

# ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

## INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 22 SUBPART H & PART 24 SUBPART E

OF

**Product Name:** Base Station

**Marketing Name:** Y-Gate 3.0

**Brand Name:** Dyzle

**Model No.:** Y-Gate 3.0 GPRS/UMTS / 010 1701 001

**Model Difference:** N/A

**FCC ID:** 2ADBY0101701

**Report No.:** EH/2014/C0008

**Issue Date:** Jan. 30, 2015

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

**Prepared for:** Dyzle  
Transistorstraat 2d, 1322 CE Almere, The Netherlands

**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:** Dyzle  
Transistorstraat 2d, 1322 CE Almere, The Netherlands

**Product Name:** Base Station

**Marketing Name:** Y-Gate 3.0

**Brand Name:** Dyzle

**Model No.:** Y-Gate 3.0 GPRS/UMTS / 010 1701 001

**Model Difference:** N/A

**FCC ID:** 2ADBY0101701

**File Number:** EH/2014/C0008

**Date of test:** Dec. 31, 2014 ~ Jan. 21, 2015

**Date of EUT Received:** Dec. 31, 2014

**We hereby certify that:**

The above equipment was tested by SGS Lionwan 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.

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

**Test By:**

Marcus Tseng

**Date:**

Jan. 30, 2015

Marcus Tseng / Engineer

**Prepared By:**

Violetta Tang

**Date:**

Jan. 30, 2015

Violetta Tang / Clerk

**Approved By:**

Jim Chang

**Date:**

Jan. 30, 2015

Jim Chang / Asst. Manager

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## Version

Version No.	Date	Description
00	Jan. 30, 2015	Initial creation of document

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## 1. GENERAL PRODUCT INFORMATION

General:

Product Name:	Base Station	
Marketing Name:	Y-Gate 3.0	
Brand Name:	Dyzle	
Model No.:	Y-Gate 3.0 GPRS/UMTS / 010 1701 001	
Model difference:	N/A	
Hardware Version:	3.0	
Software Version:	2.04	
Power Supply:	12V from AC Power Adapter	
	Adapter:	Model No.: KSAS0061200050D5D, Supplier: N/A

GPRS / WCDMA:

Cellular Phone Standards Frequency Range:	Operating Frequency		Rated Power
	GPRS 850, Class 12	824.2 MHz– 848.8 MHz	32dBm
	EDGE 850, Class 12	824.2 MHz– 848.8 MHz	26dBm
	GPRS 1900, Class 12	1850.2MHz – 1909.8MHz	29dBm
	EDGE 1900, Class 12	1850.2MHz – 1909.8MHz	25dBm
	WCDMA/HSUPA/HSDPA /HSPA+ Band II	1852.4MHz – 1907.6MHz	23dBm
	WCDMA/HSUPA/HSDPA /HSPA+ Band V	826.4MHz - 846.6MHz	23dBm
IMEI:	359998041586639		

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

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## Final Amplifier Voltage and Current Information:

Test Mode	DC voltage (V)	DC current (mA)
GPRS 850	12Vdc	153
GPRS 1900	12Vdc	164
EDGE 850	12Vdc	171
EDGE 1900	12Vdc	188
WCDMA B2	12Vdc	347
WCDMA B5	12Vdc	265
HSUPA B2	12Vdc	353
HSUPA B5	12Vdc	284
HSDPA B2	12Vdc	371
HSDPA B5	12Vdc	291

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

This submittal(s) (test report) is intended for **FCC ID: 2ADBY0101701** filing to comply with Section Part 22 subpart H, Part 24 subpart E and Section Part 27 subpart C of the FCC CFR 47 Rules.

### 1.2. Test Methodology

Both conducted and radiated testing were performed according to the procedures document of TIA/EIA 603C and FCC CFR 47.1046, 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.

### 1.3. 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 Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan which are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2009. FCC Registration Numbers are: 990257, Canada Registration Number: 4620A-4.

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. SGS Site No. 1(3 & 10 meters) and FCC Registration Number: 455997.

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

### 1.4. Special Accessories

Not available for this EUT intended for grant.

### 1.5. Equipment Modifications

Not available for this EUT intended for grant.

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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 utilized in base-station simulator to fixate the Tx frequency of default test, and establish the communication 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.
Power Meter	Anritsu	ML2495A	1005007	01/13/2014	01/12/2015
Power Sensor	Anritsu	MA2411B	917032	01/13/2014	01/12/2015
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	10/08/2014	10/09/2015
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	11/10/2014	11/09/2015

Please refer to next page for the plots.

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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	12/22/2014	12/21/2015
Spectrum Analyzer	R&S	FSV-30	101398	10/07/2014	10/06/2015
Bilog Antenna	SCHWAZBECK	VULB9168	378	12/23/2014	12/22/2015
Bilog Antenna	SCHWAZBECK	VULB9160	3158	10/31/2014	10/30/2015
Horn antenna	ETS.LINDGREN	3117	123995	05/19/2014	05/18/2015
Horn antenna	ETS.LINDGREN	3117	123991	12/19/2014	12/18/2015
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	10/08/2014	10/09/2015
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

N.C.R denotes non-calibrated require.

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## ERP, EIRP MEASUREMENT EQUIPMENT List 966 Chamber

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Pre-Amplifier	Agilent	8447D	1937A02834	01/02/2015	01/01/2016
Pre-Amplifier	Agilent	8449B	3008A00578	01/02/2015	01/01/2016
Attenuator	Mini-Circuit	BW-S10W2+	004	01/02/2015	01/01/2016
Low Loss Cable	HUBER+SUHNER	966_Tx	10m	01/02/2015	01/01/2016
Low Loss Cable	HUBER+SUHNER	966_Rx	3m	01/02/2015	01/01/2016
Filter 800-1000	Micro-Tronics	EWT	M2	01/02/2015	01/01/2016
Filter 1800-2000	Micro-Tronics	EWT	M2	01/02/2015	01/01/2016
Filter 1700-1800	Micro-Tronics	BRC15751	001	01/02/2015	01/01/2016
1GHz High Pass Filter	Micro-Tronics	HPM50108	32	01/02/2015	01/01/2016
2GHz High Pass Filter	Micro-Tronics	HPM50110	36	01/02/2015	01/01/2016

*Note: The measurement was taken place with the long duration of the time, and additional equipment list as shown above indicate those equipment of which has been subject to undertake the calibration in intermediate period of time of the measurement.*

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## 2.5. Configuration of Tested System

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

EUT

Remote Side

CMU200

**Table 2-1 Equipment Used in Tested System**

Item	Equipment	Mfr/Brand	Model/ Type No.	Series No.	Data Cable	Power Cord
1.	Radio Communication Analyzer	R&S	CMU200	102189	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)	ERP/ EIRP measurement	Compliant
§2.1049(h)	99% Occupied Bandwidth	Compliant
§2.1051 §22.917(a) §24.238(a)	Out of Band Emissions at Antenna Terminals and Band Edge	Compliant
§2.1053 §22.917(a) §24.238(a)	Field Strength of Spurious Radiation	Compliant
§24.232(d)	Peak to Average Ratio	Compliant
§2.1055(a)(1) §22.355 §24.235	Frequency Stability vs. Temperature	Compliant
§2.1055(d)(1) §22.355 §24.235	Frequency Stability vs. Voltage	Compliant

Max ERP/EIRP measurement result:

	dBm		W
GPRS 850 Band	17.65	ERP	0.058
GPRS 1900 Band	28.38	EIRP	0.689
EDGE 850 Band	16.49	ERP	0.045
EDGE 1900 Band	25.86	EIRP	0.385
WCDMA Band II	25.62	EIRP	0.365
WCDMA Band V	15.33	ERP	0.034
HSDPA Band II	23.38	EIRP	0.218
HSDPA Band V	17.23	ERP	0.053
HSUPA Band II	18.64	EIRP	0.073
HSUPA Band V	16.72	ERP	0.047

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#### 4. DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition with continuous transmitting mode, linking to simulator.

Channel Low, Mid and High is set to test against each supported band with rated data rate that yields the highest emission.

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 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 stand-up position (E2 mode as defined in Lab) and lie down position with 90 degrees angle apart (H, E1 mode as defines in Lab) for GPRS/EDGE and WCDMA Band II and V. The worst-case position in E2 is placed to conduct all applicable measurement test cases for all supported modulation, transmission bandwidth, and frequency band.

**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

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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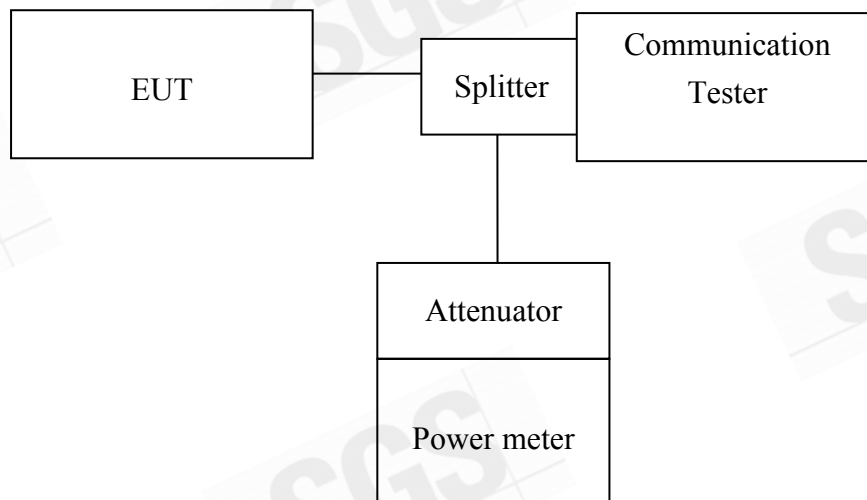
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## 6.2. Test Set-up:



*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)

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 (1DN 1UP) class 8 (dBm)	Average Burst Power (1DN 1UP) Class 8 (dBm)	Peak Power (1DN 2UP) Class 10 (dBm)	Average Burst Power (1DN 2UP) Class 10 (dBm)
GPRS 850	824.2	128	32.60	32.40	29.40	29.30
	836.6	190	32.80	32.60	29.40	29.40
	848.8	251	32.90	32.70	29.90	29.80

EUT Mode	Frequency (MHz)	CH	Peak Power (1DN 3UP) Class 11 (dBm)	Average Burst Power (1DN 3UP) Class 11 (dBm)	Peak Power (1DN 4UP) Class 12 (dBm)	Average Burst Power (1DN 4UP) Class 12 (dBm)
GPRS 850	824.2	128	27.50	27.30	26.10	26.00
	836.6	190	27.40	27.30	25.90	25.80
	848.8	251	27.30	27.20	25.90	25.70

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EUT Mode	Frequency (MHz)	CH	Peak Power (1DN 1UP) class 8 (dBm)	Average Burst Power (1DN 1UP) Class 8 (dBm)	Peak Power (1DN 2UP) Class 10 (dBm)	Average Burst Power (1DN 2UP) Class 10 (dBm)
GPRS 1900	1850.2	512	29.00	28.80	25.50	25.40
	1880.0	661	29.20	29.00	25.80	25.70
	1909.8	810	29.60	29.40	26.50	26.30

EUT Mode	Frequency (MHz)	CH	Peak Power (1DN 3UP) Class 11 (dBm)	Average Burst Power (1DN 3UP) Class 11 (dBm)	Peak Power (1DN 4UP) Class 12 (dBm)	Average Burst Power (1DN 4UP) Class 12 (dBm)
GPRS 1900	1850.2	512	23.60	23.40	22.10	22.00
	1880.0	661	23.70	23.60	22.30	22.10
	1909.8	810	24.20	24.10	23.00	22.80

EUT Mode	Frequency (MHz)	CH	Peak Power (1DN 1UP) class 8 (dBm)	Average Burst Power (1DN 1UP) Class 8 (dBm)	Peak Power (1DN 2UP) Class 10 (dBm)	Average Burst Power (1DN 2UP) Class 10 (dBm)
EDGE 850	824.2	128	29.60	26.50	26.50	23.30
	836.6	190	29.60	26.40	26.40	23.30
	848.8	251	29.60	26.40	26.50	23.20

EUT Mode	Frequency (MHz)	CH	Peak Power (1DN 3UP) Class 11 (dBm)	Average Burst Power (1DN 3UP) Class 11 (dBm)	Peak Power (1DN 4UP) Class 12 (dBm)	Average Burst Power (1DN 4UP) Class 12 (dBm)
EDGE 850	824.2	128	24.60	21.40	23.70	20.40
	836.6	190	24.50	21.30	23.50	20.20
	848.8	251	24.40	21.20	23.30	20.00

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EUT Mode	Frequency (MHz)	CH	Peak Power (1DN 1UP) class 8 (dBm)	Average Burst Power (1DN 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	24.60	24.60	21.30
	1880.0	661	28.00	24.80	24.80	21.50
	1909.8	810	28.50	25.20	25.30	22.00

EUT Mode	Frequency (MHz)	CH	Peak Power (1DN 3UP) Class 11 (dBm)	Average Burst Power (1DN 3UP) Cass 11 (dBm)	Peak Power (1DN 4UP) Class 12 (dBm)	Average Burst Power (1DN 4UP) Class 12 (dBm)
EDGE 1900	1850.2	512	23.10	19.70	21.60	18.20
	1880.0	661	23.20	19.80	21.80	18.40
	1909.8	810	23.90	20.40	22.50	19.00

Cable loss offset Low Band (Low Band): 13.2dBm

Cable loss offset High Band (High Band): 13.2dBm

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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 24dBm (+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	26.80	23.71
	1880.0	9400	26.55	23.21
	1907.6	9538	26.30	23.13

EUT Mode	Frequency (MHz)	CH	Peak Power (dBm)	Avg. Power (dBm)
WCDMA Band V	826.4	4132	27.13	23.62
	836.6	4183	27.45	23.80
	846.6	4233	26.86	23.52

Offset: b2: 13.2dBm b5: 13.2dBm

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

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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	$\beta_c$	$\beta_a$	$\beta_d$ (SF)	$\beta_c/\beta_d$	$\beta_{HS}$ (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.

### Results:

Mode	Sub-test	Avg. Power (dBm) Channel			Power Class 3 Limita- tion (dBm)	Comments
		9262	9400	9538		
HSDPA (B2)	1	23.93	23.46	23.32	20.3dBm – 25.7dBm	Pass
	2	23.64	23.10	23.00	20.3dBm – 25.7dBm	Pass
	3	23.47	22.98	22.83	19.8dBm – 25.7dBm	Pass
	4	23.52	23.02	22.89	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	23.84	24.05	23.71	20.3dBm – 25.7dBm	Pass
	2	23.55	23.69	23.69	20.3dBm – 25.7dBm	Pass
	3	23.38	23.57	23.22	19.8dBm – 25.7dBm	Pass
	4	23.43	23.61	23.28	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	23.67	23.14	23.04	18.8dBm – 25.7dBm	Pass
	2	21.73	21.22	21.08	16.8dBm – 25.7dBm	Pass
	3	22.64	22.20	22.07	17.8dBm – 25.7dBm	Pass
	4	21.78	21.28	21.16	16.8dBm – 25.7dBm	Pass
	5	23.53	22.97	22.93	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	23.58	23.73	23.43	18.8dBm – 25.7dBm	Pass
	2	21.64	21.81	21.47	16.8dBm – 25.7dBm	Pass
	3	22.55	22.79	22.46	17.8dBm – 25.7dBm	Pass
	4	21.69	21.87	21.55	16.8dBm – 25.7dBm	Pass
	5	23.44	23.56	23.32	18.8dBm – 25.7dBm	Pass

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### 6.5.2. Minimum Communications Power Measurement PCS 1900 band

N/A, the device didn't support GSM function.

### WCDMA/HSDPA/HSUPA band II, 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 23 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. PEAK TO AVERAGE RATIO

### 7.1. Standard Applicable:

According FCC 24.232(d) – The peak-to-average ration (PAR) of the transmission may not exceed 13dB.

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

Refer to section 2.4 in this report

### 7.3. Measurement Procedure:

KDB 971168 D01 is employed as the following procedure is proper adjusted accordingly:

Set resolution/measurement bandwidth  $\geq$  signal's occupied bandwidth; & internal = 1ms

Set the number of counts to a value that stabilizes the measured CCDF curve.

### 7.4. Measurement Equipment Used:

Refer to section 2.4 in this report

### 7.5. Measurement Result:

Refer to next page for plot.

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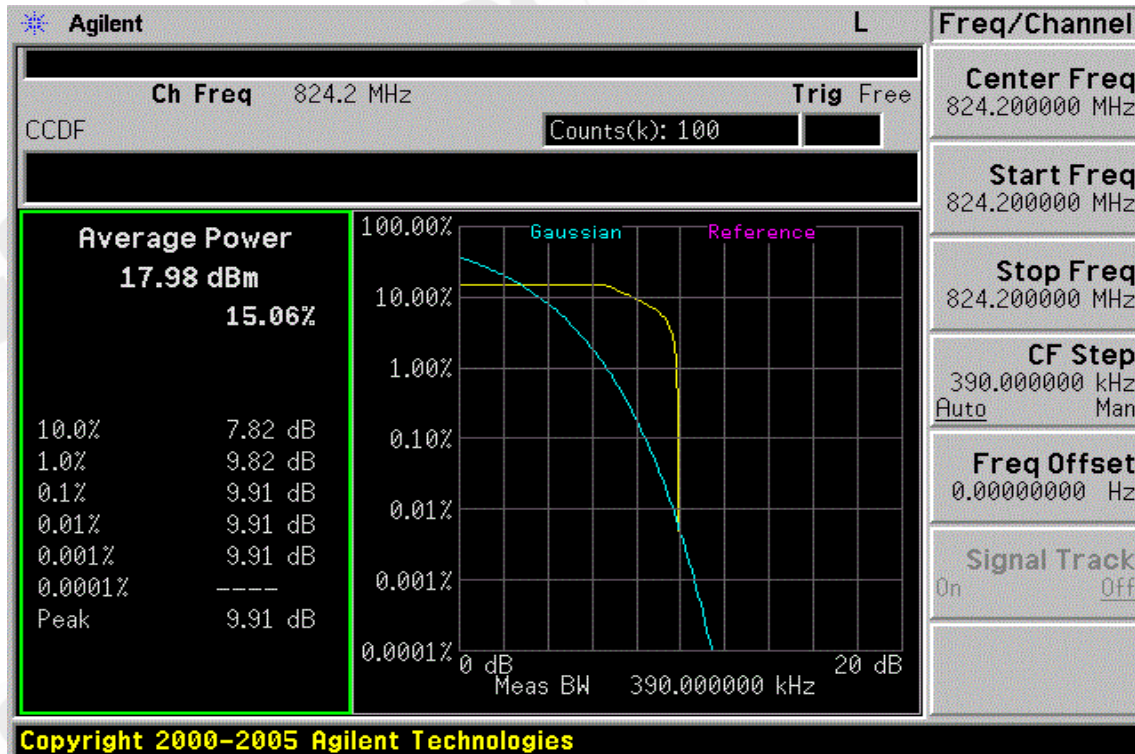
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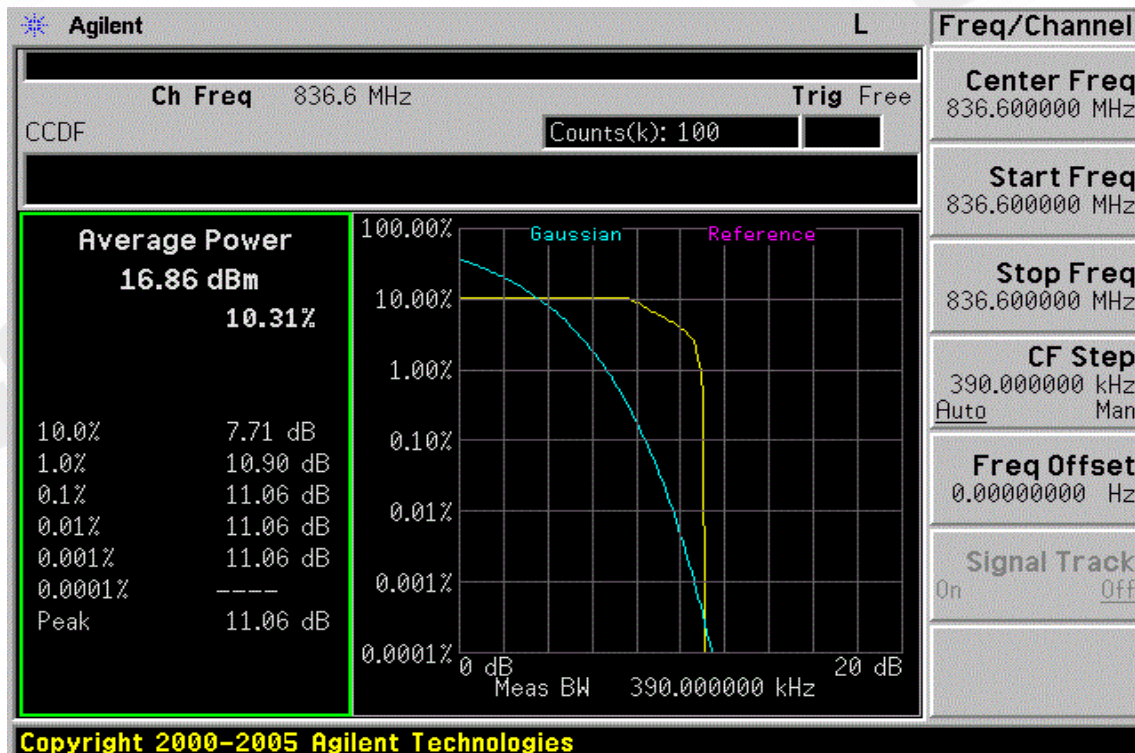
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## GPRS 850 Channel Low



## GPRS 850 Channel Mid



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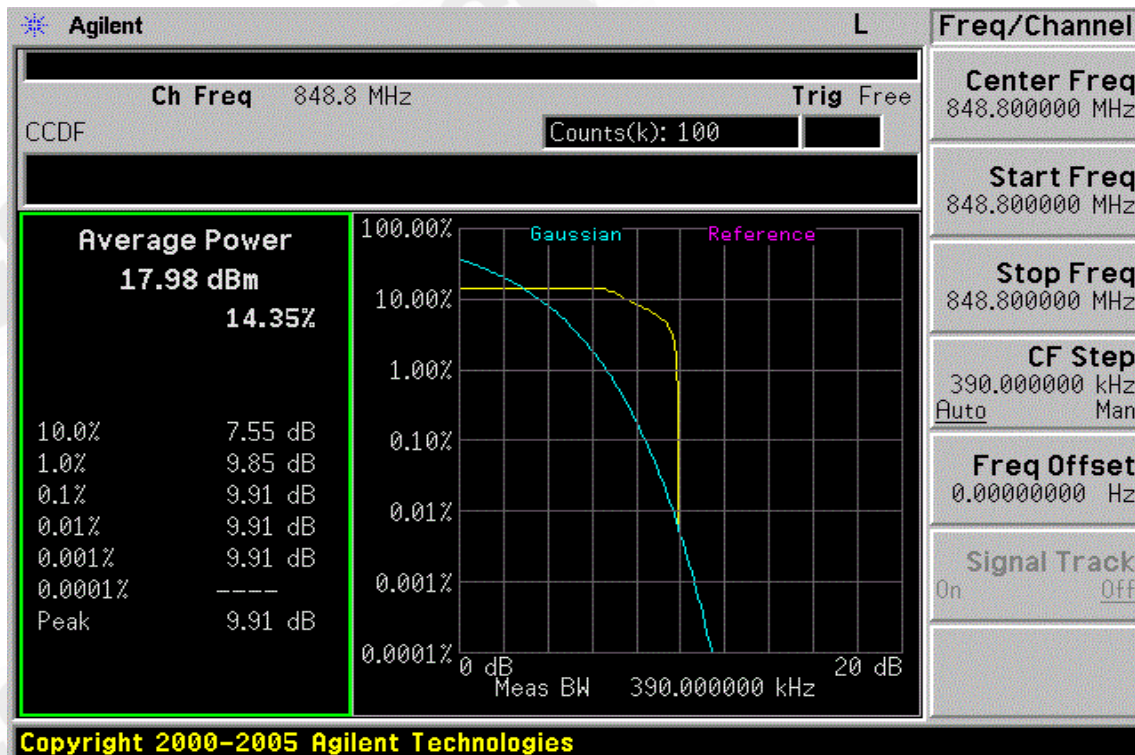
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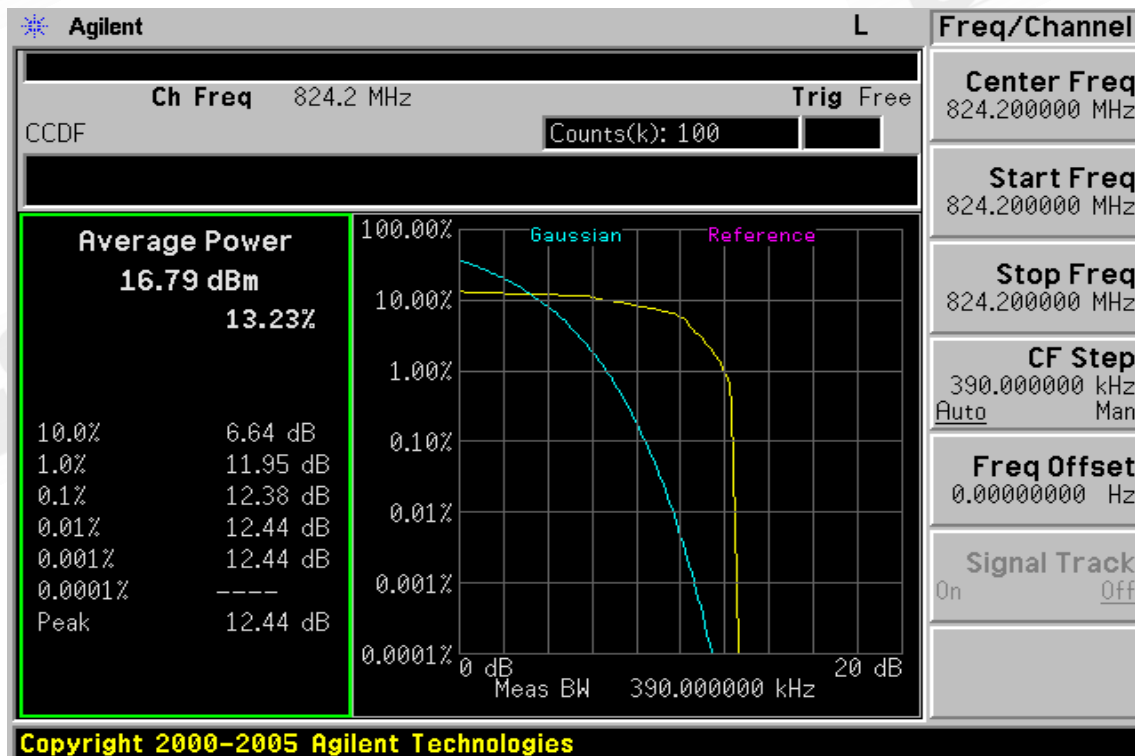
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## GPRS 850 Channel High



## EDGE 850 Channel Low



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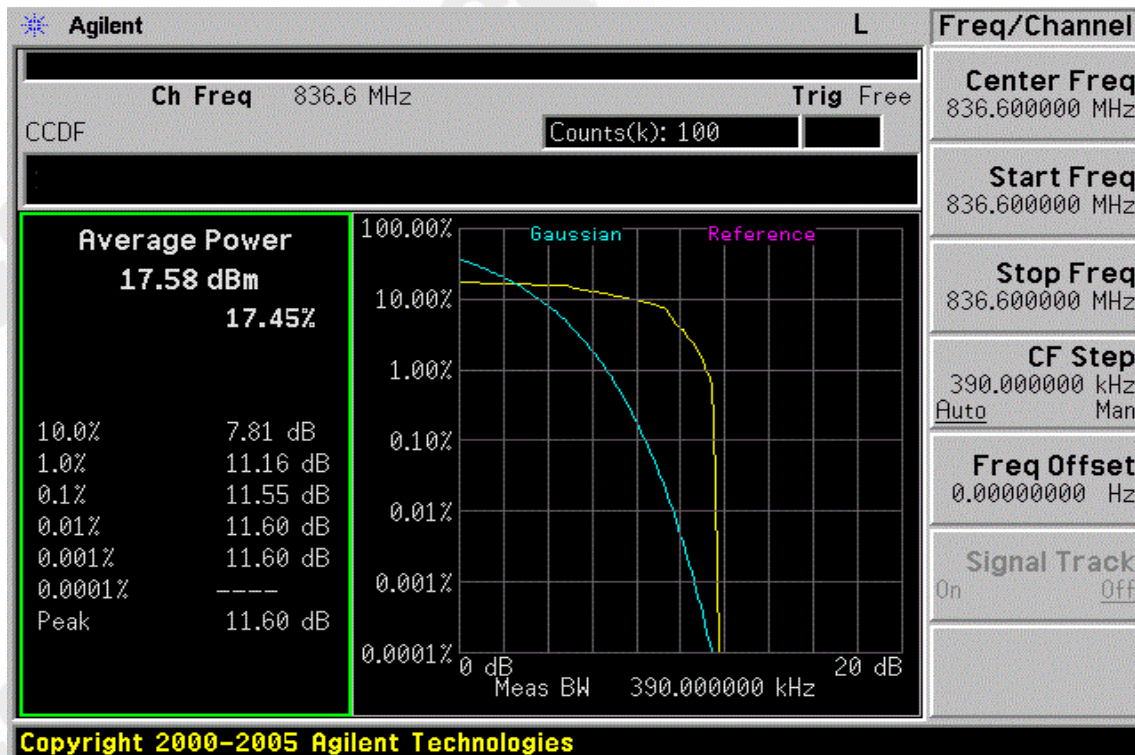
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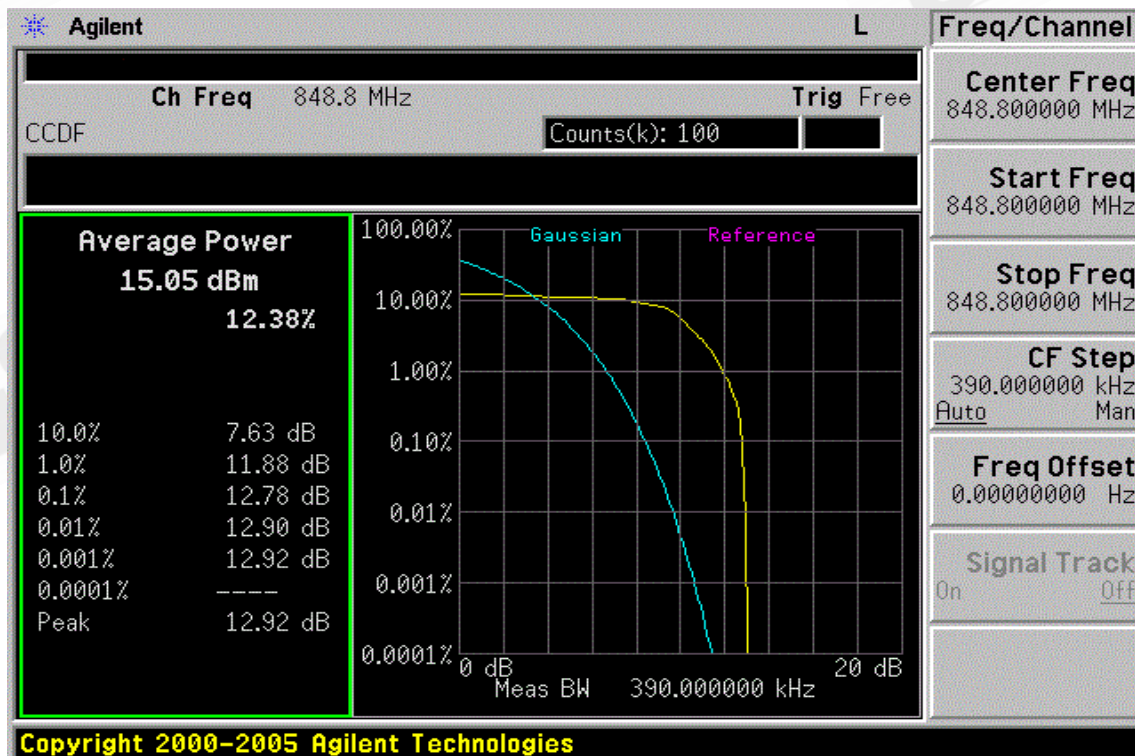
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## EDGE 850 Channel Mid



## EDGE 850 Channel High



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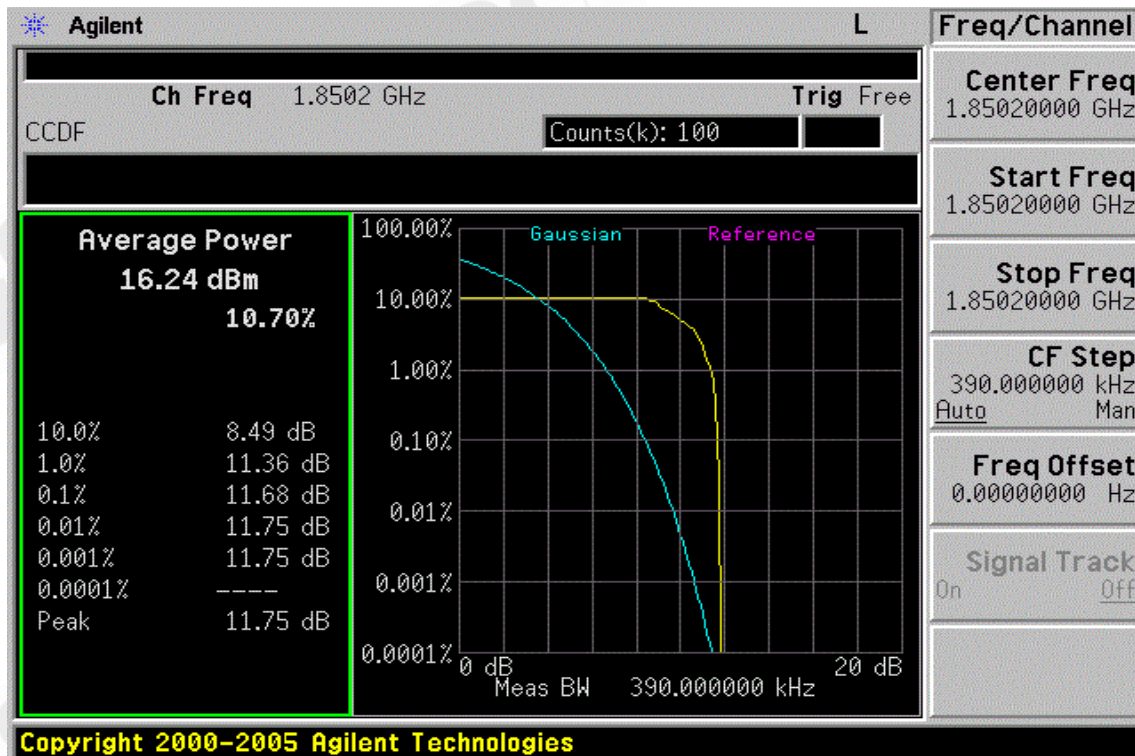
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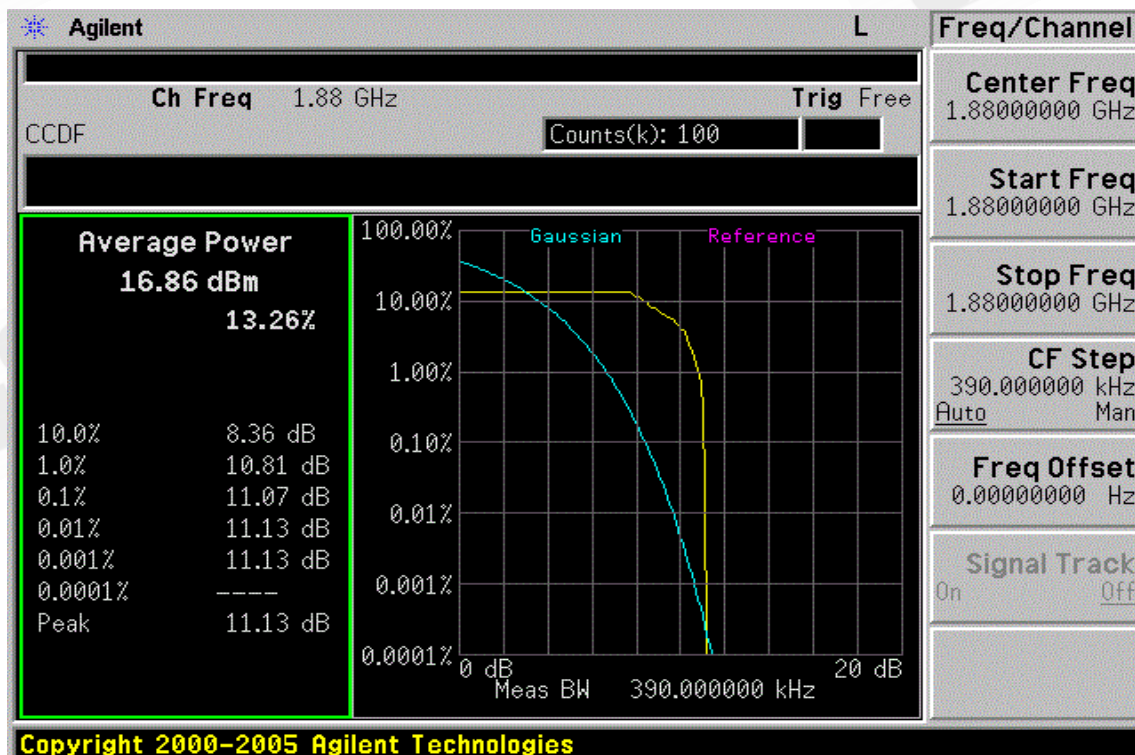
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## GPRS 1900 Channel Low



## GPRS 1900 Channel Mid



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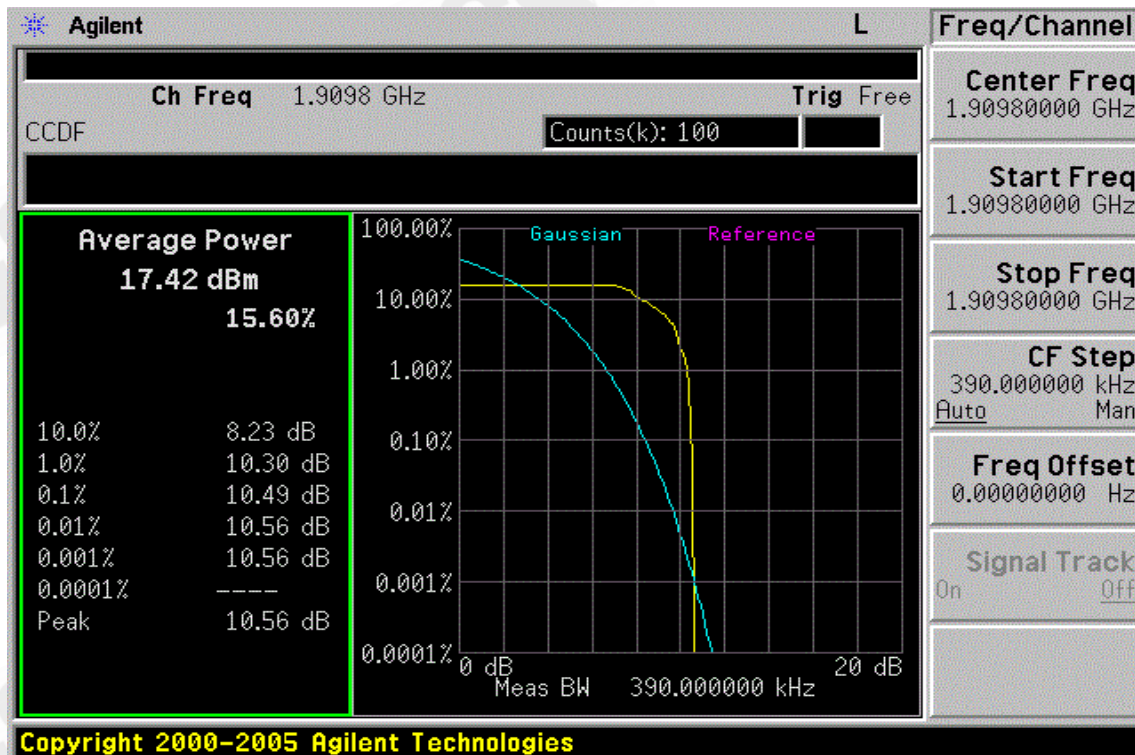
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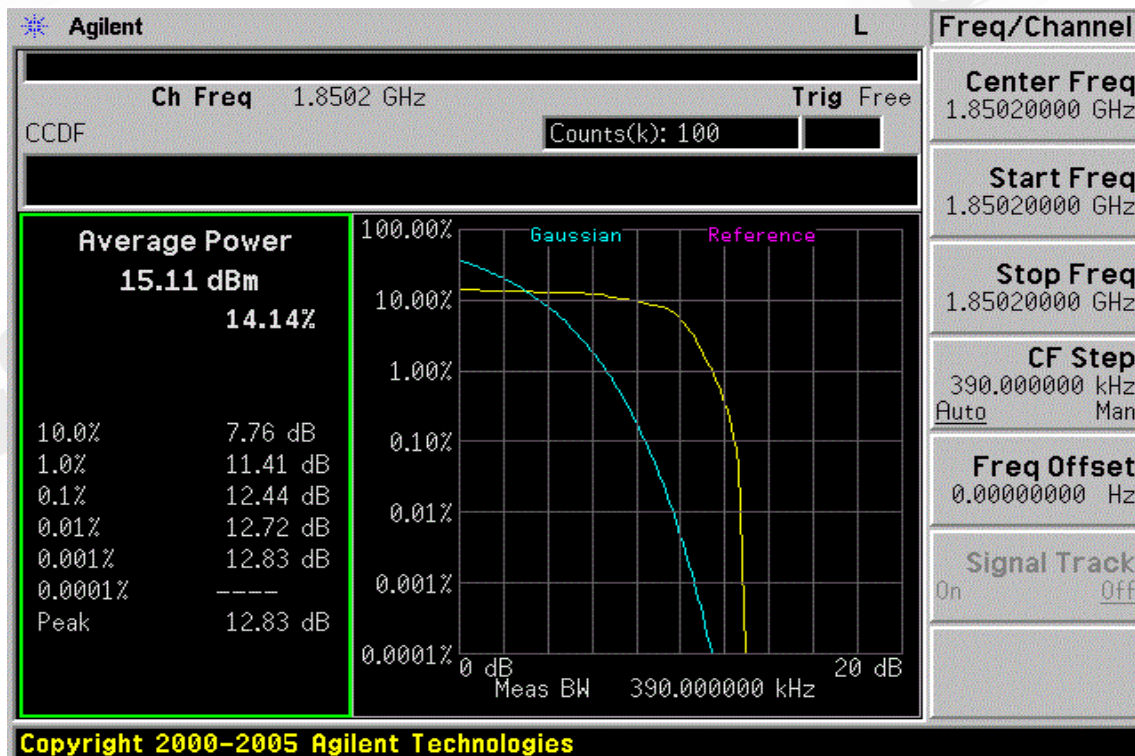
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## GPRS 1900 Channel High



## EDGE 1900 Channel Low



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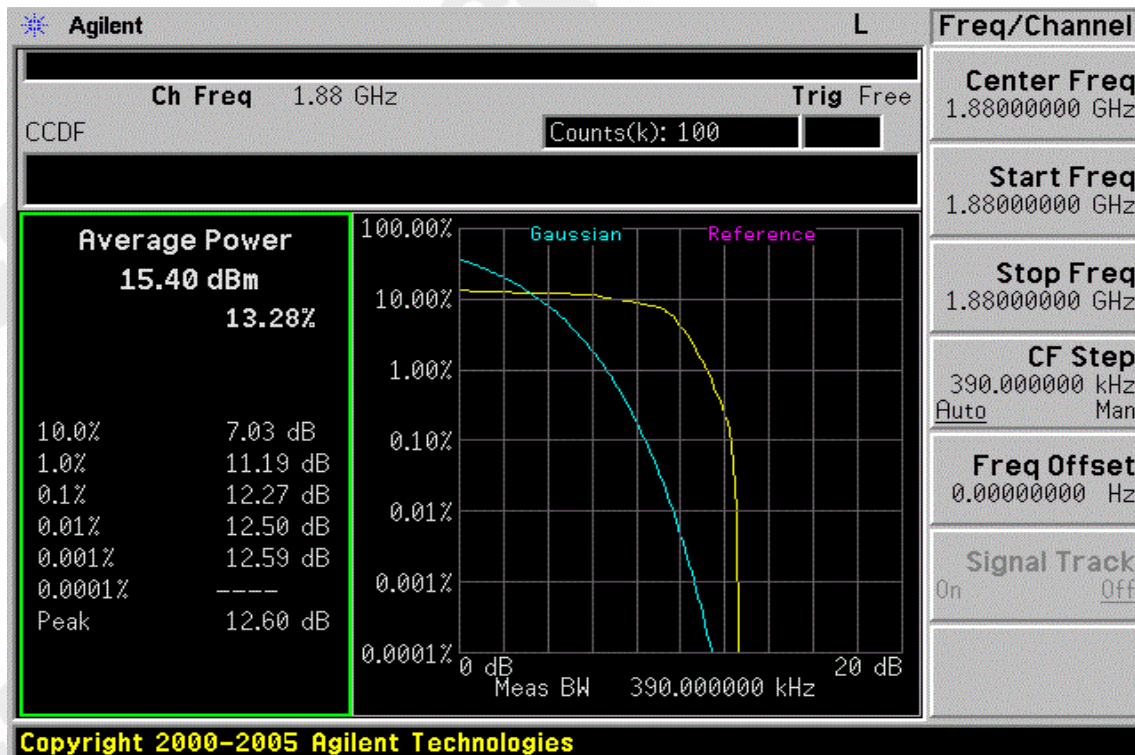
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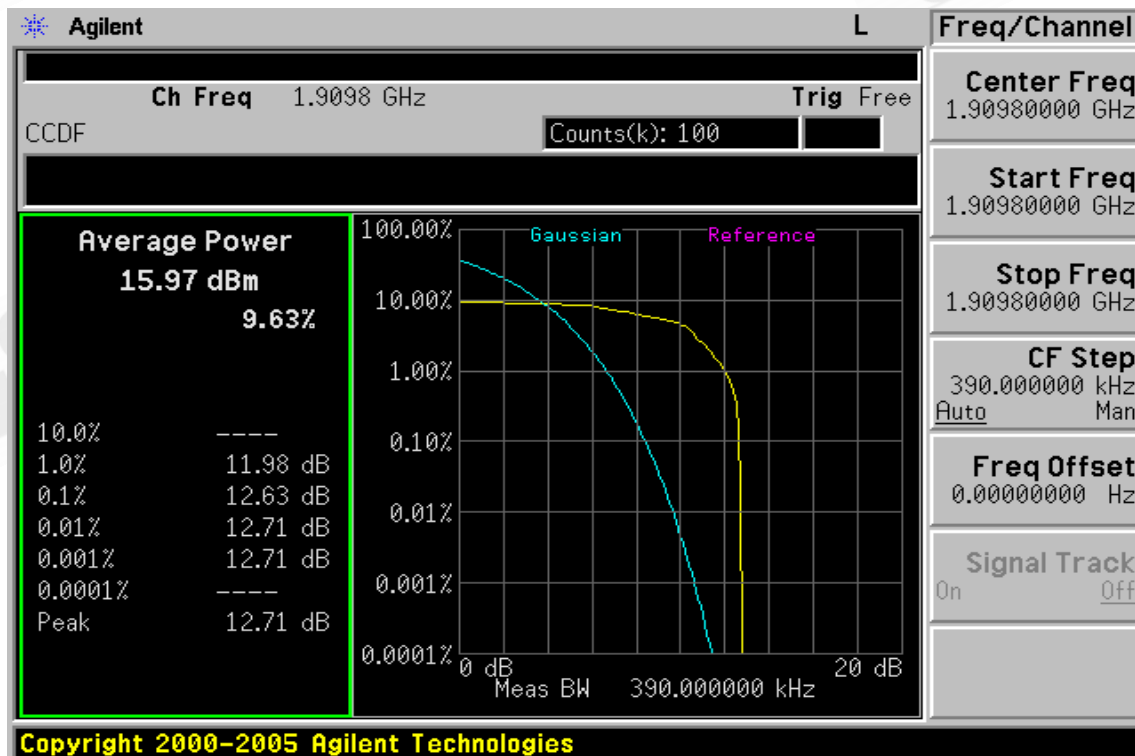
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## EDGE 1900 Channel Mid



## EDGE 1900 Channel High



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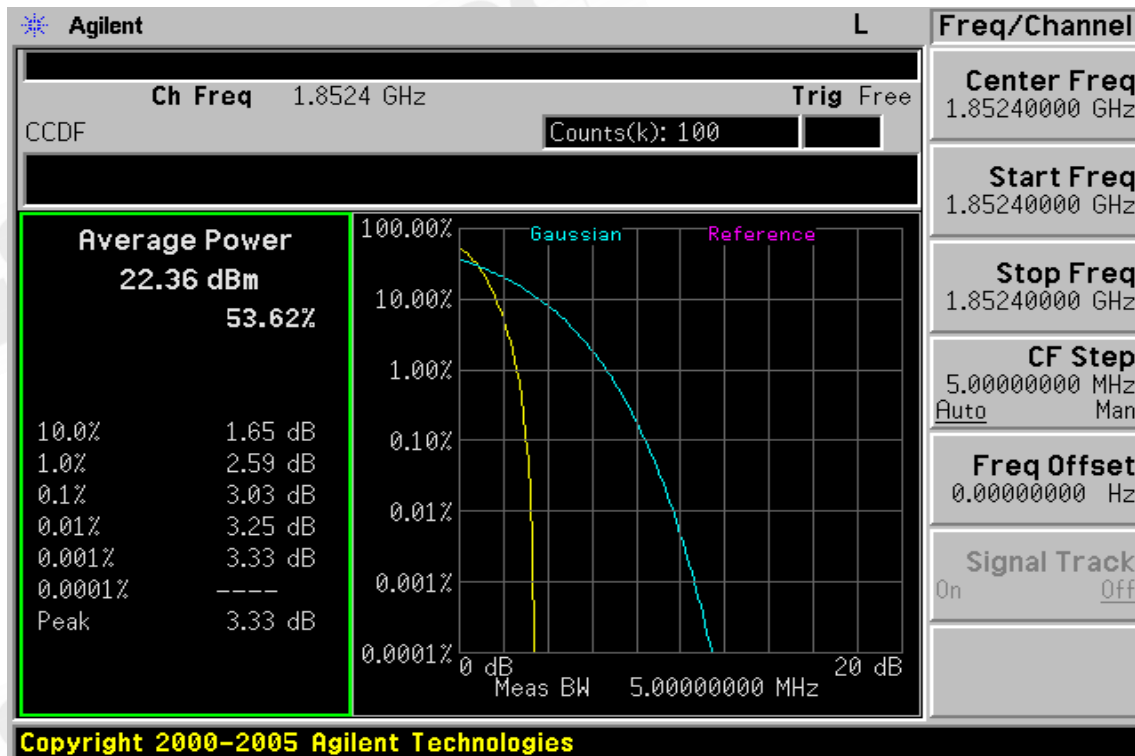
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## WCDMA BII Channel Low



## WCDMA BII Channel Mid



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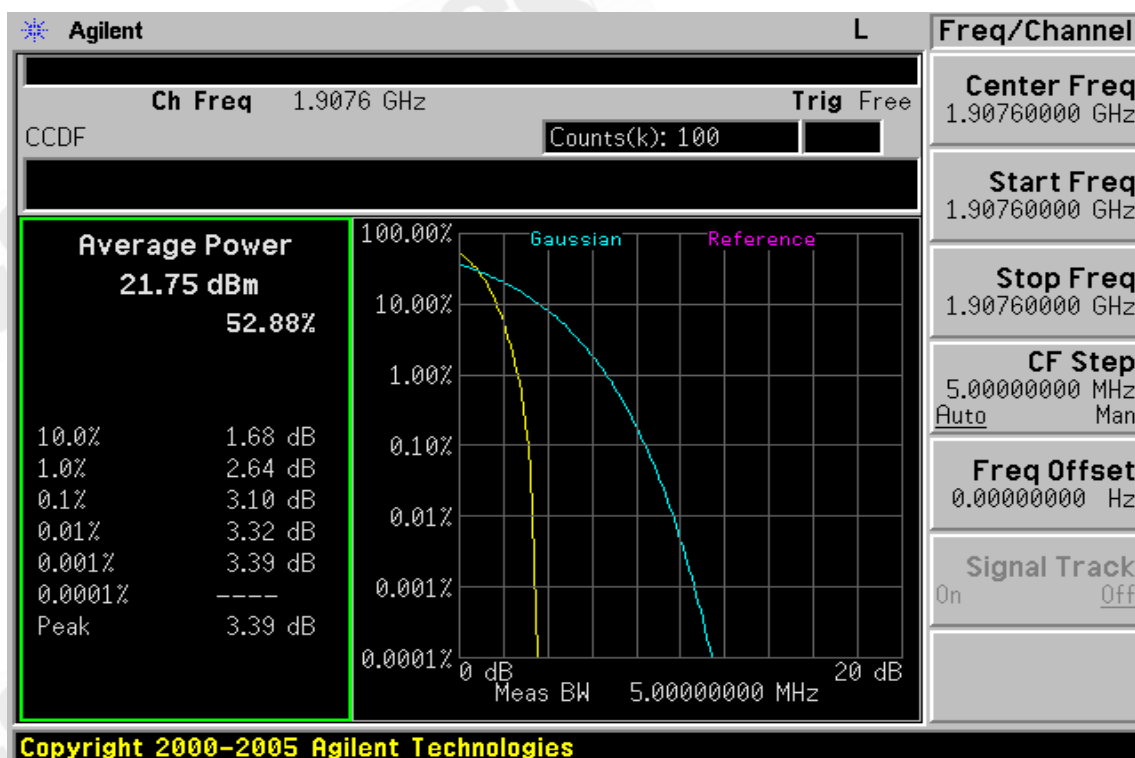
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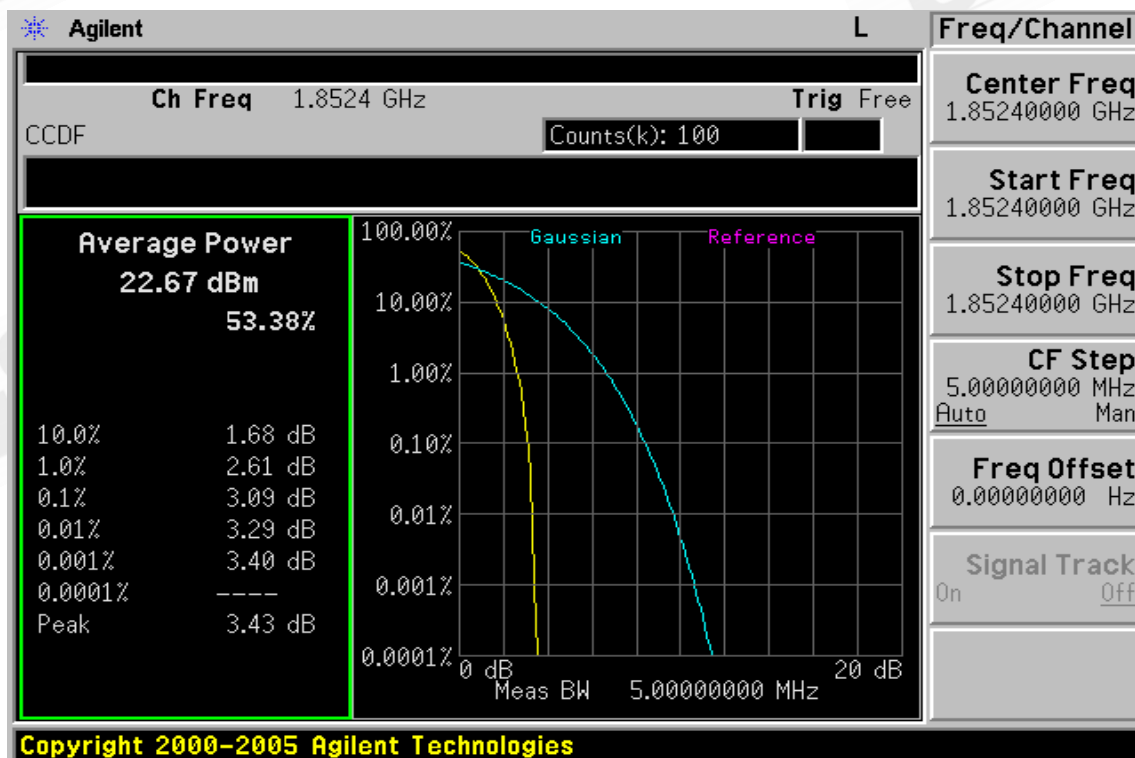
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## WCDMA BII Channel High



