FCC
EMC Test Report

Product Name: CDMA1X EVDO Rev.A Module

Model Number: MC509

Report No: SYBH(Z-EMC)084062011-2

FCC ID：QISMC509

Reliability Laboratory of Huawei Technologies Co., Ltd.

Huawei Base, Bantian, Longgang District, Shenzhen 518129, P.R. China

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Notice

1. The laboratory has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS), and accreditation number: L0310.
2. 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.
3. The laboratory has been listed by industry Canada to perform electromagnetic emission measurement. The site recognition number is 6369A-2.
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7. If there is any dissidence for the test report, please file objection to the test centre within 15 days from the date of receiving the test report.
8. Normally, the test report is only responsible for the samples that have undergone the test.
9. Context of the test report cannot be used partially or in full for publicity and/or promotional purposes without previous written approval of the laboratory.

Applicant:	**Huawei Technologies Co., Ltd.**
Address:	**Huawei Base, Bantian, Longgang District, Shenzhen 518129, P.R. China**
Date of Receipt Test Item:	**Jun.22, 2011**
Start Date of Test:	**Jun.22, 2011**
End Date of Test:	**Jun.27, 2011**
Test Result:	**Pass**

	Date	Name	Signature
Approved By	**2011-6-28**	**Liuchunlin**	
Reviewed By	**2011-6-28**	**Dailinjun**	
Operator	**2011-06-28**	**daniel**	

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1 General Information

1.1 EUT Description

EUT Description	
Product Name	CDMA1X EVDO Rev.A Module
Model Number	MC509
Serials Number	H7T2B11160300085
TX Frequency	CDMA800: 824MHz To 849MHz EVDO800: 824MHz To 849MHz CDMA1900: 1850MHz To 1910MHz EVDO1900: 1850MHz To 1910MHz
RX Frequency	CDMA800: 869MHz To 894MHz EVDO800: 869MHz To 894MHz CDMA1900: 1930MHz To 1990MHz EVDO1900: 1930MHz To 1990MHz
HW Version	ME1MC509M
SW Version	11.106.07.10.000
EUT Accessory	
NA	NA

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

Site1:	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**
Radiated Emissions Enclosure Port	Mode1	CLASS B	Pass	Site1
Conducted Emissions ☐DC Power Port ☒AC Power Port ☐Telecommunication Ports	Mode2	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.				

