

**ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT**  
**INTENTIONAL RADIATOR CERTIFICATION TO**  
**FCC PART 22 SUBPART H, PART 24 SUBPART E and PART 27 SUBPART C**  
**REQUIREMENT**

OF

**Product Name:** Tablet

**Brand Name:** HP

**Marketing Name:** HP 7 Plus G2

**Model No.:** HSTNH-B407D

**Model Difference:** N/A

**FCC ID:** B94HHB407D

**Report No.:** ER/2014/70097

**Issue Date:** Sep. 18, 2014

**FCC Rule Part:** 2, 22H & 24E & 27C

**Prepared for:** Hewlett-Packard Company  
 1501 Page Mill Road, Palo Alto, CA 94304, United States

**Prepared by:** SGS Taiwan Ltd.  
 Electronics & Communication Laboratory  
 No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803

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## VERIFICATION OF COMPLIANCE

**Applicant:** Hewlett-Packard Company  
1501 Page Mill Road, Palo Alto, CA 94304, United States

**Product Name:** Tablet

**Brand Name:** HP

**Marketing Name:** HP 7 Plus G2

**Model No.:** HSTNH-B407D

**Model Difference:** N/A

**FCC ID:** B94HHB407D

**File Number:** ER/2014/70097

**Date of test:** Jul. 29, 2014 ~ Aug. 22, 2014

**Date of EUT Received:** Jul. 29, 2014

### We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Electronics & Communication Laboratory. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in TIA/EIA-603-C-2004 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rule PART 22 subpart H, PART 24 subpart E, PART 27 subpart C.

The test results of this report relate only to the tested sample identified in this report.

**Test By:**

*Marcus Tseng*

**Date:**

Sep. 18, 2014

*Marcus Tseng / Engineer*

**Prepared By:**

*Julia Chang*

**Date:**

Sep. 18, 2014

*Julia Chang / Clerk*

**Approved By:**

*Jim Chang*

**Date:**

Sep. 18, 2014

*Jim Chang / Supervisor*

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## Version

Version No.	Date	Description
00	Aug. 22, 2014	Initial creation of document
01	Sep. 18, 2014	Update adapter supplier at page 7

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# 1. GENERAL PRODUCT INFORMATION

## 1.1. Product Description

General:

Product Name:	Tablet	
Brand Name:	HP	
Marketing Name:	HP 7 Plus G2	
Model No.:	HSTNH-B407D	
Model Difference:	N/A	
Hardware Version:	B1	
Software Version:	1.1.37	
Data Cable (USB):	Model No.:N/A, Supplier: N/A	
Power Supply:	3.7Vdc form Rechargeable Li-ion Battery or 5Vdc from adapter	
	Battery:	Model No.: WD3058150P, Supplier: Shenzhen WISEWOD Technology CO.,LTD
	Adapter:	Model No.: A31-501000 Supplier: Shenzhen Aohai Technology Co.,Ltd

GPRS / WCDMA:

Cellular Phone Standards Frequency Range and Power	Operating Frequency		Rated Power
	GPRS 850, Class 33	824.2 MHz– 848.8 MHz	33dBm
	EDGE 850, Class 33	824.2 MHz– 848.8 MHz	27dBm
	GPRS 1900, Class 33	1850.2MHz – 1909.8MHz	30dBm
	EDGE 1900, Class 33	1850.2MHz – 1909.8MHz	26dBm
	WCDMA/HSUPA/HSDPA /HSPA+ Band II	1852.4MHz – 1907.6MHz	24dBm
	WCDMA/HSUPA/HSDPA /HSPA+ Band IV	1712.4MHz - 1752.6MHz	24dBm
	WCDMA/HSUPA/HSDPA /HSPA+ Band V	826.4MHz - 846.6MHz	24dBm
IMEI:	869874004234769		

This test report applies for 850 /1900 GPRS/EDGE, WCDMA / HSDPA / HSUPA Band II/IV /V.

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Final Amplifier Voltage and Current Information:

Test Mode	DC voltage (V)	DC current (mA)
GPRS 850	3.7 Vdc	463
GPRS 1900	3.7 Vdc	472
EDGE 850	3.7 Vdc	463
EDGE 1900	3.7 Vdc	479
WCDMA B2	3.7 Vdc	592
WCDMA B4	3.7 Vdc	583
WCDMA B5	3.7 Vdc	588
HSUPA B2	3.7 Vdc	637
HSUPA B4	3.7 Vdc	649
HSUPA B5	3.7 Vdc	653
HSDPA B2	3.7 Vdc	647
HSDPA B4	3.7 Vdc	642
HSDPA B5	3.7 Vdc	633

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## 1.2. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **B94HHB407D** filing to comply with Section Part 22 subpart H, Part 24 subpart E and Part 27 subpart C of the FCC CFR 47 Rules.

## 1.3. Test Methodology

Both conducted and radiated testing were performed according to the procedures document of TIA/EIA 603C and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057.

TS 151 010-1 is used to set, and measure the output power.

The Output power Procedure of KDB941225 (SAR Measurement Procedures for 3G devices, WCDMA / HSPA) was used for EUT and Base station setting.

KDB971168 D01 Power Meas license Digital System v01 as the supplemental guideline to conduct the measurement, including Peak to Power Average Ratio, Average Power over the fundamental signal BW (EIRP/ERP) and Signal Bandwidth.

## 1.4. Test Facility

The measurement facilities used to collect the 3m Radiated Emission and AC power line conducted data are located on the address of SGS Taiwan Ltd. Electronics & Communication Laboratory No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei Country, Taiwan which are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2009. FCC Registration Number: 990257. The address of SGS Taiwan Ltd. Electronics & Communication Laboratory 1F, No.134, Wukung Road New Taipei City TAIWAN 24803, Canada Registration Number: 4620A-5

The 10 m Open Area Test Sites located on the address of SGS Taiwan Ltd. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan Township, Taoyuan County, Taiwan which is constructed and calibrated to meet the CISPR 22/EN 55022 requirements. FCC Registration Number: 455997. The address of SGS Taiwan Ltd. Electronics & Communication Laboratory 1F, No.134, Wukung Road New Taipei City TAIWAN 24803, IC Registration Number: 4620A-6.

All equipment is calibrated externally and traceable to SI(International System of Unit).

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### 1.5. Special Accessories

No special accessories were used during testing.

### 1.6. Equipment Modifications

There were no modifications incorporated into the EUT.

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## 2. SYSTEM TEST CONFIGURATION

### 2.1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

### 2.2. EUT Exercise

The EUT (Transmitter) was operated in the continuous transmission mode employed with the simulator of the Base Station that fixates at test default channels to fix the Tx frequency which was for the purpose of the measurements.

### 2.3. Test Procedure

#### 2.3.1 Conducted Measurement at Antenna Port:

According to measurement procured TIA/EIA 603C, the EUT is placed on a turn table which is 0.8 m above ground plane. A low loss of RF cable was used to connect the antenna port of EUT to measurement equipment.

#### 2.3.2 Radiated Emissions (ERP/EIRP):

According to measurement procured TIA/EIA 603C, The EUT is a placed on as turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both Horizontal and Vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made “while keeping the antenna in the ‘cone of radiation’ from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response.” is still within the 3dB illumination BW of the measurement antenna according to the requirements in Section 8 and 13 of ANSI C63.4:2009.

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**2.4. Measurement Equipment Used:**

Conducted Emission (measured at antenna port) Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4446A	MY51100003	05/19/2014	05/18/2015
Spectrum Analyzer	Agilent	E4440A	US41160416	03/08/2014	03/07/2015
Radio Communication Analyzer	R & S	CMU200	116097	03/11/2014	03/10/2015
Radio Communication Analyzer	Anritsu	MT8820C	6200995019	10/21/2013	10/20/2014
Temperature Chamber	TERCHY	MHG-120LF	911009	05/07/2014	05/06/2015
DC Block	Mini-Circuits	BLK-18-S+	1	02/27/2014	02/26/2015
Attenuator	Mini-Circuit	BW-S10W2+	002	02/27/2014	02/26/2015
Splitter	Agilent	11636B	N/A	02/27/2014	02/26/2015
DC Power Supply	Agilent	E3640A	MY52410006	11/07/2013	11/06/2014

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ERP, EIRP MEASUREMENT EQUIPMENT List 966 Chamber					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4446A	MY51100003	05/19/2014	05/18/2015
EXA Spectrum Analyzer	Agilent	N9010A	MY50420195	01/20/2014	01/19/2015
Spectrum Analyzer	R&S	FSV-30	101398	10/22/2013	10/21/2014
Bilog Antenna	SCHWAZBECK	VULB9168	378	01/02/2014	01/01/2015
Bilog Antenna	SCHWAZBECK	VULB9160	3158	11/27/2013	11/26/2014
Horn antenna	ETS.LINDGREN	3117	123995	05/19/2014	05/18/2015
Horn antenna	ETS.LINDGREN	3117	123991	01/20/2014	01/19/2015
Horn Antenna	Schwarzbeck	BBHA9170	184	01/23/2014	01/22/2015
Horn Antenna	Schwarzbeck	BBHA9170	185	07/29/2014	07/28/2015
Network Analyze	Anritsu	MS4644A	1216312	05/24/2014	05/23/2015
Signal Generator	Agilent	E4438C	MY45093613	08/06/2014	08/05/2015
Pre-Amplifier	Agilent	8447D	1937A02834	01/03/2014	01/02/2015
Pre-Amplifier	Agilent	8449B	3008A00578	01/03/2014	01/02/2015
Pre-Amplifier	EMC Instruments Corp.	EMC184045	980135	01/24/2014	01/23/2015
Attenuator	Mini-Circuit	BW-S10W2+	004	02/27/2014	02/26/2015
Radio Communication Analyzer	R & S	CMU200	116097	03/11/2014	03/10/2015
Radio Communication Analyzer	Anritsu	MT8820C	6200995019	10/21/2013	10/20/2014
Turn Table	HD	DT420	N/A	N.C.R	N.C.R
Antenna Tower	HD	MA240-N	240/657	N.C.R	N.C.R
Controller	HD	HD100	N/A	N.C.R	N.C.R
Low Loss Cable	HUBER+SUHNER	966_Tx	10m	01/03/2014	01/02/2015
Low Loss Cable	HUBER+SUHNER	966_Rx	3m	01/03/2014	01/02/2015
Filter 800-1000	Micro-Tronics	EWT	M2	02/27/2014	02/26/2015
Filter 1800-2000	Micro-Tronics	EWT	M2	02/27/2014	02/26/2015
Filter 1700-1800	Micro-Tronics	BRC15751	001	02/27/2014	02/26/2015
1GHz High Pass Filter	Micro-Tronics	HPM50108	32	02/27/2014	02/26/2015
2GHz High Pass Filter	Micro-Tronics	HPM50110	36	02/27/2014	02/26/2015
3m Site NSA	SGS	966 chamber	N/A	07/15/2014	07/14/2015

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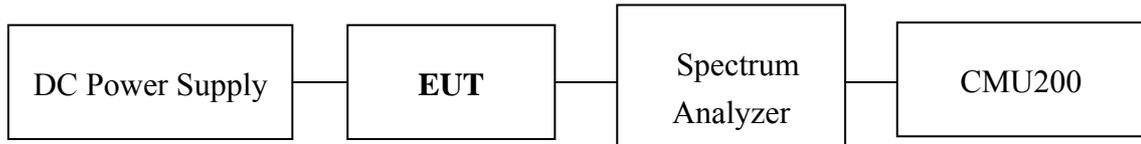
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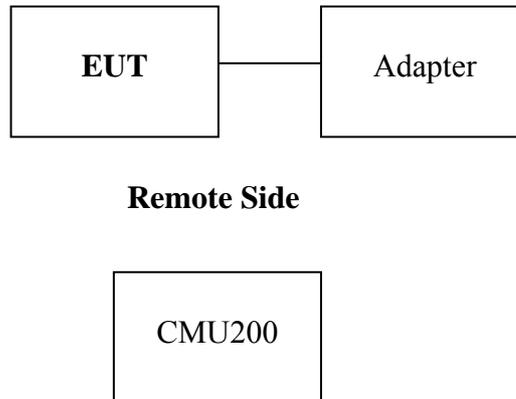
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## 2.5. Configuration of Tested System

**Fig. 2-1 Configuration of Tested System (Fixed Channel-Conducted)**



**Fig. 2-2 Configuration of Tested System (Fixed Channel-Radiated)**



**Table 2-1 Equipment Used in**

Item	Equipment	Mfr/Brand	Model/ Type No.	Series No.	Data Cable	Power Cord
1.	Universal Radio Communication Tester	R&S	CMU200	102189	shielded	Un-shielded
2.	DC Power Supply	HP	E3640A	MY52410006	shielded	Un-shielded

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### 3. SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§2.1046(a)	RF Power Output	Compliant
§2.1046(a) §22.913(a)(2) §24.232(c)§27.50(d)(4)	ERP/ EIRP measurement	Compliant
§2.1049(h)	99% Occupied Bandwidth	Compliant
§2.1051 §22.917(a) §24.238(a) §27.53(h)	Out of Band Emissions at Antenna Terminals and Band Edge	Compliant
§2.1053 §22.917(a) §24.238(a) §27.53(h)	Field Strength of Spurious Radiation	Compliant
§24.232(d) §27.50(B)	Peak to Average Ratio	Compliant
§2.1055(a)(1) §22.355 §24.235 §27.54	Frequency Stability vs. Temperature	Compliant
§2.1055(d)(2) §22.355 §24.235 §27.54	Frequency Stability vs. Voltage	Compliant

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Max ERP/EIRP measurement result:

	dBm		W
GPRS 850 Band	24.50	ERP	0.282
GPRS 1900 Band	28.58	EIRP	0.721
EDGE 850 Band	19.09	ERP	0.081
EDGE 1900 Band	28.00	EIRP	0.631
WCDMA Band II	24.89	EIRP	0.308
WCDMA Band IV	24.46	EIRP	0.279
WCDMA Band V	16.85	ERP	0.048
HSDPA Band II	25.32	EIRP	0.340
HSDPA Band IV	25.36	EIRP	0.344
HSDPA Band V	18.22	ERP	0.066
HSUPA Band II	24.76	EIRP	0.299
HSUPA Band IV	25.40	EIRP	0.347
HSUPA Band V	17.08	ERP	0.051

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#### 4. DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition.

EUT was staying in continuous transmitting mode. Channel Low, Mid and High for each type band with rated data rate were chosen for full testing.

The list of channel selected to conduct the measurements

GPRS/EDGE 850:

Channel Low: AFRCN 128 at 824.2MHz, Channel Mid: AFRCN 190 at 836.6MHz, Channel High: AFRCN 251 at 848.8MHz.

GPRS/EDGE 1900:

Channel Low: AFRCN 512 at 1850.2MHz, Channel Mid: AFRCN 661 at 1880.0MHz, Channel High: AFRCN 810 at 1909.8MHz

WCDMA/HSPA BII:

Channel Low: UAFRCN 9262 at 1852.4MHz, Channel Mid: UAFRCN 9400 at 1880.0MHz, Channel High: UAFRCN 9538 at 1907.6MHz.

WCDMA/HSPA BIV:

Channel Low: UAFRCN 1312 at 1712.4MHz, Channel Mid: UAFRCN 1413 at 1732.6MHz, Channel High: UAFRCN 1513 at 1752.6MHz.

WCDMA/HSPA BV:

Channel Low: UAFRCN 4132 at 826.4MHz, Channel Mid: UAFRCN 4183 at 836.6MHz, Channel High: UAFRCN 4233 at 846.6MHz.

The field strength of spurious radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for GPRS/EDGE, WCDMA/HSPA Band II / IV/ V with power adaptor. The worst-case of H position for GPRS 850/1900, WCDMA/HSPA Band II/IV/V were reported.

#### The evaluation of Test Mode as configured in UE presented on the Test Report:

**GPRS/WCDMA/HSPA:**

#### Radiated Spurious Emission

The Measurement Data of field strength of spurious emission with respect to supported configuration of given application (Transmission Band, Modulation Scheme, Resource Block) have been pre-scanned, and the result that yields in the highest emission close to the limit are presented on the test report.

GPRS, HSPA is the worst-case found in the pre-scanned measurement, and only data that yields the worst case is revealed on the test report.

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## 5. MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
RF Power Output	+/- 1.42 dB
ERP/ EIRP measurement	Vertical Polarization = +/- 4.74dB Horizontal Polarization = +/- 4.62dB
99% Occupied Bandwidth	+/- 123.36 Hz
Out of Band Emissions at Antenna Terminals and Band Edge	+/- 1.55 dB
Peak to Average Ratio	+/- 1.55 dB
Frequency Stability vs. Temperature	+/- 123.36 Hz
Frequency Stability vs. Voltage	+/- 123.36 Hz
Temperature	+/- 0.8 °C
Humidity	+/- 4.7 %
DC / AC Power Source	DC= +/- 1%, AC= +/- 0.2%

### Radiated Spurious Emission:

Measurement uncertainty (Polarization : <b>Vertical</b> )	30MHz - 180MHz: +/- 3.37dB
	180MHz -417MHz: +/- 3.19dB
	0.417GHz-1GHz: +/- 3.19dB
	1GHz - 18GHz: +/- 4.04dB
	18GHz - 40GHz: +/- 4.04dB

Measurement uncertainty (Polarization : <b>Horizontal</b> )	30MHz - 167MHz: +/- 4.22dB
	167MHz -500MHz: +/- 3.44dB
	0.5GHz-1GHz: +/- 3.39dB
	1GHz - 18GHz: +/- 4.08dB
	18GHz - 40GHz: +/- 4.08dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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## 6. RF POWER OUTPUT MEASUREMENT

### 6.1. Standard Applicable:

According to FCC §2.1046.

FCC 22.913(a) Mobile station are limited to 7W.

FCC 24.232(c) Peak Power Measurement limited to 2W

FCC 24.232(c) Equipment must employ means to limit the power to the minimum necessary for successful communication.

Part 27, 50(d)(4) Portable stations are limited to 1W

3GPP Power limitation for HSDPA and HSUPA

#### Maximum Output Powers for HSDPA

Sub-test in table C.10.1.4	Power Class 3		Power Class 4	
	Power (dBm)	Tol (dB)	Power (dBm)	Tol (dB)
1	+24	+1.7/-3.7	+21	+2.7/-2.7
2	+24	+1.7/-3.7	+21	+2.7/-2.7
3	+23.5	+2.2/-3.7	+20.5	+3.2/-2.7
4	+23.5	+2.2/-3.7	+20.5	+3.2/-2.7

#### Maximum Output Powers for HSUPA

Sub-test in table C.11.1.3	Power Class 3		Power Class 4	
	Power (dBm)	Tol (dB)	Power (dBm)	Tol (dB)
1	+24	+1.7/-6.7	+21	+2.7/-5.7
2	+22	+3.7/-5.2	+19	+4.7/-4.2
3	+23	+2.7/-5.2	+20	+3.7/-4.2
4	+22	+3.7/-5.2	+19	+4.7/-4.2
5	+24	+1.7/-6.7	+21	+2.7/-5.7

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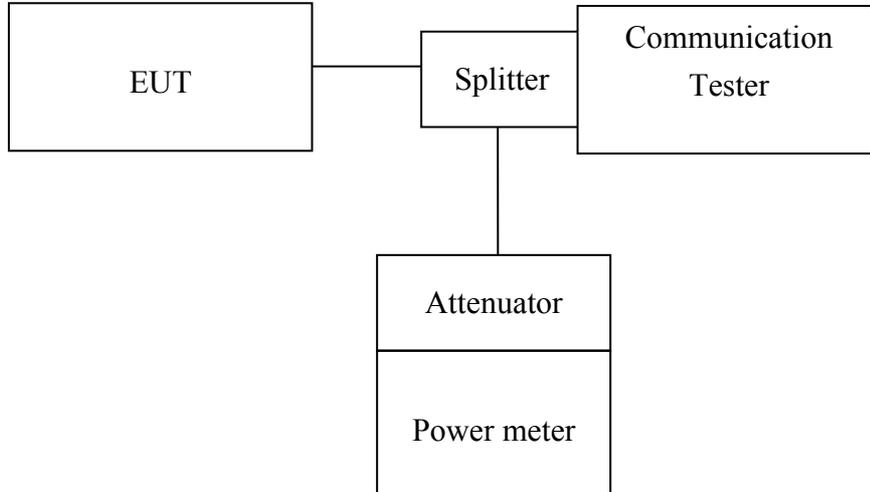
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**6.2. Test Set-up:**



*Note: Measurement setup for testing on Antenna connector*

**6.3. Measurement Procedure:**

The transmitter output was connected to a calibrated attenuator, the other end of which was connected to a power meter. Transmitter output was read off the power meter in dBm. The power output at the transmitter antenna port was determined by adding the value of the attenuator to the power meter reading. TS 151 010-1 is reference to conduct the test measurement of output power.

The Procedure of KDB941225 (SAR Measurement Procedures for 3G devices, (WCDMA/HSPA) was used for EUT and Base station setting. RMC 12.2kps is used for this testing, and KDB 971168 D01 Power Meas License Digital System as the supplemental test methodology to adjust the proper setting obtaining the measurement results

Necessary Communication complying with 24.232 (c) and 27.5(d)(4)

Set CMU200 (base-station simulator) MS Signal with packet data submenu; SLOT Configuration  
 Set appropriate level to verify if or not power on mobile station’s link with simulator still exists.

**6.4. Measurement Equipment Used:**

Refer to section 2.4 in this report

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6.5. Measurement Result:

6.5.1. RF Conducted Output Power

6.5.1.1.: GPRS/EDGE (GMSK; 8-PSK)

Result:

EUT Mode	Frequency (MHz)	CH	Peak Power (4DN 1UP) Class 8 (dBm)	Average Burst Power (4DN 1UP) Class 8 (dBm)	Peak Power (4DN 2UP) Class 10 (dBm)	Average Burst Power (4DN 2UP) Class 10 (dBm)
GPRS 850	824.2	128	32.70	32.30	30.30	30.20
	836.6	190	32.80	32.40	30.40	30.40
	848.8	251	<b>32.80</b>	32.80	30.50	30.40

EUT Mode	Frequency (MHz)	CH	Peak Power (4DN 3UP) Class 12 (dBm)	Average Burst Power (4DN 3UP) Class 12 (dBm)	Peak Power (4DN 4UP) Class 12 (dBm)	Average Burst Power (4DN 4UP) Class 12 (dBm)
GPRS 850	824.2	128	28.90	28.70	27.40	27.30
	836.6	190	28.90	28.70	27.50	27.30
	848.8	251	29.00	28.80	27.60	27.40

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EUT Mode	Frequency (MHz)	CH	Peak Power (4DN 1UP) Class 8 (dBm)	Average Burst Power (4DN 1UP) Class 8 (dBm)	Peak Power (4DN 2UP) Class 10 (dBm)	Average Burst Power (4DN 2UP) Class 10 (dBm)
GPRS 1900	1850.2	512	29.00	28.90	26.40	26.30
	1880.0	661	29.00	28.80	26.40	26.20
	1909.8	810	28.90	28.80	26.30	26.20

EUT Mode	Frequency (MHz)	CH	Peak Power (4DN 3UP) Class 12 (dBm)	Average Burst Power (4DN 3UP) Class 12 (dBm)	Peak Power (4DN 4UP) Class 12 (dBm)	Average Burst Power (4DN 4UP) Class 12 (dBm)
GPRS 1900	1850.2	512	24.90	24.70	23.60	23.40
	1880.0	661	24.90	24.70	23.60	23.30
	1909.8	810	24.80	24.70	23.50	23.30

EUT Mode	Frequency (MHz)	CH	Peak Power (4DN 1UP) Class 8 (dBm)	Average Burst Power (4DN 1UP) Class 8 (dBm)	Peak Power (4DN 2UP) Class 10 (dBm)	Average Burst Power (4DN 2UP) Class 10 (dBm)
EDGE 850	824.2	128	29.40	26.40	27.20	24.10
	836.6	190	29.60	26.50	27.20	24.20
	848.8	251	29.70	26.60	27.40	24.40

EUT Mode	Frequency (MHz)	CH	Peak Power (4DN 3UP) Class 12 (dBm)	Average Burst Power (4DN 3UP) Class 12 (dBm)	Peak Power (4DN 4UP) Class 12 (dBm)	Average Burst Power (4DN 4UP) Class 12 (dBm)
EDGE 850	824.2	128	25.70	22.60	24.10	21.10
	836.6	190	25.80	22.70	24.20	21.20
	848.8	251	25.70	22.80	24.40	21.30

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EUT Mode	Frequency (MHz)	CH	Peak Power (4DN 1UP) Class 8 (dBm)	Average Burst Power (4DN 1UP) Class 8 (dBm)	Peak Power (1DN 2UP) Class 10 (dBm)	Average Burst Power (1DN 2UP) Class 10 (dBm)
EDGE 1900	1850.2	512	27.80	25.10	25.80	22.80
	1880.0	661	27.80	25.10	25.80	22.70
	1909.8	810	27.70	25.00	25.70	22.70

EUT Mode	Frequency (MHz)	CH	Peak Power (1DN 3UP) Class 12 (dBm)	Average Burst Power (1DN 3UP) Class 12 (dBm)	Peak Power (1DN 4UP) Class 12 (dBm)	Average Burst Power (1DN 4UP) Class 12 (dBm)
EDGE 1900	1850.2	512	24.30	21.20	22.80	19.70
	1880.0	661	24.30	21.20	22.80	19.60
	1909.8	810	24.20	21.20	22.80	19.70

Cable loss offset Low Band: 14.9dB

Cable loss offset High Band: 14.9dB

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**6.5.1.2.: WCDMA mode**

The following tests were completed according to the test requirements outlined in section 5.2 of the 3GPP TS34.121-1 V8.4.0 specification. The EUT supports power Class 3, which has a nominal maximum output power of 24 dBm (+1.7/-3.7). RMC 12.2kps is used for this testing.

