EMC Test Report

Product Name: IDEOS S7 Slim

Model Number: S7-202u

Report No: SYBH-Z(EMC) 043052011-2
FCC ID：QISS7-202U

Reliability Laboratory of Huawei Technologies Co., Ltd.

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Notice 1

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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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.

Notice 2

Modification Information:

Modification Information

Modification Information	1	This is another report of S7-202u, The former report number is: SYBH (Z-EMC) 019022010-2. The former report still is adopted.
	2	Add new adapter model FM050020-US. Refer to page 9.
	3	
	4	
	5	
	6	
	7	

REPORT ON	**EMC TEST OF IDEOS S7 Slim**
	M/N: S7-202u
REGULATION	**FCC CFR47 Part 15: Subpart B;**
START OF TEST	**May.06, 2011**
END OF TEST	**May.09, 2011**
Final Judgement:	**Pass**

Approved By	**2011-05-10**	**Liuchunlin**	
	Date	**Name**	**Signature**
Reviewed By	**2011-05-10**	**Dailinjun**	
	Date	**Name**	**Signature**
Operator	**2011-05-10**	**Wenjianfeng**	
	Date	**Name**	**Signature**

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1 Status

1.1 Product Information

CLIENT:	Huawei Technologies Co., Ltd.
ADDRESS:	Bantian Longgang District Shenzhen, P.R. China
MANUFACTURING DESCRIPTION	IDEOS S7 Slim
MANUFACTURERS MODEL NUMBER	S7-202u

1.2 Test Site

Site 1:
EMC LABORATORY OF RELIABILITY LABORATORY OF HUAWEI TECHNOLOGIES CO., LTD

1.3 Test environment condition

Ambient temperature	20~25°C
Relative humidity	40%~52%
Atmospheric pressure	101kPa

2 Summary of Results

Note: This is another report of S7-202u, Add one adapter models FM050020-US
Radiated Spurious Emissions not need be tested in this report by estimate.

Table below shows a brief summary of the results obtained.

Summary of results

Test Items	Test Configuration &Test Mode	Required Performance Criteria	Result	Site
Radiated Emissions Enclosure Port	TC1 (TM13-TM24)	N/A	Pass	Site1
Conducted Emissions	TC1 (TM1-TM12)	N/A	Pass	Site1
Note: 1, Measurement taken is within the measurement uncertainty of measurement system. 2, TC = Test configuration				

3 Equipment Specification

3.1 General Description

HSDPA/HSUPA/UMTS/GPRS/GSM/EDGE information terminal IDEOS S7 Slim with Bluetooth and Wi-Fi is subscriber equipment in the WCDMA/GSM system. The HSDPA/HSUPA/UMTS frequency band is Band I /Band II / Band V. The GSM/GPRS/EDGE frequency band includes GSM850 and GSM900 and DCS1800 and PCS1900. Band II/Band V/GSM 850/ PCS 1900 test data included in the report. IDEOS S7 Slim provides convenient and quality services such as picture, audio, video, network, and information base on the Android™ open operating system, the S7 Slim serves a powerful tool to obtain quality network and multimedia services conveniently, rendering entertainment to users' work and life. The S7 Slim has a stylish appearance and a portable design. With a full touch screen, an ultra-thin design, the S7 Slim presents a stylish and technically appealing appearance.

Main Equipment Technical Data

Description:	IDEOS S7 Slim
Models:	S7-202u
Input Rated Voltage:	5V
Extreme Voltage	4.75V and 5.25V
Rated Power	<6W
Dimensions	About 200mm (Length)×109.5mm (Width)×12.5mm (Height)
Weight	About 0.45Kg

Sub-Assembly Identity

Mode		Work Frequency	
		Transmitt Frequency （MHz）	Receive Frequency （MHz）
GSM	GSM850	824 - 849	869 - 894
	PCS1900	1850-1910	1930-1990
WCDMA	WCDMA850	824-849	869-894
	WCDMA1900	1850-1910	1930-1990
Bluetooth		2400-2483.5	
WIFI		2400-2483.5	
GPS		1575.42	

