

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

OF

FCC Applicant: Sharp Corporation, Mobile Communication B.U.
2-13-1, Hachihonmatsu-lida, Higashi-hiroshima-shi, Hiroshima, 739-0192, Japan

FCC Manufacturer: Sharp Corporation
1 Takumi-cho, Sakai-ku, Sakai City, Osaka 590-8522, Japan

Product Name: Smart phone

Report Number: ER/2020/B0089

FCC ID APYHRO00291

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

Issue Date: December 21, 2020

Date of Test: November 17, 2020 - December 16, 2020

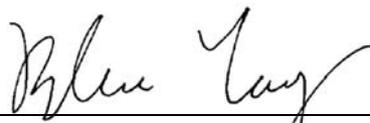
Date of EUT Received: November 17, 2020

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Central RF Lab The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.26-2015 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.

Approved By:


Blue Yang / Asst. Manager



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Revision History				
Report Number	Revision	Description	Issue Date	Remark
ER/2020/B0089	Rev.00	Original.	December 21, 2020	Revised By: Elle Chang

Note:

1、Disclaimer

Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.

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1 GENERAL PRODUCT INFORMATION

1.1 Product Description

General:

Product Name:	Smart phone
Hardware Version:	DVT
Software Version:	N/A
Power Supply:	3.85 Vdc from Rechargeable Li-polymer Battery
Antenna Designation:	Inverted-F Antenna, Gain: -4.2dBi (GSM/GPRS 800, WCDMA B5, LTE B5) -2.3dBi (GSM/GPRS 1900) -4.6dBi (LTE B12, LTE B17)
IMEI:	004401230101220 / 004401230101240 / 004401230101467 / 004401230101483 / 004401230101250 / 004401230101491

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1.2 Operation Frequency Range

Operating Frequency (MHz)	
GSM/GPRS 850	824.2 - 848.8
GSM/GPRS 1900	1850.2 - 1909.8

Operating Frequency (MHz)	
WCDMA / HSPA+ Band V	826.4 - 846.6

LTE Band 5	
BW (MHz)	Operation Frequency (MHz)
1.4	824.7 - 848.3
3	825.5 - 847.5
5	826.5 - 846.5
10	829.0 - 844.0

LTE Band 17	
BW (MHz)	Operation Frequency (MHz)
5	706.5 - 713.5
10	709.0 - 711.0

LTE Band 12	
BW (MHz)	Operation Frequency (MHz)
1.4	699.7 - 715.3
3	700.5 - 714.5
5	701.5 - 713.5
10	704.0 - 711.0

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1.3 Type of Emission & Max ERP/EIRP Power Measurement Result:

	ERP / EIRP (dBm)		W	99%	Type of Emission
GSM 850	26.98	ERP	0.499	0.2444	244KGXW
GPRS 850	26.86	ERP	0.485	0.2456	246KGXW
GSM 1900	28.20	EIRP	0.661	0.2418	242KGXW
GPRS 1900	28.15	EIRP	0.653	0.2457	246KGXW

	ERP / EIRP (dBm)		W	99%	Type of Emission
WCDMA Band V	18.11	ERP	0.065	4.1489	4M15F9W
HSDPA Band V	17.10	ERP	0.051	4.1331	4M13F9W
HSUPA Band V	17.07	ERP	0.051	4.1493	4M15F9W

LTE Band	BW	Modulation	ERP / EIRP (dBm)		(W)	99%	Type of Emission
5	1.4	QPSK	16.78	ERP	0.048	1.0939	1M09G7D
		16QAM	16.15	ERP	0.041	1.0948	1M09D7W
		64QAM	14.80	ERP	0.030	1.0928	1M09D7W
5	3	QPSK	16.84	ERP	0.048	2.7002	2M70G7D
		16QAM	16.42	ERP	0.044	2.7001	2M70D7W
		64QAM	14.83	ERP	0.030	2.7044	2M70D7W
5	5	QPSK	16.87	ERP	0.049	4.5062	4M51G7D
		16QAM	16.39	ERP	0.044	4.5024	4M50D7W
		64QAM	14.78	ERP	0.030	4.4967	4M50D7W
5	10	QPSK	17.01	ERP	0.050	8.9864	8M99G7D
		16QAM	16.29	ERP	0.043	8.9651	8M97D7W
		64QAM	14.88	ERP	0.031	8.9860	8M99D7W
LTE Band	BW	Modulation	ERP / EIRP (dBm)		(W)	99%	Type of Emission
12	1.4	QPSK	16.31	ERP	0.043	1.0948	1M09G7D
		16QAM	15.83	ERP	0.038	1.0930	1M09D7W
		64QAM	14.46	ERP	0.028	1.0942	1M09D7W
12	3	QPSK	16.36	ERP	0.043	2.6976	2M70G7D
		16QAM	16.00	ERP	0.040	2.6943	2M69D7W
		64QAM	14.55	ERP	0.029	2.6977	2M70D7W
12	5	QPSK	16.36	ERP	0.043	4.5116	4M51G7D
		16QAM	16.00	ERP	0.040	4.5036	4M50D7W
		64QAM	14.46	ERP	0.028	4.5066	4M51D7W
12	10	QPSK	16.58	ERP	0.045	9.0244	9M02G7D
		16QAM	15.95	ERP	0.039	8.9875	8M99D7W
		64QAM	14.55	ERP	0.029	9.0001	9M00D7W

LTE Band	BW	Modulation	ERP / EIRP (dBm)		(W)	99%	Type of Emission
17	5	QPSK	16.43	ERP	0.044	4.5067	4M51G7D
		16QAM	16.15	ERP	0.041	4.5076	4M51D7W
		64QAM	14.41	ERP	0.028	4.5105	4M51D7W
17	10	QPSK	16.63	ERP	0.046	8.9538	8M95G7D
		16QAM	15.81	ERP	0.038	8.9170	8M92D7W
		64QAM	14.48	ERP	0.028	8.9313	8M93D7W

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1.4 Test Methodology of Applied Standards

FCC 47 CFR Part 2, 22H, 24E, 27C

ANSI C63.26-2015

KDB971168 D01 Power Meas license Digital System v03r01

KDB941225 D01 SAR test for 3G devices v03r01 (SAR Measurement Procedures for 3G Devices, WCDMA / HSPA) was used for EUT and Base station setting.

KDB412172 D01 Determining ERP and EIRP v01r01

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

1.5 Test Facility

SGS Taiwan Ltd. Central RF Lab (TAF code 3702)

No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803

FCC Designation number: TW0027

1.6 Special Accessories

No special accessories were used during testing.

1.7 Equipment Modifications

There was no modifications incorporated into the EUT.

1.8 Radiated Emission Test Sites For Measurements From 9 kHz To 30 MHz

Radiated emission below 30MHz is measured in a 9m*9m*6m semi-anechoic chamber, the measurements correspond to those obtained at an open-field test site.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

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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 Commission's 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

The EUT is placed on a table which is 0.8 m above ground plane. A low loss of RF cable was used to connect the antenna port of EUT to measurement equipment.

2.3.2 Radiated Emissions (ERP/EIRP)

The EUT is placed on a turn table, for emission measurements below 1 GHz is 0.8 m above ground plane, for emission measurements above 1 GHz, the table height shall be 1.5 m. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both Horizontal and Vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.

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 in physical test.

2G/3G:

	RF cable loss (dB)	Attenuation factor(dB)	offset(dB)
Low Band (Below 1GHz)	3.7	10	13.7
High Band (Above 1 GHz)	3.96	10	13.96

LTE:

	RF cable loss (dB)	Attenuation factor(dB)	offset(dB)
Low Band (Below 1GHz)	3.73	10	13.73

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2.5 Final Amplifier Voltage and Current Information:

Test Mode	DC voltage (V)	DC current (mA)
GSM 850	3.85	539
GSM 1900		542
WCDMA B5		577
LTE Band 5		591
LTE Band 12		585
LTE Band 17		597

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2.6 Configuration of Tested System

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

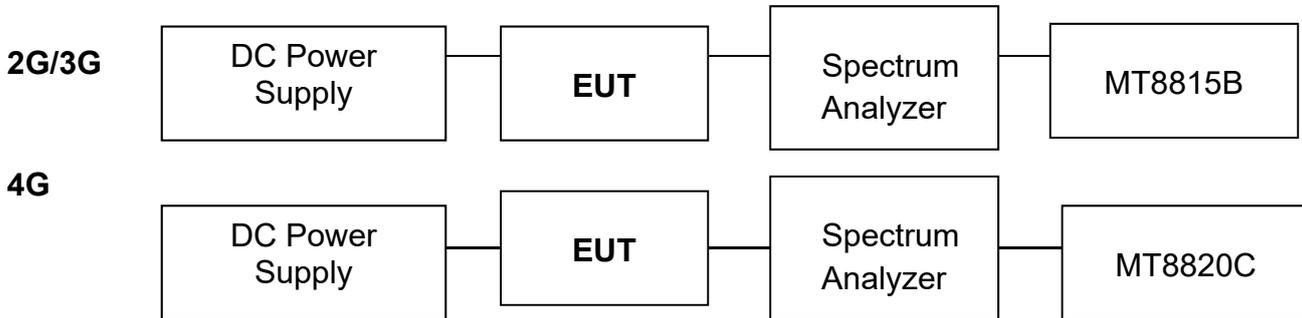


Fig. 2-2 Configuration of Tested System (Fixed Channel-Radiated)

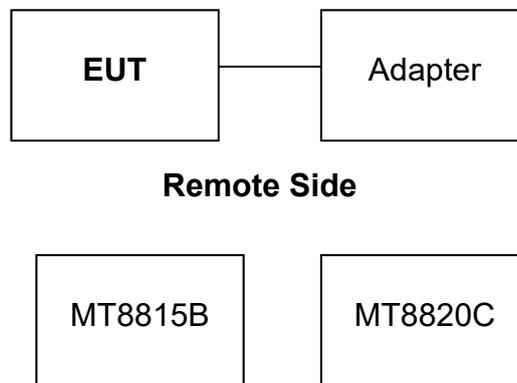


Table 2-1 Equipment Used in

Item	Equipment	Mfr/Brand	Model/ Type No.	Series No.	Data Cable	Power Cord
1.	Radio Communication Analyer	Anritsu	MT8815B	6200711454	shielded	Un-shielded
2.	Radio Communication Analyer	Anritsu	MT8820C	6200995019	shielded	Un-shielded

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3 SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§2.1046(a)	RF Power Output	Compliant
§22.913(a)(5) §24.232(c) §27.50(c)(9)	ERP/ EIRP measurement	Compliant
§2.1049(h)	99% & 26dB Occupied Bandwidth	Compliant
§2.1051 §22.917(a) §24.238(a) §27.53(g)	Out of Band Emissions at Antenna Terminals and Band Edge / Emission mask requirements	Compliant
§2.1053 §22.917(a) §24.238(a) §27.53(g)	Field Strength of Spurious Radiation	Compliant
§27.50(a)(1)(B)	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	H PLAN	E1 PLAN	E2 PLAN
GSM/GPRS 850	V		
GSM/GPRS1900	V		
WCDMA/HSPA Band V	V		
LTE Band 5	V		
LTE Band 12	V		
LTE Band 17	V		

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4.2 Measurement Configuration

Test Items	GSM Bands	Test Channel		
		L	M	H
ERP	850	v	v	v
EIRP	1900	v	v	v
FREQUENCY STABILITY	850	-	v	-
	1900	-	v	-
OCCUPIED BANDWIDTH	850	v	v	v
	1900	v	v	v
PEAK TO AVERAGE RATIO	850	v	v	v
	1900	v	v	v
BAND EDGE	850	v	-	v
	1900	v	-	v
CONDCUETED EMISSION	850	v	v	v
	1900	v	v	v
RADIATED EMISSION	850	v	v	v
	1900	v	v	v

Test Items	WCDMA / HSPA Bands	Test Channel		
		L	M	H
ERP	Band V	v	v	v
FREQUENCY STABILITY	Band V	-	v	-
OCCUPIED BANDWIDTH	Band V	v	v	v
PEAK TO AVERAGE RATIO	Band V	v	v	v
BAND EDGE	Band V	v	-	v
CONDCUETED EMISSION	Band V	v	v	v
RADIATED EMISSION	Band V	v	v	v

Test Items	Band	Test Channel			Bandwidth (MHz)						Modulation			RB #		
		L	M	H	1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full
Max. Output Power	5	v	v	v	v	v	v	v	-	-	v	v	v	v	v	v
	12	v	v	v	v	v	v	v	-	-	v	v	v	v	v	v
	17	v	v	v	-	-	v	v	-	-	v	v	v	v	v	v
Frequency Stability	5	-	v	-				v	-	-	v	-	-	-	-	v
	12	-	v	-				v	-	-	v	-	-	-	-	v
	17	-	v	-	-	-		v	-	-	v	-	-	-	-	v
Test Items	Band	Test Channel			Bandwidth (MHz)						Modulation			RB #		
		L	M	H	1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full
26dB and 99% Bandwidth	5	v	v	v	v	v	v	v	-	-	v	v	v	-	-	v
	12	v	v	v	v	v	v	v	-	-	v	v	v	-	-	v
	17	v	v	v	-	-	v	v	-	-	v	v	v	-	-	v
Peak-to-Average Ratio	5	v	v	v	v	v	v	v	-	-			v	-	-	v
	12	v	v	v	v	v	v	v	-	-			v	-	-	v
	17	v	v	v	-	-	v	v	-	-			v	-	-	v
Test Items	Band	Test Channel			Bandwidth (MHz)						Modulation			RB #		
		L	M	H	1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full
Band Edge	5	v	-	v	-	-	-	v	-	-	v	-	-	v	v	v
	12	v	-	v	-	-	-	v	-	-	v	-	-	v	v	v
	17	v	-	v	-	-	-	v	-	-	v	-	-	v	v	v
Conducted Emission	5	v	v	v	-	-	-	v	-	-	v	-	-	v	-	-
	12	v	v	v	-	-	-	v	-	-	v	-	-	v	-	-
	17	v	v	v	-	-	-	v	-	-	v	-	-	v	-	-
Test Items	Band	Test Channel			Bandwidth (MHz)						Modulation			RB #		
		L	M	H	1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full
Radiated Emission	5	v	v	v				v	-	-	v			v		
	12	v	v	v				v	-	-	v			v		
	17	v	v	v	-	-		v	-	-	v			v		

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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 : Vertical)	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 : Horizontal)	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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6 MAXMUM OUTPUT POWER

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.

6.1.1 ERP/EIRP LIMIT

According to FCC §2.1046

FCC 22.913(a) LTE 5

(5) mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

FCC 27.50(c) LTE 12 / 17

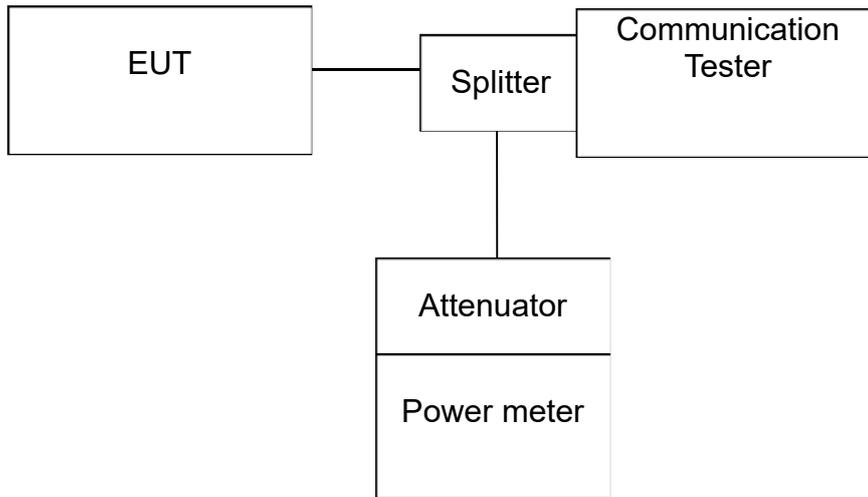
(9) Control and mobile stations in the 698-746 MHz band are limited to 30 watts ERP.

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6.2 Test Set-up



Note: Measurement setup for testing on Antenna connector

6.3 Output Power Measurement Applicable Guidance

The transmitter output was connected to a calibrated attenuator, the other end of which was connected to a power meter. Transmitter output was read off the power meter in dBm. The power output at the transmitter antenna port was determined by adding the value of the attenuator to the power meter reading. TS 151 010-1 is reference to conduct the test measurement of output power. The Procedure of KDB941225 (SAR Measurement Procedures for 3G devices, (WCDMA/HSPA) was used for EUT and Base station setting. RMC 12.2kps is used for this testing, and KDB 971168 D01 Power Meas License Digital System as the supplemental test methodology to adjust the proper setting obtaining the measurement results. All LTE bands conducted average power is obtained from the simulator telecommunication test set.

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6.4 Determining ERP and/or EIRP from conducted RF output power measurements

According to KDB 412172 D01 Power Approach,

$$EIRP = P_T + G_T - L_C,$$

$$ERP = EIRP - 2.15,$$

Where:

- ERP or EIRP = effective radiated power or equivalent isotropically radiated power (expressed in the same units as P_T , typically dBW, dBm, or power spectral density (PSD)²), relative to either a dipole antenna (ERP) or an isotropic antenna (EIRP);
- P_T = transmitter output power, expressed in dBW, dBm, or PSD;
- G_T = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);
- L_C = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

6.5 Measurement Equipment Used

Conducted Emission (measured at antenna port) Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EXA Spectrum Analyzer	Agilent	N9010A	MY50420195	05/06/2020	05/05/2021
DC Power Supply	Agilent	E3640A	MY52410006	12/10/2019	12/09/2020
Temperature Chamber	TERCHY	MHG-120LF	911009	05/20/2020	05/19/2021
Radio Communication Analyser	Anritsu	MT8815B	6200711454	04/01/2020	03/31/2021
Radio Communication Analyser	Anritsu	MT8820C	6200995019	04/01/2020	03/31/2021
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2020	01/01/2021
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2020	01/01/2021
Splitter	RF-LAMBAD	RFLT2W1G18G	11-JSPF412-017	01/02/2020	01/01/2021

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6.6 GSM Measurement Results

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

EUT Mode	Freq. (MHz)	CH	Conducted Avg. Power (dBm)	Antenna Gain (dBi)	ERP (dBm)	EIRP (dBm)	Limit (dBm)	Margin (dB)
GSM 850	824.2	128	33.25	-4.20	26.90	29.05	38.50	-9.45
	836.6	190	33.33	-4.20	26.98	29.13	38.50	-9.37
	848.8	251	33.29	-4.20	26.94	29.09	38.50	-9.41
GSM 1900	1850.2	512	30.50	-2.30	26.05	28.20	33.00	-4.80
	1880.0	661	30.33	-2.30	25.88	28.03	33.00	-4.97
	1909.8	810	30.18	-2.30	25.73	27.88	33.00	-5.12
GPRS 850	824.2	128	33.17	-4.20	26.82	28.97	38.50	-9.53
	836.6	190	33.21	-4.20	26.86	29.01	38.50	-9.49
	848.8	251	33.15	-4.20	26.80	28.95	38.50	-9.55
GPRS 1900	1850.2	512	30.45	-2.30	26.00	28.15	33.00	-4.85
	1880.0	661	30.29	-2.30	25.84	27.99	33.00	-5.01
	1909.8	810	30.14	-2.30	25.69	27.84	33.00	-5.16

EUT Mode	Frequency (MHz)	CH	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)
GPRS 850	824.2	128	33.17	29.50	27.84	26.91
	836.6	190	33.21	29.51	27.87	26.96
	848.8	251	33.15	29.53	27.85	26.98
GPRS 1900	1850.2	512	30.45	27.40	25.17	24.48
	1880.0	661	30.29	27.27	25.15	24.49
	1909.8	810	30.14	27.06	25.01	24.28

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6.7 WCDMA & HSPA Measurement Results:

The following tests were completed according to the test requirements outlined in section 5.2 of the 3GPP TS34.121-1 specification. The EUT supports power Class 3, which has a nominal maximum output power of **25dBm**. RMC 12.2kps is used for this testing.

WCDMA/HSUPA/HSDPA Band V Result:

EUT Mode	Freq. (MHz)	CH	Conducted Avg. Power (dBm)	Antenna Gain (dBi)	ERP (dBm)	EIRP (dBm)	Limit (dBm)	Margin (dB)
WCDMA	826.4	4132	24.34	-4.20	17.99	20.14	38.50	-18.36
	836.6	4183	24.46	-4.20	18.11	20.26	38.50	-18.24
	846.6	4233	24.42	-4.20	18.07	20.22	38.50	-18.28
HSDPA	826.4	4132	23.35	-4.20	17.00	19.15	38.50	-19.35
	836.6	4183	23.41	-4.20	17.06	19.21	38.50	-19.29
	846.6	4233	23.45	-4.20	17.10	19.25	38.50	-19.25
HSUPA	826.4	4132	23.36	-4.20	17.01	19.16	38.50	-19.34
	836.6	4183	23.42	-4.20	17.07	19.22	38.50	-19.28
	846.6	4233	23.42	-4.20	17.07	19.22	38.50	-19.28

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6.7.1 HSPA (HSDPA & HSUPA) Release 6:

The following 4 Sub-Tests were completed according to the test requirements outlined in section 5.2A of the 3GPP TS34.121-1 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. RMC 12.2kps is used for this testing.

6.7.2 HSDPA SUB-TEST Setting

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

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note 1, 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.

Mode	Sub test	Avg. Power (dBm) Channel		
		4132.00	4183.00	4233.00
HSDPA V	1	23.35	23.41	23.45
	2	22.85	22.94	22.95
	3	22.84	22.58	22.93
	4	22.89	22.89	22.91

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6.7.3 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	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS}	β_{ec}	β_{ed}	β_{ed} (SF)	β_{ed} (Code s)	CM (dB)	MPR (dB)	AG Index	E-TFCI	RMC (Kbps)
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/225	1309/225	4	1	1.0	0.0	20	75	12.2
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67	12.2
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1} : 47/15 β_{ed2} : 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.

Mode	Sub test	Avg. Power (dBm)		
		Channel		
		4132.00	4183.00	4233.00
HSUPA V	1	23.36	23.42	23.42
	2	21.32	21.42	21.42
	3	22.37	22.42	22.29
	4	21.36	21.41	21.41
	5	23.39	23.48	23.44

6.7.4 WCDMA/HSDPA/HSUPA band V

The EUT output power was controlled by simulator and enter max rated power 24dBm. The EUT is going to be set to max output power to 24dBm then record the read. 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.

6.7.5 Minimum Communications Power Measurement

PCS 1900 band									
PCL	0	1	2	3	4	5	6	7	8
Output power (dBm)	30.42	28.97	27.22	25.11	23.27	21.17	19.09	17.01	14.81
PCL	9	10	11	12	13	14	15		
Output power (dBm)	12.73	10.94	8.97	6.89	4.94	2.9	1.48		

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6.8 LTE Measurement Results:

Antenna gain (dBi)		-4.2								
LTE Band 5_Uplink frequency band : 824 to 849 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	ERP Limit (dBm)	Margin (dB)
1.4	20407	824.7	QPSK	1	0	22.98	16.63	18.78	38.45	-21.82
				1	5	22.91	16.56	18.71	38.45	-21.89
				3	2	22.99	16.64	18.79	38.45	-21.81
				6	0	22.08	15.73	17.88	38.45	-22.72
	20525	836.5	QPSK	1	0	22.99	16.64	18.79	38.45	-21.81
				1	5	22.89	16.54	18.69	38.45	-21.91
				3	2	23.13	16.78	18.93	38.45	-21.67
				6	0	21.97	15.62	17.77	38.45	-22.83
	20643	848.3	QPSK	1	0	22.98	16.63	18.78	38.45	-21.82
				1	5	22.88	16.53	18.68	38.45	-21.92
				3	2	22.96	16.61	18.76	38.45	-21.84
				6	0	22.00	15.65	17.80	38.45	-22.80
	20407	824.7	16QAM	1	0	22.47	16.12	18.27	38.45	-22.33
				1	5	22.45	16.10	18.25	38.45	-22.35
				3	2	21.97	15.62	17.77	38.45	-22.83
				6	0	21.04	14.69	16.84	38.45	-23.76
	20525	836.5	16QAM	1	0	22.28	15.93	18.08	38.45	-22.52
				1	5	21.87	15.52	17.67	38.45	-22.93
				3	2	21.92	15.57	17.72	38.45	-22.88
				6	0	21.19	14.84	16.99	38.45	-23.61
	20643	848.3	16QAM	1	0	21.96	15.61	17.76	38.45	-22.84
				1	5	22.50	16.15	18.30	38.45	-22.30
				3	2	21.99	15.64	17.79	38.45	-22.81
				6	0	21.18	14.83	16.98	38.45	-23.62
	20407	824.7	64QAM	1	0	21.10	14.75	16.90	38.45	-23.70
				1	5	21.01	14.66	16.81	38.45	-23.79
				3	2	20.00	13.65	15.80	38.45	-24.80
				6	0	20.08	13.73	15.88	38.45	-24.72
	20525	836.5	64QAM	1	0	21.12	14.77	16.92	38.45	-23.68
				1	5	21.06	14.71	16.86	38.45	-23.74
				3	2	19.90	13.55	15.70	38.45	-24.90
				6	0	19.86	13.51	15.66	38.45	-24.94
	20643	848.3	64QAM	1	0	21.15	14.80	16.95	38.45	-23.65
				1	5	21.01	14.66	16.81	38.45	-23.79
				3	2	19.99	13.64	15.79	38.45	-24.81
				6	0	20.00	13.65	15.80	38.45	-24.80

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Antenna gain (dBi)		-4.2								
LTE Band 5 Uplink frequency band : 824 to 849 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	ERP Limit (dBm)	Margin (dB)
3	20415	825.5	QPSK	1	0	23.09	16.74	18.89	38.45	-21.71
				1	14	23.12	16.77	18.92	38.45	-21.68
				8	4	22.20	15.85	18.00	38.45	-22.60
				15	0	22.27	15.92	18.07	38.45	-22.53
	20525	836.5	QPSK	1	0	23.10	16.75	18.90	38.45	-21.70
				1	14	23.04	16.69	18.84	38.45	-21.76
				8	4	22.21	15.86	18.01	38.45	-22.59
				15	0	22.23	15.88	18.03	38.45	-22.57
	20635	847.5	QPSK	1	0	23.19	16.84	18.99	38.45	-21.61
				1	14	22.96	16.61	18.76	38.45	-21.84
				8	4	22.16	15.81	17.96	38.45	-22.64
				15	0	22.26	15.91	18.06	38.45	-22.54
	20415	825.5	16QAM	1	0	22.45	16.10	18.25	38.45	-22.35
				1	14	22.47	16.12	18.27	38.45	-22.33
				8	4	21.22	14.87	17.02	38.45	-23.58
				15	0	21.22	14.87	17.02	38.45	-23.58
	20525	836.5	16QAM	1	0	22.71	16.36	18.51	38.45	-22.09
				1	14	22.53	16.18	18.33	38.45	-22.27
				8	4	21.38	15.03	17.18	38.45	-23.42
				15	0	21.23	14.88	17.03	38.45	-23.57
	20635	847.5	16QAM	1	0	22.77	16.42	18.57	38.45	-22.03
				1	14	22.68	16.33	18.48	38.45	-22.12
				8	4	21.37	15.02	17.17	38.45	-23.43
				15	0	21.20	14.85	17.00	38.45	-23.60
	20415	825.5	64QAM	1	0	21.18	14.83	16.98	38.45	-23.62
				1	14	21.08	14.73	16.88	38.45	-23.72
				8	4	19.98	13.63	15.78	38.45	-24.82
				15	0	20.05	13.70	15.85	38.45	-24.75
	20525	836.5	64QAM	1	0	21.18	14.83	16.98	38.45	-23.62
				1	14	21.02	14.67	16.82	38.45	-23.78
				8	4	19.84	13.49	15.64	38.45	-24.96
				15	0	19.95	13.60	15.75	38.45	-24.85
	20635	847.5	64QAM	1	0	21.07	14.72	16.87	38.45	-23.73
				1	14	21.13	14.78	16.93	38.45	-23.67
				8	4	19.88	13.53	15.68	38.45	-24.92
				15	0	20.07	13.72	15.87	38.45	-24.73

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Antenna gain (dBi)		-4.2								
LTE Band 5 Uplink frequency band : 824 to 849 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	ERP Limit (dBm)	Margin (dB)
5	20425	826.5	QPSK	1	0	23.16	16.81	18.96	38.45	-21.64
				1	24	23.14	16.79	18.94	38.45	-21.66
				12	6	22.18	15.83	17.98	38.45	-22.62
				25	0	22.21	15.86	18.01	38.45	-22.59
	20525	836.5	QPSK	1	0	23.22	16.87	19.02	38.45	-21.58
				1	24	23.10	16.75	18.90	38.45	-21.70
				12	6	22.30	15.95	18.10	38.45	-22.50
				25	0	22.20	15.85	18.00	38.45	-22.60
	20625	846.5	QPSK	1	0	23.08	16.73	18.88	38.45	-21.72
				1	24	23.12	16.77	18.92	38.45	-21.68
				12	6	22.11	15.76	17.91	38.45	-22.69
				25	0	22.17	15.82	17.97	38.45	-22.63
	20425	826.5	16QAM	1	0	22.33	15.98	18.13	38.45	-22.47
				1	24	22.55	16.20	18.35	38.45	-22.25
				12	6	21.19	14.84	16.99	38.45	-23.61
				25	0	21.23	14.88	17.03	38.45	-23.57
	20525	836.5	16QAM	1	0	22.22	15.87	18.02	38.45	-22.58
				1	24	22.74	16.39	18.54	38.45	-22.06
				12	6	21.24	14.89	17.04	38.45	-23.56
				25	0	21.29	14.94	17.09	38.45	-23.51
	20625	846.5	16QAM	1	0	22.65	16.30	18.45	38.45	-22.15
				1	24	22.27	15.92	18.07	38.45	-22.53
				12	6	21.24	14.89	17.04	38.45	-23.56
				25	0	21.13	14.78	16.93	38.45	-23.67
	20425	826.5	64QAM	1	0	21.07	14.72	16.87	38.45	-23.73
				1	24	21.06	14.71	16.86	38.45	-23.74
				12	6	20.07	13.72	15.87	38.45	-24.73
				25	0	20.04	13.69	15.84	38.45	-24.76
	20525	836.5	64QAM	1	0	21.10	14.75	16.90	38.45	-23.70
				1	24	21.05	14.70	16.85	38.45	-23.75
				12	6	19.82	13.47	15.62	38.45	-24.98
				25	0	20.00	13.65	15.80	38.45	-24.80
	20625	846.5	64QAM	1	0	21.13	14.78	16.93	38.45	-23.67
				1	24	21.12	14.77	16.92	38.45	-23.68
				12	6	19.90	13.55	15.70	38.45	-24.90
				25	0	20.07	13.72	15.87	38.45	-24.73

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Antenna gain (dBi)		-4.2								
LTE Band 5 Uplink frequency band : 824 to 849 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	ERP Limit (dBm)	Margin (dB)
10	20450	829	QPSK	1	0	23.31	16.96	19.11	38.45	-21.49
				1	49	23.17	16.82	18.97	38.45	-21.63
				25	12	22.32	15.97	18.12	38.45	-22.48
				50	0	22.23	15.88	18.03	38.45	-22.57
	20525	836.5	QPSK	1	0	23.36	17.01	19.16	38.45	-21.44
				1	49	23.12	16.77	18.92	38.45	-21.68
				25	12	22.25	15.90	18.05	38.45	-22.55
				50	0	22.21	15.86	18.01	38.45	-22.59
	20600	844	QPSK	1	0	23.03	16.68	18.83	38.45	-21.77
				1	49	23.22	16.87	19.02	38.45	-21.58
				25	12	22.24	15.89	18.04	38.45	-22.56
				50	0	22.26	15.91	18.06	38.45	-22.54
	20450	829	16QAM	1	0	22.15	15.80	17.95	38.45	-22.65
				1	49	22.17	15.82	17.97	38.45	-22.63
				25	12	21.31	14.96	17.11	38.45	-23.49
				50	0	21.28	14.93	17.08	38.45	-23.52
	20525	836.5	16QAM	1	0	22.33	15.98	18.13	38.45	-22.47
				1	49	22.13	15.78	17.93	38.45	-22.67
				25	12	21.27	14.92	17.07	38.45	-23.53
				50	0	21.29	14.94	17.09	38.45	-23.51
	20600	844	16QAM	1	0	22.64	16.29	18.44	38.45	-22.16
				1	49	22.41	16.06	18.21	38.45	-22.39
				25	12	21.21	14.86	17.01	38.45	-23.59
				50	0	21.16	14.81	16.96	38.45	-23.64
	20450	829	64QAM	1	0	21.20	14.85	17.00	38.45	-23.60
				1	49	21.17	14.82	16.97	38.45	-23.63
				25	12	20.10	13.75	15.90	38.45	-24.70
				50	0	20.17	13.82	15.97	38.45	-24.63
	20525	836.5	64QAM	1	0	21.23	14.88	17.03	38.45	-23.57
				1	49	21.15	14.80	16.95	38.45	-23.65
				25	12	19.94	13.59	15.74	38.45	-24.86
				50	0	20.05	13.70	15.85	38.45	-24.75
	20600	844	64QAM	1	0	21.20	14.85	17.00	38.45	-23.60
				1	49	21.14	14.79	16.94	38.45	-23.66
				25	12	20.03	13.68	15.83	38.45	-24.77
				50	0	20.08	13.73	15.88	38.45	-24.72

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Antenna gain (dBi) -4.6

LTE Band 12_Uplink frequency band : 699 to 716 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	ERP Limit (dBm)	Margin (dB)
1.4	23017	699.7	QPSK	1	0	22.97	16.22	18.37	34.77	-18.55
				1	5	23.03	16.28	18.43	34.77	-18.49
				3	2	22.91	16.16	18.31	34.77	-18.61
				6	0	22.19	15.44	17.59	34.77	-19.33
	23095	707.5	QPSK	1	0	23.01	16.26	18.41	34.77	-18.51
				1	5	23.06	16.31	18.46	34.77	-18.46
				3	2	22.94	16.19	18.34	34.77	-18.58
				6	0	22.19	15.44	17.59	34.77	-19.33
	23173	715.5	QPSK	1	0	23.00	16.25	18.40	34.77	-18.52
				1	5	22.99	16.24	18.39	34.77	-18.53
				3	2	22.92	16.17	18.32	34.77	-18.60
				6	0	22.03	15.28	17.43	34.77	-19.49
	23017	699.7	16QAM	1	0	22.29	15.54	17.69	34.77	-19.23
				1	5	21.96	15.21	17.36	34.77	-19.56
				3	2	21.98	15.23	17.38	34.77	-19.54
				6	0	21.15	14.40	16.55	34.77	-20.37
	23095	707.5	16QAM	1	0	22.57	15.82	17.97	34.77	-18.95
				1	5	22.02	15.27	17.42	34.77	-19.50
				3	2	21.94	15.19	17.34	34.77	-19.58
				6	0	21.17	14.42	16.57	34.77	-20.35
	23173	715.5	16QAM	1	0	22.58	15.83	17.98	34.77	-18.94
				1	5	22.58	15.83	17.98	34.77	-18.94
				3	2	21.96	15.21	17.36	34.77	-19.56
				6	0	21.20	14.45	16.60	34.77	-20.32
	23017	699.7	64QAM	1	0	21.13	14.38	16.53	34.77	-20.39
				1	5	21.03	14.28	16.43	34.77	-20.49
				3	2	20.07	13.32	15.47	34.77	-21.45
				6	0	20.17	13.42	15.57	34.77	-21.35
	23095	707.5	64QAM	1	0	21.12	14.37	16.52	34.77	-20.40
				1	5	21.11	14.36	16.51	34.77	-20.41
				3	2	20.02	13.27	15.42	34.77	-21.50
				6	0	20.06	13.31	15.46	34.77	-21.46
	23173	715.5	64QAM	1	0	21.21	14.46	16.61	34.77	-20.31
				1	5	21.16	14.41	16.56	34.77	-20.36
				3	2	20.17	13.42	15.57	34.77	-21.35
				6	0	20.18	13.43	15.58	34.77	-21.34

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Antenna gain (dBi)		-4.6								
LTE Band 12 Uplink frequency band : 699 to 716 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	ERP Limit (dBm)	Margin (dB)
3	23025	700.5	QPSK	1	0	23.05	16.30	18.45	34.77	-18.47
				1	14	23.11	16.36	18.51	34.77	-18.41
				8	4	22.25	15.50	17.65	34.77	-19.27
				15	0	22.17	15.42	17.57	34.77	-19.35
	23095	707.5	QPSK	1	0	23.01	16.26	18.41	34.77	-18.51
				1	14	23.02	16.27	18.42	34.77	-18.50
				8	4	22.35	15.60	17.75	34.77	-19.17
				15	0	22.10	15.35	17.50	34.77	-19.42
	23165	714.5	QPSK	1	0	23.04	16.29	18.44	34.77	-18.48
				1	14	23.01	16.26	18.41	34.77	-18.51
				8	4	22.11	15.36	17.51	34.77	-19.41
				15	0	22.18	15.43	17.58	34.77	-19.34
	23025	700.5	16QAM	1	0	22.61	15.86	18.01	34.77	-18.91
				1	14	22.33	15.58	17.73	34.77	-19.19
				8	4	21.16	14.41	16.56	34.77	-20.36
				15	0	21.23	14.48	16.63	34.77	-20.29
	23095	707.5	16QAM	1	0	22.75	16.00	18.15	34.77	-18.77
				1	14	22.38	15.63	17.78	34.77	-19.14
				8	4	21.32	14.57	16.72	34.77	-20.20
				15	0	21.15	14.40	16.55	34.77	-20.37
	23165	714.5	16QAM	1	0	22.49	15.74	17.89	34.77	-19.03
				1	14	22.20	15.45	17.60	34.77	-19.32
				8	4	21.16	14.41	16.56	34.77	-20.36
				15	0	21.17	14.42	16.57	34.77	-20.35
	23025	700.5	64QAM	1	0	21.08	14.33	16.48	34.77	-20.44
				1	14	21.15	14.40	16.55	34.77	-20.37
				8	4	20.17	13.42	15.57	34.77	-21.35
				15	0	20.08	13.33	15.48	34.77	-21.44
	23095	707.5	64QAM	1	0	21.08	14.33	16.48	34.77	-20.44
				1	14	20.98	14.23	16.38	34.77	-20.54
				8	4	19.98	13.23	15.38	34.77	-21.54
				15	0	19.98	13.23	15.38	34.77	-21.54
	23165	714.5	64QAM	1	0	21.30	14.55	16.70	34.77	-20.22
				1	14	21.13	14.38	16.53	34.77	-20.39
				8	4	20.17	13.42	15.57	34.77	-21.35
				15	0	20.07	13.32	15.47	34.77	-21.45

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Antenna gain (dBi)		-4.6								
LTE Band 12 Uplink frequency band : 699 to 716 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	ERP Limit (dBm)	Margin (dB)
5	23035	701.5	QPSK	1	0	23.08	16.33	18.48	34.77	-18.44
				1	24	23.11	16.36	18.51	34.77	-18.41
				12	6	22.22	15.47	17.62	34.77	-19.30
				25	0	22.23	15.48	17.63	34.77	-19.29
	23095	707.5	QPSK	1	0	23.04	16.29	18.44	34.77	-18.48
				1	24	23.06	16.31	18.46	34.77	-18.46
				12	6	22.21	15.46	17.61	34.77	-19.31
	23155	713.5	QPSK	25	0	22.25	15.50	17.65	34.77	-19.27
				1	0	22.88	16.13	18.28	34.77	-18.64
				1	24	23.09	16.34	18.49	34.77	-18.43
	23035	701.5	16QAM	12	6	22.24	15.49	17.64	34.77	-19.28
				25	0	22.00	15.25	17.40	34.77	-19.52
				1	0	22.13	15.38	17.53	34.77	-19.39
	23095	707.5	16QAM	1	24	22.75	16.00	18.15	34.77	-18.77
				12	6	21.28	14.53	16.68	34.77	-20.24
				25	0	21.27	14.52	16.67	34.77	-20.25
	23155	713.5	16QAM	1	0	22.39	15.64	17.79	34.77	-19.13
				1	24	22.74	15.99	18.14	34.77	-18.78
				12	6	21.24	14.49	16.64	34.77	-20.28
	23035	701.5	64QAM	25	0	21.29	14.54	16.69	34.77	-20.23
				1	0	22.61	15.86	18.01	34.77	-18.91
				1	24	22.33	15.58	17.73	34.77	-19.19
	23095	707.5	64QAM	12	6	21.10	14.35	16.50	34.77	-20.42
				25	0	21.32	14.57	16.72	34.77	-20.20
				1	0	21.13	14.38	16.53	34.77	-20.39
	23155	713.5	64QAM	1	24	21.07	14.32	16.47	34.77	-20.45
				12	6	20.09	13.34	15.49	34.77	-21.43
				25	0	20.08	13.33	15.48	34.77	-21.44
	23035	701.5	64QAM	1	0	21.14	14.39	16.54	34.77	-20.38
				1	24	20.97	14.22	16.37	34.77	-20.55
				12	6	19.98	13.23	15.38	34.77	-21.54
	23095	707.5	64QAM	25	0	20.09	13.34	15.49	34.77	-21.43
				1	0	21.11	14.36	16.51	34.77	-20.41
				1	24	21.21	14.46	16.61	34.77	-20.31
	23155	713.5	64QAM	12	6	20.15	13.40	15.55	34.77	-21.37
				25	0	20.06	13.31	15.46	34.77	-21.46

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Antenna gain (dBi)		-4.6								
LTE Band 12_Uplink frequency band : 699 to 716 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	ERP Limit (dBm)	Margin (dB)
10	23060	704	QPSK	1	0	23.31	16.56	18.71	34.77	-18.21
				1	49	23.20	16.45	18.60	34.77	-18.32
				25	12	22.29	15.54	17.69	34.77	-19.23
				50	0	22.23	15.48	17.63	34.77	-19.29
	23095	707.5	QPSK	1	0	23.24	16.49	18.64	34.77	-18.28
				1	49	23.33	16.58	18.73	34.77	-18.19
				25	12	22.19	15.44	17.59	34.77	-19.33
				50	0	22.28	15.53	17.68	34.77	-19.24
	23130	711	QPSK	1	0	23.26	16.51	18.66	34.77	-18.26
				1	49	23.02	16.27	18.42	34.77	-18.50
				25	12	22.26	15.51	17.66	34.77	-19.26
				50	0	22.28	15.53	17.68	34.77	-19.24
	23060	704	16QAM	1	0	22.42	15.67	17.82	34.77	-19.10
				1	49	22.31	15.56	17.71	34.77	-19.21
				25	12	21.36	14.61	16.76	34.77	-20.16
				50	0	21.38	14.63	16.78	34.77	-20.14
	23095	707.5	16QAM	1	0	22.33	15.58	17.73	34.77	-19.19
				1	49	22.70	15.95	18.10	34.77	-18.82
				25	12	21.12	14.37	16.52	34.77	-20.40
				50	0	21.22	14.47	16.62	34.77	-20.30
	23130	711	16QAM	1	0	22.32	15.57	17.72	34.77	-19.20
				1	49	22.68	15.93	18.08	34.77	-18.84
				25	12	21.34	14.59	16.74	34.77	-20.18
				50	0	21.25	14.50	16.65	34.77	-20.27
	23060	704	64QAM	1	0	21.20	14.45	16.60	34.77	-20.32
				1	49	21.21	14.46	16.61	34.77	-20.31
				25	12	20.21	13.46	15.61	34.77	-21.31
				50	0	20.20	13.45	15.60	34.77	-21.32
	23095	707.5	64QAM	1	0	21.16	14.41	16.56	34.77	-20.36
				1	49	21.12	14.37	16.52	34.77	-20.40
				25	12	20.16	13.41	15.56	34.77	-21.36
				50	0	20.13	13.38	15.53	34.77	-21.39
	23130	711	64QAM	1	0	21.30	14.55	16.70	34.77	-20.22
				1	49	21.22	14.47	16.62	34.77	-20.30
				25	12	20.26	13.51	15.66	34.77	-21.26
				50	0	20.21	13.46	15.61	34.77	-21.31

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LTE Band 17_Uplink frequency band : 704 to 716 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	ERP Limit (dBm)	Margin (dB)
5	23755	706.5	QPSK	1	0	22.97	16.22	18.37	34.77	-18.55
				1	24	23.08	16.33	18.48	34.77	-18.44
				12	6	22.17	15.42	17.57	34.77	-19.35
				25	0	22.26	15.51	17.66	34.77	-19.26
	23790	710	QPSK	1	0	23.14	16.39	18.54	34.77	-18.38
				1	24	23.18	16.43	18.58	34.77	-18.34
				12	6	22.24	15.49	17.64	34.77	-19.28
				25	0	22.19	15.44	17.59	34.77	-19.33
	23825	713.5	QPSK	1	0	23.17	16.42	18.57	34.77	-18.35
				1	24	23.16	16.41	18.56	34.77	-18.36
				12	6	22.34	15.59	17.74	34.77	-19.18
				25	0	22.17	15.42	17.57	34.77	-19.35
	23755	706.5	16QAM	1	0	22.61	15.86	18.01	34.77	-18.91
				1	24	22.34	15.59	17.74	34.77	-19.18
				12	6	21.24	14.49	16.64	34.77	-20.28
				25	0	21.29	14.54	16.69	34.77	-20.23
	23790	710	16QAM	1	0	22.35	15.60	17.75	34.77	-19.17
				1	24	22.90	16.15	18.30	34.77	-18.62
				12	6	21.34	14.59	16.74	34.77	-20.18
				25	0	21.10	14.35	16.50	34.77	-20.42
	23825	713.5	16QAM	1	0	22.40	15.65	17.80	34.77	-19.12
				1	24	22.24	15.49	17.64	34.77	-19.28
				12	6	21.30	14.55	16.70	34.77	-20.22
				25	0	21.33	14.58	16.73	34.77	-20.19
	23755	706.5	64QAM	1	0	20.96	14.21	16.36	34.77	-20.56
				1	24	21.12	14.37	16.52	34.77	-20.40
				12	6	20.04	13.29	15.44	34.77	-21.48
				25	0	19.97	13.22	15.37	34.77	-21.55
	23790	710	64QAM	1	0	21.11	14.36	16.51	34.77	-20.41
				1	24	21.16	14.41	16.56	34.77	-20.36
				12	6	20.08	13.33	15.48	34.77	-21.44
				25	0	20.01	13.26	15.41	34.77	-21.51
	23825	713.5	64QAM	1	0	21.01	14.26	16.41	34.77	-20.51
				1	24	21.12	14.37	16.52	34.77	-20.40
				12	6	20.07	13.32	15.47	34.77	-21.45
				25	0	20.05	13.30	15.45	34.77	-21.47

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Antenna gain (dBi)		-4.6								
LTE Band 17_Uplink frequency band : 704 to 716 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	ERP Limit (dBm)	Margin (dB)
10	23780	709	QPSK	1	0	23.01	16.26	18.41	34.77	-18.51
				1	49	23.38	16.63	18.78	34.77	-18.14
				25	12	22.27	15.52	17.67	34.77	-19.25
				50	0	22.17	15.42	17.57	34.77	-19.35
	23790	710	QPSK	1	0	23.09	16.34	18.49	34.77	-18.43
				1	49	23.37	16.62	18.77	34.77	-18.15
				25	12	22.27	15.52	17.67	34.77	-19.25
				50	0	22.14	15.39	17.54	34.77	-19.38
	23800	711	QPSK	1	0	23.12	16.37	18.52	34.77	-18.40
				1	49	23.13	16.38	18.53	34.77	-18.39
				25	12	22.20	15.45	17.60	34.77	-19.32
				50	0	22.18	15.43	17.58	34.77	-19.34
	23780	709	16QAM	1	0	22.56	15.81	17.96	34.77	-18.96
				1	49	22.56	15.81	17.96	34.77	-18.96
				25	12	21.22	14.47	16.62	34.77	-20.30
				50	0	21.25	14.50	16.65	34.77	-20.27
	23790	710	16QAM	1	0	22.36	15.61	17.76	34.77	-19.16
				1	49	22.36	15.61	17.76	34.77	-19.16
				25	12	21.32	14.57	16.72	34.77	-20.20
				50	0	21.15	14.40	16.55	34.77	-20.37
	23800	711	16QAM	1	0	22.28	15.53	17.68	34.77	-19.24
				1	49	22.41	15.66	17.81	34.77	-19.11
				25	12	21.29	14.54	16.69	34.77	-20.23
				50	0	21.02	14.27	16.42	34.77	-20.50
	23780	709	64QAM	1	0	21.11	14.36	16.51	34.77	-20.41
				1	49	21.20	14.45	16.60	34.77	-20.32
				25	12	20.05	13.30	15.45	34.77	-21.47
				50	0	20.11	13.36	15.51	34.77	-21.41
	23790	710	64QAM	1	0	21.12	14.37	16.52	34.77	-20.40
				1	49	21.23	14.48	16.63	34.77	-20.29
				25	12	20.20	13.45	15.60	34.77	-21.32
				50	0	20.10	13.35	15.50	34.77	-21.42
	23800	711	64QAM	1	0	21.14	14.39	16.54	34.77	-20.38
				1	49	21.16	14.41	16.56	34.77	-20.36
				25	12	20.15	13.40	15.55	34.77	-21.37
				50	0	20.09	13.34	15.49	34.77	-21.43

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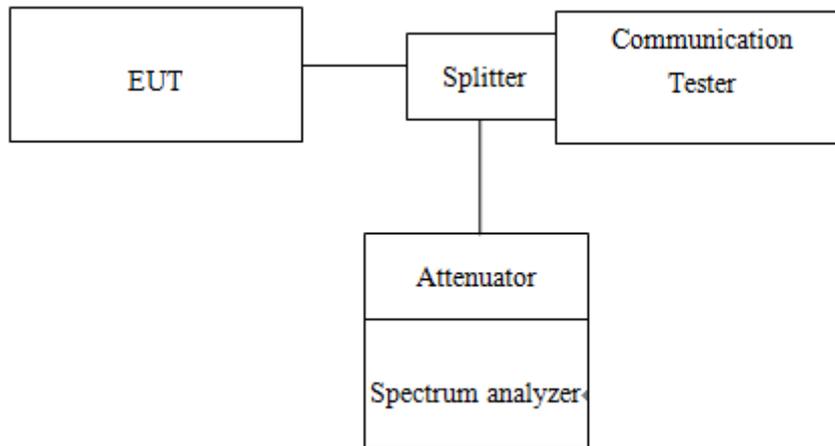
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7 OCCUPIED BANDWIDTH MEASUREMENT

7.1 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.

