

Report No.: EH/2014/10064 Issue Date: Mar. 04, 2014

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### ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

# INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 22 SUBPART H, PART 24 SUBPART E and PART 27 SUBPART C

*OF* 

**Product Name: PDA Phone** 

**Brand Name:** Sony

**Type No.:** PM-0730-BV

**Model Difference:** N/A

FCC ID: PY7PM-0730

**Report No.:** EH/2014/10064

**Issue Date:** Mar. 04, 2014

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

**Prepared for: Sony Mobile Communications AB** 

Nya Vattentornet 22188 Lund/SWEDEN

Prepared by: SGS Taiwan Ltd.

**Electronics & Communication Laboratory** 

No.134, Wu Kung Road, New Taipei Industrial

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24803

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### VERIFICATION OF COMPLIANCE

**Applicant:** Sony Mobile Communications AB

Nya Vattentornet 22188 Lund/SWEDEN

PDA Phone **Product Name:** 

**Brand Name:** Sony

Type No.: PM-0730-BV

**Model Difference:** N/A

FCC ID: PY7PM-0730

File Number: EH/2014/10064

Date of test: Jan. 29, 2014 ~ Mar. 03, 2014

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

## We hereby certify that:

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

Test By:	Marcus Tseng	Date:	Mar. 04, 2014	
Prepared By:	Marcus Tseng / Engineer Tiffany Kao	Date:	Mar. 04, 2014	
Approved By:	Tiffany Kao / Clerk  Jim Chang / Supervisor	Date:	Mar. 04, 2014	

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# **Revision History**

Report Number	Revision	Description	Issue Date
EH/2014/10064 Rev.00		Initial creation of document	Mar. 04, 2014

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### 1. GENERAL PRODUCT INFORMATION

## 1.1. Product Description

General:

ellerar.			
Product Name:	PDA Phone		
Brand Name:	Sony		
Type No.:	PM-0730-	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 Type No.: 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:	18.1.A.0.17		
	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	
Car Charger:  Hi-Fi Wireless Headset:  Hardware Version:  Software Version:	Type No.: CCA-0004017  Model No.: AN400, Supplier: Salcomp Type No.: CAA-0003013  Model No.: MW600, Supplier: BALDA Type No.: DDA-0002029.B coupling with Simple Hands Free (Model No.: MH755, Supplier: BALDA Type No.: AG-0502)  A  18.1.A.0.17  3.8Vdc  Battery: Model No.: LIS1546ERPC, Supplier: Sony Type No.: N/A  1.Model No.: EP800, Supplier: Salcomp Type No.: CAA-0002016-US		

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### Bluetooth BR+EDR:

Bluetooth Version:	V3.0+HS
Channel number:	79 channels
Modulation type:	Frequency Hopping Spread Spectrum
Transmit Power:	10.04dBm
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:	1.85dBm (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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### Antenna Plus:

Operation Frequency:	2402 – 2480MHz
Transmit Power	101.78dBuV/m at 3m.
Channel number:	79
Modulation Type:	GFSK
Antenna Designation:	PIFA Antenna, Gain: -1.34dBi

#### WLAN 2.4GHz+5.7GHz:

Wi-Fi	Frequency Range	Channels	Rated Power	Modulation Technology		
11b/g	2412-2462	11	b: 20.35dBm g: 21.91dBm	DSSS, OFDM		
11n	HT20 2412-2462	11	HT20: 20.55dBm	OFDM		
11a	5725-5850	5	a: 21.15dBm			
11n (5GHz)	HT20 5725-5850	5	HT20: 20.22dBm	OFDM		
11n (5GHz)	HT40 5725-5850	2	HT40: 19.50dBm			
		PIFA Ant	enna,			
Antenna l	Designation:	2.4GHz Gain: -1.34dBi				
		5GHz Gain: 4.51dBi (5725MHz-5850MHz)				
Modulatio	Modulation type:		CCK, DQPSK, DBPSK for DSSS			
Woddiation type.		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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### WLAN 5GHz:

Wi-Fi	Frequency Range	Channels	Rated Power (Avg)	Modulation Technology	
	5150~5250	4	13.96dBm		
11a	5250~5350	4	13.97dBm	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: 11.83dBm		
	HT40 5150~5250	2	HT40: 11.41dBm		
11n	HT40 5250~5350	2	HT40: 10.45dBm	OFDM	
	HT40 5470~5725	3	HT40: 10.48dBm		
Antenna Designation		PIFA Antenna, 5GHz Gain: -0.38dBi (5150MHz-5250MHz) 5GHz Gain: 0.10dBi (5250MHz-5350MHz) 5GHz Gain: 3.98dBi (5470MHz-5725MHz)		(Hz-5350MHz)	
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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### GSM / LTE:

	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	GSM/GPRS 1900, Class 33	1850.2MHz – 1909.8MHz	30dBm	
Standards Frequency	EDGE 1900, Class 33	1850.2MHz – 1909.8MHz	26dBm	
Range and Power.	5MHz BW LTE-Band 7	2502.5MHz – 2567.5MHz	23 dBm	
	10MHz BW LTE-Band 7	2505.0MHz – 2565.0MHz	23 dBm	
	15MHz BW LTE-Band 7	2507.5MHz – 2562.5MHz	23 dBm	
	20MHz BW LTE-Band 7 2510.0MHz – 2560MHz		23 dBm	
Type of Emission:	GSM 850: 250KGXW, GSM 1900: 252KGXW GPRS 850: 244KGXW, GPRS 1900: 248KGXW EDGE 850: 249KG7W, EDGE 1900: 248KG7W 5MHz BW LTE-Band 7: QPSK: 4M51G7D, 16QAM: 4M51D7W 10MHz BW LTE-Band 7: QPSK: 9M01G7D, 16QAM: 8M99D7W 15MHz BW LTE-Band 7: QPSK: 13M5G7D, 16QAM: 13M4D7W 20MHz BW LTE-Band 7: QPSK: 17M9G7D, 16QAM: 17M9D7W			
IMEI:	004402452026218			

This test report applies for 850 /1900 GSM/GPRS/EDGE, and LTE Band 7.

The spread of uplink in HSPA+ supports only up to 42.2 Mbps.

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Final Amplifier Voltage and Current Information:

Test Mode	DC voltage (V)	DC current (mA)
GSM 850	3.8 Vdc	218
GSM 1900	3.8 Vdc	191
GPRS 850	3.8 Vdc	225
GPRS 1900	3.8 Vdc	165
EDGE 850	3.8 Vdc	148
EDGE 1900	3.8 Vdc	139
LTE Band 7_5M QPSK	3.8 Vdc	653
LTE Band 7_5M 16QAM	3.8 Vdc	601
LTE Band 7_10M QPSK	3.8 Vdc	662
LTE Band 7_10M 16QAM	3.8 Vdc	613
LTE Band 7_15M QPSK	3.8 Vdc	703
LTE Band 7_15M 16QAM	3.8 Vdc	645
LTE Band 7_20M QPSK	3.8 Vdc	702
LTE Band 7_20M 16QAM	3.8 Vdc	648

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

This submittal(s) (test report) is intended for FCC ID: PY7PM-0730 filing to comply with Section Part 22 subpart H, Part 24 subpart E and Part27 subpart C of the FCC CFR 47 Rules.

### 1.3. Test Methodology

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

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

The Output power Procedure of KDB941225 (SAR Measurement Procedures for 3G devices, WCDMA / HSPA / LTE) 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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#### 2. SYSTEM TEST CONFIGURATION

### 2.1. EUT Configuration

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

#### 2.2. EUT Exercise

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

#### 2.3. Test Procedure

#### 2.3.1 Conducted Measurement at Antenna Port:

According to measurement procured TIA/EIA 603C and RSS-Gen Issue 3, the EUT is placed on a turn table which is 0.8 m above ground plane. A low loss of RF cable was used to connect the antenna port of EUT to measurement equipment.

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

According to measurement procured TIA/EIA 603C, 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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## 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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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	02/27/2014	02/26/2015	
Radio Communication Analyzer	R & S	CMU200	102189	06/17/2013	06/16/2014	
Radio Communication Analyzer	Anritsu	MT8820C	6200995019	10/21/2013	10/20/2014	
Turn Table	HD	DT420	N/A	N.C.R	N.C.R	
Antenna Tower	HD	MA240-N	240/657	N.C.R	N.C.R	
Controller	HD	HD100	N/A	N.C.R	N.C.R	
Low Loss Cable	HUBER+SUHNER	966_Tx	10m	01/03/2014	01/02/2015	
Low Loss Cable	HUBER+SUHNER	966_Rx	3m	01/03/2014	01/02/2015	
Filter 800-1000	Micro-Tronics	EWT	M2	02/27/2014	02/26/2015	
Filter 1800-2000	Micro-Tronics	EWT	M2	02/27/2014	02/26/2015	
Filter 1700-1800	Micro-Tronics	BRC15751	001	02/27/2014	02/26/2015	
1GHz High Pass Filter	Micro-Tronics	HPM50108	32	02/27/2014	02/26/2015	
2GHz High Pass Filter	Micro-Tronics	HPM50110	36	02/27/2014	02/26/2015	
3m Site NSA	SGS	966 chamber	N/A	07/15/2013	07/14/2014	

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

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

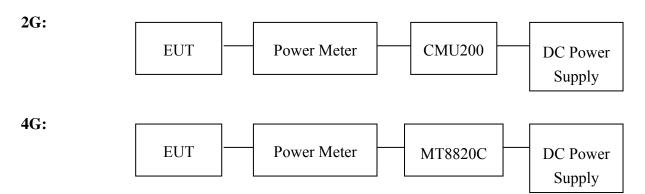
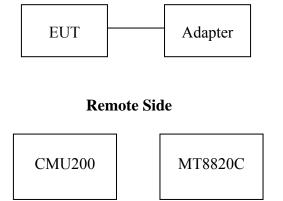


Fig. 2-2 Configuration of Tested System (Fixed Channel-Radiated)



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

Item	Equipment	Mfr/Brand	Model/ Type No.	Series No.	Data Cable	Power Cord
1.	DC Power Supply	HP	E3640A	MY40005907	shielded	Un-shielded
2.	Universal Radio Com- munication Tester	R&S	CMU200	102189	shielded	Un-shielded
3.	Universal Radio Com- munication Tester	Anritsu	MT8820C	6200307563	shielded	Un-shielded

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### 3. SUMMARY OF TEST RESULTS

FCC Rules	<b>Description Of Test</b>	Result
§2.1046(a)	RF Power Output	Compliant
\$2.1046(a) \$22.913(a)(2) \$24.232(c) \$27.50(h)(2)	ERP/ EIRP measurement	Compliant
§2.1049(h)	99% Occupied Bandwidth	Compliant
\$2.1051 \$22.917(a) \$24.238(a) \$27.53(g) \$27.50(c)(5) \$27.53(h) \$27.53(m)(4)	Out of Band Emissions at Antenna Terminals and Band Edge	Compliant
\$2.1053 \$22.917(a) \$24.238(a) \$27.50(c)(5) \$27.53(g) \$27.53(h) \$27.53(m)(4)	Field Strength of Spurious Radiation	Compliant
\$24.232(d) \$27.53(d) (5)	Peak to Average Ratio	Compliant
\$2.1055(a)(1) \$22.355 \$24.235 \$27.54	Frequency Stability vs. Temperature	Compliant
\$2.1055(d)(1) \$22.355 \$24.235 \$27.54	Frequency Stability vs. Voltage	Compliant

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### Max ERP/EIRP measurement result:

	dBm		W
GSM 850 Band	25.79	ERP	0.379
GSM 1900 Band	27.92	EIRP	0.619
GPRS 850 Band	24.76	ERP	0.299
GPRS 1900 Band	27.86	EIRP	0.611
EDGE 850 Band	24.69	ERP	0.294
EDGE 1900 Band	24.05	EIRP	0.254
LTE Band 7/5MMz /QPSK RB 1 Offset 0	25.06	EIRP	0.321
LTE Band 7/5MMz /QPSK RB 1 Offset 24	24.97	EIRP	0.314
LTE Band 7/5MMz /16QAM RB 1 Offset 0	25.09	EIRP	0.323
LTE Band 7/5MMz /16QAM RB 1 Offset 24	24.97	EIRP	0.314
LTE Band 7/10MMz /QPSK RB 1 Offset 0	24.60	EIRP	0.288
LTE Band 7/10MMz /QPSK RB 1 Offset 49	23.88	EIRP	0.244
LTE Band 7/10MMz /16QAM RB 1 Offset 0	24.23	EIRP	0.265
LTE Band 7/10MMz /16QAM RB 1 Offset 49	24.18	EIRP	0.262
LTE Band 7/15MMz /QPSK RB 1 Offset 0	24.84	EIRP	0.305
LTE Band 7/15MMz /QPSK RB 1 Offset 74	24.14	EIRP	0.259
LTE Band 7/15MMz /16QAM RB 1 Offset 0	25.02	EIRP	0.318
LTE Band 7/15MMz /16QAM RB 1 Offset 74	24.23	EIRP	0.265
LTE Band 7/20MMz /QPSK RB 1 Offset 0	24.55	EIRP	0.285
LTE Band 7/20MMz /QPSK RB 1 Offset 99	24.18	EIRP	0.262
LTE Band 7/20MMz /16QAM RB 1 Offset 0	24.62	EIRP	0.290
LTE Band 7/20MMz /16QAM RB 1 Offset 99	24.26	EIRP	0.267

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### 4. DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition.

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

The list of channel selected to conduct the measurements

GSM/GPRS/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

#### LTE B7:

Test Frequency	Bandwidth	Channel Number	Frequency of Uplink
	[MHz]		[MHz]
Low	5	20775	2502.5
	10	20800	2505
	15	20825	2507.5
	20	20850	2510
Middle	5/10 15/20	21100	2535
High	5	21425	2567.5
	10	21400	2565
	15	21375	2562.5
	20	21350	2560

The field strength of spurious radiation emission was measured as stand-up position (E2 mode as defined in Lab) and lie down position with 90 degrees angle apart (H, E1 mode as defines in Lab) for GSM/EDGE and LTE Band 7. The worst-case of H position for GSM 850, E1 position for GSM 1900 and H position for LTE band 7 is placed to conduct all applicable measurement test cases for all supported modulation, transmission bandwidth, and frequency band.

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

#### **GSM/GPRS:**

#### **Radiated Spurious Emission**

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

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

#### LTE:

### **Radiated Spurious Emission**

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

## Out of Band Emission at Antenna Terminal, and Bandedge

In comparison among all Out of Band Emission at Antenna Terminal and Bandedge in the variety of combination on LTE band 7, respectively, It's revealed to generate the highest emission while RB size = 1 with offset of both extremity for all supported transmission bandwidth of all supported frequency band. Be aware of that only data measurement that yields the worst measurement with supported modulation scheme (QPSK, 16QAM), QPSK – the worst, is shown on the corresponding section.

#### **Peak to Average Ratio**

For Peak to Average Ratio test, all combination (RB arrangement with different modulation scheme) has been evaluated, the data with the following configuration: RB number = full and modulation = 16QAM is revealed to generate the worst case result.

Only data that generates the worst-case result is shown on the report.

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#### 5. **MEASUREMENT UNCERTAINTY**

Test Items	Uncertainty
RF Power Output	+/- 1.42 dB
ERP/ EIRP measurement	Vertical Polarization = +/- 4.74dB Horizontal Polarization =+/- 4.62dB
99% Occupied Bandwidth	+/- 123.36 Hz
Out of Band Emissions at Antenna	+/- 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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#### 6. RF POWER OUTPUT MEASUREMENT

### 6.1. Standard Applicable:

According to FCC §2.1046.

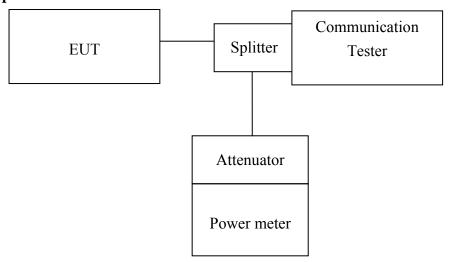
FCC 22.913(a) Mobile station are limited to 7W.

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

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

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

### 6.2. Test Set-up:



Note: Measurement setup for testing on Antenna connector

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#### **6.3.** Measurement Procedure:

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

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

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

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

### 6.4. Measurement Equipment Used:

Refer to section 2.4 in this report

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

### 6.5.1. RF Conducted Output Power

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

#### **Result:**

EUT Mode	Frequency (MHz)	СН	Peak Power (dBm)	Averager Burst Power (dBm)
	824.2	128	33.50	33.20
GSM 850	836.6	190	33.70	33.40
	848.8	251	33.70	33.40

EUT Mode	Frequency (MHz)	СН	Peak Power (dBm)	Averager Burst Power (dBm)
	1850.2	512	31.00	30.90
GSM 1900	1880.0	661	30.80	30.60
	1909.8	810	30.50	30.30

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)
GPRS 850	824.2	128	33.50	33.20	29.60	29.40
	836.6	190	33.70	33.40	29.60	29.40
	848.8	251	33.60	33.40	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)
GPRS 850	824.2	128	28.00	27.90	27.40	27.20
	836.6	190	28.10	28.00	27.40	27.30
	848.8	251	28.10	28.00	27.40	27.20

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EUT Mode	Frequency (MHz)	СН	Peak Power (4DN 1UP) Class 8 (dBm)	Average Burst Power (4DN 1UP) Class 8 (dBm)	Peak Power (4DN 2UP) Class 10 (dBm)	Average Burst Power (4DN 2UP) Class 10 (dBm)
GPRS 1900	1850.2	512	31.10	30.80	29.20	29.00
	1880.0	661	30.80	30.60	29.00	28.80
	1909.8	810	30.60	30.40	29.10	28.90

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)
GPRS 1900	1850.2	512	27.90	27.70	27.30	27.20
	1880.0	661	27.90	27.70	27.40	27.20
	1909.8	810	28.10	27.90	27.40	27.30

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)
EDGE 850	824.2	128	28.30	25.20	27.30	24.10
	836.6	190	28.40	25.20	27.30	24.10
	848.8	251	28.30	25.20	27.40	24.10

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)
EDGE 850	824.2	128	27.20	24.00	26.40	23.00
	836.6	190	27.30	24.00	26.40	23.10
	848.8	251	27.20	24.00	26.30	23.00

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EUT Mode	Frequency (MHz)	СН	Peak Power (4DN 1UP) Class 8 (dBm)	Average Burst Power (4DN 1UP) Class 8 (dBm)	Peak Power (1DN 2UP) Class 10 (dBm)	Average Burst Power (1DN 2UP) Class 10 (dBm)
EDGE 1900	1850.2	512	27.90	24.80	27.90	24.70
	1880.0	661	27.80	24.70	27.70	24.60
	1909.8	810	27.80	24.70	27.80	24.70

EUT Mode	Frequency (MHz)	СН	Peak Power (1DN 3UP) Class 12 (dBm)	Average Burst Power (1DN 3UP) Class 12 (dBm)	Peak Power (1DN 4UP) Class 12 (dBm)	Average Burst Power (1DN 4UP) Class 12 (dBm)
EDGE 1900	1850.2	512	27.80	24.60	26.80	23.60
	1880.0	661	27.70	24.60	26.80	23.60
	1909.8	810	27.70	24.60	26.80	23.70

Cable loss offset Low Band: 0.4dB Cable loss offset High Band: 0.7dB

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## 6.5.1.2: MPR Table LTE Band 7\_5MHz

BW (MHz)	Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Conducted power (dBm)
				1	0	22.41
		20775	2502.5	1	24	22.33
		20773	2302.3	12	6	21.25
				25	0	21.24
				1	0	21.79
5	ODCK	21100	2535.0	1	24	21.80
5	QPSK	21100	2333.0	12	6	20.77
				25	0	20.74
		21425		1	0	22.07
			2567.5	1	24	22.21
				12	6	21.11
				25	0	21.10
		20775	2502.5	1	0	21.06
				1	24	20.98
				12	6	20.13
				25	0	20.08
				1	0	20.49
5	16 OAM	21100	2535.0	1	24	20.55
3	16 QAM	21100	2333.0	12	6	19.61
				25	0	19.57
		21425		1	0	20.91
			2567.5	1	24	20.96
				12	6	20.00
				25	0	19.99

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### LTE Band 7\_10MHz

BW (MHz)	Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Conducted power (dBm)
				1	0	22.40
		20800	2505.0	1	49	22.38
		20800	2303.0	25	12	21.37
				50	0	21.36
				1	0	22.01
10	ODCK	21100	2535.0	1	49	22.09
10 QPSK	QPSK	21100	2333.0	25	12	20.93
				50	0	20.94
		21400	2565.0	1	0	22.20
				1	49	22.35
				25	12	21.06
				50	0	21.08
		20800	2505.0	1	0	21.17
				1	49	21.04
				25	12	20.12
				50	0	20.05
				1	0	20.84
10	16 O A M	21100	2535.0	1	49	20.91
10	16 QAM	21100	2333.0	25	12	19.83
				50	0	19.81
				1	0	21.00
		21400	2565.0	1	49	21.20
			2565.0	25	12	20.06
				50	0	20.10

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### LTE Band 7\_15MHz

BW (MHz)	Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Conducted power (dBm)
				1	0	22.32
		20050	2507.5	1	74	22.16
		20850	2507.5	36	19	21.15
				75	0	21.22
				1	0	21.95
1.5	ODCK	21100	2535.0	1	74	22.08
15 QP	QPSK	21100	2333.0	36	19	20.99
				75	0	20.96
		21375	2562.5	1	0	22.08
				1	74	22.40
				36	19	21.22
				75	0	21.22
		20850	2507.5	1	0	20.40
				1	74	20.21
				36	19	19.72
				75	0	19.84
				1	0	20.06
15	16 O A M	21100	2535.0	1	74	20.13
13	16 QAM	21100	2333.0	36	19	19.53
				75	0	19.55
		21375		1	0	20.19
			2562.5	1	74	20.40
			2362.3	36	19	19.84
				75	0	19.82

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### LTE Band 7\_20MHz

BW (MHz)	Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Conducted power (dBm)
				1	0	21.48
		20850	2510.0	1	99	21.12
		20830	2310.0	50	25	20.91
				100	0	20.29
				1	0	21.03
20	ODCK	21100	2535.0	1	99	21.15
20 QPSK	QPSK	21100	2333.0	50	25	20.60
				100	0	20.02
		21350		1	0	21.13
			2560.0	1	99	21.43
				50	25	20.86
				100	0	20.23
			2510.0	1	0	20.41
		20850		1	99	20.11
		20850		50	25	19.79
				100	0	19.72
				1	0	20.04
20	16 QAM	21100	2535.0	1	99	20.09
20	10 QAWI	21100	2333.0	50	25	19.51
				100	0	19.51
		21350		1	0	20.06
			2560.0	1	99	20.36
			2560.0	50	25	19.78
				100	0	19.77

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#### 6.5.2. Minimum Communications Power Measurement

#### PCS 1900 band

PCL	0	1	2	3	4	5	6	7	8
Output power (dBm)	30	28.9	26.7	24.8	22.9	20.7	18.6	16.9	14.8

PCL	9	10	11	12	13	14	15
Output power (dBm)	12.7	10.8	8.8	6.8	4.5	2.6	0.9

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

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## 7. ERP, EIRP MEASUREMENT

### 7.1. Standard Applicable:

According to FCC §2.1046

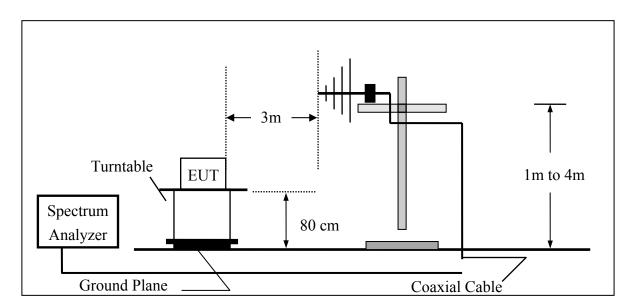
FCC 22.913(a) Mobile station is limited to 7W ERP.

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

FCC 27, 50(h)(2) Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP

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

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



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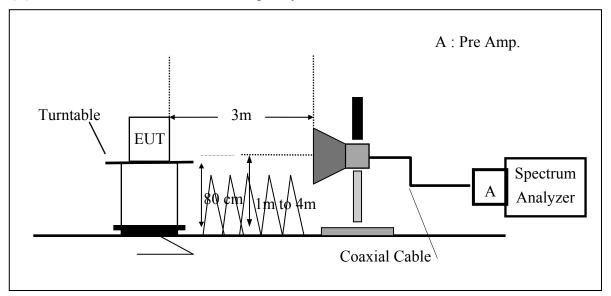
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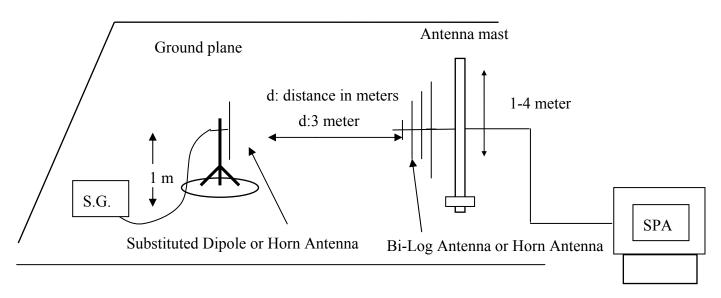
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### (B) Radiated Power Test Set-UP Frequency Over 1 GHz



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



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#### 7.3. Measurement Procedure:

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

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

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

EIRP in frequency band 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:

EIRP in frequency band 2510 – 2560MHz 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)

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### Spectrum setting:

1. Detector = Peak, marker the highest value of the detector by maximum hold, set RBW wide enough to capture the entire signal of emission, and VBW > =3xRBW. Or,

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

Set frequency = nominal signal center frequency;

Set span =  $2 \times \text{occupied BW}$ ;

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.

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

### 7.4. Measurement Equipment Used:

Refer to section 2.4 in this report

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

	Measurement							
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
	MHz		V/H	dBm	dBd	dB	dBm	dBm
	824.2	128	V	18.21	3.91	-3.03	19.09	38.45
			Н	24.84	3.91	-3.03	25.71	38.45
GSM 850	836.6	190	V	19.84	3.89	-3.07	20.67	38.45
GSW 830			Н	24.97	3.89	-3.07	25.79	38.45
	848.8	251	V	19.15	3.87	-3.11	19.91	38.45
			Н	24.81	3.87	-3.11	25.57	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
	824.2	128	V	21.95	3.91	-3.03	22.83	38.45
			Н	13.62	3.91	-3.03	14.49	38.45
GPRS 850	836.6	190	V	21.19	3.89	-3.07	22.01	38.45
GPRS 830			Н	23.90	3.89	-3.07	24.72	38.45
	848.8	251	V	17.20	3.87	-3.11	17.97	38.45
			Н	24.00	3.87	-3.11	24.76	38.45

	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	21.96	3.91	-3.03	22.84	38.45
			Н	23.30	3.91	-3.03	24.17	38.45
	836.6	190	V	21.26	3.89	-3.07	22.08	38.45
			Н	23.85	3.89	-3.07	24.67	38.45
	848.8	251	V	18.66	3.87	-3.11	19.42	38.45
			Н	23.93	3.87	-3.11	24.69	38.45

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

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	EUT				Measur	ement		
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	25.27	5.08	-4.67	25.68	33.01
	1630.2	312	Н	20.52	5.08	-4.67	20.93	33.01
CSM 1000	1880.0	661	V	27.62	5.00	-4.70	27.92	33.01
GSM 1900	1000.0	001	Н	20.8	5.00	-4.70	21.09	33.01
	1909.8	810	V	26.36	4.92	-4.74	26.55	33.01
	1909.8	810	Н	20.28	4.92	-4.74	20.46	33.01

	EUT				Measur	ement		
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	26.65	5.08	-4.67	27.06	33.01
	1830.2	312	Н	20.80	5.08	-4.67	21.21	33.01
CDDC 1000	1880.0	661	V	27.56	5.00	-4.70	27.86	33.01
GPRS 1900	1000.0	001	Н	21.70	5.00	-4.70	22.00	33.01
	1909.8	810	V	26.06	4.92	-4.74	26.25	33.01
	1909.8	810	Н	20.86	4.92	-4.74	21.04	33.01

	EUT				Measur	ement		
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	23.48	5.08	-4.67	23.89	33.01
	1830.2	312	Н	17.61	5.08	-4.67	18.02	33.01
EDGE 1000	1880.0	661	V	23.75	5.00	-4.70	24.05	33.01
EDGE 1900	1880.0	001	Н	17.84	5.00	-4.70	18.14	33.01
	1909.8	810	V	22.12	4.92	-4.74	22.31	33.01
	1909.8	810	Н	16.93	4.92	-4.74	17.11	33.01

### Remark:

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

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## BAND 7 / BW: 5M / QPSK / RB: 1,0

	EUT			Ŋ	Measurem	ent		
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
	2502.5	20775	V	22.10	5.80	-5.48	22.42	33.01
BAND 7	2502.5	20775	Н	24.74	5.80	-5.48	25.06	33.01
BW: 5M	2525.0	21100	V	22.03	5.86	-5.52	22.37	33.01
QPSK RB: 1,0	2535.0	21100	Н	24.06	5.86	-5.52	24.40	33.01
	2567.5	21.42.5	V	21.91	5.93	-5.57	22.27	33.01
	2567.5	21425	Н	24.29	5.93	-5.57	24.65	33.01

# BAND 7 / BW: 5M / QPSK / RB: 1,24

	EUT			N	Measurem	ent		
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
	2502.5	20555	V	22.47	5.81	-5.49	22.79	33.01
BAND 7	2502.5	20775	Н	24.64	5.81	-5.49	24.97	33.01
BW: 5M	2535.0	21100	V	22.04	5.87	-5.53	22.38	33.01
QPSK RB: 1,24	2333.0	21100	Н	24.34	5.87	-5.53	24.69	33.01
	2567.5	21425	V	22.22	5.93	-5.57	22.58	33.01
	2307.3	21423	Н	24.20	5.93	-5.57	24.56	33.01

### Remark:

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

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# BAND 7 / BW: 5M / 16QAM / RB: 1,0

	EUT			N	Measurem	ent		
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
	2502.5	20775	V	22.25	5.80	-5.48	22.57	33.01
BAND 7	2502.5	20775	Н	24.77	5.80	-5.48	25.09	33.01
<b>BW: 5M</b>	2535.0	21100	V	22.08	5.86	-5.52	22.42	33.01
16QAM RB: 1,0	2333.0	21100	Н	24.13	5.86	-5.52	24.47	33.01
	2567.5	21.425	V	21.95	5.93	-5.57	dBm 22.57 3 25.09 3 22.42 3 24.47 3 22.31 3	33.01
	2307.3	21425	Н	24.35	5.93	-5.57	24.71	33.01

## BAND 7 / BW: 5M / 16QAM / RB: 1,24

	EUT			Ŋ	Measurem	ent		
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
	2502.5	20775	V	22.59	5.81	-5.48	22.91	33.01
BAND 7	2502.5	20775	Н	24.65	5.81	-5.49	24.97	33.01
BW: 5M	2525.0	21100	V	22.12	5.87	-5.53	22.46	33.01
16QAM		21100	Н	24.34	5.87	-5.53	24.68	33.01
<b>RB: 1,24</b>			V	22.36	5.93	-5.57	22.72	33.01
		21425	Н	24.28	5.93	-5.57	24.65	33.01

### Remark:

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

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# BAND 7 / BW: 10M / QPSK / RB: 1,0

	EUT			N	Measurem	ent		
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
	2505.0	2505.0 20800	V	22.20	5.80	-5.48	22.52	33.01
BAND 7	2505.0	20800	Н	24.28	5.80	-5.48	24.60	33.01
BW: 10M	2525.0	21100	V	21.21	5.86	-5.52	21.54	33.01
QPSK	2535.0	21100	Н	22.54	5.86	-5.52	22.87	33.01
<b>RB:</b> 1,0	2565.0 21400	V	23.10	5.92	-5.56	23.46	33.01	
	2565.0	21400	Н	23.2	5.92	-5.56	23.56	33.01

## BAND 7 / BW: 10M / QPSK / RB: 1,49

	EUT			N	Measurem	ent		
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
	2505.0	20000	V	21.14	5.82	-5.49	21.46	33.01
BAND 7	2505.0 208	20800	Н	23.55	5.82	-5.49	23.88	33.01
BW: 10M	2525.0		V	20.56	5.88	-5.53	20.90	33.01
QPSK	2535.0 21100	Н	23.53	5.88	-5.53	23.87	33.01	
<b>RB: 1,49</b>		V	21.02	5.93	-5.57	21.38	33.01	
	2565.0	21400	Н	22.34	5.93	-5.57	22.70	33.01

### Remark:

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

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## BAND 7 / BW: 10M / 16QAM / RB: 1,0

	EUT			Ŋ	Measurem	ent		
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
	2505.0	20000	V	22.15	5.80	-5.48	22.47	33.01
BAND 7	2505.0	20800	Н	23.91	5.80	-5.48	24.23	33.01
BW: 10M	2525.0	21100	V	21.49	5.86	-5.52	21.83	33.01
16QAM RB: 1,0	2535.0	21100	Н	22.78	5.86	-5.52	23.11	33.01
	<b>RB: 1,0</b> 2565.0 21400	V	23.30	5.92	-5.56	23.66	33.01	
		21400	Н	23.43	5.92	-5.56	23.79	33.01

## BAND 7 / BW: 10M / 16QAM / RB: 1,49

	EUT			N	Measurem	ent		
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
	2505.0	20000	V	21.45	5.82	-5.49	21.77	33.01
BAND 7		20800	Н	23.86	5.82	-5.49	24.18	33.01
BW: 10M	2525.0		V	20.77	5.88	-5.53	21.12	33.01
16QAM	2535.0 21100 1,49	21100	Н	23.76	5.88	-5.53	24.10	33.01
RB: 1,49		V	21.10	5.93	-5.57	21.46	33.01	
	2565.0	21400	Н	22.44	5.93	-5.57	22.80	33.01

