

Page 1 of 205

### **ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT**

# INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 22 SUBPART H, PART 24 SUBPART E & PART 27 SUBPART C REQUIREMENT **CLASS II PC REPORT**

0F

**Product Name: Smart Phone** 

**Brand Name:** Nokia

Model No.: TA-1007

**Model Difference:** N/A

FCC ID: **2AJOTTA-1007** 

**Report No.:** ER/2017/90166

Oct. 13, 2017 **Issue Date:** 

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

**HMD Global Ov Prepared for:** 

Karaportti 2, 02610 Espoo, Finland

SGS Taiwan Ltd.

**Electronics & Communication Laboratory** 

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

Park, Wuku District, New Taipei City, Taiwan

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# VERIFICATION OF COMPLIANCE

HMD Global Ov **Applicant:** 

Karaportti 2, 02610 Espoo, Finland

**Smart Phone Product Name:** 

Nokia **Brand Name:** 

TA-1007 Model No.:

**Model Difference:** N/A

FCC ID: 2AJOTTA-1007

ER/2017/60114 File Number:

Jun. 24, 2017 ~ Jul. 04, 2017 Date of test: Oct. 03, 2017 (RSE Spot Check)

Date of EUT Received: Jun. 24, 2017

## 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-E-2016 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:	Marcus Tseng	Date:	Oct. 13, 2017
Prepared By:	Marcus Tseng/Engineer Vto letta Tang	Date:	Oct. 13, 2017
Approved By:	Violetta Tang / Clerk  Lang  Jim Chang / Asst. Manager	Date:	Oct. 13, 2017

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# **Revision History**

Report Number	Revision	Description	Issue Date
ER/2017/90166	Rev.00	Initial creation of document	Oct. 13, 2017

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# 1. GENERAL PRODUCT INFORMATION

### 1.1 Product Description

### General:

	1		
Product Name:	Smart Phone		
Brand Name:	Nokia		
Model No.:	TA-1007		
Model difference:	N/A		
Hardware Version:	670		
Software Version:	V0.37C		
USB Cable:	Model No.: CUBB01M-FA010-DH, Supplier: Nokia		
Headset	Model No.: WH-108, Supplier: Nokia		
	3.85Vdc from Rechargeable Li-polymer Battery or 5V from AC/DC Adapter		
Power Supply:	r Supply: Model No.: HE338, Supplier: Nokia		
	Adapter: Model No.: FC0102, Supplier: Nokia		

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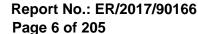
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#### **GSM / WCDMA / LTE:**

GSW/ WCDWA/ LIL	-		Rated
	Operating Frequency	Power	
	GSM/GPRS 850	824.2 MHz- 848.8 MHz	33dBm
	EDGE 850	824.2 MHz- 848.8 MHz	27dBm
	GSM/GPRS 1900	1850.2MHz – 1909.8MHz	30dBm
	EDGE 1900	1850.2MHz – 1909.8MHz	26dBm
	WCDMA/HSUPA/HSDPA /HSPA+ Band II	1852.4MHz – 1907.6MHz	23.5dBm
	WCDMA/HSUPA/HSDPA /HSPA+ Band V	826.4MHz - 846.6MHz	24dBm
Cellular Phone	LTE-Band 5 (1.4MHz)	824.7MHz – 848.3MHz	23dBm
Standards Fre-	LTE-Band 5 (3MHz)	825.5MHz – 847.5MHz	23dBm
quency Range and Power	LTE-Band 5 (5MHz)	826.5MHz – 846.5MHz	23dBm
	LTE-Band 5 (10MHz)	829.0MHz – 844.0MHz	23dBm
	LTE-Band 7 (5MHz)	2502.5MHz – 2567.5MHz	23dBm
	LTE-Band 7 (10MHz)	2505.0MHz – 2565.0MHz	23dBm
	LTE-Band 7 (15MHz)	2507.5MHz – 2562.5MHz	23dBm
	LTE-Band 7 (20MHz)	2510.0MHz – 2560MHz	23dBm
	LTE-Band 38 (5MHz)	2572.5MHz – 2617.5MHz	23dBm
	LTE-Band 38 (10MHz)	2575MHz – 2615MHz	23dBm
	LTE-Band 38 (15MHz)	2577.5MHz – 2612.5MHz	23dBm
	LTE-Band 38 (20MHz)	2580MHz – 2610MHz	23dBm
IMEI:	356038080015894, 356039080014630		

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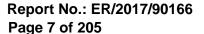
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### Type of Emission:

Frequency Band	Type of Emission:
GSM 850	245KGXW
GPRS 850	244KGXW
EDGE 850	246KG7W
GSM 1900	245KGXW
GPRS 1900	247KGXW
EDGE 1900	249KG7W
WCDMA Band II	4M16F9W
HSDPA Band II	4M17F9W
HSUPA Band II	4M16F9W
WCDMA Band V	4M15F9W
HSDPA Band V	4M15F9W
HSUPA Band V	4M15F9W

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	4M52G7D
LTE Band 5	5MHz	16QAM	4M51D7W
LTE Band 5	10MHz	QPSK	9M03G7D
LTE Band 5	10MHz	16QAM	8M98D7W
LTE Band 7	5MHz	QPSK	4M52G7D
LTE Band 7	5MHz	16QAM	4M51D7W
LTE Band 7	10MHz	QPSK	9M00G7D
LTE Band 7	10MHz	16QAM	8M97D7W
LTE Band 7	15MHz	QPSK	13M5G7D
LTE Band 7	15MHz	16QAM	13M5D7W
LTE Band 7	20MHz	QPSK	18M0G7D
LTE Band 7	20MHz	16QAM	18M0D7W
LTE Band 38	5MHz	QPSK	4M53G7D
LTE Band 38	5MHz	16QAM	4M52D7W
LTE Band 38	10MHz	QPSK	8M99G7D
LTE Band 38	10MHz	16QAM	8M97D7W
LTE Band 38	15MHz	QPSK	13M5G7D
LTE Band 38	15MHz	16QAM	13M5D7W
LTE Band 38	20MHz	QPSK	18M0G7D
LTE Band 38	20MHz	16QAM	17M9D7W

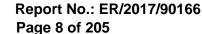
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### Max ERP/EIRP Power Measurement Result:

	T	I	
	dBm		W
GSM 850	15.64	ERP	0.037
GPRS 850	19.15	ERP	0.082
EDGE 850	16.94	ERP	0.049
GSM 1900	23.49	EIRP	0.223
GPRS 1900	26.14	EIRP	0.411
EDGE 1900	24.95	EIRP	0.313
WCDMA Band II	21.10	EIRP	0.129
HSDPA Band II	24.69	EIRP	0.294
HSUPA Band II	22.56	EIRP	0.180
WCDMA Band V	10.48	ERP	0.011
HSDPA Band V	12.26	ERP	0.017
HSUPA Band V	11.63	ERP	0.015

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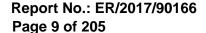
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	dBm		W
LTE-Band 5 (Bandwidth 1.4MHz) QPSK	15.54	ERP	0.036
LTE-Band 5 (Bandwidth 1.4MHz) 16QAM	15.60	ERP	0.036
LTE-Band 5 (Bandwidth 3MHz) QPSK	15.48	ERP	0.035
LTE-Band 5 (Bandwidth 3MHz) 16QAM	15.65	ERP	0.037
LTE-Band 5 (Bandwidth 5MHz) QPSK	15.52	ERP	0.036
LTE-Band 5 (Bandwidth 5MHz) 16QAM	16.04	ERP	0.040
LTE-Band 5 (Bandwidth 10MHz) QPSK	15.24	ERP	0.033
LTE-Band 5 (Bandwidth 10MHz) 16QAM	15.89	ERP	0.039
LTE-Band 7 (Bandwidth 5MHz) QPSK	20.79	EIRP	0.120
LTE-Band 7 (Bandwidth 5MHz) 16QAM	21.01	EIRP	0.126
LTE-Band 7 (Bandwidth 10MHz) QPSK	23.67	EIRP	0.233
LTE-Band 7 (Bandwidth 10MHz) 16QAM	23.10	EIRP	0.204
LTE-Band 7 (Bandwidth 15MHz) QPSK	21.32	EIRP	0.136
LTE-Band 7 (Bandwidth 15MHz) 16QAM	22.40	EIRP	0.174
LTE-Band 7 (Bandwidth 20MHz) QPSK	20.77	EIRP	0.119
LTE-Band 7 (Bandwidth 20MHz) 16QAM	20.63	EIRP	0.116
LTE-Band 38 (Bandwidth 5MHz) QPSK	24.10	EIRP	0.257
LTE-Band 38 (Bandwidth 5MHz) 16QAM	21.05	EIRP	0.127
LTE-Band 38 (Bandwidth 10MHz) QPSK	20.98	EIRP	0.125
LTE-Band 38 (Bandwidth 10MHz) 16QAM	20.87	EIRP	0.122
LTE-Band 38 (Bandwidth 15MHz) QPSK	20.79	EIRP	0.120
LTE-Band 38 (Bandwidth 15MHz) 16QAM	20.35	EIRP	0.108
LTE-Band 38 (Bandwidth 20MHz) QPSK	20.80	EIRP	0.120
LTE-Band 38 (Bandwidth 20MHz) 16QAM	20.60	EIRP	0.115

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### 1.2 Test Methodology of Applied Standards

FCC 47 CFR Part 2, 22, 24, 27

ANSI / TIA / EIA 603- E-2016

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: If test items have been performed and record as per the above standards.

#### 1.3 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

### 1.4 Special Accessories

No special accessories were used during testing.

#### 1.5 Equipment Modifications

There were no modifications incorporated into the EUT.

#### 1.6 Class II Permissive Change

This report includes test data that fully referred from the original authorization

FCC ID: **2AJOTTA-1007.** Grant Date: 08/08/2017.

Exhibition: PCE Test report ER-2017-60114.

RSE spot check data has been included in this report to apply for C2PC as an attestation that the modification does not impact compliance.

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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 603-E-2016, 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 (EIRP)

According to measurement procured TIA/EIA 603-E-2016, 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 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.

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### 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 1 dB for low band and 1 for high band with 10 dB attenuator and 3.2 splitter.

Low Band: Offset = RF cable loss (dB)+ attenuation factor(dB) =0.6+10=10.6(dB)

High Band: Offset = RF cable loss (dB)+ attenuation factor(dB) =0.8+10=10.8(dB)

### 2.5. Final Amplifier Voltage and Current Information:

Test Mode	DC voltage (V)	DC current (mA)
GSM 850	3.85Vdc	318
GSM1900	3.85Vdc	216
GPRS 850	3.85Vdc	329
GPRS 1900	3.85Vdc	226
EDGE 850	3.85Vdc	344
EDGE 1900	3.85Vdc	229
WCDMA B2	3.85Vdc	351
WCDMA B5	3.85Vdc	314
HSUPA B2	3.85Vdc	219
HSUPA B5	3.85Vdc	238
HSDPA B2	3.85Vdc	337
HSDPA B5	3.85Vdc	358

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Test Mode	DC voltage (V)	DC current (mA)
LTE Band 5_1.4M QPSK	3.85Vdc	550
LTE Band 5_1.4M 16QAM	3.85Vdc	494
LTE Band 5_3M QPSK	3.85Vdc	523
LTE Band 5_3M 16QAM	3.85Vdc	494
LTE Band 5_5M QPSK	3.85Vdc	550
LTE Band 5_5M 16QAM	3.85Vdc	504
LTE Band 5_10M QPSK	3.85Vdc	534
LTE Band 5_10M 16QAM	3.85Vdc	485

Test Mode	DC voltage (V)	DC current (mA)
LTE Band 7_5M QPSK	3.85Vdc	743
LTE Band 7_5M 16QAM	3.85Vdc	665
LTE Band 7_10M QPSK	3.85Vdc	755
LTE Band 7_10M 16QAM	3.85Vdc	650
LTE Band 7_15M QPSK	3.85Vdc	754
LTE Band 7_15M 16QAM	3.85Vdc	667
LTE Band 7_20M QPSK	3.85Vdc	728
LTE Band 7_20M 16QAM	3.85Vdc	649

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Test Mode	DC voltage (V)	DC current (mA)
LTE Band 38_5M QPSK	3.85 Vdc	335
LTE Band 38_5M 16QAM	3.85 Vdc	291
LTE Band 38_10M QPSK	3.85 Vdc	314
LTE Band 38_10M 16QAM	3.85 Vdc	277
LTE Band 38_15M QPSK	3.85 Vdc	316
LTE Band 38_15M 16QAM	3.85 Vdc	281
LTE Band 38_20M QPSK	3.85 Vdc	305
LTE Band 38_20M 16QAM	3.85 Vdc	276

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### 2.6. Configuration of Tested System

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

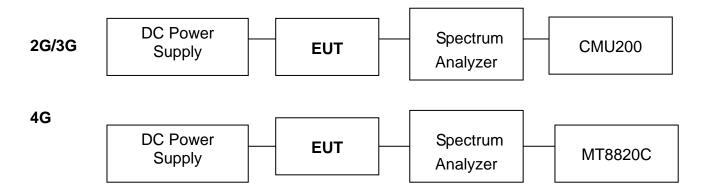
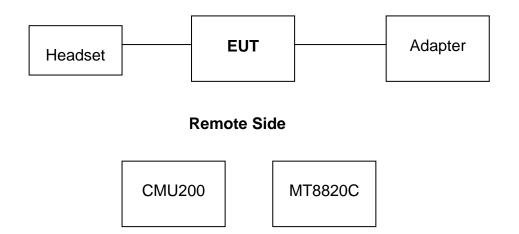


Fig. 2-2 Configuration of Tested System (Fixed Channel-Radiated)



**Table 2-1 Equipment Used in** 

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
3.	DC Power Supply	HP	E3640A	KR93300208	N/A	Unshielded
4.	Headset	Nokia	WH-108	N/A	N/A	N/A

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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)(5) GSM 850 and band 5 §24.232(c) GSM 1900 and band 2 §27.50(h)(2) band 7 and 38	ERP/ EIRP measurement	Compliant
§2.1049(h)	99% & 26dB Occuupied Bandwidth	Compliant
§2.1051 §22.917(a) §24.238(a) §27.53(g) §27.50(c)(5) §27.53(h)(3) §27.53(m)(4) (6)	Out of Band Emissions at Antenna Terminals and Band Edge / Emission mask requirements	Compliant
§2.1053 §22.917(a) §24.238(a) §27.50(c)(5) §27.53(g) §27.53(h)(3) §27.53(m)(4)	Field Strength of Spurious Radiation	Compliant
§24.232(d) §27.53(d) (5)	Peak to Average Ratio	Compliant
§2.1055(a)(1) §22.355 §24.235 §27.54	Frequency Stability	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 and Wireless charging Cover
GSM/GPRS/EDGE 850	E2-plan	E2-plan
GSM/GPRS/EDGE 1900	E2-plan	E2-plan
WCDMA/HSPA Band II	E2-plan	E2-plan
WCDMA/HSPA Band V	E2-plan	E2-plan
LTE Band 5	E2-plan	E2-plan
LTE Band 7	H-plan	H-plan
LTE Band 38	H-plan	H-plan

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#### GSM/GPRS/EDGE MODE

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

#### WCDMA/HSPA MODE

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
ERP	4132 to 4233	4132, 4183, 4233	WCDMA/HSPA Band V
EIRP	9262 to 9538	9262, 9400, 9583	WCDMA/HSPA Band II
FREQUENCY	4132 to 4233	4183	WCDMA Band II
STABILITY	9262 to 9538	9400	WCDMA Band V
OCCUPIED	4132 to 4233	4132, 4183, 4233	WCDMA/HSPA Band II
BANDWIDTH	9262 to 9538	9262, 9400, 9583	WCDMA/HSPA Band V
PEAK TO AVERAGE	4132 to 4233	4132, 4183, 4233	WCDMA/HSPA Band II
RATIO	9262 to 9538	9262, 9400, 9583	WCDMA/HSPA Band V
BAND EDGE	4132 to 4233	4132, 4233	WCDMA Band II
BAND EDGE	9262 to 9538	9262, 9583	WCDMA Band V
CONDCUDETED	4132 to 4233	4132, 4183, 4233	WCDMA Band II
EMISSION	9262 to 9538	9262, 9400, 9583	WCDMA Band V
RADIATED EMISSION	4132 to 4233	4132, 4183, 4233	HSDPA Band II
KADIATED EMISSION	9262 to 9538	9262, 9400, 9583	HSDPA Band V

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#### LTF Band 5 MODE

LIE Band 5 MODE					
TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
	20470 to 20643	20470, 20525, 20643	1.4MHz	QPSK, 16QAM	1 RB/ 0,5 RB Offest
ERP	20415 to 20635	20415, 20525, 20635	3MHz	QPSK, 16QAM	1 RB/ 0,14 RB Offest
ERF	20425 to 20625	20425, 20525, 20625	5MHz	QPSK, 16QAM	1 RB/ 0,24 RB Offest
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK, 16QAM	1 RB/ 0,49 RB Offest
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 Offes Full RB
	20415 to 20635	20415, 20635	3MHz	QPSK,	1 RB/ 0,14 RB Offest Full RB
BAND EDGE	20425 to 20625	20425, 20625	5MHz	QPSK,	1 RB/ 0,24 RB Offest Full RB
	20450 to 20600	20450, 20600	10MHz	QPSK,	1 RB/ 0,49 RB Offest Full RB
	20470 to 20643	20470, 20525, 20643	1.4MHz	QPSK,	1 RB, 0 RB Offest
CONDCUDETED EMISSION	20415 to 20635	20415, 20525, 20635	3MHz	QPSK,	1 RB, 0 RB Offest
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK,	1 RB, 0 RB Offest
		20450, 20525, 20600		QPSK,	1 RB, 0 RB Offest
RADIATED EMISSION	20425 to 20625	20425, 20525, 20625	5MHz	16QAM	1 RB/ 0 RB Offest

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### LTE Band 7 MODE

LIL Ballu / WIOL		TECTED	CHANNE		
TEST ITEM	AVAILABLE	TESTED	CHANNEL	MODULATION	MODE
	CHANNEL	CHANNEL	BANDWIDTH		
	20775 to 21425	20775, 21100, 21425	5MHz	QPSK, 16QAM	1 RB/ 0,24 RB Offest
EIRP	20800 to 21400	20800, 21100, 21400	10MHz	QPSK, 16QAM	1 RB/ 0,49 RB Offest
LIIXF	20850 to 21375	20850, 21100, 21375	15MHz	QPSK, 16QAM	1 RB/ 0,74 RB Offest
	20850 to 21350	20850, 21100, 21350	20MHz	QPSK, 16QAM	1 RB/ 0,99 RB Offest
FREQUENCY STABILITY	20800 to 21400	21100	10MHz	QPSK,	Full RB
	20775 to 21425	20775, 21100, 21425	5MHz	QPSK, 16QAM	Full RB
OCCUPIED	20800 to 21400	20800, 21100, 21400	10MHz	QPSK, 16QAM	Full RB
BANDWIDTH	20850 to 21375	20850, 21100, 21375	15MHz	QPSK, 16QAM	Full RB
	20850 to 21350	20850, 21100, 21350	20MHz	QPSK, 16QAM	Full RB
	20775 to 21425	20775, 21100, 21425	5MHz	16QAM	Full RB
PEAK TO AV-	20800 to 21400	20800, 21100, 21400	10MHz	16QAM	Full RB
ERAGE RATIO	20850 to 21375	20850, 21100, 21375	15MHz	16QAM	Full RB
	20850 to 21350	20850, 21100, 21350	20MHz	16QAM	Full RB
	20775 to 21425	20775, 21100, 21425	5MHz	QPSK,	1 RB/ 0,24 RB Offest Full RB
BAND EDGE / EMISSION	20800 to 21400	20800, 21100, 21400	10MHz	QPSK,	1 RB/ 0,49 RB Offest Full RB
MASK	20850 to 21375	20850, 21100, 21375	15MHz	QPSK,	1 RB/ 0,74 RB Offest Full RB
	20850 to 21350	20850, 21100, 21350	20MHz	QPSK,	1 RB/ 0,99 RB Offest Full RB
	20775 to 21425	20775, 21100, 21425	5MHz	QPSK,	1 RB, 0 RB Offest
CONDCUDETED EMISSION	20800 to 21400	20800, 21100, 21400	10MHz	QPSK,	1 RB, 0 RB Offest
	20850 to 21375	20850, 21100, 21375	15MHz	QPSK,	1 RB, 0 RB Offest
	20850 to 21350	20850, 21100, 21350	20MHz	QPSK,	1 RB, 0 RB Offest
RADIATED EMISSION	20775 to 21425	20775, 21100, 21425	10MHz	QPSK,	1 RB, 49 RB Offest

