



中国认可  
国际互认  
检测  
TESTING  
CNAS L0310



# FCC RF Test Report

**Product Name: Smart Phone**

**Model Number: FIG-LX1**

**Report No.: SYBH(Z-RF)001112017-2005**

**FCC ID: QISFIG-LX1**

**Reliability Laboratory of Huawei Technologies Co., Ltd.**

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

Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District,  
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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:** 2017-11-6  
**Start Date of Test:** 2017-11-6  
**End Date of Test:** 2017-11-27

**Test Result:** Pass

<b>Approved by Senior Engineer:</b>	2017-11-27	Roger zhang	<i>Roger Zhang</i>
	Date	Name	Signature

<b>Prepared by:</b>	2017-11-27	Mao Wenli	<i>Maowenli</i>
	Date	Name	Signature



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## 1 General Information

<b>1.1 Applied Standard</b>	
Applied Rules:	47 CFR FCC Part 02 FCC Part 15 Subpart C (15.225)
<b>1.2 Test Location</b>	
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
<b>1.3 Test Environmental Condition</b>	
Ambient Temperature:	20 – 25 °C
Ambient Relative Humidity:	45 – 55 %
Atmospheric Pressure:	101 kPa



## 2 Summary

FCC Part Section	Test Description	Test Limit	Test Condition	Test Result	Reference
TRANSMITTER MODE					
15.225 (a)	In-Band Emissions	15.848 $\mu$ V/m @ 30m 13.553 – 13.567 MHz	RADIATED	Pass	Section 5.2
2.1049	20 dB Bandwidth	N/A		Pass	Section 5.1
15.225(b)	In-Band Emissions	334 $\mu$ V/m @ 30m 13.410 – 13.553 MHz 13.567 – 13.710 MHz		Pass	Section 5.2
15.225(c)	In-Band Emissions	106 $\mu$ V/m @ 30m 13.110 – 13.410 MHz 13.710 – 14.010 MHz		Pass	Section 5.2
15.225(d) 15.209	Out-of-Band Emissions	Emissions outside of the specified band (13.110 – 14.010 MHz) must meet the radiated limits detailed in 15.209		Pass	Section 5.3
15.225(e)	Frequency Stability Tolerance	$\pm$ 0.01% of Operating Frequency	Temperature Chamber	Pass	Section 5.4
15.207	AC Conducted Emissions 150kHz – 30MHz	< FCC 15.207 limits	LINE CONDUCTED	Pass	Section 5.5



### 3 Product Description

#### 3.1 Product Information

##### 3.1.1 General Description

FIG-LX1 is subscriber equipment in the LTE/WCDMA/GSM system. The LTE frequency band for Single Carrier is LTE band1,LTE band 3,LTE band 7,LTE band 8,LTE band 20 and the LTE frequency band for carrier aggregation downlink operation band is inter-band CA\_3-7,CA\_7-20, CA\_3-20 and intra-band contiguous CA\_1,CA\_3,CA\_7 and intra-band non-contiguousCA\_3. The HSPA/UMTS frequency band is Band 1,Band 2,Band 5 and Band 8. The GSM/GPRS/EDGE frequency band includes GSM850,GSM900, DCS1800 and PCS1900. The Mobile Phone implements such functions as RF signal receiving/transmitting, HSPA/UMTS and GSM/GPRS/EDGE protocol processing, voice, video, MMS service, GPS, AGPS and WIFI etc.

Note: Only NFC test data included in this report.




#### 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	Hardware Version	Software Version
Main Board	HL3FIGOM	FIG-LX1 8.0.0.100 (C900)

