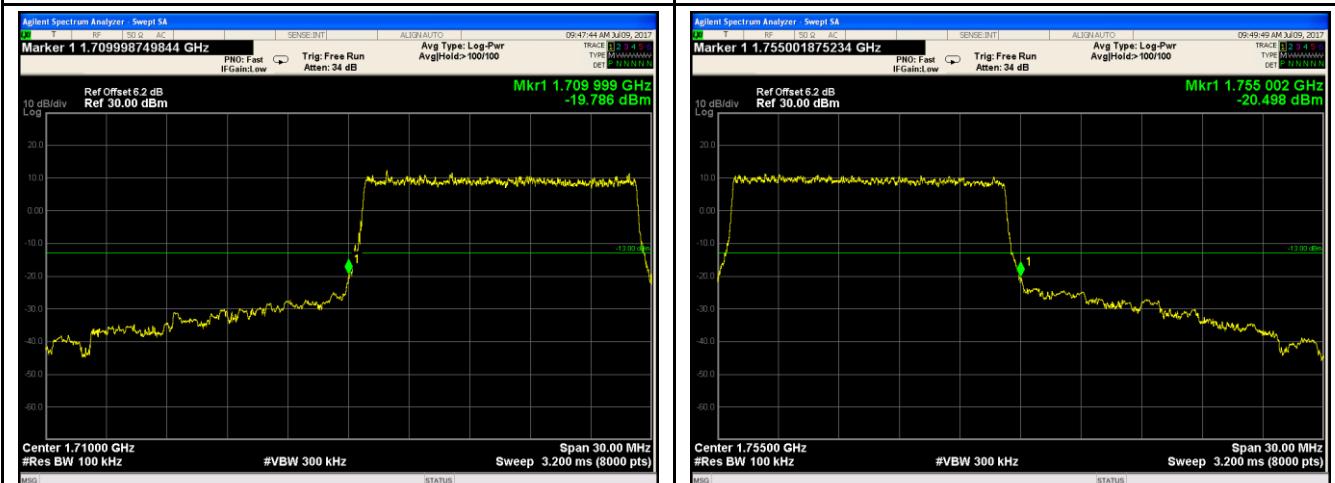


LTE band IV - Low Channel QPSK-15

Note: Offset=Cable loss (4.5) + 10log
(147/100)=4.5+1.7=6.2 dB

LTE band IV - High Channel QPSK-15

Note: Offset=Cable loss (4.5) + 10log
(148/100)=4.5+1.7=6.2 dB

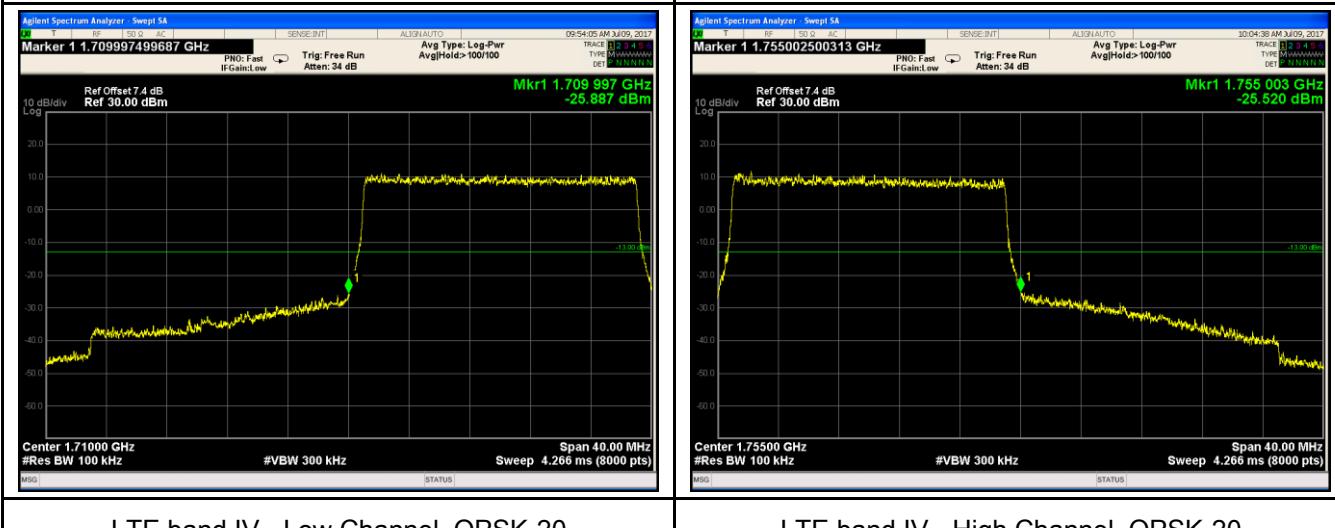


LTE band IV - Low Channel 16QAM-15

Note: Offset=Cable loss (4.5) + 10log
(148/100)=4.5+1.7=6.2 dB

LTE band IV - High Channel 16QAM-15

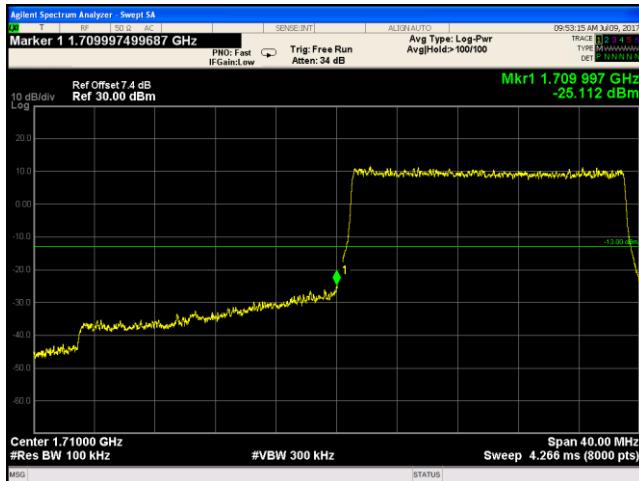
Note: Offset=Cable loss (4.5) + 10log
(148/100)=4.5+1.7=6.2 dB



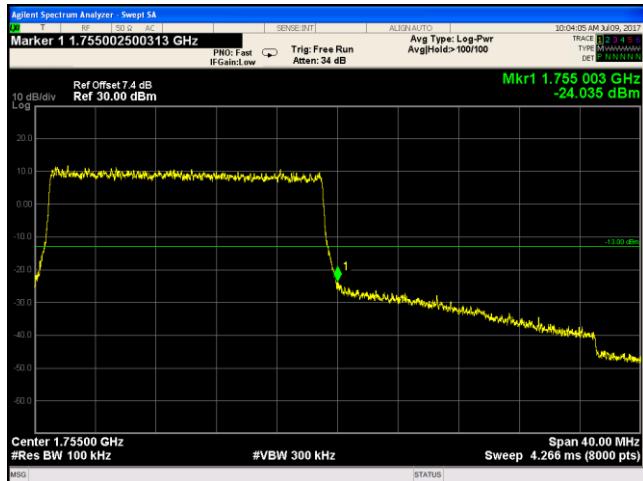
LTE band IV - Low Channel QPSK-20

LTE band IV - High Channel QPSK-20

Note: Offset=Cable loss (4.5) + 10log
(193/100)=4.5+2.9=7.4 dB



Note: Offset=Cable loss (4.5) + 10log
(194/100)=4.5+2.9=7.4 dB



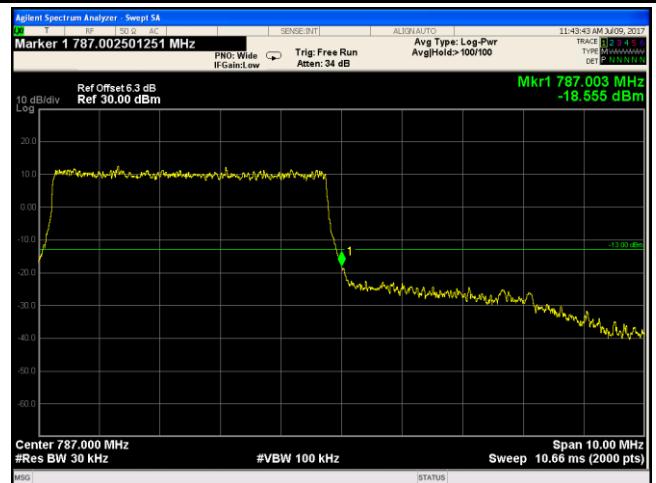
LTE band IV - Low Channel 16QAM-20

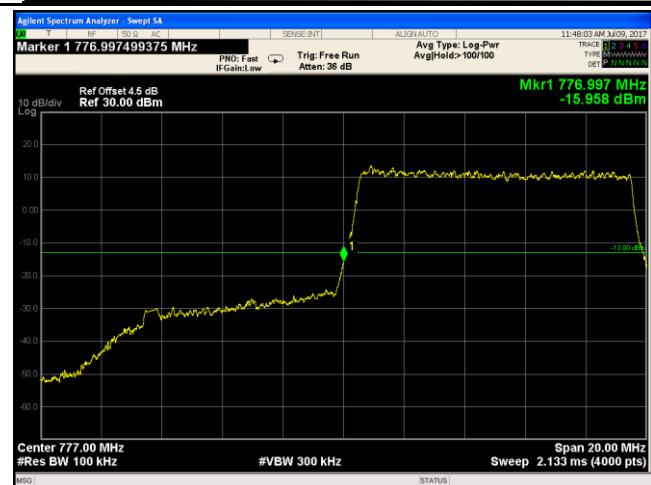
Note: Offset=Cable loss (4.5) + 10log
(193/100)=4.5+2.9=7.4dB

