



中国认可
国际互认
检测
TESTING
CNAS L0310



FCC&ISED RF Test Report

Product Name: Smart Phone

Model Number: LYA-L29, LYA-L09

Report No.: SYBH(Z-RF)20180706013002-2006

FCC ID: QISLYA-LX9

IC: 6369A-LYALX9

Reliability Laboratory of Huawei Technologies Co., Ltd.

(Global Compliance and Testing Center of Huawei Technologies Co., Ltd)

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Notice

1. The laboratory has passed the accreditation by China National Accreditation Service for Conformity Assessment (CNAS). The accreditation number is L0310.
2. The laboratory has passed the accreditation by The American Association for Laboratory Accreditation (A2LA). The accreditation number is 2174.01.
3. The laboratory has been recognized by the US Federal Communications Commission (FCC) to perform compliance testing subject to the Commission's Certification rules. The Designation Number is CN1173, and the Test Firm Registration Number is 294140.
4. The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are 6369A-1.
5. The laboratory (Reliability Lab of Huawei Technologies Co., Ltd) is also named "Global Compliance and Testing Center of Huawei Technologies Co., Ltd", the both names have coexisted since 2009.
6. The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
7. The test report is invalid if there is any evidence of erasure and/or falsification.
8. The test report is only valid for the test samples.
9. Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.



Applicant: Huawei Technologies Co., Ltd.
Address: Administration Building, Headquarters of Huawei Technologies Co., Ltd.,
Bantian, Longgang District, Shenzhen, 518129, P.R.C

Date of Receipt Sample: 2018-08-03
Start Date of Test: 2018-08-03
End Date of Test: 2018-08-27

Test Result: Pass

Approved by Senior Engineer:	2018-08-30	He Hao	He Hao
	Date	Name	Signature

Prepared by:	2018-08-29	zhoulingbo	Zhou ling bo
	Date	Name	Signature



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1 General Information

1.1 Applied Standard	
Applied Rules:	47 CFR FCC Part 02 47 CFR FCC Part 15 Subpart C (15.225)
	ISED RSS-Gen (Issue 5, April 2018) ISED RSS-210 (Issue 9, August 2016)
1.2 Test Location	
Test Location 1:	Reliability Laboratory of Huawei Technologies Co., Ltd.
Address:	No.2 New City Avenue Songshan Lake Sci. &Tech. Industry Park, Dongguan, Guangdong, P.R.C
1.3 Test Environmental Condition	
Ambient Temperature:	20 – 25 °C
Ambient Relative Humidity:	45 – 55 %
Atmospheric Pressure:	101 kPa



2 Summary

FCC Rule No.	ISED Rule No.	Test Description	Test Limit	Test Condition	Test Result	Reference
TRANSMITTER MODE						
15.225 (a)	RSS-210, B6(a)	In-Band Emissions	15.848 μ V/m @ 30m 13.553 – 13.567 MHz	RADIATED	Pass	Section 5.2
2.1049	RSS-Gen, 6.7	Bandwidth	N/A		Pass	Section 5.1
15.225(b)	RSS-210, B6(b)	In-Band Emissions	334 μ V/m @ 30m 13.410 – 13.553 MHz 13.567 – 13.710 MHz		Pass	Section 5.2
15.225(c)	RSS-210, B6(c)	In-Band Emissions	106 μ V/m @ 30m 13.110 – 13.410 MHz 13.710 – 14.010 MHz		Pass	Section 5.2
15.225(d) 15.209	RSS-210, B6(d)	Out-of-Band Emissions	FCC: Emissions outside of the specified band (13.110 – 14.010 MHz) must meet the radiated limits detailed in 15.209 ISED: Emissions outside of the specified band (13.110 – 14.010 MHz) must meet the radiated limits detailed in RSS-Gen 8.9		Pass	Section 5.3
15.225(e)	RSS-210, B6(d)	Frequency Stability Tolerance	\pm 0.01% of Operating Frequency	Temperature Chamber	Pass	Section 5.4
15.207	RSS-Gen, 8.8	AC Conducted Emissions 150kHz – 30MHz	FCC: < FCC 15.207 limits ISED: < RSS-Gen, 8.8 limits.	LINE CONDUCTED	Pass	Section 5.5