3.2 Sub-Assembly Identity

Sub-Assembly Identity

Board				
Model Name	Qty.		Hardware Version	Description
/	1		HIDS70IM	Main Board
/	1		HIDS70HA	Interface Board
LCD Panel	1		/	LCD Panel
Accessory				
Name	Qty.	Manufacture	Model	Description
Adapter	1	SHENZHEN FRECOM	FPS012USA-050200	Input voltage: 100V~240V AC and 50/60 Hz,0.3A Output voltage: +5V ⎓ 2A
Adapter	1	SHENZHEN FRECOM	FM050020-US	Input voltage: 100V~240V AC and 50/60 Hz,0.6A Output voltage: +5V ⎓ 2A
IDEOS S7 Slim Dock	1	Huawei Technologies Co., Ltd.	S7-D01	/
Rechargeable Li-ion	1	Huawei Technologies Co.,Ltd.	HB4G1H	Rated capacity: 3250 mAh Nominal Voltage: ⎓ +3.7V Charging Voltage: ⎓ +4.2V

4 System Configuration during EMC Test

The Equipment under Test (EUT) was functioning correctly during all tests. The EUT was installed within the test site and was configured to simulate a typical user installation.

4.1 Cables Used during Test

Cable Used during Test

Cable	Quantity	Type of Cable
AC Power	1	Unshielded
HDMI	1	shielded
Earphone	1	Unshielded

4.2 Associated Equipment Used during Test

Associated Equipment Used during Test

Name	Model	Manufacturer	S/N	Cal Date
Radio Communication Tester	CMU200	R&S	1117057	2010-08-04
Notebook	D630	DELL	0W7349	N/A
Television	KLV-20S400A	SONY	5017657	N/A

4.3 Test Configurations and Test Mode

4.3.1 Test Configuration.

The EUT will be connected to test system (Base Station Simulator) in order to simulate normal operating conditions (with reference to the guidance given in the standard for this type of equipment).

TC1:EUT powered with an adapter and connected to the test system (Base Station Simulator).

Configuration table

TC1	TM1~TM24

4.3.2 Test Mode

There were 24 test Modes. TM1 to TM24 were shown in the diagrams below:

TM1	operate in traffic mode GSM850;
TM2	operate in traffic mode GSM1900;
TM3	operate in traffic mode GPRS850;
TM4	operate in traffic mode GPRS 1900;
TM5	operate in traffic mode EDGE850;
TM6	operate in traffic mode EDGE1900;
TM7	operate in traffic mode WCDMA 850
TM8	operate in traffic mode HSDPA 850
TM9	operate in traffic mode HSUPA 850
TM10	operate in traffic mode WCDMA 1900
TM11	operate in traffic mode HSDPA 1900
TM12	operate in traffic mode HSUPA 1900
TM13	operate in idle mode GSM850;
TM14	operate in idle mode GSM1900;
TM15	operate in idle mode GPRS850;
TM16	operate in idle mode GPRS 1900;
TM17	operate in idle mode EDGE850;

TM18	operate in idle mode EDGE1900;
TM19	operate in idle mode WCDMA 850
TM20	operate in idle mode HSDPA 850
TM21	operate in idle mode HSUPA 850
TM22	operate in idle mode WCDMA 1900
TM23	operate in idle mode HSDPA 1900
TM24	operate in idle mode HSUPA 1900

The EUT will be connected to test system (Base Station Simulator) in order to simulate normal operating conditions (with reference to the guidance given in the standard for this type of equipment).

4.4 Test conditions and test Connections

4.4.1 Test Conditions

The EUT will be connected to test system (Base Station Simulator) in order to simulate normal operating conditions (with reference to the guidance given in the standard for this type of equipment).

4.4.2 Test Connections

Traffic Mode:

The EUT is required to be in the traffic mode, a call is set up according to the generic call set up procedure and enter the EUT into loop back test mode.
For WCDMA, the following conditions shall also be met:
Logical Test Interface for details regarding generic call set-up procedure and BER, BLER test loop scenarios:
set and send continuously up power control commands to the UE;
The DTX shall be disabled;
Inner Loop Power Control shall be enabled;
transmitting and/or receiving (UL/DL) bit rate for reference test channel shall be 12.2 kbit / s.
The EUT shall be commanded to operate at maximum transmit power;

For GSM850 and PCS1900 the following conditions shall also be met:
The EUT shall be commanded to operate at maximum transmit power;
The downlink RXQUAL shall be monitored.
Assign channel frequency to an appropriate channel number.

