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ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

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

0F

Product Name: Mobile Phone

Brand Name: FUJITSU

Model No.: F-01J

Model Difference: N/A

FCC ID: VQK-F01J

Report No.: ER/2016/80157

Issue Date: Sep. 27, 2016

FCC Rule Part: 2,22H & 24E

Fujitsu Limited

Prepared for: 1-1, Kamikodanaka 4-chome, Nakahara-ku,

Kawasaki 211-8588, Japan

SGS Taiwan Ltd.

Electronics & Communication Laboratory

No.134, Wu Kung Road, New Taipei Industrial Prepared by:

Park, Wuku District, New Taipei City, Taiwan

24803

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VERIFICATION OF COMPLIANCE

Fujitsu Limited **Applicant:**

1-1, Kamikodanaka 4-chome, Nakahara-ku, Kawasaki 211-8588,

Japan

Mobile Phone **Product Name:**

FUJITSU Brand Name:

F-01J Model No.:

N/A **Model Difference:**

VQK-F01J FCC ID:

File Number: ER/2016/80157

Aug. 17, 2016 ~ Sep. 19, 2016 Date of test:

Date of EUT Received: Aug. 17, 2016

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-D-2010 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits.

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

Test By:	louis Chen	Date:	Sep. 27, 2016
Prepared By:	Louis Chen/Engineer Vto letta Tang	Date:	Sep. 27, 2016
Approved By:	Violetta Tang / Clerk Jim Chang / Asst. Manager	Date:	Sep. 27, 2016

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Revision History

Report Number	Revision	Description	Issue Date
ER/2016/80157	Rev.00	Initial creation of document	Sep. 27, 2016

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1. GENERAL PRODUCT INFORMATION

1.1. Product Description

General:

Ochiciai.			
Product Name:	Mobile Phone		
Brand Name:	FUJITSU		
Model No.:	F-01J		
Model Difference:	N/A		
Hardware Version:	V2.1.0		
Software Version:	R015.1e		
	3.8Vdc from Rechargeable Li-polymer Battery or 5V from AC/DC Adapter		
Power Supply:	Battery: Model No.: CA54310-0069-A1, Supplier: FUJITSU CONNECTED TECHNOLOGIES LIMITED		
	Adapter: Model No.: FMV-AC346, Supplier: FUJITSU LIMITED		

GSM / WCDMA / LTE:

	Operating Frequency		
	GSM/GPRS 850	824.2 MHz- 848.8 MHz	32.5dBm
	GSM/GPRS 1900	1850.2MHz – 1909.8MHz	29.5dBm
Cellular Phone Standards Frequency Range and Power	WCDMA/HSUPA/HSDPA /HSPA+ Band V	826.4MHz - 846.6MHz	23dBm
	LTE-Band 5 (Bandwidth 1.4MHz)	824.7MHz – 848.3MHz	22.5dBm
	LTE-Band 5 (Bandwidth 3MHz)	825.5MHz – 847.5MHz	22.5dBm
	LTE-Band 5 (Bandwidth 5MHz)	826.5MHz – 846.5MHz	22.5dBm
	LTE-Band 5 (Bandwidth 10MHz)	829.0MHz – 844.0MHz	22.5dBm
IMEI	352058080006010		

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Type of Emission:

Frequency Band	Type of Emission:
GSM 850	249KGXW
GPRS 850	246KGXW
GSM 1900	251KGXW
GPRS 1900	245KGXW
WCDMA Band V	4M11F9W
HSDPA Band V	4M13F9W
HSUPA Band V	4M12F9W

LTE Band	BW (MHz)	Modulation	Type of Emission
LTE Band 5	1.4MHz	QPSK	1M10G7D
LTE Band 5	1.4MHz	16QAM	1M10D7W
LTE Band 5	3MHz	QPSK	2M71G7D
LTE Band 5	3MHz	16QAM	2M71D7W
LTE Band 5	5MHz	QPSK	4M49G7D
LTE Band 5	5MHz	16QAM	4M50D7W
LTE Band 5	10MHz	QPSK	8M98G7D
LTE Band 5	10MHz	16QAM	8M96D7W

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Max ERP/EIRP Power Measurement Result:

	dBm		W
GSM 850	27.69	ERP	0.587
GPRS 850	28.04	ERP	0.637
GSM 1900	21.24	EIRP	0.133
GPRS 1900	20.86	EIRP	0.122
WCDMA Band V	25.71	ERP	0.372
HSDPA Band V	25.50	ERP	0.355
HSUPA Band V	24.70	ERP	0.295

	dBm		W
LTE-Band 5 (Bandwidth 1.4MHz) QPSK	25.36	ERP	0.344
LTE-Band 5 (Bandwidth 1.4MHz) 16QAM	25.34	ERP	0.342
LTE-Band 5 (Bandwidth 3MHz) QPSK	25.81	ERP	0.381
LTE-Band 5 (Bandwidth 3MHz) 16QAM	25.79	ERP	0.379
LTE-Band 5 (Bandwidth 5MHz) QPSK	26.78	ERP	0.476
LTE-Band 5 (Bandwidth 5MHz) 16QAM	26.78	ERP	0.476
LTE-Band 5 (Bandwidth 10MHz) QPSK	25.77	ERP	0.378
LTE-Band 5 (Bandwidth 10MHz) 16QAM	25.76	ERP	0.377

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1.2. Product Feature of Equipment Under Test

The equipment under Test (Hereafter Called: EUT) is Mobile Phone, supporting GSM / WCDMA / LTE, Wi-Fi 802.11a/b/g/n/ac, Bluetooth, NFC and ANT+ features, and below is details of information.

iomation.	Product Feature			
Product Name:	Mobile Phone			
Brand Name:	FUJITSU			
Model No.:	F-01J			
Model Difference:	N/A			
FCC ID:	VQK-F01J			
GSM Operating Band(s)	GSM 850/1900MHz			
GPRS / EGPRS Multi Slot Class	GPRS Class 11			
WCDMA Operating Band(s)	FDD Band V			
WCDMA Rel. Version	Rel.9			
LTE Operating Band(s)	FCC Band 5: Part 22			
LTE Rel. Version	Rel.10			
Bluetooth Version	V4.2 dual mode			
Wi-Fi- Specification	802.11a/b/g/n/ac			
NFC Specification	NFC			
ANT+ Specification	ANT+			

Note: The above EUT information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

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1.3. Test Methodology of Applied Standards

FCC 47 CFR Part 2, 22, 24

ANSI / TIA / EIA 603-D-2010

KDB971168 D01 Power Meas license Digital System

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

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

Note:

- All test items have been performed and record as per the above standards.
- 2. The composite system is compliance with FCC Subpart B is authorized under the certification procedure.

1.4. Test Facility

SGS Taiwan Ltd. Electronics & Communication Laboratory No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan. (TAF code 0513)

FCC Registration Numbers are: 509634

Canada Registration Number: 4620A-5.

1.5. Special Accessories

No special accessories were used during testing.

1.6. Equipment Modifications

There were no modifications incorporated into the EUT.

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2. SYSTEM TEST CONFIGURATION

2.1. EUT Configuration

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

2.2. EUT Exercise

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

2.3. Test Procedure

2.3.1 Conducted Measurement at Antenna Port

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

2.3.2 Radiated Emissions (ERP/EIRP)

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

2.4. Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuation factor between EUT conducted port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly EUT RF output level.

Note:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Following shows an offset computation example with cable loss 0.4 dB for low band and 0.7 dB for high band with 10 dB attenuator and 3.2 splitter

Low Band: Offset = RF cable loss (dB)+ attenuation factor(dB) =0.4+10+3.2=13.6(dB)

High Band: Offset = RF cable loss (dB)+ attenuation factor(dB) =0.7+10+3.2=13.9(dB)

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2.5. Final Amplifier Voltage and Current Information:

Test Mode	DC voltage (V)	DC current (mA)
GSM 850	3.80 Vdc	651
GSM 1900	3.80 Vdc	514
GPRS 850	3.80 Vdc	654
GPRS 1900	3.80 Vdc	535
WCDMA B5	3.80 Vdc	567
HSUPA B5	3.80 Vdc	554
HSDPA B5	3.80 Vdc	541

Test Mode	DC voltage (V)	DC current (mA)
LTE Band 5_1.4M QPSK	3.80 Vdc	656
LTE Band 5_1.4M 16QAM	3.80 Vdc	565
LTE Band 5_3M QPSK	3.80 Vdc	653
LTE Band 5_3M 16QAM	3.80 Vdc	612
LTE Band 5_5M QPSK	3.80 Vdc	678
LTE Band 5_5M 16QAM	3.80 Vdc	612
LTE Band 5_10M QPSK	3.80 Vdc	542
LTE Band 5_10M 16QAM	3.80 Vdc	532

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2.6. Configuration of Tested System

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

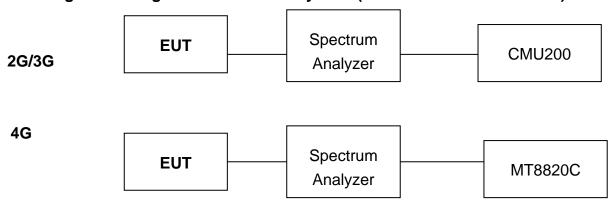


Fig. 2-2 Configuration of Tested System (Fixed Channel-Radiated)

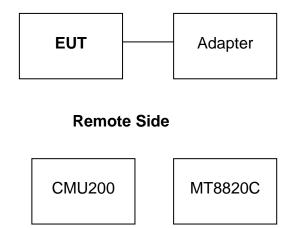


Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/ Type No.	Series No.	Data Cable	Power Cord
1.	Universal Radio Communication Tester	R&S	CMU200	102189	shielded	Un-shielded
2.	Universal Radio Communication Tester	Anritsu	MT8820C	6200307563	shielded	Un-shielded

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3. SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§2.1046(a)	RF Power Output	Compliant
§2.1046(a) §22.913(a)(2) §24.232(c)	ERP/ EIRP measurement	Compliant
§2.1049(h)	99% & 26dB Occuupied Bandwidth	Compliant
§2.1051 §22.917(a) §24.238(a)	Out of Band Emissions at Antenna Terminals and Band Edge	Compliant
§2.1053 §22.917(a) §24.238(a)	Field Strength of Spurious Radiation	Compliant
§24.232(d)	Peak to Average Ratio	Compliant
§2.1055(a)(1) §22.355 §24.235	Frequency Stability	Compliant

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4. DESCRIPTION OF TEST MODES

4.1. The Worst Test Modes and Channel Details

- 1. The EUT has been tested under operating condition.
- 2. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, X(E1)Y(E2)Z(H) axis and antenna ports. The worst case was found as listed below. Following channel(s) was (were) selected for the final test as listed below:

BAND	ERP/EIRP	RADIATED EMISSION
GSM/GPRS 850	H-plan	H-plan
GSM/GPRS 1900	E1-plan	E1-plan
WCDMA/HSPA Band V	H-plan	H-plan
LTE Band 5	H-plan	H-plan

GSM/GPRS MODE

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
ERP	128 to 251	128, 190, 251	GSM/GPRS 850
EIRP	512 to 810	512, 661, 810	GSM/GPRS 1900
FREQUENCY STABILITY	128 to 251	190	GPRS 850
	512 to 810	661	GPRS 1900
OCCUPIED BANDWIDTH	128 to 251	190	GSM/GPRS 850
	512 to 810	661	GSM/GPRS 1900
PEAK TO AVERAGE RATIO	128 to 251	128, 190, 251	GSM/GPRS 850
	512 to 810	512, 661, 810	GSM/GPRS 1900
BAND EDGE	128 to 251	128, 251	GSM/GPRS 850
	512 to 810	512, 810	GSM/GPRS 1900
CONDCUDETED EMISSION	128 to 251	128, 190, 251	GSM/GPRS 850
	512 to 810	512, 661, 810	GSM/GPRS 1900
RADIATED EMISSION	128 to 251	128, 190, 251	GPRS 850
	512 to 810	512, 661, 810	GSM 1900

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WCDMA/HSPA MODE

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
ERP	9262 to 9538	9262, 9400, 9583	WCDMA/HSPA Band V
FREQUENCY STABILITY	9262 to 9538	9400	WCDMA Band V
OCCUPIED BANDWIDTH	9262 to 9538	9400	WCDMA/HSPA Band V
PEAK TO AVERAGE RATIO	9262 to 9538	9262, 9400, 9583	WCDMA/HSPA Band V
BAND EDGE	9262 to 9538	9262, 9400, 9583	WCDMA Band V
CONDCUDETED EMISSION	9262 to 9538	9262, 9400, 9583	WCDMA Band V
RADIATED EMISSION	9262 to 9538	9262, 9400, 9583	WCDMA Band V

LTE Band 5 MODE

TEST ITEM	AVAILABLE		CHANNEL MODULATION		MODE
	CHANNEL	CHANNEL	BANDMIDIH		
		20470, 20525, 20643		QPSK, 16QAM	1 RB/ 0,5 RB Offset
ERP		20415, 20525, 20635		QPSK, 16QAM	1 RB/ 0,14 RB Offset
LIXI		20425, 20525, 20625		QPSK, 16QAM	1 RB/ 0,24 RB Offset
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK, 16QAM	1 RB/ 0,49 RB Offset
FREQUENCY STABILITY	20450 to 20600	20525	10MHz	QPSK,	Full RB
	20470 to 20643	20470, 20525, 20643	1.4MHz	QPSK, 16QAM	Full RB
OCCUPIED	20415 to 20635	20415, 20525, 20635	3MHz	QPSK, 16QAM	Full RB
BANDWIDTH	20425 to 20625	20425, 20525, 20625	5MHz	QPSK, 16QAM	Full RB
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK, 16QAM	Full RB
	20470 to 20643	20470, 20525, 20643	1.4MHz	16QAM	Full RB
PEAK TO AV-	20415 to 20635	20415, 20525, 20635	3MHz	16QAM	Full RB
ERAGE RATIO	20425 to 20625	20425, 20525, 20625	5MHz	16QAM	Full RB
	20450 to 20600	20450, 20525, 20600	10MHz	16QAM	Full RB
	20470 to 20643	20470, 20643	1.4MHz	QPSK,	1 RB/ 0,5 RB Offset Full RB
	20415 to 20635	20415, 20635	3MHz	QPSK,	1 RB/ 0,14 RB Offset Full RB
BAND EDGE	20425 to 20625	20425, 20625	5MHz	QPSK,	1 RB/ 0,24 RB Offset Full RB
	20450 to 20600	20450, 20600	10MHz	QPSK,	1 RB/ 0,49 RB Offset Full RB
		20470, 20525, 20643	1.4MHz	QPSK,	1 RB, 0 RB Offset
CONDCUDETED	20415 to 20635	20415, 20525, 20635	3MHz	QPSK,	1 RB, 0 RB Offset
EMISSION	20425 to 20625	20425, 20525, 20625	5MHz	QPSK,	1 RB, 0 RB Offset
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK,	1 RB, 0 RB Offset
RADIATED EMISSION	20425 to 20625	20425, 20525, 20625	5MHz	QPSK,	1 RB, 24 RB Offset

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5. MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
RF Power Output	+/- 1.10 dB
ERP/ EIRP measurement	Vertical Polarization = +/- 4.74dB Horizontal Polarization =+/- 4.62dB
99% Occupied Bandwidth	+/- 5.19 Hz
Out of Band Emissions at Antenna	+/- 0.70 dB
Terminals and Band Edge	
Peak to Average Ratio	+/- 0.70 dB
Frequency Stability vs. Temperature	+/- 5.19 Hz
Frequency Stability vs. Voltage	+/- 5.19 Hz
Temperature	+/- 0.65 °C
Humidity	+/- 4.6 %
DC / AC Power Source	DC= +/- 0.13%, AC=+/- 0.2%

Radiated Spurious Emission:

NA	9kHz – 30MHz: +/- 2.87 dB
	30MHz - 180MHz: +/- 3.37dB
Measurement uncertainty (Polarization : Vertical)	180MHz -417MHz: +/- 3.19dB
(1 Clarization : Vertical)	0.417GHz-1GHz: +/- 3.19dB
	1GHz - 18GHz: +/- 4.04dB
	18GHz - 40GHz: +/- 4.04dB

Management	9kHz – 30MHz: +/- 2.87 dB
	30MHz - 167MHz: +/- 4.22dB
Measurement uncertainty (Polarization : Horizontal)	167MHz -500MHz: +/- 3.44dB
(i cianzation : rionzontal)	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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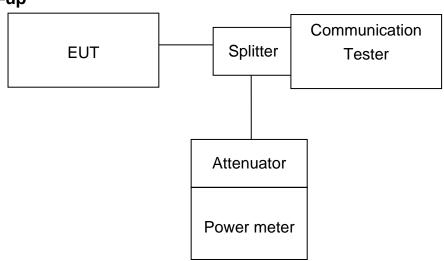
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6. RF CONDUCTED OUTPUT POWER MEASUREMENT

6.1. Standard Applicable

A base station simulator was used to establish communication with the EUT. Its parameters were set to transmit the maximum power on the EUT. The measured power in the radio frequency on the transmitter output terminals.

6.2. Test Set-up



Note: Measurement setup for testing on Antenna connector

6.3. Measurement Procedure

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

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

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6.4. Measurement Equipment Used

SGS Conducted Room						
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.	
TYPE		NUMBER	NUMBER	CAL.		
Power Meter	Anritsu	ML2495A	1005007	12/09/2015	12/08/2016	
Power Sensor	Anritsu	MA2411B	917032	12/09/2015	12/08/2016	
EXA Spectrum Analyzer	Agilent	N9030A	MY53120760	02/26/2016	02/25/2017	
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2016	01/01/2017	
Coaxial Cable	HUBER+SUHNER	SUCOFLEX 102	23670/2	01/02/2016	01/01/2017	
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2016	01/01/2017	
Splitter	Agilent	11636B	N/A	01/02/2016	01/01/2017	
DC Power Supply	Agilent	E3640A	MY52410006	11/05/2015	11/04/2016	
Temperature Chamber	TERCHY	MHG-120LF	911009	05/17/2016	05/16/2017	
Radio Communication Analyzer	R&S	CMU200	102189	02/11/2016	02/10/2017	
Radio Communication Analyzer	Anritsu	MT8820C	6200995019	09/25/2015	09/24/2016	
Radio Communication Analyzer	Anritsu	MT8820C	6201465317	12/10/2015	12/09/2016	

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6.5. Measurement Result

RF Conducted Output Power

GSM/GPRS/EDGE (GMSK: 8-PSK) Result:

EUT Mode	Frequency (MHz)	СН	Averager Burst Power (dBm)
	824.2	128	32.58
GSM 850	836.6	190	32.36
	848.8	251	32.60
	1850.2	512	30.76
GSM 1900	1880.0	661	30.89
	1909.8	810	30.85

EUT Mode	Frequency	СН	Burst Power (4DN 1UP) Class 8	Burst Power (4DN 2UP) Class 10	Burst Power (4DN 3UP) Class 12	Average Burst Power (4DN 4UP) Class 12
	(MHz)		(dBm)	(dBm)	(dBm)	(dBm)
ODDO	824.2	128	32.58	28.54	26.46	25.00
GPRS 850	836.6	190	32.36	28.56	26.31	24.95
000	848.8	251	32.60	28.75	26.58	25.10
0000	1850.2	512	30.76	25.58	23.21	21.71
GPRS 1900	1880.0	661	30.89	25.51	23.12	21.65
1300	1909.8	810	30.85	25.46	22.92	21.46

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WCDMA MODE:

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

Results:

EUT M	ode	WCDMA Band V	HSDPA Band V	HSUPA Band V
Frequency	Avg. CH Power		Avg. Power	Avg. Power
(MHz)		(dBm)	(dBm)	(dBm)
826.4	4132	24.30	23.39	23.24
5=0	-	21.00	20:0	20:2 :
836.6	4183	24.20	23.32	23.25

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

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

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LTE Result:

LTE Band 5

	LTE E	Band 5_l	Jplink fre	equency	band : 8	324 to 84	9 MHz				
				Conducted power (dBm)							
BW	RB	RB		QPSK			16QAM				
(MHz)	Size	Offset	Channel (Low) 20407	Channel (Mid) 20525	Channel (High) 20643	Channel (Low) 20407	Channel (Mid) 20525	Channel (High) 20643			
	1	0	23.38	23.09	23.48	22.13	22.20	22.40			
	1	5	23.41	23.22	23.41	22.10	22.10	22.23			
1.4	3	2	23.46	23.26	23.48	22.26	22.19	22.36			
	6	0	22.44	22.19	22.47	21.21	20.96	21.21			

	LTE E	Band 5_l	Jplink fre	equency	band: 8	324 to 84	9 MHz			
			Conducted power (dBm)							
BW	RB	RB		QPSK			16QAM Channel (High) 20525 20635 22.01 22.29 22.17 22.45 21.34 21.42			
(MHz)	MHz) Size	Offset	Channel (Low) 20415	Channel (Mid) 20525	Channel (High) 20635	Channel (Low) 20415	(Mid)	(High)		
	1	0	23.17	22.98	23.18	21.86	22.01	22.29		
3	1	14	23.12	23.41	23.41	22.26	22.17	22.45		
3	8	4	22.29	22.26	22.50	21.20	21.34	21.42		
	15	0	22.37	22.28	22.47	21.06	20.98	21.26		

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	LTE E	Band 5_l	Jplink fre	equency	band : 8	324 to 84	9 MHz			
			Conducted power (dBm)							
BW	RB	RB		QPSK		16QAM				
(MHz)	,	Offset	Channel (Low) 20425	Channel (Mid) 20525	Channel (High) 20625	Channel (Low) 20425	Channel (Mid) 20525	Channel (High) 20625		
	1	0	23.12	22.97	23.06	21.96	21.87	21.77		
5	1	24	23.01	23.09	23.28	21.94	22.05	22.09		
5	12	6	22.38	22.33	22.50	21.18	21.05	21.22		
	25	0	22.38	22.36	22.41	21.17	21.15	21.34		

	LTE E	Band 5_l	Jplink fre	equency	band: 8	324 to 84	9 MHz			
			Conducted power (dBm)							
BW	RB	RB		QPSK						
(MHz)	Size	Offset	Channel (Low) 20450	Channel (Mid) 20525	Channel (High) 20600	Channel (Low) 20450	(Mid)	(High)		
	1	0	23.15	22.98	23.15	22.08	21.95	22.03		
	1	49	22.97	23.09	23.41	21.98	22.11	22.22		
10	25	12	22.34	22.35	22.32	21.14	21.44	21.33		
	50	0	22.34	22.36	22.43	21.34	21.25	21.44		

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HSDPA Release 6 MODE:

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

HSDPA SUB-TEST Setting

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

Sub-test	βc	β_d	β _d (SF)	β_c/β_d	β _{HS} (Note1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)	RMC (Kbps)
1	2/15	15/15	64	2/15	4/15	0.0	0.0	12.2
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0	12.2
3	15/15	8/15	64	15/8	30/15	1.5	0.5	12.2
4	15/15	4/15	64	15/4	30/15	1.5	0.5	12.2

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

Results:

Mode	Sub-test	_	Power (d Channel	IBm)	Power Class 3 Lim- itation (dBm)	Comments	
			4183	4233	itation (ubiii)		
	1	24.52	24.45	24.60	20.3dBm – 25.7dBm	Pass	
HSDPA	2	24.23	24.09	24.28	20.3dBm – 25.7dBm	Pass	
(B5)	3	24.06	23.97	24.11	19.8dBm – 25.7dBm	Pass	
	4	24.11	24.01	24.17	19.8dBm – 25.7dBm	Pass	

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HSPA (HSDPA & HSUPA) Release 6 MODE

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

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

Sub- test	βε	βa	β _d (SF)	β _c /β _d	βнs	eta_{ec}	eta_{ed}	β _{ed} (SF)	β _{ed} (Code s)	CM (dB)	MPR (dB)	AG Index	E-TFCI	RMC (Kbps
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/22 5	1309/225	4	1	1.0	0.0	20	75	12.2
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67	12.2
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed} 1: 47/15 β_{ed} 2: 47/15	4 4	2	2.0	1.0	15	92	12.2
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71	12.2
5	15/15 (Note 4)	15/15 (Note 4)	64	15/15 (Note 4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81	12.2

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

Results:

Mode	Sub-test	_	Power (d Channel	IBm)	Power Class 3 Lim- itation (dBm)	Comments
		4132	4183	4233	itation (dbiii)	
	1	24.26	24.13	24.32	18.8dBm – 25.7dBm	Pass
	2	22.32	22.21	22.36	16.8dBm – 25.7dBm	Pass
HSUPA(B5)	3	23.23	23.19	23.35	17.8dBm – 25.7dBm	Pass
	4	22.37	22.27	22.44	16.8dBm – 25.7dBm	Pass
	5	24.12	23.96	24.21	18.8dBm – 25.7dBm	Pass

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Minimum Communications Power Measurement PCS 1900 band

PCL	0	1	2	3	4	5	6	7	8
Output power (dBm)	30.76	28.6	26.5	24.5	22.5	20.1	18.3	16.4	14.2

PCL	9	10	11	12	13	14	15
Output power (dBm)	12.1	9.9	8.2	6.2	4.4	2	0.3

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

WCDMA/HSDPA/HSUPA band V

The EUT output power was controlled by simulator. Set Communication Tester CMU200 function key "UE Power Control" and enter max rated power 24dBm. The EUT is going to be set to max output power to 24dBm. Then record the read (see page 21 for measurement data). The min. power was measures by a function key "minimum power" then record the read. It is -52.3dBm. The power variation can be 0.1dB step by setting.