3 Product Description

3.1 Product Information

3.1.1 General Description

LYA-L29 is a subscriber equipment in the GSM/WCDMA/LTE system. The GSM frequency band includes GSM850 and GSM900 and DCS1800 and PCS1900. The UMTS frequency band is B1 and B2 and B4 and B5 and B6 and B8 and B19. The LTE frequency band is B1 and B2 and B3 and B4 and B5 and B6 and B7 and B8 and B9 and B12 and B17 and B18 and B19 and B20 and B26 and B28 and B32 and B34 and B38 and B39 and B40 and B41. The Mobile Phone implements such functions as RF signal receiving/transmitting, LTE/HSPA/UMTS and GSM/GPRS/EDGE protocol processing, voice, video MMS service, GPS, Bluetooth, NFC, Wi-Fi and Wirelessly Charging etc. LYA-L29 is a dual SIM smart phone, and one of the SIM card interfaces could be used as HUAWEI nano SD card interface. Externally it provides type C USB charging port, and the port could be used as the earphone port or data-transfer port.

LYA-L09 is a subscriber equipment in the GSM/WCDMA/LTE system. The GSM frequency band includes GSM850 and GSM900 and DCS1800 and PCS1900. The UMTS frequency band is B1 and B2 and B4 and B5 and B6 and B8 and B19. The LTE frequency band is B1 and B2 and B3 and B4 and B5 and B6 and B7 and B8 and B9 and B12 and B17 and B18 and B19 and B20 and B26 and B28 and B32 and B34 and B38 and B39 and B40 and B41. The Mobile Phone implements such functions as RF signal receiving/transmitting, LTE/HSPA/UMTS and GSM/GPRS/EDGE protocol processing, voice, video MMS service, GPS, Bluetooth, NFC, Wi-Fi and Wirelessly Charging etc. LYA-L09 provides one SIM card interface and one HUAWEI nano SD card interface. Externally it provides type C USB charging port, and the port could be used as the earphone port or data-transfer port.

The difference between LYA-L29 and LYA-L09:

The only difference between LYA-L29 and LYA-L09 is that LYA-L09 deletes into single SIM card by software. Other parts of the two models are the same.

NOTE1: Only NFC test data included in this report.

NOTE 2: We do not test the data of LYA-L09, all test data share the LYA-L29

3.2 EUT Identity













NOTE: Unless otherwise noted in the report, the functional boards installed in the units shall be selected from the below list, but not means all the functional boards listed below shall be installed in one unit.



3.2.1 Board

Board		
Description	Software version	Hardware version
Main Board	9.0.0.82(C432E82R1P7)	HL2LAYAM

3.2.2 Sub-Assembly

Sub-Assembly			
Sub-Assembly Name	Model	Manufacturer	Description
Adapter	HW-100400A00	Huawei Technologies Co.,Ltd.	Input Voltage:100V-240V~50/60Hz, 1.2A Output Voltage: 5V  2A OR9V  2A OR 10V  4A
Adapter	HW-100400U00	Huawei Technologies Co.,Ltd.	Input Voltage:100V-240V~50/60Hz, 1.2A Output Voltage: 5V  2A OR9V  2A OR 10V  4A
Adapter	HW-100400E00	Huawei Technologies Co.,Ltd.	Input Voltage:100V-240V~50/60Hz, 1.2A Output Voltage: 5V  2A OR9V  2A OR 10V  4A
Adapter	HW-100400B00	Huawei Technologies Co.,Ltd.	Input Voltage:100V-240V~50/60Hz, 1.2A Output Voltage: 5V  2A OR9V  2A OR 10V  4A
Li-ion Polymer Battery	HB486486ECW	Huawei Technologies Co.,Ltd.	Rated capacity: 4100mAh Nominal Voltage: +3.82V Charging Voltage: +4.4V