LTE band IV - High Channel 16QAM-20

Note: Offset=Cable loss (4.5) + 10log
(193/100)=4.5+2.9=7.4 dB

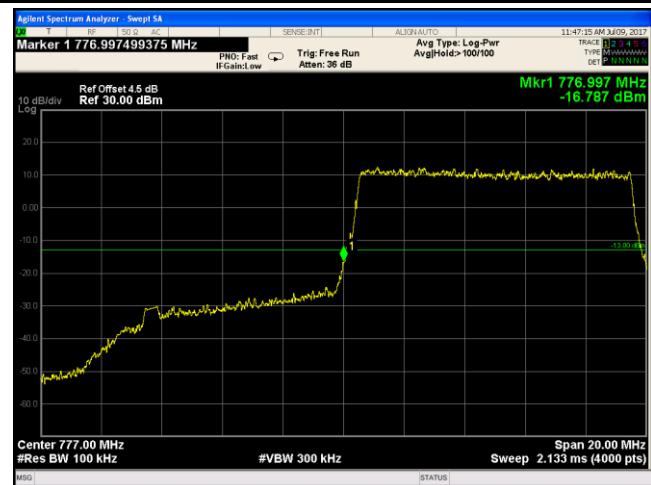
LTE band XIII (Part 27)

 <p>Marker 1 776.99749 MHz Mkr1 776.997 MHz -16.743 dBm</p> <p>Center 777.000 MHz #Res BW 30 kHz #VBW 100 kHz Sweep 10.00 MHz 10.66 ms (2000 pts)</p>	 <p>Marker 1 787.002501251 MHz Mkr1 787.003 MHz -18.555 dBm</p> <p>Center 787.000 MHz #Res BW 30 kHz #VBW 100 kHz Sweep 10.00 MHz 10.66 ms (2000 pts)</p>
<p>LTE band XIII - Low Channel QPSK-5</p>	<p>LTE band XIII - High Channel QPSK-5</p>
<p>Note: Offset=Cable loss (4.0) + 10log (50.71/30)=4.0+2.3=6.3 dB</p>	<p>Note: Offset=Cable loss (4.0) + 10log (50.56/30)=4.0+2.3=6.3 dB</p>
 <p>Marker 1 776.99749 MHz Mkr1 776.997 MHz -16.265 dBm</p> <p>Center 777.000 MHz #Res BW 30 kHz #VBW 100 kHz Sweep 10.00 MHz 10.66 ms (2000 pts)</p>	 <p>Marker 1 787.002501251 MHz Mkr1 787.003 MHz -18.029 dBm</p> <p>Center 787.000 MHz #Res BW 30 kHz #VBW 100 kHz Sweep 10.00 MHz 10.66 ms (2000 pts)</p>
<p>LTE band XIII - Low Channel 16QAM-5</p>	<p>LTE band XIII - High Channel 16QAM-5</p>
<p>Note: Offset=Cable loss (4.0) + 10log (50.71/30)=4.0+2.3=6.3 dB</p>	<p>Note: Offset=Cable loss (4.0) + 10log (50.56/30)=4.0+2.3=6.3 dB</p>



LTE band XIII - Low Channel QPSK-10

LTE band XIII - High Channel QPSK-10



LTE band XIII - Low Channel 16QAM-10

LTE band XIII - High Channel 16QAM-10

6.8 Band Edge 27.53(m)

Temperature	25°C
Relative Humidity	55%
Atmospheric Pressure	1012mbar
Test date :	July 10, 2017
Tested By :	Loren Luo

Requirement(s):

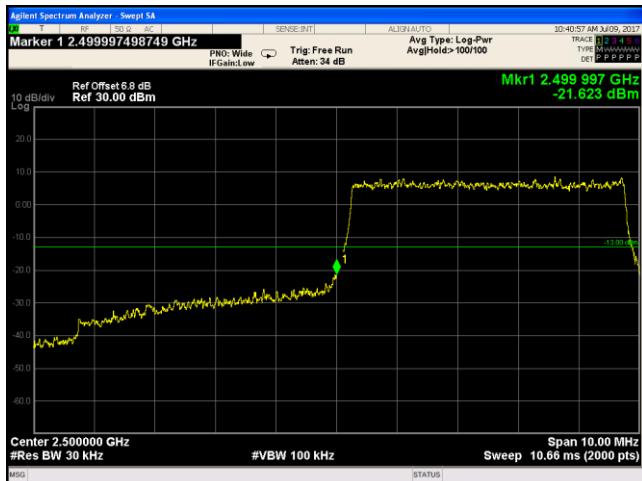
Spec	Requirement	Applicable
§27.53(m)	According to FCC 27.53(m)(4) specified that power of any emmission ouutside of the channel edge must be attenuated below the transmitting power(P) by a factor shall be not less than $43+10\log(P)$ dB at the channel edge, the limit of emission equal to -13dBm. And $55+10\log(P)$ dB at 5.5MHz from the channel edges, the limit of emission equal to -25dBm. In the 1MHz bands immediately outside and adjacent to the frenqency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.	<input checked="" type="checkbox"/>
Test Setup	<p>Base Station Spectrum Analyzer EUT</p>	
Test Procedure	<ul style="list-style-type: none"> The EUT was connected to Spectrum Analyzer and Base Station via power divider. The 99% and 26 dB occupied bandwidth (BW) of the middle channel for the highest RF powers. 	
Remark		
Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	

Test Data Yes N/A
 Test Plot Yes (See below) N/A

LTE band VII (Part 27) result

BW(MHz)	Channel	Frequency (MHz)	Mode	Emission (dBm)	Limit (dBm)
5	20775	2500	QPSK	-21.623	-13
			16QAM	-21.698	-13
5	21425	2570	QPSK	-21.964	-13
			16QAM	-21.897	-13
10	20800	2500	QPSK	-21.942	-13
			16QAM	-21.391	-13
10	21400	2570	QPSK	-23.925	-13
			16QAM	-22.500	-13
15	20825	2500	QPSK	-21.343	-13
			16QAM	-22.016	-13
15	21400	2570	QPSK	-23.776	-13
			16QAM	-25.603	-13
20	20850	2500	QPSK	-26.750	-13
			16QAM	-26.111	-13
20	21350	2570	QPSK	-29.373	-13
			16QAM	-28.177	-13

LTE band VII (Part 27)