**Results:**

EUT Mode	Frequency (MHz)	CH	Peak Power (dBm)	Avg. Power (dBm)
WCDMA Band II	1852.4	9262	24.54	22.52
	1880.0	9400	25.37	22.50
	1907.6	9538	<b>25.26</b>	22.37

EUT Mode	Frequency (MHz)	CH	Peak Power (dBm)	Avg. Power (dBm)
WCDMA Band IV	1712.4	1312	25.39	23.01
	1732.6	1412	<b>25.83</b>	22.89
	1752.6	1513	25.47	23.08

EUT Mode	Frequency (MHz)	CH	Peak Power (dBm)	Avg. Power (dBm)
WCDMA Band V	826.4	4132	26.17	23.52
	836.6	4183	25.91	23.41
	846.6	4233	<b>26.19</b>	23.66

EUT Mode	Frequency (MHz)	CH	Peak Power (dBm)	Avg. Power (dBm)
HSDPA Band II	1852.4	9262	<b>24.59</b>	22.02
	1880.0	9400	24.77	22.01
	1907.6	9538	24.51	22.00

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EUT Mode	Frequency (MHz)	CH	Peak Power (dBm)	Avg. Power (dBm)
HSDPA Band IV	1712.4	1312	24.40	22.03
	1732.6	1412	<b>24.87</b>	22.00
	1752.6	1513	24.84	22.06

EUT Mode	Frequency (MHz)	CH	Peak Power (dBm)	Avg. Power (dBm)
HSDPA Band V	826.4	4132	25.38	22.49
	836.6	4183	25.31	22.20
	846.6	4233	<b>25.58</b>	22.59

EUT Mode	Frequency (MHz)	CH	Peak Power (dBm)	Avg. Power (dBm)
HSUPA Band II	1852.4	9262	23.49	21.30
	1880.0	9400	<b>24.51</b>	21.21
	1907.6	9538	24.37	20.80

EUT Mode	Frequency (MHz)	CH	Peak Power (dBm)	Avg. Power (dBm)
HSUPA Band IV	1712.4	1312	23.81	21.67
	1732.6	1412	<b>24.48</b>	21.49
	1752.6	1513	24.43	21.76

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EUT Mode	Frequency (MHz)	CH	Peak Power (dBm)	Avg. Power (dBm)
HSUPA Band V	826.4	4132	24.62	22.14
	836.6	4183	24.58	21.85
	846.6	4233	<b>24.85</b>	22.29

Note: The results above reflect max power with all up bits.

Cable loss offset Low Band: 14.9dB

Cable loss offset High Band: 14.9dB

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**6.5.1.3:HSDPA Release 6 mode**

The following 4 Sub-Tests were completed according to the test requirements outlined in section 5.2A of the 3GPP TS34.121-1 V8.4.0 specification. All TX RMS power requirements for Power Class 3 were met according to table 5.2AA.5 and 5.2B.5 All UE channels and power ratio's are set according to table C10.1.4 & C11.1.3 in the 3GPP TS34.121-1 V8.4.0. RMC 12.2kps is used for this testing.

**HSDPA SUB-TEST Setting**

Table C.10.1.4:  $\beta$  values for transmitter characteristics tests with HS-DPCCH(FOR HSDPA)

Sub-test	$\beta_c$	$\beta_a$	$\beta_a$ (SF)	$\beta_c/\beta_a$	$\beta_{HS}$ (Note 1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)	RMC (Kbps)
1	2/15	15/15	64	2/15	4/15	0.0	0.0	12.2
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0	12.2
3	15/15	8/15	64	15/8	30/15	1.5	0.5	12.2
4	15/15	4/15	64	15/4	30/15	1.5	0.5	12.2

**Note: The recommended HSDPA MPRs are implemented as per following sub-tests.**

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**Results:**

Mode	Sub-test	Avg. Power (dBm) Channel			Power Class 3 Limita- tion (dBm)	Comments
		9262	9400	9538		
HSDPA (B2)	1	23.52	<b>23.69</b>	23.53	20.3dBm – 25.7dBm	Pass
	2	23.23	23.33	23.21	20.3dBm – 25.7dBm	Pass
	3	23.06	23.21	23.04	19.8dBm – 25.7dBm	Pass
	4	23.11	23.25	23.10	19.8dBm – 25.7dBm	Pass

Mode	Sub-test	Avg. Power (dBm) Channel			Power Class 3 Limita- tion (dBm)	Comments
		1312	1412	1513		
HSDPA (B4)	1	<b>23.65</b>	23.36	23.50	20.3dBm – 25.7dBm	Pass
	2	23.36	23.00	23.18	20.3dBm – 25.7dBm	Pass
	3	23.19	22.88	23.01	19.8dBm – 25.7dBm	Pass
	4	23.24	22.92	23.07	19.8dBm – 25.7dBm	Pass

Mode	Sub-test	Avg. Power (dBm) Channel			Power Class 3 Limita- tion (dBm)	Comments
		4132	4183	4233		
HSDPA (B5)	1	23.64	23.63	<b>23.76</b>	20.3dBm – 25.7dBm	Pass
	2	23.35	23.27	23.44	20.3dBm – 25.7dBm	Pass
	3	23.18	23.15	23.27	19.8dBm – 25.7dBm	Pass
	4	23.23	23.19	23.33	19.8dBm – 25.7dBm	Pass

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**6.5.1.4.: HSPA (HSDPA & HSUPA) Release 6 mode**

The following 5 Sub-Tests were completed according to the test requirements outlined in section 5.2A of the 3GPP TS34.121-1 V8.4.0 specification. All TX RMS power requirements for Power Class 3 were met according to table 5.2AA.5 and 5.2B.5 All UE channels and power ratio's are set according to table C11.1.3 in the 3GPP TS34.121-1 V8.4.0. RMC 12.2kps is used for this testing

**HSPA SUB-TEST Setting**

Table C.11.1.3:  $\beta$  values for transmitter characteristics tests with HS-DPCCH and E-DCH(FOR HSUPA)

Sub-test	$\beta_c$	$\beta_d$	$\beta_d$ (SF)	$\beta_c/\beta_d$	$\beta_{HS}$	$\beta_{ec}$	$\beta_{ed}$	$\beta_{ed}$ (SF)	$\beta_{ed}$ (Codes)	CM (dB)	MPR (dB)	AG Index	E-TFCI	RMC (Kbps)
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/225	1309/225	4	1	1.0	0.0	20	75	12.2
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67	12.2
3	15/15	9/15	64	15/9	30/15	30/15	$\beta_{ed1}: 47/15$ $\beta_{ed2}: 47/15$	4 4	2	2.0	1.0	15	92	12.2
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71	12.2
5	15/15 (Note 4)	15/15 (Note 4)	64	15/15 (Note 4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81	12.2

**Note: The recommended HSUPA MPRs are implemented as per following sub-tests.**

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**Results:**

Mode	Sub-test	Avg. Power (dBm) Channel			Power Class 3 Limita- tion (dBm)	Comments
		9262	9400	9538		
HSUPA(B2)	1	23.26	<b>23.37</b>	23.25	18.8dBm – 25.7dBm	Pass
	2	21.32	21.45	21.29	16.8dBm – 25.7dBm	Pass
	3	22.23	22.43	22.28	17.8dBm – 25.7dBm	Pass
	4	21.37	21.51	21.37	16.8dBm – 25.7dBm	Pass
	5	23.12	23.20	23.14	18.8dBm – 25.7dBm	Pass

Mode	Sub-test	Avg. Power (dBm) Channel			Power Class 3 Limita- tion (dBm)	Comments
		1312	1412	1513		
HSUPA(B4)	1	<b>23.39</b>	23.04	23.22	18.8dBm – 25.7dBm	Pass
	2	21.45	21.12	21.26	16.8dBm – 25.7dBm	Pass
	3	22.36	22.10	22.25	17.8dBm – 25.7dBm	Pass
	4	21.50	21.18	21.34	16.8dBm – 25.7dBm	Pass
	5	23.25	22.87	23.11	18.8dBm – 25.7dBm	Pass

Mode	Sub-test	Avg. Power (dBm) Channel			Power Class 3 Limita- tion (dBm)	Comments
		4132	4183	4233		
HSUPA(B5)	1	23.38	23.31	<b>23.48</b>	18.8dBm – 25.7dBm	Pass
	2	21.44	21.39	21.52	16.8dBm – 25.7dBm	Pass
	3	22.35	22.37	22.51	17.8dBm – 25.7dBm	Pass
	4	21.49	21.45	21.60	16.8dBm – 25.7dBm	Pass
	5	23.24	23.14	23.37	18.8dBm – 25.7dBm	Pass

**6.5.2. Minimum Communications Power Measurement**

**WCDMA/HSDPA/HSUPA band II, IV, V**

The EUT output power was controlled by simulator. Set Communication Tester CMU200 function key “UE Power Control” and enter max rated power 24dBm. The EUT is going to be set to max output power to 24dBm. Then record the read (see page 15 for measurement data) . The min. power was measures by a function key “minimum power” then record the read. It is -52.3dBm. The power variation can be 0.1dB step by setting.

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## 7. ERP, EIRP MEASUREMENT

### 7.1. Standard Applicable:

According to FCC §2.1046

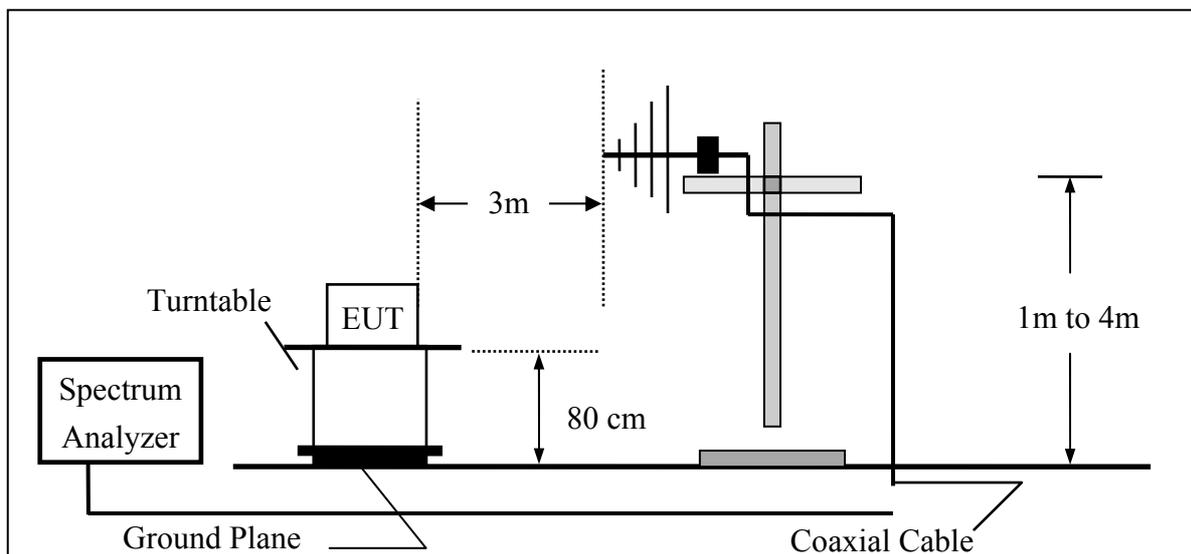
FCC 22.913(a) Mobile station is limited to 7W ERP.

FCC 24.232(b) Mobile station is limited to 2W EIRP.

FCC 27.50(d)(4) Fixed, mobile, and portable (hand-held) stations are limited to 1W EIRP.

### 7.2. Test SET-UP (Block Diagram of Configuration):

(A) Radiated Power Test Set-Up, Frequency Below 1000MHz



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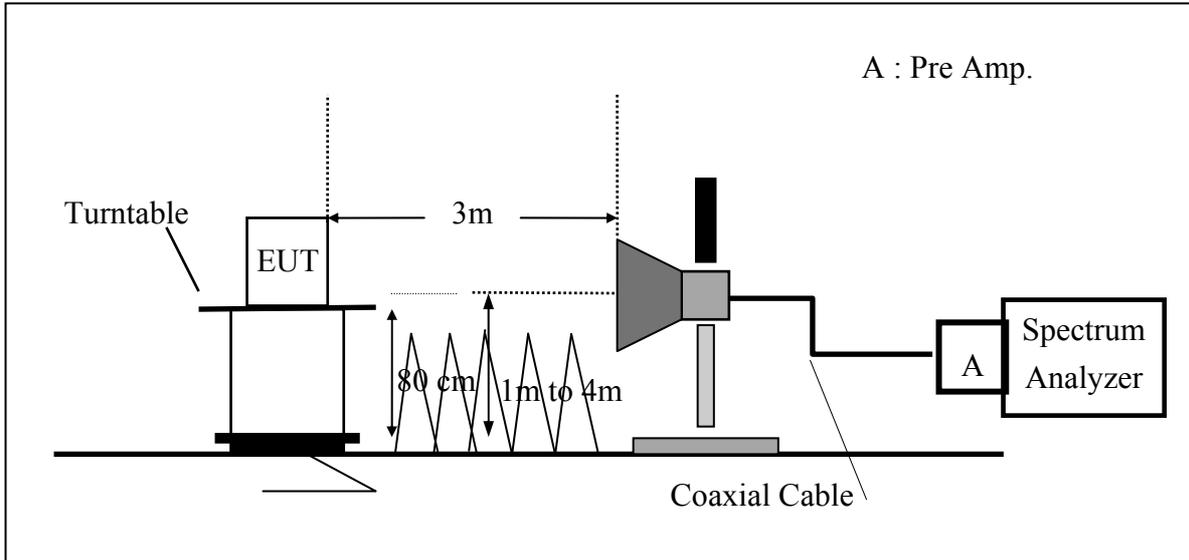
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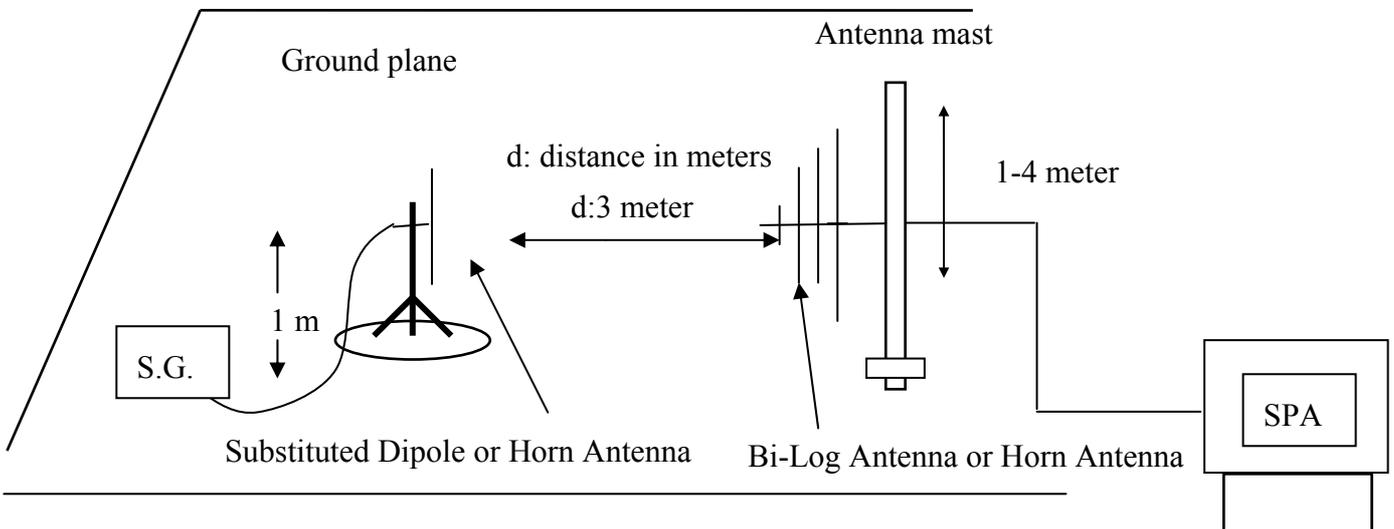
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(B) Radiated Power Test Set-UP Frequency Over 1 GHz



(C) Substituted Method Test Set-UP



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### 7.3. Measurement Procedure:

The EUT was placed on a non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer.

During the measurement, the EUT was communication with the station. The highest emission was recorded with the rotation of the turntable and the lowering of the test antenna from 4m to 1m. The reading was recorded and the field strength (E in dBuV/m) was calculated.

ERP in frequency band 824.2 –848.80MHz were measured using a substitution method. The EUT was replaced by dipole antenna connected, the S.G. output was recorded and ERP was calculated as follows:

EIRP in frequency band 1710-1755MHz and 1850.2 –1909.8MHz were measured using a substitution method. The EUT was replaced by a horn antenna connected, the S.G. output was recorded and EIRP was calculated as follows:

$$\text{ERP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBd)} - \text{Cable Loss (dB)}$$

$$\text{EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable Loss (dB)}$$

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Spectrum setting:

1. Detector = Peak, marker the highest value of the detector by maximum hold, set RBW wide enough to capture the entire signal of emission, and  $VBW \geq 3 \times RBW$ .

Or,

2. KDB 971168 D01 Power Meas License Digital Systems v01 is adopted, and the procedure as lists under item 4, Measurement of the Average Power over the Fundamental Signal Bandwidth, is followed to set correspondingly for the acquisition of proper measurement data.

Set frequency = nominal signal center frequency;

Set span = 2 X occupied BW;

Set RBW  $\approx$  1~5% of the span, not to exceed 1 MHz

Set VBW = 3 x RBW;

Select average power (RMS) detector

Set sweep time and number of measurement points to achieve a minimum of 1 millisecond/pt integration time (ex. Point = 601points, then sweep time =  $601 \times 10^{-3} = 6s$ ).

Activate trace averaging routine over a minimum of 10 sweeps;

Activate marker/span pair and set span = signal or channel bandwidth;

Activate the band/interval power marker function;

Record the band power level;

Record adjusted value as the average signal power level. Then activate the occupied bandwidth measurement function.

#### 7.4. Measurement Equipment Used:

Refer to section 2.4 in this report

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**7.5. Measurement Result: (Peak) –using option of peak measurement**

EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
	MHz		V/H	dBm	dBd	dB	dBm	dBm
GPRS 850	824.2	128	V	21.51	3.55	-3.03	22.04	38.45
			H	19.28	3.55	-3.03	19.80	38.45
	836.6	190	V	24.00	3.56	-3.07	<b>24.50</b>	38.45
			H	22.40	3.56	-3.07	22.89	38.45
	848.8	251	V	18.90	3.57	-3.11	19.36	38.45
			H	17.73	3.57	-3.11	18.19	38.45

EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
	MHz		V/H	dBm	dBd	dB	dBm	dBm
EDGE 850	824.2	128	V	18.56	3.55	-3.03	<b>19.09</b>	38.45
			H	14.86	3.55	-3.03	15.38	38.45
	836.6	190	V	17.97	3.56	-3.07	18.46	38.45
			H	14.59	3.56	-3.07	15.08	38.45
	848.8	251	V	16.38	3.57	-3.11	16.84	38.45
			H	14.10	3.57	-3.11	14.56	38.45

**Remark :** (1) The RBW,VBW of SPA for frequency RBW=300 KHz, VBW=1MHz

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
GPRS 1900	1850.2	512	V	27.71	5.54	-4.67	<b>28.58</b>	33.00
			H	1.18	5.54	-4.67	2.05	33.00
	1880.0	661	V	26.79	5.49	-4.70	27.58	33.00
			H	1.48	5.49	-4.70	2.27	33.00
	1909.8	810	V	26.98	5.44	-4.74	27.69	33.00
			H	4.03	5.44	-4.74	4.74	33.00

EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
EDGE 1900	1850.2	512	V	26.82	5.54	-4.67	27.70	33.00
			H	0.10	5.54	-4.67	0.97	33.00
	1880.0	661	V	27.22	5.49	-4.70	<b>28.00</b>	33.00
			H	1.13	5.49	-4.70	1.92	33.00
	1909.8	810	V	26.32	5.44	-4.74	27.02	33.00
			H	2.59	5.44	-4.74	3.30	33.00

**Remark :**

- (1) The RBW,VBW of SPA for frequency RBW=300K, VBW=1MHz

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
WCDMA B2	1852.4	9262	V	23.02	5.54	-4.67	23.89	33.00
			H	-0.20	5.54	-4.67	0.67	33.00
	1880.0	9400	V	24.10	5.49	-4.70	<b>24.89</b>	33.00
			H	0.66	5.49	-4.70	1.44	33.00
	1907.6	9538	V	23.14	5.45	-4.74	23.85	33.00
			H	1.83	5.45	-4.74	2.54	33.00

EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
HSDPA B2	1852.4	9262	V	23.05	5.54	-4.67	23.92	33.00
			H	-1.43	5.54	-4.67	-0.56	33.00
	1880.0	9400	V	24.53	5.49	-4.71	<b>25.32</b>	33.00
			H	-0.02	5.49	-4.70	0.77	33.00
	1907.6	9538	V	23.68	5.45	-4.74	24.39	33.00
			H	0.70	5.45	-4.74	1.41	33.00

EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
HSUPA B2	1852.4	9262	V	22.62	5.54	-4.67	23.49	33.00
			H	-1.12	5.54	-4.67	-0.25	33.00
	1880.0	9400	V	23.97	5.49	-4.7	<b>24.76</b>	33.00
			H	0.26	5.49	-4.71	1.05	33.00
	1907.6	9538	V	23.24	5.45	-4.74	23.95	33.00
			H	1.08	5.45	-4.74	1.79	33.00

**Remark :**

- (1) The RBW,VBW of SPA for frequency RBW= 5MHz , VBW= 8MHz

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
WCDMA B4	1712.4	1312	V	23.18	5.79	-4.50	<b>24.46</b>	30.00
			H	-3.66	5.79	-4.50	-2.38	30.00
	1732.6	1413	V	21.89	5.75	-4.53	23.11	30.00
			H	-1.91	5.75	-4.53	-0.69	30.00
	1752.6	1513	V	21.68	5.71	-4.55	22.84	30.00
			H	-2.62	5.71	-4.55	-1.46	30.00

EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
HSDPA B4	1712.4	1312	V	24.08	5.78	-4.50	<b>25.36</b>	30.00
			H	-3.73	5.79	-4.50	-2.44	30.00
	1732.6	1413	V	22.73	5.75	-4.53	23.95	30.00
			H	-2.44	5.75	-4.52	-1.21	30.00
	1752.6	1513	V	22.84	5.71	-4.55	24.00	30.00
			H	-2.68	5.71	-4.55	-1.52	30.00

EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
HSUPA B4	1712.4	1312	V	24.12	5.79	-4.50	<b>25.40</b>	30.00
			H	-3.95	5.79	-4.50	-2.66	30.00
	1732.6	1413	V	22.66	5.75	-4.53	23.88	30.00
			H	-2.61	5.75	-4.53	-1.38	30.00
	1752.6	1513	V	22.4	5.71	-4.55	23.56	30.00
			H	-3.18	5.71	-4.55	-2.02	30.00

**Remark :**

- (1) The RBW,VBW of SPA for measurement RBW= 1MHz , VBW= 3MHz

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
	MHz		V/H	dBm	dBd	dB	dBm	dBm
WCDMA B5	826.4	4132	V	16.13	3.56	-3.04	16.65	38.45
			H	13.29	3.56	-3.04	13.81	38.45
	836.6	4183	V	16.35	3.56	-3.07	<b>16.85</b>	38.45
			H	13.43	3.56	-3.07	13.92	38.45
	846.6	4233	V	15.19	3.57	-3.10	15.66	38.45
			H	11.15	3.57	-3.10	11.61	38.45

EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
	MHz		V/H	dBm	dBd	dB	dBm	dBm
HSDPA B5	826.4	4132	V	16.26	3.56	-3.03	16.78	38.45
			H	12.72	3.56	-3.04	13.24	38.45
	836.6	4183	V	16.38	3.56	-3.07	16.87	38.45
			H	13.01	3.56	-3.07	13.50	38.45
	846.6	4233	V	17.75	3.57	-3.10	<b>18.22</b>	38.45
			H	12.39	3.57	-3.10	12.86	38.45

EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
	MHz		V/H	dBm	dBd	dB	dBm	dBm
HSUPA B5	826.4	4132	V	16.38	3.56	-3.04	16.90	38.45
			H	12.73	3.56	-3.03	13.25	38.45
	836.6	4183	V	16.59	3.56	-3.07	<b>17.08</b>	38.45
			H	13.32	3.56	-3.07	13.81	38.45
	846.6	4233	V	15.67	3.57	-3.10	16.13	38.45
			H	12.29	3.57	-3.10	12.76	38.45

**Remark :**

- (1) The RBW,VBW of SPA for frequency RBW= 5MHz , VBW= 8MHz

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## 8. OCCUPIED BANDWIDTH MEASUREMENT

### 8.1. Standard Applicable:

According to §FCC 2.1049 (99%)

### 8.2. Test Set-up:

Refer to section 6.2 in this report

### 8.3. Measurement Procedure:

The EUT's output RF connector was connected with a short cable to the spectrum analyzer, RBW was set to about 1% of emission BW, VBW= 3 times RBW, -20dBc display line was placed on the screen (or 20dB bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace. Then set RBW to 99% bandwidth, RBW= 1%, VBW= 3 RBW, with span  $> 2 * \text{Signal BW}$ , set % Power = 99%.

### 8.4. Measurement Equipment Used:

Refer to section 2.4 in this report

### 8.5. Measurement Result:

Refer to next pages.

