



中国认可  
国际互认  
检测  
TESTING  
CNAS L0310



# FCC RF Test Report

**Product Name: Smart Phone**

**Model Number: HUAWEI MLA-L11, MLA-L11, HUAWEI MLA-L01, MLA-L01**

**Report No: SYBH(Z-RF)027052016-2005**

**FCC ID: QISMLA-LX1**

**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 & 2174.02 & 2174.03.
3. The laboratory has been listed by the US Federal Communications Commission to perform electromagnetic emission measurements. The site recognition number is 97456.
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:** 2016-05-28  
**Start Date of Test:** 2016-05-28  
**End Date of Test:** 2016-06-21

**Test Result:** Pass

<b>Approved by Senior Engineer:</b>	2016-06-28	Roger Zhang	<i>Roger Zhang</i>
	Date	Name	Signature

<b>Prepared by:</b>	2016-06-28	Feng Nianwei	<i>Feng Nianwei</i>
	Date	Name	Signature



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## 1 General Information

<b>1.1 Applied Standard</b>	
Applied Rules:	47 CFR FCC Part 02: 2014 FCC Part 15 Subpart C (15.225): 2014
<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 Section	Part	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	Part 15B report



### 3 Product Description

#### 3.1 Product Information

##### 3.1.1 General Description

HUAWEI MLA-L11, MLA-L11, HUAWEI MLA-L01, MLA-L01 are 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 B8. The LTE frequency band is B1 and B3 and B7 and B8 and B20 and B38. 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, AGPS, NFC and WIFI etc. Externally it provides one micro SD card interface (it can also used as SIM card interface), earphone port (to provide voice service) and one SIM card interface. HUAWEI MLA-L11, MLA-L11 is dual SIM smart phone. HUAWEI MLA-L01, MLA-L01 is single SIM smart phone. It also provides Bluetooth module to synchronize data between a PC and the phone, or to use the built-in modem of the phone to access the Internet with a PC, or to exchange data with other Bluetooth devices.

NOTE: But only NFC test data included in this report.

NOTE: The mobile phone MLA-L01 and MLA-L11 are LTE/UMTS mobile phone with Bluetooth

The differences between MLA-L01 and MLA-L11 are showed in the following table. MLA-L01 delete one SIM by software. Other parts of the mobile phone are the same, including the appearance, the antenna, Chipset, Bluetooth mode, Wifi mode, Adapter, Battery, Main board and so on.

	MLA-L01	MLA-L11
GSM four bands	B2/B3/B5/B8	B2/B3/B5/B8
WCDMA bands	B1/B8	B1/B8
LTE bands	B1/B3/B7/ B8/B20/B38	B1/B3/B7/ B8/B20/B38
FCC bands	GSM850/1900 LTE B7 /B38	GSM850/1900 LTE B7 /B38
SIM card	One	Two
NFC	the same	the same
External camera	the same	the same
internal camera	the same	the same
FLASH	the same	the same
Mainboard	the same	the same
PCB layout	the same	the same
Appearance	the same	the same
Bluetooth mode	the same	the same
WLAN mode	the same	the same



BT/ WLAN antenna	the same	the same
GSM/ WCDMA /LTE antenna	the same	the same
Adapter	the same	the same
Battery	the same	the same
Chipset	the same	the same
Memory	the same	the same
RF Parameter	The same RF Parameter in the same band	The same RF Parameter in the same band
Dimension	the same	the same
Main Frequency NV	The same NV in the same band	The same NV in the same band except LTE B1 antenna 2

