# **TEST REPORT**

DT&C (	Co., Ltd.
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Report No : DRTFCC1511-0229 Pages:(1) / (79) page



1. Ouotomor	1.	Customer
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- Name : BLUEBIRD INC.
- Address : (Dogok-dong, SEI Tower 13,14) 39, Eonjuro30-gil, Gangnam-gu, Seoul, South Korea
- 2. Use of Report : FCC Original Grant
- 3. Product Name (FCC ID): Enterprise Handheld Computer (SS4EF500)
- 4. Date of Test : 2015-09-28 ~ 2015-10-06
- 5. Test Method Used: §22(H), §24(E)
- 6. Testing Environment : See appended test report
- 7. Test Result : 🛛 Pass 🗌 Fail

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This Test Report cannot be reproduced, except in full.

Tested by Name : KwiCheol Yeom	(Signature)	Technical Manager Name : GeunKi Son (Signature)
	2015. 11. 02	12
	DT&C Co.,	, Ltd.
	-	Name : KwiCheol Yeom (Signature)



## **Test Report Version**

Test Report No.	Date	Description	
DRTFCC1511-0229	Nov. 02, 2015	Initial issue	



## **Table of Contents**

1. GENERAL INFORMATION	4
2. INTRODUCTION	5
2.1. EUT DESCRIPTION	5
2.2. Support equipment	5
2.3. MEASURING INSTRUMENT CALIBRATION	5
2.4. TEST FACILITY	5
3. DESCRIPTION OF TESTS	6
3.1 ERP & EIRP	6
3.2 PEAK TO AVERAGE RATIO	8
3.3 OCCUPIED BANDWIDTH1	-
3.4 BAND EDGE EMISSIONS AT ANTENNA TERMINAL	1
3.5 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL	2
3.6 RADIATED SPURIOUS EMISSIONS 1	3
3.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE 1	
4. LIST OF TEST EQUIPMENT1	5
	6
5. SUMMARY OF TEST RESULTS	
6. SAMPLE CALCULATION 1	7
6. SAMPLE CALCULATION	7 9
6. SAMPLE CALCULATION         1           7. TEST DATA         1           7.1 PEAK TO AVERAGE RATIO         1	7 9 9
6. SAMPLE CALCULATION       1         7. TEST DATA       1         7.1 PEAK TO AVERAGE RATIO       1         7.2 OCCUPIED BANDWIDTH       1	7 9 9 9
6. SAMPLE CALCULATION       1         7. TEST DATA       1         7.1 PEAK TO AVERAGE RATIO       1         7.2 OCCUPIED BANDWIDTH       1         7.3 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL       1	7 9 9 9
6. SAMPLE CALCULATION       1         7. TEST DATA       1         7.1 PEAK TO AVERAGE RATIO       1         7.2 OCCUPIED BANDWIDTH       1         7.3 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL       1         7.4 BAND EDGE       1	7 9 9 9 9
6. SAMPLE CALCULATION       1         7. TEST DATA       1         7.1 PEAK TO AVERAGE RATIO       1         7.2 OCCUPIED BANDWIDTH       1         7.3 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL       1         7.4 BAND EDGE       1         7.5 EFFECTIVE RADIATED POWER       2	7 9 9 9 9 9
6. SAMPLE CALCULATION       1         7. TEST DATA       1         7.1 PEAK TO AVERAGE RATIO       1         7.2 OCCUPIED BANDWIDTH       1         7.3 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL       1         7.4 BAND EDGE       1         7.5 EFFECTIVE RADIATED POWER       2         7.6 EQUIVALENT ISOTROPIC RADIATED POWER       2	7 9 9 9 9 9 9 9 9 9 9 20 21
6. SAMPLE CALCULATION       1         7. TEST DATA       1         7.1 PEAK TO AVERAGE RATIO       1         7.2 OCCUPIED BANDWIDTH       1         7.3 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL       1         7.4 BAND EDGE       1         7.5 EFFECTIVE RADIATED POWER       2         7.6 EQUIVALENT ISOTROPIC RADIATED POWER       2         7.7 RADIATED SPURIOUS EMISSIONS       2	7 9 9 9 9 9 9 9 9 20 21 22
6. SAMPLE CALCULATION       1         7. TEST DATA       1         7.1 PEAK TO AVERAGE RATIO       1         7.2 OCCUPIED BANDWIDTH       1         7.3 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL       1         7.4 BAND EDGE       1         7.5 EFFECTIVE RADIATED POWER       2         7.6 EQUIVALENT ISOTROPIC RADIATED POWER       2         7.7 RADIATED SPURIOUS EMISSIONS       2         7.7.1 RADIATED SPURIOUS EMISSIONS (GSM850)       2	7 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9
6. SAMPLE CALCULATION       1         7. TEST DATA       1         7.1 PEAK TO AVERAGE RATIO       1         7.2 OCCUPIED BANDWIDTH       1         7.3 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL       1         7.4 BAND EDGE       1         7.5 EFFECTIVE RADIATED POWER       2         7.6 EQUIVALENT ISOTROPIC RADIATED POWER       2         7.7 RADIATED SPURIOUS EMISSIONS (GSM850)       2         7.7.1 RADIATED SPURIOUS EMISSIONS (WCDMA850)       2	7 9 9 9 9 9 9 9 20 21 22 23
6. SAMPLE CALCULATION       1         7. TEST DATA       1         7.1 PEAK TO AVERAGE RATIO       1         7.2 OCCUPIED BANDWIDTH       1         7.3 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL       1         7.4 BAND EDGE       1         7.5 EFFECTIVE RADIATED POWER       2         7.6 EQUIVALENT ISOTROPIC RADIATED POWER       2         7.7 RADIATED SPURIOUS EMISSIONS (GSM850)       2         7.7.1 RADIATED SPURIOUS EMISSIONS (WCDMA850)       2         7.7.3 RADIATED SPURIOUS EMISSIONS (HSUPA850)       2	7 9 9 9 9 9 9 9 9 20 21 22 23 24
6. SAMPLE CALCULATION       1         7. TEST DATA       1         7.1 PEAK TO AVERAGE RATIO       1         7.2 OCCUPIED BANDWIDTH       1         7.3 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL       1         7.4 BAND EDGE       1         7.5 EFFECTIVE RADIATED POWER       2         7.6 EQUIVALENT ISOTROPIC RADIATED POWER       2         7.7 RADIATED SPURIOUS EMISSIONS       2         7.7.1 RADIATED SPURIOUS EMISSIONS (GSM850)       2         7.7.2 RADIATED SPURIOUS EMISSIONS (WCDMA850)       2         7.7.3 RADIATED SPURIOUS EMISSIONS (HSUPA850)       2         7.7.4 RADIATED SPURIOUS EMISSIONS (GSM1900)       2	7 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9
6. SAMPLE CALCULATION       1         7. TEST DATA       1         7.1 PEAK TO AVERAGE RATIO       1         7.2 OCCUPIED BANDWIDTH       1         7.3 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL       1         7.4 BAND EDGE       1         7.5 EFFECTIVE RADIATED POWER       2         7.6 EQUIVALENT ISOTROPIC RADIATED POWER       2         7.7 RADIATED SPURIOUS EMISSIONS (GSM850)       2         7.7.1 RADIATED SPURIOUS EMISSIONS (WCDMA850)       2         7.7.3 RADIATED SPURIOUS EMISSIONS (HSUPA850)       2	<b>7</b> <b>9</b> <b>9</b> <b>9</b> <b>9</b> <b>9</b> <b>9</b> <b>9</b> <b>9</b> <b>20</b> <b>21</b> <b>22</b> <b>23</b> <b>24</b> <b>25</b> <b>26</b>



### **1. GENERAL INFORMATION**

Applicant Name:	LUEBIRD INC.		
Address:	(Dogok-dong, SEI Tower 13,14) 39, Eonjuro30-gil, Gangnam-gu, Seoul, South Korea		
FCC ID	: SS4EF500		
FCC Classification	: Licensed Portable Transmitter Held to Ear (PCE)		
EUT	: Enterprise Handheld Computer		
Model Name	: EF500		
Add Model Name	: EF500R		
Supplying power	: DC 3.8 V		
Antenna Informatio	: Internal Antenna - Type: Built-In type		

Mode	Tx Frequency	Emission	ERP/EIRP	
wode	(MHz)	Designator	Max. Power (W)	Max. Power (dBm)
GSM850	824.2 ~ 848.8 MHz	248KGXW	0.488 W	26.88 dBm
EDGE850	824.2 ~ 848.8 MHz	246KG7W	0.121 W	20.84 dBm
WCDMA850	826.4 ~ 846.6 MHz	4M17F9W	0.086 W	19.35 dBm
HSUPA850	826.4 ~ 846.6 MHz	4M17F9W	0.073 W	18.61 dBm
GSM1900	1850.2 ~ 1909.8 MHz	248KGXW	0.469 W	26.71 dBm
EDGE1900	1850.2 ~ 1909.8 MHz	244KG7W	0.177 W	22.49 dBm
WCDMA1900	1852.4 ~ 1907.6 MHz	4M18F9W	0.120 W	20.78 dBm
HSUPA1900	1852.4 ~ 1907.6 MHz	4M19F9W	0.096 W	19.83 dBm



### 2. INTRODUCTION

### 2.1. EUT DESCRIPTION

The Equipment Under Test(EUT) supports a GPRS/EDGE /WCDMA/HSUPA and Bluetooth, 2.4GHz WLAN.

### 2.2. Support equipment

Equipment	Model No.	Serial No.	Manufacturer	Note
-	-	-	-	-
-	-	-	-	-

Note: The above equipment were supported by manufacturer.

### 2.3. MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

### 2.4. TEST FACILITY

The 3m test site and conducted measurement facility used to collect the radiated data are located at the 42, Yurim-ro, 154beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea 449-935. The site is constructed in conformance with the requirements.

- Semi anechoic chamber registration Number: 165783 (FCC) & 5740A-3 (IC)

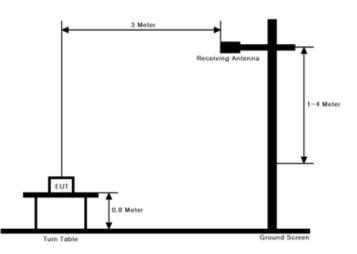


### **3. DESCRIPTION OF TESTS**

#### 3.1 ERP & EIRP

(Effective Radiated Power & Equivalent Isotropic Radiated Power)

#### Test Set-up



### Test Procedure

- ANSI/TIA-603-C-2004 Section 2.2.17
- KDB971168 v02r02 Section 5.2.1

These measurements were performed at 3 &10 m test site. The equipment under test is placed on a non-conductive table 0.8-meters above a turntable which is flush with the ground plane and 3 meters from the receive antenna.

### Test setting

- 1. Set span to at least 1.5 times the OBW.
- 2. Set RBW = 1-5 % of the OBW, not to exceed 1 MHz.
- 3. Set VBW  $\geq$  3 x RBW.
- 4. Set number of points in sweep  $\geq$  2 × span / RBW.
- 5. Sweep time = auto couple.
- 6. Detector = RMS (power averaging).
- 7. If the EUT can be configured to transmit continuously (i.e., burst duty cycle  $\geq$  98 %), then set the trigger to free run.
- 8. If the EUT cannot be configured to transmit continuously (i.e., burst duty cycle < 98 %), then use a sweep trigger with the level set to enable triggering only on full power bursts and configure the EUT to transmit at full power for the entire duration of each sweep.

Ensure that the sweep time is less than or equal to the transmission burst duration.

- 9. Trace average at least 100 traces in power averaging (i.e., RMS) mode.
- 10. Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function, with the band limits set equal to the OBW band edges. If the instrument does not have a band power function, then sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.



The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer.

A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminal of the substitute antenna is measured.

The ERP/EIRP is calculated using the following formula:

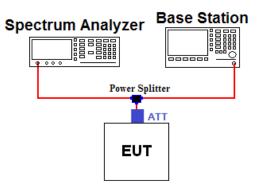
ERP/EIRP = The conducted power at the substitute antenna's terminal [dBm] + Substitute Antenna gain [dBd for ERP, dBi for EIRP]

For readings above 1 GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn antenna and an isotropic antenna are taken into consideration.



### **3.2 PEAK TO AVERAGE RATIO**

#### Test set-up



### Test Procedure

A peak to average ratio measurement is performed using the following procedure.

### CCDF Procedure

- KDB971168 v02r02-Section 5.7.1
- 1. Set resolution/measurement bandwidth ≥ signal's occupied bandwidth
- 2. Set the number of counts to a value that stabilizes the measured CCDF curve
- 3. Set the measurement interval as follows:
  - 1) For continuous transmissions, set to 1 ms
  - 2) For burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.
- 4. Record the maximum PAPR level associated with a probability of 0.1%



### Alternate Procedure

### - KDB971168 v02r02-Section 5.7.2

Use one of the measurement procedures of the peak power and record as PPk.

Use one of the measurement procedures of the average power and record as PAvg.

Both the peak and average power levels must be expressed in the same logarithmic units (e.g., dBm). Determine the PAPR from:

PAPR (dB) =  $P_{Pk}$  (dBm) -  $P_{Avg}$  (dBm).

### - Peak Power Measurement

- 1. Set the RBW  $\geq$  OBW
- 2. Set VBW ≥ 3 × RBW
- 3. Set span ≥ 2 x RBW
- 4. Sweep time = auto couple
- 5. Detector = peak
- 6. Ensure that the number of measurement points  $\geq$  span/RBW.
- 7. Trace mode = max hold
- 8. Allow trace to fully stabilize.
- 9. Use the peak marker function to determine the peak amplitude level.

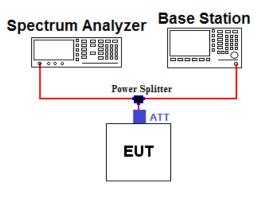
### - Average Power Measurement

- 1. Set span to at least 1.5 times the OBW.
- 2. Set RBW = 1-5% of the OBW, not to exceed 1 MHz.
- 3. Set VBW  $\geq$  3 x RBW.
- 4. Set number of points in sweep  $\geq 2 \times \text{span} / \text{RBW}$ .
- 5. Sweep time = auto-couple.
- 6. Detector = RMS (power averaging).
- 7. If the EUT can be configured to transmit continuously (i.e., burst duty cycle ≥ 98%), then set the trigger to free run.
- 8. If the EUT cannot be configured to transmit continuously (i.e., burst duty cycle < 98 %), then use a sweep trigger with the level set to enable triggering only on full power bursts and configure the EUT to transmit at full power for the entire duration of each sweep. Ensure that the sweep time is less than or equal to the transmission burst duration.</p>
- 9. Trace average at least 100 traces in power averaging (i.e., RMS) mode.
- 10. Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function, with the band limits set equal to the OBW band edges. If the instrument does not have a band power function, then sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.



### 3.3 OCCUPIED BANDWIDTH.

### Test set-up



#### Offset value information

Frequency (MHz)	Offset Value (dB)	Frequency (MHz)	Offset Value (dB)
824.2	12.70	1850.2	12.99
826.4	12.70	1852.4	13.00
836.6	12.71	1880.0	13.00
846.6	12.72	1907.6	13.03
848.8	12.73	1909.8	13.04
-	-	-	-

Note. 1: The offset values from EUT to Spectrum analyzer were measured and used for test. Offset value = Cable A + Splitter +ATT+ Cable B

### Test Procedure

### - KDB971168 v02r02-Section 4.2

The occupied bandwidth, that 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 of a given emission.

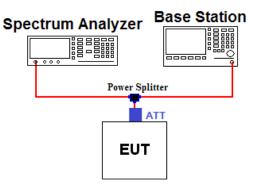
### Test setting

- 1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99 % occupied bandwidth and the 26 dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
- 2. RBW = 1 ~ 5 % of the expected OBW & VBW  $\geq$  3 X RBW
- 3. Detector = Peak
- 4. Trance mode = Max hold
- 5. Sweep = Auto couple
- 6. The trace was allowed to stabilize
- 7. If necessary, step 2 ~ 6 were repeated after changing the RBW such that it would be within  $1 \sim 5 \%$  of the 99 % occupied bandwidth observed in step 6.



### 3.4 BAND EDGE EMISSIONS AT ANTENNA TERMINAL.

#### Test set-up



#### Offset value information

Frequency (MHz)	Offset Value (dB)	Frequency (MHz)	Offset Value (dB)
823.0	12.70	1850.0	13.00
824.0	12.70	1910.0	13.05
849.0	12.73	-	-
850.0	12.73	-	-
-	-	-	-

Note. 1: The offset value from EUT to Spectrum analyzer was measured and used for test. Offset value = Cable A + Splitter +ATT+ Cable B

### **Test Procedure**

### - KDB971168 v02r02 - Section 6.0

All out of band emissions are measured by means of a calibrated spectrum analyzer. The EUT was setup to maximum output power at its lowest and highest channel with all modulations.

The power of any spurious emission shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log(P) dB$ 

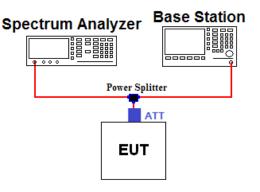
#### Test setting

- 1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
- 2. Span was set large enough so as to capture all out of band emissions near the band edge
- 3. RBW  $\geq$  1 % of the emission
- 4. VBW  $\geq$  3 X RBW
- 5. Detector = RMS & Trace mode = Max hold
- 6. Sweep time = Auto couple or 1 s for band edge
- 7. Number of sweep point  $\geq$  2 X span / RBW
- 8. The trace was allowed to stabilize
  - Note 1: In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of **at least one percent** of the emission bandwidth of the fundamental emission of the transmitter may be employed to demonstrate compliance with the out-of-band emissions limit. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.