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**99% Bandwidth**

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
GPRS 850	824.20	128	0.239
	836.60	190	0.242
	848.80	251	<b>0.245</b>

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
GPRS 1900	1850.20	512	0.245
	1880.00	661	<b>0.248</b>
	1909.80	810	0.247

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
EDGE 850	824.20	128	0.238
	836.60	190	0.235
	848.80	251	<b>0.249</b>

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
EDGE 1900	1850.20	512	0.248
	1880.00	661	<b>0.249</b>
	1909.80	810	0.245

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EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
WCDMA II	1852.40	9262	<b>4.0748</b>
	1880.00	9400	4.0409
	1907.60	9538	4.0496

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
WCDMA IV	1712.40	1312	<b>4.0611</b>
	1732.60	1413	4.0505
	1752.60	1513	4.0554

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
WCDMA V	826.40	4132	4.0528
	836.00	4183	<b>4.0612</b>
	846.60	4233	4.0483

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
HSDPA II	1852.40	9262	<b>4.0622</b>
	1880.00	9400	4.0497
	1907.60	9538	4.0515

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
HSDPA IV	1712.40	1312	<b>4.0662</b>
	1732.60	1413	4.0467
	1752.60	1513	4.0582

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
HSDPA V	826.40	4132	4.0427
	836.60	4183	<b>4.0523</b>
	846.60	4233	4.0428

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EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
HSUPA II	1852.40	9262	<b>4.0660</b>
	1880.00	9400	4.0474
	1907.60	9538	4.0508

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
HSUPA IV	1712.40	1312	4.0452
	1732.60	1413	4.0458
	1752.60	1513	<b>4.0574</b>

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
HSUPA V	826.40	4132	<b>4.0508</b>
	836.60	4183	4.0398
	846.60	4233	4.0430

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99% Bandwidth Test Data

Figure 8-1: GPRS 850 Channel Low

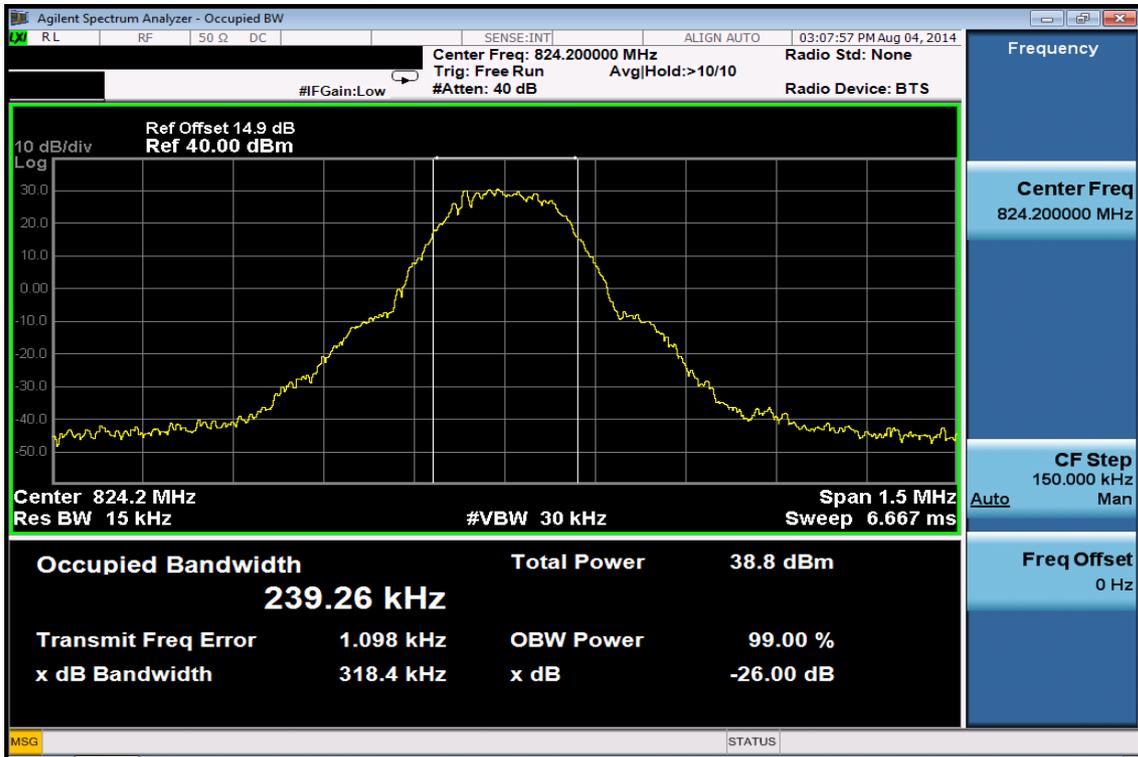
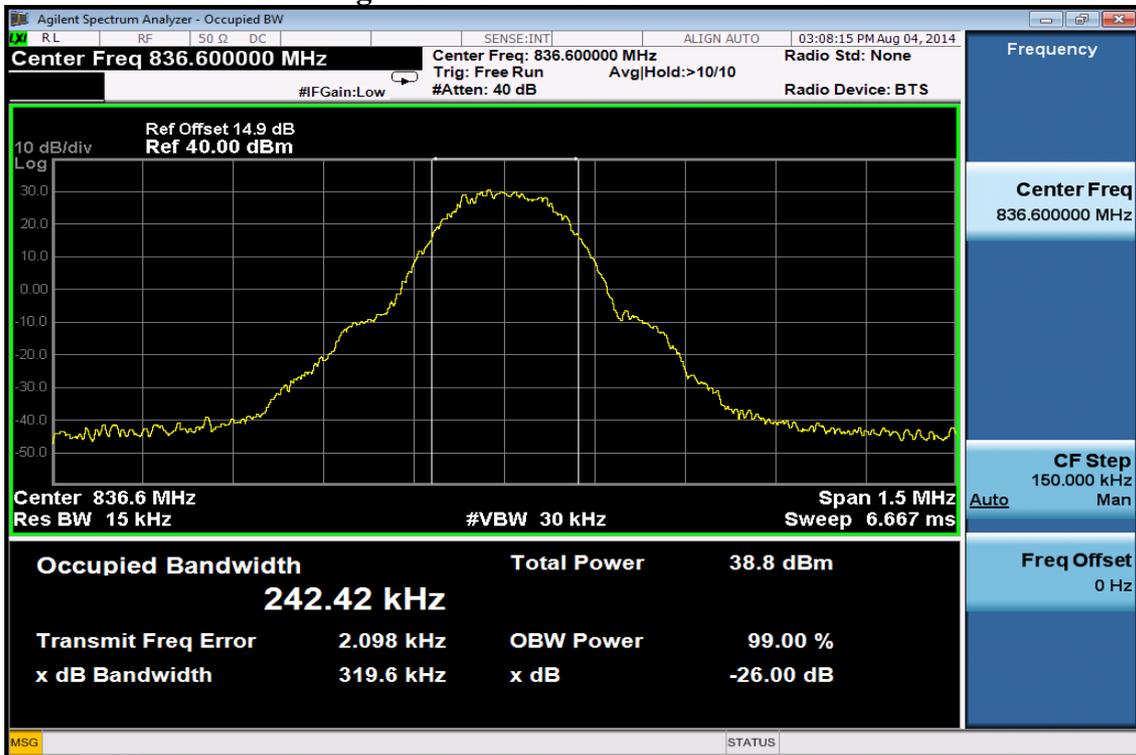


Figure 8-2: GPRS 850 Channel Mid



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Figure 8-3: GPRS 850 Channel High

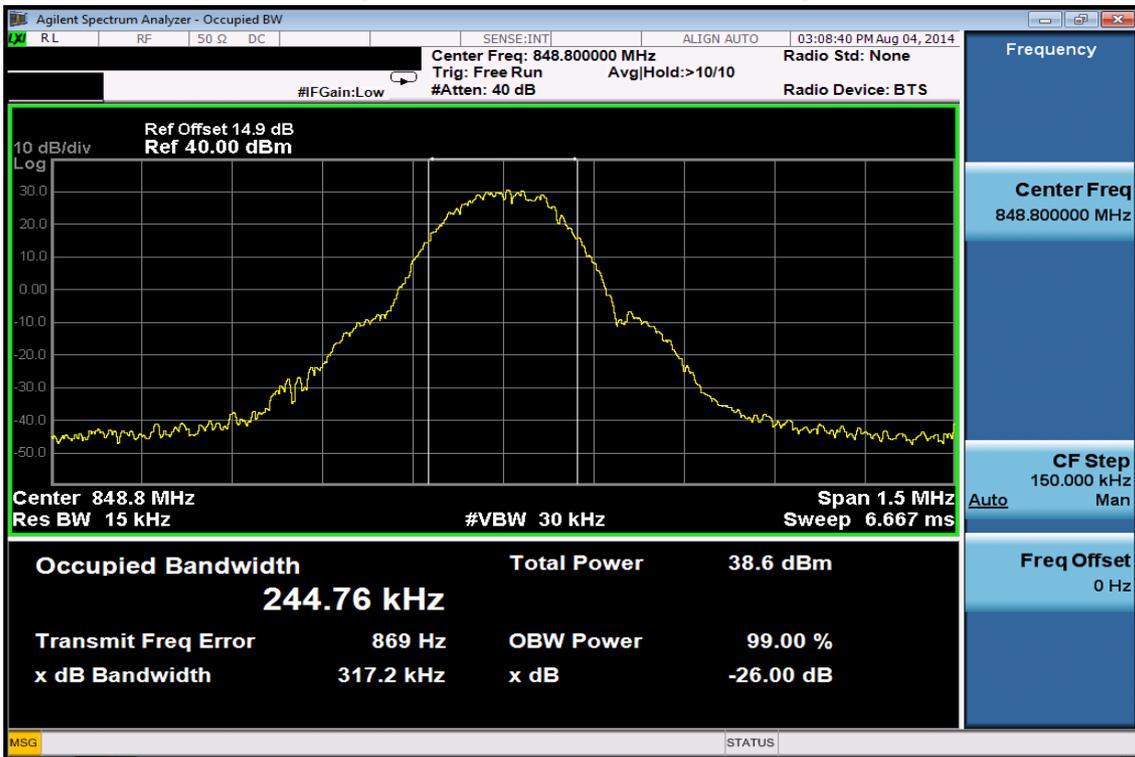
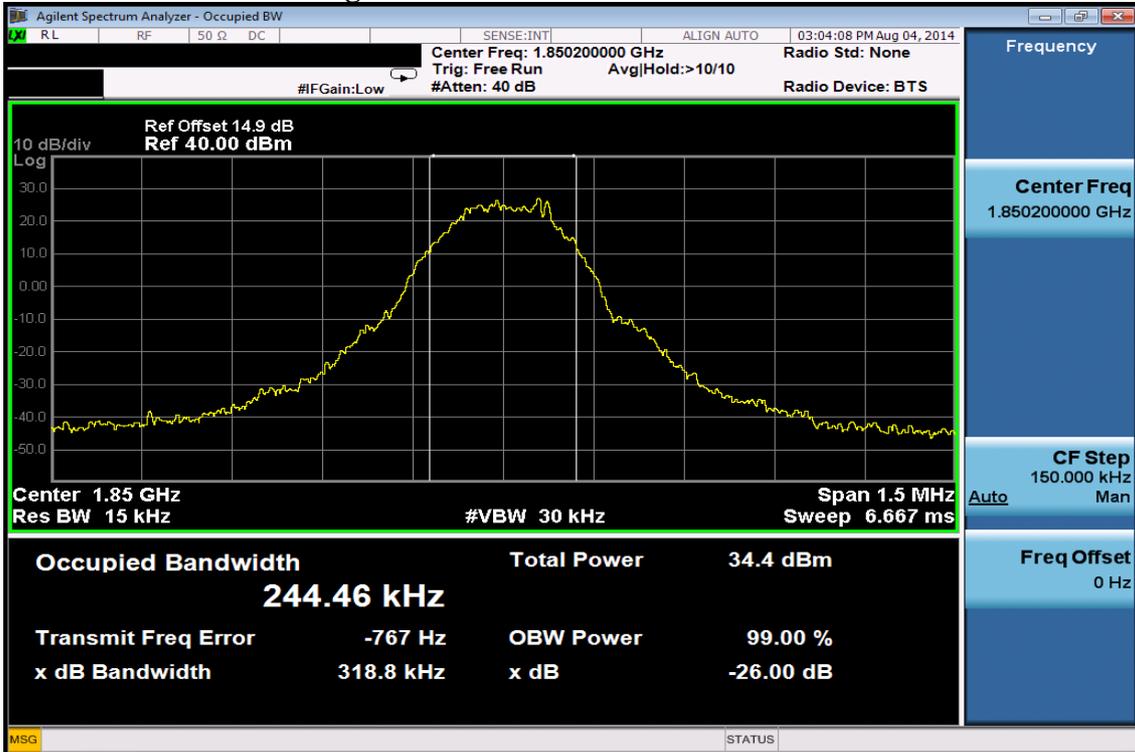


Figure 8-4: GPRS 1900 Channel Low



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Figure 8-5: GPRS 1900 Channel Mid

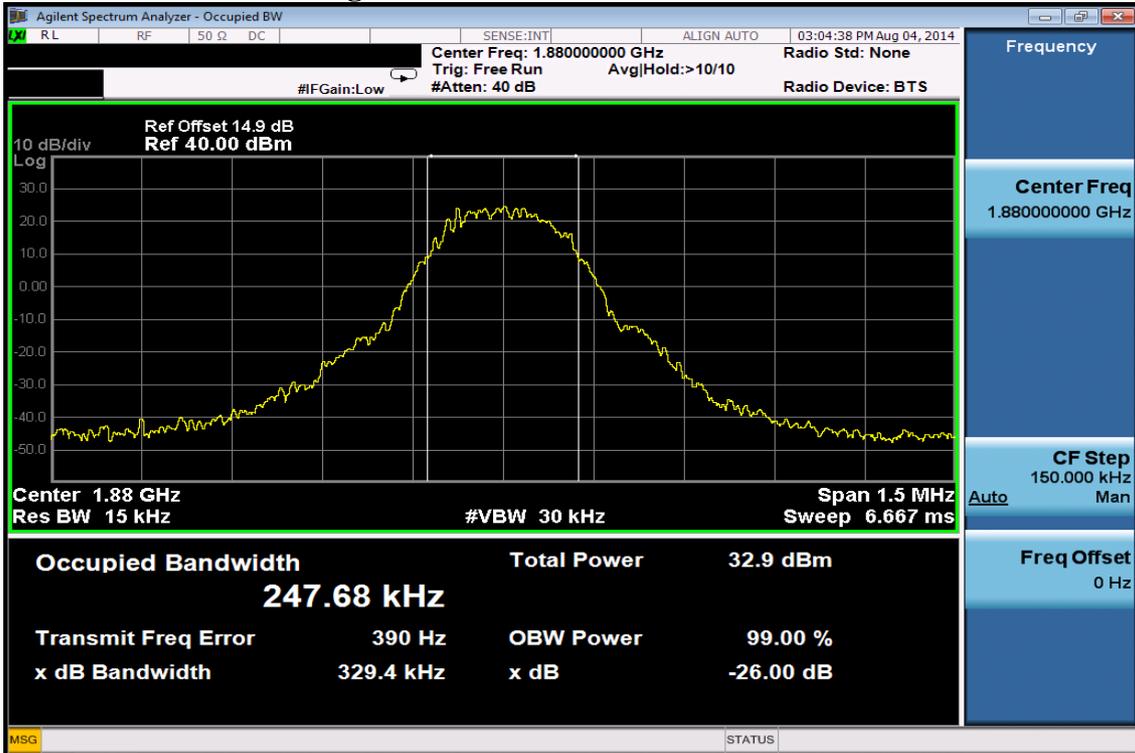
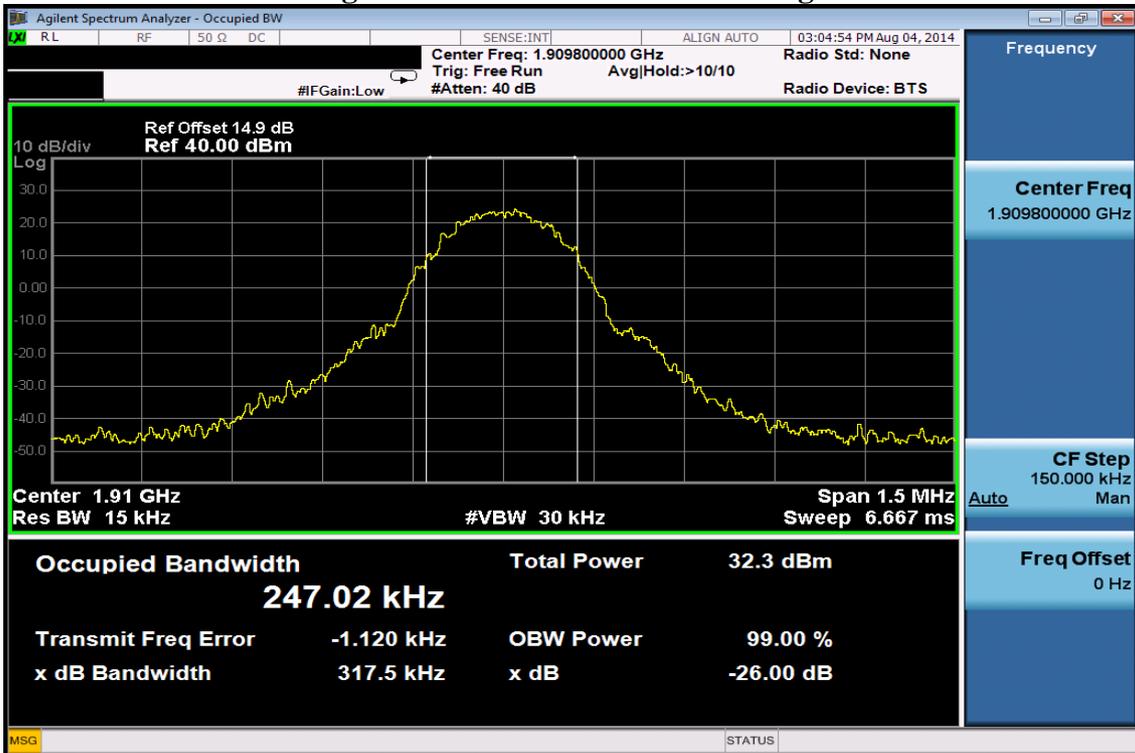


Figure 8-6: GPRS 1900 Channel High



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Figure 8-7: EDGE 850 Channel Low

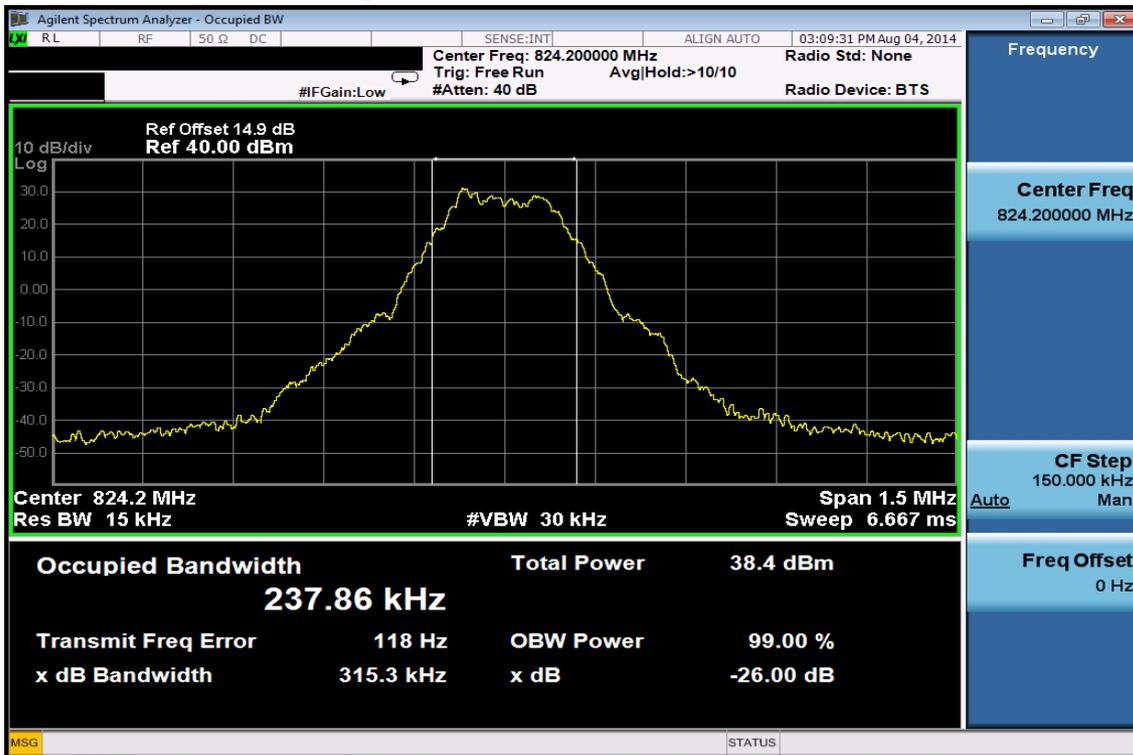
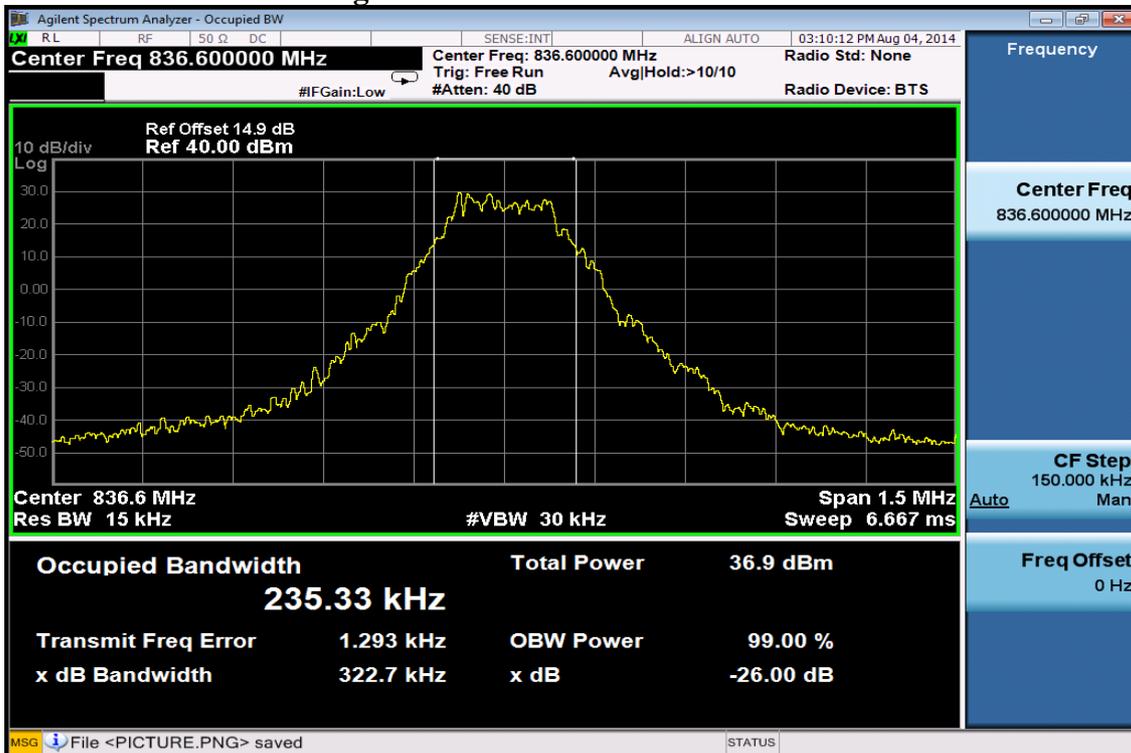


Figure 8-8: EDGE 850 Channel Mid



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GPRS Figure 8-9: EDGE 850 Channel High