Please refer to following figure:

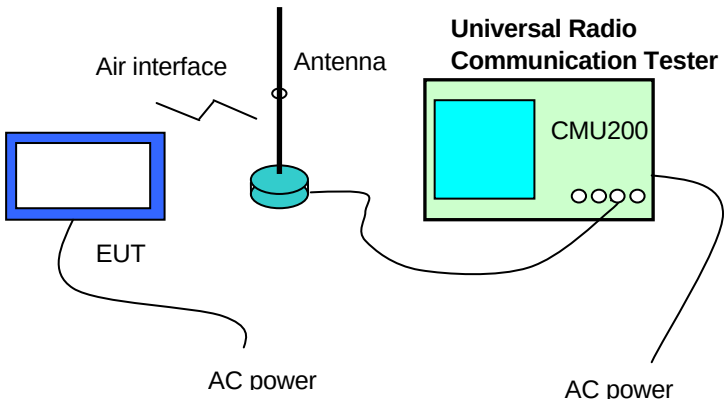


Figure 1. Test Configuration

Idle Mode:
The EUT is required to be in the idle mode.

For WCDMA, the following conditions shall be met:
UE shall be camped on a cell;
UE shall perform Location Registration (LR) before the test, but not during the test;
UE's neighbour cell list shall be empty;
Paging repetition period and DRX cycle shall be set to minimum (shortest possible time interval).

For GSM850 and PCS1900, the following conditions shall be met::
When the EUT is required to be in the idle mode, the test system shall simulate a Base Station (BS) with Broadcast Control Channel/Common Control Channel (BCCH/CCCH) on one carrier. The EUT shall be synchronized to the BCCH, listening to the CCCH and able to respond to paging messages. Periodic Location Updating shall be disabled.
.
Please refer to following figure:

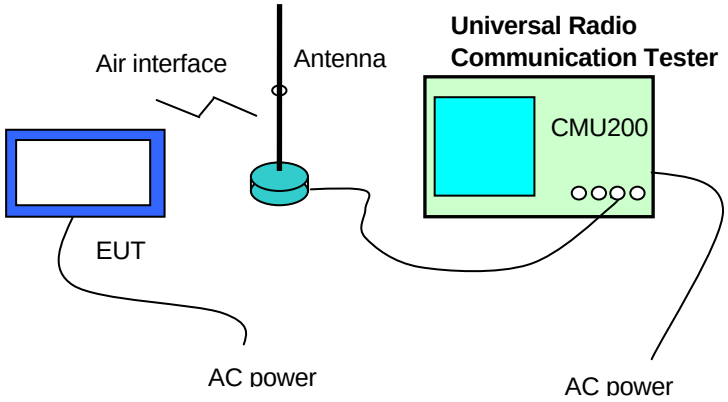


Figure 2. Test Configuration

5 Electromagnetic Interference (EMI)

5.1 Radiated Disturbance 30MHz to 18GHz

5.1.1 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 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.

Measurement bandwidth: 30 MHz – 1000 MHz: 120 k Hz

Measurement bandwidth: 1GHz – 18GHz: 1MHz

Test set up figure:

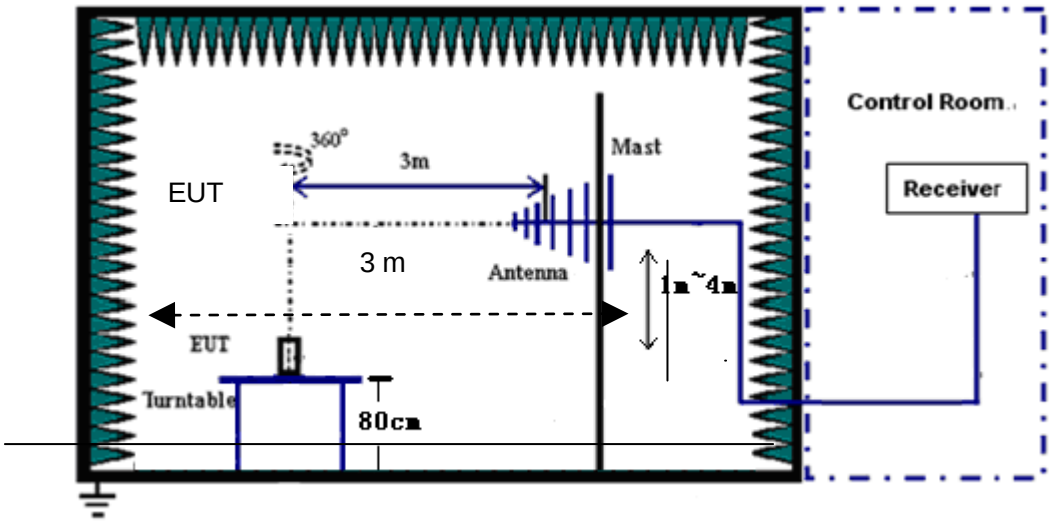


Figure 3. Test set-up

5.1.2 Test Results

The EUT has met the requirements for Radiated Emission of enclosure port.