##### 3.2.2 Sub-Assembly

Sub-Assembly			
Sub-Assembly Name	Model	Manufacturer	Description
Adapter	HW-050200E01	Huawei Technologies Co., Ltd.	Input Voltage: 100-240V 50/60Hz 0.5A Output Voltage: 5V  2A Rated Power: 10W
Battery	HB366481ECW-11	Huawei Technologies Co., Ltd.	Rated capacity: 2900mAh 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
Power supply	KEITHLEY	2303	000500E	2017/5/31	2018/5/30
Wireless Communication Test set	Agilent	N4010A	MY49081592	2017/7/31	2018/7/30
Universal Radio Communication Tester	R&S	CMU200	117341	2016/12/1	2017/11/30
Universal Radio Communication Tester	R & S	CMW500	126854	2017/10/19	2018/10/18
Signal Analyzer	R&S	FSQ31	200021	2017/7/31	2018/7/30
Spectrum Analyzer	Agilent	N9030A	MY49431698	2017/7/31	2018/7/30
Temperature Chamber	WEISS	WKL64	56246002940010	2016/12/21	2017/12/20
Signal generator	Agilent	E8257D	MY49281095	2017/7/31	2018/7/30
Vector Signal Generator	R&S	SMU200A	104162	2017/7/31	2018/7/30
Test receiver	R&S	ESU26	100387	2017/2/21	2018/2/20
Test receiver	R&S	ESCI	101163	2017/2/21	2018/2/20
Spectrum analyzer	R&S	FSU3	200474	2017/2/21	2018/2/20
Spectrum analyzer	R&S	FSU43	100144	2017/2/21	2018/2/20
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	9163-490	2017/3/29	2019/3/29
Trilog Broadband Antenna (30M~3GHz)	SCHWARZBECK	VULB 9163	9163-521	2017/4/9	2019/4/9
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	206665	2017/3/24	2018/3/23
Artificial Main Network	R&S	ENV4200	100134	2017/5/15	2018/5/14
Line Impedance Stabilization Network	R&S	ENV216	100382	2017/5/15	2018/5/14
Signal Generator	Agilent	E4438C	MY49071538	2016/12/15	2017/12/14
Power Detecting & Sampling Unit	R&S	OSP-B157	100914	2017/7/31	2018/7/30
Software Information					
Test Item	Software Name		Manufacturer	Version	
RE	EMC32		R&S	V9.25.0	
CE	EMC32		R&S	V9.25.0	

