

Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 1 of 247

# ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

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

*OF* 

**PDA Phone Product Name:** 

**Brand Name:** Sony

PM-0732-BV **Type No.:** 

N/A **Model Difference:** 

FCC ID: PY7PM-0732

**Report No.:** EH/2014/10048

**Issue Date:** Mar. 10, 2014

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

**Prepared for: Sony Mobile Communications AB** 

Nya Vattentornet 22188 Lund/Sweden

Prepared by: SGS Taiwan Ltd.

**Electronics & Communication Laboratory** 

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Page: 2 of 247

# VERIFICATION OF COMPLIANCE

**Applicant:** Sony Mobile Communications AB

Nya Vattentornet 22188 Lund/Sweden

PDA Phone **Product Name:** 

**Brand Name:** Sony

Type No.: PM-0732-BV

**Model Difference:** N/A

FCC ID: PY7PM-0732

File Number: EH/2014/10048

Date of test: Jan. 27, 2014 ~ Mar. 03, 2014

**Date of EUT Received:** Jan. 27, 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 Iseng	Date:	Mar. 10, 2014
Prepared By:	Marcus Tseng/Engineer Utoletta Tang	Date:	Mar. 10, 2014
Approved By:	Violetta Tang / Clerk  Jim Chang / Supervisor	Date:	Mar. 10, 2014

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 3 of 247

# **Revision History**

Report Number	Revision	Description	Issue Date
EH/2014/10048 Rev.00		Initial creation of document	Mar. 10, 2014

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 4 of 247

### **Table of Contents**

1.	GEN	NERAL PRODUCT INFORMATION	6
	1.1.	Product Description	6
	1.2.	Related Submittal(s) / Grant (s)	12
	1.3.	Test Methodology	12
	1.4.	Test Facility	12
	1.5.	Special Accessories	12
	1.6.	Equipment Modifications	12
2.	SYS	TEM TEST CONFIGURATION	13
	2.1.	EUT Configuration.	13
	2.2.	EUT Exercise	13
	2.3.	Test Procedure	13
	2.4.	Measurement Equipment Used:	14
	2.5.	Configuration of Tested System	17
3.	SUN	MARY OF TEST RESULTS	18
4.	DES	SCRIPTION OF TEST MODES	19
5.	MEA	ASUREMENT UNCERTAINTY	20
6.	RF I	POWER OUTPUT MEASUREMENT	21
	6.1.	Standard Applicable:	21
	6.2.	Test Set-up:	22
	6.3.	Measurement Procedure:	22
	6.4.	Measurement Equipment Used:	22
	6.5.	Measurement Result:	23
7.	ERP	P, EIRP MEASUREMENT	33
	7.1.	Standard Applicable:	33
	7.2.	Test SET-UP (Block Diagram of Configuration):	33
	7.3.	Measurement Procedure:	35
	7.4.	Measurement Equipment Used:	35
	7.5.	Measurement Result: (Peak) –using option of peak measurement	36
8.	OCC	CUPIED BANDWIDTH MEASUREMENT	40
	8.1.	Standard Applicable:	40
	8.2.	Test Set-up:	40
	8.3.	Measurement Procedure:	40
	8.4.	Measurement Equipment Used:	40
	8.5.	Measurement Result:	40

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 5 of 247

9.	OUT	OF BAND EMISSION AT ANTENNA TERMINALS	61
	9.1.	Standard Applicable:	61
	9.2.	Test SET-UP:	61
	9.3.	Measurement Procedure:	62
	9.4.	Measurement Equipment Used:	62
	9.5.	Measurement Result:	62
10.	FIEL	D STRENGTH OF SPURIOUS RADIATION MEASUREMENT	159
	10.1.	Standard Applicable:	159
	10.2.	EUT Setup (Block Diagram of Configuration):	159
	10.3.	Measurement Procedure:	160
	10.4.	Measurement Equipment Used:	160
	10.5.	Measurement Result:	160
11.	FRE	QUENCY STABILITY V.S. TEMPERATURE MEASUREMENT	185
	11.1.	Standard Applicable:	185
	11.2.	Test Set-up:	185
	11.3.	Measurement Procedure:	185
	11.4.	Measurement Equipment Used:	185
	11.5.	Measurement Result:	186
12.	FRE	QUENCY STABILITY V.S. VOLTAGE MEASUREMENT	188
	12.1.		
	12.2.	Test Set-up:	188
	12.3.	Measurement Procedure:	188
	12.4.	Measurement Equipment Used:	188
	12.5.	Measurement Result:	189
13.	PEA.	K TO AVERAGE RATIO	191
	13.1.	Standard Applicable:	191
	13.2.	Test SET-UP (Block Diagram of Configuration):	191
	13.3.	Measurement Procedure:	191
	13.4.	Measurement Equipment Used:	191
	13.5.	Measurement Result:	191
ME	ASUR	REMENT PLOT OF RADIATED SPURIOUS EMISSION	211

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 6 of 247

# 1. GENERAL PRODUCT INFORMATION

# 1.1. Product Description

General:

Product Name:	PDA Phone		
Brand Name:	Sony		
Type No.:	PM-0732-	BV	
Model Difference:	N/A		
Data Cable (USB):	1.Model No.: EC450, Supplier: K-one Type No.: AI-0700, Length: 100 cm 2.Model No.: EC801, Supplier: Sony		
	• •	AI-0401, Length: 100 cm	
Simple Hands-Free (SHF-White):	Model No. Type No.:	: MH410c, Supplier: Foster Electric AG-1100	
Simple Hands-Free (SHF-Black):	Model No.: MH410c, Supplier: Foster Electric Type No.: CCA-0004017		
Car Charger:	Model No.: AN400, Supplier: Salcomp Type No.: CAA-0003013		
Hi-Fi Wireless Headset:	Model No.: MW600, Supplier: BALDA Type No.: DDA-0002029.B coupling with Simple Hands Free (Model No.: MH755, Supplier: BALDA Type No.: AG-0502)		
Hardware Version:	A		
Software Version:	18.2.A.1.0		
	3.8Vdc		
	Battery:	Model No.: LIS1546ERPC, Supplier: Sony Type No.: N/A	
Power Supply:	A 1	1.Model No.: EP800, Supplier: Salcomp Type No.: CAA-0002016-US	
	Adapter:	2.Model No.: EP880, Supplier: Salcomp Type No.: AC-0400-US	

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Page: 7 of 247

### Bluetooth\_BR+EDR:

Bluetooth Version:	V3.0+HS
Channel number:	79 channels
Modulation type:	Frequency Hopping Spread Spectrum
Transmit Power:	10.12dBm
Frequency Range:	2.402GHz – 2.480GHz
Dwell Time:	<= 0.4s
Antenna Designation:	PIFA Antenna, Gain: -1.34dBi

### Bluetooth Low Energy:

Frequency Range:	2402 – 2480MHz
Bluetooth Version:	V4.0 Dual mode
Channel number:	40 channels
Modulation type:	GFSK
Transmit Power:	1.79dBm (Peak)
Antenna Designation:	PIFA Antenna, Gain: -1.34dBi

#### NFC:

Operating Frequency	13.56MHz
Transmit Power	< 123dBuV/m at 3m.
Number of Channels	1
Antenna Type	Loop Antenna
Modulation Type	ASK, BPSK

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 8 of 247

### ANT Plus:

Operating Frequency:	2402 – 2480MHz
Transmit Power:	102.10dBuV/m
Number of Channels:	79
Antenna Type:	PIFA Antenna, Gain: -1.34dBi
Modulation Type:	GFSK

#### WLAN 2.4GHz+5.7GHz:

Wi-Fi	Frequency Range	Channels	Rated Power	Modulation Technology	
11b/g	2412-2462	11	b: 20.40dBm g: 21.93dBm	DSSS, OFDM	
11n	HT20 2412-2462	11	HT20: 20.89dBm	OFDM	
11a	5725-5850	5	a: 20.66dBm		
11n (5GHz)	HT20 5725-5850	5	HT20: 19.89dBm	OFDM	
11n (5GHz)	HT40 5725-5850	2	HT40: 19.07dBm		
Antenna Designation:		PIFA Antenna, 2.4GHz Gain: -1.34dBi 5GHz Gain: 4.51dBi (5725MHz-5850MHz)			
Modulation type:		CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM			
Transition Rate:		802.11 a: 6/9/12/18/24/36/48/54 Mbps 802.11 b: 1/2/5.5/11 Mbps 802.11 g: 6/9/12/18/24/36/48/54 Mbps 802.11 n_20MHz: 6.5 – 65.0Mbps 802.11 n_40MHz: 13.5 – 135.0Mbps			

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 9 of 247

### WLAN 5GHz:

Wi-Fi	Frequency Range	Channels	Rated Power (Avg)	Modulation Technology	
	5150~5250	4	13.98dBm		
11a	5250~5350	4	13.99dBm	OFDM	
	5470~5725	8	13.99dBm		
	HT20 5150~5250	4	HT20: 11.49dBm		
11n	HT20 5250~5350	4	HT20: 11.49dBm	OFDM	
	HT20 5470~5725	8	HT20: 11.48dBm		
	HT40 5150~5250	2	HT40: 10.48dBm		
11n	HT40 5250~5350	2	HT40: 10.46dBm	OFDM	
	HT40 5470~5725	3	HT40: 10.49dBm		
Antenna Designation		PIFA Antenna, 5GHz Gain: -0.38dBi (5150MHz-5250MHz) 5GHz Gain: 0.10dBi (5250MHz-5350MHz) 5GHz Gain: 3.98dBi (5470MHz-5725MHz)			
Modulation type		64QAM, 16QAM, QPSK, BPSK for OFDM			
Transition Rate:		802.11 a: 6/9/12/18/24/36/48/54 Mbps 802.11 n_20MHz: 6.5 – 65.0Mbps 802.11 n_40MHz: 13.5 – 135.0Mbps			

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 10 of 247

### GSM / WCDMA:

	Operating Frequency	Rated Power		
	GSM/GPRS 850, Class 33	824.2 MHz- 848.8 MHz	33dBm	
	EDGE 850, Class 33	824.2 MHz- 848.8 MHz	27dBm	
Cellular Phone Standards Frequency	GSM/GPRS 1900, Class 33	1850.2MHz – 1909.8MHz	30dBm	
Range and Power.	EDGE 1900, Class 33	1850.2MHz – 1909.8MHz	26dBm	
	WCDMA/HSUPA/HSDPA /HSPA+ Band II	1852.4MHz – 1907.6MHz	24dBm	
	WCDMA/HSUPA/HSDPA /HSPA+ Band V	826.4MHz - 846.6MHz	24dBm	
Type of Emission:	GSM 850: 249KGXW, GSM 1900: 255KGXW GPRS 850: 243KGXW, GPRS 1900: 254KGXW EDGE 850: 248KG7W, EDGE 1900: 251KG7W WCDMA Band II: 4M19F9W, WCDMA Band V: 4M18F9W HSDPA Band II: 4M18F9W, HSDPA Band V: 4M17F9W HSUPA Band II: 4M18F9W, HSUPA Band V: 4M18F9W			
IMEI:	004402146985134			

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

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 11 of 247

Final Amplifier Voltage and Current Information:

Test Mode	DC voltage (V)	DC current (mA)
GSM 850	3.8	230
GSM 1900	3.8	195
GPRS 850	3.8	220
GPRS 1900	3.8	177
EDGE 850	3.8	158
EDGE 1900	3.8	136
WCDMA B2	3.8	322
WCDMA B5	3.8	350
HSUPA B2	3.8	352
HSUPA B5	3.8	394
HSDPA B2	3.8	365
HSDPA B5	3.8	411

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 12 of 247

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

This submittal(s) (test report) is intended for FCC ID: <u>PY7PM-0732</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 47.1046, 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, Wuku Industrial Zone, Taipei County, Taiwan which are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2009. & ANSI C63.10:2009. 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. 29, Pau-Tou-Tsuo Valley Chia-Pau Tsuen, Linkou Hsiang, Taipei county, which is constructed and calibrated to meet the CISPR 22/EN 55022 requirements. SGS Site No. 1(3 &10 meters) and FCC Registration Number: 94644.

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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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 13 of 247

### 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.

#### **Test Procedure**

### 2.3.1 Conducted Measurement at Antenna Port:

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

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

According to measurement procured TIA/EIA 603C, The EUT is a placed on as turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both Horizontal and Vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna according to the requirements in Section 8 and 13 of ANSI C63.4:2009 & ANSI C63.10:2009.

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 14 of 247

# 2.4. Measurement Equipment Used:

Conducted Emission (measured at antenna port) Test Site						
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.	
TYPE		NUMBER	NUMBER	CAL.		
Power Meter	Anritsu	ML2495A	1005007	01/13/2014	01/12/2015	
Power Sensor	Anritsu	MA2411B	917032	01/13/2014	01/12/2015	
Spectrum Analyzer	Agilent	E4446A	MY51100003	05/30/2013	05/29/2014	
Spectrum Analyzer	Agilent	E4440A	US41160416	03/15/2013	03/14/2014	
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	05/06/2013	05/05/2014	
DC Block	Mini-Circuits	BLK-18-S+	1	02/28/2013	02/27/2014	
Attenuator	Mini-Circuit	BW-S10W2+	002	02/28/2013	02/27/2014	
Splitter	Agilent	11636B	N/A	02/28/2013	02/27/2014	
DC Power Supply	Agilent	E3640A	KR93300208	07/24/2013	07/23/2014	

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 15 of 247

ERP, EIRP MEASUREMENT EQUIPMENT List 966 Chamber					
EQUIPMENT TYPE	MFR	MODEL	SERIAL	LAST CAL.	CAL DUE.
		NUMBER	NUMBER		
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	01/02/2015
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	02/28/2013	02/27/2014
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	02/28/2013	02/28/2014
Filter 1800-2000	Micro-Tronics	EWT	M2	02/28/2013	02/28/2014
Filter 1700-1800	Micro-Tronics	BRC15751	001	02/28/2013	02/28/2014
1GHz High Pass Filter	Micro-Tronics	HPM50108	32	02/28/2013	02/28/2014
2GHz High Pass Filter	Micro-Tronics	HPM50110	36	02/28/2013	02/28/2014
3m Site NSA	SGS	966 chamber	N/A	07/15/2013	07/14/2014

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 16 of 247

ERP, EIRP MEASUREMENT EQUIPMENT List 966 Chamber						
EQUIPMENT TYPE	MFR	MODEL	SERIAL	LAST CAL.	CAL DUE.	
		NUMBER	NUMBER			
Attenuator	Mini-Circuit	BW-S10W2+	004	02/27/2014	02/26/2015	
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	

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

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 17 of 247

# 2.5 Configuration of Tested System

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

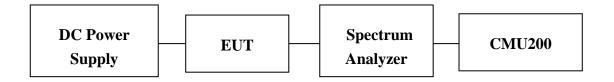


Fig. 2-2 Configuration of Tested System (Fixed Channel-Radiated)

**EUT** 

**Remote Side** 

**CMU200** 

**Table 2-1 Equipment Used in** 

Item	Equipment	Mfr/Brand	Model/ Type No.	Series No.	Data Ca- ble	Power Cord
1.	Universal Radio Com- munication Tester	R&S	CMU200	102189	shielded	Un-shielded
2.	DC Power Supply	HP	E3640A	MY40005907	shielded	Un-shielded

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 18 of 247

### 3. SUMMARY OF TEST RESULTS

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

### Max ERP/EIRP measurement result:

	dBm		W
GSM 850 Band	27.92	ERP	0.619
GSM 1900 Band	31.81	EIRP	1.517
GPRS 850 Band	27.93	ERP	0.621
GPRS 1900 Band	31.65	EIRP	1.462
EDGE 850 Band	27.00	ERP	0.501
EDGE 1900 Band	30.91	EIRP	1.233
WCDMA Band II	21.78	EIRP	0.151
WCDMA Band V	25.50	ERP	0.355
HSUPA Band II	21.91	EIRP	0.155
HSUPA Band V	24.98	ERP	0.315
HSDPA Band II	21.33	EIRP	0.136
HSDPA Band V	24.70	ERP	0.295

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 19 of 247

### 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/EDGE 850:

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

#### GSM/GPRS/EDGE 1900:

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

#### WCDMA/HSPA BII:

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

#### WCDMA/HSPA BV:

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

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

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 20 of 247

# 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:

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

	30MHz - 167MHz: +/- 4.22dB
Measurement uncertainty	167MHz -500MHz: +/- 3.44dB
(Polarization : <b>Horizontal</b> )	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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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 21 of 247

### 6. RF POWER OUTPUT MEASUREMENT

### 6.1. Standard Applicable:

According to FCC §2.1046.

FCC 22.913(a) Mobile station is 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		Class 4
ble C.10.1.4	Power Tol (dBm) (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	Power Class 3		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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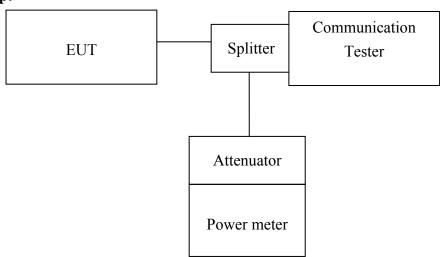
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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 22 of 247

### 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 KDB 971168 D01 Power Meas License Digital System as the supplemental test methodology to adjust the proper setting obtaining the measurement results

Necessary Communication complying with 24.232 (c)

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

### 6.4. Measurement Equipment Used:

Refer to section 2.4 in this report

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 23 of 247

### **6.5.** Measurement Result:

### 6.5.1. RF Conducted Output Power

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

#### **Result:**

EUT Mode	Frequency (MHz)	СН	Peak Power (dBm)	Averager Burst Power (dBm)
	824.2	128	32.70	32.50
GSM 850	836.6	190	32.60	32.40
	848.8	251	32.80	32.60

EUT Mode	Frequency (MHz)	СН	Peak Power (dBm)	Averager Burst Power (dBm)
	1850.2	512	30.00	29.80
GSM 1900	1880.0	661	30.20	30.00
	1909.8	810	30.20	30.00

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	32.70	32.50	29.80	29.60
GPRS 850	836.6	190	32.60	32.40	29.70	29.50
	848.8	251	32.80	32.60	29.80	29.60

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	28.10	27.90	27.50	27.30
GPRS 850	836.6	190	28.10	27.80	27.50	27.30
	848.8	251	28.00	27.80	27.60	27.40

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 24 of 247

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	30.10	29.90	28.90	28.70
GPRS 1900	1880.0	661	30.20	30.00	28.90	28.60
	1909.8	810	30.30	30.00	28.90	28.70

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)
	1850.2	512	27.50	27.30	26.90	26.70
GPRS 1900	1880.0	661	27.50	27.30	26.80	26.60
	1909.8	810	27.70	27.40	27.00	26.80

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	29.50	26.40	28.40	25.30
EDGE 850	836.6	190	29.40	26.30	28.40	25.30
	848.8	251	29.50	26.40	28.50	25.30

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	28.40	25.20	27.10	24.00
EDGE 850	836.6	190	28.40	25.10	27.10	24.00
	848.8	251	28.30	25.20	27.20	24.10

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 25 of 247

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	28.80	25.50	28.70	25.40
EDGE 1900	1880.0	661	28.70	25.40	28.70	25.30
	1909.8	810	28.70	25.50	28.60	25.30

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)
	1850.2	512	28.50	25.30	27.30	24.00
EDGE 1900	1880.0	661	28.30	25.10	27.20	24.00
	1909.8	810	28.40	25.20	27.00	23.90

Cable loss offset Low Band: 13.6dB Cable loss offset High Band: 13.9dB

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 26 of 247

#### 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)
	1852.4	9262	25.02	21.54
WCDMA Band II	1880.0	9400	25.04	21.61
Dana II	1907.6	9538	25.07	21.54

EUT Mode	Frequency (MHz)	СН	Peak Power (dBm)	Avg. Power (dBm)
W CD M	826.4	4132	26.42	23.09
WCDMA Band V	836.6	4183	26.56	23.23
Build V	846.6	4233	26.57	23.18

EUT Mode		СН	Peak Power		
	(MHz)		(dBm)	(dBm)	
HSDPA Band II	1852.4	9262	24.12	20.57	
	1880.0	9400	24.05	20.54	
	1907.6	9538	24.32	20.56	

EUT Mode	Frequency (MHz)	СН	Peak Power (dBm)	Avg. Power (dBm)	
HSDPA Band V	826.4	4132	25.94	22.05	
	836.6	4183	26.12	22.07	
Build V	846.6	4233	26.13	22.11	

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 27 of 247

EUT Mode	Frequency (MHz)	СН	Peak Power (dBm)	Avg. Power (dBm)
HSUPA Band II	1852.4	9262	24.18	20.66
	1880.0	9400	24.15	20.89
	1907.6	9538	24.32	20.78

EUT Mode	Frequency (MHz)	СН	Peak Power (dBm)	Avg. Power (dBm)	
HSUPA Band V	826.4	4132	25.62	21.47	
	836.6	4183	25.56	21.44	
	846.6	4233	25.36	21.35	

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

Cable loss offset Low Band: 13.6B Cable loss offset High Band: 13.9dB

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 28 of 247

#### 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	$eta_{ m c}$	$eta_{ m d}$	$eta_{ m d} \ (SF)$	$\beta_c/\beta_d$	β <sub>HS</sub> (Note1, Note 2)	<b>CM (dB)</b> ( <i>Note 3</i> )	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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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 29 of 247

### **Results:**

Mode	Sub-test	Avg.	Power (di	Bm)	Power Class 3 Limita-	Comments	
		9262	9400	9538	tion (dBm)		
1		21.76	21.86	21.73	20.3dBm – 25.7dBm	Pass	
HSDPA	2	21.47	21.50	21.41	20.3dBm – 25.7dBm	Pass	
(B2)	3	21.30	21.38	21.24	19.8dBm – 25.7dBm	Pass	
	4	21.35	21.42	21.30	19.8dBm – 25.7dBm	Pass	

Mode	Sub-test	Avg.	Power (di	Bm)	Power Class 3 Limita-	Comments	
		4132	4183	4233	tion (dBm)		
	1	23.31	23.48	23.37	20.3dBm – 25.7dBm	Pass	
HSDPA	2	23.02	23.12	23.05	20.3dBm – 25.7dBm	Pass	
(B5)	(B5) 3		23.00	22.88	19.8dBm – 25.7dBm	Pass	
	4	22.09	23.04	22.94	19.8dBm – 25.7dBm	Pass	

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 30 of 247

### 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	$eta_{ m c}$	$eta_{ m d}$	β <sub>d</sub> (SF)	$\beta_c/\beta_d$	$eta_{ ext{HS}}$	$eta_{ m ec}$	$eta_{ m ed}$	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	β <sub>ed</sub> 1: 47/15 β <sub>ed</sub> 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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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 31 of 247

### **Results:**

Mode	Sub-test	Avg.	Power (di	Bm)	Power Class 3 Limita-	Comments
		9262	9400	9538	tion (dBm)	
	1	21.50	21.54	21.45	18.8dBm – 25.7dBm	Pass
	2	19.56	19.62	19.49	16.8dBm – 25.7dBm	Pass
HSUPA(B2)	3	20.47	20.06	20.48	17.8dBm – 25.7dBm	Pass
	4	19.61	19.68	19.57	16.8dBm – 25.7dBm	Pass
	5	21.36	21.37	21.34	18.8dBm – 25.7dBm	Pass

Mode	Sub-test	Avg.	Power (di	Bm)	Power Class 3 Limita-	Comments	
		4132	4183	4233	tion (dBm)		
	1	23.05	23.16	23.09	18.8dBm – 25.7dBm	Pass	
	2	21.11	21.24	21.13	16.8dBm – 25.7dBm	Pass	
HSUPA(B5)	3	22.02	22.22	22.12	17.8dBm – 25.7dBm	Pass	
	4	21.16	21.30	21.21	16.8dBm – 25.7dBm	Pass	
	5	22.91	22.99	22.98	18.8dBm – 25.7dBm	Pass	

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 32 of 247

#### 6.5.2. Minimum Communications Power Measurement

### PCS 1900 band

PCL	0	1	2	3	4	5	6	7	8
Output power (dBm)	29.6	27.8	25.8	24	22.1	20.2	17.9	15.8	13.9

PCL	9	10	11	12	13	14	15
Output power (dBm)	12.1	9.9	8	6	3.9	1.9	0.1

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 22 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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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 33 of 247

# 7. ERP, EIRP MEASUREMENT

# 7.1. Standard Applicable:

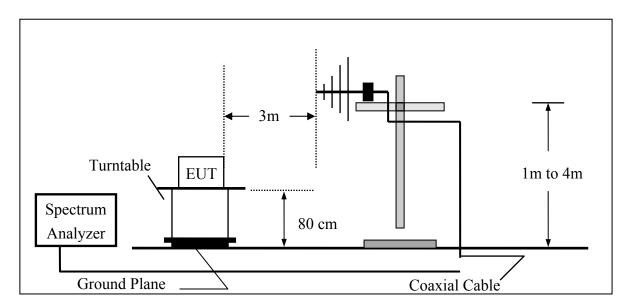
According to FCC §2.1046

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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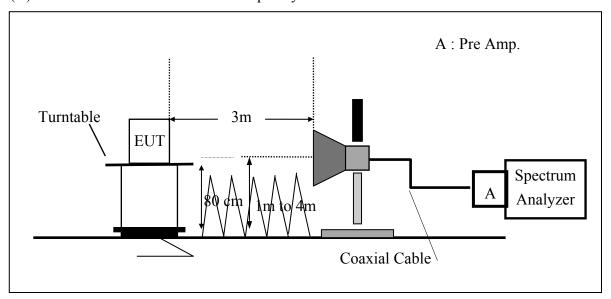
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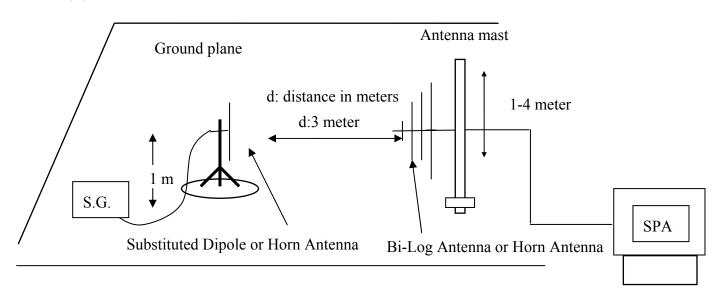
Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 34 of 247

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



### (C) Substituted Method Test Set-UP



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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 35 of 247

#### 7.3. Measurement Procedure:

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

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.
- 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 =  $2 \times \text{occupied BW}$ ;

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 =  $601*10^{-3} = 6$ s.

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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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 36 of 247

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

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	
GSM 850	824.2	128	V	18.97	3.91	-3.03	19.85	38.45	
			Н	26.72	3.91	-3.03	27.60	38.45	
	836.6	190	V	19.43	3.89	-3.07	20.25	38.45	
			Н	27.10	3.89	-3.07	27.92	38.45	
	848.8	251	V	19.16	3.87	-3.11	19.92	38.45	
			Н	26.93	3.87	-3.11	27.70	38.45	

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	
GPRS 850	824.2	128	V	19.18	3.91	-3.03	20.06	38.45	
			Н	26.73	3.91	-3.03	27.61	38.45	
	836.6	190	V	19.48	3.89	-3.07	20.30	38.45	
			Н	27.11	3.89	-3.07	27.93	38.45	
	848.8	251	V	19.27	3.87	-3.11	20.04	38.45	
			Н	26.96	3.87	-3.11	27.72	38.45	

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	
EDGE 850	824.2	128	V	16.23	3.91	-3.03	17.1.	38.45	
			Н	25.64	3.91	-3.03	26.52	38.45	
	836.6	190	V	16.24	3.89	-3.07	17.06	38.45	
			Н	26.18	3.89	-3.07	27.00	38.45	
	848.8	251	V	15.79	3.87	-3.11	16.55	38.45	
			Н	25.82	3.87	-3.11	26.58	38.45	

### Remark:

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

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Page: 37 of 247

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	
	1850.2	512	V	23.82	5.08	-4.67	24.23	33.00	
	1630.2	312	Н	31.06	5.08	-4.67	31.47	33.00	
GSM 1900	1880.0	661	V	22.63	5.00	-4.70	22.93	33.00	
GSWI 1900	1000.0	001	Н	31.52	5.00	-4.70	31.81	33.00	
	1909.8 8	810	V	24.81	4.92	-4.74	25.00	33.00	
	1909.8	810	Н	31.27	4.92	-4.74	31.46	33.00	

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	
	1850.2	512	V	25.28	5.08	-4.67	25.69	33.00	
	1630.2	312	Н	31.24	5.08	-4.67	31.65	33.00	
GPRS 1900	1880.0	661	V	22.96	5.00	-4.70	23.26	33.00	
G1 K3 1900	1000.0	001	Н	31.29	5.00	-4.70	31.59	33.00	
	1909.8	810	V	24.49	4.92	-4.74	24.67	33.00	
			Н	31.32	4.92	-4.74	31.50	33.00	

	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
	1850.2	512	V	22.51	5.08	-4.67	22.92	33.00
	1630.2	312	Н	30.5	5.08	-4.67	30.91	33.00
EDGE 1900	1880.0	661	V	21.23	5.00	-4.70	21.53	33.00
EDGE 1900	1000.0	001	Н	30.22	5.00	-4.70	30.51	33.00
	1909.8	810	V	23.61	4.92	-4.74	23.80	33.00
	1909.0	610	Н	29.72	4.92	-4.74	29.90	33.00

#### Remark:

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

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 38 of 247

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	18.15	5.07	-4.67	18.55	33.00	
	1032.4	9202	Н	21.16	5.07	-4.67	21.56	33.00	
WCDMA	1880.0	9400	V	15.89	5.00	-4.70	16.19	33.00	
Band II	1000.0	9400	Н	21.29	5.00	-4.70	21.59	33.00	
	1907.6 953	9538	V	18.18	4.93	-4.74	18.37	33.00	
	1907.0	9338	Н	21.59	4.93	-4.74	21.78	33.00	

	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	17.89	5.07	-4.67	18.29	33.00		
	1632.4	9202	Н	21.02	5.07	-4.67	21.42	33.00		
HSDPA	1880.0	9400	V	15.76	5.00	-4.70	16.06	33.00		
Band II	1880.0	9400	Н	21.20	5.00	-4.70	21.50	33.00		
	1907.6	9538	V	17.95	4.93	-4.74	18.14	33.00		
	1907.0	9338	Н	21.72	4.93	-4.74	21.91	33.00		

	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	17.39	5.07	-4.67	17.79	33.00	
	1032.4	9202	Н	20.61	5.07	-4.67	21.01	33.00	
HSUPA	1880.0	9400	V	15.26	5.00	-4.70	15.56	33.00	
Band II	1000.0	9400	Н	20.81	5.00	-4.70	21.11	33.00	
	1907.6	9538	V	17.63	4.93	-4.74	17.82	33.00	
	1907.0	7338	Н	21.14	4.93	-4.74	21.33	33.00	

### Remark:

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

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 39 of 247

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	13.18	3.90	-3.04	14.05	38.45	
	620.4	4132	Н	23.21	3.90	-3.03	24.09	38.45	
WCDMA	836.6	4183	V	13.22	3.89	-3.07	14.04	38.45	
Band V	830.0	4183	Н	24.68	3.89	-3.07	25.50	38.45	
	846.6 423	4233	V	11.79	3.87	-3.10	12.56	38.45	
	040.0	4233	Н	23.22	3.87	-3.10	23.99	38.45	

	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	13.01	3.90	-3.03	13.88	38.45	
	620.4	4132	Н	23.17	3.90	-3.03	24.04	38.45	
HSDPA	836.6	4183	V	13.24	3.89	-3.07	14.06	38.45	
Band V	830.0	4103	Н	24.16	3.89	-3.07	24.98	38.45	
	846.6	4233	V	11.46	3.87	-3.10	12.23	38.45	
	840.0	4233	Н	22.73	3.87	-3.10	23.50	38.45	

	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	12.36	3.90	-3.04	13.23	38.45		
	620.4	4132	Н	22.88	3.90	-3.03	23.75	38.45		
HSUPA	836.6	4183	V	12.69	3.89	-3.07	13.51	38.45		
Band V	830.0	4103	Н	23.88	3.89	-3.07	24.70	38.45		
	846.6	4233	V	11.24	3.87	-3.10	12.02	38.45		
	040.0	4233	Н	22.47	3.87	-3.10	23.25	38.45		

#### Remark:

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

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 40 of 247

## 8. OCCUPIED BANDWIDTH MEASUREMENT

# 8.1. Standard Applicable:

According to §FCC 2.1049.

