

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT
INTENTIONAL RADIATOR CERTIFICATION TO
FCC PART 24 SUBPART E and PART 27 SUBPART C & SUBPART L
REQUIREMENT

OF

Applicant: Novatel Wireless
9605 Scranton Rd., Suite 300, San Diego, CA 92121, USA
Product Name: Voice Link Home Phone
Brand Name: Novatel Wireless
Model No.: T2050
Model Difference: N/A
FCC ID: PKRNVWT2050
Report Number: ER/2017/90168
FCC Rule Part: 2, 24E, 27C & L
Issue Date: Oct. 20, 2017
Date of Test: Sep. 25, 2017~ Oct. 13, 2017
Date of EUT Received: Sep. 25, 2017

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Electronics & Communication Laboratory. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in TIA/EIA-603-E-2016 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits.

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

Prepared By:

Stefanie

Stefanie Yu / Clerk

Approved By:

Jim Chang

Jim Chang / Asst. Manager



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Revision History

Report Number	Revision	Description	Issue Date
ER/2017/90168	Rev.00	Initial creation of document	Oct. 20, 2017

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1. GENERAL PRODUCT INFORMATION

1.1. Product Description

General:

Product Name:	Voice Link Home Phone	
Brand Name:	Novatel Wireless	
Model No.:	T2050	
Model Difference:	N/A	
Product SW/HW version:	N/A / N/A	
Power Supply:	3.6Vdc from AA Battery or 5Vdc from AC/DC Adapter	
	Adapter:	Model No.: ASSA76a-050200, Supplier: AQUIL STAR PRECISION INDUSTRIAL (SHENZHEN)CO.,LTD.

LTE:

Cellular Phone Standards Frequency Range and Power	Operating Frequency		Rated Power
	LTE-Band 2 (Bandwidth 5MHz)	1852.5MHz – 1907.5MHz	23dBm
	LTE-Band 2 (Bandwidth 10MHz)	1855.0MHz – 1905.0MHz	23dBm
	LTE-Band 2 (Bandwidth 15MHz)	1857.5MHz – 1902.5MHz	23dBm
	LTE-Band 2 (Bandwidth 20MHz)	1860.0MHz – 1900.0MHz	23dBm
	LTE-Band 4 (Bandwidth 5MHz)	1712.5MHz – 1752.5MHz	23dBm
	LTE-Band 4 (Bandwidth 10MHz)	1715.0MHz – 1750.0MHz	23dBm
	LTE-Band 4 (Bandwidth 15MHz)	1717.5MHz – 1747.5MHz	23dBm
	LTE-Band 4 (Bandwidth 20MHz)	1720.0MHz – 1745.0MHz	23dBm
	LTE-Band 13 (5MHz)	779.5MHz - 784.5MHz	23dBm
	LTE-Band 13 (10MHz)	782.0MHz	23dBm

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Type of Emission:

LTE Band	BW (MHz)	Modulation	Type of Emission
LTE Band 2	5MHz	QPSK	4M49G7D
LTE Band 2	5MHz	16QAM	4M90D7W
LTE Band 2	10MHz	QPSK	9M00G7D
LTE Band 2	10MHz	16QAM	8M96D7W
LTE Band 2	15MHz	QPSK	13M6G7D
LTE Band 2	15MHz	16QAM	13M5D7W
LTE Band 2	20MHz	QPSK	18M0G7D
LTE Band 2	20MHz	16QAM	18M0D7W
LTE Band 4	5MHz	QPSK	4M49G7D
LTE Band 4	5MHz	16QAM	4M89D7W
LTE Band 4	10MHz	QPSK	9M00G7D
LTE Band 4	10MHz	16QAM	8M96D7W
LTE Band 4	15MHz	QPSK	13M5G7D
LTE Band 4	15MHz	16QAM	13M5D7W
LTE Band 4	20MHz	QPSK	18M0G7D
LTE Band 4	20MHz	16QAM	18M0D7W
LTE Band 13	5MHz	QPSK	4M49G7D
LTE Band 13	5MHz	16QAM	4M50D7W
LTE Band 13	10MHz	QPSK	8M99G7D
LTE Band 13	10MHz	16QAM	9M70D7W

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Max ERP/EIRP Power Measurement Result: (Internal Antenna)

LTE Band	Bandwidth	Modulation	(dBm)	ERP / EIRP	(W)
LTE Band 2	5MHz	QPSK	23.86	EIRP	0.243
LTE Band 2	5MHz	16QAM	24.10	EIRP	0.257
LTE Band 2	10MHz	QPSK	23.82	EIRP	0.241
LTE Band 2	10MHz	16QAM	23.62	EIRP	0.230
LTE Band 2	15MHz	QPSK	24.44	EIRP	0.278
LTE Band 2	15MHz	16QAM	25.62	EIRP	0.365
LTE Band 2	20MHz	QPSK	24.44	EIRP	0.278
LTE Band 2	20MHz	16QAM	24.94	EIRP	0.312
LTE Band 4	5MHz	QPSK	25.29	EIRP	0.338
LTE Band 4	5MHz	16QAM	25.43	EIRP	0.349
LTE Band 4	10MHz	QPSK	25.55	EIRP	0.359
LTE Band 4	10MHz	16QAM	25.73	EIRP	0.374
LTE Band 4	15MHz	QPSK	23.71	EIRP	0.235
LTE Band 4	15MHz	16QAM	23.37	EIRP	0.217
LTE Band 4	20MHz	QPSK	23.99	EIRP	0.251
LTE Band 4	20MHz	16QAM	23.94	EIRP	0.248
LTE Band 13	5MHz	QPSK	21.71	ERP	0.148
LTE Band 13	5MHz	16QAM	21.53	ERP	0.142
LTE Band 13	10MHz	QPSK	17.95	ERP	0.062
LTE Band 13	10MHz	16QAM	18.71	ERP	0.074

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(External Antenna)

LTE Band	Bandwidth	Modulation	(dBm)	ERP / EIRP	(W)
LTE Band 2	5MHz	QPSK	26.15	EIRP	0.412
LTE Band 2	5MHz	16QAM	26.45	EIRP	0.442
LTE Band 2	10MHz	QPSK	25.91	EIRP	0.390
LTE Band 2	10MHz	16QAM	25.92	EIRP	0.391
LTE Band 2	15MHz	QPSK	26.58	EIRP	0.455
LTE Band 2	15MHz	16QAM	26.23	EIRP	0.420
LTE Band 2	20MHz	QPSK	26.41	EIRP	0.438
LTE Band 2	20MHz	16QAM	26.48	EIRP	0.445
LTE Band 4	5MHz	QPSK	27.79	EIRP	0.601
LTE Band 4	5MHz	16QAM	28.48	EIRP	0.705
LTE Band 4	10MHz	QPSK	28.37	EIRP	0.687
LTE Band 4	10MHz	16QAM	27.68	EIRP	0.586
LTE Band 4	15MHz	QPSK	27.43	EIRP	0.553
LTE Band 4	15MHz	16QAM	23.28	EIRP	0.213
LTE Band 4	20MHz	QPSK	26.25	EIRP	0.422
LTE Band 4	20MHz	16QAM	28.76	EIRP	0.752
LTE Band 13	5MHz	QPSK	23.54	ERP	0.226
LTE Band 13	5MHz	16QAM	23.24	ERP	0.211
LTE Band 13	10MHz	QPSK	20.28	ERP	0.107
LTE Band 13	10MHz	16QAM	21.90	ERP	0.155

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1.2. Test Methodology of Applied Standards

CC 47 CFR Part 2, 24, 27.

TIA/EIA-603-E-2016

KDB971168 D01 Power Meas license Digital System

KDB941225 D05 of the Output power Procedure of (SAR Measurement Procedures for LTE Devices) was used for EUT and Base station setting.

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

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

1.3. Test Facility

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

FCC Registration Number and Designation number are: 509634 / TW0001

1.4. Special Accessories

No special accessories were used during testing.

1.5. Equipment Modifications

There were no modifications incorporated into the EUT.

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2. SYSTEM TEST CONFIGURATION

2.1. EUT Configuration

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

2.2. EUT Exercise

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

2.3. Test Procedure

2.3.1 Conducted Measurement at Antenna Port

According to measurement procured TIA/EIA-603-E-2016, the EUT is placed on a turn table which is 0.8 m above ground plane. A low loss of RF cable was used to connect the antenna port of EUT to measurement equipment.

2.3.2 Radiated Emissions (ERP/EIRP)

According to measurement procured TIA/EIA-603-E-2016, The EUT is placed on a turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both Horizontal and Vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna according to the requirements in Section 8 and 13.

2.4. Measurement Results Explanation Example

For all conducted test items:

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

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Note:

Offset = RF cable loss (dB)+ attenuation factor(dB) =4.7+10 =14.7(dB)

2.5. Final Amplifier Voltage and Current Information:

Test Mode	DC voltage (V)	DC current (mA)
LTE Band 2	3.6 Vdc	589
LTE Band 4	3.6 Vdc	597
LTE Band 13	3.6 Vdc	593

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2.6. Configuration of Tested System

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

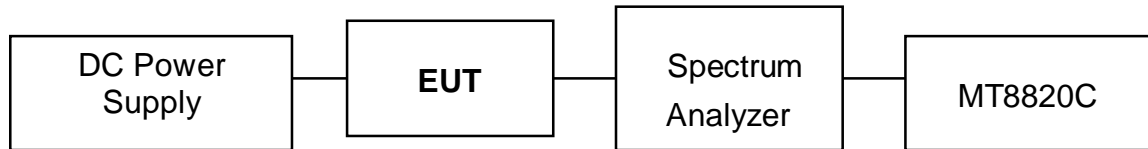


Fig. 2-2 Configuration of Tested System (Fixed Channel-Radiated)

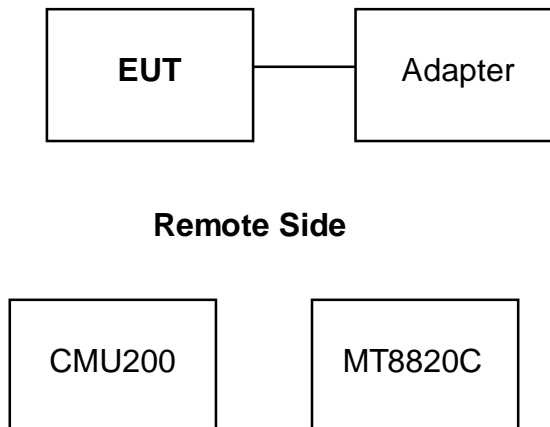


Table 2-1 Equipment Used in

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

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3. SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§2.1046(a)	RF Power Output	Compliant
§2.1046(a) §22.913(a)(5) §24.232(c) §27.50(c)(10) §27.50(d)(4) §27.50(h)(2)	ERP/ EIRP measurement	Compliant
§2.1049(h)	99% & 26dB Occupied Bandwidth	Compliant
§2.1051 §22.917(a) §24.238(a) §27.53(g) §27.50(c)(5) §27.53(h) §27.53(m)(4)(6)	Out of Band Emissions at Antenna Terminals and Band Edge / Emission mask requirements	Compliant
§2.1053 §22.917(a) §24.238(a) §27.53(c)(2),(4) §27.50(c)(5) §27.53(f) §27.53(g) §27.53(h) §27.53(m)(4)	Field Strength of Spurious Radiation	Compliant
§24.232(d) §27.53(d) (5) §27.50(i) (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	ERP/EIRP	RADIATED EMISSION
LTE Band 2	E2-plan	E2-plan
LTE Band 4	E2-plan	E2-plan
LTE Band 13	E2-plan	E2-plan

Note: The product supports internal and external antennas and evaluates in the relevant test items.

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LTE Band 2 MODE

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
EIRP	18625 to 19175	18625, 18900, 19175	5MHz	QPSK, 16QAM	1 RB/ 0,24 RB Offest
	18650 to 19150	18650, 18900, 19150	10MHz	QPSK, 16QAM	1 RB/ 0,49 RB Offest
	18675 to 19125	18675, 18900, 19125	15MHz	QPSK, 16QAM	1 RB/ 0,74 RB Offest
	18700 to 19100	18700, 18900, 19100	20MHz	QPSK, 16QAM	1 RB/ 0,99 RB Offest
FREQUENCY STABILITY	18650 to 19150	18900	10MHz	QPSK	Full RB
OCCUPIED BANDWIDTH	18625 to 19175	18625, 18900, 19175	5MHz	QPSK, 16QAM	Full RB
	18650 to 19150	18650, 18900, 19150	10MHz	QPSK, 16QAM	Full RB
	18675 to 19125	18675, 18900, 19125	15MHz	QPSK, 16QAM	Full RB
	18700 to 19100	18700, 18900, 19100	20MHz	QPSK, 16QAM	Full RB
PEAK TO AVERAGE RATIO	18625 to 19175	18625, 18900, 19175	5MHz	16QAM	Full RB
	18650 to 19150	18650, 18900, 19150	10MHz	16QAM	Full RB
	18675 to 19125	18675, 18900, 19125	15MHz	16QAM	Full RB
	18700 to 19100	18700, 18900, 19100	20MHz	16QAM	Full RB
BAND EDGE	18625 to 19175	18625, 19175	5MHz	QPSK	1 RB/ 0,24 RB Offest Full RB
	18650 to 19150	18650, 19150	10MHz	QPSK,	1 RB/ 0,49 RB Offest Full RB
	18675 to 19125	18675, 19125	15MHz	QPSK,	1 RB/ 0,74 RB Offest Full RB
	18700 to 19100	18700, 19100	20MHz	QPSK	1 RB/ 0,99 RB Offest Full RB
CONDCUDED EMISSION	18625 to 19175	18625, 18900, 19175	5MHz	QPSK,	1 RB, 0 RB Offest
	18650 to 19150	18650, 18900, 19150	10MHz	QPSK,	1 RB, 0 RB Offest
	18675 to 19125	18675, 18900, 19125	15MHz	QPSK,	1 RB, 0 RB Offest
	18700 to 19100	18700, 18900, 19100	20MHz	QPSK	1 RB, 0 RB Offest
RADIATED EMIS- SION (Int.)	18675 to 19125	18675, 18900, 19125	15MHz	16QAM	1 RB, 74 RB Offest
RADIATED EMIS- SION (Ext.)	18675 to 19125	18675, 19125	15MHz	QPSK	1 RB, 74 RB Offest

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LTE Band 4 MODE

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
EIRP	19975 to 20375	19975, 20175, 20375	5MHz	QPSK, 16QAM	1 RB/ 0,24 RB Offset
	20000 to 20350	20000, 20175, 20350	10MHz	QPSK, 16QAM	1 RB/ 0,49 RB Offset
	20025 to 20325	20025, 20175, 20325	15MHz	QPSK, 16QAM	1 RB/ 0,74 RB Offset
	20050 to 20300	20050, 20175, 20300	20MHz	QPSK, 16QAM	1 RB/ 0,99 RB Offset
FREQUENCY STABILITY	20000 to 20350	20175	10MHz	QPSK,	Full RB
OCCUPIED BANDWIDTH	19975 to 20375	19975, 20175, 20375	5MHz	QPSK, 16QAM	Full RB
	20000 to 20350	20000, 20175, 20350	10MHz	QPSK, 16QAM	Full RB
	20025 to 20325	20025, 20175, 20325	15MHz	QPSK, 16QAM	Full RB
	20050 to 20300	20050, 20175, 20300	20MHz	QPSK, 16QAM	Full RB
PEAK TO AVERAGE RATIO	19975 to 20375	19975, 20175, 20375	5MHz	16QAM	Full RB
	20000 to 20350	20000, 20175, 20350	10MHz	16QAM	Full RB
	20025 to 20325	20025, 20175, 20325	15MHz	16QAM	Full RB
	20050 to 20300	20050, 20175, 20300	20MHz	16QAM	Full RB
BAND EDGE	19975 to 20375	19975, 20375	5MHz	QPSK,	1 RB/ 0,24 RB Offset Full RB
	20000 to 20350	20000, 20350	10MHz	QPSK,	1 RB/ 0,49 RB Offset Full RB
	20025 to 20325	20025, 20325	15MHz	QPSK,	1 RB/ 0,74 RB Offset Full RB
	20050 to 20300	20050, 20300	20MHz	QPSK,	1 RB/ 0,99 RB Offset Full RB
CONDUCTED EMISSION	19975 to 20375	19975, 20175, 20375	5MHz	QPSK,	1 RB, 0 RB Offset
	20000 to 20350	20000, 20175, 20350	10MHz	QPSK,	1 RB, 0 RB Offset
	20025 to 20325	20025, 20175, 20325	15MHz	QPSK,	1 RB, 0 RB Offset
	20050 to 20300	20050, 20175, 20300	20MHz	QPSK,	1 RB, 0 RB Offset
RADIATED EMISSION (Int.)	20000 to 20350	20000, 20175, 20350	10MHz	16QAM	1 RB/ 49 RB Offset
RADIATED EMISSION (Ext.)	20050 to 20300	20050, 20175, 20300	20MHz	16QAM	1 RB/ 0 RB Offset

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LTE Band 13 MODE

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
ERP	23205 to 23255	23205, 23230, 23255	5MHz	QPSK, 16QAM	1 RB/ 0,24 RB Offset
	23230	23230	10MHz	QPSK, 16QAM	1 RB/ 0,49 RB Offset
FREQUENCY STABILITY	23230	23230	10MHz	QPSK,	Full RB
OCCUPIED BANDWIDTH	23205 to 23255	23205, 23230, 23255	5MHz	QPSK, 16QAM	Full RB
	23230	23230	10MHz	QPSK, 16QAM	Full RB
PEAK TO AVERAGE RATIO	23205 to 23255	23205, 23230, 23255	5MHz	16QAM	Full RB
	23230	23230	10MHz	16QAM	Full RB
BAND EDGE	23205 to 23255	23205, 23255	5MHz	QPSK,	1 RB/ 0,24 RB Offset Full RB
	23230	23230	10MHz	QPSK,	1 RB/ 0,49 RB Offset Full RB
CONDUCTED EMISSION	23205 to 23255	23205, 23230, 23255	5MHz	QPSK,	1 RB, 0 RB Offset
	23230	23230	10MHz	QPSK,	1 RB, 0 RB Offset
RADIATED EMISSION (Int.)	23205 to 23255	23205, 23230, 23255	5MHz	QPSK	1 RB, 0 RB Offset
RADIATED EMISSION (Ext.)	23205 to 23255	23205, 23230, 23255	5MHz	QPSK	1 RB, 0 RB Offset

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5. MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
RF Power Output	+/- 1.10 dB
ERP/ EIRP measurement	Vertical Polarization = +/- 4.74dB Horizontal Polarization = +/- 4.62dB
99% Occupied Bandwidth	+/- 5.19 Hz
Out of Band Emissions at Antenna 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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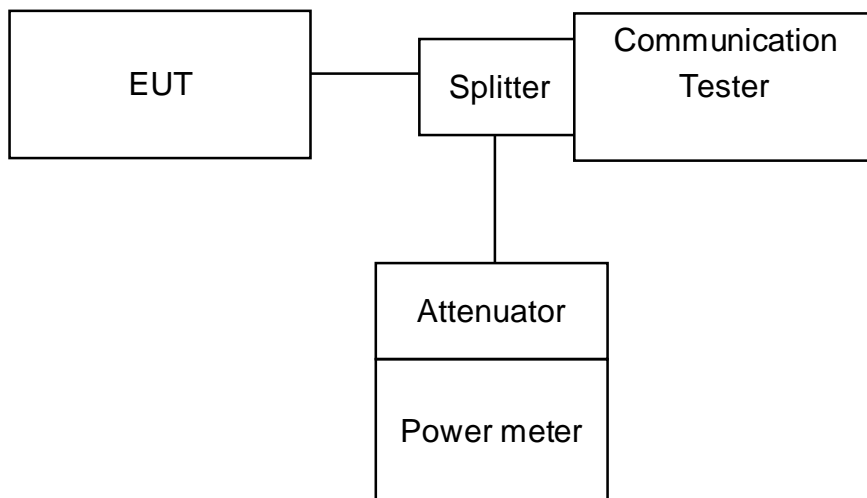
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6. RF CONDUCTED OUTPUT POWER MEASUREMENT

6.1. Standard Applicable

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

6.2. Test Set-up



Note: Measurement setup for testing on Antenna connector

6.3. Measurement Procedure

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

The Procedure of KDB941225 D05 (SAR Measurement Procedures for LTE devices) was used for EUT and Base station setting. RMC 12.2kps is used for this testing, and KDB 971168 D01 Power Meas License Digital System as the supplemental test methodology to adjust the proper setting obtaining the measurement results.

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6.4. Measurement Equipment Used

Conducted Emission (measured at antenna port) Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	KEYSIGHT	N9010A	MY51440113	06/20/2017	06/19/2018
Communication Tester	Anritsu	MT8820C	6201107337	05/25/2017	05/24/2018
Coaxial Cable 30cm	WOKEN	00100A1F1A195C	RF01	12/12/2016	12/11/2017
Temperature Chamber	TERCHY	MHK-120LK	1020582	06/13/2017	06/12/2018
DC Block	PASTERNAK	PE8210	RF29	12/12/2016	12/11/2017
Splitter	RF-LAMBDA	RFLT2W1G18G	RF35	12/12/2016	12/11/2017
Attenuator	WOKEN	218FS-10	RF23	12/12/2016	12/11/2017
DC Power Supply	Agilent	E3640A	MY53140006	05/02/2017	05/01/2018

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6.5. Measurement Result

LTE Band 2

LTE Band 2_Uplink frequency band : 1850 to 1910 MHz								
BW (MHz)	RB Size	RB Offset	Conducted power(dBm)					
			QPSK			16QAM		
			CH (Low) 18625	CH (Mid) 18900	CH (High) 19175	CH (Low) 18625	CH (Mid) 18900	CH (High) 19175
5	1	0	23.5	23.55	23.43	21.54	21.62	21.83
	1	24	23.32	23.54	23.45	21.86	21.65	22.32
	12	6	22.42	22.35	22.36	21.23	21.27	21.2
	25	0	22.38	22.39	22.55	21.45	21.49	21.5

LTE Band 2_Uplink frequency band : 1850 to 1910 MHz								
BW (MHz)	RB Size	RB Offset	Conducted power(dBm)					
			QPSK			16QAM		
			CH (Low) 18650	CH (Mid) 18900	CH (High) 19150	CH (Low) 18650	CH (Mid) 18900	CH (High) 19150
10	1	0	23.46	23.64	23.14	21.88	21.87	21.36
	1	49	23.18	23.51	23.57	21.52	21.91	21.74
	25	12	22.3	22.44	22.3	21.4	21.34	21.21
	50	0	22.32	22.48	22.31	21.33	21.59	21.4

LTE Band 2_Uplink frequency band : 1850 to 1910 MHz								
BW (MHz)	RB Size	RB Offset	Conducted power(dBm)					
			QPSK			16QAM		
			CH (Low) 18675	CH (Mid) 18900	CH (High) 19125	CH (Low) 18675	CH (Mid) 18900	CH (High) 19125
15	1	0	23.82	23.49	22.26	22.01	22.03	21.66
	1	74	23.32	23.54	23.61	21.53	22.23	21.76
	36	19	22.27	22.42	21.69	21.21	21.46	21.04
	75	0	22.35	22.47	22.19	21.23	21.45	21.18

LTE Band 2_Uplink frequency band : 1850 to 1910 MHz								
BW (MHz)	RB Size	RB Offset	Conducted power(dBm)					
			QPSK			16QAM		
			CH (Low) 18700	CH (Mid) 18900	CH (High) 19100	CH (Low) 18700	CH (Mid) 18900	CH (High) 19100
20	1	0	23.44	23.33	23.44	21.76	21.81	21.82
	1	99	23.23	23.52	23.47	21.53	22.16	21.87
	50	25	22.24	22.4	22.05	21.26	21.43	21.06
	100	0	22.29	22.5	22.31	21.24	21.4	21.21

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LTE Band 4

LTE Band 4_Uplink frequency band : 1710 to 1755 MHz								
BW (MHz)	RB Size	RB Offset	Conducted power(dBm)					
			QPSK			16QAM		
			CH (Low) 19975	CH (Mid) 20175	CH (High) 20375	CH (Low) 19975	CH (Mid) 20175	CH (High) 20375
5	1	0	24.51	24.42	24.24	22.41	22.84	22.62
	1	24	24.43	24.43	24.1	22.73	22.87	22.19
	12	6	23.33	23.26	23.01	22.13	22.14	21.56
	25	0	23.39	23.33	23.15	22.42	22.31	22.16

LTE Band 4_Uplink frequency band : 1710 to 1755 MHz								
BW (MHz)	RB Size	RB Offset	Conducted power(dBm)					
			QPSK			16QAM		
			CH (Low) 20000	CH (Mid) 20175	CH (High) 20350	CH (Low) 20000	CH (Mid) 20175	CH (High) 20350
10	1	0	24.42	24.26	24.25	22.58	22.19	22.58
	1	49	24.29	24.32	24.06	22.59	22.19	21.87
	25	12	23.27	23.19	23.21	22.09	22.23	22.25
	50	0	23.25	23.28	23.14	22.17	22.29	22.17

LTE Band 4_Uplink frequency band : 1710 to 1755 MHz								
BW (MHz)	RB Size	RB Offset	Conducted power(dBm)					
			QPSK			16QAM		
			CH (Low) 20025	CH (Mid) 20175	CH (High) 20325	CH (Low) 20025	CH (Mid) 20175	CH (High) 20325
15	1	0	24.42	24.39	24.38	22.75	22.56	22.45
	1	74	24.33	24.34	24.03	22.49	22.91	22.1
	36	19	23.28	23.26	23.13	22.31	22.19	22.08
	75	0	23.23	23.18	23.17	22.15	22.16	22.06

LTE Band 4_Uplink frequency band : 1710 to 1755 MHz								
BW (MHz)	RB Size	RB Offset	Conducted power(dBm)					
			QPSK			16QAM		
			CH (Low) 20050	CH (Mid) 20175	CH (High) 20300	CH (Low) 20050	CH (Mid) 20175	CH (High) 20300
20	1	0	24.41	24.35	24.37	22.64	22.18	22.39
	1	99	24.28	24.25	23.99	22.36	22.52	22.02
	50	25	23.22	23.24	23.1	22.24	22.22	22.25
	100	0	23.25	23.23	23.22	22.19	22.11	22.26

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LTE Band 13

LTE Band 13_Uplink frequency band : 777 to 787 MHz								
BW (MHz)	RB Size	RB Offset	Conducted power(dBm)					
			QPSK			16QAM		
			CH (Low) 23205	CH (Mid) 23230	CH (High) 23255	CH (Low) 23205	CH (Mid) 23230	CH (High) 23255
5	1	0	24.49	24.45	23.3	22.6	23.12	22.43
	1	24	24.26	24.39	24.22	22.22	22.45	22.39
	12	6	23.49	23.05	23.1	22.5	21.46	21.53
	25	0	23.36	23.08	23.09	22.32	22.21	22.12

LTE Band 13_Uplink frequency band : 777 to 787 MHz								
BW (MHz)	RB Size	RB Offset	Conducted power(dBm)					
			QPSK			16QAM		
			CH (Low)	CH (Mid) 23230	CH (High)	CH (Low)	CH (Mid) 23230	CH (High)
10	1	0		23.39			22.23	
	1	49		23.24			22.38	
	25	12		23.21			22.21	
	50	0		23.22			22.21	

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7. EFFECTIVE RADIATED POWER AND EQUIVALENT ISOTROPIC RADIATED POWER MEASUREMENT

7.1. Standard Applicable

According to FCC §2.104

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

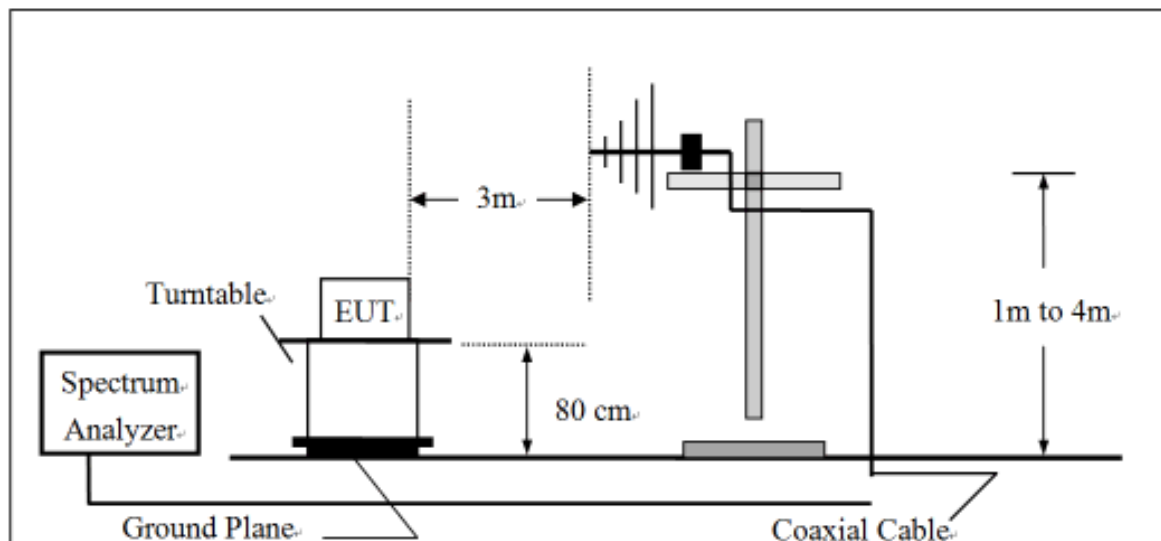
FCC 27.50(c)(10) Portable stations (hand-held devices) are limited to 3 watts ERP.

FCC 27.50(d)(4) Fixed, mobile, and portable (hand-held) stations are limited to 1W EIRP.

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

7.2. Test SET-UP

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



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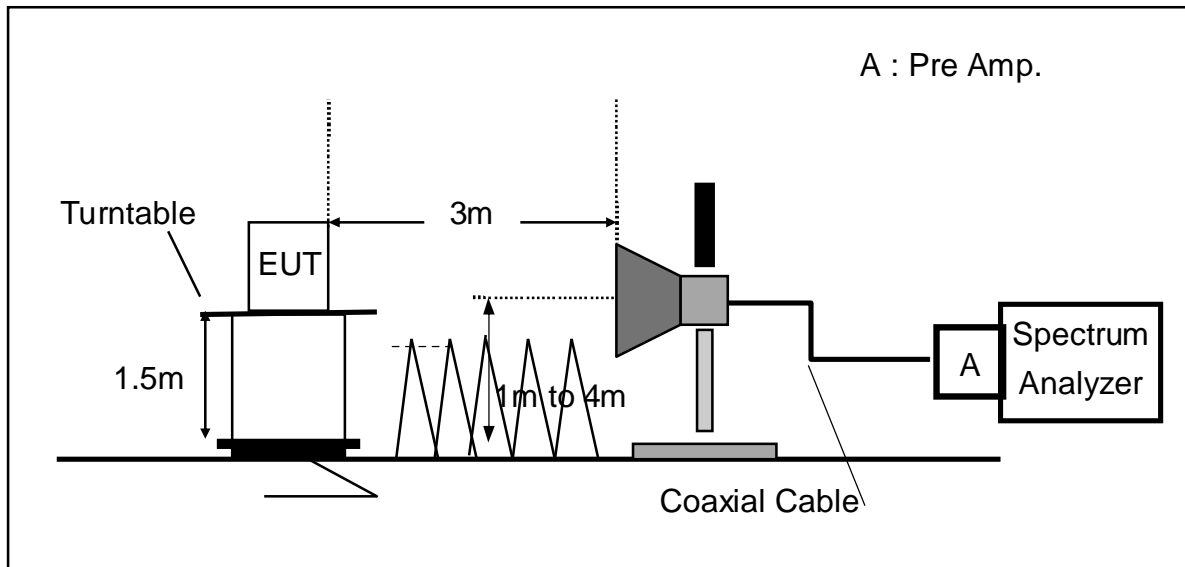
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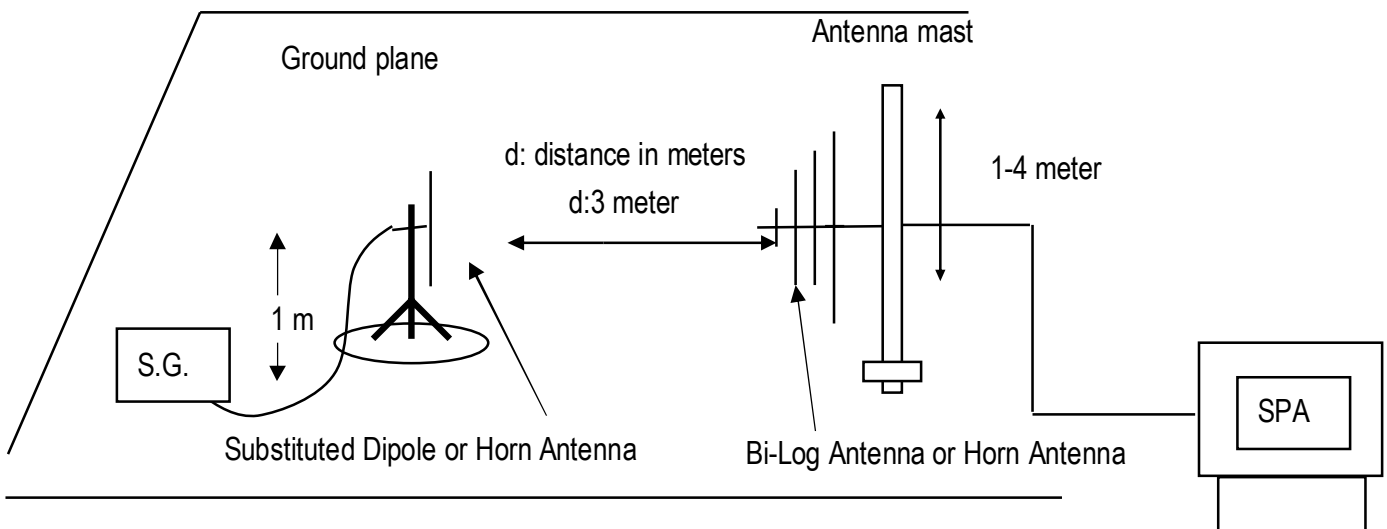
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(B) Radiated Power Test Set-UP Frequency Over 1 GHz



(C) Substituted Method Test Set-UP



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7.3. Measurement Procedure

1. The testing follows the Measurement Procedure of FCC KDB 971168 D01
2. The EUT was placed on a non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer.
3. During the measurement, the EUT was communication with the station. The highest emission was recorded with the rotation of the turntable and the lowering of the test antenna from 4m to 1m. The reading was recorded and the field strength (E in dBuV/m) was calculated
4. The testing follows the Measurement Procedure of FCC KDB 971168 D01
5. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a tx cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step b. Record the power level of S.G.
6. $ERP = S.G. \text{ output (dBm)} + \text{Antenna Gain (dBd)} - \text{Cable Loss (dB)}$
7. $ERP = S.G. \text{ output (dBm)} + \text{Antenna Gain (dBd)} - \text{Cable Loss (dB)}$
8. Spectrum setting:
 - (1) Detector = Peak, marker the highest value of the detector by maximum hold, set RBW wide enough to capture the entire signal of emission, and $VBW \geq 3 \times RBW$.
 - (2) KDB 971168 D01 is adopted, and the procedure as lists under item 4, Measurement of the Average Power over the Fundamental Signal Bandwidth, is followed to set correspondingly for the acquisition of proper measurement data.

Set frequency = nominal signal center frequency;
 Set span = 2 X occupied BW;
 Set RBW $\approx 1 \sim 5\%$ of the span, not to exceed 1 MHz
 Set VBW = 3 x RBW;
 Select average power (RMS) detector
 Set sweep time and number of measurement points to achieve a minimum of 1 millisecond/pt integration time (ex. Point = 601points, then sweep time = $601 \times 10^{-3} = 6s$).

Activate trace averaging routine over a minimum of 10 sweeps;
 Activate marker/span pair and set span = signal or channel bandwidth;
 Activate the band/interval power marker function;

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

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

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7.4. Measurement Equipment Used

ERP, EIRP MEASUREMENT EQUIPMENT List 966 Chamber					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI Test Receiver	R&S	ESU 40	100363	04/18/2017	04/17/2018
Broadband Antenna	TESEQ	CBL 6112D	35240	11/03/2016	11/02/2017
Broadband Antenna	TESEQ	CBL 6112D	35243	11/09/2016	11/08/2017
Horn Antenna	ETS-Lindgren	3117	00143272	12/15/2016	12/16/2017
Horn Antenna	ETS-Lindgren	3117	143279	11/14/2016	11/13/2017
Horn Antenna	Schwarzbeck	BBHA9170	184	12/11/2016	12/10/2017
Horn Antenna	Schwarzbeck	BBHA9170	185	08/01/2017	07/31/2018
Pre Amplifier	EMC Instruments	EMC330	980096	12/12/2016	12/11/2017
Pre Amplifier	EMC Instruments	EMC0011830	980199	12/12/2016	12/11/2017
Pre Amplifier	R&S	SCU-18	10204	12/12/2016	12/11/2017
Pre Amplifier	R&S	SCU-26	100780	12/12/2016	12/11/2017
Pre Amplifier	EMC Instruments	EMC184045B	980135	12/12/2016	12/11/2017
Coaxial Cable	Huber+Suhner	RG 214/U	966Rx 9K-30M	12/12/2016	12/11/2017
Coaxial Cable	Huber+Suhner	RG 214/U SUCOFLEX 104	966Rx 30M-3G	12/12/2016	12/11/2017
Coaxial Cable	Huber+Suhner	SUCOFLEX 104	966Rx 1G-18G	12/12/2016	12/11/2017
Coaxial Cable	Huber+Suhner	mini 141-12 SUCOFLEX 104	966Rx 18G-40G	12/12/2016	12/11/2017
Coaxial Cable	Huber+Suhner	SUCOFLEX 104	966Tx 30M-18G	12/12/2016	12/11/2017
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	966Tx 18G-40G	12/12/2016	12/11/2017
Attenuator	WOKEN	218FS-10	RF27	12/12/2016	12/11/2017
Communication Tester	Anritsu	MT8820C	6201107337	05/25/2017	05/24/2018
Site NSA	SGS	966 Chamber C	SAC-C	03/02/2017	03/01/2018
Site VSWR	SGS	966 Chamber C	SAC-C	03/02/2017	03/01/2018
DC Power Supply	HOLA	DP-3003	D7070035	05/04/2017	05/03/2018
Controller	MF	MF-7802	N/A	N.C.R.	N.C.R.
Antenna Master	MF	N/A	N/A	N.C.R.	N.C.R.
Turn Table	MF	N/A	N/A	N.C.R.	N.C.R.
Test Software	World-Pallas	Dr. E	V 3.0 Lite	N.C.R.	N.C.R.

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

EUT			Measurement					
Operation Band	Fundamental	CH	Antenna	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dB	dB	dBm	dBm
LTE BAND 2 BW: 5M QPSK RB: 1,0	1852.5	18625	V	17.68	9.95	-4.46	23.17	33.01
			H	15.55	9.95	-4.46	21.04	33.01
	1880.0	18900	V	18.33	10.04	-4.51	23.86	33.01
			H	16.27	10.03	-4.51	21.79	33.01
	1907.5	19175	V	16.66	10.12	-4.55	22.23	33.01
			H	15.02	10.12	-4.55	20.59	33.01
LTE BAND 2 BW: 5M QPSK RB: 1,24	1852.5	18625	V	17.54	9.95	-4.46	23.03	33.01
			H	15.3	9.95	-4.46	20.79	33.01
	1880.0	18900	V	17.81	10.04	-4.51	23.34	33.01
			H	15.8	10.04	-4.51	21.33	33.01
	1907.5	19175	V	16.76	10.12	-4.55	22.33	33.01
			H	14.01	10.12	-4.55	19.58	33.01
LTE BAND 2 BW: 5M 16QAM RB: 1,0	1852.5	18625	V	17.26	9.95	-4.46	22.75	33.01
			H	15.48	9.95	-4.46	20.97	33.01
	1880.0	18900	V	18.58	10.03	-4.51	24.1	33.01
			H	15.95	10.03	-4.51	21.47	33.01
	1907.5	19175	V	16.4	10.12	-4.55	21.97	33.01
			H	14.77	10.12	-4.55	20.34	33.01
LTE BAND 2 BW: 5M 16QAM RB: 1,24	1852.5	18625	V	17.55	9.95	-4.46	23.04	33.01
			H	16.57	9.95	-4.46	22.06	33.01
	1880.0	18900	V	18.56	10.03	-4.51	24.08	33.01
			H	16.82	10.03	-4.51	22.34	33.01
	1907.5	19175	V	16.62	10.12	-4.55	22.19	33.01
			H	15.06	10.12	-4.55	20.63	33.01

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

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EUT			Measurement					
Operation Band	Fundamenta l	CH	Antenn a	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 2 BW: 10M QPSK RB: 1,0	1855.0	18650	V	17.51	9.95	-4.47	22.99	33.01
			H	15.61	9.95	-4.47	21.09	33.01
	1880.0	18900	V	18.3	10.03	-4.51	23.82	33.01
			H	16.21	10.03	-4.51	21.73	33.01
	1905.0	19150	V	16.59	10.09	-4.54	22.14	33.01
			H	16.1	10.09	-4.54	21.65	33.01
LTE BAND 2 BW: 10M QPSK RB: 1,49	1855.0	18650	V	17.07	9.96	-4.47	22.56	33.01
			H	16.48	9.96	-4.47	21.97	33.01
	1880.0	18900	V	17.45	10.04	-4.51	22.98	33.01
			H	17.21	10.04	-4.51	22.74	33.01
	1905.0	19150	V	15.88	10.12	-4.55	21.45	33.01
			H	15.36	10.12	-4.55	20.93	33.01
LTE BAND 2 BW: 10M 16QAM RB: 1,0	1855.0	18650	V	16.28	9.95	-4.47	21.76	33.01
			H	16.18	9.95	-4.47	21.66	33.01
	1880.0	18900	V	18.1	10.03	-4.51	23.62	33.01
			H	17.06	10.03	-4.51	22.58	33.01
	1905.0	19150	V	16.69	10.09	-4.54	22.24	33.01
			H	16.12	10.11	-4.54	21.69	33.01
LTE BAND 2 BW: 10M 16QAM RB: 1,49	1855.0	18650	V	16.72	9.96	-4.47	22.21	33.01
			H	16.66	9.96	-4.47	22.15	33.01
	1880.0	18900	V	17.85	10.04	-4.51	23.38	33.01
			H	16.69	10.04	-4.51	22.22	33.01
	1905.0	19150	V	15.62	10.12	-4.55	21.19	33.01
			H	15.51	10.12	-4.55	21.08	33.01

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

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EUT			Measurement					
Operation Band	Fundamental	CH	Antenna	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 2 BW: 15M QPSK RB: 1,0	1857.5	18675	V	17.83	9.95	-4.47	23.31	33.01
			H	16.7	9.95	-4.47	22.18	33.01
	1880.0	18900	V	18.92	10.02	-4.5	24.44	33.01
			H	17.15	10.02	-4.5	22.67	33.01
	1902.5	19125	V	17.79	10.09	-4.54	23.34	33.01
			H	16.99	10.08	-4.53	22.54	33.01
LTE BAND 2 BW: 15M QPSK RB: 1,74	1857.5	18675	V	17.56	9.98	-4.48	23.06	33.01
			H	16.71	9.98	-4.48	22.21	33.01
	1880.0	18900	V	17.59	10.05	-4.52	23.12	33.01
			H	16.71	10.05	-4.52	22.24	33.01
	1902.5	19125	V	16.54	10.12	-4.55	22.11	33.01
			H	16.46	10.12	-4.55	22.03	33.01
LTE BAND 2 BW: 15M 16QAM RB: 1,0	1857.5	18675	V	18.66	9.95	-4.47	24.14	33.01
			H	16.26	9.95	-4.47	21.74	33.01
	1880.0	18900	V	20.11	10.02	-4.5	25.63	33.01
			H	17.33	10.02	-4.5	22.85	33.01
	1902.5	19125	V	19.34	10.09	-4.54	24.89	33.01
			H	16.16	10.08	-4.53	21.71	33.01
LTE BAND 2 BW: 15M 16QAM RB: 1,74	1857.5	18675	V	19.57	9.98	-4.48	25.07	33.01
			H	16.94	9.98	-4.48	22.44	33.01
	1880.0	18900	V	20.09	10.05	-4.52	25.62	33.01
			H	17.07	10.05	-4.51	22.61	33.01
	1902.5	19125	V	18.53	10.12	-4.55	24.1	33.01
			H	16.34	10.12	-4.55	21.91	33.01

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

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EUT			Measurement					
Operation Band	Fundamenta I	CH	Antenn a	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 2 BW: 20M QPSK RB: 1,0	1860.0	18700	V	17.79	9.95	-4.47	23.27	33.01
			H	15.89	9.95	-4.47	21.37	33.01
	1880.0	18900	V	18.69	10.01	-4.5	24.2	33.01
			H	15.73	10.02	-4.5	21.25	33.01
	1900.0	19100	V	18.89	10.08	-4.53	24.44	33.01
			H	16.52	10.08	-4.53	22.07	33.01
LTE BAND 2 BW: 20M QPSK RB: 1,99	1860.0	18700	V	17.76	9.99	-4.49	23.26	33.01
			H	15.63	9.99	-4.49	21.13	33.01
	1880.0	18900	V	19.08	10.05	-4.52	24.61	33.01
			H	16.31	10.05	-4.52	21.84	33.01
	1900.0	19100	V	17.12	10.12	-4.55	22.69	33.01
			H	15.92	10.12	-4.55	21.49	33.01
LTE BAND 2 BW: 20M 16QAM RB: 1,0	1860.0	18700	V	17.44	9.95	-4.47	22.92	33.01
			H	16	9.95	-4.47	21.48	33.01
	1880.0	18900	V	18.94	10.01	-4.5	24.45	33.01
			H	16.21	10.01	-4.5	21.72	33.01
	1900.0	19100	V	19.39	10.08	-4.53	24.94	33.01
			H	16.18	10.08	-4.53	21.73	33.01
LTE BAND 2 BW: 15M 16QAM RB: 1,99	1860.0	18700	V	17.76	9.99	-4.49	23.26	33.01
			H	16.01	9.99	-4.49	21.51	33.01
	1880.0	18900	V	19.06	10.05	-4.52	24.59	33.01
			H	16.86	10.05	-4.52	22.39	33.01
	1900.0	19100	V	17.41	10.12	-4.55	22.98	33.01
			H	15.63	10.12	-4.55	21.2	33.01

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

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EUT			Measurement					
Operation Band	Fundamental	CH	Antenna	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 4 BW: 5M QPSK RB: 1,0	1712.5	19975	V	16.08	9.48	-4.31	21.26	30.00
			H	20.11	9.48	-4.31	25.29	30.00
	1732.5	20175	V	15.37	9.55	-4.31	20.61	30.00
			H	18.81	9.55	-4.31	24.05	30.00
	1752.5	20375	V	15.74	9.62	-4.34	21.02	30.00
			H	19.24	9.62	-4.34	24.53	30.00
LTE BAND 4 BW: 5M QPSK RB: 1,24	1712.5	19975	V	15.86	9.48	-4.31	21.03	30.00
			H	20.11	9.48	-4.31	25.28	30.00
	1732.5	20175	V	15.03	9.55	-4.31	20.27	30.00
			H	18.31	9.55	-4.31	23.55	30.00
	1752.5	20375	V	15.47	9.62	-4.34	20.75	30.00
			H	18.7	9.62	-4.34	23.98	30.00
LTE BAND 4 BW: 5M 16QAM RB: 1,0	1712.5	19975	V	15.6	9.48	-4.31	20.77	30.00
			H	20.01	9.48	-4.31	25.19	30.00
	1732.5	20175	V	15.32	9.55	-4.31	20.56	30.00
			H	18.63	9.55	-4.31	23.87	30.00
	1752.5	20375	V	15.89	9.62	-4.34	21.17	30.00
			H	19.06	9.62	-4.33	24.35	30.00
LTE BAND 4 BW: 5M 16QAM RB: 1,24	1712.5	19975	V	16.16	9.48	-4.31	21.33	30.00
			H	20.25	9.48	-4.31	25.43	30.00
	1732.5	20175	V	15.18	9.55	-4.31	20.42	30.00
			H	18.41	9.55	-4.31	23.66	30.00
	1752.5	20375	V	15.64	9.62	-4.34	20.93	30.00
			H	18.92	9.62	-4.34	24.21	30.00