### 3.5 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL.

### Test set-up



#### Offset value information

Frequency (MHz)	Offset Value (dB)	Frequency (MHz)	Offset Value (dB)
5000.0	13.16	15000.0	15.22
10000.0	14.27	20000.0	16.02
-	-	-	-

Note. 1: The offset value from EUT to Spectrum analyzer was measured and used for test. Offset value = Cable A + Splitter +ATT+ Cable B

### Test Procedure

### - KDB971168 v02r02 - Section 6.0

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The EUT was setup to maximum output power at its low, middle, high channel with all bandwidths. The spectrum is scanned from 30 MHz up to a frequency including its 10<sup>th</sup> harmonic.

The power of any spurious emission shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log(P) dB$ 

### Test setting

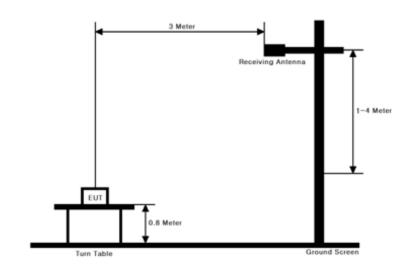
- 1. RBW = 100 KHz or 1 MHz & VBW  $\ge$  3 X RBW (Refer to Note 1)
- 2. Detector = RMS & Trace mode = Max hold
- 3. Sweep time = Auto couple
- 4. Number of sweep point  $\geq$  2 X span / RBW
- 5. The trace was allowed to stabilize

Note 1: Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for Part 22 and 1 MHz or greater for Part 24.



### 3.6 RADIATED SPURIOUS EMISSIONS





### **Test Procedure**

- ANSI/TIA-603-C-2004 - Section 2.2.12

### - KDB971168 v02r02 - Section 5.8

These measurements were performed at 3 & 10m test site. The equipment under test is placed on a non-conductive table 0.8-meters above a turntable which is flush with the ground plane and 3 meters from the receive antenna.

### Test setting

- 1. RBW = 100 kHz for below 1 GHz and 1 MHz for above 1 GHz / VBW  $\ge$  3 X RBW
- 2. Detector = Peak & Trace mode = Max hold
- 3. Sweep time = Auto couple
- 4. Number of sweep point  $\geq$  2 X span / RBW
- 5. The trace was allowed to stabilize

The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer.

For radiated power measurements below 1 GHz, a half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading.

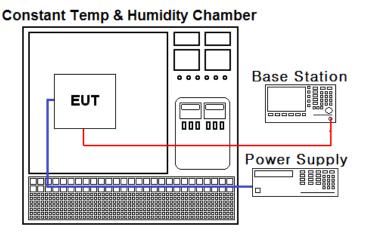
For radiated power measurements above 1 GHz, a Horn antenna was substituted in place of the EUT. This Horn antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. The difference between the gain of the horn and an isotropic antenna are taken into consideration.

This measurement was performed with the EUT oriented in 3 orthogonal axis.



### **3.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE**

### Test Set-up



### Test Procedure

- ANSI/TIA-603-C-2004
- KDB971168 v02r02 Section 9.0

The frequency stability of the transmitter is measured by:

### a.) Temperature:

The temperature is varied from - 30 °C to + 50 °C using an environmental chamber.

### b.) Primary Supply Voltage:

The primary supply voltage is varied from 85 % to 115 % of the nominal value for non handcarried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

### Specification:

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block for Part 24. The frequency stability of the transmitter shall be maintained within  $\pm$  0.000 25 % ( $\pm$  2.5 ppm) of the center frequency for Part 22.

### Time Period and Procedure:

- The carrier frequency of the transmitter is measured at room temperature. (25 °C to provide a reference)
- 2. The equipment is turned on in a "standby" condition for one minute before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
- Frequency measurements are made at 10 °C intervals ranging from -30 °C to +50 °C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.



### 4. LIST OF TEST EQUIPMENT

Туре	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal. Date (yy/mm/dd)	S/N
MXA Signal Analyzer	Agilent Technologies	N9020A	15/02/26	16/02/26	MY50200816
Dynamic Measurement DC Source	Agilent Technologies	66332A	15/01/06	16/01/06	GB37470190
Temp & Humi Test Chamber	SJ Science	SJ-TH-S50	15/02/26	16/02/26	SJ-TH-S50-140205
Signal Generator	Rohde Schwarz	SMF100A	15/06/29	16/06/29	102341
Digital Multimeter	Agilent Technologies	34401A	15/01/06	16/01/06	US36099541
8960 Series 10 Wireless	Agilent	LEE1EO	14/09/12	15/09/12	CD44224464
Comms Test Set	Technologies	E5515C	15/09/09	16/09/09	GB41321164
Power Splitter	Anritsu	K241B	15/06/25	16/06/25	017060
Thermohygrometer	BODYCOM	BJ5478	15/05/08	16/05/08	120612-2
Vector Signal Generator	Rohde Schwarz	SMBV100A	15/01/06	16/01/06	255571
Loop Antenna	Schwarzbeck	FMZB1513	14/04/29	16/04/29	1513-128
Dipole Antenna	Schwarzbeck	VHA9103	13/10/24	15/10/24	2116
Dipole Antenna	Schwarzbeck	VHA9103	14/04/01	16/04/01	2117
Dipole Antenna	Schwarzbeck	UHA9105	13/10/24	15/10/24	2261
Dipole Antenna	Schwarzbeck	UHA9105	14/04/01	16/04/01	2262
HORN ANT	ETS	3115	15/02/09	17/02/09	00021097
HORN ANT	ETS	3117	14/05/12	16/05/12	140394
HORN ANT	A.H.Systems	SAS-574	15/04/30	17/04/30	154
HORN ANT	ETS	3160-09-01	15/09/03	17/09/03	00158433
Low Noise Pre Amplifier	TSJ	MLA-010K01-B01-27	15/04/09	16/04/09	1844538
Amplifier (30dB)	Agilent	8449B	14/11/06	15/11/06	3008A02108
High-pass filter	Wainwright	WHKX12-935-1000- 15000-40SS	15/09/23	16/09/23	7
High-pass filter	Wainwright	WHKX12-2580- 3000-18000-80SS	15/09/23	16/09/23	3
TRILOG Broadband Test- Antenna	SCHWARZBECK	VULB 9160	14/04/04	16/04/04	3357
Amplifier	EMPOWER	BBS3Q7ELU	15/09/09	16/09/09	1020



### **5. SUMMARY OF TEST RESULTS**

FCC Part Section(s)	RSS Section(s)	Parameter	Status Note 1
2.1046	RSS-132 (5.4) RSS-133 (4.1)	Conducted Output Power	C <sup>Note 2</sup>
22.913(a) 24.232(c)	RSS-132 [5.4] [SRSP-503(5.1.3)] RSS-133 [6.4] [SRSP-510(5.1.2)]	Effective Radiated Power Equivalent Isotropic Radiated Power	С
22.917(a) 24.238(a) 2.1049	RSS-Gen [6.6]	Occupied Bandwidth	С
22.917(a) 24.238(a) 2.1051	RSS-132 [5.5] RSS-133 [6.5]	Band Edge Spurious and Harmonic Emissions at Antenna Terminal	С
24.232(d)	RSS-133 [6.4]	Peak to Average Ratio	С
22.917(a) 24.238(a) 2.1053	RSS-132 [5.5] RSS-133 [6.5]	Radiated Spurious and Harmonic Emissions	С
22.355 24.235 2.1055	RSS-132 [5.3] RSS-133 [6.3]	Frequency Stability	С
Note 1: <b>C</b> =Com Note 2: Refer to	ply <b>NC=</b> Not Comply	NT=Not Tested NA=Not Applicable	

The sample was tested according to the following specification: ANSI/TIA/EIA-603-C-2004 and KDB 971168 D01 v02r02



### **6. SAMPLE CALCULATION**

### A. Emission Designator

### **GSM850 Emission Designator**

### Emission Designator = **248KGXW** GSM OBW = 247.62 kHz

(Measured at the 99.75 % power bandwidth) G = Phase Modulation X = Cases not otherwise covered W = Combination (Audio/Data) EDGE850 Emission Designator

### Emission Designator = **246KG7W** GSM OBW = 245.53 kHz (Measured at the 99.75 % power bandwidth) G = Phase Modulation 7 = Two or more channels containing quantized or digital information W = Combination (Audio/Data) **WCDMA850 Emission Designator**

Emission Designator = **4M17F9W** WCDMA OBW = 4.17070 MHz (Measured at the 99.75 % power bandwidth) F = Frequency Modulation 9 = Composite Digital Information W = Combination (Audio/Data) HSUPA850 Emission Designator

Emission Designator = **4M17F9W** WCDMA OBW = 4.17410 MHz (Measured at the 99.75 % power bandwidth) F = Frequency Modulation 9 = Composite Digital Information W = Combination (Audio/Data) Note: Emission designators of the granted module were used.

### **GSM1900 Emission Designator**

Emission Designator = **248KGXW** GSM OBW = 247.52 kHz (Measured at the 99.75 % power bandwidth) G = Phase Modulation X = Cases not otherwise covered W = Combination (Audio/Data) EDGE1900 Emission Designator

Emission Designator = **244KG7W** GSM OBW = 244.13 kHz (Measured at the 99.75 % power bandwidth) G = Phase Modulation 7 = Two or more channels containing quantized or digital information W = Combination (Audio/Data)

### WCDMA1900 Emission Designator

Emission Designator = **4M18F9W** WCDMA OBW = 4.18320 MHz (Measured at the 99.75 % power bandwidth) F = Frequency Modulation 9 = Composite Digital Information W = Combination (Audio/Data) HSUPA1900 Emission Designator

Emission Designator = **4M19F9W** WCDMA OBW = 4.19460 MHz (Measured at the 99.75 % power bandwidth) F = Frequency Modulation

- 9 = Composite Digital Information
- W = Combination (Audio/Data)



### **B. ERP Sample Calculation**

MODE	Ch.	/ Freq	Spectrum Reading	EUT	Ant Pol	Level(dBm)	TX Ant	Res	sult
WODE	channel	Freq.(MHz)	Value(dBm)	Axis	(H/V)	@ Ant Terminal	Gain(dBd)	(dBm)	(W)
GSM850	128	824.2	-8.33	Х	Н	25.65	1.23	26.88	0.488

### ERP = @ Ant Terminal LEVEL(dBm) + Ant. Gain

The EUT mounted on a non-conductive turntable is 0.8 meter above test site ground level.
 During the test, the turn table is rotated until the maximum signal is found.

3) Record the field strength meter's level.

4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.

5) Increase the signal generator output till the field strength meter's level is equal to the item (3).

6) The signal generator output level with Ant. Gain is the rating of effective radiated power (ERP).



### 7. TEST DATA

### 7.1 PEAK TO AVERAGE RATIO

Band	Channel	Frequency	Test Result (kHz)
	128	824.2	244.69
GSM850	190	836.6	247.62
	251	848.8	242.36
	128	824.2	245.53
EDGE850	190	836.6	244.56
	251	848.8	240.90
	4132	826.4	4170.70
WCDMA850	4183	836.6	4159.50
	4233	846.6	4159.50
	4132	826.4	4174.10
HSUPA850	4183	836.6	4170.50
	4233	846.6	4158.80
	512	1850.2	247.52
GSM1900	661	1880.0	243.53
	810	1909.8	246.87
	512	1850.2	240.78
EDGE1900	661	1880.0	243.32
	810	1909.8	244.13
	9262	1850.2	4176.80
WCDMA1900	9400	1880.0	4166.30
	9538	1909.8	4183.20
	9262	1852.4	4194.60
HSUPA1900	9400	1880.0	4180.60
	9538	1907.6	4189.40

- Plots of the EUT's Occupied Bandwidth are shown in Clause 8.2

### 7.2 OCCUPIED BANDWIDTH

- Not Applicable

### 7.3 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL

- Not Applicable

### 7.4 BAND EDGE

- Not Applicable



### 7.5 EFFECTIVE RADIATED POWER

#### - GSM850

	EUT				Test mode			
CH.	Position (Axis)	Pol. (H/V)	LEVEL@ TX ANTENNA TERMINAL (dBm)	Antenna Gain (dBd)	ERP (dBm)	ERP (W)	Rated Voltage	Note.
824.2 128	x	Н	-13.85	1.23	26.88	0.488	DC 3.8V	GSM
836.6 190	Х	Н	-15.31	1.17	25.26	0.336	DC 3.8V	GSM
848.8 251	Х	Н	-15.51	1.11	24.95	0.313	DC 3.8V	GSM
824.2 128	Х	Н	-19.89	1.23	20.84	0.121	DC 3.8V	EDGE

### - WCDMA850 data

	EUT		Test mode 12.2 kbps RMC										
CH.	EUT Position (Axis)	Pol. (H/V)	LEVEL@ TX ANTENNA TERMINAL (dBm)	Antenna Gain (dBd)	ERP (dBm)	ERP (W)	Rated Voltage	Note.					
826.4 4132	x	Н	-21.30	1.22	19.35	0.086	DC 3.8V	-					
836.6 4183	Х	Н	-22.12	1.17	18.45	0.070	DC 3.8V	-					
846.6 4233	Х	Н	-21.97	1.12	18.51	0.071	DC 3.8V	-					

### - HSUPA850 data

	EUT			Tes	st mode subtes	st 1		
CH.		Pol. (H/V)	LEVEL@ TX ANTENNA TERMINAL (dBm)	Antenna Gain (dBd)	ERP (dBm)	ERP (W)	Rated Voltage	Note.
826.4 4132	x	Н	-22.04	1.22	18.61	0.073	DC 3.8V	-
836.6 4183	Х	н	-23.17	1.17	17.40	0.055	DC 3.8V	-
846.6 4233	Х	Н	-22.92	1.12	17.56	0.057	DC 3.8V	-

#### NOTES:

This EUT was tested under all configurations and the highest power is reported in GSM mode and WCDMA mode with HSDPA inactive at 12.2 kbps RMC and TPC bits set to "1" and HSUPA mode with 12.2 kbps + HSPA and subtest 1 and in GSM mode using a Power Control Level of "0" in PCS Band and "5" in the Cellular Band. This EUT was tested with the fully charged battery. Also, we have done x, y, z planes in EUT and horizontal and vertical polarization of detecting antenna.



### 7.6 EQUIVALENT ISOTROPIC RADIATED POWER

### - GSM1900 data

	EUT				Test mode			
CH.	Position (Axis)	Pol. (H/V)	LEVEL@ TX ANTENNA TERMINAL (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (W)	Rated Voltage	Note.
1850.2 512	Z	V	-20.96	9.01	25.55	0.359	DC 3.8V	GSM
1880.0 661	Z	V	-19.58	9.05	26.71	0.469	DC 3.8V	GSM
1909.80 810	Z	V	-21.53	9.08	24.69	0.294	DC 3.8V	GSM
1880.0 661	Z	V	-23.80	9.05	22.49	0.177	DC 3.8V	EDGE

### - WCDMA1900 data

	EUT		Test mode 12.2 kbps RMC									
CH.	Position (Axis)	Pol. (H/V)	LEVEL@ TX ANTENNA TERMINAL (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (W)	Rated Voltage	Note.				
1852.4 9262	Z	V	-25.79	9.01	20.78	0.120	DC 3.8V	-				
1880.0 9400	Z	V	-28.41	9.05	17.88	0.061	DC 3.8V	-				
1907.6 9538	Z	V	-29.21	9.08	16.99	0.050	DC 3.8V	-				

### - HSUPA1900 data

	CH. EUT Position (Axis)	Test mode subtest 1									
CH.		Pol. (H/V)	LEVEL@ TX ANTENNA TERMINAL (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (W)	Rated Voltage	Note.			
1852.4 9262	Z	V	-26.74	9.01	19.83	0.096	DC 3.8V	-			
1880.0 9400	Z	V	-29.22	9.05	17.07	0.051	DC 3.8V	-			
1907.6 9538	Z	V	-30.26	9.08	15.94	0.039	DC 3.8V	-			

#### NOTES:

This EUT was tested under all configurations and the highest power is reported in GSM mode and WCDMA mode with HSDPA inactive at 12.2 kbps RMC and TPC bits set to "1" and HSUPA mode with 12.2 kbps + HSPA and subtest 1 and in GSM mode using a Power Control Level of "0" in PCS Band and "5" in the Cellular Band. This EUT was tested with the fully charged battery. Also, we have done x, y, z planes in EUT and horizontal and vertical polarization of detecting antenna.



### 7.7 RADIATED SPURIOUS EMISSIONS

### 7.7.1 RADIATED SPURIOUS EMISSIONS (GSM850)

Channel (ERP)	Freq. (MHz)	EUT Position (Axis)	POL (H/V)	LEVEL@ ANTENNA TERMINAL (dBm)	Substitute Antenna Gain (dBd)	Correct Generator Level (dBm)	Result (dBc)	Limit (dBc)
128	1648.39	Х	Н	-39.64	6.64	-33.00	59.88	
_	2472.94	Z	V	-45.78	7.58	-38.20	65.08	39.88
(0.488 W)	3296.80	Y	Н	-47.87	7.79	-40.08	66.96	
100	1673.24	Х	Н	-41.62	6.66	-34.96	60.22	
190 (0.226.W/)	2509.78	Z	V	-48.64	7.61	-41.03	66.29	38.26
(0.336 W)	3346.02	Y	Н	-57.85	7.83	-50.02	75.28	
051	1697.71	Х	н	-43.04	6.69	-36.35	61.30	
251 (0.313 W)	2446.35	Z	V	-50.33	7.55	-42.78	67.73	37.95
(0.313 W)	3395.49	Y	Н	-57.46	7.87	-49.59	74.54	

- Limit Calculation= 43 + 10 log<sub>10</sub>( ERP [W] ) [dBc]

- No other spurious and harmonic emissions were reported greater than listed emissions above table.

