

# **ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT**

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

OF

Product Name:	TITAN 5
Brand Name:	AMobile
Marketing Name:	TITAN 5
Model No.:	T551BA, T55XXXX (X=0~9, A~Z)
Model Difference:	Please refer to page 7
FCC ID:	2ACC5-T55
Report No.:	EH/2014/10024
Issue Date:	Jul. 09, 2014
FCC Rule Part:	2 , 22H & 24E
Prepared for:	AMobile Intelligent Corp 18F-1, No.150, Jian 1st Rd., Zhong He dist., New
	Taipei City, 235, Taiwan
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

	AMobile Intelligent Corp
Applicant:	18F-1, No.150, Jian 1st Rd., Zhong He dist., New Taipei City, 235,
	Taiwan
Product Name:	TITAN 5
Brand Name:	AMobile
Marketing Name:	TITAN 5
Model No.:	T551BA, T55XXXX (X=0~9, A~Z)
Model Difference:	Please refer to page 7
FCC ID:	2ACC5-T55
File Number:	EH/2014/10024
Date of test:	Jan. 29, 2014 ~ May. 09, 2014
Date of EUT Received:	Jan. 22, 2014

# We hereby certify that:

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

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

Test By:	Marcus Tseng	Date	Jul. 09, 2014
Prepared By:	Marcus Tseng / Engineer Tiffany Kao	Date	Jul. 09, 2014
Approved By:	Tiffany Kao / Clerk Jim Chang Jim Chang / Supervisor	Date	Jul. 09, 2014

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# Version

Version No.	Date	Description
00	May. 20, 2014	Initial creation of document
01	Jul. 09, 2014	Modified USB Cable Model No., Supplier and EUT Photos

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# **1. GENERAL PRODUCT INFORMATION**

# 1.1. Product Description

General:

Product Name:	TITAN 5			
Brand Name:	AMobile			
Marketing Name:	TITAN 5			
Model No.:	T551BA, T55	XXXX (X=0~9, A~Z)		
Model difference:	Please refer to	page 7		
Hardware Version:	V02			
Software Version:	AMobile_G0550_V08			
Data Cable (USB):	Model No.: YXT-64-MK5P-1M, Supplier: THIN STRIP OF SKY			
Simple Hands-Free:	Model No.: LTX-12654319-B003, Supplier: Sanmu			
	3.7Vdc Recha	rgeable Li-ion Battery or 5Vdc from AC/DC Adapter		
Power Supply:	Battery:	Model: G0550B01, Supplier: Japone		
	Adapter:	Model No.: BSYB050150U USB, Supplier: BSY		

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#### GSM / GPRS / WCDMA:

	Operating Frequency	Rated Power	
	GSM/GPRS 850, Class 12 824.2 MHz– 848.8 MHz		33dBm
Cellular Phone	GSM/GPRS 1900, Class 12	1850.2MHz - 1909.8MHz	30dBm
Standards Frequency Range and Power.	WCDMA/HSUPA/HSDPA /HSPA+ Band II 1852.4MHz – 1907.6MHz		24dBm
	WCDMA/HSUPA/HSDPA /HSPA+ Band V 826.4MHz - 846.6MHz		24dBm
Type of Emission:	GSM 850: 248KGXW, GSM 19 GPRS 850: 249KGXW, GPRS 7 WCDMA Band II: 4M15F9W, V HSDPA Band II: 4M16F9W, HS HSUPA Band II: 4M17F9W, HS		
IMEI:	865922019095200		

This test report applies for 850 / 1700 / 1900 GSM / GPRS, WCDMA / HSDPA / HSUPA Band II/V. Marketing

Model Difference:

T55XXXX	55	X	X	XX
Model	Panel Size	Barcode Type	Color	Location
Т	55: 5.5"	0:No Barcode Scanner 1:Honey 1D Scanner 3:Marson 1D Scanner	B:Black W:White	where X may be A-Z or blank for Marketing purpose

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Test Mode	DC voltage (V)	DC current (mA)
GSM 850	3.7	310
GSM 1900	3.7	240
GPRS 850	3.7	220
GPRS 1900	3.7	240
WCDMA B2	3.7	570
WCDMA B5	3.7	560
HSUPA B2	3.7	550
HSUPA B5	3.7	470
HSDPA B2	3.7	560
HSDPA B5	3.7	500

#### Final Amplifier Voltage and Current Information:

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

This submittal(s) (test report) is intended for **FCC ID:** <u>2ACC5-T55</u> filing to comply with Section Part 22 subpart H, Part 24 subpart E of the FCC CFR 47 Rules.

#### **1.3.** Test Methodology

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

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

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

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

#### 1.4. Test Facility

The measurement facilities used to collect the 3m Radiated Emission and AC power line conducted data are located on the address of SGS Taiwan Ltd. Electronics & Communication Laboratory No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803 which are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2009. FCC Registration Number 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).

#### **1.5.** Special Accessories

No special accessories were used during testing.

# **1.6.** Equipment Modifications

There were no modifications incorporated into the EUT.

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# 2. SYSTEM TEST CONFIGURATION

#### 2.1. EUT Configuration

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

#### 2.2. EUT Exercise

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

#### 2.3. Test Procedure

#### 2.3.1 Conducted Measurement at Antenna Port:

According to measurement procured TIA/EIA 603C and RSS-Gen Issue 3, 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 and RSS-Gen Issue 3, 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:

ERP, EIRP MEASUREMENT EQUIPMENT List 966 Chamber						
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.	
ТҮРЕ		NUMBER	NUMBER	CAL.		
Spectrum Analyzer	Agilent	E4446A	MY51100003	05/30/2013	05/29/2014	
EXA Spectrum Analyzer	Agilent	N9010A	MY50420195	01/20/2014	01/19/2015	
Spectrum Analyzer	R&S	FSV-30	101398	10/22/2013	10/21/2014	
Bilog Antenna	SCHWAZBECK	VULB9168	378	01/02/2014	01/01/2015	
Bilog Antenna	SCHWAZBECK	VULB9160	3158	11/27/2013	11/26/2014	
Horn antenna	ETS.LINDGREN	3117	123995	05/31/2013	05/30/2014	
Horn antenna	ETS.LINDGREN	3117	123991	01/20/2014	01/19/2015	
Horn Antenna	Schwarzbeck	BBHA9170	184	01/23/2014	01/22/2015	
Horn Antenna	Schwarzbeck	BBHA9170	185	07/19/2013	07/18/2014	
Network Analyze	Anritsu	MS4644A	1216312	05/23/2013	05/22/2014	
Signal Generator	Agilent	E4438C	MY45093613	07/30/2013	07/29/2014	
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	102189	06/17/2013	06/16/2014	
Radio Communication Analyzer	Anritsu	MT8820C	6200995019	10/21/2013	10/20/2014	
Turn Table	HD	DT420	N/A	N.C.R	N.C.R	
Antenna Tower	HD	MA240-N	240/657	N.C.R	N.C.R	
Controller	HD	HD100	N/A	N.C.R	N.C.R	
Low Loss Cable	HUBER+SUHNER	966_Tx	10m	01/03/2014	01/02/2015	
Low Loss Cable	HUBER+SUHNER	966_Rx	3m	01/03/2014	01/02/2015	
Filter 800-1000	Micro-Tronics	EWT	M2	02/27/2014	02/26/2015	
Filter 1800-2000	Micro-Tronics	EWT	M2	02/27/2014	02/26/2015	
Filter 1700-1800	Micro-Tronics	BRC15751	001	02/27/2014	02/26/2015	
1GHz High Pass Filter	Micro-Tronics	HPM50108	32	02/27/2014	02/26/2015	
2GHz High Pass Filter	Micro-Tronics	HPM50110	36	02/27/2014	02/26/2015	
3m Site NSA	SGS	966 chamber	N/A	07/15/2013	07/14/2014	

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Conducted Emission Test Site						
EQUIPMENT	MFR	MODEL SERIAL		LAST	CAL DUE.	
ТҮРЕ		NUMBER	NUMBER	CAL.		
Spectrum Analyzer	Agilent	E4446A	MY51100003	05/30/2013	05/29/2014	
Spectrum Analyzer	Agilent	E4440A	US41160416	03/08/2014	03/07/2015	
Radio Communication Analyzer	R & S	CMU200	102189	06/17/2013	06/16/2014	
Radio Communication Analyzer	Anritsu	MT8820C	6200995019	10/21/2013	10/20/2014	
Temperature Chamber	TERCHY	MHG-120LF	911009	05/07/2014	05/06/2015	
DC Block	Mini-Circuits	BLK-18-S+	1	02/27/2014	02/26/2015	
Attenuator	Mini-Circuit	BW-S10W2+	002	02/27/2014	02/26/2015	
Splitter	Agilent	11636B	N/A	02/27/2014	02/26/2015	
DC Power Supply	Agilent	E3640A	KR93300208	07/24/2013	07/23/2014	

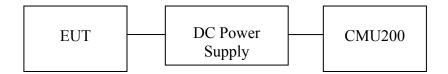
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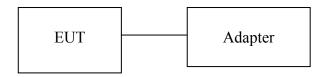


#### **Configuration of Tested System** 2.5.

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



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



# **Remote Side**



# **Table 2-1 Equipment Used in**

Item	Equipment	Mfr/Brand	Model/ Type No.	Series No.	Data Cable	Power Cord
1.	Universal Radio Com- munication Tester	R&S	CMU200	102189	shielded	Un-shielded
2.	DC Power Supply	Agilent	E3640A	MY53140006	shielded	Un-shielded

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# 3. SUMMARY OF TEST RESULTS

FCC Rules	<b>Description Of Test</b>	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
\$2.1055(a)(1) \$22.355 \$24.235	Frequency Stability vs. Temperature	Compliant
\$2.1055(d)(2) \$22.355 \$24.235	Frequency Stability vs. Voltage	Compliant

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Max ERP/EIRP measurement result:

	dBm		W
GSM 850 Band	25.22	ERP	0.333
GSM 1900 Band	23.04	EIRP	0.201
GPRS 850 Band	25.26	ERP	0.336
GPRS 1900 Band	23.45	EIRP	0.221
WCDMA Band II	21.42	EIRP	0.139
WCDMA Band V	22.07	ERP	0.161
HSUPA Band II	21.19	EIRP	0.132
HSUPA Band V	22.01	ERP	0.159
HSDPA Band II	21.30	EIRP	0.135
HSDPA Band V	22.17	ERP	0.165

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# 4. DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition.

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

The list of channel selected to conduct the measurements

GSM/GPRS 850:

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

GSM/GPRS 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 EUT stand-up position (H mode)and lie down position (E1, E2 mode) for GSM and WCDMA Band II / V with power adaptor. The worst-case of H position for GSM 850 and WCDMA/HSPA Band V, E2 position for GPRS 1900 and WCDMA/HSPA Band II were reported.

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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	+/- 1.55 dB
Terminals and Band Edge	
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	30MHz - 180MHz: +/- 3.37dB
	180MHz -417MHz: +/- 3.19dB
(Polarization : Vertical)	0.417GHz-1GHz: +/- 3.19dB
	1GHz - 18GHz: +/- 4.04dB
	18GHz - 40GHz: +/- 4.04dB

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

This uncertainty represents an expanded uncertainty expressed at approximately the

95% confidence level using a coverage factor of k=2.

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# 6. RF POWER OUTPUT MEASUREMENT

#### 6.1. Standard Applicable:

According to FCC §2.1046.

FCC 22.913(a) Mobile station are limited to 7W. FCC 24.232(c) Peak Power Measurement limited to 2W FCC 24.232(c) Equipment must employ means to limit the power to the minimum necessary for successful communication.

**3GPP** Power limitation for HSDPA and HSUPA

#### Maximum Output Powers for HSDPA

Sub-test in ta-	Power	Power Class 3 Pow		Class 4
ble C.10.1.4	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**

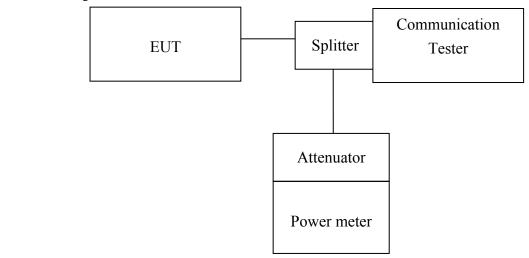
Sub-test in table	Power	Class 3	Power	Class 4
C.11.1.3	Power (dBm)	Tol (dB)	Power (dBm)	Tol (dB)
1	+24	+1.7/-6.7	+21	+2.7/-5.7
2	+22	+3.7/-5.2	+19	+4.7/-4.2
3	+23	+2.7/-5.2	+20	+3.7/-4.2
4	+22	+3.7/-5.2	+19	+4.7/-4.2
5	+24	+1.7/-6.7	+21	+2.7/-5.7

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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 CMW200 (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.: GSM/GPRS (GMSK; 8-PSK)

#### **Result:**

EUT Mode	Frequency (MHz)	СН	Peak Power (dBm)	Average Burst Power (dBm)
	824.2	128	32.50	32.40
GSM 850	836.6	190	32.50	32.30
	848.8	251	32.40	32.30

EUT Mode	Frequency (MHz)	СН	Peak Power (dBm)	Average Burst Power (dBm)
	1850.2	512	29.40	29.30
GSM 1900	1880.0	661	29.20	29.00
	1909.8	810	29.10	28.90

EUT Mode	Frequency (MHz)	СН	Peak Power (4DN 1UP) Class 8 (dBm)	Average Burst Power (4DN 1UP) Class 8 (dBm)	Peak Power (4DN 2UP) Class 10 (dBm)	Average Burst Power (4DN 2UP) Class 10 (dBm)
	824.2	128	32.50	32.30	31.90	31.70
GPRS 850	836.6	190	32.50	32.30	31.90	31.70
	848.8	251	32.40	32.30	31.80	31.70

EUT Mode	Frequency (MHz)	СН	Peak Power (4DN 3UP) Class 12 (dBm)	Average Burst Power (4DN 3UP) Class 12 (dBm)	Peak Power (4DN 4UP) Class 12 (dBm)	Average Burst Power (4DN 4UP) Class 12 (dBm)
	824.2	128	30.30	30.10	29.20	29.10
GPRS 850	836.6	190	30.30	30.10	29.30	29.20
	848.8	251	30.20	30.10	29.30	29.10

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EUT Mode	Frequency (MHz)	СН	Peak Power (4DN 1UP) Class 8 (dBm)	Average Burst Power (4DN 1UP) Class 8 (dBm)	Peak Power (4DN 2UP) Class 10 (dBm)	Average Burst Power (4DN 2UP) Class 10 (dBm)	
	1850.2	512	29.40	29.20	28.90	28.70	
GPRS 1900	1880.0	661	29.20	29.00	28.60	28.40	
	1909.8	810	29.10	28.90	28.50	28.30	

EUT Mode	JT Mode Frequency CH (MHz)		Peak Power (4DN 3UP) Class 12 (dBm)	Average Burst Power (4DN 3UP) Class 12 (dBm)	Peak Power (4DN 4UP) Class 12 (dBm)	Average Burst Power (4DN 4UP) Class 12 (dBm)
	1850.2	512	27.40	27.20	26.30	26.10
GPRS 1900	1880.0	661	27.10	26.90	26.10	25.90
	1909.8	810	27.00	26.90	26.00	25.80

Cable loss offset:1dB

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# 6.5.1.2.: WCDMA mode

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

# **Results:**

EUT Mode	Frequency (MHz)	СН	Peak Power (dBm)	Avg. Power (dBm)
WCDMA Band II	1852.4	9262	25.83	22.53
	1880.0	9400	25.64	22.48
	1907.6	9538	25.12	22.08

EUT Mode	Frequency (MHz)	СН	Peak Power (dBm)	Avg. Power (dBm)	
WCDMA Band V	826.4	4132	25.88	22.91	
	836.6	4183	25.88	22.91	
	846.6	4233	25.71	22.75	

EUT Mode	Frequency (MHz)	СН	Peak Power (dBm)	Avg. Power (dBm)	
UCDDA	1852.4	9262	24.96	22.16	
HSDPA Band II	1880.0	9400	24.75	21.08	
	1907.6	9538	24.41	20.79	

EUT Mode	Frequency (MHz)	СН	Peak Power (dBm)	Avg. Power (dBm)
UCDDA	826.4	4132	25.02	21.51
HSDPA Band V	836.6	4183	24.99	21.50
	846.6	4233	24.89	21.39

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EUT Mode	Frequency (MHz)	СН	Peak Power (dBm)	Avg. Power (dBm)	
	1852.4	9262	24.95	21.17	
HSUPA Band II	1880.0	9400	24.84	21.02	
	1907.6	9538	24.41	20.72	

EUT Mode	Frequency	СН	Peak Power	C	
	(MHz)		(dBm)	(dBm)	
	826.4	4132	25.05	21.47	
HSUPA Band V	836.6	4183	25.03	21.45	
	846.6	4233	24.84	21.32	

Note: The results above reflect max power with all up bits. Cable loss offset: 1dB

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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: β values for transmitter characteristics tests with HS-DPCCH(FOR HSDPA)

Sub-test	βc	$\beta_d$	β <sub>d</sub> (SF)	β <sub>c</sub> /β <sub>d</sub>	β <sub>HS</sub> (Note1, Note 2)	<b>CM (dB)</b> (Note 3)	MPR (dB) (Note 3)	RMC (Kbps)
1	2/15	15/15	64	2/15	4/15	0.0	0.0	12.2
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0	12.2
3	15/15	8/15	64	15/8	30/15	1.5	0.5	12.2
4	15/15	4/15	64	15/4	30/15	1.5	0.5	12.2

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

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**Results:** 

Mode	Sub-test	Avg.	Power (d Channel	Bm)	Power Class 3 Limita-	Comments	
		9262	9400	9538	tion (dBm)		
	1	22.70	22.37	21.94	20.3dBm – 25.7dBm	Pass	
HSDPA	2	22.41	22.34	21.93	20.3dBm - 25.7dBm	Pass	
<b>(B2)</b>	3	22.22	21.92	21.41	19.8dBm – 25.7dBm	Pass	
	4	22.29	21.93	21.53	19.8dBm – 25.7dBm	Pass	

Mode	Sub-test	Avg.	Power (d Channel	Bm)	Power Class 3 Limita- tion (dBm)	Comments	
		4132	4183	4233			
	1	22.70	22.77	22.87	20.3dBm - 25.7dBm	Pass	
HSDPA	2	22.84	22.80	22.62	20.3dBm – 25.7dBm	Pass	
<b>(B5)</b>	3	22.24	22.29	22.38	19.8dBm – 25.7dBm	Pass	
	4	22.29 22.33 22		22.44	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: β values for transmitter characteristics tests with HS-DPCCH and E-DCH(FOR HSUPA)

Sub- test	βc	βa	β <sub>d</sub> (SF)	$\beta_c/\beta_d$	$\beta_{\rm HS}$	β <sub>ec</sub>	$\beta_{ed}$	β <sub>ed</sub> (SF)	β <sub>ed</sub> (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	$\beta_{ed}$ 1: 47/15 $\beta_{ed}$ 2: 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 (d Channel	Bm)	Power Class 3 Limita-	Comments	
		9262	9400	9538	tion (dBm)		
	1	22.45	22.46	22.02	18.8dBm – 25.7dBm	Pass	
	2	20.50	20.53	20.06	16.8dBm – 25.7dBm	Pass	
HSUPA(B2)	3	21.51	21.48	21.10	17.8dBm – 25.7dBm	Pass	
	4	20.63	20.58	20.10	16.8dBm – 25.7dBm	Pass	
	5	22.34	22.32	21.93	18.8dBm – 25.7dBm	Pass	

Mode	Sub-test	Avg.	Power (d Channel	Bm)	Power Class 3 Limita- tion (dBm)	Comments
		4132	4183	4233		
	1	22.87	22.84	22.67	18.8dBm – 25.7dBm	Pass
	2	20.93	20.92	20.71	16.8dBm – 25.7dBm	Pass
HSUPA(B5)	3	21.91	21.90	21.75	17.8dBm – 25.7dBm	Pass
	4	20.98	20.98	20.79	16.8dBm – 25.7dBm	Pass
	5	22.73	22.67	22.56	18.8dBm – 25.7dBm	Pass

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PCS 1900 band									
PCL	0	1	2	3	4	5	6	7	8
Output power (dBm)	28	27	25.1	23.1	21.2	19.2	17.2	15.1	13.1
PCL	9	10	11	12	13	14	15		
Output power (dBm)	11.2	9.1	7	4.9	2.9	1.4	-0.5		

6.5.2. Minimum Communications Power Measurement

Note: The EUT output power was controlled by simulator. Set Communication Tester CMU200 PCL as above, and get the mobile phone output power reading.

# 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 15 for measurement data). The min. power was measures by a function key "minimum power" then record the read. It is -52.3dBm. The power variation can be 0.1dB step by setting.