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7. EFFECTIVE RADIATED POWER AND EQUIVALENT ISOTROPIC RADIATED POWER MEASUREMENT

7.1. Standard Applicable

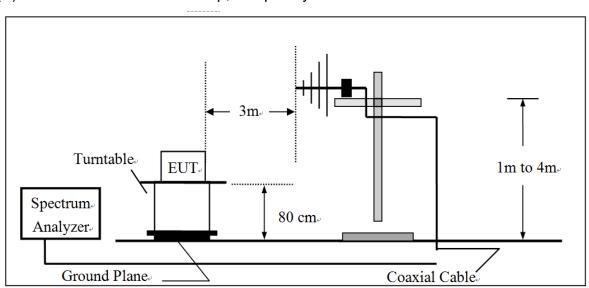
According to FCC §2.1046

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

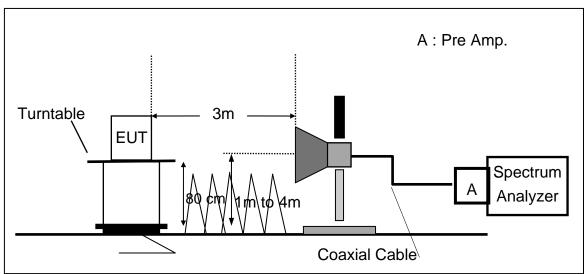
FCC 24.232(b) Mobile and portable stations are limited to 2 W EIRP.

7.2. Test SET-UP

(A) Radiated Power Test Set-Up, Frequency Below1000MHz



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



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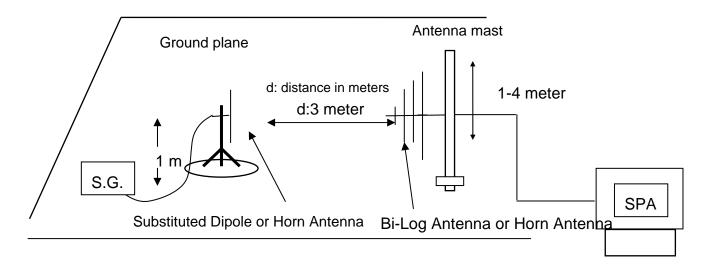
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(C) Substituted Method Test Set-UP



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7.3. Measurement Procedure

- The testing follows the Measurement Procedure of FCC KDB 971168 D01
- 2. 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.
- 3. 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
- 4. The testing follows the Measurement Procedure of FCC KDB 971168 D01
- 5. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a tx cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step b. Record the power level of S.G.
- 6. ERP = S.G. output (dBm) + Antenna Gain (dBd) Cable Loss (dB)
- 7. ERP = S.G. output (dBm) + Antenna Gain (dBd) Cable Loss (dB)
- 8. Spectrum setting:
 - (1) Detector = Peak, marker the highest value of the detector by maximum hold, set RBW wide enough to capture the entire signal of emission, and VBW > =3xRBW.
 - (2) KDB 971168 D01 is adopted, and the procedure as lists under item 4, Measurement of the Average Power over the Fundamental Signal Bandwidth, is followed to set correspondingly for the acquisition of proper measurement data.

Set frequency = nominal signal center frequency;

Set span = 2 X occupied BW;

Set RBW ≈ 1~5% 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 = 601points, then sweet time = $601*10^{-3}$ = 6s.

Activate trace averaging routine over a minimum of 10 sweeps;

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

Activate the band/interval power marker function;

Record the band power level:

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

The proper adjustment due to limitation of spectrum capability is given compensated to spectrum with conversion factor of 10*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.

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7.4. Measurement Equipment Used

		SGS SAC-III			
EQUIPMENT TYPE	MFR	MODEL	SERIAL	LAST CAL.	CAL DUE.
		NUMBER	NUMBER		
EMI Test Receiver	R&S	ESCI7	100760	05/10/2016	05/09/2017
Spectrum Analyzer	Agilent	E4446A	MY51100003	01/29/2016	01/28/2017
Loop Antenna	ETS-Lindgren	6502	143303	12/23/2015	12/22/2016
Bilog Antenna	SCHWAZBECK	VULB9168	378	12/14/2015	12/13/2016
Horn Antenna	Schwarzbeck	BBHA9120D	1441	08/01/2016	07/31/2017
Pre-Amplifier	Agilent	8447D	2944A07676	01/02/2016	01/01/2017
Pre-Amplifier	EMC Instruments Corp.	EMC0126530	980038	01/02/2016	01/01/2017
Turn Table	HD	DT420	N/A	N.C.R	N.C.R
Antenna Tower	ChamPro	AM-BS-4500-B	060776-ABS	N.C.R	N.C.R
Controller	ChamPro	EM1000	60776	N.C.R	N.C.R
Low Loss Cable	Huber Suhner	966_RX	9	01/02/2016	01/01/2017
3m Site NSA	SGS	966 chamber	N/A	07/02/2015	07/01/2016
Low Loss Cable	Huber Suhner	966 TX	1	01/02/2016	01/01/2017
Horn Antenna	Schwarzbeck	BBHA9170	184	12/12/2015	12/11/2016
Pre-Amplifier	EMC Instruments Corp.	EMC184045	980135	01/02/2016	01/01/2017
Radio Communication Analyzer	R&S	CMU200	102189	02/11/2016	02/10/2017
Radio Communication Analyzer	Anritsu	MT8820C	6200995019	09/25/2015	09/24/2016
Radio Communication Analyer	Anritsu	MT8820C	6201465317	12/10/2015	12/09/2016

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

	EUT		Measurement							
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP Lin			
	MHz		V/H	dBm	dBd	dB	dBm	dBm		
	824.2	128	V	34.02	-1.54	-4.79	27.69	38.45		
	024.2	120	Н	30.38	-1.54	-4.79	24.05	38.45		
GSM 850	836.6	190	V	33.49	-1.59	-4.81	27.09	38.45		
GSIVI 650	630.0	190	Н	27.51	-1.59	-4.81	21.11	38.45		
	0.40 0	251	V	33.34	-1.63	-4.84	26.88	38.45		
	848.8		Н	27.34	-1.63	-4.84	20.87	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	34.37	-1.54	-4.79	28.04	38.45		
	024.2	120	Н	31.96	-1.54	-4.79	25.63	38.45		
GPRS 850	836.6	400	V	33.84	-1.59	-4.81	27.44	38.45		
GFK3 650	030.0	190	Н	31.03	-1.59	-4.81	24.63	38.45		
	848.8	251	V	34.37	-1.63	-4.84	27.91	38.45		
	040.0	231	Н	31.09	-1.63	-4.84	24.62	38.45		

Remark:

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

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	EUT		Measurement							
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit		
	MHz		V/H	dBm	dBi	dB	dBm	dBm		
	1050.0	512	V	18.81	9.67	-7.23	21.24	33.01		
	1850.2	512	Н	17.65	9.67	-7.23	20.08	33.01		
GSM 1900	1880.0	661	V	18.21	9.76	-7.28	20.68	33.01		
G3W 1900	33W 1900 1000.0	001	Н	17.16	9.76	-7.28	19.63	33.01		
	1000.8	810	V	16	9.84	-7.36	18.48	33.01		
	1909.8		Н	15.38	9.84	-7.36	17.87	33.01		

	EUT		Measurement							
Operation Band	Fundamental CH /		Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit		
	MHz		V/H	dBm	dBi	dB	dBm	dBm		
	1850.2	512	V	18.43	9.67	-7.23	20.86	33.01		
		512	Н	17.64	9.67	-7.23	20.08	33.01		
CDDS 1000	1880.0	661	V	17.56	9.76	-7.28	20.04	33.01		
GPRS 1900	1000.0	661	Н	17.22	9.76	-7.28	19.69	33.01		
	1909.8	810	V	15.62	9.84	-7.36	18.1	33.01		
	1909.0	610	Н	15.2	9.84	-7.36	17.69	33.01		

Remark:

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

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	EUT		Measurement							
Operation Band	Fundamental Frequency	I CH I		S.G. Output	Antenna Gain	Cable Loss	ERP	Limit		
	MHz		V/H	dBm	dBd	dB	dBm	dBm		
	826.4	4132	V	31.96	-1.55	-4.79	25.62	38.45		
	020.4		Н	24.41	-1.55	-4.79	18.06	38.45		
WCDMA B5	836.6	4183	V	32.11	-1.59	-4.81	25.71	38.45		
VVCDIVIA B3	030.0	4183	Н	23.94	-1.59	-4.81	17.54	38.45		
	846.6	4233	V	29.58	-1.62	-4.83	23.13	38.45		
	846.6		Н	24.8	-1.62	-4.84	18.34	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		
	926.4	826.4 4132	V	31.83	-1.55	-4.79	25.50	38.45		
	020.4		Н	24.72	-1.55	-4.79	18.38	38.45		
HSDPA B5	926.6	4183	V	31.53	-1.59	-4.81	25.13	38.45		
HODPA BO	836.6	4183	Н	22.83	-1.59	-4.82	16.42	38.45		
	846.6	4233	V	30.17	-1.62	-4.83	23.72	38.45		
	040.0		Н	23.65	-1.62	-4.83	17.19	38.45		

	EUT		Measurement							
Operation Band	Fundamental Frequency	I CH		Antenna S.G. A		Cable Loss	ERP	Limit		
	MHz		V/H	dBm	dBd	dB	dBm	dBm		
	826.4	4132	V	31.05	-1.55	-4.79	24.70	38.45		
	020.4	4132	Н	23.95	-1.55	-4.79	17.61	38.45		
HSUPA B5	926.6	1100	V	29.76	-1.59	-4.81	23.36	38.45		
HOUPA BO	836.6	4183	Н	22.65	-1.58	-4.81	16.25	38.45		
	846.6	4233	V	30.32	-1.62	-4.83	23.86	38.45		
	040.0		Н	22.5	-1.62	-4.83	16.05	38.45		

Remark:

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

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	EUT			N	leasurem	ent		
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
	MHz		V/H	dBm	dBd	dB	dBm	dBm
			V	31.41	-1.55	-4.79	25.07	38.45
BAND 5	824.7	20407	Н	24.07	-1.54	-4.79	17.74	38.45
BW: 1.4M	836.5	20525	V	30.76	-1.58	-4.81	24.37	38.45
QPSK	636.5	20020	Н	23.04	-1.58	-4.81	16.65	38.45
RB: 1,0	848.3	20643	V	29.88	-1.63	-4.84	23.41	38.45
	040.3	20043	Н	22.2	-1.62	-4.83	15.75	38.45
	0047	00407	V	31.69	-1.54	-4.79	25.36	38.45
BAND 5	824.7	20407	Н	24.39	-1.54	-4.79	18.06	38.45
BW: 1.4M	836.5	20525	V	30.62	-1.58	-4.81	24.23	38.45
QPSK		20020	Н	22.95	-1.58	-4.81	16.56	38.45
RB: 1,5	848.3	20643	V	29.45	-1.62	-4.84	22.99	38.45
		20043	Н	22.33	-1.62	-4.84	15.87	38.45
	0047	00407	V	31.43	-1.55	-4.79	25.09	38.45
BAND 5	824.7	20407	Н	24.18	-1.55	-4.79	17.84	38.45
BW: 1.4M	836.5	20525	V	30.52	-1.58	-4.81	24.13	38.45
16QAM	830.3	20020	Н	22.87	-1.58	-4.81	16.48	38.45
RB: 1,0	848.3	20643	V	29.73	-1.63	-4.84	23.26	38.45
	040.5	20043	Н	22.56	-1.62	-4.83	16.11	38.45
	004.7	00407	V	31.67	-1.54	-4.79	25.34	38.45
BAND 5 BW: 1.4M 16QAM RB: 1,5	824.7	20407	Н	24.41	-1.54	-4.79	18.08	38.45
	836.5	20525	V	30.57	-1.58	-4.81	24.17	38.45
	030.3	20020	Н	22.87	-1.58	-4.81	16.47	38.45
	848.3	20643	V	29.19	-1.62	-4.84	22.73	38.45
	0-0.0	20043	Н	22.52	-1.62	-4.84	16.06	38.45

Remark:

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

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	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		
			V	31.48	-1.55	-4.79	25.14	38.45		
BAND 5	825.5	20415	Н	23.85	-1.55	-4.79	17.51	38.45		
BW: 3M	926 F	20525	V	30.65	-1.58	-4.81	24.27	38.45		
QPSK	836.5	20020	Н	23.46	-1.58	-4.81	17.08	38.45		
RB: 1,0	047.5	20625	V	30.58	-1.61	-4.83	24.13	38.45		
	847.5	20635	Н	23.21	-1.62	-4.83	16.76	38.45		
			V	32.15	-1.55	-4.79	25.81	38.45		
BAND 5	825.5	20415	Н	24.91	-1.55	-4.79	18.57	38.45		
BW: 3M	836.5	20525	V	30.32	-1.59	-4.81	23.92	38.45		
QPSK		20020	Н	23.49	-1.59	-4.81	17.09	38.45		
RB: 1,14	847.5	20635	V	29.39	-1.62	-4.84	22.93	38.45		
		20033	Н	21.35	-1.62	-4.84	14.89	38.45		
			V	31.53	-1.55	-4.79	25.19	38.45		
BAND 5	825.5	20415	Н	23.67	-1.55	-4.79	17.33	38.45		
BW: 3M	836.5	20525	V	30.53	-1.58	-4.81	24.15	38.45		
16QAM	030.5	20020	Н	23.37	-1.58	-4.81	16.98	38.45		
RB: 1,0	847.5	20635	V	31.33	-1.62	-4.84	24.87	38.45		
	047.5	20033	Н	23.5	-1.63	-4.84	17.04	38.45		
	205.5	00445	V	32.13	-1.55	-4.79	25.79	38.45		
BAND 5 BW: 3M 16QAM RB: 1,14	825.5	20415	Н	24.95	-1.55	-4.79	18.61	38.45		
	836.5	20525	V	30.36	-1.59	-4.81	23.96	38.45		
	030.5	20020	Н	23.42	-1.59	-4.81	17.02	38.45		
	847.5	20635	V	29.21	-1.62	-4.84	22.75	38.45		
	047.5	20000	Н	21.5	-1.62	-4.84	15.04	38.45		

Remark:

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

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	EUT			N	leasurem	ent		
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
	MHz		V/H	dBm	dBd	dB	dBm	dBm
	222.5	00.405	V	31.72	-1.55	-4.79	25.38	38.45
BAND 5	826.5	20425	Н	23.6	-1.54	-4.79	17.28	38.45
BW: 5M	836.5	20525	V	30.83	-1.57	-4.81	24.45	38.45
QPSK	030.3	20020	Н	23.35	-1.57	-4.81	16.97	38.45
RB: 1,0	846.5	20625	V	31.55	-1.61	-4.83	25.12	38.45
	040.5	20023	Н	24.42	-1.61	-4.83	17.99	38.45
		00405	V	33.13	-1.55	-4.8	26.78	38.45
BAND 5	826.5	20425	Н	25.79	-1.55	-4.8	19.44	38.45
BW: 5M	836.5	20525	V	30.13	-1.59	-4.82	23.72	38.45
QPSK	030.3	20020	Н	23.13	-1.59	-4.82	16.73	38.45
RB: 1,24	846.5	20625	V	29.15	-1.62	-4.84	22.69	38.45
	040.5		Н	21.25	-1.62	-4.84	14.79	38.45
	000.5	00405	V	31.9	-1.55	-4.79	25.56	38.45
BAND 5	826.5	20425	Н	23.72	-1.54	-4.79	17.4	38.45
BW: 5M	836.5	20525	V	30.55	-1.57	-4.81	24.17	38.45
16QAM	000.0	20020	Н	23.17	-1.57	-4.81	16.78	38.45
RB: 1,0	846.5	20625	V	31.53	-1.61	-4.83	25.09	38.45
	040.0	20020	Н	24.48	-1.61	-4.83	18.04	38.45
	000.5	00405	V	33.13	-1.55	-4.8	26.78	38.45
BAND 5	BW: 5M	20425	Н	25.68	-1.55	-4.8	19.33	38.45
BW: 5M		20525	V	30.21	-1.59	-4.82	23.81	38.45
16QAM	000.0	20020	Н	23.14	-1.59	-4.82	16.73	38.45
RB: 1,24	846.5	20625	V	29.22	-1.62	-4.84	22.76	38.45
	070.0	20020	Н	21.24	-1.62	-4.84	14.78	38.45

Remark:

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

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	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
			V	32.11	-1.54	-4.79	25.77	38.45
BAND 5	829.0	20450	Н	23.67	-1.54	-4.79	17.34	38.45
BW: 10M	926 F	20525	V	31.87	-1.57	-4.8	25.5	38.45
QPSK	836.5	20525	Н	24.44	-1.57	-4.8	18.08	38.45
RB: 1,0	944.0	20600	V	30.47	-1.59	-4.82	24.06	38.45
	844.0	20600	Н	23.71	-1.59	-4.82	17.3	38.45
			V	31.25	-1.57	-4.81	24.87	38.45
BAND 5	829.0	20450	Н	23.77	-1.57	-4.81	17.39	38.45
BW: 10M	836.5	20525	V	30.77	-1.6	-4.82	24.36	38.45
QPSK			Н	23.96	-1.6	-4.82	17.54	38.45
RB: 1,49	844.0	20600	V	29.59	-1.62	-4.84	23.13	38.45
			Н	21.66	-1.62	-4.83	15.2	38.45
	200		V	32.1	-1.54	-4.79	25.76	38.45
BAND 5	829.0	20450	Н	23.67	-1.54	-4.79	17.34	38.45
BW: 10M	836.5	20525	V	29.93	-1.57	-4.8	23.56	38.45
16QAM	030.5	20020	Н	22.51	-1.57	-4.8	16.14	38.45
RB: 1,0	844.0	20600	V	30.51	-1.59	-4.82	24.1	38.45
	044.0	20000	Н	23.69	-1.59	-4.82	17.28	38.45
	200		V	31.6	-1.58	-4.81	25.21	38.45
BAND 5 BW: 10M 16QAM	829.0	20450	Н	24.12	-1.57	-4.8	17.75	38.45
	836.5	20525	V	30.74	-1.6	-4.82	24.33	38.45
	030.5	20020	Н	23.99	-1.6	-4.82	17.57	38.45
RB: 1,49	844.0	20600	V	29.41	-1.62	-4.84	22.96	38.45
	044.0	20600	Н	21.51	-1.62	-4.84	15.05	38.45

Remark:

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

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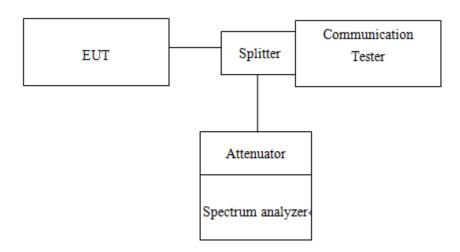
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8. OCCUPIED BANDWIDTH MEASUREMENT

8.1. Standard Applicable

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power.

8.2. Test Set-up



8.3. Measurement Procedure

99% &26dB Bandwidth with detector peak

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, -26dBc display line was placed on the screen (or 26dB 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%.

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8.4. Measurement Equipment Used

·	SGS Conducted Room										
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.						
TYPE		NUMBER	NUMBER	CAL.							
Power Meter	Anritsu	ML2495A	1005007	12/09/2015	12/08/2016						
Power Sensor	Anritsu	MA2411B	917032	12/09/2015	12/08/2016						
EXA Spectrum Analyzer	Agilent	N9030A	MY53120760	02/26/2016	02/25/2017						
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2016	01/01/2017						
Coaxial Cable	HUBER+SUHNER	SUCOFLEX 102	23670/2	01/02/2016	01/01/2017						
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2016	01/01/2017						
Splitter	Agilent	11636B	N/A	01/02/2016	01/01/2017						
DC Power Supply	Agilent	E3640A	MY52410006	11/05/2015	11/04/2016						
Temperature Chamber	TERCHY	MHG-120LF	911009	05/17/2016	05/16/2017						
Radio Communication Analyzer	R&S	CMU200	102189	02/11/2016	02/10/2017						
Radio Communication Analyzer	Anritsu	MT8820C	6200995019	09/25/2015	09/24/2016						
Radio Communication Analyzer	Anritsu	MT8820C	6201465317	12/10/2015	12/09/2016						

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8.5. Measurement Result 99% Bandwidth

411411141				
Frequency	СН	99% Bandwidth (kHz)	h 99% Bandwidt (kHz)	
(MHz)	CII	GSM 850	GPRS 850	
824.20	128	246.41	246.20	
836.60	190	246.43	241.63	
848.80	251	249.48	240.09	

Frequency	/1		99% Bandwidth (kHz)
(MHz)	Cii	GSM 1900	GPRS 1900
1850.20	512	243.23	242.10
1880.00	661	250.93	241.05
1909.80	810	248.05	245.41

Frequency	СН	99% Bandwidth (MHz)	99% Bandwidth (MHz)	99% Bandwidth (MHz)
(MHz)	Gn	WCDMA V	HSDPA V	HSUPA V
826.40	4132	4.1007	4.1166	4.1199
836.60	4183	4.1143	4.1294	4.1009
846.60	4233	4.1033	4.1120	4.1184

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	LTE BAND 5										
Channel bandwidth: 1.4MHz			Channel bandwidth: 3MHz								
Frequency	СН	99% Bandwidth (MHz)	99% Bandwidth (MHz)	Frequency	СН	99% Bandwidth (MHz)	99% Bandwidth (MHz)				
(MHz)		QPSK	16QAM	(MHz)		QPSK	16QAM				
824.7	20407	1.0979	1.0966	825.5	20415	2.6976	2.7033				
836.5	20525	1.0924	1.0962	836.5	20525	2.7054	2.7053				
848.3	20643	1.0932	1.1004	847.5	20635	2.7029	2.7056				

	LTE BAND 5									
Channel bandwidth: 5MHz				Cha	nnel ba	ndwidth: 10	MHz			
Frequency	СН	99% Bandwidth (MHz)	99% Bandwidth (MHz)	Frequency	СН	99% Bandwidth (MHz)	99% Bandwidth (MHz)			
(MHz)		QPSK	16QAM	(MHz)		QPSK	16QAM			
826.5	20425	4.4909	4.4915	829.0	20450	8.9830	8.9614			
836.5	20525	4.4711	4.4749	836.5	20525	8.9593	8.9370			
846.5	20625	4.4854	4.5027	844.0	20600	8.9636	8.9610			

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26dB Bandwidth

Frequency (MHz)	СН	26dB Band- width (kHz) GSM 850	26dB Band- width (kHz) GPRS 850
824.20	128	321.14	311.96
836.60	190	318.15	315.50
848.80	251	315.40	318.30

Frequency (MHz)	СН	26dB Band- width (kHz) GSM 1900	26dB Band- width (kHz) GPRS 1900
1850.20	512	318.63	317.63
1880.00	661	320.67	307.75
1909.80	810	323.41	325.63

Frequency	СН	26dB Band- width (MHz)	26dB Band- width (MHz)	26dB Band- width (MHz)	
(MHz)		WCDMA V	HSDPA V	HSUPA V	
826.40	4132	4.684	4.675	4.689	
836.60	4183	4.694	4.683	4.634	
846.60	4233	4.681	4.667	4.676	

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	LTE BAND 5										
Channel bandwidth: 1.4MHz			Channel bandwidth: 3MHz								
Frequency	СН	26dB Bandwidth (MHz)	26dB Bandwidth (MHz)	Frequency	СН	26dB Bandwidth (MHz)	26dB Bandwidth (MHz)				
(MHz)		QPSK	16QAM	(MHz)		QPSK	16QAM				
824.7	20407	1.283	1.285	825.5	20415	2.993	2.984				
836.5	20525	1.281	1.265	836.5	20525	2.948	2.983				
848.3	20643	1.288	1.285	847.5	20635	3.017	2.967				

	LTE BAND 5									
Channel bandwidth: 5MHz				Cha	nnel ba	ndwidth: 10	MHz			
Frequency	СН	26dB Bandwidth (MHz)	26dB Bandwidth (MHz)	Frequency	СН	26dB Bandwidth (MHz)	26dB Bandwidth (MHz)			
(MHz)		QPSK	16QAM	(MHz)		QPSK	16QAM			
826.5	20425	4.949	4.990	829.0	20450	9.844	9.768			
836.5	20525	4.930	4.960	836.5	20525	9.784	9.734			
846.5	20625	5.001	4.948	844.0	20600	9.876	9.621			

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99% & 26dB Bandwidth Test Data (Detector Peak) GSM 850 Channel Low



GSM 850 Channel Mid



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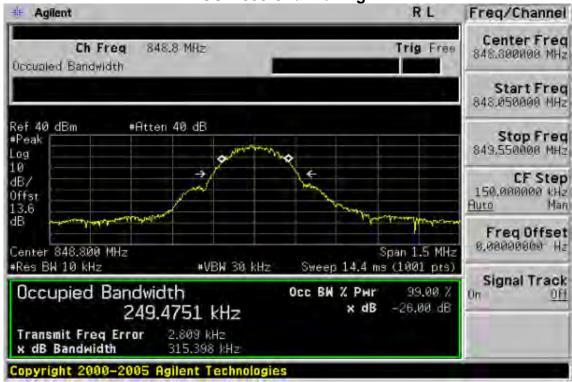
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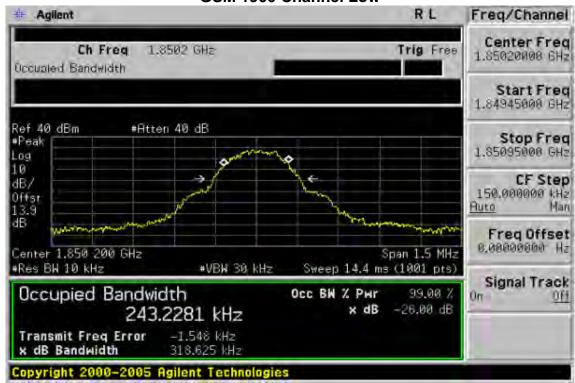