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#### LTE Band 38 MODE

LIL Balla 00 IIIO	LIE Band 36 MODE					
TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE	
	37775 to 38225	37775, 38000, 38225	5MHz	QPSK, 16QAM	1 RB/ 0,24 RB Offest	
5100	37800 to 38200	37800 , 38000, 38200	10MHz	QPSK, 16QAM	1 RB/ 0,49 RB Offest	
EIRP	37825 to 38175	37825 , 38000, 38175	15MHz	QPSK, 16QAM	1 RB/ 0,74 RB Offest	
	37850 to 38150	37850 , 38000, 38150	20MHz	QPSK, 16QAM	1 RB/ 0,99 RB Offest	
FREQUENCY STABILITY	37800 to 38200	37800 , 38000, 38200	10MHz	QPSK,	Full RB	
	37775 to 38225	37775, 38000, 38225	5MHz	QPSK, 16QAM	Full RB	
OCCUPIED	37800 to 38200	37800 , 38000, 38200	10MHz	QPSK, 16QAM	Full RB	
BANDWIDTH	37825 to 38175	37825 , 38000, 38175	15MHz	QPSK, 16QAM	Full RB	
	37850 to 38150	37850 , 38000, 38150	20MHz	QPSK, 16QAM	Full RB	
	37775 to 38225	37775, 38000, 38225	5MHz	16QAM	Full RB	
PEAK TO AV-	37800 to 38200	37800 , 38000, 38200	10MHz	16QAM	Full RB	
ERAGE RATIO	37825 to 38175	37825 , 38000, 38175	15MHz	16QAM	Full RB	
	37850 to 38150	37850 , 38000, 38150	20MHz	16QAM	Full RB	
	37775 to 38225	37775, 38000, 38225	5MHz	QPSK,	1 RB/ 0,24 RB Offest Full RB	
BAND EDGE /	37800 to 38200	37800 , 38000, 38200	10MHz	QPSK,	1 RB/ 0,49 RB Offest Full RB	
EMISSION MASK	37825 to 38175	37825 , 38000, 38175	15MHz	QPSK,	1 RB/ 0,74 RB Offest Full RB	
	37850 to 38150	37850 , 38000, 38150	20MHz	QPSK,	1 RB/ 0,99 RB Offest Full RB	
CONDCUDETED EMISSION	37775 to 38225	37775, 38000, 38225	5MHz	QPSK,	1 RB, 0 RB Offest	
	37800 to 38200	37800 , 38000, 38200	10MHz	QPSK,	1 RB, 0 RB Offest	
	37825 to 38175	37825 , 38000, 38175	15MHz	QPSK,	1 RB, 0 RB Offest	
	37850 to 38150	37850 , 38000, 38150	20MHz	QPSK,	1 RB, 0 RB Offest	
RADIATED EMISSION	37775 to 38225	37775, 38000, 38225	5MHz	QPSK,	1 RB, 0 RB Offest	

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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 Terminals and Band Edge	+/- 0.70 dB
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:

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

Measurement uncertainty (Polarization : <b>Horizontal</b> )	9kHz – 30MHz: +/- 2.87 dB
	30MHz - 167MHz: +/- 4.22dB
	167MHz -500MHz: +/- 3.44dB
	0.5GHz-1GHz: +/- 3.39dB
	1GHz - 18GHz: +/- 4.08dB
	18GHz - 40GHz: +/- 4.08dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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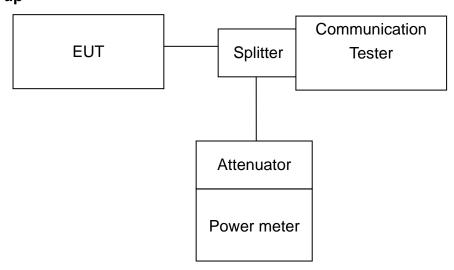
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### 6. RF CONDUCTED OUTPUT POWER MEASUREMENT

#### 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, (WCD-MA/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

Conduc	ted Emission (m	neasured at a	antenna port)	Test Site	
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.
TYPE		NUMBER	NUMBER	CAL.	
Power Meter	Anritsu	ML2495A	1005007	12/15/2016	12/14/2017
Power Sensor	Anritsu	MA2411B	917032	12/15/2016	12/14/2017
EXA Spectrum Analyz- er	Agilent	N9030A	MY53120760	03/21/2017	03/20/2018
DC Block	Mini-Circuits	BLK-18-S+	1	01/05/2017	01/04/2018
Coaxial Cable	HU- BER+SUHNER	SUCOFLEX 102	23670/2	01/05/2017	01/04/2018
Attenuator	Mini-Circuit	BW-S10W2+	2	01/05/2017	01/04/2018
Splitter	Agilent	11636B	N/A	01/05/2017	01/04/2018
DC Power Supply	Agilent	E3640A	MY52410006	11/21/2016	11/20/2017
Temperature Chamber	TERCHY	MHG-120LF	911009	05/19/2017	05/18/2018
Radio Communication Analyzer	R&S	CMU200	102189	02/11/2017	02/10/2018
Radio Communication Analyer	Anritsu	MT8820C	6201465317	01/03/2017	01/02/2018

#### 6.5. Measurement Result

**RF Conducted Output Power** 

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

EUT Mode	Frequency	СН	Average Burst Power (1DN 1UP) Class 8	
	(MHz)		(dBm)	
0014	824.2	128	33.27	
GSM 850	836.6	190	33.53	
000	848.8	251	33.23	
0014	1850.2	512	29.80	
GSM 1900	1880.0	661	30.08	
1000	1909.8	810	30.64	

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EUT Mode	Frequency (MHz)	СН	Average Burst Power (1DN 1UP) Class 8 (dBm)	Average Burst Power (1DN 2UP) Class 10 (dBm)	Average Burst Power (1DN 3UP) Class 12 (dBm)	Average Burst Power (1DN 4UP) Class 12 (dBm)
0000	824.2	128	33.27	28.62	27.67	26.32
GPRS 850	836.6	190	33.53	28.78	27.05	25.68
	848.8	251	33.23	28.88	26.80	25.36
0000	1850.2	512	29.80	27.87	26.69	25.31
GPRS 1900	1880.0	661	30.08	27.83	25.96	24.55
1000	1909.8	810	30.64	28.33	26.00	24.62
EDOE	824.2	128	25.98	25.16	23.71	22.07
EDGE 850	836.6	190	25.94	25.12	23.57	22.04
	848.8	251	25.93	25.13	23.54	22.05
EDOE	1850.2	512	25.27	24.22	22.84	21.38
1900	1880.0	661	25.31	24.25	22.81	21.29
1000	1909.8	810	25.68	24.44	23.24	21.72

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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 II	HSDPA Band II	HSUPA Band II	
Frequency CH		Avg. Power	Avg. Power	Avg. Power	
(MHz)		(dBm)	(dBm)	(dBm)	
1852.4	9262	23.47	22.32	21.94	
1880.0	9400	23.43	22.38	22.06	
1907.6	9538	23.19	22.02	22.18	

EUT M	ode	WCDMA Band V	HSDPA Band V	HSUPA Band V	
Frequency	СН	Avg. Power	Avg. Power	Avg. Power	
(MHz)		(dBm)	(dBm)	(dBm)	
826.4	4132	24.21	23.09	22.88	
836.6	4183	24.07	23.00	22.60	
846.6	4233	24.34	23.07	22.19	

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# LTE Result: LTE Band 5

	LTE Band 5_Uplink frequency band : 824 to 849 MHz											
				Conducted power(dBm)								
BW	RB	RB		QPSK			16QAM					
(MHz)	Size	Offset	Channe	Channe	Channe	Channe	Channe	Channe				
(IVII IZ)	SIZE	Oliset	I (Low)	I (Mid)	I (High)	I (Low)	I (Mid)	I (High)				
			20407	20525	20643	20407	20525	20643				
	1	0	23.26	23.36	23.45	22.29	22.12	22.64				
1.4	1	5	23.13	23.30	23.38	22.11	22.27	22.42				
1.4	3	2	23.41	23.45	23.41	22.23	22.33	22.73				
	6	0	22.40	22.51	22.54	21.32	21.28	21.35				

	LTE	E Band	5_Uplink	frequenc	y band :	824 to 84	9 MHz			
				Conducted power(dBm)						
BW	RB	RB		QPSK			16QAM			
(MHz)		Offset	Channel	Channel	Channel	Channel	Channel	Channe		
(IVITIZ)	Size	Ullset	(Low)	(Mid)	(High)	(Low)	(Mid)	I (High)		
			20415	20525	20635	20415	20525	20635		
	1	0	23.30	23.45	23.53	22.73	22.95	22.47		
3	1	14	23.24	23.45	23.37	22.16	22.34	22.07		
'	8	4	22.21	22.36	22.52	21.30	21.55	21.62		
	15	0	22.20	22.37	22.52	21.17	21.38	21.55		

	LTE Band 5_Uplink frequency band : 824 to 849 MHz											
				Conducted power(dBm)								
BW	RB	RB		QPSK			16QAM					
(MHz)		Offset	Channe	Channe	Channe	Channe	Channe	Channe				
(IVII IZ)	Size	Oliset	I (Low)	I (Mid)	I (High)	I (Low)	I (Mid)	I (High)				
			20425	20525	20625	20425	20525	20625				
	1	0	23.38	23.70	23.62	22.86	22.96	22.80				
5	1	24	23.49	23.51	23.43	22.73	22.27	22.94				
5	12	6	22.23	22.41	22.54	21.24	21.16	21.54				
	25	0	22.31	22.40	22.61	21.27	21.27	21.66				

	LTE	E Band	5_Uplink	frequenc	y band :	824 to 84	9 MHz	
				Co	nducted p	ower(dBi	n)	
BW	RB	RB		QPSK			16QAM	
(MHz)	Size	Offset	Channel	Channel	Channel	Channel	Channel	Channe
(IVII IZ)	Size	oize Oliset	(Low)	(Mid)	(High)	(Low)	(Mid)	I (High)
			20450	20525	20600	20450	20525	20600
	1	0	23.18	23.55	23.51	22.32	22.98	22.84
10	1	49	23.23	23.52	23.40	22.49	22.51	22.12
10	25	12	22.62	22.52	22.60	21.42	21.64	21.71
	50	0	22.53	22.51	22.65	21.47	21.39	21.41

#### LTE Band 7

	LTE Band 7_Uplink frequency band : 2500 to 2570 MHz										
				Conducted power(dBm)							
BW	RB	RB		QPSK			16QAM				
(MHz)	Size	Offset	Channe	Channe	Channe	Channe	Channe	Channe			
(IVITZ) SIZ	SIZE	Oliset	I (Low)	I (Mid)	I (High)	I (Low)	I (Mid)	I (High)			
			20775	21100	21425	20775	21100	21425			
	1	0	22.74	22.46	22.87	21.82	21.82	21.90			
5	1	24	22.75	22.53	22.95	21.65	21.51	21.63			
"	12	6	21.58	21.60	21.96	20.69	20.50	20.98			
	25	0	21.65	21.59	21.82	20.98	20.55	20.84			

	LTE Band 7_Uplink frequency band : 2500 to 2570 MHz												
BW				С	onducted	power(dB	m)						
	RB	RB		QPSK			16QAM						
(MHz	(MHz Size	Offset	Channel	Channel	Channel	Channel	Channel	Channel					
)   312	SIZE	Oliset	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)					
			20800	21100	21400	20800	21100	21400					
	1	0	22.77	22.69	22.92	21.79	21.68	21.63					
10	1	49	22.80	22.72	22.81	21.66	21.87	21.82					
10	25	12	21.62	21.56	21.94	20.77	20.54	20.98					
	50	0	21.53	21.58	21.92	20.54	20.52	20.95					

	LTE Band 7_Uplink frequency band : 2500 to 2570 MHz										
				Conducted power(dBm)							
BW	RB	RB		QPSK			16QAM				
(MHz)		Offset	Channe	Channe	Channe	Channe	Channe	Channe			
(IVITZ) SIZE	SIZE	Oliset	I (Low)	I (Mid)	I (High)	I (Low)	I (Mid)	I (High)			
			20825	21100	21375	20825	21100	21375			
	1	0	22.92	22.54	22.79	21.94	21.46	21.82			
15	1	74	22.83	22.60	22.95	21.84	21.48	21.95			
13	36	19	21.78	21.44	21.89	20.42	20.44	20.95			
	75	0	21.65	21.49	21.94	20.54	20.50	20.92			

		LTI	E Band	7_Uplink	frequen	cy band :	2500 to 2	570 MHz			
				Conducted power(dBm)							
E	BW	RB	RB		QPSK			16QAM Channel Channe			
(1	(MHz )	Size	Offset	Channel	Channel	Channel	Channel	Channel	Channel		
			Oliset	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)		
				20850	21100	21350	20850	21100	21350		
		1	0	22.65	22.58	22.81	21.79	21.36	21.88		
	20	1	99	22.60	22.55	22.95	21.79	21.64	21.85		
	20	50	25	21.47	21.50	21.96	20.50	20.39	20.83		
		100	0	21.49	21.56	21.95	20.61	20.52	20.79		

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#### LTE Band 38

	LTE B	and 38	_Uplink f	requenc	y band :	2570 to 2	2620 MH	Z
				Co	nducted	power(dE	Bm)	
BW	RB	RB		QPSK			16QAM ne Channe Chan w) I (Mid) I (Hig 5 38000 3822 3 22.87 22.6 6 22.82 22.4 0 21.87 21.4	
(MHz)	Size	Offset	Channe	Channe	Channe	nanne Channe Channe (		Channe
(IVITIZ)	SIZE	Oliset	I (Low)	I (Mid)	I (High)	I (Low)	I (Mid)	I (High)
			37775	38000	38225	37775	38000	38225
	1	0	23.46	23.72	23.39	22.73	22.87	22.67
5	1	24	23.50	23.61	23.24	22.66	22.82	22.47
3	12	6	22.58	22.64	22.46	21.80	21.87	21.40
	25	0	22.65	22.79	22.38	21.89	21.94	21.49

	LTE	E Band 38	_Uplink f	requency	band : 257	70 to 2620	MHz		
				C	onducted	power(dBr	n)	nel Channel (High) 0 38200 9 22.75 8 22.47	
BW	RB	RB		QPSK			dBm)  16QAM  lel Channel Chann (Mid) (High 0 38000 38200 5 22.99 22.75 7 22.58 22.47 9 21.95 21.90		
(MHz)	Size	Offset	Channel	Channel	Channel	Channel	Channel	Channel	
(IVITZ)	Size		(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	
			37800	38000	38200	37800	38000	38200	
	1	0	23.42	23.84	23.49	22.85	22.99	22.75	
10	1	49	23.63	23.60	23.49	22.87	22.58	22.47	
10	25	12	22.73	22.91	22.64	21.99	21.95	21.90	
	50	0	22.76	22.84	22.55	21.79	21.80	21.64	

	LTE Band 38_Uplink frequency band : 2570 to 2620 MHz												
				Co	nducted	power(dE	Bm)						
BW	RB	RB		QPSK			16QAM						
(MHz)	Size	Offset	Channe	Channe	Channe	Channe	Channe	Channe					
(1111 12)	Size	Oliset	I (Low)	I (Mid)	I (High)	I (Low)	I (Mid)	I (High)					
			37825	38000	38175	37825	38000	38175					
	1	0	23.82	23.81	23.72	23.00	22.83	22.96					
15	1	74	23.87	23.57	23.39	22.93	22.79	22.39					
10	36	19	22.90	22.82	22.60	21.52	21.60	21.65					
	75	0	22.93	22.77	22.60	21.61	21.68	21.57					

	LTE	E Band 38	3_Uplink f	requency	band : 257	70 to 2620	MHz			
				C	onducted	power(dBr	n)			
BW	RB	RB		QPSK		16QAM				
(MHz)	Size	Offset	Channel	Channel	Channel	Channel	Channel	Channel		
	3126	Oliset	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)		
			37850	38000	38150	37850	38000	38150		
	1	0	23.63	23.89	23.69	22.87	22.98	22.89		
20	1	99	23.50	23.34	23.31	22.79	22.74	22.28		
20	50	25	22.78	22.91	22.69	21.86	21.95	21.70		
	100	0	22.75	22.86	22.67	21.96	21.77	21.65		

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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	βς	β <sub>d</sub>	β <sub>d</sub> ( <b>SF</b> )	β <sub>c</sub> /β <sub>d</sub>	β <sub>HS</sub> (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-	Comments	
		9262	9400	9538	itation (dBm)		
	1	22.32	22.38	22.02	20.3dBm - 25.7dBm	Pass	
HSDPA	2	21.9	21.98	21.60	20.3dBm - 25.7dBm	Pass	
(B2)	3	21.93	22.03	21.64	19.8dBm – 25.7dBm	Pass	
	4	21.95	22.06	21.70	19.8dBm – 25.7dBm	Pass	

Mode	Sub-test	_	Power (d Channel	Bm)	Power Class 3 Lim-	Comments	
		4132	4183	4233	itation (dBm)		
	1	23.09	23.00	23.07	20.3dBm - 25.7dBm	Pass	
HSDPA	2	22.61	22.39	22.57	20.3dBm – 25.7dBm	Pass	
(B5)	3	22.61	22.39	22.56	19.8dBm – 25.7dBm	Pass	
	4	22.60	22.38	22.56	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	βа	β <sub>d</sub> (SF)	βс/βа	βнѕ	βес	βed	β <sub>ed</sub> (SF)	β <sub>ed</sub> (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 <sub>ed</sub> 1: 47/15 β <sub>ed</sub> 2: 47/15	4 4	2	2.0	1.0	15	92	12.2
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71	12.2
5	15/15 (Note 4)	15/15 (Note 4)	64	15/15 (Note 4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81	12.2

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

#### Results:

Mode	Sub-test	_	Power (d Channel	IBm)	Power Class 3 Lim-	Comments
		9262	9400	9538	itation (dBm)	
	1	21.94	22.06	22.18	18.8dBm – 25.7dBm	Pass
	2	21.03	20.98	20.74	16.8dBm - 25.7dBm	Pass
HSUPA(B2)	3	20.88	20.57	20.92	17.8dBm – 25.7dBm	Pass
	4	21.77	21.46	21.61	16.8dBm – 25.7dBm	Pass
	5	22.4	22.5	22	18.8dBm – 25.7dBm	Pass

Mode	Sub-test	_	Power (d Channel	IBm)	Power Class 3 Lim- itation (dBm)	Comments
		4132	4183	4233	ilalion (ubin)	
	1	22.88	22.60	22.19	18.8dBm – 25.7dBm	Pass
	2	21.57	21.87	21.76	16.8dBm - 25.7dBm	Pass
HSUPA(B5)	3	21.52	21.49	21.39	17.8dBm – 25.7dBm	Pass
	4	21.89	22.18	22.14	16.8dBm – 25.7dBm	Pass
	5	22.90	22.80	22.8	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)	29.8	27.95	26.15	24.15	22.25	20.3	18.31	16.37	14.36

PCL	9	10	11	12	13	14	15
Output power (dBm)	12.41	10.42	8.22	6.07	3.96	1.86	-0.06

Note: The EUT output power was controlled by simulator. Set Communication Tester MT8820C PCL as above, and get the mobile phone output power reading.

#### WCDMA/HSDPA/HSUPA band II, V

The EUT output power was controlled by simulator. Set Communication Tester MT8820C function key "UE Power Control" and enter max rated power 24dBm. The EUT is going to be set to max output power to 24dBm. Then record the read (see page 15 for measurement data). The min. power was measures by a function key "minimum power" then record the read. It is -52.3dBm. The power variation can be 0.1dB step by setting.

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# 7. EFFECTIVE RADIATED POWER AND EQUIVALENT ISOTROPIC RADIATED POWER MEASUREMENT

### 7.1. Standard Applicable

According to FCC §2.1046

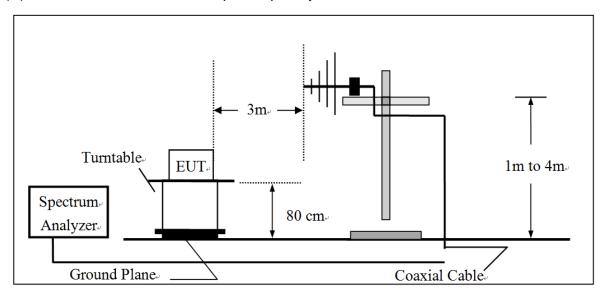
FCC 22.913(a) Mobile station is limited to 7W ERP.