LTE band VII - Low Channel QPSK-5

Note: Offset=Cable loss (4.5) + 10log
(50.97/30)=4.5+2.3=6.8 dB

LTE band VII - High Channel QPSK-5

Note: Offset=Cable loss (4.5) + 10log
(50.65/30)=4.5+2.3=6.8 dB

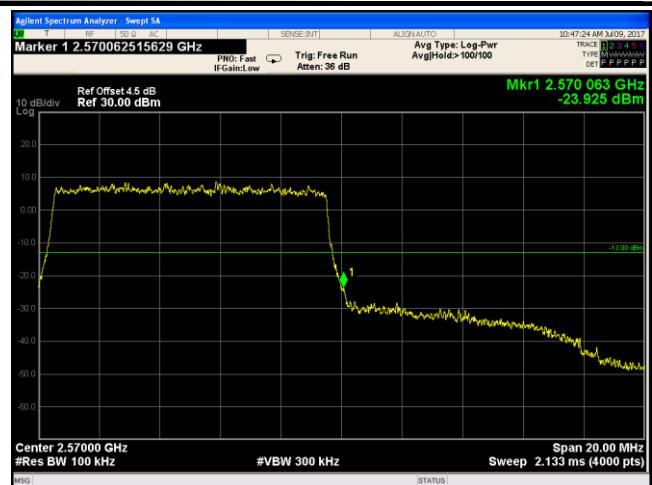


LTE band VII - Low Channel 16QAM-5

Note: Offset=Cable loss (4.5) + 10log
(51.02/30)=4.5+2.3=6.8 dB

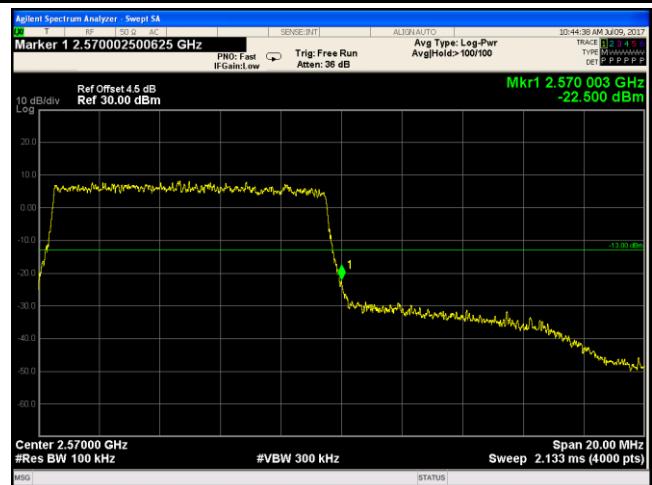
LTE band VII - High Channel 16QAM-5

Note: Offset=Cable loss (4.5) + 10log
(50.65/30)=4.5+2.3=6.8 dB



LTE band VII - Low Channel QPSK-10

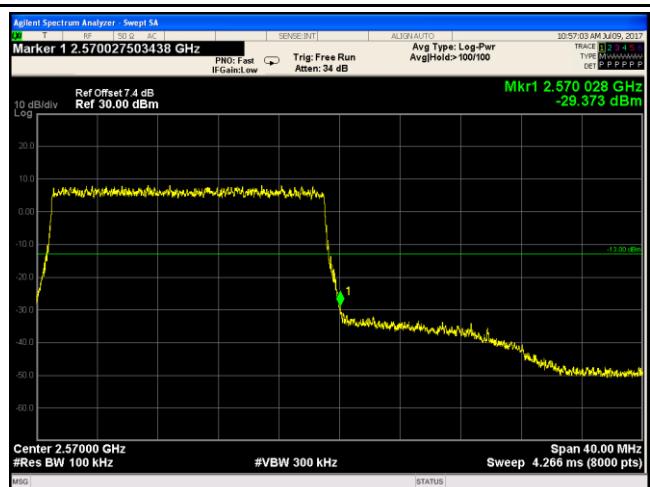
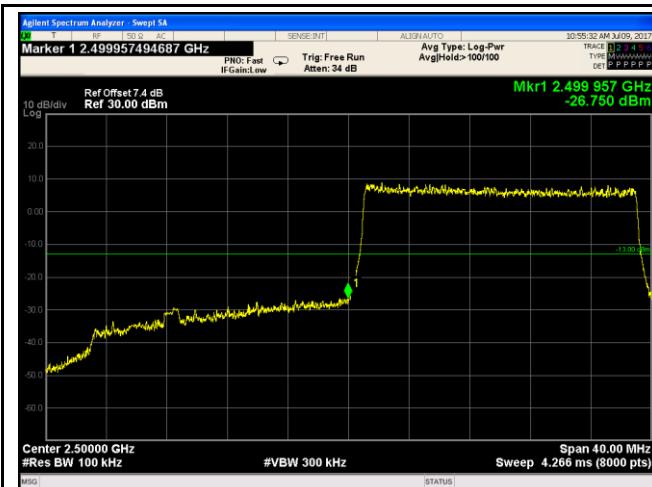
LTE band VII - High Channel QPSK-10



LTE band VII - Low Channel 16QAM-10

LTE band VII - High Channel 16QAM-10

 <p>Agilent Spectrum Analyzer - Swept SA</p> <p>Marker 1 2.499998124766 GHz</p> <p>PN0: Fast IFGain:Low Trig: Free Run Avg Type: Log-Pwr AvgHold: >100/100</p> <p>Ref Offset 6.2 dB Ref 30.00 dBm</p> <p>10 dB/div Log</p> <p>20.0 10.0 0.0 -10.0 -20.0 -30.0 -40.0 -50.0 -60.0</p> <p>Center 2.50000 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 3.200 ms (8000 pts)</p> <p>Mkr1 2.499 998 GHz -21.343 dBm</p> <p>13.0 dBm</p> <p>MSO [STATUS]</p>	 <p>Agilent Spectrum Analyzer - Swept SA</p> <p>Marker 1 2.570001875234 GHz</p> <p>PN0: Fast IFGain:Low Trig: Free Run Avg Type: Log-Pwr AvgHold: >100/100</p> <p>Ref Offset 6.2 dB Ref 30.00 dBm</p> <p>10 dB/div Log</p> <p>20.0 10.0 0.0 -10.0 -20.0 -30.0 -40.0 -50.0 -60.0</p> <p>Center 2.57000 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 3.200 ms (8000 pts)</p> <p>Mkr1 2.570 002 GHz -23.776 dBm</p> <p>13.0 dBm</p> <p>MSO [STATUS]</p>
<p>LTE band VII - Low Channel QPSK-15</p> <p>Note: Offset=Cable loss (4.5) + 10log (149/100)=4.5+1.7=6.2 dB</p>	<p>LTE band VII - High Channel QPSK-15</p> <p>Note: Offset=Cable loss (4.5) + 10log (149/100)=4.5+1.7=6.2 dB</p>
 <p>Agilent Spectrum Analyzer - Swept SA</p> <p>Marker 1 2.499998124766 GHz</p> <p>PN0: Fast IFGain:Low Trig: Free Run Avg Type: Log-Pwr AvgHold: >100/100</p> <p>Ref Offset 6.2 dB Ref 30.00 dBm</p> <p>10 dB/div Log</p> <p>20.0 10.0 0.0 -10.0 -20.0 -30.0 -40.0 -50.0 -60.0</p> <p>Center 2.50000 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 3.200 ms (8000 pts)</p> <p>Mkr1 2.499 998 GHz -22.016 dBm</p> <p>13.0 dBm</p> <p>MSO [STATUS]</p>	 <p>Agilent Spectrum Analyzer - Swept SA</p> <p>Marker 1 2.570001875234 GHz</p> <p>PN0: Fast IFGain:Low Trig: Free Run Avg Type: Log-Pwr AvgHold: >100/100</p> <p>Ref Offset 6.2 dB Ref 30.00 dBm</p> <p>10 dB/div Log</p> <p>20.0 10.0 0.0 -10.0 -20.0 -30.0 -40.0 -50.0 -60.0</p> <p>Center 2.57000 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 3.200 ms (8000 pts)</p> <p>Mkr1 2.570 002 GHz -25.603 dBm</p> <p>13.0 dBm</p> <p>MSO [STATUS]</p>
<p>LTE band VII - Low Channel 16QAM-15</p> <p>Note: Offset=Cable loss (4.5) + 10log (148/100)=4.5+1.7=6.2dB</p>	<p>LTE band VII - High Channel 16QAM-15</p> <p>Note: Offset=Cable loss (4.5) + 10log (149/100)=4.5+1.7=6.2 dB</p>



LTE band VII - Low Channel QPSK-20

LTE band VII - High Channel QPSK-20

Note: Offset=Cable loss (4.5) + 10log
(193/100)=4.5+2.9=7.4 dB

Note: Offset=Cable loss (4.5) + 10log
(193/100)=4.5+2.9=7.4 dB



LTE band VII - Low Channel 16QAM-20

LTE band VII - High Channel 16QAM-20

Note: Offset=Cable loss (4.5) + 10log
(194/100)=4.5+2.9=7.4 dB

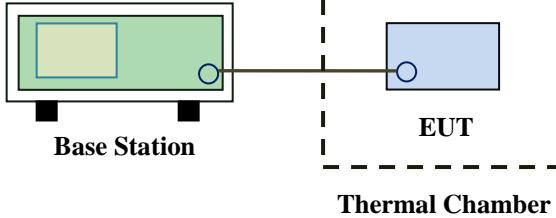
Note: Offset=Cable loss (4.5) + 10log
(195/100)=4.5+2.9=7.4 dB

6.9 Frequency Stability

Temperature	25°C
Relative Humidity	55%
Atmospheric Pressure	1012mbar
Test date :	July 10, 2017
Tested By :	Loren Luo

Requirement(s):

