

# RF TEST REPORT



Report No.: 15071290-FCC-R1

Supersede Report No.: N/A

Applicant	MOBIWIRE MOBILES (NINGBO) CO.,LTD	
Product Name	3G feature phone	
Model No.	öwnF1035	
Serial No.	N/A	
Test Standard	FCC Part 22(H):2014 ;FCC Part 24(E):2014; ANSI/TIAC603 D: 2010	
Test Date	December 30, 2015 to January 11, 2016	
Issue Date	January 12, 2016	
Test Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	
Equipment complied with the specification <input checked="" type="checkbox"/>		
Equipment did not comply with the specification <input type="checkbox"/>		
<i>Winnie Zhang</i>	<i>David Huang</i>	
Winnie Zhang Test Engineer	David Huang Checked By	
This test report may be reproduced in full only Test result presented in this test report is applicable to the tested sample only		

Issued by:

**SIEMIC (SHENZHEN-CHINA) LABORATORIES**

Zone A, Floor 1, Building 2 Wan Ye Long Technology Park

South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China 518108

Phone: +86 0755 2601 4629801 Email: [China@siemic.com.cn](mailto:China@siemic.com.cn)

## Laboratories Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.



In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

### Accreditations for Conformity Assessment

Country/Region	Scope
USA	EMC, RF/Wireless, SAR, Telecom
Canada	EMC, RF/Wireless, SAR, Telecom
Taiwan	EMC, RF, Telecom, SAR, Safety
Hong Kong	RF/Wireless, SAR, Telecom
Australia	EMC, RF, Telecom, SAR, Safety
Korea	EMI, EMS, RF, SAR, Telecom, Safety
Japan	EMI, RF/Wireless, SAR, Telecom
Singapore	EMC, RF, SAR, Telecom
Europe	EMC, RF, SAR, Telecom, Safety

Test Report	15071290-FCC-R1
Page	3 of 49

---

This page has been left blank intentionally.

# CONTENTS

1. REPORT REVISION HISTORY .....	5
2. CUSTOMER INFORMATION .....	5
3. TEST SITE INFORMATION .....	5
4. EQUIPMENT UNDER TEST (EUT) INFORMATION .....	6
5. TEST SUMMARY .....	8
6. MEASUREMENTS, EXAMINATION AND DERIVED RESULTS .....	9
6.1 RF EXPOSURE (SAR).....	9
6.2 RF OUTPUT POWER .....	10
6.3 PEAK-AVERAGE RATIO.....	16
6.4 OCCUPIED BANDWIDTH.....	18
6.5 SPURIOUS EMISSIONS AT ANTENNA TERMINALS .....	22
6.6 SPURIOUS RADIATED EMISSIONS .....	26
6.7 BAND EDGE.....	31
6.8 FREQUENCY STABILITY .....	35
ANNEX A. TEST INSTRUMENT.....	39
ANNEX B. EUT AND TEST SETUP PHOTOGRAPHS.....	40
ANNEX C. TEST SETUP AND SUPPORTING EQUIPMENT.....	45
ANNEX C.II. EUT OPERATING CONKITIONS .....	47
ANNEX D. USER MANUAL / BLOCK DIAGRAM / SCHEMATICS / PARTLIST .....	48
ANNEX E. DECLARATION OF SIMILARITY .....	49

## 1. Report Revision History

Report No.	Report Version	Description	Issue Date
15071290-FCC-R1	NONE	Original	January 12, 2016

## 2. Customer information

Applicant Name	MOBIWIRE MOBILES (NINGBO) CO.,LTD
Applicant Add	No.999,Dacheng East Road,Fenghua City,Zhejiang
Manufacturer	MOBIWIRE MOBILES (NINGBO) CO.,LTD
Manufacturer Add	No.999,Dacheng East Road,Fenghua City,Zhejiang

## 3. Test site information

Lab performing tests	SIEMIC (Shenzhen-China) LABORATORIES
Lab Address	Zone A, Floor 1, Building 2 Wan Ye Long Technology Park South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China 518108
FCC Test Site No.	718246
IC Test Site No.	4842E-1
Test Software	Radiated Emission Program-To Shenzhen v2.0

## 4. Equipment under Test (EUT) Information

Description of EUT:	3G feature phone
Main Model:	<b>öwF1035</b>
Serial Model:	N/A
Date EUT received:	December 29, 2015
Test Date(s):	December 30, 2015 to January 11, 2016
Equipment Category :	PCE
Antenna Gain:	GSM850: -4 dBi PCS1900: 0 dBi UMTS-FDD Band II: 0 dBi Bluetooth: -1 dBi
Type of Modulation:	GSM / GPRS: GMSK EGPRS: GMSK UMTS-FDD: QPSK, 16QAM Bluetooth: GFSK, $\pi$ /4DQPSK, 8DPSK
RF Operating Frequency (ies):	GSM850 TX: 824.2 ~ 848.8 MHz; RX: 869.2 ~ 893.8 MHz PCS1900 TX: 1850.2 ~ 1909.8 MHz; RX: 1930.2 ~ 1989.8 MHz UMTS-FDD Band II TX: 1852.4 ~ 1907.6 MHz; RX: 1932.4 ~ 1987.6 MHz Bluetooth: 2402-2480 MHz
Maximum Conducted AV Power to Antenna:	GSM850: 33.16 dBm PCS1900: 30.57 dBm UMTS-FDD Band II : 22.17 dBm

ERP/EIRP: GSM850: 27.51 dBm / ERP  
PCS1900: 30.44 dBm / EIRP  
UMTS-FDD Band II : 21.96 dBm / EIRP

Number of Channels: GSM 850: 124CH  
PCS1900: 299CH  
UMTS-FDD Band II : 277CH  
Bluetooth: 79CH

Port: Power Port, Earphone Port, USB Port

Input Power: Adapter:  
Model: A31-500550  
Input: AC 100-240V; 50/60Hz;0.15A  
Output: DC 5.0V,550mA  
Battery:  
Model: L6  
Standard: 3.7V,800mAh,2.96Wh  
Limited charge voltage:4.2V

Trade Name : **öwn**

GPRS/EGPRS Multi-slot class 8/10/12

FCC ID: 2ADA4F1035

## 5. Test Summary

The product was tested in accordance with the following specifications.

All testing has been performed according to below product classification:

FCC Rules	Description of Test	Result
§ 1.1307; § 2.1093	RF Exposure (SAR)	Compliance
§2.1046; § 22.913(a); § 24.232(c);	RF Output Power	Compliance
§ 24.232 (d) ;	Peak-Average Ratio	Compliance
§ 2.1049; § 22.905; § 22.917; § 24.238;	99% & -26 dB Occupied Bandwidth	Compliance
§ 2.1051; § 22.917(a); § 24.238(a);	Spurious Emissions at Antenna Terminal	Compliance
§ 2.1053; § 22.917(a); § 24.238(a);	Field Strength of Spurious Radiation	Compliance
§ 22.917(a); § 24.238(a);	Out of band emission, Band Edge	Compliance
§ 2.1055; § 22.355; § 24.235;	Frequency stability vs. temperature Frequency stability vs. voltage	Compliance

Note: Testing was performed by configuring EUT to maximum output power status, the declared output power class for different

### Measurement Uncertainty

Emissions		
Test Item	Description	Uncertainty
Band Edge and Radiated Spurious Emissions	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m)	+5.6dB/-4.5dB
-	-	-



## **6. MEASUREMENTS, EXAMINATION AND DERIVED RESULTS**

### **6.1 RF Exposure (SAR)**

Test Result: Pass

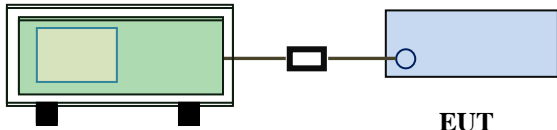
The EUT is a portable device, thus requires SAR evaluation;  
Please refer to RF Exposure Evaluation Report: 15071290-FCC-H.