### NOTES:

This EUT was tested under all configurations and the highest power is reported in GSM mode and WCDMA mode with HSDPA inactive at 12.2 kbps RMC and TPC bits set to "1" and HSUPA mode with 12.2 kbps + HSPA and subtest 1 and in GSM mode using a Power Control Level of "0" in PCS Band and "5" in the Cellular Band. This EUT was tested with the fully charged battery. Also, we have done x, y, z planes in EUT and horizontal and vertical polarization of detecting antenna.



Channel (ERP)	Freq. (MHz)	EUT Position (Axis)	POL (H/V)	LEVEL@ ANTENNA TERMINAL (dBm)	Substitute Antenna Gain (dBd)	Correct Generator Level (dBm)	Result (dBc)	Limit (dBc)
	1655.43	Х	Н	-54.54	6.64	-47.90	67.25	
4132 (0.086 W)	-	-	-	-	-	-	-	32.35
(0.000)	-	-	-	-	-	-	-	
	1670.82	Х	Н	-55.29	6.66	-48.63	67.08	31.45
4183 (0.070 W)	-	-	-	-	-	-	-	
(0.01011)	-	-	-	-	-	-	-	
	1695.92	Х	Н	-54.99	6.69	-48.30	66.81	
4233 (0.071 W)	-	-	-	-	-	-	-	31.51
(0.0.1 11)	-	-	-	-	-	-	-	

- Limit Calculation= 43 + 10 log10( ERP [W] ) [dBc]

- No other spurious and harmonic emissions were reported greater than listed emissions above table.

### NOTES:

This EUT was tested under all configurations and the highest power is reported in GSM mode and WCDMA mode with HSDPA inactive at 12.2 kbps RMC and TPC bits set to "1" and HSUPA mode with 12.2 kbps + HSPA and subtest 1 and in GSM mode using a Power Control Level of "0" in PCS Band and "5" in the Cellular Band. This EUT was tested with the fully charged battery. Also, we have done x, y, z planes in EUT and horizontal and vertical polarization of detecting antenna.



7.7.3 RADIATED SPURIOUS EMISSIONS (HSUPA850)
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Channel (ERP)	Freq. (MHz)	EUT Position (Axis)	POL (H/V)	LEVEL@ ANTENNA TERMINAL (dBm)	Substitute Antenna Gain (dBd)	Correct Generator Level (dBm)	Result (dBc)	Limit (dBc)
	1655.72	Х	Н	-55.66	6.64	-49.02	67.63	
4132 (0.073 W)	-	-	-	-	-	-	-	31.61
(0.01011)	-	-	-	-	-	-	-	
	1670.53	Х	Н	-55.73	6.66	-49.07	66.47	
4183 (0.055 W)	-	-	-	-	-	-	-	30.40
(0.000)	-	-	-	-	-	-	-	
	1695.23	Х	Н	-55.71	6.69	-49.02	66.58	
4233 (0.057 W)	-	-	-	-	-	-	-	30.56
(0.001 11)	-	-	-	-	-	-	-	

- Limit Calculation= 43 + 10 log<sub>10</sub>( ERP [W] ) [dBc]

- No other spurious and harmonic emissions were reported greater than listed emissions above table.

### NOTES:

This EUT was tested under all configurations and the highest power is reported in GSM mode and WCDMA mode with HSDPA inactive at 12.2 kbps RMC and TPC bits set to "1" and HSUPA mode with 12.2 kbps + HSPA and subtest 1 and in GSM mode using a Power Control Level of "0" in PCS Band and "5" in the Cellular Band. This EUT was tested with the fully charged battery. Also, we have done x, y, z planes in EUT and horizontal and vertical polarization of detecting antenna.



Channel (EIRP)	Freq. (MHz)	EUT Position (Axis)	POL (H/V)	LEVEL@ ANTENNA TERMINAL (dBm)	Substitute Antenna Gain (dBi)	Correct Generator Level (dBm)	Result (dBc)	Limit (dBc)
	3700.38	Y	Н	-53.41	9.91	-43.50	69.05	
512 (0.359 W)	5550.47	Z	Н	-49.46	10.98	-38.48	64.03	38.55
(	-	-	-	-	-	-	-	
	3760.03	Y	Н	-52.16	9.86	-42.30	69.01	
661 (0.469 W)	5639.75	Z	Н	-50.05	11.11	-38.94	65.65	39.71
(0.100 11)	-	-	-	-	-	-	-	
	3819.51	Y	Н	-53.46	9.80	-43.66	68.35	
810 (0.294 W)	5729.75	Z	Н	-51.41	11.24	-40.17	64.86	37.69
	-	-	-	-	-	-	-	

### 7.7.4 RADIATED SPURIOUS EMISSIONS (GSM1900)

- Limit Calculation = 43 + 10 log<sub>10</sub>( EIRP [W] ) [dBc]

- No other spurious and harmonic emissions were reported greater than listed emissions above table.

### NOTES:

This EUT was tested under all configurations and the highest power is reported in GSM mode and WCDMA mode with HSDPA inactive at 12.2 kbps RMC and TPC bits set to "1" and HSUPA mode with 12.2 kbps + HSPA and subtest 1 and in GSM mode using a Power Control Level of "0" in PCS Band and "5" in the Cellular Band. This EUT was tested with the fully charged battery. Also, we have done x, y, z planes in EUT and horizontal and vertical polarization of detecting antenna.



### 7.7.5 RADIATED SPURIOUS EMISSIONS (WCDMA1900)

Channel (EIRP)	Freq. (MHz)	EUT Position (Axis)	POL (H/V)	LEVEL@ ANTENNA TERMINAL (dBm)	Substitute Antenna Gain (dBi)	Correct Generator Level (dBm)	Result (dBc)	Limit (dBc)
	5553.72	Z	V	-42.38	10.98	-31.40	52.18	
9262 (0.120 W)	-	-	-	-	-	-	-	33.78
(01.20.11)	-	-	-	-	-	-	-	
	5636.40	Z	V	-46.71	11.10	-35.61	53.49	
9400 (0.061 W)	-	-	-	-	-	-	-	30.88
(0.001.11)	-	-	-	-	-	-	-	1
	5719.50	Z	V	-49.13	11.23	-37.90	54.89	
9538 (0.050 W)	-	-	-	-	-	-	-	29.99
(0.000 W)	-	-	-	-	-	-	-	

- Limit Calculation = 43 + 10 log<sub>10</sub>( EIRP [W] ) [dBc]

- No other spurious and harmonic emissions were reported greater than listed emissions above table.

### NOTES:

This EUT was tested under all configurations and the highest power is reported in GSM mode and WCDMA mode with HSDPA inactive at 12.2 kbps RMC and TPC bits set to "1" and HSUPA mode with 12.2 kbps + HSPA and subtest 1 and in GSM mode using a Power Control Level of "0" in PCS Band and "5" in the Cellular Band. This EUT was tested with the fully charged battery. Also, we have done x, y, z planes in EUT and horizontal and vertical polarization of detecting antenna.



Channel (EIRP)	Freq. (MHz)	EUT Position (Axis)	POL (H/V)	LEVEL@ ANTENNA TERMINAL (dBm)	Substitute Antenna Gain (dBi)	Correct Generator Level (dBm)	Result (dBc)	Limit (dBc)
	5553.57	Z	V	-43.56	10.98	-32.58	52.41	
9262 (0.096 W)	-	-	-	-	-	-	-	32.83
(0.000)	-	-	-	-	-	-	-	
	5636.69	Z	V	-47.63	11.11	-36.52	53.59	30.07
9400 (0.051 W)	-	-	-	-	-	-	-	
(0.001.11)	-	-	-	-	-	-	-	
	5719.75	Z	V	-50.00	11.23	-38.77	54.71	
9538 (0.039 W)	-	-	-	-	-	-	-	28.94
(0.000 11)	-	-	-	-	-	-	-	

- Limit Calculation = 43 + 10 log<sub>10</sub>( EIRP [W] ) [dBc]

- No other spurious and harmonic emissions were reported greater than listed emissions above table.

### NOTES:

This EUT was tested under all configurations and the highest power is reported in GSM mode and WCDMA mode with HSDPA inactive at 12.2 kbps RMC and TPC bits set to "1" and HSUPA mode with 12.2 kbps + HSPA and subtest 1 and in GSM mode using a Power Control Level of "0" in PCS Band and "5" in the Cellular Band. This EUT was tested with the fully charged battery. Also, we have done x, y, z planes in EUT and horizontal and vertical polarization of detecting antenna.

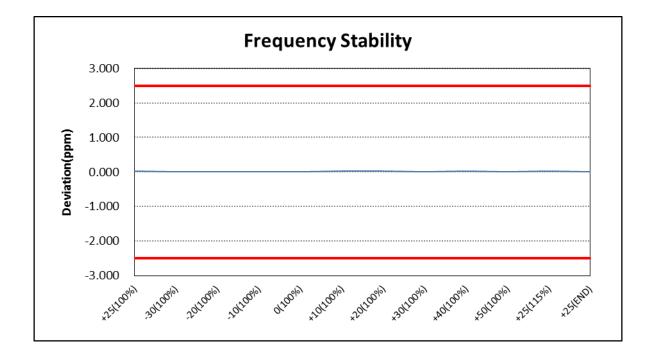


### 7.8 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

### 7.8.1 FREQUENCY STABILITY (GSM850)

<u>836,600,000</u> Hz
<u>190(Mid)</u>
3.800V DC
<u>± 0.00025</u> % or <u>2.5</u> ppm

VOLTAGE	POWER	TEMP	FREQ	Dev	viation
(%)	(V DC)	(°C)	(Hz)	(ppm)	(%)
100%	3.800	+25(Ref)	836,600,015	0.018	0.00000179
100%		-30	836,600,013	0.016	0.00000155
100%		-20	836,600,008	0.010	0.00000096
100%		-10	836,600,004	0.005	0.00000048
100%		0	836,600,009	0.011	0.00000108
100%		+10	836,600,016	0.019	0.00000191
100%		+20	836,600,018	0.022	0.00000215
100%		+30	836,600,011	0.013	0.00000131
100%		+40	836,600,016	0.019	0.00000191
100%		+50	836,600,008	0.010	0.00000096
115%	4.370	+25	836,600,017	0.020	0.00000203
BATT.ENDPOINT	3.230	+25	836,600,004	0.005	0.00000048

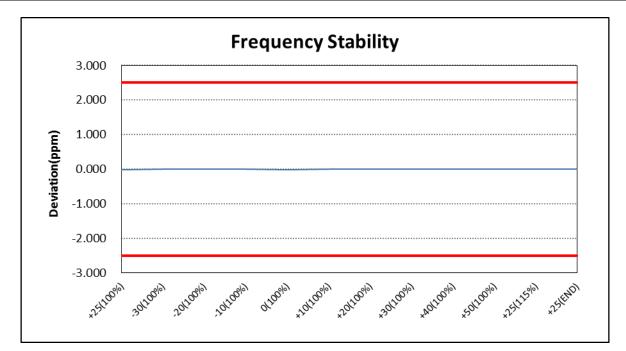




### 7.8.2 FREQUENCY STABILITY (WCDMA850)

OPERATING FREQUENCY	:	<u>836,600,000</u> Hz		
CHANNEL	:	4183(Mid)		
REFERENCE VOLTAGE	:	3.800	V DC	
DEVIATION LIMIT	:	<u>± 0.00025 % or</u>	2.5	_ppm

VOLTAGE	POWER	TEMP	FREQ	Dev	viation
(%)	(V DC)	(°C)	(Hz)	(ppm)	(%)
100%	3.800	+25(Ref)	836,599,993	-0.008	-0.00000084
100%		-30	836,600,009	0.011	0.00000108
100%		-20	836,600,002	0.002	0.00000024
100%		-10	836,600,008	0.010	0.00000096
100%		0	836,599,991	-0.011	-0.00000108
100%		+10	836,600,005	0.006	0.00000060
100%		+20	836,600,001	0.001	0.00000012
100%		+30	836,600,008	0.010	0.00000096
100%		+40	836,599,997	-0.004	-0.00000036
100%		+50	836,599,994	-0.007	-0.00000072
115%	4.370	+25	836,600,007	0.008	0.0000084
BATT.ENDPOINT	3.230	+25	836,600,001	0.001	0.00000012

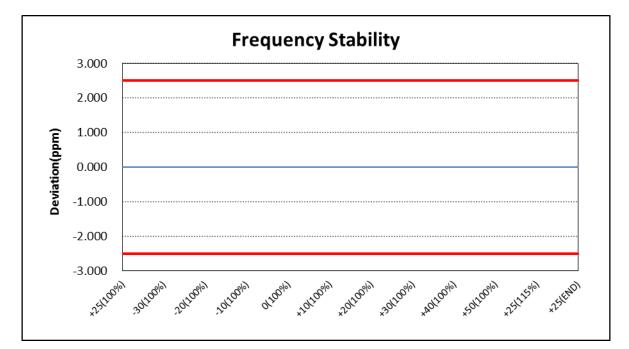




### 7.8.3 FREQUENCY STABILITY (HSUPA850)

OPERATING FREQUENCY	:	<u>836,600,000 Hz</u>		
CHANNEL	:	4183(Mid)		
REFERENCE VOLTAGE	:	3.800	V DC	
DEVIATION LIMIT	:	<u>± 0.00025</u> % or	2.5	_ppm

VOLTAGE	POWER	TEMP	FREQ	Dev	viation
(%)	(V DC)	(°C)	(Hz)	(ppm)	(%)
100%	3.800	+25(Ref)	836,600,006	0.007	0.00000072
100%		-30	836,600,008	0.010	0.00000096
100%		-20	836,599,997	-0.004	-0.00000036
100%		-10	836,599,998	-0.002	-0.00000024
100%		0	836,600,004	0.005	0.00000048
100%		+10	836,600,009	0.011	0.00000108
100%		+20	836,599,994	-0.007	-0.00000072
100%		+30	836,600,003	0.004	0.0000036
100%		+40	836,600,005	0.006	0.00000060
100%		+50	836,599,998	-0.002	-0.00000024
115%	4.370	+25	836,600,003	0.004	0.0000036
BATT.ENDPOINT	3.230	+25	836,599,999	-0.001	-0.00000012





### 7.8.4 FREQUENCY STABILITY (GSM1900)

```
OPERATING FREQUENCY
CHANNEL
REFERENCE VOLTAGE
LIMIT
```

<u>1,880,000,000</u>Hz 661(Mid)

3.800 V DC

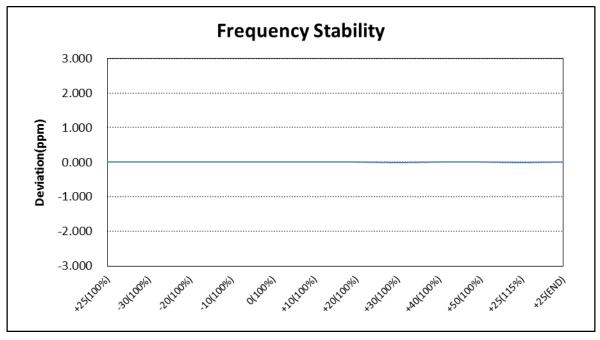
AGE : <u>3.</u> .IMIT : TI

:

:

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

VOLTAGE	POWER	TEMP	FREQ	Deviation				
(%)	(V DC)	(°C)	(Hz)	(ppm)	(%)			
100%	3.800	+25(Ref)	1,880,000,006	0.003	0.0000032			
100%		-30	1,880,000,003	0.002	0.00000016			
100%		-20	1,880,000,007	0.004	0.0000037			
100%		-10	1,879,999,998	-0.001	-0.00000011			
100%		0	1,880,000,009	0.005	0.00000048			
100%		+10	1,880,000,011	0.006	0.00000059			
100%		+20	1,880,000,003	0.002	0.00000016			
100%		+30	1,879,999,990	-0.005	-0.00000053			
100%		+40	1,879,999,995	-0.003	-0.00000027			
100%		+50	1,880,000,013	0.007	0.0000069			
115%	4.370	+25	1,879,999,994	-0.003	-0.0000032			
BATT.ENDPOINT	3.230	+25	1,880,000,007	0.004	0.0000037			



**Note.** Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. as such it is determined that the channels at the band edge would remain inband when the maximum measured frequency deviation noted during the frequency stability tests is applied. therefore the device is determined to remain operating in band over the temperature and voltage range as tested.



### 7.8.5 FREQUENCY STABILITY (WCDMA1900)

OPERATING FREQUENCY
CHANNEL
REFERENCE VOLTAGE

1,880,000,000 Hz

9400(Mid)

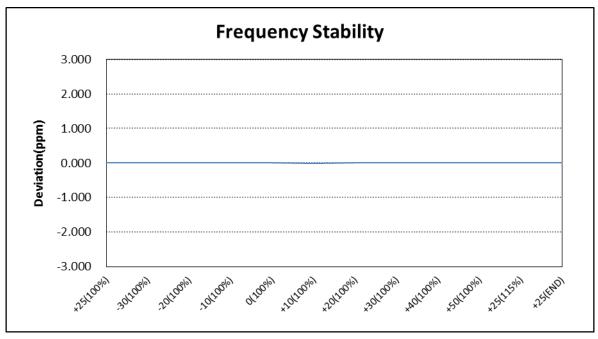
V DC 3.800

: LIMIT

1

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

VOLTAGE	POWER	TEMP	FREQ	Deviation			
(%)	(V DC)	(°C)	(Hz)	(ppm)	(%)		
100%	3.800	+25(Ref)	1,880,000,006	0.003	0.0000032		
100%		-30	1,880,000,002	0.001	0.00000011		
100%		-20	1,880,000,007	0.004	0.0000037		
100%		-10	1,879,999,997	-0.002	-0.00000016		
100%		0	1,879,999,998	-0.001	-0.00000011 -0.00000043		
100%		+10	1,879,999,992	-0.004			
100%		+20	1,880,000,009	0.005	0.00000048		
100%		+30	1,880,000,005	0.003	0.00000027		
100%		+40	1,880,000,007	0.004	0.0000037		
100%		+50	1,880,000,006	0.003	0.0000032		
115%	4.370	+25	1,880,000,004	0.002	0.00000021		
BATT.ENDPOINT	3.230	+25	1,879,999,998	-0.00000011			



Note. Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. as such it is determined that the channels at the band edge would remain inband when the maximum measured frequency deviation noted during the frequency stability tests is applied. therefore the device is determined to remain operating in band over the temperature and voltage range as tested.