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# 7. ERP, EIRP MEASUREMENT

#### 7.1. Standard Applicable:

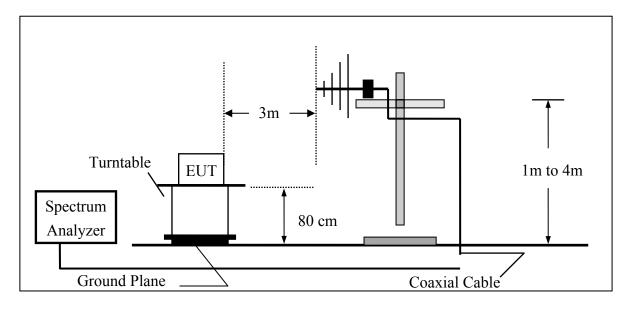
According to FCC §2.1046

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

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

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

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

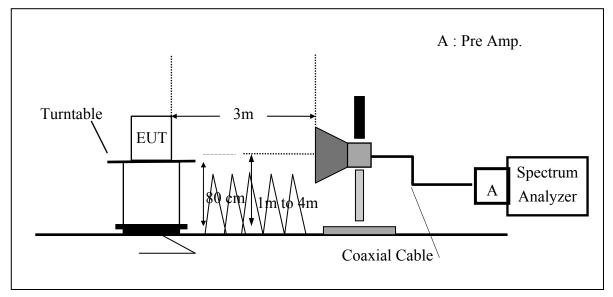


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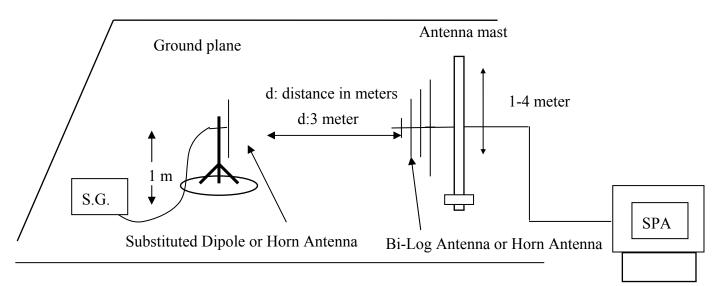
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#### (B) Radiated Power Test Set-UP Frequency Over 1 GHz

# (C) Substituted Method Test Set-UP



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# 7.3. Measurement Procedure:

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

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

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

EIRP in frequency band 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:

ERP = S.G. output (dBm) + Antenna Gain (dBd) – Cable Loss (dB) EIRP = S.G. output (dBm) + Antenna Gain (dBi) – Cable Loss (dB)

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 > =3xRBW.

# 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 =  $3 \times RBW$ ;

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 sweet time =  $601 \times 10^{-3} = 6$ s.

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Activate trace averaging routine over a minimum of 10 sweeps; Activate marker/span pair and set span = signal or channel bandwidth; Activate the band/interval power marker function; Record the band power level;

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

#### 7.4. Measurement Equipment Used:

Refer to section 2.4 in this report

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#### EUT Measurement **Fundamental** S.G. Antenna Antenna Cable **Operation Band** CH ERP Limit Frequency Pol. Output Gain Loss V/H dBd MHz dBm dB dBm dBm V 24.12 3.91 -3.03 24.99 38.45 824.2 128 20.48 3.91 -3.03 21.35 Η 38.45 V 24.40 3.89 -3.07 25.22 38.45 **GSM 850** 836.6 190 Η 20.81 3.89 -3.07 21.63 38.45 V 23.98 38.45 3.87 -3.11 24.74 848.8 251 Η 19.96 3.87 -3.11 20.73 38.45

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

#### **Remark**:

The RBW, VBW of SPA for measurement RBW=300 kHz, VBW=1MHz (1)

I	Measurement							
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
	1850.2	512	V	19.60	5.08	-4.67	20.01	33.00
			Н	22.63	5.08	-4.67	23.04	33.00
GSM 1900	1000.0		V	18.83	5.00	-4.70	19.13	33.00
USWI 1900	1880.0	661	Н	22.56	5.00	-4.70	22.86	33.00
	1909.8	010	V	18.59	4.92	-4.74	18.77	33.00
		810	Н	20.25	4.92	-4.74	20.43	33.00

#### **Remark** :

The RBW, VBW of SPA for measurement RBW=300 kHz,, VBW=1MHz (1)

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H	EUT			Measurement						
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit		
	MHz		V/H	dBm	dBd	dB	dBm	dBm		
	824.20	128	V	24.35	3.91	-3.03	25.23	38.45		
			Н	20.48	3.91	-3.03	21.36	38.45		
GPRS 850	836.60	100	V	24.44	3.89	-3.07	25.26	38.45		
01K5 850	830.00	190	Н	20.84	3.89	-3.07	21.66	38.45		
	848.80	251	V	V 24.17 3.87 -3.11	24.94	38.45				
		251	Н	20.04	3.87	-3.11	20.81	38.45		

# **Remark**:

(1)The RBW, VBW of SPA for measurement RBW=300 kHz,, VBW=1MHz

H		Measurement						
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
	1850.2	512	V	20.24	5.08	-4.67	20.65	33.00
			Н	22.76	5.08	-4.67	23.17	33.00
GPRS 1900	1000.0	((1	V	18.95	5.00	-4.7	19.25	33.00
UFRS 1900	1880.0	661	Н	23.15	5.00	-4.7	23.45	33.00
	1909.8	810	V	18.72	4.92	-4.74	18.90	33.00
			Н	20.39	4.92	-4.74	20.57	33.00

#### **Remark**:

The RBW, VBW of SPA for measurement RBW=300 kHz,, VBW=1MHz (1)

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	EUT				Measurement						
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit			
	MHz		V/H	dBm	dBi	dB	dBm	dBm			
	1852.4	9262	V	19.41	5.08	-4.67	19.81	33.00			
			Н	20.83	5.08	-4.67	21.23	33.00			
WCDMA			V	19.38	5.01	-4.70	19.69	33.00			
Band II	1880.0	9400	Н	21.12	5.00	-4.70	21.42	33.00			
	100-		V	17.98	4.93	-4.73	18.17	33.00			
	1907.6	9538	Н	18.90	4.93	-4.74	19.10	33.00			

#### **Remark**:

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

I	EUT			Measurement						
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit		
	MHz		V/H	dBm	dBd	dB	dBm	dBm		
	826.4	4132	V	20.79	3.90	-3.03	21.66	38.45		
			Н	16.90	3.90	-3.03	17.77	38.45		
WCDMA		4183	V	21.24	3.89	-3.07	22.07	38.45		
Band V	836.6	4165	Н	17.39	3.89	-3.07	18.21	38.45		
		4233 -	V	20.65	3.88	-3.10	21.43	38.45		
	846.6		Н	16.03	3.88	-3.10	16.80	38.45		

#### **Remark**:

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

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EUT				Measurement						
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit		
	MHz		V/H	dBm	dBi	dB	dBm	dBm		
	1052.4	02(2	V	18.84	5.07	-4.67	19.24	33.00		
	1852.4	9262	Н	20.76	5.08	-4.67	21.16	33.00		
HSUPA	1000.0	0.400	V	18.34	5.00	-4.7	18.64	33.00		
Band II	1880.0	9400	Н	20.89	5.00	-4.7	21.19	33.00		
1007 (		V	17.95	4.93	-4.73	18.15	33.00			
	1907.6	9538	Н	18.86	4.93	-4.74	19.05	33.00		

# Remark :

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

H	EUT		Measurement						
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit	
	MHz		V/H	dBm	dBd	dB	dBm	dBm	
	826.4	4100	V	20.77	3.90	-3.03	21.64	38.45	
		4132	Н	16.83	3.90	-3.03	17.70	38.45	
HSUPA			V	21.19	3.89	-3.07	22.01	38.45	
Band V	836.6	4183	Н	17.34	3.89	-3.07	18.16	38.45	
	046.6	4000	V	20.50	3.88	-3.1	21.28	38.45	
	846.6	4233	Н	15.8	3.88	-3.1	16.58	38.45	

#### Remark :

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

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EUT			Measurement					
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
	1952 4	02(2	V	18.61	5.08	-4.67	19.02	33.00
	1852.4	1852.4 9262	Н	20.77	5.08	-4.67	21.18	33.00
HSDPA	1880.0	0.400	V	18.21	5.01	-4.7	18.52	33.00
Band II		1880.0 9400	Н	21.00	5.00	-4.7	21.30	33.00
1007.(	0520	V	17.71	4.93	-4.74	17.91	33.00	
	1907.6	9538	Н	18.89	4.93	-4.73	19.09	33.00

# Remark :

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

EUT		Measurement							
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit	
	MHz		V/H	dBm	dBd	dB	dBm	dBm	
	826.4 41	826.4 4132	4122	V	20.92	3.90	-3.03	21.79	38.45
			Н	17.14	3.90	-3.03	18.01	38.45	
HSDPA	836.6 418.	4102	V	21.35	3.89	-3.07	22.17	38.45	
Band V		4183	Н	17.41	3.89	-3.06	18.24	38.45	
	4000	V	20.92	3.88	-3.10	21.70	38.45		
	846.6	4233	Н	16.07	3.87	-3.10	16.85	38.45	

# **Remark** :

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

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# **OCCUPIED BANDWIDTH MEASUREMENT**

# 8.1. Standard Applicable:

According to §FCC 2.1049 (99%)

# 8.2. Test Set-up:

Refer to section 6.2 in this report

# 8.3. Measurement Procedure:

The EUT's output RF connector was connected with a short cable to the spectrum analyzer, RBW was set to about 1% of emission BW, VBW= 3 times RBW, 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%.

# 8.4. Measurement Equipment Used:

Refer to section 2.4 in this report

# 8.5. Measurement Result:

Refer to next pages.

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EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
GSM 850	824.20	128	0.241
	836.60	190	0.245
	848.80	251	0.248

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
GSM 1900	1850.20	512	0.243
	1880.00	661	0.245
	1909.80	810	0.244

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
GPRS 850	824.20	128	0.247
	836.60	190	0.249
	848.80	251	0.245

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
GPRS 1900	1850.20	512	0.245
	1880.00	661	0.243
	1909.80	810	0.241

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EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
WCDMA II	1852.40	9262	4.1417
	1880.00	9400	4.1505
	1907.60	9538	4.1394

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
WCDMA V	826.40	4132	4.1587
	836.00	4183	4.1609
	846.60	4233	4.1542

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
HSDPA II	1852.40	9262	4.1552
	1880.00	9400	4.1301
	1907.60	9538	4.1483

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
HSDPA V	826.40	4132	4.1604
	836.60	4183	4.1558
	846.60	4233	4.1837

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
HSUPA II	1852.40	9262	4.1508
	1880.00	9400	4.1653
	1907.60	9538	4.1383

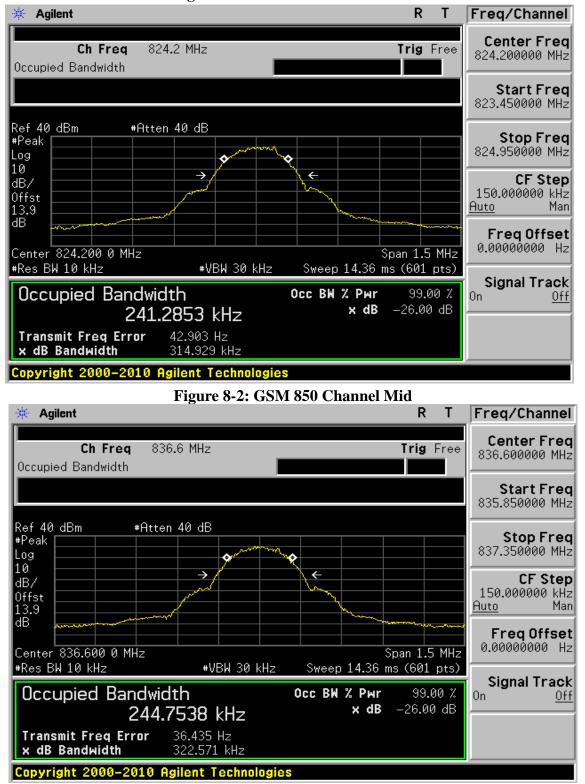
EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
HSUPA V	826.40	4132	4.1577
	836.60	4183	4.1490
	846.60	4233	4.1576

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# FCC ID: 2ACC5-T55

Figure 8-1: GSM 850 Channel Low



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Agilent

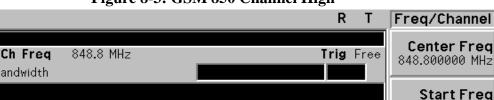
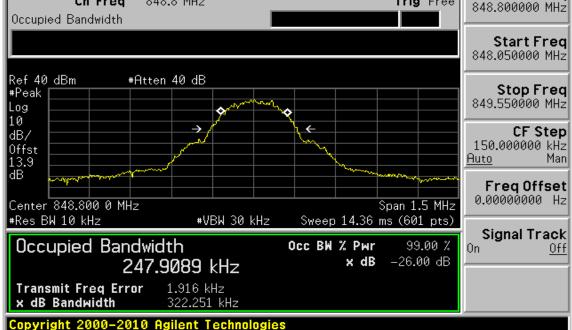
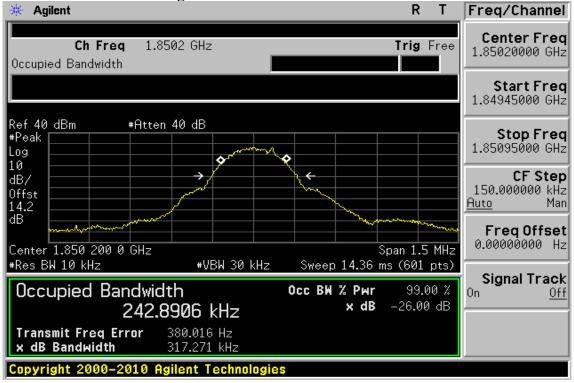


Figure 8-3: GSM 850 Channel High



#### Figure 8-4: GSM 1900 Channel Low

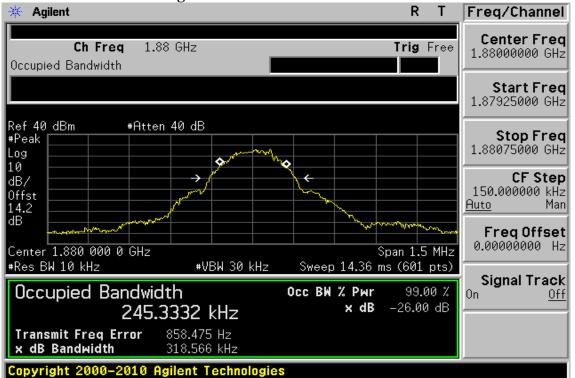


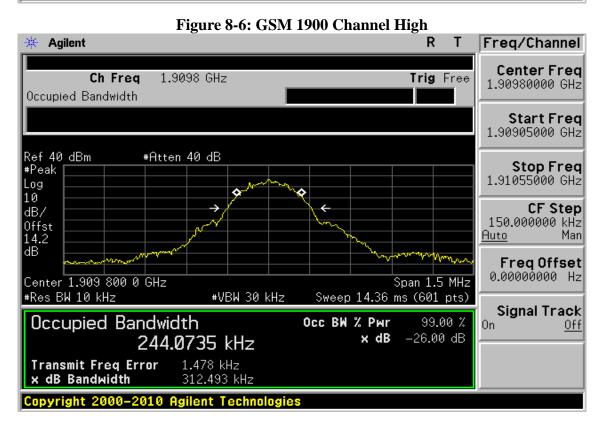
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Figure 8-5: GSM 1900 Channel Mid

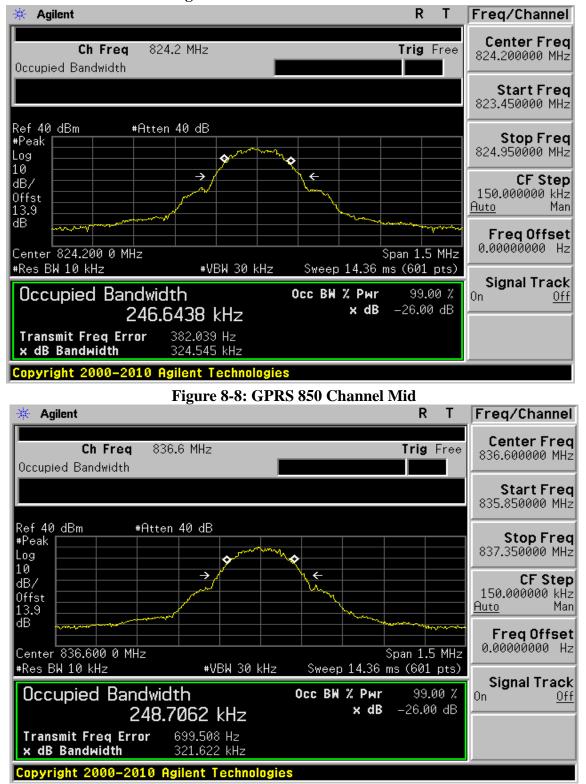




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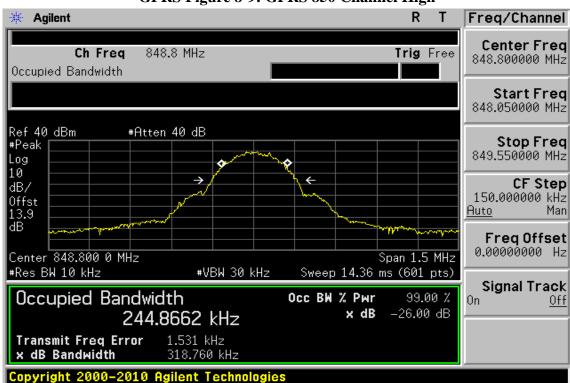
Figure 8-7: GPRS 850 Channel Low



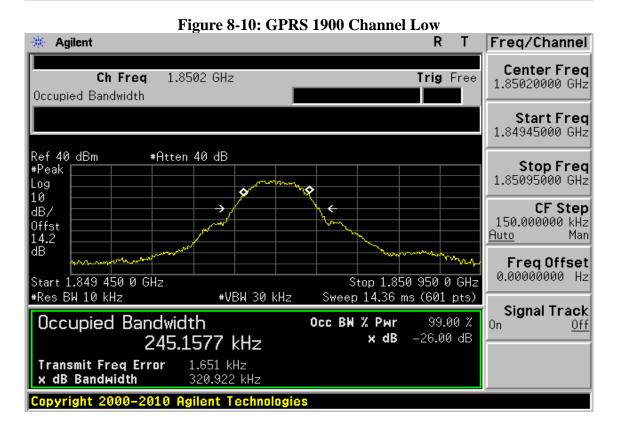
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GPRS Figure 8-9: GPRS 850 Channel High

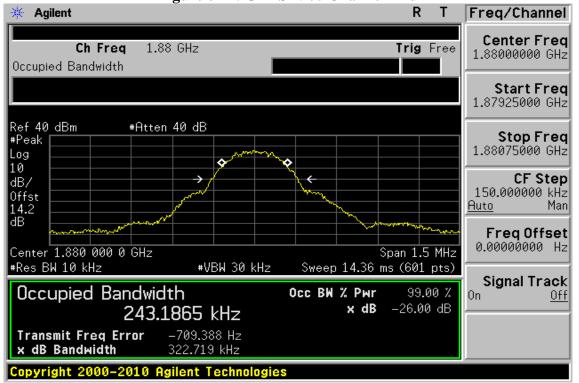


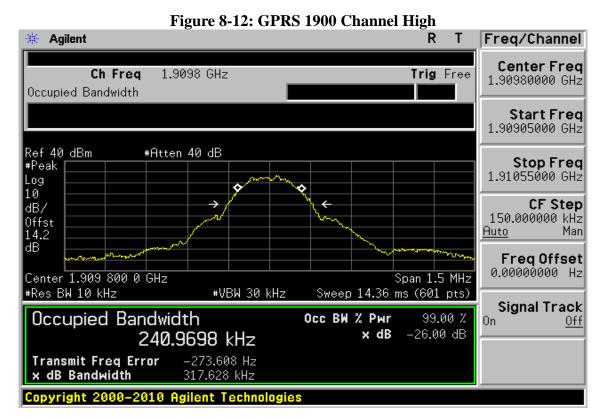
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Figure 8-11: GPRS 1900 Channel Mid

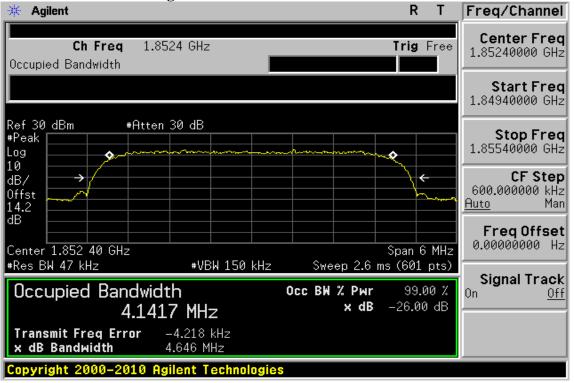


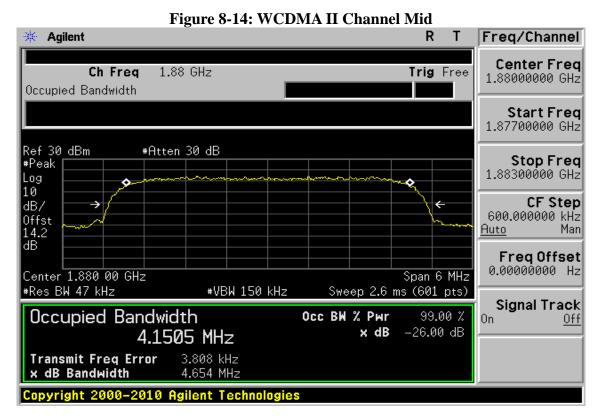


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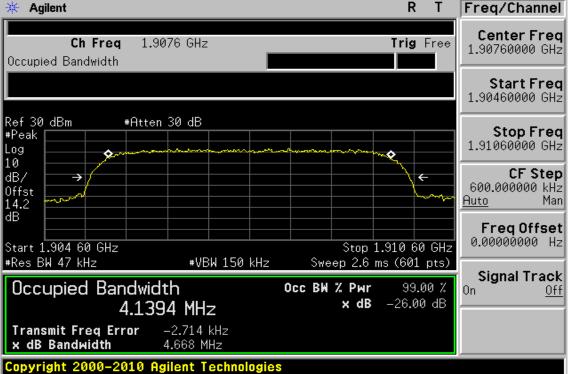