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

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EUT			Measurement					
Operation Band	Fundamental	CH	Antenna	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 4 BW: 10M QPSK RB: 1,0	1715.0	20000	V	15.56	9.49	-4.31	20.74	30.00
			H	19.98	9.49	-4.31	25.16	30.00
	1732.0	20175	V	15.59	9.55	-4.31	20.83	30.00
			H	18.79	9.55	-4.31	24.02	30.00
	1750.0	20350	V	15.72	9.61	-4.33	21	30.00
			H	18.8	9.61	-4.33	24.07	30.00
LTE BAND 4 BW: 10M QPSK RB: 1,49	1715.0	20000	V	16.58	9.5	-4.31	21.77	30.00
			H	20.36	9.5	-4.31	25.55	30.00
	1732.0	20175	V	15.13	9.56	-4.31	20.38	30.00
			H	18.21	9.56	-4.31	23.45	30.00
	1750.0	20350	V	15.6	9.62	-4.33	20.88	30.00
			H	18.84	9.62	-4.33	24.12	30.00
LTE BAND 4 BW: 10M 16QAM RB: 1,0	1715.0	20000	V	15.57	9.49	-4.31	20.75	30.00
			H	19.96	9.49	-4.31	25.13	30.00
	1732.0	20175	V	15.7	9.54	-4.31	20.93	30.00
			H	18.89	9.54	-4.31	24.13	30.00
	1750.0	20350	V	15.7	9.6	-4.33	20.98	30.00
			H	18.68	9.61	-4.33	23.96	30.00
LTE BAND 4 BW: 10M 16QAM RB: 1,49	1715.0	20000	V	16.57	9.5	-4.31	21.76	30.00
			H	20.54	9.5	-4.31	25.73	30.00
	1732.0	20175	V	15.11	9.56	-4.31	20.35	30.00
			H	18.5	9.56	-4.31	23.75	30.00
	1750.0	20350	V	15.61	9.62	-4.33	20.89	30.00
			H	19.22	9.62	-4.33	24.51	30.00

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

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Operation Band	Fundamental	CH	Antenna	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 4 BW: 15M QPSK RB: 1,0	1717.5	20025	V	15.6	9.49	-4.31	20.78	30.00
			H	18.51	9.51	-4.31	23.71	30.00
	1732.5	20175	V	16	9.54	-4.31	21.23	30.00
			H	18.32	9.53	-4.31	23.54	30.00
	1747.5	20325	V	10.95	9.59	-4.32	16.22	30.00
			H	16.08	9.59	-4.32	21.35	30.00
LTE BAND 4 BW: 15M QPSK RB: 1,74	1717.5	20025	V	11.42	9.52	-4.31	16.63	30.00
			H	17.97	9.52	-4.31	23.18	30.00
	1732.5	20175	V	10.03	9.57	-4.31	15.29	30.00
			H	15.84	9.57	-4.31	21.09	30.00
	1747.5	20325	V	10.86	9.62	-4.33	16.14	30.00
			H	15.82	9.62	-4.33	21.1	30.00
LTE BAND 4 BW: 15M 16QAM RB: 1,0	1717.5	20025	V	9.06	9.49	-4.31	14.24	30.00
			H	18.04	9.49	-4.31	23.22	30.00
	1732.5	20175	V	11.06	9.54	-4.31	16.29	30.00
			H	17.38	9.54	-4.31	22.61	30.00
	1747.5	20325	V	10.3	9.59	-4.32	15.57	30.00
			H	15.55	9.59	-4.32	20.82	30.00
LTE BAND 4 BW: 15M 16QAM RB: 1,74	1717.5	20025	V	11.3	9.51	-4.31	16.51	30.00
			H	18.17	9.51	-4.31	23.37	30.00
	1732.5	20175	V	10.12	9.57	-4.31	15.37	30.00
			H	16	9.57	-4.31	21.25	30.00
	1747.5	20325	V	11.11	9.62	-4.33	16.39	30.00
			H	15.84	9.62	-4.33	21.13	30.00

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

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EUT			Measurement					
Operation Band	Fundamenta I	CH	Antenn a	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 4 BW: 20M QPSK RB: 1,0	1720.0	20050	V	9.11	9.49	-4.31	14.29	30.00
			H	18.58	9.49	-4.31	23.76	30.00
	1732.5	20175	V	11.19	9.53	-4.31	16.41	30.00
			H	18.77	9.53	-4.31	23.99	30.00
	1745.0	20300	V	10.08	9.57	-4.31	15.34	30.00
			H	17.4	9.57	-4.31	22.67	30.00
LTE BAND 4 BW: 20M QPSK RB: 1,99	1720.0	20050	V	11.69	9.53	-4.31	16.91	30.00
			H	18.54	9.53	-4.31	23.76	30.00
	1732.5	20175	V	10.6	9.57	-4.31	15.86	30.00
			H	17.57	9.57	-4.31	22.83	30.00
	1745.0	20300	V	9.69	9.62	-4.33	14.97	30.00
			H	18.04	9.61	-4.33	23.32	30.00
LTE BAND 4 BW: 20M 16QAM RB: 1,0	1720.0	20050	V	16.28	9.48	-4.31	21.44	30.00
			H	18.4	9.49	-4.31	23.57	30.00
	1732.5	20175	V	16.64	9.53	-4.31	21.86	30.00
			H	18.72	9.53	-4.31	23.94	30.00
	1745.0	20300	V	15.02	9.57	-4.31	20.29	30.00
			H	17.27	9.57	-4.31	22.53	30.00
LTE BAND 4 BW: 20M 16QAM RB: 1,99	1720.0	20050	V	16.09	9.53	-4.31	21.31	30.00
			H	18.11	9.53	-4.31	23.33	30.00
	1732.5	20175	V	15.24	9.57	-4.31	20.51	30.00
			H	17.32	9.57	-4.31	22.58	30.00
	1745.0	20300	V	15.12	9.61	-4.33	20.4	30.00
			H	17.64	9.61	-4.33	22.92	30.00

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

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EUT			Measurement					
Operation Band	Fundamental	CH	Antenna	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 13 BW: 5M QPSK RB: 1,0	779.5	23205	V	13.16	3.27	-2.91	13.52	34.77
			H	19.78	3.28	-2.91	20.15	34.77
	782.0	23230	V	14.25	3.29	-2.91	14.63	34.77
			H	21.33	3.29	-2.91	21.71	34.77
	784.5	23255	V	12.17	3.29	-2.91	12.55	34.77
			H	19.9	3.29	-2.91	20.29	34.77
LTE BAND 13 BW: 5M QPSK RB: 1,24	779.5	23205	V	12.18	3.28	-2.91	12.55	34.77
			H	19.1	3.29	-2.91	19.48	34.77
	782.0	23230	V	10.63	3.29	-2.91	11	34.77
			H	18.1	3.3	-2.9	18.49	34.77
	784.5	23255	V	10.98	3.29	-2.91	11.37	34.77
			H	19.53	3.29	-2.91	19.92	34.77
LTE BAND 13 BW: 5M 16QAM RB: 1,0	779.5	23205	V	13.35	3.28	-2.91	13.71	34.77
			H	20.09	3.28	-2.91	20.46	34.77
	782.0	23230	V	14.31	3.28	-2.91	14.69	34.77
			H	21.15	3.28	-2.91	21.53	34.77
	784.5	23255	V	12.38	3.28	-2.91	12.76	34.77
			H	20.3	3.29	-2.91	20.69	34.77
LTE BAND 13 BW: 5M 16QAM RB: 1,24	779.5	23205	V	13.44	3.28	-2.91	13.81	34.77
			H	20.38	3.28	-2.91	20.75	34.77
	782.0	23230	V	11.67	3.29	-2.91	12.05	34.77
			H	19.33	3.29	-2.91	19.71	34.77
	784.5	23255	V	11.85	3.29	-2.91	12.24	34.77
			H	20.25	3.29	-2.91	20.64	34.77

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

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EUT			Measurement					
Operation Band	Fundamenta l	CH	Antenn a	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
	MHz		V/H	dBm	dBd	dB	dBm	dBm
BAND 13 BW: 10M QPSK RB: 1,0	782.0	23230	V	12.69	3.27	-2.91	13.05	34.77
			H	17.4	3.28	-2.91	17.77	34.77
BAND 13 BW: 10M QPSK RB: 1,49	782.0	23230	V	11.09	3.29	-2.91	11.47	34.77
			H	17.57	3.29	-2.91	17.95	34.77
BAND 13 BW: 10M 16QAM RB: 1,0	782.0	23230	V	13.94	3.28	-2.91	14.31	34.77
			H	18.34	3.28	-2.91	18.71	34.77
BAND 13 BW: 10M 16QAM RB: 1,49	782.0	23230	V	12.04	3.29	-2.91	12.43	34.77
			H	17.99	3.29	-2.91	18.37	34.77

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

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7.6. Measurement Result: (Peak) –using option of peak measurement (Ext. Antenna)

EUT			Measurement					
Operation Band	Fundamental	CH	Antenna	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 2 BW: 5M QPSK RB: 1,0	1852.5	18625	V	17.68	9.95	-4.46	23.17	33.01
			H	15.55	9.95	-4.46	21.04	33.01
	1880.0	18900	V	18.33	10.04	-4.51	23.86	33.01
			H	16.27	10.03	-4.51	21.79	33.01
	1907.5	19175	V	16.66	10.12	-4.55	22.23	33.01
			H	15.02	10.12	-4.55	20.59	33.01
LTE BAND 2 BW: 5M QPSK RB: 1,24	1852.5	18625	V	17.54	9.95	-4.46	23.03	33.01
			H	15.3	9.95	-4.46	20.79	33.01
	1880.0	18900	V	17.81	10.04	-4.51	23.34	33.01
			H	15.8	10.04	-4.51	21.33	33.01
	1907.5	19175	V	16.76	10.12	-4.55	22.33	33.01
			H	14.01	10.12	-4.55	19.58	33.01
LTE BAND 2 BW: 5M 16QAM RB: 1,0	1852.5	18625	V	17.26	9.95	-4.46	22.75	33.01
			H	15.48	9.95	-4.46	20.97	33.01
	1880.0	18900	V	18.58	10.03	-4.51	24.1	33.01
			H	15.95	10.03	-4.51	21.47	33.01
	1907.5	19175	V	16.4	10.12	-4.55	21.97	33.01
			H	14.77	10.12	-4.55	20.34	33.01
LTE BAND 2 BW: 5M 16QAM RB: 1,24	1852.5	18625	V	17.55	9.95	-4.46	23.04	33.01
			H	16.57	9.95	-4.46	22.06	33.01
	1880.0	18900	V	18.56	10.03	-4.51	24.08	33.01
			H	16.82	10.03	-4.51	22.34	33.01
	1907.5	19175	V	16.62	10.12	-4.55	22.19	33.01
			H	15.06	10.12	-4.55	20.63	33.01

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

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EUT			Measurement					
Operation Band	Fundamenta l	CH	Antenn a	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 2 BW: 10M QPSK RB: 1,0	1855.0	18650	V	17.51	9.95	-4.47	22.99	33.01
			H	15.61	9.95	-4.47	21.09	33.01
	1880.0	18900	V	18.3	10.03	-4.51	23.82	33.01
			H	16.21	10.03	-4.51	21.73	33.01
	1905.0	19150	V	16.59	10.09	-4.54	22.14	33.01
			H	16.1	10.09	-4.54	21.65	33.01
LTE BAND 2 BW: 10M QPSK RB: 1,49	1855.0	18650	V	17.07	9.96	-4.47	22.56	33.01
			H	16.48	9.96	-4.47	21.97	33.01
	1880.0	18900	V	17.45	10.04	-4.51	22.98	33.01
			H	17.21	10.04	-4.51	22.74	33.01
	1905.0	19150	V	15.88	10.12	-4.55	21.45	33.01
			H	15.36	10.12	-4.55	20.93	33.01
LTE BAND 2 BW: 10M 16QAM RB: 1,0	1855.0	18650	V	16.28	9.95	-4.47	21.76	33.01
			H	16.18	9.95	-4.47	21.66	33.01
	1880.0	18900	V	18.1	10.03	-4.51	23.62	33.01
			H	17.06	10.03	-4.51	22.58	33.01
	1905.0	19150	V	16.69	10.09	-4.54	22.24	33.01
			H	16.12	10.11	-4.54	21.69	33.01
LTE BAND 2 BW: 10M 16QAM RB: 1,49	1855.0	18650	V	16.72	9.96	-4.47	22.21	33.01
			H	16.66	9.96	-4.47	22.15	33.01
	1880.0	18900	V	17.85	10.04	-4.51	23.38	33.01
			H	16.69	10.04	-4.51	22.22	33.01
	1905.0	19150	V	15.62	10.12	-4.55	21.19	33.01
			H	15.51	10.12	-4.55	21.08	33.01

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

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 2 BW: 15M QPSK RB: 1,0	1857.5	18675	V	17.83	9.95	-4.47	23.31	33.01
			H	16.7	9.95	-4.47	22.18	33.01
	1880.0	18900	V	18.92	10.02	-4.5	24.44	33.01
			H	17.15	10.02	-4.5	22.67	33.01
	1902.5	19125	V	17.79	10.09	-4.54	23.34	33.01
			H	16.99	10.08	-4.53	22.54	33.01
LTE BAND 2 BW: 15M QPSK RB: 1,74	1857.5	18675	V	17.56	9.98	-4.48	23.06	33.01
			H	16.71	9.98	-4.48	22.21	33.01
	1880.0	18900	V	17.59	10.05	-4.52	23.12	33.01
			H	16.71	10.05	-4.52	22.24	33.01
	1902.5	19125	V	16.54	10.12	-4.55	22.11	33.01
			H	16.46	10.12	-4.55	22.03	33.01
LTE BAND 2 BW: 15M 16QAM RB: 1,0	1857.5	18675	V	18.66	9.95	-4.47	24.14	33.01
			H	16.26	9.95	-4.47	21.74	33.01
	1880.0	18900	V	20.11	10.02	-4.5	25.63	33.01
			H	17.33	10.02	-4.5	22.85	33.01
	1902.5	19125	V	19.34	10.09	-4.54	24.89	33.01
			H	16.16	10.08	-4.53	21.71	33.01
LTE BAND 2 BW: 15M 16QAM RB: 1,74	1857.5	18675	V	19.57	9.98	-4.48	25.07	33.01
			H	16.94	9.98	-4.48	22.44	33.01
	1880.0	18900	V	20.09	10.05	-4.52	25.62	33.01
			H	17.07	10.05	-4.51	22.61	33.01
	1902.5	19125	V	18.53	10.12	-4.55	24.1	33.01
			H	16.34	10.12	-4.55	21.91	33.01

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

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 2 BW: 20M QPSK RB: 1,0	1860.0	18700	V	17.79	9.95	-4.47	23.27	33.01
			H	15.89	9.95	-4.47	21.37	33.01
	1880.0	18900	V	18.69	10.01	-4.5	24.2	33.01
			H	15.73	10.02	-4.5	21.25	33.01
	1900.0	19100	V	18.89	10.08	-4.53	24.44	33.01
			H	16.52	10.08	-4.53	22.07	33.01
LTE BAND 2 BW: 20M QPSK RB: 1,99	1860.0	18700	V	17.76	9.99	-4.49	23.26	33.01
			H	15.63	9.99	-4.49	21.13	33.01
	1880.0	18900	V	19.08	10.05	-4.52	24.61	33.01
			H	16.31	10.05	-4.52	21.84	33.01
	1900.0	19100	V	17.12	10.12	-4.55	22.69	33.01
			H	15.92	10.12	-4.55	21.49	33.01
LTE BAND 2 BW: 20M 16QAM RB: 1,0	1860.0	18700	V	17.44	9.95	-4.47	22.92	33.01
			H	16	9.95	-4.47	21.48	33.01
	1880.0	18900	V	18.94	10.01	-4.5	24.45	33.01
			H	16.21	10.01	-4.5	21.72	33.01
	1900.0	19100	V	19.39	10.08	-4.53	24.94	33.01
			H	16.18	10.08	-4.53	21.73	33.01
LTE BAND 2 BW: 15M 16QAM RB: 1,99	1860.0	18700	V	17.76	9.99	-4.49	23.26	33.01
			H	16.01	9.99	-4.49	21.51	33.01
	1880.0	18900	V	19.06	10.05	-4.52	24.59	33.01
			H	16.86	10.05	-4.52	22.39	33.01
	1900.0	19100	V	17.41	10.12	-4.55	22.98	33.01
			H	15.63	10.12	-4.55	21.2	33.01

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

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EUT			Measurement					
Operation Band	Fundamental	CH	Antenna	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 4 BW: 5M QPSK RB: 1,0	1712.5	19975	V	21.58	9.49	-4.31	26.76	30.00
			H	16.19	9.49	-4.31	21.37	30.00
	1732.5	20175	V	22.03	9.55	-4.31	27.27	30.00
			H	15.72	9.55	-4.31	20.96	30.00
	1752.5	20375	V	21.97	9.61	-4.33	27.25	30.00
			H	15.23	9.61	-4.33	20.51	30.00
LTE BAND 4 BW: 5M QPSK RB: 1,24	1712.5	19975	V	22.6	9.5	-4.31	27.79	30.00
			H	17	9.5	-4.31	22.19	30.00
	1732.5	20175	V	22.11	9.56	-4.31	27.36	30.00
			H	14.56	9.56	-4.31	19.81	30.00
	1752.5	20375	V	21.97	9.62	-4.33	27.26	30.00
			H	15.35	9.62	-4.33	20.64	30.00
LTE BAND 4 BW: 5M 16QAM RB: 1,0	1712.5	19975	V	21.64	9.49	-4.31	26.82	30.00
			H	16.22	9.49	-4.31	21.4	30.00
	1732.5	20175	V	21.87	9.54	-4.31	27.1	30.00
			H	15.86	9.54	-4.31	21.09	30.00
	1752.5	20375	V	22.19	9.6	-4.33	27.46	30.00
			H	15.07	9.61	-4.33	20.35	30.00
LTE BAND 4 BW: 5M 16QAM RB: 1,24	1712.5	19975	V	23.29	9.5	-4.31	28.48	30.00
			H	16.9	9.5	-4.31	22.09	30.00
	1732.5	20175	V	21.78	9.56	-4.31	27.03	30.00
			H	14.53	9.56	-4.31	19.78	30.00
	1752.5	20375	V	22.37	9.62	-4.33	27.66	30.00
			H	15.91	9.62	-4.33	21.2	30.00

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

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EUT			Measurement					
Operation Band	Fundamental	CH	Antenna	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 4 BW: 10M QPSK RB: 1,0	1715.0	20000	V	21.82	9.49	-4.31	27	30.00
			H	16.73	9.49	-4.31	21.91	30.00
	1732.0	20175	V	22.25	9.55	-4.31	27.49	30.00
			H	15.25	9.55	-4.31	20.49	30.00
	1750.0	20350	V	22.52	9.61	-4.33	27.8	30.00
			H	15.21	9.61	-4.33	20.49	30.00
LTE BAND 4 BW: 10M QPSK RB: 1,49	1715.0	20000	V	23.18	9.5	-4.31	28.37	30.00
			H	16.38	9.5	-4.31	21.57	30.00
	1732.0	20175	V	21.75	9.56	-4.31	27	30.00
			H	14.39	9.56	-4.31	19.64	30.00
	1750.0	20350	V	22.34	9.62	-4.33	27.63	30.00
			H	15.46	9.62	-4.33	20.75	30.00
LTE BAND 4 BW: 10M 16QAM RB: 1,0	1715.0	20000	V	22.08	9.49	-4.31	27.26	30.00
			H	16.37	9.49	-4.31	21.55	30.00
	1732.0	20175	V	22.45	9.54	-4.31	27.68	30.00
			H	15.7	9.54	-4.31	20.93	30.00
	1750.0	20350	V	22.23	9.6	-4.33	27.5	30.00
			H	14.99	9.61	-4.33	20.27	30.00
LTE BAND 4 BW: 10M 16QAM RB: 1,49	1715.0	20000	V	23.13	9.5	-4.31	28.32	30.00
			H	17.52	9.5	-4.31	22.71	30.00
	1732.0	20175	V	21.64	9.56	-4.31	26.89	30.00
			H	15.39	9.56	-4.31	20.64	30.00
	1750.0	20350	V	22.26	9.62	-4.33	27.55	30.00
			H	15.7	9.62	-4.33	20.99	30.00

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

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EUT			Measurement					
Operation Band	Fundamental	CH	Antenna	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 4 BW: 15M QPSK RB: 1,0	1717.5	20025	V	21.16	9.49	-4.31	26.34	30.00
			H	16.04	9.51	-4.31	21.24	30.00
	1732.5	20175	V	22.2	9.54	-4.31	27.43	30.00
			H	14.34	9.53	-4.31	19.56	30.00
	1747.5	20325	V	17.84	9.59	-4.32	23.11	30.00
			H	12.85	9.59	-4.32	18.12	30.00
LTE BAND 4 BW: 15M QPSK RB: 1,74	1717.5	20025	V	18.07	9.52	-4.31	23.28	30.00
			H	14.53	9.52	-4.31	19.74	30.00
	1732.5	20175	V	16.93	9.57	-4.31	22.19	30.00
			H	12.01	9.57	-4.31	17.27	30.00
	1747.5	20325	V	17.62	9.62	-4.33	22.91	30.00
			H	12.6	9.62	-4.33	17.89	30.00
LTE BAND 4 BW: 15M 16QAM RB: 1,0	1717.5	20025	V	15.52	9.49	-4.31	20.7	30.00
			H	14.66	9.49	-4.31	19.84	30.00
	1732.5	20175	V	17.9	9.54	-4.31	23.13	30.00
			H	13.45	9.54	-4.31	18.68	30.00
	1747.5	20325	V	16.98	9.59	-4.32	22.25	30.00
			H	11.74	9.59	-4.32	17.01	30.00
LTE BAND 4 BW: 15M 16QAM RB: 1,74	1717.5	20025	V	18.08	9.51	-4.31	23.28	30.00
			H	15.16	9.51	-4.31	20.36	30.00
	1732.5	20175	V	16.74	9.57	-4.31	22	30.00
			H	12.84	9.57	-4.31	18.1	30.00
	1747.5	20325	V	17.12	9.62	-4.33	22.41	30.00
			H	11.97	9.62	-4.33	17.26	30.00

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

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EUT			Measurement					
Operation Band	Fundamental	CH	Antenna	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 4 BW: 20M QPSK RB: 1,0	1720.0	20050	V	21.07	9.49	-4.31	26.25	30.00
			H	14.96	9.49	-4.31	20.14	30.00
	1732.5	20175	V	18.03	9.53	-4.31	23.25	30.00
			H	14.96	9.53	-4.31	20.18	30.00
	1745.0	20300	V	16.41	9.57	-4.31	21.67	30.00
			H	13.69	9.57	-4.31	18.95	30.00
LTE BAND 4 BW: 20M QPSK RB: 1,99	1720.0	20050	V	17.89	9.53	-4.31	23.11	30.00
			H	14.61	9.53	-4.31	19.83	30.00
	1732.5	20175	V	17.07	9.57	-4.31	22.33	30.00
			H	13.73	9.57	-4.31	18.99	30.00
	1745.0	20300	V	16.51	9.62	-4.33	21.8	30.00
			H	14.58	9.61	-4.33	19.86	30.00
LTE BAND 4 BW: 20M 16QAM RB: 1,0	1720.0	20050	V	22.58	9.48	-4.31	27.75	30.00
			H	15.3	9.49	-4.31	20.48	30.00
	1732.5	20175	V	23.54	9.53	-4.31	28.76	30.00
			H	15.68	9.53	-4.31	20.9	30.00
	1745.0	20300	V	21.38	9.57	-4.31	26.64	30.00
			H	14.08	9.57	-4.31	19.34	30.00
LTE BAND 4 BW: 20M 16QAM RB: 1,99	1720.0	20050	V	22.61	9.53	-4.31	27.83	30.00
			H	14.58	9.53	-4.31	19.8	30.00
	1732.5	20175	V	21.98	9.57	-4.31	27.24	30.00
			H	13.76	9.57	-4.31	19.02	30.00
	1745.0	20300	V	21.95	9.61	-4.33	27.23	30.00
			H	14.1	9.61	-4.33	19.38	30.00

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

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EUT			Measurement					
Operation Band	Fundamental	CH	Antenna	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 13 BW: 5M QPSK RB: 1,0	779.5	23205	V	14.35	3.27	-2.91	14.71	34.77
			H	21.18	3.28	-2.91	21.55	34.77
	782.0	23230	V	15.61	3.29	-2.91	15.99	34.77
			H	23.16	3.29	-2.91	23.54	34.77
	784.5	23255	V	14.17	3.29	-2.91	14.55	34.77
			H	20.92	3.29	-2.91	21.3	34.77
LTE BAND 13 BW: 5M QPSK RB: 1,24	779.5	23205	V	14.1	3.28	-2.91	14.47	34.77
			H	20.11	3.29	-2.91	20.49	34.77
	782.0	23230	V	12.59	3.29	-2.91	12.97	34.77
			H	19.93	3.3	-2.9	20.33	34.77
	784.5	23255	V	12.56	3.29	-2.91	12.94	34.77
			H	20.66	3.29	-2.91	21.04	34.77
LTE BAND 13 BW: 5M 16QAM RB: 1,0	779.5	23205	V	14.72	3.28	-2.91	15.09	34.77
			H	21.65	3.28	-2.91	22.02	34.77
	782.0	23230	V	15.8	3.28	-2.91	16.17	34.77
			H	22.87	3.28	-2.91	23.24	34.77
	784.5	23255	V	13.93	3.28	-2.91	14.3	34.77
			H	21.69	3.29	-2.91	22.07	34.77
LTE BAND 13 BW: 5M 16QAM RB: 1,24	779.5	23205	V	14.83	3.28	-2.91	15.2	34.77
			H	22.07	3.28	-2.91	22.44	34.77
	782.0	23230	V	13.44	3.29	-2.91	13.82	34.77
			H	20.68	3.29	-2.91	21.06	34.77
	784.5	23255	V	13.27	3.29	-2.91	13.65	34.77
			H	21.27	3.29	-2.91	21.65	34.77

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

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
	MHz		V/H	dBm	dBd	dB	dBm	dBm
BAND 13 BW: 10M QPSK RB: 1,0	782.0	23230	V	16.59	3.27	-2.91	16.95	34.77
			H	19.58	3.28	-2.91	19.95	34.77
BAND 13 BW: 10M QPSK RB: 1,49	782.0	23230	V	14.46	3.29	-2.91	14.84	34.77
			H	19.9	3.29	-2.91	20.28	34.77
BAND 13 BW: 10M 16QAM RB: 1,0	782.0	23230	V	17.59	3.28	-2.91	17.96	34.77
			H	20.68	3.28	-2.91	21.90	34.77
BAND 13 BW: 10M 16QAM RB: 1,49	782.0	23230	V	15.24	3.29	-2.91	15.62	34.77
			H	20.13	3.29	-2.91	20.51	34.77

Remark :

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

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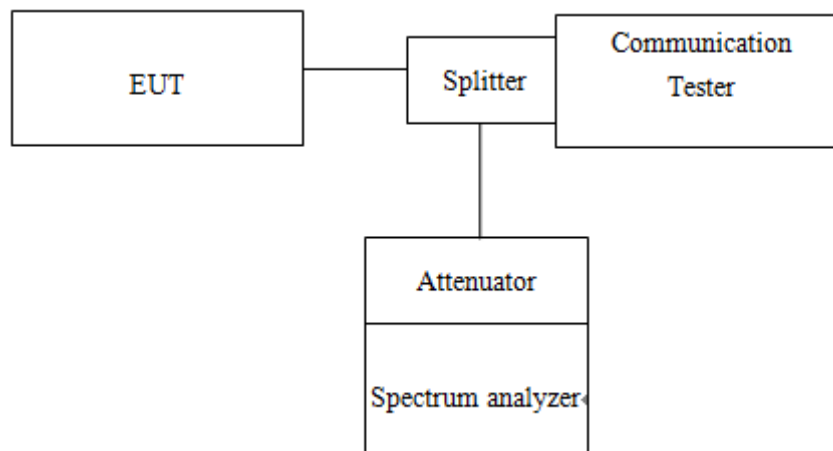
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8. OCCUPIED BANDWIDTH MEASUREMENT

8.1. Standard Applicable

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

8.2. Test Set-up



8.3. Measurement Procedure

99% & 26dB Bandwidth with detector peak

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

99% Bandwidth with detector sample

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

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8.4. Measurement Equipment Used

Conducted Emission (measured at antenna port) Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	KEYSIGHT	N9010A	MY51440113	06/20/2017	06/19/2018
Communication Tester	Anritsu	MT8820C	6201107337	05/25/2017	05/24/2018
Coaxial Cable 30cm	WOKEN	00100A1F1A195C	RF01	12/12/2016	12/11/2017
Temperature Chamber	TERCHY	MHK-120LK	1020582	06/13/2017	06/12/2018
DC Block	PASTERNAK	PE8210	RF29	12/12/2016	12/11/2017
Splitter	RF-LAMBDA	RFLT2W1G18G	RF35	12/12/2016	12/11/2017
Attenuator	WOKEN	218FS-10	RF23	12/12/2016	12/11/2017
DC Power Supply	Agilent	E3640A	MY53140006	05/02/2017	05/01/2018

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8.5. Measurement Result

LTE BAND 2 Channel bandwidth: 5MHz					
Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM
1852.5	18625	4.4858	4.9040	4.912	4.940
1880.0	18900	4.4877	4.9040	4.899	4.908
1907.5	19175	4.4847	4.4893	4.933	4.926

LTE BAND 2 Channel bandwidth: 15MHz					
Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM
1857.5	18675	13.556	13.522	14.82	14.79
1880.0	18900	13.484	13.483	14.79	14.86
1902.5	19125	13.517	13.511	14.84	14.81

LTE BAND 4 Channel bandwidth: 5MHz					
Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM
1712.5	19957	4.4861	4.4911	4.925	4.924
1732.5	20175	4.4846	4.8800	4.919	4.926
1752.5	20375	4.4847	4.4898	4.929	4.260

LTE BAND 4 Channel bandwidth: 15MHz					
Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM
1717.5	20025	13.521	13.507	14.79	14.96
1732.5	20175	13.498	13.487	14.73	14.82
1747.5	20325	13.486	13.485	14.76	14.90

LTE BAND 13 Channel bandwidth: 5MHz					
Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM
779.5	23205	4.4928	4.5011	4.947	4.957
782.0	23230	4.4846	4.4907	4.897	4.915
784.5	23255	4.4782	4.4829	4.919	4.917

LTE BAND 2 Channel bandwidth: 10MHz					
Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM
1855.0	18650	9.0091	8.9629	9.886	9.726
1880.0	18900	9.0045	8.9563	9.833	9.715
1905.0	19150	8.9947	8.9571	9.872	9.720

LTE BAND 2 Channel bandwidth: 20MHz					
Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM
1860.0	18700	18.000	18.048	19.52	19.59
1880.0	18900	17.886	17.957	19.47	19.48
1900.0	19100	17.969	18.000	19.45	19.60

LTE BAND 4 Channel bandwidth: 10MHz					
Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM
1715.0	20000	8.9837	8.9638	9.802	9.758
1732.5	20175	8.9852	8.9507	9.844	9.716
1750.0	20350	9.0003	8.9527	9.849	9.735

LTE BAND 4 Channel bandwidth: 20MHz					
Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM
1720.0	20050	17.979	18.019	19.56	19.59
1732.5	20175	17.901	17.955	19.48	19.43
1745.0	20300	17.926	17.978	19.37	19.51

LTE BAND 13 Channel bandwidth: 10MHz					
Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM
782.0	23230	8.9855	9.7000	9.944	8.942

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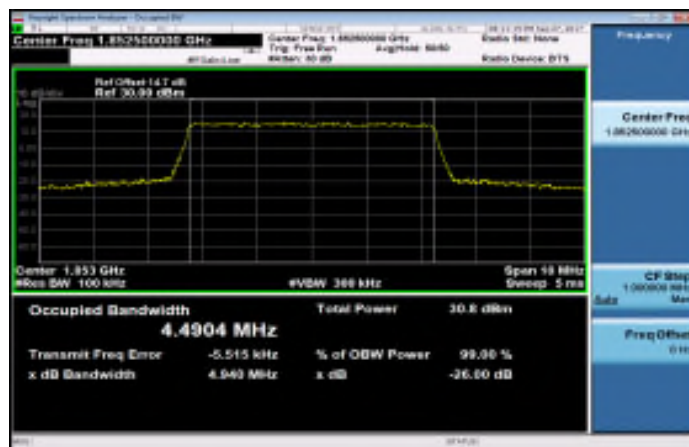
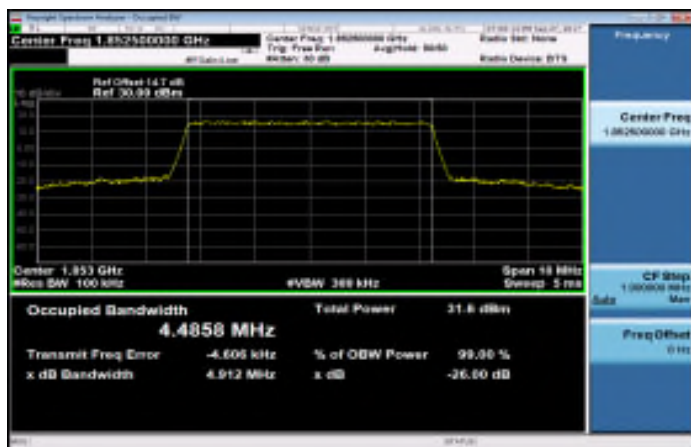
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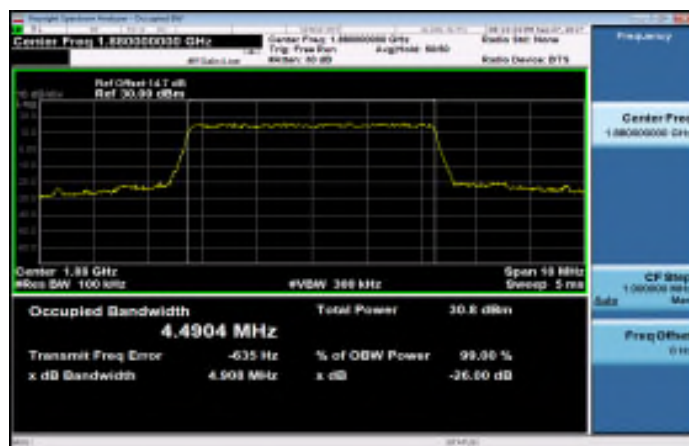
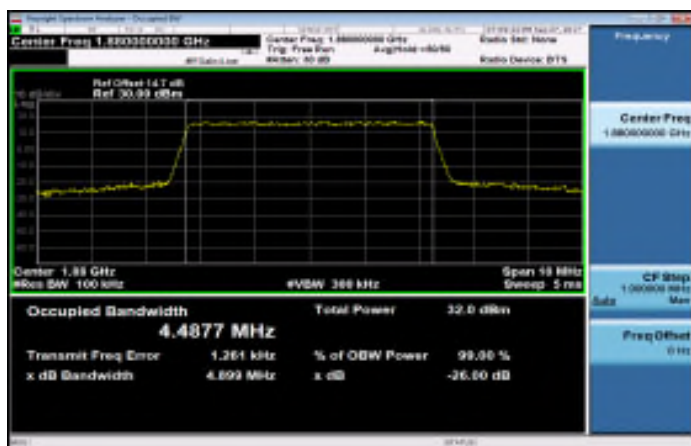
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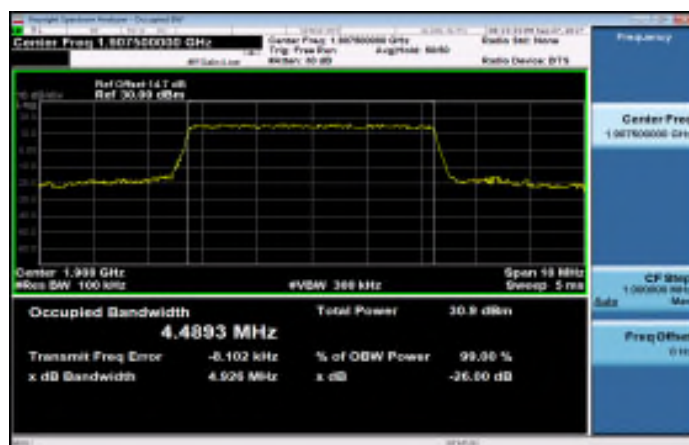
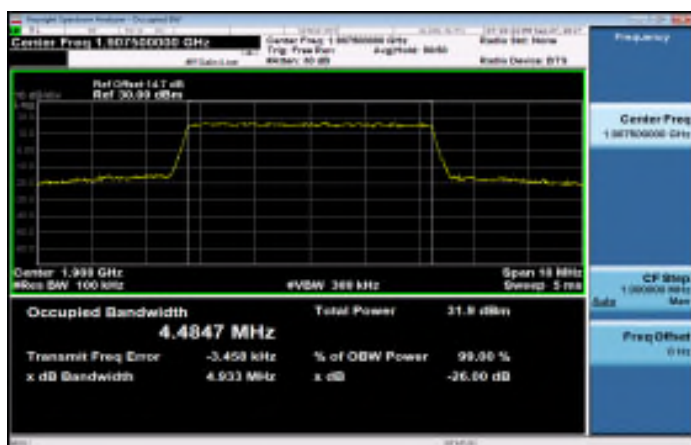
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Band2_5MHz_16QAM_25_0_HighCH19175-1907.5



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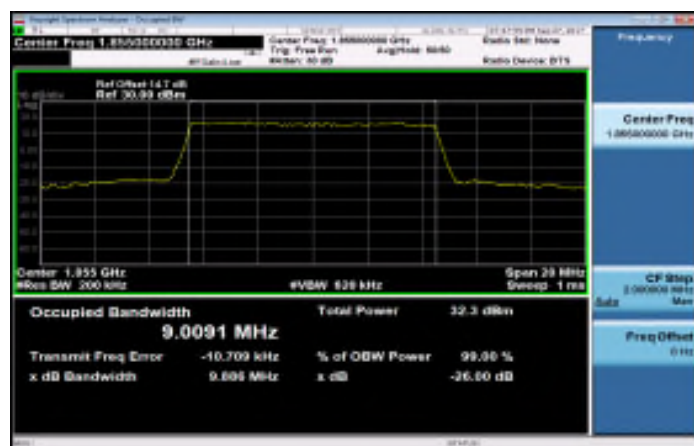
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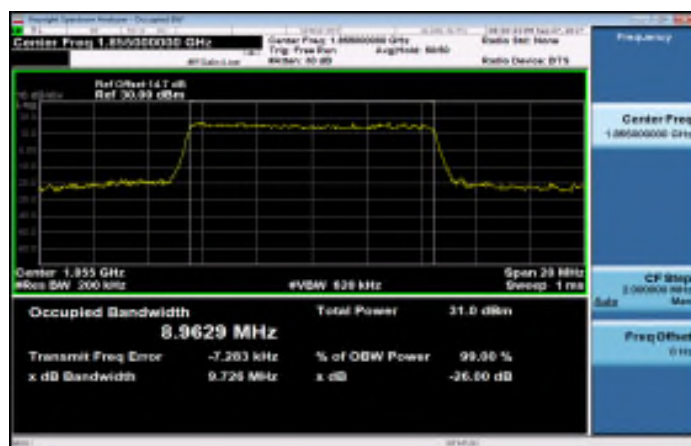
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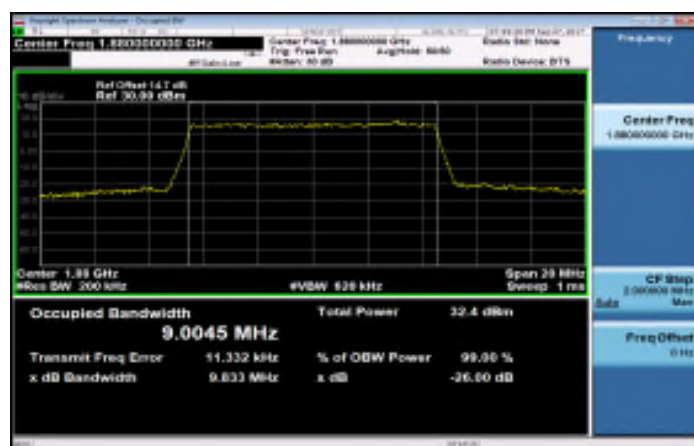
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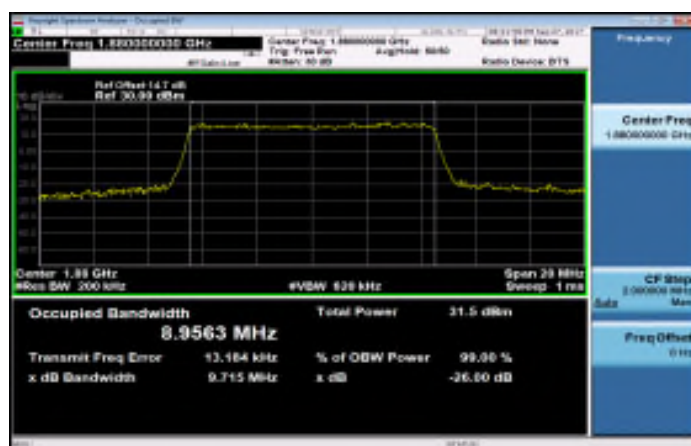
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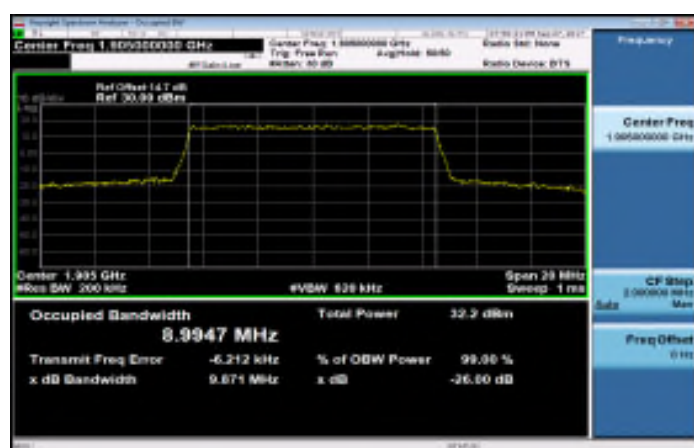
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Band2_10MHz_QPSK_50_0_HighCH19150-1905