7.2 Test Set-up



7.3 Measurement Procedure

99% & 26dB Bandwidth with detector peak

The EUT's output RF connector was connected with a short cable to the spectrum analyzer, RBW was set to about 1% of emission BW, VBW= 3 times RBW, -26dBc display line was placed on the screen (or 26dB bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace. Then set RBW to 99% bandwidth, RBW= 1%, VBW= 3 * RBW, with span > 2 * Signal BW, set % Power = 99%.

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7.4 Measurement Equipment Used

Conducted Emission (measured at antenna port) Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EXA Spectrum Analyzer	Agilent	N9010A	MY50420195	05/06/2020	05/05/2021
DC Power Supply	Agilent	E3640A	MY52410006	12/10/2019	12/09/2020
Temperature Chamber	TERCHY	MHG-120LF	911009	05/20/2020	05/19/2021
Radio Communication Analyser	Anritsu	MT8815B	6200711454	04/01/2020	03/31/2021
Radio Communication Analyser	Anritsu	MT8820C	6200995019	04/01/2020	03/31/2021
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2020	01/01/2021
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2020	01/01/2021
Splitter	RF-LAMBAD	RFLT2W1G1 8G	11-JSPF412- 017	01/02/2020	01/01/2021

7.5 Measurement Result

Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		GSM 850	GPRS 850	GSM 850	GPRS 850
824.2	128	0.24438	0.24439	0.3164	0.3181
836.6	190	0.24322	0.24335	0.3127	0.3132
848.8	251	0.24342	0.24563	0.3133	0.3145
Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		GSM 1900	GPRS 1900	GSM 1900	GPRS 1900
1850.2	512	0.24130	0.24100	0.3162	0.3141
1880.0	661	0.24176	0.24341	0.3150	0.3188
1909.8	810	0.24555	0.24570	0.3151	0.3192

Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		WCDMA V	HSDPA V	HSUPA V	WCDMA V	HSDPA V	HSUPA V
826.40	4132	4.14050	4.12280	4.12650	4.695	4.703	4.680
836.60	4183	4.14890	4.13270	4.14370	4.696	4.710	4.700
846.60	4233	4.14540	4.13310	4.14930	4.708	4.685	4.677

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LTE BAND 5 Channel bandwidth: 1.4MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
824.7	20407	1.0928	1.0948	1.0924	1.239	1.230	1.245
836.5	20525	1.0939	1.0935	1.0928	1.240	1.233	1.232
848.3	20643	1.0925	1.0927	1.0919	1.240	1.238	1.230

LTE BAND 5 Channel bandwidth: 3MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
825.5	20415	2.7002	2.6987	2.7035	2.991	3.011	3.001
836.5	20525	2.6932	2.7001	2.7044	3.007	2.999	2.991
847.5	20635	2.6989	2.6935	2.7029	2.982	3.007	3.001

LTE BAND 5 Channel bandwidth: 5MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
826.5	20425	4.4939	4.4984	4.4920	4.967	5.003	4.950
836.5	20525	4.5062	4.5024	4.4958	4.996	4.975	4.935
846.5	20625	4.4990	4.4960	4.4967	4.964	4.958	4.954

LTE BAND 5 Channel bandwidth: 10MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
829.0	20450	8.9748	8.9584	8.9828	9.769	9.766	9.836
836.5	20525	8.9864	8.9589	8.9860	9.810	9.763	9.839
844.0	20600	8.9716	8.9651	8.9784	9.770	9.759	9.821

LTE BAND 12 Channel bandwidth: 1.4MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
699.7	23017	1.0910	1.0930	1.0920	1.235	1.236	1.237
707.5	23095	1.0897	1.0919	1.0916	1.237	1.237	1.227
715.3	23173	1.0948	1.0876	1.0942	1.221	1.226	1.280

LTE BAND 12 Channel bandwidth: 3MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
700.5	23025	2.6976	2.6927	2.6958	2.992	2.988	2.977
707.5	23095	2.6918	2.6943	2.6977	2.981	3.003	2.968
714.5	23165	2.6893	2.6908	2.6971	2.916	2.933	2.928

LTE BAND 12 Channel bandwidth: 5MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
701.5	23035	4.4925	4.4923	4.5012	4.979	4.969	4.943
707.5	23095	4.4953	4.4899	4.5066	4.946	4.989	4.978
713.5	23155	4.5116	4.5036	4.5042	4.980	5.001	4.939

LTE BAND 12 Channel bandwidth: 10MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
704.0	23060	9.0244	8.9875	9.0001	9.880	9.774	9.820
707.5	23095	8.9481	8.9532	8.9687	9.767	9.680	9.818
711.0	23130	8.9171	8.9087	8.9218	9.528	9.727	9.758

LTE BAND 17 Channel bandwidth: 5MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
706.5	23755	4.4985	4.5076	4.5105	4.969	4.938	5.008
710.0	23790	4.4841	4.4910	4.5023	4.970	4.967	4.904
713.5	23825	4.5067	4.4805	4.4842	4.935	4.739	4.795

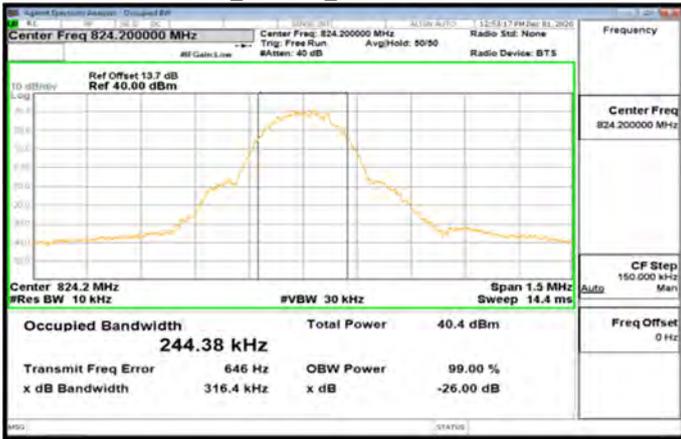
LTE BAND 17 Channel bandwidth: 10MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
709.0	23780	8.9351	8.9170	8.9167	9.707	9.718	9.758
710.0	23790	8.9538	8.9079	8.9313	9.714	9.690	9.768
711.0	23800	8.9454	8.9062	8.9303	9.751	9.740	9.740

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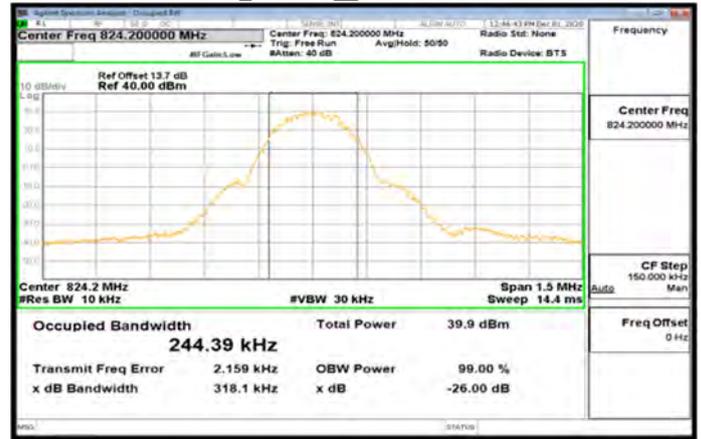
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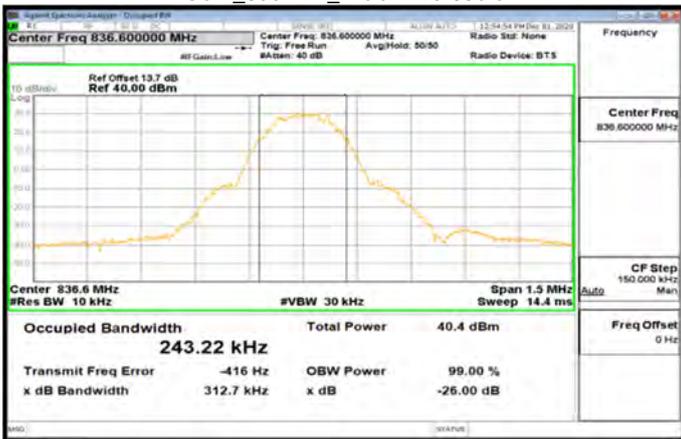
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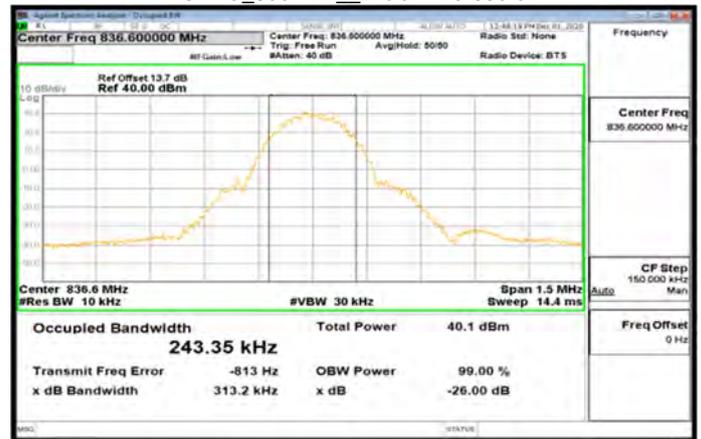
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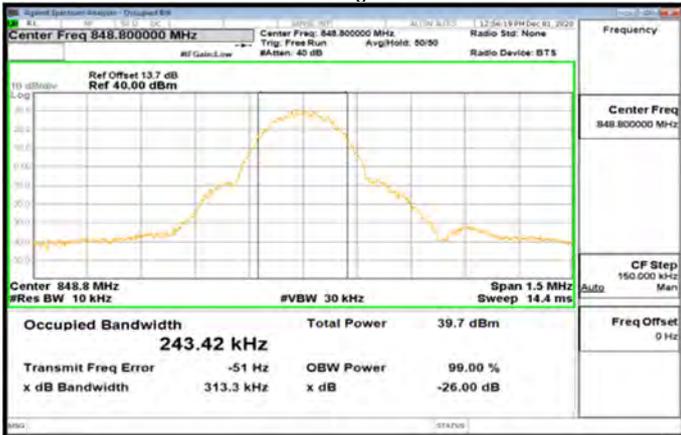
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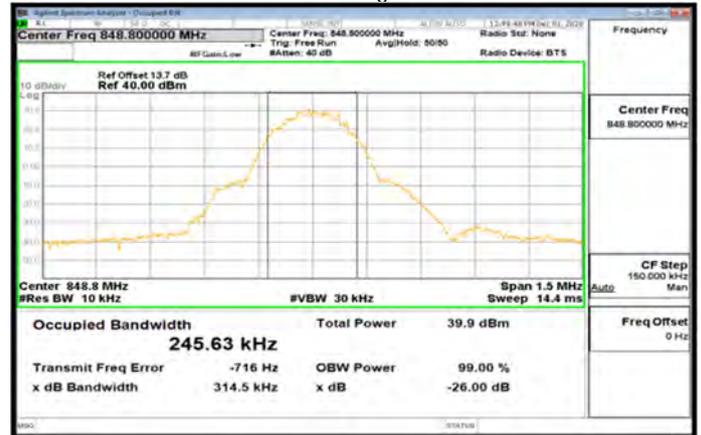
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GSM_850MHz_HighCH251-848.8



GPRS_850MHz_HighCH251-848.8

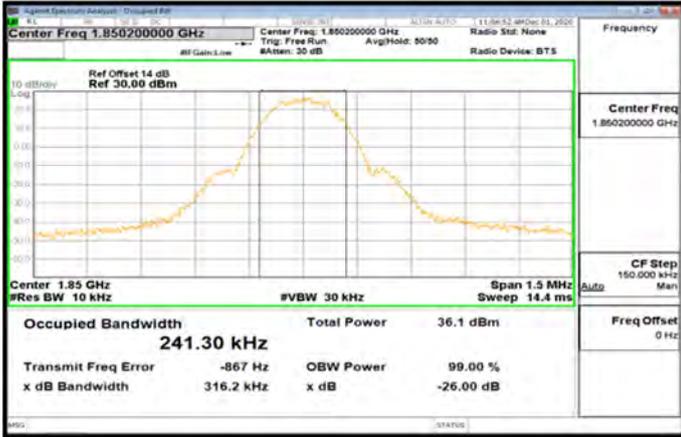


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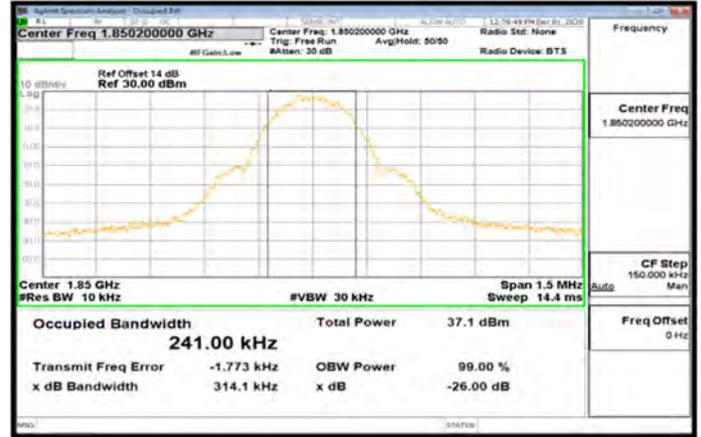
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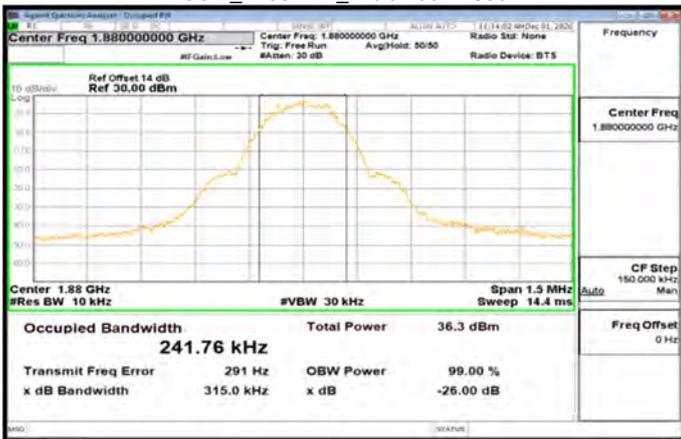
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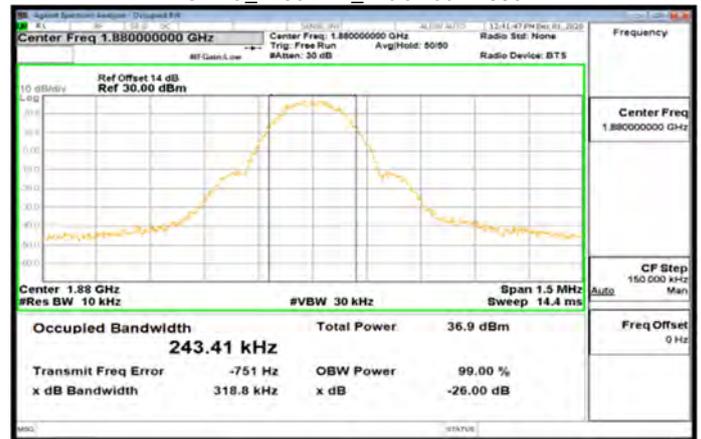
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GSM_1900MHz_MidCH661-1880



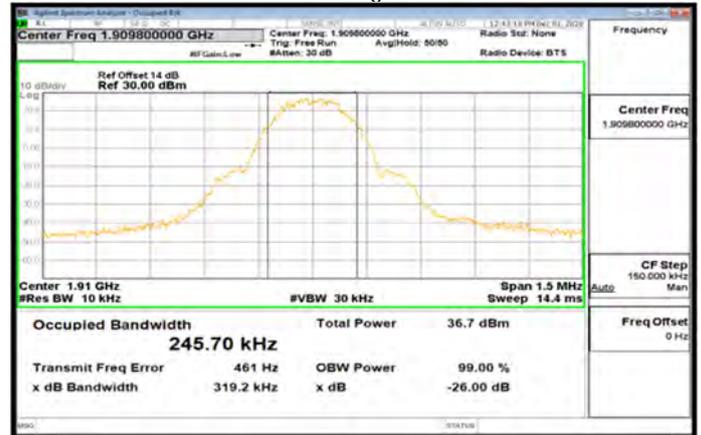
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GSM_1900MHz_HighCH810-1909.8



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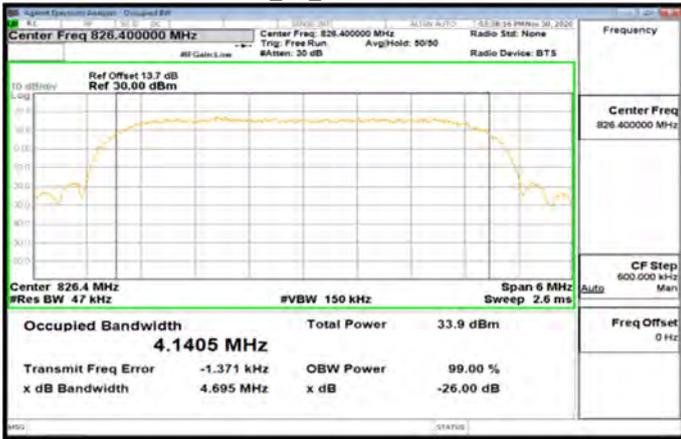


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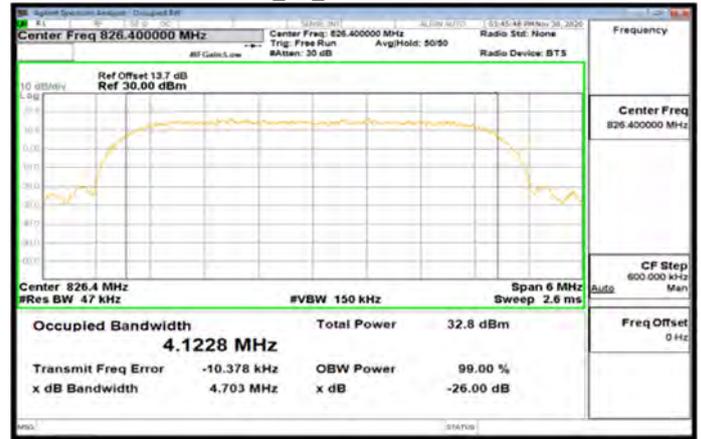
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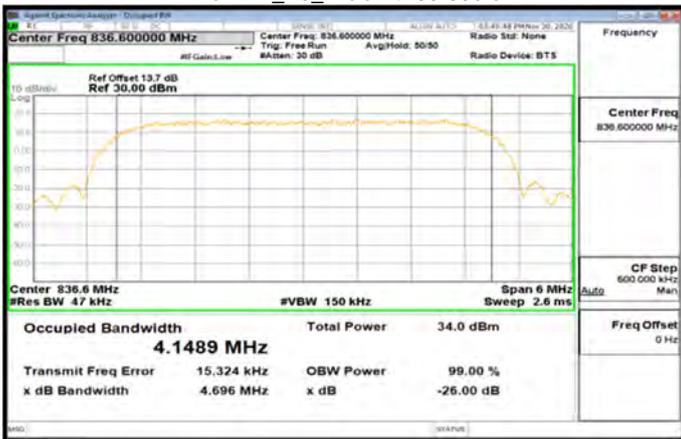
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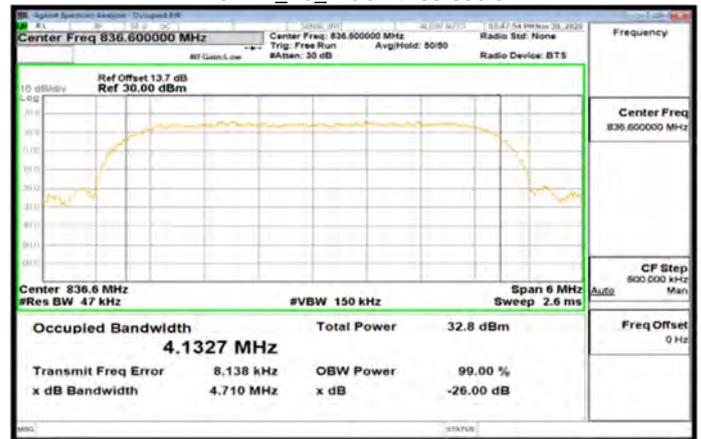
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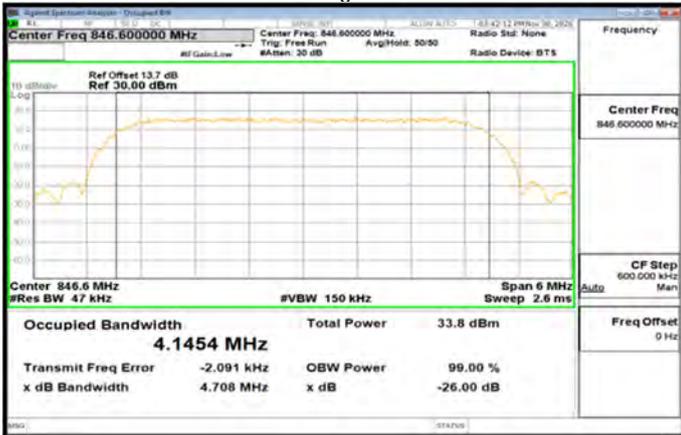
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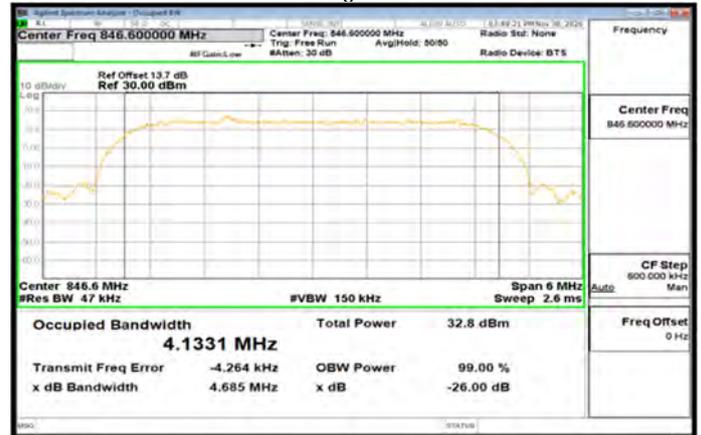
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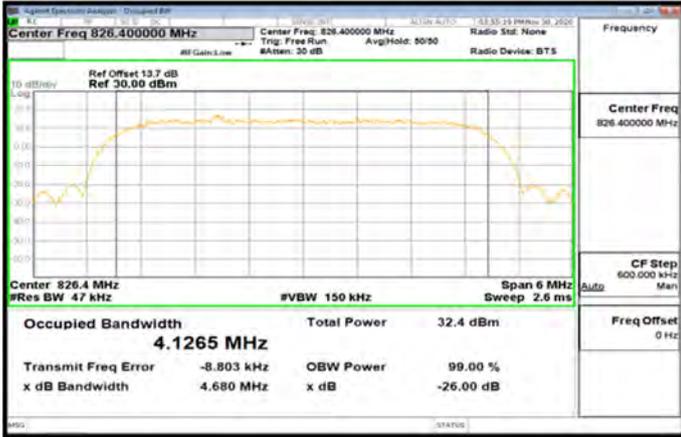


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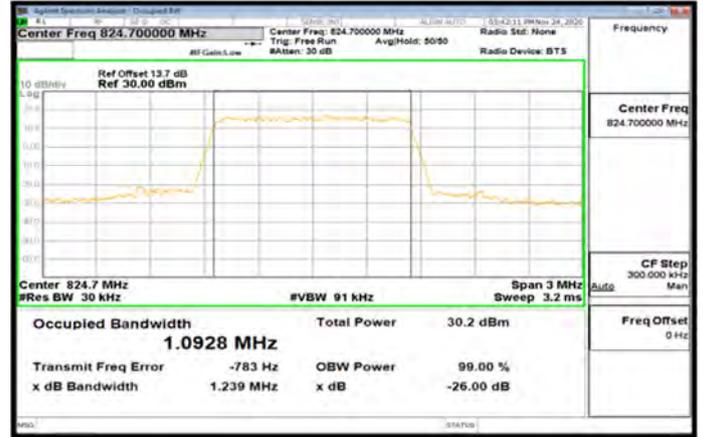
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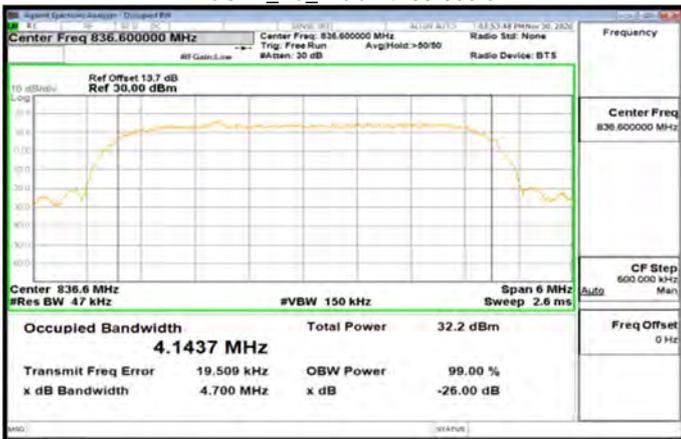
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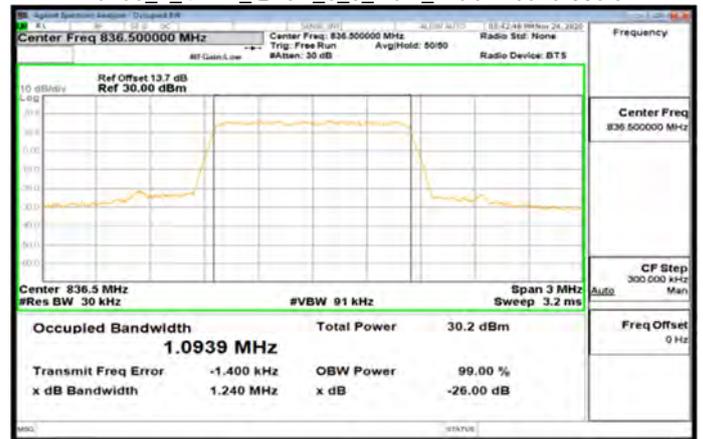
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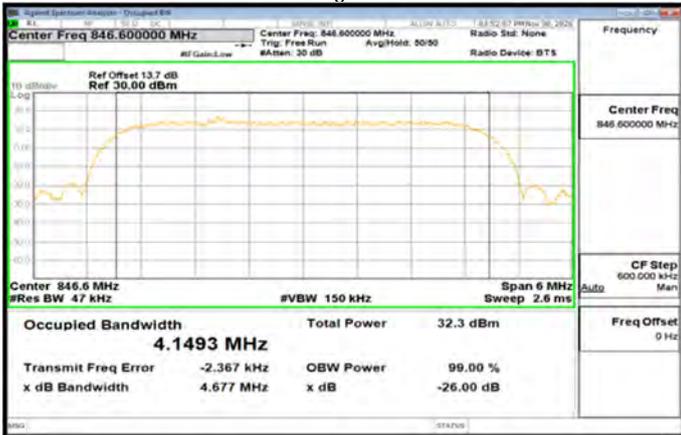
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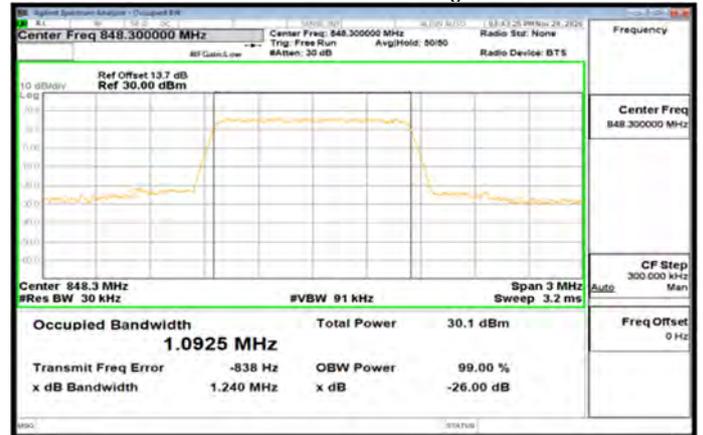
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HSUPA_B5_HighCH4233-846.6



Band5_1_4MHz_QPSK_6_0_Main_HighCH20643-848.3

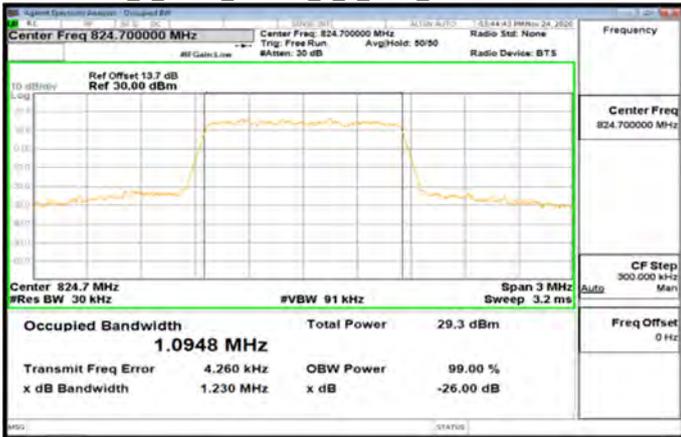


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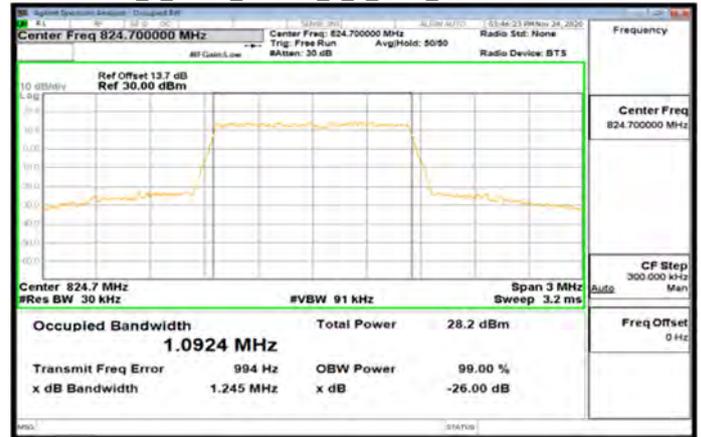
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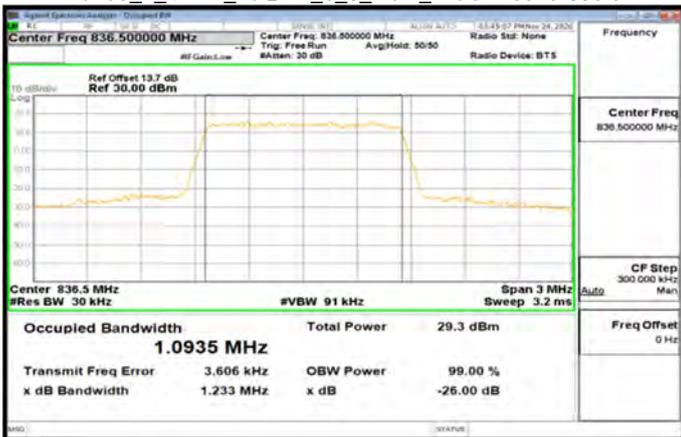
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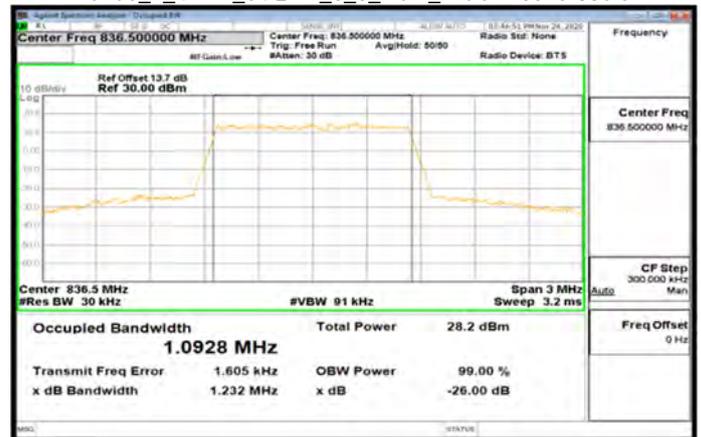
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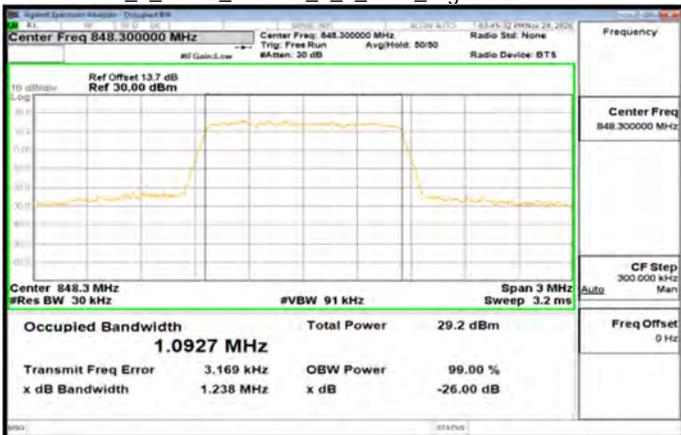
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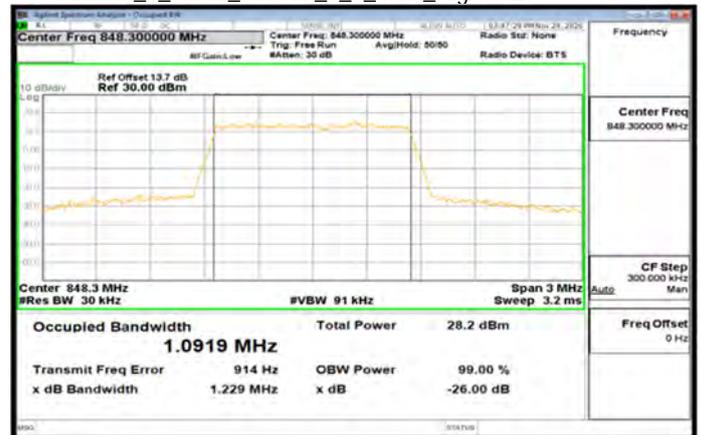
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Band5_1_4MHz_64QAM_6_0_Main_HighCH20643-848.3

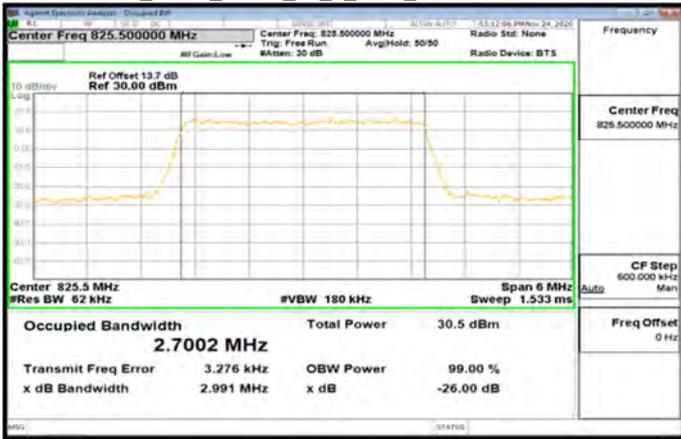


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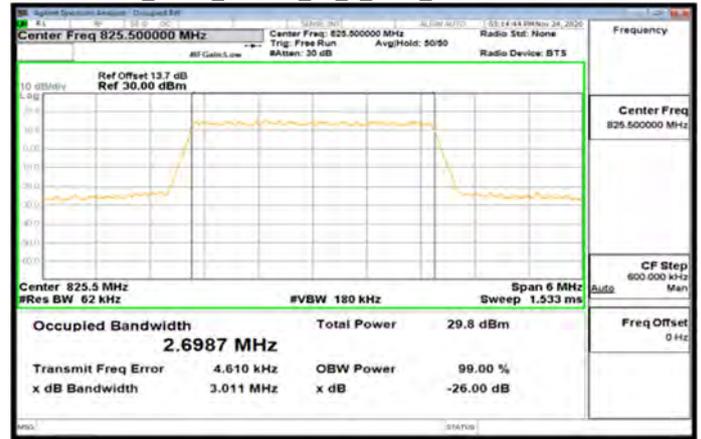
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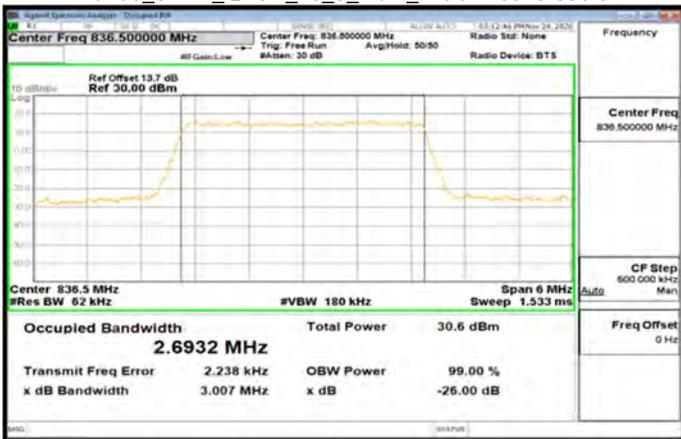
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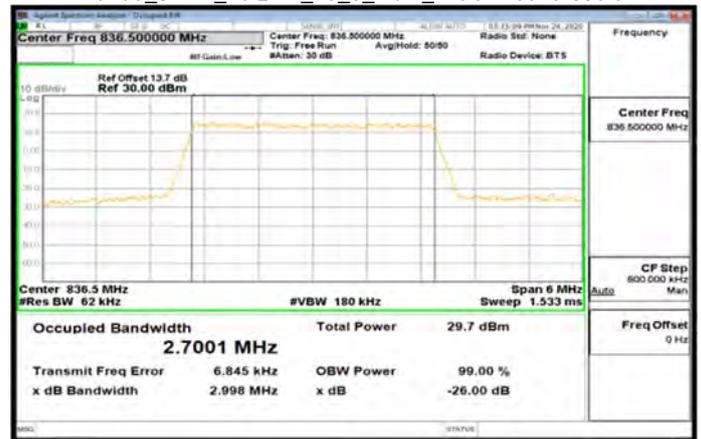
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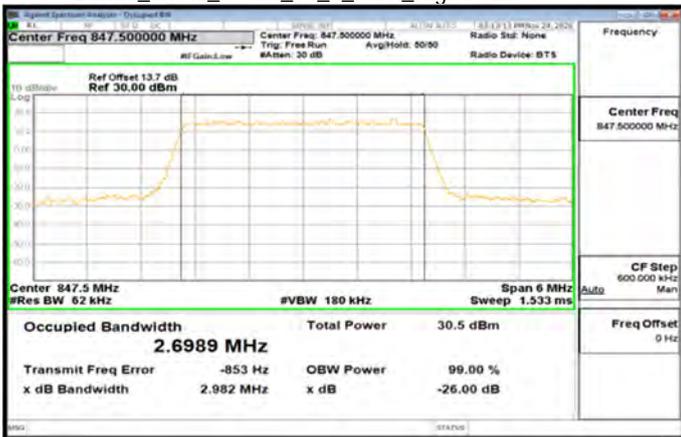
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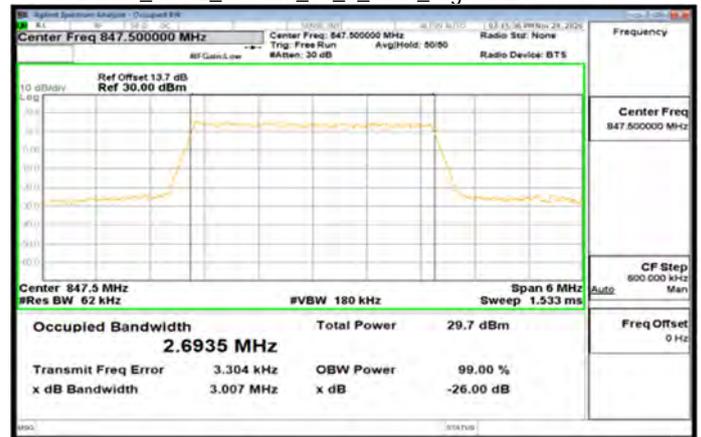
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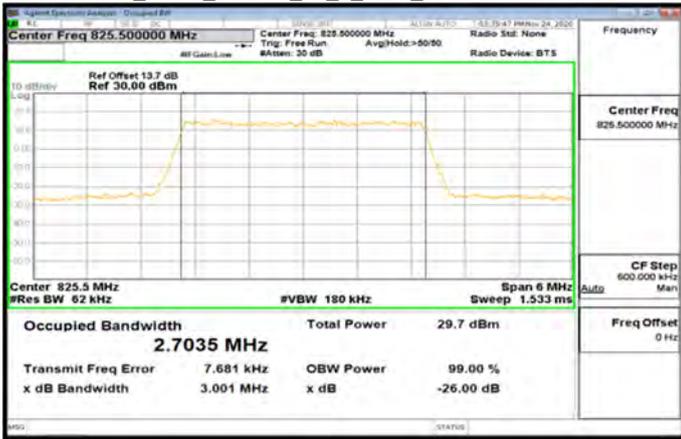