### Remark:

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

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### BAND 7 / BW: 15M / QPSK / RB: 1,0

	EUT			N	Measurem	ent		
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
	2507.5	2507.5	V	21.79	5.80	-5.48	22.11	33.01
BAND 7	2507.5	20825	Н	24.52	5.80	-5.48	24.84	33.01
BW: 15M	2525.0	21100	V	20.23	5.86	-5.52	20.57	33.01
QPSK	2535.0	21100	Н	22.8	5.85	-5.52	23.14	33.01
<b>RB:</b> 1,0	25/2.5	21275	V	21.45	5.91	-5.55	21.81	33.01
	2562.5	21375	Н	23.27	5.91	-5.55	23.63	33.01

# BAND 7 / BW: 15M / QPSK / RB: 1,74

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	
	2507.5	20925	V	21.64	5.83	-5.50	21.96	33.01	
BAND 7	2507.5	20825	Н	23.38	5.83	-5.50	23.70	33.01	
<b>BW: 15M</b>	2525.0	21100	V	21.14	5.88	-5.54	21.49	33.01	
QPSK	2535.0	21100	Н	23.79	5.88	-5.54	24.14	33.01	
<b>RB: 1,74</b>	<b>RB: 1,74</b> 2562.5 2137	21275	V	20.21	5.93	-5.57	20.57	33.01	
		213/3	Н	22.88	5.93	-5.57	23.24	33.01	

### Remark:

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

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## BAND 7 / BW: 15M / 16QAM / RB: 1,0

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	
	2507.5	20025	V	21.67	5.80	-5.48	21.99	33.01	
BAND 7	2507.5	20825	Н	24.70	5.80	-5.48	25.02	33.01	
BW: 15M	2525.0	21100	V	20.23	5.86	-5.52	20.57	33.01	
16QAM	2535.0	21100	Н	23.25	5.86	-5.52	23.59	33.01	
<b>RB: 1,0</b>	25.62.5	21275	V	21.33	5.91	-5.56	21.69	33.01	
	2562.5	21375	Н	23.29	5.91	-5.56	23.64	33.01	

# BAND 7 / BW: 15M / 16QAM / RB: 1,74

EUT			Measurement					
<b>Operation Band</b>	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
	2505.5		V	21.87	5.83	-5.50	22.20	33.01
BAND 7	2507.5	20825	Н	23.47	5.83	-5.50	23.79	33.01
<b>BW: 15M</b>	2525.0		V 21.31	5.88	-5.54	21.66	33.01	
<b>16QAM</b>	2535.0 21100	Н	23.88	5.88	-5.53	24.23	33.01	
<b>RB: 1,74</b>	25/2.5	V	20.27	5.93	-5.57	20.63	33.01	
	2562.5	21375	Н	22.90	5.93	-5.57	23.26	33.01

### Remark:

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

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## BAND 7 / BW: 20M / QPSK / RB: 1,0

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	
	2510.0 208	20050	V	22.13	5.80	-5.48	22.45	33.01	
BAND 7	2310.0	20850	Н	24.23	5.80	-5.48	24.55	33.01	
BW: 20M	2535.0	21100	V	21.44	5.85	-5.51	21.78	33.01	
QPSK	2333.0	21100	Н	23.81	5.85	-5.51	24.15	33.01	
<b>RB:</b> 1,0	2560.0	2560.0 21350	V	21.14	5.90	-5.55	21.49	33.01	
	2300.0		Н	22.96	5.90	-5.55	23.31	33.01	

# BAND 7 / BW: 20M / QPSK / RB: 1,99

EUT				N	Measurem	ent					
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit			
	MHz		V/H	dBm	dBi	dB	dBm	dBm			
	2510.0	20850	V	21.24	5.84	-5.51	21.57	33.01			
BAND 7	2510.0	20830	Н	23.48	5.84	-5.50	23.81	33.01			
BW: 20M	2535.0	21100	V	20.99	5.88	-5.54	21.33	33.01			
QPSK	2333.0		Н	23.83	5.88	-5.54	24.18	33.01			
RB: 1,99	2560.0		V	20.58	5.93	-5.57	20.94	33.01			
	2300.0	21330	Н	23.02	5.93	-5.57	23.38	33.01			

### Remark:

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

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# BAND 7 / BW: 20M /16QAM / RB: 1,0

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
	2510.0	20850	V	22.04	5.80	-5.48	22.36	33.01
BAND 7	2510.0	20830	Н	24.3	5.80	-5.48	24.62	33.01
BW: 20M	2535.0	21100	V	21.59	5.85	-5.52	21.92	33.01
16QAM	2333.0	21100	Н	23.80	5.85	-5.51	24.13	33.01
<b>RB: 1,0</b>	2560.0 21350	V	21.34	5.90	-5.55	21.69	33.01	
		21330	Н	23.24	5.90	-5.55	23.59	33.01

### BAND 7 / BW: 20M / 16QAM / RB: 1,99

EUT				N	Measurem	ent					
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit			
	MHz		V/H	dBm	dBi	dB	dBm	dBm			
	2510.0	20050	V	21.16	5.84	-5.50	21.49	33.01			
BAND 7	2510.0	20850	Н	23.82	5.83	-5.50	24.15	33.01			
BW: 20M	2535.0	21100	V	21.27	5.88	-5.54	21.61	33.01			
16QAM	2333.0	21100	Н	23.91	5.88	-5.54	24.26	33.01			
RB: 1,99	2560.0	21350	V	20.75	5.93	-5.57	21.11	33.01			
	2300.0	21330	Н	23.20	5.93	-5.57	23.56	33.01			

### Remark:

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

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### OCCUPIED BANDWIDTH MEASUREMENT

### 8.1. Standard Applicable:

According to §FCC 2.1049 (99%)

### 8.2. Test Set-up:

Refer to section 6.2 in this report

#### 8.3. Measurement Procedure:

The EUT's output RF connector was connected with a short cable to the spectrum analyzer, RBW was set to about 1% of emission BW, VBW= 3 times RBW, -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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EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
GSM 850	824.20	128	0.244
	836.60	190	0.250
	848.80	251	0.247

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)	
GSM 1900	1850.20	512	0.252	
	1880.00	661	0.240	
	1909.80	810	0.246	

EUT Mode	Mode Frequency (MHz) CH		99% Bandwidth (MHz)		
GPRS 850	824.20	128	0.243		
	836.60	190	0.242		
	848.80	251	0.244		

EUT Mode	Frequency (MHz)		99% Bandwidth (MHz)	
GPRS 1900	1850.20	512	0.248	
	1880.00	661	0.244	
	1909.80	810	0.247	

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
	824.20	128	0.245
EDGE 850	836.60	190	0.249
22 02 00	848.80	251	0.233

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
EDGE 1900	1850.20	512	0.245
	1880.00	661	0.248
	1909.80	810	0.242

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EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
5MHz BW	2502.5	20775	4.5076
LTE-Band 7 (QPSK	2535.0	21100	4.4956
RB Number: 25 Offset: 0)	2567.5	21425	4.4951

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
5MHz BW	2502.5	20775	4.5018
LTE-Band 7 (16QAM	2535.0	21100	4.5083
RB Number: 25 Offset: 0)	2567.5	21425	4.4859

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
10MHz BW	2505.0	20800	9.0070
LTE-Band 7 (QPSK	2535.0	21100	8.9852
RB Number: 50 Offset: 0)	2565.0	21400	9.0040

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
10MHz BW	2505.0	20800	8.9685
LTE-Band 7 (16QAM	2535.0	21100	8.9760
RB Number: 50 Offset: 0)	2565.0	21400	8.9945

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EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
15MHz BW	2507.5	20825	13.4067
LTE-Band 7 (QPSK	2535.0	21100	13.4468
RB Number: 75 Offset: 0)	2562.5	21375	13.4656

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
15MHz BW	2507.5	20825	13.4464
LTE-Band 7 (16QAM	2535.0	21100	13.4047
RB Number: 75 Offset: 0)	2562.5	21375	13.4248

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
20MHz BW	2510.0	20850	17.8812
LTE-Band 7 (QPSK	2535.0	21100	17.8509
RB Number: 100 Offset: 0)	2560.0	21350	17.8538

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
20MHz BW	2510.0	20850	17.8123
LTE-Band 7 (16QAM	2535.0	21100	17.9426
RB Number: 100 Offset: 0)	2560.0	21350	17.8172

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Figure 8-1: GSM 850 Channel Low

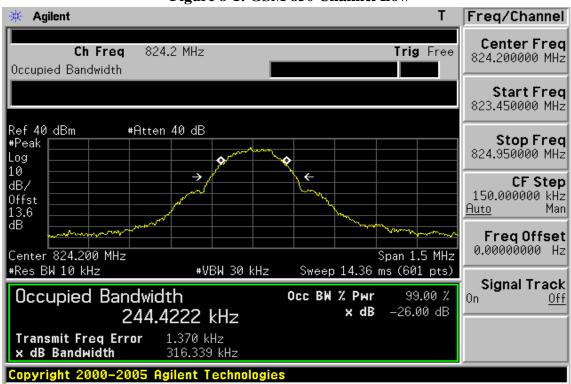
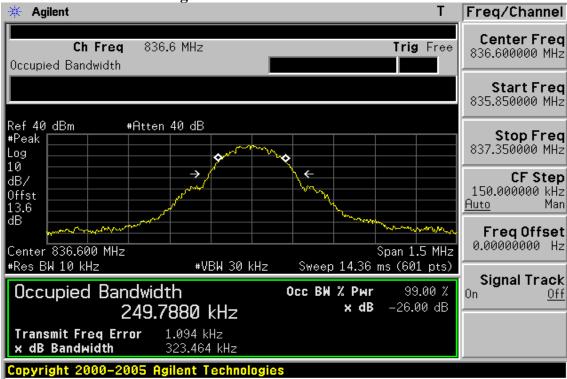


Figure 8-2: GSM 850 Channel Mid



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Figure 8-3: GSM 850 Channel High

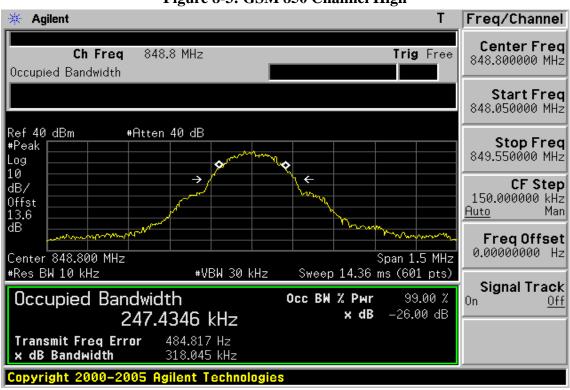
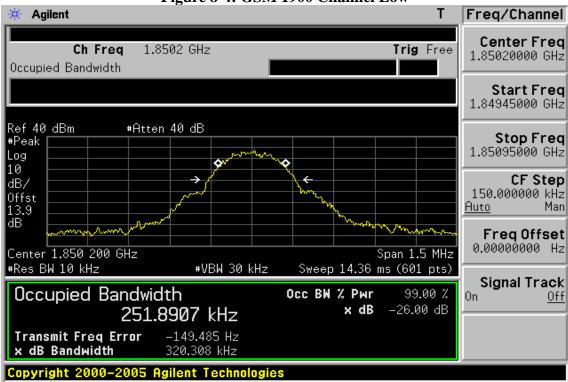


Figure 8-4: GSM 1900 Channel Low



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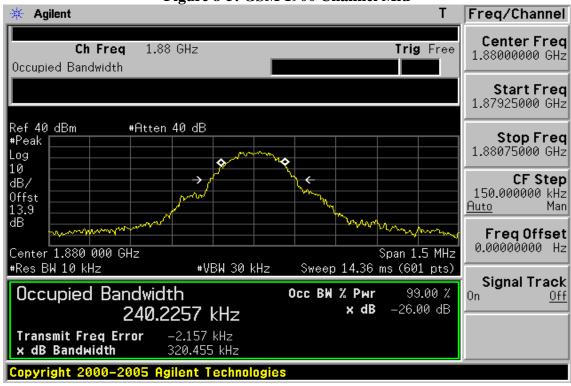
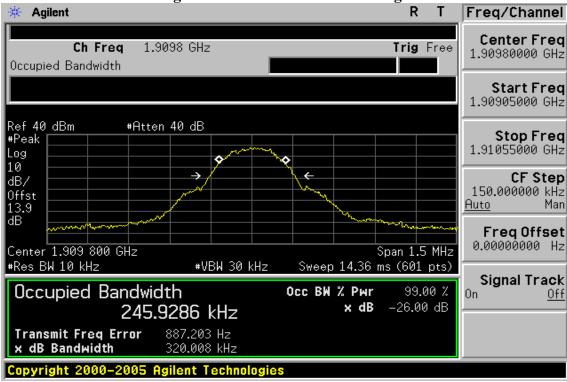


Figure 8-6: GSM 1900 Channel High



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Figure 8-7: GPRS 850 Channel Low

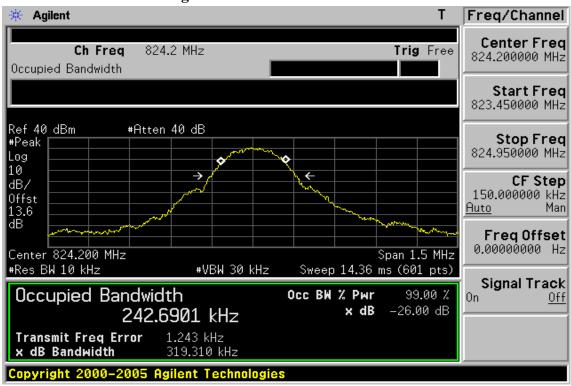
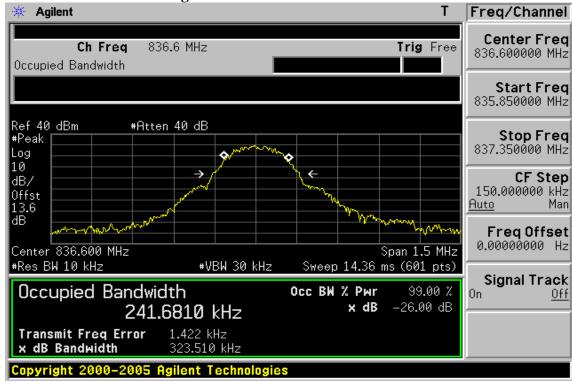


Figure 8-8: GPRS 850 Channel Mid



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Figure 8-9: GPRS 850 Channel High

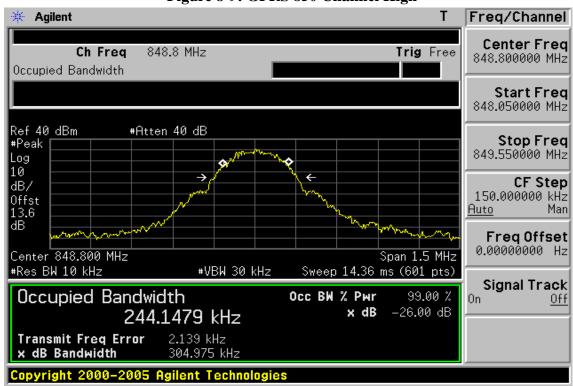
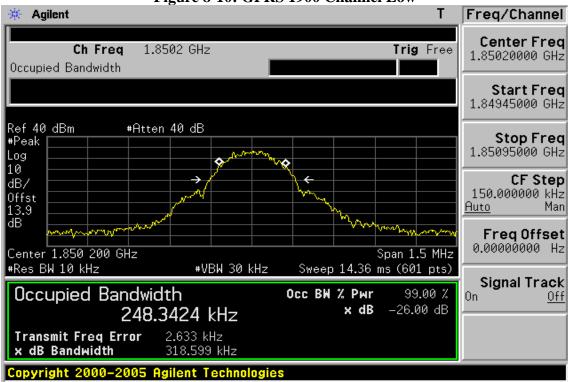


Figure 8-10: GPRS 1900 Channel Low



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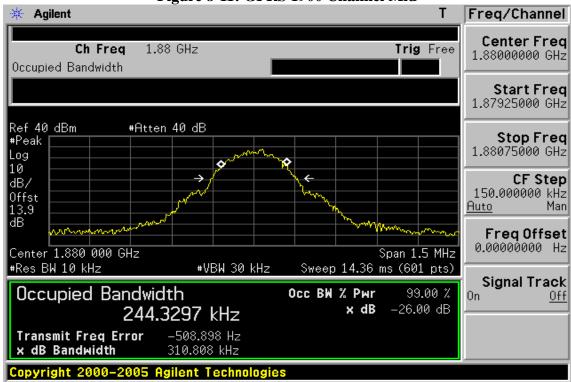
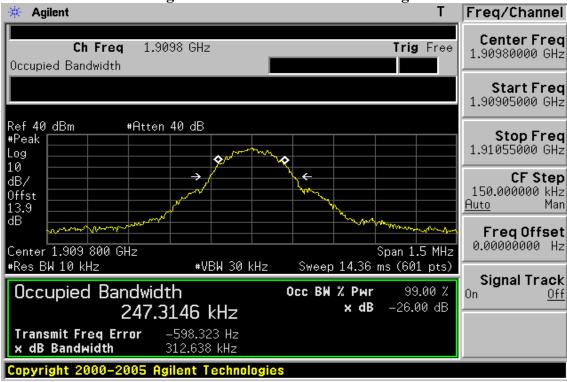


Figure 8-12: GPRS 1900 Channel High



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Figure 8-13: EDGE 850 Channel Low

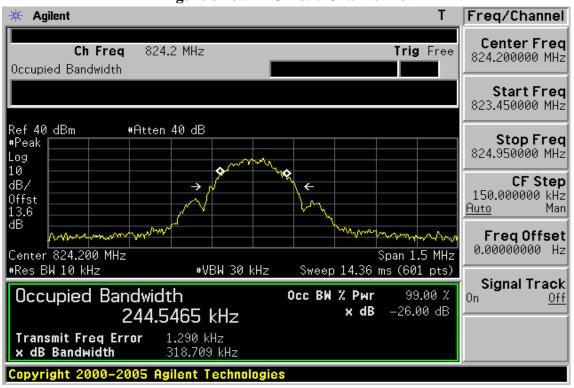
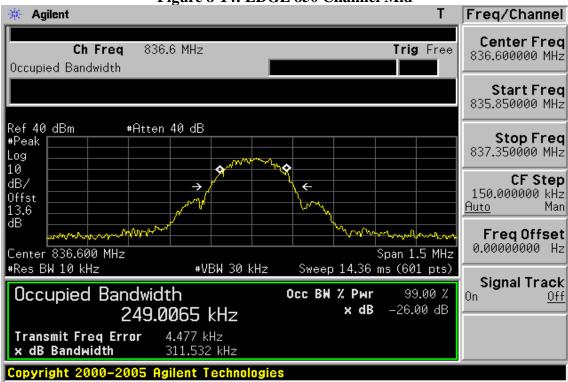


Figure 8-14: EDGE 850 Channel Mid



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

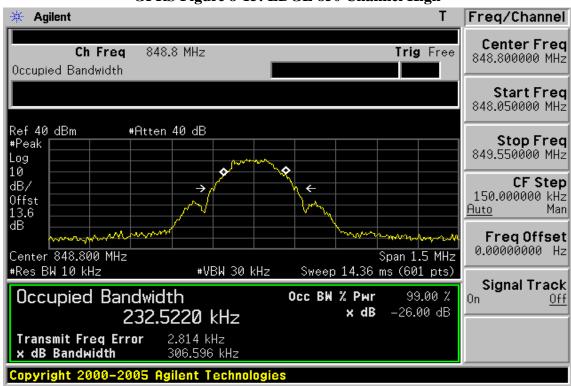
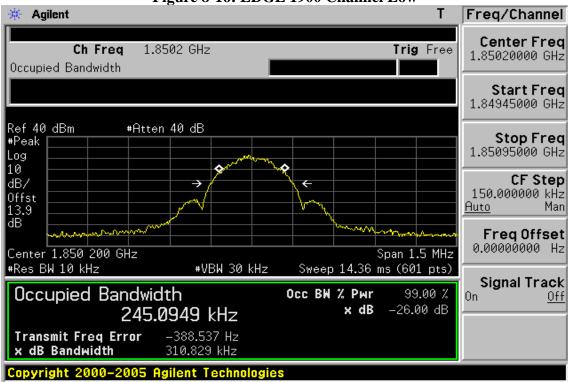


Figure 8-16: EDGE 1900 Channel Low



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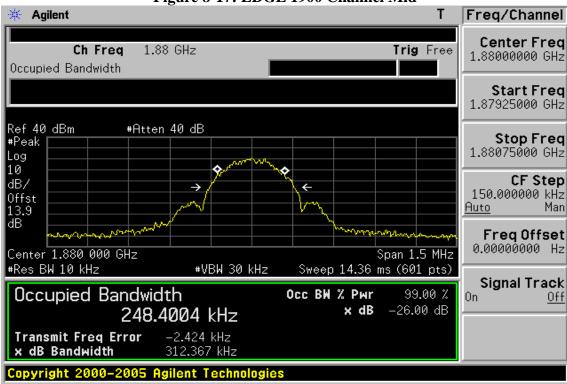
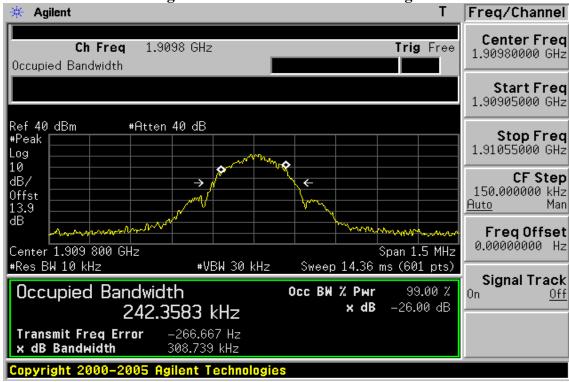


Figure 8-18: EDGE 1900 Channel High



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Figure 8-19: 5MHz BW LTE-Band 7(QPSK RB Number: 25 Offset: 0) Channel Low

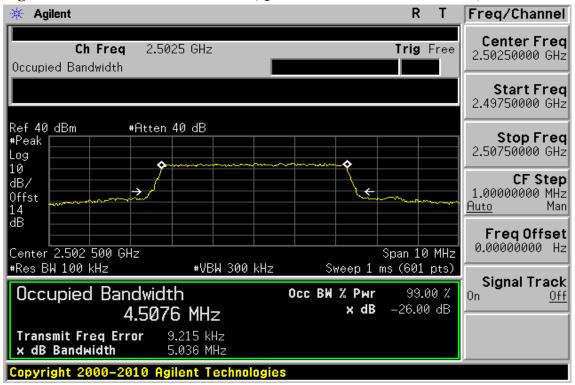
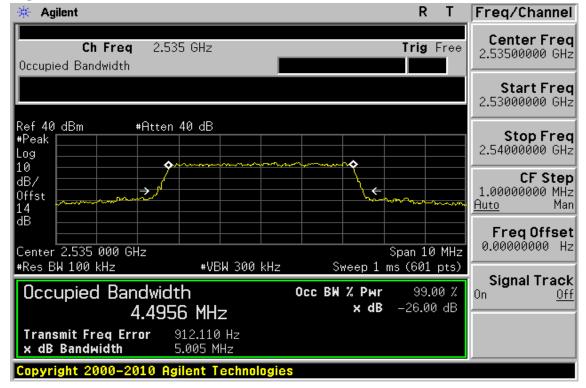


Figure 8-20: 5MHz BW LTE-Band 7(QPSK RB Number: 25 Offset: 0) Channel Mid



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Figure 8-21: 5MHz BW LTE-Band 7(QPSK RB Number: 25 Offset: 0) Channel High

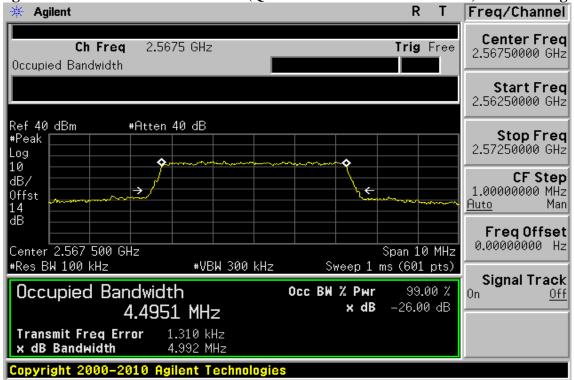
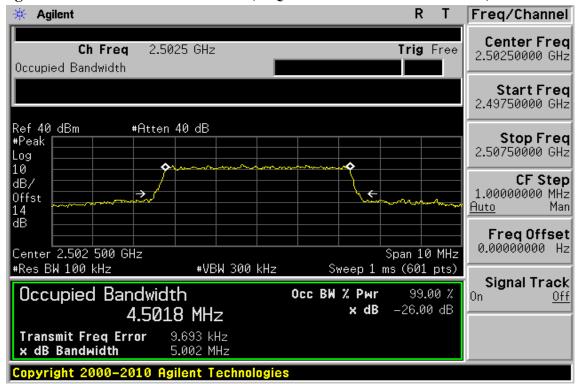


Figure 8-22: 5MHz BW LTE-Band 7(16QAM RB Number: 25 Offset: 0) Channel Low



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Figure 8-23: 5MHz BW LTE-Band 7(16QAM RB Number: 25 Offset: 0) Channel Mid

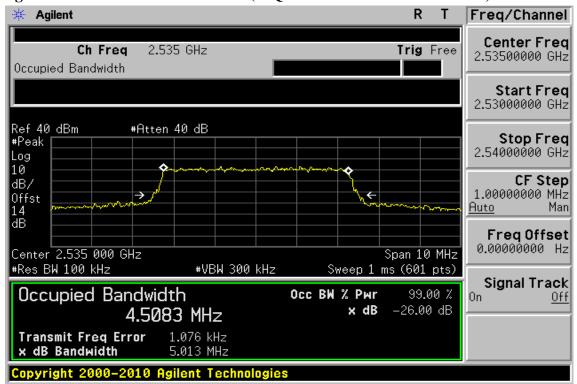
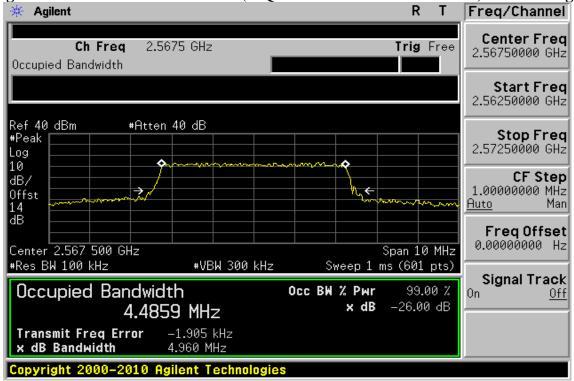


Figure 8-24: 5MHz BW LTE-Band 7(16QAM RB Number: 25 Offset: 0) Channel High



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Figure 8-25: 10MHz BW LTE-Band 7 (QPSK RB Number: 50 Offset: 0) Channel Low

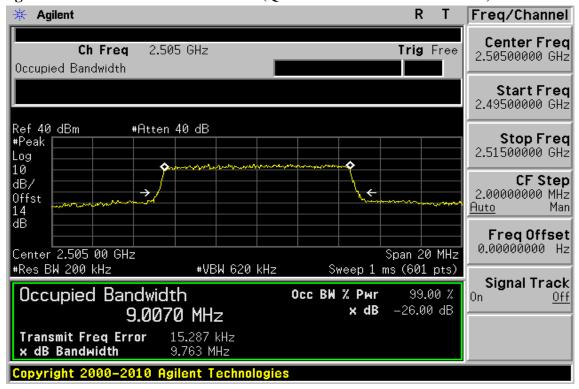
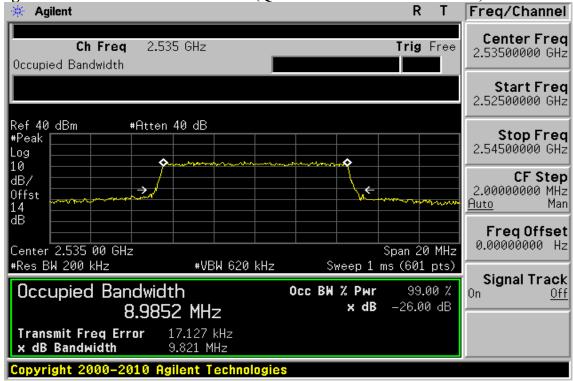


Figure 8-26: 10MHz BW LTE-Band 7(QPSK RB Number: 50 Offset: 0) Channel Mid



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Figure 8-27: 10MHz BW LTE-Band 7(QPSK RB Number: 50 Offset: 0) Channel High

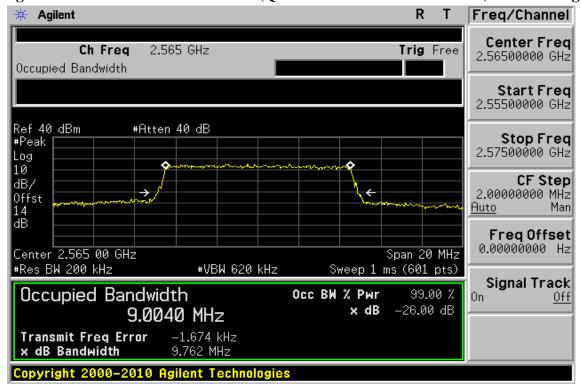
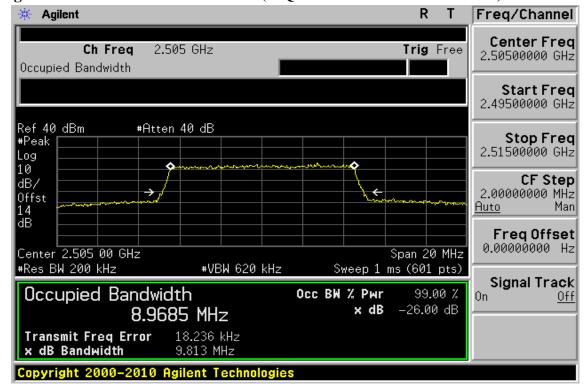


Figure 8-28: 10MHz BW LTE-Band 7 (16QAM RB Number: 50 Offset: 0) Channel Low



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Figure 8-29: 10MHz BW LTE-Band 7(16QAM RB Number: 50 Offset: 0) Channel Mid

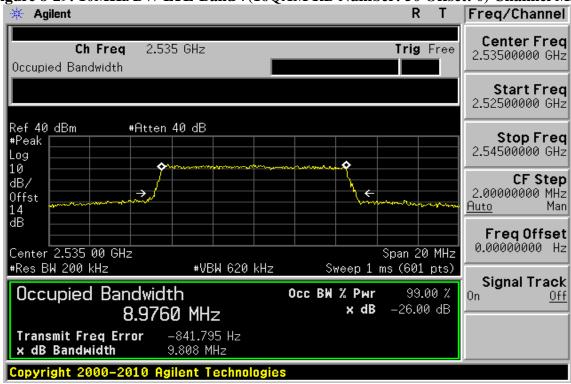
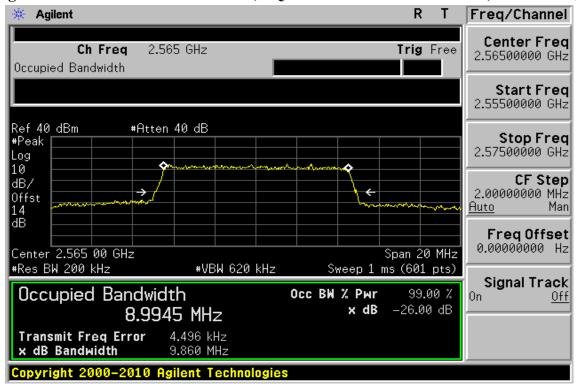


Figure 8-30: 10MHz BW LTE-Band 7(16QAM RB Number: 50 Offset: 0) Channel High



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Figure 8-31: 15MHz BW LTE-Band 7 (QPSK RB Number: 75 Offset: 0) Channel Low

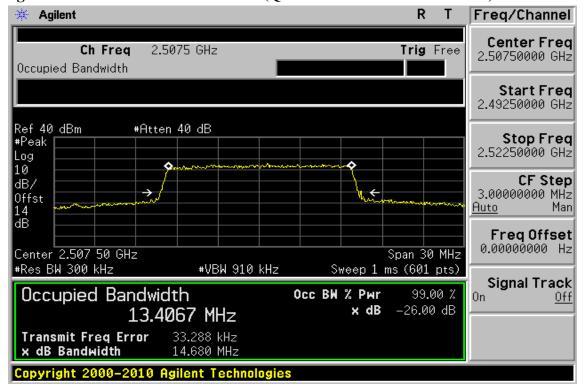
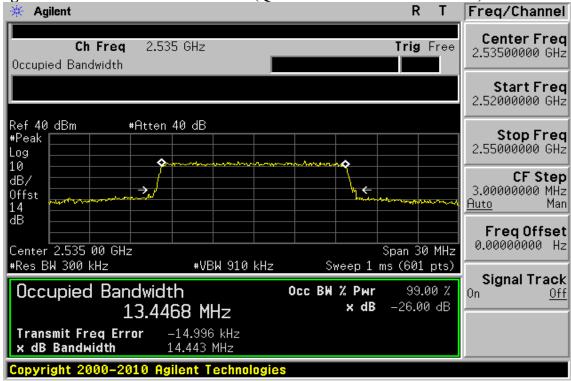


Figure 8-32: 15MHz BW LTE-Band 7(QPSK RB Number: 75 Offset: 0) Channel Mid



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Figure 8-33: 15MHz BW LTE-Band 7(QPSK RB Number: 75 Offset: 0) Channel High

