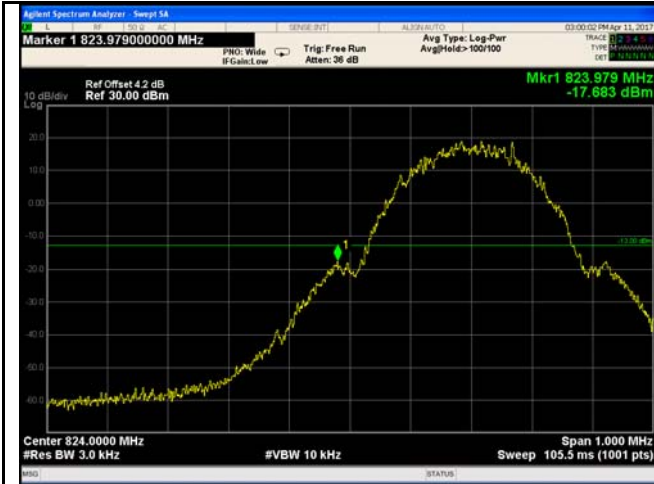


**GSM Voice:
Test Plots**



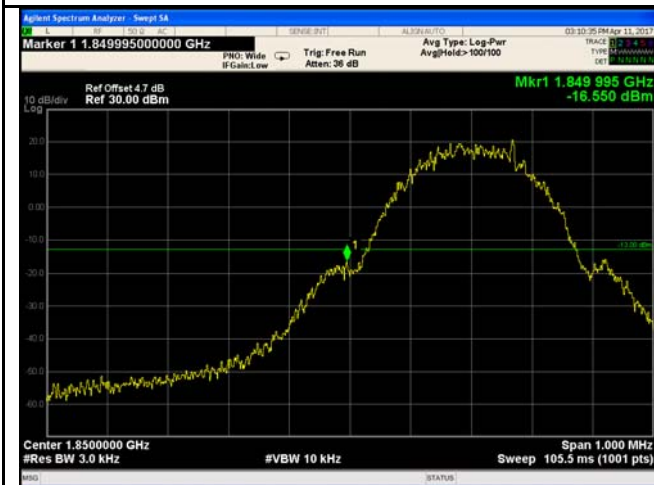
Cellular Band - Low Channel

Note: Offset=Cable loss (4.0) + 10log
(3.18/3)=4.0+0.2=4.2dB



Cellular Band - High Channel

Note: Offset=Cable loss (4.0) + 10log
(3.23/3)=4.0+0.3=4.3dB



PCS Band - Low Channel

Note: Offset=Cable loss (4.0) + 10log
(3.16/3)=4.5+0.2=4.7dB

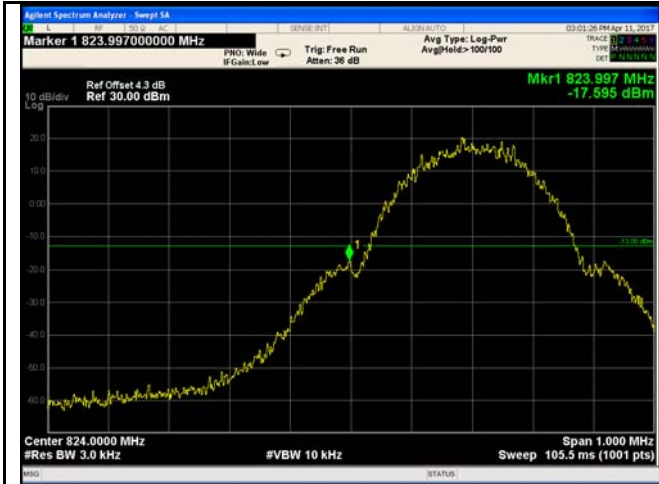


PCS Band - High Channel

Note: Offset=Cable loss (4.0) + 10log
(3.18/3)=4.5+0.3=4.8dB

GPRS:

Test Plots



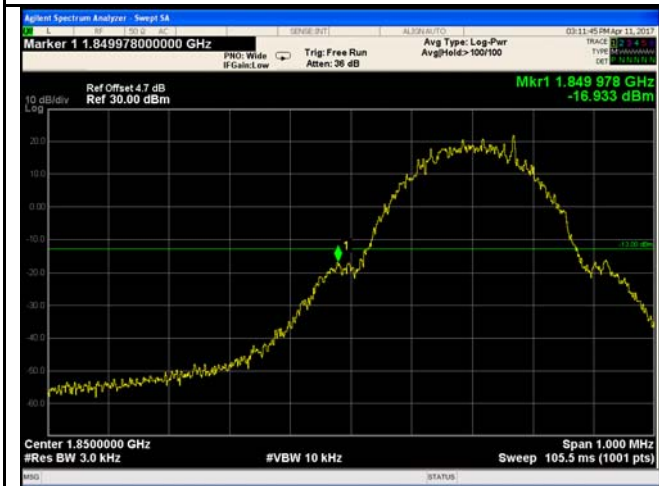
Cellular Band - Low Channel

Note: Offset=Cable loss (4.0) + 10log
 $(3.18/3)=4.0+0.3=4.3\text{dB}$



Cellular Band - High Channel

Note: Offset=Cable loss (4.0) + 10log
 $(3.16/3)=4.0+0.2=4.2\text{dB}$



PCS Band - Low Channel

Note: Offset=Cable loss (4.5) + 10log
 $(3.17/3)=4.5+0.2=4.7\text{dB}$

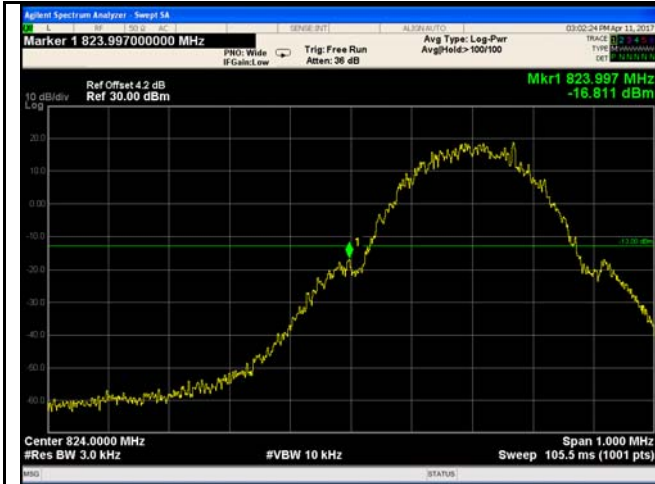


PCS Band - High Channel

Note: Offset=Cable loss (4.5) + 10log
 $(3.15/3)=4.5+0.2=4.7\text{dB}$

EGPRS (MCS5):

Test Plots



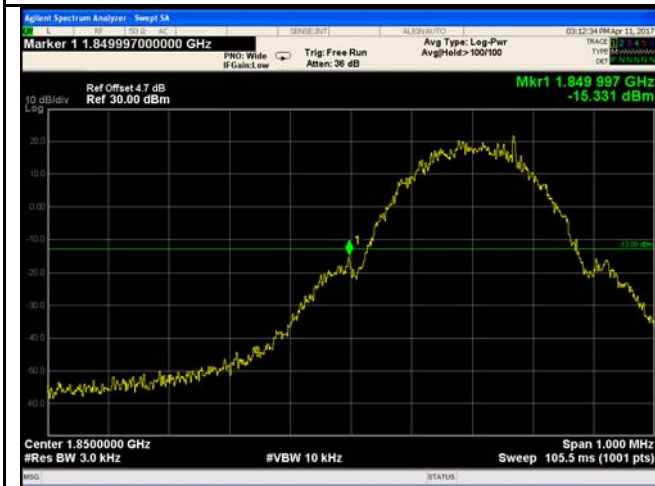
Cellular Band - Low Channel

Note: Offset=Cable loss (4.0) + 10log
 $(3.13/3)=4.0+0.2=4.2\text{dB}$



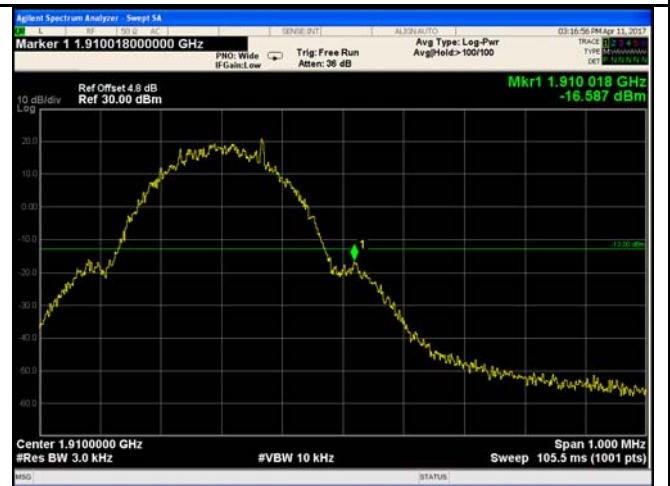
Cellular Band - High Channel

Note: Offset=Cable loss (4.0) + 10log
 $(3.14/3)=4.0+0.2=4.2\text{dB}$



PCS Band - Low Channel

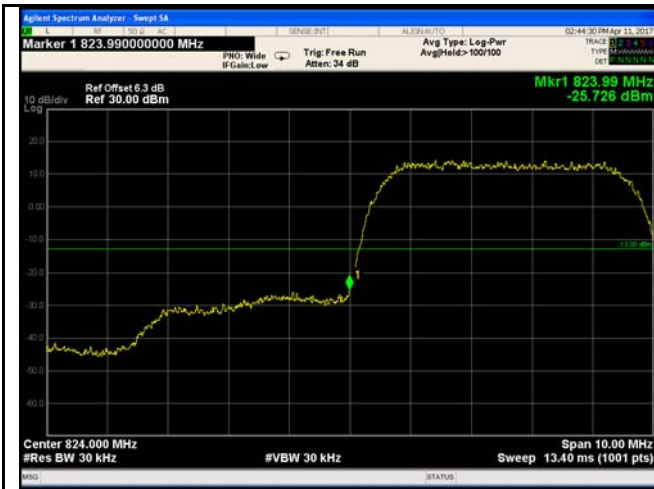
Note: Offset=Cable loss (4.5) + 10log
 $(3.15/3)=4.5+0.2=4.7\text{dB}$