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

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

#### 7.2. Test SET-UP

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



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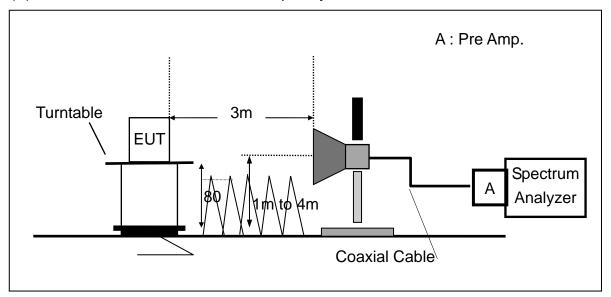
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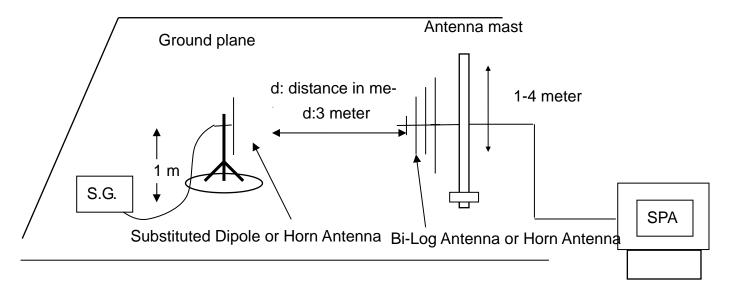


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### (B) Radiated Power Test Set-UP Frequency Over 1 GHz



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



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#### 7.3. Measurement Procedure

- The 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. EIRP = S.G. output (dBm) + Antenna Gain (dBi) 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 =  $601*10^-3 = 6$ s.

Activate trace averaging routine over a minimum of 10 sweeps;

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

Activate the band/interval power marker function;

Record the band power level;

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

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

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### 7.4. Measurement Equipment Used

ERP, EIRP MEASUREMENT EQUIPMENT List 966 Chamber								
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.			
EMI Test Receiver	R&S	ESCI7	100760	05/11/2017	05/10/2018			
Spectrum Analyzer	Agilent	E4446A	MY51100003	04/25/2017	04/24/2018			
Loop Antenna	ETS-Lindgren	6502	148045	09/20/2016	09/19/2017			
Bilog Antenna	SCHWAZBECK	VULB9168	378	12/19/2016	12/18/2017			
Horn Antenna	Schwarzbeck	BBHA9120D	1441	08/01/2016	07/31/2017			
Pre-Amplifier	Agilent	8447D	2944A07676	01/05/2017	01/04/2018			
Pre-Amplifier	EMC Instruments Corp.	EMC0126530	980038	01/05/2017	01/04/2018			
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	01/05/2017	01/04/2018			
3m Site NSA	SGS	966 chamber	N/A	07/01/2017	06/30/2018			
Low Loss Cable	Huber Suhner	966 TX	1	01/05/2017	01/04/2018			
Horn Antenna	Schwarzbeck	BBHA9170	184	12/12/2016	12/11/2017			
Pre-Amplifier	EMC Instruments Corp.	EMC184045	980135	01/05/2017	01/04/2018			
EMI Test Receiver	R&S	ESCI7	100760	05/11/2017	05/10/2018			
Radio Communication Analyzer	R&S	CMU200	102189	02/11/2017	02/10/2018			
Radio Communication Analyer	Anritsu	MT8820C	6201465317	01/03/2017	01/02/2018			

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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	Limit
	MHz		V/H	dBm	dBd	dB	dBm	dBm
GSM 850	824.2	128	V	7.52	3.31	-2.92	7.74	38.45
			Н	6.67	3.31	-2.92	15.36	38.45
	836.6	190	V	7.14	3.29	-2.96	7.68	38.45
			Н	6.57	3.29	-2.96	14.61	38.45
	848.8	251	V	7.46	3.27	-3.00	1.78	38.45
			Н	6.97	3.27	-3.00	15.64	38.45
GPRS 850	824.2	128	V	7.52	3.31	-2.92	10.02	38.45
			Н	6.67	3.31	-2.92	19.15	38.45
	836.6	190	V	7.15	3.29	-2.96	10.31	38.45
			Н	6.57	3.29	-2.96	17.88	38.45
	848.8	251	V	7.47	3.27	-3.00	9.27	38.45
			Н	6.97	3.27	-3.00	17.93	38.45
EDGE 850	824.2	128	V	7.51	3.31	-2.92	9.13	38.45
			Н	6.67	3.31	-2.92	16.94	38.45
	836.6	190	V	7.14	3.29	-2.96	8.93	38.45
			Н	6.57	3.29	-2.96	15.44	38.45
	848.8	251	V	7.46	3.27	-3.00	6.88	38.45
			Н	6.97	3.27	-3.00	16.02	38.45

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

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	EUT				Measur	ement		
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
	4050.0	E40	V	0.51	9.94	-4.46	17.93	33.00
	1850.2	512	Н	0.91	9.94	-4.46	20.18	33.00
GSM 1900	1880.0	661	V	0.55	10.03	-4.51	17.74	33.00
GSW 1900	1000.0	001	Н	1.10	10.03	-4.51	23.49	33.00
	1000.0	010	V	0.45	10.13	-4.55	14.89	33.00
	1909.8	810	Н	0.96	10.13	-4.55	22.33	dBm 33.00 33.00 33.00 33.00
	1050.0	E40	V	0.51	9.94	-4.46	21.35	33.00
	1850.2	512	Н	0.91	9.94	-4.46	23.73	33.00
CDDC 4000	1000.0	004	V	0.55	10.03	-4.51	19.72	33.00
GPRS 1900	1880.0	661	Н	1.10	10.03	-4.51	26.14	33.00
	1000.0	040	V	0.45	10.13	-4.55	19.47	33.00
	1909.8	810	Н	0.96	10.13	-4.55	26.04	33.00
	1050.0	E40	V	0.51	9.94	-4.46	19.15	33.00
	1850.2	512	Н	0.91	9.94	-4.46	21.72	33.00
EDOE 4000	4000.0	004	V	0.55	10.03	-4.51	19.18	33.00
EDGE 1900 -	1880.0	661	Н	1.10	10.03	-4.51	24.95	33.00
	1000.0	040	V	0.45	9.94 -4 10.03 -4 10.13 -4 10.13 -4 9.94 -4 9.94 -4 10.03 -4 10.03 -4 10.13 -4	-4.55	18.25	33.00
	1909.8	810	Н	0.96	10.13	-4.55	24.25	33.00

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

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	EUT				Measur	ement		
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
	1852.4	9262	V	0.51	9.95	-4.46	12.71	33.00
	1002.4	9202	Н	0.92	9.95	-4.46	20.39	33.00
WCDMA B2	1880.0	9400	V	0.55	10.03	-4.51	16.54	33.00
WCDIVIA 62	1000.0	9400	Н	1.10	10.04	-4.51	21.10	33.00
	1007.0	0520	V	0.46	10.12	-4.55	12.67	33.00
	1907.6	9538	Н	0.97	10.12	-4.55	19.18	33.00
	1852.4	0262	V	0.51	9.95	-4.46	17.23	33.00
	1002.4	9262	Н	0.92	9.95	-4.46	24.69	33.00
HSDPA B2	1880.0	9400	V	0.55	10.03	-4.51	17.56	33.00
HODPA BZ	1000.0	9400	Н	1.09	10.03	-4.51	23.36	33.00
	1007.0	0530	V	0.46	10.12	-4.55	16.44	33.00
	1907.6	9538	Н	0.97	10.12	-4.55	22.95	33.00
	1050.4	0000	V	0.51	9.95	-4.46	13.90	33.00
	1852.4	9262	Н	0.92	9.95	-4.46	22.53	33.00
HCHDA BO	1000.0	0400	V	0.55	10.03	-4.51	17.15	33.00
HSUPA B2	1880.0	9400	Н	1.09	10.03	-4.51	22.56	dBm 33.00
	1007.6	0520	V	0.46	10.12	-4.55	14.39	33.00
	1907.6	9538	Н	0.97	10.12	-4.55	20.54	33.00

### Remark:

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

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	EUT				Measur	ement		
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
	MHz		V/H	dBm	dBd	dB	dBm	dBm
	826.4	4132	V	7.57	3.30	-2.93	4.28	38.45
	020.4	4132	Н	6.73	3.30	-2.93	10.48	38.45
WCDMA B5	936.6	4400	V	7.14	3.29	-2.96	1.88	38.45
WCDIVIA B5	836.6	4183	Н	6.57	3.29	-2.96	9.22	38.45
	0.40.0	4000	V	7.20	3.27	-3.00	0.64	38.45
	846.6	4233	Н	6.78	3.27	-3.00	9.02	38.45
	000.4	4422	V	7.56	3.30	-2.93	5.63	38.45
	826.4	4132	Н	6.74	3.30	-2.93	12.26	38.45
HSDPA B5	836.6	4400	V	7.13	3.29	-2.96	3.50	dBm 38.45 38.45 38.45 38.45 38.45 38.45 38.45
HODPA BO	0.00.0	4183	Н	6.59	3.29	-2.96	10.22	38.45
	0.40.0	4000	V	7.16	3.27	-3.00	2.62	38.45
	846.6	4233	Н	6.74	3.27	-3.00	10.44	38.45
	000.4	4400	V	7.56	3.30	-2.93	4.90	38.45
	826.4	4132	Н	6.75	3.30	-2.93	11.63	38.45
LICUDA DE	020.0	4400	V	7.18	3.29	-2.96	3.09	m dBm 28 38.45 48 38.45 28 38.45 29 38.45 20 38.45 20 38.45 20 38.45 21 38.45 22 38.45 23 38.45 24 38.45 25 38.45 26 38.45 27 38.45 28 38.45 29 38.45 20 38.45 20 38.45 21 38.45 22 38.45 23 38.45 24 38.45 25 38.45 26 38.45 27 38.45 28 38.45 29 38.45 29 38.45 20 38.45 20 38.45 20 38.45 20 38.45 20 38.45 20 38.45 20 38.45
HSUPA B5	836.6	4183	Н	6.56	3.29	-2.96	9.78	
	946.6	4000	V	7.10	3.27	-3.00	1.40	38.45
	846.6	4233	Н	6.79	3.27	-3.00	9.68	38.45

### Remark:

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

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	EUT				Measur	ement		
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
	824.7	20407	V	11.59	3.30	-2.93	11.97	38.45
BAND 5	024.7	20407	Н	14.02	3.30	-2.93	14.39	38.45
BW: 1.4M	836.5	20525	V	12.40	3.29	-2.96	12.73	38.45
QPSK	030.3	20020	Н	15.21	3.29	-2.96	15.54	38.45
RB: 1,0	848.3	20643	V	9.75	3.27	-2.99	10.03	38.45
	040.5	20043	Н	12.30	3.27	-2.99	12.58	38.45
DANDE	824.7	20407	V	11.40	3.31	-2.92	11.78	38.45
BAND 5		20407	Н	13.79	3.31	-2.92	14.17	38.45
BW: 1.4M QPSK	836.5	20525	V	11.85	3.29	-2.96	12.18	38.45
	000.0	20020	Н	14.55	3.29	-2.96	14.88	38.45
RB: 1,5	848.3	20643	V	9.32	3.27	-3.00	9.59	38.45
	040.0	20043	Н	11.78	3.27	-3.00	12.05	38.45
	824.7	20407	V	12.20	3.30	-2.93	12.57	38.45
BAND 5	02-1.7	20401	Н	14.62	3.30	-2.93	15.00	38.45
BW: 1.4M	836.5	20525	V	12.58	3.29	-2.96	12.92	38.45
16QAM	000.0	20020	Н	15.27	3.29	-2.96	15.60	38.45
RB: 1,0	848.3	20643	V	10.52	3.27	-2.99	10.80	38.45
	0 10.0	20010	Н	12.45	3.27	-2.99	12.73	38.45
	824.7	20407	V	12.13	3.31	-2.92	12.51	38.45
BAND 5	BAND 5 824.7	20107	Н	14.44	3.31	-2.92	14.83	38.45
BW: 1.4M 16QAM RB: 1,5	836.5	20525	V	12.47	3.29	-2.96	12.80	38.45
	333.3		Н	15.13	3.29	-2.96	15.46	38.45
	848.3	20643	V	10.27	3.27	-3.00	10.55	38.45
	- 2-2		Н	12.62	3.27	-3.00	12.90	38.45

The RBW, VBW of SPA for frequency RBW= 8MHz, VBW= 8MHz

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	EUT				Measur	ement		
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
	825.5	20415	V	10.65	3.30	-2.93	11.02	38.45
BAND 5	023.3	20413	Н	14.33	3.30	-2.93	14.70	38.45
BW: 3M	836.5	20525	V	11.72	3.29	-2.95	12.06	38.45
QPSK	030.5	20020	Н	15.14	3.29	-2.95	15.48	38.45
RB: 1,0	847.5	20635	V	8.89	3.28	-2.99	9.17	38.45
	047.0	20000	Н	11.78	3.28	-2.99	12.07	38.45
	825.5	20415	V	10.72	3.30	-2.93	11.10	38.45
BAND 5	AND 5	20110	Н	14.22	3.30	-2.93	14.60	38.45
BW: 3M QPSK	836.5	20525	V	11.15	3.29	-2.96	11.48	38.45
	000.0	20525 -	Н	14.50	3.29	-2.96	14.83	38.45
RB: 1,14	847.5	20635	V	9.32	3.27	-3.00	9.60	38.45
	0 11 10	20033	Н	11.59	3.27	-3.00	11.86	38.45
	825.5	20415	V	11.27	3.30	-2.93	11.65	38.45
BAND 5	020.0	20415 -	Н	14.96	3.30	-2.93	15.33	38.45
BW: 3M	836.5	20525	V	11.93	3.29	-2.95	12.26	38.45
16QAM			Н	15.32	3.29	-2.96	15.65	38.45
RB: 1,0	847.5	20635	V	9.60	3.28	-2.99	9.89	38.45
			Н	12.38	3.28	-2.99	12.67	38.45
	825.5	20415	V	11.44	3.30	-2.93	11.82	38.45
BAND 5 BW: 3M 16QAM RB: 1,14		_	Н	14.90	3.30	-2.93	15.28	38.45
	836.5	20525	V	11.66	3.29	-2.96	11.99	38.45
			Н	14.84	3.29	-2.96	15.17	38.45
	847.5	20635	V	10.11	3.27	-3.00	10.39	38.45
			Н	12.49	3.27	-3.00	12.77	38.45

The RBW, VBW of SPA for frequency RBW= 8MHz, VBW= 8MHz

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	EUT				Measur	rement		
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
	826.5	20425	V	10.24	3.30	-2.93	10.61	38.45
BAND 5	020.5	20423	Н	15.03	3.30	-2.93	15.41	38.45
BW: 5M	836.5	20525	V	11.45	3.29	-2.95	11.79	38.45
QPSK	030.3	20020	Н	15.18	3.29	-2.95	15.52	38.45
RB: 1,0	846.5	20625	V	9.81	3.28	-2.98	10.11	38.45
	0.0	20020	Н	12.71	3.28	-2.98	13.01	38.45
	826.5	20425	V	10.95	3.30	-2.93	11.32	38.45
BAND 5	020.0	20120	Н	14.63	3.30	-2.93	15.00	38.45
BW: 5M QPSK	836.5	20525	V	10.36	3.29	-2.97	10.68	38.45
	000.0	20020	Н	13.81	3.29	-2.96	14.13	38.45
RB: 1,24	846.5	20625	V	9.83	3.27	-3.00	10.11	38.45
	0 10.0	20625	Н	12.66	3.27	-3.00	12.94	38.45
	826.5	20425	V	10.92	3.30	-2.93	11.29	38.45
BAND 5	020.0	20120	Н	15.53	3.30	-2.93	15.90	38.45
BW: 5M	836.5	20525	V	12.36	3.29	-2.95	12.71	38.45
16QAM			Н	15.70	3.29	-2.95	16.04	38.45
RB: 1,0	846.5	20625	V	10.12	3.28	-2.98	10.41	38.45
			Н	12.92	3.28	-2.98	13.21	38.45
	826.5	20425	V	11.50	3.30	-2.93	11.87	38.45
BAND 5	BAND 5		Н	15.39	3.30	-2.93	15.76	38.45
BW: 5M 16QAM RB: 1,24	836.5	20525	V	11.49	3.29	-2.96	11.82	38.45
			Н	14.72	3.29	-2.96	15.04	38.45
	846.5	20625	V	10.88	3.27	-3.00	11.16	38.45
			Н	13.52	3.27	-3.00	13.80	38.45

The RBW, VBW of SPA for frequency RBW= 8MHz, VBW= 8MHz

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	EUT				Measu	ement		
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
	829.0	20450	V	10.96	3.30	-2.93	11.33	38.45
BAND 5	029.0	20430	Н	14.87	3.30	-2.93	15.24	38.45
BW: 10M	836.5	20525	V	11.54	3.30	-2.94	11.89	38.45
QPSK	030.3	20020	Н	14.68	3.30	-2.94	15.03	38.45
RB: 1,0	844.0	20600	V	10.21	3.29	-2.97	10.53	38.45
	011.0	20000	Н	13.50	3.29	-2.97	13.82	38.45
	829.0	20450	V	11.82	3.29	-2.95	12.17	38.45
BAND 5	BAND 5	20400	Н	14.34	3.29	-2.95	14.69	38.45
BW: 10M QPSK	836.5	20525	V	9.45	3.28	-2.97	9.76	38.45
	000.0	20020	Н	12.78	3.28	-2.98	13.08	38.45
RB: 1,49	844.0	20600	V	9.64	3.27	-3.00	9.92	38.45
	011.0	20000	Н	12.43	3.27	-3.00	12.71	38.45
	829.0	20450	V	11.62	3.30	-2.93	12.00	38.45
BAND 5	020.0	20100	Н	15.44	3.30	-2.93	15.81	38.45
BW: 10M	836.5	20525	V	12.38	3.30	-2.94	12.73	38.45
16QAM	000.0		Н	15.54	3.30	-2.94	15.89	38.45
RB: 1,0	844.0	20600	V	10.88	3.29	-2.97	11.20	38.45
	0.1.10		Н	14.18	3.29	-2.97	14.50	38.45
	829.0	20450	V	12.57	3.29	-2.95	12.92	38.45
BAND 5 BW: 10M 16QAM RB: 1,49			Н	15.41	3.29	-2.95	15.75	38.45
	836.5	20525	V	10.06	3.28	-2.97	10.37	38.45
			Н	13.42	3.28	-2.97	13.73	38.45
	844.0	20600	V	10.64	3.27	-3.00	10.92	38.45
			Н	13.50	3.27	-3.00	13.78	38.45

The RBW, VBW of SPA for frequency RBW= 8MHz, VBW= 8MHz

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	EUT				Measur	rement		
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
	2502.5	20775	V	8.24	10.90	-5.25	13.89	33.01
BAND 7	2302.3	20113	Н	14.64	10.90	-5.25	20.28	33.01
BW: 5M	2535.0	21100	V	9.16	10.94	-5.30	14.80	33.01
QPSK	2333.0	21100	Н	15.15	10.94	-5.30	20.79	33.01
RB: 1,0	2567.5	21425	V	7.95	10.98	-5.34	13.60	33.01
	2507.5	21420	Н	14.71	10.98	-5.34	20.35	33.01
	2502.5	20775	V	8.84	10.90	-5.26	14.49	33.01
BAND 7	2002.0	20110	Н	15.04	10.90	-5.26	20.69	33.01
BW: 5M QPSK	2535.0	21100	V	9.04	10.95	-5.31	14.68	33.01
	2555.0	21100	Н	15.02	10.95	-5.31	20.66	33.01
RB: 1,24	2567.5	21425	V	7.31	10.99	-5.34	12.96	33.01
	2507.5	21425	Н	14.32	10.99	-5.34	19.97	33.01
	2502.5	20775	V	8.32	10.90	-5.26	13.96	33.01
BAND 7	2002.0	20110	Н	14.57	10.90	-5.25	20.22	33.01
BW: 5M	2535.0	21100	V	8.90	10.94	-5.30	14.54	33.01
16QAM	2000.0	21100	Н	15.37	10.94	-5.30	21.01	33.01
RB: 1,0	2567.5	21425	V	7.79	10.98	-5.34	13.44	33.01
	2001.0	21120	Н	14.69	10.98	-5.34	20.34	33.01
	2502.5	20775	V	9.09	10.90	-5.26	14.73	33.01
BAND 7 BW: 5M 16QAM RB: 1,24		20110	Н	14.95	10.90	-5.26	20.60	33.01
	2535.0	21100	V	9.13	10.95	-5.31	14.77	33.01
			Н	14.95	10.95	-5.31	20.59	33.01
	2567.5	21425	V	7.21	10.99	-5.34	12.86	33.01
		•	Н	14.40	10.99	-5.34	20.05	33.01