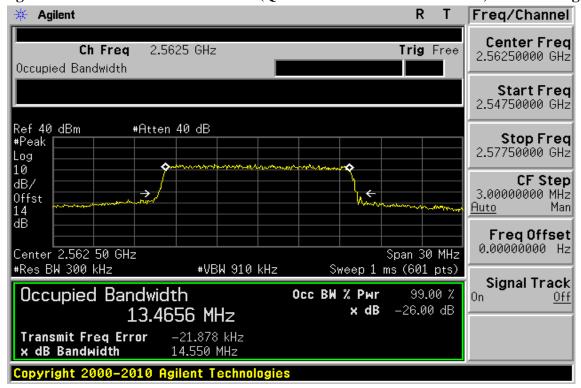
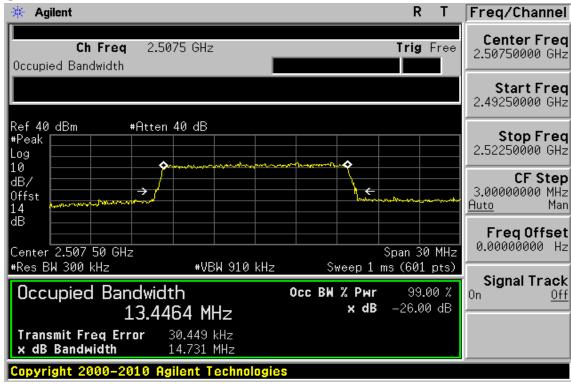


Figure 8-34: 15MHz BW LTE-Band 7 (16QAM RB Number: 75 Offset: 0) Channel Low



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Figure 8-35: 10MHz BW LTE-Band 7(16QAM RB Number: 75 Offset: 0) Channel Mid

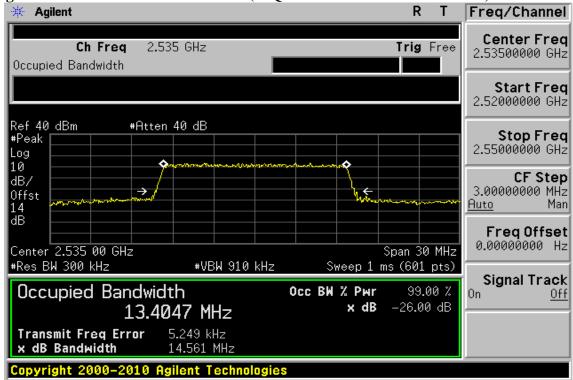
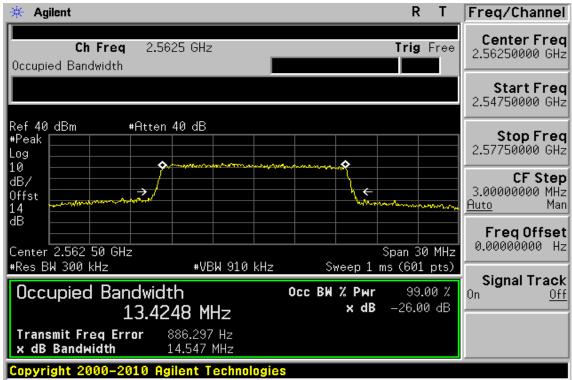


Figure 8-36: 10MHz BW LTE-Band 7(16QAM RB Number: 75 Offset: 0) Channel High



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Figure 8-37: 20MHz BW LTE-Band 7 (QPSK RB Number: 100 Offset: 0) Channel Low

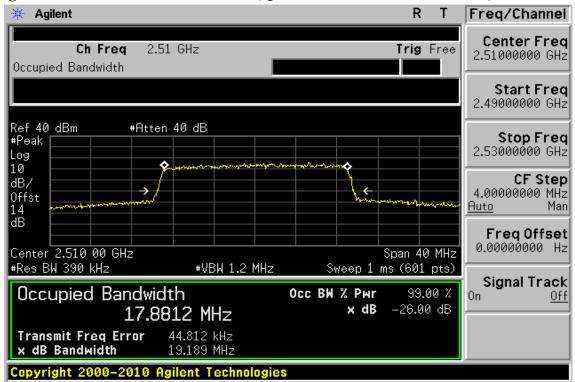
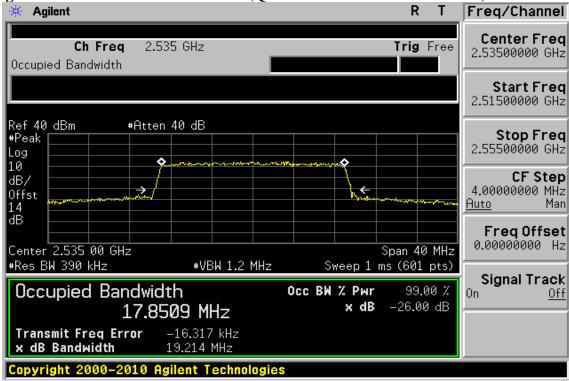


Figure 8-38: 20MHz BW LTE-Band 7(QPSK RB Number: 100 Offset: 0) Channel Mid



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Figure 8-39: 20MHz BW LTE-Band 7(QPSK RB Number: 100 Offset: 0) Channel High

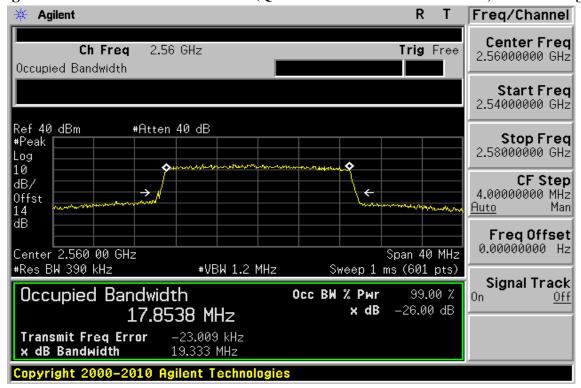
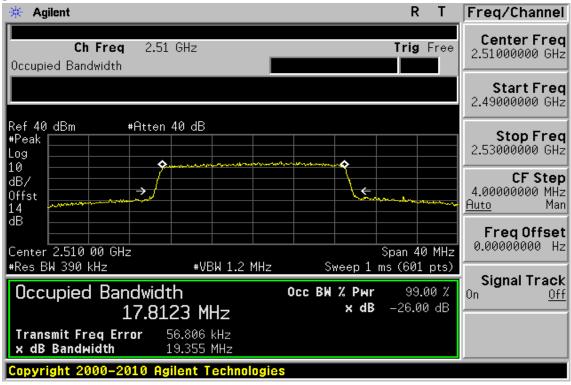


Figure 8-40: 20MHz BW LTE-Band 7 (16QAM RB Number: 100 Offset: 0) Channel Low



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Figure 8-41: 20MHz BW LTE-Band 7(16QAM RB Number: 100 Offset: 0) Channel Mid

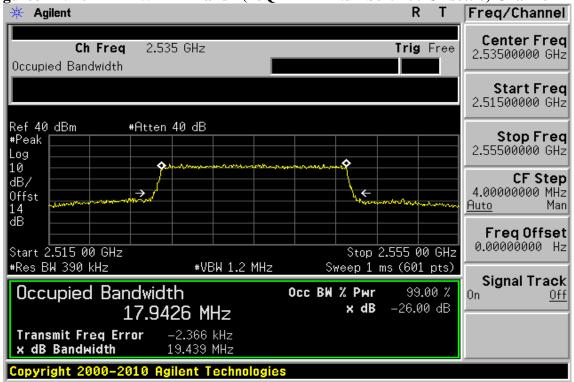
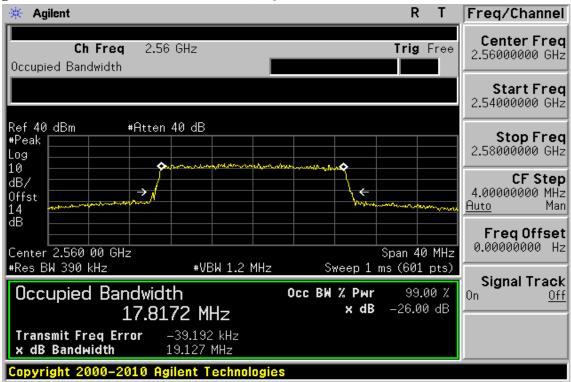


Figure 8-42: 20MHz BW LTE-Band 7(16QAM RB Number: 100 Offset: 0) Channel High



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

### 9.1. Standard Applicable:

According to FCC §2.1051.

FCC §22.917(a), §24.238(a), §27.53(g)(h) the magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under the conditions specified in the instruction manual and/ or alignment procedure, shall not be less than 43 + 10 log (mean output power in watts) dBc below the mean power output outside a license's frequency block (-13dBm). §27.53 (m) (4) shall not be less than 55 +10log(mean output power in watt) dBc below the mean power output outside a license's frequency block (-25dBm).

#### 100KHz Bandedge:

FCC §27.53(g)

Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

FCC §27.53(h)

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

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FCC §27.53(m) (4) (6)

For mobile digital stations, the attenuation factor shall be not less than 43 + 10 log (P) dB at the channel edge and 55 + 10 log (P) dB at 5.5 megahertz from the channel edges. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees

Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. With respect to television operations, measurements must be made of the separate visual and aural operating powers at sufficiently frequent intervals to ensure compliance with the rules.

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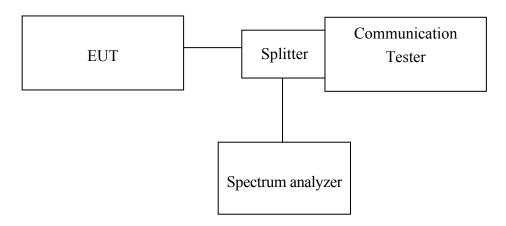


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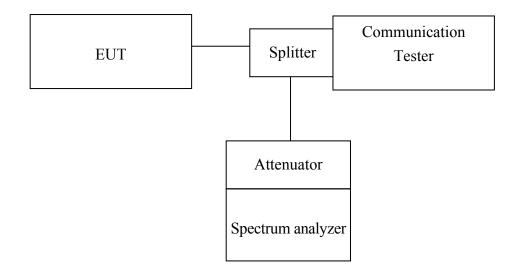
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### 9.2. Test SET-UP:

### Out of band emission



## **Band Edge**



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#### 9.3. Measurement Procedure:

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

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

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

- h) For operations in the 1710–1755 MHz and 2110–2155 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 + 10 log10 (P) dB. Limit, -13dBm
- (1) Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. Limit, -13dBm

#### **Conducted Emission:**

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

## 9.4. Measurement Equipment Used:

Refer to section 2.4 in this report

#### 9.5. Measurement Result:

Refer to next pages.

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

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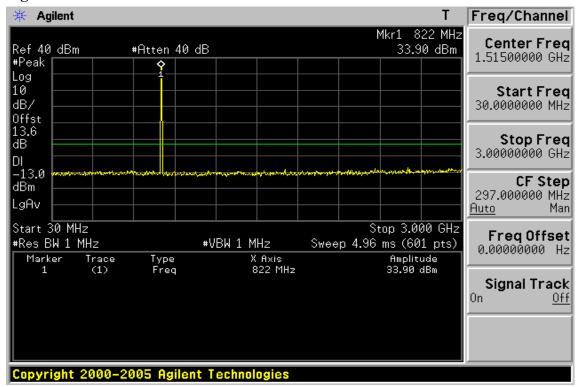
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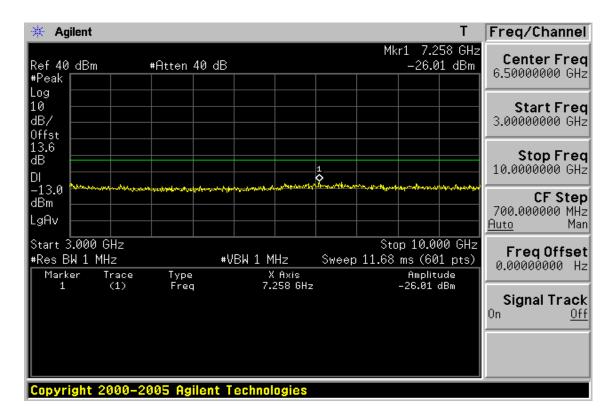


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Figure 9-1: Out of Band emission at antenna terminals – GSM 850 Channel Lowest





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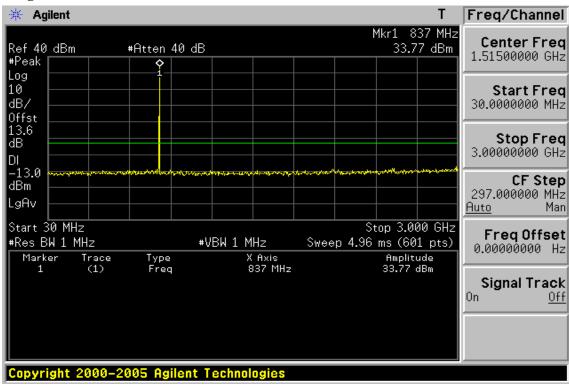
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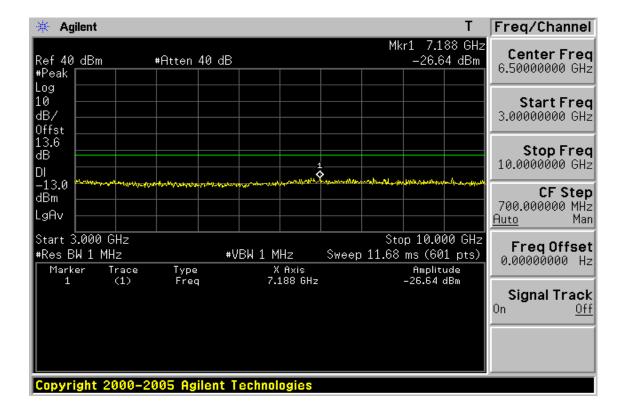


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Figure 9-2: Out of Band emission at antenna terminals – GSM 850 Channel Mid





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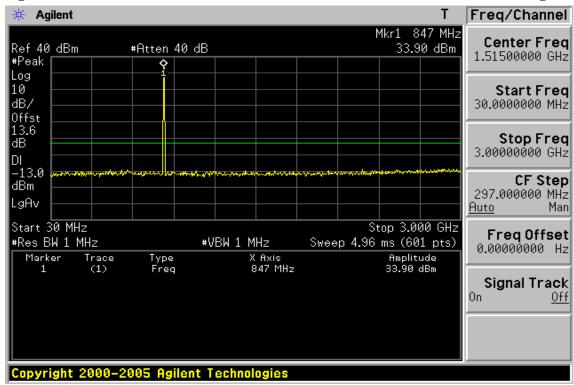
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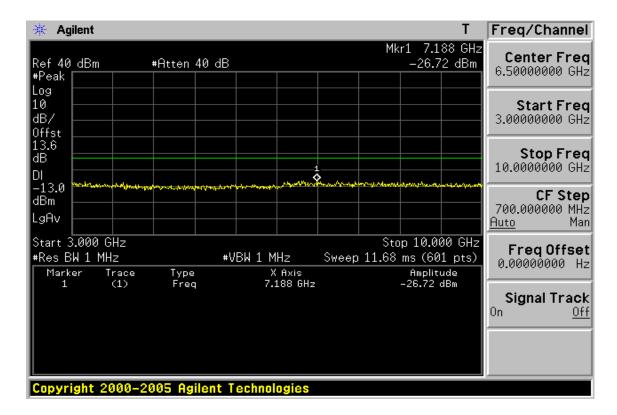


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Figure 9-3: Out of Band emission at antenna terminals – GSM 850 Channel Highest





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# 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	
7258.00	S	-26.01	-13.00	13.01
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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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	
7188.00	S	-26.64	-13.00	13.64
8366.00	Н		-13.00	

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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	
7188.00	S	-26.72	-13.00	13.72
7639.20	Н		-13.00	
8488.00	Н		-13.00	

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

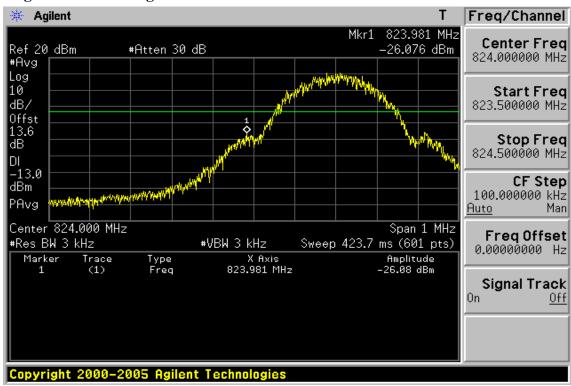
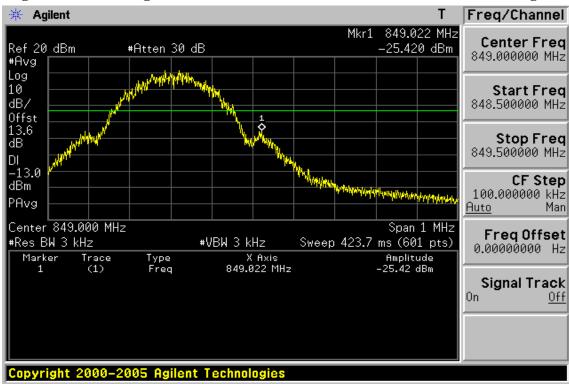


Figure 9-5: Band edge emission at antenna terminals – GSM 850 Channel Highest



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# 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
823.981	-26.08	-13.00	13.08
849.022	-25.42	-13.00	12.42

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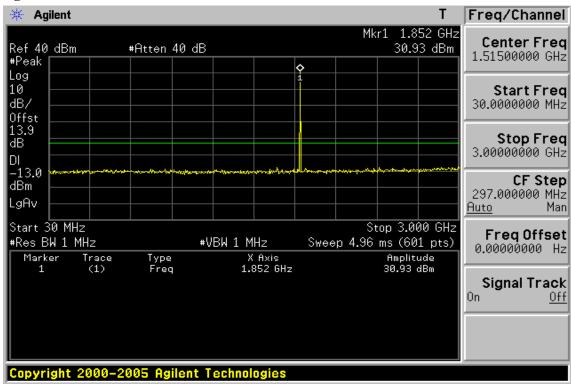
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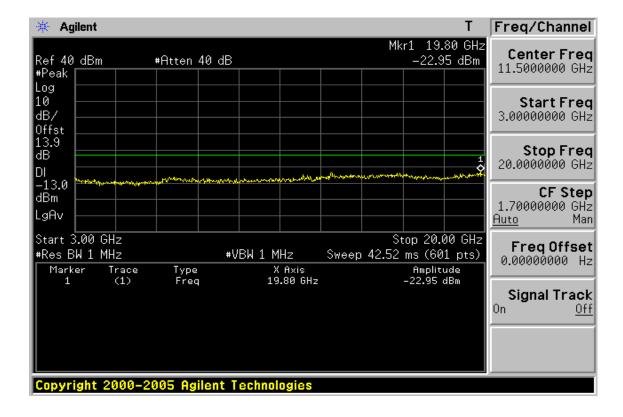


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Figure 9-6: Out of Band emission at antenna terminals – GSM 1900 Channel Lowest





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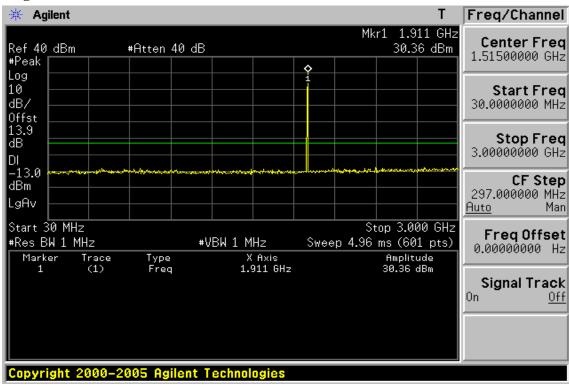
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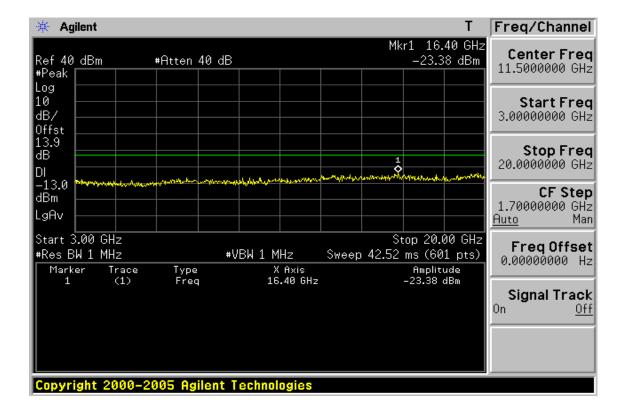


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Figure 9-7: Out of Band emission at antenna terminals – GSM 1900 Channel Mid





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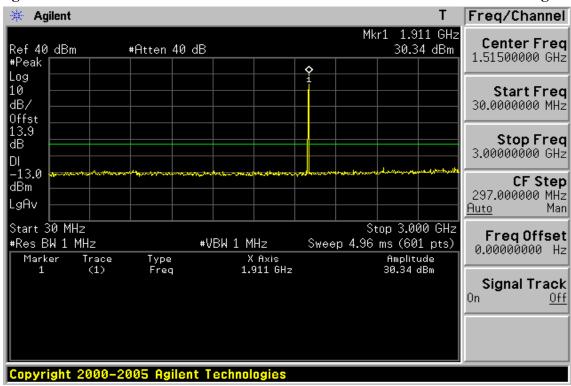
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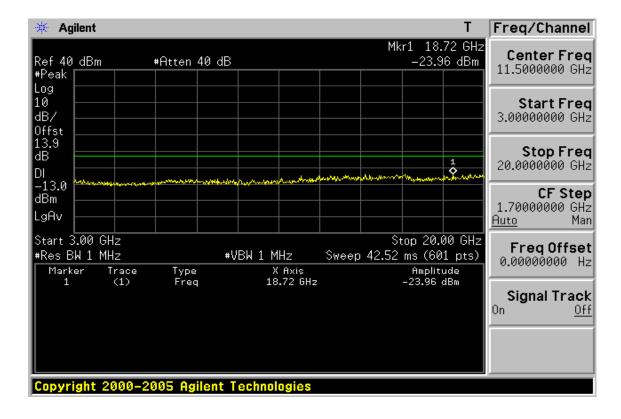


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Figure 9-8: Out of Band emission at antenna terminals – GSM 1900 Channel Highest





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9.95

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

Fundamental Frequency Operation Mode	:1850.2 MHz :TX Low	Engin	eer	:Nick
<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	

-22.95

-13.00

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

S

"---": denotes Noise Floor.

19800.00

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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	
16400.00	S	-23.38	-13.00	10.38
16920.00	Н		-13.00	
18800.00	Н		-13.00	

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

"---": denotes Noise Floor.

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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	
18720.00	S	-23.96	-13.00	10.96
19098.00	Н		-13.00	

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

"---": denotes Noise Floor.

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

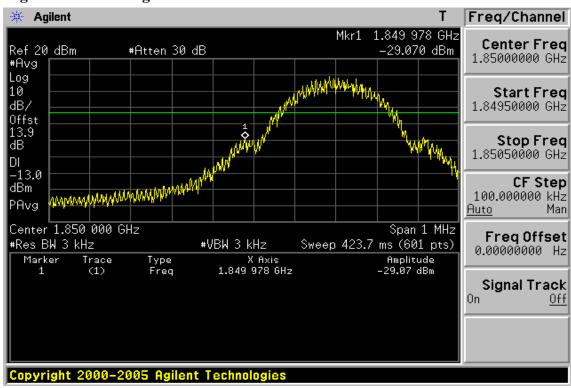
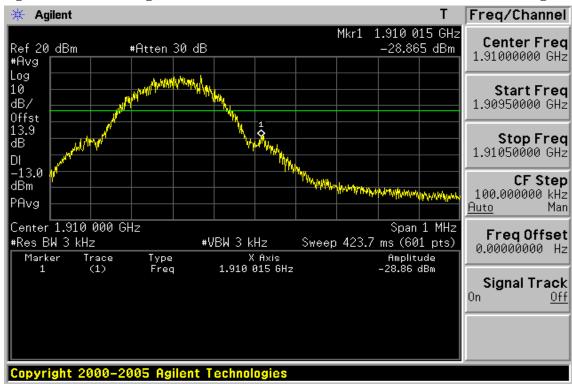


Figure 9-10: Band edge emission at antenna terminals – GSM 1900 Channel Highest



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

Test Mode GSM 1900 Engineer :Nick

Freq. MHz	Reading dBm	Limit dBm	Safe Margin dB
1849.978	-29.07	-13.00	16.07
1910.015	-28.86	-13.00	15.86

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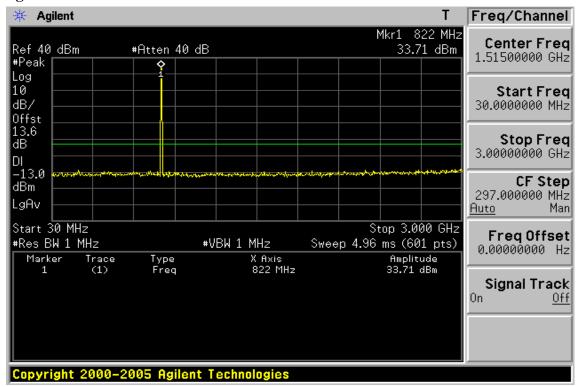
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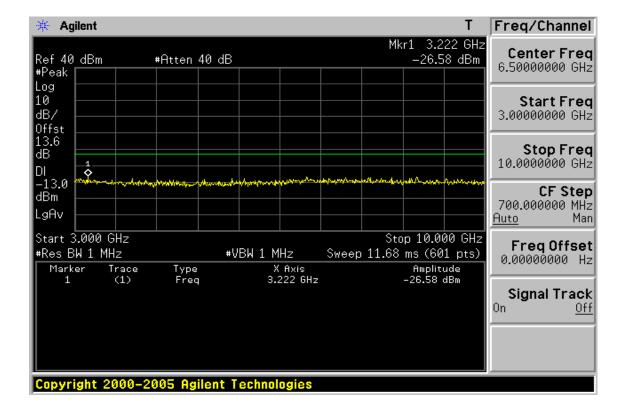


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Figure 9-11: Out of Band emission at antenna terminals – GPRS850 Channel Lowest





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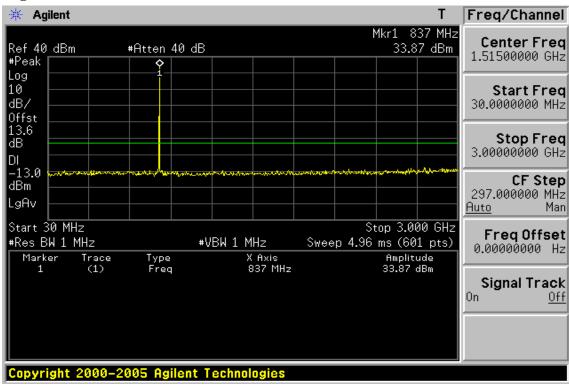
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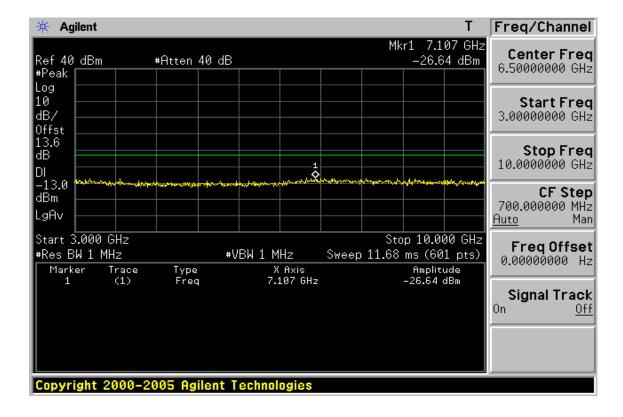


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Figure 9-12: Out of Band emission at antenna terminals – GPRS 850 Channel Mid





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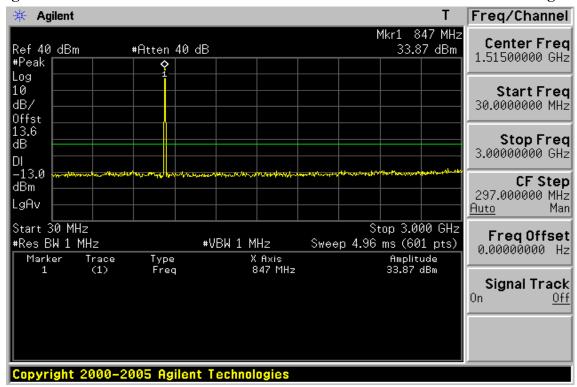
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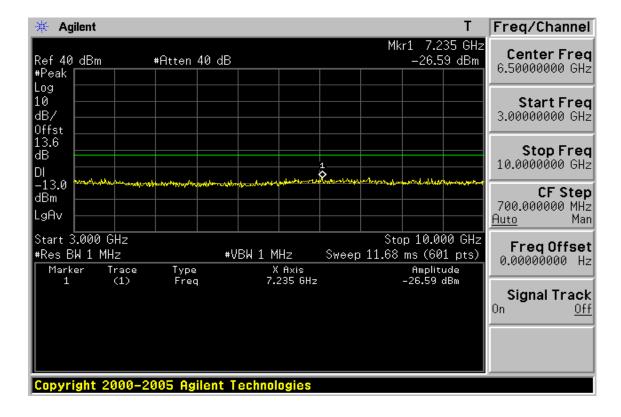
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Figure 9-13: Out of Band emission at antenna terminals – GPRS 850 Channel Highest





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# 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	
3222.00	S	-26.58	-13.00	13.58
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	
8242.00	Н		-13.00	

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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	
7107.00	S	-26.64	-13.00	13.64
7529.40	Н		-13.00	
8366.00	Н		-13.00	

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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	
7235.00	S	-26.59	-13.00	13.59
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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Figure 9-14: Band edge emission at antenna terminals – GPRS 850 Channel Lowest

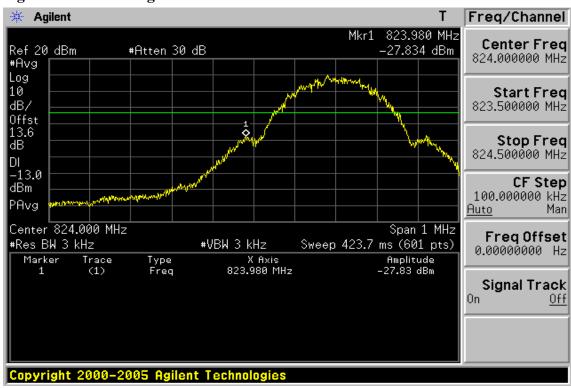
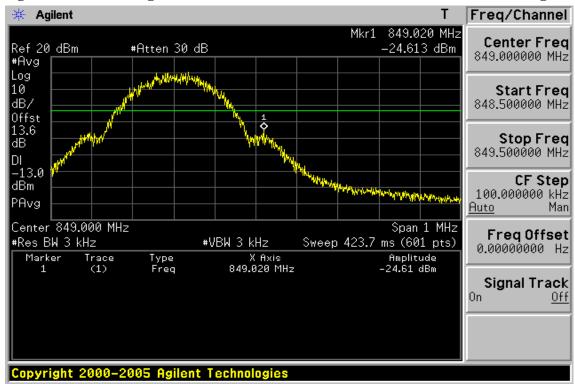


Figure 9-15: Band edge emission at antenna terminals – GPRS 850 Channel Highest



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

Test Mode **GPRS 850** Engineer :Nick

Freq. MHz	Reading dBm	Limit dBm	Safe Margin dB
	27.02	12.00	4.4.00
823.980	-27.83	-13.00	14.83
849.020	-24.61	-13.00	11.61

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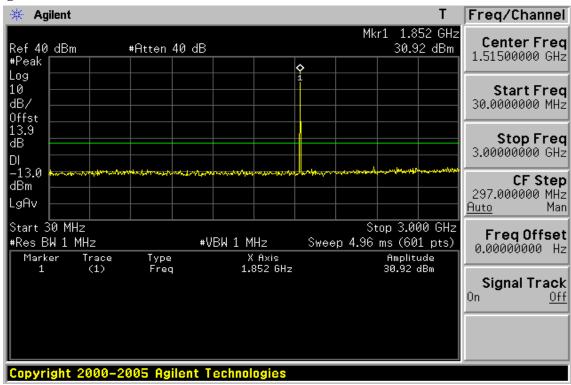
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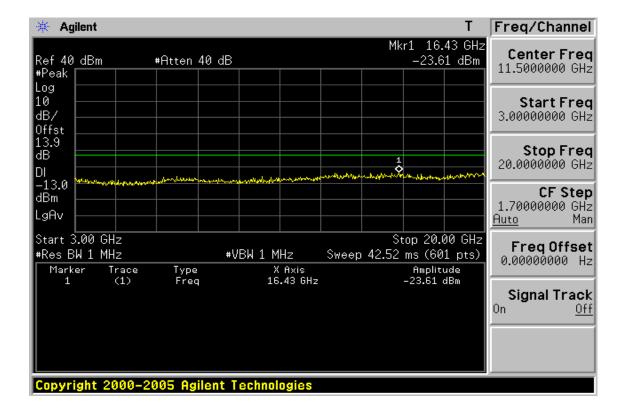


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Figure 9-16: Out of Band emission at antenna terminals – GPRS 1900 Channel Lowest





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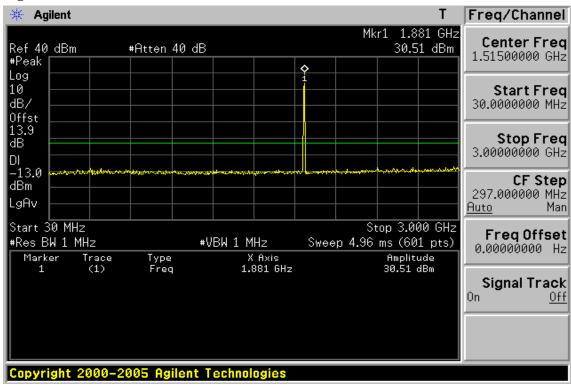
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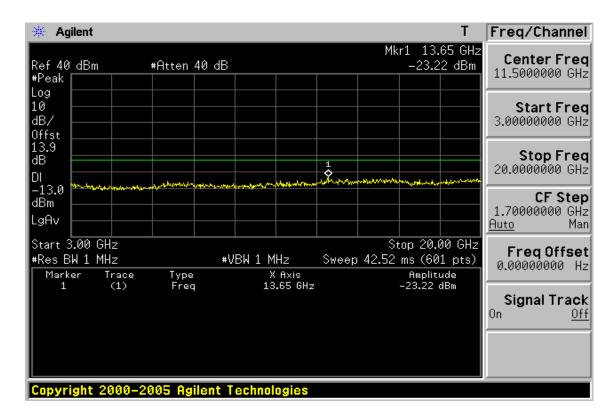