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

5.2 Conducted Disturbance 0.15 MHz to 30MHz

5.2.1 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;

Test Set-up figure:

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

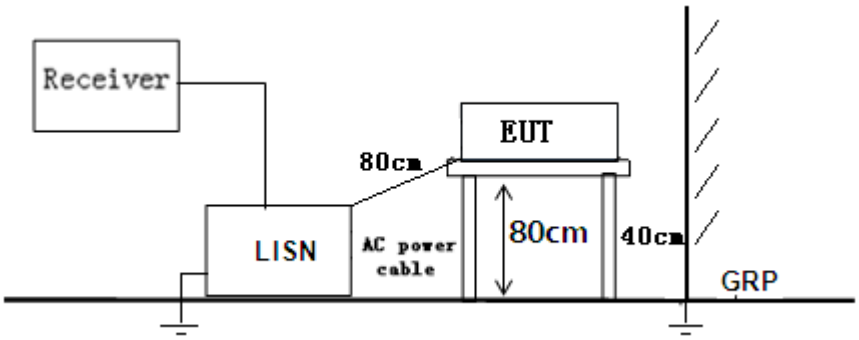


Figure 4. Test Set-up

5.2.2 Test Results

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

Test Limit of AC Power Port

Frequency range	150kHz~ 30MHz	
Classification	Class B	
Limit(Class B)	Voltage limits	
	QP	AV
0.15MHz~0.5MHz	66~56 dBμV	56~46 dBμV
0.5MHz~5MHz	56 dBμV	46 dBμV
5MHz~30MHz	60 dBμV	50 dBμV

6 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	Jun.25, 2010	12
	Broadband Antenna	VULB 9163	SCHWARZBECK	May.15, 2010	12
	Horn Antenna	HF906	R&S	May.15, 2010	12
	LISN	ENV216	R&S	Jun.25.2010	12
Software Information					
Test Item	Software Name	Manufacturer	Version		
RE/CE	ES-K1	R&S	1.7.1		

7 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

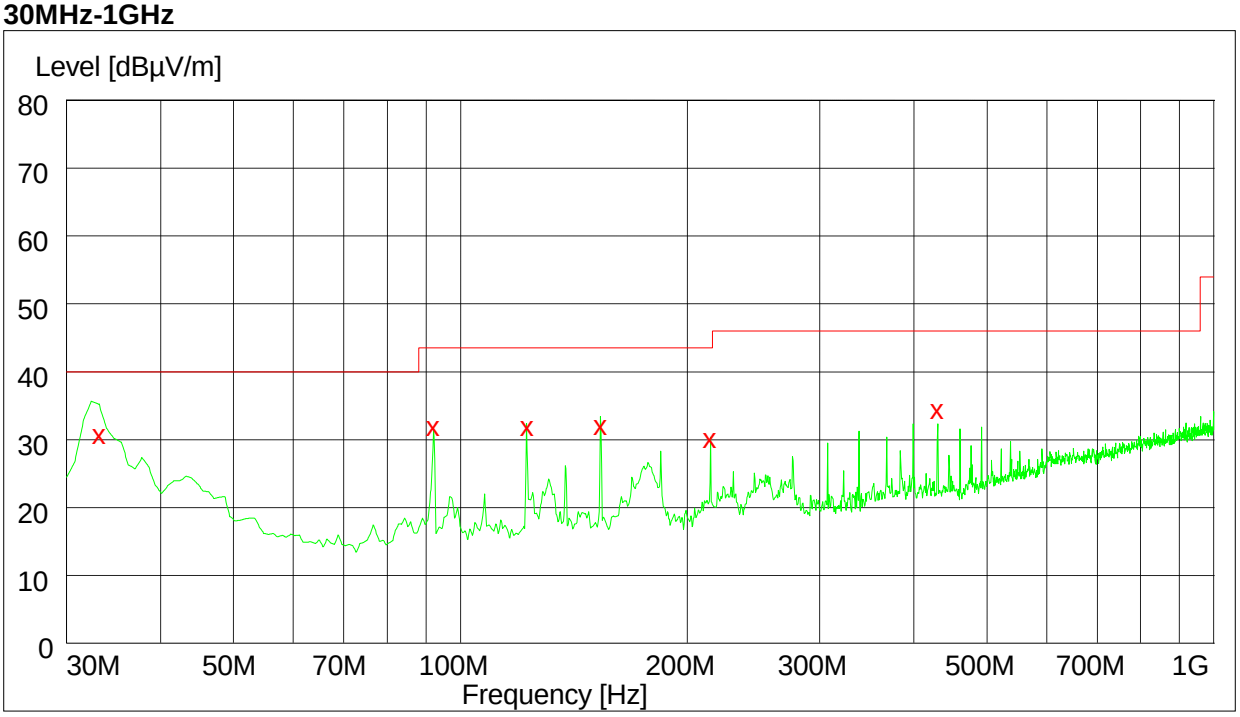
Items		Extended Uncertainty
RE	Field strength (dBμV/m)	U=4.1dB; k=2(30MHz-1GHz)
RE	Field strength (dBμV/m)	U=4.1dB; k=2(1GHz-18GHz)
CE	Disturbance Voltage (dBμV)	U=3.4dB; k=2