# 8.2. Test Set-up:

Refer to section 6.2 in this report

#### 8.3. Measurement Procedure:

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

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

### **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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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 41 of 247

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
	824.20	128	0.248
GSM 850	836.60	190	0.249
	848.80	251	0.244

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
	1850.20	512	0.239
GSM 1900	1880.00	661	0.244
	1909.80	810	0.255

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
	824.20	128	0.241
GPRS 850	836.60	190	0.242
	848.80	251	0.243

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
	1850.20	512	0.247
GPRS 1900	1880.00	661	0.254
	1909.80	810	0.250

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
	824.20	128	0.240
EDGE 850	836.60	190	0.248
	848.80	251	0.244

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
	1850.20	512	0.251
EDGE 1900	1880.00	661	0.242
	1909.80	810	0.239

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 42 of 247

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
	1852.40	9262	4.1779
WCDMA II	1880.00	9400	4.1890
	1907.60	9538	4.1745

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
	826.40	4132	4.1807
WCDMA V	836.00	4183	4.1751
	846.60	4233	4.1591

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
	1852.40	9262	4.1793
HSDPA II	1880.00	9400	4.1500
	1907.60	9538	4.1696

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
	826.40	4132	4.1710
HSDPA V	836.60	4183	4.1662
	846.60	4233	4.1580

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
	1852.40	9262	4.1651
HSUPA II	1880.00	9400	4.1765
	1907.60	9538	4.1716

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
	826.40	4132	4.1634
HSUPA V	836.60	4183	4.1649
	846.60	4233	4.1767

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 43 of 247

Figure 8-1: GSM 850 Channel Low

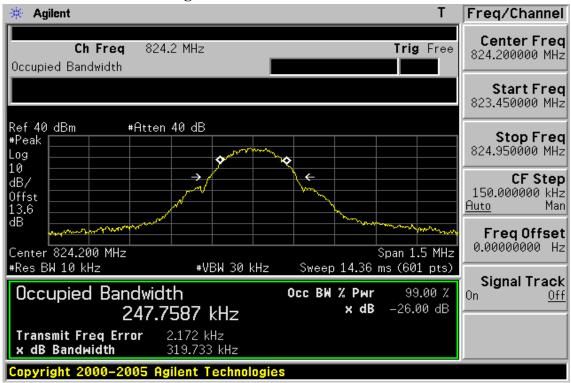


Figure 8-2: GSM 850 Channel Mid



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Page: 44 of 247

Figure 8-3: GSM 850 Channel High

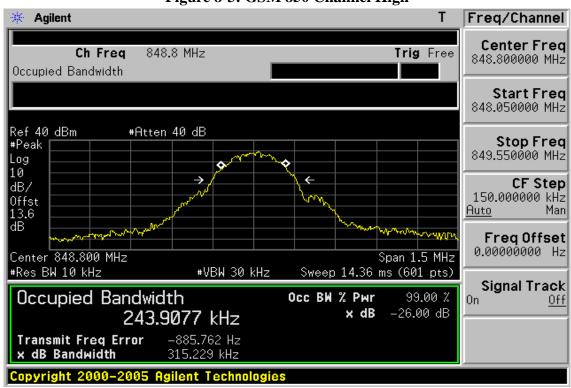
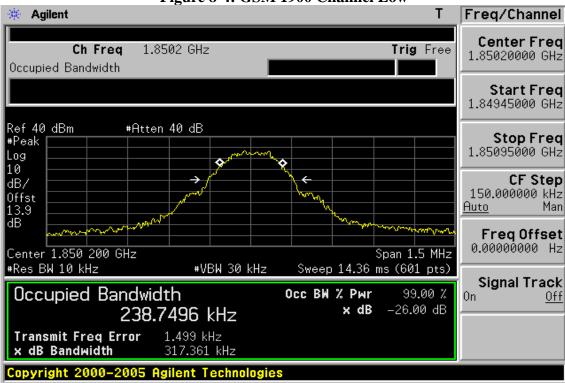


Figure 8-4: GSM 1900 Channel Low



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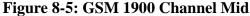
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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 45 of 247



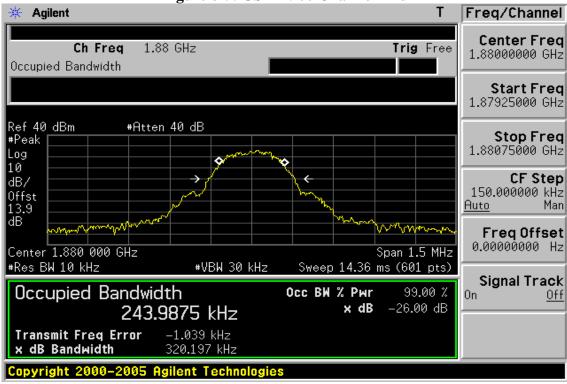
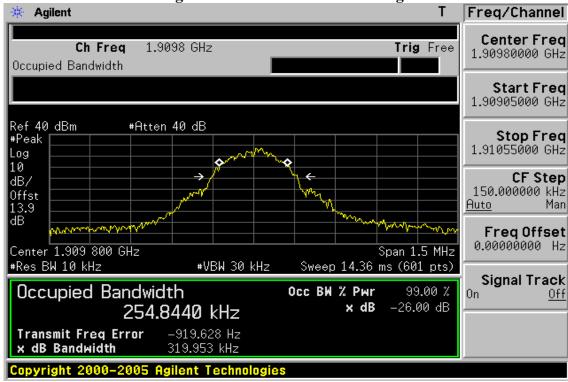


Figure 8-6: GSM 1900 Channel High



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Page: 46 of 247

Figure 8-7: GPRS 850 Channel Low

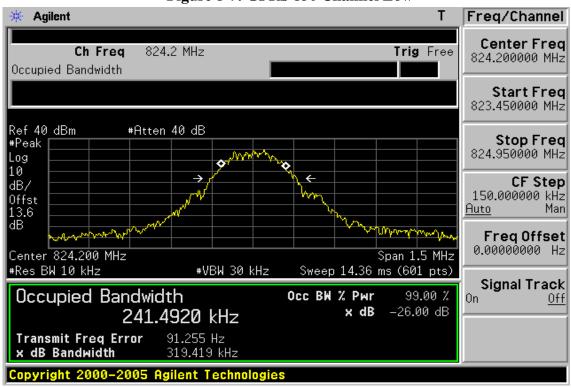


Figure 8-8: GPRS 850 Channel Mid



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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 47 of 247

## GPRS Figure 8-9: GPRS 850 Channel High

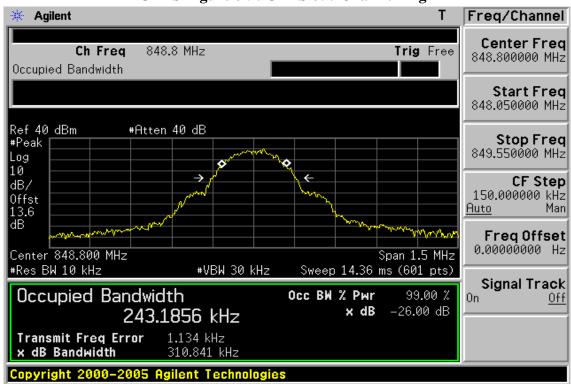
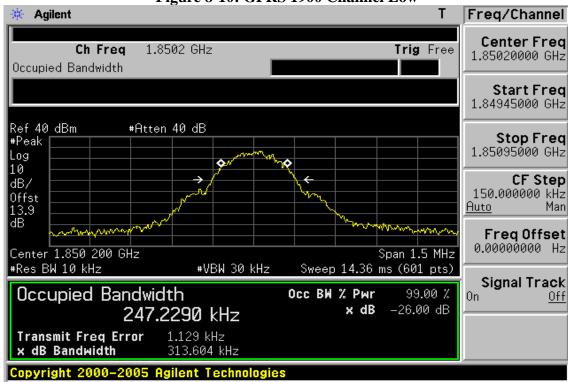


Figure 8-10: GPRS 1900 Channel Low



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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 48 of 247

Figure 8-11: GPRS 1900 Channel Mid

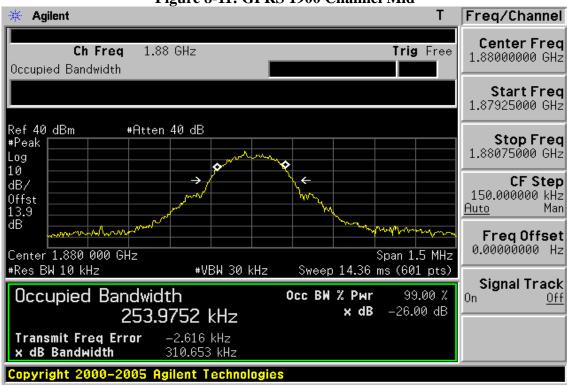
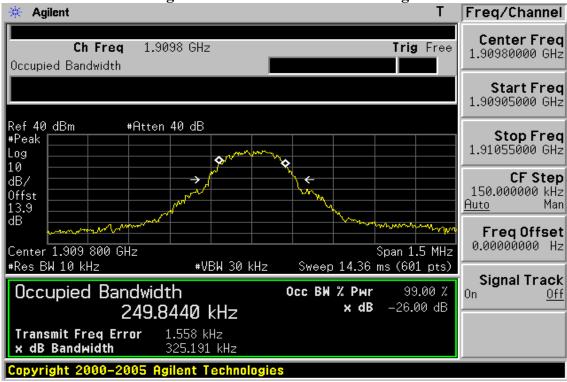


Figure 8-12: GPRS 1900 Channel High



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Page: 49 of 247

Figure 8-13: EDGE 850 Channel Low

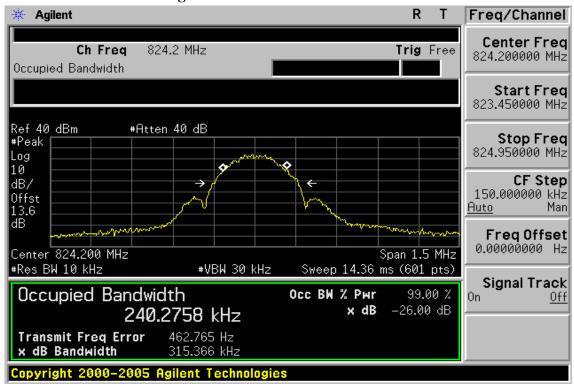
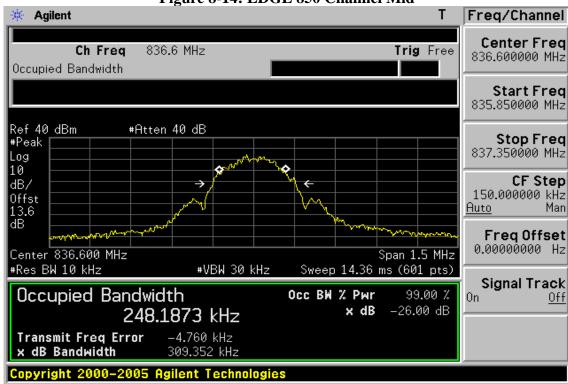


Figure 8-14: EDGE 850 Channel Mid



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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 50 of 247

## GPRS Figure 8-15: EDGE 850 Channel High

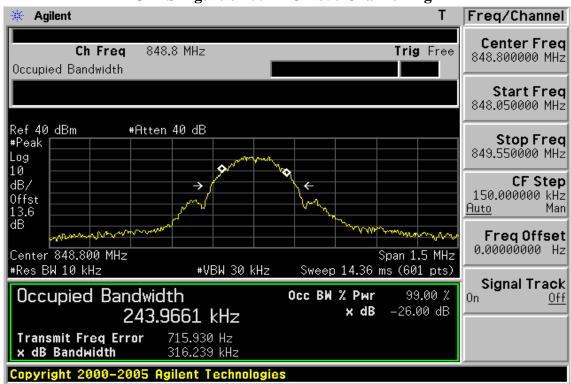
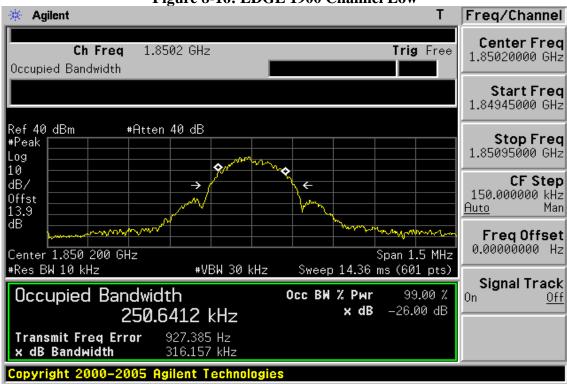


Figure 8-16: EDGE 1900 Channel Low



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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 51 of 247

Figure 8-17: EDGE 1900 Channel Mid

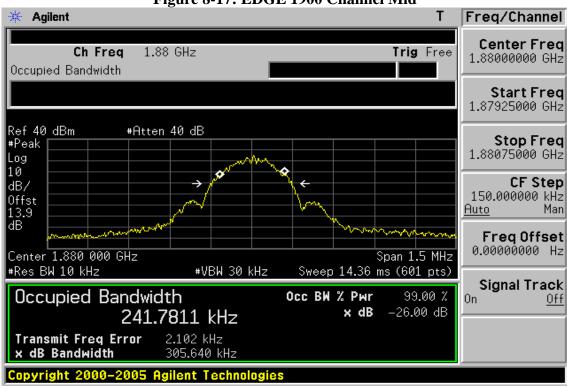
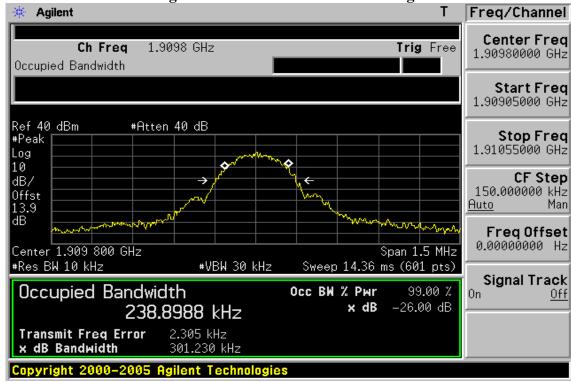


Figure 8-18: EDGE 1900 Channel High



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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 52 of 247



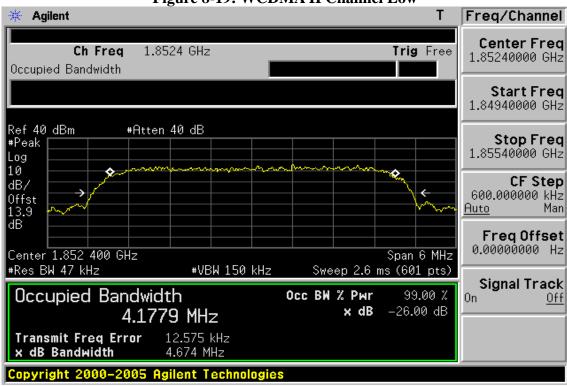
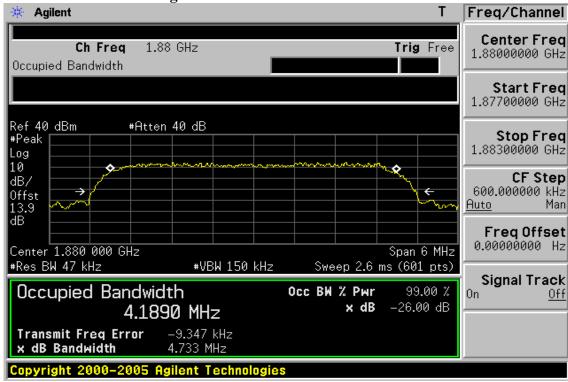


Figure 8-20: WCDMA II Channel Mid



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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 53 of 247

Figure 8-21: WCDMA II Channel High

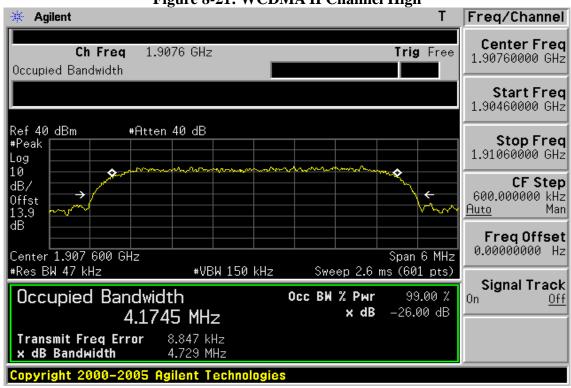
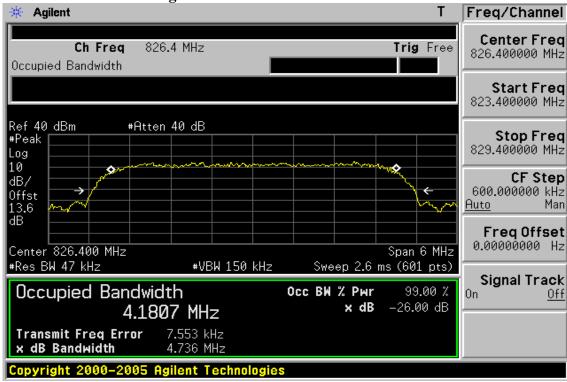


Figure 8-22: WCDMA V Channel Low



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Page: 54 of 247

Figure 8-23: WCDMA V Channel Mid

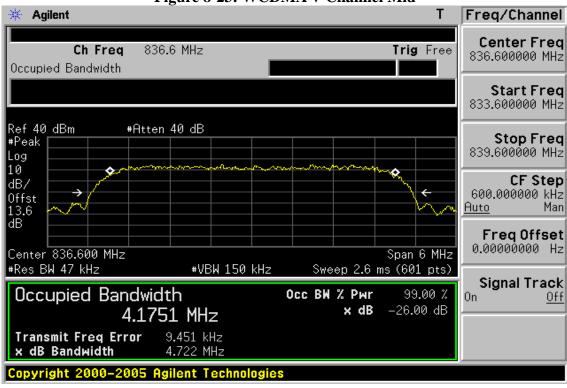
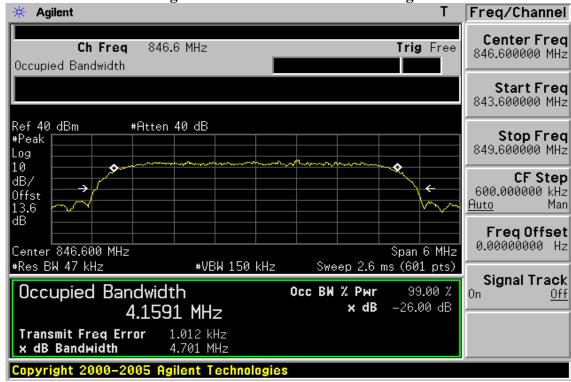


Figure 8-24: WCDMA V Channel High



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Page: 55 of 247



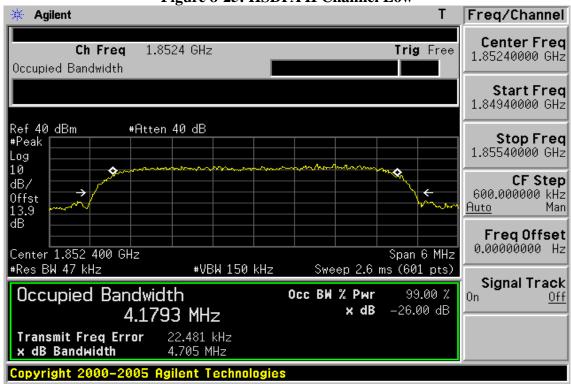
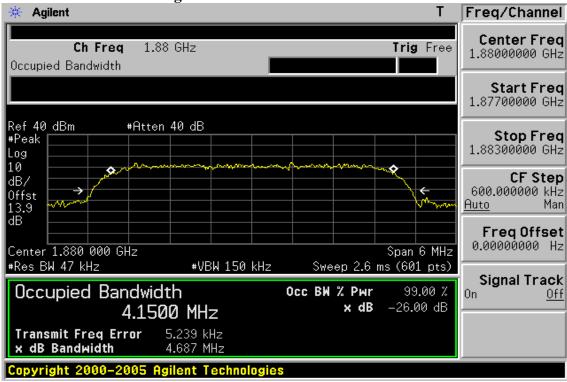


Figure 8-26: HSDPA II Channel Mid



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Page: 56 of 247

Figure 8-27: HSDPA II Channel High

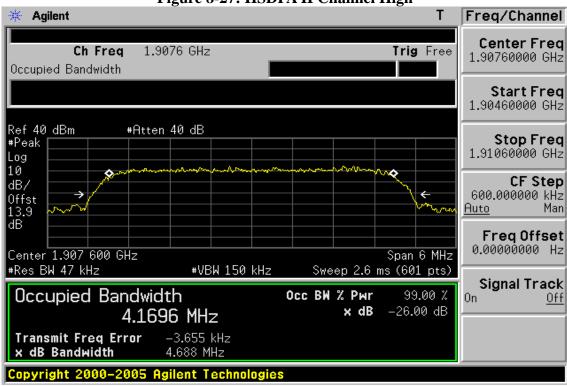
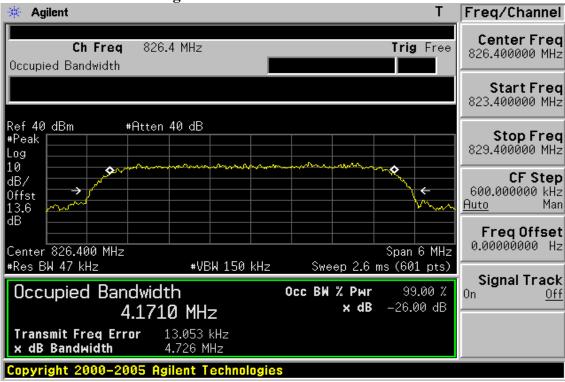


Figure 8-28: HSDPA V Channel Low



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Page: 57 of 247

Figure 8-29: HSDPA V Channel Mid

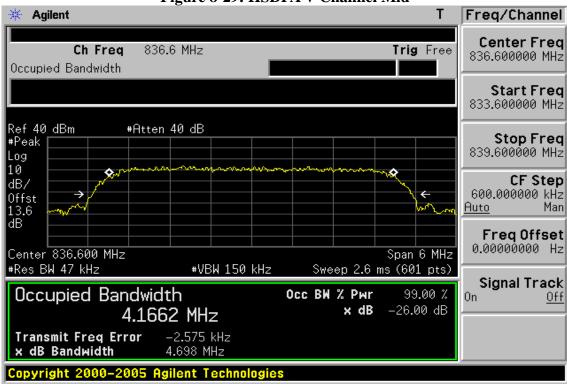
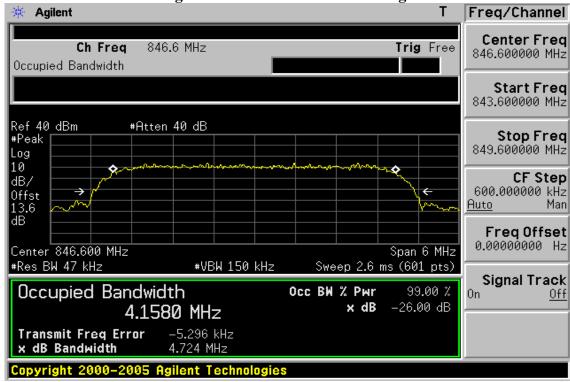


Figure 8-30: HSDPA V Channel High



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Page: 58 of 247



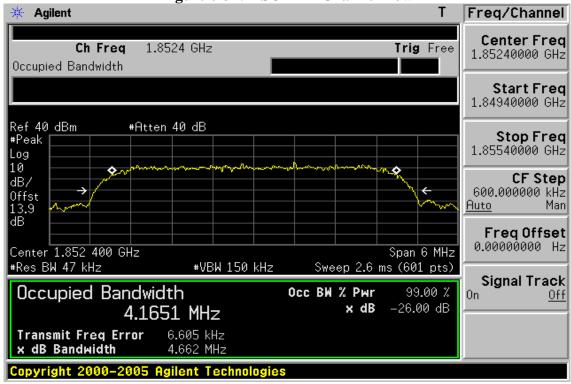
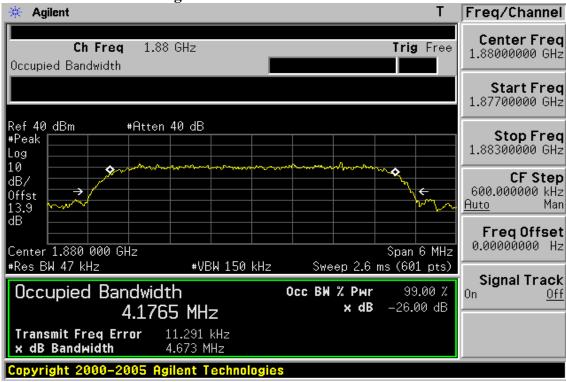


Figure 8-32: HSUPA II Channel Mid



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Page: 59 of 247



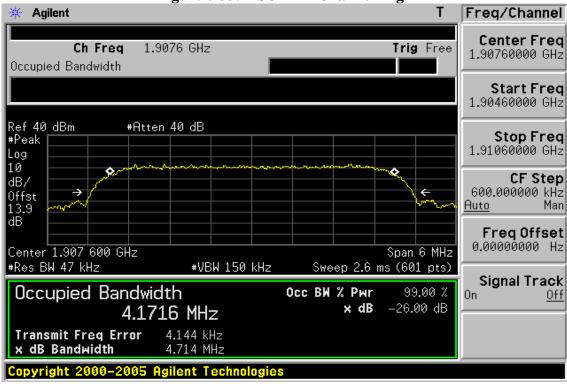
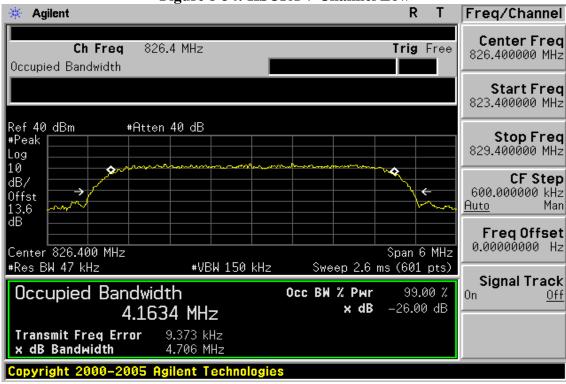


Figure 8-34: HSUPA V Channel Low



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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 60 of 247

Figure 8-35: HSUPA V Channel Mid

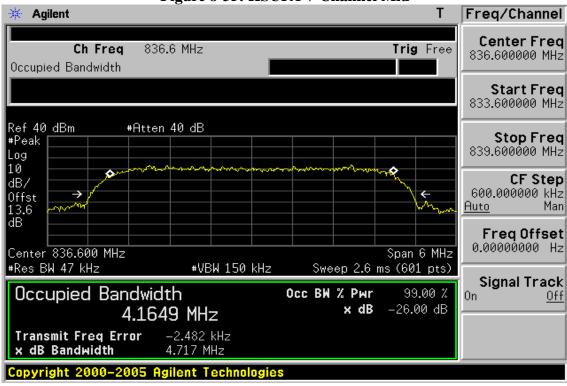
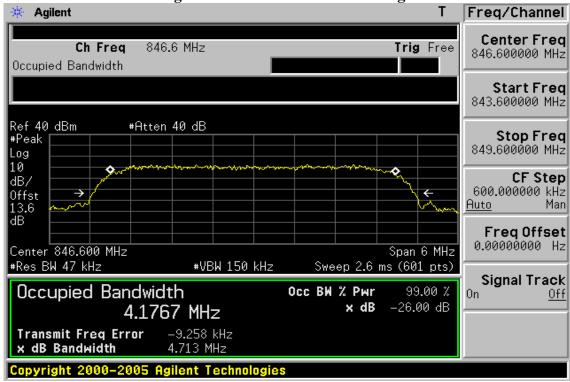


Figure 8-36: HSUPA V Channel High



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Page: 61 of 247

## **OUT OF BAND EMISSION AT ANTENNA TERMINALS**

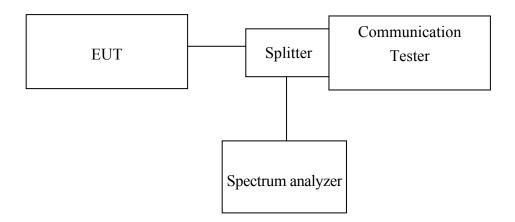
## 9.1. Standard Applicable:

According to FCC §2.1051.