Band2_10MHz_16QAM_50_0_HighCH19150-1905



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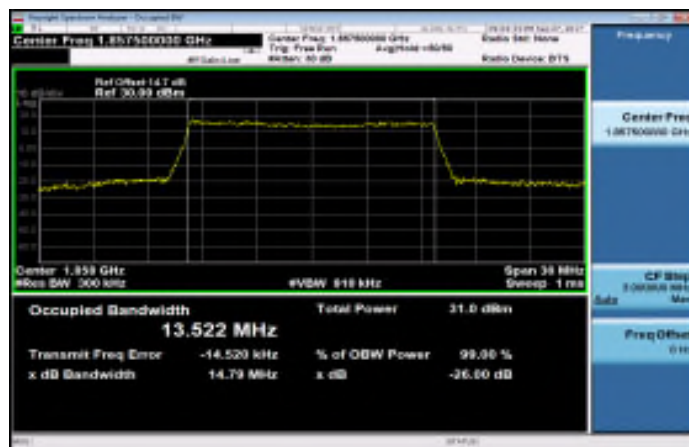
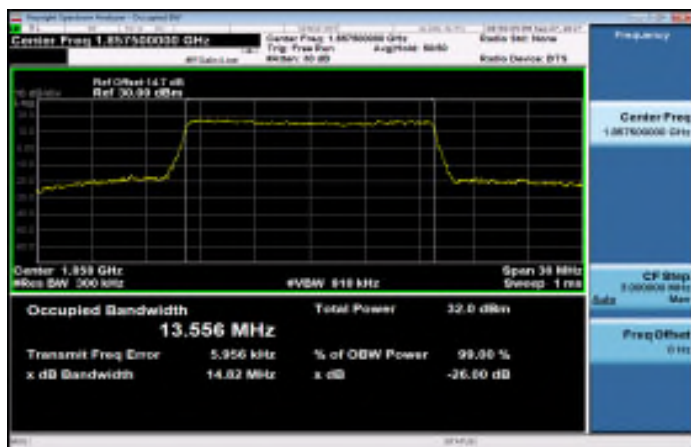
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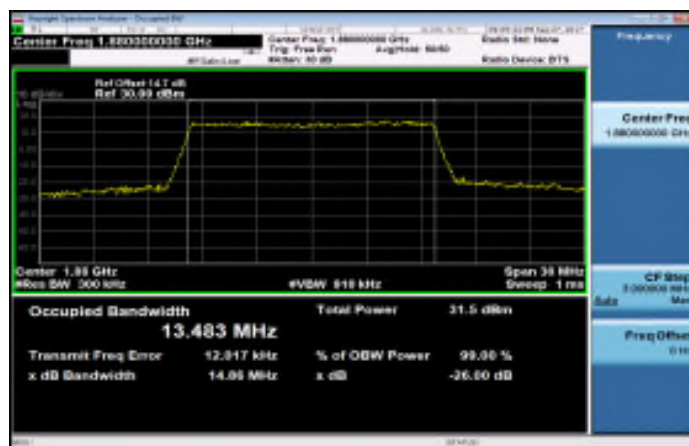
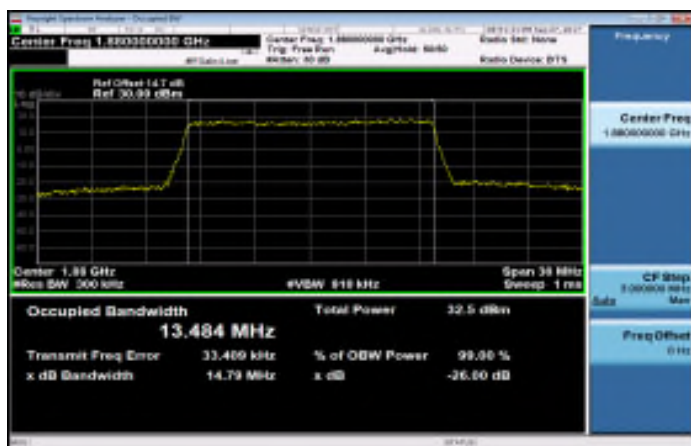
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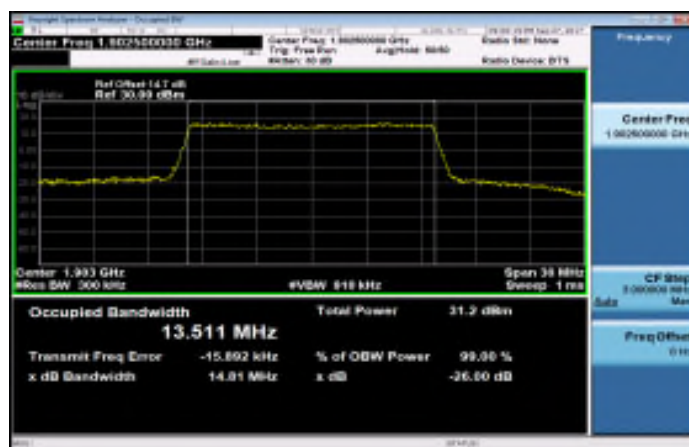
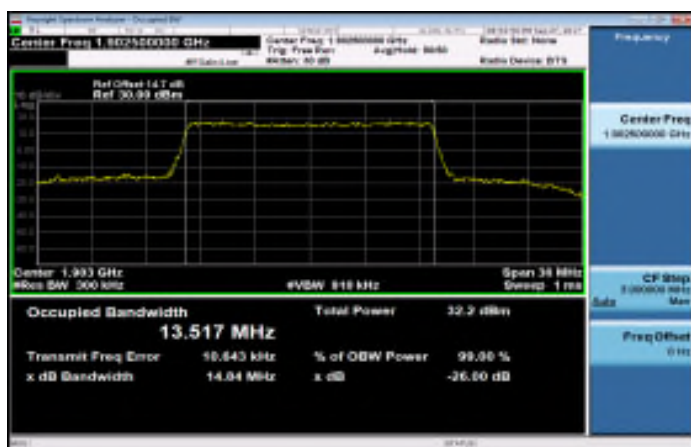
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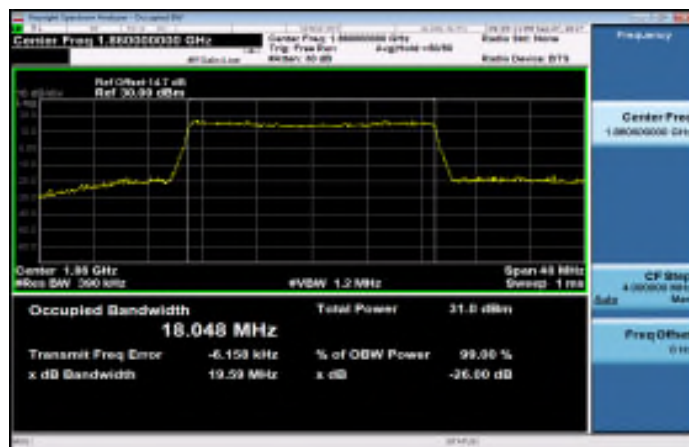
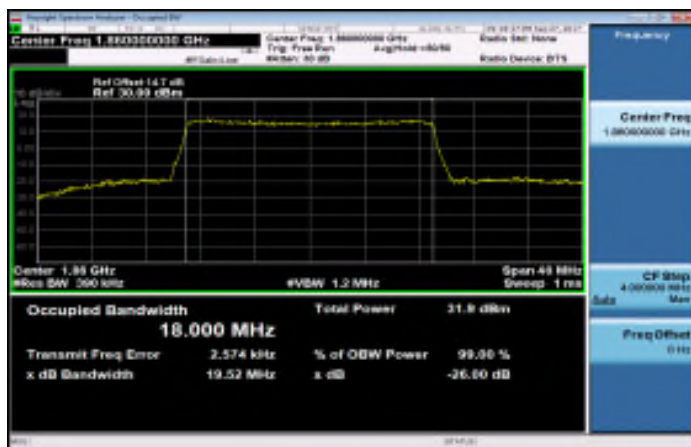
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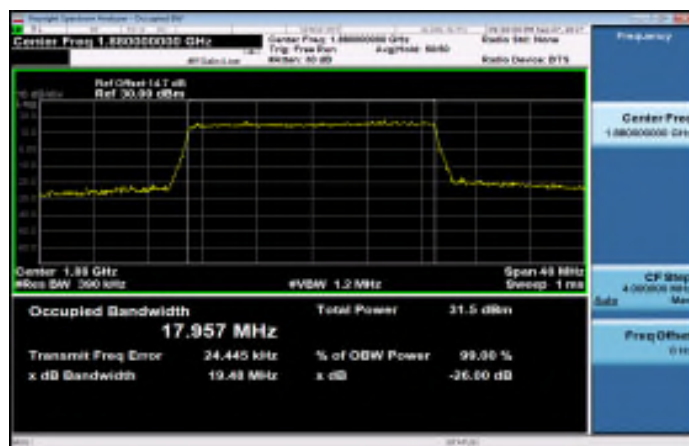
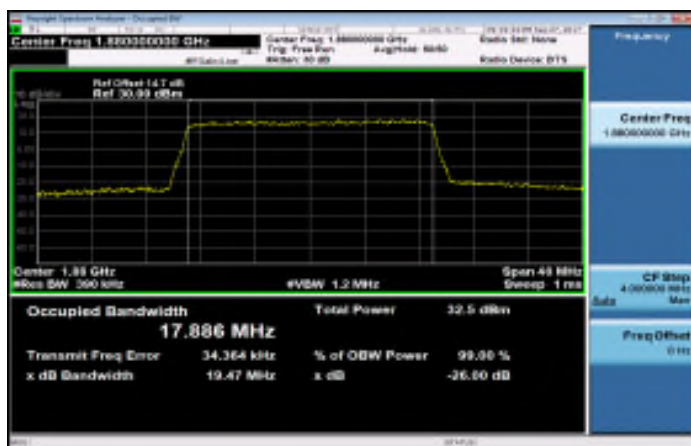
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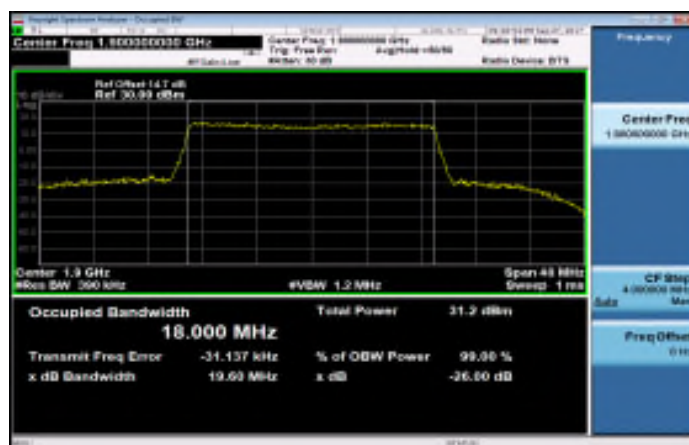
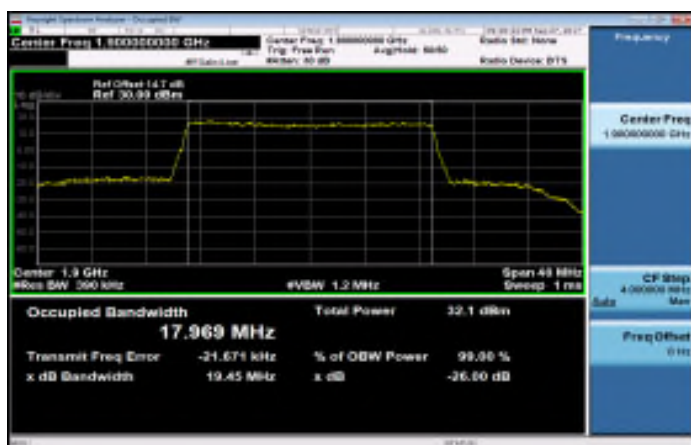
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Band2_20MHz_16QAM_100_0_MidCH18900-1880



Band2_20MHz_QPSK_100_0_HighCH19100-1900

Band2_20MHz_16QAM_100_0_HighCH19100-1900



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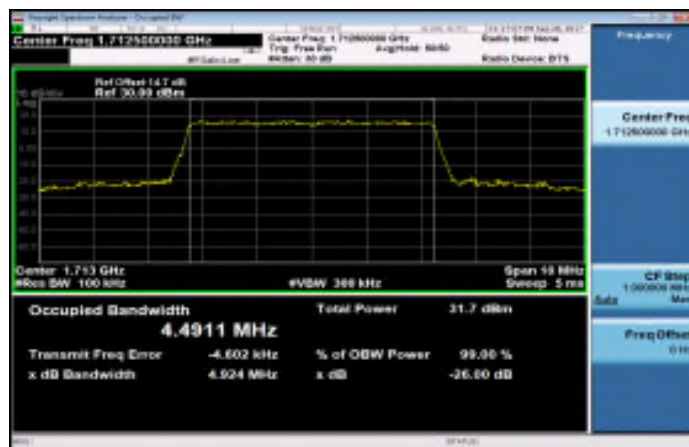
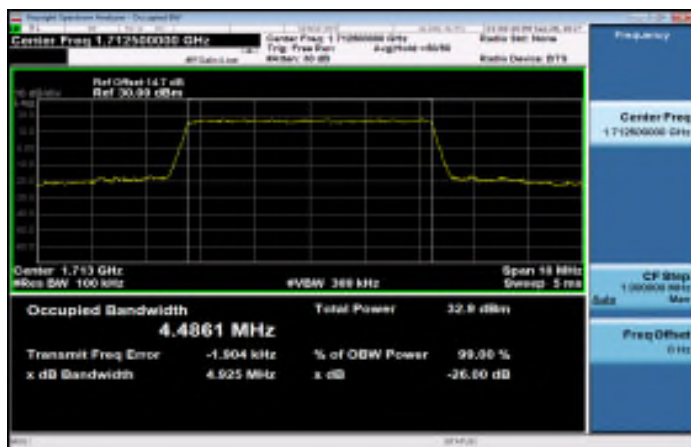
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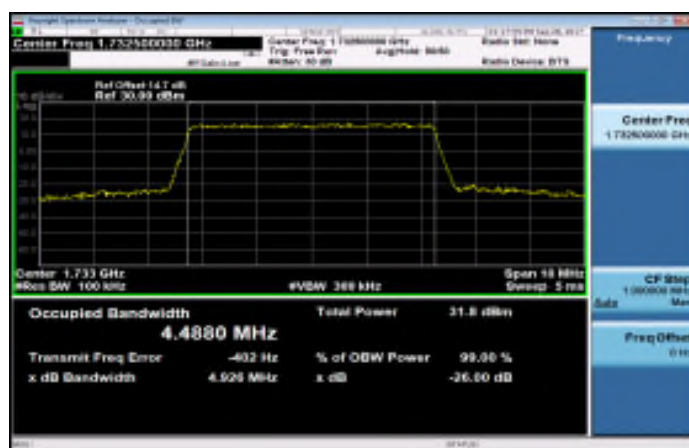
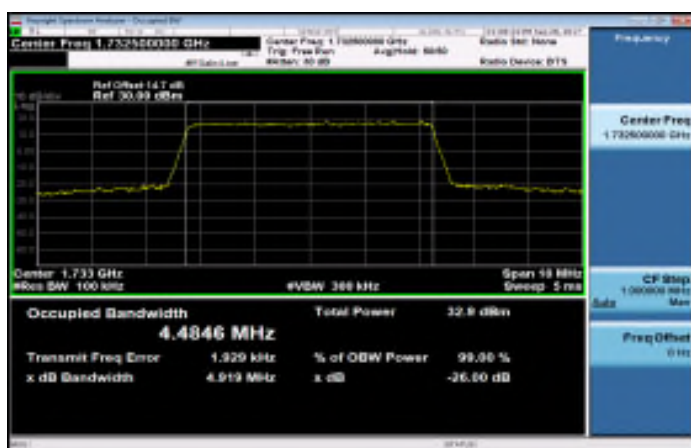
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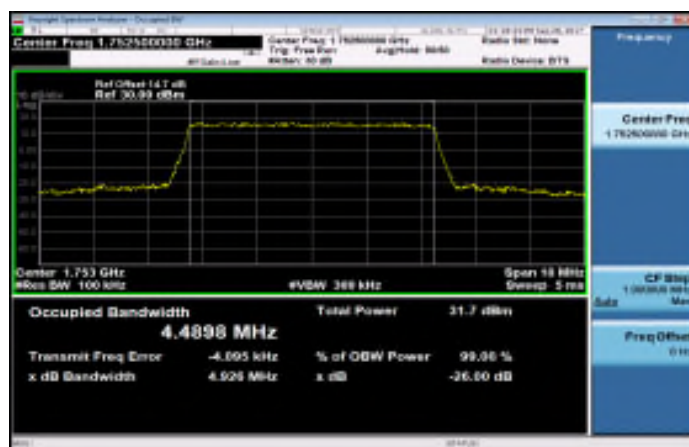
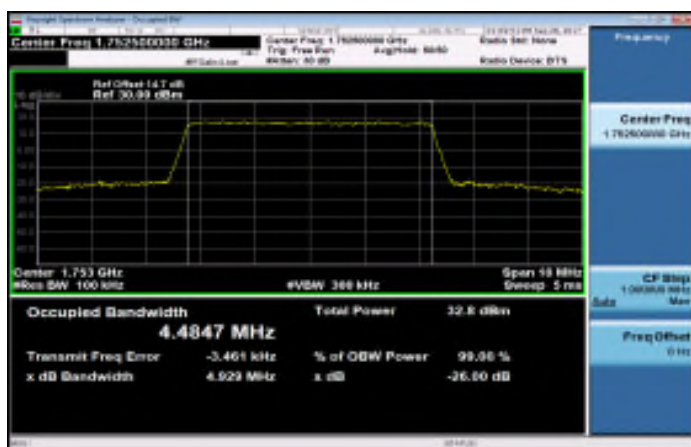
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Band4_5MHz_16QAM_25_0_HighCH20375-1752.5



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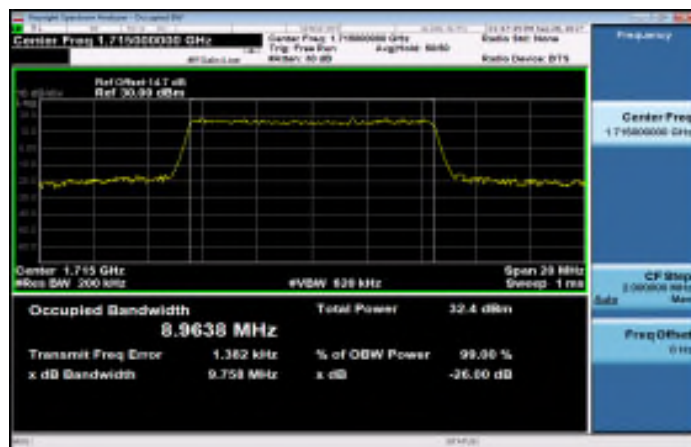
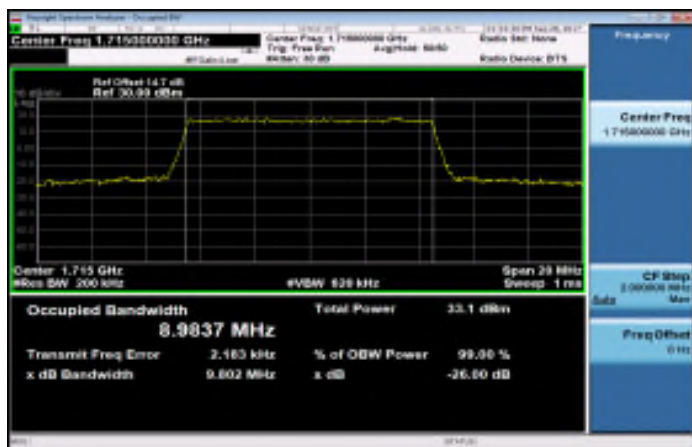
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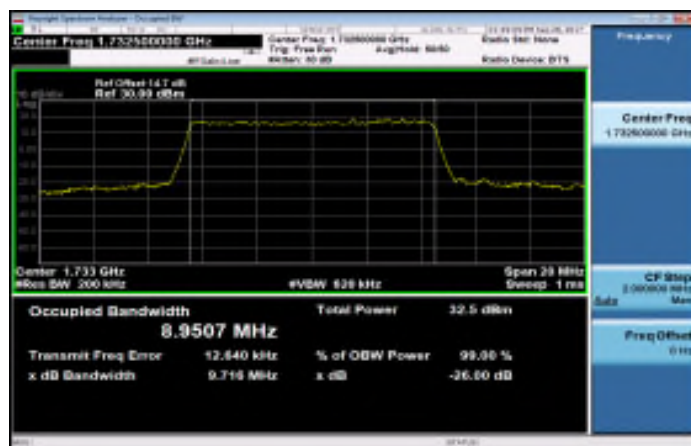
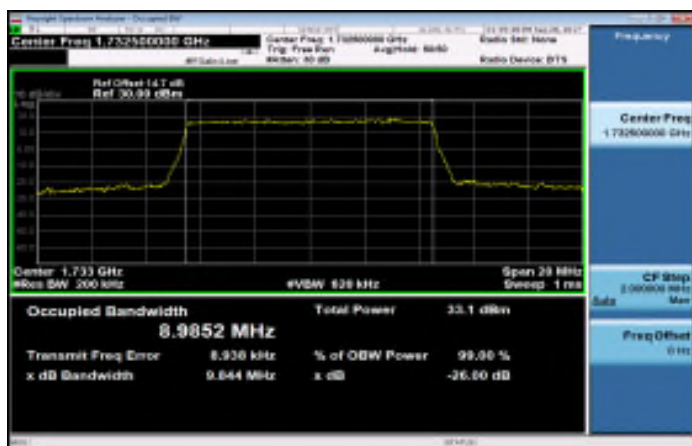
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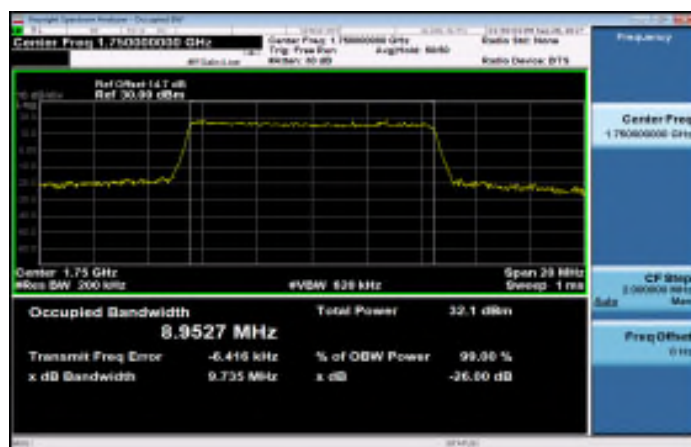
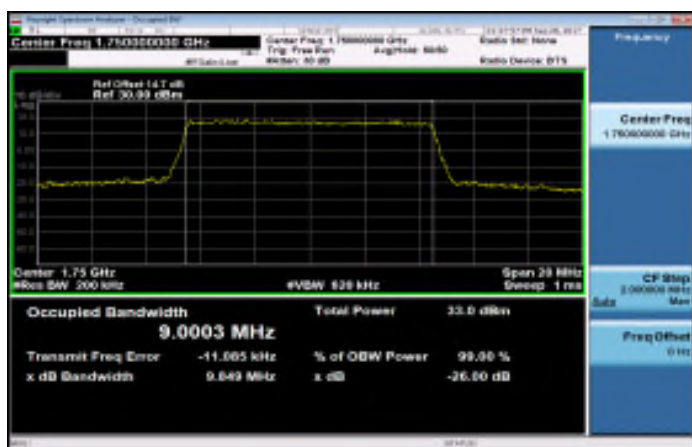
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Band4_10MHz_QPSK_50_0_HighCH20350-1750

Band4_10MHz_16QAM_50_0_HighCH20350-1750



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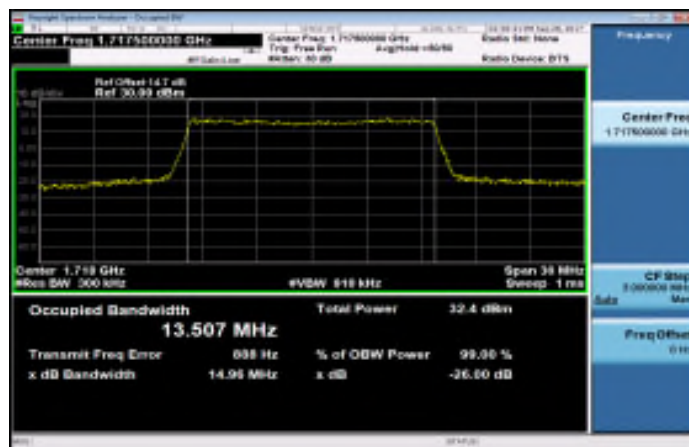
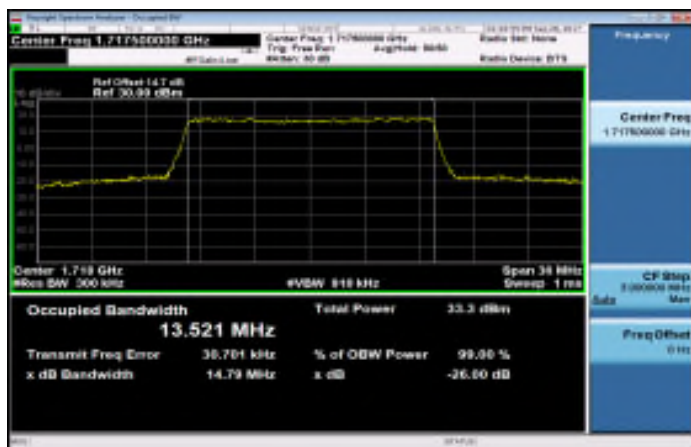
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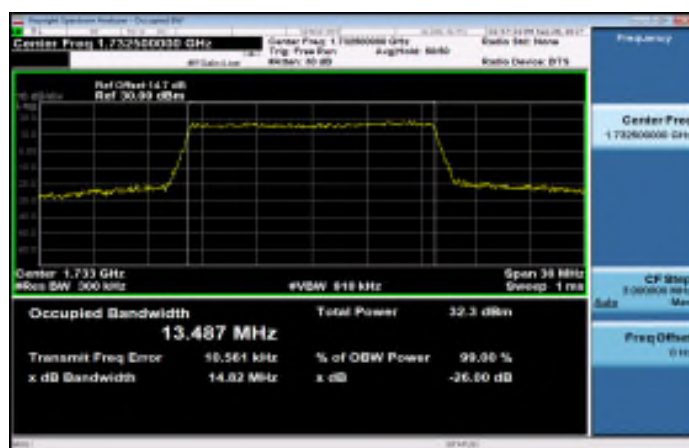
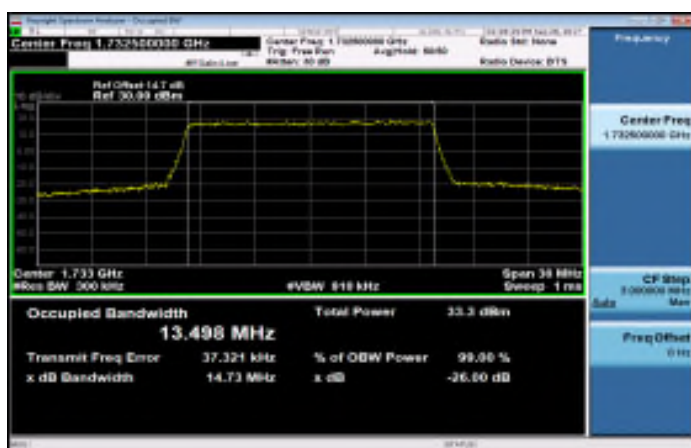
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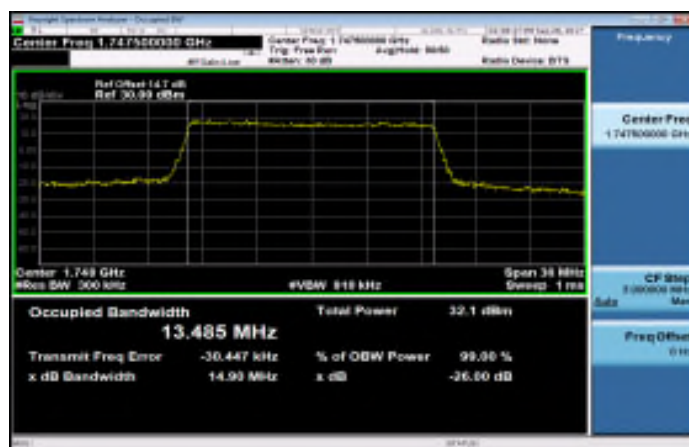
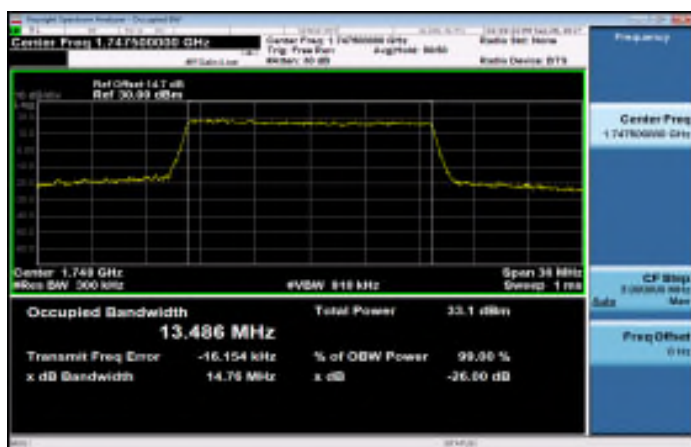
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Band4_15MHz_16QAM_75_0_HighCH20325-1747.5



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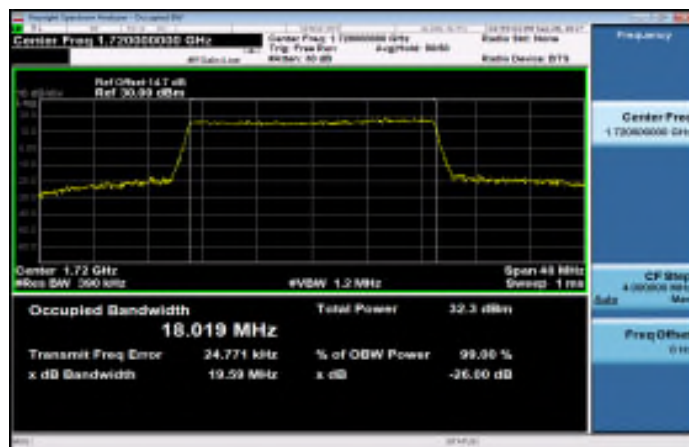
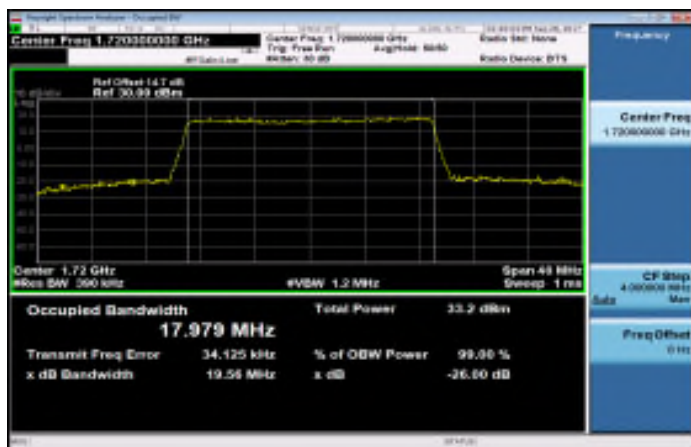
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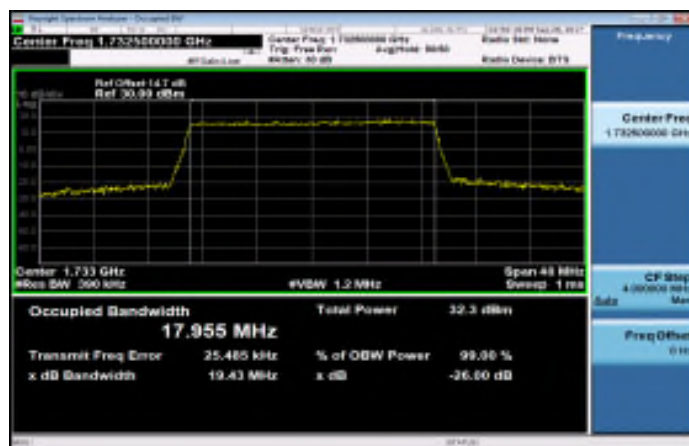
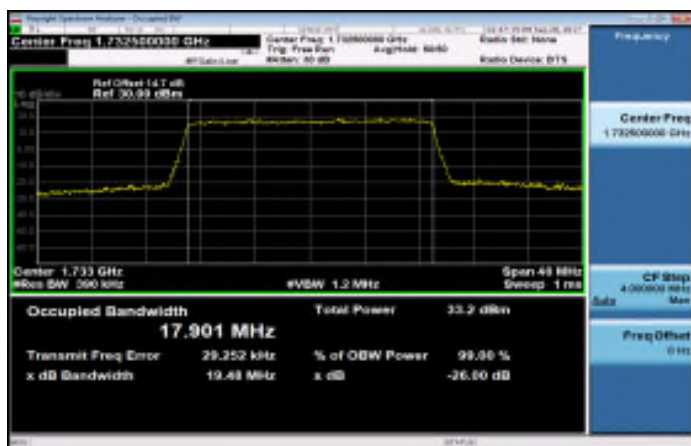
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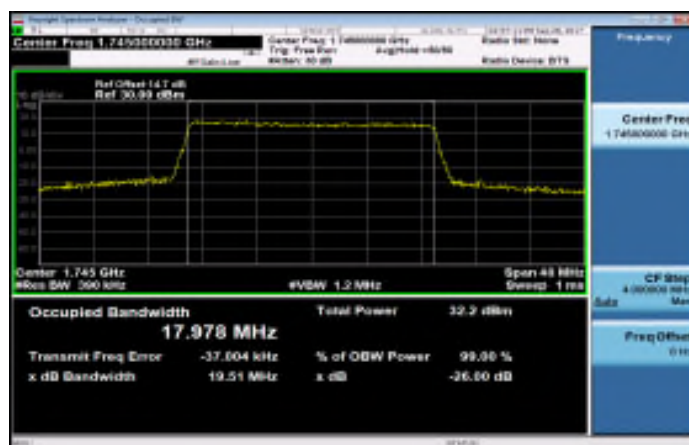
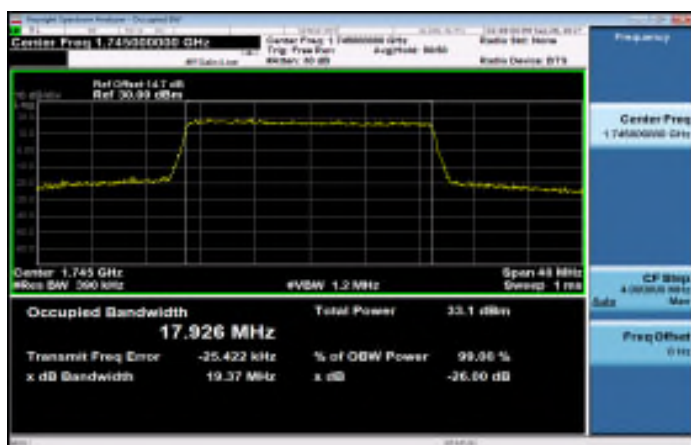
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Band4_20MHz_QPSK_100_0_HighCH20300-1745

Band4_20MHz_16QAM_100_0_HighCH20300-1745



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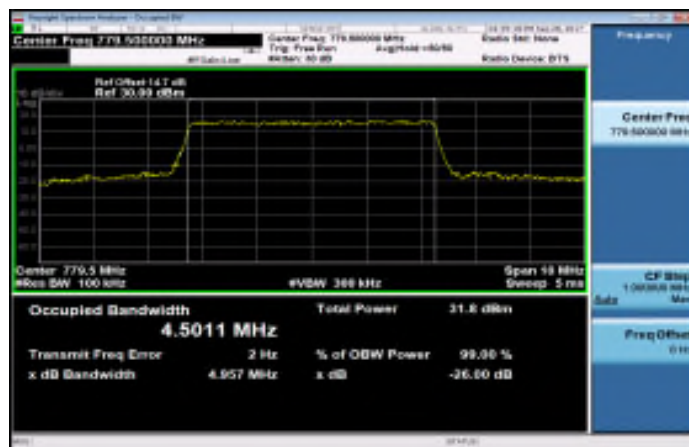
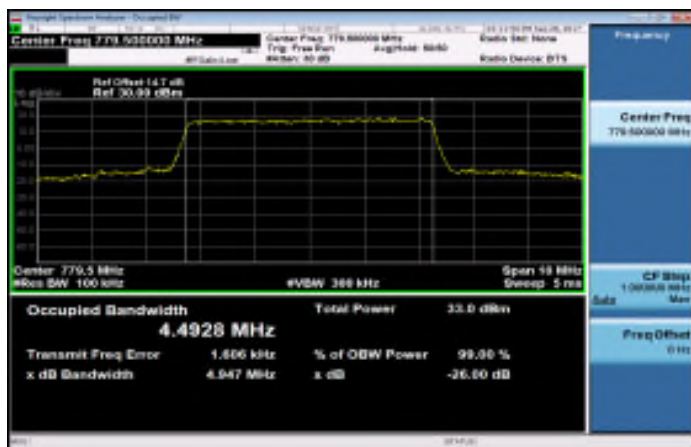
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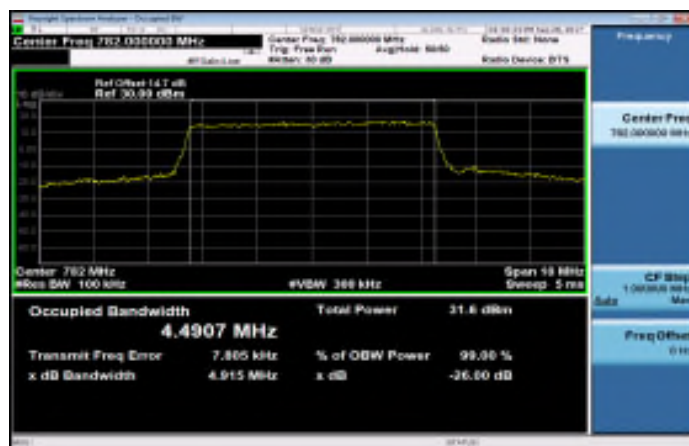
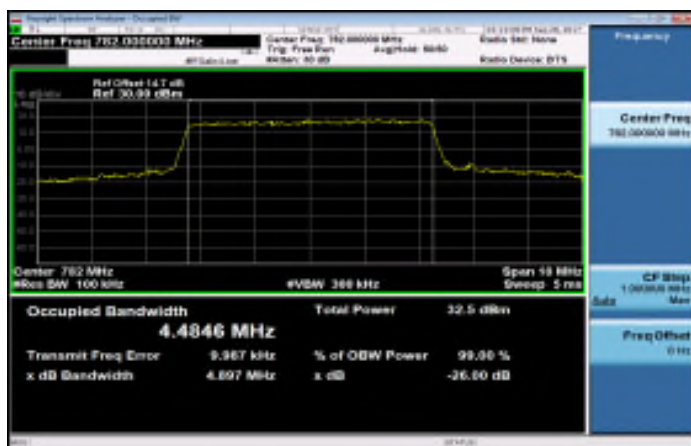
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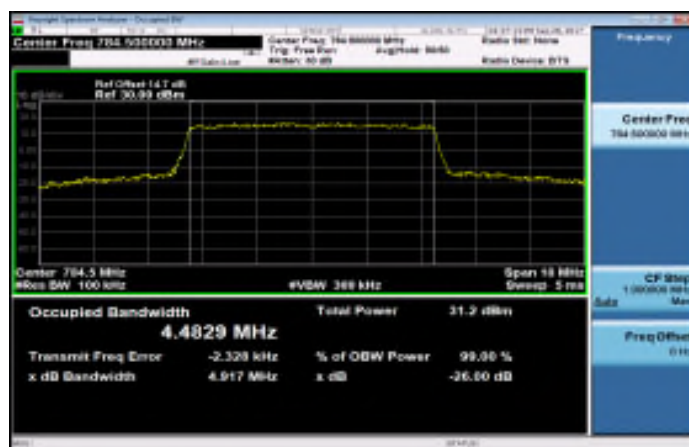
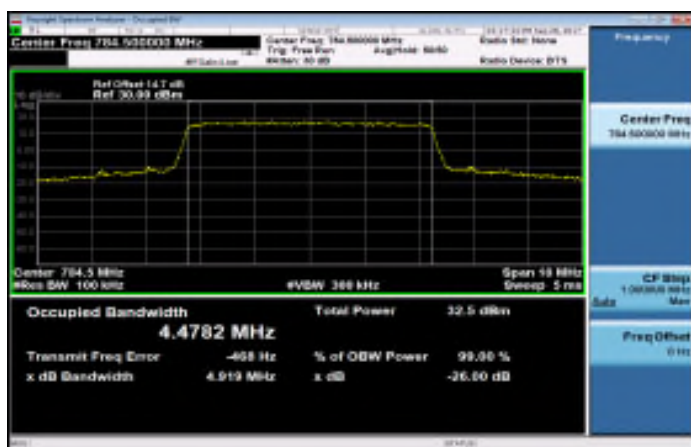
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Band13_5MHz_QPSK_25_0_HighCH23255-784.5

Band13_5MHz_16QAM_25_0_HighCH23255-784.5



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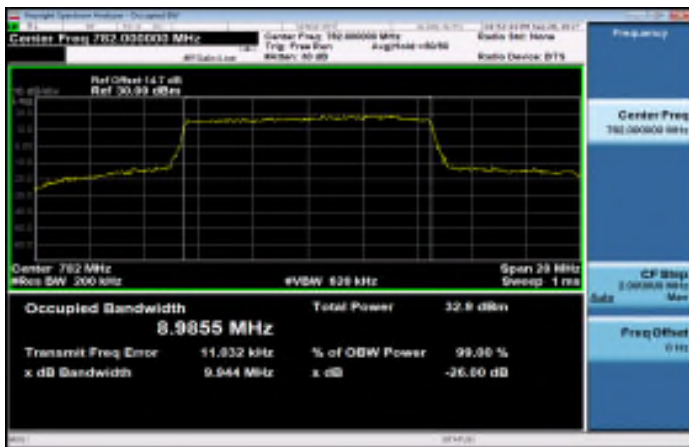
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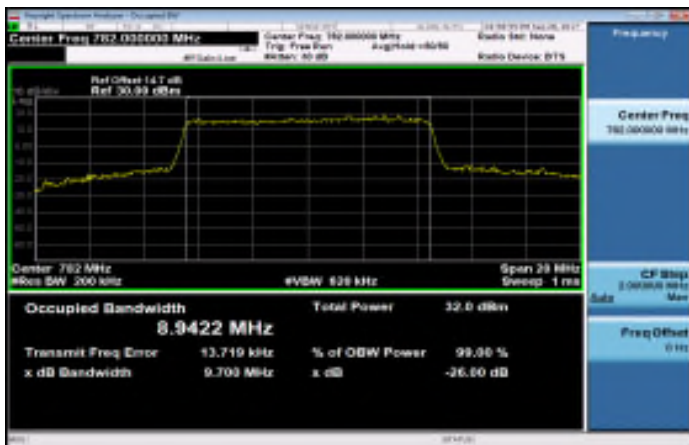
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Band13_10MHz_16QAM_50_0_HighCH23230-782



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9. OUT OF BAND EMISSION AT ANTENNA TERMINALS

9.1. Standard Applicable

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

FCC §27.53(c)

(c) For operations in the 746–758 MHz band and the 776–788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(2) On any frequency outside the 776–788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log(P)$ dB (-13dBm)

(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $65 + 10 \log(P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;

§27.53 (f) For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

FCC §27.53(c) (5) & FCC §27.53(g)

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

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FCC §27.53(h) (3)

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

FCC §27.53(m) (4) (6)

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

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

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§90.691 Emission mask requirements for EA-based systems.

(a) Out-of-band emission requirement shall apply only to the “outer” channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:

(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \log_{10}(f/6.1)$ decibels or $50 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

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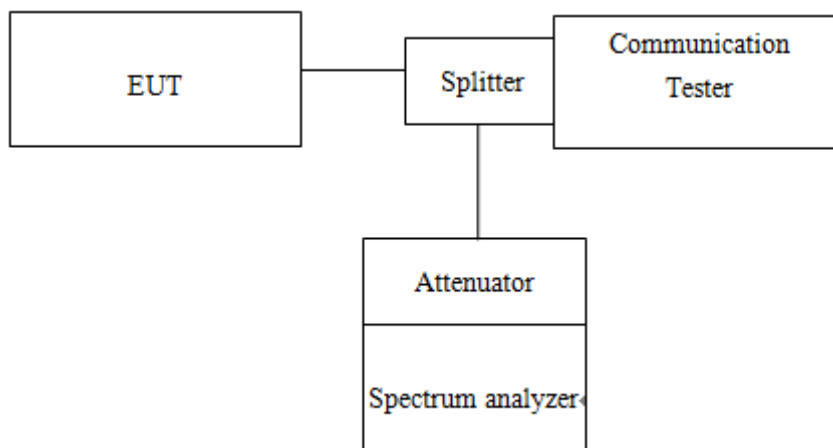
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9.2. Test SET-UP



9.3. Measurement Procedure

Conducted Emission

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

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

Band Edge

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

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9.4. Measurement Equipment Used

Conducted Emission (measured at antenna port) Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	KEYSIGHT	N9010A	MY51440113	06/20/2017	06/19/2018
Communication Tester	Anritsu	MT8820C	6201107337	05/25/2017	05/24/2018
Coaxial Cable 30cm	WOKEN	00100A1F1A195C	RF01	12/12/2016	12/11/2017
Temperature Chamber	TERCHY	MHK-120LK	1020582	06/13/2017	06/12/2018
DC Block	PASTERNAK	PE8210	RF29	12/12/2016	12/11/2017
Splitter	RF-LAMBAD	RFLT2W1G18G	RF35	12/12/2016	12/11/2017
Attenuator	WOKEN	218FS-10	RF23	12/12/2016	12/11/2017
DC Power Supply	Agilent	E3640A	MY53140006	05/02/2017	05/01/2018
Communication Tester	Anritsu	MT8820C	6201107337	05/25/2017	05/24/2018

9.5. Measurement Result:

Refer to next pages.