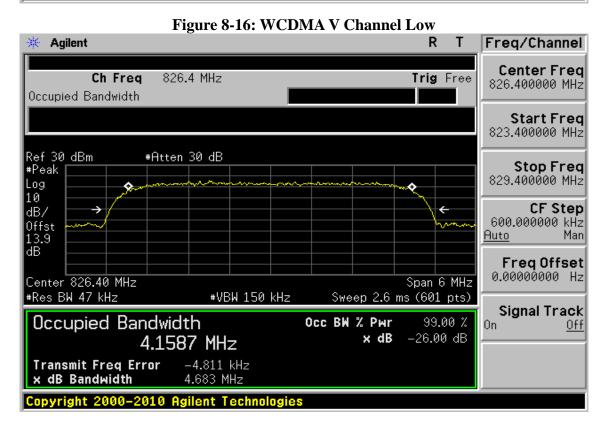


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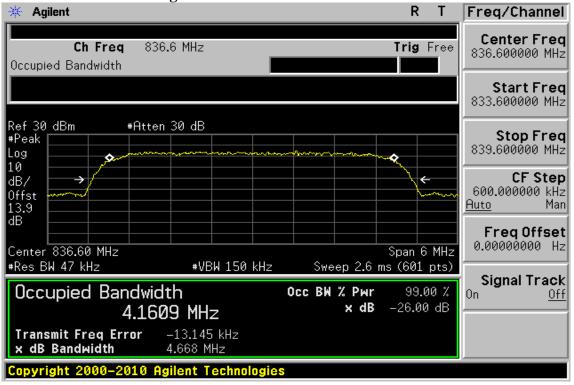


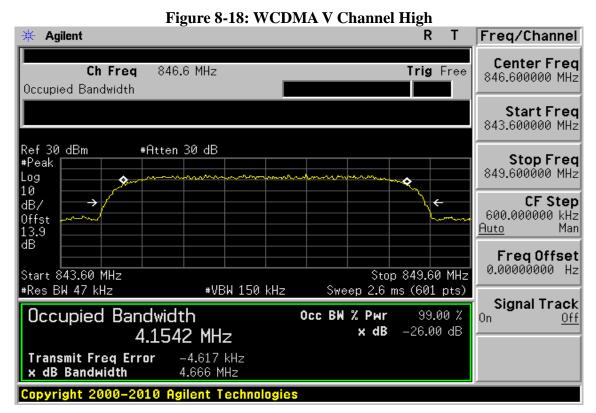




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Figure 8-17: WCDMA V Channel Mid

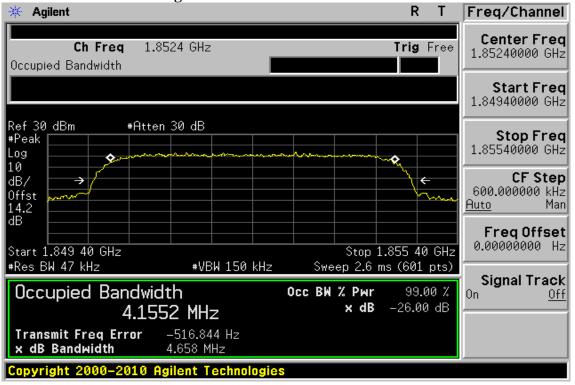


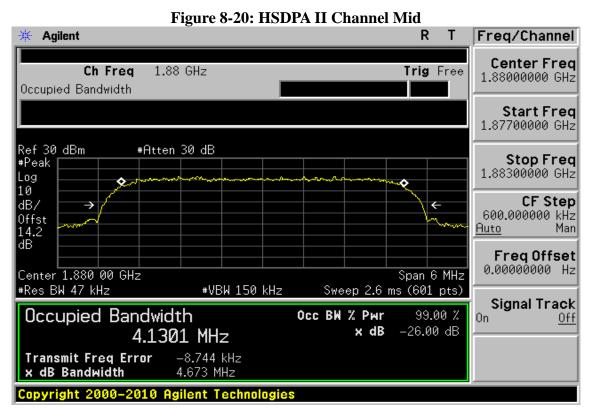


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Figure 8-19: HSDPA II Channel Low

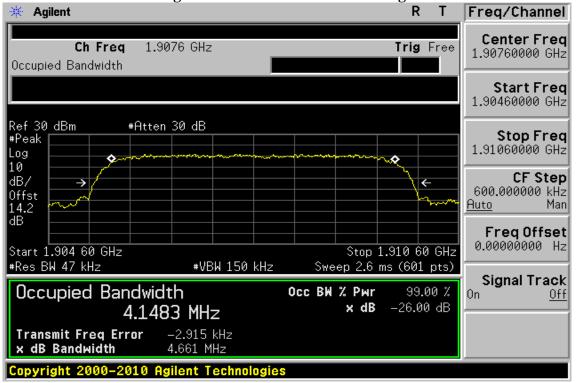


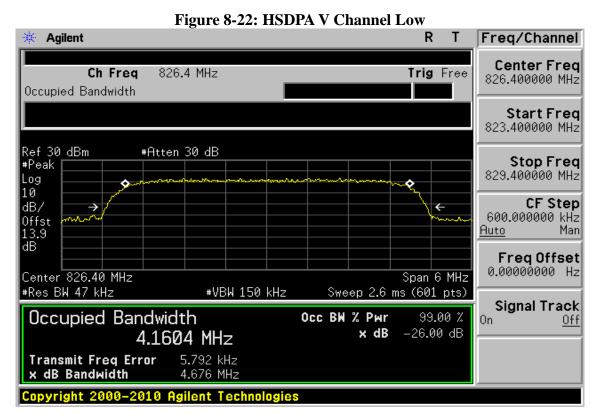


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Figure 8-21: HSDPA II Channel High





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Transmit Freq Error

x dB Bandwidth

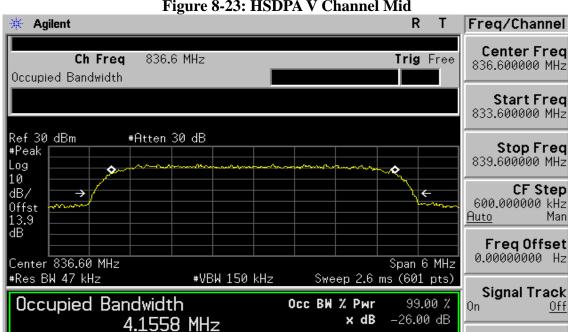
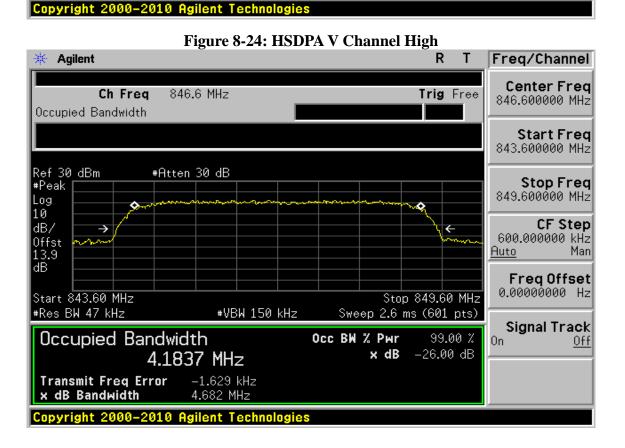


Figure 8-23: HSDPA V Channel Mid

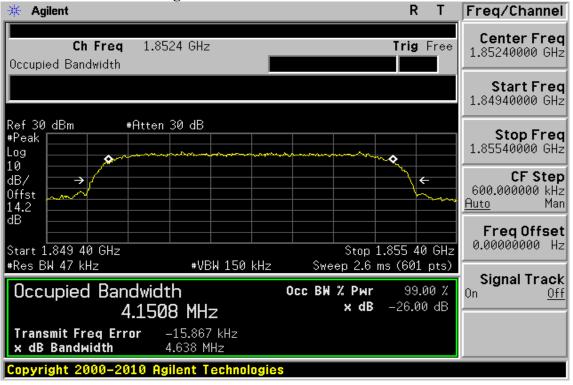


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-6.174 kHz

4.669 MHz

Figure 8-25: HSUPA II Channel Low



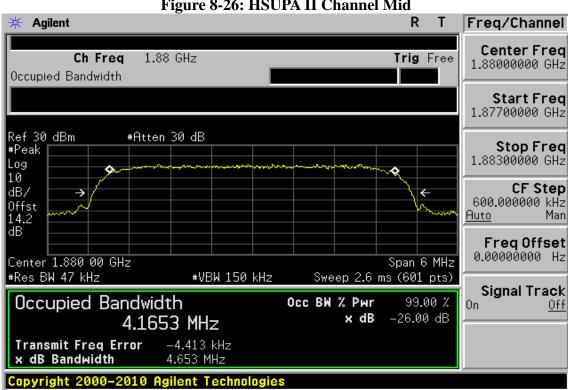
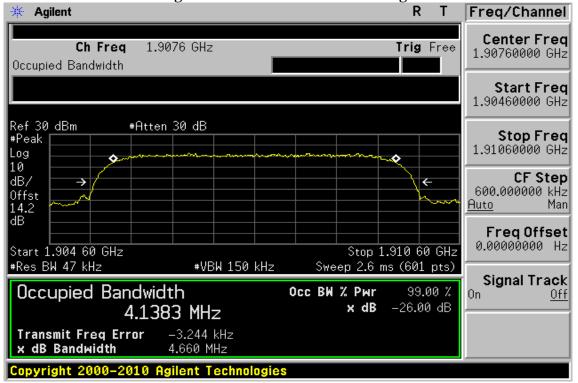


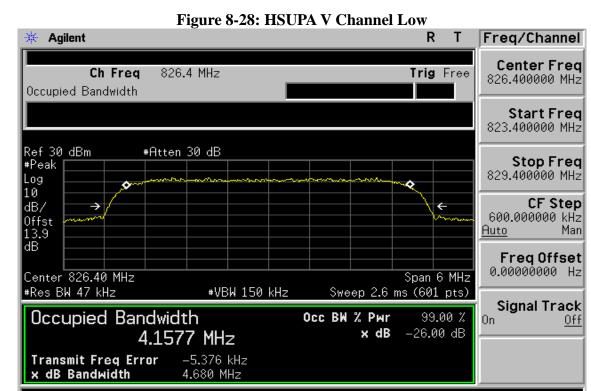
Figure 8-26: HSUPA II Channel Mid

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Figure 8-27: HSUPA II Channel High

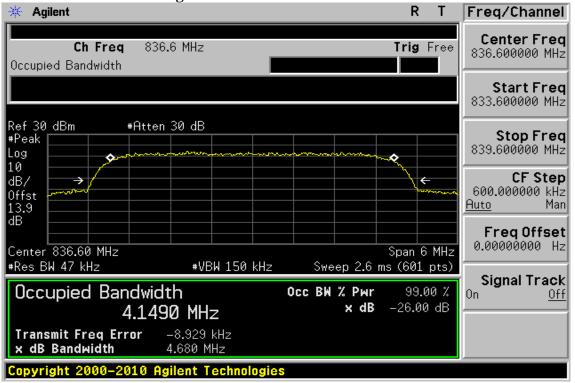


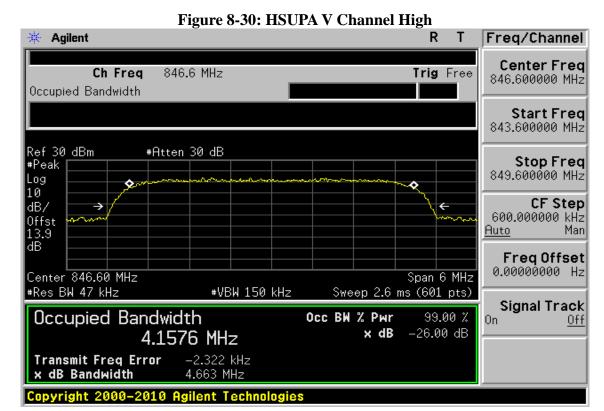


#### Adilent vriaht Technologies

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Figure 8-29: HSUPA V Channel Mid





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# 9. OUT OF BAND EMISSION AT ANTENNA TERMINALS

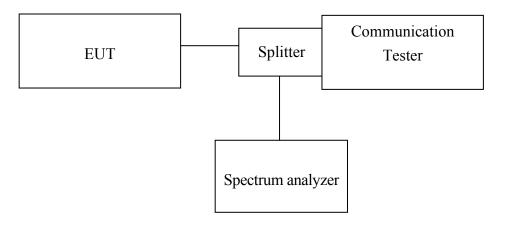
# 9.1. Standard Applicable:

According to FCC §2.1051.

FCC \$22.917(a), \$24.238(a) 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).

# **9.2.** Test SET-UP:

# Out of band emission



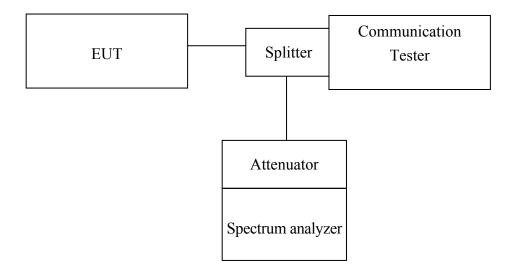
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# **Band Edge**



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# 9.3. Measurement Procedure:

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

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

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

# **Conducted Emission:**

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

# 9.4. Measurement Equipment Used:

Refer to section 2.4 in this report

# 9.5. Measurement Result:

Refer to next pages.

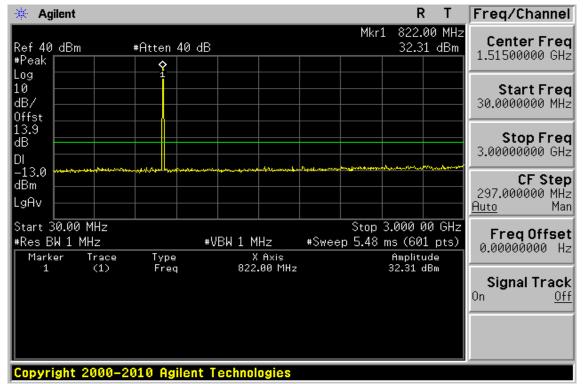
*NOTE: the occurrence of the spike on the conducted emission is the signal of the fundamental emission.* 

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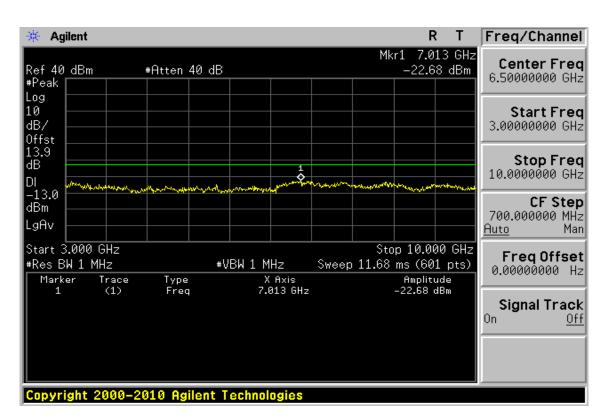
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#### Figure 9-1: Out of Band emission at antenna terminals - GSM 850 Channel Lowest

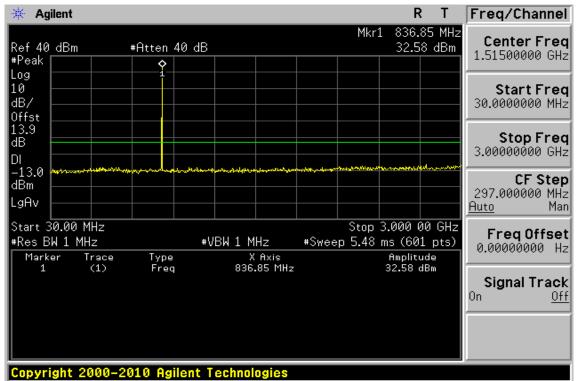


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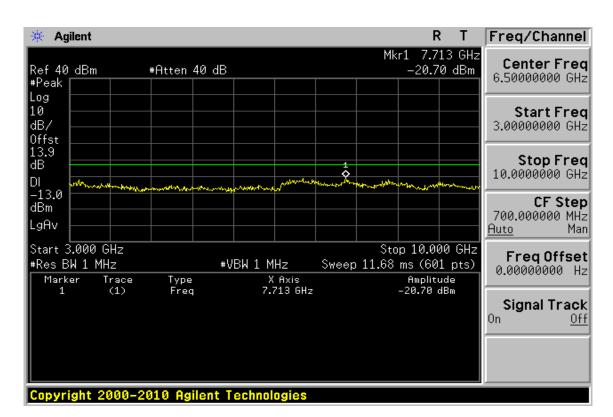
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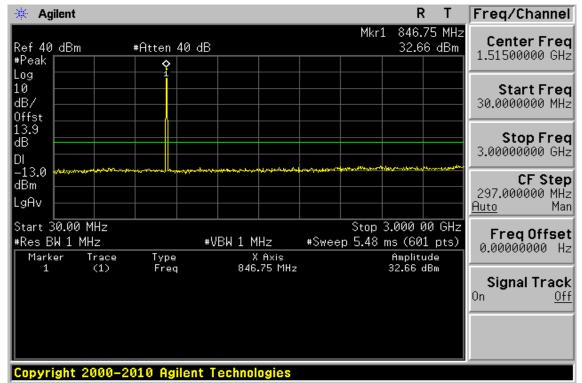
### Figure 9-2: Out of Band emission at antenna terminals - GSM 850 Channel Mid



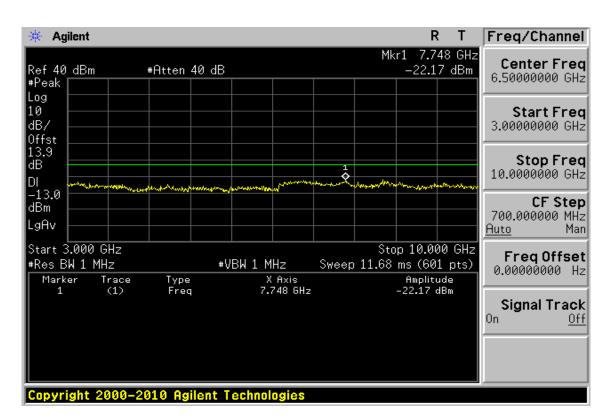
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# Figure 9-3: Out of Band emission at antenna terminals - GSM 850 Channel Highest



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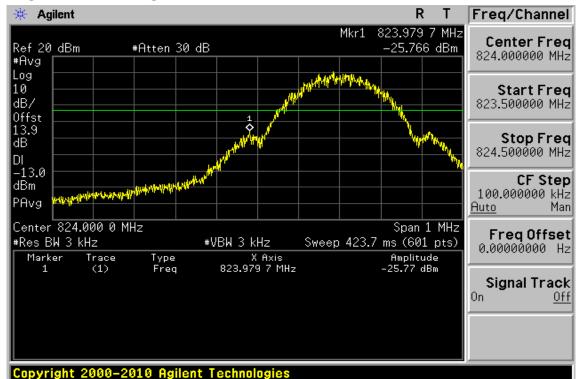
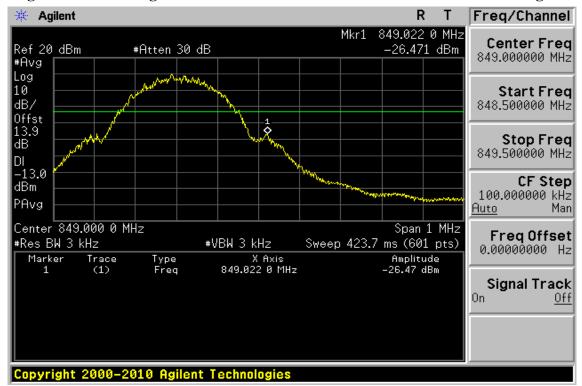


Figure 9-4: Band edge emission at antenna terminals - GSM 850 Channel Lowest

Figure 9-5: Band edge emission at antenna terminals – GSM 850 Channel Highest

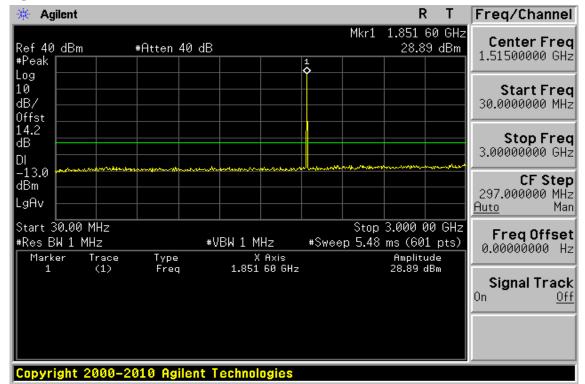


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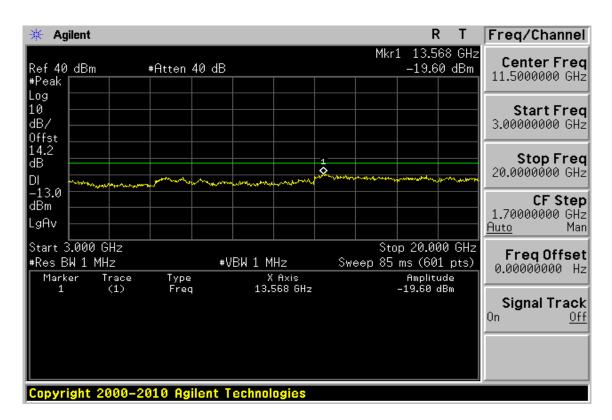
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#### Figure 9-6: Out of Band emission at antenna terminals - GSM 1900 Channel Lowest