### 7.8.6 FREQUENCY STABILITY (HSUPA1900)

OPERATING FREQUENCY
CHANNEL
REFERENCE VOLTAGE
LIMIT

1,8880,000,000 Hz 9400(Mid)

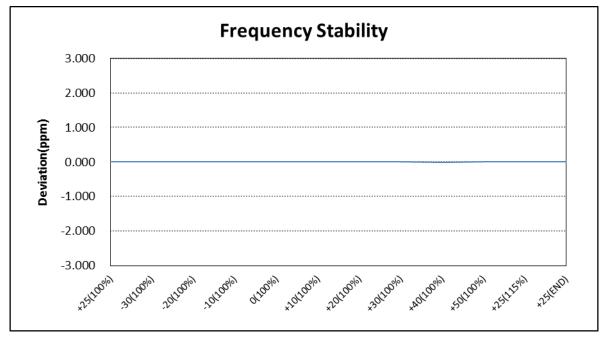
3.800 V DC

: :

:

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

VOLTAGE	POWER	TEMP	FREQ	Deviation			
(%)	(V DC)	(°C)	(Hz)	(ppm)	(%)		
100%	3.800	+25(Ref)	1,880,000,005	0.003	0.0000027		
100%		-30	1,880,000,003	0.002	0.00000016		
100%		-20	1,879,999,998	-0.001	-0.00000011		
100%		-10	1,880,000,007	0.004	0.0000037		
100%		0	1,880,000,009	0.005	0.0000048		
100%		+10	1,880,000,005	0.003	0.00000027		
100%		+20	1,880,000,006	0.003	0.0000032		
100%		+30	1,879,999,997	-0.002	-0.00000016		
100%		+40	1,879,999,993	-0.004	-0.0000037		
100%		+50	1,879,999,998	-0.001	-0.00000011		
115%	4.370	+25	1,880,000,006	0.003	0.0000032		
BATT.ENDPOINT	3.230	+25	1,880,000,005	0.003	0.00000027		

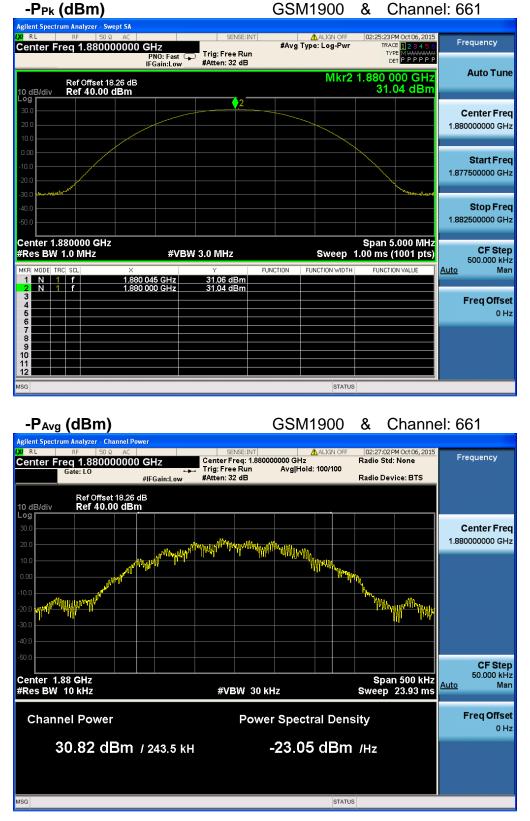


Note. Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. as such it is determined that the channels at the band edge would remain inband when the maximum measured frequency deviation noted during the frequency stability tests is applied. therefore the device is determined to remain operating in band over the temperature and voltage range as tested.



### 8. TEST PLOTS

### 8.1 Peak to Average Ratio



PAPR (dB) =  $P_{Pk}$  (dBm) -  $P_{Avg}$  (dBm) = 31.06 dBm - 30.82 dBm = 0.24 dB





P<sub>Pk</sub> (dBm)

EDGE1900 & Channel: 661

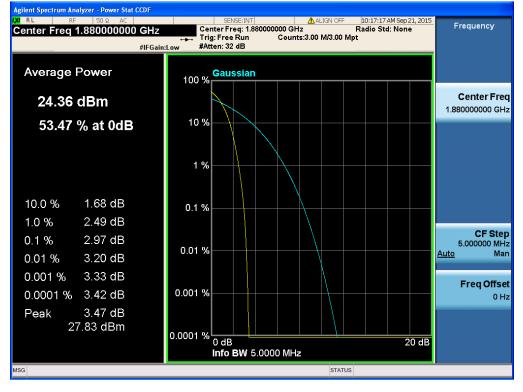
	it Spectri																	
L <b>XI</b> R		RF		]Ω A				SE	NSE:IN	IT			ALIGN OFF	08:5		M Oct 06, 201		Frequency
Cen	iter Fr	eq	1.880	0000	00 6	FIZ PNO: Fas	t 🗔	Trig: Free	Run		#Avg	Type	e: Log-Pwr		TYF	E M WARARAR	4	, ,
						IFGain:Lo		#Atten: 3	2 dB						DE	тРРРР	P	
		-		10.00									Mkr2	1.88	0 0	00 GH:		Auto Tune
10 di	Bidiv		Offset f 40.0													86 dBn		
Lõg			1 1010					$\sim$	2									
30.0	<u> </u>																	Center Freq
20.0	L																1	880000000 GHz
10.0																		
0.00																		
-10.0																		Start Freq
														)	w.		1	.877500000 GHz
-20.0		1	<i>(</i>												Ż			
-30.0	en aba	" ليرم														"Story of Lynn, fy		
-40.0	<u> </u>																	Stop Freq
-50.0																	1	.882500000 GHz
	ter 1.8			z												.000 MH		CF Step
#Re	s BW	1.0	MHz			#\	/BW	3.0 MHz					Sweep	1.00 r	ns (	1001 pts	)	500.000 kHz
MKR	MODE TR	C SCL			X			Y		FUN	CTION	FUN	NCTION WIDTH	FI	UNCTIO	N VALUE	Aut	
1	N 1					25 GHz		30.94 d										
2	N 1	f		1	.880 (	000 GHz		30.86 d	Bm			-						
4																		Freq Offset
5												-						0 Hz
7																		
8									_			-						
10																		
11																		
12																		
MSG													STATUS	S				

PAvg (dBm) EDGE1900 & Channel: 661 Agilent Spectrum Analyzer - Char SENSE:INT ALIGN OFF Center Freq: 1.88000000 GHz Trig: Free Run Avg|Hold: 100/100 #Atten: 32 dB 08:54:17 PM Oct 06, 2015 Radio Std: None Frequency Center Freq 1.880000000 GHz #IFGain:Low Radio Device: BTS Ref Offset 18.26 dB Ref 40.00 dBm 10 dB/div og **Center Freq** 1.880000000 GHz mandly 'yynyf' 1 CF Step 50.000 kHz Man Center 1.88 GHz #Res BW 10 kHz Span 500 kHz Sweep 23.93 ms <u>Auto</u> #VBW 30 kHz Freq Offset **Channel Power Power Spectral Density** 0 Hz 26.75 dBm / 243.3 кн -27.12 dBm /Hz STATUS

PAR (dB) =  $P_{Pk}$  (dBm) -  $P_{Avg}$  (dBm) = 30.94 dBm - 26.75 dBm = 4.19 dB



#### WCDMA1900 & Channel: 9400

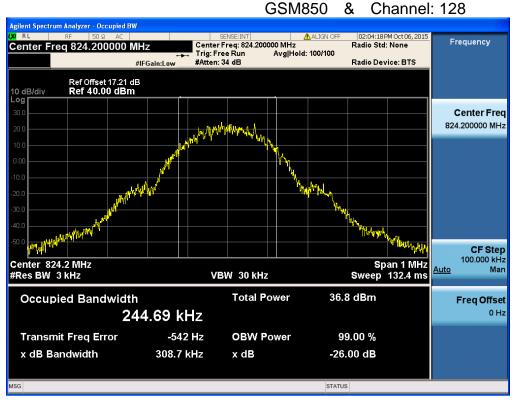


### HSUPA1900 & Channel: 9400

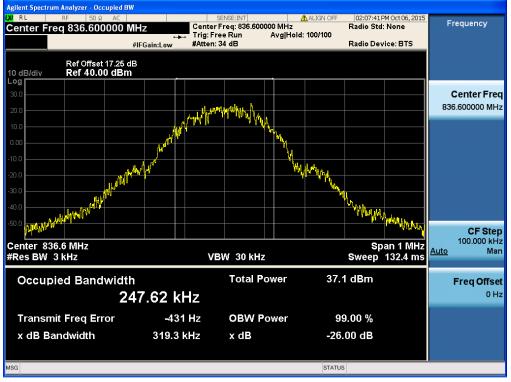




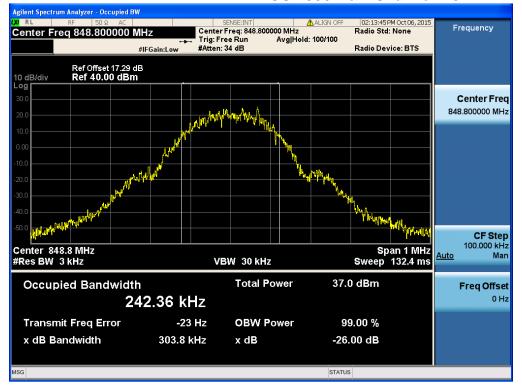
### 8.2 Occupied Bandwidth (99 % Bandwidth)



# GSM850 & Channel: 190

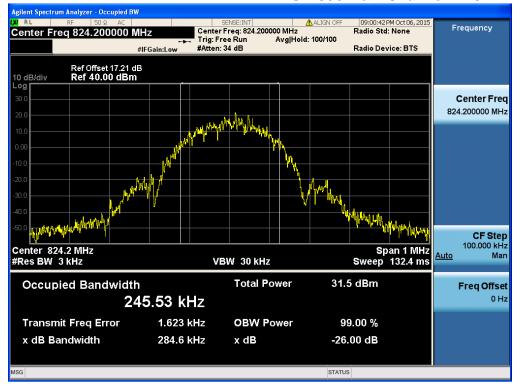






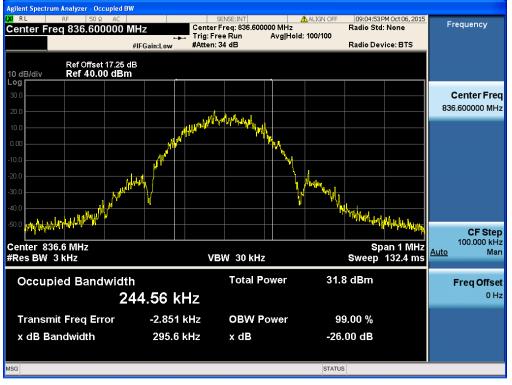
### GSM850 & Channel: 251





#### EDGE 850 & Channel: 128

# EDGE 850 & Channel: 190



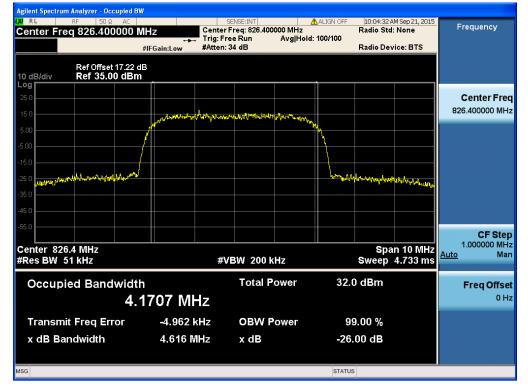




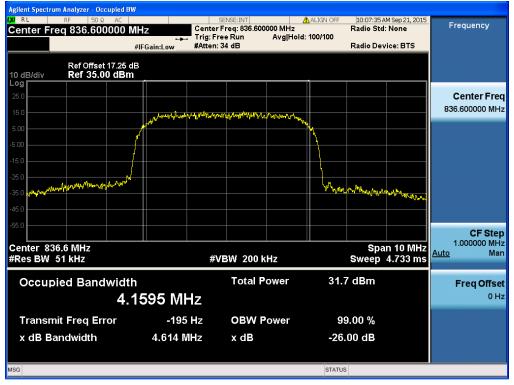
#### EDGE 850 & Channel: 251



#### WCDMA850 & Channel: 4132



## WCDMA850 & Channel: 4183



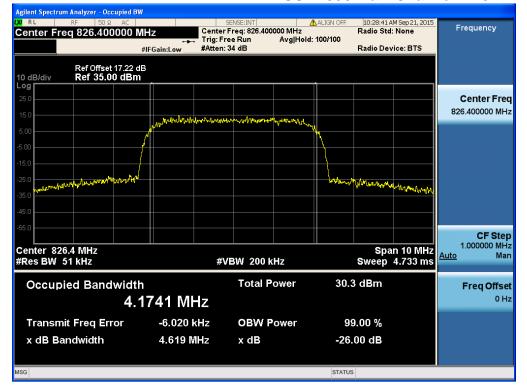


# WCDMA850 & Channel: 4233

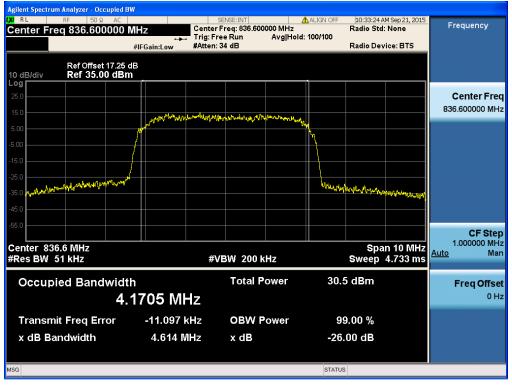
Image: Start Star
Center Pred 846.600000 WHz         Center Free Run AvglHold: 100/100         Radio Device: BTS           Ref Offset 17.29 dB         Ref 35.00 dBm         Center F           10 dB/div         Ref 35.00 dBm         Ref 35.00 dBm         Ref 35.00 dBm           250         Image: Second Secon
10 dB/div         Ref 35.00 dBm         Center F           250
250       Center F         150       Center F         500       Center F         1.000000
500     500       500     500       500     500       160     100       160     100       160     100       160     100       160     100       160     100       160     100       160     100       160     100       160     100       160     100       100     100000       1000000     100000
-150 -250 -350 -450 -50 Center 846.6 MHz Span 10 MHz
-35.0 -45.0 -55.0 Center 846.6 MHz Span 10 MHz
-550 Center 846.6 MHz Span 10 MHz Auto
Center 846.6 MHz Span 10 MHz Auto
Center 846.6 MHz Span 10 MHz Auto
#Res BW 51 kHz #VBW 200 kHz Sweep 4.733 ms
Occupied Bandwidth Total Power 31.5 dBm Freq Off
4.1595 MHz
Transmit Freq Error 5.962 kHz OBW Power 99.00 %
x dB Bandwidth 4.616 MHz x dB -26.00 dB
MSG STATUS



