



EMC Test Report

Product Name: Videoconferencing Endpoint

Product Model: HUAWEI TE30

Report Number: SYBH (E) 00851477EB

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3. The laboratory has been listed by the US Federal Communications Commission to perform electromagnetic emission measurements. The site recognition number is 97456.
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Modification Record

No.	Last Report No.	Modification Description
1	N/A	First report



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1 General Information

1.1 Applied Standard

Applied Product Standard: FCC CFR47 Part 15 Subpart B:2012
ICES-003 Issue 5:2012

Test Method: ANSI C63.4:2003

1.2 Test Location

Test Location 1: Reliability Laboratory of Huawei Technologies Co., Ltd.
Address: Administration Building, Headquarters of Huawei Technologies
Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C

1.3 Test Environment Condition

Ambient Temperature: 20-25°C

Relative Humidity: 45-55%

Atmospheric Pressure: 101kPa



2 Summary of Test Results

Table 1 Test summary

EUT Classification: Class A Digital Device				
Test Items	Test Configuration	Limit	Test Result	Location
<u>Radiated Emissions</u> Enclosure Port	TC1	Class A	Pass	Location1
<u>Conducted Emissions</u> AC Power Port	TC1	Class A	Pass	Location1

Note:
1, Measurement taken is within the uncertainty of measurement system.
2, TC = Test configuration

3 Equipment Specification

3.1 General Description

HUAWEI TE30, videoconferencing Endpoint (720P, All-in-One HD videoconferencing system with embedded HD Codec, 1080p30 camera and microphone, including cable assembly, Rack, Remote control).

3.2 Specification

Table 2 Main equipment specification

Rated Input Voltage	~ 100 V to 240 V , (50 /60Hz)
Rated Power (W)	60 W
Dimensions (W x D x H)	234 mm (W) x 163 mm (D) x 157 mm (H)
Weight (kg)	2.1 kg
Transmit Frequency (MHz)	Wlan Band: 2.4G (2400MHz- 2483.5MHz)
Receive Frequency (MHz)	Wlan Band: 2.4G (2400MHz - 2483.5MHz)
Frequency of the Internal Source (MHz)	25MHz, 27MHz, 28.63636MHz, 37.125MHz, 49.152MHz, 74.25MHz, 100MHz , 125MHz, 152MHz, 333 MHz, 480MHz, 533MHz, 2500MHz



Figure 1. EUT Appearance



Figure 2. EUT Appearance

3.3 Board and SubAssembly

Table 3 Board list

Board		
Board full Name	Hardware Version	Description
VC84HDIM	VER.D	High Definition Integrative Terminal Main Board
VC84HDIA	VER.D	High Definition Integrative Terminal Aux-Board
VC84HDCT	VER.B	High Definition Camera Lens Driver & Tilt Ctl Board
VC84HDSA	VER.A	High Definition Camera Sensor Board A
VC84FPCB	VER.A	High Definition Camera FPC B
VC84OPEA	VER.B	HD camera optical encoder board
VC84HDCO	VER.A	High Definition Camera 5th Optical coupler Board
VC84AMICL	VER.B	Videoconferencing Endpoint MIC Adapter Board A
VC84AMICR	VER.B	Videoconferencing Endpoint MIC Adapter Board A
VC84BMICL	VER.A	Videoconferencing Endpoint MIC Adapter Board B
VC84BMICR	VER.A	Videoconferencing Endpoint MIC Adapter Board B
VC84OTFA	VER.C	Commutate Box for Integrative Cable

Table 4 Subassembly list

Subassembly			
Subassembly Name	Model	Manufacturer	Description
Adapter	HW-60-12AC14D-1	HUAWEI Technologies Co., Ltd.	Input voltage: ~ 100-240 V, 1.5A , 50-60 Hz Output voltage: --- +12 V, 5 A Rate power: 60 W



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 configuration.

4.1 Ports and Cables

Table 5 Ports and cables

Port	Connector	Board	Length	Qty.	Type of Cable	Remark
HPAI/TV/LAN/POWER		VC84HDIM	2m	1	shielded	
FE	RJ45			1	shielded	Root in the commutator, that is connecting with the HPAI/TV/LAN/POWER port by the cable
AC POWER			3m	1	Unshielded	
VGA IN	DB15	VC84HDIA	1m	1	shielded	
VGA OUT	DB15	VC84HDIA	1m	1	shielded	
Line IN		VC84HDIA	1m	1	Unshielded	
Line Out		VC84HDIA	1m	1	Unshielded	
USB		VC84HDIA	N/A	1	N/A	Reserved