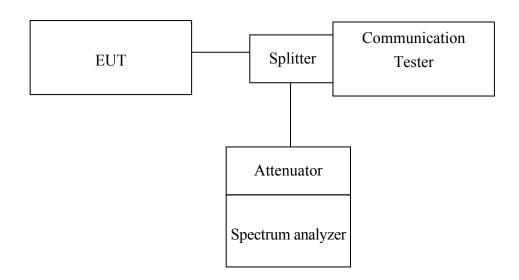
FCC §22.917(a), §24.238(a) the magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under the conditions specified in the instruction manual and/ or alignment procedure, shall not be less than 43 + 10 log (mean output power in watts) dBc below the mean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

#### 9.2. Test SET-UP:

## Out of band emission



## **Band Edge**



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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 62 of 247

#### 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.

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

#### **Conducted Emission:**

- To connect Antenna Port of EUT to Spectrum.
- 2、 Set RBW = 1MHz & VBW = 1MHz on Spectrum.
- 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
- Via Software, combine 6 spans of frequency range into one plot 4、

#### 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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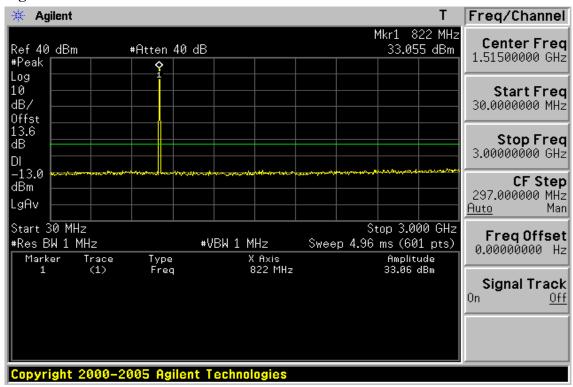
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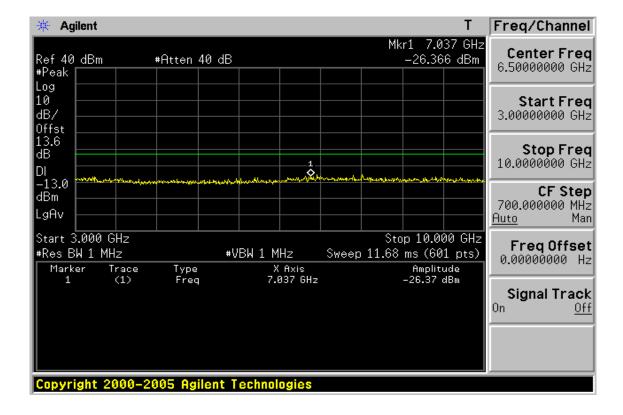


Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 63 of 247

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





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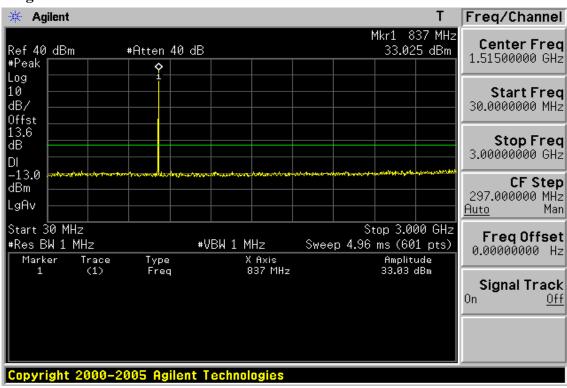
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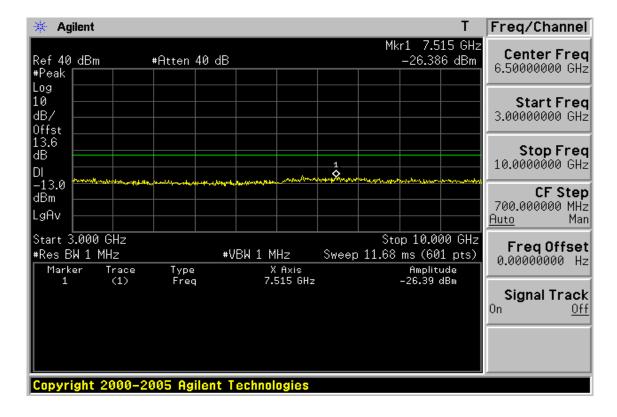


Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 64 of 247

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





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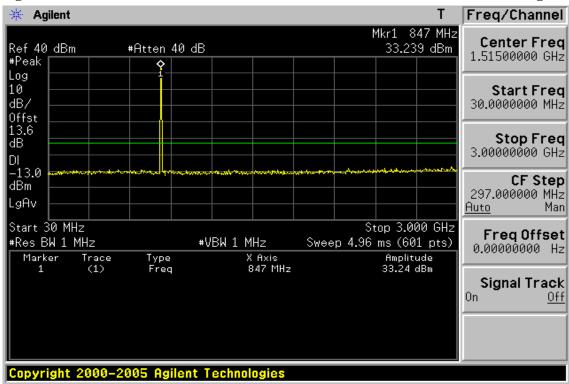
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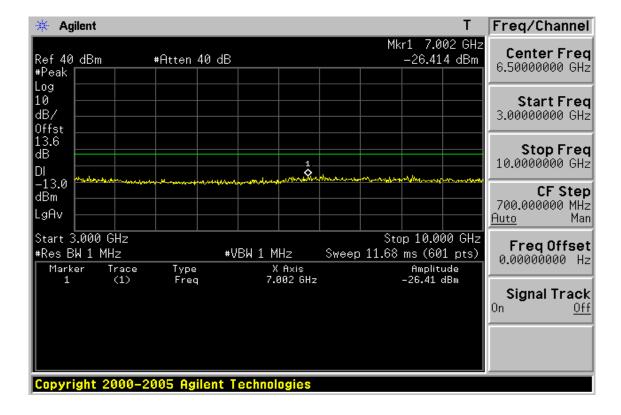


Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 65 of 247

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





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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 66 of 247

## Out of Band emission at antenna terminals – GSM 850

Fundamental Frequency :824.2 MHz Engineer :Nick

Operation Mode :TX Low

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
<30	S		-13.00	
30-1000	S		-13.00	
1648.40	Н		-13.00	
2472.60	Н		-13.00	
3296.80	Н		-13.00	
4121.00	Н		-13.00	
4945.20	Н		-13.00	
5769.40	Н		-13.00	
6593.60	Н		-13.00	
7037.00	S	-26.37	-13.00	13.37
7417.80	Н		-13.00	
8242.00	Н		-13.00	

"H": denotes Harmonic Frequency. "S": denotes Spurious Frequency. Note:

"---": denotes Noise Floor.

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 67 of 247

Fundamental Frequency :836.6 MHz Engineer :Nick

Operation Mode :TX Mid

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
				_
<30	S		-13.00	
30-1000	S		-13.00	
1673.20	Н		-13.00	
2509.80	Н		-13.00	
3346.40	Н		-13.00	
4183.00	Н		-13.00	
5019.60	Н		-13.00	
5856.20	Н		-13.00	
6692.80	Н		-13.00	
7517.00	S	-26.39	-13.00	13.39
7529.00	Н		-13.00	
8366.00	Н		-13.00	

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 68 of 247

Fundamental Frequency :848.8MHz Engineer :Nick

Operation Mode :TX High

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
				_
<30	S		-13.00	
30-1000	S		-13.00	
1697.60	Н		-13.00	
2546.40	Н		-13.00	
3395.20	Н		-13.00	
4244.00	Н		-13.00	
5092.80	Н		-13.00	
5941.60	Н		-13.00	
6790.40	Н		-13.00	
7002.00	S	-26.41	-13.00	13.41
7639.20	Н		-13.00	
8488.00	Н		-13.00	

"H": denotes Harmonic Frequency. "S": denotes Spurious Frequency. Note:

"---": denotes Noise Floor.

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 69 of 247

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

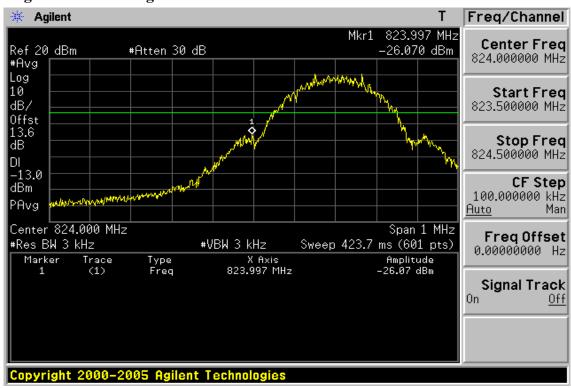
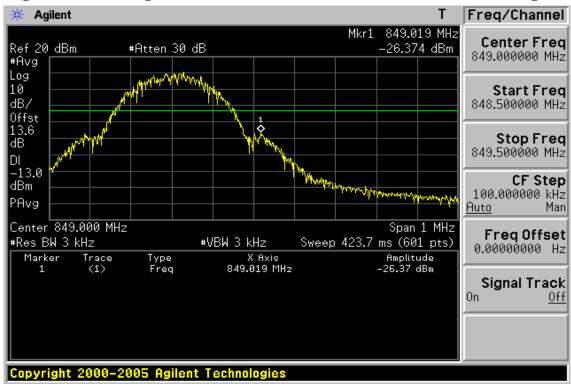


Figure 9-5: Band edge emission at antenna terminals – GSM 850 Channel Highest



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Page: 70 of 247

# Band edge emission at antenna terminals - GSM 850 Low & High

Test Mode **GSM 850** Engineer :Nick

Freq. MHz	Reading dBm	Limit dBm	Safe Margin dB
823.997	-26.07	-13.00	13.07
849.019	-26.37	-13.00	13.37

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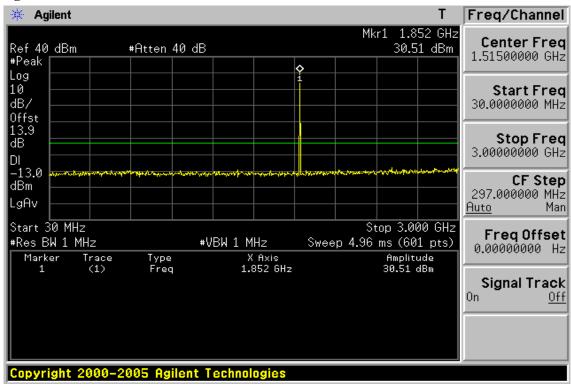
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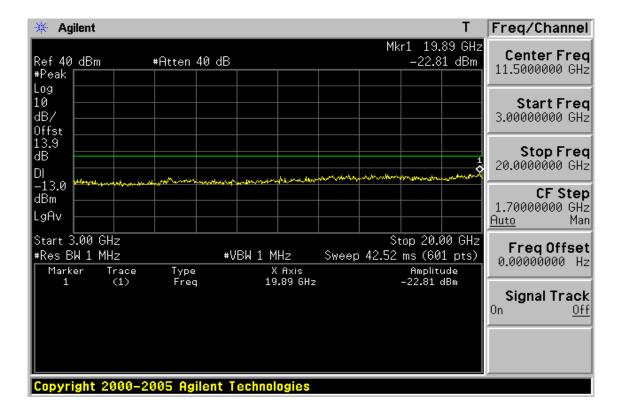


Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 71 of 247

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





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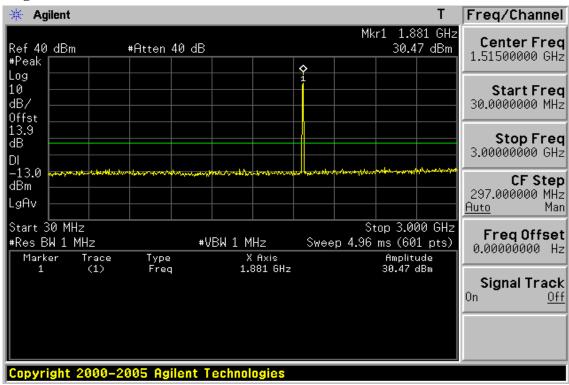
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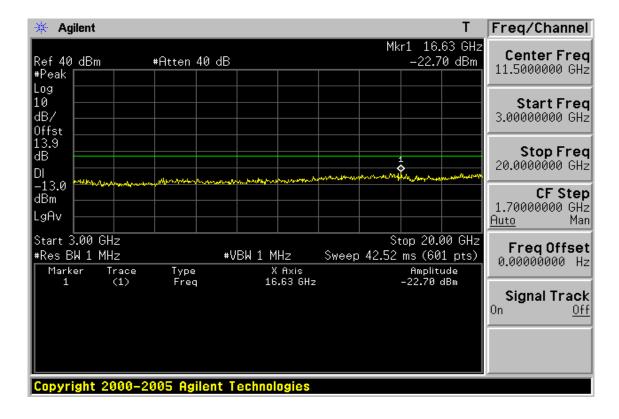


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Page: 72 of 247

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





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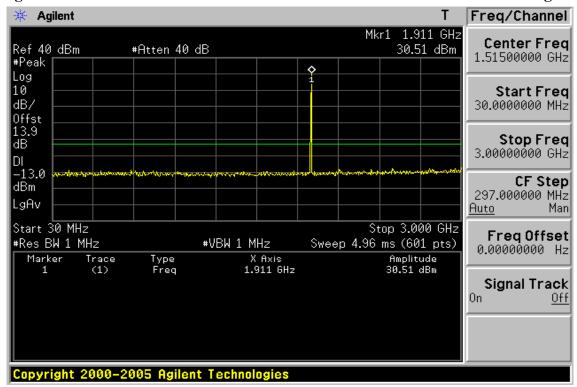
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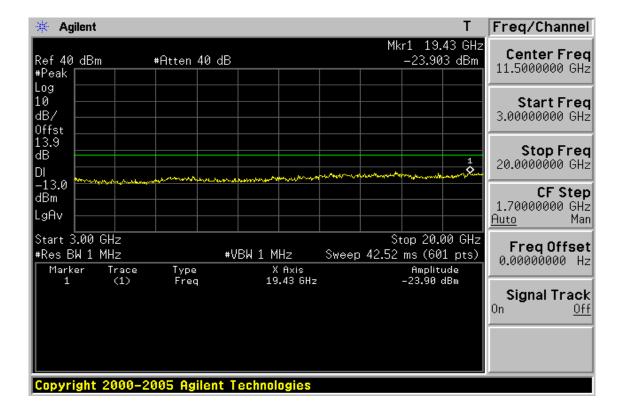


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Page: 73 of 247

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





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Page: 74 of 247

## Out of Band emission at antenna terminals - GSM 1900

Fundamental Frequency :1850.2 MHz Engineer :Nick

Operation Mode :TX Low

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
<30	S		-13.00	
30-1000	S		-13.00	
3700.40	Н		-13.00	
5550.60	Н		-13.00	
7400.80	Н		-13.00	
9251.00	Н		-13.00	
11101.20	Н		-13.00	
12951.40	Н		-13.00	
14801.60	Н		-13.00	
16651.80	Н		-13.00	
18502.00	Н		-13.00	
19890.00	S	-22.81	-13.00	9.81

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 75 of 247

Fundamental Frequency :1880.0 MHz Engineer :Nick

Operation Mode :TX Mid

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
< 30	S		-13.00	
30-1000	S		-13.00	
3760.00	Н		-13.00	
5640.00	Н		-13.00	
7520.00	Н		-13.00	
9400.00	Н		-13.00	
11280.00	Н		-13.00	
13160.00	Н		-13.00	
15040.00	Н		-13.00	
16630.00	S	-22.70	-13.00	9.70
16920.00	Н		-13.00	
18800.00	Н		-13.00	

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Page: 76 of 247

Fundamental Frequency :1909.8 MHz Engineer :Nick

Operation Mode :TX High

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
				_
< 30	S		-13.00	
30-1000	S		-13.00	
3819.60	Н		-13.00	
5729.40	Н		-13.00	
7639.20	Н		-13.00	
9549.00	Н		-13.00	
11458.80	Н		-13.00	
13368.60	Н		-13.00	
15278.40	Н		-13.00	
17188.20	Н		-13.00	
19098.00	Н		-13.00	
19430.00	S	-23.9	-13.00	10.90

"H": denotes Harmonic Frequency. "S": denotes Spurious Frequency. Note:

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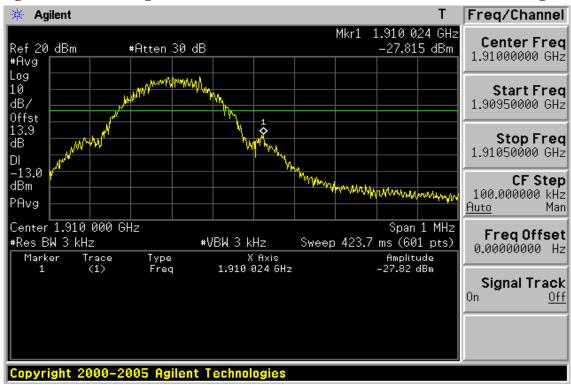
Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 77 of 247

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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Page: 78 of 247

## Band edge emission at antenna terminals - GSM 1900 Low & High

Engineer Test Mode GSM 1900 :Nick

Freq. MHz	Reading dBm	Limit dBm	Safe Margin dB
1849.992	-31.71	-13.00	18.71
1910.024	-27.82	-13.00	14.82

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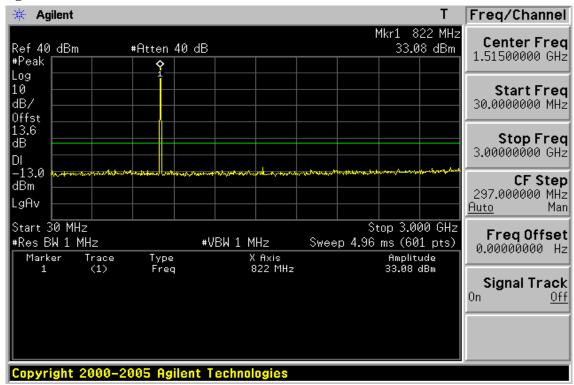
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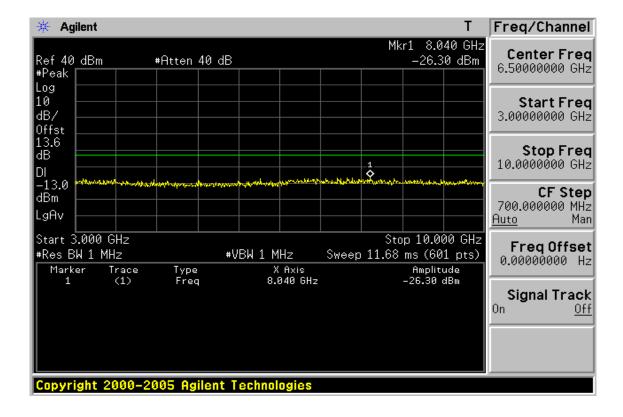


Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 79 of 247

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





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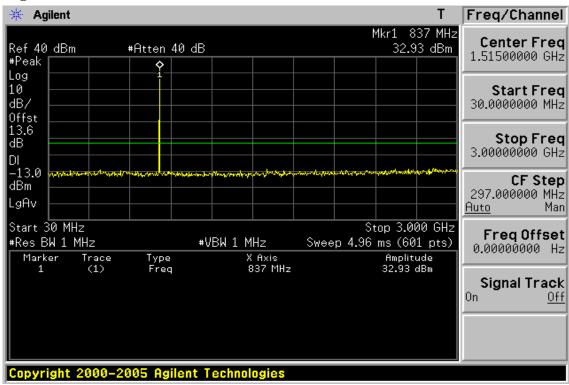
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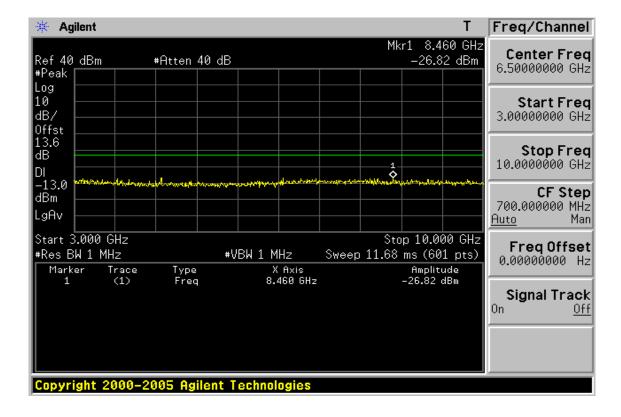


Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 80 of 247

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





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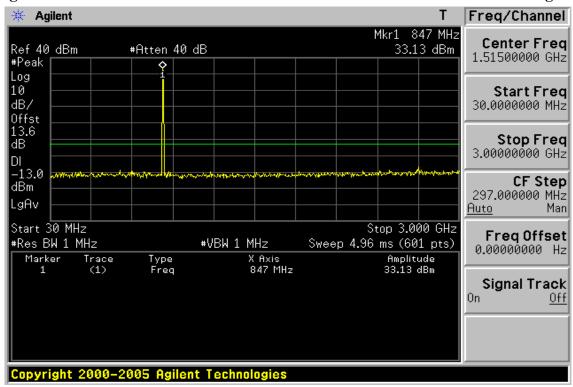
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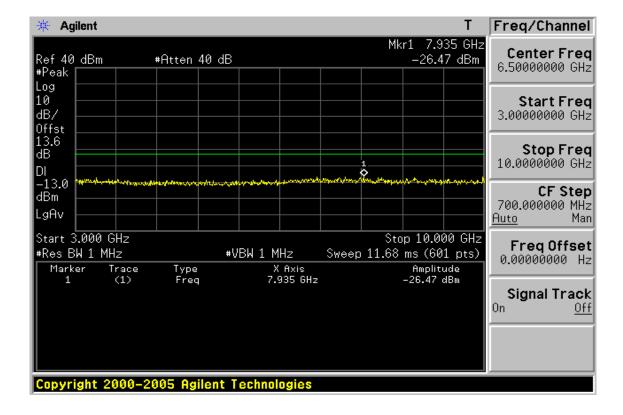


Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 81 of 247

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





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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 82 of 247

#### Out of Band emission at antenna terminals - GPRS 850

Fundamental Frequency :824.2 MHz Engineer :Nick

Operation Mode :TX Low

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
<30	S		-13.00	
30-1000	S		-13.00	
1648.40	Н		-13.00	
2472.60	Н		-13.00	
3296.80	Н		-13.00	
4121.00	Н		-13.00	
4945.20	Н		-13.00	
5769.40	Н		-13.00	
6593.60	Н		-13.00	
7417.80	Н		-13.00	
8040.00	S	-26.30	-13.00	13.30
8242.00	Н		-13.00	

"H": denotes Harmonic Frequency. "S": denotes Spurious Frequency. Note:

"---": denotes Noise Floor.

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 83 of 247

Fundamental Frequency :836.6 MHz Engineer :Nick

Operation Mode :TX Mid

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
<30	S		-13.00	
30-1000	S		-13.00	
1673.20	Н		-13.00	
2509.80	Н		-13.00	
3346.40	Н		-13.00	
4183.00	Н		-13.00	
5019.60	Н		-13.00	
5856.20	Н		-13.00	
6692.80	Н		-13.00	
7529.40	Н		-13.00	
8366.00	Н		-13.00	
8460.00	S	-26.82	-13.00	13.82

"H": denotes Harmonic Frequency. "S": denotes Spurious Frequency. Note:

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 84 of 247

Fundamental Frequency :848.8MHz Engineer :Nick

Operation Mode :TX High

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
<30	S		-13.00	
30-1000	S		-13.00	
1697.60	Н		-13.00	
2546.40	Н		-13.00	
3395.20	Н		-13.00	
4244.00	Н		-13.00	
5092.80	Н		-13.00	
5941.60	Н		-13.00	
6790.40	Н		-13.00	
7639.20	Н		-13.00	
7935.00	S	-26.47	-13.00	13.47
8488.00	Н		-13.00	

"H": denotes Harmonic Frequency. "S": denotes Spurious Frequency. Note:

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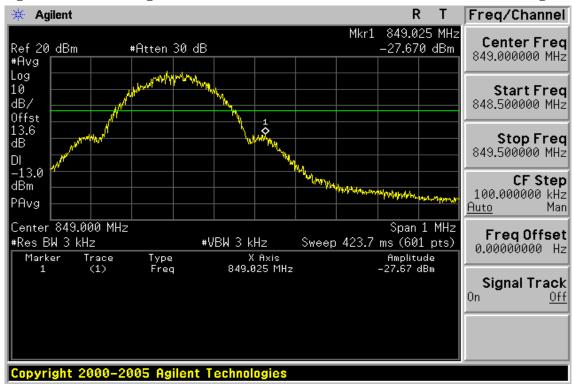
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Page: 85 of 247

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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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 86 of 247

## Band edge emission at antenna terminals - GPRS 850 Low & High

Engineer Test Mode **GPRS 850** :Nick

Freq. MHz	Reading dBm	Limit dBm	Safe Margin dB
823.997	-26.25	-13.00	13.25
849.025	-27.67	-13.00	14.67

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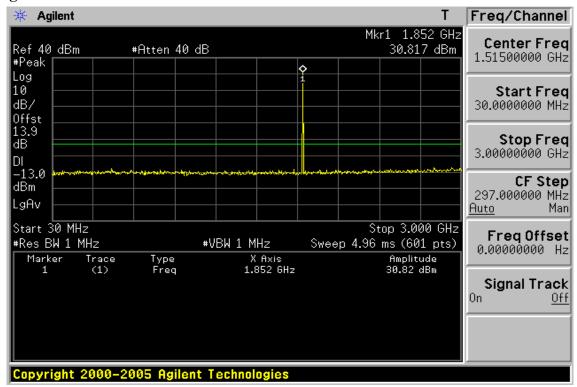
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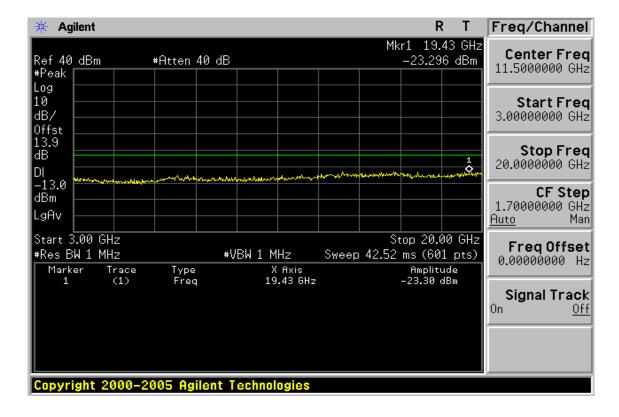


Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 87 of 247

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





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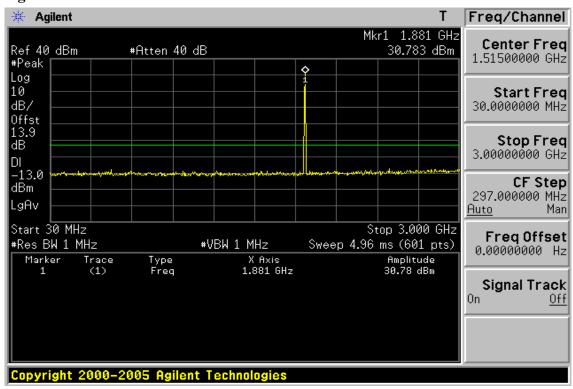
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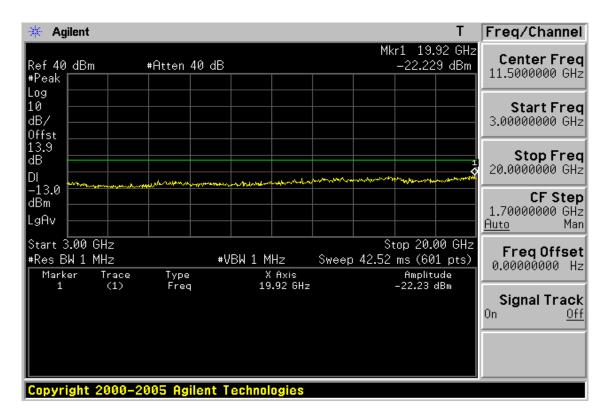


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Page: 88 of 247

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





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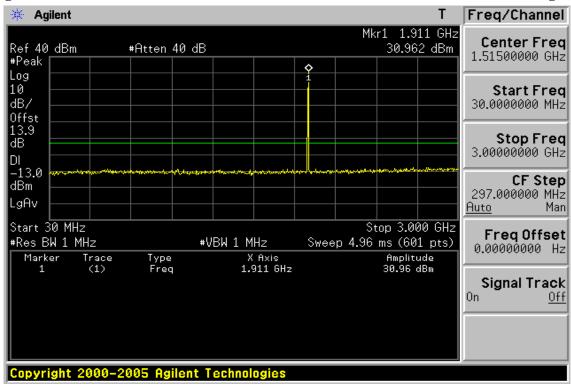
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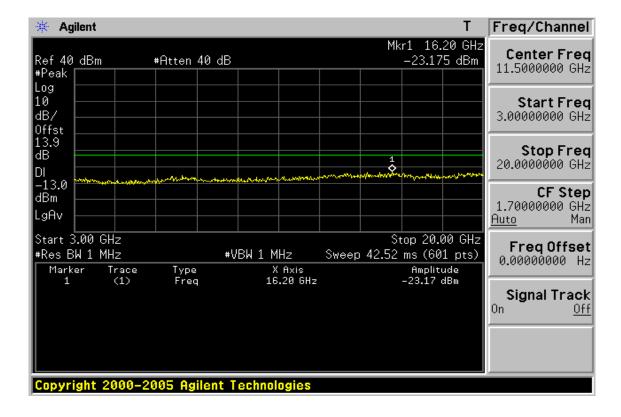


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Page: 89 of 247

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





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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 90 of 247

## Out of Band emission at antenna terminals - GPRS 1900

Fundamental Frequency :1850.2 MHz Engineer :Nick

Operation Mode :TX Low

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
<30	S		-13.00	
30-1000	S		-13.00	
3700.40	Н		-13.00	
5550.60	Н		-13.00	
7400.80	Н		-13.00	
9251.00	Н		-13.00	
11101.20	Н		-13.00	
12951.40	Н		-13.00	
14801.60	Н		-13.00	
16651.80	Н		-13.00	
18502.00	Н		-13.00	
19430.00	S	-23.30	-13.00	10.30

"H": denotes Harmonic Frequency. "S": denotes Spurious Frequency. Note:

"---": denotes Noise Floor.

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 91 of 247

Fundamental Frequency :1880.0 MHz Engineer :Nick

Operation Mode :TX Mid

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
				_
<30	S		-13.00	
30-1000	S		-13.00	
3760.00	Н		-13.00	
5640.00	Н		-13.00	
7520.00	Н		-13.00	
9400.00	Н		-13.00	
11280.00	Н		-13.00	
13160.00	Н		-13.00	
15040.00	Н		-13.00	
16920.00	Н		-13.00	
18800.00	Н		-13.00	
19920.00	S	-22.23	-13.00	9.23

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 92 of 247

Fundamental Frequency :1909.8 MHz Engineer :Nick

Operation Mode :TX High

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
<30	S		-13.00	
30-1000	S		-13.00	
3819.60	Н		-13.00	
5729.40	Н		-13.00	
7639.20	Н		-13.00	
9549.00	Н		-13.00	
11458.80	Н		-13.00	
13368.60	Н		-13.00	
15278.40	Н		-13.00	
16200.00	S	-23.17	-13.00	10.17
17188.20	Н		-13.00	
19098.00	Н		-13.00	

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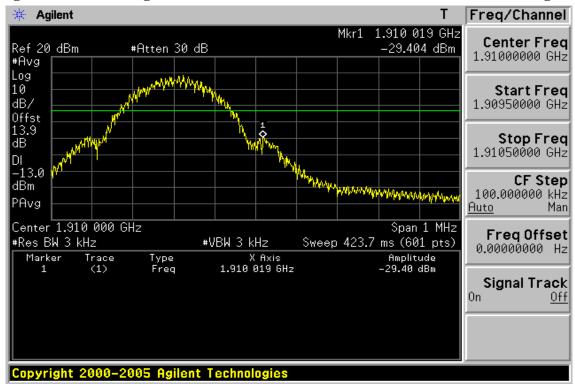
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Page: 93 of 247

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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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 94 of 247

## Band edge emission at antenna terminals - GPRS 1900 Low & High

Test Mode **GPRS 1900** Engineer :Nick

Freq. MHz	Reading dBm	Limit dBm	Safe Margin dB
1040.007	-29.21	-13.00	16 21
1849.985 1910.019	-29.21 -29.4	-13.00	16.21 16.40

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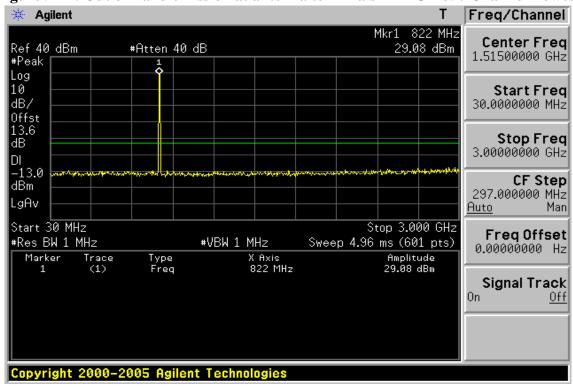
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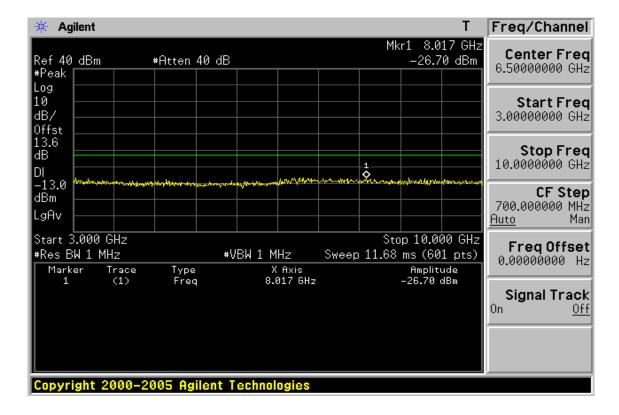


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Page: 95 of 247

Figure 9-21: Out of Band emission at antenna terminals – EDGE 850 Channel Lowest





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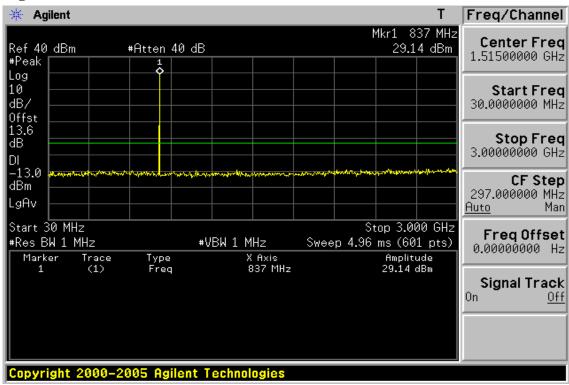
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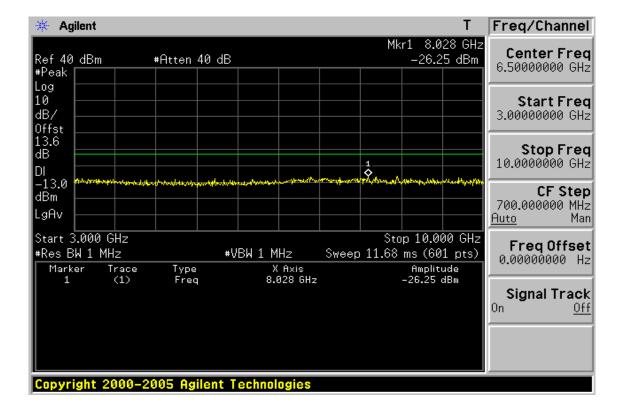


Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 96 of 247

Figure 9-22: Out of Band emission at antenna terminals – EDGE 850 Channel Mid





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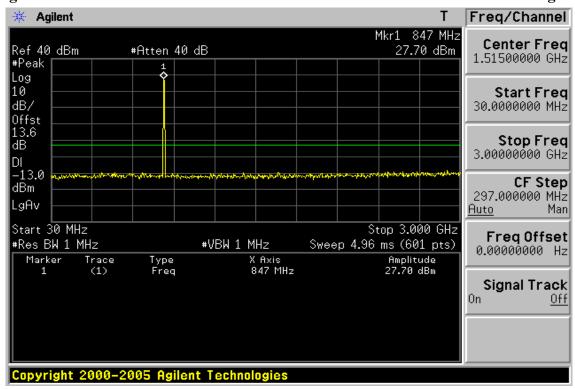
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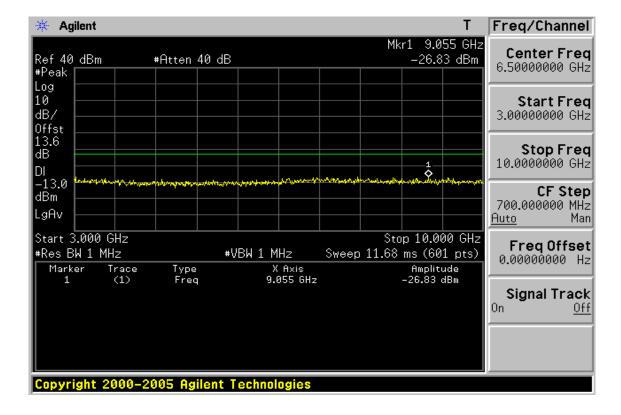


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Page: 97 of 247

Figure 9-23: Out of Band emission at antenna terminals – EDGE 850 Channel Highest





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Page: 98 of 247

#### Out of Band emission at antenna terminals - EDGE 850

Fundamental Frequency :824.2 MHz Engineer :Nick

Operation Mode :TX Low

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
< 30	S		-13.00	
30-1000	S		-13.00	
1648.40	Н		-13.00	
2472.60	Н		-13.00	
3296.80	Н		-13.00	
4121.00	Н		-13.00	
4945.20	Н		-13.00	
5769.40	Н		-13.00	
6593.60	Н		-13.00	
7417.80	Н		-13.00	
8017.00	S	-26.70	-13.00	13.70
8242.00	Н		-13.00	

Note: "H": denotes Harmonic Frequency. "S": denotes Spurious Frequency.