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

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Band2_5MHz_QPSK_1_0_LowCH18625-1852.5



Band2_5MHz_QPSK_25_0_HighCH19175-1907.5



Band2_5MHz_QPSK_1_24_HighCH19175-1907.5



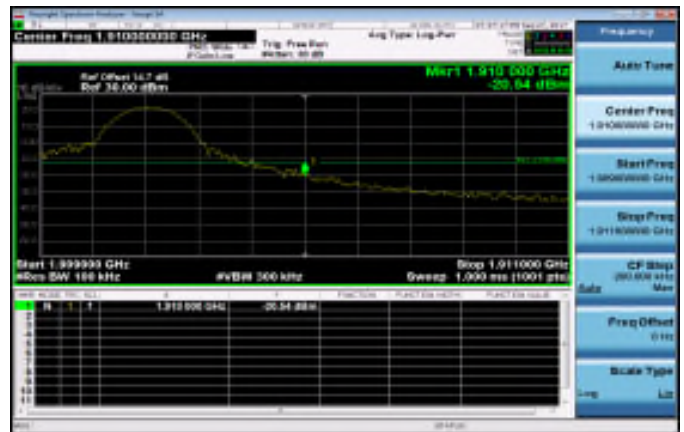
Band2_10MHz_QPSK_1_0_LowCH18650-1855



Band2_5MHz_QPSK_25_0_LowCH18625-1852.5



Band2_10MHz_QPSK_1_49_HighCH19150-1905



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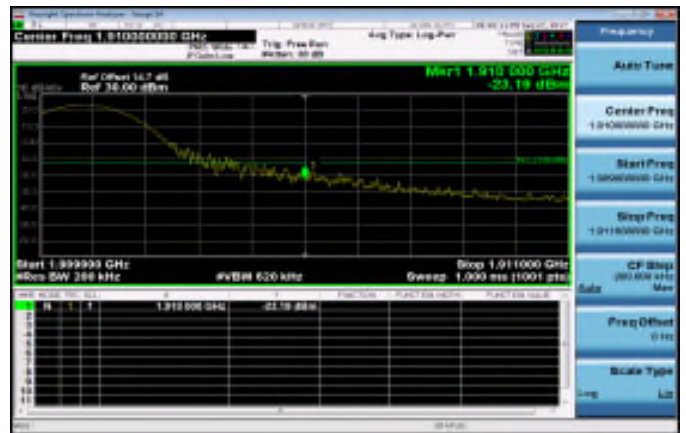
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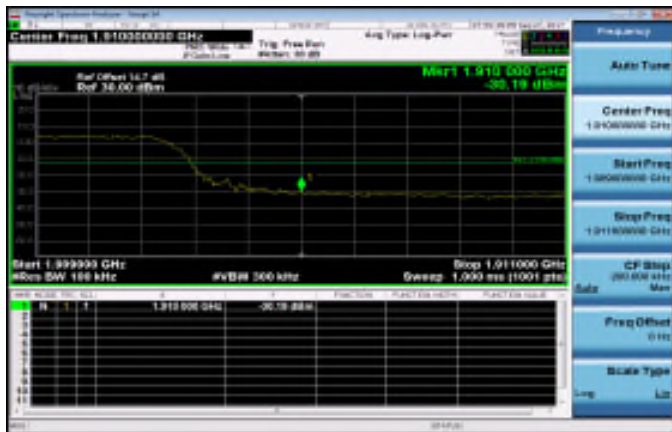
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Band2_15MHz_QPSK_1_74_HighCH19125-1902.5



Band2_10MHz_QPSK_50_0_HighCH19150-1905



Band2_15MHz_QPSK_75_0_LowCH18675-1857.5



Band2_15MHz_QPSK_1_0_LowCH18675-1857.5



Band2_15MHz_QPSK_75_0_HighCH19125-1902.5



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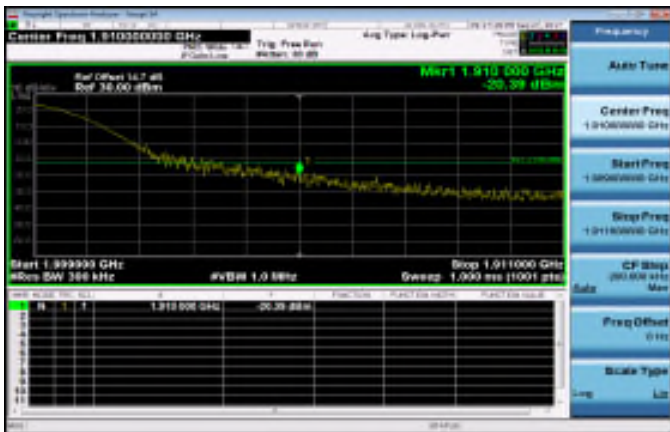
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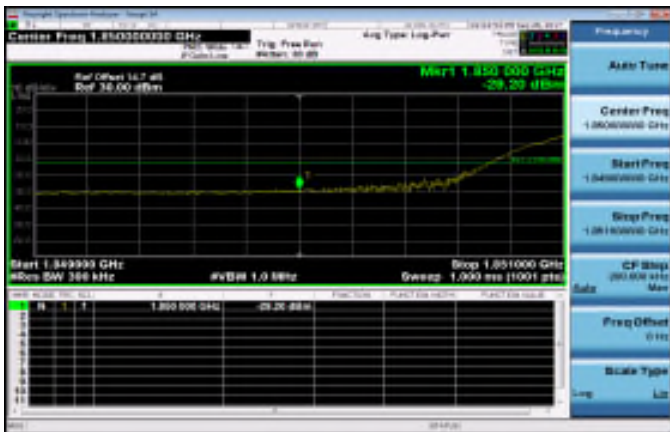
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Band4_5MHz_QPSK_1_0_LowCH19975-1712.5



Band2_20MHz_QPSK_100_0_LowCH18700-1860



Band4_5MHz_QPSK_1_24_HighCH20375-1752.5



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Band4_10MHz_QPSK_1_49_HighCH20350-1750



Band4_5MHz_QPSK_25_0_HighCH20375-1752.5



Band4_10MHz_QPSK_50_0_LowCH20000-1715



Band4_10MHz_QPSK_1_0_LowCH20000-1715



Band4_10MHz_QPSK_50_0_HighCH20350-1750



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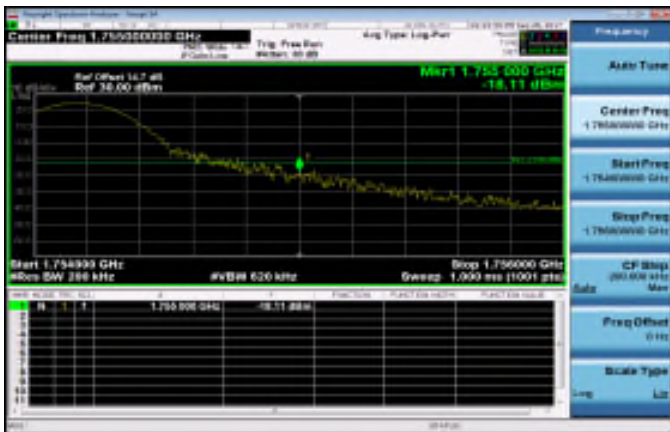
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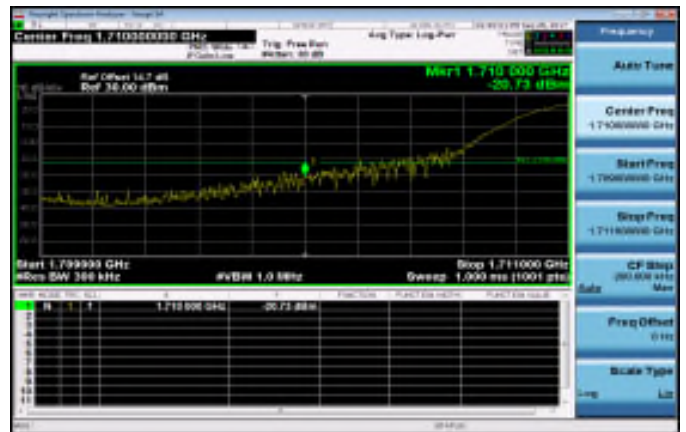
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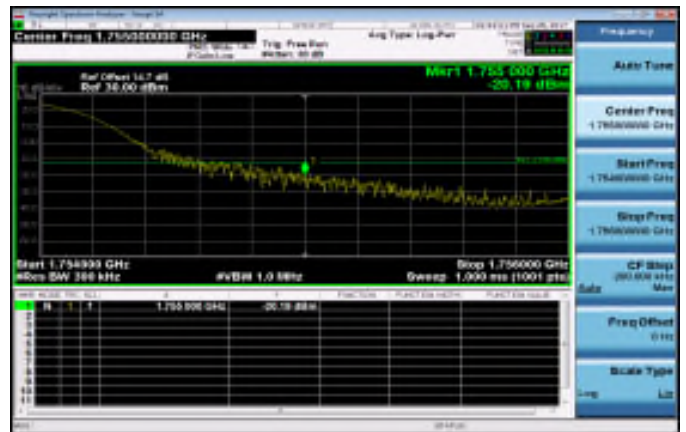
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Band4_15MHz_QPSK_75_0_LowCH20025-1717.5



Band4_20MHz_QPSK_1_99_HighCH20300-1745



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Band13_5MHz_QPSK_1_24_HighCH23255-784.5



Band4_20MHz_QPSK_100_0_HighCH20300-1745



Band13_5MHz_QPSK_25_0_LowCH23205-779.5



Band13_5MHz_QPSK_1_0_LowCH23205-779.5



Band13_5MHz_QPSK_25_0_HighCH23255-784.5



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Band13_10MHz_QPSK_50_0_HighCH23230-782



Band13_10MHz_QPSK_1_49_HighCH23230-782



Band13_10MHz_QPSK_50_0_Low CH23230-782



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Out of Band Emission

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3GHz~10GHz_Band2_5MHz_QPSK_1_0_MidCH18900-1880



3GHz~10GHz_Band2_5MHz_QPSK_1_0_LowCH18625-1852.5



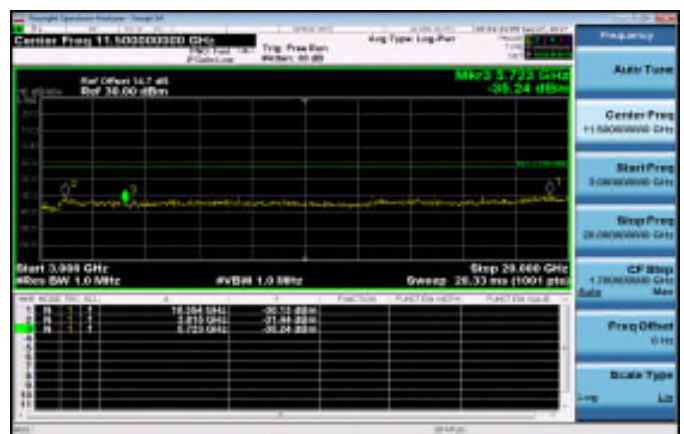
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30MHz~3GHz_Band2_5MHz_QPSK_1_0_MidCH18900-1880



3GHz~10GHz_Band2_5MHz_QPSK_1_0_HighCH19175-1907.5



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30MHz~3GHz_Band2_10MHz_QPSK_1_0_LowCH18650-1855



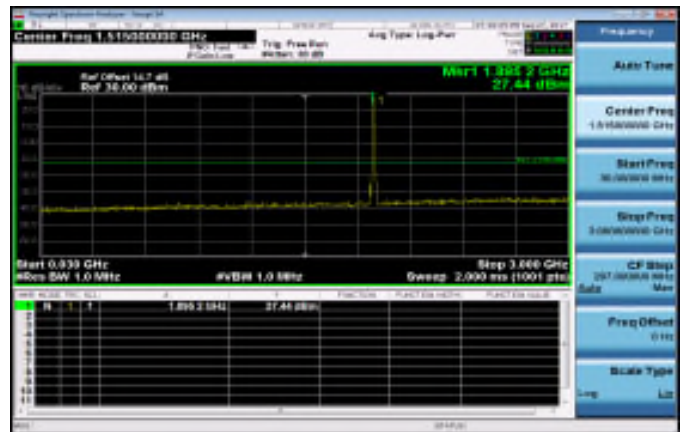
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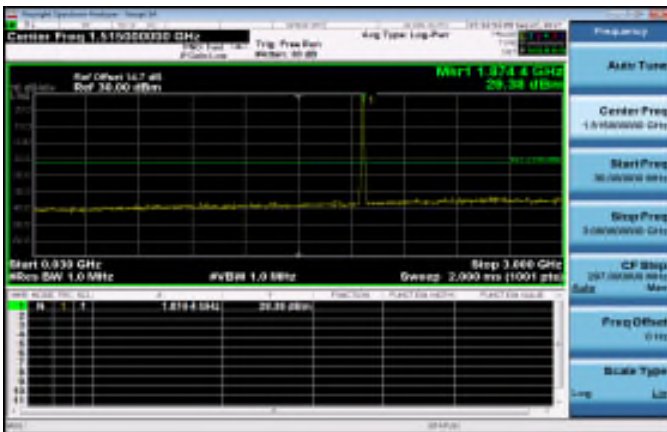
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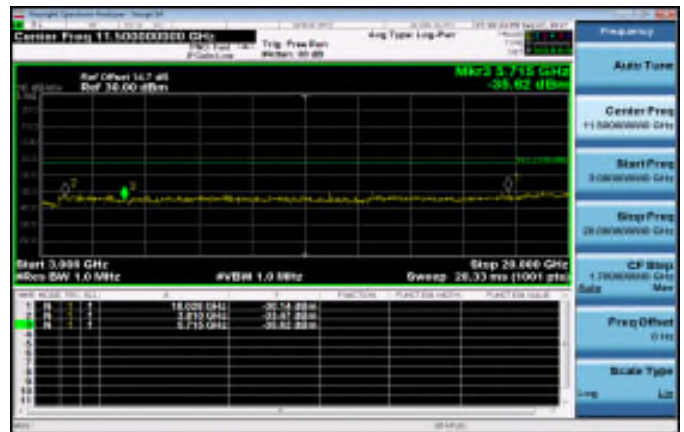
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30MHz~3GHz_Band2_10MHz_QPSK_1_0_MidCH18900-1880



3GHz~10GHz_Band2_10MHz_QPSK_1_0_HighCH19150-1905



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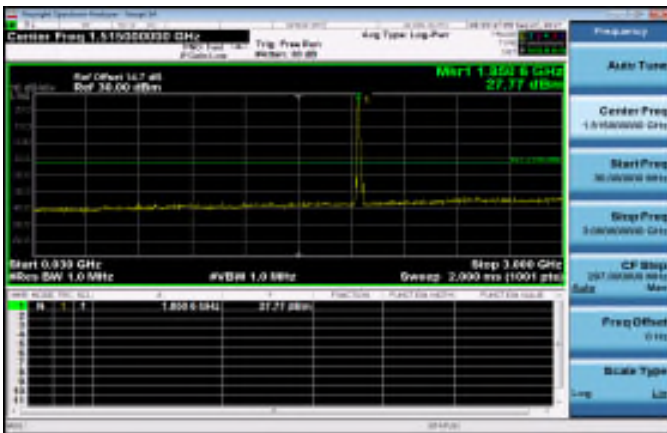
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30MHz~3GHz_Band2_15MHz_QPSK_1_0_LowCH18675-1857.5



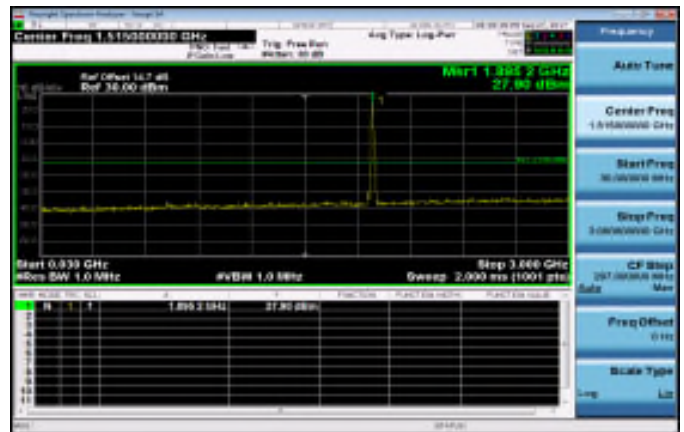
3GHz~10GHz_Band2_15MHz_QPSK_1_0_MidCH18900-1880



3GHz~10GHz_Band2_15MHz_QPSK_1_0_LowCH18675-1857.5



30MHz~3GHz_Band2_15MHz_QPSK_1_0_HighCH19125-1902.5



30MHz~3GHz_Band2_15MHz_QPSK_1_0_MidCH18900-1880



3GHz~10GHz_Band2_15MHz_QPSK_1_0_HighCH19125-1902.5



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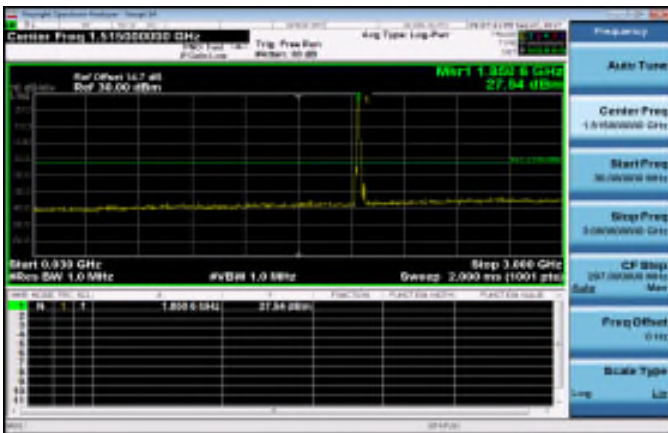
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30MHz~3GHz_Band2_20MHz_QPSK_1_0_LowCH18700-1860



3GHz~10GHz_Band2_20MHz_QPSK_1_0_MidCH18900-1880



3GHz~10GHz_Band2_20MHz_QPSK_1_0_LowCH18700-1860



30MHz~3GHz_Band2_20MHz_QPSK_1_0_HighCH19100-1900



30MHz~3GHz_Band2_20MHz_QPSK_1_0_MidCH18900-1880



3GHz~10GHz_Band2_20MHz_QPSK_1_0_HighCH19100-1900



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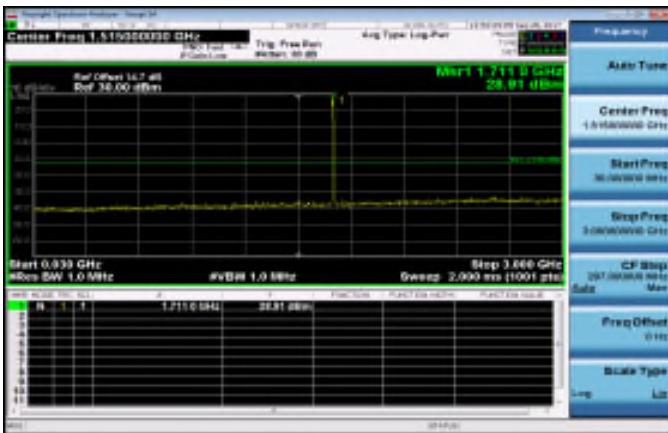
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30MHz~3GHz_Band4_5MHz_QPSK_1_0_LowCH19975-1712.5



3GHz~10GHz_Band4_5MHz_QPSK_1_0_MidCH20175-1732.5



3GHz~10GHz_Band4_5MHz_QPSK_1_0_LowCH19975-1712.5



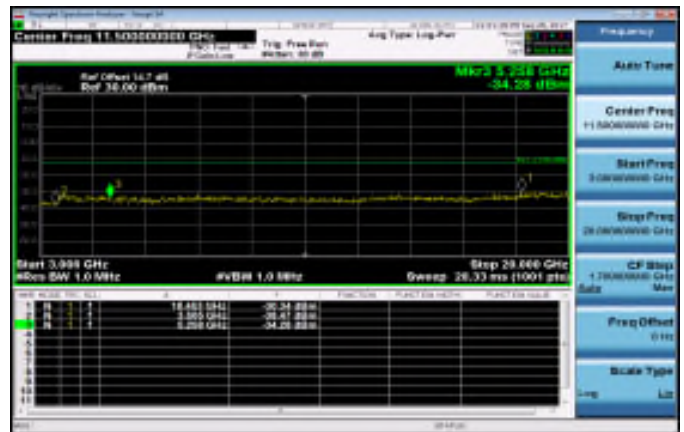
30MHz~3GHz_Band4_5MHz_QPSK_1_0_HighCH20375-1752.5



30MHz~3GHz_Band4_5MHz_QPSK_1_0_MidCH20175-1732.5



3GHz~10GHz_Band4_5MHz_QPSK_1_0_HighCH20375-1752.5



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3GHz~10GHz_Band4_10MHz_QPSK_1_0_MidCH20175-1732.5



3GHz~10GHz_Band4_10MHz_QPSK_1_0_LowCH20000-1715



30MHz~3GHz_Band4_10MHz_QPSK_1_0_HighCH20350-1750



30MHz~3GHz_Band4_10MHz_QPSK_1_0_MidCH20175-1732.5



3GHz~10GHz_Band4_10MHz_QPSK_1_0_HighCH20350-1750



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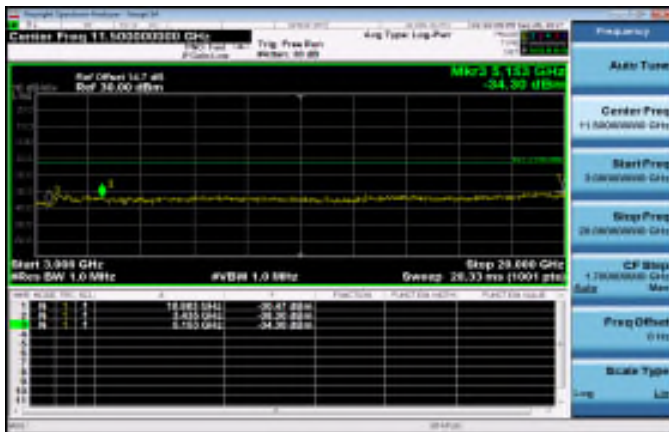
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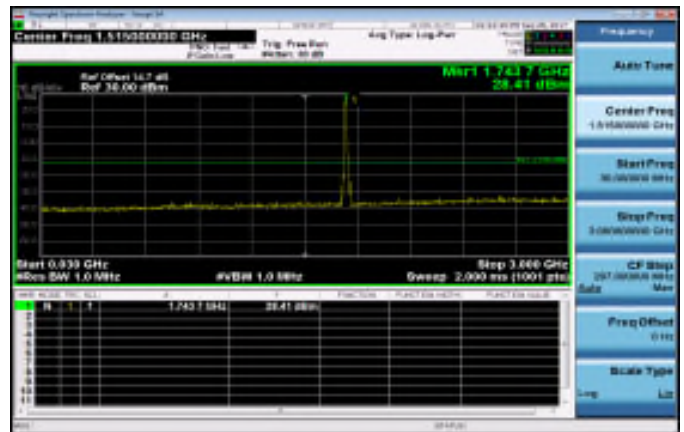
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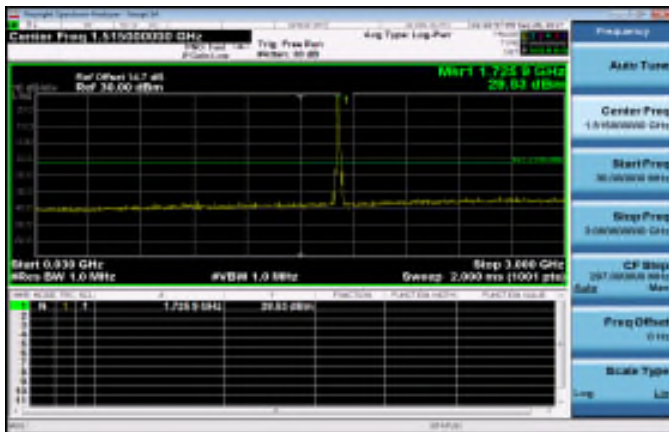
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30MHz~3GHz_Band4_15MHz_QPSK_1_0_MidCH20175-1732.5



3GHz~10GHz_Band4_15MHz_QPSK_1_0_HighCH20325-1747.5



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30MHz~3GHz_Band4_20MHz_QPSK_1_0_LowCH20050-1720



3GHz~10GHz_Band4_20MHz_QPSK_1_0_MidCH20175-1732.5



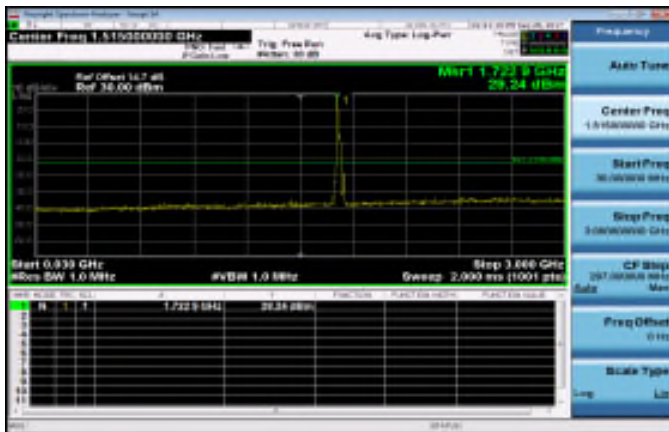
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30MHz~3GHz_Band4_20MHz_QPSK_1_0_MidCH20175-1732.5



3GHz~10GHz_Band4_20MHz_QPSK_1_0_HighCH20300-1745



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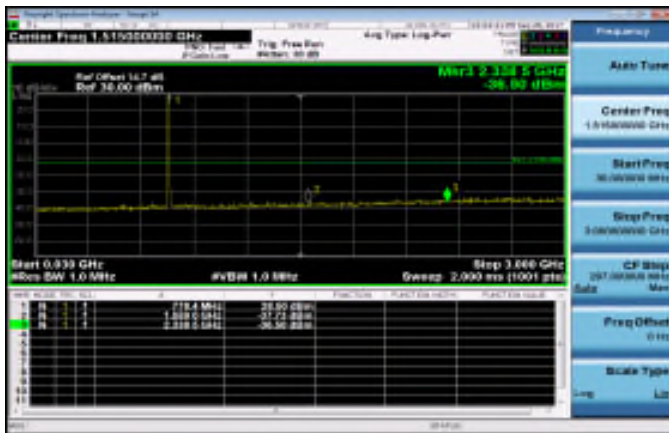
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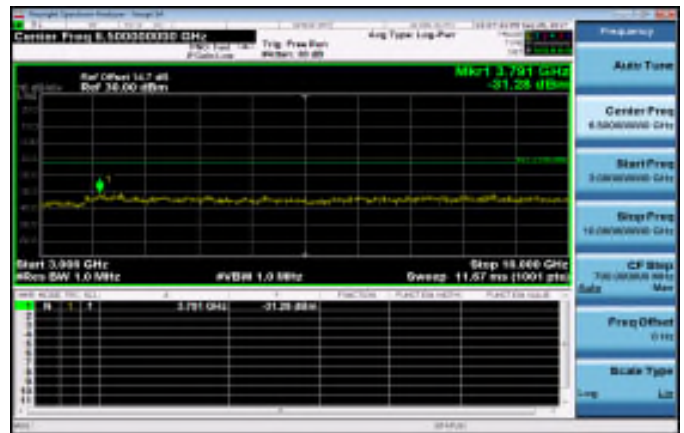
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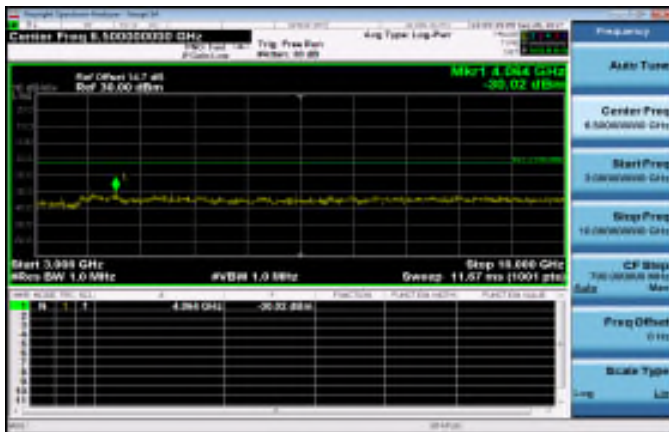
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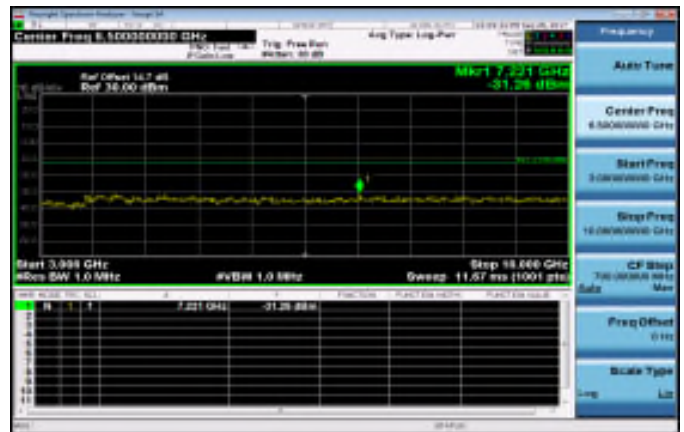
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3GHz~10GHz_Band13_5MHz_QPSK_1_0_HighCH23255-784.5



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793MHz~805MHz_Band13_5MHz_QPSK_1_0_LowCH23205-779.5



3GHz~10GHz_Band13_10MHz_QPSK_1_0_MidCH23230-782



763.3MHz~775MHz_Band13_5MHz_QPSK_1_0_MidCH23230-782



763.3MHz~775MHz_Band13_5MHz_QPSK_1_0_LowCH23205-779.5



793MHz~805MHz_Band13_5MHz_QPSK_1_0_MidCH23230-782



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763.3MHz~775MHz_Band13_5MHz_QPSK_1_0_HighCH23255-784.5



793MHz~805MHz_Band13_10MHz_QPSK_1_0_MidCH23230-782



793MHz~805MHz_Band13_5MHz_QPSK_1_0_HighCH23255-784.5



763.3MHz~775MHz_Band13_10MHz_QPSK_1_0_MidCH23230-782



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10. FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

10.1. Standard Applicable

According to FCC §2.1053,

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

§27.53 (c)

(2) On any frequency outside the 776– 788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB (-13dBm)

(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;

§27.53 (f) For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

FCC §27.53(c) (5) & FCC §27.53(g)

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

FCC §27.53(h) (3)

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

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FCC §27.53(m) (4) (6)

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

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

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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 5.2 for the permitted frequency ranges for various equipment types.

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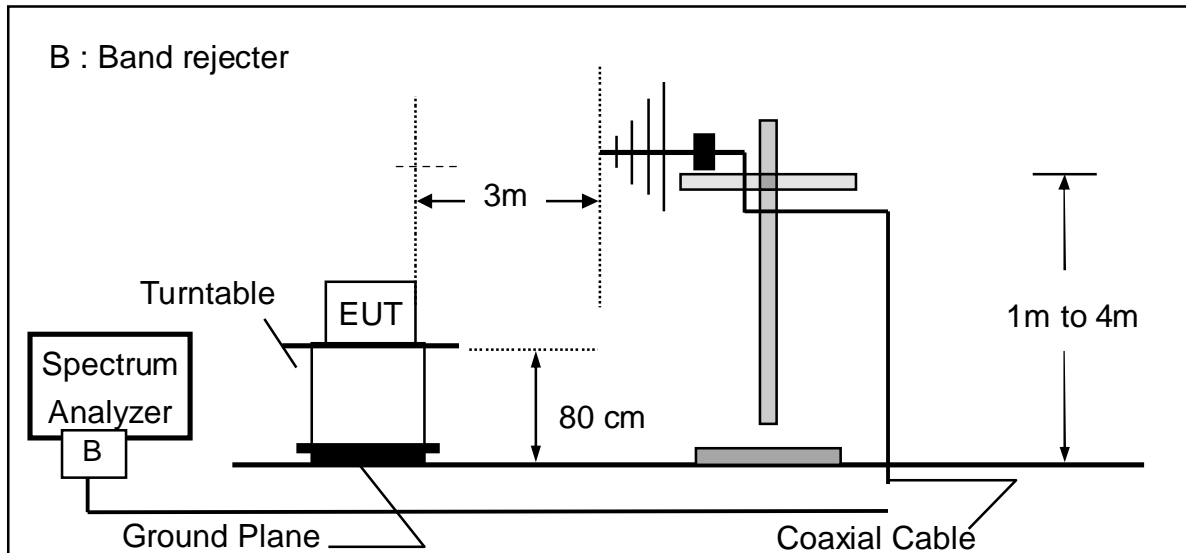
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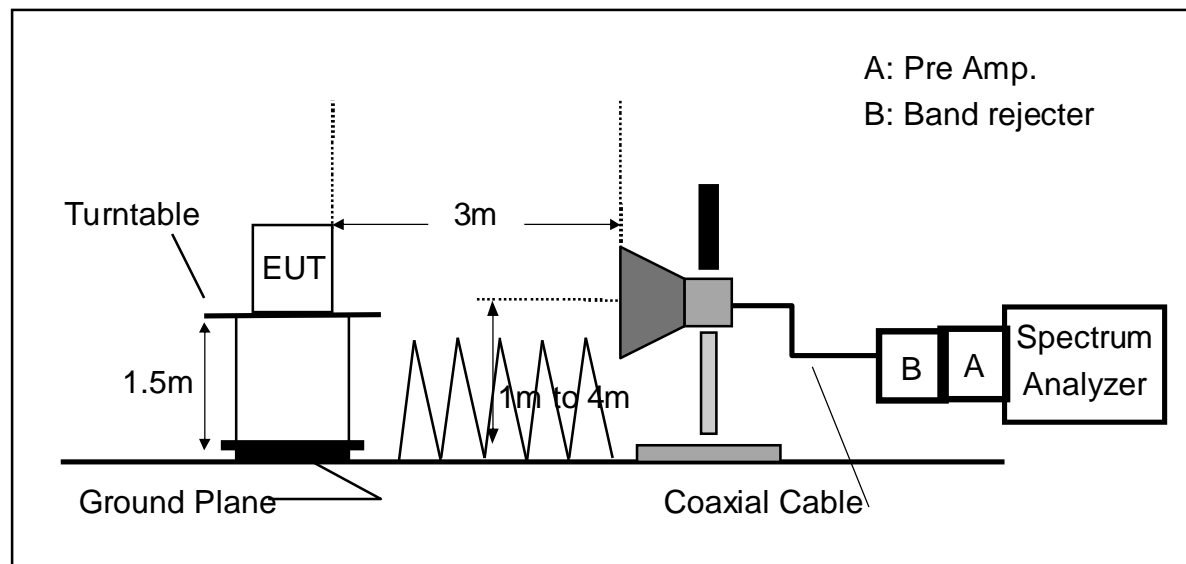
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10.2. EUT Setup

Radiated Emission Test Set-Up, Frequency Below 1000MHz



Radiated Emission Test Set-UP Frequency Over 1 GHz



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10.3. Measurement Procedure:

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

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

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

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

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

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

Test result below 1GHz is ERP, and translate to EIRP: ERP+2.15=EIRP.

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10.4. Measurement Equipment Used:

ERP, EIRP MEASUREMENT EQUIPMENT List 966 Chamber					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI Test Receiver	R&S	ESU 40	100363	04/18/2017	04/17/2018
Broadband Antenna	TESEQ	CBL 6112D	35240	11/03/2016	11/02/2017
Broadband Antenna	TESEQ	CBL 6112D	35243	11/09/2016	11/08/2017
Horn Antenna	ETS-Lindgren	3117	00143272	12/15/2016	12/16/2017
Horn Antenna	ETS-Lindgren	3117	143279	11/14/2016	11/13/2017
Horn Antenna	Schwarzbeck	BBHA9170	184	12/11/2016	12/10/2017
Horn Antenna	Schwarzbeck	BBHA9170	185	08/01/2017	07/31/2018
Pre Amplifier	EMC Instruments	EMC330	980096	12/12/2016	12/11/2017
Pre Amplifier	EMC Instruments	EMC0011830	980199	12/12/2016	12/11/2017
Pre Amplifier	R&S	SCU-18	10204	12/12/2016	12/11/2017
Pre Amplifier	R&S	SCU-26	100780	12/12/2016	12/11/2017
Pre Amplifier	EMC Instruments	EMC184045B	980135	12/12/2016	12/11/2017
Coaxial Cable	Huber+Suhner	RG 214/U	966Rx 9K-30M	12/12/2016	12/11/2017
Coaxial Cable	Huber+Suhner	RG 214/U SUCOFLEX 104	966Rx 30M-3G	12/12/2016	12/11/2017
Coaxial Cable	Huber+Suhner	SUCOFLEX 104	966Rx 1G-18G	12/12/2016	12/11/2017
Coaxial Cable	Huber+Suhner	mini 141-12 SUCOFLEX 104	966Rx 18G-40G	12/12/2016	12/11/2017
Coaxial Cable	Huber+Suhner	SUCOFLEX 104	966Tx 30M-18G	12/12/2016	12/11/2017
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	966Tx 18G-40G	12/12/2016	12/11/2017
Attenuator	WOKEN	218FS-10	RF27	12/12/2016	12/11/2017
Communication Tester	Anritsu	MT8820C	6201107337	05/25/2017	05/24/2018
Site NSA	SGS	966 Chamber C	SAC-C	03/02/2017	03/01/2018
Site VSWR	SGS	966 Chamber C	SAC-C	03/02/2017	03/01/2018
DC Power Supply	HOLA	DP-3003	D7070035	05/04/2017	05/03/2018
Controller	MF	MF-7802	N/A	N.C.R.	N.C.R.
Antenna Master	MF	N/A	N/A	N.C.R.	N.C.R.
Turn Table	MF	N/A	N/A	N.C.R.	N.C.R.
Test Software	World-Pallas	Dr. E	V 3.0 Lite	N.C.R.	N.C.R.

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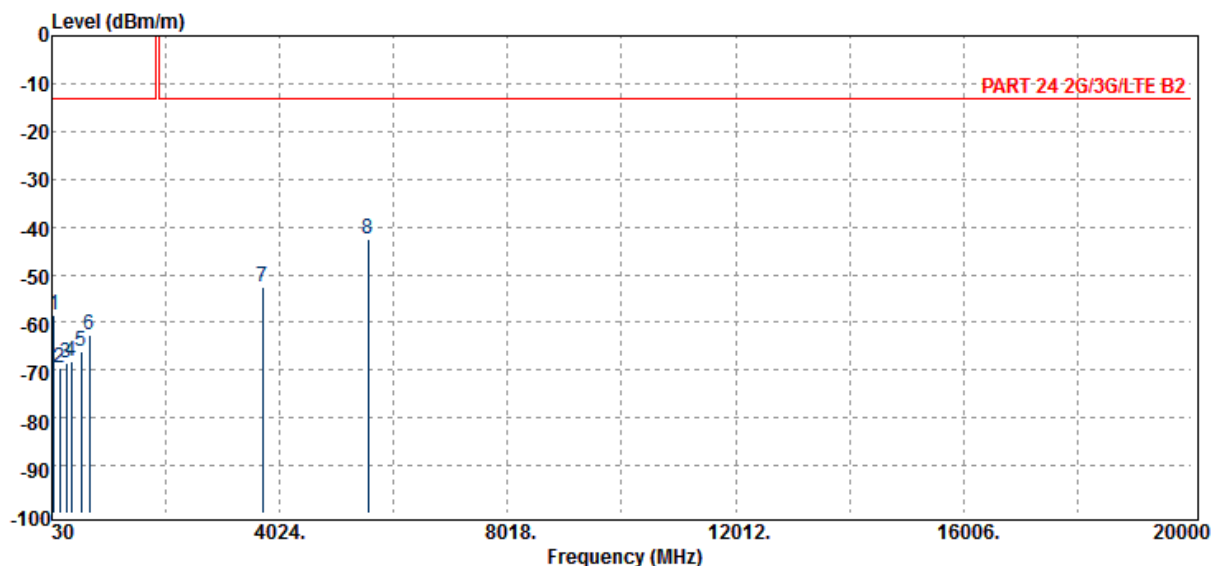
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10.5. Measurement Result:

Radiated Spurious Emission Measurement Result: *Int. Antenna

LTE-Band 2 / BW 15MHz / 16QAM / RB: 1, 0 (The Worst Case)

Operation Band	:LTE B2	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1857.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna: VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
66.86	S	-58.53	-50.66	-6.76	-1.11	-13.00	-45.53
173.56	S	-69.38	-67.58	-0.26	-1.53	-13.00	-56.38
277.35	S	-68.47	-70.05	3.45	-1.86	-13.00	-55.47
366.59	S	-68.29	-69.97	3.85	-2.17	-13.00	-55.29
541.19	S	-66.06	-67.08	3.63	-2.61	-13.00	-53.06
692.51	S	-62.52	-62.77	3.09	-2.84	-13.00	-49.52
3715.00	H	-52.59	-58.45	12.44	-6.58	-13.00	-39.59
5572.50	H	-42.72	-47.31	12.90	-8.30	-13.00	-29.72

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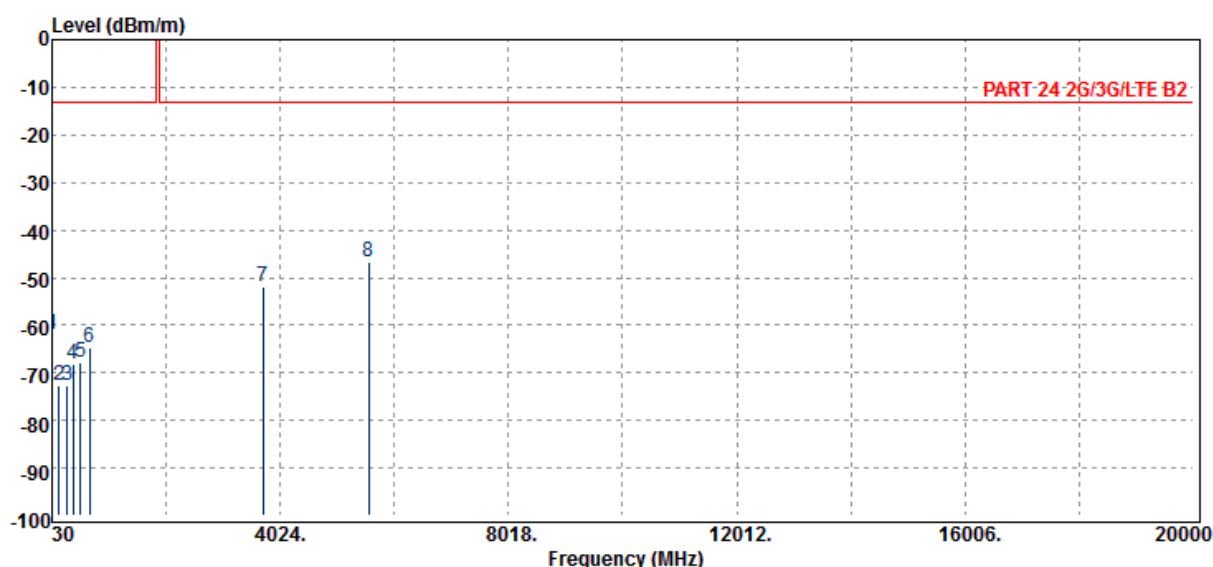
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Operation Band	:LTE B2	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1857.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-62.02	-46.28	-14.78	-0.96	-13.00	-49.02
146.40	S	-72.64	-68.91	-2.31	-1.42	-13.00	-59.64
298.69	S	-72.76	-74.41	3.60	-1.95	-13.00	-59.76
403.45	S	-68.23	-69.64	3.81	-2.40	-13.00	-55.23
521.79	S	-67.72	-69.05	3.74	-2.41	-13.00	-54.72
689.60	S	-64.79	-65.09	3.09	-2.79	-13.00	-51.79
3715.00	H	-51.81	-57.68	12.44	-6.58	-13.00	-38.81
5572.50	H	-46.70	-51.30	12.90	-8.30	-13.00	-33.70

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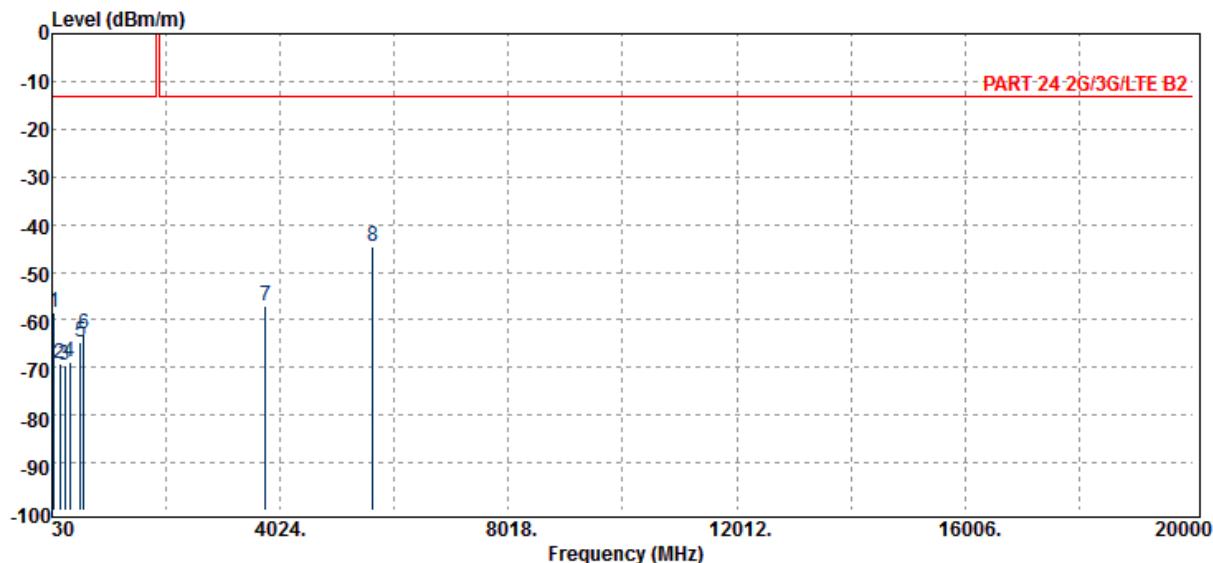
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Operation Band	:LTE B2	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1880.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna:VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
65.89	S	-58.46	-50.32	-7.03	-1.10	-13.00	-45.46
165.80	S	-69.32	-66.61	-1.21	-1.50	-13.00	-56.32
248.25	S	-69.39	-71.05	3.41	-1.75	-13.00	-56.39
343.31	S	-69.00	-70.84	3.83	-1.99	-13.00	-56.00
529.55	S	-64.64	-65.85	3.70	-2.49	-13.00	-51.64
592.60	S	-63.11	-63.61	3.29	-2.79	-13.00	-50.11
3760.00	H	-56.99	-62.85	12.45	-6.60	-13.00	-43.99
5640.00	H	-44.74	-49.28	12.90	-8.36	-13.00	-31.74

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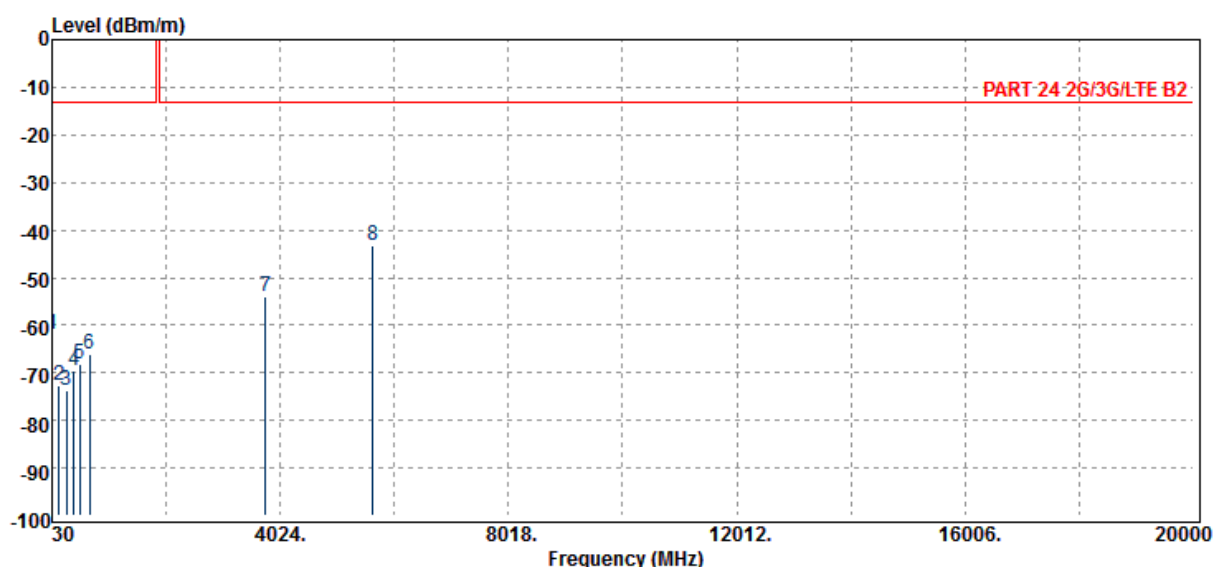
t (886-2) 2299-3279

f (886-2) 2298-0488

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Member of SGS Group

Operation Band	:LTE B2	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1880.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-61.99	-46.26	-14.78	-0.96	-13.00	-48.99
148.34	S	-72.61	-68.99	-2.19	-1.42	-13.00	-59.61
287.05	S	-73.61	-75.13	3.43	-1.91	-13.00	-60.61
410.24	S	-69.51	-70.90	3.78	-2.40	-13.00	-56.51
516.94	S	-68.27	-69.66	3.76	-2.37	-13.00	-55.27
694.45	S	-65.98	-66.19	3.09	-2.88	-13.00	-52.98
3760.00	H	-54.06	-59.92	12.45	-6.60	-13.00	-41.06
5640.00	H	-43.28	-47.82	12.90	-8.36	-13.00	-30.28

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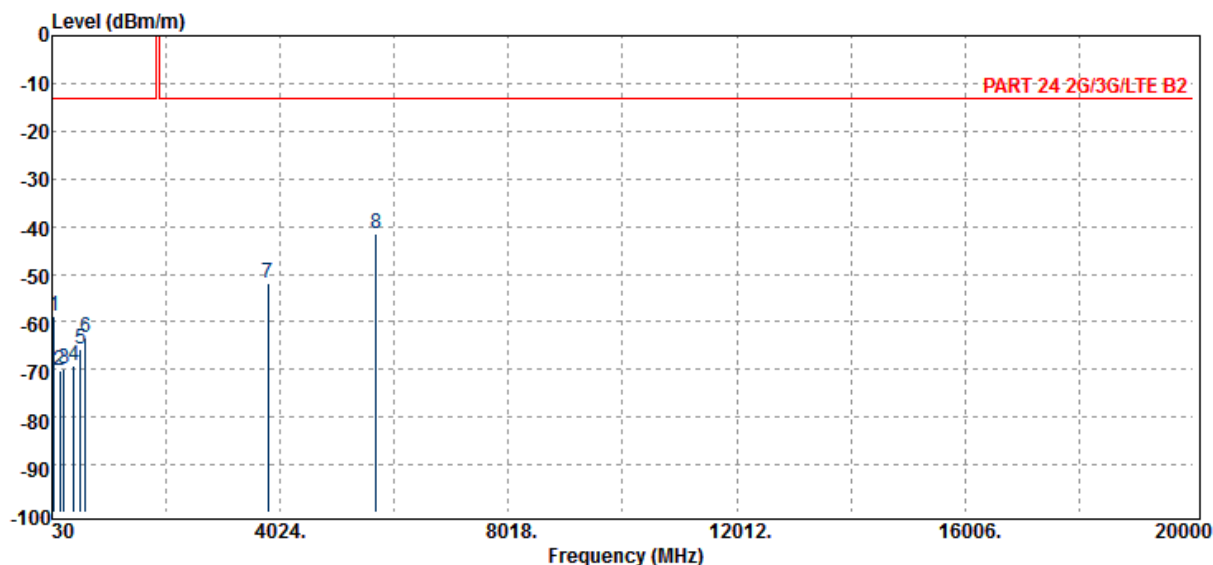
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f (886-2) 2298-0488

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Operation Band	:LTE B2	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1902.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna:VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
65.89	S	-58.65	-50.52	-7.03	-1.10	-13.00	-45.65
167.74	S	-70.14	-67.56	-1.07	-1.51	-13.00	-57.14
246.31	S	-69.82	-71.45	3.38	-1.75	-13.00	-56.82
408.30	S	-69.36	-70.73	3.79	-2.41	-13.00	-56.36
522.76	S	-65.75	-67.06	3.73	-2.42	-13.00	-52.75
619.76	S	-63.19	-63.84	3.20	-2.55	-13.00	-50.19
3805.00	H	-51.91	-57.75	12.46	-6.62	-13.00	-38.91
5707.50	H	-41.55	-46.10	12.90	-8.36	-13.00	-28.55

