

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT
INTENTIONAL RADIATOR CERTIFICATION TO
FCC PART 22 SUBPART H, PART 24 SUBPART E and
PART 27 SUBPART B, C, F, G & H REQUIREMENT

OF

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

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

Product Name: Smart Phone

Report Number: ER/2019/A0070

FCC ID: APYHRO00279

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

Issue Date: Nov. 21, 2019

Date of Test: Oct. 16, 2019 ~ Nov. 15, 2019

Date of EUT Received: Oct. 16, 2019

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 ANSI C63.26-2015 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits.

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

Approved By:

Jay Lin

Jay Lin / Asst. Supervisor



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Revision History

Revision	Description	Issue Date	Remark
Rev.00	Original.	Nov. 21, 2019	Revised By: Karen Huang

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1. GENERAL PRODUCT INFORMATION

1.1. Product Description

Product Name:	Smart Phone
Hardware Version:	DVT
Software Version:	N/A
Power Supply:	3.85V from Rechargeable Li-ion Battery
Antenna Designation:	Inverted-F Antenna, Gain: -6.6dBi (GSM/GPRS 850, WCDMA B5, LTE B5), -2.6dBi (GSM/GPRS 1900, WCDMA B2, LTE B2), -3.0dBi (WCDMA B4, LTE B4), -8.9dBi (LTE B12, LTE B17), -6.6dBi (LTE B13)
IMEI:	004401116941077 / 004401116941085 / 004401116941093 004401116940848 / 004401116940830 / 004401116940806

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1.2. GSM / WCDMA / LTE: Cellular Phone Standards Frequency Range

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

Operating Frequency (MHz)		
WCDMA / HSPA+ Band II	1852.4	- 1907.6
WCDMA / HSPA+ Band IV	1712.4	- 1752.6
WCDMA / HSPA+ Band V	826.4	- 846.6

LTE Band	BW (MHz)	Operation Frequency (MHz)
2	1.4	1850.7 - 1909.3
	3	1851.5 - 1908.5
	5	1852.5 - 1907.5
	10	1855.0 - 1905.0
	15	1857.5 - 1902.5
	20	1860.0 - 1900.0
4	1.4	1710.7 - 1754.3
	3	1711.5 - 1753.5
	5	1712.5 - 1752.5
	10	1715.0 - 1780.0
	15	1717.5 - 1747.5
	20	1720.0 - 1745.0
5	1.4	824.7 - 848.3
	3	825.5 - 847.5
	5	826.5 - 846.5
	10	829.0 - 844.0
12	1.4	699.7 - 715.3
	3	700.5 - 714.5
	5	701.5 - 713.5
	10	704.0 - 711.0
13	5	779.5 - 784.5
	10	782
17	5	706.5 - 713.5
	10	709.0 - 711.0

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

	ERP / EIRP (dBm)		(W)	Type of Emission
GSM 850	23.68	ERP	0.233	243KGXW
GPRS 850	23.66	ERP	0.232	244KGXW
GSM 1900	26.55	EIRP	0.452	246KGXW
GPRS 1900	26.52	EIRP	0.449	248KGXW

	ERP / EIRP (dBm)		(W)	Type of Emission
WCDMA Band II	19.91	EIRP	0.098	4M16F9W
HSDPA Band II	18.89	EIRP	0.077	4M15F9W
HSUPA Band II	18.96	EIRP	0.079	4M15F9W
WCDMA Band IV	19.31	EIRP	0.085	4M16F9W
HSDPA Band IV	18.23	EIRP	0.067	4M16F9W
HSUPA Band IV	18.25	EIRP	0.067	4M15F9W
WCDMA Band V	15.21	ERP	0.033	4M14F9W
HSDPA Band V	14.27	ERP	0.027	4M15F9W
HSUPA Band V	14.12	ERP	0.026	4M16F9W

LTE Band	BW (MHz)	Modulation	ERP / EIRP (dBm)		(W)	Type of Emission
2	1.4	QPSK	20.12	EIRP	0.103	1M10G7D
	1.4	16QAM	18.81	EIRP	0.076	1M10D7W
	1.4	64QAM	17.97	EIRP	0.063	1M10D7W
	3	QPSK	20.04	EIRP	0.101	2M70G7D
	3	16QAM	19.37	EIRP	0.086	2M70D7W
	3	64QAM	18.60	EIRP	0.072	2M70D7W
	5	QPSK	20.10	EIRP	0.102	4M51G7D
	5	16QAM	19.47	EIRP	0.089	4M51D7W
	5	64QAM	18.60	EIRP	0.072	4M52D7W
	10	QPSK	20.05	EIRP	0.101	9M02G7D
	10	16QAM	19.42	EIRP	0.087	8M97D7W
	10	64QAM	18.55	EIRP	0.072	8M99D7W
	15	QPSK	20.09	EIRP	0.102	13M5G7D
	15	16QAM	19.43	EIRP	0.088	13M5D7W
	15	64QAM	18.65	EIRP	0.073	13M5D7W
	20	QPSK	20.19	EIRP	0.104	18M0G7D
	20	16QAM	19.48	EIRP	0.089	18M0D7W
	20	64QAM	18.68	EIRP	0.074	18M0D7W

LTE Band	BW (MHz)	Modulation	ERP / EIRP (dBm)		(W)	Type of Emission
4	1.4	QPSK	18.73	EIRP	0.075	1M10G7D
	1.4	16QAM	18.19	EIRP	0.066	1M10D7W
	1.4	64QAM	17.38	EIRP	0.055	1M10D7W
	3	QPSK	18.76	EIRP	0.075	2M70G7D
	3	16QAM	18.28	EIRP	0.067	2M70D7W
	3	64QAM	17.65	EIRP	0.058	2M70D7W
	5	QPSK	18.73	EIRP	0.075	4M51G7D
	5	16QAM	18.17	EIRP	0.066	4M51D7W
	5	64QAM	17.71	EIRP	0.059	4M51D7W
	10	QPSK	18.72	EIRP	0.074	9M02G7D
	10	16QAM	18.18	EIRP	0.066	8M97D7W
	10	64QAM	17.69	EIRP	0.059	8M99D7W
	15	QPSK	18.79	EIRP	0.076	13M5G7D
	15	16QAM	18.19	EIRP	0.066	13M5D7W
	15	64QAM	17.62	EIRP	0.058	13M5D7W
	20	QPSK	18.79	EIRP	0.076	17M9G7D
	20	16QAM	18.30	EIRP	0.068	18M0D7W
	20	64QAM	17.76	EIRP	0.060	17M9D7W

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LTE Band	BW (MHz)	Modulation	ERP / EIRP (dBm)		(W)	Type of Emission
5	1.4	QPSK	14.12	ERP	0.026	1M09G7D
	1.4	16QAM	13.43	ERP	0.022	1M10D7W
	1.4	64QAM	12.19	ERP	0.017	1M10D7W
	3	QPSK	14.21	ERP	0.026	2M70G7D
	3	16QAM	13.55	ERP	0.023	2M70D7W
	3	64QAM	12.85	ERP	0.019	2M71D7W
	5	QPSK	14.16	ERP	0.026	4M51G7D
	5	16QAM	13.52	ERP	0.022	4M51D7W
	5	64QAM	12.80	ERP	0.019	4M51D7W
	10	QPSK	14.24	ERP	0.027	9M01G7D
	10	16QAM	13.59	ERP	0.023	8M97D7W
	10	64QAM	12.86	ERP	0.019	9M01D7W
12	1.4	QPSK	11.65	ERP	0.015	1M10G7D
	1.4	16QAM	10.61	ERP	0.012	1M11D7W
	1.4	64QAM	10.09	ERP	0.010	1M10D7W
	3	QPSK	11.92	ERP	0.016	2M68G7D
	3	16QAM	11.24	ERP	0.013	2M70D7W
	3	64QAM	10.82	ERP	0.012	2M68D7W
	5	QPSK	12.03	ERP	0.016	4M50G7D
	5	16QAM	11.25	ERP	0.013	4M50D7W
	5	64QAM	10.85	ERP	0.012	4M50D7W
	10	QPSK	12.04	ERP	0.016	9M01G7D
	10	16QAM	11.30	ERP	0.013	8M98D7W
	10	64QAM	10.94	ERP	0.012	9M00D7W

LTE Band	BW (MHz)	Modulation	ERP / EIRP (dBm)		(W)	Type of Emission
13	5	QPSK	14.39	ERP	0.027	4M49G7D
	5	16QAM	13.11	ERP	0.020	4M51D7W
	5	64QAM	12.63	ERP	0.018	4M51D7W
	10	QPSK	14.51	ERP	0.028	8M98G7D
	10	16QAM	13.56	ERP	0.023	8M94D7W
	10	64QAM	12.85	ERP	0.019	8M98D7W
17	5	QPSK	11.93	ERP	0.016	4M50G7D
	5	16QAM	11.25	ERP	0.013	4M51D7W
	5	64QAM	10.36	ERP	0.011	4M52D7W
	10	QPSK	12.06	ERP	0.016	9M00G7D
	10	16QAM	11.40	ERP	0.014	8M98D7W
	10	64QAM	10.42	ERP	0.011	8M98D7W

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1.4. Test Methodology of Applied Standards

FCC 47 CFR Part 2, 22, 24, 27.

ANSI C63.26-2015

KDB971168 D01 Power Meas license Digital System v03r01

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

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.

1.5. Test Facility

SGS Taiwan Ltd. Electronics & Communication Laboratory No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803 (TAF code 0513)

FCC Designation number: TW0001

1.6. Special Accessories

No special accessories were used during testing.

1.7. Equipment Modifications

There were no modifications incorporated into the EUT.

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

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

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

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2. SYSTEM TEST CONFIGURATION

2.1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the 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 ANSI C63.26-2015, 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 ANSI C63.26-2015, The EUT is a placed on as turn table, for emission measurements below 1 GHz is 0.8 m above ground plane, for emission measurements above 1 GHz, the table height shall be 1.5 m. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both Horizontal and Vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna according to the requirements in Section 8 and 13.

2.4. Measurement Results Explanation Example

For all conducted test items:

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

Note:

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

Following shows an offset computation in physical test.