8 Graph and Data of Emission Test

8.1 Radiated Disturbance

This test was carried out in all the test modes, Here only the worst test result was shown.

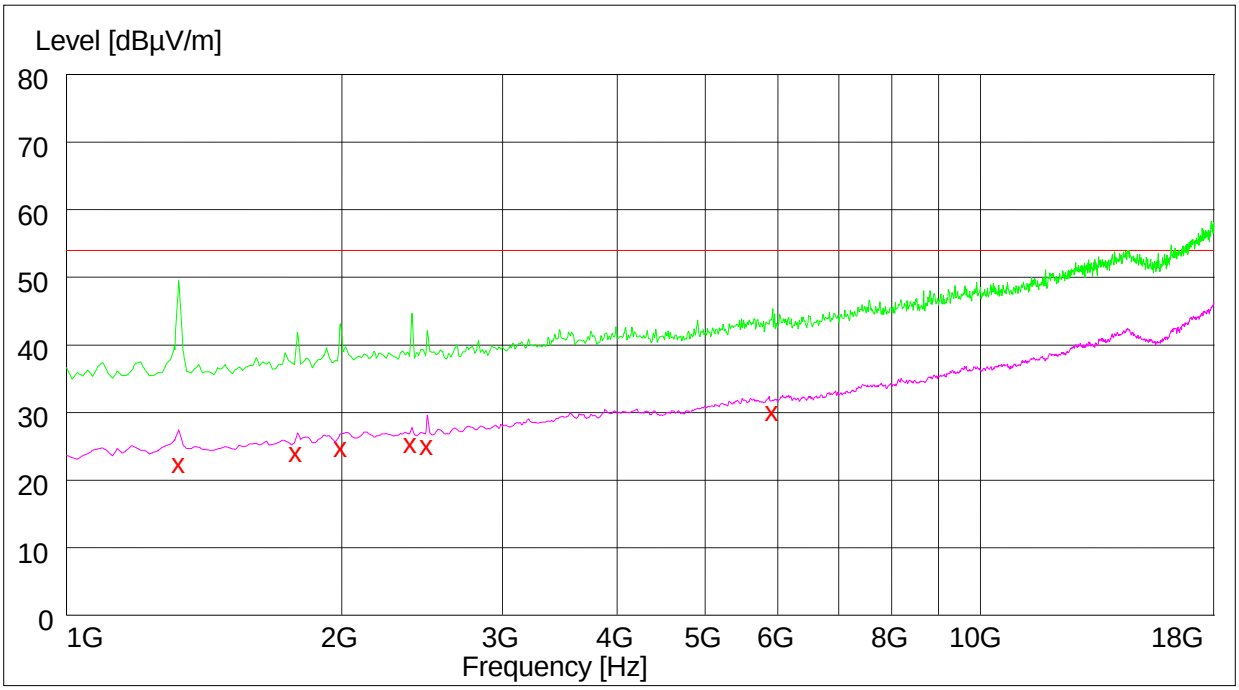
30MHz-1GHz



MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation
33.180000	31.60	11.7	40.0	8.4	100.0	101.00	VERTICAL
92.160000	32.80	12.2	43.5	10.7	121.0	93.00	VERTICAL
122.880000	32.70	10.1	43.5	10.8	100.0	163.00	VERTICAL
153.600000	32.90	9.2	43.5	10.6	100.0	158.00	VERTICAL
215.040000	31.00	12.7	43.5	12.5	159.0	19.00	HORIZONTAL
430.080000	35.30	18.8	46.0	10.7	122.0	203.00	VERTICAL