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GSM 850 Channel High



GSM 1900 Channel Low



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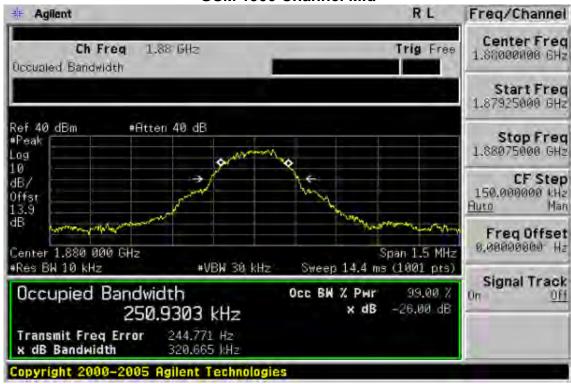
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GSM 1900 Channel Mid





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GPRS 850 Channel Low



GPRS 850 Channel Mid



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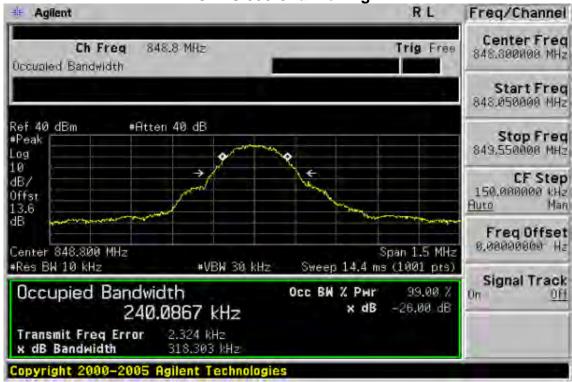
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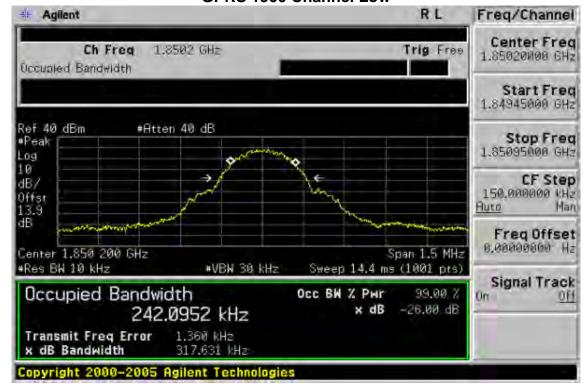


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GPRS 850 Channel High



GPRS 1900 Channel Low



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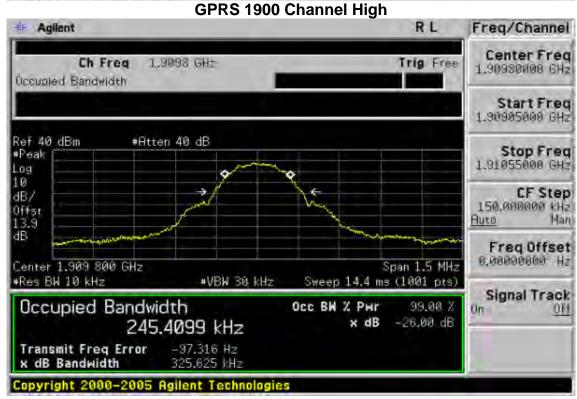
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GPRS 1900 Channel Mid





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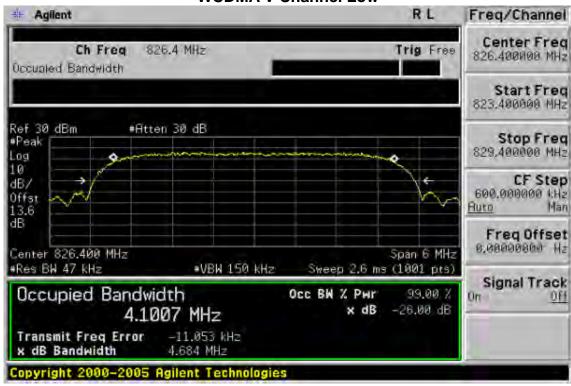
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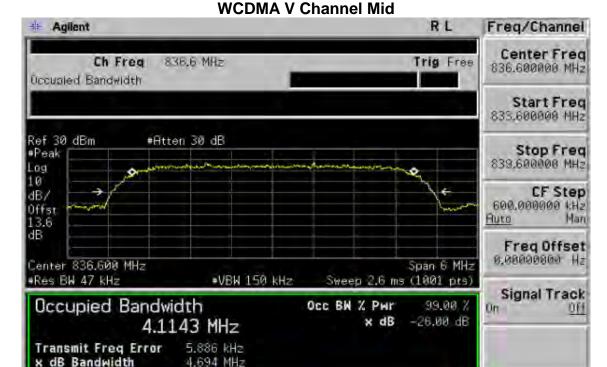
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WCDMA V Channel Low





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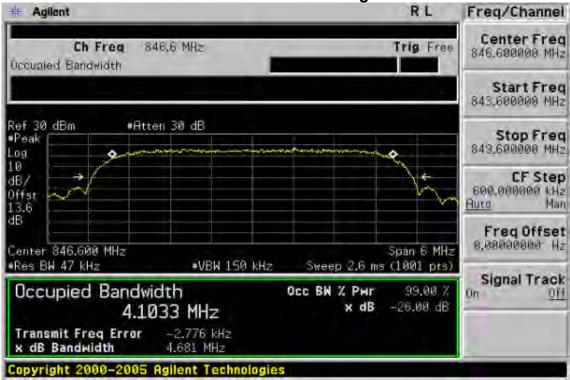
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WCDMA V Channel High



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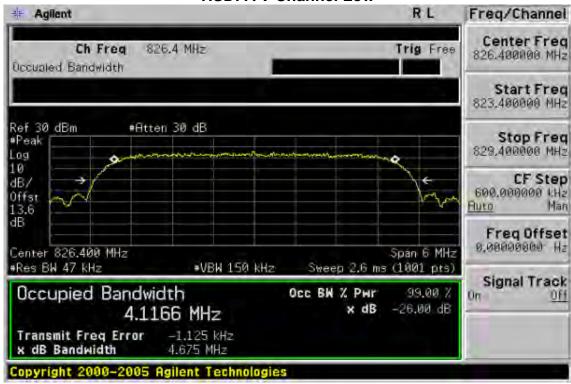
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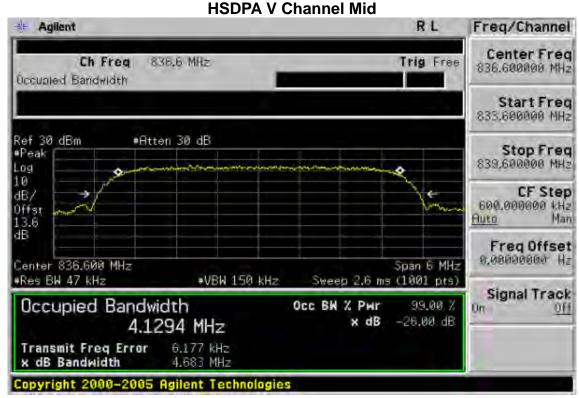
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HSDPA V Channel Low





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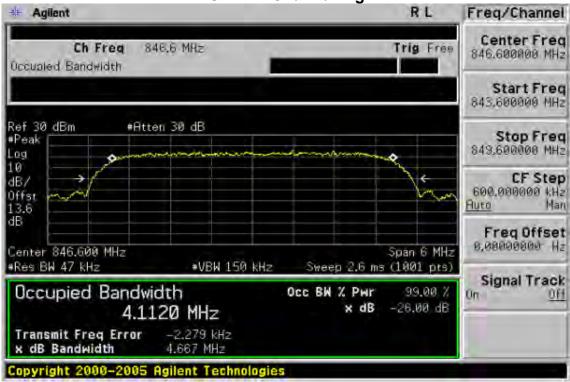
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HSDPA V Channel High



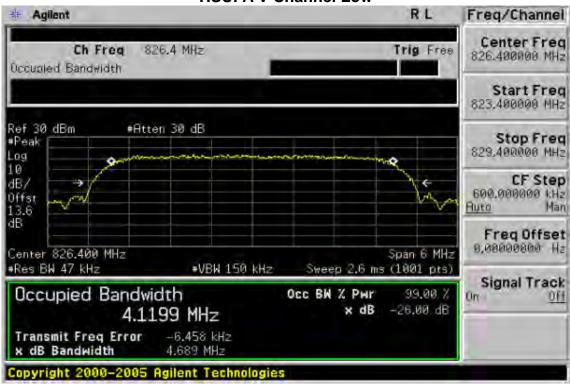
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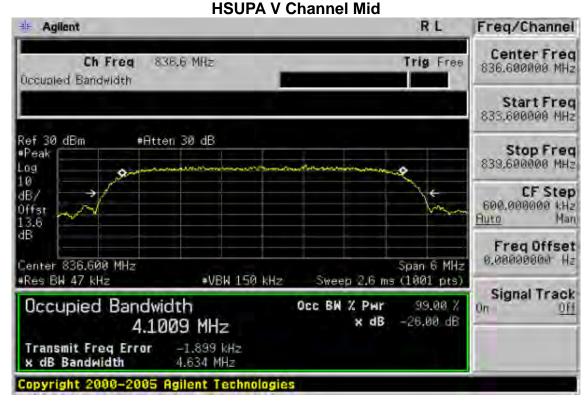
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HSUPA V Channel Low





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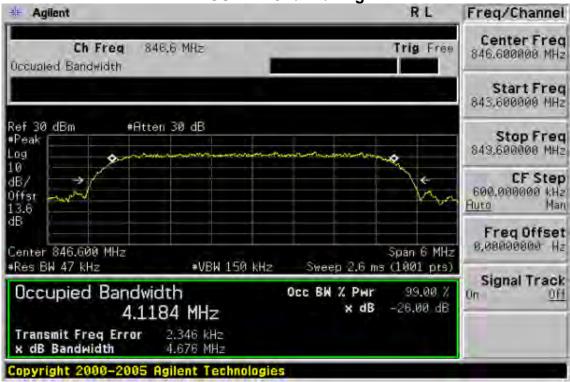
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HSUPA V Channel High



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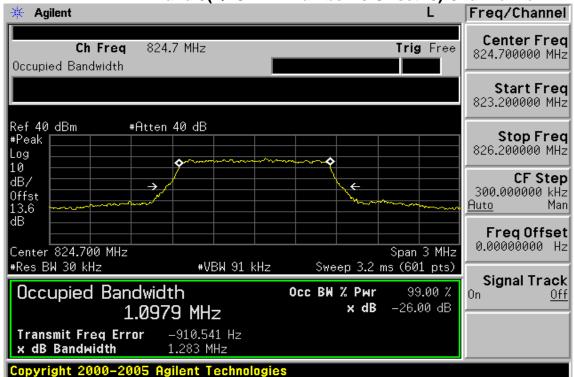
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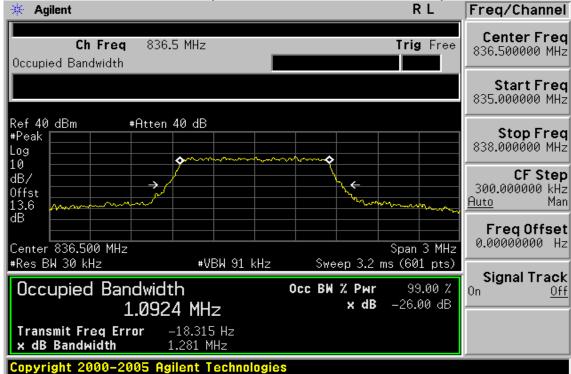


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1.4MHz BW LTE-Band 5(QPSK RB Number: 6 Offset: 0) Channel Low



1.4MHz BW LTE-Band 5(QPSK RB Number: 6 Offset: 0) Channel Mid



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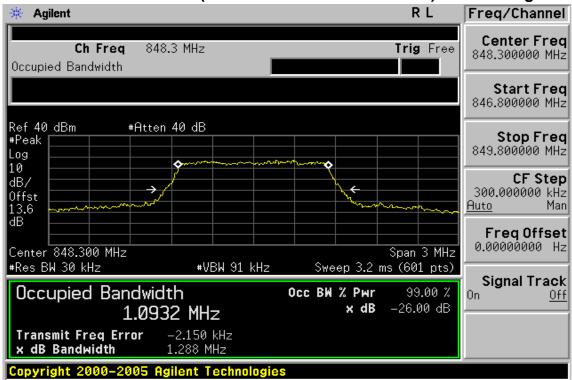
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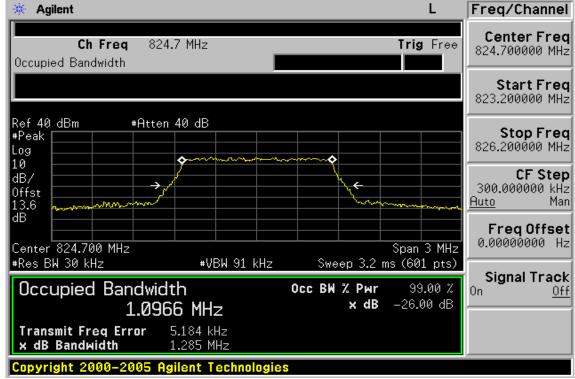


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1.4MHz BW LTE-Band 5(QPSK RB Number: 6 Offset: 0) Channel High



1.4MHz BW LTE-Band 5(16QAM RB Number: 6 Offset: 0) Channel Low



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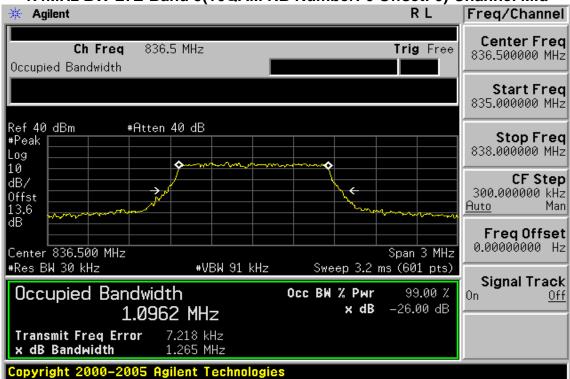
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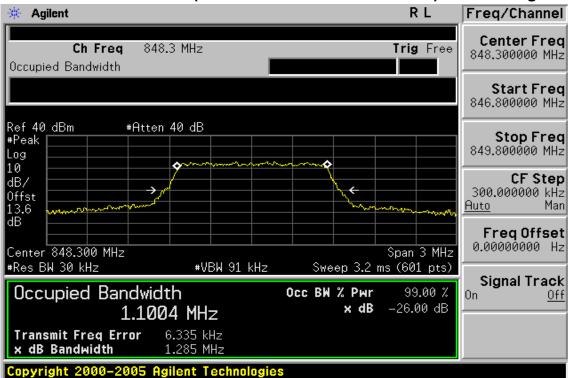


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1.4MHz BW LTE-Band 5(16QAM RB Number: 6 Offset: 0) Channel Mid



1.4MHz BW LTE-Band 5(16QAM RB Number: 6 Offset: 0) Channel High



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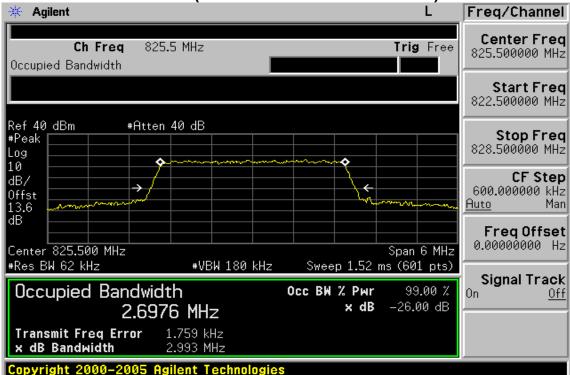
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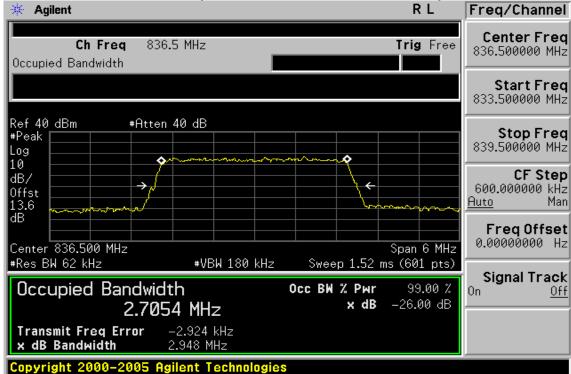


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3MHz BW LTE-Band 5(QPSK RB Number: 15 Offset: 0) Channel Low



3MHz BW LTE-Band 5(QPSK RB Number: 15 Offset: 0) Channel Mid



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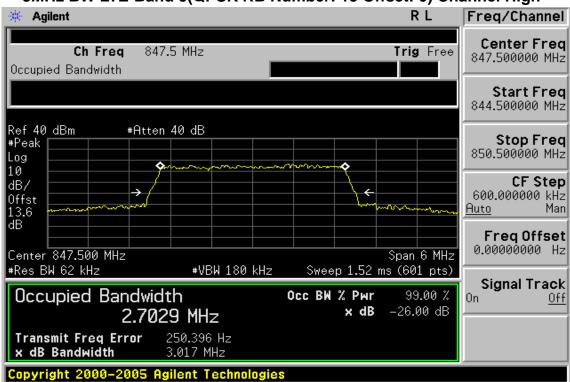
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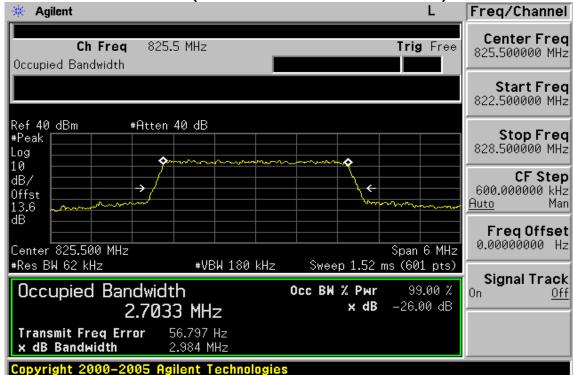


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3MHz BW LTE-Band 5(QPSK RB Number: 15 Offset: 0) Channel High



3MHz BW LTE-Band 5(16QAM RB Number: 15 Offset: 0) Channel Low



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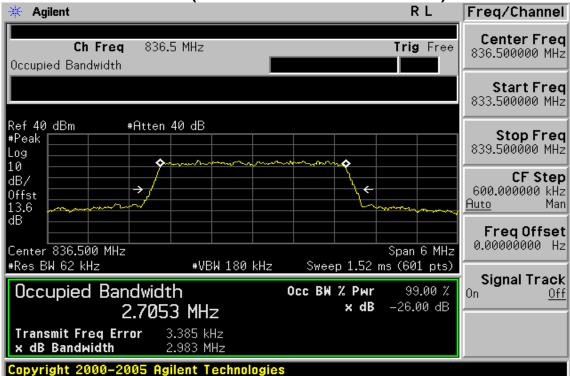
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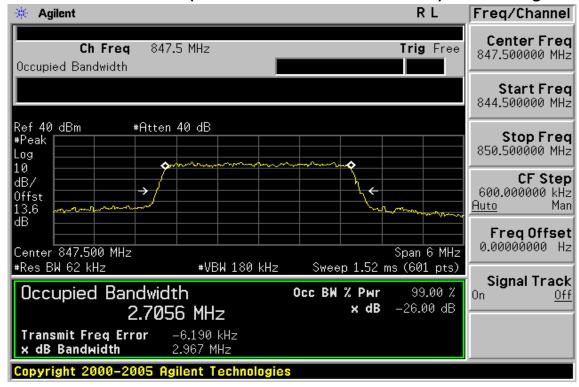


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3MHz BW LTE-Band 5(16QAM RB Number: 15 Offset: 0) Channel Mid



3MHz BW LTE-Band 5(16QAM RB Number: 15 Offset: 0) Channel High



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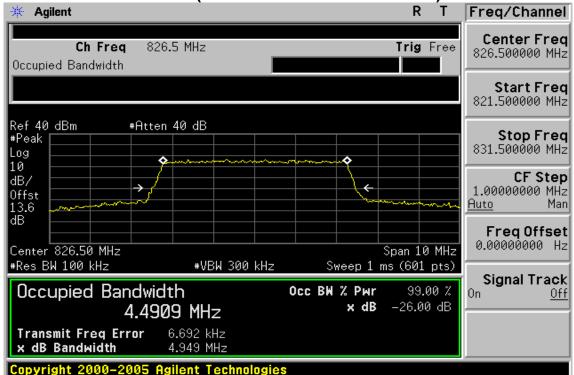
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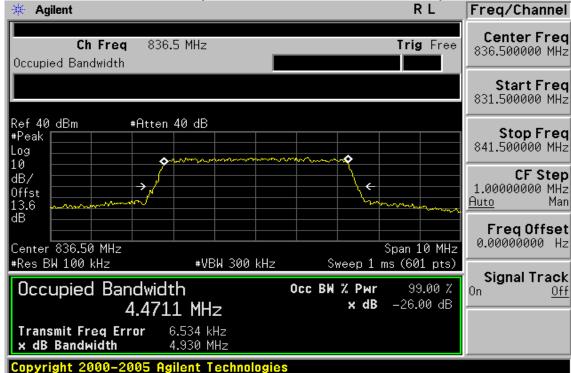


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5MHz BW LTE-Band 5(QPSK RB Number: 25 Offset: 0) Channel Low



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



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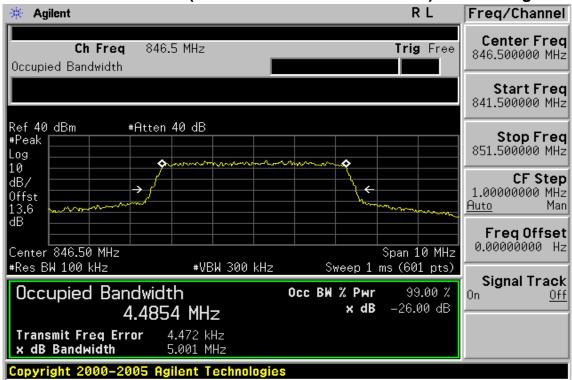
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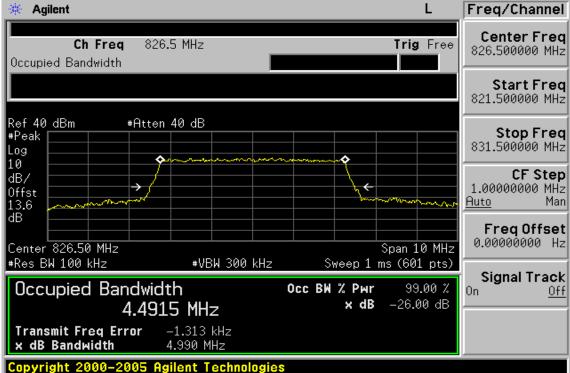


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5MHz BW LTE-Band 5(QPSK RB Number: 25 Offset: 0) Channel High



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



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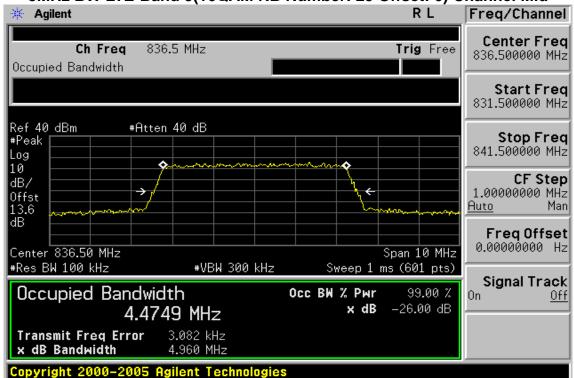
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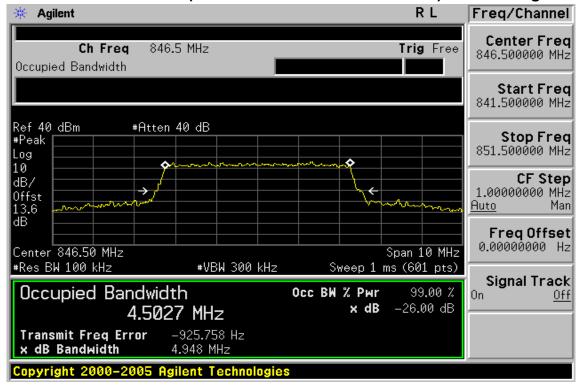


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5MHz BW LTE-Band 5(16QAM RB Number: 25 Offset: 0) Channel Mid



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



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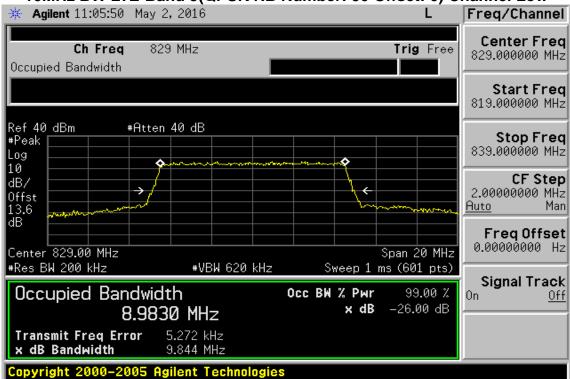
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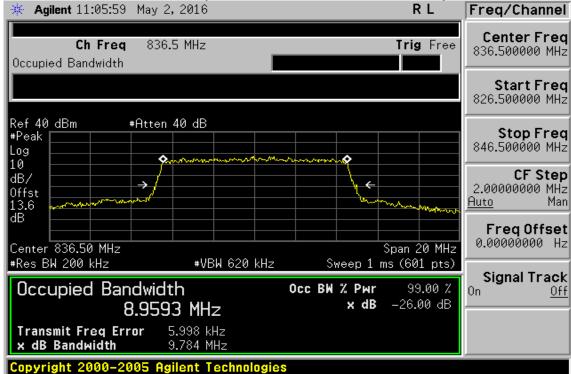