	RF cable loss (dB)	Attenuation factor(dB)	offset(dB)
Low Band (Below 1GHz)	0.2	14.8	15
High Band (Above 1 GHz)	0.5	14.5	15

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2.5. Final Amplifier Voltage and Current Information:

Test Mode	DC voltage (V)	DC current (mA)
GPRS 850	3.85	967
GPRS 1900		976
HSDPA B2		861
HSDPA B4		953
HSUPA B5		943
LTE Band 2		1461
LTE Band 4		1441
LTE Band 5		1444
LTE Band 12		1404
LTE Band 13		1428
LTE Band 17		1444

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2.6. Configuration of Tested System

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

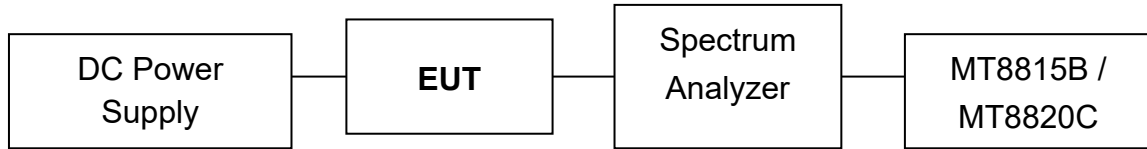


Fig. 2-2 Configuration of Tested System (Fixed Channel-Radiated)

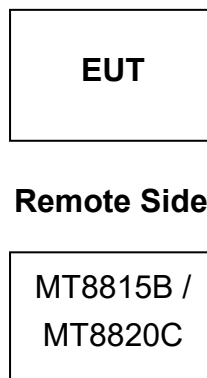


Table 2-1 Equipment Used in

Item	Equipment	Mfr/Brand	Model/ Type No.	Series No.	Data Cable	Power Cord
1.	Radio Communication Analyzer	Anritsu	MT8820C	6200995019	N/A	N/A
2.	Radio Communication Analyzer	Anritsu	MT8815B	6200711454	N/A	N/A
3.	DC Power Supply	Agilent	E3640A	MY52410006	N/A	N/A

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3. SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§2.1046(a)	RF Power Output	Compliant
§2.1046(a) §22.913(a)(5) §24.232(c) §27.50(a)(3) §27.50(c)(10)	ERP/ EIRP measurement	Compliant
§2.1049(h)	99% & 26dB Occuupied Bandwidth	Compliant
§2.1051 §22.917(a) §24.238(a) §27.53(g) §27.50(c)(5) §27.53(h)	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)	Field Strength of Spurious Radiation	Compliant
§24.232(d) §27.50((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	RADIATED EMISSION
GSM/GPRS 850	H-plan
GSM/GPRS 1900	H-plan
WCDMA/HSPA Band II	H-plan
WCDMA/HSPA Band IV	H-plan
WCDMA/HSPA Band V	H-plan
LTE Band 2	H-plan
LTE Band 4	H-plan
LTE Band 5	H-plan
LTE Band 12	H-plan
LTE Band 13	H-plan
LTE Band 17	H-plan

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GSM/GPRS MODE

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

WCDMA/HSPA MODE

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
ERP	4132 to 4233	4132, 4183, 4233	WCDMA/HSPA Band V
EIRP	9262 to 9538 1312 to 1513	1312, 1413, 1513 9262, 9400, 9538	WCDMA/HSPA Band II WCDMA/HSPA Band IV
FREQUENCY STABILITY	4132 to 4233 1312 to 1513 9262 to 9538	4183 1413 9400	WCDMA Band II WCDMA Band IV WCDMA Band V
OCCUPIED BANDWIDTH	4132 to 4233 1312 to 1513 9262 to 9538	4132, 4183, 4233 1312, 1413, 1513 9262, 9400, 9538	WCDMA/HSPA Band II WCDMA/HSPA Band IV WCDMA/HSPA Band V
PEAK TO AVERAGE RATIO	4132 to 4233 1312 to 1513	4132, 4183, 4233 1312, 1413, 1513	WCDMA/HSPA Band II WCDMA/HSPA Band IV
BAND EDGE	4132 to 4233 1312 to 1513 9262 to 9538	4132, 4233 1312, 1513 9262, 9538	WCDMA Band II WCDMA Band IV WCDMA Band V
CONDCUDED EMISSION	4132 to 4233 1312 to 1513 9262 to 9538	4132, 4183, 4233 1312, 1413, 1513 9262, 9400, 9538	WCDMA Band II WCDMA Band IV WCDMA Band V
RADIATED EMISSION	4132 to 4233 1312 to 1513 9262 to 9538	4132, 4183, 4233 1312, 1413, 1513 9262, 9400, 9538	WCDMA Band II WCDMA Band IV WCDMA Band V

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LTE Band 2 MODE

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
EIRP	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK, 16QAM, 64QAM	1 RB/ 0,5 RB Offest
	18615 to 19185	18615, 18900, 19185	3MHz	QPSK, 16QAM, 64QAM	1 RB/ 0,14 RB Offest
	18625 to 19175	18625, 18900, 19175	5MHz	QPSK, 16QAM, 64QAM	1 RB/ 0,24 RB Offest
	18650 to 19150	18650, 18900, 19150	10MHz	QPSK, 16QAM, 64QAM	1 RB/ 0,49 RB Offest
	18675 to 19125	18675, 18900, 19125	15MHz	QPSK, 16QAM, 64QAM	1 RB/ 0,74 RB Offest
	18700 to 19100	18700, 18900, 19100	20MHz	QPSK, 16QAM, 64QAM	1 RB/ 0,99 RB Offest
FREQUENCY STABILITY	18650 to 19150	18900	10MHz	QPSK	Full RB
OCCUPIED BANDWIDTH	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK, 16QAM, 64QAM	Full RB
	18615 to 19185	18615, 18900, 19185	3MHz	QPSK, 16QAM, 64QAM	Full RB
	18625 to 19175	18625, 18900, 19175	5MHz	QPSK, 16QAM, 64QAM	Full RB
	18650 to 19150	18650, 18900, 19150	10MHz	QPSK, 16QAM, 64QAM	Full RB
	18675 to 19125	18675, 18900, 19125	15MHz	QPSK, 16QAM, 64QAM	Full RB
	18700 to 19100	18700, 18900, 19100	20MHz	QPSK, 16QAM, 64QAM	Full RB
PEAK TO AVER-AGE RATIO	18607 to 19193	18607, 18900, 19193	1.4MHz	64QAM	Full RB
	18615 to 19185	18615, 18900, 19185	3MHz	64QAM	Full RB
	18625 to 19175	18625, 18900, 19175	5MHz	64QAM	Full RB
	18650 to 19150	18650, 18900, 19150	10MHz	64QAM	Full RB
	18675 to 19125	18675, 18900, 19125	15MHz	64QAM	Full RB
	18700 to 19100	18700, 18900, 19100	20MHz	64QAM	Full RB
BAND EDGE	18607 to 19193	18607, 19193	1.4MHz	QPSK	1 RB/ 0,5 RB Offes Full RB
	18615 to 19185	18615, 19185	3MHz	QPSK	1 RB/ 0,14 RB Offest Full RB
	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	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK	1 RB, 0 RB Offest
	18615 to 19185	18615, 18900, 19185	3MHz	QPSK	1 RB, 0 RB Offest
	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 EMISSION	18700 to 19100	18700, 18900, 19100	20MHz	QPSK	1 RB, 0 RB Offest

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LTE Band 4 MODE

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
EIRP	19957 to 19393	19957, 20175, 19393	1.4MHz	QPSK, 16QAM, 64QAM	1 RB/ 0,5 RB Offest
	19965 to 22385	19965, 20175, 22385	3MHz	QPSK, 16QAM, 64QAM	1 RB/ 0,14 RB Offest
	19975 to 20375	19975, 20175, 20375	5MHz	QPSK, 16QAM, 64QAM	1 RB/ 0,24 RB Offest
	20000 to 20350	20000, 20175, 20350	10MHz	QPSK, 16QAM, 64QAM	1 RB/ 0,49 RB Offest
	20025 to 20325	20025, 20175, 20325	15MHz	QPSK, 16QAM, 64QAM	1 RB/ 0,74 RB Offest
	20050 to 20300	20050, 20175, 20300	20MHz	QPSK, 16QAM, 64QAM	1 RB/ 0,99 RB Offest
FREQUENCY STABILITY	20000 to 20350	20175	10MHz	QPSK	Full RB
OCCUPIED BANDWIDTH	19957 to 19393	19957, 20175, 19393	1.4MHz	QPSK, 16QAM, 64QAM	Full RB
	19965 to 22385	19965, 20175, 22385	3MHz	QPSK, 16QAM, 64QAM	Full RB
	19975 to 20375	19975, 20175, 20375	5MHz	QPSK, 16QAM, 64QAM	Full RB
	20000 to 20350	20000, 20175, 20350	10MHz	QPSK, 16QAM, 64QAM	Full RB
	20025 to 20325	20025, 20175, 20325	15MHz	QPSK, 16QAM, 64QAM	Full RB
	20050 to 20300	20050, 20175, 20300	20MHz	QPSK, 16QAM, 64QAM	Full RB
PEAK TO AVER-AGE RATIO	19957 to 19393	19957, 20175, 19393	1.4MHz	64QAM	Full RB
	19965 to 22385	19965, 20175, 22385	3MHz	64QAM	Full RB
	19975 to 20375	19975, 20175, 20375	5MHz	64QAM	Full RB
	20000 to 20350	20000, 20175, 20350	10MHz	64QAM	Full RB
	20025 to 20325	20025, 20175, 20325	15MHz	64QAM	Full RB
	20050 to 20300	20050, 20175, 20300	20MHz	64QAM	Full RB
BAND EDGE	19957 to 19393	19957, 19393	1.4MHz	QPSK	1 RB/ 0,5 RB Offes Full RB
	19965 to 22385	19965, 22385	3MHz	QPSK	1 RB/ 0,14 RB Offest Full RB
	19975 to 20375	19975, 20375	5MHz	QPSK	1 RB/ 0,24 RB Offest Full RB
	20000 to 20350	20000, 20350	10MHz	QPSK	1 RB/ 0,49 RB Offest Full RB
	20025 to 20325	20025, 20325	15MHz	QPSK	1 RB/ 0,74 RB Offest Full RB
	20050 to 20300	20050, 20300	20MHz	QPSK	1 RB/ 0,99 RB Offest Full RB
CONDCUDED EMISSION	19957 to 19393	19957, 20175, 19393	1.4MHz	QPSK	1 RB, 0 RB Offest
	19965 to 22385	19965, 20175, 22385	3MHz	QPSK	1 RB, 0 RB Offest
	19975 to 20375	19975, 20175, 20375	5MHz	QPSK	1 RB, 0 RB Offest
	20000 to 20350	20000, 20175, 20350	10MHz	QPSK	1 RB, 0 RB Offest
	20025 to 20325	20025, 20175, 20325	15MHz	QPSK	1 RB, 0 RB Offest
	20050 to 20300	20050, 20175, 20300	20MHz	QPSK	1 RB, 0 RB Offest
RADIATED EMISSION	20050 to 20300	20050, 20175, 20300	20MHz	QPSK	1 RB, 50 RB Offest

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LTE Band 5 MODE

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
ERP	20470 to 20643	20470, 20525, 20643	1.4MHz	QPSK, 16QAM, 64QAM	1 RB/ 0,5 RB Offest
	20415 to 20635	20415, 20525, 20635	3MHz	QPSK, 16QAM, 64QAM	1 RB/ 0,14 RB Offest
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK, 16QAM, 64QAM	1 RB/ 0,24 RB Offest
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK, 16QAM, 64QAM	1 RB/ 0,49 RB Offest
FREQUENCY STABILITY	20450 to 20600	20525	10MHz	QPSK	Full RB
OCCUPIED BANDWIDTH	20470 to 20643	20470, 20525, 20643	1.4MHz	QPSK, 16QAM, 64QAM	Full RB
	20415 to 20635	20415, 20525, 20635	3MHz	QPSK, 16QAM, 64QAM	Full RB
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK, 16QAM, 64QAM	Full RB
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK, 16QAM, 64QAM	Full RB
BAND EDGE	20470 to 20643	20470, 20643	1.4MHz	QPSK	1 RB/ 0,5 RB Offes Full RB
	20415 to 20635	20415, 20635	3MHz	QPSK	1 RB/ 0,14 RB Offest Full RB
	20425 to 20625	20425, 20625	5MHz	QPSK	1 RB/ 0,24 RB Offest Full RB
	20450 to 20600	20450, 20600	10MHz	QPSK	1 RB/ 0,49 RB Offest Full RB
CONDCUDED EMISSION	20470 to 20643	20470, 20525, 20643	1.4MHz	QPSK	1 RB, 0 RB Offest
	20415 to 20635	20415, 20525, 20635	3MHz	QPSK	1 RB, 0 RB Offest
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK	1 RB, 0 RB Offest
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK	1 RB, 0 RB Offest
RADIATED EMISSION	20450 to 20600	20450, 20525, 20600	10MHz	QPSK	1 RB, 0 RB Offest