3 System Configuration during EMC Test

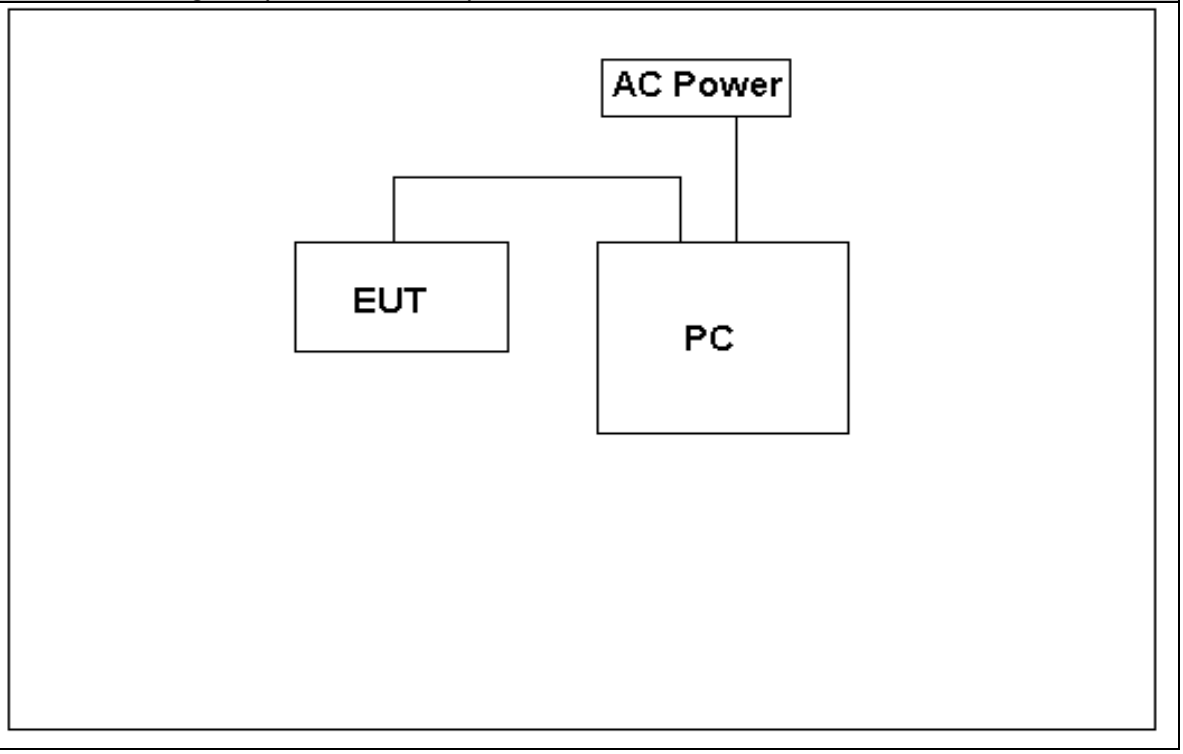
3.1 Test Mode

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:	PC+ Idle
Mode 2:	PC + Traffic

3.2 Configurations of Test System

Connection Diagram (Mode 1/ Mode 2)



3.3 Cables Used during Test

Cable	Quantity	Length	Type of Cable
NA	NA	NA	NA

3.4 Associated Equipment Used during Test

Name	Model	Manufacturer	S/N	Cal Date
Radio Communication Tester	CMU200	R&S	3607033573	2011-03-17
Notebook	T61	ThinkPad	3108052581	NA

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. 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 to18 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.

4.1.2 Test setup

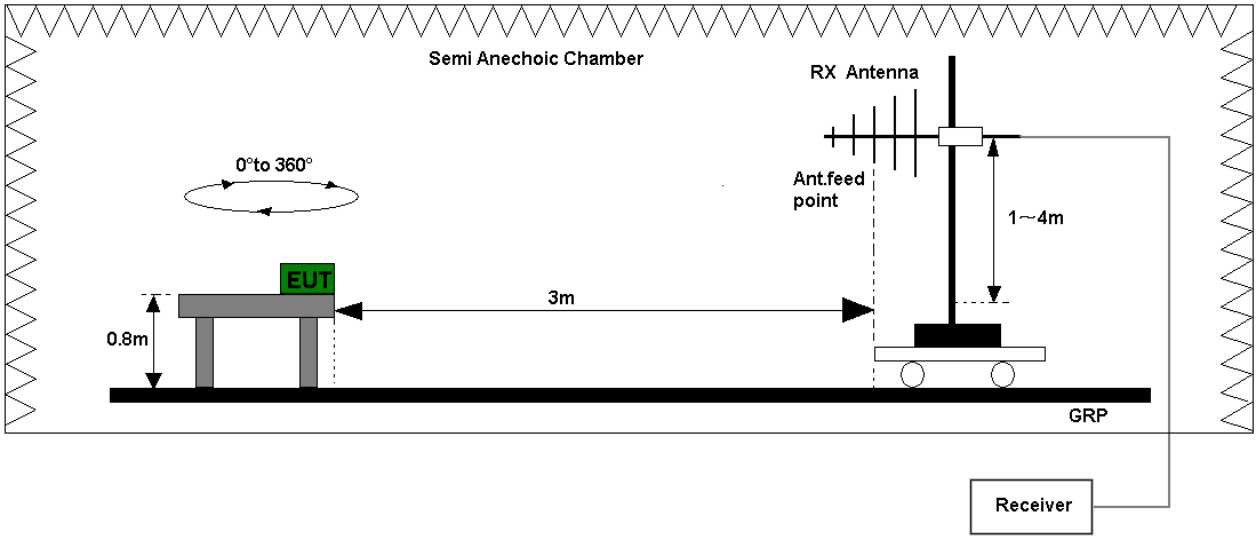


Figure 1. Test set-up of radiated disturbance(30MHz-1GHz)