The RBW, VBW of SPA for frequency RBW= 8MHz, VBW= 8MHz

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	EUT				Measu	rement		
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
	2505.0	20800	V	8.97	10.90	-5.26	14.62	33.01
BAND 7	2303.0	20000	Н	17.64	10.90	-5.26	23.29	33.01
BW: 10M	2535.0	21100	V	9.74	10.94	-5.29	15.38	33.01
QPSK	2000.0	21100	Н	15.58	10.94	-5.29	21.22	33.01
RB: 1,0	2565.0	21400	V	9.09	10.98	-5.34	14.73	33.01
	2000.0	21400	Н	15.14	10.98	-5.34	20.78	33.01
	2505.0	20800	V	9.59	10.91	-5.26	15.24	33.01
BAND 7	2000.0	20000	Н	18.02	10.91	-5.26	23.67	33.01
BW: 10M QPSK	2535.0	21100	V	9.04	10.95	-5.31	14.68	33.01
	2000.0	21100	Н	14.89	10.95	-5.31	20.53	33.01
RB: 1,49	2565.0	21400	V	7.21	10.99	-5.34	12.86	33.01
	2000.0	21100 <b>-</b> 21400 <b>-</b> 20800 <b>-</b>	Н	13.45	10.99	-5.34	19.10	33.01
	2505.0	20800	V	8.82	10.90	-5.26	14.46	33.01
BAND 7	2000.0	20000	Н	17.45	10.90	-5.25	23.10	33.01
BW: 10M	2535.0	21100	V	9.57	10.94	-5.29	15.21	33.01
16QAM			Н	15.08	10.94	-5.29	20.73	33.01
RB: 1,0	2565.0	21400	V	9.76	10.98	-5.34	15.39	33.01
			Н	15.50	10.98	-5.34	21.14	33.01
	2505.0	20800	V	9.17	10.91	-5.26	14.82	33.01
BAND 7			Н	15.84	10.91	-5.26	21.49	33.01
BW: 10M 16QAM RB: 1,49	2535.0	21100	V	9.18	10.95	-5.31	14.81	33.01
			Н	14.31	10.95	-5.31	19.94	33.01
	2565.0	21400	V	7.35	10.99	-5.34	13.00	33.01
			Н	13.60	10.99	-5.34	19.25	33.01

The RBW, VBW of SPA for frequency RBW= 8MHz, VBW= 8MHz

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	EUT				Measur	ement		
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
	2507.5	20825	V	9.08	10.90	-5.26	14.73	33.01
BAND 7	2507.5	20020	Н	14.18	10.90	-5.25	19.82	33.01
BW: 15M	2535.0	21100	V	9.84	10.94	-5.29	15.48	33.01
QPSK	2333.0	21100	Н	14.97	10.94	-5.29	20.61	33.01
RB: 1,0	2562.5	21375	V	9.78	10.97	-5.34	15.41	33.01
	2502.5	21070	Н	15.69	10.97	-5.34	21.32	33.01
DAND 7	2507.5	20825	V	9.88	10.92	-5.27	15.53	33.01
BAND 7	BAND 7	20020	Н	15.14	10.92	-5.27	20.79	33.01
BW: 15M QPSK	2535.0	21100	V	9.06	10.95	-5.32	14.70	33.01
	2000.0	21100	Н	14.15	10.95	-5.32	19.78	33.01
RB: 1,74	2562.5	21375	V	6.86	10.99	-5.34	12.51	33.01
	2002.0	21375	Н	13.01	10.99	-5.34	18.65	33.01
	2507.5	20825	V	8.96	10.90	-5.25	14.61	33.01
BAND 7	2007.0	20020	Н	14.01	10.90	-5.26	19.66	33.01
BW: 15M	2535.0	21100	V	9.58	10.94	-5.29	15.22	33.01
16QAM	2000.0	21100	Н	14.78	10.93	-5.29	20.42	33.01
RB: 1,0	2562.5	21375	V	10.08	10.97	-5.34	15.71	33.01
	2002.0	21070	Н	16.77	10.97	-5.34	22.40	33.01
	2507.5	20825	V	9.74	10.92	-5.27	15.39	33.01
BAND 7	200710		Н	15.04	10.92	-5.27	20.69	33.01
BW: 15M 16QAM RB: 1,74	2535.0	21100	V	8.83	10.95	-5.32	14.47	33.01
			Н	14.01	10.95	-5.32	19.64	33.01
	2562.5	21375	V	6.94	10.99	-5.34	12.59	33.01
			Н	15.71	10.99	-5.34	21.36	33.01

The RBW, VBW of SPA for frequency RBW= 8MHz, VBW= 8MHz

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	EUT				Measu	ement		Limit dBm 33.01 33.01 33.01 33.01 33.01				
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit				
	MHz		V/H	dBm	dBi	dB	dBm	dBm				
	2510.0	20850	V	8.45	10.90	-5.26	14.10	33.01				
BAND 7	2510.0	20000	Н	13.95	10.90	-5.26	19.60	33.01				
BW: 20M	2535.0	21100	V	5.56	10.93	-5.29	11.21	33.01				
QPSK	2333.0	21100	Н	14.81	10.93	-5.29	20.46	33.01				
RB: 1,0	2560.0	21350	V	9.13	10.96	-5.33	14.76	33.01				
	2500.0	21000	Н	15.08	10.96	-5.33	20.71	33.01				
	2510.0	20850	V	5.67	10.92	-5.27	11.32	33.01				
BAND 7	2010.0	20000	Н	15.12	10.92	-5.27	20.77	33.01				
BW: 20M QPSK	2535.0	21100	V	4.83	10.95	-5.32	10.46	33.01				
	2555.0	21100	Н	13.89	10.95	-5.32	19.53	33.01				
RB: 1,99	2560.0	21350	V	6.31	10.99	-5.34	11.96	33.01				
	2000.0	21100 <b>-</b> 21350 <b>-</b> 20850 <b>-</b>	Н	12.85	10.99	-5.34	18.49	33.01				
	2510.0	20850	V	5.71	10.90	-5.25	11.35	33.01				
BAND 7	2010.0	20000	Н	13.87	10.90	-5.26	19.52	33.01				
BW: 20M	2535.0	21100	V	5.51	10.93	-5.29	11.16	33.01				
16QAM	2000.0	21100	Н	14.66	10.93	-5.29	20.30	33.01				
RB: 1,0	2560.0	21350	V	9.21	10.96	-5.33	14.84	33.01				
			Н	14.93	10.96	-5.33	20.56	33.01				
	2510.0	20850	V	5.18	10.92	-5.27	10.83	33.01				
BAND 7 BW: 20M 16QAM RB: 1 99			Н	14.98	10.92	-5.27	20.63	33.01				
	2535.0	21100	V	4.76	10.95	-5.32	10.39	33.01				
			Н	13.48	10.96	-5.32	19.12	33.01				
	2560.0	21350	V	6.53	10.99	-5.34	12.18	33.01				
			Н	13.01	10.99	-5.34	18.66	33.01				

The RBW, VBW of SPA for frequency RBW= 8MHz, VBW= 8MHz

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	EUT				Measu	rement		
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
	2572.5	37775	V	9.15	10.99	-5.34	14.81	33.01
BAND 38	2012.0	31113	Н	18.44	10.99	-5.34	24.10	33.01
BW: 5M	2595.0	38000	V	10.70	11.02	-5.34	16.37	33.01
QPSK	2333.0	30000	Н	15.83	11.02	-5.34	21.51	33.01
RB: 1,0	2617.5	38225	V	9.19	11.05	-5.37	14.87	33.01
	2017.0	00220	Н	14.14	11.05	-5.37	19.82	33.01
	2572.5	37775	V	10.09	10.99	-5.34	15.74	33.01
BAND 38	BAND 38	01110	Н	14.41	10.99	-5.34	20.07	33.01
BW: 5M QPSK	2595.0	38000	V	10.53	11.02	-5.35	16.21	33.01
	2000.0	00000	Н	15.42	11.02	-5.35	21.09	33.01
RB: 1,24	2617.5	38225	V	9.90	11.05	-5.37	15.59	33.01
	2017.0	00220	Н	14.07	11.05	-5.37	19.75	33.01
	2572.5	37775	V	8.59	10.99	-5.34	14.24	33.01
BAND 38	2012.0	01110	Н	13.48	10.99	-5.34	19.14	33.01
BW: 5M	2595.0	38000	V	10.72	11.02	-5.34	16.39	33.01
16QAM	2000.0	00000	Н	15.37	11.02	-5.34	21.05	33.01
RB: 1,0	2617.5	38225	V	8.79	11.05	-5.37	14.48	33.01
	201110	00220	Н	13.61	11.05	-5.37	19.29	33.01
	2572.5	37775	V	9.63	10.99	-5.34	15.29	33.01
BAND 38	20.2.0	0.7.0	Н	14.31	10.99	-5.34	19.97	33.01
BW: 5M 16QAM RB: 1,24	2595.0	38000	V	10.44	11.02	-5.35	16.11	33.01
			Н	15.19	11.02	-5.35	20.87	33.01
	2617.5	38225	V	9.20	11.05	-5.37	14.88	33.01
		33223	Н	13.74	11.05	-5.37	19.42	33.01

The RBW, VBW of SPA for frequency RBW= 8MHz , VBW= 8MHz

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	EUT				Measur	rement		
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
	2575.0	37800	V	9.30	10.99	-5.34	14.96	33.01
BAND 38	2373.0	37000	Н	13.47	10.99	-5.34	19.12	33.01
BW: 10M	2595.0	38000	V	10.60	11.02	-5.34	16.27	33.01
QPSK	2393.0	30000	Н	15.22	11.02	-5.34	20.90	33.01
RB: 1,0	2615.0	38200	V	9.35	11.04	-5.36	15.03	33.01
	2013.0		Н	14.26	11.04	-5.36	19.94	33.01
	2575.0	37800	V	10.83	11.00	-5.34	16.49	33.01
BAND 38	2373.0	3/000	Н	15.31	11.00	-5.34	20.98	33.01
QPSK	2595.0	38000	V	10.54	11.03	-5.35	16.22	33.01
	2000.0		Н	15.02	11.03	-5.35	20.70	33.01
	2615.0	38200	V	9.65	11.05	-5.37	15.33	33.01
	2010.0	00200	Н	14.19	11.05	-5.37	19.87	33.01
	2575.0	37800	V	8.94	10.99	-5.34	14.59	33.01
BAND 38	2070.0	07000	Н	13.52	10.99	-5.34	19.18	33.01
BW: 10M	2595.0	38000	V	10.59	11.02	-5.34	16.27	33.01
16QAM	2000.0	00000	Н	15.19	11.02	-5.34	20.87	33.01
RB: 1,0	2615.0	38200	V	8.65	11.04	-5.36	14.33	33.01
	2010.0	00200	Н	13.40	11.04	-5.36	19.08	33.01
	2575.0	37800	V	10.22	11.00	-5.34	15.89	33.01
BAND 38 BW: 10M	20.0.0	3,000	Н	14.81	11.00	-5.34	20.47	33.01
	2595.0	38000	V	10.24	11.03	-5.35	15.91	33.01
16QAM			Н	14.78	11.03	-5.35	20.46	33.01
RB: 1,49	2615.0	38200	V	9.10	11.05	-5.37	14.78	33.01
		3323	Н	13.62	11.05	-5.37	19.30	33.01

The RBW, VBW of SPA for frequency RBW= 8MHz, VBW= 8MHz

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	EUT				Measur	rement		
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
	2577.5	37825	V	8.73	10.99	-5.34	14.39	33.01
BAND 38	2011.0	37023	Н	13.22	10.99	-5.34	18.87	33.01
BW: 15M	2595.0	38000	V	10.50	11.02	-5.34	16.18	33.01
QPSK	2000.0	00000	Н	14.98	11.02	-5.34	20.66	33.01
RB: 1,0	2612.5	38175	V	9.21	11.04	-5.36	14.89	33.01
	2012.0		Н	13.73	11.04	-5.36	19.41	33.01
<b>B</b> 4 4 1 <b>B</b> 6 6	2577.5	37825	V	10.78	11.01	-5.34	16.45	33.01
BAND 38	2011.0	01020	Н	15.12	11.01	-5.34	20.79	33.01
QPSK	2595.0	38000	V	10.11	11.03	-5.35	15.79	33.01
	2000.0		Н	14.29	11.03	-5.35	19.97	33.01
	2612.5	38175	V	9.10	11.05	-5.37	14.78	33.01
			Н	13.35	11.05	-5.37	19.04	33.01
	2577.5	37825	V	8.78	10.99	-5.34	14.43	33.01
BAND 38			Н	13.03	10.99	-5.34	18.69	33.01
BW: 15M	2595.0	38000	V	10.25	11.02	-5.34	15.92	33.01
16QAM			Н	14.33	11.02	-5.34	20.01	33.01
RB: 1,0	2612.5	38175	V	9.06	11.04	-5.36	14.74	33.01
			Н	13.60	11.04	-5.36	19.28	33.01
	2577.5	37825	V	10.46	11.01	-5.34	16.12	33.01
BAND 38 BW: 15M			Н	14.68	11.01	-5.34	20.35	33.01
	2595.0	38000	V	9.96	11.03	-5.35	15.64	33.01
16QAM			Н	14.34	11.03	-5.35	20.02	33.01
RB: 1,74	2612.5	38175	V	9.00	11.05	-5.37	14.68	33.01
			Н	13.28	11.05	-5.37	18.96	33.01

The RBW, VBW of SPA for frequency RBW= 8MHz , VBW= 8MHz

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	EUT				Measur	ement		
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
	2580	37850	V	8.93	10.99	-5.34	14.59	33.01
BAND 38	2300	37000	Н	13.24	10.99	-5.34	18.90	33.01
BW: 20M	2595	38000	V	10.80	11.01	-5.34	16.47	33.01
QPSK	2393	30000	Н	15.13	11.01	-5.34	20.80	33.01
RB: 1,0	2610	38150	V	10.18	11.03	-5.35	15.86	33.01
	2010	30130	Н	14.60	11.03	-5.35	20.28	33.01
	2580	37850	V	10.87	11.01	-5.34	16.54	33.01
BAND 38	2000	07000	Н	15.10	11.01	-5.34	20.77	33.01
BW: 20M QPSK RB: 1,99	2595	38000	V	9.84	11.03	-5.35	15.52	33.01
	2000		Н	14.22	11.03	-5.35	19.90	33.01
	2610	38150	V	9.15	11.05	-5.37	14.83	33.01
	2010	00.00	Н	13.43	11.05	-5.37	19.11	33.01
	2580	37850	V	8.95	10.99	-5.34	14.60	33.01
BAND 38	2000	07000	Н	13.18	10.99	-5.34	18.83	33.01
BW: 20M	2595	38000	V	10.29	11.01	-5.34	15.96	33.01
16QAM	2000		Н	14.93	11.01	-5.34	20.60	33.01
RB: 1,0	2610	38150	V	10.22	11.03	-5.35	15.90	33.01
			Н	14.50	11.03	-5.35	20.18	33.01
	2580	37850	V	10.60	11.01	-5.34	16.27	33.01
BAND 38 BW: 20M			Н	14.88	11.01	-5.34	20.56	33.01
	2595	38000	V	9.67	11.03	-5.35	15.35	33.01
16QAM			Н	14.06	11.03	-5.35	19.74	33.01
RB: 1,99	2610	38150	V	9.03	11.05	-5.37	14.71	33.01
			Н	13.26	11.05	-5.37	18.94	33.01

The RBW, VBW of SPA for frequency RBW= 8MHz, VBW= 8MHz

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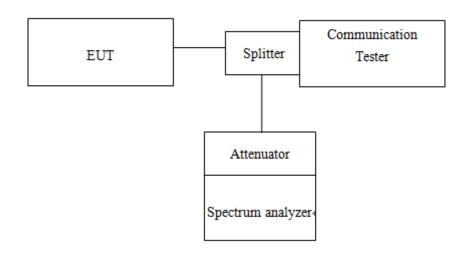
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### 8. OCCUPIED BANDWIDTH MEASUREMENT

### 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%.

### 99% Bandwidth with detector sample

The EUT's output RF connector was connected with a short cable to the spectrum analyzer, RBW was set to about  $1\% \sim 5\%$  of emission BW, VBW= 3 times RBW, -20dBc display line was placed on the screen (or 20dB bandwidth). Set RBW to 99% bandwidth, RBW=  $1\% \sim 5\%$ , VBW= 3 RBW, with span > 2\* Signal BW, set % Power = 99%.

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# 8.4. Measurement Equipment Used

Conduc	ted Emission (m	neasured at a	antenna port)	Test Site	
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.
TYPE		NUMBER	NUMBER	CAL.	
Power Meter	Anritsu	ML2495A	1005007	12/15/2016	12/14/2017
Power Sensor	Anritsu	MA2411B	917032	12/15/2016	12/14/2017
EXA Spectrum Analyz- er	Agilent	N9030A	MY53120760	03/21/2017	03/20/2018
DC Block	Mini-Circuits	BLK-18-S+	1	01/05/2017	01/04/2018
Coaxial Cable	HU- BER+SUHNER	SUCOFLEX 102	23670/2	01/05/2017	01/04/2018
Attenuator	Mini-Circuit	BW-S10W2+	2	01/05/2017	01/04/2018
Splitter	Agilent	11636B	N/A	01/05/2017	01/04/2018
DC Power Supply	Agilent	E3640A	MY52410006	11/21/2016	11/20/2017
Temperature Chamber	TERCHY	MHG-120LF	911009	05/19/2017	05/18/2018
Radio Communication Analyzer	R&S	CMU200	102189	02/11/2017	02/10/2018
Radio Communication Analyer	Anritsu	MT8820C	6201465317	01/03/2017	01/02/2018

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### 8.5. Measurement Result

Freq. (MHz)	99% BW (MHz)	99% BW (MHz)	99% BW (MHz)	26 dB BW (MHz)	26 dB BW (MHz)	26 dB BW (MHz)	
		GSM 850	GPRS 850	EDGE 850	GSM 850	GPRS 850	EDGE 850
824.2	128	0.24348	0.24318	0.24626	0.3222	0.3205	0.3132
836.6	190	0.24486	0.24155	0.24204	0.3522	0.3160	0.3113
848.8	251	0.24270	0.24415	0.24087	0.3193	0.3164	0.3153

Freq. (MHz)	СН	99% BW (MHz) GSM 1900	99% BW (MHz) GPRS 1900	99% BW (MHz) EDGE 1900	26 dB BW (MHz) GSM 1900	26 dB BW (MHz) GPRS 1900	26 dB BW (MHz) EDGE 1900
1850.2	512	0.24376	0.24678	0.24740	0.3210	0.3180	0.3031
1880.0	661	0.24470	0.24521	0.24627	0.3203	0.3186	0.3229
1909.8	810	0.24350	0.24491	0.24918	0.3180	0.3191	0.3215

		99%	99%	99%	26 dB	26 dB	26 dB
Freq.		BW	BW	BW	BW	BW	BW
(MHz)	CH	(MHz)	(MHz)	(MHz)	(MHz)	(MHz)	(MHz)
(IVIHZ)		WCDMA	HSDPA	HSUPA	WCDMA	HSDPA	HSUPA
		II	II	II	II	II	I
1850.20	9262	4.1591	4.1654	4.1478	0.4718	0.4721	0.4736
1880.00	9400	4.1544	4.1548	4.1513	0.4716	0.4723	0.4717
1909.80	9538	4.1461	4.1560	4.1568	0.4713	0.4743	0.4709

		99%	99%	99%	26 dB	26 dB	26 dB
F		BW	BW	BW	BW	BW	BW
Freq.	CH	(MHz)	(MHz)	(MHz)	(MHz)	(MHz)	(MHz)
(MHz)		WCDMA	HSDPA	HSUPA	WCDMA	HSDPA	HSUPA
		V	V	V	V	V	V
826.40	4132	4.1349	4.1410	4.1338	0.4692	0.4714	0.4705
836.60	4183	4.1510	4.1517	4.1464	0.4701	0.4690	0.4713
846.60	4233	4.1493	4.1396	4.1510	0.4699	0.4712	0.4709

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	LTE BAND 5 Channel bandwidth: 1.4MHz								
Freq. (MHz)	СН	99% BW (MHz)	99% BW (MHz)	26 dB BW (MHz)	26 dB BW (MHz)				
		QPSK	16QAM	QPSK	16QAM				
824.7	20407	1.0977	1.1014	1.297	1.291				
836.5	20525	1.0982	1.0999	1.294	1.300				
848.3	20643	1.0979	1.0991	1.296	1.293				