## 6.2 RF Output Power

Temperature	24°C
Relative Humidity	59%
Atmospheric Pressure	1007mbar
Test date :	January 07, 2016
Tested By :	Winnie Zhang

### Requirement(s):

Spec	Item	Requirement	Applicable
§22.913 (a)	a)	ERP:38.45dBm	<input checked="" type="checkbox"/>
§24.232 (c)	b)	EIRP:33dBm	<input checked="" type="checkbox"/>

Test Setup	 <p style="text-align: center;">Base Station                      EUT</p>
------------	--

Test Procedure	<p>For Conducted Power:</p> <ul style="list-style-type: none"> <li>- The transmitter output port was connected to base station.</li> <li>- Set EUT at maximum power through base station.</li> <li>- Select lowest, middle, and highest channels for each band and different test mode.</li> </ul> <p>For ERP/EIRP:</p> <ul style="list-style-type: none"> <li>- According with KDB 971168 v02r02</li> <li>- The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.</li> <li>- The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.</li> <li>- The frequency range up to tenth harmonic of the fundamental frequency was investigated.</li> </ul>
----------------	---

Test Report	15071290-FCC-R1
Page	11 of 49

	<ul style="list-style-type: none"> <li>- Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.</li> <li>- Spurious emissions in dB = 10 log (TX power in Watts/0.001) – the absolute level</li> <li>- Spurious attenuation limit in dB = 43 + 10 Log10 (power out in Watts).</li> </ul>
Remark	
Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail

Test Data ☒ Yes ☐ N/A

Test Plot ☐ Yes (See below) ☒ N/A

## Conducted Power

### GSM Mode:

Burst Average Power (dBm);								
Band	GSM850				PCS1900			
Channel	128	190	251	Tune up Power tolerant	512	661	810	Tune up Power tolerant
Frequency (MHz)	824.2	836.6	848.8	/	1850.2	1880	1909.8	/
GSM Voice (1 uplink),GMSK	<b>33.16</b>	33.14	33.10	33±1	<b>30.57</b>	30.56	30.56	30.5±1
GPRS Multi-Slot Class 8 (1 uplink),GMSK	33.09	33.13	33.14	33±1	30.55	30.54	30.56	30.5±1
GPRS Multi-Slot Class 10 (2 uplink) GMSK	32.19	32.25	32.24	32±1	29.57	29.56	29.59	29.5±1
GPRS Multi-Slot Class 12 (4 uplink) GMSK	29.48	29.25	29.54	29±1	26.85	26.87	26.88	26.5±1
EGPRS Multi-Slot Class 8 (1 uplink) GMSK MCS1	33.06	33.12	33.13	33±1	30.54	30.53	30.54	30.5±1
EGPRS Multi-Slot Class 10 (2 uplink) GMSK MCS1	32.14	32.21	32.19	32±1	29.55	29.56	29.59	29.5±1
EGPRS Multi-Slot Class 12 (4 uplink) GMSK MCS1	29.45	29.53	29.50	29±1	26.85	26.88	26.87	26.5±1

Remark :

GPRS, CS1 coding scheme.

EGPRS, MCS1 coding scheme.

Multi-Slot Class 8 , Support Max 4 downlink, 1 uplink , 5 working link

Multi-Slot Class 10 , Support Max 4 downlink, 2 uplink , 5 working link

Multi-Slot Class 12 , Support Max 4 downlink, 4 uplink , 5 working link

**Note: Since GSM mode has higher power, so the test items below were not performed to GPRS and EGPRS mode.**

## UMTS Mode:

### UMTS-FDD Band II

Band/ Time Slot configuration	Channel	Frequency	Average power (dBm)	Tune up Power tolerant
RMC 12.2kbps	9262	1852.4	22.14	22±1
	9400	1880	<b>22.17</b>	22±1
	9538	1907.6	22.11	22±1
HSDPA Subtest1	9262	1852.4	21.45	21.3±1
	9400	1880	21.46	21.3±1
	9538	1907.6	21.35	21.3±1
HSDPA Subtest2	9262	1852.4	21.56	21.3±1
	9400	1880	21.48	21.3±1
	9538	1907.6	21.59	21.3±1
HSDPA Subtest3	9262	1852.4	21.47	21.3±1
	9400	1880	21.46	21.3±1
	9538	1907.6	21.43	21.3±1
HSDPA Subtest4	9262	1852.4	21.52	21.3±1
	9400	1880	21.52	21.3±1
	9538	1907.6	21.52	21.3±1
HSUPA Subtest1	9262	1852.4	21.46	21.3±1
	9400	1880	21.49	21.3±1
	9538	1907.6	21.58	21.3±1
HSUPA Subtest2	9262	1852.4	21.51	21.3±1
	9400	1880	21.54	21.3±1
	9538	1907.6	21.46	21.3±1
HSUPA Subtest3	9262	1852.4	21.46	21.3±1
	9400	1880	21.45	21.3±1
	9538	1907.6	21.43	21.3±1
HSUPA Subtest4	9262	1852.4	21.48	21.3±1
	9400	1880	21.42	21.3±1
	9538	1907.6	21.42	21.3±1
HSUPA Subtest5	9262	1852.4	21.44	21.3±1
	9400	1880	21.49	21.3±1
	9538	1907.6	21.45	21.3±1

## ERP & EIRP

### ERP for Cellular Band (Part 22H)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
824.2	21.18	V	6.8	0.53	27.45	38.45
824.2	19.43	H	6.8	0.53	25.70	38.45
836.6	21.24	V	6.8	0.53	<b>27.51</b>	38.45
836.6	19.49	H	6.8	0.53	25.76	38.45
848.8	21.13	V	6.9	0.53	27.50	38.45
848.8	19.37	H	6.9	0.53	25.74	38.45

### EIRP for PCS Band (Part 24E)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
1850.2	23.39	V	7.88	0.85	30.42	33
1850.2	21.72	H	7.88	0.85	28.75	33
1880	23.41	V	7.88	0.85	<b>30.44</b>	33
1880	21.76	H	7.88	0.85	28.79	33
1909.8	23.38	V	7.86	0.85	30.39	33
1909.8	21.71	H	7.86	0.85	28.72	33

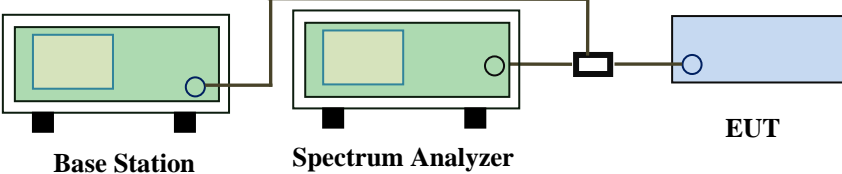
### EIRP for UMTS-FDD Band II (Part 24E)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
1852.4	14.86	V	7.88	0.85	21.89	33
1852.4	13.22	H	7.88	0.85	20.25	33
1880	14.93	V	7.88	0.85	<b>21.96</b>	33
1880	13.27	H	7.88	0.85	20.30	33
1907.6	14.84	V	7.86	0.85	21.85	33
1907.6	13.21	H	7.86	0.85	20.22	33

### 6.3 Peak-Average Ratio

Temperature	24°C
Relative Humidity	59%
Atmospheric Pressure	1007mbar
Test date :	January 07, 2016
Tested By :	Winnie Zhang

Requirement(s):

Spec	Item	Requirement	Applicable
§24.232(d)	a)	The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.	<input checked="" type="checkbox"/>
Test Setup			
Test Procedure	<p><b>According with KDB 971168 v02r02</b></p> <ol style="list-style-type: none"> <li>1. The signal analyzer' s CCDF measurement profile is enabled</li> <li>2. Frequency = carrier center frequency</li> <li>3. Measurement BW &gt; Emission bandwidth of signal</li> <li>4. The signal analyzer was set to collect one million samples to generate the CCDF curve</li> <li>5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (&gt;98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal “ RF Burst” trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the “ on time” of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power</li> </ol>		
Remark			
Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail		

Test Data    ☒ Yes      ☐ N/A

Test Plot    ☐ Yes (See below)      ☒ N/A



### GSM 1900 PK-AV POWER(PART 24E)

Frequency (MHz)	Conducted power(dBm)		Peak-Average Ratio(PAR)
	Peak	Average	
1850.2	32.59	30.56	2.03
1880	32.86	30.56	2.30
1909.8	32.49	30.57	1.92

### UMTS-FDD Band II PK-AV POWER(PART 24E)

Frequency (MHz)	Conducted power(dBm)		Peak-Average Ratio(PAR)
	Peak	Average	
1852.4	28.16	22.14	6.02
1880	28.54	22.17	6.37
1907.6	28.15	22.11	6.04

## 6.4 Occupied Bandwidth

Temperature	24°C
Relative Humidity	59%
Atmospheric Pressure	1007mbar
Test date :	January 07, 2016
Tested By :	Winnie Zhang

### Requirement(s):

Spec	Item	Requirement	Applicable
§2.1049, §22.917, §22.905 §24.238	a)	99% Occupied Bandwidth(kHz)	<input checked="" type="checkbox"/>
	b)	26 dB Bandwidth(kHz)	<input checked="" type="checkbox"/>
Test Setup	<p>Base Station      Spectrum Analyzer      EUT</p>		
Test Procedure	<ul style="list-style-type: none"> <li>- The EUT was connected to Spectrum Analyzer and Base Station via power divider.</li> <li>- The 99% and 26 dB occupied bandwidth (BW) of the middle channel for the highest RF powers.</li> </ul>		
Remark			
Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail		

Test Data ☒ Yes      ☐ N/A

Test Plot ☒ Yes (See below)      ☐ N/A

### Cellular Band (Part 22H) result

Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Bandwidth (kHz)
128	824.2	245.2009	317.036
190	836.6	244.5750	306.801
251	848.8	244.9446	322.689