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10MHz BW LTE-Band 5(QPSK RB Number: 50 Offset: 0) Channel Low



10MHz BW LTE-Band 5(QPSK RB Number: 50 Offset: 0) Channel Mid



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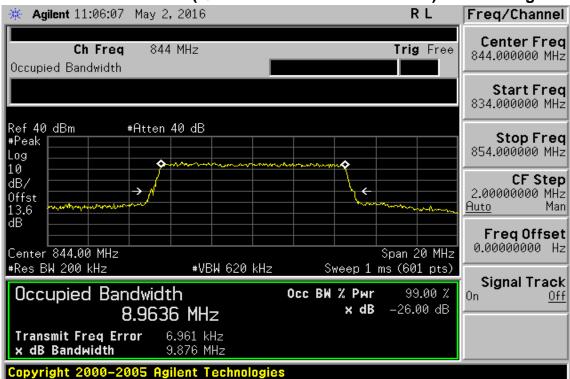
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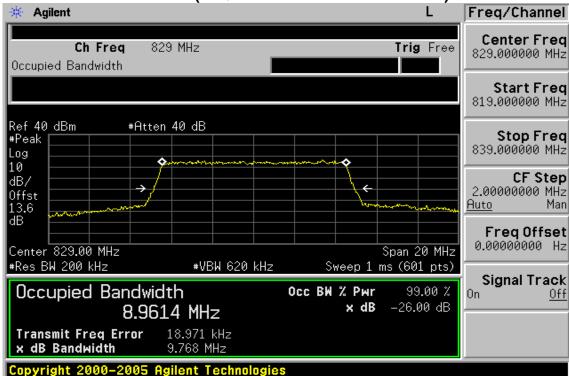


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10MHz BW LTE-Band 5(QPSK RB Number: 50 Offset: 0) Channel High



10MHz BW LTE-Band 5(16QAM RB Number: 50 Offset: 0) Channel Low



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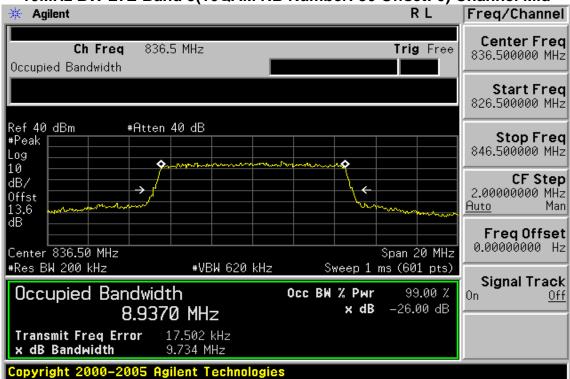
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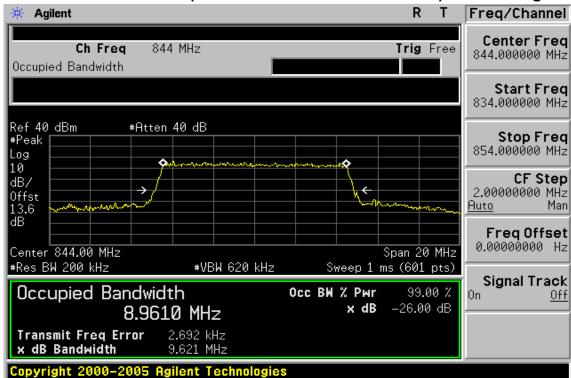


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10MHz BW LTE-Band 5(16QAM RB Number: 50 Offset: 0) Channel Mid



10MHz BW LTE-Band 5(16QAM RB Number: 50 Offset: 0) Channel High



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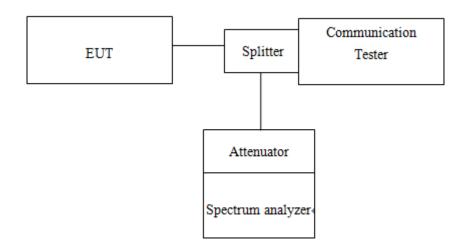
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9. OUT OF BAND EMISSION AT ANTENNA TERMINALS

9.1. Standard Applicable

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

9.2. Test SET-UP



9.3. Measurement Procedure

Conducted Emission

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.

- 1. To connect Antenna Port of EUT to Spectrum.
- 2. Set RBW = 1MHz & VBW = 1MHz on Spectrum.
- 3. Allow trace to fully stabilize
- 4. Repeat above procedures until all default test channel measured were complete.

Band Edge

- To connect Antenna Port of EUT to Spectrum.
- 2. The band edge of low and high channels for the highest RF powers was measured. Setting RBW ≥ 1% EBW.
- Allow trace to fully stabilize
- Repeat above procedures until all default test channel measured were complete.

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9.4. Measurement Equipment Used

SGS Conducted Room					
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.
TYPE		NUMBER	NUMBER	CAL.	
Power Meter	Anritsu	ML2495A	1005007	12/09/2015	12/08/2016
Power Sensor	Anritsu	MA2411B	917032	12/09/2015	12/08/2016
EXA Spectrum Analyzer	Agilent	N9030A	MY53120760	02/26/2016	02/25/2017
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2016	01/01/2017
Coaxial Cable	HUBER+SUHNER	SUCOFLEX 102	23670/2	01/02/2016	01/01/2017
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2016	01/01/2017
Splitter	Agilent	11636B	N/A	01/02/2016	01/01/2017
DC Power Supply	Agilent	E3640A	MY52410006	11/05/2015	11/04/2016
Temperature Chamber	TERCHY	MHG-120LF	911009	05/17/2016	05/16/2017
Radio Communication Analyzer	R&S	CMU200	102189	02/11/2016	02/10/2017
Radio Communication Analyzer	Anritsu	MT8820C	6200995019	09/25/2015	09/24/2016
Radio Communication Analyzer	Anritsu	MT8820C	6201465317	12/10/2015	12/09/2016

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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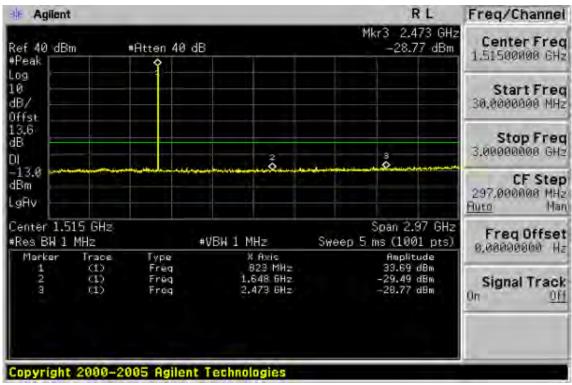
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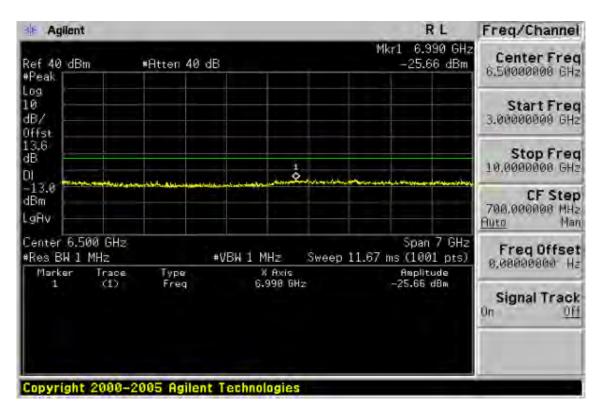
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Out of Band emission at antenna terminals – GSM 850 Channel Lowest





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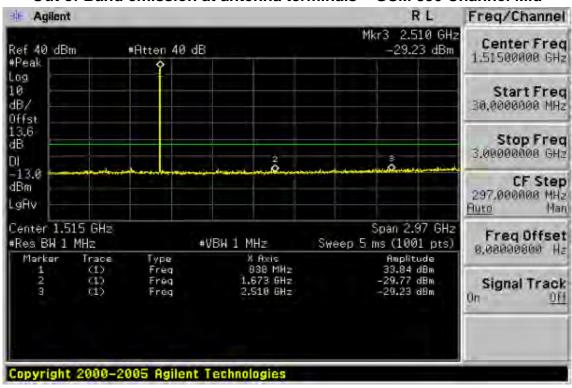
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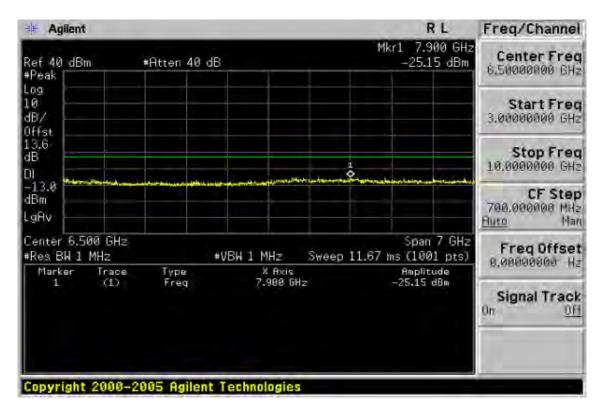
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Out of Band emission at antenna terminals – GSM 850 Channel Mid





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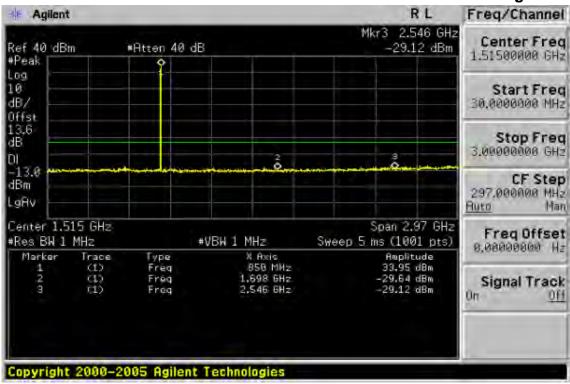
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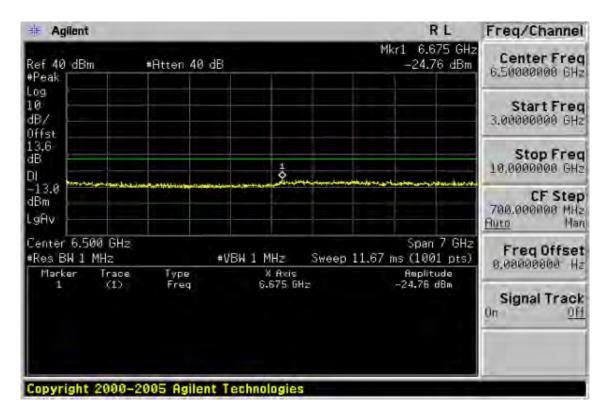
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Out of Band emission at antenna terminals - GSM 850 Channel Highest





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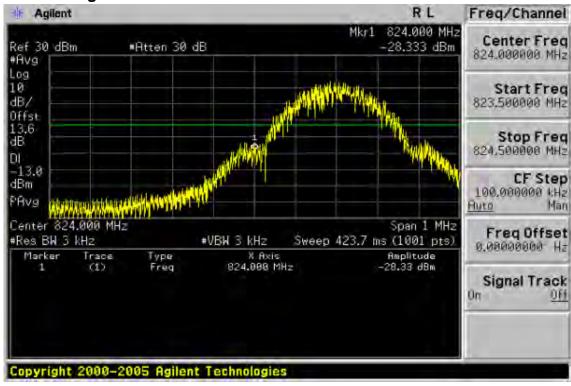
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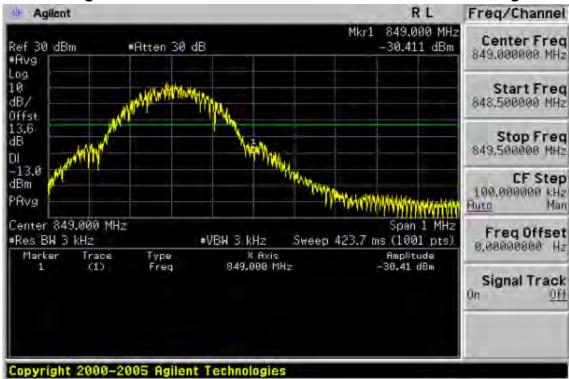


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Band edge emission at antenna terminals – GSM 850 Channel Lowest



Band edge emission at antenna terminals - GSM 850 Channel Highest



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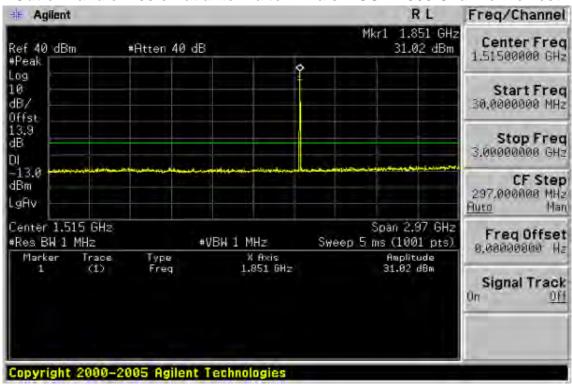
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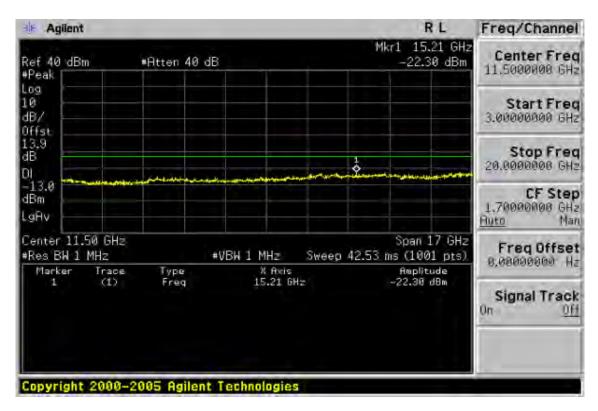
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Out of Band emission at antenna terminals - GSM 1900 Channel Lowest





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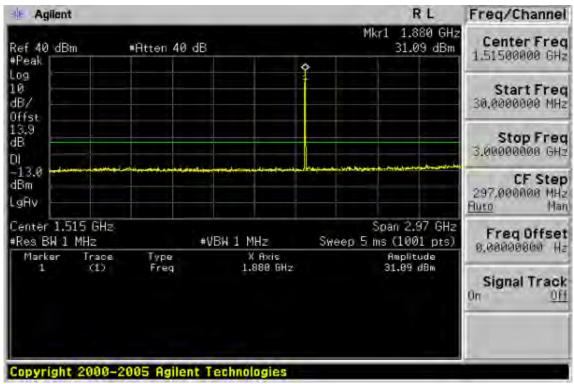
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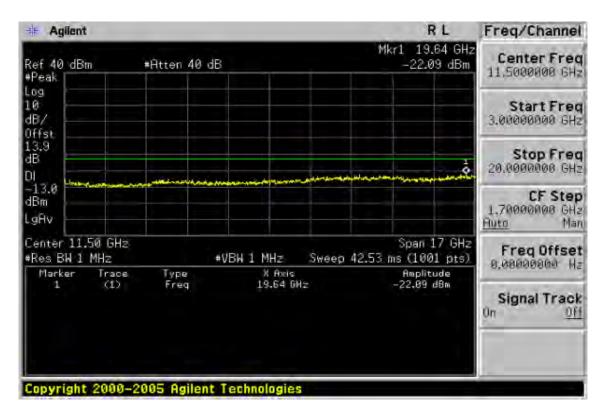
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Out of Band emission at antenna terminals - GSM 1900 Channel Mid





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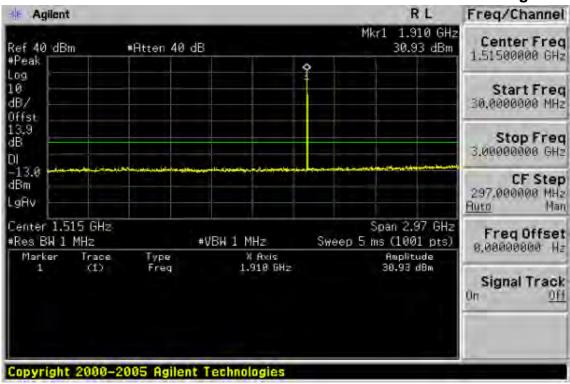
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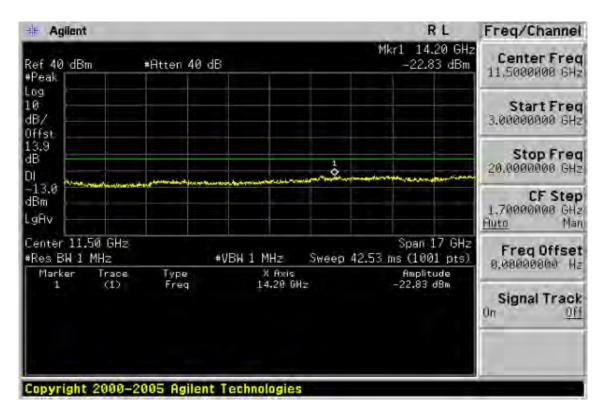
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Out of Band emission at antenna terminals - GSM 1900 Channel Highest





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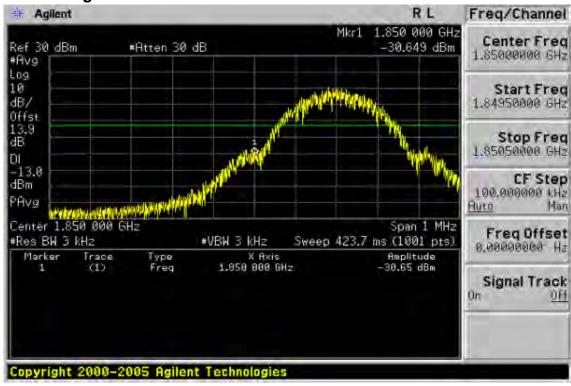
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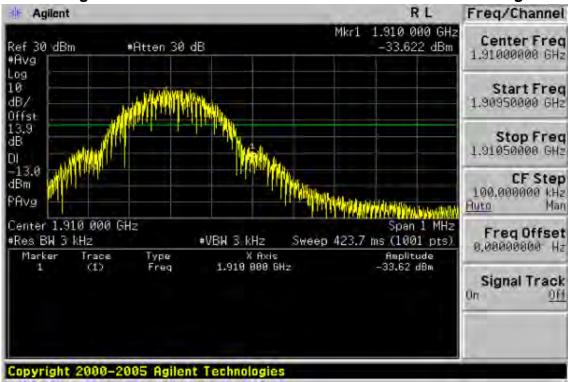


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Band edge emission at antenna terminals – GSM 1900 Channel Lowest



Band edge emission at antenna terminals - GSM 1900 Channel Highest



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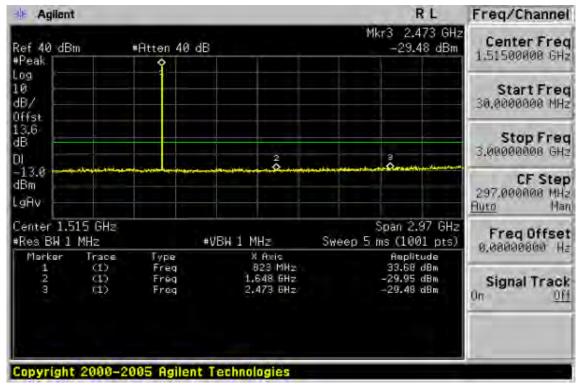
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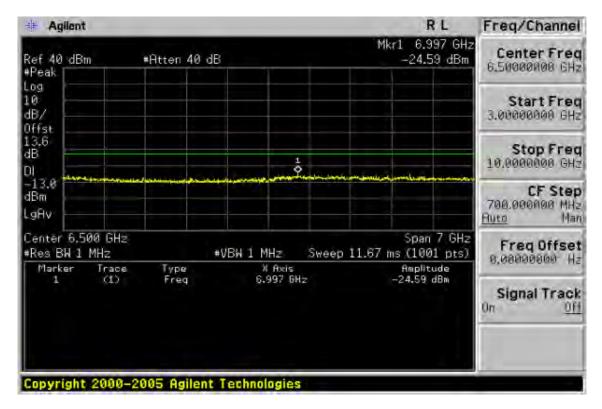
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Out of Band emission at antenna terminals – GPRS 850 Channel Lowest





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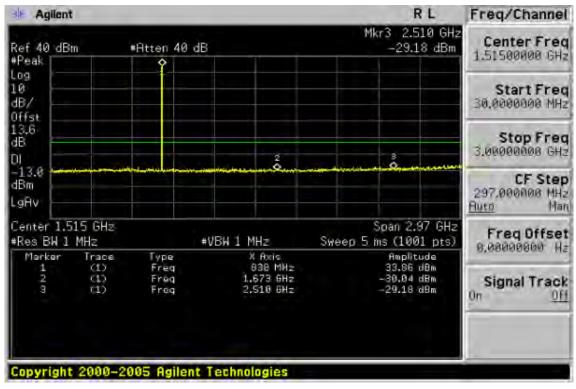
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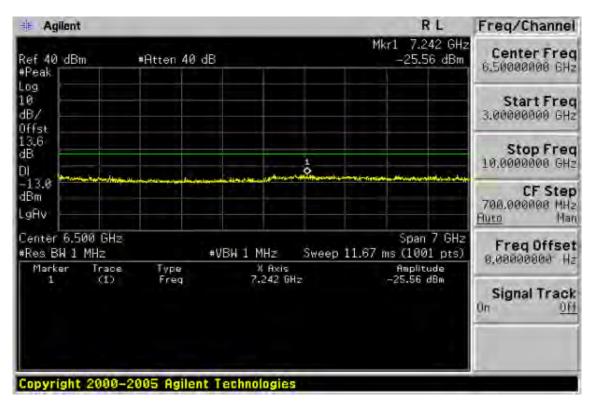
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Out of Band emission at antenna terminals - GPRS 850 Channel Mid





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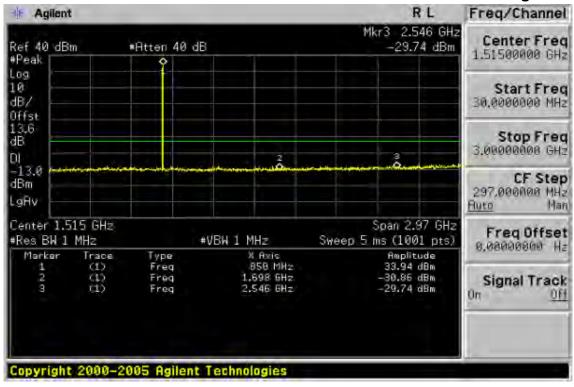
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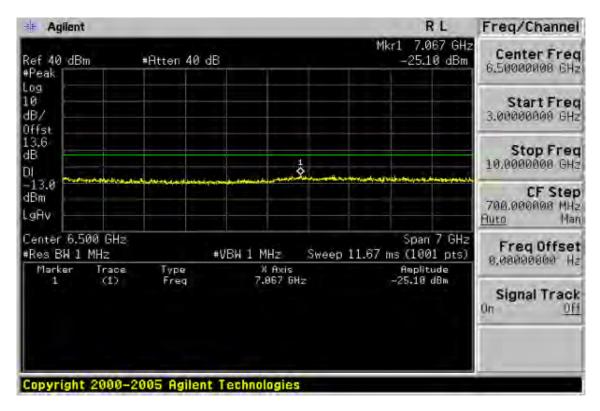
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Out of Band emission at antenna terminals - GPRS 850 Channel Highest





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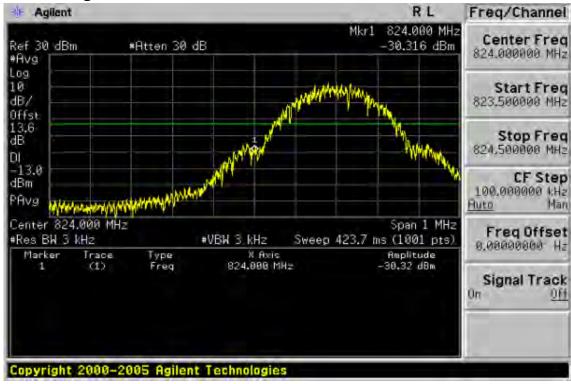
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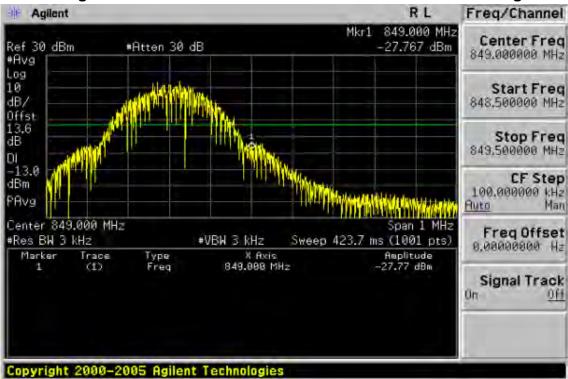


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Band edge emission at antenna terminals – GPRS 850 Channel Lowest



