

FCC

RF

TEST REPORT

ISSUED BY  
Shenzhen BALUN Technology Co., Ltd.



FOR  
**Mobile Phone**

ISSUED TO  
Shenzhen Huadoo Bright Group Limited

Room 13E, jinsong Buiding, Tai ran 4th Rood, chegong miao, Futian District, Shenzhen



Report No.: BL-SZ1480032-604

EUT Type: Mobile Phone

Model Name: Huadoo V3

Brand Name: Huadoo

Test Standard: 47 CFR Part 2

47 CFR Part 22 Subpart H

47 CFR Part 24 Subpart E

47 CFR Part 27 Subpart L

2ACXS-V3

FCC ID:

Test conclusion: PASS

Test Date: Aug 20, 2014 ~ Oct 17, 2014

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Date: *Nov 3, 2014*



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**Revision History**

Version	Issue Date	Revisions
Rev. 01	Oct 17, 2014	Initial Issue
Rev. 02	Nov 3, 2014	The Second Issue

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# 1 ADMINISTRATIVE DATA (GENERAL INFORMATION)

## Identification of the Testing Laboratory

Company Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Phone Number	+86 755 6683 3402
Fax Number	+86 755 6182 4271

### 1.1 Identification of the Responsible Testing Location

Test Location	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Accreditation Certificate	The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are 11524A-1. The laboratory has been listed by US Federal Communications Commission to perform electromagnetic emission measurements. The recognition numbers of test site are 832625. The laboratory has met the requirements of the IAS Accreditation Criteria for Testing Laboratories (AC89), has demonstrated compliance with ISO/IEC Standard 17025:2005. The accreditation certificate number is TL-588. The laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L6791.
Description	All measurement facilities used to collect the measurement data are located at Block B, FL 1, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China 518055

### 1.2 Test Environment Condition

Ambient Temperature	15 to 35°C
Ambient Relative Humidity	30 to 60%
Ambient Pressure	86 to 106 kPa

### 1.3 Announce

- (1) The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
- (2) The test report is invalid if there is any evidence and/or falsification.
- (3) The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.
- (4) This document may not be altered or revised in any way unless done so by BALUN and all revisions are duly noted in the revisions section.
- (5) 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.

## 2 PRODUCT INFORMATION

### 2.1 Applicant

Applicant	Shenzhen Huadoo Bright Group Limitied
Address	Room 13E, jinsong Buiding, Tai ran 4th Rood, chegong miao, Futian Distrct, Shenzhen

### 2.2 Manufacturer

Manufacturer	Shenzhen Huadoo Bright Group Limitied
Address	Room 13E, jinsong Buiding, Tai ran 4th Rood, chegong miao, Futian Distrct, Shenzhen

### 2.3 General Description for Equipment under Test (EUT)

EUT Type	Mobile Phone
Model Name	Huadoo V3
Series Model Name	N/A
Hardware Version	GMAL
Software Version	Huadoo V1_Chinas_ENGLISH_13_V0.1_V2_20140708
Network and Wireless connectivity	GSM, WCDMA
About the Product	The equipment is Mobile Phone, intended for used with information technology equipment.

## 2.4 Technical Information

Frequency Bands	GSM 850/1900, WCDMA 850/1700
Modulation Type	GSM: GMSK GPRS: GMSK EGPRS: 8PSK WCDMA: QPSK
Tx Frequency Range	GSM 850: 824.20 - 848.80MHz (at intervals of 200kHz); GSM 1900: 1850.20 - 1909.80MHz (at intervals of 200kHz); WCDMA 850: 826.4 - 846.6MHz (at intervals of 200kHz) WCDMA 1700: 1712.4 - 1752.6MHz(at intervals of 200kHz)
Rx Frequency Range	GSM850: 869.20 - 893.80MHz (at intervals of 200kHz) GSM 1900: 1930.20 - 1989.80MHz (at intervals of 200kHz) WCDMA 850: 871.4 - 891.6MHz (at intervals of 200kHz) WCDMA 1700: 2112.4 - 2152.6MHz (at intervals of 200kHz)
Power Class	GSM 850: 4 GSM 1900: 1 WCDMA 850: 3 WCDMA 1700 :3
Multislot Class	GPRS: 12, EGPRS: 12
Antenna Type	PIFA Antenna
Antenna Gain	GSM 850: -1.25dBi GSM1900: -3.26dBi WCDMA850: -0.87dBi WCDMA1700: -2.28dBi

Note: The above EUT information in section 2.3 and 2.4 was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

## 2.5 Ancillary Equipment

Ancillary Equipment 1	Battery	
	Brand Name	N/A
	Model No	V3
	Serial No	(N/A. marked #1 by test site)
	Capacitance	2800mAh
	Rated Voltage	3.7V
	Extreme Voltage	Low: 3.5V / High: 4.2V
Ancillary Equipment 2	AC Adapter	
	Brand Name	N/A
	Model No	HJ-0501000
	Serial No	(N/A. marked #1 by test site)
	Rated Input	~ 100-240V, 0.15A, 50/60Hz
	Rated Output	= 5V, 1000mA
Ancillary Equipment 3	Earphone	
Ancillary Equipment 4	USB Cable	

### 3 SUMMARY OF TEST RESULTS

#### 3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 2 (5-25-14 Edition)	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	47 CFR Part 22 (8-20-14 Edition)	Public Mobile Services
3	47 CFR Part 24 (9-20-14 Edition)	Personal Communications Services
	47 CFR Part 27 (6-20-14 Edition)	Miscellaneous Wireless Communications Services
4	TIA/EIA 603.D-2010	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards

#### 3.2 Verdict

No.	Description	FCC Part No.	Test Result	Verdict
1	Conducted RF Output Power	2.1046	ANNEX A.1	PASS
2	Peak to average radio	22.234(d)	ANNEX A.2	PASS
3	Occupied Bandwidth	2.1049 27.53	ANNEX A.2	PASS
4	Frequency Stability	2.1055 22.355 24.235 27.54	ANNEX A.3	PASS
5	Conducted Out of Band Emissions	2.1051 2.1057 22.917 24.238 27.53	ANNEX A.4	PASS
6	Band Edge	2.1051 2.1057 22.917 24.238 27.53	ANNEX A.5	PASS
7	Transmitter Radiated Power (EIPR/ERP)	22.913 24.232 27.50	ANNEX A.6	PASS
8	Radiated Out of Band Emissions	2.1053 2.1057 22.917 24.238 27.53	ANNEX A.7	PASS

## 4 GENERAL TEST CONFIGURATIONS

### 4.1 Test Environments

During the measurement, the normal environmental conditions were within the listed ranges:

Relative Humidity (%)	30 - 60
Atmospheric Pressure (kPa)	86 - 106
Temperature(°C)	15 - 35

### 4.2 Test Equipment List

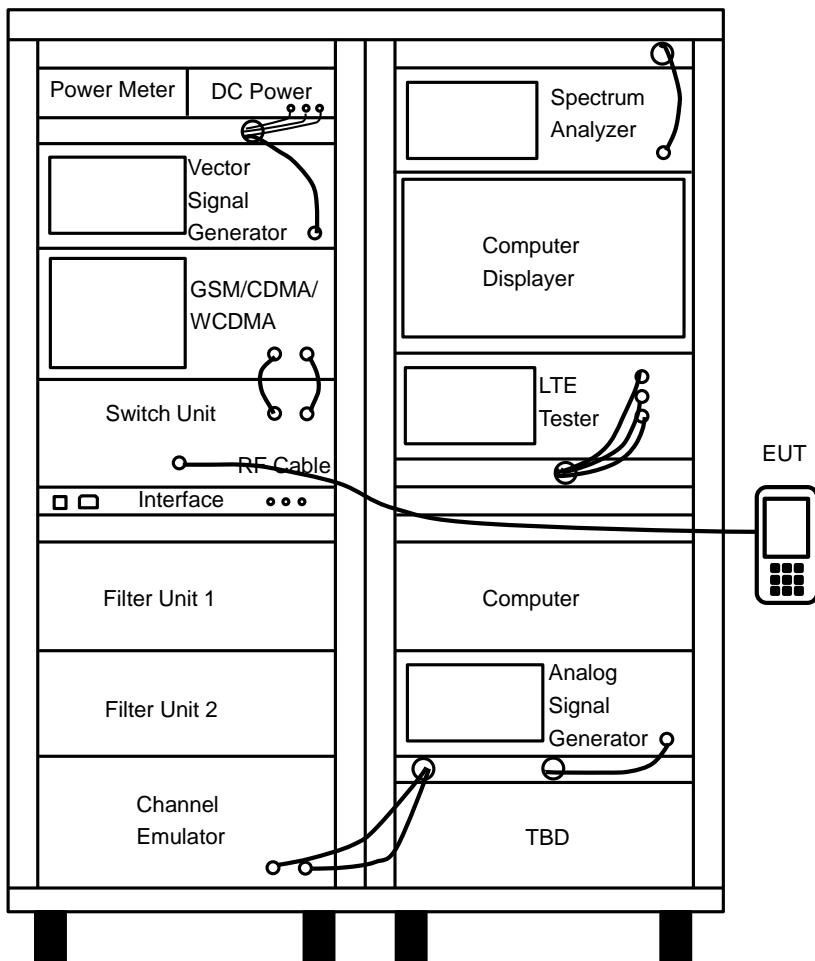
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	AGILENT	E4440A	MY45304434	2014.07.07	2015.07.06
Spectrum Analyzer	ROHDE&SCHWARZ	FSL3	103640/003	2014.07.07	2015.07.06
Power Splitter	KMW	DCPD-LDC	1305003215	2014.07.07	2015.07.06
Power Sensor	ROHDE&SCHWARZ	NRP-Z21	103971	2014.07.07	2015.07.06
Attenuator (20dB)	KMW	ZA-S1-201	110617091	--	--
Attenuator (6dB)	KMW	ZA-S1-61	1305003189	--	--
DC Power Supply	ROHDE&SCHWARZ	HMP2020	018141664	2014.07.07	2015.07.06
Temperature Chamber	ANGELANTIONI SCIENCE	NTH64-40A	1310	2014.07.07	2015.07.06
Test Antenna-Loop(9kHz-30MHz)	SCHWARZBECK	FMZB 1519	1519-037	2013.07.03	2015.07.02
Test Antenna-Bi-Log(30MHz-3G Hz)	SCHWARZBECK	VULB 9163	9163-624	2013.07.02	2015.07.01
Test Antenna-Horn(1-18GHz)	SCHWARZBECK	BBHA 9120D	9120D-1148	2013.07.02	2015.07.01
Test Antenna-Horn(15-26.5GHz)	SCHWARZBECK	BBHA 9170	9170-305	2013.07.02	2015.07.01
Anechoic Chamber	RAINFORD	9m*6m*6m	N/A	2014.10.07	2015.10.06

#### 4.3 Test Configurations

Test Configurations (TC) NO.	Description	
	Signal Description	Operating Frequency
Transmitter		
TC01	GMSK modulation, GSM 850	Ch No. 128/ 824.2MHz
TC02	GMSK modulation, GSM 850	Ch No. 190/ 836.6MHz
TC03	GMSK modulation, GSM 850	Ch No. 251/ 848.8MHz
TC04	GMSK modulation, GSM 1900	Ch No. 512/ 1850.2MHz
TC05	GMSK modulation, GSM 1900	Ch No. 661/ 1880.0MHz
TC06	GMSK modulation, GSM 1900	Ch No. 810/ 1909.8MHz
TC07	GMSK modulation, GPRS 850	Ch No. 128/ 824.2MHz
TC08	GMSK modulation, GPRS 850	Ch No. 190/ 836.6MHz
TC09	GMSK modulation, GPRS 850	Ch No. 251/ 848.8MHz
TC10	GMSK modulation, GPRS 1900	Ch No. 512/ 1850.2MHz
TC11	GMSK modulation, GPRS 1900	Ch No. 661/ 1880.0MHz
TC12	GMSK modulation, GPRS 1900	Ch No. 810/ 1909.8MHz
TC13	8PSK modulation, EGPRS 850	Ch No. 128/ 824.2MHz
TC14	8PSK modulation, EGPRS 850	Ch No. 190/ 836.6MHz
TC15	8PSK modulation, EGPRS 850	Ch No. 251/ 848.8MHz
TC16	8PSK modulation, EGPRS 1900	Ch No. 512/ 1850.2MHz
TC17	8PSK modulation, EGPRS 1900	Ch No. 661/ 1880.0MHz
TC18	8PSK modulation, EGPRS 1900	Ch No. 810/ 1909.8MHz
TC19	QPSK Modulation, WCDMA 850	Ch No. 4132/ 826.4MHz
TC20	QPSK Modulation, WCDMA 850	Ch No. 4183/ 836.6MHz
TC21	QPSK Modulation, WCDMA 850	Ch No. 4233/ 846.6MHz
TC22	QPSK Modulation, WCDMA 1700	Ch No. 1312/ 1712.4MHz
TC23	QPSK Modulation, WCDMA 1700	Ch No. 1413/ 1732.6MHz
TC24	QPSK Modulation, WCDMA 1700	Ch No. 1513/ 1752.6MHz

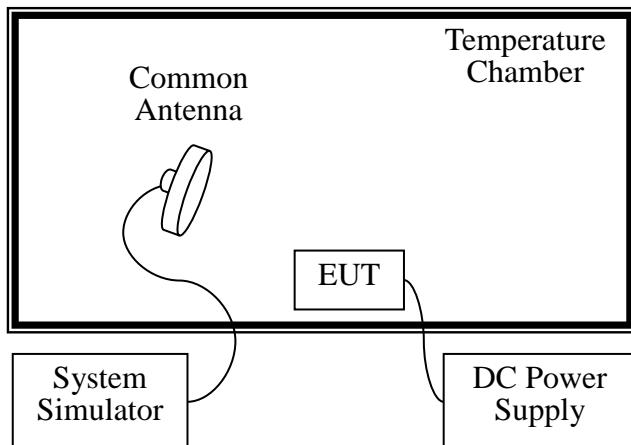
## 4.4 Description of Test Setup

### 4.4.1 For Antenna Port Test



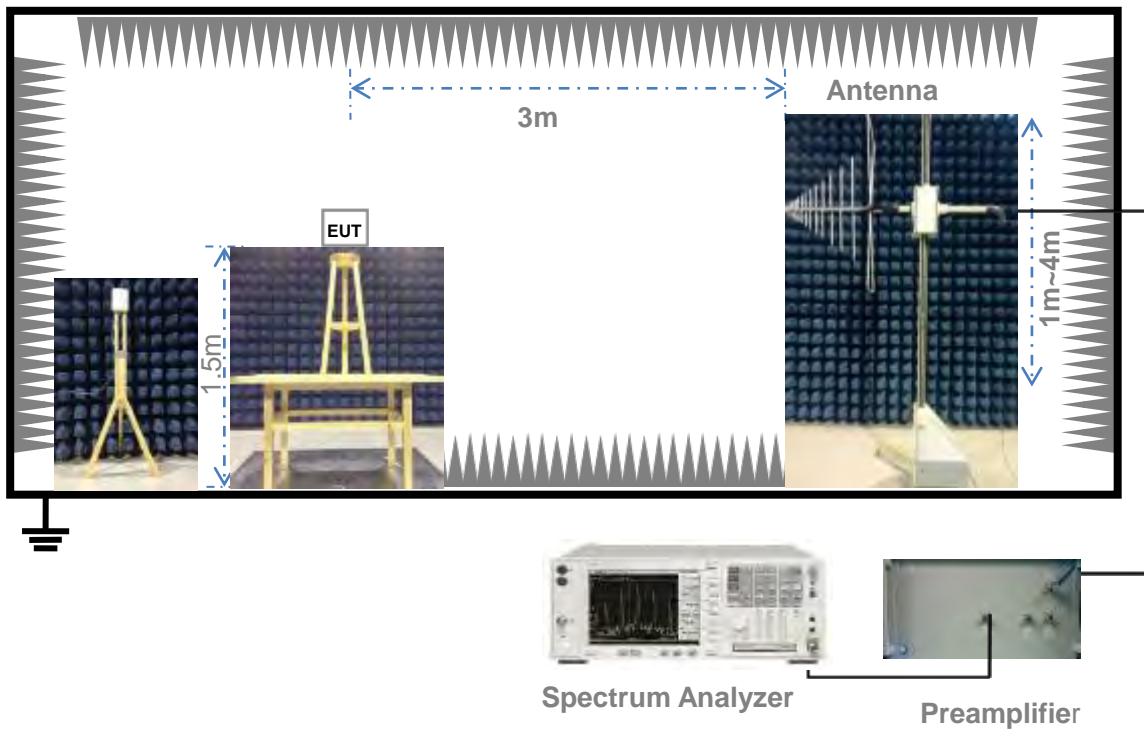
(Diagram 1)

### 4.4.2 For Frequency Stability Test



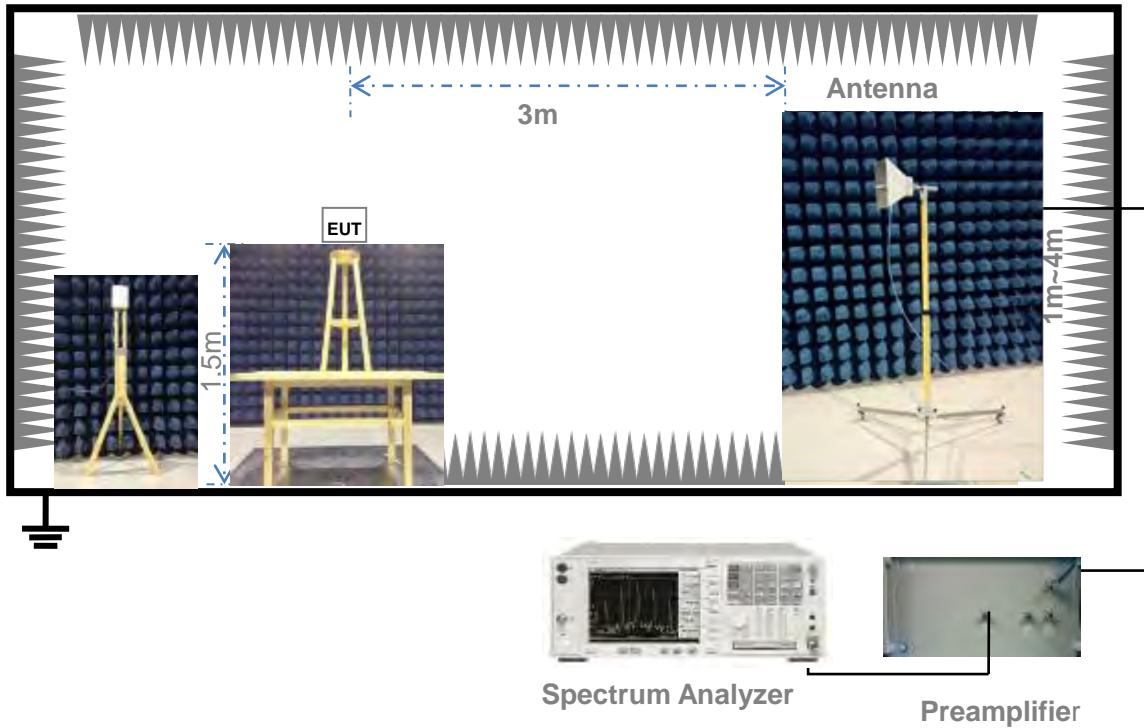
(Diagram 2)

#### 4.4.3 For Radiated Test (30MHz-1GHz)



(Diagram 3)

#### 4.4.4 For Radiated Test (Above 1GHz)



(Diagram 4)

## 4.5 Test Conditions

Test Case	Test Conditions		
	Test Env.	Test Setup <sup>Note 1</sup>	Test Configuration <sup>Note 2</sup>
Conducted RF Output Power	NTNV	Test Setup 1	TC01~TC24
Peak to average radio	NTNV	Test Setup 1	TC04~TC06, TC10~TC12, TC16~TC18
Occupied Bandwidth	NTNV	Test Setup 1	TC01~TC24
Frequency Stability	NTNV	Test Setup 2	TC01~TC24
Conducted Out of Band Emissions	NTNV	Test Setup 1	TC01~TC24
Band Edge	NTNV	Test Setup 1	TC01, TC03, TC04, TC06, TC07, TC09, TC10, TC12, TC13, TC15, TC16, TC18, TC19, TC21, TC22, TC24
Transmitter Radiated Power (EIPR/ERP)	NTNV	Test Setup 3 Test Setup 4	TC01~TC24
Radiated Out of Band Emissions	NTNV	Test Setup 3 Test Setup 4	TC01~TC24

**Note:**

1. Please refer to section 4.4 for test setup details.
2. Please refer to section 4.3 for test setup details.

## 5 TEST ITEMS

### 5.1 Conducted RF Output Power

#### 5.1.1 Test Limit

FCC §2.1046 (a)

For transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in §2.1033 (c)(8). The electrical characteristics of the radio frequency load attached to the output terminals when this test is made shall be stated.

#### 5.1.2 Test Procedure

The EUT, which is powered by the Battery, is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.

1. The RF output of the transmitter was connected to the input of the Mobile Communication Test Unit through sufficient attenuation.
2. The mobile was set up for the max, Output power with pseudo random data modulation.

## 5.2 Peak to average radio

### 5.2.1 Limit

FCC § 2.1049 & 24.232

In addition, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

### 5.2.2 Test Procedure

Here the lowest, middle and highest channels are selected to perform testing to verify the peak-to-average ratio.

Test procedures:

A .For GSM/EGPRS operating mode:

- a. Set RBW=1MHz, VBW=1MHz, peak detector in spectrum analyzer.
- b. Set EUT in maximum output power, and triggered the burst signal.
- c. Measured respectively the peak level and mean level, and the deviation was recorded as Peak to Average radio.

B. For UMTS operating mode:

- a. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
- b. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1%.

## 5.3 Occupied Bandwidth

### 5.3.1 Limit

FCC § 2.1049

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

Occupied bandwidth is also known as the 99% emission bandwidth

### 5.3.2 Test Procedure

The EUT, which is powered by the Battery, is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.

1. The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.
2. The resolution bandwidth of the spectrum analyzer was set.

## 5.4 Frequency Stability

### 5.4.1 Limit

FCC § 2.1055 & 22.355 & 24.235 & 27.54

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

The test conditions are:

- (a) The temperature is varied from -30°C to +50°C at intervals of not more than 10°C.
- (b) For hand carried battery powered equipment, the primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer. The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided.

### 5.4.2 Test Procedure

1. The test is performed in a Temperature Chamber.
2. The EUT is configured as MS + DC Power Supply.

## 5.5 Conducted Out of Band Emissions

### 5.5.1 Limit

FCC §22.917(a) & 24.238(a) & 27.53(h)

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43+10\log(P)$  dB. This calculated to be -13dBm.

### 5.5.2 Test Procedure

The EUT, which is powered by the Battery, is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.

1. The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation.
2. The resolution bandwidth of the spectrum analyzer was set at 1MHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.

## 5.6 Band Edge

### 5.6.1 Limit

FCC § 22.917(b) & 24.238(b) & 27.53(h)

In the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth (26dB emission bandwidth) of the fundamental emission of the transmitter may be employed.

### 5.6.2 Test Procedure

The EUT, which is powered by the Battery, is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.

1. The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.
2. The center of the spectrum analyzer was set to block edge frequency.

## 5.7 Transmitter Radiated Power (EIRP/ERP)

### 5.7.1 Limit

FCC §22.913 & 24.232 & 27.50

According to FCC section 22.913, the Effective Radiated Power (ERP) of mobile transmitters and auxiliary test transmitters must not exceed 7Watts, and FCC section 24.232, the broadband PCS mobile station is limited to 2Watts e.i.r.p. peak power.

FCCF§27.50

Fixed, mobile, and portable (handheld) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP. Fixed stations operating in this band are limited to a maximum antenna height of 10 meters above ground. Mobile and portable stations operating in this band must employ a means for limiting power to the minimum necessary for successful communications.

### 5.7.2 Test Procedure

The EUT, which is powered by the Battery charged with the AC Adapter, is located in a 3m Full-Anechoic Chamber; the cable loss, air loss and so on of the site as factors are pre-calibrated using the "Substitution" method, and calculated to correct the reading.

A call is established between the EUT and the SS via a Common Antenna.

The EUT is commanded by the SS to operate at the maximum and minimum output power (i.e. GSM850MHz band Power Control Level (PCL) = 5/19 and Power Class = 4, GSM1900MHz band Power Control Level (PCL) = 0/15 and Power Class = 1), and only the test result of the maximum output power was recorded.

The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. The lowest, middle and highest channels are tested.

The substitution corrections are obtained as described below:

$$\text{ASUBST} = \text{PSUBST\_TX} - \text{PSUBST\_RX} - \text{LSUBST\_CABLES} + \text{GSUBST\_TX\_ANT}$$

$$\text{ATOT} = \text{LCABLES} + \text{ASUBST}$$

Where ASUBST is the final substitution correction including receive antenna gain.

PSUBST\_TX is signal generator level,

PSUBST\_RX is receiver level,

LSUBST\_CABLES is cable losses including TX cable,

GSUBST\_TX\_ANT is substitution antenna gain.

ATOT is total correction factor including cable loss and substitution correction

During the test, the data of ATOT was added in the Test Spectrum Analyze, so Spectrum Analyze reading is the final values which contain the data of ATOT.

## 5.8 Radiated Out of Band Emissions

### 5.8.1 Limit

FCC § 22.917(a) & 24.238(a) & 27.53(h)

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43+10\log(P)$  dB. This calculated to be -13dBm.

### 5.8.2 Test Procedure

See section 5.6.2 of this report.

Note: when doing measurements above 1GHz, the EUT has been within the 3dB cone width of the horn antenna during horizontal antenna.

## ANNEX A TEST RESULT

### A.1 Conducted RF Output Power

#### GSM Mode Test Data

Band	Channel	Frequency (MHz)	Measured Output Power (dBm)	Limit (dBm)	Verdict
GSM 850	128	824.2	33.45	35	PASS
	190	836.6	33.47		PASS
	251	848.8	33.42		PASS
GSM 1900	512	1850.2	29.67	32	PASS
	661	1880.0	29.67		PASS
	810	1909.8	29.64		PASS
GPRS 850	128	824.2	33.49	35	PASS
	190	836.6	33.49		PASS
	251	848.8	33.42		PASS
GPRS 1900	512	1850.2	29.52	32	PASS
	661	1880.0	29.54		PASS
	810	1909.8	29.38		PASS
EGPRS 850	128	824.2	30.49	35	PASS
	190	836.6	30.16		PASS
	251	848.8	29.98		PASS
EGPRS 1900	512	1850.2	27.58	32	PASS
	661	1880.0	27.41		PASS
	810	1909.8	27.14		PASS

NOTE: For the GPRS and EGPRS mode, all the slots were tested and just the worst data was record in this table.

#### GPRS Conducted output power

Band	Channel	Frequency (MHz)	Output Power(dBm)			
			Slot 1	Slot 2	Slot 3	Slot 4
GPRS 850	128	824.2	33.49	32.79	30.99	29.95
	190	836.6	33.49	32.74	30.98	29.91
	251	848.8	33.42	32.71	30.95	29.88
GPRS 1900	512	1850.2	29.52	28.86	27.66	26.69
	661	1880.0	29.54	28.88	27.41	26.33
	810	1909.8	29.51	28.74	27.01	25.86

EGPRS Conducted output power

Band	Channel	Frequency (MHz)	Output Power(dBm)			
			Slot 1	Slot 2	Slot 3	Slot 4
EGPRS 850	128	824.2	30.49	29.41	27.58	25.51
	190	836.6	30.16	29.11	26.50	25.59
	251	848.8	29.98	28.64	26.76	25.30
EGPRS 1900	512	1850.2	27.58	25.45	23.18	20.95
	661	1880.0	27.41	25.36	23.06	20.58
	810	1909.8	27.14	25.93	22.02	20.31

## WCDMA Mode Test data:

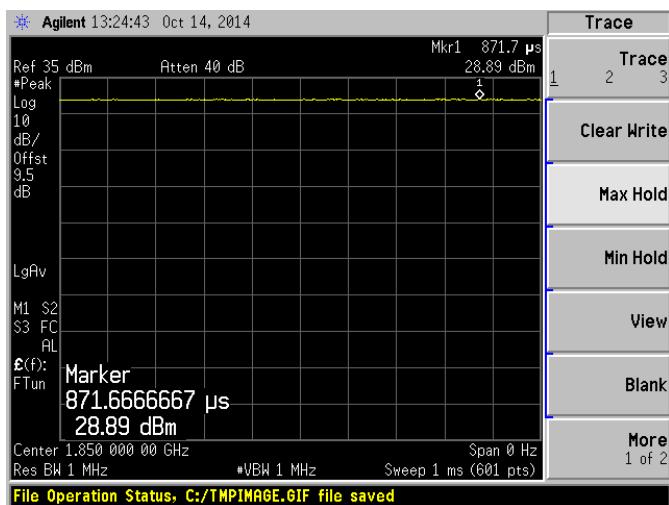
Band	Channel	Frequency (MHz)	Output Power(dBm)
WCDMA 850	4132	826.4	23.35
	4183	835	23.41
	4233	846.6	23.03
WCDMA 1700	1312	1712.4	24.42
	1413	1732.6	24.46
	1513	1752.6	24.23

## A.2 Peak to Average Radio

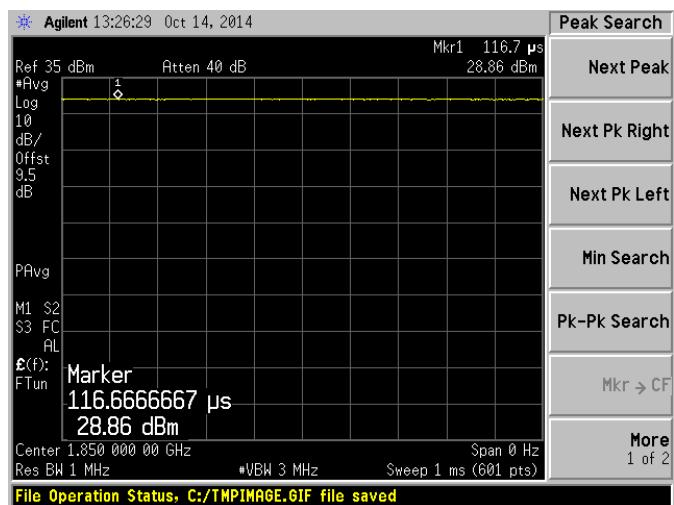
Band	Channel	Frequency (MHz)	Peak to Average radio	Limit	Verdict
			dBm	dBm	
GSM 1900MHz	512	1850.2	0.03	13	PASS
	661	1880.0	0.02		PASS
	810	1909.8	0.03		PASS
EGPRS 1900MHz	512	1850.2	0.04	13	PASS
	661	1880.0	0.01		PASS
	810	1909.8	0.03		PASS