"---": denotes Noise Floor.

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 99 of 247

Fundamental Frequency :836.6 MHz Engineer :Nick

Operation Mode :TX Mid

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
<30	S		-13.00	
30-1000	S		-13.00	
1673.20	Н		-13.00	
2509.80	Н		-13.00	
3346.40	Н		-13.00	
4183.00	Н		-13.00	
5019.60	Н		-13.00	
5856.20	Н		-13.00	
6692.80	Н		-13.00	
7529.40	Н		-13.00	
8028.00	S	-26.25	-13.00	13.25
8366.00	Н		-13.00	

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 100 of 247

Fundamental Frequency :848.8MHz Engineer :Nick

Operation Mode :TX High

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
				_
<30	S		-13.00	
30-1000	S		-13.00	
1697.60	Н		-13.00	
2546.40	Н		-13.00	
3395.20	Н		-13.00	
4244.00	Н		-13.00	
5092.80	Н		-13.00	
5941.60	Н		-13.00	
6790.40	Н		-13.00	
7639.20	Н		-13.00	
8488.00	Н		-13.00	
9055.00	S	-26.83	-13.00	13.83

"H": denotes Harmonic Frequency. "S": denotes Spurious Frequency. Note:

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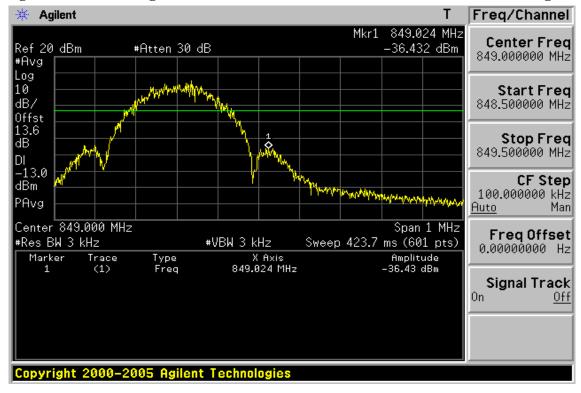
Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 101 of 247

Figure 9-24: Band edge emission at antenna terminals – EDGE 850 Channel Lowest



Figure 9-25: Band edge emission at antenna terminals – EDGE 850 Channel Highest



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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 102 of 247

## Band edge emission at antenna terminals – EDGE 850 Low & High

Engineer Test Mode **EDGE 850** :Nick

Freq. MHz	Reading dBm	Limit dBm	Safe Margin dB
823.971	-34.29	-13.00	21.29
849.024	-36.43	-13.00	23.43

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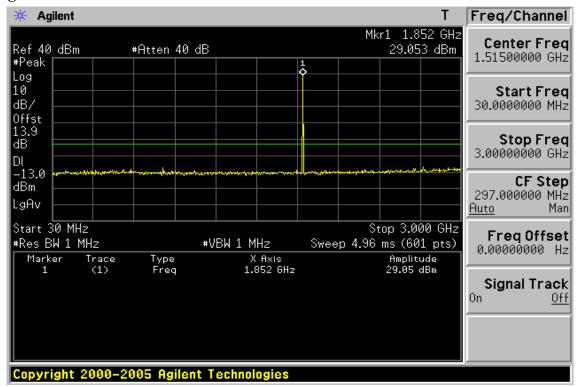
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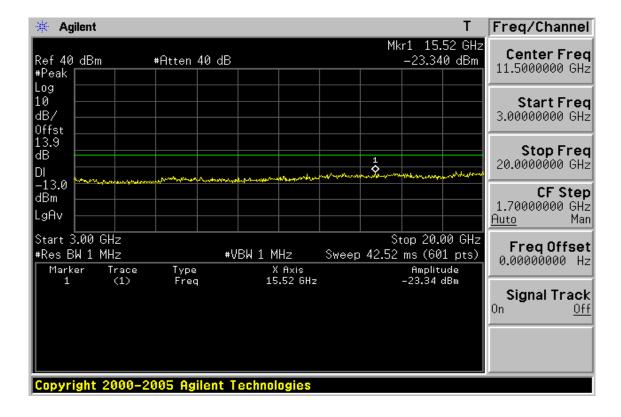


Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 103 of 247

Figure 9-26: Out of Band emission at antenna terminals – EDGE 1900 Channel Lowest





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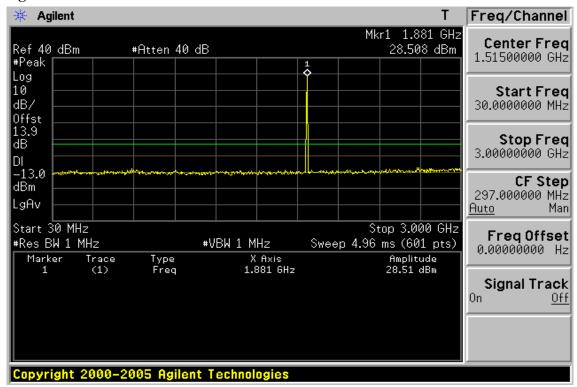
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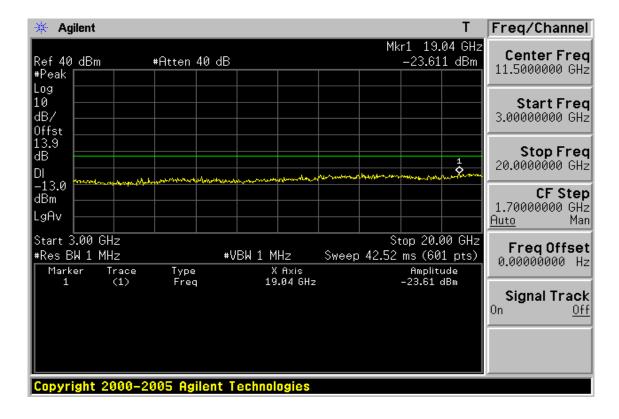


Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 104 of 247

Figure 9-27: Out of Band emission at antenna terminals – EDGE 1900 Channel Mid





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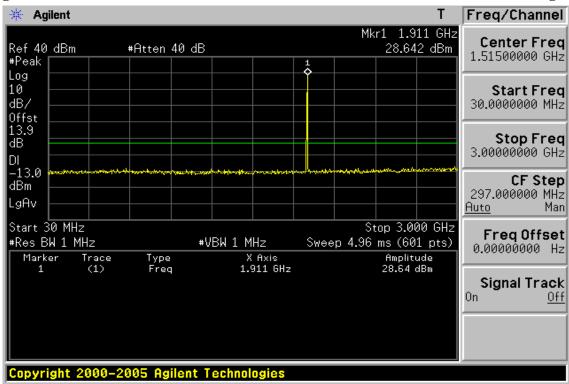
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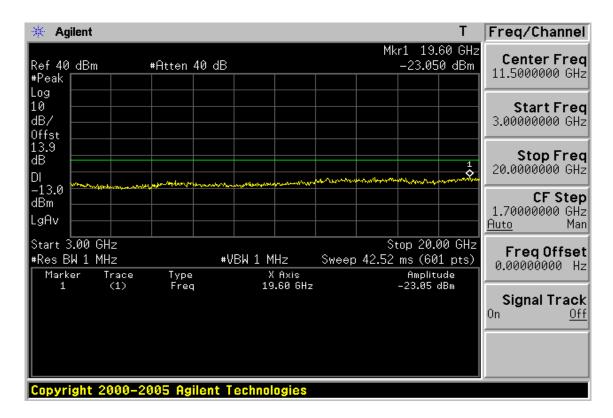


Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 105 of 247

Figure 9-28: Out of Band emission at antenna terminals – EDGE 1900 Channel Highest





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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 106 of 247

# Out of Band emission at antenna terminals - EDGE 1900

Fundamental Frequency :1850.2 MHz Engineer :Nick

Operation Mode :TX Low

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
< 30	S		-13.00	
30-1000	S		-13.00	
3700.40	Н		-13.00	
5550.60	Н		-13.00	
7400.80	Н		-13.00	
9251.00	Н		-13.00	
11101.20	Н		-13.00	
12951.40	Н		-13.00	
14801.60	Н		-13.00	
15520.00	S	-23.34	-13.00	10.34
16651.80	Н		-13.00	
18502.00	Н		-13.00	

"H": denotes Harmonic Frequency. "S": denotes Spurious Frequency. Note:

"---": denotes Noise Floor.

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 107 of 247

Fundamental Frequency :1880.0 MHz Engineer :Nick

Operation Mode :TX Mid

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
< 30	S		-13.00	
30-1000	S		-13.00	
3760.00	Н		-13.00	
5640.00	Н		-13.00	
7520.00	Н		-13.00	
9400.00	Н		-13.00	
11280.00	Н		-13.00	
13160.00	Н		-13.00	
15040.00	Н		-13.00	
16920.00	Н		-13.00	
18800.00	Н		-13.00	
19040.00	S	-23.61	-13.00	10.61

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 108 of 247

Fundamental Frequency :1909.8 MHz Engineer :Nick

Operation Mode :TX High

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
<30	S		-13.00	
30-1000	S		-13.00	
3819.60	Н		-13.00	
5729.40	Н		-13.00	
7639.20	Н		-13.00	
9549.00	Н		-13.00	
11458.80	Н		-13.00	
13368.60	Н		-13.00	
15278.40	Н		-13.00	
17188.20	Н		-13.00	
19098.00	Н		-13.00	
19600.00	S	-23.05	-13.00	10.05

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Page: 109 of 247

Figure 9-29: Band edge emission at antenna terminals – EDGE 1900 Channel Lowest

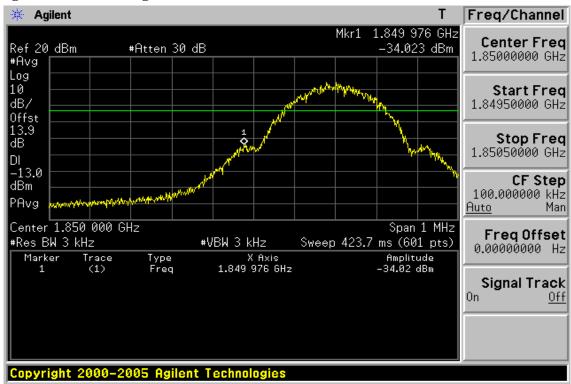
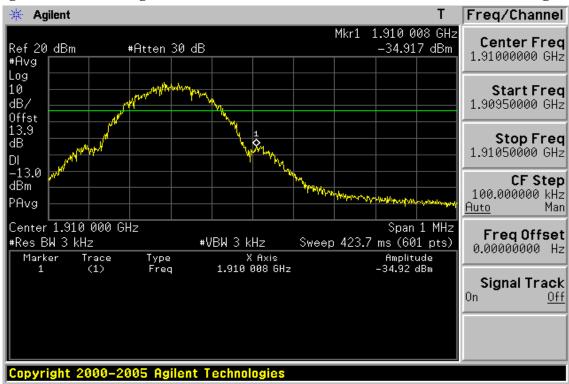


Figure 9-30: Band edge emission at antenna terminals – EDGE 1900 Channel Highest



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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 110 of 247

# Band edge emission at antenna terminals - EDGE 1900 Low & High

Test Mode EDGE 1900: Engineer :Nick

Freq. MHz	Reading dBm	Limit dBm	Safe Margin dB
1849.976	-34.02	-13.00	21.02
1910.008	-34.92	-13.00	21.92

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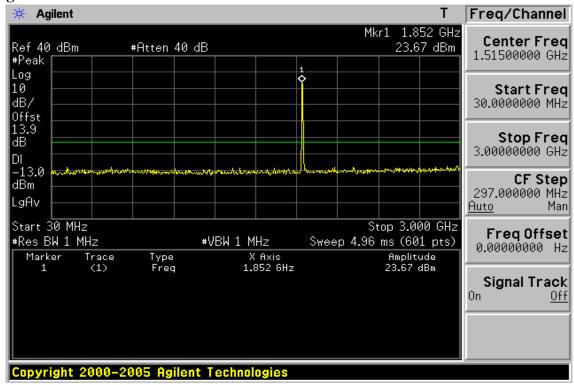
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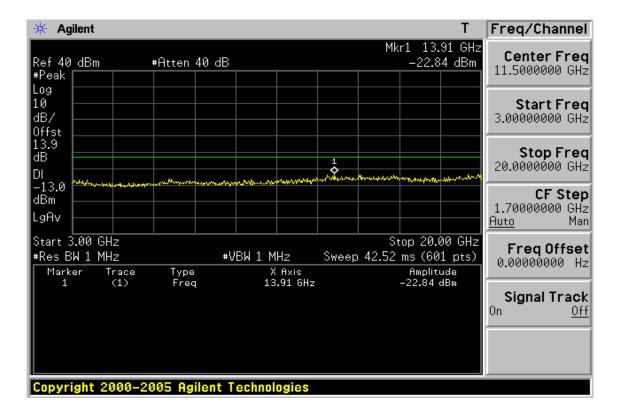


Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 111 of 247

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





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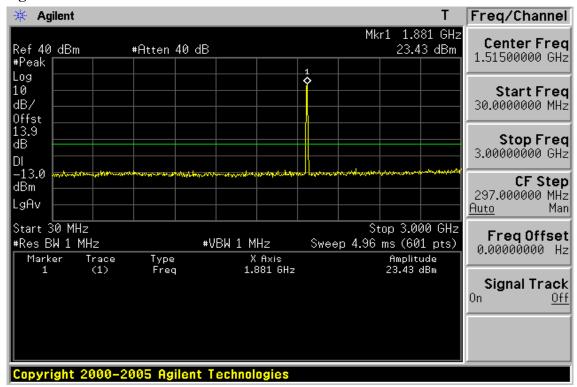
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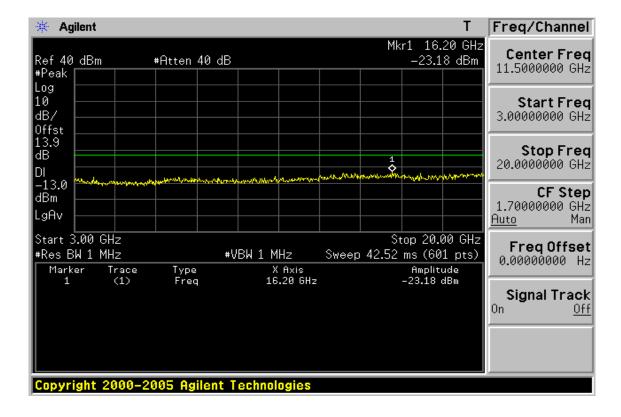


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Page: 112 of 247

Figure 9-32: Out of Band emission at antenna terminals – WCDMA II Channel Mid





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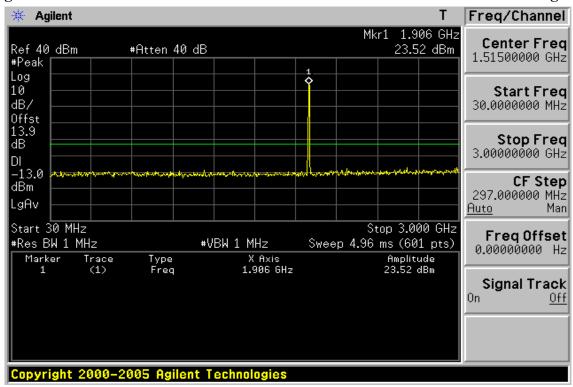
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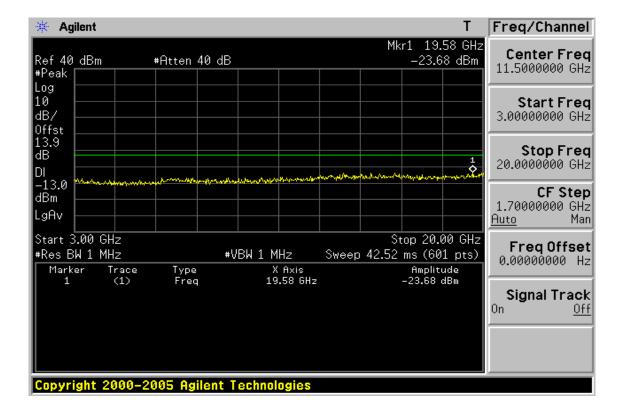


Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 113 of 247

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





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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 114 of 247

# Out of Band emission at antenna terminals - WCDMA II

Fundamental Frequency :1852.4 MHz Engineer :Nick

Operation Mode :TX Low

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
<30	S		-13.00	
30-1000	S		-13.00	
3704.80	Н		-13.00	
5557.20	Н		-13.00	
7409.60	Н		-13.00	
9262.00	Н		-13.00	
11114.40	Н		-13.00	
12966.80	Н		-13.00	
13910.00	S	-22.84	-13.00	9.84
14819.20	Н		-13.00	
16671.60	Н		-13.00	
18524.00	Н		-13.00	

"H": denotes Harmonic Frequency. "S": denotes Spurious Frequency. Note:

"---": denotes Noise Floor.

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 115 of 247

Fundamental Frequency :1880.0 MHz Engineer :Nick

Operation Mode :TX Mid

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
				_
<30	S		-13.00	
30-1000	S		-13.00	
3760.00	Н		-13.00	
5640.00	Н		-13.00	
7520.00	Н		-13.00	
9400.00	Н		-13.00	
11280.00	Н		-13.00	
13160.00	Н		-13.00	
15040.00	Н		-13.00	
16200.00	S	-23.18	-13.00	10.18
16920.00	Н		-13.00	
18800.00	Н		-13.00	

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 116 of 247

Fundamental Frequency :1907.6MHz Engineer :Nick

Operation Mode :TX High

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
				_
< 30	S		-13.00	
30-1000	S		-13.00	
3815.20	Н		-13.00	
5722.80	Н		-13.00	
7630.40	Н		-13.00	
9538.00	Н		-13.00	
11445.60	Н		-13.00	
13353.20	Н		-13.00	
15260.80	Н		-13.00	
17168.40	Н		-13.00	
19076.00	Н		-13.00	
19580.00	S	-23.68	-13.00	10.68

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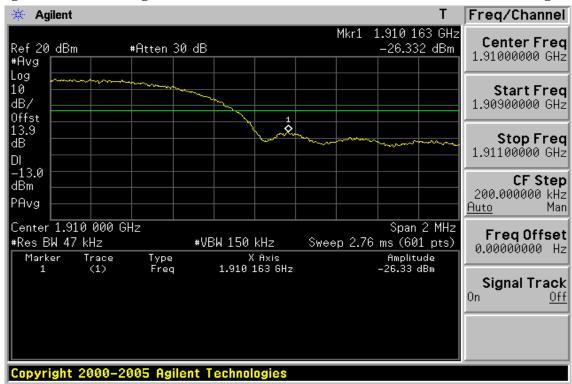
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Page: 117 of 247

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



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



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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 118 of 247

# Band edge emission at antenna terminals - WCDMA II Low & High

Test Mode WCDMA II Engineer :Nick

Freq. MHz	Reading dBm	Limit dBm	Safe Margin dB
1849.873	-27.15	-13.00	14.15
1910.163	-26.33	-13.00	13.33

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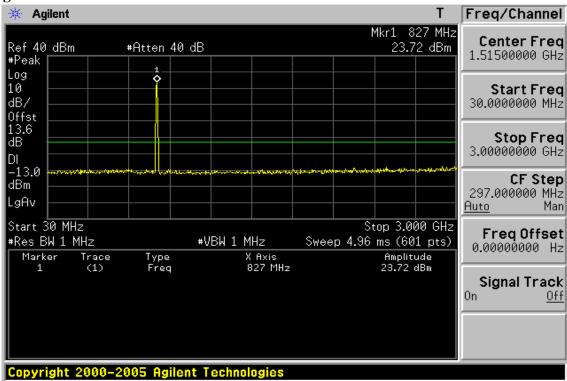
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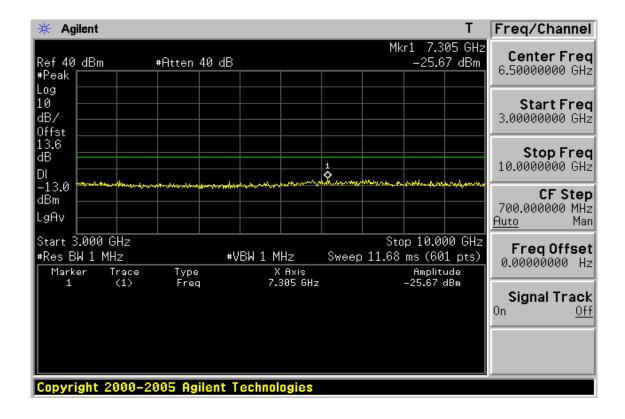


Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 119 of 247

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





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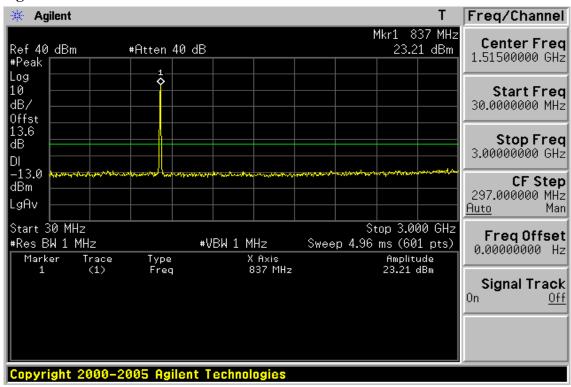
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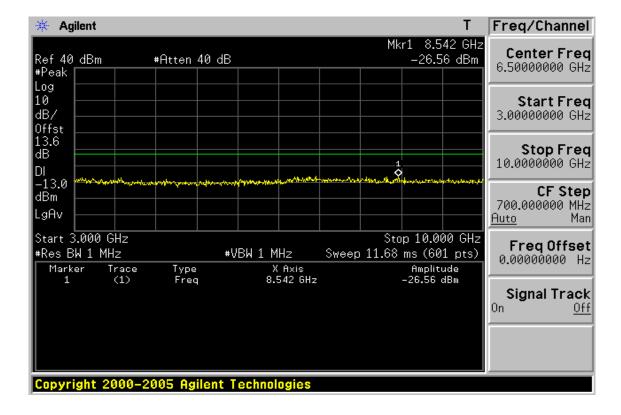


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Page: 120 of 247

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





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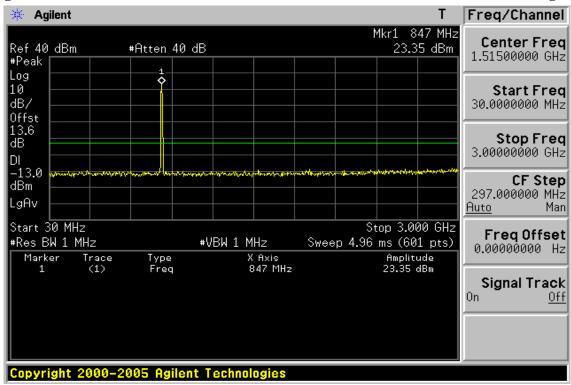
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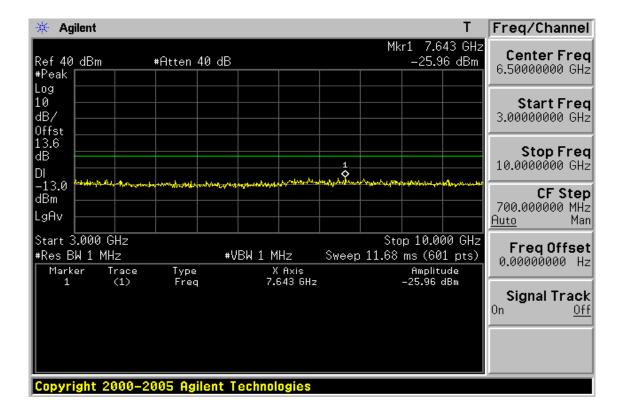


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Page: 121 of 247

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





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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 122 of 247

### Out of Band emission at antenna terminals - WCDMA V

Fundamental Frequency :826.4 MHz Engineer :Nick

Operation Mode :TX Low

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
<30	S		-13.00	
30-1000	S		-13.00	
1652.80	Н		-13.00	
2479.20	Н		-13.00	
3305.60	Н		-13.00	
4132.00	Н		-13.00	
4958.40	Н		-13.00	
5784.80	Н		-13.00	
6611.20	Н		-13.00	
7305.00	S	-25.67	-13.00	12.67
7437.60	Н		-13.00	
8264.00	Н		-13.00	

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 123 of 247

Fundamental Frequency :836.6 MHz Engineer :Nick

Operation Mode :TX Mid

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
<30	S		-13.00	
30-1000	S		-13.00	
1673.20	Н		-13.00	
2509.80	Н		-13.00	
3346.40	Н		-13.00	
4183.00	Н		-13.00	
5019.60	Н		-13.00	
5856.20	Н		-13.00	
6692.80	Н		-13.00	
7529.40	Н		-13.00	
8366.00	Н		-13.00	
8542.00	S	-26.56	-13.00	13.56

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Page: 124 of 247

Fundamental Frequency :846.6MHz Engineer :Nick

Operation Mode :TX High

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
				_
<30	S		-13.00	
30-1000	S		-13.00	
1693.20	Н		-13.00	
2539.80	Н		-13.00	
3386.40	Н		-13.00	
4233.00	Н		-13.00	
5079.60	Н		-13.00	
5926.20	Н		-13.00	
6772.80	Н		-13.00	
7619.40	Н		-13.00	
7643.00	S	-25.96	-13.00	12.96
8466.00	Н		-13.00	

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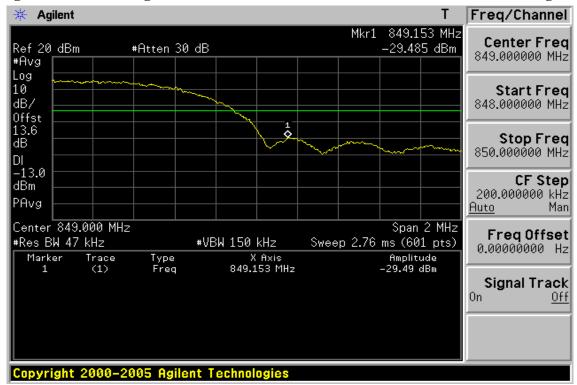
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Page: 125 of 247

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



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



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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 126 of 247

# Band edge emission at antenna terminals - WCDMA V Low & High

Test Mode WCDMA V Engineer :Nick

Reading dBm	Limit dBm	Safe Margin dB
20.56	12.00	16.56
		16.56 16.49
	-29.56	dBm dBm

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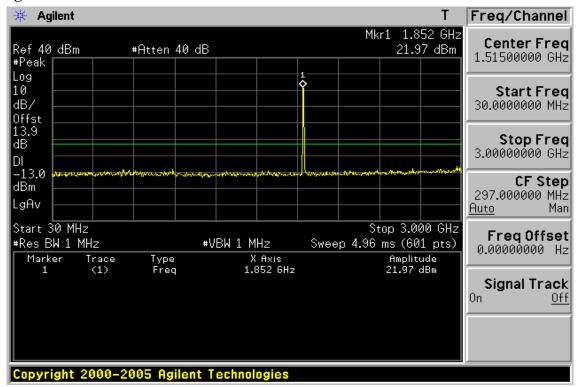
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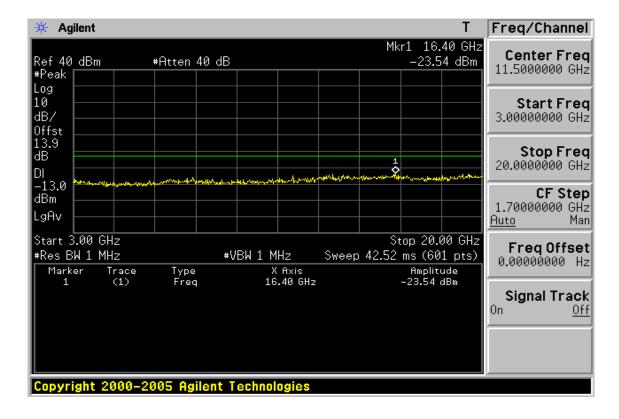


Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 127 of 247

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





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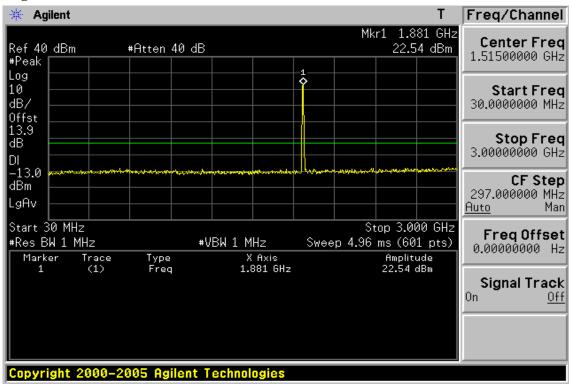
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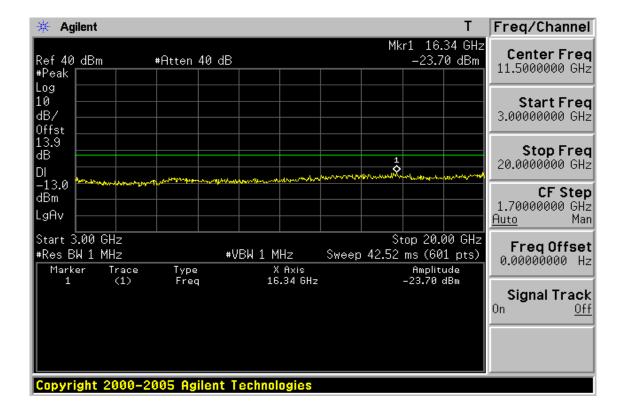


Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 128 of 247

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





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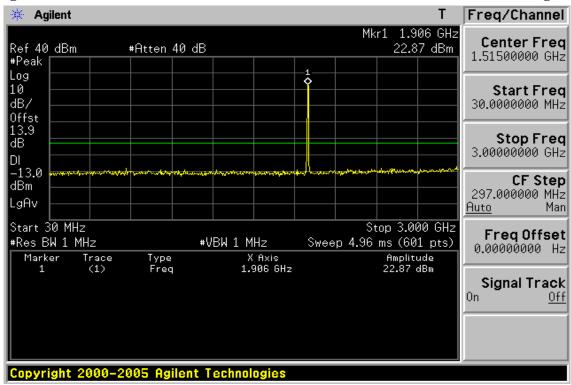
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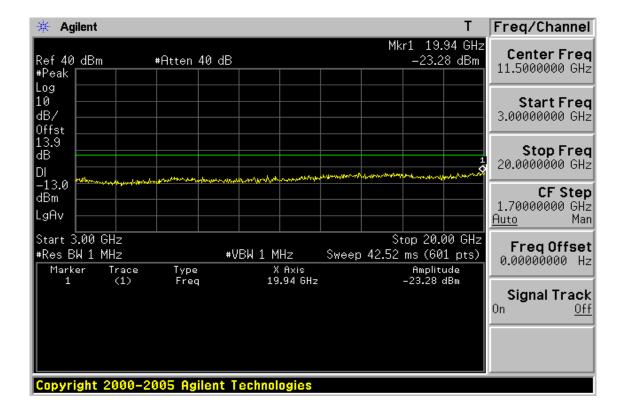


Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 129 of 247

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





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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 130 of 247

# Out of Band emission at antenna terminals - HSDPA II

Fundamental Frequency :1852.4 MHz Engineer :Nick

Operation Mode :TX Low

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
<30	S		-13.00	
30-1000	S		-13.00	
3704.80	Н		-13.00	
5557.20	Н		-13.00	
7409.60	Н		-13.00	
9262.00	Н		-13.00	
11114.40	Н		-13.00	
12966.80	Н		-13.00	
14819.20	Н		-13.00	
16400.00	S	-23.54	-13.00	10.54
16671.60	Н		-13.00	
18524.00	Н		-13.00	
10521.00				

"H": denotes Harmonic Frequency. "S": denotes Spurious Frequency. Note:

"---": denotes Noise Floor.