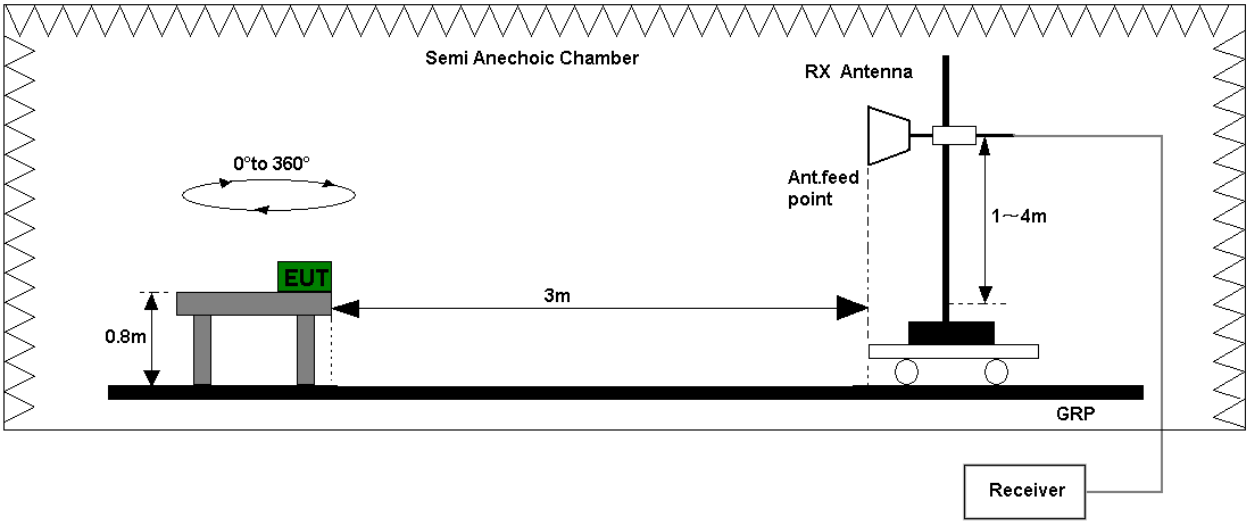


Figure 2. Test set-up of radiated disturbance(above 1GHz)

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(μV/m)		Unit(dBμV/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	23°C
	Relative humidity	25%～75%	55%
	Atmospheric pressure	86 kPa～106kPa	101kPa

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 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 BTS 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 150kz to 30 MHz: 9 kHz;
The Mobile Station was setup in the screened chamber and operated under nominal conditions.

4.2.2 Test Setup

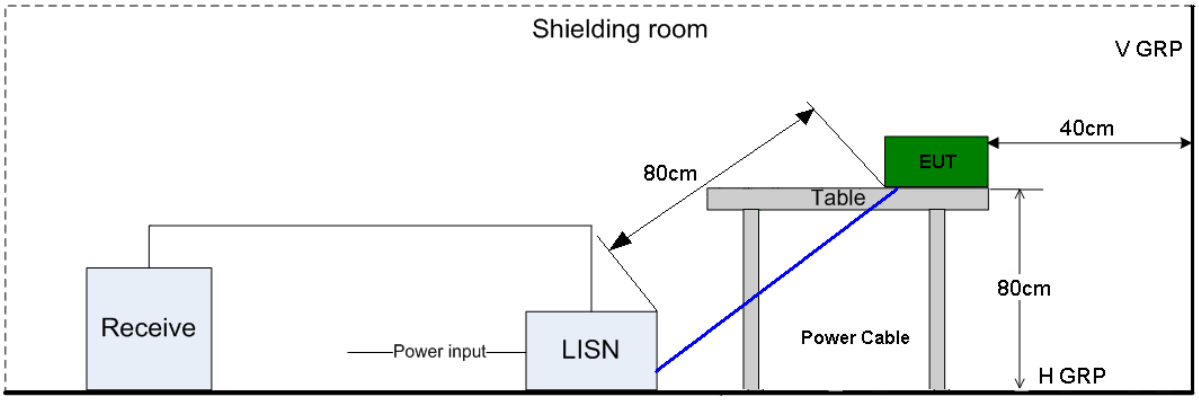


Figure 3. Test Set-up of conducted disturbance

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

Test environment condition:

Performed Item	Item	Required	Actual
Conducted Disturbance	Ambient temperature	15°C～35°C	23°C
	Relative humidity	25%～75%	55%
	Atmospheric pressure	86 kPa～106kPa	101kPa

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

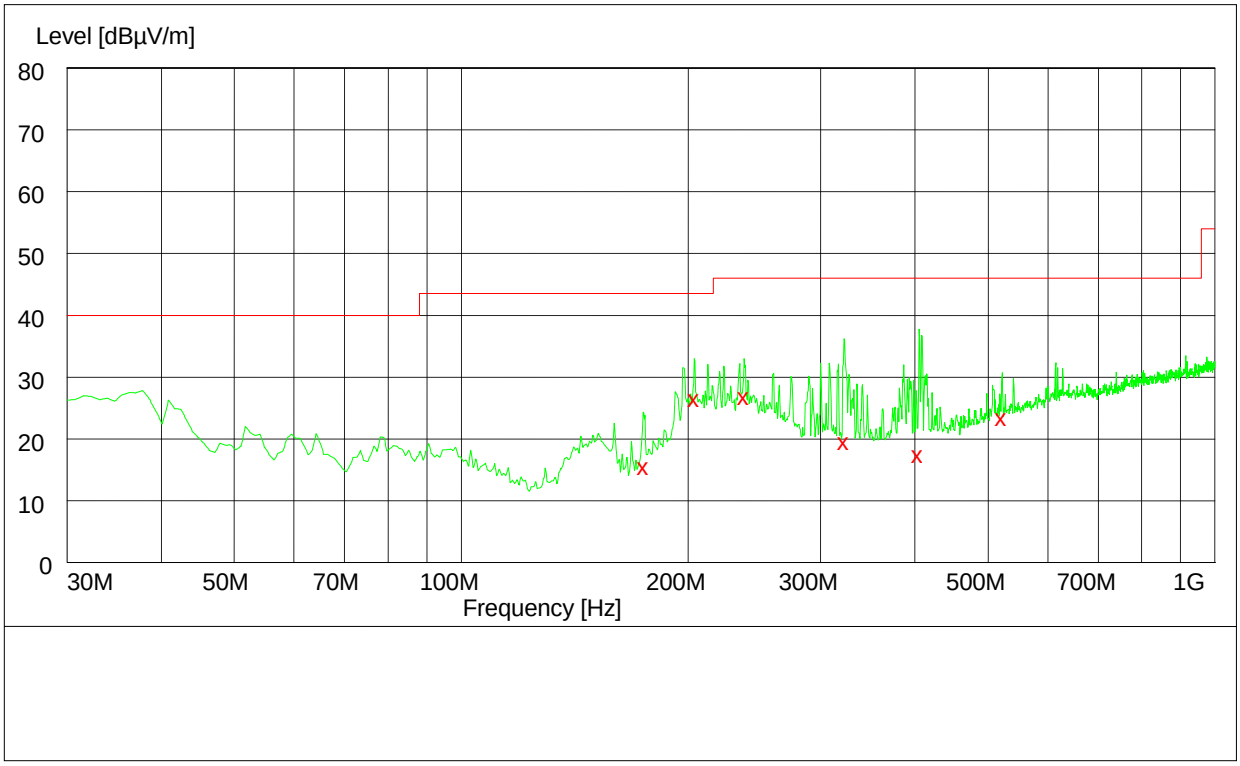
For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

System Measurement Uncertainty		
Items		**Extended Uncertainty**
RE(30MHz-1GHz,)	Field strength (dBμV/m)	U=4.1dB; k=2
RE(1GHz-18GHz)	Field strength (dBμV/m)	U=4.1dB; k=2
CE	Disturbance Voltage (dBμV)	U=3.4dB; k=2