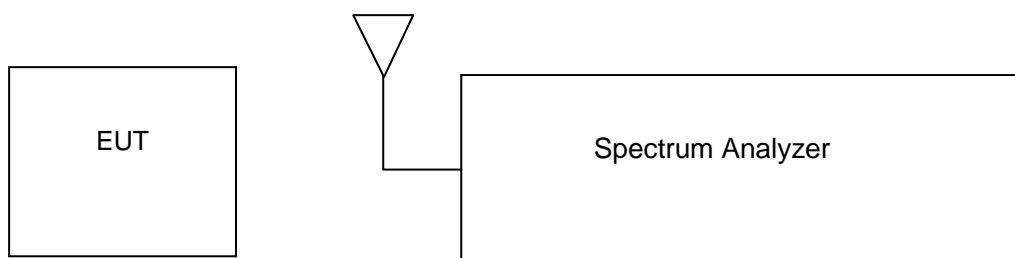


## 5 Test Results

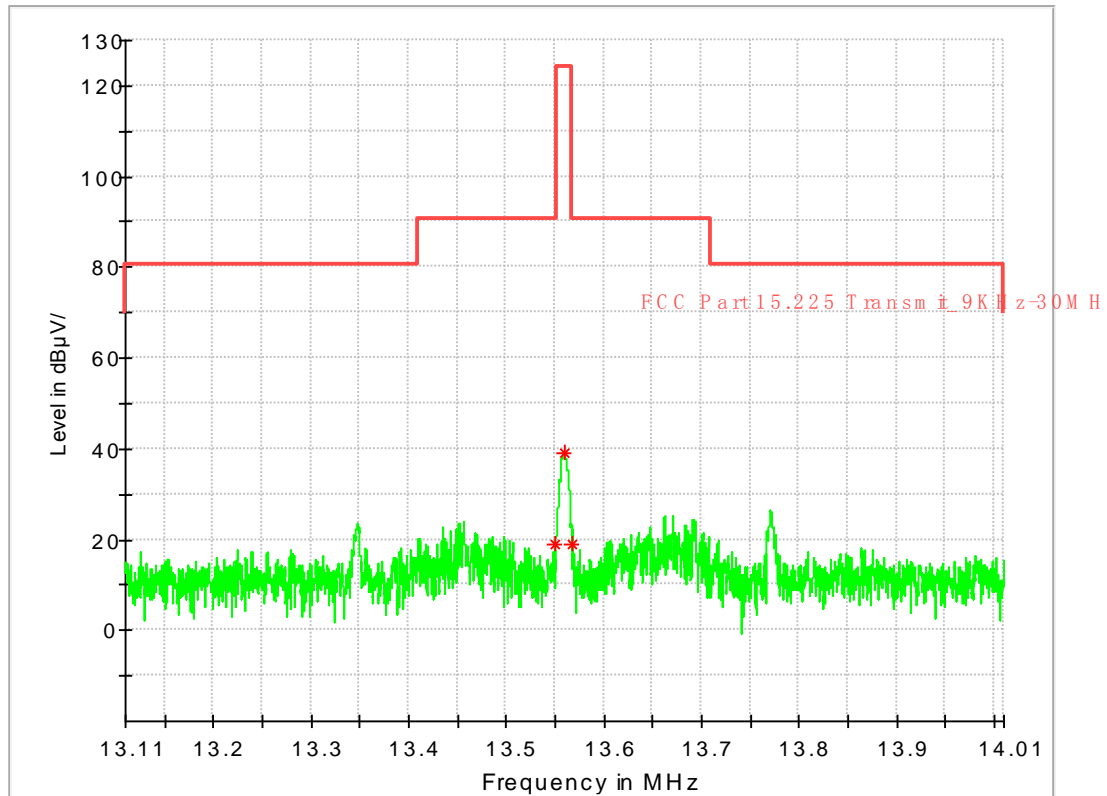
### 5.1 20dB Bandwidth Measurement

The 20dB 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 Setup



## 5.1.2 Test Result

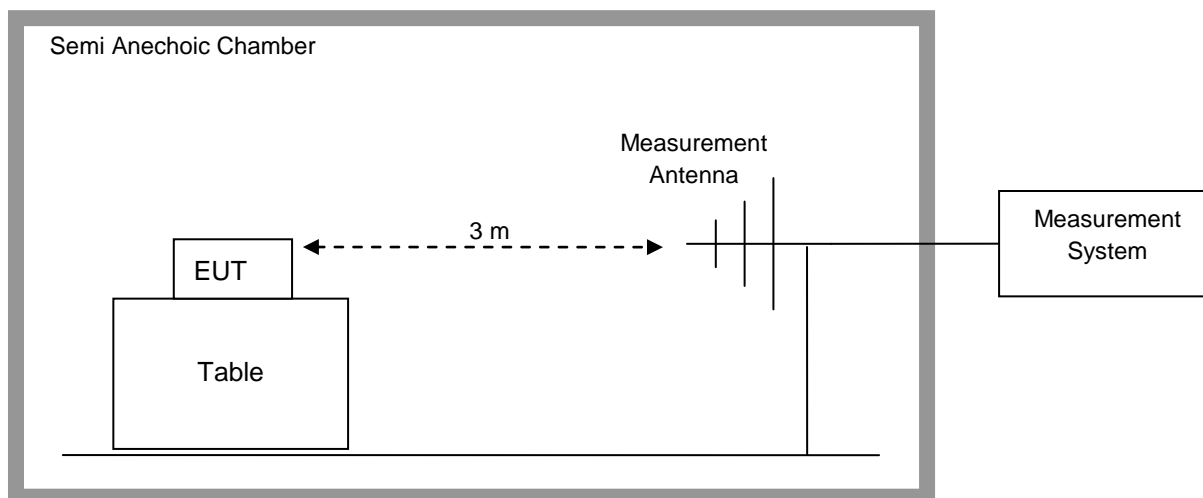


OBW (KHz)	FL@OBW (MHz)	FH@OBW (MHz)	Verdict
17.287	13.551315	13.568602	PASS

The result of the measurement is passed.