## HSUPA850 & Channel: 4132

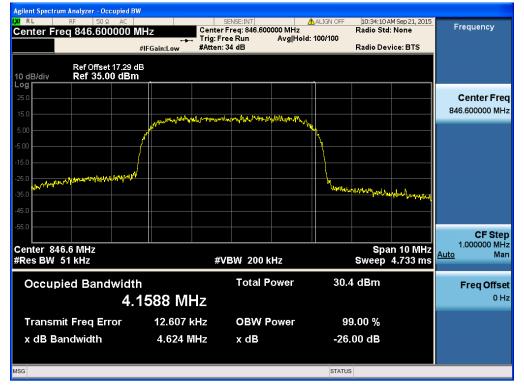


#### HSUPA850 & Channel: 4183

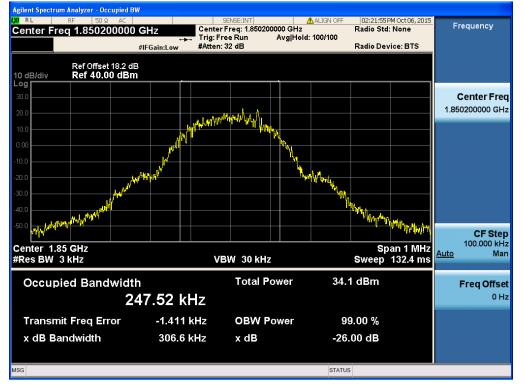


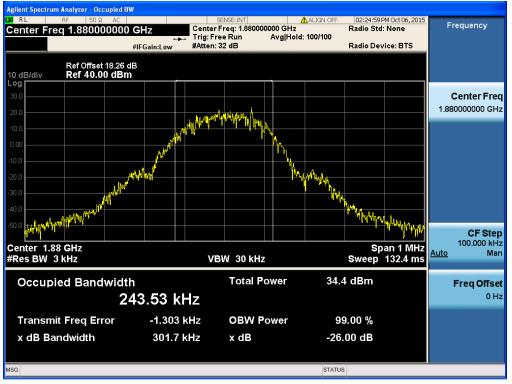


#### HSUPA850 & Channel: 4233

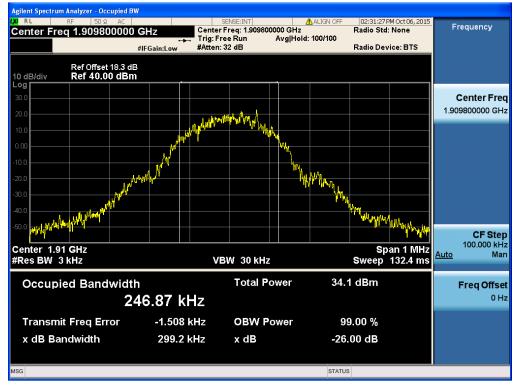




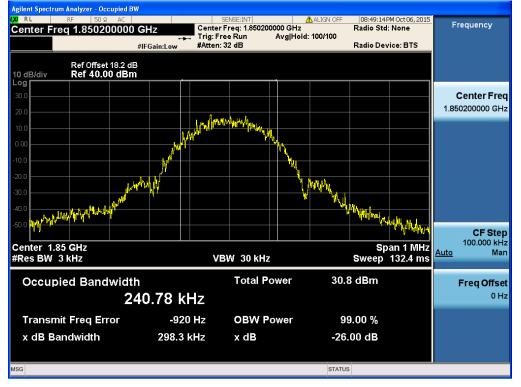






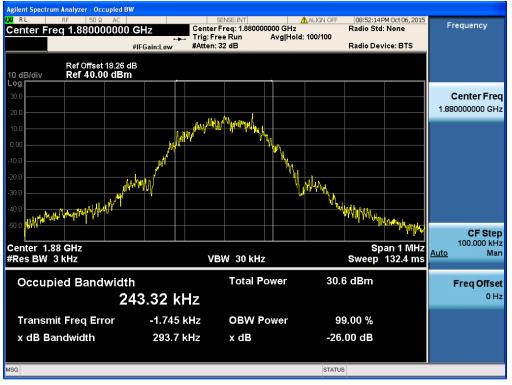




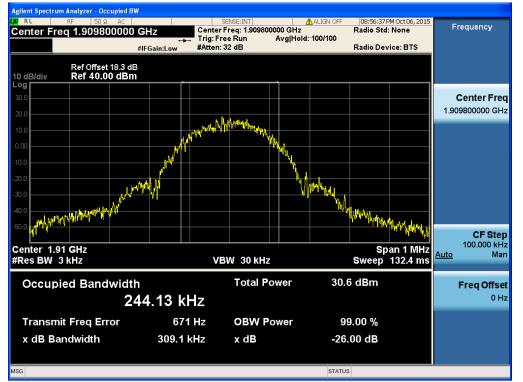


#### EDGE 1900 & Channel: 512

## EDGE 1900 & Channel: 661



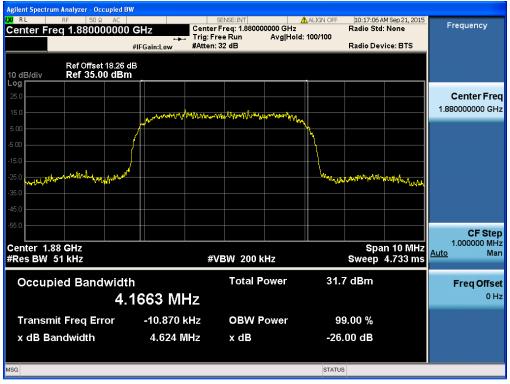




#### EDGE 1900 & Channel: 810

#### n Analyzer - Occupied BW Lisense:INT ▲ ALIGN OF Center Freq: 1.852400000 GHz Trig: Free Run Avg|Hold: 100/100 #Atten: 32 dB 10:11:14 AM Sep 21, 2015 Radio Std: None Frequency Center Freq 1.852400000 GHz #IFGain:Low Radio Device: BTS Ref Offset 18.21 dB Ref 35.00 dBm 10 dB/div og **Center Freq** 1.852400000 GHz CF Step 1.000000 MHz Center 1.852 GHz #Res BW 51 kHz Span 10 MHz Sweep 4.733 ms <u>Auto</u> Man #VBW 200 kHz **Total Power** 31.3 dBm Occupied Bandwidth Freq Offset 4.1768 MHz 0 Hz 8.904 kHz **Transmit Freq Error OBW Power** 99.00 % x dB Bandwidth 4.627 MHz -26.00 dB x dB STATUS MSG

#### WCDMA1900 & Channel: 9262



#### nt Spectrum Analyzer - Occupied BW Center Freq: 1.907600000 GHz Trig: Free Run Avg|Hold: 100/100 #Atten: 32 dB 10:18:16 AM Sep 21, 2015 Radio Std: None Frequency Center Freq 1.907600000 GHz Radio Device: BTS #IFGain:Low Ref Offset 18.3 dB Ref 35.00 dBm 10 dB/div Log **Center Freq** 1.907600000 GHz LAN AND CF Step 1.000000 MHz Center 1.908 GHz #Res BW 51 kHz Span 10 MHz Sweep 4.733 ms <u>Auto</u> Man #VBW 200 kHz **Total Power** 31.3 dBm Occupied Bandwidth Freq Offset 4.1832 MHz 0 Hz -8.075 kHz 99.00 % **Transmit Freq Error OBW Power** x dB Bandwidth 4.645 MHz x dB -26.00 dB STATUS MSG

#### Spectrum Analyzer - Occupied BW SENSE:INT ALIGN OF Center Freq: 1.852400000 GHz Trig: Free Run Avg|Hold: 100/100 #Atten: 32 dB 10:38:55 AM Sep 21, 2015 Radio Std: None Frequency Center Freq 1.852400000 GHz Radio Device: BTS #IFGain:Low Ref Offset 18.21 dB Ref 35.00 dBm 10 dB/div Log **Center Freq** 1.852400000 GHz www.mulipen.man A BALLARD CF Step 1.000000 MHz Center 1.852 GHz #Res BW 51 kHz Span 10 MHz Sweep 4.733 ms <u>Auto</u> Man #VBW 200 kHz **Total Power** 30.0 dBm Occupied Bandwidth Freq Offset 4.1946 MHz 0 Hz 2.764 kHz **Transmit Freq Error OBW Power** 99.00 % x dB Bandwidth 4.645 MHz x dB -26.00 dB STATUS MSG

### HSUPA1900 & Channel: 9262

## HSUPA1900 & Channel: 9400

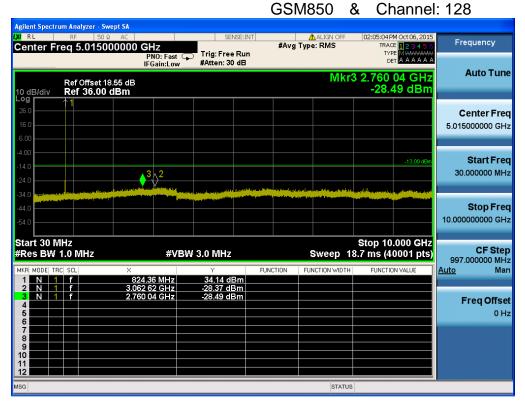
Agilent Spectrum An			SENSE	INT	ALIGN OFF	10:47:11 A	M Sep 21, 2015	
								Frequency
	Ref Offset 18. <b>Ref 35.00 d</b>							
25.0								Center Freq 1.880000000 GHz
5.00		pagen Mindowing	entral and and the	Prillin and production of	www.www.			
-15.0		- 11/						
-25.0 1000 -35.0	ARANIHAR ANA ANA				ԱվերեելելՄՍ	halben Arlow Myn	Mary Conception and All &	
-45.0								05.000
Center 1.88 0 #Res BW 51			#VBW	200 kHz		Spa Sweep	n 10 MHz 4.733 ms	CF Step 1.000000 MHz <u>Auto</u> Man
Occupied				otal Power	30.4	l dBm		Freq Offset 0 Hz
<b>T</b>		4.1806 M						0112
Transmit I x dB Banc		-74 4.621		BW Power dB		9.00 % 00 dB		
MSG					STATUS			

Mit     RF     SO @ AG     SENSENT     Called W     Determinant     Called W     Determinant     Called W     Determinant     Called W     Determinant     Frequency       Center Freq 1.907600000 GHz     Radio Device: BTS     Radio Device:		ım Analyzer - Occupied	BW						
Center Freq 1.907800000 GHz       Center Freq 1.907800000 GHz       AvgiHod: 100/100       Radio Device: BTS         Ref Offset 18.3 dB       Center Freq	LXIRL	RF 50 Ω AC							Fraguanay
Ing: Free kin       Avgiliol:::00/10/ Radio Device: BTS         Ref Offset 18.3 dB Ref 35.00 dBm       Img: Free kin       Auter: 32 dB       Radio Device: BTS         10 dB/div       Ref 35.00 dBm       Img: Free kin       Img: Free kin       Radio Device: BTS         250       Img: Free kin       Img: Free kin       Img: Free kin       Radio Device: BTS         250       Img: Free kin       Img: Free kin       Img: Free kin       Img: Free kin         250       Img: Free kin       Img: Free kin       Img: Free kin       Img: Free kin         250       Img: Free kin       Img: Free kin       Img: Free kin       Img: Free kin         250       Img: Free kin       Img: Free kin       Img: Free kin       Img: Free kin         250       Img: Free kin       Img: Free kin       Img: Free kin       Img: Free kin         250       Img: Free kin       Img: Free kin       Img: Free kin       Img: Free kin         251       Img: Free kin       Img: Free kin       Img: Free kin       Img: Free kin         251       Img: Free kin       Img: Free kin       Img: Free kin       Img: Free kin         252       Img: Free kin       Img: Free kin       Img: Free kin       Img: Free kin         253       Img: Free kin       Img	Center Fr	eq 1.90760000	0 GHz				Radio Std:	None	Frequency
Ref Offset 18.3 dB       Center Freq         10 dB/div       Ref 35.00 dBm         250       Image: construction of the set of the s		•			Avg Hold: 1				
10 dB/div       Ref 35.00 dBm         250       260       260       260<			#IFGain:Low	#Atten: 32 dB			Radio Dev	ice: BTS	
10 dB/div       Ref 35.00 dBm         250       260       260       260<									
Log 250 250 250 250 250 250 250 250									
250       Center Freq         150       Image: Center Freq         160       Image: Center Freq         1.000000 MHz       Image: Center		Ref 35.00 dB	m						
150       1.907600000 GHz         150       1.90760000 GHz         150       1.907600000 GHz         150       1.908 GHz         #VBW 200 KHz       Span 10 MHz         1.000000 MHz       1.90760000 GHz         1.000000 MHz       1.90760000 GHz <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>									
500       1000       100       100	25.0								Center Freq
500       1000       100       100	15.0								1.907600000 GHz
600       6	15.0		AWAY VUTAN	methode the more ment	man alaman -				
600       1	500				ALL STORE STORES				
150       100       1									
-250       Junnahum munum mulum	-5.00					<b>↓</b> →			
-250       Junnahum munum mulum	15.0		ſ			1			
-35.0       -35.0 <td< td=""><td></td><td></td><td></td><td></td><td>i i i</td><td></td><td></td><td></td><td></td></td<>					i i i				
-35.0       -35.0 <td< td=""><td>25.0 alut wat</td><td>JWIP WARLER AND WARY PARTINE TO</td><td>A Contraction of the second se</td><td></td><td></td><td>W-MARKAN MA</td><td>Warne - Aller</td><td></td><td></td></td<>	25.0 alut wat	JWIP WARLER AND WARY PARTINE TO	A Contraction of the second se			W-MARKAN MA	Warne - Aller		
45.0	-23.0						T T T P P P P P P P	an durate and the	
Span 10 MHz     Span 10 MHz       #Res BW 51 kHz     #VBW 200 kHz     Span 10 MHz       Man     CCF Step       1.00000 MHz     Man       Occupied Bandwidth     Total Power     30.1 dBm       4.1894 MHz     OBW Power     99.00 %       x dB Bandwidth     4.643 MHz     x dB	-35.0								
Span 10 MHz     Span 10 MHz       #Res BW 51 kHz     #VBW 200 kHz     Span 10 MHz       Man     CCF Step       1.00000 MHz     Man       Occupied Bandwidth     Total Power     30.1 dBm       4.1894 MHz     OBW Power     99.00 %       x dB Bandwidth     4.643 MHz     x dB									
Center 1.908 GHz #Res BW 51 kHz     #VBW 200 kHz     Span 10 MHz Sweep 4.733 ms     CF Step 1.00000 MHz Man       Occupied Bandwidth     Total Power     30.1 dBm     Freq Offset 0 Hz       Transmit Freq Error     -21.559 kHz     OBW Power     99.00 % -26.00 dB	-45.0								
Center 1.908 GHz #Res BW 51 kHz     #VBW 200 kHz     Span 10 MHz Sweep 4.733 ms     CF Step 1.00000 MHz Man       Occupied Bandwidth     Total Power     30.1 dBm     Freq Offset 0 Hz       Transmit Freq Error     -21.559 kHz     OBW Power     99.00 % -26.00 dB	55.0								
Center 1.908 GHz #Res BW 51 kHzSpan 10 MHz #VBW 200 kHzSpan 10 MHz Sweep 4.733 ms1.00000 MHz ManOccupied Bandwidth 4.1894 MHzTotal Power30.1 dBmFreq Offset 0 HzTransmit Freq Error x dB Bandwidth-21.559 kHzOBW Power99.00 % -26.00 dB-26.00 dB	-55.0								CE Sten
Center 1.908 GH2     Span 10 MHz     Span 10 MHz     Auto     Man       #Res BW 51 kHz     #VBW 200 kHz     Sweep 4.733 ms     Auto     Man       Occupied Bandwidth     Total Power     30.1 dBm     Freq Offset       4.1894 MHz     OBW Power     99.00 %     0 Hz       Transmit Freq Error     -21.559 kHz     OBW Power     99.00 %       x dB Bandwidth     4.643 MHz     x dB     -26.00 dB									4 000000 MU
#Res BW 51 kHz     #VBW 200 kHz     Sweep 4./33 ms       Occupied Bandwidth     Total Power     30.1 dBm       4.1894 MHz     0 Hz       Transmit Freq Error     -21.559 kHz     0 BW Power       x dB Bandwidth     4.643 MHz     x dB	Center 1.9	908 GHz					Spa	n 10 MHz	
4.1894 MHz     0 Hz       Transmit Freq Error     -21.559 kHz       V B Bandwidth     4.643 MHz       x dB     -26.00 dB	#Res BW	51 kHz		#VBW 200	kHz		Sweep	4.733 ms	Adto
4.1894 MHz     0 Hz       Transmit Freq Error     -21.559 kHz       V B Bandwidth     4.643 MHz       x dB     -26.00 dB									
4.1894 MHz     0 Hz       Transmit Freq Error     -21.559 kHz       V B Bandwidth     4.643 MHz       x dB     -26.00 dB	Occur	ind Randwid	th	Total	ower	30.1	dBm		Eren Offent
Transmit Freq Error -21.559 kHz OBW Power 99.00 % x dB Bandwidth 4.643 MHz x dB -26.00 dB	Occup				011/01				
Transmit Freq Error -21.559 kHz OBW Power 99.00 % x dB Bandwidth 4.643 MHz x dB -26.00 dB		4	1894 MI	7					0 Hz
x dB Bandwidth 4.643 MHz x dB -26.00 dB									
x dB Bandwidth 4.643 MHz x dB -26.00 dB	Tranen	hit Fred Error	-21 550 L		Power	90	00 %		
	Transmit Freq Entor -21.559 KHZ				OBW Fower 9				
	x dB B	x dB Bandwidth 4 643 MHz			x dB -2f				
MSG STATUS					-20.0				
MSG									
mou SIAIUS	MEC					STATIS			
	Mog					STATUS			

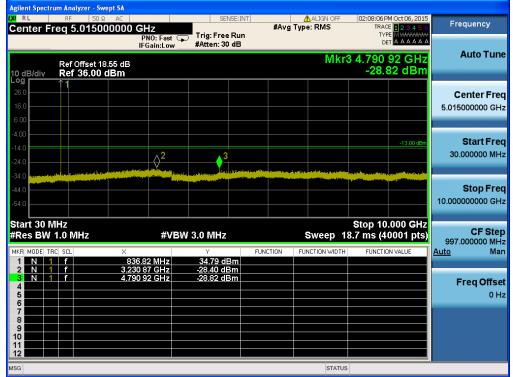
# HSUPA1900 & Channel: 9538



# 8.3 Spurious Emissions at Antenna Terminal



GSM850 & Channel: 190





Ref Offset 18.55 dB         Mkr3 5.84           10 dB/div         Ref 36.00 dBm         -2           26.0         -2         -3           14.0         -2         -3           -4.0         -4.0         -4.0         -4.0           -4.0         -2         -3	H31PM Oct 06, 2015         Frequency           TRACE 12 3 4 3 6         Frequency           DET A A A A A A         Auto Tu           28.57 dBm         Center Fr           5.015000000 d         5.015000000 d
IFGain:Low         #Atten: 30 dB           Ref Offset 18:55 dB         Mkr3 5.84           10 dB/div         Ref 36.00 dBm         -2           260         -40         -40         -40           -40         -2         3         -40           540         -40         -40         -40         -40           540         -40         -40         -40         -40         -40           540         -50	47 74 GHz 28.57 dBm Center Fi
10 dB/div     Ref 36.00 dBm     -2       260     -1     -1       160     -1     -1       160     -1     -1       400     -2     3       -400     -2       340     -2       340     -2       540     -1       Start 30 MHz     Stop	28.57 dBm Center Fr
26.0 16.0 4.00 14.0 24.0 34.0 34.0 55.0 Start 30 MHz Stop	
4.00 1.4.0 2.4.0 3.4.0 5.0 Start 30 MHz Stop	
24.0         2         3           34.0         34.0         34.0         34.0           -54.0         34.0         34.0         34.0           Start 30 MHz         Stop         Stop	-1300 dBm Start Fr
-44.0 -54.0 Start 30 MHz Stop	30.000000 N
	Stop Fr 10.000000000 G
	997.000000 1
1 N 1 f 849.04 MHz 34.37 dBm 2 N 1 f 3.182 51 GHz -28.28 dBm	NCTION VALUE Auto N
3         N         1         f         5.847 74 GHz         -28.57 dBm           4         -         -         -         -         -           5         -         -         -         -         -           6         -         -         -         -         -	Freq Offs
7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	
MSG STATUS	