4.2 Auxiliary Equipment

Table 6 Auxiliary equipment

Equipment	Model	Manufacturer	S/N	Calibration Date	Calibration Interval (month)	Remark
Monitor	L197wD	Lenovo	M2-A	N/A	N/A	N/A
Headphone	E418M	VEDOO	04-0020	N/A	N/A	N/A
PC	HP Compaq 8200	HP	CNK1310 F9C	N/A	N/A	N/A
Videoconferencing Endpoint	TE30	HUAWEI	N/A	N/A	N/A	N/A

4.3 Test Configurations

The equipment under test (EUT) was connected to ancillary devices in order to simulate normal operating conditions (with reference to the guidance given in the standard for this type of equipment). There is one test configuration TC1, was shown in the following tables and figures:

Table 7 Test configuration

Configuration No.	Configuration Description
TC1	AC Power Supply, HPAI/TV/LAN/POWER

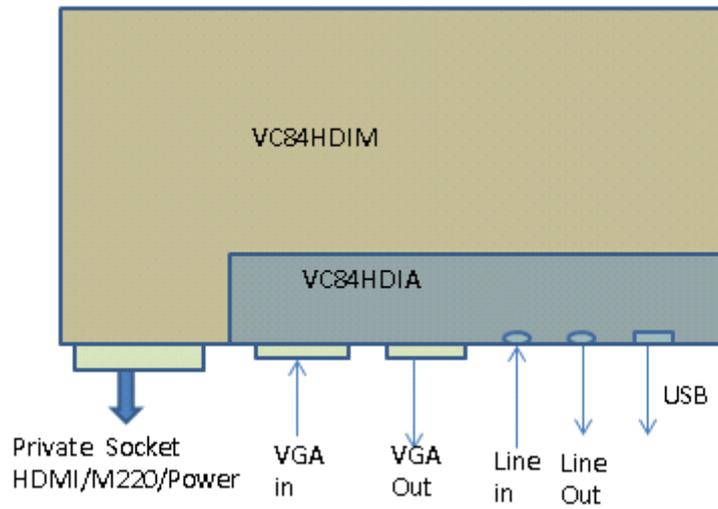


Figure 3.: Test configuration (TC1)

4.4 Test Conditions and Connections

The EUT connected the monitor to show the video from another HUAWEI TE30 through the cable of FE. The EUT connected the earphone to show the sound of another HUAWEI TE30 and itself. And the EUT can also show the sound through the line in port from the PC.

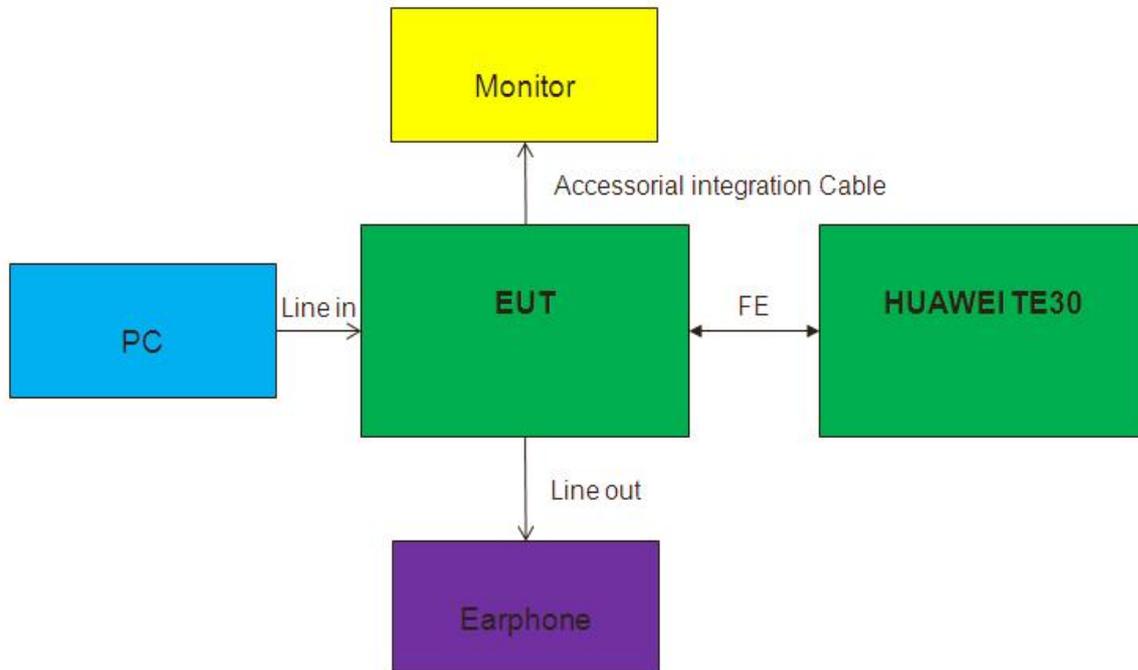


Figure 4. Test connection of TC1

5 Details of Test Items

5.1 Radiated Emission 30 MHz to 18 GHz

5.1.1 Test Procedure

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standard 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 for 30 MHz to 1 GHz, Average and Peak detector for above 1 GHz. 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 1 m to 4 m, the azimuth range of turntable was 0° to 360°, The receive antenna has two polarizations V and H.