### Test plots

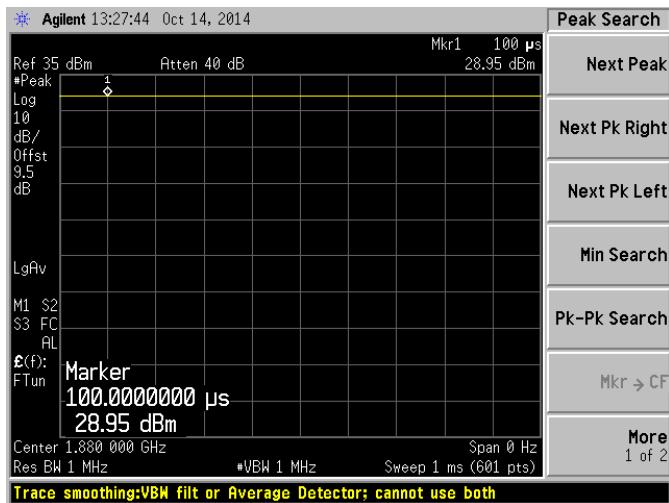
GSM 1900MHz CHANNEL 512 PEAK POWER



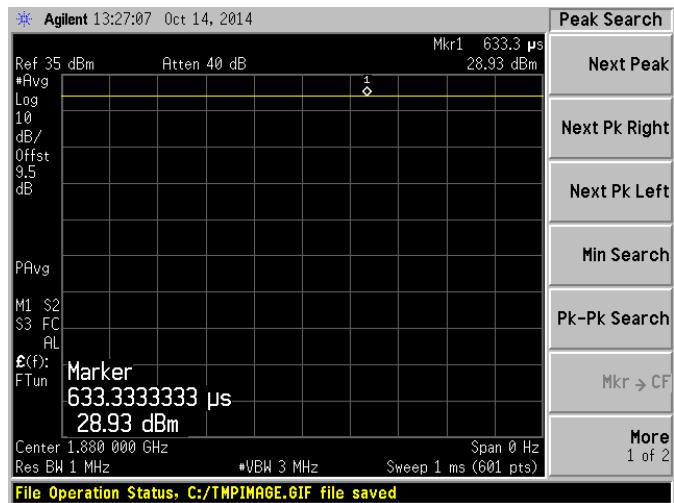
GSM 1900MHz CHANNEL 512 AV POWER



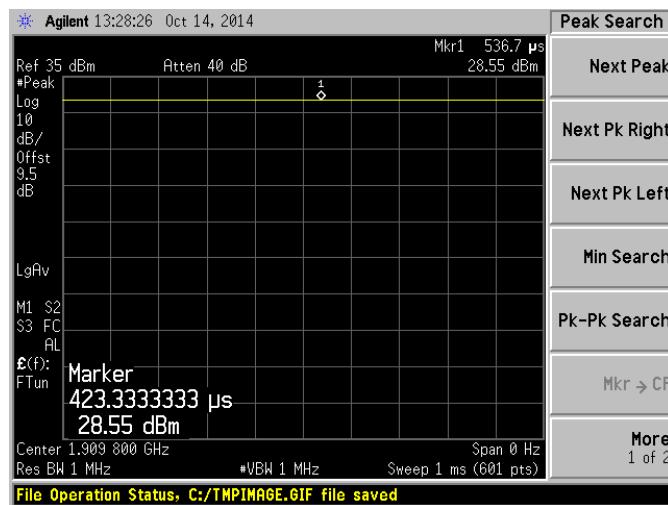
GSM 1900MHz CHANNEL 661 PEAK POWER



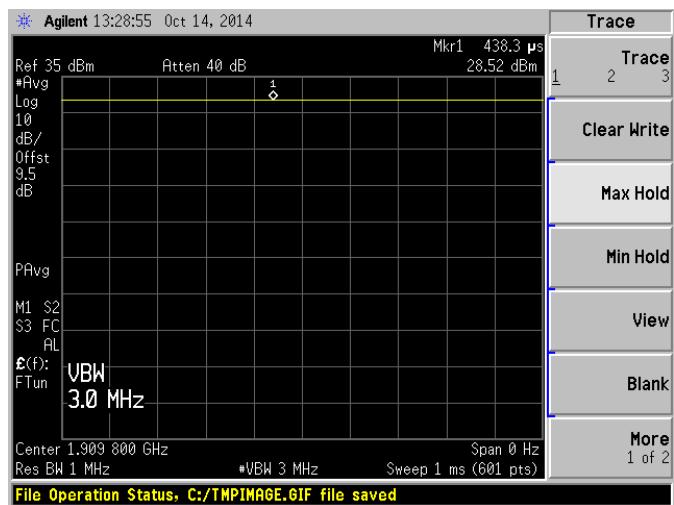
GSM 1900MHz CHANNEL 661 AV POWER



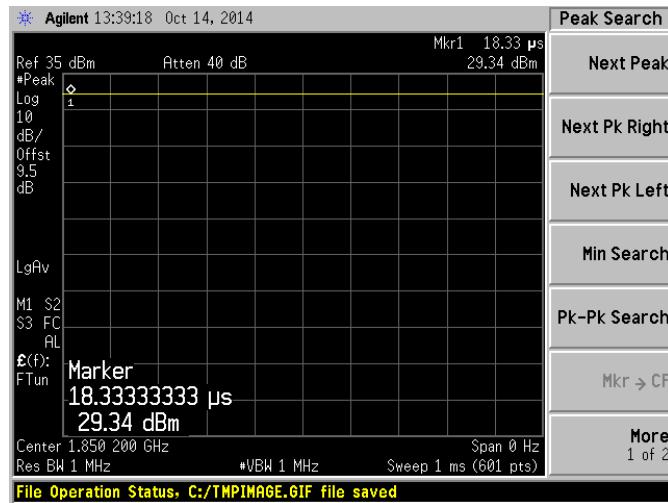
## GSM 1900MHz CHANNEL 810 PEAK POWER



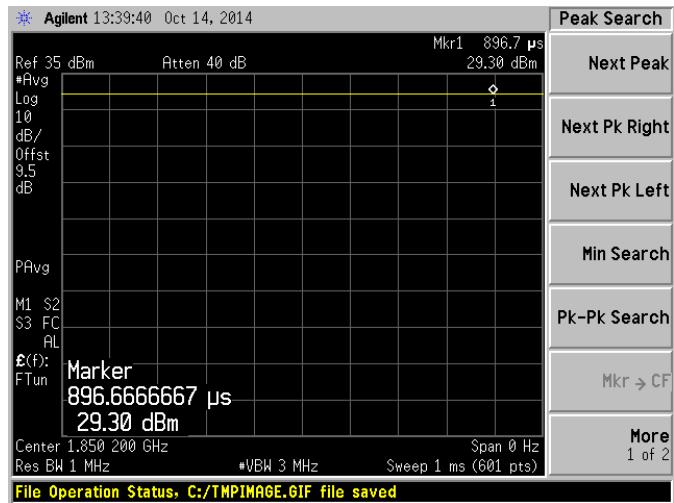
## GSM 1900MHz CHANNEL 810 AV POWER



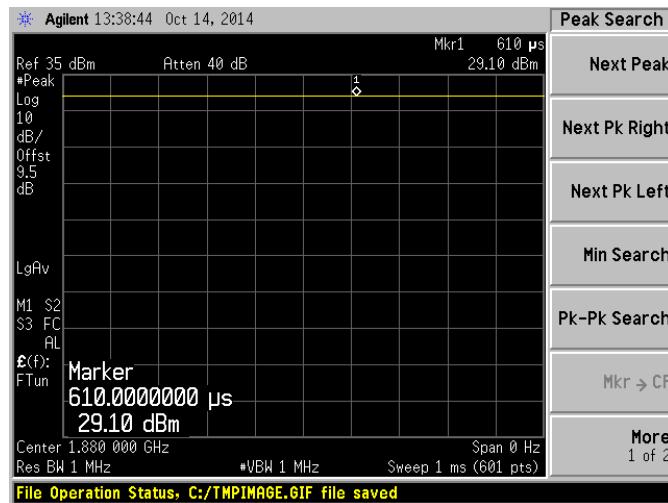
## EGPRS 1900MHz CHANNEL 512 PEAK POWER



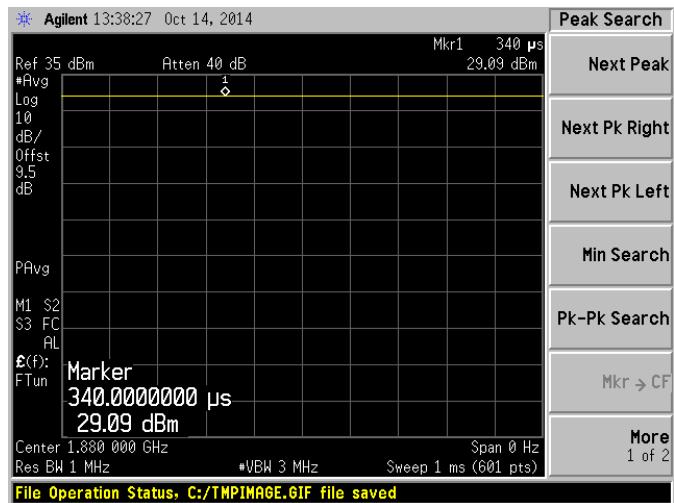
## EGPRS 1900MHz CHANNEL 512 AV POWER



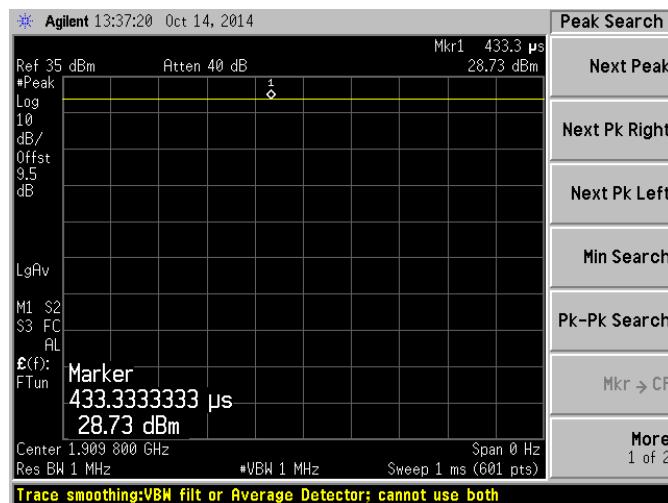
## EGPRS 1900MHz CHANNEL 661 PEAK POWER



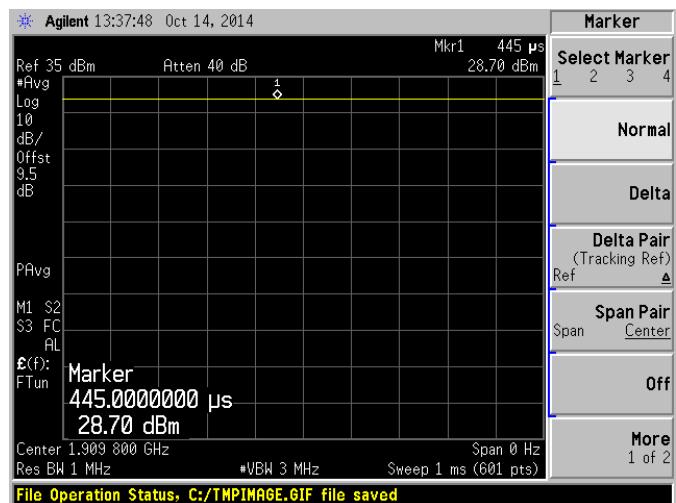
## EGPRS 1900MHz CHANNEL 661 AV POWER



## EGPRS 1900MHz CHANNEL 810 PEAK POWER



## EGPRS 1900MHz CHANNEL 810 AV POWER



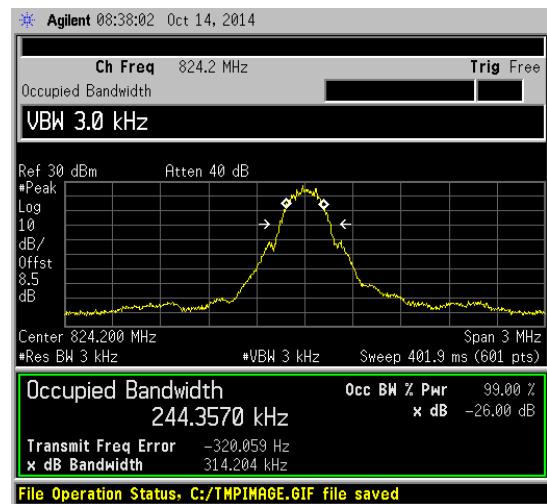
### A.3 Occupied Bandwidth

#### Test Data

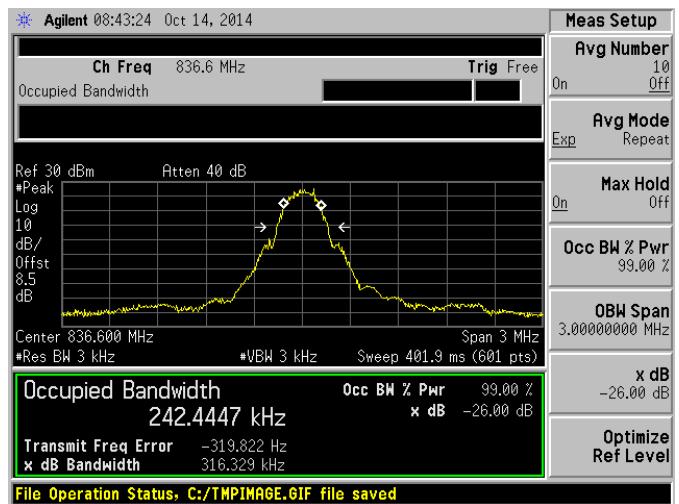
Band	Channel	Frequency (MHz)	Measured 99% Occupied Bandwidth	Measured -26dB Occupied Bandwidth
GSM 850MHz	128	824.2	244.3570 kHz	314.204 kHz
	190	836.6	242.4447 kHz	316.329 kHz
	251	848.8	243.2139 kHz	317.800 kHz
GSM 1900MHz	512	1850.2	246.0512 kHz	315.646 kHz
	661	1880.0	244.8861 kHz	315.641 kHz
	810	1909.8	245.110 kHz	318.110 kHz
GPRS 850MHz	128	824.2	242.6312 kHz	315.205 kHz
	190	836.6	242.0970 kHz	315.215 kHz
	251	848.8	244.1523 kHz	316.671 kHz
GPRS 1900MHz	512	1850.2	245.9013 kHz	317.179 kHz
	661	1880.0	247.7244 kHz	315.071 kHz
	810	1909.8	245.0053 kHz	319.175 kHz
EGPRS 850MHz	128	824.2	244.8724 kHz	316.888 kHz
	190	836.6	248.7828 kHz	317.030 kHz
	251	848.8	246.1565 kHz	317.019 kHz
EGPRS 1900MHz	512	1850.2	242.4778 kHz	315.733 kHz
	661	1880.0	245.3323 kHz	312.423 kHz
	810	1909.8	244.4249 kHz	319.144 kHz
WCDMA 850	4132	826.4	4.1793 MHz	4.675 MHz
	4183	836.6	4.1505 MHz	4.644 MHz
	4233	846.6	4.1291 MHz	4.630 MHz
WCDMA 1700	1312	1712.4	4.1625 MHz	4.645 MHz
	1413	1732.6	4.2120 MHz	4.842 MHz
	1513	1752.6	4.1510 MHz	4.647 MHz