### 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	HL1MLAL01M	MLA-L11C900B055 MLA-L01C900B055

#### 3.2.2 Sub-Assembly

Sub-Assembly			
Sub-Assembly Name	Model	Manufacturer	Description
Adapter	HW-050200U01	Huawei Technologies Co., Ltd.	Input Voltage: ~100-240V 50/60Hz 0.5A Output Voltage: 5V  2A Rated Power: 5W
Adapter	HW-050200E01	Huawei Technologies Co., Ltd.	Input Voltage: ~100-240V 50/60Hz 0.5A Output Voltage: 5V  2A Rated Power: 5W
Adapter	HW-050200B01	Huawei Technologies Co., Ltd.	Input Voltage: ~100-240V 50/60Hz 0.5A Output Voltage: 5V  2A Rated Power: 5W
Adapter	HW-050200A01	Huawei Technologies Co., Ltd.	Input Voltage: ~100-240V 50/60Hz 0.5A Output Voltage: 5V  2A Rated Power: 5W
Battery	HB386483ECW	Huawei Technologies	Rated capacity: 3340mAh



Sub-Assembly			
Sub-Assembly Name	Model	Manufacturer	Description
		Co., Ltd.	Nominal Voltage:  +3.82V Charging Voltage:  +4.4V



## 4 Main Test Instruments

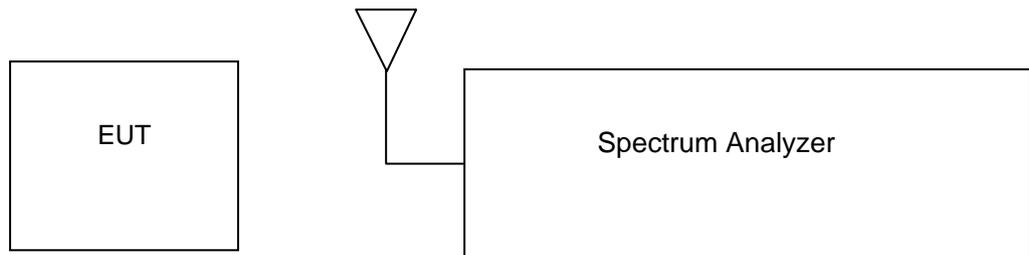
Main Test Equipments					
Equipment Name	Manufacturer	Model	Serial Number	Cal Date	Cal- Due
Test receiver	R&S	ESU26	100387	2015-06-24	2016-06-23
Test receiver	R&S	ESCI	101163	2015.11.11	2016.11.10
Spectrum analyzer	R&S	FSU3	200474	2016-05-24	2017-05-23
Spectrum analyzer	R&S	FSU43	100144	2015-06-02	2017-06-02
LOOP Antennas(9kHz-30MHz)	R&S	HFH2-Z2	100262	2015-04-30	2017-04-29
LOOP Antennas(9kHz-30MHz)	R&S	HFH2-Z2	100263	2015-04-30	2017-04-29
Trilog Broadband Antenna (30M~3GHz)	SCHWARZ BECK	VULB 9163	9163-490	2015-04-30	2017-04-29
Trilog Broadband Antenna (30M~3GHz)	SCHWARZ BECK	VULB 9163	9163-520	2015-04-30	2017-04-29
Double-Ridged Waveguide Horn Antenna (1G~18GHz)	R&S	HF907	100304	2015-04-30	2017-04-29
double ridged horn antenna (0.8G-18GHz)	R&S	HF907	100305	2015-04-30	2017-04-29
Pyramidal Horn Antenna(18GHz-26.5GHz)	ETS-Lindgren	3160-09	5140299	2015-07-15	2017-07-14
Artificial Main Network	R&S	ENV4200	100134	2016-06-02	2017-06-01
Line Impedance Stabilization Network	R&S	ENV216	100382	2016-06-02	2017-06-01
Signal Generator	Agilent	E4438C	MY49071538	2016-03-01	2017-03-01
Power Detecting & Sampling Unit	R&S	OSP-B157	100914	2015-07-27	2016-07-26
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