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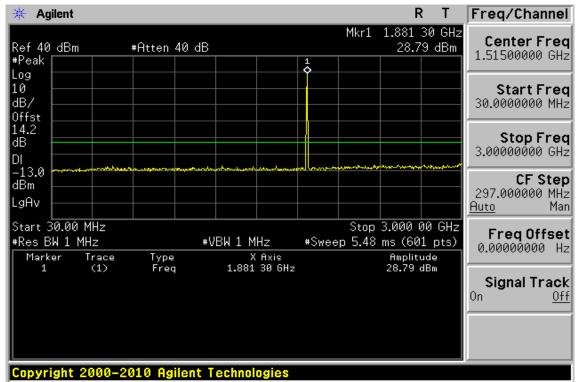
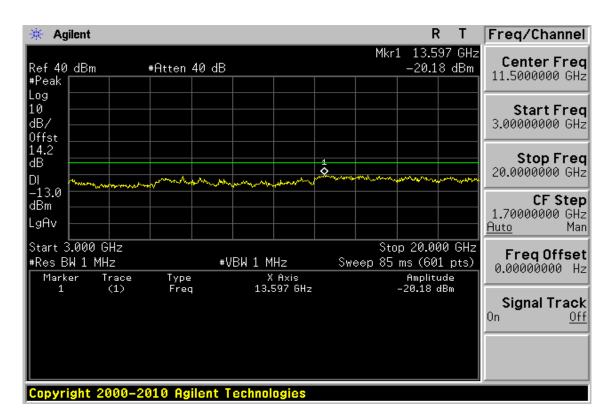


Figure 9-7: Out of Band emission at antenna terminals - GSM 1900 Channel Mid

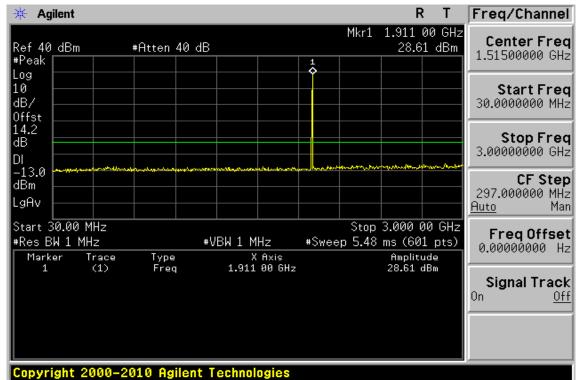


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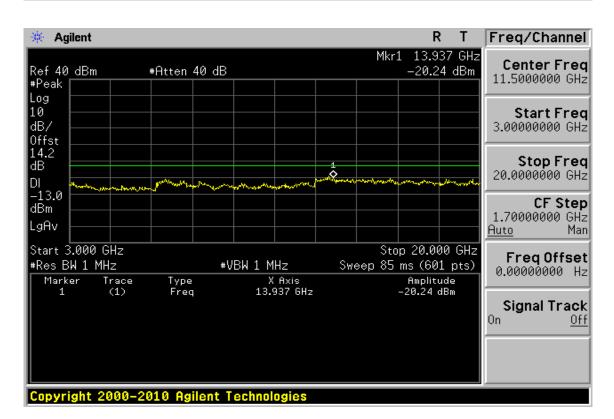
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# Figure 9-8: Out of Band emission at antenna terminals - GSM 1900 Channel Highest

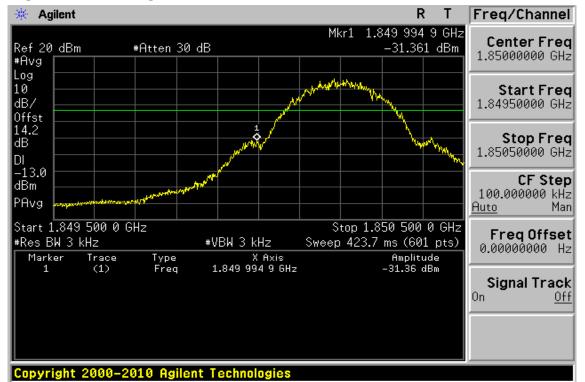


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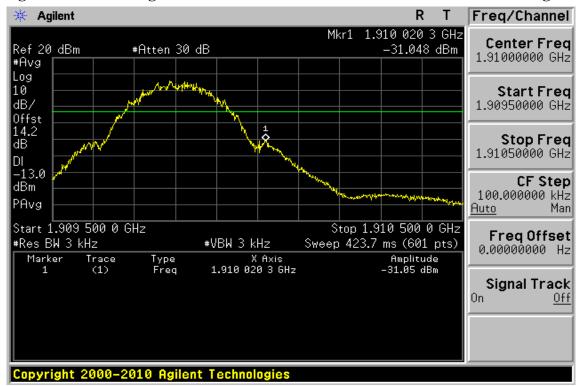
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#### Figure 9-9: Band edge emission at antenna terminals – GSM 1900 Channel Lowest

Figure 9-10: Band edge emission at antenna terminals – GSM 1900 Channel Highest

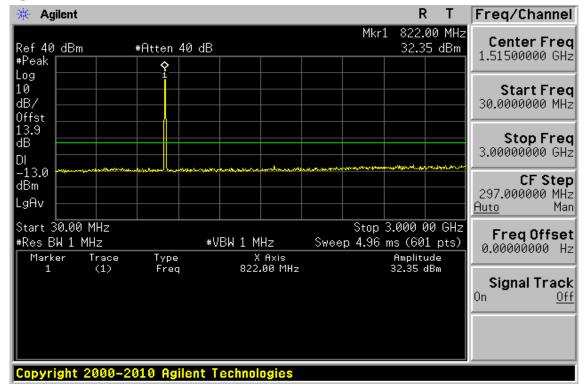


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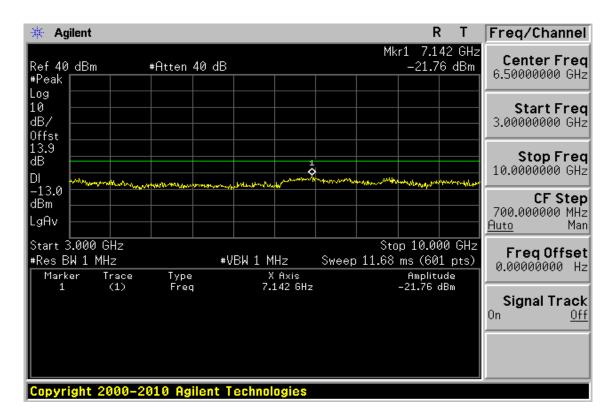
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#### Figure 9-11: Out of Band emission at antenna terminals – GPRS850 Channel Lowest

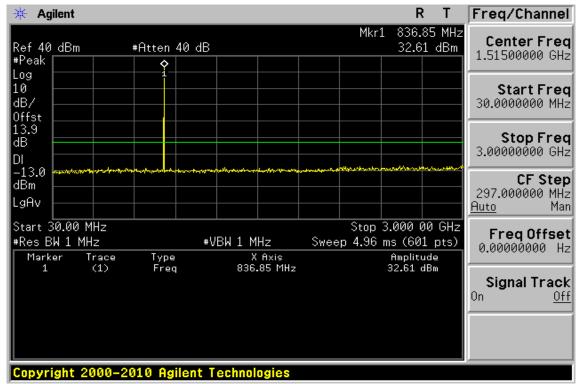


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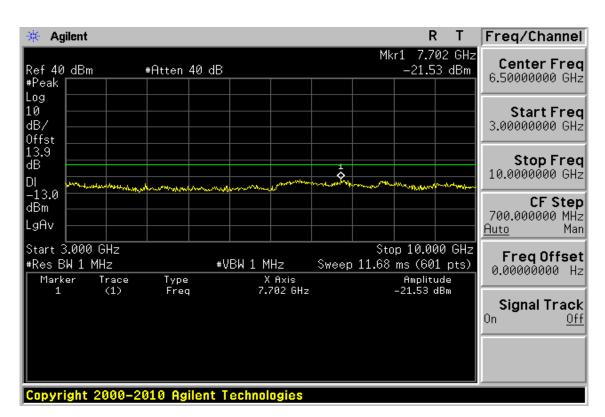
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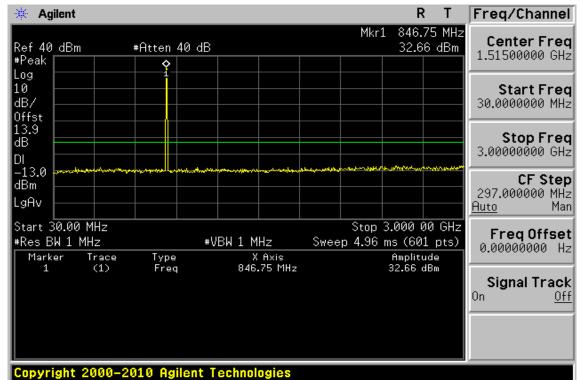


#### Figure 9-12: Out of Band emission at antenna terminals - GPRS 850 Channel Mid

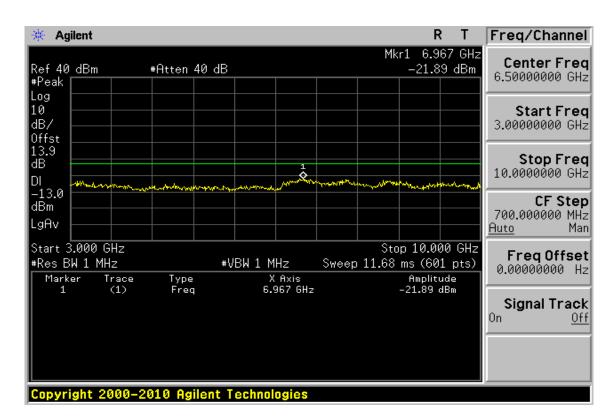


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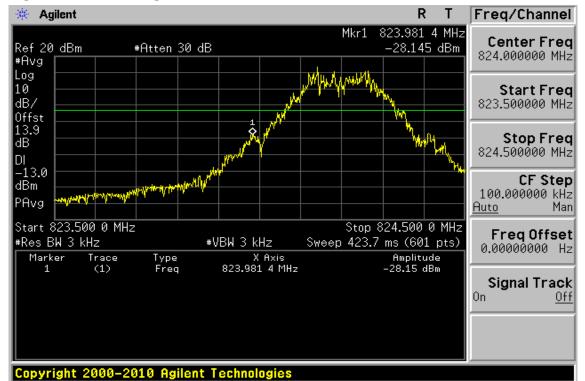


# Figure 9-13: Out of Band emission at antenna terminals - GPRS 850 Channel Highest



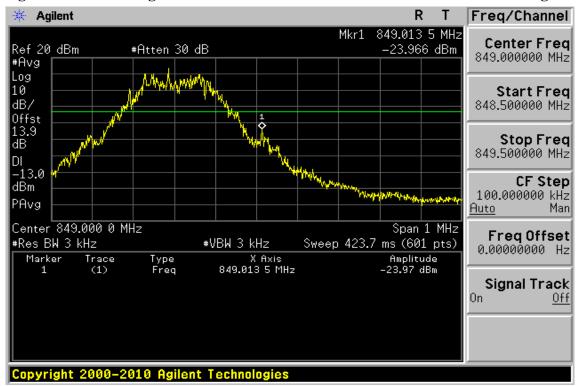
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#### Figure 9-14: Band edge emission at antenna terminals – GPRS 850 Channel Lowest

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

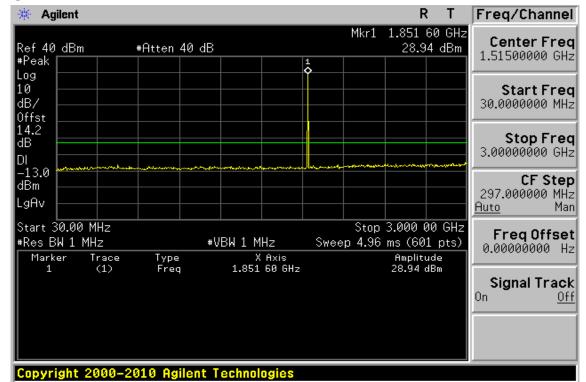


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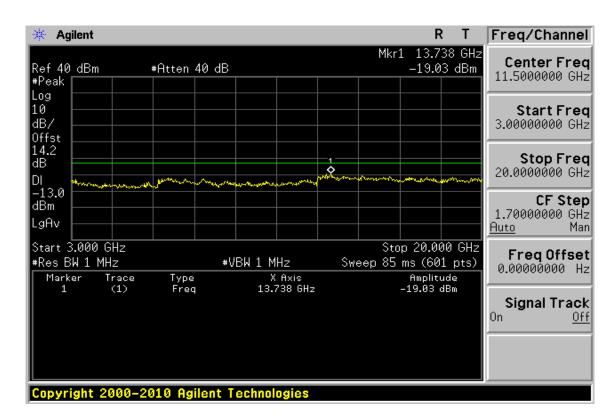
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#### Figure 9-16: Out of Band emission at antenna terminals – GPRS 1900 Channel Lowest



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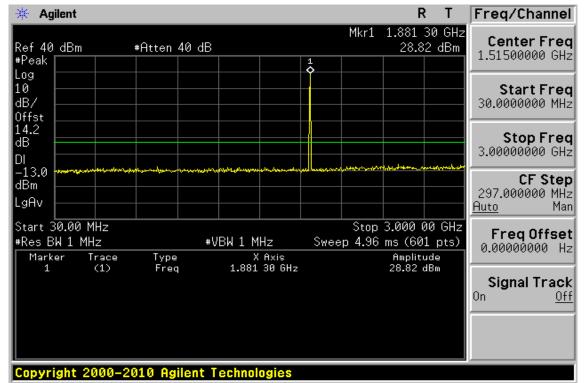
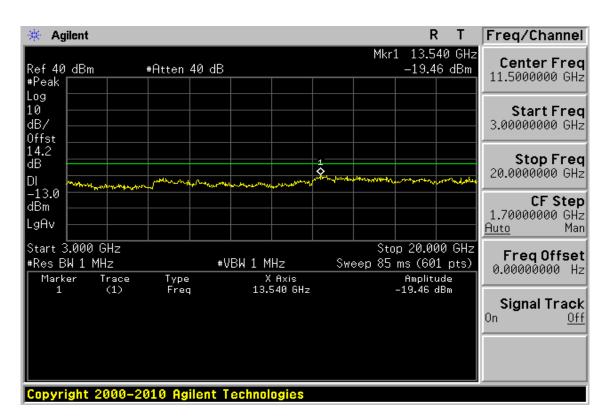
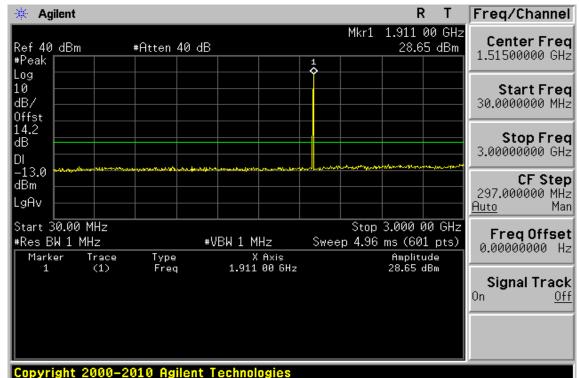


Figure 9-17: Out of Band emission at antenna terminals - GPRS 1900 Channel Mid

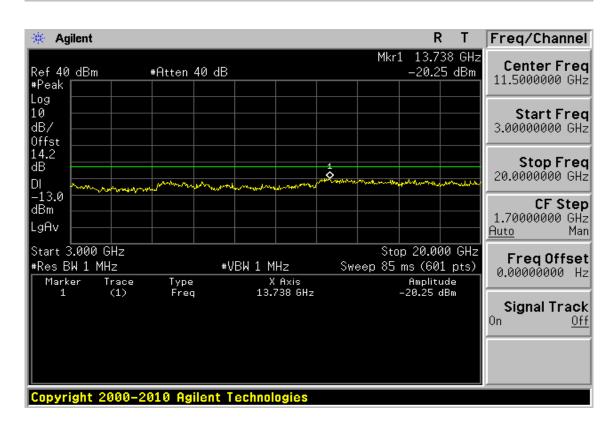


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# Figure 9-18: Out of Band emission at antenna terminals - GPRS 1900 Channel Highest



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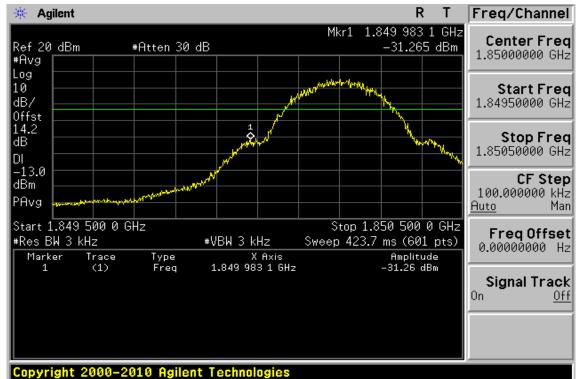


Figure 9-19: Band edge emission at antenna terminals – GPRS 1900 Channel Lowest

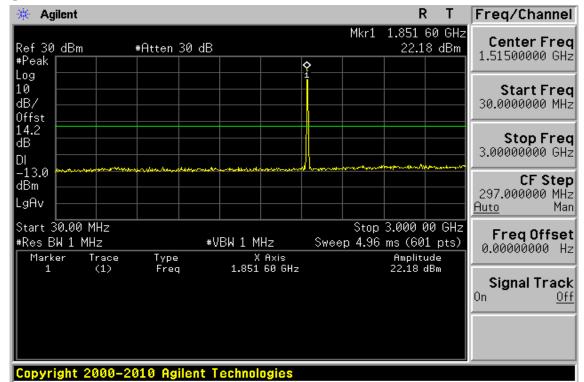
Figure 9-20: Band edge emission at antenna terminals - GPRS 1900 Channel Highest



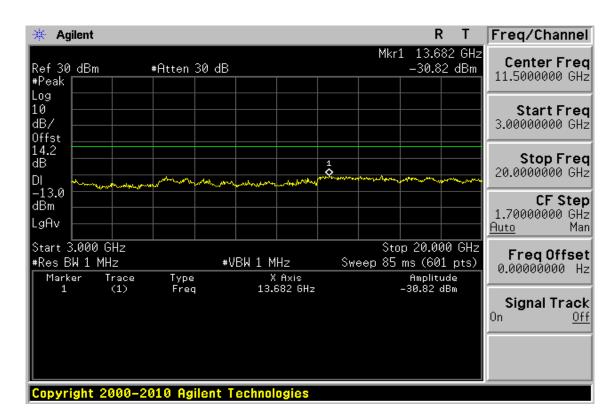
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#### Figure 9-21: Out of Band emission at antenna terminals – WCDMA II Channel Lowest



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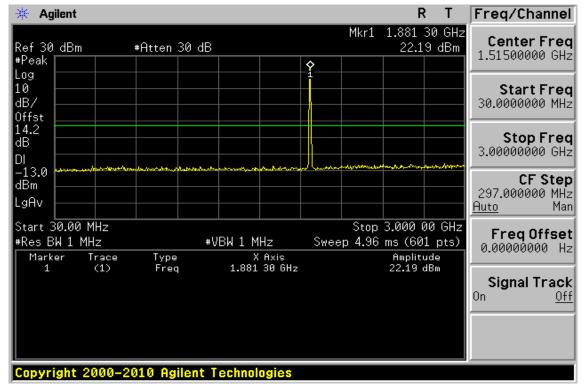
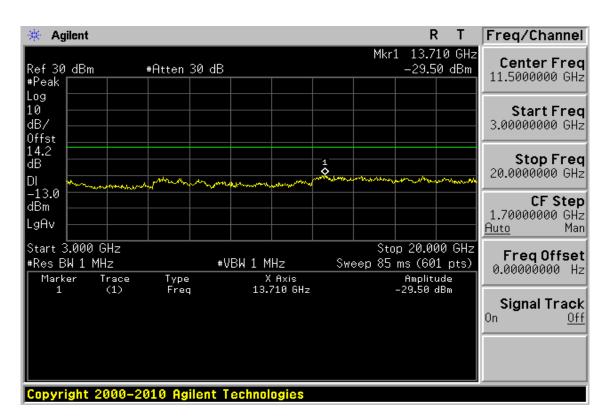


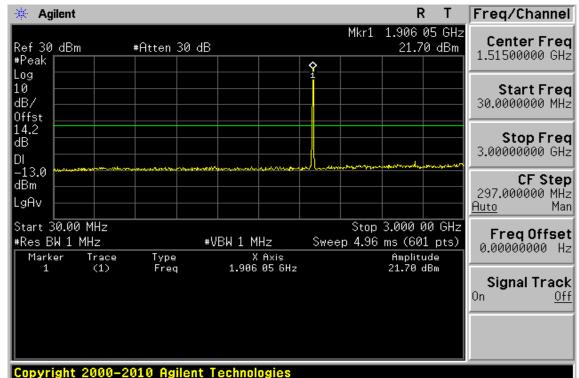
Figure 9-22: Out of Band emission at antenna terminals – WCDMA II Channel Mid