## HSDPA BII Channel Low



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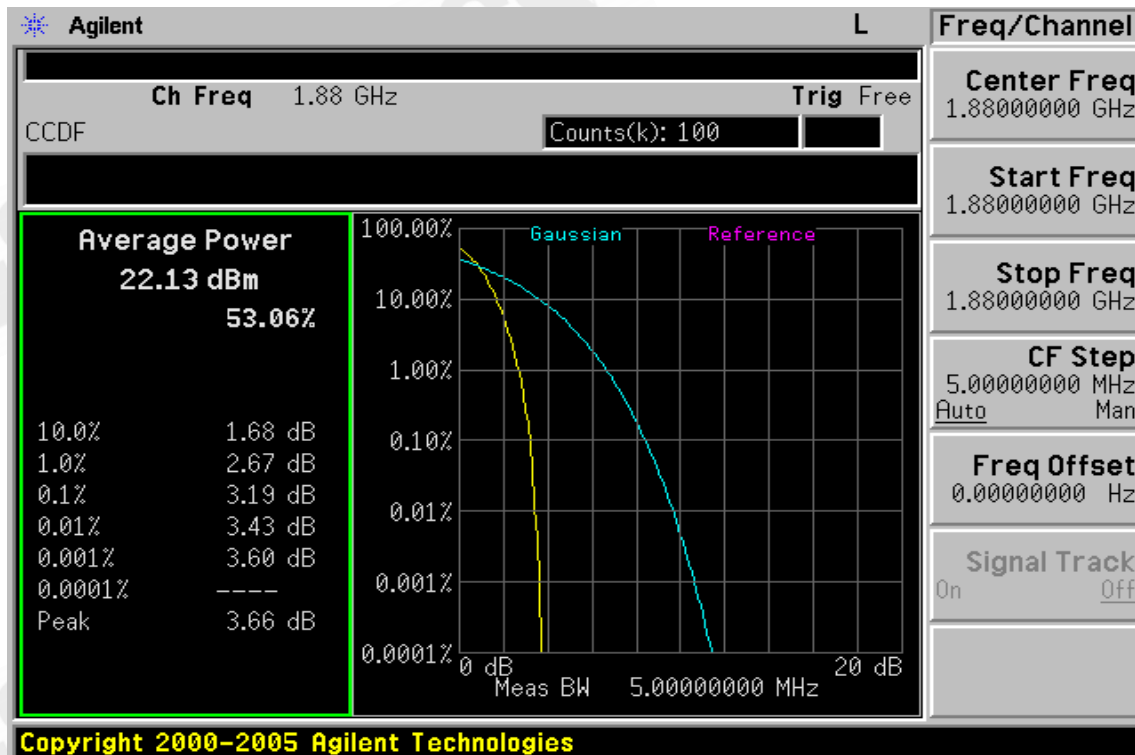
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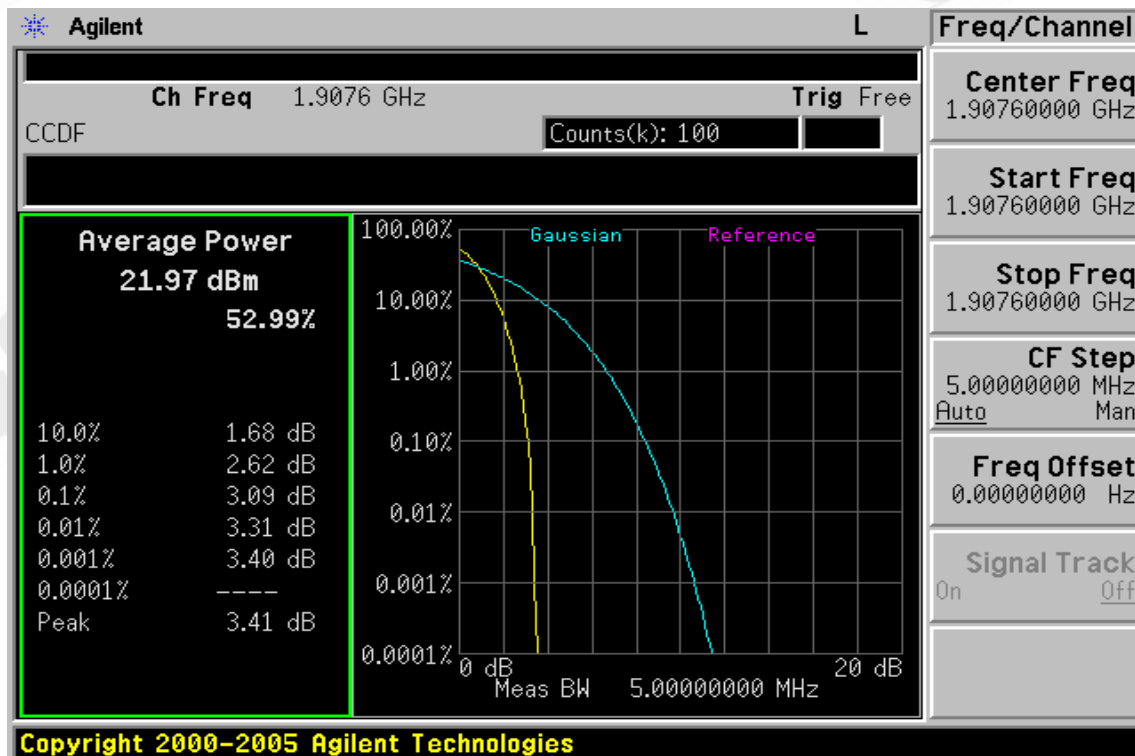
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## HSDPA BII Channel Mid



## HSDPA BII Channel High



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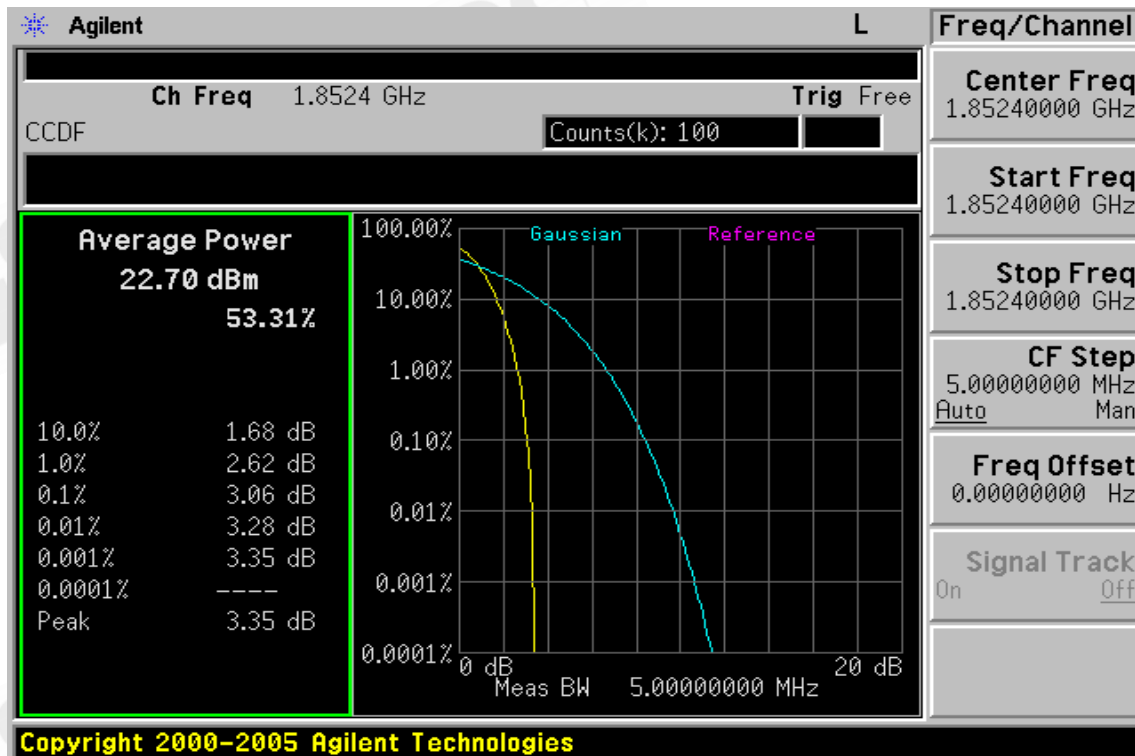
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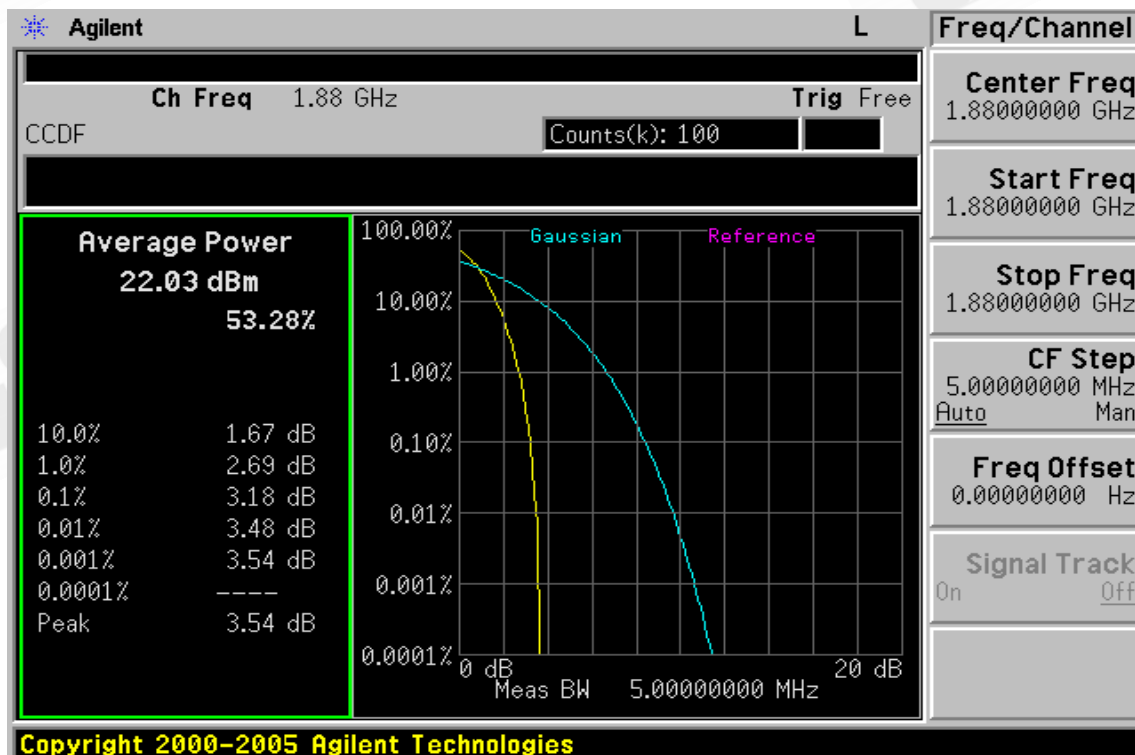
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## HSUPA BII Channel Low



## HSUPA BII Channel Mid



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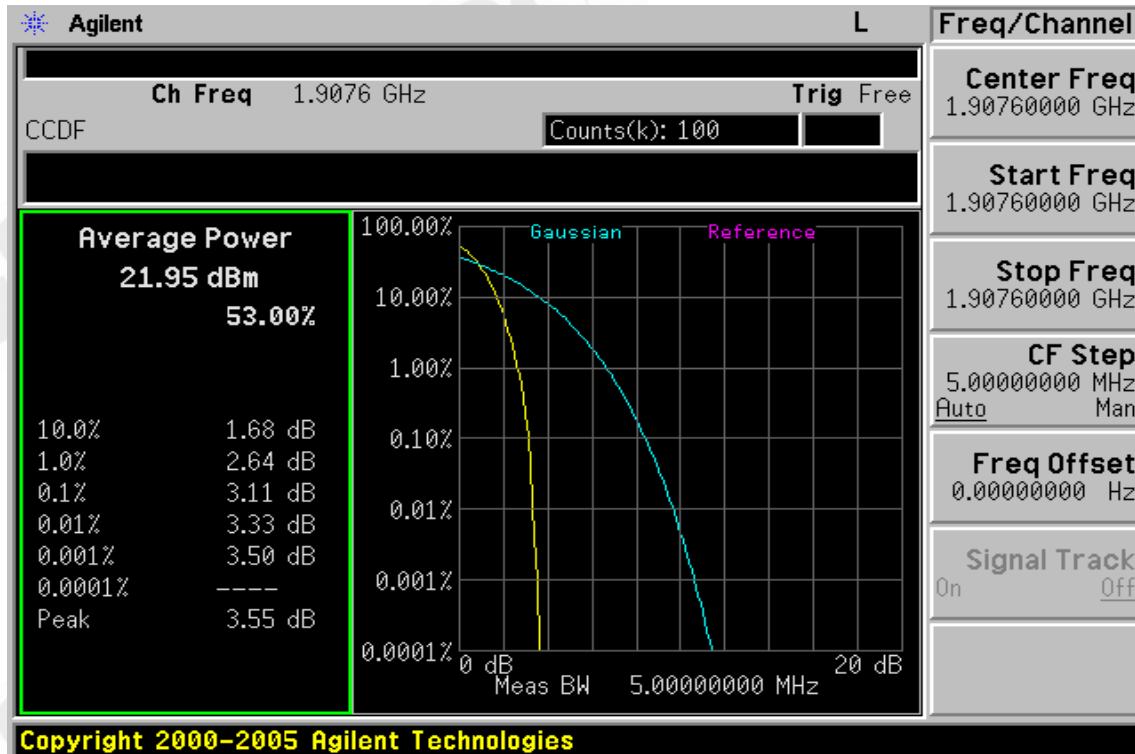
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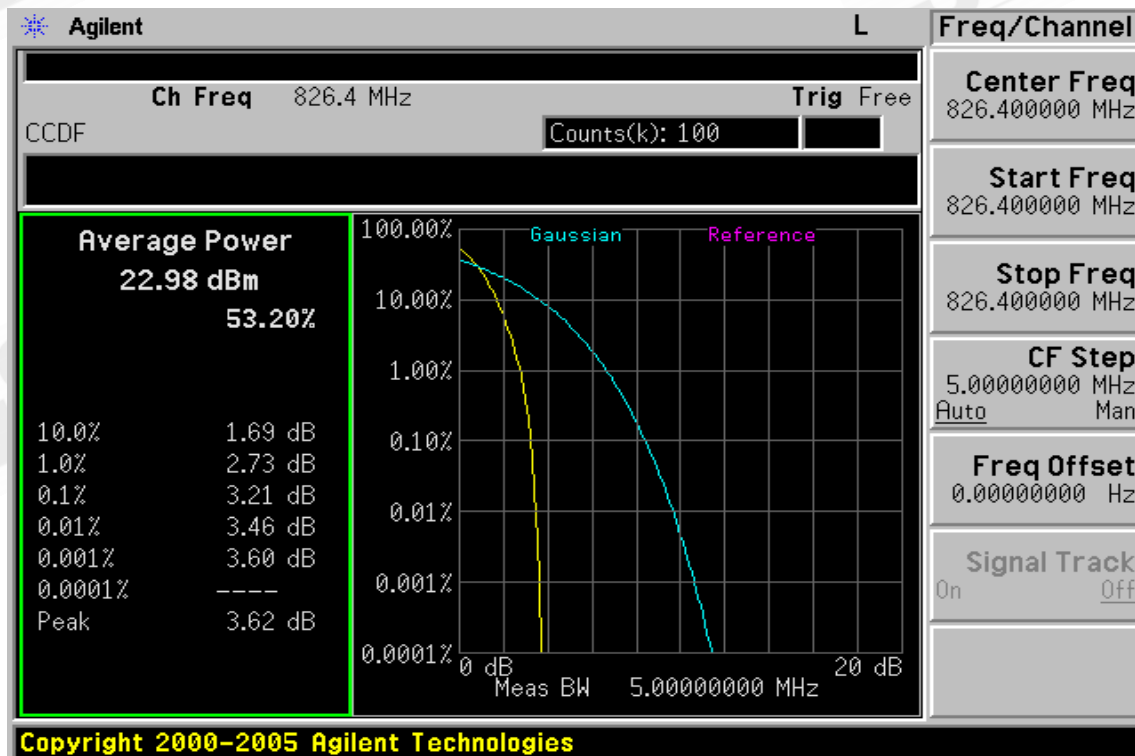
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## HSUPA BII Channel High



## WCDMA BV Channel Low



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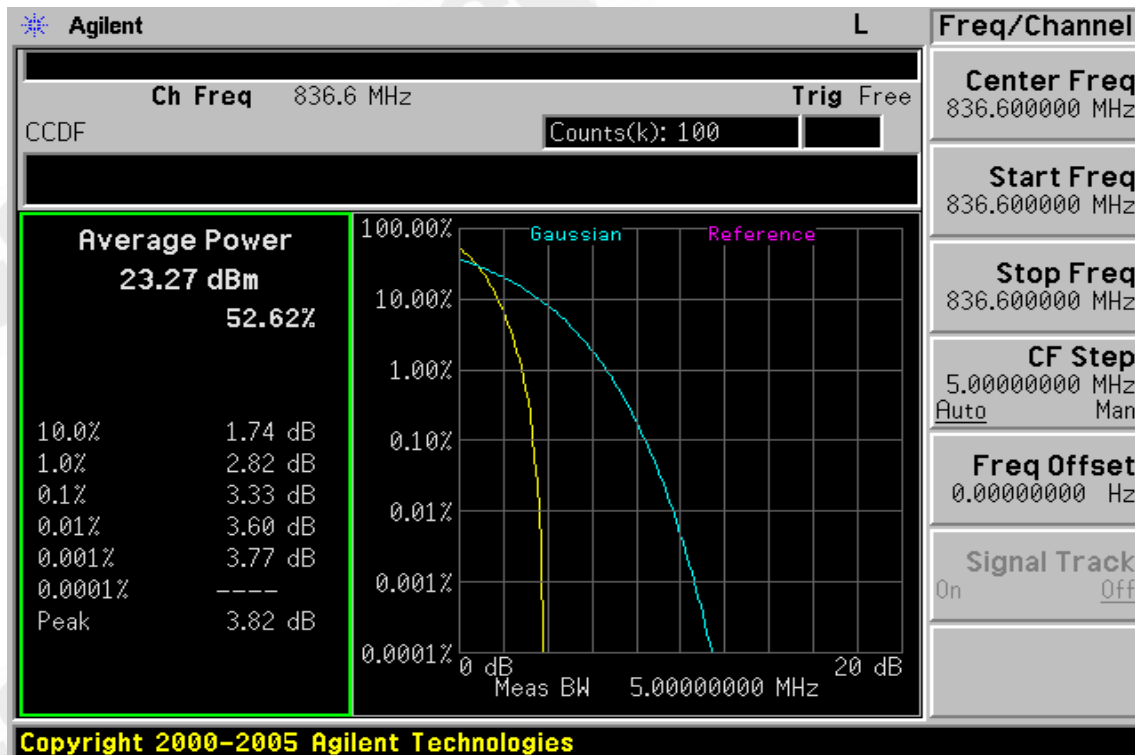
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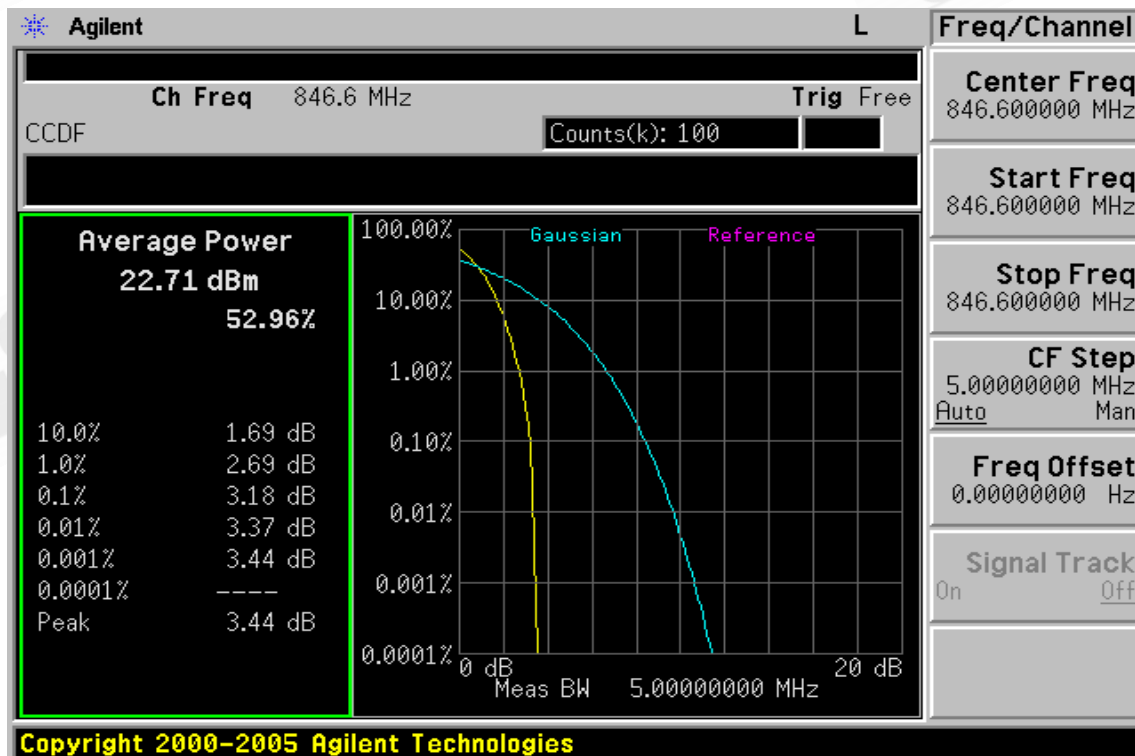
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## WCDMA BV Channel Mid



## WCDMA BV Channel High



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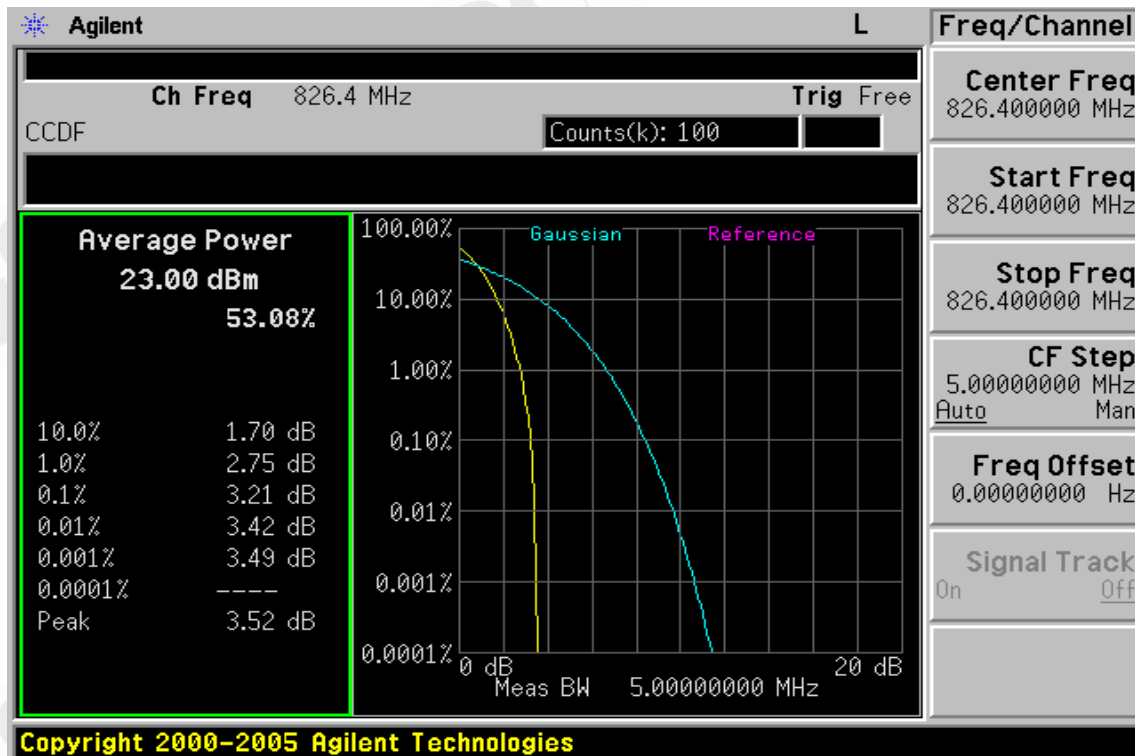
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## HSDPA BV Channel Low



## HSDPA BV Channel Mid



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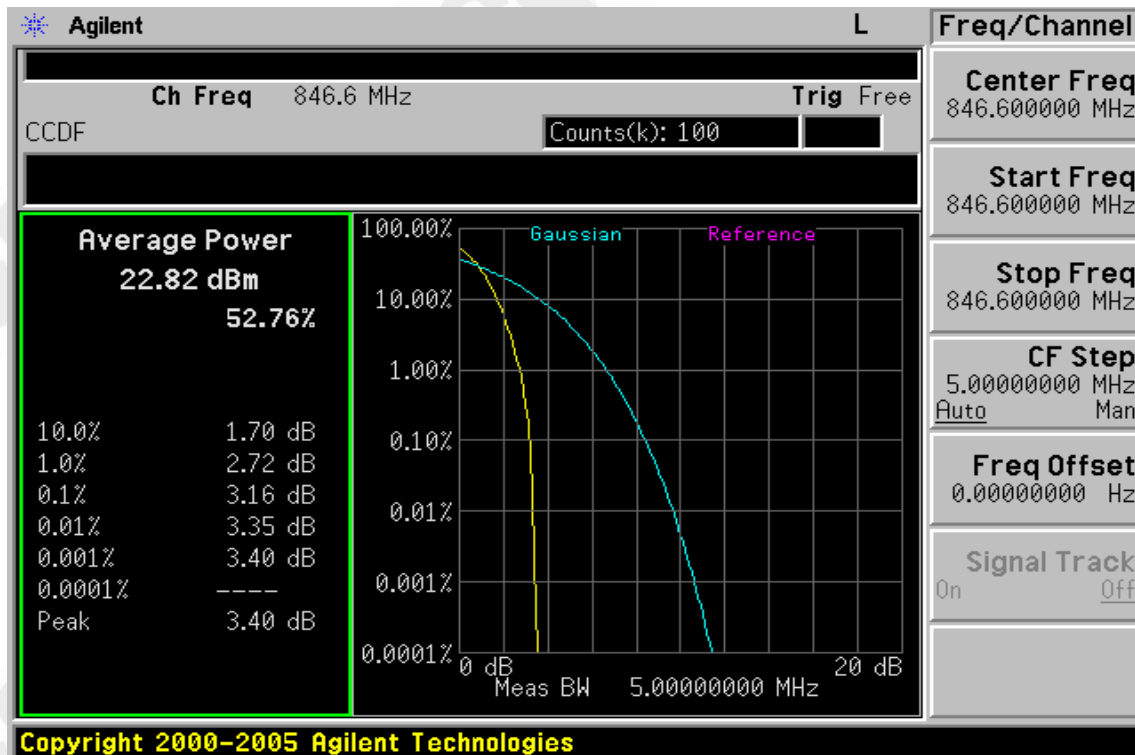
t (886-2) 2299-3279

f (886-2) 2298-0488

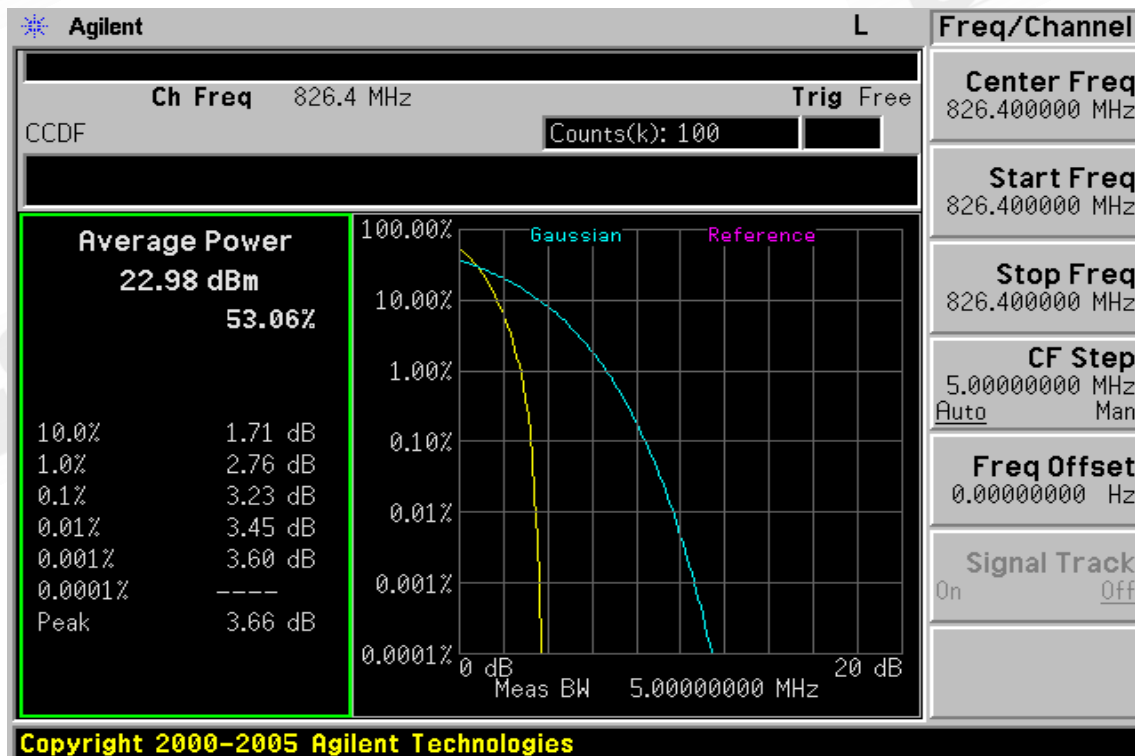
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## HSDPA BV Channel High



## HSUPA BV Channel Low



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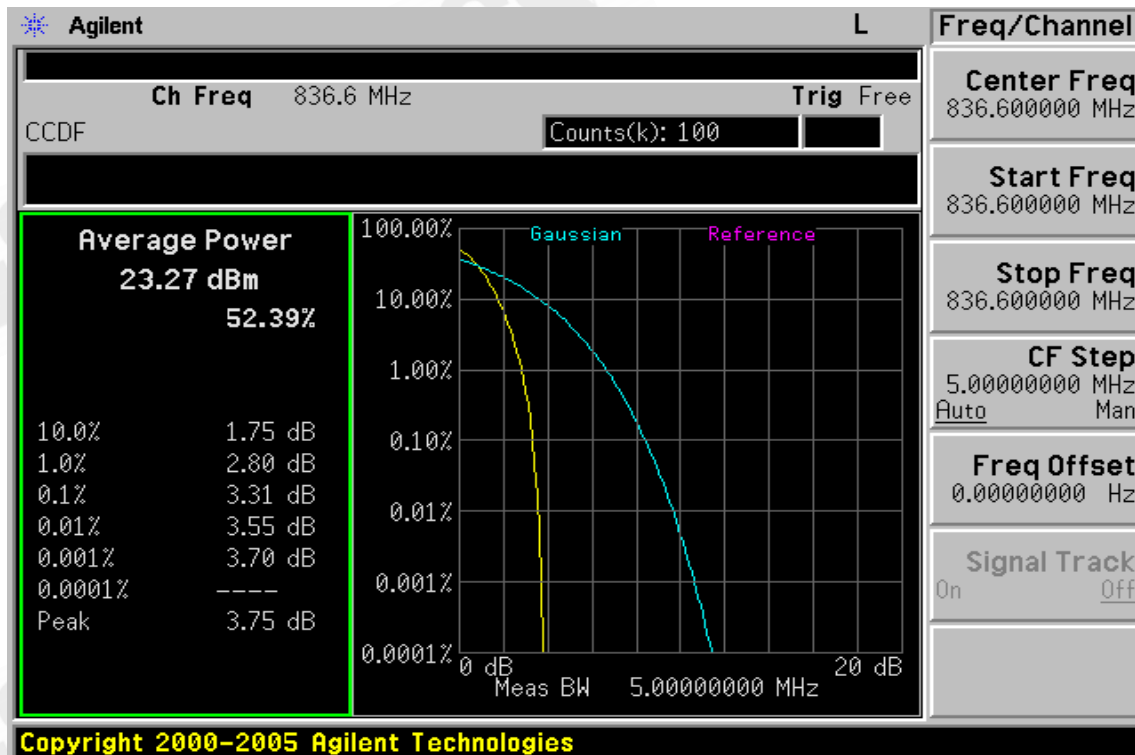
t (886-2) 2299-3279

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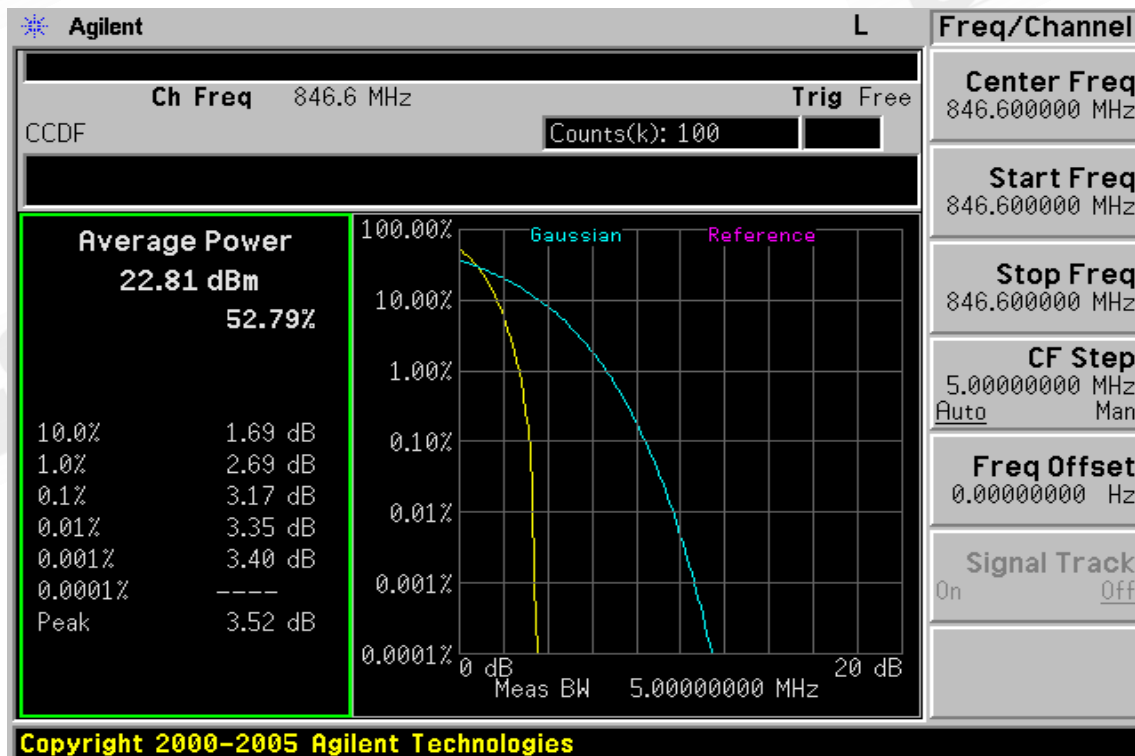
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## HSUPA BV Channel Mid



## HSUPA BV Channel High



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## 8. ERP, EIRP MEASUREMENT

### 8.1. Standard Applicable:

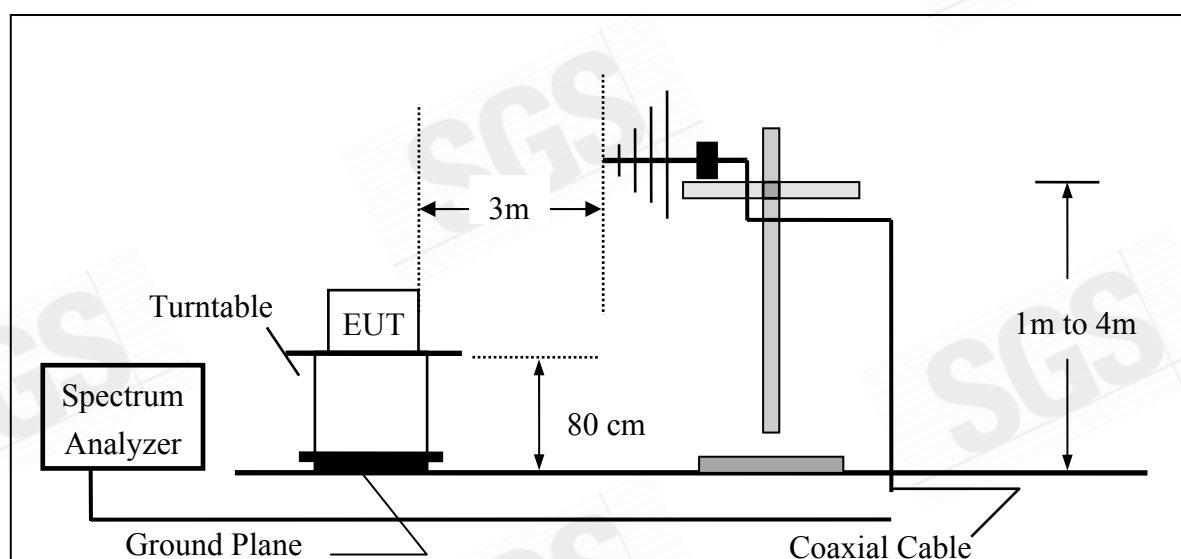
According to FCC §2.1046

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

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

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

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



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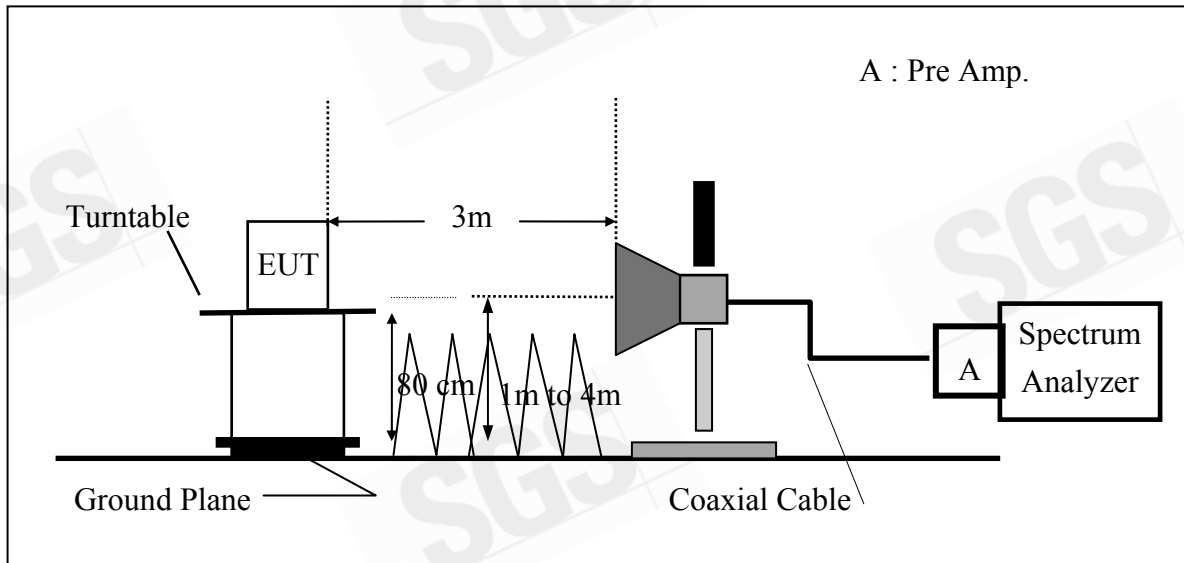
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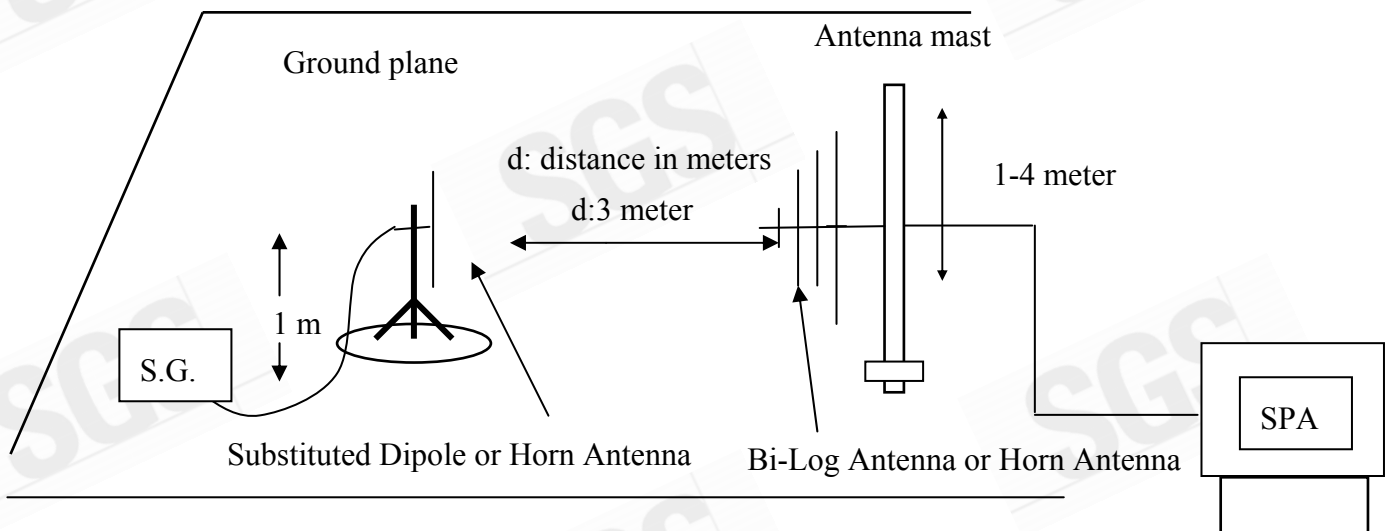
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## (B) Radiated Emission Test Set-UP Frequency Over 1 GHz



## (C) Substituted Method Test Set-UP



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### 8.3. Measurement Procedure:

The EUT was placed on an 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 and converted.

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 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  $\approx 1 \sim 5\%$  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 = 601 points, 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.

The proper adjustment due to limitation of spectrum capability is given compensated to spectrum with conversion factor of  $10 \times \log(TBW/RBW)$ , where TBW is the transmission of UE exceeding the maximum BW UE can extend, and RBW is the resolution BW in UE.

#### 8.4. Measurement Equipment Used:

Refer to section 2.4 in this report

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## 8.5. Measurement Result:

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	14.75	3.75	-3.03	15.48	38.45
			H	16.92	3.75	-3.03	<b>17.65</b>	38.45
	836.6	190	V	14.09	3.76	-3.07	14.78	38.45
			H	16.92	3.76	-3.07	17.61	38.45
	848.8	251	V	13.70	3.77	-3.11	14.36	38.45
			H	16.39	3.77	-3.11	17.05	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	13.22	3.75	-3.03	13.95	38.45
			H	8.84	3.75	-3.03	9.57	38.45
	836.6	190	V	12.62	3.76	-3.07	13.31	38.45
			H	15.80	3.76	-3.07	<b>16.49</b>	38.45
	848.8	251	V	12.64	3.77	-3.11	13.30	38.45
			H	15.10	3.77	-3.11	15.76	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	26.76	5.22	-4.67	27.32	33.00
			H	18.89	5.22	-4.67	19.44	33.00
	1880.0	661	V	27.38	5.16	-4.70	27.83	33.00
			H	18.87	5.16	-4.70	19.32	33.00
	1909.8	810	V	28.03	5.09	-4.74	<b>28.38</b>	33.00
			H	20.57	5.09	-4.74	20.92	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	25.30	5.22	-4.67	<b>25.86</b>	33.00
			H	17.52	5.22	-4.67	18.08	33.00
	1880.0	661	V	24.78	5.16	-4.70	25.23	33.00
			H	17.45	5.16	-4.70	17.90	33.00
	1909.8	810	V	24.26	5.09	-4.74	24.61	33.00
			H	19.12	5.09	-4.74	19.47	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
WCDMA B2	MHz		V/H	dBm	dB	dB	dBm	dBm
	1852.4	9262	V	25.07	5.22	-4.67	<b>25.62</b>	33.01
			H	17.69	5.22	-4.67	18.24	33.01
	1880.0	9400	V	21.46	5.16	-4.70	21.91	33.01
			H	17.05	5.16	-4.70	17.50	33.01
	1907.6	9538	V	20.07	5.10	-4.74	20.43	33.01
			H	16.06	5.09	-4.74	16.42	33.01

EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
HSDPA B2	MHz		V/H	dBm	dB	dB	dBm	dBm
	1852.4	9262	V	22.83	5.22	-4.67	<b>23.38</b>	33.01
			H	21.28	5.22	-4.67	21.83	33.01
	1880.0	9400	V	15.46	5.22	-4.67	16.01	33.01
			H	13.94	5.22	-4.67	14.49	33.01
	1907.6	9538	V	21.45	5.16	-4.70	21.91	33.01
			H	20.77	5.16	-4.70	21.22	33.01

EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
HSUPA B2	MHz		V/H	dBm	dB	dB	dBm	dBm
	1852.4	9262	V	13.95	5.16	-4.70	14.40	33.01
			H	12.80	5.16	-4.71	13.25	33.01
	1880.0	9400	V	17.82	5.10	-4.74	18.18	33.01
			H	18.27	5.10	-4.74	<b>18.64</b>	33.01
	1907.6	9538	V	13.84	5.10	-4.74	14.20	33.01
			H	13.98	5.10	-4.74	14.34	33.01

**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	ERP	Limit
	MHz		V/H	dBm	dBd	dB	dBm	dBm
WCDMA B5	826.4	4132	V	9.96	3.76	-3.03	10.68	38.45
			H	14.27	3.76	-3.04	14.99	38.45
	836.6	4183	V	9.73	3.76	-3.07	10.43	38.45
			H	14.64	3.76	-3.07	<b>15.33</b>	38.45
	846.6	4233	V	10.65	3.77	-3.10	11.32	38.45
			H	14.56	3.77	-3.10	15.23	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	11.57	3.76	-3.03	12.29	38.45
			H	16.25	3.76	-3.03	16.97	38.45
	836.6	4183	V	11.11	3.76	-3.07	11.80	38.45
			H	16.53	3.76	-3.07	<b>17.23</b>	38.45
	846.6	4233	V	12.42	3.77	-3.10	13.09	38.45
			H	15.50	3.77	-3.10	16.16	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	11.37	3.76	-3.03	12.09	38.45
			H	16.00	3.76	-3.03	<b>16.72</b>	38.45
	836.6	4183	V	11.04	3.76	-3.07	11.73	38.45
			H	15.98	3.76	-3.07	16.68	38.45
	846.6	4233	V	12.13	3.77	-3.10	12.80	38.45
			H	15.17	3.77	-3.10	15.84	38.45

## Remark :

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

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## 9. OCCUPIED BANDWIDTH MEASUREMENT

### 9.1. Standard Applicable:

According to §FCC 2.1049 (99%)

### 9.2. Test Set-up:

Refer to section 5.2 in this report

### 9.3. 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 \* Signal BW, set % Power = 99%.

**NOTE:** For the plot of bandwidth measurement, the marker of the 99% bandwidth is diamond-shape while the marker of the 20dB BW is arrow-mark

### 9.4. Measurement Equipment Used:

Refer to section 2.4 in this report

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## 9.5. Measurement Result:

### 99% Bandwidth

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
GPRS 850	824.20	128	0.240
	836.60	190	0.247
	848.80	251	0.243

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
GPRS 1900	1850.20	512	0.244
	1880.00	661	0.241
	1909.80	810	0.237

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
EDGE 850	824.20	128	0.239
	836.60	190	0.245
	848.80	251	0.246

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
EDGE 1900	1850.20	512	0.250
	1880.00	661	0.243
	1909.80	810	0.250

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EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
WCDMA II	1852.40	9262	4.1347
	1880.00	9400	4.1368
	1907.60	9538	4.1497

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
WCDMA V	826.40	4132	4.1387
	836.00	4180	4.1321
	846.60	4233	4.1233

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
HSDPA II	1852.4	9262	4.1362
	1880.0	9400	4.1273
	1907.6	9538	4.1475

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
HSDPA V	826.40	4132	4.1256
	836.60	4183	4.1127
	846.60	4233	4.1237

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
HSUPA II	1852.4	9262	4.1266
	1880.0	9400	4.1460
	1907.6	9538	4.1425

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
HSUPA V	826.40	4132	4.1371
	836.60	4183	4.1185
	846.60	4233	4.1088

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## 99% Bandwidth Test Data

Figure 9-1: GPRS 850 Channel Low

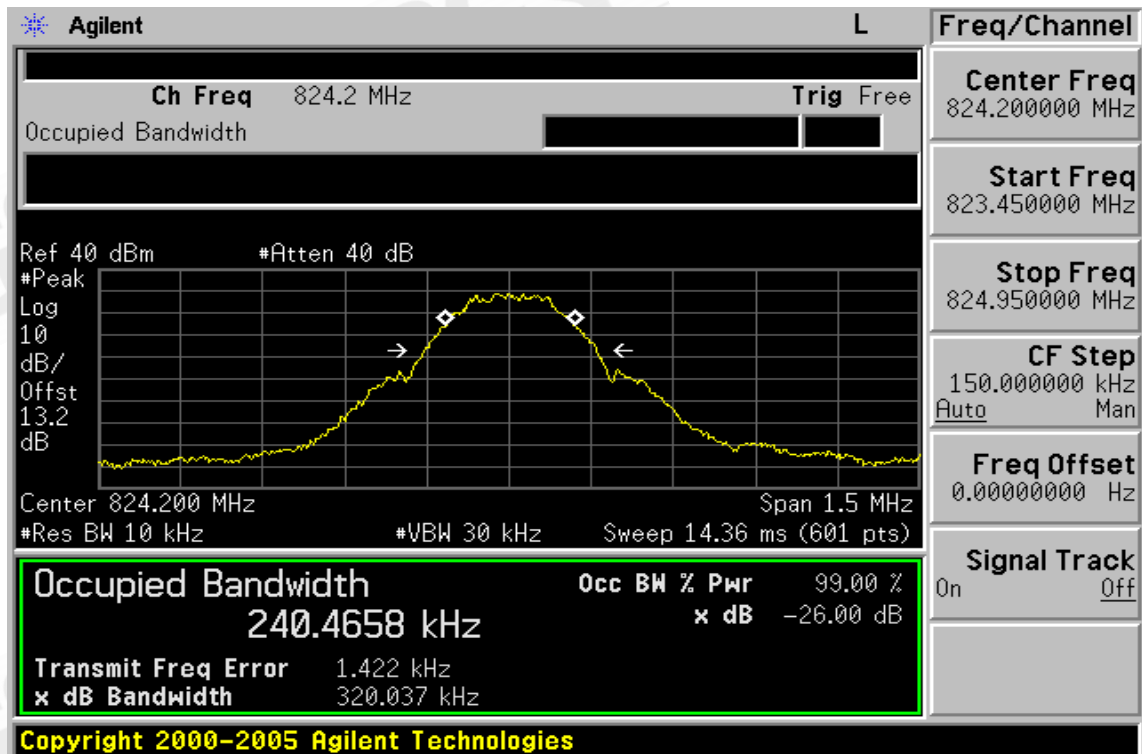
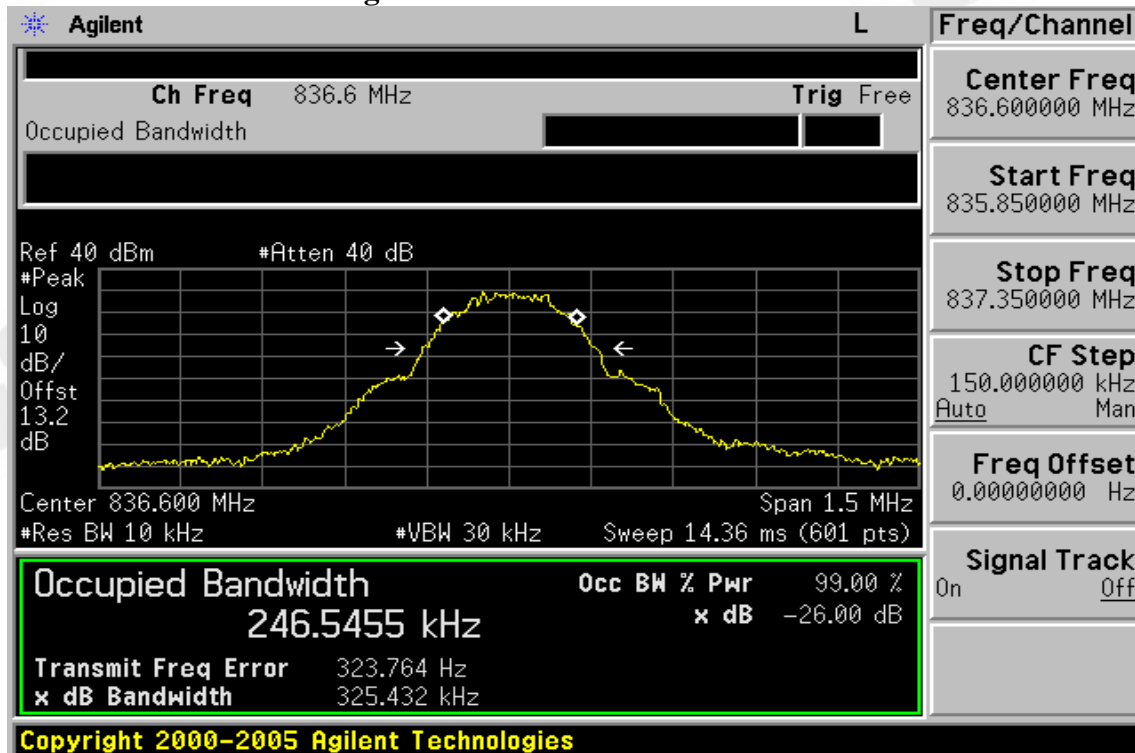


Figure 9-2: GPRS 850Channel Mid



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Figure 9-3: GPRS 850 Channel High