Spec	Item	Requirement	Applicable																																
§2.1055, §22.355 & §24.235 § 27.5(h); § 27.54	a)	<p>According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table below:</p> <p>Frequency Tolerance for Transmitters in the Public Mobile Services</p> <table border="1"> <thead> <tr> <th>Frequency Range (MHz)</th> <th>Base, fixed (ppm)</th> <th>Mobile \leq 3 watts (ppm)</th> <th>Mobile \leq 3 watts (ppm)</th> </tr> </thead> <tbody> <tr> <td>25 to 50</td> <td>20.0</td> <td>20.0</td> <td>50.0</td> </tr> <tr> <td>50 to 450</td> <td>5.0</td> <td>5.0</td> <td>50.0</td> </tr> <tr> <td>450 to 512</td> <td>2.5</td> <td>5.0</td> <td>50.0</td> </tr> <tr> <td>821 to 896</td> <td>1.5</td> <td>2.5</td> <td>2.5</td> </tr> <tr> <td>928 to 929.</td> <td>5.0</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td>929 to 960.</td> <td>1.5</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td>2110 to 2220</td> <td>10.0</td> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table> <p>According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized frequency block.</p> <p>According to §27.54, The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.</p>	Frequency Range (MHz)	Base, fixed (ppm)	Mobile \leq 3 watts (ppm)	Mobile \leq 3 watts (ppm)	25 to 50	20.0	20.0	50.0	50 to 450	5.0	5.0	50.0	450 to 512	2.5	5.0	50.0	821 to 896	1.5	2.5	2.5	928 to 929.	5.0	N/A	N/A	929 to 960.	1.5	N/A	N/A	2110 to 2220	10.0	N/A	N/A	<input checked="" type="checkbox"/>
Frequency Range (MHz)	Base, fixed (ppm)	Mobile \leq 3 watts (ppm)	Mobile \leq 3 watts (ppm)																																
25 to 50	20.0	20.0	50.0																																
50 to 450	5.0	5.0	50.0																																
450 to 512	2.5	5.0	50.0																																
821 to 896	1.5	2.5	2.5																																
928 to 929.	5.0	N/A	N/A																																
929 to 960.	1.5	N/A	N/A																																
2110 to 2220	10.0	N/A	N/A																																

Test setup	
Procedure	<p>A communication link was established between EUT and base station. The frequency error was monitored and measured by base station under variation of ambient temperature and variation of primary supply voltage.</p> <p>Limit: The frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ ($\pm 2.5\text{ppm}$) of the center frequency.</p>
Remark	<p>Frequency Stability versus Temperature: The Frequency tolerance of the carrier signal shall be maintained within 2.5ppm of the operating frequency over a temperature variation of -10°C to $+55^\circ\text{C}$ at normal supply voltage.</p>
Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail

Test Data Yes N/A

Test Plot Yes (See below) N/A

LTE band II (Part 24E) result

Middle Channel, $f_0 = 1880$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-10	3.85	-15	0.0080	2.5
0		-10	0.0053	2.5
10		-11	0.0059	2.5
20		-16	0.0085	2.5
30		-16	0.0085	2.5
40		-13	0.0069	2.5
50		-16	0.0085	2.5
55		-20	0.0106	2.5
25	4.2	-16	0.0085	2.5
	3.6	-18	0.0096	2.5

LTE band IV (Part 27) result

Middle Channel, $f_0 = 1732.5$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-10	3.85	-16	0.0092	2.5
0		-16	0.0092	2.5
10		-14	0.0081	2.5
20		-20	0.0115	2.5
30		-19	0.0110	2.5
40		-17	0.0098	2.5
50		-14	0.0081	2.5
55		-20	0.0115	2.5
25	4.2	-16	0.0092	2.5
	3.6	-21	0.0121	2.5

LTE band VII (Part 27) result

Middle Channel, $f_0 = 2535$ MHz				
Temperature (°C)	Power Supplied (V _{dc})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-10	3.85	-12	0.0047	2.5
0		-14	0.0055	2.5
10		-17	0.0067	2.5
20		-10	0.0039	2.5
30		-9	0.0036	2.5
40		-15	0.0059	2.5
50		-12	0.0047	2.5
55		-15	0.0059	2.5
25		-9	0.0036	2.5
	4.2	-10	0.0039	2.5
	3.6			

LTE band XIII (Part 27) result

Middle Channel, $f_0 = 782$ MHz				
Temperature (°C)	Power Supplied (V _{dc})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-10	3.85	-12	0.0047	2.5
0		-15	0.0059	2.5
10		-10	0.0039	2.5
20		-16	0.0063	2.5
30		-14	0.0055	2.5
40		-14	0.0055	2.5
50		-14	0.0055	2.5
55		-9	0.0036	2.5
25		-17	0.0067	2.5
	4.2	-9	0.0036	2.5
	3.6			

Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Due	In use
RF Conducted Test					
Agilent ESA-E SERIES SPECTRUM ANALYZER	E4407B	MY45108319	09/15/2016	09/14/2017	<input checked="" type="checkbox"/>
Power Splitter	1#	1#	08/31/2016	08/30/2017	<input checked="" type="checkbox"/>
Universal Radio Communication Tester	CMW500	121393	09/24/2016	09/23/2017	<input checked="" type="checkbox"/>
Temperature/Humidity Chamber	UHL-270	001	10/08/2016	10/07/2017	<input checked="" type="checkbox"/>
DC Power Supply	E3640A	MY40004013	09/16/2016	09/15/2017	<input checked="" type="checkbox"/>
RF Power Sensor	Dare RPR3006C/P/W	AY554013	09/16/2016	09/15/2017	<input checked="" type="checkbox"/>
Radiated Emissions					
EMI test receiver	ESL6	100262	09/16/2016	09/15/2017	<input checked="" type="checkbox"/>
OPT 010 AMPLIFIER (0.1-1300MHz)	8447E	2727A02430	08/31/2016	08/30/2017	<input checked="" type="checkbox"/>
Microwave Preamplifier (1 ~ 26.5GHz)	8449B	3008A02402	03/23/2017	03/22/2018	<input checked="" type="checkbox"/>
Bilog Antenna (30MHz~6GHz)	JB6	A110712	09/20/2016	09/19/2017	<input checked="" type="checkbox"/>
Bilog Antenna (30MHz~2GHz)	JB1	A112017	09/20/2016	09/19/2017	<input checked="" type="checkbox"/>
Double Ridge Horn Antenna (1 ~18GHz)	AH-118	71259	09/23/2016	09/22/2017	<input checked="" type="checkbox"/>
Double Ridge Horn Antenna (1 ~18GHz)	AH-118	71283	09/23/2016	09/22/2017	<input checked="" type="checkbox"/>
SYNTHESIZED SIGNAL GENERATOR	8665B	3744A01293	09/16/2016	09/15/2017	<input checked="" type="checkbox"/>
Power Amplifier	SMC150D	R1553-0313	03/08/2017	03/07/2018	<input checked="" type="checkbox"/>
Power Amplifier	S41-25D	R1553-0314	05/26/2017	05/25/2018	<input checked="" type="checkbox"/>
Tunable Notch Filter	3NF-800/1000-S	AA4	08/31/2016	08/30/2017	<input checked="" type="checkbox"/>

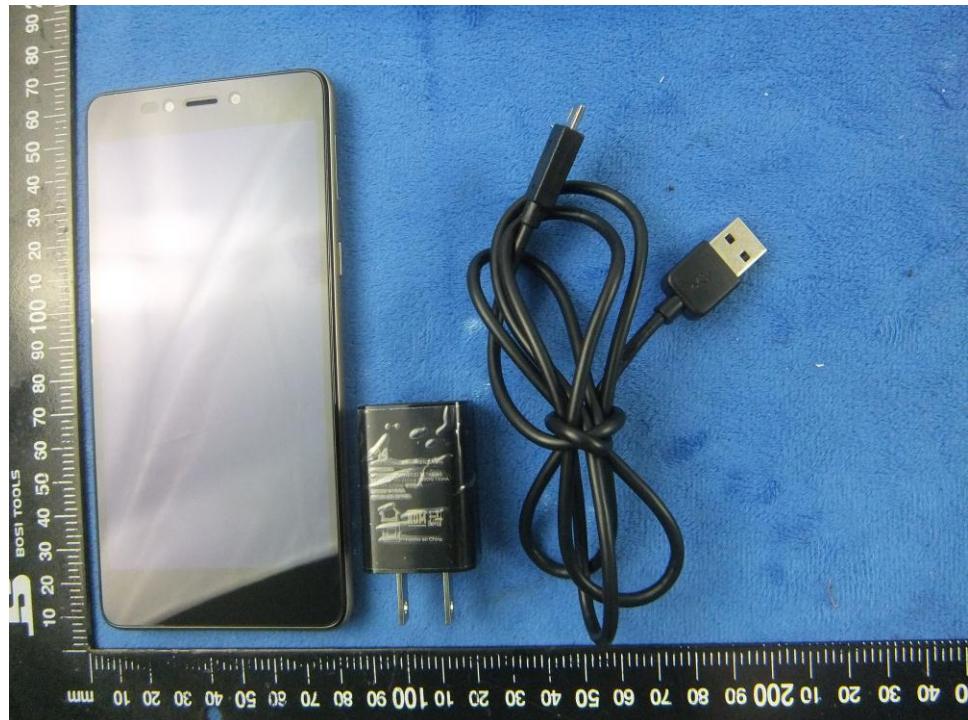
Test Report	17070522-FCC-R5
Page	105 of 122