#### Test plots

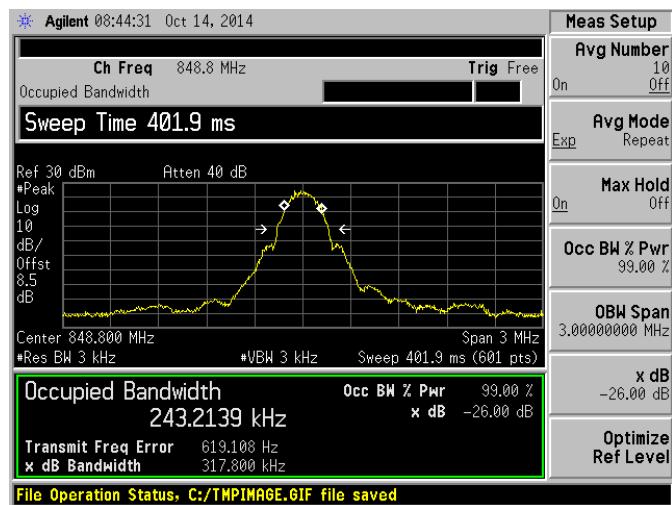
GSM 850MHz CHANNEL 128



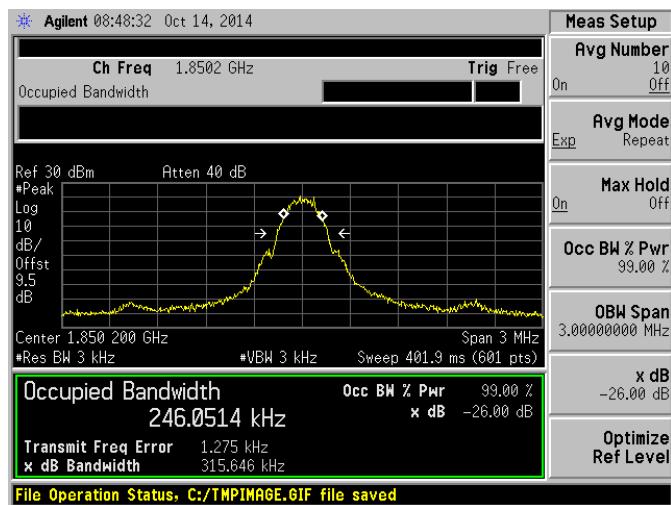
GSM 850MHz CHANNEL 190



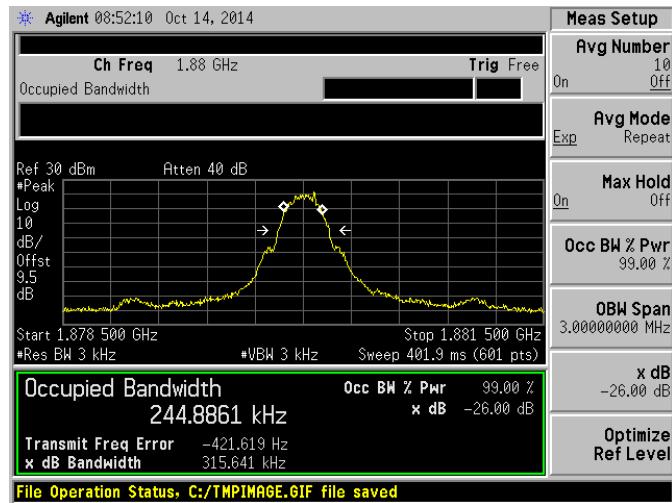
## GSM 850MHz CHANNEL 251



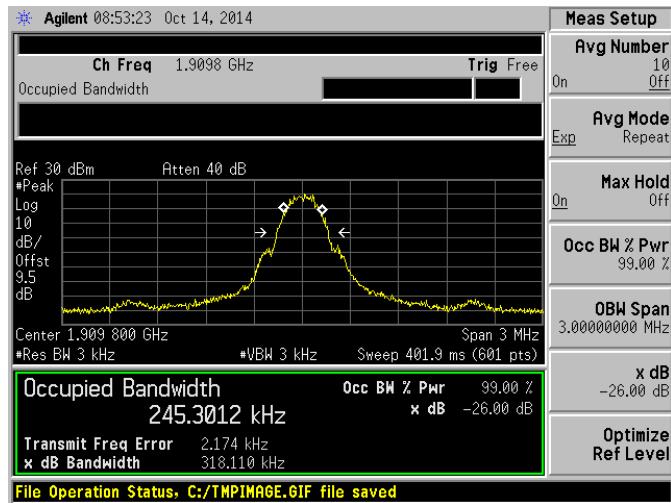
## GSM 1900MHz CHANNEL 512



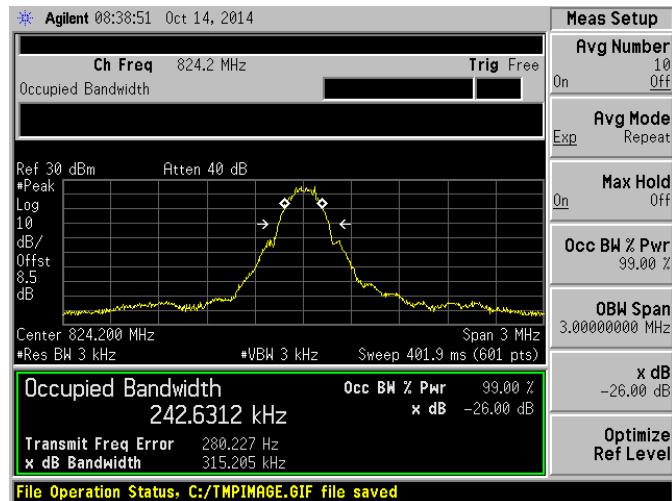
## GSM 1900MHz CHANNEL 661



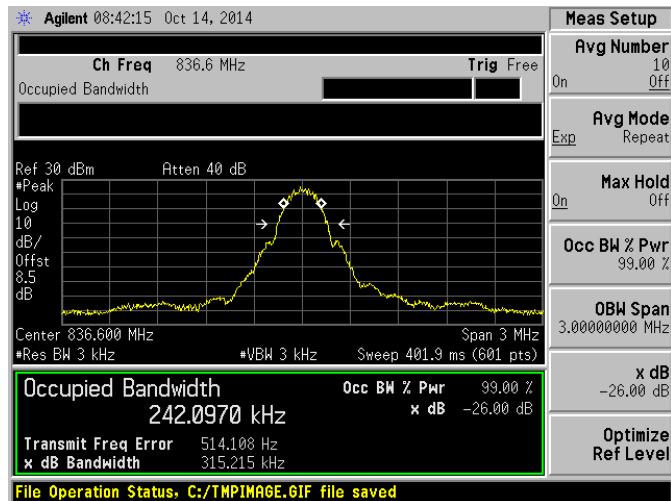
## GSM 1900MHz CHANNEL 810



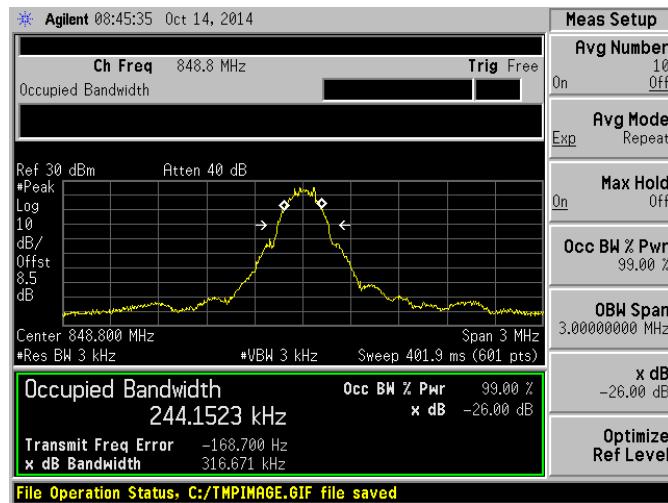
## GPRS 850MHz CHANNEL 128



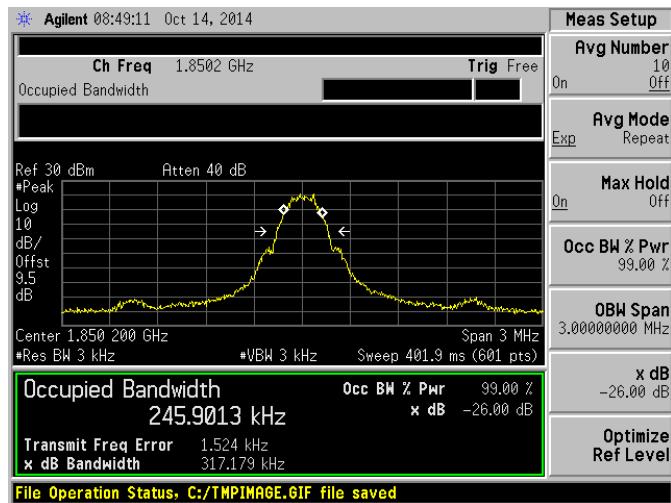
## GPRS 850MHz CHANNEL 190



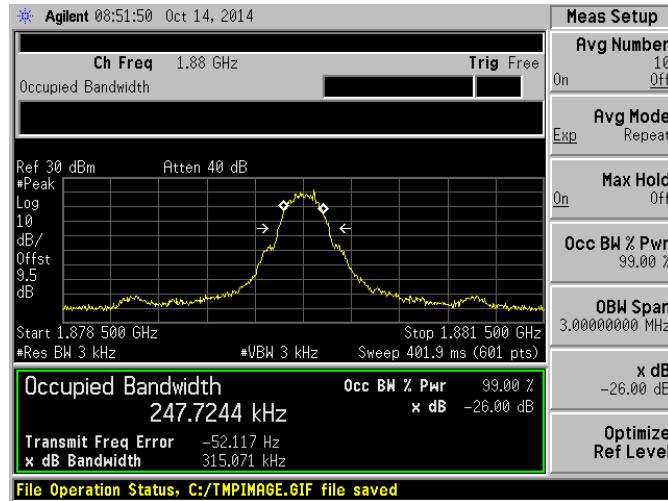
## GPRS 850MHz CHANNEL 251



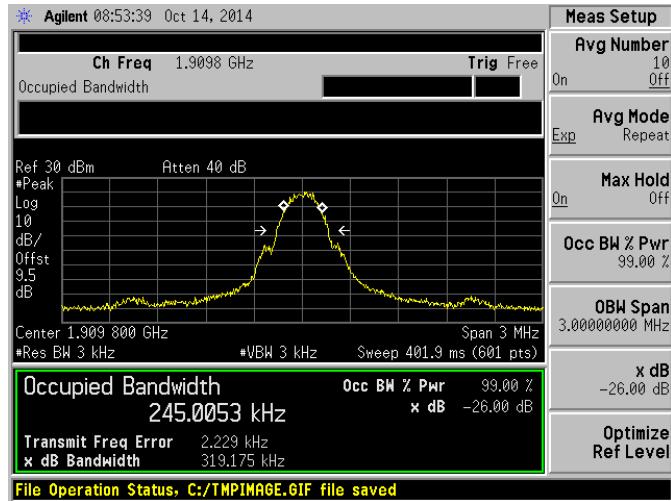
## GPRS 1900MHz CHANNEL 512



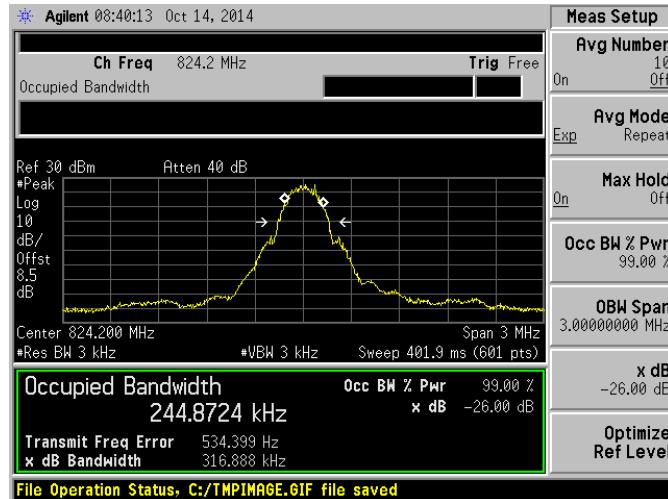
## GPRS 1900MHz CHANNEL 661



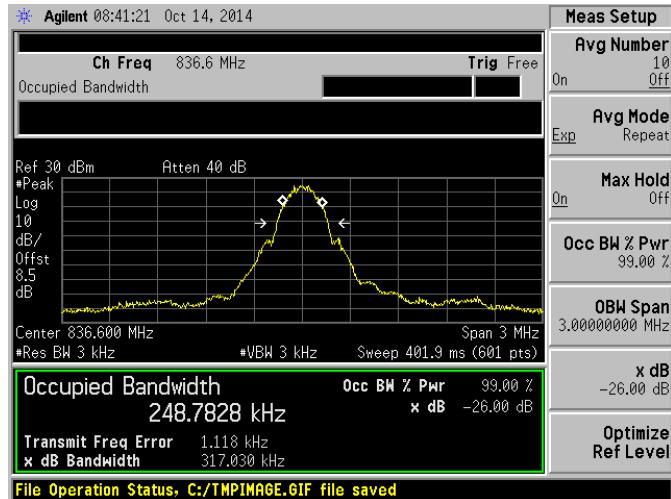
## GPRS 1900MHz CHANNEL 810



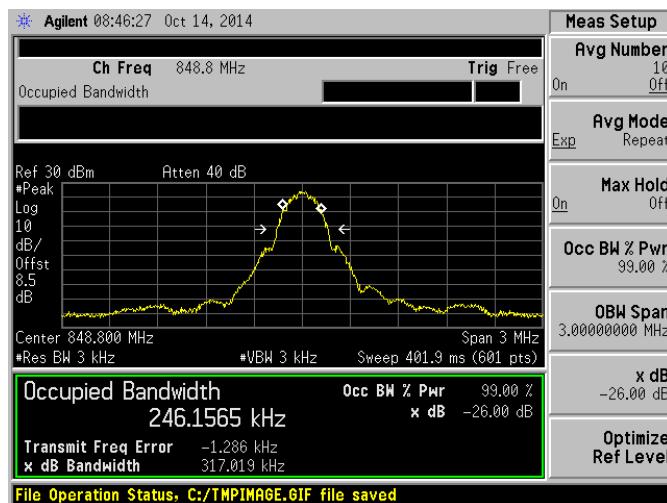
## EGPRS 850MHz CHANNEL 128



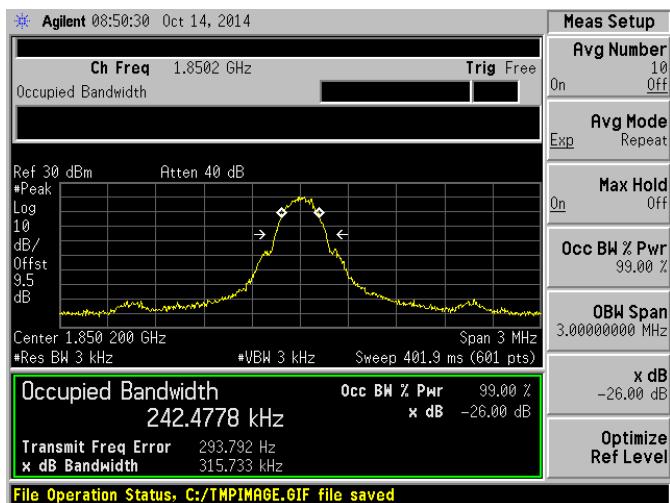
## EGPRS 850MHz CHANNEL 190



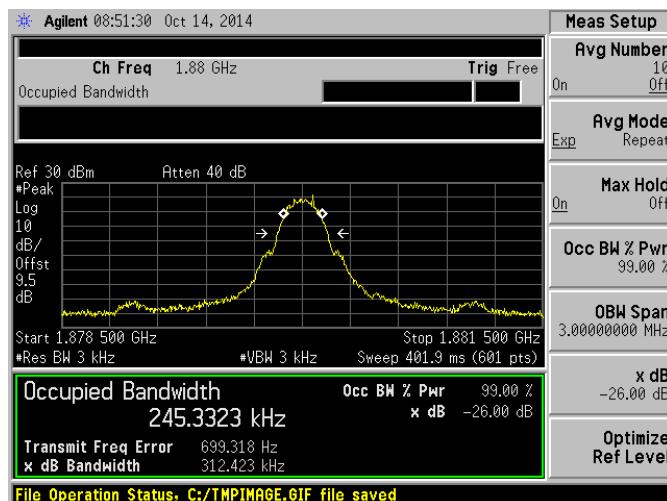
## EGPRS 850MHz CHANNEL 251



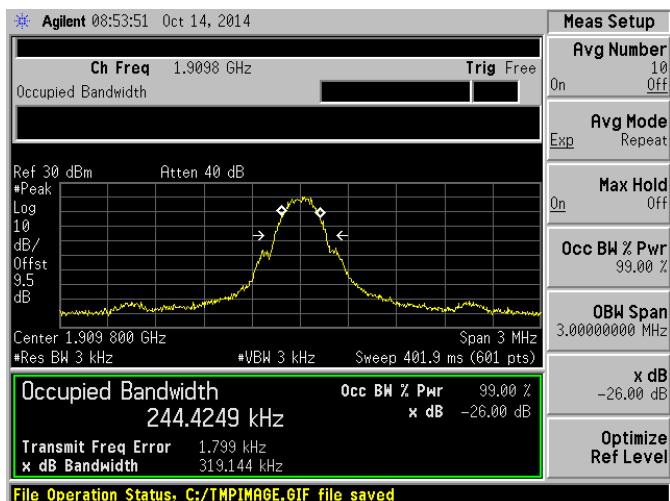
## EGPRS 1900MHz CHANNEL 512



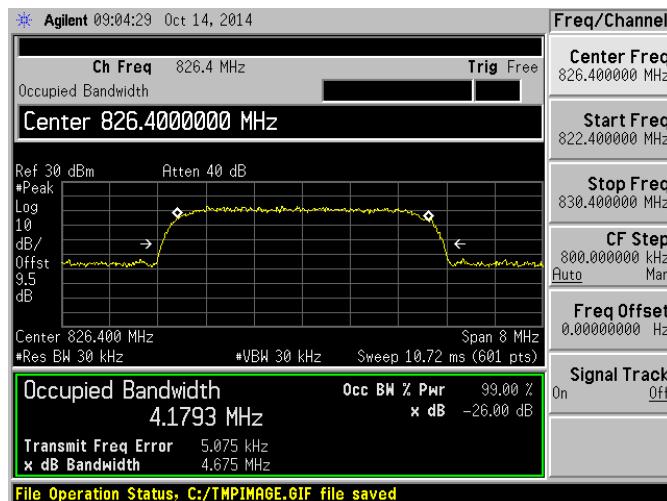
## EGPRS 1900MHz CHANNEL 661



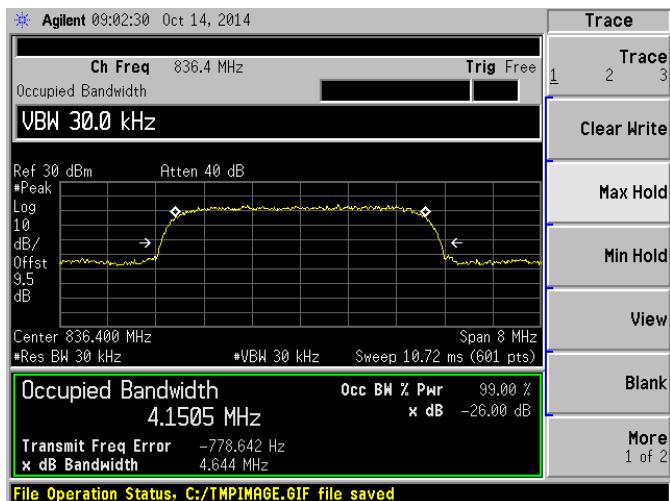
## EGPRS 1900MHz CHANNEL 810



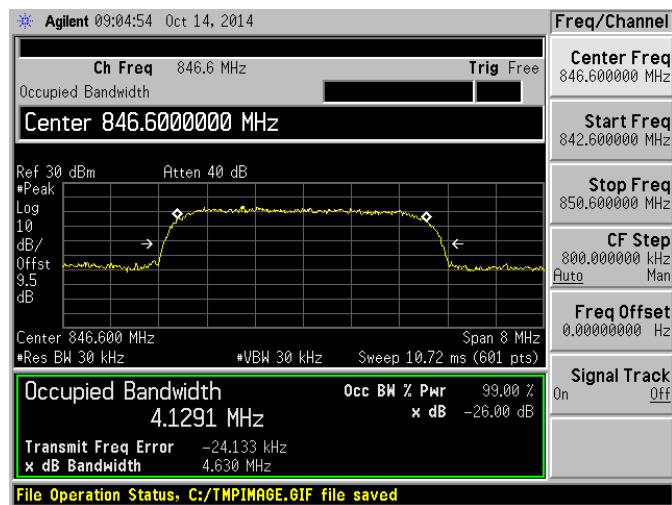
## WCDMA 850MHz CHANNEL 4132



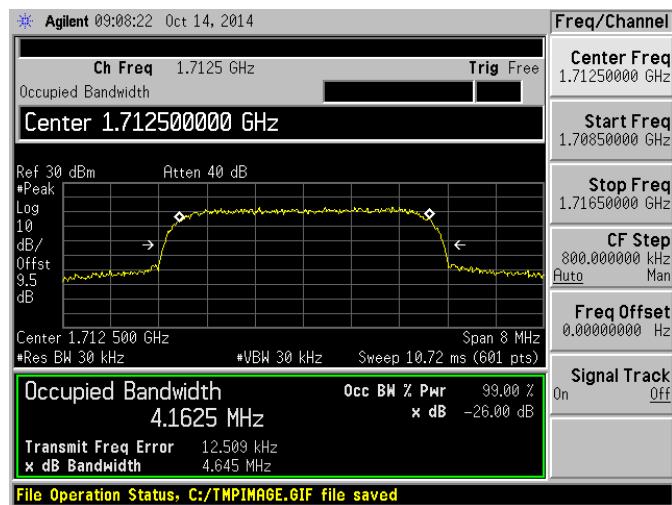
## WCDMA 850MHz CHANNEL 4183



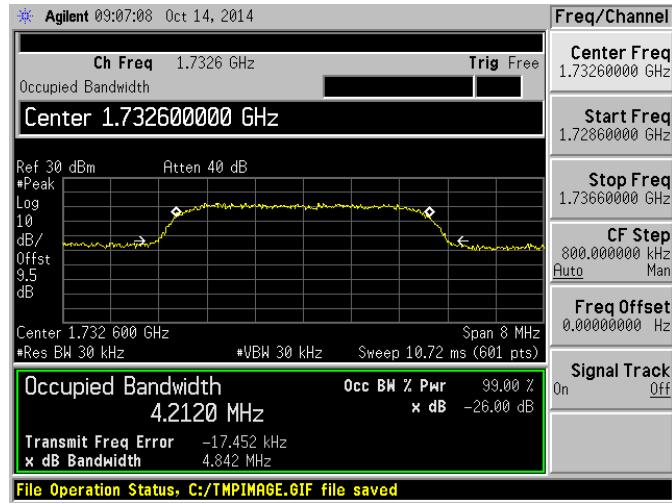
## WCDMA 850MHz CHANNEL 4233



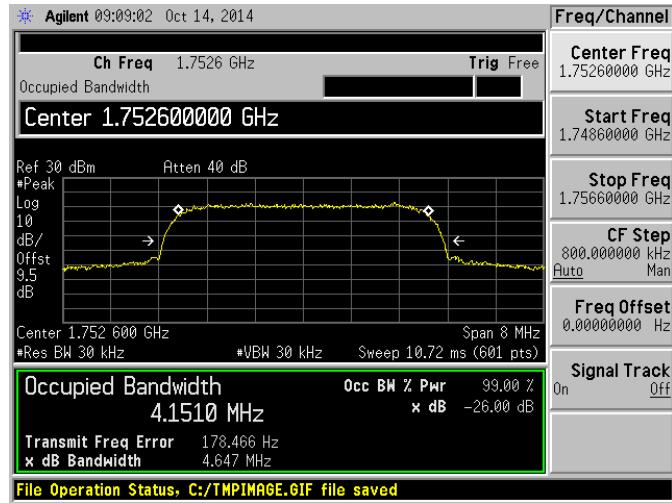
## WCDMA 1700MHz CHANNEL 1312



## WCDMA 1700MHz CHANNEL 1413



## WCDMA 1700MHz CHANNEL 1513



#### A.4 Frequency Stability

GSM 850MHz Band:

Test Conditions		Frequency Deviation						Verdict	
Power (VDC)	Temperature (°C)	Channel = 128 (824.2MHz)		Channel = 190 (836.6MHz)		Channel = 251 (848.8MHz)			
		Hz	Limits	Hz	Limits	Hz	Limits		
3.7	-30	-2.38	$\pm 2060.5$	-4.87	$\pm 2091.5$	0.58	$\pm 2122$	PASS	
	-20	-7.98		0.27		-3.87			
	-10	1.14		8.80		53.03			
	0	-1.39		4.09		56.67			
	+10	5.47		4.26		47.04			
	+20	-7.61		-6.13		6.08			
	+30	6.09		-9.91		16.68			
	+40	5.49		6.44		32.88			
	+50	10.19		6.52		13.30			
	4.2	+25		8.07		7.88			
3.5	+25	-8.32		9.78		-11.81			

GSM 1900MHz Band:

Test Conditions		Frequency Deviation						Verdict	
Power (VDC)	Temperature (°C)	Channel = 512 (1850.2MHz)		Channel = 661 (1880.0MHz)		Channel = 810 (1909.8MHz)			
		Hz	Limits	Hz	Limits	Hz	Limits		
3.7	-30	-4.32	$\pm 4625.5$	51.25	$\pm 4700.0$	1.12	$\pm 4774.5$	PASS	
	-20	35.25		51.56		8.81			
	-10	-19.21		48.10		22.21			
	0	27.75		43.19		47.37			
	+10	-13.73		6.50		14.85			
	+20	-6.95		3.76		33.63			
	+30	48.07		7.11		38.27			
	+40	42.00		5.70		57.38			
	+50	38.85		-5.74		21.22			
	4.2	+25		42.11		50.98			
3.5	+25	4.49		5.31		0.95			

## GPRS 850MHz Band:

Test Conditions		Frequency Deviation						Verdict	
Power (VDC)	Temperature (°C)	Channel = 128 (824.2MHz)		Channel = 190 (836.6MHz)		Channel = 251 (848.8MHz)			
		Hz	Limits	Hz	Limits	Hz	Limits		
3.7	-30	-21.65	±2060.5	-20.82	±2091.5	8.87	±2122	PASS	
	-20	-5.66		0.02		5.71			
	-10	18.73		2.27		-5.22			
	0	-19.68		-0.19		9.37			
	+10	20.47		9.81		13.97			
	+20	23.05		0.28		22.42			
	+30	18.00		16.39		18.57			
	+40	-12.80		21.06		-19.93			
	+50	-9.55		31.36		23.76			
	4.2	+25		-13.27		-10.20			
3.5	+25	29.91		-9.00		-9.09			

## GPRS 1900MHz Band:

Test Conditions		Frequency Deviation						Verdict	
Power (VDC)	Temperature (°C)	Channel = 512 (1850.2MHz)		Channel = 661 (1880.0MHz)		Channel = 810 (1909.8MHz)			
		Hz	Limits	Hz	Limits	Hz	Limits		
3.7	-30	40.74	±4625.5	39.64	±4700.0	4.24	±4774.5	PASS	
	-20	44.81		36.49		50.42			
	-10	-2.51		7.98		23.49			
	0	7.95		-3.94		25.50			
	+10	29.51		-9.04		-15.21			
	+20	29.84		45.91		30.37			
	+30	13.40		-5.29		18.94			
	+40	56.48		40.47		9.91			
	+50	18.09		22.99		32.97			
	4.2	+25		30.91		50.69			
3.5	+25	6.75		-10.79		13.44			

## EGPRS 850MHz Band:

Test Conditions		Frequency Deviation						Verdict	
Power (VDC)	Temperature (°C)	Channel = 128 (824.2MHz)		Channel = 190 (836.6MHz)		Channel = 251 (848.8MHz)			
		Hz	Limits	Hz	Limits	Hz	Limits		
3.7	-30	-3.51	±2060.5	16.52	±2091.5	16.62	±2122	PASS	
	-20	43.61		39.74		-4.70			
	-10	31.83		29.21		5.59			
	0	20.08		11.20		11.51			
	+10	-12.32		42.22		-9.42			
	+20	17.45		23.45		-13.86			
	+30	21.45		27.13		29.87			
	+40	7.14		-15.60		11.59			
	+50	16.48		-17.11		5.90			
	4.2	+25		-11.48		-0.49			
3.5	+25	43.61		18.41		-3.07			

## EGPRS 1900MHz Band:

Test Conditions		Frequency Deviation						Verdict	
Power (VDC)	Temperature (°C)	Channel = 512 (1850.2MHz)		Channel = 661 (1880.0MHz)		Channel = 810 (1909.8MHz)			
		Hz	Limits	Hz	Limits	Hz	Limits		
3.7	-30	3.89	±4625.5	-0.46	±4700.0	7.86	±4774.5	PASS	
	-20	9.44		2.79		29.51			
	-10	6.69		0.25		-7.86			
	0	3.27		0.97		-9.17			
	+10	-6.31		-0.50		7.31			
	+20	-0.46		4.30		31.29			
	+30	0.78		-4.20		-7.54			
	+40	-2.08		-5.95		64.57			
	+50	5.71		-2.49		8.53			
	4.2	+25		10.61		77.46			
3.5	+25	1.29		9.35		68.75			

## WCDMA 850MHz Band:

Test Conditions		Frequency Deviation						Verdict	
Power (VDC)	Temperature (°C)	Channel = 4123 (826.4MHz)		Channel = 4183 (836.6MHz)		Channel = 4233 (846.6MHz)			
		Hz	Limits	Hz	Limits	Hz	Limits		
3.7	-30	9.44	±2066	-3.09	±2091.5	34.11	±2166.5	PASS	
	-20	-22.92		-20.38		26.51			
	-10	-10.95		0.41		31.75			
	0	-11.17		-1.81		-6.39			
	+10	9.63		46.89		23.61			
	+20	36.54		8.45		-2.46			
	+30	39.27		18.08		-2.32			
	+40	14.87		-25.96		40.05			
	+50	6.57		15.94		-15.44			
	4.2	+25		18.69		-22.68			
3.5	+25	48.97		44.80		41.02			

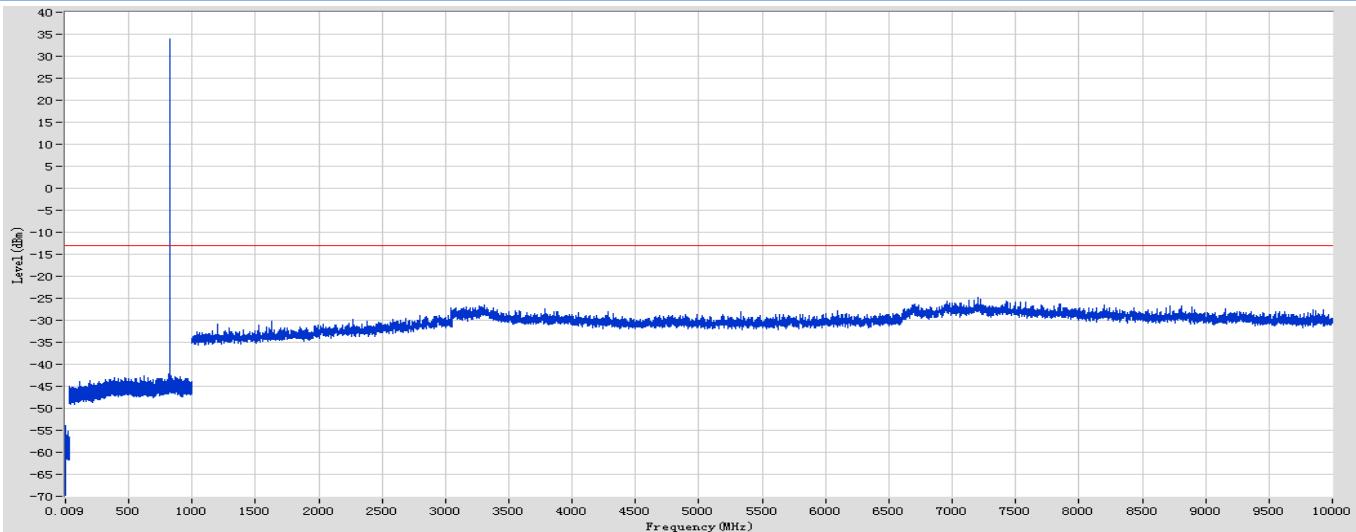
## WCDMA 1700MHz Band:

Test Conditions		Frequency Deviation						Verdict	
Power (VDC)	Temperature (°C)	Channel = 1312 (1712.4MHz)		Channel = 1413 (1732.6MHz)		Channel = 1513 (1752.6MHz)			
		Hz	Limits	Hz	Limits	Hz	Limits		
3.7	-30	33.26	±4281	15.73	±4331.5	22.27	±4381.5	PASS	
	-20	42.12		-8.20		84.18			
	-10	-0.56		43.40		92.23			
	0	8.20		-13.79		71.76			
	+10	-13.04		28.82		90.32			
	+20	-14.56		25.83		35.00			
	+30	21.86		41.20		32.01			
	+40	-5.39		-10.03		20.71			
	+50	38.99		2.69		16.99			
	4.2	+25		7.29		78.93			
3.5	+25	6.44		17.60		24.76			

## A.5 Conducted Out of Band Emissions

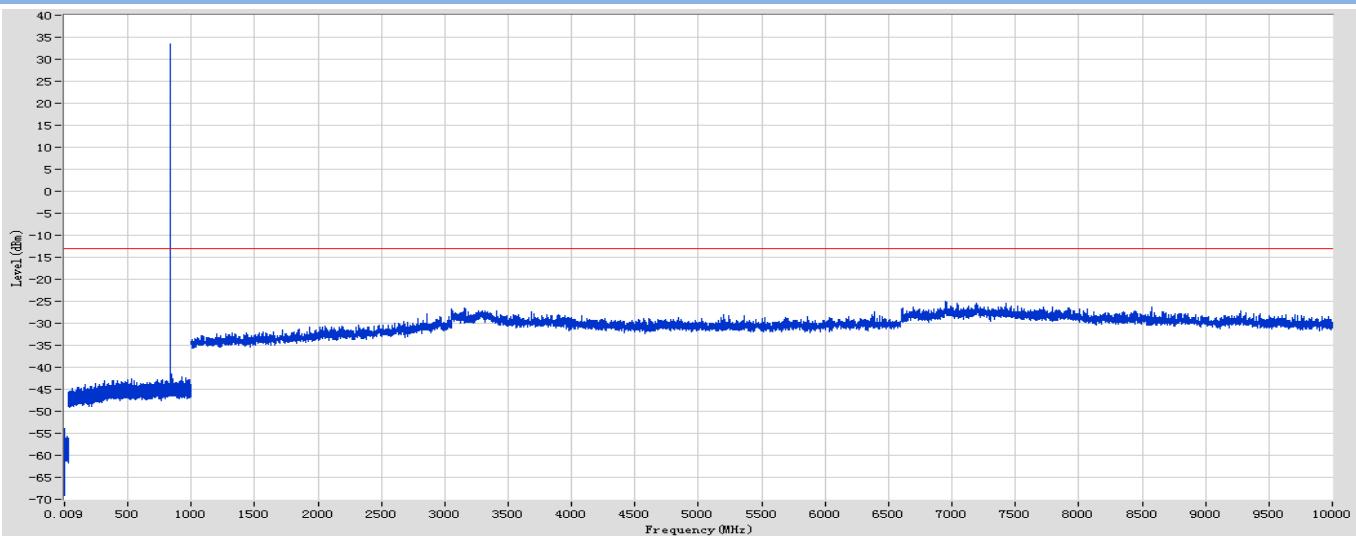
### Test Data

#### GSM 850MHz CHANNEL 128



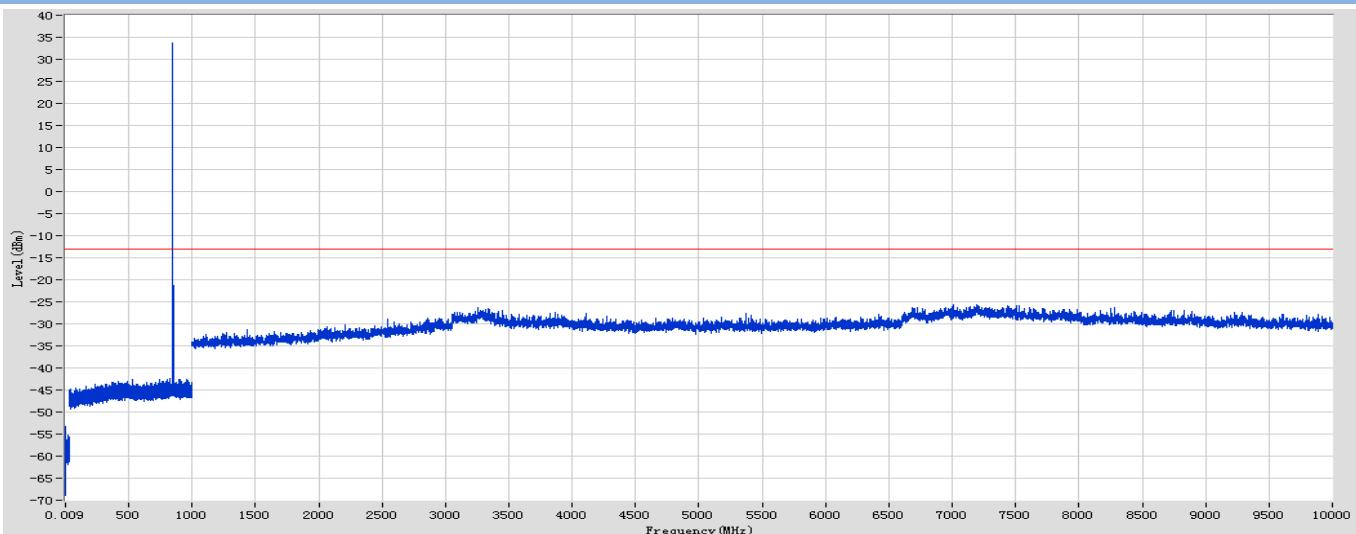
Start Frequency[MHz]	Stop Frequency[MHz]	RBW [MHz]	Detector	Frequency [MHz]	Emission[dBm]	Limit [dBm]	Margin [dB]	Verdict
30.00	500.00	0.10	Peak	388.28	-43.13	-13.00	30.13	Pass
500.00	1000.00	0.10	Peak	824.16	33.89	-13.00	-46.89	Fail
1000.00	10000.00	1.00	Peak	7202.76	-24.86	-13.00	11.86	Pass

#### GSM 850MHz CHANNEL 190



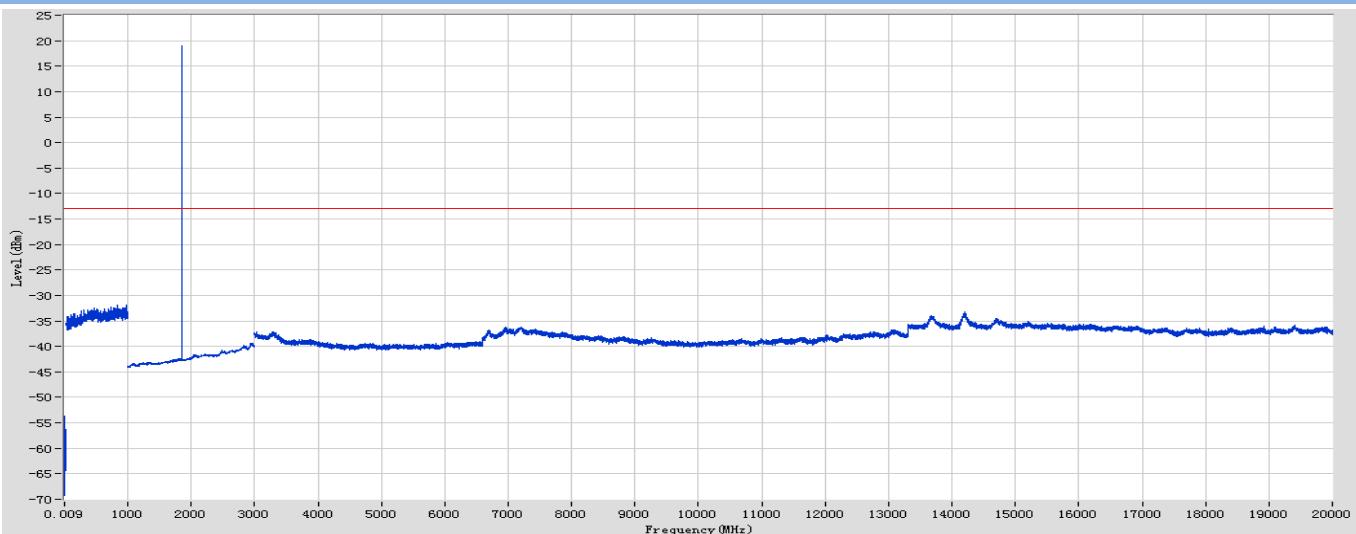
Start Frequency[MHz]	Stop Frequency[MHz]	RBW [MHz]	Detector	Frequency [MHz]	Emission[dBm]	Limit [dBm]	Margin [dB]	Verdict
30.00	500.00	0.10	Peak	495.00	-42.75	-13.00	29.75	Pass
500.00	1000.00	0.10	Peak	836.57	N/A	N/A	N/A	N/A
1000.00	10000.00	1.00	Peak	6948.73	-24.95	-13.00	11.95	Pass

## GSM 850MHz CHANNEL 251



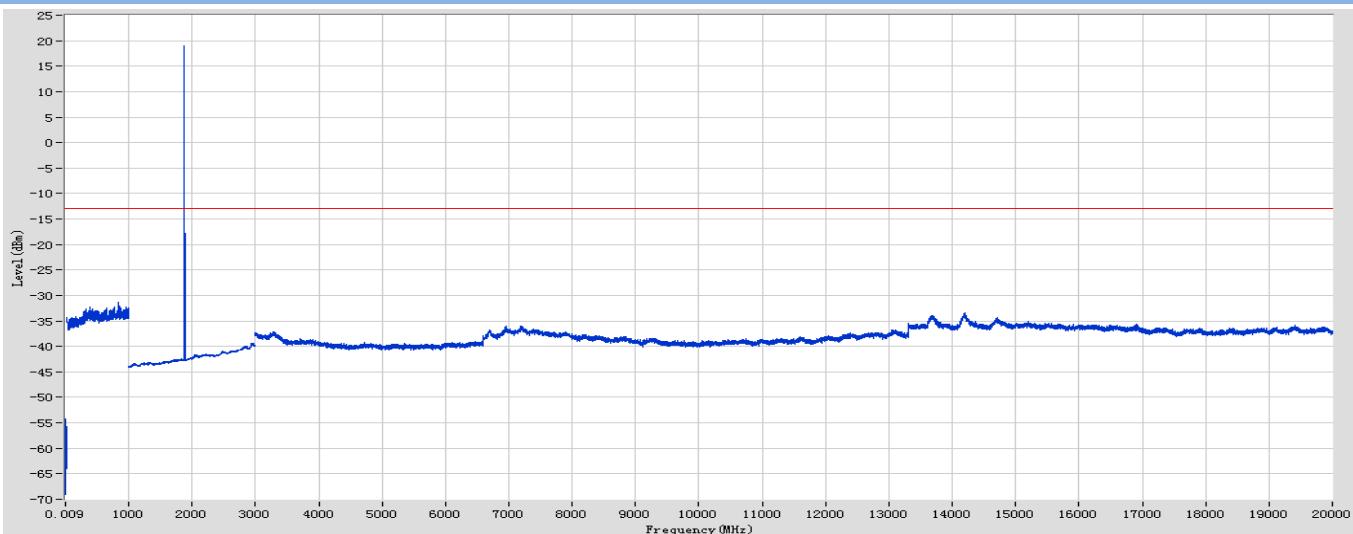
Start Frequency[MHz]	Stop Frequency[MHz]	RBW [MHz]	Detector	Frequency [MHz]	Emission[dBm]	Limit [dBm]	Margin [dB]	Verdict
30.00	500.00	0.10	Peak	418.38	-42.96	-13.00	29.96	Pass
500.00	1000.00	0.10	Peak	848.77	33.63	N/A	N/A	N/A
1000.00	10000.00	1.00	Peak	7005.73	-25.59	-13.00	12.59	Pass

## GSM 1900MHz CHANNEL 512



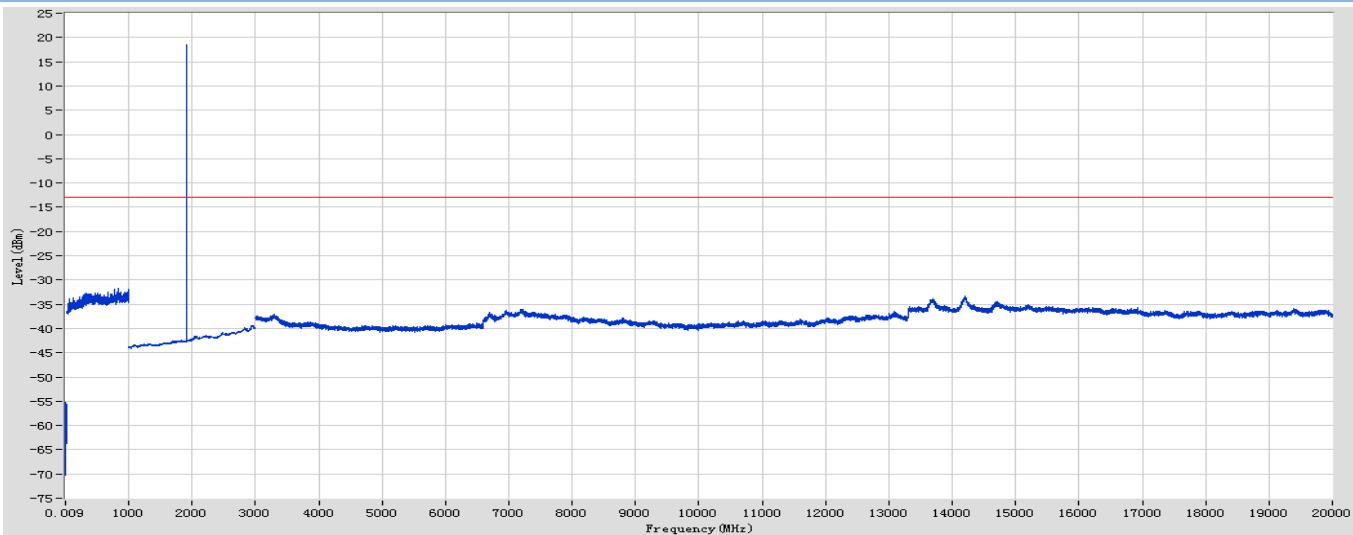
Start Frequency[MHz]	Stop Frequency[MHz]	RBW [MHz]	Detector	Frequency [MHz]	Emission[dBm]	Limit [dBm]	Margin [dB]	Verdict
30.00	1000.00	1.00	Peak	974.97	-31.81	-13.00	18.81	Pass
1000.00	3000.00	1.00	RMS	1850.43	18.99	N/A	N/A	N/A
3000.00	20000.00	1.00	RMS	14206.37	-33.29	-13.00	20.29	Pass

## GSM 1900MHz CHANNEL 661



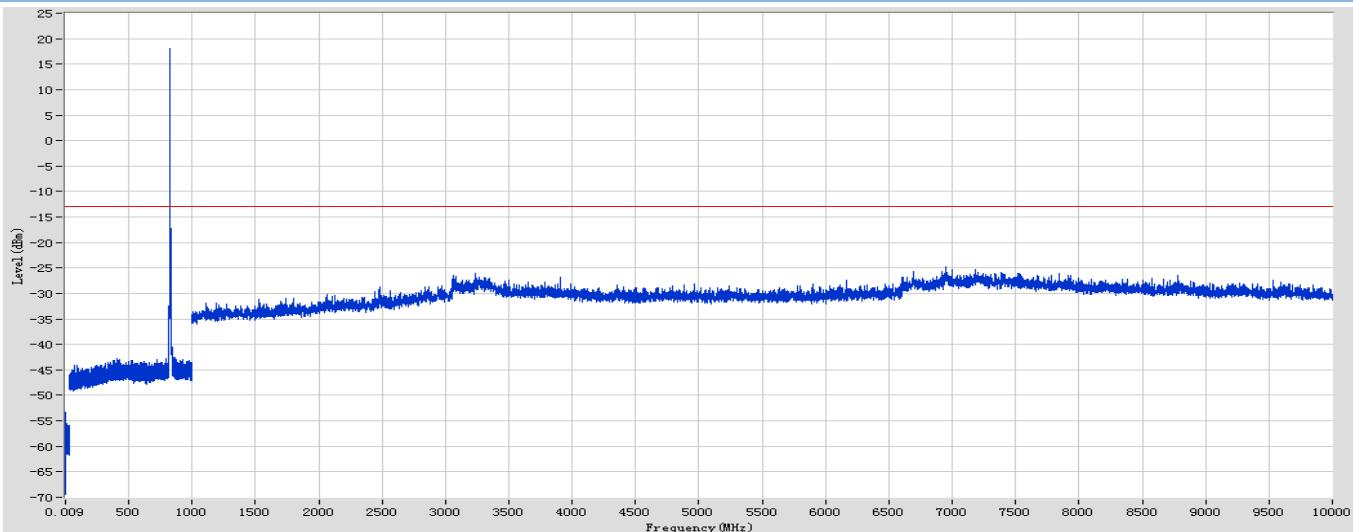
Start Frequency[MHz]	Stop Frequency[MHz]	RBW [MHz]	Detector	Frequency [MHz]	Emission[dBm]	Limit [dBm]	Margin [dB]	Verdict
30.00	1000.00	1.00	Peak	833.83	-31.40	-13.00	18.40	Pass
1000.00	3000.00	1.00	RMS	1880.44	19.04	N/A	N/A	N/A
3000.00	20000.00	1.00	RMS	14195.37	-33.48	-13.00	20.48	Pass