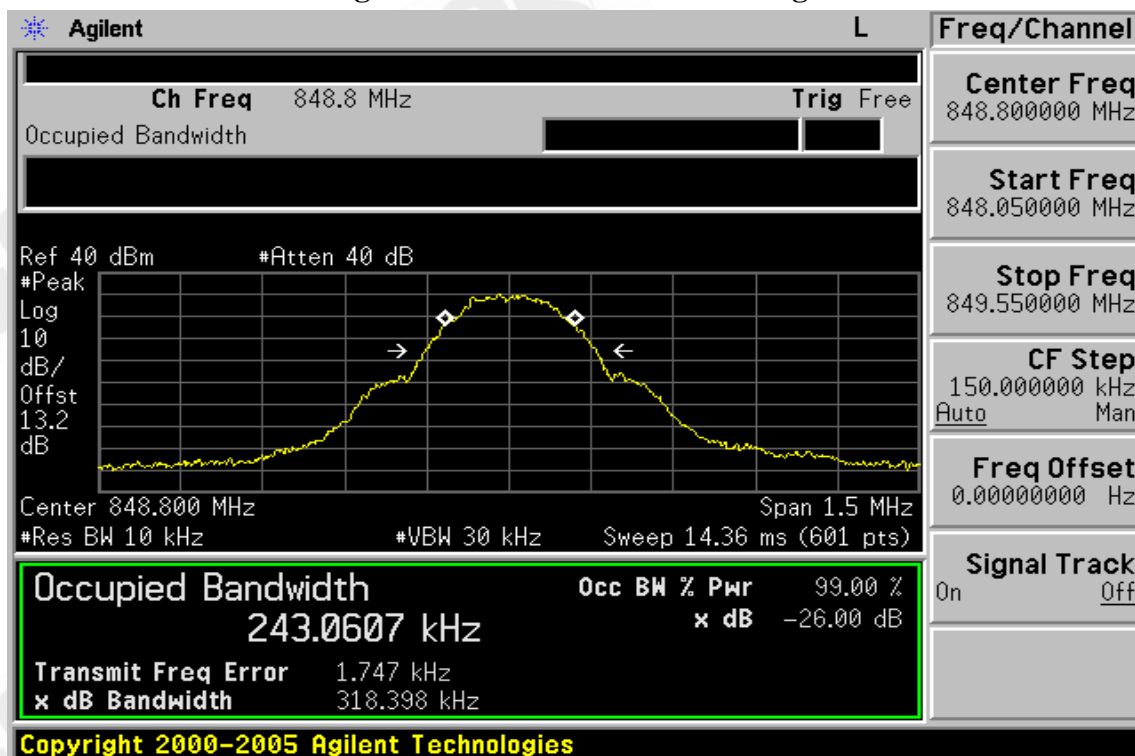
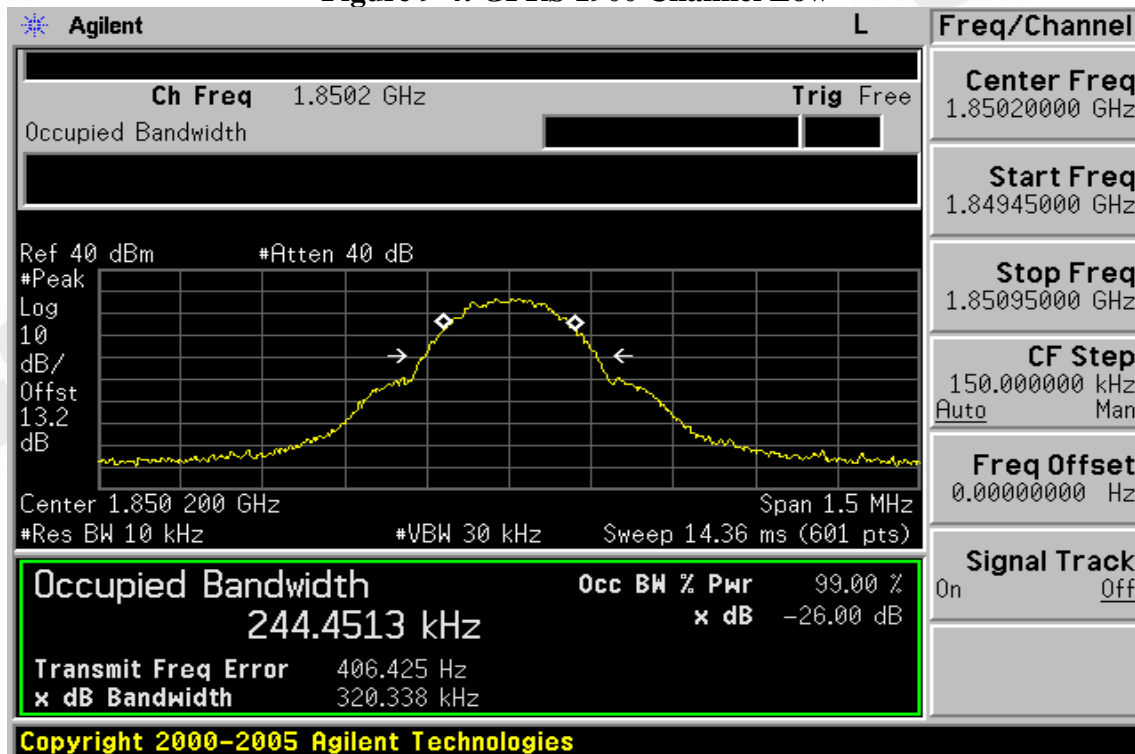


Figure 9-4: GPRS 1900 Channel Low



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Figure 9-5: GPRS 1900 Channel Mid

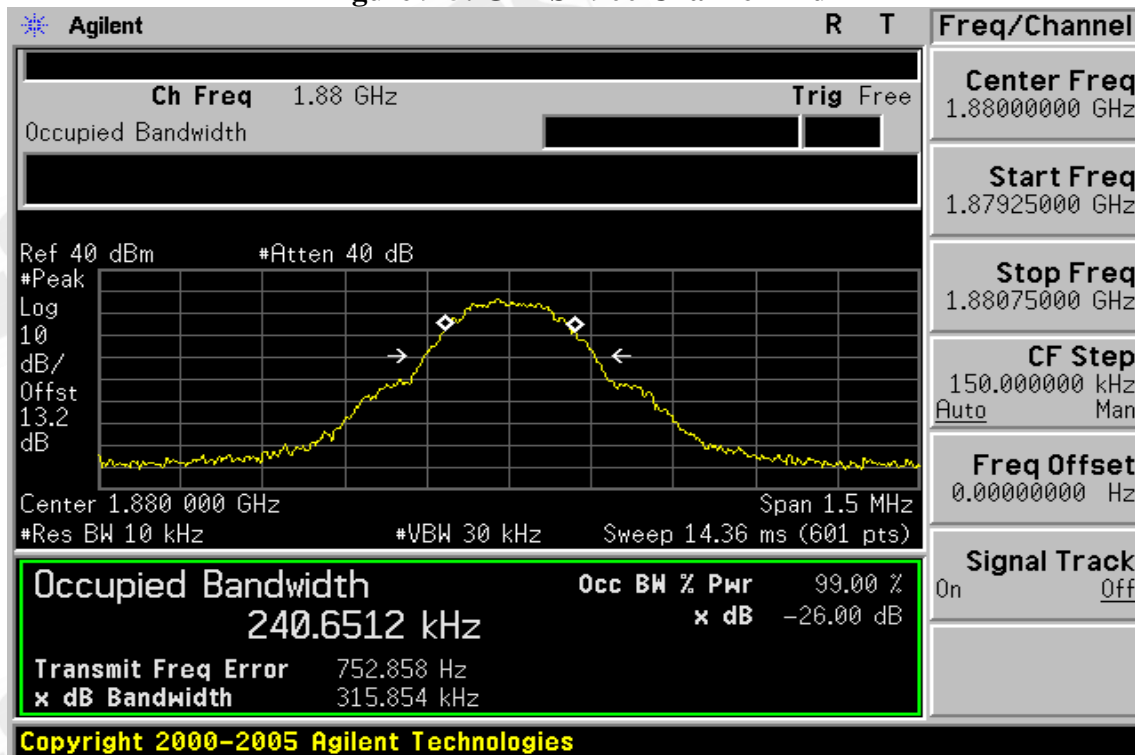
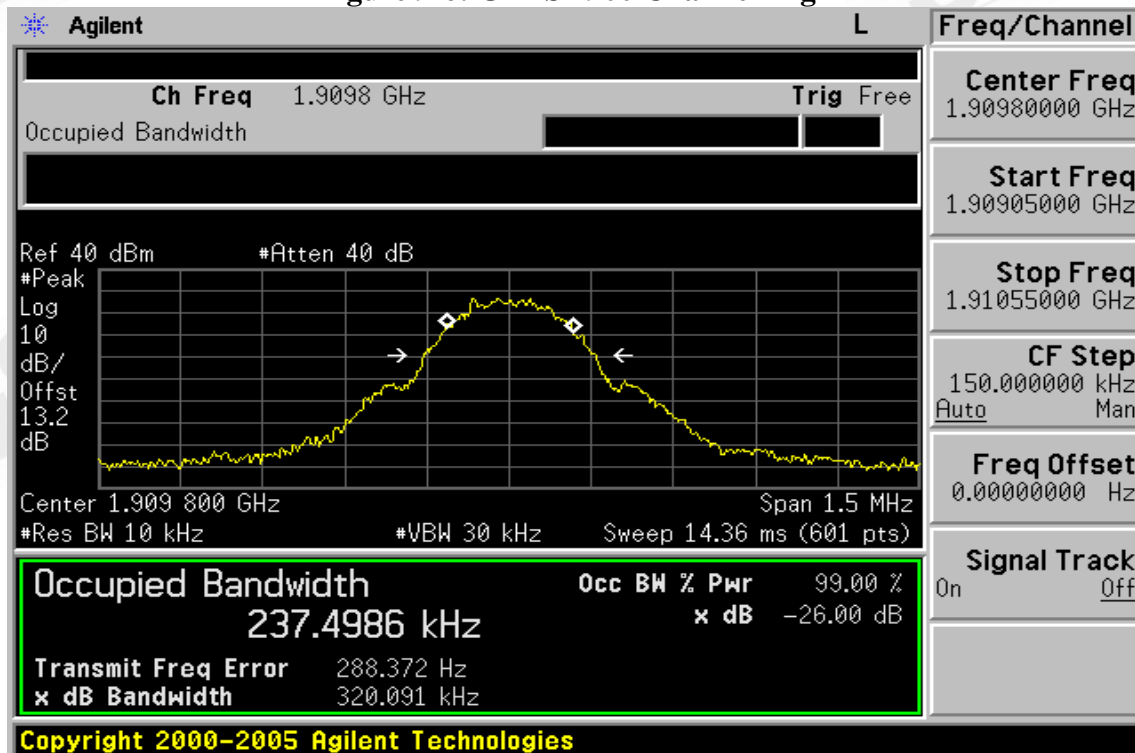


Figure 9-6: GPRS 1900 Channel High



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Figure 9-7: EDGE 850 Channel Low

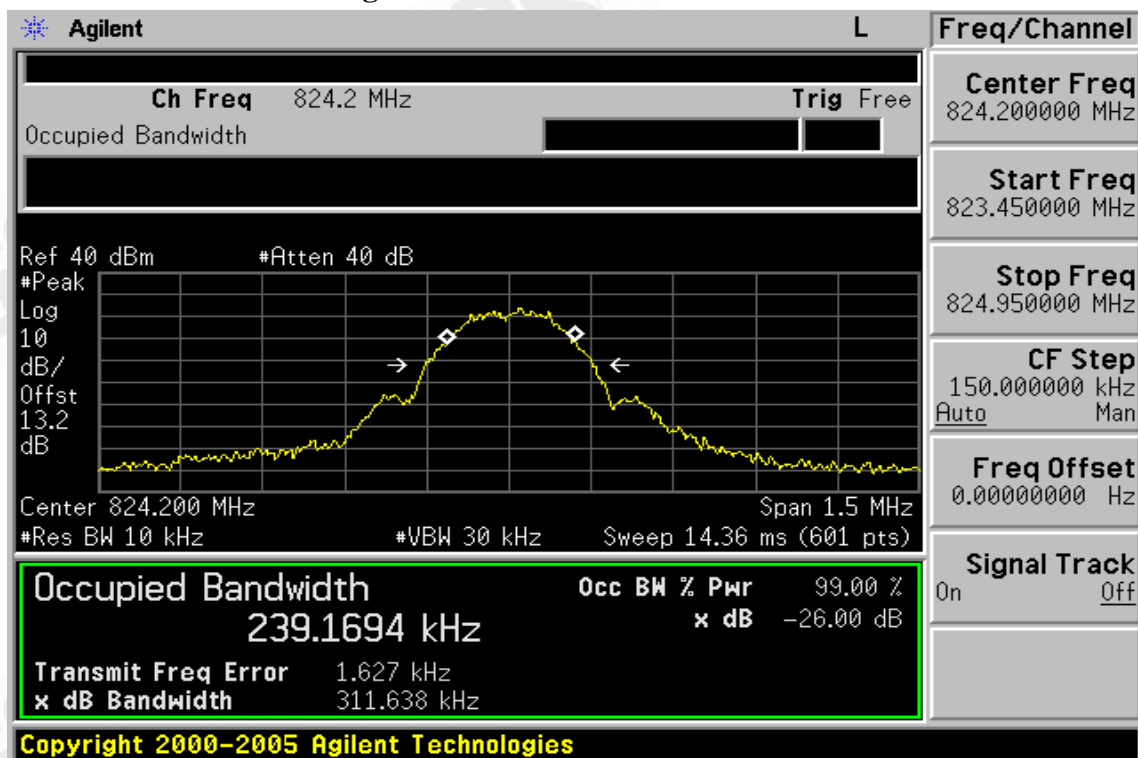
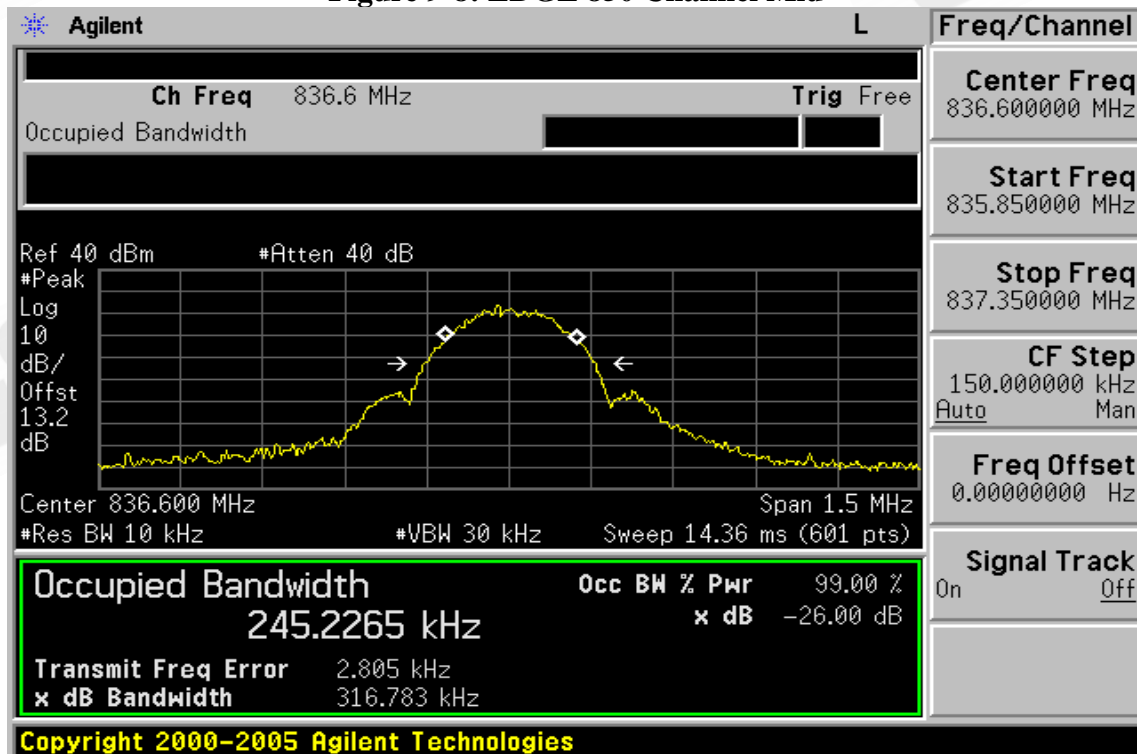


Figure 9-8: EDGE 850 Channel Mid



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Figure 9-9: EDGE 850 Channel High

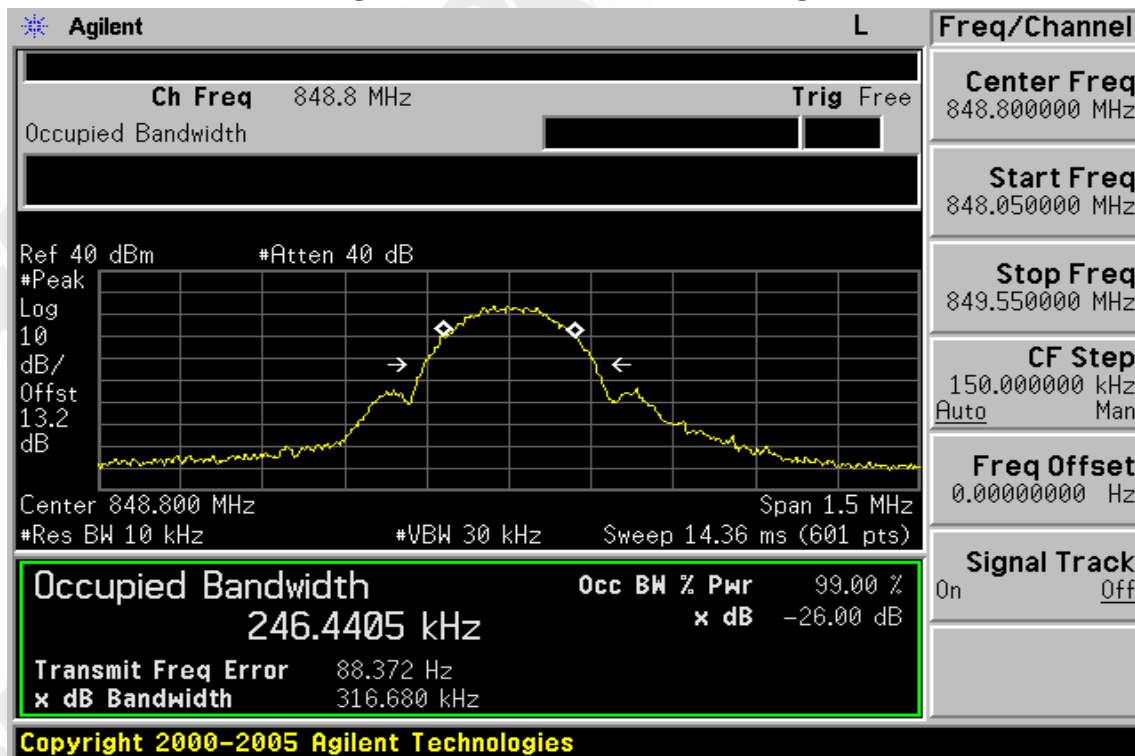
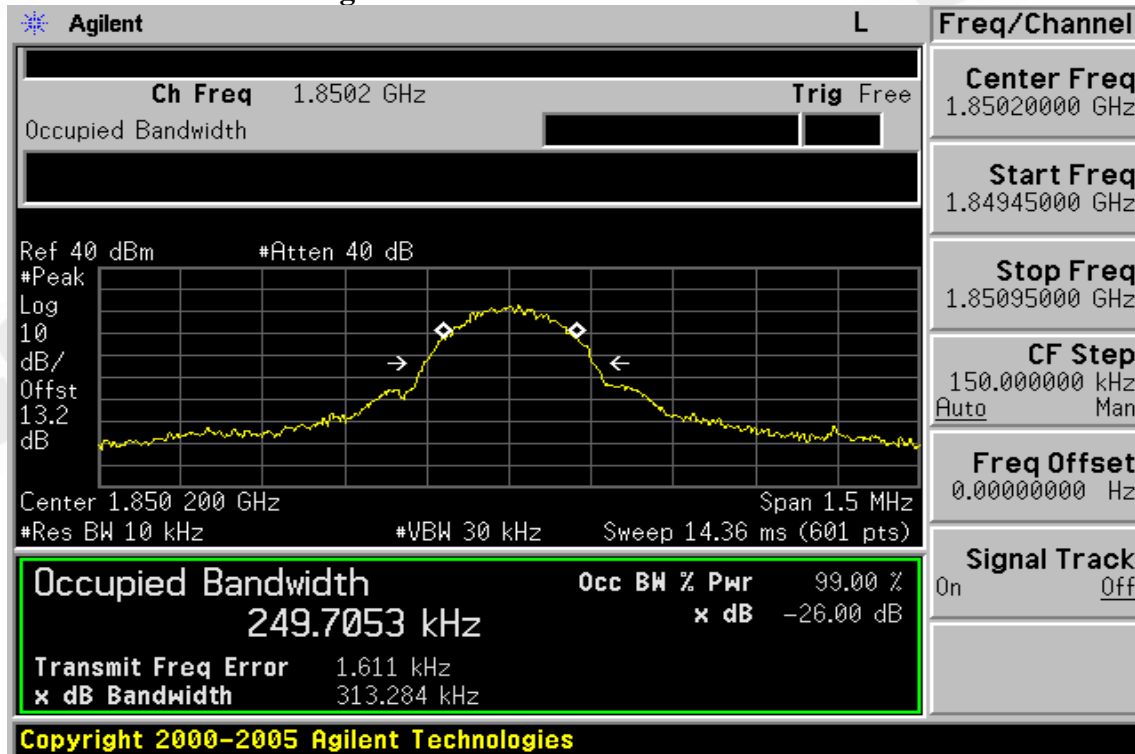


Figure 9-10: EDGE 1900 Channel Low



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Figure 9-11: EDGE 1900 Channel Mid

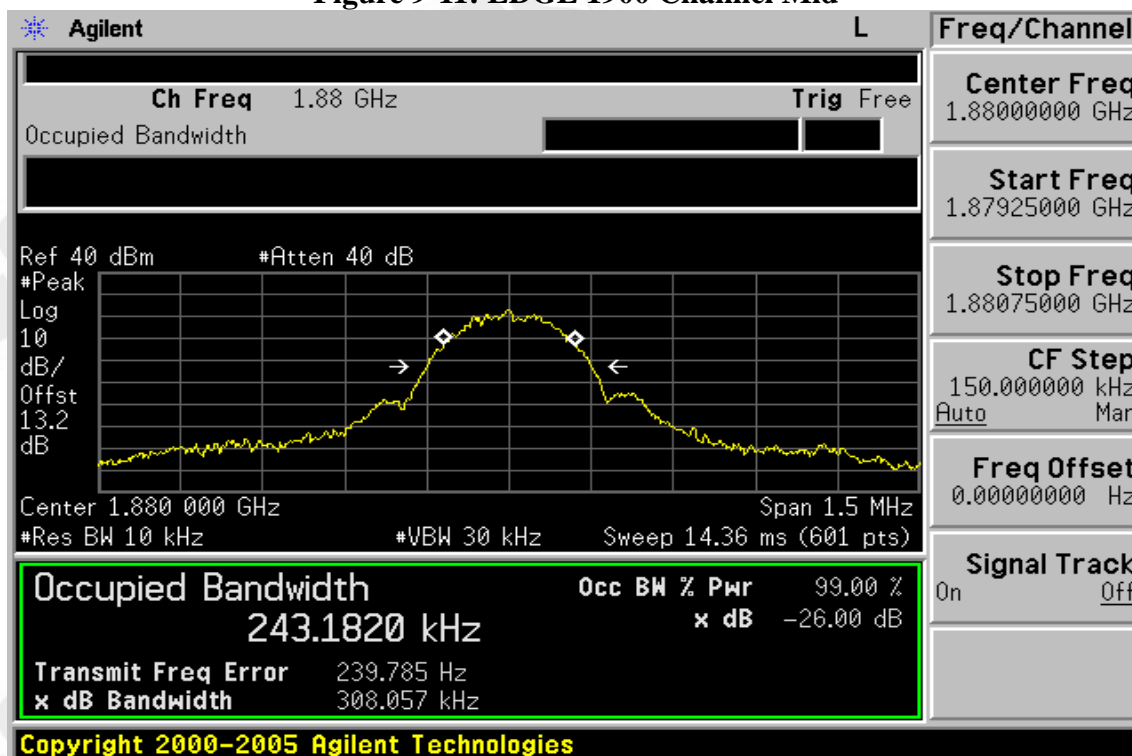
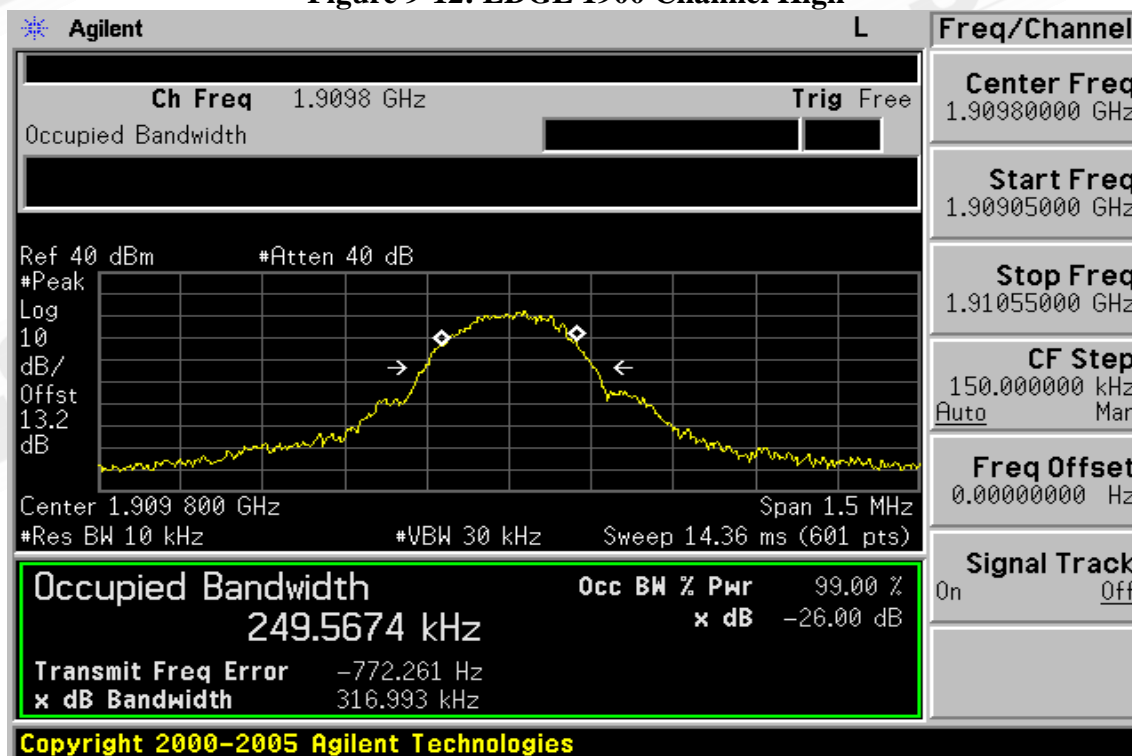


Figure 9-12: EDGE 1900 Channel High



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Figure 9-13: WCDMA II Channel Low

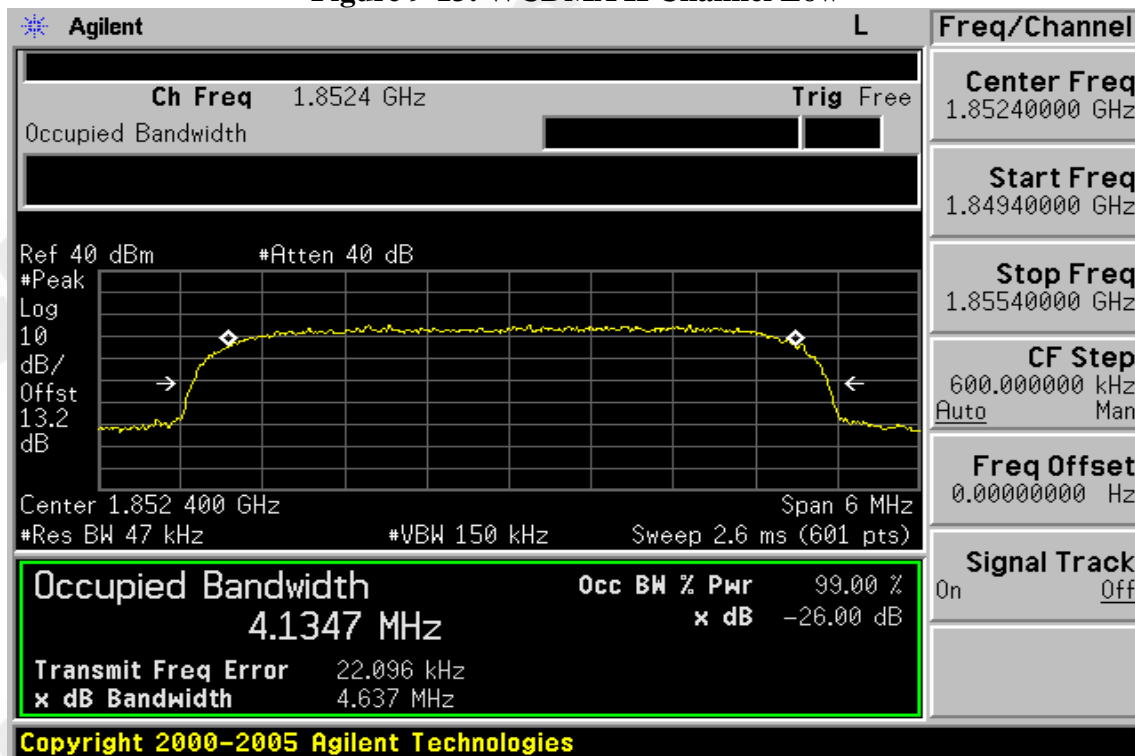
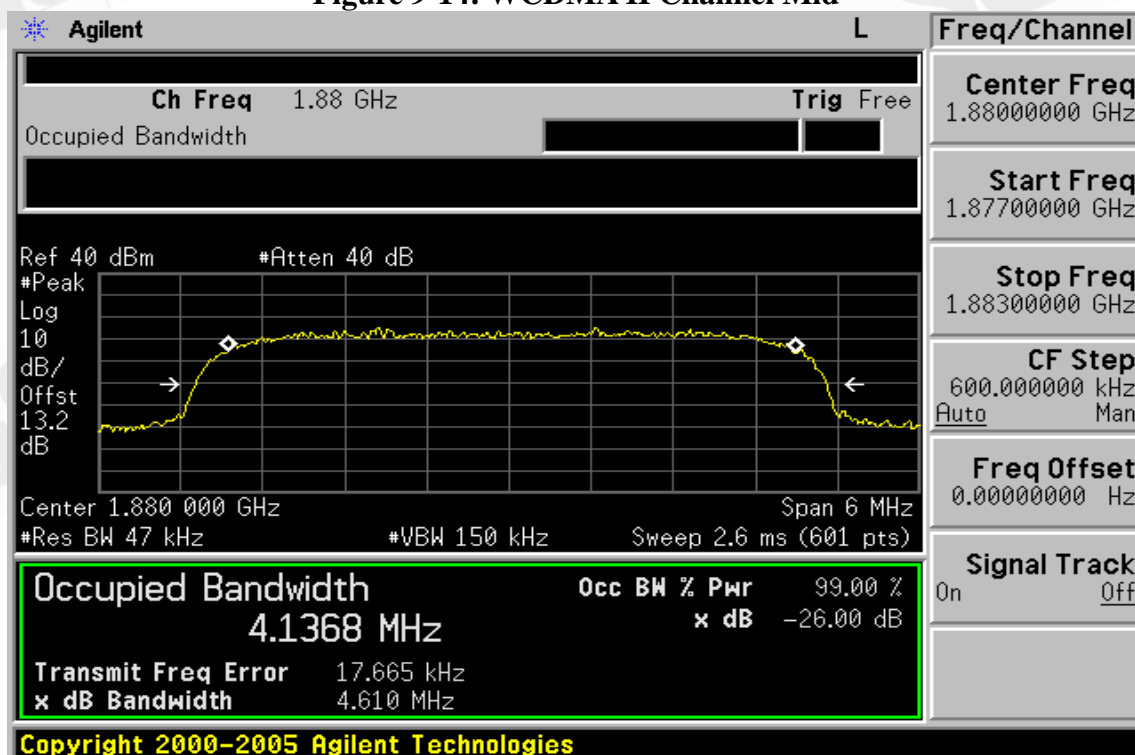


Figure 9-14: WCDMA II Channel Mid



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Figure 9-15: WCDMA II Channel High

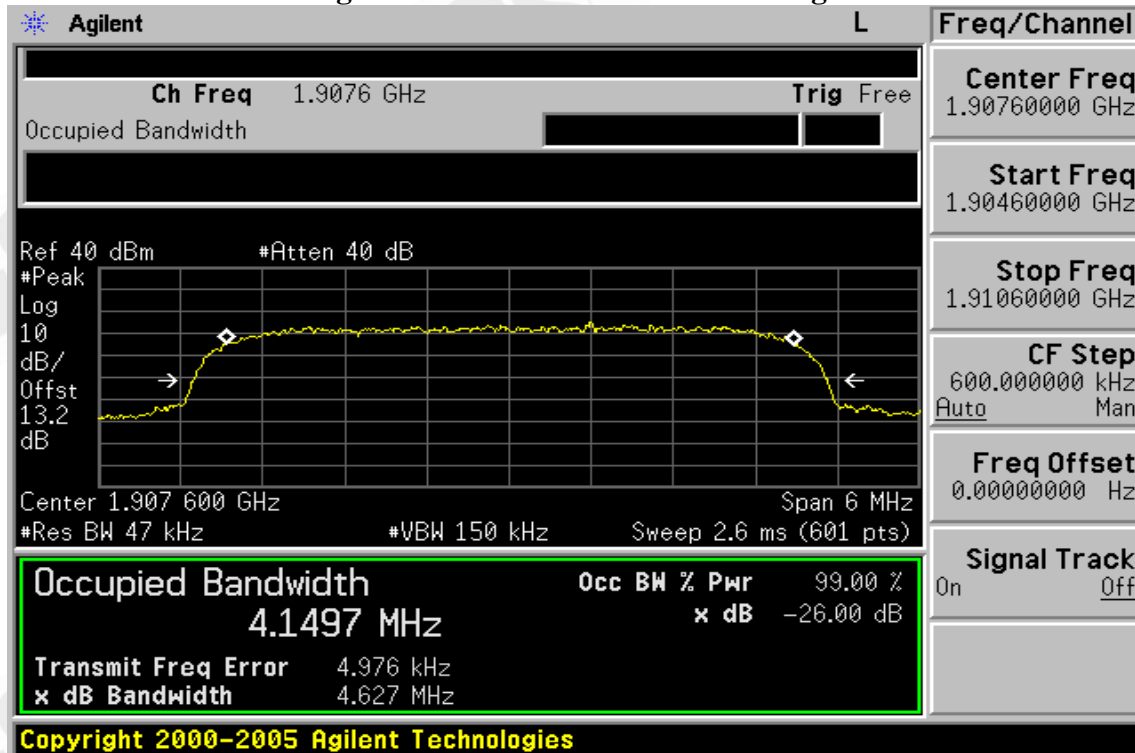
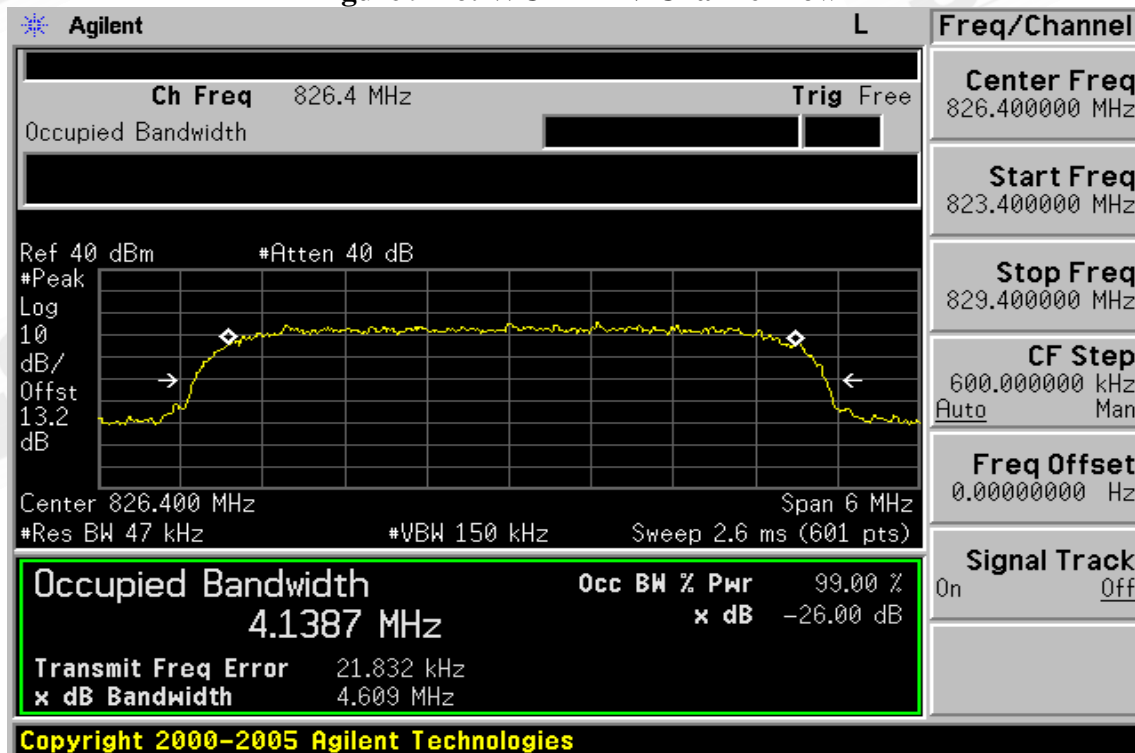


Figure 9-16: WCDMA V Channel Low



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Figure 9-17: WCDMA V Channel Mid

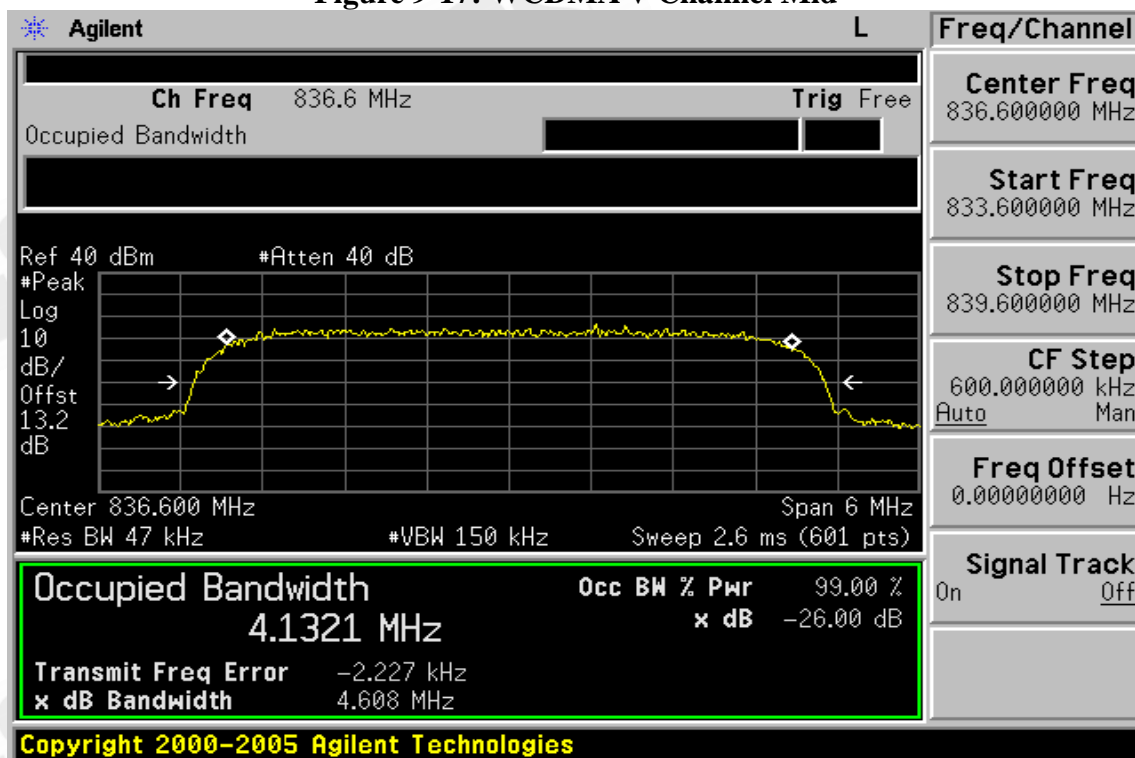
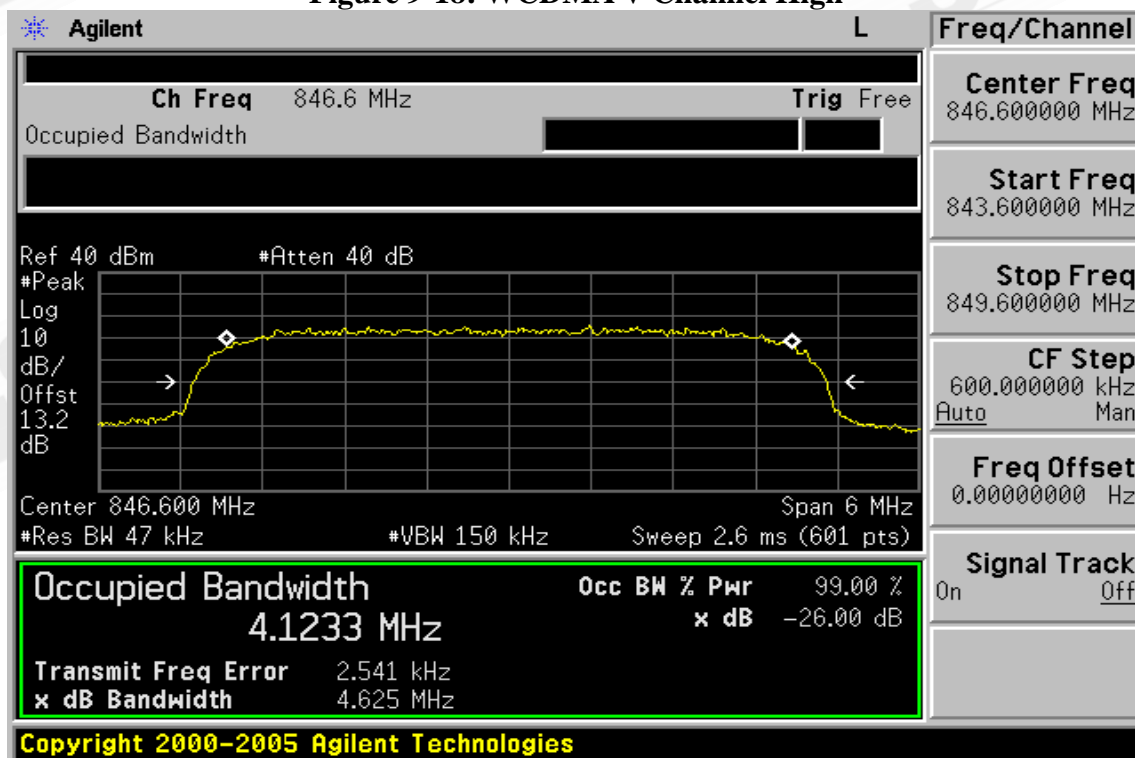


Figure 9-18: WCDMA V Channel High



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Figure 9-19: HSDPA II Channel Low

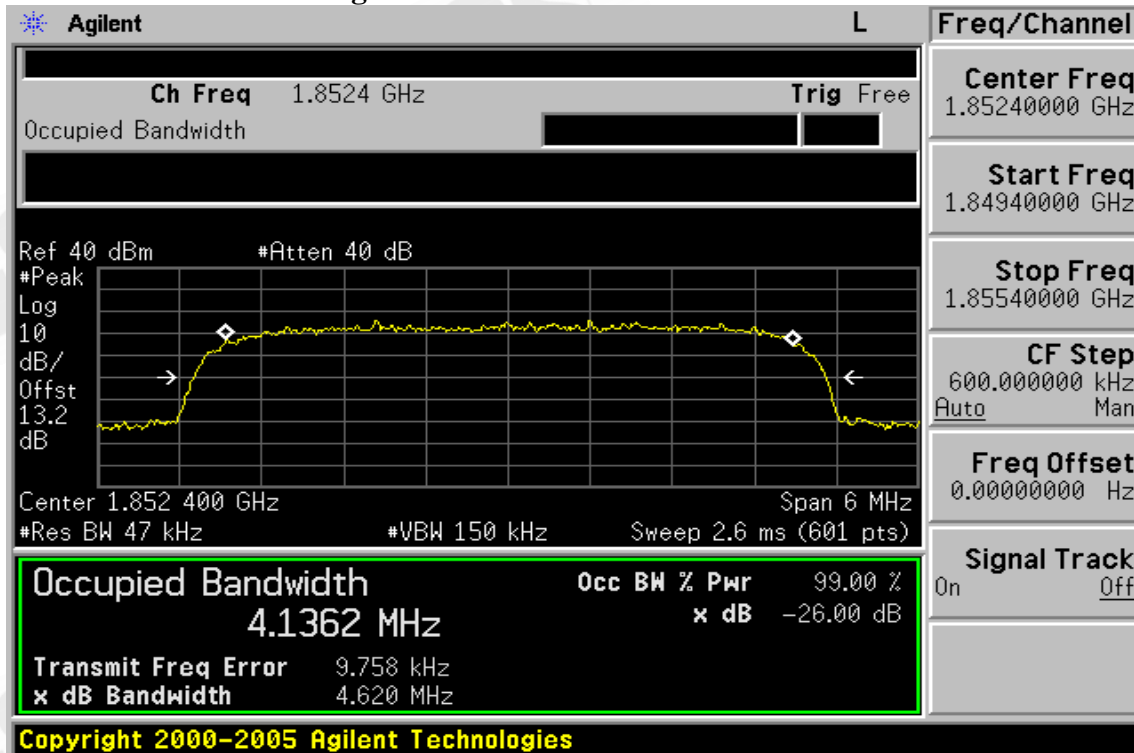
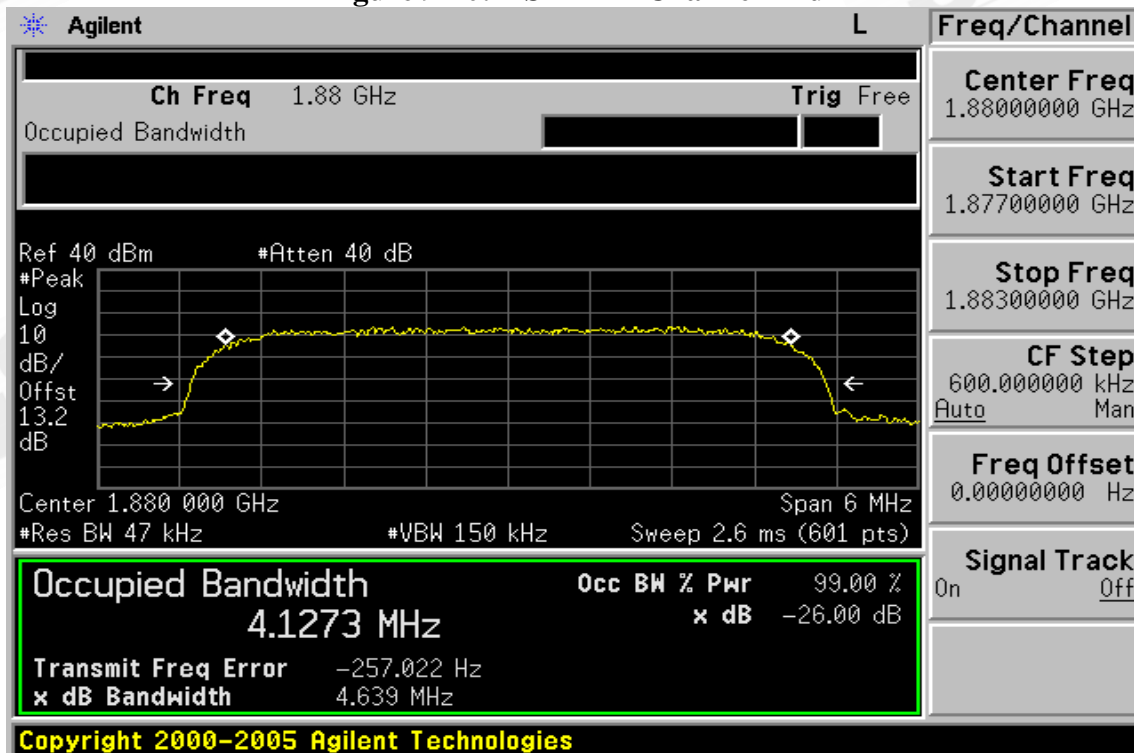


Figure 9-20: HSDPA II Channel Mid



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Figure 9-21: HSDPA II Channel High

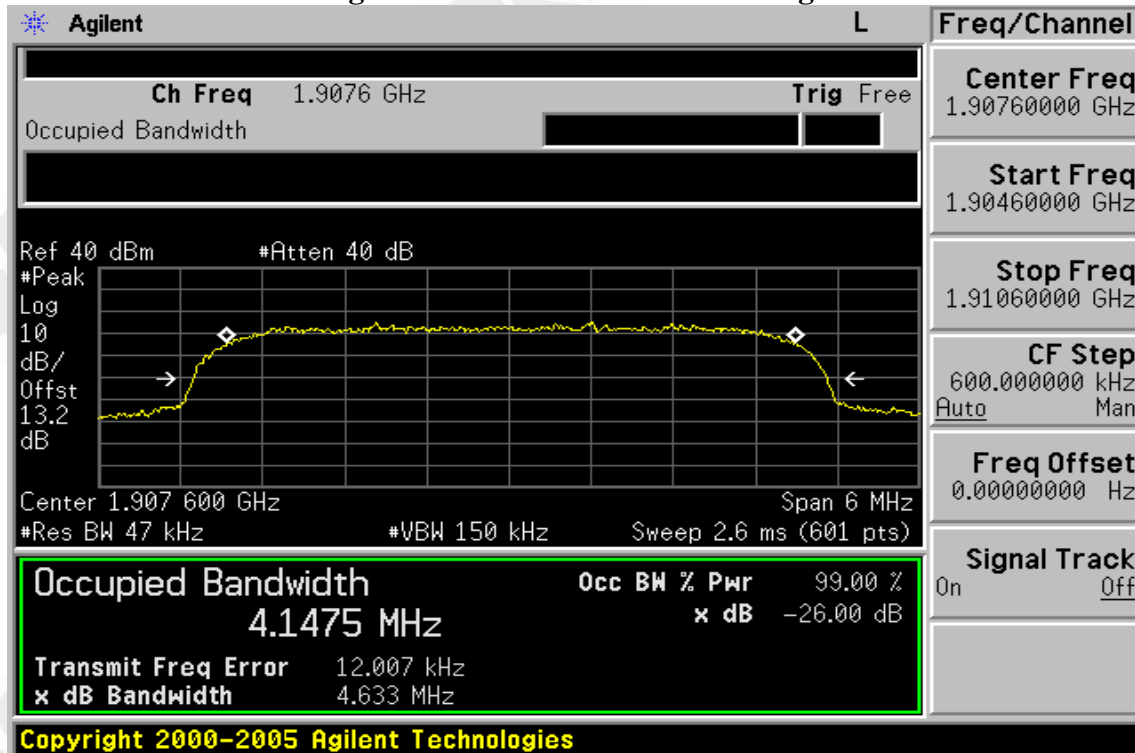
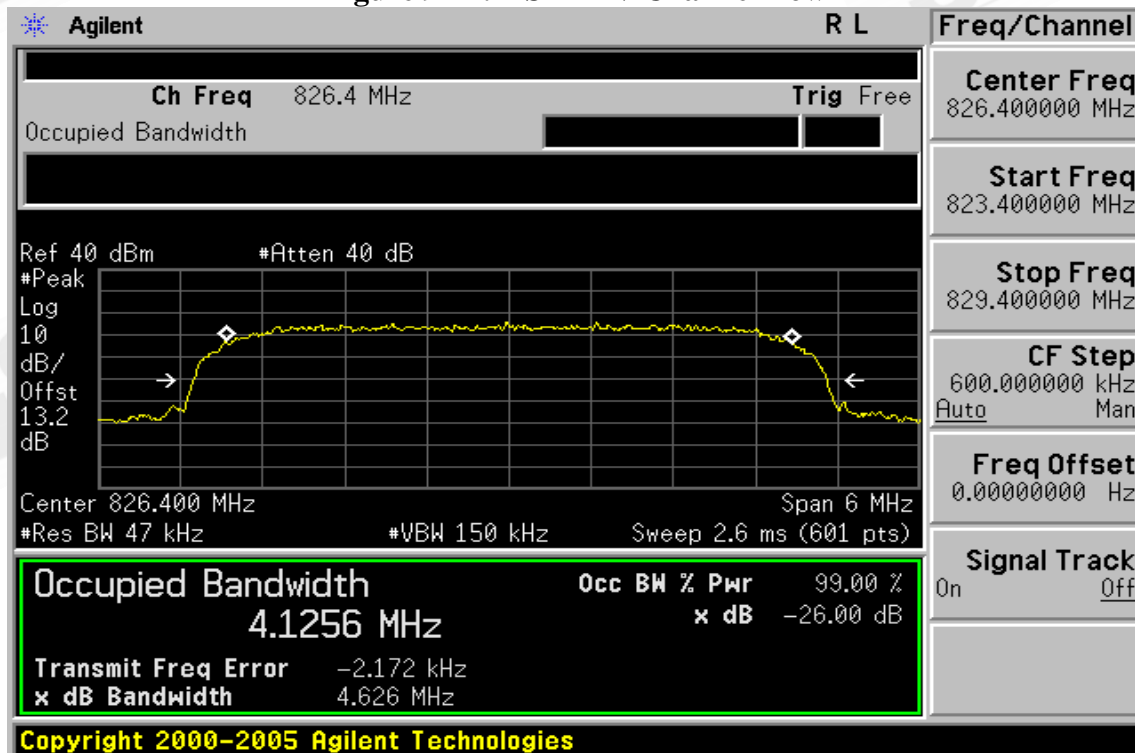


Figure 9-22: HSDPA V Channel Low



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Figure 9-23: HSDPA V Channel Mid