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LTE Band 12 MODE

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
ERP	23017 to 23173	23017, 23095, 23173	1.4MHz	QPSK, 16QAM, 64QAM	1 RB/ 0,5 RB Offest
	23025 to 23165	23025, 23095, 23165	3MHz	QPSK, 16QAM, 64QAM	1 RB/ 0,14 RB Offest
	23035 to 23155	23035, 23095, 23155	5MHz	QPSK, 16QAM, 64QAM	1 RB/ 0,24 RB Offest
	23060 to 23130	23060, 23095, 23130	10MHz	QPSK, 16QAM, 64QAM	1 RB/ 0,49 RB Offest
FREQUENCY STABILITY	23060 to 23130	23095	10MHz	QPSK	Full RB
OCCUPIED BANDWIDTH	23017 to 23173	23017, 23095, 23173	1.4MHz	QPSK, 16QAM, 64QAM	Full RB
	23025 to 23165	23025, 23095, 23165	3MHz	QPSK, 16QAM, 64QAM	Full RB
	23035 to 23155	23035, 23095, 23155	5MHz	QPSK, 16QAM, 64QAM	Full RB
	23060 to 23130	23060, 23095, 23130	10MHz	QPSK, 16QAM, 64QAM	Full RB
PEAK TO AVERAGE RATIO	23017 to 23173	23017, 23095, 23173	1.4MHz	64QAM	Full RB
	23025 to 23165	23025, 23095, 23165	3MHz	64QAM	Full RB
	23035 to 23155	23035, 23095, 23155	5MHz	64QAM	Full RB
	23060 to 23130	23060, 23095, 23130	10MHz	64QAM	Full RB
BAND EDGE	23017 to 23173	23017, 23095, 23173	1.4MHz	QPSK	1 RB/ 0,5 RB Offes Full RB
	23025 to 23165	23025, 23095, 23165	3MHz	QPSK	1 RB/ 0,14 RB Offest Full RB
	23035 to 23155	23035, 23095, 23155	5MHz	QPSK	1 RB/ 0,24 RB Offest Full RB
	23060 to 23130	23060, 23095, 23130	10MHz	QPSK	1 RB/ 0,49 RB Offest Full RB
CONDUCTED EMISSION	23017 to 23173	23017, 23095, 23173	1.4MHz	QPSK	1 RB, 0 RB Offest
	23025 to 23165	23025, 23095, 23165	3MHz	QPSK	1 RB, 0 RB Offest
	23035 to 23155	23035, 23095, 23155	5MHz	QPSK	1 RB, 0 RB Offest
	23060 to 23130	23060, 23095, 23130	10MHz	QPSK	1 RB, 0 RB Offest
RADIATED EMISSION	23060 to 23130	23060, 23095, 23130	10MHz	QPSK	1 RB, 49 RB Offest

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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, 64QAM	1 RB/ 0,24 RB Offest
	23230	23230	10MHz	QPSK, 16QAM, 64QAM	1 RB/ 0,49 RB Offest
FREQUENCY STABILITY	23230	23230	10MHz	QPSK	Full RB
OCCUPIED BANDWIDTH	23205 to 23255	23205, 23230, 23255	5MHz	QPSK, 16QAM, 64QAM	Full RB
	23230	23230	10MHz	QPSK, 16QAM, 64QAM	Full RB
PEAK TO AVERAGE RATIO	23205 to 23255	23205, 23230, 23255	5MHz	64QAM	Full RB
	23230	23230	10MHz	64QAM	Full RB
BAND EDGE	23205 to 23255	23205, 23255	5MHz	QPSK	1 RB/ 0,24 RB Offest Full RB
	23230	23230	10MHz	QPSK	1 RB/ 0,49 RB Offest Full RB
CONDUCTED EMISSION	23205 to 23255	23205, 23230, 23255	5MHz	QPSK	1 RB, 0 RB Offest
	23230	23230	10MHz	QPSK	1 RB, 0 RB Offest
RADIATED EMISSION	23230	23230	10MHz	QPSK	1 RB, 0 RB Offest

LTE Band 17 MODE

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
ERP	23755 to 23825	23755, 23790, 23825	5MHz	QPSK, 16QAM, 64QAM	1 RB/ 0,24 RB Offest
	23780 to 23800	23780, 23790, 23800	10MHz	QPSK, 16QAM, 64QAM	1 RB/ 0,49 RB Offest
FREQUENCY STABILITY	23780 to 23800	23790	10MHz	QPSK	Full RB
OCCUPIED BANDWIDTH	23755 to 23825	23755, 23790, 23825	5MHz	QPSK, 16QAM, 64QAM	Full RB
	23780 to 23800	23780, 23790, 23800	10MHz	QPSK, 16QAM, 64QAM	Full RB
PEAK TO AVERAGE RATIO	23755 to 23825	23755, 23790, 23825	5MHz	64QAM	Full RB
	23780 to 23800	23780, 23790, 23800	10MHz	64QAM	Full RB
BAND EDGE	23755 to 23825	23755, 23825	5MHz	QPSK	1 RB/ 0,24 RB Offest Full RB
	23780 to 23800	23780, 23800	10MHz	QPSK	1 RB/ 0,49 RB Offest Full RB
CONDUCTED EMISSION	23755 to 23825	23755, 23790, 23825	5MHz	QPSK	1 RB, 0 RB Offest
	23780 to 23800	23780, 23790, 23800	10MHz	QPSK	1 RB, 0 RB Offest
RADIATED EMISSION	23780 to 23800	23780, 23800	10MHz	QPSK	1 RB, 25 RB Offest

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5. MEASUREMENT UNCERTAINTY

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

Radiated Spurious Emission:

Measurement uncertainty (Polarization : 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

Note:

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
2. The conformity assessment statement in this report is based solely on the test results, measurement uncertainty is excluded.

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6. MAXMUM OUTPUT POWER

6.1. Standard Applicable

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

ERP/EIRP LIMIT

According to FCC §2.1046

FCC 22.913(a)

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

FCC 24.232(c)

Mobile and portable stations are limited to 2 W EIRP.

FCC 27.50 (a)

(3) for mobile and portable stations compliant with 3GPP LTE standards transmitting in the 2305-2315 MHz band or the 2350-2360 MHz band are limited to 250 mW/ 5MHz EIRP but may exceed 50 milliwatts within any 1 megahertz of authorized bandwidth.

FCC 27.50(c)

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

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

FCC 27.50(d)

(4) Mobile, and portable (hand-held) stations operating in the 1710-1755 MHz, 1695-1710 MHz and 1755-1780 MHz bands are limited to 1W EIRP.

(7) Mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band are limited to 2 watts EIRP.

FCC 27, 50(h)

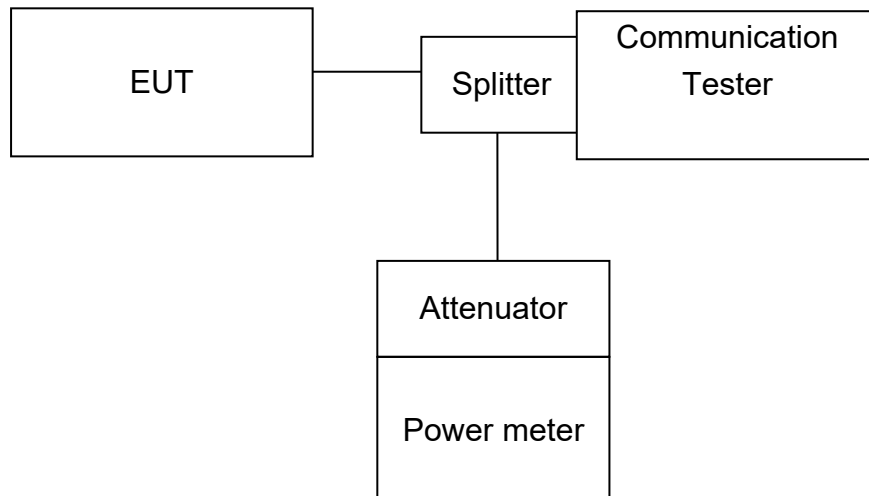
(2) Mobile and other user stations transmitting in the BRS and EBS bands are limited to 2 W EIRP.

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6.2. Test Set-up



Note: Measurement setup for testing on Antenna connector

6.3. Measurement Procedure

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

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

All LTE bands conducted average power is obtained from the simulator telecommunication test set.

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

$$ERP/EIRP = P_{Meas} + GT - LC$$

Where:

- ERP/EIRP = effective or equivalent radiated power, respectively (expressed in the same units as P_{Meas}, typically dBW or dBm);
- P_{Meas} = measured transmitter output power or PSD, in dBm or dBW;
- GT = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP)
- LC = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

For devices utilizing multiple antennas, KDB 662911 provides guidance for determining the effective array transmit antenna gain term to be used in the above equation.

6.5. Measurement Equipment Used

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
DC Power Supply	Agilent	E3640A	MY52410006	12/04/2018	12/03/2019
Radio Communication Analyzer	Anritsu	MT8815B	6200711454	04/01/2019	03/31/2020
Radio Communication Analyzer	Anritsu	MT8820C	6200995019	04/01/2019	03/31/2020

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6.6. Measurement Result

RF Conducted Output Power GSM/GPRS MODE:

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

EUT Mode	Freq. (MHz)	CH	Conducted Avg. Power (dBm)	Antenna Gain (dBi)	ERP (dBm)	EIRP (dBm)	Limit (dBm)	Margin (dB)
GSM 850	824.2	128	32.43	-6.60	23.68	25.83	38.50	-12.67
	836.6	190	32.18	-6.60	23.43	25.58	38.50	-12.92
	848.8	251	32.04	-6.60	23.29	25.44	38.50	-13.06
GSM 1900	1850.2	512	29.05	-2.60	24.30	26.45	33.00	-6.55
	1880.0	661	29.07	-2.60	24.32	26.47	33.00	-6.53
	1909.8	810	29.15	-2.60	24.40	26.55	33.00	-6.45
GPRS 850	824.2	128	32.41	-6.60	23.66	25.81	38.50	-12.69
	836.6	190	32.19	-6.60	23.44	25.59	38.50	-12.91
	848.8	251	32.06	-6.60	23.31	25.46	38.50	-13.04
GPRS 1900	1850.2	512	29.02	-2.60	24.27	26.42	33.00	-6.58
	1880.0	661	29.07	-2.60	24.32	26.47	33.00	-6.53
	1909.8	810	29.12	-2.60	24.37	26.52	33.00	-6.48

EUT Mode	Frequency (MHz)	CH	Average Burst Power (1DN 1UP) Class 8 (dBm)	Average Burst Power (1DN 2UP) Class 10 (dBm)	Average Burst Power (1DN 3UP) Class 12 (dBm)	Average Burst Power (1DN 4UP) Class 12 (dBm)
GPRS 850	824.2	128	32.41	30.22	28.03	27.07
	836.6	190	32.19	30.18	28.11	27.11
	848.8	251	32.06	30.08	28.06	27.16
GPRS 1900	1850.2	512	29.02	26.92	25.28	24.21
	1880.0	661	29.07	27.03	25.36	24.36
	1909.8	810	29.12	27.29	25.48	24.24

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WCDMA/HSPA MODE:

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

Results:

WCDMA/HSUPA/HSDPA Band II Result:

EUT Mode	Freq. (MHz)	CH	Conducted Avg. Power (dBm)	Antenna Gain (dBi)	ERP (dBm)	EIRP (dBm)	Limit (dBm)	Margin (dB)
WCDMA	1852.4	9262	22.32	-2.60	17.57	19.72	33.00	-13.28
	1880.0	9400	22.26	-2.60	17.51	19.66	33.00	-13.34
	1907.6	9538	22.51	-2.60	17.76	19.91	33.00	-13.09
HSDPA	1852.4	9262	21.29	-2.60	16.54	18.69	33.00	-14.31
	1880.0	9400	21.35	-2.60	16.60	18.75	33.00	-14.25
	1907.6	9538	21.49	-2.60	16.74	18.89	33.00	-14.11
HSUPA	1852.4	9262	21.23	-2.60	16.48	18.63	33.00	-14.37
	1880.0	9400	21.32	-2.60	16.57	18.72	33.00	-14.28
	1907.6	9538	21.56	-2.60	16.81	18.96	33.00	-14.04

WCDMA/HSUPA/HSDPA Band IV Result:

EUT Mode	Freq. (MHz)	CH	Conducted Avg. Power (dBm)	Antenna Gain (dBi)	ERP (dBm)	EIRP (dBm)	Limit (dBm)	Margin (dB)
WCDMA	1712.4	1312	22.14	-3.00	16.99	19.14	30.00	-10.86
	1732.6	1413	22.18	-3.00	17.03	19.18	30.00	-10.82
	1752.6	1513	22.31	-3.00	17.16	19.31	30.00	-10.69
HSDPA	1712.4	1312	21.06	-3.00	15.91	18.06	30.00	-11.94
	1732.6	1413	21.16	-3.00	16.01	18.16	30.00	-11.84
	1752.6	1513	21.23	-3.00	16.08	18.23	30.00	-11.77
HSUPA	1712.4	1312	21.12	-3.00	15.97	18.12	30.00	-11.88
	1732.6	1413	21.21	-3.00	16.06	18.21	30.00	-11.79
	1752.6	1513	21.25	-3.00	16.10	18.25	30.00	-11.75

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WCDMA/HSUPA/HSDPA Band V Result:

EUT Mode	Freq. (MHz)	CH	Conducted Avg. Power (dBm)	Antenna Gain (dBi)	ERP (dBm)	EIRP (dBm)	Limit (dBm)	Margin (dB)
WCDMA	826.4	4132	23.87	-6.60	15.12	17.27	38.50	-21.23
	836.6	4183	23.96	-6.60	15.21	17.36	38.50	-21.14
	846.6	4233	23.88	-6.60	15.13	17.28	38.50	-21.22
HSDPA	826.4	4132	23.02	-6.60	14.27	16.42	38.50	-22.08
	836.6	4183	22.98	-6.60	14.23	16.38	38.50	-22.12
	846.6	4233	22.83	-6.60	14.08	16.23	38.50	-22.27
HSUPA	826.4	4132	22.87	-6.60	14.12	16.27	38.50	-22.23
	836.6	4183	22.78	-6.60	14.03	16.18	38.50	-22.32
	846.6	4233	22.84	-6.60	14.09	16.24	38.50	-22.26

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HSPA (HSDPA & HSUPA) Release 6 MODE:

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

HSDPA SUB-TEST Setting

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

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

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

HSPA SUB-TEST Setting

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

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS}	β_{ec}	β_{ed}	β_{ed} (SF)	β_{ed} (Code s)	CM (dB)	MPR (dB)	AG Index	E-TFCI	RMC (Kbps)
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/225	1309/225	4	1	1.0	0.0	20	75	12.2
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67	12.2
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1} : 47/15 β_{ed2} : 47/15	4 4	2	2.0	1.0	15	92	12.2
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71	12.2
5	15/15 (Note 4)	15/15 (Note 4)	64	15/15 (Note 4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81	12.2

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

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Results:

Mode	Sub test	Avg. Power (dBm)		
		Channel		
		9262.00	9400.00	9538.00
HSDPA II	1	21.29	21.35	21.49
	2	20.73	20.74	20.96
	3	20.88	20.72	21.02
	4	20.81	20.68	20.99

Mode	Sub test	Avg. Power (dBm)		
		Channel		
		1312.00	1413.00	1513.00
HSDPA IV	1	21.06	21.16	21.23
	2	20.66	20.67	20.74
	3	20.62	20.71	20.65
	4	20.57	20.59	20.82

Mode	Sub test	Avg. Power (dBm)		
		Channel		
		4132.00	4183.00	4233.00
HSDPA V	1	23.02	22.98	22.83
	2	22.44	22.42	22.32
	3	22.51	22.53	22.26
	4	22.52	22.41	22.35

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Mode	Sub test	Avg. Power (dBm)		
		Channel		
		9262.00	9400.00	9538.00
HSUPA II	1	21.23	21.32	21.56
	2	19.32	19.25	19.48
	3	20.13	20.29	20.37
	4	19.23	19.18	19.61
	5	21.19	21.29	21.52

Mode	Sub test	Avg. Power (dBm)		
		Channel		
		1312.00	1413.00	1513.00
HSUPA IV	1	21.12	21.21	21.25
	2	19.13	19.23	19.22
	3	20.13	20.16	20.24
	4	19.13	19.19	19.21
	5	21.18	21.22	21.33

Mode	Sub test	Avg. Power (dBm)		
		Channel		
		4132.00	4183.00	4233.00
HSUPA V	1	22.87	22.78	22.84
	2	20.97	20.85	20.69
	3	21.79	21.87	22.03
	4	20.96	20.94	20.88
	5	23.11	23.01	22.91

WCDMA/HSDPA/HSUPA band II, IV, V

The EUT output power was controlled by simulator and enter max rated power 24dBm. The EUT is going to be set to max output power to 24dBm then record the read. The min. power was measures by a function key “minimum power” then record the read. It is -52.3dBm. The power variation can be 0.1dB step by setting.

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Minimum Communications Power Measurement

PCS 1900 band

PCL	0	1	2	3	4	5	6	7	8
Output power (dBm)	27.1	25.3	22.6	20.2	18.7	16.7	14.7	12.8	11

PCL	9	10	11	12	13	14	15
Output power (dBm)	9	6.8	4.9	3.2	1.6	-0.3	-2.3

Note: The EUT output power was controlled by simulator. Set Communication Tester **CMU 200** PCL as above, and get the mobile phone output power reading.

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LTE Result:

Antenna gain (dBi) -2.6

LTE Band 2_Uplink frequency band : 1850 to 1910 MHz									
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Limit (dBm)	Margin (dB)
1.4	18607	1850.7	QPSK	1	0	22.68	20.08	33	-12.92
				1	5	22.35	19.75	33	-13.25
				3	2	22.28	19.68	33	-13.32
				6	0	21.32	18.72	33	-14.28
	18900	1880	QPSK	1	0	22.21	19.61	33	-13.39
				1	5	22.16	19.56	33	-13.44
				3	2	22.10	19.50	33	-13.5
				6	0	21.28	18.68	33	-14.32
	19193	1909.3	QPSK	1	0	22.44	19.84	33	-13.16
				1	5	22.72	20.12	33	-12.88
				3	2	22.24	19.64	33	-13.36
				6	0	21.38	18.78	33	-14.22
	18607	1850.7	16QAM	1	0	21.33	18.73	33	-14.27
				1	5	21.35	18.75	33	-14.25
				3	2	21.10	18.50	33	-14.5
				6	0	20.25	17.65	33	-15.35
	18900	1880	16QAM	1	0	21.25	18.65	33	-14.35
				1	5	21.09	18.49	33	-14.51
				3	2	21.14	18.54	33	-14.46
				6	0	20.32	17.72	33	-15.28
	19193	1909.3	16QAM	1	0	21.41	18.81	33	-14.19
				1	5	21.32	18.72	33	-14.28
				3	2	21.05	18.45	33	-14.55
				6	0	20.47	17.87	33	-15.13
	18607	1850.7	64QAM	1	0	20.55	17.95	33	-15.05
				1	5	20.57	17.97	33	-15.03
				3	2	20.35	17.75	33	-15.25
				6	0	19.76	17.16	33	-15.84
	18900	1880	64QAM	1	0	20.25	17.65	33	-15.35
				1	5	20.46	17.86	33	-15.14
				3	2	20.33	17.73	33	-15.27
				6	0	19.69	17.09	33	-15.91
	19193	1909.3	64QAM	1	0	20.49	17.89	33	-15.11
				1	5	20.46	17.86	33	-15.14
				3	2	20.22	17.62	33	-15.38
				6	0	19.75	17.15	33	-15.85

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Antenna gain (dBi) -2.6

LTE Band 2_Uplink frequency band : 1850 to 1910 MHz									
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Limit (dBm)	Margin (dB)
3	18615	1851.5	QPSK	1	0	22.64	20.04	33	-12.96
				1	14	22.37	19.77	33	-13.23
				8	4	21.46	18.86	33	-14.14
				15	0	21.33	18.73	33	-14.27
	18900	1880	QPSK	1	0	22.22	19.62	33	-13.38
				1	14	22.18	19.58	33	-13.42
				8	4	21.51	18.91	33	-14.09
				15	0	21.33	18.73	33	-14.27
	19185	1908.5	QPSK	1	0	22.38	19.78	33	-13.22
				1	14	22.64	20.04	33	-12.96
				8	4	21.67	19.07	33	-13.93
				15	0	21.44	18.84	33	-14.16
	18615	1851.5	16QAM	1	0	21.42	18.82	33	-14.18
				1	14	21.44	18.84	33	-14.16
				8	4	20.50	17.90	33	-15.1
				15	0	20.30	17.70	33	-15.3
	18900	1880	16QAM	1	0	21.86	19.26	33	-13.74
				1	14	21.75	19.15	33	-13.85
				8	4	20.35	17.75	33	-15.25
				15	0	20.33	17.73	33	-15.27
	19185	1908.5	16QAM	1	0	21.75	19.15	33	-13.85
				1	14	21.97	19.37	33	-13.63
				8	4	20.69	18.09	33	-14.91
				15	0	20.41	17.81	33	-15.19
	18615	1851.5	64QAM	1	0	20.80	18.20	33	-14.8
				1	14	20.93	18.33	33	-14.67
				8	4	19.91	17.31	33	-15.69
				15	0	19.71	17.11	33	-15.89
	18900	1880	64QAM	1	0	21.08	18.48	33	-14.52
				1	14	21.16	18.56	33	-14.44
				8	4	19.85	17.25	33	-15.75
				15	0	19.70	17.10	33	-15.9
	19185	1908.5	64QAM	1	0	21.20	18.60	33	-14.4
				1	14	20.99	18.39	33	-14.61
				8	4	20.06	17.46	33	-15.54
				15	0	19.87	17.27	33	-15.73