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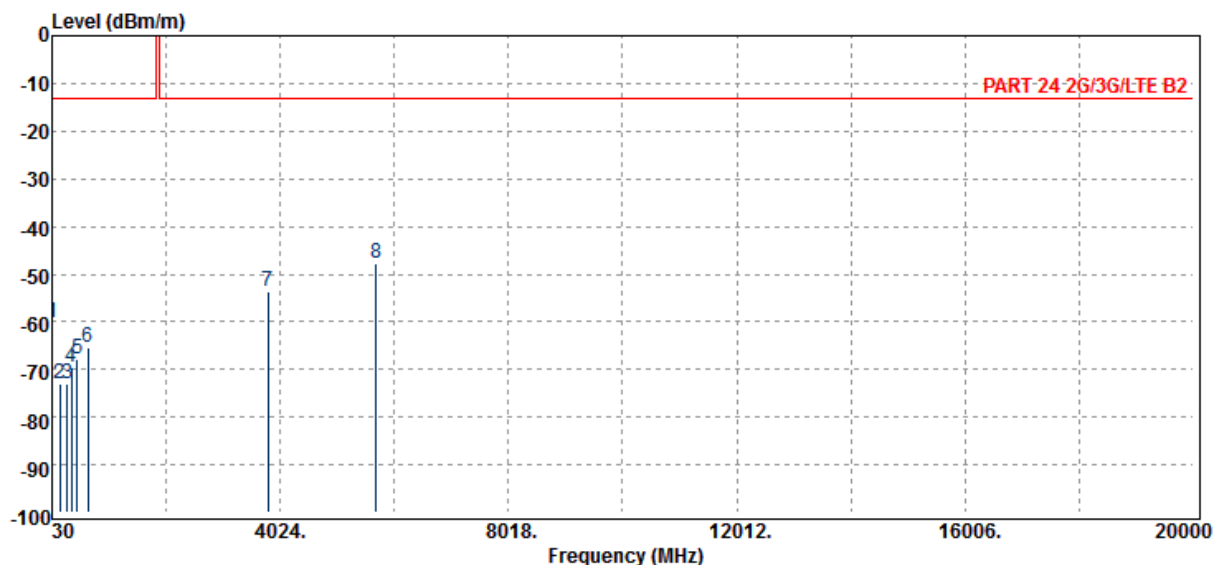
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Operation Band	:LTE B2	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1902.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-60.29	-44.56	-14.78	-0.96	-13.00	-47.29
162.89	S	-73.09	-70.18	-1.42	-1.49	-13.00	-60.09
296.75	S	-72.97	-74.58	3.56	-1.95	-13.00	-59.97
367.56	S	-69.39	-71.06	3.85	-2.18	-13.00	-56.39
471.35	S	-67.89	-69.41	3.74	-2.22	-13.00	-54.89
655.65	S	-65.33	-66.07	3.13	-2.39	-13.00	-52.33
3805.00	H	-53.78	-59.63	12.46	-6.62	-13.00	-40.78
5707.50	H	-47.88	-52.42	12.90	-8.36	-13.00	-34.88

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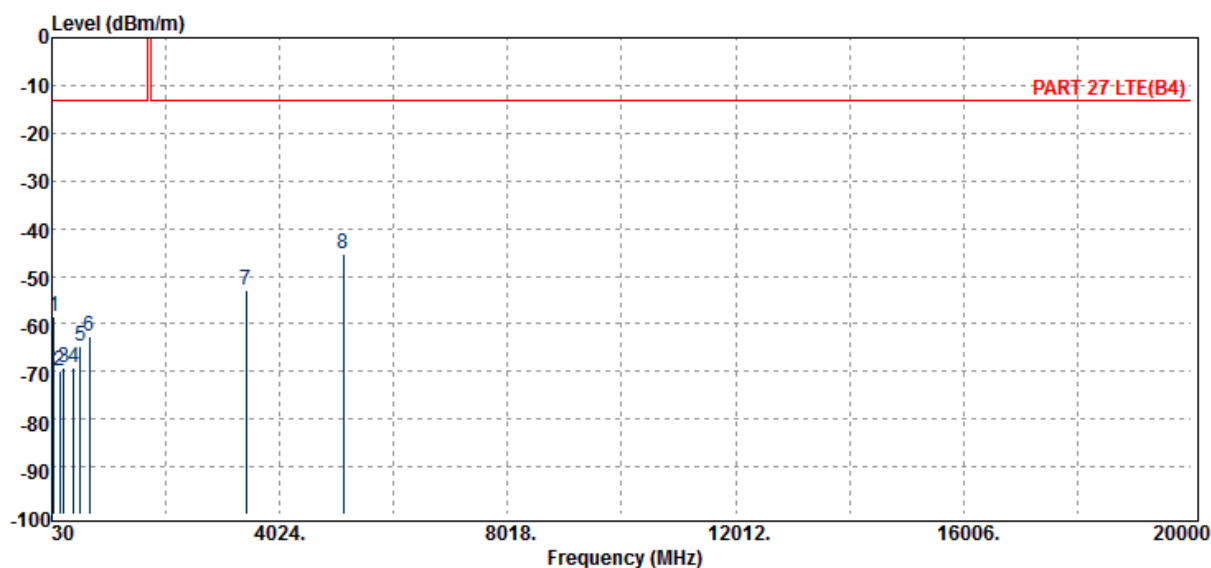
f (886-2) 2298-0488

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LTE-Band 4 / BW 10MHz / 16QAM / RB: 1, 49 (The Worst Case)

Operation Band	:LTE B4	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1715.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
65.89	S	-58.51	-50.37	-7.03	-1.10	-13.00	-45.51
160.95	S	-69.85	-66.80	-1.57	-1.48	-13.00	-56.85
241.46	S	-69.36	-70.93	3.31	-1.74	-13.00	-56.36
413.15	S	-69.08	-70.47	3.77	-2.38	-13.00	-56.08
534.40	S	-64.75	-65.88	3.67	-2.54	-13.00	-51.75
687.66	S	-62.65	-62.98	3.10	-2.76	-13.00	-49.65
3430.00	H	-52.97	-59.03	12.28	-6.23	-13.00	-39.97
5145.00	H	-45.42	-50.24	12.76	-7.94	-13.00	-32.42

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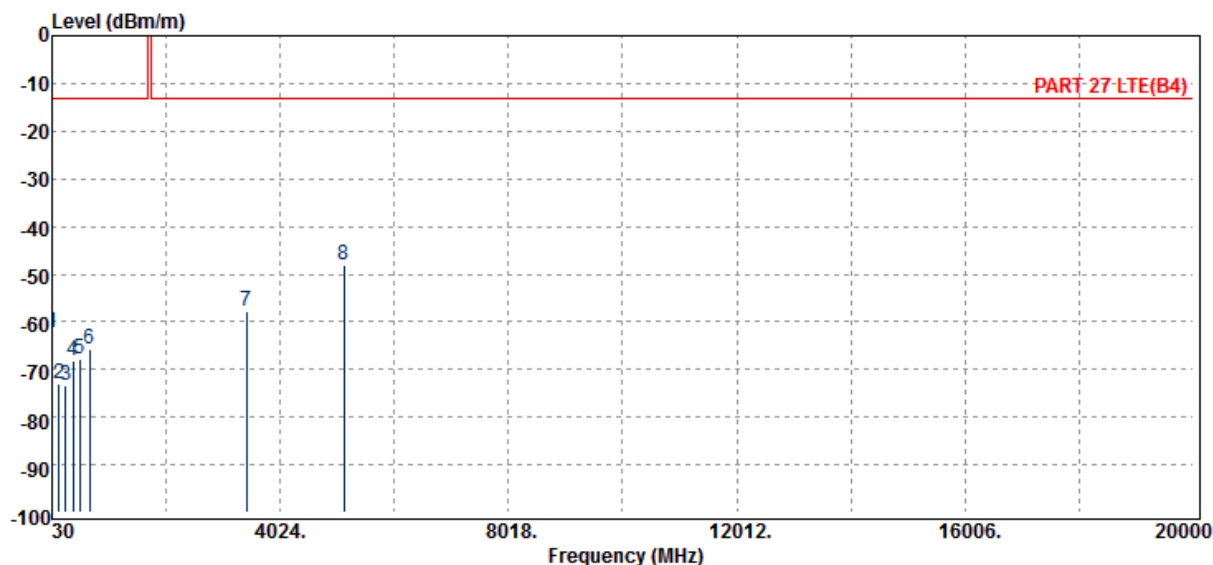
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f (886-2) 2298-0488

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Member of SGS Group

Operation Band	:LTE B4	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1715.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-62.23	-46.49	-14.78	-0.96	-13.00	-49.23
146.40	S	-72.89	-69.17	-2.31	-1.42	-13.00	-59.89
274.44	S	-73.43	-75.05	3.47	-1.85	-13.00	-60.43
405.39	S	-68.29	-69.68	3.80	-2.41	-13.00	-55.29
516.94	S	-67.79	-69.19	3.76	-2.37	-13.00	-54.79
694.45	S	-65.83	-66.04	3.09	-2.88	-13.00	-52.83
3430.00	H	-57.75	-63.80	12.28	-6.23	-13.00	-44.75
5145.00	H	-48.22	-53.04	12.76	-7.94	-13.00	-35.22

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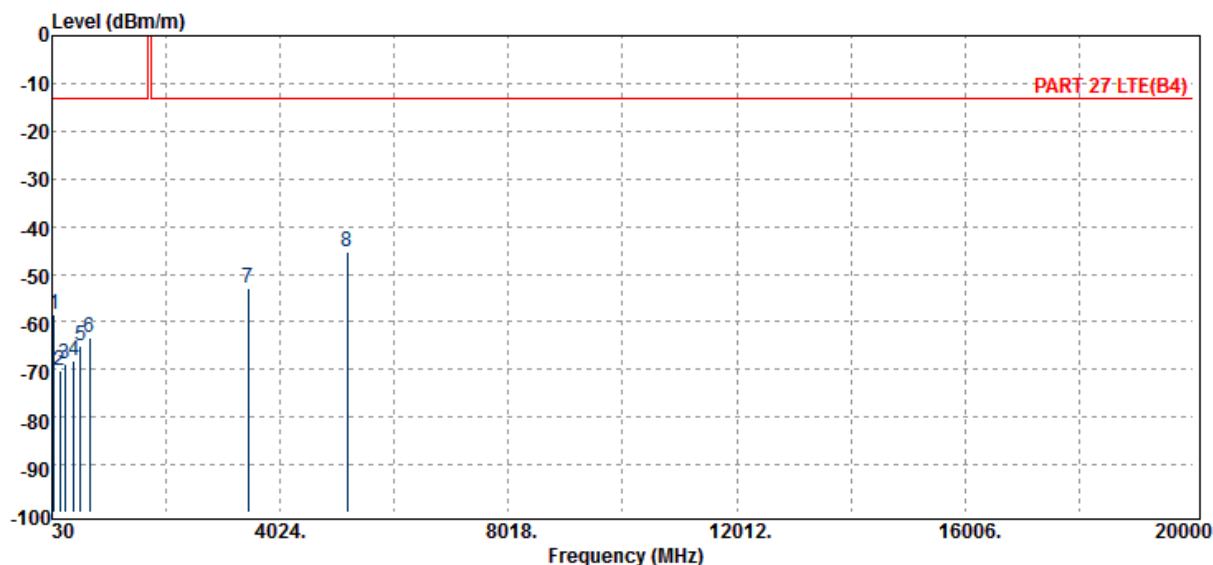
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Operation Band	:LTE B4	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1732.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna:VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
65.89	S	-58.64	-50.51	-7.03	-1.10	-13.00	-45.64
160.95	S	-70.09	-67.04	-1.57	-1.48	-13.00	-57.09
251.16	S	-68.95	-70.66	3.47	-1.76	-13.00	-55.95
410.24	S	-68.31	-69.69	3.78	-2.40	-13.00	-55.31
526.64	S	-65.03	-66.28	3.71	-2.46	-13.00	-52.03
686.69	S	-63.18	-63.53	3.10	-2.74	-13.00	-50.18
3465.00	H	-53.10	-59.20	12.34	-6.25	-13.00	-40.10
5197.50	H	-45.39	-50.21	12.78	-7.96	-13.00	-32.39

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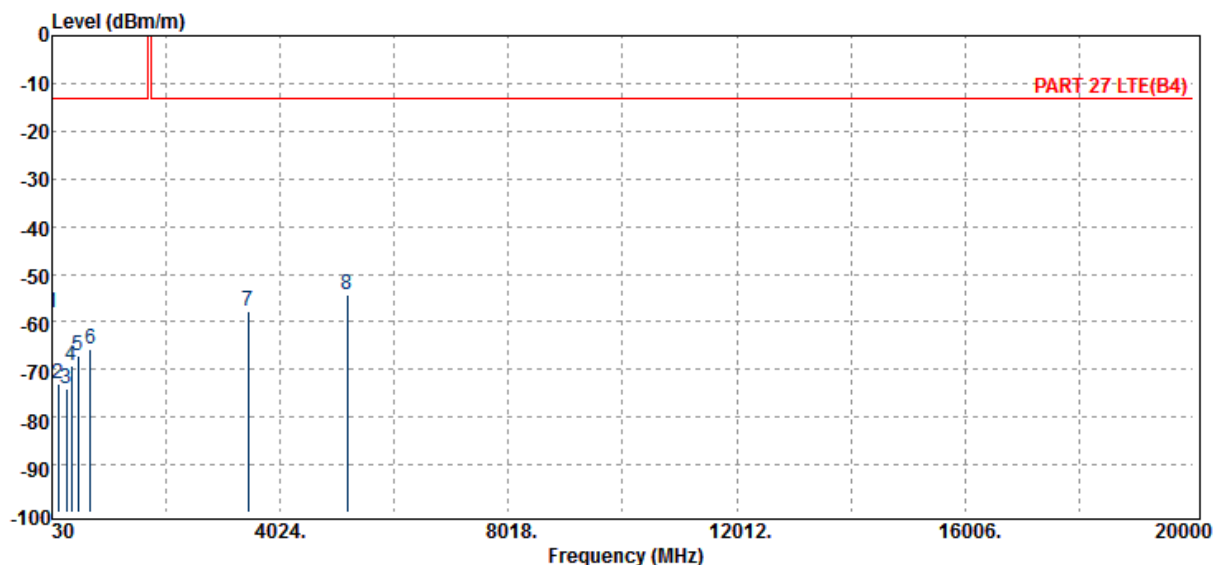
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Operation Band	:LTE B4	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1732.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-58.18	-42.45	-14.78	-0.96	-13.00	-45.18
139.61	S	-72.94	-68.85	-2.70	-1.39	-13.00	-59.94
289.96	S	-73.96	-75.47	3.43	-1.92	-13.00	-60.96
371.44	S	-69.17	-70.81	3.84	-2.21	-13.00	-56.17
482.99	S	-66.97	-68.51	3.79	-2.25	-13.00	-53.97
699.30	S	-65.72	-65.84	3.08	-2.96	-13.00	-52.72
3465.00	H	-57.63	-63.73	12.34	-6.25	-13.00	-44.63
5197.50	H	-54.19	-59.01	12.78	-7.96	-13.00	-41.19

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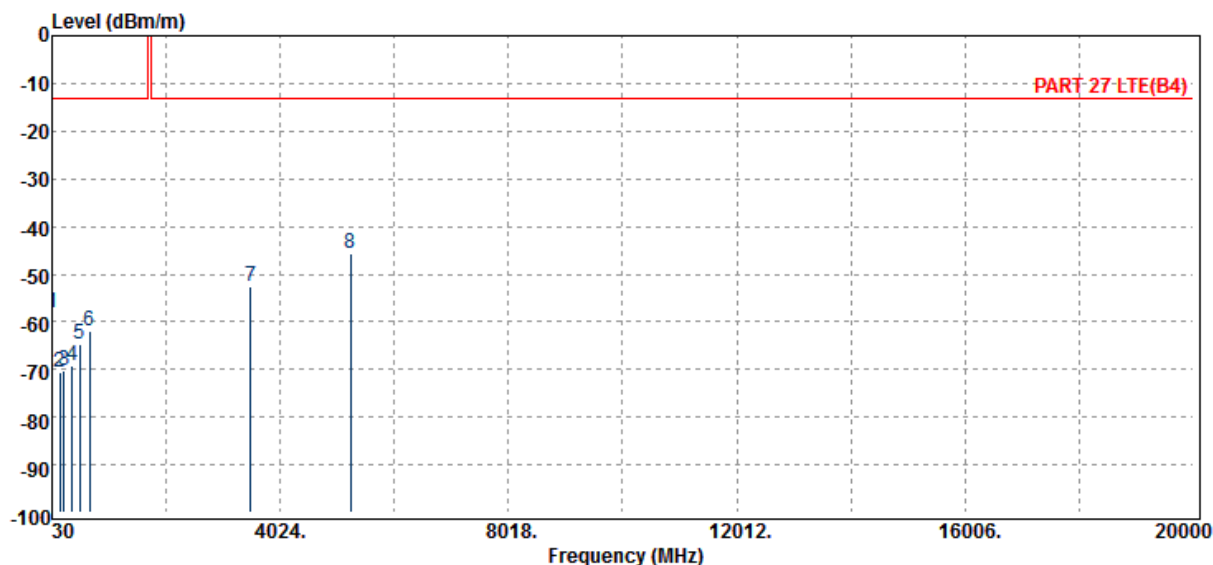
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Operation Band	:LTE B4	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1750.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna:VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-58.26	-42.52	-14.78	-0.96	-13.00	-45.26
172.59	S	-70.48	-68.52	-0.44	-1.53	-13.00	-57.48
239.52	S	-70.08	-71.61	3.28	-1.74	-13.00	-57.08
381.14	S	-69.10	-70.67	3.84	-2.27	-13.00	-56.10
515.00	S	-64.87	-66.29	3.77	-2.36	-13.00	-51.87
689.60	S	-62.10	-62.40	3.09	-2.79	-13.00	-49.10
3500.00	H	-52.70	-58.67	12.40	-6.43	-13.00	-39.70
5250.00	H	-45.56	-50.34	12.80	-8.02	-13.00	-32.56

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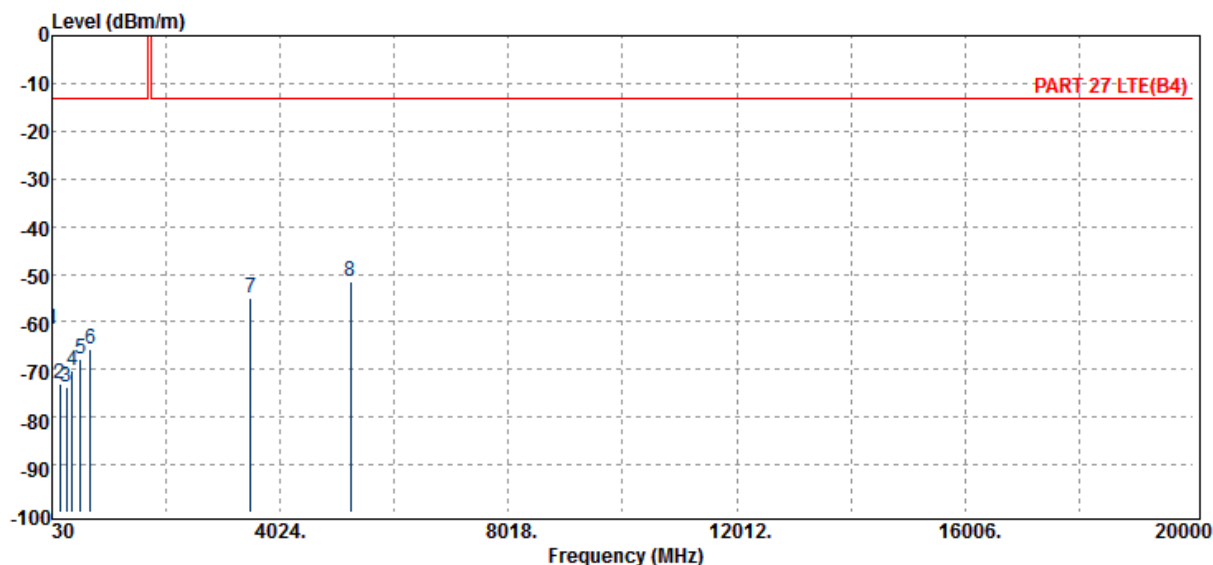
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Operation Band	:LTE B4	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1750.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-61.48	-45.74	-14.78	-0.96	-13.00	-48.48
167.74	S	-73.07	-70.49	-1.07	-1.51	-13.00	-60.07
280.26	S	-73.76	-75.31	3.42	-1.88	-13.00	-60.76
382.11	S	-70.11	-71.67	3.83	-2.27	-13.00	-57.11
521.79	S	-67.74	-69.07	3.74	-2.41	-13.00	-54.74
696.39	S	-65.78	-65.95	3.09	-2.91	-13.00	-52.78
3500.00	H	-54.92	-60.89	12.40	-6.43	-13.00	-41.92
5250.00	H	-51.41	-56.20	12.80	-8.02	-13.00	-38.41

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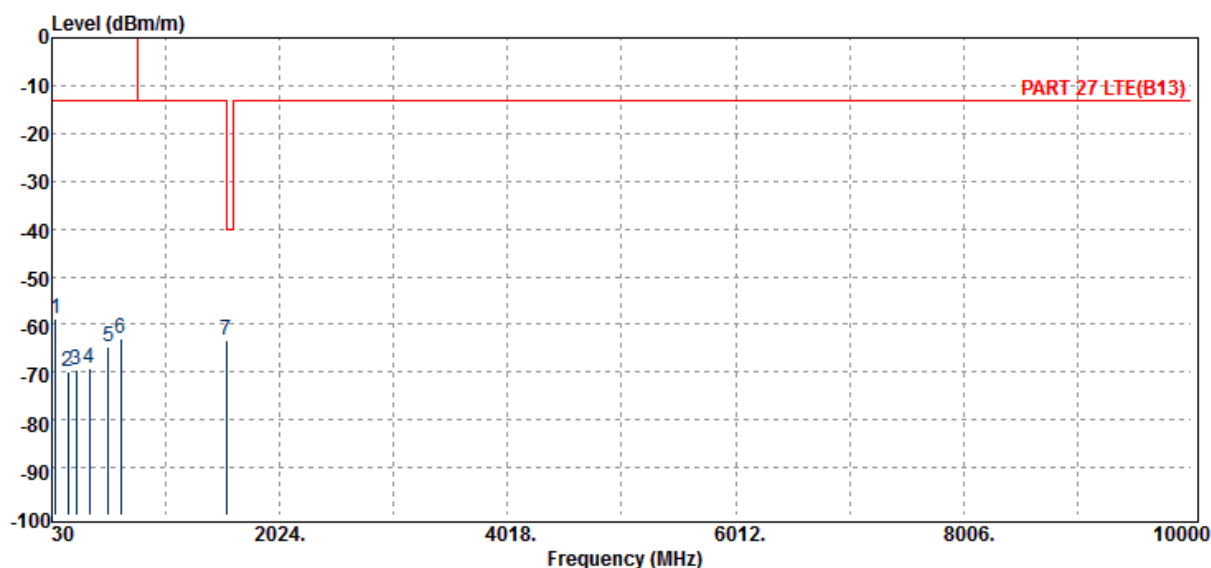
f (886-2) 2298-0488

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Member of SGS Group

LTE-Band 13 / BW 5MHz / QPSK / RB: 1, 0 (The Worst Case)

Operation Band	:LTE B13	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:779.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
63.95	S	-58.77	-50.09	-7.58	-1.10	-13.00	-45.77
167.74	S	-69.91	-67.33	-1.07	-1.51	-13.00	-56.91
240.49	S	-69.45	-71.00	3.29	-1.74	-13.00	-56.45
361.74	S	-69.12	-70.84	3.85	-2.14	-13.00	-56.12
524.70	S	-64.57	-65.86	3.72	-2.44	-13.00	-51.57
629.46	S	-62.99	-63.71	3.18	-2.47	-13.00	-49.99
1559.00	H	-63.31	-65.97	6.78	-4.12	-40.00	-23.31

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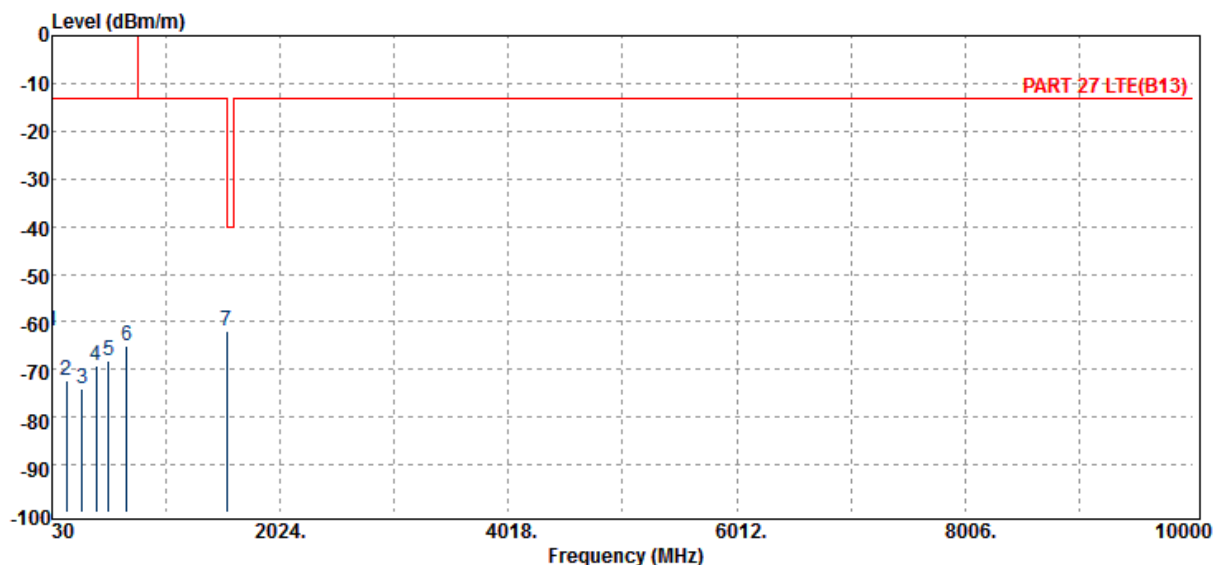
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Operation Band	:LTE B13	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:779.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-62.06	-46.33	-14.78	-0.96	-13.00	-49.06
156.10	S	-72.26	-68.98	-1.81	-1.46	-13.00	-59.26
289.96	S	-74.01	-75.52	3.43	-1.92	-13.00	-61.01
413.15	S	-69.31	-70.71	3.77	-2.38	-13.00	-56.31
522.76	S	-68.00	-69.31	3.73	-2.42	-13.00	-55.00
682.81	S	-65.06	-65.49	3.10	-2.67	-13.00	-52.06
1559.00	H	-61.85	-64.51	6.78	-4.12	-40.00	-21.85

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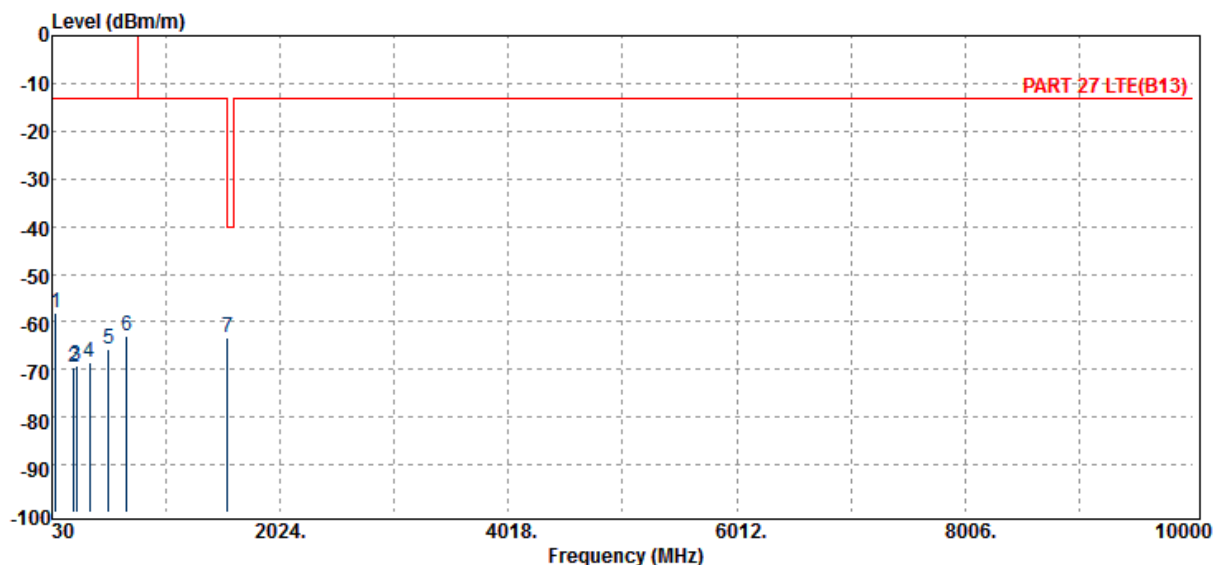
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Operation Band	:LTE B13	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:782.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna:VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
65.89	S	-58.00	-49.87	-7.03	-1.10	-13.00	-45.00
219.15	S	-69.52	-71.16	3.34	-1.70	-13.00	-56.52
241.46	S	-69.17	-70.73	3.31	-1.74	-13.00	-56.17
356.89	S	-68.63	-70.39	3.86	-2.10	-13.00	-55.63
526.64	S	-65.77	-67.02	3.71	-2.46	-13.00	-52.77
682.81	S	-62.84	-63.27	3.10	-2.67	-13.00	-49.84
1564.00	H	-63.30	-65.97	6.80	-4.13	-40.00	-23.30

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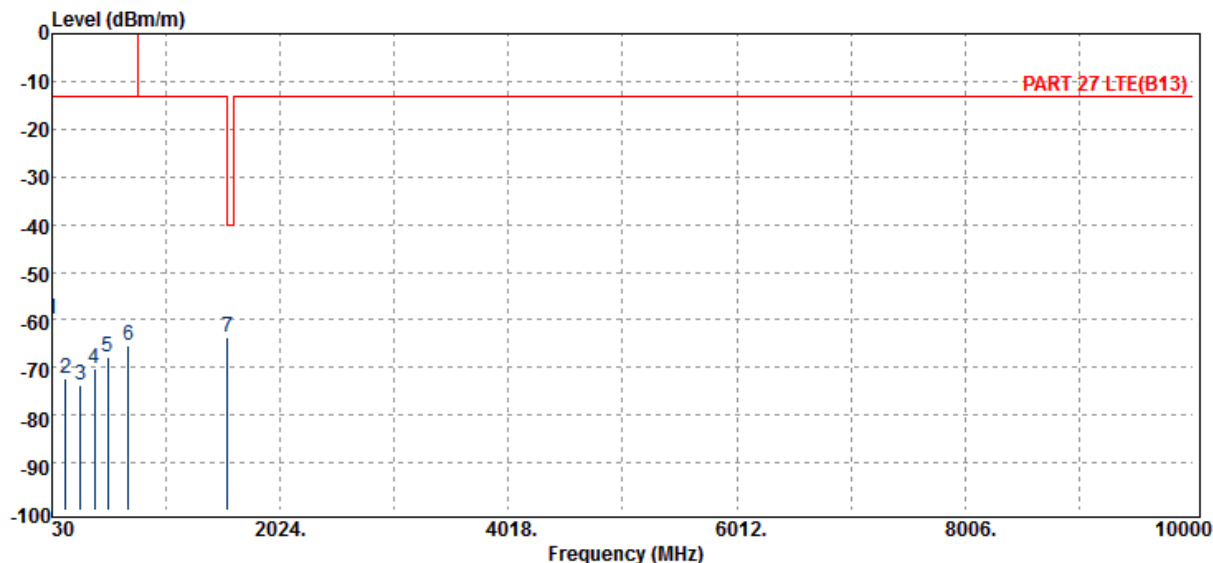
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Operation Band	:LTE B13	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:782.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-59.84	-44.10	-14.78	-0.96	-13.00	-46.84
146.40	S	-72.36	-68.64	-2.31	-1.42	-13.00	-59.36
280.26	S	-73.80	-75.34	3.42	-1.88	-13.00	-60.80
403.45	S	-70.11	-71.52	3.81	-2.40	-13.00	-57.11
516.94	S	-67.78	-69.18	3.76	-2.37	-13.00	-54.78
694.45	S	-65.56	-65.76	3.09	-2.88	-13.00	-52.56
1564.00	H	-63.77	-66.43	6.80	-4.13	-40.00	-23.77

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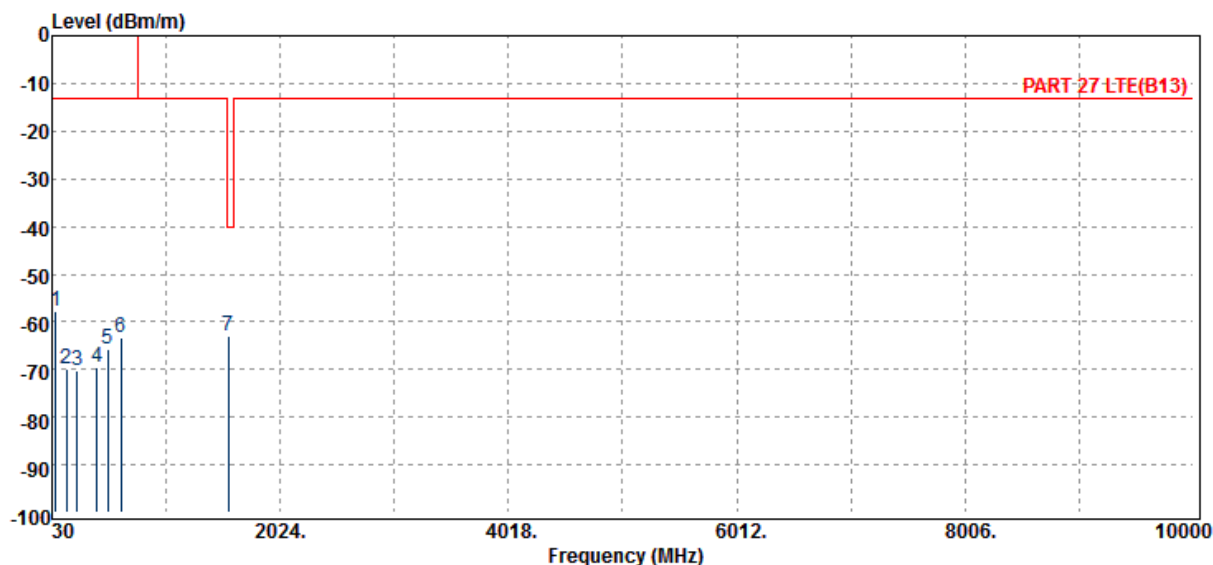
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Operation Band	:LTE B13	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:784.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna:VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
65.89	S	-57.72	-49.58	-7.03	-1.10	-13.00	-44.72
154.16	S	-69.85	-66.50	-1.90	-1.45	-13.00	-56.85
248.25	S	-70.12	-71.78	3.41	-1.75	-13.00	-57.12
419.94	S	-69.52	-70.93	3.75	-2.33	-13.00	-56.52
519.85	S	-65.66	-67.02	3.75	-2.39	-13.00	-52.66
633.34	S	-63.35	-64.07	3.17	-2.46	-13.00	-50.35
1569.00	H	-63.03	-65.71	6.82	-4.14	-40.00	-23.03

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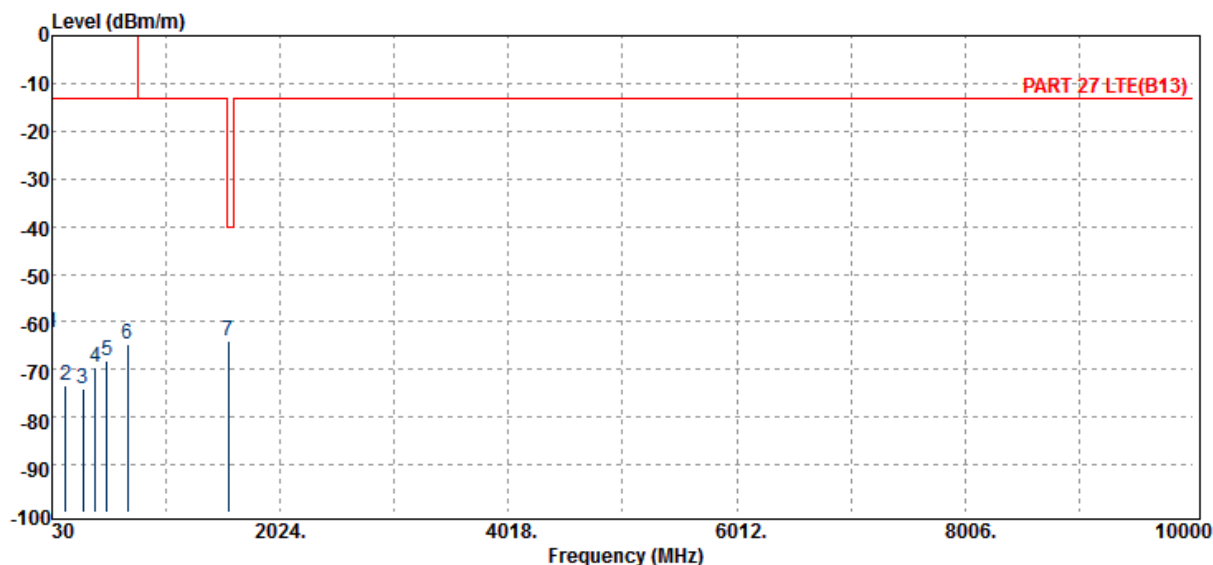
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Operation Band	:LTE B13	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:784.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-62.23	-46.50	-14.78	-0.96	-13.00	-49.23
146.40	S	-73.37	-69.65	-2.31	-1.42	-13.00	-60.37
299.66	S	-74.22	-75.89	3.62	-1.95	-13.00	-61.22
406.36	S	-69.41	-70.79	3.80	-2.42	-13.00	-56.41
512.09	S	-68.32	-69.76	3.79	-2.35	-13.00	-55.32
691.54	S	-64.65	-64.91	3.09	-2.83	-13.00	-51.65
1569.00	H	-63.93	-66.61	6.82	-4.14	-40.00	-23.93

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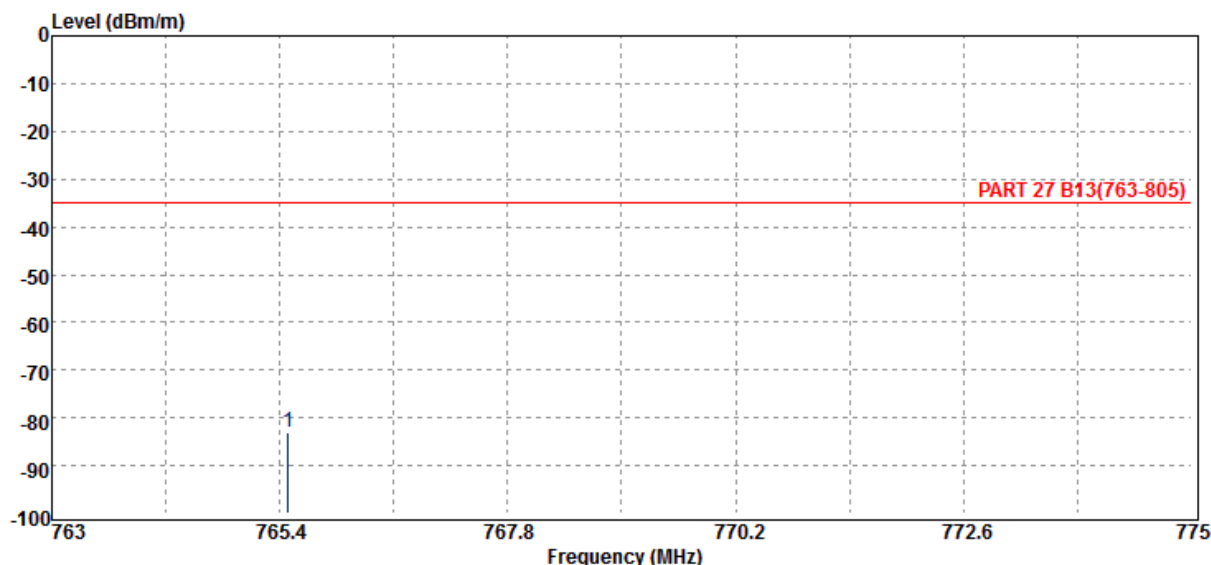
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LTE-Band 13 / BW 5MHz / QPSK / RB: 1, 0 (763MHz-775MHz)

Operation Band	:LTE B13	Temp./Humi.	:24 deg_C / 59 RH
Fundamental Frequency	:779.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
765.48	S	-82.96	-83.21	3.23	-2.98	-35.00	-47.96

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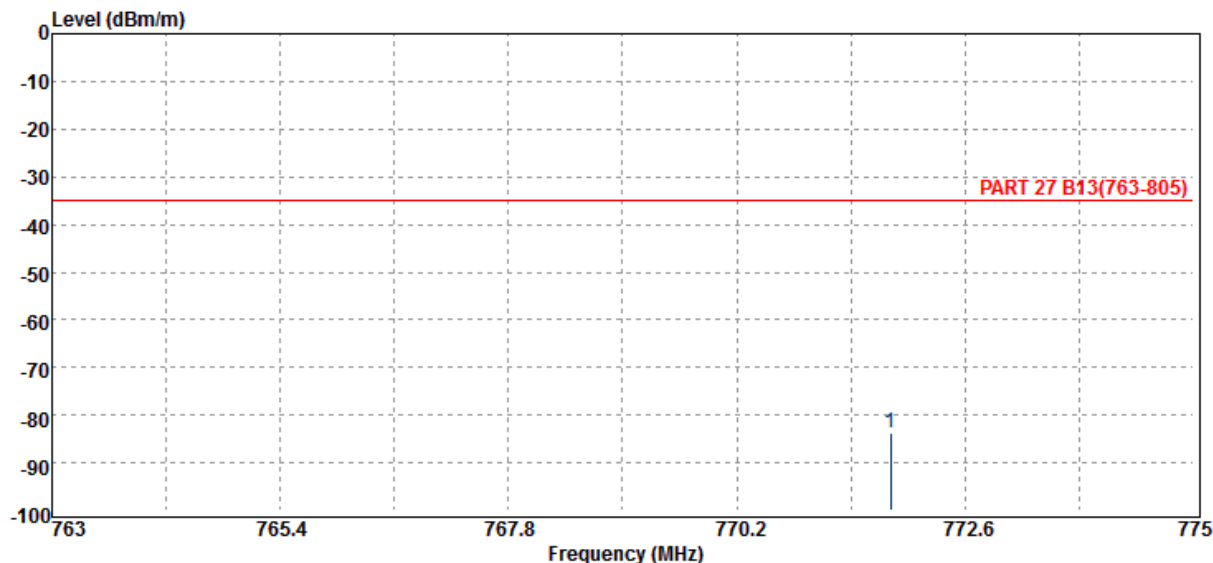
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Operation Band	:LTE B13	Temp./Humi.	:24 deg_C / 59 RH
Fundamental Frequency	:779.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
771.82	S	-83.57	-83.88	3.25	-2.94	-35.00	-48.57

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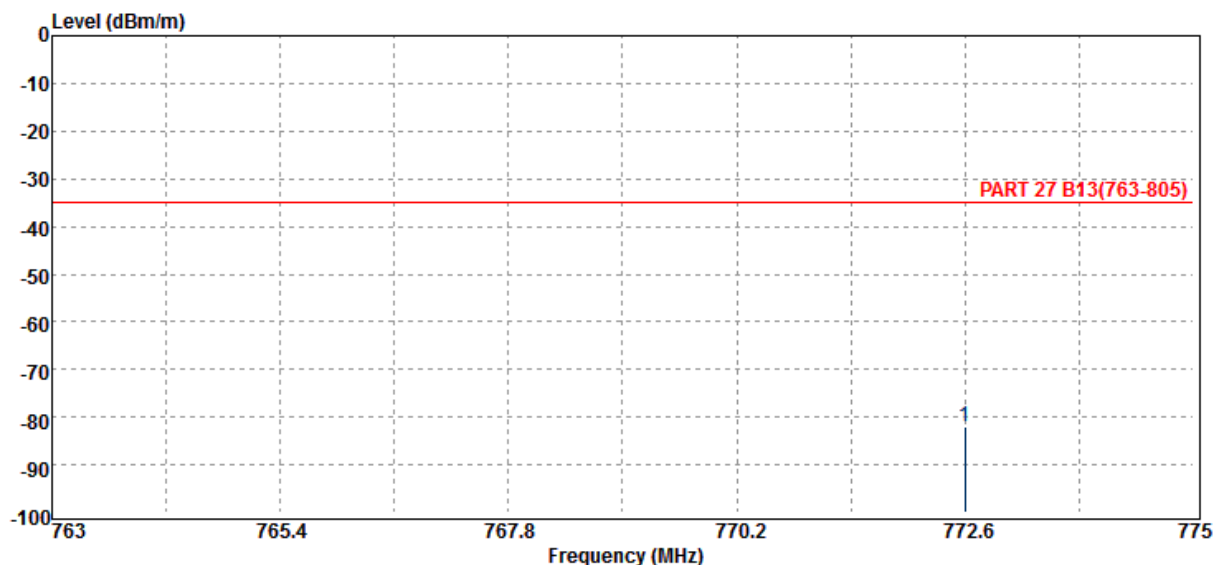
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Operation Band	:LTE B13	Temp./Humi.	:24 deg_C / 59 RH
Fundamental Frequency	:782.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
772.60	S	-82.00	-82.32	3.26	-2.94	-35.00	-47.00

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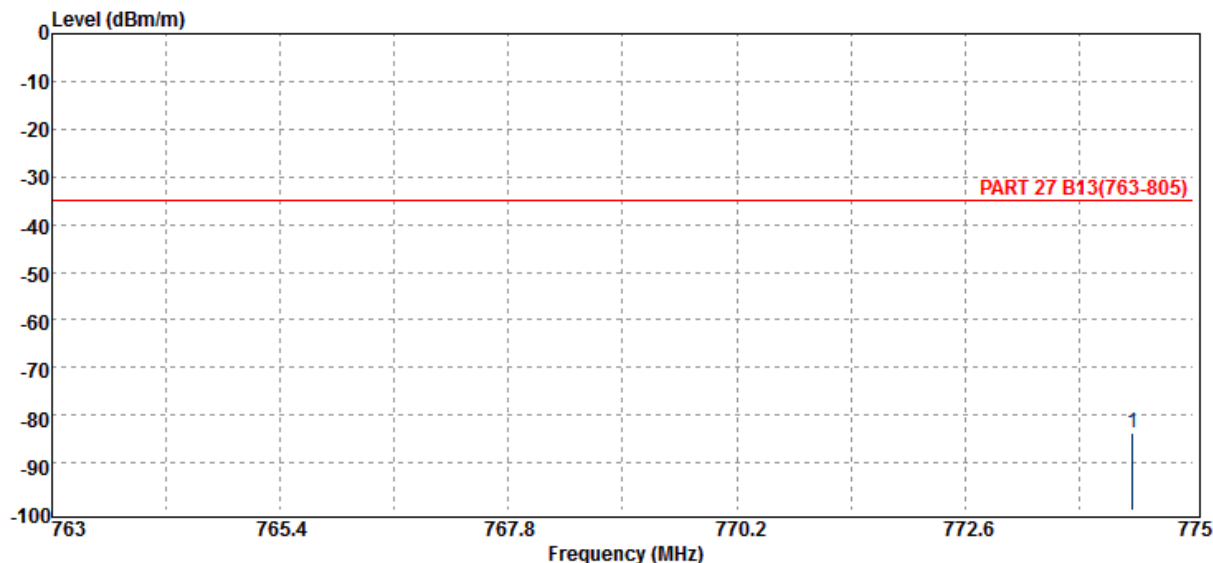
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f (886-2) 2298-0488

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Operation Band	:LTE B13	Temp./Humi.	:24 deg_C / 59 RH
Fundamental Frequency	:782.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
774.36	S	-83.58	-83.92	3.26	-2.93	-35.00	-48.58

