51.20	18.9	74.0	22.8	100.0	205.00	VERTICAL
17990.500000	52.10	19.4	74.0	21.9	100.0	220.00	VERTICAL

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation
5465.000000	28.10	-0.5	54.0	25.9	100.0	42.00	VERTICAL
17886.500000	38.60	18.9	54.0	15.4	100.0	245.00	VERTICAL
17991.500000	39.00	19.4	54.0	15.0	100.0	161.00	VERTICAL

7.2 Conducted Disturbance

AC Port Test Data



MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.202000	50.40	10.1	64	13.6	N	FLO
0.748000	39.70	10.1	56	16.3	N	FLO
1.128000	37.20	10.1	56	18.8	N	FLO
2.124000	36.00	10.1	56	20.0	N	FLO
5.184000	28.70	10.2	60	31.3	L1	FLO
14.224000	24.60	10.3	60	35.4	L1	FLO

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.300000	31.30	10.0	50	18.7	N	FLO
0.748000	30.30	10.1	46	15.7	N	FLO
1.218000	27.90	10.1	46	18.1	N	FLO
2.462000	25.70	10.1	46	20.3	N	FLO
6.504000	20.90	10.2	50	29.1	N	FLO
13.240000	19.10	10.3	50	30.9	N	FLO

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