The test set-up is shown in diagram as below:

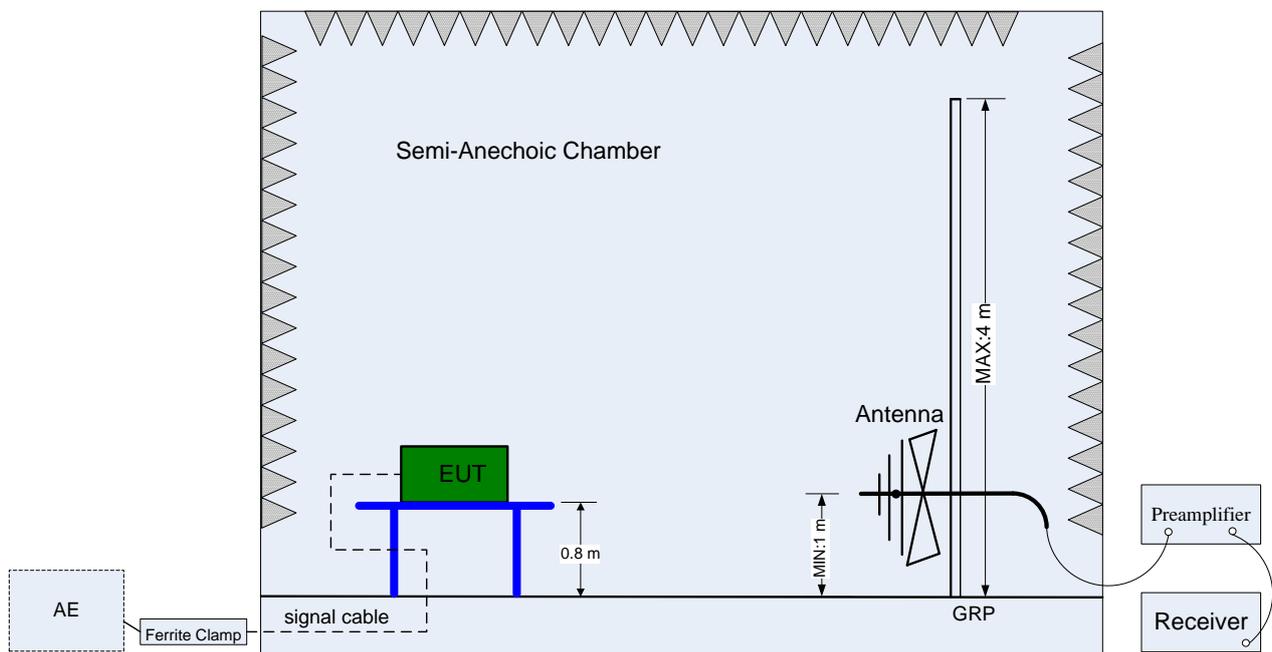


Figure 5. Test set-up of radiated disturbance (30 MHz-1 GHz)