Band edge emission at antenna terminals - GPRS 850 Channel Highest



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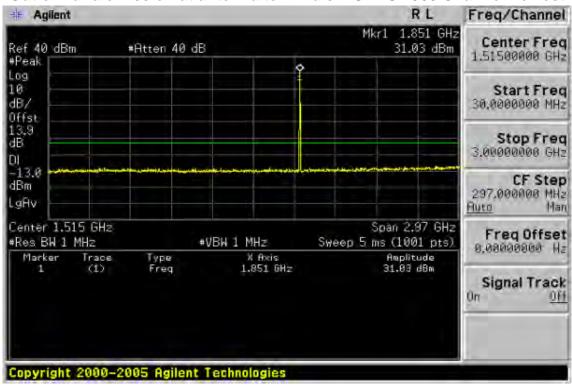
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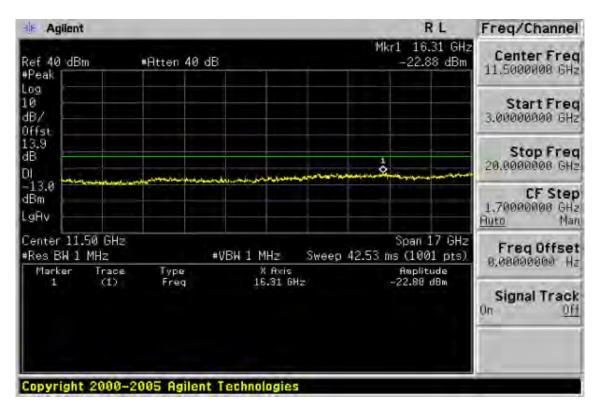
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Out of Band emission at antenna terminals – GPRS 1900 Channel Lowest





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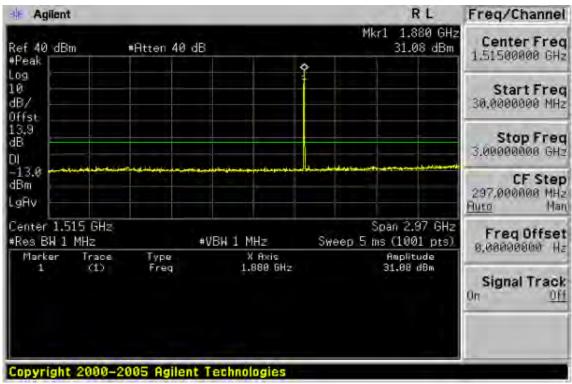
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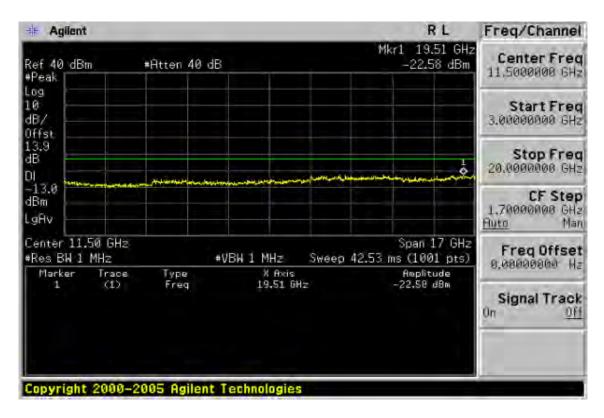
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Out of Band emission at antenna terminals – GPRS 1900 Channel Mid





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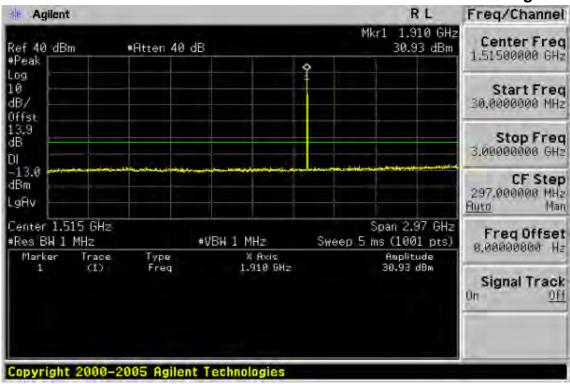
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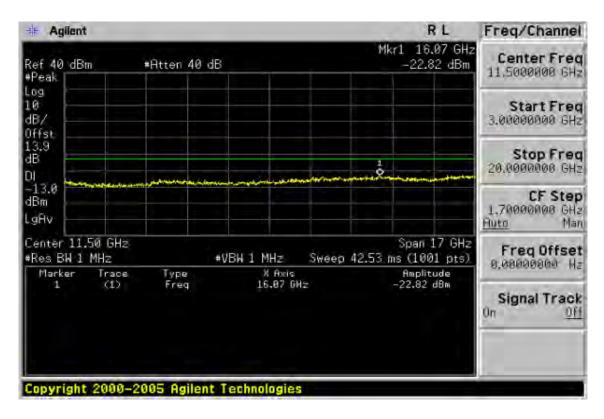
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Out of Band emission at antenna terminals - GPRS 1900 Channel Highest





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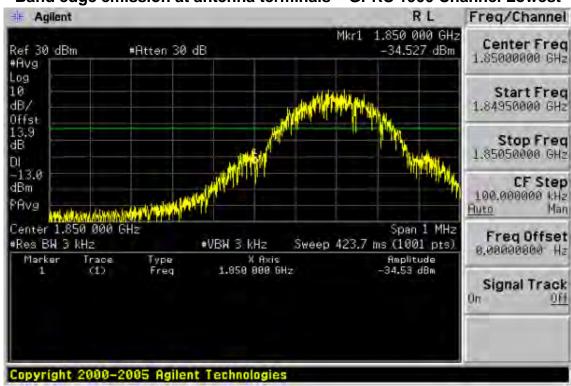
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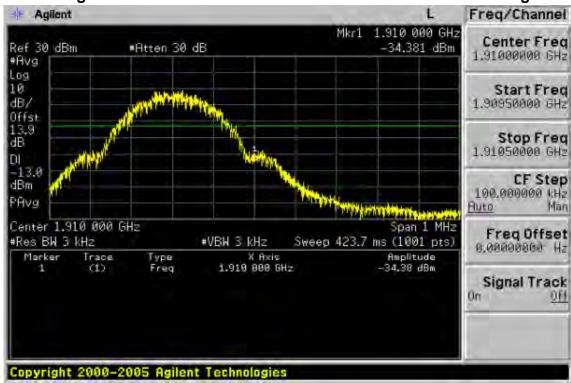


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Band edge emission at antenna terminals - GPRS 1900 Channel Lowest



Band edge emission at antenna terminals - GPRS 1900 Channel Highest



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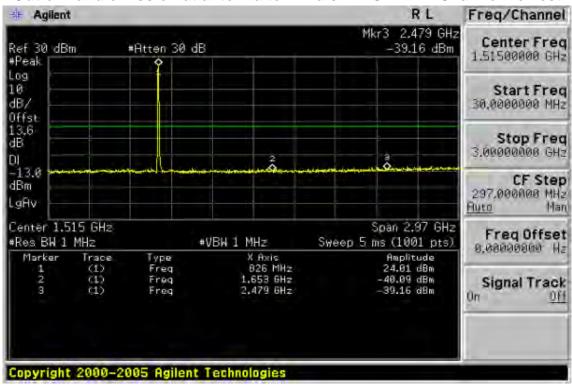
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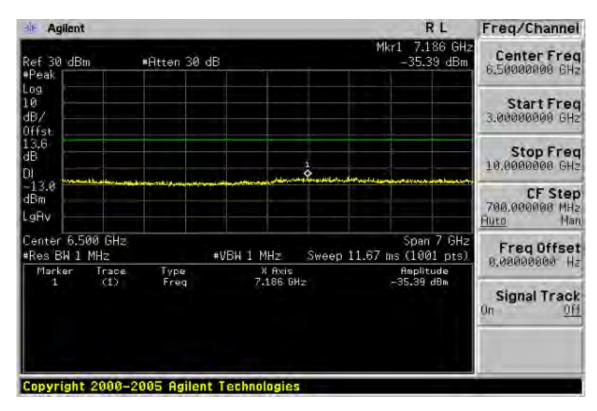
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Out of Band emission at antenna terminals - WCDMA V Channel Lowest





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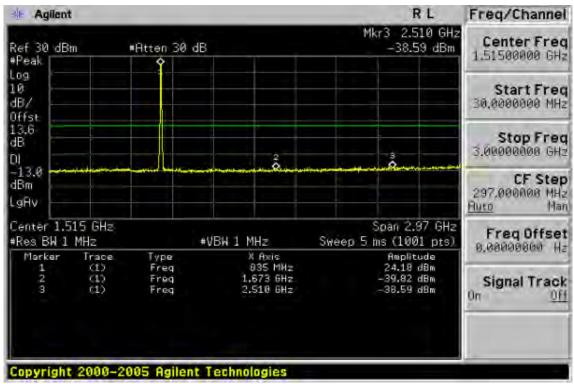
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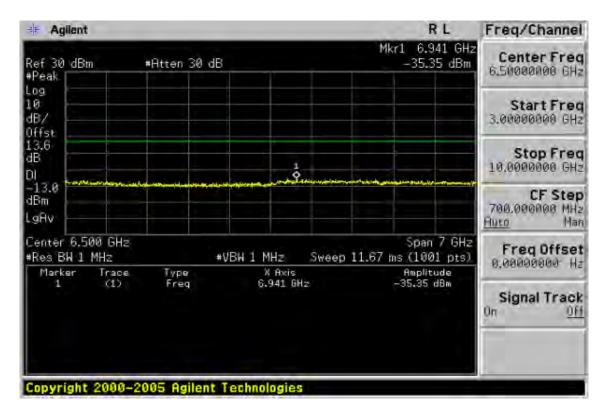
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Out of Band emission at antenna terminals - WCDMA V Channel Mid





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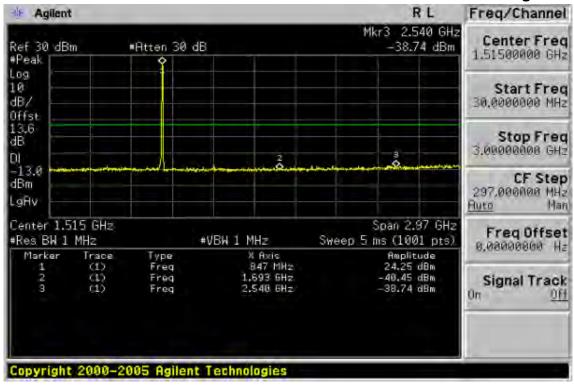
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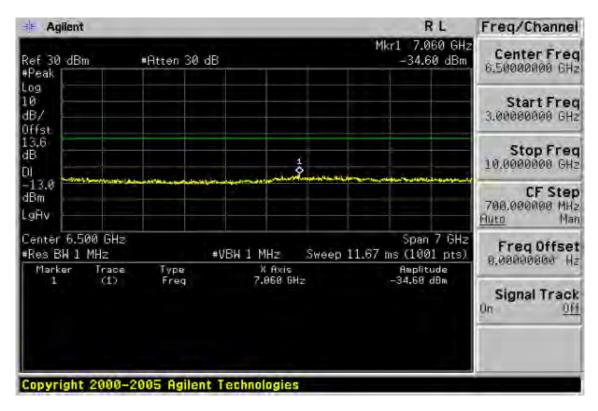
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Out of Band emission at antenna terminals – WCDMA V Channel Highest





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Band edge emission at antenna terminals – WCDMA V Channel Lowest



Band edge emission at antenna terminals – WCDMA V Channel Highest



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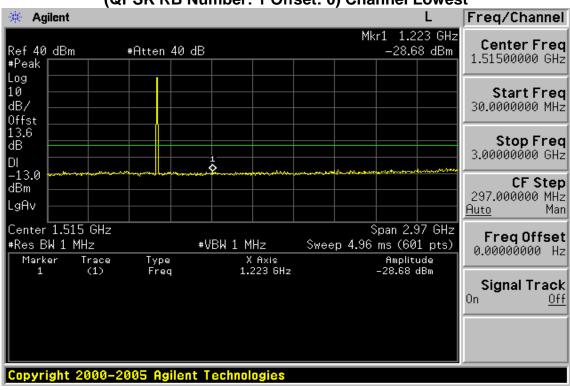
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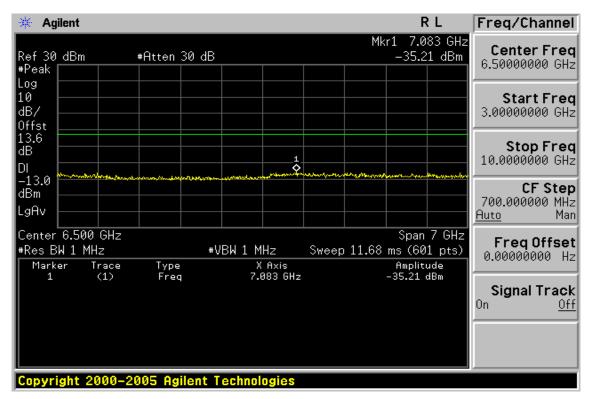
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Out of Band emission at antenna terminals-1.4MHz BW LTE-Band 5 (QPSK RB Number: 1 Offset: 0) Channel Lowest





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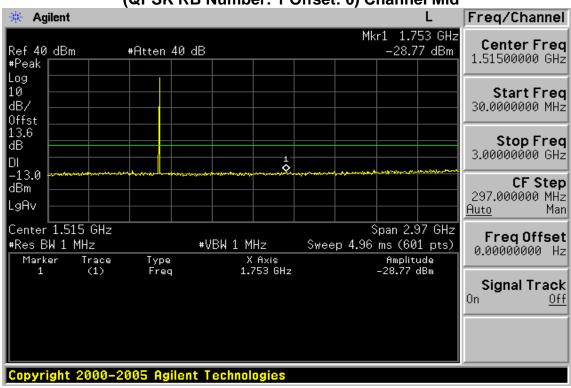
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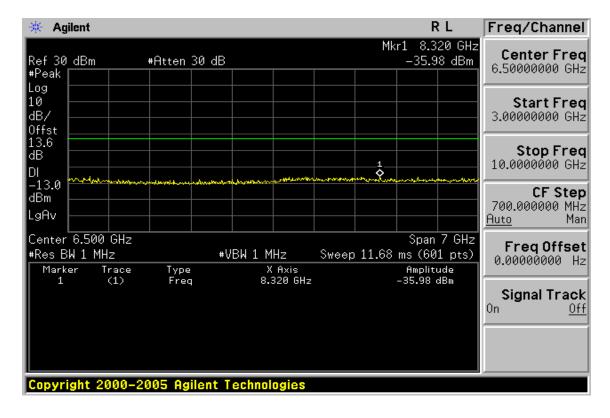
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Out of Band emission at antenna terminals -1.4MHz BW LTE-Band 5 (QPSK RB Number: 1 Offset: 0) Channel Mid





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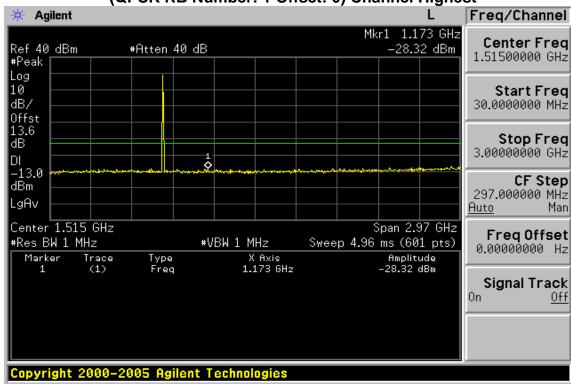
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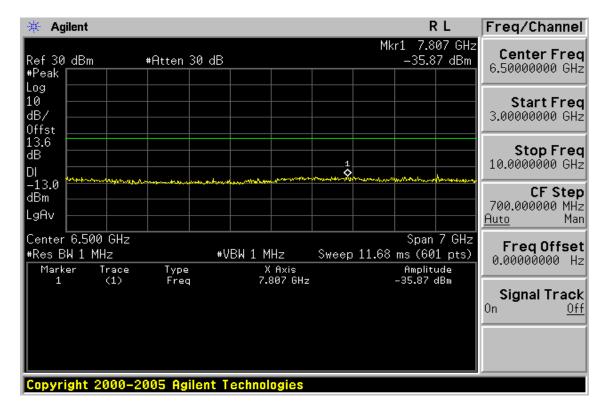
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Out of Band emission at antenna terminals-1.4MHz BW LTE-Band 5 (QPSK RB Number: 1 Offset: 0) Channel Highest





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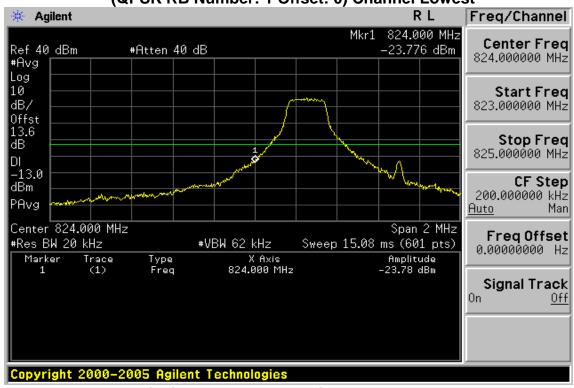
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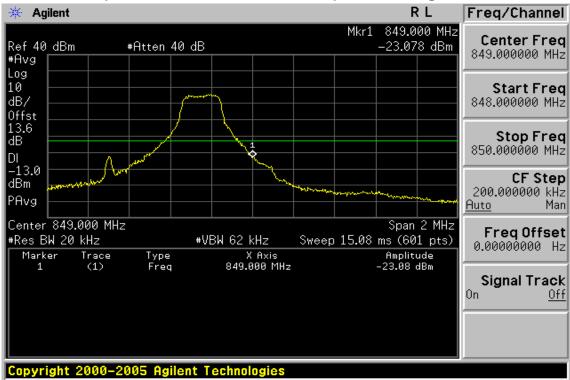


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Band edge emission at antenna terminals –1.4MHz BW LTE-Band 5 (QPSK RB Number: 1 Offset: 0) Channel Lowest



Band edge emission at antenna terminals -1.4MHz BW LTE-Band 5 (QPSK RB Number: 1 Offset: 5) Channel Highest



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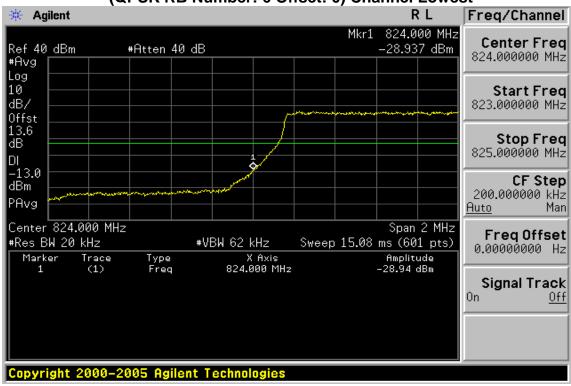
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Band edge emission at antenna terminals –1.4MHz BW LTE-Band 5 (QPSK RB Number: 6 Offset: 0) Channel Lowest



Band edge emission at antenna terminals –1.4MHz BW LTE-Band 5 (QPSK RB Number: 6 Offset: 0) Channel Highest



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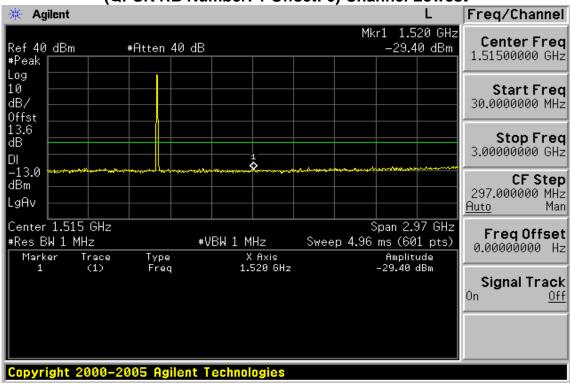
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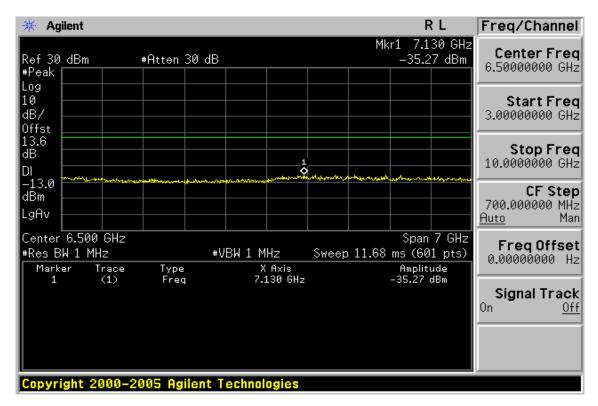
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Out of Band emission at antenna terminals-3MHz BW LTE-Band 5 (QPSK RB Number: 1 Offset: 0) Channel Lowest





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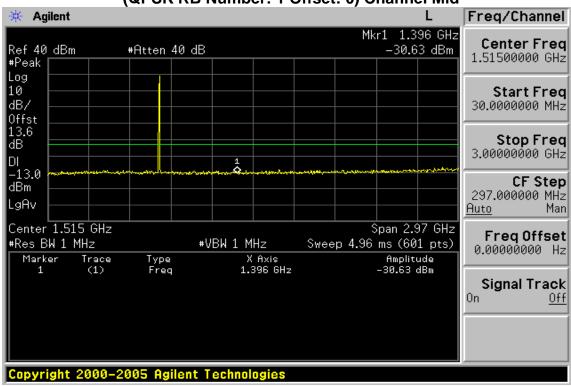
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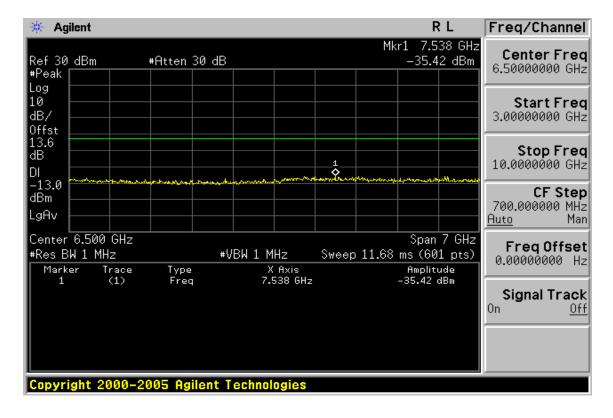
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Out of Band emission at antenna terminals -3MHz BW LTE-Band 5 (QPSK RB Number: 1 Offset: 0) Channel Mid





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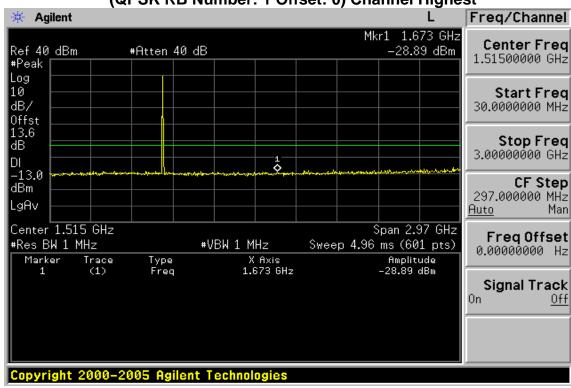
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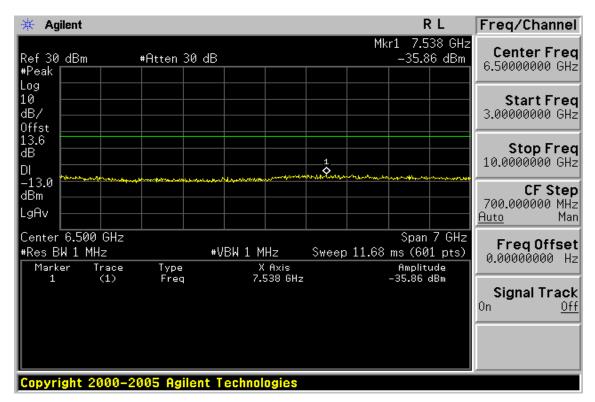
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Out of Band emission at antenna terminals-3MHz BW LTE-Band 5 (QPSK RB Number: 1 Offset: 0) Channel Highest





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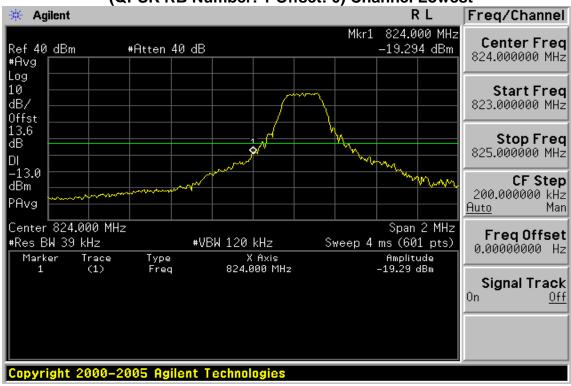
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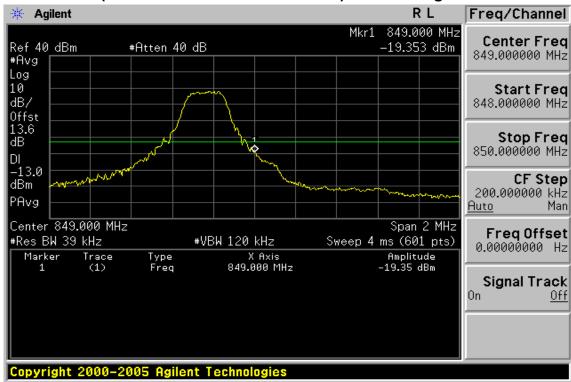


Page: 98 of 148

Band edge emission at antenna terminals –3MHz BW LTE-Band 5 (QPSK RB Number: 1 Offset: 0) Channel Lowest



Band edge emission at antenna terminals -3MHz BW LTE-Band 5 (QPSK RB Number: 1 Offset: 14) Channel Highest