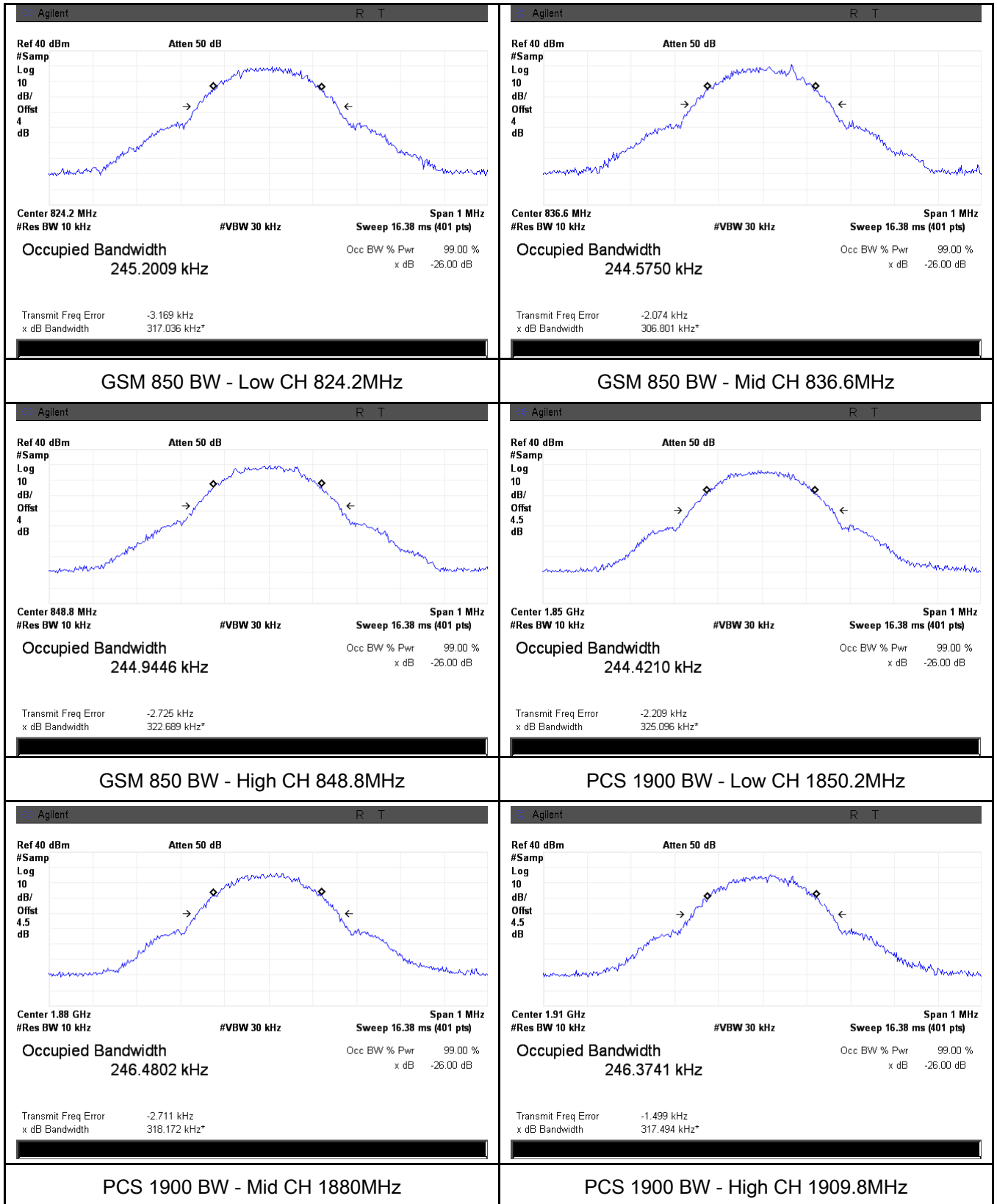
### PCS Band (Part 24E) result

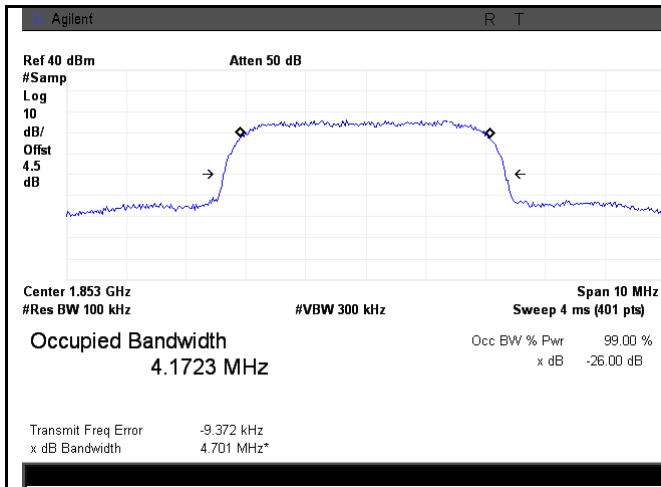
Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Bandwidth (kHz)
512	1850.2	244.4210	325.096
661	1880.0	246.4802	318.172
810	1909.8	246.3741	317.494

### UMTS-FDD Band II (Part 24E)

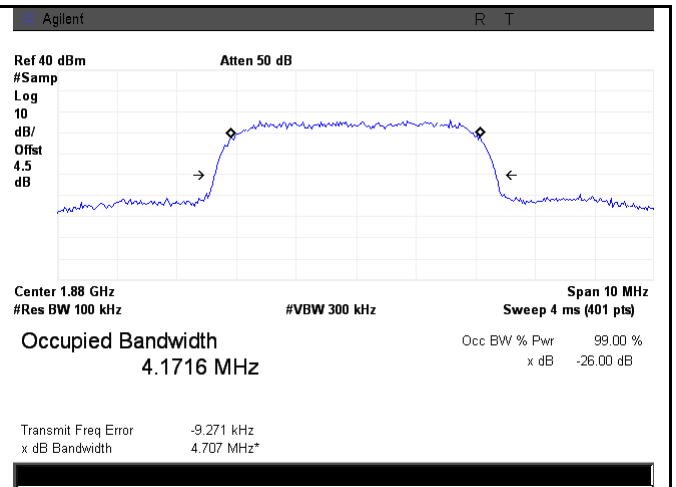
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
9262	1852.4	4.1723	4.701
9400	1880.0	4.1716	4.707
9538	1907.6	4.1653	4.709

## Test Plots

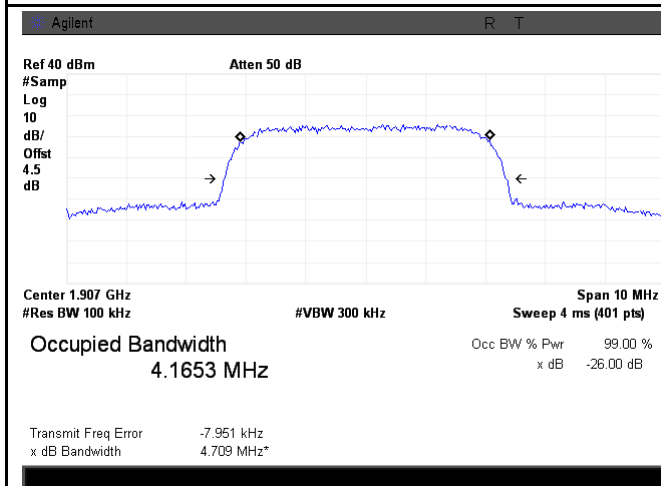




Band II BW - Low CH 1852.4MHz



Band II BW - Mid CH 1880MHz



Band II BW - High CH 1907.6MHz

## 6.5 Spurious Emissions at Antenna Terminals

Temperature	24°C
Relative Humidity	59%
Atmospheric Pressure	1007mbar
Test date :	January 07, 2016
Tested By :	Winnie Zhang