	LTE BAND 5 Channel bandwidth: 3MHz									
Freq. (MHz)	СН	99% 99% BW BW (MHz) (MHz)		26 dB BW (MHz)	26 dB BW (MHz)					
		QPSK	16QAM	QPSK	16QAM					
825.5	20415	2.6985	2.7025	2.982	2.984					
836.5	20525	2.7043	2.7056	2.978	2.991					
847.5	20635	2.7052	2.7079	2.991	2.998					

	LTE BAI	ND 5 Chanı	nel bandwid	dth: 5MHz	
Freq. (MHz)	СН	99% BW (MHz)	BW BW		26 dB BW (MHz)
		QPSK	16QAM	QPSK	16QAM
826.5	20425	4.5075	4.5124	5.037	4.999
836.5	20525	4.5188	4.5139	5.068	5.043
846.5	20625	4.5165	4.5095	5.058	5.008

	LTE BAN	ID 5 Chann	el bandwid	th: 10MHz	7
Freq. (MHz)	СН	99% 99% BW BW (MHz) (MHz)		26 dB BW (MHz)	26 dB BW (MHz)
		QPSK	16QAM	QPSK	16QAM
829.0	20450	9.0012	8.9472	9.906	9.816
836.5	20525	9.0312	8.9758	9.938	9.830
844.0	20600	8.9847	8.9481	9.903	9.854

LTE BAND 7 Channel bandwidth: 5MHz						
From	СН	99% BW	99% BW	26 dB BW	26 dB BW	
Freq.						
(MHz)		(MHz)	(MHz)	(MHz)	(MHz)	
		QPSK	16QAM	QPSK	16QAM	
2502.5	20775	4.5095	4.5145	5.047	5.057	
2535.0	21100	4.5165	4.5143	5.071	5.038	
2567.5	21425	4.5174	4.5099	5.067	5.042	

LTE BAND 7 Channel bandwidth: 10MHz						
Freq. (MHz)	СН	99% BW (MHz)	99% BW (MHz)	BW BV	26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM	
2505.0	20800	9.0000	8.9707	9.890	9.807	
2535.0	21100	9.0040	8.9671	9.964	9.897	
2565.0	21400	8.9959	8.9498	9.953	9.885	

LTE BAND 7 Channel bandwidth: 15MHz						
Freq. (MHz)	СН	99% BW (MHz)	99% BW (MHz)	26 dB BW (MHz)	26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM	
2507.5	20825	13.479	13.488	14.88	14.93	
2535.0	21100	13.503	13.471	14.74	14.76	
2562.5	21375	13.475	13.467	14.63	14.63	

LTE BAND 7 Channel bandwidth: 20MHz						
Freq. (MHz)	СН	99% BW (MHz)	99% BW (MHz)	26 dB BW (MHz)	26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM	
2510.0	20850	17.950	17.989	19.42	19.53	
2535.0	21100	17.944	17.966	19.52	19.49	
2560.0	21350	17.911	17.935	19.51	19.56	

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LTE BAND 38 Channel bandwidth: 5MHz						
		99%	99%	26 dB	26 dB	
Freq.	CH	BW	BW	BW	BW	
(MHz)	СН	(MHz)	(MHz)	(MHz)	(MHz)	
		QPSK	16QAM	QPSK	16QAM	
2752.5	37775	4.5266	4.5134	5.360	5.056	
2595.0	38000	4.5185	4.5076	5.309	4.989	
2617.5	38225	4.5188	4.5158	5.458	5.011	

LTE BAND 38 Channel bandwidth: 10MHz						
Freq. (MHz)	СН	99% BW (MHz)	99% BW (MHz)	26 dB BW (MHz)	26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM	
2575.0	37800	8.9871	8.9594	9.895	9.769	
2595.0	38000	8.9554	8.9541	9.734	9.764	
2615.0	38200	8.9604	8.9686	9.758	9.873	

LTE BAND 38 Channel bandwidth: 15MHz						
Freq. (MHz)	СН	BW BW	26 dB BW (MHz)	26 dB BW (MHz)		
		QPSK	16QAM	QPSK	16QAM	
2577.5	37825	13.487	13.500	15.57	14.98	
2595.0	38000	13.460	13.505	15.65	15.23	
2612.5	38175	13.473	13.489	15.70	14.95	

LTE BAND 38 Channel bandwidth: 20MHz						
Freq. (MHz)	СН	99% BW (MHz)	99% BW (MHz)	26 dB BW (MHz)	26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM	
2580.0	37850	17.940	17.947	20.18	19.64	
2595.0	38000	17.903	17.920	20.56	19.79	
2610.0	38150	17.895	17.943	19.88	19.68	

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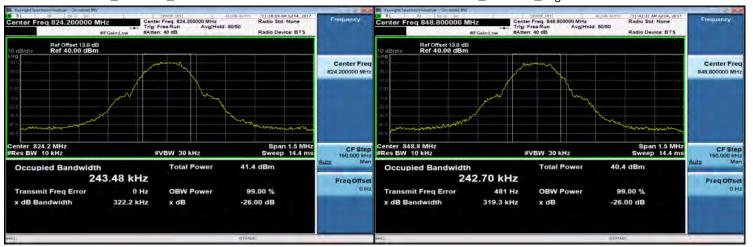


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# 99% & 26dB Bandwidth Test Data (Detector Peak)

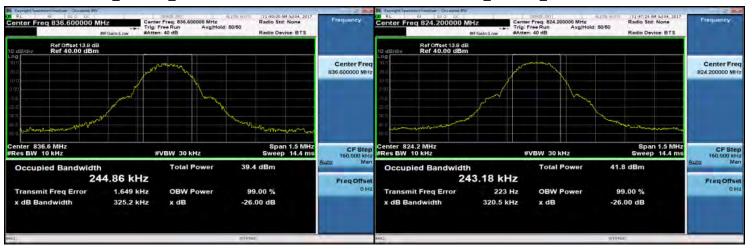
GSM\_850MHz\_LowCH128-824.2

GSM\_850MHz\_HighCH251-848.8



### GSM\_850MHz\_MidCH190-836.6

### GPRS\_850MHz\_LowCH128-824.2



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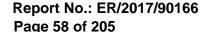
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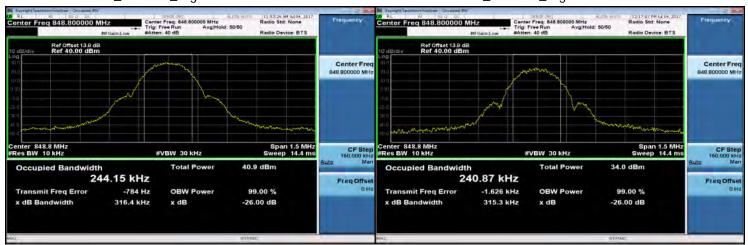
### GPRS\_850MHz\_MidCH190-836.6

# EDGE\_850MHz\_MidCH190-836.6



# GPRS\_850MHz\_HighCH251-848.8

# EDGE\_850MHz\_HighCH251-848.8



### EDGE 850MHz LowCH128-824.2

### GSM 1900MHz LowCH512-1850.2



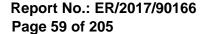
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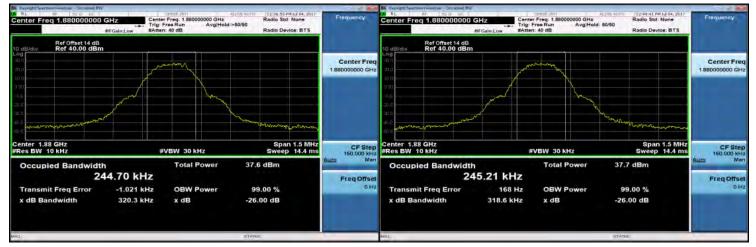
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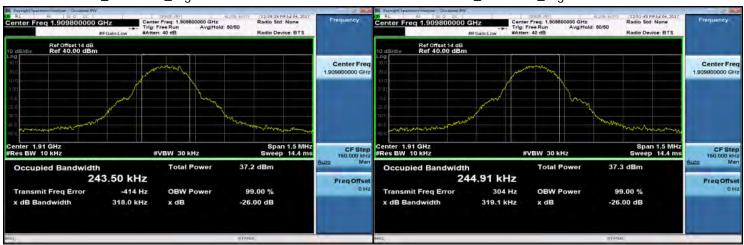
### GSM\_1900MHz\_MidCH661-1880

# GPRS\_1900MHz\_MidCH661-1880



# GSM\_1900MHz\_HighCH810-1909.8

# GPRS\_1900MHz\_HighCH810-1909.8



### GPRS 1900MHz LowCH512-1850.2

### EDGE 1900MHz LowCH512-1850.2



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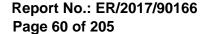
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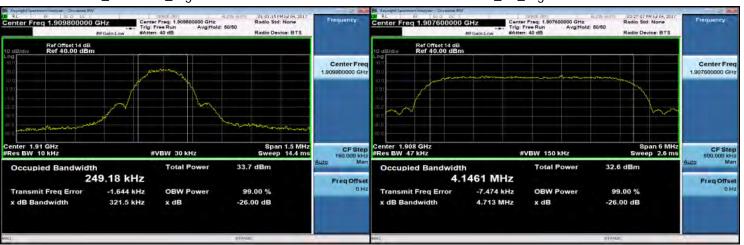
### EDGE\_1900MHz\_MidCH661-1880

### WCDMA\_B2\_MidCH9400-1880



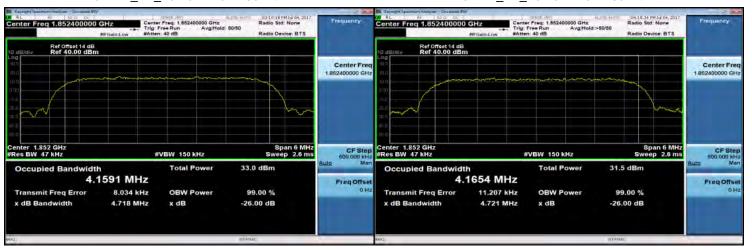
# EDGE\_1900MHz\_HighCH810-1909.8

# WCDMA\_B2\_HighCH9538-1907.6



### WCDMA B2 LowCH9262-1852.4

### HSDPA B2 LowCH9262-1852.4



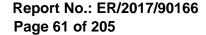
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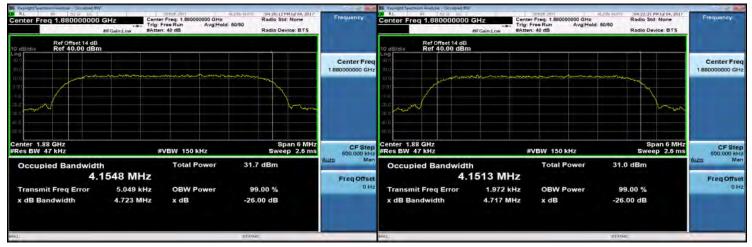
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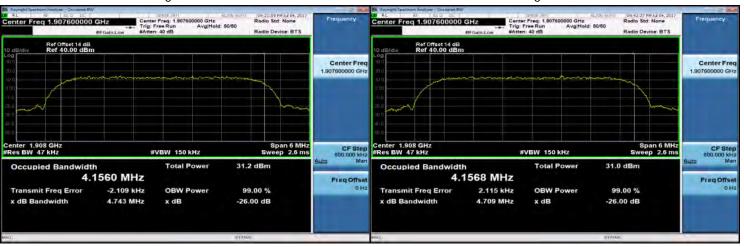
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### HSUPA\_B2\_MidCH9400-1880



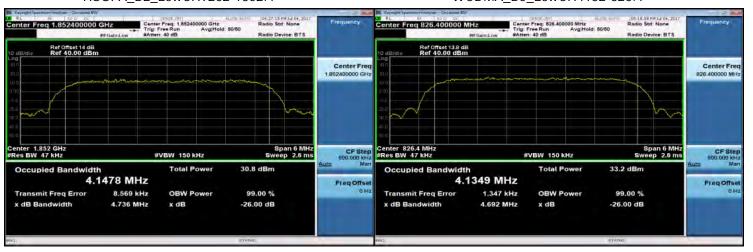
# HSDPA\_B2\_HighCH9538-1907.6

# HSUPA\_B2\_HighCH9538-1907.6



### HSUPA B2 LowCH9262-1852.4

### WCDMA B5 LowCH4132-826.4



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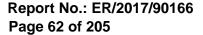
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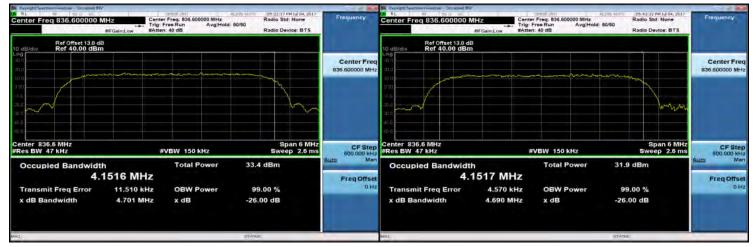
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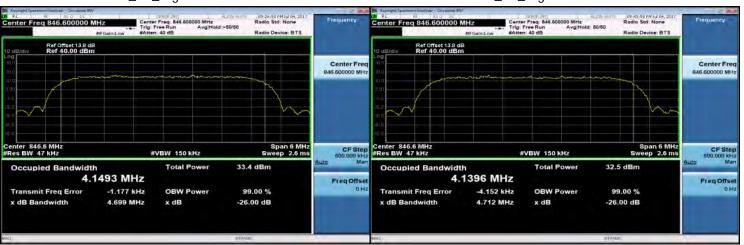
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### HSDPA\_B5\_MidCH4183-836.6



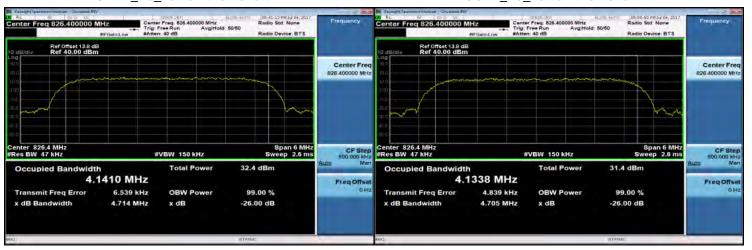
# WCDMA\_B5\_HighCH4233-846.6

# HSDPA\_B5\_HighCH4233-846.6



### HSDPA B5 LowCH4132-826.4

### HSUPA B5 LowCH4132-826.4

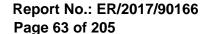


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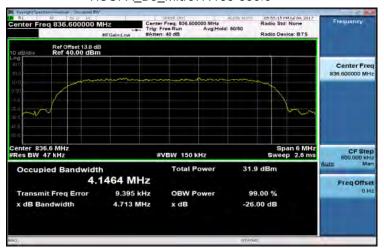
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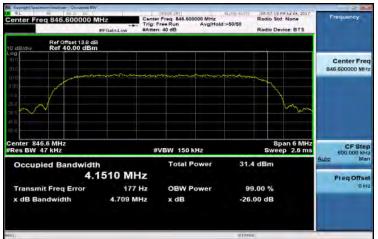




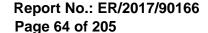
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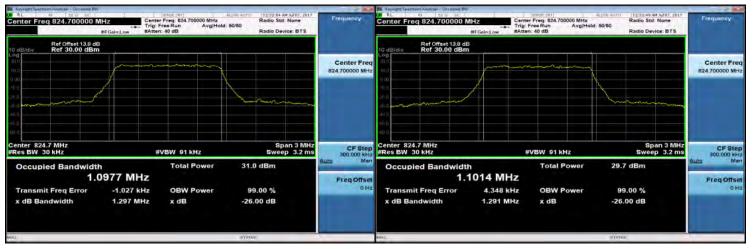
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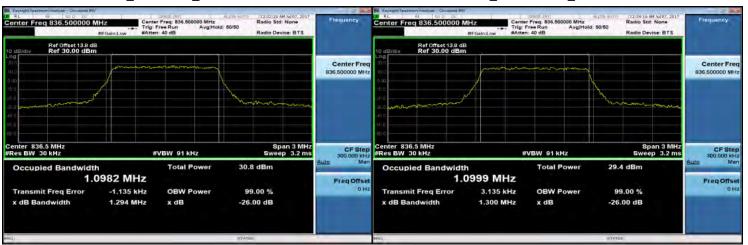
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# Band5 1.4MHz\_16-QAM 6 0\_LowCH20407-824.7



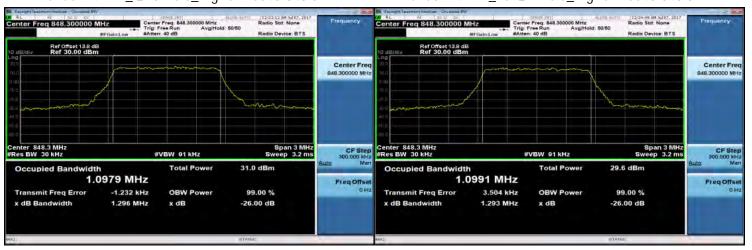
Band5 1.4MHz QPSK 6 0 MidCH20525-836.5

Band5 1.4MHz 16-QAM 6 0 MidCH20525-836.5



Band5 1.4MHz QPSK 6 0 HighCH20643-848.3

### Band5 1.4MHz 16-QAM 6 0 HighCH20643-848.3



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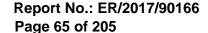
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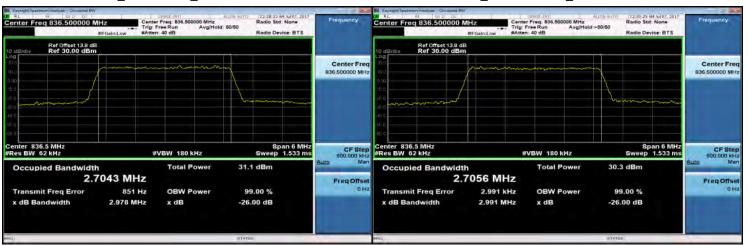
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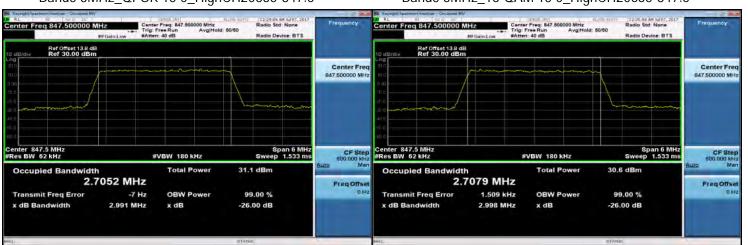
Band5 3MHz QPSK 15 0 MidCH20525-836.5

### Band5 3MHz\_16-QAM 15 0\_MidCH20525-836.5



Band5 3MHz QPSK 15 0 HighCH20635-847.5

### Band5 3MHz 16-QAM 15 0 HighCH20635-847.5



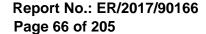
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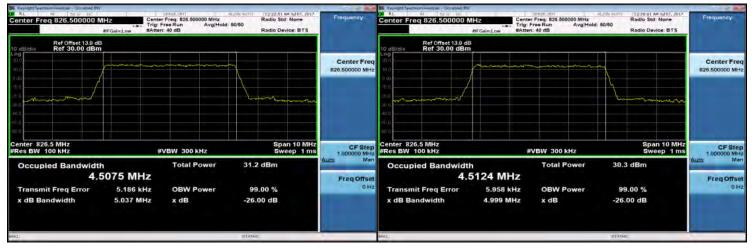
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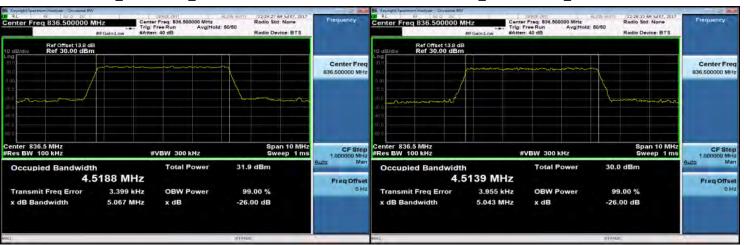
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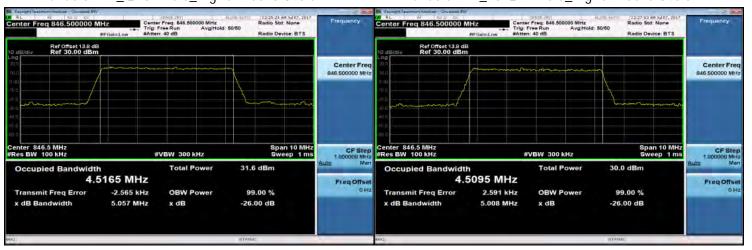
Band5 5MHz QPSK 25 0 MidCH20525-836.5