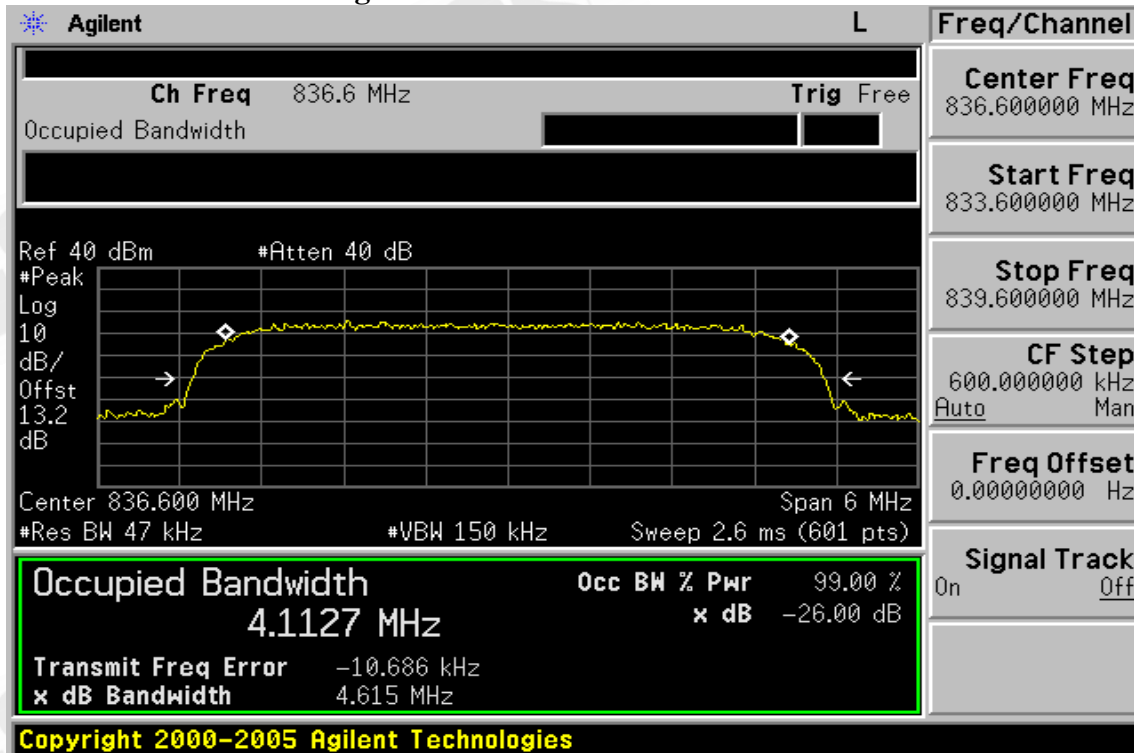
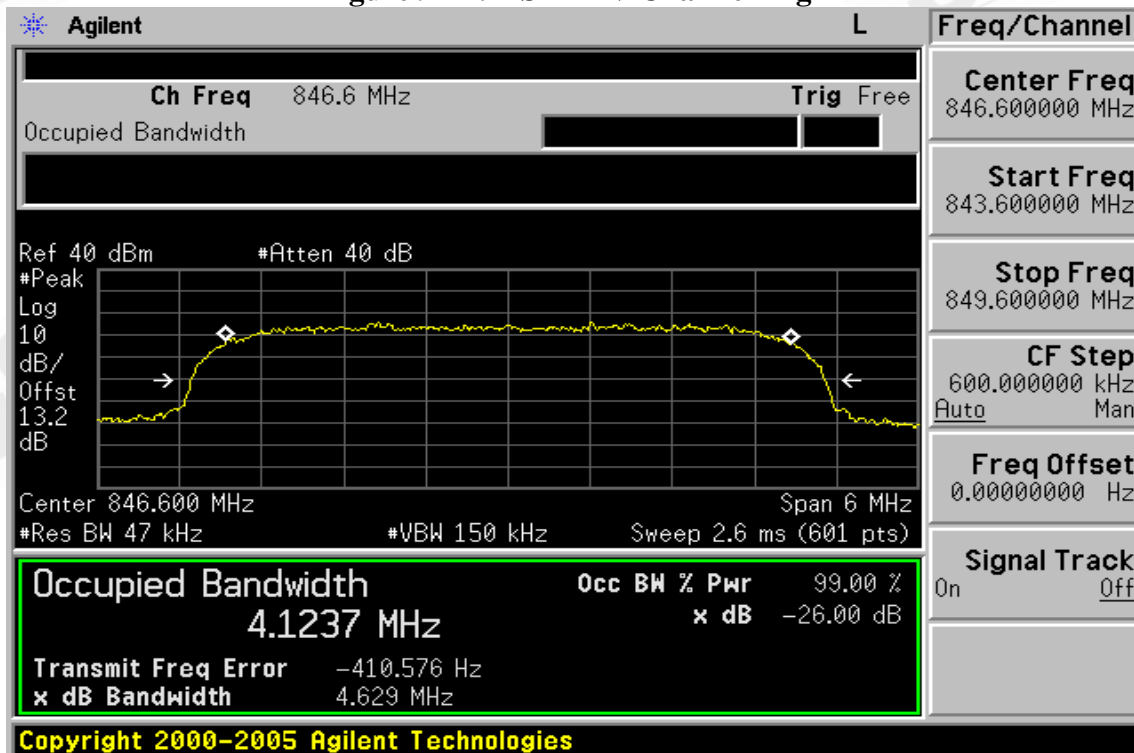


Figure 9-24: HSDPA V Channel High



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Figure 9-25: HSUPA II Channel Low

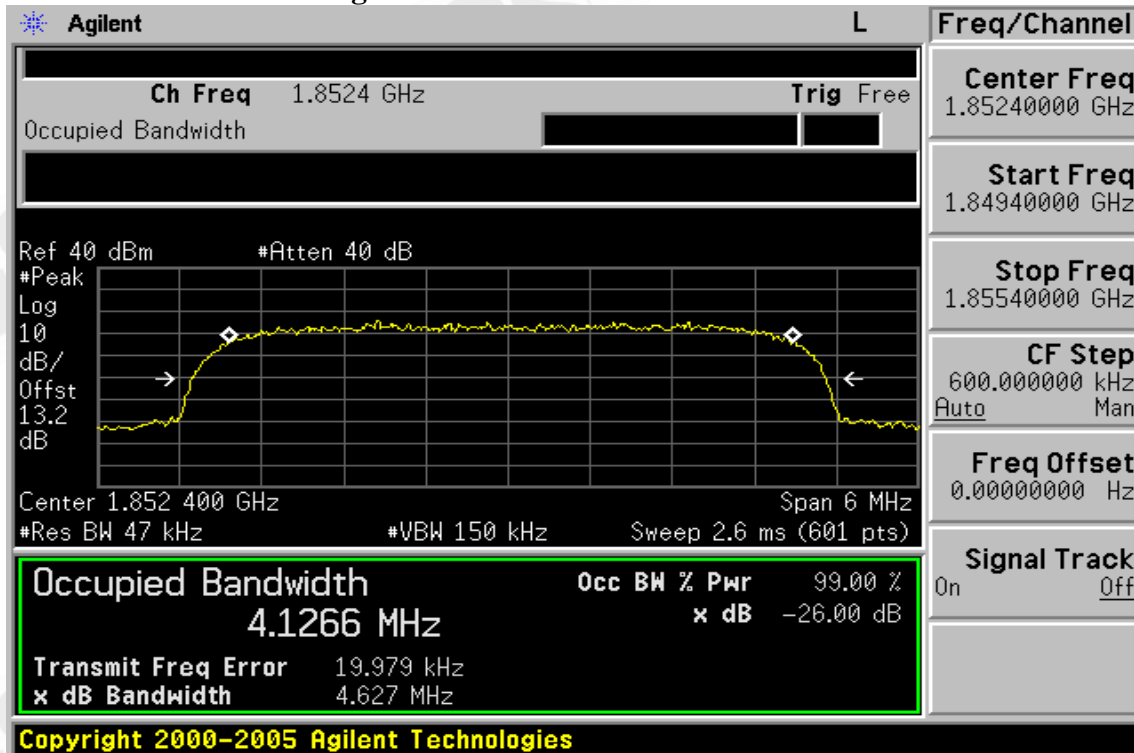
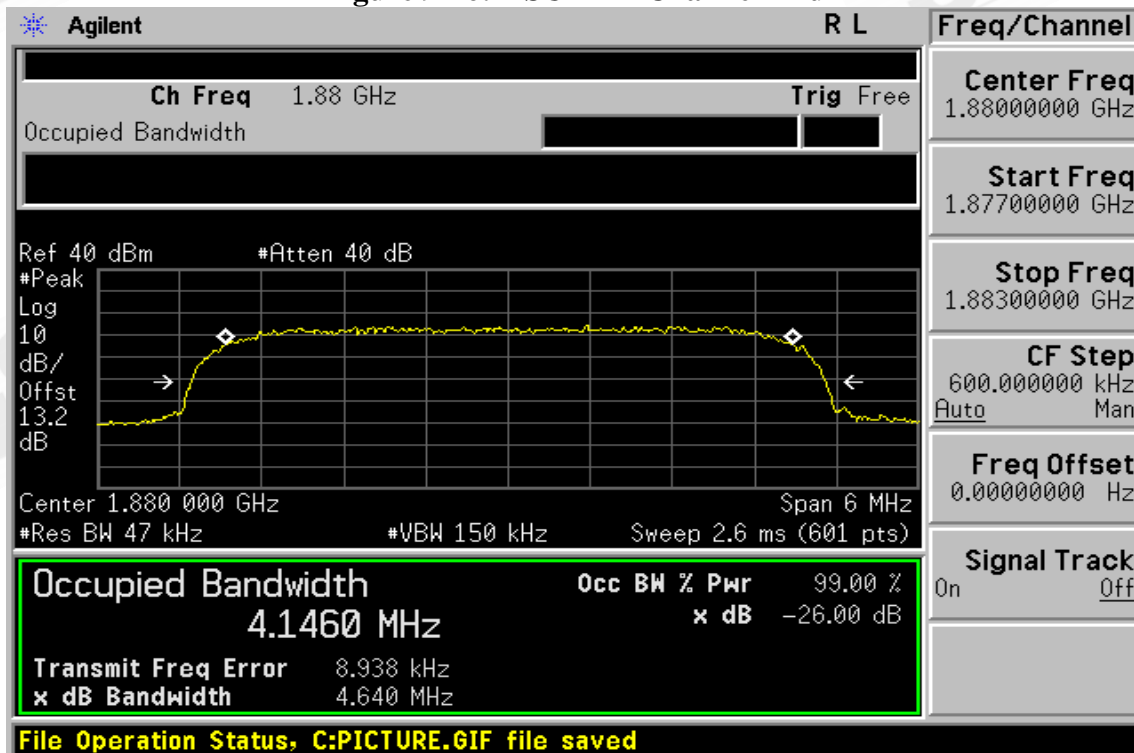


Figure 9-26: HSUPA II Channel Mid



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Figure 9-27: HSUPA II Channel High

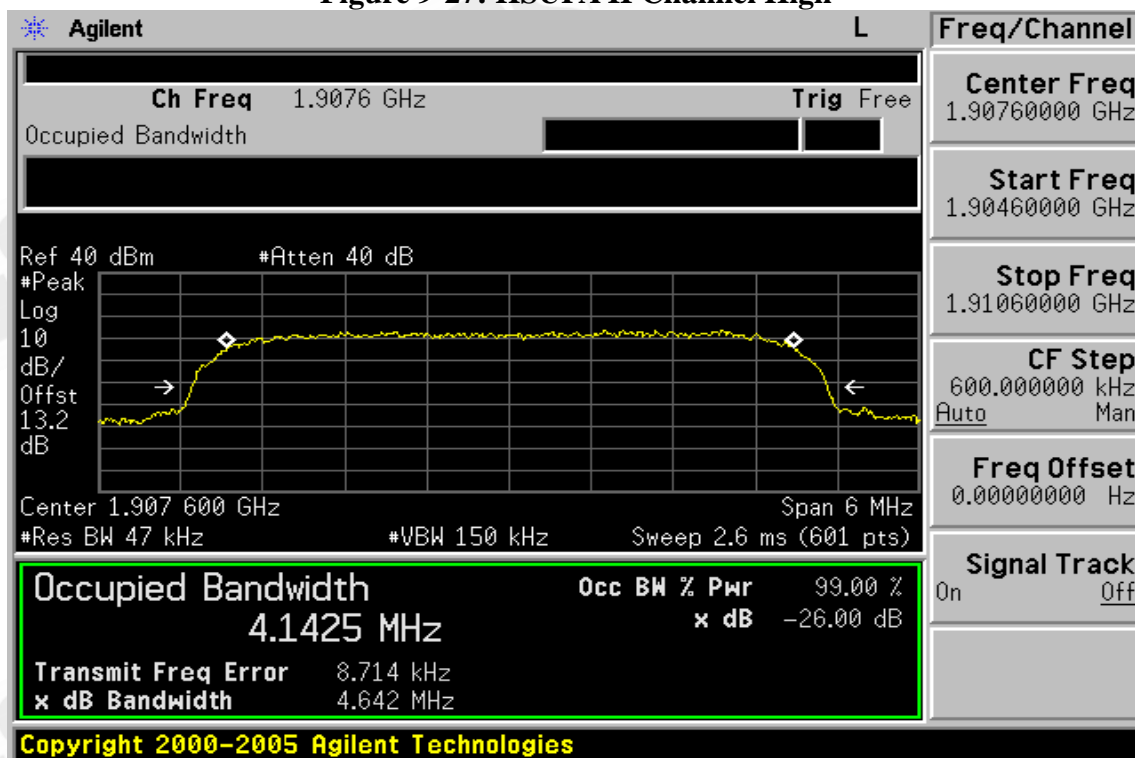
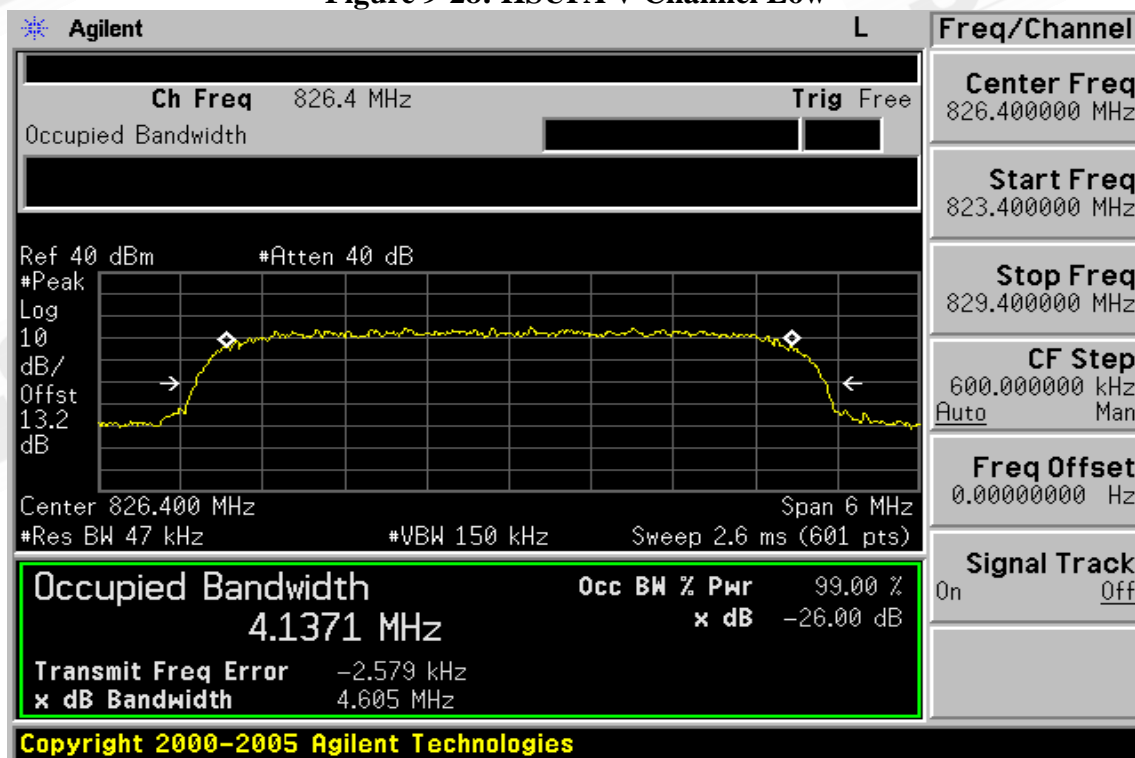


Figure 9-28: HSUPA V Channel Low



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Figure 9-29: HSUPA V Channel Mid

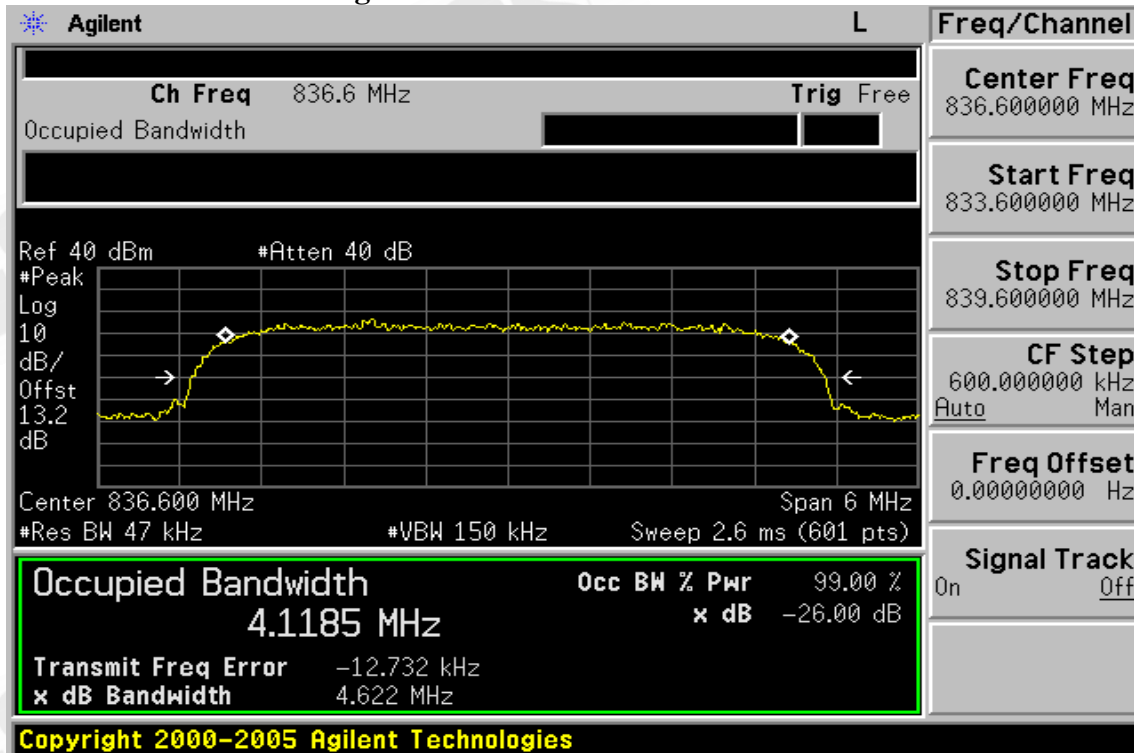
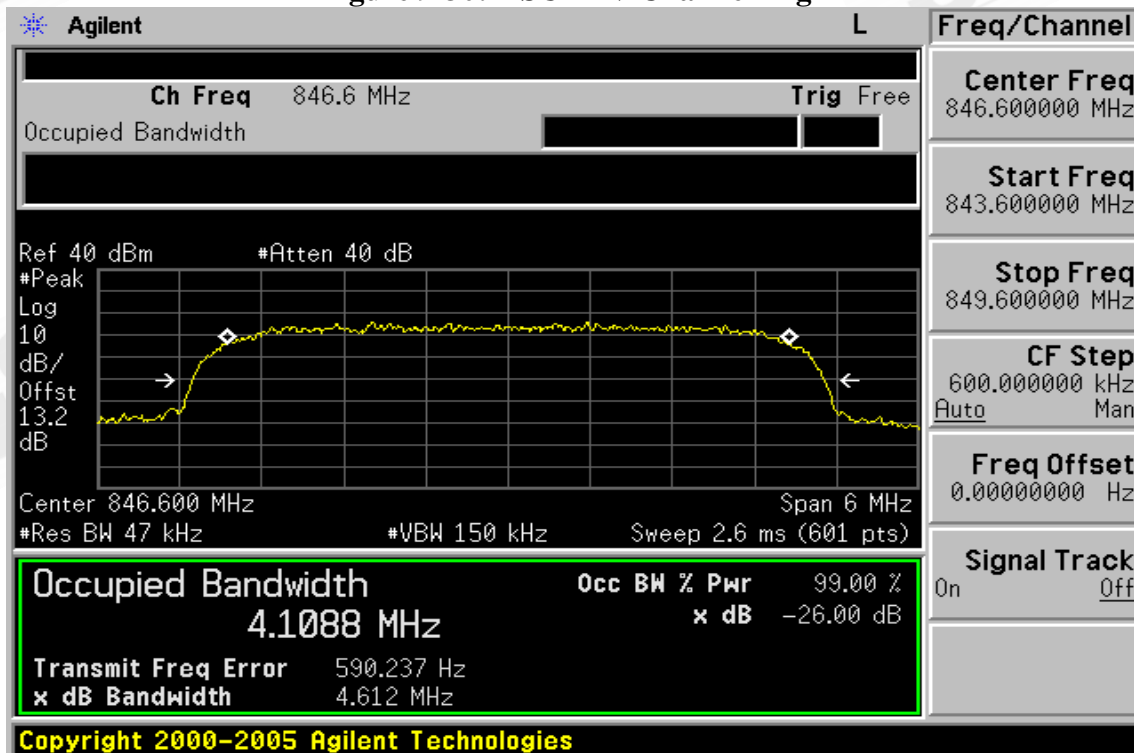


Figure 9-30: HSUPA V Channel High



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## 10. OUT OF BAND EMISSION AT ANTENNA TERMINALS

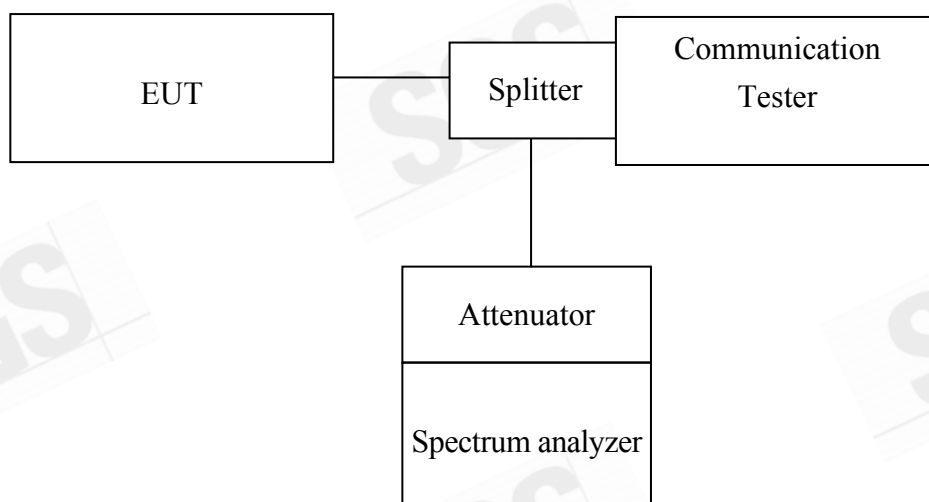
### 10.1. Standard Applicable:

According to FCC §2.1051.

FCC §22.917(a), §24.238(a) 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).

### 10.2. Test SET-UP:

#### Out of band emission & Band edge



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### 10.3. 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.

(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

### 10.4. Measurement Equipment Used:

Refer to section 2.4 in this report

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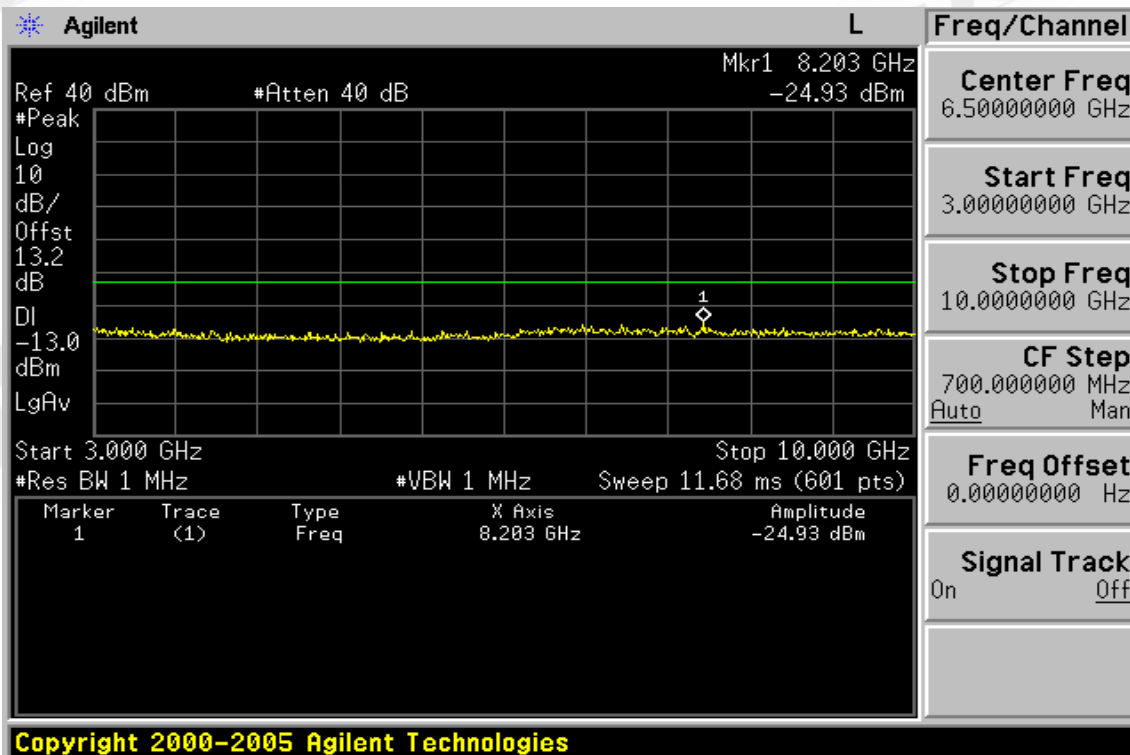
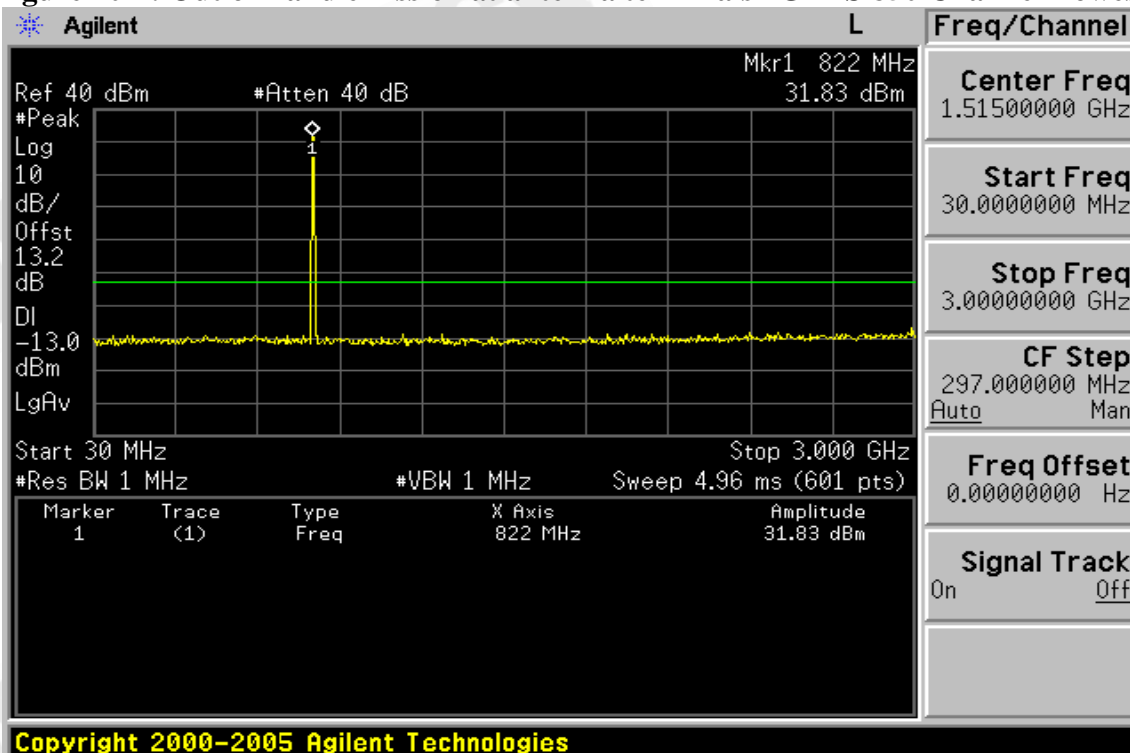
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## 10.5. Measurement Result:

Figure 10-1: Out of Band emission at antenna terminals– GPRS 850 Channel Lowest



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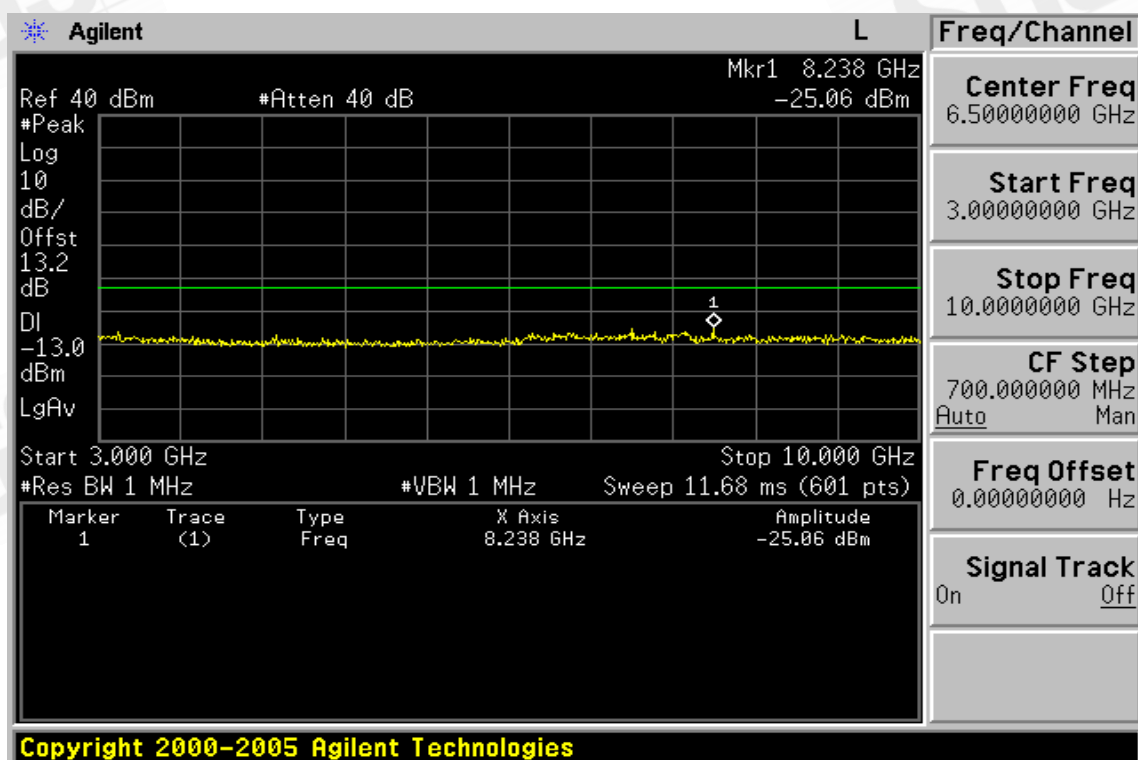
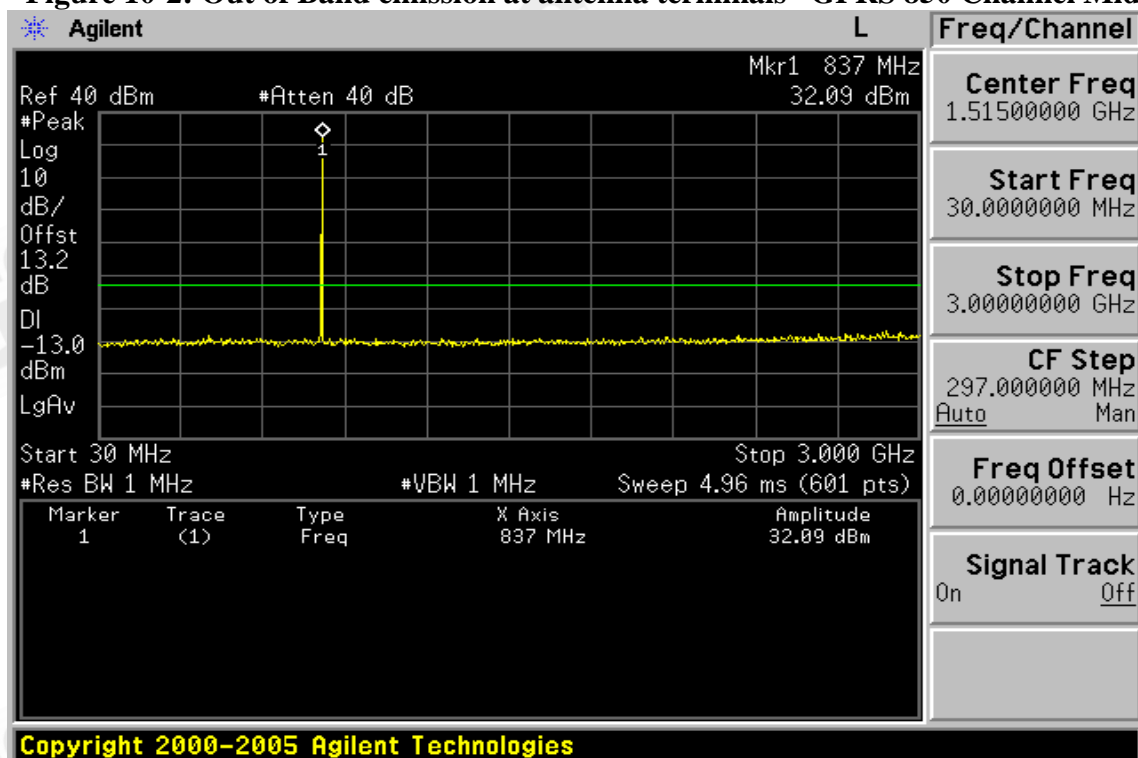
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Figure 10-2: Out of Band emission at antenna terminals –GPRS 850 Channel Mid



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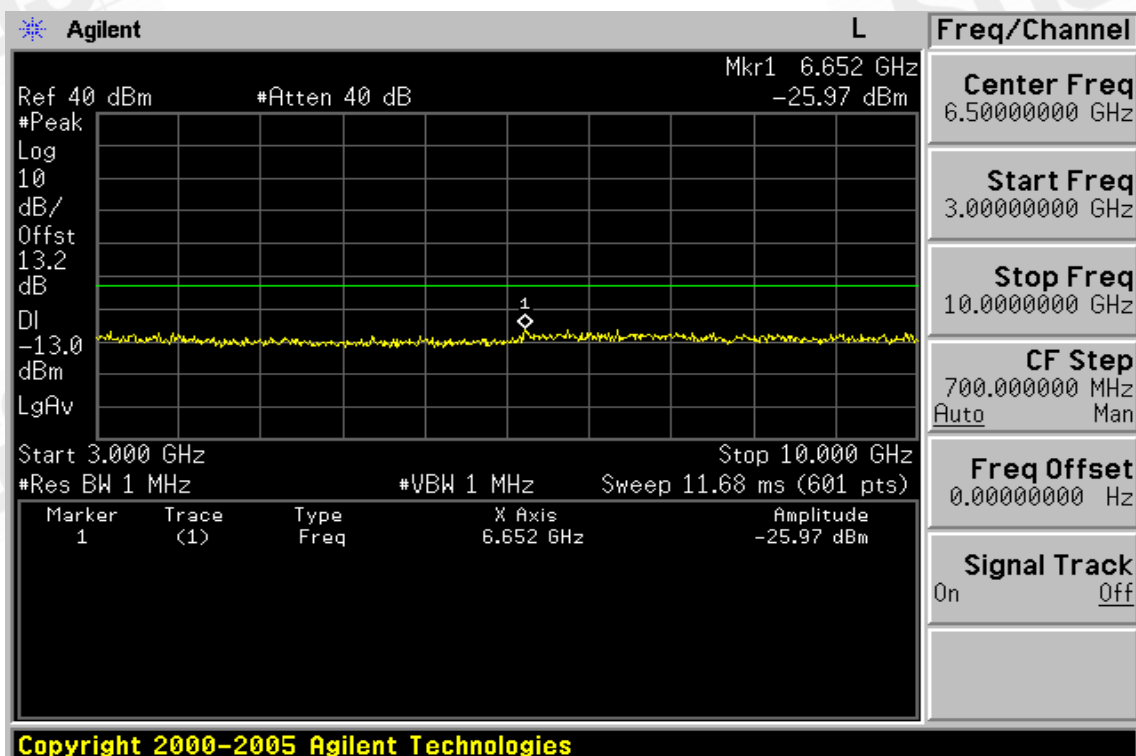
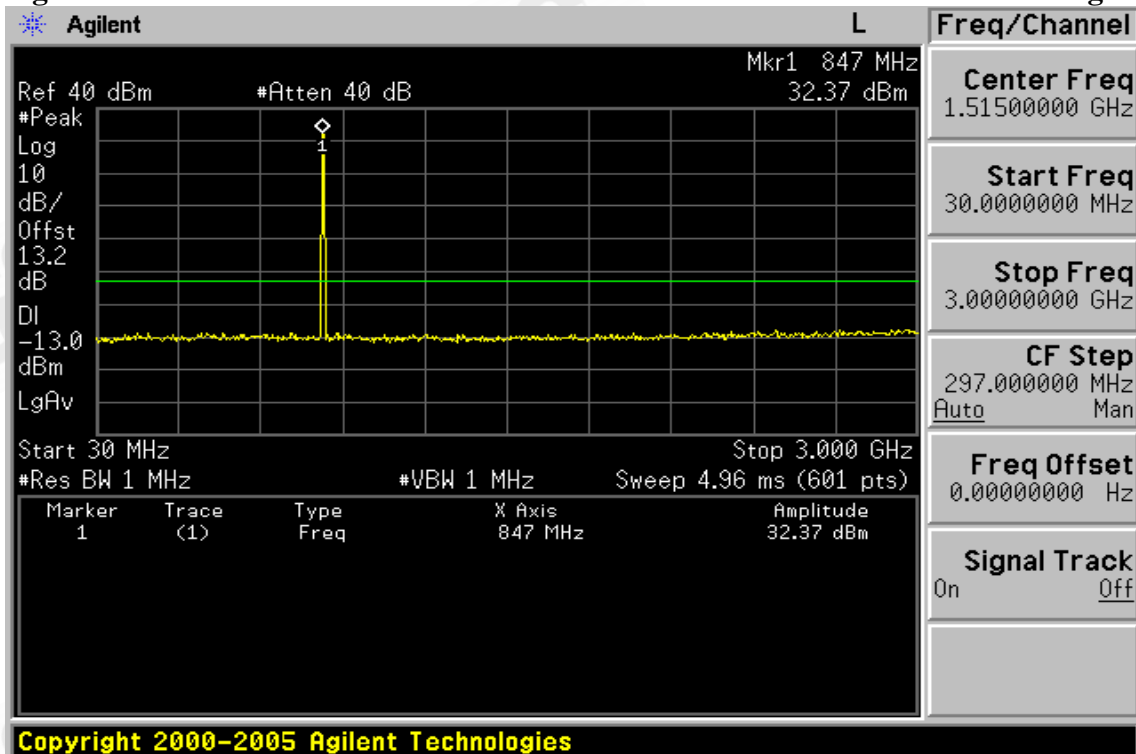
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Figure 10-3: Out of Band emission at antenna terminals–GPRS 850 Channel Highest



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Figure 10-4: Band edge emission at antenna terminals –GPRS 850 Channel Lowest

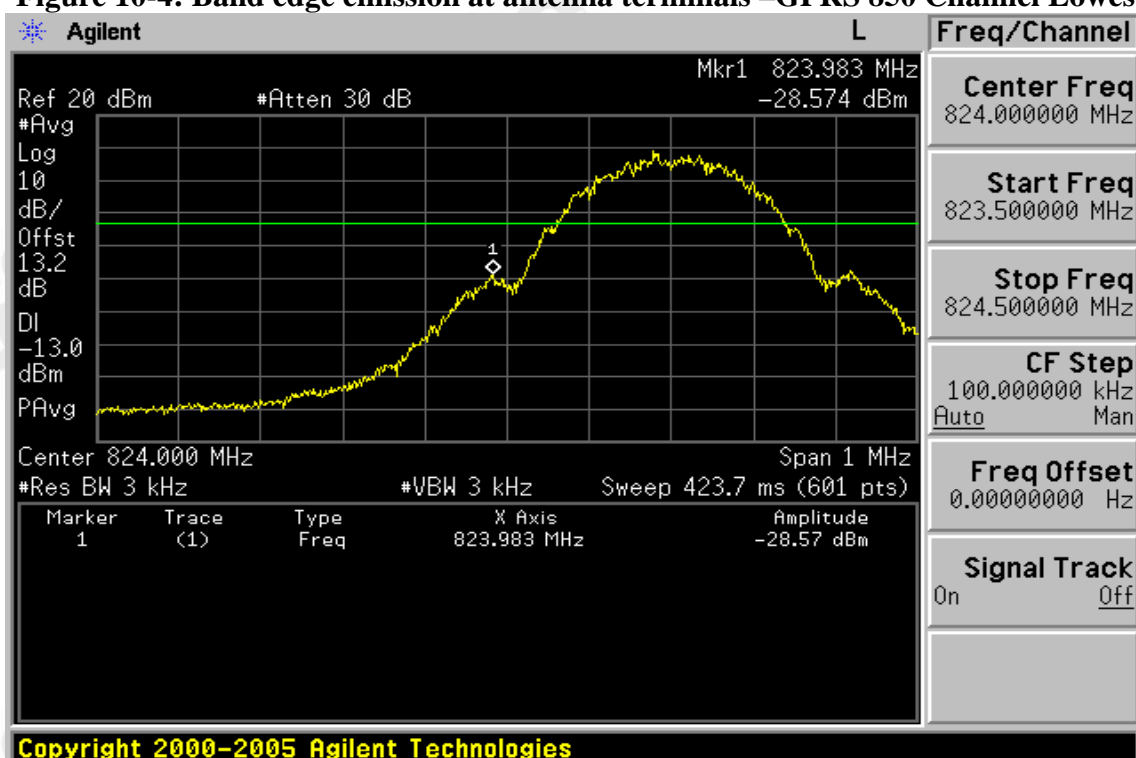
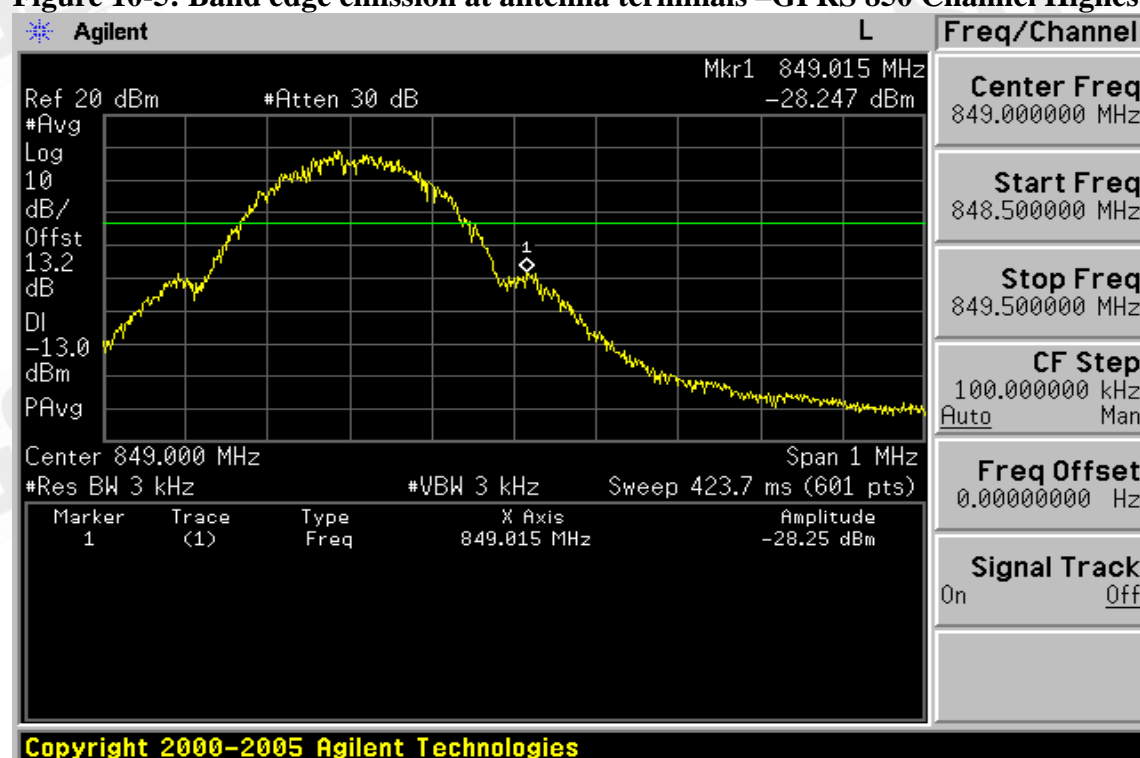


Figure 10-5: Band edge emission at antenna terminals –GPRS 850 Channel Highest



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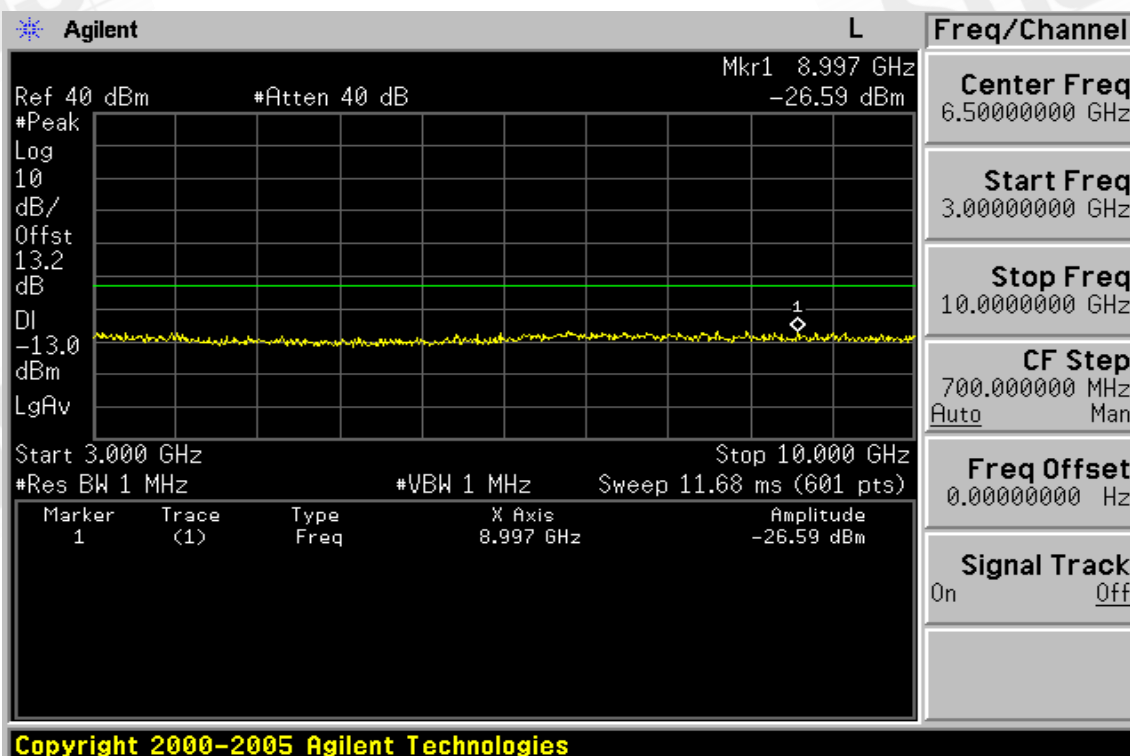
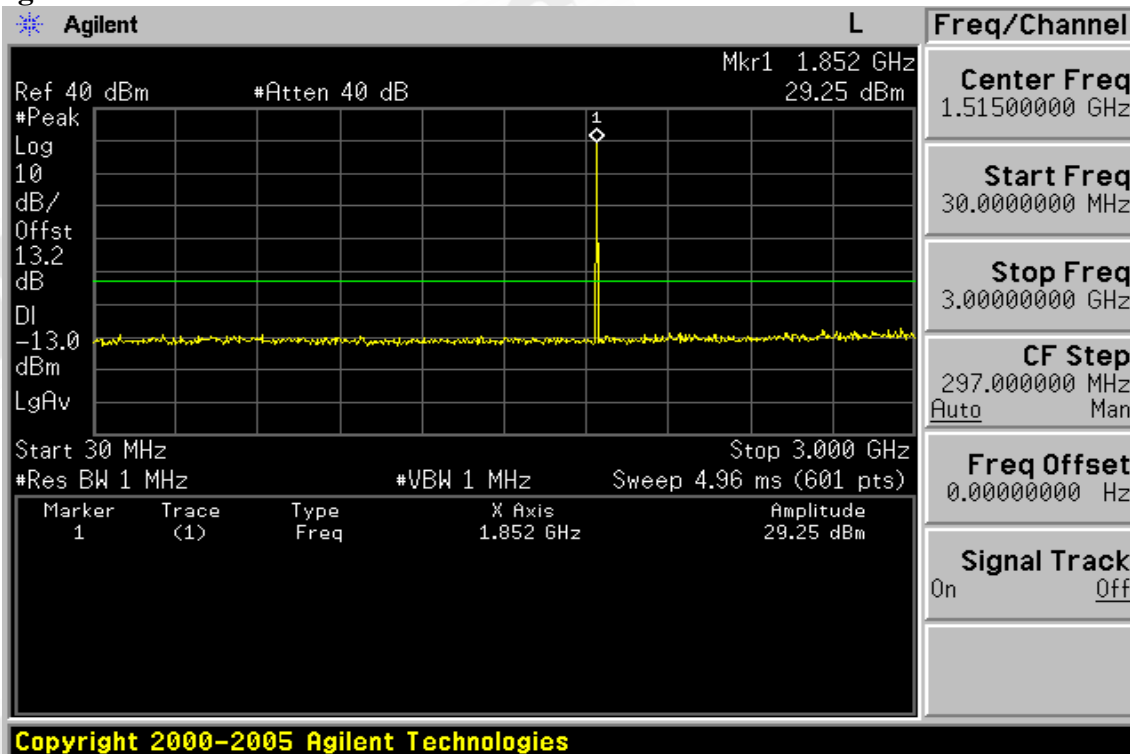
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Figure 10-6: Out of Band emission at antenna terminals–GPRS 1900 Channel Lowest



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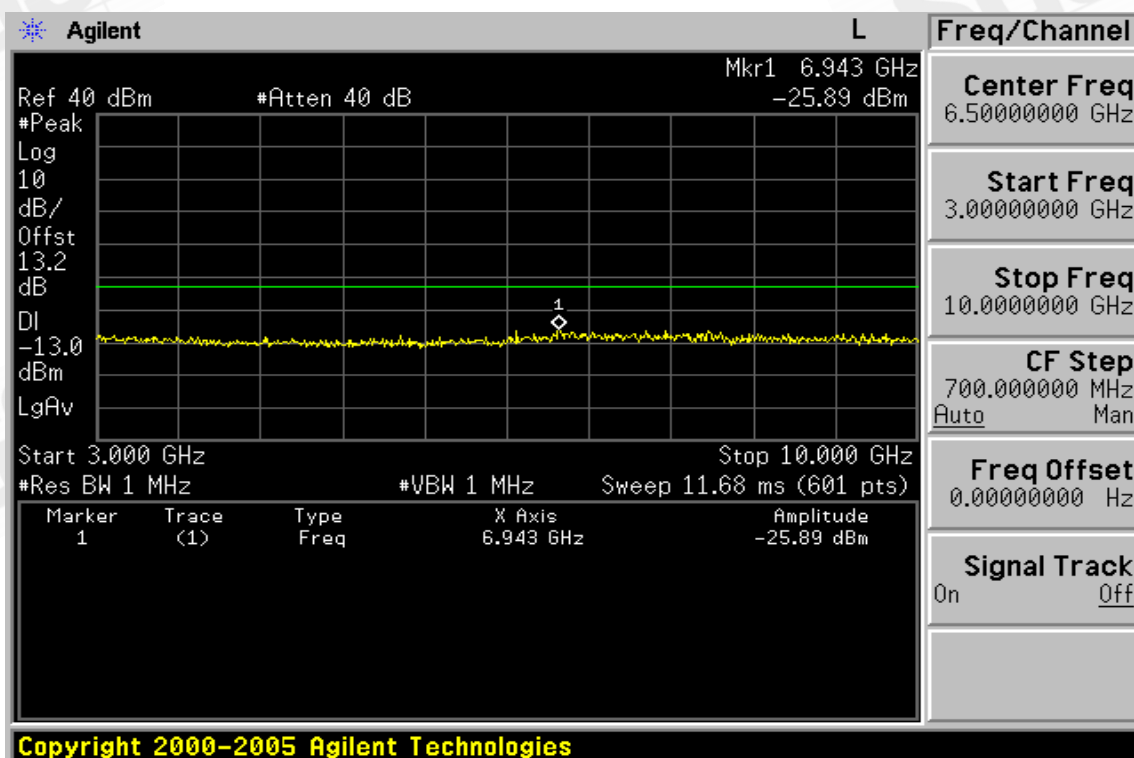
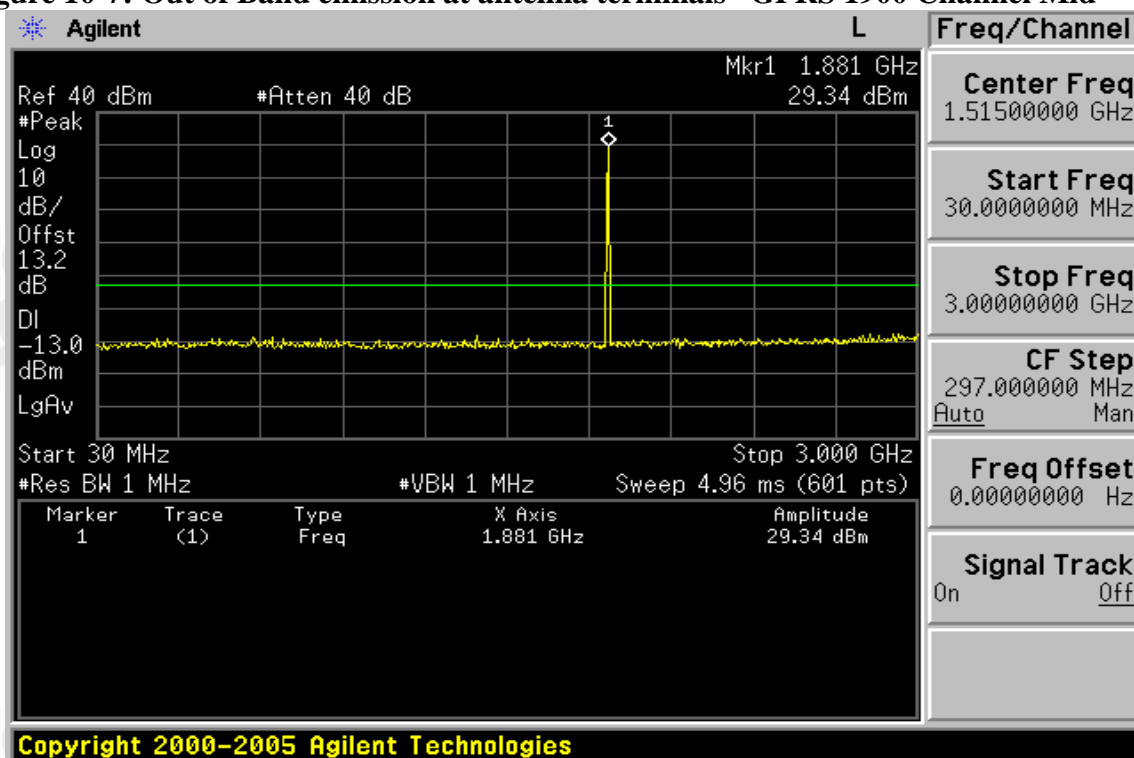
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Figure 10-7: Out of Band emission at antenna terminals –GPRS 1900 Channel Mid