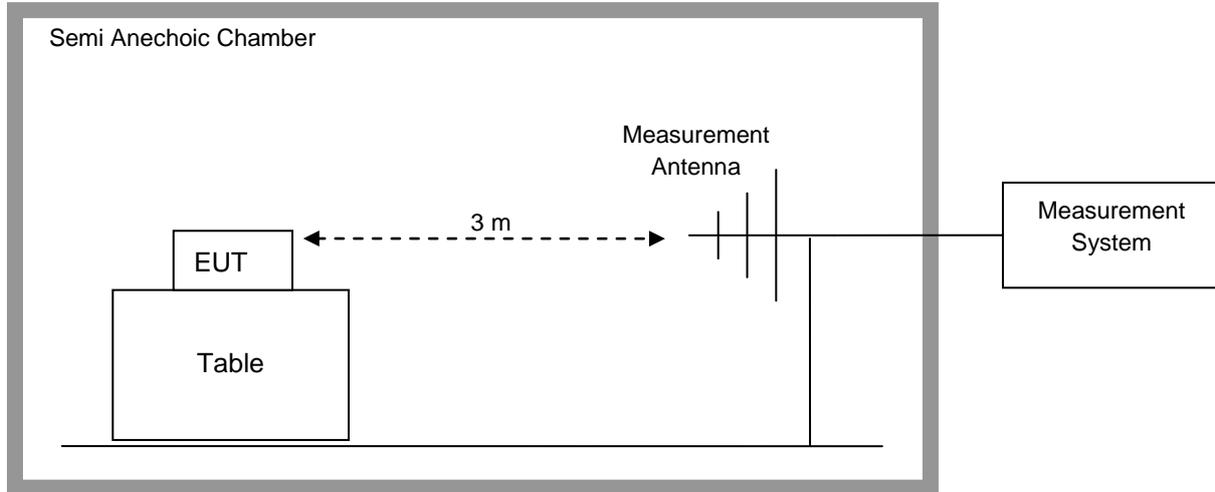
#### 5.1.2 Test Result

Frequency	Occupied Bandwidth
13.56MHz	200KHz

**The result of the measurement is passed.**

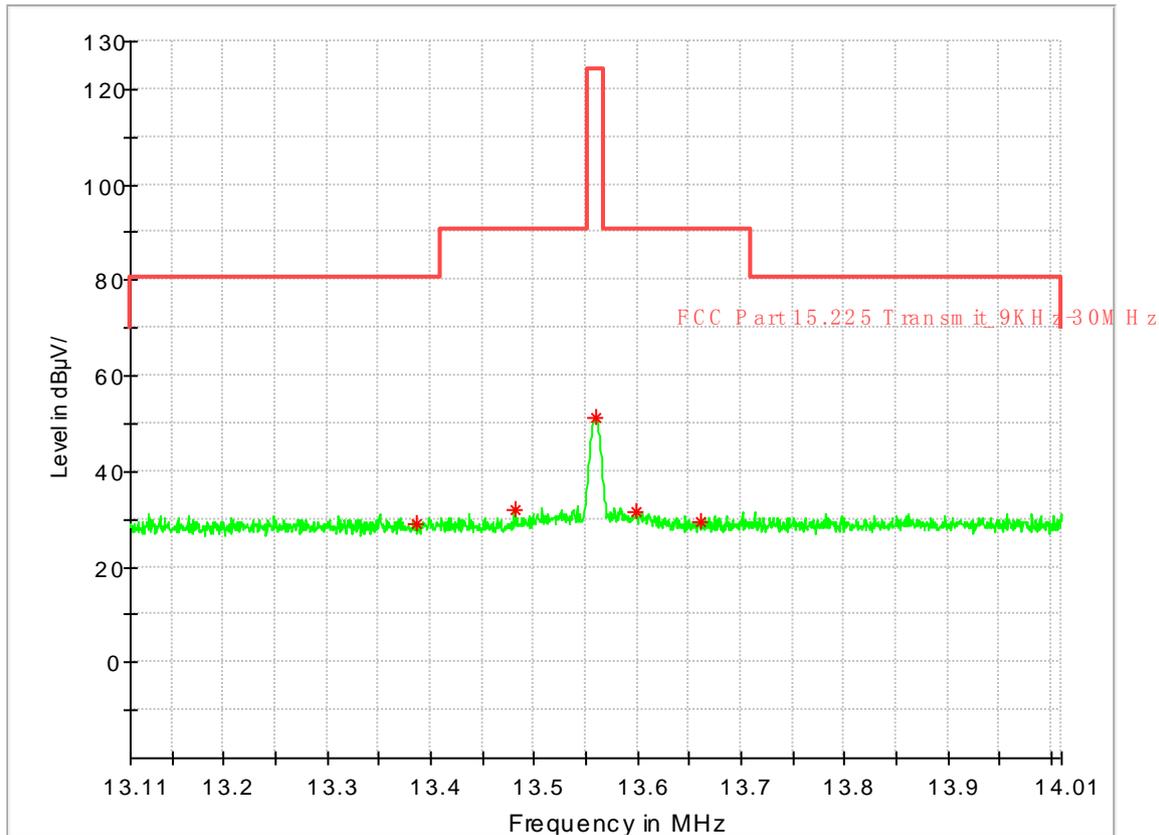
## 5.2 In-Band Radiated Spurious Emission Measurements