PCS Band - High Channel

Note: Offset=Cable loss (4.5) + 10log
 $(3.18/3)=4.5+0.3=4.8\text{dB}$

RMC:



UMTS-FDD Band V - Low Channel

Note: Offset=Cable loss (4.0) + 10log
(50.59/30)=4.0+2.3=6.3 dB



UMTS-FDD Band V - High Channel

Note: Offset=Cable loss (4.0) + 10log
(48.77/30)=4.0+2.1=6.1 dB



UMTS-FDD Band II - Low Channel

Note: Offset=Cable loss (4.5) + 10log
(48.62/30)=4.5+2.1=6.6dB



UMTS-FDD Band II - High Channel

Note: Offset=Cable loss (4.5) + 10log
(48.74/30)=4.5+2.1=6.6 dB

HSDPA:



UMTS-FDD Band V - Low Channel



UMTS-FDD Band V - High Channel

Note: Offset=Cable loss (4.0) + 10log
(48.70/30)=4.0+2.1=6.1dB

Note: Offset=Cable loss (4.0) + 10log
(48.61/30)=4.0+2.1=6.1dB



UMTS-FDD Band II - Low Channel

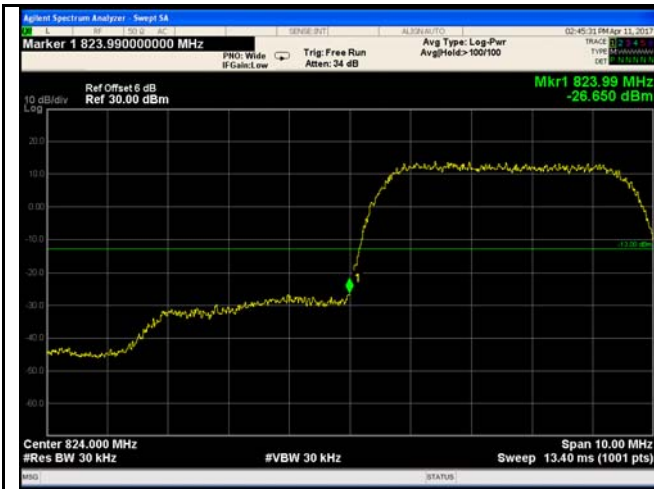


UMTS-FDD Band II - High Channel

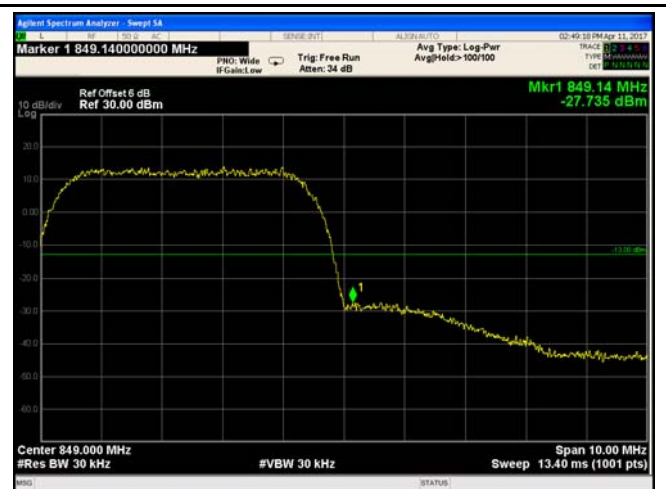
Note: Offset=Cable loss (4.5) + 10log
(48.53/30)=4.5+2.1=6.6 dB

Note: Offset=Cable loss (4.5) + 10log
(48.59/30)=4.5+2.1=6.6 dB

HSUPA:



UMTS-FDD Band V - Low Channel



UMTS-FDD Band V - High Channel

Note: Offset=Cable loss (4.0) + 10log
(48.83/30)=4.0+2.0=6.0dB

Note: Offset=Cable loss (4.0) + 10log
(48.51/30)=4.0+2.0=6.0dB



UMTS-FDD Band II - Low Channel



UMTS-FDD Band II - High Channel

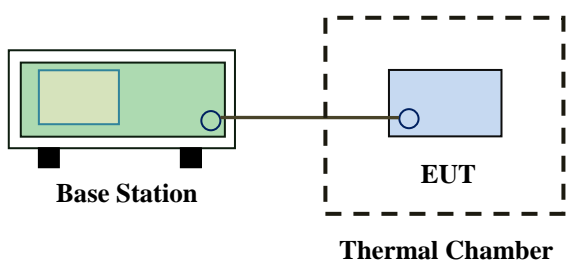
Note: Offset=Cable loss (4.5) + 10log
(48.82/30)=4.5+2.1=6.6dB