## GSM 1900MHz CHANNEL 810



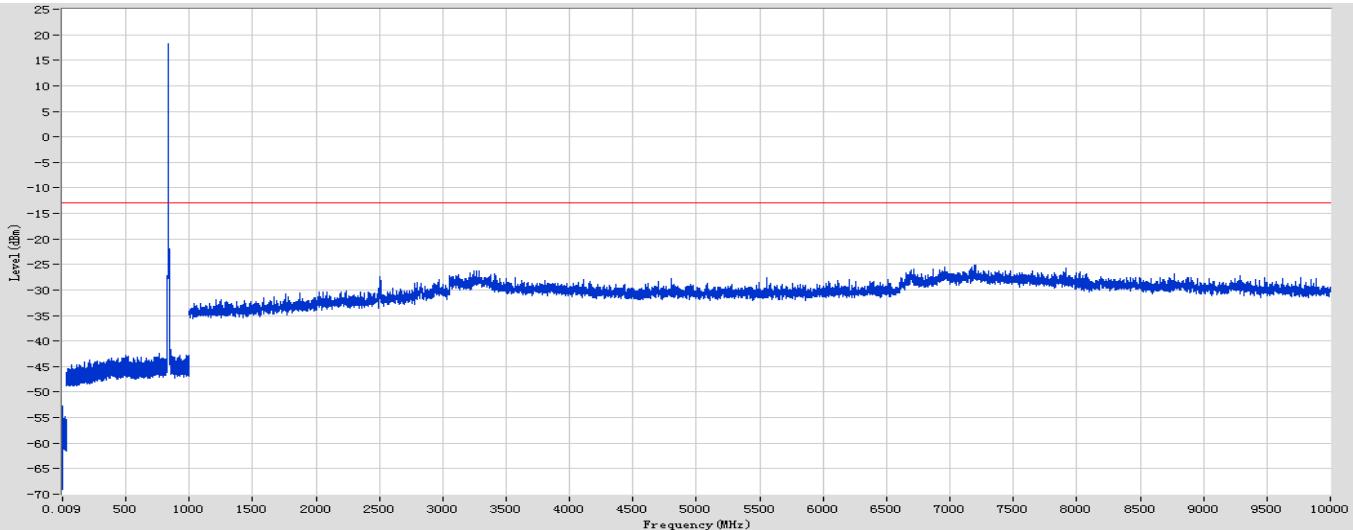
Start Frequency[MHz]	Stop Frequency[MHz]	RBW [MHz]	Detector	Frequency [MHz]	Emission[dBm]	Limit [dBm]	Margin [dB]	Verdict
30.00	1000.00	1.00	Peak	840.84	-31.62	-13.00	18.62	Pass
1000.00	3000.00	1.00	RMS	1909.45	18.57	N/A	N/A	N/A
3000.00	20000.00	1.00	RMS	14204.37	-33.31	-13.00	20.31	Pass

## WCDMA 850MHz CHANNEL 4132



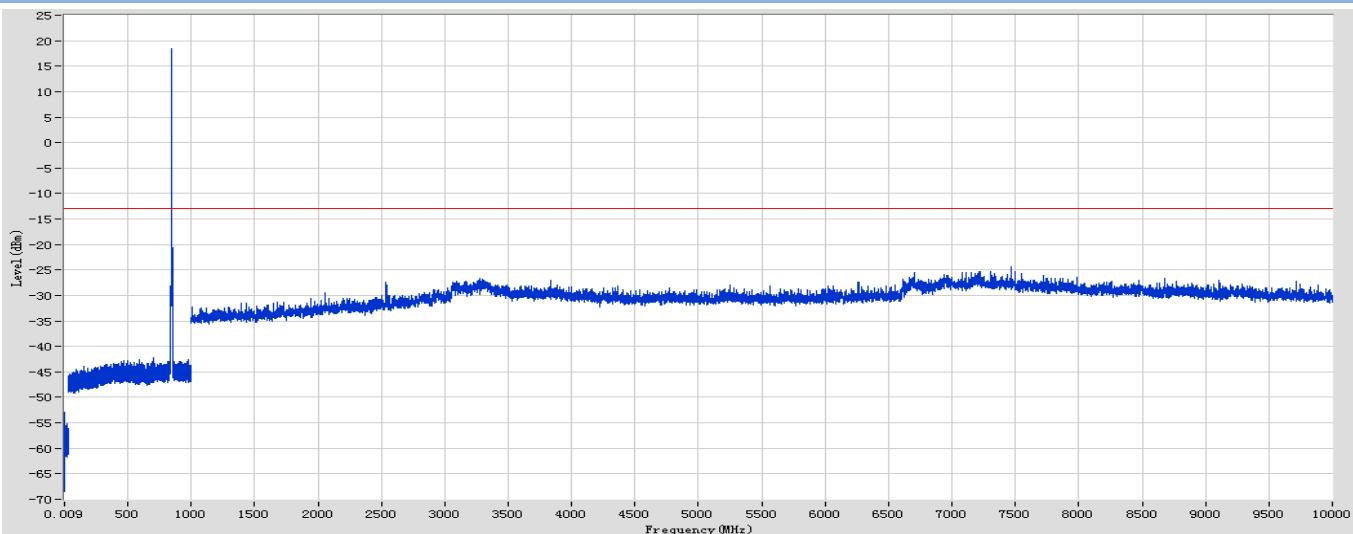
Start Frequency [MHz]	Stop Frequency [MHz]	RBW [MHz]	Detector	Frequency [MHz]	Emission [dBm]	Limit [dBm]	Margin [dB]	Verdict
30.00	500.00	0.10	Peak	411.58	-42.78	-13.00	29.78	Pass
500.00	1000.00	0.10	Peak	826.17	18.03	N/A	N/A	N/A
1000.00	10000.00	1.00	Peak	6945.73	-24.84	-13.00	11.84	Pass

## WCDMA 850MHz CHANNEL 4183



Start Frequency [MHz]	Stop Frequency [MHz]	RBW [MHz]	Detector	Frequency [MHz]	Emission [dBm]	Limit [dBm]	Margin [dB]	Verdict
30.00	500.00	0.10	Peak	479.20	-43.32	-13.00	30.32	Pass
500.00	1000.00	0.10	Peak	834.07	18.18	N/A	N/A	N/A
1000.00	10000.00	1.00	Peak	7194.76	-25.05	-13.00	12.05	Pass

## WCDMA 850MHz CHANNEL 4233



Start Frequency [MHz]	Stop Frequency [MHz]	RBW [MHz]	Detector	Frequency [MHz]	Emission [dBm]	Limit [dBm]	Margin [dB]	Verdict
30.00	500.00	0.10	Peak	494.60	-42.75	-13.00	29.75	Pass
500.00	1000.00	0.10	Peak	845.47	18.35	N/A	N/A	N/A
1000.00	10000.00	1.00	Peak	7467.79	-24.43	-13.00	11.43	Pass

## WCDMA 1700MHz CHANNEL 1312



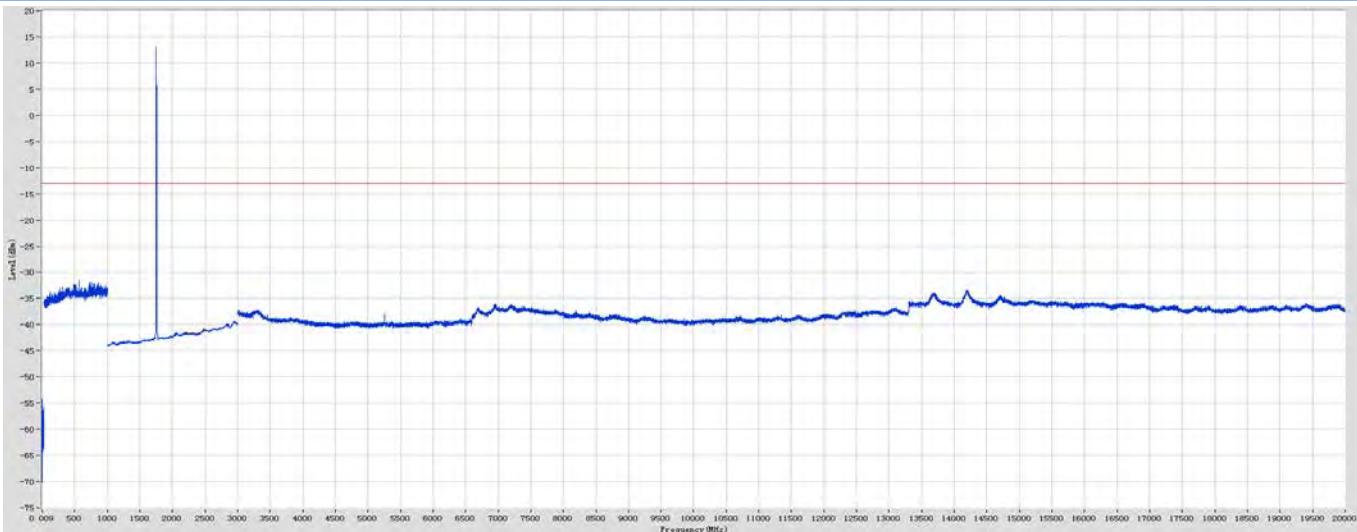
Start Frequency [MHz]	Stop Frequency [MHz]	RBW [MHz]	Detector	Frequency [MHz]	Emission [dBm]	Limit [dBm]	Margin [dB]	Verdict
30.00	1000.00	1.00	Peak	860.86	-31.69	-13.00	18.69	Pass
1000.00	3000.00	1.00	RMS	1713.36	15.20	N/A	N/A	N/A
3000.00	20000.00	1.00	RMS	14196.37	-33.33	-13.00	20.33	Pass

## WCDMA 1700MHz CHANNEL 1413



Start Frequency [MHz]	Stop Frequency [MHz]	RBW [MHz]	Detector	Frequency [MHz]	Emission [dBm]	Limit [dBm]	Margin [dB]	Verdict
30.00	1000.00	1.00	Peak	857.85	-32.25	-13.00	19.25	Pass
1000.00	3000.00	1.00	RMS	1732.37	13.65	N/A	N/A	N/A
3000.00	20000.00	1.00	RMS	14204.37	-33.22	-13.00	20.22	Pass

## WCDMA 1700MHz CHANNEL 1513



Start Frequency [MHz]	Stop Frequency [MHz]	RBW [MHz]	Detector	Frequency [MHz]	Emission [dBm]	Limit [dBm]	Margin [dB]	Verdict
30.00	1000.00	1.00	Peak	570.56	-31.57	-13.00	18.57	Pass
1000.00	3000.00	1.00	RMS	1753.38	13.05	N/A	N/A	N/A
3000.00	20000.00	1.00	RMS	14199.37	-33.30	-13.00	20.30	Pass

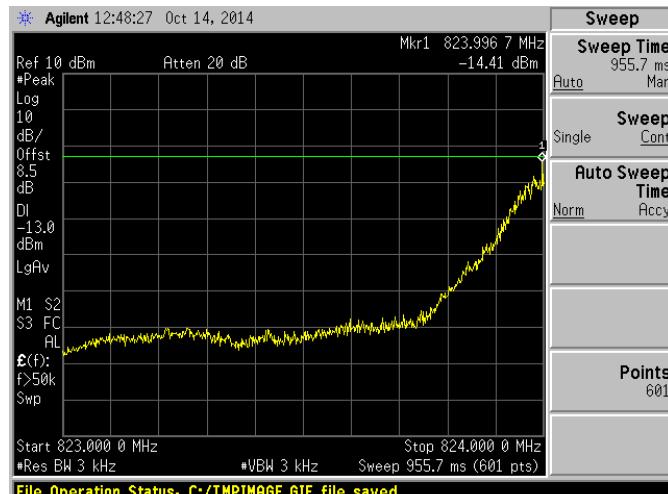
## A.6 Band Edge

### Test Data

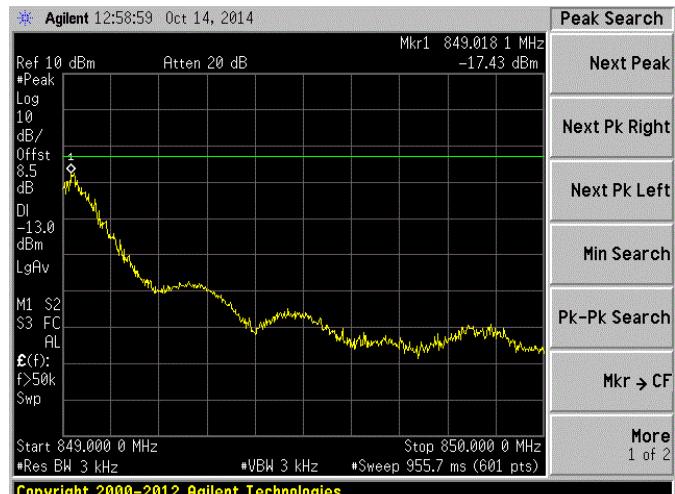
Band	Channel	Frequency (MHz)	Measured Max. Band Edge Emission (dBm)	Limit (dBm)	Verdict
GSM 850	128	824.2	-14.41	-13	PASS
	251	848.8	-17.43		PASS
GSM 1900	512	1850.2	-16.36	-13	PASS
	810	1909.8	-15.13		PASS
GPRS 850	128	824.2	-16.59	-13	PASS
	251	848.8	-16.96		PASS
GPRS 1900	512	1850.2	-16.72	-13	PASS
	810	1909.8	-15.44		PASS
EGPRS 850	128	824.2	-14.05	-13	PASS
	251	848.8	-16.59		PASS
EGPRS 1900	512	1850.2	-15.79	-13	PASS
	810	1909.8	-16.13		PASS
WCDMA 850	4132	826.4	-20.67	-13	PASS
	4233	846.6	-20.48		PASS
WCDMA 1700	1312	1712.4	-27.89	-13	PASS
	1513	1752.6	-27.05		PASS

### Test Plots

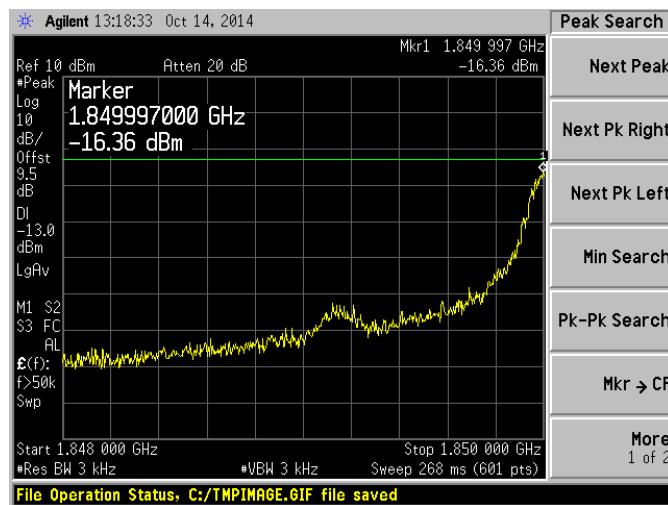
GSM 850MHz CHANNEL 128



GSM 850MHz CHANNEL 251



### GSM 1900MHz CHANNEL 512



### GSM 1900MHz CHANNEL 810



### GPRS 850MHz CHANNEL 128



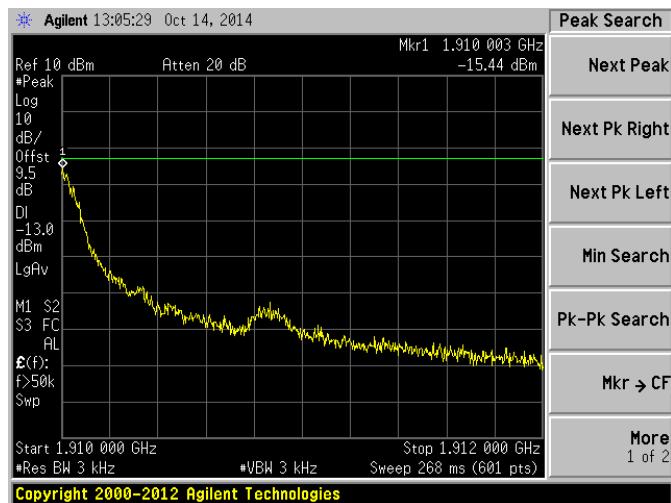
### GPRS 850MHz CHANNEL 251



### GPRS1900MHz CHANNEL 512



### GPRS 1900MHz CHANNEL 810



### EGPRS 850MHz CHANNEL 128



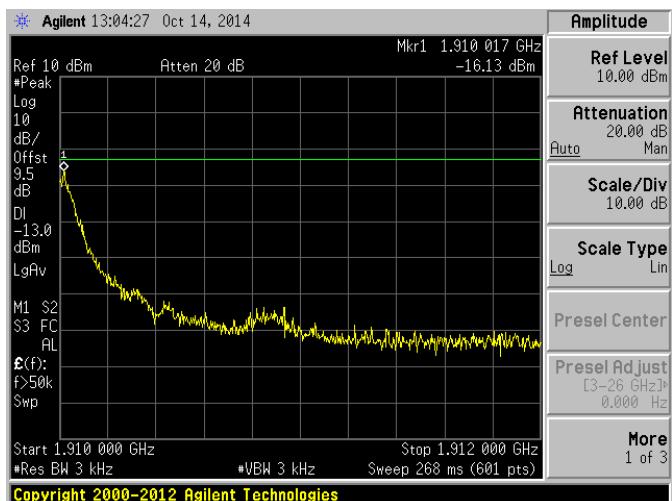
### EGPRS 850MHz CHANNEL 251



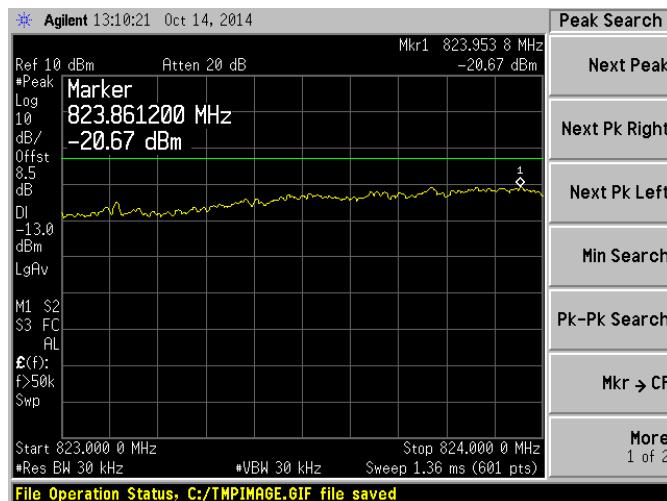
### EGPRS 1900MHz CHANNEL 512



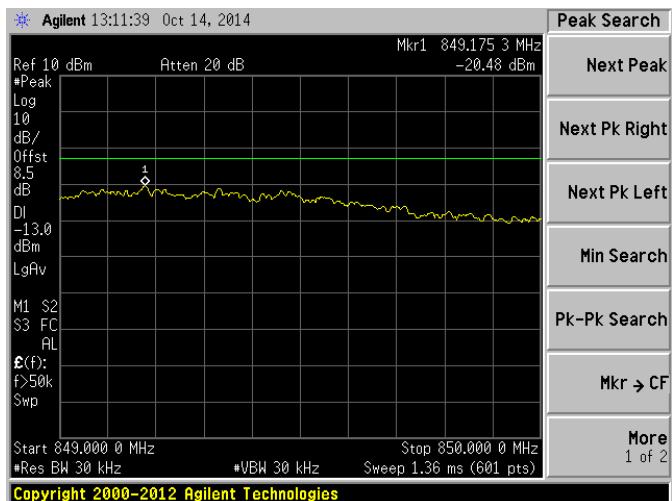
### EGPRS 1900MHz CHANNEL 810



### WCDMA 850MHz CHANNEL 4132



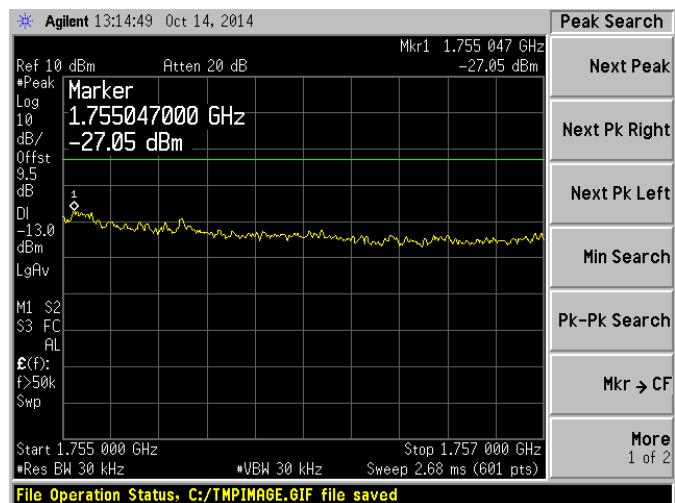
### WCDMA 850MHz CHANNEL 4233



## WCDMA 1700MHz CHANNEL1312



## WCDMA 1700MHz CHANNEL 1513



### A.7 Transmitter Radiated Power (EIRP/ERP)

Minimum RF power: GSM850 5.23dBm, GSM 1900 -0.67dBm, WCDMA 850 -1.61dBm, WCDMA 1700 -0.39dBm.

#### Test Data

GSM Mode Test data:

Band	Channel	Frequency (MHz)	PCL	Measured ERP				Limit		Verdict
				SA Read Value dBm	Correction Factor(dB)	ERP (dBm)	ERP (W)	dBm	W	
GSM 850	128	824.20	5	-4.29	37.02	32.73	1.87	38.5	7	PASS
	190	836.60	5	-3.98	37.02	33.04	2.01			PASS
	251	848.80	5	-4.85	37.02	32.17	1.65			PASS
GPRS 850	128	824.20	5	-5.06	37.02	31.96	1.57	38.5	7	PASS
	190	836.60	5	-5.67	37.02	31.35	1.36			PASS
	251	848.80	5	-6.08	37.02	30.94	1.24			PASS
EGPRS 850	128	824.20	5	-4.26	37.02	32.76	1.89	38.5	7	PASS
	190	836.60	5	-3.93	37.02	33.09	2.04			PASS
	251	848.80	5	-4.92	37.02	32.10	1.62			PASS

Band	Channel	Frequency (MHz)	PCL	Measured EIRP				Limit		Verdict
				SA Read Value (dBm)	Correction Factor(dB)	EIRP (dBm)	EIRP (W)	dBm	W	
GSM 1900	512	1850.2	0	-12.61	39.21	26.60	0.46	33	2	PASS
	661	1880.0	0	-12.63	39.21	26.58	0.45			PASS
	810	1909.8	0	-12.83	39.21	26.38	0.43			PASS
GPRS 1900	512	1850.2	0	-15.20	39.21	24.01	0.25	33	2	PASS
	661	1880.0	0	-15.49	39.21	23.72	0.24			PASS
	810	1909.8	0	-16.26	39.21	22.95	0.20			PASS
EGPRS 1900	512	1850.2	0	-13.17	39.21	26.04	0.40	33	2	PASS
	661	1880.0	0	-13.13	39.21	26.08	0.41			PASS
	810	1909.8	0	-13.53	39.21	25.68	0.37			PASS

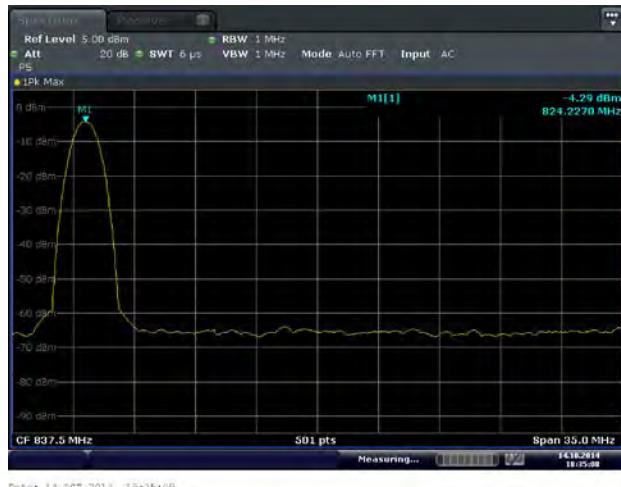
## WCDMA Mode Test data:

Band	Channel	Frequency (MHz)	Measured ERP				Limit		Verdict
			SA Read Value (dBm)	Correction Factor(dB)	ERP (dBm)	ERP (W)	dBm	W	
WCDMA 850	4132	826.4	-14.12	37.02	22.90	0.19	38.5	7	PASS
	4183	836.6	-14.08	37.02	22.94	0.20			PASS
	4233	846.6	-14.86	37.02	22.16	0.16			PASS

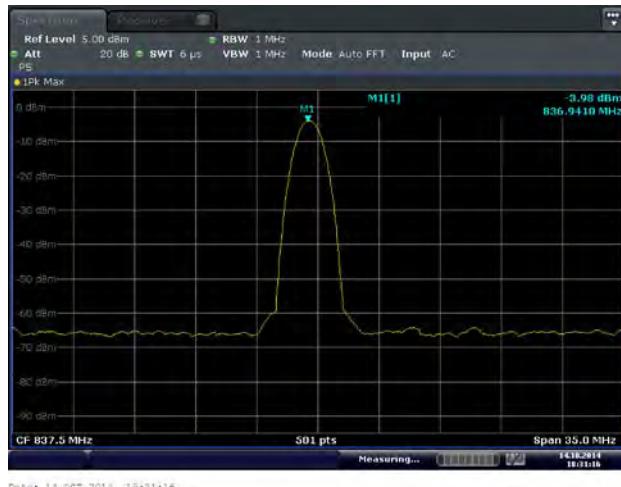
Band	Channel	Frequency (MHz)	Measured EIRP				Limit		Verdict
			SA Read Value (dBm)	Correction Factor(dB)	EIRP (dBm)	EIRP (W)	dBm	W	
WCDMA 1700	1312	1712.4	-16.52	39.11	22.59	0.19	33	2	PASS
	1413	1732.6	-16.62	39.11	22.49	0.18			PASS
	1513	1752.6	-17.16	39.11	21.95	0.16			PASS