### 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 (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (deg)	Transd (dB)
13.386429	29.09	80.50	51.41	128.0	20.8
13.482214	31.89	90.50	58.61	260.0	20.8
13.560000	51.07	124.00	72.93	236.0	20.8
13.599857	31.39	90.50	59.11	53.0	20.8
13.662214	29.50	90.50	61.00	86.0	20.8

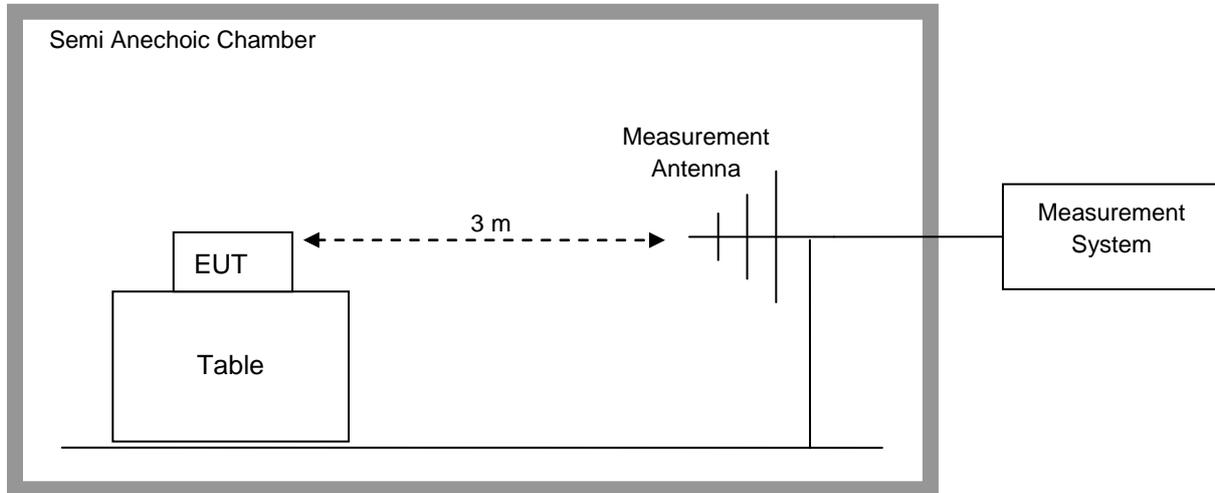
**NOTES:**

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. 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 =  $20 \log_{10}(30/3)^2 = 40\text{dB}$
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