Tunable Notch Filter	3NF- 1000/2000-S	AM 4	08/31/2016	08/30/2017	<input checked="" type="checkbox"/>
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Annex B. EUT And Test Setup Photographs

Annex B.i. Photograph: EUT External Photo

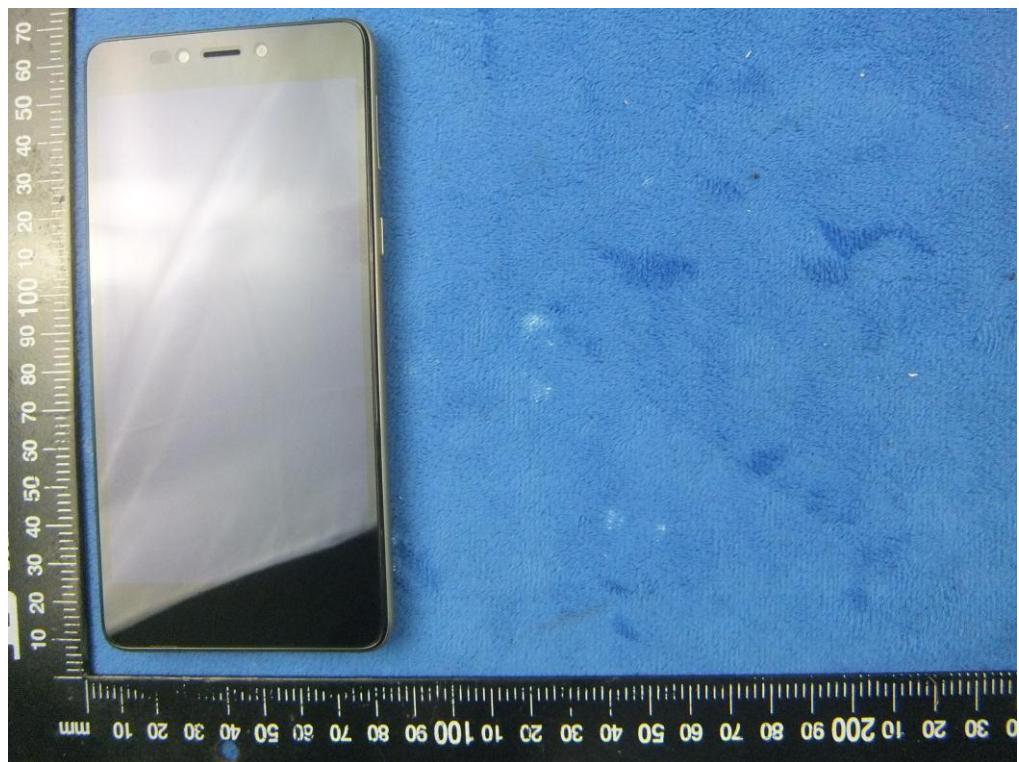
Whole Package View



Adapter - Lable View