Test Plots

GSM 850MHz CHANNEL 128



GSM 850MHz CHANNEL 190



GSM 850MHz CHANNEL 251



GSM 1900MHz CHANNEL 512



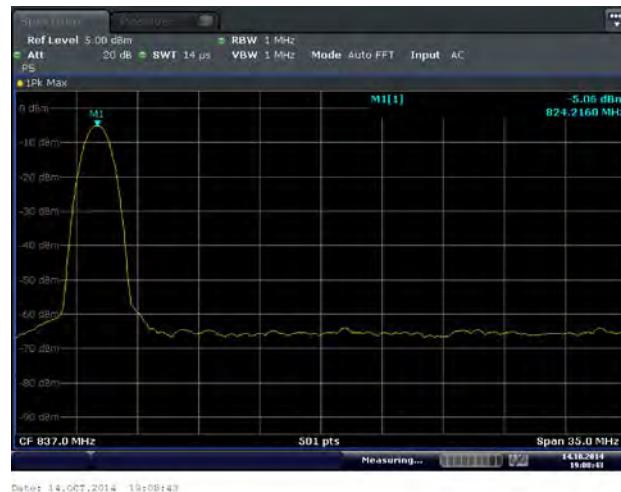
## GSM 1900MHz CHANNEL 661



## GSM 1900MHz CHANNEL 810



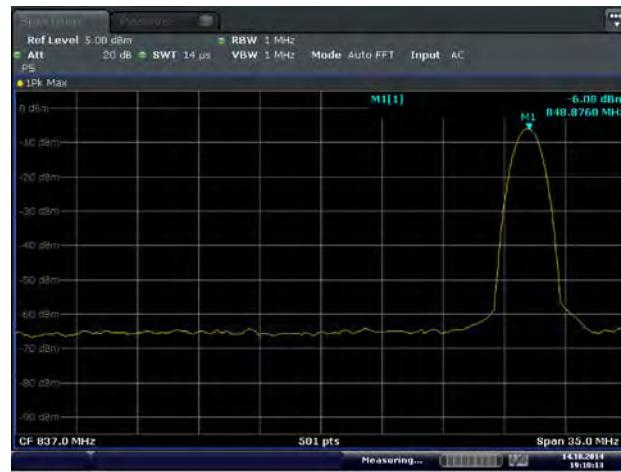
## GPRS 850MHz CHANNEL 128



## GPRS 850MHz CHANNEL 190



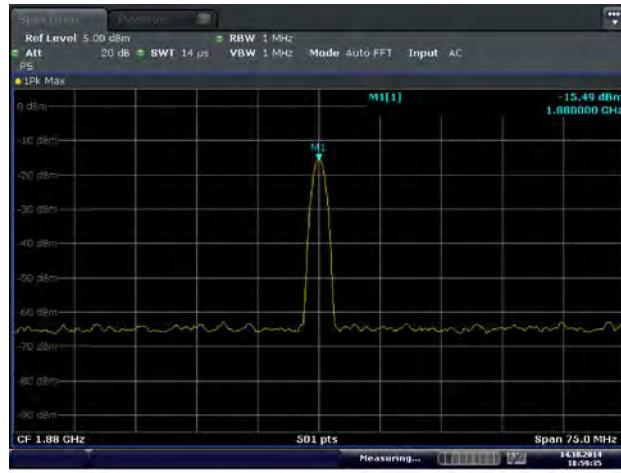
## GPRS 850MHz CHANNEL 251



## GPRS 1900MHz CHANNEL 512



## GPRS 1900MHz CHANNEL 661



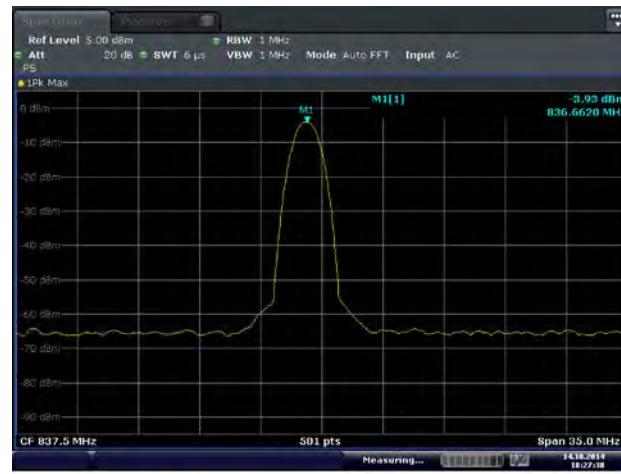
## GPRS 1900MHz CHANNEL 810



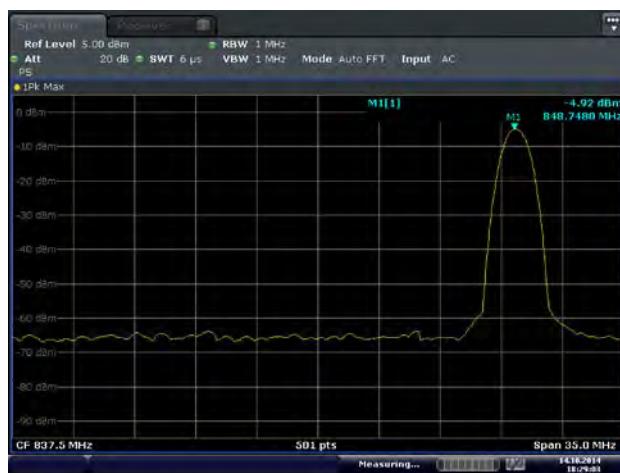
## EGPRS 850MHz CHANNEL 128



## EGPRS 850MHz CHANNEL 190

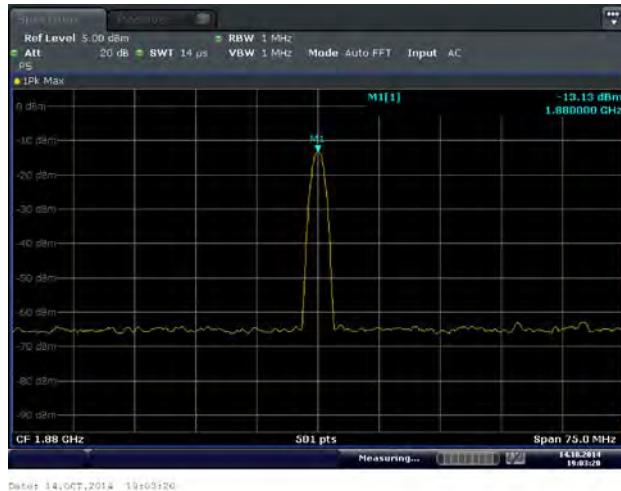
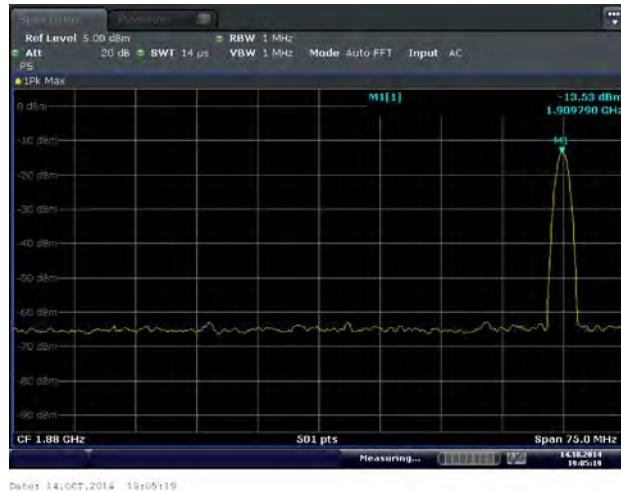
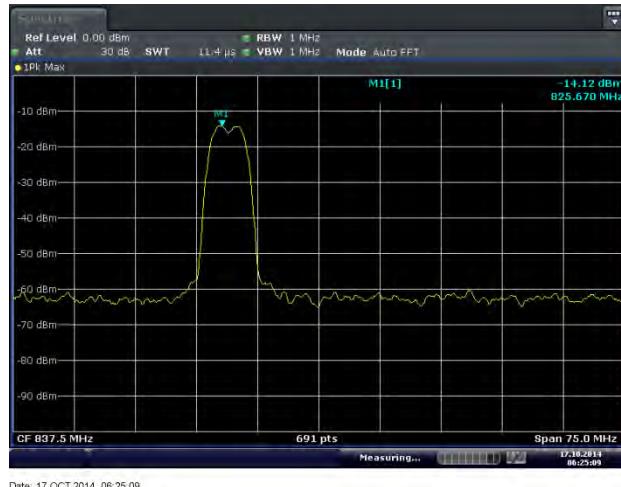
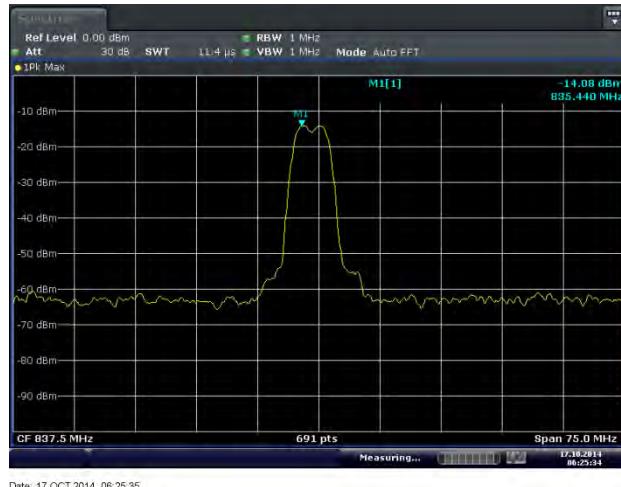
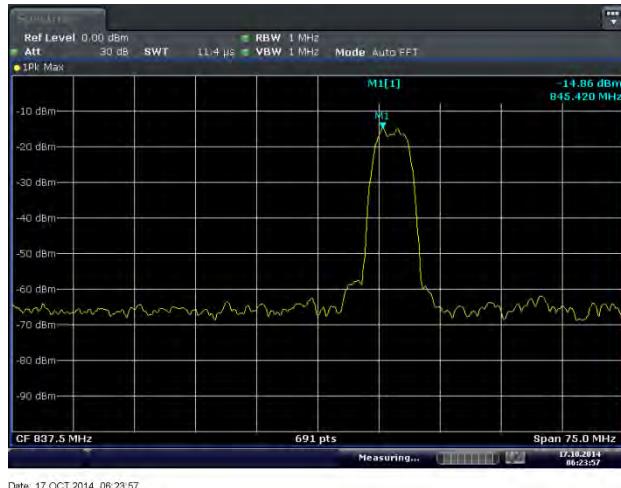
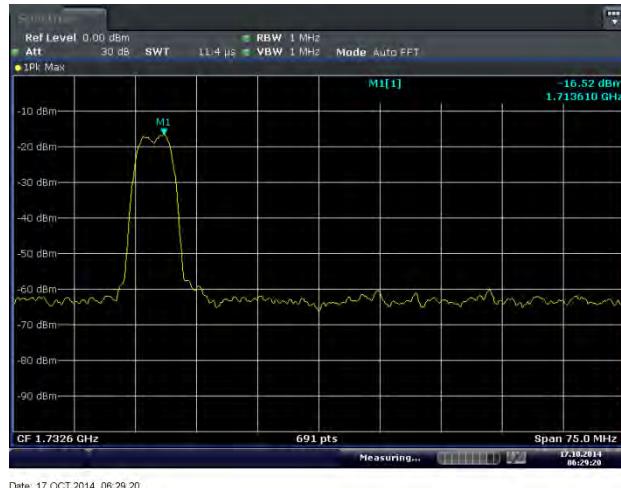


## EGPRS 850MHz CHANNEL 251

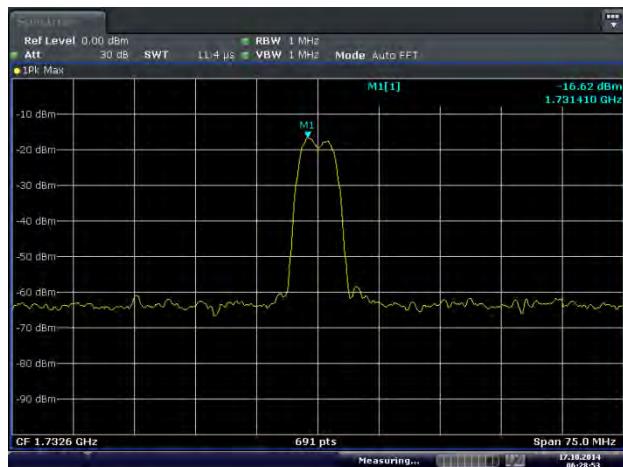


## EGPRS 1900MHz CHANNEL 512



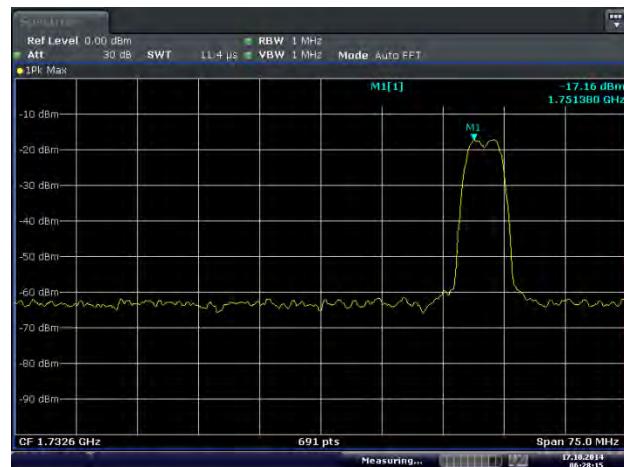
**EGPRS 1900MHz CHANNEL 661**

**EGPRS 1900MHz CHANNEL 810**

**WCDMA 850MHz CHANNEL 4132**

**WCDMA 850MHz CHANNEL 4183**

**WCDMA 850MHz CHANNEL 4233**

**WCDMA 1700MHz CHANNEL 1312**


## WCDMA 1700MHz CHANNEL 1413



Date: 17.OCT.2014 06:28:54

## WCDMA 1700MHz CHANNEL 1513



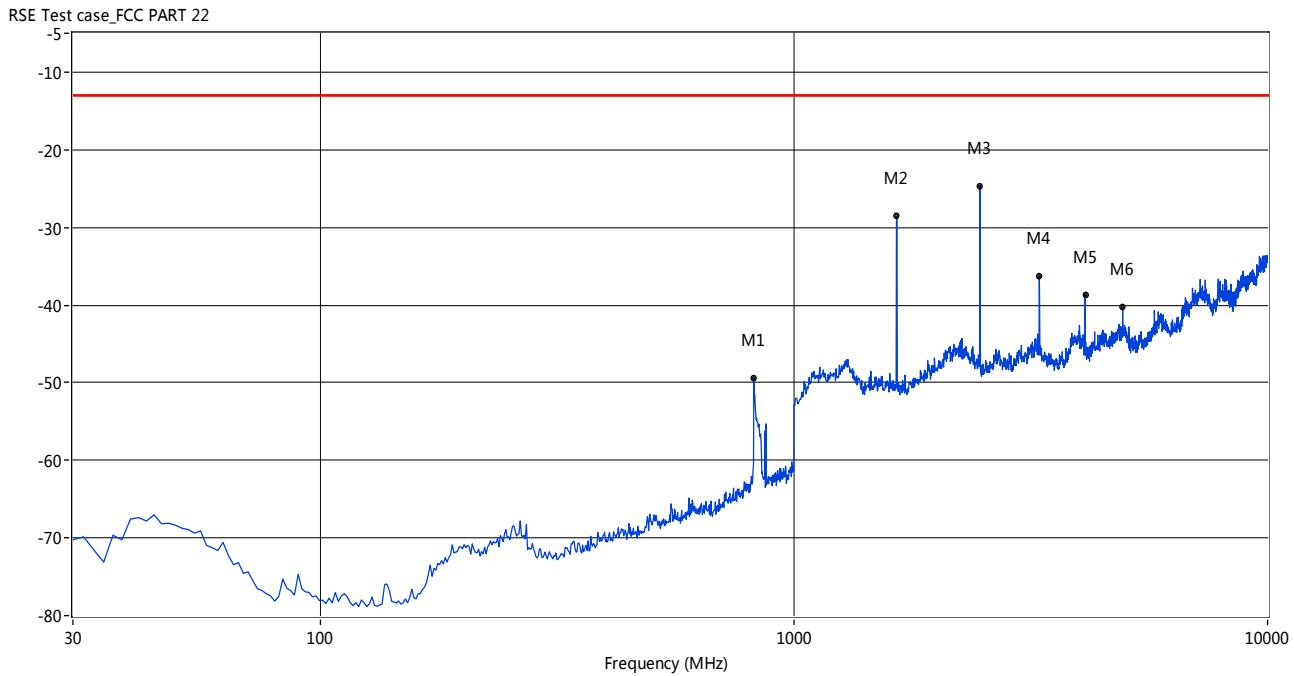
Date: 17.OCT.2014 06:28:14

## A.8 Radiated Out of Band Emissions

Note: GSM and GPRS, EGPRS modes have been verified, only the worst data with different data bandwidth show here.

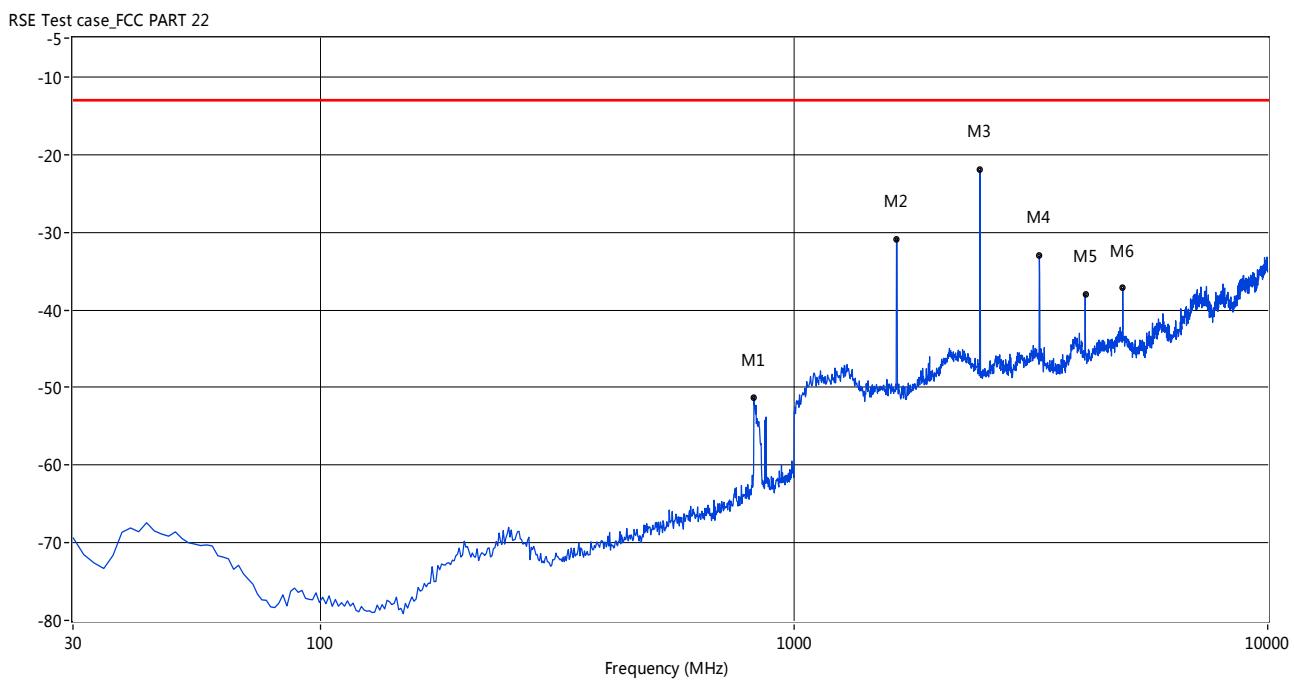
### Test Data

#### GSM 850MHz CHANNEL 128, ANT V



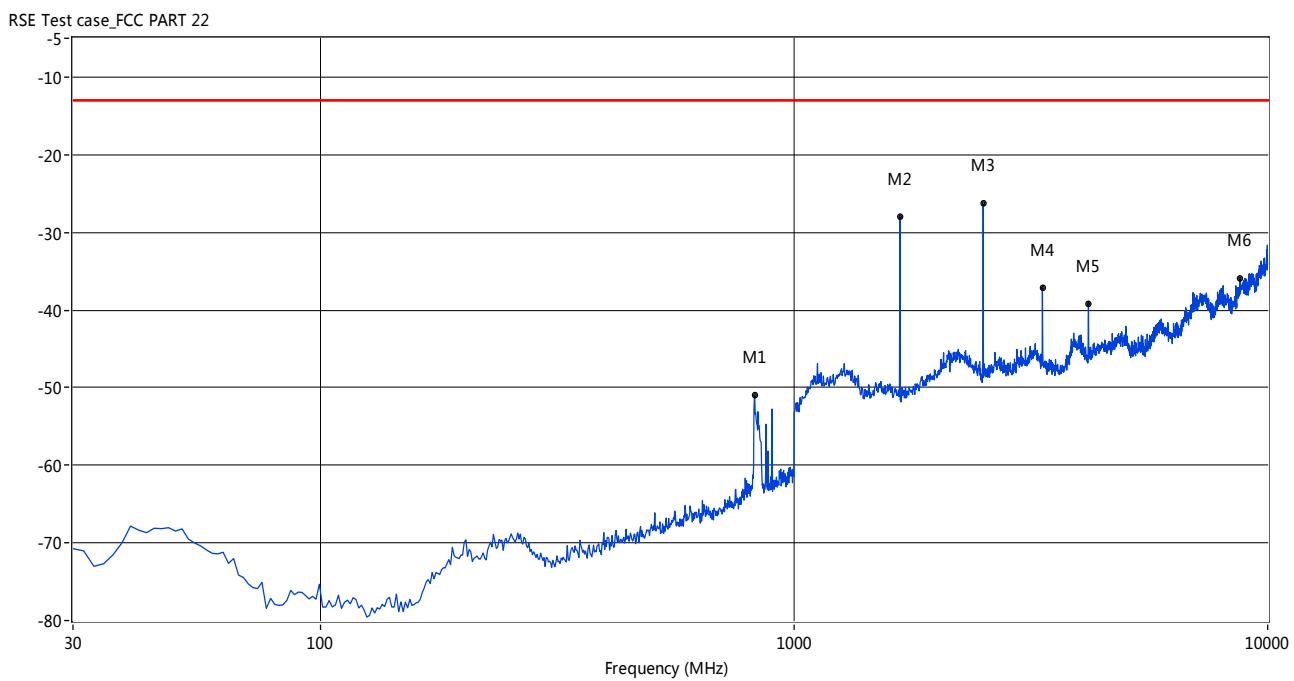
Frequency (MHz)	Peak level (dBm)	Factor (dB)	PK Limit (dBm)	Margin (dB)	Table (o)	ANT	Verdict
822.46	-49.45	16.39	-13.0	36.45	282.10	Vertical	PASS
1645.59	-28.57	10.96	-13.0	15.57	53.20	Vertical	PASS
2470.88	-24.70	14.33	-13.0	11.70	271.90	Vertical	PASS
3294.51	-36.29	21.56	-13.0	23.29	263.30	Vertical	PASS
4118.14	-38.64	23.86	-13.0	25.64	360.00	Vertical	PASS
4941.76	-40.31	26.05	-13.0	27.31	200.70	Vertical	PASS

## GSM 850MHz CHANNEL 128, ANT H



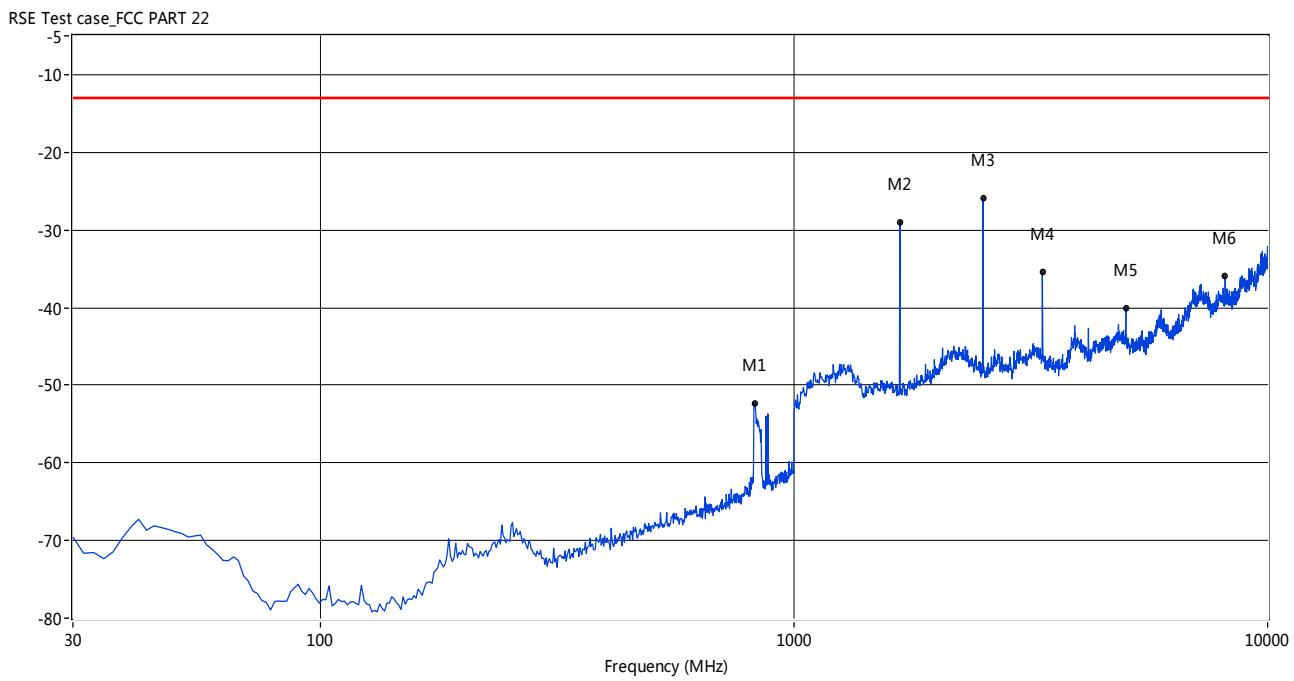
Frequency (MHz)	Peak level (dBm)	Factor (dB)	PK Limit (dBm)	Margin (dB)	Table (o)	ANT	Verdict
822.46	-51.31	16.39	-13.0	38.31	346.70	Horizontal	PASS
1645.59	-30.88	10.96	-13.0	17.88	212.00	Horizontal	PASS
2470.88	-21.99	14.33	-13.0	8.99	48.00	Horizontal	PASS
3294.51	-33.06	21.56	-13.0	20.06	324.90	Horizontal	PASS
4118.14	-37.97	23.86	-13.0	24.97	46.70	Horizontal	PASS
4941.76	-37.22	26.05	-13.0	24.22	310.40	Horizontal	PASS

## GSM 850MHz CHANNEL 190, ANT V



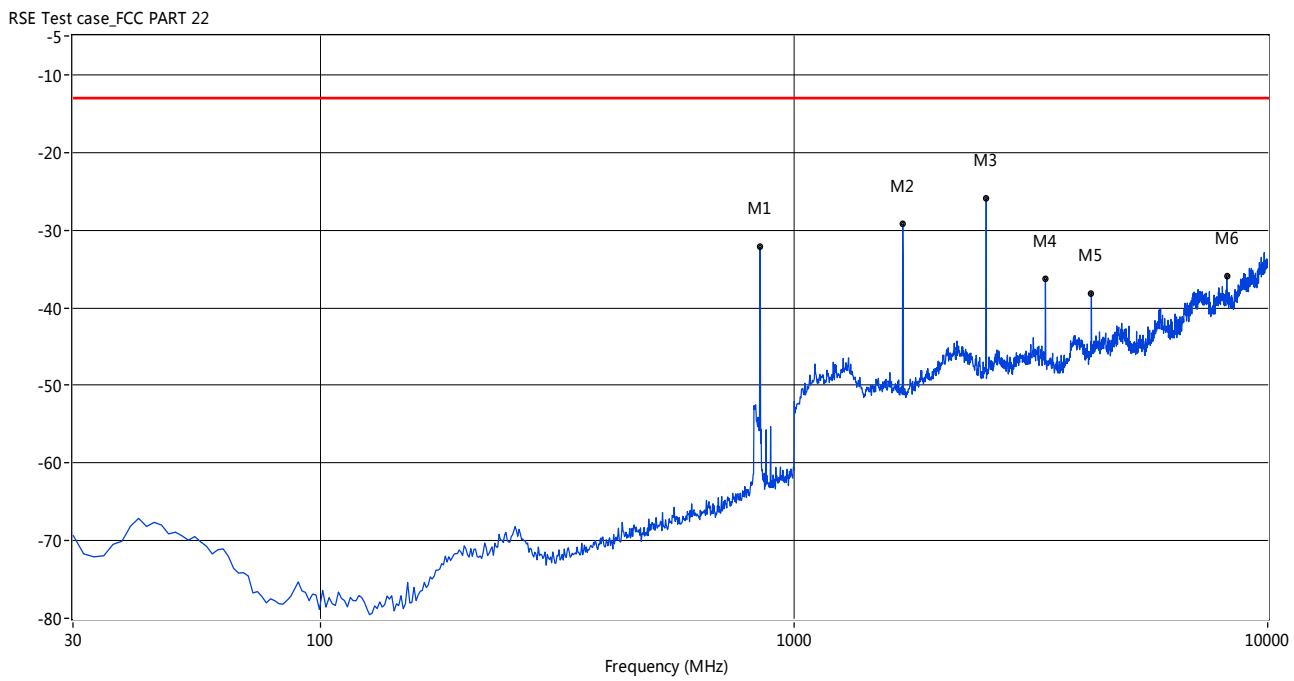
Frequency (MHz)	Peak level (dBm)	Factor (dB)	PK Limit (dBm)	Margin (dB)	Table (o)	ANT	Verdict
825.69	-51.02	15.80	-13.0	38.02	41.80	Vertical	PASS
1672.21	-27.95	10.80	-13.0	14.95	53.50	Vertical	PASS
2507.49	-26.32	14.13	-13.0	13.32	254.20	Vertical	PASS
3344.43	-37.11	21.58	-13.0	24.11	210.00	Vertical	PASS
4183.03	-39.18	23.73	-13.0	26.18	340.40	Vertical	PASS
8735.44	-35.94	32.28	-13.0	22.94	247.10	Vertical	PASS

## GSM 850MHz CHANNEL 190, ANT H



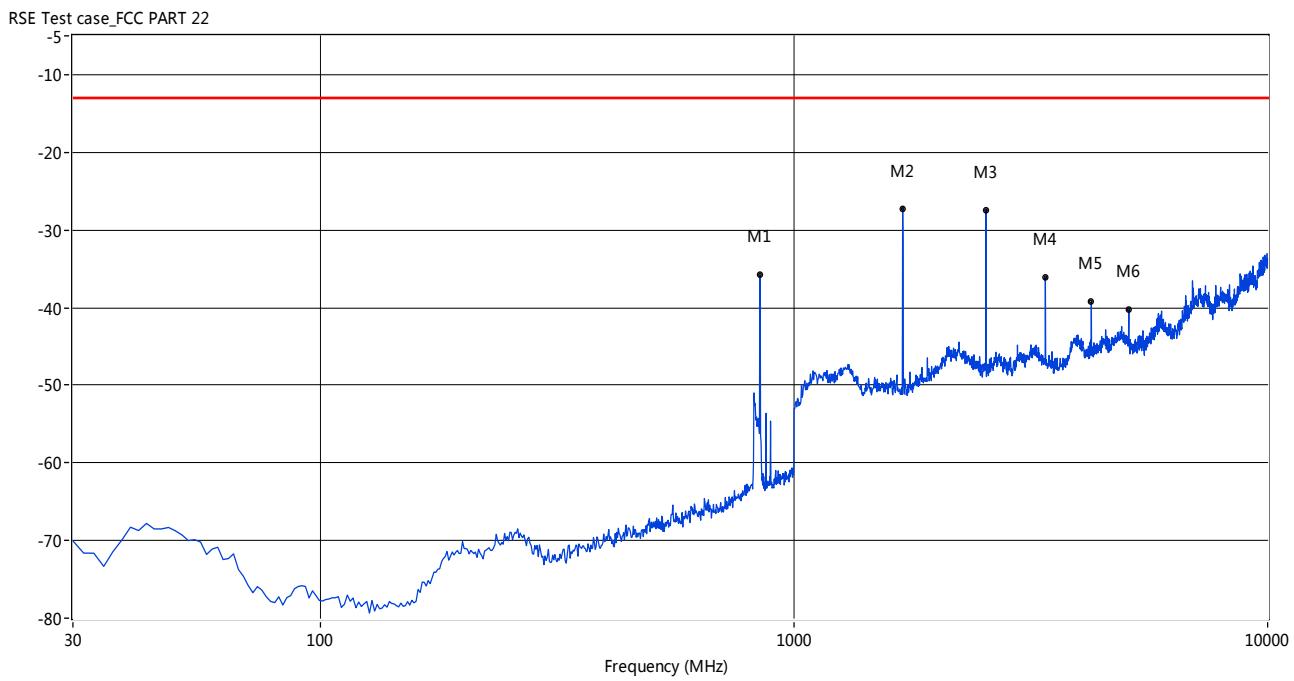
Frequency (MHz)	Peak level (dBm)	Factor (dB)	PK Limit (dBm)	Margin (dB)	Table (o)	ANT	Verdict
824.08	-52.31	16.10	-13.0	39.31	108.30	Horizontal	PASS
1672.21	-28.94	10.80	-13.0	15.94	159.40	Horizontal	PASS
2507.49	-25.89	14.13	-13.0	12.89	213.80	Horizontal	PASS
3344.43	-35.48	21.58	-13.0	22.48	314.40	Horizontal	PASS
5016.64	-40.04	26.14	-13.0	27.04	324.00	Horizontal	PASS
8136.44	-35.92	30.78	-13.0	22.92	238.60	Horizontal	PASS

## GSM 850MHz CHANNEL 251, ANT V



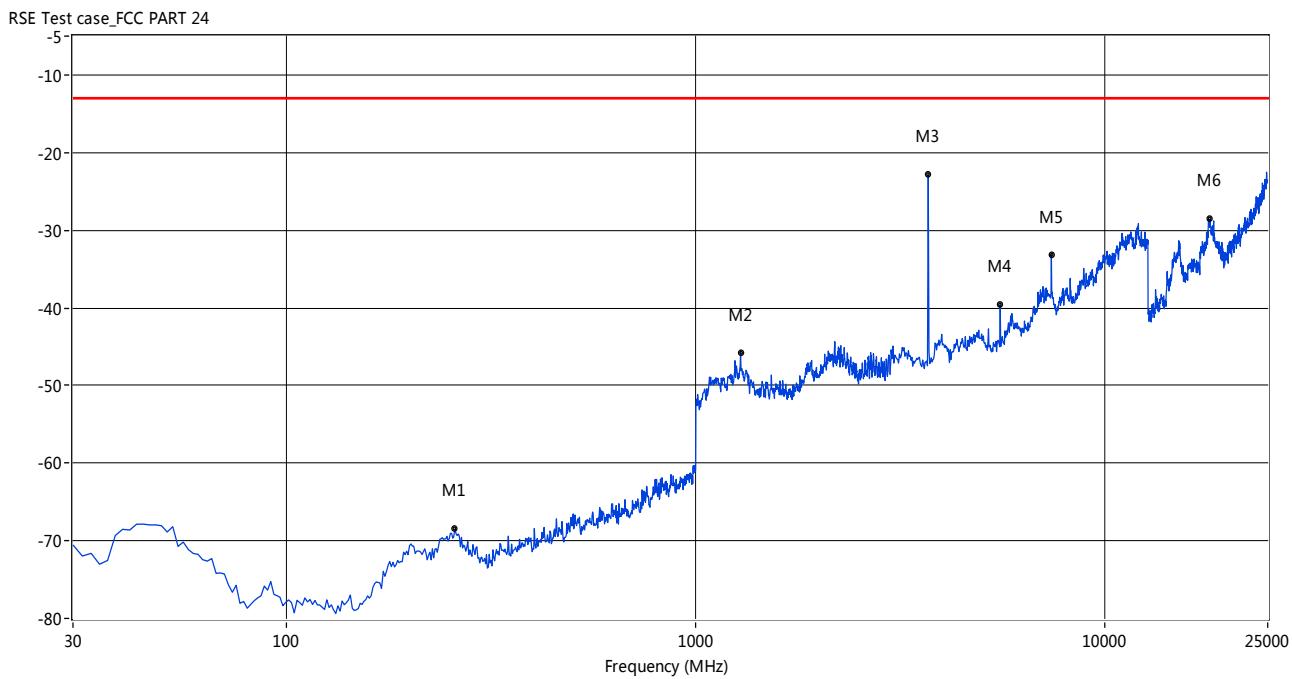
Frequency (MHz)	Peak level (dBm)	Factor (dB)	PK Limit (dBm)	Margin (dB)	Table (o)	ANT	Verdict
846.67	-32.18	11.95	-13.0	19.18	120.40	Vertical	PASS
1695.51	-29.26	10.96	-13.0	16.26	223.40	Vertical	PASS
2544.09	-25.95	14.46	-13.0	12.95	34.30	Vertical	PASS
3394.34	-36.32	21.68	-13.0	23.32	200.60	Vertical	PASS
4242.93	-38.11	24.10	-13.0	25.11	350.00	Vertical	PASS
8196.34	-35.92	30.84	-13.0	22.92	257.10	Vertical	PASS