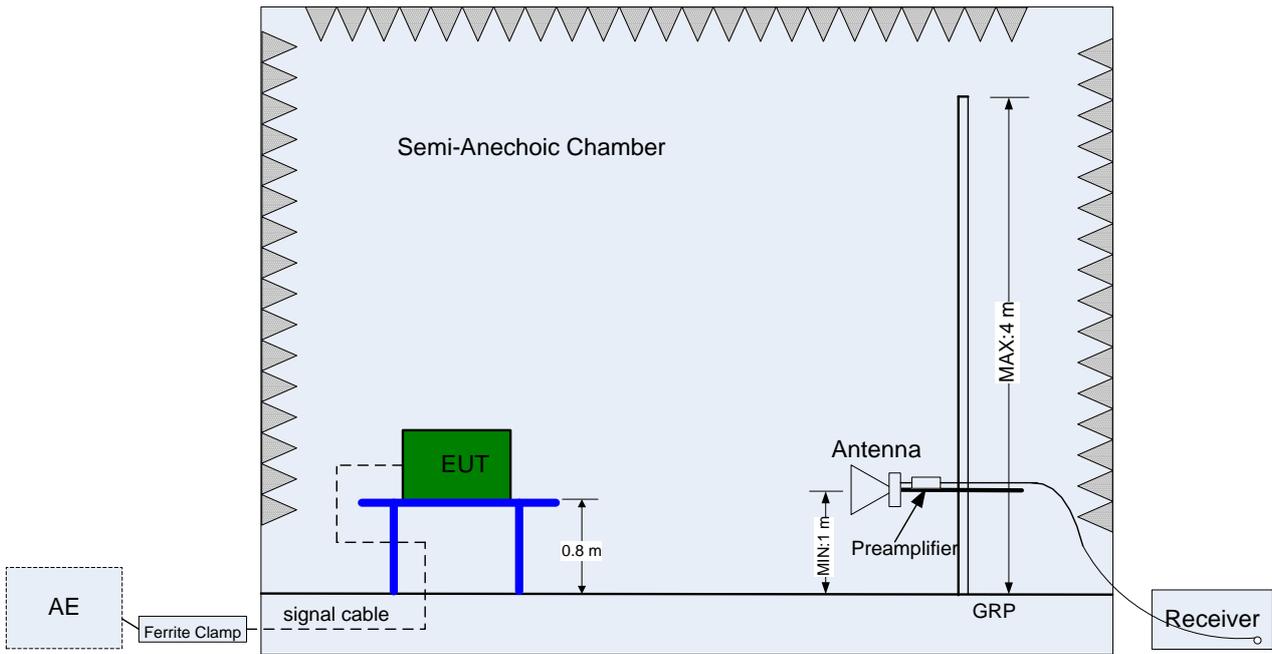


Figure 6. Test set-up of radiated disturbance (above 1 GHz)

5.1.2 Test Results

The EUT has met the requirements for radiated emission of enclosure port.
For the test data, see section 8.1.

Table 8 Test limits for 30MHz to 1GHz at a measuring distance of 3m

Frequency range	30 MHz to 1 GHz	
Measuring distance	3 m	
Classification	Class A	
Limits(Class A)	30 MHz to 88 MHz	49.0 dB μ V/m
	88 MHz to 216 MHz	53.5 dB μ V/m
	216 MHz to 960 MHz	56.4 dB μ V/m
	960 MHz to 1 GHz	59.5 dB μ V/m

Table 9 Test limits for above 1GHz at a measuring distance of 3m

Frequency range	1 GHz to 18 GHz	
Measuring distance	3 m	
Classification	Class A	
Limits(Class A)	AV Detector	PK Detector
	59.5 dB μ V/m	79.5 dB μ V/m

Note: The highest frequency of the internal sources of the EUT is 2500 MHz, the measurement was made up to 18 GHz.

5.2 Conducted Disturbance 0.15 MHz to 30 MHz

5.2.1 Test Procedure

The EUT was configured as described in section 4. The mains cable of the EUT must be connected to LISN. The LISN shall be placed 0.8 m from the boundary of EUT and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance is between the closest points of the LISN and the EUT. All other units of the EUT and associated equipment shall be at least 0.8m from the LISN.

The test set-up is shown in diagram as below:

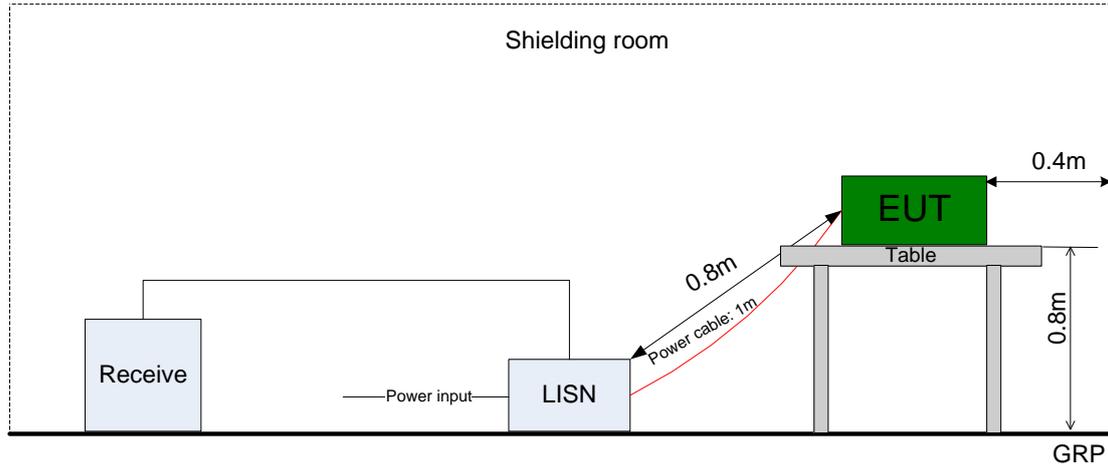


Figure 7. Test set-up of conducted disturbance for AC power port

5.2.2 Test Results

The EUT has met the requirements of FCC Part15 and ICES 003 for Conducted Disturbance of AC Power Port

For the test data, see section 8.2.