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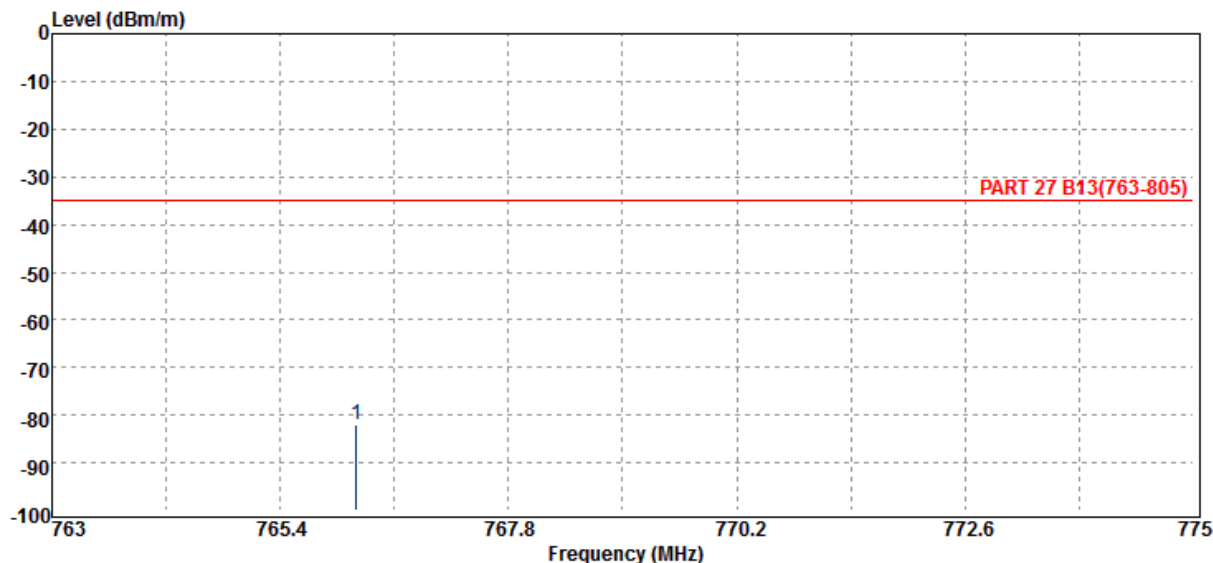
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Operation Band	:LTE B13	Temp./Humi.	:24 deg_C / 59 RH
Fundamental Frequency	:784.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
766.20	S	-81.84	-82.10	3.23	-2.98	-35.00	-46.84

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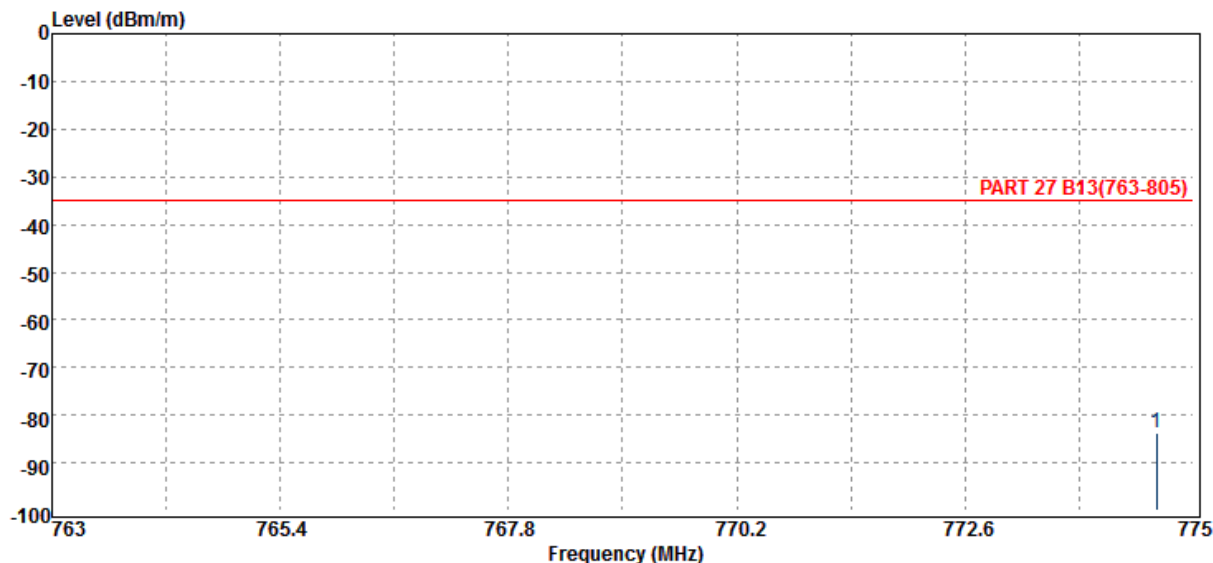
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Operation Band	:LTE B13	Temp./Humi.	:24 deg_C / 59 RH
Fundamental Frequency	:784.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
774.62	S	-83.57	-83.91	3.26	-2.92	-35.00	-48.57

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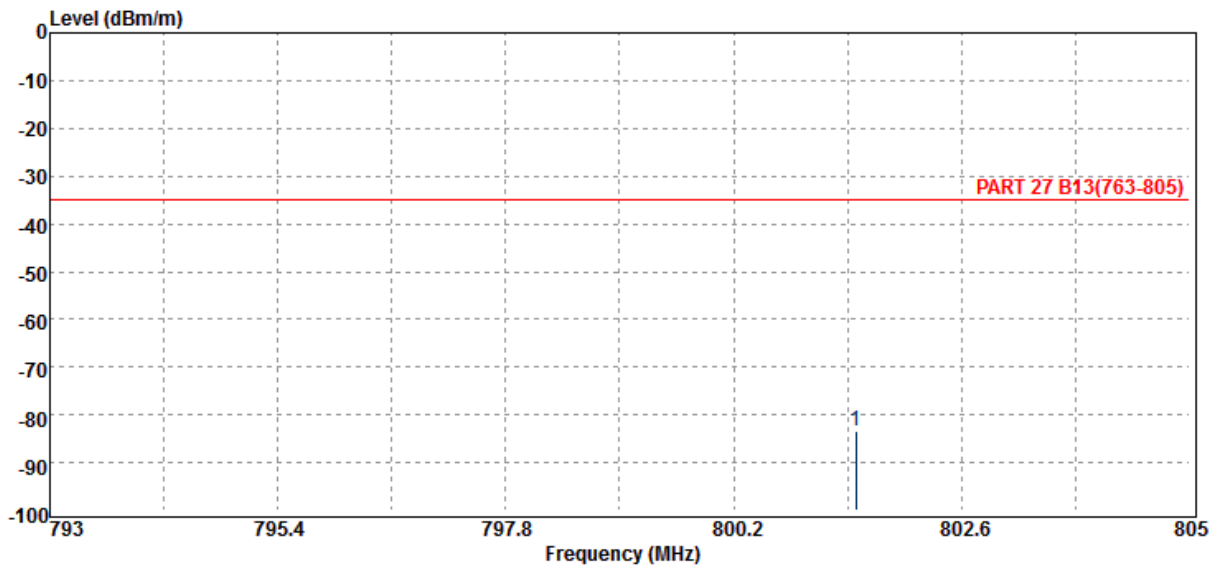
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LTE-Band 13 / BW 5MHz / QPSK / RB: 1, 0 (793MHz-805MHz)

Operation Band	:LTE B13	Temp./Humi.	:24 deg_C / 59 RH
Fundamental Frequency	:779.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
801.48	S	-83.51	-83.95	3.34	-2.90	-35.00	-48.51

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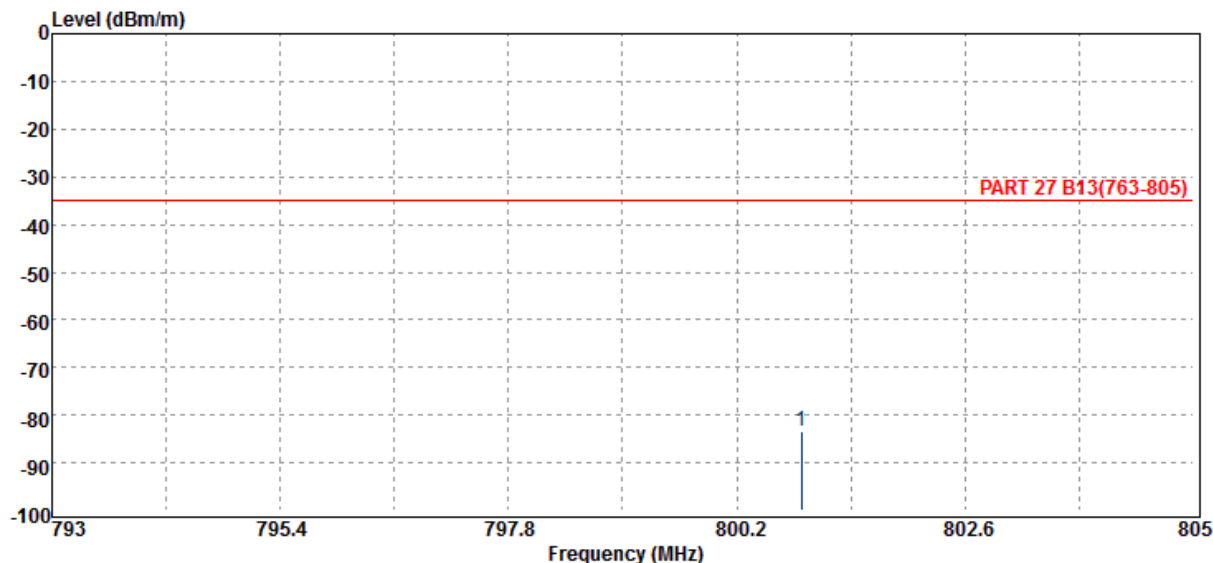
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Operation Band	:LTE B13	Temp./Humi.	:24 deg_C / 59 RH
Fundamental Frequency	:779.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
800.88	S	-83.26	-83.70	3.34	-2.90	-35.00	-48.26

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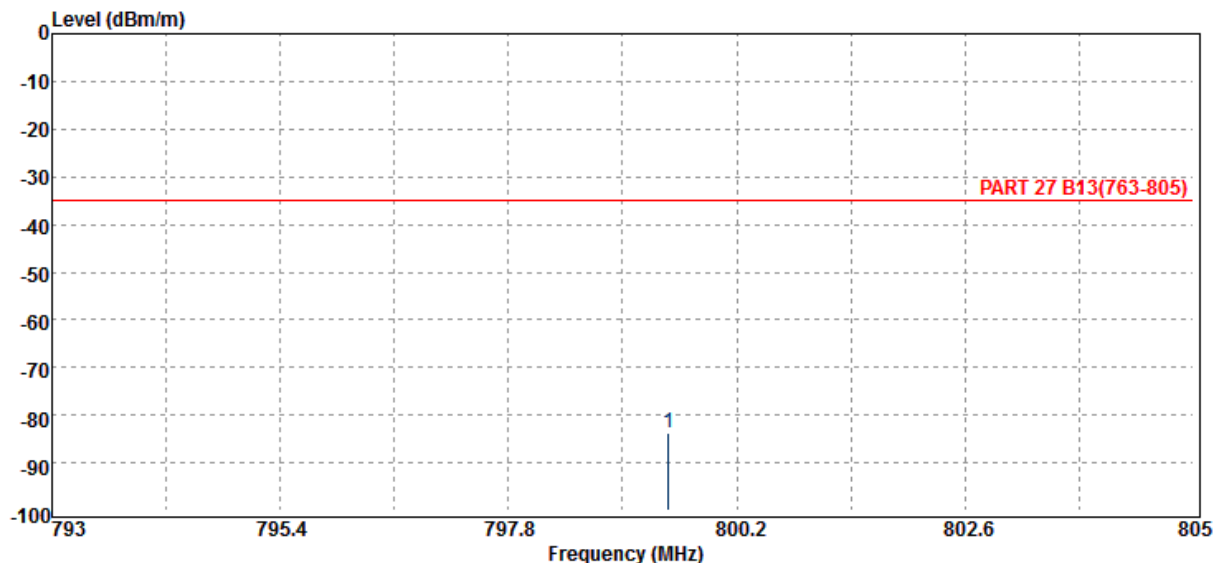
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Operation Band	:LTE B13	Temp./Humi.	:24 deg_C / 59 RH
Fundamental Frequency	:782.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
799.48	S	-83.75	-84.20	3.34	-2.90	-35.00	-48.75

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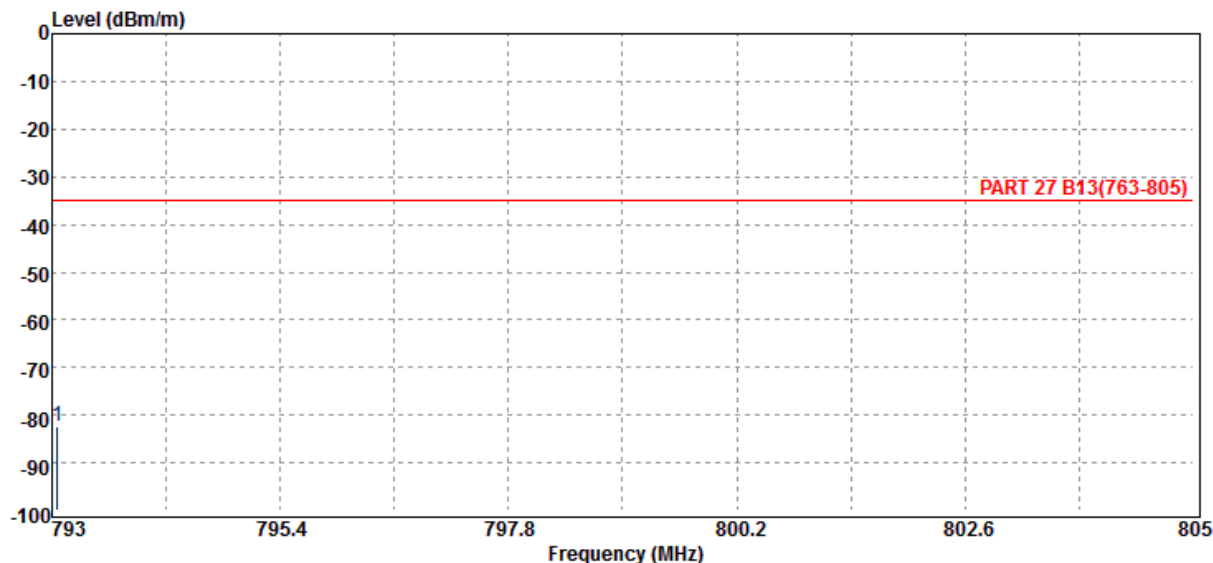
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Operation Band	:LTE B13	Temp./Humi.	:24 deg_C / 59 RH
Fundamental Frequency	:782.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
793.06	S	-82.25	-82.67	3.32	-2.90	-35.00	-47.25

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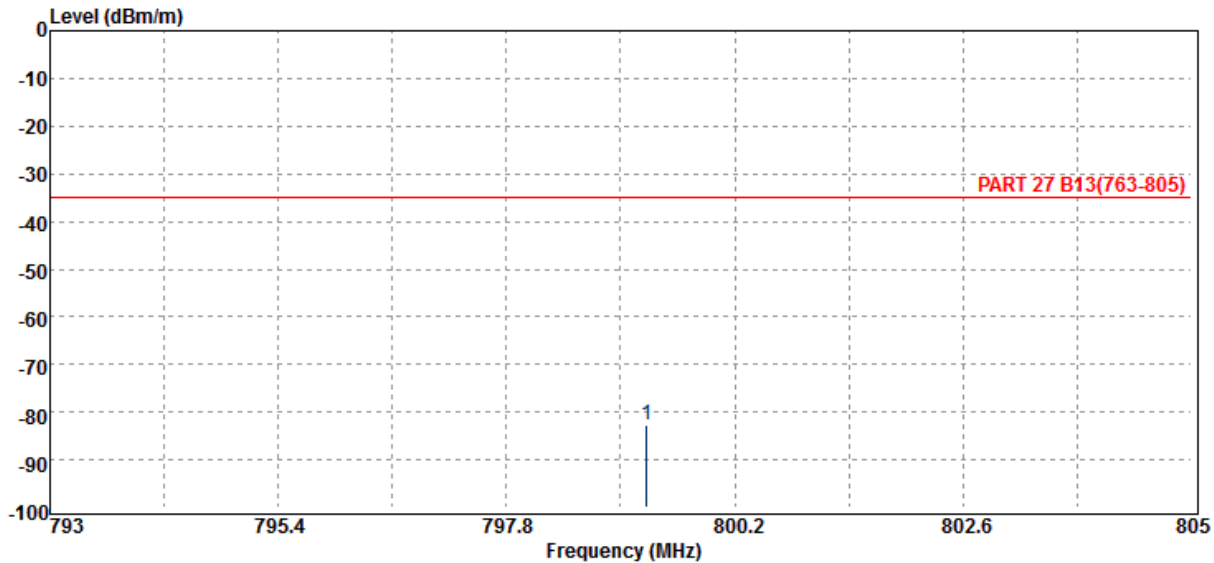
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Operation Band	:LTE B13	Temp./Humi.	:24 deg_C / 59 RH
Fundamental Frequency	:784.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna:VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
799.28	S	-82.84	-83.28	3.34	-2.90	-35.00	-47.84

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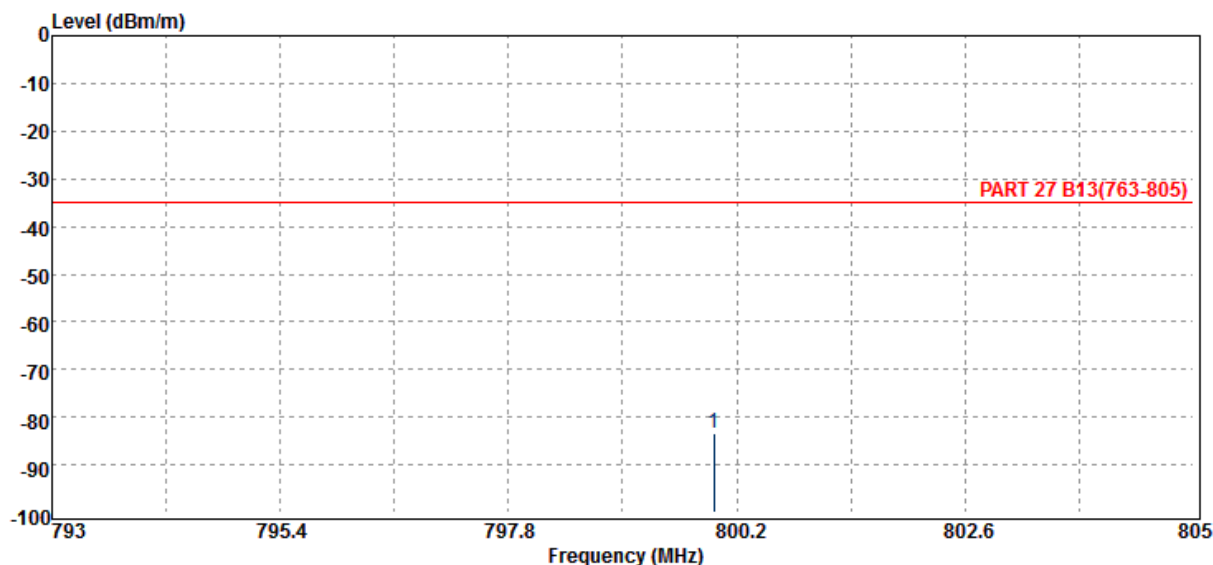
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Operation Band	:LTE B13	Temp./Humi.	:24 deg_C / 59 RH
Fundamental Frequency	:784.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
799.96	S	-83.39	-83.83	3.34	-2.90	-35.00	-48.39

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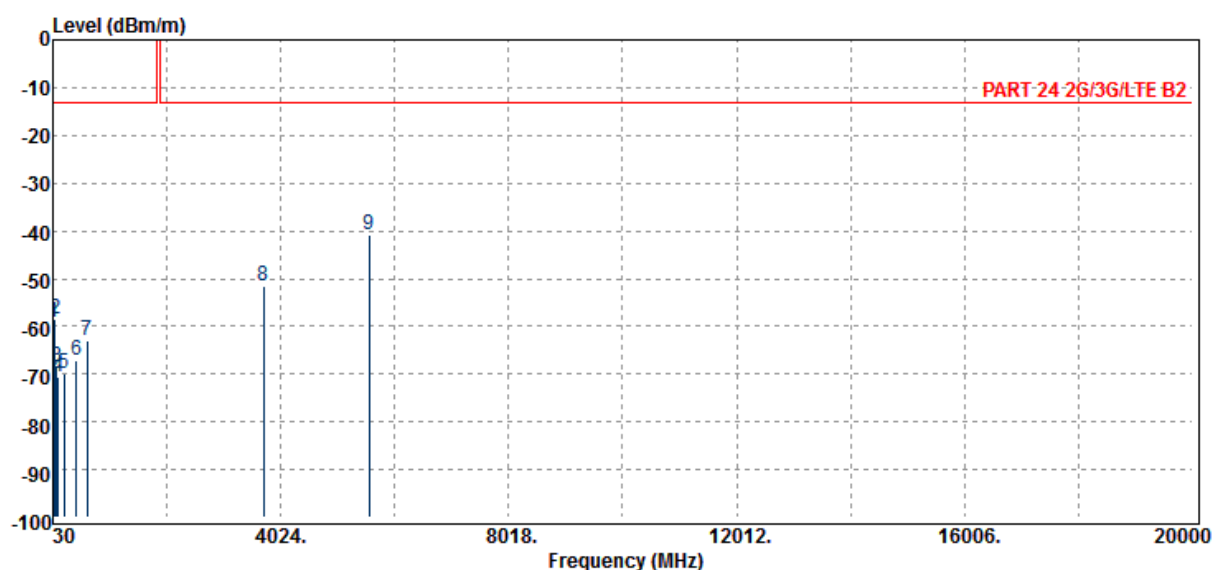
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***Ext. Antenna**

LTE-Band 2 / BW 15MHz / QPSKM / RB: 1, 0 (The Worst Case)

Operation Band	:LTE B2	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1857.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-59.01	-43.28	-14.78	-0.96	-13.00	-46.01
66.86	S	-58.53	-50.66	-6.76	-1.11	-13.00	-45.53
93.05	S	-68.65	-66.62	-0.81	-1.22	-13.00	-55.65
125.06	S	-70.59	-66.71	-2.54	-1.34	-13.00	-57.59
222.06	S	-69.73	-71.31	3.28	-1.71	-13.00	-56.73
443.22	S	-67.09	-68.57	3.67	-2.18	-13.00	-54.09
628.49	H	-63.11	-63.82	3.18	-2.47	-13.00	-50.11
3715.00	H	-51.59	-57.45	12.44	-6.58	-13.00	-38.59
5572.50	H	-40.72	-45.31	12.90	-8.30	-13.00	-27.72

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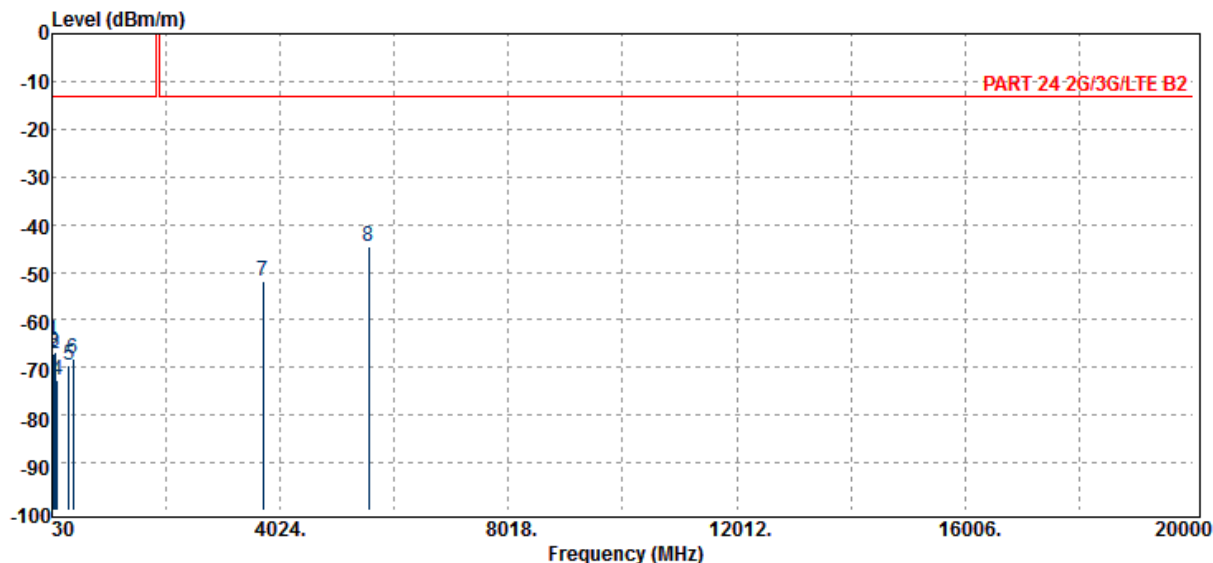
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Operation Band	:LTE B2	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1857.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :HORIZONTAL



Freq.	Note	ERP/EIRP	SG	Antenna	Cable	Limit	Margin
MHz	F/H/E/S	dBm	Output Level dBm	Gain dBi	Loss dB	dBm	dB
32.91	S	-64.22	-49.16	-14.09	-0.97	-13.00	-51.22
66.86	S	-67.03	-59.16	-6.76	-1.11	-13.00	-54.03
80.44	S	-66.82	-62.91	-2.75	-1.16	-13.00	-53.82
127.00	S	-72.51	-68.57	-2.58	-1.35	-13.00	-59.51
323.91	S	-69.39	-71.22	3.74	-1.92	-13.00	-56.39
403.45	S	-68.23	-69.64	3.81	-2.40	-13.00	-55.23
3715.00	H	-51.81	-57.68	12.44	-6.58	-13.00	-38.81
5572.50	H	-44.70	-49.30	12.90	-8.30	-13.00	-31.70

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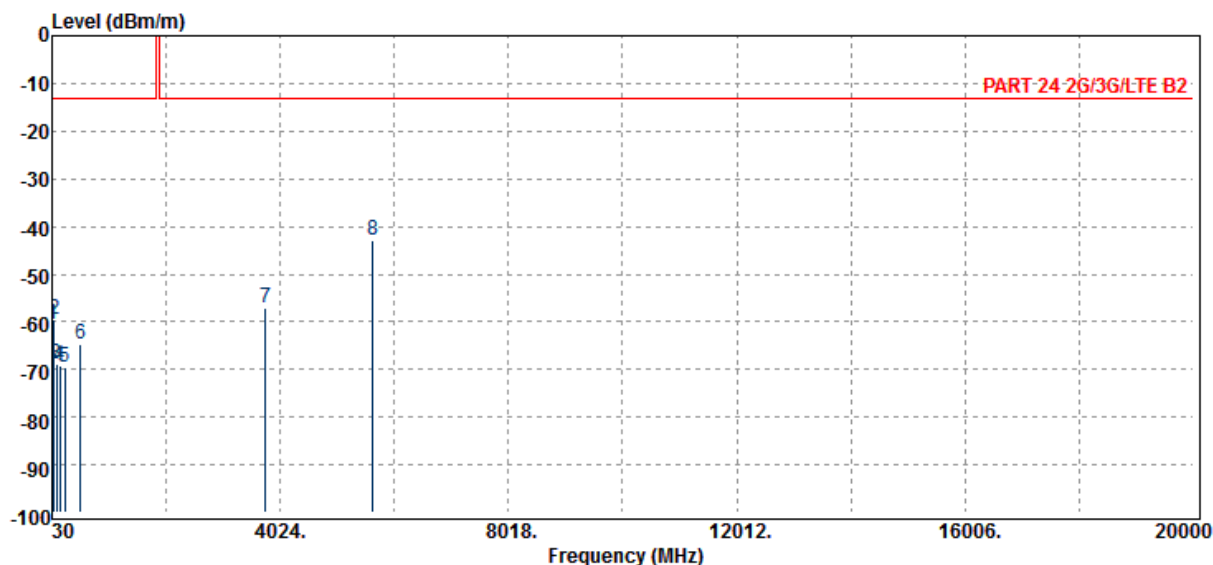
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f (886-2) 2298-0488

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Member of SGS Group

Operation Band	:LTE B2	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1880.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna:VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-60.44	-44.71	-14.78	-0.96	-13.00	-47.44
66.86	S	-59.42	-51.55	-6.76	-1.11	-13.00	-46.42
104.69	S	-68.97	-65.67	-2.04	-1.27	-13.00	-55.97
165.80	S	-69.32	-66.61	-1.21	-1.50	-13.00	-56.32
248.25	S	-69.39	-71.05	3.41	-1.75	-13.00	-56.39
529.55	S	-64.64	-65.85	3.70	-2.49	-13.00	-51.64
3760.00	H	-56.99	-62.85	12.45	-6.60	-13.00	-43.99
5640.00	H	-42.74	-47.28	12.90	-8.36	-13.00	-29.74

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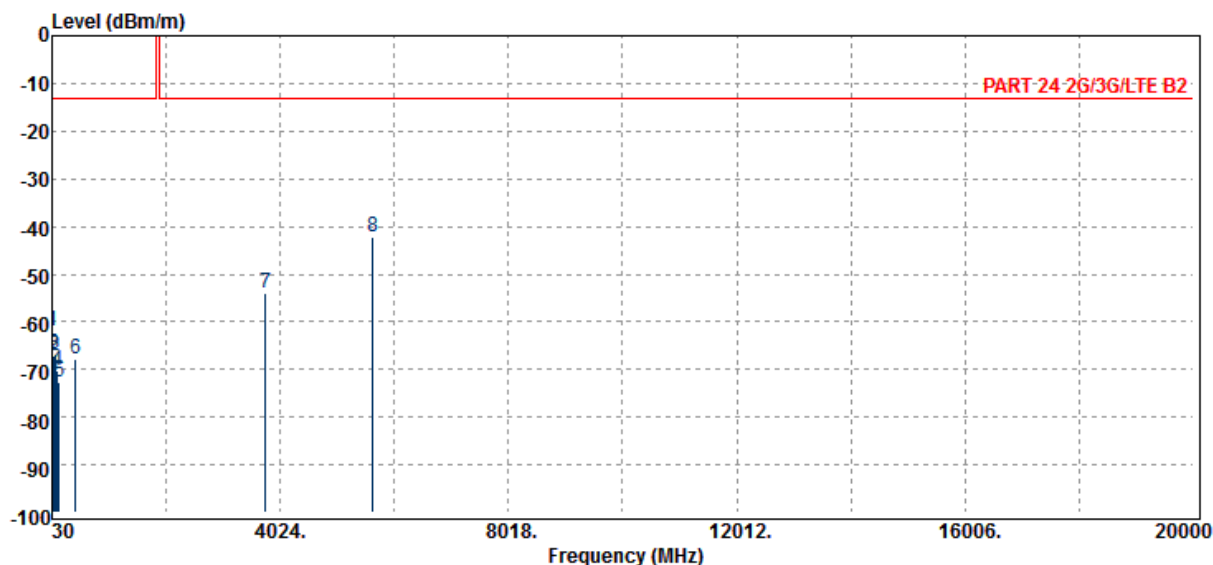
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Operation Band	:LTE B2	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1880.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-61.99	-46.26	-14.78	-0.96	-13.00	-48.99
65.89	S	-67.19	-59.05	-7.03	-1.10	-13.00	-54.19
81.41	S	-66.64	-62.97	-2.50	-1.17	-13.00	-53.64
120.21	S	-70.38	-66.61	-2.44	-1.33	-13.00	-57.38
148.34	S	-72.61	-68.99	-2.19	-1.42	-13.00	-59.61
440.31	S	-67.91	-69.38	3.68	-2.20	-13.00	-54.91
3760.00	H	-54.06	-59.92	12.45	-6.60	-13.00	-41.06
5640.00	H	-42.28	-46.82	12.90	-8.36	-13.00	-29.28

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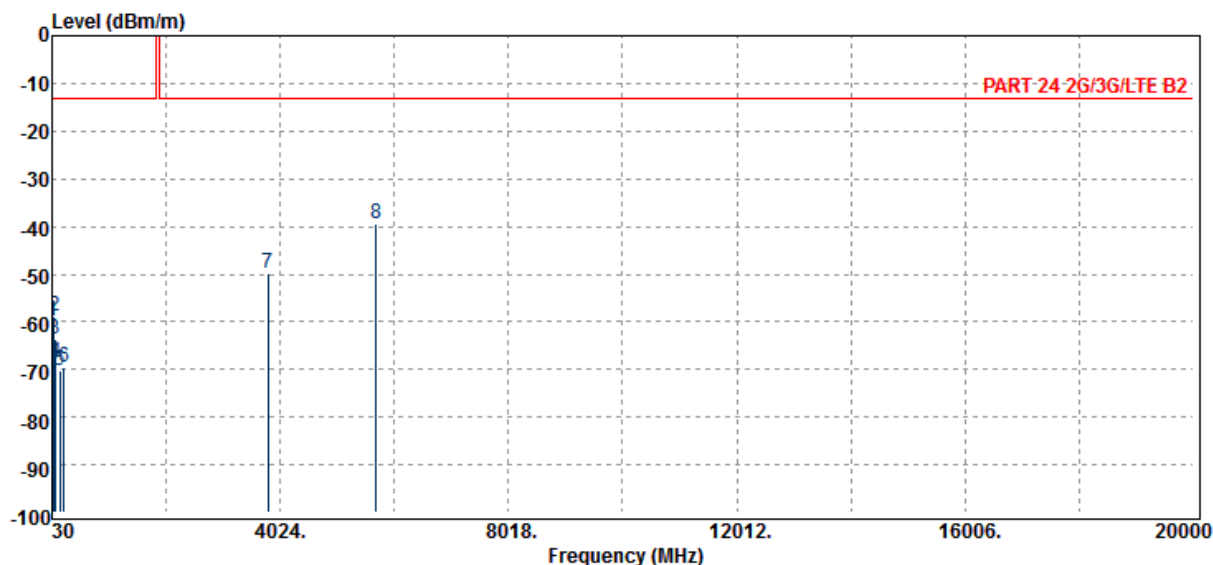
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Operation Band	:LTE B2	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1902.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna:VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-59.81	-44.08	-14.78	-0.96	-13.00	-46.81
65.89	S	-58.65	-50.52	-7.03	-1.10	-13.00	-45.65
80.44	S	-63.77	-59.86	-2.75	-1.16	-13.00	-50.77
97.90	S	-68.52	-65.89	-1.38	-1.24	-13.00	-55.52
167.74	S	-70.14	-67.56	-1.07	-1.51	-13.00	-57.14
236.61	S	-69.70	-71.19	3.23	-1.73	-13.00	-56.70
3805.00	H	-49.91	-55.75	12.46	-6.62	-13.00	-36.91
5707.50	H	-39.55	-44.10	12.90	-8.36	-13.00	-26.55

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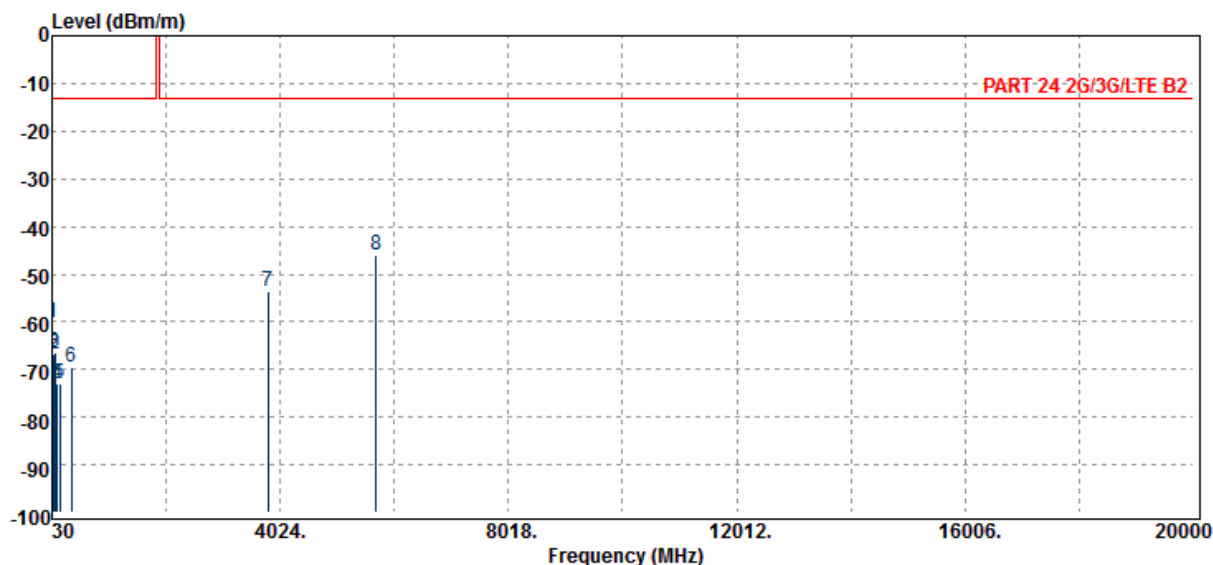
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Operation Band	:LTE B2	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1902.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-60.29	-44.56	-14.78	-0.96	-13.00	-47.29
66.86	S	-66.65	-58.78	-6.76	-1.11	-13.00	-53.65
81.41	S	-66.28	-62.62	-2.50	-1.17	-13.00	-53.28
124.09	S	-73.08	-69.22	-2.52	-1.34	-13.00	-60.08
162.89	S	-73.09	-70.18	-1.42	-1.49	-13.00	-60.09
367.56	S	-69.39	-71.06	3.85	-2.18	-13.00	-56.39
3805.00	H	-53.78	-59.63	12.46	-6.62	-13.00	-40.78
5707.50	H	-45.88	-50.42	12.90	-8.36	-13.00	-32.88

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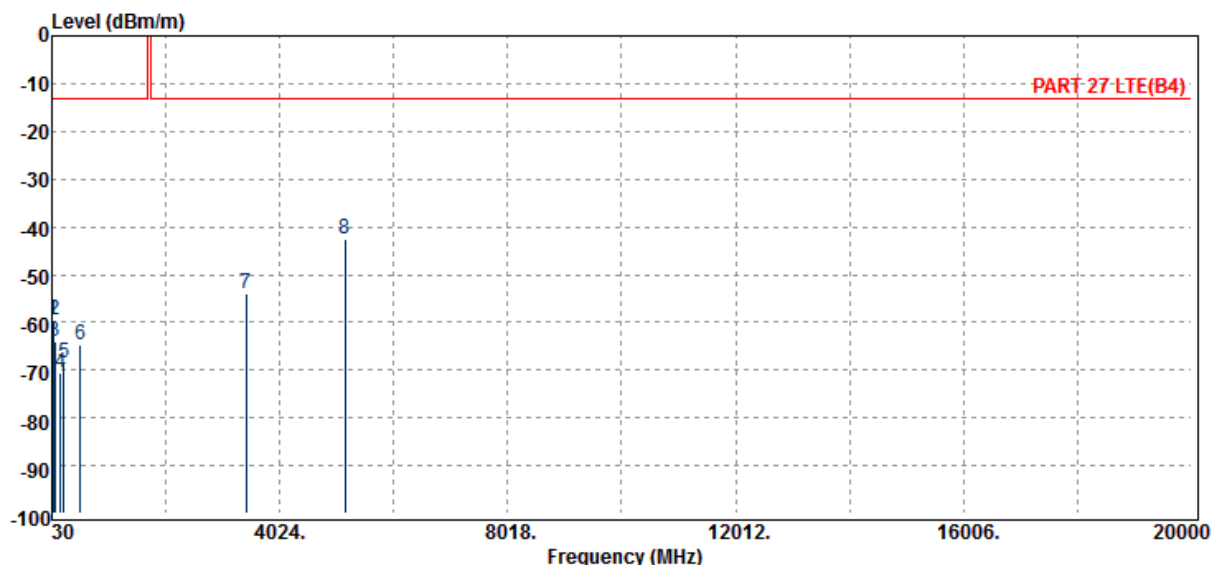
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LTE-Band 4 / BW 20MHz / 16QAM / RB: 1, 0 (The Worst Case)

Operation Band	:LTE B4	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1720.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna:VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-59.65	-43.92	-14.78	-0.96	-13.00	-46.65
64.92	S	-59.66	-51.25	-7.31	-1.10	-13.00	-46.66
80.44	S	-64.05	-60.14	-2.75	-1.16	-13.00	-51.05
179.38	S	-70.52	-69.74	0.78	-1.56	-13.00	-57.52
233.70	S	-68.47	-69.92	3.18	-1.73	-13.00	-55.47
534.40	S	-64.75	-65.88	3.67	-2.54	-13.00	-51.75
3440.00	H	-53.89	-59.97	12.30	-6.22	-13.00	-40.89
5160.00	H	-42.43	-47.26	12.77	-7.94	-13.00	-29.43

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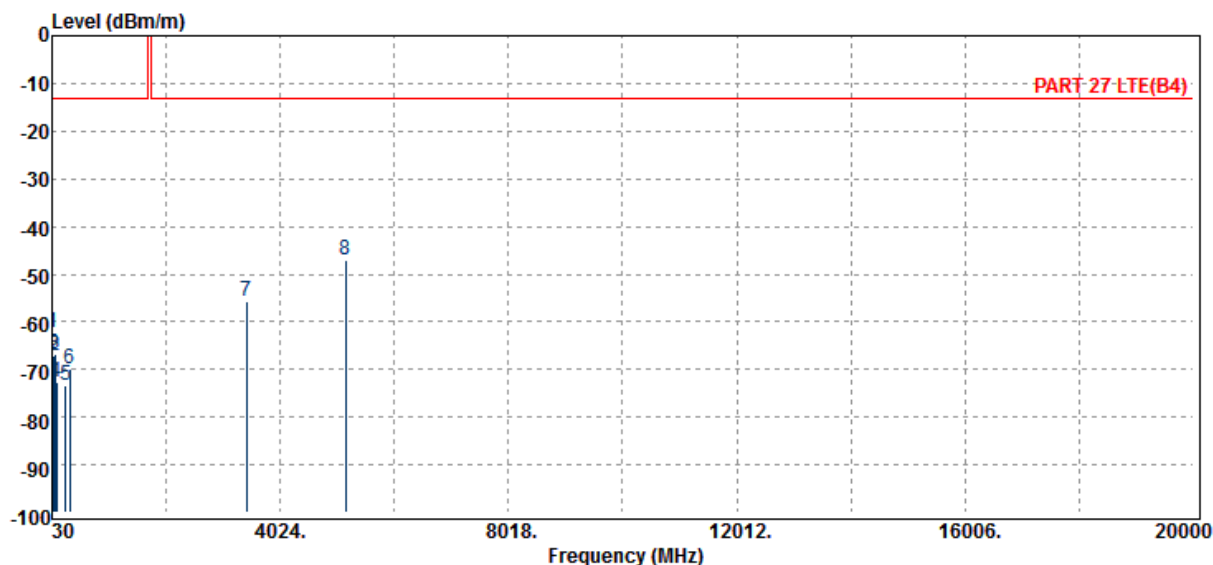
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Operation Band	:LTE B4	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1720.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :HORIZONTAL



Freq.	Note	ERP/EIRP	SG	Antenna	Cable	Limit	Margin
MHz	F/H/E/S	dBm	Output Level dBm	Gain dBi	Loss dB	dBm	dB
30.00	S	-62.23	-46.49	-14.78	-0.96	-13.00	-49.23
66.86	S	-66.99	-59.12	-6.76	-1.11	-13.00	-53.99
81.41	S	-66.80	-63.14	-2.50	-1.17	-13.00	-53.80
110.51	S	-72.57	-68.80	-2.49	-1.29	-13.00	-59.57
274.44	S	-73.43	-75.05	3.47	-1.85	-13.00	-60.43
337.49	S	-69.97	-71.83	3.80	-1.95	-13.00	-56.97
3440.00	H	-55.55	-61.62	12.30	-6.22	-13.00	-42.55
5160.00	H	-47.15	-51.98	12.77	-7.94	-13.00	-34.15

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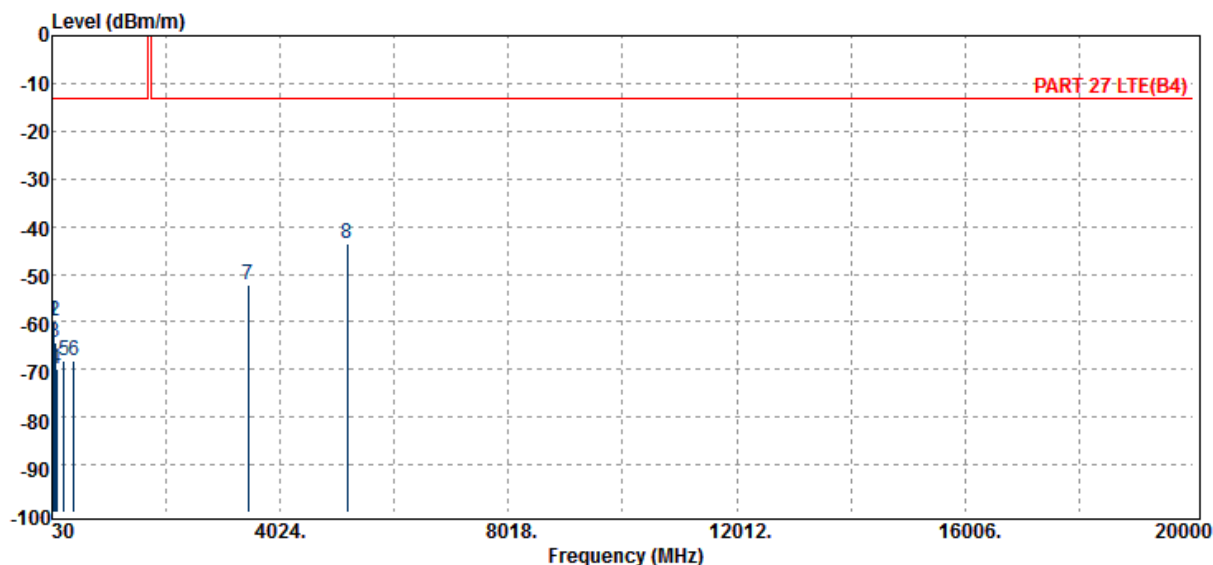
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Operation Band	:LTE B4	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1732.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna:VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-59.74	-44.01	-14.78	-0.96	-13.00	-46.74
64.92	S	-59.85	-51.45	-7.31	-1.10	-13.00	-46.85
80.44	S	-64.21	-60.31	-2.75	-1.16	-13.00	-51.21
112.45	S	-70.02	-66.25	-2.48	-1.30	-13.00	-57.02
235.64	S	-68.34	-69.82	3.21	-1.73	-13.00	-55.34
410.24	S	-68.31	-69.69	3.78	-2.40	-13.00	-55.31
3465.00	H	-52.22	-58.31	12.34	-6.25	-13.00	-39.22
5197.50	H	-43.46	-48.29	12.78	-7.96	-13.00	-30.46