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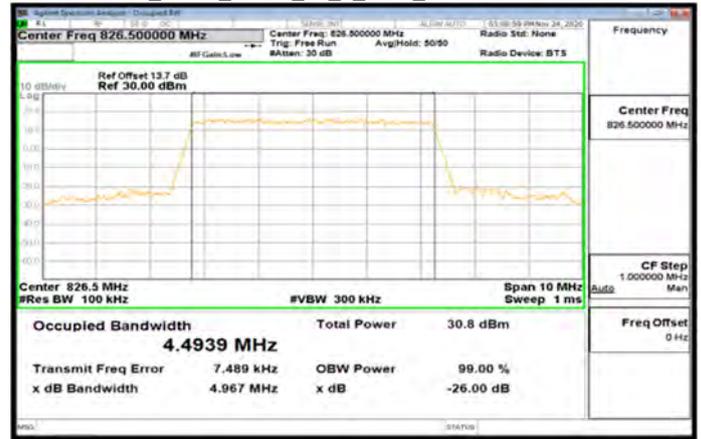
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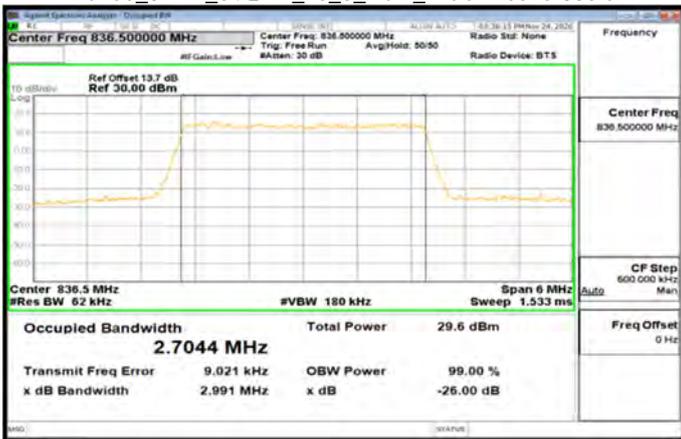
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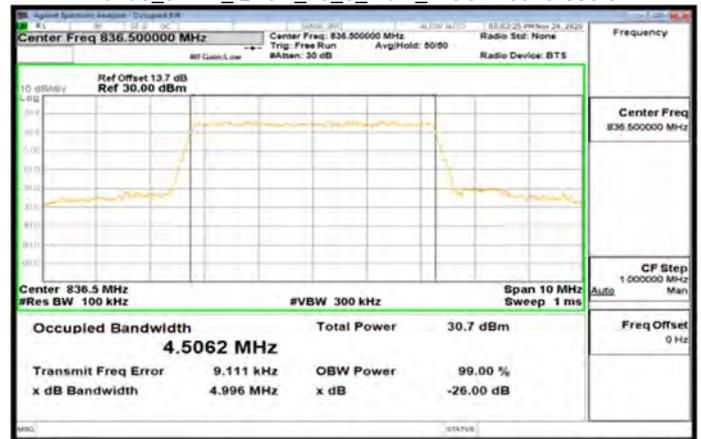
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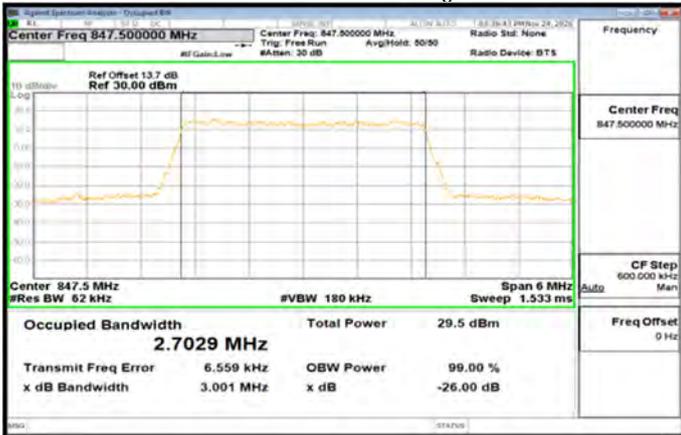
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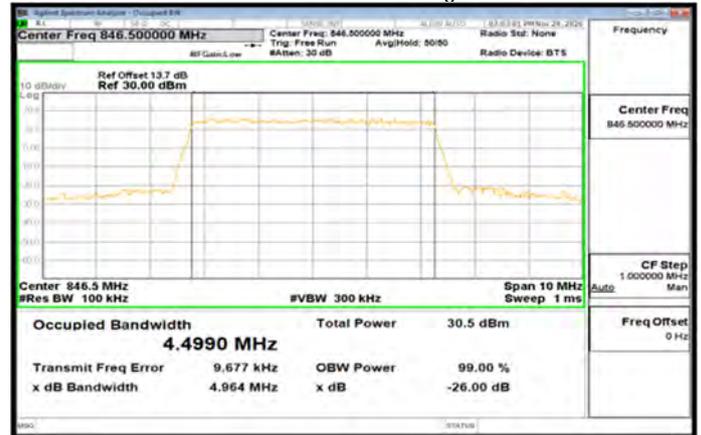
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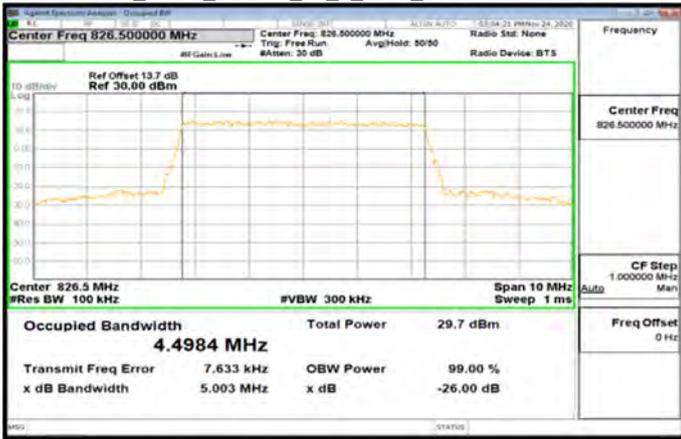


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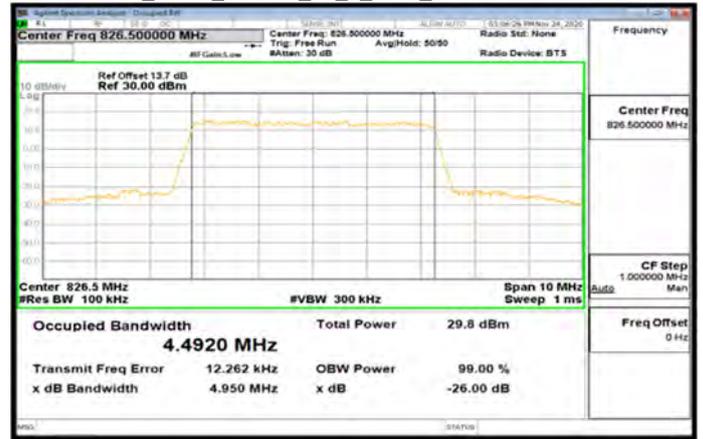
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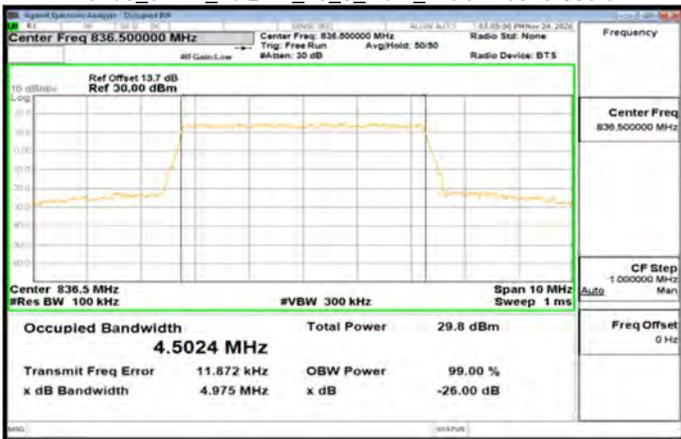
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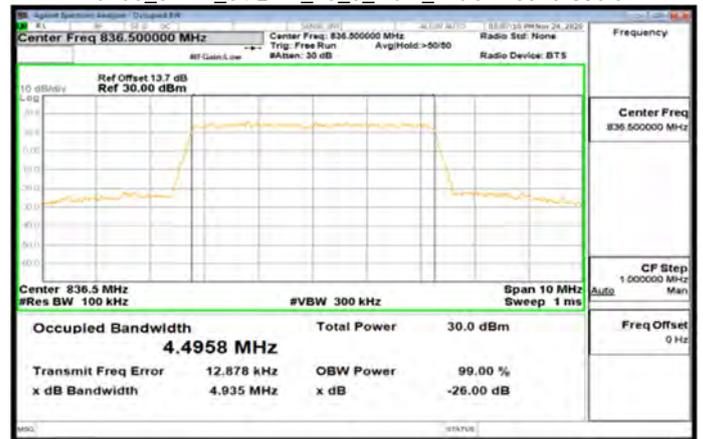
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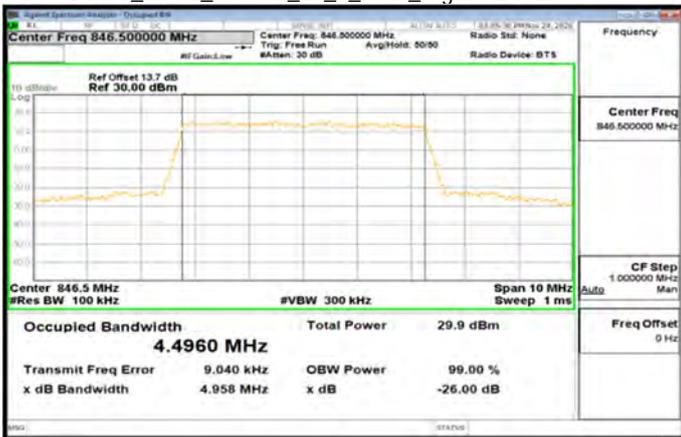
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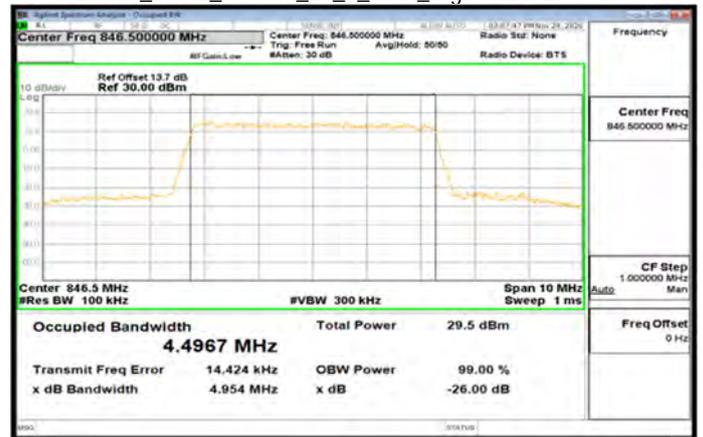
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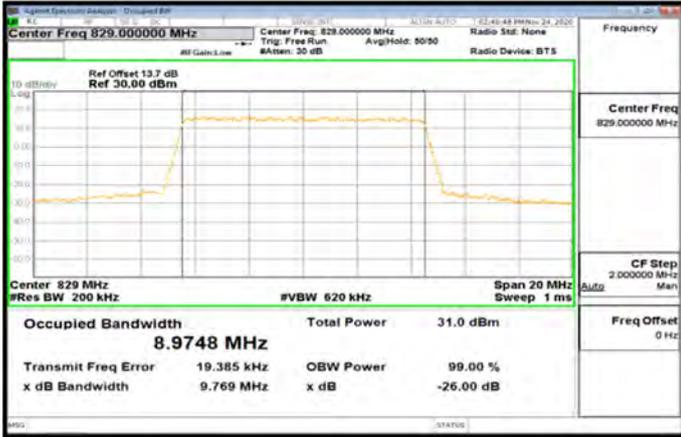


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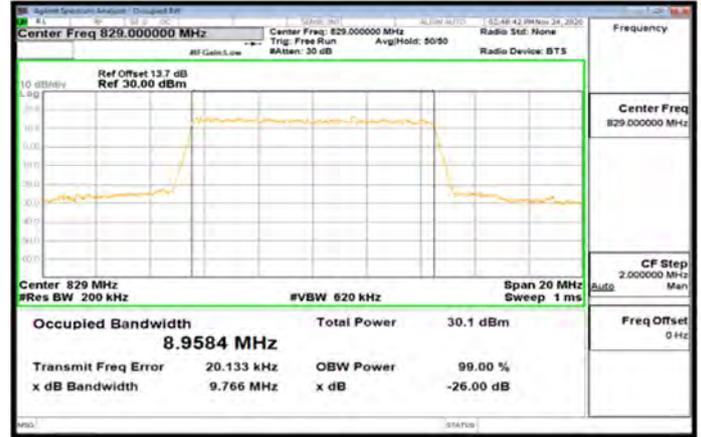
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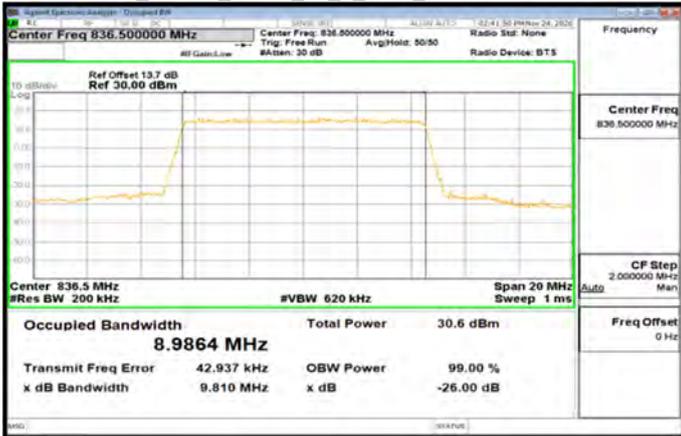
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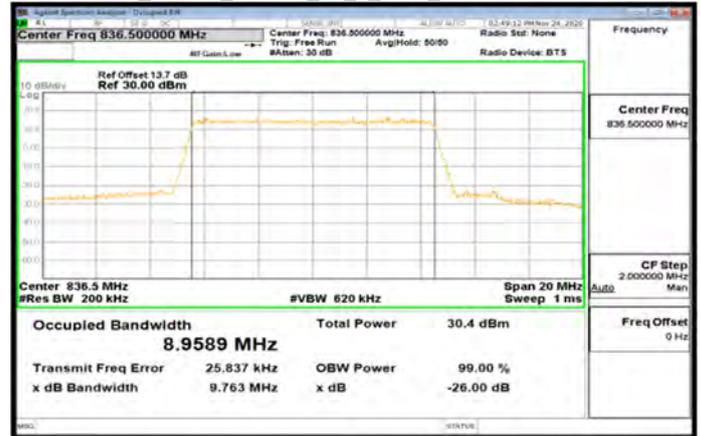
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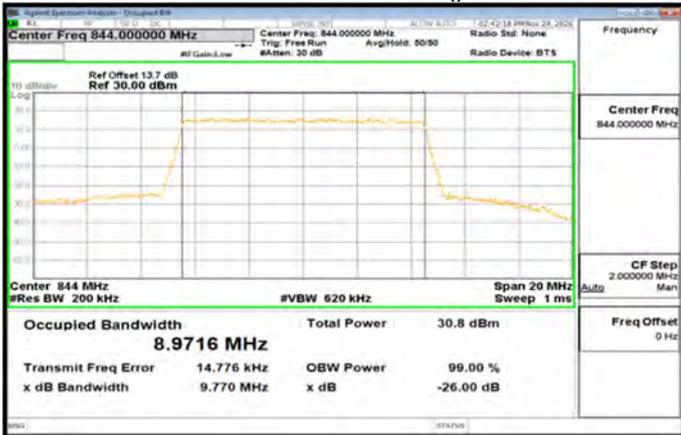
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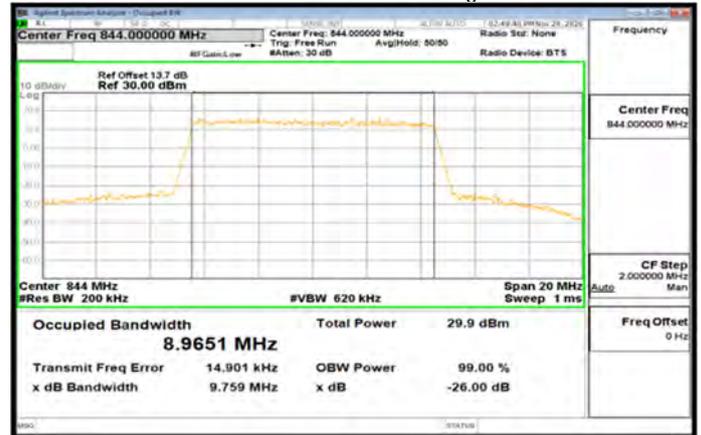
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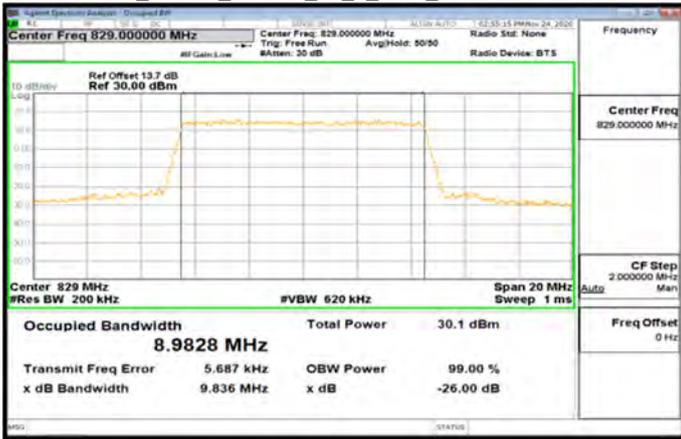


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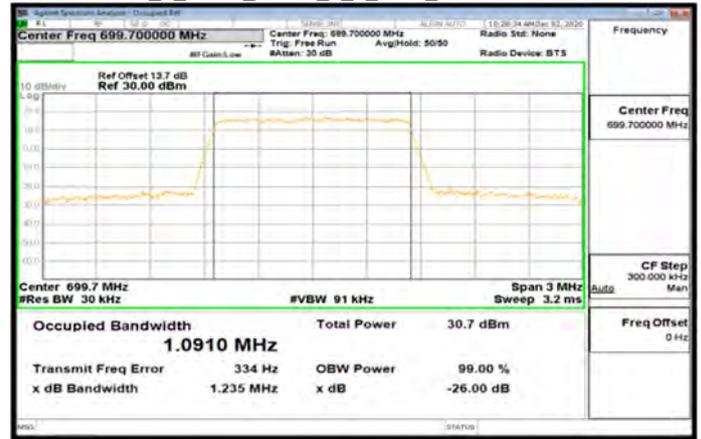
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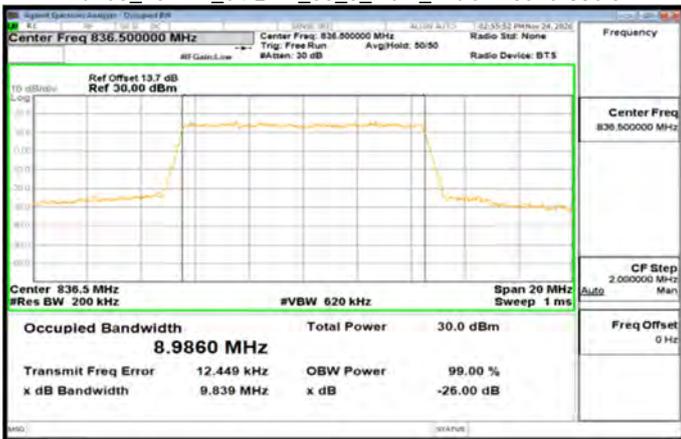
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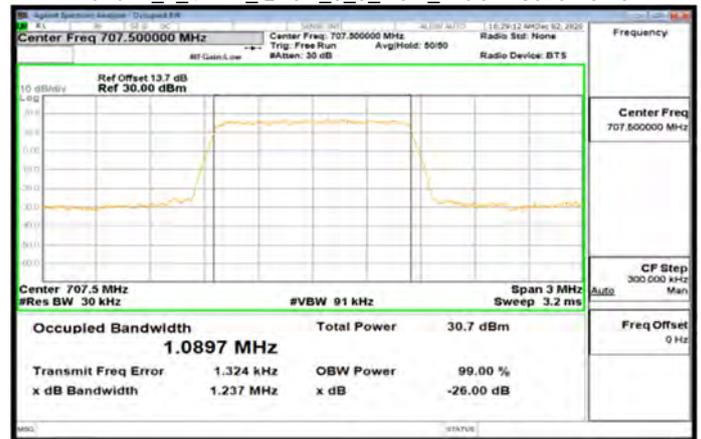
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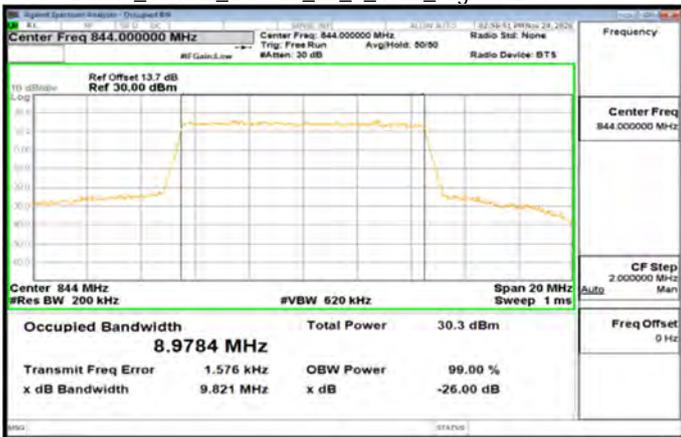
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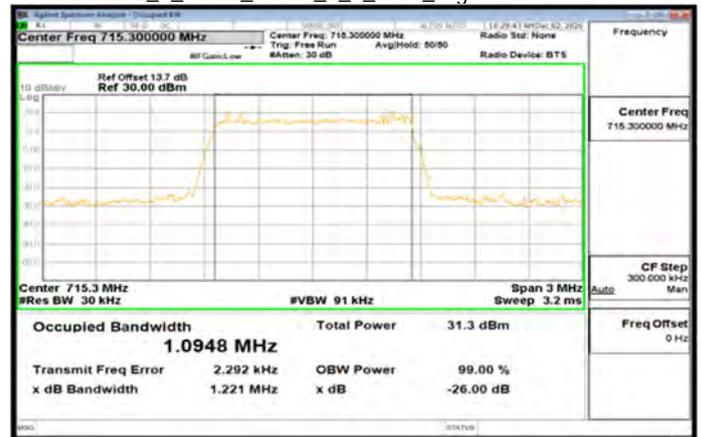
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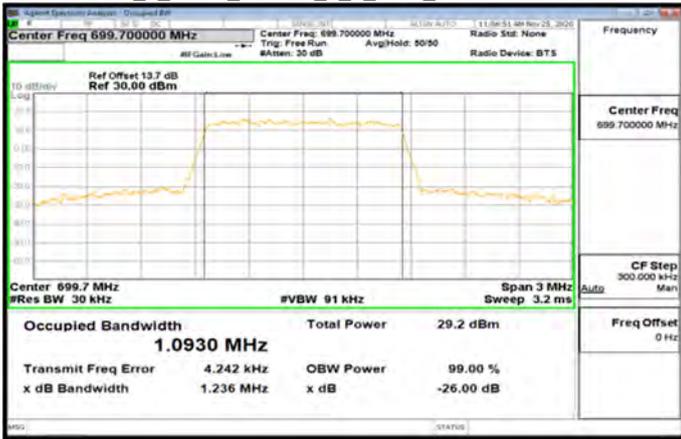


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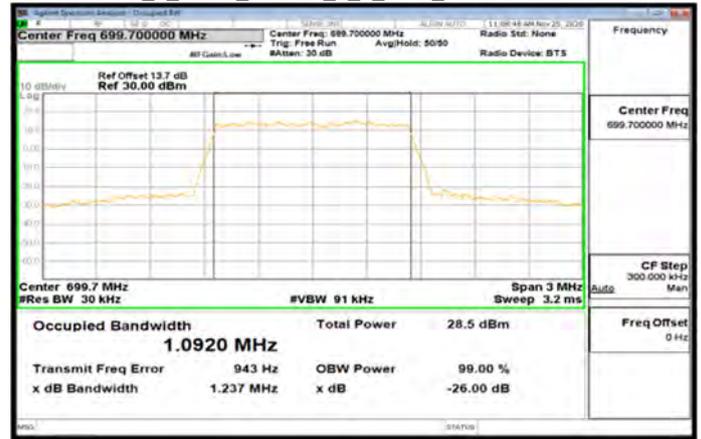
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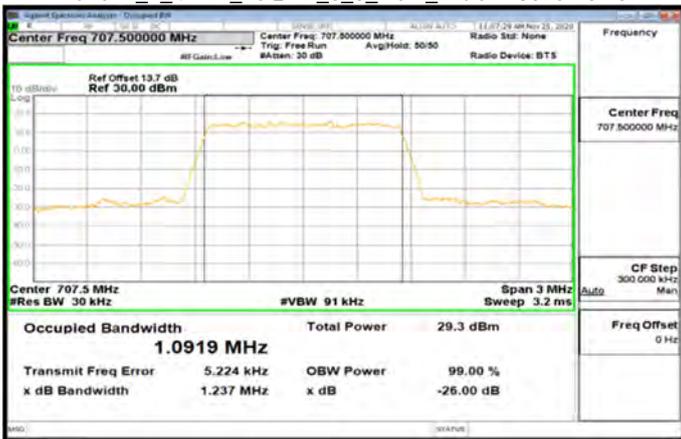
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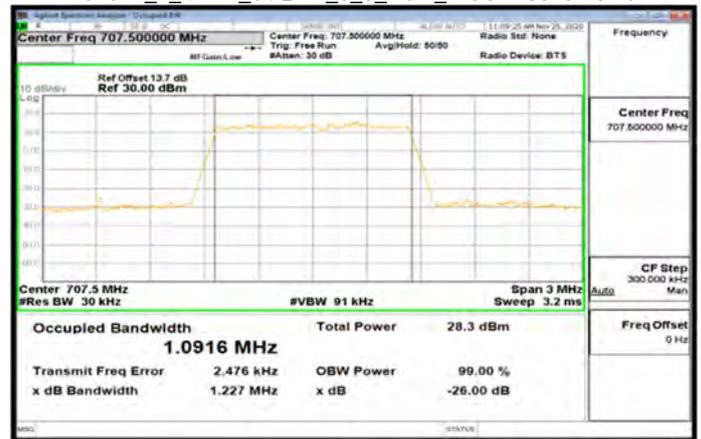
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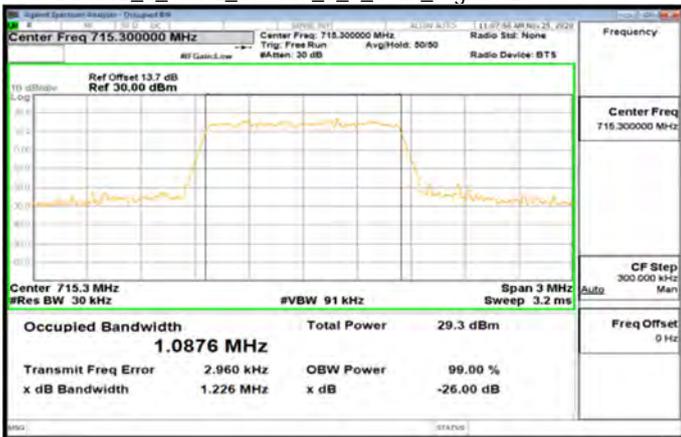
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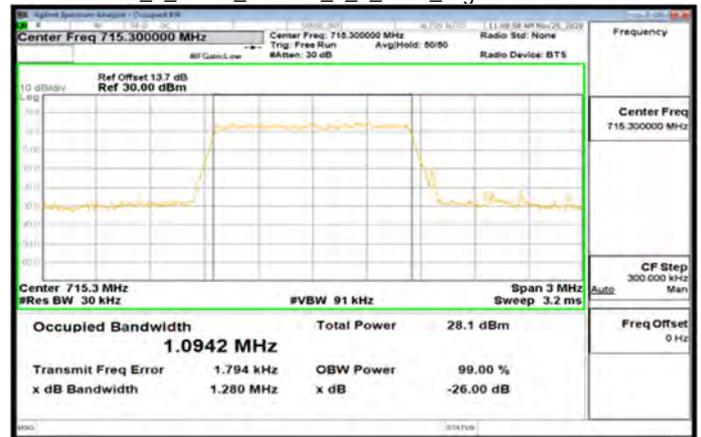
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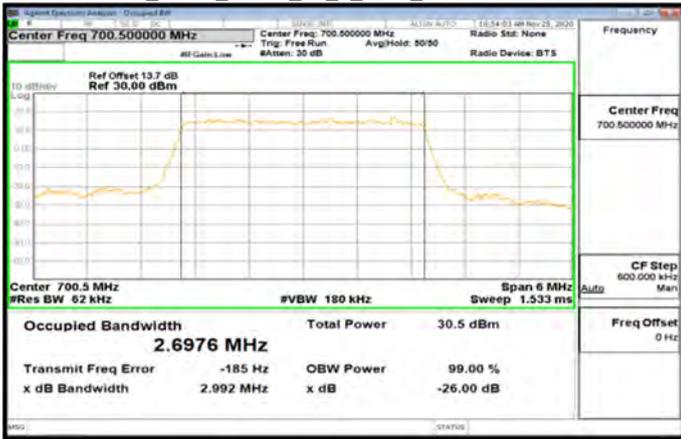


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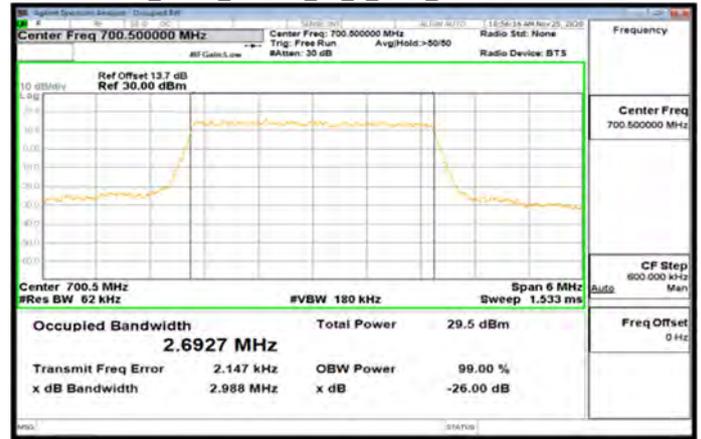
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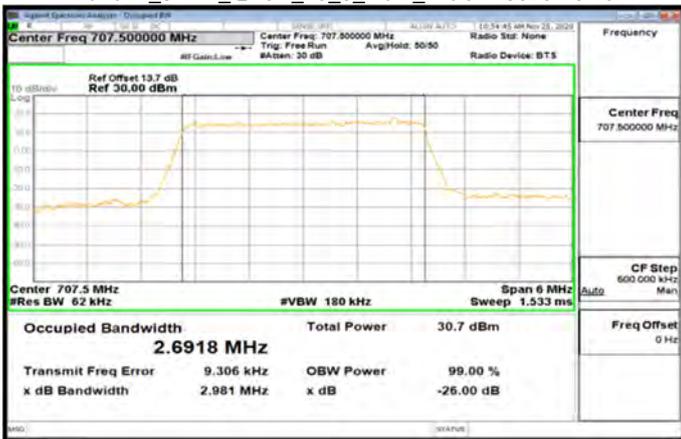
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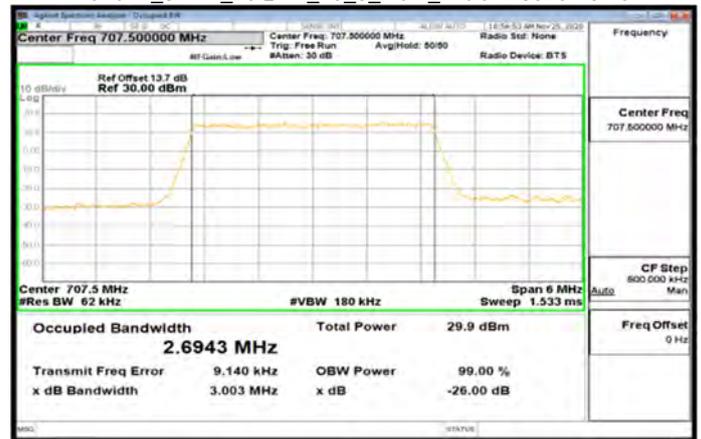
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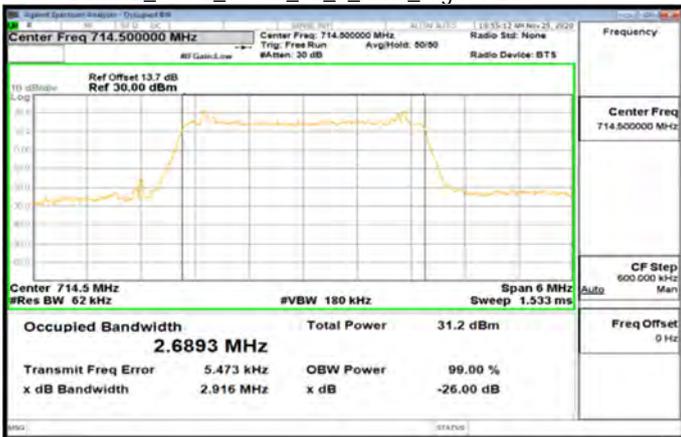
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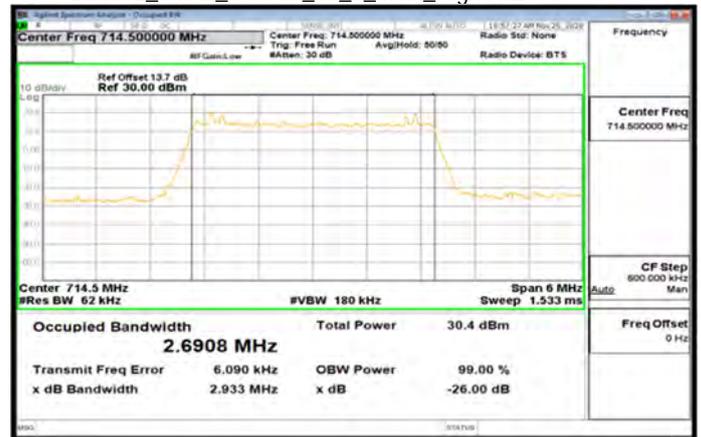
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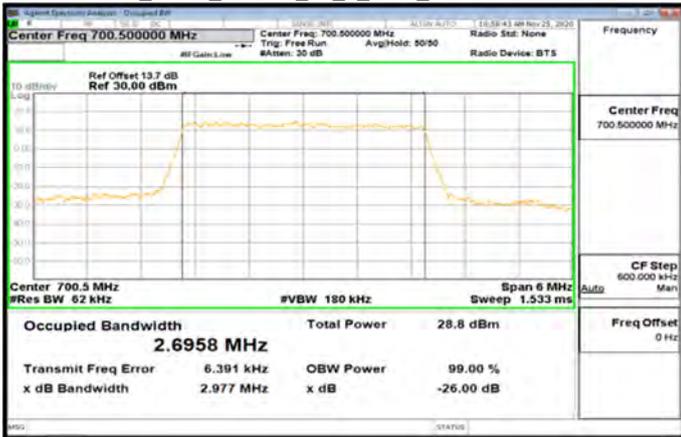


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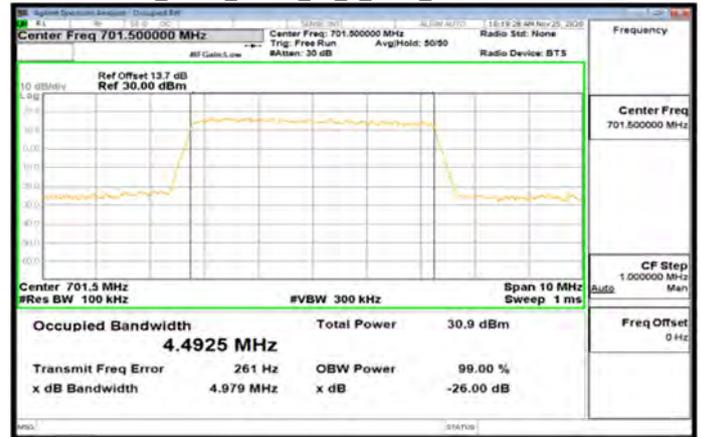
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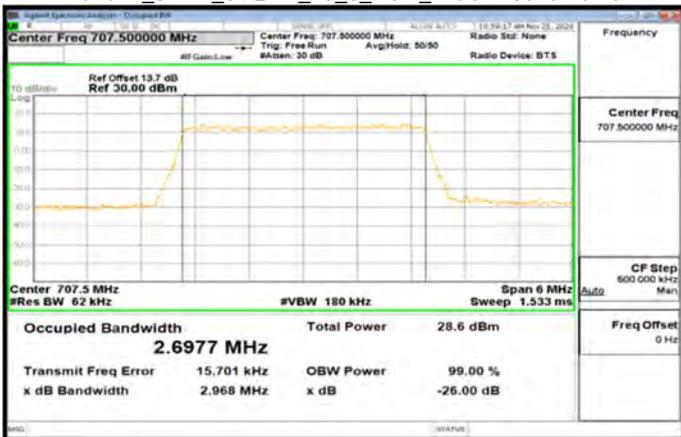
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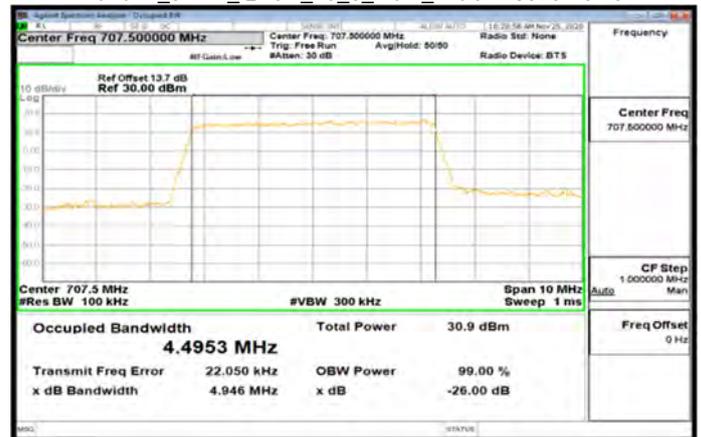
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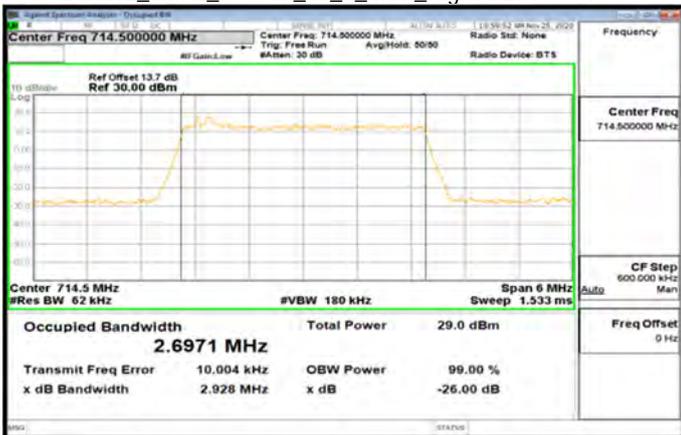
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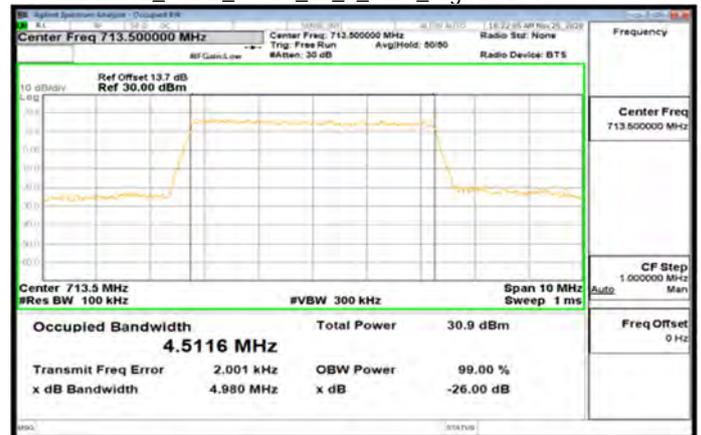
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Band12_5MHz_QPSK_25_0_Main_HighCH23155-713.5

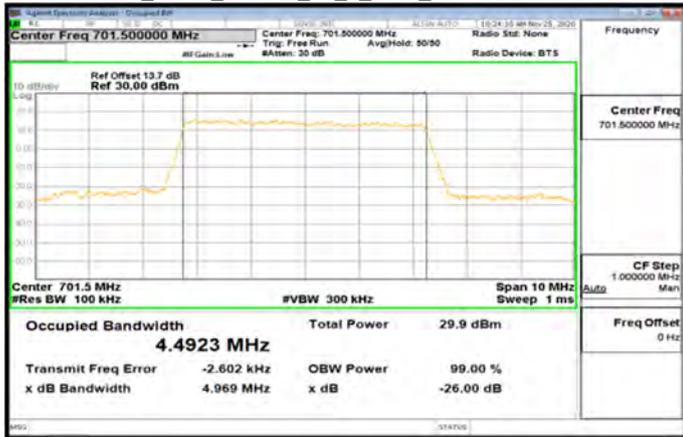


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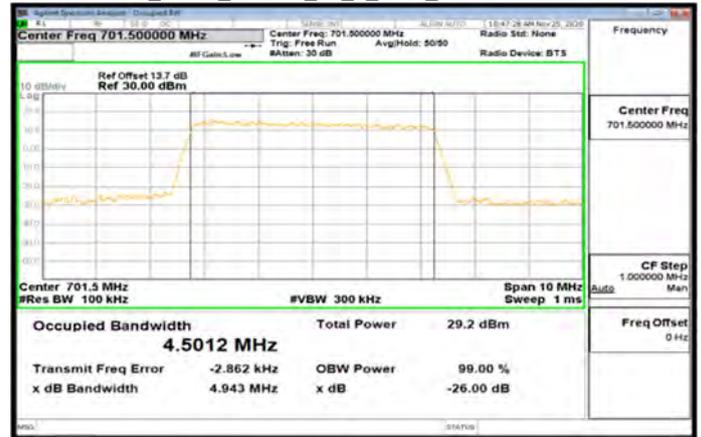
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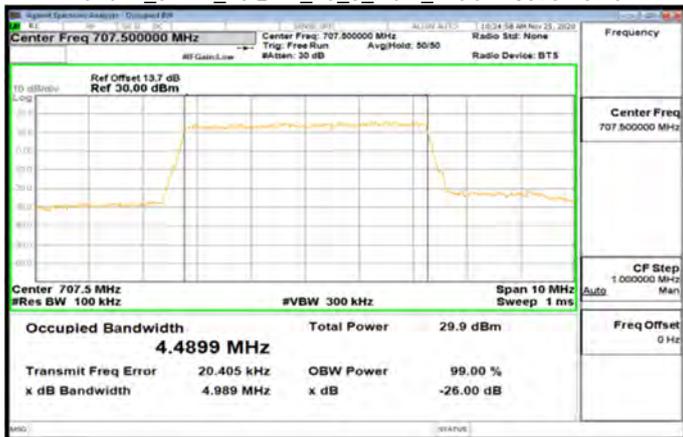
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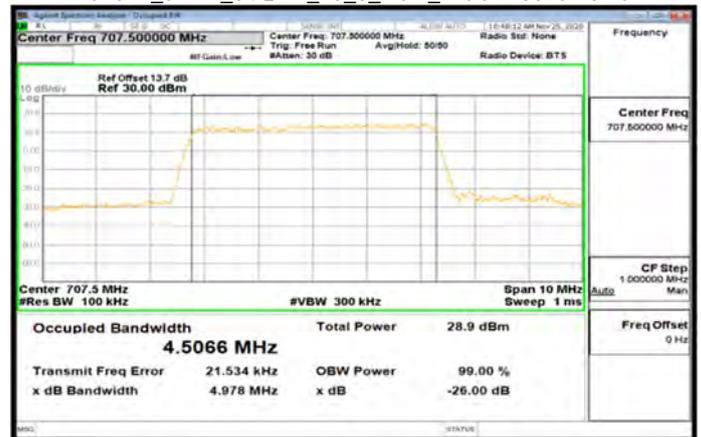
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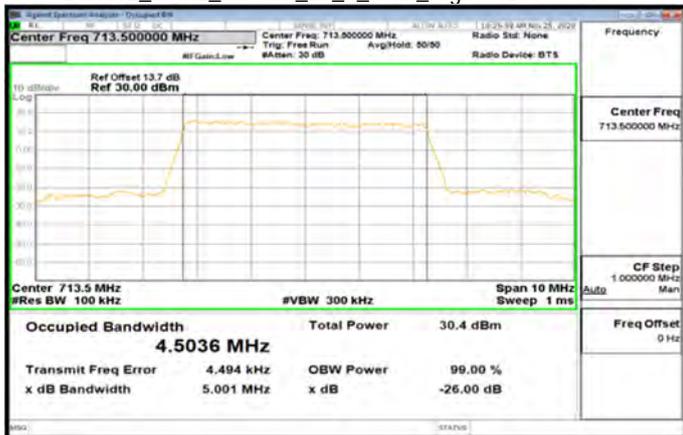
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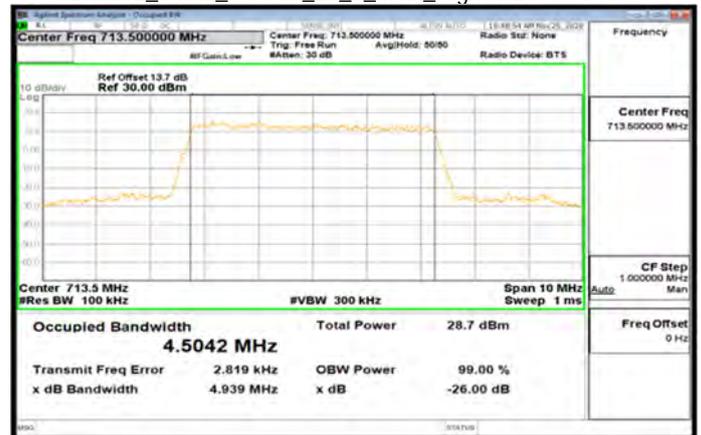
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Band12_5MHz_16QAM_25_0_Main_HighCH23155-713.5



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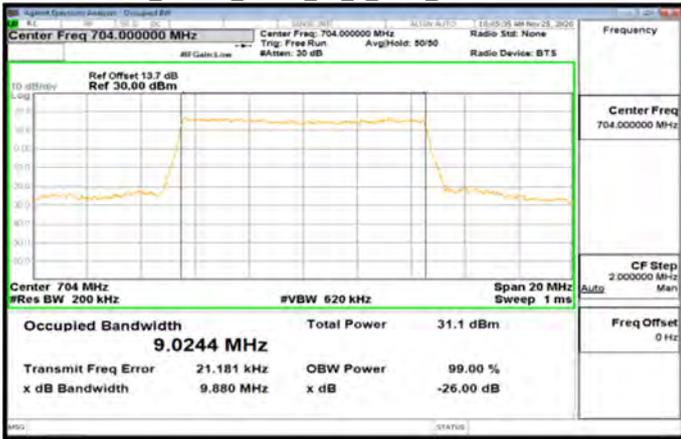


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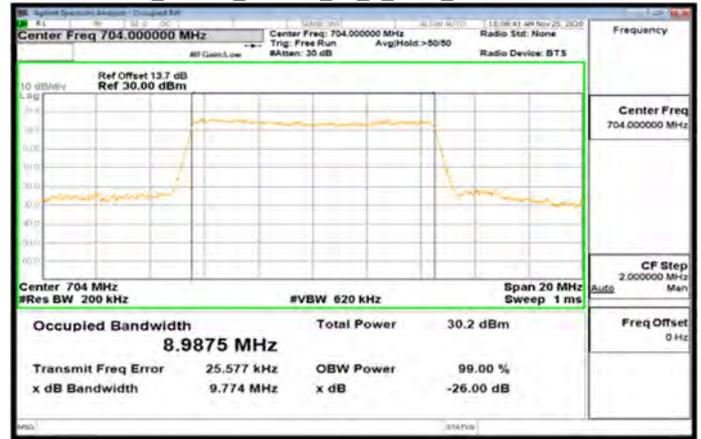
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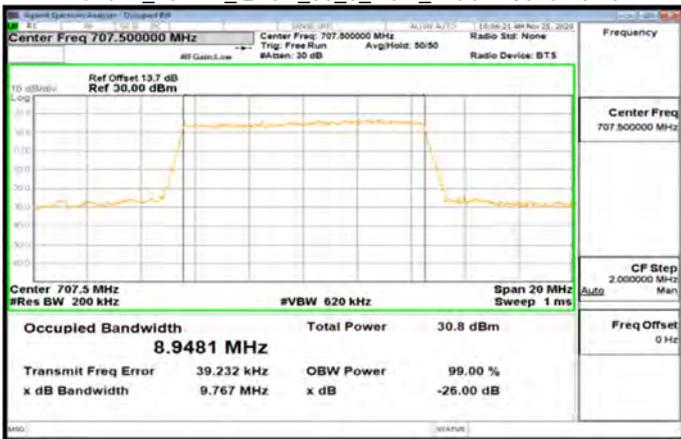
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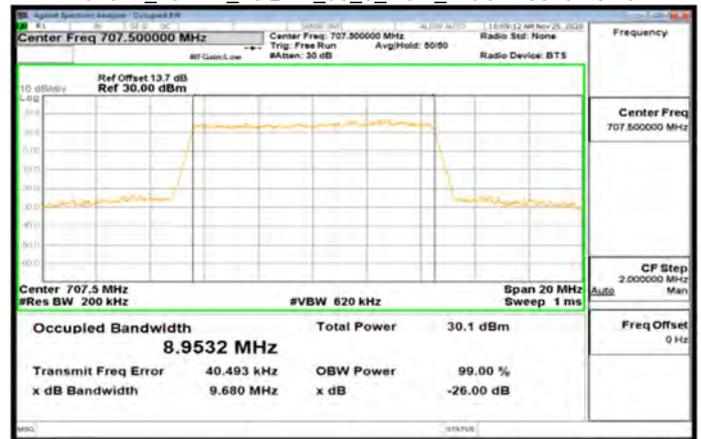
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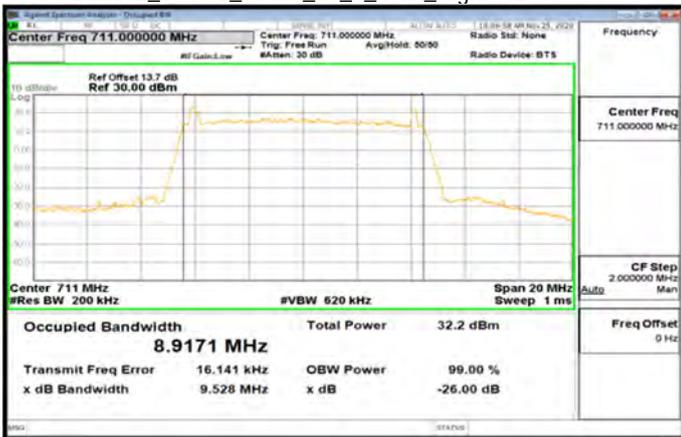
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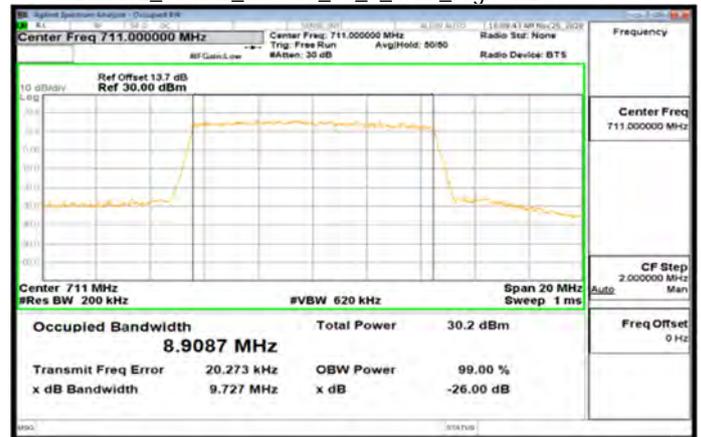
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Band12_10MHz_QPSK_50_0_Main_HighCH23130-711