Table 10 Limits of AC power port

Frequency range	150 kHz to 30 MHz	
Classification	Class A	
Limits(Class A) (Frequency)	Voltage limits (dB μ V)	
	QP	AV
0.15 to 0.5 MHz	79	66
0.5 to 30 MHz	73	60



6 Main Test Instruments

Table 11 Main test instrument

Test Item	Test Instrument	Model	Manufacturer	Calibration Date	Calibration Interval (Month)
Radiated emission	EMI Test receiver	ESU26 (100150)	R&S	2012-05-28	12
	Trilog Broadband Antenna (30 MHz to 1 GHz)	VULB 9163 (9163-491)	SCHWARZBECK	2011-07-08	24
	Double-Ridged Waveguide Horn Antenna (1 GHz to 18 GHz)	HF906 (10084)	R&S	2011-05-16	24
	Chamber _NSA	3m chamber	Albatross	2012-03-05	24
	Chamber _S _{VSWR}	3m chamber	Albatross	2012-03-05	24
Conducted emission	EMI test receiver	ESCI	R&S	2012-05-14	12
	Artificial Mains Network	ENV4200	R&S	2012-05-14	12
Software Information					
Test Item	Software Name	Manufacturer	Version		
Radiated emission	ES-K1	R&S	V1.7.1		
Conducted emission	ES-K1	R&S	V1.7.1		



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:

Table 12 System measurement uncertainty

Items		Extended Uncertainty
Radiated emission	Field strength (dB μ V/m)	U=4.2 dB; k=2 (30MHz to 1GHz)
		U=5.0 dB; k=2 (1 GHz to 18GHz)
Conducted emission	Disturbance Voltage (dB μ V)	U=3.3 dB; k=2



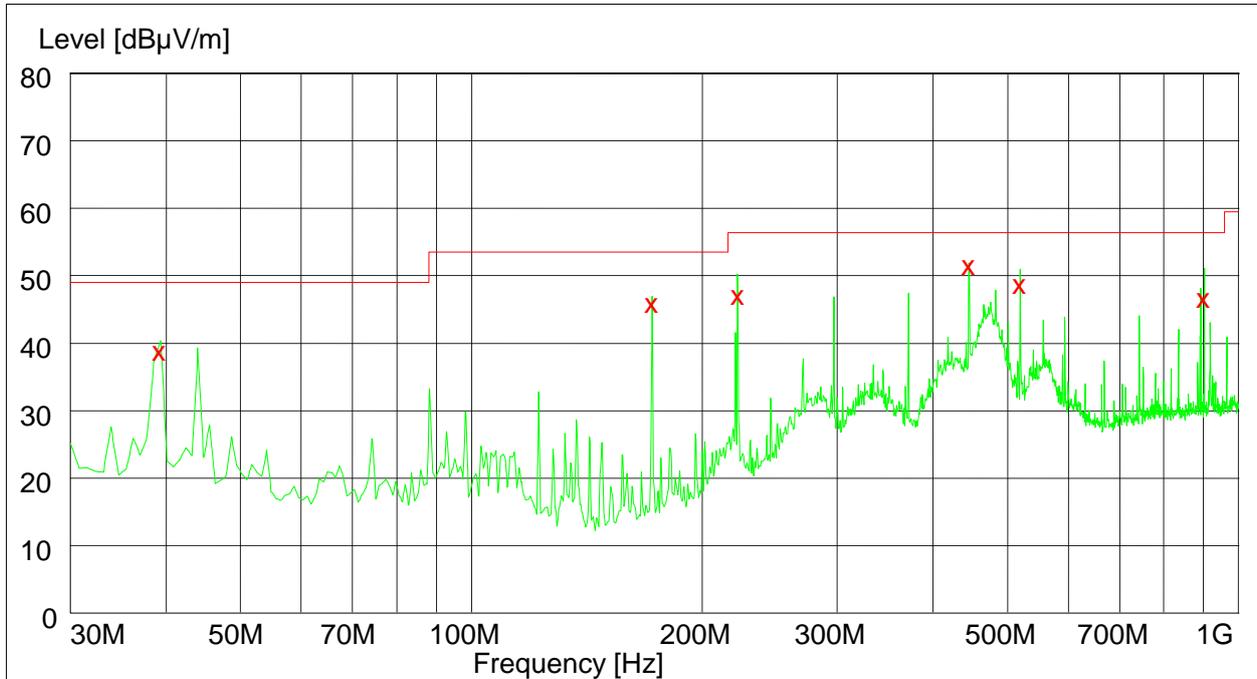
8 Graph and Data of Emission Test

8.1 Radiated Disturbance

8.1.1 Radiated Disturbance of TC1

Short Description: FCC PART 15 Field Strength

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	Resolution Bandw.	Video Bandw.	Transducer
30.0 MHz	1.0 GHz	60.0 kHz	QuasiPeak	15.0 s	120 kHz	300 kHz	RE VULB SN 491 AF