### Requirement(s):

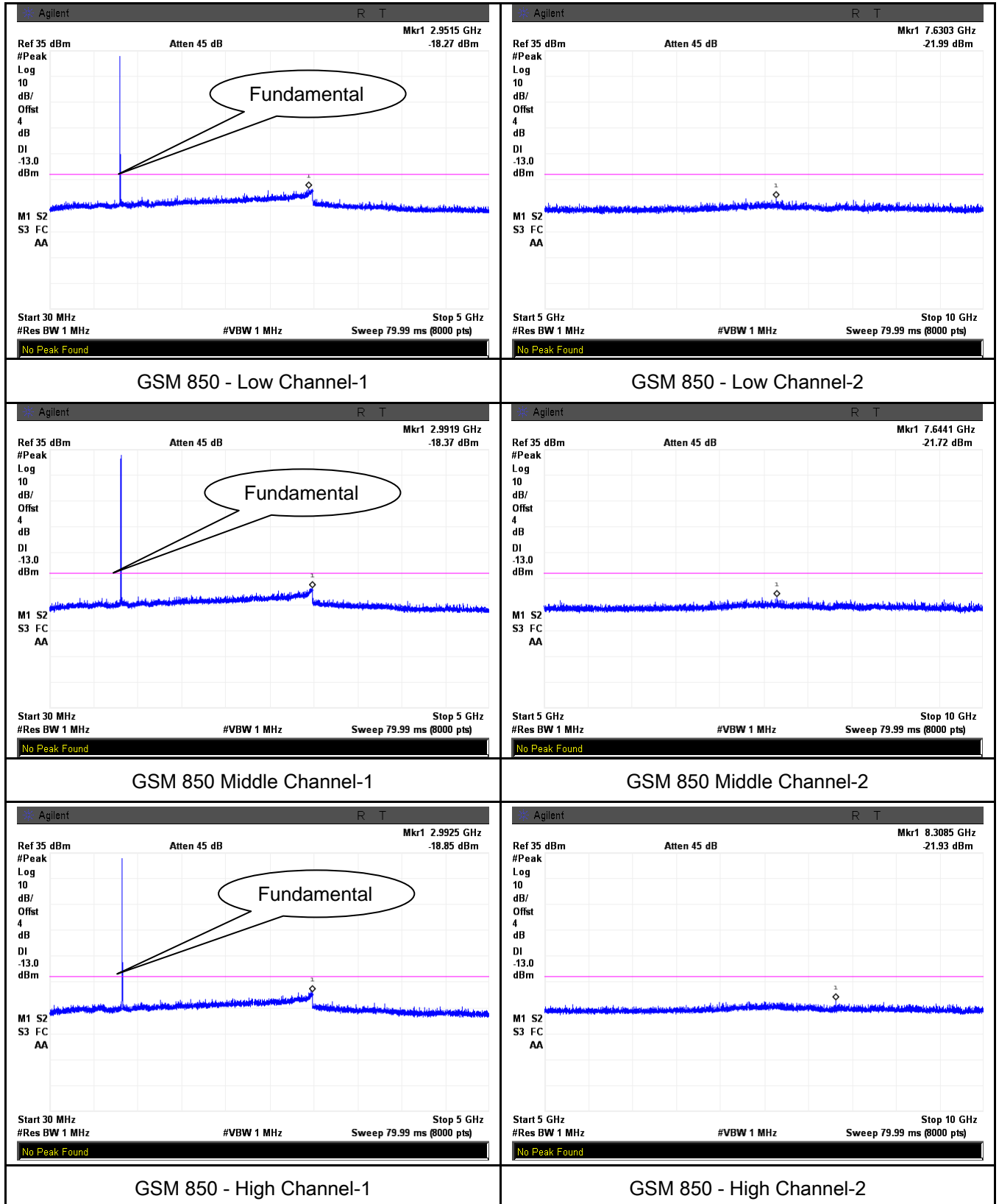
Spec	Item	Requirement	Applicable
§2.1051, §22.917(a)& §24.238(a)	a)	The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB	<input checked="" type="checkbox"/>
Test Setup	<p style="text-align: center;">Base Station      Spectrum Analyzer      EUT</p>		
Test Procedure	<ul style="list-style-type: none"> <li>- The EUT was connected to Spectrum Analyzer and Base Station via power divider.</li> <li>- The Band Edges of low and high channels for the highest RF powers were measured.</li> <li>- Setting RBW as roughly BW/100.</li> </ul>		
Remark			
Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail		

Test Data    ☒ Yes      ☐ N/A

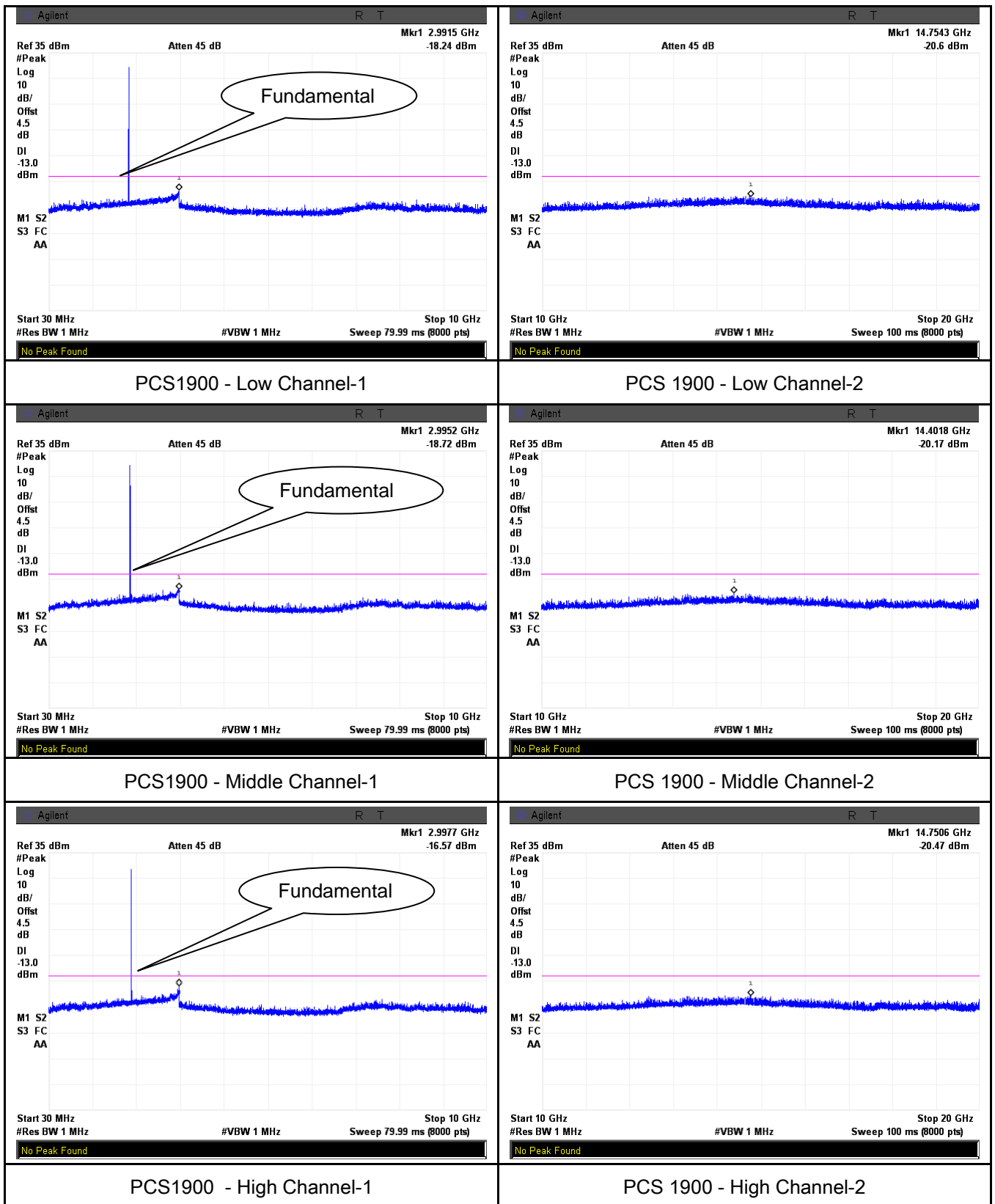
Test Plot    ☒ Yes (See below)      ☐ N/A