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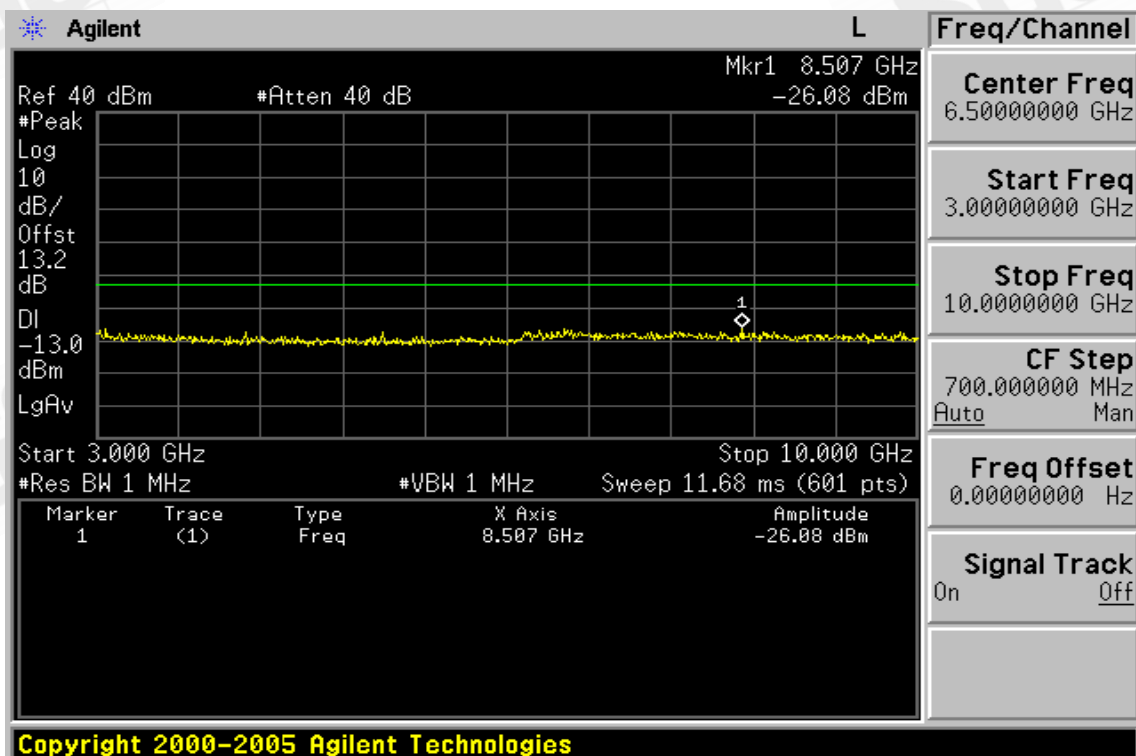
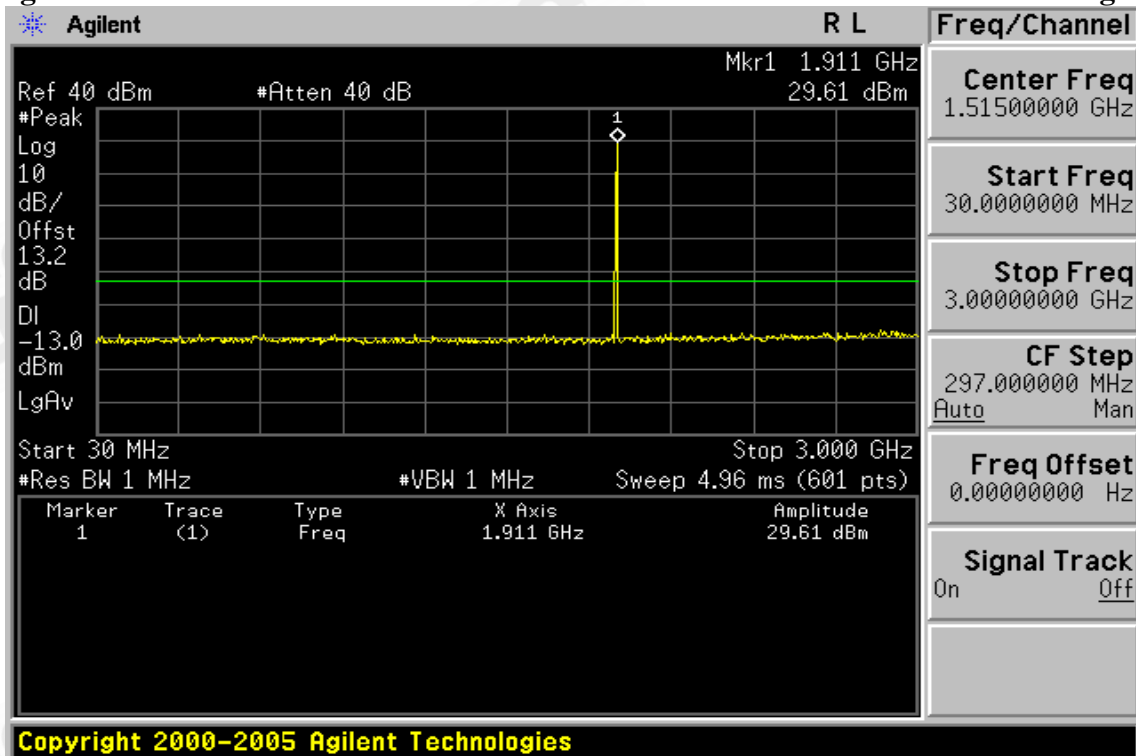
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Figure 10-8: Out of Band emission at antenna terminals –GPRS 1900 Channel Highest



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Figure 10-9: Bad edge emission at antenna terminals –GPRS 1900 Channel Lowest

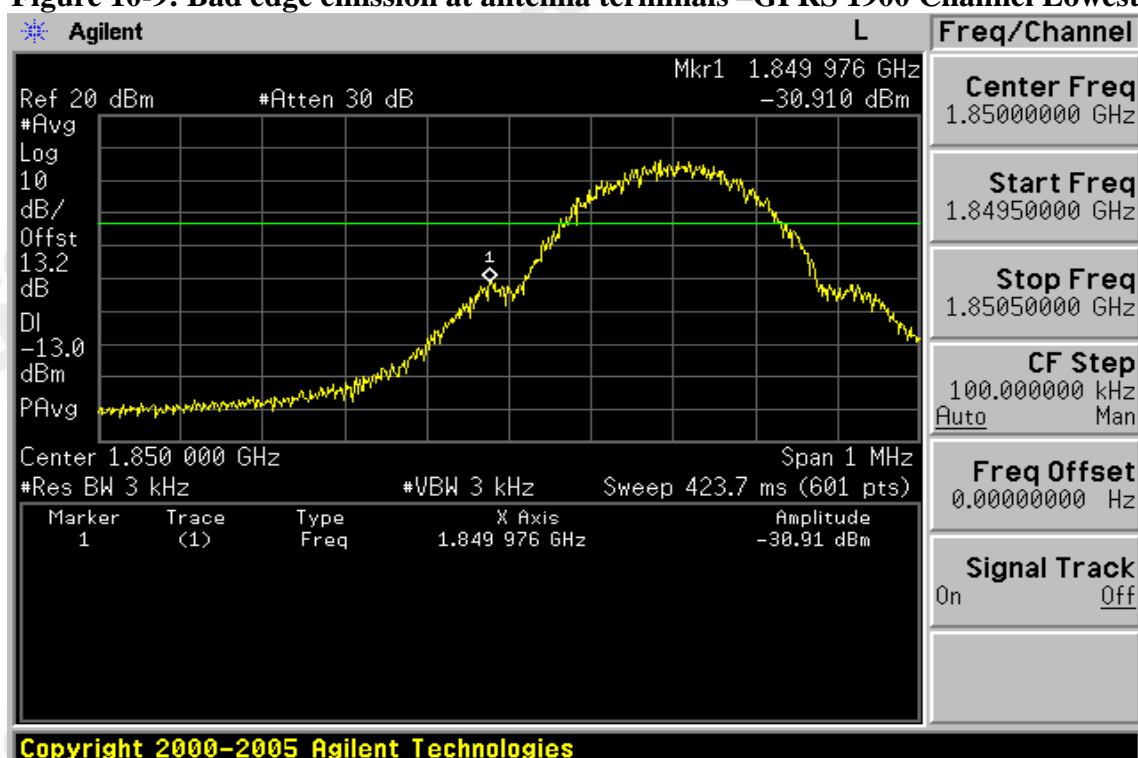
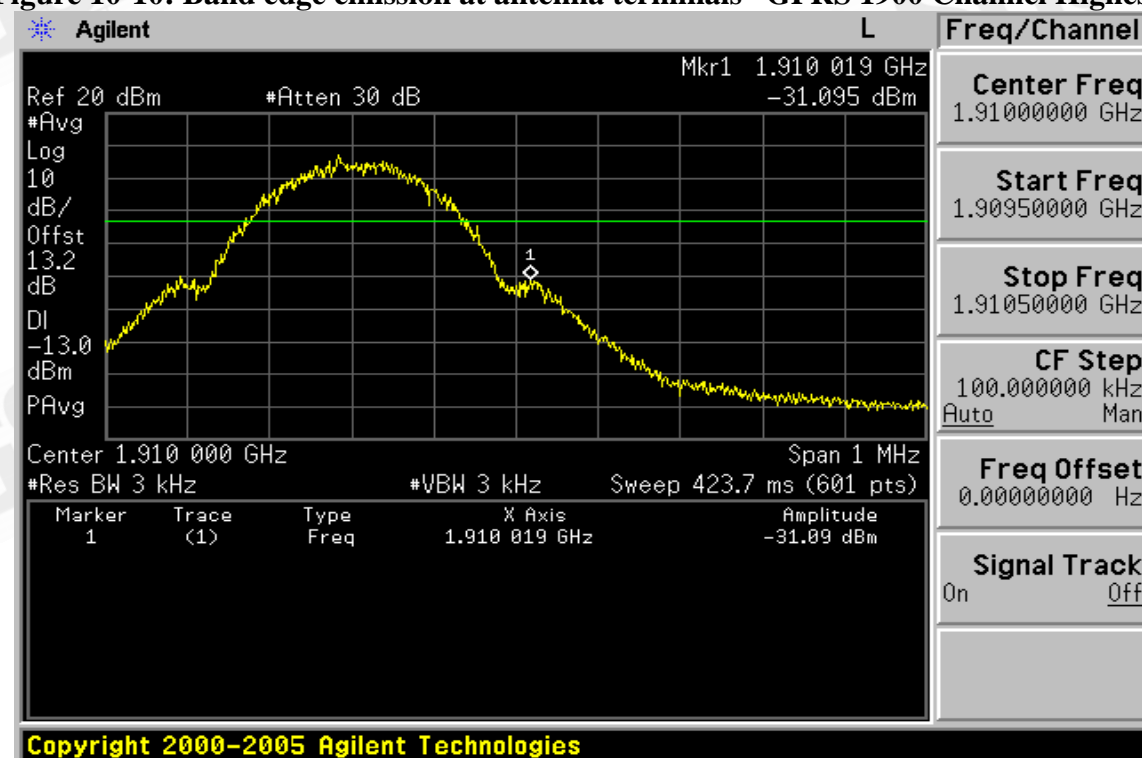


Figure 10-10: Band edge emission at antenna terminals –GPRS 1900 Channel Highest



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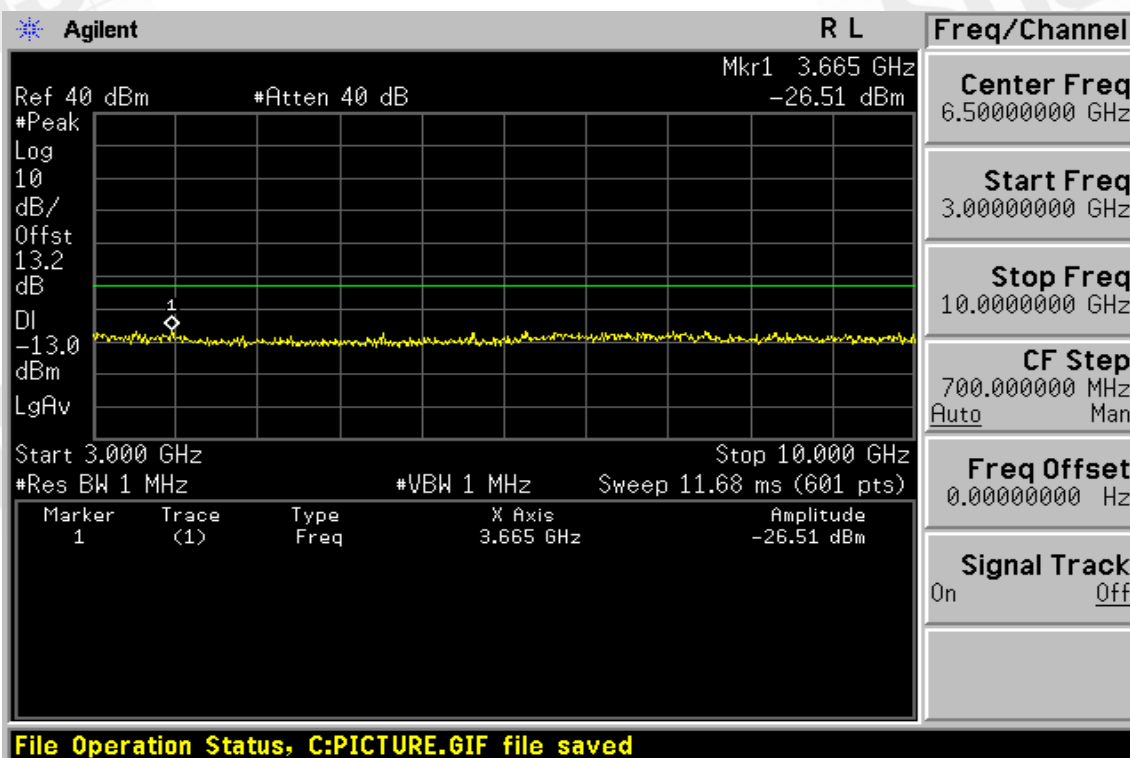
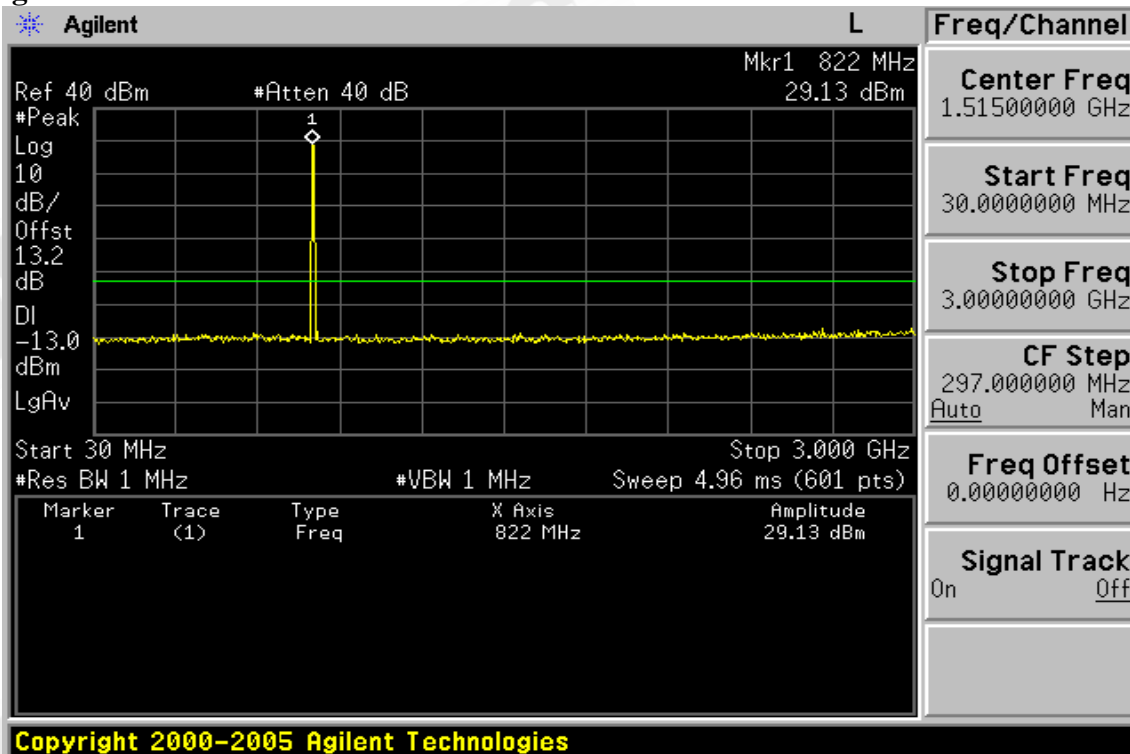
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Figure 10-11: Out of Band emission at antenna terminals– EDGE 850 Channel Lowest



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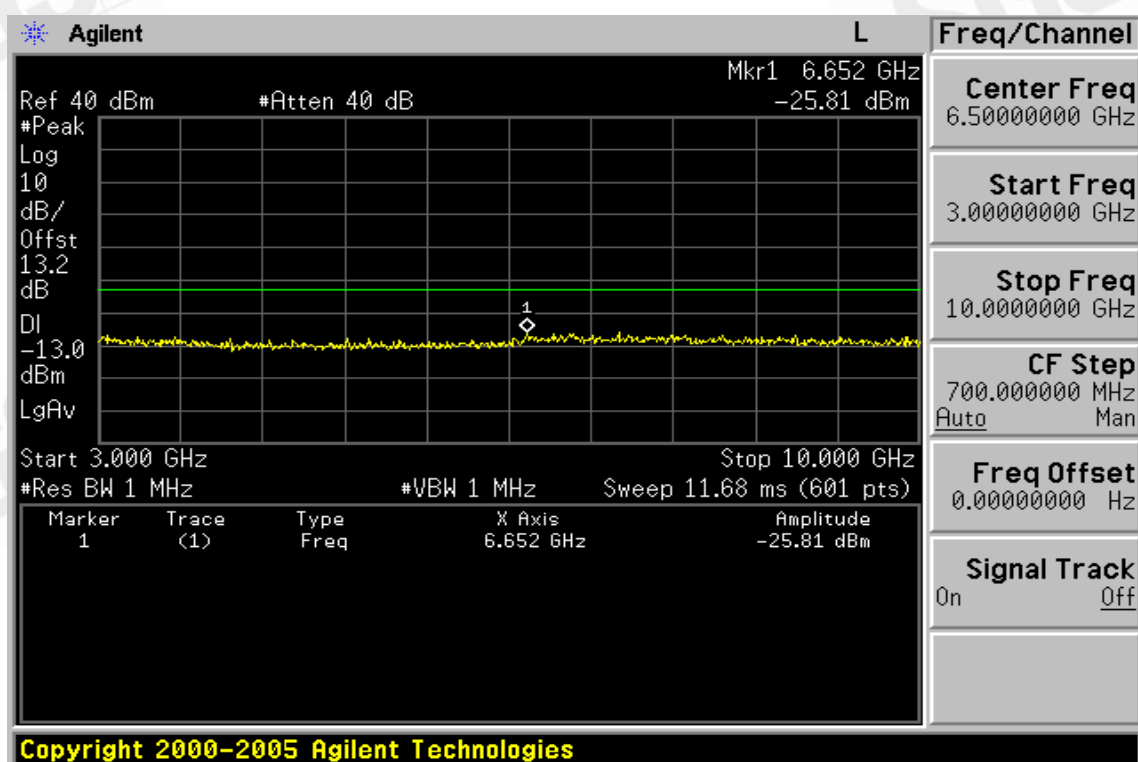
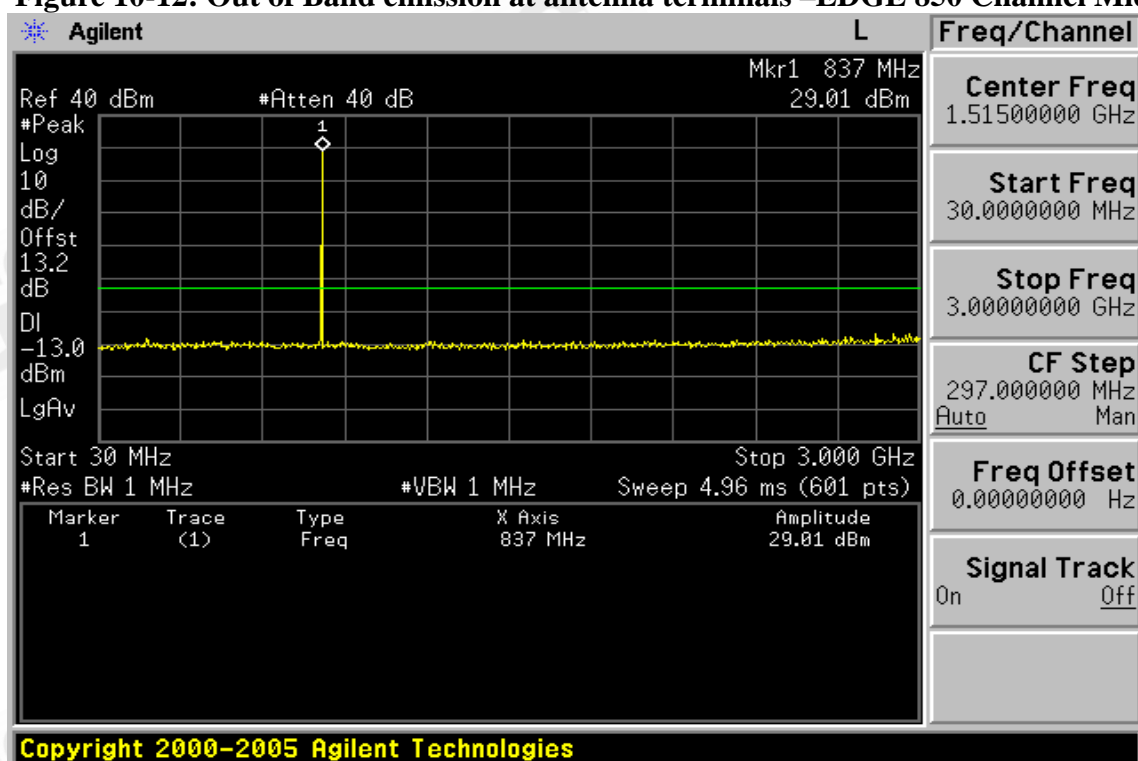
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Figure 10-12: Out of Band emission at antenna terminals –EDGE 850 Channel Mid



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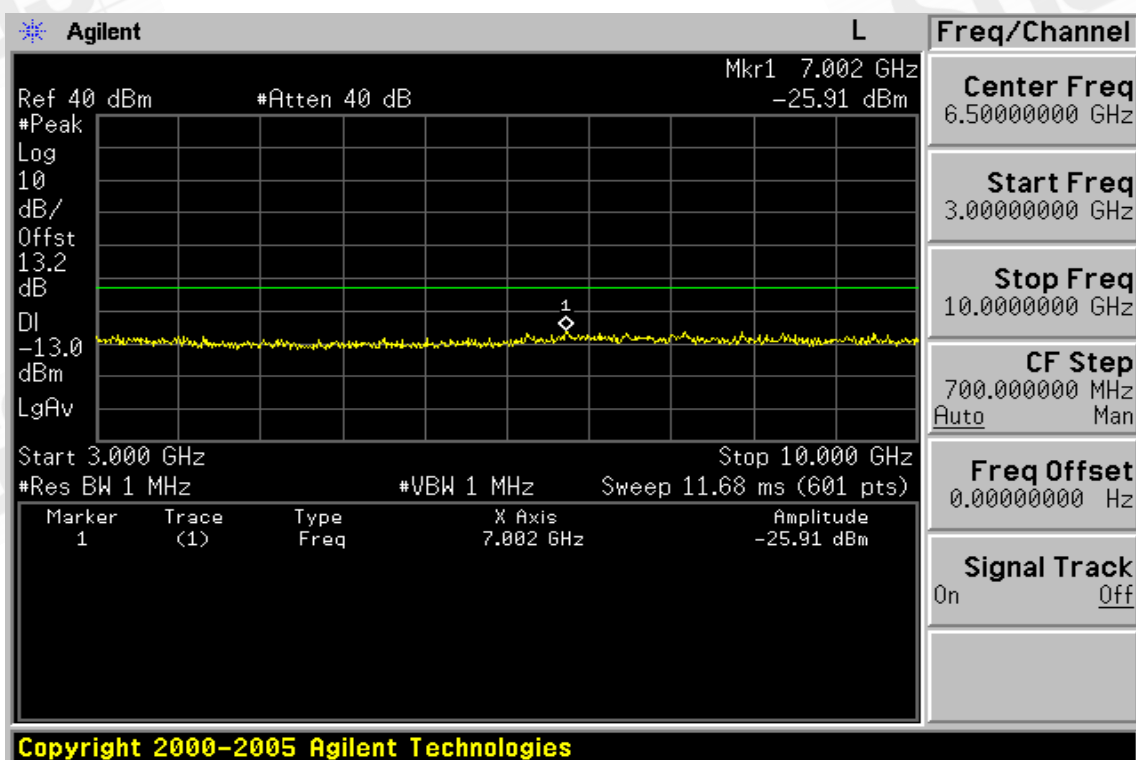
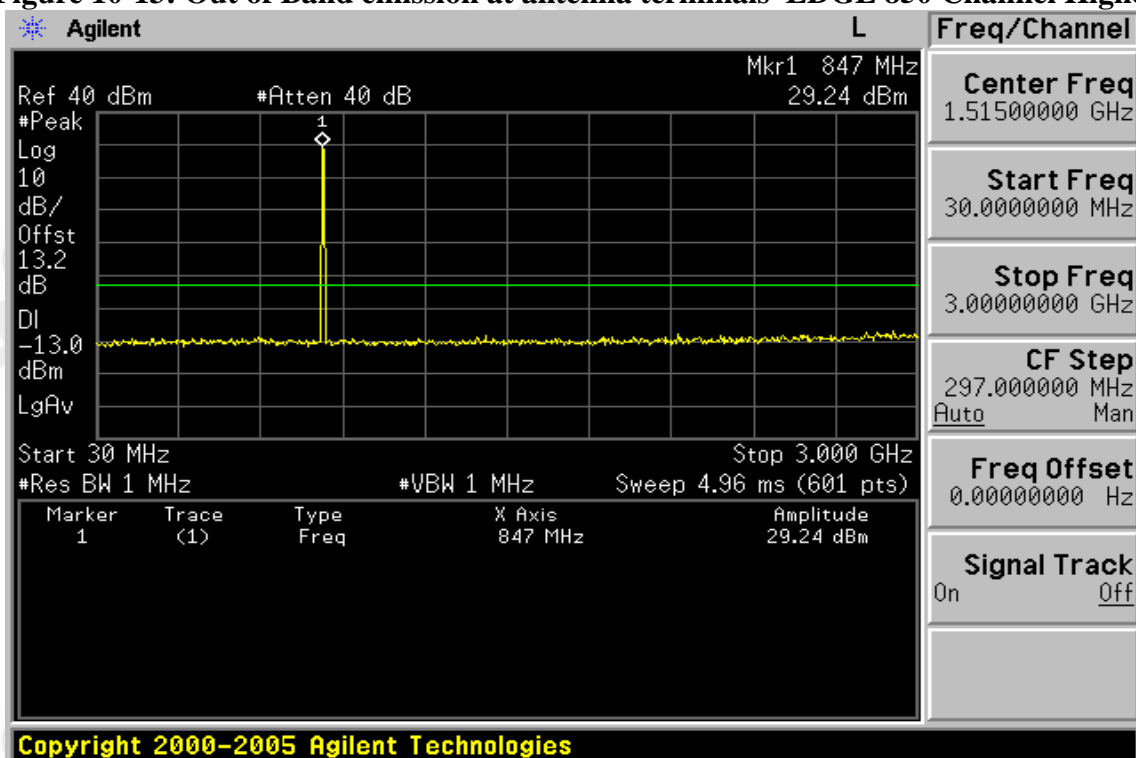
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Figure 10-13: Out of Band emission at antenna terminals–EDGE 850 Channel Highest



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Figure 10-14: Band edge emission at antenna terminals –EDGE 850 Channel Lowest

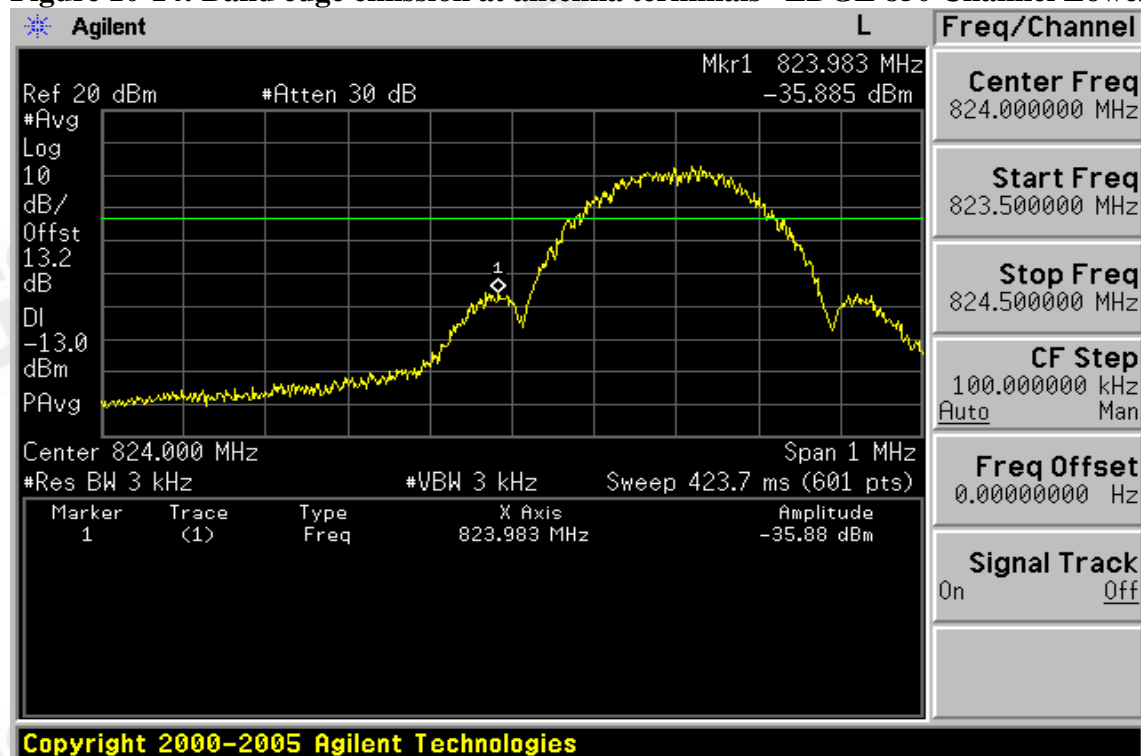
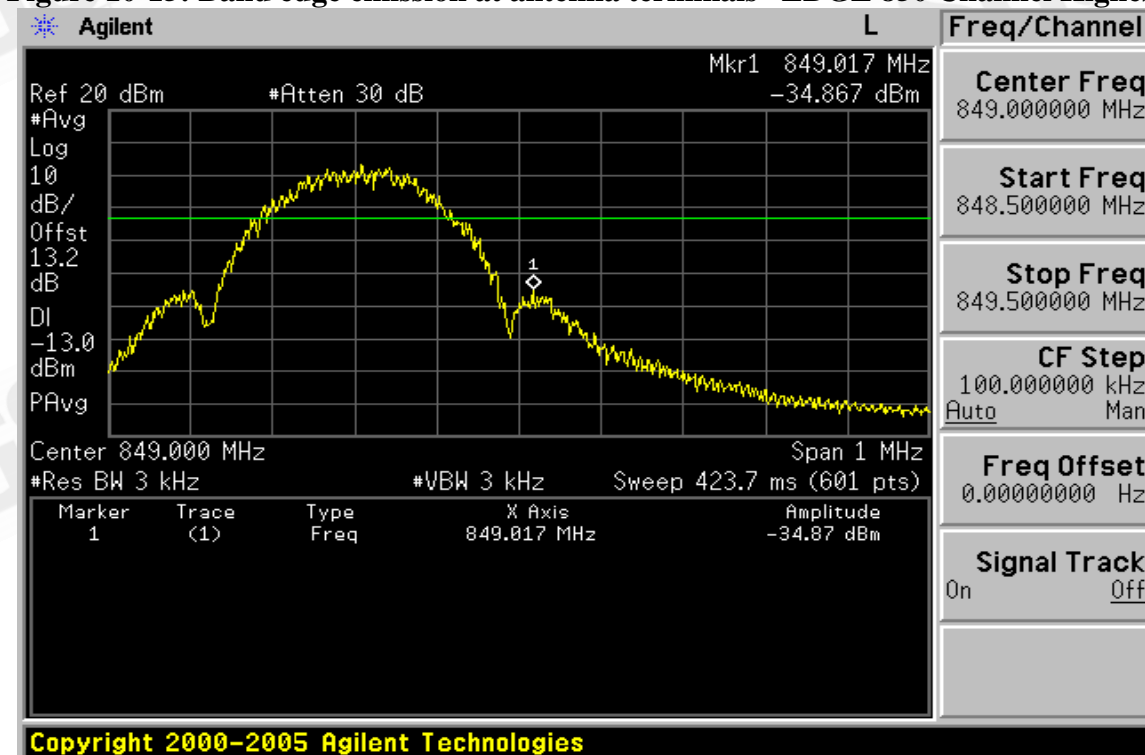


Figure 10-15: Band edge emission at antenna terminals –EDGE 850 Channel Highest



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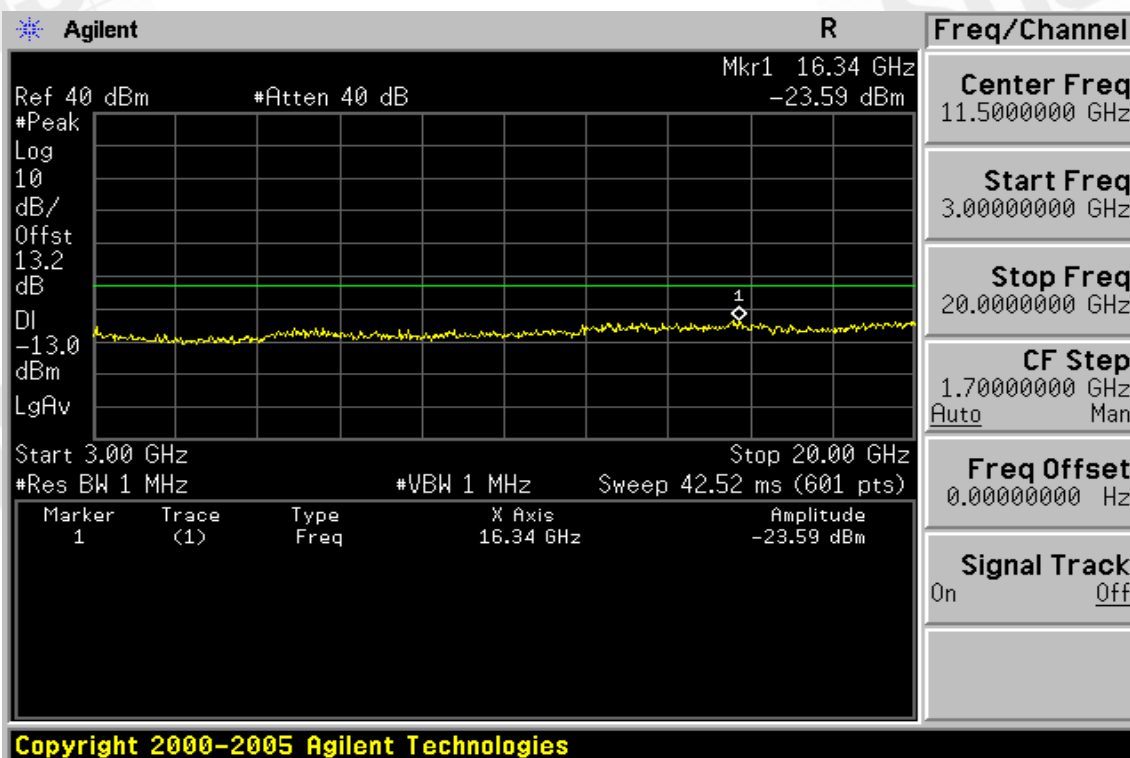
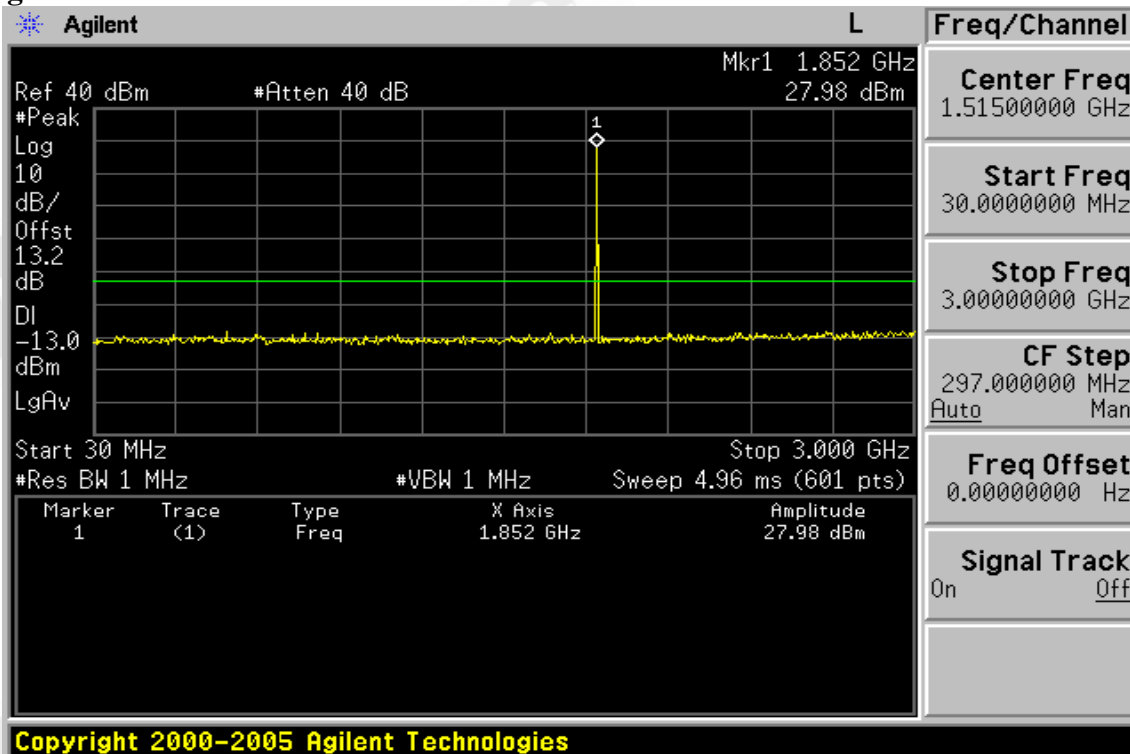
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Figure 10-16: Out of Band emission at antenna terminals–EDGE 1900 Channel Lowest



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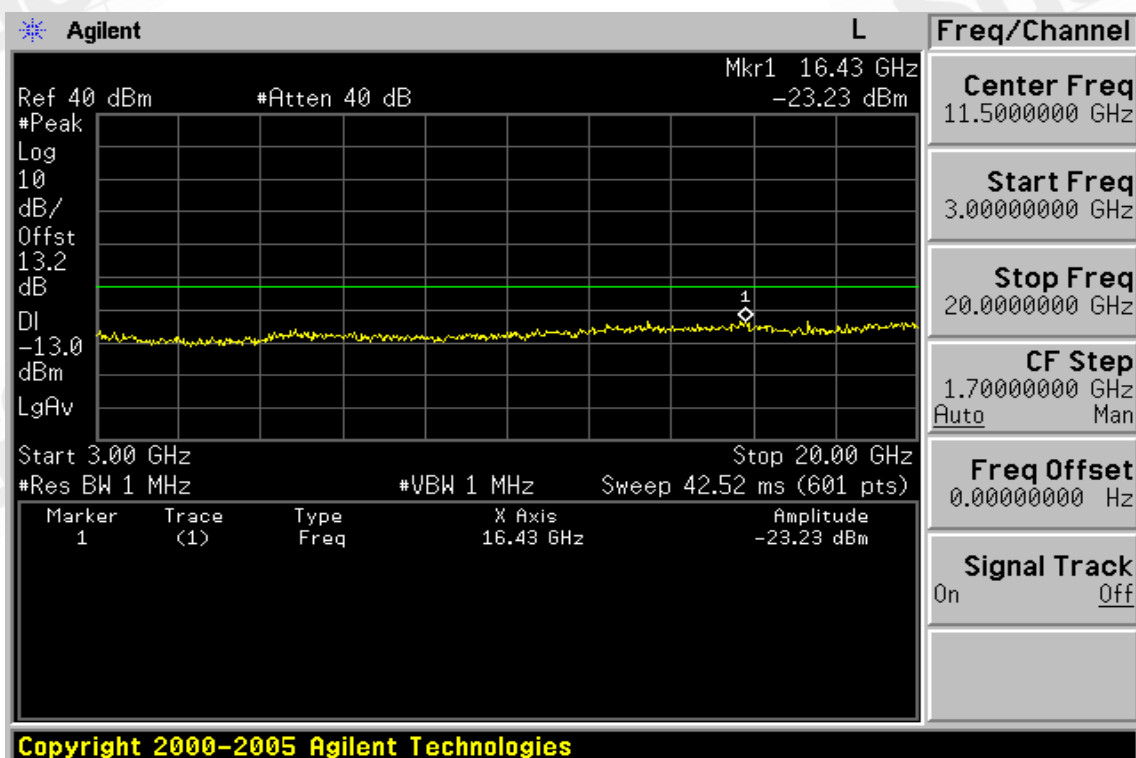
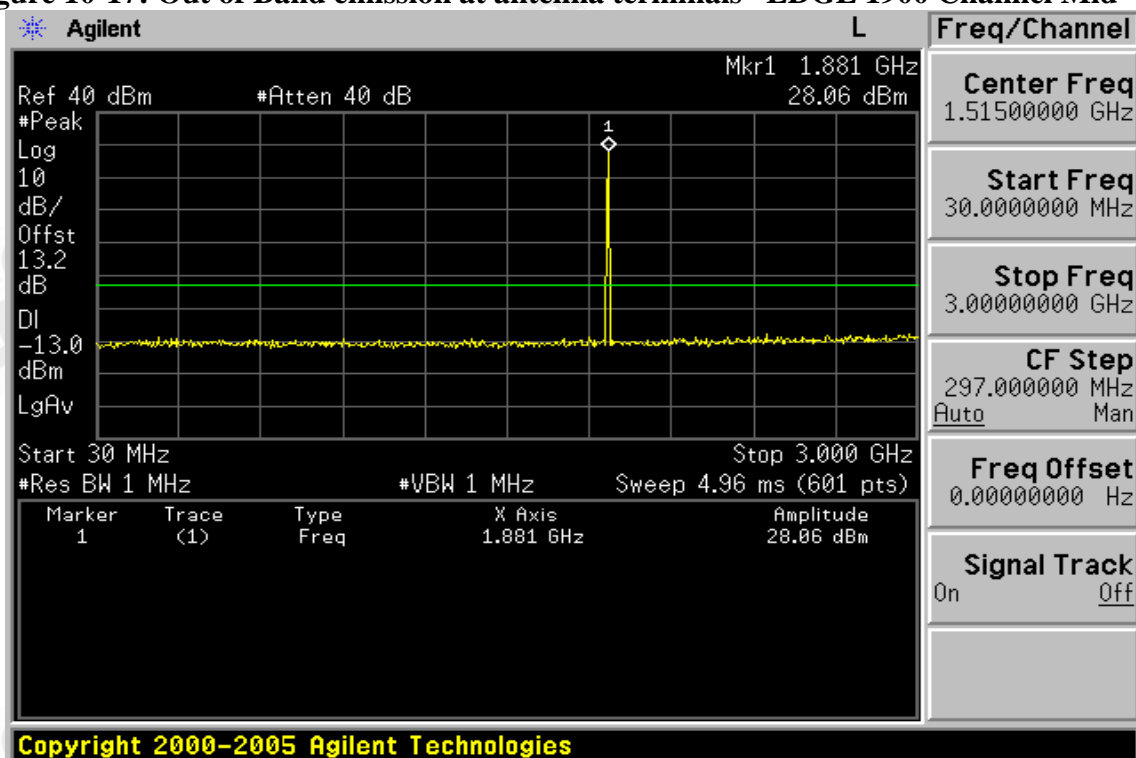
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Figure 10-17: Out of Band emission at antenna terminals –EDGE 1900 Channel Mid



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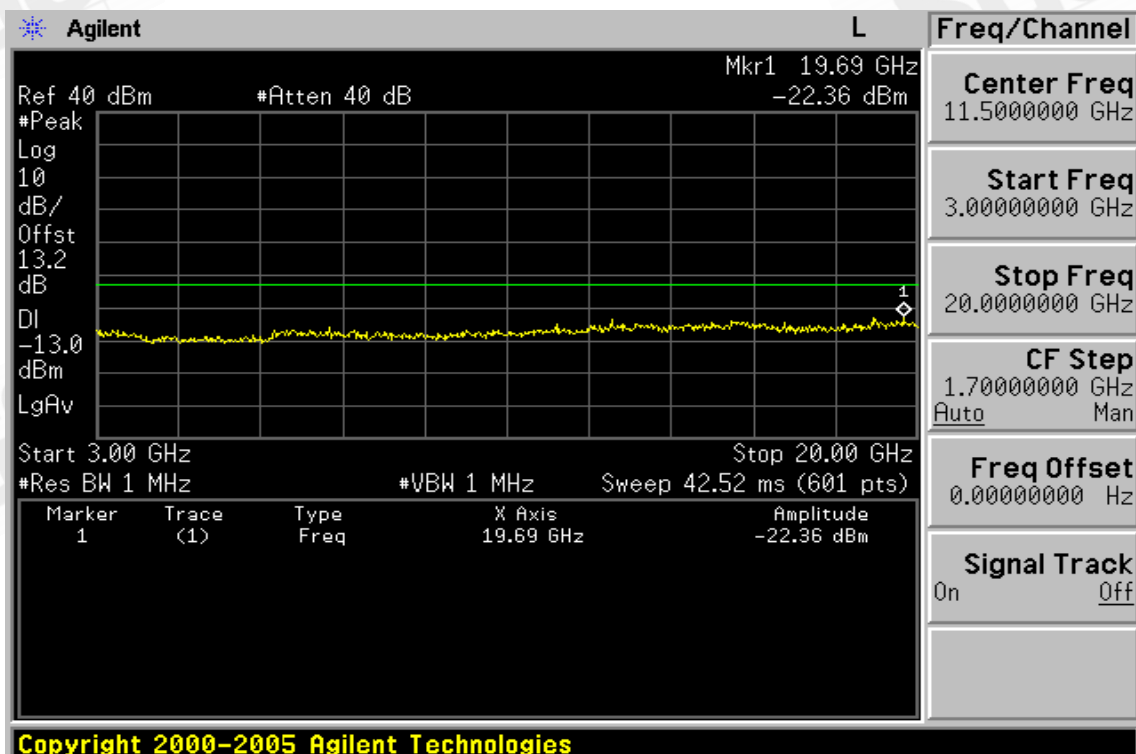
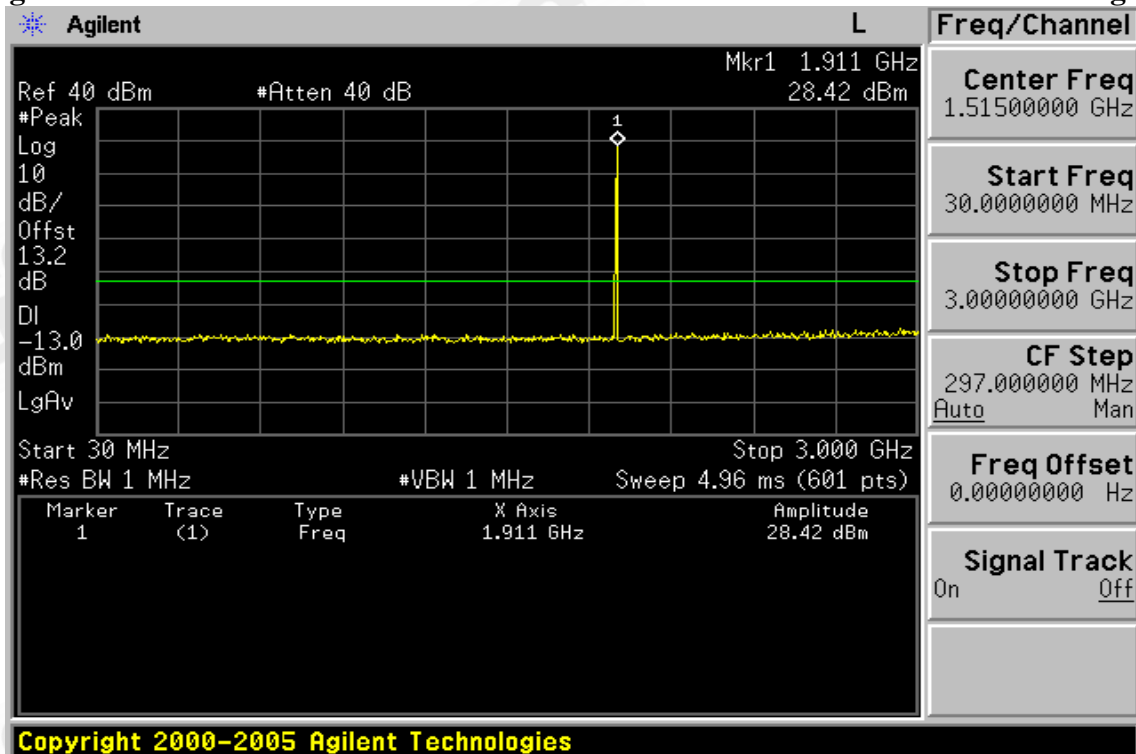
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Figure 10-18: Out of Band emission at antenna terminals –EDGE 1900 Channel Highest



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Figure 10-19: Bad edge emission at antenna terminals –EDGE 1900 Channel Lowest

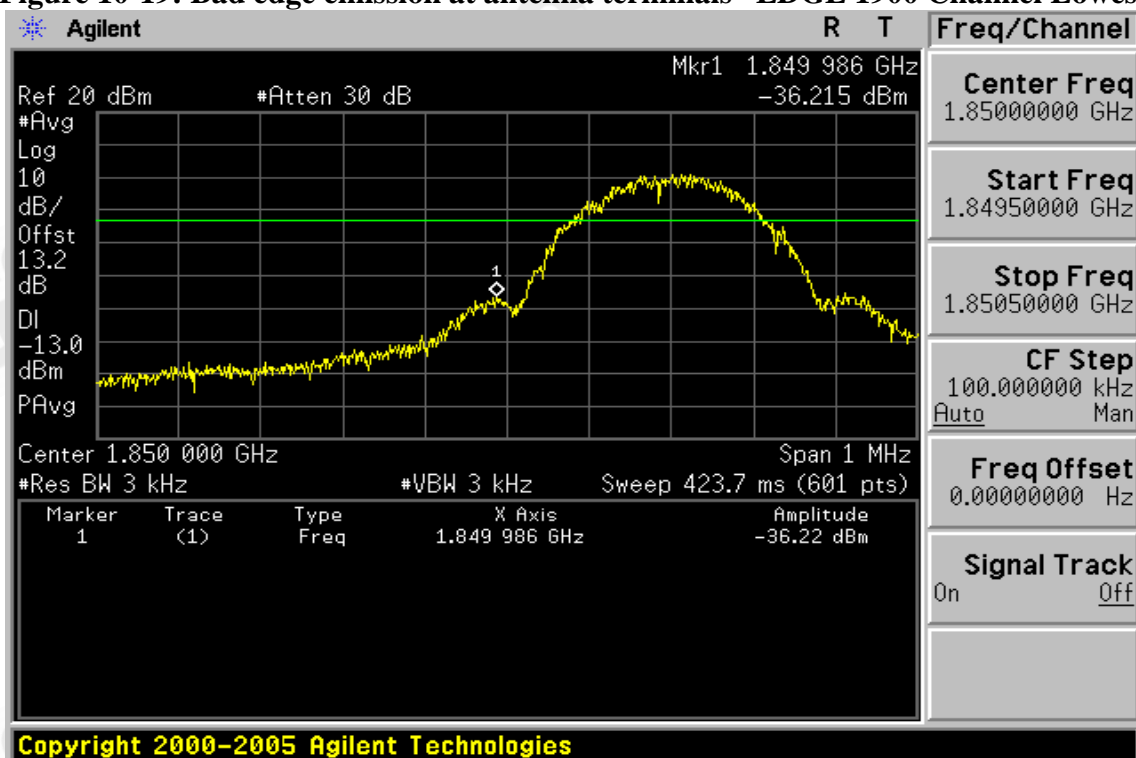
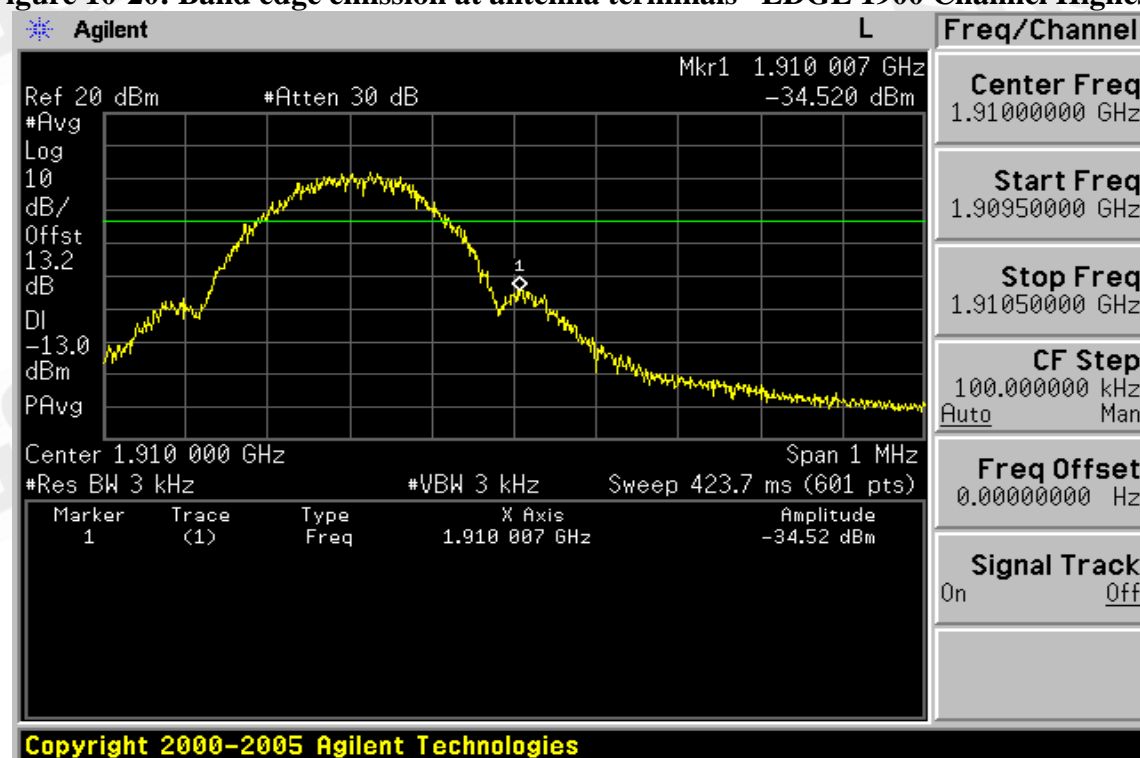