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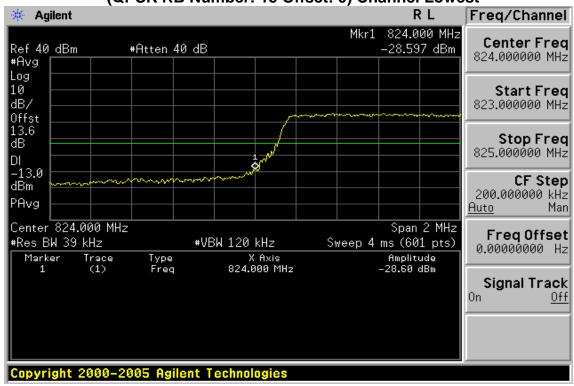
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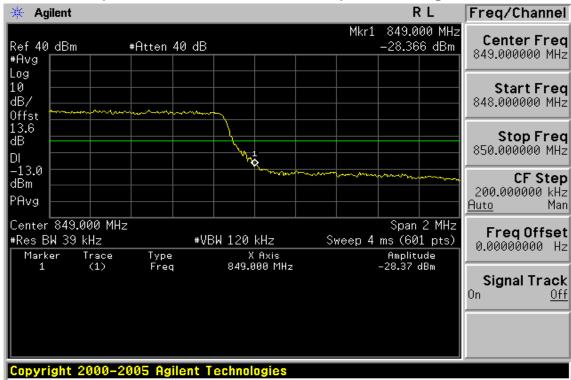


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Band edge emission at antenna terminals –3MHz BW LTE-Band 5 (QPSK RB Number: 15 Offset: 0) Channel Lowest



Band edge emission at antenna terminals -3MHz BW LTE-Band 5 (QPSK RB Number: 15 Offset: 0) Channel Highest



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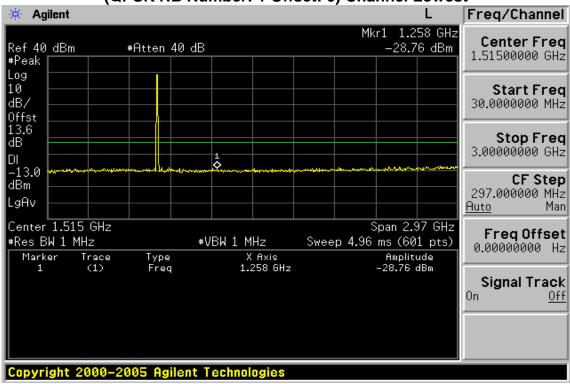
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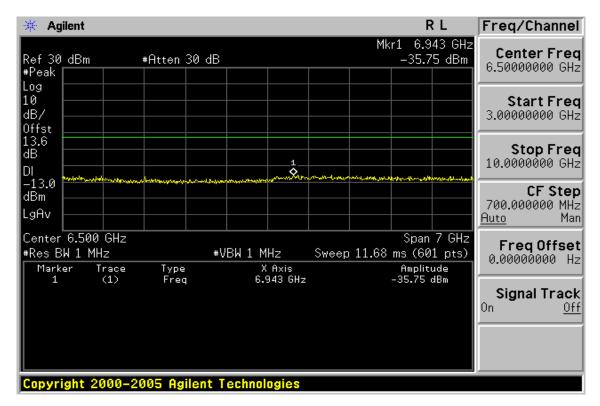
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Page: 100 of 148

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





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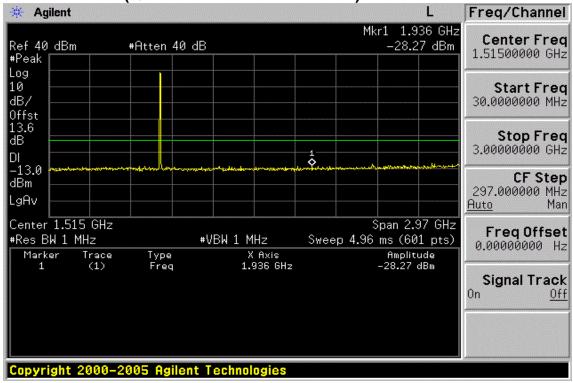
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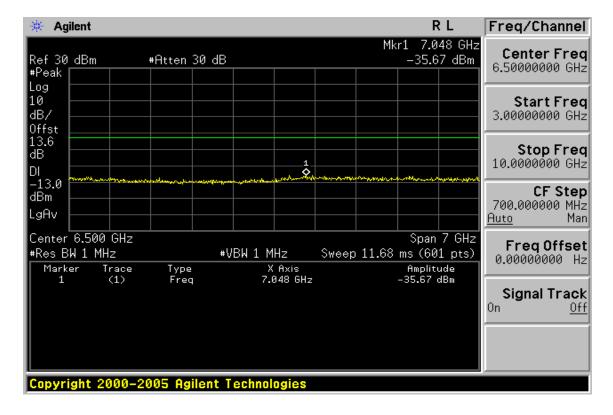
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Out of Band emission at antenna terminals -5MHz BW LTE-Band 5 (QPSK RB Number: 1 Offset: 0) Channel Mid





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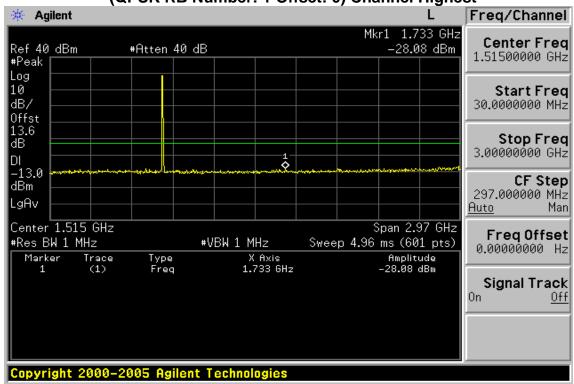
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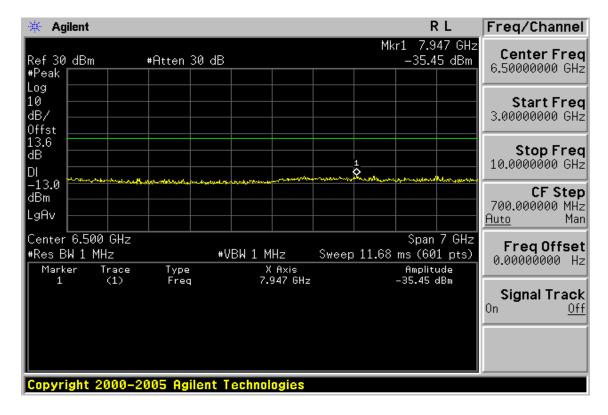
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Out of Band emission at antenna terminals-5MHz BW LTE-Band 5 (QPSK RB Number: 1 Offset: 0) Channel Highest





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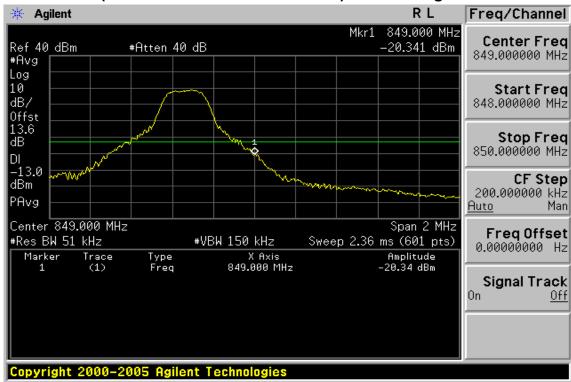


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Band edge emission at antenna terminals –5MHz BW LTE-Band 5 (QPSK RB Number: 1 Offset: 0) Channel Lowest



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



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



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



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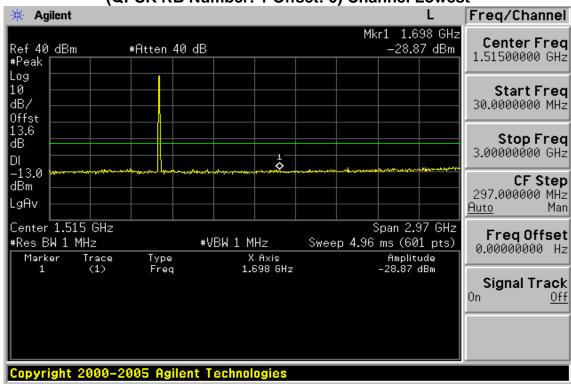
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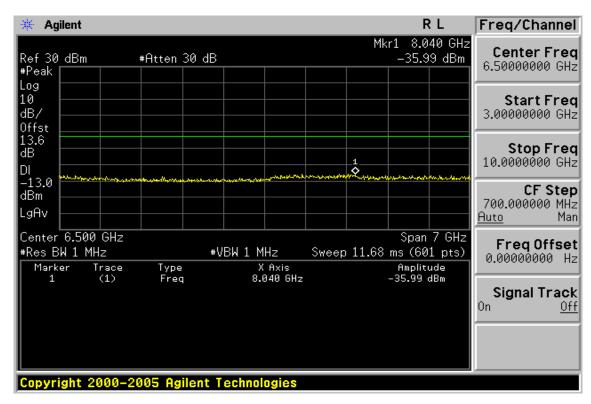
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Out of Band emission at antenna terminals-10MHz BW LTE-Band 5 (QPSK RB Number: 1 Offset: 0) Channel Lowest





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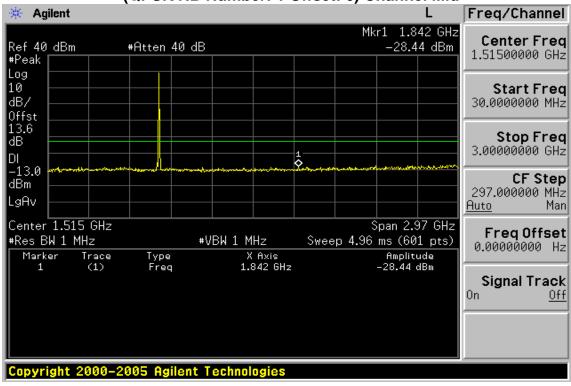
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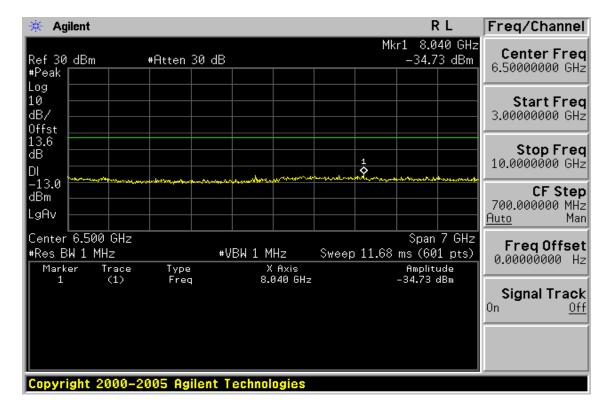
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Out of Band emission at antenna terminals -10MHz BW LTE-Band 5 (QPSK RB Number: 1 Offset: 0) Channel Mid





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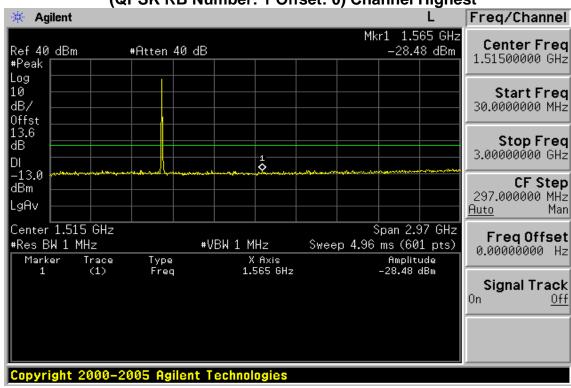
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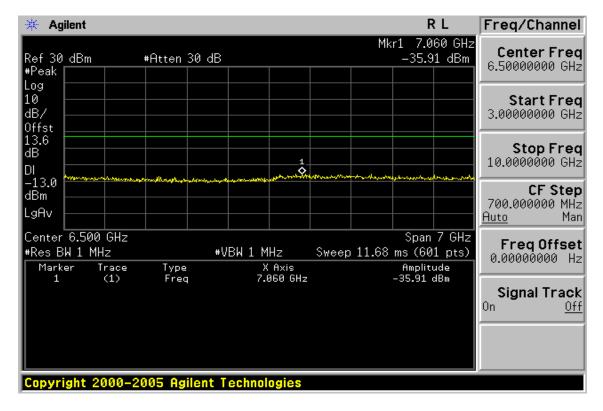
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Out of Band emission at antenna terminals-10MHz BW LTE-Band 5 (QPSK RB Number: 1 Offset: 0) Channel Highest





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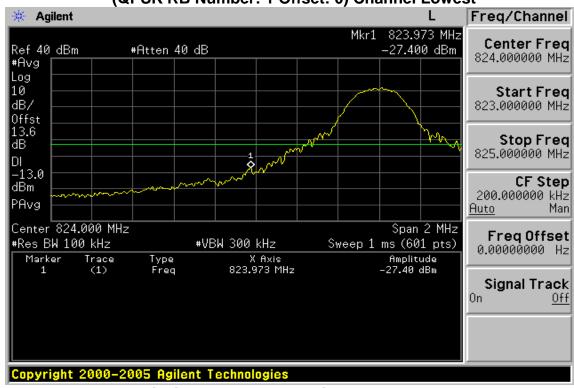
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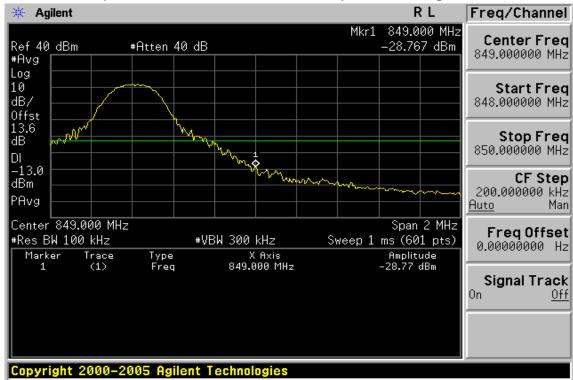


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Band edge emission at antenna terminals –10MHz BW LTE-Band 5 (QPSK RB Number: 1 Offset: 0) Channel Lowest



Band edge emission at antenna terminals -10MHz BW LTE-Band 5 (QPSK RB Number: 1 Offset: 49) Channel Highest



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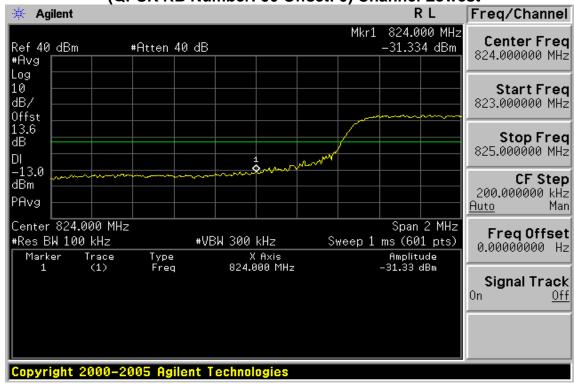
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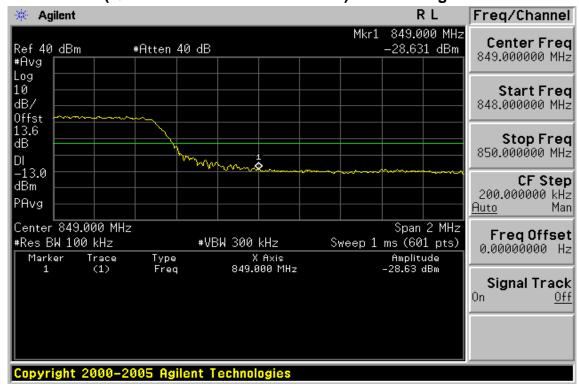


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Band edge emission at antenna terminals –10MHz BW LTE-Band 5 (QPSK RB Number: 50 Offset: 0) Channel Lowest



Band edge emission at antenna terminals –10MHz BW LTE-Band 5 (QPSK RB Number: 50 Offset: 0) Channel Highest



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10. FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

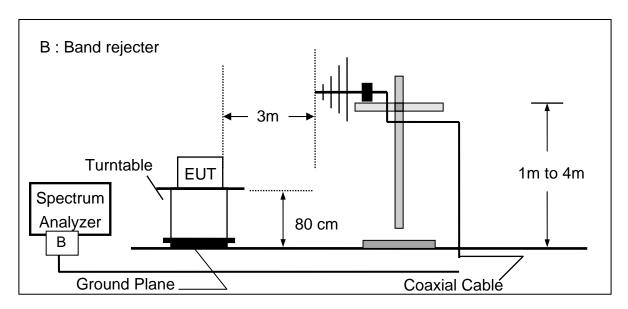
10.1. Standard Applicable

According to FCC §2.1053,

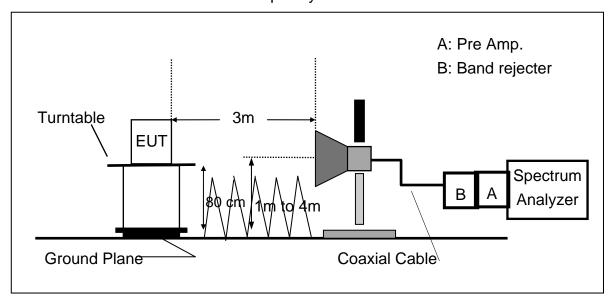
FCC §22.917(a), §24.238(a), the magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under the conditions specified in the instruction manual and/ or alignment procedure, shall not be less than 43 + 10 log (mean output power in watts) dBc below the mean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

10.2. EUT Setup

Radiated Emission Test Set-Up, Frequency Below 1000MHz



Radiated Emission Test Set-UP Frequency Over 1 GHz



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

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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10.4. Measurement Equipment Used:

	SGS SAC-III									
EQUIPMENT TYPE	MFR	MODEL	SERIAL	LAST CAL.	CAL DUE.					
		NUMBER	NUMBER							
EMI Test Receiver	R&S	ESCI7	100760	05/10/2016	05/09/2017					
Spectrum Analyzer	Agilent	E4446A	MY51100003	01/29/2016	01/28/2017					
Loop Antenna	ETS-Lindgren	6502	143303	12/23/2015	12/22/2016					
Bilog Antenna	SCHWAZBECK	VULB9168	378	12/14/2015	12/13/2016					
Horn Antenna	Schwarzbeck	BBHA9120D	1441	08/01/2016	07/31/2017					
Pre-Amplifier	Agilent	8447D	2944A07676	01/02/2016	01/01/2017					
Pre-Amplifier	EMC Instruments Corp.	EMC0126530	980038	01/02/2016	01/01/2017					
Turn Table	HD	DT420	N/A	N.C.R	N.C.R					
Antenna Tower	ChamPro	AM-BS-4500-B	060776-ABS	N.C.R	N.C.R					
Controller	ChamPro	EM1000	60776	N.C.R	N.C.R					
Low Loss Cable	Huber Suhner	966_RX	9	01/02/2016	01/01/2017					
3m Site NSA	SGS	966 chamber	N/A	07/02/2015	07/01/2016					
Low Loss Cable	Huber Suhner	966 TX	1	01/02/2016	01/01/2017					
Horn Antenna	Schwarzbeck	BBHA9170	184	12/12/2015	12/11/2016					
Pre-Amplifier	EMC Instruments Corp.	EMC184045	980135	01/02/2016	01/01/2017					
Radio Communication Analyzer	R&S	CMU200	102189	02/11/2016	02/10/2017					
Radio Communication Analyzer	Anritsu	MT8820C	6200995019	09/25/2015	09/24/2016					
Radio Communication Analyer	Anritsu	MT8820C	6201465317	12/10/2015	12/09/2016					

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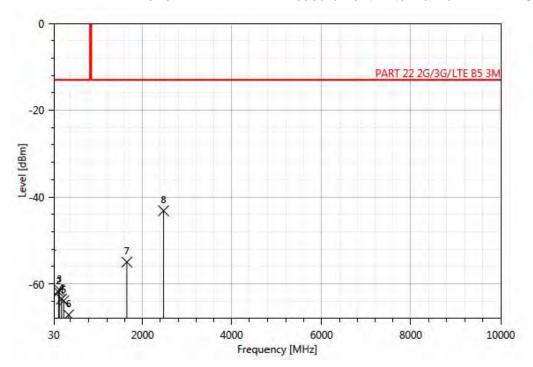
10.5. Measurement Result:

Radiated Spurious Emission Measurement Result: GPRS 850 Mode

Operation Mode: **GPRS 850** Test Date: 08/25/2016

Fundamental Frequency: 824.2 MHz Temp. / Humi. : 22 deg_C / 53 RH

Operation Band: Tx CH LOW Test Engineer: Edward Measurement Antenna Pol.: VERTICAL EUT Pol.: H Plane



Freq.	Note	Decetor	ERP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBd	dB	dBm	dB
30.00	S	Peak	-54.15	-32.49	-20.78	-0.88	-13.00	-41.15
134.76	S	Peak	-61.86	-52.98	-6.91	-1.97	-13.00	-48.86
153.19	S	Peak	-61.37	-52.32	-6.95	-2.10	-13.00	-48.37
201.69	S	Peak	-63.52	-59.23	-1.99	-2.29	-13.00	-50.52
253.10	S	Peak	-63.90	-59.76	-1.61	-2.53	-13.00	-50.90
362.71	S	Peak	-67.13	-62.72	-1.38	-3.04	-13.00	-54.13
1648.40	Н	Peak	-54.99	-55.06	6.87	-6.81	-13.00	-41.99
2472.60	Н	Peak	-43.16	-42.99	8.33	-8.51	-13.00	-30.16

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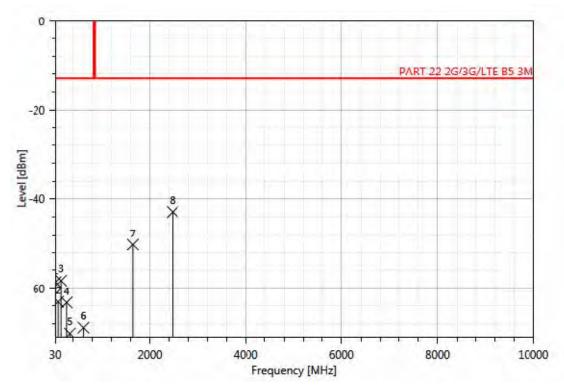
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Operation Mode: **GPRS 850** Test Date: 08/25/2016

Fundamental Frequency: 824.2 MHz Temp. / Humi.: 22 deg_C / 53 RH

Tx CH LOW Operation Band: Test Engineer: Edward

EUT Pol.: H Plane **HORIZONTAL** Measurement Antenna Pol.:



Freq.	Note	Decetor	ERP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBd	dB	dBm	dB
36.79	S	Peak	-58.62	-38.36	-19.25	-1.00	-13.00	-45.62
90.14	S	Peak	-63.12	-55.56	-6.04	-1.52	-13.00	-50.12
149.31	S	Peak	-58.29	-49.10	-7.10	-2.08	-13.00	-45.29
264.74	S	Peak	-63.28	-59.04	-1.66	-2.58	-13.00	-50.28
330.70	S	Peak	-70.17	-65.85	-1.46	-2.85	-13.00	-57.17
612.00	S	Peak	-68.87	-63.28	-1.73	-3.85	-13.00	-55.87
1648.40	Н	Peak	-50.30	-50.37	6.87	-6.81	-13.00	-37.30
2472.60	Н	Peak	-42.92	-42.74	8.33	-8.51	-13.00	-29.92

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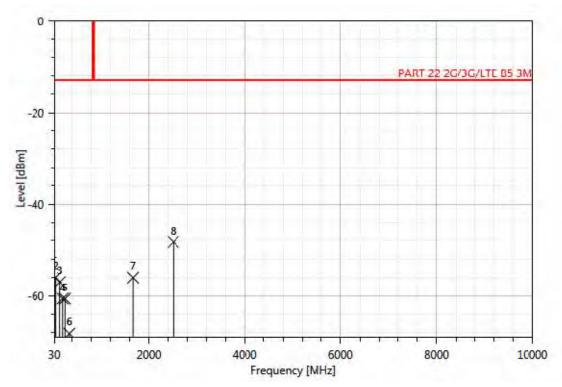


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Operation Mode: **GPRS 850** Test Date: 08/25/2016

Fundamental Frequency: 836.6 MHz Temp. / Humi.: 22 deg_C / 53 RH

Operation Band: Tx CH MID Test Engineer: Edward EUT Pol.: H Plane **VERTICAL** Measurement Antenna Pol.:



Freq.	Note	Decetor	ERP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBd	dB	dBm	dB
30.00	S	Peak	-53.54	-31.88	-20.78	-0.88	-13.00	-40.54
61.04	S	Peak	-55.92	-39.47	-15.15	-1.29	-13.00	-42.92
141.55	S	Peak	-56.96	-47.75	-7.18	-2.03	-13.00	-43.96
202.66	S	Peak	-60.63	-56.41	-1.93	-2.30	-13.00	-47.63
251.16	S	Peak	-60.65	-56.55	-1.58	-2.52	-13.00	-47.65
342.34	S	Peak	-68.16	-63.85	-1.39	-2.92	-13.00	-55.16
1673.20	Н	Peak	-55.97	-56.07	6.96	-6.86	-13.00	-42.97
2509.80	Н	Peak	-48.30	-48.09	8.36	-8.58	-13.00	-35.30

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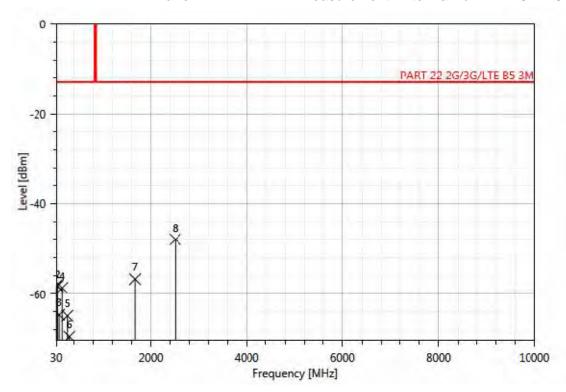
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Operation Mode: **GPRS 850** Test Date: 08/25/2016