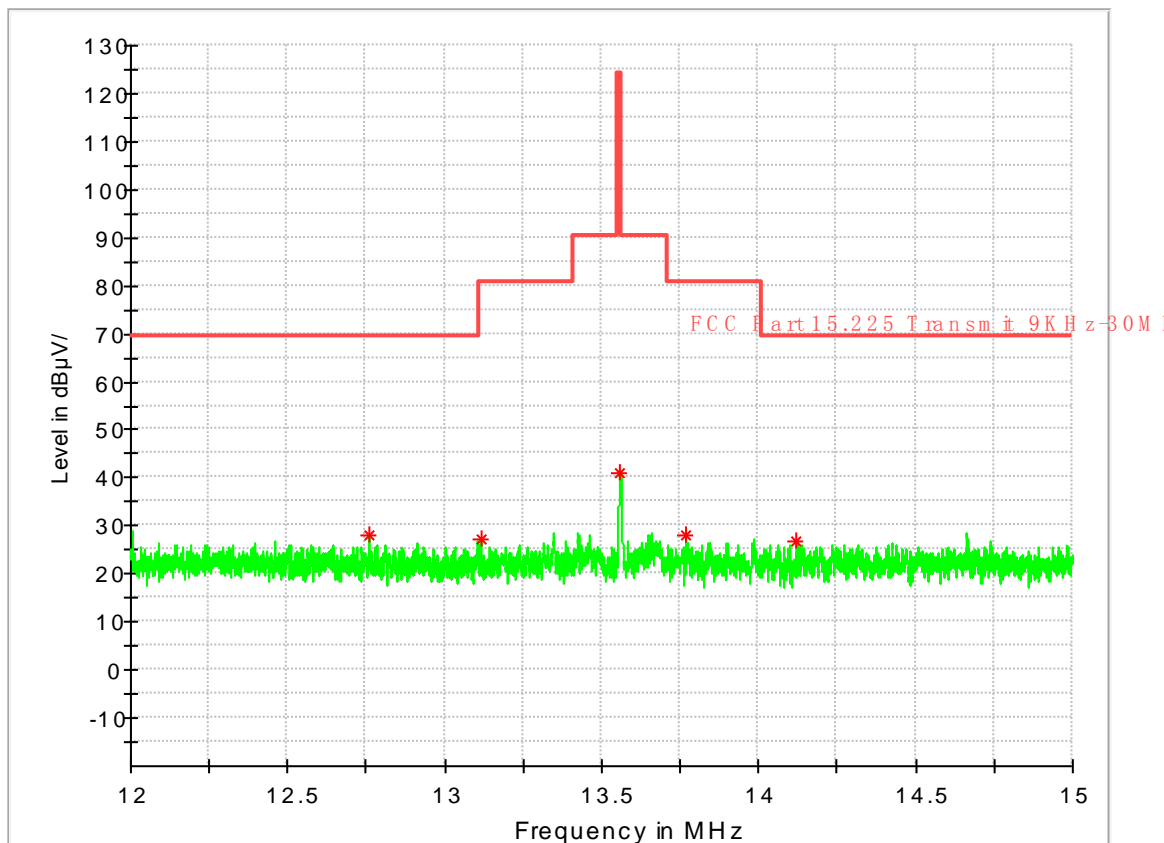
## 5.2 In-Band Radiated Spurious Emission Measurements

### 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 (dBμA/m)	Limit (dBμA/m)	Margin (dB)	Azimuth (deg)	Corr. (dB)
12.757688	27.99	69.50	41.51	264.0	-51.4
13.114125	27.10	80.50	53.40	131.0	-51.4
13.558125	40.93	124.00	83.07	196.0	-51.4
13.770000	28.05	80.50	52.45	207.0	-51.4
14.121563	26.75	69.50	42.75	325.0	-51.4

### 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 =  $40\log\left(\frac{d_{\text{near field}}}{d_{\text{measure}}}\right) + 20\log\left(\frac{d_{\text{limit}}}{d_{\text{near field}}}\right)$ .