Figure 10-20: Band edge emission at antenna terminals –EDGE 1900 Channel Highest



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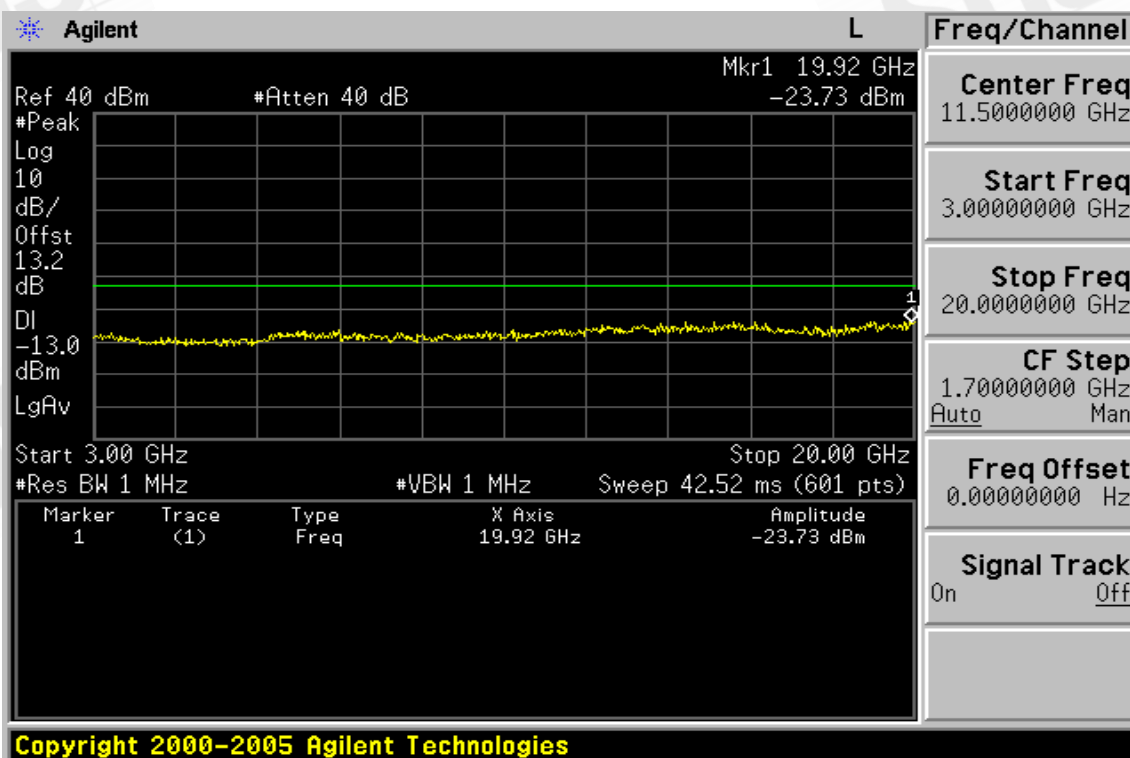
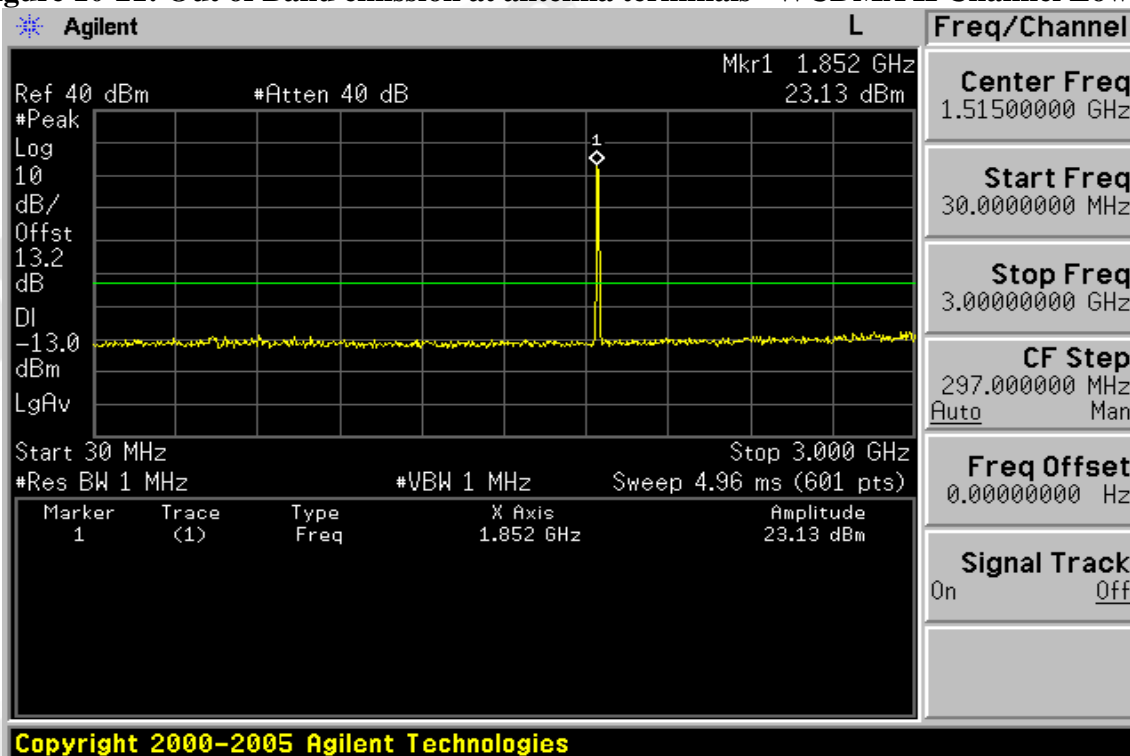
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Figure 10-21: Out of Band emission at antenna terminals– WCDMA II Channel Lowest



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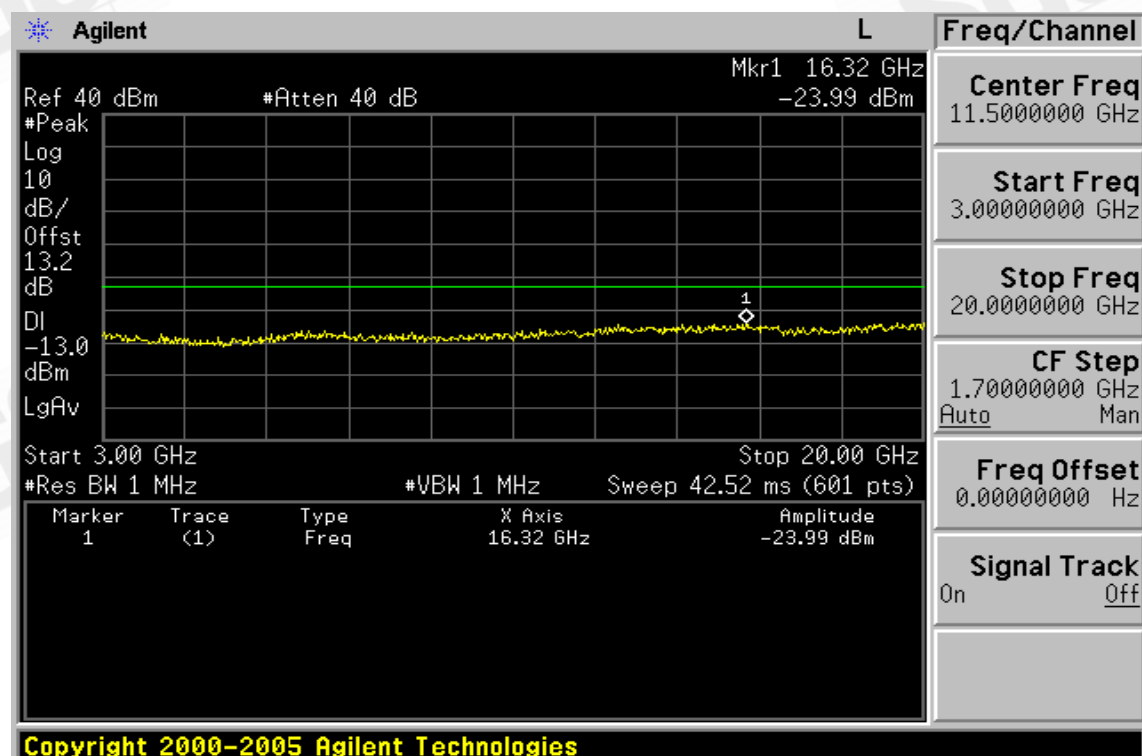
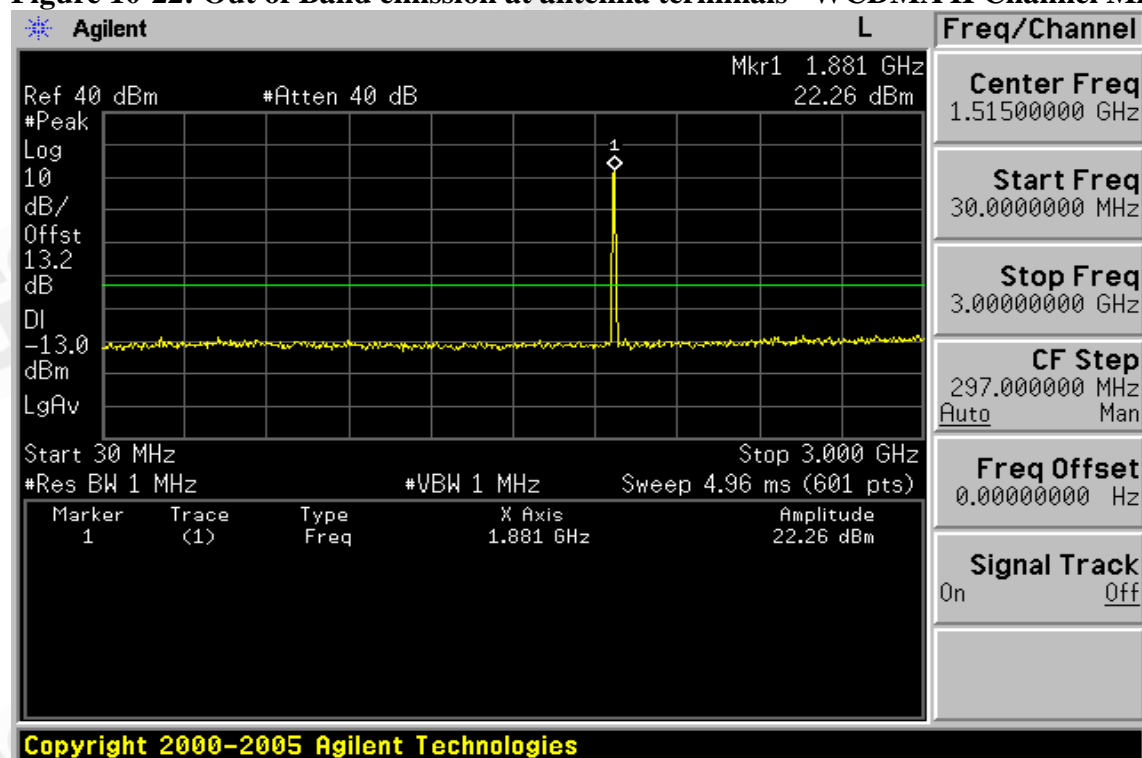
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Figure 10-22: Out of Band emission at antenna terminals –WCDMA II Channel Mid



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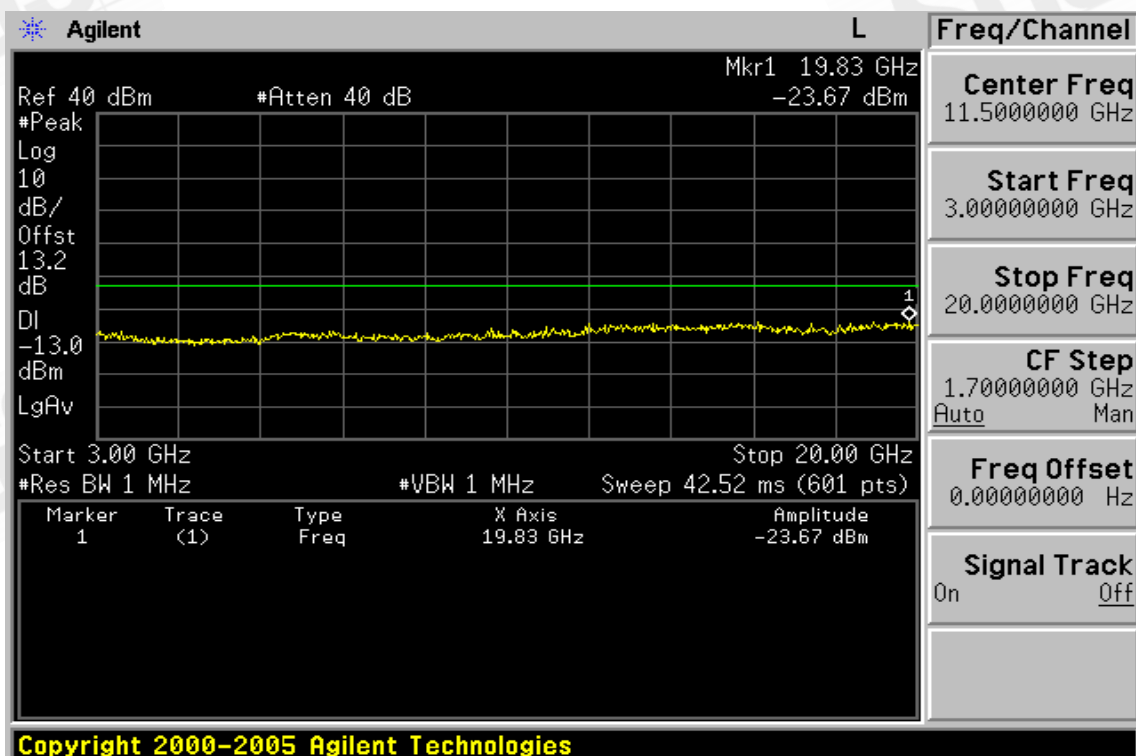
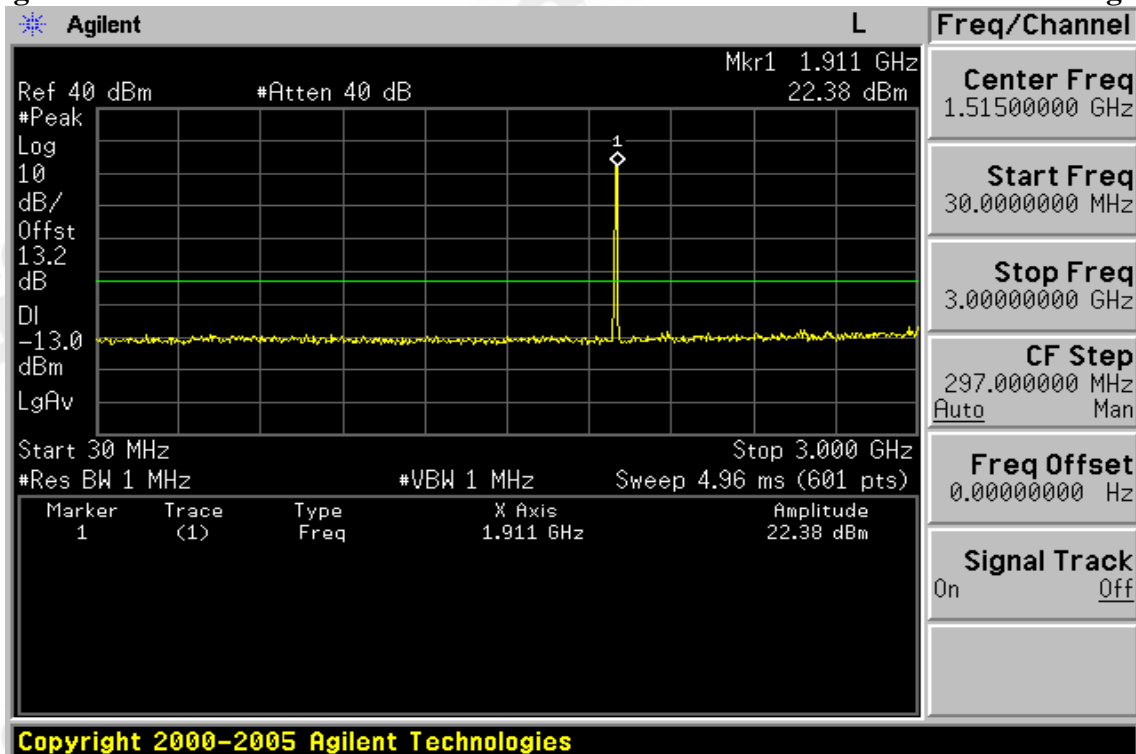
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Figure 10-23: Out of Band emission at antenna terminals–WCDMA II Channel Highest



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Figure 10-24: Bad edge emission at antenna terminals –WCDMA II Channel Lowest

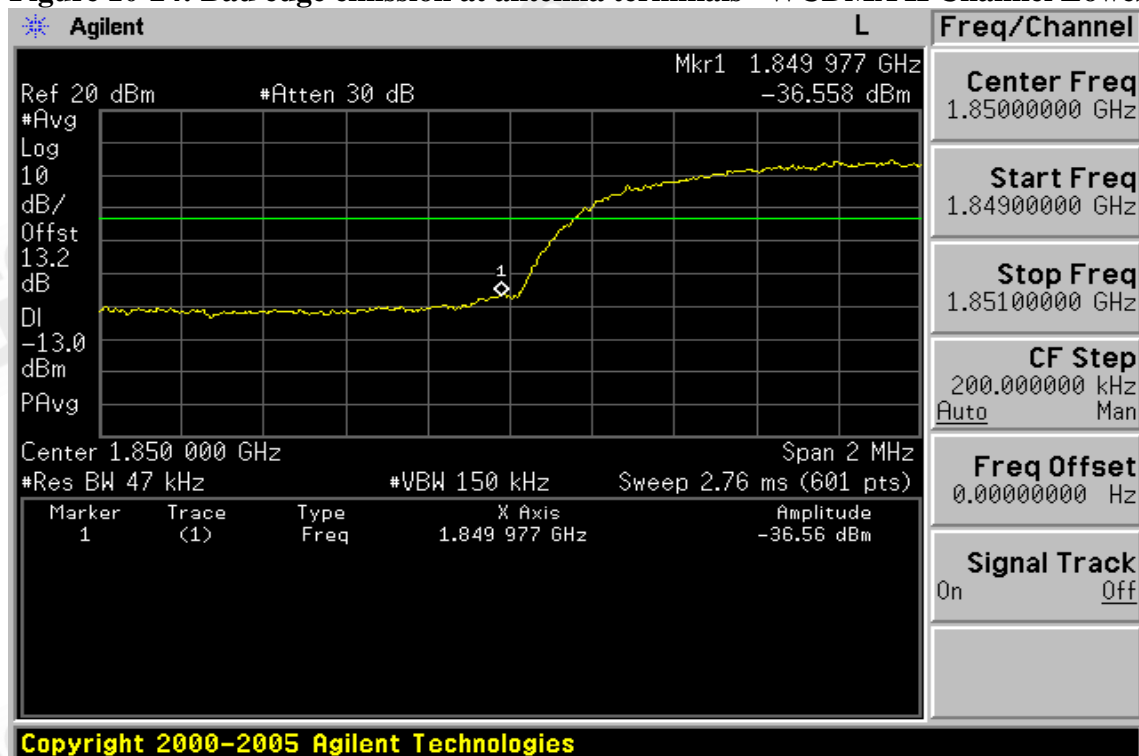
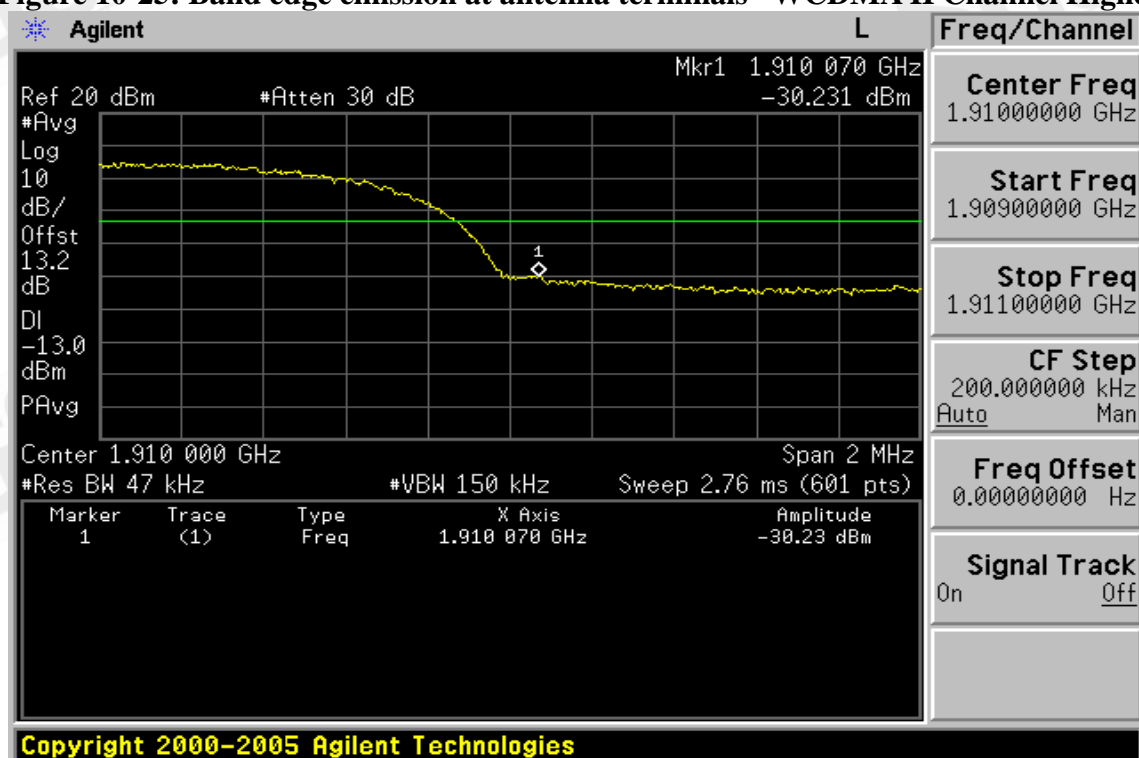


Figure 10-25: Band edge emission at antenna terminals –WCDMA II Channel Highest



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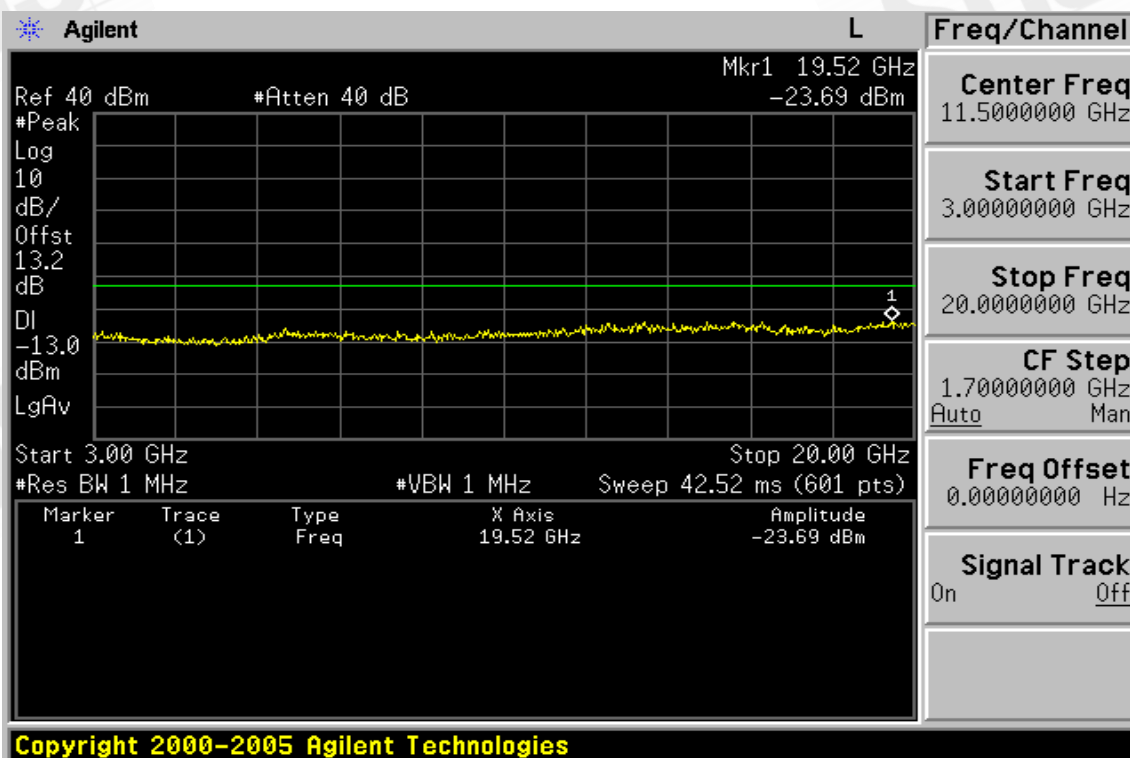
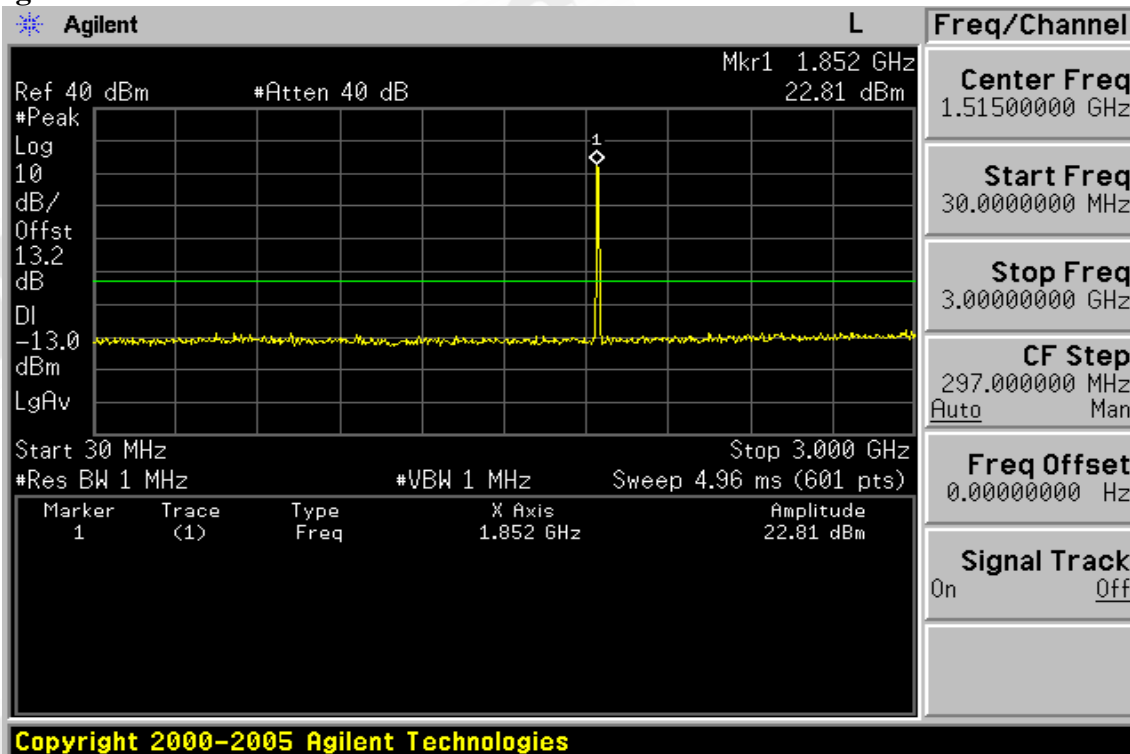
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Figure 10-26: Out of Band emission at antenna terminals– HSDPA II Channel Lowest



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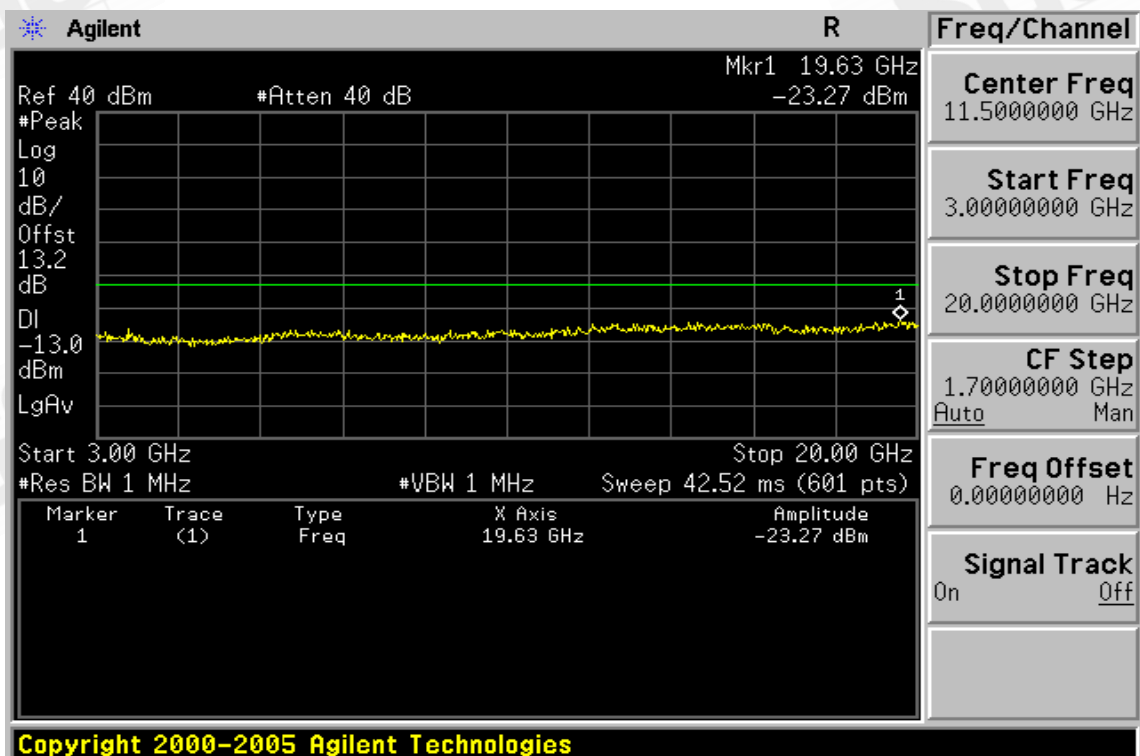
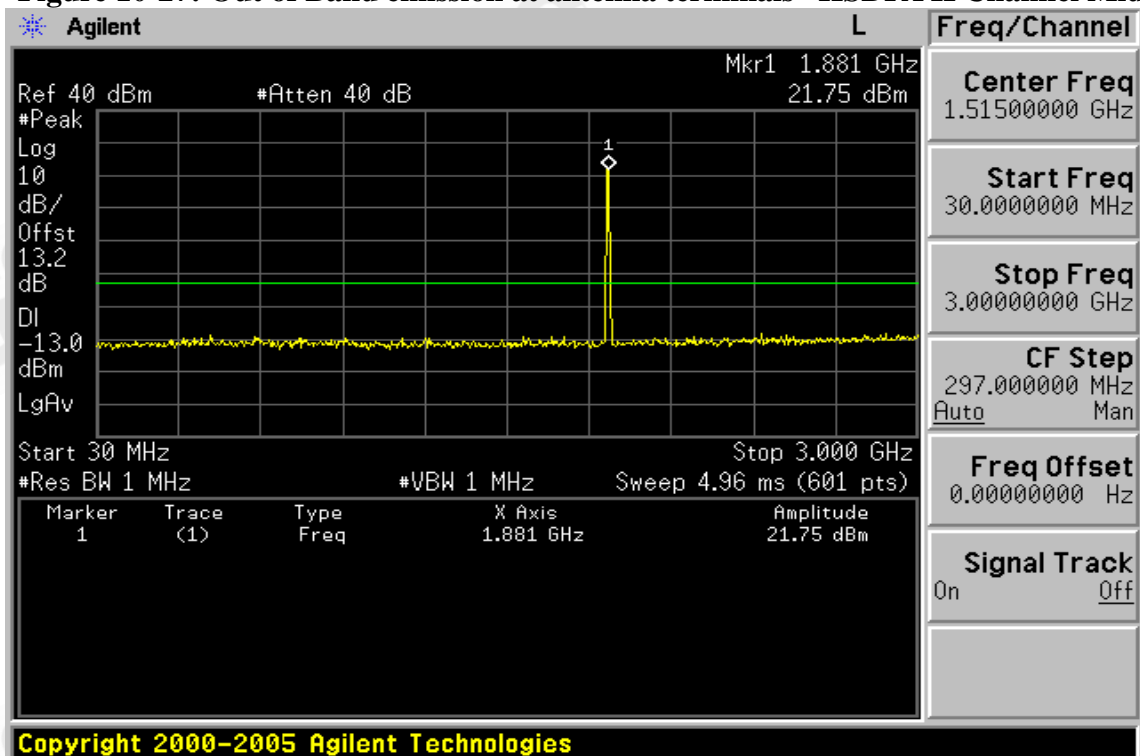
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Figure 10-27: Out of Band emission at antenna terminals –HSDPA II Channel Mid



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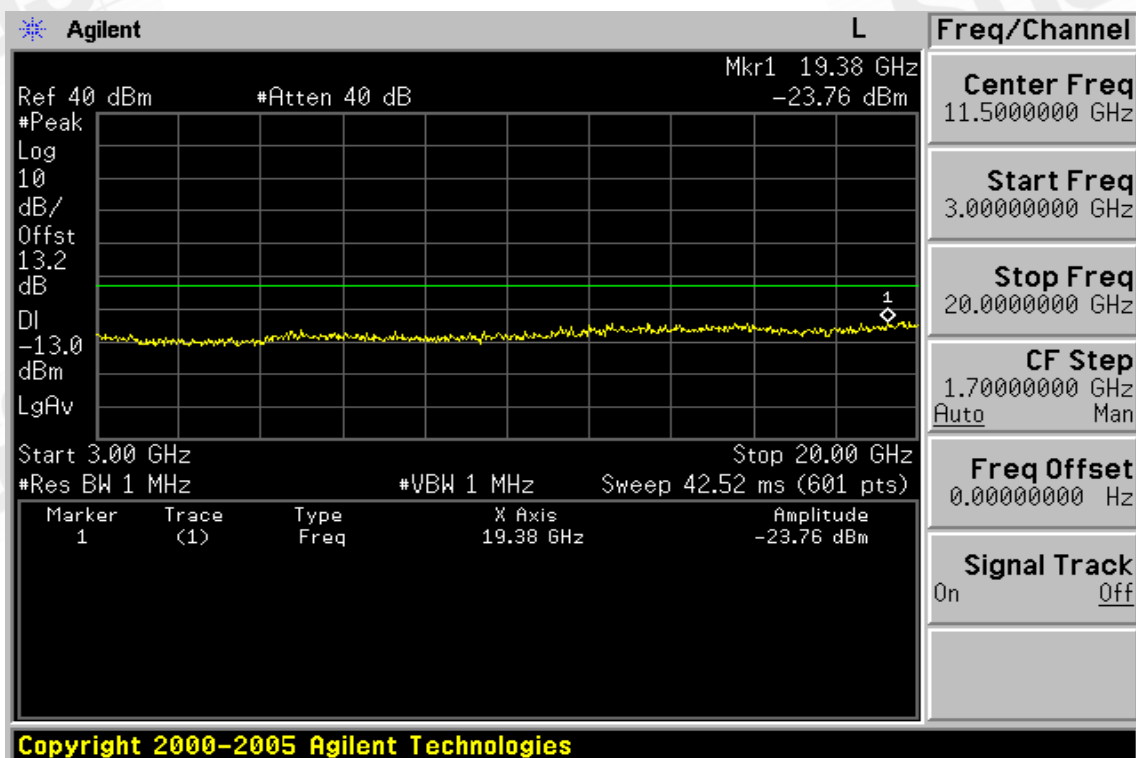
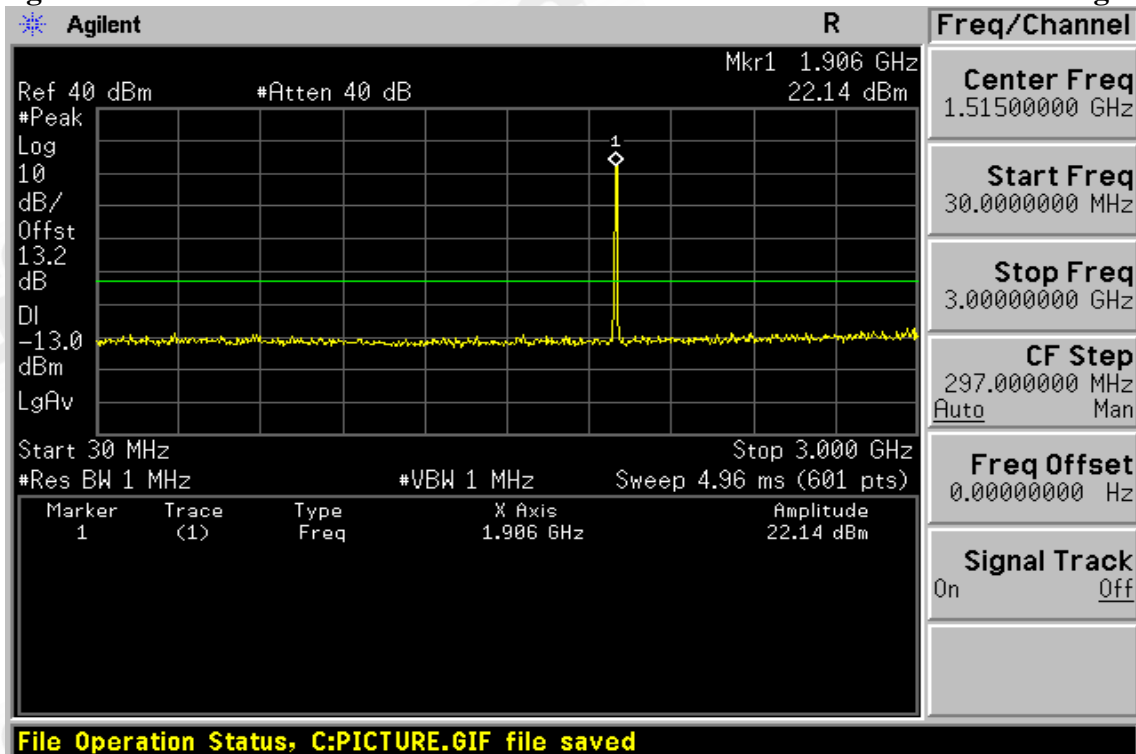
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Figure 10-28: Out of Band emission at antenna terminals–HSDPA II Channel Highest



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Figure 10-29: Bad edge emission at antenna terminals –HSDPA II Channel Lowest

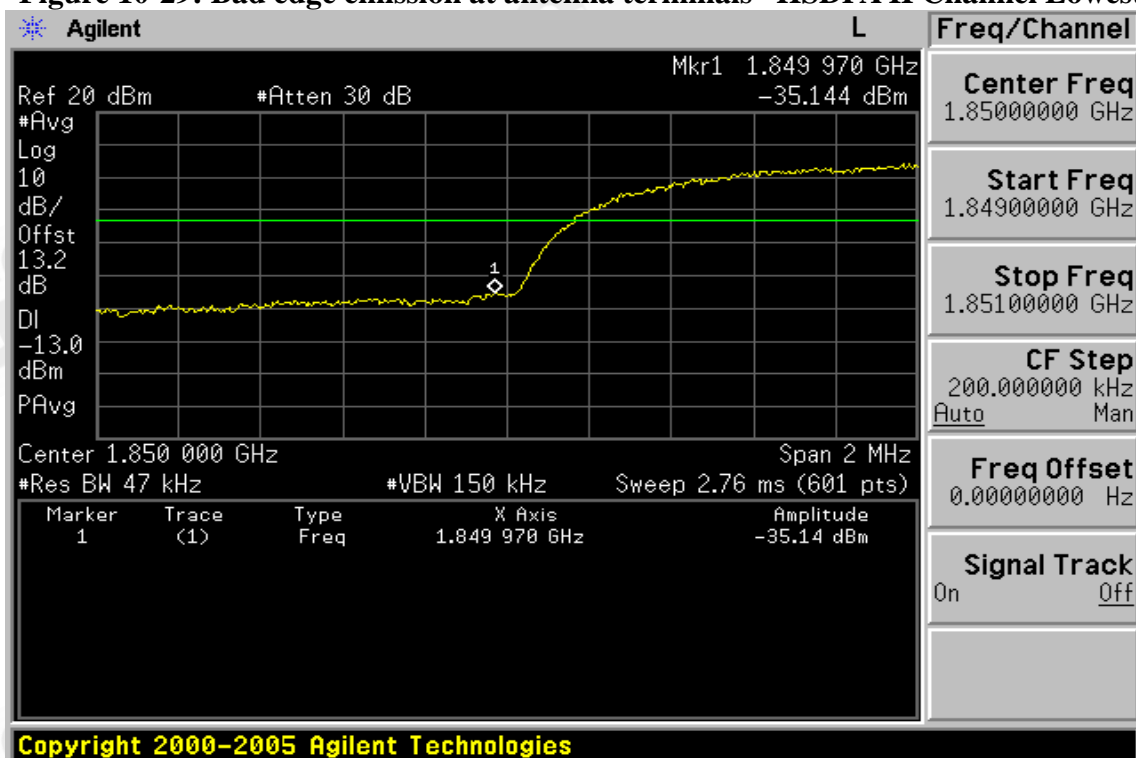


Figure 10-30: Band edge emission at antenna terminals –HSDPA II Channel Highest



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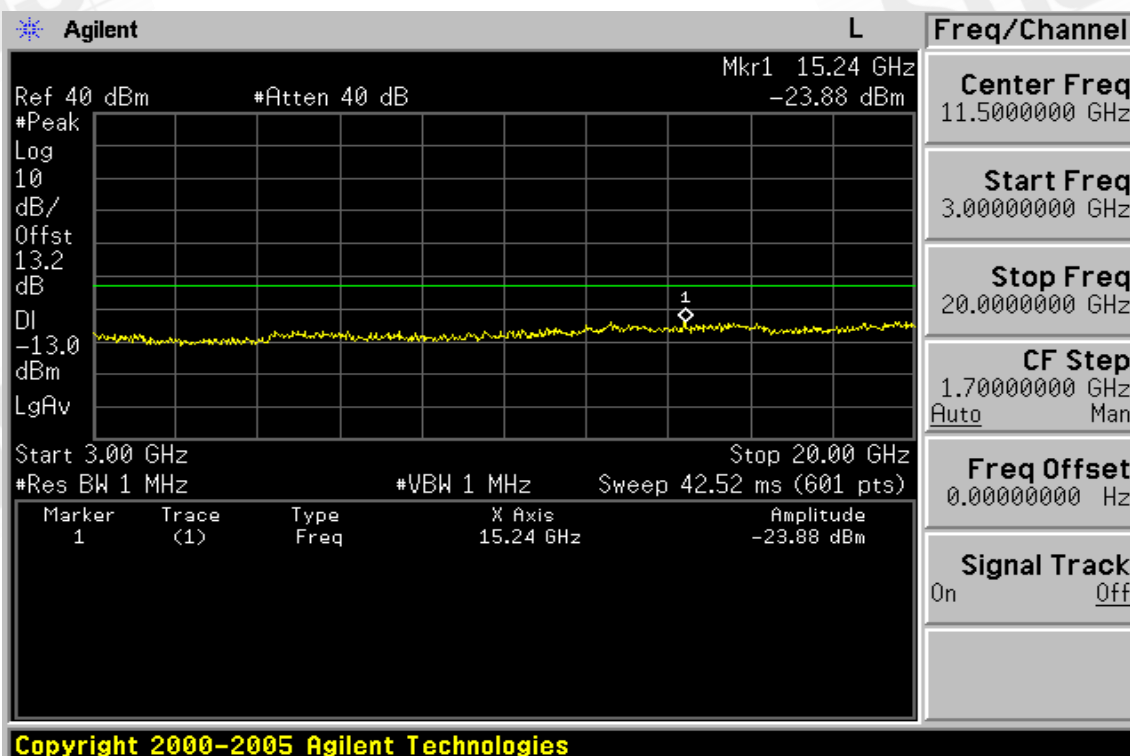
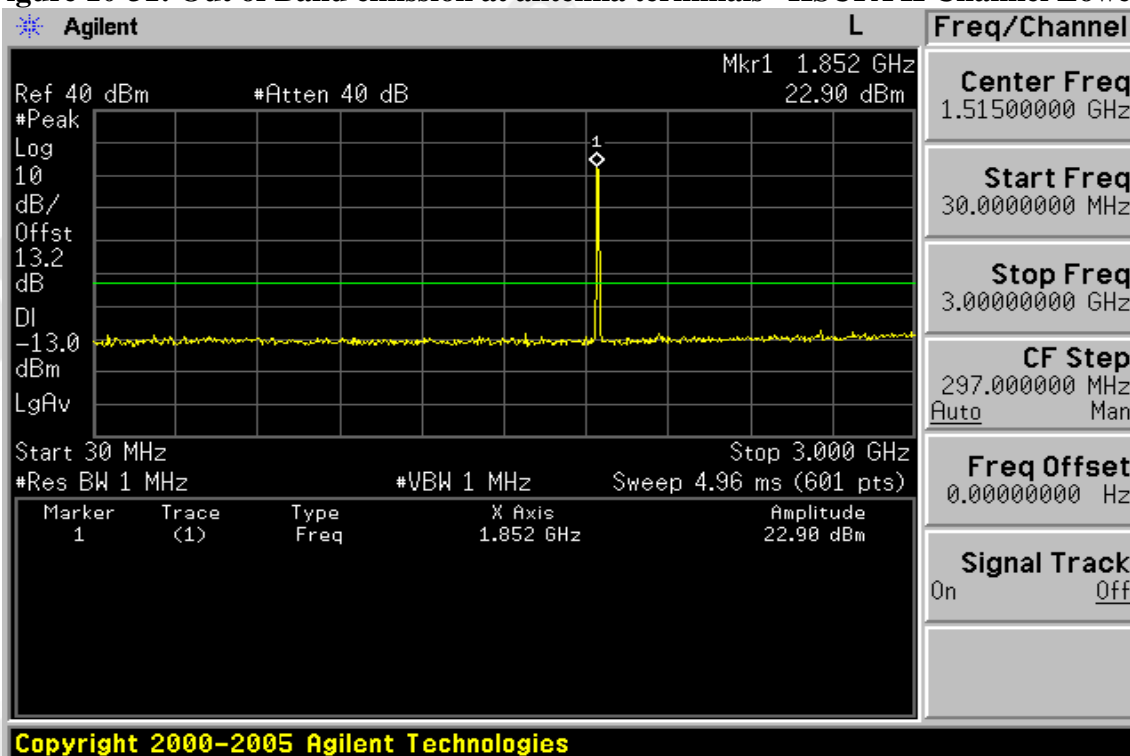
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Figure 10-31: Out of Band emission at antenna terminals– HSUPA II Channel Lowest



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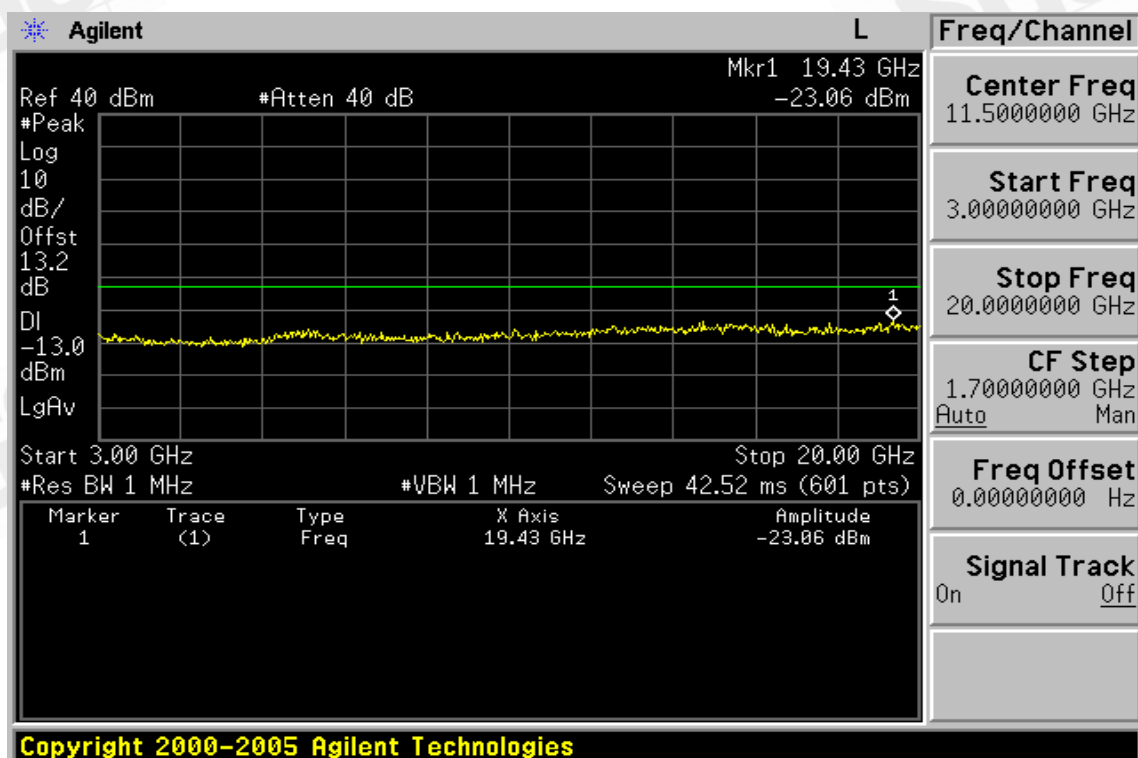
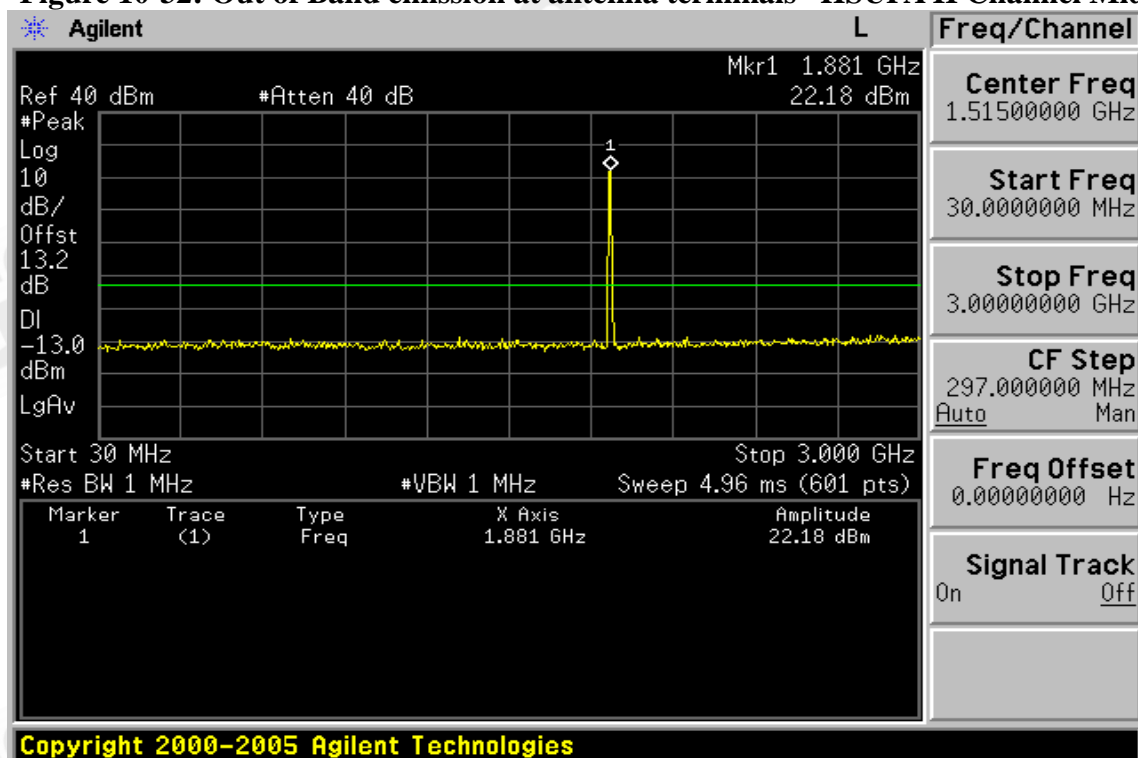
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Figure 10-32: Out of Band emission at antenna terminals –HSUPA II Channel Mid



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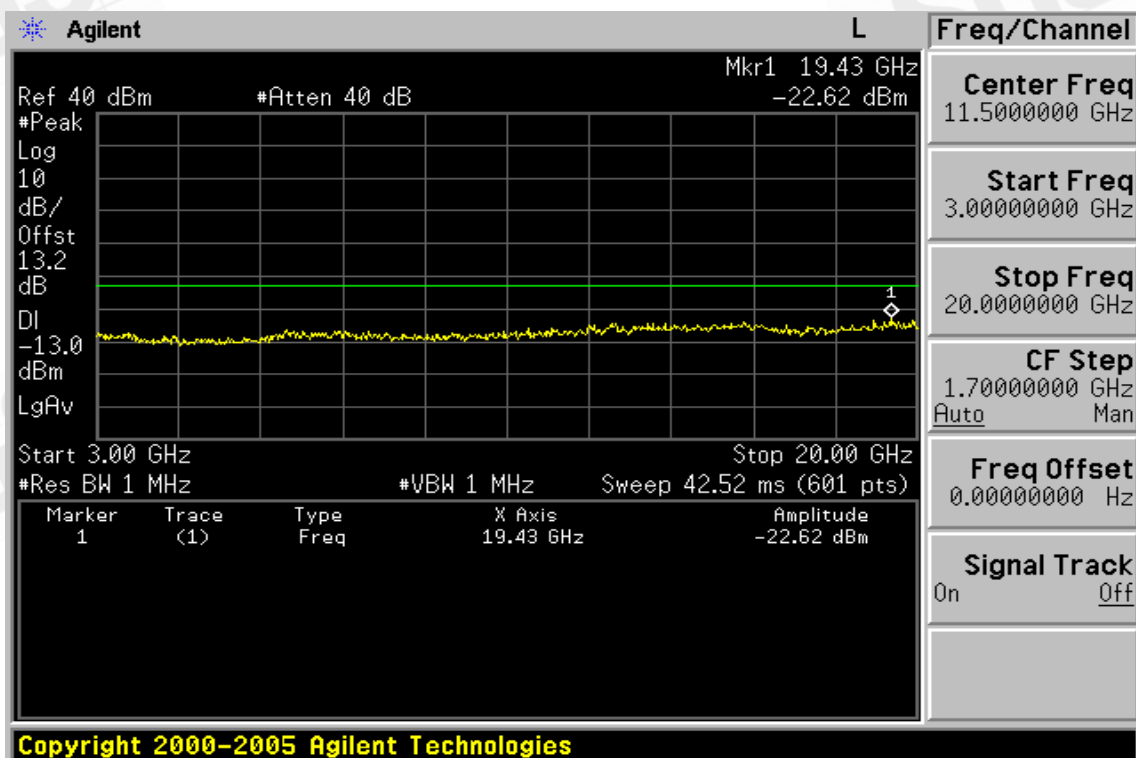
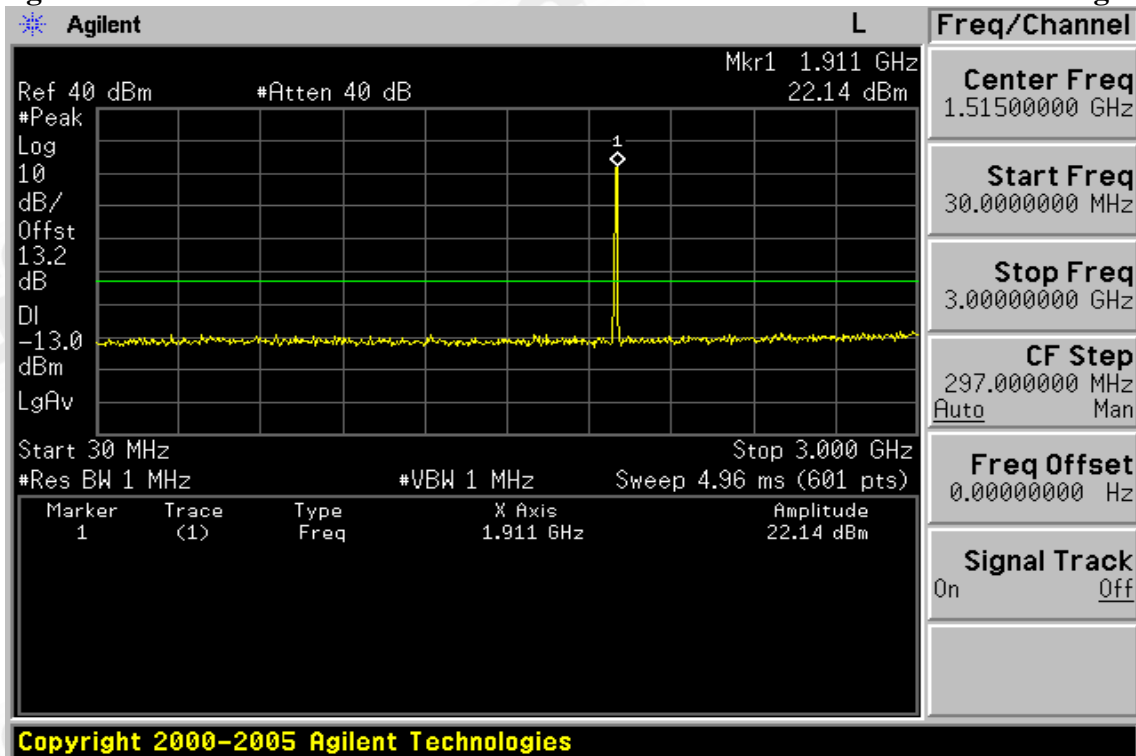
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Figure 10-33: Out of Band emission at antenna terminals–HSUPA II Channel Highest