Note: Offset=Cable loss (4.5) + 10log
(48.61/30)=4.5+2.1=6.6 dB

6.8 Frequency Stability

Temperature	25°C
Relative Humidity	55%
Atmospheric Pressure	1012mbar
Test date :	April 11, 2017
Tested By :	Loren Luo

Requirement(s):

Spec	Item	Requirement	Applicable																																
§2.1055, §22.355 & §24.235	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 ≥ 3 watts (ppm)</th> <th>Mobile ≤ 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>45 to 512</td> <td>2.5</td> <td>5.0</td> <td>5.0</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>	Frequency Range (MHz)	Base, fixed (ppm)	Mobile ≥ 3 watts (ppm)	Mobile ≤ 3 watts (ppm)	25 to 50	20.0	20.0	50.0	50 to 450	5.0	5.0	50.0	45 to 512	2.5	5.0	5.0	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 ≥ 3 watts (ppm)	Mobile ≤ 3 watts (ppm)																														
		25 to 50	20.0	20.0	50.0																														
		50 to 450	5.0	5.0	50.0																														
		45 to 512	2.5	5.0	5.0																														
		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	 <p>The diagram illustrates the test setup. On the left, a green rectangular box labeled 'Base Station' is shown. A line connects it to a blue rectangular box labeled 'EUT' (Equipment Under Test) which is enclosed within a dashed-line box labeled 'Thermal Chamber'.</p>																																		

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	
Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail

Test Data Yes N/A

Test Plot Yes (See below) N/A

GSM Voice:

Cellular Band (Part 22H) result

Middle Channel, $f_0 = 836.6$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-10	3.7	15	0.0179	2.5
0		14	0.0167	2.5
10		18	0.0215	2.5
20		17	0.0203	2.5
30		16	0.0191	2.5
40		15	0.0179	2.5
50		12	0.0143	2.5
55		14	0.0167	2.5
25	4.2	19	0.0227	2.5
	3.5	20	0.0239	2.5

PCS Band (Part 24E) result

Middle Channel, $f_0 = 1880$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-10	3.7	15	0.0080	2.5
0		16	0.0085	2.5
10		14	0.0074	2.5
20		19	0.0101	2.5
30		17	0.0090	2.5
40		17	0.0090	2.5
50		15	0.0080	2.5
55		16	0.0085	2.5
25	4.2	12	0.0064	2.5
	3.5	14	0.0074	2.5

RMC:

UMTS-FDD Band V (Part 22H)

Middle Channel, $f_o = 835$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-10	3.7	16	0.0191	2.5
0		15	0.0179	2.5
10		15	0.0179	2.5
20		15	0.0179	2.5
30		16	0.0191	2.5
40		17	0.0203	2.5
50		18	0.0215	2.5
55		19	0.0227	2.5
25	4.2	20	0.0239	2.5
	3.7	16	0.0191	2.5

UMTS-FDD Band II (Part 24E)

Middle Channel, $f_o = 1880$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-10	3.7	15	0.0080	2.5
0		19	0.0101	2.5
10		18	0.0096	2.5
20		17	0.0090	2.5
30		15	0.0080	2.5
40		16	0.0085	2.5
50		14	0.0074	2.5
55		13	0.0069	2.5
25		4.2	15	0.0080
	3.5	17	0.0090	2.5

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	CMU200	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	05/27/2016	05/26/2017	<input checked="" type="checkbox"/>
Tunable Notch Filter	3NF-800/1000-S	AA4	08/31/2016	08/30/2017	<input checked="" type="checkbox"/>



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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 - Label View