3. Measurements were performed at 3m and the data was extrapolated to the specified measurement



distance of 30m using the square of an inverse linear distance extrapolation factor (40 dB/decade) as specified in §15.31(f)(2). Extrapolation Factor =  $20 \log_{10}(30/3)^2 = 40\text{dB}$

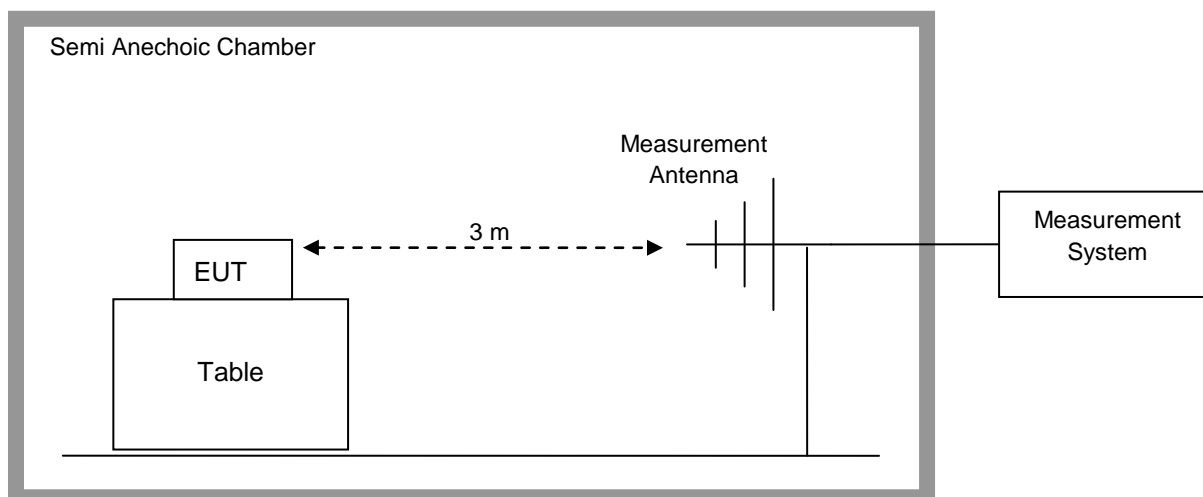
4. All measurements were recorded using a spectrum analyzer employing a quasi-peak detector.