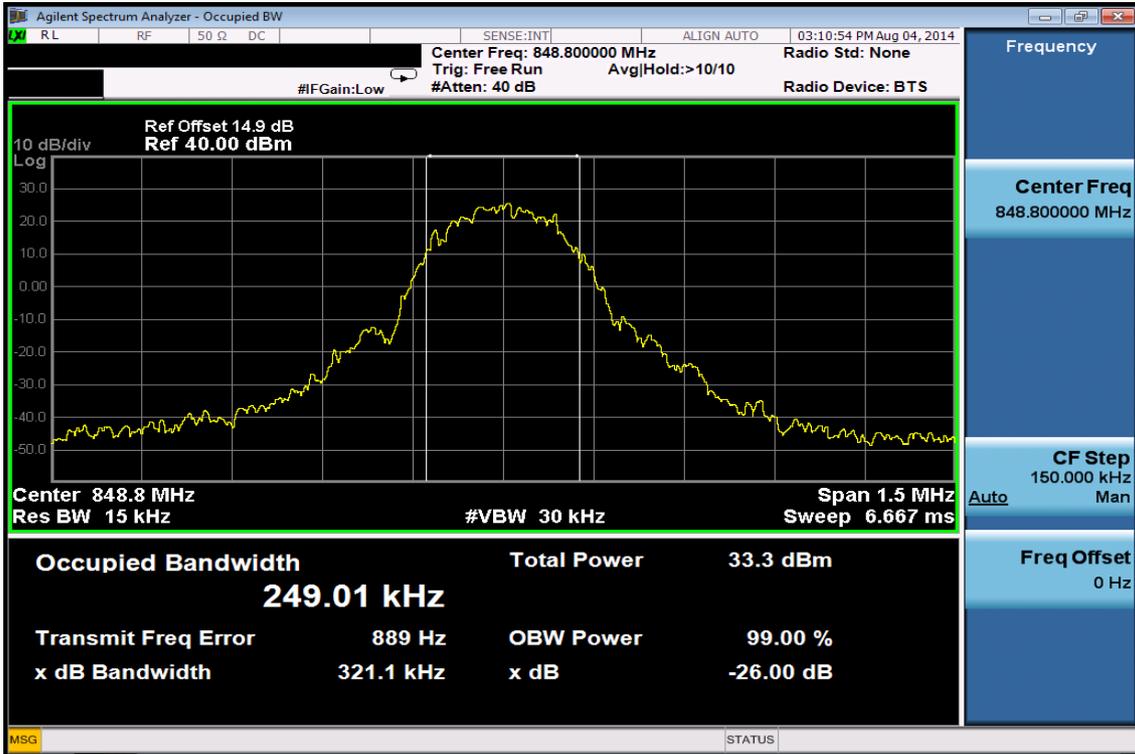
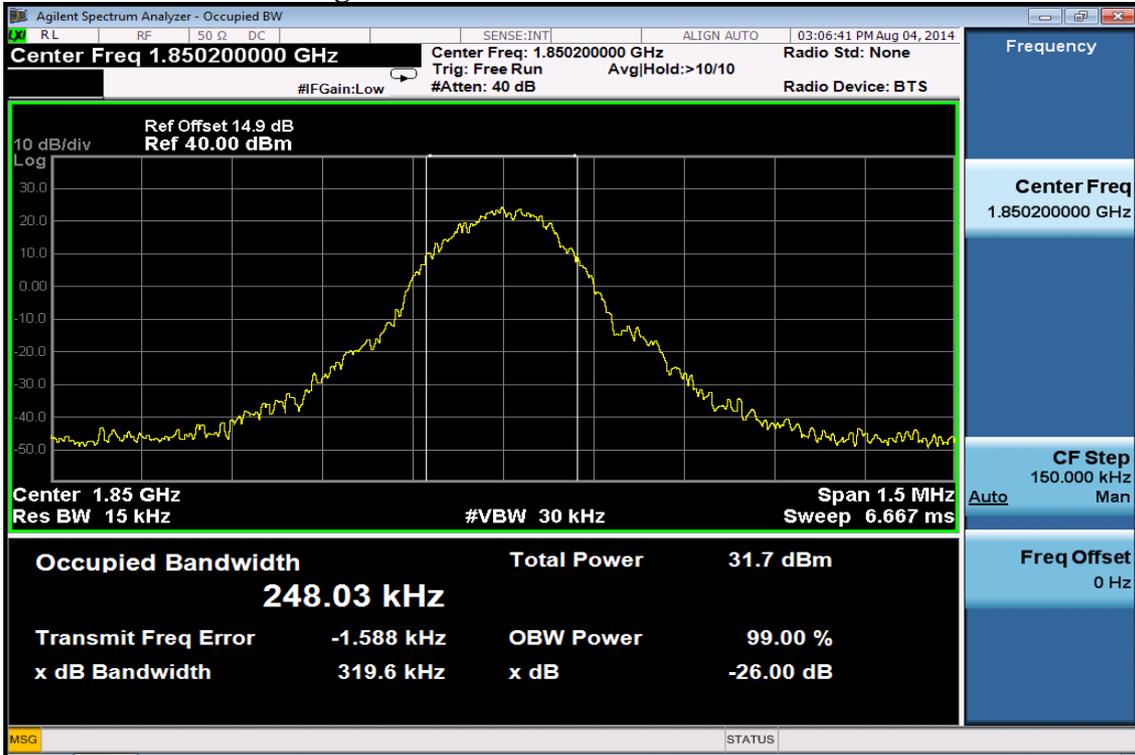


Figure 8-10: EDGE 1900 Channel Low



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Figure 8-11: EDGE 1900 Channel Mid

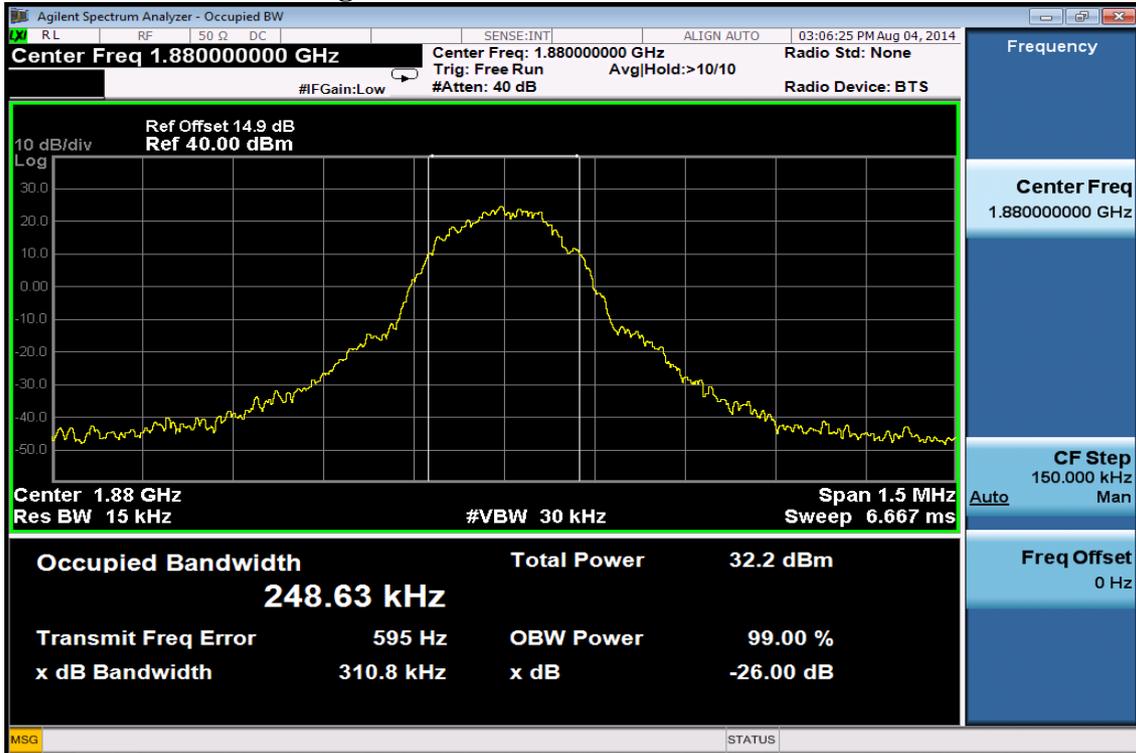
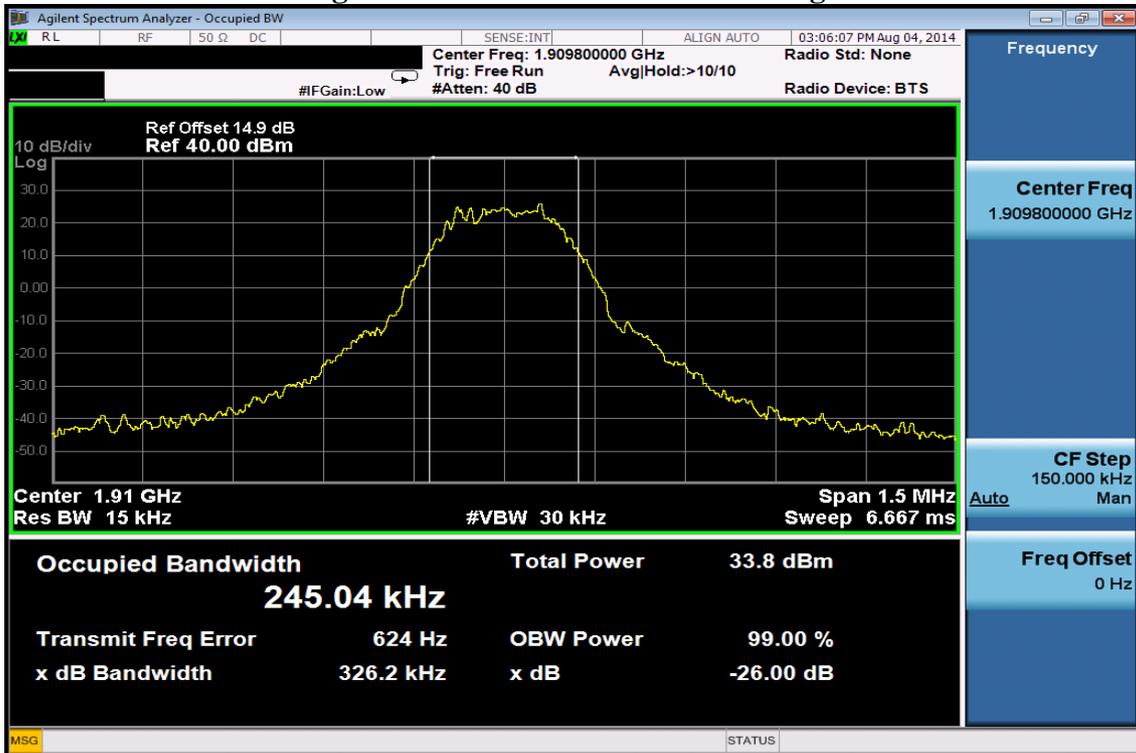


Figure 8-12: EDGE 1900 Channel High



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Figure 8-13: WCDMA II Channel Low

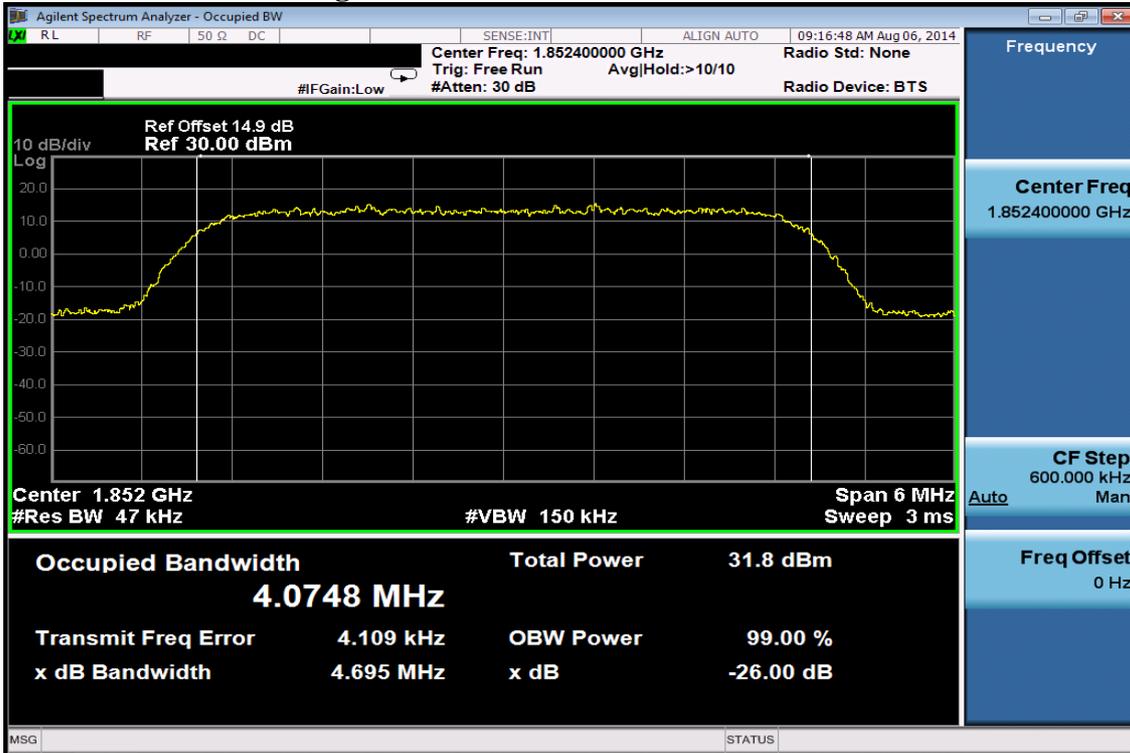
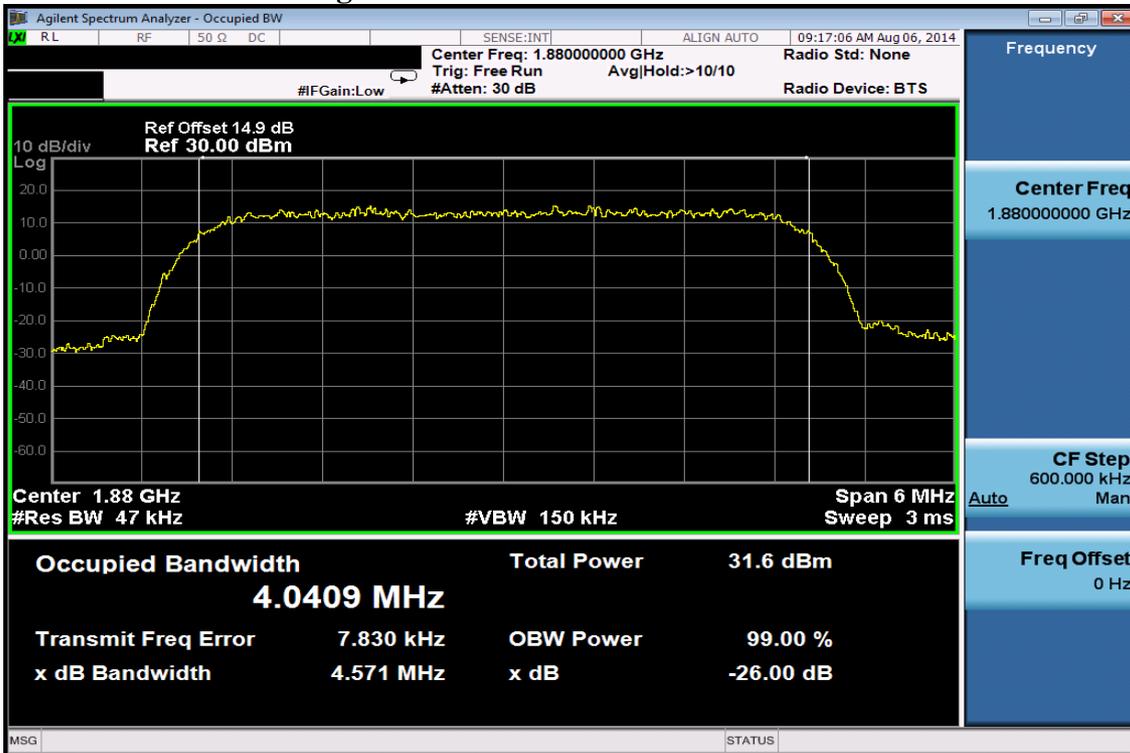


Figure 8-14: WCDMA II Channel Mid



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Figure 8-15: WCDMA II Channel High

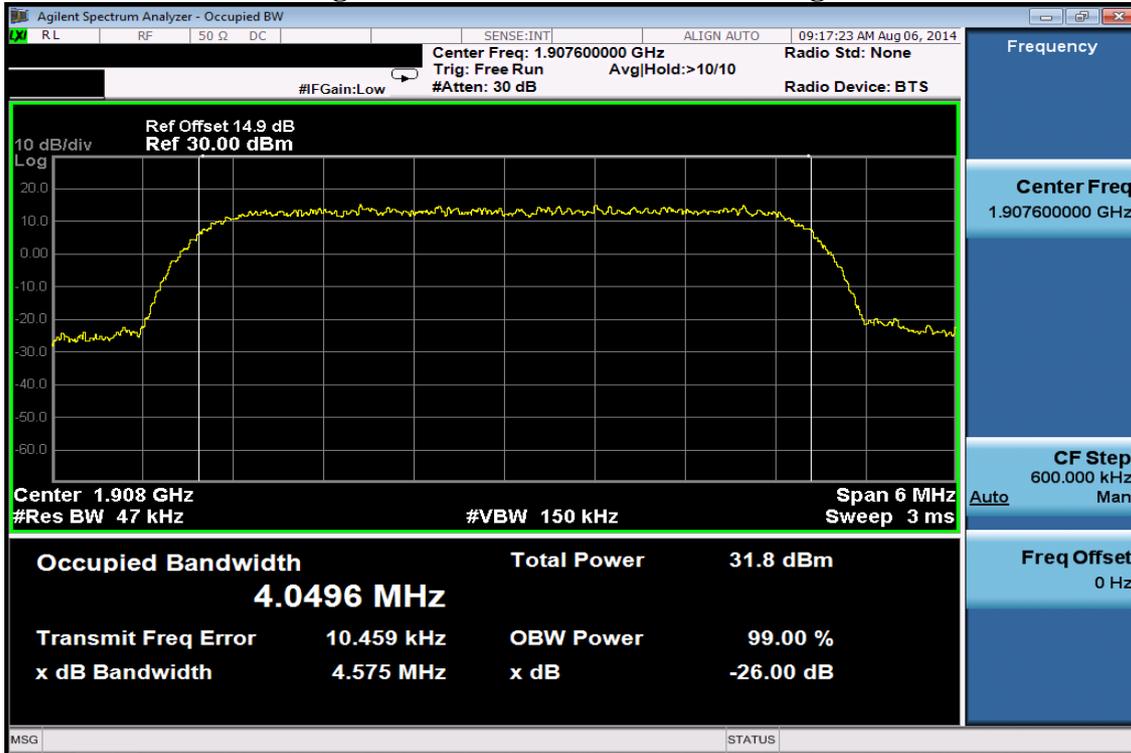
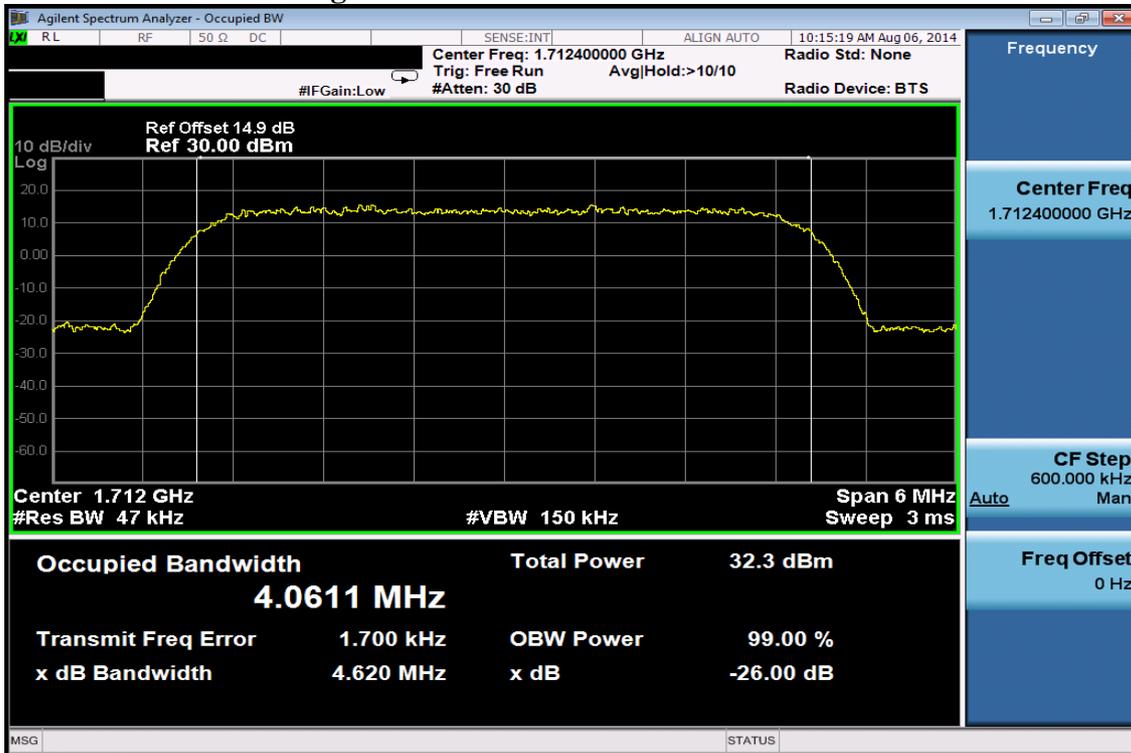


Figure 8-16: WCDMA IV Channel Low



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Figure 8-17: WCDMA IV Channel Mid

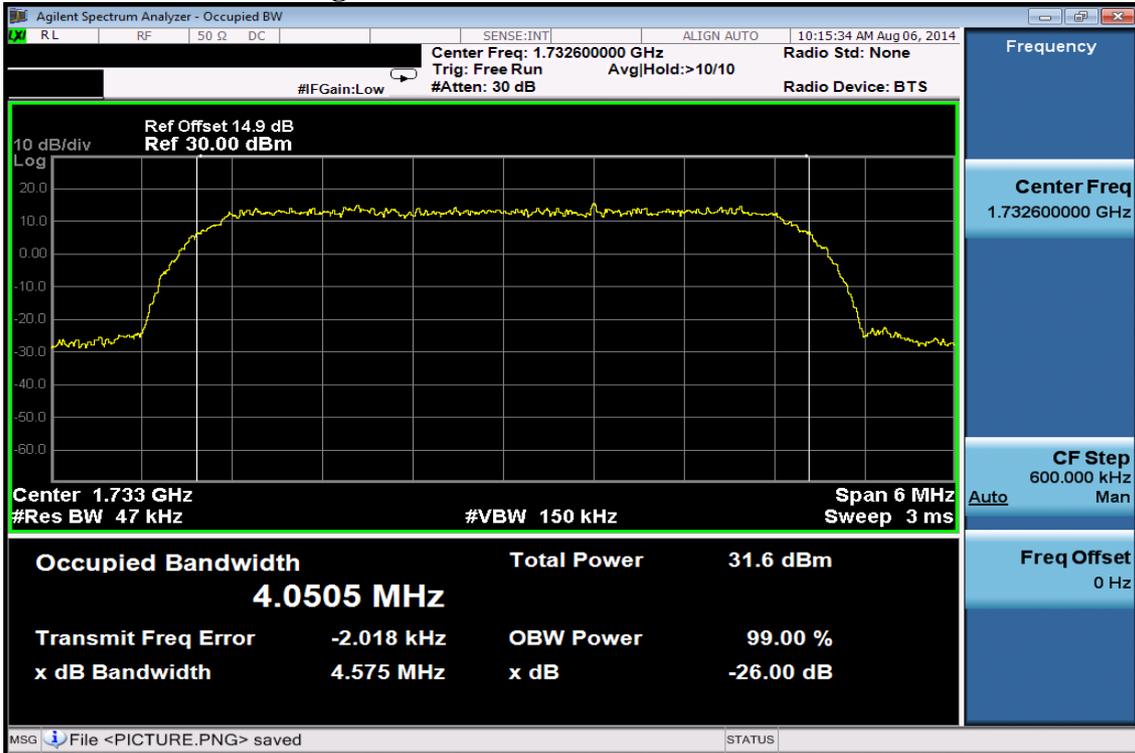
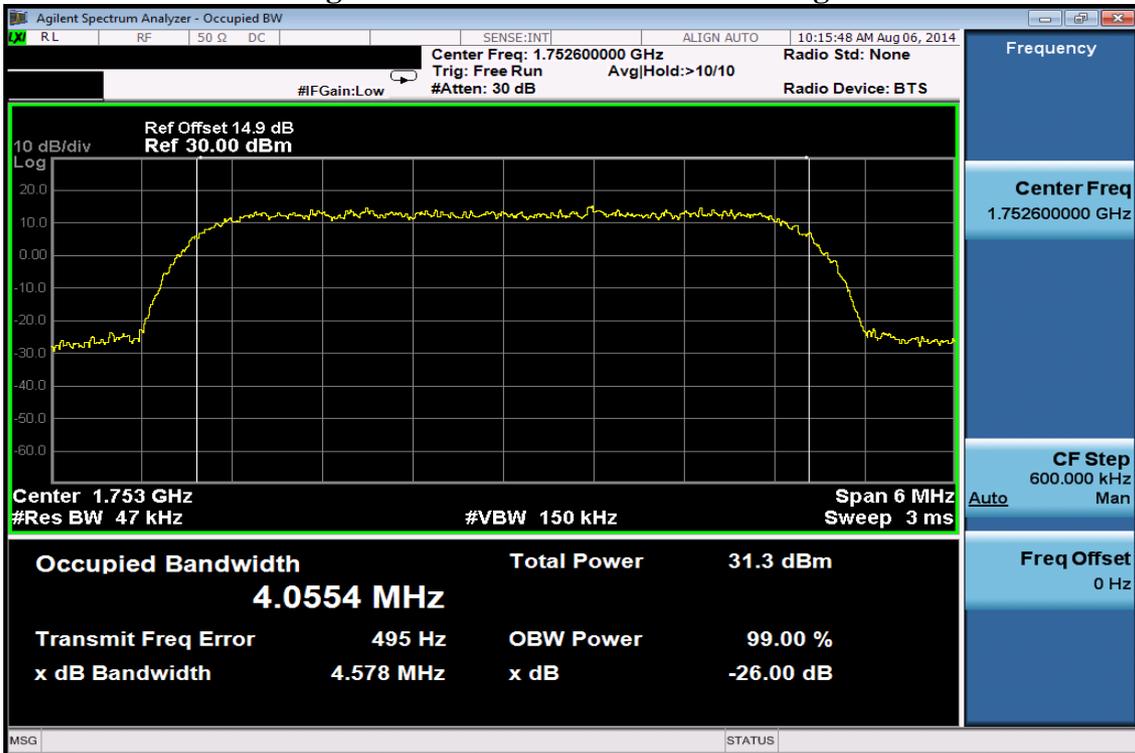


Figure 8-18: WCDMA IV Channel High



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Figure 8-19: WCDMA V Channel Low