## GSM 850MHz CHANNEL 251, ANT H



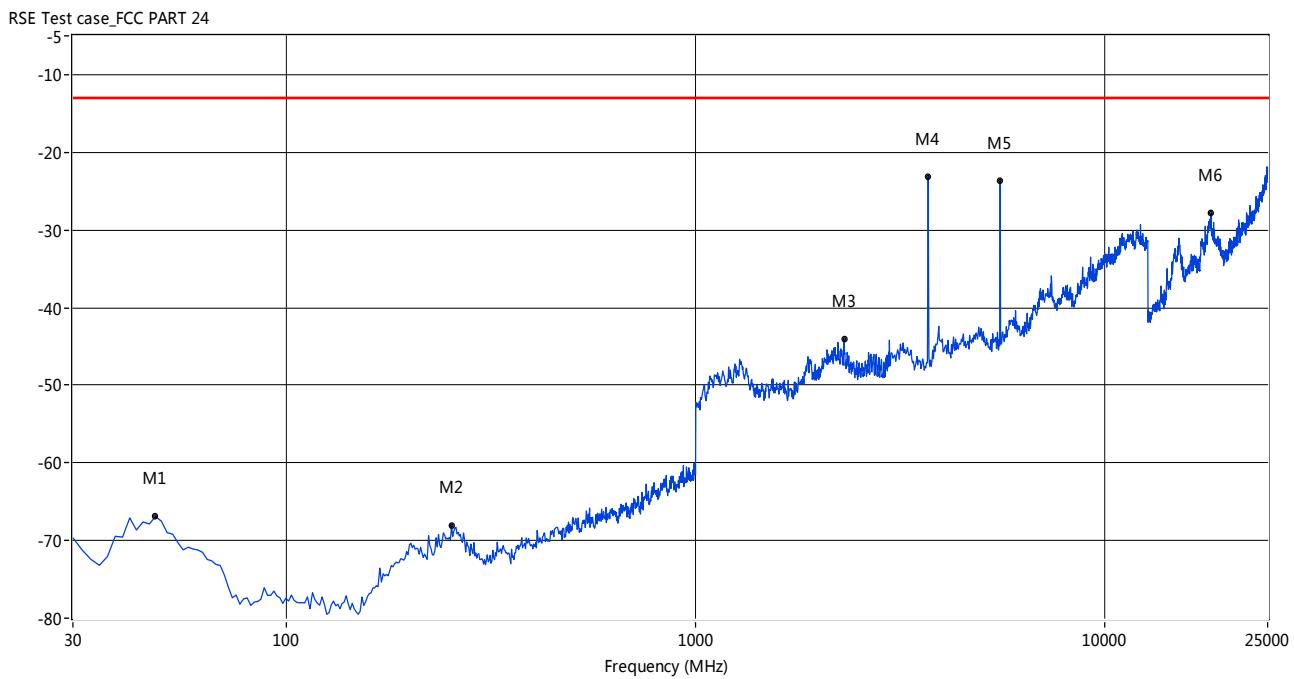
Frequency (MHz)	Peak level (dBm)	Factor (dB)	PK Limit(dBm)	Margin (dB)	Table (o)	ANT	Verdict
846.67	-35.78	11.95	-13.0	22.78	139.10	Horizontal	PASS
1695.51	-27.25	10.96	-13.0	14.25	24.60	Horizontal	PASS
2544.09	-27.40	14.46	-13.0	14.40	359.10	Horizontal	PASS
3394.34	-36.10	21.68	-13.0	23.10	41.80	Horizontal	PASS
4242.93	-39.24	24.10	-13.0	26.24	118.60	Horizontal	PASS
5091.51	-40.23	25.40	-13.0	27.23	326.00	Horizontal	PASS

## GSM 1900MHz CHANNEL 512, ANT V



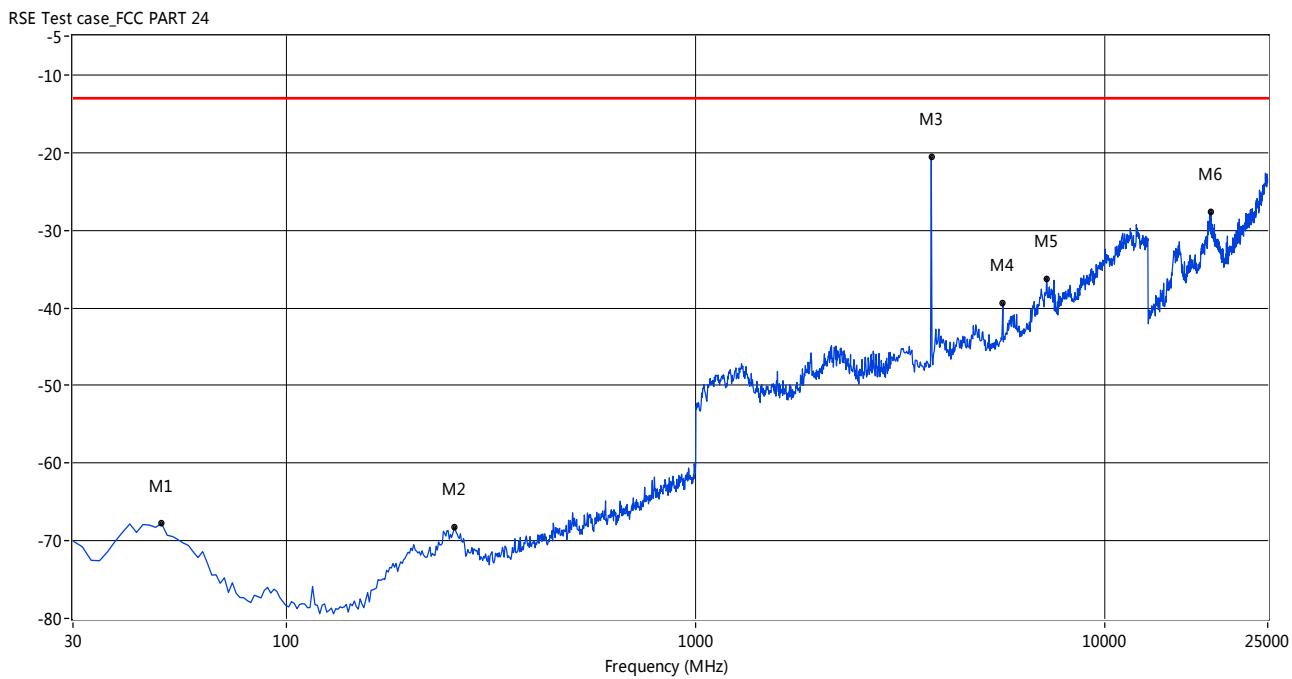
Frequency (MHz)	Peak level (dBm)	Factor (dB)	PK Limit (dBm)	Margin (dB)	Table (o)	ANT	Verdict
257.57	-68.48	-1.63	-13.0	55.48	65.60	Vertical	PASS
1286.19	-45.72	13.03	-13.0	32.72	327.10	Vertical	PASS
3697.59	-22.87	21.83	-13.0	9.87	2.50	Vertical	PASS
5547.00	-39.61	25.71	-13.0	26.61	105.80	Vertical	PASS
7396.42	-33.16	29.83	-13.0	20.16	1.50	Vertical	PASS
18008.74	-28.55	39.62	-13.0	15.55	331.10	Vertical	PASS

## GSM 1900MHz CHANNEL 512, ANT H



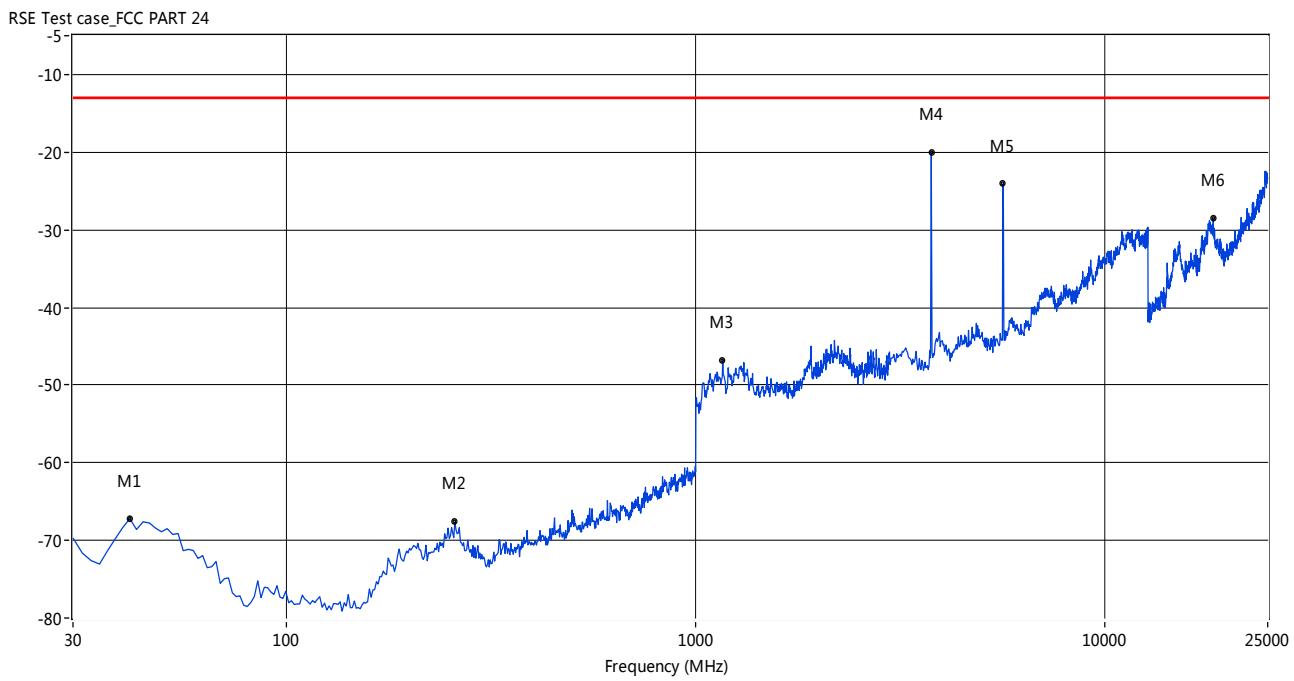
Frequency (MHz)	Peak level (dBm)	Factor (dB)	PK Limit (dBm)	Margin (dB)	Table (o)	ANT	Verdict
47.75	-66.90	-1.22	-13.0	53.90	131.20	Horizontal	PASS
252.73	-68.04	-1.97	-13.0	55.04	140.80	Horizontal	PASS
2304.49	-44.07	15.66	-13.0	31.07	8.10	Horizontal	PASS
3697.59	-23.12	21.83	-13.0	10.12	41.80	Horizontal	PASS
5547.00	-23.59	25.71	-13.0	10.59	350.00	Horizontal	PASS
18171.80	-27.84	38.99	-13.0	14.84	231.30	Horizontal	PASS

## GSM 1900MHz CHANNEL 661, ANT V



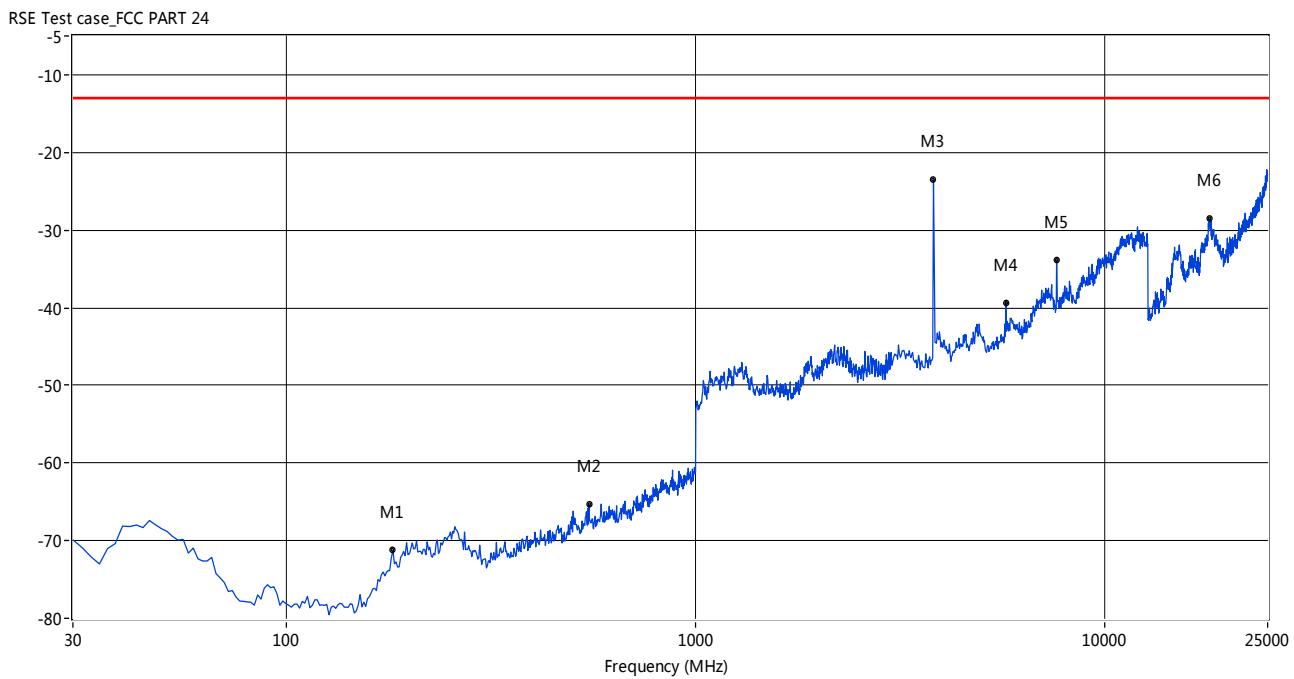
Frequency (MHz)	Peak level (dBm)	Factor (dB)	PK Limit (dBm)	Margin (dB)	Table (o)	ANT	Verdict
49.37	-67.77	-1.36	-13.0	54.77	11.40	Vertical	PASS
257.57	-68.25	-1.63	-13.0	55.25	41.10	Vertical	PASS
3762.48	-20.55	22.36	-13.0	7.55	355.80	Vertical	PASS
5628.12	-39.45	26.56	-13.0	26.45	153.50	Vertical	PASS
7201.75	-36.21	29.52	-13.0	23.21	7.30	Vertical	PASS
18151.41	-27.64	39.07	-13.0	14.64	96.80	Vertical	PASS

## GSM 1900MHz CHANNEL 661, ANT H



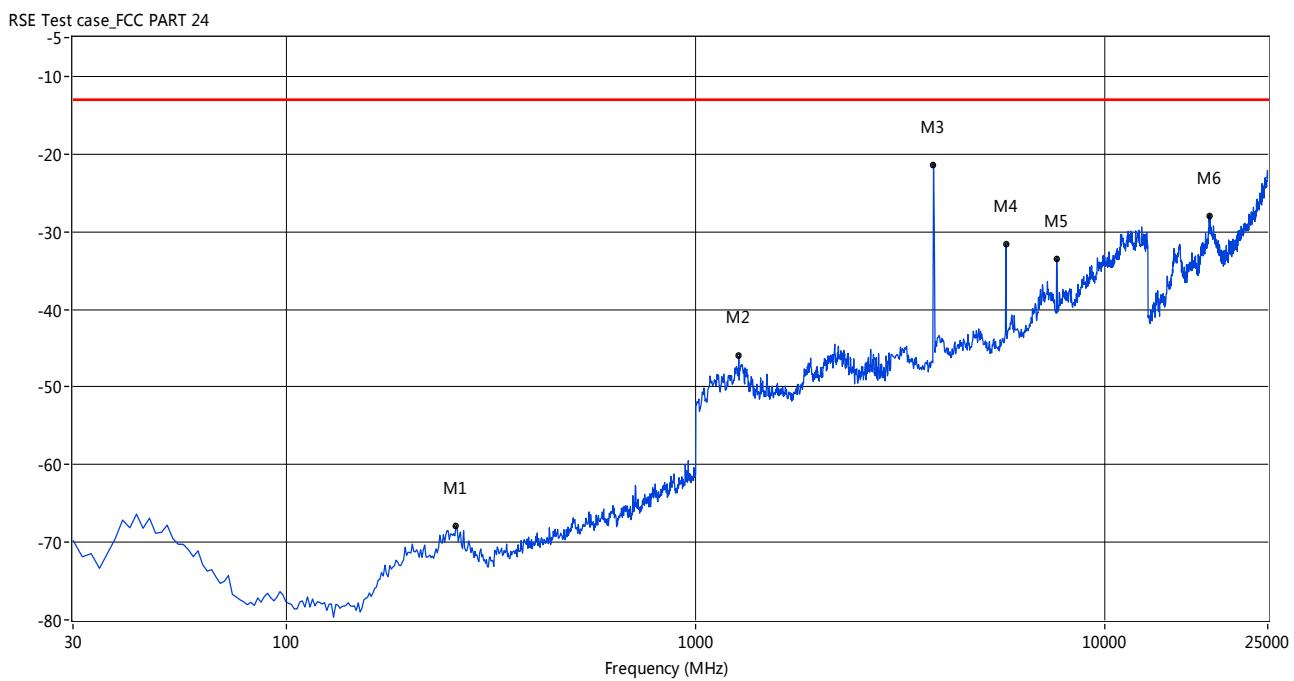
Frequency (MHz)	Peak level (dBm)	Factor (dB)	PK Limit (dBm)	Margin (dB)	Table (o)	ANT	Verdict
41.30	-67.20	-0.87	-13.0	54.20	170.20	Horizontal	PASS
257.57	-67.63	-1.63	-13.0	54.63	359.20	Horizontal	PASS
1163.06	-46.78	11.81	-13.0	33.78	114.90	Horizontal	PASS
3762.48	-20.01	22.36	-13.0	7.01	52.60	Horizontal	PASS
5628.12	-24.10	26.56	-13.0	11.10	344.50	Horizontal	PASS
18396.01	-28.54	38.13	-13.0	15.54	294.50	Horizontal	PASS

## GSM 1900MHz CHANNEL 810 , ANT V



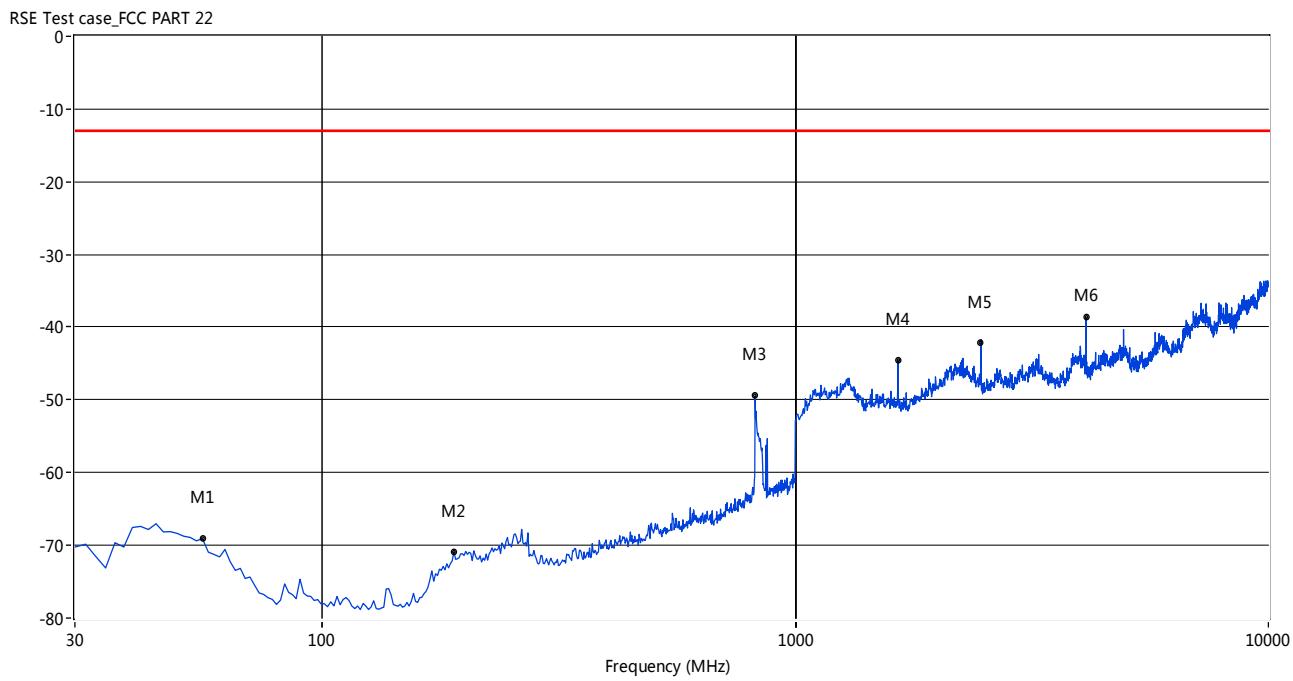
Frequency (MHz)	Peak level (dBm)	Factor (dB)	PK Limit (dBm)	Margin (dB)	Table (o)	ANT	Verdict
181.71	-71.23	-5.82	-13.0	58.23	135.70	Vertical	PASS
548.09	-65.37	-0.10	-13.0	52.37	347.10	Vertical	PASS
3811.15	-23.48	22.78	-13.0	10.48	359.70	Vertical	PASS
5725.46	-39.34	26.70	-13.0	26.34	349.90	Vertical	PASS
7623.54	-33.88	28.48	-13.0	20.88	0.60	Vertical	PASS
18008.74	-28.56	39.62	-13.0	15.56	1.00	Vertical	PASS

## GSM 1900MHz CHANNEL 810 , ANT H



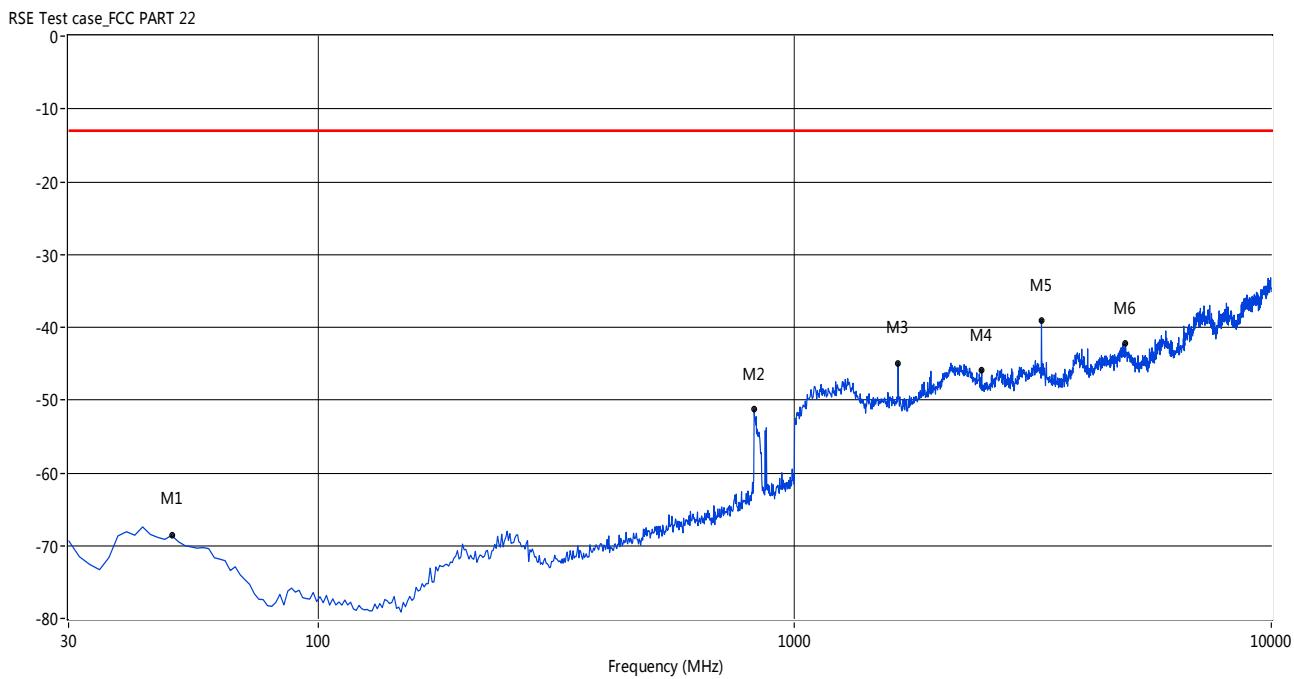
Frequency (MHz)	Peak level (dBm)	Factor (dB)	PK Limit (dBm)	Margin (dB)	Table (o)	ANT	Verdict
259.18	-67.98	-1.55	-13.0	54.98	213.30	Horizontal	PASS
1272.88	-46.04	13.07	-13.0	33.04	242.00	Horizontal	PASS
3811.15	-21.36	22.78	-13.0	8.36	37.10	Horizontal	PASS
5725.46	-31.64	26.70	-13.0	18.64	62.30	Horizontal	PASS
7623.54	-33.51	28.48	-13.0	20.51	87.90	Horizontal	PASS
17967.97	-27.91	39.28	-13.0	14.91	157.50	Horizontal	PASS

## WCDMA 850MHz CHANNEL 4132, ANT V



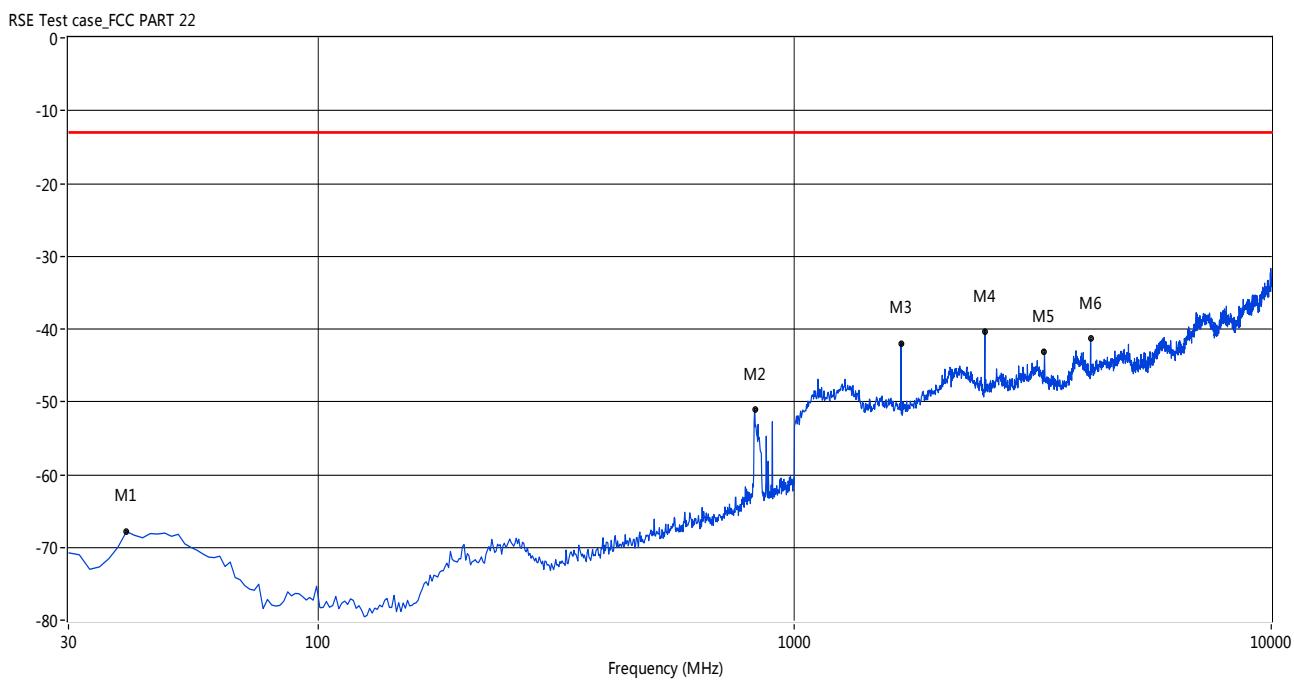
Frequency (MHz)	Peak level (dBm)	Factor (dB)	PK Limit (dBm)	Margin (dB)	Table (o)	ANT	Verdict
55.82	-69.09	-3.12	-13.0	56.09	198.00	Vertical	PASS
189.78	-70.89	-4.83	-13.0	57.89	360.00	Vertical	PASS
822.46	-49.45	16.39	-13.0	36.45	282.10	Vertical	PASS
1648.92	-44.57	10.88	-13.0	31.57	53.20	Vertical	PASS
2467.55	-42.09	14.61	-13.0	29.09	277.90	Vertical	PASS
4118.14	-38.64	23.86	-13.0	25.64	360.00	Vertical	PASS