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.**

## 5.3 Radiated Spurious Emission Measurements, Out-of-Band

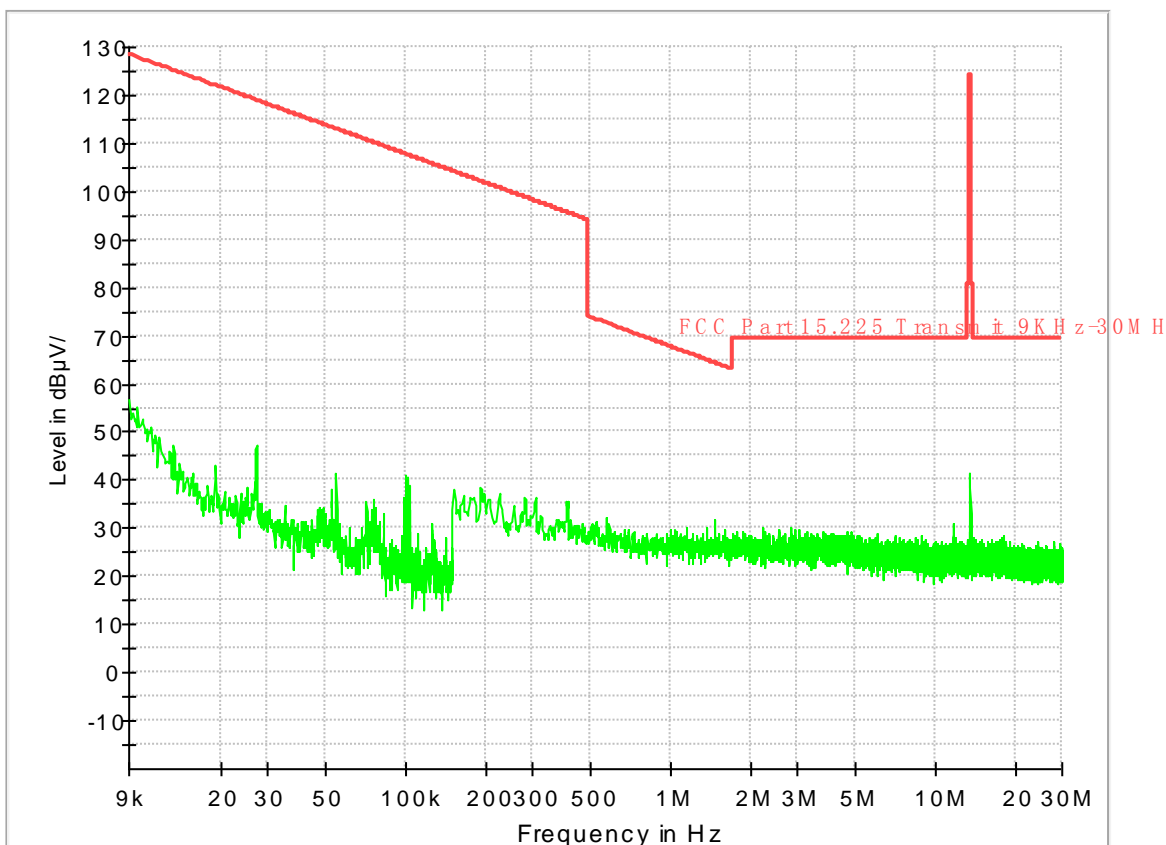
### 5.3.1 Test Setup



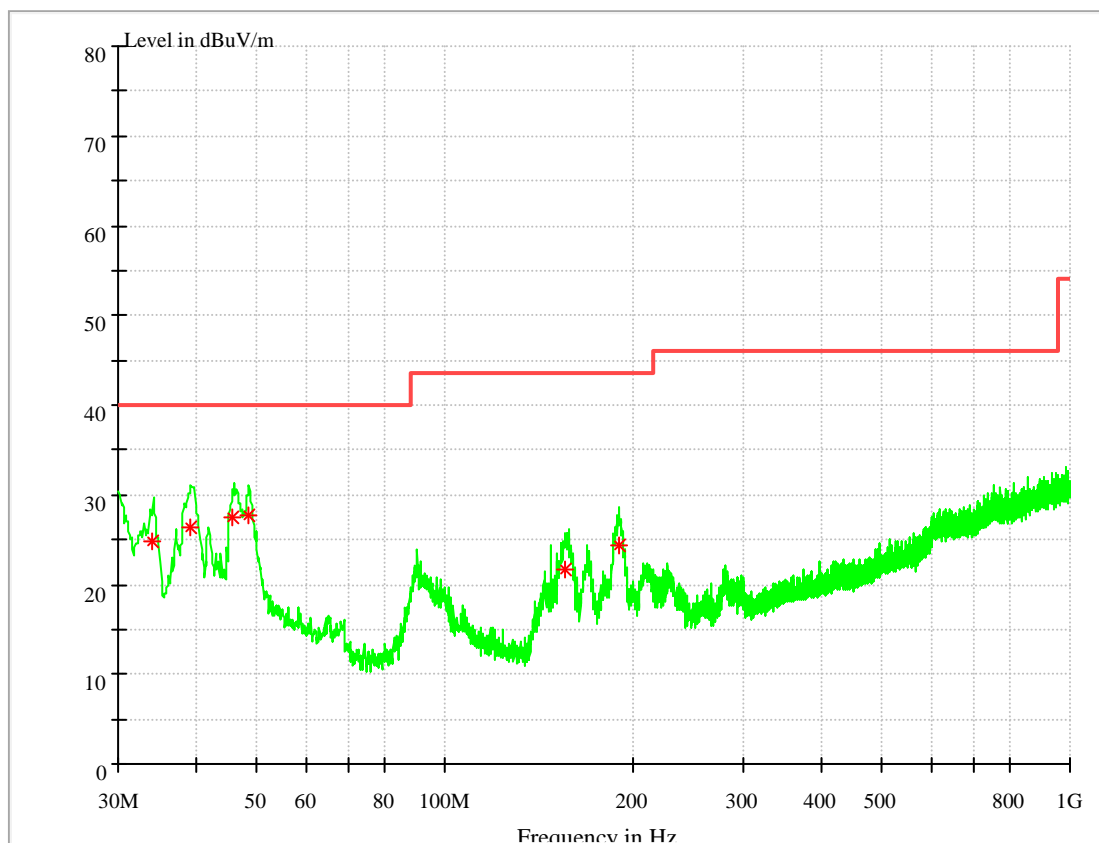
Measurement parameters	
Detector:	Quasi Peak
Sweep time:	Auto
Resolution bandwidth:	9 kHz – 150 kHz: 200 Hz 150 kHz – 30 MHz: 9 kHz 30 MHz – 1000 MHz: 100 kHz
Video bandwidth:	9 kHz – 150 kHz: 200 Hz 150 kHz – 30 MHz: 9 kHz 30 MHz – 1000 MHz: 100 kHz
Span:	See Plots
Trace-Mode:	Max Hold