## Test Plots

### Cellular Band (Part 22H) result

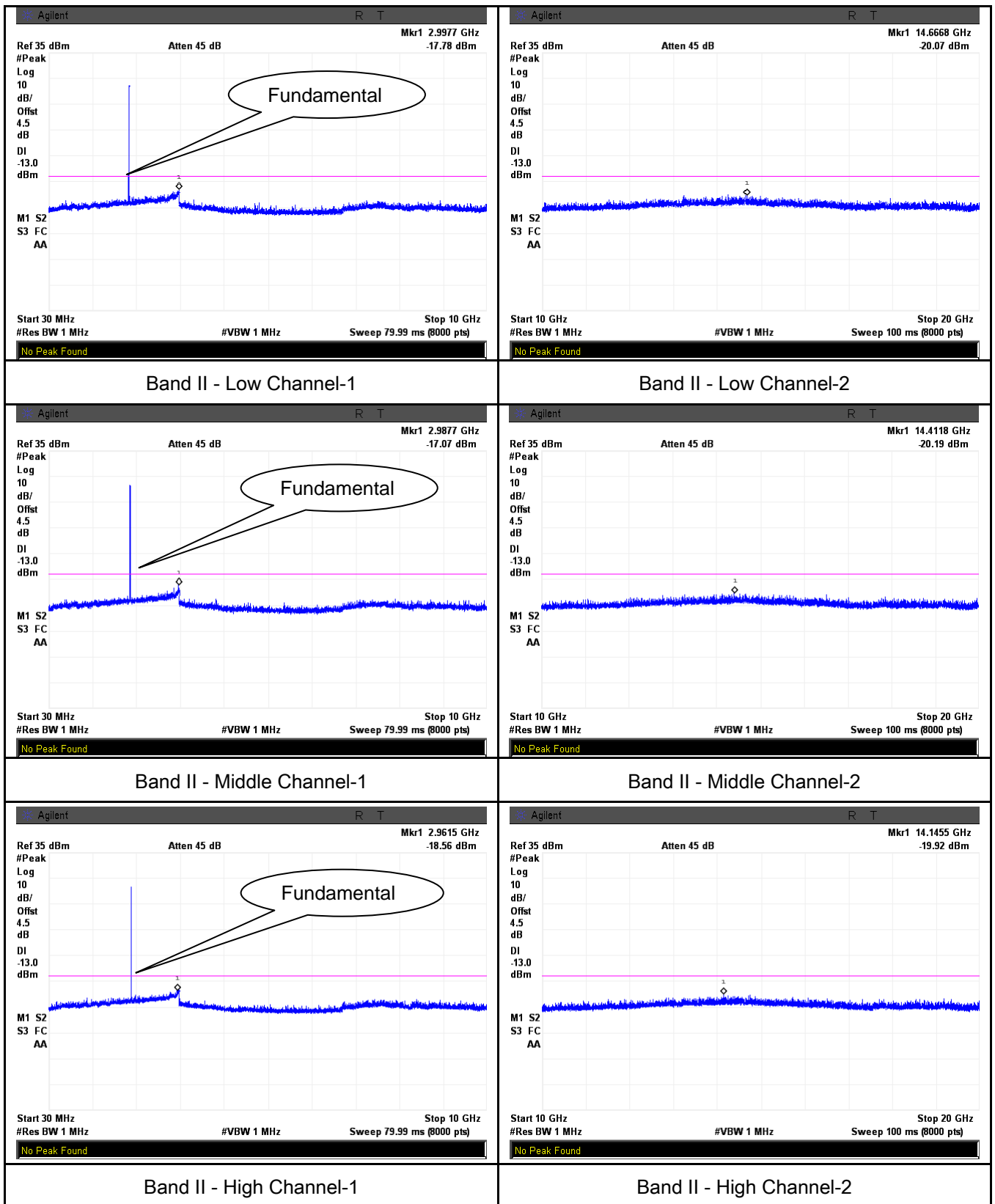


## PCS Band (Part24E) result





## UMTS-FDD Band II (Part 24E)



## 6.6 Spurious Radiated Emissions

Temperature	24°C
Relative Humidity	59%
Atmospheric Pressure	1007mbar
Test date :	January 07, 2016
Tested By :	Winnie Zhang

### Requirement(s):

Spec	Item	Requirement	Applicable
§2.1053, §22.917 & §24.238	a)	The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.	<input checked="" type="checkbox"/>

Test setup	
------------	--

Test Procedure	<ol style="list-style-type: none"> <li>The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.</li> <li>The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.</li> <li>Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.</li> </ol> <p>Sample Calculation:</p> <p>EUT Field Strength = Raw Amplitude (dBμV/m) – Amplifier Gain (dB) + Antenna Factor (dB) + Cable Loss (dB) + Filter Attenuation (dB, if used)</p>
----------------	---

Test Report	15071290-FCC-R1
Page	27 of 49

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

Test Data ☒ Yes ☐ N/A

Test Plot ☐ Yes (See below) ☒ N/A

## Cellular Band (Part 22H) result

### Low channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1648.4	-43.59	V	7.95	0.78	-36.42	-13	-23.42
1648.4	-44.61	H	7.95	0.78	-37.44	-13	-24.44
319.3	-49.38	V	6.5	0.3	-43.18	-13	-30.18
695.8	-50.72	H	6.9	0.44	-44.26	-13	-31.26

### Middle channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1673.2	-43.66	V	7.95	0.78	-36.49	-13	-23.49
1673.2	-44.57	H	7.95	0.78	-37.4	-13	-24.40
319.7	-49.42	V	6.5	0.3	-43.22	-13	-30.22
695.4	-50.65	H	6.9	0.44	-44.19	-13	-31.19

### High channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1697.6	-43.61	V	7.95	0.78	-36.44	-13	-23.44
1697.6	-44.52	H	7.95	0.78	-37.35	-13	-24.35
319.4	-49.48	V	6.5	0.3	-43.28	-13	-30.28
695.7	-50.55	H	6.9	0.44	-44.09	-13	-31.09

#### Note:

- 1, The testing has been conformed to  $10 \times 848.8 \text{ MHz} = 8,488 \text{ MHz}$
- 2, All other emissions more than 30 dB below the limit

## PCS Band (Part24E) result

### Low channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
3700.4	-44.66	V	10.25	2.73	-37.14	-13	-24.14
3700.4	-45.49	H	10.25	2.73	-37.97	-13	-24.97
318.6	-50.15	V	6.5	0.3	-43.95	-13	-30.95
694.9	-50.83	H	6.9	0.44	-44.37	-13	-31.37

### Middle channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
3760	-44.61	V	10.25	2.73	-37.09	-13	-24.09
3760	-45.52	H	10.25	2.73	-38.00	-13	-25.00
318.5	-50.26	V	6.5	0.3	-44.06	-13	-31.06
694.3	-50.77	H	6.9	0.44	-44.31	-13	-31.31

### High channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
3819.6	-44.57	V	10.36	2.73	-36.94	-13	-23.94
3819.6	-45.49	H	10.36	2.73	-37.86	-13	-24.86
318.9	-50.33	V	6.5	0.3	-44.13	-13	-31.13
695.2	-50.71	H	6.9	0.44	-44.25	-13	-31.25

#### Note:

- 1, The testing has been conformed to  $10 \times 1909.8 \text{ MHz} = 19,098 \text{ MHz}$
- 2, All other emissions more than 30 dB below the limit

## UMTS-FDD Band II (Part 24E)

### Low channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
3704.8	-47.96	V	10.25	2.73	-40.44	-13	-27.44
3704.8	-48.81	H	10.25	2.73	-41.29	-13	-28.29
319.1	-51.24	V	6.5	0.3	-45.04	-13	-32.04
695.7	-51.59	H	6.9	0.44	-45.13	-13	-32.13

### Middle channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
3760	-47.94	V	10.25	2.73	-40.42	-13	-27.42
3760	-48.76	H	10.25	2.73	-41.24	-13	-28.24
319.3	-51.18	V	6.5	0.3	-44.98	-13	-31.98
695.8	-51.63	H	6.9	0.44	-45.17	-13	-32.17

### High channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
3815.2	-47.86	V	10.36	2.73	-40.23	-13	-27.23
3815.2	-48.72	H	10.36	2.73	-41.09	-13	-28.09
319.5	-51.22	V	6.5	0.3	-45.02	-13	-32.02
695.2	-51.58	H	6.9	0.44	-45.12	-13	-32.12

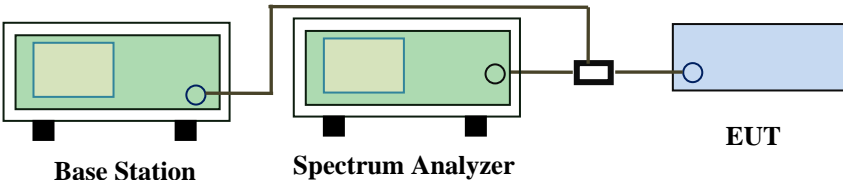
#### Note:

- 1, The testing has been conformed to  $10 \times 1907.6 \text{ MHz} = 19,076 \text{ MHz}$
- 2, All other emissions more than 30 dB below the limit

## 6.7 Band Edge

Temperature	23°C
Relative Humidity	58%
Atmospheric Pressure	1006mbar
Test date :	January 06, 2016
Tested By :	Winnie Zhang

### Requirement(s):

Spec	Item	Requirement	Applicable
§22.917(a) §24.238(a)	a)	The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB.	<input checked="" type="checkbox"/>
Test setup	 <p style="text-align: center;">Base Station      Spectrum Analyzer      EUT</p>		
Procedure	<ul style="list-style-type: none"> <li>- The EUT was connected to Spectrum Analyzer and Base Station via power divider.</li> <li>- The Band Edges of low and high channels for the highest RF powers were measured. Setting RBW as roughly BW/100.</li> </ul>		
Remark			
Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail		

Test Data    ☒ Yes      ☐ N/A

Test Plot    ☒ Yes (See below)      ☐ N/A

### Cellular Band (Part 22H) result

Frequency (MHz)	Emission (dBm)	Limit (dBm)
823.9875	-19.47	-13
849.0175	-18.28	-13