1GHz-18GHz



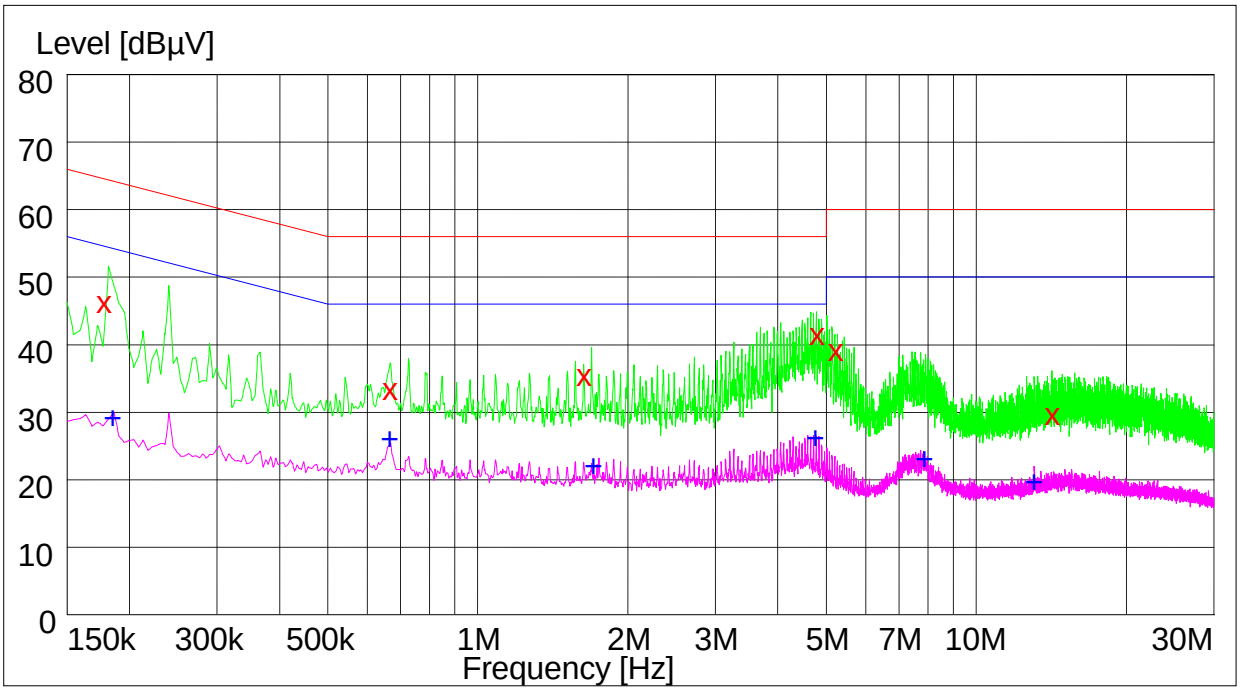
MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation
1328.000000	23.30	-5.5	54.0	30.7	100.0	177.00	VERTICAL
1784.000000	24.90	-2.6	54.0	29.1	100.0	161.00	VERTICAL
1997.500000	25.70	-1.3	54.0	28.3	100.0	165.00	VERTICAL
2380.000000	26.20	-0.3	54.0	27.8	100.0	139.00	VERTICAL
2483.500000	25.90	-0.1	54.0	28.1	100.0	330.00	VERTICAL
5920.500000	31.00	9.1	54.0	23.0	100.0	34.00	VERTICAL

8.2 Conducted Disturbance

This test was carried out in all the test modes, Here only the worst test result was shown.

AC Power Port Test Data



MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.178000	47.50	10.1	65	17.5	L1	FLO
0.666000	34.60	10.1	56	21.4	N	FLO
1.636000	35.00	10.1	56	21.0	L1	FLO
4.790000	41.00	10.2	56	15.0	N	FLO
5.216000	38.90	10.2	60	21.1	L1	FLO
14.240000	29.70	10.3	60	30.3	N	FLO

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.184000	29.30	10.1	54	24.7	L1	FLO
0.666000	25.70	10.1	46	20.3	N	FLO
1.698000	23.20	10.1	46	22.8	L1	FLO
4.728000	25.50	10.2	46	20.5	N	FLO
7.822000	24.20	10.2	50	25.8	N	FLO
12.974000	20.80	10.3	50	29.2	N	FLO

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