# GSM850 & Channel: 251



Agilent Spectru							
Center Fr		Ω AC 000000 GHz			ALIGN OFF	10:07:21 AM Sep 21, 20 TRACE 12345	6 Frequency
10 dB/div	Ref Offset 1 Ref 36.00	PNO: Fa IFGain:Lu 18.55 dB			Mkr	3 3.133 16 GH -27.60 dBi	Auto Tune
26.0 16.0 6.00	<b>⊘1</b>						Center Freq 5.015000000 GHz
-4.00 -14.0 -24.0				caulifica da y porti titila	liitakiya, thealitin, y <sub>o m</sub> inesa:	-13.00 dl	Start Freq 30.000000 MHz
-34.0 autoration -44.0 -54.0							<b>Stop Freq</b> 10.000000000 GHz
Start 30 M #Res BW	1.0 MHz		VBW 3.0 MHz			Stop 10.000 GH 8.7 ms (40001 pt	s) CF Step 997.000000 MHz
MKR MODE TR 1 N 1 2 N 1	f f	× 825.36 MH; 2.696 48 GH;	z -27.17 dBi	m	FUNCTION WIDTH	FUNCTION VALUE	Auto Man
3 N 1 4 5 6	f	3.133 16 GH:	z -27.60 dBi	m			Freq Offset 0 Hz
7 8 9 10 11 12							
MSG					STATUS	\$	

# WCDMA850 & Channel: 4132

# WCDMA850 & Channel: 4183

Agilent Spectrum Analyzer - Swept SA							
RL RF 50 Ω AC     Center Freq 5.015000000	GHz	SENS	#Avg Typ	ALIGN OFF	TRAC	4 Sep 21, 2015 E <b>1 2 3 4 5 6</b>	Frequency
	PNO: Fast 🕞 IFGain:Low	Trig: Free F #Atten: 30 d			DE		B. (1) T. (1)
Ref Offset 18.55 dB 10 dB/div Ref 36.00 dBm				Mkr	3 3.280 -27.9	97 GHz 99 dBm	Auto Tune
26.0 16.0							Center Freq 5.015000000 GHz
-4.00 -14.0 -24.0	3					-13.00 dBm	Start Freq 30.000000 MHz
-34.0 -44.0 -54.0							<b>Stop Freq</b> 10.000000000 GHz
Start 30 MHz #Res BW 1.0 MHz	#VBW	/ 3.0 MHz		Sweep 1	Stop 10 3.7 ms (4	.000 GHz 0001 pts)	<b>CF Step</b> 997.000000 MHz
	35.83 MHz	⊻ 25.76 dBr	TION FL	JNCTION WIDTH	FUNCTIO	IN VALUE	<u>Auto</u> Man
	66 31 GHz 80 97 GHz	-27.54 dBr -27.99 dBr					<b>Freq Offset</b> 0 Hz
7 8 9 9 10							
12 MSG				STATUS			



Agilent Spectrum Analyzer - Swept SA				
RL RF 50 Ω AC     Center Freq 5.01500000	0 GHz	ALIGN OFF #Avg Type: RMS	10:11:00 AM Sep 21, 2015 TRACE 1 2 3 4 5 6	Frequency
Ref Offset 18.55 dE 10 dB/div Ref 36.00 dBm	PNO: Fast 🖵 Trig: Free Run IFGain:Low #Atten: 30 dB B		TYPE MUMANA Det A A A A A 3 3.149 61 GHz -28.06 dBm	Auto Tune
26.0 16.0 6.00				Center Freq 5.015000000 GHz
-4.00	32	attant (	-13.00 dBm	Start Freq 30.000000 MHz
-34.0 -44.0 -54.0				<b>Stop Freq</b> 10.000000000 GHz
Start 30 MHz #Res BW 1.0 MHz MKR MODE TRC SCL X		Sweep 1	Stop 10.000 GHz 8.7 ms (40001 pts) FUNCTION VALUE	<b>CF Step</b> 997.000000 MHz <u>Auto</u> Man
2 N 1 f 3.	847.79 MHz 26.10 dBm .278 72 GHz -27.56 dBm .149 61 GHz -28.06 dBm			Freq Offset 0 Hz
7 8 9 10 11 12				
MSG		STATUS	,	

# WCDMA850 & Channel: 4233



Agilent Spectro										
		000000 GI	-17	SENSE	INT	#Avg Typ	ALIGN OFF	TRAC	4 Sep 21, 2015	Frequency
10 dB/div	Ref Offset Ref 36.00	P IF1 18.55 dB	NO: Fast G Gain:Low	Trig: Free R #Atten: 30 d			Mkr	TYP DE 3 3.178		Auto Tune
26.0 16.0 6.00										Center Freq 5.015000000 GHz
-4.00 -14.0 -24.0			<b>∂</b> 3		and aggregation of	and the star of the second star star			-13.00 dBm	Start Freq 30.000000 MHz
-44.0										<b>Stop Freq</b> 10.000000000 GHz
Start 30 N #Res BW	1.0 MHz	×		<b>V 3.0 MHz</b> Y	FUNCI		Sweep 1	Stop 10. 8.7 ms (40 FUNCTIO		CF Step 997.000000 MHz <u>Auto</u> Man
1 N 1 2 N 1 3 N 1 4 5 6	f f f	827.6 2.464 9 3.178 2	0 MHz 2 GHz 8 GHz	24.62 dBn -28.73 dBn -28.81 dBn	1					<b>Freq Offset</b> 0 Hz
7 8 9 10 11 12										
MSG							STATUS			

# HSUPA850 & Channel: 4132

## HSUPA850 & Channel: 4183

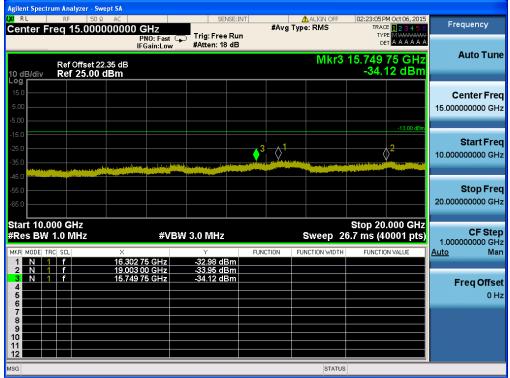
Agilent Spectrum Analyzer - Swej						
RL RF 50 Ω     Center Freq 5.01500		SENSE:IN	#Avg Ty	ALIGN OFF	10:33:48 AM Sep 21, 2015 TRACE 1 2 3 4 5 6	Frequency
	PNO: Fast ⊂ IFGain:Low	Trig: Free Run #Atten: 30 dB				Auto Turo
Ref Offset 18.0 10 dB/div Ref 36.00 d				Mkra	3.142 38 GHz -28.15 dBm	Auto Tune
Log 26.0 16.0 6.00						Center Freq 5.015000000 GHz
-4.00 -14.0 -24.0				d a si bilitta yan a ma kasa a	-13.00 dBm	Start Freq 30.000000 MHz
-34.0						<b>Stop Freq</b> 10.000000000 GHz
Start 30 MHz #Res BW 1.0 MHz	#VB	W 3.0 MHz		Sweep 18	Stop 10.000 GHz 3.7 ms (40001 pts)	CF Step 997.000000 MHz
MKR MODE TRC SCL	× 837.82 MHz	Y 24.54 dBm	FUNCTION F	UNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
2 N 1 f 3 N 1 f 4 6 5 6	2.743 34 GHz 3.142 38 GHz	-27.77 dBm -28.15 dBm				<b>Freq Offset</b> 0 Hz
7 8 9 10 11						
MSG				STATUS		



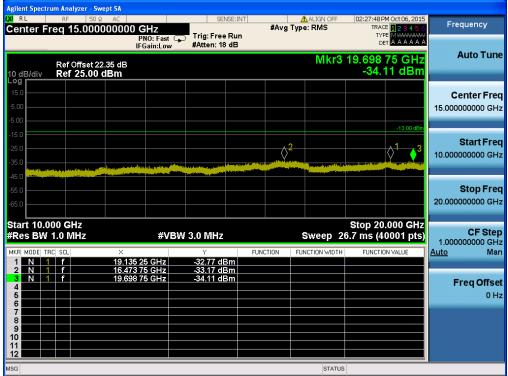
Agilent Spectrum Analyzer - Swept SA					
X RL RF 50 Ω AC Center Freq 5.015000000	GHz	SENSE:INT	ALIGN OFF #Avg Type: RMS	10:38:33 AM Sep 21, 2015 TRACE 1 2 3 4 5 6 TYPE MWWWWW	Frequency
Ref Offset 18.55 dB 10 dB/div Ref 36.00 dBm	PNO: Fast IFGain:Low	) Trig: Free Run #Atten: 30 dB	Mkr	3 3.144 88 GHz -27.98 dBm	Auto Tune
Log1 26.01 16.0					Center Freq 5.015000000 GHz
-4.00 -14.0 -24.0 -34.0	3			-13.00 dBm	Start Freq 30.000000 MHz
-44.0					<b>Stop Freq</b> 10.000000000 GHz
Start 30 MHz #Res BW 1.0 MHz MKR  MODE  TRC  SCL  X	#VBW	Y 3.0 MHz	Sweep 1	Stop 10.000 GHz 8.7 ms (40001 pts) FUNCTION VALUE	CF Step 997.000000 MHz <u>Auto</u> Mar
2 N 1 f 7.73	5.80 MHz 88 55 GHz 14 88 GHz	24.75 dBm -27.81 dBm -27.98 dBm			Freq Offset 0 Hz
7 8 9 10 11 12					
MSG			STATUS	·	

# HSUPA850 & Channel: 4233

	um Analyzer -								
LXI RL		OΩ AC		SENSI		ALIGN OFF		4 Oct 06, 2015	Frequency
Center F	req 5.015	000000	PNO: Fast C	Trig: Free R		g Type: KWS	TYP	123456 M <del>wwww</del> AAAAAA	
			IFGain:Low	🚩 #Atten: 30 d			DE		
	D-605	40.55 -10				Mkr	3 3.256	79 GHz	Auto Tune
10 dB/div	Ref Offset Ref 36.0							3 dBm	
Log		$\overline{\chi_1}$							
26.0									Center Freq
16.0									5.015000000 GHz
6.00									
-4.00									
-14.0								-13.00 dBm	Start Freq
			2 3						30.000000 MHz
-24.0			and a fill the day of a		ورجروراء فالعطر ورويقفون	مرا ب مامرين د ادر			
-34.0	<ul> <li>A sub-field of the second se</li> </ul>							Contraction of the second	
-44.0									Stop Freq
-54.0									10.00000000 GHz
Start 30 N			-40 (5)			<b>a</b>	Stop 10.	000 GHz	CF Step
#Res BW	1.U IVIHZ		#VB	W 3.0 MHz		Sweep 1	8.7 ms (40	JUU1 pts)	997.000000 MHz
MKR MODE TR		×		Y	FUNCTION	FUNCTION WIDTH	FUNCTIO	N VALUE	<u>Auto</u> Man
1 N 1 2 N 1	f		0 27 GHz 4 82 GHz	30.62 dBr -28.53 dBr					
3 N 1		3.25	6 79 GHz	-28.53 dBn					Freq Offset
4 5									0 Hz
6									UHZ
7									
8									
10									
11 12									
MSG						STATUS	5		



Agilent Spectrum Analyzer - Swept S						
LX/ RL RF 50Ω A		SENSE:INT	#Avg Typ	ALIGN OFF	02:27:25 PM Oct 06, 2015	Frequency
Center Freq 5.0150000	PNO: Fast 0	Trig: Free Run	#Avg iyp	De: RIVIS	TRACE 123456 TYPE MWWWWW DET A A A A A A	
	IFGain:Low	#Atten: 30 dB			DET A A A A A A	
				Mkr	3 2.685 26 GHz	Auto Tune
Ref Offset 18.55 10 dB/div Ref 36.00 dBr					-28.30 dBm	
26.0						Center Freq
16.0						5.015000000 GHz
6.00						
-4.00						
					-13.00 dBm	Start Freq
-14.0	▲3		^2			30.000000 MHz
-24.0	11 Idde a standar - St					
-34.0 and a state of the state of the state of the		And a second			Terrardian sector and a sector sector and a sector se	
-44.0						Stop Freq
-54.0						10.00000000 GHz
Start 30 MHz					Stop 10.000 GHz	CF Step
#Res BW 1.0 MHz	#VB	W 3.0 MHz		Sweep 1	8.7 ms (40001 pts)	997.000000 MHz
MKR MODE TRC SCL	×	Y	FUNCTION FL	JNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
	1.880 18 GHz	30.95 dBm				
	6.311 10 GHz 2.685 26 GHz	-28.10 dBm -28.30 dBm				
4						Freq Offset
5						0 Hz
7						
8						
10						
11						
12				1		
MSG				STATUS		

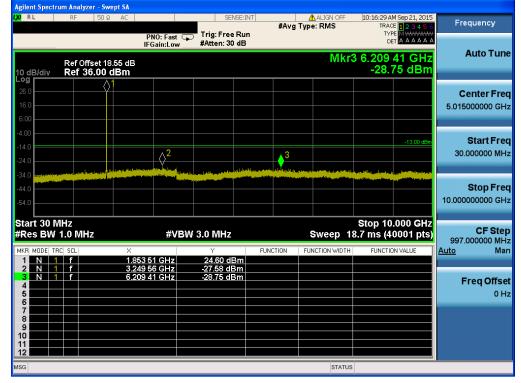


Agilent Spectrum Analyzer - Swept SA							
		SENSE:INT	Avg Typ		02:32:13 PM	Oct 06, 2015	Frequency
Center Freq 5.015000000	PNO: Fast IFGain:Low	Trig: Free Run #Atten: 30 dB	#Avg typ	e. RIND	TYPE	AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	
Ref Offset 18.55 dB 10 dB/div Ref 36.00 dBm				Mkr	3 3.025 7 -28.7	4 GHz 2 dBm	Auto Tune
Log 16.0 6.00							<b>Center Fred</b> 5.015000000 GHz
-4.00	3 2	الشهرية رما يعلمون و حرمون	مى مەركىيى بىرىكى بى يەركىيە بىرىكى		h dadaa a taada oo	-13.00 dBm	Start Free 30.000000 MHz
-34.0 -54.0							<b>Stop Fred</b> 10.000000000 GHz
Start 30 MHz #Res BW 1.0 MHz	#VBW	3.0 MHz			Stop 10.0 8.7 ms (40	001 pts)	CF Step 997.000000 MHz
	0 09 GHz	Y 30.72 dBm	FUNCTION FUI	NCTION WIDTH	FUNCTION	VALUE	<u>Auto</u> Mar
	5 84 GHz 5 74 GHz	-28.48 dBm -28.72 dBm					Freq Offsel 0 Hz
7 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9							
MSG				STATUS			

Agilent Spectrum Analyzer - Sw V RL RF 50 Ω Center Freq 15.000	AC	SENSE:IN	#Avg T	ALIGN OFF	02:32:35 PM Oct 06, 2015 TRACE 1 2 3 4 5 6 TYPE MWWWWMM DET A A A A A A	Frequency
Ref Offset 22 10 dB/div Ref 25.00	IFGain:Low	#Atten: 18 dB		Mkr3	18.980 25 GHz -33.82 dBm	Auto Tuno
Log 15.0 5.00						Center Freq 15.00000000 GHz
-5.00 -15.0 -25.0 -35.0			^1<	2	-13.00 dBm	<b>Start Freq</b> 10.000000000 GHz
-45.0 -55.0 -65.0						Stop Freq 20.000000000 GHz
Start 10.000 GHz #Res BW 1.0 MHz		W 3.0 MHz			Stop 20.000 GHz 5.7 ms (40001 pts)	CF Step 1.000000000 GHz
MKR         MODE         TRC         SCL           1         N         1         f           2         N         1         f           3         N         1         f           4         -         -         -           5         -         -         -           6         -         -         -	× 16.446 75 GHz 16.712 00 GHz 18.980 25 GHz	-32.96 dBm -33.14 dBm -33.82 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	Auto Man Freq Offset 0 Hz
7 8 9 10 11 12						
MSG				STATUS		