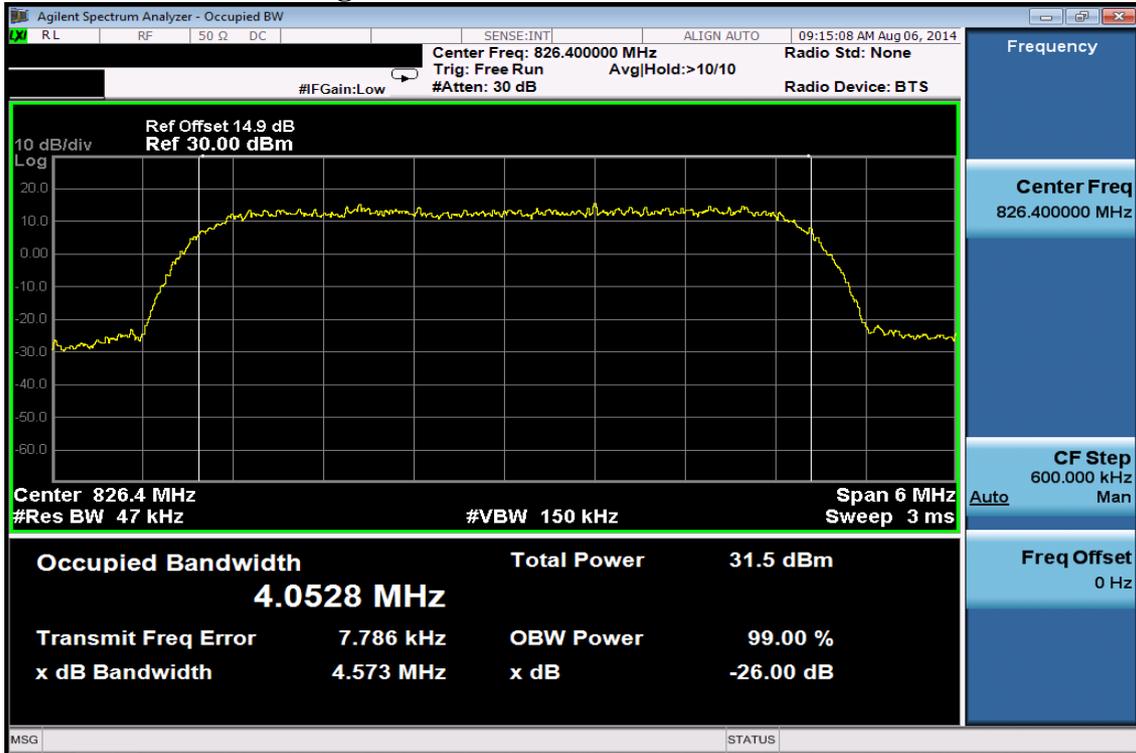
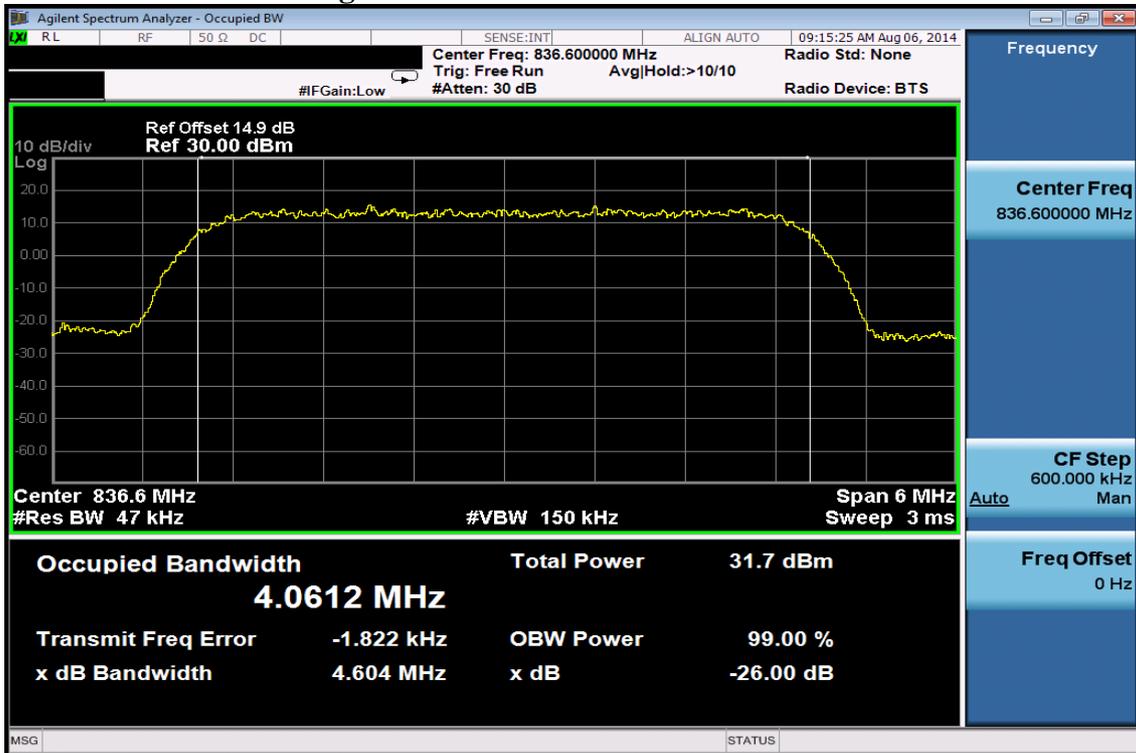


Figure 8-20: WCDMA V Channel Mid



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Figure 8-21: WCDMA V Channel High

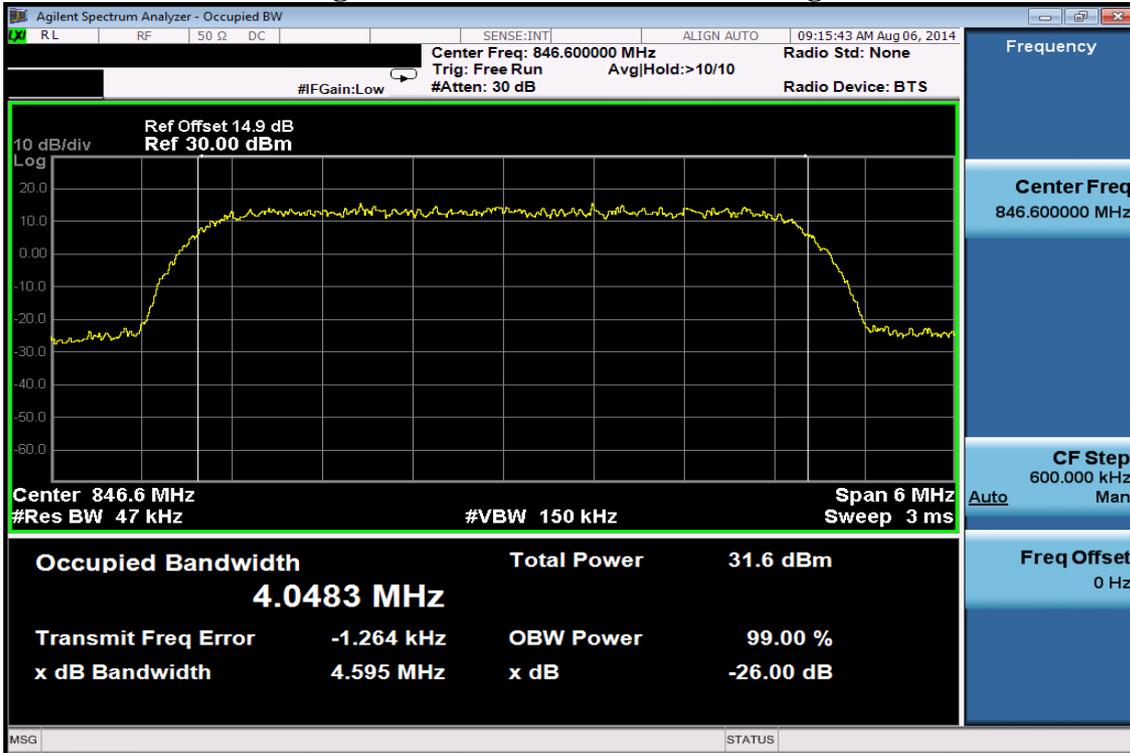
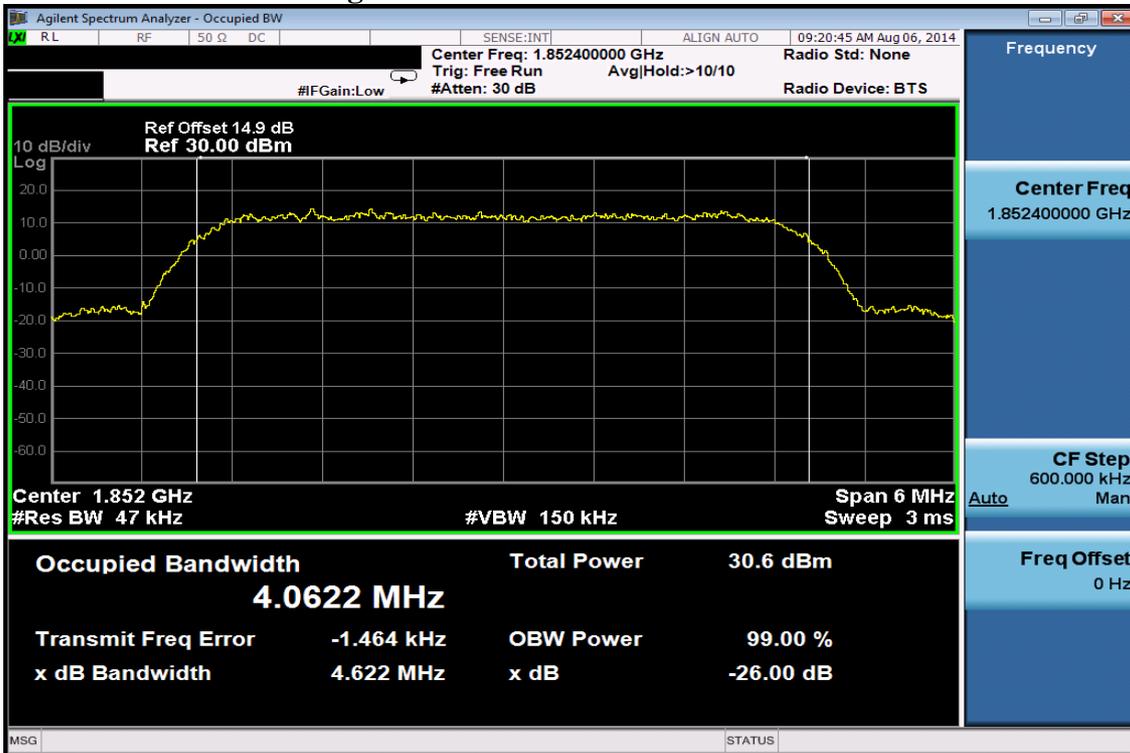


Figure 8-22: HSDPA II Channel Low



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Figure 8-23: HSDPA II Channel Mid

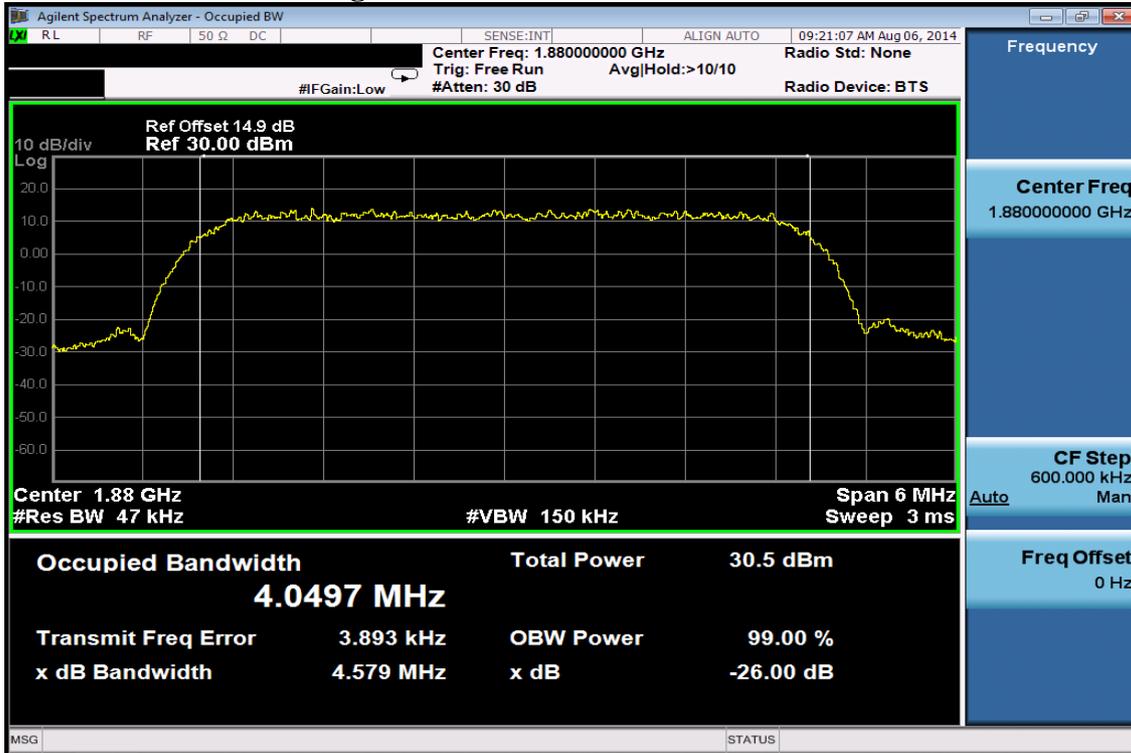
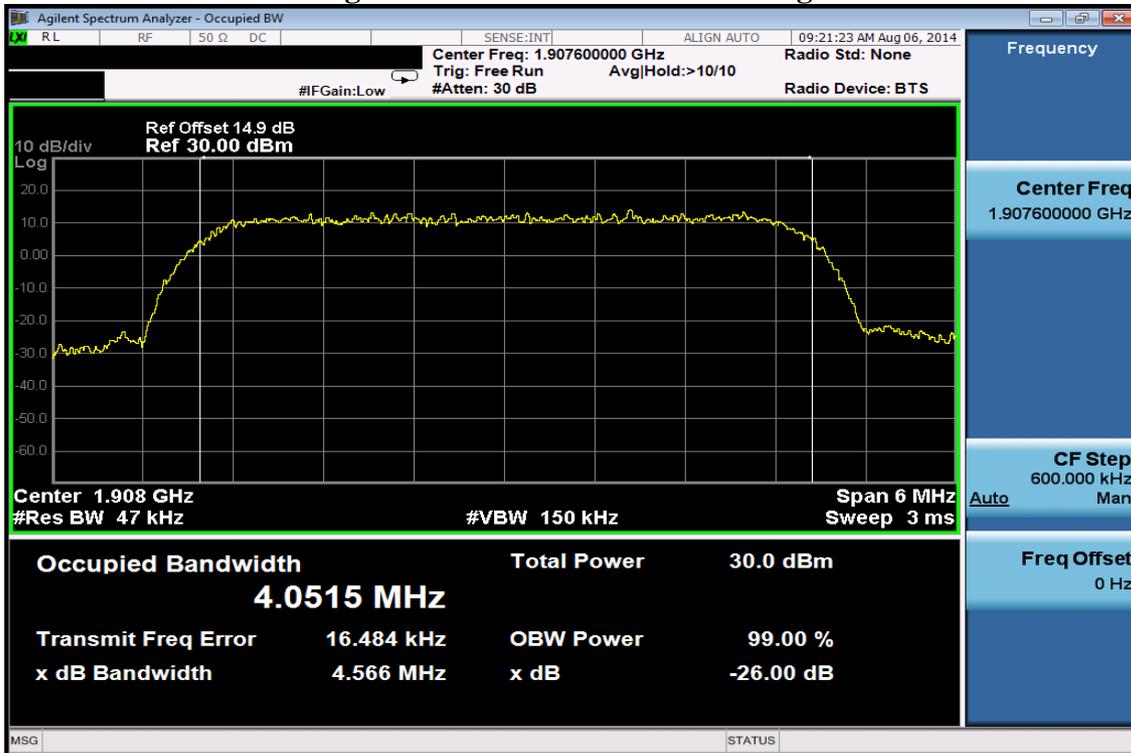


Figure 8-24: HSDPA II Channel High



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Figure 8-25: HSDPA IV Channel Low

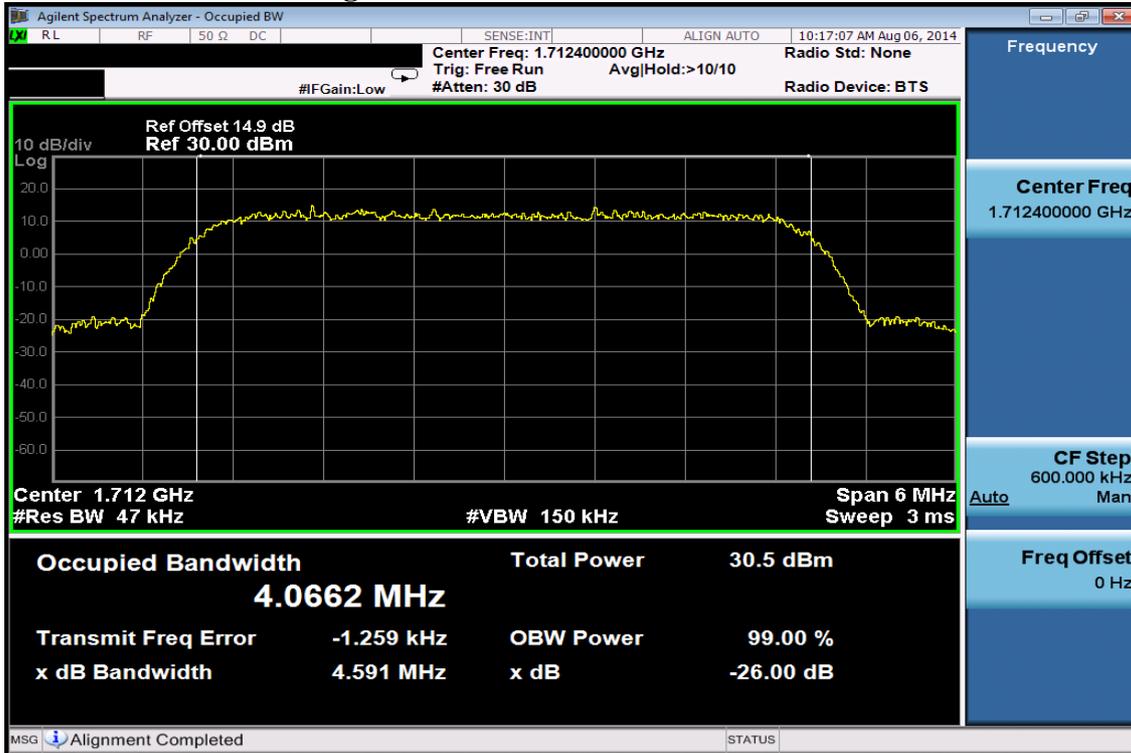
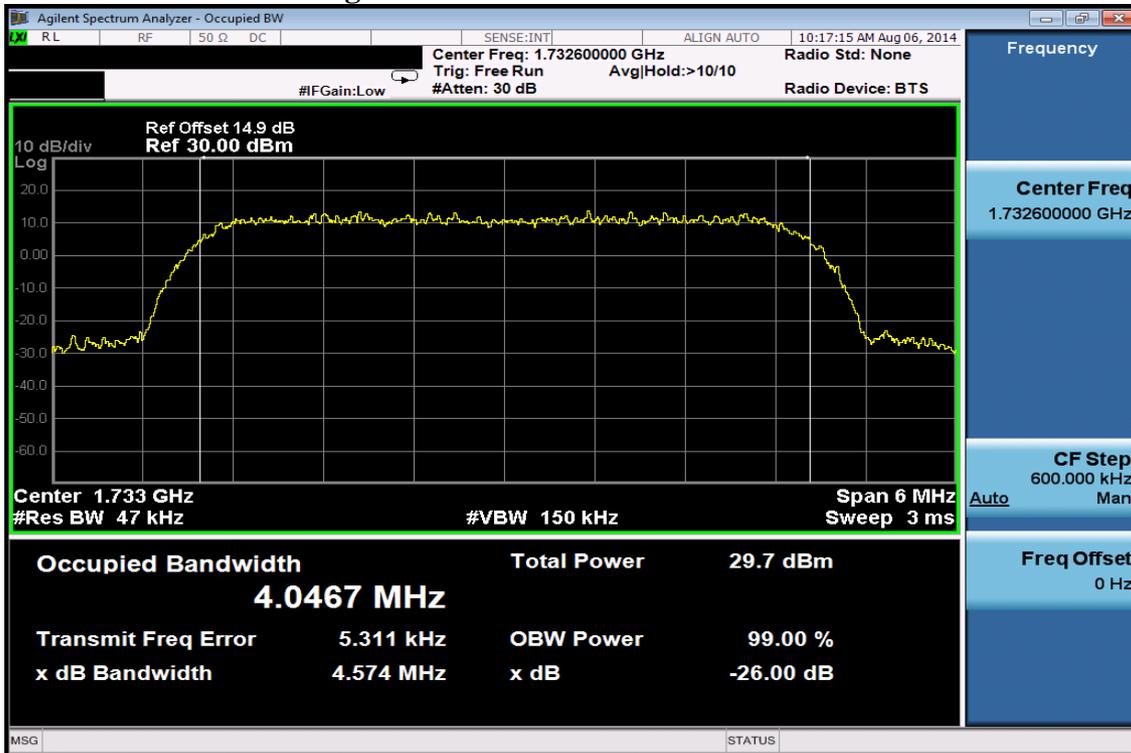


Figure 8-26: HSDPA IV Channel Mid



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Figure 8-27: HSDPA IV Channel High

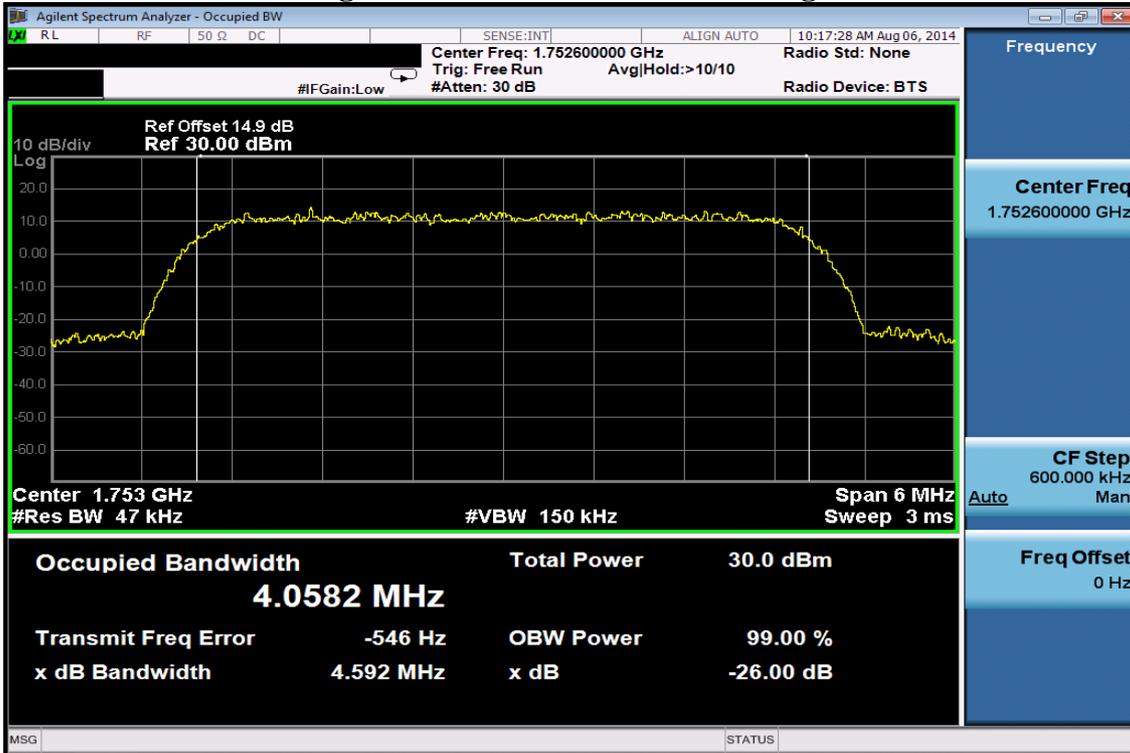
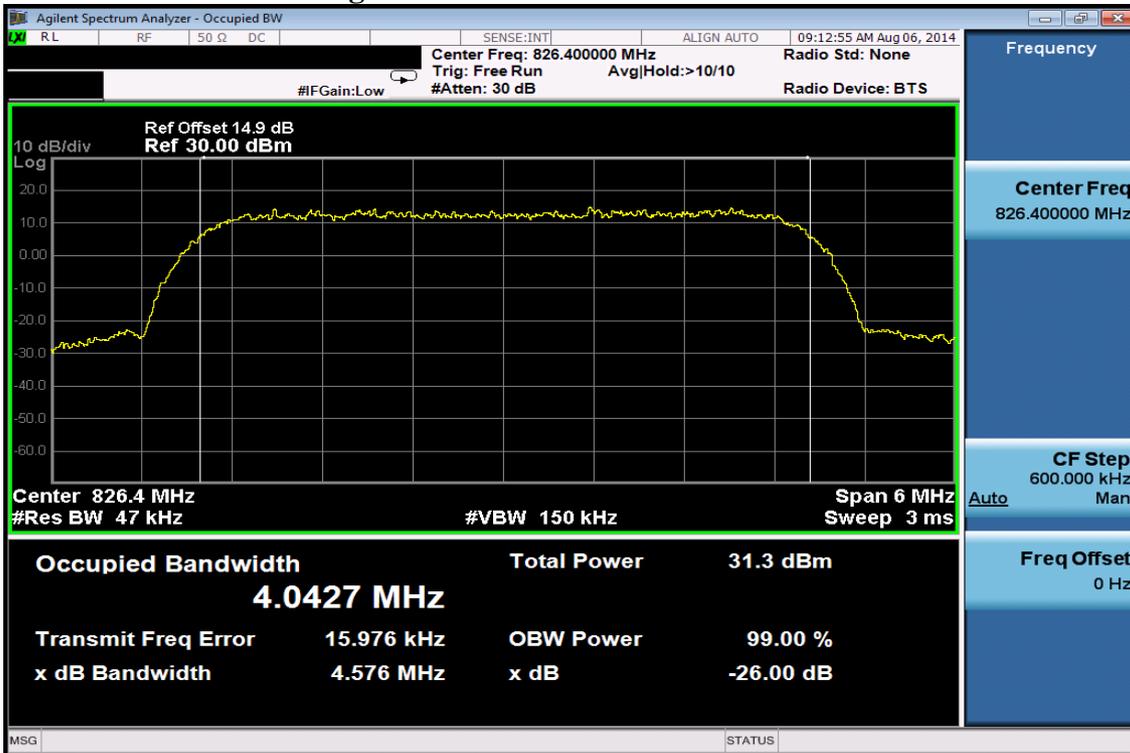