Measurement Result: QP Detector

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation
39.300000	39.60	15.3	49.0	9.4	100.0	333.00	VERTICAL
172.020000	46.60	10.8	53.5	6.9	100.0	329.00	VERTICAL
222.720000	47.80	13.1	56.4	8.6	100.0	214.00	VERTICAL
445.500000	50.80	18.2	56.4	5.6	117.0	320.00	VERTICAL
519.720000	49.50	19.8	56.4	6.9	100.0	191.00	VERTICAL
902.400000	47.40	25.1	56.4	9.0	100.0	204.00	VERTICAL

Notes:

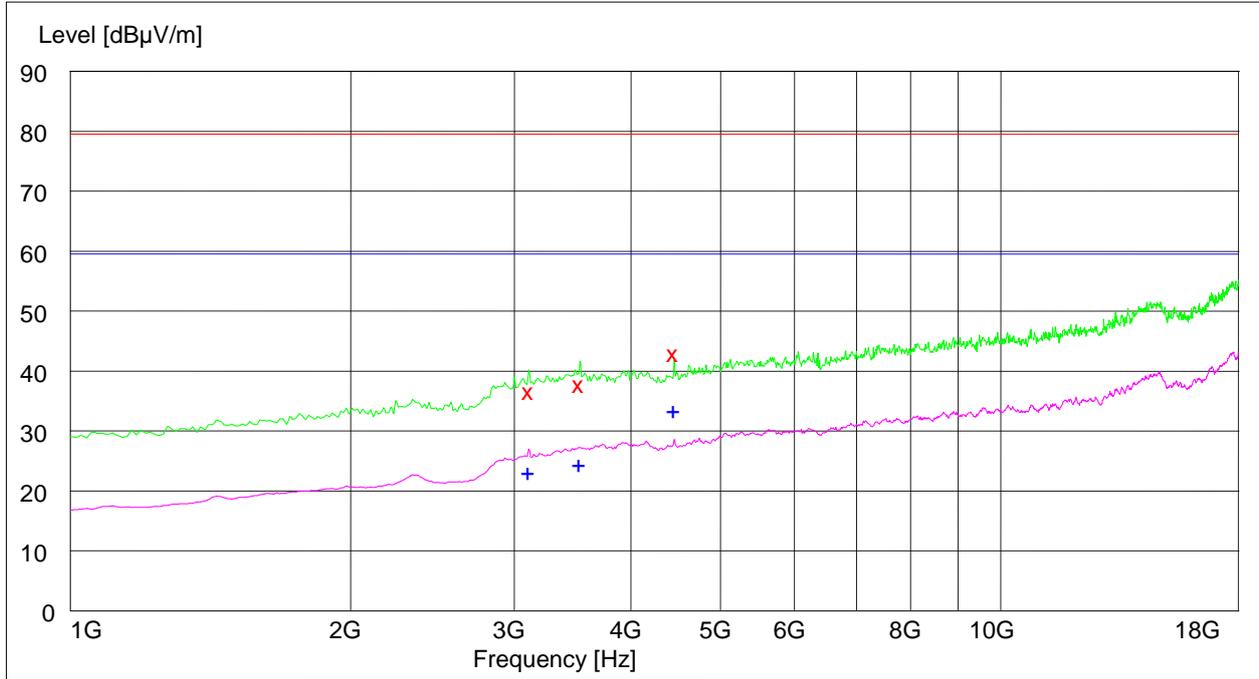
Level = Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain)

The reading level is used to calculate by software which is not shown in the sheet.



Short Description: FCC PART 15 Field Strength

Start	Stop	Step	Detector	Meas. Time	Resolution Bandw.	Video Bandw.	Transducer
1 GHz	18 GHz	500 kHz	Peak Average	1.0 s	1 MHz	3 MHz	RE HORN SN683 AF



Measurement Result: PK Detector

Frequency (MHz)	Peak (dB µV/m)	Transd (dB)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Azimuth (deg)	Polarisation
3112.500000	37.00	-6.6	79.5	42.5	144.0	38.00	H
3525.100000	38.10	-5.0	79.5	41.4	150.0	52.00	V
4454.900000	43.30	-3.4	79.5	36.2	135.0	75.00	V