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 131 of 247

Fundamental Frequency :1880.0 MHz Engineer :Nick

Operation Mode :TX Mid

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
				_
< 30	S		-13.00	
30-1000	S		-13.00	
3760.00	Н		-13.00	
5640.00	Н		-13.00	
7520.00	Н		-13.00	
9400.00	Н		-13.00	
11280.00	Н		-13.00	
13160.00	Н		-13.00	
15040.00	Н		-13.00	
16340.00	S	-23.70	-13.00	10.70
16920.00	Н		-13.00	
18800.00	Н		-13.00	

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 132 of 247

Fundamental Frequency :1907.6MHz Engineer :Nick

Operation Mode :TX High

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
< 30	S		-13.00	
30-1000	S		-13.00	
3815.20	Н		-13.00	
5722.80	Н		-13.00	
7630.40	Н		-13.00	
9538.00	Н		-13.00	
11445.60	Н		-13.00	
13353.20	Н		-13.00	
15260.80	Н		-13.00	
17168.40	Н		-13.00	
19076.00	Н		-13.00	
19940.00	S	-23.28	-13.00	10.28

"H": denotes Harmonic Frequency. "S": denotes Spurious Frequency. Note:

"---": denotes Noise Floor.

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Page: 133 of 247

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

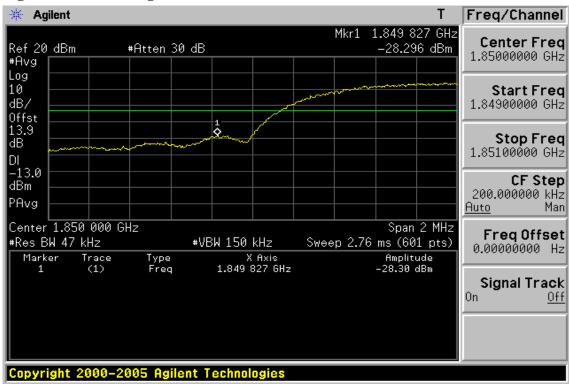
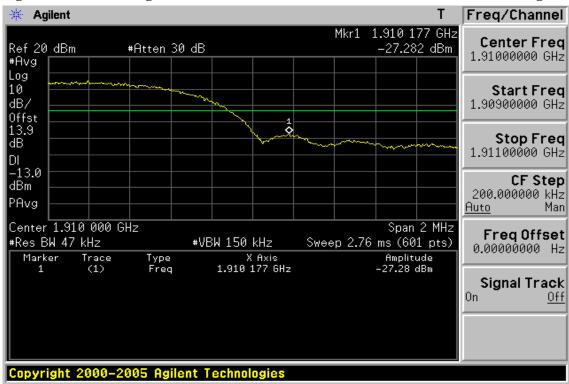


Figure 9-45: Band edge emission at antenna terminals – HSDPA II Channel Highest



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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 134 of 247

# Band edge emission at antenna terminals - HSDPA II Low & High

Engineer Test Mode HSDPA II :Nick

Freq. MHz	Reading dBm	Limit dBm	Safe Margin dB
1849.827	-28.30	-13.00	15.30
1910.177	-27.28	-13.00	14.28

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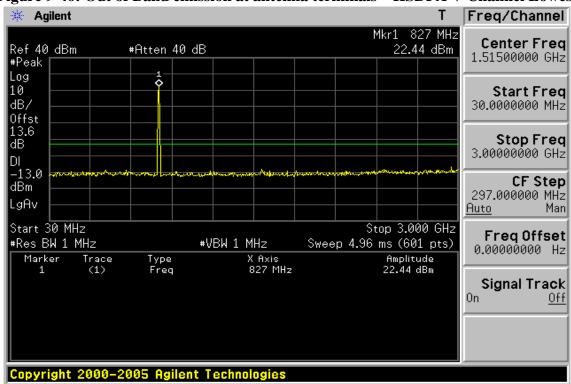
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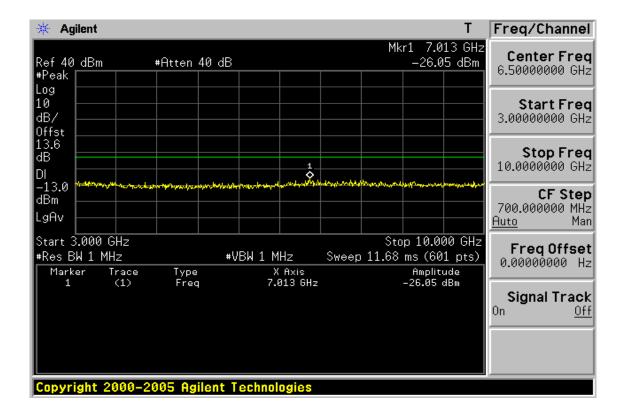


Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 135 of 247

Figure 9-46: Out of Band emission at antenna terminals – HSDPA V Channel Lowest





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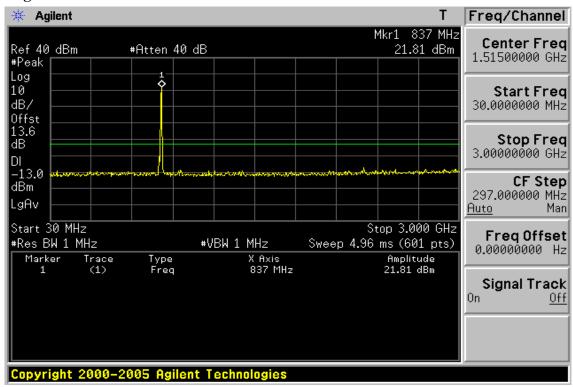
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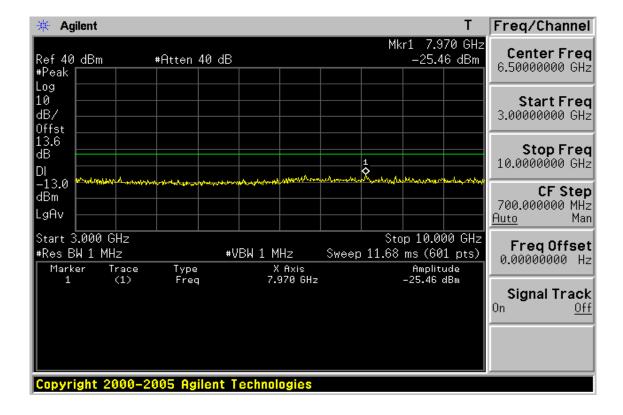


Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 136 of 247

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





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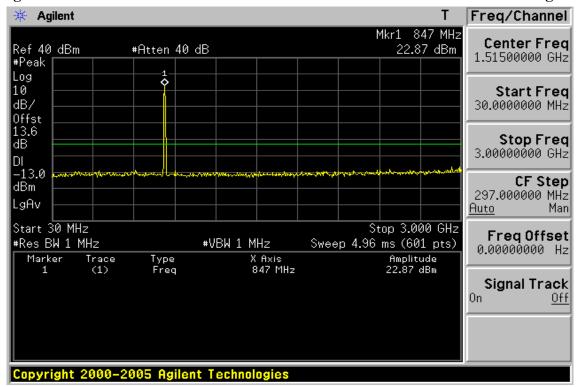
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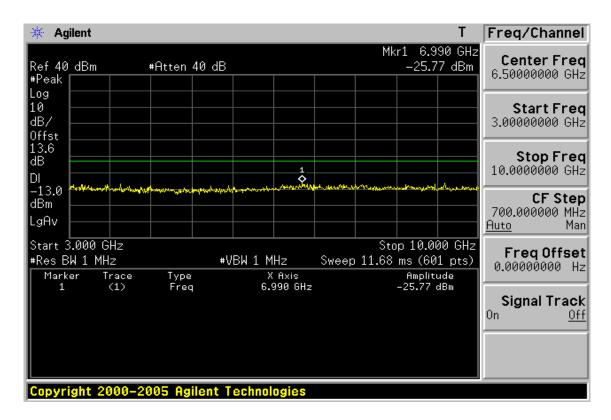


Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 137 of 247

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





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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 138 of 247

### Out of Band emission at antenna terminals - HSDPA V

Fundamental Frequency :826.4 MHz Engineer :Nick

Operation Mode :TX Low

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
< 30	S		-13.00	
30-1000	S		-13.00	
1652.80	Н		-13.00	
2479.20	Н		-13.00	
3305.60	Н		-13.00	
4132.00	Н		-13.00	
4958.40	Н		-13.00	
5784.80	Н		-13.00	
6611.20	Н		-13.00	
7013.00	S	-26.05	-13.00	13.05
7437.60	Н		-13.00	
8264.00	Н		-13.00	
7437.60	Н	-26.05 	-13.00	13.05

"H": denotes Harmonic Frequency. "S": denotes Spurious Frequency. Note:

"---": denotes Noise Floor.

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 139 of 247

Fundamental Frequency :836.6 MHz Engineer :Nick

Operation Mode :TX Mid

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
< 30	S		-13.00	
30-1000	S		-13.00	
1673.20	Н		-13.00	
2509.80	Н		-13.00	
3346.40	Н		-13.00	
4183.00	Н		-13.00	
5019.60	Н		-13.00	
5856.20	Н		-13.00	
6692.80	Н		-13.00	
7529.40	Н		-13.00	
7970.00	S	-25.46	-13.00	12.46
8366.00	Н		-13.00	

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 140 of 247

Fundamental Frequency :846.6MHz Engineer :Nick

Operation Mode :TX High

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
<30	S		-13.00	
30-1000	S		-13.00	
1693.20	Н		-13.00	
2539.80	Н		-13.00	
3386.40	Н		-13.00	
4233.00	Н		-13.00	
5079.60	Н		-13.00	
5926.20	Н		-13.00	
6772.80	Н		-13.00	
6990.00	S	-25.77	-13.00	12.77
7619.40	Н		-13.00	
8466.00	Н		-13.00	

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 141 of 247

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

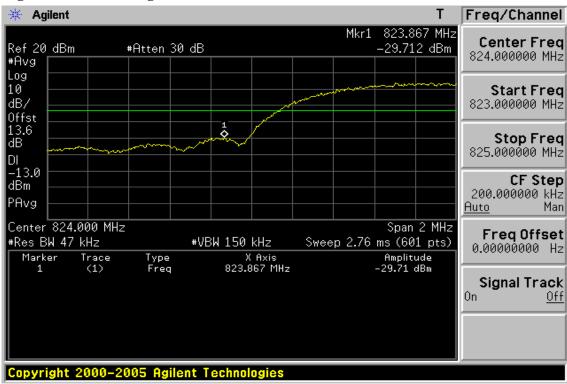
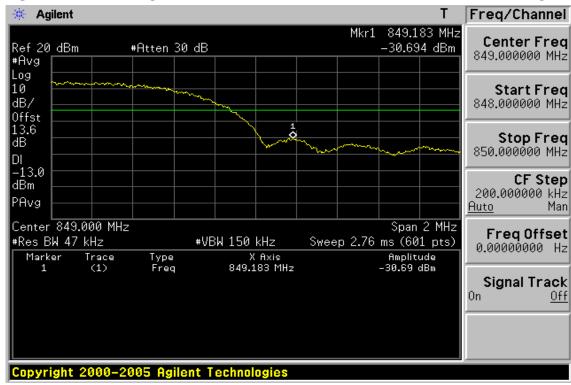


Figure 9-50: Band edge emission at antenna terminals – HSDPA V Channel Highest



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Page: 142 of 247

### Band edge emission at antenna terminals - HSDPA V Low & High

Test Mode HSDPA V Engineer :Nick

Freq. MHz	Reading dBm	Limit dBm	Safe Margin dB
823.867	-29.71	-13.00	16.71
849.183	-30.69	-13.00	17.69

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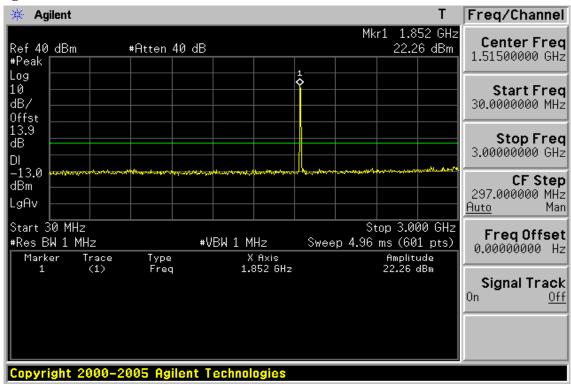
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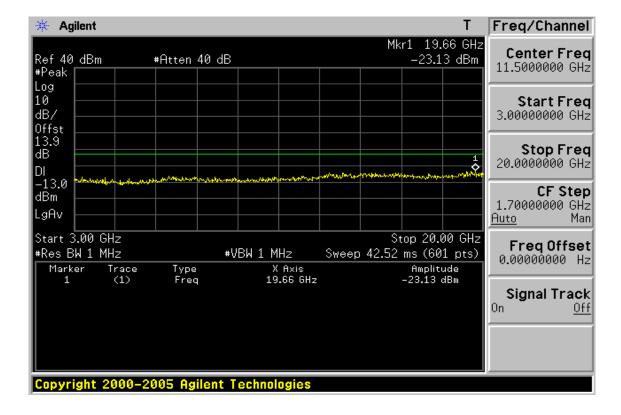


Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 143 of 247

Figure 9-51: Out of Band emission at antenna terminals – HSUPA II Channel Lowest





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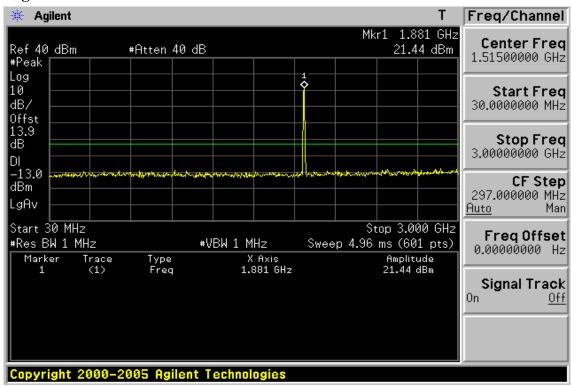
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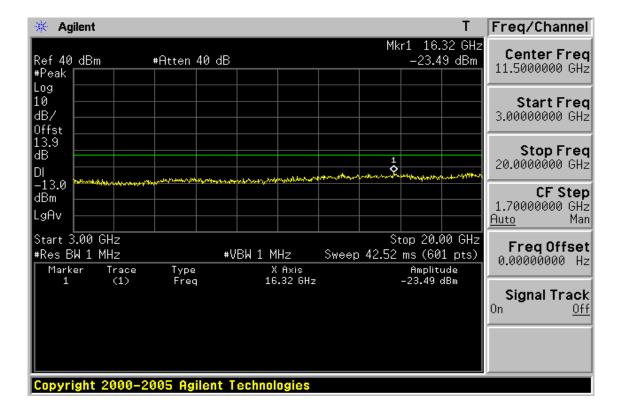


Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 144 of 247

Figure 9-52: Out of Band emission at antenna terminals – HSUPA II Channel Mid





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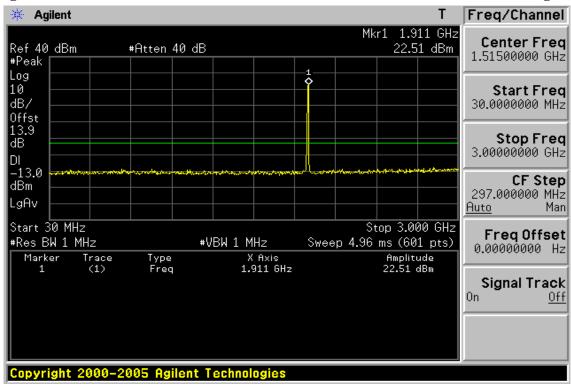
t (886-2) 2299-3279

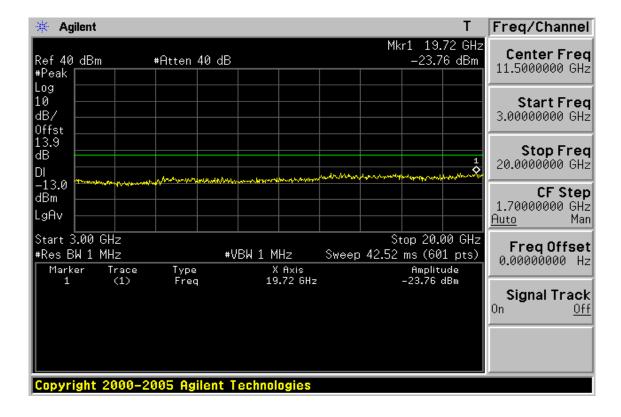


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Page: 145 of 247

Figure 9-53: Out of Band emission at antenna terminals – HSUPA II Channel Highest





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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 146 of 247

# Out of Band emission at antenna terminals - HSUPA II

Fundamental Frequency :1852.4 MHz Engineer :Nick

Operation Mode :TX Low

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
< 30	S		-13.00	
30-1000	S		-13.00	
3704.80	Н		-13.00	
5557.20	Н		-13.00	
7409.60	Н		-13.00	
9262.00	Н		-13.00	
11114.40	Н		-13.00	
12966.80	Н		-13.00	
14819.20	Н		-13.00	
16671.60	Н		-13.00	
18524.00	Н		-13.00	
19660.00	S	-23.13	-13.00	10.13

"H": denotes Harmonic Frequency. "S": denotes Spurious Frequency. Note:

"---": denotes Noise Floor.

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 147 of 247

Fundamental Frequency :1880.0 MHz Engineer :Nick

Operation Mode :TX Mid

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
				_
< 30	S		-13.00	
30-1000	S		-13.00	
3760.00	Н		-13.00	
5640.00	Н		-13.00	
7520.00	Н		-13.00	
9400.00	Н		-13.00	
11280.00	Н		-13.00	
13160.00	Н		-13.00	
15040.00	Н		-13.00	
16320.00	S	-23.49	-13.00	10.49
16920.00	Н		-13.00	
18800.00	Н		-13.00	

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 148 of 247

Fundamental Frequency :1907.6MHz Engineer :Nick

Operation Mode :TX High

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
				_
<30	S		-13.00	
30-1000	S		-13.00	
3815.20	Н		-13.00	
5722.80	Н		-13.00	
7630.40	Н		-13.00	
9538.00	Н		-13.00	
11445.60	Н		-13.00	
13353.20	Н		-13.00	
15260.80	Н		-13.00	
17168.40	Н		-13.00	
19076.00	Н		-13.00	
19720.00	S	-23.76	-13.00	10.76

"H": denotes Harmonic Frequency. "S": denotes Spurious Frequency. Note:

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Page: 149 of 247

Figure 9-54: Band edge emission at antenna terminals – HSUPA II Channel Lowest

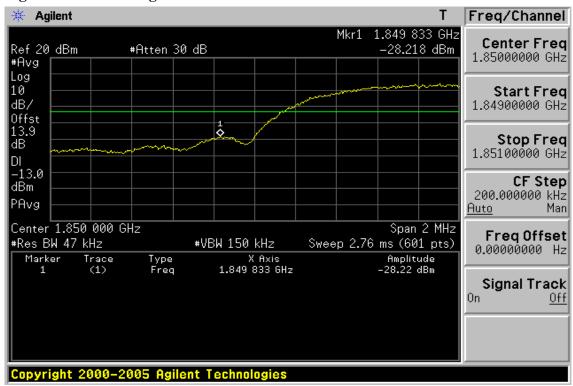
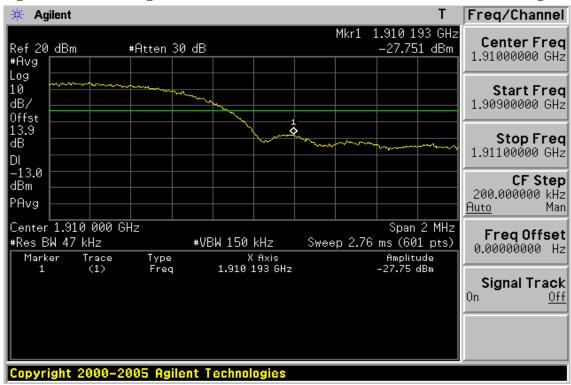


Figure 9-55: Band edge emission at antenna terminals – HSUPA II Channel Highest



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Page: 150 of 247

# Band edge emission at antenna terminals - HSUPA II Low & High

Engineer Test Mode **HSUPA II** :Nick

Freq. MHz	1		Safe Margin dB	
1040 022	-28.22	-13.00	15.22	
1849.833 1910.193	-28.22 -27.75	-13.00	13.22	

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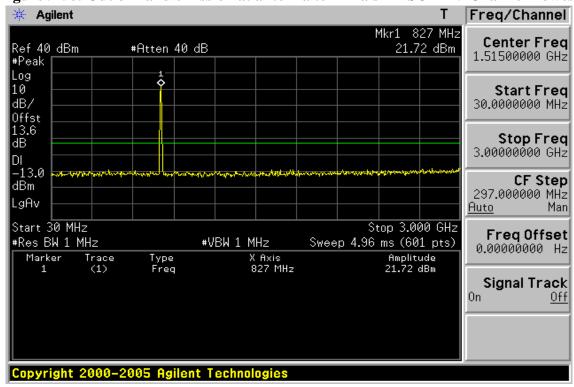
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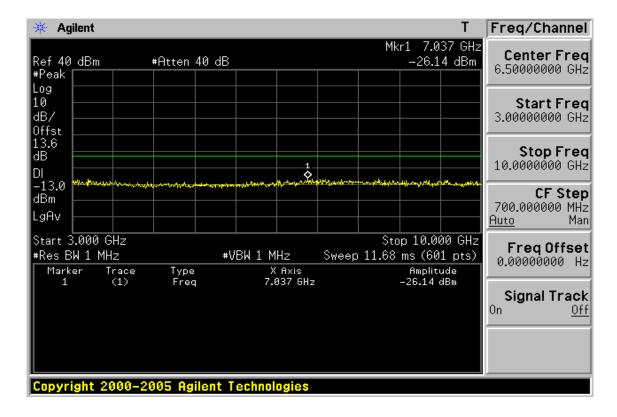


Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 151 of 247

Figure 9-56: Out of Band emission at antenna terminals – HSUPA V Channel Lowest





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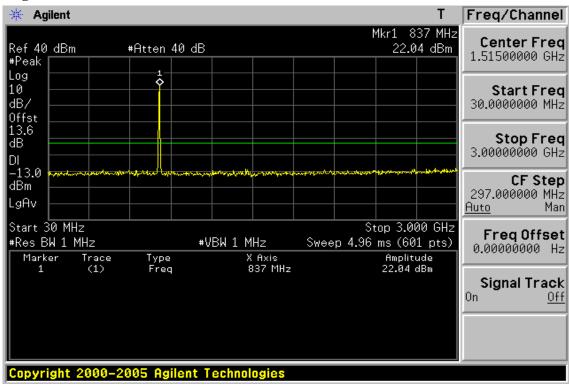
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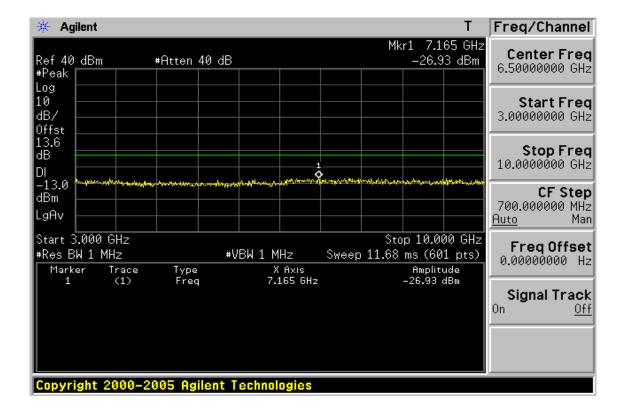


Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 152 of 247

Figure 9-57: Out of Band emission at antenna terminals – HSUPA V Channel Mid





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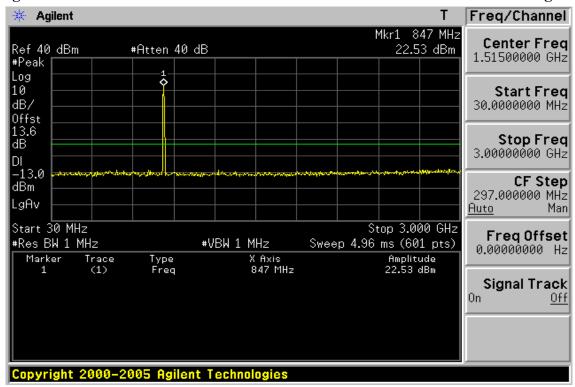
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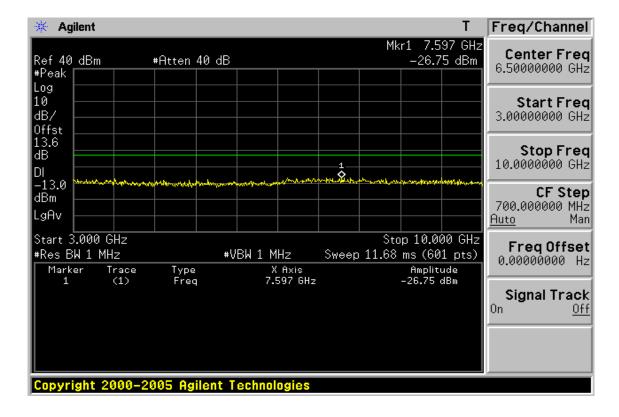


Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 153 of 247

Figure 9-58: Out of Band emission at antenna terminals – HSUPA V Channel Highest





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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 154 of 247

## Out of Band emission at antenna terminals - HSUPA V

Fundamental Frequency :826.4 MHz Engineer :Nick

Operation Mode :TX Low

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
<30	S		-13.00	
30-1000	S		-13.00	
1652.80	Н		-13.00	
2479.20	Н		-13.00	
3305.60	Н		-13.00	
4132.00	Н		-13.00	
4958.40	Н		-13.00	
5784.80	Н		-13.00	
6611.20	Н		-13.00	
7037.00	S	-26.14	-13.00	13.14
7437.60	Н		-13.00	
8264.00	Н		-13.00	

"H": denotes Harmonic Frequency. "S": denotes Spurious Frequency. Note:

"---": denotes Noise Floor.

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 155 of 247

Fundamental Frequency :836.6 MHz Engineer :Nick

Operation Mode :TX Mid

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
< 30	S		-13.00	
30-1000	S		-13.00	
1673.20	Н		-13.00	
2509.80	Н		-13.00	
3346.40	Н		-13.00	
4183.00	Н		-13.00	
5019.60	Н		-13.00	
5856.20	Н		-13.00	
6692.80	Н		-13.00	
7165.00	S	-26.93	-13.00	13.93
7529.40	Н		-13.00	
8366.00	Н		-13.00	

"H": denotes Harmonic Frequency. "S": denotes Spurious Frequency. Note:

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 156 of 247

Fundamental Frequency :846.6MHz Engineer :Nick

Operation Mode :TX High

Freq. (MHz)	Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
				_
<30	S		-13.00	
30-1000	S		-13.00	
1693.20	Н		-13.00	
2539.80	Н		-13.00	
3386.40	Н		-13.00	
4233.00	Н		-13.00	
5079.60	Н		-13.00	
5926.20	Н		-13.00	
6772.80	Н		-13.00	
7597.00	S	-26.75	-13.00	13.75
7619.40	Н		-13.00	
8466.00	Н		-13.00	

"H": denotes Harmonic Frequency. "S": denotes Spurious Frequency. Note:

"---": denotes Noise Floor.