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Figure 10-34: Bad edge emission at antenna terminals –HSUPA II Channel Lowest

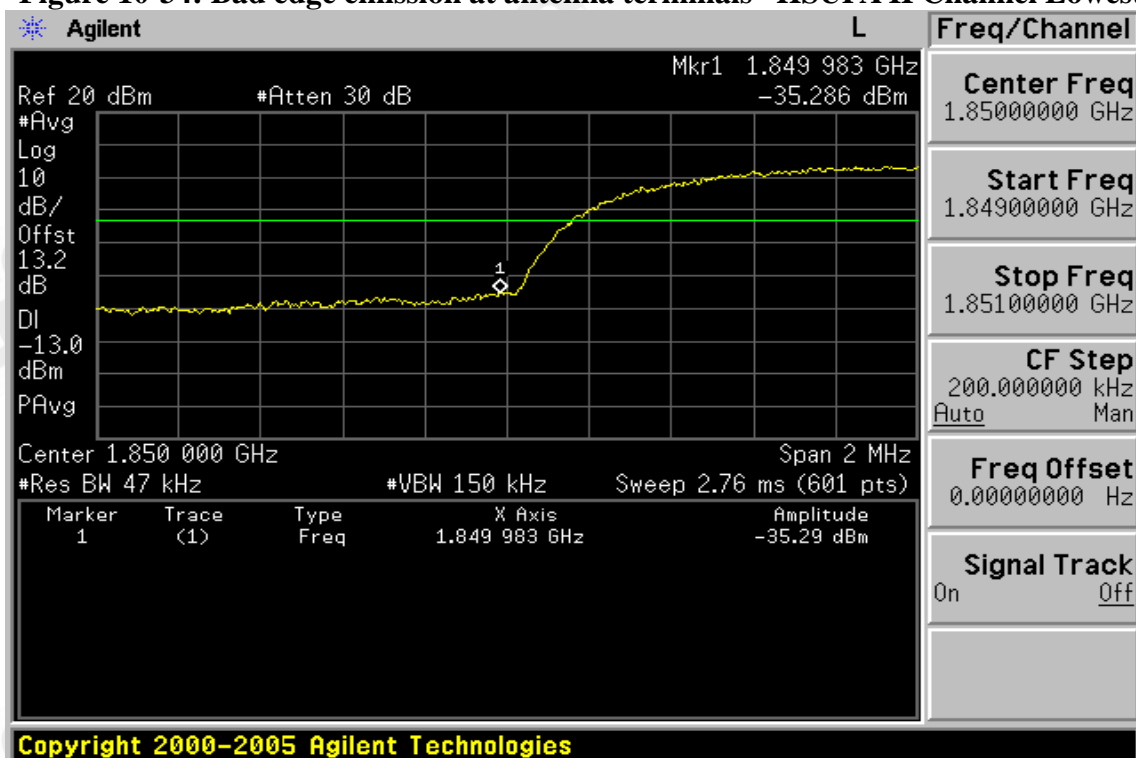


Figure 10-35: Band edge emission at antenna terminals –HSUPA II Channel Highest



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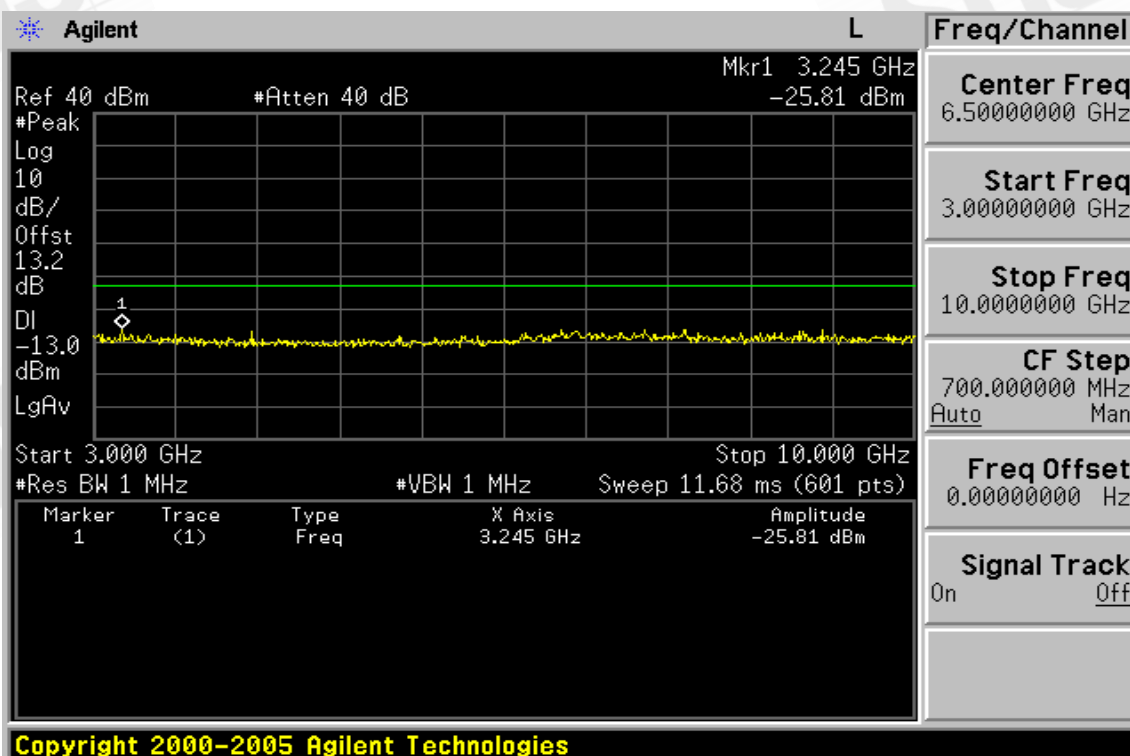
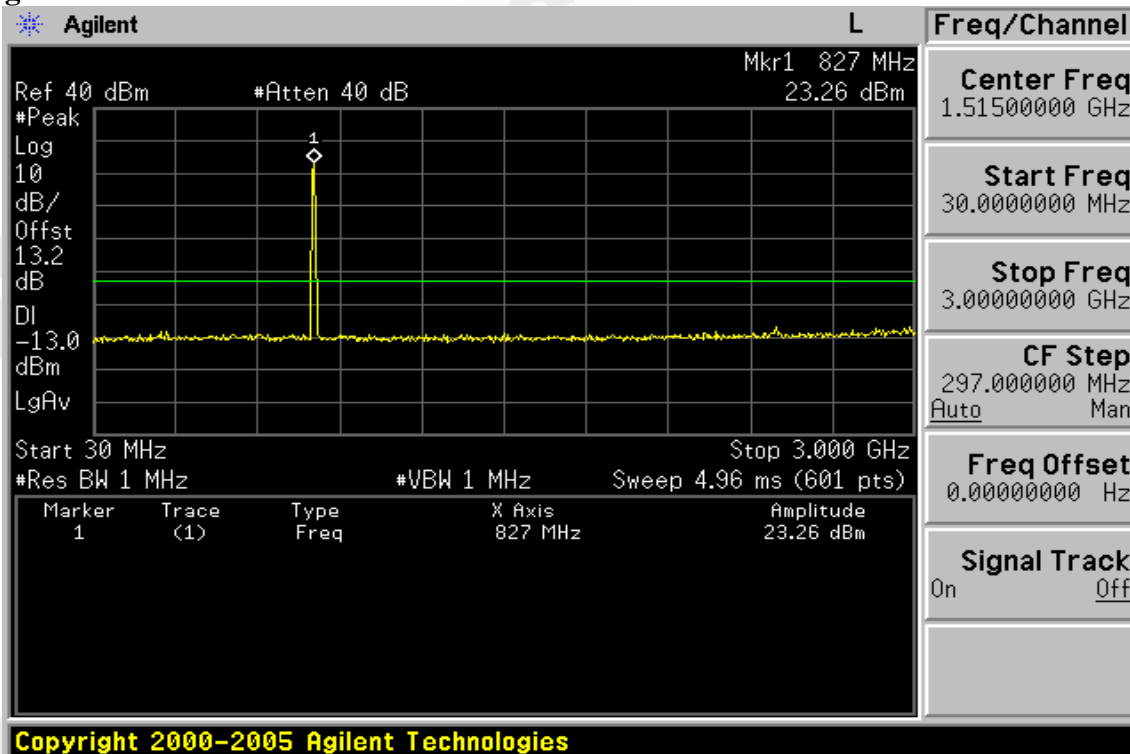
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Figure 10-36: Out of Band emission at antenna terminals– WCDMA V Channel Lowest



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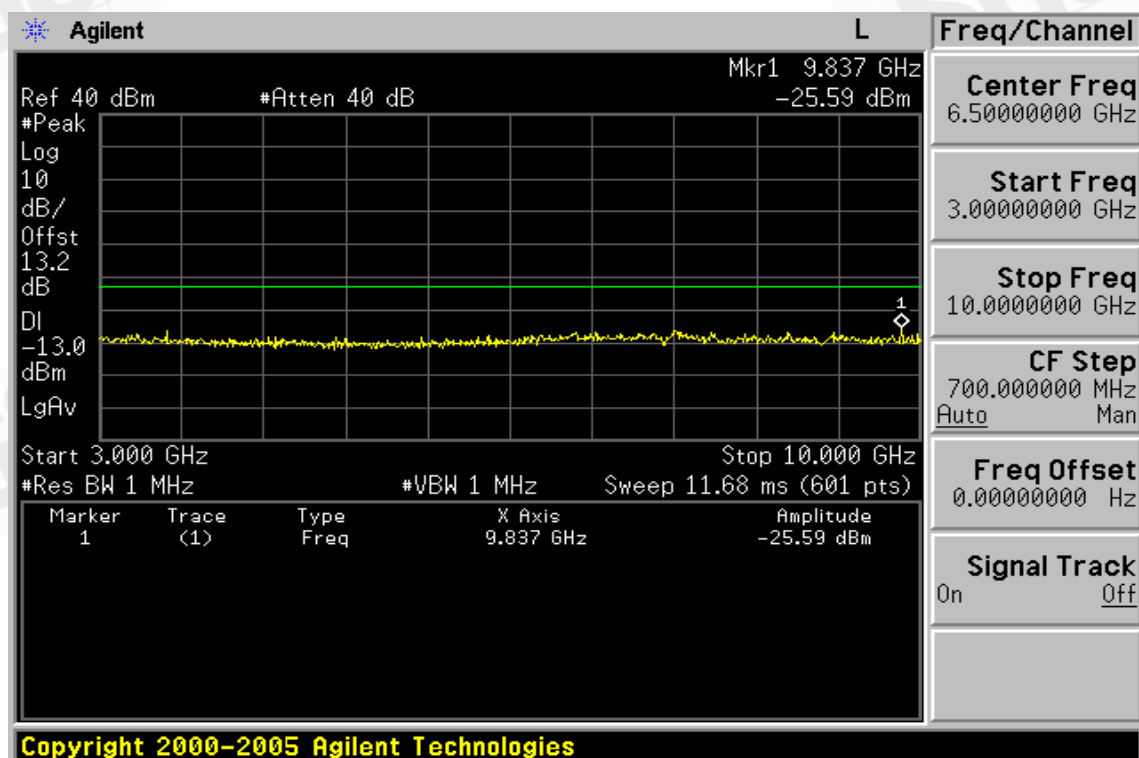
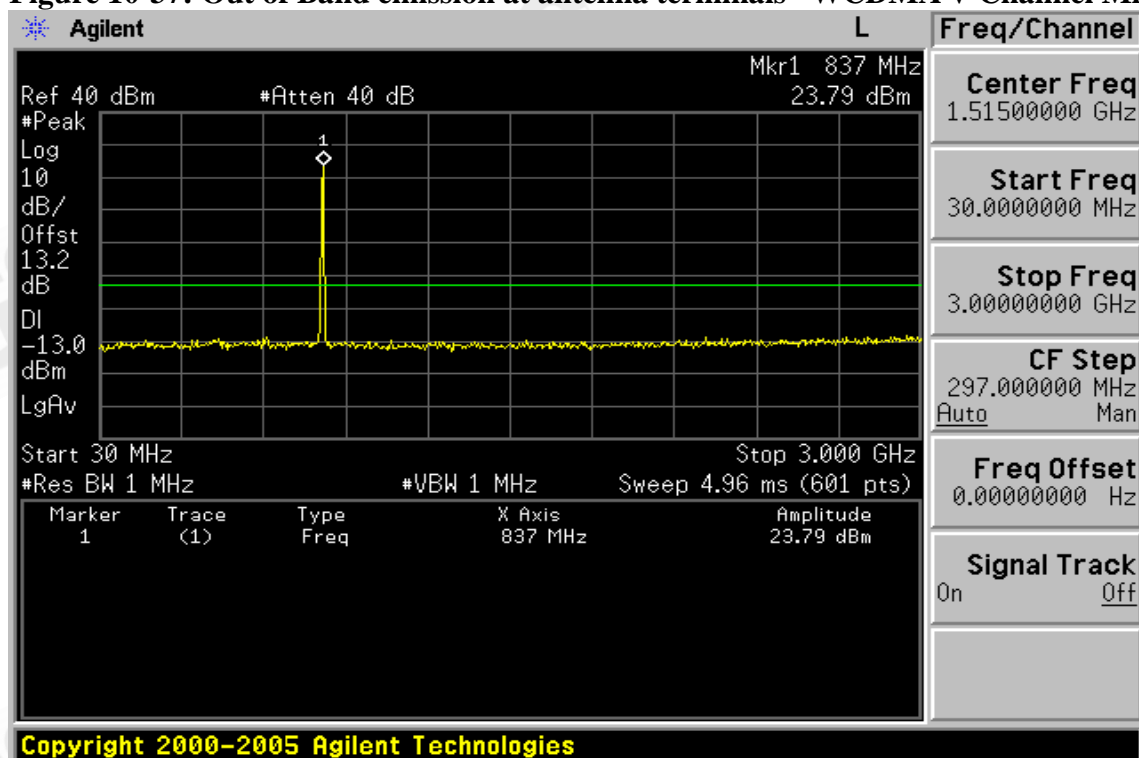
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Figure 10-37: Out of Band emission at antenna terminals –WCDMA V Channel Mid



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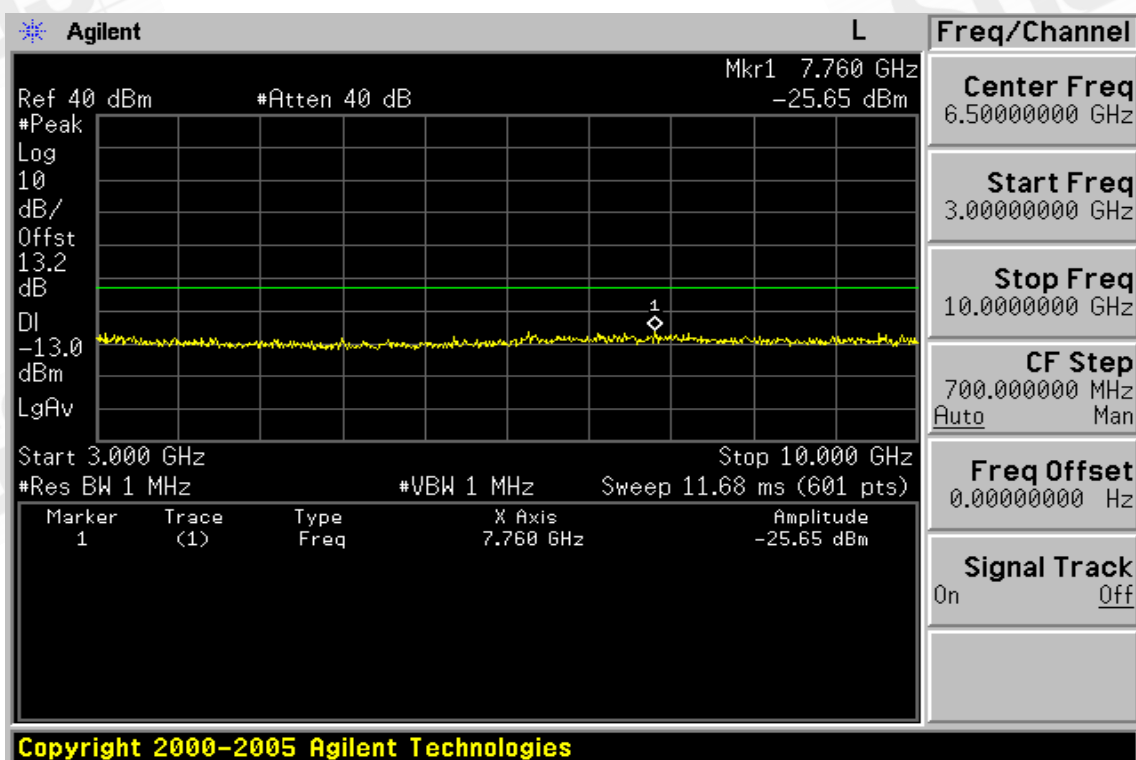
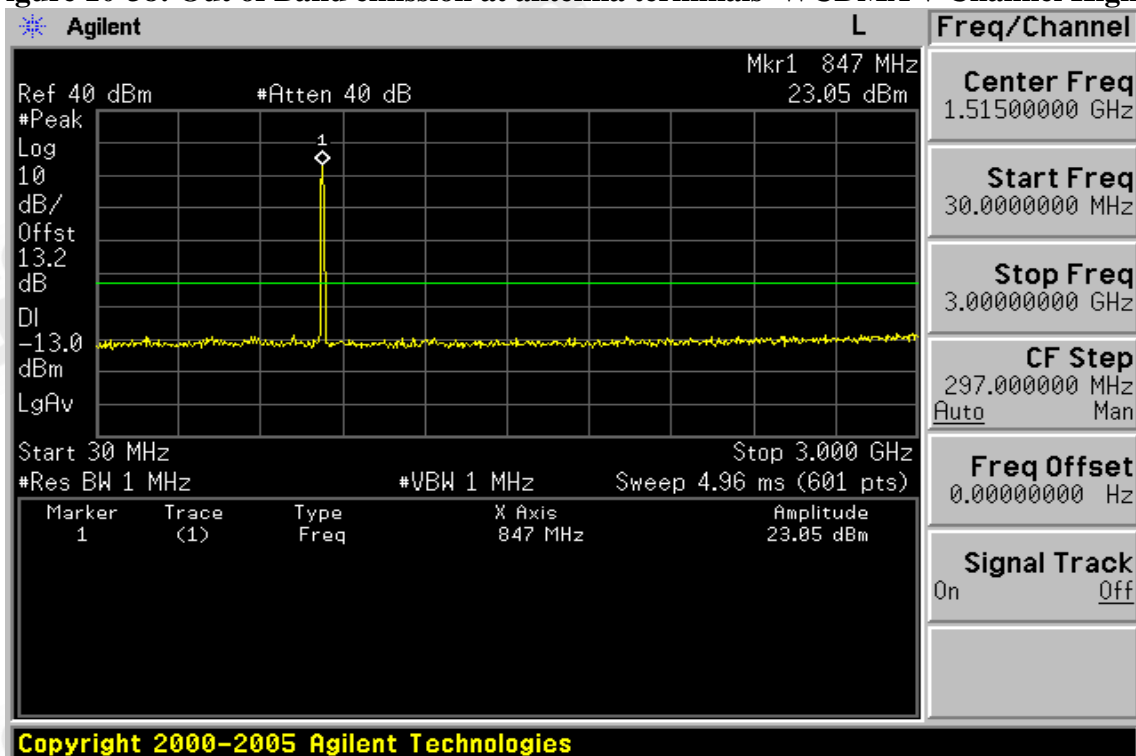
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Figure 10-38: Out of Band emission at antenna terminals–WCDMA V Channel Highest



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Figure 10-39: Bad edge emission at antenna terminals –WCDMA V Channel Lowest

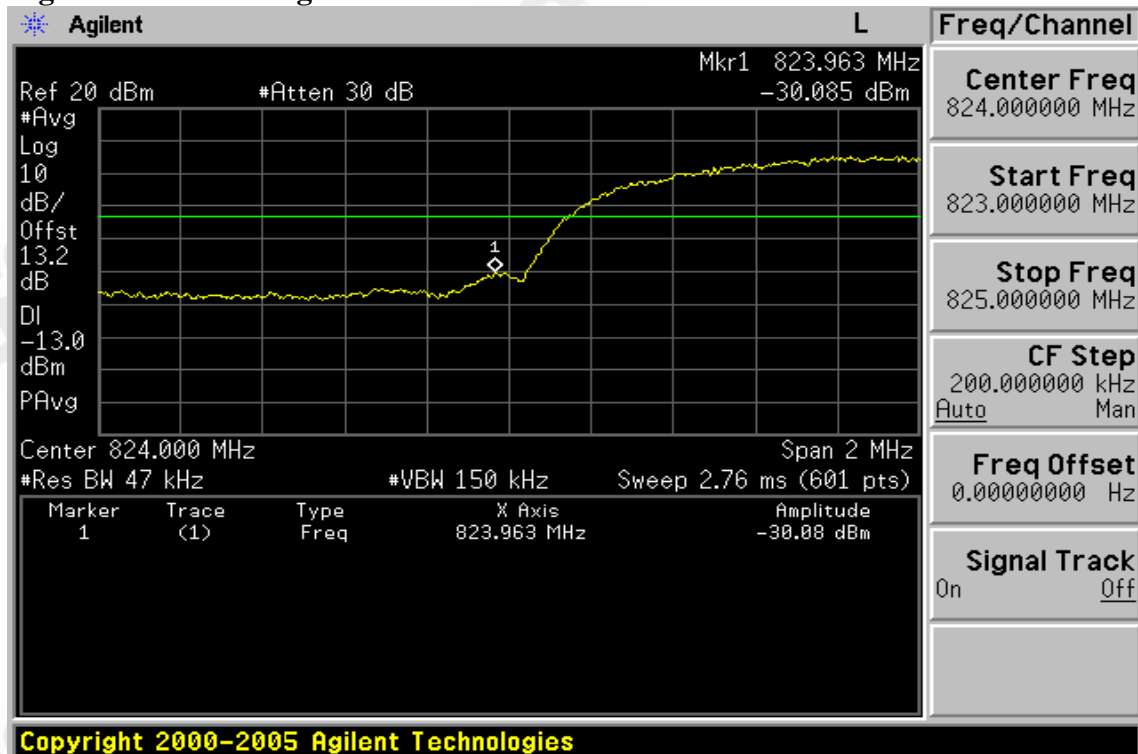
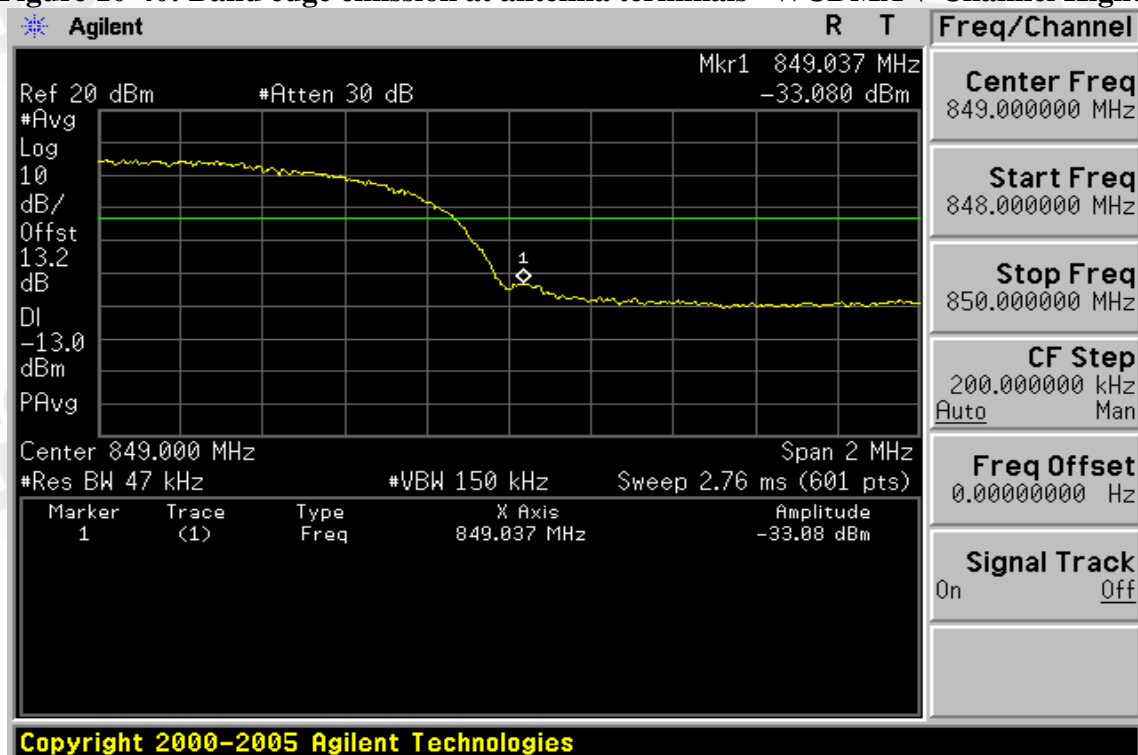


Figure 10-40: Band edge emission at antenna terminals –WCDMA V Channel Highest



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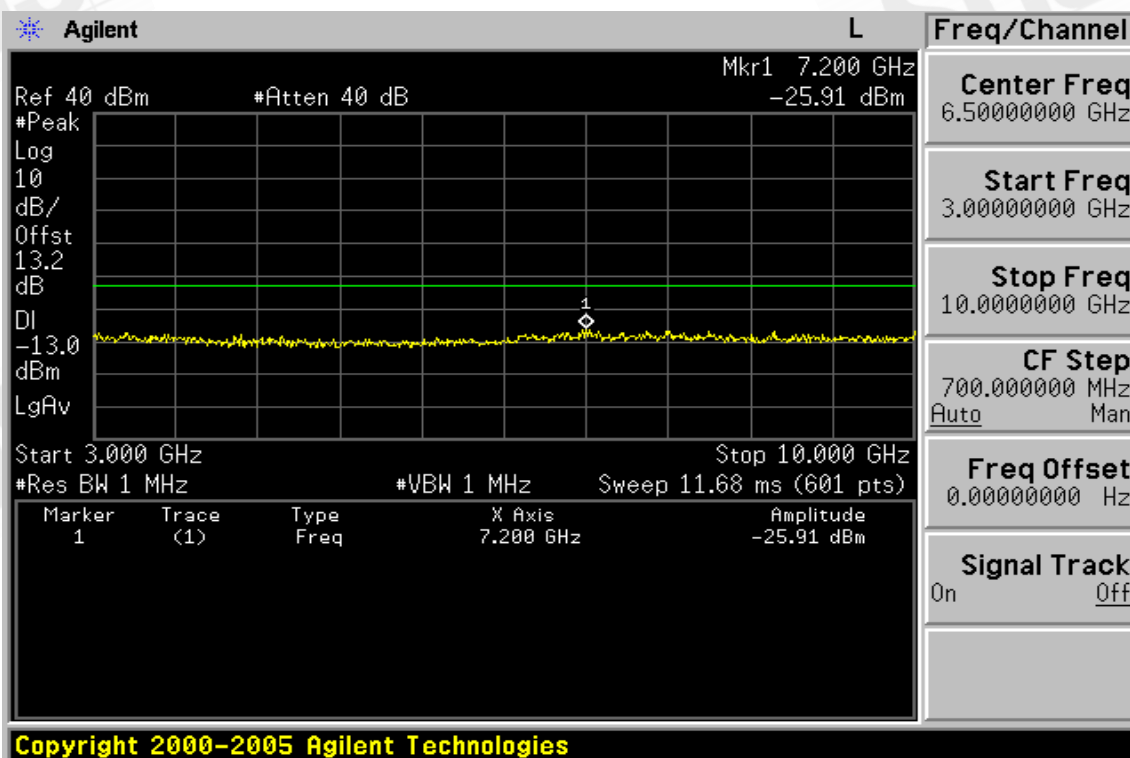
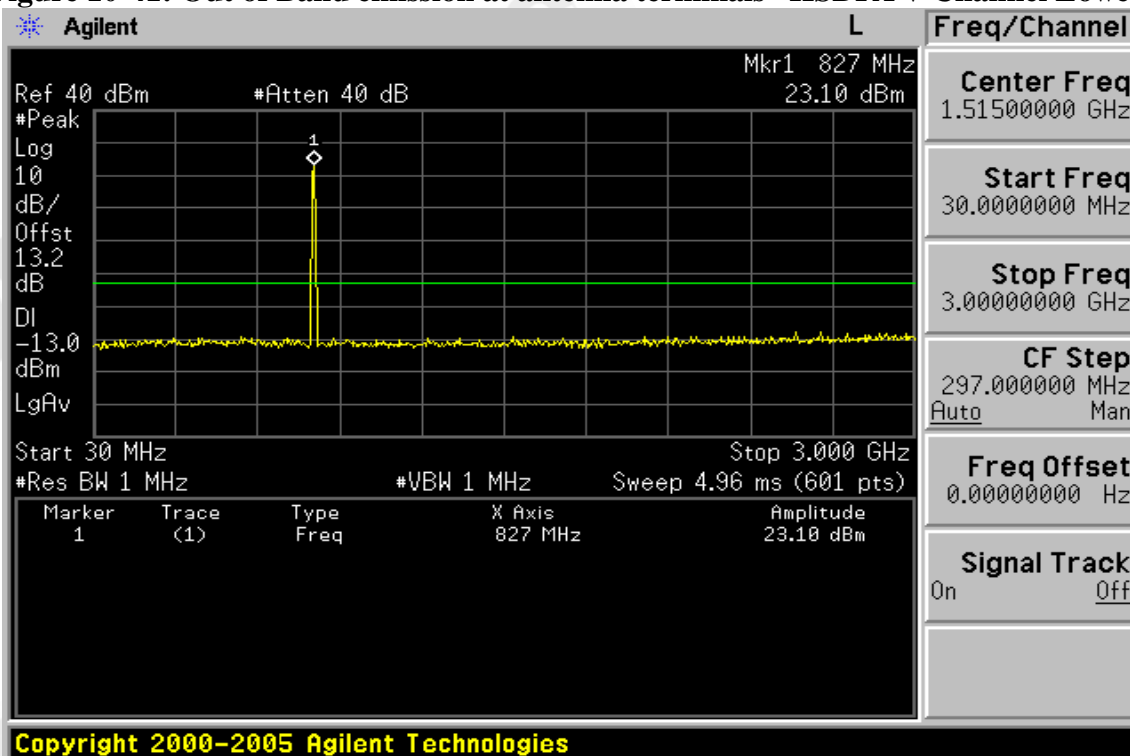
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Figure 10-41: Out of Band emission at antenna terminals– HSDPA V Channel Lowest



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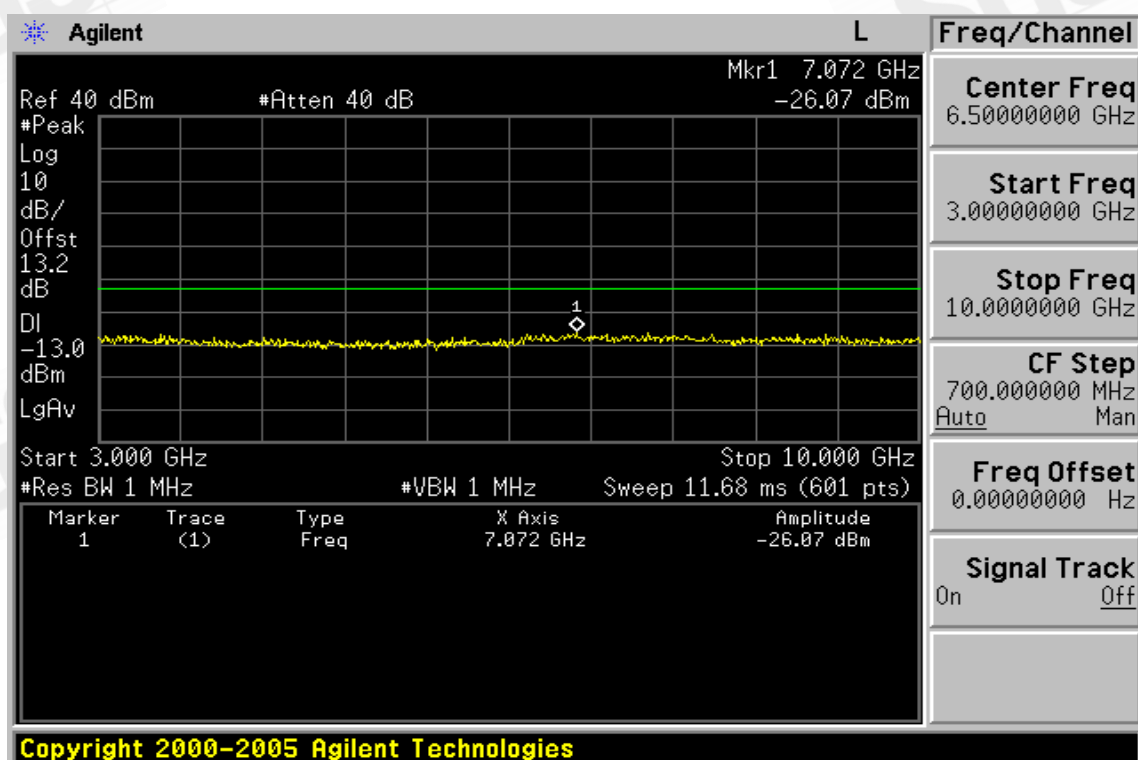
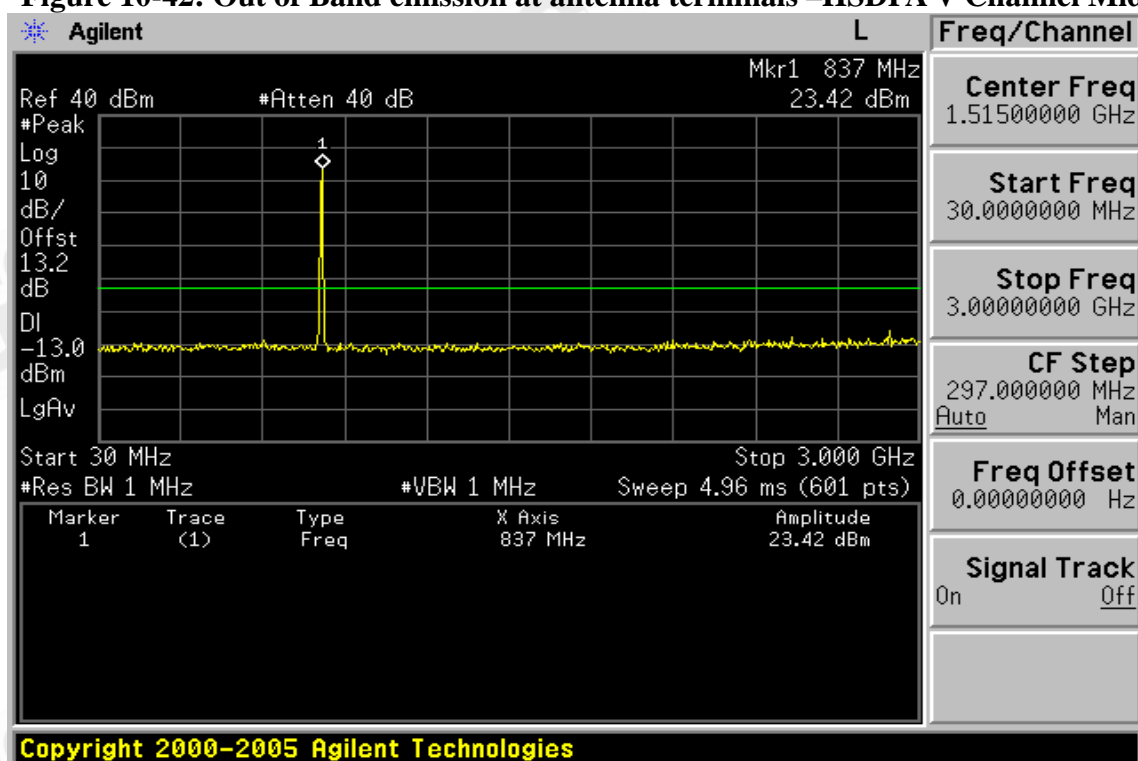
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Figure 10-42: Out of Band emission at antenna terminals –HSDPA V Channel Mid



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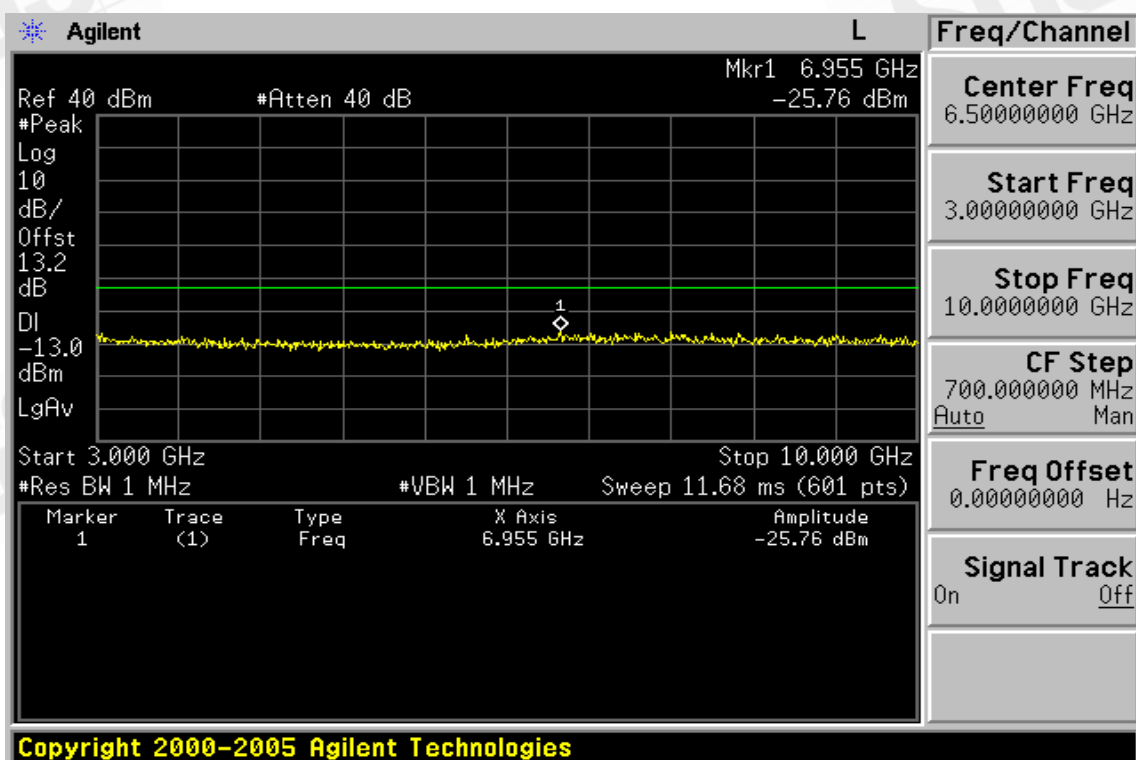
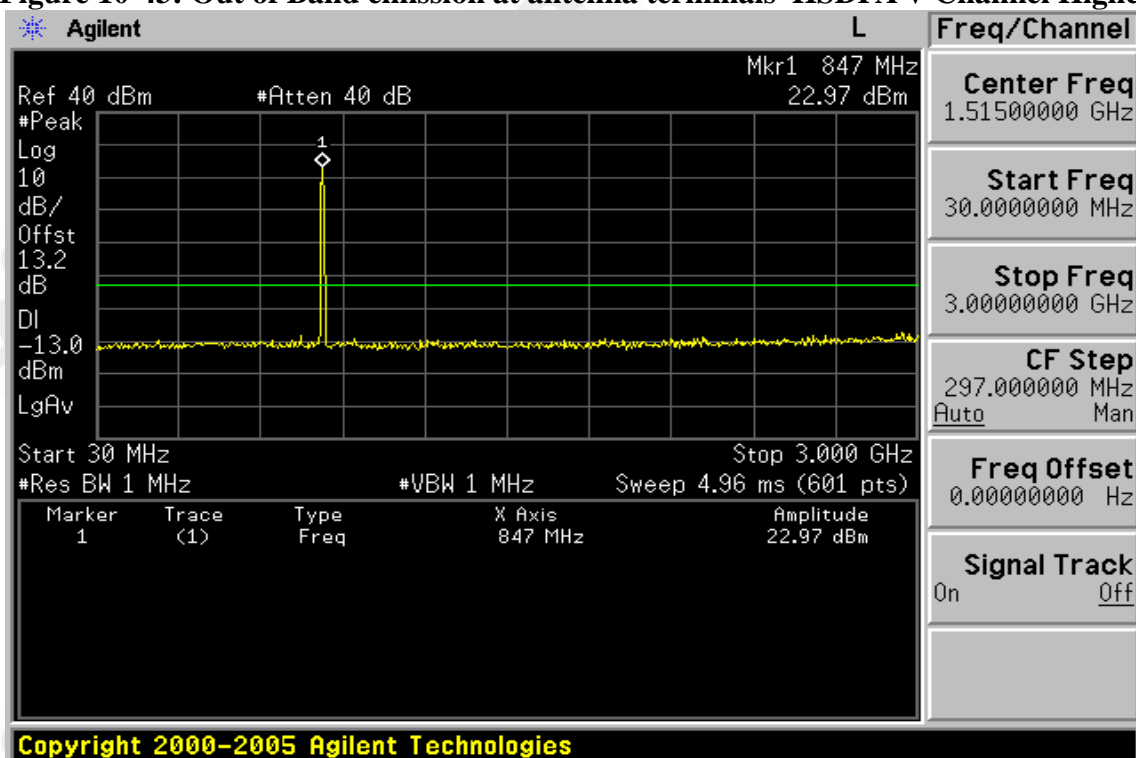
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Figure 10-43: Out of Band emission at antenna terminals–HSDPA V Channel Highest



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Figure 10-44: Bad edge emission at antenna terminals –HSDPA V Channel Lowest

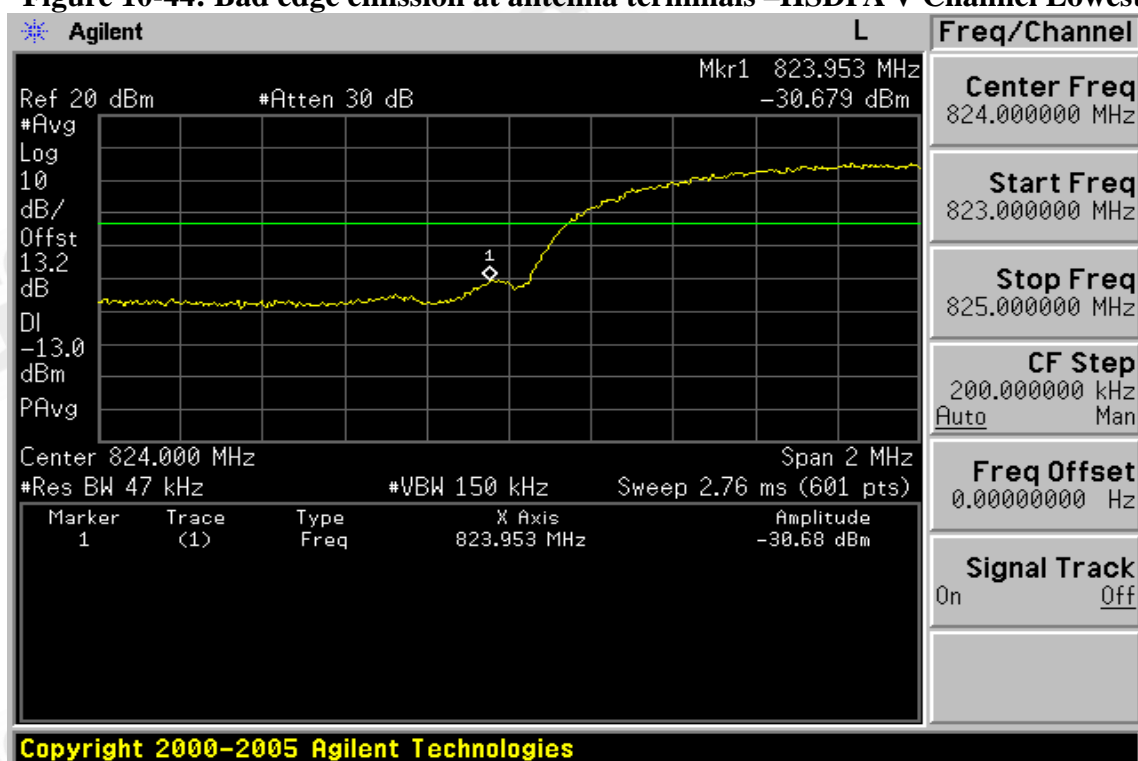
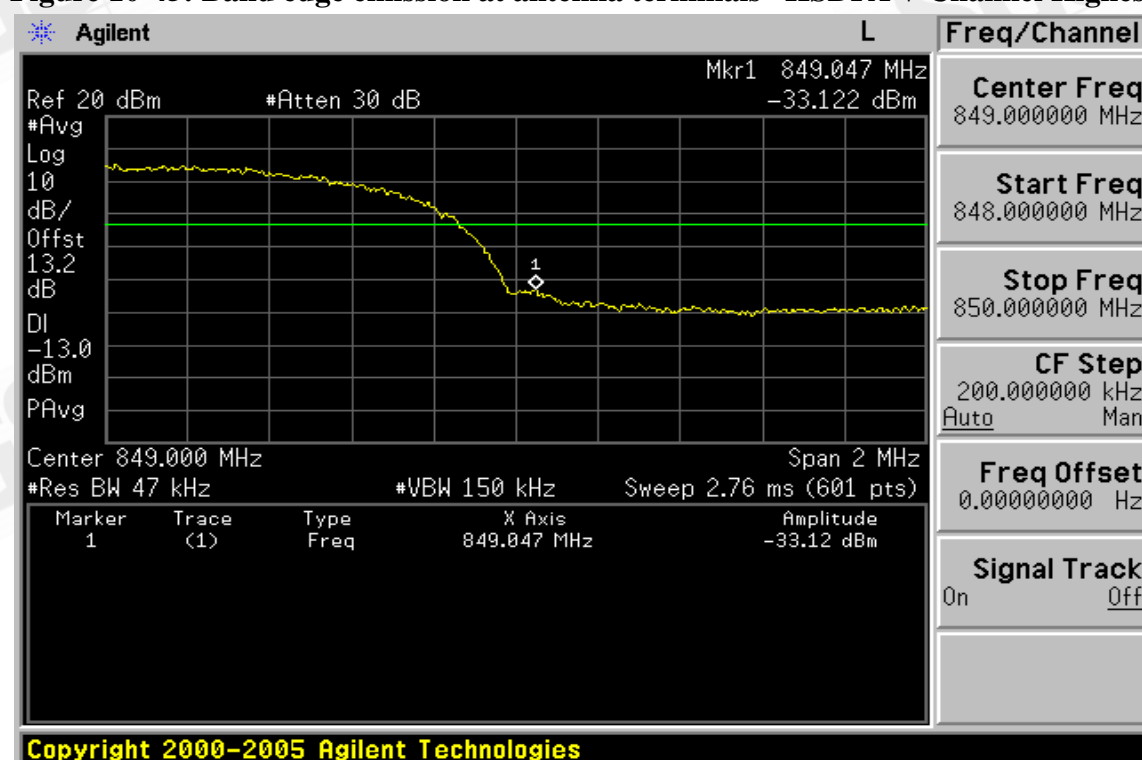


Figure 10-45: Band edge emission at antenna terminals –HSDPA V Channel Highest



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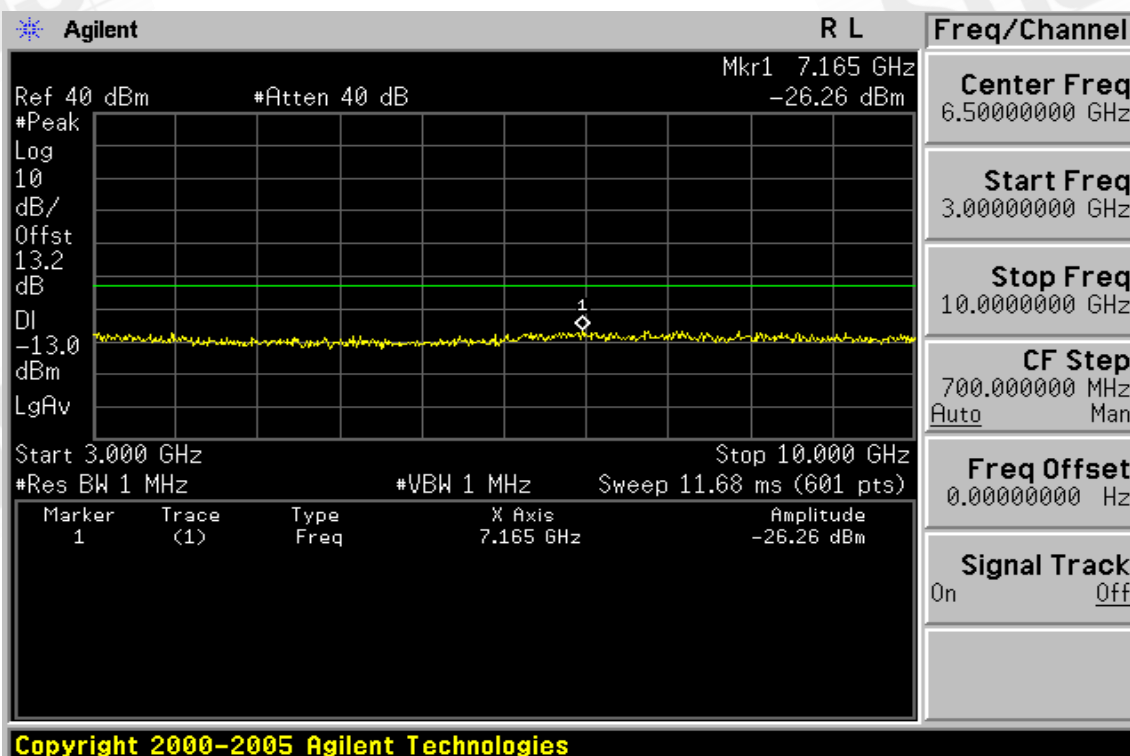
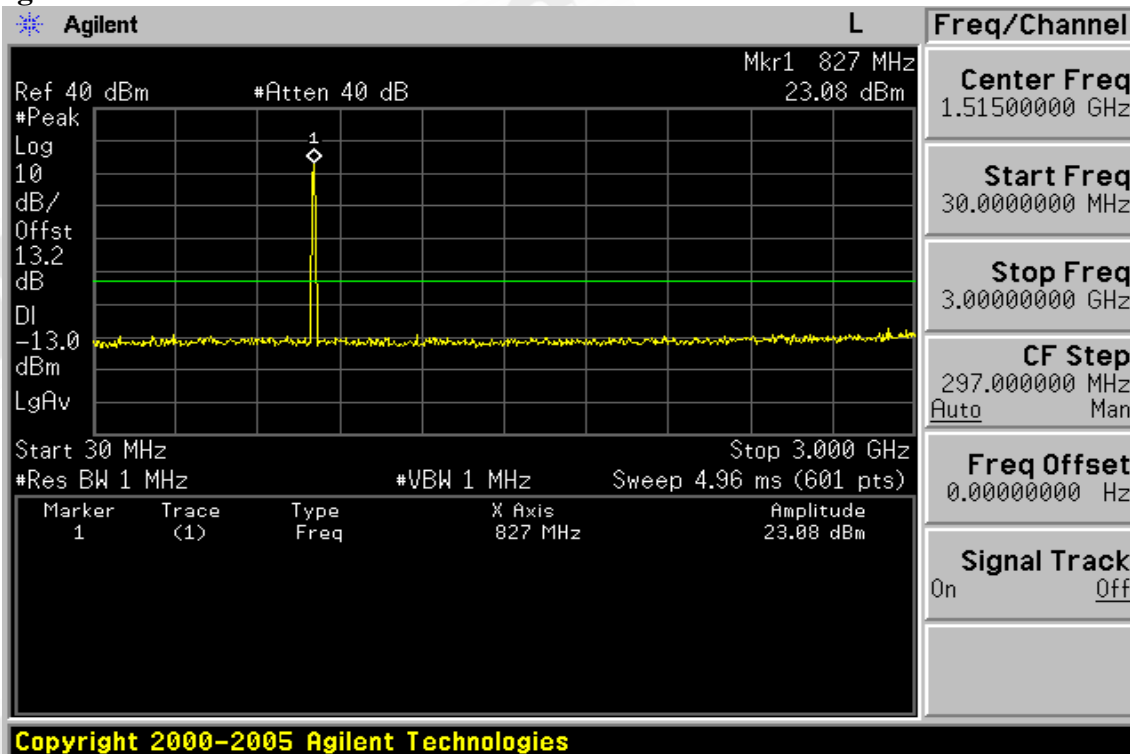
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Figure 10-46: Out of Band emission at antenna terminals– HSUPA V Channel Lowest