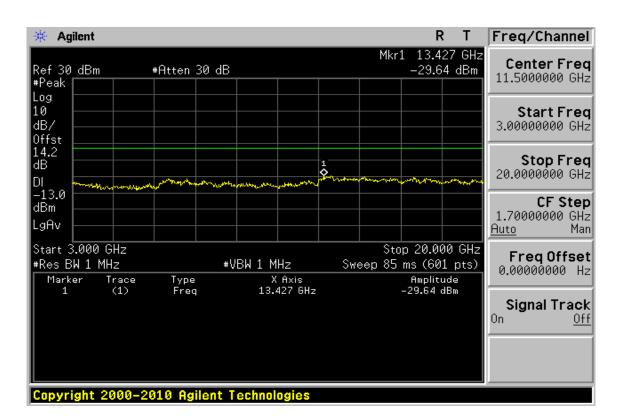
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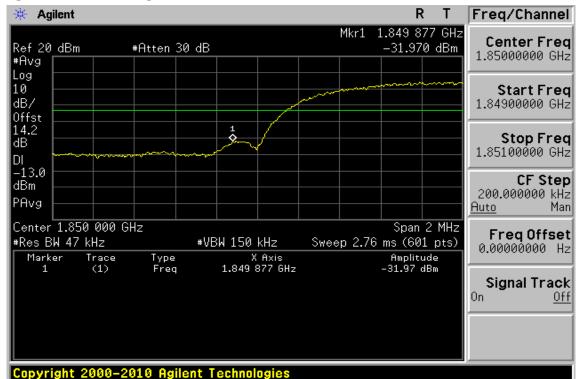
# Figure 9-23: Out of Band emission at antenna terminals - WCDMA II Channel Highest



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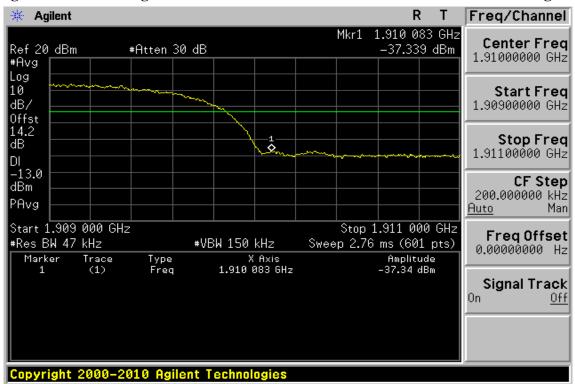
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### Figure 9-24: Band edge emission at antenna terminals – WCDMA II Channel Lowest

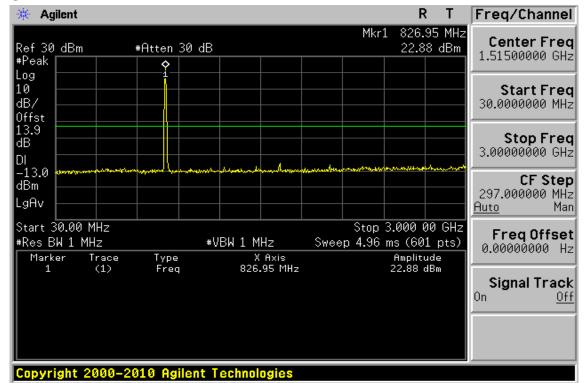
# Figure 9-25: Band edge emission at antenna terminals – WCDMA II Channel Highest



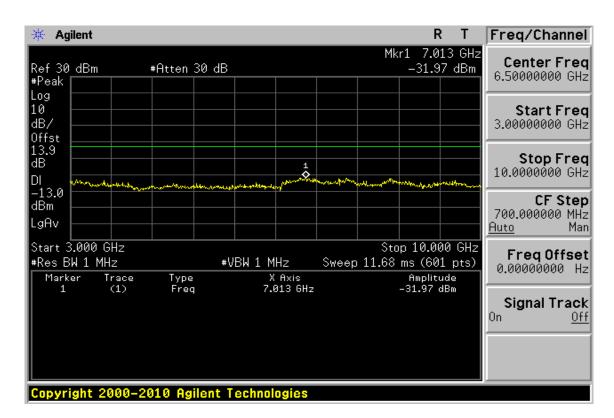
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#### Figure 9-26: Out of Band emission at antenna terminals – WCDMA V Channel Lowest

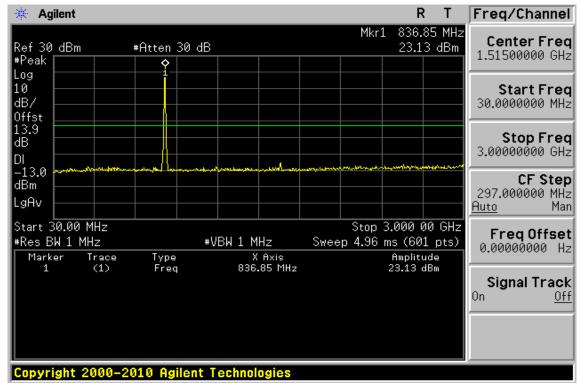


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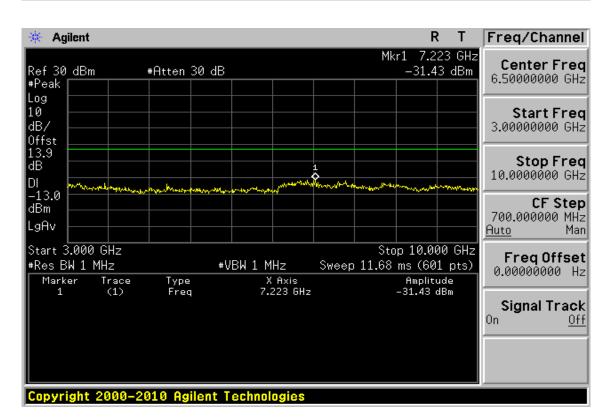
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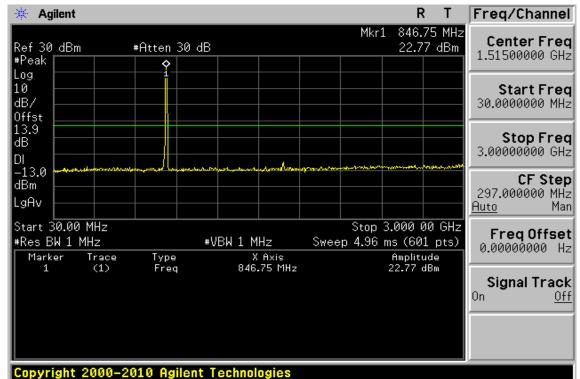
#### Figure 9-27: Out of Band emission at antenna terminals - WCDMA V Channel Mid



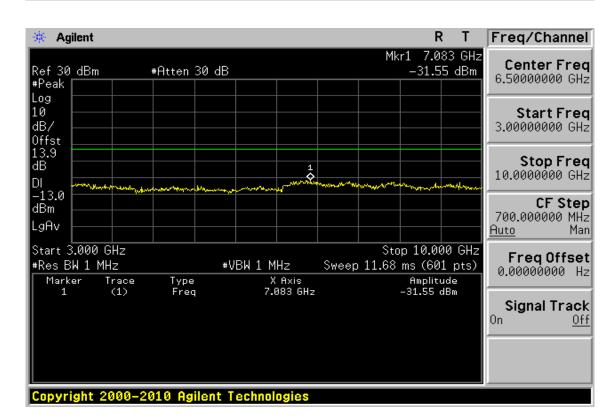
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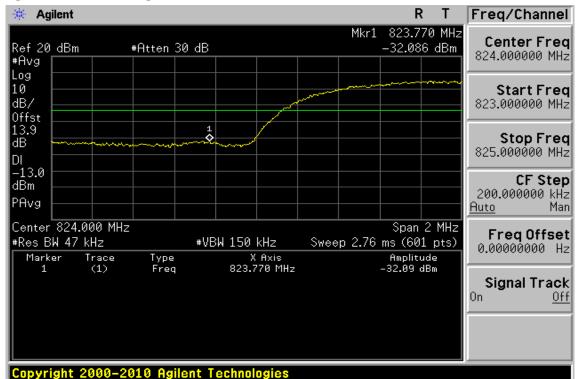
#### Figure 9-28: Out of Band emission at antenna terminals - WCDMA V Channel Highest



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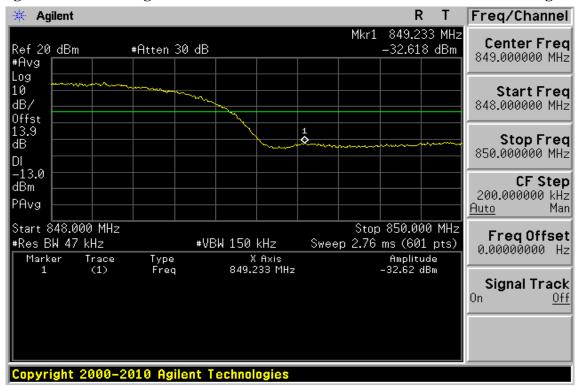
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### Figure 9-29: Band edge emission at antenna terminals – WCDMA V Channel Lowest

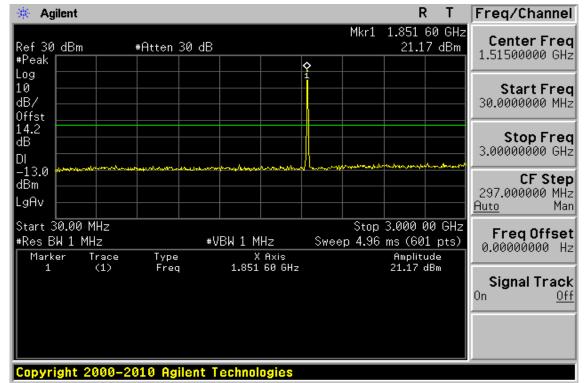
Figure 9-30: Band edge emission at antenna terminals – WCDMA V Channel Highest



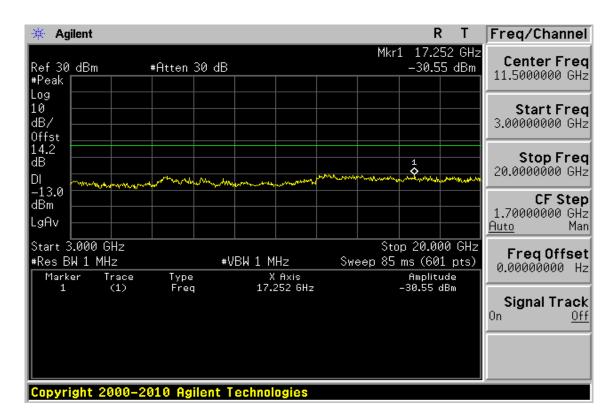
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#### Figure 9-31: Out of Band emission at antenna terminals – HSDPA II Channel Lowest

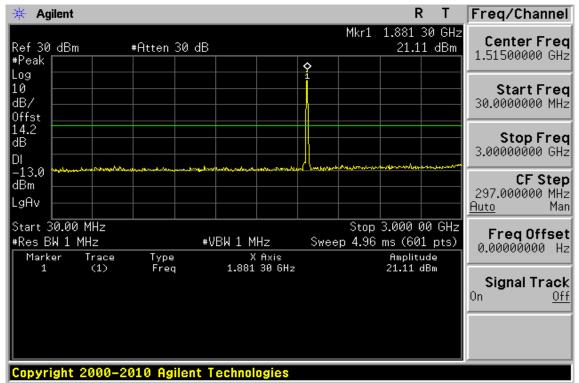


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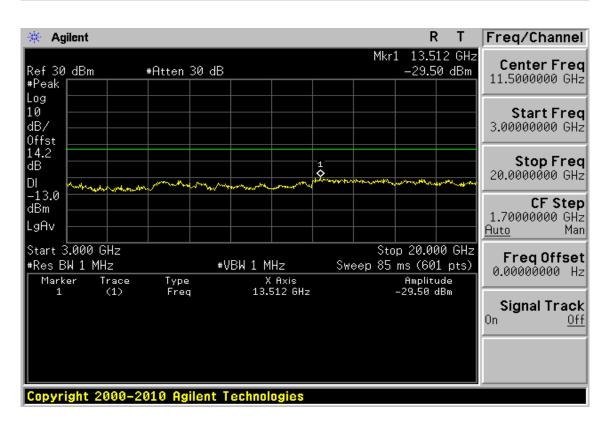
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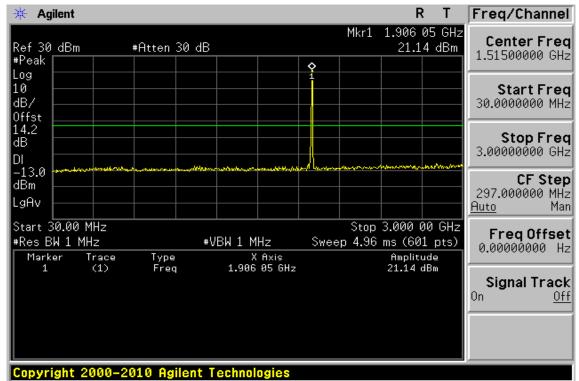
### Figure 9-32: Out of Band emission at antenna terminals - HSDPA II Channel Mid



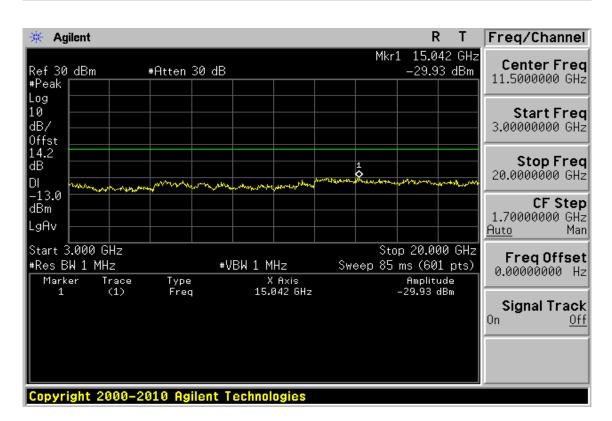
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# Figure 9-33: Out of Band emission at antenna terminals – HSDPA II Channel Highest



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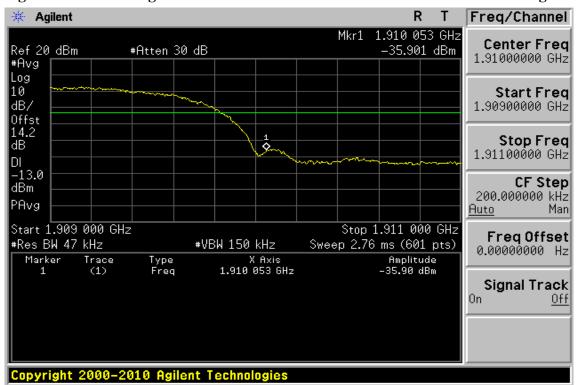
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Figure 9-34: Band edge emission at antenna terminals – HSDPA II Channel Lowest

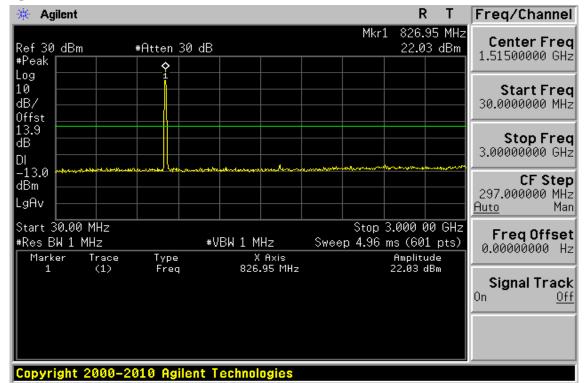
#### Figure 9-35: Band edge emission at antenna terminals – HSUPA II Channel Highest



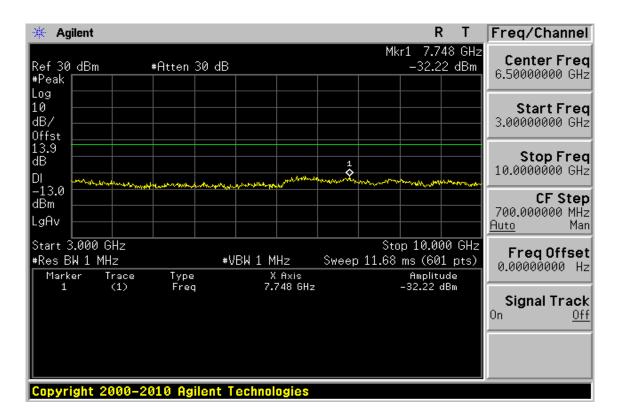
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#### Figure 9-36: Out of Band emission at antenna terminals – HSDPA V Channel Lowest

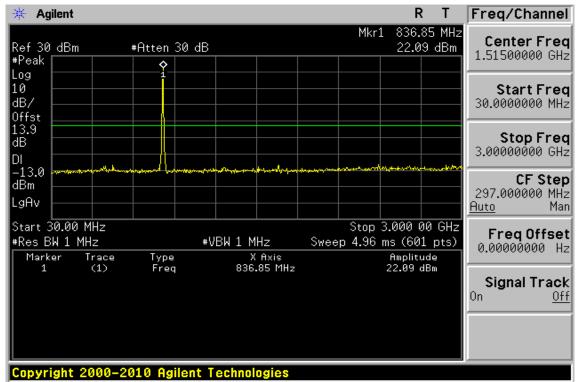


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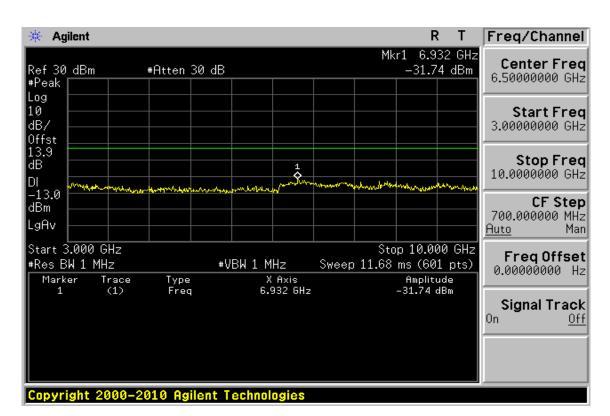
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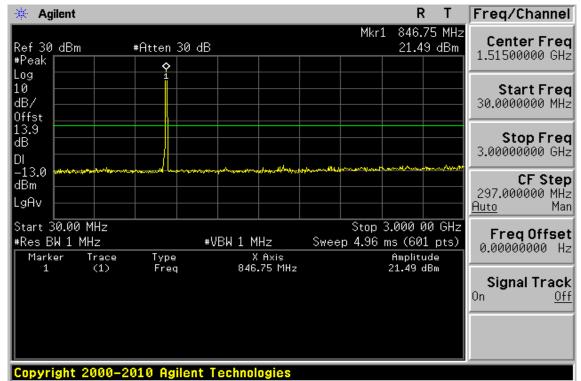
#### Figure 9-37: Out of Band emission at antenna terminals – HSDPA V Channel Mid



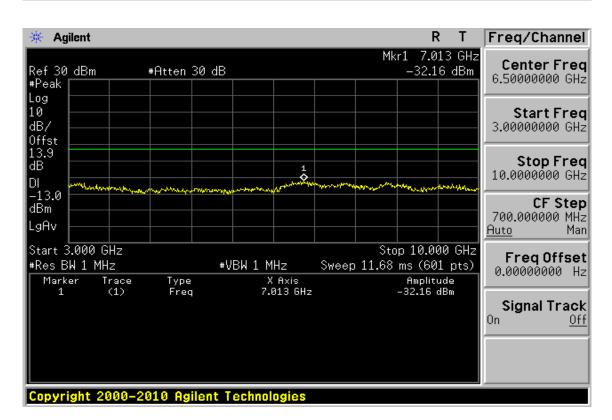
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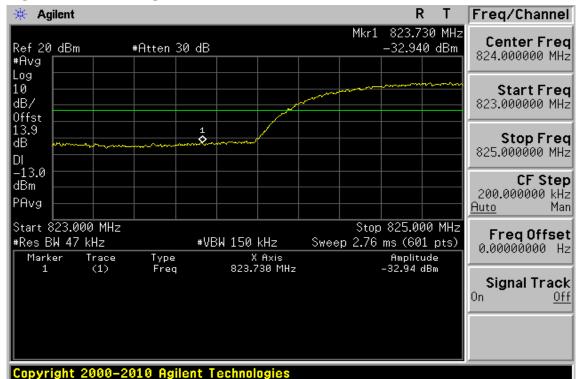
### Figure 9-38: Out of Band emission at antenna terminals – HSDPA V Channel Highest



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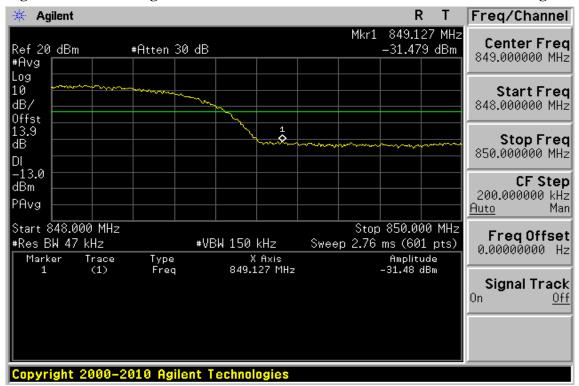
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#### Figure 9-39: Band edge emission at antenna terminals – HSDPA V Channel Lowest

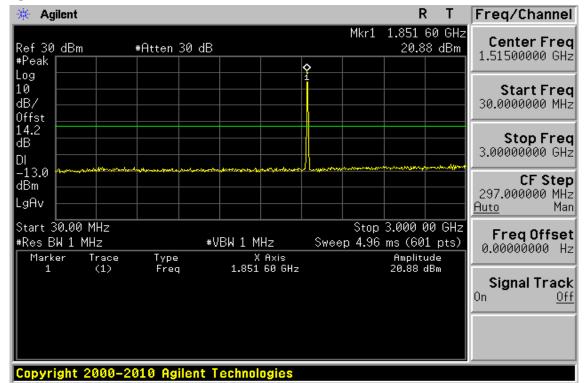
Figure 9-40: Band edge emission at antenna terminals – HSDPA V Channel Highest