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BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Limit (dBm)	Margin (dB)
5	18625	1852.5	QPSK	1	0	22.65	20.05	33	-12.95
				1	24	22.38	19.78	33	-13.22
				12	6	21.48	18.88	33	-14.12
				25	0	21.34	18.74	33	-14.26
	18900	1880	QPSK	1	0	22.29	19.69	33	-13.31
				1	24	22.27	19.67	33	-13.33
				12	6	21.48	18.88	33	-14.12
				25	0	21.32	18.72	33	-14.28
	19175	1907.5	QPSK	1	0	22.44	19.84	33	-13.16
				1	24	22.70	20.10	33	-12.9
				12	6	21.64	19.04	33	-13.96
				25	0	21.42	18.82	33	-14.18
	18625	1852.5	16QAM	1	0	21.30	18.70	33	-14.3
				1	24	21.47	18.87	33	-14.13
				12	6	20.42	17.82	33	-15.18
				25	0	20.31	17.71	33	-15.29
	18900	1880	16QAM	1	0	21.85	19.25	33	-13.75
				1	24	21.80	19.20	33	-13.8
				12	6	20.48	17.88	33	-15.12
				25	0	20.36	17.76	33	-15.24
	19175	1907.5	16QAM	1	0	21.64	19.04	33	-13.96
				1	24	22.07	19.47	33	-13.53
				12	6	20.67	18.07	33	-14.93
				25	0	20.50	17.90	33	-15.1
	18625	1852.5	64QAM	1	0	20.87	18.27	33	-14.73
				1	24	20.91	18.31	33	-14.69
				12	6	19.99	17.39	33	-15.61
				25	0	19.79	17.19	33	-15.81
	18900	1880	64QAM	1	0	21.14	18.54	33	-14.46
				1	24	21.20	18.60	33	-14.4
				12	6	19.81	17.21	33	-15.79
				25	0	19.77	17.17	33	-15.83
	19175	1907.5	64QAM	1	0	21.15	18.55	33	-14.45
				1	24	21.03	18.43	33	-14.57
				12	6	20.06	17.46	33	-15.54
				25	0	19.86	17.26	33	-15.74

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LTE Band 2_Uplink frequency band : 1850 to 1910 MHz									
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10	18650	1855	QPSK	1	0	22.56	19.96	33	-13.04
				1	49	22.39	19.79	33	-13.21
				25	12	21.41	18.81	33	-14.19
				50	0	21.38	18.78	33	-14.22
	18900	1880	QPSK	1	0	22.30	19.70	33	-13.3
				1	49	22.16	19.56	33	-13.44
				25	12	21.38	18.78	33	-14.22
				50	0	21.28	18.68	33	-14.32
	19150	1905	QPSK	1	0	22.34	19.74	33	-13.26
				1	49	22.65	20.05	33	-12.95
				25	12	21.63	19.03	33	-13.97
				50	0	21.43	18.83	33	-14.17
	18650	1855	16QAM	1	0	21.29	18.69	33	-14.31
				1	49	21.42	18.82	33	-14.18
				25	12	20.49	17.89	33	-15.11
				50	0	20.28	17.68	33	-15.32
	18900	1880	16QAM	1	0	21.79	19.19	33	-13.81
				1	49	21.78	19.18	33	-13.82
				25	12	20.47	17.87	33	-15.13
				50	0	20.36	17.76	33	-15.24
	19150	1905	16QAM	1	0	21.77	19.17	33	-13.83
				1	49	22.02	19.42	33	-13.58
				25	12	20.62	18.02	33	-14.98
				50	0	20.50	17.90	33	-15.1
	18650	1855	64QAM	1	0	20.79	18.19	33	-14.81
				1	49	20.88	18.28	33	-14.72
				25	12	19.98	17.38	33	-15.62
				50	0	19.66	17.06	33	-15.94
	18900	1880	64QAM	1	0	21.15	18.55	33	-14.45
				1	49	21.15	18.55	33	-14.45
				25	12	19.76	17.16	33	-15.84
				50	0	19.78	17.18	33	-15.82
	19150	1905	64QAM	1	0	21.14	18.54	33	-14.46
				1	49	20.94	18.34	33	-14.66
				25	12	20.07	17.47	33	-15.53
				50	0	19.79	17.19	33	-15.81

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Antenna gain (dBi) -2.6

LTE Band 2_Uplink frequency band : 1850 to 1910 MHz									
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Limit (dBm)	Margin (dB)
15	18675	1857.5	QPSK	1	0	22.60	20.00	33	-13
				1	74	22.41	19.81	33	-13.19
				36	18	21.52	18.92	33	-14.08
				75	0	21.34	18.74	33	-14.26
	18900	1880	QPSK	1	0	22.22	19.62	33	-13.38
				1	74	22.24	19.64	33	-13.36
				36	18	21.44	18.84	33	-14.16
				75	0	21.29	18.69	33	-14.31
	19125	1902.5	QPSK	1	0	22.40	19.80	33	-13.2
				1	74	22.69	20.09	33	-12.91
				36	18	21.69	19.09	33	-13.91
				75	0	21.38	18.78	33	-14.22
	18675	1857.5	16QAM	1	0	21.33	18.73	33	-14.27
				1	74	21.49	18.89	33	-14.11
				36	18	20.45	17.85	33	-15.15
				75	0	20.38	17.78	33	-15.22
	18900	1880	16QAM	1	0	21.86	19.26	33	-13.74
				1	74	21.74	19.14	33	-13.86
				36	18	20.45	17.85	33	-15.15
				75	0	20.33	17.73	33	-15.27
	19125	1902.5	16QAM	1	0	21.70	19.10	33	-13.9
				1	74	22.03	19.43	33	-13.57
				36	18	20.65	18.05	33	-14.95
				75	0	20.44	17.84	33	-15.16
	18675	1857.5	64QAM	1	0	20.84	18.24	33	-14.76
				1	74	21.00	18.40	33	-14.6
				36	18	19.96	17.36	33	-15.64
				75	0	19.71	17.11	33	-15.89
	18900	1880	64QAM	1	0	21.11	18.51	33	-14.49
				1	74	21.25	18.65	33	-14.35
				36	18	19.90	17.30	33	-15.7
				75	0	19.80	17.20	33	-15.8
	19125	1902.5	64QAM	1	0	21.14	18.54	33	-14.46
				1	74	21.05	18.45	33	-14.55
				36	18	20.09	17.49	33	-15.51
				75	0	19.91	17.31	33	-15.69

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Antenna gain (dBi) -2.6

LTE Band 2_Uplink frequency band : 1850 to 1910 MHz									
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Limit (dBm)	Margin (dB)
20	18700	1860	QPSK	1	0	22.79	20.19	33	-12.81
				1	99	22.42	19.82	33	-13.18
				50	25	21.52	18.92	33	-14.08
				100	0	21.41	18.81	33	-14.19
	18900	1880	QPSK	1	0	22.31	19.71	33	-13.29
				1	99	22.29	19.69	33	-13.31
				50	25	21.52	18.92	33	-14.08
				100	0	21.23	18.63	33	-14.37
	19100	1900	QPSK	1	0	22.46	19.86	33	-13.14
				1	99	22.77	20.17	33	-12.83
				50	25	21.73	19.13	33	-13.87
				100	0	21.45	18.85	33	-14.15
	18700	1860	16QAM	1	0	21.43	18.83	33	-14.17
				1	99	21.51	18.91	33	-14.09
				50	25	20.53	17.93	33	-15.07
				100	0	20.39	17.79	33	-15.21
	18900	1880	16QAM	1	0	21.90	19.30	33	-13.7
				1	99	21.81	19.21	33	-13.79
				50	25	20.49	17.89	33	-15.11
				100	0	20.38	17.78	33	-15.22
	19100	1900	16QAM	1	0	21.77	19.17	33	-13.83
				1	99	22.08	19.48	33	-13.52
				50	25	20.73	18.13	33	-14.87
				100	0	20.51	17.91	33	-15.09
	18700	1860	64QAM	1	0	20.87	18.27	33	-14.73
				1	99	21.00	18.40	33	-14.6
				50	25	20.00	17.40	33	-15.6
				100	0	19.80	17.20	33	-15.8
	18900	1880	64QAM	1	0	21.18	18.58	33	-14.42
				1	99	21.28	18.68	33	-14.32
				50	25	19.90	17.30	33	-15.7
				100	0	19.82	17.22	33	-15.78
	19100	1900	64QAM	1	0	21.22	18.62	33	-14.38
				1	99	21.07	18.47	33	-14.53
				50	25	20.18	17.58	33	-15.42
				100	0	19.92	17.32	33	-15.68

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Antenna gain (dBi) -3

LTE Band 4_Uplink frequency band : 1710 to 1755 MHz									
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Limit (dBm)	Margin (dB)
1.4	19957	1710.7	QPSK	1	0	21.71	18.71	30	-11.29
				1	5	21.36	18.36	30	-11.64
				3	2	21.48	18.48	30	-11.52
				6	0	20.88	17.88	30	-12.12
	20175	1732.5	QPSK	1	0	21.69	18.69	30	-11.31
				1	5	21.35	18.35	30	-11.65
				3	2	21.38	18.38	30	-11.62
				6	0	21.11	18.11	30	-11.89
	20393	1754.3	QPSK	1	0	21.73	18.73	30	-11.27
				1	5	21.66	18.66	30	-11.34
				3	2	21.34	18.34	30	-11.66
				6	0	21.11	18.11	30	-11.89
	19957	1710.7	16QAM	1	0	21.14	18.14	30	-11.86
				1	5	20.97	17.97	30	-12.03
				3	2	20.83	17.83	30	-12.17
				6	0	20.30	17.30	30	-12.7
	20175	1732.5	16QAM	1	0	21.19	18.19	30	-11.81
				1	5	21.02	18.02	30	-11.98
				3	2	20.78	17.78	30	-12.22
				6	0	20.42	17.42	30	-12.58
	20393	1754.3	16QAM	1	0	21.10	18.10	30	-11.9
				1	5	21.13	18.13	30	-11.87
				3	2	20.69	17.69	30	-12.31
				6	0	20.32	17.32	30	-12.68
	19957	1710.7	64QAM	1	0	20.24	17.24	30	-12.76
				1	5	20.26	17.26	30	-12.74
				3	2	19.95	16.95	30	-13.05
				6	0	19.55	16.55	30	-13.45
	20175	1732.5	64QAM	1	0	20.38	17.38	30	-12.62
				1	5	20.31	17.31	30	-12.69
				3	2	19.89	16.89	30	-13.11
				6	0	19.47	16.47	30	-13.53
	20393	1754.3	64QAM	1	0	20.33	17.33	30	-12.67
				1	5	20.11	17.11	30	-12.89
				3	2	20.01	17.01	30	-12.99
				6	0	19.61	16.61	30	-13.39

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Antenna gain (dBi) -3

LTE Band 4_Uplink frequency band : 1710 to 1755 MHz									
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Limit (dBm)	Margin (dB)
3	19965	1711.5	QPSK	1	0	21.75	18.75	30	-11.25
				1	14	21.37	18.37	30	-11.63
				8	4	21.29	18.29	30	-11.71
				15	0	21.12	18.12	30	-11.88
	20175	1732.5	QPSK	1	0	21.66	18.66	30	-11.34
				1	14	21.41	18.41	30	-11.59
				8	4	21.30	18.30	30	-11.7
				15	0	21.13	18.13	30	-11.87
	20385	1753.5	QPSK	1	0	21.76	18.76	30	-11.24
				1	14	21.64	18.64	30	-11.36
				8	4	21.33	18.33	30	-11.67
				15	0	21.18	18.18	30	-11.82
	19965	1711.5	16QAM	1	0	20.81	17.81	30	-12.19
				1	14	20.45	17.45	30	-12.55
				8	4	20.30	17.30	30	-12.7
				15	0	20.08	17.08	30	-12.92
	20175	1732.5	16QAM	1	0	21.28	18.28	30	-11.72
				1	14	20.97	17.97	30	-12.03
				8	4	20.46	17.46	30	-12.54
				15	0	20.18	17.18	30	-12.82
	20385	1753.5	16QAM	1	0	21.11	18.11	30	-11.89
				1	14	20.75	17.75	30	-12.25
				8	4	20.41	17.41	30	-12.59
				15	0	20.18	17.18	30	-12.82
	19965	1711.5	64QAM	1	0	20.26	17.26	30	-12.74
				1	14	20.00	17.00	30	-13
				8	4	19.74	16.74	30	-13.26
				15	0	19.52	16.52	30	-13.48
	20175	1732.5	64QAM	1	0	20.65	17.65	30	-12.35
				1	14	20.36	17.36	30	-12.64
				8	4	19.89	16.89	30	-13.11
				15	0	19.67	16.67	30	-13.33
	20385	1753.5	64QAM	1	0	20.43	17.43	30	-12.57
				1	14	20.19	17.19	30	-12.81
				8	4	19.97	16.97	30	-13.03
				15	0	19.61	16.61	30	-13.39