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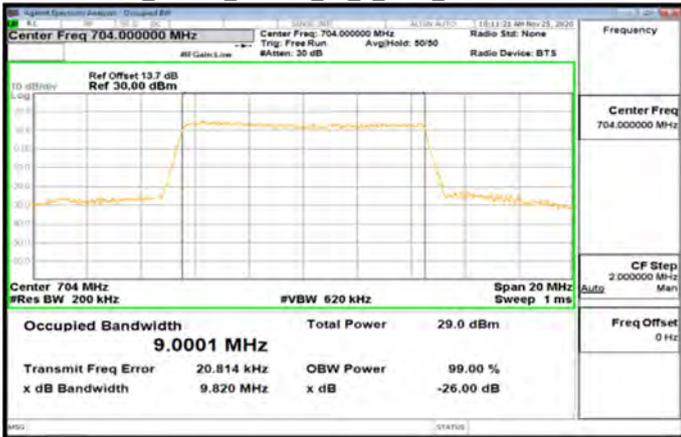


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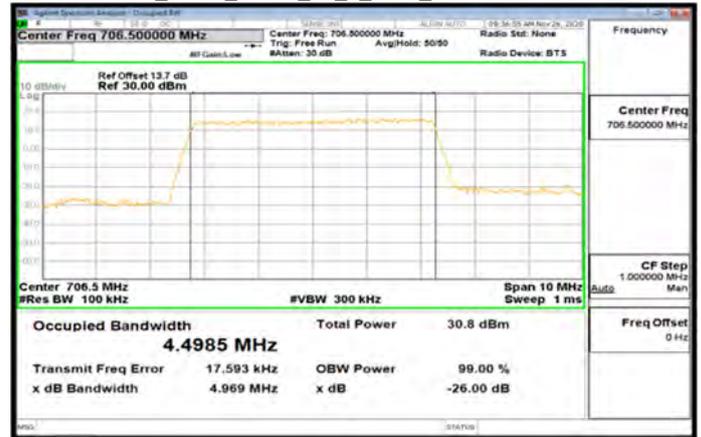
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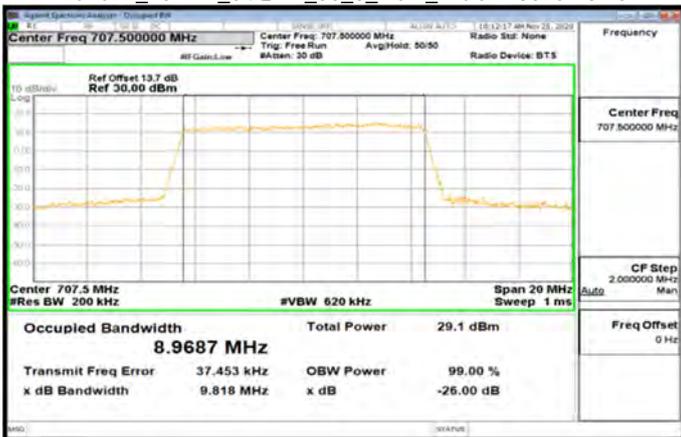
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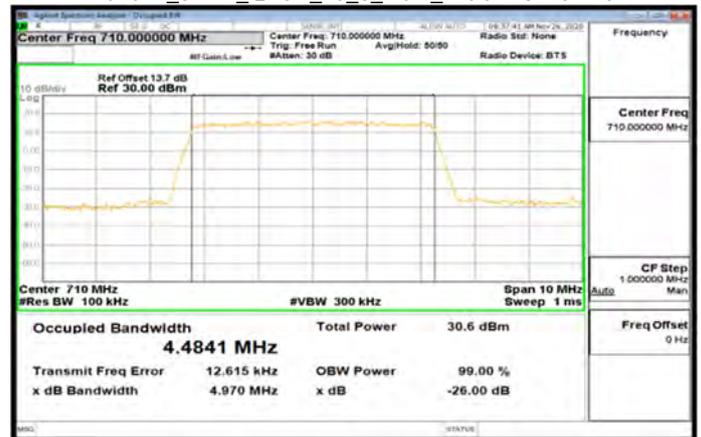
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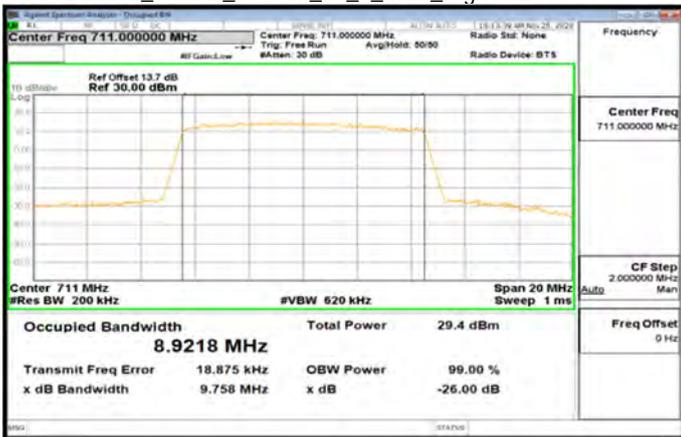
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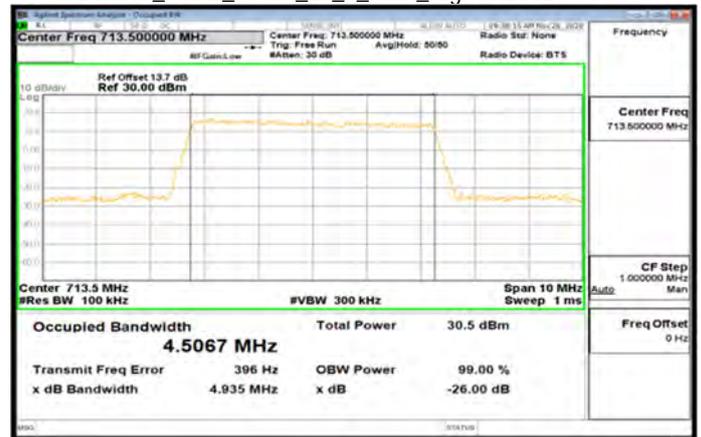
Band17_5MHz_QPSK_25_0_Main_MidCH23790-710



Band12_10MHz_64QAM_50_0_Main_HighCH23130-711



Band17_5MHz_QPSK_25_0_Main_HighCH23825-713.5

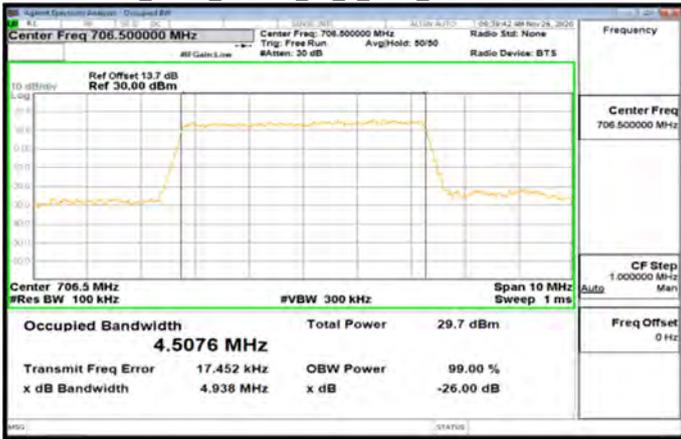


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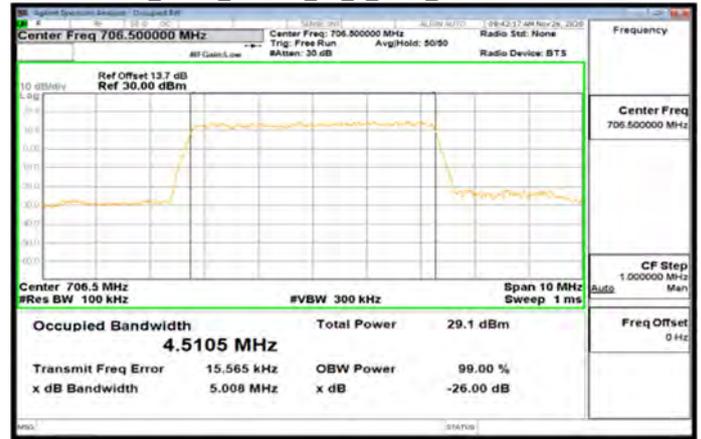
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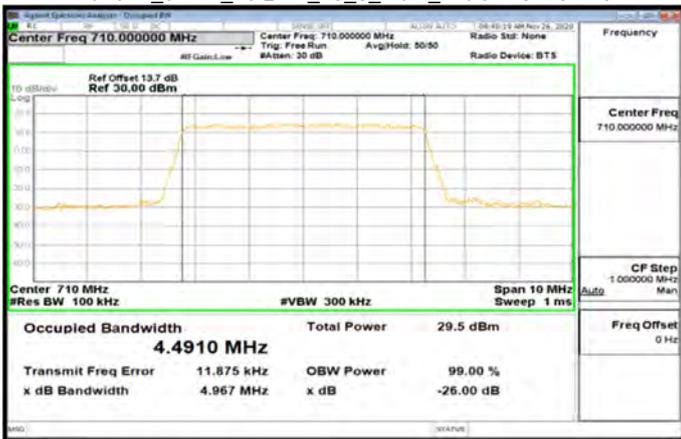
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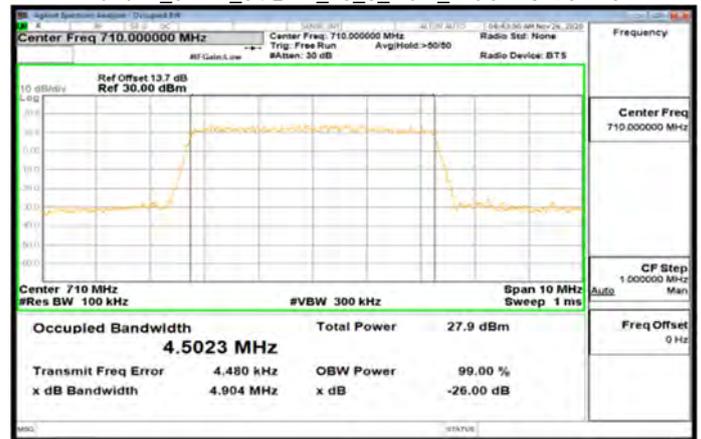
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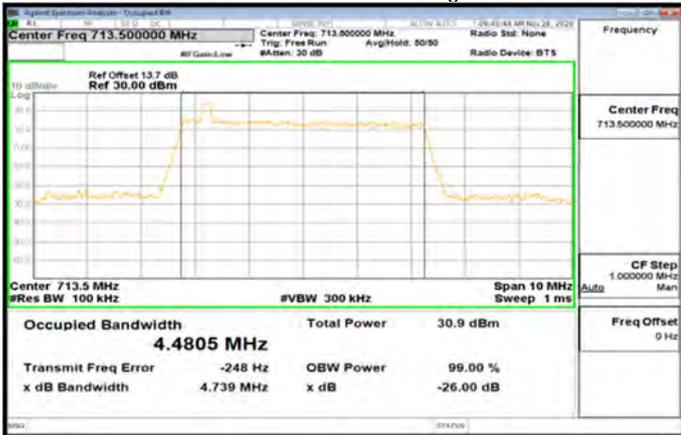
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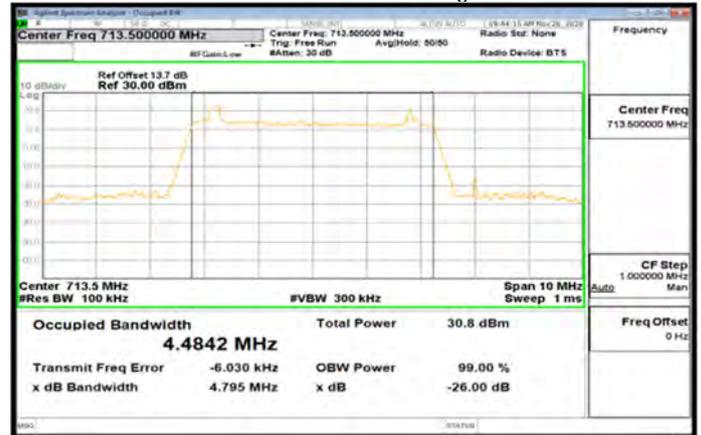
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Band17_5MHz_64QAM_25_0_Main_HighCH23825-713.5

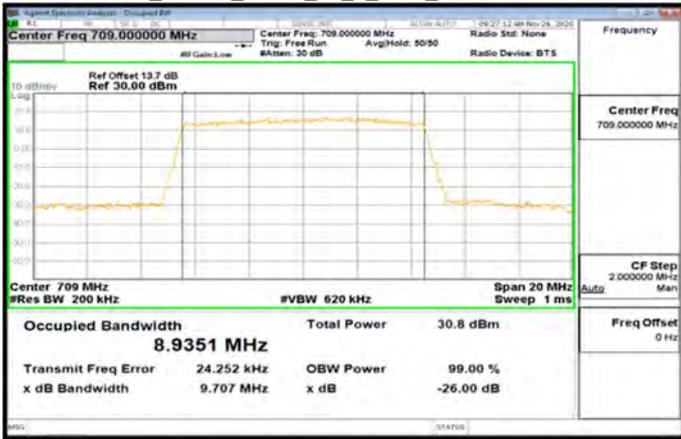


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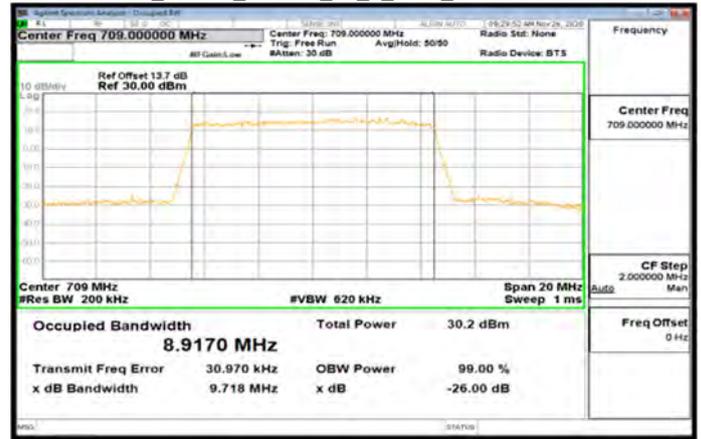
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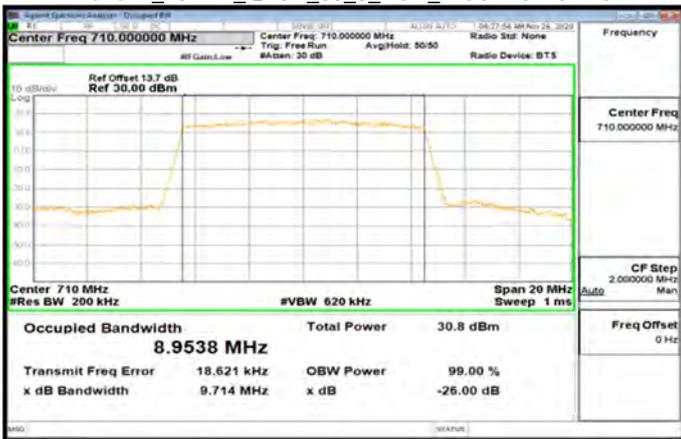
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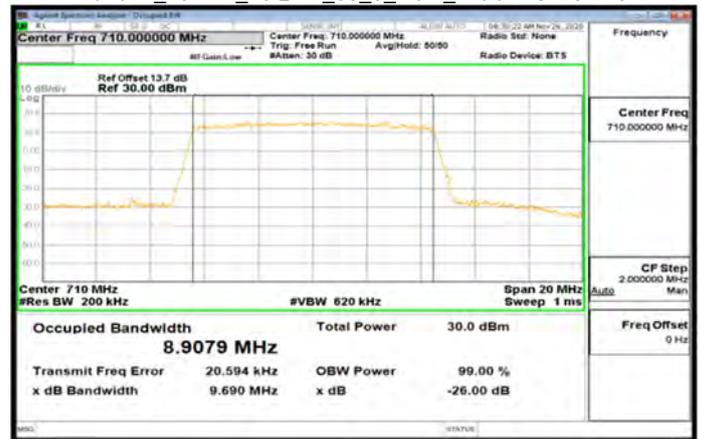
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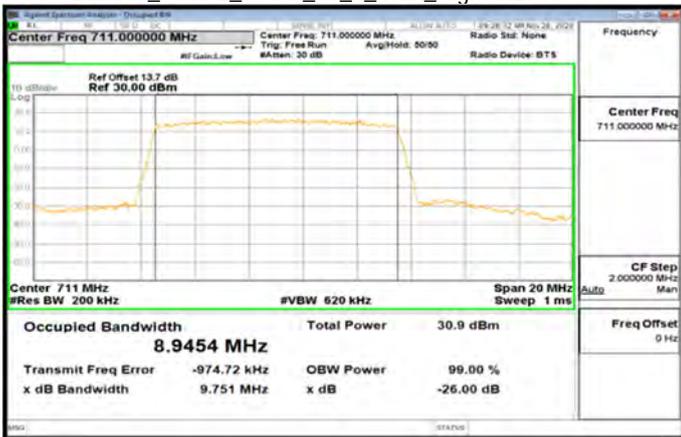
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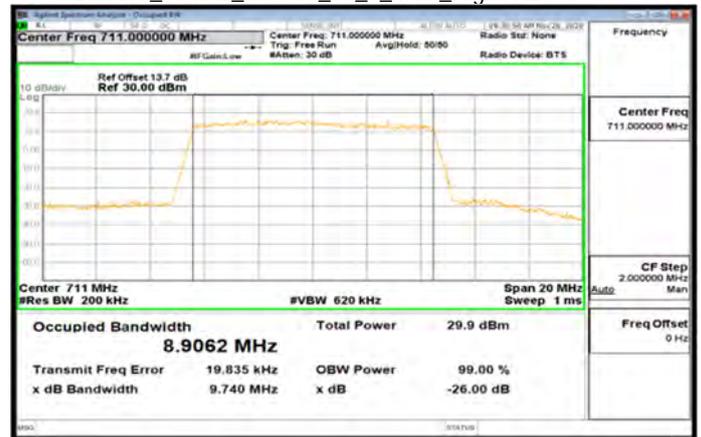
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Band17_10MHz_QPSK_50_0_Main_HighCH23800-711



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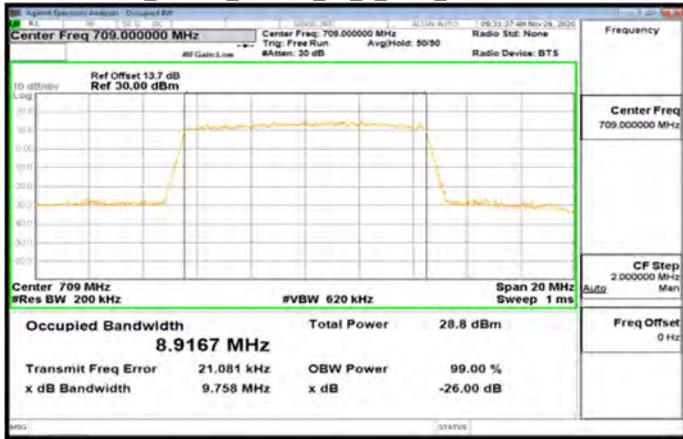


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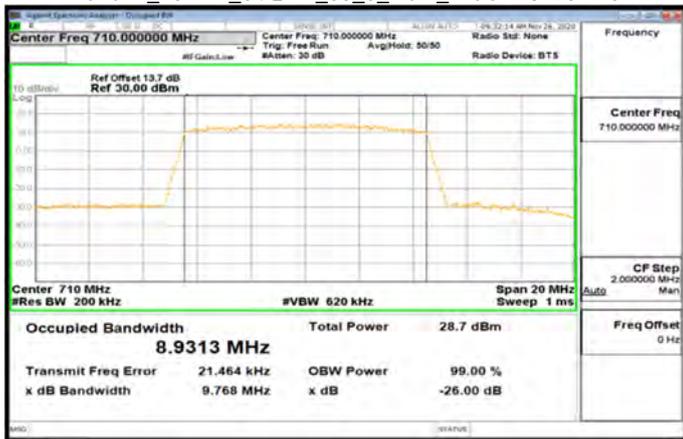
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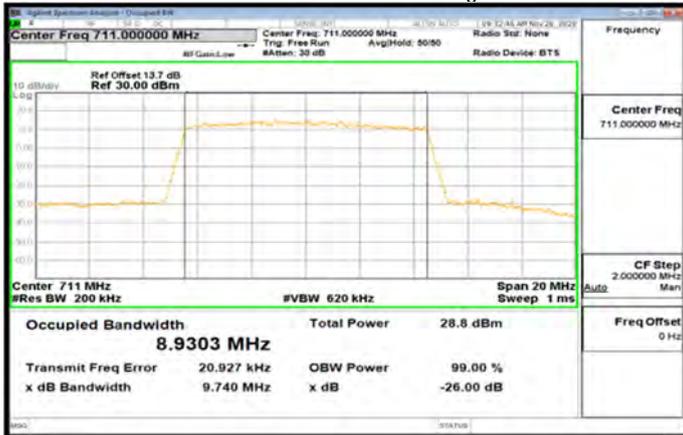
Band17_10MHz_64QAM_50_0_Main_LowCH23780-709



Band17_10MHz_64QAM_50_0_Main_MidCH23790-710



Band17_10MHz_64QAM_50_0_Main_HighCH23800-711



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8 OUT OF BAND EMISSION AT ANTENNA TERMINALS

8.1 Standard Applicable

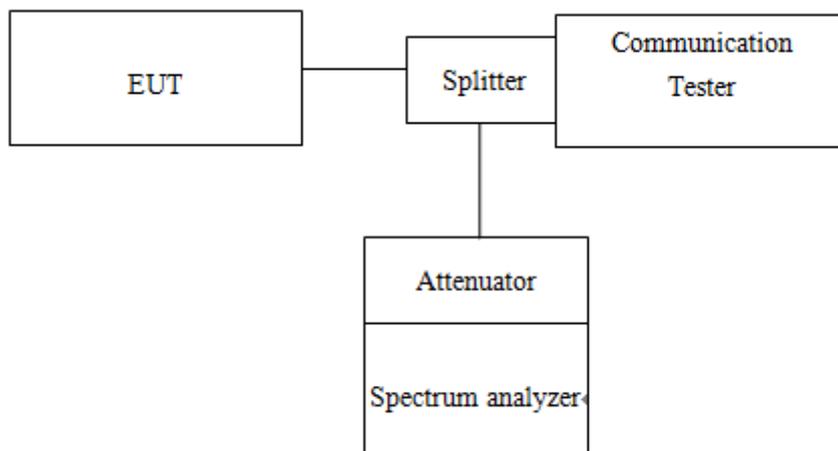
FCC §22.917(a), §24.238(a), §27.53(h)

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(g) for LTE B12

Compliance for operations in the 600 MHz, 698-746 MHz, 746-758 MHz and the 776-788 MHz band 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.

8.2 Test SET-UP



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8.3 Measurement Procedure

8.3.1 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.

8.3.2 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 \geq 1% EBW.
3. Allow trace to fully stabilize
4. Repeat above procedures until all default test channel measured were complete.

8.4 Measurement Equipment Used

Conducted Emission (measured at antenna port) Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EXA Spectrum Analyzer	Agilent	N9010A	MY50420195	05/06/2020	05/05/2021
DC Power Supply	Agilent	E3640A	MY52410006	12/10/2019	12/09/2020
Temperature Chamber	TERCHY	MHG-120LF	911009	05/20/2020	05/19/2021
Radio Communication Analyser	Anritsu	MT8815B	6200711454	04/01/2020	03/31/2021
Radio Communication Analyser	Anritsu	MT8820C	6200995019	04/01/2020	03/31/2021
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2020	01/01/2021
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2020	01/01/2021
Splitter	RF-LAMBAD	RFLT2W1G1 8G	11-JSPF412- 017	01/02/2020	01/01/2021

8.5 Measurement Result:

Refer to next pages.

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Bandedge

GSM/GSM_850MHz_LowCH128-824.2



GPRS/GPRS_850MHz_HighCH251-848.8



GSM/GSM_850MHz_HighCH251-848.8



GSM/GSM_1900MHz_LowCH512-1850.2



GPRS/GPRS_850MHz_LowCH128-824.2



GSM/GSM_1900MHz_HighCH810-1909.8



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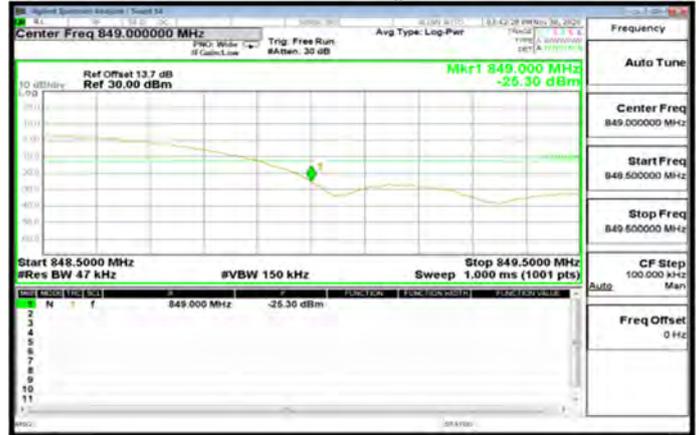
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GPRS/GPRS_1900MHz_LowCH512-1850.2



WCDMA/WCDMA_B5_HighCH4233-846.6



GPRS/GPRS_1900MHz_HighCH810-1909.8



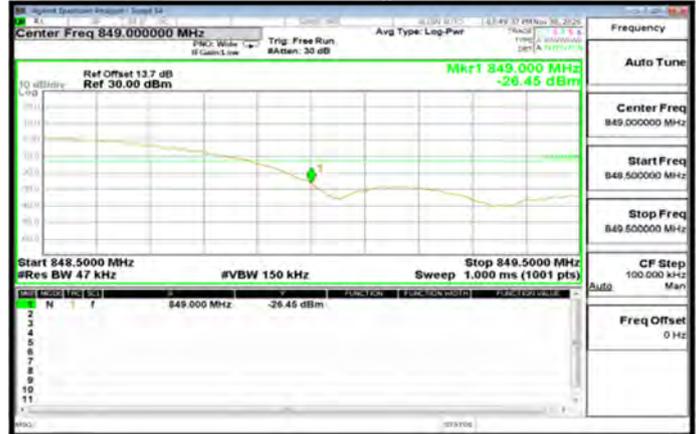
HSDPA/HSDPA_B5_LowCH4132-826.4



WCDMA/WCDMA_B5_LowCH4132-826.4



HSDPA/HSDPA_B5_HighCH4233-846.6

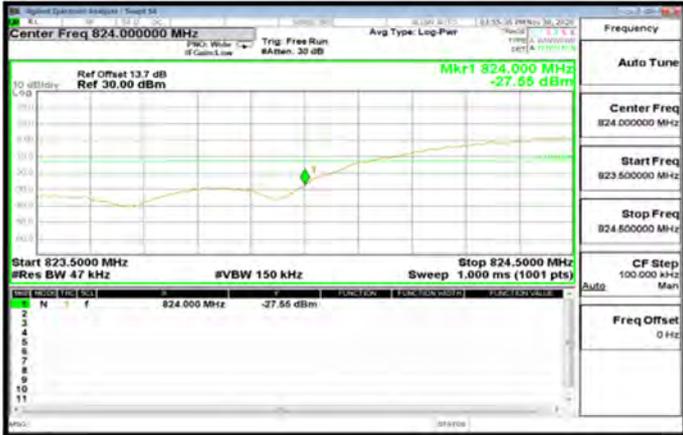


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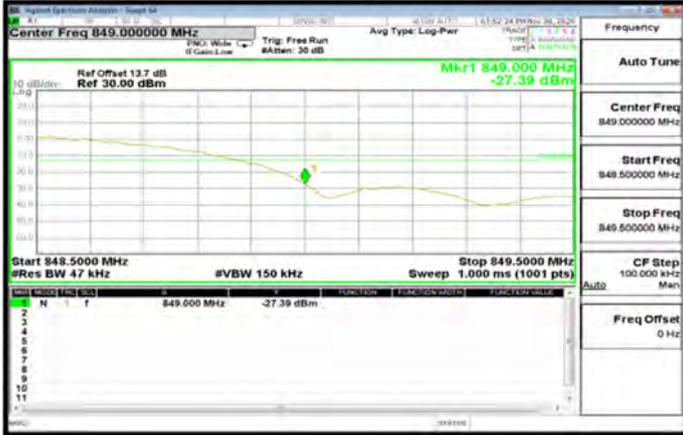
HSUPA\HSUPA_B5_LowCH4132-826.4



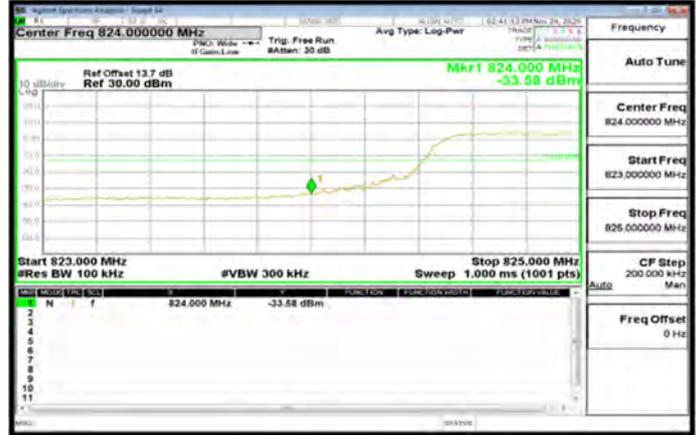
LTE\Band5_10MHz_QPSK_1_49_HighCH20600-844



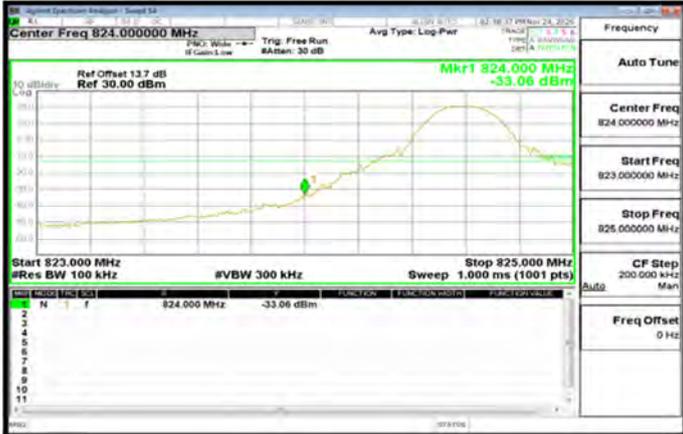
HSUPA\HSUPA_B5_HighCH4233-846.6



LTE\Band5_10MHz_QPSK_50_0_LowCH20450-829



LTE\Band5_10MHz_QPSK_1_0_LowCH20450-829



LTE\Band5_10MHz_QPSK_50_0_HighCH20600-844



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LTE\Band12_10MHz_QPSK_1_0_LowCH23060-704



LTE\Band12_10MHz_QPSK_50_0_HighCH23130-711



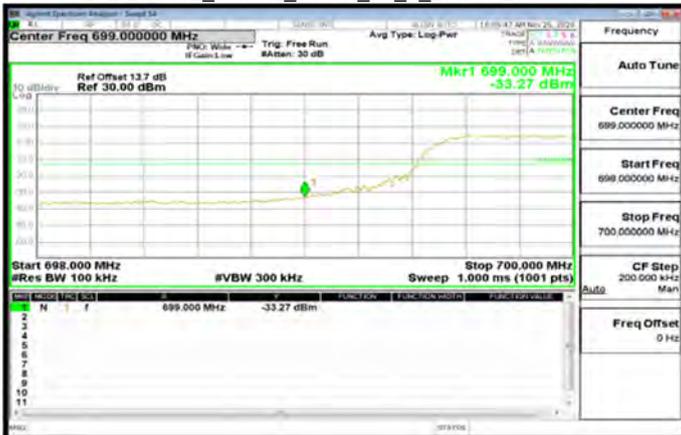
LTE\Band12_10MHz_QPSK_1_49_HighCH23130-711



LTE\Band17_10MHz_QPSK_1_0_LowCH23780-709



LTE\Band12_10MHz_QPSK_50_0_LowCH23060-704



LTE\Band17_10MHz_QPSK_1_49_HighCH23800-711



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LTE\Band17_10MHz_QPSK_50_0_LowCH23780-709



LTE\Band17_10MHz_QPSK_50_0_HighCH23800-711



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Supurious Emission

30MHz~3GHz_GSM_850MHz_LowCH128-824.2



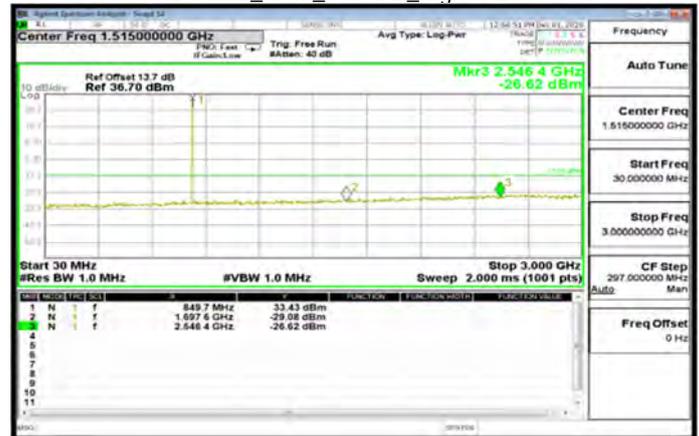
3GHz~10GHz_GSM_850MHz_MidCH190-836.6



3GHz~10GHz_GSM_850MHz_LowCH128-824.2



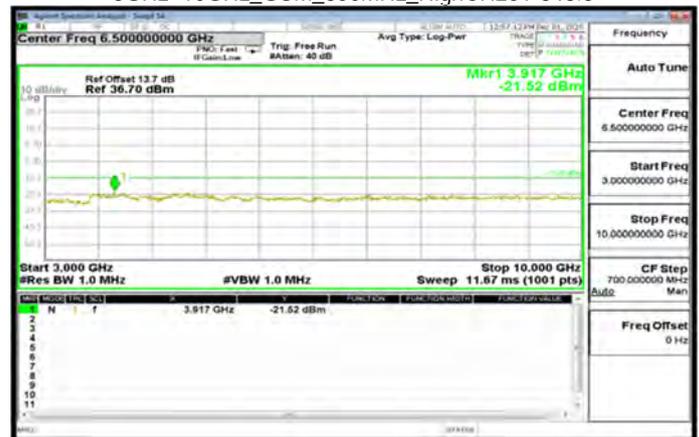
30MHz~3GHz_GSM_850MHz_HighCH251-848.8



30MHz~3GHz_GSM_850MHz_MidCH190-836.6



3GHz~10GHz_GSM_850MHz_HighCH251-848.8



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30MHz~3GHz_GPRS_850MHz_LowCH128-824.2



3GHz~10GHz_GPRS_850MHz_MidCH190-836.6



3GHz~10GHz_GPRS_850MHz_LowCH128-824.2



30MHz~3GHz_GPRS_850MHz_HighCH251-848.8



30MHz~3GHz_GPRS_850MHz_MidCH190-836.6



3GHz~10GHz_GPRS_850MHz_HighCH251-848.8

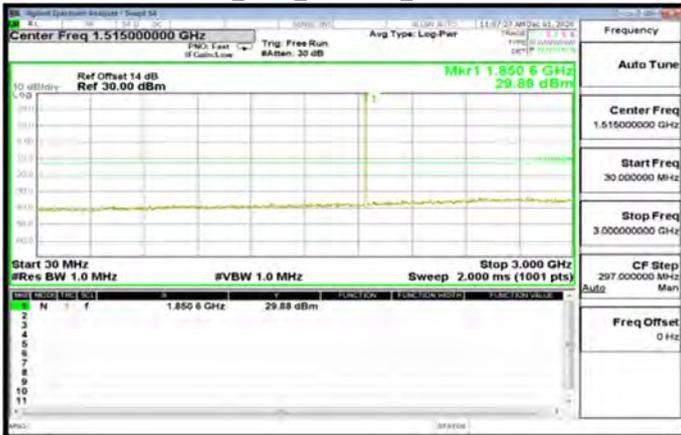


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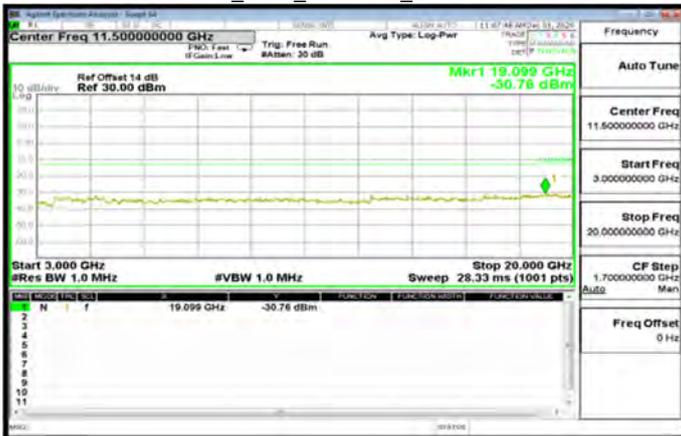
30MHz~3GHz_GSM_1900MHz_LowCH512-1850.2



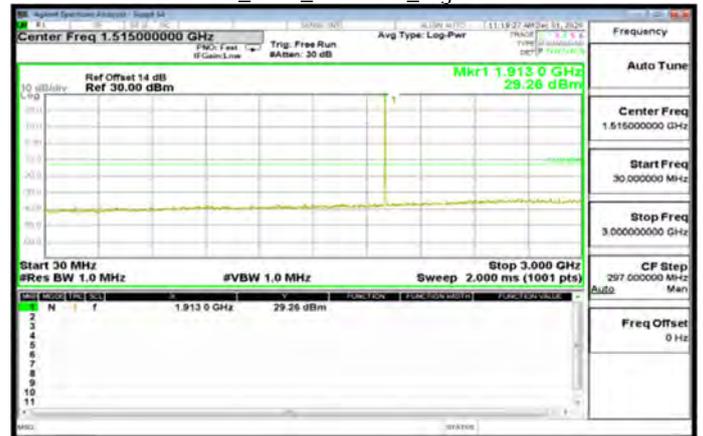
3GHz~10GHz_GSM_1900MHz_MidCH661-1880



3GHz~10GHz_GSM_1900MHz_LowCH512-1850.2



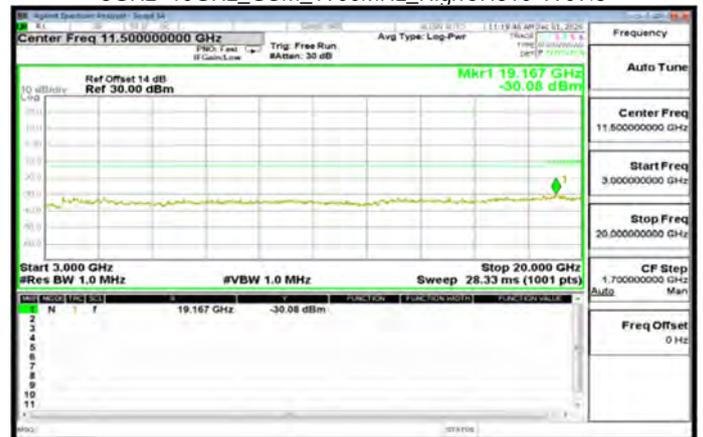
30MHz~3GHz_GSM_1900MHz_HighCH810-1909.8



30MHz~3GHz_GSM_1900MHz_MidCH661-1880



3GHz~10GHz_GSM_1900MHz_HighCH810-1909.8



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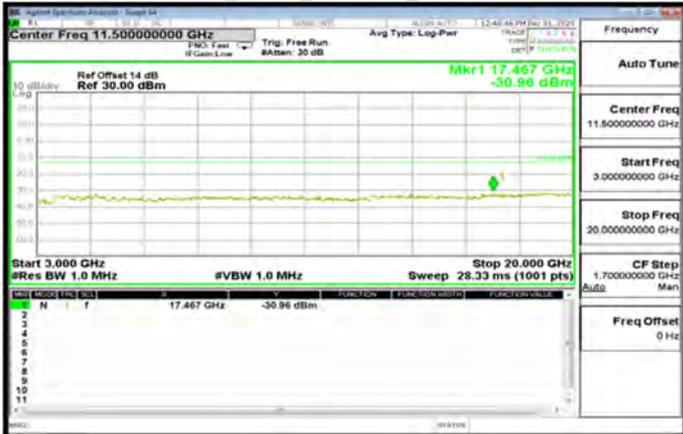
30MHz~3GHz_GPRS_1900MHz_LowCH512-1850.2



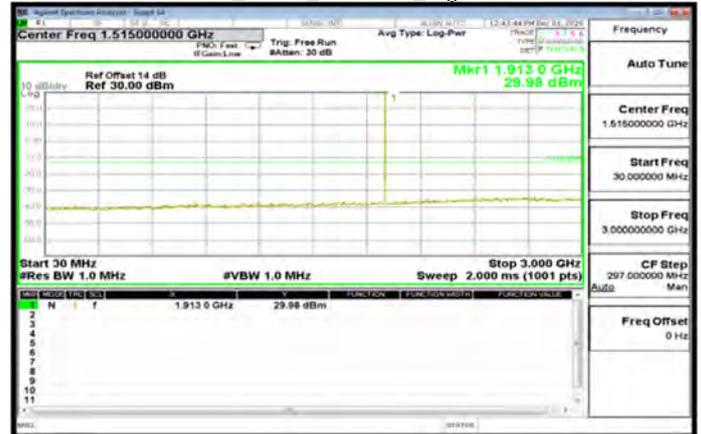
3GHz~10GHz_GPRS_1900MHz_MidCH661-1880



3GHz~10GHz_GPRS_1900MHz_LowCH512-1850.2



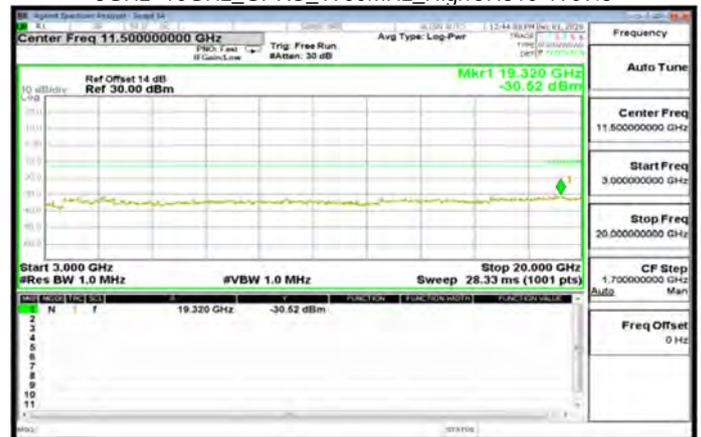
30MHz~3GHz_GPRS_1900MHz_HighCH810-1909.8



30MHz~3GHz_GPRS_1900MHz_MidCH661-1880



3GHz~10GHz_GPRS_1900MHz_HighCH810-1909.8



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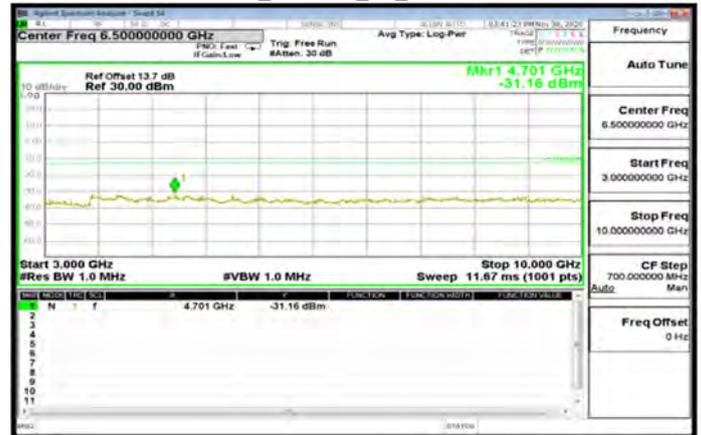
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30MHz~3GHz_WCDMA_B5_LowCH4132-826.4