Figure 8-28: HSDPA V Channel Low



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Figure 8-29: HSDPA V Channel Mid

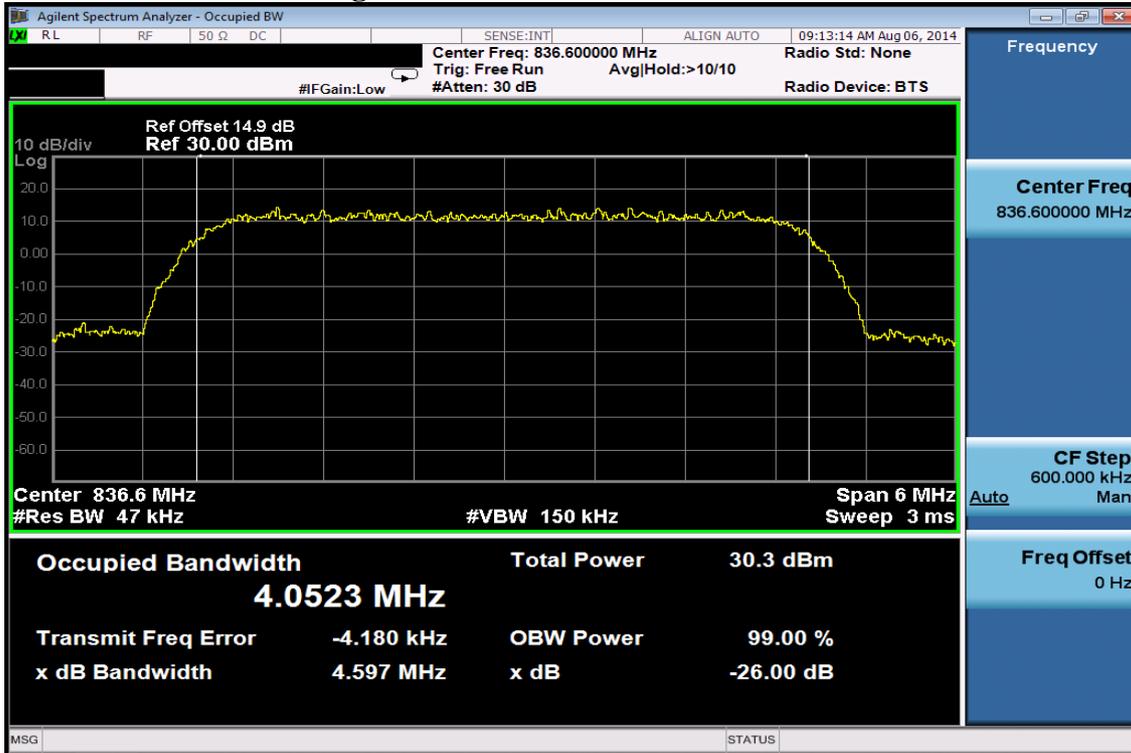
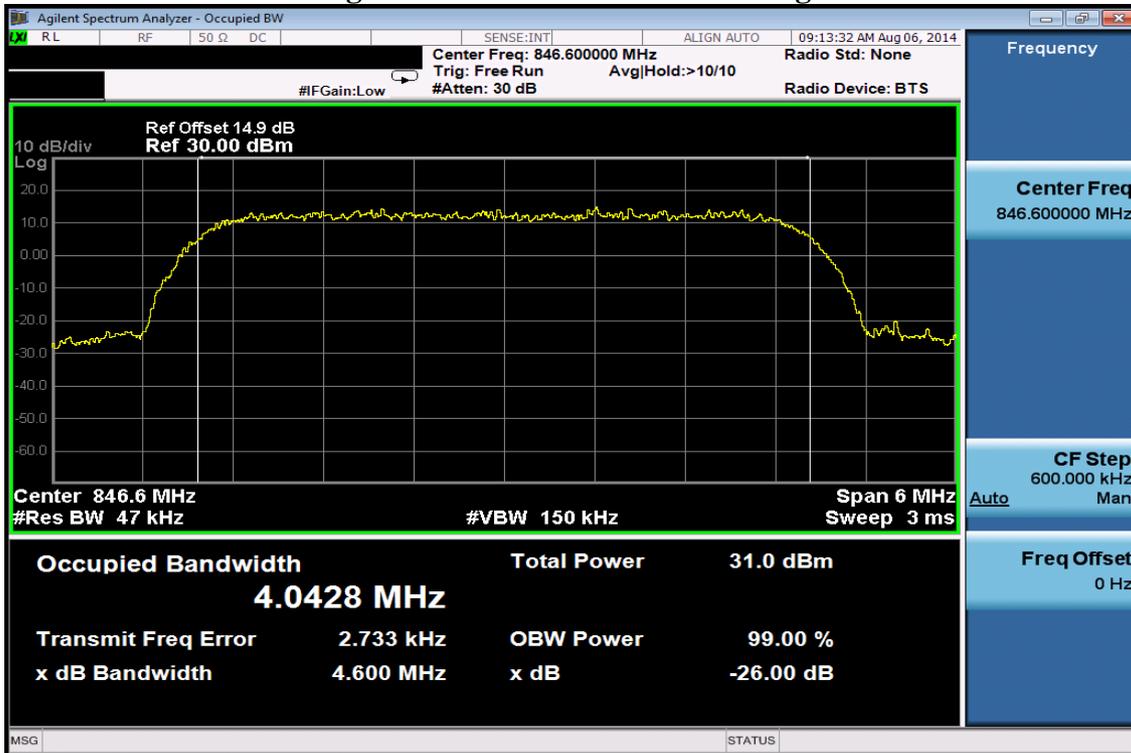


Figure 8-30: HSDPA V Channel High



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Figure 8-31: HSUPA II Channel Low

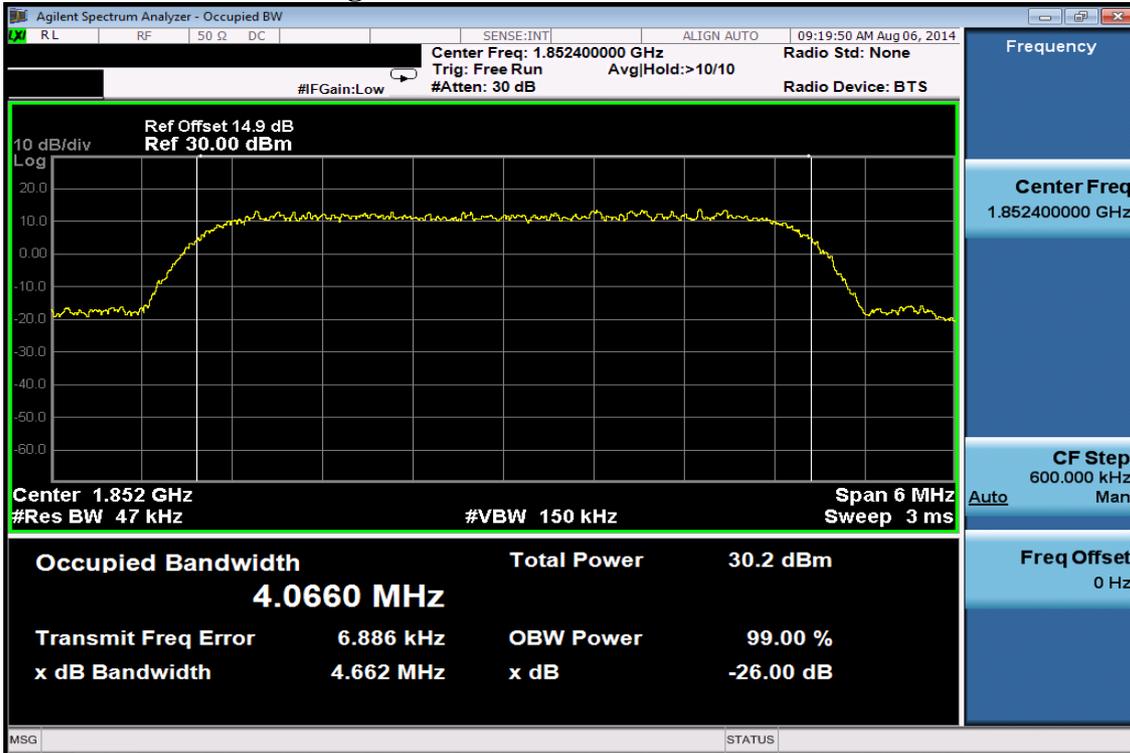
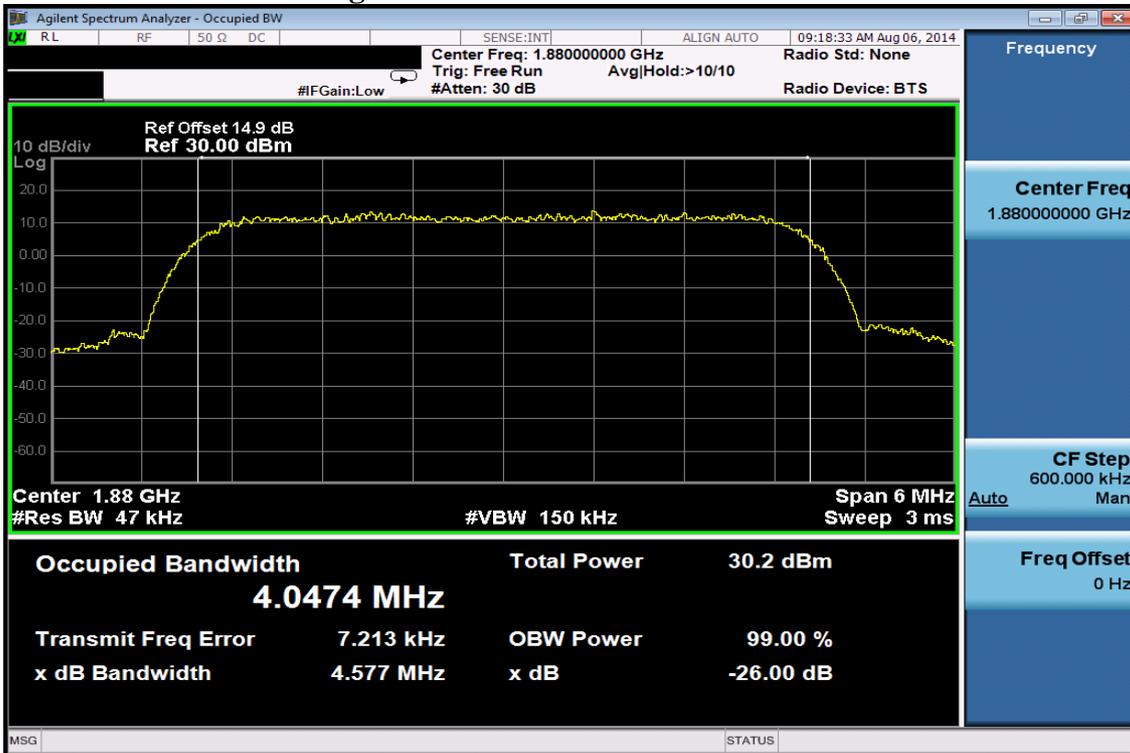


Figure 8-32: HSUPA II Channel Mid



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Figure 8-33: HSUPA II Channel High

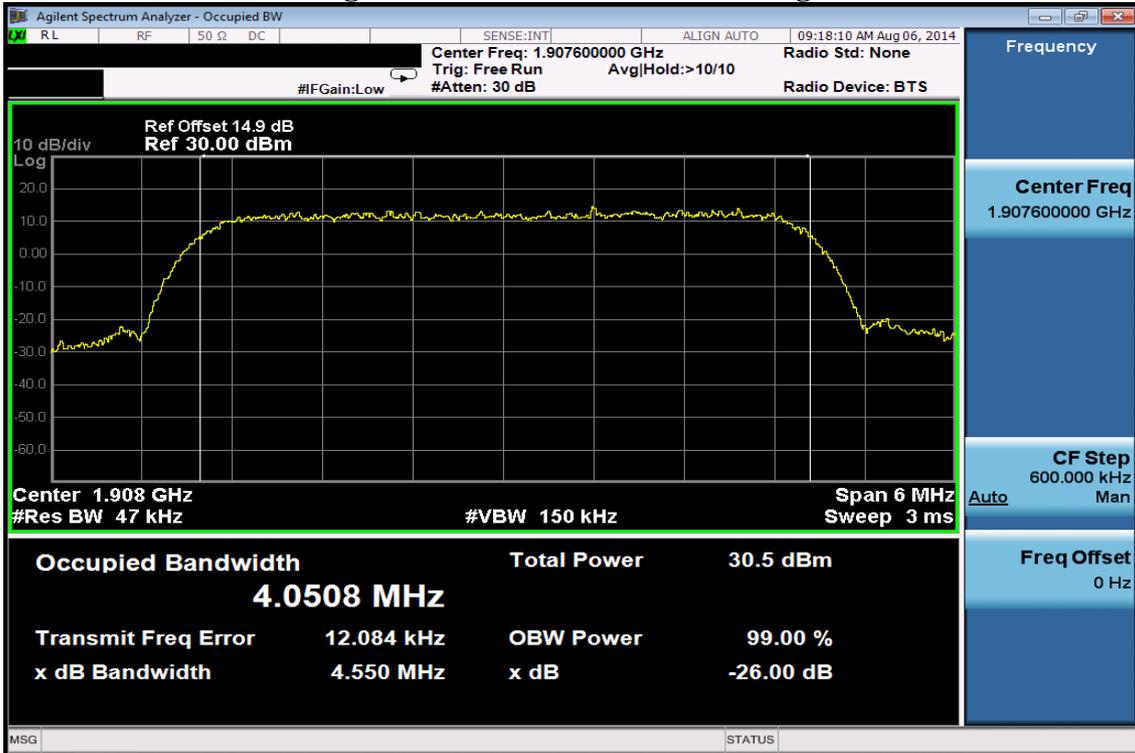
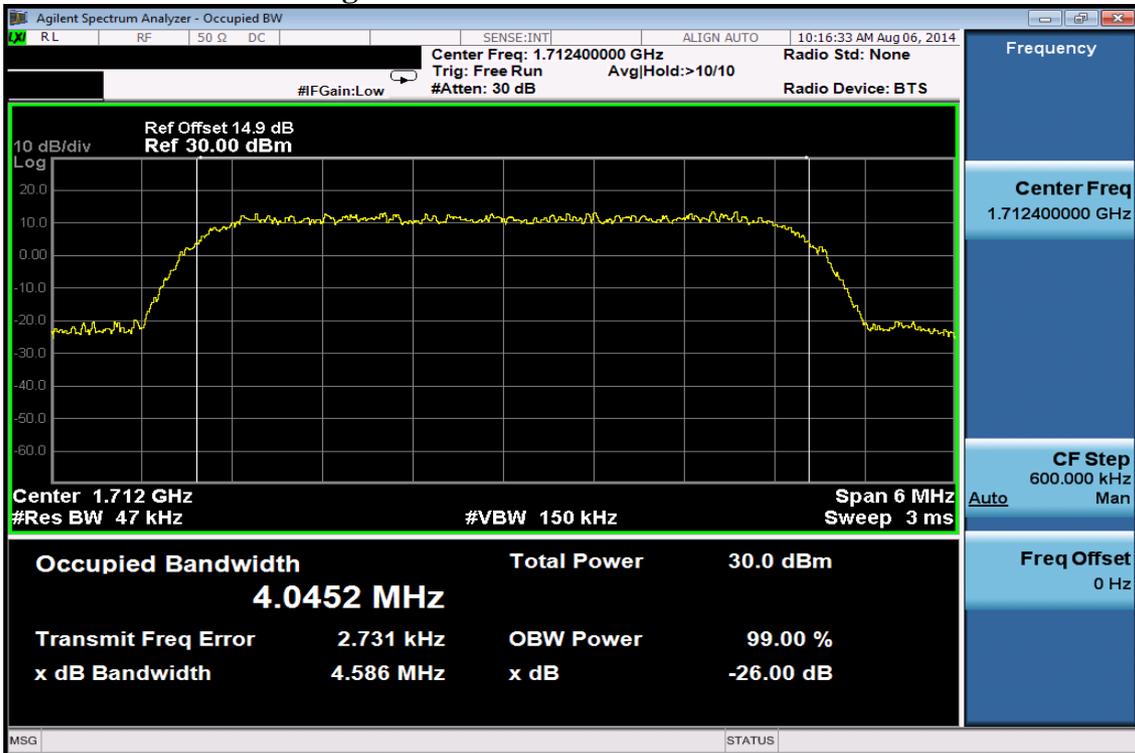


Figure 8-34: HSUPA IV Channel Low



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Figure 8-35: HSUPA IV Channel Mid

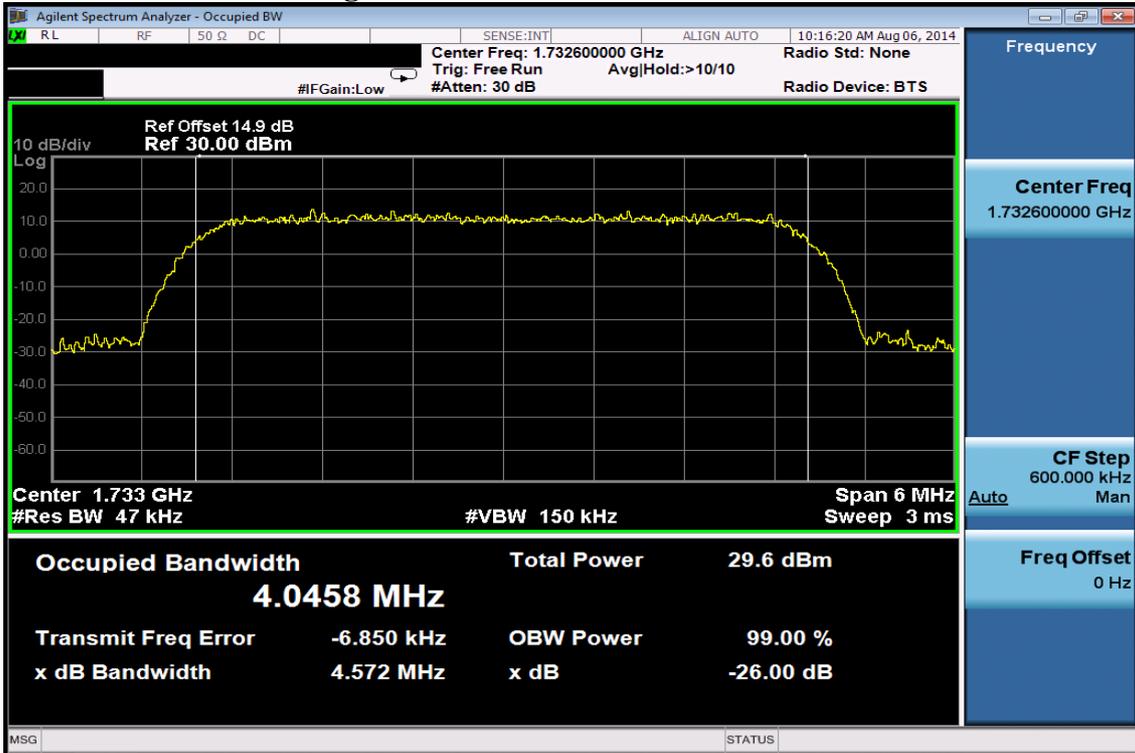
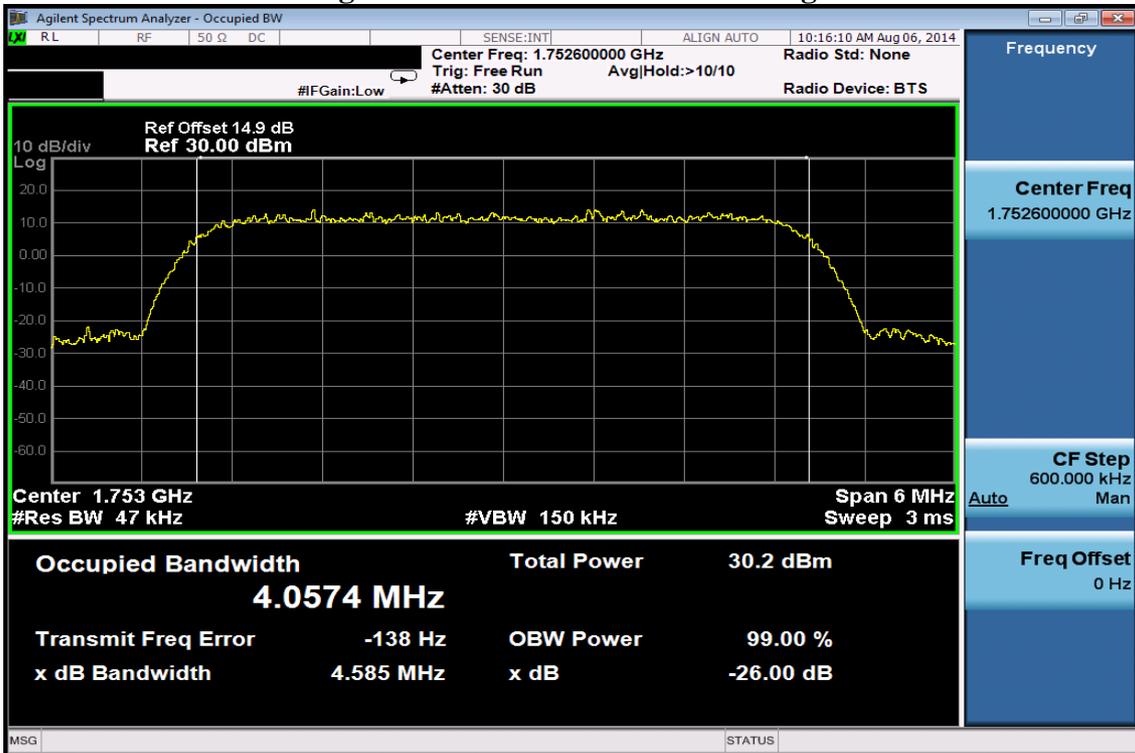


Figure 8-36: HSUPA IV Channel High



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Figure 8-37: HSUPA V Channel Low

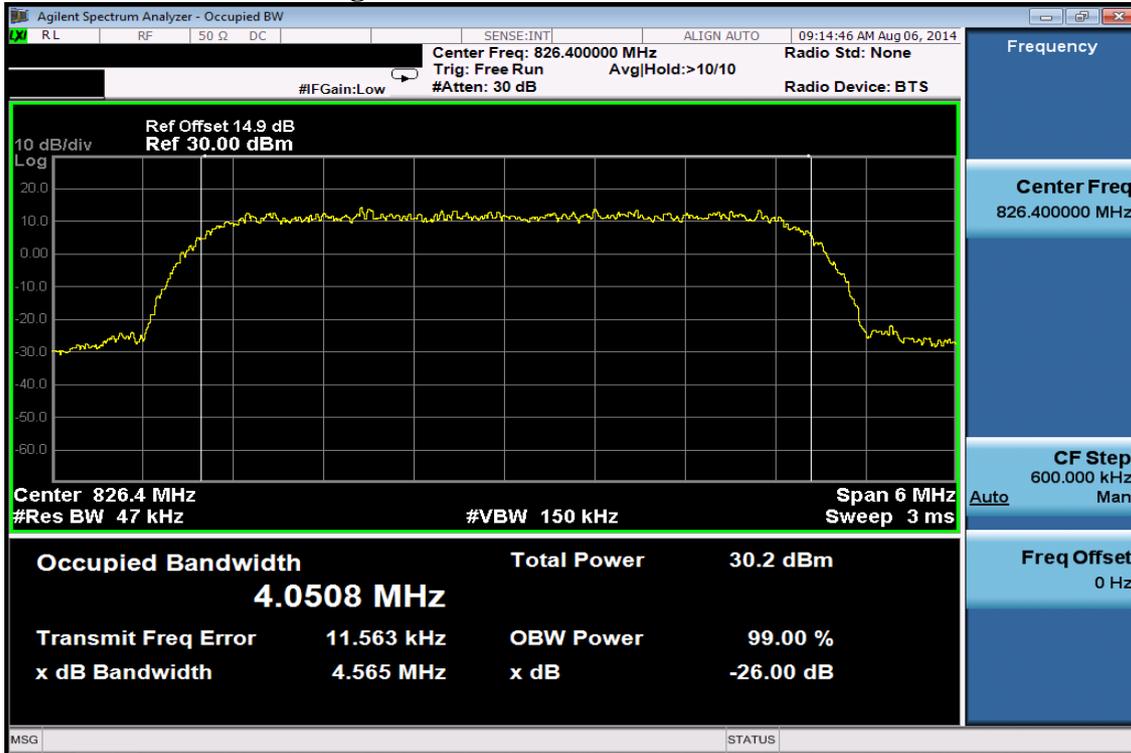
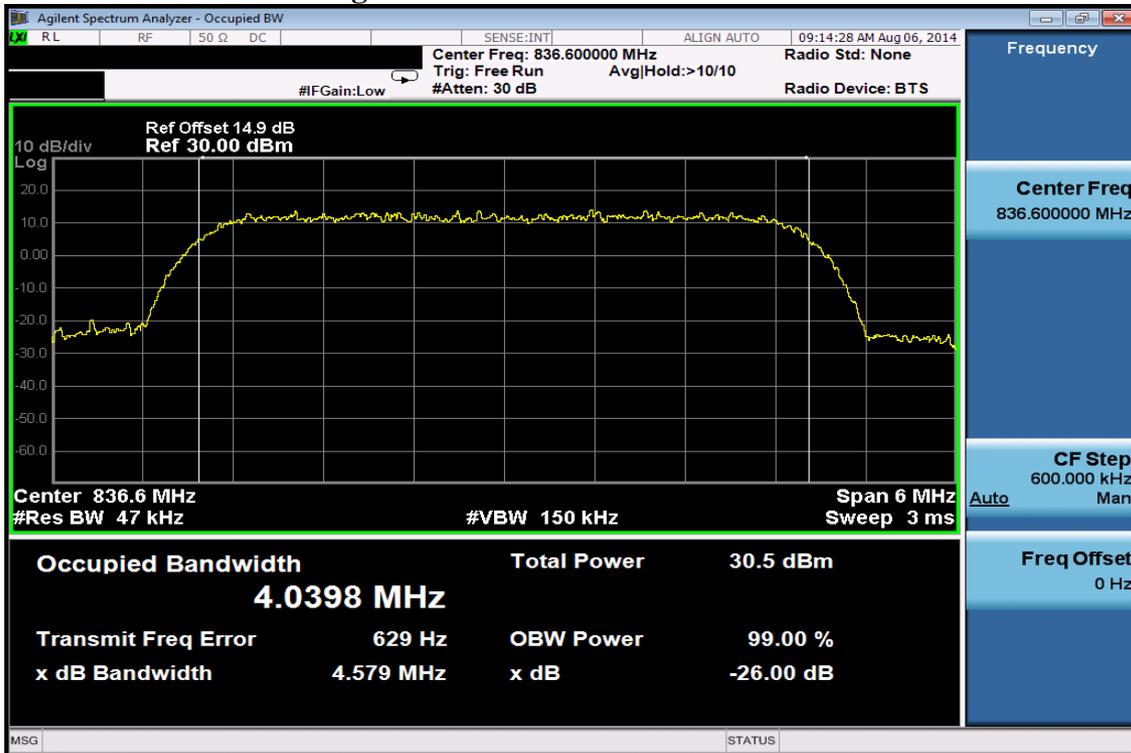