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Figure 9-17: Out of Band emission at antenna terminals – GPRS 1900 Channel Mid





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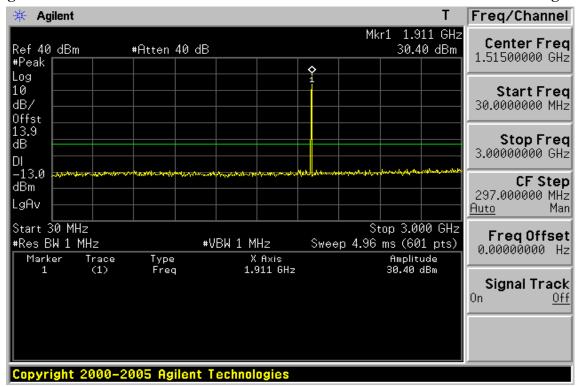
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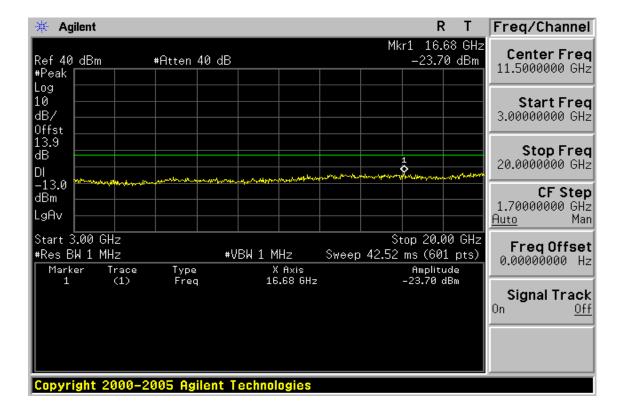


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Figure 9-18: Out of Band emission at antenna terminals – GPRS 1900 Channel Highest





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# 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	
16430.00	S	-23.61	-13.00	10.61
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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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	
13650.00	S	-23.22	-13.00	10.22
15040.00	Н		-13.00	
16920.00	Н		-13.00	
18800.00	Н		-13.00	

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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	
16680.00	S	-23.7	-13.00	10.70
17188.20	Н		-13.00	
19098.00	Н		-13.00	

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

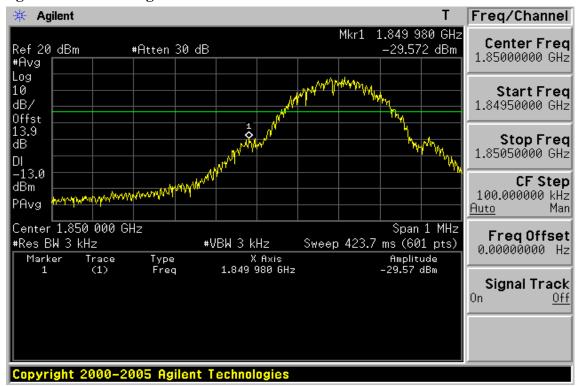
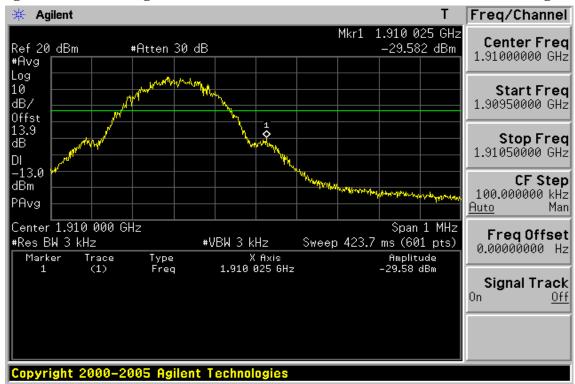


Figure 9-20: Band edge emission at antenna terminals – GPRS 1900 Channel Highest



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# 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
1849.980	-29.57	-13.00	16.57
1910.025	-29.58	-13.00	16.58

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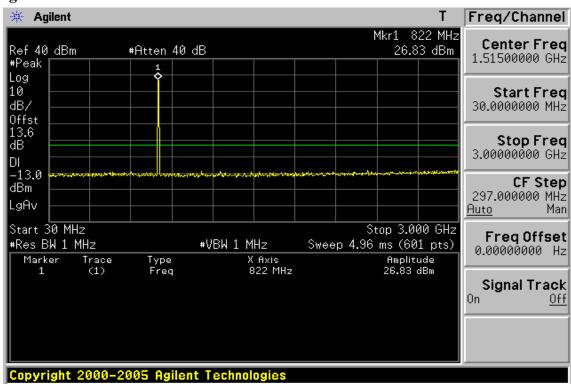
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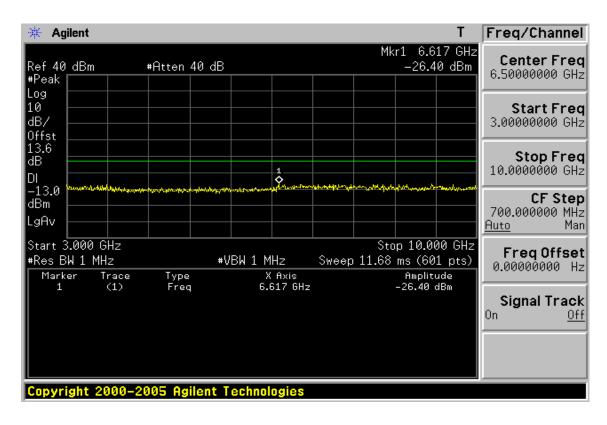


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Figure 9-21: Out of Band emission at antenna terminals – EDGE 850 Channel Lowest





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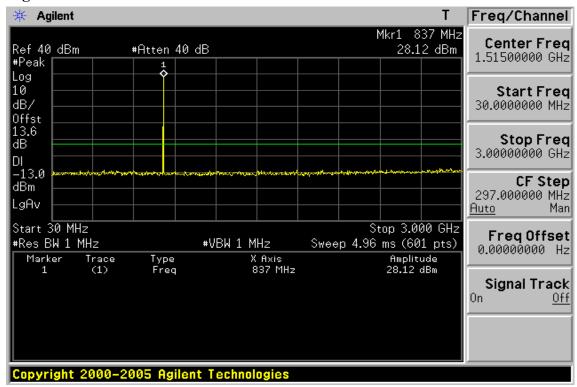
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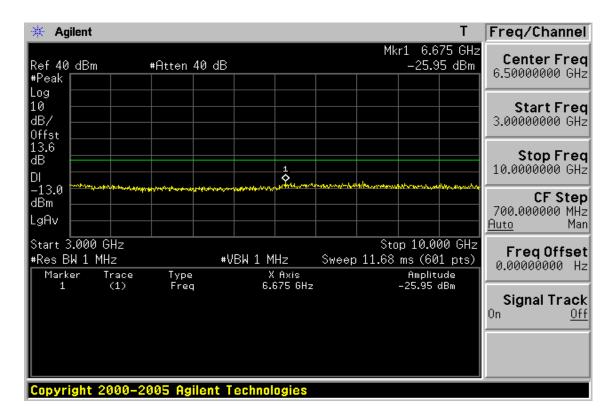


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Figure 9-22: Out of Band emission at antenna terminals – EDGE 850 Channel Mid





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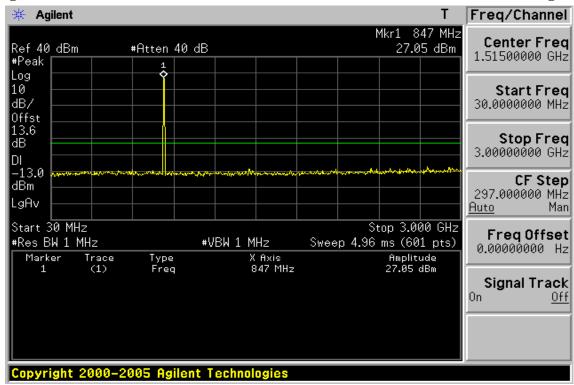
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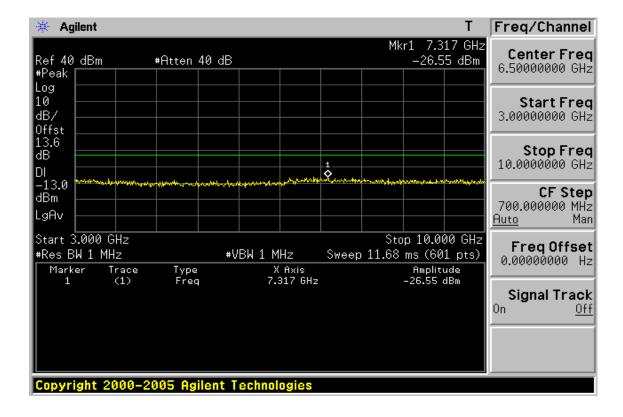


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Figure 9-23: Out of Band emission at antenna terminals – EDGE 850 Channel Highest





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## 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	H		-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	
6617.00	S	-26.4	-13.00	13.40
7417.80	Н		-13.00	
8242.00	Н		-13.00	

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"---": denotes Noise Floor.

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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	
6675.00	S	-25.95	-13.00	12.95
6692.80	Н		-13.00	
7529.40	Н		-13.00	
8366.00	Н		-13.00	

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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	
7317.00	S	-26.55	-13.00	13.55
7639.20	Н		-13.00	
8488.00	Н		-13.00	

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

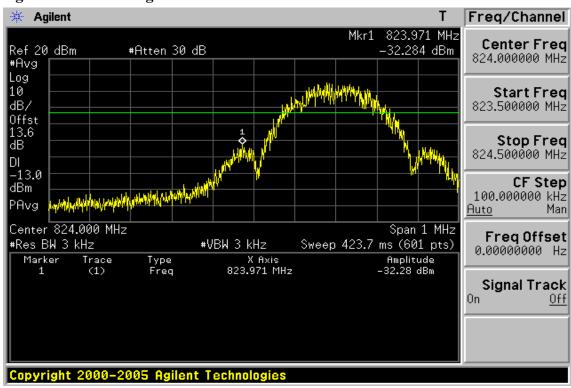
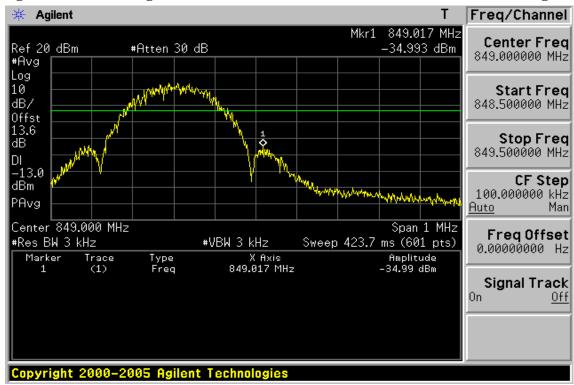


Figure 9-25: Band edge emission at antenna terminals – EDGE 850 Channel Highest



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# 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	-32.28	-13.00	19.28
849.017	-34.99	-13.00	21.99

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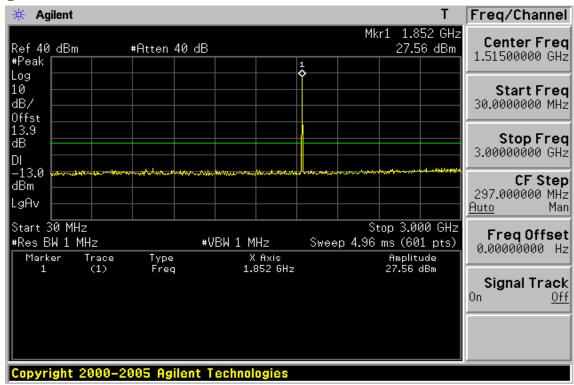
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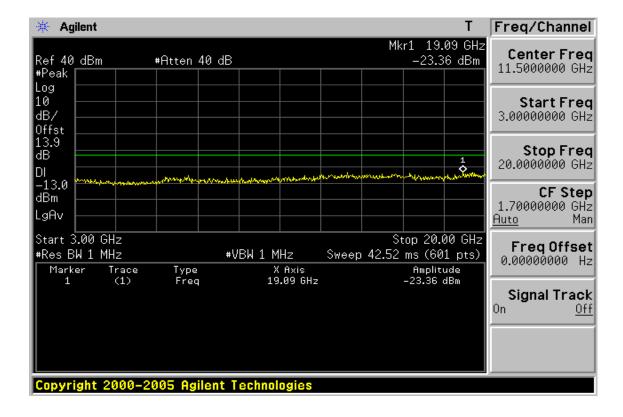


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Figure 9-26: Out of Band emission at antenna terminals – EDGE 1900 Channel Lowest





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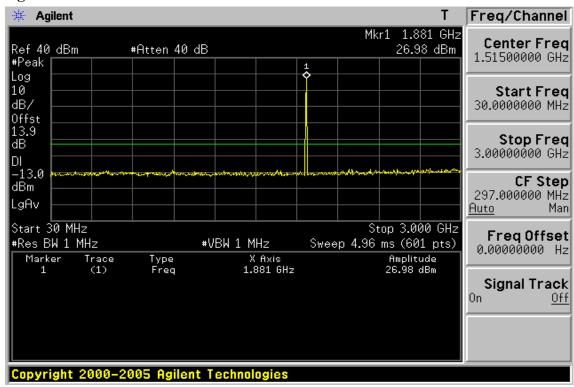
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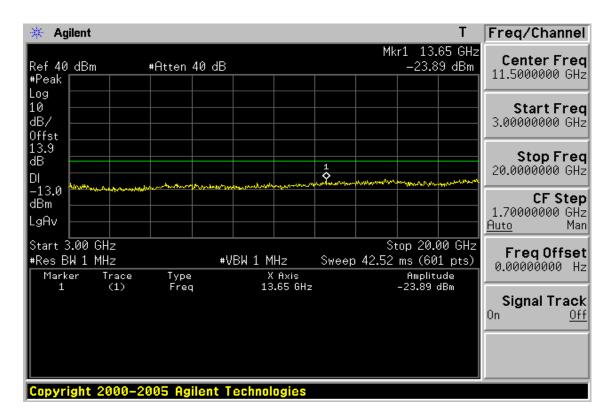


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Figure 9-27: Out of Band emission at antenna terminals – EDGE 1900 Channel Mid





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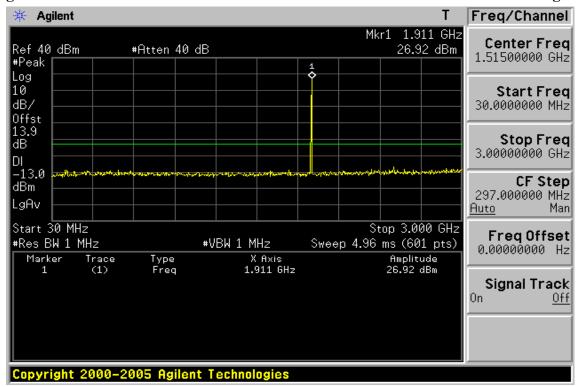
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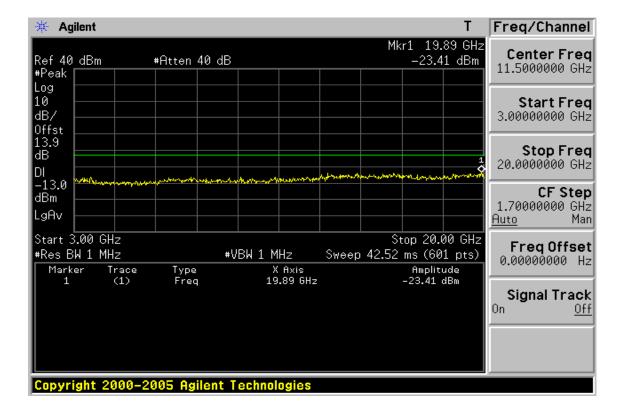


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Figure 9-28: Out of Band emission at antenna terminals – EDGE 1900 Channel Highest





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# 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	
16651.80	Н		-13.00	
18502.00	Н		-13.00	
19090.00	S	-23.36	-13.00	10.36

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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	
13650.00	S	-23.89	-13.00	10.89
15040.00	Н		-13.00	
16920.00	Н		-13.00	
18800.00	Н		-13.00	

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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	
19890.00	S	-23.41	-13.00	10.41

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

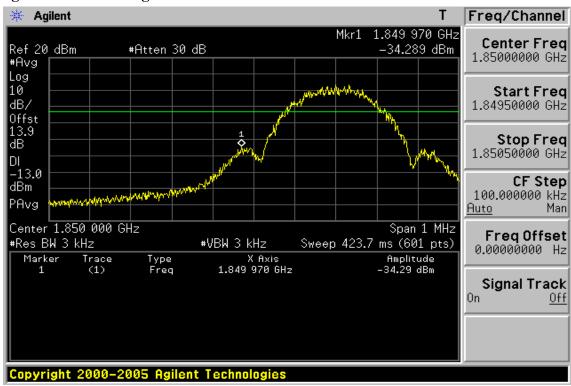
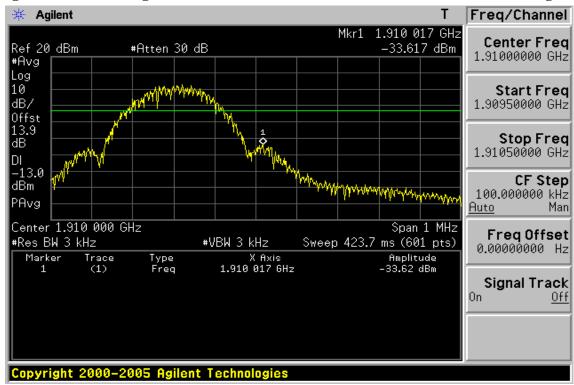


Figure 9-30: Band edge emission at antenna terminals – EDGE 1900 Channel Highest



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

EDGE 1900: Test Mode Engineer :Nick

Freq. MHz	Reading dBm	Limit dBm	Safe Margin dB
1849.970	-34.29	-13.00	21.29
1910.017	-33.62	-13.00	20.62

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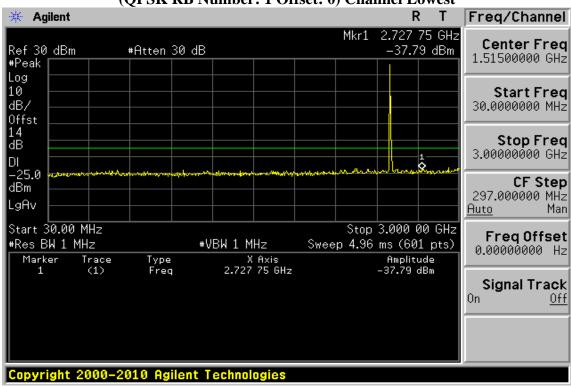
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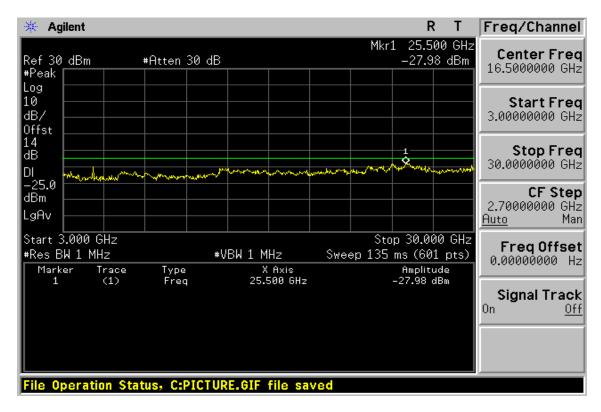


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Figure 10-31: Out of Band emission at antenna terminals-5MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 0) Channel Lowest





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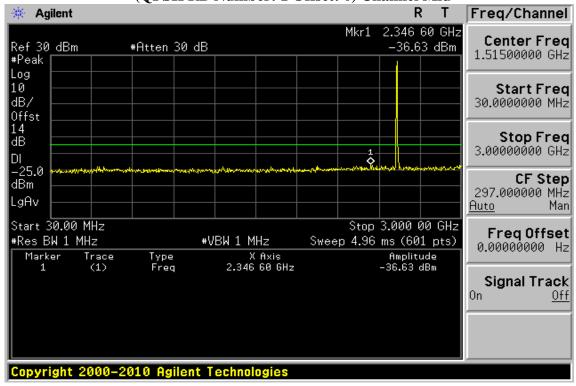
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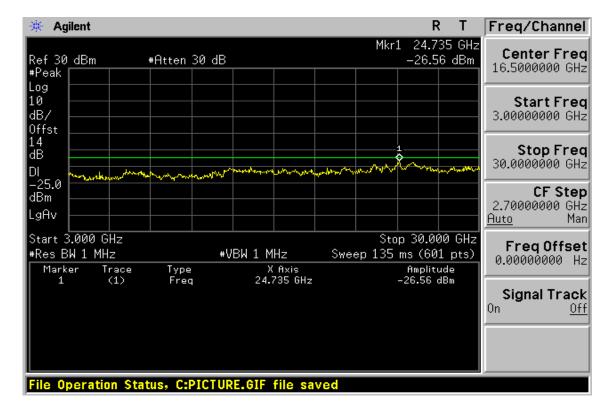


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Figure 10-32: Out of Band emission at antenna terminals –5MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 0) Channel Mid





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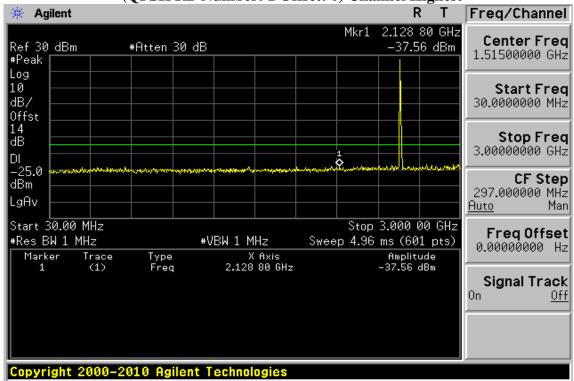
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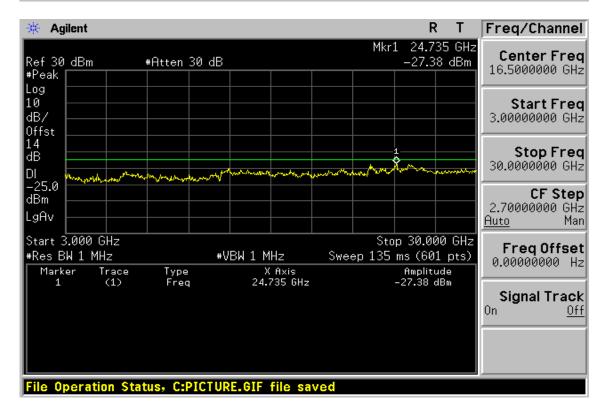


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Figure 10-33: Out of Band emission at antenna terminals–5MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 0) Channel Highest





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## Out of Band emission at antenna terminals –5MHz BW LTE-Band 7

(QPSK RB Number: 1 Offset: 0)

Fundamental Frequency :2502.5 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	
5005.00	Н		-13.00	
7507.50	Н		-13.00	
10010.00	Н		-13.00	
12512.50	Н		-13.00	
15015.00	Н		-13.00	
17517.50	Н		-13.00	
20020.00	Н		-13.00	
22522.50	Н		-13.00	
25025.00	Н		-13.00	
25500.00	S	-27.98	-13.00	14.98

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

"---": denotes Noise Floor.

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Fundamental Frequency :2535 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	
5070.00	Н		-13.00	
7605.00	Н		-13.00	
10140.00	Н		-13.00	
12675.00	Н		-13.00	
15210.00	Н		-13.00	
17745.00	Н		-13.00	
20280.00	Н		-13.00	
22815.00	Н		-13.00	
24735.00	S	-26.56	-13.00	13.56
25350.00	Н		-13.00	

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

"---": denotes Noise Floor.

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Fundamental Frequency :2567.5MHz 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	
5135.00	Н		-13.00	
7702.50	Н		-13.00	
10270.00	Н		-13.00	
12837.50	Н		-13.00	
15405.00	Н		-13.00	
17972.50	Н		-13.00	
20540.00	Н		-13.00	
23107.50	Н		-13.00	
24735.00	S	-27.38	-13.00	14.38
25675.00	Н		-13.00	

"H": denotes Harmonic Frequency. "S": denotes Spurious Frequency. Note: "---": denotes Noise Floor.

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Figure 10-34: Band edge emission at antenna terminals –5MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 0) Channel Lowest

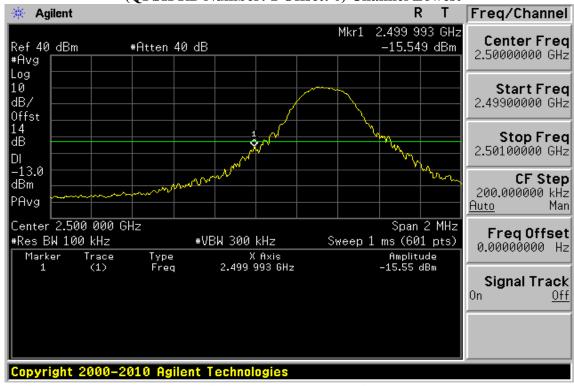
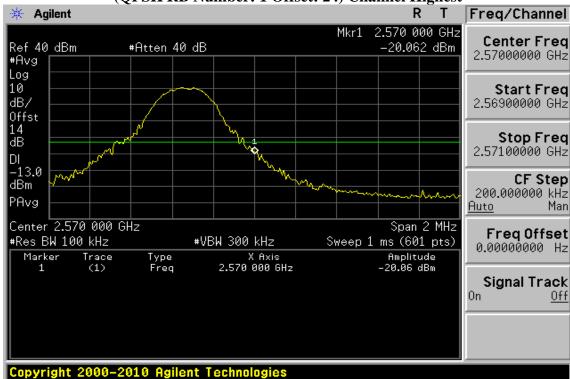


Figure 10-35: Band edge emission at antenna terminals –5MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 24) Channel Highest



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Band edge emission at antenna terminals -5MHz BW LTE-Band 7

(QPSK RB Number: 1 Offset: 0) (QPSK RB Number: 1 Offset: 24)

5MHz BW LTE-Band 7 Test Mode Engineer :Nick

Freq. MHz	Reading dBm	Limit dBm	Safe Margin dB
2499.993	-15.55	-13.00	2.55
2570.000	-20.06	-13.00	7.06

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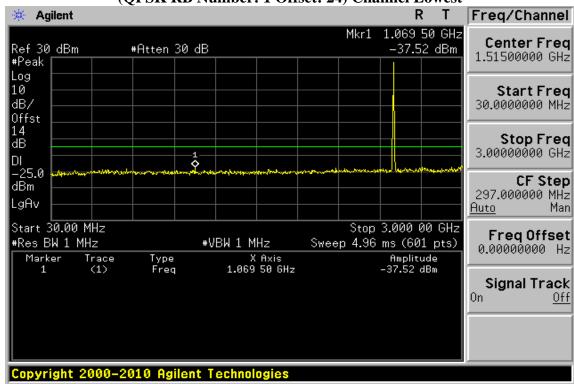
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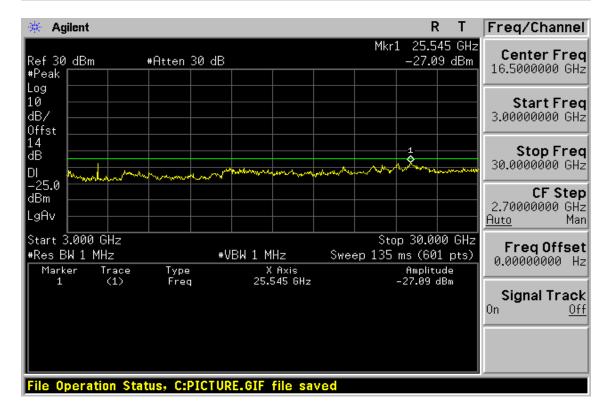


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Figure 10-36: Out of Band emission at antenna terminals–5MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 24) Channel Lowest





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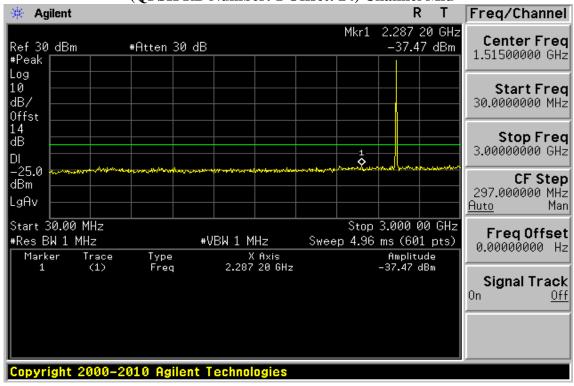
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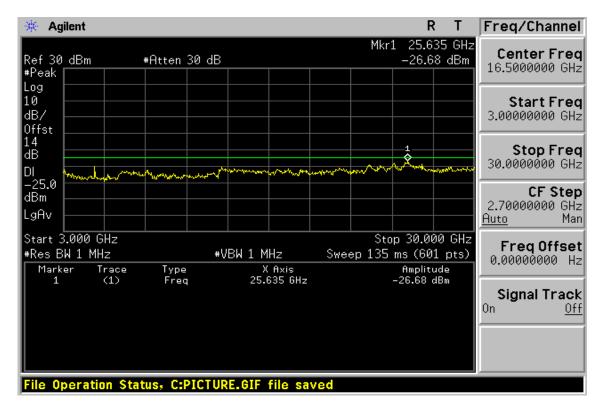


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Figure 10-37: Out of Band emission at antenna terminals –5MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 24) Channel Mid





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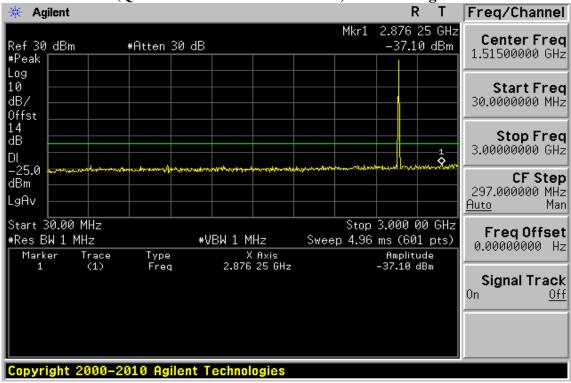
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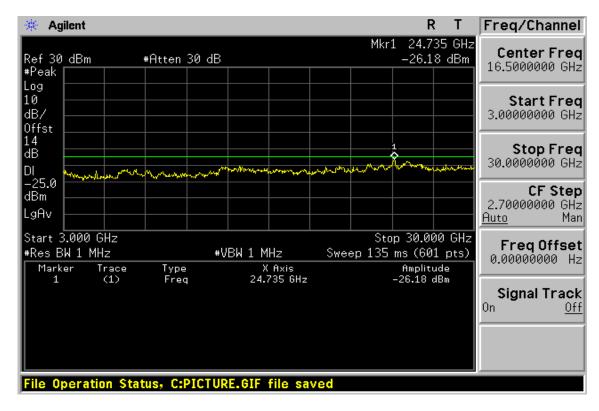


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Figure 10-38: Out of Band emission at antenna terminals–5MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 24) Channel Highest





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## Out of Band emission at antenna terminals –5MHz BW LTE-Band 7

(QPSK RB Number: 1 Offset: 24)

:2502.5 MHz Fundamental Frequency 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	
5005.00	Н		-13.00	
7507.50	Н		-13.00	
10010.00	Н		-13.00	
12512.50	Н		-13.00	
15015.00	Н		-13.00	
17517.50	Н		-13.00	
20020.00	Н		-13.00	
22522.50	Н		-13.00	
25025.00	Н		-13.00	
25545.00	S	-27.09	-13.00	14.09

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Fundamental Frequency :2535 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	
5070.00	Н		-13.00	
7605.00	Н		-13.00	
10140.00	Н		-13.00	
12675.00	Н		-13.00	
15210.00	Н		-13.00	
17745.00	Н		-13.00	
20280.00	Н		-13.00	
22815.00	Н		-13.00	
25350.00	Н		-13.00	
25635.00	S	-26.68	-13.00	13.68

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"---": denotes Noise Floor.

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Fundamental Frequency :2567.5MHz 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	
5135.00	Н		-13.00	
7702.50	Н		-13.00	
10270.00	Н		-13.00	
12837.50	Н		-13.00	
15405.00	Н		-13.00	
17972.50	Н		-13.00	
20540.00	Н		-13.00	
23107.50	Н		-13.00	
24735.00	S	-26.18	-13.00	13.18
25675.00	Н		-13.00	

"H": denotes Harmonic Frequency. "S": denotes Spurious Frequency. Note: "---": denotes Noise Floor.