### PCS Band (Part24E) result

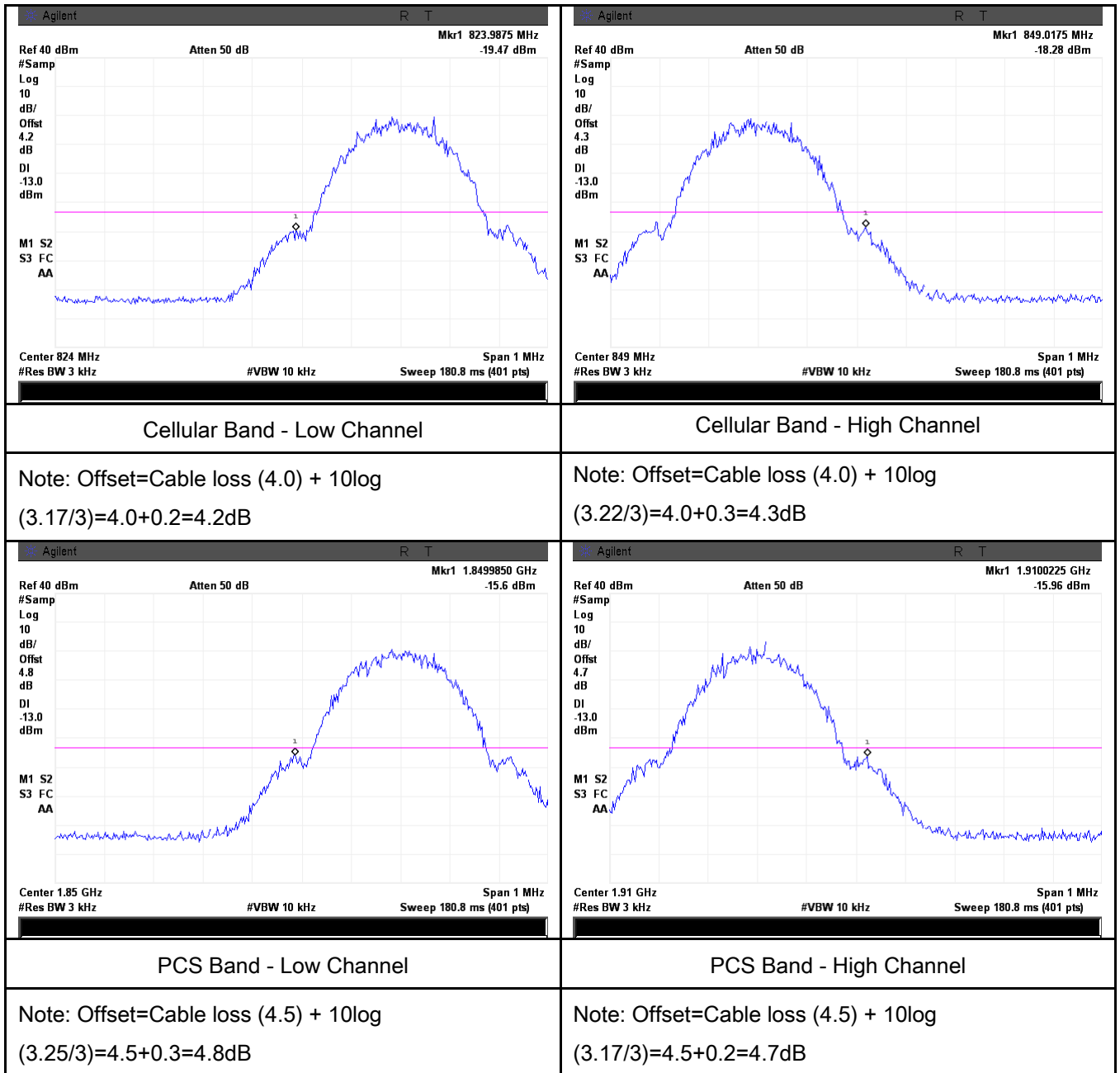
Frequency (MHz)	Emission (dBm)	Limit (dBm)
1849.9850	-15.60	-13
1910.0225	-15.96	-13

### UMTS-FDD Band II (Part 24E)

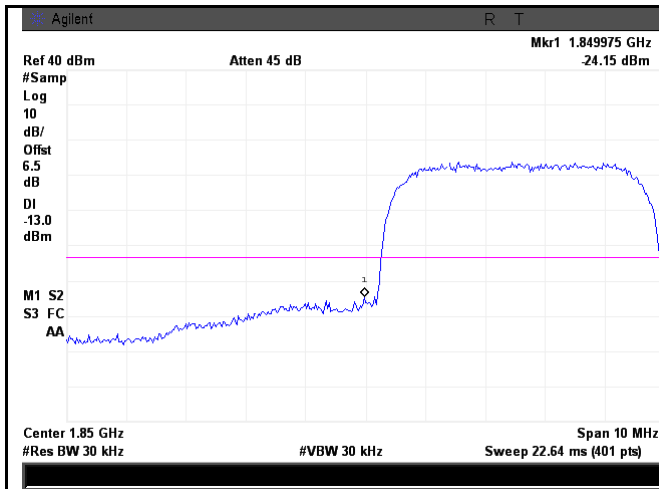
Frequency (MHz)	Emission (dBm)	Limit (dBm)
1849.975	-24.15	-13
1910.025	-22.70	-13



## Test Plots

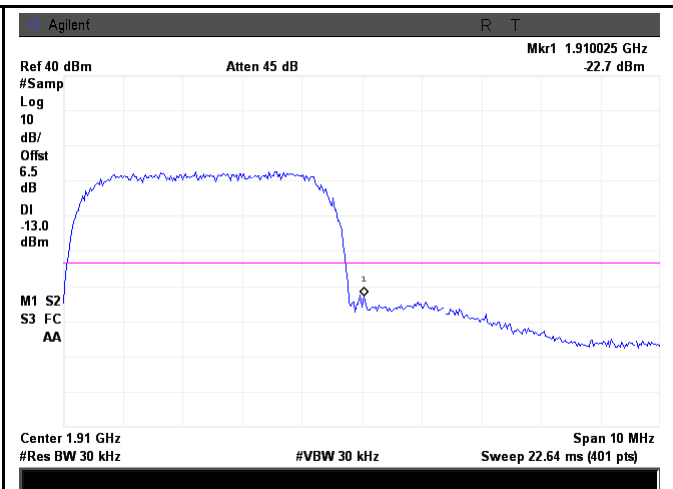


Test Report	15071290-FCC-R1
Page	34 of 49



UMTS-FDD Band II - Low Channel

Note: Offset=Cable loss (4.5) + 10log  
(47.01/30)=4.5+2.0=6.5 dB




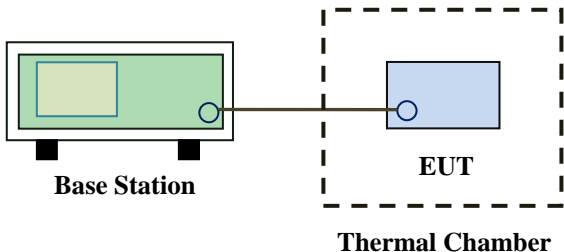
UMTS-FDD Band II - High Channel

Note: Offset=Cable loss (4.5) + 10log  
(47.09/30)=4.5+2.0=6.5 dB

## 6.8 Frequency Stability

Temperature	23°C
Relative Humidity	58%
Atmospheric Pressure	1006mbar
Test date :	January 06, 2016
Tested By :	Winnie Zhang

### 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>.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 29.</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	.0	821 to 896	1.5	2.5	2.5	928 to 29.	5.0	N/A	N/A	929 to 960.	1.5	N/A	N/A	2110 to 2220	10.0	N/A	N/A	
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	.0																																
821 to 896	1.5	2.5	2.5																																
928 to 29.	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 style="text-align: center;">Base Station                      EUT Thermal Chamber</p>																																		

Test Report	15071290-FCC-R1
Page	36 of 49

Procedure	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. Limit: The frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ ( $\pm 2.5\text{ppm}$ ) of the center frequency.
Remark	
Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail

Test Data ☒ Yes ☐ N/A

Test Plot ☐ Yes (See below) ☒ N/A

### Cellular Band (Part 22H) result

Middle Channel, $f_0 = 836.6$ MHz				
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-10	3.7	21	0.0251	2.5
0		20	0.0239	2.5
10		22	0.0263	2.5
20		21	0.0251	2.5
30		17	0.0203	2.5
40		16	0.0191	2.5
50		15	0.0179	2.5
55		26	0.0311	2.5
25	4.2	20	0.0239	2.5
	3.5	21	0.0251	2.5