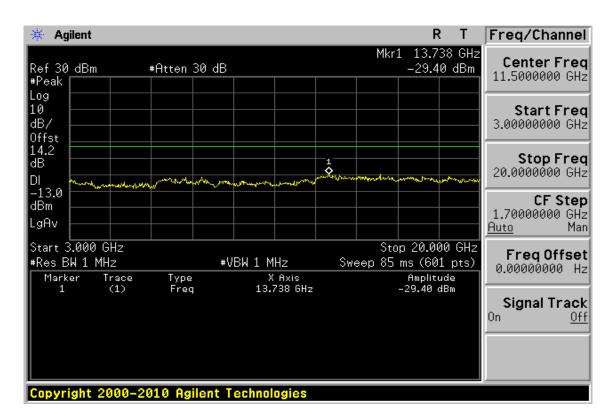
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#### Figure 9-41: Out of Band emission at antenna terminals – HSUPA II Channel Lowest

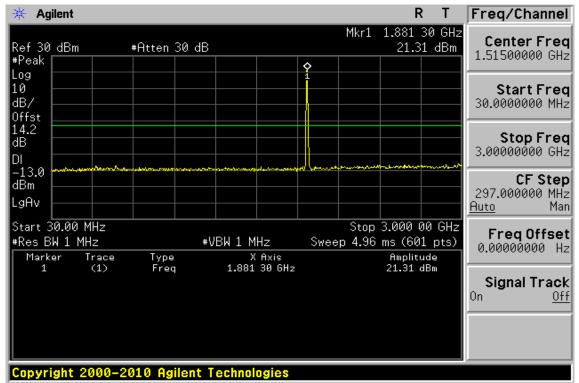


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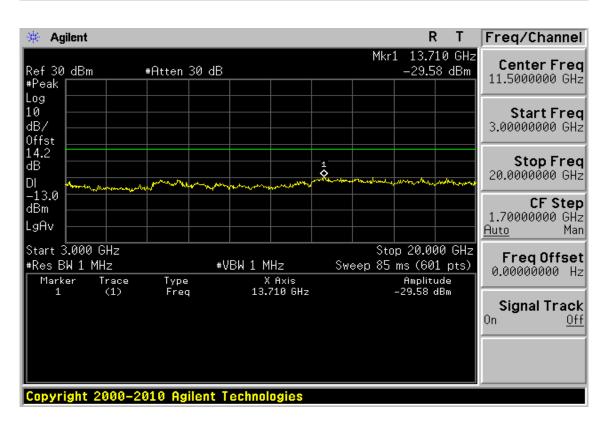
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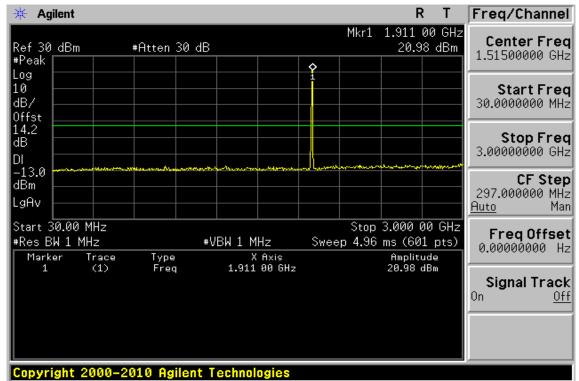
### Figure 9-42: Out of Band emission at antenna terminals – HSUPA II Channel Mid



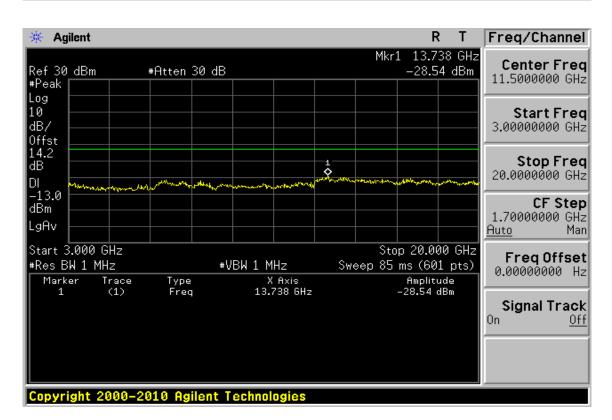
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# Figure 9-43: Out of Band emission at antenna terminals – HSUPA II Channel Highest



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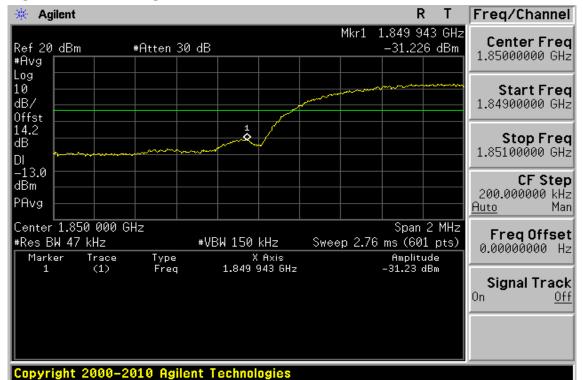
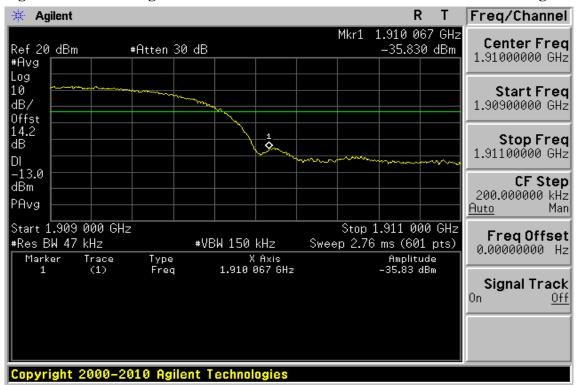


Figure 9-44: Band edge emission at antenna terminals – HSUPA II Channel Lowest

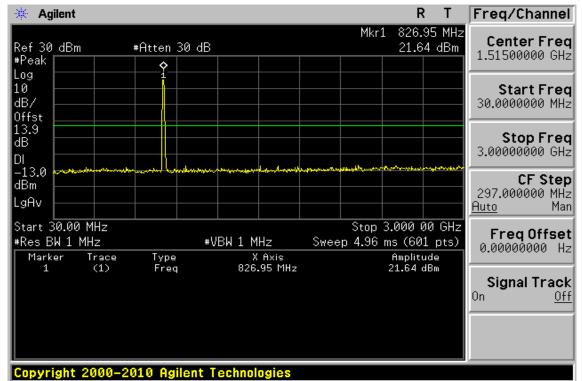
### Figure 9-45: Band edge emission at antenna terminals – HSUPA II Channel Highest



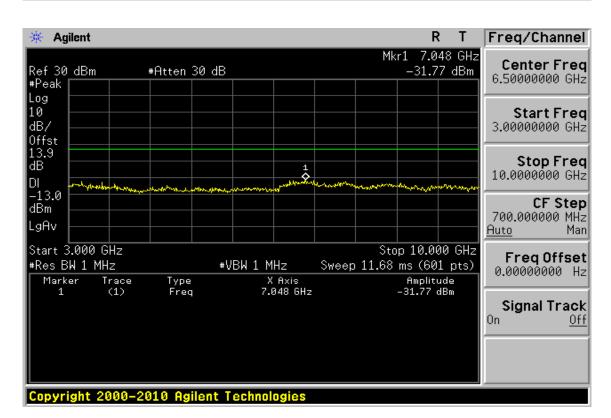
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Onless other was stated are results and the art report for the form of the state are results and the state are results are results and the state are results tronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="http://www.sgs.com/terms-e-document.htm">www.sgs.com/terms-e-document.htm</a>. Attention is frawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.





#### Figure 9-46: Out of Band emission at antenna terminals - HSUPA V Channel Lowest

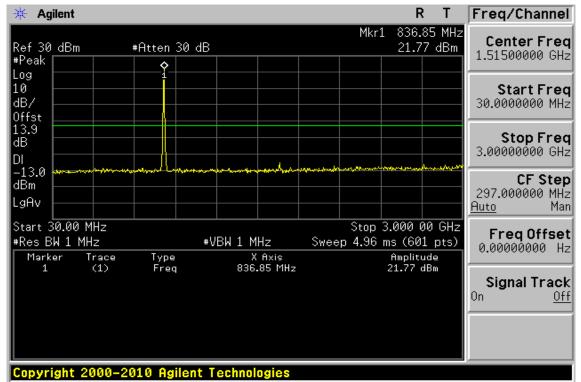


Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only

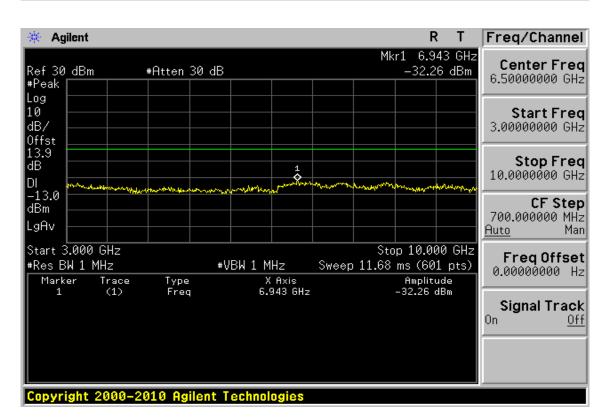
Weif So that we stated the results and the state of the Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

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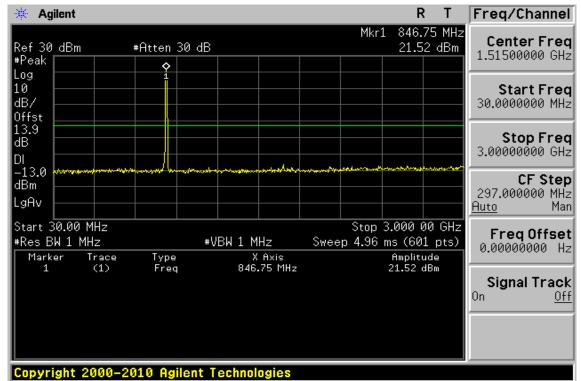
#### Figure 9-47: Out of Band emission at antenna terminals – HSUPA V Channel Mid



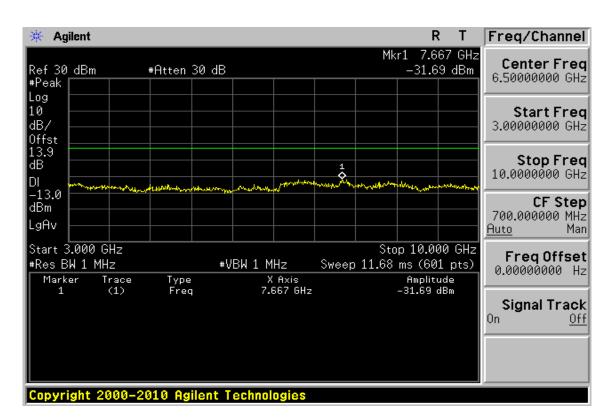
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only

Weif So that we stated the results and the state of the Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



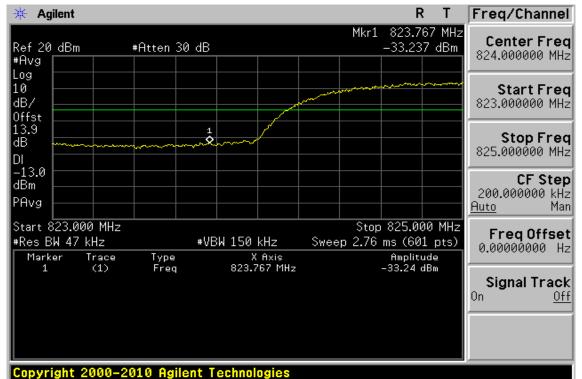


# Figure 9-48: Out of Band emission at antenna terminals – HSUPA V Channel Highest



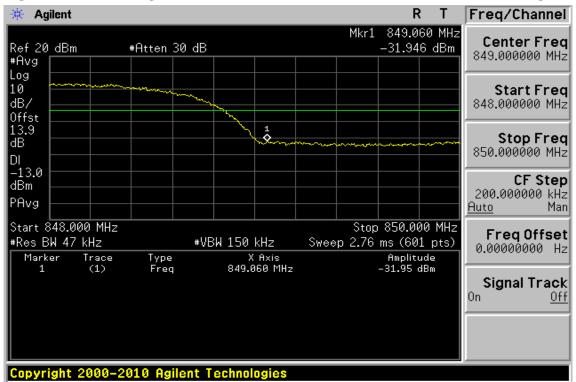
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#### Figure 9-49: Band edge emission at antenna terminals – HSUPA V Channel Lowest

#### Figure 9-50: Band edge emission at antenna terminals – HSUPA V Channel Highest



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only

Onless other was stated are results and the art report for the form of the state are results and the state are results are results and the state are results tronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="http://www.sgs.com/terms-e-document.htm">www.sgs.com/terms-e-document.htm</a>. Attention is frawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



# **10. FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT**

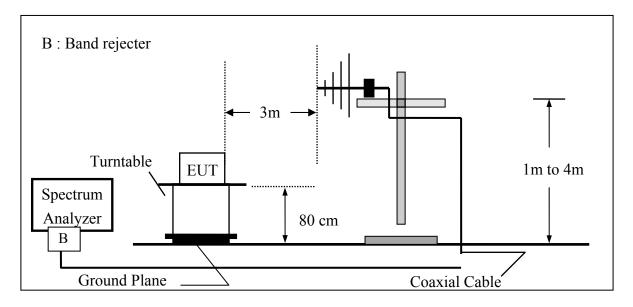
# **10.1. Standard Applicable:**

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).

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

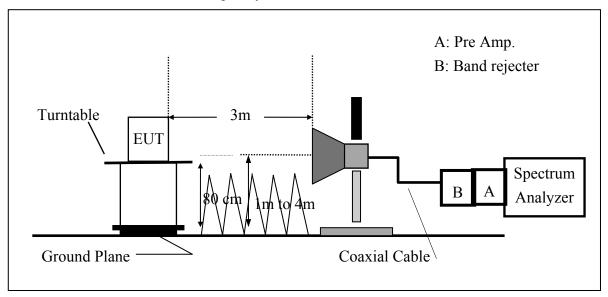
Radiated Emission Test Set-Up, Frequency Below 1000MHz



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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Radiated Emission Test Set-UP Frequency Over 1 GHz

### **10.3. 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 frequencies (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= S.G. output (dBm) + Antenna Gain (dBd) – Cable Loss (dB)

EIRP = S.G. output (dBm) + Antenna Gain (dBi) – Cable Loss (dB)

### 10.4. Measurement Equipment Used:

Refer to section 2.4 in this report

# **10.5. Measurement Result:**

Refer to attach tabular data sheets.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。



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Radiated S	purious Emis		nent Result: GPI	RS 850 Mode				
Operation Band		:GPRS 850	Test Date			:2014-05-08		
ARFCN		:CH 128	Temp./Humi.			:23 deg_C / 65 RH		
Fundamental Frequency		:824.2 MHz	Eng	gineer		:Curry		
Operation M	lode	:TX LOW						
EUT Pol.		:H Plam	Me	asurement Ante	nna Pol.	:VERTICAL		
Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin	
I			Output Level	Gain	Loss		U	
MII-		1D	-			4D	ЧĿ	
MHz	F/H/E/S	dBm	dBm	dBd	dB	dBm	dB	
38.73	S	-51.97	-36.73	-14.44	-0.80	-13.00	-38.97	
254.07	S	-69.93	-71.71	3.50	-1.72	-13.00	-56.93	
338.46	S	-66.85	-68.94	4.04	-1.95	-13.00	-53.85	
465.53	S	-69.34	-70.69	3.61	-2.26	-13.00	-56.34	
693.48	S	-66.19	-67.34	3.89	-2.73	-13.00	-53.19	
773.99	S	-63.34	-64.25	3.81	-2.90	-13.00	-50.34	
1648.40	Н	-29.02	-28.15	3.54	-4.42	-13.00	-16.02	
2472.60	Н	-37.79	-35.99	3.65	-5.45	-13.00	-24.79	
3296.80	Н	-42.32	-41.41	5.51	-6.42	-13.00	-29.32	
4121.00	Н	-52.61	-52.55	7.10	-7.16	-13.00	-39.61	
4945.20	Н							
5769.40	Н	-46.34	-45.97	8.20	-8.57	-13.00	-33.34	
6593.60	Н	-39.65	-39.30	8.81	-9.16	-13.00	-26.65	
7417.80	Н	-47.58	-47.67	9.89	-9.80	-13.00	-34.58	
8242.00	Н	-46.26	-46.54	10.60	-10.32	-13.00	-33.26	

Dedicted Sources Emission Measurement Desults CDDS 950 Mede

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

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

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

"---": denotes Noise Floor.



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Operation Band ARFCN Fundamental Frequency Operation Mode		:GPRS 850 :CH 128 :824.2 MHz :TX LOW	Test Date Temp./Humi. Engineer			:2014-05-08 :23 deg_C / 65 RH :Curry	
EUT Pol.		:H Plam	Measurement Antenna Pol.			:HORIZON	ΓAL
Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
			Output Level	Gain	Loss		
MHz	F/H/E/S	dBm	dBm	dBd	dB	dBm	dB
40.67	S	-66.47	-51.49	-14.16	-0.81	-13.00	-53.47
280.26	S	-68.33	-69.84	3.32	-1.81	-13.00	-55.33
290.93	S	-67.32	-68.93	3.45	-1.84	-13.00	-54.32
523.73	S	-70.70	-72.11	3.82	-2.42	-13.00	-57.70
699.30	S	-65.21	-66.35	3.88	-2.74	-13.00	-52.21
773.99	S	-62.17	-63.08	3.81	-2.90	-13.00	-49.17
1648.40	Н	-34.17	-33.30	3.54	-4.42	-13.00	-21.17
2472.60	Н	-40.09	-38.29	3.65	-5.45	-13.00	-27.09
3296.80	Н	-44.69	-43.79	5.51	-6.42	-13.00	-31.69
4121.00	Н	-48.88	-48.81	7.10	-7.16	-13.00	-35.88
4945.20	Н						
5769.40	Н	-44.32	-43.95	8.20	-8.57	-13.00	-31.32
6593.60	Н	-35.95	-35.60	8.81	-9.16	-13.00	-22.95
7417.80	Н	-43.29	-43.38	9.89	-9.80	-13.00	-30.29
8242.00	Н	-44.47	-44.75	10.60	-10.32	-13.00	-31.47

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

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

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

"---": denotes Noise Floor.



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Operation Band ARFCN Fundamental Frequency Operation Mode	:TX MID	Test Date:2014-05-08Temp./Humi.:23 deg_C / 6Engineer:CurryMeasurement Antenna Pol.:VERTICAL				65 RH
EUT Pol.	:H Plam	Me	Measurement Antenna Pol.			<u>.</u>
Freq. Note	ERP	SG	Antenna	Cable	Limit	Margin
		Output Level	Gain	Loss		
MHz F/H/E/S	dBm	dBm	dBd	dB	dBm	dB
43.58 S	-45.70	-31.14	-13.68	-0.88	-13.00	-32.70
248.25 S	-67.55	-69.28	3.43	-1.70	-13.00	-54.55
424.79 S	-68.28	-69.81	3.68	-2.15	-13.00	-55.28
468.44 S	-70.14	-71.50	3.62	-2.27	-13.00	-57.14
688.63 S	-65.96	-67.12	3.89	-2.73	-13.00	-52.96
942.77 S	-60.53	-60.84	3.63	-3.33	-13.00	-47.53
1673.20 Н	-31.39	-30.40	3.46	-4.45	-13.00	-18.39
2509.80 H	-41.05	-39.27	3.72	-5.50	-13.00	-28.05
3346.40 Н	-43.21	-42.41	5.67	-6.47	-13.00	-30.21
4183.00 H	-52.70	-52.58	7.10	-7.22	-13.00	-39.70
5019.60 H						
5856.20 H	-46.60	-46.16	8.20	-8.64	-13.00	-33.60
6692.80 H	-43.12	-42.82	8.94	-9.24	-13.00	-30.12
7529.40 Н	-45.06	-45.20	10.02	-9.87	-13.00	-32.06
8366.00 H	-51.68	-51.97	10.70	-10.40	-13.00	-38.68

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

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

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

"---": denotes Noise Floor.