### 5.3.2 Test Result

9k~30MHz



30M~1GHz



Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Transd. (dB)
33.90025	24.89	40.00	15.11	100	V	161	14.4
39.2136	26.42	40.00	13.58	136	V	-10	15.0
45.68445	27.38	40.00	12.62	100	V	238	15.5
48.6228	27.70	40.00	12.30	100	V	281	15.4
155.8893	21.64	43.50	21.86	100	V	262	10.5
190.18045	24.39	43.50	19.11	106	V	25	12.6

#### 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	13559985	-15	-0.00000110619
100%		-10	13559982	-18	-0.00000132743
100%		0	13560017	17	0.00000125369
100%		10	13560012	12	0.000000884956
100%		20	13560001	1	0.0000000737463
100%		30	13560019	19	0.00000140118
100%		40	13560011	11	0.000000811209
100%		50	13559981	-19	-0.00000140118
Battery End Point	3.6	20	13560009	9	0.00000663717
115%	4.35	20	13559989	-11	-0.000000811209

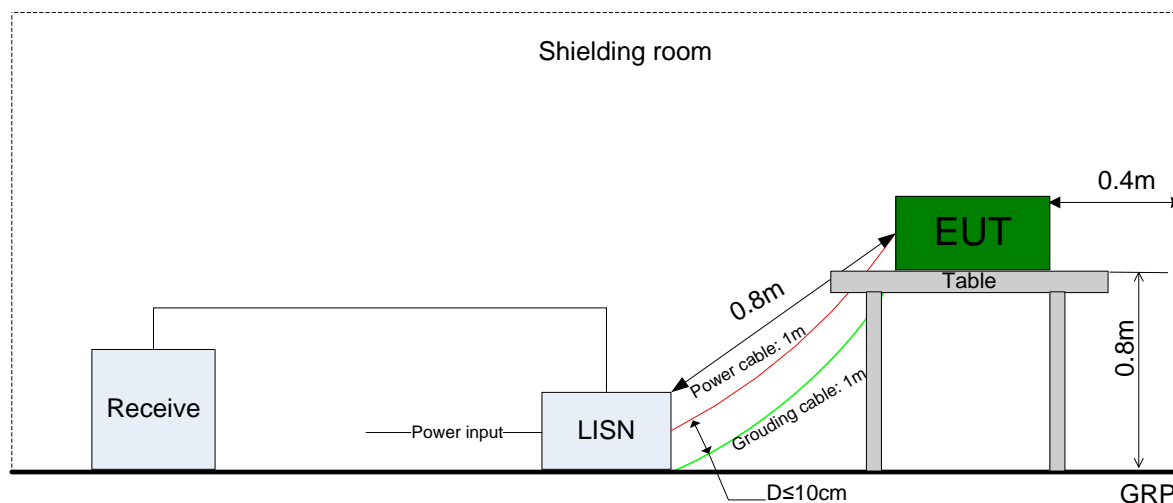
The result of the measurement is passed.