EUT - Front View



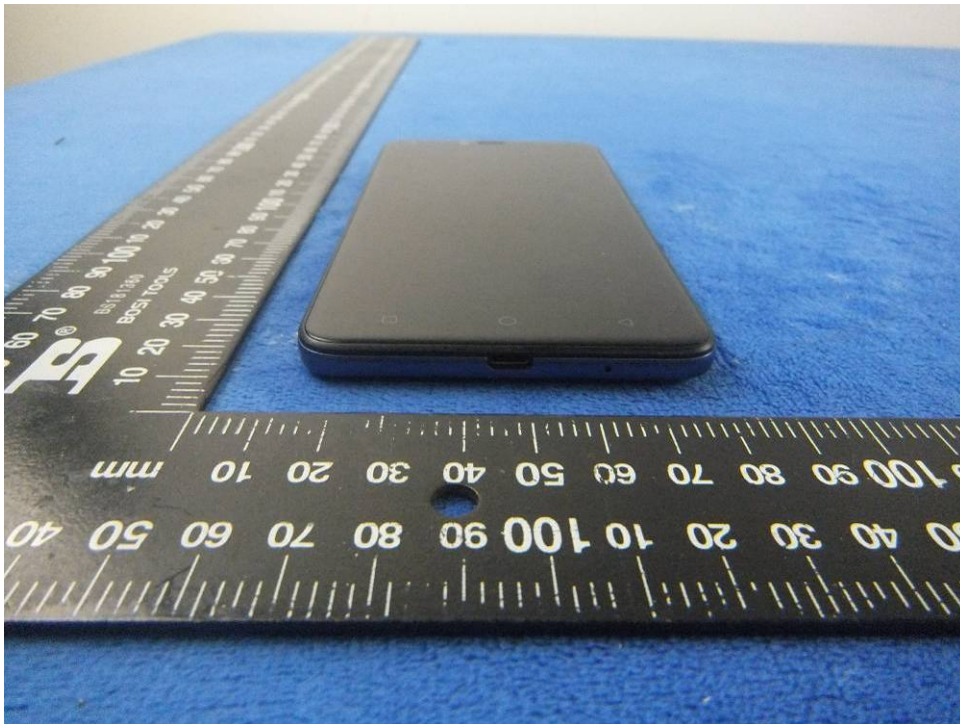
EUT - Rear View



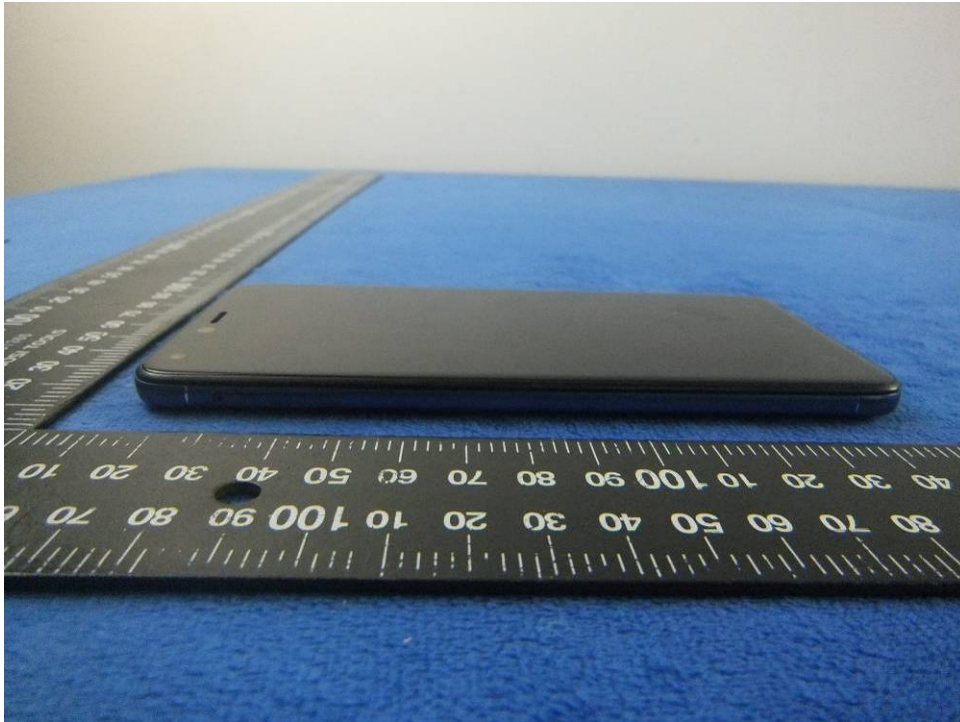
EUT - Top View



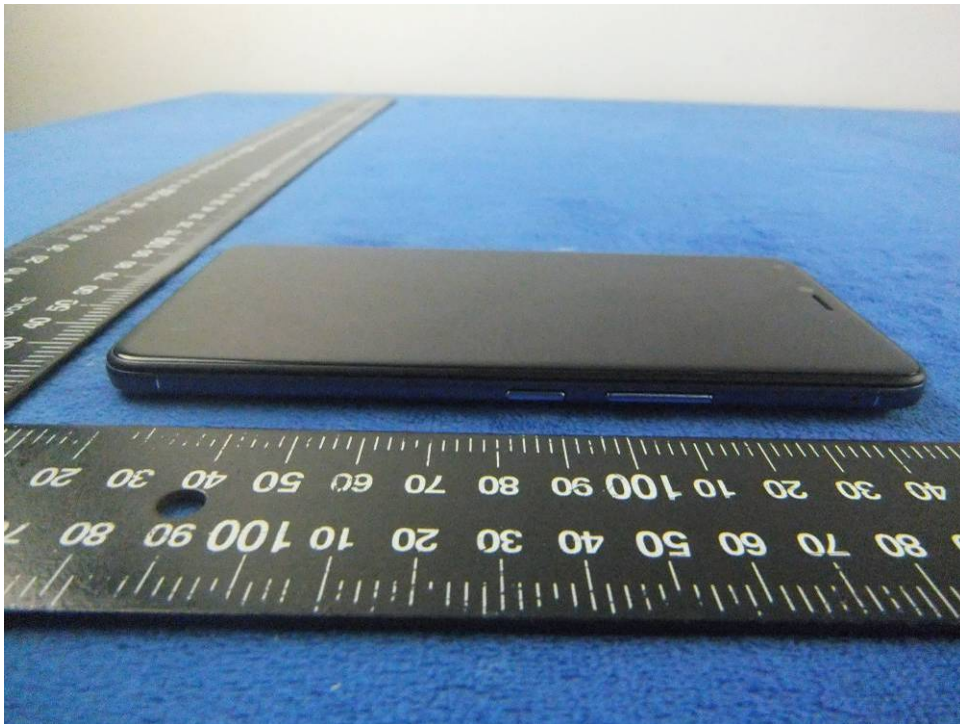
EUT - Bottom View



EUT - Left View



EUT - Right View



Annex B.ii. Photograph: EUT Internal Photo

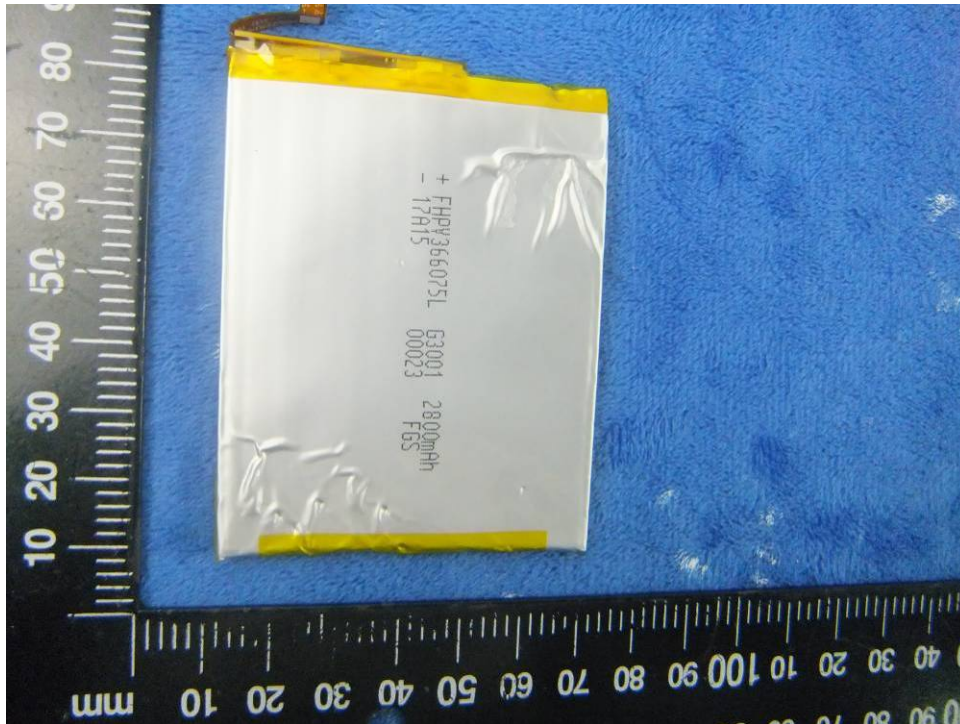
Cover Off - Top View 1