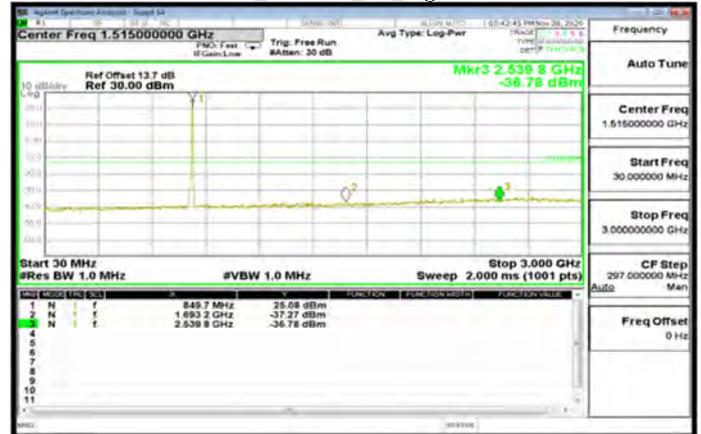
3GHz~10GHz_WCDMA_B5_MidCH4183-836.6



3GHz~10GHz_WCDMA_B5_LowCH4132-826.4



30MHz~3GHz_WCDMA_B5_HighCH4233-846.6



30MHz~3GHz_WCDMA_B5_MidCH4183-836.6



3GHz~10GHz_WCDMA_B5_HighCH4233-846.6



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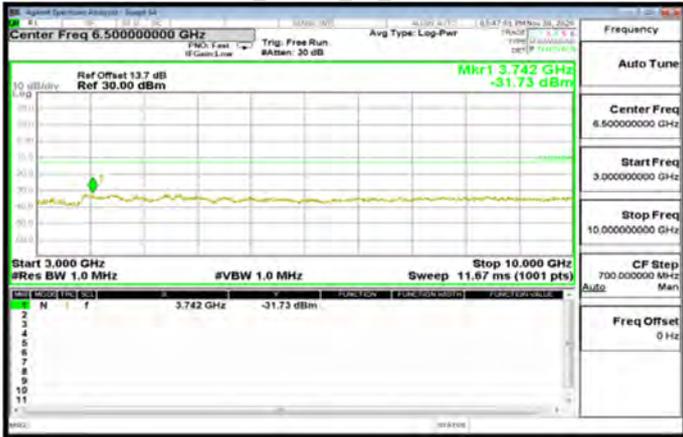
30MHz-3GHz_HSDPA_B5_LowCH4132-826.4



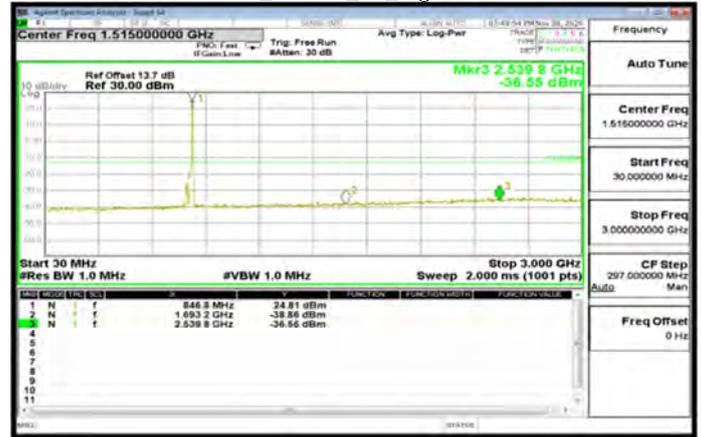
3GHz-10GHz_HSDPA_B5_MidCH4183-836.6



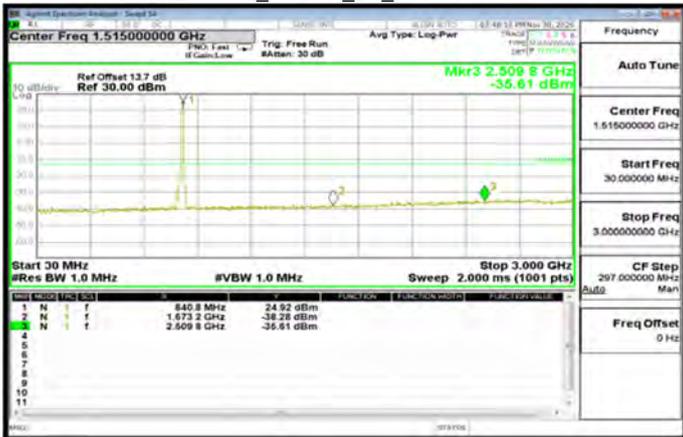
3GHz-10GHz_HSDPA_B5_LowCH4132-826.4



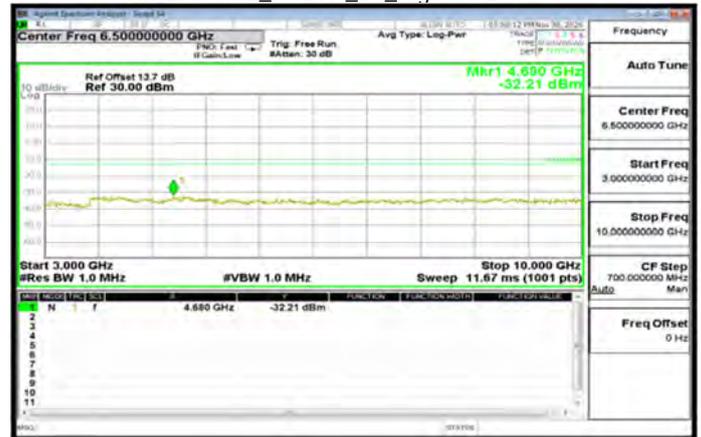
30MHz-3GHz_HSDPA_B5_HighCH4233-846.6



30MHz-3GHz_HSDPA_B5_MidCH4183-836.6



3GHz-10GHz_HSDPA_B5_HighCH4233-846.6



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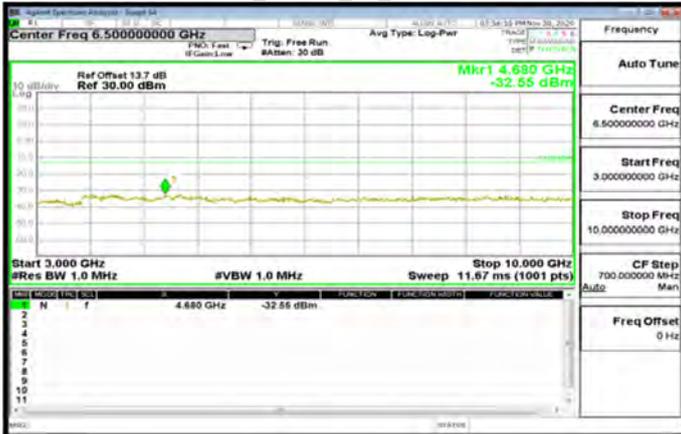
30MHz-3GHz_HSUPA_B5_LowCH4132-826.4



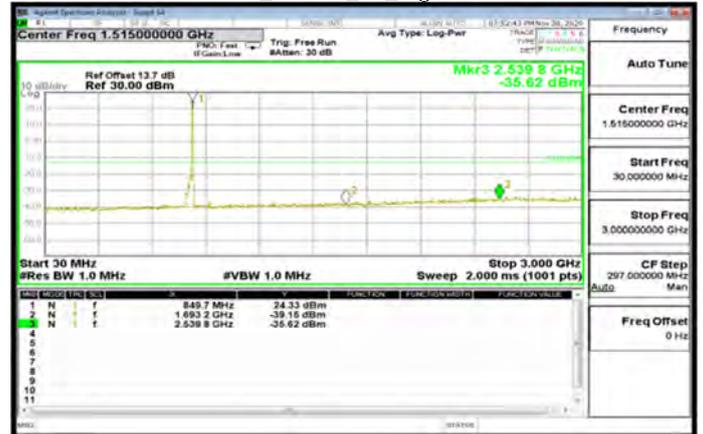
3GHz-10GHz_HSUPA_B5_MidCH4183-836.6



3GHz-10GHz_HSUPA_B5_LowCH4132-826.4



30MHz-3GHz_HSUPA_B5_HighCH4233-846.6



30MHz-3GHz_HSUPA_B5_MidCH4183-836.6



3GHz-10GHz_HSUPA_B5_HighCH4233-846.6



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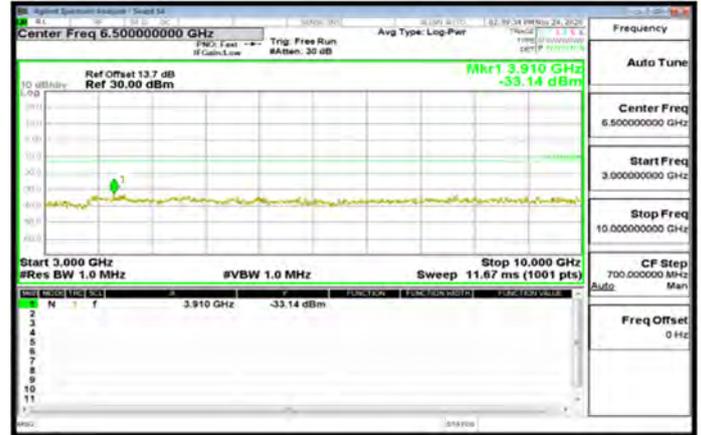
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30MHz-3GHz_Band5_10MHz_QPSK_1_0_LowCH20450-829



3GHz-10GHz_Band5_10MHz_QPSK_1_0_MidCH20525-836.5



3GHz-10GHz_Band5_10MHz_QPSK_1_0_LowCH20450-829



30MHz-3GHz_Band5_10MHz_QPSK_1_0_HighCH20600-844



30MHz-3GHz_Band5_10MHz_QPSK_1_0_MidCH20525-836.5



3GHz-10GHz_Band5_10MHz_QPSK_1_0_HighCH20600-844

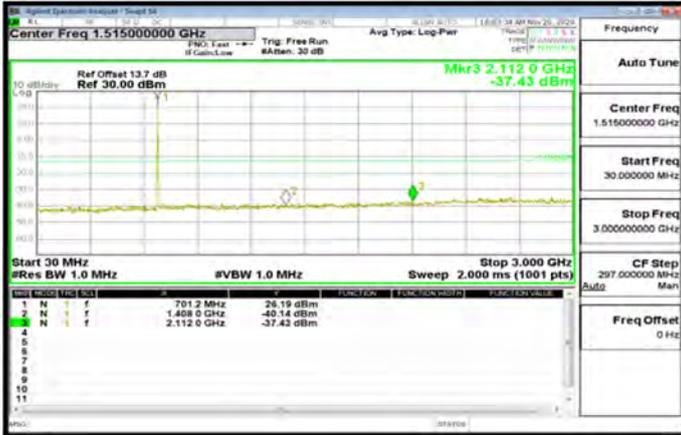


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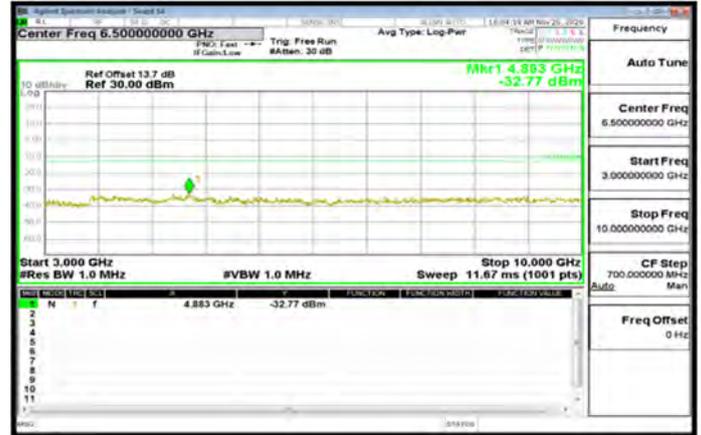
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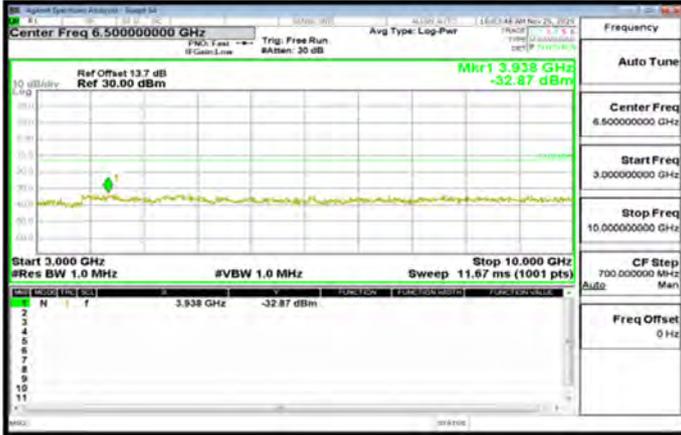
30MHz-3GHz_Band12_10MHz_QPSK_1_0_LowCH23060-704



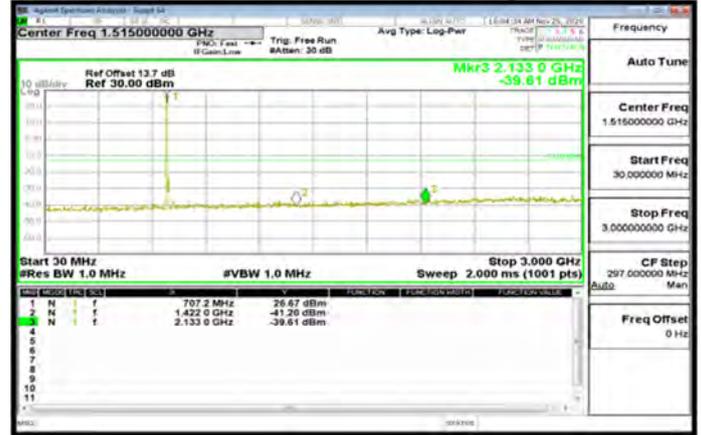
3GHz-10GHz_Band12_10MHz_QPSK_1_0_MidCH23095-707.5



3GHz-10GHz_Band12_10MHz_QPSK_1_0_LowCH23060-704



30MHz-3GHz_Band12_10MHz_QPSK_1_0_HighCH23130-711



30MHz-3GHz_Band12_10MHz_QPSK_1_0_MidCH23095-707.5



3GHz-10GHz_Band12_10MHz_QPSK_1_0_HighCH23130-711



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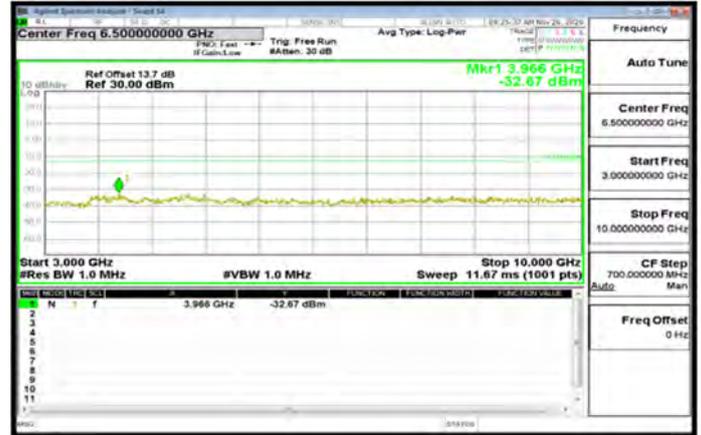
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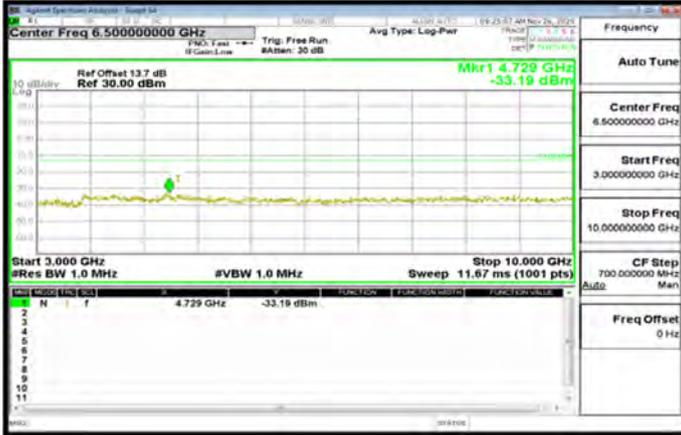
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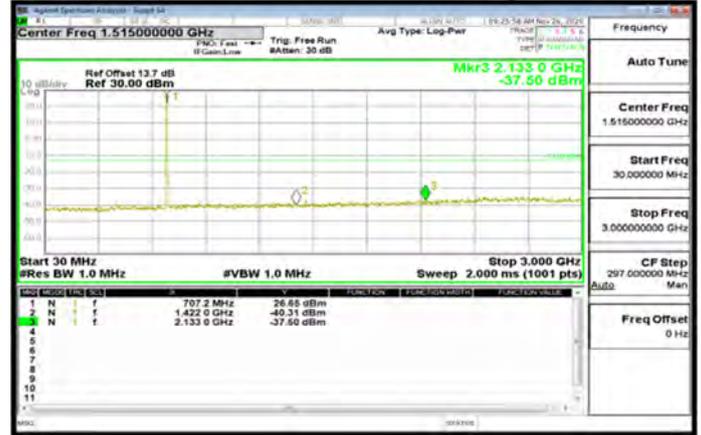
3GHz-10GHz_Band17_10MHz_QPSK_1_0_MidCH23790-710



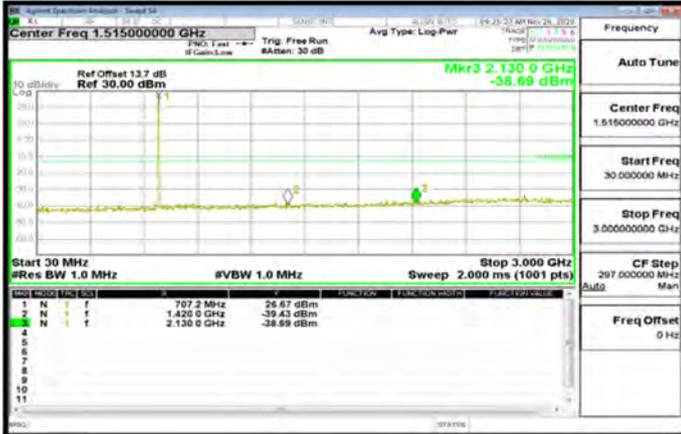
3GHz-10GHz_Band17_10MHz_QPSK_1_0_LowCH23780-709



30MHz-3GHz_Band17_10MHz_QPSK_1_0_HighCH23800-711



30MHz-3GHz_Band17_10MHz_QPSK_1_0_MidCH23790-710



3GHz-10GHz_Band17_10MHz_QPSK_1_0_HighCH23800-711



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9 FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

9.1 Standard Applicable

According to FCC §2.1053,
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(g) for LTE B12

Compliance for operations in the 600 MHz, 698-746 MHz, 746-758 MHz and the 776-788 MHz band 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.

Table 2 — Unwanted Emissions for Mobile, Portable and Low-Power Fixed Subscriber Equipment

Frequency (MHz)	Attenuation (dB)
<2200	$43 + 10 \log_{10}(p)$
2200 - 2288	$70 + 10 \log_{10}(p)$
2288 - 2292	$67 + 10 \log_{10}(p)$
2292 - 2296	$61 + 10 \log_{10}(p)$
2296 - 2300	$55 + 10 \log_{10}(p)$
2300 - 2305	$43 + 10 \log_{10}(p)$
2305 - 2320	$43 + 10 \log_{10}(p)$ ^{Note}
2320 - 2324	$55 + 10 \log_{10}(p)$
2324 - 2328	$61 + 10 \log_{10}(p)$
2328 - 2337	$67 + 10 \log_{10}(p)$
2337 - 2341	$61 + 10 \log_{10}(p)$
2341 - 2345	$55 + 10 \log_{10}(p)$
2345 - 2360	$43 + 10 \log_{10}(p)$ ^{Note}
2360 - 2365	$43 + 10 \log_{10}(p)$
2365 - 2395	$70 + 10 \log_{10}(p)$
>2395	$43 + 10 \log_{10}(p)$

Note: Measured at the edges of the highest and lowest frequency range(s) in which the equipment is designed to operate. See Section 1.2 for the permitted frequency ranges for various equipment types.

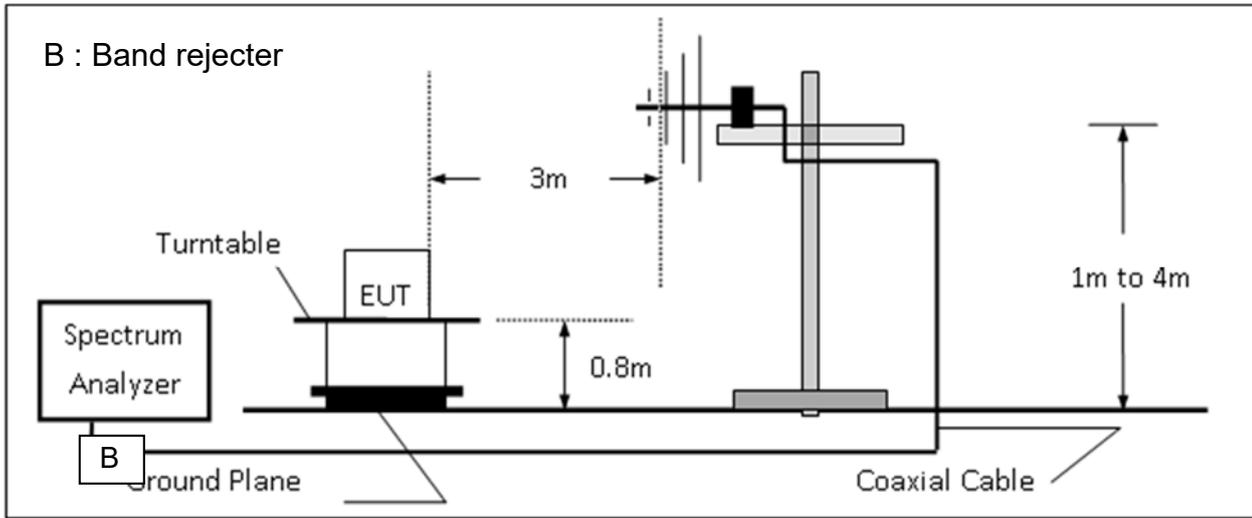
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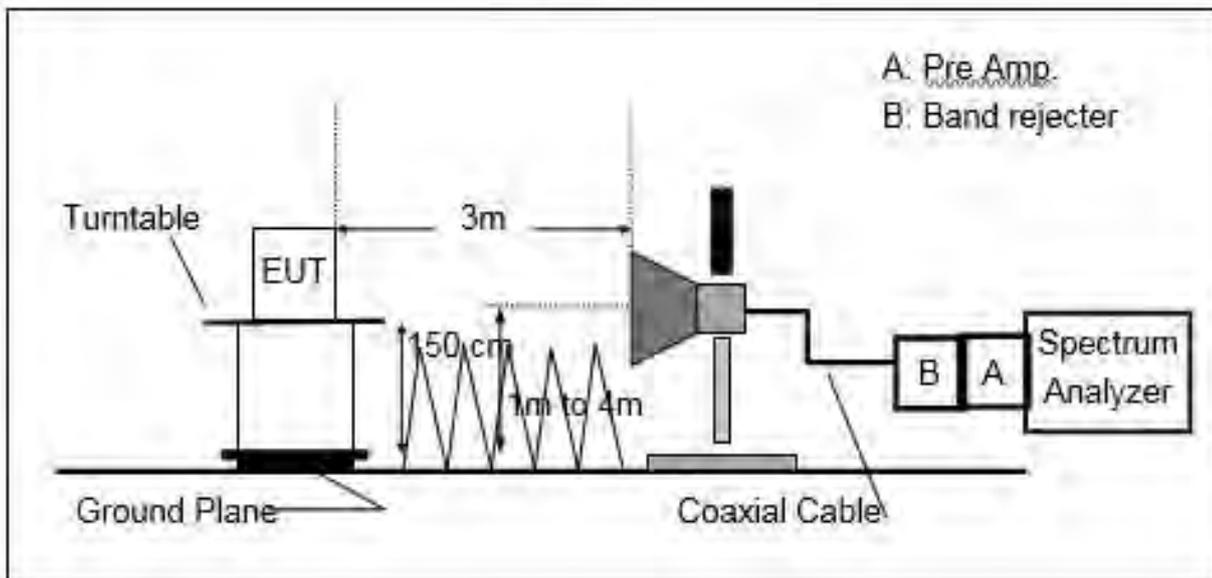
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9.2 EUT Setup

Radiated Emission Test Set-Up, Frequency Below 1000MHz



Radiated Emission Test Set-UP Frequency Over 1 GHz



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9.3 Measurement Procedure:

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

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

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

$$\text{ERP (dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

$$\text{EIRP (dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBi)} + \text{Cable Loss(dB)}$$

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9.4 Measurement Equipment Used:

ERP, EIRP MEASUREMENT EQUIPMENT List 966 Chamber					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Horn Antenna	Schwarzbeck	BBHA9120D	1441	10/16/2020	10/15/2021
Horn Antenna	Schwarzbeck	BBHA9170	184	12/25/2019	12/24/2020
Bi-log Antenna	TESEO	CBL 6112D	35242 & AT-N0555	01/13/2020	01/12/2021
Loop Antenna	ETS.LINDGREN	6502	148045	10/19/2020	10/18/2021
Spectrum Analyzer	Agilent	E4446A	MY51100003	10/29/2020	10/28/2021
Radio Communication Analyer	Anritsu	MT8815B	6200711454	04/01/2020	03/31/2021
EMI Test Receiver	R&S	ESCI 7	100759	07/13/2020	07/12/2021
Pre-Amplifier	EMC Instruments	EMC051825	980152	01/02/2020	01/01/2021
Pre-Amplifier	HP	8447D	2944A09469	01/02/2020	01/01/2021
Filter 800-1000	Micro-Tronics	EWT	M1	01/02/2020	01/01/2021
Filter 1700-2000	Micro-Tronics	EWT	M3	01/02/2020	01/01/2021
1GHz High Pass Filter	Micro-Tronics	HPM50108	32	01/02/2020	01/01/2021
2GHz High Pass Filter	Micro-Tronics	HPM50110	36	01/02/2020	01/01/2021
Coaxial Cable	Huber Suhner	succoflex 102	MY2622/2	01/02/2020	01/01/2021
Coaxial Cable	Huber Suhner	succoflex 104A	800086/4a	01/02/2020	01/01/2021
Coaxial Cable	Huber Suhner	EMC 104-SM-SM-2000	160123	01/02/2020	01/01/2021

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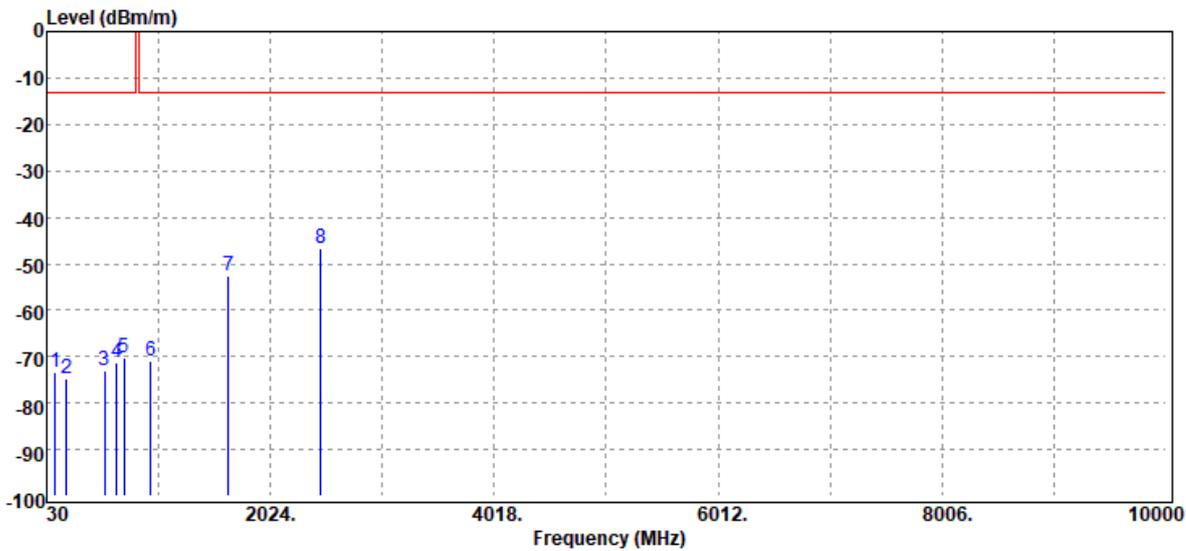
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9.5 Measurement Result:

Radiated Spurious Emission Measurement Result: GSM 850 Mode

Report Number	:ER/2020/B0089	Test Site	:SAC I Chamber
Operation Mode	:GSM 850	Test Date	:2020-12-05
Test Mode	:Tx CH Low	Temp./Humi.	:23.3/61
EUT Pol	:H Plane	Antenna Pol.	:VERTICAL
Test Frequency	:824.2 MHz	Engineer	:Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
104.69	-73.28	-65.64	-6.67	-0.97	-13.00	-60.28
204.60	-74.63	-71.36	-1.92	-1.35	-13.00	-61.63
548.95	-73.16	-69.77	-1.22	-2.17	-13.00	-60.16
655.65	-71.43	-67.52	-1.31	-2.60	-13.00	-58.43
716.76	-70.19	-66.32	-1.28	-2.59	-13.00	-57.19
953.44	-70.89	-66.19	-1.84	-2.86	-13.00	-57.89
1648.40	-52.56	-58.49	9.79	-3.86	-13.00	-39.56
2472.60	-46.56	-52.57	10.78	-4.77	-13.00	-33.56

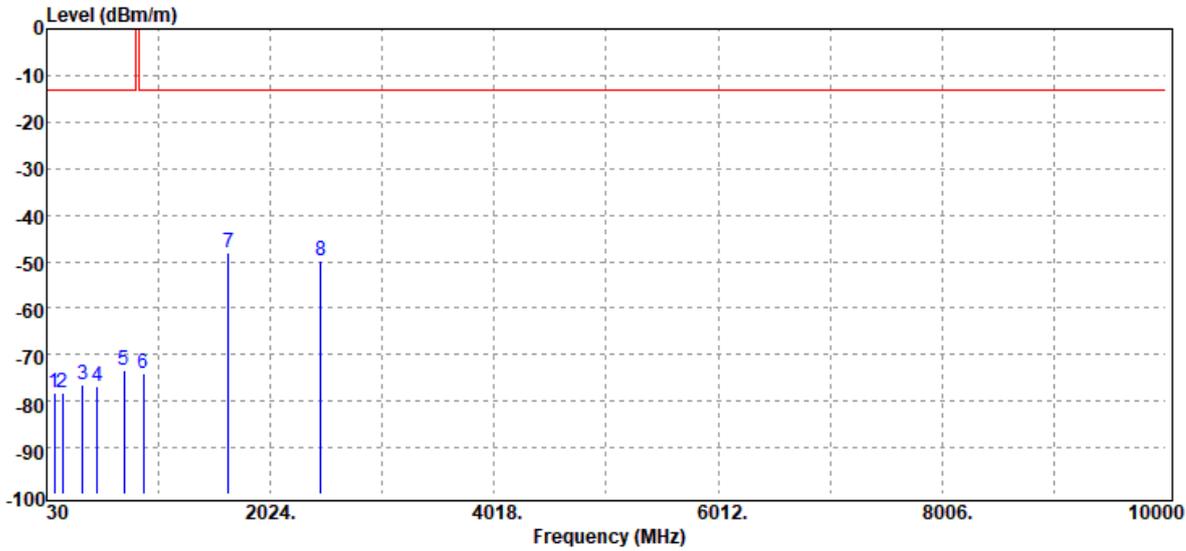
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Report Number :ER/2020/B0089
Operation Mode :GSM 850
Test Mode :Tx CH Low
EUT Pol :H Plane
Test Frequency :824.2 MHz

Test Site :SAC I Chamber
Test Date :2020-12-05
Temp./Humi. :23.3/61
Antenna Pol. :HORIZONTAL
Engineer :Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
95.96	-78.33	-71.82	-5.58	-0.93	-13.00	-65.33
172.59	-78.09	-71.34	-5.49	-1.26	-13.00	-65.09
348.16	-76.54	-73.15	-1.55	-1.84	-13.00	-63.54
479.11	-76.89	-73.08	-1.72	-2.09	-13.00	-63.89
719.67	-73.20	-69.37	-1.19	-2.64	-13.00	-60.20
890.39	-73.93	-69.53	-1.45	-2.95	-13.00	-60.93
1648.40	-48.23	-54.16	9.79	-3.86	-13.00	-35.23
2472.60	-49.75	-55.76	10.78	-4.77	-13.00	-36.75

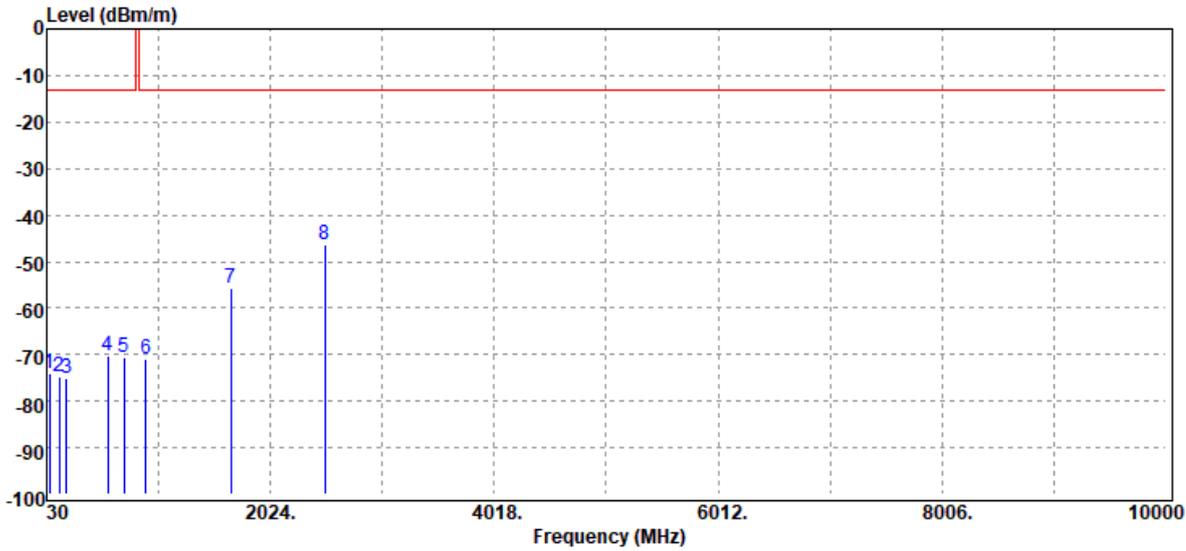
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Report Number :ER/2020/B0089
 Operation Mode :GSM 850
 Test Mode :Tx CH Mid
 EUT Pol :H Plane
 Test Frequency :836.6 MHz

Test Site :SAC I Chamber
 Test Date :2020-12-05
 Temp./Humi. :23.3/61
 Antenna Pol. :VERTICAL
 Engineer :Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
57.16	-74.12	-57.76	-15.65	-0.71	-13.00	-61.12
138.64	-74.76	-65.73	-7.95	-1.08	-13.00	-61.76
206.54	-75.05	-71.86	-1.83	-1.36	-13.00	-62.05
576.11	-70.30	-66.34	-1.56	-2.40	-13.00	-57.30
718.70	-70.51	-66.66	-1.22	-2.63	-13.00	-57.51
915.61	-70.79	-66.06	-1.80	-2.93	-13.00	-57.79
1673.20	-55.81	-61.71	9.80	-3.90	-13.00	-42.81
2509.80	-46.45	-52.67	11.04	-4.82	-13.00	-33.45

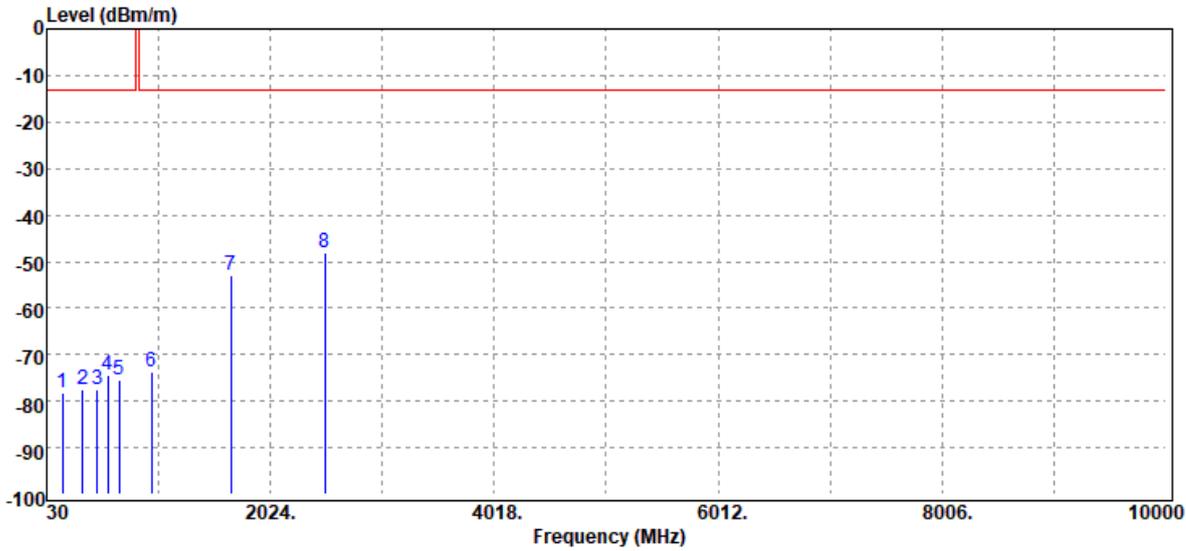
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 Operation Mode :GSM 850
 Test Mode :Tx CH Mid
 EUT Pol :H Plane
 Test Frequency :836.6 MHz

Test Site :SAC I Chamber
 Test Date :2020-12-05
 Temp./Humi. :23.3/61
 Antenna Pol. :HORIZONTAL
 Engineer :Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
168.71	-78.32	-71.02	-6.04	-1.26	-13.00	-65.32
352.04	-77.62	-74.27	-1.54	-1.81	-13.00	-64.62
478.14	-77.60	-73.78	-1.74	-2.08	-13.00	-64.60
576.11	-74.33	-70.37	-1.56	-2.40	-13.00	-61.33
676.99	-75.60	-71.67	-1.45	-2.48	-13.00	-62.60
961.20	-73.54	-68.69	-1.79	-3.06	-13.00	-60.54
1673.20	-52.87	-58.77	9.80	-3.90	-13.00	-39.87
2509.80	-48.12	-54.34	11.04	-4.82	-13.00	-35.12

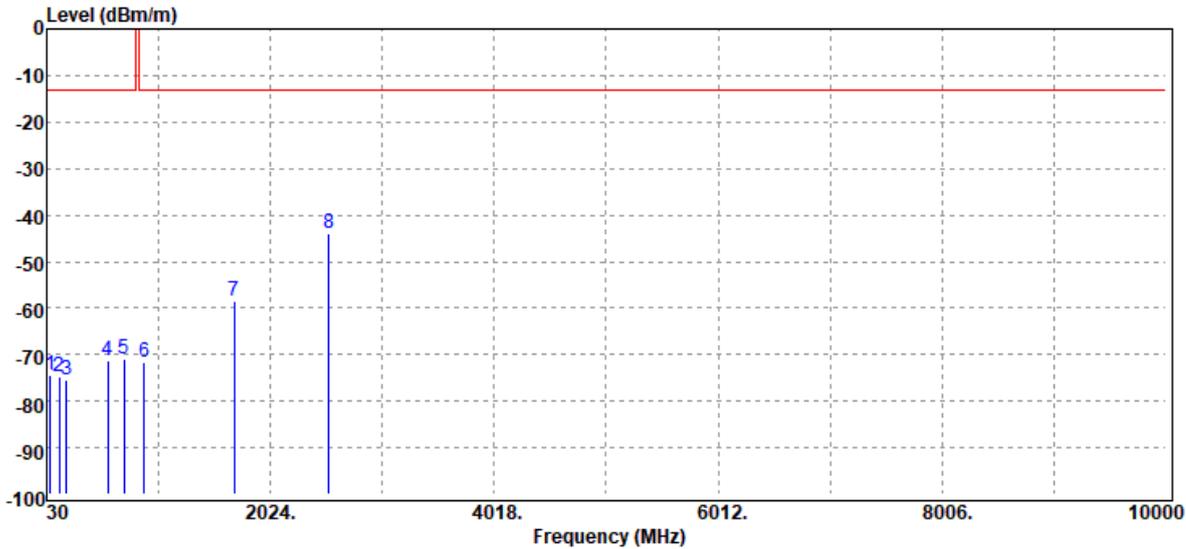
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Report Number :ER/2020/B0089
 Operation Mode :GSM 850
 Test Mode :Tx CH High
 EUT Pol :H Plane
 Test Frequency :848.8 MHz

Test Site :SAC I Chamber
 Test Date :2020-12-05
 Temp./Humi. :23.3/61
 Antenna Pol. :VERTICAL
 Engineer :Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
62.01	-74.42	-59.28	-14.38	-0.76	-13.00	-61.42
142.52	-74.90	-65.93	-7.85	-1.12	-13.00	-61.90
206.54	-75.30	-72.11	-1.83	-1.36	-13.00	-62.30
576.11	-71.25	-67.29	-1.56	-2.40	-13.00	-58.25
720.64	-70.92	-67.06	-1.21	-2.65	-13.00	-57.92
901.06	-71.46	-66.82	-1.65	-2.99	-13.00	-58.46
1697.60	-58.37	-64.24	9.80	-3.93	-13.00	-45.37
2546.40	-43.86	-50.19	11.19	-4.86	-13.00	-30.86

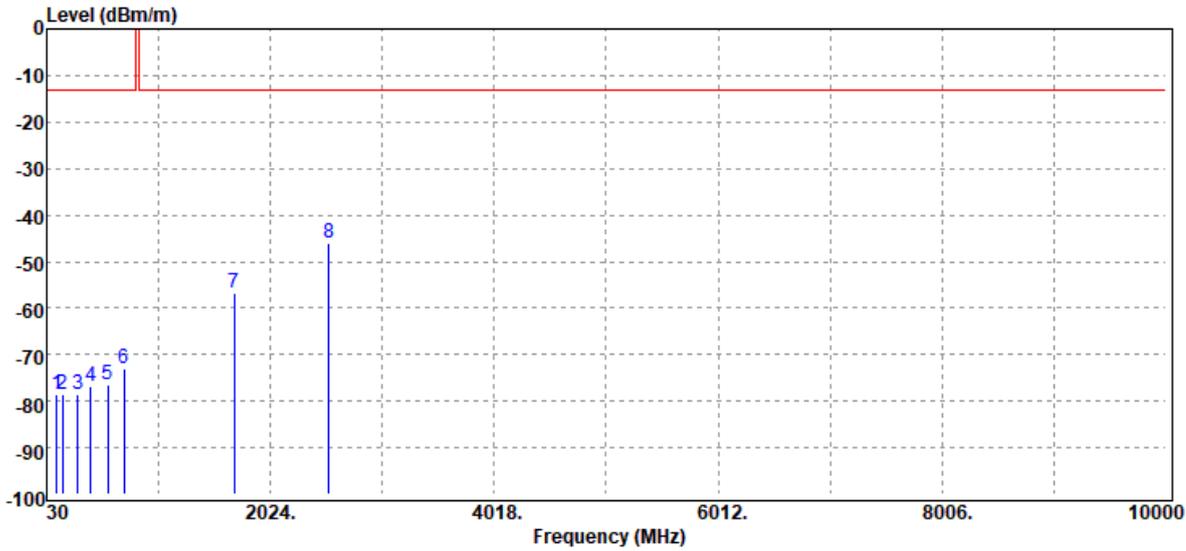
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Report Number :ER/2020/B0089
 Operation Mode :GSM 850
 Test Mode :Tx CH High
 EUT Pol :H Plane
 Test Frequency :848.8 MHz

Test Site :SAC I Chamber
 Test Date :2020-12-05
 Temp./Humi. :23.3/61
 Antenna Pol. :HORIZONTAL
 Engineer :Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
117.30	-78.70	-70.31	-7.34	-1.05	-13.00	-65.70
173.56	-78.43	-71.91	-5.27	-1.25	-13.00	-65.43
308.39	-78.41	-75.20	-1.61	-1.60	-13.00	-65.41
422.85	-76.88	-73.25	-1.52	-2.11	-13.00	-63.88
576.11	-76.31	-72.35	-1.56	-2.40	-13.00	-63.31
721.61	-73.04	-69.13	-1.26	-2.65	-13.00	-60.04
1697.60	-56.58	-62.45	9.80	-3.93	-13.00	-43.58
2546.40	-46.14	-52.47	11.19	-4.86	-13.00	-33.14

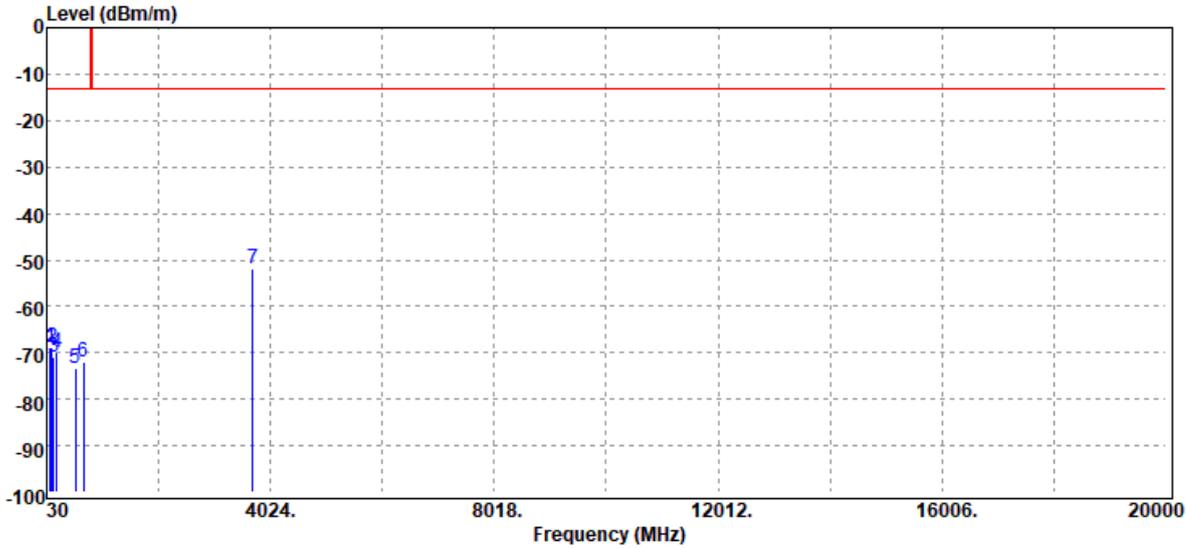
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Radiated Spurious Emission Measurement Result: GSM 1900 Mode

Report Number	:ER/2020/B0089	Test Site	:SAC I Chamber
Operation Mode	:GSM 1900	Test Date	:2020-12-05
Test Mode	:Tx CH Low	Temp./Humi.	:23.3/61
EUT Pol	:H Plane	Antenna Pol.	:VERTICAL
Test Frequency	:1850.2 MHz	Engineer	:Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
100.81	-68.80	-61.65	-6.20	-0.95	-13.00	-55.80
124.09	-68.96	-60.47	-7.46	-1.03	-13.00	-55.96
158.04	-70.80	-62.54	-7.05	-1.21	-13.00	-57.80
206.54	-69.79	-66.60	-1.83	-1.36	-13.00	-56.79
537.31	-73.32	-70.10	-1.32	-1.90	-13.00	-60.32
682.81	-71.99	-68.29	-1.44	-2.26	-13.00	-58.99
3700.40	-51.84	-58.38	12.40	-5.86	-13.00	-38.84