### Band5 5MHz\_16-QAM 25 0\_MidCH20525-836.5



Band5 5MHz QPSK 25 0 HighCH20625-846.5

### Band5 5MHz 16-QAM 25 0 HighCH20625-846.5



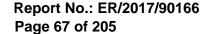
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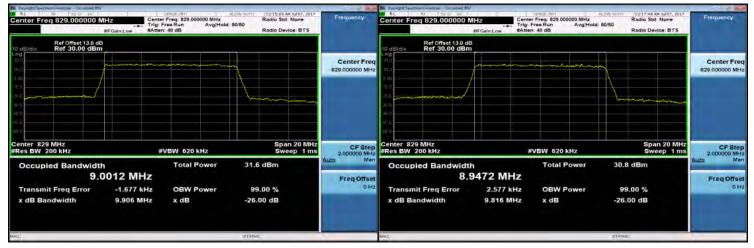
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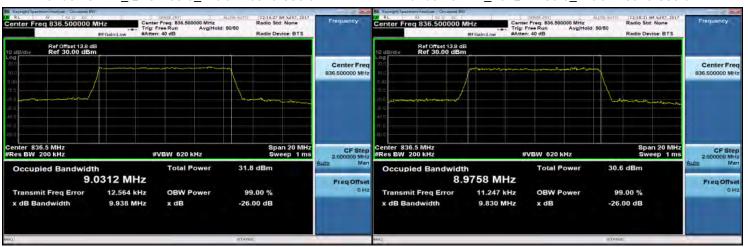
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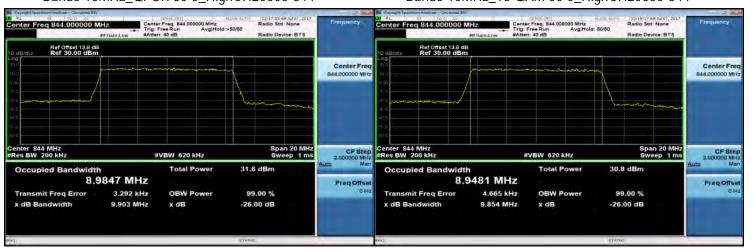
Band5 10MHz QPSK 50 0 MidCH20525-836.5

### Band5 10MHz 16-QAM 50 0 MidCH20525-836.5



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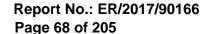


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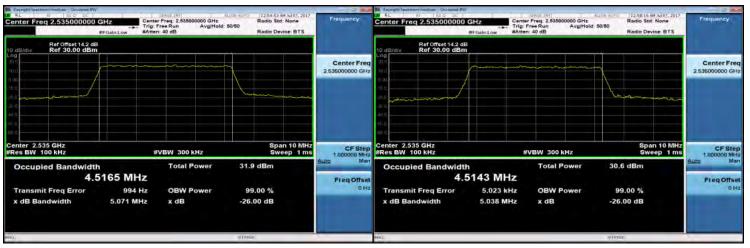
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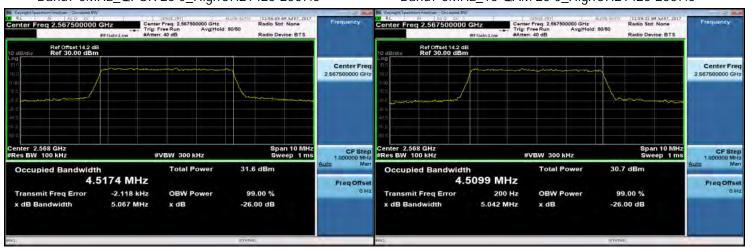
Band7 5MHz QPSK 25 0 MidCH21100-2535

### Band7 5MHz\_16-QAM 25 0\_MidCH21100-2535



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### Band7 5MHz 16-QAM 25 0 HighCH21425-2567.5



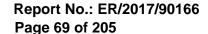
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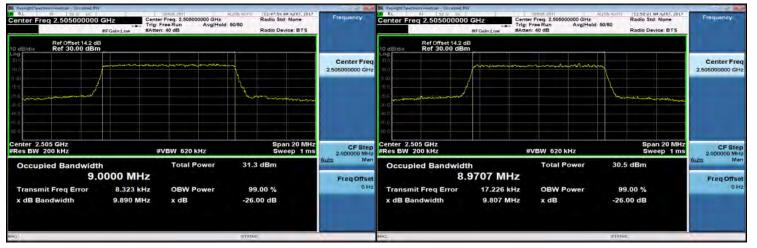
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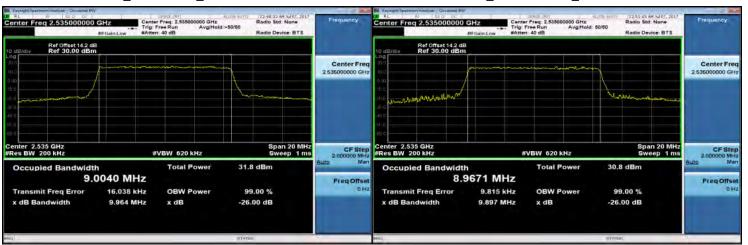
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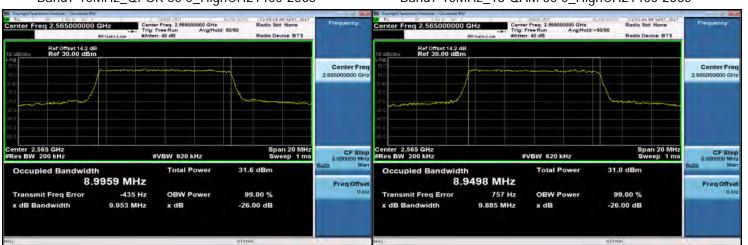
Band7 10MHz\_QPSK 50 0\_MidCH21100-2535

### Band7 10MHz\_16-QAM 50 0\_MidCH21100-2535



### Band7 10MHz QPSK 50 0 HighCH21400-2565

### Band7 10MHz 16-QAM 50 0 HighCH21400-2565



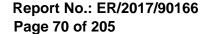
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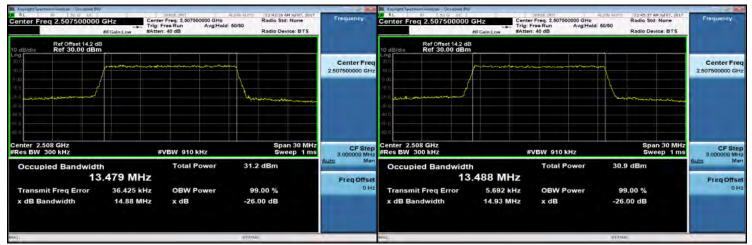
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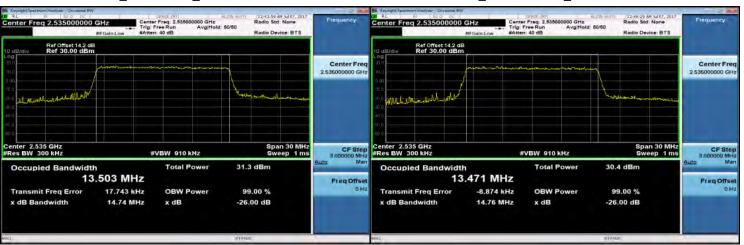
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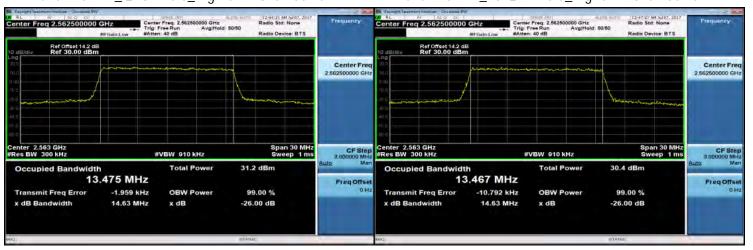
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Band7 15MHz QPSK 75 0 High CH21375-2562.5

### Band7 15MHz 16-QAM 75 0 HighCH21375-2562.5



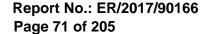
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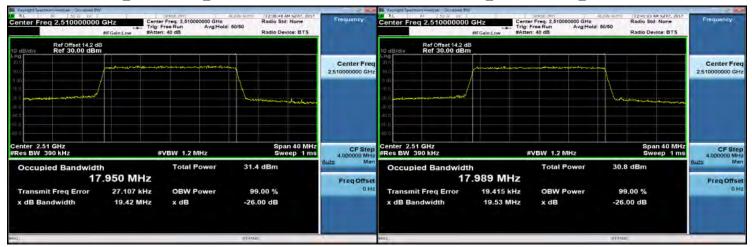
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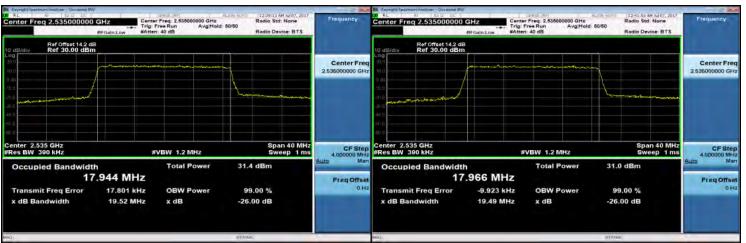
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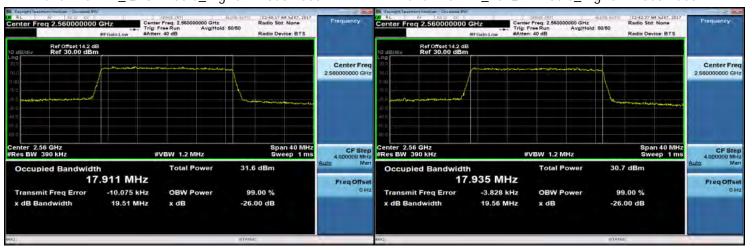
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### Band7 20MHz 16-QAM 100 0 HighCH21350-2560



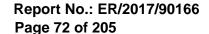
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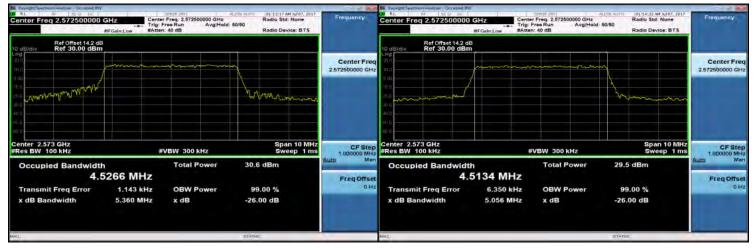
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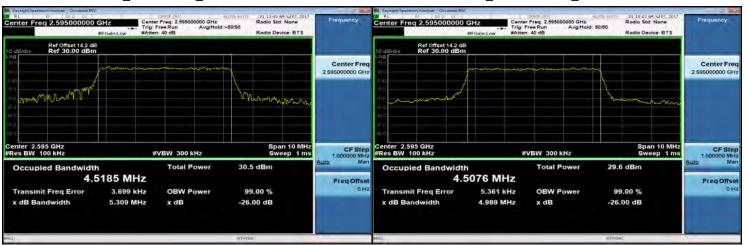
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Band38 5MHz\_QPSK 25 0\_MidCH38000-2595

### Band38 5MHz\_16-QAM 25 0\_MidCH38000-2595



Band38 5MHz QPSK 25 0 HighCH38225-2617.5

### Band38 5MHz 16-QAM 25 0 HighCH38225-2617.5



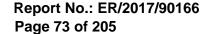
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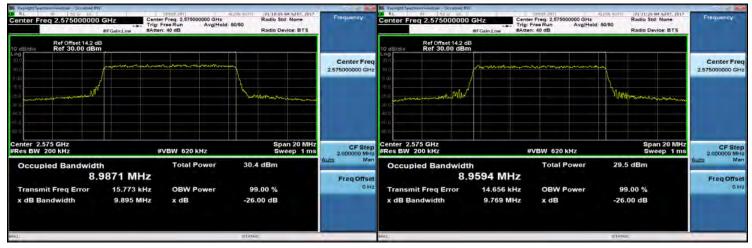
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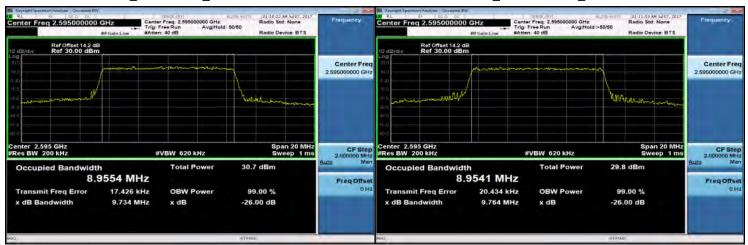
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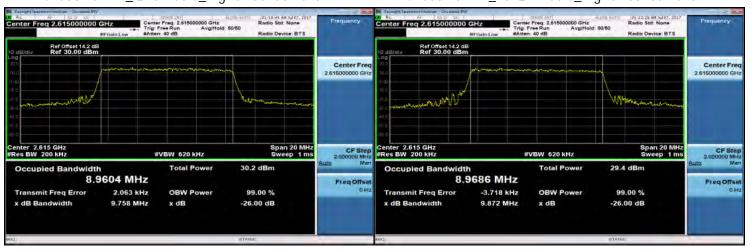
Band38 10MHz QPSK 50 0 MidCH38000-2595

## Band38 10MHz 16-QAM 50 0 MidCH38000-2595



Band38 10MHz QPSK 50 0 HighCH38200-2615

## Band38 10MHz 16-QAM 50 0 HighCH38200-2615



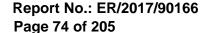
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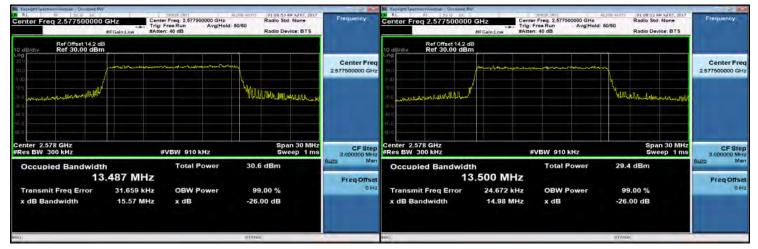
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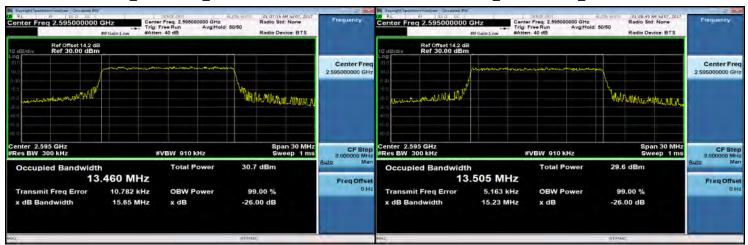
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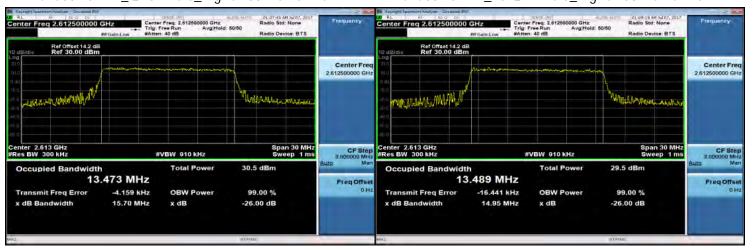
Band38 15MHz QPSK 75 0 MidCH38000-2595

## Band38 15MHz 16-QAM 75 0 MidCH38000-2595



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## Band38 15MHz 16-QAM 75 0 HighCH38175-2612.5



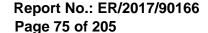
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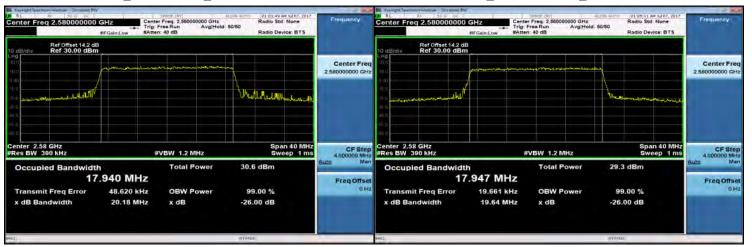
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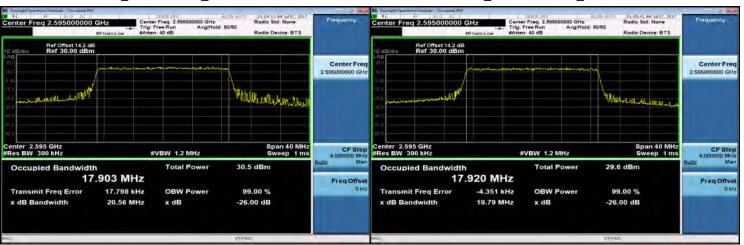
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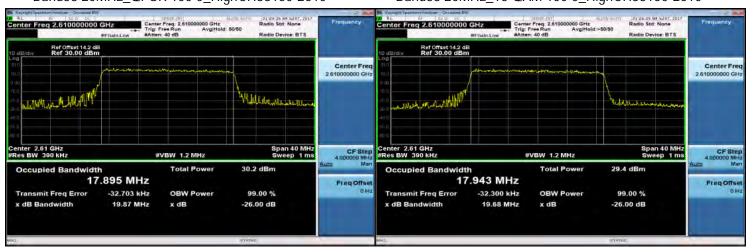
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# Band38 20MHz\_16-QAM 100 0\_MidCH38000-2595



Band38 20MHz QPSK 100 0 HighCH38150-2610

## Band38 20MHz 16-QAM 100 0 HighCH38150-2610



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## 9. OUT OF BAND EMISSION AT ANTENNA TERMINALS

# 9.1. Standard Applicable

FCC §22.917(a), §24.238(a), §27.53(h), Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

FCC §27.53(c) (5) & FCC §27.53(q)

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

FCC §27.53(h) (3)

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

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## FCC §27.53(m) (4) (6)

For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed; for mobile digital stations, in the 1 megahertz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed, except when the 1 megahertz band is 2495-2496 MHz, in which case a resolution bandwidth of at least one percent may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 megahertz or 1 percent of emission bandwidth, as specified; or 1 megahertz or 2 percent for mobile digital stations, except in the band 2495-2496 MHz). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. With respect to television operations, measurements must be made of the separate visual and aural operating powers at sufficiently frequent intervals to ensure compliance with the rules.

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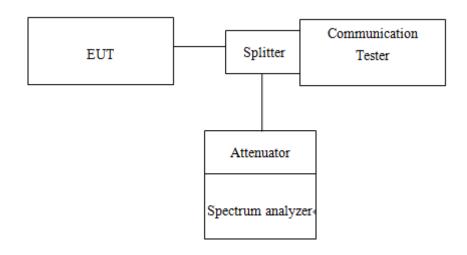
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## 9.2. Test SET-UP



#### 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**

- 1. 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.
- 3. Allow trace to fully stabilize
- 4. Repeat above procedures until all default test channel measured were complete.