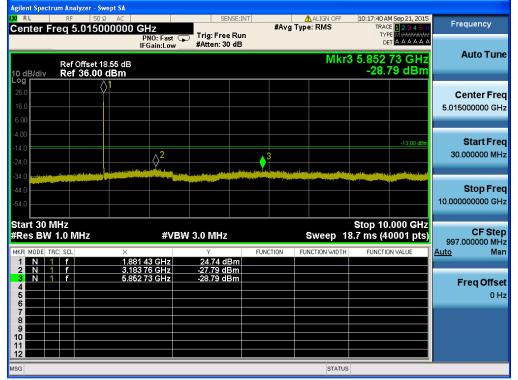






Agilent Spectrum An							
LXI RL RF	50 Ω AC		SENSE	#Avg	ALIGN OFF	10:16:52 AM Sep 21, 2015 TRACE 1 2 3 4 5 6	Frequency
		PNO: Fast G	#Atten: 18 di				Auto Tune
10 dB/div Rei	Offset 22.35 dB f 25.00 dBm				Mkr3	19.692 00 GHz -34.00 dBm	Auto Tune
Log 15.0 5.00							Center Freq 15.000000000 GHz
-25.0 -35.0			للم من الم الم			-13.00 dBm	Start Freq 10.000000000 GHz
-45.0 -55.0 -65.0							Stop Fred 20.000000000 GHz
Start 10.000 G #Res BW 1.0 I		#VB\	N 3.0 MHz		Sweep 2	Stop 20.000 GHz 6.7 ms (40001 pts)	CF Step 1.000000000 GH
MKR MODE TRC SCL		9 50 GHz	-32.46 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Mar
2 N 1 f 3 N 1 f 4 5 6	19.09	03 00 GHz 02 00 GHz	-33.48 dBm -34.00 dBm				Freq Offset 0 Hz
7 8 9 10							
11 12 MSG					STATUS		





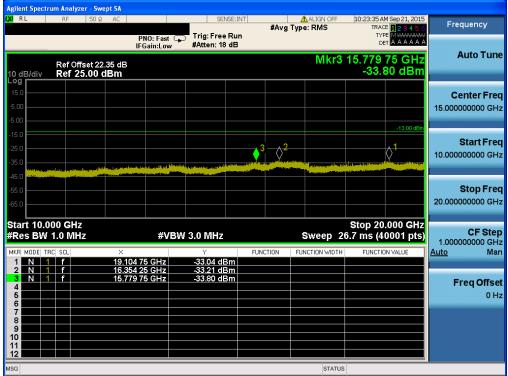
### WCDMA1900 & Channel: 9400

Agilent Spectrum Analyzer - Swept SA		0001000					
Center Freq 15.00000000		SENSE:II	#Avg	ALIGN OFF	TRAC	4 Sep 21, 2015	Frequency
	PNO: Fast 😱 IFGain:Low	#Atten: 18 dB	1		DE		
Ref Offset 22.35 dB 10 dB/div Ref 25.00 dBm				Mkr3	19.007 -33.0	00 GHz 85 dBm	Auto Tune
15.0							Center Freq
-5.00							15.00000000 GHz
-15.0						-13.00 dBm	Start Fred
-25.0	and the second	a las a constant sectored			$\uparrow$	3	10.000000000 GHz
-45.0				Contraction of the local division of the loc			Stop Fred
-65.0							20.000000000 GHz
Start 10.000 GHz #Res BW 1.0 MHz	#VBW	3.0 MHz		Sweep 2		.000 GHz 0001 pts)	CF Step 1.00000000 GHz
MKR MODE TRC SCL X		Y	FUNCTION	FUNCTION WIDTH	FUNCTIO	N VALUE	Auto Mar
2 N 1 f 18.72	8 75 GHz 7 50 GHz	-32.95 dBm -33.32 dBm					
3 N 1 f 19.00 4 5	17 00 GHz	-33.65 dBm					Freq Offset
6 7							
8 9 10							
10 11 12							
MSG				STATUS			



#### lent Spectrum Analyzer - Swept SA RI ALIGN C 1:12 AM Frequency PNO: Fast IFGain:Low #Atten: 30 dB Auto Tune Mkr3 2.617 46 GHz -27.86 dBm Ref Offset 18.55 dB Ref 36.00 dBm 10 dB/di Loc **Center Freq** 5.015000000 GHz Start Freq 32 30.000000 MHz Stop Freq 10.000000000 GHz Start 30 MHz #Res BW 1.0 MHz Stop 10.000 GHz Sweep 18.7 ms (40001 pts) CF Step 997.000000 MHz #VBW 3.0 MHz FUNCTION FUNCTION Auto Man FUNCTIO N 1 f N 1 f N 1 f 25.02 dBm -27.69 dBm -27.86 dBm 1 2.738 35 GHz 2.617 46 GHz Freq Offset 4 5 0 Hz ε g 10 11 12 STATUS ISG

#### WCDMA1900 & Channel: 9538

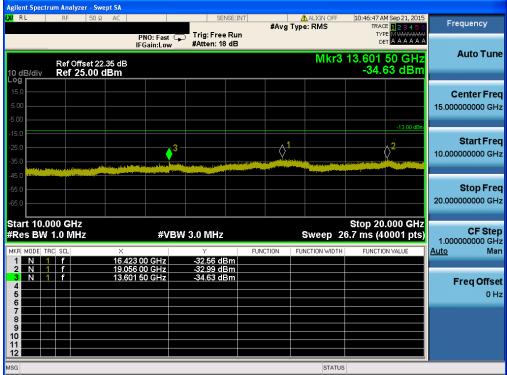




Agilent Spectru											
LXIRL	RF	50 Ω	AC		9	ENSE:INT		ALIGN OFF		4 Sep 21, 2015	Frequency
					- · -	_	#Avg	Type: RMS	TRAC	E 123456 E M <del>WWWW</del>	riequency
				PNO: Fast IFGain:Low	Trig: Fre #Atten: 3			Mkr	3 3.127		Auto Tune
10 dB/div Log		fset 18./ 6.00 d ∧1							-28.4	43 dBm	
26.0 16.0 6.00											Center Freq 5.015000000 GHz
-4.00 -14.0 -24.0				2 3			المراجعة المراجع ملياجي المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع مالي مراجع المراجع مالي مراجع م		destander of 1994	-13.00 dBm	Start Freq 30.000000 MHz
-34.0 -44.0 -54.0											<b>Stop Freq</b> 10.000000000 GHz
Start 30 M #Res BW	1.0 MH	z	×	#VE	3W 3.0 MH		FUNCTION	Sweep 1	8.7 ms (4	.000 GHz 0001 pts) N VALUE	CF Step 997.000000 MHz Auto Man
1 N 1	f			2 77 GHz	23.03		renement	Tonorion morn	Tonona	IT THESE	<u>Auto</u> man
2 N 1 3 N 1 4 5 6	f		2.61	9 21 GHz 7 18 GHz	-28.32 -28.43	Bm					<b>Freq Offset</b> 0 Hz
7 8 9 10 11 12											
MSG								STATUS	6		

# HSUPA1900 & Channel: 9262

# HSUPA 1900 & Channel: 9262





Agilent Spectrum Analyzer - Swe	pt SA				
	AC	SENSE:INT			Frequency
Center Freq 5.01500	0000 GHz	Trig: Free Run	#Avg Type: RMS	TRACE 123456	riequency
	PNO: Fast G IFGain:Low	#Atten: 30 dB		TYPE MWWWWWW DET A A A A A A	
	II Guilleow		M		Auto Tune
Ref Offset 18.			IVI	kr3 2.843 53 GHz	
10 dB/div Ref 36.00 d	Bm			-28.71 dBm	
26.0					
					Center Freq
16.0					5.015000000 GHz
6.00					
-4.00					
-14 በ				-13.00 dBm	Start Freq
	<u>∧3</u> ∧2				30.000000 MHz
-24.0					
-34.0				and the second second and long and second	
-44.0					Stop Freq
-54.0					10.000000000 GHz
-34:0					
Start 30 MHz				Stop 10.000 GHz	
#Res BW 1.0 MHz	#VB	N 3.0 MHz	Sweep	18.7 ms (40001 pts)	CF Step
					997.000000 MHz
MKR MODE TRC SCL	X	⊻ 23.65 dBm	FUNCTION FUNCTION WE	TH FUNCTION VALUE	<u>Auto</u> Man
1 N 1 f 2 N 1 f	1.879 68 GHz 3.322 09 GHz	-28.10 dBm			
3 N 1 f	2.843 53 GHz	-28.71 dBm			Freq Offset
4 5					0 Hz
6					0 H2
7					
8					
10					
11					
12					
MSG			STA	TUS	

# HSUPA1900 & Channel: 9400

# HSUPA1900 & Channel: 9400

Agilent Spectrum Analyzer - Swept SA	SENSE:I	NT ALIGN OFF	10:48:08 AM Sep 21, 2015 TRACE 1 2 3 4 5 6	Frequency
Center Freq 15.00000000 Ref Offset 22.35 dB	PN0: Fast IFGain:Low #Atten: 18 dB	n	19.181 25 GHz	Auto Tune
10 dB/div Ref 25.00 dBm			-33.28 dBm	
15.0 5.00 -5.00				Center Freq 15.000000000 GHz
-15.0 -25.0 -35.0	And the state of the	12 12	-13.00 dBm	Start Freq 10.000000000 GHz
-45.0 -65.0 -66.0				<b>Stop Freq</b> 20.000000000 GHz
Start 10.000 GHz #Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep 2	Stop 20.000 GHz 6.7 ms (40001 pts)?	CF Step 1.000000000 GHz
	36 00 GHz -32.37 dBm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Mar
	23 00 GHz -32.80 dBm 31 25 GHz -33.28 dBm			<b>Freq Offset</b> 0 Hz
7 8 9 10 11 12				
MSG		STATU	5	



#### lent Spectrum Analyzer - Swept SA 5:14 AM Se TRACE RI ALIGN C p 21, 201 Frequency PNO: Fast Trig: Free Run IFGain:Low #Atten: 30 dB RACE 1 2 3 4 5 6 TYPE M WARMAN DET A A A A A A Auto Tune Mkr3 2.669 06 GHz -28.78 dBm Ref Offset 18.55 dB Ref 36.00 dBm 10 dB/di<sup>.</sup> Log **r Center Freq** 5.015000000 GHz Start Freq 3 30.000000 MHz Stop Freq 10.00000000 GHz Start 30 MHz #Res BW 1.0 MHz Stop 10.000 GHz Sweep 18.7 ms (40001 pts) **CF Step** 997.000000 MHz <u>ito</u> Man #VBW 3.0 MHz FUNCTION FUNCTION <u>Auto</u> FUNCTION N 1 f N 1 f N 1 f 23.62 dBm -27.42 dBm -28.78 dBm 1.906 85 GHz 3.103 25 GHz 2.669 06 GHz 1 Freq Offset 4 5 0 Hz g 10 11 12 STATUS ISG

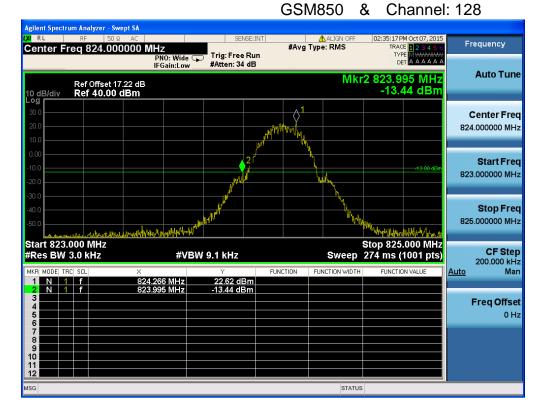
## HSUPA1900 & Channel: 9538

# HSUPA1900 & Channel: 9538

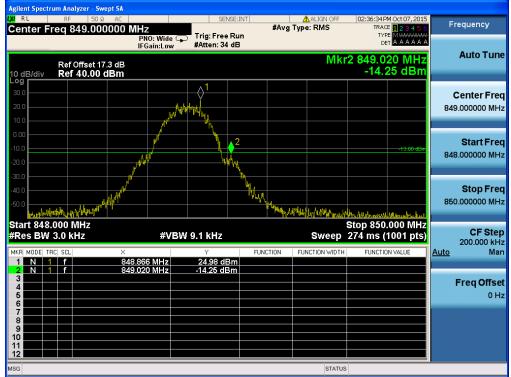
Agilent Spectru		Swept SA		SENS		ALIGN OFF	10:55:37 AM Sep 21, 2015	
KL	KF   DL	J V AL			#A	/g Type: RMS	TRACE 1 2 3 4 5 6	Frequency
			PNO: Fast C IFGain:Low	Trig: Free F #Atten: 18 d				
10 dB/div	Ref Offset Ref 25.0					Mkr3	19.089 00 GHz -33.77 dBm	Auto Tune
15.0 5.00								Center Fred 15.000000000 GHz
-15.0 -25.0 -35.0	s diskussitu		Herbert gapertilleren <sup>ander</sup>	ford appendential program in the View		2 1	-13.00 dBm	Start Fred 10.000000000 GHz
-45.0 -55.0 -65.0								Stop Free 20.000000000 GH:
Start 10.00 #Res BW 1			#VB	W 3.0 MHz		Sweep 2	Stop 20.000 GHz 6.7 ms (40001 pts)	CF Step 1.000000000 GH
MKR MODE TRC	SCL	× 17.01	3 75 GHz	⊰33.16 dBr	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Mai
2 N 1 3 N 1 4 5 6	f f	16.30	4 00 GHz 9 00 GHz	-33.21 dBr -33.77 dBr	1			Freq Offset 0 Ha
7 8 9 10 11								
12						STATUS	;	

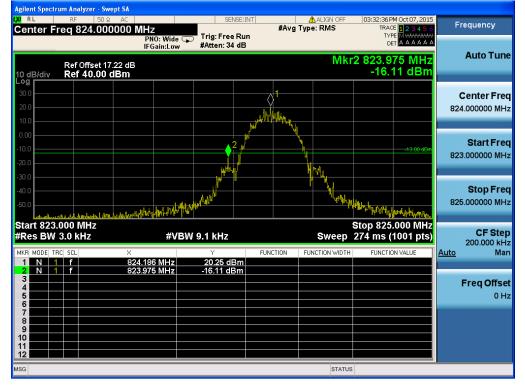


# 8.4 Band Edge



GSM850 & Channel: 251





#### EDGE 850 & Channel: 128

## EDGE 850 & Channel: 251





Agilent Spectrur				1.400 NR 1000	A 11 1011 055		
Center Fre					ALIGN OFF	10:05:52 AM Sep 21, 2015 TRACE 1 2 3 4 5 6 TYPE	Frequency
	Ref Offset 17 Ref 35.00 (		Trig: Free I #Atten: 34		MI	kr2 823.86 MHz -19.38 dBm	Auto Tune
10 dB/div 25.0 15.0	Kei 35.00 (				1 Langebarmonterand	Reason provides and been seen	Center Freq 824.000000 MHz
-5.00 -15.0 -25.0		Wales and the second	2 martine-n	<u></u>		-13.00 tiBm	Start Freq 819.000000 MHz
-35.0 -45.0 -55.0	hand the set of the se						Stop Frec 829.000000 MHz
Start 819.0 #Res BW 5	1 kHz	#V	BW 200 kHz			Stop 829.000 MHz 4.73 ms (1001 pts)	CF Step 1.000000 MHz
MKR MODE TRC	SCL f	× 825.44 MHz	Y 17.84 dB	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Mar
2 N 1 3 4 5 6	f	823.86 MHz	-19.38 dBi	m			Freq Offset 0 Hz
7 8 9 10 11 12							
MSG					STATUS	3	

## WCDMA850& Channel: 4132

# WCDMA850& Channel: 4132

gilent Spectrum Analyzer - Swept SA RL RF 50 Q AC Center Freq 821.000000		ALIGN OFF	10:06:59 AM Sep 21, 2015 TRACE <b>1 2 3 4 5 6</b>	Frequency
Ref Offset 17.21 dB	PNO: Wide Trig: Free Run IFGain:Low #Atten: 34 dB	Mkr	TYPE A & A & A & A & A & A & A & A & A & A	Auto Tun
• • 9 25.0 15.0 5.00				Center Fre 821.000000 M⊦
5.00 15.0 25.0	Martin Martin Concert	want hard and a second	2-13.00 dBm	Start Fre 819.000000 MH
5.0	Monages Allow			Stop Fro 823.000000 Mi
tart 819.000 MHz Res BW 100 kHz	#VBW 300 kHz	Sweep 1	Stop 823.000 MHz 1.00 ms (1001 pts) FUNCTION VALUE	CF Sto 400.000 k Auto M
1 N 1 f 82:	2.620 MHz -16.85 dBm 2.618 MHz -16.85 dBm			Freq Offs 01
8 9 0 1 2				



Agilent Spectrum Analyzer - Swept SA		SENSE:INT		ALIGN OFF	10:09:30 AM Sep 21, 2015	_
Center Freq 849.000000 M				Type: RMS	TRACE 1 2 3 4 5 6 TYPE MWWWWW	Frequency
Ref Offset 17.32 dB 10 dB/div Ref 35.00 dBm	PNO: Wide 🕞 IFGain:Low	#Atten: 34 dB		Mk	r2 849.00 MHz -25.36 dBm	Auto Tune
25.0 15.0 5.00	1	and an and a				Center Freq 849.000000 MHz
-5.00		2	Warner Hore		-13.00 dBm	Start Fred 844.000000 MHz
-35.0 -45.0 -55.0				and the second	Workgood wy Wood way whe	Stop Free 854.000000 MH:
Start 844.000 MHz #Res BW 51 kHz	#VBW	200 kHz			top 854.000 MHz .73 ms (1001 pts)	CF Step 1.000000 MH
MKR MODE TRC SCL X	47.21 MHz	Y 17.83 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Mar
2 N 1 f 84 3 4 5 5 6 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	49.00 MHz	-25.36 dBm				Freq Offse 0 Hz
7 8 9 10 11 12						
MSG				STATUS		