Figure 8-38: HSUPA V Channel Mid



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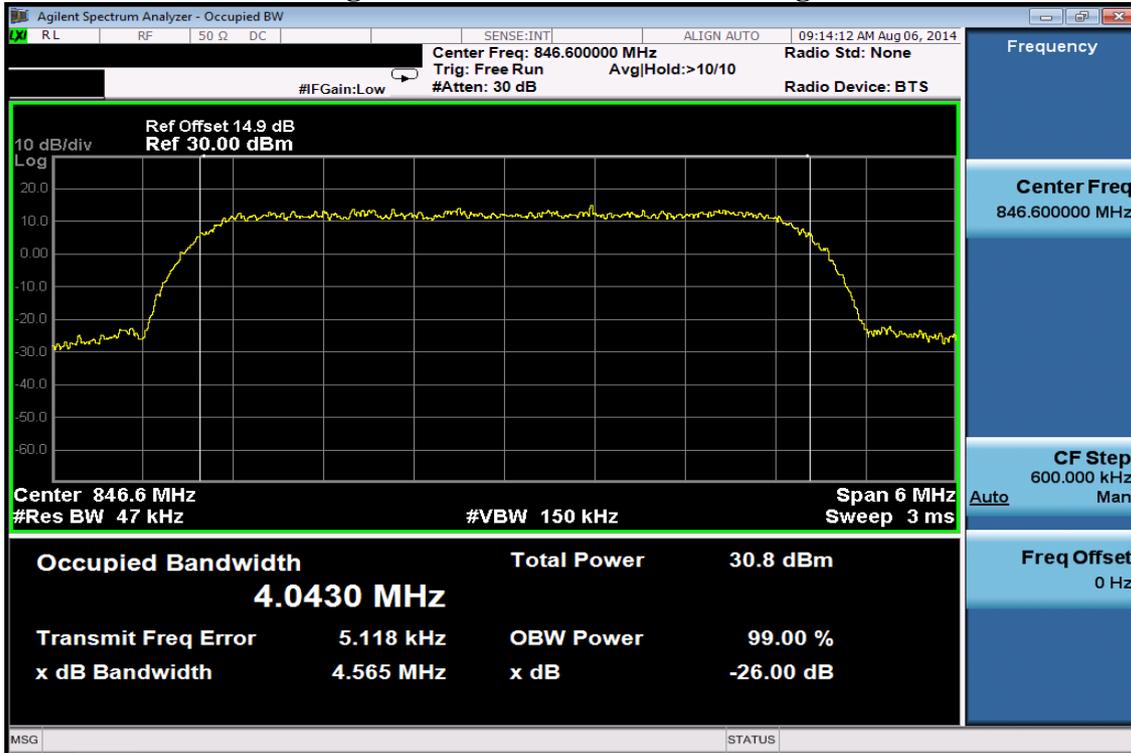
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Figure 8-39: HSUPA V Channel High



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## 9. OUT OF BAND EMISSION AT ANTENNA TERMINALS

### 9.1. Standard Applicable:

According to FCC §2.1051.

FCC §22.917(a), §24.238(a), §27.53(h) the magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under the conditions specified in the instruction manual and/ or alignment procedure, shall not be less than  $43 + 10 \log$  (mean output power in watts) dBc below the mean power output outside a license's frequency block (-13dBm).

#### 100KHz Bandedge:

FCC §27.53(h)

Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. 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 emissions are attenuated at least 26 dB below the transmitter power.

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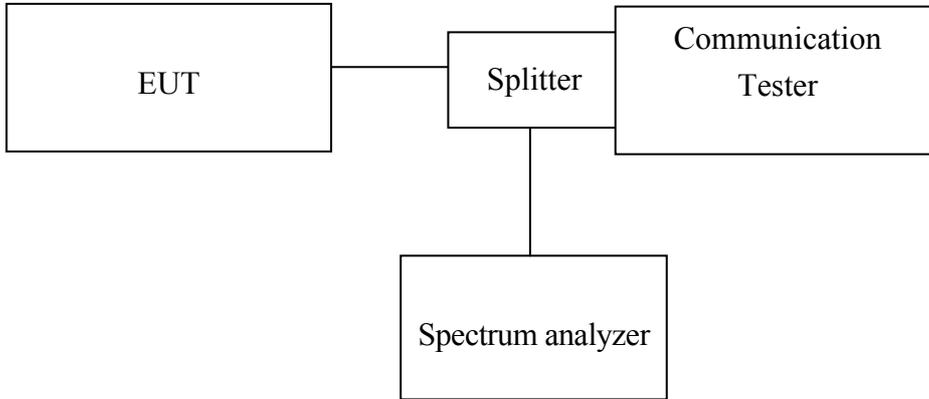
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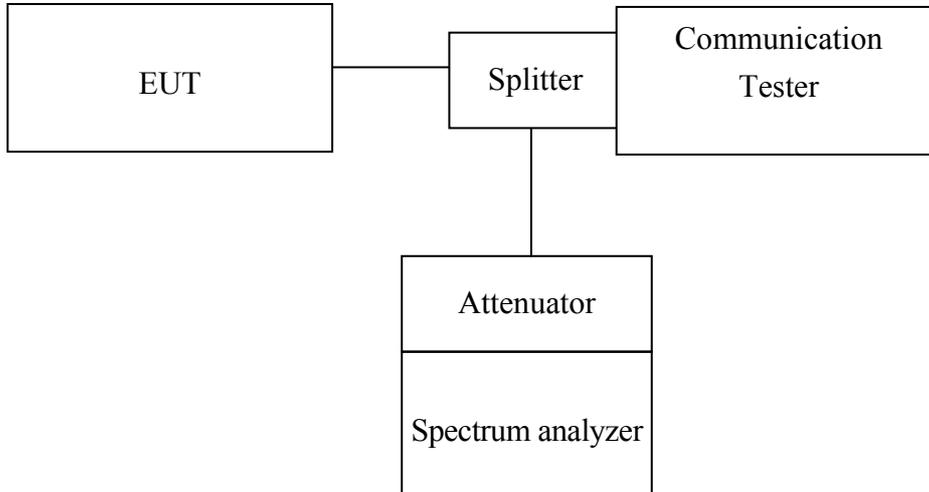
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9.2. Test SET-UP:

Out of band emission



Band Edge



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### 9.3. Measurement Procedure:

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

For the out of band: Set the RBW, VBW = 1MHz, Start=30MHz, Stop= 10 th harmonic. Limit = -13dBm.

Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions. Limit, -13dBm.

h) For operations in the 1710–1755 MHz and 2110–2155 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log_{10}(P)$  dB. Limit, -13dBm

(1) Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. Limit, -13dBm

### Conducted Emission:

- 1、To connect Antenna Port of EUT to Spectrum.
- 2、Set RBW = 1MHz & VBW = 1MHz on Spectrum.
- 3、Sweep the frequency to determine spurious emission as seen on spectrum from span of 30 to 1G, 1G to 2.5G, 2.5G to 7.5G, 7.5G to 10G, 10G to 15G and 15G to 20GHz
- 4、Via Software, combine 6 spans of frequency range into one plot

### 9.4. Measurement Equipment Used:

Refer to section 2.4 in this report

### 9.5. Measurement Result:

Refer to next pages.

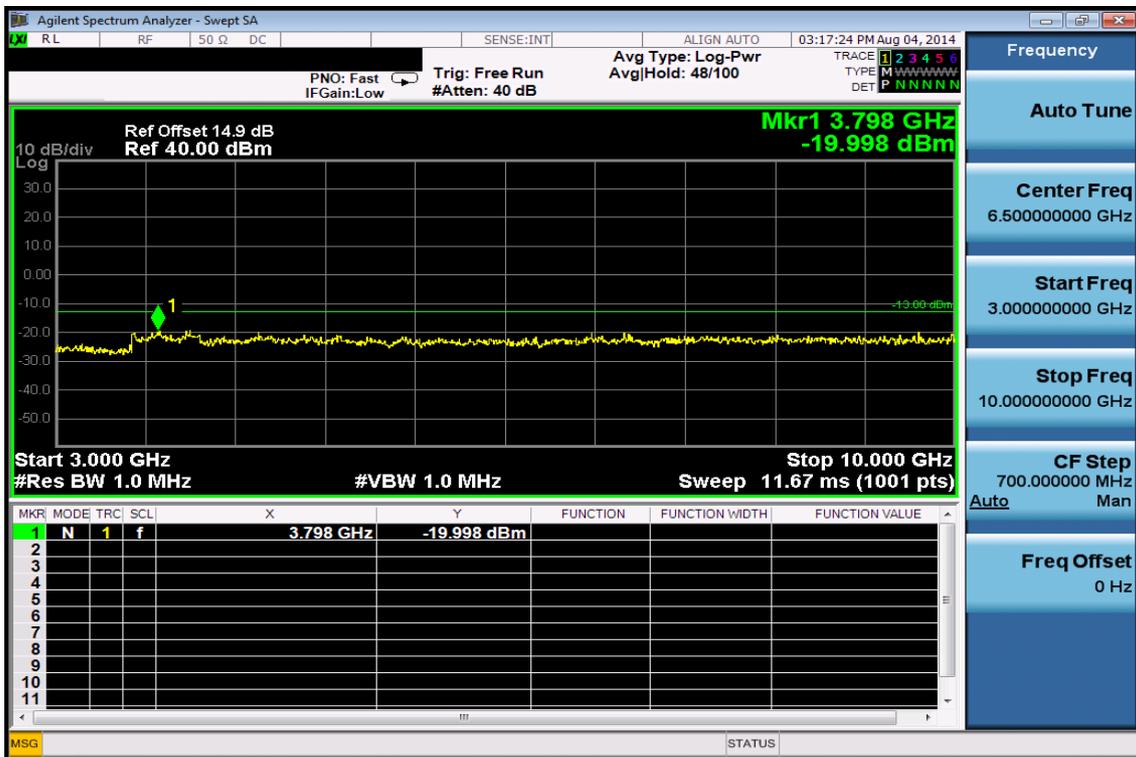
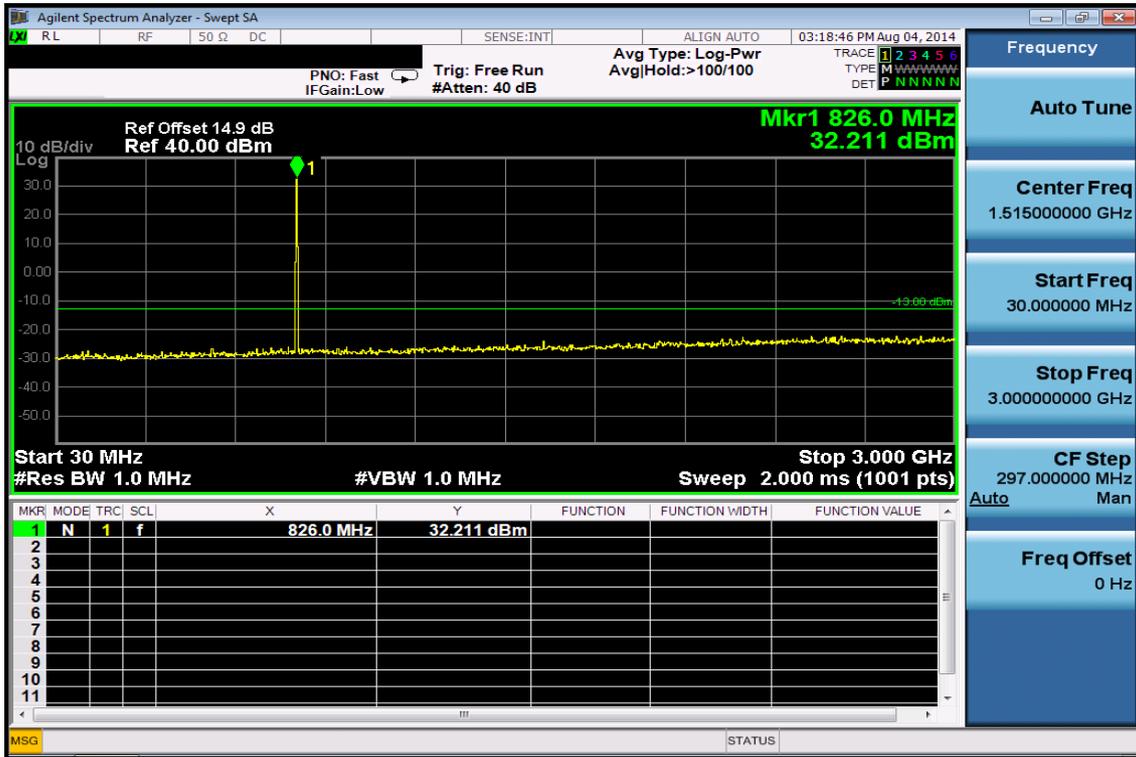
**NOTE: the occurrence of the spike on the conducted emission is the signal of the fundamental emission.**

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Figure 9-11: Out of Band emission at antenna terminals – GPRS850 Channel Lowest



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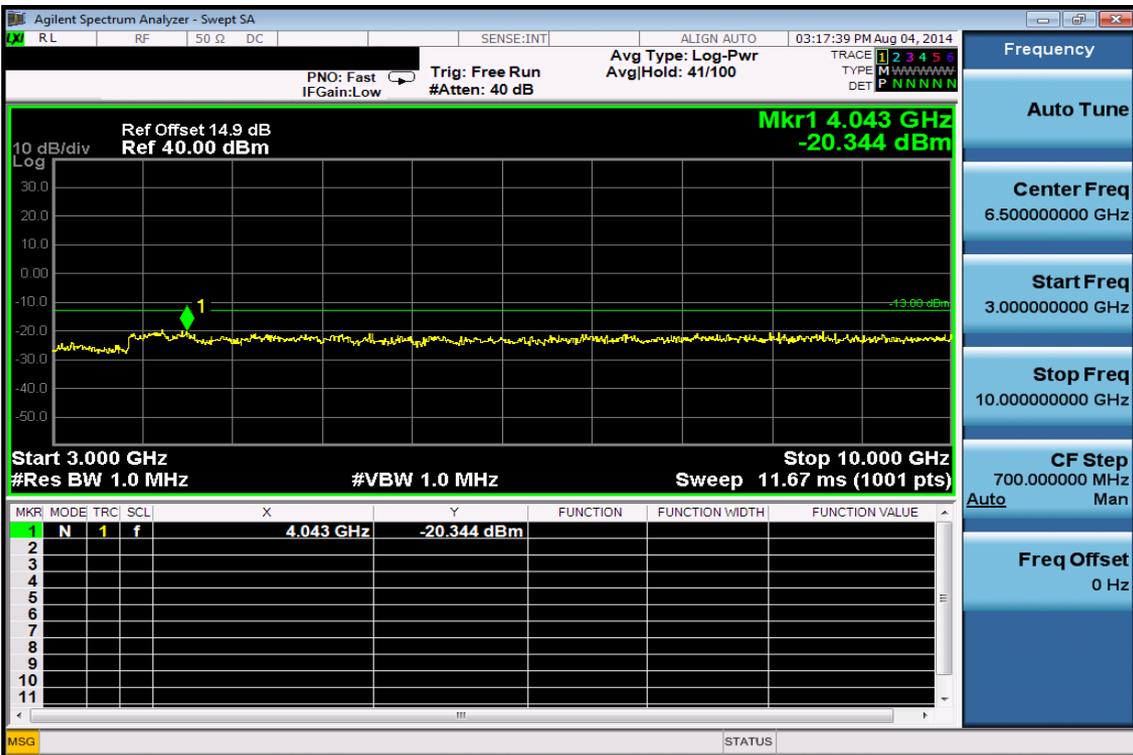
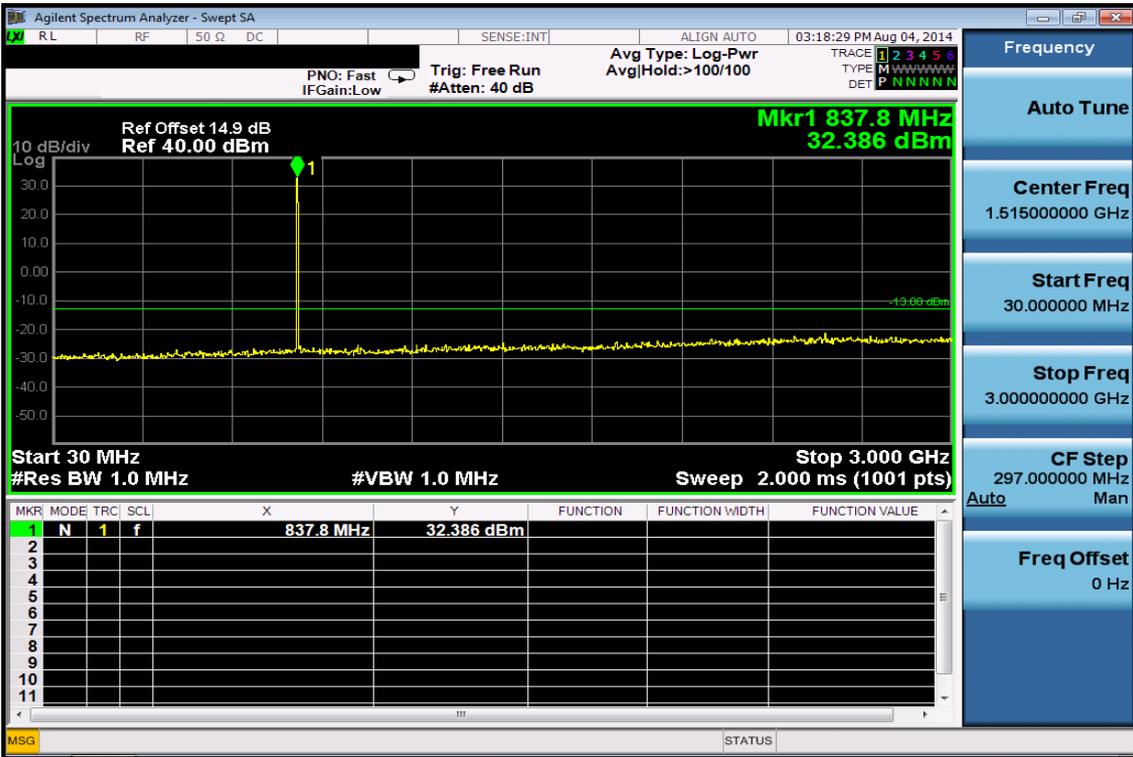
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Figure 9-12: Out of Band emission at antenna terminals – GPRS 850 Channel Mid

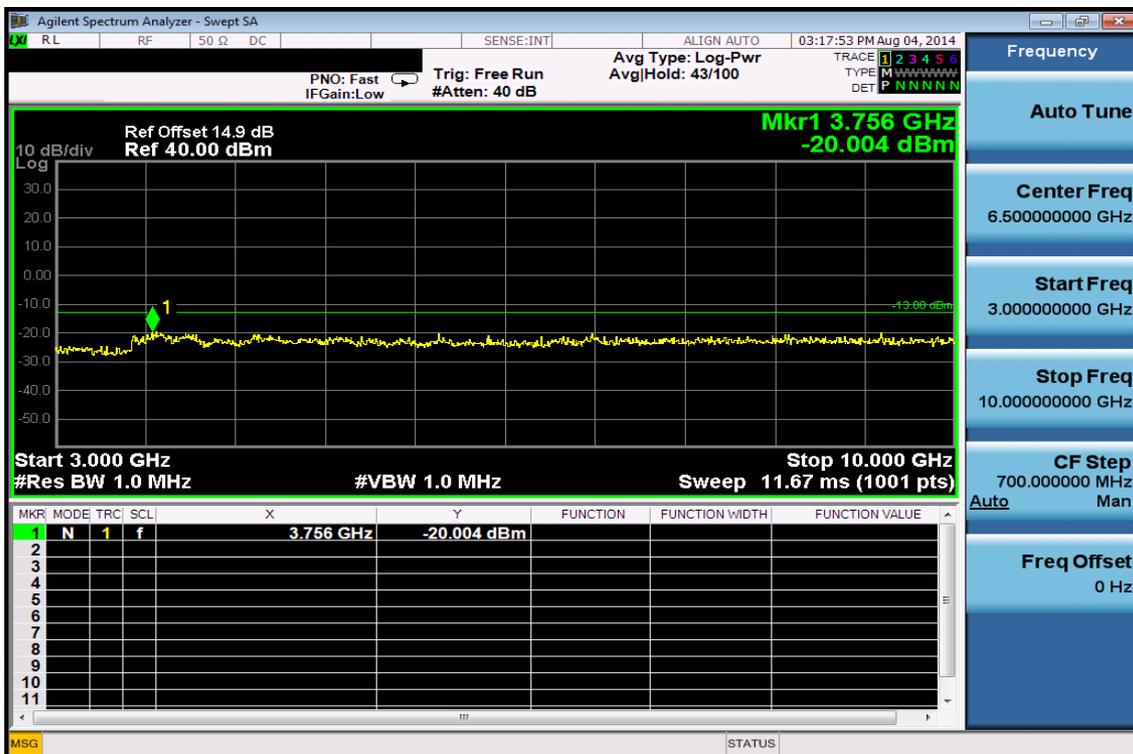
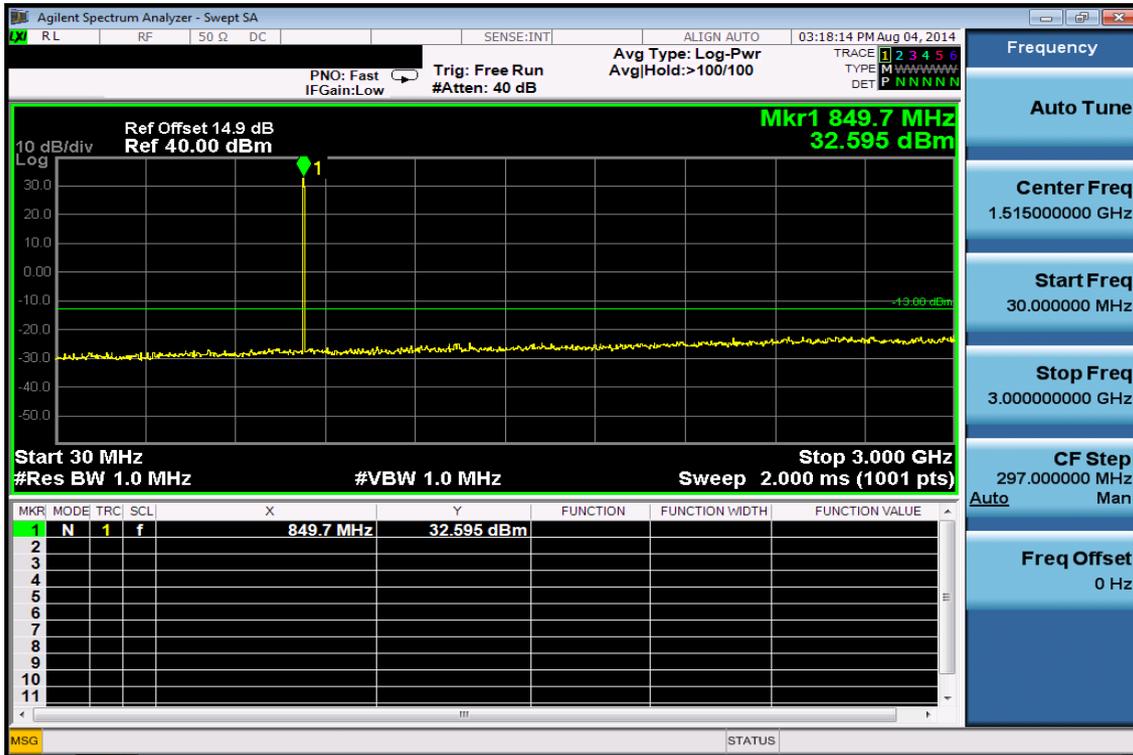