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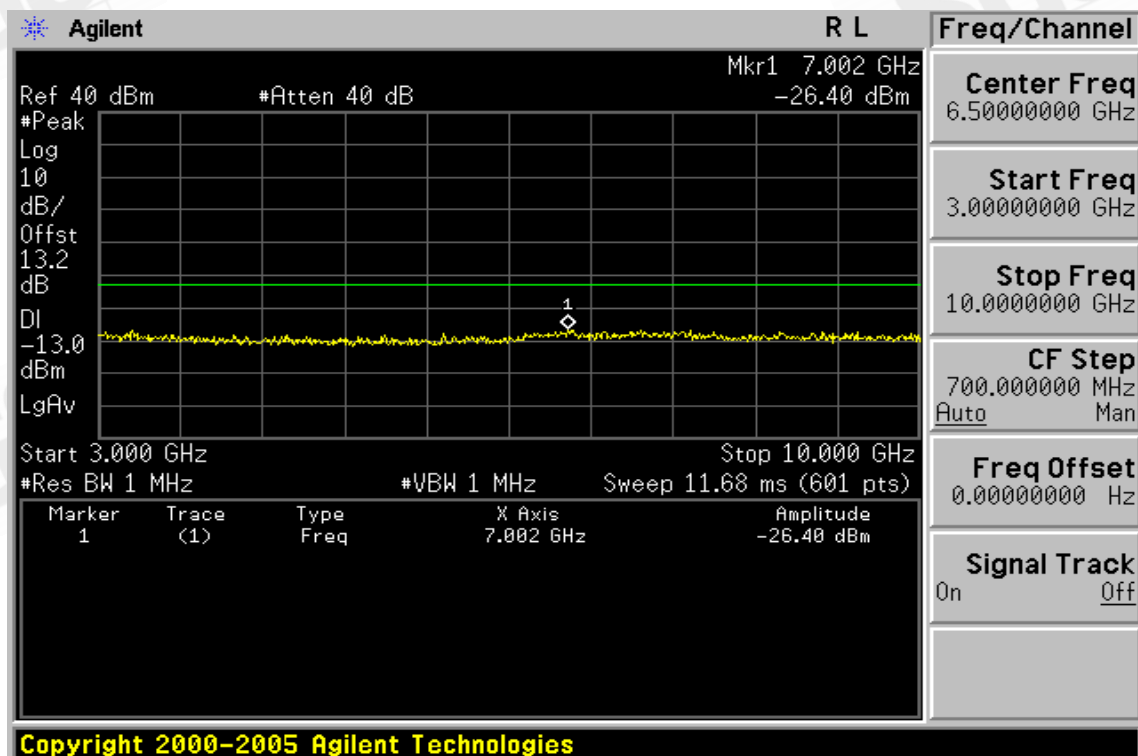
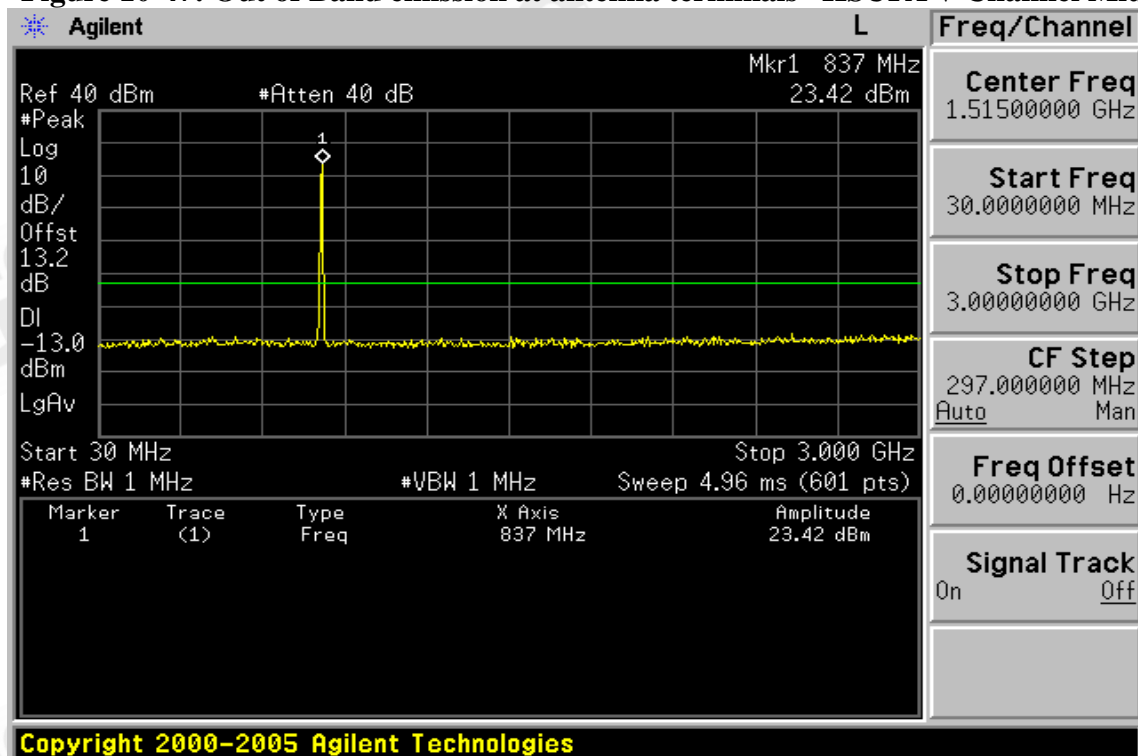
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Figure 10-47: Out of Band emission at antenna terminals –HSUPA V Channel Mid



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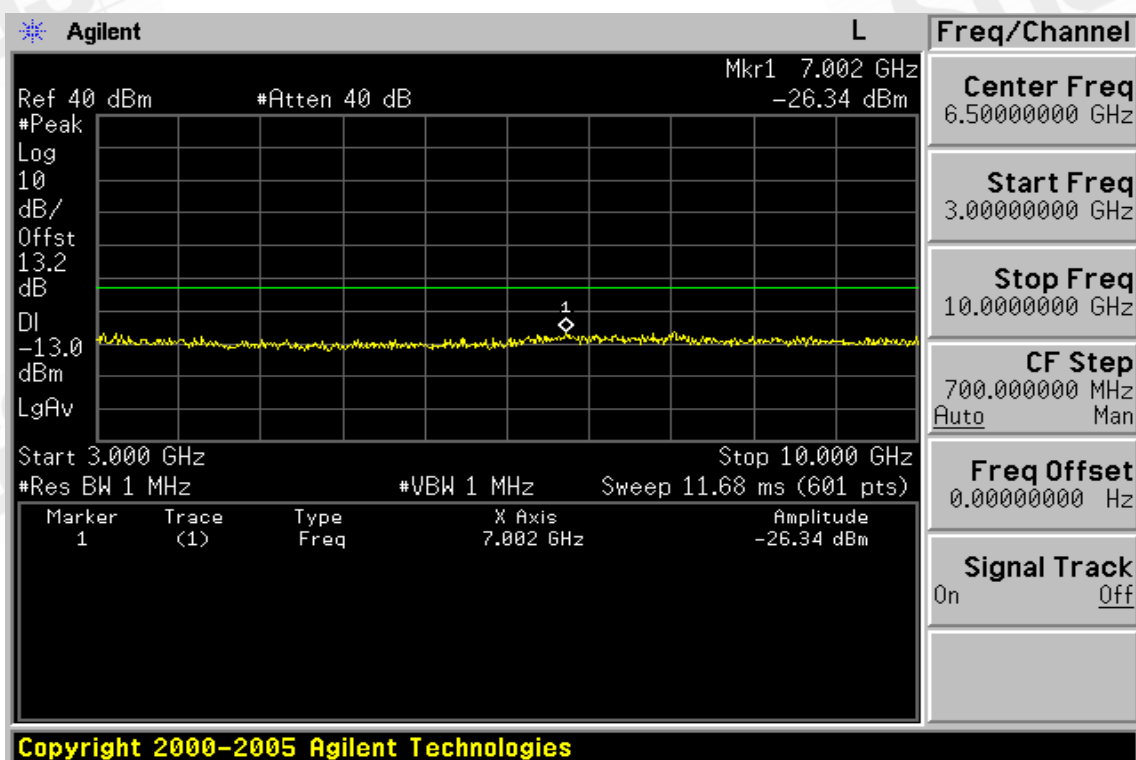
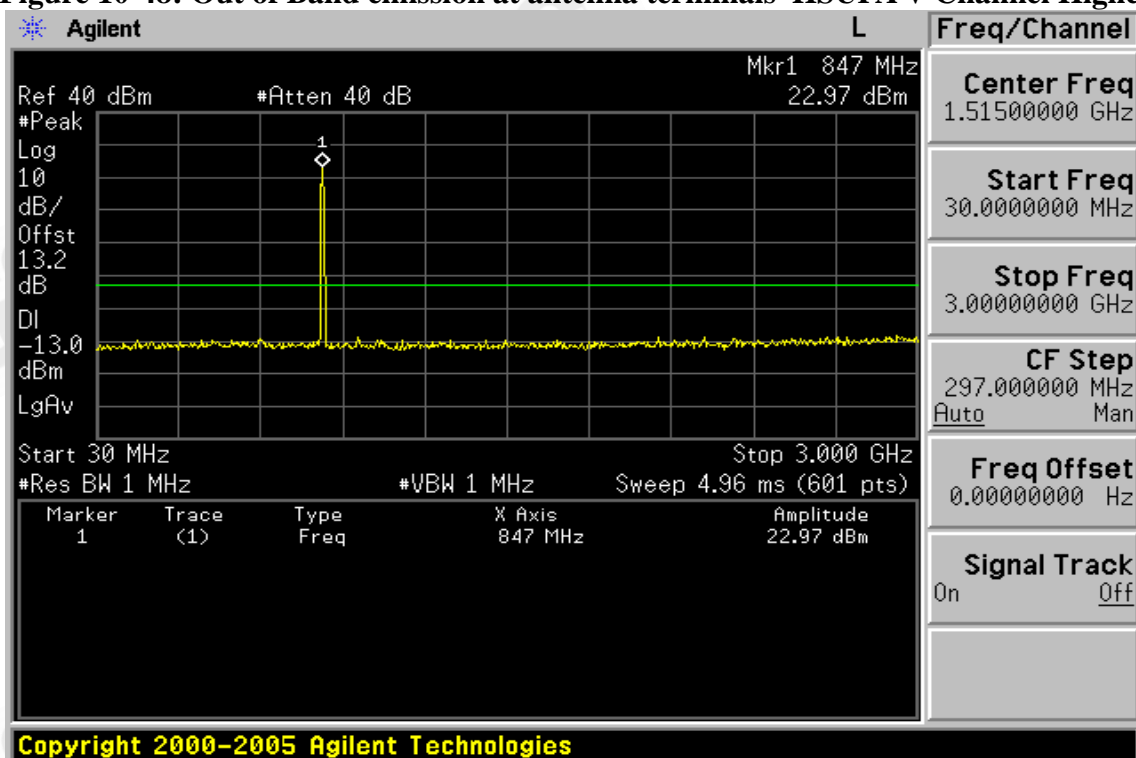
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Figure 10-48: Out of Band emission at antenna terminals–HSUPA V Channel Highest



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Figure 10-49: Bad edge emission at antenna terminals –HSUPA V Channel Lowest

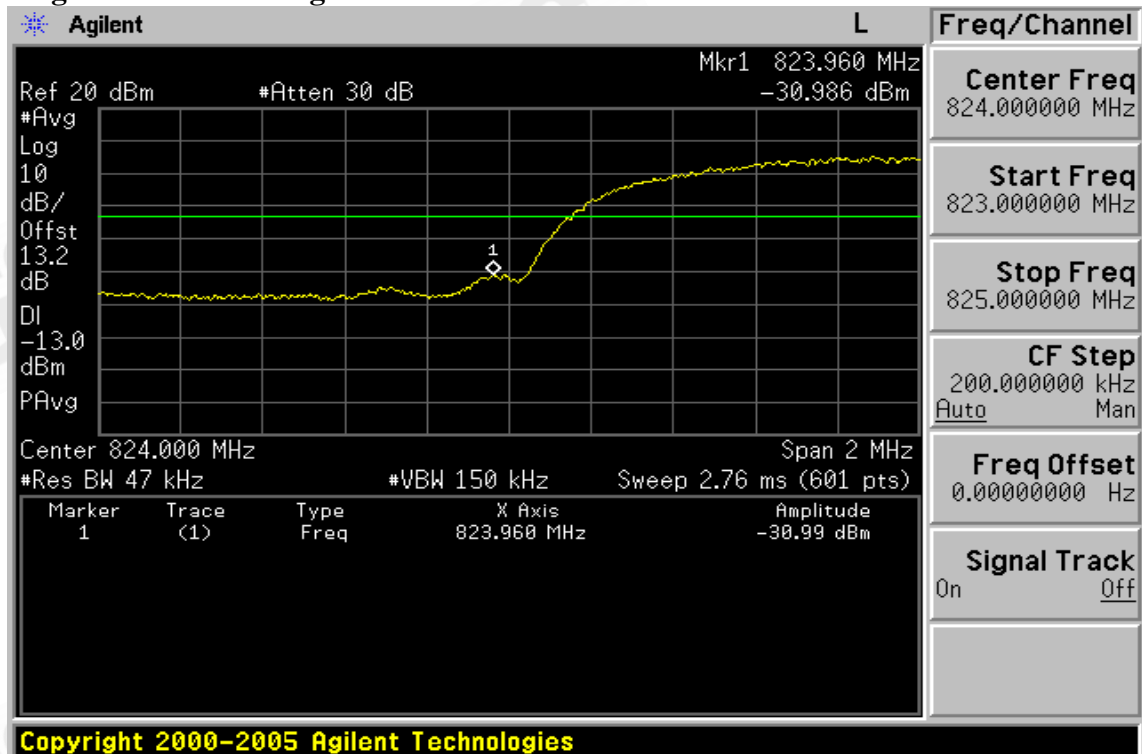
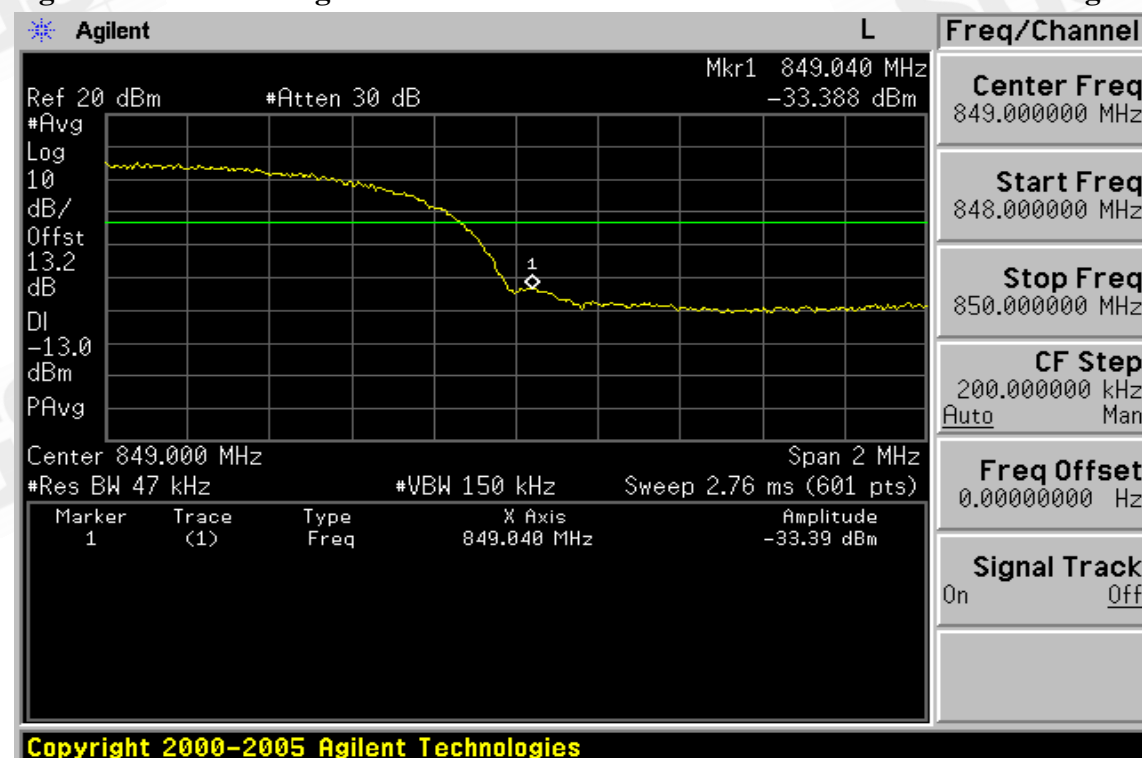


Figure 10-50: Band edge emission at antenna terminals –HSUPA V Channel Highest



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## 11. FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

### 11.1. Standard Applicable:

According to FCC §2.1053,

FCC §22.917(a), §24.238(a) 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).

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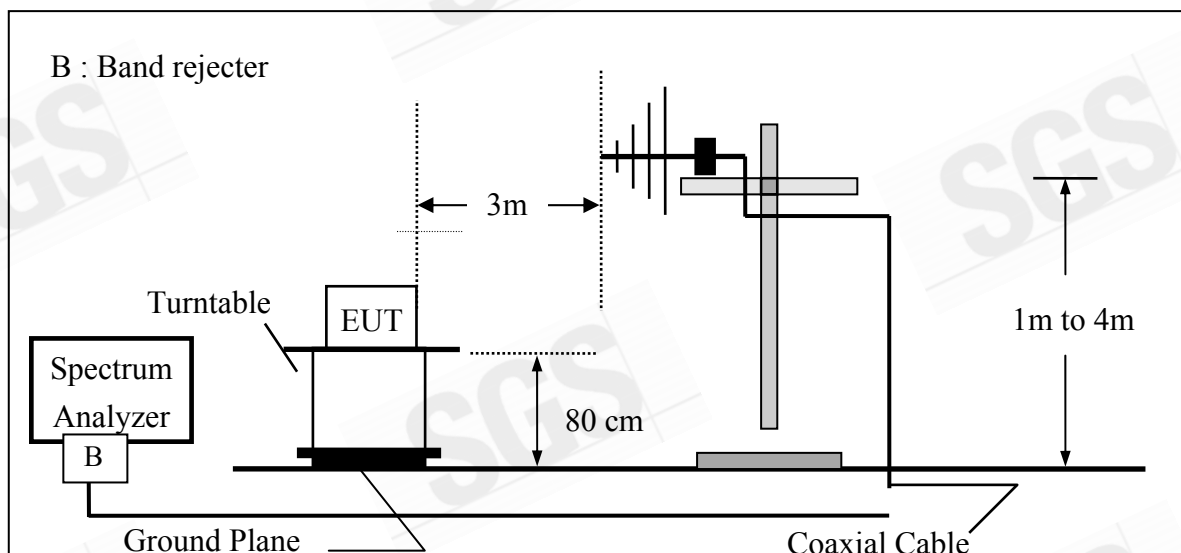
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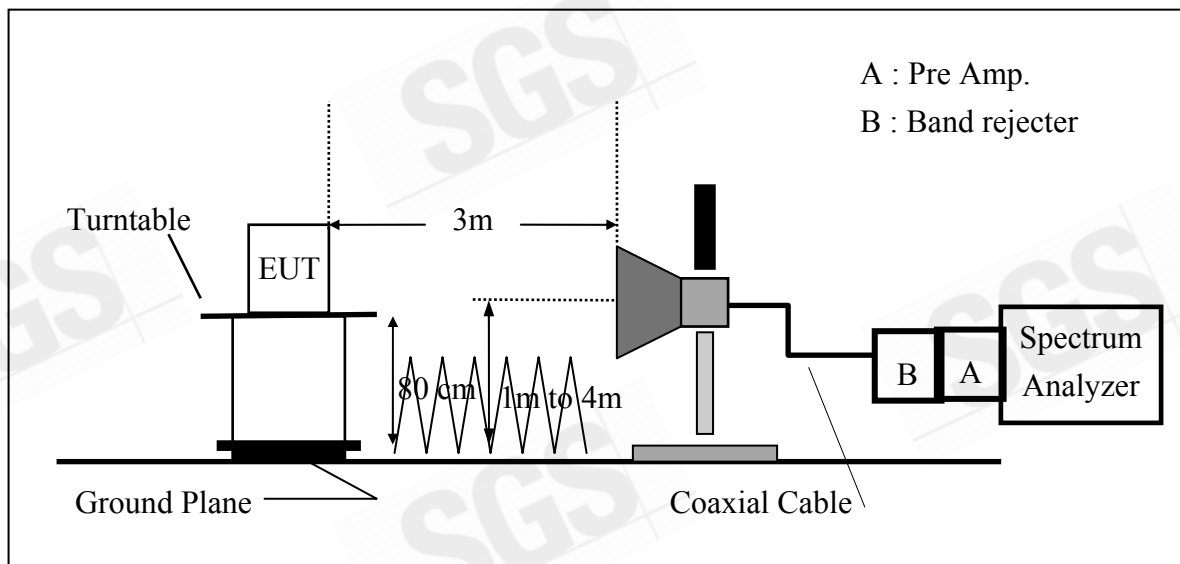
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## 11.2. EUT Setup (Block Diagram of Configuration):

### Radiated Emission Test Set-Up, Frequency Below 1000MHz



### Radiated Emission Test Set-Up Frequency Over 1 GHz



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### 11.3. Measurement Procedure:

The EUT was placed on a non-conductive; The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method.

The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency.

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

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

### 11.4. Measurement Equipment Used:

Refer to section 2.4 in this report

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**11.5. Measurement Result:****Radiated Spurious Emission Measurement Result: GPRS 850 Mode**

Operation Band	:GPRS 850	Test Date	:2015-01-19
ARFCN	:CH 128	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:824.2 MHz	Engineer	:Tin
Operation Mode	:TX LOW		
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
MHz	F/H/E/S	dBm	Output Level dBm	Gain dBd	Loss dB	dBm	dB
31.94	S	-64.71	-50.03	-13.87	-0.80	-13.00	-51.71
247.28	S	-63.85	-65.47	3.32	-1.70	-13.00	-50.85
301.60	S	-72.10	-73.96	3.73	-1.87	-13.00	-59.10
474.26	S	-72.36	-73.97	3.90	-2.28	-13.00	-59.36
701.24	S	-67.47	-68.61	3.88	-2.74	-13.00	-54.47
913.67	S	-66.05	-66.27	3.50	-3.28	-13.00	-53.05
1648.40	H	-62.79	-61.93	3.56	-4.42	-13.00	-49.79
2472.60	H	-38.44	-37.17	4.18	-5.45	-13.00	-25.44
3296.80	H	---					
4121.00	H	---					
4945.20	H	---					
5769.40	H	---					
6593.60	H	---					
7417.80	H	---					
8242.00	H	---					

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band	:GPRS 850	Test Date	:2015-01-19
ARFCN	:CH 128	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:824.2 MHz	Engineer	:Tin
Operation Mode	:TX LOW		
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
MHz	F/H/E/S	dBm	Output Level dBm	Gain dBd	Loss dB	dBm	dB
31.94	S	-67.71	-53.04	-13.87	-0.80	-13.00	-54.71
231.76	S	-65.33	-67.41	3.72	-1.64	-13.00	-52.33
432.55	S	-72.94	-74.68	3.90	-2.17	-13.00	-59.94
521.79	S	-72.42	-73.93	3.93	-2.41	-13.00	-59.42
706.09	S	-70.30	-71.41	3.86	-2.75	-13.00	-57.30
949.56	S	-66.39	-66.39	3.34	-3.34	-13.00	-53.39
1648.40	H	-65.25	-64.39	3.56	-4.42	-13.00	-52.25
2472.60	H	-42.71	-41.44	4.18	-5.45	-13.00	-29.71
3296.80	H	---					
4121.00	H	---					
4945.20	H	---					
5769.40	H	---					
6593.60	H	---					
7417.80	H	---					
8242.00	H	---					

ERP(dBm) = SG Level(dBm) + Antenna Gain(dBd) + Cable Loss(dB)

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---" : denotes Noise Floor.

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Operation Band	:GPRS 850	Test Date	:2015-01-19
ARFCN	:CH 190	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:836.6 MHz	Engineer	:Tin
Operation Mode	:TX MID		
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
MHz	F/H/E/S	dBm	Output Level dBm	Gain dBd	Loss dB	dBm	dB
40.67	S	-63.99	-51.13	-12.05	-0.81	-13.00	-50.99
242.43	S	-64.22	-65.84	3.30	-1.68	-13.00	-51.22
425.76	S	-72.14	-73.92	3.93	-2.15	-13.00	-59.14
558.65	S	-71.70	-73.03	3.84	-2.51	-13.00	-58.70
696.39	S	-66.62	-67.77	3.89	-2.74	-13.00	-53.62
955.38	S	-65.78	-65.46	3.02	-3.35	-13.00	-52.78
1673.20	H	-63.11	-62.15	3.49	-4.45	-13.00	-50.11
2509.80	H	-36.53	-35.31	4.28	-5.49	-13.00	-23.53
3346.40	H	---					
4183.00	H	---					
5019.60	H	---					
5856.20	H	---					
6692.80	H	---					
7529.40	H	---					
8366.00	H	---					

ERP(dBm) = SG Level(dBm) + Antenna Gain(dBd) + Cable Loss(dB)

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---" : denotes Noise Floor.

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Operation Band	:GPRS 850	Test Date	:2015-01-19
ARFCN	:CH 190	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:836.6 MHz	Engineer	:Tin
Operation Mode	:TX MID		
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
MHz	F/H/E/S	dBm	Output Level dBm	Gain dBd	Loss dB	dBm	dB
62.01	S	-67.42	-58.33	-8.09	-1.00	-13.00	-54.42
226.91	S	-64.84	-66.94	3.73	-1.62	-13.00	-51.84
426.73	S	-72.76	-74.53	3.92	-2.15	-13.00	-59.76
466.50	S	-72.24	-73.86	3.88	-2.26	-13.00	-59.24
696.39	S	-70.09	-71.24	3.89	-2.74	-13.00	-57.09
960.23	S	-66.57	-65.95	2.73	-3.35	-13.00	-53.57
1673.20	H	-64.93	-63.97	3.49	-4.45	-13.00	-51.93
2509.80	H	-45.98	-44.76	4.28	-5.49	-13.00	-32.98
3346.40	H	---					
4183.00	H	---					
5019.60	H	---					
5856.20	H	---					
6692.80	H	---					
7529.40	H	---					
8366.00	H	---					

ERP(dBm) = SG Level(dBm) + Antenna Gain(dBd) + Cable Loss(dB)

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band	:GPRS 850	Test Date	:2015-01-19
ARFCN	:CH 251	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:848.8 MHz	Engineer	:Tin
Operation Mode	:TX HIGH		
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
MHz	F/H/E/S	dBm	Output Level dBm	Gain dBd	Loss dB	dBm	dB
41.64	S	-63.67	-50.83	-12.00	-0.84	-13.00	-50.67
249.22	S	-63.50	-65.13	3.33	-1.71	-13.00	-50.50
420.91	S	-71.98	-73.79	3.94	-2.13	-13.00	-58.98
540.22	S	-71.70	-73.14	3.90	-2.46	-13.00	-58.70
694.45	S	-66.60	-67.76	3.89	-2.73	-13.00	-53.60
947.62	S	-65.79	-65.81	3.35	-3.33	-13.00	-52.79
1697.60	H	-61.28	-60.23	3.43	-4.48	-13.00	-48.28
2546.40	H	-40.06	-38.89	4.37	-5.54	-13.00	-27.06
3395.20	H	---					
4244.00	H	---					
5092.80	H	---					
5941.60	H	---					
6790.40	H	---					
7639.20	H	---					
8488.00	H	---					

ERP(dBm) = SG Level(dBm) + Antenna Gain(dBd) + Cable Loss(dB)

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---" : denotes Noise Floor.

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Operation Band	:GPRS 850	Test Date	:2015-01-19
ARFCN	:CH 251	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:848.8 MHz	Engineer	:Tin
Operation Mode	:TX HIGH		
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
MHz	F/H/E/S	dBm	Output Level dBm	Gain dBd	Loss dB	dBm	dB
39.70	S	-68.26	-55.33	-12.14	-0.80	-13.00	-55.26
223.03	S	-64.38	-66.39	3.62	-1.61	-13.00	-51.38
430.61	S	-72.39	-74.14	3.91	-2.16	-13.00	-59.39
510.15	S	-71.84	-73.40	3.94	-2.38	-13.00	-58.84
752.65	S	-69.92	-70.75	3.68	-2.85	-13.00	-56.92
924.34	S	-66.36	-66.52	3.45	-3.30	-13.00	-53.36
1697.60	H	-63.44	-62.39	3.43	-4.48	-13.00	-50.44
2546.40	H	-49.46	-48.29	4.37	-5.54	-13.00	-36.46
3395.20	H	---					
4244.00	H	---					
5092.80	H	---					
5941.60	H	---					
6790.40	H	---					
7639.20	H	---					
8488.00	H	---					

ERP(dBm) = SG Level(dBm) + Antenna Gain(dBd) + Cable Loss(dB)

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---" : denotes Noise Floor.

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**Radiated Spurious Emission Measurement Result: GPRS 1900 Mode**

Operation Band	:GPRS 1900	Test Date	:2015-01-19
ARFCN	:CH 512	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:1850.2 MHz	Engineer	:Tin
Operation Mode	:TX LOW		
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
MHz	F/H/E/S	dBm	Output Level dBm	Gain dBi	Loss dB	dBm	dB
32.91	S	-60.73	-48.45	-11.48	-0.80	-13.00	-47.73
241.46	S	-61.68	-65.44	5.44	-1.68	-13.00	-48.68
413.15	S	-69.96	-73.97	6.12	-2.11	-13.00	-56.96
556.71	S	-68.72	-72.21	6.00	-2.51	-13.00	-55.72
687.66	S	-64.82	-68.14	6.05	-2.73	-13.00	-51.82
857.41	S	-63.86	-66.61	5.89	-3.13	-13.00	-50.86
3700.40	H	-56.64	-58.96	9.13	-6.80	-13.00	-43.64
5550.60	H	---					
7400.80	H	---					
9251.00	H	---					
11101.20	H	---					
12951.40	H	---					
14801.60	H	---					
16651.80	H	---					
18502.00	H	---					

$EIRP(dBm) = SG\ Level(dBm) + Antenna\ Gain(dBi) + Cable\ Loss(dB)$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band	:GPRS 1900	Test Date	:2015-01-19
ARFCN	:CH 512	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:1850.2 MHz	Engineer	:Tin
Operation Mode	:TX LOW		
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
MHz	F/H/E/S	dBm	Output Level dBm	Gain dBi	Loss dB	dBm	dB
62.01	S	-64.24	-57.29	-5.94	-1.00	-13.00	-51.24
229.82	S	-63.59	-67.91	5.96	-1.63	-13.00	-50.59
423.82	S	-70.28	-74.22	6.08	-2.14	-13.00	-57.28
476.20	S	-69.55	-73.32	6.06	-2.29	-13.00	-56.55
760.41	S	-66.60	-69.58	5.84	-2.87	-13.00	-53.60
911.73	S	-64.10	-66.48	5.66	-3.28	-13.00	-51.10
3700.40	H	-58.37	-60.70	9.13	-6.80	-13.00	-45.37
5550.60	H	---					
7400.80	H	---					
9251.00	H	---					
11101.20	H	---					
12951.40	H	---					
14801.60	H	---					
16651.80	H	---					
18502.00	H	---					

$EIRP(dBm) = SG\ Level(dBm) + Antenna\ Gain(dBi) + Cable\ Loss(dB)$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band	:GPRS 1900	Test Date	:2015-01-19
ARFCN	:CH 661	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:1880.0 MHz	Engineer	:Tin
Operation Mode	:TX MID		
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
MHz	F/H/E/S	dBm	Output Level dBm	Gain dBi	Loss dB	dBm	dB
32.91	S	-59.26	-46.97	-11.48	-0.80	-13.00	-46.26
241.46	S	-62.02	-65.79	5.44	-1.68	-13.00	-49.02
414.12	S	-70.41	-74.42	6.12	-2.11	-13.00	-57.41
490.75	S	-69.47	-73.23	6.09	-2.33	-13.00	-56.47
709.97	S	-63.87	-67.10	5.99	-2.76	-13.00	-50.87
922.40	S	-63.97	-66.28	5.61	-3.30	-13.00	-50.97
3760.00	H	-55.98	-58.29	9.16	-6.85	-13.00	-42.98
5640.00	H	---					
7520.00	H	---					
9400.00	H	---					
11280.00	H	---					
13160.00	H	---					
15040.00	H	---					
16920.00	H	---					
18800.00	H	---					

$EIRP(dBm) = SG\ Level(dBm) + Antenna\ Gain(dBi) + Cable\ Loss(dB)$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band	:GPRS 1900	Test Date	:2015-01-19
ARFCN	:CH 661	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:1880.0 MHz	Engineer	:Tin
Operation Mode	:TX MID		
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
MHz	F/H/E/S	dBm	Output Level dBm	Gain dBi	Loss dB	dBm	dB
31.94	S	-64.96	-52.44	-11.72	-0.80	-13.00	-51.96
227.88	S	-63.53	-67.81	5.90	-1.63	-13.00	-50.53
436.43	S	-71.66	-75.52	6.04	-2.18	-13.00	-58.66
461.65	S	-70.23	-74.00	6.02	-2.25	-13.00	-57.23
692.51	S	-68.03	-71.34	6.04	-2.73	-13.00	-55.03
930.16	S	-63.66	-65.92	5.57	-3.31	-13.00	-50.66
3760.00	H	-57.37	-59.68	9.16	-6.85	-13.00	-44.37
5640.00	H	---					
7520.00	H	---					
9400.00	H	---					
11280.00	H	---					
13160.00	H	---					
15040.00	H	---					
16920.00	H	---					
18800.00	H	---					

$EIRP(dBm) = SG\ Level(dBm) + Antenna\ Gain(dBi) + Cable\ Loss(dB)$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band	:GPRS 1900	Test Date	:2015-01-19
ARFCN	:CH 810	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:1909.8 MHz	Engineer	:Tin
Operation Mode	:TX HIGH		
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
MHz	F/H/E/S	dBm	Output Level dBm	Gain dBi	Loss dB	dBm	dB
30.97	S	-58.29	-45.52	-11.97	-0.80	-13.00	-45.29
249.22	S	-62.90	-66.68	5.48	-1.71	-13.00	-49.90
424.79	S	-70.65	-74.59	6.08	-2.15	-13.00	-57.65
528.58	S	-69.90	-73.54	6.07	-2.43	-13.00	-56.90
703.18	S	-63.79	-67.07	6.02	-2.75	-13.00	-50.79
912.70	S	-63.96	-66.34	5.66	-3.28	-13.00	-50.96
3819.60	H	-56.02	-58.31	9.20	-6.90	-13.00	-43.02
5729.40	H	---					
7639.20	H	---					
9549.00	H	---					
11458.80	H	---					
13368.60	H	---					
15278.40	H	---					
17188.20	H	---					
19098.00	H	---					

$EIRP(dBm) = SG\ Level(dBm) + Antenna\ Gain(dBi) + Cable\ Loss(dB)$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band	:GPRS 1900	Test Date	:2015-01-19
ARFCN	:CH 810	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:1909.8 MHz	Engineer	:Tin
Operation Mode	:TX HIGH		
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
MHz	F/H/E/S	dBm	Output Level dBm	Gain dBi	Loss dB	dBm	dB
62.01	S	-64.90	-57.95	-5.94	-1.00	-13.00	-51.90
224.97	S	-63.60	-67.81	5.82	-1.61	-13.00	-50.60
428.67	S	-70.34	-74.25	6.07	-2.16	-13.00	-57.34
521.79	S	-70.34	-74.00	6.08	-2.41	-13.00	-57.34
760.41	S	-68.07	-71.04	5.84	-2.87	-13.00	-55.07
915.61	S	-63.90	-66.26	5.64	-3.28	-13.00	-50.90
3819.60	H	-57.84	-60.14	9.20	-6.90	-13.00	-44.84
5729.40	H	---					
7639.20	H	---					
9549.00	H	---					
11458.80	H	---					
13368.60	H	---					
15278.40	H	---					
17188.20	H	---					
19098.00	H	---					

$EIRP(dBm) = SG\ Level(dBm) + Antenna\ Gain(dBi) + Cable\ Loss(dB)$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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**Radiated Spurious Emission Measurement Result: WCDMA II Mode**

Operation Band	:WCDMA B2	Test Date	:2015-01-19
ARFCN	:CH 9262	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:1852.4 MHz	Engineer	:Tin
Operation Mode	:TX LOW		
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
MHz	F/H/E/S	dBm	Output Level dBm	Gain dBi	Loss dB	dBm	dB
30.97	S	-57.25	-44.48	-11.97	-0.80	-13.00	-44.25
244.37	S	-60.65	-64.42	5.46	-1.69	-13.00	-47.65
416.06	S	-69.66	-73.65	6.11	-2.12	-13.00	-56.66
559.62	S	-68.64	-72.11	5.99	-2.52	-13.00	-55.64
709.00	S	-63.64	-66.87	5.99	-2.76	-13.00	-50.64
929.19	S	-63.36	-65.63	5.58	-3.31	-13.00	-50.36
3704.80	H	-43.52	-45.85	9.13	-6.80	-13.00	-30.52
5557.20	H	---					
7409.60	H	---					
9262.00	H	---					
11114.40	H	---					
12966.80	H	---					
14819.20	H	---					
16671.60	H	---					
18524.00	H	---					

$EIRP(dBm) = SG\ Level(dBm) + Antenna\ Gain(dBi) + Cable\ Loss(dB)$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band	:WCDMA B2	Test Date	:2015-01-19
ARFCN	:CH 9262	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:1852.4 MHz	Engineer	:Tin
Operation Mode	:TX LOW		
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
MHz	F/H/E/S	dBm	Output Level dBm	Gain dBi	Loss dB	dBm	dB
30.97	S	-62.73	-49.95	-11.97	-0.80	-13.00	-49.73
229.82	S	-62.35	-66.67	5.96	-1.63	-13.00	-49.35
430.61	S	-70.12	-74.02	6.06	-2.16	-13.00	-57.12
525.67	S	-69.96	-73.61	6.07	-2.42	-13.00	-56.96
760.41	S	-67.54	-70.52	5.84	-2.87	-13.00	-54.54
953.44	S	-64.08	-66.02	5.28	-3.34	-13.00	-51.08
3704.80	H	-53.42	-55.75	9.13	-6.80	-13.00	-40.42
5557.20	H	---					
7409.60	H	---					
9262.00	H	---					
11114.40	H	---					
12966.80	H	---					
14819.20	H	---					
16671.60	H	---					
18524.00	H	---					

$EIRP(dBm) = SG\ Level(dBm) + Antenna\ Gain(dBi) + Cable\ Loss(dB)$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band	:WCDMA B2	Test Date	:2015-01-19
ARFCN	:CH 9400	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:1880 MHz	Engineer	:Tin
Operation Mode	:TX MID		
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
MHz	F/H/E/S	dBm	Output Level dBm	Gain dBi	Loss dB	dBm	dB
30.97	S	-58.32	-45.55	-11.97	-0.80	-13.00	-45.32
241.46	S	-62.36	-66.12	5.44	-1.68	-13.00	-49.36
302.57	S	-70.01	-74.02	5.89	-1.88	-13.00	-57.01
532.46	S	-69.81	-73.43	6.06	-2.44	-13.00	-56.81
709.00	S	-64.84	-68.08	5.99	-2.76	-13.00	-51.84
926.28	S	-64.15	-66.44	5.59	-3.30	-13.00	-51.15
3760.00	H	-47.05	-49.36	9.16	-6.85	-13.00	-34.05
5640.00	H	---					
7520.00	H	---					
9400.00	H	---					
11280.00	H	---					
13160.00	H	---					
15040.00	H	---					
16920.00	H	---					
18800.00	H	---					

$EIRP(dBm) = SG\ Level(dBm) + Antenna\ Gain(dBi) + Cable\ Loss(dB)$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band	:WCDMA B2	Test Date	:2015-01-19
ARFCN	:CH 9400	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:1880 MHz	Engineer	:Tin
Operation Mode	:TX MID		
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
MHz	F/H/E/S	dBm	Output Level dBm	Gain dBi	Loss dB	dBm	dB
36.79	S	-63.92	-52.53	-10.59	-0.80	-13.00	-50.92
227.88	S	-63.16	-67.44	5.90	-1.63	-13.00	-50.16
434.49	S	-70.65	-74.53	6.05	-2.17	-13.00	-57.65
526.64	S	-70.01	-73.66	6.07	-2.43	-13.00	-57.01
709.97	S	-67.76	-70.99	5.99	-2.76	-13.00	-54.76
958.29	S	-62.98	-64.63	5.00	-3.35	-13.00	-49.98
3760.00	H	-52.47	-54.78	9.16	-6.85	-13.00	-39.47
5640.00	H	---					
7520.00	H	---					
9400.00	H	---					
11280.00	H	---					
13160.00	H	---					
15040.00	H	---					
16920.00	H	---					
18800.00	H	---					

$EIRP(dBm) = SG\ Level(dBm) + Antenna\ Gain(dBi) + Cable\ Loss(dB)$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band	:WCDMA B2	Test Date	:2015-01-19
ARFCN	:CH 9538	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:1907.6 MHz	Engineer	:Tin
Operation Mode	:TX HIGH		
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
MHz	F/H/E/S	dBm	Output Level dBm	Gain dBi	Loss dB	dBm	dB
35.82	S	-62.58	-50.98	-10.80	-0.80	-13.00	-49.58
242.43	S	-62.15	-65.91	5.45	-1.68	-13.00	-49.15
307.42	S	-70.68	-74.72	5.93	-1.89	-13.00	-57.68
516.94	S	-70.07	-73.75	6.08	-2.40	-13.00	-57.07
709.00	S	-63.99	-67.23	5.99	-2.76	-13.00	-50.99
949.56	S	-63.68	-65.83	5.49	-3.34	-13.00	-50.68
3815.20	H	-46.67	-48.96	9.19	-6.90	-13.00	-33.67
5722.80	H	-47.86	-49.82	10.50	-8.54	-13.00	-34.86
7630.40	H	---					
9538.00	H	---					
11445.60	H	---					
13353.20	H	---					
15260.80	H	---					
17168.40	H	---					
19076.00	H	---					

EIRP(dBm) = SG Level(dBm) + Antenna Gain(dBi) + Cable Loss(dB)

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---" : denotes Noise Floor.

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Operation Band	:WCDMA B2	Test Date	:2015-01-19
ARFCN	:CH 9538	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:1907.6 MHz	Engineer	:Tin
Operation Mode	:TX HIGH		
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
MHz	F/H/E/S	dBm	Output Level dBm	Gain dBi	Loss dB	dBm	dB
62.01	S	-64.74	-57.79	-5.94	-1.00	-13.00	-51.74
229.82	S	-63.09	-67.41	5.96	-1.63	-13.00	-50.09
431.58	S	-69.90	-73.79	6.06	-2.17	-13.00	-56.90
539.25	S	-69.78	-73.37	6.05	-2.46	-13.00	-56.78
757.50	S	-67.42	-70.40	5.84	-2.86	-13.00	-54.42
916.58	S	-63.83	-66.18	5.64	-3.29	-13.00	-50.83
3815.00	H	-52.37	-54.67	9.19	-6.90	-13.00	-39.37
5722.80	H	-52.50	-54.46	10.50	-8.54	-13.00	-39.50
7630.40	H	---					
9538.00	H	---					
11445.60	H	---					
13353.20	H	---					
15260.80	H	---					
17168.40	H	---					
19076.00	H	---					

$EIRP(dBm) = SG\ Level(dBm) + Antenna\ Gain(dBi) + Cable\ Loss(dB)$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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**Radiated Spurious Emission Measurement Result: HSDPA V Mode**

Operation Band	:HSDPA B5	Test Date	:2015-01-19
ARFCN	:CH 4132	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:826.4 MHz	Engineer	:Tin
Operation Mode	:TX LOW		
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
MHz	F/H/E/S	dBm	Output Level dBm	Gain dBd	Loss dB	dBm	dB
31.94	S	-61.16	-46.49	-13.87	-0.80	-13.00	-48.16
246.31	S	-63.38	-65.00	3.32	-1.69	-13.00	-50.38
415.09	S	-71.72	-73.57	3.97	-2.12	-13.00	-58.72
519.85	S	-72.39	-73.91	3.93	-2.41	-13.00	-59.39
710.94	S	-66.87	-67.95	3.84	-2.76	-13.00	-53.87
945.68	S	-66.89	-66.91	3.35	-3.33	-13.00	-53.89
1652.80	H	-57.97	-57.09	3.55	-4.42	-13.00	-44.97
2479.20	H	-49.23	-47.97	4.19	-5.46	-13.00	-36.23
3305.60	H	---					
4132.00	H	---					
4958.40	H	---					
5784.80	H	---					
6611.20	H	---					
7437.60	H	---					
8264.00	H	---					

ERP(dBm) = SG Level(dBm) + Antenna Gain(dBd) + Cable Loss(dB)

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band	:HSDPA B5	Test Date	:2015-01-19
ARFCN	:CH 4132	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:826.4 MHz	Engineer	:Tin
Operation Mode	:TX LOW		
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
MHz	F/H/E/S	dBm	Output Level dBm	Gain dBd	Loss dB	dBm	dB
61.04	S	-67.18	-57.81	-8.36	-1.00	-13.00	-54.18
227.88	S	-64.56	-66.69	3.75	-1.63	-13.00	-51.56
430.61	S	-73.44	-75.19	3.91	-2.16	-13.00	-60.44
522.76	S	-73.01	-74.52	3.93	-2.42	-13.00	-60.01
738.10	S	-70.39	-71.29	3.73	-2.82	-13.00	-57.39
924.34	S	-66.37	-66.53	3.45	-3.30	-13.00	-53.37
1652.80	H	-63.01	-62.13	3.55	-4.42	-13.00	-50.01
2479.20	H	-55.79	-54.53	4.19	-5.46	-13.00	-42.79
3305.60	H	---					
4132.00	H	---					
4958.40	H	---					
5784.80	H	---					
6611.20	H	---					
7437.60	H	---					
8264.00	H	---					

ERP(dBm) = SG Level(dBm) + Antenna Gain(dBd) + Cable Loss(dB)

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---" : denotes Noise Floor.

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Operation Band	:HSDPA B5	Test Date	:2015-01-19
ARFCN	:CH 4183	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:836.6 MHz	Engineer	:Tin
Operation Mode	:TX MID		
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
MHz	F/H/E/S	dBm	Output Level dBm	Gain dBd	Loss dB	dBm	dB
32.91	S	-62.32	-47.88	-13.63	-0.80	-13.00	-49.32
248.25	S	-62.94	-64.56	3.33	-1.70	-13.00	-49.94
430.61	S	-71.62	-73.37	3.91	-2.16	-13.00	-58.62
553.80	S	-72.03	-73.40	3.87	-2.50	-13.00	-59.03
704.15	S	-67.44	-68.55	3.86	-2.75	-13.00	-54.44
944.71	S	-66.22	-66.25	3.36	-3.33	-13.00	-53.22
1673.20	H	-52.53	-51.58	3.49	-4.45	-13.00	-39.53
2509.80	H	-51.23	-50.01	4.28	-5.49	-13.00	-38.23
3346.40	H	---					
4183.00	H	---					
5019.60	H	---					
5856.20	H	---					
6692.80	H	---					
7529.40	H	---					
8366.00	H	---					

ERP(dBm) = SG Level(dBm) + Antenna Gain(dBd) + Cable Loss(dB)

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---" : denotes Noise Floor.

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Operation Band	:HSDPA B5	Test Date	:2015-01-19
ARFCN	:CH 4183	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:836.6 MHz	Engineer	:Tin
Operation Mode	:TX MID		
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
MHz	F/H/E/S	dBm	Output Level dBm	Gain dBd	Loss dB	dBm	dB
30.97	S	-63.37	-48.45	-14.12	-0.80	-13.00	-50.37
225.94	S	-65.17	-67.25	3.70	-1.62	-13.00	-52.17
420.91	S	-72.89	-74.70	3.94	-2.13	-13.00	-59.89
523.73	S	-72.00	-73.50	3.92	-2.42	-13.00	-59.00
719.67	S	-70.52	-71.54	3.80	-2.78	-13.00	-57.52
878.75	S	-66.35	-66.80	3.65	-3.20	-13.00	-53.35
1673.20	H	-61.25	-60.29	3.49	-4.45	-13.00	-48.25
2509.80	H	-52.30	-51.08	4.28	-5.49	-13.00	-39.30
3346.40	H	---					
4183.00	H	---					
5019.60	H	---					
5856.20	H	---					
6692.80	H	---					
7529.40	H	---					
8366.00	H	---					

ERP(dBm) = SG Level(dBm) + Antenna Gain(dBd) + Cable Loss(dB)

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---" : denotes Noise Floor.

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Operation Band	:HSDPA B5	Test Date	:2015-01-19
ARFCN	:CH 4233	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:846.6 MHz	Engineer	:Tin
Operation Mode	:TX HIGH		
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
MHz	F/H/E/S	dBm	Output Level dBm	Gain dBd	Loss dB	dBm	dB
30.97	S	-59.75	-44.82	-14.12	-0.80	-13.00	-46.75
249.22	S	-63.87	-65.50	3.33	-1.71	-13.00	-50.87
317.12	S	-71.37	-73.31	3.84	-1.91	-13.00	-58.37
523.73	S	-71.49	-73.00	3.92	-2.42	-13.00	-58.49
705.12	S	-66.82	-67.93	3.86	-2.75	-13.00	-53.82
903.97	S	-66.64	-66.92	3.55	-3.27	-13.00	-53.64
1693.20	H	-51.32	-50.29	3.44	-4.48	-13.00	-38.32
2539.80	H	-50.70	-49.52	4.35	-5.53	-13.00	-37.70
3386.40	H	---					
4233.00	H	---					
5079.60	H	---					
5926.20	H	---					
6772.80	H	---					
7619.40	H	---					
8466.00	H	---					

ERP(dBm) = SG Level(dBm) + Antenna Gain(dBd) + Cable Loss(dB)

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---" : denotes Noise Floor.

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Operation Band	:HSDPA B5	Test Date	:2015-01-19
ARFCN	:CH 4233	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:846.6 MHz	Engineer	:Tin
Operation Mode	:TX HIGH		
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
MHz	F/H/E/S	dBm	Output Level dBm	Gain dBd	Loss dB	dBm	dB
62.01	S	-67.06	-57.97	-8.09	-1.00	-13.00	-54.06
228.85	S	-65.16	-67.31	3.78	-1.63	-13.00	-52.16
450.01	S	-72.79	-74.42	3.84	-2.22	-13.00	-59.79
522.76	S	-71.73	-73.24	3.93	-2.42	-13.00	-58.73
707.06	S	-71.04	-72.14	3.85	-2.76	-13.00	-58.04
922.40	S	-66.39	-66.56	3.46	-3.30	-13.00	-53.39
1693.20	H	-58.69	-57.66	3.44	-4.48	-13.00	-45.69
2539.80	H	-58.37	-57.19	4.35	-5.53	-13.00	-45.37
3386.40	H	---					
4233.00	H	---					
5079.60	H	---					
5926.20	H	---					
6772.80	H	---					
7619.40	H	---					
8466.00	H	---					

ERP(dBm) = SG Level(dBm) + Antenna Gain(dBd) + Cable Loss(dB)

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---" : denotes Noise Floor.

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## 12. FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT

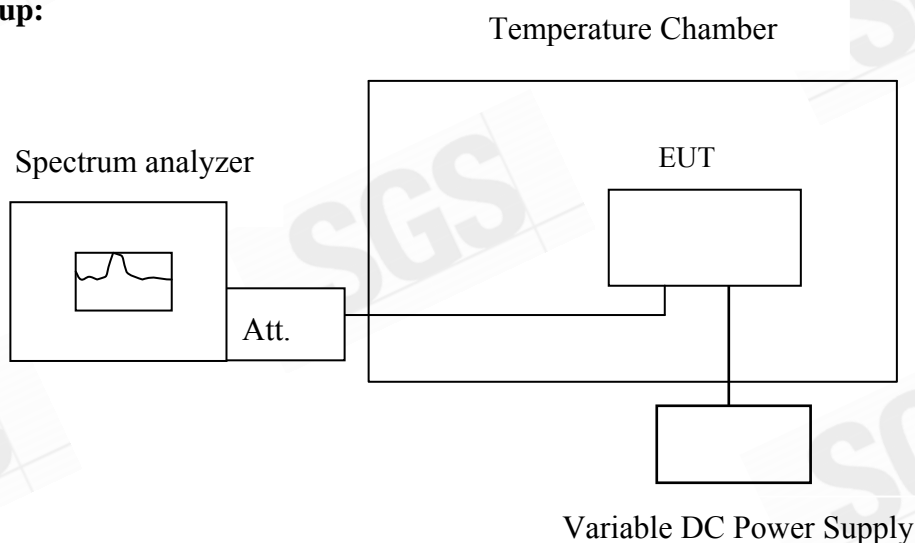
### 12.1. Standard Applicable:

According to FCC §2.1055(a) (1)

Frequency Tolerance:  $\pm 2.5$ ppm for 850MHz band

$\pm 2.5$ ppm for 1900MHz band

### 12.2. Test Set-up:



**Note :** Measurement setup for testing on Antenna connector

### 12.3. Measurement Procedure:

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

### 12.4. Measurement Equipment Used:

Refer to section 2.4 in this report

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## 12.5. Measurement Result:

## GPRS850

Reference Frequency: GPRS Mid Channel 836.6 MHz				
Limit: +/- 2.5 ppm = 2091 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature ( )	(Hz)		
12.0	50	836599981	-8	2091
12.0	40	836599983	-6	2091
12.0	30	836599987	-2	2091
12.0	20	836599989	0	2091
12.0	10	836599991	2	2091
12.0	0	836599992	3	2091
12.0	-10	836599997	8	2091
12.0	-20	836600000	11	2091
12.0	-30	836600002	13	2091

## GPRS1900

Reference Frequency: GPRS Mid Channel 1880 MHz				
Limit: +/- 2.5 ppm = 4700 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature ( )	(Hz)		
12.0	50	1879999981	-10	4700
12.0	40	1879999985	-6	4700
12.0	30	1879999989	-2	4700
12.0	20	1879999991	0	4700
12.0	10	1879999993	2	4700
12.0	0	1879999998	7	4700
12.0	-10	1880000001	10	4700
12.0	-20	1880000006	15	4700
12.0	-30	1880000009	18	4700

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## WCDMA II

Reference Frequency: WCDMA Mid Channel 1880 MHz				
Limit: +/- 2.5 ppm = 4700 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature ( )	(Hz)		
12.0	50	1879999978	-15	4700
12.0	40	1879999983	-10	4700
12.0	30	1879999989	-4	4700
12.0	20	1879999993	0	4700
12.0	10	1879999998	5	4700
12.0	0	1880000004	11	4700
12.0	-10	1880000005	12	4700
12.0	-20	1880000009	16	4700
12.0	-30	1880000014	21	4700

## HSDPA V

Reference Frequency: WCDMA Mid Channel 836.6 MHz				
Limit: +/- 2.5 ppm = 2091 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature ( )	(Hz)		
12.0	50	836599978	-14	2091
12.0	40	836599981	-11	2091
12.0	30	836599986	-6	2091
12.0	20	836599992	0	2091
12.0	10	836599994	2	2091
12.0	0	836599999	7	2091
12.0	-10	836600003	11	2091
12.0	-20	836600007	15	2091
12.0	-30	836600016	24	2091

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### 13. FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT

#### 13.1. Standard Applicable:

According to FCC §2.1055(d) (2)

Frequency Tolerance:  $\pm 2.5$ ppm for 850MHz band

$\pm 2.5$ ppm for 1900MHz band

#### 13.2. Test Set-up:

Refer to section 10.2 in this report

#### 13.3. Measurement Procedure:

Set chamber temperature to 25 °C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specified extreme-voltage-variation ( $\pm 15\%$ ) and endpoint, record the maximum frequency change.

#### 13.4. Measurement Equipment Used:

Refer to section 2.4 in this report

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**13.5. Measurement Result:****GPRS850**

Reference Frequency: GPRS Mid Channel 836.6 MHz				
Limit: +/- 2.5 ppm = 2091 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature ( )	(Hz)		
13.2	20	836599988	-1	2091
12.0	20	836599989	0	2091
10.8	20	836599993	4	2091
shutdown point				
7.0	20	836599984	-5	2091

**GPRS1900**

Reference Frequency: GPRS Mid Channel 1880 MHz				
Limit: +/- 2.5 ppm = 4700 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature ( )	(Hz)		
13.2	20	1879999988	-3	4700
12.0	20	1879999991	0	4700
10.8	20	1879999997	6	4700
shutdown point				
7.0	20	1879999986	-5	4700

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## WCDMA II

Reference Frequency: WCDMA Mid Channel 1880 MHz				
Limit: +/- 2.5 ppm = 4700 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature ( )	(Hz)		
13.2	20	1879999994	1	4700
12.0	20	1879999993	0	4700
10.8	20	1879999991	-2	4700
shutdown point				
7.0	20	1879999987	-6	4700

## HSDPA V

Reference Frequency: WCDMA Mid Channel 836.6 MHz				
Limit: +/- 2.5 ppm = 2091 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature ( )	(Hz)		
13.2	20	836599988	-4	2091
12.0	20	836599992	0	2091
10.8	20	836599996	4	2091
shutdown point				
7.0	20	836599990	-2	2091

~ End of Report ~

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