Fundamental Frequency: 836.6 MHz Temp. / Humi.: 22 deg_C / 53 RH

Operation Band: Tx CH MID Test Engineer: Edward

EUT Pol.: H Plane **HORIZONTAL** Measurement Antenna Pol.:



Freq.	Note	Decetor	ERP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBd	dB	dBm	dB
34.85	S	Peak	-58.10	-37.56	-19.57	-0.97	-13.00	-45.10
57.16	S	Peak	-58.22	-40.86	-16.11	-1.26	-13.00	-45.22
90.14	S	Peak	-64.67	-57.11	-6.04	-1.52	-13.00	-51.67
153.19	S	Peak	-58.64	-49.58	-6.95	-2.10	-13.00	-45.64
260.86	S	Peak	-64.89	-60.62	-1.71	-2.56	-13.00	-51.89
299.66	S	Peak	-69.46	-65.05	-1.68	-2.73	-13.00	-56.46
1673.20	Н	Peak	-56.70	-56.80	6.96	-6.86	-13.00	-43.70
2509.80	Н	Peak	-47.91	-47.69	8.36	-8.58	-13.00	-34.91

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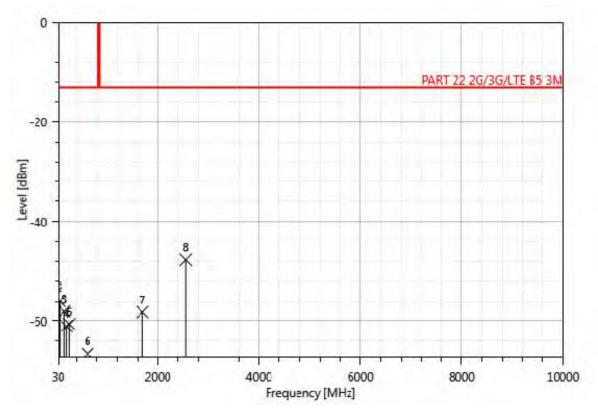


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Operation Mode: **GPRS 850** Test Date: 08/25/2016

Fundamental Frequency: 848.8 MHz Temp. / Humi.: 22 deg_C / 53 RH

Operation Band: Tx CH HIGH Test Engineer: Edward EUT Pol.: H Plane **VERTICAL** Measurement Antenna Pol.:



Freq.	Note	Decetor	ERP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBd	dB	dBm	dB
30.00	S	Peak	-54.14	-32.48	-20.78	-0.88	-13.00	-41.14
62.01	S	Peak	-55.96	-39.88	-14.78	-1.30	-13.00	-42.96
156.10	S	Peak	-58.10	-49.17	-6.81	-2.12	-13.00	-45.10
199.75	S	Peak	-61.06	-56.65	-2.12	-2.29	-13.00	-48.06
255.04	S	Peak	-60.65	-56.47	-1.64	-2.54	-13.00	-47.65
614.91	S	Peak	-66.60	-61.05	-1.71	-3.84	-13.00	-53.60
1697.60	Н	Peak	-58.24	-58.37	7.04	-6.91	-13.00	-45.24
2546.40	Н	Peak	-47.74	-47.49	8.41	-8.65	-13.00	-34.74

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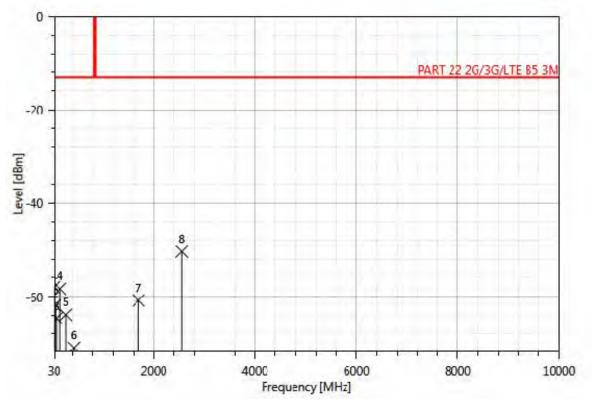
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Operation Mode: **GPRS 850** Test Date: 08/25/2016

Fundamental Frequency: 848.8 MHz Temp. / Humi.: 22 deg_C / 53 RH

Operation Band: Tx CH HIGH Test Engineer: Edward

EUT Pol.: H Plane **HORIZONTAL** Measurement Antenna Pol.:



Freq.	Note	Decetor	ERP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBd	dB	dBm	dB
34.85	S	Peak	-58.02	-37.48	-19.57	-0.97	-13.00	-45.02
54.25	S	Peak	-61.88	-43.94	-16.71	-1.23	-13.00	-48.88
90.14	S	Peak	-64.62	-57.06	-6.04	-1.52	-13.00	-51.62
151.25	S	Peak	-58.35	-49.21	-7.04	-2.10	-13.00	-45.35
265.71	S	Peak	-63.91	-59.68	-1.65	-2.58	-13.00	-50.91
419.94	S	Peak	-70.98	-66.01	-1.59	-3.38	-13.00	-57.98
1697.60	Н	Peak	-60.82	-60.95	7.04	-6.91	-13.00	-47.82
2546.40	Н	Peak	-50.38	-50.14	8.41	-8.65	-13.00	-37.38

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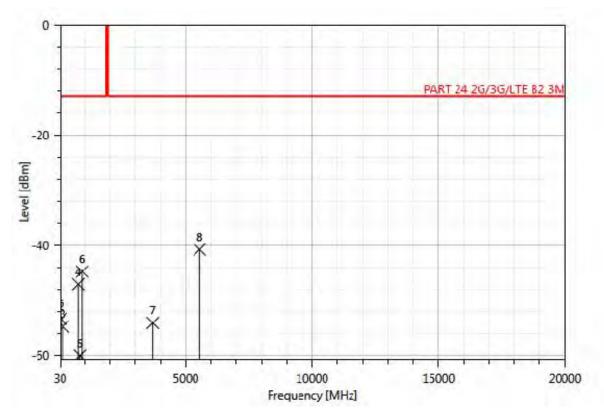
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Radiated Spurious Emission Measurement Result: GSM 1900 Mode

GSM 1900 Operation Mode: Test Date: 08/25/2016

Fundamental Frequency: 22 deg C / 53 RH 1850.2 MHz Temp. / Humi. :

Operation Band: TX LOW Test Engineer: Edward EUT Pol.: **VERTICAL** E1 Plane Measurement Antenna Pol.:



Freq.	Note	Decetor	EIRP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBi	dB	dBm	dB
30.00	S	Peak	-51.66	-32.15	-18.63	-0.88	-13.00	-38.66
62.01	S	Peak	-53.39	-39.46	-12.63	-1.30	-13.00	-40.39
153.19	S	Peak	-54.79	-47.88	-4.80	-2.10	-13.00	-41.79
747.80	S	Peak	-47.08	-42.94	0.45	-4.59	-13.00	-34.08
813.76	S	Peak	-60.10	-55.97	0.64	-4.77	-13.00	-47.10
896.21	S	Peak	-44.79	-40.29	0.42	-4.92	-13.00	-31.79
3700.40	Н	Peak	-54.11	-55.29	11.87	-10.70	-13.00	-41.11
5550.60	Н	Peak	-40.80	-39.32	11.92	-13.40	-13.00	-27.80

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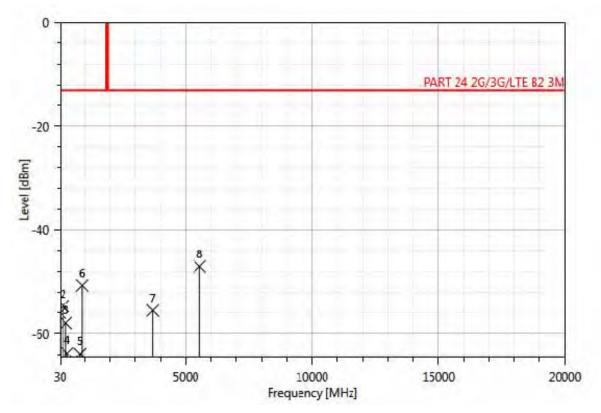
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Operation Mode: **GSM 1900** Test Date: 08/25/2016

Fundamental Frequency: 1850.2 MHz Temp. / Humi.: 22 deg_C / 53 RH

Operation Band: TX LOW Test Engineer: Edward

EUT Pol.: E1 Plane **HORIZONTAL** Measurement Antenna Pol.:



Freq.	Note	Decetor	EIRP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBi	dB	dBm	dB
36.79	S	Peak	-55.92	-37.81	-17.10	-1.00	-13.00	-42.92
149.31	S	Peak	-54.68	-47.65	-4.95	-2.08	-13.00	-41.68
262.80	S	Peak	-57.90	-55.80	0.47	-2.57	-13.00	-44.90
316.15	S	Peak	-63.75	-61.54	0.59	-2.80	-13.00	-50.75
813.76	S	Peak	-63.88	-59.75	0.64	-4.77	-13.00	-50.88
896.21	S	Peak	-50.73	-46.24	0.42	-4.92	-13.00	-37.73
3700.40	Н	Peak	-55.54	-56.72	11.87	-10.70	-13.00	-42.54
5550.60	Н	Peak	-47.03	-45.55	11.92	-13.40	-13.00	-34.03

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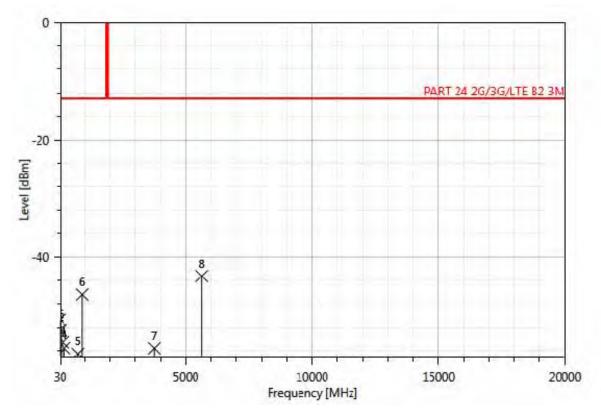


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Operation Mode: **GSM 1900** Test Date: 08/25/2016

Fundamental Frequency: 1880 MHz Temp. / Humi.: 22 deg_C / 53 RH

Operation Band: TX MID Test Engineer: Edward EUT Pol.: E1 Plane **VERTICAL** Measurement Antenna Pol.:



Freq.	Note	Decetor	EIRP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBi	dB	dBm	dB
31.94	S	Peak	-50.67	-31.63	-18.12	-0.92	-13.00	-37.67
61.04	S	Peak	-52.43	-38.13	-13.00	-1.29	-13.00	-39.43
153.19	S	Peak	-54.51	-47.61	-4.80	-2.10	-13.00	-41.51
199.75	S	Peak	-55.50	-53.24	0.03	-2.29	-13.00	-42.50
730.34	S	Peak	-56.48	-52.59	0.59	-4.47	-13.00	-43.48
896.21	S	Peak	-46.36	-41.86	0.42	-4.92	-13.00	-33.36
3760.00	Н	Peak	-55.53	-56.65	11.84	-10.72	-13.00	-42.53
5640.00	Н	Peak	-43.25	-41.66	11.96	-13.55	-13.00	-30.25

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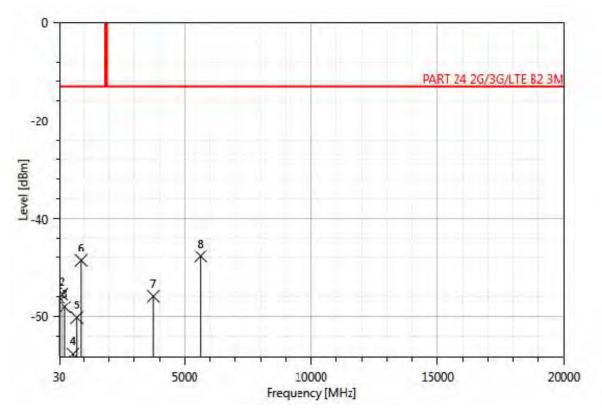
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Operation Mode: **GSM 1900** Test Date: 08/25/2016

Fundamental Frequency: 1880 MHz Temp. / Humi.: 22 deg_C / 53 RH

Operation Band: TX MID Test Engineer: Edward

EUT Pol.: E1 Plane **HORIZONTAL** Measurement Antenna Pol.:



Freq.	Note	Decetor	EIRP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBi	dB	dBm	dB
34.85	S	Peak	-56.09	-37.69	-17.42	-0.97	-13.00	-43.09
151.25	S	Peak	-55.43	-48.44	-4.89	-2.10	-13.00	-42.43
259.89	S	Peak	-58.05	-55.92	0.43	-2.56	-13.00	-45.05
582.90	S	Peak	-67.60	-64.11	0.44	-3.93	-13.00	-54.60
730.34	S	Peak	-60.20	-56.31	0.59	-4.47	-13.00	-47.20
896.21	S	Peak	-48.55	-44.06	0.42	-4.92	-13.00	-35.55
3760.00	Н	Peak	-55.83	-56.95	11.84	-10.72	-13.00	-42.83
5640.00	Н	Peak	-47.71	-46.12	11.96	-13.55	-13.00	-34.71

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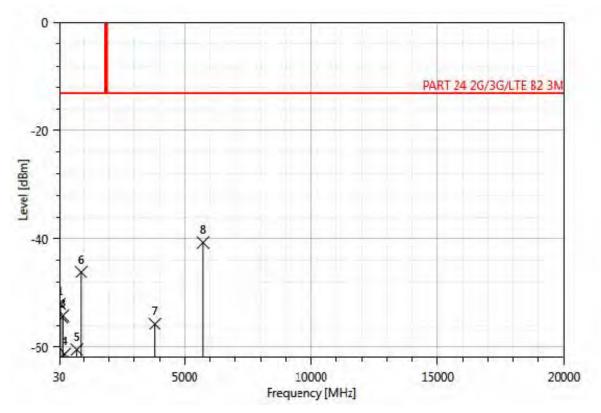


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Operation Mode: **GSM 1900** Test Date: 08/25/2016

Fundamental Frequency: 1909.8 MHz Temp. / Humi.: 22 deg_C / 53 RH

Operation Band: TX HIGH Test Engineer: Edward EUT Pol.: E1 Plane **VERTICAL** Measurement Antenna Pol.:



Freq.	Note	Decetor	EIRP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBi	dB	dBm	dB
62.01	S	Peak	-52.01	-38.07	-12.63	-1.30	-13.00	-39.01
154.16	S	Peak	-54.45	-47.58	-4.75	-2.11	-13.00	-41.45
202.66	S	Peak	-54.22	-52.14	0.22	-2.30	-13.00	-41.22
262.80	S	Peak	-61.27	-59.16	0.47	-2.57	-13.00	-48.27
728.40	S	Peak	-60.46	-56.60	0.60	-4.46	-13.00	-47.46
896.21	S	Peak	-46.14	-41.65	0.42	-4.92	-13.00	-33.14
3819.60	Н	Peak	-55.75	-56.74	11.80	-10.82	-13.00	-42.75
5729.40	Н	Peak	-40.67	-38.97	11.99	-13.70	-13.00	-27.67

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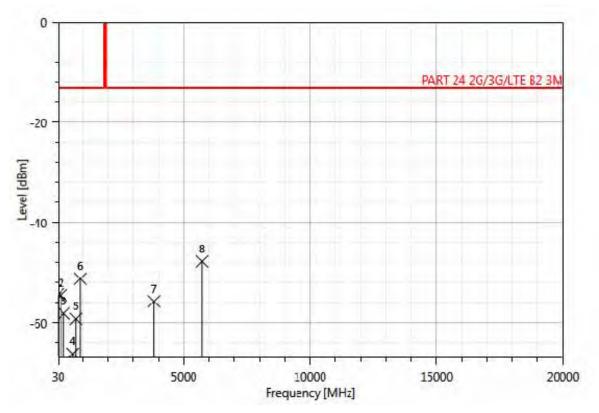
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Operation Mode: **GSM 1900** Test Date: 08/25/2016

Fundamental Frequency: 1909.8 MHz Temp. / Humi.: 22 deg_C / 53 RH

Operation Band: TX HIGH Test Engineer: Edward

EUT Pol.: E1 Plane **HORIZONTAL** Measurement Antenna Pol.:



Freq.	Note	Decetor	EIRP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBi	dB	dBm	dB
34.85	S	Peak	-54.32	-35.92	-17.42	-0.97	-13.00	-41.32
149.31	S	Peak	-54.53	-47.49	-4.95	-2.08	-13.00	-41.53
257.95	S	Peak	-58.16	-56.07	0.46	-2.55	-13.00	-45.16
610.06	S	Peak	-66.23	-62.77	0.40	-3.85	-13.00	-53.23
731.31	S	Peak	-59.25	-55.35	0.58	-4.48	-13.00	-46.25
900.09	S	Peak	-51.23	-46.72	0.41	-4.92	-13.00	-38.23
3819.60	Н	Peak	-55.75	-56.74	11.80	-10.82	-13.00	-42.75
5729.40	Н	Peak	-47.77	-46.07	11.99	-13.70	-13.00	-34.77

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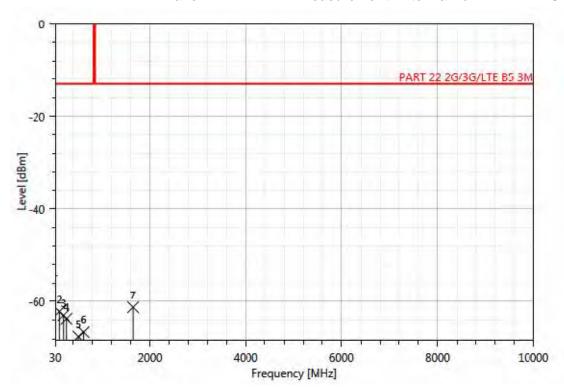
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Radiated Spurious Emission Measurement Result: WCDMA V Mode

Operation Mode: WCDMA B5 Test Date: 08/25/2016

Fundamental Frequency: 826.4 MHz Temp. / Humi.: 22 deg_C / 53 RH

Operation Band: Tx CH LOW Test Engineer: Edward EUT Pol.: H Plane **VERTICAL** Measurement Antenna Pol.:



Freq.	Note	Decetor	ERP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBd	dB	dBm	dB
30.00	S	Peak	-56.32	-34.66	-20.78	-0.88	-13.00	-43.32
115.36	S	Peak	-62.19	-53.78	-6.61	-1.80	-13.00	-49.19
202.66	S	Peak	-62.96	-58.73	-1.93	-2.30	-13.00	-49.96
260.86	S	Peak	-63.74	-59.47	-1.71	-2.56	-13.00	-50.74
507.24	S	Peak	-67.51	-62.26	-1.44	-3.81	-13.00	-54.51
614.91	S	Peak	-66.56	-61.01	-1.71	-3.84	-13.00	-53.56
1652.80	Н	Peak	-61.23	-61.31	6.89	-6.82	-13.00	-48.23

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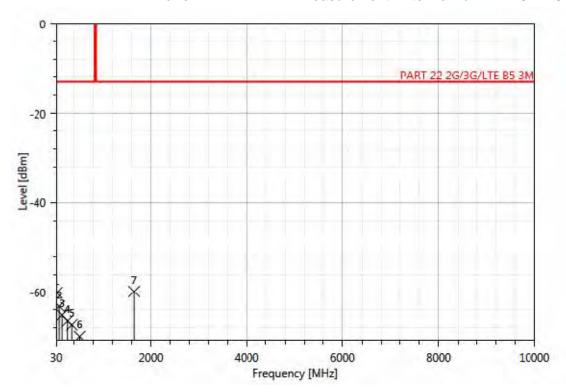
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Operation Mode: Test Date: WCDMA B5 08/25/2016

Fundamental Frequency: 826.4 MHz Temp. / Humi.: 22 deg_C / 53 RH

Operation Band: Tx CH LOW Test Engineer: Edward

EUT Pol.: H Plane **HORIZONTAL** Measurement Antenna Pol.:



Freq.	Note	Decetor	ERP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBd	dB	dBm	dB
37.76	S	Peak	-60.09	-39.96	-19.11	-1.02	-13.00	-47.09
91.11	S	Peak	-63.18	-55.60	-6.05	-1.53	-13.00	-50.18
150.28	S	Peak	-65.09	-55.92	-7.08	-2.09	-13.00	-52.09
260.86	S	Peak	-66.41	-62.14	-1.71	-2.56	-13.00	-53.41
352.04	S	Peak	-67.26	-62.93	-1.34	-2.98	-13.00	-54.26
513.06	S	Peak	-69.86	-64.60	-1.43	-3.83	-13.00	-56.86
1652.80	Н	Peak	-59.81	-59.89	6.89	-6.82	-13.00	-46.81

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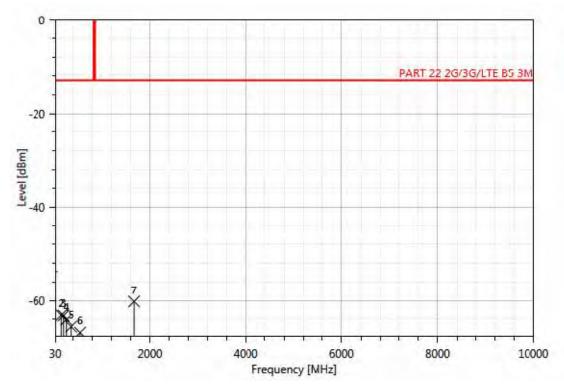


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Operation Mode: Test Date: WCDMA B5 08/25/2016

Fundamental Frequency: 836.6 MHz Temp. / Humi.: 22 deg_C / 53 RH

Tx CH MID Operation Band: Test Engineer: Edward EUT Pol.: H Plane **VERTICAL** Measurement Antenna Pol.:



Freq.	Note	Decetor	ERP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBd	dB	dBm	dB
30.00	S	Peak	-55.76	-34.10	-20.78	-0.88	-13.00	-42.76
153.19	S	Peak	-63.12	-54.06	-6.95	-2.10	-13.00	-50.12
201.69	S	Peak	-63.19	-58.90	-1.99	-2.29	-13.00	-50.19
260.86	S	Peak	-64.03	-59.76	-1.71	-2.56	-13.00	-51.03
357.86	S	Peak	-65.53	-61.16	-1.36	-3.01	-13.00	-52.53
542.16	S	Peak	-66.80	-61.48	-1.42	-3.90	-13.00	-53.80
1673.20	Н	Peak	-60.23	-60.33	6.96	-6.86	-13.00	-47.23

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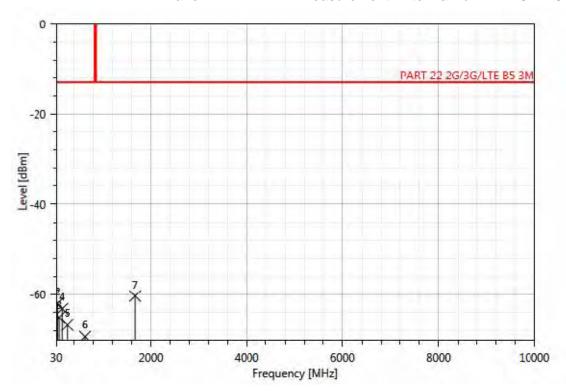
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Operation Mode: Test Date: WCDMA B5 08/25/2016

Fundamental Frequency: 836.6 MHz Temp. / Humi.: 22 deg_C / 53 RH

Operation Band: Tx CH MID Test Engineer: Edward

EUT Pol.: H Plane **HORIZONTAL** Measurement Antenna Pol.:



Freq.	Note	Decetor	ERP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBd	dB	dBm	dB
30.00	S	Peak	-60.80	-39.14	-20.78	-0.88	-13.00	-47.80
57.16	S	Peak	-62.00	-44.64	-16.11	-1.26	-13.00	-49.00
91.11	S	Peak	-65.10	-57.52	-6.05	-1.53	-13.00	-52.10
153.19	S	Peak	-63.21	-54.16	-6.95	-2.10	-13.00	-50.21
260.86	S	Peak	-66.70	-62.43	-1.71	-2.56	-13.00	-53.70
623.64	S	Peak	-69.28	-63.84	-1.62	-3.82	-13.00	-56.28
1673.20	Н	Peak	-60.36	-60.46	6.96	-6.86	-13.00	-47.36

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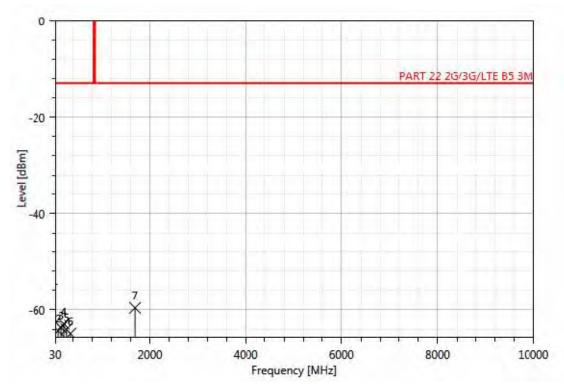


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Operation Mode: Test Date: WCDMA B5 08/25/2016

Fundamental Frequency: 846.6 MHz Temp. / Humi.: 22 deg_C / 53 RH

Tx CH HIGH Operation Band: Test Engineer: Edward EUT Pol.: H Plane **VERTICAL** Measurement Antenna Pol.:



Freq.	Note	Decetor	ERP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBd	dB	dBm	dB
30.00	S	Peak	-56.37	-34.71	-20.78	-0.88	-13.00	-43.37
91.11	S	Peak	-64.33	-56.75	-6.05	-1.53	-13.00	-51.33
151.25	S	Peak	-63.70	-54.56	-7.04	-2.10	-13.00	-50.70
206.54	S	Peak	-62.90	-58.91	-1.69	-2.31	-13.00	-49.90
260.86	S	Peak	-64.03	-59.76	-1.71	-2.56	-13.00	-51.03
343.31	S	Peak	-64.91	-60.59	-1.38	-2.93	-13.00	-51.91
1693.20	Н	Peak	-59.63	-59.76	7.02	-6.90	-13.00	-46.63