Cover Off - Top View 2



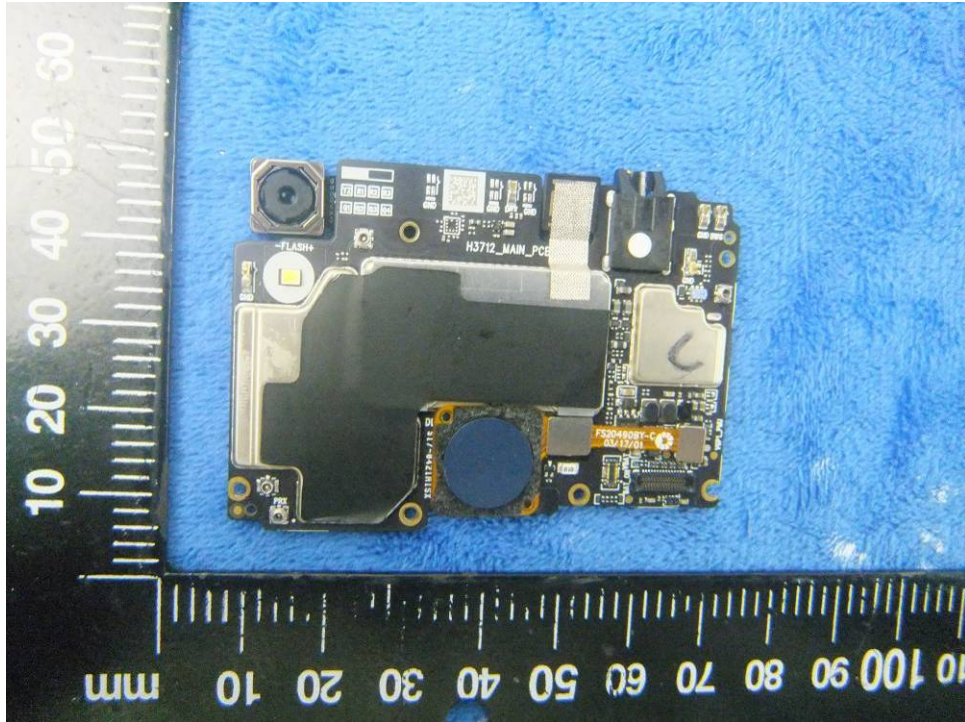
Battery - Front View



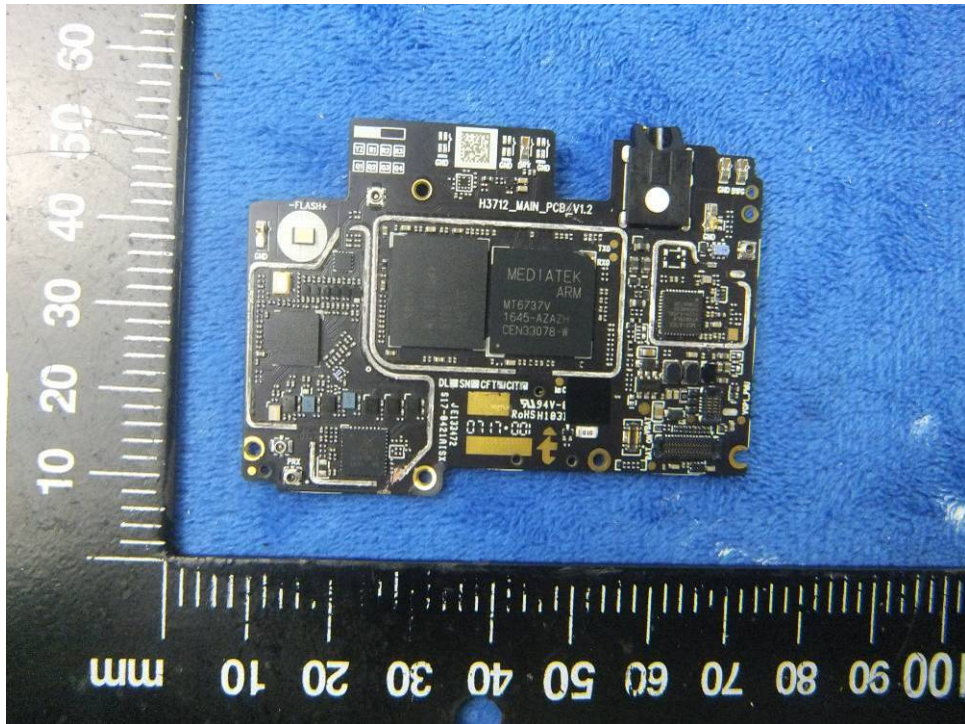
Battery - Rear View



Mainboard with Shielding - Front View



Mainboard without Shielding - Front View



LCD – Front View



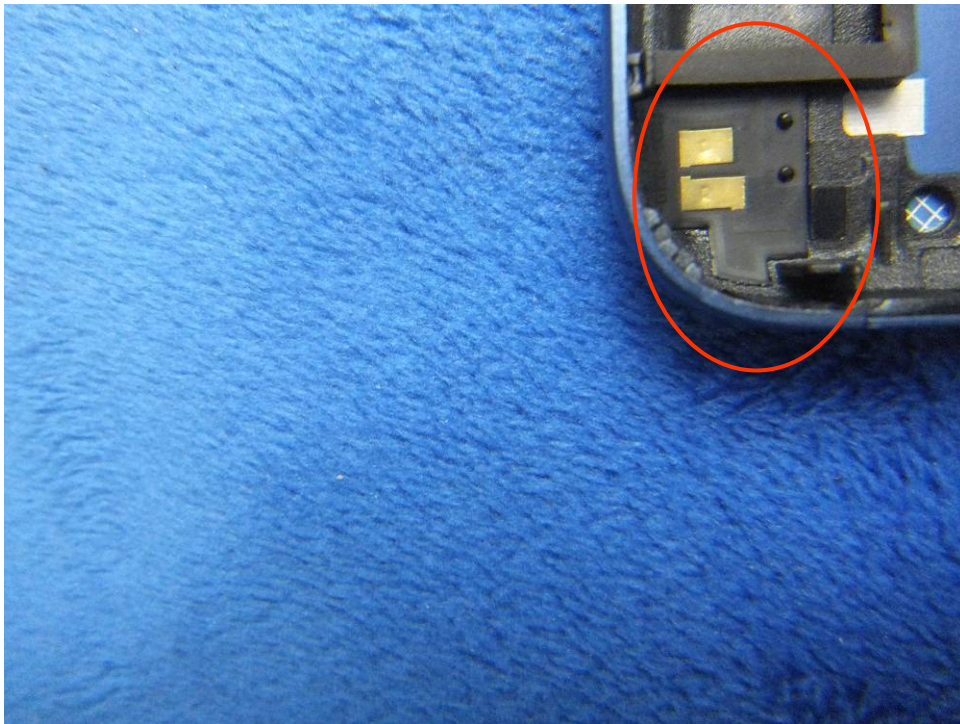
LCD – Rear View