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Figure 10-39: Band edge emission at antenna terminals –5MHz BW LTE-Band 7 (QPSK RB Number: 25 Offset: 0) Channel Lowest

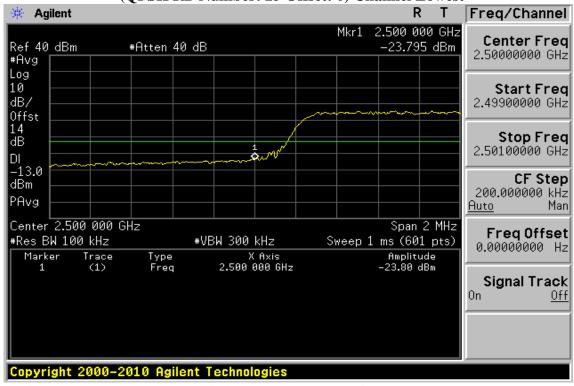
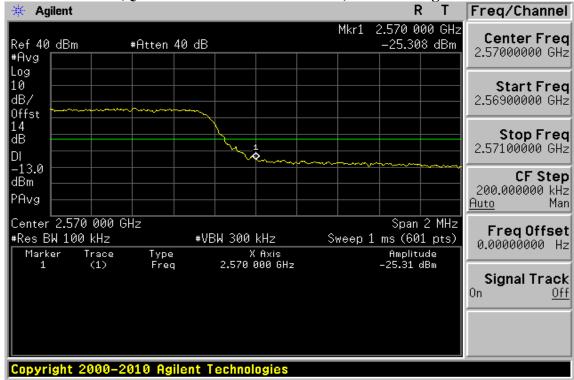


Figure 10-40: Band edge emission at antenna terminals –5MHz BW LTE-Band 7 (QPSK RB Number: 25 Offset: 0) Channel Highest



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## Band edge emission at antenna terminals –5MHz BW LTE-Band 7

(QPSK RB Number: 25 Offset: 0)

Test Mode 5MHz BW LTE-Band 7 Engineer :Nick

Freq. MHz	Reading dBm	Limit dBm	Safe Margin dB
2500.000	-23.80	-13.00	10.80
2570.000	-25.31	-13.00	12.31

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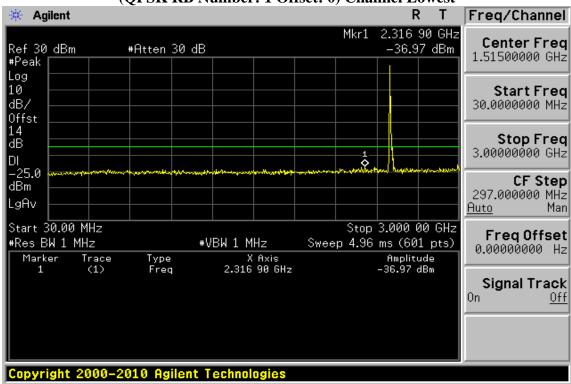
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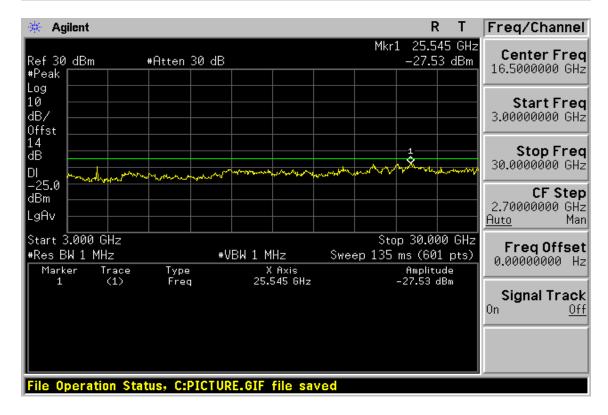


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Figure 10-41: Out of Band emission at antenna terminals—10MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 0) Channel Lowest





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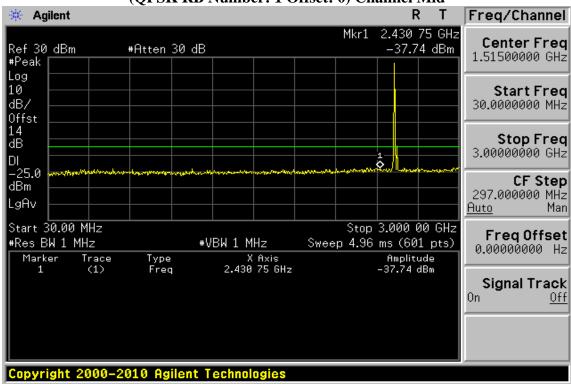
f (886-2) 2298-0488 www.tw.sqs.com

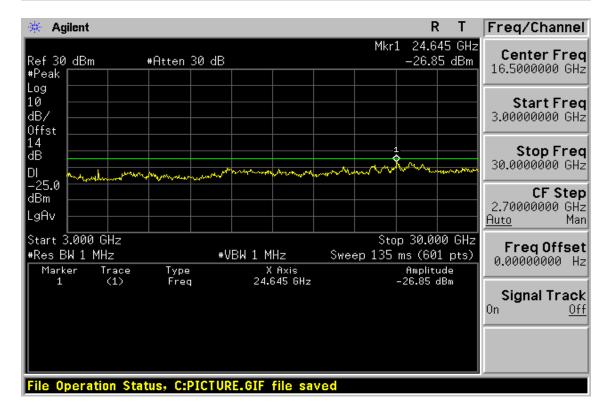


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Figure 10-42: Out of Band emission at antenna terminals–10MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 0) Channel Mid





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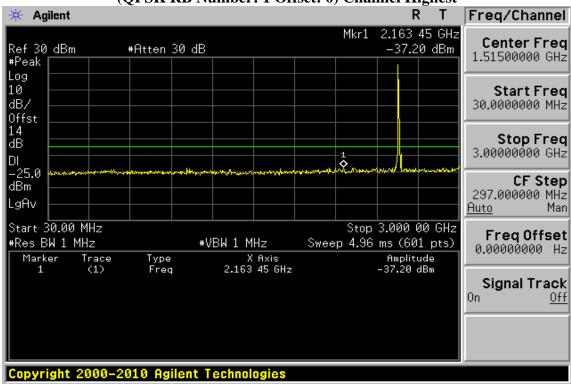
t (886-2) 2299-3279

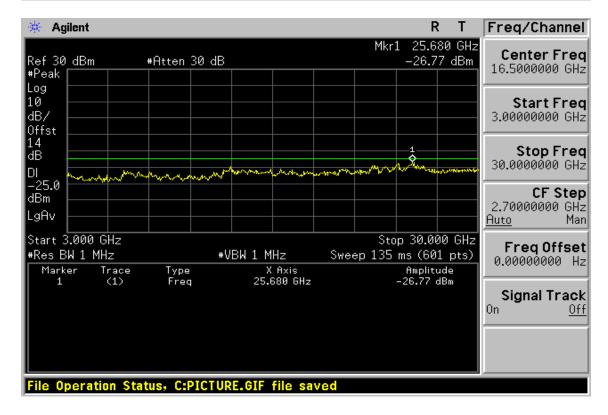


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Figure 10-43: Out of Band emission at antenna terminals-10MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 0) Channel Highest





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## Out of Band emission at antenna terminals -10MHz BW LTE-Band 7

(QPSK RB Number: 1 Offset: 0)

Fundamental Frequency :2505MHz 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	
5010.00	Н		-13.00	
7515.00	Н		-13.00	
10020.00	Н		-13.00	
12525.00	Н		-13.00	
15030.00	Н		-13.00	
17535.00	Н		-13.00	
20040.00	Н		-13.00	
22545.00	Н		-13.00	
25050.00	Н		-13.00	
25545.00	S	-27.53	-13.00	14.53

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

"---": denotes Noise Floor.

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Fundamental Frequency :2535 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	
5070.00	Н		-13.00	
7605.00	Н		-13.00	
10140.00	Н		-13.00	
12675.00	Н		-13.00	
15210.00	Н		-13.00	
17745.00	Н		-13.00	
20280.00	Н		-13.00	
22815.00	Н		-13.00	
24645.00	S	-26.85	-13.00	13.85
25350.00	Н		-13.00	

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

"---": denotes Noise Floor.

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Fundamental Frequency :2565MHz 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	
5130.00	Н		-13.00	
7695.00	Н		-13.00	
10260.00	Н		-13.00	
12825.00	Н		-13.00	
15390.00	Н		-13.00	
17955.00	Н		-13.00	
20520.00	Н		-13.00	
23085.00	Н		-13.00	
25650.00	Н		-13.00	
25680.00	S	-26.77	-13.00	13.77

"H": denotes Harmonic Frequency. "S": denotes Spurious Frequency. Note: "---": denotes Noise Floor.

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Figure 10-44: Band edge emission at antenna terminals –10MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 0) Channel Lowest

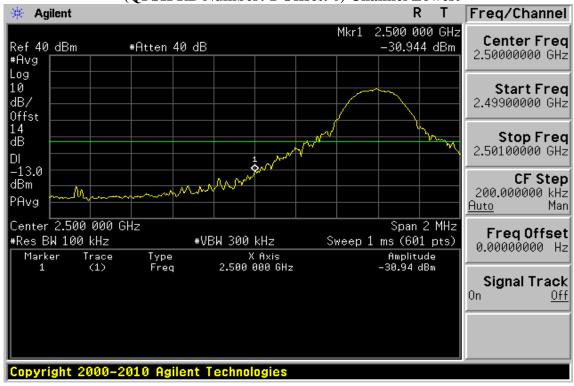


Figure 10-45: Band edge emission at antenna terminals –10MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 49) Channel Highest



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Band edge emission at antenna terminals -10MHz BW LTE-Band 7

(QPSK RB Number: 1 Offset: 0) (QPSK RB Number: 1 Offset: 49)

Test Mode 10MHz BW LTE-Band 7 Engineer :Nick

Freq. MHz	Reading dBm	Limit dBm	Safe Margin dB
2500.000	-30.94	-13.00	17.94
2570.000	-31.46	-13.00	18.46

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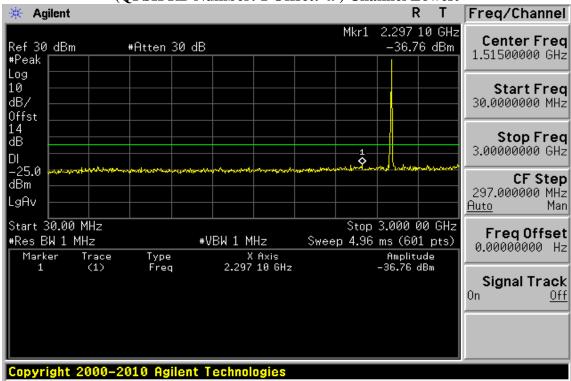
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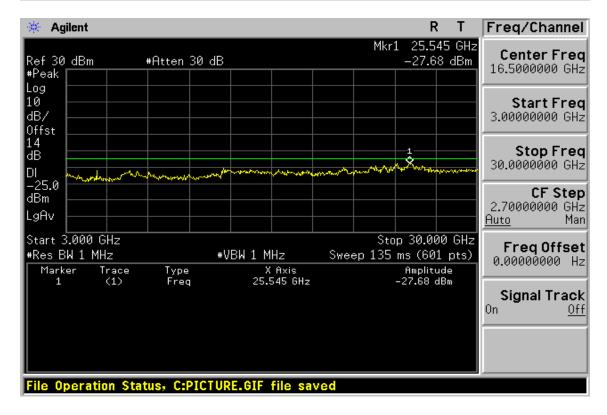


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Figure 10-46: Out of Band emission at antenna terminals-10MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 49) Channel Lowest





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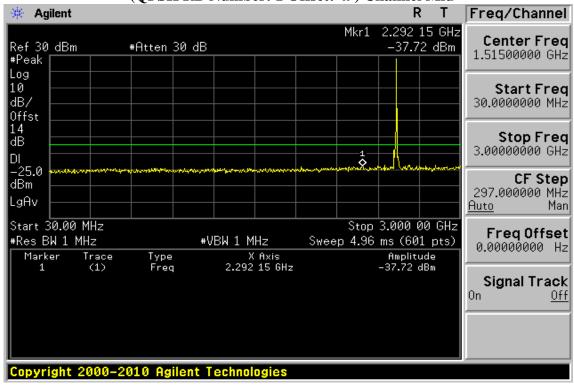
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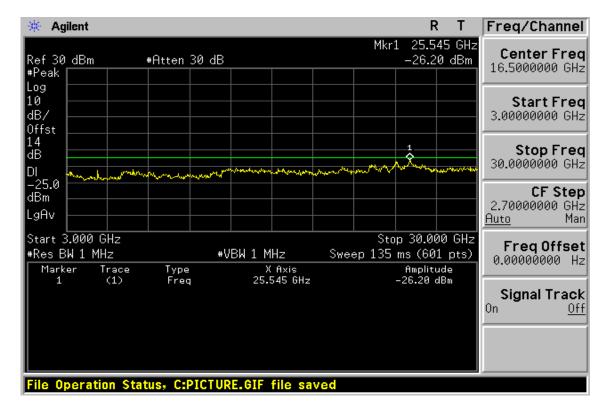


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Figure 10-47: Out of Band emission at antenna terminals –10MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 49) Channel Mid





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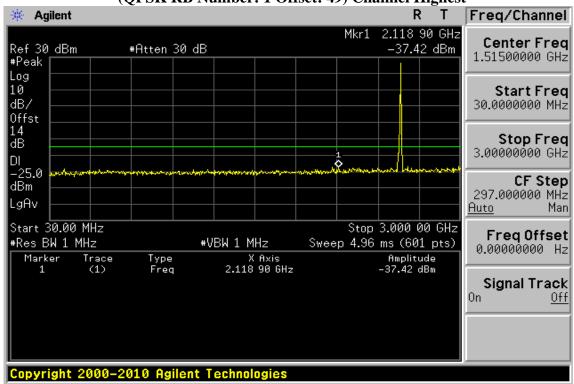
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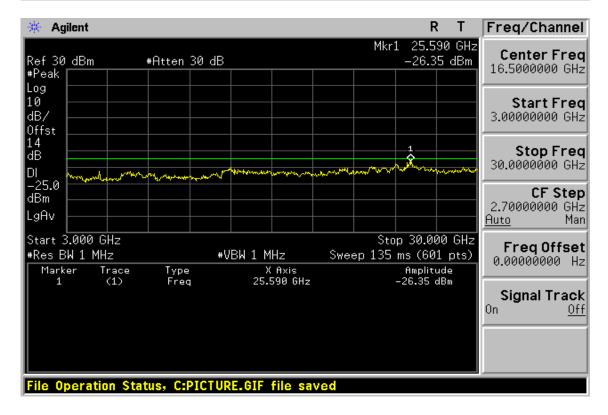


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Figure 10-48: Out of Band emission at antenna terminals-10MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 49) Channel Highest





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## Out of Band emission at antenna terminals –10MHz BW LTE-Band 7

(QPSK RB Number: 1 Offset: 49)

Fundamental Frequency :2505 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	
5010.00	Н		-13.00	
7515.00	Н		-13.00	
10020.00	Н		-13.00	
12525.00	Н		-13.00	
15030.00	Н		-13.00	
17535.00	Н		-13.00	
20040.00	Н		-13.00	
22545.00	Н		-13.00	
25050.00	Н		-13.00	
25545.00	S	-27.68	-13.00	14.68

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

"---": denotes Noise Floor.

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Fundamental Frequency :2535 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	
5070.00	Н		-13.00	
7605.00	Н		-13.00	
10140.00	Н		-13.00	
12675.00	Н		-13.00	
15210.00	Н		-13.00	
17745.00	Н		-13.00	
20280.00	Н		-13.00	
22815.00	Н		-13.00	
25350.00	Н		-13.00	
25545.00	S	-26.20	-13.00	13.20

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

"---": denotes Noise Floor.

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Fundamental Frequency :2565MHz 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	
5130.00	Н		-13.00	
7695.00	Н		-13.00	
10260.00	Н		-13.00	
12825.00	Н		-13.00	
15390.00	Н		-13.00	
17955.00	Н		-13.00	
20520.00	Н		-13.00	
23085.00	Н		-13.00	
25590.00	S	-26.35	-13.00	13.35
25650.00	Н		-13.00	

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

"---": denotes Noise Floor.

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Figure 10-49: Band edge emission at antenna terminals –10MHz BW LTE-Band 7 (QPSK RB Number: 50 Offset: 0) Channel Lowest

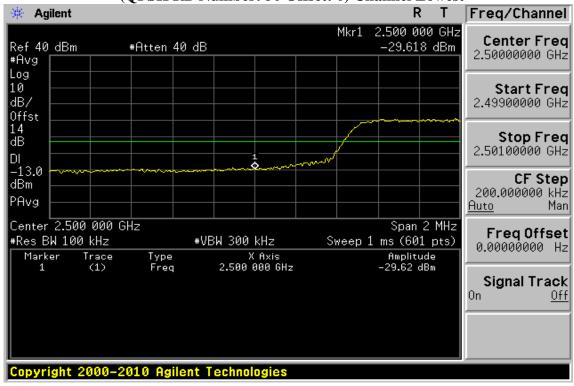


Figure 10-50: Band edge emission at antenna terminals –10MHz BW LTE-Band 7 (QPSK RB Number: 50 Offset: 0) Channel Highest



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# Band edge emission at antenna terminals –10MHz BW LTE-Band 7

(QPSK RB Number: 50 Offset: 0)

Test Mode 10MHz BW LTE-Band 7 Engineer :Nick

Freq. MHz	Reading dBm	Limit dBm	Safe Margin dB
2500.000	-29.62	-13.00	16.62
2570.000	-30.43	-13.00	17.43

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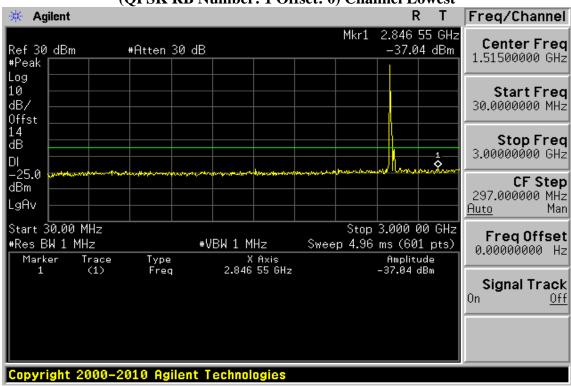
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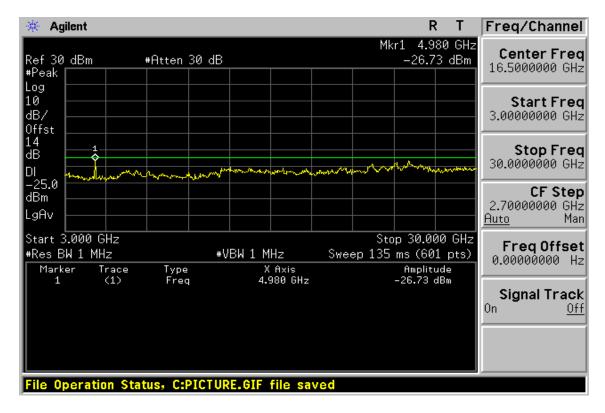


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Figure 10-51: Out of Band emission at antenna terminals–15MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 0) Channel Lowest





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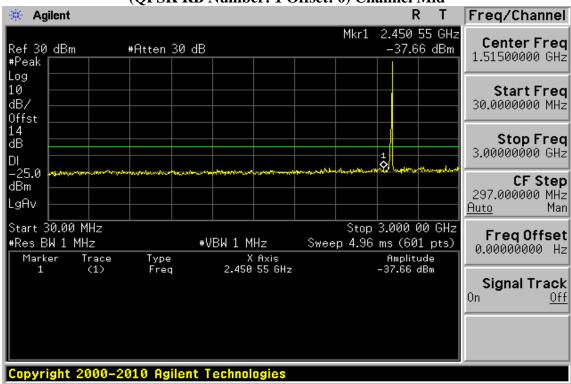
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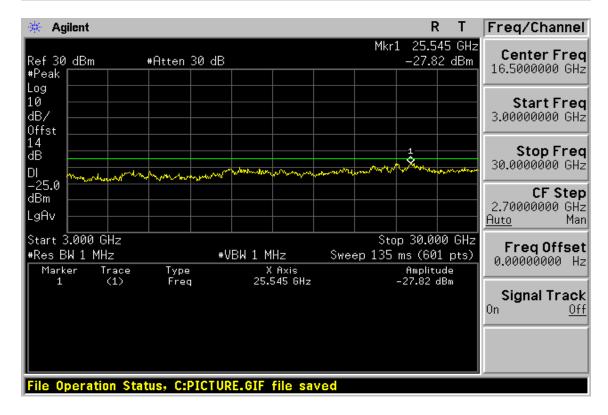


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Figure 10-52: Out of Band emission at antenna terminals–15MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 0) Channel Mid





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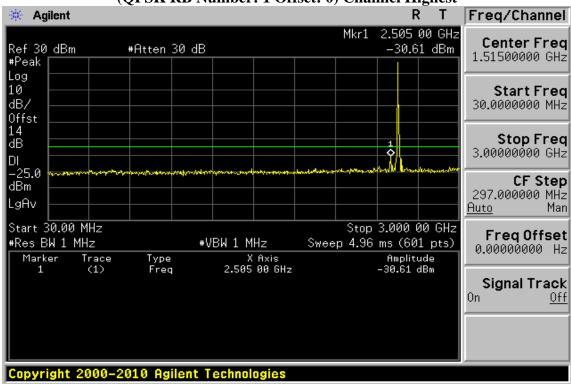
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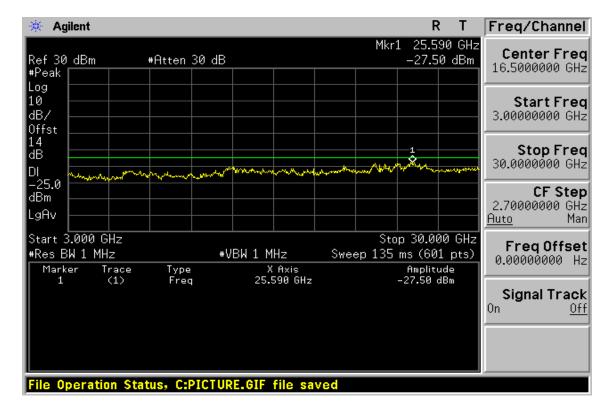


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Figure 10-53: Out of Band emission at antenna terminals—15MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 0) Channel Highest





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## Out of Band emission at antenna terminals –15MHz BW LTE-Band 7

(QPSK RB Number: 1 Offset: 0)

:2507.5 MHz Fundamental Frequency 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	
4980.00	S	-26.73	-13.00	13.73
5015.00	Н		-13.00	
7522.50	Н		-13.00	
10030.00	Н		-13.00	
12537.50	Н		-13.00	
15045.00	Н		-13.00	
17552.50	Н		-13.00	
20060.00	Н		-13.00	
22567.50	Н		-13.00	
25075.00	Н		-13.00	

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Fundamental Frequency :2535 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	
5070.00	Н		-13.00	
7605.00	Н		-13.00	
10140.00	Н		-13.00	
12675.00	Н		-13.00	
15210.00	Н		-13.00	
17745.00	Н		-13.00	
20280.00	Н		-13.00	
22815.00	Н		-13.00	
25350.00	Н		-13.00	
25545.00	S	-27.82	-13.00	14.82

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Fundamental Frequency :2562.5MHz 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	
5125.00	Н		-13.00	
7687.50	Н		-13.00	
10250.00	Н		-13.00	
12812.50	Н		-13.00	
15375.00	Н		-13.00	
17937.50	Н		-13.00	
20500.00	Н		-13.00	
23062.50	Н		-13.00	
25590.00	S	-27.5	-13.00	14.50
25625.00	Н		-13.00	

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Figure 10-54: Band edge emission at antenna terminals –15MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 0) Channel Lowest

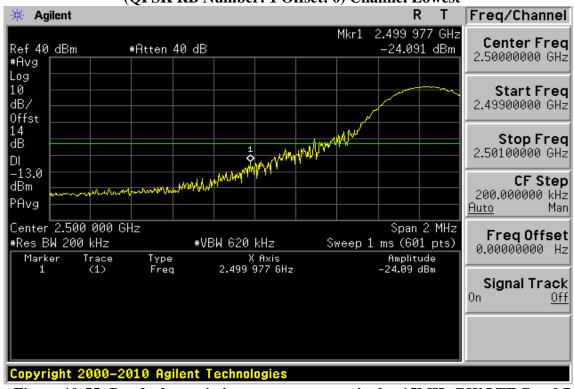
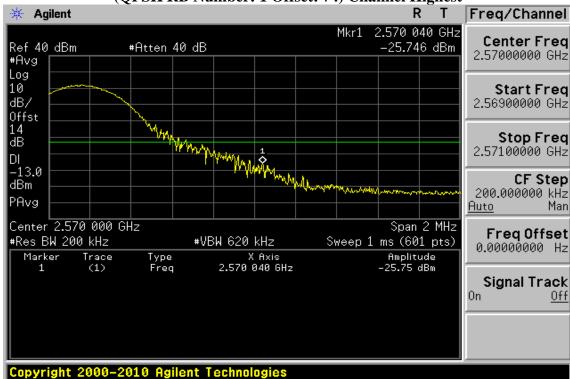


Figure 10-55: Band edge emission at antenna terminals –15MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 74) Channel Highest



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Band edge emission at antenna terminals -15MHz BW LTE-Band 7

(QPSK RB Number: 1 Offset: 0) (QPSK RB Number: 1 Offset: 74)

Test Mode	15MHz BW LTE-Band 7	Engineer	:Nick

Freq. MHz	Reading dBm	Limit dBm	Safe Margin dB
2499.977	-24.09	-13.00	11.09
2570.040	-25.75	-13.00	12.75

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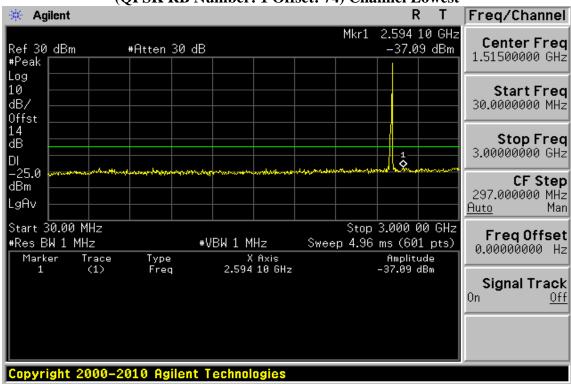
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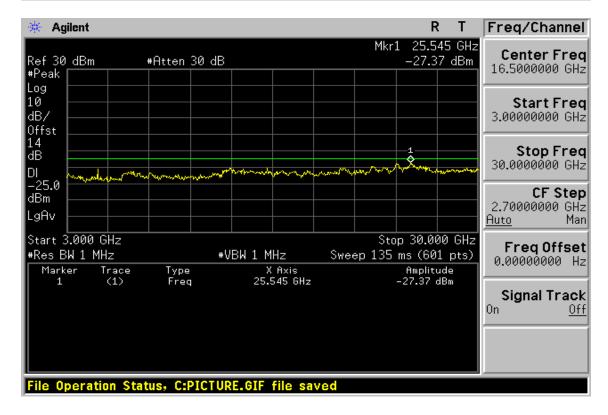


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Figure 10-56: Out of Band emission at antenna terminals—15MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 74) Channel Lowest





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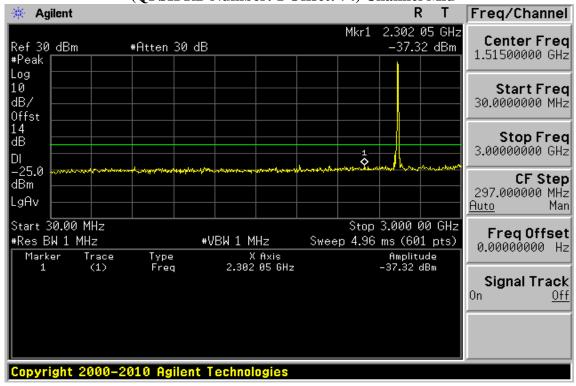
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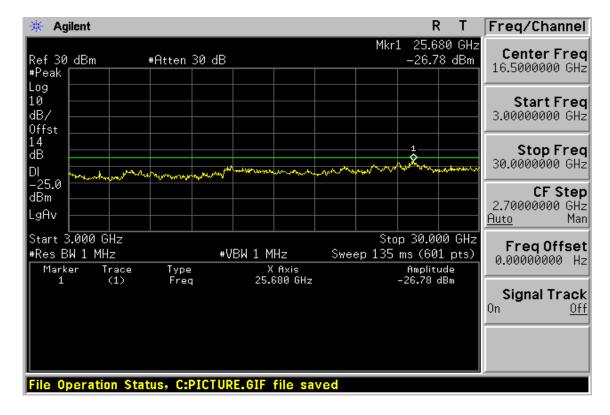


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Figure 10-57: Out of Band emission at antenna terminals –15MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 74) Channel Mid





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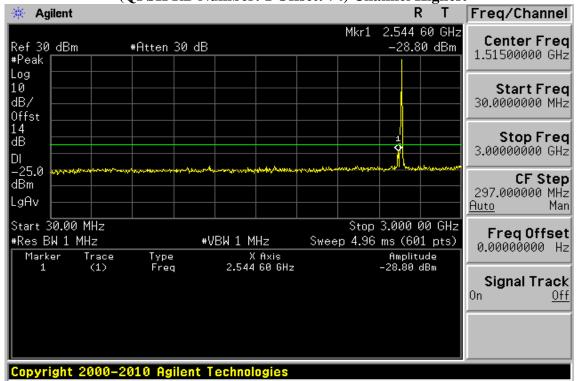
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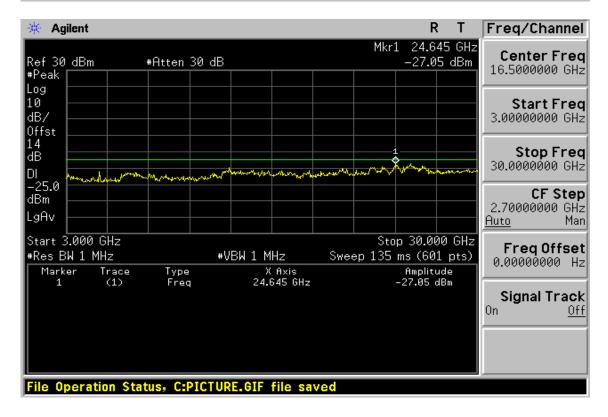


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Figure 10-58: Out of Band emission at antenna terminals—15MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 74) Channel Highest





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## Out of Band emission at antenna terminals –15MHz BW LTE-Band 7

(QPSK RB Number: 1 Offset: 74)

Fundamental Frequency :2507.5 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	
5015.00	Н		-13.00	
7522.50	Н		-13.00	
10030.00	Н		-13.00	
12537.50	Н		-13.00	
15045.00	Н		-13.00	
17552.50	Н		-13.00	
20060.00	Н		-13.00	
22567.50	Н		-13.00	
25075.00	Н		-13.00	
25545.00	S	-27.37	-13.00	14.37

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

"---": denotes Noise Floor.

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Fundamental Frequency :2535 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	
5070.00	Н		-13.00	
7605.00	Н		-13.00	
10140.00	Н		-13.00	
12675.00	Н		-13.00	
15210.00	Н		-13.00	
17745.00	Н		-13.00	
20280.00	Н		-13.00	
22815.00	Н		-13.00	
25350.00	Н		-13.00	
25680.00	S	-26.78	-13.00	13.78

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Fundamental Frequency :2562.5MHz 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	
5125.00	Н		-13.00	
7687.50	Н		-13.00	
10250.00	Н		-13.00	
12812.50	Н		-13.00	
15375.00	Н		-13.00	
17937.50	Н		-13.00	
20500.00	Н		-13.00	
23062.50	Н		-13.00	
24645.00	S	-27.05	-13.00	14.05
25625.00	Н		-13.00	

"H": denotes Harmonic Frequency. "S": denotes Spurious Frequency. Note: "---": denotes Noise Floor.