### PCS Band (Part 24E) result

Middle Channel, $f_0 = 1880$ MHz				
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-10	3.7	21	0.0112	2.5
0		24	0.0128	2.5
10		15	0.0080	2.5
20		15	0.0080	2.5
30		19	0.0101	2.5
40		17	0.0090	2.5
50		22	0.0117	2.5
55		22	0.0117	2.5
25	4.2	21	0.0112	2.5
	3.5	23	0.0122	2.5

### UMTS-FDD Band II (Part 24E)

Middle Channel, $f_0 = 1880$ MHz				
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-10	3.7	18	0.0096	2.5
0		16	0.0085	2.5
10		10	0.0053	2.5
20		11	0.0059	2.5
30		10	0.0053	2.5
40		12	0.0064	2.5
50		11	0.0059	2.5
55		13	0.0069	2.5
25	4.2	10	0.0053	2.5
	3.5	13	0.0069	2.5

## Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Due	In use
<b>RF Conducted Test</b>					
Agilent ESA-E SERIES SPECTRUM ANALYZER	E4407B	MY45108319	09/16/2015	09/15/2016	<input checked="" type="checkbox"/>
Power Splitter	1#	1#	09/01/2015	08/31/2016	<input checked="" type="checkbox"/>
Universal Radio Communication Tester	CMU200	121393	09/25/2015	09/24/2016	<input checked="" type="checkbox"/>
Temperature/Humidity Chamber	UHL-270	001	10/09/2015	10/08/2016	<input checked="" type="checkbox"/>
DC Power Supply	E3640A	MY40004013	09/17/2015	09/16/2016	<input checked="" type="checkbox"/>
<b>Radiated Emissions</b>					
EMI test receiver	ESL6	100262	09/17/2015	09/16/2016	<input checked="" type="checkbox"/>
OPT 010 AMPLIFIER (0.1-1300MHz)	8447E	2727A02430	09/01/2015	08/31/2016	<input checked="" type="checkbox"/>
Microwave Preamplifier (1 ~ 26.5GHz)	8449B	3008A02402	03/25/2015	03/24/2016	<input checked="" type="checkbox"/>
Bilog Antenna (30MHz~6GHz)	JB6	A110712	09/21/2015	09/20/2016	<input checked="" type="checkbox"/>
Bilog Antenna (30MHz~2GHz)	JB1	A112017	09/21/2015	09/20/2016	<input checked="" type="checkbox"/>
Double Ridge Horn Antenna (1 ~18GHz)	AH-118	71259	09/24/2015	09/23/2016	<input checked="" type="checkbox"/>
Double Ridge Horn Antenna (1 ~18GHz)	AH-118	71283	09/24/2015	09/23/2016	<input checked="" type="checkbox"/>
SYNTHESIZED SIGNAL GENERATOR	8665B	3744A01293	09/17/2015	09/16/2016	<input checked="" type="checkbox"/>
Tunable Notch Filter	3NF-800/1000-S	AA4	09/01/2015	08/31/2016	<input checked="" type="checkbox"/>
Tunable Notch Filter	3NF-1000/2000-S	AM 4	09/01/2015	08/31/2016	<input checked="" type="checkbox"/>