## WCDMA 850MHz CHANNEL 4132, ANT H



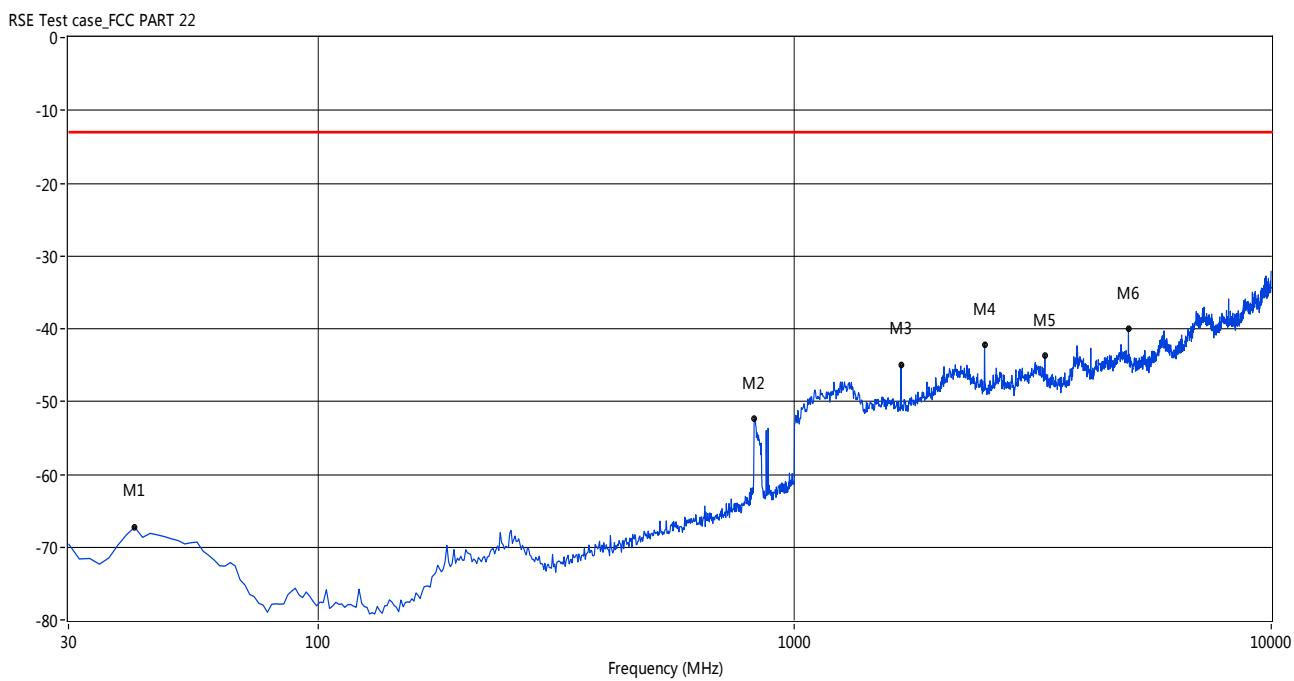
Frequency (MHz)	Peak level (dBm)	Factor (dB)	PK Limit (dBm)	Margin (dB)	Table (o)	ANT	Verdict
49.37	-68.59	-1.35	-13.0	55.59	111.80	Horizontal	PASS
822.46	-51.31	16.39	-13.0	38.31	346.70	Horizontal	PASS
1648.92	-44.91	10.88	-13.0	31.91	229.70	Horizontal	PASS
2470.88	-45.99	14.32	-13.0	32.99	48.00	Horizontal	PASS
3294.51	-39.06	21.56	-13.0	26.06	324.90	Horizontal	PASS
4941.76	-42.23	26.05	-13.0	29.23	310.40	Horizontal	PASS

## WCDMA 850MHz CHANNEL 4183, ANT V



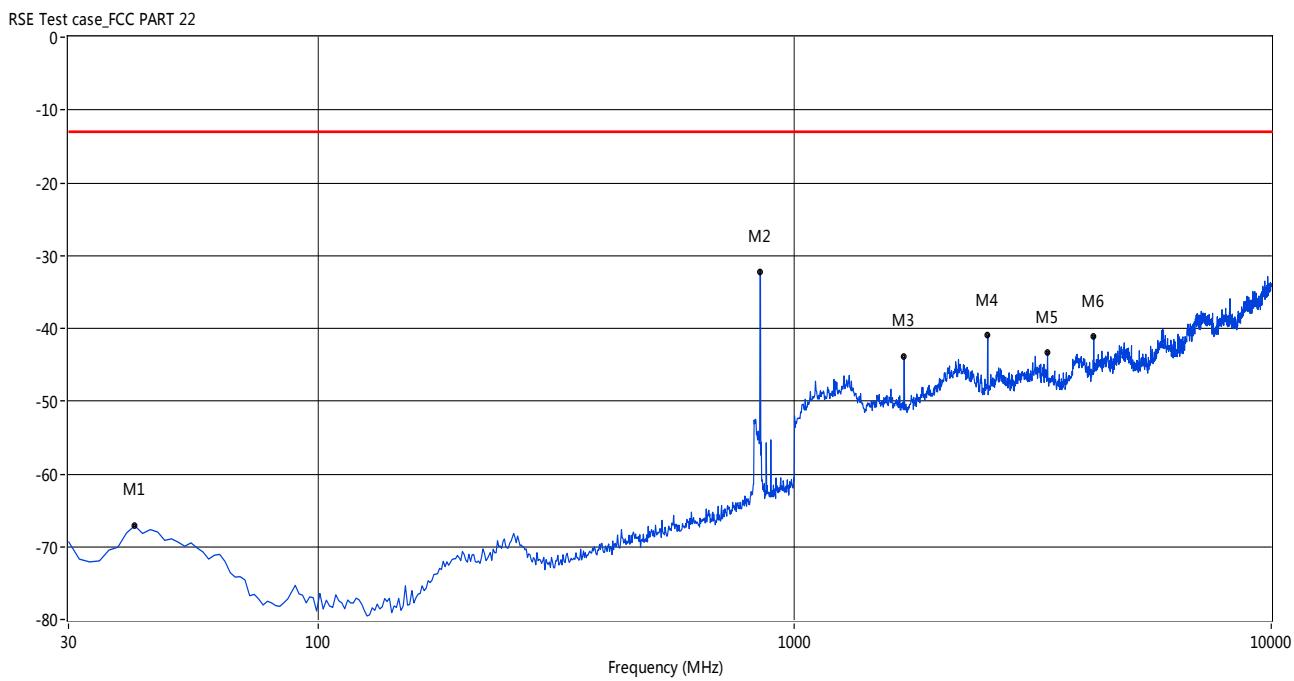
Frequency (MHz)	Peak level (dBm)	Factor (dB)	PK Limit (dBm)	Margin (dB)	Table (o)	ANT	Verdict
39.68	-67.84	-1.11	-13.0	54.84	121.10	Vertical	PASS
825.69	-51.02	15.80	-13.0	38.02	41.80	Vertical	PASS
1672.21	-41.95	10.80	-13.0	28.95	53.50	Vertical	PASS
2507.49	-40.32	14.13	-13.0	27.32	254.20	Vertical	PASS
3344.43	-43.11	21.58	-13.0	30.11	210.00	Vertical	PASS
4178.04	-41.36	23.74	-13.0	28.36	325.90	Vertical	PASS

## WCDMA 850MHz CHANNEL 4183, ANT H



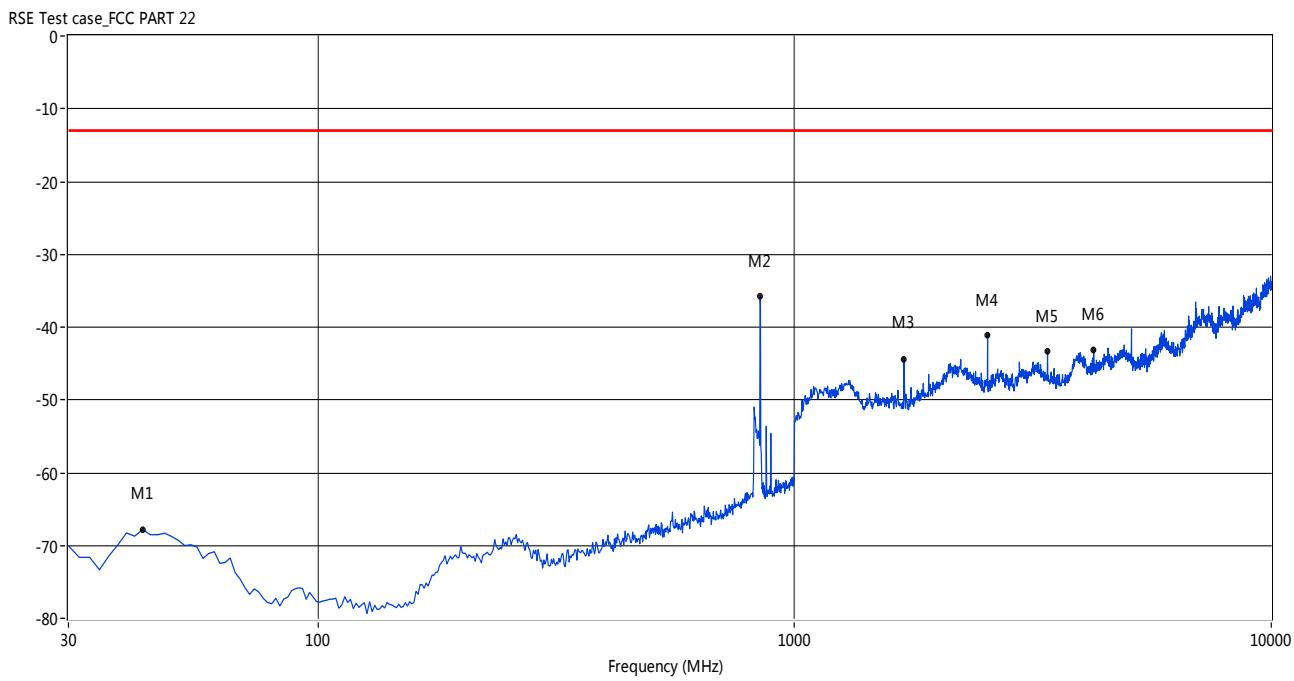
Frequency (MHz)	Peak level (dBm)	Factor (dB)	PK Limit (dBm)	Margin (dB)	Table (o)	ANT	Verdict
41.30	-67.26	-0.83	-13.0	54.26	360.00	Horizontal	PASS
824.08	-52.31	16.10	-13.0	39.31	108.30	Horizontal	PASS
1672.21	-44.95	10.80	-13.0	31.95	53.50	Horizontal	PASS
2504.16	-42.18	13.99	-13.0	29.18	237.50	Horizontal	PASS
3349.42	-43.66	21.62	-13.0	30.66	36.30	Horizontal	PASS
5016.64	-40.04	26.14	-13.0	27.04	324.00	Horizontal	PASS

## WCDMA 850MHz CHANNEL 4233, ANT V



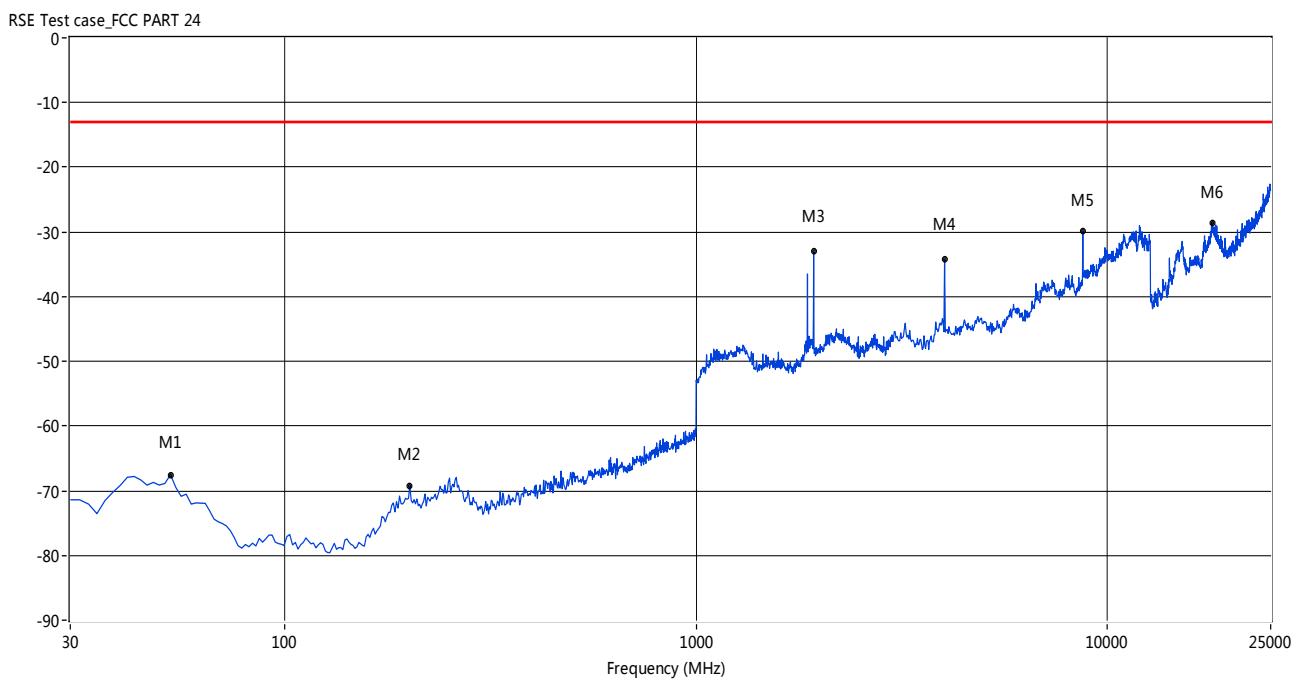
Frequency (MHz)	Peak level (dBm)	Factor (dB)	PK Limit (dBm)	Margin (dB)	Table (o)	ANT	Verdict
41.30	-67.12	-0.83	-13.0	54.12	85.90	Vertical	PASS
846.67	-32.18	11.95	-13.0	19.18	120.40	Vertical	PASS
1698.84	-43.91	10.91	-13.0	30.91	217.50	Vertical	PASS
2544.09	-40.95	14.46	-13.0	27.95	34.30	Vertical	PASS
3394.34	-43.32	21.68	-13.0	30.32	200.60	Vertical	PASS
4242.93	-41.11	24.09	-13.0	28.11	350.00	Vertical	PASS

## WCDMA 850MHz CHANNEL 4233, ANT H



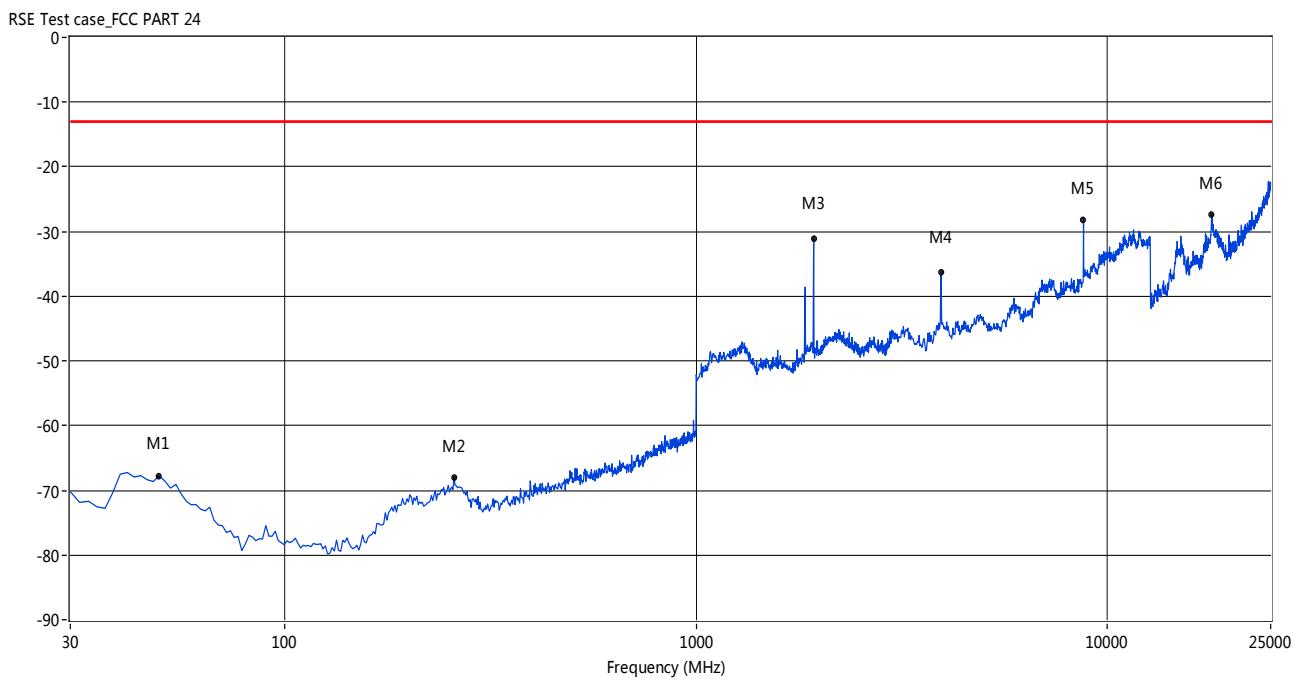
Frequency (MHz)	Peak level (dBm)	Factor (dB)	PK Limit (dBm)	Margin (dB)	Table (o)	ANT	Verdict
42.91	-67.80	-0.85	-13.0	54.80	237.70	Vertical	PASS
846.67	-32.18	11.95	-13.0	19.18	120.40	Vertical	PASS
1698.84	-44.49	10.91	-13.0	31.49	18.30	Vertical	PASS
2540.76	-41.04	14.32	-13.0	28.04	358.20	Vertical	PASS
3394.34	-43.32	21.68	-13.0	30.32	200.60	Vertical	PASS
4242.93	-43.11	24.09	-13.0	30.11	350.00	Vertical	PASS

## WCDMA 1700MHz CHANNEL 1312, ANT V



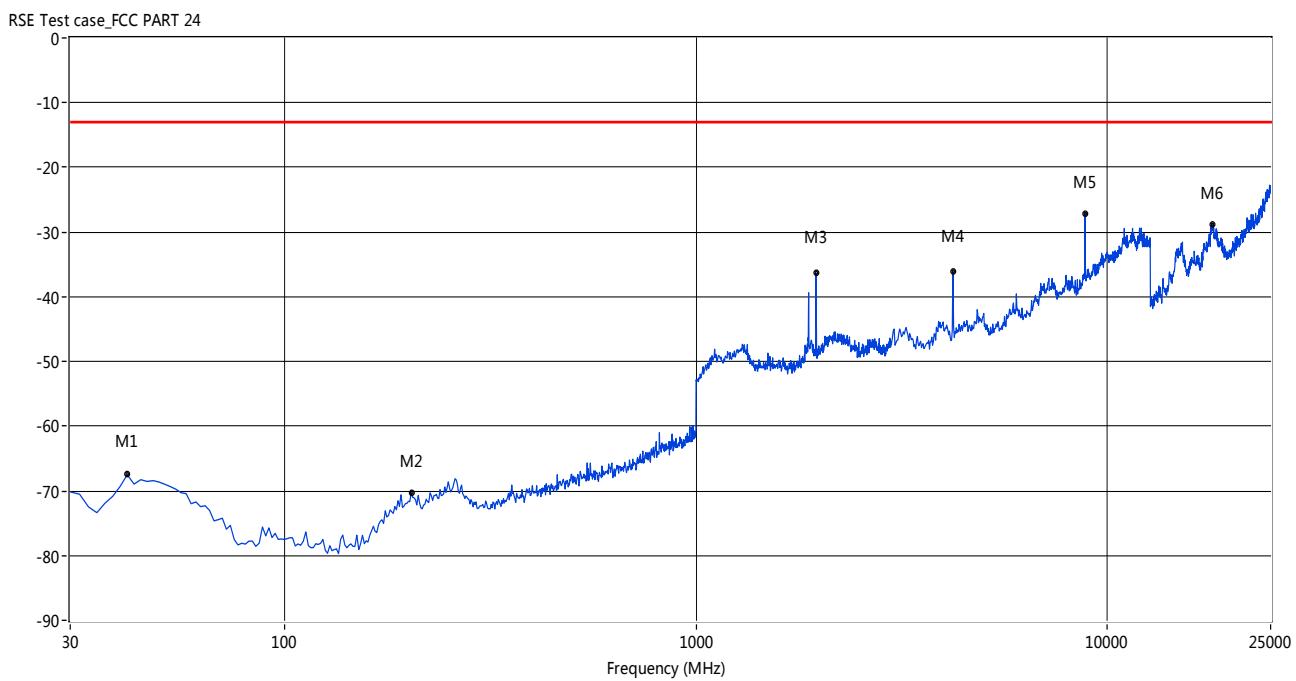
Frequency (MHz)	Peak level (dBm)	Factor (dB)	PK Limit (dBm)	Margin (dB)	Table (o)	ANT	Verdict
52.60	-67.52	-2.16	-13.0	54.52	358.80	Vertical	PASS
201.08	-69.23	-3.69	-13.0	56.23	178.20	Vertical	PASS
2108.50	-33.01	13.37	-13.0	20.01	212.00	Vertical	PASS
4217.50	-34.26	24.40	-13.0	21.26	-0.00	Vertical	PASS
8434.08	-29.89	32.23	-13.0	16.89	216.60	Vertical	PASS
18008.74	-28.55	39.62	-13.0	15.55	180.70	Vertical	PASS

## WCDMA 1700MHz CHANNEL 1312, ANT H



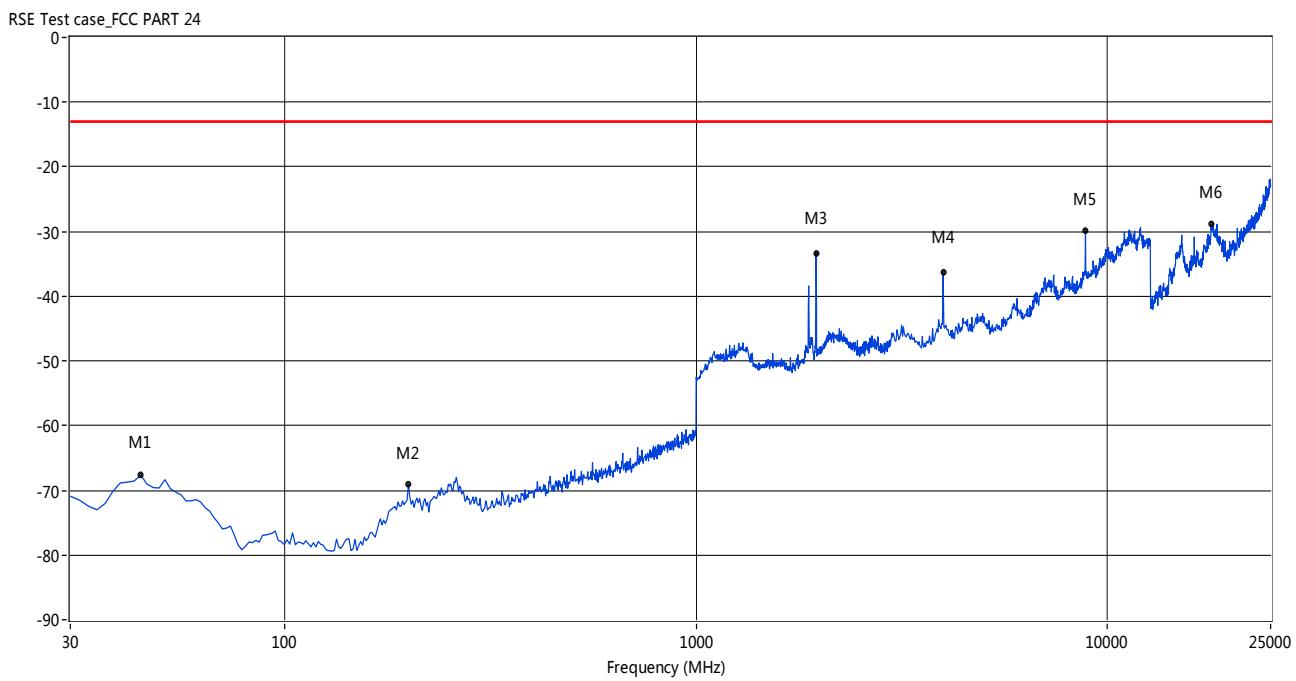
Frequency (MHz)	Peak level (dBm)	Factor (dB)	PK Limit(dBm)	Margin (dB)	Table (o)	ANT	Verdict
49.37	-67.74	-1.36	-13.0	54.74	-0.00	Horizontal	PASS
257.57	-67.99	-1.63	-13.0	54.99	186.80	Horizontal	PASS
2110.58	-31.01	13.37	-13.0	18.01	350.20	Horizontal	PASS
4221.16	-36.31	24.65	-13.0	23.31	111.00	Horizontal	PASS
8442.30	-28.21	32.43	-13.0	15.21	360.20	Horizontal	PASS
17947.59	-27.37	39.05	-13.0	14.37	358.70	Horizontal	PASS

## WCDMA 1700MHz CHANNEL 1413, ANT V



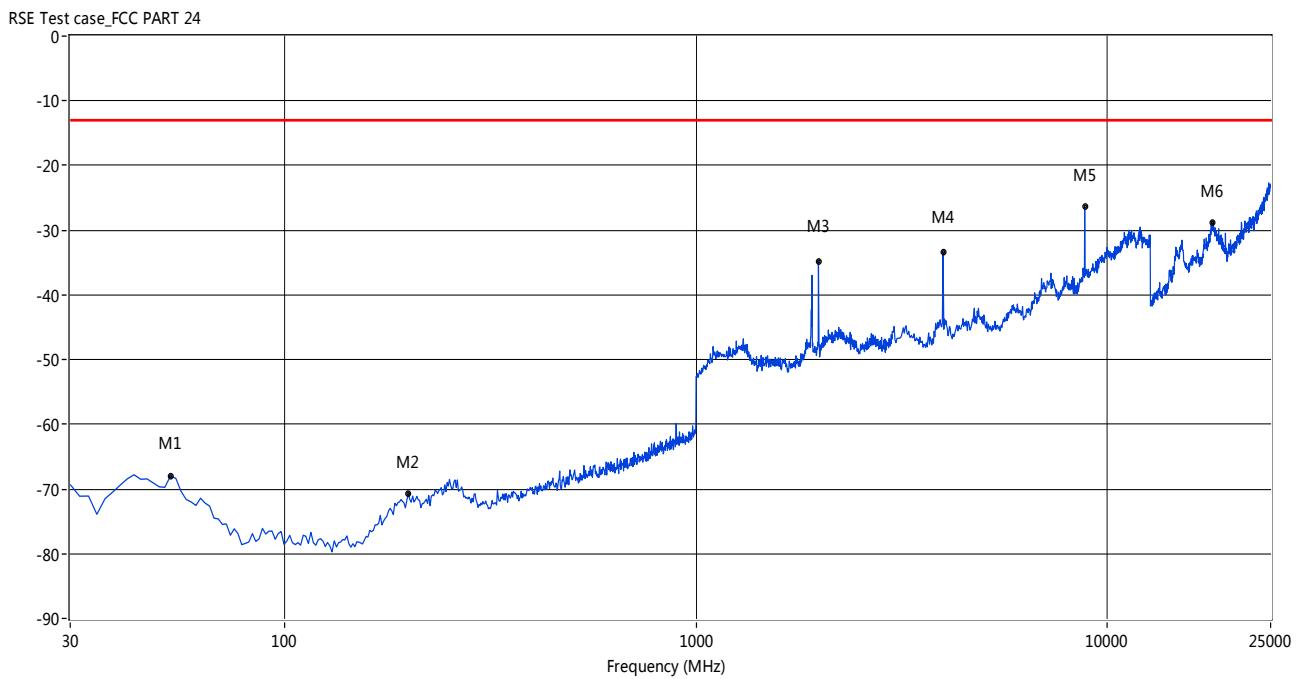
Frequency (MHz)	Peak level (dBm)	Factor (dB)	PK Limit (dBm)	Margin (dB)	Table (o)	ANT	Verdict
41.30	-67.50	-0.87	-13.0	54.50	244.30	Vertical	PASS
202.70	-70.28	-3.80	-13.0	57.28	88.50	Vertical	PASS
2130.58	-36.35	13.47	-13.0	23.35	218.20	Vertical	PASS
4261.16	-36.08	24.14	-13.0	23.08	133.30	Vertical	PASS
8522.32	-27.10	32.76	-13.0	14.10	159.30	Vertical	PASS
18049.50	-28.75	39.47	-13.0	15.75	207.90	Vertical	PASS

## WCDMA 1700MHz CHANNEL 1413, ANT H



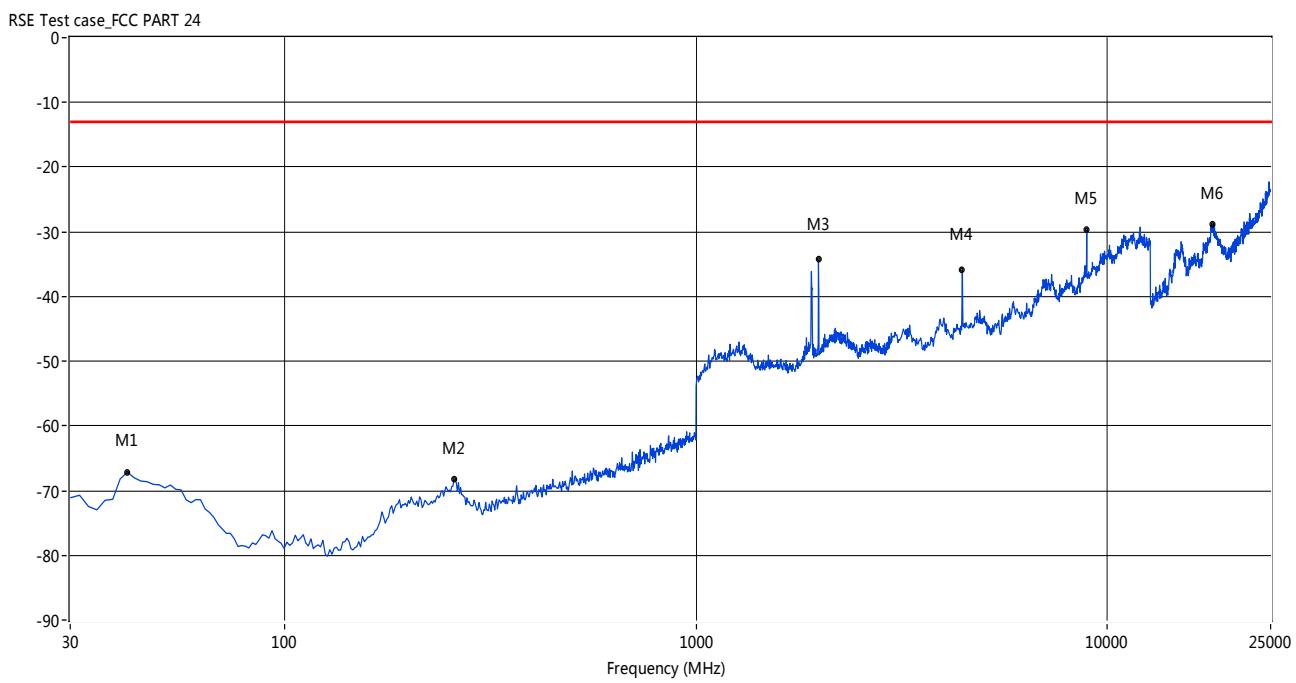
Frequency (MHz)	Peak level (dBm)	Factor (dB)	PK Limit (dBm)	Margin (dB)	Table (o)	ANT	Verdict
44.53	-67.64	-0.94	-13.0	54.64	359.70	Horizontal	PASS
199.47	-69.14	-3.73	-13.0	56.14	223.10	Horizontal	PASS
2128.65	-33.35	13.47	-13.0	20.35	218.20	Horizontal	PASS
4257.50	-36.36	24.88	-13.0	23.36	336.70	Horizontal	PASS
8514.62	-29.92	32.78	-13.0	16.92	54.10	Horizontal	PASS
17947.59	-28.88	39.05	-13.0	15.88	110.60	Horizontal	PASS

## WCDMA 1700MHz CHANNEL 1513, ANT V



Frequency (MHz)	Peak level (dBm)	Factor (dB)	PK Limit (dBm)	Margin (dB)	Table (o)	ANT	Verdict
52.60	-68.01	-2.16	-13.0	55.01	251.30	Vertical	PASS
199.47	-70.71	-3.73	-13.0	57.71	215.70	Vertical	PASS
2151.38	-34.78	13.56	-13.0	21.78	359.70	Vertical	PASS
4304.75	-33.36	24.88	-13.0	20.36	336.70	Vertical	PASS
8609.50	-26.26	32.73	-13.0	13.26	320.70	Vertical	PASS
18008.74	-28.77	39.62	-13.0	15.77	112.50	Vertical	PASS

## WCDMA 1700MHz CHANNEL 1513, ANT H



Frequency (MHz)	Peak level (dBm)	Factor (dB)	PK Limit (dBm)	Margin (dB)	Table (o)	ANT	Verdict
41.30	-67.14	-0.87	-13.0	54.14	359.20	Horizontal	PASS
257.57	-68.32	-1.63	-13.0	55.32	317.80	Horizontal	PASS
2148.50	-34.26	13.56	-13.0	21.26	45.70	Horizontal	PASS
4297.84	-35.92	25.18	-13.0	22.92	257.50	Horizontal	PASS
8594.38	-29.69	32.88	-13.0	16.69	37.30	Horizontal	PASS
18029.12	-28.91	39.54	-13.0	15.91	287.90	Horizontal	PASS