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Figure 10-59: Band edge emission at antenna terminals –15MHz BW LTE-Band 7 (QPSK RB Number: 75 Offset: 0) Channel Lowest

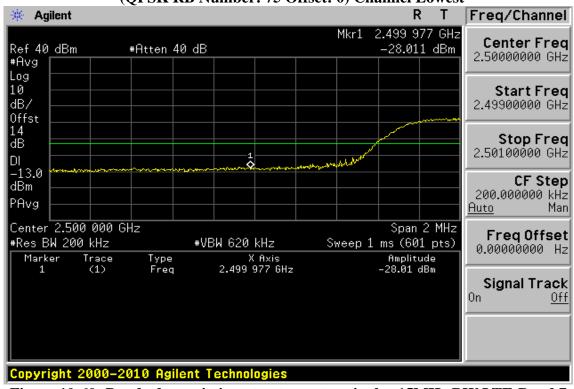


Figure 10-60: Band edge emission at antenna terminals –15MHz BW LTE-Band 7 (QPSK RB Number: 75 Offset: 0) Channel Highest



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## Band edge emission at antenna terminals –15MHz BW LTE-Band 7

(QPSK RB Number: 75 Offset: 0)

Test Mode 15MHz BW LTE-Band 7 Engineer :Nick

Freq. MHz	Reading dBm	Limit dBm	Safe Margin dB
2499.977	-28.01	-13.00	15.01
2570.000	-29.83	-13.00	16.83

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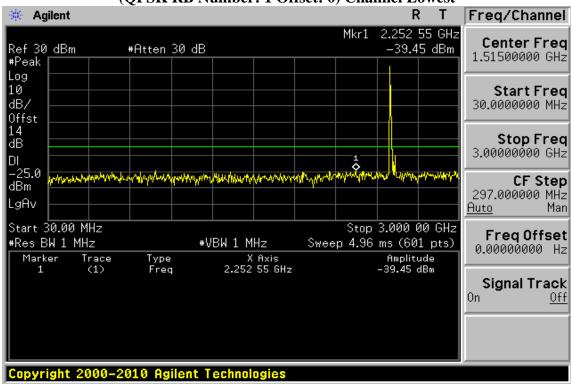
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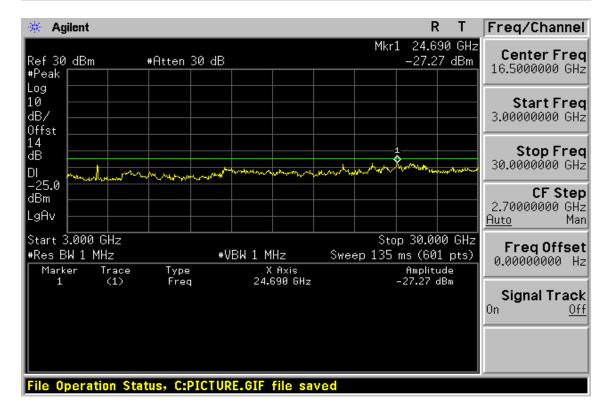


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Figure 10-61: Out of Band emission at antenna terminals-20MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 0) Channel Lowest





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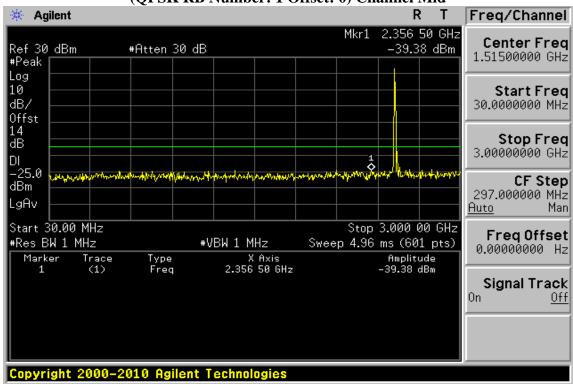
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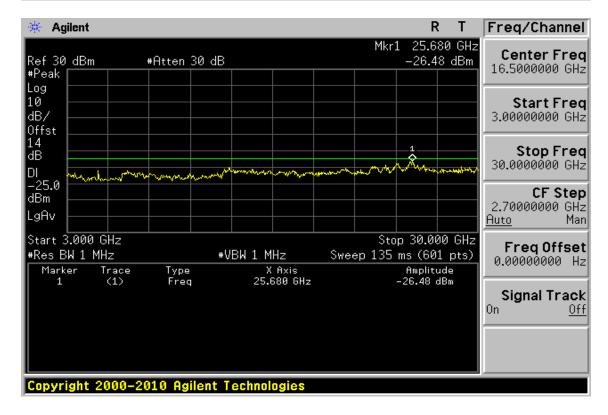


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Figure 10-62: Out of Band emission at antenna terminals-20MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 0) Channel Mid





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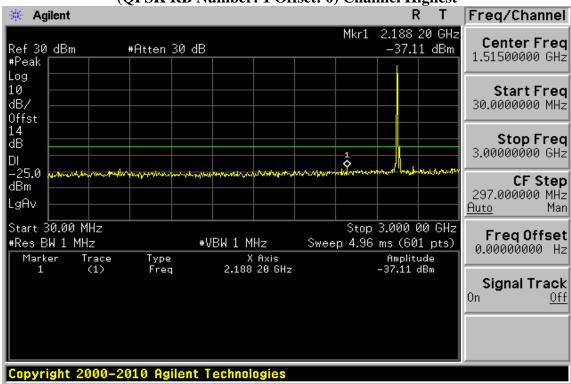
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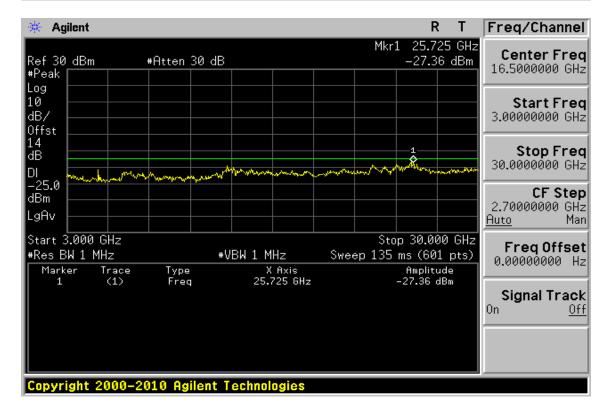


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Figure 10-63: Out of Band emission at antenna terminals-20MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 0) Channel Highest





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## Out of Band emission at antenna terminals -20MHz BW LTE-Band 7

(QPSK RB Number: 1 Offset: 0)

Fundamental Frequency :2510 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	
5020.00	Н		-13.00	
7530.00	Н		-13.00	
10040.00	Н		-13.00	
12550.00	Н		-13.00	
15060.00	Н		-13.00	
17570.00	Н		-13.00	
20080.00	Н		-13.00	
22590.00	Н		-13.00	
24690.00	S	-27.27	-13.00	14.27
25100.00	Н		-13.00	

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

"---": denotes Noise Floor.

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Fundamental Frequency :2535 MHz Engineer :Nick

Operation Mode :TX Mid

Note F/H/E/S	Reading dBm	Limit dBm	Safe Margin dB
S		-13.00	
S		-13.00	
Н		-13.00	
S	-26.48	-13.00	13.48
	S S H H H H H H H H H H H H H H H H H H	F/H/E/S dBm  S S H H H H H H H H H H	F/H/E/S     dBm     dBm       S      -13.00       S      -13.00       H      -13.00

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Fundamental Frequency :2560MHz 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	
5120.00	Н		-13.00	
7680.00	Н		-13.00	
10240.00	Н		-13.00	
12800.00	Н		-13.00	
15360.00	Н		-13.00	
17920.00	Н		-13.00	
20480.00	Н		-13.00	
23040.00	Н		-13.00	
25600.00	Н		-13.00	
25725.00	S	-27.36	-13.00	14.36

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Figure 10-64: Band edge emission at antenna terminals –20MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 0) Channel Lowest

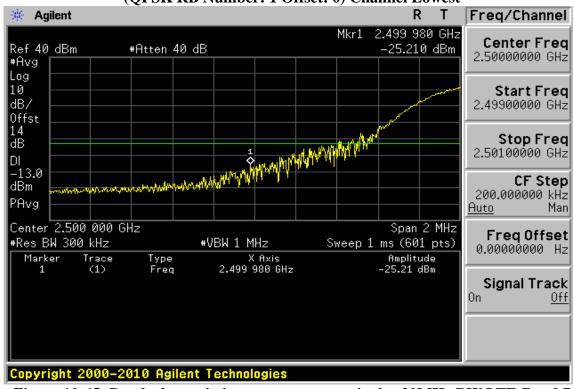
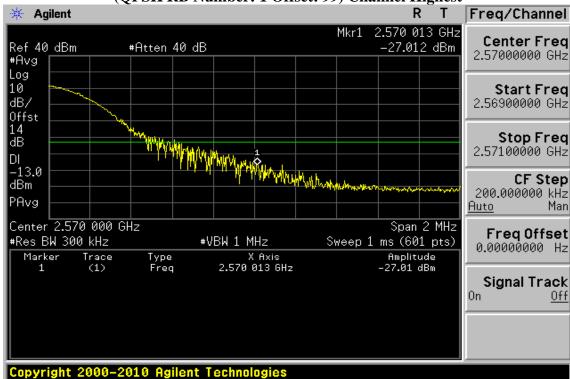


Figure 10-65: Band edge emission at antenna terminals –20MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 99) Channel Highest



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Band edge emission at antenna terminals –20MHz BW LTE-Band 7

(QPSK RB Number: 1 Offset: 0) (QPSK RB Number: 1 Offset: 99)

Test Mode 20MHz BW LTE-Band 7 Engineer :Nick

Freq. MHz	Reading dBm	Limit dBm	Safe Margin dB
2499.988	-25.21	-13.00	12.21
2570.013	-27.01	-13.00	14.01

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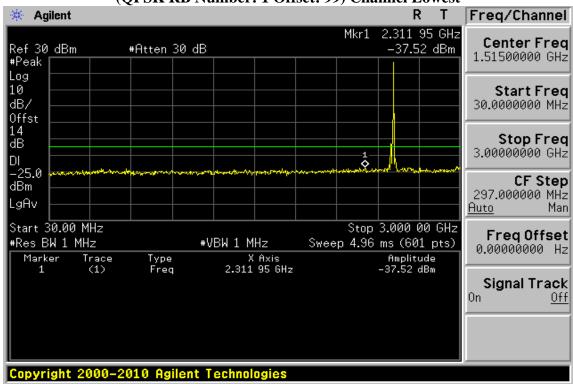
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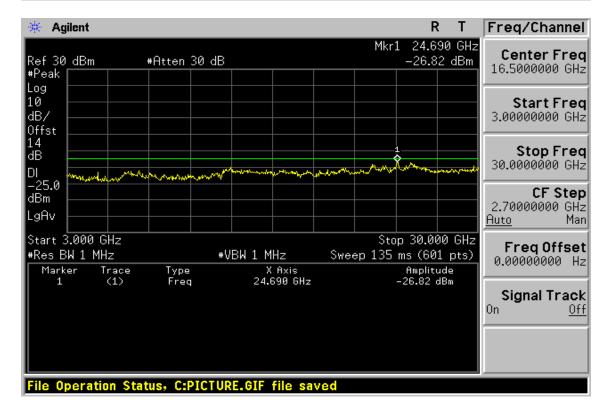


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Figure 10-66: Out of Band emission at antenna terminals-20MHz BW LTE-Band 7 (OPSK RB Number: 1 Offset: 99) Channel Lowest





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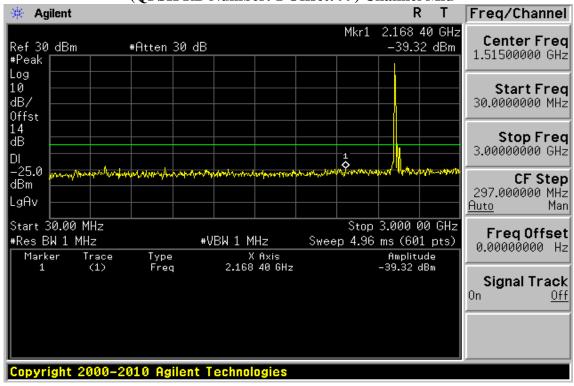
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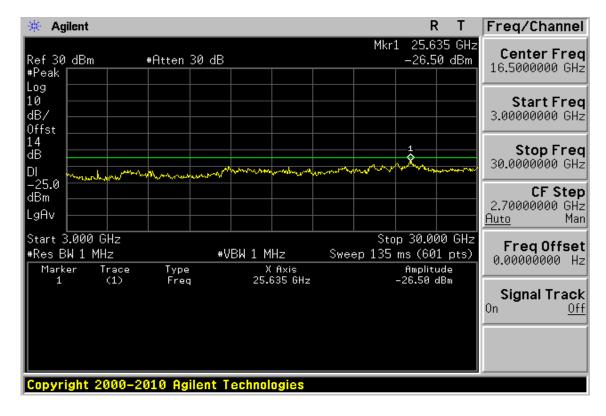


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Figure 10-67: Out of Band emission at antenna terminals –20MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 99) Channel Mid





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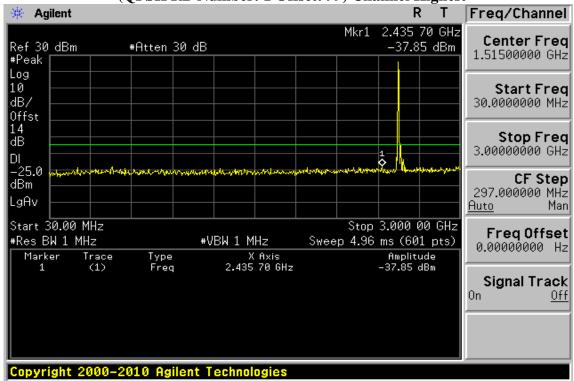
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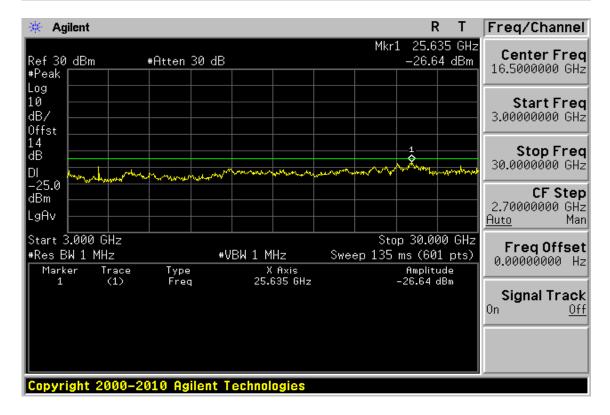


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Figure 10-68: Out of Band emission at antenna terminals-20MHz BW LTE-Band 7 (QPSK RB Number: 1 Offset: 99) Channel Highest





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### Out of Band emission at antenna terminals -20MHz BW LTE-Band 7

(QPSK RB Number: 1 Offset: 99)

Fundamental Frequency :2510 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	
5020.00	Н		-13.00	
7530.00	Н		-13.00	
10040.00	Н		-13.00	
12550.00	Н		-13.00	
15060.00	Н		-13.00	
17570.00	Н		-13.00	
20080.00	Н		-13.00	
22590.00	Н		-13.00	
24690.00	S	-26.82	-13.00	13.82
25100.00	Н		-13.00	

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

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Fundamental Frequency :2535 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	
5070.00	Н		-13.00	
7605.00	Н		-13.00	
10140.00	Н		-13.00	
12675.00	Н		-13.00	
15210.00	Н		-13.00	
17745.00	Н		-13.00	
20280.00	Н		-13.00	
22815.00	Н		-13.00	
25350.00	Н		-13.00	
25635.00	S	-26.5	-13.00	13.50

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Fundamental Frequency :2560MHz 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	
5120.00	Н		-13.00	
7680.00	Н		-13.00	
10240.00	Н		-13.00	
12800.00	Н		-13.00	
15360.00	Н		-13.00	
17920.00	Н		-13.00	
20480.00	Н		-13.00	
23040.00	Н		-13.00	
25600.00	Н		-13.00	
25635.00	S	-26.64	-13.00	13.64

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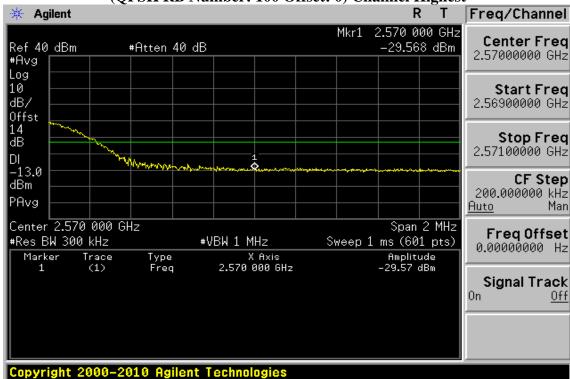
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Figure 10-69: Band edge emission at antenna terminals –20MHz BW LTE-Band 7 (QPSK RB Number: 100 Offset: 0) Channel Lowest



Figure 10-70: Band edge emission at antenna terminals –20MHz BW LTE-Band 7 (QPSK RB Number: 100 Offset: 0) Channel Highest



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# Band edge emission at antenna terminals –20MHz BW LTE-Band 7

(QPSK RB Number: 100 Offset: 0)

Test Mode 20MHz BW LTE-Band 7 Engineer :Nick

Freq. MHz	Reading dBm	Limit dBm	Safe Margin dB	
2500.000	-28.61	-13.00	15.61	
2570.000	-29.57	-13.00	16.57	

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

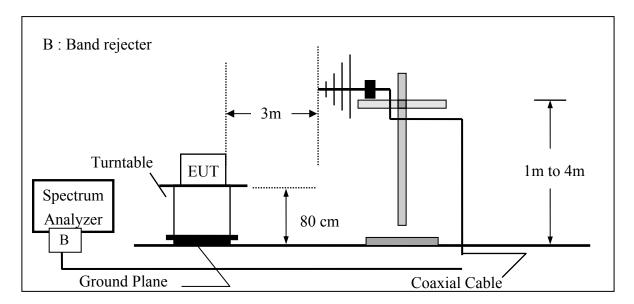
# 10.1. Standard Applicable:

According to FCC §2.1053,

FCC §22.917(a), §24.238(a), §27.53(g) (h) the magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under the conditions specified in the instruction manual and/or alignment procedure, shall not be less than 43 + 10 log (mean output power in watts) dBc below the mean power output outside a license's frequency block (-13dBm). §27.53 (m) (4) shall not be less than 55 +10log(mean output power in watt) dBc below the mean power output outside a license's frequency block (-25dBm).

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

Radiated Emission Test Set-Up, Frequency Below 1000MHz



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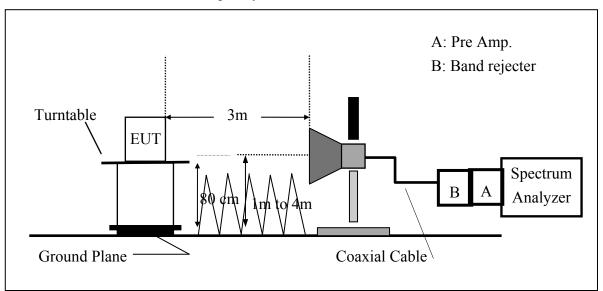
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# Radiated Emission Test Set-UP Frequency Over 1 GHz



#### 10.3. Measurement Procedure:

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

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

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

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

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

### 10.4. Measurement Equipment Used:

Refer to section 2.4 in this report

# 10.5. Measurement Result:

Refer to attach tabular data sheets.

For radiated plot of test data, please refer to Appendix 1, page 321

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Radiated Spurious Emission Measurement Result: GSM 850 Mode

Operation Band :GSM 850 Test Date :2014-03-01

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

Fundamental Frequency :824.2 MHz Engineer :Allen

Operation Mode :TX LOW

EUT Pol. :H Plan 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
35.82	S	-50.37	-34.74	-14.83	-0.80	-13.00	-37.37
90.14	S	-53.05	-51.30	-0.55	-1.20	-13.00	-40.05
171.62	S	-67.78	-65.54	-0.80	-1.44	-13.00	-54.78
197.81	S	-70.22	-71.77	3.06	-1.51	-13.00	-57.22
248.25	S	-62.46	-64.19	3.43	-1.70	-13.00	-49.46
373.38	S	-64.56	-66.53	4.00	-2.02	-13.00	-51.56
1648.40	Н	-62.63	-61.75	3.54	-4.42	-13.00	-49.63
2472.60	Н						
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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Operation Band :GSM 850 Test Date :2014-03-01

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

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

EUT Pol. :H Plan 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
36.79	S	-36.32	-20.83	-14.69	-0.80	-13.00	-23.32
69.77	S	-55.22	-47.43	-6.79	-1.00	-13.00	-42.22
111.48	S	-61.27	-57.83	-2.20	-1.25	-13.00	-48.27
248.25	S	-64.87	-66.60	3.43	-1.70	-13.00	-51.87
294.81	S	-63.97	-65.64	3.52	-1.85	-13.00	-50.97
373.38	S	-68.19	-70.16	4.00	-2.02	-13.00	-55.19
1648.40	Н	-62.65	-61.77	3.54	-4.42	-13.00	-49.65
2472.60	Н						
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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Operation Band :GSM 850 Test Date :2014-03-01

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

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

EUT Pol. :H Plan 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
35.82	S	-50.75	-35.13	-14.83	-0.80	-13.00	-37.75
89.17	S	-53.43	-51.45	-0.79	-1.18	-13.00	-40.43
150.28	S	-67.38	-63.71	-2.28	-1.38	-13.00	-54.38
196.84	S	-69.57	-71.07	3.00	-1.50	-13.00	-56.57
252.13	S	-62.06	-63.81	3.47	-1.72	-13.00	-49.06
373.38	S	-65.05	-67.03	4.00	-2.02	-13.00	-52.05
1673.20	Н	-63.25	-62.27	3.47	-4.45	-13.00	-50.25
2509.80	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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Operation Band :GSM 850 Test Date :2014-03-01

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

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

EUT Pol. :H Plan 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
35.82	S	-35.96	-20.34	-14.83	-0.80	-13.00	-22.96
53.28	S	-54.79	-42.15	-11.64	-1.00	-13.00	-41.79
111.48	S	-59.61	-56.16	-2.20	-1.25	-13.00	-46.61
251.16	S	-64.74	-66.49	3.46	-1.71	-13.00	-51.74
291.90	S	-65.51	-67.13	3.47	-1.85	-13.00	-52.51
373.38	S	-68.42	-70.39	4.00	-2.02	-13.00	-55.42
1673.20	Н	-63.53	-62.54	3.47	-4.45	-13.00	-50.53
2509.80	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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Operation Band :GSM 850 Test Date :2014-03-01

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

Fundamental Frequency :848.8 MHz Engineer :Allen Operation Mode :TX HIGH

EUT Pol. :H Plan 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
36.79	S	-50.75	-35.26	-14.69	-0.80	-13.00	-37.75
90.14	S	-53.47	-51.72	-0.55	-1.20	-13.00	-40.47
171.62	S	-67.73	-65.49	-0.80	-1.44	-13.00	-54.73
248.25	S	-62.31	-64.03	3.43	-1.70	-13.00	-49.31
345.25	S	-66.50	-68.64	4.11	-1.97	-13.00	-53.50
373.38	S	-64.86	-66.83	4.00	-2.02	-13.00	-51.86
1697.60	Н	-64.36	-63.28	3.40	-4.48	-13.00	-51.36
2546.40	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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Operation Band :GSM 850 Test Date :2014-03-01

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

Fundamental Frequency :848.8 MHz Engineer :Allen Operation Mode :TX HIGH

EUT Pol. :H Plan 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
35.82	S	-35.03	-19.40	-14.83	-0.80	-13.00	-22.03
52.31	S	-53.69	-40.79	-11.90	-1.00	-13.00	-40.69
67.83	S	-56.80	-48.41	-7.38	-1.00	-13.00	-43.80
110.51	S	-61.25	-57.82	-2.19	-1.24	-13.00	-48.25
248.25	S	-64.88	-66.61	3.43	-1.70	-13.00	-51.88
303.54	S	-65.05	-66.83	3.66	-1.88	-13.00	-52.05
1697.60	Н	-63.75	-62.67	3.40	-4.48	-13.00	-50.75
2546.40	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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### Radiated Spurious Emission Measurement Result: GSM 1900 Mode

Operation Band :GSM 1900 **Test Date** :2014-03-01

**ARFCN** :CH 512 Temp./Humi. :18.6 deg C / 67 RH

Fundamental Frequency :1850.2 MHz Engineer :Allen

Operation Mode :TX LOW

EUT Pol. :E1 Plan 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	-54.54	-41.06	-12.68	-0.80	-13.00	-41.54
90.14	S	-51.26	-51.66	1.60	-1.20	-13.00	-38.26
164.83	S	-64.37	-63.72	0.77	-1.42	-13.00	-51.37
249.22	S	-63.03	-66.91	5.59	-1.71	-13.00	-50.03
346.22	S	-64.80	-69.11	6.27	-1.97	-13.00	-51.80
770.11	S	-62.58	-65.63	5.94	-2.89	-13.00	-49.58
3700.40	Н	-56.28	-58.10	8.62	-6.80	-13.00	-43.28
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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Operation Band :GSM 1900 **Test Date** :2014-03-01

**ARFCN** :18.6 deg C / 67 RH :CH 512 Temp./Humi.

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

EUT Pol. :E1 Plan Measurement Antenna Pol. :HORIZONTAL

Freq.	Note	EIRP	SG	Antenna	Cable	Limit	Margin
			Output Level	Gain	Loss		
MHz	F/H/E/S	dBm	dBm	dBi	dВ	dBm	dB
35.82	S	-59.42	-45.94	-12.68	-0.80	-13.00	-46.42
90.14	S	-58.47	-58.87	1.60	-1.20	-13.00	-45.47
159.98	S	-60.55	-59.65	0.51	-1.41	-13.00	-47.55
297.72	S	-64.11	-67.98	5.73	-1.86	-13.00	-51.11
373.38	S	-62.11	-66.24	6.15	-2.02	-13.00	-49.11
402.48	S	-64.42	-68.29	5.96	-2.08	-13.00	-51.42
3700.40	Н	-56.47	-58.29	8.62	-6.80	-13.00	-43.47
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)

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

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

"---": denotes Noise Floor.

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Operation Band :GSM 1900 **Test Date** :2014-03-01

**ARFCN** :18.6 deg C / 67 RH :CH 661 Temp./Humi.

Fundamental Frequency :1880 MHz Engineer :Allen Operation Mode

:TX MID

EUT Pol. :E1 Plan 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	-57.15	-43.68	-12.68	-0.80	-13.00	-44.15
89.17	S	-51.28	-51.46	1.36	-1.18	-13.00	-38.28
165.80	S	-64.04	-63.44	0.82	-1.43	-13.00	-51.04
246.31	S	-63.90	-67.78	5.57	-1.69	-13.00	-50.90
379.20	S	-64.58	-68.66	6.11	-2.03	-13.00	-51.58
754.59	S	-62.84	-65.84	5.85	-2.86	-13.00	-49.84
3760.00	Н	-56.67	-58.56	8.74	-6.85	-13.00	-43.67
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-0730**

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Operation Band :GSM 1900 **Test Date** :2014-03-01

**ARFCN** :18.6 deg C / 67 RH :CH 661 Temp./Humi.

Fundamental Frequency :1880 MHz Engineer :Allen

:TX MID

EUT Pol. :E1 Plan 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
36.79	S	-59.46	-46.12	-12.54	-0.80	-13.00	-46.46
96.93	S	-58.23	-58.24	1.20	-1.20	-13.00	-45.23
159.98	S	-60.92	-60.02	0.51	-1.41	-13.00	-47.92
298.69	S	-65.16	-69.04	5.75	-1.87	-13.00	-52.16
373.38	S	-61.42	-65.54	6.15	-2.02	-13.00	-48.42
402.48	S	-63.98	-67.86	5.96	-2.08	-13.00	-50.98
3760.00	Н	-56.13	-58.02	8.74	-6.85	-13.00	-43.13
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 Band :GSM 1900 **Test Date** :2014-03-01

**ARFCN** :18.6 deg C / 67 RH :CH 810 Temp./Humi.

Fundamental Frequency :1909.8 MHz Engineer :Allen Operation Mode :TX HIGH

EUT Pol. :E1 Plan 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	-57.89	-44.27	-12.82	-0.80	-13.00	-44.89
90.14	S	-50.74	-51.14	1.60	-1.20	-13.00	-37.74
171.62	S	-64.47	-64.38	1.35	-1.44	-13.00	-51.47
246.31	S	-64.46	-68.33	5.57	-1.69	-13.00	-51.46
379.20	S	-64.90	-68.97	6.11	-2.03	-13.00	-51.90
777.87	S	-63.00	-66.07	5.98	-2.91	-13.00	-50.00
3819.60	Н	-55.85	-57.80	8.85	-6.90	-13.00	-42.85
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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Operation Band :GSM 1900 **Test Date** :2014-03-01

**ARFCN** :18.6 deg C / 67 RH :CH 810 Temp./Humi.

Fundamental Frequency :1909.8 MHz Engineer :Allen Operation Mode :TX HIGH

EUT Pol. :E1 Plan 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
34.85	S	-61.71	-48.10	-12.82	-0.80	-13.00	-48.71
95.96	S	-58.35	-58.41	1.26	-1.20	-13.00	-45.35
159.98	S	-60.26	-59.36	0.51	-1.41	-13.00	-47.26
264.74	S	-64.26	-68.15	5.65	-1.76	-13.00	-51.26
373.38	S	-61.92	-66.04	6.15	-2.02	-13.00	-48.92
772.05	S	-65.12	-68.17	5.95	-2.89	-13.00	-52.12
3819.60	Н	-56.11	-58.07	8.85	-6.90	-13.00	-43.11
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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Radiated Spurious Emission Measurement Result: 5MHz BW LTE-Band 7(The Worst Case)

:2014-03-01 **Operation Band** :LTE B7 Test Date

:CH 20775 16QAM BW 5 Temp./Humi. **ARFCN** :18.6 deg C / 67 RH

RB 1 0

Engineer Fundamental Frequency :2502.5 MHz :Allen Operation Mode :TX LOW

EUT Pol. :H Plan 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
36.79	S	-55.91	-42.57	-12.54	-0.80	-25.00	-30.91
90.14	S	-50.33	-50.73	1.60	-1.20	-25.00	-25.33
294.81	S	-60.88	-64.70	5.67	-1.85	-25.00	-35.88
651.77	S	-63.87	-67.27	6.09	-2.68	-25.00	-38.87
714.82	S	-63.21	-66.41	5.97	-2.77	-25.00	-38.21
924.34	S	-62.79	-65.29	5.80	-3.30	-25.00	-37.79
5005.00	Н	-54.39	-56.38	9.90	-7.91	-25.00	-29.39
7507.50	Н						
10010.00	Н						
12512.50	Н						
15015.00	Н						
17517.50	Н						
20020.00	Н						
22522.50	Н						
25025.00	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/2014/10064 Issue Date: Mar. 04, 2014

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Operation Band :LTE B7 Test Date :2014-03-01

:CH 20775 16QAM BW 5 Temp./Humi. **ARFCN** :18.6 deg C / 67 RH **RB 10** 

Fundamental Frequency :2502.5 MHz Engineer :Allen

Operation Mode :TX LOW

EUT Pol. :H Plan 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
36.79	S	-58.99	-45.64	-12.54	-0.80	-25.00	-33.99
89.17	S	-57.67	-57.84	1.36	-1.18	-25.00	-32.67
288.02	S	-63.76	-67.49	5.56	-1.83	-25.00	-38.76
587.75	S	-66.86	-69.97	5.70	-2.59	-25.00	-41.86
714.82	S	-66.98	-70.17	5.97	-2.77	-25.00	-41.98
916.58	S	-63.26	-65.77	5.80	-3.29	-25.00	-38.26
5005.00	Н	-52.84	-54.83	9.90	-7.91	-25.00	-27.84
7507.50	Н						
10010.00	Н						
12512.50	Н						
15015.00	Н						
17517.50	Н						
20020.00	Н						
22522.50	Н						
25025.00	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/2014/10064 Issue Date: Mar. 04, 2014

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Operation Band :LTE **B7** Test Date :2014-03-01

:CH 21100 16QAM BW 5 Temp./Humi. **ARFCN** :18.6 deg C / 67 RH RB 10

Fundamental Frequency :2535.0 MHz Engineer :Allen

Operation Mode :TX MID

EUT Pol. :H Plan 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	-57.86	-44.38	-12.68	-0.80	-25.00	-32.86
89.17	S	-52.08	-52.25	1.36	-1.18	-25.00	-27.08
297.72	S	-63.34	-67.20	5.73	-1.86	-25.00	-38.34
645.95	S	-63.12	-66.49	6.05	-2.68	-25.00	-38.12
690.57	S	-63.78	-67.09	6.04	-2.73	-25.00	-38.78
941.80	S	-62.58	-65.04	5.78	-3.32	-25.00	-37.58
5070.00	Н	-54.68	-56.66	9.96	-7.98	-25.00	-29.68
7605.00	Н						
10140.00	Н						
12675.00	Н						
15210.00	Н						
17745.00	Н						
20280.00	Н						
22815.00	Н						
25350.00	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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EUT Pol.

#### **FCC ID: PY7PM-0730**

Report No.: EH/2014/10064 Issue Date: Mar. 04, 2014

:HORIZONTAL

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Operation Band :LTE **B7** Test Date :2014-03-01

:CH 21100 16QAM BW 5 Temp./Humi. **ARFCN** :18.6 deg C / 67 RH RB 10

Measurement Antenna Pol.

Fundamental Frequency :2535.0 MHz Engineer :Allen

:H Plan

Operation Mode :TX MID

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	-58.47	-44.99	-12.68	-0.80	-25.00	-33.47
90.14	S	-56.61	-57.02	1.60	-1.20	-25.00	-31.61
345.25	S	-68.55	-72.84	6.26	-1.97	-25.00	-43.55
420.91	S	-68.05	-71.77	5.85	-2.13	-25.00	-43.05
726.46	S	-67.14	-70.27	5.92	-2.80	-25.00	-42.14
948.59	S	-62.55	-65.00	5.78	-3.33	-25.00	-37.55
5070.00	Н	-53.54	-55.52	9.96	-7.98	-25.00	-28.54
7605.00	Н						
10140.00	Н						
12675.00	Н						
15210.00	Н						
17745.00	Н						
20280.00	Н						
22815.00	Н						
25350.00	Н						

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

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

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

"---": denotes Noise Floor.

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Operation Band :LTE **B7** Test Date :2014-03-01

:CH 21425 16QAM BW 5 Temp./Humi. **ARFCN** :18.6 deg C / 67 RH **RB 10** 

Fundamental Frequency :2567.5 MHz Engineer :Allen

Operation Mode :TX HIGH

EUT Pol. :H Plan 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	-57.50	-44.03	-12.68	-0.80	-25.00	-32.50
90.14	S	-51.67	-52.07	1.60	-1.20	-25.00	-26.67
294.81	S	-61.23	-65.04	5.67	-1.85	-25.00	-36.23
645.95	S	-63.84	-67.21	6.05	-2.68	-25.00	-38.84
704.15	S	-63.59	-66.86	6.01	-2.75	-25.00	-38.59
955.38	S	-62.15	-64.23	5.42	-3.35	-25.00	-37.15
5135.00	Н	-55.63	-57.60	10.01	-8.04	-25.00	-30.63
7702.50	Н						
10270.00	Н						
12837.50	Н						
15405.00	Н						
17972.50	Н						
20540.00	Н						
23107.50	Н						
25675.00	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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EUT Pol.

#### FCC ID: PY7PM-0730

Report No.: EH/2014/10064 Issue Date: Mar. 04, 2014

:HORIZONTAL

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**Operation Band** :LTE B7 Test Date :2014-03-01

:CH 21425 16QAM BW 5 Temp./Humi. **ARFCN** :18.6 deg C / 67 RH RB 10

Measurement Antenna Pol.