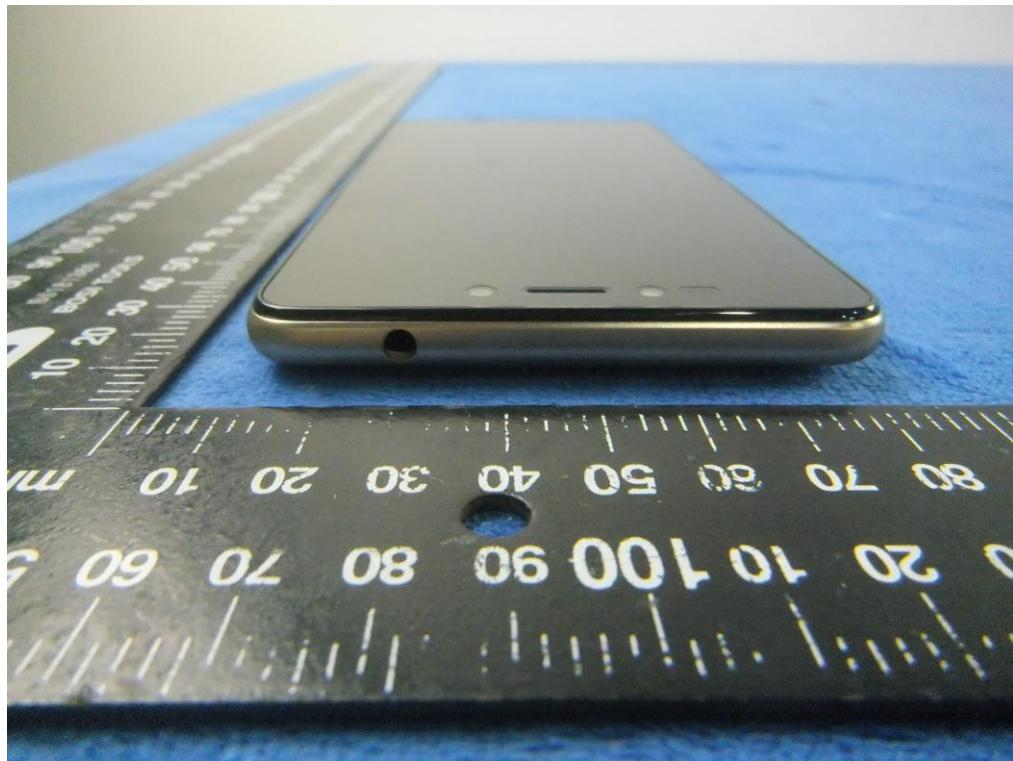
EUT - Front View



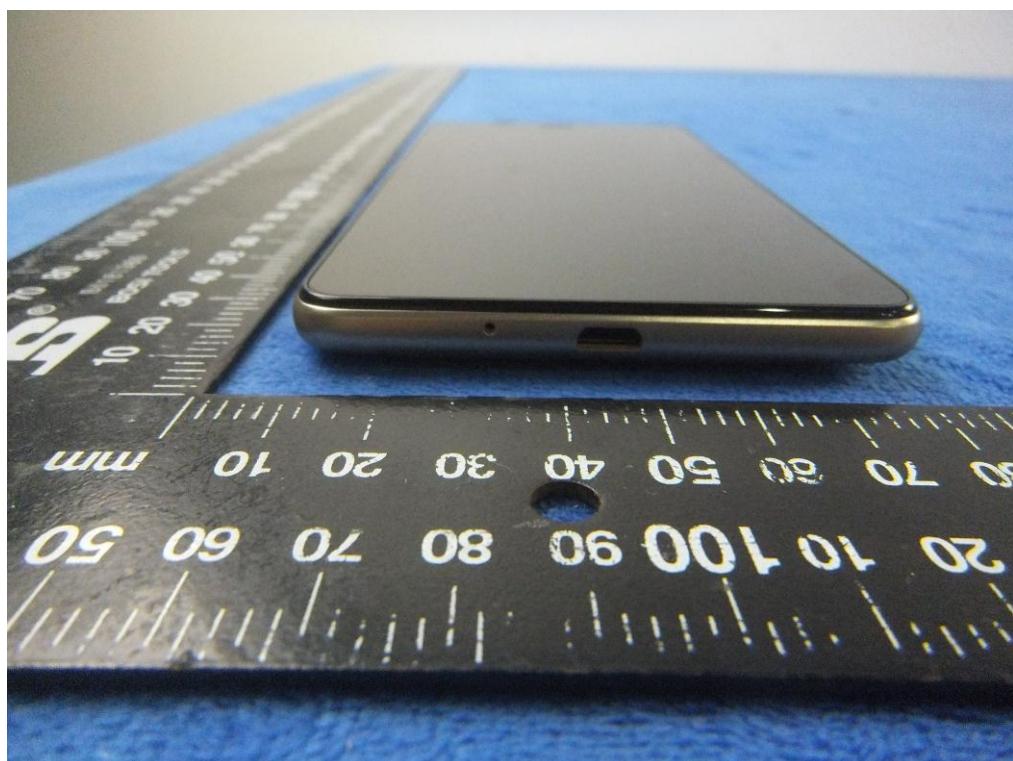
EUT - Rear View



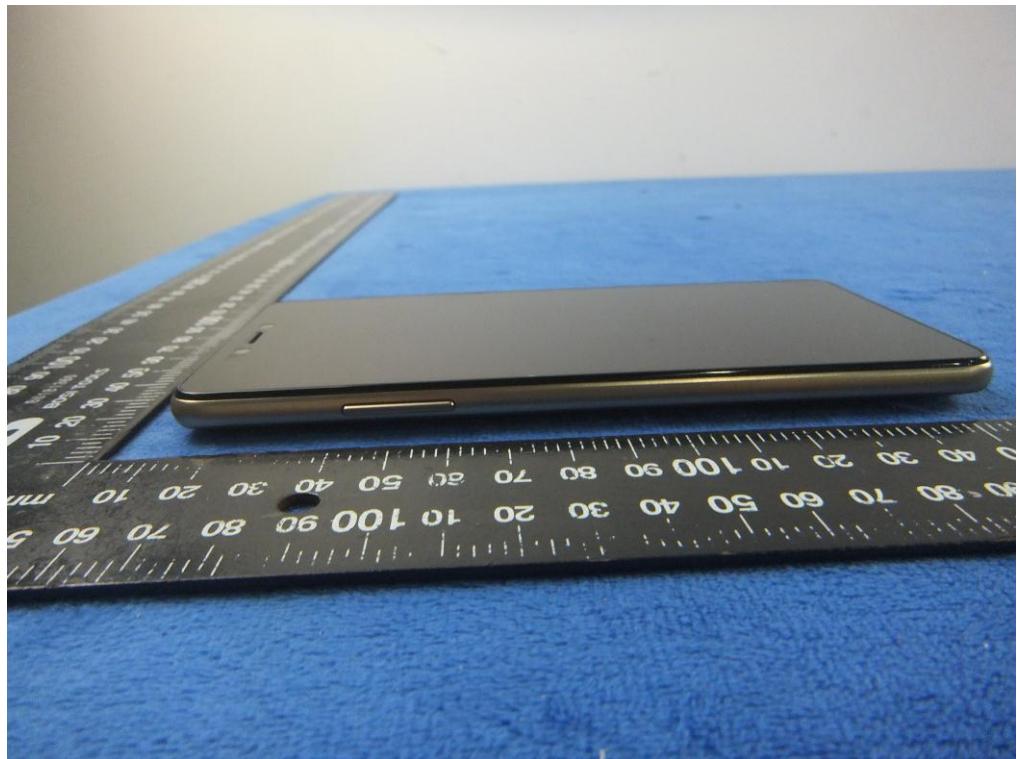
EUT - Top View



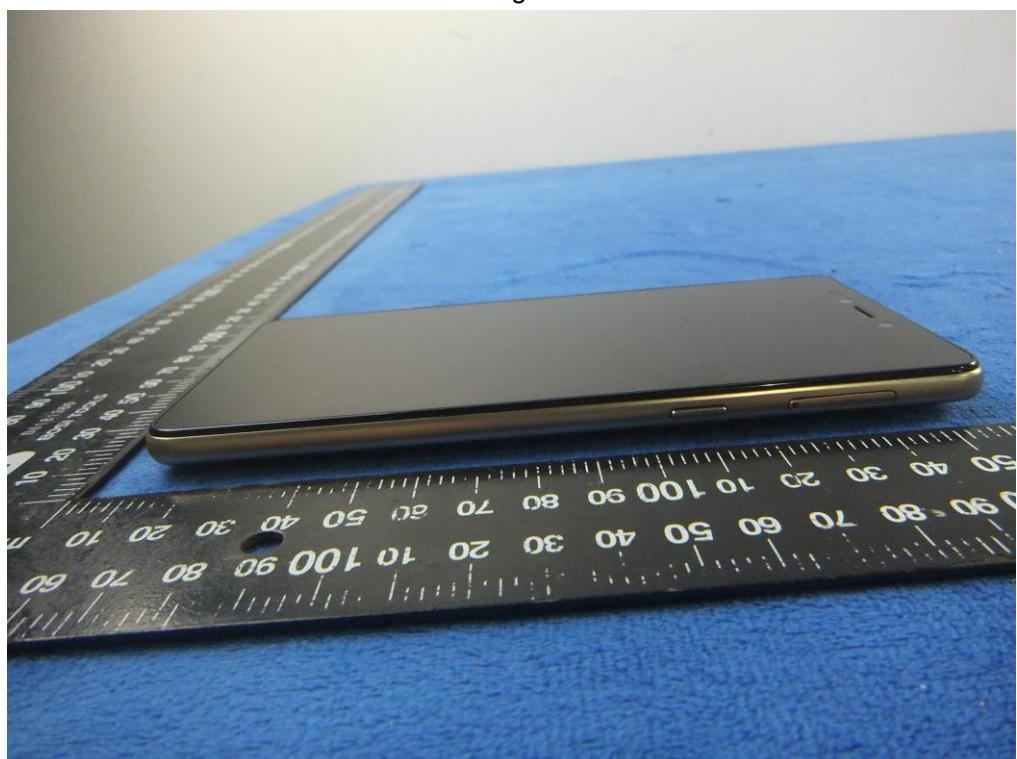
EUT - Bottom View



EUT - Left View



EUT - Right View



Annex B.ii. Photograph: EUT Internal Photo

Cover Off - Top View 1