4 Main Test Instruments

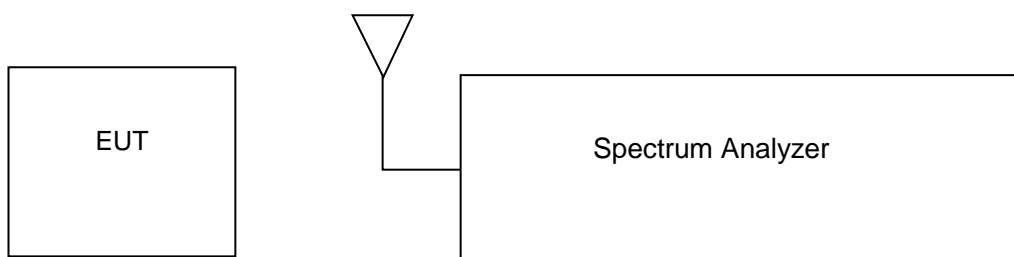
Main Test Equipments					
Equipment Name	Manufacturer	Model	Serial Number	Cal Date	Cal- Due
Test receiver	R&S	ESU26	100387	2018/1/20	2019/1/19
Test receiver	R&S	ESU26	100387	2018/1/20	2019/1/19
Test receiver	R&S	ESCI	101163	2018/1/20	2019/1/19
Spectrum analyzer	R&S	FSU3	200474	2018/1/20	2019/1/19
Spectrum analyzer	R&S	FSU43	100144	2018/1/20	2019/1/19
LOOP Antennas(9kHz-30MHz)	R&S	HFH2-Z2	100262	2017/4/25	2019/4/25
LOOP Antennas(9kHz-30MHz)	R&S	HFH2-Z2	100263	2017/4/25	2019/4/25
Trilog Broadband Antenna (30M~3GHz)	SCHWARZBECK	VULB 9163	9163-357	2017/4/21	2019/4/20
Double-Ridged Waveguide Horn Antenna (1G~18GHz)	R&S	HF907	100304	2017/5/27	2019/5/27
Pyramidal Horn Antenna(18GHz-26.5GHz)	ETS-Lindgren	3160-09	5140299	2017/7/20	2019/7/19
Artificial Main Network	R&S	ENV4200	100134	2018/5/8	2019/5/7
Line Impedance Stabilization Network	R&S	ENV216	100382	2018/5/8	2019/5/7
Software Information					
Test Item	Software Name		Manufacturer	Version	
RE	EMC32		R&S	V9.25.0	
CE	EMC32		R&S	V9.25.0	

5 Test Results

5.1 Bandwidth

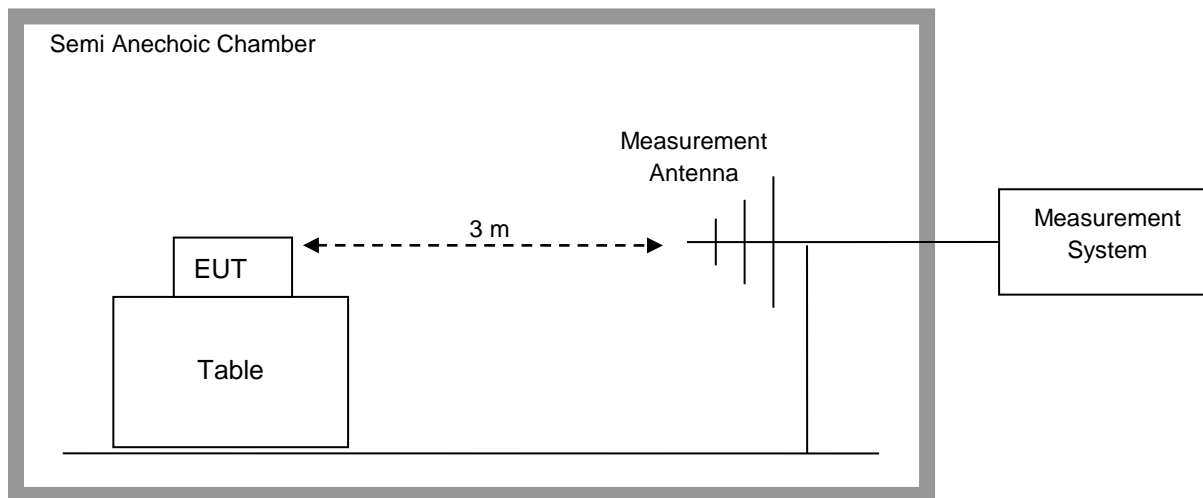
The 99% emission bandwidth is measured with a spectrum analyzer connected via a receive antenna placed near the EUT while the EUT is operating in transmission mode.