Fundamental Frequency :2567.5 MHz Engineer :Allen

:H Plan

Operation Mode :TX HIGH

Freq. Note **EIRP** SG Antenna Cable Limit Margin Output Level Gain Loss MHz F/H/E/S dBm dBm dBi dΒ dBm dΒ 35.82 S -57.83 -44.36 -12.68-0.80-25.00 -32.83 S 90.14 -57.48 -57.881.60 -1.20-25.00 -32.48294.81 S -65.66 -69.47 5.67 -1.85 -25.00 -40.66 S 547.01 -68.13 -71.68 -25.00 -43.13 6.03 -2.48748.77 S -67.09 -70.08 5.83 -2.85-25.00 -42.09 S 946.65 -63.26 -65.71 -25.00 5.78 -3.33 -38.26 5135.00 Η -56.12 10.01 -25.00 -29.15 -54.15 -8.04 7702.50 Η Η 10270.00 12837.50 Η Η 15405.00 17972.50 Н 20540.00 Η 23107.50 Η 25675.00 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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# 11. FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT

# 11.1. Standard Applicable:

According to FCC §2.1055(a) (1)

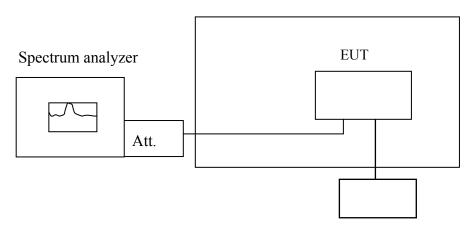
Frequency Tolerance: +/-2.5ppm for 850MHz band

+/-2.5ppm for 1900MHz band

+/-2.5ppm for 2500MHz band

# 11.2. Test Set-up:

# Temperature Chamber



Variable DC Power Supply

Note: Measurement setup for testing on Antenna connector

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#### 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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### 11.5. Measurement Result:

	Reference Frequency: GPRS 850 Mid Channel 836.6 MHz							
	Lir	mit: +/- 2.5 ppm = 209	1 Hz					
Power Supply	Environment	Frequency						
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)				
3.8	50	836600011	4	2091				
3.8	40	836600008	1	2091				
3.8	30	836600006	-1	2091				
3.8	20	836600007	0	2091				
3.8	10	836600007	0	2091				
3.8	0	836600014	7	2091				
3.8	-10	836600007	0	2091				
3.8	-20	836600005	-2	2091				
3.8	-30	836600008	1	2091				

	Reference Frequency: GPRS 1900 Mid Channel 1880 MHz							
	L	imit: $\pm -2.5 \text{ ppm} = 4700 $	Hz					
Power Supply	Environment	Frequency						
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)				
3.8	50	1880000033	-29	4700				
3.8	40	1880000046	-16	4700				
3.8	30	1880000038	-24	4700				
3.8	20	1880000062	0	4700				
3.8	10	1880000025	-37	4700				
3.8	0	1880000018	-44	4700				
3.8	-10	1880000035	-27	4700				
3.8	-20	1880000029	-33	4700				
3.8	-30	1880000027	-35	4700				

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Referen	ce Frequency:	LTE B7 Mid Channel	2535.0	MHz 5M QPSK CH 21100
		Limit: +/- 2.5 ppn	n = Hz	
Power Supply	Environment	Frequency	Dolto (Hz)	Limit (Hz)
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)
3.8	-30	2535.000008	5.10	6338
3.8	-20	2534.999999	-3.20	6338
3.8	-10	2535.000000	-2.40	6338
3.8	0	2534.999995	-7.40	6338
3.8	10	2535.000004	1.90	6338
3.8	20	2535.000002	0.00	6338
3.8	30	2534.999997	-5.30	6338
3.8	40	2534.999999	-3.10	6338
3.8	50	2535.000005	2.80	6338

Referen	ce Frequency:	LTE B7 Mid Channel	2535.0	MHz 5M 16QAM CH 21100			
	Limit: +/- 2.5 ppm = Hz						
Power Supply	Environment	Frequency	Dalta (II-)	Limit (II-)			
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)			
3.8	-30	2534.999997	2.90	6338			
3.8	-20	2534.999998	3.60	6338			
3.8	-10	2534.999997	3.20	6338			
3.8	0	2534.999993	-1.10	6338			
3.8	10	2535.000006	11.60	6338			
3.8	20	2534.999994	0.00	6338			
3.8	30	2535.000005	10.80	6338			
3.8	40	2535.000003	9.30	6338			
3.8	50	2534.999995	1.40	6338			

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Reference Frequency:		LTE B7 Mid Channel 2535.		MHz 10M QPSK CH 21100
		Limit: +/- 2.5 ppn	n = Hz	
Power Supply	Environment	Frequency	Dalta (II-)	I :; (II-)
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)
3.8	-30	2535.000001	-0.90	6338
3.8	-20	2535.000003	1.80	6338
3.8	-10	2534.999993	-8.00	6338
3.8	0	2535.000001	-0.70	6338
3.8	10	2534.999995	-6.00	6338
3.8	20	2535.000001	0.00	6338
3.8	30	2534.999999	-2.30	6338
3.8	40	2534.999994	-7.30	6338
3.8	50	2535.000002	0.40	6338

Referen	ce Frequency:	LTE B7 Mid Channel	2535.0	MHz 10M 16QAM CH 21100		
	Limit: +/- 2.5 ppm = Hz					
Power Supply	Environment	Frequency	D-14- (II-)	I :;4 (II-)		
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)		
3.8	-30	2534.999998	1.50	6338		
3.8	-20	2535.000004	8.30	6338		
3.8	-10	2535.000004	8.10	6338		
3.8	0	2534.999993	-2.80	6338		
3.8	10	2534.999994	-2.10	6338		
3.8	20	2534.999996	0.00	6338		
3.8	30	2535.000003	7.00	6338		
3.8	40	2535.000008	11.50	6338		
3.8	50	2534.999998	2.10	6338		

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Referen	ce Frequency:	LTE B7 Mid Channel 2535.0		MHz 15M QPSK CH 21100
		Limit: +/- 2.5 ppn	n = Hz	
Power Supply	Environment	Frequency	Dalta (Hz)	I :; (II-)
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)
3.8	-30	2534.999999	-5.20	6338
3.8	-20	2535.000003	-0.60	6338
3.8	-10	2534.999995	-9.10	6338
3.8	0	2534.999996	-7.60	6338
3.8	10	2535.000007	3.20	6338
3.8	20	2535.000004	0.00	6338
3.8	30	2535.000004	0.10	6338
3.8	40	2535.000004	0.30	6338
3.8	50	2534.999995	-8.90	6338

Referen	ce Frequency:	LTE B7 Mid Channel	2535.0	MHz 15M 16QAM CH 21100		
	Limit: +/- 2.5 ppm = Hz					
Power Supply	Environment	Frequency	D-14- (II-)	I :;4 (II-)		
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)		
3.8	-30	2535.000006	9.70	6338		
3.8	-20	2535.000003	6.50	6338		
3.8	-10	2535.000007	10.50	6338		
3.8	0	2535.000001	5.00	6338		
3.8	10	2535.000001	4.50	6338		
3.8	20	2534.999996	0.00	6338		
3.8	30	2534.999994	-2.50	6338		
3.8	40	2534.999997	1.10	6338		
3.8	50	2534.999994	-2.20	6338		

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Referen	ce Frequency:	LTE B7 Mid Channel 2535.0		MHz 20M QPSK CH 21100
		Limit: +/- 2.5 ppn	n = Hz	
Power Supply	Environment	Frequency	Dalta (Uz)	I :; (II-)
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)
3.8	-30	2534.999996	0.20	6338
3.8	-20	2535.000001	5.20	6338
3.8	-10	2535.000004	8.50	6338
3.8	0	2535.000008	12.60	6338
3.8	10	2534.999994	-1.10	6338
3.8	20	2534.999995	0.00	6338
3.8	30	2535.000008	12.20	6338
3.8	40	2535.000001	5.30	6338
3.8	50	2535.000000	5.10	6338

Referen	ce Frequency:	LTE B7 Mid Channel	2535.0	MHz 20M 16QAM CH 21100
		Limit: +/- 2.5 ppn	n = Hz	
Power Supply	Environment	Frequency	Dalta (II-)	I :; (II-)
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)
3.8	-30	2534.999999	6.40	6338
3.8	-20	2534.999999	6.00	6338
3.8	-10	2534.999998	5.80	6338
3.8	0	2535.000007	14.00	6338
3.8	10	2534.999998	5.60	6338
3.8	20	2534.999993	0.00	6338
3.8	30	2535.000006	13.00	6338
3.8	40	2534.999994	1.80	6338
3.8	50	2535.000006	13.30	6338

Note: The battery is rated 3.8V dc.

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# 12. FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT

# 12.1. Standard Applicable:

According to FCC §2.1055(d) (2)

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

+/-2.5ppm for 1900MHz band

+/-2.5ppm for 2500MHz band

## 12.2. Test Set-up:

Refer to section 11.2 in this report

### 12.3. Measurement Procedure:

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

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

## 12.4. Measurement Equipment Used:

Refer to section 2.4 in this report

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#### 12.5. Measurement Result:

#### GPRS850

050								
-	Reference Frequency: GPRS 850 Mid Channel 836.6 MHz							
	Limit: +/- 2.5 ppm = 2091 Hz							
Power Supply	Environment	Frequency	Dolto (Uz)	Limit (Uz)				
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)				
4.3	20	836600005	-2	2091				
3.8	20	836600007	0	2091				
3.1	20	836600011	4	2091				
2.5	20	92669999	2	2001				
(End point)	20	836600009	2	2091				

### **GPRS1900**

Reference Frequency: GPRS 1900 Mid Channel 1880 MHz						
	Limit	: +/- 2.5  ppm = 470	00 Hz			
Power Supply	Environment	Frequency	Dolto (II=)	Limit (II-)		
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)		
4.3	20	1880000053	-9	4700		
3.8	20	1880000062	0	4700		
3.1	20	1880000055	-7	4700		
2.5	20	100000004	20	4700		
(End point)	20	1880000024	-38	4700		

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Reference Frequency:		LTE B7 Mid Channel 2535.0		MHz 5M QPSK CH 21100
		Limit: +/- 2.5	ppm = Hz	
Power Supply	Environment	Frequency		
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)
4.25	25	2535.000005	2.00	6338
3.8	25	2535.000003	0.00	6338
3.15	25	2534.999994	-9.00	6338
2.6 (End Point)	25	2535.000000	-2.90	6338

Reference Frequency:		LTE B7 Mid Channel 2535.0		MHz 5M 16 QAM CH 21100
		Limit: +/- 2.5	ppm = Hz	
Power Sup- ply	Environment	Frequency		
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)
4.25	25	2535.000007	8.60	6338
3.8	25	2534.999999	0.00	6338
3.15	25	2534.999991	-7.70	6338
2.6 (End Point)	25	2534.999996	-2.80	6338

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Reference	Frequency:	equency: LTE B7 Mid Channel 2535.0 MHz 10M QPSI 21100			
		Limit: +/- 2.5	ppm = Hz		
Power Sup- ply	Environment	Frequency			
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)	
4.25	25	2535.000001	3.00	6338	
3.8	25	2534.999998	0.00	6338	
3.15	25	2534.999997	-1.00	6338	
2.85 (End Point)	25	2534.999997	-1.40	6338	

Reference 1	Frequency:	LTE B7 Mid Channel	2535.0	MHz 10M 16 QAM CH 21100
		Limit: +/- 2.5	ppm = Hz	
Power Supply	Environment	Frequency		
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)
4.25	25	2535.000001	-4.00	6338
3.8	25	2535.000005	0.00	6338
3.15	25	2535.000007	1.70	6338
2.85 (End Point)	25	2535.000009	3.90	6338

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Reference	Frequency:	LTE B7 Mid Channel	2535.0	MHz 15M QPSK CH 21100	
		Limit: +/- 2.5	ppm = Hz		
Power Supply	Environment	Frequency			
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)	
4.25	25	2534.999993	-0.40	6338	
3.8	25	2534.999994	0.00	6338	
3.15	25	2535.000000	6.20	6338	
2.85 (End Point)	25	2534.999999	4.80	6338	

Reference ?	e Frequency: LTE B7 Mid Channel 2535.0 MHz 15M 16 QAM C 21100			MHz 15M 16 QAM CH 21100				
Limit: +/- 2.5 ppm = Hz								
Power Supply	Environment	Frequency						
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)				
4.25	25	2535.000006	-1.20	6338				
3.8	25	2535.000008	0.00	6338				
3.15	25	2534.999995	-12.50	6338				
2.85 (End Point)	25	2534.999999	-8.70	6338				

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Reference	Frequency:	LTE B7 Mid Channel	2535.0	MHz 20M QPSK CH 21100
		Limit: +/- 2.5	ppm = Hz	
Power Supply	Environment	Frequency		
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)
4.25	25	2535.000001	3.70	6338
3.8	25	2534.999997	0.00	6338
3.15	25	2535.000000	2.70	6338
2.85 (End Point)	25	2535.000001	4.20	6338

Reference 1	rence Frequency: LTE B7 Mid Channel 2535.0 MHz 20M 16 QAM Cl 21100							
Limit: +/- 2.5 ppm = Hz								
Power Supply	Environment	Frequency						
Vdc	Temperature ( )	(MHz)	Delta (Hz)	Limit (Hz)				
4.25	25	2535.000005	7.80	6338				
3.8	25	2534.999997	0.00	6338				
3.15	25	2534.999995	-2.60	6338				
2.85 (End Point)	25	2535.000005	7.80	6338				

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#### 13. PEAK TO AVERAGE RATIO

## 13.1. Standard Applicable:

According FCC 24.232(d), FCC 27.53 (d) (5) – 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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#### 13.5.1 Tabular Results:

		Peak-to-Average Ratio						
	Channe	l 128(L)	Channel	Channel 190(M)		1 251(H)		
TEST	824.2MHz		836.6MHz		848.8MHz			
CONDITIONS	dB		dB		dB			
Tnom / Vnom	Measured	Limit	Measured	Limit	Measured	Limit		
GSM 850	9.61	13	11.53	13	9.88	13		
GPRS 850	11.08	13	10.66	13	11.80	13		
EDGE 850	10.81	13	9.23	13	11.75	13		

		Peak-to-Average Ratio						
	Channe	l 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	11.22	13	10.50	13	10.38	13		
GPRS 1900	11.09	13	10.90	13	10.93	13		
EDGE 1900	10.16	13	13.13	13	11.22	13		

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	Peak-to-Average Ratio						
	Channel	20775(L)	Channel 21100(M)		Channel 21425(H)		
TEST	2502.5MHz		2535.0MHz		2567.5MHz		
CONDITIONS	ď	В	dB		dB		
Tnom / Vnom	Measured	Limit	Measured	Limit	Measured	Limit	
BAND 7/BW:5M	6.17	13	6.28	13	6.14	13	

	Peak-to-Average Ratio					
	Channel 2	20800 (L)	Channel 21100(M)		Channel 21400 (H)	
TEST	2505.0MHz		2535.0MHz		2565.0MHz	
CONDITIONS	d	В	dB		dB	
Tnom / Vnom	Measured	Limit	Measured	Limit	Measured	Limit
BAND 7/BW:10M	6.15	13	5.26	13	5.20	13

	Peak-to-Average Ratio						
	Channel	20825(L)	Channel 21100(M)		Channel 21375(H)		
TEST	2507.5MHz		2535.5MHz		2562.5MHz		
CONDITIONS	dB		dB		dB		
Tnom / Vnom	Measured	Limit	Measured	Limit	Measured	Limit	
BAND 7/BW:15M	5.44	13	5.56	13	5.50	13	

	Peak-to-Average Ratio					
	Channel 2	20850(L)	Channel 21100(M)		Channel 2	21350(H)
TEST	2510.0MHz		2535.0MHz		2560.0MHz	
CONDITIONS	d	В	dB		dB	
Tnom / Vnom	Measured	Limit	Measured	Limit	Measured	Limit
BAND 7/BW:20M	6.12	13	6.13	13	6.15	13

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#### 13.5.2 Measurement Results:

Figure 13-1: GSM 850 Channel Low



Figure 13-2: GSM 850 Channel Mid



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Figure 13-3: GSM 850 Channel High



Figure 13-4: GSM 1900 Channel Low



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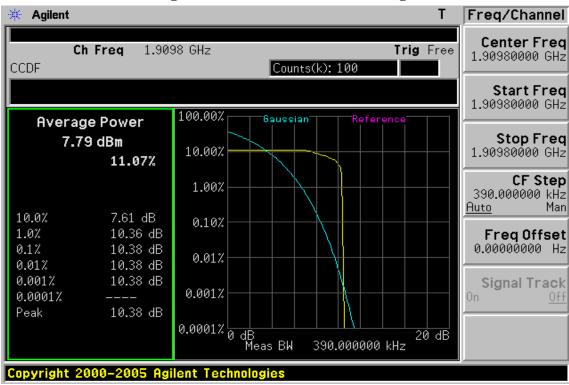
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Figure 13-5: GSM 1900 Channel Mid



Figure 13-6: GSM 1900 Channel High



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Figure 13-7: GPRS 850 Channel Low



Figure 13-8: GPRS 850 Channel Mid



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Figure 13-9: GPRS 850 Channel High



Figure 13-10: GPRS 1900 Channel Low



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Figure 13-11 GPRS 1900 Channel Mid



Figure 13-12: GPRS 1900 Channel High



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Figure 13-13: EDGE 850 Channel Low



Figure 13-14 EDGE 850 Channel Mid



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Figure 13-15: EDGE 850 Channel High



Figure 13-16: EDGE 1900 Channel Low



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Figure 13-17 EDGE 1900 Channel Mid



Figure 13-18: EDGE 1900 Channel High



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Figure 13-19: 5MHz BW LTE-Band 7(16QAM Number: 25 Offset: 0) Channel Low



Figure 13-20: 5MHz BW LTE-Band 7(16QAM Number: 25 Offset: 0) Channel Mid



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Figure 13-21: 5MHz BW LTE-Band 7(16QAM Number: 25 Offset: 0) Channel High

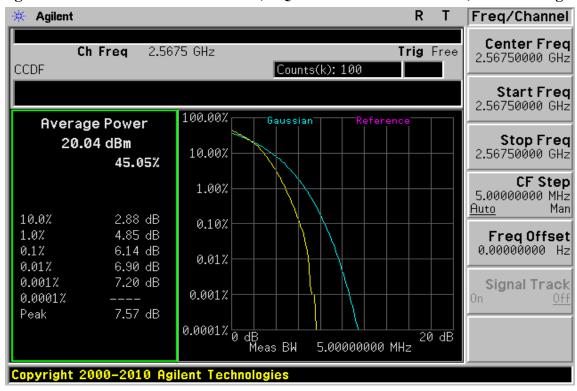
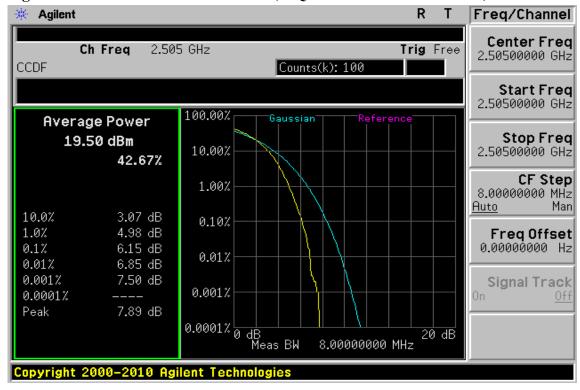


Figure 13-22: 10MHz BW LTE-Band 7(16QAM Number: 50 Offset: 0) Channel Low



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Figure 13-23: 10MHz BW LTE-Band 7(16QAM Number: 50 Offset: 0) Channel Mid

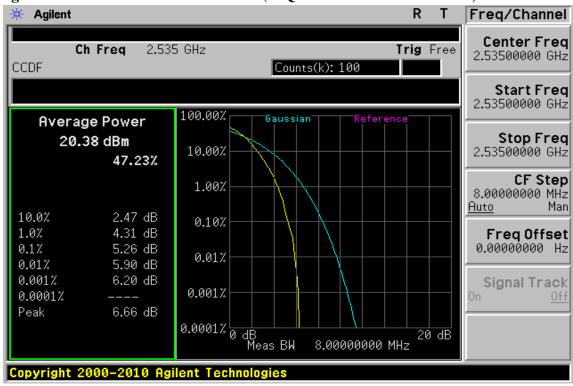
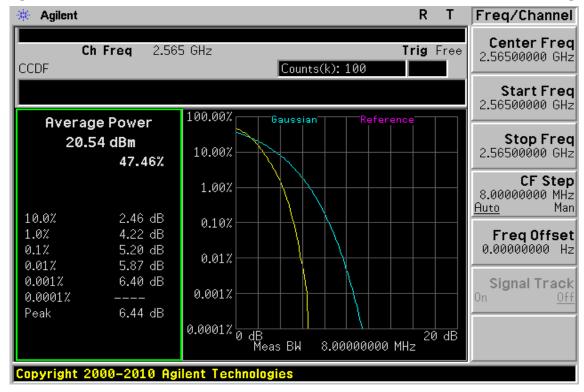


Figure 13-24: 10MHz BW LTE-Band 7(16QAM Number: 50 Offset: 0) Channel High



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Figure 13-25: 15MHz BW LTE-Band 7(16QAM Number: 75 Offset: 0) Channel Low



Figure 13-26: 15MHz BW LTE-Band 7(16QAM Number: 75 Offset: 0) Channel Mid



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Figure 13-27: 15MHz BW LTE-Band 7(16QAM Number: 75 Offset: 0) Channel High

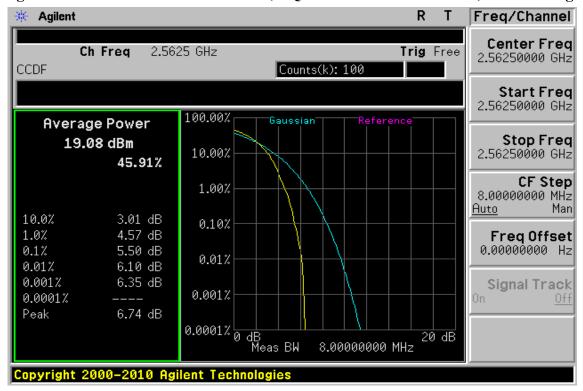
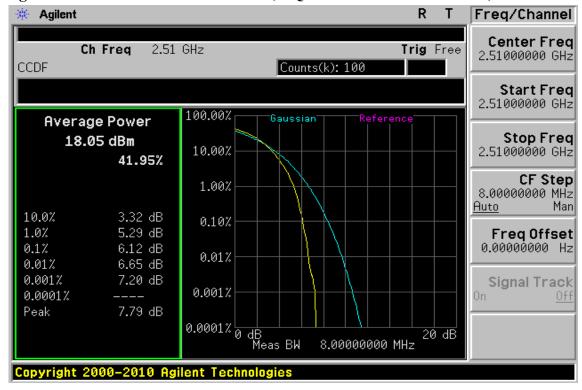


Figure 13-28: 20MHz BW LTE-Band 7(16QAM Number: 100 Offset: 0) Channel Low



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Figure 13-29: 20MHz BW LTE-Band 7(16QAM Number: 100 Offset: 0) Channel Mid



Figure 13-30: 20MHz BW LTE-Band 7(16QAM Number: 100 Offset: 0) Channel High



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# **APPENDIX 1**

# MEASUREMENT PLOT OF RADIATED SPURIOUS **EMISSION**

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Radiated Spurious Emission Measurement Result: GSM 850 Mode

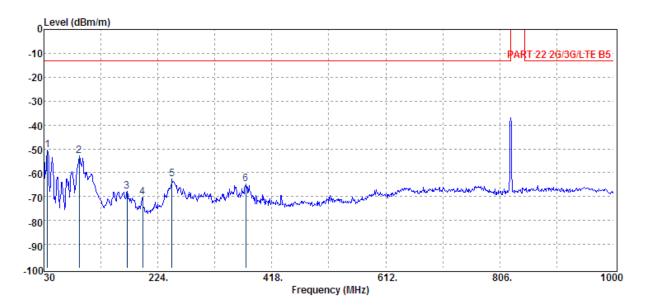
**Operation Band** :GSM 850 Test Date :2014-03-01

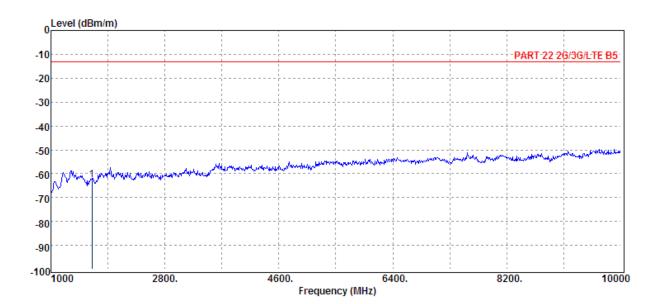
**ARFCN** :CH 128 Temp./Humi. :19.6 deg C / 65 RH

Fundamental Frequency :824.2 MHz Engineer :Allen

Operation Mode :TX LOW

EUT Pol. :H Plan Measurement Antenna Pol. :VERTICAL





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**FCC ID: PY7PM-0730** 

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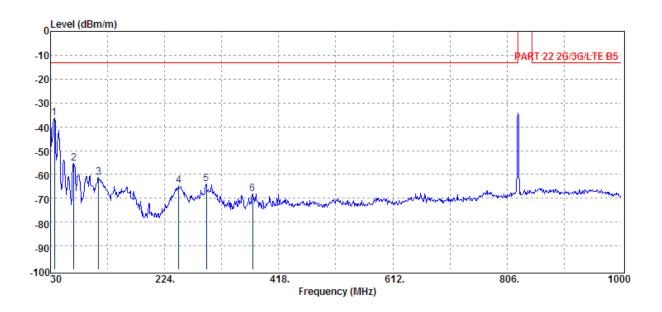
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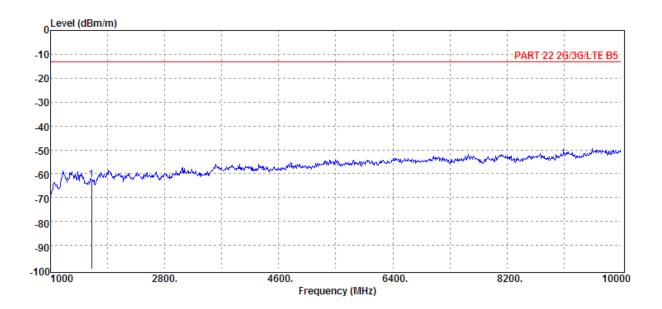
**ARFCN** Temp./Humi. :19.6 deg C / 65 RH :CH 128

Fundamental Frequency: 824.2 MHz Engineer :Allen

:TX LOW

EUT Pol. :H Plan Measurement Antenna Pol. :HORIZONTAL





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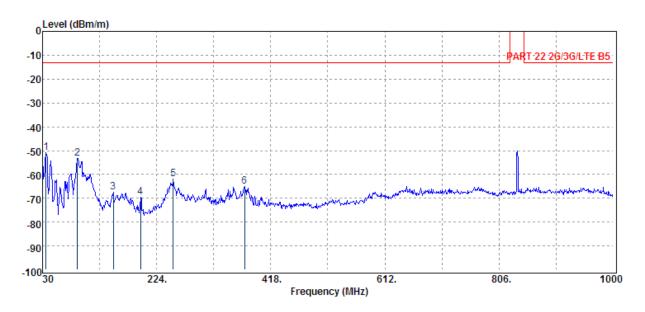
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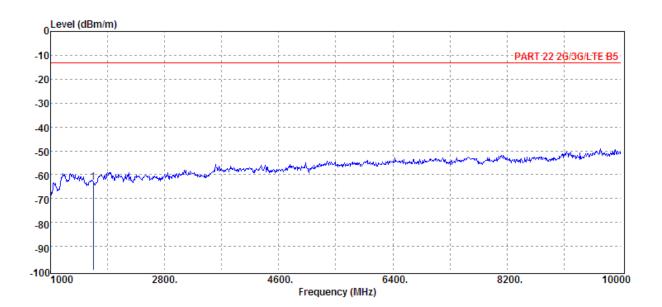
:19.6 deg\_C / 65 RH **ARFCN** :CH 190 Temp./Humi.

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

:TX MID

EUT Pol. :H Plan Measurement Antenna Pol. :VERTICAL





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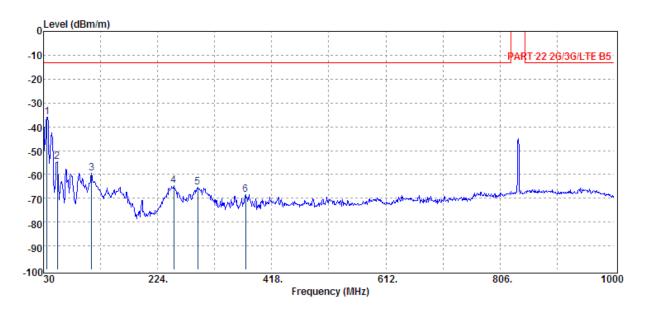
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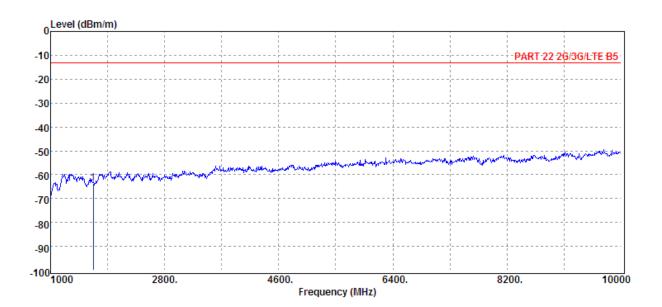
:19.6 deg\_C / 65 RH **ARFCN** :CH 190 Temp./Humi.

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

:TX MID

EUT Pol. :H Plan Measurement Antenna Pol. :HORIZONTAL





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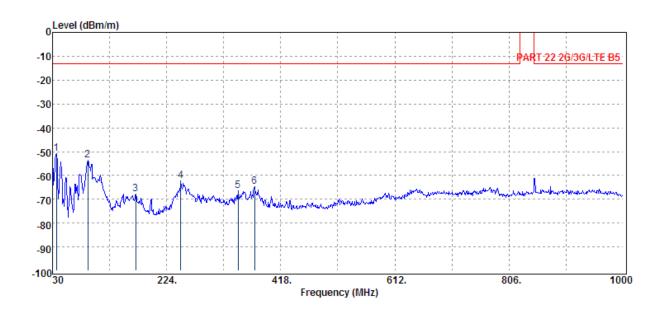
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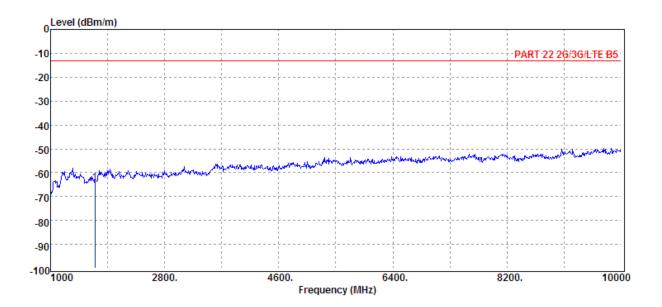
:19.6 deg\_C / 65 RH **ARFCN** Temp./Humi. :CH 251

**Fundamental Frequency** :848.8 MHz Engineer :Allen

:TX HIGH

EUT Pol. :H Plan Measurement Antenna Pol. :VERTICAL





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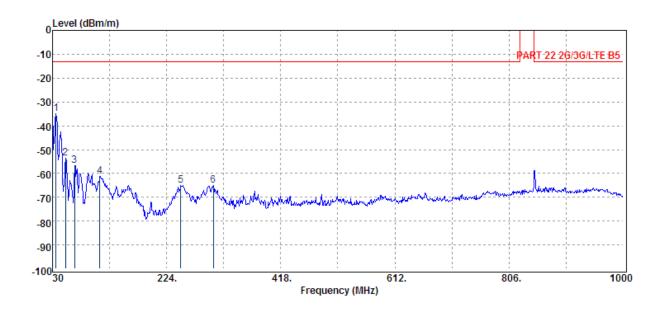
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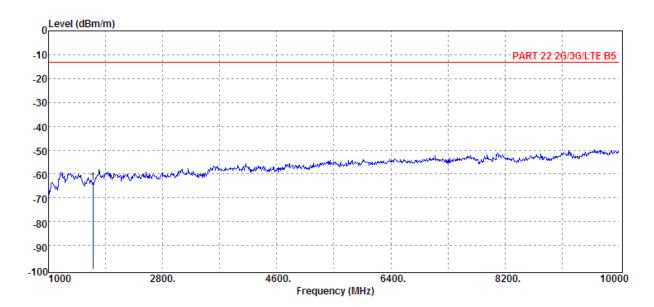
Operation Band :GSM 850 **Test Date** :2014-03-01

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

Fundamental Frequency :848.8 MHz Engineer :Allen

Operation Mode :TX HIGH EUT Pol. :H Plan Measurement Antenna Pol. :HORIZONTAL





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

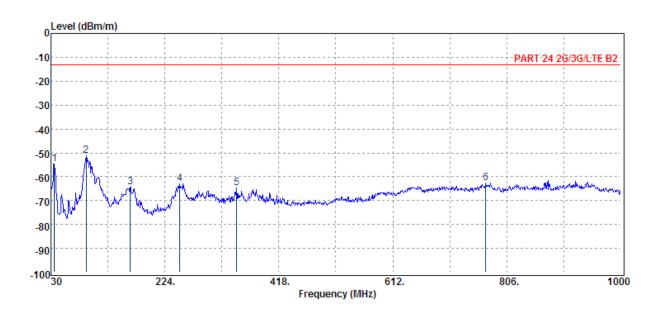
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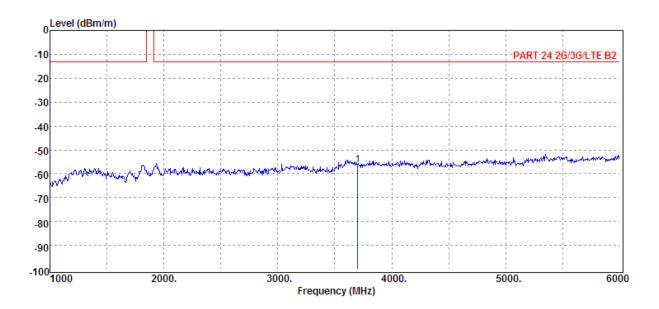
:18.6 deg\_C / 67 RH **ARFCN** :CH 512 Temp./Humi.

Fundamental Frequency :1850.2 MHz Engineer :Allen

Operation Mode :TX LOW

EUT Pol. :E1 Plan :VERTICAL Measurement Antenna Pol.