7 Graph and Data of Emission Test

7.1 Radiated Disturbance

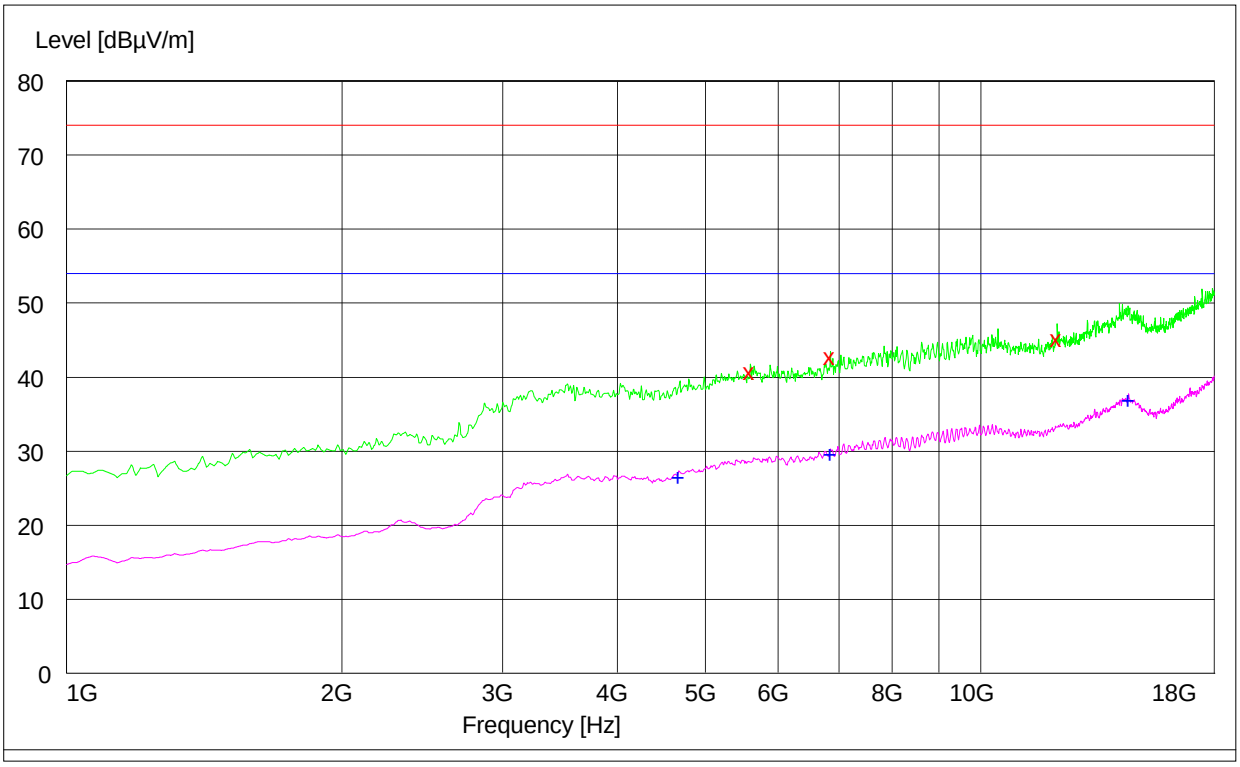
7.1.1 30MHz~1GHz



MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation
175.020000	16.10	10.5	43.5	27.4	170.0	0.00	HORIZONTAL
204.060000	27.00	12.2	43.5	16.5	143.0	74.00	HORIZONTAL
237.780000	27.40	14.0	46.0	18.6	100.0	92.00	HORIZONTAL
322.620000	20.10	16.1	46.0	25.9	167.0	99.00	VERTICAL
404.520000	18.00	18.3	46.0	28.0	100.0	146.00	HORIZONTAL
522.840000	24.00	20.8	46.0	22.0	100.0	40.00	VERTICAL