5.1.1 Test Set-up



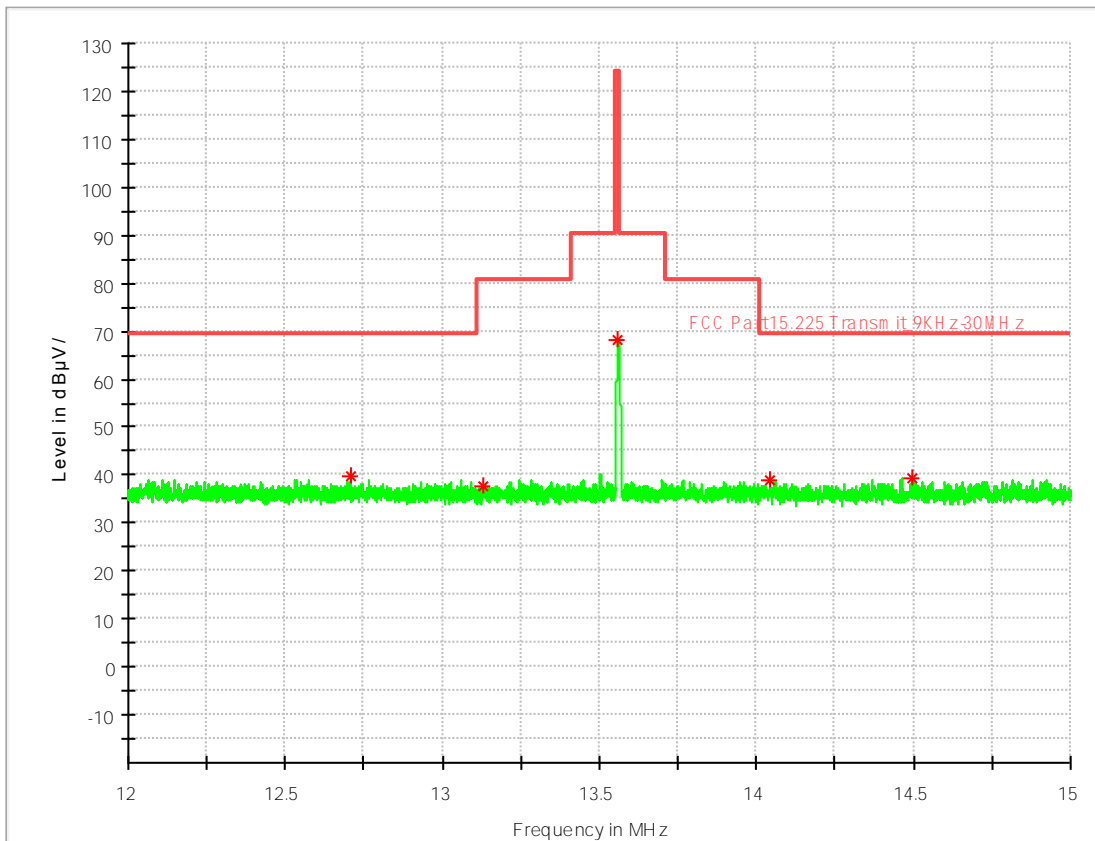
5.2 In-Band Radiated Spurious Emission Measurements

5.2.1 Test Setup



Measurement parameters	
Detector:	Quasi Peak
Sweep time:	-/-
Resolution bandwidth:	10 kHz
Video bandwidth:	10 kHz
Span:	-/-
Trace-Mode:	Max Hold

5.2.2 Test Result



MEASUREMENT RESULT: QP Detector

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Azimuth (deg)	Transd (dB)
12.708375	39.61	69.50	29.89	V	0.0	21.1
13.132500	37.80	80.50	42.70	V	0.0	21.1
13.559438	68.22	124.00	55.78	V	0.0	21.1
14.040563	38.87	69.50	30.63	V	90.0	21.1
14.494125	39.50	69.50	30.01	V	0.0	21.1

NOTES:

1. All measurements were performed using a loop antenna. The antenna was positioned in three orthogonal positions (X front, Y side, Z top) and the position with the highest emission level was recorded.
2. When using other measurement distance, according to the standard C63.10, If that point is closer to the EUT than $\lambda/2\pi$ and the limit distance is greater than $\lambda/2\pi$, the data was extrapolated to the specified measurement distance of 30m using extrapolation factor as specified in

§6.4.4.2. Extrapolation Factor = $40\log\left(\frac{d_{near\ field}}{d_{measure}}\right) + 20\log\left(\frac{d_{limit}}{d_{near\ field}}\right)$.