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Figure 9-13: Out of Band emission at antenna terminals – GPRS 850 Channel Highest



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Figure 9-14: Band edge emission at antenna terminals – GPRS 850 Channel Lowest

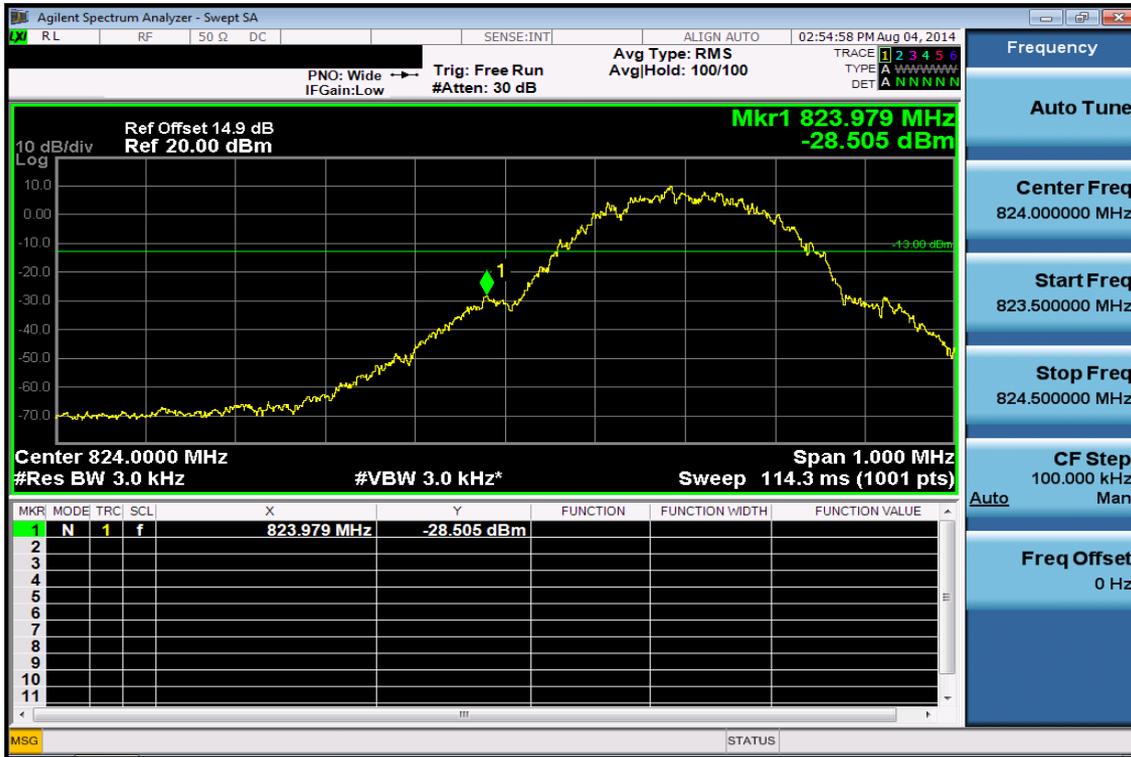
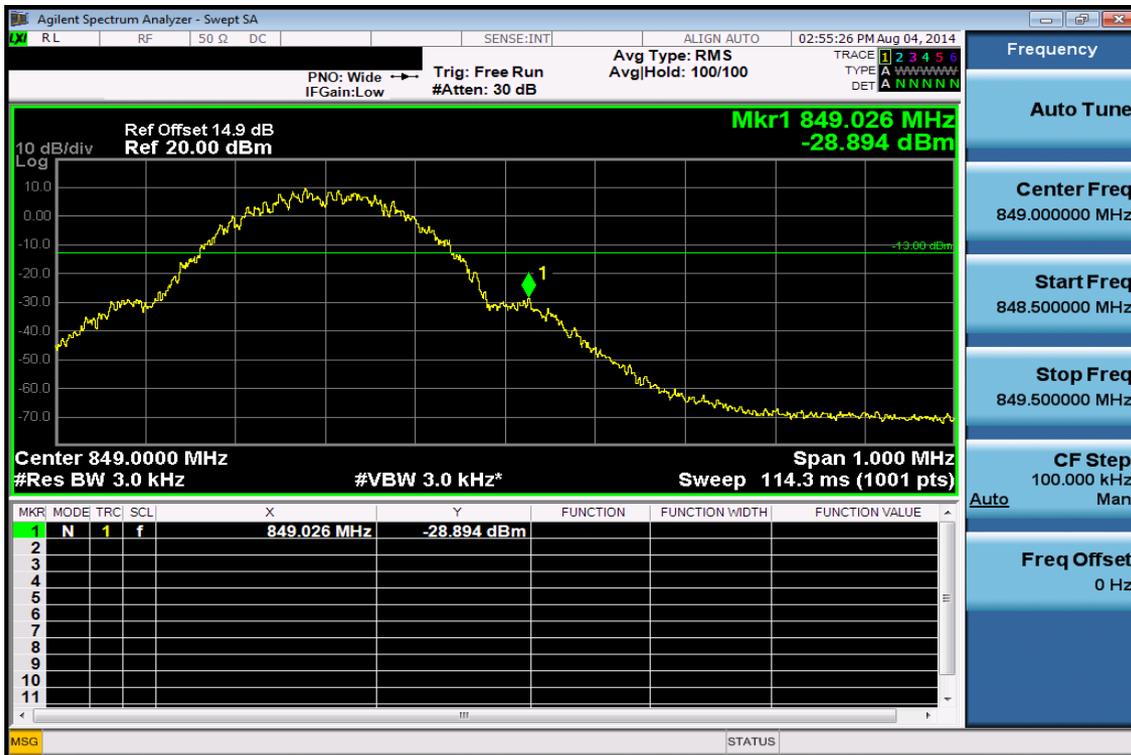


Figure 9-15: Band edge emission at antenna terminals – GPRS 850 Channel Highest

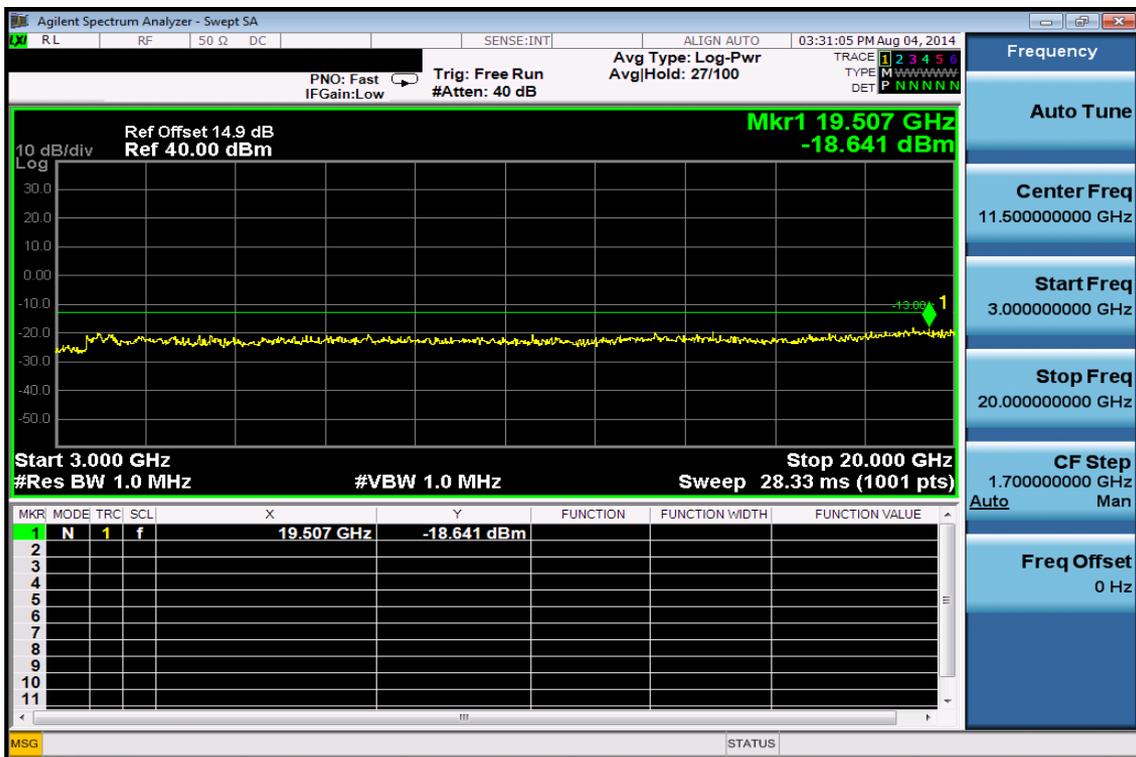
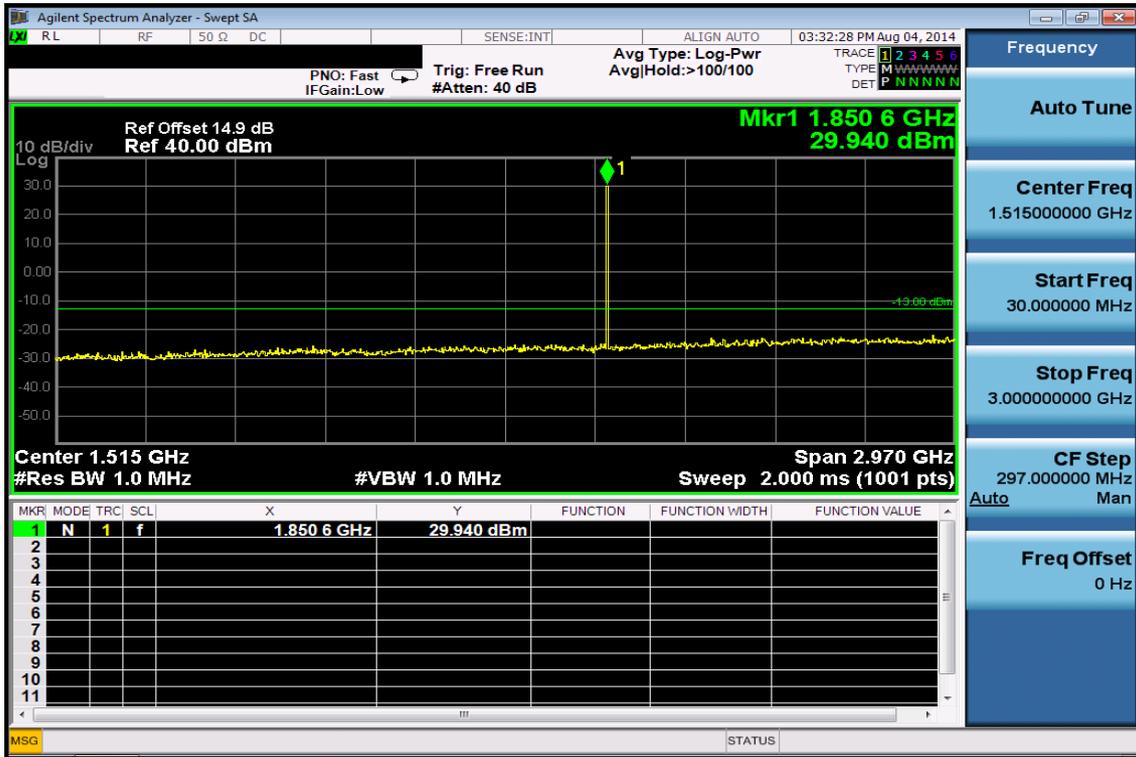


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Figure 9-16: Out of Band emission at antenna terminals – GPRS 1900 Channel Lowest

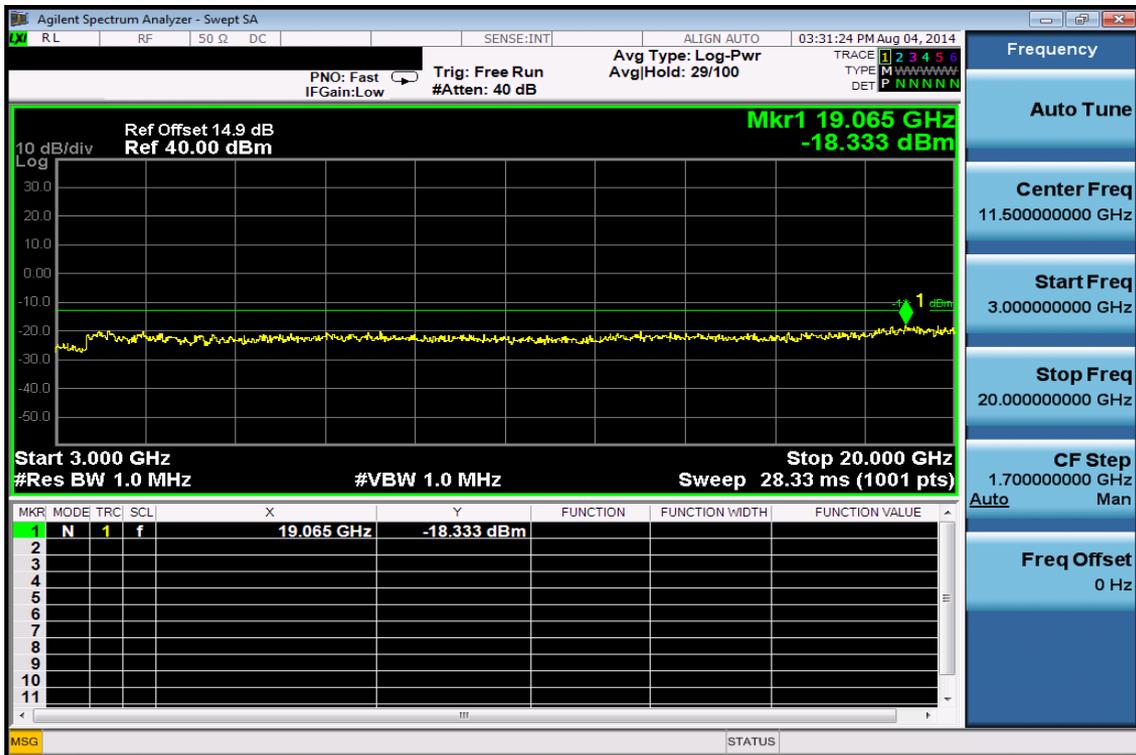
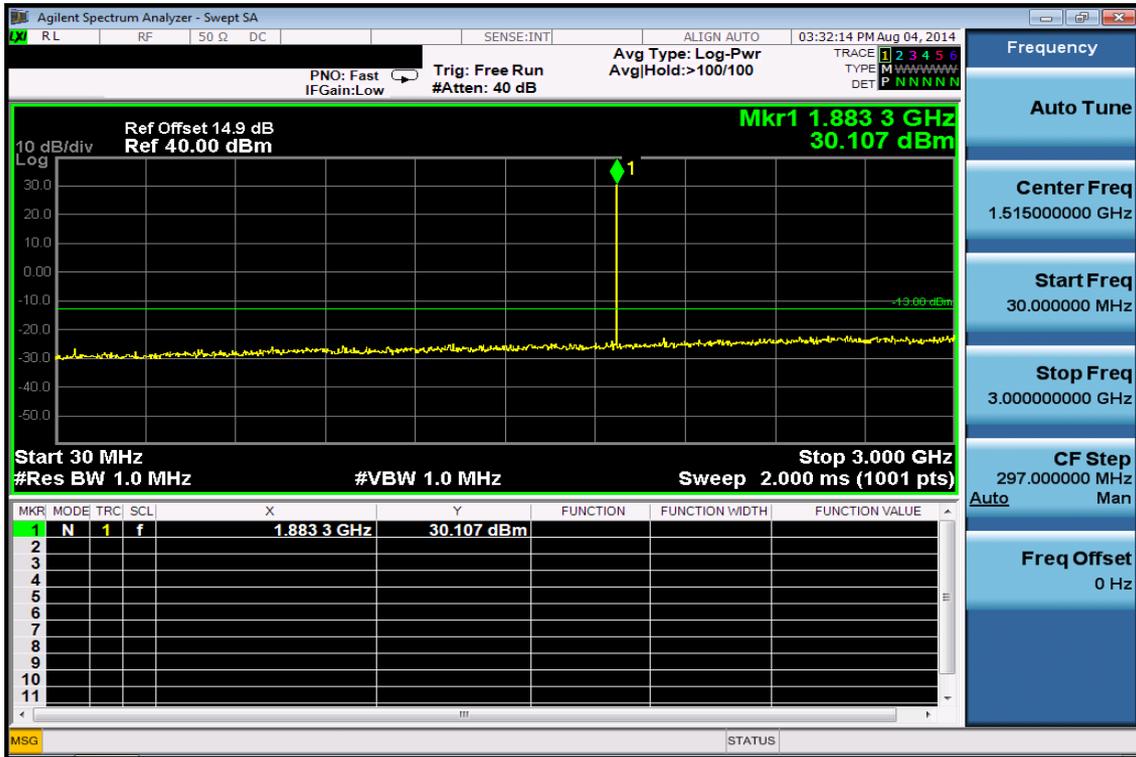


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Figure 9-17: Out of Band emission at antenna terminals – GPRS 1900 Channel Mid

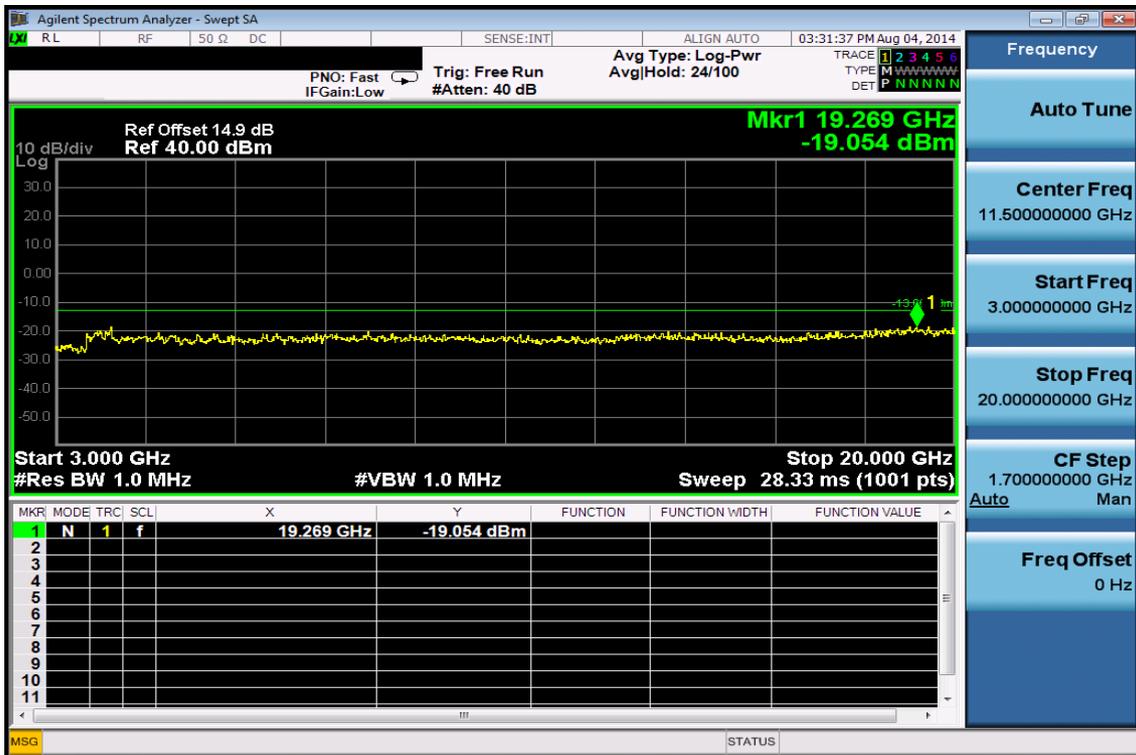
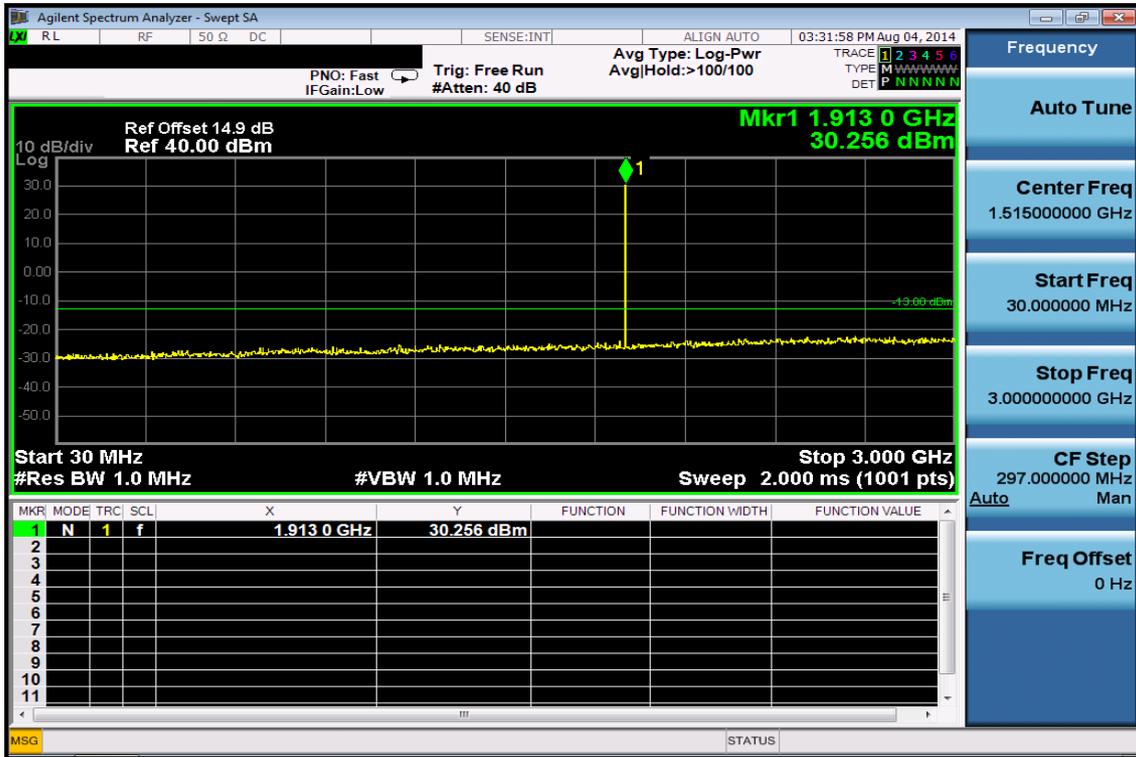


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Figure 9-18: Out of Band emission at antenna terminals – GPRS 1900 Channel Highest



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Figure 9-19: Band edge emission at antenna terminals – GPRS 1900 Channel Lowest

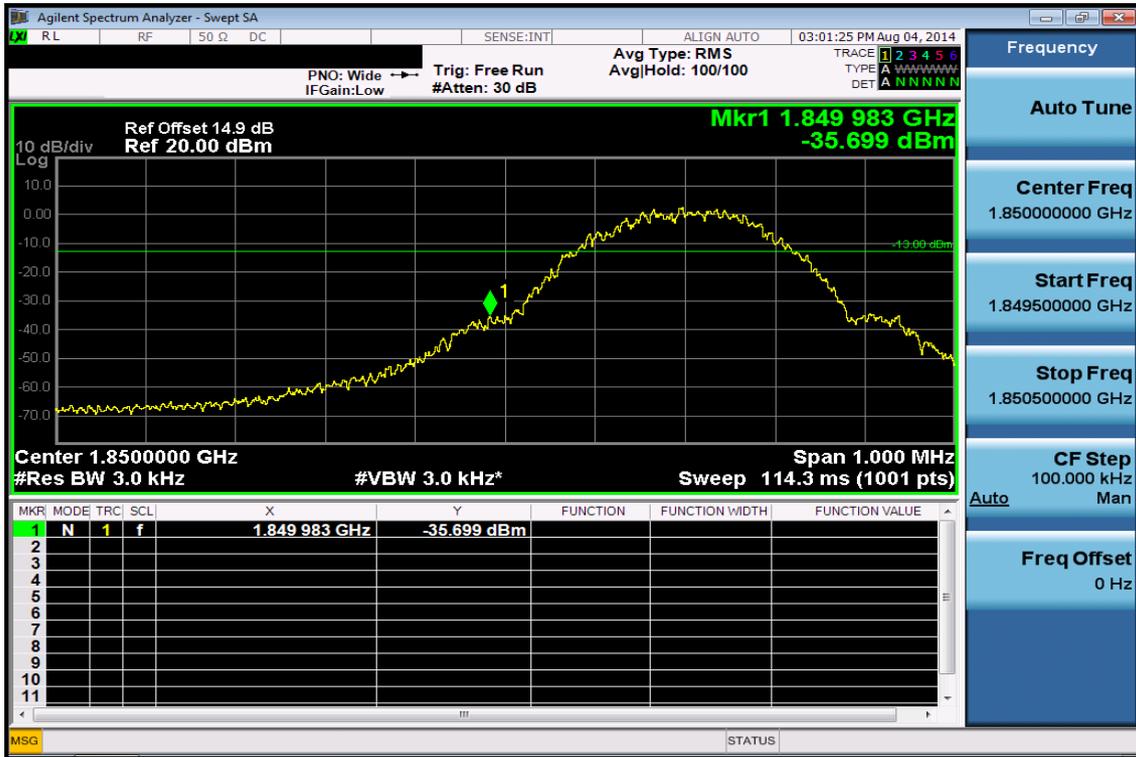


Figure 9-20: Band edge emission at antenna terminals – GPRS 1900 Channel Highest



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