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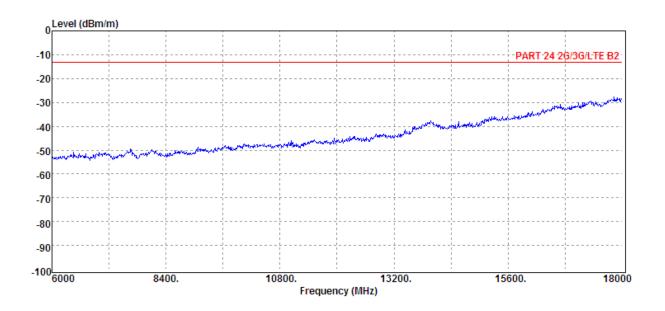
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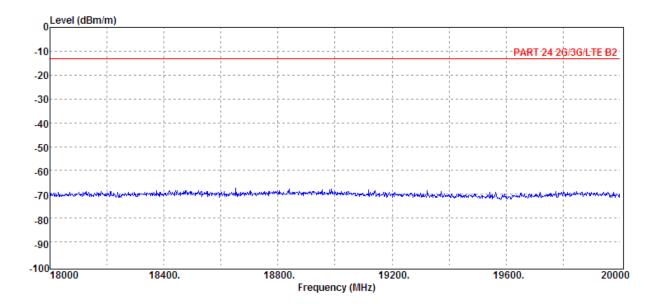
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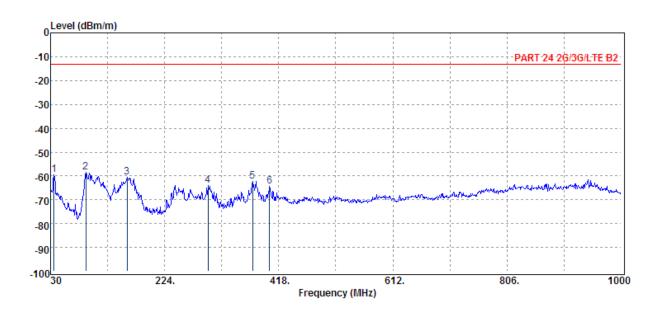
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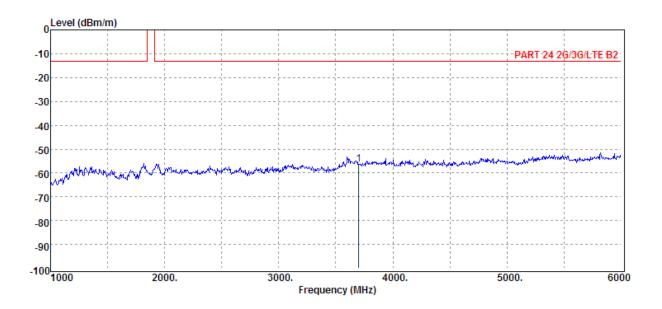
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**ARFCN** :CH 512 Temp./Humi. :18.6 deg C / 67 RH

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

EUT Pol. :E1 Plan Measurement Antenna Pol. :HORIZONTAL



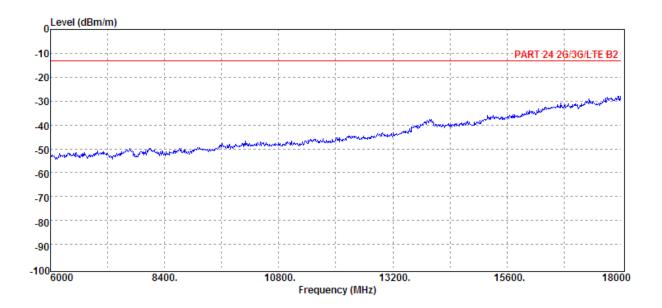


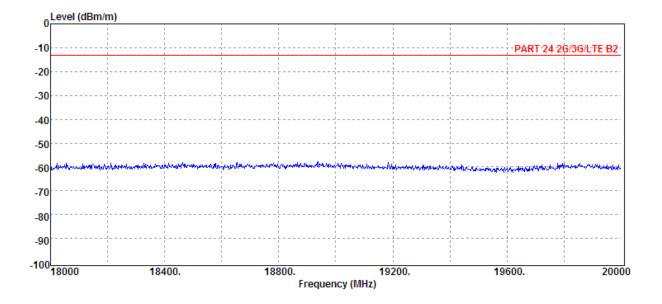
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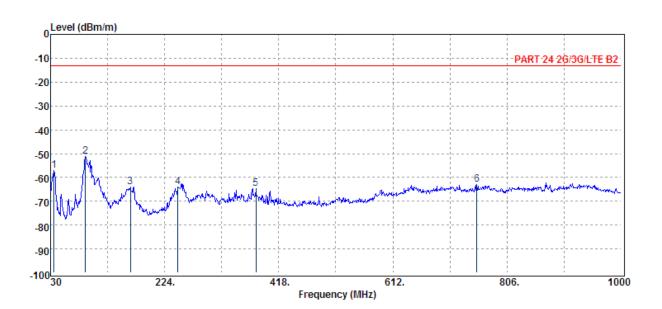
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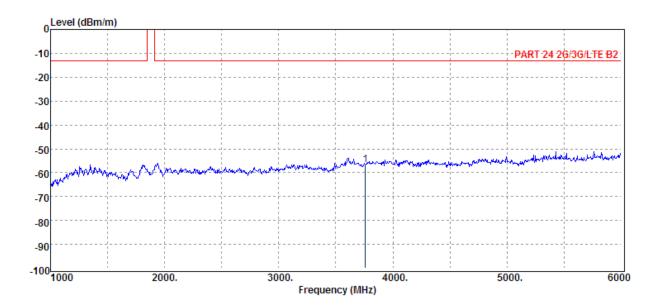
Operation Band :GSM 1900 **Test Date** :2014-03-01

:18.6 deg\_C / 67 RH **ARFCN** Temp./Humi. :CH 661

Fundamental Frequency :1880 MHz Engineer :Allen

Operation Mode :TX MID EUT Pol. :E1 Plan :VERTICAL Measurement Antenna Pol.



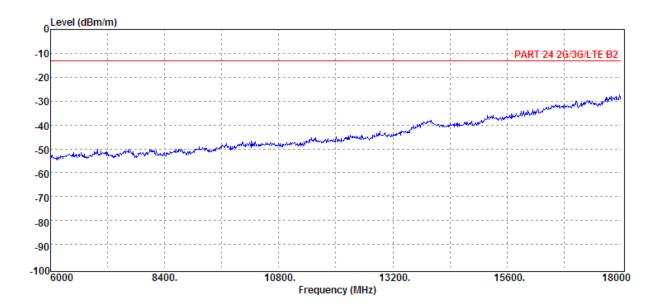


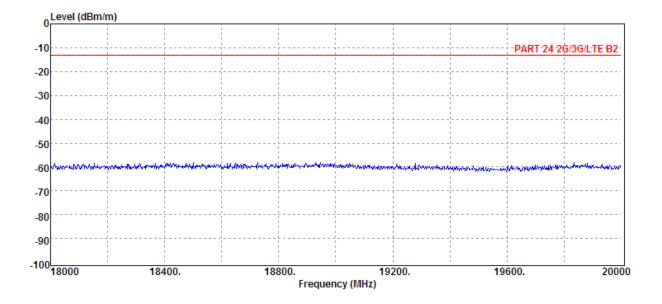
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**FCC ID: PY7PM-0730** 

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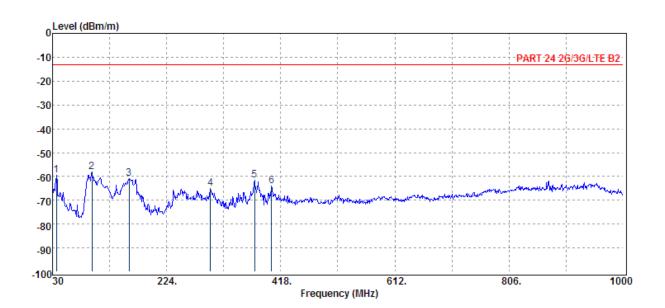
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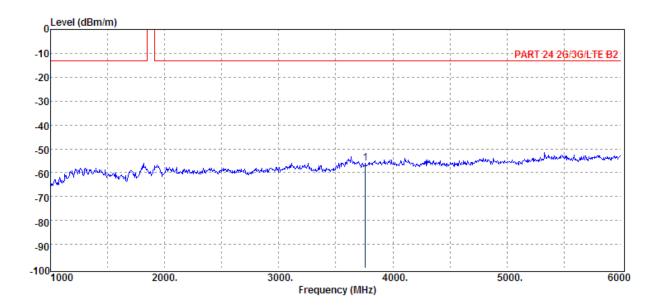
:18.6 deg\_C / 67 RH **ARFCN** Temp./Humi. :CH 661

**Fundamental Frequency** :1880 MHz Engineer :Allen

:TX MID

EUT Pol. :E1 Plan :HORIZONTAL Measurement Antenna Pol.



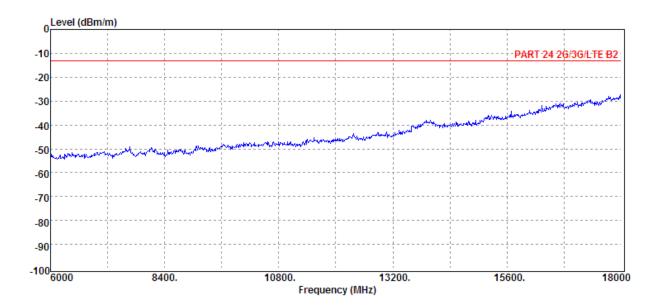


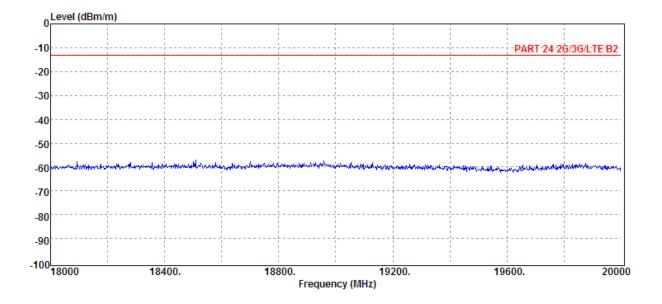
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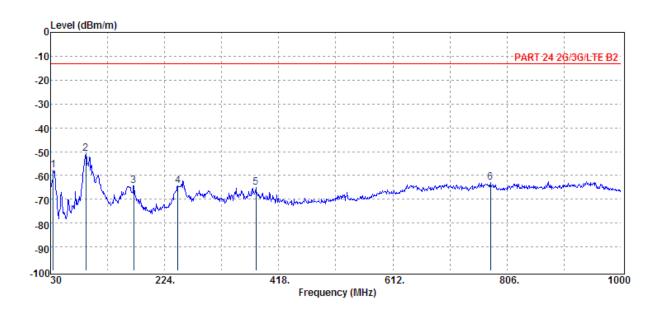
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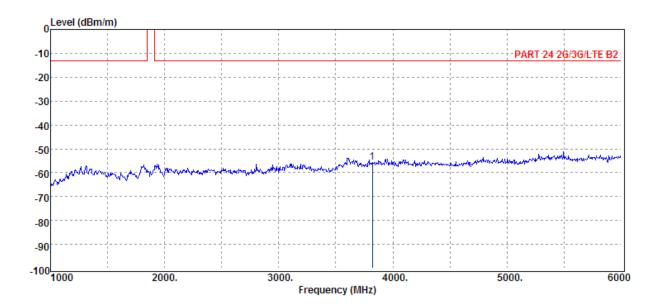
Operation Band :GSM 1900 **Test Date** :2014-03-01

:18.6 deg\_C / 67 RH **ARFCN** Temp./Humi. :CH 810

Fundamental Frequency :1909.8 MHz Engineer :Allen

Operation Mode :TX HIGH EUT Pol. :E1 Plan :VERTICAL Measurement Antenna Pol.



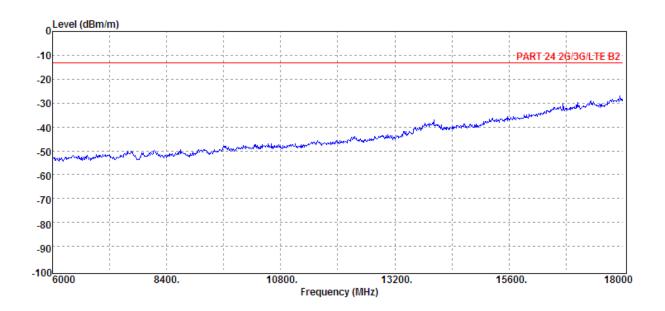


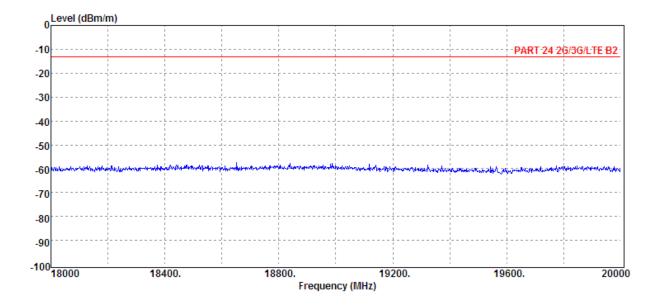
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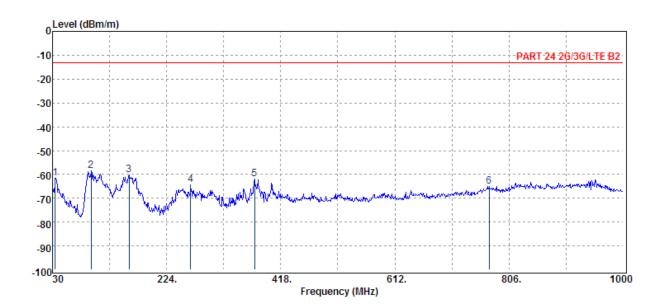
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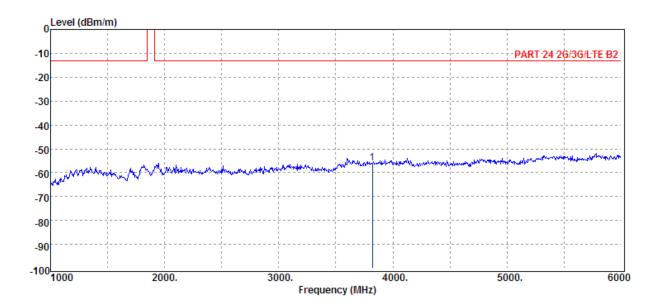
Operation Band :GSM 1900 **Test Date** :2014-03-01

:18.6 deg\_C / 67 RH **ARFCN** Temp./Humi. :CH 810

Fundamental Frequency :1909.8 MHz Engineer :Allen Operation Mode :TX HIGH

EUT Pol. :E1 Plan Measurement Antenna Pol. :HORIZONTAL



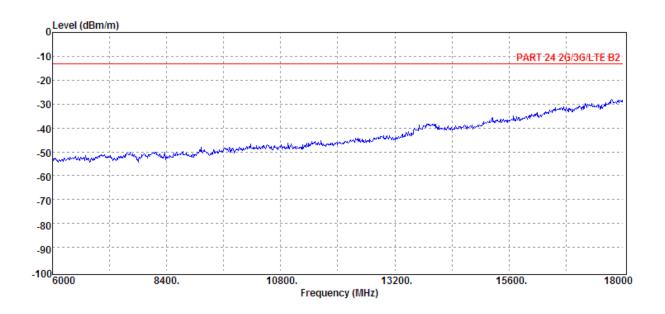


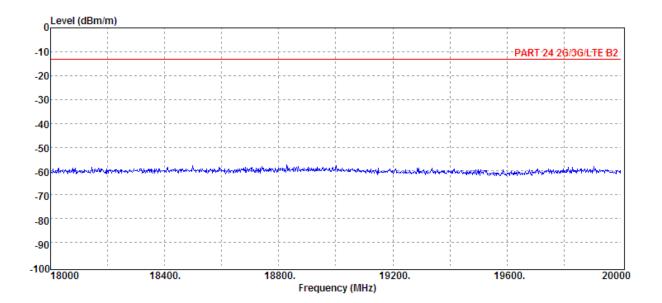
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## Radiated Spurious Emission Measurement Result: 5MHz BW LTE-Band 7(The Worst Case)

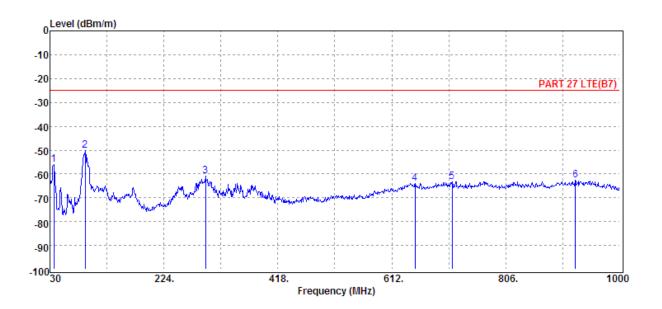
Operation Band :LTE B7 Test Date :2014-03-01

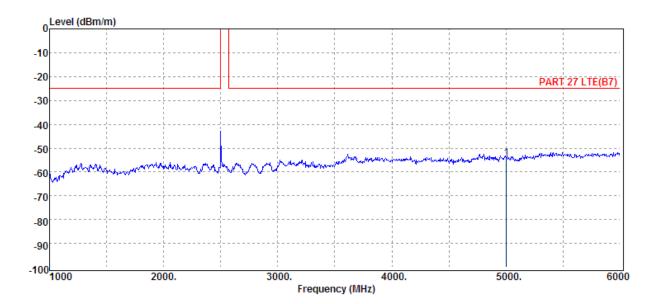
:CH 20775 16QAM BW 5 Temp./Humi. :18.6 deg C / 67 RH **ARFCN RB 1 0** 

Fundamental Frequency :2502.5 MHz Engineer :Allen

Operation Mode :TX LOW

EUT Pol. :H Plan Measurement Antenna Pol. :VERTICAL





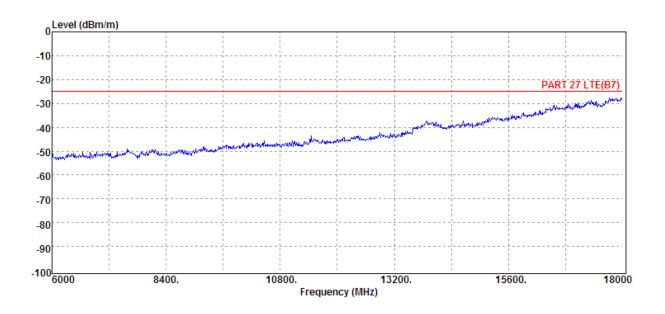
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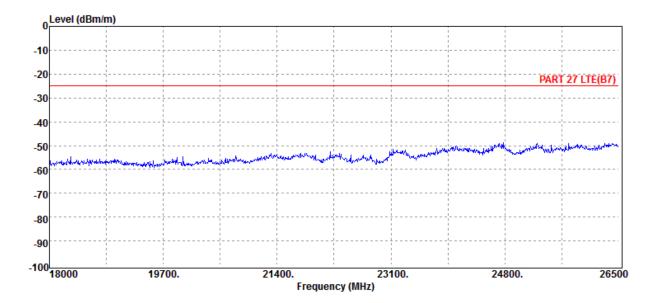
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EUT Pol.

-100

## **FCC ID: PY7PM-0730**

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:HORIZONTAL

1000

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Operation Band :LTE B7 **Test Date** :2014-03-01

:CH 20775 16QAM BW 5 Temp./Humi. **ARFCN** :18.6 deg C / 67 RH **RB10** 

Measurement Antenna Pol.

Engineer Fundamental Frequency :2502.5 MHz :Allen

Operation Mode :TX LOW

418.

:H Plan

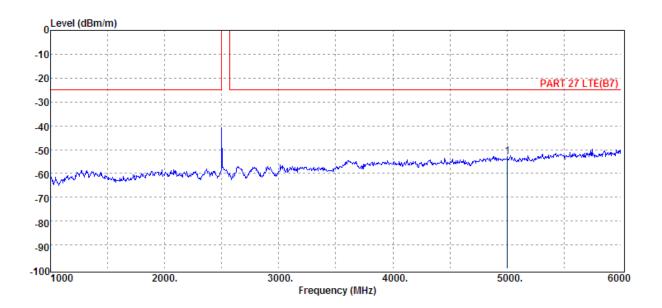
224.

Level (dBm/m) -20 -30 -40 -60 -70 -80 -90

Frequency (MHz)

612.

806.



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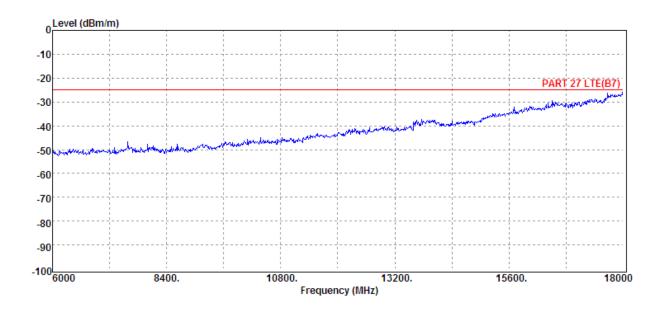
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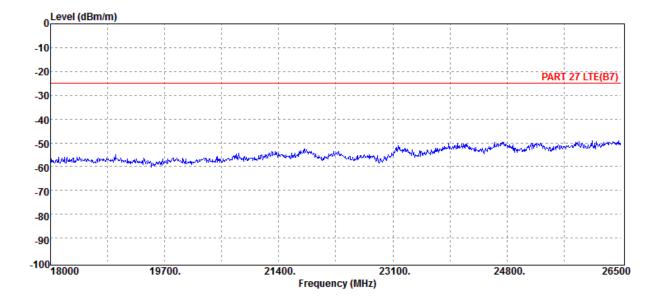
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EUT Pol.

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:VERTICAL

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Operation Band :LTE **B7** Test Date :2014-03-01

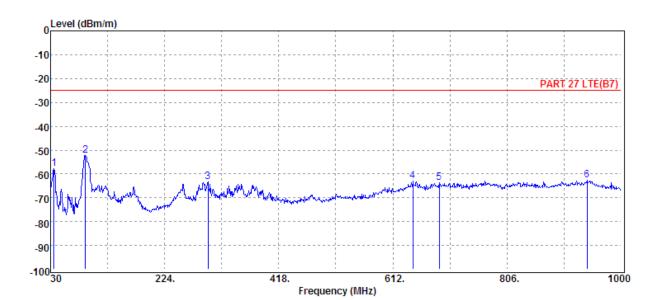
:CH 21100 16QAM BW 5 Temp./Humi. **ARFCN** :18.6 deg C / 67 RH RB 10

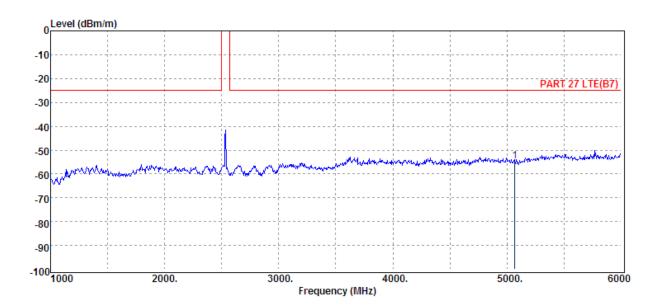
Measurement Antenna Pol.

Fundamental Frequency :2535.0 MHz Engineer :Allen

Operation Mode :TX MID

:H Plan





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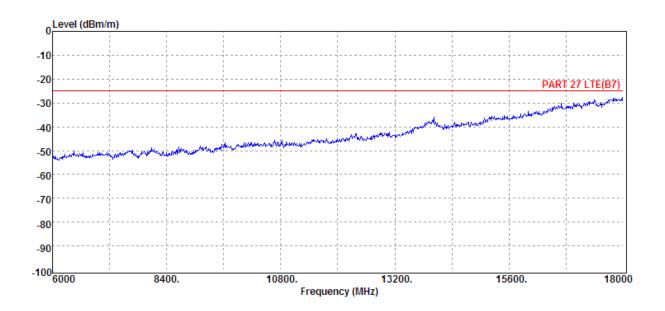
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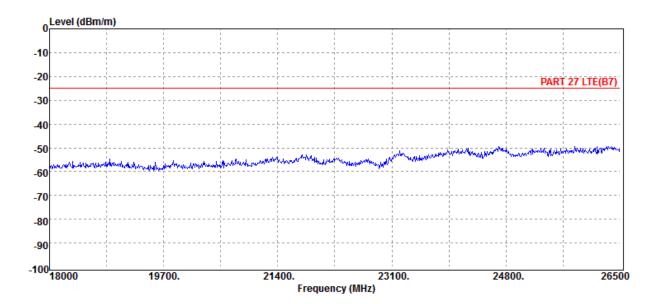
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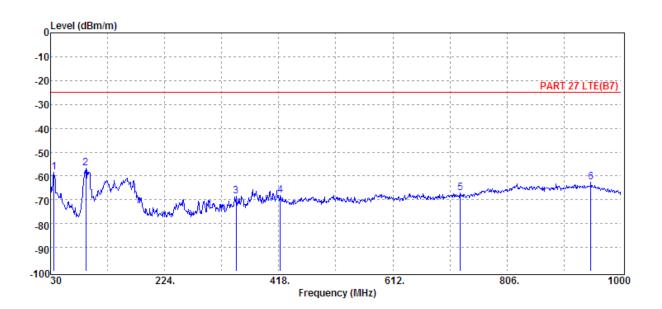
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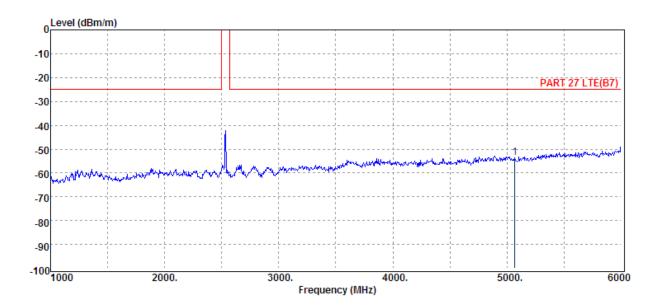
Operation Band :LTE B7 Test Date :2014-03-01

:CH 21100 16QAM BW 5 Temp./Humi. **ARFCN** :18.6 deg C / 67 RH RB 10

Fundamental Frequency :2535.0 MHz Engineer :Allen

Operation Mode :TX MID EUT Pol. :H Plan Measurement Antenna Pol. :HORIZONTAL





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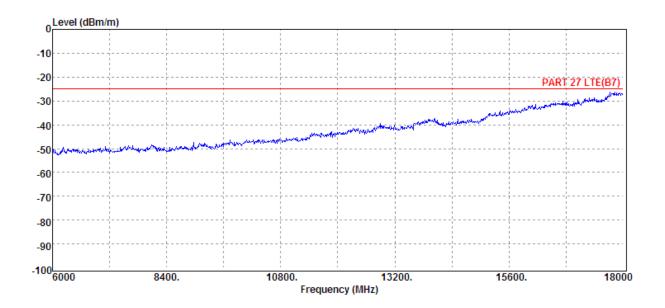
f (886-2) 2298-0488

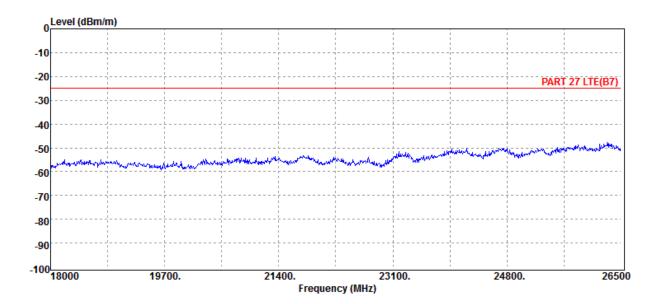
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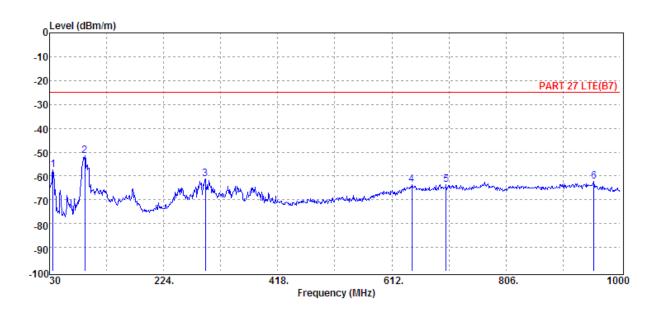
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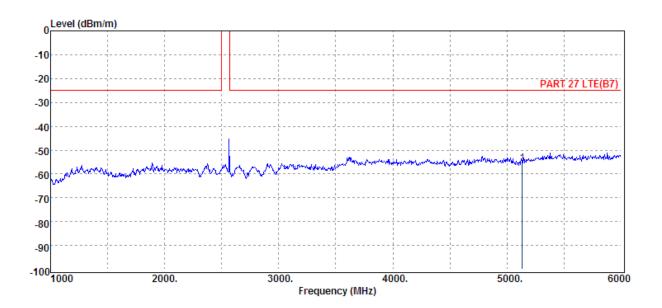
:CH 21425 16QAM BW 5 Temp./Humi. **ARFCN** :18.6 deg C / 67 RH RB 10

Fundamental Frequency :2567.5 MHz Engineer :Allen

Operation Mode :TX HIGH

EUT Pol. :H Plan Measurement Antenna Pol. :VERTICAL





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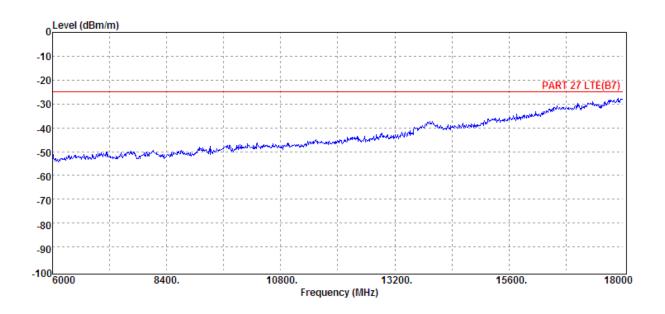
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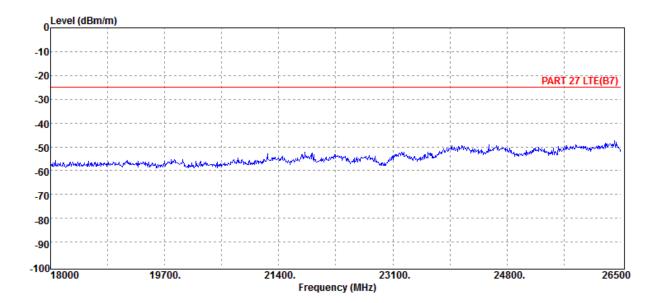
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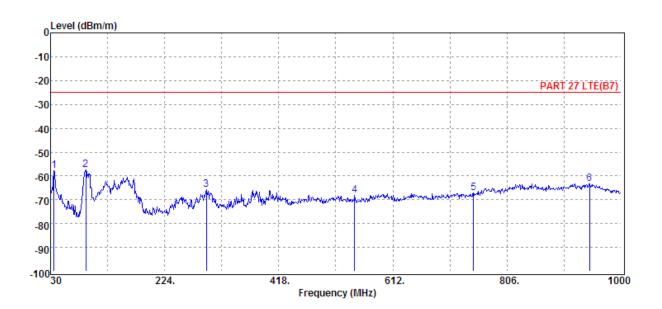
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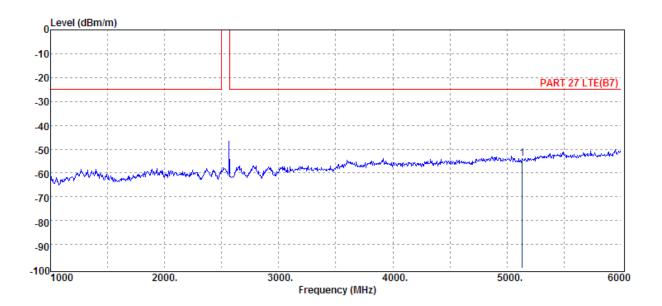
Operation Band :LTE B7 Test Date :2014-03-01

:CH 21425 16QAM BW 5 Temp./Humi. **ARFCN** :18.6 deg C / 67 RH RB 10

Fundamental Frequency :2567.5 MHz Engineer :Allen

Operation Mode :TX HIGH EUT Pol. :H Plan Measurement Antenna Pol. :HORIZONTAL





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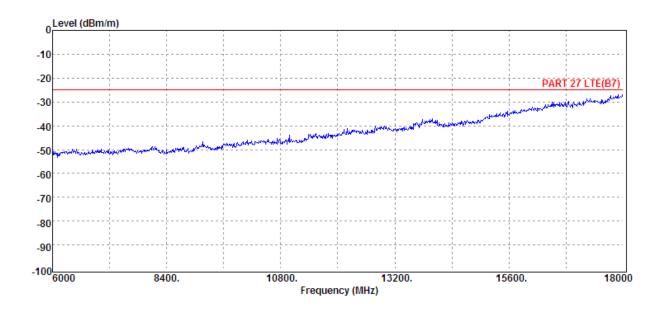
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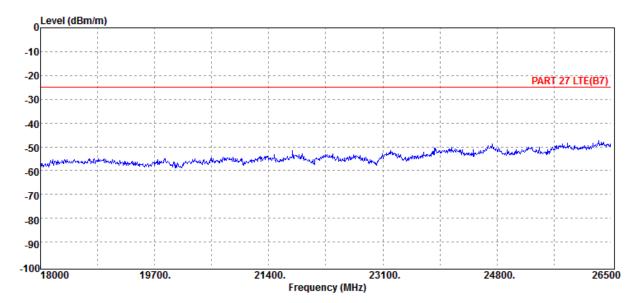
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~ End of Report ~