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Page: 157 of 247

Figure 9-59: Band edge emission at antenna terminals – HSUPA V Channel Lowest

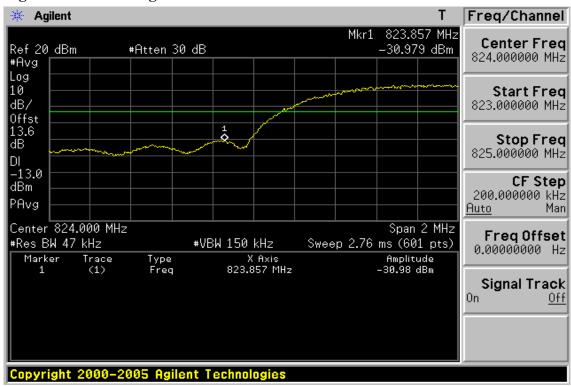
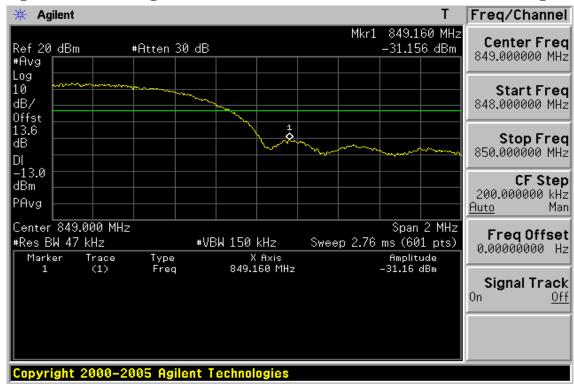


Figure 9-60: Band edge emission at antenna terminals – HSUPA V Channel Highest



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Page: 158 of 247

## Band edge emission at antenna terminals - HSUPA V Low & High

Test Mode HSUPA V Engineer :Nick

Freq. MHz	Reading dBm	Limit dBm	Safe Margin dB	
823.857	-30.98	-13.00	17.98	
849.160	-31.16	-13.00	18.16	

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Page: 159 of 247

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

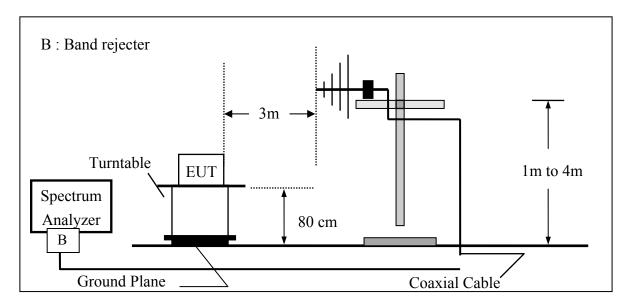
# 10.1. Standard Applicable:

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



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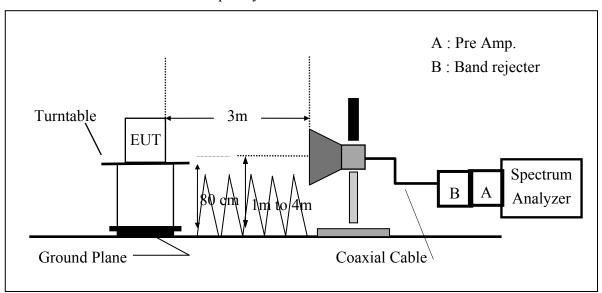
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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 160 of 247

## 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.

For radiated plot of test data, please refer to Appendix 1, page 211.

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 161 of 247

## Radiated Spurious Emission Measurement Result: GPRS 850 Mode

Operation Band :GPRS 850 Test Date :2014-03-03

**ARFCN** :CH 128 Temp./Humi. :19.6 deg C / 65 RH

Fundamental Frequency :824.2 MHz Engineer :Allen

Operation Mode :TX LOW

EUT Pol. :E2 Plane Measurement Antenna 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
44.55	S	-49.03	-34.60	-13.53	-0.90	-13.00	-36.03
78.50	S	-59.11	-53.93	-4.18	-1.00	-13.00	-46.11
90.14	S	-60.62	-58.87	-0.55	-1.20	-13.00	-47.62
183.26	S	-65.59	-65.49	1.37	-1.47	-13.00	-52.59
197.81	S	-66.26	-67.81	3.06	-1.51	-13.00	-53.26
236.61	S	-67.21	-68.95	3.39	-1.66	-13.00	-54.21
1648.40	Н	-54.18	-53.30	3.54	-4.42	-13.00	-41.18
2472.60	Н	-42.53	-40.73	3.65	-5.45	-13.00	-29.53
3296.80	Н						
4121.00	Н						
4945.20	Н						
5769.40	Н						
6593.60	Н						
7417.80	Н						
8242.00	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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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 162 of 247

Operation Band :GPRS 850 Test Date :2014-03-03

**ARFCN** :19.6 deg C / 65 RH :CH 128 Temp./Humi.

Fundamental Frequency :824.2 MHz Engineer :Allen Operation Mode :TX LOW

EUT Pol. :E2 Plane 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	-38.33	-23.90	-13.53	-0.90	-13.00	-25.33
52.31	S	-53.07	-40.16	-11.90	-1.00	-13.00	-40.07
77.53	S	-60.57	-55.11	-4.46	-1.00	-13.00	-47.57
90.14	S	-63.89	-62.15	-0.55	-1.20	-13.00	-50.89
182.29	S	-68.87	-68.60	1.19	-1.47	-13.00	-55.87
400.54	S	-69.54	-71.28	3.82	-2.07	-13.00	-56.54
1648.40	Н	-47.28	-46.40	3.54	-4.42	-13.00	-34.28
2472.60	H	-41.94	-40.14	3.65	-5.45	-13.00	-28.94
3296.80	H						
4121.00	Н						
4945.20	Н						
5769.40	Н						
6593.60	Н						
7417.80	H						
8242.00	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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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 163 of 247

Operation Band :GPRS 850 Test Date :2014-03-03

**ARFCN** :CH 190 Temp./Humi. :19.6 deg C / 65 RH

Fundamental Frequency :836.6 MHz Engineer :Allen Operation Mode

:TX MID

EUT Pol. :E2 Plane Measurement Antenna 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
44.55	S	-49.43	-35.00	-13.53	-0.90	-13.00	-36.43
79.47	S	-59.67	-54.77	-3.91	-1.00	-13.00	-46.67
90.14	S	-61.15	-59.40	-0.55	-1.20	-13.00	-48.15
183.26	S	-66.17	-66.07	1.37	-1.47	-13.00	-53.17
196.84	S	-65.47	-66.97	3.00	-1.50	-13.00	-52.47
236.61	S	-67.65	-69.38	3.39	-1.66	-13.00	-54.65
1673.20	Н	-58.25	-57.27	3.47	-4.45	-13.00	-45.25
2509.80	H	-51.49	-49.71	3.72	-5.49	-13.00	-38.49
3346.40	Н						
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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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 164 of 247

Operation Band :GPRS 850 Test Date :2014-03-03

**ARFCN** :19.6 deg C / 65 RH :CH 190 Temp./Humi.

Fundamental Frequency :836.6 MHz Engineer :Allen Operation Mode

:TX MID

EUT Pol. :E2 Plane 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	-37.85	-23.42	-13.53	-0.90	-13.00	-24.85
76.56	S	-59.40	-53.67	-4.73	-1.00	-13.00	-46.40
90.14	S	-64.23	-62.48	-0.55	-1.20	-13.00	-51.23
183.26	S	-68.83	-68.72	1.37	-1.47	-13.00	-55.83
196.84	S	-69.27	-70.77	3.00	-1.50	-13.00	-56.27
400.54	S	-70.22	-71.96	3.82	-2.07	-13.00	-57.22
1673.20	H	-49.32	-48.34	3.47	-4.45	-13.00	-36.32
2509.80	Н	-46.12	-44.34	3.72	-5.49	-13.00	-33.12
3346.40	Н						
4183.00	Н						
5019.60	Н						
5856.20	Н						
6692.80	Н						
7529.40	H						
8366.00	H						

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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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 165 of 247

:GPRS 850 Operation Band Test Date :2014-03-03

**ARFCN** :CH 251 Temp./Humi. :19.6 deg C / 65 RH

Fundamental Frequency :848.8 MHz Engineer :Allen Operation Mode

:TX HIGH

EUT Pol. :E2 Plane Measurement Antenna 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
44.55	S	-49.96	-35.53	-13.53	-0.90	-13.00	-36.96
78.50	S	<b>-</b> 60.14	-54.96	-4.18	-1.00	-13.00	-47.14
90.14	S	-60.81	-59.06	-0.55	-1.20	-13.00	-47.81
182.29	S	-66.42	-66.14	1.19	-1.47	-13.00	-53.42
236.61	S	-67.87	-69.60	3.39	-1.66	-13.00	-54.87
353.01	S	-68.20	-70.36	4.14	-1.98	-13.00	-55.20
1697.60	Н	-58.96	-57.87	3.40	-4.48	-13.00	-45.96
2546.40	Н	-51.67	-49.92	3.79	-5.54	-13.00	-38.67
3395.20	Н						
4244.00	Н						
5092.80	Н						
5941.60	Н						
6790.40	H						
7639.20	H						
8488.00	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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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 166 of 247

:GPRS 850 Operation Band Test Date :2014-03-03

**ARFCN** :19.6 deg C / 65 RH :CH 251 Temp./Humi.

Fundamental Frequency :848.8 MHz Engineer :Allen Operation Mode

:TX HIGH

EUT Pol. :E2 Plane 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	-50.28	-35.85	-13.53	-0.90	-13.00	-37.28
76.56	S	-61.15	-55.41	-4.73	-1.00	-13.00	-48.15
90.14	S	-60.73	-58.98	-0.55	-1.20	-13.00	-47.73
183.26	S	-65.04	-64.94	1.37	-1.47	-13.00	-52.04
196.84	S	-67.41	-68.91	3.00	-1.50	-13.00	-54.41
353.01	S	-67.85	-70.01	4.14	-1.98	-13.00	-54.85
1697.60	Н	-49.60	-48.51	3.40	-4.48	-13.00	-36.60
2546.40	Н	-47.39	-45.64	3.79	-5.54	-13.00	-34.39
3395.20	Н						
4244.00	Н						
5092.80	Н						
5941.60	Н						
6790.40	Н						
7639.20	Н						
8488.00	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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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 167 of 247

### Radiated Spurious Emission Measurement Result: GSM 1900 Mode

**Operation Band** :GSM 1900 **Test Date** :2014-03-03

**ARFCN** :CH 512 Temp./Humi. :19.6 deg C / 65 RH

Fundamental Frequency :1850.2 MHz Engineer :Allen

Operation Mode :TX LOW

EUT Pol. :E2 Plane 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
35.82	S	-52.67	-39.20	-12.68	-0.80	-13.00	-39.67
79.47	S	-60.28	-57.52	-1.76	-1.00	-13.00	-47.28
236.61	S	-64.80	-68.69	5.54	-1.66	-13.00	-51.80
353.01	S	-64.20	-68.51	6.29	-1.98	-13.00	-51.20
873.90	S	-40.96	-43.69	5.92	-3.18	-13.00	-27.96
946.65	S	-49.88	-52.33	5.78	-3.33	-13.00	-36.88
3700.40	Н	-55.18	-56.99	8.62	-6.80	-13.00	-42.18
5550.60	Н						
7400.80	Н						
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)

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

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

"---": denotes Noise Floor.

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 168 of 247

Operation Band :GSM 1900 **Test Date** :2014-03-03

**ARFCN** :CH 512 Temp./Humi. :19.6 deg C / 65 RH

Fundamental Frequency :1850.2 MHz Engineer :Allen Operation Mode :TX LOW

EUT Pol. :E2 Plane Measurement Antenna Pol. :HORIZONTAL

Г	NT 4	EIDD	0.0	<b>A</b> 4	0.11	T ' '	
Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
			Output Level	Gain	Loss		
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB
44.55	S	-48.08	-35.80	-11.38	-0.90	-13.00	-35.08
225.94	S	-63.66	-67.69	5.65	-1.62	-13.00	-50.66
429.64	S	-64.06	-67.70	5.80	-2.16	-13.00	-51.06
872.93	S	-42.72	-45.46	5.92	-3.18	-13.00	-29.72
896.21	S	-50.43	-53.01	5.83	-3.25	-13.00	-37.43
947.62	S	-51.71	-54.16	5.78	-3.33	-13.00	-38.71
3700.40	Н	-57.21	-59.03	8.62	-6.80	-13.00	-44.21
5550.60	Н						
7400.80	Н						
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)

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

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

"---": denotes Noise Floor.

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 169 of 247

Operation Band :GSM 1900 **Test Date** :2014-03-03

**ARFCN** :CH 661 Temp./Humi. :19.6 deg C / 65 RH

Fundamental Frequency :1880.0 MHz Engineer :Allen Operation Mode

:TX MID

EUT Pol. :E2 Plane 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
37.76	S	-54.86	-41.64	-12.41	-0.80	-13.00	-41.86
79.47	S	-60.48	-57.72	-1.76	-1.00	-13.00	-47.48
236.61	S	-64.24	-68.12	5.54	-1.66	-13.00	-51.24
872.93	S	-41.23	-43.98	5.92	-3.18	-13.00	-28.23
896.21	S	-51.02	-53.60	5.83	-3.25	-13.00	-38.02
947.62	S	-49.33	-51.78	5.78	-3.33	-13.00	-36.33
3760.00	Н	-57.30	-59.19	8.74	-6.85	-13.00	-44.30
5640.00	Н						
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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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 170 of 247

Operation Band :GSM 1900 **Test Date** :2014-03-03

**ARFCN** :19.6 deg C / 65 RH :CH 661 Temp./Humi.

Fundamental Frequency :1880.0 MHz Engineer :Allen Operation Mode

:TX MID

EUT Pol. :E2 Plane Measurement Antenna 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
43.58	S	-49.58	-37.17	-11.53	-0.88	-13.00	-36.58
224.00	S	-63.65	-67.73	5.69	-1.61	-13.00	-50.65
430.61	S	-63.23	-66.86	5.79	-2.16	-13.00	-50.23
873.90	S	-39.57	-42.31	5.92	-3.18	-13.00	-26.57
896.21	S	-51.02	-53.60	5.83	-3.25	-13.00	-38.02
940.83	S	-52.14	-54.60	5.79	-3.32	-13.00	-39.14
3760.00	Н	-57.29	-59.18	8.74	-6.85	-13.00	-44.29
5640.00	Н						
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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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 171 of 247

Operation Band :GSM 1900 **Test Date** :2014-03-03

**ARFCN** :CH 810 Temp./Humi. :19.6 deg C / 65 RH

Fundamental Frequency :1909.8 MHz Engineer :Allen Operation Mode

:TX HIGH

EUT Pol. :E2 Plane Measurement Antenna Pol. :VERTICAL

Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
1			Output Level	Gain	Loss		J
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB
35.82	S	-54.65	-41.17	-12.68	-0.80	-13.00	-41.65
79.47	S	-60.41	-57.65	-1.76	-1.00	-13.00	-47.41
353.01	S	-64.53	-68.84	6.29	-1.98	-13.00	-51.53
872.93	S	-41.32	-44.06	5.92	-3.18	-13.00	-28.32
896.21	S	-52.81	-55.39	5.83	-3.25	-13.00	-39.81
940.83	S	-52.33	-54.79	5.79	-3.32	-13.00	-39.33
3819.60	Н	-52.31	-54.26	8.85	-6.90	-13.00	-39.31
5729.40	Н						
7639.20	Н						
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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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 172 of 247

Operation Band :GSM 1900 **Test Date** :2014-03-03

**ARFCN** :CH 810 Temp./Humi. :19.6 deg C / 65 RH

Fundamental Frequency :1909.8 MHz Engineer :Allen Operation Mode

:TX HIGH

EUT Pol. :E2 Plane Measurement Antenna Pol. :HORIZONTAL

Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
1			Output Level	Gain	Loss		C
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB
44.55	S	-61.17	-48.89	-11.38	-0.90	-13.00	-48.17
177.44	S	-64.92	-65.92	2.46	-1.46	-13.00	-51.92
226.91	S	-59.51	-63.52	5.63	-1.62	-13.00	-46.51
872.93	S	-42.04	-44.78	5.92	-3.18	-13.00	-29.04
896.21	S	-51.76	-54.34	5.83	-3.25	-13.00	-38.76
946.65	S	-49.64	-52.09	5.78	-3.33	-13.00	-36.64
3819.60	Н	-56.79	-58.74	8.85	-6.90	-13.00	-43.79
5729.40	Н						
7639.20	Н						
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)

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

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

"---": denotes Noise Floor.

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 173 of 247

Radiated Spurious Emission Measurement Result: HSDPA II Mode

Operation Band :HSDPA B2 Test Date :2014-03-03

**ARFCN** :CH 9262 Temp./Humi. :19.6 deg C / 65 RH

Fundamental Frequency :1852.4 MHz Engineer :Allen

Operation Mode :TX LOW

EUT Pol. :E2 Plane 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
34.85	S	-54.04	-40.42	-12.82	-0.80	-13.00	-41.04
79.47	S	-59.46	-56.70	-1.76	-1.00	-13.00	-46.46
353.01	S	-63.22	-67.53	6.29	-1.98	-13.00	-50.22
872.93	S	-39.27	-42.01	5.92	-3.18	-13.00	-26.27
896.21	S	-52.18	-54.76	5.83	-3.25	-13.00	-39.18
946.65	S	-48.00	-50.45	5.78	-3.33	-13.00	-35.00
3704.80	Н	-54.51	-56.33	8.63	-6.80	-13.00	-41.51
5557.20	Н						
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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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 174 of 247

Operation Band :HSDPA B2 Test Date :2014-03-03

**ARFCN** :19.6 deg C / 65 RH :CH 9262 Temp./Humi.

Fundamental Frequency :1852.4 MHz Engineer :Allen Operation Mode :TX LOW

EUT Pol. :E2 Plane Measurement Antenna 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
43.58	S	-45.53	-33.12	-11.53	-0.88	-13.00	-32.53
226.91	S	-63.82	-67.82	5.63	-1.62	-13.00	-50.82
424.79	S	-63.67	-67.35	5.83	-2.15	-13.00	-50.67
873.90	S	-39.62	-42.36	5.92	-3.18	-13.00	-26.62
896.21	S	-42.50	-45.08	5.83	-3.25	-13.00	-29.50
940.83	S	-48.90	-51.36	5.79	-3.32	-13.00	-35.90
3704.80	Н	-56.60	-58.42	8.63	-6.80	-13.00	-43.60
5557.20	Н						
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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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 175 of 247

Operation Band :HSDPA B2 Test Date :2014-03-03

**ARFCN** :CH 9400 Temp./Humi. :19.6 deg C / 65 RH

Fundamental Frequency :1880.0 MHz Engineer :Allen Operation Mode

:TX MID

EUT Pol. :E2 Plane Measurement Antenna Pol. :VERTICAL

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Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
			Output Level	Gain	Loss		
MHz	F/H/E/S	dBm	dBm	dBi	dB	dBm	dB
36.79	S	-53.07	-39.73	-12.54	-0.80	-13.00	-40.07
77.53	S	-58.30	-55.00	-2.31	-1.00	-13.00	-45.30
353.01	S	-63.68	-67.98	6.29	-1.98	-13.00	-50.68
872.93	S	-39.93	-42.68	5.92	-3.18	-13.00	-26.93
896.21	S	-41.67	-44.25	5.83	-3.25	-13.00	-28.67
940.83	S	-49.88	-52.34	5.79	-3.32	-13.00	-36.88
3760.00	Н	-55.78	-57.67	8.74	-6.85	-13.00	-42.78
5640.00	Н						
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 Mode

**FCC ID: PY7PM-0732** 

Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 176 of 247

Operation Band :HSDPA B2 Test Date :2014-03-03

**ARFCN** :19.6 deg C / 65 RH :CH 9400 Temp./Humi.

Fundamental Frequency :1880.0 MHz Engineer :Allen

:TX MID

EUT Pol. :E2 Plane Measurement Antenna 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
44.55	S	-46.80	-34.53	-11.38	-0.90	-13.00	-33.80
353.01	S	-63.86	-68.16	6.29	-1.98	-13.00	-50.86
432.55	S	-63.64	-67.26	5.78	-2.17	-13.00	-50.64
872.93	S	-40.18	-42.92	5.92	-3.18	-13.00	-27.18
896.21	S	-50.35	-52.93	5.83	-3.25	-13.00	-37.35
940.83	S	-50.22	-52.68	5.79	-3.32	-13.00	-37.22
3760.00	Н	-55.90	-57.78	8.74	-6.85	-13.00	-42.90
5640.00	Н						
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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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 177 of 247

Operation Band :HSDPA B2 **Test Date** :2014-03-03

**ARFCN** :CH 9538 Temp./Humi. :19.6 deg C / 65 RH

Fundamental Frequency :1907.6 MHz Engineer :Allen Operation Mode

:TX HIGH

EUT Pol. :E2 Plane 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
38.73	S	-54.30	-41.21	-12.29	-0.80	-13.00	-41.30
77.53	S	-59.48	-56.18	-2.31	-1.00	-13.00	-46.48
353.01	S	-63.75	-68.06	6.29	-1.98	-13.00	-50.75
873.90	S	-41.78	-44.52	5.92	-3.18	-13.00	-28.78
896.21	S	-52.22	-54.79	5.83	-3.25	-13.00	-39.22
940.83	S	-51.37	-53.84	5.79	-3.32	-13.00	-38.37
3815.20	Н	-47.04	-48.99	8.85	-6.90	-13.00	-34.04
5722.80	Н						
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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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 178 of 247

Operation Band :HSDPA B2 **Test Date** :2014-03-03

**ARFCN** :19.6 deg C / 65 RH :CH 9538 Temp./Humi.

Fundamental Frequency :1907.6 MHz Engineer :Allen Operation Mode

:TX HIGH

EUT Pol. :E2 Plane Measurement Antenna 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
44.55	S	-59.97	-47.69	-11.38	-0.90	-13.00	-46.97
227.88	S	-59.55	-63.53	5.61	-1.63	-13.00	-46.55
423.82	S	-64.22	-67.91	5.83	-2.14	-13.00	-51.22
873.90	S	-40.17	-42.90	5.92	-3.18	-13.00	-27.17
896.21	S	-49.73	-52.30	5.83	-3.25	-13.00	-36.73
940.83	S	-51.21	-53.67	5.79	-3.32	-13.00	-38.21
3815.20	Н	-49.40	-51.35	8.85	-6.90	-13.00	-36.40
5722.80	Н						
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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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 179 of 247

Radiated Spurious Emission Measurement Result: WCDMA V Mode

Operation Band :WCDMA B5 Test Date :2014-03-03 **ARFCN** :CH 4132 Temp./Humi. :19.6 deg C / 65 RH

Fundamental Frequency :826.4 MHz Engineer :Allen

Operation Mode :TX LOW

EUT Pol. :E2 Plane Measurement Antenna 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
44.55	S	-50.49	-36.06	-13.53	-0.90	-13.00	-37.49
78.50	S	-60.54	-55.36	-4.18	-1.00	-13.00	-47.54
90.14	S	-61.50	-59.75	-0.55	-1.20	-13.00	-48.50
182.29	S	-66.57	-66.30	1.19	-1.47	-13.00	-53.57
197.81	S	-67.74	-69.29	3.06	-1.51	-13.00	-54.74
236.61	S	-68.33	-70.06	3.39	-1.66	-13.00	-55.33
1652.80	Н	-61.79	-60.89	3.53	-4.42	-13.00	-48.79
2479.20	Н						
3305.60	Н						
4132.00	Н						
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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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 180 of 247

Operation Band :WCDMA B5 **Test Date** :2014-03-03

**ARFCN** :19.6 deg C / 65 RH :CH 4132 Temp./Humi.

Fundamental Frequency :826.4 MHz Engineer :Allen Operation Mode :TX LOW

EUT Pol. :E2 Plane Measurement Antenna Pol. :HORIZONTAL

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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	-38.63	-24.20	-13.53	-0.90	-13.00	-25.63
53.28	S	-54.84	-42.20	-11.64	-1.00	-13.00	-41.84
76.56	S	-60.54	-54.80	-4.73	-1.00	-13.00	-47.54
183.26	S	-69.05	-68.94	1.37	-1.47	-13.00	-56.05
196.84	S	-69.14	-70.63	3.00	-1.50	-13.00	-56.14
400.54	S	-70.40	-72.14	3.82	-2.07	-13.00	-57.40
1652.80	Н	-56.62	-55.73	3.53	-4.42	-13.00	-43.62
2479.20	Н						
3305.60	Н						
4132.00	Н						
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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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 181 of 247

Operation Band :WCDMA B5 **Test Date** :2014-03-03

**ARFCN** :19.6 deg C / 65 RH :CH 4183 Temp./Humi.

Fundamental Frequency :836.6 MHz Engineer :Allen Operation Mode

:TX MID

EUT Pol. :E2 Plane Measurement Antenna 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
44.55	S	-50.27	-35.84	-13.53	-0.90	-13.00	-37.27
78.50	S	-60.91	-55.73	-4.18	-1.00	-13.00	-47.91
90.14	S	-61.57	-59.82	-0.55	-1.20	-13.00	-48.57
183.26	S	-66.57	-66.46	1.37	-1.47	-13.00	-53.57
197.81	S	-67.51	-69.07	3.06	-1.51	-13.00	-54.51
353.01	S	-68.58	-70.73	4.14	-1.98	-13.00	-55.58
1673.20	Н	-62.70	-61.71	3.47	-4.45	-13.00	-49.70
3346.40	Н						
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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**FCC ID: PY7PM-0732** 

Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 182 of 247

Operation Band :WCDMA B5 **Test Date** :2014-03-03

**ARFCN** :19.6 deg C / 65 RH :CH 4183 Temp./Humi.

Fundamental Frequency :836.6 MHz Engineer :Allen

:TX MID

EUT Pol. :E2 Plane 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	-38.18	-23.75	-13.53	-0.90	-13.00	-25.18
77.53	S	-60.50	-55.05	-4.46	-1.00	-13.00	-47.50
91.11	S	-65.30	-63.49	-0.61	-1.20	-13.00	-52.30
182.29	S	-68.18	-67.91	1.19	-1.47	-13.00	-55.18
196.84	S	-69.51	-71.01	3.00	-1.50	-13.00	-56.51
400.54	S	-69.39	-71.14	3.82	-2.07	-13.00	-56.39
1673.20	Н	-56.16	-55.18	3.47	-4.45	-13.00	-43.16
3346.40	Н						
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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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 183 of 247

Operation Band :WCDMA B5 **Test Date** :2014-03-03

**ARFCN** :CH 4233 Temp./Humi. :19.6 deg C / 65 RH

Fundamental Frequency :846.6 MHz Engineer :Allen Operation Mode

:TX HIGH

EUT Pol. :E2 Plane Measurement Antenna 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
44.55	S	-50.80	-36.37	-13.53	-0.90	-13.00	-37.80
78.50	S	-60.48	-55.30	-4.18	-1.00	-13.00	-47.48
90.14	S	-62.44	-60.69	-0.55	-1.20	-13.00	-49.44
182.29	S	-66.49	-66.22	1.19	-1.47	-13.00	-53.49
197.81	S	-66.74	-68.30	3.06	-1.51	-13.00	-53.74
236.61	S	-68.30	-70.03	3.39	-1.66	-13.00	-55.30
1693.20	Н	-60.28	-59.21	3.41	-4.48	-13.00	-47.28
2539.80	Н						
3386.40	Н						
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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**FCC ID: PY7PM-0732** 

Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 184 of 247

Operation Band :WCDMA B5 **Test Date** :2014-03-03

**ARFCN** :19.6 deg C / 65 RH :CH 4233 Temp./Humi.

Fundamental Frequency :846.6 MHz Engineer :Allen

:TX HIGH

EUT Pol. :E2 Plane Measurement Antenna Pol. :HORIZONTAL

T.	<b>N</b> T 4	EDD	G.C.		0.11	T	3.6
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	-49.76	-35.33	-13.53	-0.90	-13.00	-36.76
76.56	S	-60.63	-54.90	-4.73	-1.00	-13.00	-47.63
89.17	S	-61.82	-59.84	-0.79	-1.18	-13.00	-48.82
183.26	S	-64.10	-64.00	1.37	-1.47	-13.00	-51.10
197.81	S	-68.28	-69.83	3.06	-1.51	-13.00	-55.28
353.01	S	-68.45	-70.61	4.14	-1.98	-13.00	-55.45
1693.20	Н	-53.84	-52.77	3.41	-4.48	-13.00	-40.84
2539.80	Н						
3386.40	Н						
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)

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

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

"---": denotes Noise Floor.

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 185 of 247

# 11. FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT

# 11.1. Standard Applicable:

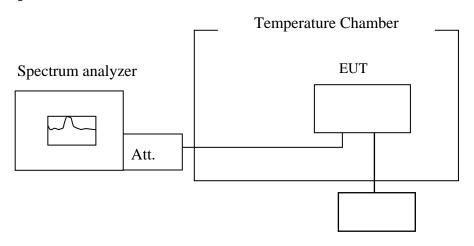
According to FCC §2.1055(a) (1)

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

+/-2.5ppm for 1900MHz band

The carrier frequency shall not depart from the reference frequency in excess of  $\pm 2.5$  ppm for mobile stations.

# 11.2. Test Set-up:



Variable DC Power Supply

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

#### 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

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 186 of 247

#### 11.5. Measurement Result:

Reference Frequency: GPRS 850 Mid Channel 836.6 MHz								
	Liı	mit: $\pm -2.5 \text{ ppm} = 209$	1 Hz					
Power Supply	Environment	Frequency						
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)				
3.8	50	836600036	26	2091				
3.8	40	836600022	12	2091				
3.8	30	836600017	7	2091				
3.8	20	836600010	0	2091				
3.8	10	836600035	25	2091				
3.8	0	836600014	4	2091				
3.8	-10	836600033	23	2091				
3.8	-20	836600017	7	2091				
3.8	-30	836600008	-2	2091				

	Reference Frequency: GPRS 1900 Mid Channel 1880 MHz								
	Limit: $+/- 2.5 \text{ ppm} = 4700 \text{ Hz}$								
Power Supply	Environment	Frequency							
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)					
3.8	50	1880000008	2	4700					
3.8	40	1880000014	8	4700					
3.8	30	1880000009	3	4700					
3.8	20	1880000006	0	4700					
3.8	10	1880000011	5	4700					
3.8	0	1880000004	-2	4700					
3.8	-10	1880000006	0	4700					
3.8	-20	1880000019	13	4700					
3.8	-30	1880000011	5	4700					

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 187 of 247

Reference Frequency: WCDMA II Mid Channel 1880							
	Limit	+/-2.5  ppm = 470	00 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)			
Vdc	Temperature ( )	(MHz)	Della (HZ)	Lillit (HZ)			
3.8	50	1879999988	0	4700			
3.8	40	1879999987	-1	4700			
3.8	30	1879999978	-10	4700			
3.8	20	1879999988	0	4700			
3.8	10	1879999983	-5	4700			
3.8	0	1879999978	-10	4700			
3.8	-10	1880000013	25	4700			
3.8	-20	1880000027	39	4700			
3.8	-30	1880000028	40	4700			

Reference Frequency: WCDMA V Mid Channel 836.6 MHz							
	Limit	+/- 2.5  ppm = 209	91 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)			
Vdc	Temperature ( )	(MHz)	Della (112)	Lillit (112)			
3.8	50	836600011	19	2091			
3.8	40	836599993	1	2091			
3.8	30	836599988	-4	2091			
3.8	20	836599992	0	2091			
3.8	10	836600012	20	2091			
3.8	0	836599992	0	2091			
3.8	-10	836600011	19	2091			
3.8	-20	836600012	20	2091			
3.8	-30	836600018	26	2091			

Note: The battery is rated 3.8Vdc.

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 188 of 247

# 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

The carrier frequency shall not depart from the reference frequency in excess of  $\pm 2.5$  ppm for mobile stations.

#### 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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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 189 of 247

#### 12.5. Measurement Result:

#### GPRS850

Reference Frequency: GPRS 850 Mid Channel 836.6 MHz								
	Limit: +/- 2.5 ppm = 2091 Hz							
Power Supply	Environment	Frequency	Dolto (Hz)	Limit (Hz)				
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)				
4.10	20	836600021	11	2091				
3.80	20	836600010	0	2091				
3.50	20	836600007	-3	2091				
2.70	20	00.000011	1	2001				
(End point)	20	836600011		2091				

#### **GPRS1900**

Reference Frequency: GPRS 1900 Mid Channel 1880 MHz								
	Limit: +/- 2.5 ppm = 4700 Hz							
Power Supply	Environment	Frequency						
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)				
4.10	20	1880000012	6	2091				
3.80	20	1880000006	0	2091				
3.50	20	1880000005	-1	2091				
2.70	20	100000000		2001				
(End point)	20	1880000002	-4	2091				

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 190 of 247

#### **WCDMA II**

F	Reference Frequency: WCDMA II Mid Channel 1880 MHz							
	Limit	: +/- 2.5  ppm = 470	00 Hz					
Power Supply	Environment	Frequency						
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)				
4.10	20	1879999990	2	4700				
3.80	20	1879999988	0	4700				
3.50	20	1879999986	-2	4700				
2.70	20	107000004		4700				
(End point)	20	1879999994	6	4700				

#### WCDMA V

IVIA								
F	Reference Frequency: WCDMA V Mid Channel 836.6 MHz							
	Limit: +/- 2.5 ppm = 2091 Hz							
Power Supply	Environment	Frequency						
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)				
4.10	20	836599992	0	2091				
3.80	20	836599992	0	2091				
3.50	20	836599994	2	2091				
2.70	20	00650005		2001				
(End point)	20	836599995	3	2091				

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 191 of 247

# 13. PEAK TO AVERAGE RATIO

# 13.1. Standard Applicable:

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

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

Refer to section 2.4 in this report

#### 13.3. Measurement Procedure:

KDB 971168 D01 is employed as the following procedure is proper adjusted accordingly: Set resolution/measurement bandwidth ≥ signal's occupied bandwidth; & internal =1ms Set the number of counts to a value that stabilizes the measured CCDF curve.