7.1.2 1GHz~18GHz



MEASUREMENT RESULT: PK Detector

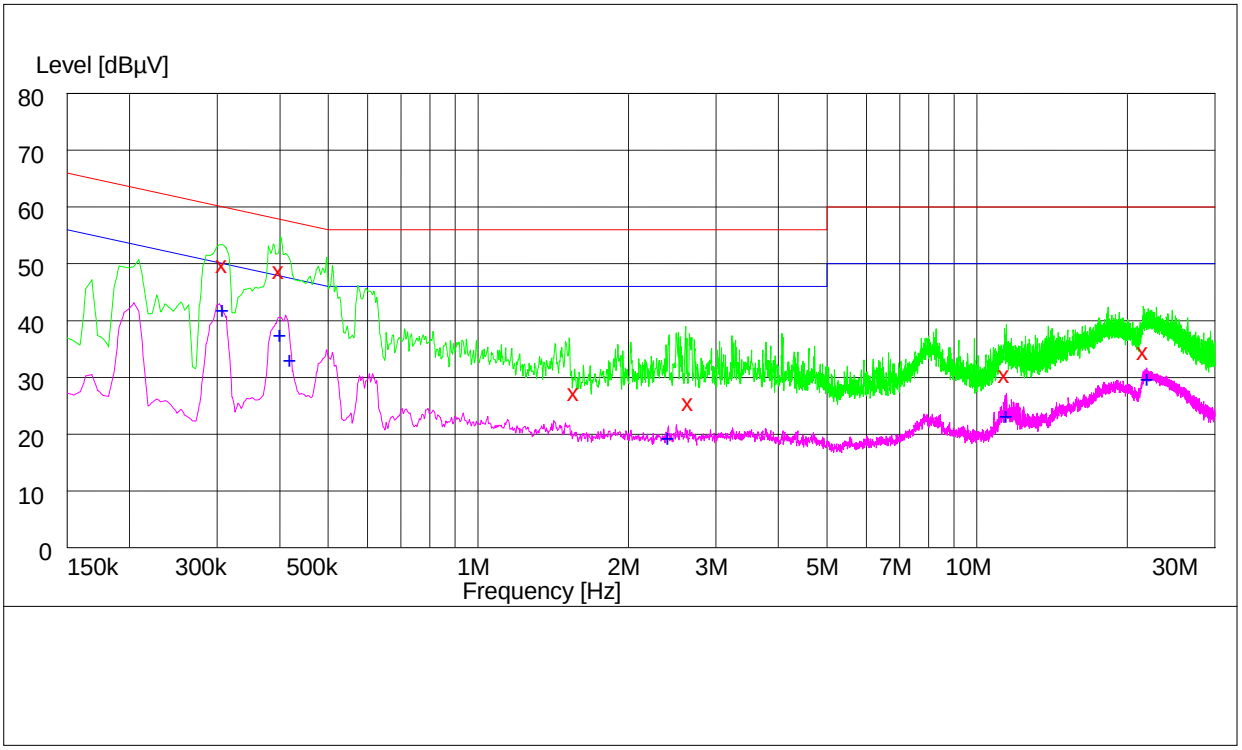
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation
5592.500000	40.90	-1.8	74.0	33.1	150.0	193.00	VERTICAL
6852.000000	42.90	0.9	74.0	31.1	100.0	0.00	VERTICAL
12123.500000	45.40	8.2	74.0	28.6	107.0	360.00	HORIZONTAL

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation
4678.000000	26.60	-4.1	54.0	27.4	100.0	183.00	VERTICAL
6849.000000	29.70	1.0	54.0	24.3	102.0	359.00	HORIZONTAL
14511.500000	37.00	14.7	54.0	17.0	112.0	149.00	VERTICAL

7.2 Conducted Disturbance

7.2.1 AC Port Test Data



MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.308000	50.60	10.0	60	9.4	L1	GND
0.400000	49.60	10.0	58	8.4	N	GND
1.560000	28.00	10.1	56	28	L1	GND
2.642000	26.30	10.2	56	29.7	L1	GND
11.398000	31.30	10.3	60	28.7	L1	GND
21.614000	35.20	10.4	60	24.8	L1	GND

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.308000	42.50	10.0	50	7.5	L1	GND
0.402000	38.10	10.0	48	9.9	L1	GND
0.420000	33.70	10.0	47	13.3	L1	GND
2.410000	19.90	10.1	46	26.1	L1	GND
11.456000	23.90	10.3	50	26.1	N	GND
21.966000	30.30	10.4	50	19.7	L1	GND