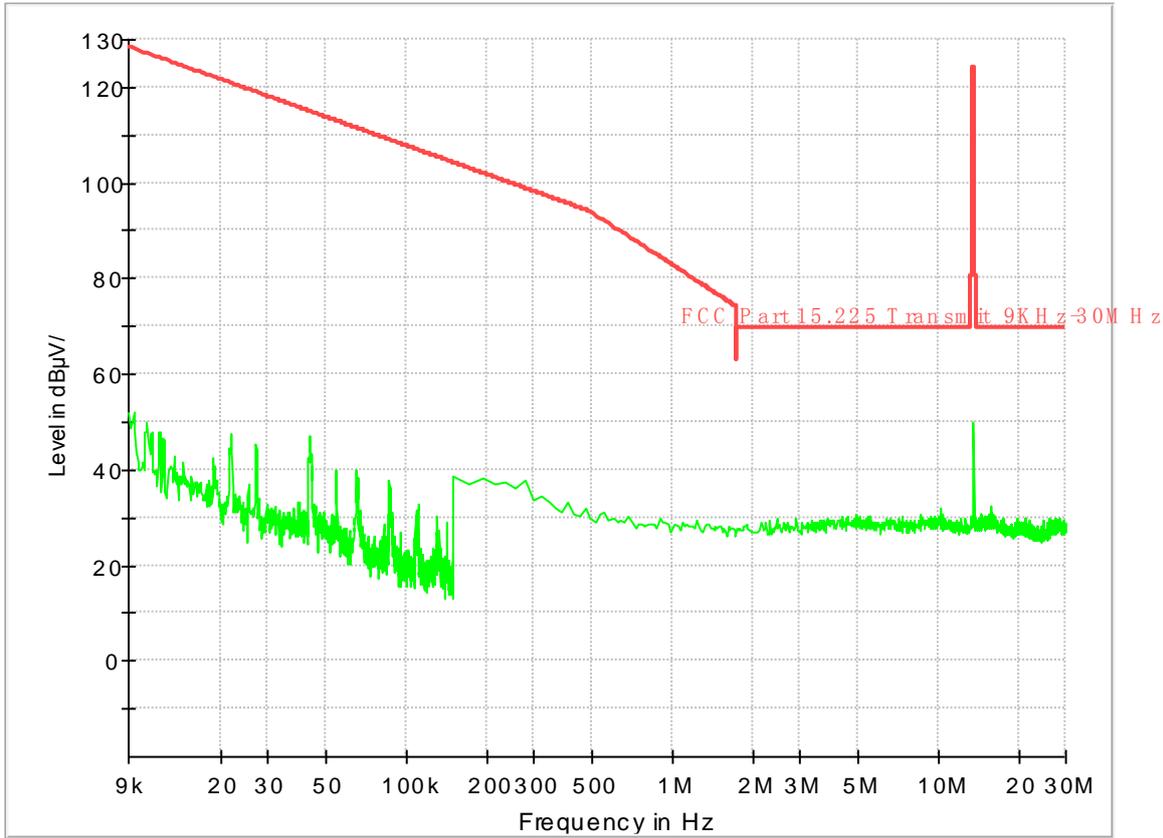
#### 5.3.1 Test Setup



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 (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Polarisation	Azimuth (deg)	Transd (dB)
48.707143	34.78	40.00	5.22	100.0	V	145.0	15.3
70.878571	35.31	40.00	4.69	100.0	V	192.0	10.6
93.050000	33.91	43.50	9.59	100.0	V	14.0	12.5
187.971429	29.61	43.50	13.89	100.0	V	301.0	12.3
454.028571	25.02	46.00	20.98	100.0	H	278.0	19.0
925.171429	32.51	46.00	13.49	100.0	H	317.0	26.0

**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	13559980	11	0.0000009587035
100%		-10	13560007	-15	-0.0000011061941
100%		0	13560002	8	0.0000005899700
100%		10	13560003	13	0.0000011061935
100%		20	13560007	-15	-0.0000011061941
100%		30	13560010	11	0.0000015486713
100%		40	13560002	-12	-0.0000011061941
100%		50	13560009	14	0.0000008849551
Battery End Point		3.6	20	13559993	-7
115%	4.35	20	13560003	13	0.0000011061935

The result of the measurement is passed.

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