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Antenna gain (dBi) -3

LTE Band 4_Uplink frequency band : 1710 to 1755 MHz									
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Limit (dBm)	Margin (dB)
5	19975	1712.5	QPSK	1	0	21.73	18.73	30	-11.27
				1	24	21.31	18.31	30	-11.69
				12	6	21.32	18.32	30	-11.68
				25	0	21.03	18.03	30	-11.97
	20175	1732.5	QPSK	1	0	21.63	18.63	30	-11.37
				1	24	21.33	18.33	30	-11.67
				12	6	21.41	18.41	30	-11.59
				25	0	21.15	18.15	30	-11.85
	20375	1752.5	QPSK	1	0	21.72	18.72	30	-11.28
				1	24	21.67	18.67	30	-11.33
				12	6	21.44	18.44	30	-11.56
				25	0	21.16	18.16	30	-11.84
	19975	1712.5	16QAM	1	0	20.89	17.89	30	-12.11
				1	24	20.51	17.51	30	-12.49
				12	6	20.27	17.27	30	-12.73
				25	0	20.04	17.04	30	-12.96
	20175	1732.5	16QAM	1	0	21.17	18.17	30	-11.83
				1	24	20.99	17.99	30	-12.01
				12	6	20.36	17.36	30	-12.64
				25	0	20.23	17.23	30	-12.77
	20375	1752.5	16QAM	1	0	21.12	18.12	30	-11.88
				1	24	20.80	17.80	30	-12.2
				12	6	20.52	17.52	30	-12.48
				25	0	20.12	17.12	30	-12.88
	19975	1712.5	64QAM	1	0	20.32	17.32	30	-12.68
				1	24	19.87	16.87	30	-13.13
				12	6	19.78	16.78	30	-13.22
				25	0	19.45	16.45	30	-13.55
	20175	1732.5	64QAM	1	0	20.71	17.71	30	-12.29
				1	24	20.40	17.40	30	-12.6
				12	6	19.94	16.94	30	-13.06
				25	0	19.63	16.63	30	-13.37
	20375	1752.5	64QAM	1	0	20.44	17.44	30	-12.56
				1	24	20.11	17.11	30	-12.89
				12	6	19.90	16.90	30	-13.1
				25	0	19.67	16.67	30	-13.33

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10	20000	1715	QPSK	1	0	21.67	18.67	30	-11.33
				1	49	21.39	18.39	30	-11.61
				25	12	21.29	18.29	30	-11.71
				50	0	21.07	18.07	30	-11.93
	20175	1732.5	QPSK	1	0	21.70	18.70	30	-11.3
				1	49	21.36	18.36	30	-11.64
				25	12	21.41	18.41	30	-11.59
				50	0	21.26	18.26	30	-11.74
	20375	1750	QPSK	1	0	21.72	18.72	30	-11.28
				1	49	21.71	18.71	30	-11.29
				25	12	21.33	18.33	30	-11.67
				50	0	21.13	18.13	30	-11.87
	20000	1715	16QAM	1	0	20.90	17.90	30	-12.1
				1	49	20.54	17.54	30	-12.46
				25	12	20.29	17.29	30	-12.71
				50	0	20.02	17.02	30	-12.98
	20175	1732.5	16QAM	1	0	21.18	18.18	30	-11.82
				1	49	20.98	17.98	30	-12.02
				25	12	20.41	17.41	30	-12.59
				50	0	20.16	17.16	30	-12.84
	20375	1750	16QAM	1	0	21.01	18.01	30	-11.99
				1	49	20.72	17.72	30	-12.28
				25	12	20.53	17.53	30	-12.47
				50	0	20.20	17.20	30	-12.8
	20000	1715	64QAM	1	0	20.40	17.40	30	-12.6
				1	49	20.03	17.03	30	-12.97
				25	12	19.85	16.85	30	-13.15
				50	0	19.56	16.56	30	-13.44
	20175	1732.5	64QAM	1	0	20.69	17.69	30	-12.31
				1	49	20.32	17.32	30	-12.68
				25	12	19.89	16.89	30	-13.11
				50	0	19.67	16.67	30	-13.33
	20375	1750	64QAM	1	0	20.50	17.50	30	-12.5
				1	49	20.25	17.25	30	-12.75
				25	12	20.02	17.02	30	-12.98
				50	0	19.59	16.59	30	-13.41

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Antenna gain (dBi) -3

LTE Band 4_Uplink frequency band : 1710 to 1755 MHz									
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Limit (dBm)	Margin (dB)
15	20025	1717.5	QPSK	1	0	21.79	18.79	30	-11.21
				1	74	21.32	18.32	30	-11.68
				36	18	21.27	18.27	30	-11.73
				75	0	21.03	18.03	30	-11.97
	20175	1732.5	QPSK	1	0	21.63	18.63	30	-11.37
				1	74	21.42	18.42	30	-11.58
				36	18	21.36	18.36	30	-11.64
				75	0	21.19	18.19	30	-11.81
	20325	1747.5	QPSK	1	0	21.69	18.69	30	-11.31
				1	74	21.64	18.64	30	-11.36
				36	18	21.30	18.30	30	-11.7
				75	0	21.22	18.22	30	-11.78
	20025	1717.5	16QAM	1	0	20.88	17.88	30	-12.12
				1	74	20.48	17.48	30	-12.52
				36	18	20.31	17.31	30	-12.69
				75	0	20.05	17.05	30	-12.95
	20175	1732.5	16QAM	1	0	21.19	18.19	30	-11.81
				1	74	20.99	17.99	30	-12.01
				36	18	20.47	17.47	30	-12.53
				75	0	20.14	17.14	30	-12.86
	20325	1747.5	16QAM	1	0	21.00	18.00	30	-12
				1	74	20.77	17.77	30	-12.23
				36	18	20.42	17.42	30	-12.58
				75	0	20.11	17.11	30	-12.89
	20025	1717.5	64QAM	1	0	20.31	17.31	30	-12.69
				1	74	19.96	16.96	30	-13.04
				36	18	19.81	16.81	30	-13.19
				75	0	19.54	16.54	30	-13.46
	20175	1732.5	64QAM	1	0	20.62	17.62	30	-12.38
				1	74	20.40	17.40	30	-12.6
				36	18	19.95	16.95	30	-13.05
				75	0	19.70	16.70	30	-13.3
	20325	1747.5	64QAM	1	0	20.53	17.53	30	-12.47
				1	74	20.19	17.19	30	-12.81
				36	18	20.02	17.02	30	-12.98
				75	0	19.60	16.60	30	-13.4

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Antenna gain (dBi) -3

LTE Band 4_Uplink frequency band : 1710 to 1755 MHz									
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Limit (dBm)	Margin (dB)
20	20050	1720	QPSK	1	0	21.79	18.79	30	-11.21
				1	99	21.41	18.41	30	-11.59
				50	25	21.39	18.39	30	-11.61
				100	0	21.15	18.15	30	-11.85
	20175	1732.5	QPSK	1	0	21.72	18.72	30	-11.28
				1	99	21.32	18.32	30	-11.68
				50	25	21.43	18.43	30	-11.57
				100	0	21.26	18.26	30	-11.74
	20300	1745	QPSK	1	0	21.79	18.79	30	-11.21
				1	99	21.73	18.73	30	-11.27
				50	25	21.45	18.45	30	-11.55
				100	0	21.26	18.26	30	-11.74
	20050	1720	16QAM	1	0	20.95	17.95	30	-12.05
				1	99	20.57	17.57	30	-12.43
				50	25	20.38	17.38	30	-12.62
				100	0	20.14	17.14	30	-12.86
	20175	1732.5	16QAM	1	0	21.30	18.30	30	-11.7
				1	99	21.02	18.02	30	-11.98
				50	25	20.48	17.48	30	-12.52
				100	0	20.24	17.24	30	-12.76
	20300	1745	16QAM	1	0	21.13	18.13	30	-11.87
				1	99	20.85	17.85	30	-12.15
				50	25	20.55	17.55	30	-12.45
				100	0	20.23	17.23	30	-12.77
	20050	1720	64QAM	1	0	20.41	17.41	30	-12.59
				1	99	20.01	17.01	30	-12.99
				50	25	19.85	16.85	30	-13.15
				100	0	19.59	16.59	30	-13.41
	20175	1732.5	64QAM	1	0	20.76	17.76	30	-12.24
				1	99	20.45	17.45	30	-12.55
				50	25	19.98	16.98	30	-13.02
				100	0	19.70	16.70	30	-13.3
	20300	1745	64QAM	1	0	20.53	17.53	30	-12.47
				1	99	20.26	17.26	30	-12.74
				50	25	20.04	17.04	30	-12.96
				100	0	19.70	16.70	30	-13.3

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Antenna gain (dBi) -6.6

LTE Band 5_Uplink frequency band : 824 to 849 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	EIRP Limit (dBm)	Margin (dB)
1.4	20407	824.7	QPSK	1	0	22.76	14.01	16.16	38.45	-22.29
				1	5	22.84	14.09	16.24	38.45	-22.21
				3	2	22.55	13.80	15.95	38.45	-22.5
				6	0	21.63	12.88	15.03	38.45	-23.42
	20525	836.5	QPSK	1	0	22.82	14.07	16.22	38.45	-22.23
				1	5	22.87	14.12	16.27	38.45	-22.18
				3	2	22.59	13.84	15.99	38.45	-22.46
				6	0	21.73	12.98	15.13	38.45	-23.32
	20643	848.3	QPSK	1	0	22.86	14.11	16.26	38.45	-22.19
				1	5	22.86	14.11	16.26	38.45	-22.19
				3	2	22.59	13.84	15.99	38.45	-22.46
				6	0	21.82	13.07	15.22	38.45	-23.23
	20407	824.7	16QAM	1	0	21.85	13.10	15.25	38.45	-23.2
				1	5	21.62	12.87	15.02	38.45	-23.43
				3	2	21.80	13.05	15.20	38.45	-23.25
				6	0	20.69	11.94	14.09	38.45	-24.36
	20525	836.5	16QAM	1	0	21.98	13.23	15.38	38.45	-23.07
				1	5	21.80	13.05	15.20	38.45	-23.25
				3	2	22.18	13.43	15.58	38.45	-22.87
				6	0	20.96	12.21	14.36	38.45	-24.09
	20643	848.3	16QAM	1	0	22.09	13.34	15.49	38.45	-22.96
				1	5	21.69	12.94	15.09	38.45	-23.36
				3	2	22.08	13.33	15.48	38.45	-22.97
				6	0	20.68	11.93	14.08	38.45	-24.37
	20407	824.7	64QAM	1	0	20.93	12.18	14.33	38.45	-24.12
				1	5	20.67	11.92	14.07	38.45	-24.38
				3	2	20.64	11.89	14.04	38.45	-24.41
				6	0	19.57	10.82	12.97	38.45	-25.48
	20525	836.5	64QAM	1	0	20.78	12.03	14.18	38.45	-24.27
				1	5	20.67	11.92	14.07	38.45	-24.38
				3	2	20.79	12.04	14.19	38.45	-24.26
				6	0	19.76	11.01	13.16	38.45	-25.29
	20643	848.3	64QAM	1	0	20.94	12.19	14.34	38.45	-24.11
				1	5	20.75	12.00	14.15	38.45	-24.3
				3	2	20.69	11.94	14.09	38.45	-24.36
				6	0	19.56	10.81	12.96	38.45	-25.49