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# 9.4. Measurement Equipment Used

Conducted Emission (measured at antenna port) Test Site					
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.
TYPE		NUMBER	NUMBER	CAL.	
Power Meter	Anritsu	ML2495A	1005007	12/15/2016	12/14/2017
Power Sensor	Anritsu	MA2411B	917032	12/15/2016	12/14/2017
EXA Spectrum Analyz- er	Agilent	N9030A	MY53120760	03/21/2017	03/20/2018
DC Block	Mini-Circuits	BLK-18-S+	1	01/05/2017	01/04/2018
Coaxial Cable	HU- BER+SUHNER	SUCOFLEX 102	23670/2	01/05/2017	01/04/2018
Attenuator	Mini-Circuit	BW-S10W2+	2	01/05/2017	01/04/2018
Splitter	Agilent	11636B	N/A	01/05/2017	01/04/2018
DC Power Supply	Agilent	E3640A	MY52410006	11/21/2016	11/20/2017
Temperature Chamber	TERCHY	MHG-120LF	911009	05/19/2017	05/18/2018
Radio Communication Analyzer	R&S	CMU200	102189	02/11/2017	02/10/2018
Radio Communication Analyer	Anritsu	MT8820C	6201465317	01/03/2017	01/02/2018

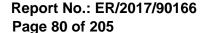
#### 9.5. Measurement Result:

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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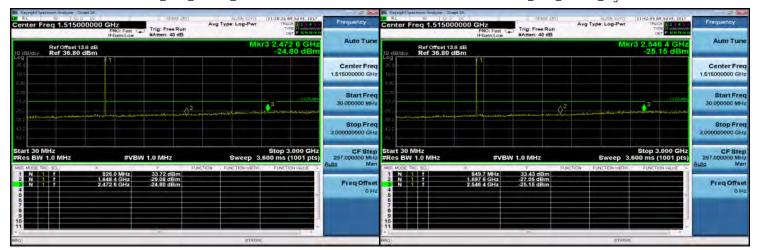
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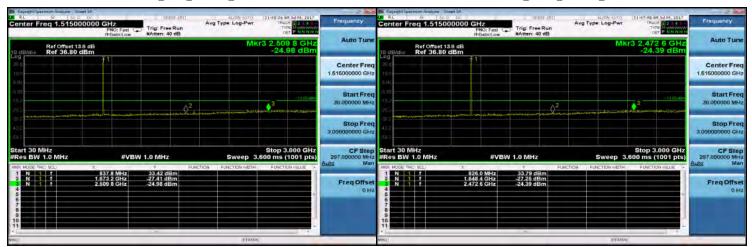
Out of Band Emission Low\_GSM\_850MHz\_LowCH128-824.2

Out of Band Emission Low\_GSM\_850MHz\_HighCH251-848.8



Out of Band Emission Low\_GSM\_850MHz\_MidCH190-836.6

Out of Band Emission Low\_GPRS\_850MHz\_LowCH128-824.2



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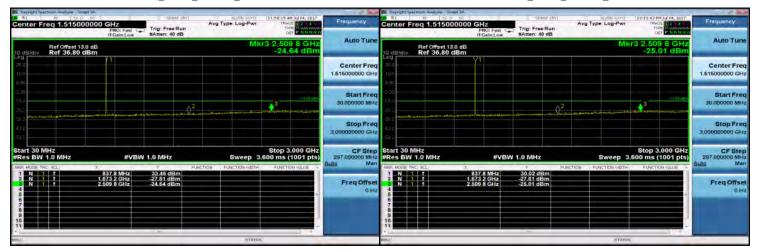
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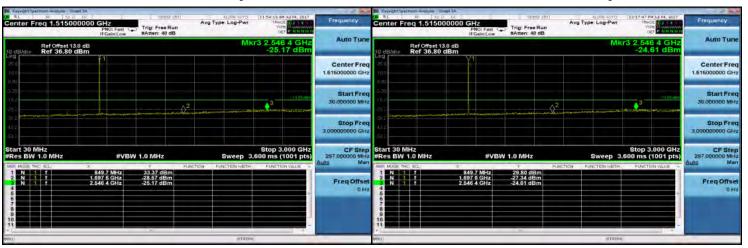
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Out of Band Emission Low\_EDGE\_850MHz\_MidCH190-836.6



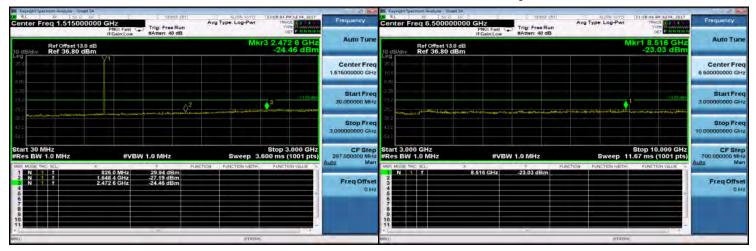
Out of Band Emission Low\_GPRS\_850MHz\_HighCH251-848.8

Out of Band Emission Low\_EDGE\_850MHz\_HighCH251-848.8



Out of Band Emission Low\_EDGE\_850MHz\_LowCH128-824.2

Out of Band Emission High\_GSM\_850MHz\_LowCH128-824.2



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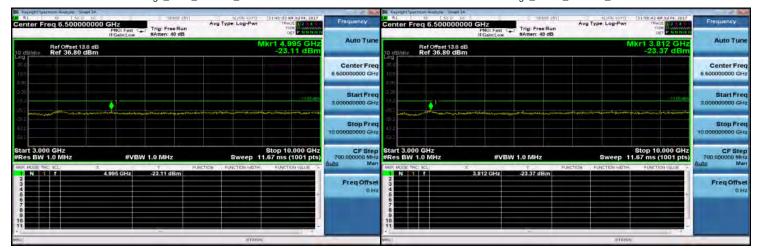
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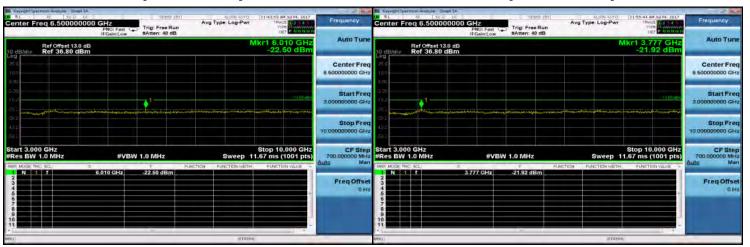
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Out of Band Emission High\_GPRS\_850MHz\_MidCH190-836.6



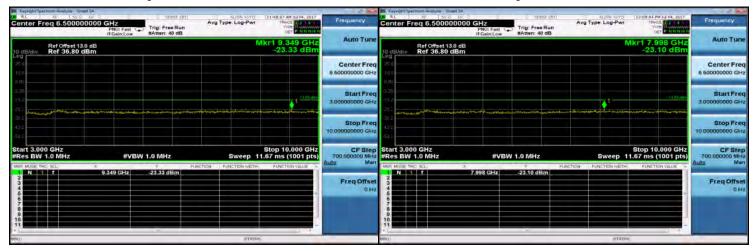
Out of Band Emission High\_GSM\_850MHz\_HighCH251-848.8

Out of Band Emission High\_GPRS\_850MHz\_HighCH251-848.8



Out of Band Emission High\_GPRS\_850MHz\_LowCH128-824.2

Out of Band Emission High\_EDGE\_850MHz\_LowCH128-824.2



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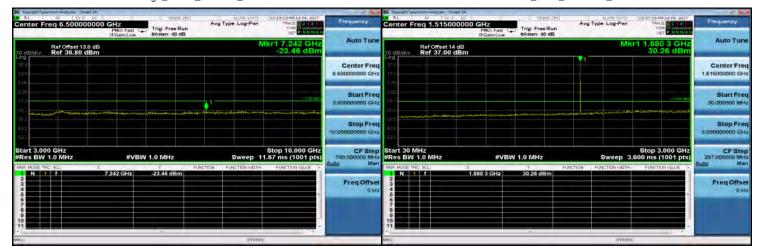
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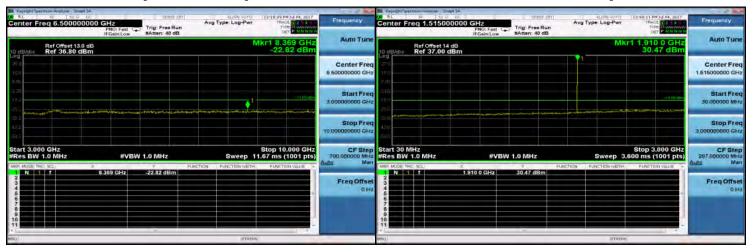
Out of Band Emission High\_EDGE\_850MHz\_MidCH190-836.6

Out of Band Emission Low\_GSM\_1900MHz\_MidCH661-1880



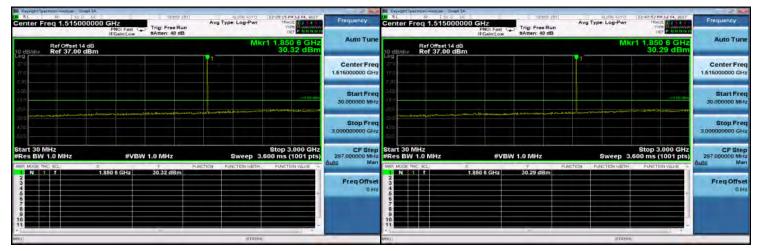
Out of Band Emission High\_EDGE\_850MHz\_HighCH251-848.8

Out of Band Emission Low\_GSM\_1900MHz\_HighCH810-1909.8



Out of Band Emission Low\_GSM\_1900MHz\_LowCH512-1850.2

Out of Band Emission Low\_GPRS\_1900MHz\_LowCH512-1850.2



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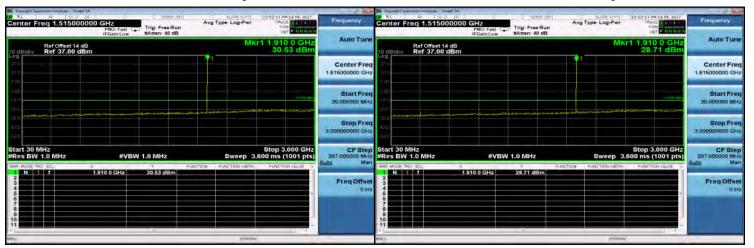
Out of Band Emission Low\_GPRS\_1900MHz\_MidCH661-1880

Out of Band Emission Low\_EDGE\_1900MHz\_MidCH661-1880



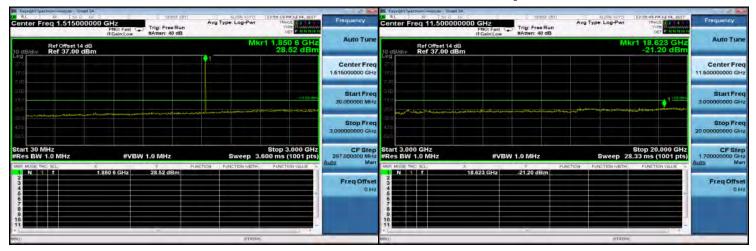
Out of Band Emission Low\_GPRS\_1900MHz\_HighCH810-1909.8

Out of Band Emission Low\_EDGE\_1900MHz\_HighCH810-1909.8



Out of Band Emission Low\_EDGE\_1900MHz\_LowCH512-1850.2

Out of Band Emission High\_GSM\_1900MHz\_LowCH512-1850.2



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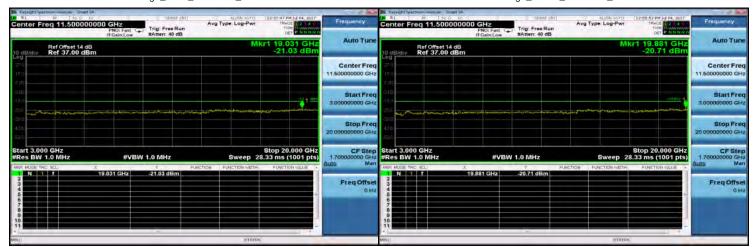
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Out of Band Emission High\_GSM\_1900MHz\_MidCH661-1880

Out of Band Emission High\_GPRS\_1900MHz\_MidCH661-1880



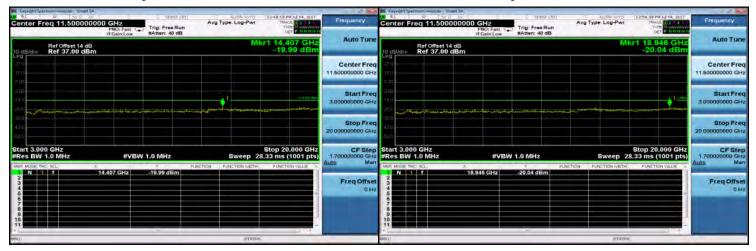
Out of Band Emission High\_GSM\_1900MHz\_HighCH810-1909.8

Out of Band Emission High\_GPRS\_1900MHz\_HighCH810-1909.8



Out of Band Emission High\_GPRS\_1900MHz\_LowCH512-1850.2

Out of Band Emission High\_EDGE\_1900MHz\_LowCH512-1850.2



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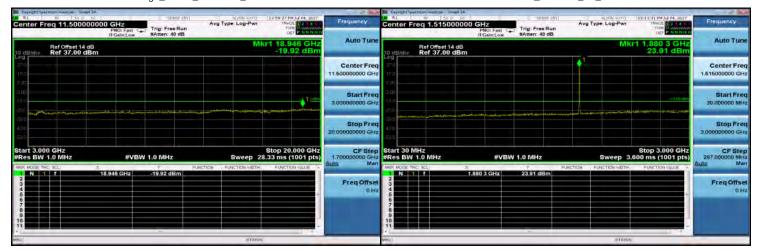
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Out of Band Emission High\_EDGE\_1900MHz\_MidCH661-1880

Out of Band Emission Low\_WCDMA\_B2\_MidCH9400-1880



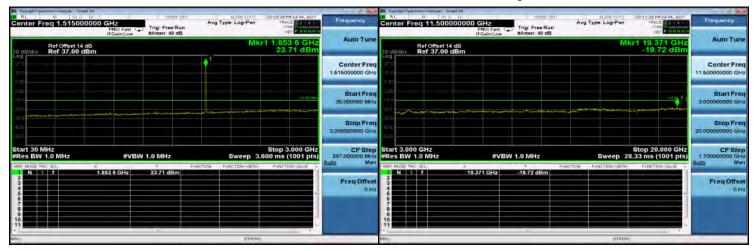
Out of Band Emission High\_EDGE\_1900MHz\_HighCH810-1909.8

Out of Band Emission Low\_WCDMA\_B2\_HighCH9538-1907.6



Out of Band Emission Low\_WCDMA\_B2\_LowCH9262-1852.4

Out of Band Emission High\_WCDMA\_B2\_LowCH9262-1852.4



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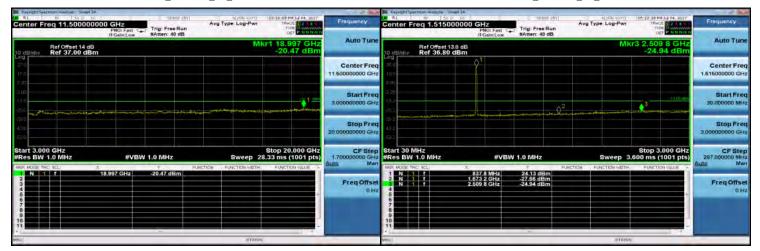
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Out of Band Emission Low\_WCDMA\_B2\_MidCH9400-1880

Out of Band Emission Low\_WCDMA\_B5\_MidCH4183-836.6



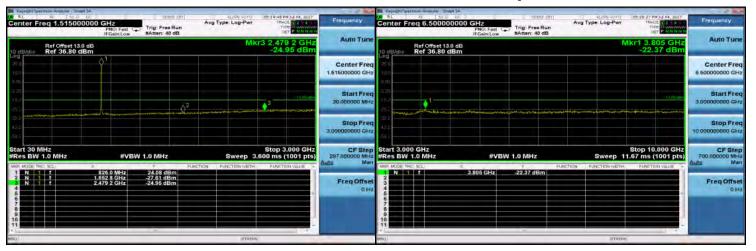
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Out of Band Emission Low\_WCDMA\_B5\_HighCH4233-846.6



Out of Band Emission Low\_WCDMA\_B5\_LowCH4132-826.4

Out of Band Emission High\_WCDMA\_B5\_LowCH4132-826.4



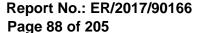
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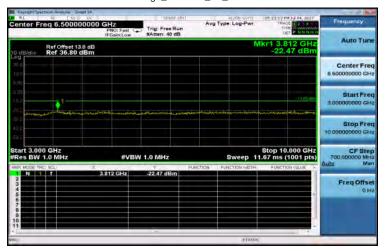
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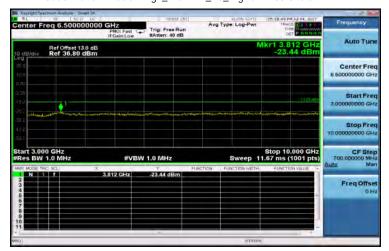




Out of Band Emission High\_WCDMA\_B5\_MidCH4183-836.6



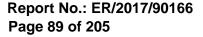
Out of Band Emission High\_WCDMA\_B5\_HighCH4233-846.6



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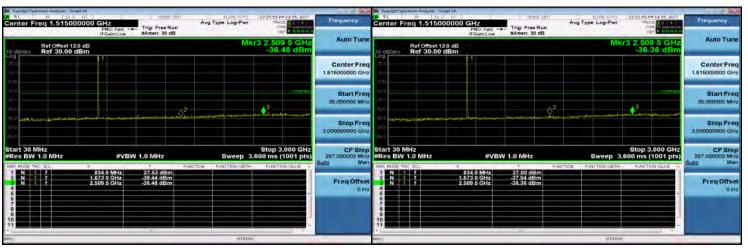
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Out of Band Emission Low\_Band5 3MHz\_QPSK 1 0\_LowCH20415-825.5



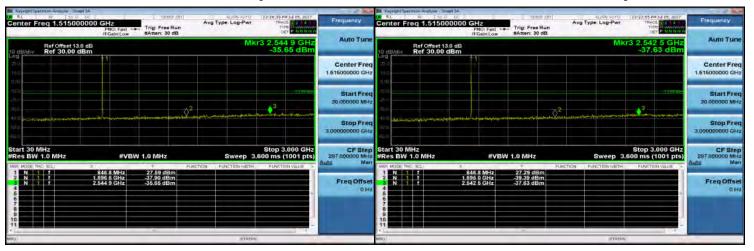
Out of Band Emission Low Band5 1.4MHz QPSK 1.0 MidCH20525-836.5

Out of Band Emission Low Band5 3MHz QPSK 1 0 MidCH20525-836.5



Out of Band Emission Low\_Band5 1.4MHz\_QPSK 1 0\_HighCH20643-848.3

Out of Band Emission Low\_Band5 3MHz\_QPSK 1 0\_HighCH20635-847.5



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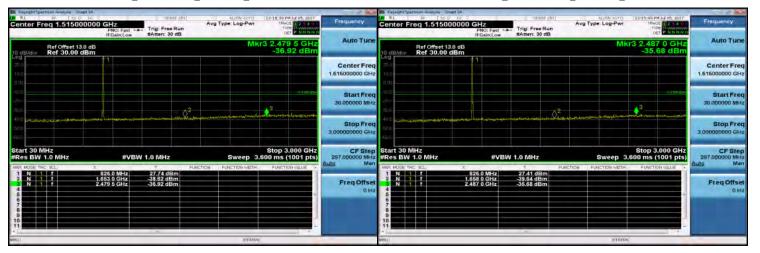
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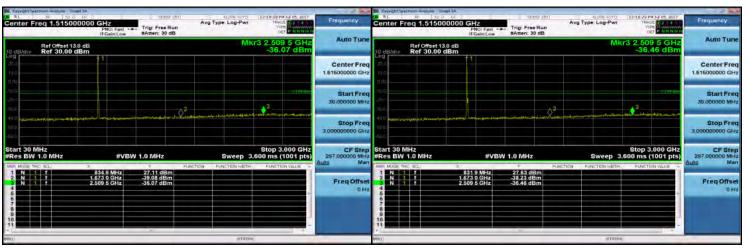
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Out of Band Emission Low\_Band5 10MHz\_QPSK 1 0\_LowCH20450-829



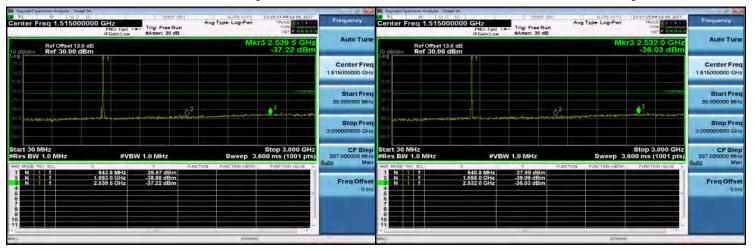
Out of Band Emission Low Band5 5MHz QPSK 1 0 MidCH20525-836.5

Out of Band Emission Low\_Band5 10MHz\_QPSK 1 0\_MidCH20525-836.5



Out of Band Emission Low\_Band5 5MHz\_QPSK 1 0\_HighCH20625-846.5

Out of Band Emission Low\_Band5 10MHz\_QPSK 1 0\_HighCH20600-844



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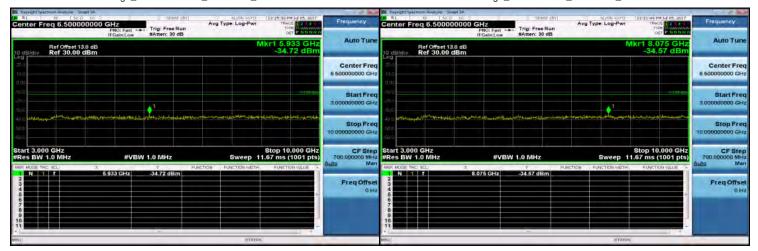
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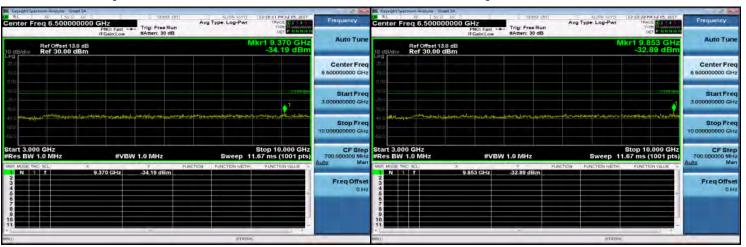
Out of Band Emission High\_Band5 1.4MHz\_QPSK 1 0\_LowCH20407-824.7