## ANNEX B TEST SETUP PHOTOS

### B.1. Conducted Test Photo



## B.2. Radiated Test Photo



## ANNEX C TEST SETUP PHOTOS

### C.1 Appearance of the EUT



THE FRONT OF EUT



THE BACK OF EUT



THE LEFT OF EUT



THE RIGHT OF EUT



THE UP OF EUT



THE DOWN OF EUT



THE EARPHONE



THE USB CABLE



THE CHARGER

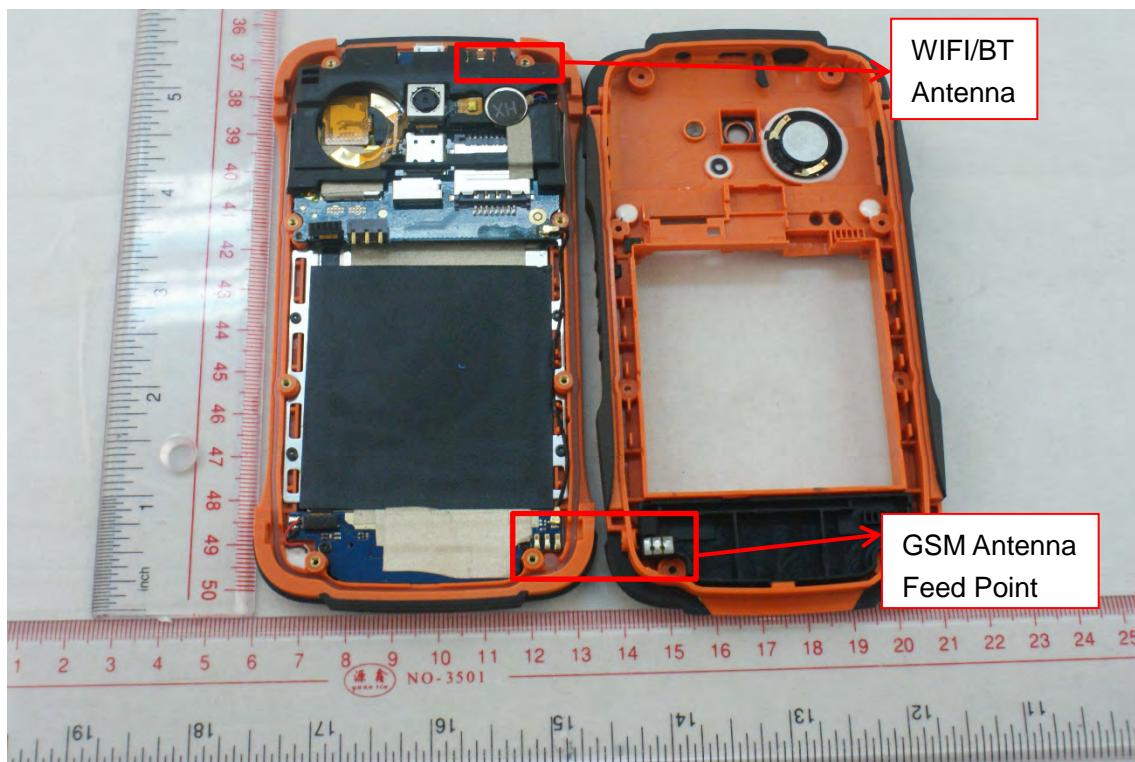
## C.2 Inside of the EUT



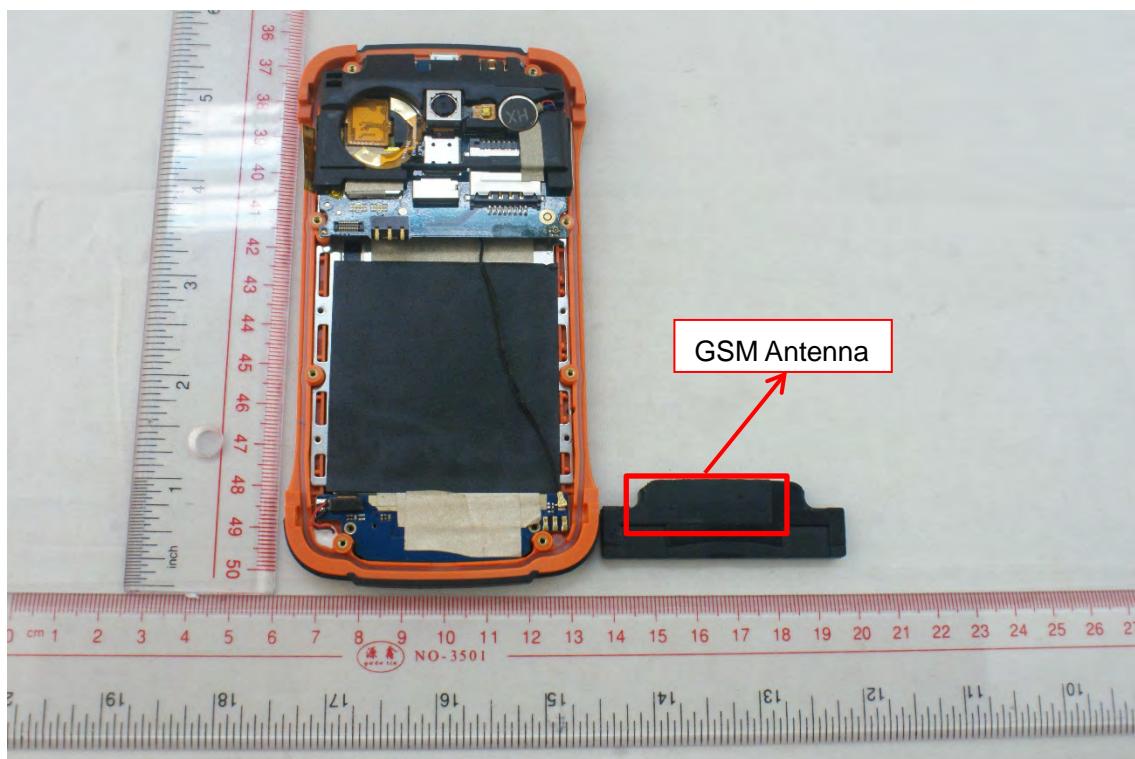
OPEN THE EUT PHOTO 1



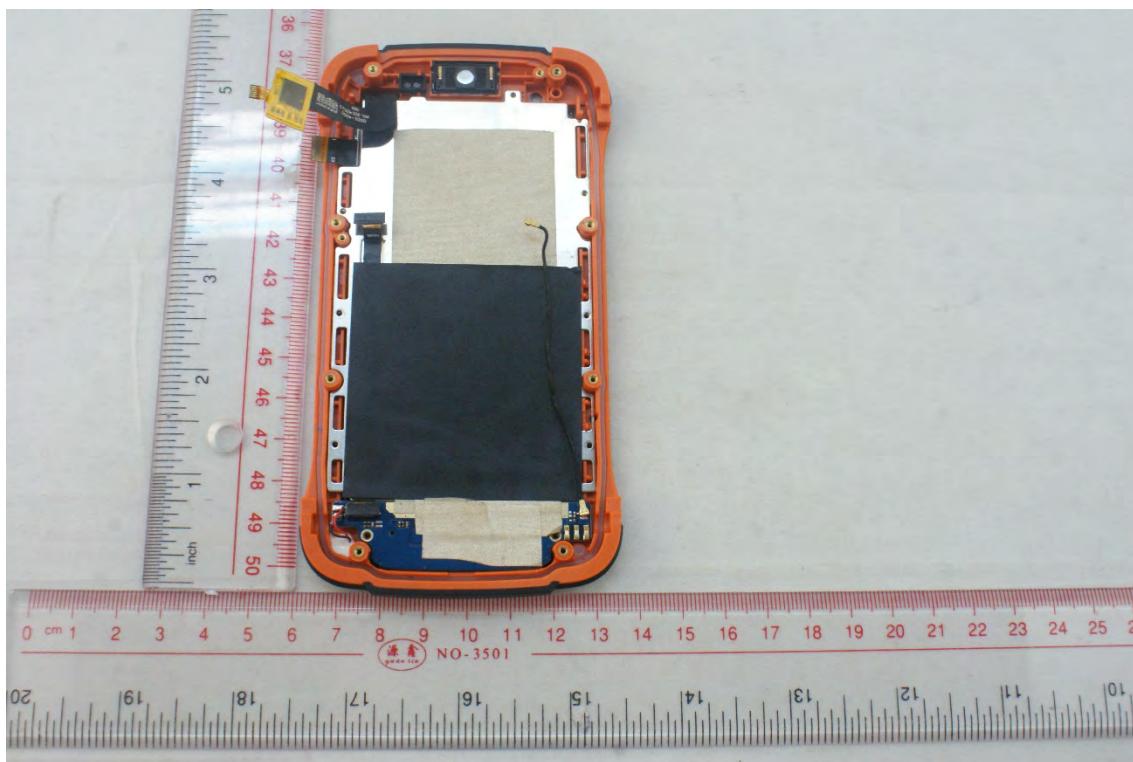
OPEN THE EUT PHOTO 2



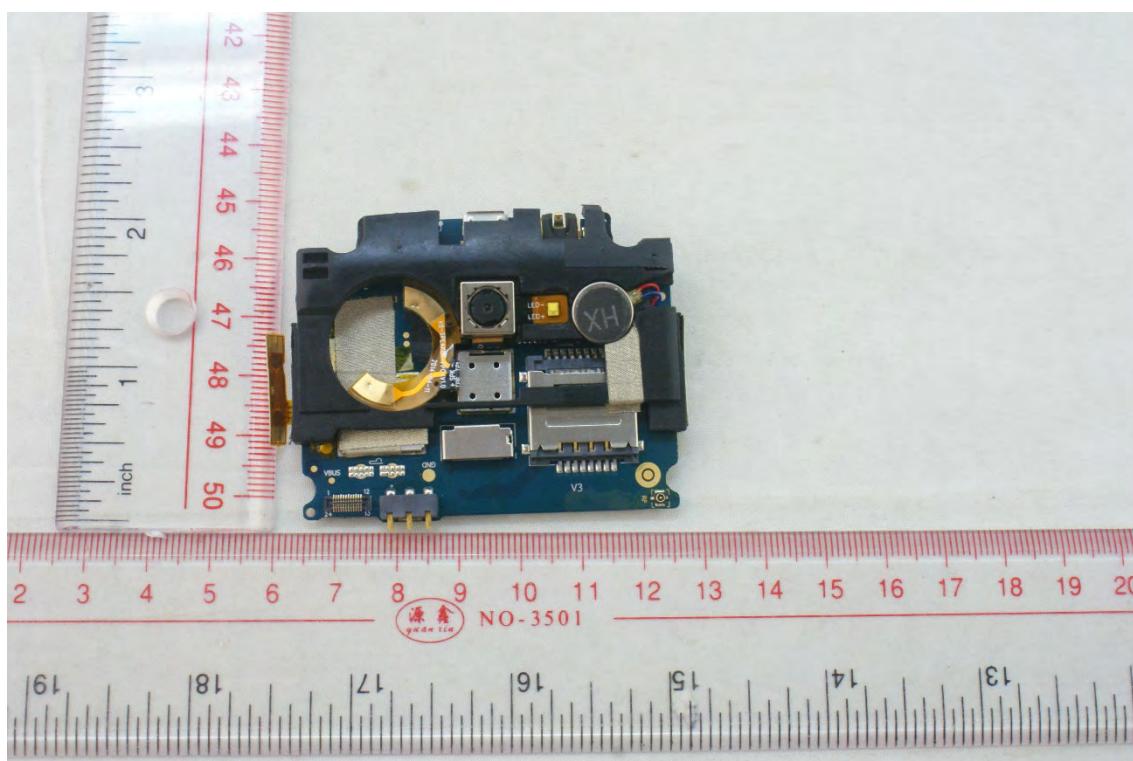
OPEN THE EUT PHOTO 3



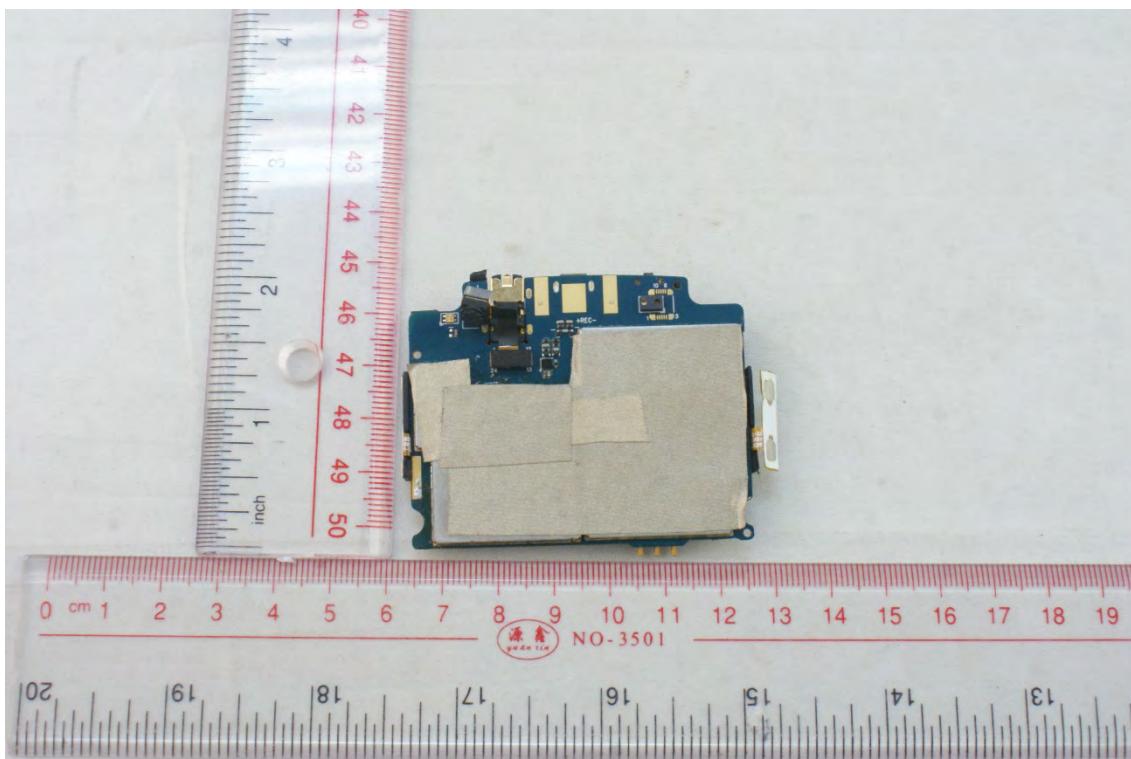
OPEN THE EUT PHOTO 4



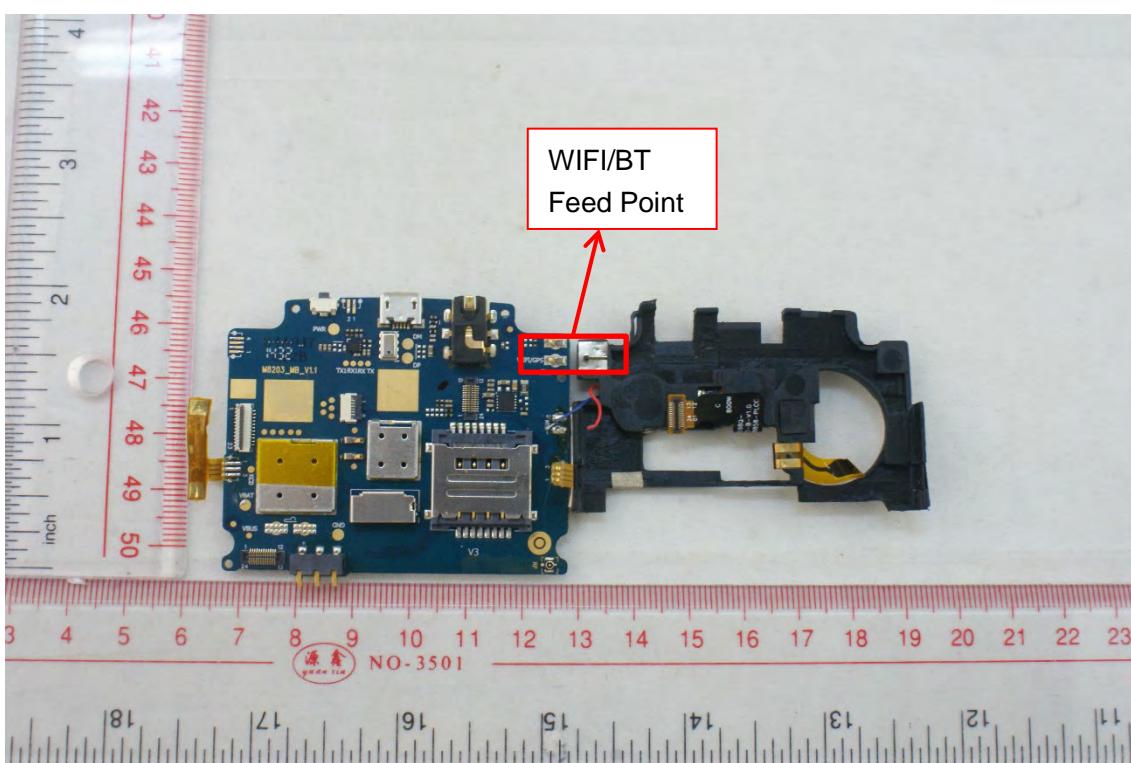
OPEN THE EUT PHOTO 5



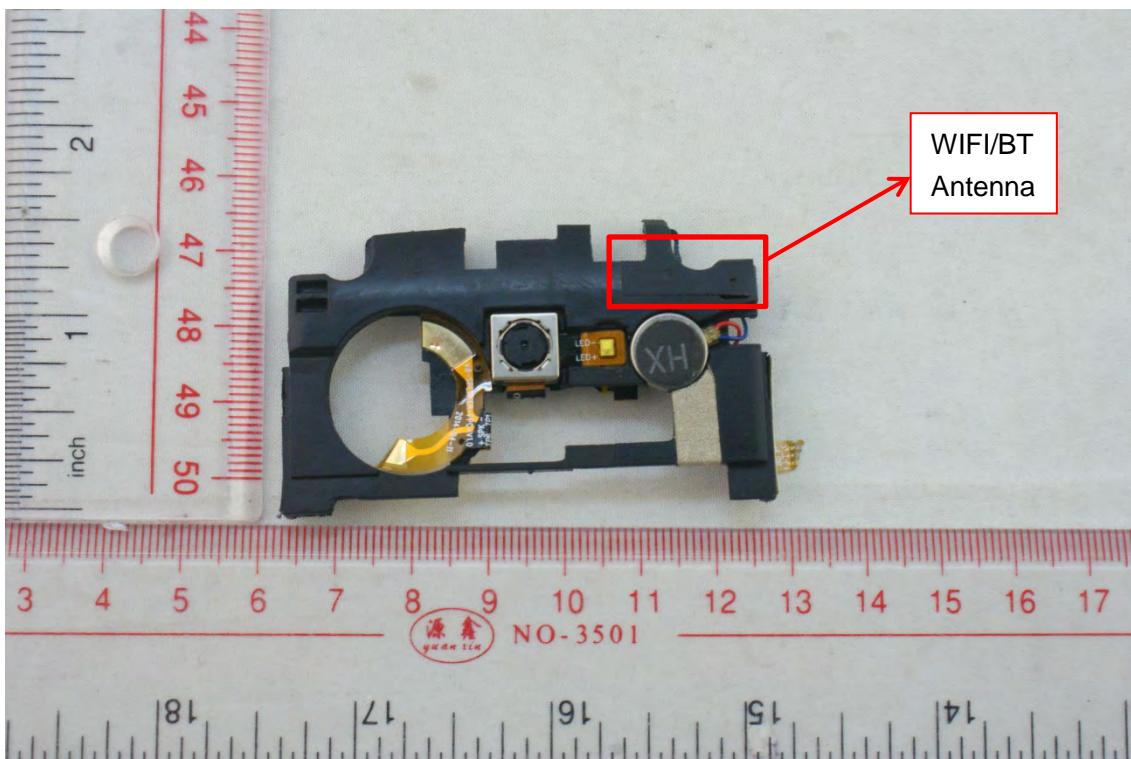
EUT INTERNAL BOARD 1



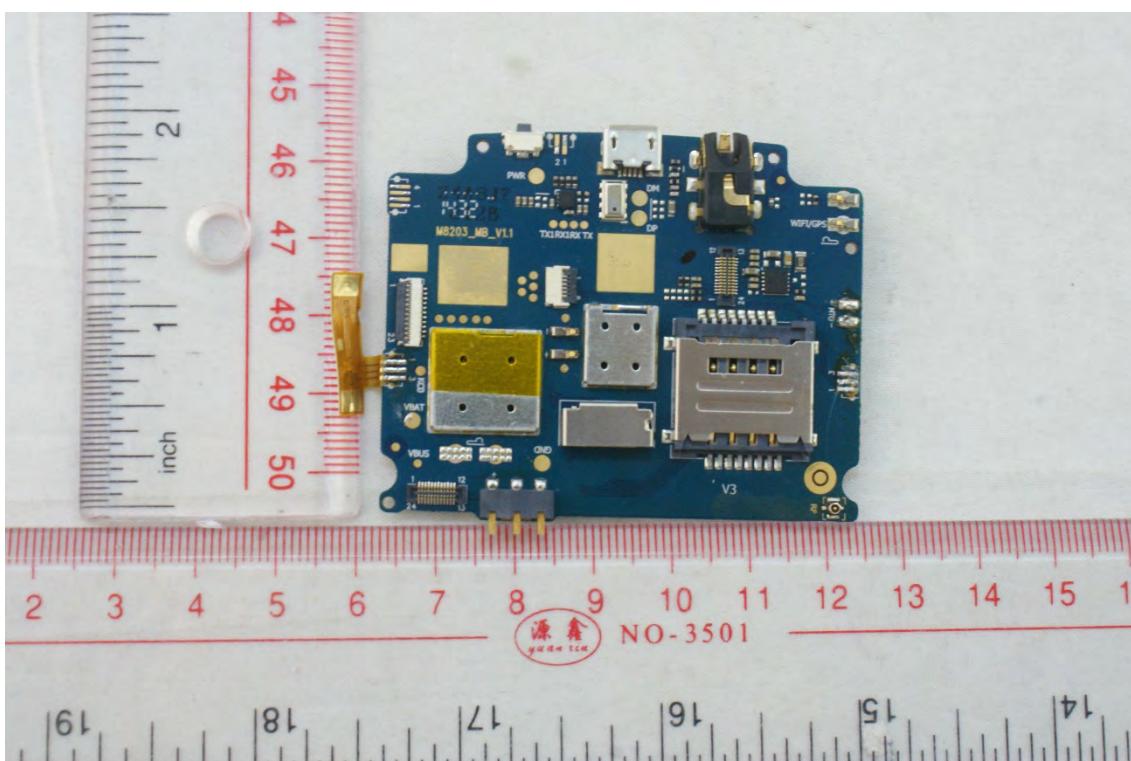
EUT INTERNAL BOARD 2



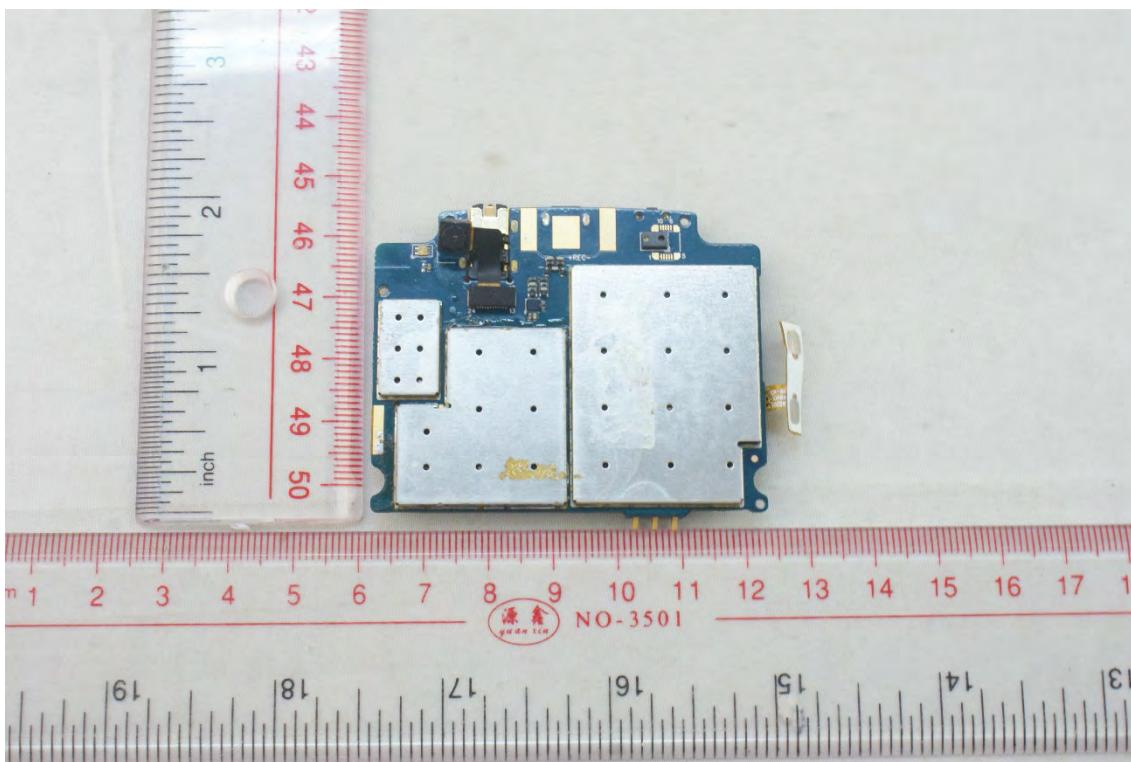
EUT INTERNAL BOARD 3



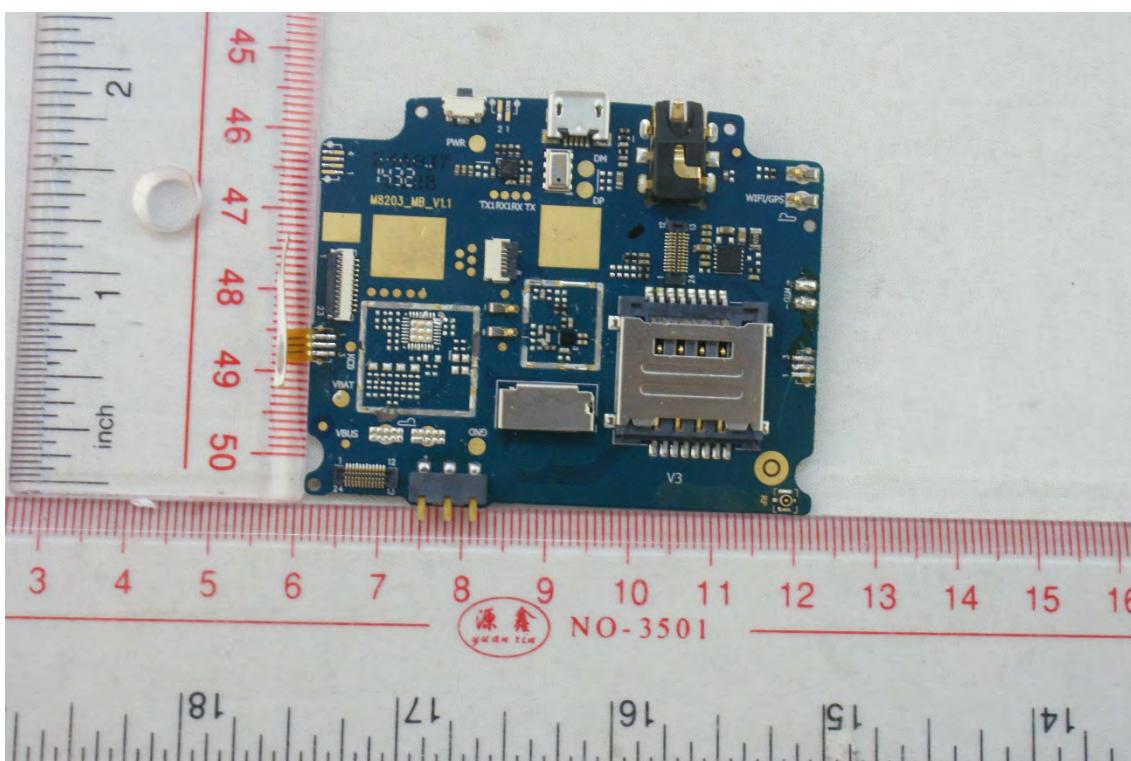
EUT INTERNAL BOARD 4



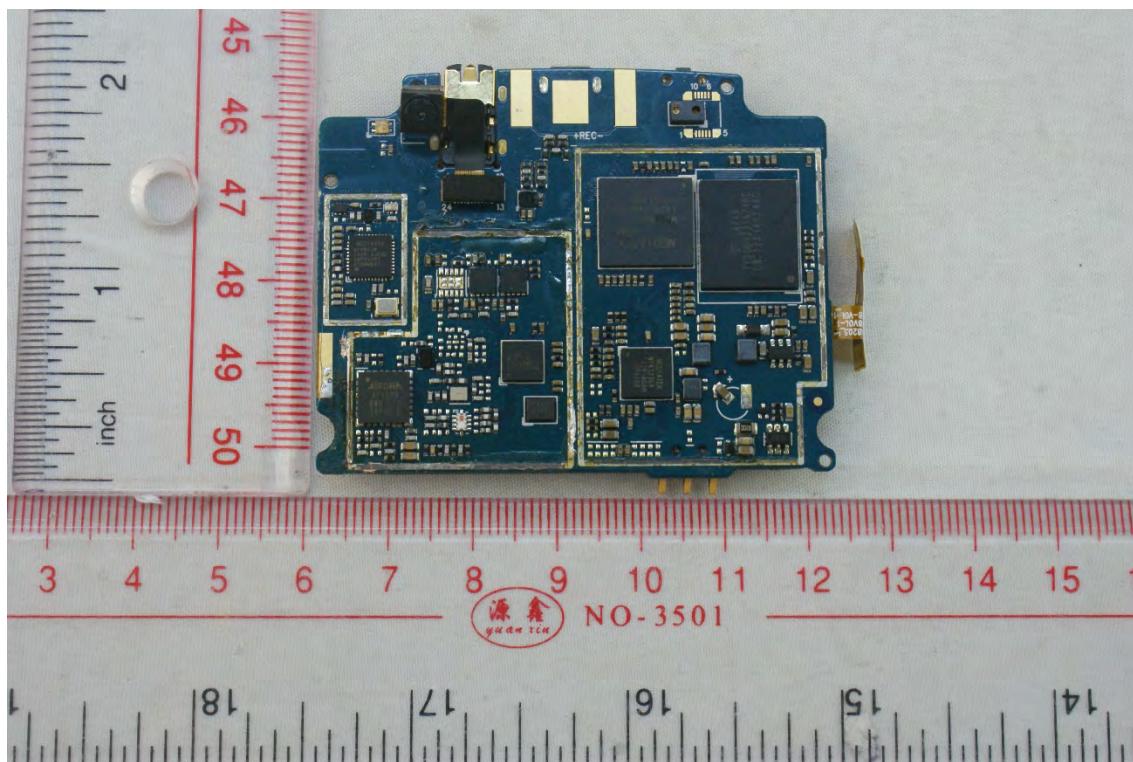
EUT INTERNAL BOARD 5



EUT INTERNAL BOARD 6



EUT INTERNAL BOARD7



EUT INTERNAL BOARD8



BATTERY

--END OF REPORT--