## Annex B. EUT And Test Setup Photographs

### Annex B.i. Photograph: EUT External Photo







EUT - Top View



EUT - Bottom View



EUT - Left View



EUT - Right View



**Annex B.ii. Photograph: EUT Internal Photo**



Cover Off - Top View 1



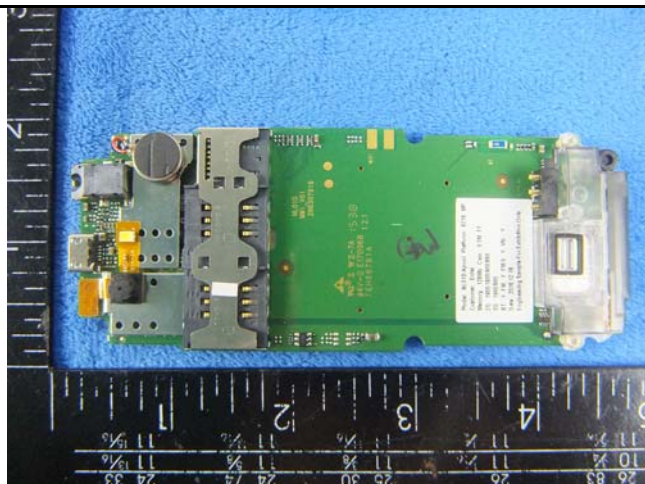
Cover Off - Top View 2



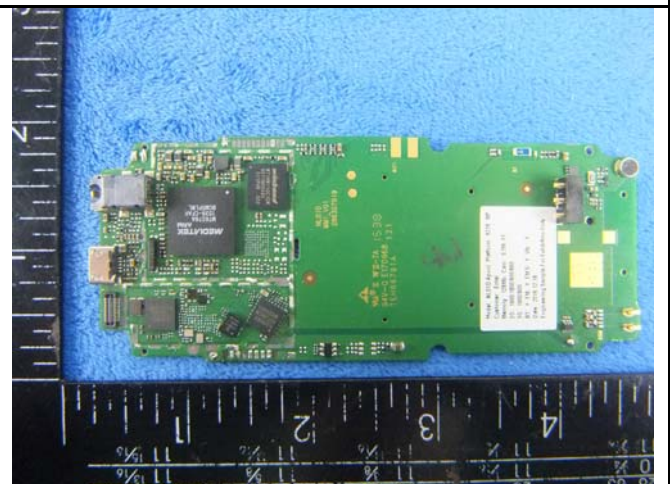
Battery - Front View



Battery - Rear View

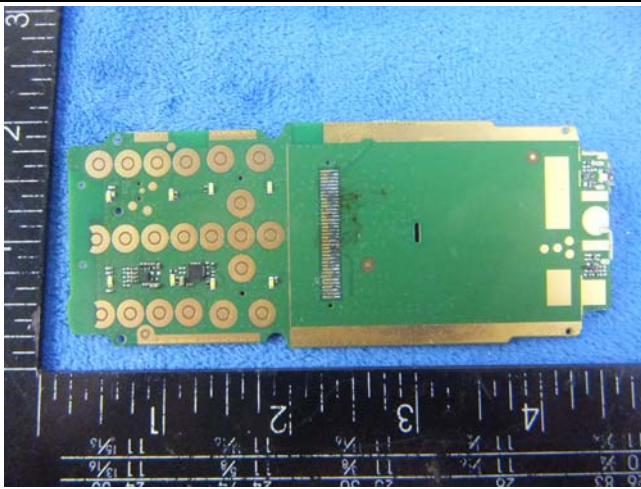


Mainboard with Shielding - Front View

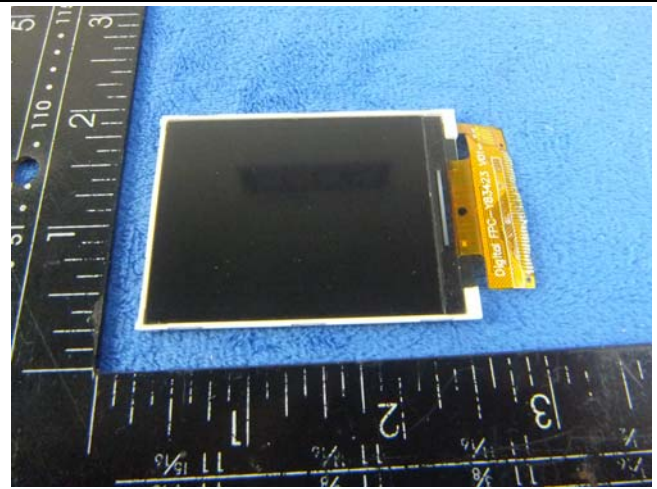


Mainboard without Shielding - Front View

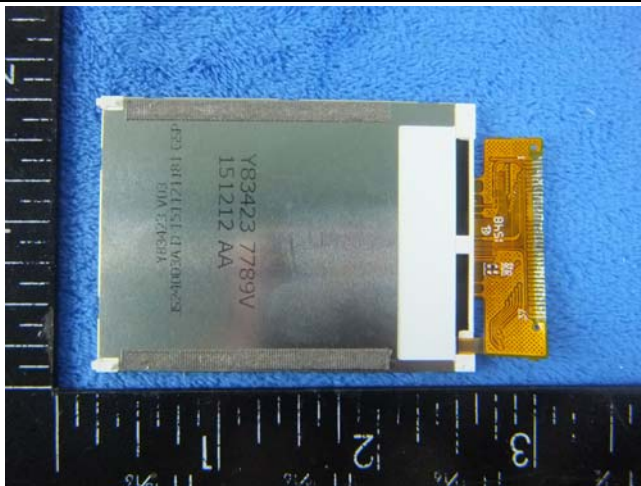




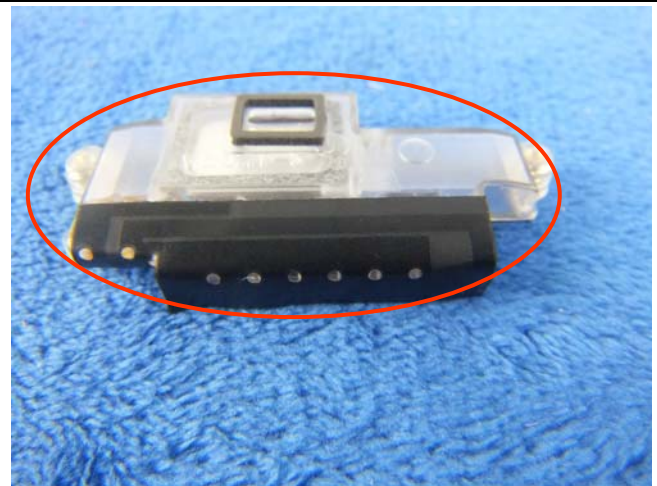
Mainboard – Rear View



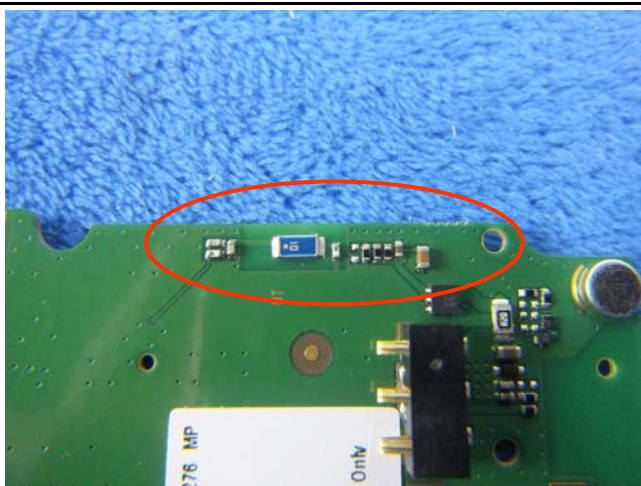
LCD – Front View



LCD – Rear View

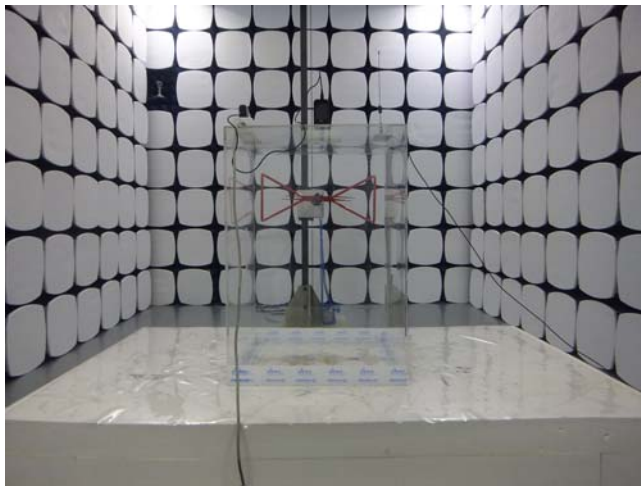


GSM/PCS/UMTS-FDD Antenna View

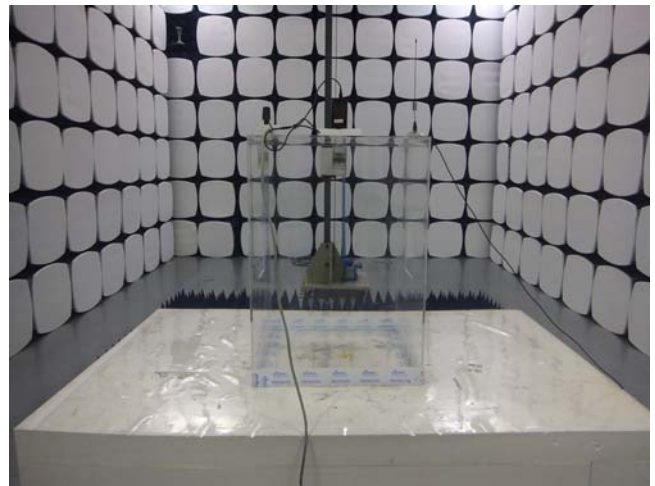


BT - Antenna View

**Annex B.iii. Photograph: Test Setup Photo**



Radiated Spurious Emissions Test Setup Below 1GHz

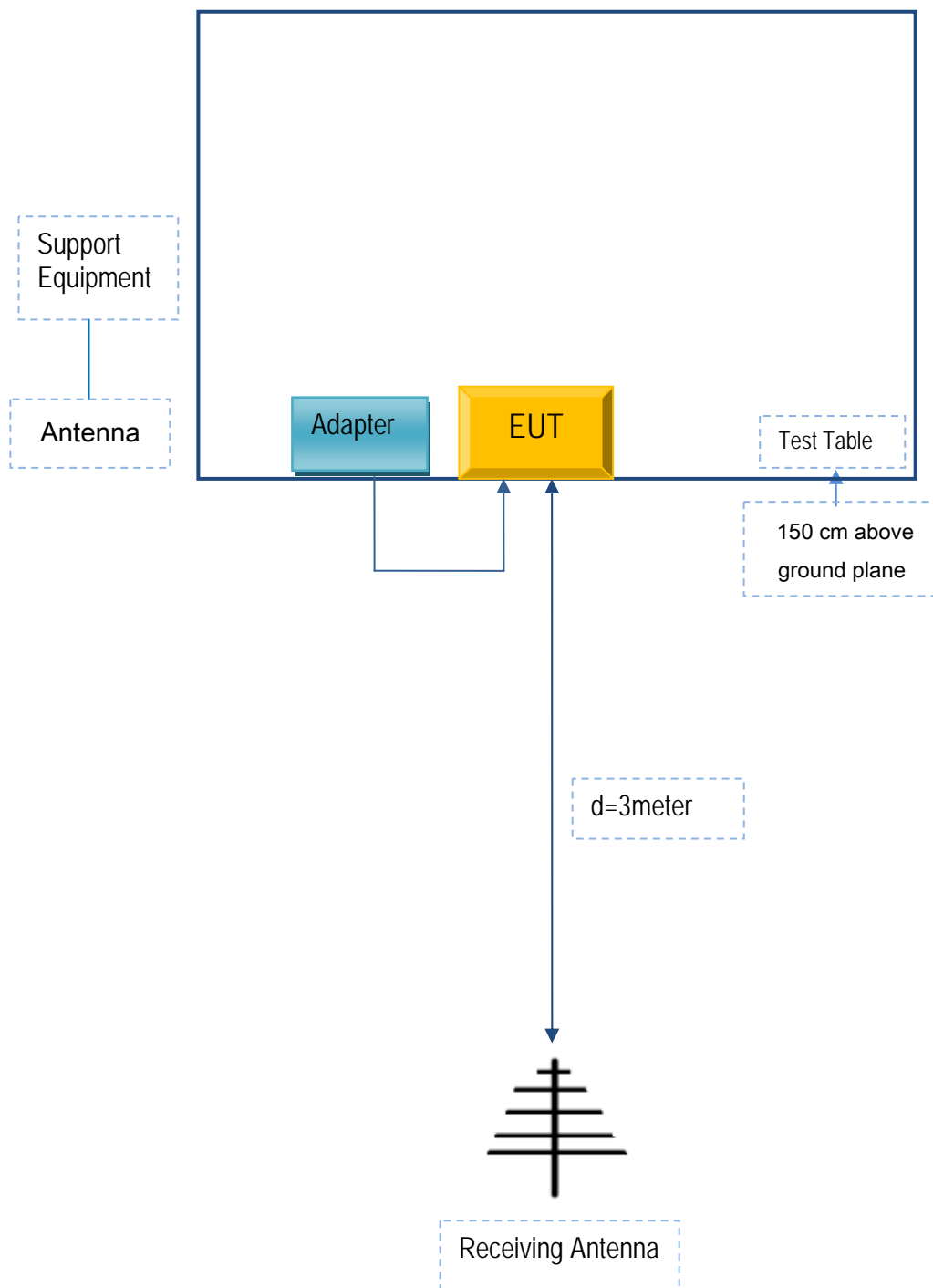


Radiated Spurious Emissions Test Setup Above  
1GHz

## 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
MOBIWIRE MOBILES (NINGBO) CO.,LTD	Adapter	A31-500550	ST214113

### **Supporting Cable:**

Cable type	Shield Type	Ferrite Core	Length	Serial No
AC cable	Un-shielding	No	0.8m	ST214113

Test Report	15071290-FCC-R1
Page	47 of 49

## Annex C.ii. EUT OPERATING CONKITIONS

N/A

Test Report	15071290-FCC-R1
Page	48 of 49

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

Please see attachment



Test Report	15071290-FCC-R1
Page	49 of 49

## Annex E. DECLARATION OF SIMILARITY

N/A