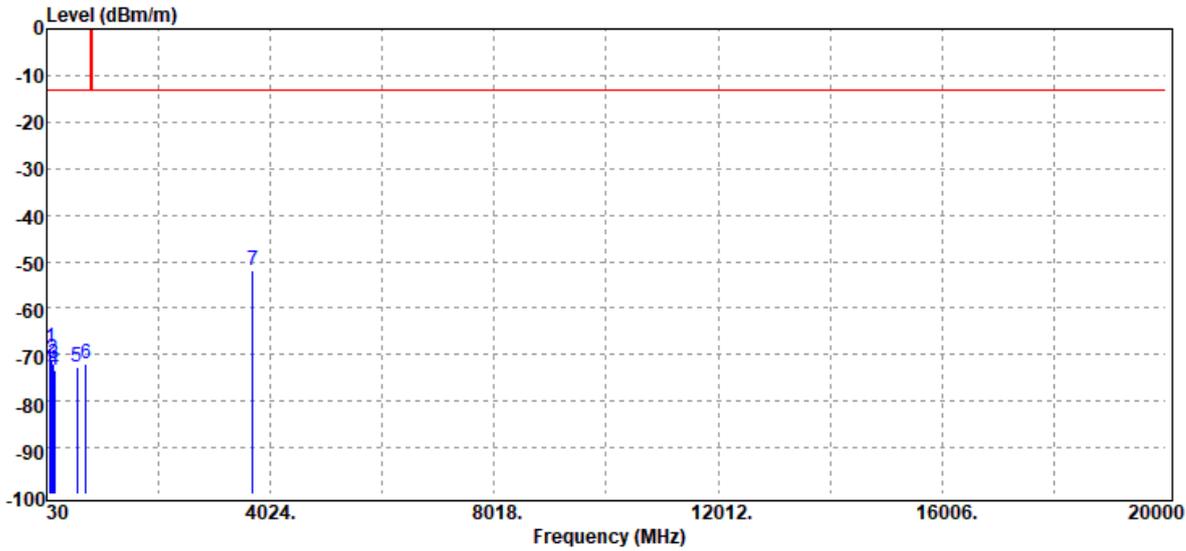
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Report Number :ER/2020/B0089
 Operation Mode :GSM 1900
 Test Mode :Tx CH Low
 EUT Pol :H Plane
 Test Frequency :1850.2 MHz

Test Site :SAC I Chamber
 Test Date :2020-12-05
 Temp./Humi. :23.3/61
 Antenna Pol. :HORIZONTAL
 Engineer :Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
99.84	-68.66	-61.70	-6.01	-0.95	-13.00	-55.66
122.15	-70.92	-62.47	-7.40	-1.05	-13.00	-57.92
146.40	-71.96	-63.06	-7.72	-1.18	-13.00	-58.96
171.62	-73.39	-66.52	-5.61	-1.26	-13.00	-60.39
576.11	-72.61	-68.65	-1.56	-2.40	-13.00	-59.61
730.34	-71.94	-67.81	-1.47	-2.66	-13.00	-58.94
3700.40	-51.81	-58.35	12.40	-5.86	-13.00	-38.81

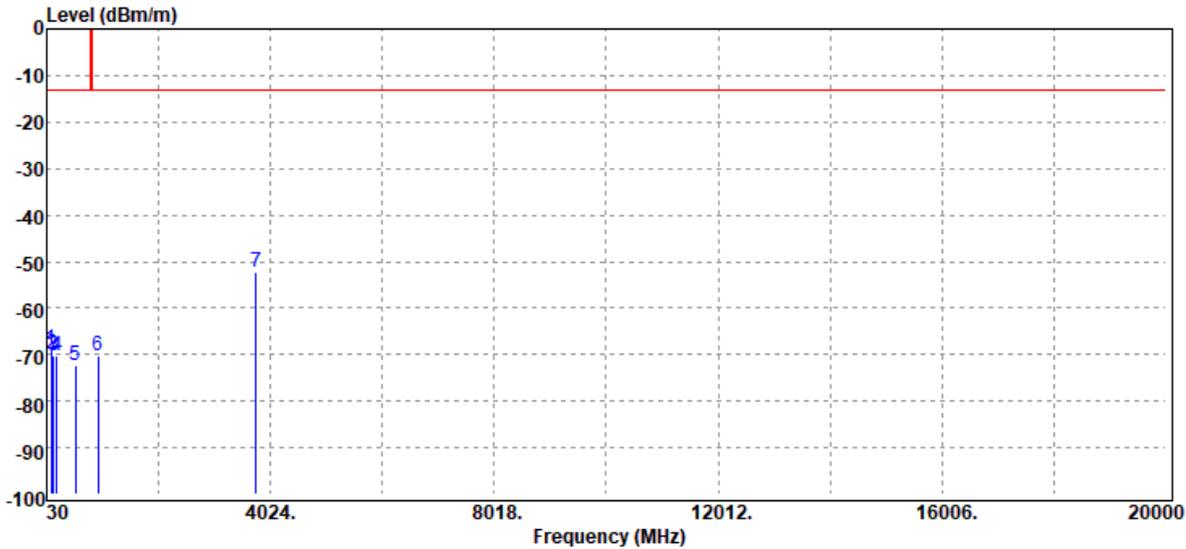
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Report Number :ER/2020/B0089
 Operation Mode :GSM 1900
 Test Mode :Tx CH Mid
 EUT Pol :H Plane
 Test Frequency :1880 MHz

Test Site :SAC I Chamber
 Test Date :2020-12-05
 Temp./Humi. :23.3/61
 Antenna Pol. :VERTICAL
 Engineer :Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
102.75	-68.75	-61.35	-6.44	-0.96	-13.00	-55.75
125.06	-69.82	-61.31	-7.49	-1.02	-13.00	-56.82
159.01	-70.20	-61.99	-7.00	-1.21	-13.00	-57.20
206.54	-70.23	-67.04	-1.83	-1.36	-13.00	-57.23
539.25	-72.49	-69.28	-1.29	-1.92	-13.00	-59.49
953.44	-70.14	-65.44	-1.84	-2.86	-13.00	-57.14
3760.00	-52.25	-58.91	12.40	-5.74	-13.00	-39.25

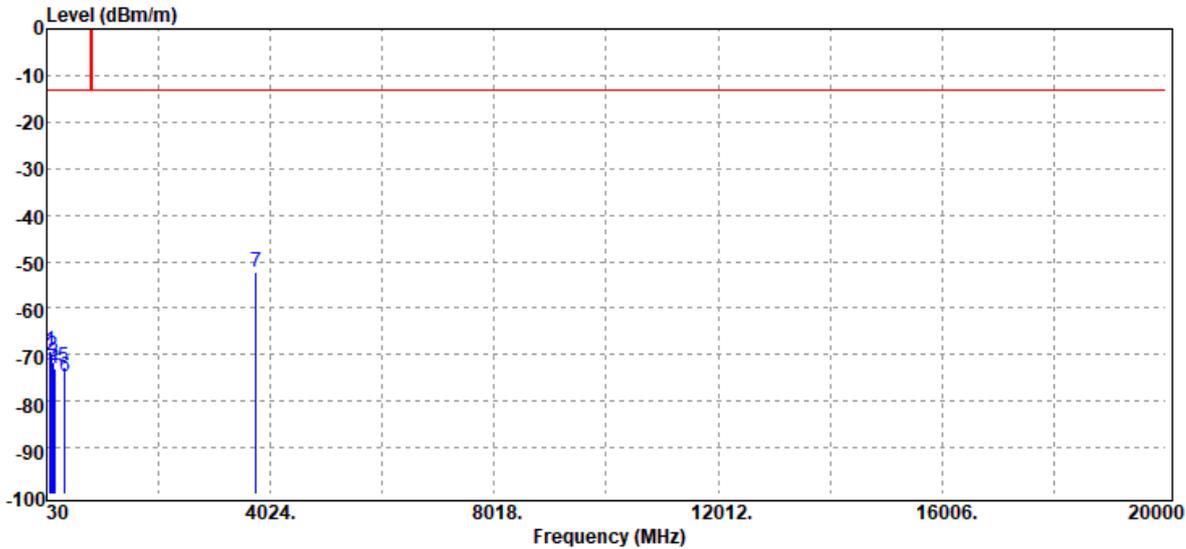
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Report Number :ER/2020/B0089
 Operation Mode :GSM 1900
 Test Mode :Tx CH Mid
 EUT Pol :H Plane
 Test Frequency :1880 MHz

Test Site :SAC I Chamber
 Test Date :2020-12-05
 Temp./Humi. :23.3/61
 Antenna Pol. :HORIZONTAL
 Engineer :Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
99.84	-69.35	-62.39	-6.01	-0.95	-13.00	-56.35
117.30	-70.29	-61.90	-7.34	-1.05	-13.00	-57.29
146.40	-71.71	-62.81	-7.72	-1.18	-13.00	-58.71
170.65	-73.08	-65.99	-5.82	-1.27	-13.00	-60.08
335.55	-72.78	-69.27	-1.72	-1.79	-13.00	-59.78
357.86	-74.78	-71.54	-1.51	-1.73	-13.00	-61.78
3760.00	-52.12	-58.78	12.40	-5.74	-13.00	-39.12

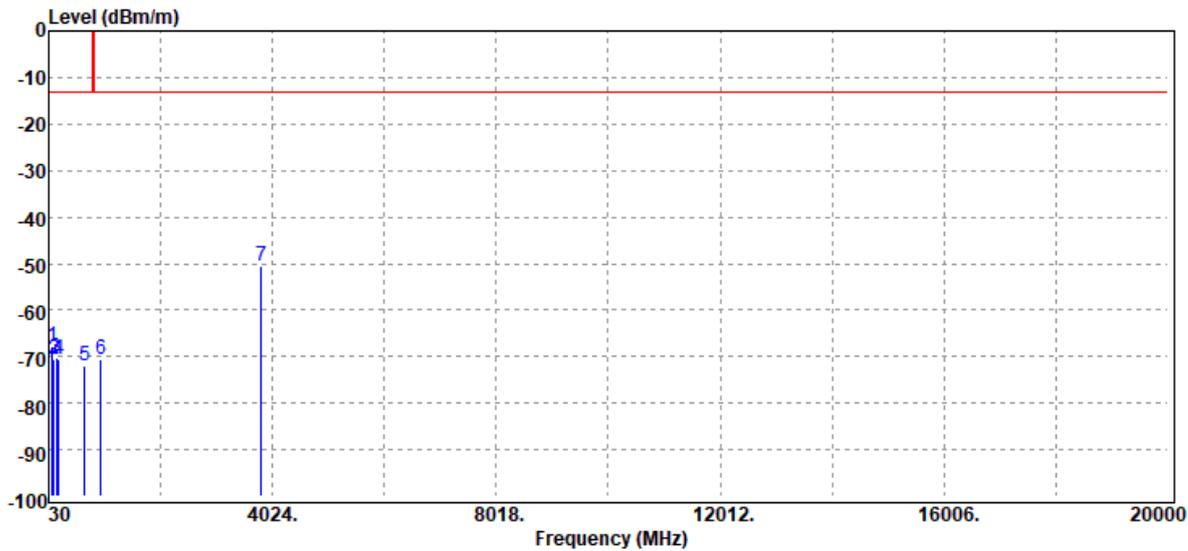
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Report Number :ER/2020/B0089
 Operation Mode :GSM 1900
 Test Mode :Tx CH High
 EUT Pol :H Plane
 Test Frequency :1909.8 MHz

Test Site :SAC I Chamber
 Test Date :2020-12-05
 Temp./Humi. :23.3/61
 Antenna Pol. :VERTICAL
 Engineer :Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
95.96	-67.94	-61.43	-5.58	-0.93	-13.00	-54.94
125.06	-70.66	-62.15	-7.49	-1.02	-13.00	-57.66
160.95	-70.09	-62.08	-6.80	-1.21	-13.00	-57.09
206.54	-70.44	-67.25	-1.83	-1.36	-13.00	-57.44
675.05	-72.08	-68.07	-1.44	-2.57	-13.00	-59.08
958.29	-70.73	-65.92	-1.80	-3.01	-13.00	-57.73
3819.60	-50.35	-57.00	12.44	-5.79	-13.00	-37.35

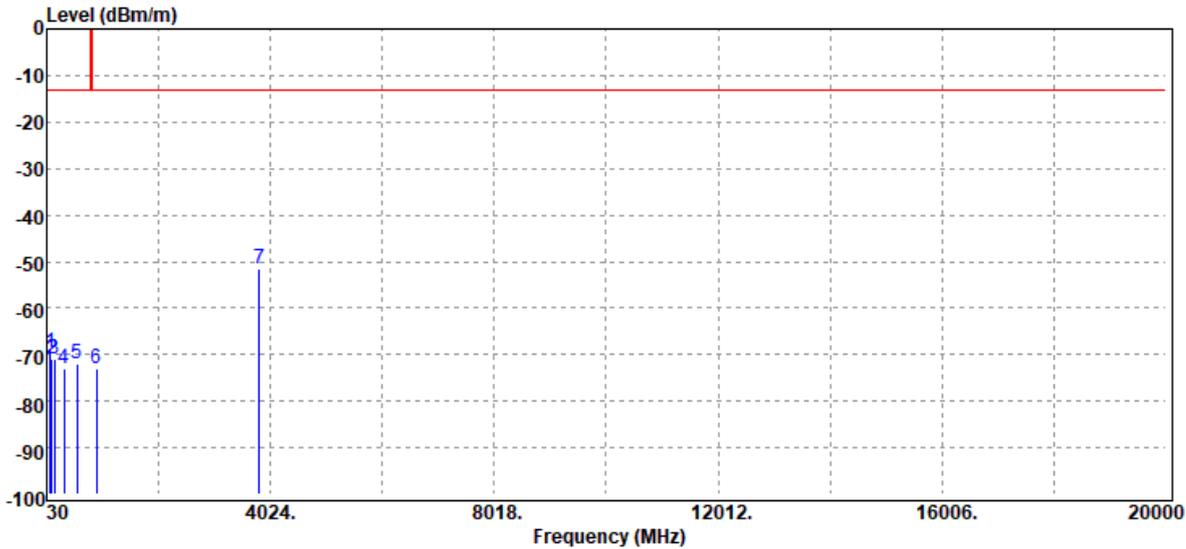
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Report Number :ER/2020/B0089
 Operation Mode :GSM 1900
 Test Mode :Tx CH High
 EUT Pol :H Plane
 Test Frequency :1909.8 MHz

Test Site :SAC I Chamber
 Test Date :2020-12-05
 Temp./Humi. :23.3/61
 Antenna Pol. :HORIZONTAL
 Engineer :Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
99.84	-69.66	-62.70	-6.01	-0.95	-13.00	-56.66
120.21	-71.06	-62.65	-7.35	-1.06	-13.00	-58.06
167.74	-70.89	-63.40	-6.23	-1.26	-13.00	-57.89
340.40	-73.14	-69.59	-1.69	-1.86	-13.00	-60.14
576.11	-71.95	-67.99	-1.56	-2.40	-13.00	-58.95
919.49	-72.98	-68.25	-1.85	-2.88	-13.00	-59.98
3819.60	-51.41	-58.06	12.44	-5.79	-13.00	-38.41

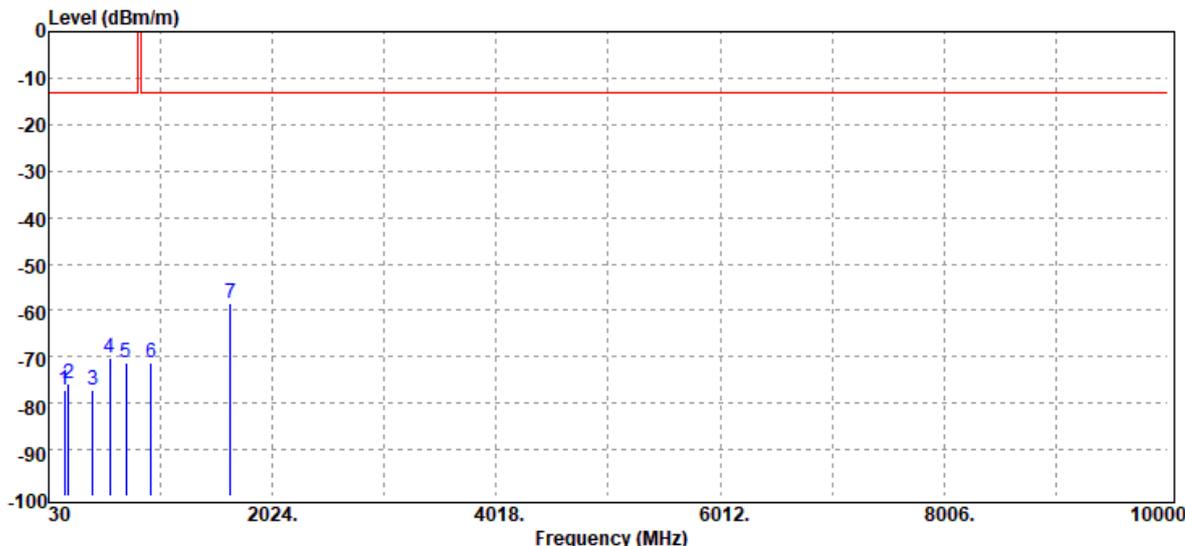
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Radiated Spurious Emission Measurement Result: WCDMA Band 5 Mode

Report Number	:ER/2020/B0089	Test Site	:SAC I Chamber
Operation Mode	:WCDMA B5	Test Date	:2020-12-05
Test Mode	:Tx CH Low	Temp./Humi.	:23.3/61
EUT Pol	:H Plane	Antenna Pol.	:VERTICAL
Test Frequency	:826.4 MHz	Engineer	:Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
173.56	-77.03	-70.51	-5.27	-1.25	-13.00	-64.03
207.51	-75.65	-72.50	-1.79	-1.36	-13.00	-62.65
425.76	-77.32	-73.61	-1.57	-2.14	-13.00	-64.32
576.11	-70.24	-66.28	-1.56	-2.40	-13.00	-57.24
718.70	-71.34	-67.49	-1.22	-2.63	-13.00	-58.34
944.71	-71.26	-66.56	-2.01	-2.69	-13.00	-58.26
1652.80	-58.47	-64.40	9.80	-3.87	-13.00	-45.47

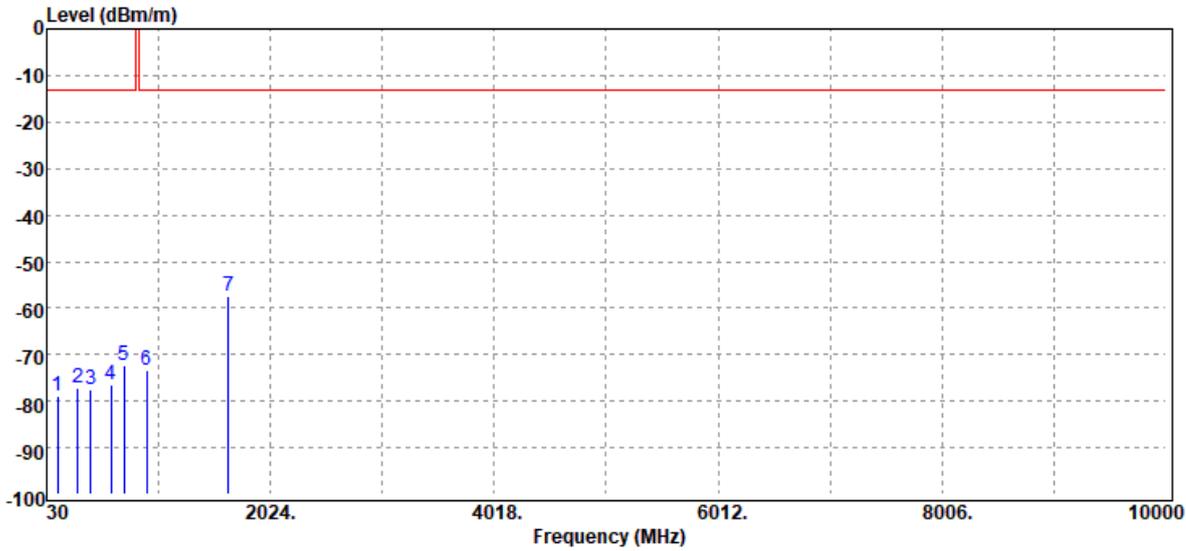
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Report Number :ER/2020/B0089
 Operation Mode :WCDMA B5
 Test Mode :Tx CH Low
 EUT Pol :H Plane
 Test Frequency :826.4 MHz

Test Site :SAC I Chamber
 Test Date :2020-12-05
 Temp./Humi. :23.3/61
 Antenna Pol. :HORIZONTAL
 Engineer :Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
124.09	-78.76	-70.27	-7.46	-1.03	-13.00	-65.76
309.36	-77.09	-73.89	-1.60	-1.60	-13.00	-64.09
424.79	-77.42	-73.74	-1.55	-2.13	-13.00	-64.42
605.21	-76.38	-72.38	-1.89	-2.11	-13.00	-63.38
720.64	-72.47	-68.61	-1.21	-2.65	-13.00	-59.47
920.46	-73.23	-68.50	-1.86	-2.87	-13.00	-60.23
1652.80	-57.51	-63.44	9.80	-3.87	-13.00	-44.51

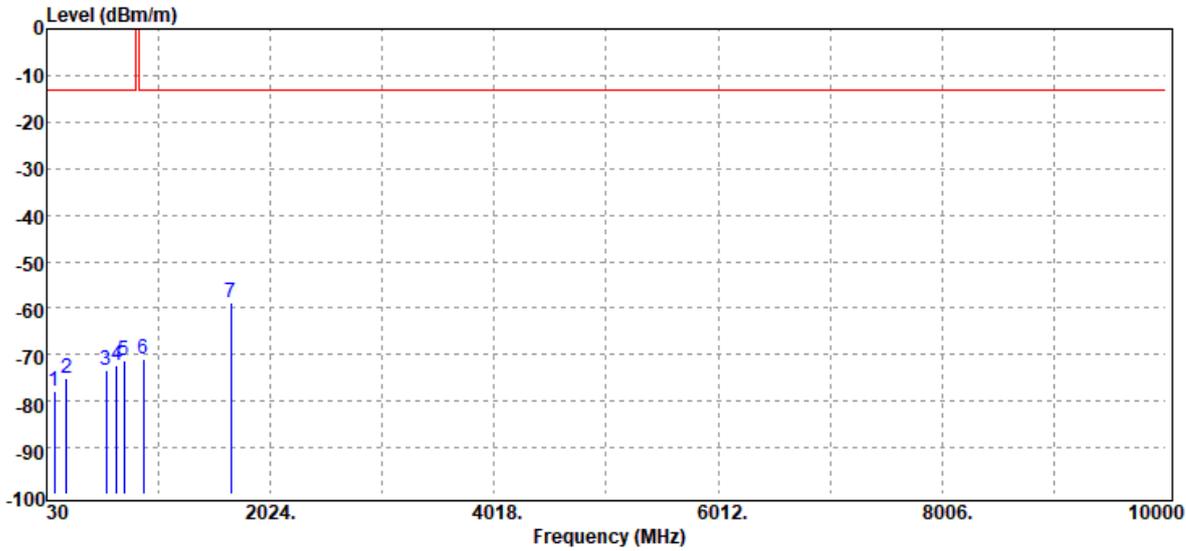
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Report Number :ER/2020/B0089
 Operation Mode :WCDMA B5
 Test Mode :Tx CH Mid
 EUT Pol :H Plane
 Test Frequency :836.6 MHz

Test Site :SAC I Chamber
 Test Date :2020-12-05
 Temp./Humi. :23.3/61
 Antenna Pol. :VERTICAL
 Engineer :Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
100.81	-77.69	-70.54	-6.20	-0.95	-13.00	-64.69
206.54	-74.98	-71.79	-1.83	-1.36	-13.00	-61.98
556.71	-73.22	-69.61	-1.35	-2.26	-13.00	-60.22
652.74	-72.15	-68.28	-1.33	-2.54	-13.00	-59.15
720.64	-71.11	-67.25	-1.21	-2.65	-13.00	-58.11
890.39	-70.90	-66.50	-1.45	-2.95	-13.00	-57.90
1673.20	-58.75	-64.65	9.80	-3.90	-13.00	-45.75

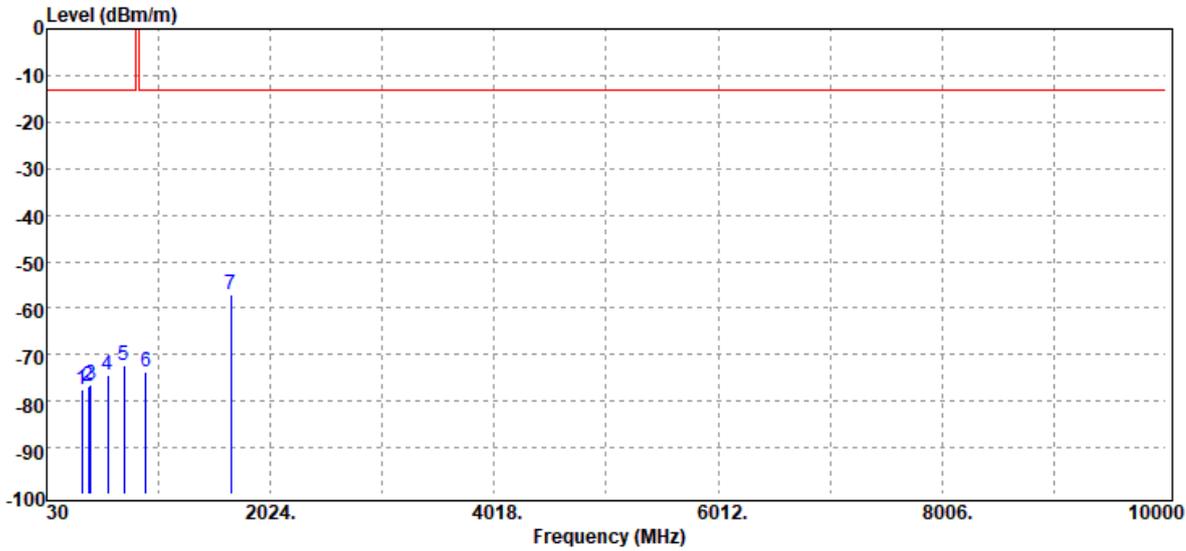
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Report Number :ER/2020/B0089
 Operation Mode :WCDMA B5
 Test Mode :Tx CH Mid
 EUT Pol :H Plane
 Test Frequency :836.6 MHz

Test Site :SAC I Chamber
 Test Date :2020-12-05
 Temp./Humi. :23.3/61
 Antenna Pol. :HORIZONTAL
 Engineer :Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
345.25	-77.63	-74.21	-1.57	-1.85	-13.00	-64.63
403.45	-76.84	-73.49	-1.48	-1.87	-13.00	-63.84
425.76	-76.57	-72.86	-1.57	-2.14	-13.00	-63.57
576.11	-74.53	-70.57	-1.56	-2.40	-13.00	-61.53
720.64	-72.30	-68.44	-1.21	-2.65	-13.00	-59.30
912.70	-73.75	-69.00	-1.77	-2.98	-13.00	-60.75
1673.20	-57.03	-62.93	9.80	-3.90	-13.00	-44.03

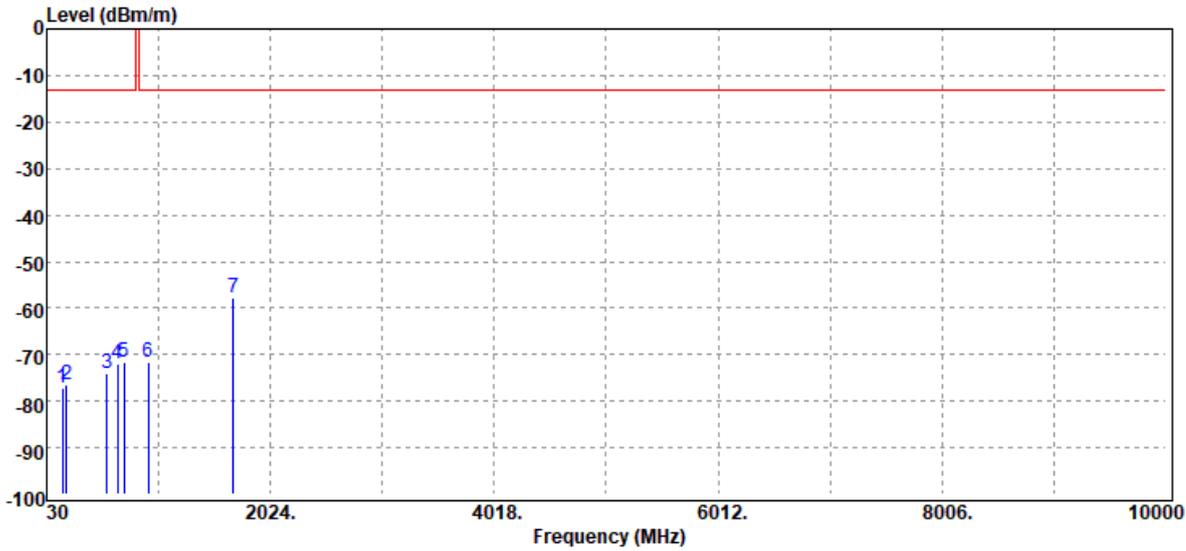
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Report Number :ER/2020/B0089
 Operation Mode :WCDMA B5
 Test Mode :Tx CH High
 EUT Pol :H Plane
 Test Frequency :846.6 MHz

Test Site :SAC I Chamber
 Test Date :2020-12-05
 Temp./Humi. :23.3/61
 Antenna Pol. :VERTICAL
 Engineer :Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
172.59	-76.99	-70.24	-5.49	-1.26	-13.00	-63.99
204.60	-76.52	-73.25	-1.92	-1.35	-13.00	-63.52
568.35	-74.04	-70.28	-1.47	-2.29	-13.00	-61.04
658.56	-72.08	-68.09	-1.33	-2.66	-13.00	-59.08
719.67	-71.60	-67.77	-1.19	-2.64	-13.00	-58.60
934.04	-71.59	-66.91	-2.00	-2.68	-13.00	-58.59
1693.20	-57.89	-63.77	9.80	-3.92	-13.00	-44.89

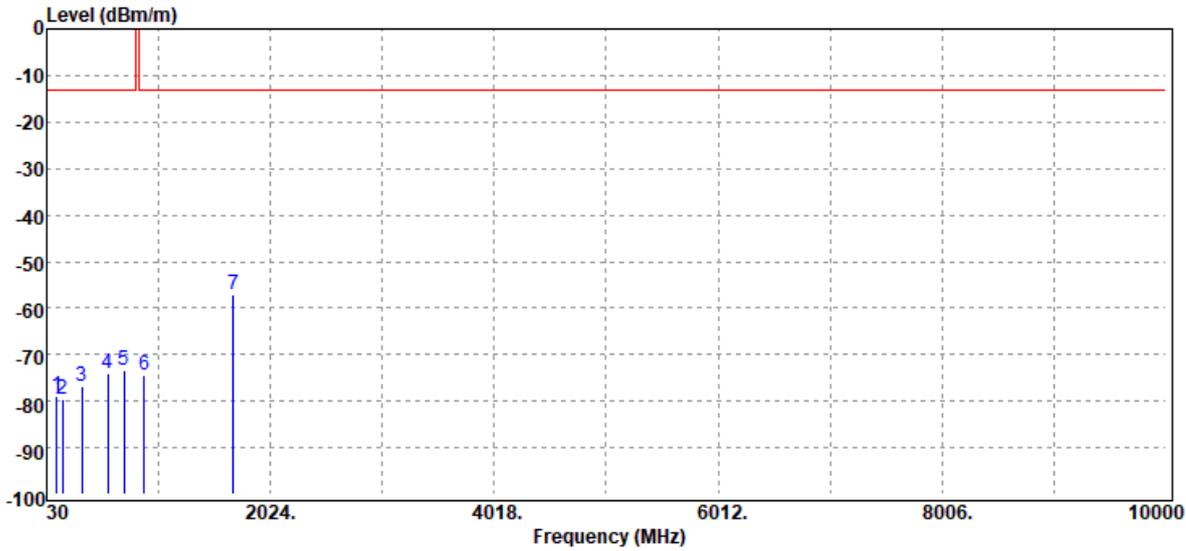
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Report Number :ER/2020/B0089
 Operation Mode :WCDMA B5
 Test Mode :Tx CH High
 EUT Pol :H Plane
 Test Frequency :846.6 MHz

Test Site :SAC I Chamber
 Test Date :2020-12-05
 Temp./Humi. :23.3/61
 Antenna Pol. :HORIZONTAL
 Engineer :Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
120.21	-78.92	-70.51	-7.35	-1.06	-13.00	-65.92
173.56	-79.60	-73.08	-5.27	-1.25	-13.00	-66.60
343.31	-76.94	-73.48	-1.61	-1.85	-13.00	-63.94
576.11	-74.08	-70.12	-1.56	-2.40	-13.00	-61.08
720.64	-73.31	-69.45	-1.21	-2.65	-13.00	-60.31
901.06	-74.23	-69.59	-1.65	-2.99	-13.00	-61.23
1693.20	-57.19	-63.07	9.80	-3.92	-13.00	-44.19

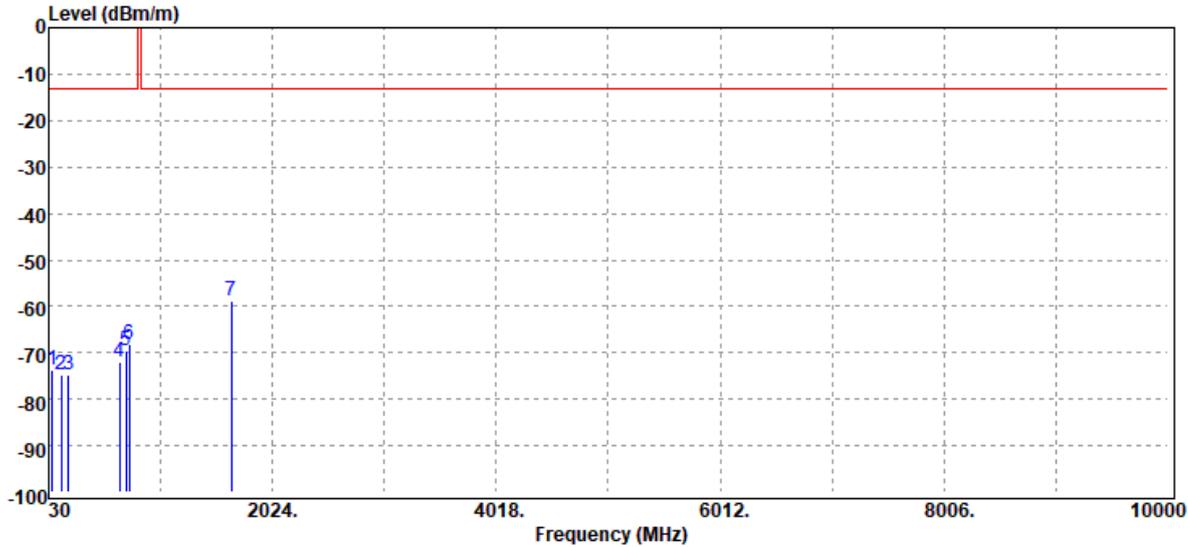
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Radiated Spurious Emission Measurement Result: LTE Band 5 Mode

Report Number	:ER/2020/B0089	Test Site	:SAC I Chamber
Operation Mode	:LTE B5	Test Date	:2020-12-05
Test Mode	:Tx CH Low	Temp./Humi.	:23.3/61
EUT Pol	:H Plane	Antenna Pol.	:VERTICAL
Test Frequency	:829 MHz	Engineer	:Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
65.89	-73.67	-59.79	-13.09	-0.79	-13.00	-60.67
143.49	-74.89	-65.91	-7.84	-1.14	-13.00	-61.89
204.60	-74.69	-71.42	-1.92	-1.35	-13.00	-61.69
658.56	-72.06	-68.07	-1.33	-2.66	-13.00	-59.06
718.70	-69.70	-65.85	-1.22	-2.63	-13.00	-56.70
747.80	-68.02	-63.38	-1.75	-2.89	-13.00	-55.02
1658.00	-58.77	-64.69	9.80	-3.88	-13.00	-45.77

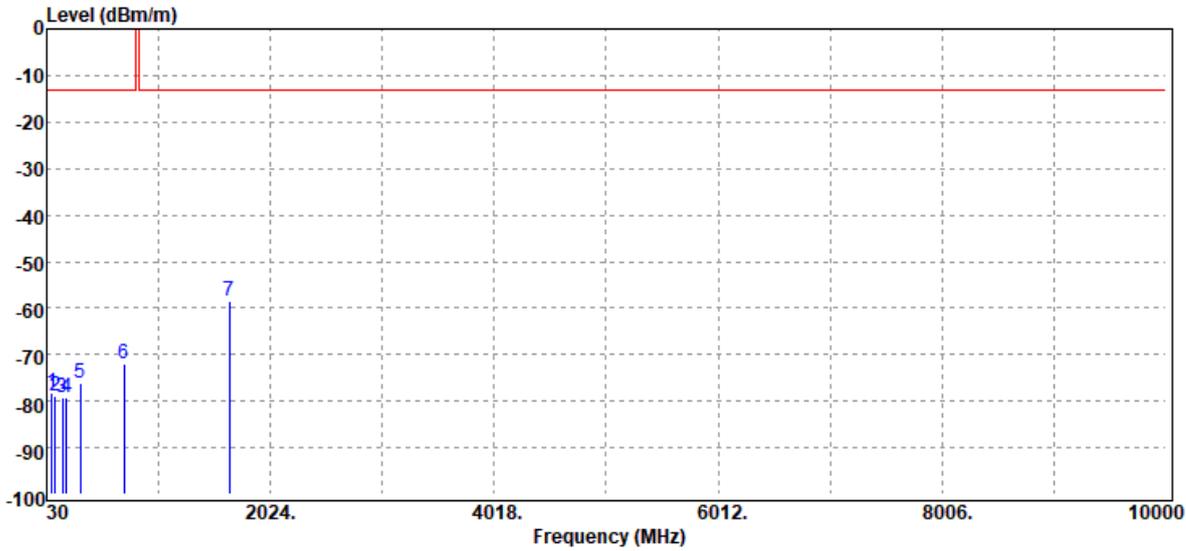
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Report Number :ER/2020/B0089
Operation Mode :LTE B5
Test Mode :Tx CH Low
EUT Pol :H Plane
Test Frequency :829 MHz

Test Site :SAC I Chamber
Test Date :2020-12-05
Temp./Humi. :23.3/61
Antenna Pol. :HORIZONTAL
Engineer :Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
76.56	-78.30	-67.53	-9.93	-0.84	-13.00	-65.30
104.69	-78.86	-71.22	-6.67	-0.97	-13.00	-65.86
167.74	-79.17	-71.68	-6.23	-1.26	-13.00	-66.17
209.45	-79.40	-76.32	-1.71	-1.37	-13.00	-66.40
328.76	-76.16	-72.75	-1.72	-1.69	-13.00	-63.16
720.64	-72.00	-68.14	-1.21	-2.65	-13.00	-59.00
1658.00	-58.35	-64.27	9.80	-3.88	-13.00	-45.35

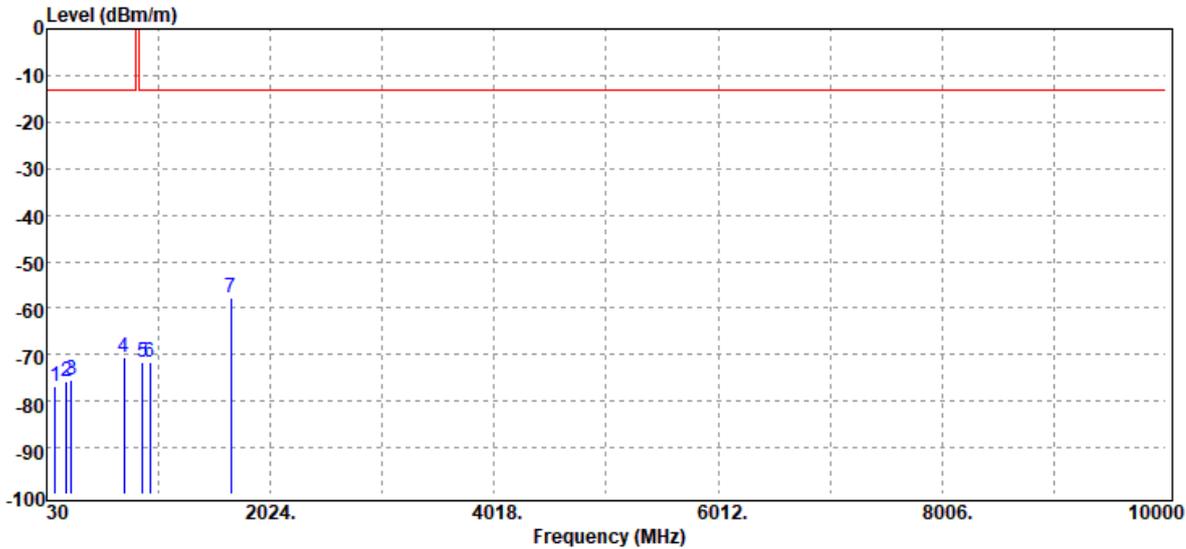
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Report Number :ER/2020/B0089
 Operation Mode :LTE B5
 Test Mode :Tx CH Mid
 EUT Pol :H Plane
 Test Frequency :836.5 MHz

Test Site :SAC I Chamber
 Test Date :2020-12-05
 Temp./Humi. :23.3/61
 Antenna Pol. :VERTICAL
 Engineer :Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
102.75	-76.68	-69.28	-6.44	-0.96	-13.00	-63.68
207.51	-75.75	-72.60	-1.79	-1.36	-13.00	-62.75
251.16	-75.30	-72.13	-1.65	-1.52	-13.00	-62.30
718.70	-70.67	-66.82	-1.22	-2.63	-13.00	-57.67
836.51	-71.70	-67.26	-1.47	-2.97	-13.00	-58.70
946.65	-71.55	-66.86	-1.97	-2.72	-13.00	-58.55
1673.00	-57.93	-63.83	9.80	-3.90	-13.00	-44.93

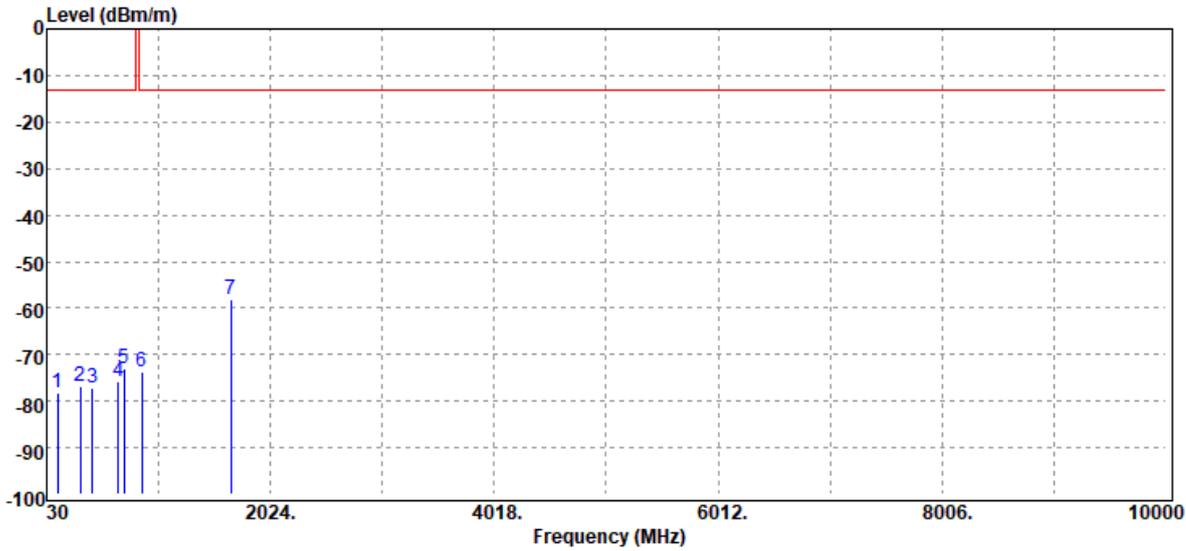
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Report Number :ER/2020/B0089
 Operation Mode :LTE B5
 Test Mode :Tx CH Mid
 EUT Pol :H Plane
 Test Frequency :836.5 MHz

Test Site :SAC I Chamber
 Test Date :2020-12-05
 Temp./Humi. :23.3/61
 Antenna Pol. :HORIZONTAL
 Engineer :Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
124.09	-78.35	-69.86	-7.46	-1.03	-13.00	-65.35
330.70	-76.98	-73.52	-1.75	-1.71	-13.00	-63.98
435.46	-77.00	-73.11	-1.86	-2.03	-13.00	-64.00
668.26	-75.68	-71.43	-1.46	-2.79	-13.00	-62.68
716.76	-73.02	-69.15	-1.28	-2.59	-13.00	-60.02
880.69	-73.63	-69.19	-1.44	-3.00	-13.00	-60.63
1673.00	-58.09	-63.99	9.80	-3.90	-13.00	-45.09

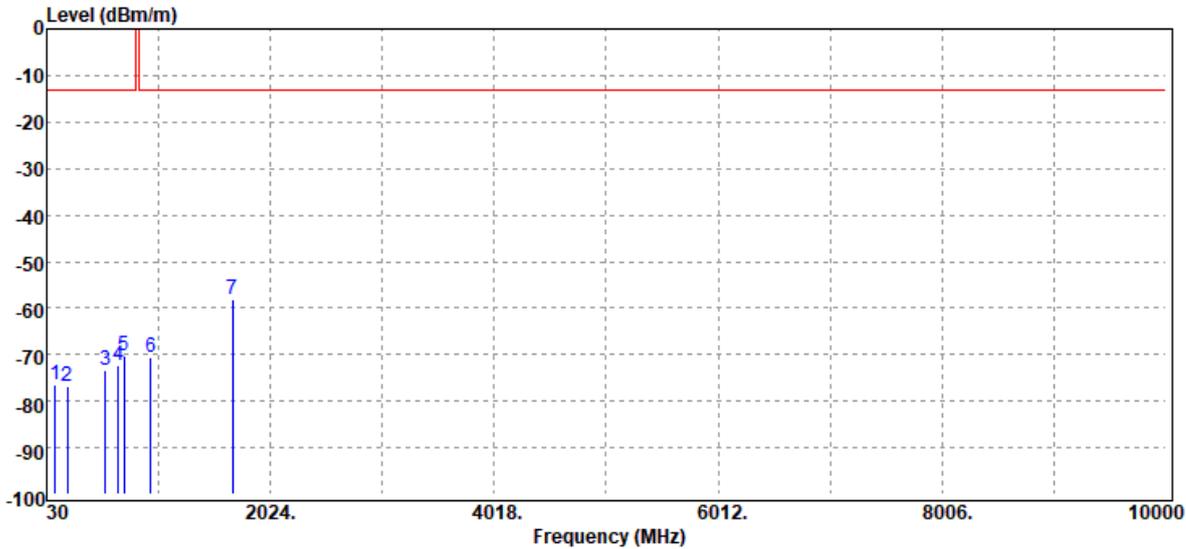
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Report Number :ER/2020/B0089
 Operation Mode :LTE B5
 Test Mode :Tx CH High
 EUT Pol :H Plane
 Test Frequency :844 MHz