Cover Off - Top View 2



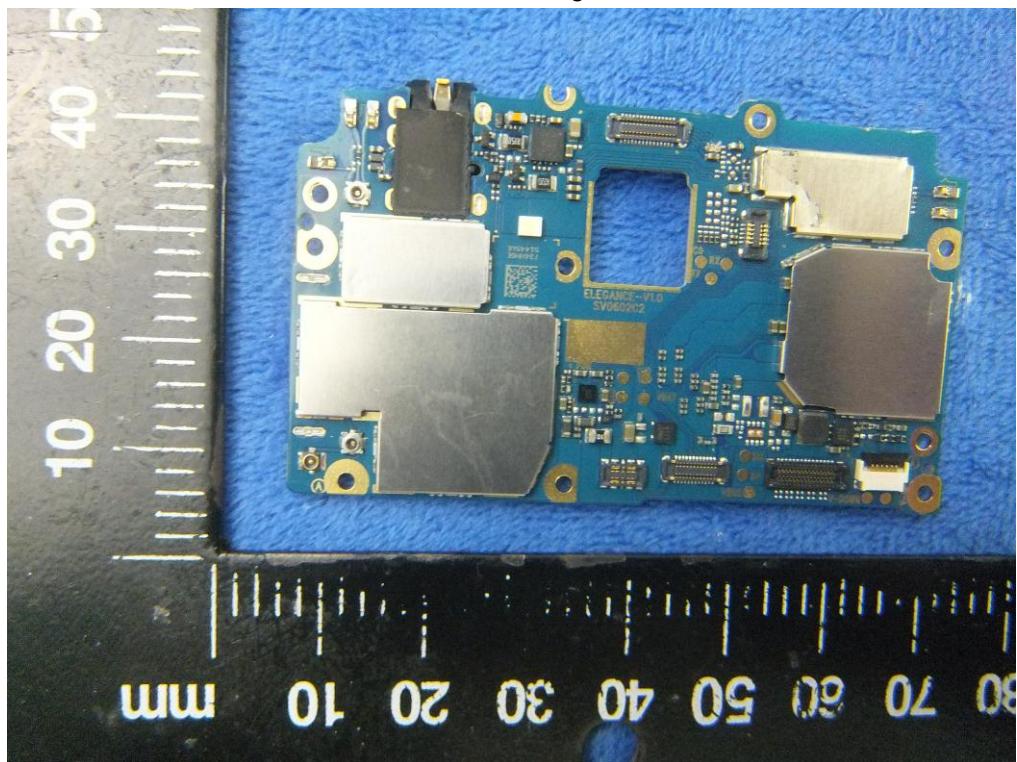
Battery - Front View



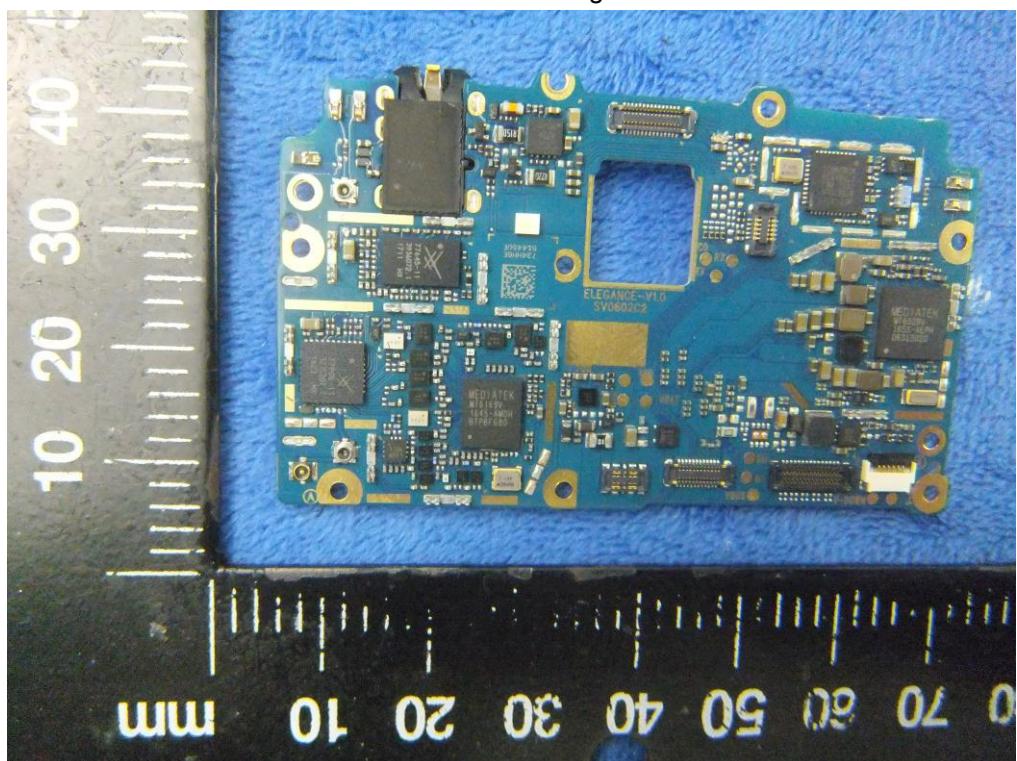
Battery - Rear View



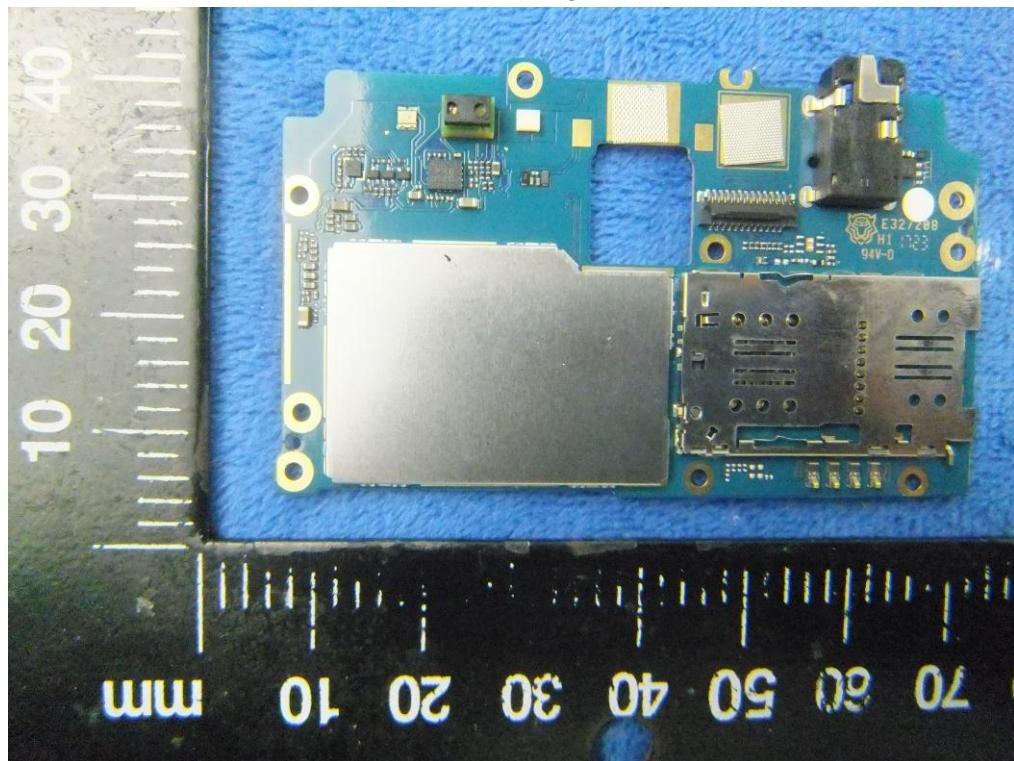
Mainboard with Shielding - Front View



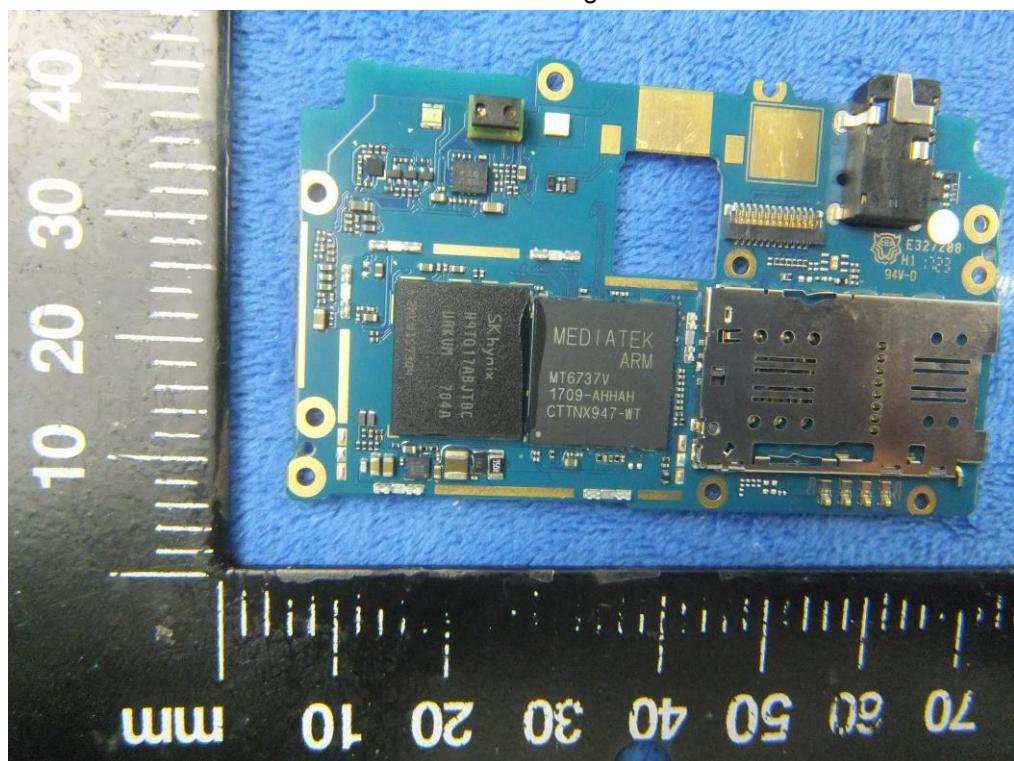
Mainboard without Shielding - Front View