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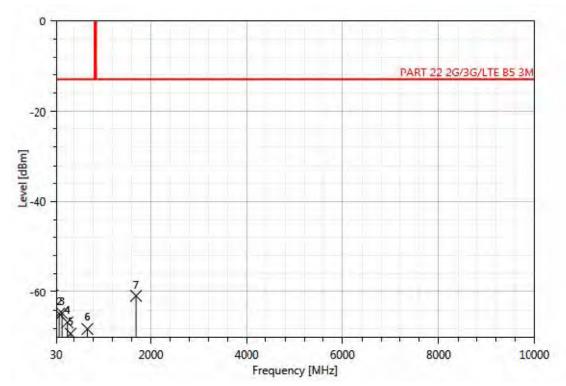
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Operation Mode: Test Date: WCDMA B5 08/25/2016

Fundamental Frequency: 846.6 MHz Temp. / Humi.: 22 deg_C / 53 RH

Operation Band: Tx CH HIGH Test Engineer: Edward

EUT Pol.: H Plane **HORIZONTAL** Measurement Antenna Pol.:



Freq.	Note	Decetor	ERP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBd	dB	dBm	dB
30.00	S	Peak	-61.58	-39.92	-20.78	-0.88	-13.00	-48.58
91.11	S	Peak	-64.78	-57.20	-6.05	-1.53	-13.00	-51.78
151.25	S	Peak	-64.71	-55.58	-7.04	-2.10	-13.00	-51.71
260.86	S	Peak	-66.69	-62.41	-1.71	-2.56	-13.00	-53.69
327.79	S	Peak	-69.15	-64.83	-1.48	-2.84	-13.00	-56.15
672.14	S	Peak	-68.14	-62.73	-1.34	-4.07	-13.00	-55.14
1693.20	Н	Peak	-60.93	-61.06	7.02	-6.90	-13.00	-47.93

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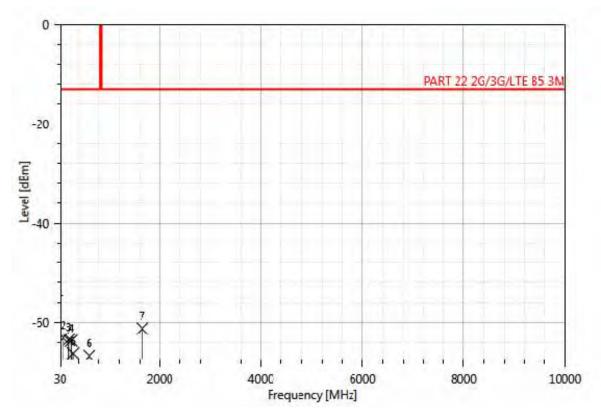
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Radiated Spurious Emission Measurement Result: 5MHz BW LTE-Band 5 QPSK RB 1 24 (The Worst Case)

Operation Mode: LTE B5 Test Date: 08/25/2016

Fundamental Frequency: 826.5 MHz Temp. / Humi. : 21 deg_C / 52 RH

Operation Band: Tx CH LOW Test Engineer: Edward EUT Pol.: H Plane Measurement Antenna Pol.: VERTICAL



Freq.	Note	Decetor	ERP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBd	dB	dBm	dB
30.00	S	Peak	-56.33	-34.67	-20.78	-0.88	-13.00	-43.33
91.11	S	Peak	-63.11	-55.53	-6.05	-1.53	-13.00	-50.11
201.69	S	Peak	-63.53	-59.24	-1.99	-2.29	-13.00	-50.53
255.04	S	Peak	-63.67	-59.49	-1.64	-2.54	-13.00	-50.67
288.99	S	Peak	-66.20	-61.74	-1.77	-2.68	-13.00	-53.20
607.15	S	Peak	-66.72	-61.07	-1.78	-3.86	-13.00	-53.72
1653.00	Н	Peak	-61.22	-61.29	6.89	-6.82	-13.00	-48.22

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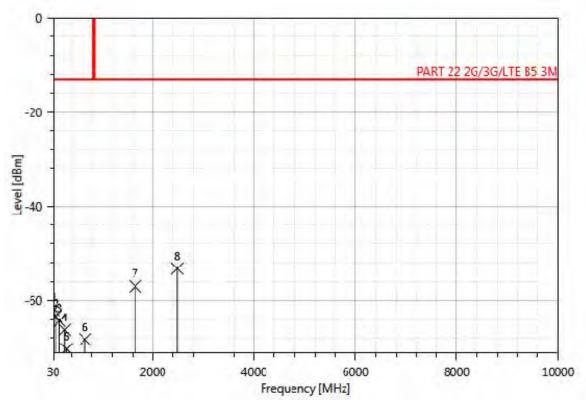
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Operation Mode: Test Date: LTE B5 08/25/2016

Fundamental Frequency: 826.5 MHz Temp. / Humi. : 21 deg_C / 52 RH

Operation Band: Tx CH LOW Test Engineer: Edward

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



Freq.	Note	Decetor	ERP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBd	dB	dBm	dB
44.55	S	Peak	-61.96	-42.55	-18.30	-1.11	-13.00	-48.96
91.11	S	Peak	-63.34	-55.76	-6.05	-1.53	-13.00	-50.34
158.04	S	Peak	-64.31	-55.46	-6.73	-2.13	-13.00	-51.31
260.86	S	Peak	-66.24	-61.97	-1.71	-2.56	-13.00	-53.24
299.66	S	Peak	-70.29	-65.88	-1.68	-2.73	-13.00	-57.29
662.44	S	Peak	-68.25	-62.89	-1.35	-4.01	-13.00	-55.25
1653.00	Н	Peak	-56.93	-57.01	6.89	-6.82	-13.00	-43.93
2479.50	Н	Peak	-53.20	-53.01	8.34	-8.52	-13.00	-40.20

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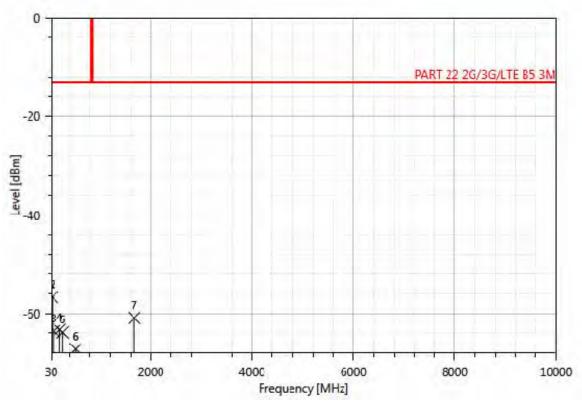


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Operation Mode: Test Date: LTE B5 08/25/2016

Fundamental Frequency: 836.5 MHz Temp. / Humi. : 21 deg_C / 52 RH

Operation Band: Tx CH MID Test Engineer: Edward EUT Pol.: H Plane Measurement Antenna Pol.: VERTICAL



Freq.	Note	Decetor	ERP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBd	dB	dBm	dB
30.00	S	Peak	-56.45	-34.79	-20.78	-0.88	-13.00	-43.45
52.31	S	Peak	-56.65	-38.32	-17.12	-1.20	-13.00	-43.65
91.11	S	Peak	-63.56	-55.98	-6.05	-1.53	-13.00	-50.56
199.75	S	Peak	-63.28	-58.87	-2.12	-2.29	-13.00	-50.28
259.89	S	Peak	-63.81	-59.53	-1.72	-2.56	-13.00	-50.81
510.15	S	Peak	-67.19	-61.93	-1.43	-3.82	-13.00	-54.19
1673.00	Н	Peak	-60.87	-60.97	6.96	-6.86	-13.00	-47.87

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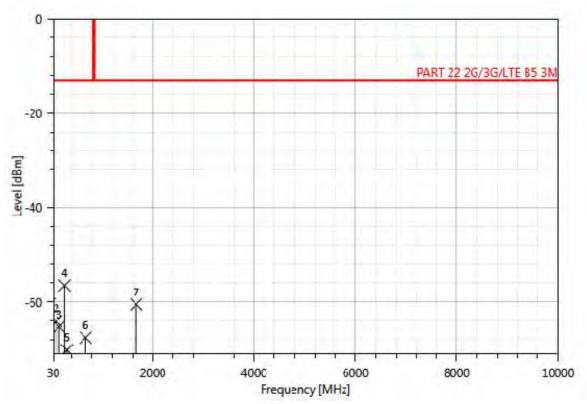
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Operation Mode: Test Date: LTE B5 08/25/2016

Fundamental Frequency: 836.5 MHz Temp. / Humi.: 21 deg_C / 52 RH

Operation Band: Tx CH MID Test Engineer: Edward

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



Freq.	Note	Decetor	ERP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBd	dB	dBm	dB
30.00	S	Peak	-61.29	-39.63	-20.78	-0.88	-13.00	-48.29
93.05	S	Peak	-64.12	-56.50	-6.06	-1.56	-13.00	-51.12
149.31	S	Peak	-65.30	-56.11	-7.10	-2.08	-13.00	-52.30
257.95	S	Peak	-56.55	-52.31	-1.69	-2.55	-13.00	-43.55
304.51	S	Peak	-70.22	-65.83	-1.64	-2.75	-13.00	-57.22
672.14	S	Peak	-67.57	-62.16	-1.34	-4.07	-13.00	-54.57
1673.00	Н	Peak	-60.54	-60.64	6.96	-6.86	-13.00	-47.54

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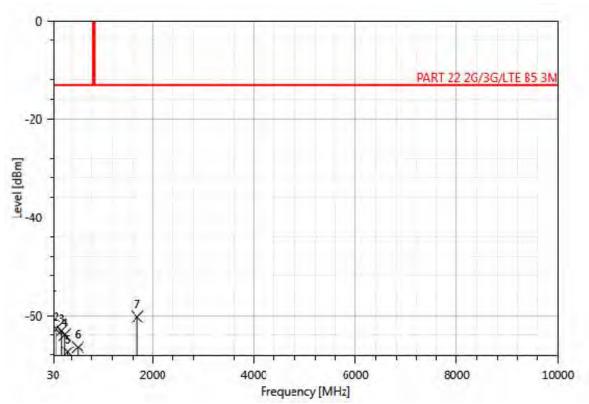


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Operation Mode: LTE B5 Test Date: 08/25/2016

Fundamental Frequency: 846.5 MHz Temp. / Humi. : 21 deg_C / 52 RH

Operation Band: Tx CH HIGH Test Engineer: Edward EUT Pol.: H Plane Measurement Antenna Pol.: VERTICAL



Freq.	Note	Decetor	ERP	SG Output	Antenna	Cable	Limit	Margin	
		Mode	Level	Level	Gain	Loss	@3m		
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBd	dB	dBm	dB	_
30.00	S	Peak	-56.83	-35.17	-20.78	-0.88	-13.00	-43.83	
91.11	S	Peak	-62.82	-55.24	-6.05	-1.53	-13.00	-49.82	
202.66	S	Peak	-63.17	-58.94	-1.93	-2.30	-13.00	-50.17	
260.86	S	Peak	-63.96	-59.69	-1.71	-2.56	-13.00	-50.96	
319.06	S	Peak	-67.47	-63.12	-1.54	-2.81	-13.00	-54.47	
519.85	S	Peak	-66.48	-61.20	-1.43	-3.85	-13.00	-53.48	
1693.00	Н	Peak	-60.27	-60.40	7.02	-6.90	-13.00	-47.27	

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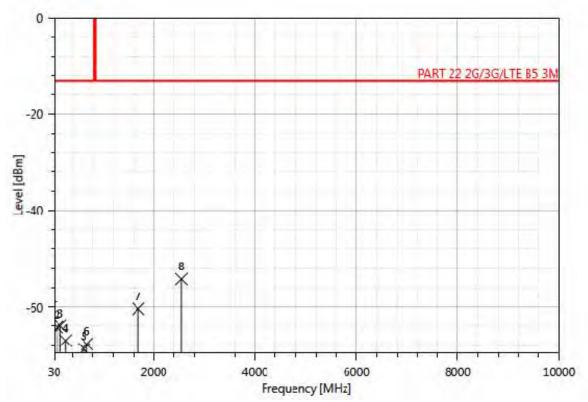
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Operation Mode: LTE B5 Test Date: 08/25/2016

Fundamental Frequency: 846.5 MHz Temp. / Humi. : 21 deg_C / 52 RH

Operation Band: Tx CH HIGH Test Engineer: Edward

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



Freq.	Note	Decetor	ERP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBd	dB	dBm	dB
30.00	S	Peak	-60.88	-39.22	-20.78	-0.88	-13.00	-47.88
91.11	S	Peak	-64.22	-56.64	-6.05	-1.53	-13.00	-51.22
153.19	S	Peak	-63.94	-54.89	-6.95	-2.10	-13.00	-50.94
260.86	S	Peak	-66.98	-62.70	-1.71	-2.56	-13.00	-53.98
621.70	S	Peak	-68.72	-63.26	-1.64	-3.82	-13.00	-55.72
676.99	S	Peak	-67.68	-62.24	-1.34	-4.10	-13.00	-54.68
1693.00	Н	Peak	-60.36	-60.48	7.02	-6.90	-13.00	-47.36
2539.50	Н	Peak	-54.19	-53.95	8.40	-8.64	-13.00	-41.19

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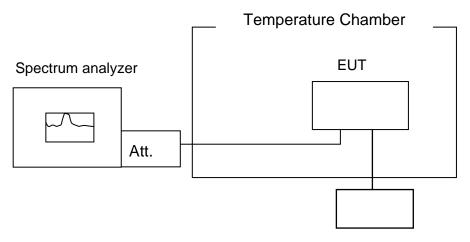
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11. FREQUENCY STABILITY MEASUREMENT

11.1. Standard Applicable:

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

11.2. **Test Set-up**:



Variable DC Power Supply

Note: Measurement setup for testing on Antenna connector

11.3. Measurement Procedure:

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

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.

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11.4. Measurement Equipment Used:

.4. Measurement Lyu	•	andusted De	om					
	SGS Conducted Room							
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.			
TYPE		NUMBER	NUMBER	CAL.				
Power Meter	Anritsu	ML2495A	1005007	12/09/2015	12/08/2016			
Power Sensor	Anritsu	MA2411B	917032	12/09/2015	12/08/2016			
EXA Spectrum Analyzer	Agilent	N9030A	MY53120760	02/26/2016	02/25/2017			
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2016	01/01/2017			
Coaxial Cable	HUBER+SUHNER	SUCOFLEX 102	23670/2	01/02/2016	01/01/2017			
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2016	01/01/2017			
Splitter	Agilent	11636B	N/A	01/02/2016	01/01/2017			
DC Power Supply	Agilent	E3640A	MY52410006	11/05/2015	11/04/2016			
Temperature Chamber	TERCHY	MHG-120LF	911009	05/17/2016	05/16/2017			
Radio Communication Analyzer	R&S	CMU200	102189	02/11/2016	02/10/2017			
Radio Communication Analyzer	Anritsu	MT8820C	6200995019	09/25/2015	09/24/2016			
Radio Communication Analyzer	Anritsu	MT8820C	6201465317	12/10/2015	12/09/2016			

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11.5. Measurement Result:

FREQUENCY ERROR vs. VOLTAGE

· · · · · · · · · · · · · · · · · · ·							
Ref	Reference Frequency: GPRS 850 Mid Channel 836.6 MHz						
	Limit: +/- 2.5 ppm						
Power Supply	Environment	Frequency					
\/da	Temperature		Delta (Hz)	Limit (Hz)			
Vdc	()	(MHz)					
4.29	20	836.600025	-11	2091			
3.80	20	836.600036	0	2091			
3.42	20	836.600011	-25	2091			
2.7	20	836 600000	27	2004			
(End point)	20	836.600009	-27	2091			

FREQUENCY ERROR vs. TEMPERATURE

	ALGOLIUS I ENTONE						
Re	Reference Frequency: GPRS 850 Mid Channel 836.6 MHz						
		Limit: +/- 2.5 ppm					
Power Supply	Environment	Frequency					
Vdc	Temperature ()	(MHz)	Delta (Hz)	Limit (Hz)			
3.80	50	836.600017	-19	2091			
3.80	40	836.600021	-15	2091			
3.80	30	836.600033	-3	2091			
3.80	20	836.600036	0	2091			
3.80	10	836.599986	-50	2091			
3.80	0	836.600026	-10	2091			
3.80	-10	836.600016	-20	2091			
3.80	-20	836.600015	-21	2091			
3.80	-30	836.600027	-9	2091			

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FREQUENCY ERROR vs. VOLTAGE

Reference Frequency: GPRS 1900 Mid Channel 1880 MHz						
		Limit: +/- 2.5 ppm				
Power Supply	Environment	Frequency				
Vdc	Temperature ()	(MHz)	Delta (Hz)	Limit (Hz)		
4.29	20	1880.000016	-9	4700		
3.80	20	1880.000025	0	4700		
3.42	20	1880.000022	-3	4700		
2.7 (End point)	20	1880.000017	-8	4700		

FREQUENCY ERROR vs. TEMPERATURE

	<u></u>						
R	Reference Frequency: GPRS 1900 Mid Channel 1880 MHz						
	L	_imit: +/- 2.5 ppm = H	z				
Power Supply	Environment	Frequency	Dolto (Uz)	Limit (Uz)			
Vdc	Temperature ()	(MHz)	Delta (Hz)	Limit (Hz)			
3.80	50	1880.000007	-18	4700			
3.80	40	1880.000014	-11	4700			
3.80	30	1880.000022	-3	4700			
3.80	20	1880.000025	0	4700			
3.80	10	1880.000016	-9	4700			
3.80	0	1880.000002	-23	4700			
3.80	-10	1880.000024	-1	4700			
3.80	-20	1880.000016	-9	4700			
3.80	-30	1880.000011	-14	4700			

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FREQUENCY ERROR vs. VOLTAGE

Re	Reference Frequency: WCDMA V Mid Channel 836.6 MHz						
	Limit: +/- 2.5 ppm						
Power Supply	Environment	Frequency					
Vdc	Temperature ()	(MHz)	Delta (Hz)	Limit (Hz)			
4.29	20	836.600011	-8	2091			
3.80	20	836.600019	0	2091			
3.42	20	836.599978	-41	2091			
2.7 (End Point)	20	836.600011	-8	2091			

FREQUENCY ERROR vs. TEMPERATURE

Re	Reference Frequency: WCDMA V Mid Channel 836.6 MHz					
		Limit: +/- 2.5 ppr	m			
Power Supply	Environment	Frequency	Delta (Hz)	1 : :		
Vdc	Temperature ()	(MHz)	Della (HZ)	Limit (Hz)		
3.80	50	836.599984	-35	2091		
3.80	40	836.599978	-41	2091		
3.80	30	836.600014	-5	2091		
3.80	20	836.600019	0	2091		
3.80	10	836.600016	-3	2091		
3.80	0	836.600000	-19	2091		
3.80	-10	836.599995	-24	2091		
3.80	-20	836.599993	-26	2091		
3.80	-30	836.599984	-35	2091		

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FREQUENCY ERROR vs. VOLTAGE

QUEITOT ENTON VS. VOETAGE					
Reference Frequency:		LTE B5 Mid	836.5	MHz 10M QPSK	
Reference	Frequency.	Channel	030.5	CH 20525	
		Limit: +/- 2.5 pp	om		
Power Supply	Environment	Frequency			
Vdc	Temperature ()	(MHz)	Delta (Hz)	Limit (Hz)	
4.29	25	836.500000	-2.20	2091	
3.80	25	836.500002	0.00	2091	
3.42	25	836.500004	1.80	2091	
3.14 (End Point)	25	836.499997	-4.40	2091	

FREQUENCY ERROR vs. TEMPERATURE

Reference Frequency:		LTE B5 Mid Channel	836.5	MHz 10M QPSK CH 20525			
	Limit: +/- 2.5 ppm						
Power Supply	Environment	Frequency	Dolto (Uz)	l imit /U¬\			
Vdc	Temperature ()	(MHz)	Delta (Hz)	Limit (Hz)			
3.80	-30	836.500001	3.70	2091			
3.80	-20	836.500002	4.30	2091			
3.80	-10	836.500001	3.10	2091			
3.80	0	836.499998	0.10	2091			
3.80	10	836.500000	2.10	2091			
3.80	20	836.499998	0.00	2091			
3.80	30	836.500003	5.10	2091			
3.80	40	836.500004	6.40	2091			
3.80	50	836.500001	3.60	2091			

Note: The battery is rated 3.80Vdc.

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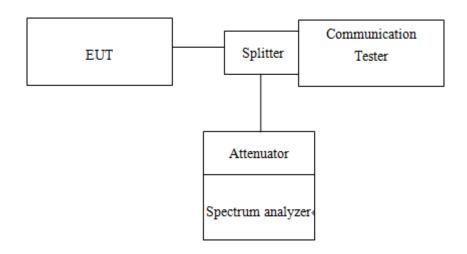
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12. PEAK TO AVERAGE RATIO

12.1. Standard Applicable

The peak-to-average ration (PAR) of the transmission may not exceed 13dB.

12.2. Test SET-UP



12.3. Measurement Procedure

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

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12.4. Measurement Equipment Used

SGS Conducted Room						
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.	
TYPE		NUMBER	NUMBER	CAL.		
Power Meter	Anritsu	ML2495A	1005007	12/09/2015	12/08/2016	
Power Sensor	Anritsu	MA2411B	917032	12/09/2015	12/08/2016	
EXA Spectrum Analyzer	Agilent	N9030A	MY53120760	02/26/2016	02/25/2017	
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2016	01/01/2017	
Coaxial Cable	HUBER+SUHNER	SUCOFLEX 102	23670/2	01/02/2016	01/01/2017	
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2016	01/01/2017	
Splitter	Agilent	11636B	N/A	01/02/2016	01/01/2017	
DC Power Supply	Agilent	E3640A	MY52410006	11/05/2015	11/04/2016	
Temperature Chamber	TERCHY	MHG-120LF	911009	05/17/2016	05/16/2017	
Radio Communication Analyzer	R&S	CMU200	102189	02/11/2016	02/10/2017	
Radio Communication Analyzer	Anritsu	MT8820C	6200995019	09/25/2015	09/24/2016	
Radio Communication Analyzer	Anritsu	MT8820C	6201465317	12/10/2015	12/09/2016	

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12.5. Measurement Result

Tabular Results:

Frequency	СН	Peak-to-Average Ratio (dB)		
(MHz)	ОП	GSM	GPRS	
1850.20	9296	8.36	10.14	
1880.00	9400	9.66	9.03	
1909.80	9538	9.47	9.61	

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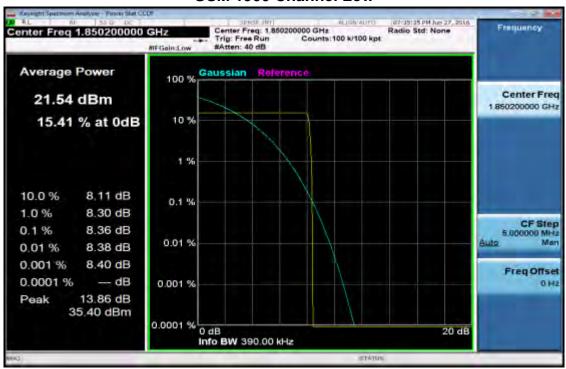
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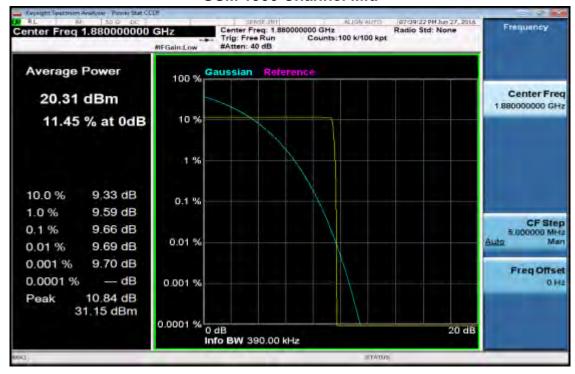
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Measurement Results:

GSM 1900 Channel Low



GSM 1900 Channel Mid



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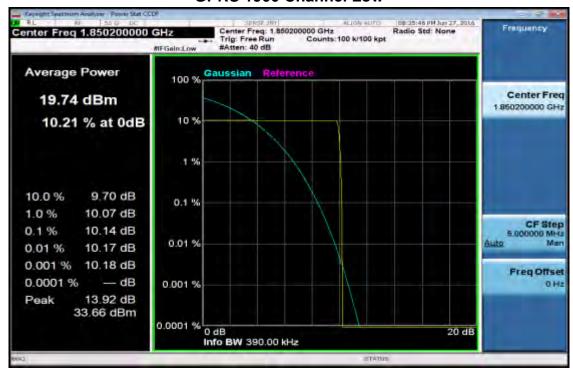


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GSM 1900 Channel High



GPRS 1900 Channel Low



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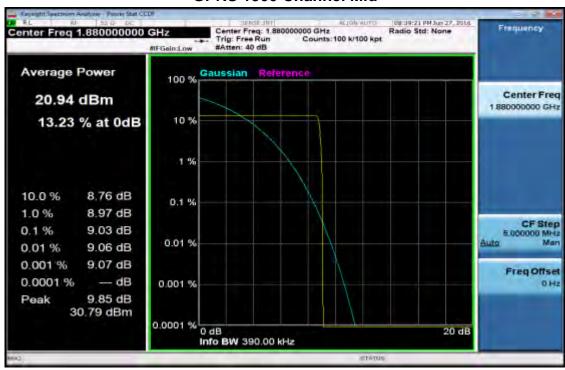
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GPRS 1900 Channel Mid



GPRS 1900 Channel High



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