Test Site :SAC I Chamber
 Test Date :2020-12-05
 Temp./Humi. :23.3/61
 Antenna Pol. :VERTICAL
 Engineer :Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
102.75	-76.32	-68.92	-6.44	-0.96	-13.00	-63.32
211.39	-76.65	-73.54	-1.74	-1.37	-13.00	-63.65
555.74	-73.45	-69.86	-1.34	-2.25	-13.00	-60.45
665.35	-72.21	-68.07	-1.38	-2.76	-13.00	-59.21
719.67	-70.32	-66.49	-1.19	-2.64	-13.00	-57.32
958.29	-70.75	-65.94	-1.80	-3.01	-13.00	-57.75
1688.00	-58.11	-63.99	9.80	-3.92	-13.00	-45.11

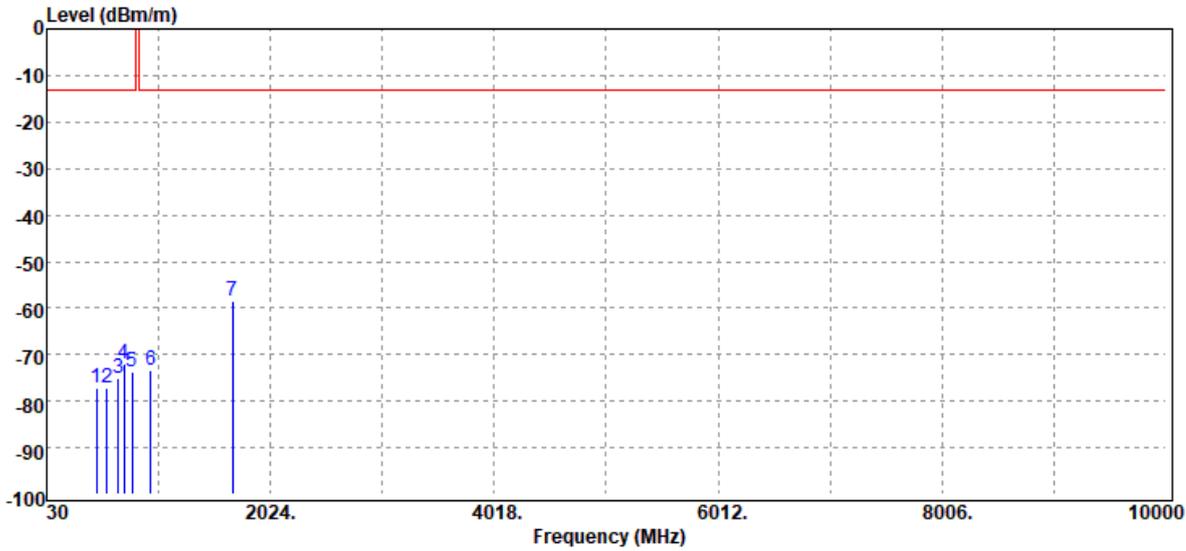
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Report Number :ER/2020/B0089
 Operation Mode :LTE B5
 Test Mode :Tx CH High
 EUT Pol :H Plane
 Test Frequency :844 MHz

Test Site :SAC I Chamber
 Test Date :2020-12-05
 Temp./Humi. :23.3/61
 Antenna Pol. :HORIZONTAL
 Engineer :Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
474.26	-77.09	-73.25	-1.79	-2.05	-13.00	-64.09
568.35	-77.15	-73.39	-1.47	-2.29	-13.00	-64.15
665.35	-75.26	-71.12	-1.38	-2.76	-13.00	-62.26
720.64	-72.01	-68.15	-1.21	-2.65	-13.00	-59.01
793.39	-73.58	-69.25	-1.60	-2.73	-13.00	-60.58
959.26	-73.39	-68.57	-1.79	-3.03	-13.00	-60.39
1688.00	-58.51	-64.39	9.80	-3.92	-13.00	-45.51

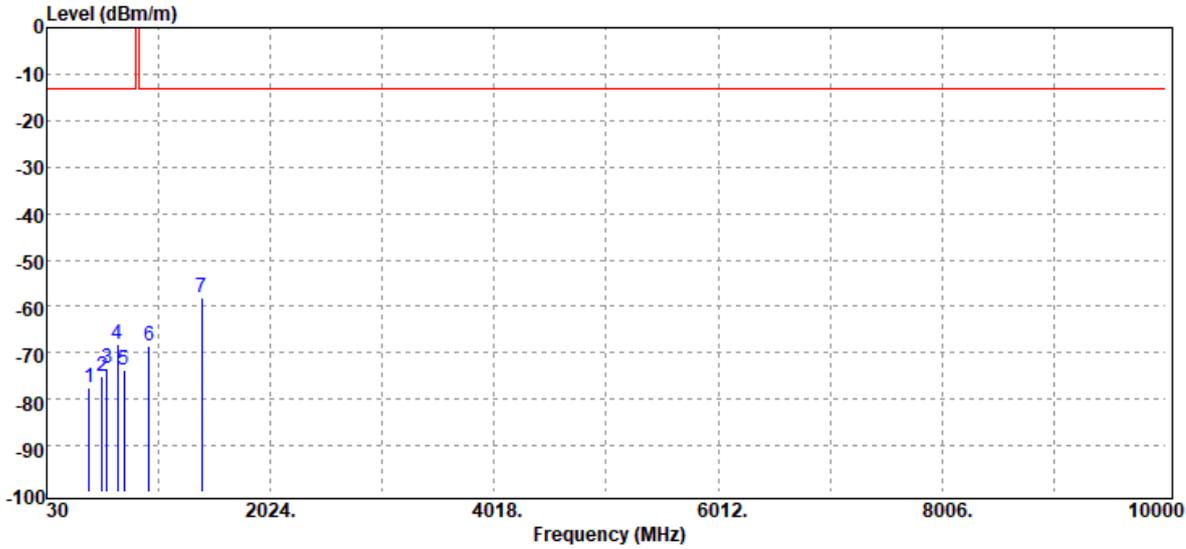
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Radiated Spurious Emission Measurement Result: LTE Band 12 Mode

Report Number	:ER/2020/B0089	Test Site	:SAC I Chamber
Operation Mode	:LTE B12	Test Date	:2020-12-05
Test Mode	:Tx CH Low	Temp./Humi.	:23.3/61
EUT Pol	:H Plane	Antenna Pol.	:VERTICAL
Test Frequency	:704 MHz	Engineer	:Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
406.36	-77.67	-74.35	-1.45	-1.87	-13.00	-64.67
524.70	-75.18	-71.85	-1.33	-2.00	-13.00	-62.18
568.35	-73.34	-69.58	-1.47	-2.29	-13.00	-60.34
658.56	-68.22	-64.23	-1.33	-2.66	-13.00	-55.22
718.70	-73.61	-69.76	-1.22	-2.63	-13.00	-60.61
939.86	-68.62	-64.02	-1.97	-2.63	-13.00	-55.62
1408.00	-57.99	-62.16	7.75	-3.58	-13.00	-44.99

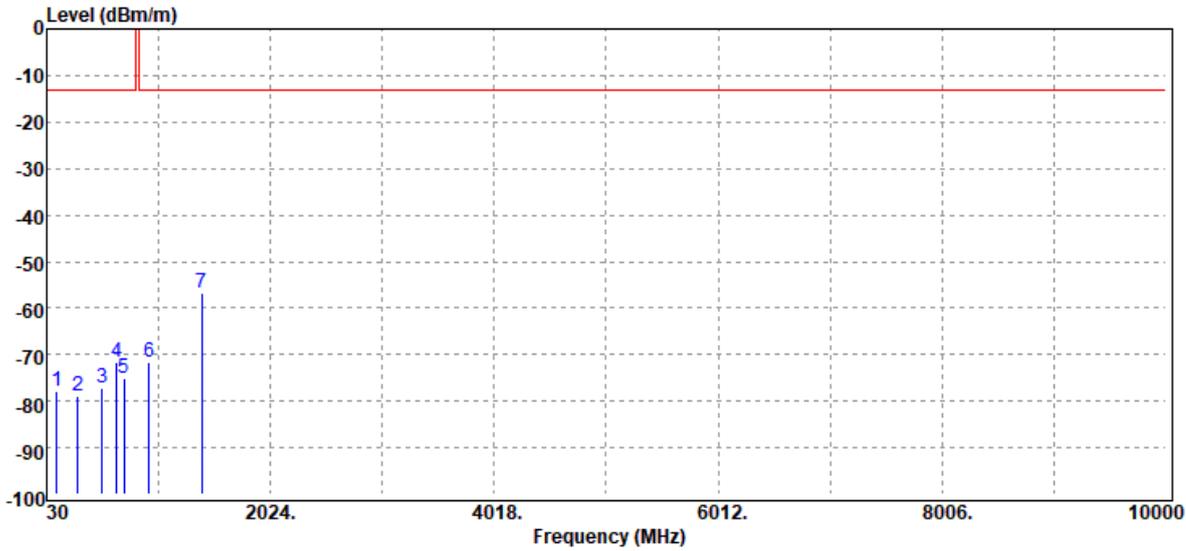
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Report Number :ER/2020/B0089
 Operation Mode :LTE B12
 Test Mode :Tx CH Low
 EUT Pol :H Plane
 Test Frequency :704 MHz

Test Site :SAC I Chamber
 Test Date :2020-12-05
 Temp./Humi. :23.3/61
 Antenna Pol. :HORIZONTAL
 Engineer :Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
122.15	-77.79	-69.34	-7.40	-1.05	-13.00	-64.79
304.51	-78.73	-75.47	-1.65	-1.61	-13.00	-65.73
524.70	-77.26	-73.93	-1.33	-2.00	-13.00	-64.26
655.65	-71.68	-67.77	-1.31	-2.60	-13.00	-58.68
720.64	-75.16	-71.30	-1.21	-2.65	-13.00	-62.16
939.86	-71.50	-66.90	-1.97	-2.63	-13.00	-58.50
1408.00	-56.76	-60.93	7.75	-3.58	-13.00	-43.76

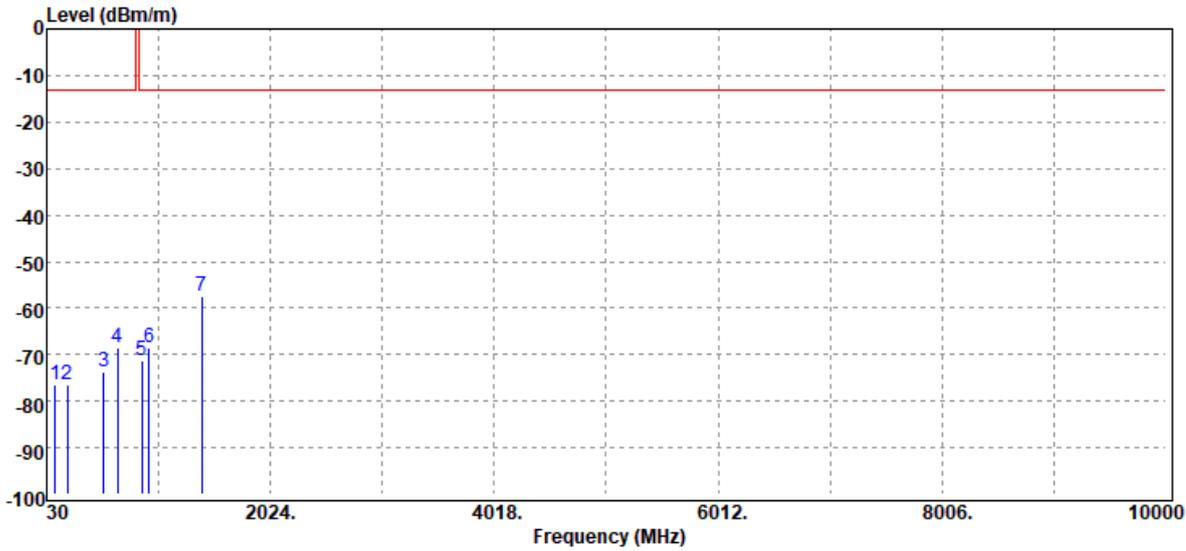
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Report Number :ER/2020/B0089
 Operation Mode :LTE B12
 Test Mode :Tx CH Mid
 EUT Pol :H Plane
 Test Frequency :707.5 MHz

Test Site :SAC I Chamber
 Test Date :2020-12-05
 Temp./Humi. :23.3/61
 Antenna Pol. :VERTICAL
 Engineer :Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
102.75	-76.37	-68.97	-6.44	-0.96	-13.00	-63.37
211.39	-76.34	-73.23	-1.74	-1.37	-13.00	-63.34
542.16	-73.56	-70.33	-1.24	-1.99	-13.00	-60.56
660.50	-68.38	-64.35	-1.34	-2.69	-13.00	-55.38
876.81	-71.28	-66.82	-1.53	-2.93	-13.00	-58.28
939.86	-68.54	-63.94	-1.97	-2.63	-13.00	-55.54
1415.00	-57.53	-61.73	7.79	-3.59	-13.00	-44.53

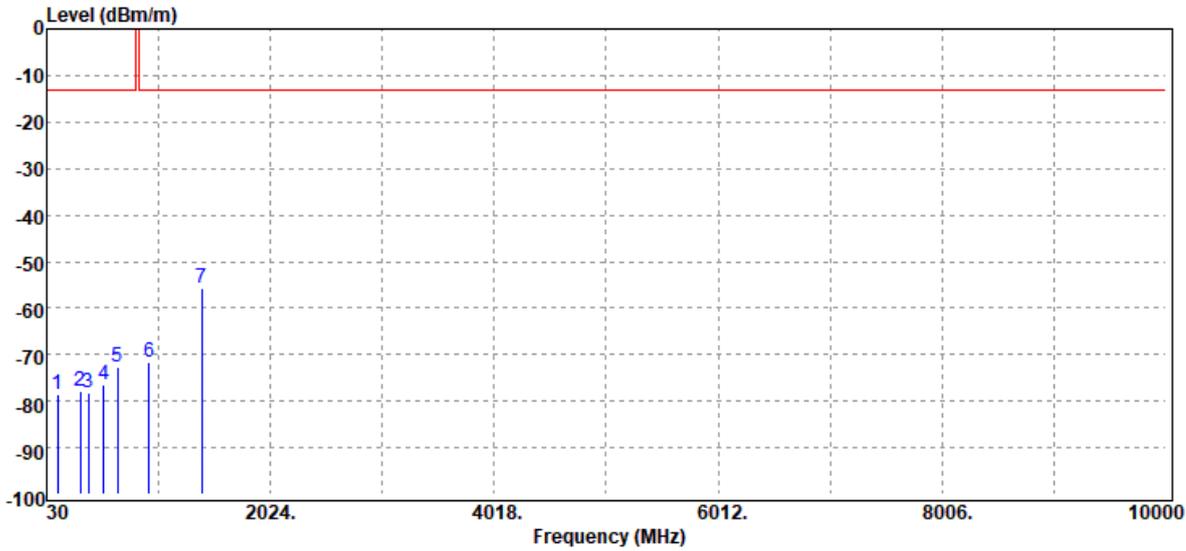
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Report Number :ER/2020/B0089
 Operation Mode :LTE B12
 Test Mode :Tx CH Mid
 EUT Pol :H Plane
 Test Frequency :707.5 MHz

Test Site :SAC I Chamber
 Test Date :2020-12-05
 Temp./Humi. :23.3/61
 Antenna Pol. :HORIZONTAL
 Engineer :Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
124.09	-78.67	-70.18	-7.46	-1.03	-13.00	-65.67
328.76	-77.96	-74.55	-1.72	-1.69	-13.00	-64.96
401.51	-78.28	-74.93	-1.48	-1.87	-13.00	-65.28
539.25	-76.33	-73.12	-1.29	-1.92	-13.00	-63.33
659.53	-72.59	-68.58	-1.33	-2.68	-13.00	-59.59
943.74	-71.68	-67.00	-2.00	-2.68	-13.00	-58.68
1415.00	-55.82	-60.02	7.79	-3.59	-13.00	-42.82

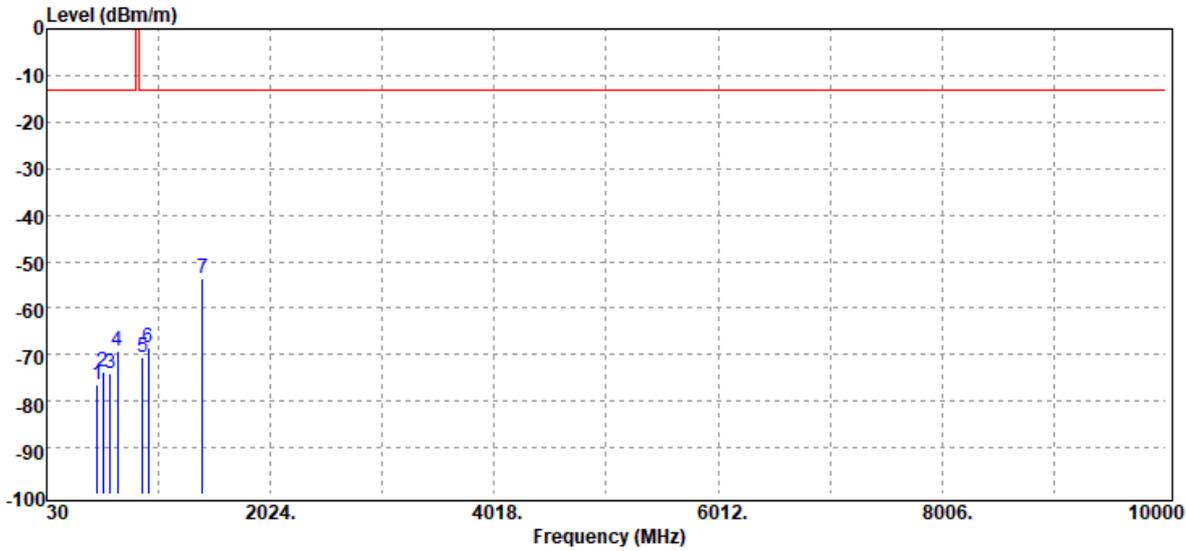
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Report Number :ER/2020/B0089
 Operation Mode :LTE B12
 Test Mode :Tx CH High
 EUT Pol :H Plane
 Test Frequency :711 MHz

Test Site :SAC I Chamber
 Test Date :2020-12-05
 Temp./Humi. :23.3/61
 Antenna Pol. :VERTICAL
 Engineer :Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
481.05	-76.40	-72.62	-1.68	-2.10	-13.00	-63.40
534.40	-73.82	-70.59	-1.36	-1.87	-13.00	-60.82
594.54	-74.12	-69.83	-1.83	-2.46	-13.00	-61.12
659.53	-69.14	-65.13	-1.33	-2.68	-13.00	-56.14
888.45	-70.59	-66.18	-1.45	-2.96	-13.00	-57.59
938.89	-68.38	-63.77	-1.97	-2.64	-13.00	-55.38
1422.00	-53.52	-57.76	7.83	-3.59	-13.00	-40.52

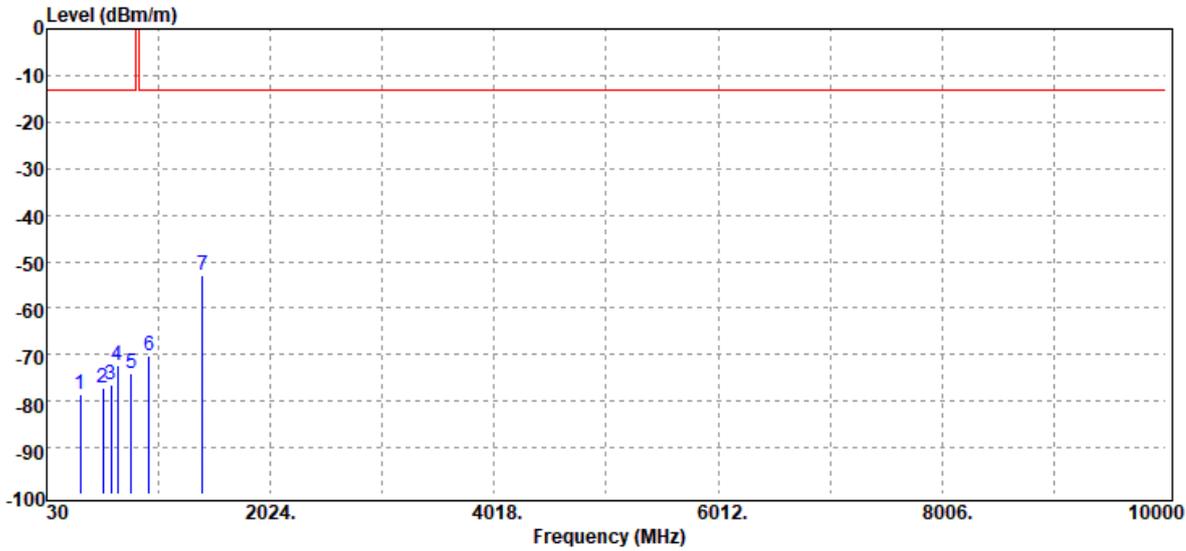
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Report Number :ER/2020/B0089
 Operation Mode :LTE B12
 Test Mode :Tx CH High
 EUT Pol :H Plane
 Test Frequency :711 MHz

Test Site :SAC I Chamber
 Test Date :2020-12-05
 Temp./Humi. :23.3/61
 Antenna Pol. :HORIZONTAL
 Engineer :Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
327.79	-78.48	-75.11	-1.68	-1.69	-13.00	-65.48
532.46	-77.06	-73.86	-1.35	-1.85	-13.00	-64.06
605.21	-76.62	-72.62	-1.89	-2.11	-13.00	-63.62
659.53	-72.33	-68.32	-1.33	-2.68	-13.00	-59.33
786.60	-73.94	-69.71	-1.68	-2.55	-13.00	-60.94
939.86	-70.40	-65.80	-1.97	-2.63	-13.00	-57.40
1422.00	-52.80	-57.04	7.83	-3.59	-13.00	-39.80

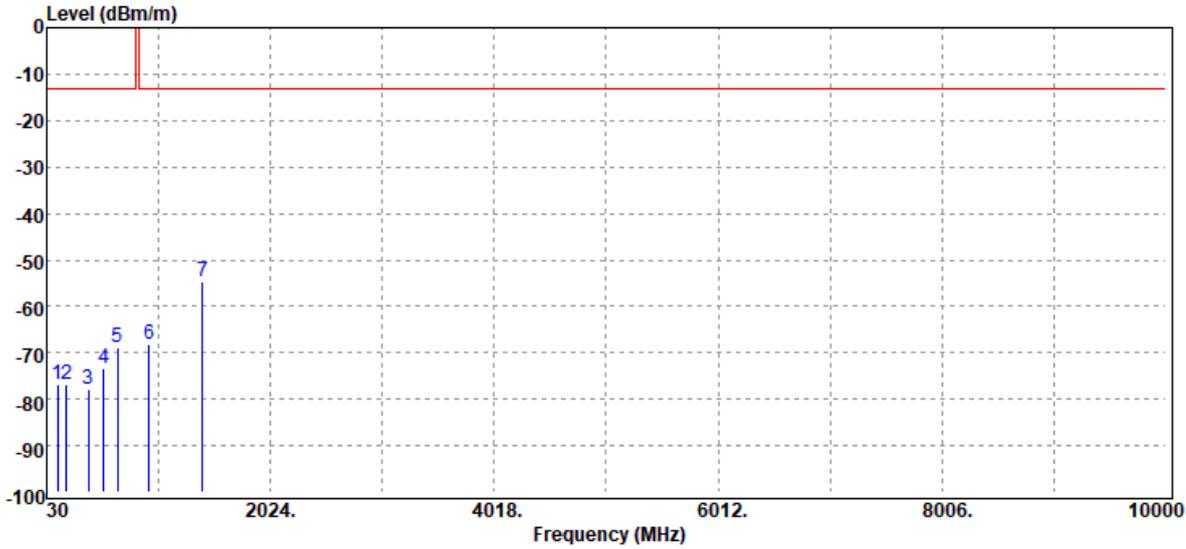
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Radiated Spurious Emission Measurement Result: LTE Band 17 Mode

Report Number	:ER/2020/B0089	Test Site	:SAC I Chamber
Operation Mode	:LTE B17	Test Date	:2020-12-05
Test Mode	:Tx CH Low	Temp./Humi.	:23.3/61
EUT Pol	:H Plane	Antenna Pol.	:VERTICAL
Test Frequency	:709 MHz	Engineer	:Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
125.06	-76.78	-68.27	-7.49	-1.02	-13.00	-63.78
209.45	-76.90	-73.82	-1.71	-1.37	-13.00	-63.90
403.45	-77.75	-74.40	-1.48	-1.87	-13.00	-64.75
541.19	-73.47	-70.25	-1.26	-1.96	-13.00	-60.47
660.50	-68.81	-64.78	-1.34	-2.69	-13.00	-55.81
939.86	-68.25	-63.65	-1.97	-2.63	-13.00	-55.25
1418.00	-54.54	-58.76	7.81	-3.59	-13.00	-41.54

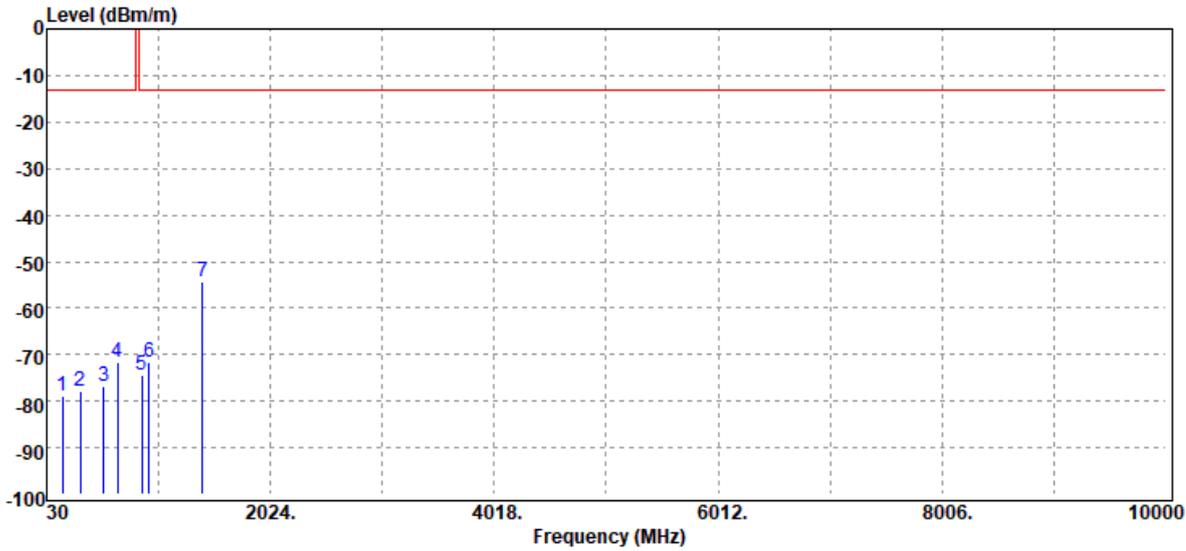
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Report Number :ER/2020/B0089
 Operation Mode :LTE B17
 Test Mode :Tx CH Low
 EUT Pol :H Plane
 Test Frequency :709 MHz

Test Site :SAC I Chamber
 Test Date :2020-12-05
 Temp./Humi. :23.3/61
 Antenna Pol. :HORIZONTAL
 Engineer :Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
170.65	-78.78	-71.69	-5.82	-1.27	-13.00	-65.78
330.70	-77.91	-74.45	-1.75	-1.71	-13.00	-64.91
541.19	-76.77	-73.55	-1.26	-1.96	-13.00	-63.77
660.50	-71.53	-67.50	-1.34	-2.69	-13.00	-58.53
880.69	-74.26	-69.82	-1.44	-3.00	-13.00	-61.26
940.83	-71.59	-66.98	-1.97	-2.64	-13.00	-58.59
1418.00	-54.35	-58.57	7.81	-3.59	-13.00	-41.35

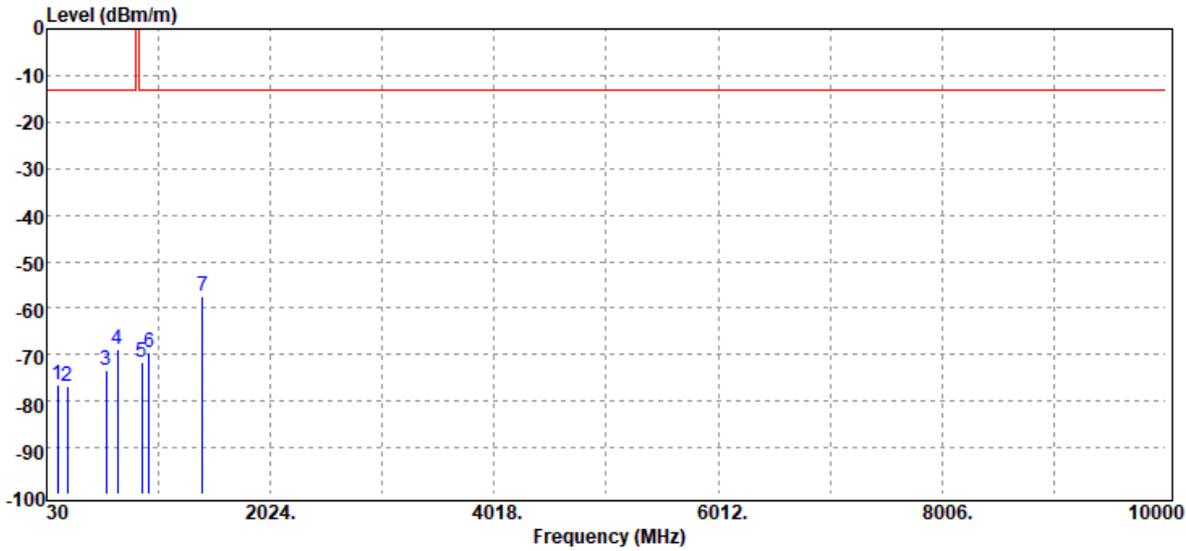
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Report Number :ER/2020/B0089
 Operation Mode :LTE B17
 Test Mode :Tx CH Mid
 EUT Pol :H Plane
 Test Frequency :710 MHz

Test Site :SAC I Chamber
 Test Date :2020-12-05
 Temp./Humi. :23.3/61
 Antenna Pol. :VERTICAL
 Engineer :Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
124.09	-76.64	-68.15	-7.46	-1.03	-13.00	-63.64
212.36	-76.88	-73.73	-1.78	-1.37	-13.00	-63.88
563.50	-73.21	-69.55	-1.38	-2.28	-13.00	-60.21
660.50	-68.90	-64.87	-1.34	-2.69	-13.00	-55.90
876.81	-71.60	-67.14	-1.53	-2.93	-13.00	-58.60
939.86	-69.48	-64.88	-1.97	-2.63	-13.00	-56.48
1420.00	-57.29	-61.52	7.82	-3.59	-13.00	-44.29

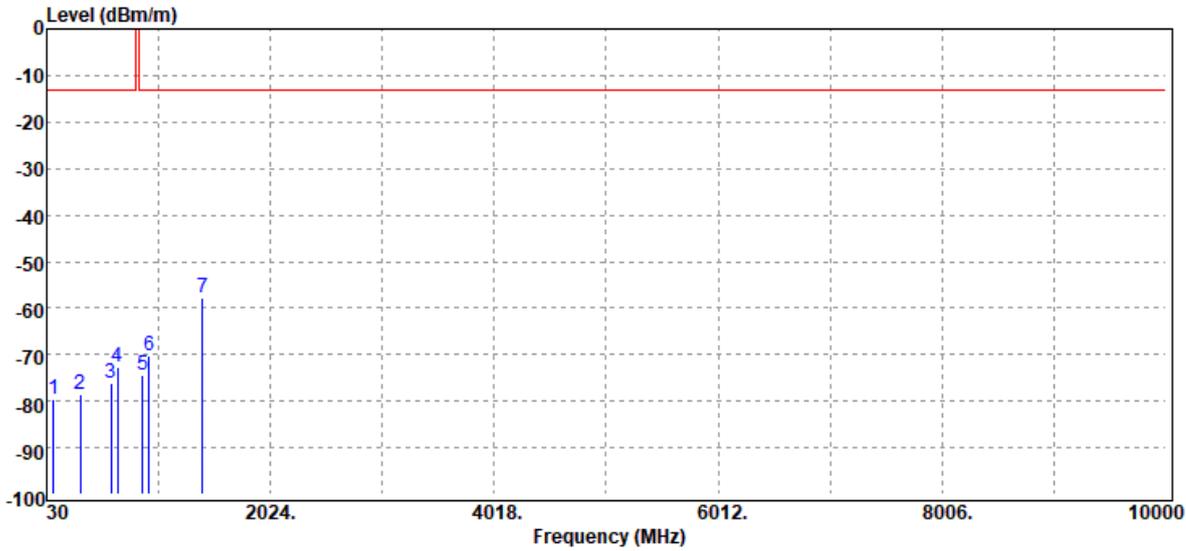
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Report Number :ER/2020/B0089
 Operation Mode :LTE B17
 Test Mode :Tx CH Mid
 EUT Pol :H Plane
 Test Frequency :710 MHz

Test Site :SAC I Chamber
 Test Date :2020-12-05
 Temp./Humi. :23.3/61
 Antenna Pol. :HORIZONTAL
 Engineer :Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
91.11	-79.43	-72.88	-5.64	-0.91	-13.00	-66.43
328.76	-78.46	-75.05	-1.72	-1.69	-13.00	-65.46
605.21	-76.17	-72.17	-1.89	-2.11	-13.00	-63.17
662.44	-72.82	-68.75	-1.35	-2.72	-13.00	-59.82
888.45	-74.33	-69.92	-1.45	-2.96	-13.00	-61.33
939.86	-70.19	-65.59	-1.97	-2.63	-13.00	-57.19
1420.00	-57.84	-62.07	7.82	-3.59	-13.00	-44.84

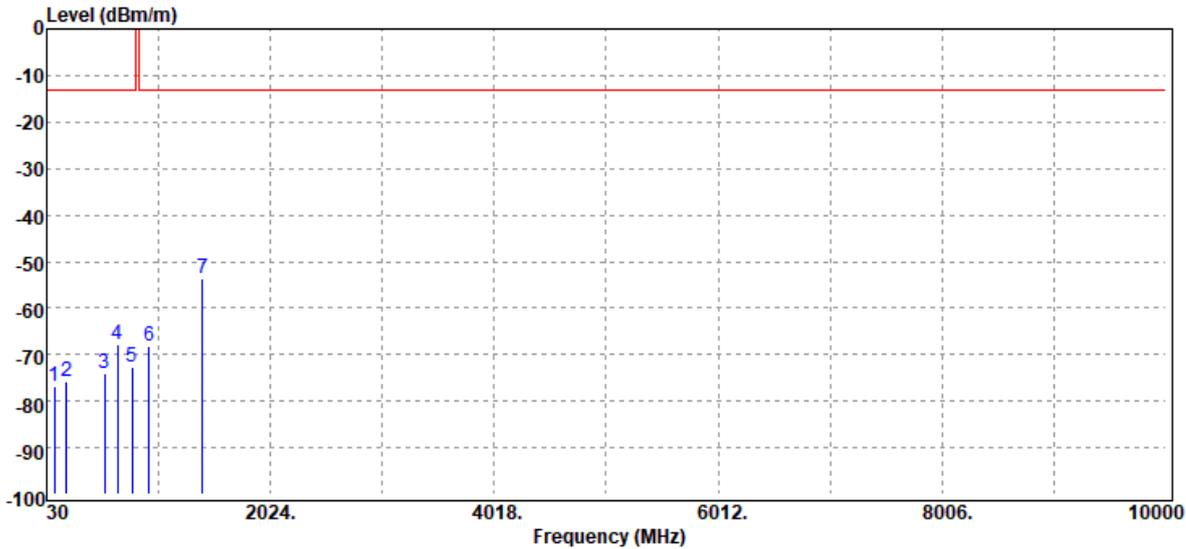
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Report Number :ER/2020/B0089
 Operation Mode :LTE B17
 Test Mode :Tx CH High
 EUT Pol :H Plane
 Test Frequency :711 MHz

Test Site :SAC I Chamber
 Test Date :2020-12-05
 Temp./Humi. :23.3/61
 Antenna Pol. :VERTICAL
 Engineer :Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
100.81	-76.67	-69.52	-6.20	-0.95	-13.00	-63.67
209.45	-75.93	-72.85	-1.71	-1.37	-13.00	-62.93
548.95	-73.92	-70.53	-1.22	-2.17	-13.00	-60.92
660.50	-67.85	-63.82	-1.34	-2.69	-13.00	-54.85
789.51	-72.57	-68.31	-1.59	-2.67	-13.00	-59.57
939.86	-68.24	-63.64	-1.97	-2.63	-13.00	-55.24
1422.00	-53.47	-57.71	7.83	-3.59	-13.00	-40.47

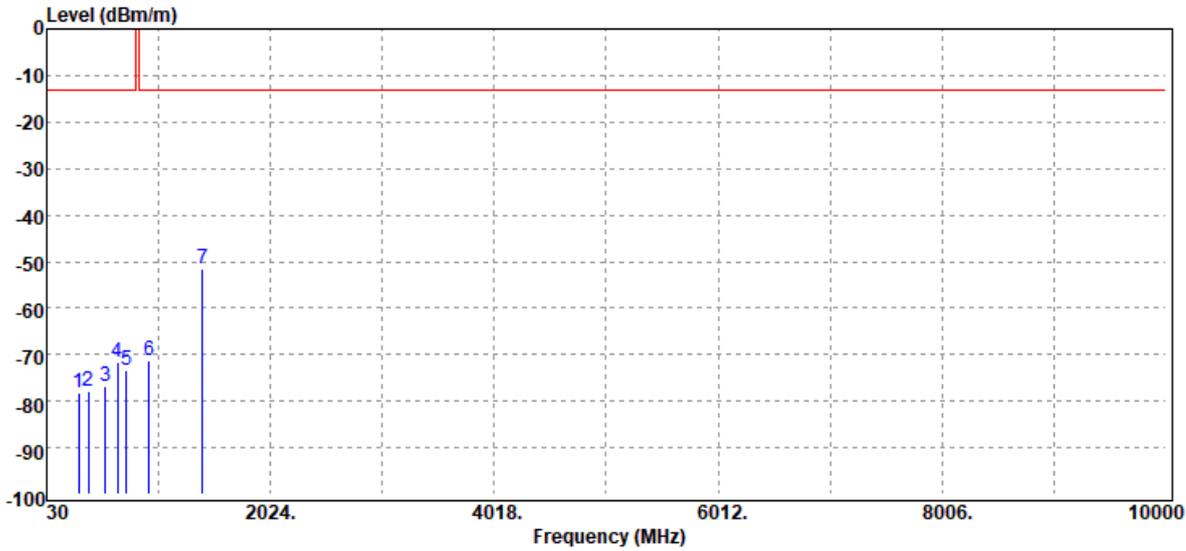
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Report Number :ER/2020/B0089
 Operation Mode :LTE B17
 Test Mode :Tx CH High
 EUT Pol :H Plane
 Test Frequency :711 MHz

Test Site :SAC I Chamber
 Test Date :2020-12-05
 Temp./Humi. :23.3/61
 Antenna Pol. :HORIZONTAL
 Engineer :Neo



Freq. MHz	EIRP/ERP dBm	SG Output Level dBm	Antenna Gain dBi/dBd	Cable Loss dB	Limit dBm	Margin dB
318.09	-78.19	-75.01	-1.54	-1.64	-13.00	-65.19
403.45	-77.92	-74.57	-1.48	-1.87	-13.00	-64.92
550.89	-76.67	-73.22	-1.24	-2.21	-13.00	-63.67
660.50	-71.57	-67.54	-1.34	-2.69	-13.00	-58.57
740.04	-73.45	-68.94	-1.74	-2.77	-13.00	-60.45
939.86	-71.16	-66.56	-1.97	-2.63	-13.00	-58.16
1422.00	-51.59	-55.83	7.83	-3.59	-13.00	-38.59

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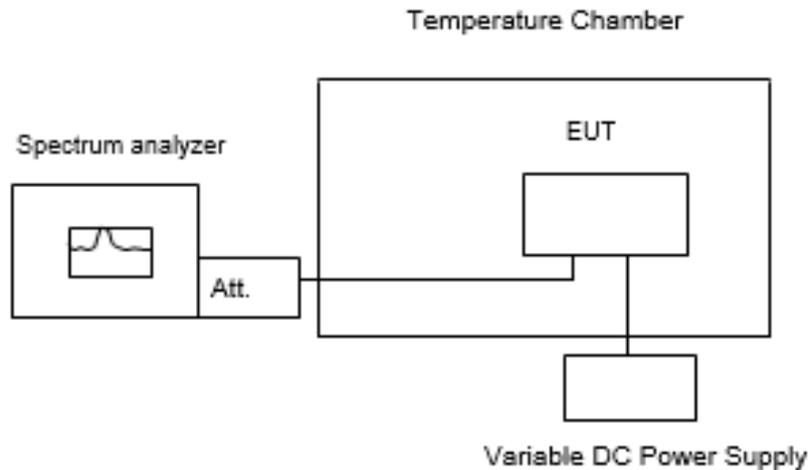
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10 FREQUENCY STABILITY MEASUREMENT

10.1 Standard Applicabl

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

10.2 Test Set-up



Note: Measurement setup for testing on Antenna connector

10.3 Measurement Procedure

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

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

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

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10.4 Measurement Equipment Used

Conducted Emission (measured at antenna port) Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EXA Spectrum Analyzer	Agilent	N9010A	MY50420195	05/06/2020	05/05/2021
DC Power Supply	Agilent	E3640A	MY52410006	12/10/2019	12/09/2020
Temperature Chamber	TERCHY	MHG-120LF	911009	05/20/2020	05/19/2021
Radio Communication Analyser	Anritsu	MT8815B	6200711454	04/01/2020	03/31/2021
Radio Communication Analyser	Anritsu	MT8820C	6200995019	04/01/2020	03/31/2021
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2020	01/01/2021
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2020	01/01/2021
Splitter	RF-LAMBAD	RFLT2W1G18G	11-JSPF412-017	01/02/2020	01/01/2021

10.5 Measurement Result

Note: The battery is rated 3.85V dc.