Measurement Result: AV Detector

Frequency (MHz)	Average (dB µV/m)	Transd (dB)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Azimuth (deg)	Polarisation
3108.500000	23.50	-6.6	59.5	36.0	100.0	334.00	H
3523.600000	24.90	-5.0	59.5	34.6	141.0	173.00	V
4454.900000	33.80	-3.4	59.5	25.7	131.0	68.00	V

Notes:

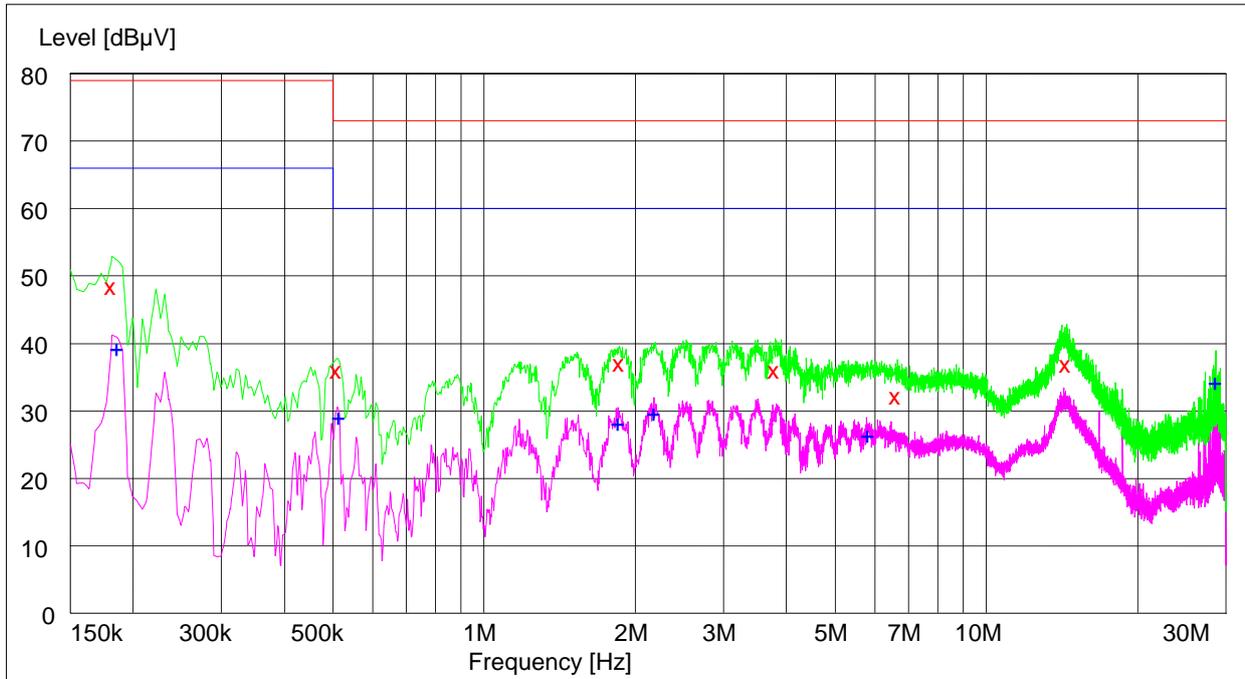
Level = Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain)
 The reading level is used to calculate by software which is not shown in the sheet.



8.2 Conducted Disturbance

8.2.1 AC Power Port Test Data

Short Description: EN 55022 Field Strength
 Start Stop Step Detector Meas. Resolution Video Transducer
 Frequency Frequency Width Time Bandw. Bandw.
 150 kHz 30 MHz 4.5 kHz QuasiPeak 1.0 s 9 kHz 30 kHz ENV 4200_2009
 Average



Measurement Result: QP Detector

Frequency (MHz)	Level (dBµV)	Transd (dB)	Limit (dBµV)	Margin (dB)	Line	PE
0.181500	48.90	9.9	79	30.1	N	GND
0.510000	36.40	9.9	73	36.6	N	GND
1.864500	37.50	10.0	73	35.5	N	GND
3.799500	36.40	10.1	73	36.6	L3	GND
6.612000	32.60	10.3	73	40.4	L3	GND
14.433000	37.20	10.5	73	35.8	N	GND

Measurement Result: AV Detector

Frequency (MHz)	Level (dBµV)	Transd (dB)	Limit (dBµV)	Margin (dB)	Line	PE
0.186000	39.70	9.9	66	26.3	N	GND
0.514500	29.30	9.9	60	30.7	L3	GND
1.855500	28.60	10.0	60	31.4	L3	GND
1.855500	30.00	10.1	60	30.0	N	GND
5.820000	26.80	10.3	60	33.2	L3	GND
28.684500	34.70	10.9	60	25.3	L3	GND

Note:

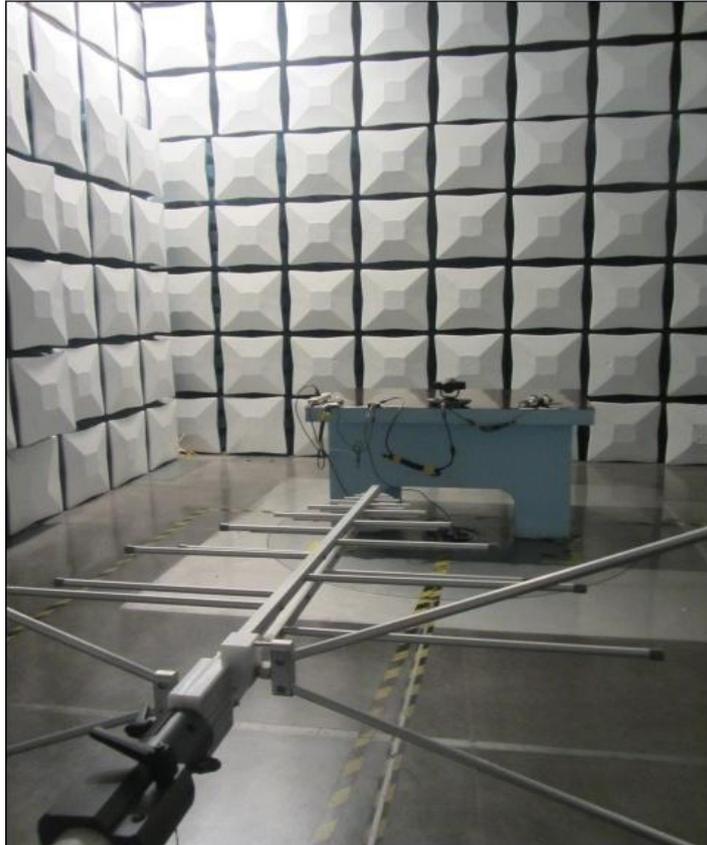
Level= Reading level+ Transd (cable loss + correction factor)

The reading level is used to calculate by software which is not shown in the sheet.

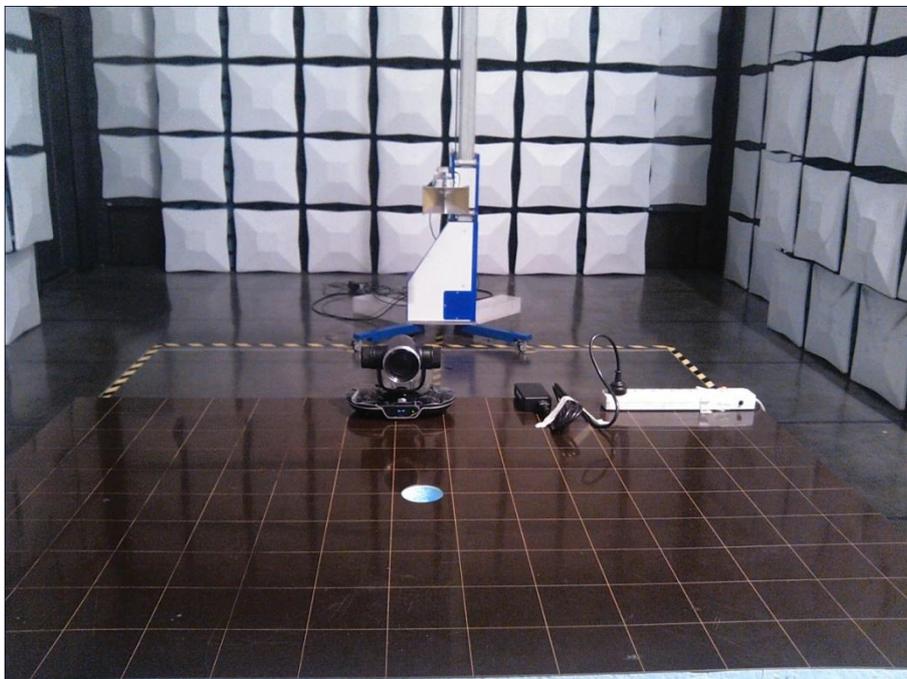


9 Photographs of Test Set-up

9.1 Radiated Emission



Radiated emission for 30MHz-1GHz



Radiated emission for 1GHz to 18GHz

9.2 Conducted Emission



Conducted emissions of AC power port

Appendix: Abbreviation

Table 13 Abbreviation

Abbreviation	Full Name
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
EUT	Equipment Under Test
AE	Auxiliary Equipment
AC	Alternate Current
DC	Direct Current
NSA	Normalized Site Attenuation
LISN	Line Impedance Stabilization Network
TC	Test configuration
N/A	Not Applicable

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