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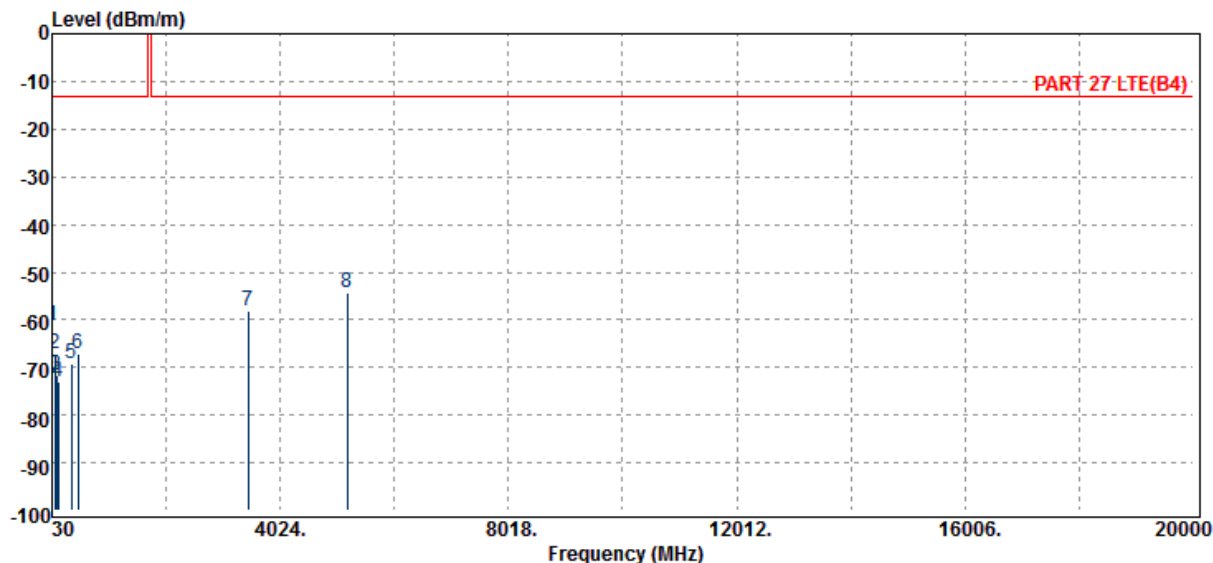
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Operation Band	:LTE B4	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1732.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
30.97	S	-61.09	-45.59	-14.54	-0.96	-13.00	-48.09
80.44	S	-67.12	-63.21	-2.75	-1.16	-13.00	-54.12
102.75	S	-71.57	-68.44	-1.87	-1.26	-13.00	-58.57
139.61	S	-72.94	-68.85	-2.70	-1.39	-13.00	-59.94
371.44	S	-69.17	-70.81	3.84	-2.21	-13.00	-56.17
482.99	S	-66.97	-68.51	3.79	-2.25	-13.00	-53.97
3465.00	H	-58.20	-64.29	12.34	-6.25	-13.00	-45.20
5197.50	H	-54.45	-59.27	12.78	-7.96	-13.00	-41.45

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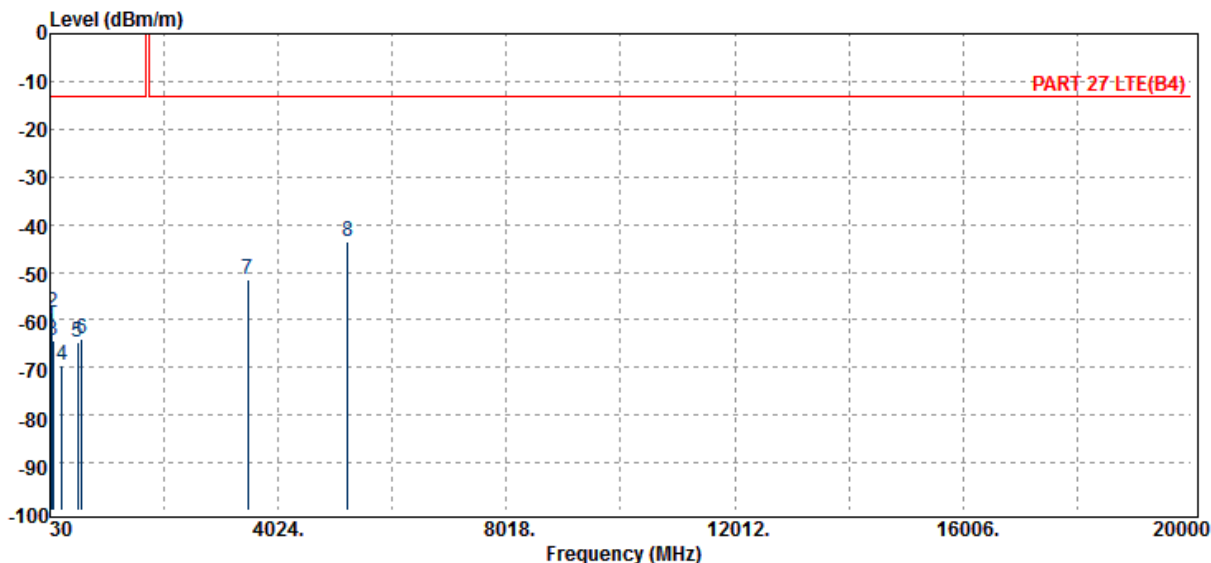
t (886-2) 2299-3279

f (886-2) 2298-0488

www.tw.sgs.com

Member of SGS Group

Operation Band	:LTE B4	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1745.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna:VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
31.94	S	-61.46	-46.18	-14.31	-0.96	-13.00	-48.46
65.89	S	-58.50	-50.36	-7.03	-1.10	-13.00	-45.50
80.44	S	-64.29	-60.39	-2.75	-1.16	-13.00	-51.29
236.61	S	-69.56	-71.05	3.23	-1.73	-13.00	-56.56
515.00	S	-64.87	-66.29	3.77	-2.36	-13.00	-51.87
585.81	S	-63.99	-64.54	3.34	-2.79	-13.00	-50.99
3490.00	H	-51.46	-57.49	12.38	-6.35	-13.00	-38.46
5235.00	H	-43.65	-48.44	12.80	-8.00	-13.00	-30.65

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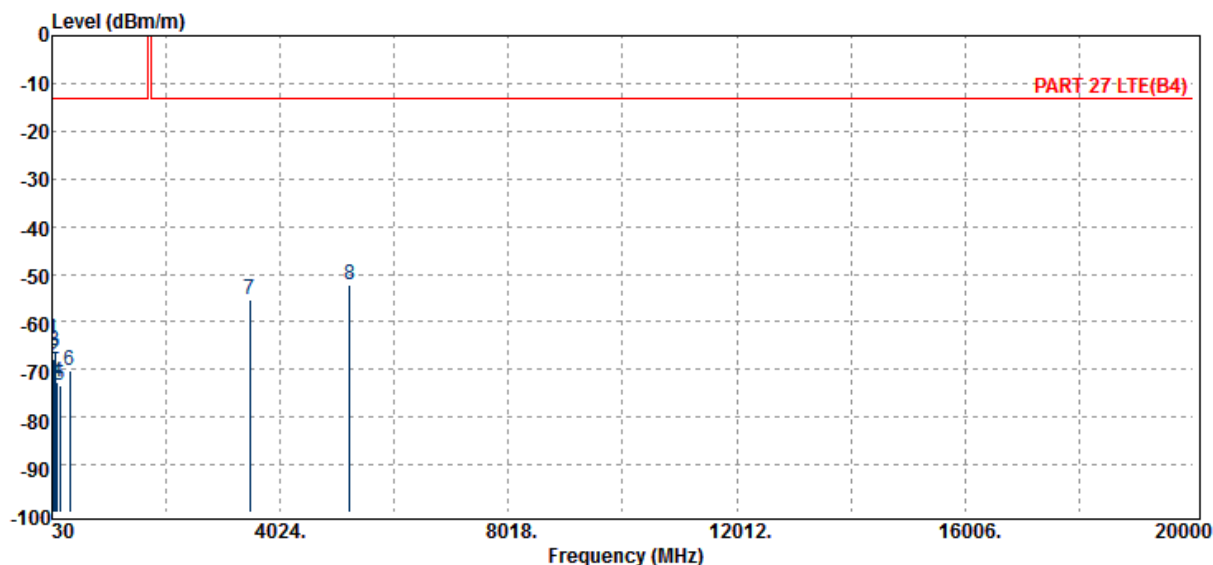
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f (886-2) 2298-0488

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Operation Band	:LTE B4	Temp./Humi.	:22 deg_C / 62 RH
Fundamental Frequency	:1745.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
31.94	S	-63.62	-48.34	-14.31	-0.96	-13.00	-50.62
66.86	S	-67.94	-60.07	-6.76	-1.11	-13.00	-54.94
80.44	S	-66.09	-62.18	-2.75	-1.16	-13.00	-53.09
125.06	S	-72.76	-68.87	-2.54	-1.34	-13.00	-59.76
172.59	S	-73.51	-71.55	-0.44	-1.53	-13.00	-60.51
345.25	S	-70.20	-72.03	3.84	-2.01	-13.00	-57.20
3490.00	H	-55.52	-61.56	12.38	-6.35	-13.00	-42.52
5235.00	H	-52.40	-57.19	12.80	-8.00	-13.00	-39.40

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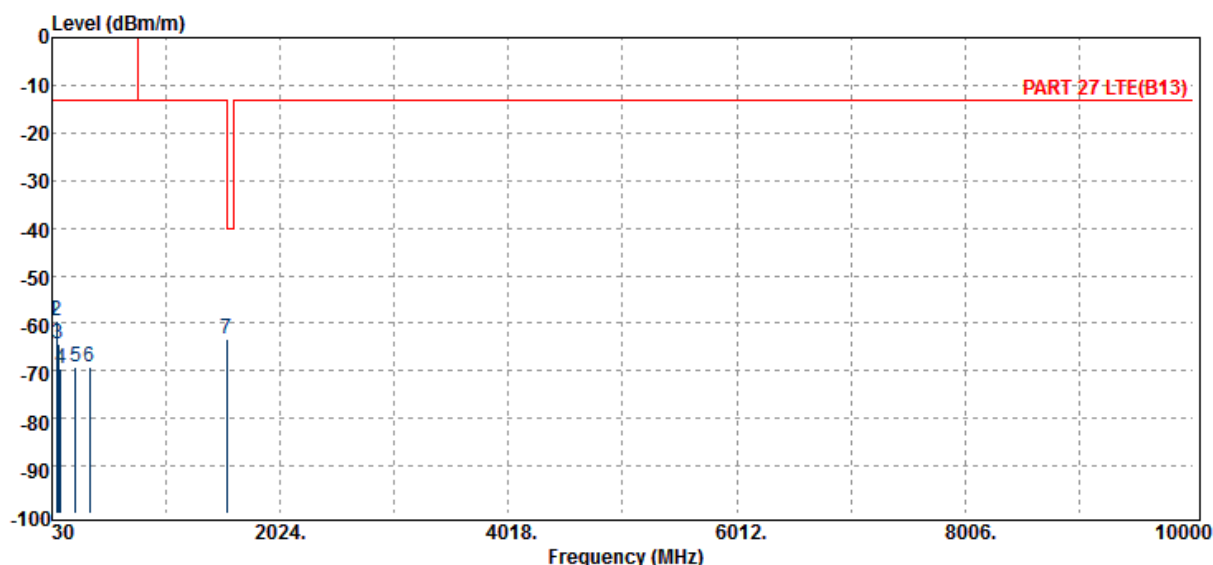
f (886-2) 2298-0488

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Member of SGS Group

LTE-Band 13 / BW 5MHz / QPSK / RB: 1, 0 (The Worst Case)

Operation Band	:LTE B13	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:779.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-59.48	-43.75	-14.78	-0.96	-13.00	-46.48
66.86	S	-59.57	-51.70	-6.76	-1.11	-13.00	-46.57
81.41	S	-64.51	-60.85	-2.50	-1.17	-13.00	-51.51
105.66	S	-69.45	-66.06	-2.12	-1.27	-13.00	-56.45
235.64	S	-69.28	-70.75	3.21	-1.73	-13.00	-56.28
361.74	S	-69.12	-70.84	3.85	-2.14	-13.00	-56.12
1559.00	H	-63.36	-66.02	6.78	-4.12	-40.00	-23.36

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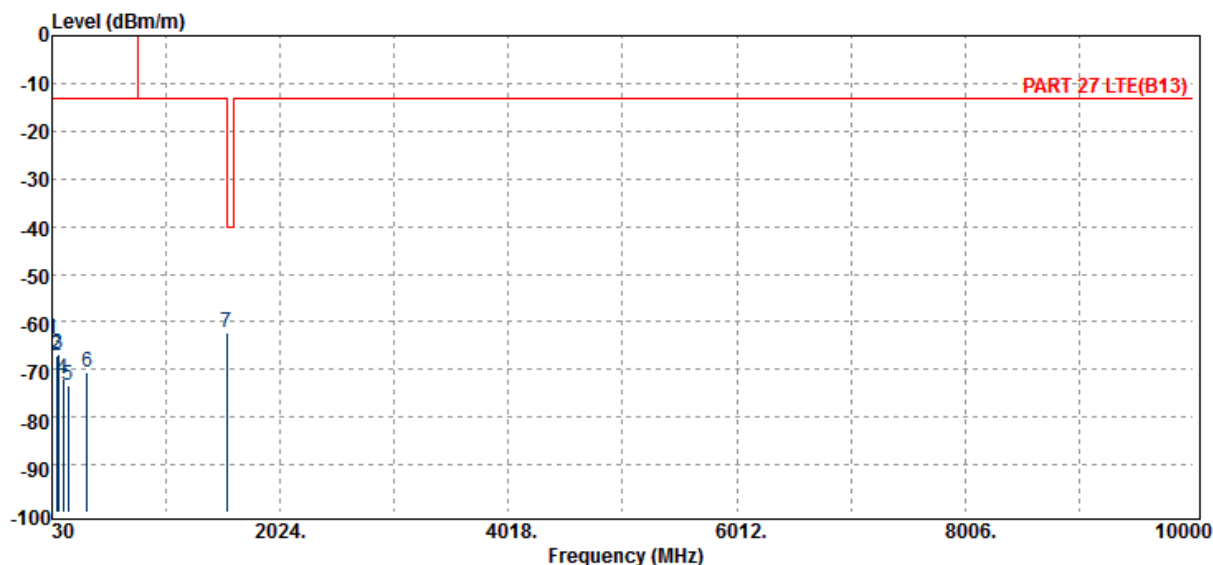
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f (886-2) 2298-0488

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Operation Band	:LTE B13	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:779.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
31.94	S	-63.59	-48.31	-14.31	-0.96	-13.00	-50.59
66.86	S	-67.02	-59.15	-6.76	-1.11	-13.00	-54.02
81.41	S	-66.74	-63.08	-2.50	-1.17	-13.00	-53.74
125.06	S	-72.00	-68.12	-2.54	-1.34	-13.00	-59.00
167.74	S	-73.50	-70.92	-1.07	-1.51	-13.00	-60.50
333.61	S	-70.71	-72.58	3.79	-1.92	-13.00	-57.71
1559.00	H	-62.11	-64.77	6.78	-4.12	-40.00	-22.11

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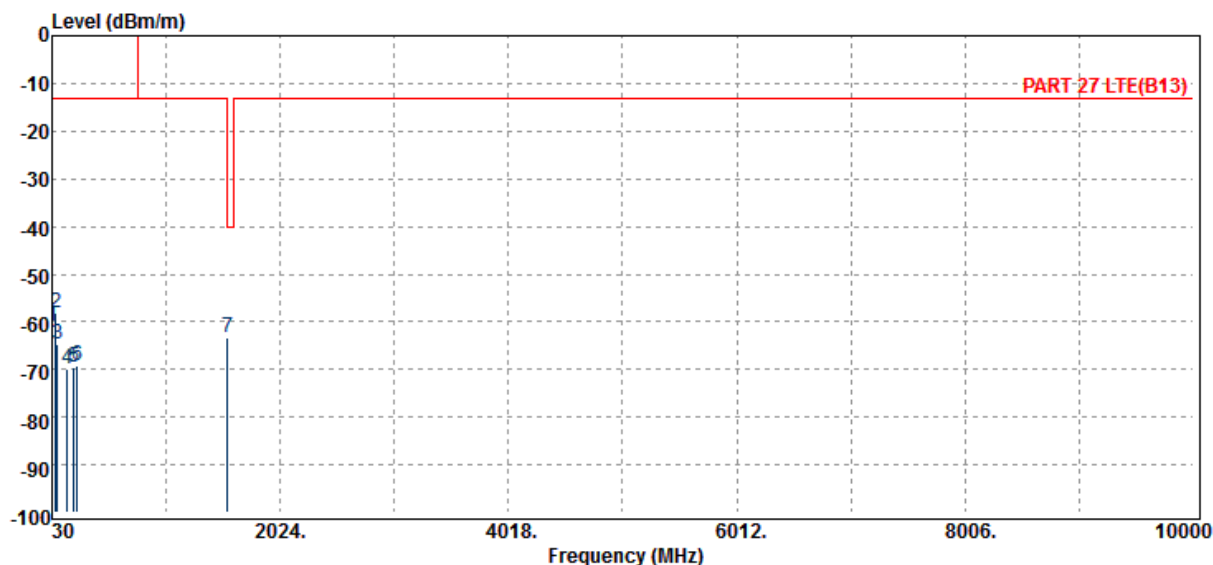
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Operation Band	:LTE B13	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:782.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna:VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-60.93	-45.19	-14.78	-0.96	-13.00	-47.93
65.89	S	-58.00	-49.87	-7.03	-1.10	-13.00	-45.00
80.44	S	-64.55	-60.64	-2.75	-1.16	-13.00	-51.55
160.95	S	-70.03	-66.98	-1.57	-1.48	-13.00	-57.03
219.15	S	-69.52	-71.16	3.34	-1.70	-13.00	-56.52
251.16	S	-69.17	-70.88	3.47	-1.76	-13.00	-56.17
1564.00	H	-63.41	-66.07	6.80	-4.13	-40.00	-23.41

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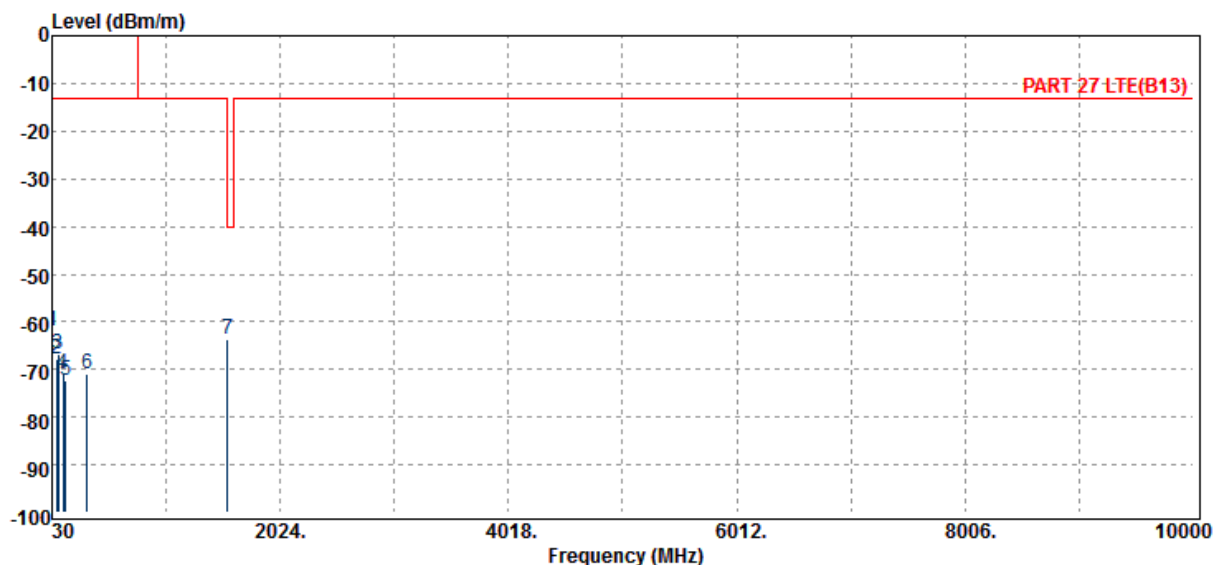
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Operation Band	:LTE B13	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:782.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
30.97	S	-61.99	-46.49	-14.54	-0.96	-13.00	-48.99
66.86	S	-67.74	-59.87	-6.76	-1.11	-13.00	-54.74
81.41	S	-66.80	-63.13	-2.50	-1.17	-13.00	-53.80
125.06	S	-70.83	-66.95	-2.54	-1.34	-13.00	-57.83
146.40	S	-72.36	-68.64	-2.31	-1.42	-13.00	-59.36
337.49	S	-70.81	-72.67	3.80	-1.95	-13.00	-57.81
1564.00	H	-63.65	-66.32	6.80	-4.13	-40.00	-23.65

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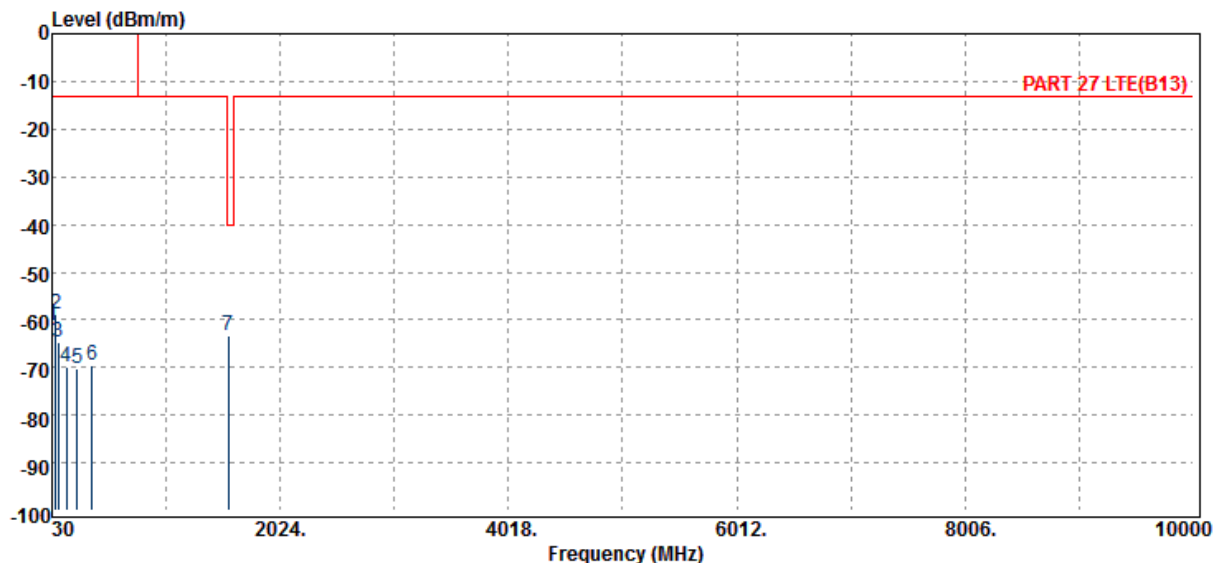
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Operation Band	:LTE B13	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:784.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna:VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-61.32	-45.59	-14.78	-0.96	-13.00	-48.32
64.92	S	-58.68	-50.28	-7.31	-1.10	-13.00	-45.68
81.41	S	-64.62	-60.95	-2.50	-1.17	-13.00	-51.62
154.16	S	-69.85	-66.50	-1.90	-1.45	-13.00	-56.85
248.25	S	-70.12	-71.78	3.41	-1.75	-13.00	-57.12
376.29	S	-69.55	-71.15	3.84	-2.24	-13.00	-56.55
1569.00	H	-63.29	-65.97	6.82	-4.14	-40.00	-23.29

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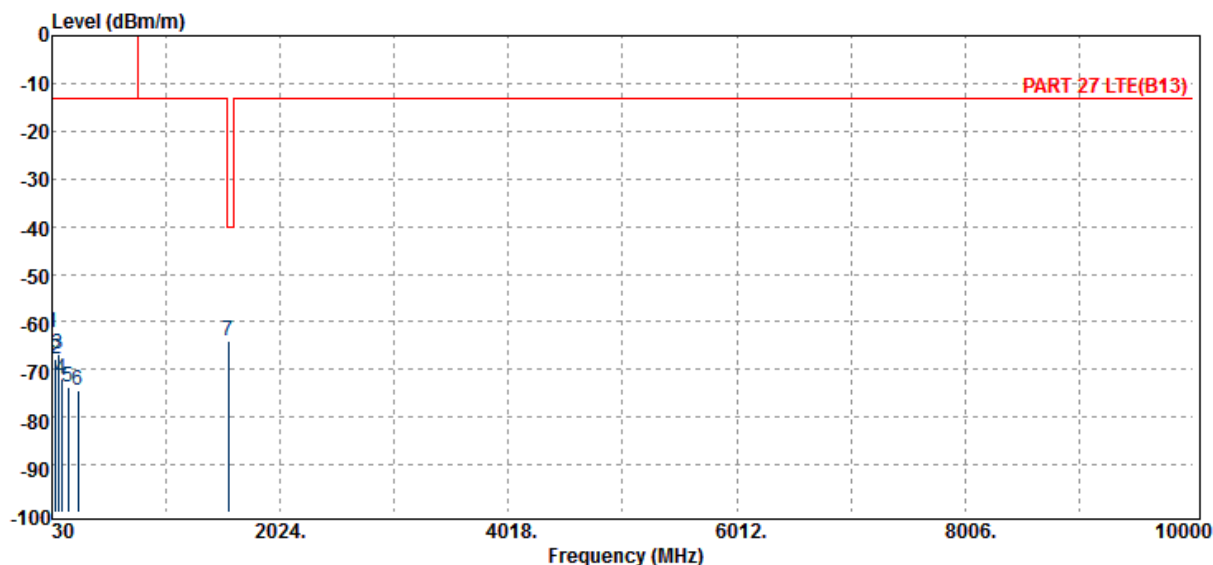
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Operation Band	:LTE B13	Temp./Humi.	:23 deg_C / 62 RH
Fundamental Frequency	:784.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
30.00	S	-62.23	-46.50	-14.78	-0.96	-13.00	-49.23
65.89	S	-67.97	-59.83	-7.03	-1.10	-13.00	-54.97
81.41	S	-66.82	-63.15	-2.50	-1.17	-13.00	-53.82
114.39	S	-72.06	-68.29	-2.47	-1.30	-13.00	-59.06
172.59	S	-73.67	-71.71	-0.44	-1.53	-13.00	-60.67
257.95	S	-74.34	-76.20	3.63	-1.77	-13.00	-61.34
1569.00	H	-64.14	-66.82	6.82	-4.14	-40.00	-24.14

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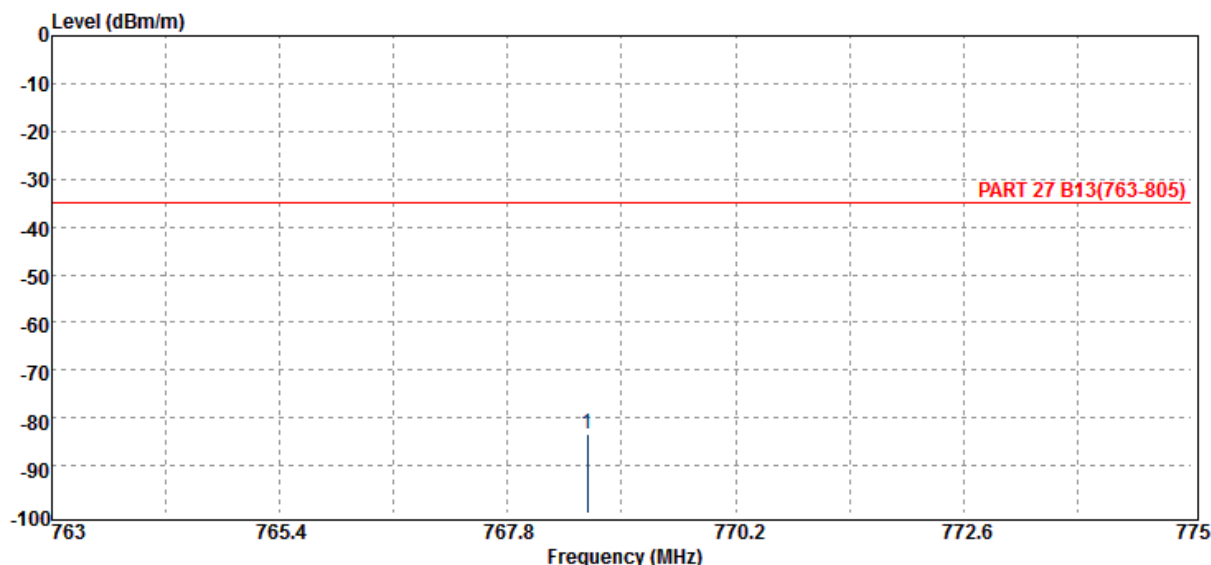
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LTE-Band 13 / BW 5MHz / QPSK / RB: 1, 0 (763MHz-775MHz)

Operation Band	:LTE B13	Temp./Humi.	:24 deg_C / 59 RH
Fundamental Frequency	:779.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
768.64	S	-83.31	-83.59	3.24	-2.96	-35.00	-48.31

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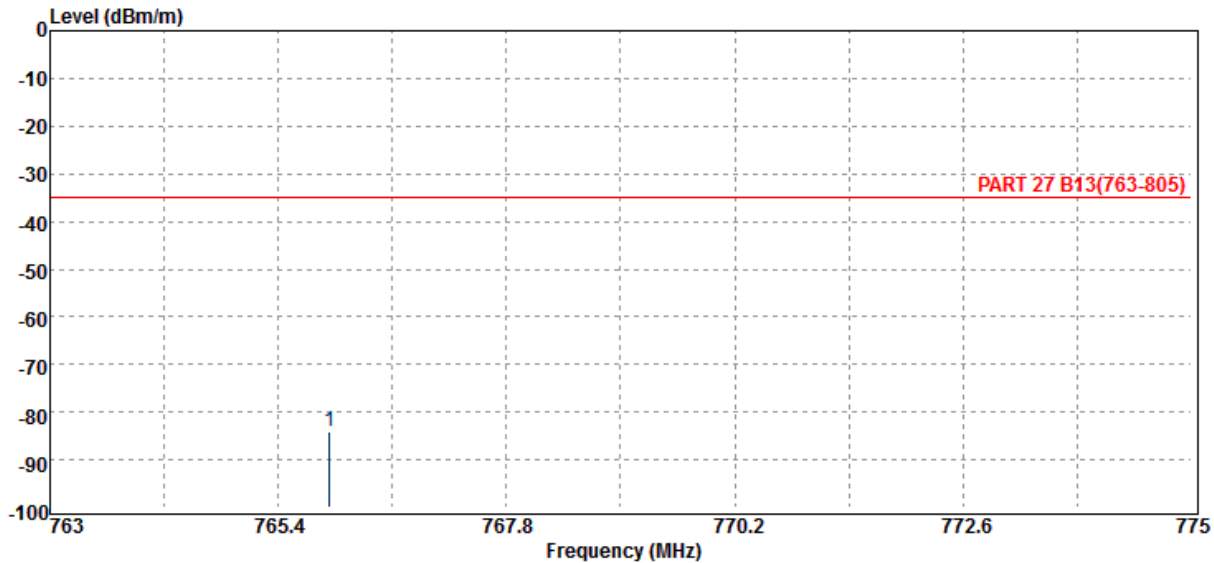
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Operation Band	:LTE B13	Temp./Humi.	:24 deg_C / 59 RH
Fundamental Frequency	:779.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
765.94	S	-84.14	-84.40	3.23	-2.98	-35.00	-49.14

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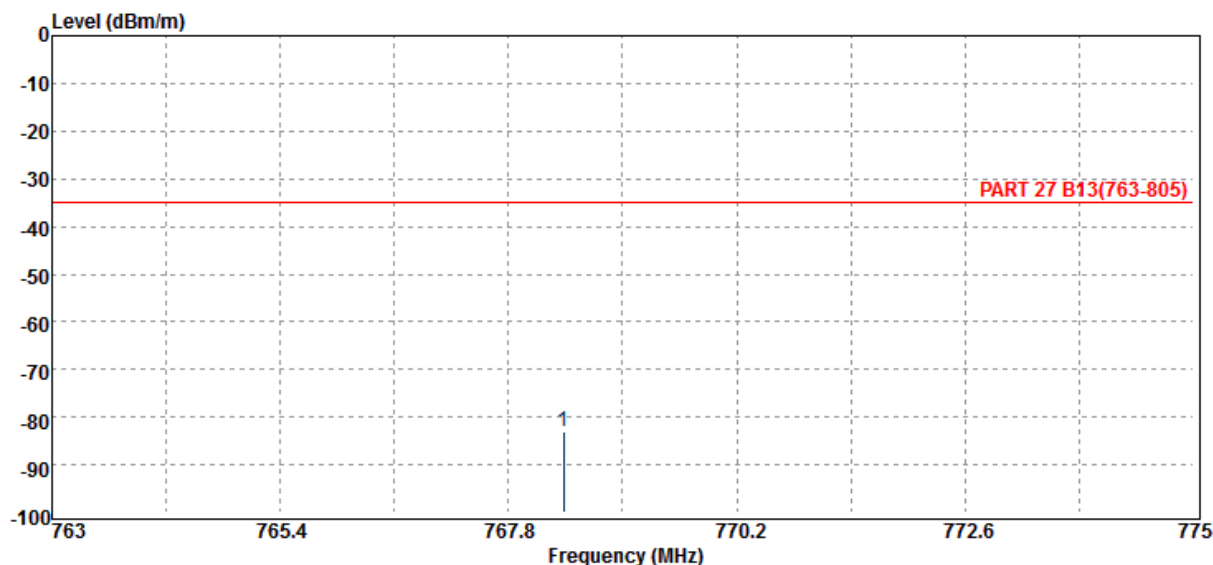
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Operation Band	:LTE B13	Temp./Humi.	:24 deg_C / 59 RH
Fundamental Frequency	:782.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID	Measurement Pol.	Antenna:VERTICAL
EUT Pol.	:E2 Plane		



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
768.38	S	-83.03	-83.31	3.24	-2.96	-35.00	-48.03

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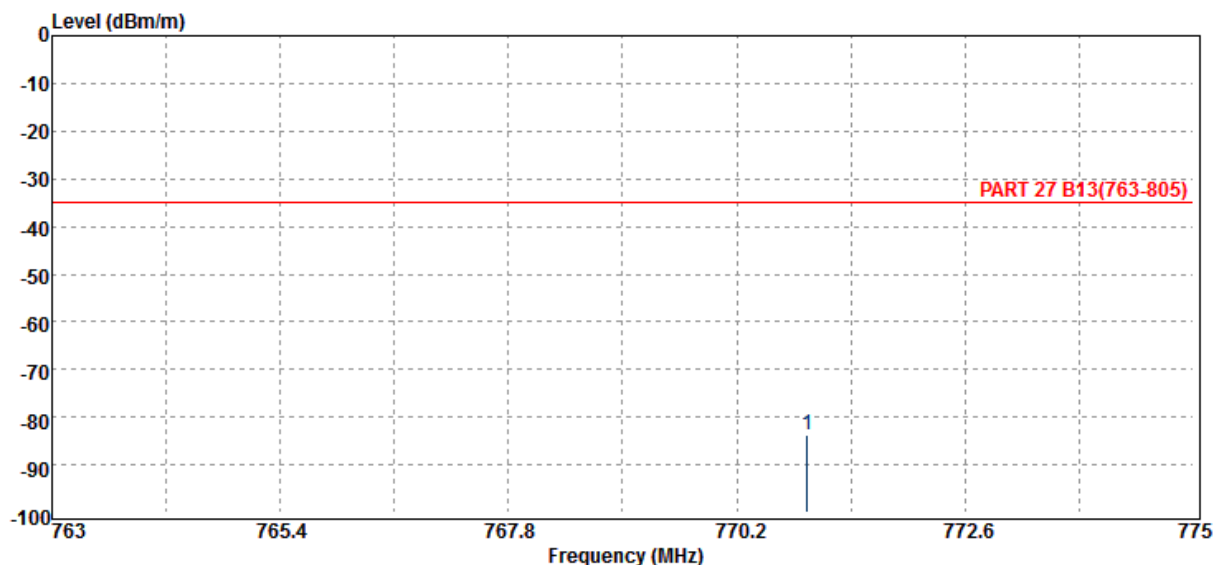
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Operation Band	:LTE B13	Temp./Humi.	:24 deg_C / 59 RH
Fundamental Frequency	:782.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID	Measurement Pol.	Antenna :HORIZONTAL
EUT Pol.	:E2 Plane		



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
770.94	S	-83.75	-84.06	3.25	-2.95	-35.00	-48.75

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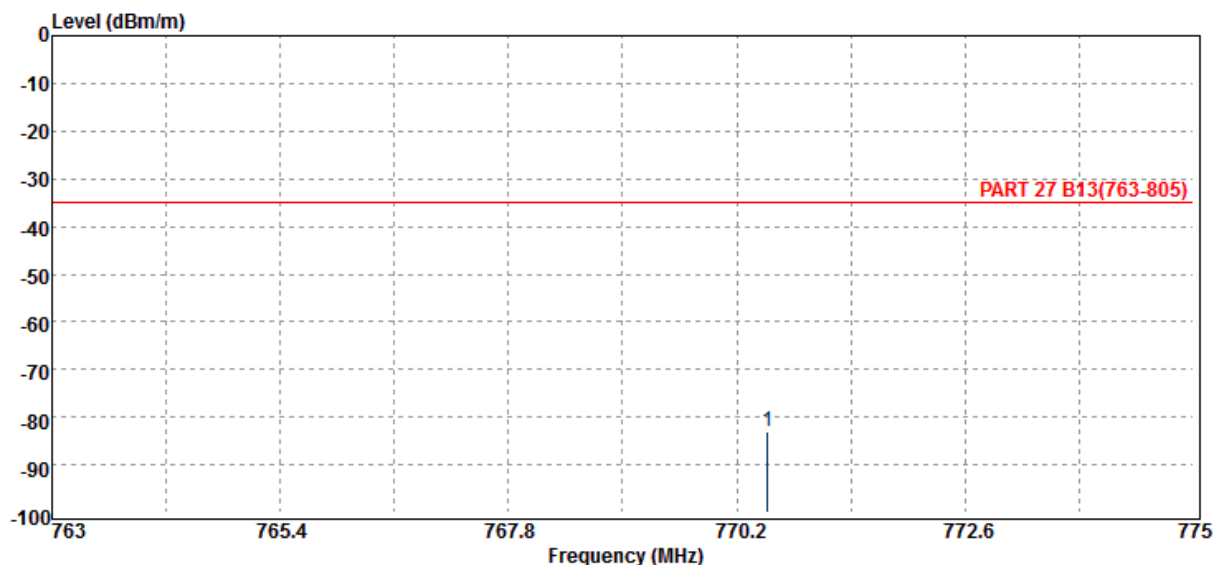
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Operation Band	:LTE B13	Temp./Humi.	:24 deg_C / 59 RH
Fundamental Frequency	:784.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna:VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
770.52	S	-83.05	-83.35	3.25	-2.95	-35.00	-48.05

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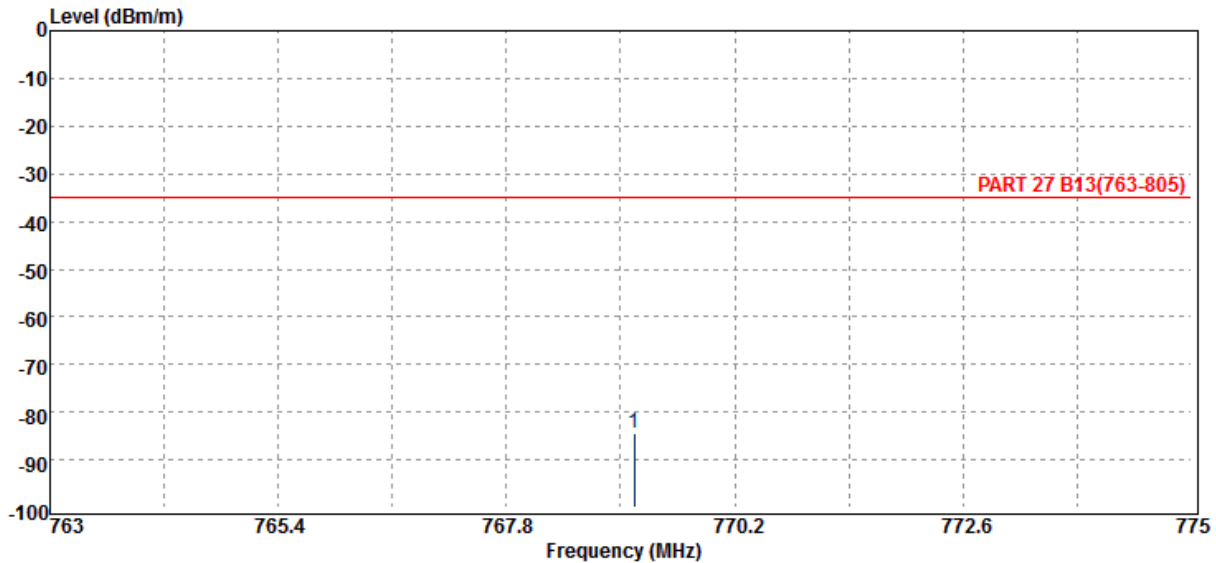
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Operation Band	:LTE B13	Temp./Humi.	:24 deg_C / 59 RH
Fundamental Frequency	:784.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
769.14	S	-84.47	-84.76	3.24	-2.96	-35.00	-49.47

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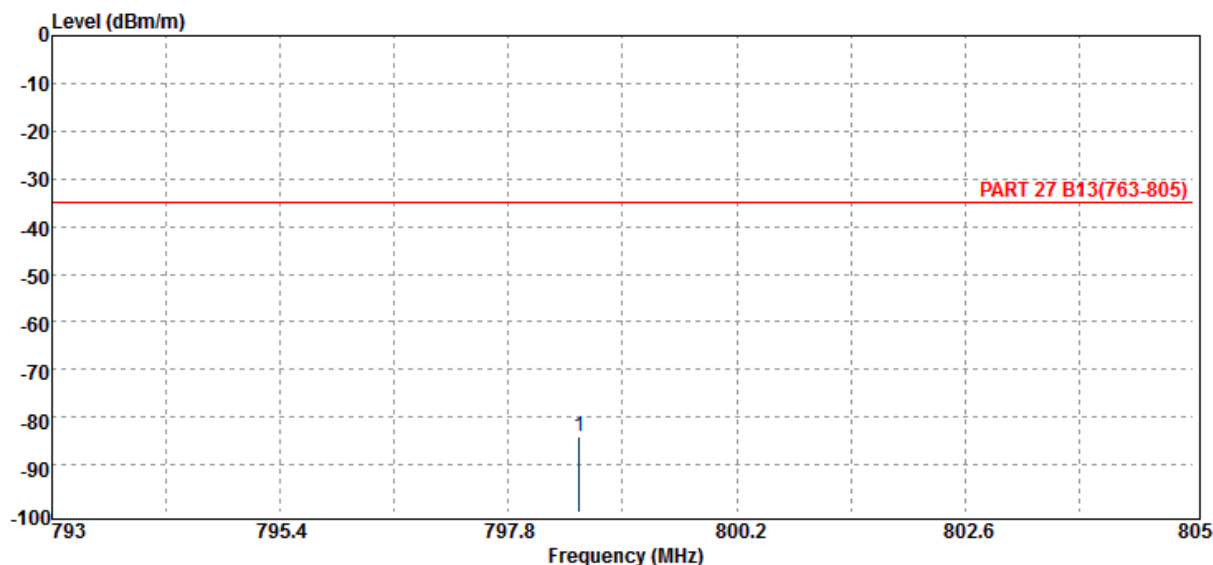
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Operation Band	:LTE B13	Temp./Humi.	:24 deg_C / 59 RH
Fundamental Frequency	:779.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
798.54	S	-83.96	-84.40	3.34	-2.90	-35.00	-48.96

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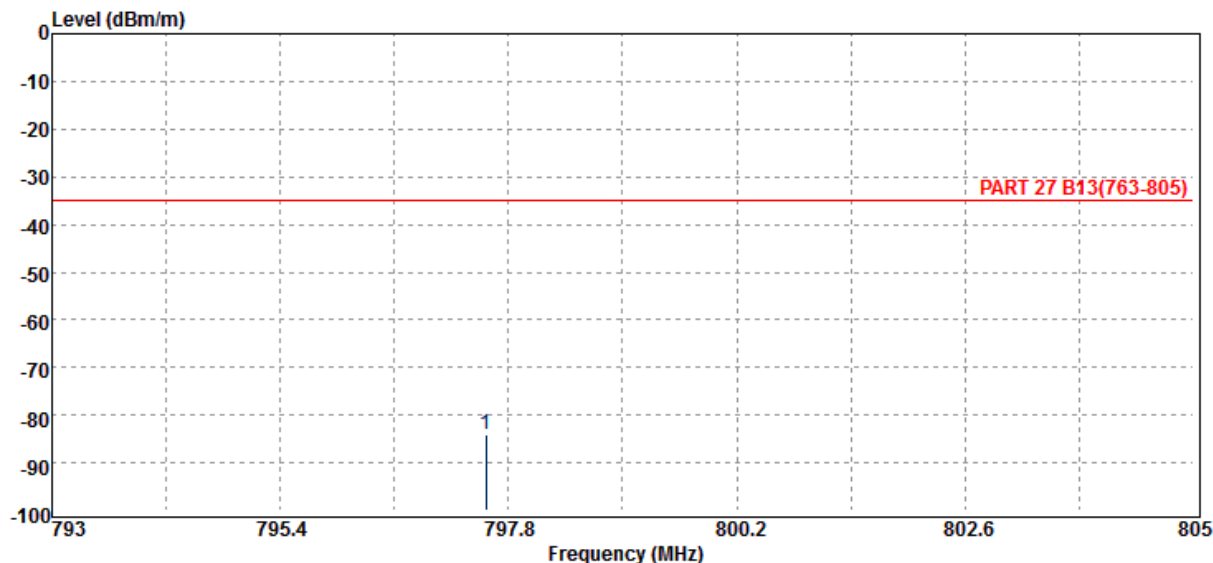
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Operation Band	:LTE B13	Temp./Humi.	:24 deg_C / 59 RH
Fundamental Frequency	:779.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH LOW		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
797.56	S	-84.04	-84.47	3.33	-2.90	-35.00	-49.04

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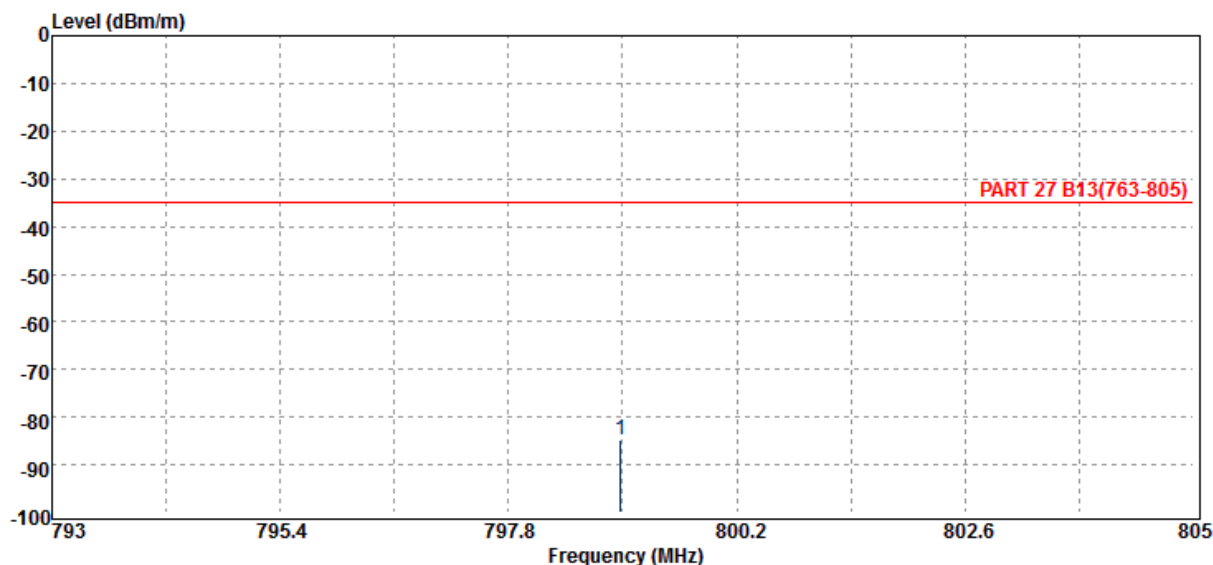
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Operation Band	:LTE B13	Temp./Humi.	:24 deg_C / 59 RH
Fundamental Frequency	:782.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
798.98	S	-84.68	-85.12	3.34	-2.90	-35.00	-49.68