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Antenna gain (dBi) -6.6

LTE Band 5_Uplink frequency band : 824 to 849 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	EIRP Limit (dBm)	Margin (dB)
3	20415	825.5	QPSK	1	0	22.74	13.99	16.14	38.45	-22.31
				1	14	22.96	14.21	16.36	38.45	-22.09
				8	4	21.93	13.18	15.33	38.45	-23.12
				15	0	21.71	12.96	15.11	38.45	-23.34
	20525	836.5	QPSK	1	0	22.87	14.12	16.27	38.45	-22.18
				1	14	22.93	14.18	16.33	38.45	-22.12
				8	4	21.95	13.20	15.35	38.45	-23.1
				15	0	21.81	13.06	15.21	38.45	-23.24
	20635	847.5	QPSK	1	0	22.81	14.06	16.21	38.45	-22.24
				1	14	22.82	14.07	16.22	38.45	-22.23
				8	4	22.10	13.35	15.50	38.45	-22.95
				15	0	21.78	13.03	15.18	38.45	-23.27
	20415	825.5	16QAM	1	0	22.30	13.55	15.70	38.45	-22.75
				1	14	21.99	13.24	15.39	38.45	-23.06
				8	4	20.93	12.18	14.33	38.45	-24.12
				15	0	20.75	12.00	14.15	38.45	-24.3
	20525	836.5	16QAM	1	0	21.85	13.10	15.25	38.45	-23.2
				1	14	22.08	13.33	15.48	38.45	-22.97
				8	4	21.03	12.28	14.43	38.45	-24.02
				15	0	20.64	11.89	14.04	38.45	-24.41
	20635	847.5	16QAM	1	0	22.05	13.30	15.45	38.45	-23
				1	14	21.86	13.11	15.26	38.45	-23.19
				8	4	20.93	12.18	14.33	38.45	-24.12
				15	0	20.87	12.12	14.27	38.45	-24.18
	20415	825.5	64QAM	1	0	21.60	12.85	15.00	38.45	-23.45
				1	14	21.17	12.42	14.57	38.45	-23.88
				8	4	20.22	11.47	13.62	38.45	-24.83
				15	0	19.99	11.24	13.39	38.45	-25.06
	20525	836.5	64QAM	1	0	21.20	12.45	14.60	38.45	-23.85
				1	14	21.25	12.50	14.65	38.45	-23.8
				8	4	20.23	11.48	13.63	38.45	-24.82
				15	0	19.94	11.19	13.34	38.45	-25.11
	20635	847.5	64QAM	1	0	21.39	12.64	14.79	38.45	-23.66
				1	14	21.14	12.39	14.54	38.45	-23.91
				8	4	20.22	11.47	13.62	38.45	-24.83
				15	0	19.98	11.23	13.38	38.45	-25.07

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Antenna gain (dBi) -6.6

LTE Band 5_Uplink frequency band : 824 to 849 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	EIRP Limit (dBm)	Margin (dB)
5	20425	826.5	QPSK	1	0	22.77	14.02	16.17	38.45	-22.28
				1	24	22.83	14.08	16.23	38.45	-22.22
				12	6	21.95	13.20	15.35	38.45	-23.1
				25	0	21.59	12.84	14.99	38.45	-23.46
	20525	836.5	QPSK	1	0	22.86	14.11	16.26	38.45	-22.19
				1	24	22.90	14.15	16.30	38.45	-22.15
				12	6	22.03	13.28	15.43	38.45	-23.02
				25	0	21.85	13.10	15.25	38.45	-23.2
	20625	846.5	QPSK	1	0	22.82	14.07	16.22	38.45	-22.23
				1	24	22.91	14.16	16.31	38.45	-22.14
				12	6	22.04	13.29	15.44	38.45	-23.01
				25	0	21.76	13.01	15.16	38.45	-23.29
	20425	826.5	16QAM	1	0	22.27	13.52	15.67	38.45	-22.78
				1	24	21.85	13.10	15.25	38.45	-23.2
				12	6	20.88	12.13	14.28	38.45	-24.17
				25	0	20.75	12.00	14.15	38.45	-24.3
	20525	836.5	16QAM	1	0	21.97	13.22	15.37	38.45	-23.08
				1	24	22.13	13.38	15.53	38.45	-22.92
				12	6	20.91	12.16	14.31	38.45	-24.14
				25	0	20.66	11.91	14.06	38.45	-24.39
	20625	846.5	16QAM	1	0	22.16	13.41	15.56	38.45	-22.89
				1	24	21.89	13.14	15.29	38.45	-23.16
				12	6	20.96	12.21	14.36	38.45	-24.09
				25	0	20.77	12.02	14.17	38.45	-24.28
	20425	826.5	64QAM	1	0	21.55	12.80	14.95	38.45	-23.5
				1	24	21.12	12.37	14.52	38.45	-23.93
				12	6	20.26	11.51	13.66	38.45	-24.79
				25	0	19.95	11.20	13.35	38.45	-25.1
	20525	836.5	64QAM	1	0	21.21	12.46	14.61	38.45	-23.84
				1	24	21.23	12.48	14.63	38.45	-23.82
				12	6	20.14	11.39	13.54	38.45	-24.91
				25	0	19.94	11.19	13.34	38.45	-25.11
	20625	846.5	64QAM	1	0	21.46	12.71	14.86	38.45	-23.59
				1	24	21.16	12.41	14.56	38.45	-23.89
				12	6	20.23	11.48	13.63	38.45	-24.82
				25	0	20.03	11.28	13.43	38.45	-25.02

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Antenna gain (dBi) -6.6

LTE Band 5 Uplink frequency band : 824 to 849 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	EIRP Limit (dBm)	Margin (dB)
10	20450	829	QPSK	1	0	22.83	14.08	16.23	38.45	-22.22
				1	49	22.98	14.23	16.38	38.45	-22.07
				25	12	21.97	13.22	15.37	38.45	-23.08
				50	0	21.71	12.96	15.11	38.45	-23.34
	20525	836.5	QPSK	1	0	22.99	14.24	16.39	38.45	-22.06
				1	49	22.94	14.19	16.34	38.45	-22.11
				25	12	22.06	13.31	15.46	38.45	-22.99
				50	0	21.86	13.11	15.26	38.45	-23.19
	20600	844	QPSK	1	0	22.94	14.19	16.34	38.45	-22.11
				1	49	22.96	14.21	16.36	38.45	-22.09
				25	12	22.15	13.40	15.55	38.45	-22.9
				50	0	21.82	13.07	15.22	38.45	-23.23
	20450	829	16QAM	1	0	22.34	13.59	15.74	38.45	-22.71
				1	49	22.00	13.25	15.40	38.45	-23.05
				25	12	21.01	12.26	14.41	38.45	-24.04
				50	0	20.80	12.05	14.20	38.45	-24.25
	20525	836.5	16QAM	1	0	21.98	13.23	15.38	38.45	-23.07
				1	49	22.14	13.39	15.54	38.45	-22.91
				25	12	21.06	12.31	14.46	38.45	-23.99
				50	0	20.77	12.02	14.17	38.45	-24.28
	20600	844	16QAM	1	0	22.19	13.44	15.59	38.45	-22.86
				1	49	21.96	13.21	15.36	38.45	-23.09
				25	12	21.02	12.27	14.42	38.45	-24.03
				50	0	20.87	12.12	14.27	38.45	-24.18
	20450	829	64QAM	1	0	21.61	12.86	15.01	38.45	-23.44
				1	49	21.26	12.51	14.66	38.45	-23.79
				25	12	20.29	11.54	13.69	38.45	-24.76
				50	0	20.09	11.34	13.49	38.45	-24.96
	20525	836.5	64QAM	1	0	21.24	12.49	14.64	38.45	-23.81
				1	49	21.38	12.63	14.78	38.45	-23.67
				25	12	20.27	11.52	13.67	38.45	-24.78
				50	0	19.99	11.24	13.39	38.45	-25.06
	20600	844	64QAM	1	0	21.48	12.73	14.88	38.45	-23.57
				1	49	21.17	12.42	14.57	38.45	-23.88
				25	12	20.29	11.54	13.69	38.45	-24.76
				50	0	20.12	11.37	13.52	38.45	-24.93

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Antenna gain (dBi) -8.9

LTE Band 12_Uplink frequency band : 699 to 716 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	EIRP Limit (dBm)	Margin (dB)
1.4	23017	699.7	QPSK	1	0	22.57	11.52	13.67	34.77	-21.1
				1	5	22.60	11.55	13.70	34.77	-21.07
				3	2	22.69	11.64	13.79	34.77	-20.98
				6	0	21.68	10.63	12.78	34.77	-21.99
	23095	707.5	QPSK	1	0	22.62	11.57	13.72	34.77	-21.05
				1	5	22.60	11.55	13.70	34.77	-21.07
				3	2	22.70	11.65	13.80	34.77	-20.97
				6	0	21.56	10.51	12.66	34.77	-22.11
	23173	715.5	QPSK	1	0	22.64	11.59	13.74	34.77	-21.03
				1	5	22.70	11.65	13.80	34.77	-20.97
				3	2	22.59	11.54	13.69	34.77	-21.08
				6	0	21.57	10.52	12.67	34.77	-22.1
	23017	699.7	16QAM	1	0	21.60	10.55	12.70	34.77	-22.07
				1	5	21.60	10.55	12.70	34.77	-22.07
				3	2	21.63	10.58	12.73	34.77	-22.04
				6	0	20.57	9.52	11.67	34.77	-23.1
	23095	707.5	16QAM	1	0	21.63	10.58	12.73	34.77	-22.04
				1	5	21.61	10.56	12.71	34.77	-22.06
				3	2	21.58	10.53	12.68	34.77	-22.09
				6	0	20.64	9.59	11.74	34.77	-23.03
	23173	715.5	16QAM	1	0	21.66	10.61	12.76	34.77	-22.01
				1	5	21.53	10.48	12.63	34.77	-22.14
				3	2	21.65	10.60	12.75	34.77	-22.02
				6	0	20.54	9.49	11.64	34.77	-23.13
	23017	699.7	64QAM	1	0	21.03	9.98	12.13	34.77	-22.64
				1	5	20.95	9.90	12.05	34.77	-22.72
				3	2	21.14	10.09	12.24	34.77	-22.53
				6	0	20.11	9.06	11.21	34.77	-23.56
	23095	707.5	64QAM	1	0	21.04	9.99	12.14	34.77	-22.63
				1	5	21.00	9.95	12.10	34.77	-22.67
				3	2	21.01	9.96	12.11	34.77	-22.66
				6	0	20.03	8.98	11.13	34.77	-23.64
	23173	715.5	64QAM	1	0	21.02	9.97	12.12	34.77	-22.65
				1	5	21.00	9.95	12.10	34.77	-22.67
				3	2	21.02	9.97	12.12	34.77	-22.65
				6	0	20.07	9.02	11.17	34.77	-23.6