# WCDMA850& Channel: 4233

# WCDMA850& Channel: 4233

Agilent Spectrum Analyzer - Swept S XI RL RF 50Ω A( Center Freq 852.00000	o MHz	SENSE:IM	#Avg	ALIGN OFF	10:10:38 AM Sep 21, 2015 TRACE 1 2 3 4 5 6	Frequency
Ref Offset 17.32		#Atten: 34 dB		Mkr	TYPE A A A A A A DET A A A A A A 2 850.113 MHz -25.78 dBm	Auto Tune
25.0 15.0 5.00						Center Fred 852.000000 MHz
-5.00 -15.0 -25.0					-13.00 dBm	Start Free 850.000000 MH2
-45.0					mmuhuh	<b>Stop Free</b> 854.000000 MH:
Start 850.000 MHz #Res BW 100 kHz		N 300 kHz	FUNCTION	Sweep ′	Stop 854.000 MHz 1.00 ms (1001 pts)	CF Step 400.000 kH
MKR MODE TRC SC. 1 N 1 F 2 N 1 F 3 4 4 6 6 6 7 8 8 9 9 9 10	× 850.112 MHz 850.113 MHz	-25.78 dBm -25.78 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	Auto Mar Freq Offse 0 H:
11 12 ISG				STATUS		



Agilent Spectrum Analyzer - 5 RF 50 Center Freq 824.0	Ω AC 00000 MHz	SENSE:INT	AAVg Type:	RMS TRAC	M Sep 21, 2015 E 1 2 3 4 5 6 E M WWWWWW	Frequency
Ref Offset 10 dB/div Ref 35.00		Trig: Free Run #Atten: 34 dB		™ Mkr2 823.		Auto Tune
25.0 15.0 5.00			1	and an and a start and a start	and the second sec	Center Fred 824.000000 MH:
-5.00 -15.0 -25.0 -35.0	an hard ward all all all all all all all all all al	2 			-13.00 plBm	Start Free 819.000000 MH:
-35.0						<b>Stop Fre</b> 829.000000 MH
Start 819.000 MHz FRes BW 51 kHz	#VE × 824.89 MHz	W 200 kHz		weep 4.73 ms (		CF Ste 1.000000 M⊢ Auto Ma
2 N 1 f 3 4 5 6	823.82 MHz	-18.43 dBm				<b>Freq Offse</b> 0 H
7 8 9 10 11						
12 sg				STATUS		

## HSUPA850& Channel: 4132

# HSUPA850 & Channel: 4132

Agilent Spectrum Analyzer - Swept SA				
X RL RF 50Ω AC Center Freq 821.000000 Ν		ALIGN OFF #Avg Type: RMS	10:32:40 AM Sep 21, 2015 TRACE 1 2 3 4 5 6 TYPE MWWWWW	Frequency
	PNO: Wide 😱 Trig: Free Run IFGain:Low #Atten: 34 dB			
Ref Offset 17.21 dB 10 dB/div Ref 35.00 dBm		Mkr	2 822.926 MHz -17.79 dBm	Auto Tune
Log 25.0 15.0 5.00				Center Free 821.000000 MH
-5.00 -15.0 -25.0 -35.0	Mummer prover and and	man man and a contraction	-13.00 cf	Start Free 819.000000 MH
-45.0				Stop Fre 823.000000 MH
Start 819.000 MHz #Res BW 100 kHz	#VBW 300 kHz		Stop 823.000 MHz 1.00 ms (1001 pts)	<b>CF Ste</b> 400.000 kH
	2.928 MHz -17.79 dBm	UNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Ma
2 N 1 f 822 3 4 5 6	2.926 MHz -17.79 dBm			<b>Freq Offse</b> 0 H
7 8 9 10				
11 12 13 13 13 14		STATUS		

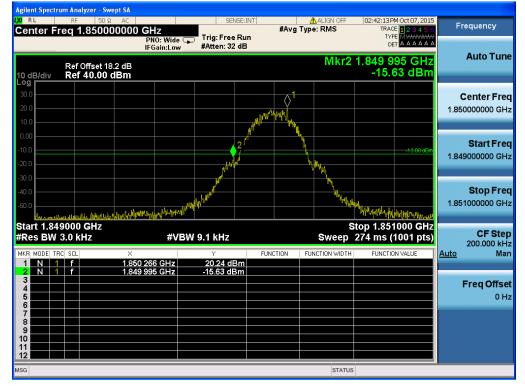


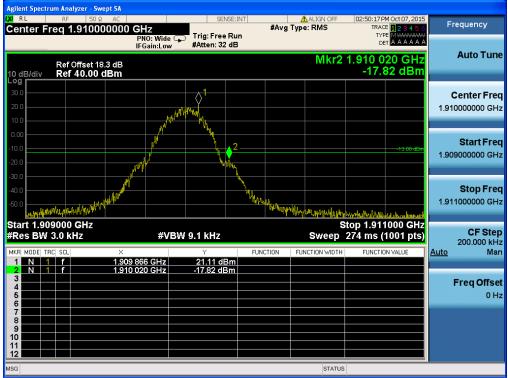
Agilent Spectrum Analyzer - Swept SA						
M RL RF 50 Ω AC Center Freq 849,000000 N	٨Hz	SENSE:INT	#Avg Ty	ALIGN OFF	10:37:03 AM Sep 21, 2015 TRACE 1 2 3 4 5 6	Frequency
Ref Offset 17.32 dB	PNO: Wide 🖵 IFGain:Low	Trig: Free Run #Atten: 34 dB		Mk	r2 849.02 MHz -24.38 dBm	Auto Tune
10 dB/div Ref 35.00 dBm 25.0 15.0 5.00		Hallow Mag			-24.30 (15)	Center Freq 849.000000 MHz
-5.00 -15.0 -25.0 -25.0		2 Variant	wheeterate	Managad sala and as	-13.00 dBm	Start Freq 844.000000 MHz
-45.0 -65.0					when the second second second	<b>Stop Freq</b> 854.000000 MHz
Start 844.000 MHz #Res BW 51 kHz	#VBW	200 kHz			Stop 854.000 MHz .73 ms (1001 pts)	CF Step 1.000000 MHz
MKR MODE TRC SCL X	7.40 MHz	Ƴ 15.91 dBm	FUNCTION F	UNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
2 N 1 f 84 3 4 5 6 6	19.02 MHz	-24.38 dBm				Freq Offset 0 Hz
7 8 9 10 11 12						
MSG				STATUS		

# HSUPA850 & Channel: 4233

# HSUPA850 & Channel: 4233

Agilent Spectrum Analyzer - Swept SA XV RL RF 50 Ω AC		SENSE:INT		🛕 ALIGN OFF	10:38:10 AM Sep 21, 2015	English
Center Freq 852.000000 I	PNO: Wide 🗔	Trig: Free Run	#Avg 1	[ype: RMS	TRACE 123456 TYPE MWWWW DET A A A A A A	Frequency
Ref Offset 17.32 dB 10 dB/div Ref 35.00 dBm	IFGain:Low	#Atten: 34 dB		Mkr	2 850.269 MHz -25.41 dBm	Auto Tune
25.0 15.0 5.00						Center Fred 852.000000 MHz
-5.00 .15.0 2 -25.0	hune par particles at the	Marther Marthagener			-13.00 dBm	Start Free 850.000000 MH:
-35.0					un de la companya de La companya de la comp	Stop Free 854.000000 MH
Start 850.000 MHz #Res BW 100 kHz	#VBW 3	300 kHz		Sweep	Stop 854.000 MHz I.00 ms (1001 pts)	<b>CF Ste</b> 400.000 kH
	0.268 MHz	-25.41 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Ma
2 N 1 f 850 3 4 5 6	0.269 MHz	-25.41 dBm				<b>Freq Offse</b> 0 H
7 8 9 9 10 11						
				STATUS		

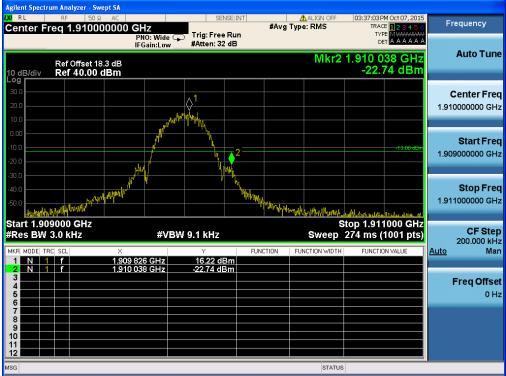






#### EDGE 1900 & Channel: 512

# EDGE 1900 & Channel: 810



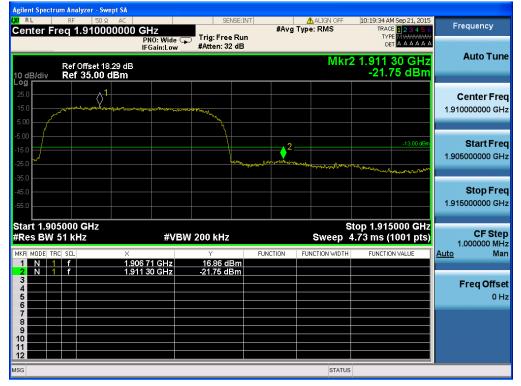


#### Spectrum Analyzer - Swept SA 10:12:33 AM Sep 21, 2015 TRACE **1 2 3 4 5 6** TYPE M <del>WWWWW</del> DET A A A A A A ALIGN C Center Freq 1.850000000 GHz PN0: Wide PHO: Wide #Atten: 32 dB Frequency Auto Tune Mkr2 1.849 98 GHz -21.48 dBm Ref Offset 18.21 dB Ref 35.00 dBm 10 dB/div Log r **Center Freq** Ő 1.85000000 GHz Start Freq 1.845000000 GHz Stop Freq 1.855000000 GHz Start 1.845000 GHz #Res BW 51 kHz Stop 1.855000 GHz Sweep 4.73 ms (1001 pts) CF Step 1.000000 MHz Man #VBW 200 kHz FUNCTION FUNCTION <u>Auto</u> FUNCTIO 1.852 98 GHz 1.849 98 GHz 16.59 dBm -21.48 dBm N 1 f N 1 f Freq Offset 0 Hz C 11 12 STATUS SG

### WCDMA1900 & Channel: 9262

<b>RL</b> RF 50 Ω	AC	SENSE:I	#Avg	ALIGN OFF	10:16:06 AM Sep 21, 2015 TRACE 1 2 3 4 5 6	Frequency
Ref Offset 18 0 dB/div Ref 35.00		Trig: Free Run #Atten: 32 dB	1	Mkr2	1.848 982 GHz -14.64 dBm	Auto Tun
.0g 25.0 15.0 5.00						Center Fre 1.847000000 G⊢
5.00 15.0 25.0					2) -13.00 att	Start Fre 1.845000000 G⊦
45.0						<b>Stop Fre</b> 1.849000000 GH
tart 1.845000 GHz Res BW 1.0 MHz	#VI	BW 3.0 MHz		S Sweep	top 1.849000 GHz 1.00 s (1001 pts)	CF Ste 400.000 ki
IKR MODE TRC SCL	× 1.848 984 GHz 1.848 982 GHz	۲ -14.635 dBm -14.64 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Ma
2 N 1 f 3 4 5 6	1.848 982 GH2	-14.94 abm				Freq Offs 0 F
7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9						
2 <b>3</b>				STATUS		





#### WCDMA1900 & Channel: 9538

Agilent Spectrum								10.00.10.1			
	RF   50 Ω	AC			BE:INT	#Avg Typ	ALIGN OFF	TRAC	4 Sep 21, 2015 E 1 2 3 4 5 6	Fi	requency
			PNO: Fast ⊂ IFGain:Low	Trig: Free I #Atten: 32				TYP	E M <del>WWWWW</del> T A A A A A A		
	Ref Offset 18						Mkr2	1.911 0	09 GHz		Auto Tune
	Ref 35.00							-14.4	15 dBm		
25.0											Center Freq
15.0											3000000 GHz
5.00											
-5.00 <b>- 2</b>									-13.00 dBm		Start Freq
-15.0										1.91	1000000 GHz
-25.0											
-35.0											Stop Freq
-55.0										1.91	5000000 GHz
Start 1.9110								ton 1 016			
#Res BW 1.			#VB	W 3.0 MHz			ہ Sweep#	1.00 s (	i000 GHz 1001 pts)		CF Step
MKR MODE TRC	SCL	X		Y	FUNC	TION FU	NCTION WIDTH	FUNCTIO	N VALUE	Auto	400.000 kHz Man
1 N 1 2 N 1	f		008 GHz 009 GHz	-14.448 dB -14.45 dB							
3											Freq Offset
5											0 Hz
7											
8											
10											
12							STATUS				
							514105				



#### Spectrum Analyzer - Swept SA ALIGN C :40:14 AM Se TRACE Dig RL RF 300 AC Center Freq 1.850000000 GHz PNO: Wide IFGain:Low #Atten: 32 dB p 21, 201 Frequency RACE 1 2 3 4 5 6 TYPE M WARMAN DET A A A A A A Auto Tune Mkr2 1.849 91 GHz -20.38 dBm Ref Offset 18.21 dB Ref 35.00 dBm 10 dB/div Log r $\Diamond^1$ **Center Freq** 1.85000000 GHz Start Freq 1.845000000 GHz Stop Freq 1.855000000 GHz Start 1.845000 GHz #Res BW 51 kHz Stop 1.855000 GHz Sweep 4.73 ms (1001 pts) CF Step 1.000000 MHz Man #VBW 200 kHz FUNCTION FUNCTION <u>Auto</u> FUNCTIO 15.72 dBm -20.38 dBm N 1 f N 1 f 1.853 46 GHz 1.849 91 GHz Freq Offset 0 Hz C 11 12 STATUS ISG

### HSUPA1900 & Channel: 9262

# HSUPA1900 & Channel: 9262

Agilent Spectrum An										
<b>l,XI R L R</b> F	50 Ω	AC		ENSE:INT	#Avg Typ	ALIGN OFF	TRAC	1 Sep 21, 2015	Fn	equency
		PNO: F IEGain:L	ast 🖵 Trig: Fro ow #Atten: 3				TYP DE			
	f Offset 18.2					Mkr2	1.848 9	94 GHz		Auto Tune
10 dB/div Re	f 35.00 dE						-14.8	6 dBm		
Log 25.0									-	enter Frea
15.0										7000000 GHz
5.00										
-5.00								-13.00 gpt		Otort Eron
-15.0								-13.00 dBk	1 84	Start Freq 5000000 GHz
-25.0									1.0-4	
-35.0										Oton Eron
-45.0									1 849	Stop Freq
-35.0									1.0 1.	
Start 1.84500 #Res BW 1.0			≠VBW 3.0 MH	-			top 1.849 1.00 s (1			CF Step
							FUNCTIO		0	400.000 kHz
MKR MODE TRC SCL	-	× 1.848 996 GH		dBm	CTION FU	NCTION WIDTH	FUNCTIO	N VALUE	<u>Auto</u>	Man
2 N 1 f		1.848 994 GH	Iz -14.86 (	dBm						Freq Offset
4										0 Hz
6										
8										
10										
11 12										
MSG						STATUS	😢 Align No	w, All requi	red	



#### Spectrum Analyzer - Swept SA 19:49 AM Se TRACE ALIGN C Center Freq 1.910000000 GHz FNO: Wide IFGain:Low #Atten: 32 dB p 21, 20: Frequency RACE 1 2 3 4 5 6 TYPE M WARMAN DET A A A A A A Auto Tune Mkr2 1.910 18 GHz -18.90 dBm Ref Offset 18.29 dB Ref 35.00 dBm 10 dB/div Log $\Diamond^1$ **Center Freq** 1.91000000 GHz 2 Start Freq 1.905000000 GHz Stop Freq 1.915000000 GHz Stop 1.915000 GHz Sweep 4.73 ms (1001 pts) Start 1.905000 GHz #Res BW 51 kHz CF Step 1.000000 MHz Man #VBW 200 kHz FUNCTION FUNCTION <u>Auto</u> FUNCTION 15.70 dBm -18.90 dBm N 1 f N 1 f 1.906 44 GHz 1.910 18 GHz Freq Offset 0 Hz C 11 12 STATUS ISG

### HSUPA1900 & Channel: 9538

# HSUPA1900 & Channel: 9538

RL	RF	50 Ω	AC		SE	NSE:INT	40	ALIGN OFF		M Sep 21, 2015	F	requency
				PNO: Fast IFGain:Low	Trig: Free #Atten: 3		#AVg	Type: RMS	TYI	<sup>Е</sup> 123456 РЕМ <del>ИНИИИ</del> ТАААААА		
dB/div	Ref Offs Ref 35							Mkr2 1.911 005 GH: -14.80 dBn				Auto Tun
<b>9</b> 5.0 5.0 .00												Center Fre 3000000 G⊢
.00 <mark>2 —</mark> 5.0 <b>—</b> 5.0 —										-13.00 dBm	1.91	<b>Start Fre</b> 1000000 G⊦
5.0											1.91	<b>Stop Fre</b> 5000000 GH
tart 1.91 Res BW				#VI	BW 3.0 MHz			S #Sweep	top 1.91 1.00 s (	5000 GHz 1001 pts)		CF Ste 400.000 ki
KR MODE TR	C SOL			004 GHz 005 GHz	۲ -14.802 d -14.80 d	Bm	JNCTION	FUNCTION WIDTH	FUNCTIO	ON VALUE	<u>Auto</u>	Ma
					-14.00 0							Freq Offs 0 I
7 B 9 0 1												
2												