GPRS 850 Mid Channel 836.6 MHz				
Limit: +/- 2.5 ppm				
Vdc	Temp. (°C)	Freq. (MHz)	Delta (Hz)	Limit (Hz)
FREQUENCY ERROR vs. VOLTAGE				
4.235	20	836.600005	5	2091
3.85	20	836.599999	-10	2091
3.465	20	836.599996	-4	2091
2.7 (End point)	20	836.600004	4	2091
FREQUENCY ERROR vs. Temp.				
3.85	50	836.600001	10	2091
3.85	40	836.600001	1	2091
3.85	30	836.599996	-4	2091
3.85	20	836.599999	-10	2091
3.85	10	836.600004	4	2091
3.85	0	836.599995	-5	2091
3.85	-10	836.600003	3	2091
3.85	-20	836.600006	6	2091
3.85	-30	836.600004	4	2091

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GPRS 1900 Mid Channel		1880	MHz	
Limit: +/- 2.5 ppm				
Vdc	Temp. (°C)	Freq. (MHz)	Delta (Hz)	Limit (Hz)
FREQUENCY ERROR vs. VOLTAGE				
4.235	20	1880.000005	5	4700
3.85	20	1880.000009	9	4700
3.465	20	1879.999999	-1	4700
2.7 (End point)	20	1880.00001	10	4700
FREQUENCY ERROR vs. Temp.				
3.85	50	1880.000002	2	4700
3.85	40	1880.00001	10	4700
3.85	30	1879.999997	-3	4700
3.85	20	1880.000007	7	4700
3.85	10	1880.000007	7	4700
3.85	0	1880.000004	4	4700
3.85	-10	1879.999993	-7	4700
3.85	-20	1880.000009	9	4700
3.85	-30	1879.999991	-9	4700

WCDMA V Mid Channel		836.6	MHz	
Limit: +/- 2.5 ppm				
Vdc	Temp. (°C)	Freq. (MHz)	Delta (Hz)	Limit (Hz)
FREQUENCY ERROR vs. VOLTAGE				
4	20	836.599995	-5	2091
3.85	20	836.599999	-10	2091
3.7	20	836.600007	7	2091
2.7 (End point)	20	836.600002	2	2091
FREQUENCY ERROR vs. Temp.				
3.85	50	836.599999	-10	2091
3.85	40	836.599993	-7	2091
3.85	30	836.600008	8	2091
3.85	20	836.599991	-9	2091
3.85	10	836.600003	3	2091
3.85	0	836.600007	7	2091
3.85	-10	836.599998	-2	2091
3.85	-20	836.600009	9	2091
3.85	-30	836.600007	7	2091

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Reference Freq.:	LTE B5 Mid Channel		836.5	MHz 10M QPSK CH 20525
	Power Supply Vdc	Temp. (°C)		
Freq. ERROR vs. VOLTAGE				
4.235	25	836.500003	3	2091
3.85	25	836.499991	-9	2091
3.465	25	836.500007	7	2091
2.7 (End Point)	25	836.500008	8	2091
Freq. ERROR vs. Temp.				
3.85	-30	836.500004	4	2091
3.85	-20	836.499999	-1	2091
3.85	-10	836.499996	-4	2091
3.85	0	836.500000	0	2091
3.85	10	836.500002	2	2091
3.85	20	836.499991	-9	2091
3.85	30	836.499997	-3	2091
3.85	40	836.500008	8	2091
3.85	50	836.499992	-8	2091

Reference Freq.:	LTE B12 Mid Channel		707.5	MHz 10M QPSK CH 23095
	Power Supply Vdc	Temp. (°C)		
Freq. ERROR vs. VOLTAGE				
4.235	25	707.499993	-7	1769
3.85	25	707.499992	-8	1769
3.465	25	707.499991	-9	1769
2.7 (End Point)	25	707.500009	9	1769
Freq. ERROR vs. Temp.				
3.85	-30	707.500006	6	1769
3.85	-20	707.500006	6	1769
3.85	-10	707.500006	6	1769
3.85	0	707.499990	-10	1769
3.85	10	707.499999	-1	1769
3.85	20	707.499995	-5	1769
3.85	30	707.500000	0	1769
3.85	40	707.500008	8	1769
3.85	50	707.499999	-1	1769

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Reference Freq.:	LTE B17 Mid Channel		710	MHz 10M QPSK CH 23790
Power Supply Vdc	Temp. (°C)	Freq. (MHz)	Delta (Hz)	Limit = +/- 2.5 ppm (Hz)
Freq. ERROR vs. VOLTAGE				
4.235	25	709.999993	-7	1775
3.85	25	709.999992	-8	1775
3.465	25	709.999994	-6	1775
2.7	25	710.000010	10	1775
(End Point)				
Freq. ERROR vs. Temp.				
3.85	-30	709.999992	-8	1775
3.85	-20	710.000008	8	1775
3.85	-10	710.000008	8	1775
3.85	0	710.000002	2	1775
3.85	10	709.999993	-7	1775
3.85	20	709.999992	-8	1775
3.85	30	709.999994	-6	1775
3.85	40	710.000004	4	1775
3.85	50	710.000000	0	1775

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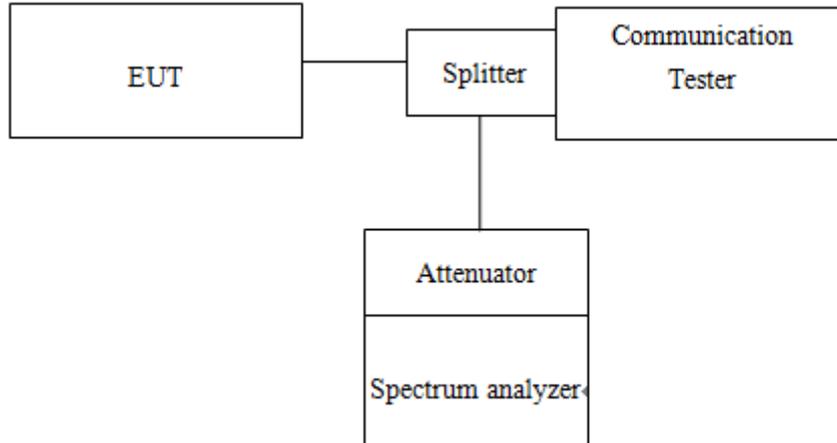
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11 PEAK TO AVERAGE RATIO

11.1 Standard Applicable

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

11.2 Test SET-UP



11.3 Measurement Procedure

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

11.4 Measurement Equipment Used

Conducted Emission (measured at antenna port) Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EXA Spectrum Analyzer	Agilent	N9010A	MY50420195	05/06/2020	05/05/2021
DC Power Supply	Agilent	E3640A	MY52410006	12/10/2019	12/09/2020
Temperature Chamber	TERCHY	MHG-120LF	911009	05/20/2020	05/19/2021
Radio Communication Analyer	Anritsu	MT8815B	6200711454	04/01/2020	03/31/2021
Radio Communication Analyer	Anritsu	MT8820C	6200995019	04/01/2020	03/31/2021
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2020	01/01/2021
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2020	01/01/2021
Splitter	RF-LAMBAD	RFLT2W1G1 8G	11-JSPF412- 017	01/02/2020	01/01/2021

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11.5 Measurement Result

Freq. (MHz)	CH	Peak-to-Average Ratio (dB)	
		GSM 850	GPRS 850
824.2	128	10.99	9.52
836.6	190	9.47	9.64
848.8	251	10.67	9.68
Freq. (MHz)	CH	Peak-to-Average Ratio (dB)	
		GSM 1900	GPRS 1900
1850.2	512	9.94	9.96
1880	661	9.54	9.94
1909.8	810	9.78	9.73

Freq. (MHz)	CH	Peak-to-Average Ratio (dB)		
		WCDMA V	HSDPA V	HSUPA V
826.4	4132	2.94	3.71	4.04
836.6	4183	2.97	4.05	3.86
846.6	4233	2.92	3.94	4.02

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LTE BAND 5							
Channel bandwidth: 1.4MHz				Channel bandwidth: 3MHz			
Freq. (MHz)	CH	PAPR (dB)		Freq. (MHz)	CH	PAPR (dB)	
		64QAM	Limit			64QAM	Limit
824.7	20407	6.86	13	825.5	20415	6.16	13
836.5	20525	6.94	13	836.5	20525	6.08	13
848.3	20643	6.72	13	847.5	20635	6.02	13

LTE BAND 5							
Channel bandwidth: 5MHz				Channel bandwidth: 10MHz			
Freq. (MHz)	CH	PAPR (dB)		Freq. (MHz)	CH	PAPR (dB)	
		64QAM	Limit			64QAM	Limit
826.5	20425	6.11	13	829.0	20450	6.17	13
836.5	20525	6.13	13	836.5	20525	6.14	13
846.5	20625	6.04	13	844.0	20600	6.11	13

LTE BAND 12							
Channel bandwidth: 1.4MHz				Channel bandwidth: 3MHz			
Freq. (MHz)	CH	PAPR (dB)		Freq. (MHz)	CH	PAPR (dB)	
		64QAM	Limit			64QAM	Limit
699.7	23017	6.18	13	700.5	23025	6.38	13
707.5	23095	6.59	13	707.5	23095	6.63	13
715.3	23173	6.68	13	714.5	23165	6.57	13

LTE BAND 12							
Channel bandwidth: 5MHz				Channel bandwidth: 10MHz			
Freq. (MHz)	CH	PAPR (dB)		Freq. (MHz)	CH	PAPR (dB)	
		64QAM	Limit			64QAM	Limit
701.5	23035	6.48	13	704.0	23060	6.69	13
707.5	23095	6.51	13	707.5	23095	6.60	13
713.5	23155	6.55	13	711.0	23130	6.34	13

LTE BAND 17							
Channel bandwidth: 1.4MHz				Channel bandwidth: 3MHz			
Freq. (MHz)	CH	PAPR (dB)		Freq. (MHz)	CH	PAPR (dB)	
		64QAM	Limit			64QAM	Limit
706.5	23755	6.61	13	709.0	23780	6.34	13
710.0	23790	6.34	13	710.0	23790	6.42	13
713.5	23825	6.59	13	711.0	23800	6.25	13

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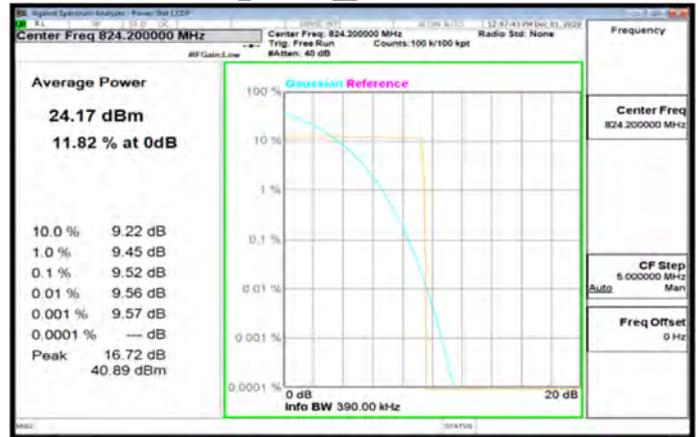
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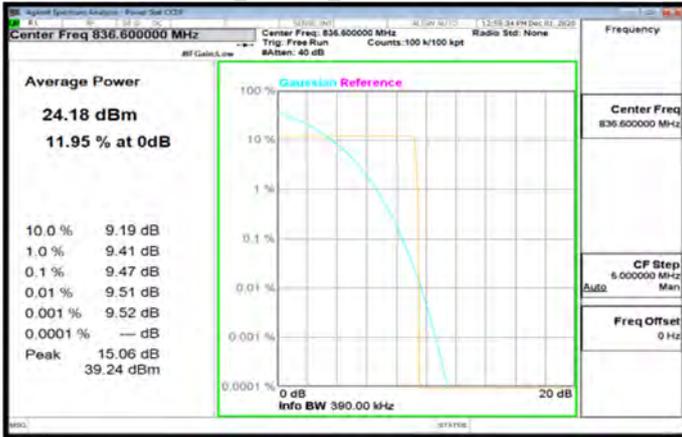
GSM_850MHz_LowCH128-824.2



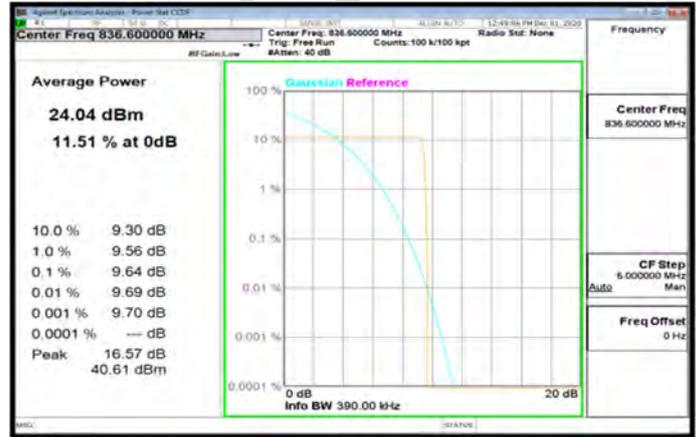
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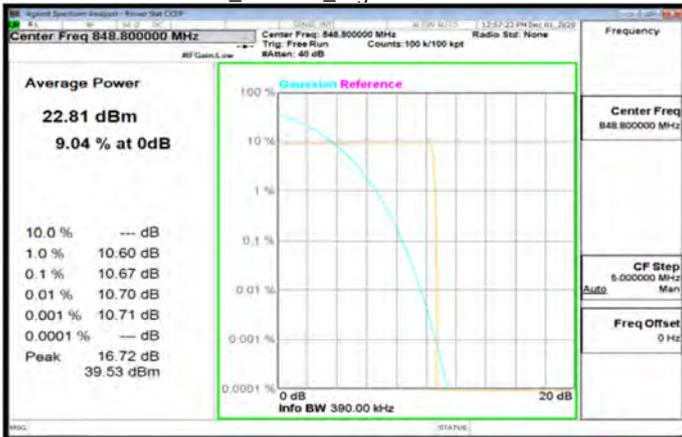
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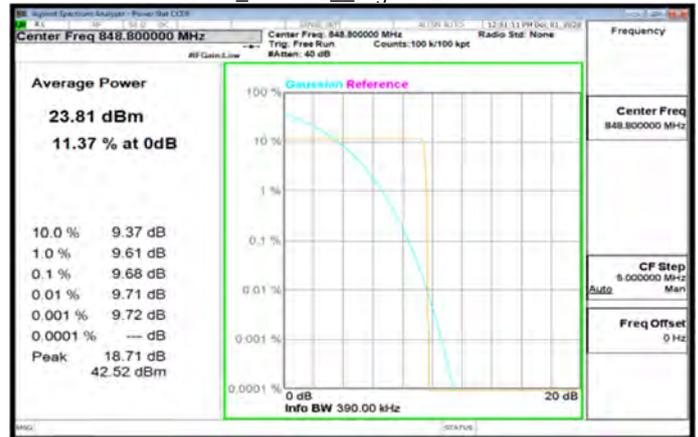
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GSM_850MHz_HighCH251-848.8



GPRS_850MHz_HighCH251-848.8

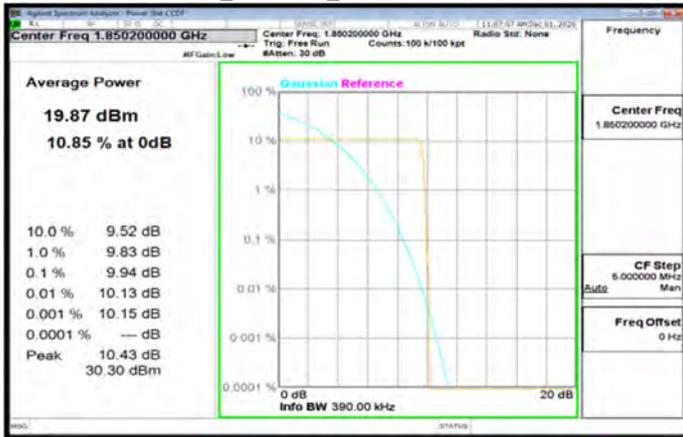


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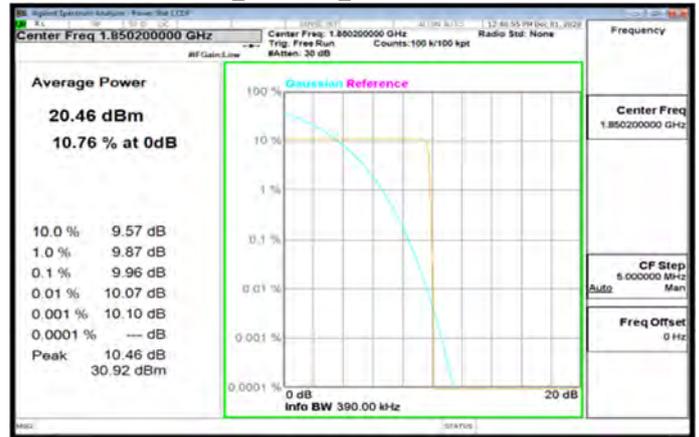
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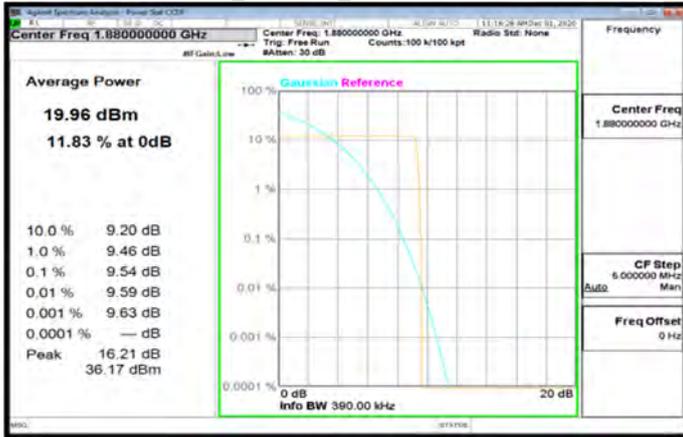
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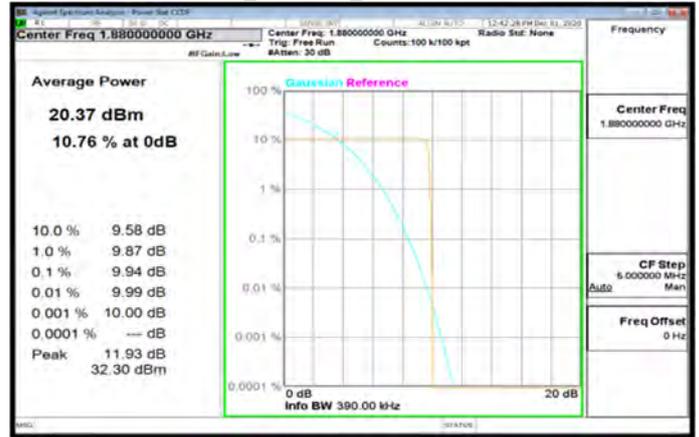
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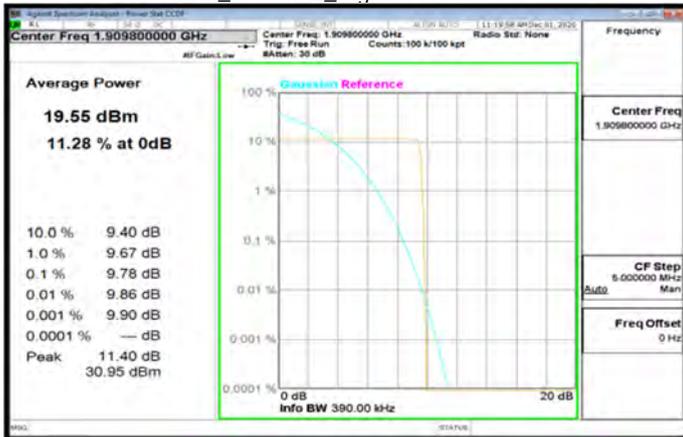
GSM_1900MHz_MidCH661-1880



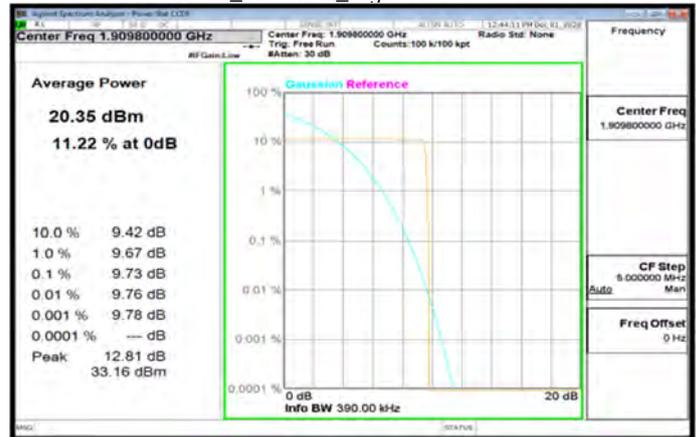
GPRS_1900MHz_MidCH661-1880



GSM_1900MHz_HighCH810-1909.8



GPRS_1900MHz_HighCH810-1909.8

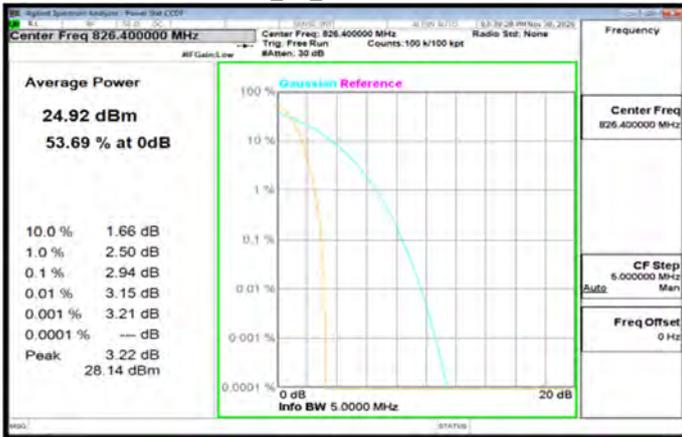


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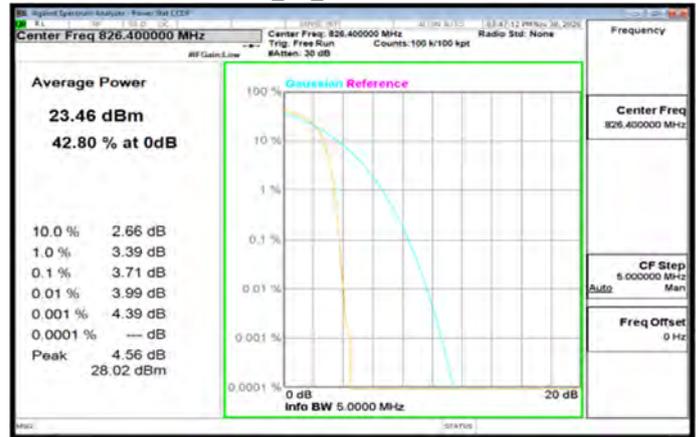
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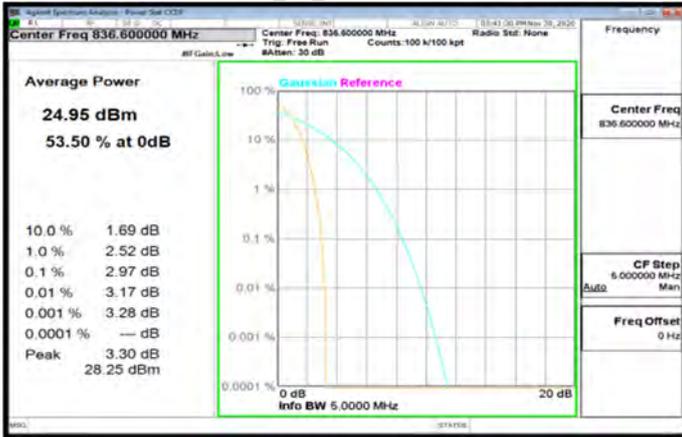
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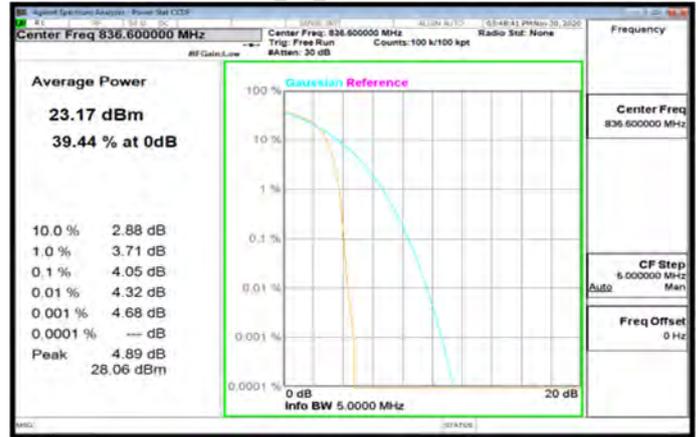
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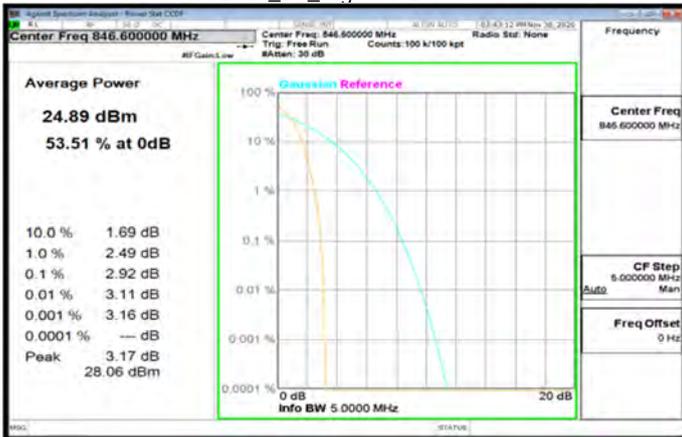
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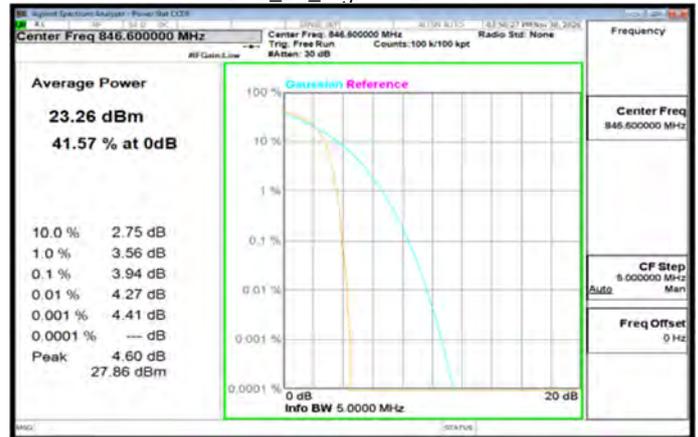
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WCDMA_B5_HighCH4233-846.6



HSDPA_B5_HighCH4233-846.6

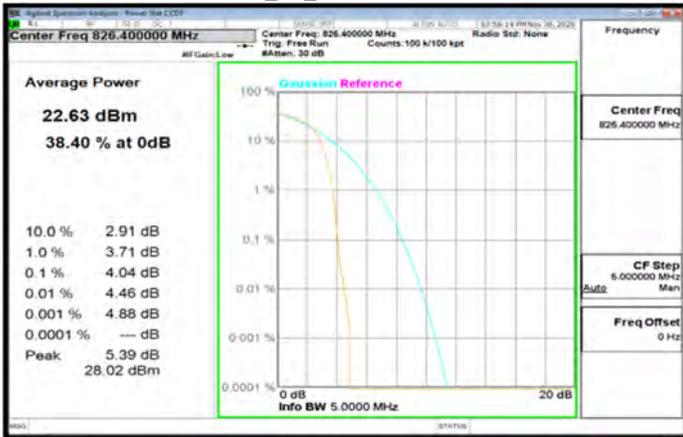


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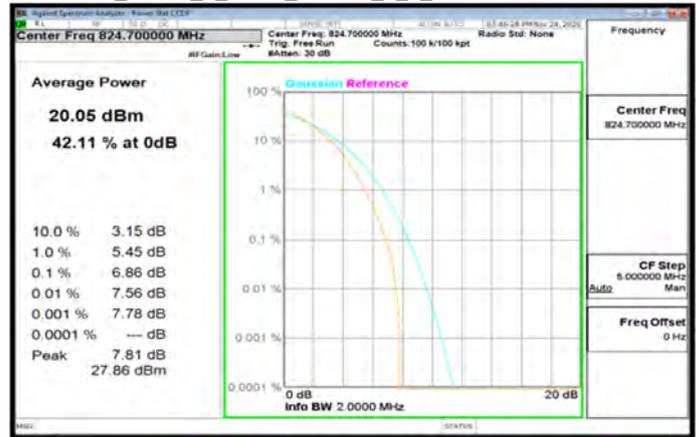
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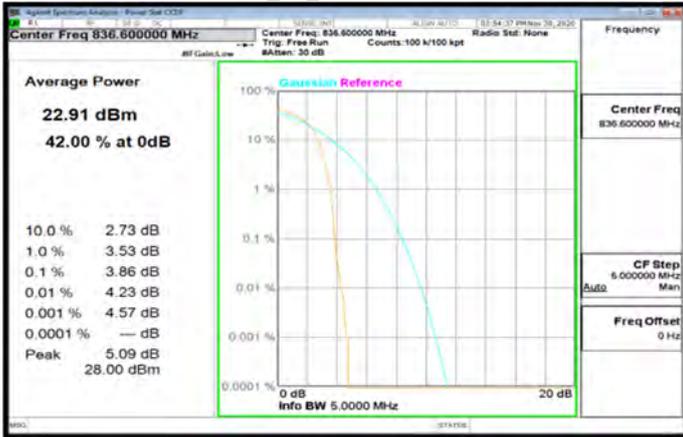
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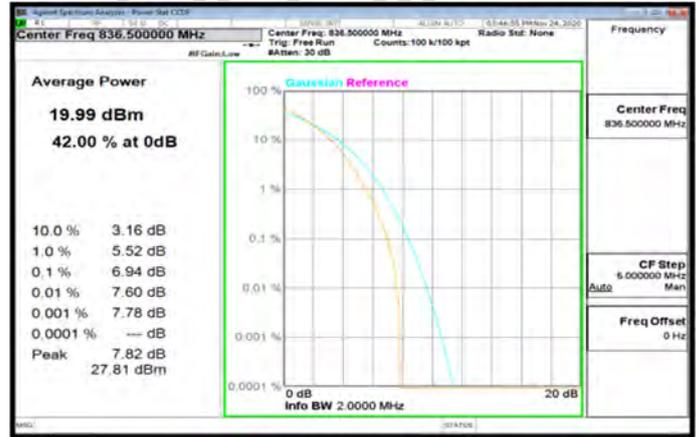
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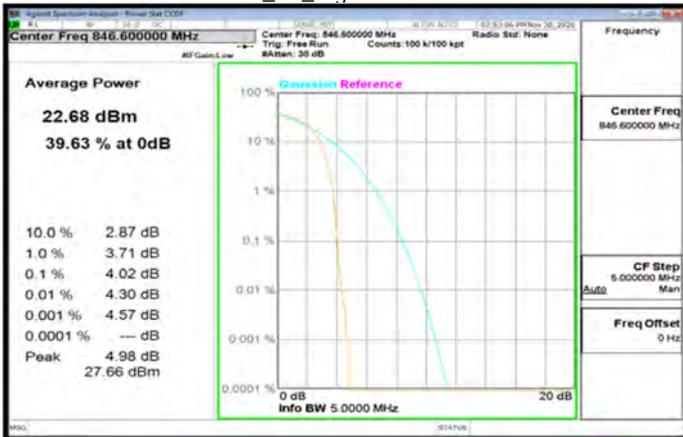
HSUPA_B5_MidCH4183-836.6



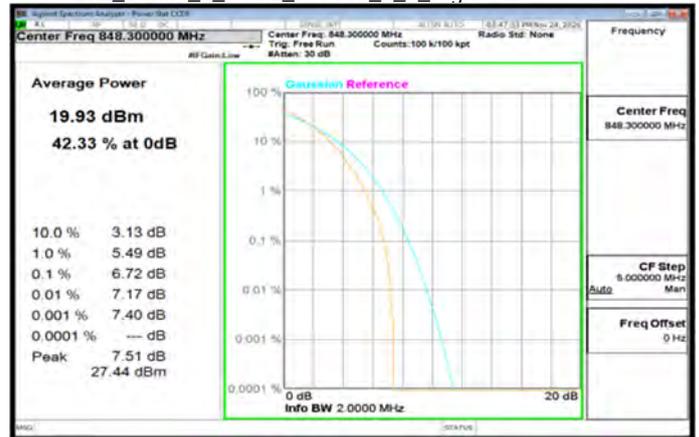
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HSUPA_B5_HighCH4233-846.6



LTE_Band5_1_4MHz_64QAM_6_0_HighCH20643-848.3

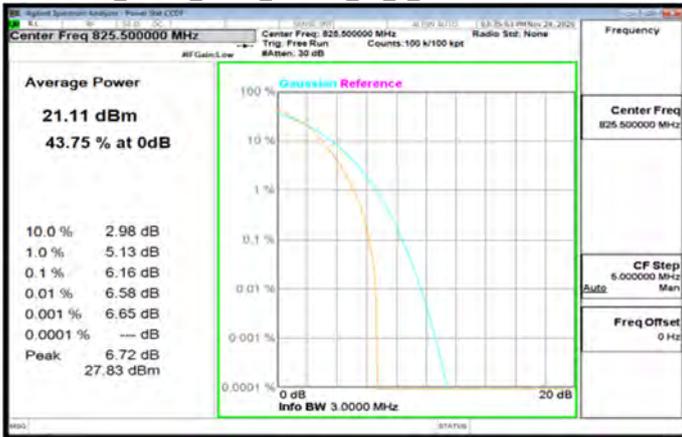


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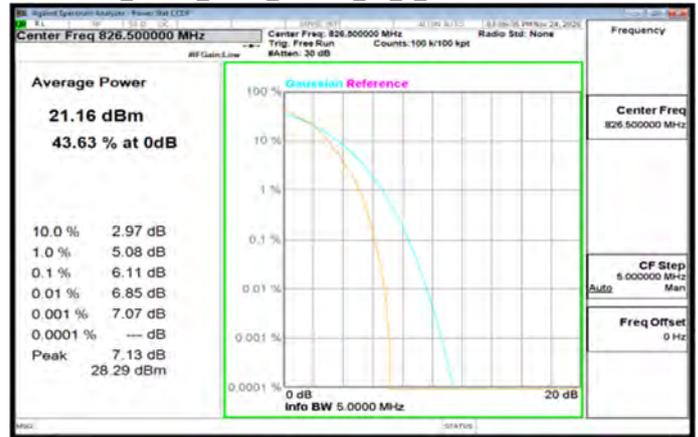
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LTE_Band5_3MHz_64QAM_15_0_LowCH20415-825.5



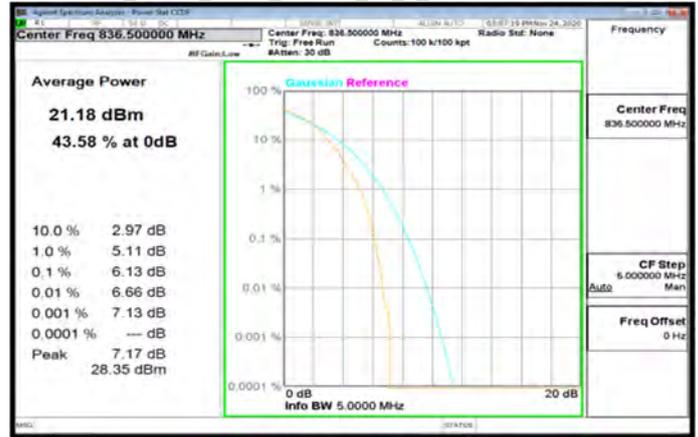
LTE_Band5_5MHz_64QAM_25_0_LowCH20425-826.5



LTE_Band5_3MHz_64QAM_15_0_MidCH20525-836.5



LTE_Band5_5MHz_64QAM_25_0_MidCH20525-836.5



LTE_Band5_3MHz_64QAM_15_0_HighCH20635-847.5



LTE_Band5_5MHz_64QAM_25_0_HighCH20625-846.5



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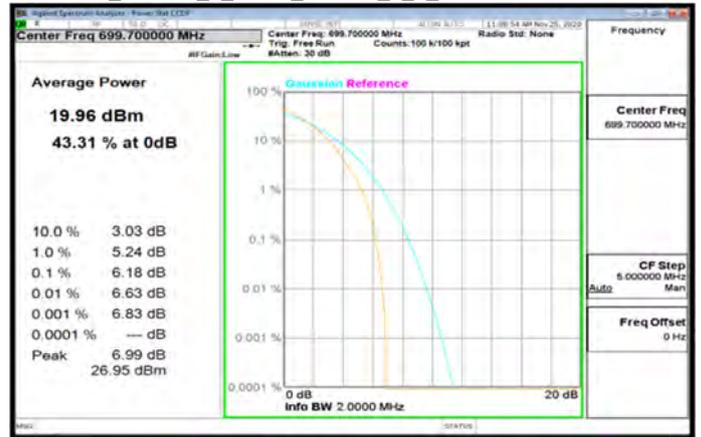
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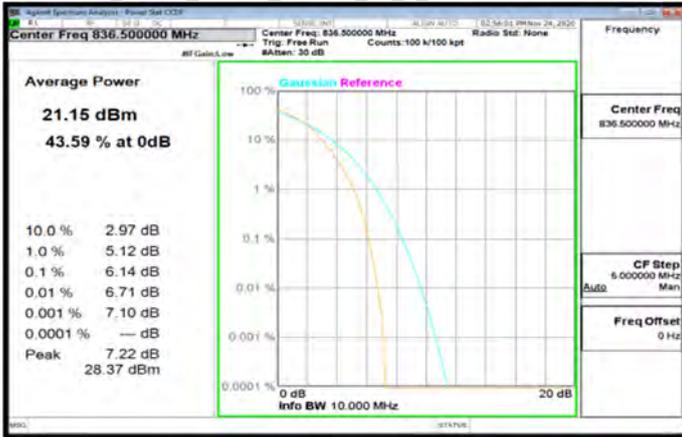
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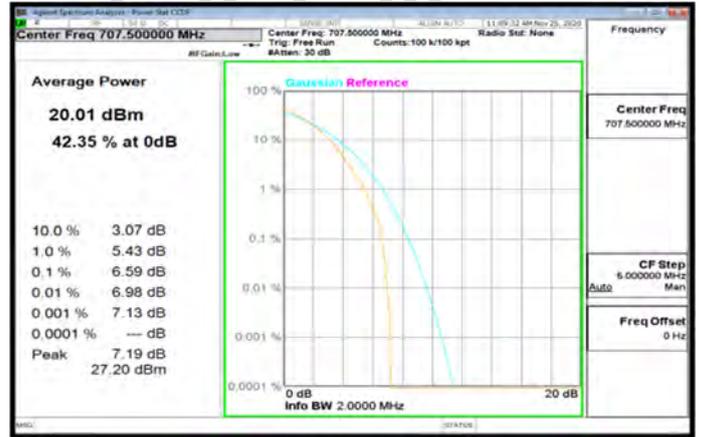
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LTE_Band5_10MHz_64QAM_50_0_MidCH20525-836.5



LTE_Band12_1_4MHz_64QAM_6_0_MidCH23095-707.5



LTE_Band5_10MHz_64QAM_50_0_HighCH20600-844



LTE_Band12_1_4MHz_64QAM_6_0_HighCH23173-715.3

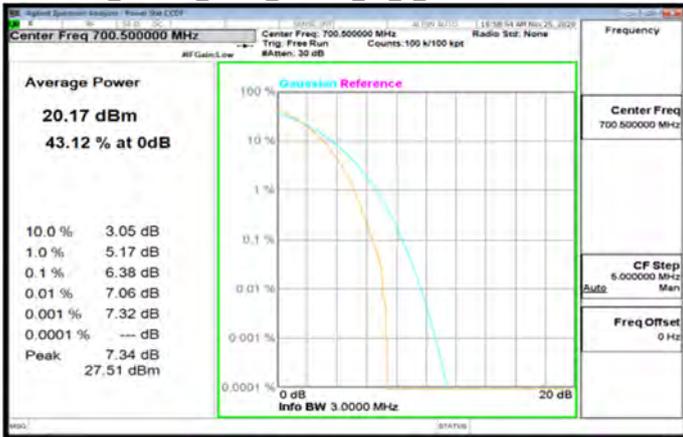


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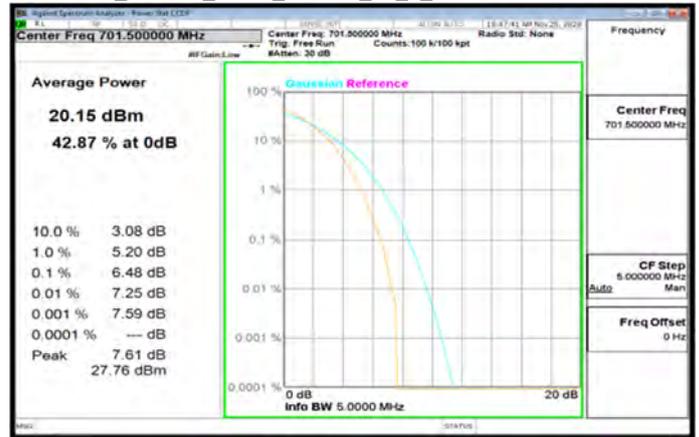
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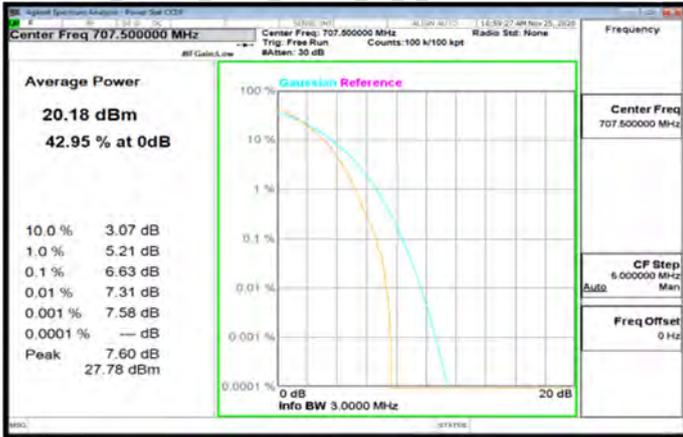
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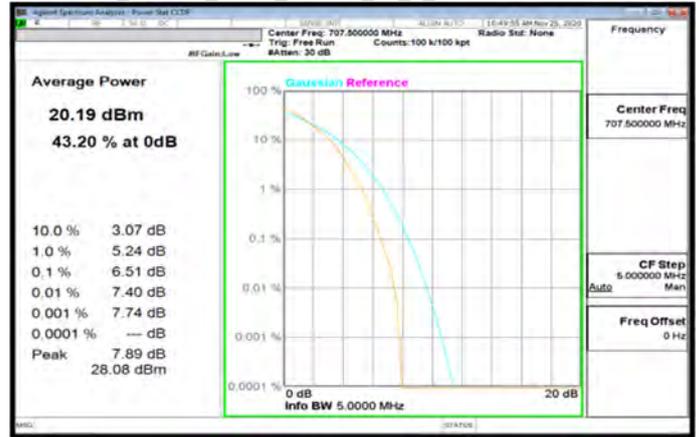
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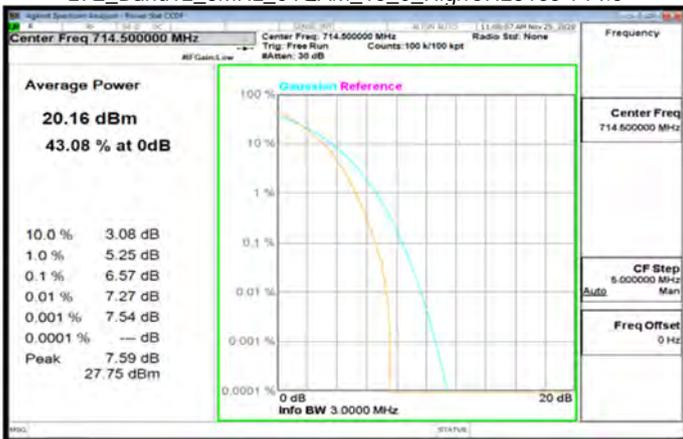
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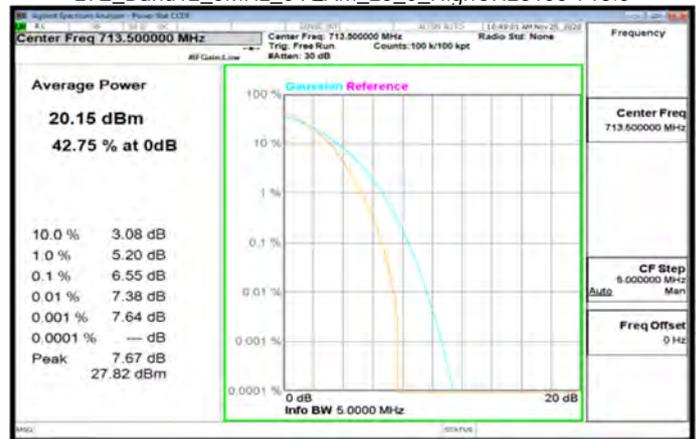
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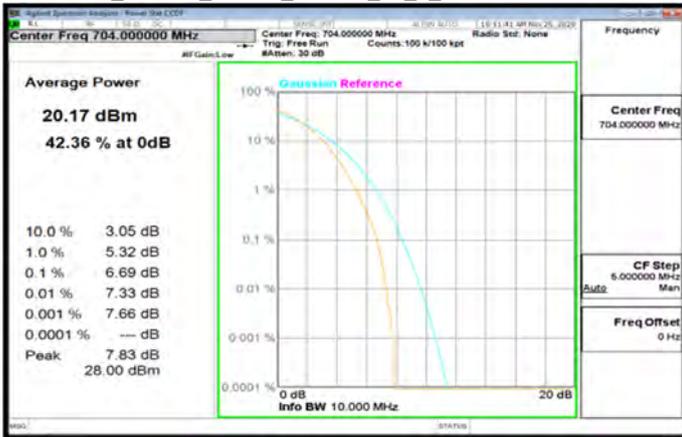


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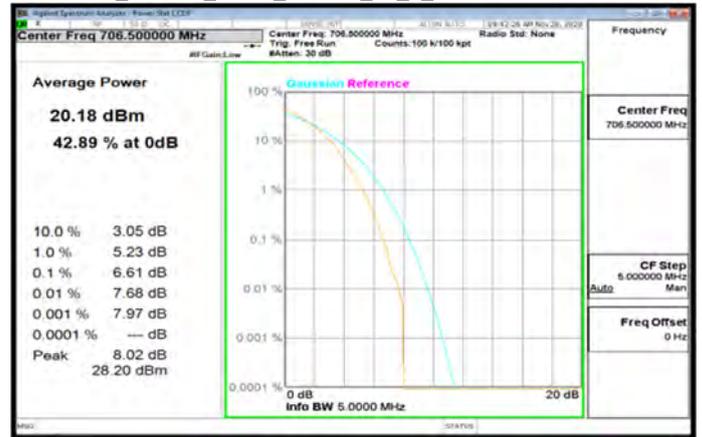
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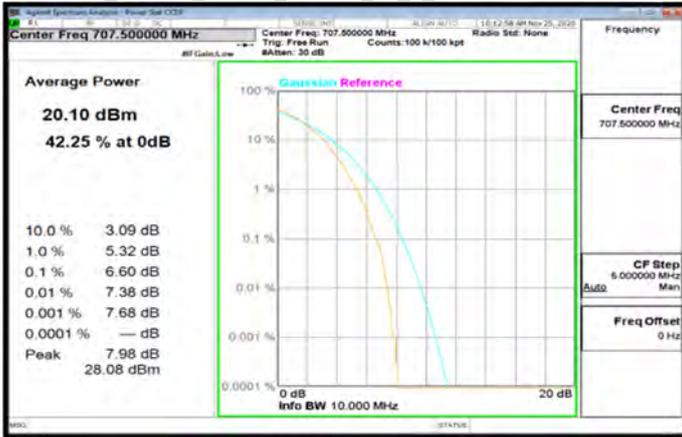
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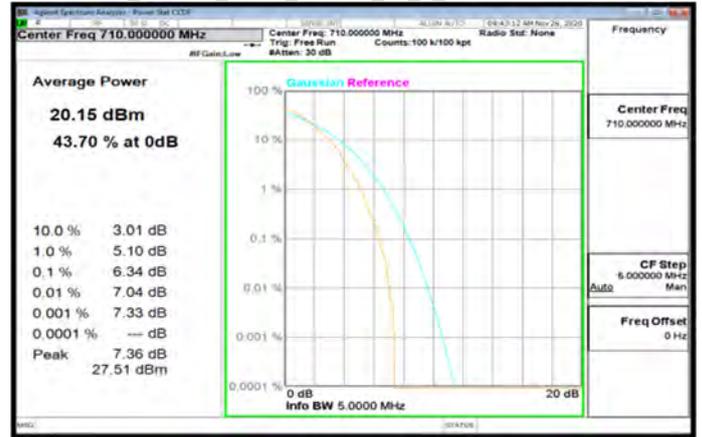
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LTE_Band12_10MHz_64QAM_50_0_MidCH23095-707.5



LTE_Band17_5MHz_64QAM_25_0_MidCH23790-710



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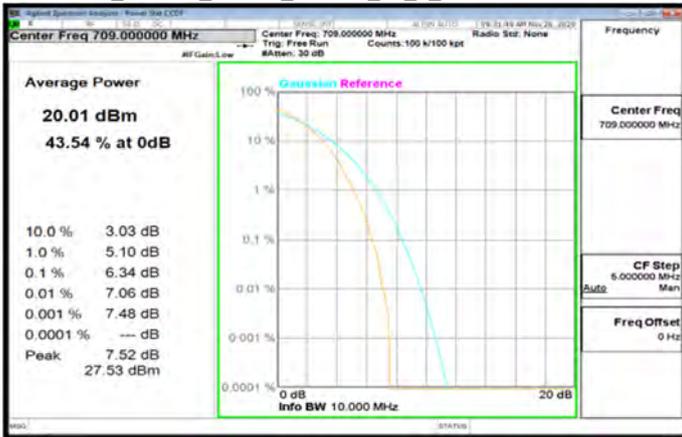


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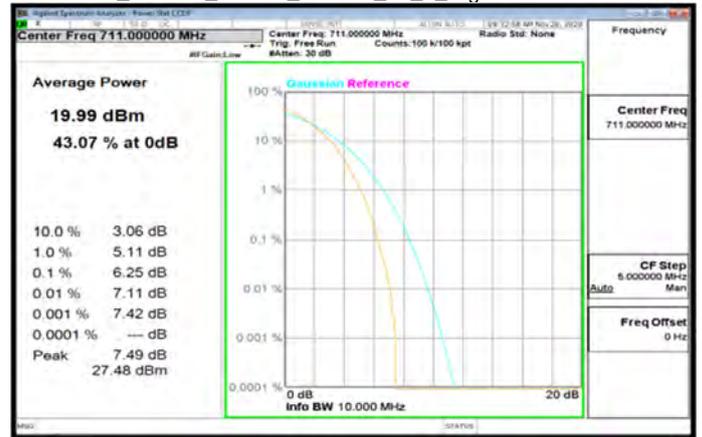
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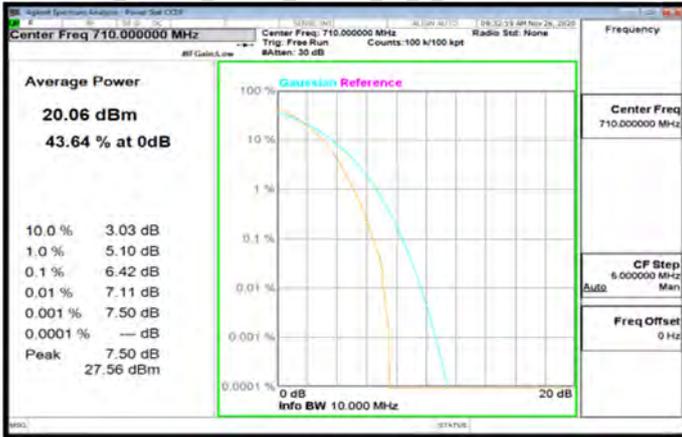
LTE_Band17_10MHz_64QAM_50_0_LowCH23780-709



LTE_Band17_10MHz_64QAM_50_0_HighCH23800-711



LTE_Band17_10MHz_64QAM_50_0_MidCH23790-710



~ End of Report ~

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

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