3. All measurements were recorded using a spectrum analyzer employing a quasi-peak detector.
4. Level = Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain). The

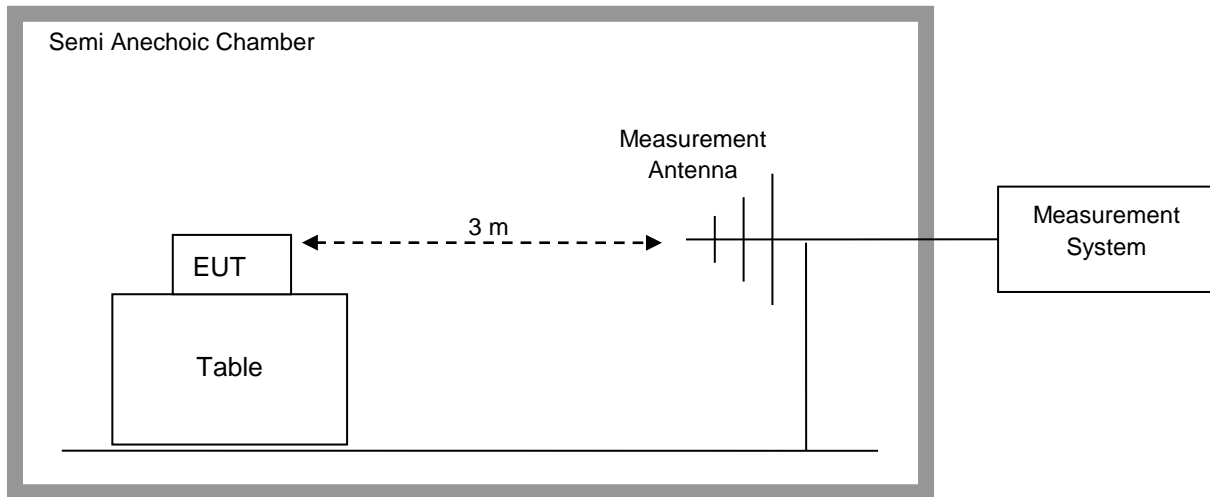


reading level is calculated by software which is not shown in the sheet.

The result of the measurement is passed.