Mainboard with Shielding – Rear View



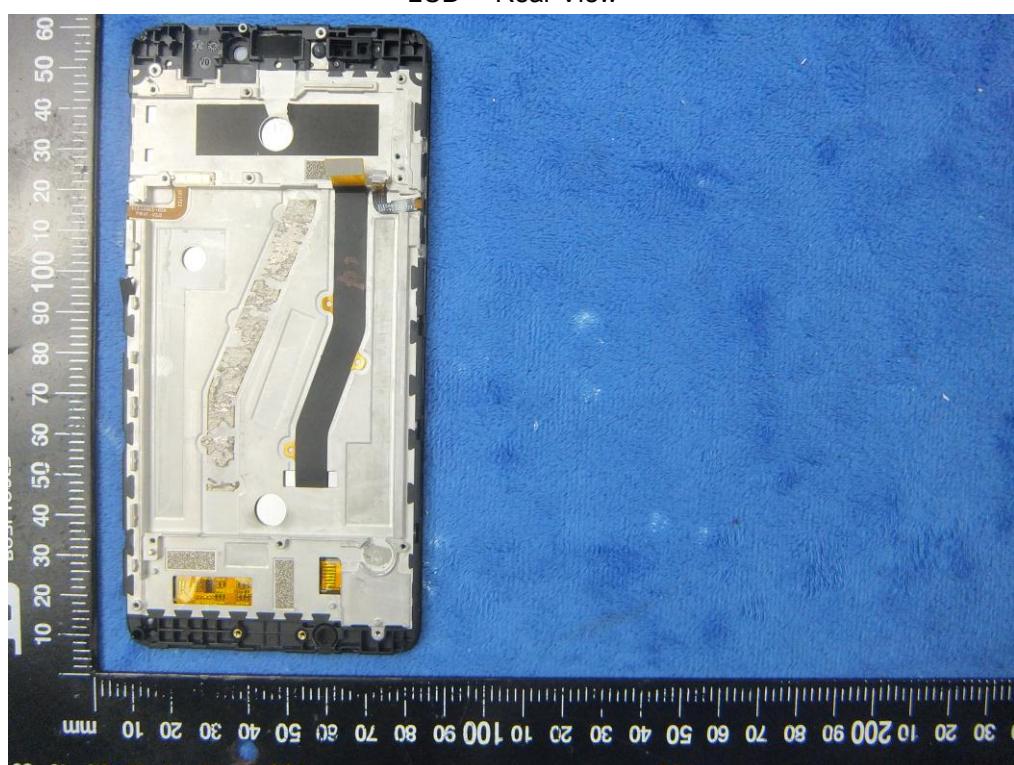
Mainboard without Shielding – Rear View



LCD – Front View



LCD – Rear View



GSM/PCS/UMTS-FDD Antenna View



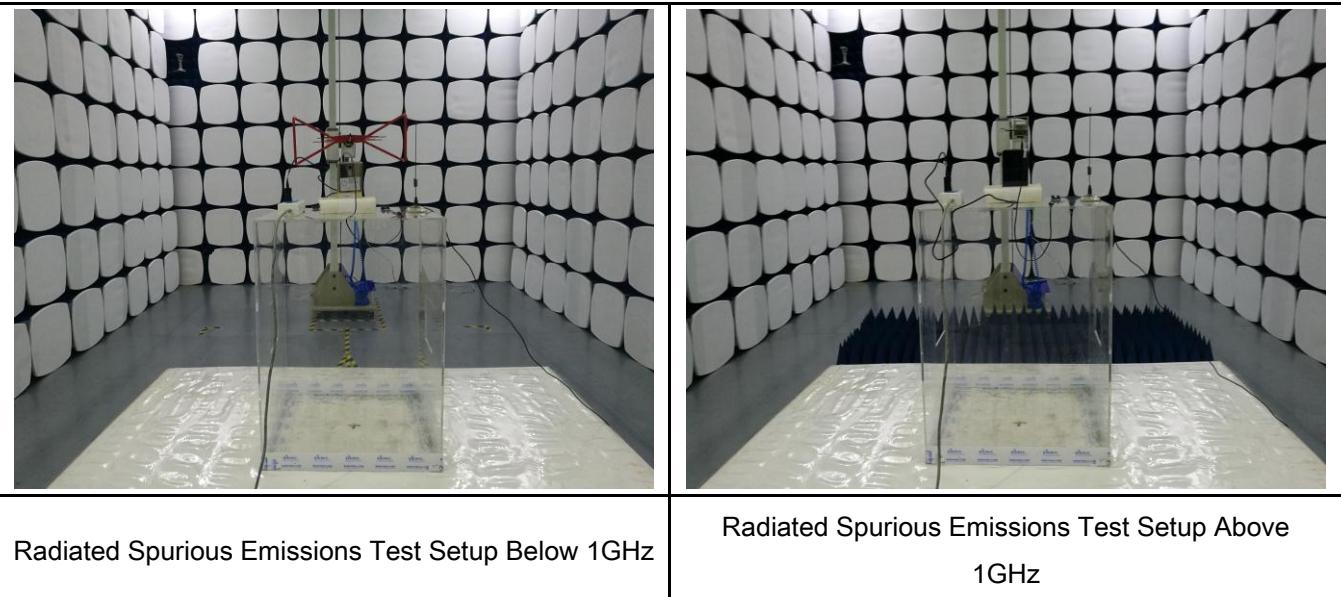
WIFI/BT/BLE/GPS - Antenna View



LTE - Antenna View



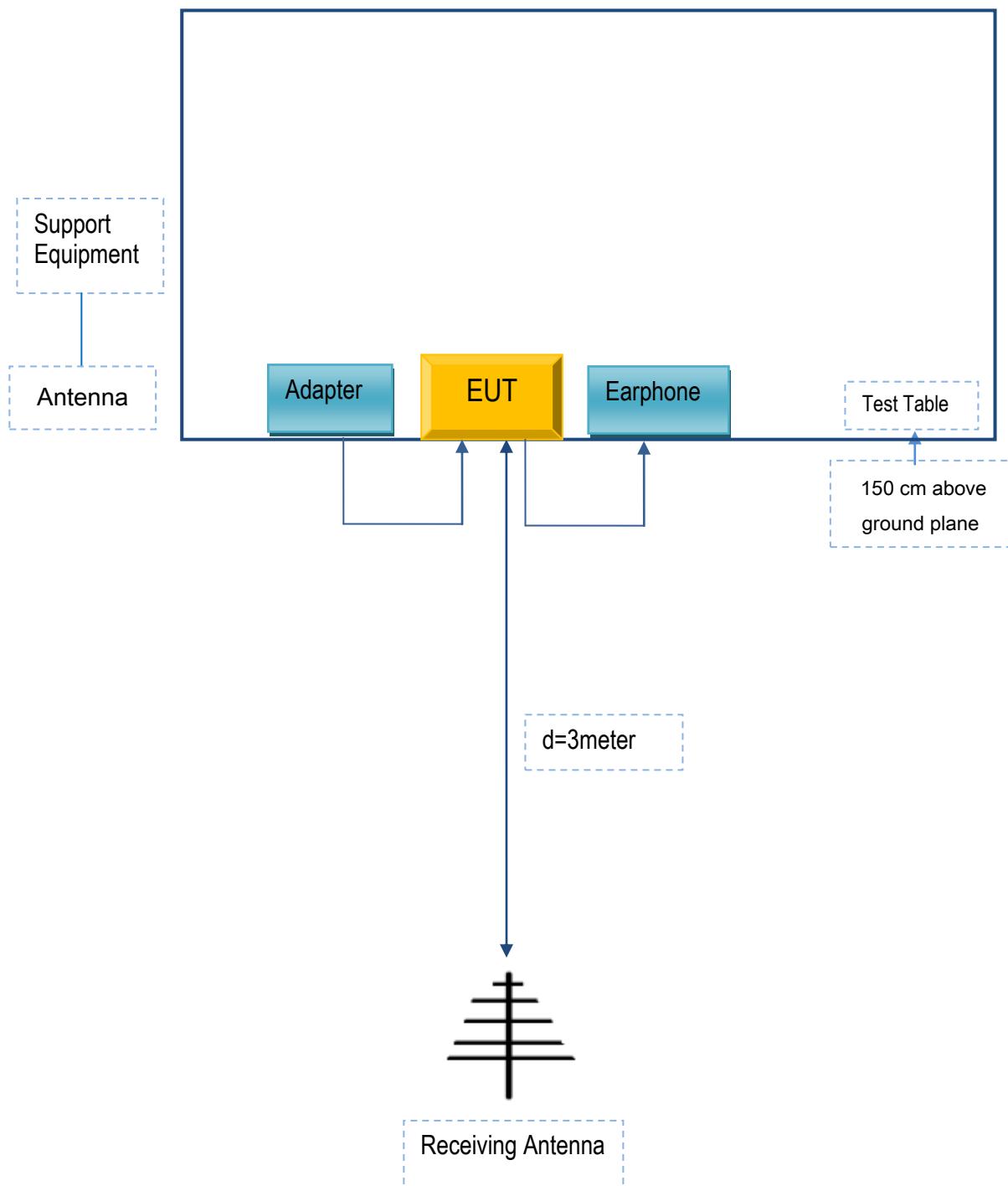
Annex B.iii. Photograph: Test Setup Photo



Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

Annex C.ii. TEST SET UP BLOCK

Block Configuration Diagram for Radiated Emissions



Annex C. ii. SUPPORTING EQUIPMENT DESCRIPTION

The following is a description of supporting equipment and details of cables used with the EUT.

Supporting Equipment:

Manufacturer	Equipment Description	Model	Serial No
MFOURTEL MEXICO S.A. DE C.V.	Adapter	A8-501000	N/A
MFOURTEL MEXICO S.A. DE C.V.	Earphone	M4 SS4453-R	N/A

Supporting Cable:

Cable type	Shield Type	Ferrite Core	Length	Serial No
USB Cable	Un-shielding	No	0.8m	N/A

Annex C.ii. EUT OPERATING CONDITIONS

N/A

Annex D. User Manual / Block Diagram / Schematics / Partlist

Please see the attachment

Annex E. DECLARATION OF SIMILARITY

N/A