## 5.5 AC Power Line Conducted Emissions

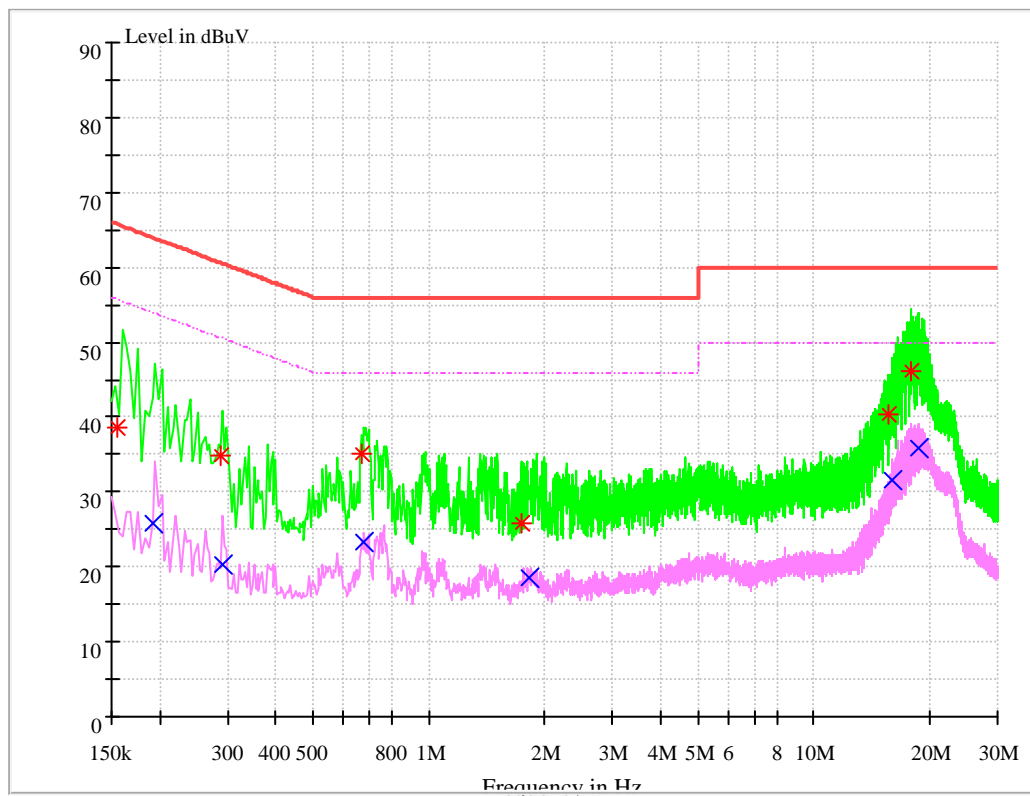
### 5.5.1 Test Setup

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: AV Detector

Frequency (MHz)	Level (dBμV)	Limit (dBμV)	Transd. (dB)	Margin (dB)	Line	PE
0.191758	25.7	53.96	9.7	28.26	L1	FLO
0.290526	20.24	50.51	9.7	30.27	L1	FLO
0.678649	23.22	46	9.7	22.78	L1	FLO
1.830806	18.46	46	9.7	27.54	L1	FLO
16.040404	31.61	50	10.1	18.39	L1	FLO
18.762232	35.77	50	10.1	14.23	L1	FLO

### MEASUREMENT RESULT: PK Detector

Frequency (MHz)	Level (dBμV)	Limit (dBμV)	Transd. (dB)	Margin (dB)	Line	PE
0.154593	38.53	65.75	9.7	27.22	N	FLO
0.288312	34.97	60.57	9.7	25.6	L1	FLO
0.672983	35.05	56	9.7	20.95	L1	FLO
1.750444	25.74	56	9.7	30.26	L1	FLO
15.71021	40.3	60	10.1	19.7	L1	FLO
17.900797	46.23	60	10.1	13.77	L1	FLO



Note1:

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.**

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