5.3 Radiated Spurious Emission Measurements, Out-of-Band

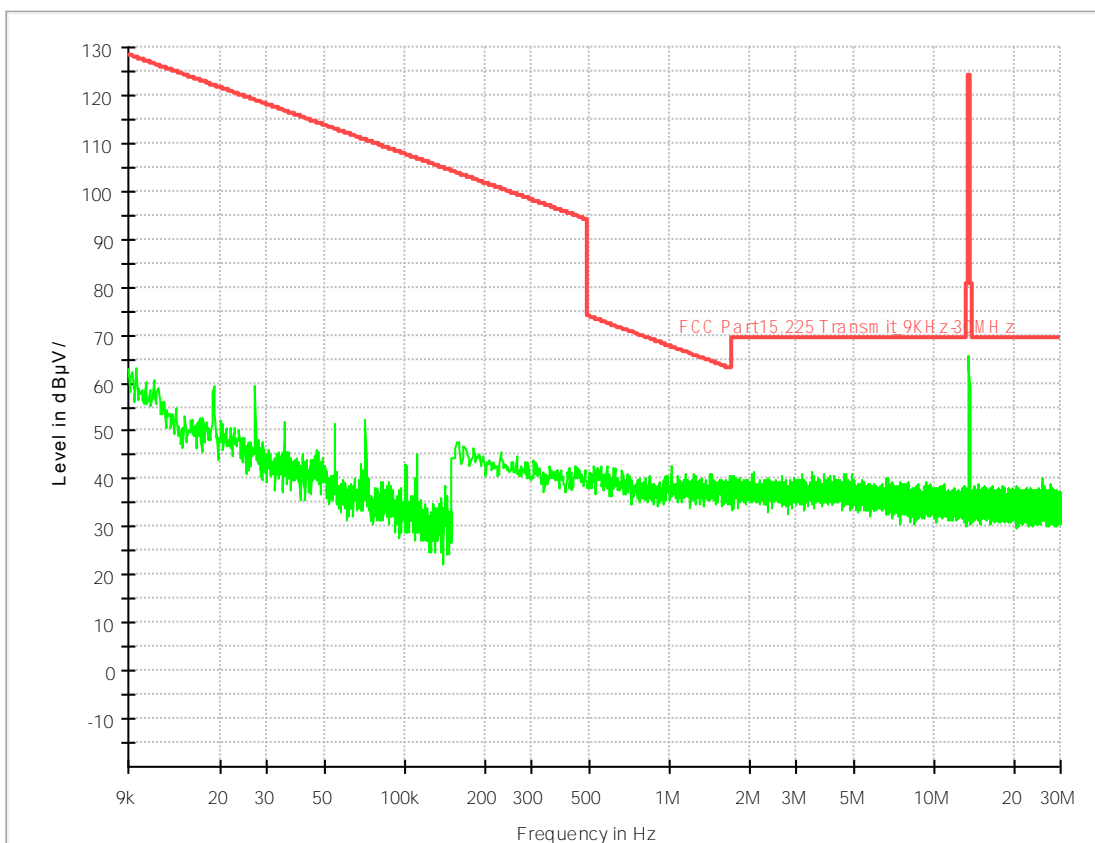
5.3.1 Test Setup



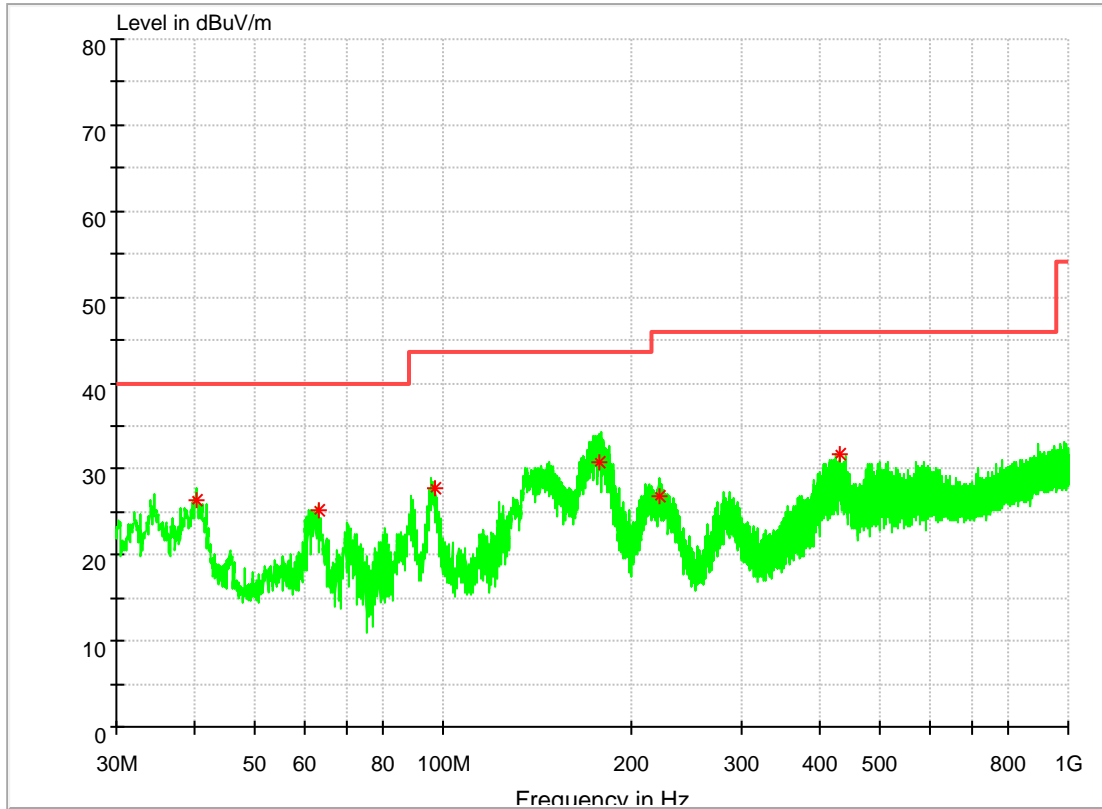
Measurement parameters	
Detector:	Quasi Peak
Sweep time:	Auto
Resolution bandwidth:	9 kHz – 150 kHz: 200 Hz 150 kHz – 30 MHz: 9 kHz 30 MHz – 1000 MHz: 100 kHz
Video bandwidth:	9 kHz – 150 kHz: 200 Hz 150 kHz – 30 MHz: 9 kHz 30 MHz – 1000 MHz: 100 kHz
Span:	See Plots
Trace-Mode:	Max Hold