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EUT Pol.   :H Plam   Measurement Antenna Pol.   :HORIZONTAL     Freq.   Note   ERP   SG Output Level   Antenna Gain   Cable Loss   Limit   Margin     44.55   S   -45.79   -31.37   -13.53   -0.90   -13.00   -32.79     236.61   S   -66.97   -68.70   3.39   -1.66   -13.00   -53.97     293.84   S   -66.73   -68.38   3.50   -1.85   -13.00   -53.73     468.44   S   -70.30   -71.66   3.62   -2.27   -13.00   -53.73     698.33   S   -66.73   -67.87   3.88   -2.74   -13.00   -53.73     953.44   S   -60.17   -60.23   3.40   -3.34   -13.00   -22.50     2509.80   H   -41.28   -39.51   3.72   -5.50   -13.00   -28.28     3346.40   H   -47.60   -46.80   5.67   -6.47   -13.00   -35.92     5019.60   H   -43.39   -42.95   8.20   -8.64   -13.00   -30.39 <tr< th=""><th colspan="2">Operation Band ARFCN Fundamental Frequency Operation Mode</th><th>:GPRS 850 :CH 190 :836.6 MHz :TX MID</th><th colspan="3">Test Date Temp./Humi. Engineer</th><th colspan="2">:2014-05-08 :23 deg_C / 65 RH :Curry</th></tr<>	Operation Band ARFCN Fundamental Frequency Operation Mode		:GPRS 850 :CH 190 :836.6 MHz :TX MID	Test Date Temp./Humi. Engineer			:2014-05-08 :23 deg_C / 65 RH :Curry		
MHz     F/H/E/S     dBm     dBm     dBd     dBd     dB     dBm     dB       44.55     S     -45.79     -31.37     -13.53     -0.90     -13.00     -32.79       236.61     S     -66.97     -68.70     3.39     -1.66     -13.00     -53.97       293.84     S     -66.73     -68.38     3.50     -1.85     -13.00     -53.73       468.44     S     -70.30     -71.66     3.62     -2.27     -13.00     -57.30       698.33     S     -66.73     -67.87     3.88     -2.74     -13.00     -53.73       953.44     S     -60.17     -60.23     3.40     -3.34     -13.00     -22.50       2509.80     H     -41.28     -39.51     3.72     -5.50     -13.00     -28.28       3346.40     H     -47.60     -46.80     5.67     -6.47     -13.00     -34.60       4183.00     H     -43.39     -42.95     8.20     -8.64     -13.00     -30.39	1	loue		Measurement Antenna Pol.			:HORIZONTAL		
MHzF/H/E/SdBmdBmdBddBdBmdB44.55S-45.79-31.37-13.53-0.90-13.00-32.79236.61S-66.97-68.703.39-1.66-13.00-53.97293.84S-66.73-68.383.50-1.85-13.00-53.73468.44S-70.30-71.663.62-2.27-13.00-57.30698.33S-66.73-67.873.88-2.74-13.00-53.73953.44S-60.17-60.233.40-3.34-13.00-47.171673.20H-35.50-34.513.46-4.45-13.00-22.502509.80H-41.28-39.513.72-5.50-13.00-28.283346.40H-47.60-46.805.67-6.47-13.00-34.604183.00H-48.92-48.807.10-7.22-13.00-35.925019.60H5856.20H-43.39-42.958.20-8.64-13.00-30.396692.80H-39.62-39.328.93-9.24-13.00-26.627529.40H-39.07-39.2210.03-9.88-13.00-26.07	Freq.	Note	ERP			Cable	Limit	Margin	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$				Output Level	Gain	Loss			
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	MHz	F/H/E/S	dBm	dBm	dBd	dB	dBm	dB	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$									
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	44.55	S	-45.79	-31.37	-13.53	-0.90	-13.00	-32.79	
468.44S-70.30-71.663.62-2.27-13.00-57.30698.33S-66.73-67.873.88-2.74-13.00-53.73953.44S-60.17-60.233.40-3.34-13.00-47.171673.20H-35.50-34.513.46-4.45-13.00-22.502509.80H-41.28-39.513.72-5.50-13.00-28.283346.40H-47.60-46.805.67-6.47-13.00-34.604183.00H-48.92-48.807.10-7.22-13.00-35.925019.60H30.396692.80H-39.62-39.328.93-9.24-13.00-26.627529.40H-39.07-39.2210.03-9.88-13.00-26.07	236.61	S	-66.97	-68.70	3.39	-1.66	-13.00	-53.97	
698.33S-66.73-67.873.88-2.74-13.00-53.73953.44S-60.17-60.233.40-3.34-13.00-47.171673.20H-35.50-34.513.46-4.45-13.00-22.502509.80H-41.28-39.513.72-5.50-13.00-28.283346.40H-47.60-46.805.67-6.47-13.00-34.604183.00H-48.92-48.807.10-7.22-13.00-35.925019.60H-43.39-42.958.20-8.64-13.00-30.396692.80H-39.62-39.328.93-9.24-13.00-26.627529.40H-39.07-39.2210.03-9.88-13.00-26.07	293.84	S	-66.73	-68.38	3.50	-1.85	-13.00	-53.73	
953.44S-60.17-60.233.40-3.34-13.00-47.171673.20H-35.50-34.513.46-4.45-13.00-22.502509.80H-41.28-39.513.72-5.50-13.00-28.283346.40H-47.60-46.805.67-6.47-13.00-34.604183.00H-48.92-48.807.10-7.22-13.00-35.925019.60H5856.20H-43.39-42.958.20-8.64-13.00-30.396692.80H-39.62-39.328.93-9.24-13.00-26.627529.40H-39.07-39.2210.03-9.88-13.00-26.07	468.44	S	-70.30	-71.66	3.62	-2.27	-13.00	-57.30	
1673.20H-35.50-34.513.46-4.45-13.00-22.502509.80H-41.28-39.513.72-5.50-13.00-28.283346.40H-47.60-46.805.67-6.47-13.00-34.604183.00H-48.92-48.807.10-7.22-13.00-35.925019.60H5856.20H-43.39-42.958.20-8.64-13.00-30.396692.80H-39.62-39.328.93-9.24-13.00-26.627529.40H-39.07-39.2210.03-9.88-13.00-26.07	698.33	S	-66.73	-67.87	3.88	-2.74	-13.00	-53.73	
2509.80H-41.28-39.513.72-5.50-13.00-28.283346.40H-47.60-46.805.67-6.47-13.00-34.604183.00H-48.92-48.807.10-7.22-13.00-35.925019.60H5856.20H-43.39-42.958.20-8.64-13.00-30.396692.80H-39.62-39.328.93-9.24-13.00-26.627529.40H-39.07-39.2210.03-9.88-13.00-26.07	953.44	S	-60.17	-60.23	3.40	-3.34	-13.00	-47.17	
3346.40H-47.60-46.805.67-6.47-13.00-34.604183.00H-48.92-48.807.10-7.22-13.00-35.925019.60H5856.20H-43.39-42.958.20-8.64-13.00-30.396692.80H-39.62-39.328.93-9.24-13.00-26.627529.40H-39.07-39.2210.03-9.88-13.00-26.07	1673.20	Н	-35.50	-34.51	3.46	-4.45	-13.00	-22.50	
4183.00H-48.92-48.807.10-7.22-13.00-35.925019.60H30.395856.20H-43.39-42.958.20-8.64-13.00-30.3930.3930.396692.80H-39.62-39.328.93-9.24-13.00-26.62 <td>2509.80</td> <td>Н</td> <td>-41.28</td> <td>-39.51</td> <td>3.72</td> <td>-5.50</td> <td>-13.00</td> <td>-28.28</td>	2509.80	Н	-41.28	-39.51	3.72	-5.50	-13.00	-28.28	
5019.60H5856.20H-43.39-42.958.20-8.64-13.00-30.396692.80H-39.62-39.328.93-9.24-13.00-26.627529.40H-39.07-39.2210.03-9.88-13.00-26.07	3346.40	Н	-47.60	-46.80	5.67	-6.47	-13.00	-34.60	
5856.20H-43.39-42.958.20-8.64-13.00-30.396692.80H-39.62-39.328.93-9.24-13.00-26.627529.40H-39.07-39.2210.03-9.88-13.00-26.07	4183.00	Н	-48.92	-48.80	7.10	-7.22	-13.00	-35.92	
6692.80H-39.62-39.328.93-9.24-13.00-26.627529.40H-39.07-39.2210.03-9.88-13.00-26.07	5019.60	Н							
7529.40 H -39.07 -39.22 10.03 -9.88 -13.00 -26.07	5856.20	Н	-43.39	-42.95	8.20	-8.64	-13.00	-30.39	
	6692.80	Н	-39.62	-39.32	8.93	-9.24	-13.00	-26.62	
8366.00 H -48.92 -49.21 10.69 -10.40 -13.00 -35.92	7529.40	Н	-39.07	-39.22	10.03	-9.88	-13.00	-26.07	
	8366.00	Н	-48.92	-49.21	10.69	-10.40	-13.00	-35.92	

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

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

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

"---": denotes Noise Floor.



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Operation Band ARFCN Fundamental Frequency Operation Mode		:GPRS 850 :CH 251 :848.8 MHz :TX HIGH	Test Date:2014-05-08Temp./Humi.:23 deg_C / 65Engineer:Curry				65 RH
EUT Pol.		:H Plam	Me	Measurement Antenna Pol.			_
Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
			Output Level	Gain	Loss		
MHz	F/H/E/S	dBm	dBm	dBd	dB	dBm	dB
44.55	S	-46.87	-32.44	-13.53	-0.90	-13.00	-33.87
236.61	S	-67.01	-68.74	3.39	-1.66	-13.00	-54.01
291.90	S	-67.09	-68.72	3.47	-1.85	-13.00	-54.09
528.58	S	-70.20	-71.60	3.84	-2.43	-13.00	-57.20
694.45	S	-66.78	-67.94	3.89	-2.73	-13.00	-53.78
942.77	S	-59.79	-60.09	3.63	-3.33	-13.00	-46.79
1697.60	Н	-33.38	-32.28	3.39	-4.49	-13.00	-20.38
2546.40	Н	-40.21	-38.46	3.79	-5.54	-13.00	-27.21
3395.20	Н	-44.12	-43.40	5.80	-6.52	-13.00	-31.12
4244.00	Н	-55.10	-54.94	7.10	-7.27	-13.00	-42.10
5092.80	Н						
5941.60	Н	-50.81	-50.31	8.20	-8.71	-13.00	-37.81
6790.40	Н	-42.25	-41.99	9.05	-9.31	-13.00	-29.25
7639.20	Н	-43.08	-43.25	10.12	-9.94	-13.00	-30.08
8488.00	Н	-51.71	-52.02	10.79	-10.48	-13.00	-38.71

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

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

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

"---": denotes Noise Floor.



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Operation Band ARFCN Fundamental Frequency Operation Mode		:GPRS 850 :CH 251 :848.8 MHz :TX HIGH	Test Date Temp./Humi. Engineer			:2014-05-08 :23 deg_C / 65 RH :Curry		
EUT Pol.		:H Plam	Measurement Antenna Pol.			:HORIZONTAL		
Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin	
			Output Level	Gain	Loss			
MHz	F/H/E/S	dBm	dBm	dBd	dB	dBm	dB	
44.55	S	-46.75	-32.32	-13.53	-0.90	-13.00	-33.75	
248.25	S	-67.29	-69.02	3.43	-1.70	-13.00	-54.29	
294.81	S	-67.37	-69.04	3.52	-1.85	-13.00	-54.37	
468.44	S	-70.48	-71.84	3.62	-2.27	-13.00	-57.48	
700.27	S	-66.26	-67.40	3.88	-2.74	-13.00	-53.26	
942.77	S	-58.80	-59.11	3.63	-3.33	-13.00	-45.80	
1697.60	Н	-37.69	-36.59	3.39	-4.49	-13.00	-24.69	
2546.40	Н	-39.48	-37.73	3.79	-5.54	-13.00	-26.48	
3395.20	Н	-51.84	-51.13	5.80	-6.52	-13.00	-38.84	
4244.00	Н	-49.04	-48.87	7.10	-7.27	-13.00	-36.04	
5092.80	Н							
5941.60	Н	-43.61	-43.10	8.20	-8.71	-13.00	-30.61	
6790.40	Н	-41.76	-41.50	9.05	-9.31	-13.00	-28.76	
7639.20	Н	-36.64	-36.81	10.12	-9.94	-13.00	-23.64	
8488.00	Н	-47.03	-47.33	10.79	-10.48	-13.00	-34.03	

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

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

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

"---": denotes Noise Floor.



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# Radiated Spurious Emission Measurement Result: GPRS 1900 Mode

Radiated Sp	ourious Emis	sion Measurem	ent Result: G	PRS 1900 Mode				
Operation Band		:GPRS 1900	Test Date			:2014-05-08		
ARFCN		:CH 512					deg_C / 65 RH	
Fundamental Frequency		:1850.2 MHz	Engineer :Curry					
Operation M EUT Pol.	ode	:TX LOW :E2 Plam	Measurement Antenna Pol. :VERTICAL					
LUT 101.		.L2 I IuIII	14	reasurement 7 me	inia i 01.		_	
Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin	
1			Output Level		Loss		U	
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB	
	1,11,11,0	dDin .	<b>u</b> Din	QD1	uD.	<b>QD</b> III	uD	
39.70	S	-50.20	-37.23	-12.17	-0.80	-13.00	-37.20	
271.53	S	-64.89	-68.65	5.55	-1.78	-13.00	-51.89	
293.84	S	-67.01	-70.81	5.65	-1.85	-13.00	-54.01	
519.85	S	-69.42	-72.97	5.96	-2.41	-13.00	-56.42	
689.60	S	-64.38	-67.69	6.04	-2.73	-13.00	-51.38	
957.32	S	-62.94	-64.88	5.29	-3.35	-13.00	-49.94	
3700.40	Н	-46.15	-47.97	8.62	-6.80	-13.00	-33.15	
5550.60	Н	-35.95	-37.85	10.30	-8.40	-13.00	-22.95	
7400.80	Н	-29.07	-31.25	11.96	-9.78	-13.00	-16.07	
9251.00	Н							
11101.20	Н							
12951.40	Н							
14801.60	Н							

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

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

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

"---": denotes Noise Floor.

Η

Η

16651.80

18502.00



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Operation Mode EUT Pol.:TX LOW :E2 PlamMeasurement Antenna Pol.:HORIZONTALFreq.NoteEIRPSGAntennaCableLimitMargin Output LevelMHzF/H/E/SdBmdBmdBidBdBmdB	
Output Level Gain Loss	
-	
MHz F/H/E/S dBm dBm dBi dB dBm dB	
81.41 S -63.82 -61.65 -1.13 -1.03 -13.00 -50.82	
279.29 S -61.80 -65.47 5.48 -1.81 -13.00 -48.80	
295.78 S -60.65 -64.48 5.69 -1.86 -13.00 -47.65	
462.62 S -67.74 -71.24 5.75 -2.25 -13.00 -54.74	
685.72     S     -63.87     -67.20     6.05     -2.72     -13.00     -50.87	
772.05 S -62.16 -65.22 5.95 -2.89 -13.00 -49.16	
3700.40 H -55.18 -56.99 8.62 -6.80 -13.00 -42.18	
5550.60 H -44.91 -46.81 10.30 -8.40 -13.00 -31.91	
7400.80 H -34.53 -36.71 11.96 -9.78 -13.00 -21.53	
9251.00 Н	
11101.20 Н	
12951.40 Н	
14801.60 Н	
16651.80 Н	
18502.00 Н	

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

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

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

"---": denotes Noise Floor.



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ARFCN :C Fundamental Frequency :1		:GPRS 1900 :CH 661 :1880.0 MHz :TX MID	Test Date Temp./Humi. Engineer			:2014-05-08 :23 deg_C / 65 RH :Curry		
EUT Pol.	oue	:E2 Plam	Me	asurement Ante	nna Pol.	:VERTICAL		
Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin	
			Output Level	Gain	Loss			
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB	
39.70	S	-50.28	-37.31	-12.17	-0.80	-13.00	-37.28	
280.26	S	-64.87	-68.53	5.47	-1.81	-13.00	-51.87	
291.90	S	-67.80	-71.57	5.62	-1.85	-13.00	-54.80	
536.34	S	-69.01	-72.56	6.01	-2.45	-13.00	-56.01	
696.39	S	-63.90	-67.20	6.03	-2.74	-13.00	-50.90	
941.80	S	-62.64	-65.10	5.78	-3.32	-13.00	-49.64	
3760.00	Н	-46.82	-48.70	8.74	-6.85	-13.00	-33.82	
5640.00	Н	-34.69	-36.52	10.30	-8.47	-13.00	-21.69	
7520.00	Н	-28.31	-30.56	12.12	-9.87	-13.00	-15.31	
9400.00	Н							
11280.00	Н							
13160.00	Н							
15040.00	Н							
16920.00	Н							
18800.00	Н							

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

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

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

"---": denotes Noise Floor.



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Operation Band ARFCN Fundamental Frequency Operation Mode		:GPRS 1900 :CH 661 :1880.0 MHz :TX MID	Te	Test Date Temp./Humi. Engineer			:2014-05-08 :23 deg_C / 65 RH :Curry	
EUT Pol.	ouc	:E2 Plam	М	leasurement Ante	nna Pol.	:HORIZONTAL		
Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin	
			Output Level	Gain	Loss			
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB	
81.41	S	-63.73	-61.57	-1.13	-1.03	-13.00	-50.73	
279.29	S	-62.59	-66.26	5.48	-1.81	-13.00	-49.59	
298.69	S	-60.94	-64.82	5.75	-1.87	-13.00	-47.94	
473.29	S	-67.61	-71.12	5.80	-2.28	-13.00	-54.61	
698.33	S	-64.21	-67.51	6.03	-2.74	-13.00	-51.21	
783.69	S	-63.13	-66.22	6.01	-2.92	-13.00	-50.13	
3760.00	Н	-53.93	-55.82	8.74	-6.85	-13.00	-40.93	
5640.00	Н	-44.17	-46.00	10.30	-8.47	-13.00	-31.17	
7520.00	Н	-34.84	-37.08	12.12	-9.87	-13.00	-21.84	
9400.00	Н							
11280.00	Н							
13160.00	Н							
15040.00	Н							
16920.00	Н							
18800.00	Н							

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

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

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

"---": denotes Noise Floor.



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Operation Band ARFCN Fundamental Frequency Operation Mode		:GPRS 1900 :CH 810 :1909.8 MHz :TX HIGH	810Temp./Humi.0.8 MHzEngineer				:2014-05-08 :23 deg_C / 65 RH :Curry		
EUT Pol.	oue	:E2 Plam	Μ	Measurement Antenna Pol.			:VERTICAL		
Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin		
			Output Level	Gain	Loss				
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB		
39.70	S	-49.97	-37.00	-12.17	-0.80	-13.00	-36.97		
245.34	S	-63.85	-67.72	5.56	-1.69	-13.00	-50.85		
291.90	S	-67.33	-71.10	5.62	-1.85	-13.00	-54.33		
504.33	S	-69.40	-72.96	5.92	-2.36	-13.00	-56.40		
685.72	S	-64.56	-67.88	6.05	-2.72	-13.00	-51.56		
949.56	S	-63.25	-65.69	5.78	-3.34	-13.00	-50.25		
3819.60	Н	-45.48	-47.44	8.86	-6.90	-13.00	-32.48		
5729.40	Н	-34.31	-36.07	10.30	-8.54	-13.00	-21.31		
7639.20	Н	-31.54	-33.81	12.21	-9.94	-13.00	-18.54		
9549.00	Н								
11458.80	Н								
13368.60	Н								
15278.40	Н								
17188.20	Н								
19098.00	Н								

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

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

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

"---": denotes Noise Floor.



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Operation Band ARFCN Fundamental Freque Operation Mode	:GPRS 1900 :CH 810 ncy :1909.8 MHz :TX HIGH	Т	1			:2014-05-08 :23 deg_C / 65 RH :Curry	
EUT Pol.	:E2 Plam	Ν	leasurement Ante	enna Pol.	:HORIZONTAL		
Freq. Note	e EIRP	SG	Antenna	Cable	Limit	Margin	
		Output Level	Gain	Loss			
MHz F/H/E	/S dBm	dBm	dBi	dB	dBm	dB	
80.44 S	-63.10	-60.63	-1.46	-1.01	-13.00	-50.10	
280.26 S	-61.42	-65.08	5.47	-1.81	-13.00	-48.42	
290.93 S	-60.76	-64.52	5.60	-1.84	-13.00	-47.76	
469.41 S	-68.42	-71.92	5.78	-2.27	-13.00	-55.42	
692.51 S	-64.28	-67.59	6.04	-2.73	-13.00	-51.28	
822.49 S	-62.70	-65.74	6.06	-3.02	-13.00	-49.70	
3819.60 H	-51.19	-53.15	8.86	-6.90	-13.00	-38.19	
5729.40 H	-44.40	-46.16	10.30	-8.54	-13.00	-31.40	
7639.20 Н	-35.65	-37.92	12.21	-9.94	-13.00	-22.65	
9549.00 H							
11458.80 H							
13368.60 Н							
15278.40 Н							
17188.20 H							
19098.00 H							

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

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

"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 B	and	:WCDMA B2		st Date		:2014-05-08			
ARFCN	1.5	:CH 9262	Temp./Humi.			:23 deg_C / 65 RH			
Fundamenta		:1852.4 MHz	Er	ngineer		:Curry			
Operation M EUT Pol.	lode	:TX LOW :E2 Plam	Measurement Antenna Pol.		nna Dal				
EUT POI.		.E2 Plain	IVI	easurement Ante	illa Pol.	:VERTICAI			
Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin		
1			Output Level	Gain	Loss		C C		
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB		
38.73	S	-49.70	-36.61	-12.29	-0.80	-13.00	-36.70		
280.26	S	-66.92	-70.58	5.47	-1.81	-13.00	-53.92		
290.93	S	-66.97	-70.73	5.60	-1.84	-13.00	-53.97		
549.92	S	-69.53	-73.08	6.04	-2.49	-13.00	-56.53		
692.51	S	-64.14	-67.45	6.04	-2.73	-13.00	-51.14		
937.92	S	-62.86	-65.33	5.79	-3.32	-13.00	-49.86		
3704.80	Н	-40.99	-42.81	8.63	-6.80	-13.00	-27.99		
5557.20	Н	-34.23	-36.12	10.30	-8.40	-13.00	-21.23		
7409.60	Н								
9262.00	Н								
11114.40	Н								
12966.80	Н								
14819.20	Н								
16671.60	Н								
18524.00	Н								

## Dedicted Sources Emission Measurement Desults WCDMA II Mede

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

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

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

"---": denotes Noise Floor.