Out of Band Emission High\_Band5 3MHz\_QPSK 1 0\_LowCH20415-825.5



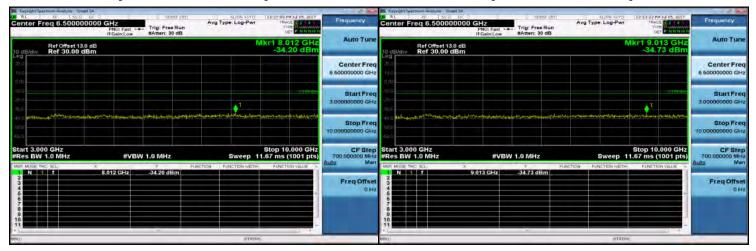
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Out of Band Emission High\_Band5 3MHz\_QPSK 1 0\_MidCH20525-836.5



Out of Band Emission High\_Band5 1.4MHz\_QPSK 1 0\_HighCH20643-848.3

Out of Band Emission High\_Band5 3MHz\_QPSK 1 0\_HighCH20635-847.5



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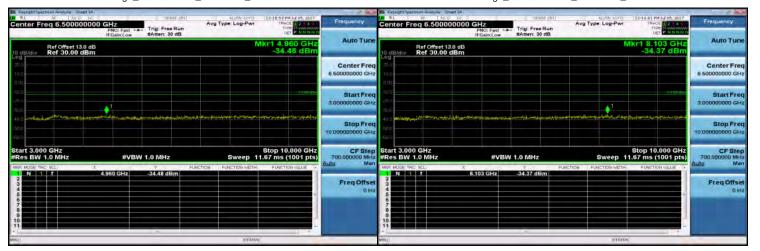
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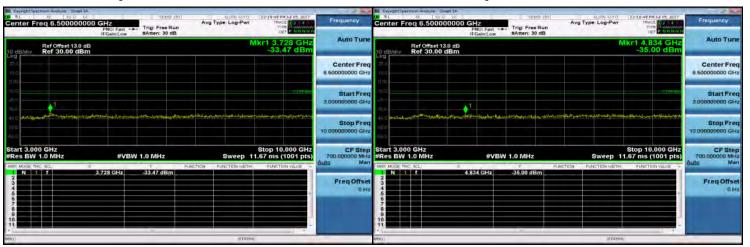
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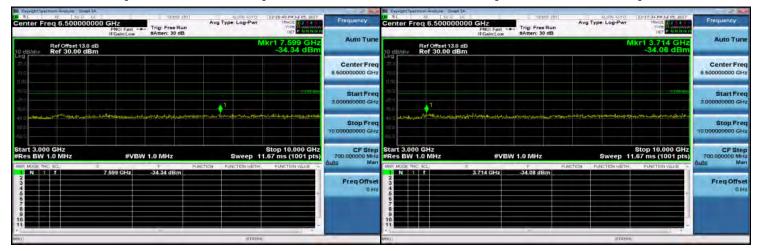
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Out of Band Emission High\_Band5 5MHz\_QPSK 1 0\_HighCH20625-846.5

Out of Band Emission High\_Band5 10MHz\_QPSK 1 0\_HighCH20600-844



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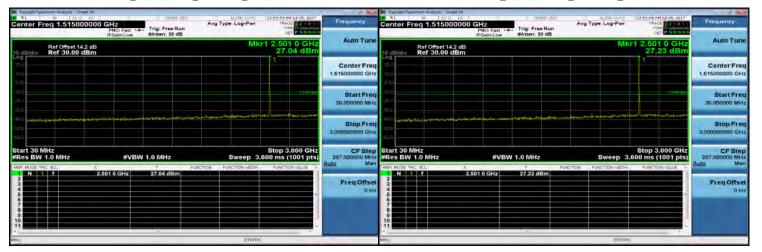
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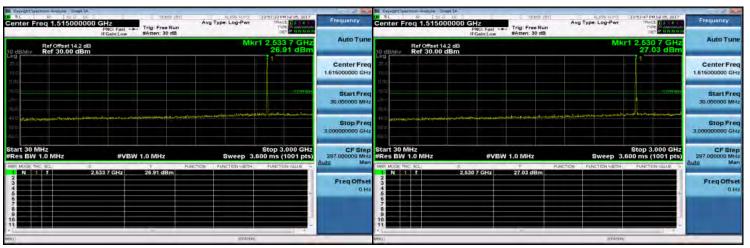
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Out of Band Emission Low\_Band7 10MHz\_QPSK 1 0\_LowCH20800-2505



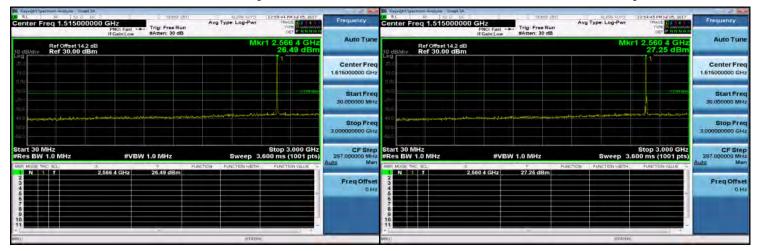
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Out of Band Emission Low\_Band7 10MHz\_QPSK 1 0\_MidCH21100-2535



Out of Band Emission Low\_Band7 5MHz\_QPSK 1 0\_HighCH21425-2567.5

Out of Band Emission Low\_Band7 10MHz\_QPSK 1 0\_HighCH21400-2565



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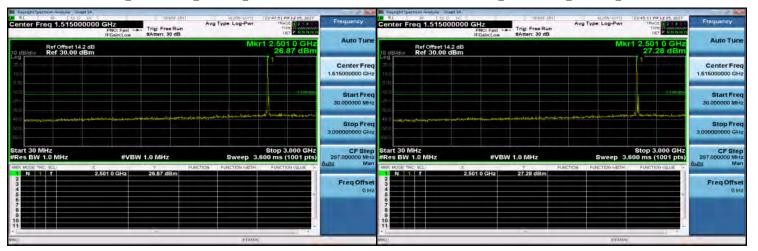
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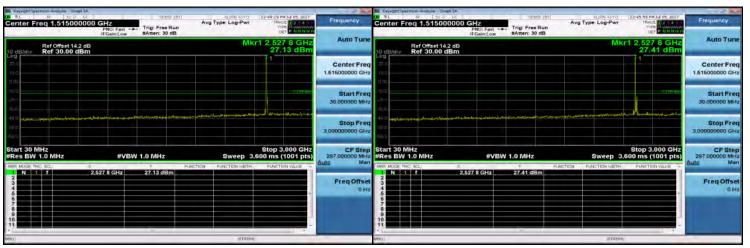
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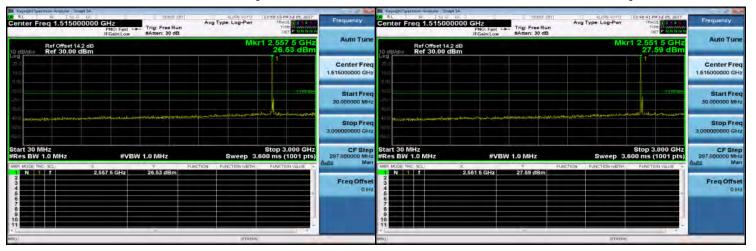
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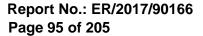


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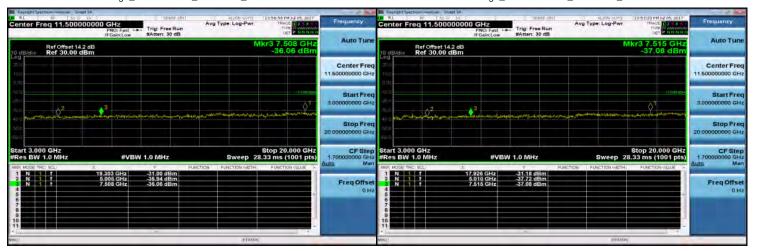
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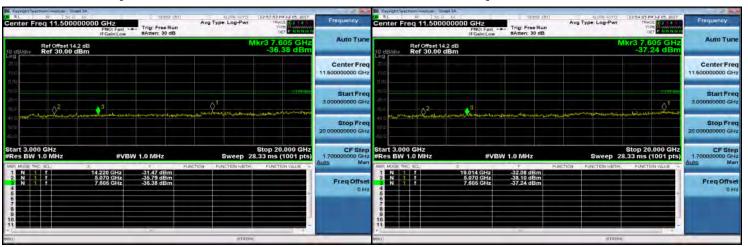
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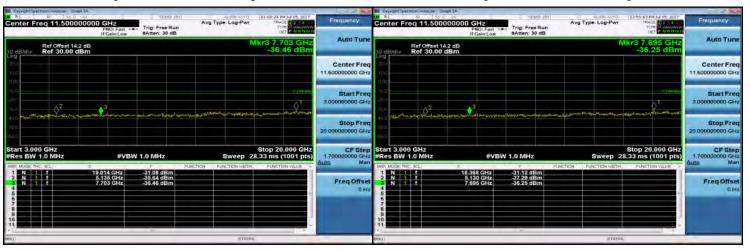
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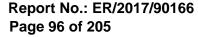
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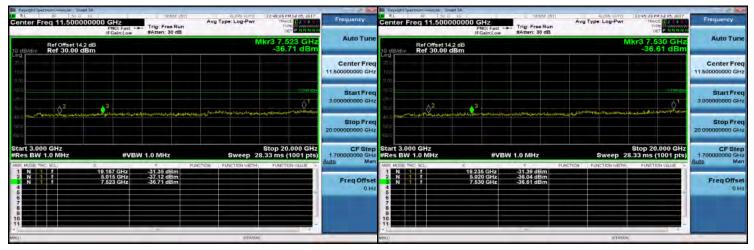
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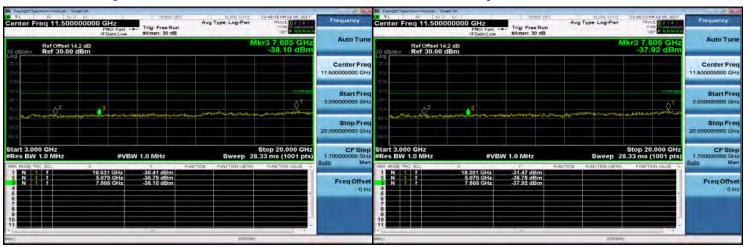
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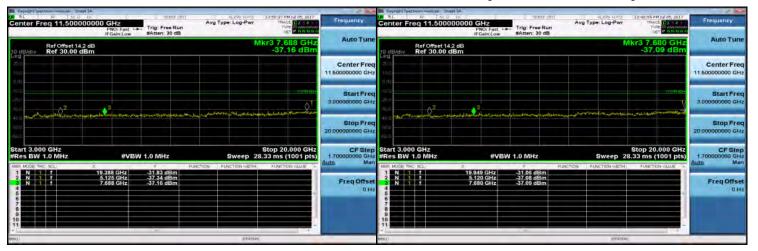
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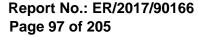
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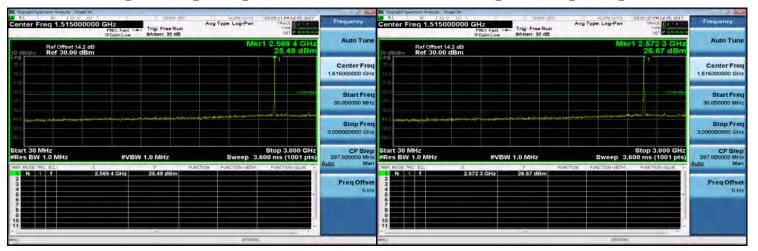
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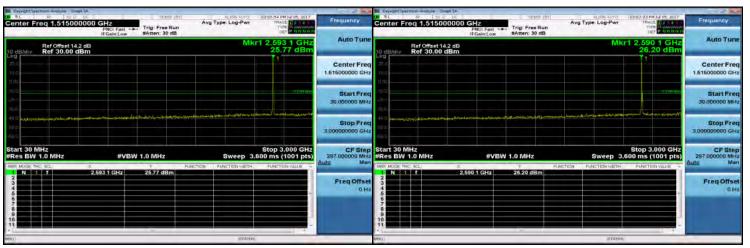
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Out of Band Emission Low\_Band38 10MHz\_QPSK 1 0\_LowCH37800-2575



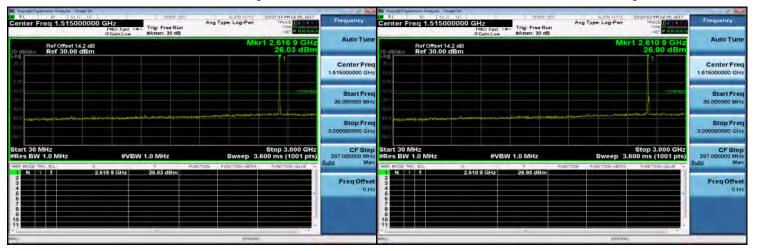
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Out of Band Emission Low Band38 10MHz QPSK 1 0 MidCH38000-2595



Out of Band Emission Low\_Band38 5MHz\_QPSK 1 0\_HighCH38225-2617.5

Out of Band Emission Low\_Band38 10MHz\_QPSK 1 0\_HighCH38200-2615



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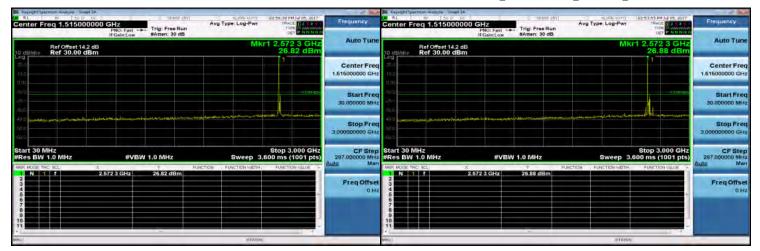
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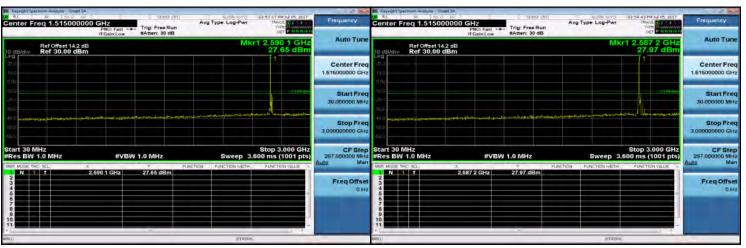
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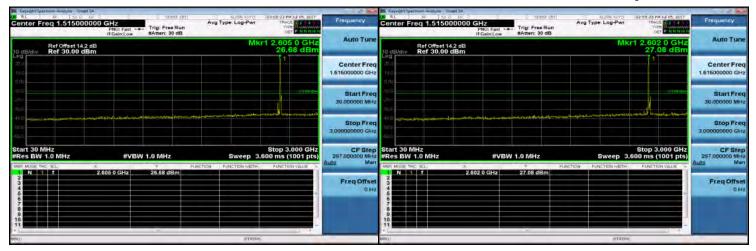
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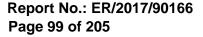
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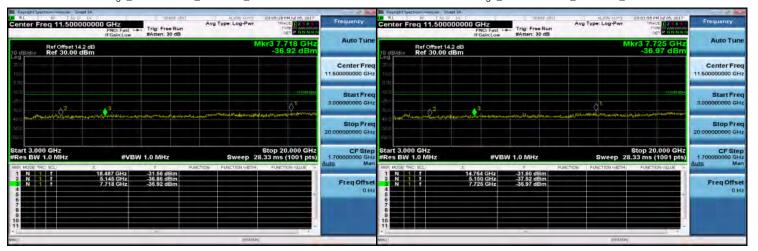
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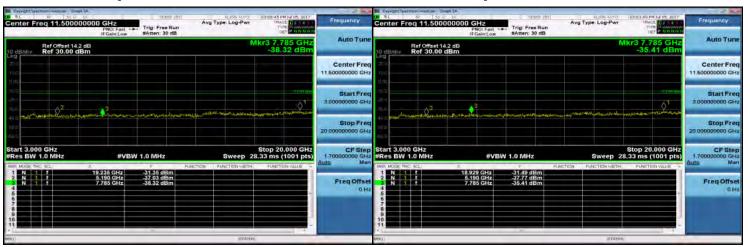
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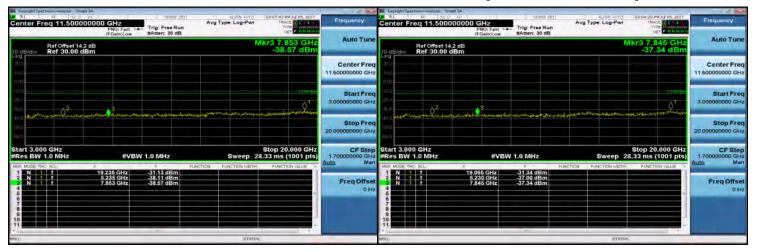
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Out of Band Emission High\_Band38 5MHz\_QPSK 1 0\_HighCH38225-2617.5

Out of Band Emission High\_Band38 10MHz\_QPSK 1 0\_HighCH38200-2615



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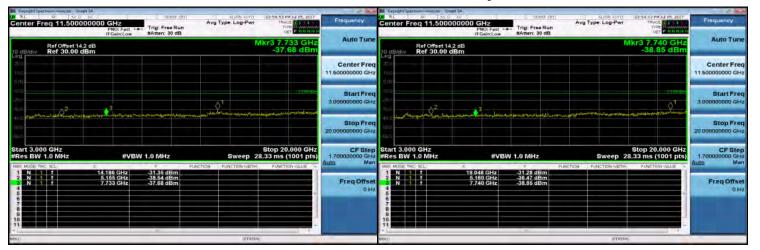
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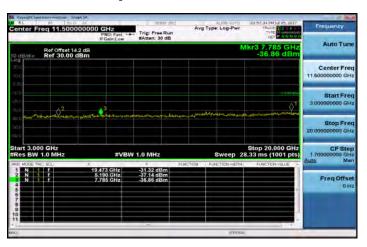
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Out of Band Emission High\_Band38 20MHz\_QPSK 1 0\_LowCH37850-2580

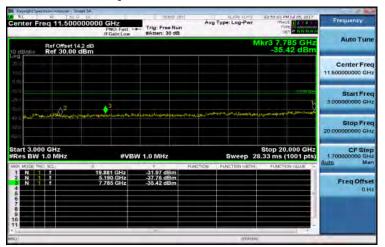


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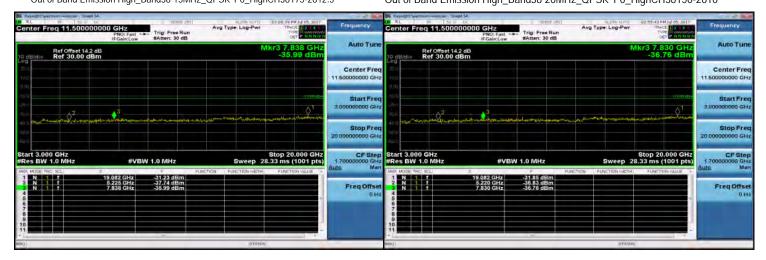


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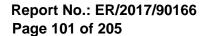
Out of Band Emission High\_Band38 20MHz\_QPSK 1 0\_HighCH38150-2610



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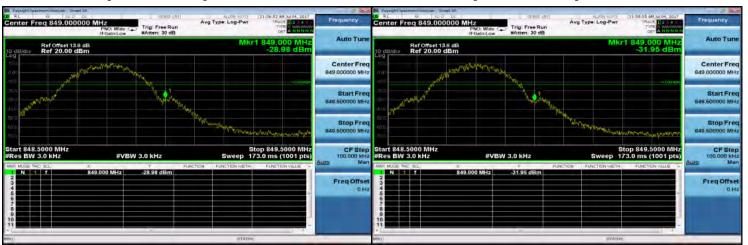
Band Edge\_GSM\_850MHz\_LowCH128-824.2

Band Edge\_GPRS\_850MHz\_LowCH128-824.2



Band Edge\_GSM\_850MHz\_HighCH251-848.8

Band Edge\_GPRS\_850MHz\_HighCH251-848.8



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