GSM/PCS/UMTS-FDD/GPS Antenna View



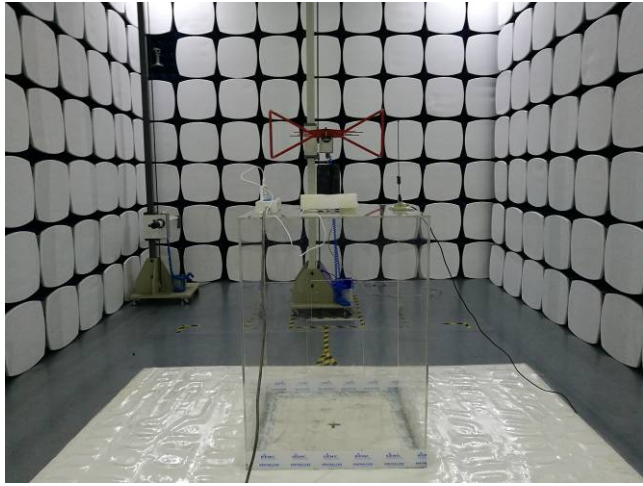
WIFI/BT/BLE/GPS - Antenna View



LTE - Antenna View



Annex B.iii. Photograph: Test Setup Photo



Radiated Spurious Emissions Test Setup Below 1GHz

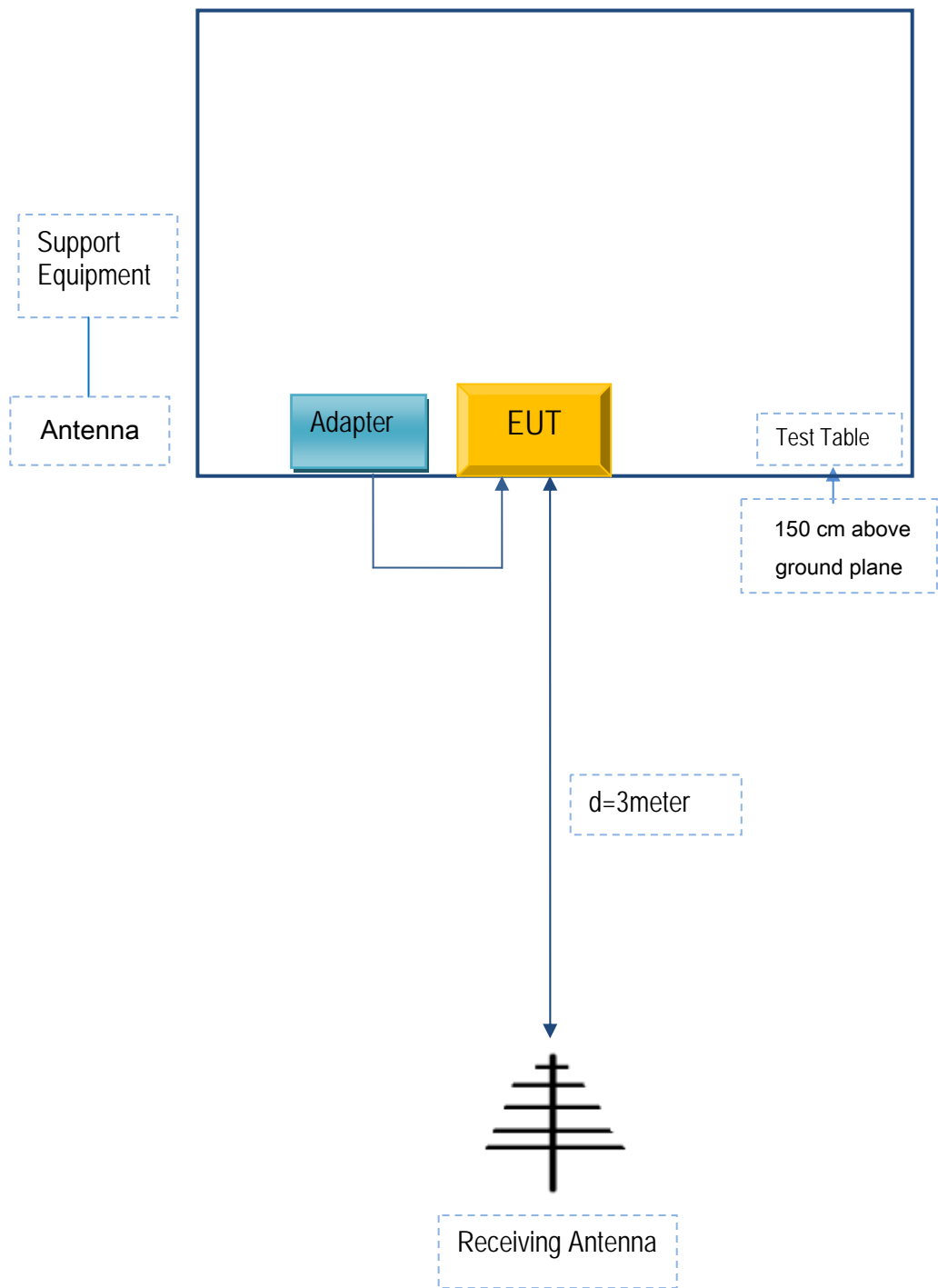


Radiated Spurious Emissions Test Setup Above
1GHz

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
TECNO MOBILE LIMITED	Adapter	A8-50100	F1012

Supporting Cable:

Cable type	Shield Type	Ferrite Core	Length	Serial No
USB Cable	Un-shielding	No	0.8m	F1012

Annex C.ii. EUT OPERATING CONKITIONS

N/A

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

Please see the attachment

Annex E. DECLARATION OF SIMILARITY

N/A