# 13.4. Measurement Equipment Used:

Refer to section 2.4 in this report

#### 13.5. Measurement Result:

Refer to next page for tabular, and plot results

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 192 of 247

#### 13.5.1 Tabular Results:

	Peak-to-Average Ratio					
	Channel 128(L)		Channel 190(M)		Channel 251(H)	
TEST	824.2MHz		836.6MHz		848.8MHz	
CONDITIONS	dB		dB		dB	
Tnom / Vnom	Measured	Limit	Measured	Limit	Measured	Limit
GSM 850	11.67	13	10.74	13	11.49	13
GPRS 850	10.36	13	10.37	13	11.44	13
EDGE 850	12.19	13	12.21	13	12.26	13

	Peak-to-Average Ratio					
	Channel 512(L)		Channel 661(M)		Channel 810(H)	
TEST	1850.2MHz		1880.0MHz		1909.8MHz	
CONDITIONS	dB		dB		dB	
Tnom / Vnom	Measured	Limit	Measured	Limit	Measured	Limit
GSM 1900	10.09	13	8.89	13	9.86	13
GPRS 1900	9.93	13	11.37	13	11.67	13
EDGE 1900	11.18	13	11.37	13	11.81	13

	Peak-to-Average Ratio					
	Channel 9262(L)		Channel 9400(M)		Channel 9538(H)	
TEST	1852.4MHz		1880.0MHz		1907.6MHz	
CONDITIONS	dB		dB		dB	
Tnom / Vnom	Measured	Limit	Measured	Limit	Measured	Limit
WCDMA Band II	3.13	13	3.12	13	3.12	13
HSDPA Band II	3.91	13	3.88	13	4.07	13
HSUPA Band II	5.49	13	3.74	13	4.31	13

	Peak-to-Average Ratio					
	Channel 4132(L)		Channel 4183(M)		Channel 4233(H)	
TEST	826.4MHz		836.6MHz		846.6MHz	
CONDITIONS	dB		dB		dB	
Tnom / Vnom	Measured	Limit	Measured	Limit	Measured	Limit
WCDMA Band V	3.06	13	3.06	13	3.04	13
HSDPA Band V	3.81	13	3.66	13	3.79	13
HSUPA Band V	3.59	13	3.69	13	3.88	13

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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 193 of 247

#### 13.5.2 Measurement Results:

Figure 13-1: GSM 850 Channel Low



Figure 13-2: GSM 850 Channel Mid



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Page: 194 of 247

Figure 13-3: GSM 850 Channel High



Figure 13-4: GSM 1900 Channel Low



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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 195 of 247

Figure 13-5: GSM 1900 Channel Mid



Figure 13-6: GSM 1900 Channel High



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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 196 of 247

Figure 13-7: GPRS 850 Channel Low

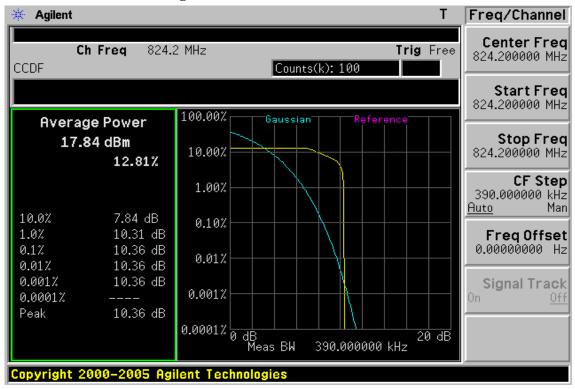


Figure 13-8: GPRS 850 Channel Mid



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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 197 of 247

Figure 13-9: GPRS 850 Channel High



Figure 13-10: GPRS 1900 Channel Low



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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 198 of 247

Figure 13-11 GPRS 1900 Channel Mid



Figure 13-12: GPRS 1900 Channel High



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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 199 of 247

Figure 13-13: EDGE 850 Channel Low



Figure 13-14 EDGE 850 Channel Mid



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Page: 200 of 247

Figure 13-15: EDGE 850 Channel High



Figure 13-16: EDGE 1900 Channel Low



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Page: 201 of 247

Figure 13-17 EDGE 1900 Channel Mid



Figure 13-18: EDGE 1900 Channel High



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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 202 of 247

Figure 13-19: WCDMA Band II Channel Low



Figure 13-20: WCDMA Band II Channel Mid



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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 203 of 247

Figure 13-21: WCDMA Band II Channel High



Figure 13-22: WCDMA Band V Channel Low



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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 204 of 247

Figure 13-23: WCDMA Band V Channel Mid



Figure 13-24: WCDMA Band V Channel High



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Page: 205 of 247

Figure 13-25: HSDPA Band II Channel Low



Figure 13-26: HSDPA Band II Channel Mid



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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 206 of 247

Figure 13-27: HSDPA Band II Channel High

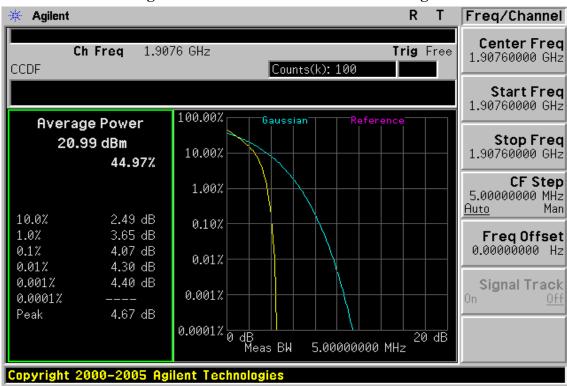


Figure 13-28: HSDPA Band V Channel Low



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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 207 of 247

Figure 13-29: HSDPA Band V Channel Mid



Figure 13-30: HSDPA Band V Channel High



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Page: 208 of 247

Figure 13-31: HSUPA Band II Channel Low



Figure 13-32: HSUPA Band II Channel Mid



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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 209 of 247

Figure 13-33: HSUPA Band II Channel High



Figure 13-34: HSUPA Band V Channel Low



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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 210 of 247

Figure 13-35: HSUPA Band V Channel Mid



Figure 13-36: HSUPA Band V Channel High



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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 211 of 247

# **APPENDIX 1**

# MEASUREMENT PLOT OF RADIATED SPURIOUS **EMISSION**

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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 212 of 247

# Radiated Spurious Emission Measurement Result: GPRS 850 Mode

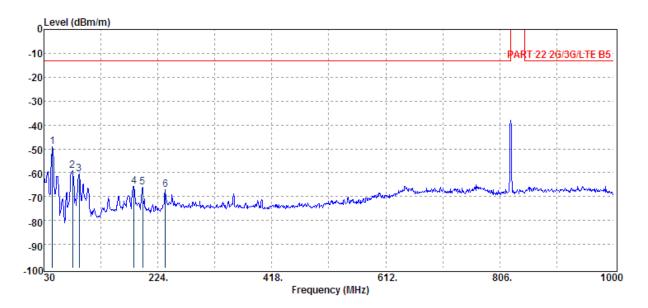
**Operation Band** :GPRS 850 Test Date :2014-03-03

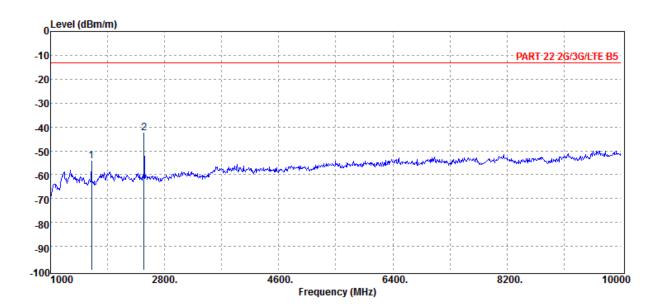
**ARFCN** :19.6 deg C / 65 RH :CH 128 Temp./Humi.

Fundamental Frequency :824.2 MHz Engineer :Allen

Operation Mode :TX LOW

EUT Pol. :E2 Plane Measurement Antenna Pol. :VERTICAL





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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 213 of 247

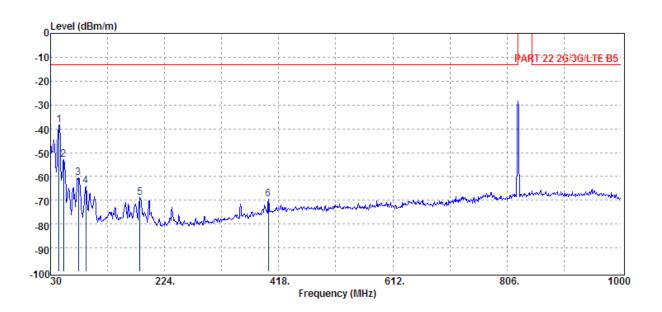
Operation Band :GPRS 850 **Test Date** :2014-03-03

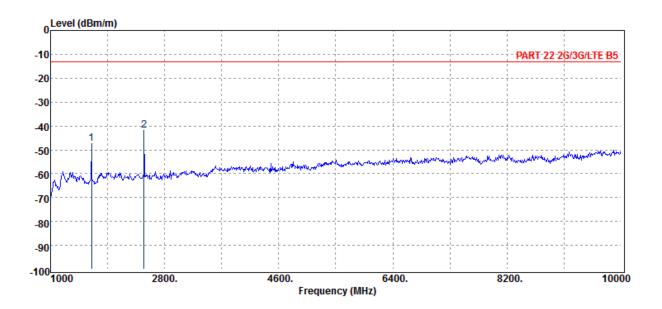
**ARFCN** Temp./Humi. :19.6 deg C / 65 RH :CH 128

Fundamental Frequency: 824.2 MHz Engineer :Allen

:TX LOW

Measurement Antenna Pol. :HORIZONTAL EUT Pol. :E2 Plane





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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 214 of 247

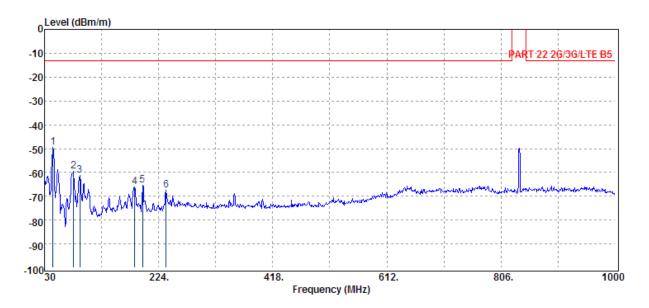
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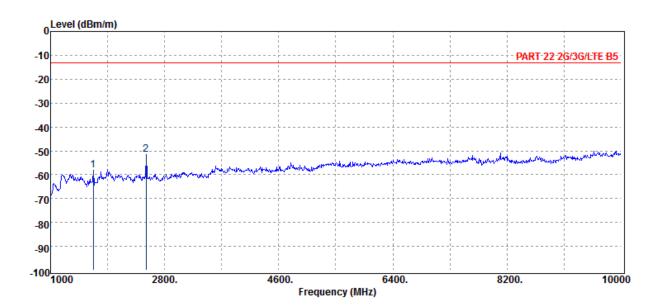
:19.6 deg\_C / 65 RH **ARFCN** :CH 190 Temp./Humi.

**Fundamental Frequency** :836.6 MHz Engineer :Allen

:TX MID

EUT Pol. :E2 Plane Measurement Antenna Pol. :VERTICAL





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Page: 215 of 247

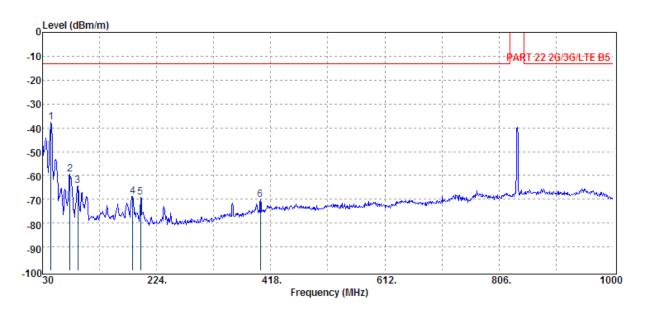
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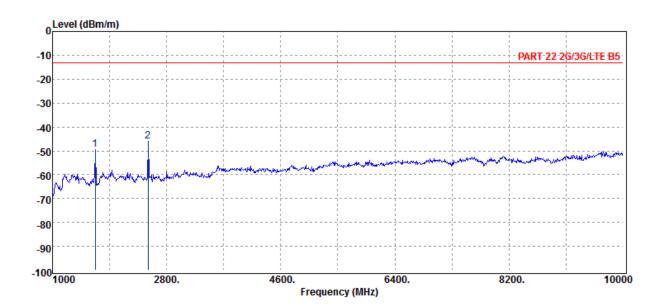
:19.6 deg\_C / 65 RH **ARFCN** :CH 190 Temp./Humi.

Fundamental Frequency :836.6 MHz Engineer :Allen

:TX MID

EUT Pol. :E2 Plane Measurement Antenna Pol. :HORIZONTAL





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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 216 of 247

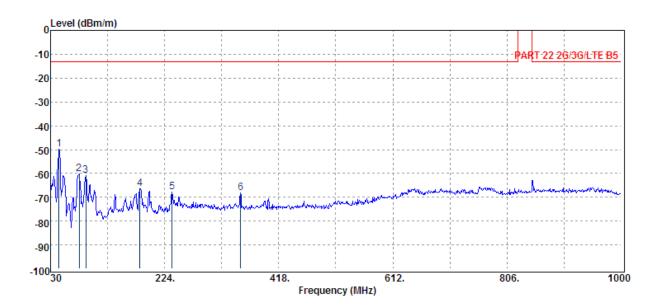
Operation Band :GPRS 850 **Test Date** :2014-03-03

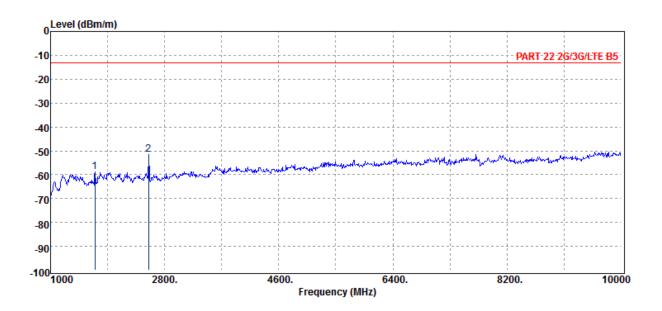
:19.6 deg\_C / 65 RH **ARFCN** Temp./Humi. :CH 251

Fundamental Frequency :848.8 MHz Engineer :Allen

:TX HIGH

EUT Pol. :E2 Plane Measurement Antenna Pol. :VERTICAL





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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 217 of 247

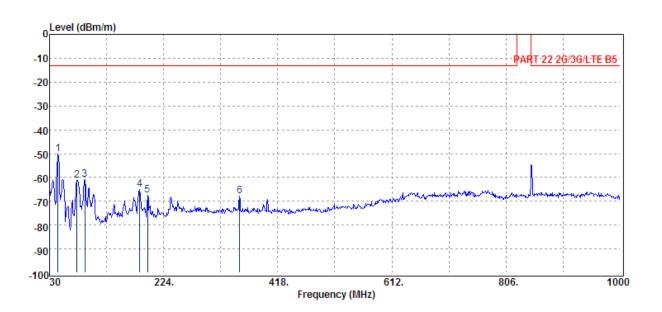
Operation Band :GPRS 850 **Test Date** :2014-03-03

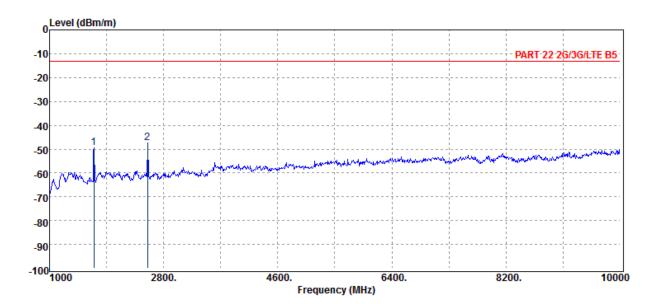
:19.6 deg\_C / 65 RH **ARFCN** Temp./Humi. :CH 251

Fundamental Frequency :848.8 MHz Engineer :Allen

:TX HIGH

EUT Pol. :E2 Plane Measurement Antenna Pol. :HORIZONTAL





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Page: 218 of 247

## Radiated Spurious Emission Measurement Result: GSM 1900 Mode

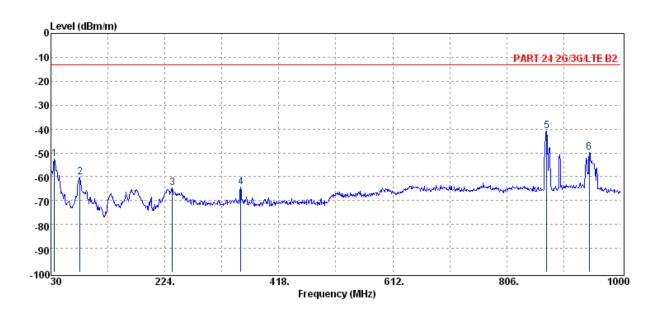
**Operation Band** :GSM 1900 Test Date :2014-03-03

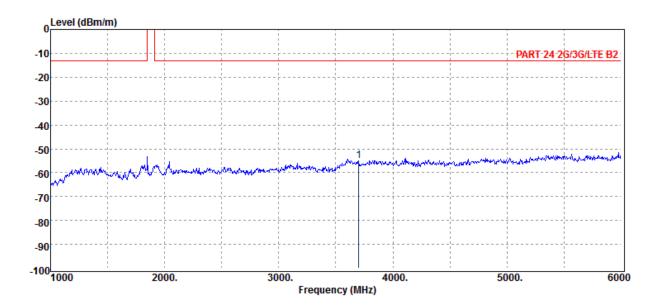
**ARFCN** :CH 512 Temp./Humi. :19.6 deg C / 65 RH

Fundamental Frequency :1850.2 MHz Engineer :Allen

Operation Mode :TX LOW

EUT Pol. :E2 Plane :VERTICAL Measurement Antenna Pol.





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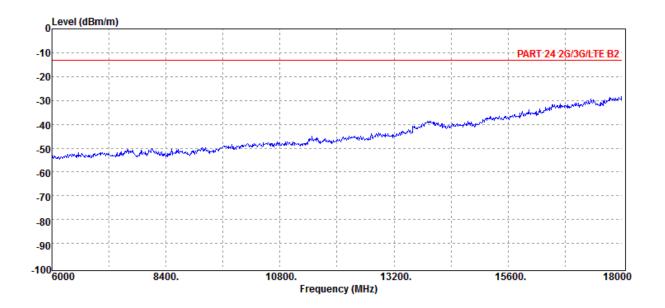
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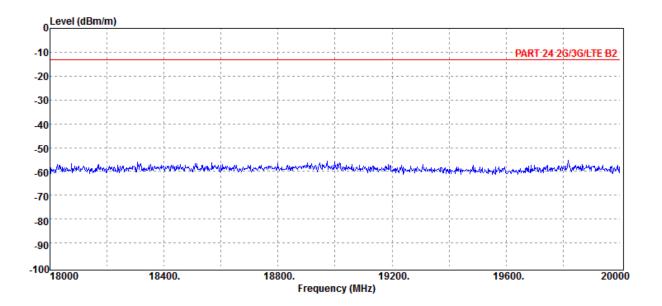
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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 219 of 247





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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 220 of 247

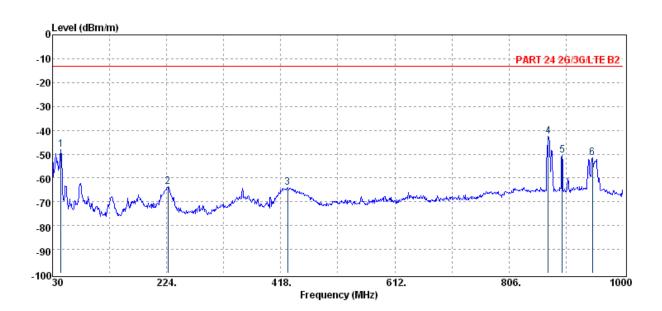
Operation Band :GSM 1900 **Test Date** :2014-03-03

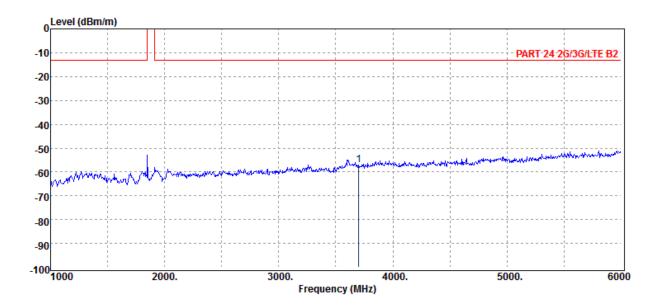
**ARFCN** :CH 512 Temp./Humi. :19.6 deg C / 65 RH

Fundamental Frequency :1850.2 MHz Engineer :Allen

:TX LOW

EUT Pol. :E2 Plane Measurement Antenna Pol. :HORIZONTAL





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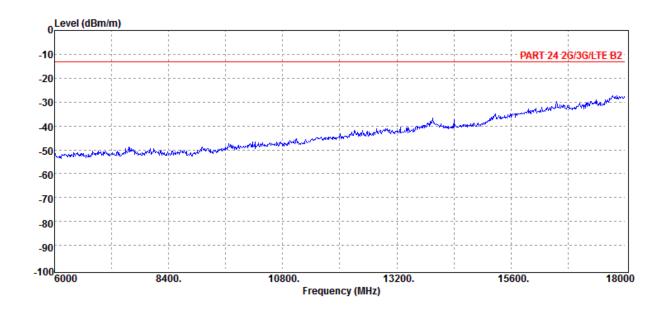
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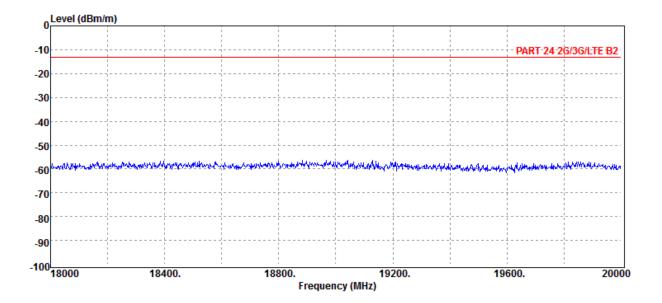
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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 221 of 247





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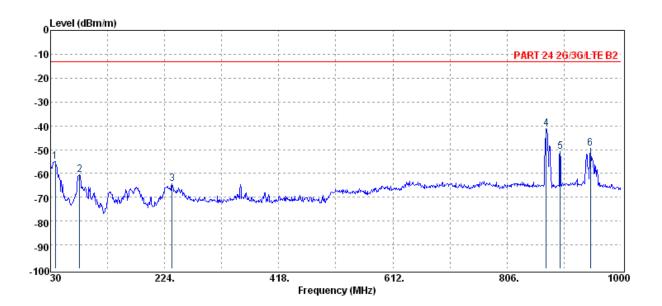
Page: 222 of 247

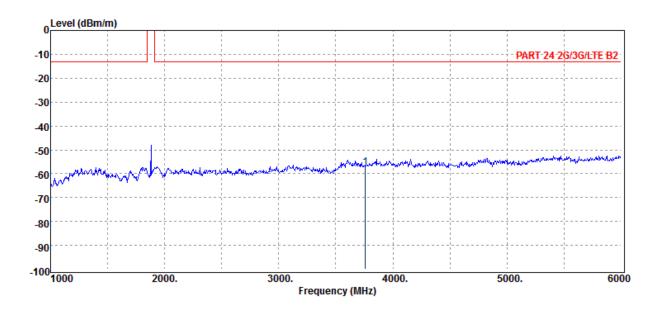
Operation Band :GSM 1900 **Test Date** :2014-03-03

:19.6 deg\_C / 65 RH **ARFCN** Temp./Humi. :CH 661

Fundamental Frequency :1880.0 MHz Engineer :Allen

Operation Mode :TX MID EUT Pol. :E2 Plane Measurement Antenna Pol. :VERTICAL





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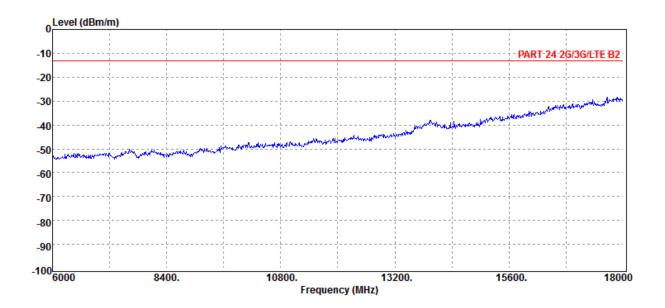
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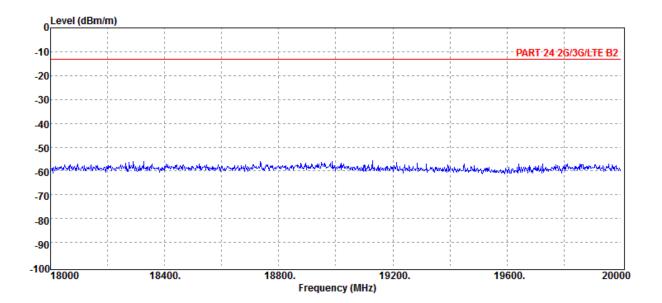
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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 223 of 247





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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 224 of 247

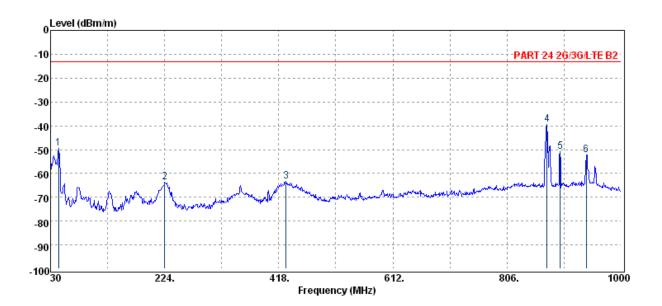
Operation Band :GSM 1900 **Test Date** :2014-03-03

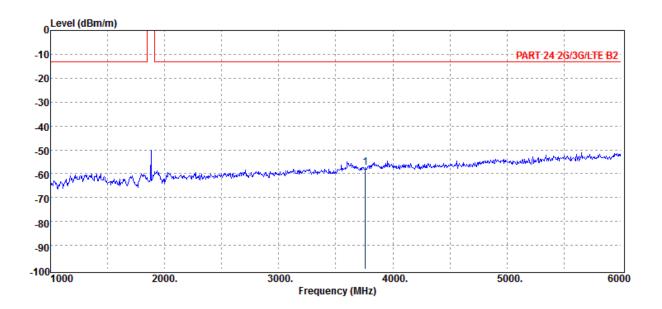
:19.6 deg\_C / 65 RH **ARFCN** Temp./Humi. :CH 661

Fundamental Frequency :1880.0 MHz Engineer :Allen

Operation Mode :TX MID

EUT Pol. :E2 Plane Measurement Antenna Pol. :HORIZONTAL





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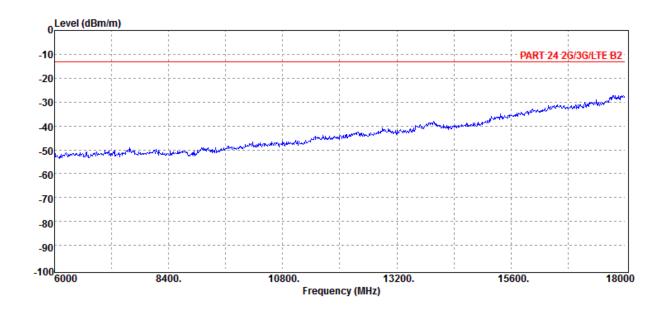
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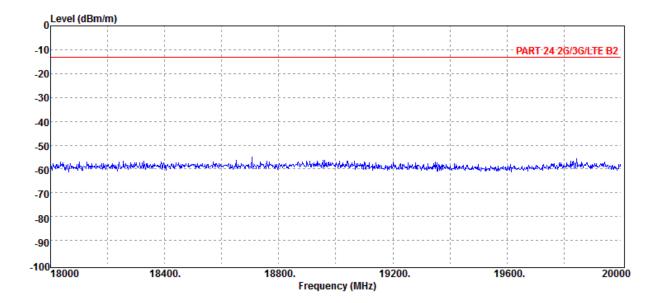
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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 225 of 247





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EUT Pol.

**FCC ID: PY7PM-0732** 

Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

:VERTICAL

1000

Page: 226 of 247

Operation Band :GSM 1900 **Test Date** :2014-03-03

:19.6 deg\_C / 65 RH **ARFCN** Temp./Humi. :CH 810

Measurement Antenna Pol.

Fundamental Frequency :1909.8 MHz Engineer :Allen

Operation Mode :TX HIGH

418.

:E2 Plane

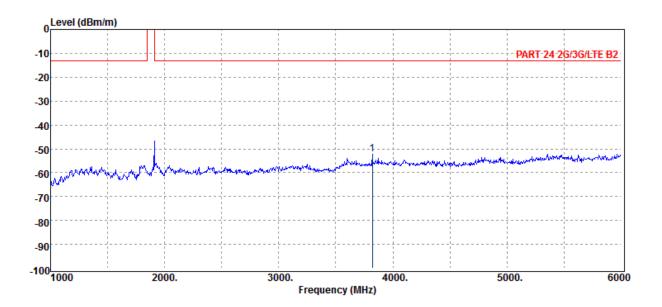
224.

o<u>Level (dBm/m)</u> -20 -30 -40 -50 -60 -80 -90

Frequency (MHz)

612.

806.