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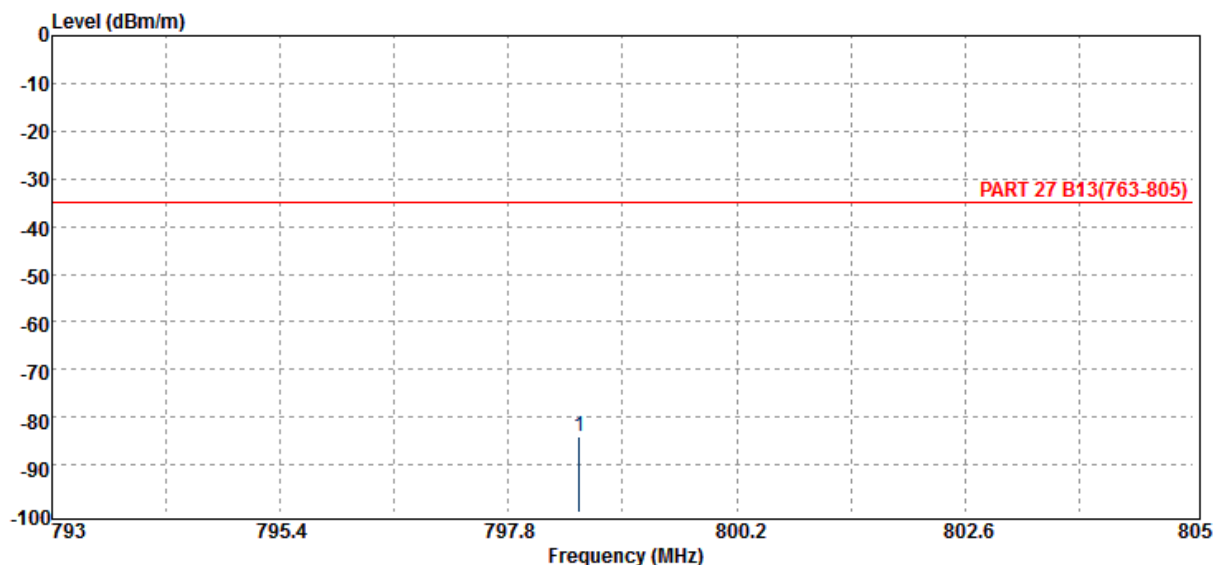
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Operation Band	:LTE B13	Temp./Humi.	:24 deg_C / 59 RH
Fundamental Frequency	:782.0 MHz	Engineer	:Tin
Operation Mode	:Tx CH MID		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
798.54	S	-84.22	-84.66	3.34	-2.90	-35.00	-49.22

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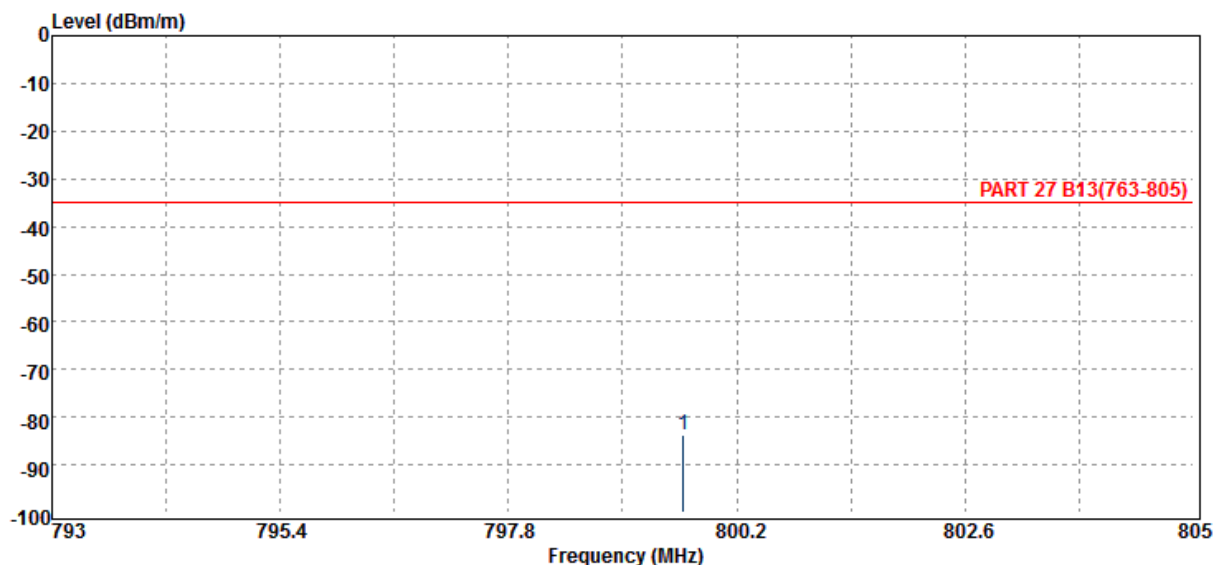
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Operation Band	:LTE B13	Temp./Humi.	:24 deg_C / 59 RH
Fundamental Frequency	:784.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna:VERTICAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
799.64	S	-83.78	-84.23	3.34	-2.90	-35.00	-48.78

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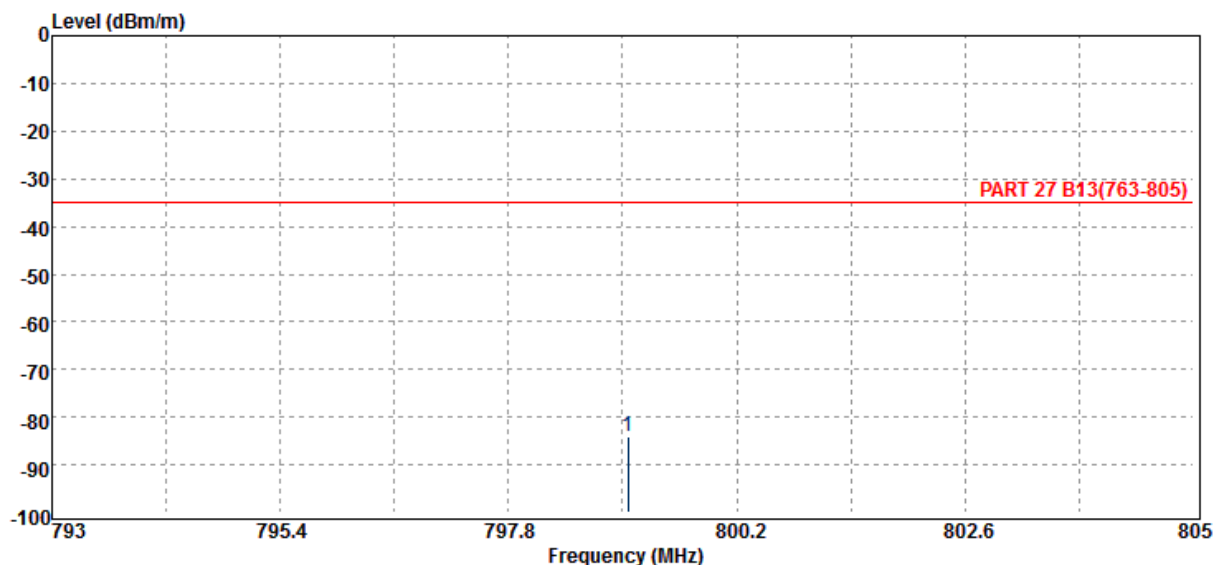
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Operation Band	:LTE B13	Temp./Humi.	:24 deg_C / 59 RH
Fundamental Frequency	:784.5 MHz	Engineer	:Tin
Operation Mode	:Tx CH HIGH		
EUT Pol.	:E2 Plane	Measurement Pol.	Antenna :HORIZONTAL



Freq. MHz	Note F/H/E/S	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBi	Cable Loss dB	Limit dBm	Margin dB
799.06	S	-84.20	-84.64	3.34	-2.90	-35.00	-49.20

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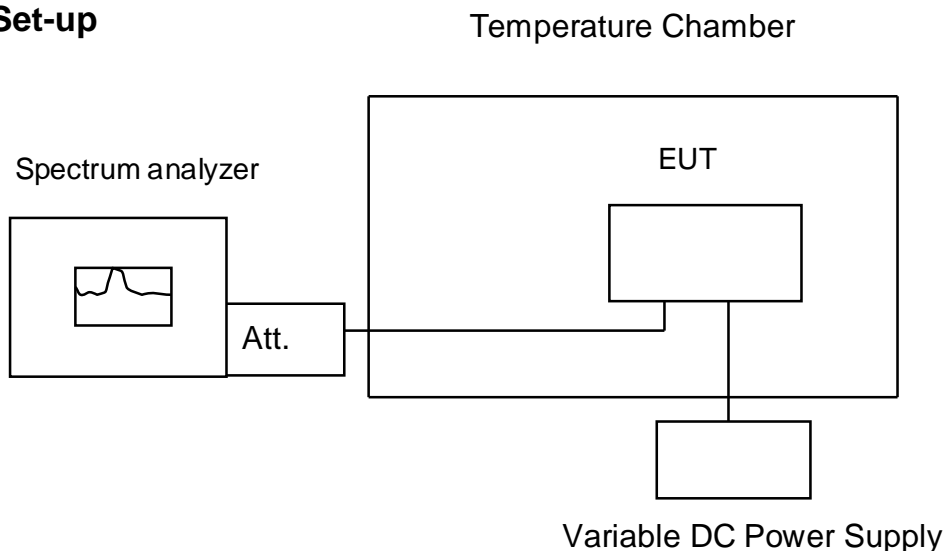
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11. FREQUENCY STABILITY MEASUREMENT

11.1. Standard Applicabl

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

11.2. Test Set-up



Note: Measurement setup for testing on Antenna connector

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11.3. Measurement Procedure

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

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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11.4. Measurement Equipment Used

Conducted Emission (measured at antenna port) Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	KEYSIGHT	N9010A	MY51440113	06/20/2017	06/19/2018
Communication Tester	Anritsu	MT8820C	6201107337	05/25/2017	05/24/2018
Coaxial Cable 30cm	WOKEN	00100A1F1A 195C	RF01	12/12/2016	12/11/2017
Temperature Chamber	TERCHY	MHK-120LK	1020582	06/13/2017	06/12/2018
DC Block	PASTERNAK	PE8210	RF29	12/12/2016	12/11/2017
Splitter	RF-LAMBDA	RFLT2W1G1 8G	RF35	12/12/2016	12/11/2017
Attenuator	WOKEN	218FS-10	RF23	12/12/2016	12/11/2017
DC Power Supply	Agilent	E3640A	MY53140006	05/02/2017	05/01/2018

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11.5. Measurement Result

FREQUENCY ERROR vs. VOLTAGE

Reference Frequency:		LTE B2 Mid Channel	1880.0	MHz	10M QPSK CH 18900
Limit: +/- 2.5 ppm					
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)	
Vdc	Temperature (°C)	(MHz)			
3.60	25	1880.000022	-10.00	4700	
3.3	25	1880.000032	0.00	4700	
3.00	25	1879.999968	-64.00	4700	
2.9 (End Point)	25	1879.999976	-56.00	4700	

FREQUENCY ERROR vs. TEMPERATURE

Reference Frequency:		LTE B2 Mid Channel	1880.0	MHz	10M QPSK CH 18900
Limit: +/- 2.5 ppm					
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)	
Vdc	Temperature (°C)	(MHz)			
3.6	-30	1879.999967	1.00	4700	
3.6	-20	1879.999963	-3.00	4700	
3.6	-10	1880.000023	57.00	4700	
3.6	0	1879.999968	2.00	4700	
3.6	10	1880.000028	62.00	4700	
3.6	20	1879.999966	0.00	4700	
3.6	30	1879.999963	-3.00	4700	
3.6	40	1879.999968	2.00	4700	
3.6	50	1879.999972	6.00	4700	

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FREQUENCY ERROR vs. VOLTAGE

Reference Frequency:		LTE B4 Mid Channel	1732.5	MHz	10M QPSK CH 20175
Limit: +/- 2.5 ppm					
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)	
Vdc	Temperature (°C)	(MHz)			
3.60	25	1732.499979	-10.00	4331	
3.3	25	1732.499989	0.00	4331	
3.00	25	1732.499972	-17.00	4331	
2.9 (End Point)	25	1732.500003	14.00	4331	

FREQUENCY ERROR vs. TEMPERATURE

Reference Frequency:		LTE B4 Mid Channel	1732.5	MHz	10M QPSK CH 20175
Limit: +/- 2.5 ppm					
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)	
Vdc	Temperature (°C)	(MHz)			
3.6	-30	1732.499963	-14.00	4331	
3.6	-20	1732.499958	-19.00	4331	
3.6	-10	1732.500033	56.00	4331	
3.6	0	1732.499966	-11.00	4331	
3.6	10	1732.499966	-11.00	4331	
3.6	20	1732.499977	0.00	4331	
3.6	30	1732.500034	57.00	4331	
3.6	40	1732.499979	2.00	4331	
3.6	50	1732.499967	-10.00	4331	

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FREQUENCY ERROR vs. VOLTAGE

Reference Frequency:		LTE B13 Mid Channel	782.0	MHz	10M QPSK CH 23230
Limit: +/- 2.5 ppm					
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)	
Vdc	Temperature (°C)	(MHz)			
3.60	25	781.999946	-32.00	1955	
3.3	25	781.999978	0.00	1955	
3.00	25	781.999996	18.00	1955	
2.9 (End Point)	25	782.000044	66.00	1955	

FREQUENCY ERROR vs. TEMPERATURE

Reference Frequency:		LTE B13 Mid Channel	782.0	MHz	10M QPSK CH 23230
Limit: +/- 2.5 ppm					
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)	
Vdc	Temperature (°C)	(MHz)			
3.6	-30	781.999972	-25.00	1955	
3.6	-20	781.999967	-30.00	1955	
3.6	-10	781.999966	-31.00	1955	
3.6	0	781.999972	-25.00	1955	
3.6	10	781.999965	-32.00	1955	
3.6	20	781.999997	0.00	1955	
3.6	30	782.000025	28.00	1955	
3.6	40	782.000021	24.00	1955	
3.6	50	782.000054	57.00	1955	

Note: The battery is rated 3.6V dc.

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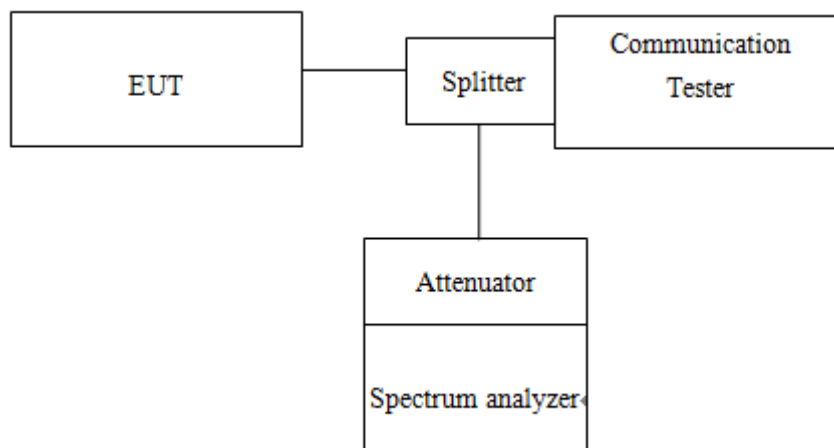
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12. PEAK TO AVERAGE RATIO

12.1. Standard Applicable

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

12.2. Test SET-UP



12.3. Measurement Procedure

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

12.4. Measurement Equipment Used

Conducted Emission (measured at antenna port) Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	KEYSIGHT	N9010A	MY51440113	06/20/2017	06/19/2018
Communication Tester	Anritsu	MT8820C	6201107337	05/25/2017	05/24/2018
Coaxial Cable 30cm	WOKEN	00100A1F1A 195C	RF01	12/12/2016	12/11/2017
Temperature Chamber	TERCHY	MHK-120LK	1020582	06/13/2017	06/12/2018
DC Block	PASTERNAK	PE8210	RF29	12/12/2016	12/11/2017
Splitter	RF-LAMBDA	RFLT2W1G1 8G	RF35	12/12/2016	12/11/2017
Attenuator	WOKEN	218FS-10	RF23	12/12/2016	12/11/2017
DC Power Supply	Agilent	E3640A	MY53140006	05/02/2017	05/01/2018
Communication Tester	Anritsu	MT8820C	6201107337	05/25/2017	05/24/2018

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12.5. Measurement Result

Tabular Results:

LTE BAND 2							
Channel bandwidth: 5MHz				Channel bandwidth: 10MHz			
Freq. (MHz)	CH	Peak-to-Average Ratio		Freq. (MHz)	CH	Peak-to-Average Ratio	
		16QAM	Limit			16QAM	Limit
1852.5	18625	6.01	13	1855.0	18650	6.06	13
1880.0	18900	5.97	13	1880.0	18900	6.09	13
1907.5	19175	5.73	13	1905.0	19150	5.29	13

LTE BAND 2							
Channel bandwidth: 15MHz				Channel bandwidth: 20MHz			
Freq. (MHz)	CH	Peak-to-Average Ratio		Freq. (MHz)	CH	Peak-to-Average Ratio	
		16QAM	Limit			16QAM	Limit
1857.5	18675	6.11	13	1860.0	18700	6.59	13
1880.0	18900	6.23	13	1880.0	18900	6.72	13
1902.5	19125	6.20	13	1900.0	19100	6.71	13

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LTE BAND 4							
Channel bandwidth: 5MHz				Channel bandwidth: 10MHz			
Freq. (MHz)	CH	Peak-to-Average Ratio		Freq. (MHz)	CH	Peak-to-Average Ratio	
		16QAM	Limit			16QAM	Limit
1712.5	19957	4.05	13	1715.0	20000	4.96	13
1732.5	20175	3.89	13	1732.5	20175	4.45	13
1752.5	20375	3.61	13	1750.0	20350	5.13	13

LTE BAND 4							
Channel bandwidth: 15MHz				Channel bandwidth: 20MHz			
Freq. (MHz)	CH	Peak-to-Average Ratio		Freq. (MHz)	CH	Peak-to-Average Ratio	
		5.92	13			16QAM	Limit
1717.5	20025	5.48	13	1720.0	20050	6.39	13
1732.5	20175	5.87	13	1732.5	20175	6.43	13
1747.5	20325	6.66	13	1745.0	20300	6.55	13

LTE BAND 13							
Channel bandwidth: 5MHz				Channel bandwidth: 10MHz			
Freq. (MHz)	CH	Peak-to-Average Ratio (dB)		Freq. (MHz)	CH	Peak-to-Average Ratio (dB)	
		16QAM	Limit			16QAM	Limit
779.5	23205	6.09	13	782.0	23230	6.05	13
782.0	23230	6.14	13				
784.5	23255	6.15	13				

Measurement Results:

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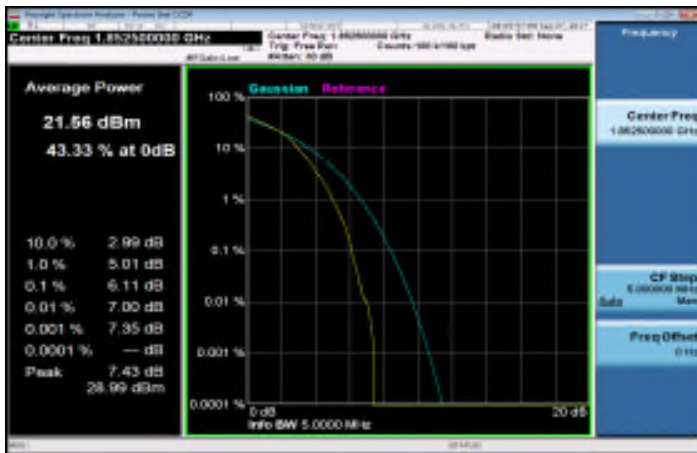
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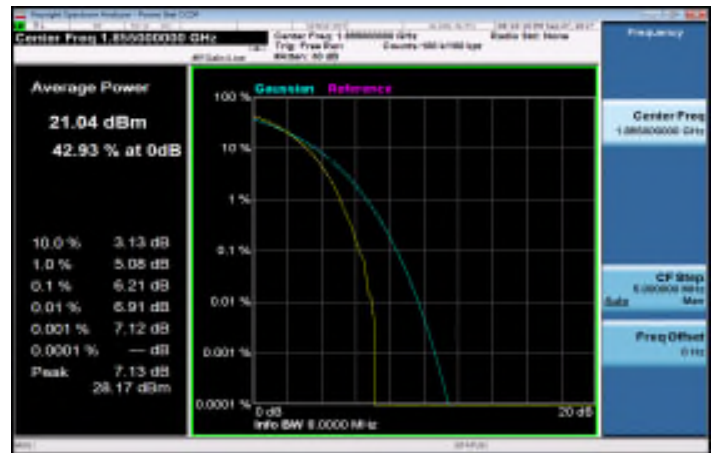
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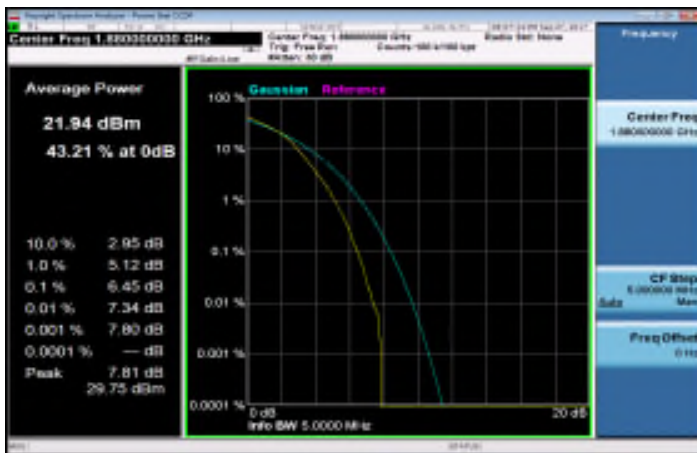
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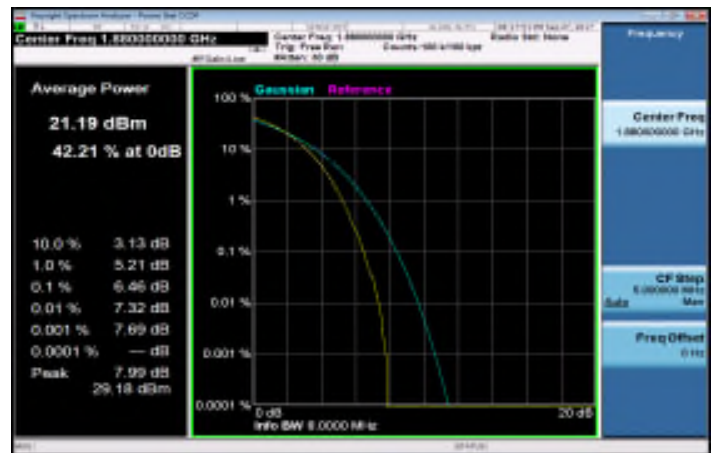
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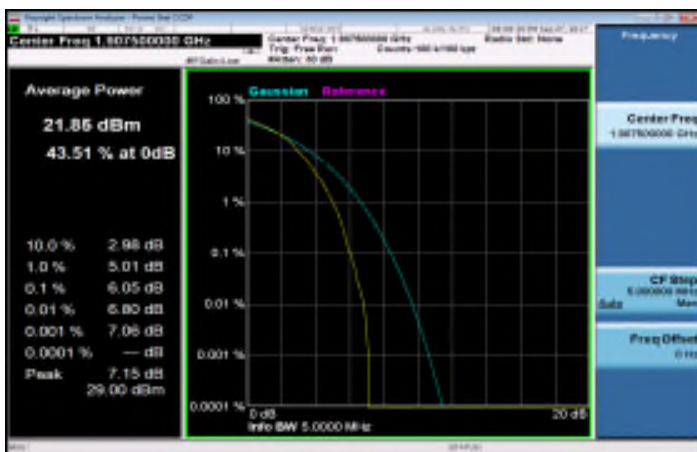
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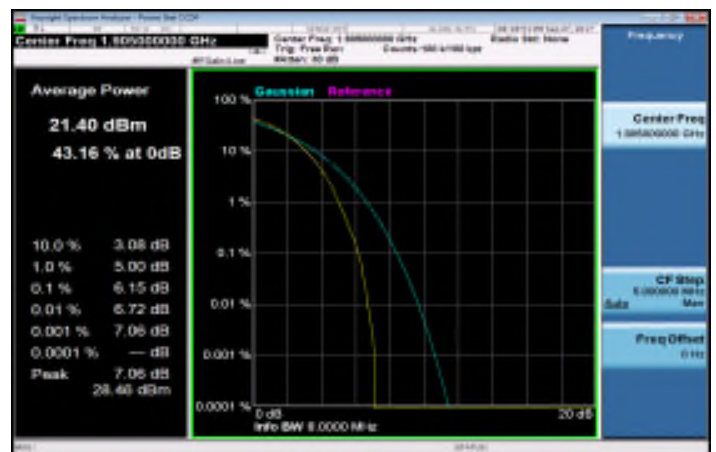
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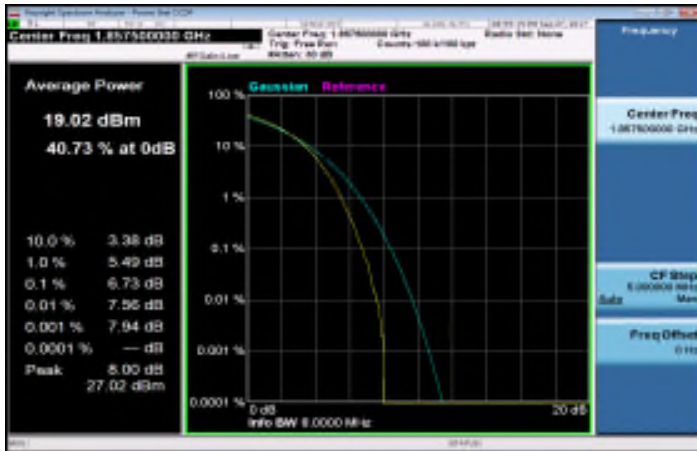
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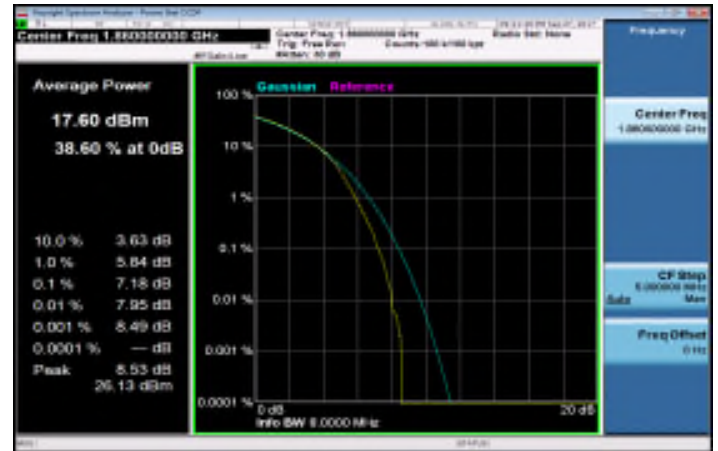
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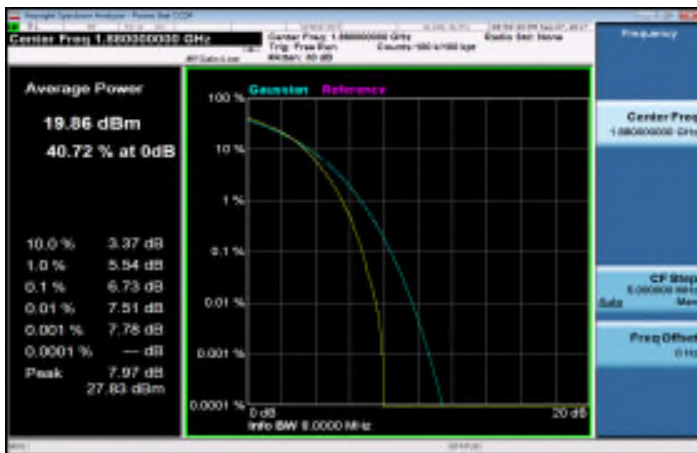
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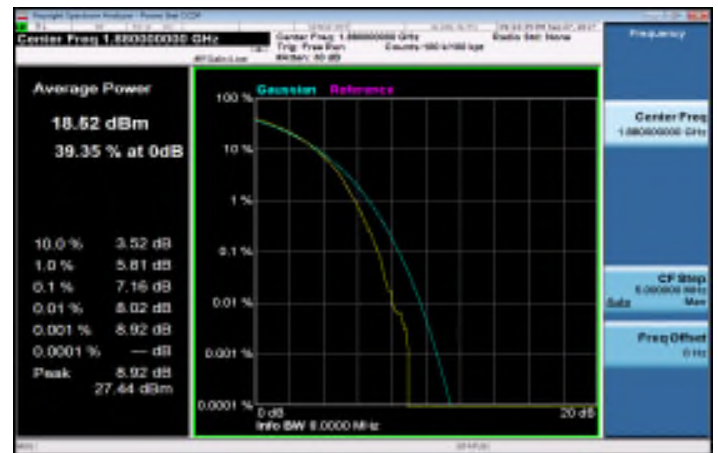
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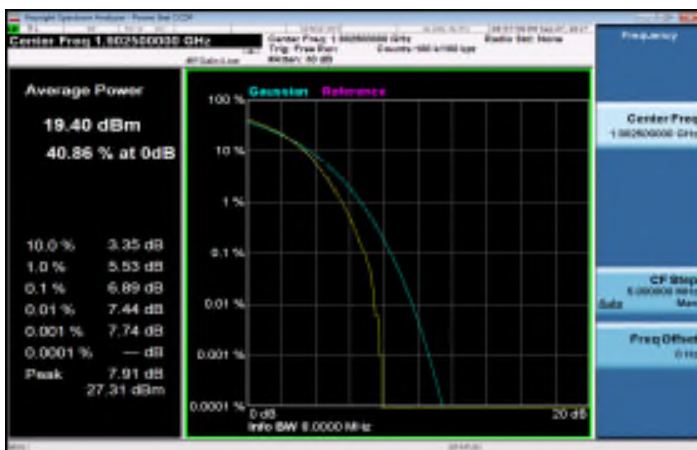
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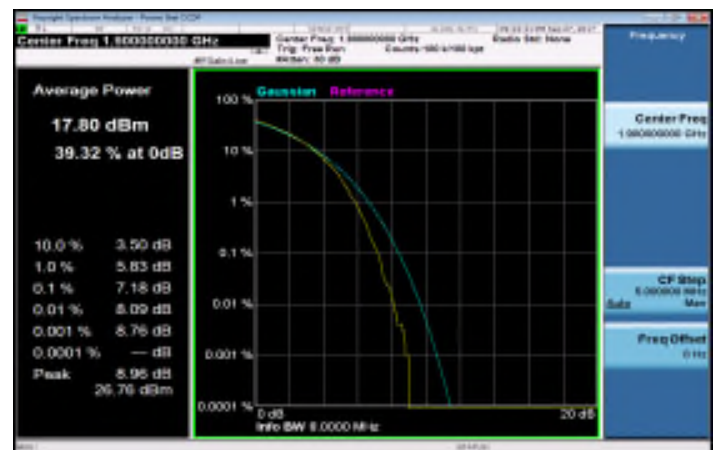
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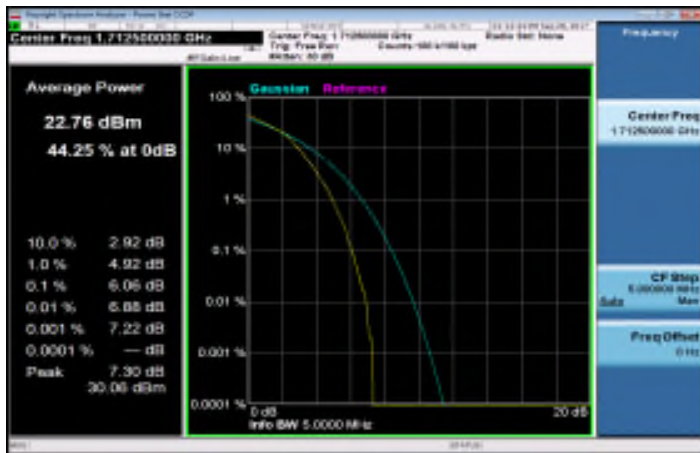
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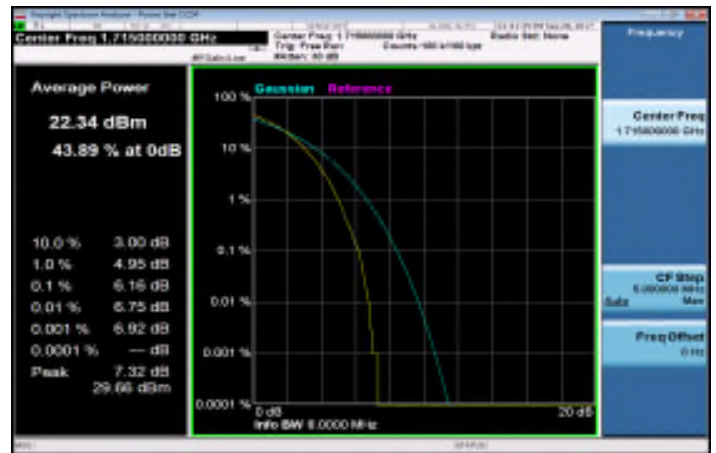
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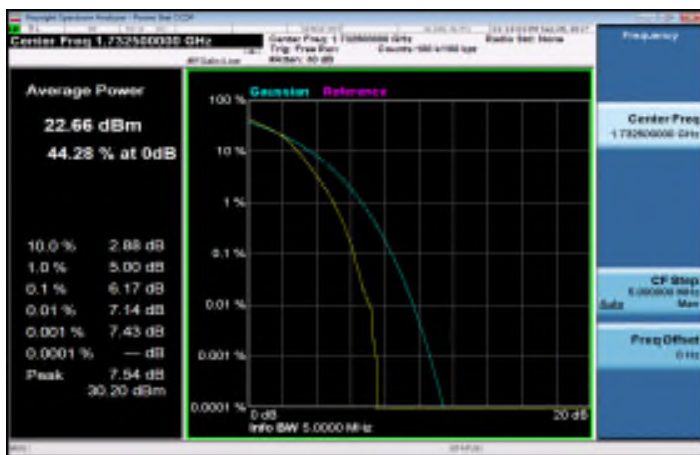
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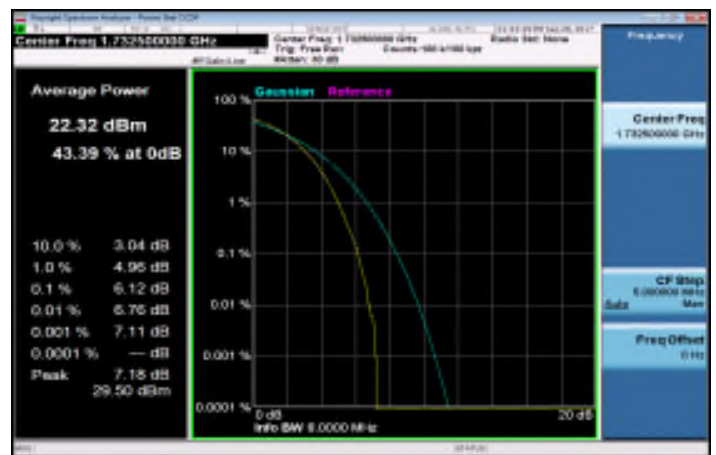
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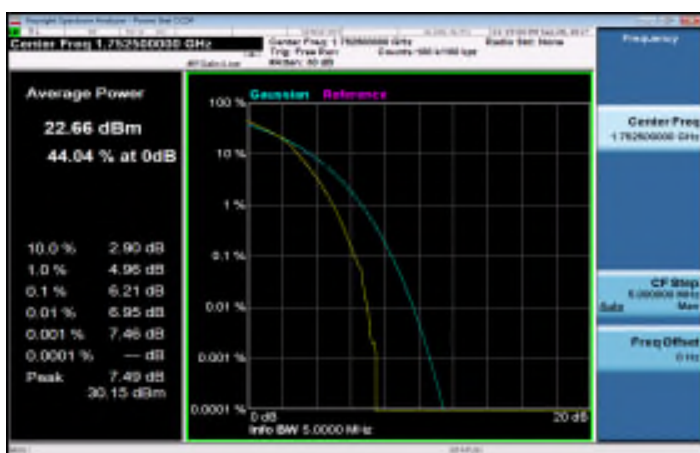
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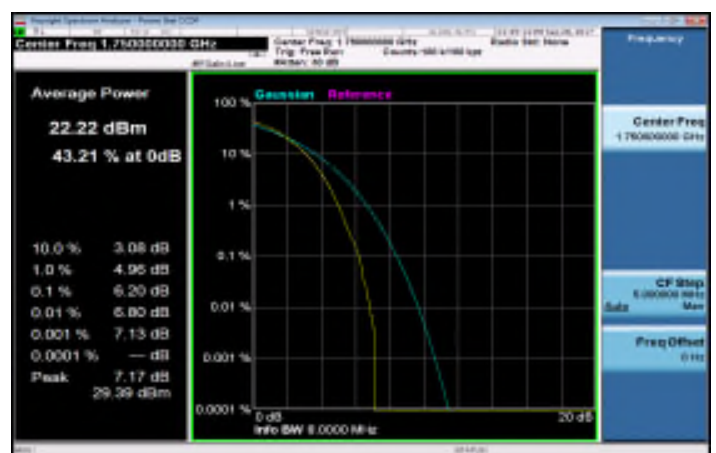
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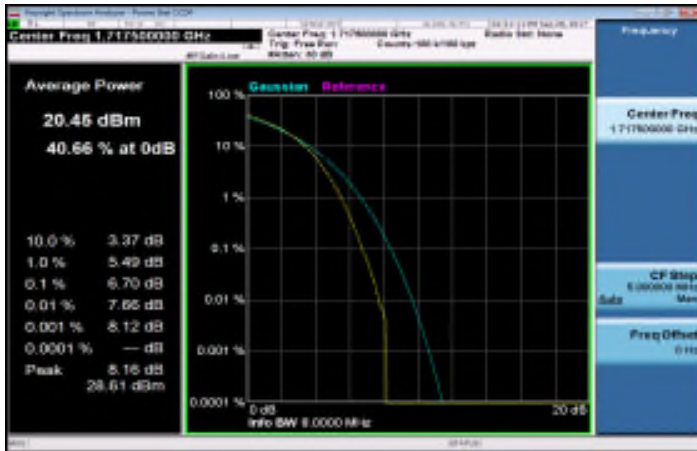
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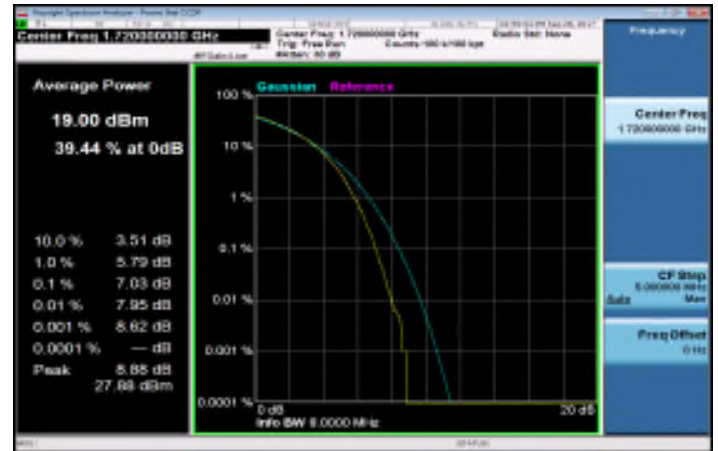
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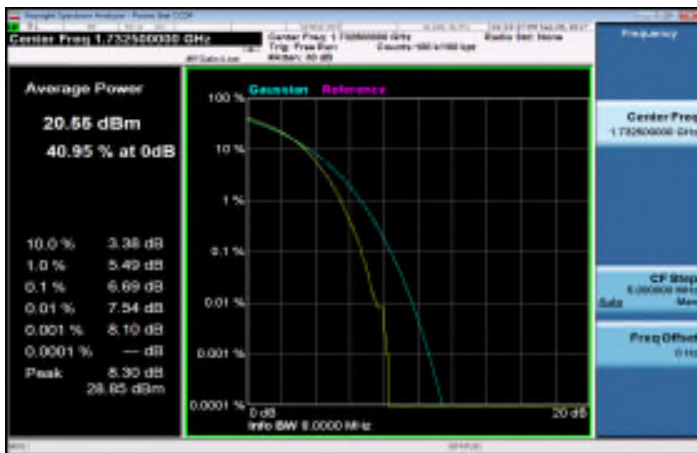
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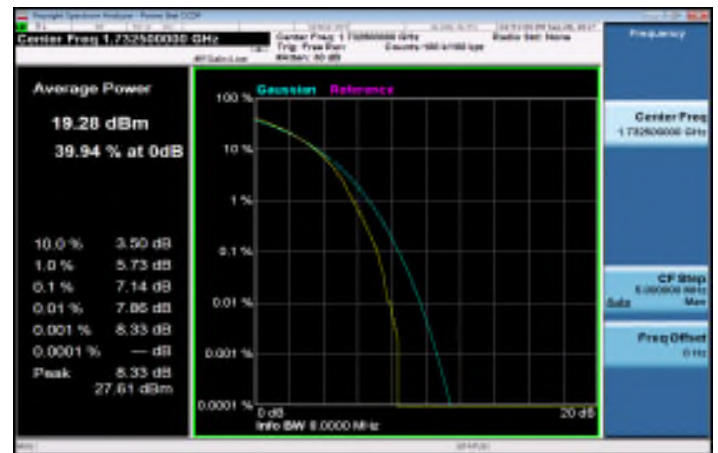
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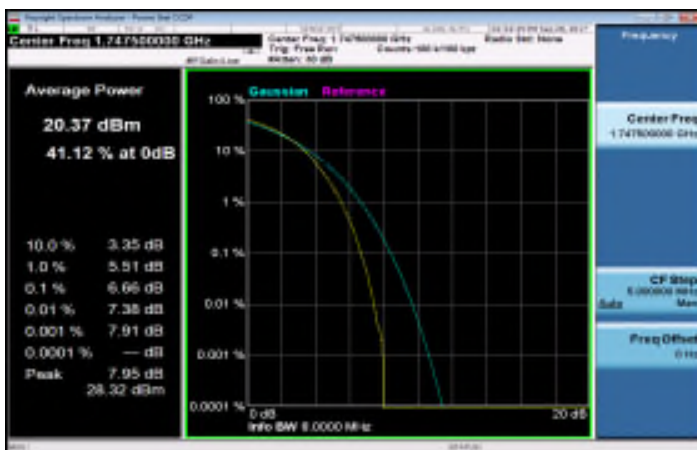
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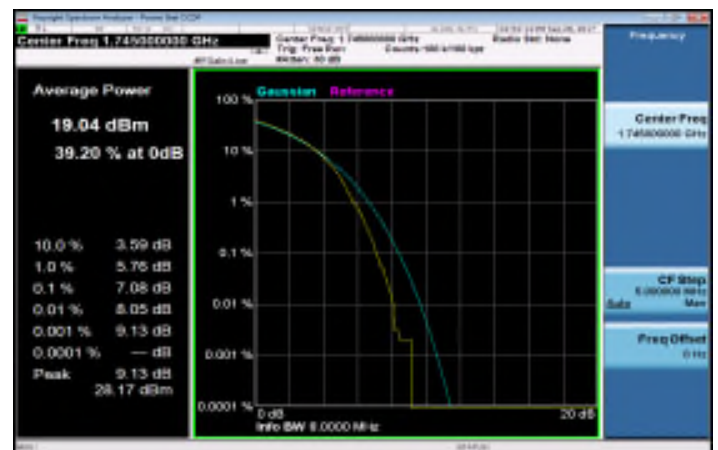
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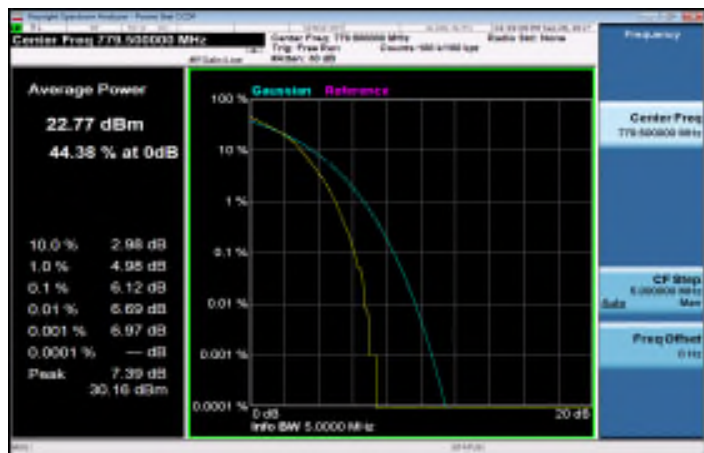
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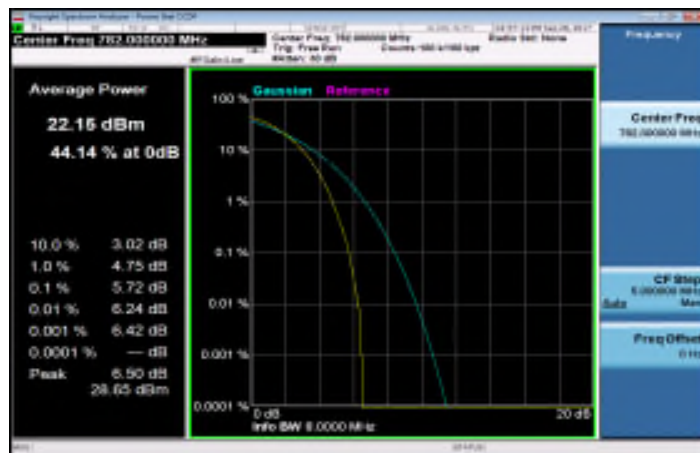
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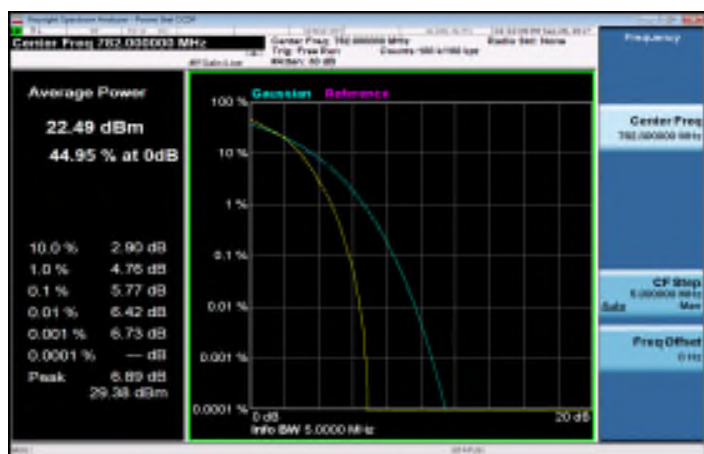
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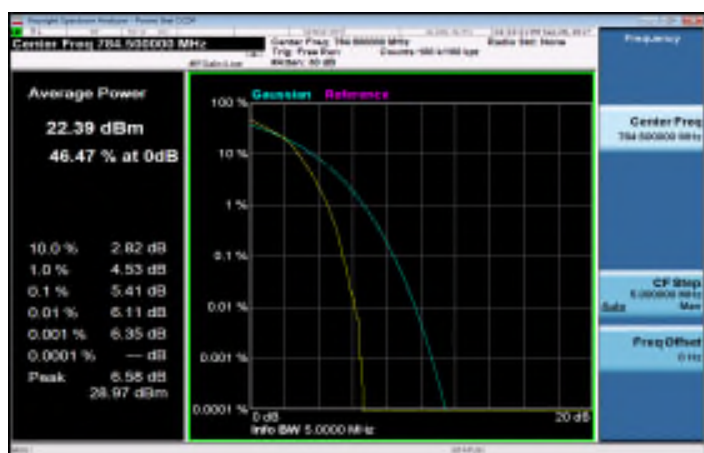
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