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Operation Band ARFCN Fundamental Frequency Operation Mode		:WCDMA B2 :CH 9262 :1852.4 MHz :TX LOW	Temp./Humi. :23			:2014-05-08 :23 deg_C / :Curry	23 deg_C / 65 RH	
EUT Pol.	loue	:E2 Plam	Measurement Antenna			:HORIZON	ΓAL	
Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin	
			Output Level	Gain	Loss			
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB	
39.70	S	-65.14	-52.17	-12.17	-0.80	-13.00	-52.14	
280.26	S	-64.50	-68.16	5.47	-1.81	-13.00	-51.50	
294.81	S	-61.70	-65.52	5.67	-1.85	-13.00	-48.70	
550.89	S	-68.37	-71.91	6.03	-2.49	-13.00	-55.37	
689.60	S	-64.20	-67.51	6.04	-2.73	-13.00	-51.20	
773.02	S	-62.22	-65.27	5.95	-2.90	-13.00	-49.22	
3704.80	Н	-48.00	-49.83	8.63	-6.80	-13.00	-35.00	
5557.20	Н	-43.99	-45.88	10.30	-8.41	-13.00	-30.99	
7409.60	Н							
9262.00	Н							
11114.40	Н							
12966.80	Н							
14819.20	Н							
16671.60	Н							
18524.00	Н							

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

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

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

"---": denotes Noise Floor.



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Operation Band ARFCN Fundamental Frequency Operation Mode		:WCDMA B2 :CH 9400 :1880.0 MHz :TX MID					g_C / 65 RH		
EUT Pol.	loue	:E2 Plam	Me	Measurement Antenna Pol.			:VERTICAL		
Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin		
			Output Level	Gain	Loss				
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB		
39.70	S	-49.45	-36.48	-12.17	-0.80	-13.00	-36.45		
279.29	S	-65.78	-69.44	5.48	-1.81	-13.00	-52.78		
292.87	S	-66.70	-70.48	5.64	-1.85	-13.00	-53.70		
522.76	S	-69.25	-72.81	5.97	-2.42	-13.00	-56.25		
694.45	S	-64.37	-67.67	6.04	-2.73	-13.00	-51.37		
915.61	S	-63.07	-65.59	5.80	-3.28	-13.00	-50.07		
3760.00	Н	-40.31	-42.19	8.74	-6.85	-13.00	-27.31		
5640.00	Н	-36.36	-38.19	10.30	-8.47	-13.00	-23.36		
7520.00	Н								
9400.00	Н								
11280.00	Н								
13160.00	Н								
15040.00	Н								
16920.00	Н								
18800.00	Н								

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

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

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

"---": denotes Noise Floor.



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Operation Band ARFCN Fundamental Frequency Operation Mode		:WCDMA B2 :CH 9400 :1880.0 MHz :TX MID	Temp./Humi. :23			:2014-05-08 :23 deg_C / :Curry	23 deg_C / 65 RH	
EUT Pol.	loue	:E2 Plam	М	Measurement Antenna Pol			ΓAL	
Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin	
			Output Level	Gain	Loss			
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB	
39.70	S	-64.90	-51.94	-12.17	-0.80	-13.00	-51.90	
277.35	S	-64.04	-67.73	5.49	-1.80	-13.00	-51.04	
291.90	S	-61.98	-65.75	5.62	-1.85	-13.00	-48.98	
465.53	S	-67.78	-71.28	5.76	-2.26	-13.00	-54.78	
693.48	S	-63.94	-67.24	6.04	-2.73	-13.00	-50.94	
773.99	S	-62.91	-65.97	5.96	-2.90	-13.00	-49.91	
3760.00	Н	-47.83	-49.72	8.74	-6.85	-13.00	-34.83	
5640.00	Н	-43.81	-45.64	10.30	-8.47	-13.00	-30.81	
7520.00	Н							
9400.00	Н							
11280.00	Н							
13160.00	Н							
15040.00	Н							
16920.00	Н							
18800.00	Н							

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

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

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

"---": denotes Noise Floor.



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Operation Band ARFCN Fundamental Frequency Operation Mode		:WCDMA B2 :CH 9538 :1907.6 MHz :TX HIGH	Te	Test Date Temp./Humi. Engineer			:2014-05-08 :23 deg_C / 65 RH :Curry	
EUT Pol.	ouc	:E2 Plam	М	easurement Ante	nna Pol.	:VERTICAL		
Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin	
			Output Level	Gain	Loss			
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB	
39.70	S	-49.56	-36.59	-12.17	-0.80	-13.00	-36.56	
277.35	S	-66.05	-69.74	5.49	-1.80	-13.00	-53.05	
291.90	S	-67.97	-71.74	5.62	-1.85	-13.00	-54.97	
550.89	S	-69.28	-72.82	6.03	-2.49	-13.00	-56.28	
700.27	S	-63.80	-67.09	6.03	-2.74	-13.00	-50.80	
947.62	S	-62.84	-65.29	5.78	-3.33	-13.00	-49.84	
3815.20	Н	-34.74	-36.69	8.86	-6.90	-13.00	-21.74	
5722.80	Н	-34.64	-36.40	10.30	-8.54	-13.00	-21.64	
7630.40	Н							
9538.00	Н							
11445.60	Н							
13353.20	Н							
15260.80	Н							
17168.40	Н							
19076.00	Н							

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

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

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

"---": denotes Noise Floor.



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Operation Band ARFCN Fundamental Frequency Operation Mode		:WCDMA B2 :CH 9538 :1907.6 MHz :TX HIGH	Test Date Temp./Humi. Engineer			:2014-05-08 :23 deg_C / 65 RH :Curry		
EUT Pol.	loue	:E2 Plam	Measurement Antenna Po			:HORIZONTAL		
Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin	
			Output Level	Gain	Loss			
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB	
39.70	S	-64.62	-51.65	-12.17	-0.80	-13.00	-51.62	
275.41	S	-63.52	-67.24	5.51	-1.79	-13.00	-50.52	
293.84	S	-63.33	-67.14	5.65	-1.85	-13.00	-50.33	
517.91	S	-68.40	-71.96	5.96	-2.40	-13.00	-55.40	
700.27	S	-63.88	-67.17	6.03	-2.74	-13.00	-50.88	
769.14	S	-62.97	-66.01	5.93	-2.89	-13.00	-49.97	
3815.20	Н	-45.24	-47.19	8.85	-6.90	-13.00	-32.24	
5722.80	Н	-43.59	-45.35	10.30	-8.54	-13.00	-30.59	
7630.40	Н							
9538.00	Н							
11445.60	Н							
13353.20	Н							
15260.80	Н							
17168.40	Н							
19076.00	Н							

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

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

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

"---": denotes Noise Floor.



-			nent Result: HSI					
Operation B	and	:HSDPA B5		t Date		:2014-05-08		
ARFCN	1 5	:CH 4132	-				deg_C / 65 RH	
Fundamenta		:826.4 MHz	Eng	gineer		:Curry		
Operation Mode		TX LOW	М		р 1			
EUT Pol.		:H Plam	Me	asurement Ante	nna Pol.	:VERTICAI	1	
Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin	
			Output Level	Gain	Loss			
MHz	F/H/E/S	dBm	dBm	dBd	dB	dBm	dB	
40.67	S	-53.39	-38.41	-14.16	-0.81	-13.00	-40.39	
236.61	S	-66.65	-68.38	3.39	-1.66	-13.00	-53.65	
432.55	S	-58.01	-59.47	3.63	-2.17	-13.00	-45.01	
553.80	S	-68.10	-69.45	3.85	-2.50	-13.00	-55.10	
614.91	S	-62.49	-63.45	3.59	-2.64	-13.00	-49.49	
676.02	S	-66.02	-67.21	3.91	-2.71	-13.00	-53.02	
1652.80	Н	-40.94	-40.07	3.54	-4.42	-13.00	-27.94	
2479.20	Н	-54.12	-52.32	3.65	-5.45	-13.00	-41.12	
3305.60	Н	-49.04	-48.17	5.57	-6.43	-13.00	-36.04	
4132.00	Н							
4958.40	Н							
5784.80	Н							
6611.20	Н							
7437.60	Н							

Dedicted Sourious Emission Massurement Desult. USDDA V Mede

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

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

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

"---": denotes Noise Floor.

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Operation Band ARFCN Fundamental Frequency Operation Mode		:HSDPA B5 :CH 4132 :826.4 MHz :TX LOW	Ten	Test Date Temp./Humi. Engineer			:2014-05-08 :23 deg_C / 65 RH :Curry	
EUT Pol.	loue	:H Plam	Me	nna Pol.	:HORIZON	ΓAL		
Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin	
			Output Level	Gain	Loss			
MHz	F/H/E/S	dBm	dBm	dBd	dB	dBm	dB	
43.58	S	-58.87	-44.31	-13.68	-0.88	-13.00	-45.87	
96.93	S	-67.80	-65.65	-0.95	-1.20	-13.00	-54.80	
236.61	S	-66.09	-67.82	3.39	-1.66	-13.00	-53.09	
294.81	S	-67.53	-69.20	3.52	-1.85	-13.00	-54.53	
558.65	S	-67.96	-69.25	3.81	-2.51	-13.00	-54.96	
695.42	S	-66.80	-67.95	3.89	-2.73	-13.00	-53.80	
1652.80	Н	-45.95	-45.08	3.54	-4.42	-13.00	-32.95	
2479.20	Н	-53.87	-52.08	3.67	-5.46	-13.00	-40.87	
3305.60	Н	-53.65	-52.76	5.54	-6.43	-13.00	-40.65	
4132.00	Н	-54.74	-54.67	7.10	-7.16	-13.00	-41.74	
4958.40	Н							
5784.80	Н							
6611.20	Н							
7437.60	Н							
8264.00	Н							

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

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

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

"---": denotes Noise Floor.



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Operation B ARFCN Fundamenta Operation M	ll Frequency	:HSDPA B5 :CH 4183 :836.6 MHz :TX MID	Test Date Temp./Humi. Engineer		:2014-05-08 :23 deg_C / 65 RH :Curry		
EUT Pol.	loue	:H Plam	Me	easurement Ante	nna Pol.	:VERTICAL	
Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
			Output Level	Gain	Loss		
MHz	F/H/E/S	dBm	dBm	dBd	dB	dBm	dB
39.70	S	-56.99	-41.88	-14.32	-0.80	-13.00	-43.99
236.61	S	-65.98	-67.72	3.39	-1.66	-13.00	-52.98
297.72	S	-69.07	-70.78	3.58	-1.86	-13.00	-56.07
558.65	S	-67.99	-69.29	3.81	-2.51	-13.00	-54.99
614.91	S	-63.71	-64.67	3.59	-2.64	-13.00	-50.71
691.54	S	-66.60	-67.76	3.89	-2.73	-13.00	-53.60
1673.20	Н	-43.02	-42.03	3.46	-4.45	-13.00	-30.02
2509.80	Н	-50.29	-48.51	3.71	-5.48	-13.00	-37.29
3346.40	Н	-48.05	-47.25	5.67	-6.47	-13.00	-35.05
4183.00	Н						
5019.60	Н						
5856.20	Н						
6692.80	Н						
7529.40	Н						
8366.00	Н						

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

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

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

"---": denotes Noise Floor.



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Operation B ARFCN Fundamenta Operation M	l Frequency	:HSDPA B5 :CH 4183 :836.6 MHz :TX MID	Test Date Temp./Humi. Engineer		:2014-05-08 :23 deg_C / 65 RH :Curry		
EUT Pol.	loue	:H Plam	Me	asurement Ante	nna Pol.	:HORIZONTAL	
Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
			Output Level	Gain	Loss		
MHz	F/H/E/S	dBm	dBm	dBd	dB	dBm	dB
44.55	S	-58.98	-44.56	-13.53	-0.90	-13.00	-45.98
236.61	S	-66.17	-67.90	3.39	-1.66	-13.00	-53.17
292.87	S	-68.67	-70.31	3.49	-1.85	-13.00	-55.67
558.65	S	-67.96	-69.26	3.81	-2.51	-13.00	-54.96
614.91	S	-63.79	-64.75	3.59	-2.64	-13.00	-50.79
696.39	S	-66.43	-67.58	3.88	-2.74	-13.00	-53.43
1673.20	Н	-44.59	-43.61	3.46	-4.45	-13.00	-31.59
2509.80	Н	-52.53	-50.75	3.72	-5.50	-13.00	-39.53
3346.40	Н	-53.21	-52.41	5.67	-6.47	-13.00	-40.21
4183.00	Н						
5019.60	Н						
5856.20	Н						
6692.80	Н						
7529.40	Н						
8366.00	Н						

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

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

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

"---": denotes Noise Floor.



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Operation B ARFCN Fundamenta Operation M	l Frequency	:HSDPA B5 :CH 4233 :846.6 MHz :TX HIGH	Test Date Temp./Humi. Engineer		:2014-05-08 :23 deg_C / 65 RH :Curry		
EUT Pol.	loue	:H Plam	Me	asurement Ante	nna Pol.	:VERTICAL	
Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
			Output Level	Gain	Loss		
MHz	F/H/E/S	dBm	dBm	dBd	dB	dBm	dB
38.73	S	-52.47	-37.23	-14.44	-0.80	-13.00	-39.47
236.61	S	-65.83	-67.56	3.39	-1.66	-13.00	-52.83
323.91	S	-67.54	-69.50	3.89	-1.92	-13.00	-54.54
480.08	S	-65.24	-66.61	3.68	-2.30	-13.00	-52.24
614.91	S	-63.87	-64.82	3.59	-2.64	-13.00	-50.87
676.02	S	-66.42	-67.61	3.91	-2.71	-13.00	-53.42
1693.20	Н	-45.30	-44.23	3.41	-4.48	-13.00	-32.30
2539.80	Н	-54.47	-52.72	3.78	-5.53	-13.00	-41.47
3386.40	Н	-47.91	-47.17	5.77	-6.51	-13.00	-34.91
4233.00	Н						
5079.60	Н						
5926.20	Н						
6772.80	Н						
7619.40	Н						
8466.00	Н						

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

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

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

"---": denotes Noise Floor.



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Operation B ARFCN Fundamenta Operation M	l Frequency	:HSDPA B5 :CH 4233 :846.6 MHz :TX HIGH	Test Date Temp./Humi. Engineer		:2014-05-08 :23 deg_C / 65 RH :Curry		
EUT Pol.	loue	:H Plam	Me	easurement Ante	nna Pol.	:HORIZONTAL	
Freq.	Note	ERP	SG	Antenna	Cable	Limit	Margin
			Output Level	Gain	Loss		
MHz	F/H/E/S	dBm	dBm	dBd	dB	dBm	dB
44.55	S	-57.26	-42.84	-13.53	-0.90	-13.00	-44.26
236.61	S	-66.64	-68.37	3.39	-1.66	-13.00	-53.64
292.87	S	-69.50	-71.13	3.49	-1.85	-13.00	-56.50
480.08	S	-67.99	-69.37	3.68	-2.30	-13.00	-54.99
692.51	S	-65.96	-67.12	3.89	-2.73	-13.00	-52.96
760.41	S	-65.26	-66.13	3.74	-2.87	-13.00	-52.26
1693.20	Н	-51.32	-50.26	3.41	-4.48	-13.00	-38.32
2539.80	Н	-53.98	-52.23	3.78	-5.53	-13.00	-40.98
3386.40	Н	-51.04	-50.31	5.77	-6.51	-13.00	-38.04
4233.00	Н						
5079.60	Н						
5926.20	Н						
6772.80	Н						
7619.40	Н						
8466.00	Н						

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

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

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

"---": denotes Noise Floor.



# **11. FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT**

#### **11.1. Standard Applicable:**

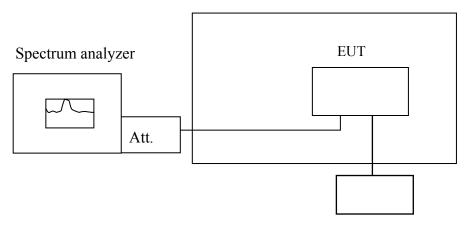
According to FCC §2.1055(a) (1)

Frequency Tolerance: +/-2.5ppm for 850MHz band

+/-2.5ppm for 1900MHz band

#### 11.2. Test Set-up:

**Temperature Chamber** 



Variable DC Power Supply

Note: Measurement setup for testing on Antenna connector

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_and\_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ed-coument.htm</u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



#### **11.3. 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.

# **11.4. Measurement Equipment Used:**

Refer to section 2.4 in this report

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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## **11.5. Measurement Result:**

	Reference Frequency: GPRS 850 Mid Channel 836.6 MHz							
	Lii	mit: +/- 2.5 ppm = 2091	Hz					
Power Supply	Environment	Frequency						
Vdc	Temperature	(MHz)	Delta (Hz)	Limit (Hz)				
3.7	50	836599999	12	2091				
3.7	40	836599987	0	2091				
3.7	30	836599990	3	2091				
3.7	20	836599987	0	2091				
3.7	10	836599991	4	2091				
3.7	0	836599999	12	2091				
3.7	-10	836599995	8	2091				
3.7	-20	836599985	-2	2091				
3.7	-30	836599988	1	2091				

	Reference Frequency: GPRS 1900 Mid Channel 1880 MHz							
	L	imit: +/- 2.5 ppm = 4700	Hz					
Power Supply	Environment	Frequency						
Vdc	Temperature	(MHz)	Delta (Hz)	Limit (Hz)				
3.7	50	1879999999	7	4700				
3.7	40	1879999994	2	4700				
3.7	30	1879999992	0	4700				
3.7	20	1879999992	0	4700				
3.7	10	1879999996	4	4700				
3.7	0	1879999993	1	4700				
3.7	-10	1879999994	2	4700				
3.7	-20	1879999985	-7	4700				
3.7	-30	1879999989	-3	4700				

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Reference Frequency: WCDMA II Mid Channel 1880							
	Limit	$\pm +/- 2.5 \text{ ppm} = 470$	00 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)			
Vdc	Temperature ( )	(MHz)	Della (HZ)	Linit (HZ)			
3.7	50	1879999989	0	4700			
3.7	40	1879999985	-4	4700			
3.7	30	1879999977	-12	4700			
3.7	20	1879999989	0	4700			
3.7	10	1879999979	-10	4700			
3.7	0	1879999980	-9	4700			
3.7	-10	1880000018	29	4700			
3.7	-20	1880000030	41	4700			
3.7	-30	1880000029	40	4700			

Reference Frequency: WCDMA V Mid Channel 836.6 MHz								
	Limit	$\pm +/- 2.5 \text{ ppm} = 209$	91 Hz					
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)				
Vdc	Temperature ( )	(MHz)	Delta (112)	Lillint (112)				
3.7	50	836600012	17	2091				
3.7	40	836599992	-3	2091				
3.7	30	836599987	-8	2091				
3.7	20	836599995	0	2091				
3.7	10	836600009	14	2091				
3.7	0	836599994	-1	2091				
3.7	-10	836599990	-5	2091				
3.7	-20	836600013	18	2091				
3.7	-30	836600016	21	2091				

# Note: The battery is rated 3.7V dc.

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# **12. FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT**

## 12.1. Standard Applicable:

According to FCC §2.1055(d) (2)

Frequency Tolerance: +/-2.5ppm for 850MHz band

+/-2.5ppm for 1900MHz band

#### 12.2. Test Set-up:

Refer to section 11.2 in this report

#### **12.3. Measurement Procedure:**

Set chamber temperature to 20 . 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 specify extreme voltage variation (+/-15%) and endpoint as declared by the manufacturer, record the maximum frequency change.

#### 12.4. Measurement Equipment Used:

Refer to section 2.4 in this report

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## 12.5. Measurement Result:

Reference Frequency: GPRS 850 Mid Channel 836.6 MHz							
	Limit	: +/- 2.5  ppm = 209	91 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)			
Vdc	Temperature ( )	(MHz)	Della (HZ)	Linit (HZ)			
4.2	20	836599991	4	2091			
3.7	20	836599987	0	2091			
3.4	20	836600008	21	2091			
2.9	20	82(500080	2	2001			
(End point)	20	836599989	2	2091			

Reference Frequency: GPRS 1900 Mid Channel 1880 MHz							
	Limit	:: +/- 2.5  ppm = 470	00 Hz				
Power Supply	Environment	Frequency	Dolto (Ur)	Limit (IIz)			
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)			
4.2	20	1879999989	-3	4700			
3.7	20	1879999992	0	4700			
3.4	20	1879999987	-5	4700			
2.8	20	100000002	11	4700			
(End point)	20	1880000003	11	4700			

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H	Reference Frequency: WCDMA II Mid Channel 1880 MHz							
	Limit: +/- 2.5 ppm = 4700 Hz							
Power Supply	Environment	Frequency	Dolta (Uz)	Limit (Uz)				
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)				
4.2	20	1879999986	-3	4700				
3.7	20	1879999989	0	4700				
3.4	20	1879999987	-2	4700				
2.7	20	107000000	1	1700				
(End point)	20	1879999988	-1	4700				

R	Reference Frequency: WCDMA V Mid Channel 836.6 MHz							
	Limit	:: +/- 2.5  ppm = 209	91 Hz					
Power Supply	Environment	Frequency	Dolta (Uz)	Limit (IIz)				
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)				
4.2	20	836599991	-4	2091				
3.7	20	836599995	0	2091				
3.4	20	836600010	15	2091				
2.8	20			2001				
(End point)	20	836600003	8	2091				

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