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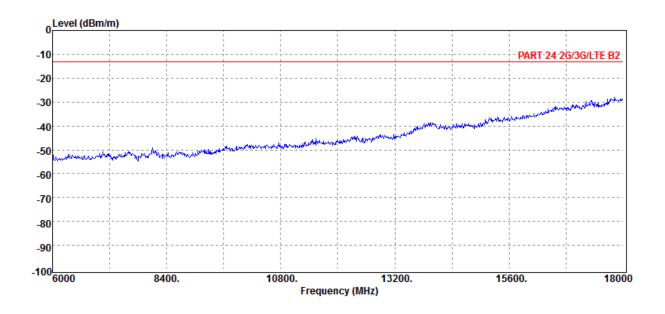
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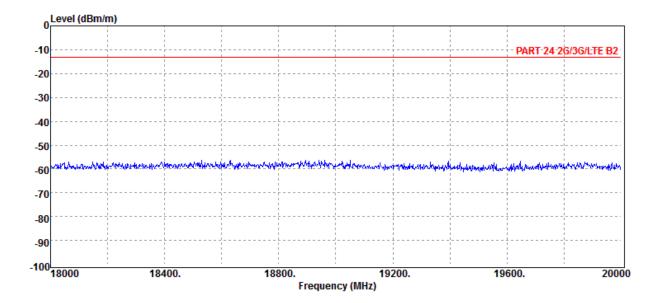
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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 227 of 247





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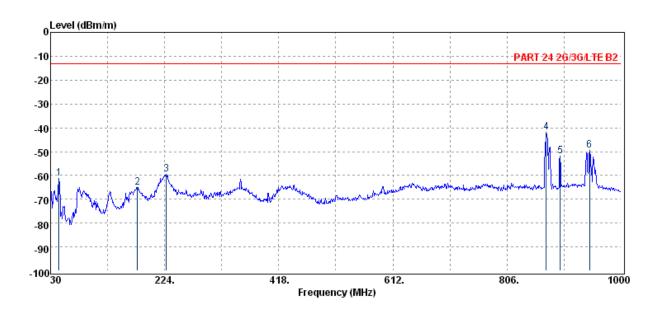
Page: 228 of 247

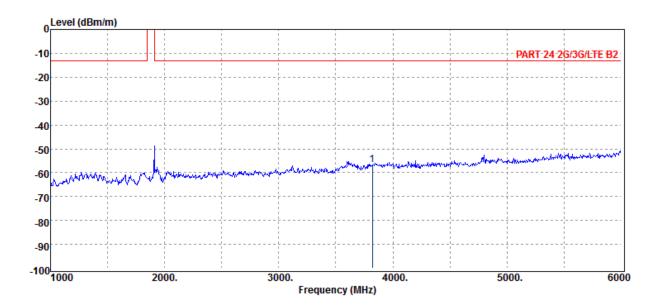
Operation Band :GSM 1900 Test Date :2014-03-03

ARFCN :CH 810 Temp./Humi. :19.6 deg\_C / 65 RH

Fundamental Frequency :1909.8 MHz Engineer :Allen

Operation Mode :TX HIGH
EUT Pol. :E2 Plane Measurement Antenna Pol. :HORIZONTAL





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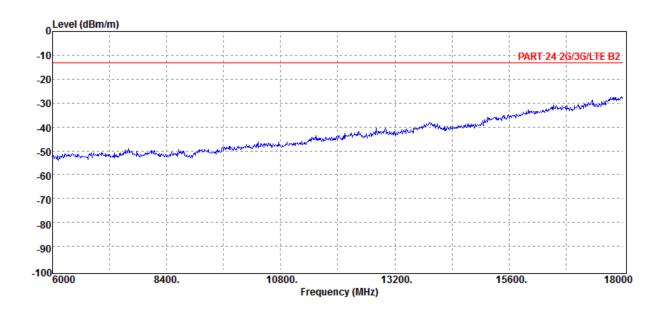
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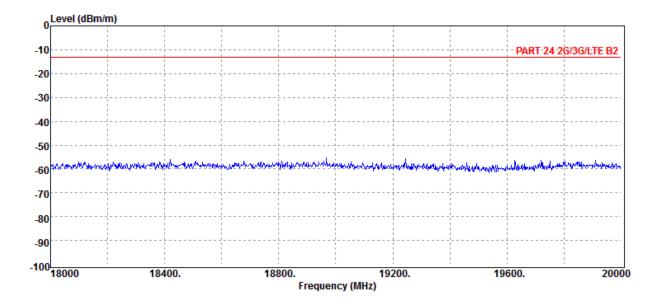
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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 229 of 247





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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 230 of 247

## Radiated Spurious Emission Measurement Result: HSDPA II Mode

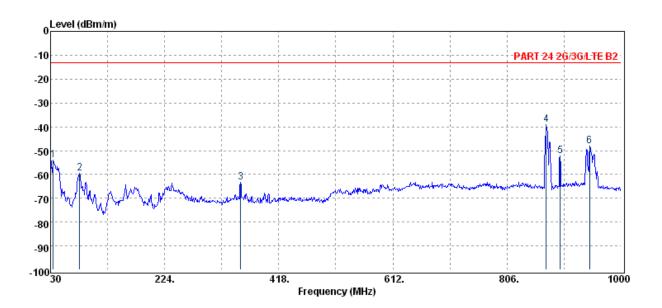
**Operation Band** :HSDPA B2 Test Date :2014-03-03

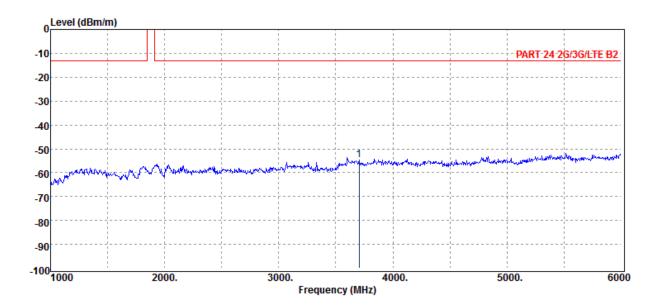
**ARFCN** :CH 9262 Temp./Humi. :19.6 deg C / 65 RH

Fundamental Frequency :1852.4 MHz Engineer :Allen

Operation Mode :TX LOW

EUT Pol. :E2 Plane Measurement Antenna Pol. :VERTICAL





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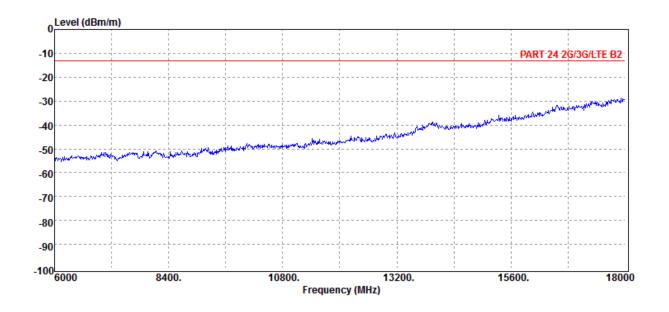
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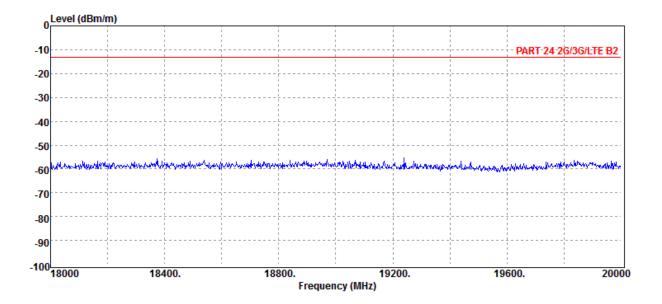
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Page: 231 of 247





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Report No.: EH/2014/10048 Issue Date: Mar. 10, 2014

Page: 232 of 247

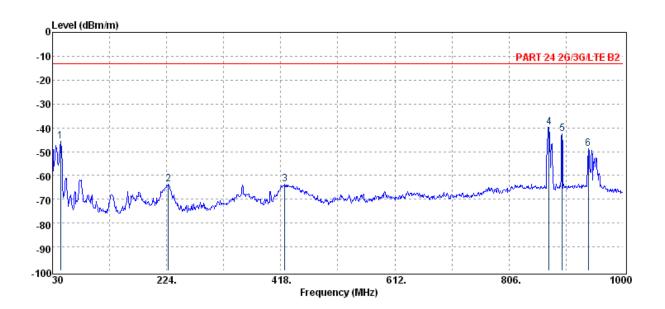
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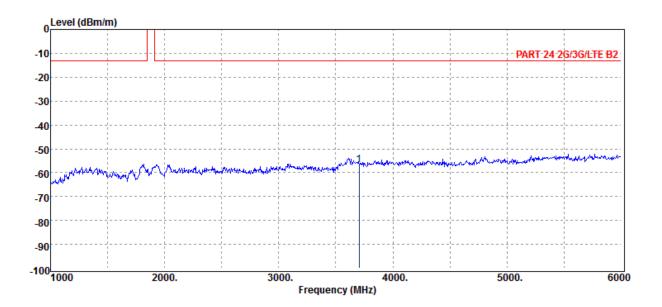
ARFCN :CH 9262 Temp./Humi. :19.6 deg\_C / 65 RH

Fundamental Frequency :1852.4 MHz Engineer :Allen

Operation Mode :TX LOW

EUT Pol. :E2 Plane Measurement Antenna Pol. :HORIZONTAL





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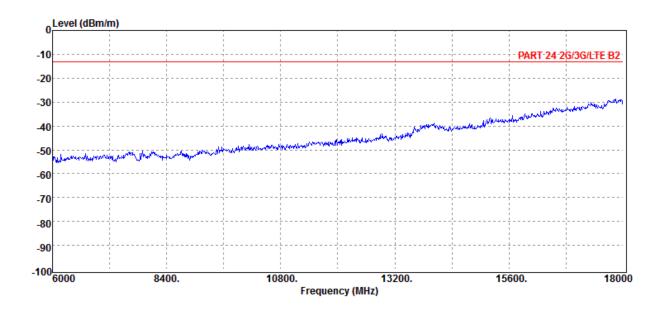
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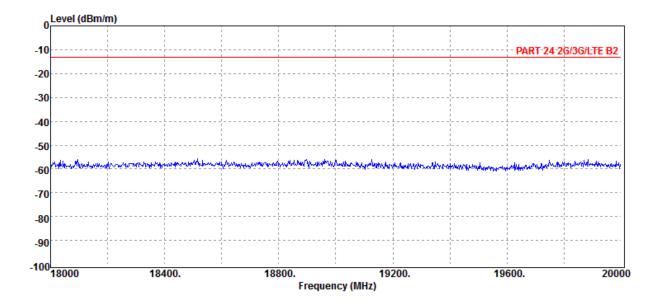
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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 233 of 247





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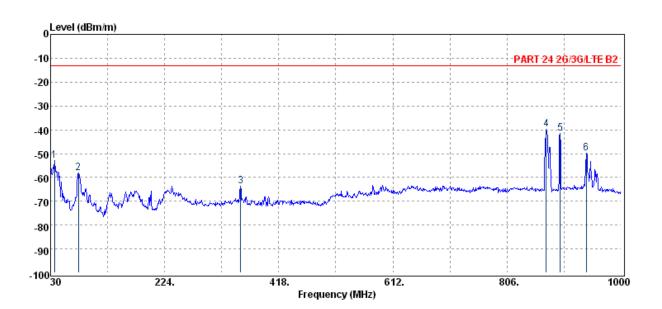
Page: 234 of 247

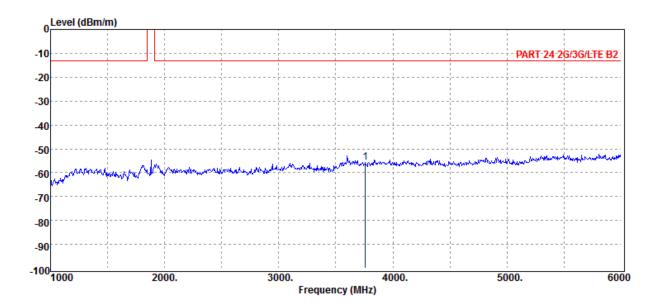
Operation Band :HSDPA B2 **Test Date** :2014-03-03

:19.6 deg\_C / 65 RH **ARFCN** Temp./Humi. :CH 9400

Fundamental Frequency :1880.0 MHz Engineer :Allen

Operation Mode :TX MID EUT Pol. :E2 Plane Measurement Antenna Pol. :VERTICAL





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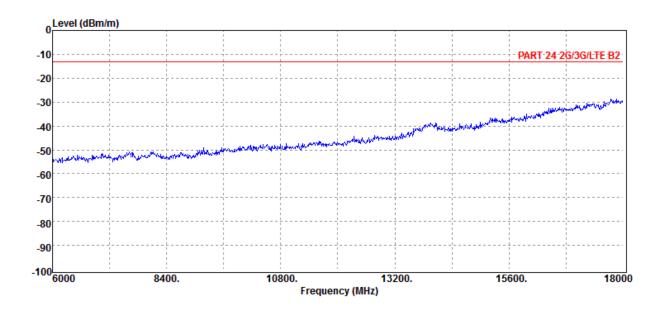
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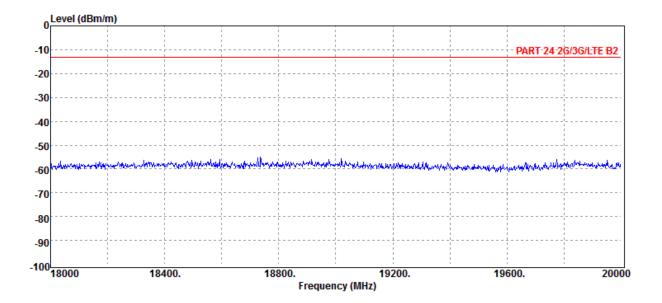
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Page: 235 of 247





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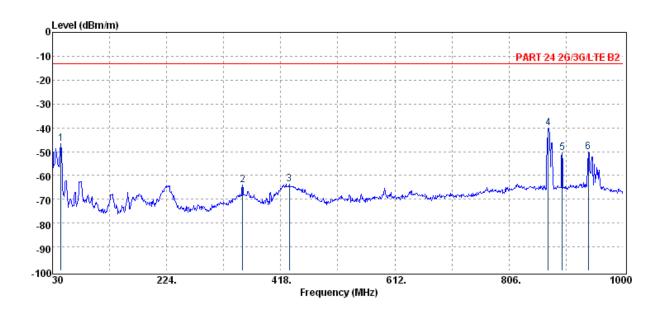
Page: 236 of 247

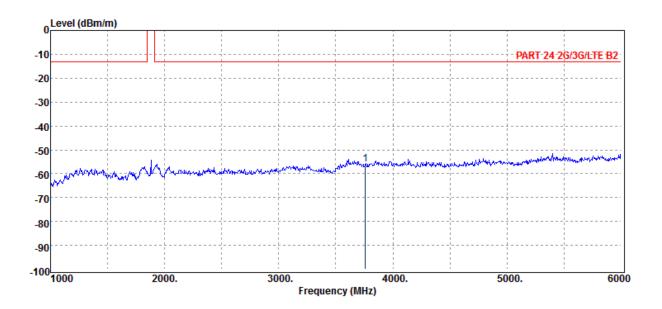
Operation Band :HSDPA B2 **Test Date** :2014-03-03

:19.6 deg\_C / 65 RH **ARFCN** Temp./Humi. :CH 9400

Fundamental Frequency :1880.0 MHz Engineer :Allen

Operation Mode :TX MID EUT Pol. :E2 Plane Measurement Antenna Pol. :HORIZONTAL





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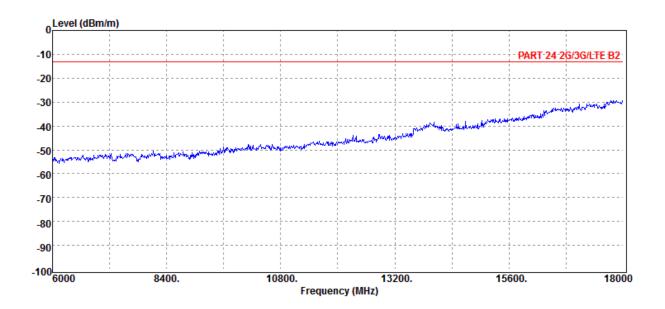
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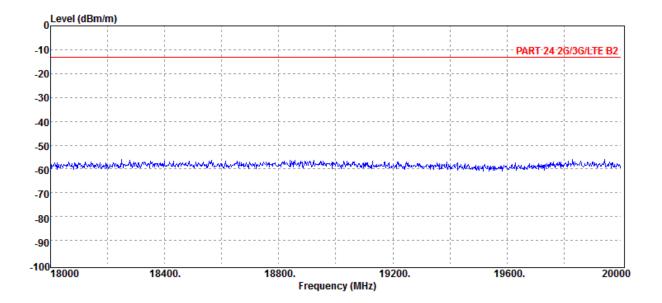
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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 237 of 247





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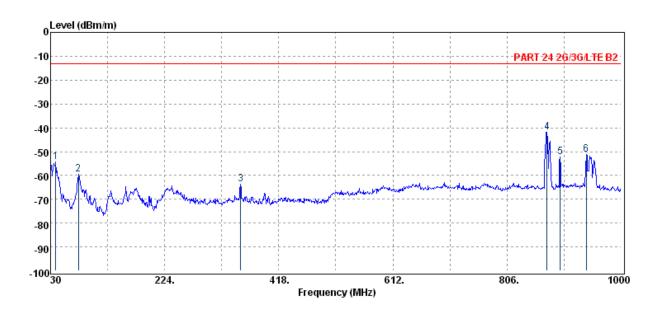
Page: 238 of 247

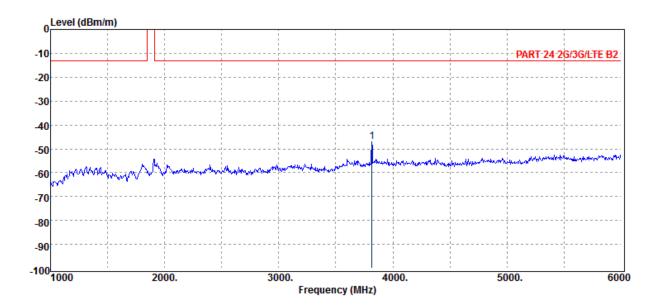
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ARFCN :CH 9538 Temp./Humi. :19.6 deg\_C / 65 RH

Fundamental Frequency :1907.6 MHz Engineer :Allen Operation Mode :TX HIGH

EUT Pol. :E2 Plane Measurement Antenna Pol. :VERTICAL





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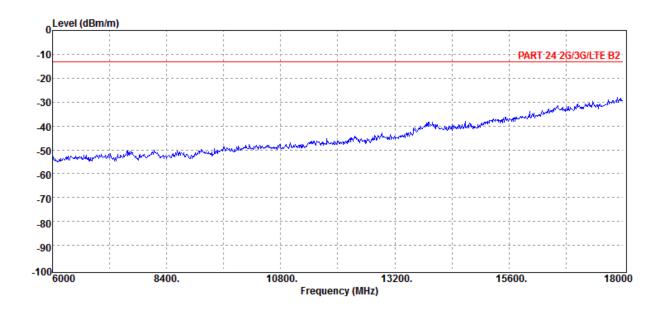
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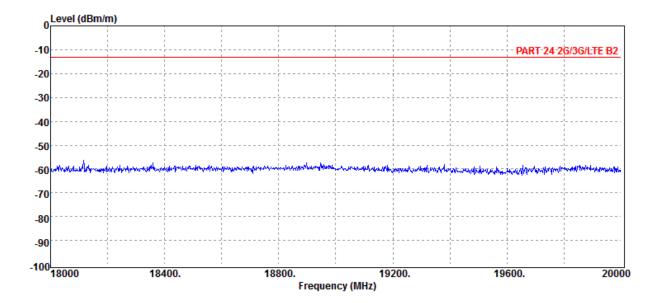
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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 239 of 247





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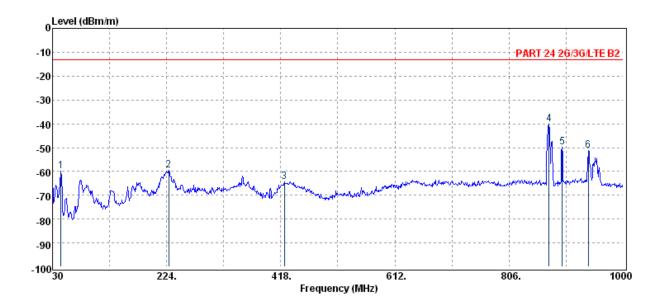
Page: 240 of 247

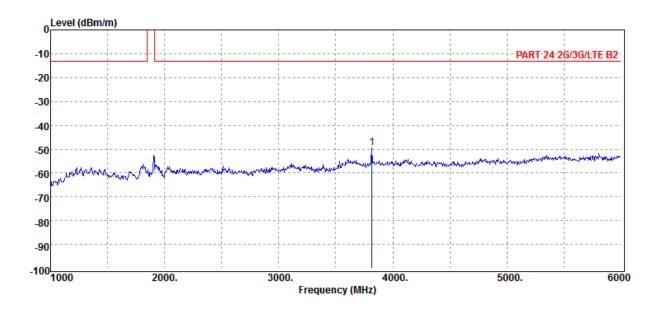
Operation Band :HSDPA B2 Test Date :2014-03-03

ARFCN :CH 9538 Temp./Humi. :19.6 deg\_C / 65 RH

Fundamental Frequency :1907.6 MHz Engineer :Allen Operation Mode :TX HIGH

EUT Pol. :E2 Plane Measurement Antenna Pol. :HORIZONTAL





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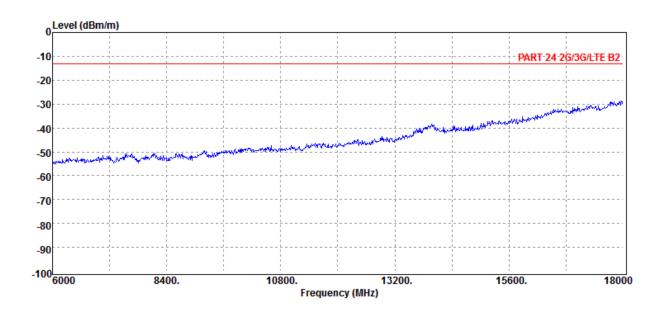
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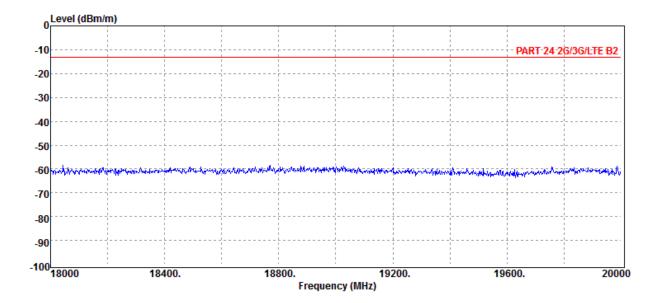
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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 241 of 247





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Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 242 of 247

## Radiated Spurious Emission Measurement Result: WCDMA V Mode

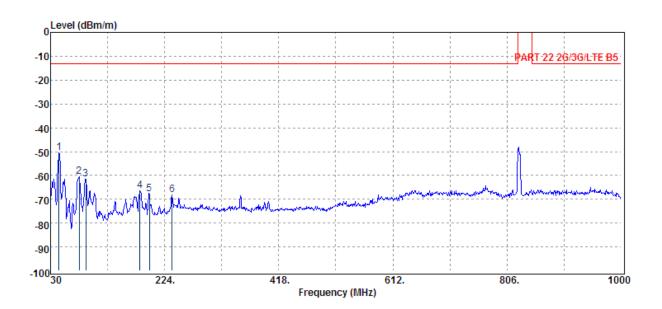
**Operation Band** :WCDMA B5 Test Date :2014-03-03

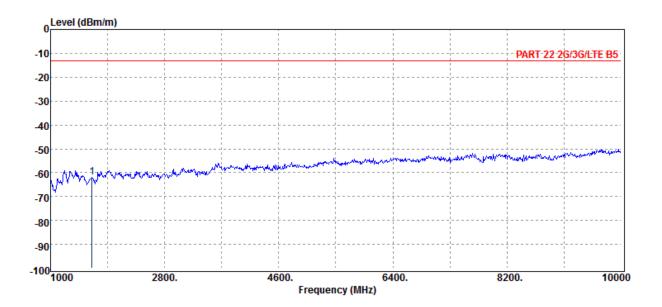
**ARFCN** :CH 4132 Temp./Humi. :19.6 deg C / 65 RH

Fundamental Frequency :826.4 MHz Engineer :Allen

Operation Mode :TX LOW

EUT Pol. :E2 Plane Measurement Antenna Pol. :VERTICAL





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Operation Mode

**FCC ID: PY7PM-0732** 

Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 243 of 247

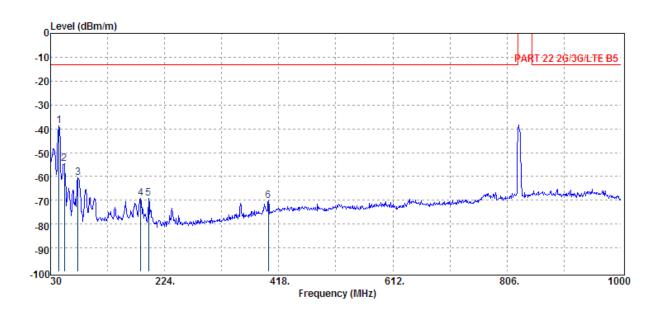
Operation Band :WCDMA B5 **Test Date** :2014-03-03

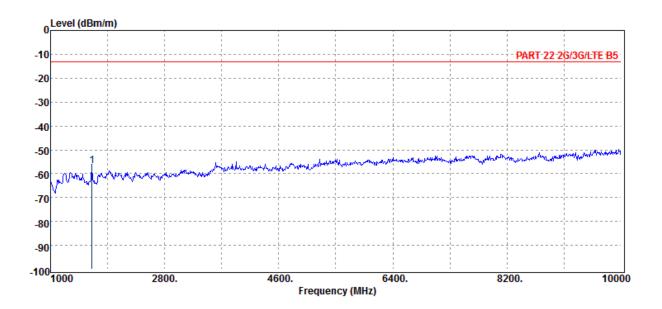
:19.6 deg\_C / 65 RH **ARFCN** Temp./Humi. :CH 4132

Fundamental Frequency :826.4 MHz Engineer :Allen

:TX LOW

EUT Pol. :E2 Plane Measurement Antenna Pol. :HORIZONTAL





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Operation Mode

**FCC ID: PY7PM-0732** 

Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 244 of 247

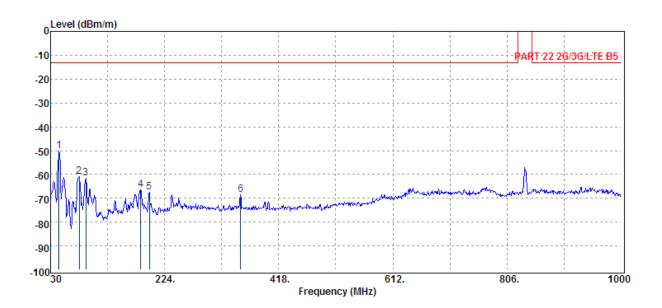
Operation Band :WCDMA B5 **Test Date** :2014-03-03

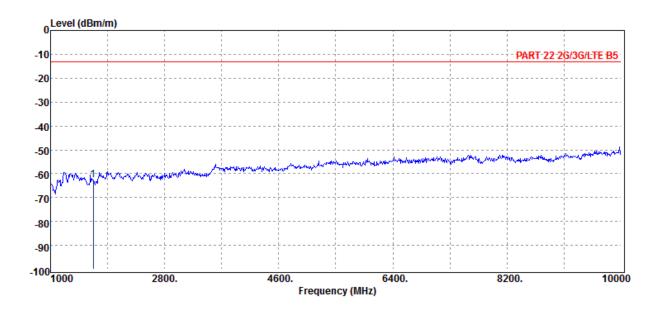
:19.6 deg\_C / 65 RH **ARFCN** Temp./Humi. :CH 4183

Fundamental Frequency :836.6 MHz Engineer :Allen

:TX MID

EUT Pol. :E2 Plane Measurement Antenna Pol. :VERTICAL





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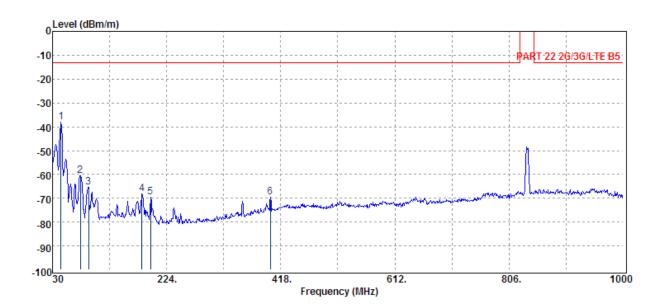
Page: 245 of 247

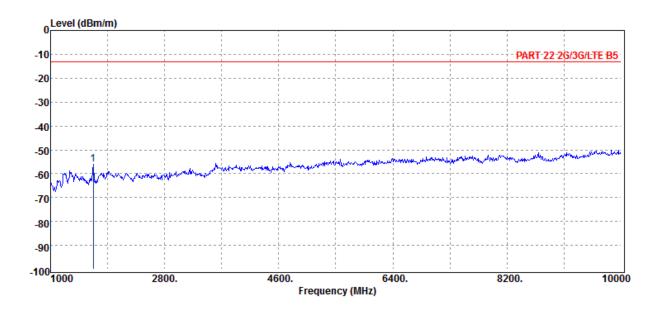
Operation Band :WCDMA B5 Test Date :2014-03-03

ARFCN :CH 4183 Temp./Humi. :19.6 deg\_C / 65 RH

Fundamental Frequency :836.6 MHz Engineer :Allen Operation Mode :TX MID

EUT Pol. :E2 Plane Measurement Antenna Pol. :HORIZONTAL





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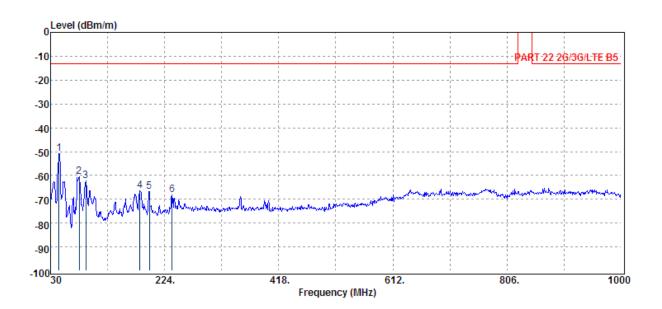
Page: 246 of 247

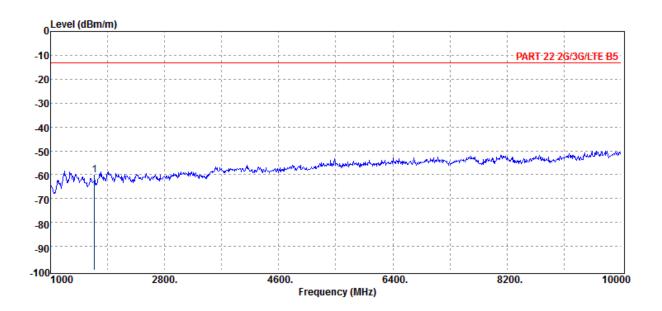
Operation Band :WCDMA B5 Test Date :2014-03-03

ARFCN :CH 4233 Temp./Humi. :19.6 deg\_C / 65 RH

Fundamental Frequency :846.6 MHz Engineer :Allen

Operation Mode :TX HIGH EUT Pol. :E2 Plane Measurement Antenna Pol. :VERTICAL





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Operation Mode

**FCC ID: PY7PM-0732** 

Report No.: EH/2014/10048 **Issue Date: Mar. 10, 2014** 

Page: 247 of 247

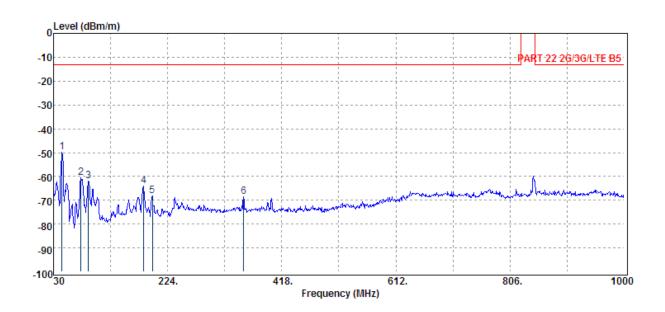
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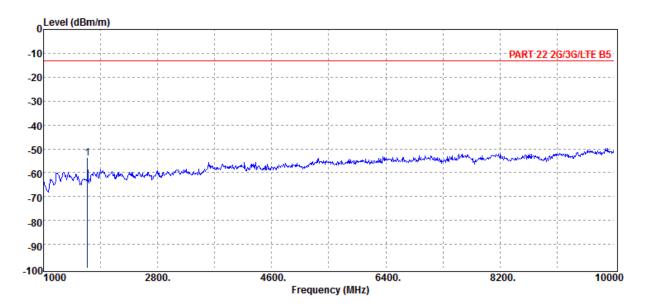
:19.6 deg\_C / 65 RH **ARFCN** :CH 4233 Temp./Humi.

Fundamental Frequency :846.6 MHz Engineer :Allen

:TX HIGH

EUT Pol. :E2 Plane Measurement Antenna Pol. :HORIZONTAL





~ End of Report ~

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