5.3.2 Test Result

9k~30MHz



30M~1GHz



Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Polarisation	Azimuth (deg)	Transd (dB)
40.301660	26.38	40.00	13.82	101.0	V	69.0	14.3
63.136440	25.12	40.00	14.66	101.0	V	192.0	12.6
96.934140	27.78	43.50	15.84	101.0	V	236.0	14.3
178.044820	30.77	43.50	9.96	102.0	V	128.0	11.3
222.022240	26.94	46.00	17.64	100.0	H	25.0	13.3
430.736120	31.79	46.00	14.34	100.0	V	27.0	18.4

NOTES:

1. All measurements were recorded using a spectrum analyzer employing a quasi-peak detector for emissions below 960MHz.
2. Both Vertical and Horizontal polarities of the receive antenna were evaluated with the worst case emissions being reported. Below 30MHz the Loop antenna was positioned in 3 separate radials.
3. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
4. The spectrum is measured from 9kHz to the 10th harmonic and the worst-case emissions are reported.
5. Level =Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain). The reading level is calculated by software which is not shown in the sheet.

The result of the measurement is passed.



5.4 Frequency Stability

5.4.1 Test Setup

The EUT was placed in a Climatic Chamber. A small whip antenna was placed close to the EUT, and connected to the measuring Spectrum Analyzer. Measurement performed without modulation on TX.

5.4.2 Test Result

VOLTAGE (%)	POWER Battery	TEMP (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100%		-20	13559982	-18	-0.00013274336
100%		-10	13559985	-15	-0.00011061947
100%		0	13560017	17	0.00000125369
100%		10	13560012	12	0.000000884956
100%		20	13560009	9	0.00006637168
100%		30	13560019	19	0.00000140118
100%		40	13560011	11	0.000000811209
100%		50	13559981	-19	-0.00000140118
Battery End Point		3.6	20	13560015	15
115%	4.35	20	13559986	-14	-0.00010324484

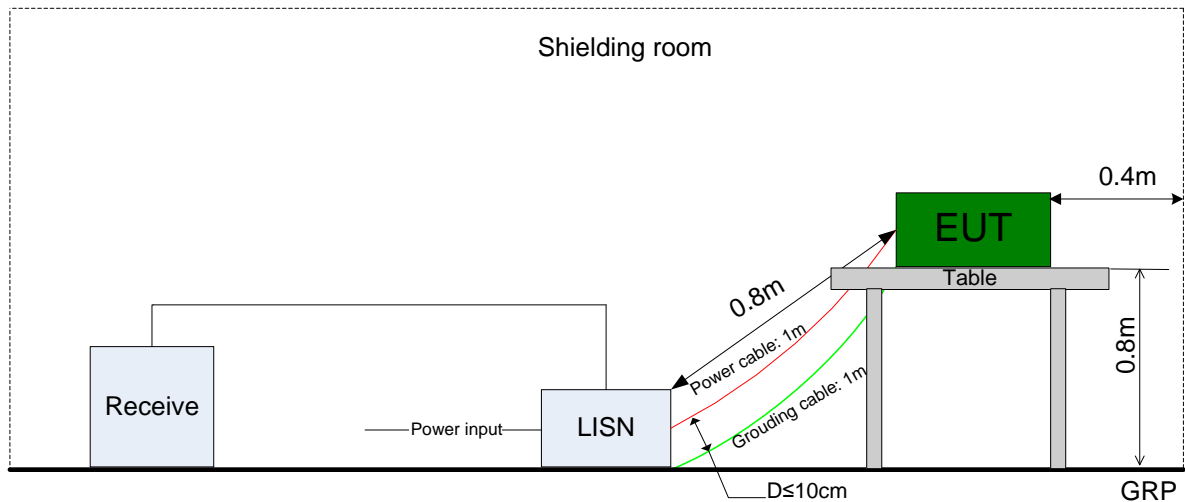
The result of the measurement is passed.

5.5 AC Power Line Conducted Emissions

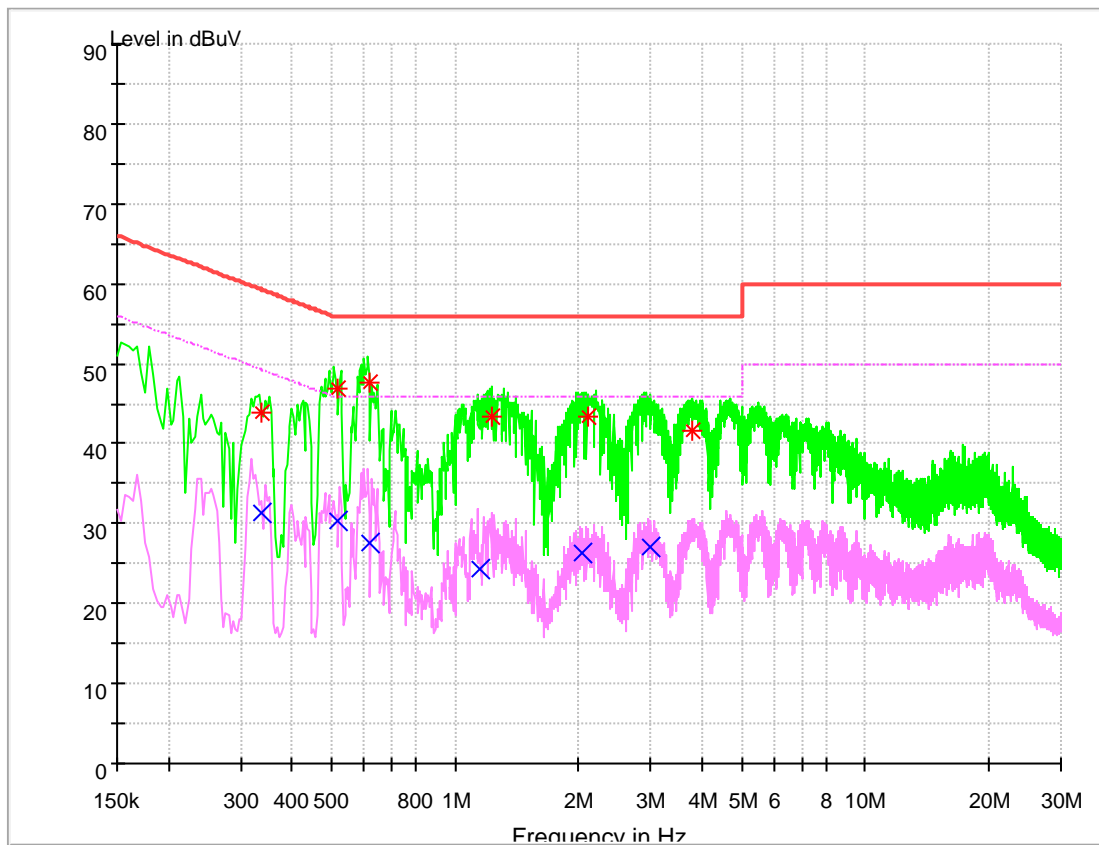
5.5.1 Test Setup

The mains cable of the EUT (maybe per AC/DC Adapter) 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.

Ground connections, where required for safety purposes, shall be connected to the reference ground point of the LISN and, where not otherwise provided or specified by the manufacturer, shall be of same length as the mains cable and run parallel to the mains connection at a separation distance of not more than 0.1 m.



5.5.2 Test Result





MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dBμV	Limit dBμV	Transd dB	Margin dB	Line	PE
0.336272	43.76	N	9.7	15.54	59.30	FLO
0.517978	46.82	L1	9.7	9.18	56.00	FLO
0.615686	47.71	L1	9.7	8.29	56.00	FLO
1.229777	43.28	L1	9.7	12.72	56.00	FLO
2.101718	43.38	L1	9.7	12.62	56.00	FLO
3.769949	41.69	L1	9.7	14.31	56.00	FLO

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBμV	Limit dBμV	Transd dB	Margin dB	Line dBμV	PE
0.337662	31.29	L1	9.7	17.97	49.26	FLO
0.517042	30.28	L1	9.7	15.72	46.00	FLO
0.618527	27.51	L1	9.7	18.49	46.00	FLO
1.148974	24.28	L1	9.7	21.72	46.00	FLO
2.032836	26.25	L1	9.7	19.75	46.00	FLO
0.337662	31.29	L1	9.7	17.97	49.26	FLO

Note:

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

The reading level is calculated by software which is not shown in the sheet.

2, Margin=Limit - Level

The result of the measurement is passed.

6 System Measurement Uncertainty

For a 95% confidence level (k = 2), the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 as following:

Test Item		Extended Uncertainty
All Emissions, Radiated	Field Strength [dBμV/m]	For 3 m Chamber: U = 5.90 dB (30 MHz-1 GHz) U = 4.94 dB (1 GHz-18 GHz) U = 4.24 dB (18 GHz-26.5 GHz)
AC Power Line Conducted Emissions	Disturbance Voltage[dBμV]	U=2.3 dB

-----The END-----