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Antenna gain (dBi) -8.9

LTE Band 12_Uplink frequency band : 699 to 716 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	EIRP Limit (dBm)	Margin (dB)
3	23025	700.5	QPSK	1	0	22.80	11.75	13.90	34.77	-20.87
				1	14	22.94	11.89	14.04	34.77	-20.73
				8	4	21.96	10.91	13.06	34.77	-21.71
				15	0	21.66	10.61	12.76	34.77	-22.01
	23095	707.5	QPSK	1	0	22.70	11.65	13.80	34.77	-20.97
				1	14	22.85	11.80	13.95	34.77	-20.82
				8	4	21.99	10.94	13.09	34.77	-21.68
				15	0	21.72	10.67	12.82	34.77	-21.95
	23165	714.5	QPSK	1	0	22.76	11.71	13.86	34.77	-20.91
				1	14	22.97	11.92	14.07	34.77	-20.7
				8	4	21.96	10.91	13.06	34.77	-21.71
				15	0	21.74	10.69	12.84	34.77	-21.93
	23025	700.5	16QAM	1	0	21.96	10.91	13.06	34.77	-21.71
				1	14	22.20	11.15	13.30	34.77	-21.47
				8	4	20.98	9.93	12.08	34.77	-22.69
				15	0	20.73	9.68	11.83	34.77	-22.94
	23095	707.5	16QAM	1	0	22.03	10.98	13.13	34.77	-21.64
				1	14	22.08	11.03	13.18	34.77	-21.59
				8	4	21.06	10.01	12.16	34.77	-22.61
				15	0	20.80	9.75	11.90	34.77	-22.87
	23165	714.5	16QAM	1	0	22.12	11.07	13.22	34.77	-21.55
				1	14	22.29	11.24	13.39	34.77	-21.38
				8	4	21.05	10.00	12.15	34.77	-22.62
				15	0	20.75	9.70	11.85	34.77	-22.92
	23025	700.5	64QAM	1	0	21.31	10.26	12.41	34.77	-22.36
				1	14	21.69	10.64	12.79	34.77	-21.98
				8	4	20.43	9.38	11.53	34.77	-23.24
				15	0	20.10	9.05	11.20	34.77	-23.57
	23095	707.5	64QAM	1	0	21.50	10.45	12.60	34.77	-22.17
				1	14	21.64	10.59	12.74	34.77	-22.03
				8	4	20.46	9.41	11.56	34.77	-23.21
				15	0	20.30	9.25	11.40	34.77	-23.37
	23165	714.5	64QAM	1	0	21.73	10.68	12.83	34.77	-21.94
				1	14	21.87	10.82	12.97	34.77	-21.8
				8	4	20.48	9.43	11.58	34.77	-23.19
				15	0	20.30	9.25	11.40	34.77	-23.37

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Antenna gain (dBi) -8.9

LTE Band 12 Uplink frequency band : 699 to 716 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	EIRP Limit (dBm)	Margin (dB)
5	23035	701.5	QPSK	1	0	22.82	11.77	13.92	34.77	-20.85
				1	24	23.07	12.02	14.17	34.77	-20.6
				12	6	21.86	10.81	12.96	34.77	-21.81
				25	0	21.67	10.62	12.77	34.77	-22
	23095	707.5	QPSK	1	0	22.76	11.71	13.86	34.77	-20.91
				1	24	22.87	11.82	13.97	34.77	-20.8
				12	6	21.96	10.91	13.06	34.77	-21.71
				25	0	21.80	10.75	12.90	34.77	-21.87
	23155	713.5	QPSK	1	0	22.86	11.81	13.96	34.77	-20.81
				1	24	23.08	12.03	14.18	34.77	-20.59
				12	6	21.90	10.85	13.00	34.77	-21.77
				25	0	21.82	10.77	12.92	34.77	-21.85
	23035	701.5	16QAM	1	0	21.96	10.91	13.06	34.77	-21.71
				1	24	22.19	11.14	13.29	34.77	-21.48
				12	6	20.90	9.85	12.00	34.77	-22.77
				25	0	20.71	9.66	11.81	34.77	-22.96
	23095	707.5	16QAM	1	0	22.00	10.95	13.10	34.77	-21.67
				1	24	22.14	11.09	13.24	34.77	-21.53
				12	6	21.02	9.97	12.12	34.77	-22.65
				25	0	20.75	9.70	11.85	34.77	-22.92
	23155	713.5	16QAM	1	0	22.05	11.00	13.15	34.77	-21.62
				1	24	22.30	11.25	13.40	34.77	-21.37
				12	6	21.01	9.96	12.11	34.77	-22.66
				25	0	20.72	9.67	11.82	34.77	-22.95
	23035	701.5	64QAM	1	0	21.30	10.25	12.40	34.77	-22.37
				1	24	21.62	10.57	12.72	34.77	-22.05
				12	6	20.44	9.39	11.54	34.77	-23.23
				25	0	20.13	9.08	11.23	34.77	-23.54
	23095	707.5	64QAM	1	0	21.51	10.46	12.61	34.77	-22.16
				1	24	21.54	10.49	12.64	34.77	-22.13
				12	6	20.40	9.35	11.50	34.77	-23.27
				25	0	20.21	9.16	11.31	34.77	-23.46
	23155	713.5	64QAM	1	0	21.79	10.74	12.89	34.77	-21.88
				1	24	21.90	10.85	13.00	34.77	-21.77
				12	6	20.50	9.45	11.60	34.77	-23.17
				25	0	20.26	9.21	11.36	34.77	-23.41

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Antenna gain (dBi) -8.9

LTE Band 12_Uplink frequency band : 699 to 716 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	EIRP Limit (dBm)	Margin (dB)
10	23060	704	QPSK	1	0	22.88	11.83	13.98	34.77	-20.79
				1	49	23.08	12.03	14.18	34.77	-20.59
				25	12	21.98	10.93	13.08	34.77	-21.69
				50	0	21.80	10.75	12.90	34.77	-21.87
	23095	707.5	QPSK	1	0	22.77	11.72	13.87	34.77	-20.9
				1	49	22.89	11.84	13.99	34.77	-20.78
				25	12	21.99	10.94	13.09	34.77	-21.68
				50	0	21.85	10.80	12.95	34.77	-21.82
	23130	711	QPSK	1	0	22.86	11.81	13.96	34.77	-20.81
				1	49	23.09	12.04	14.19	34.77	-20.58
				25	12	22.01	10.96	13.11	34.77	-21.66
				50	0	21.83	10.78	12.93	34.77	-21.84
	23060	704	16QAM	1	0	21.96	10.91	13.06	34.77	-21.71
				1	49	22.32	11.27	13.42	34.77	-21.35
				25	12	21.04	9.99	12.14	34.77	-22.63
				50	0	20.73	9.68	11.83	34.77	-22.94
	23095	707.5	16QAM	1	0	22.05	11.00	13.15	34.77	-21.62
				1	49	22.22	11.17	13.32	34.77	-21.45
				25	12	21.07	10.02	12.17	34.77	-22.6
				50	0	20.86	9.81	11.96	34.77	-22.81
	23130	711	16QAM	1	0	22.13	11.08	13.23	34.77	-21.54
				1	49	22.35	11.30	13.45	34.77	-21.32
				25	12	21.09	10.04	12.19	34.77	-22.58
				50	0	20.85	9.80	11.95	34.77	-22.82
	23060	704	64QAM	1	0	21.43	10.38	12.53	34.77	-22.24
				1	49	21.74	10.69	12.84	34.77	-21.93
				25	12	20.50	9.45	11.60	34.77	-23.17
				50	0	20.18	9.13	11.28	34.77	-23.49
	23095	707.5	64QAM	1	0	21.51	10.46	12.61	34.77	-22.16
				1	49	21.69	10.64	12.79	34.77	-21.98
				25	12	20.53	9.48	11.63	34.77	-23.14
				50	0	20.34	9.29	11.44	34.77	-23.33
	23130	711	64QAM	1	0	21.87	10.82	12.97	34.77	-21.8
				1	49	21.99	10.94	13.09	34.77	-21.68
				25	12	20.54	9.49	11.64	34.77	-23.13
				50	0	20.33	9.28	11.43	34.77	-23.34

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Antenna gain (dBi) -6.6

LTE Band 13 Uplink frequency band : 777 to 787 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	EIRP Limit (dBm)	Margin (dB)
5	23205	779.5	QPSK	1	0	23.14	14.39	16.54	34.77	-18.23
				1	24	22.98	14.23	16.38	34.77	-18.39
				12	6	21.60	12.85	15.00	34.77	-19.77
				25	0	21.58	12.83	14.98	34.77	-19.79
	23230	782	QPSK	1	0	22.79	14.04	16.19	34.77	-18.58
				1	24	22.63	13.88	16.03	34.77	-18.74
				12	6	21.57	12.82	14.97	34.77	-19.8
				25	0	21.42	12.67	14.82	34.77	-19.95
	23255	784.5	QPSK	1	0	22.81	14.06	16.21	34.77	-18.56
				1	24	22.75	14.00	16.15	34.77	-18.62
				12	6	21.69	12.94	15.09	34.77	-19.68
				25	0	21.48	12.73	14.88	34.77	-19.89
	23205	779.5	16QAM	1	0	21.84	13.09	15.24	34.77	-19.53
				1	24	21.48	12.73	14.88	34.77	-19.89
				12	6	20.55	11.80	13.95	34.77	-20.82
				25	0	20.59	11.84	13.99	34.77	-20.78
	23230	782	16QAM	1	0	21.85	13.10	15.25	34.77	-19.52
				1	24	21.70	12.95	15.10	34.77	-19.67
				12	6	20.56	11.81	13.96	34.77	-20.81
				25	0	20.63	11.88	14.03	34.77	-20.74
	23255	784.5	16QAM	1	0	21.67	12.92	15.07	34.77	-19.7
				1	24	21.86	13.11	15.26	34.77	-19.51
				12	6	20.54	11.79	13.94	34.77	-20.83
				25	0	20.49	11.74	13.89	34.77	-20.88
	23205	779.5	64QAM	1	0	21.33	12.58	14.73	34.77	-20.04
				1	24	21.01	12.26	14.41	34.77	-20.36
				12	6	19.87	11.12	13.27	34.77	-21.5
				25	0	19.74	10.99	13.14	34.77	-21.63
	23230	782	64QAM	1	0	21.28	12.53	14.68	34.77	-20.09
				1	24	21.19	12.44	14.59	34.77	-20.18
				12	6	19.93	11.18	13.33	34.77	-21.44
				25	0	19.88	11.13	13.28	34.77	-21.49
	23255	784.5	64QAM	1	0	21.09	12.34	14.49	34.77	-20.28
				1	24	21.38	12.63	14.78	34.77	-19.99
				12	6	19.95	11.20	13.35	34.77	-21.42
				25	0	19.85	11.10	13.25	34.77	-21.52

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Antenna gain (dBi) -6.6

LTE Band 13_Uplink frequency band : 777 to 787 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	EIRP Limit (dBm)	Margin (dB)
10	23230	782	QPSK	1	0	23.26	14.51	16.66	34.77	-18.11
				1	49	22.83	14.08	16.23	34.77	-18.54
				25	12	22.06	13.31	15.46	34.77	-19.31
				50	0	21.78	13.03	15.18	34.77	-19.59
	23230	782	16QAM	1	0	22.31	13.56	15.71	34.77	-19.06
				1	49	22.20	13.45	15.60	34.77	-19.17
				25	12	20.98	12.23	14.38	34.77	-20.39
				50	0	20.83	12.08	14.23	34.77	-20.54
	23230	782	64QAM	1	0	21.60	12.85	15.00	34.77	-19.77
				1	49	21.45	12.70	14.85	34.77	-19.92
				25	12	20.23	11.48	13.63	34.77	-21.14
				50	0	20.03	11.28	13.43	34.77	-21.34

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Antenna gain (dBi) -8.9

LTE Band 17_Uplink frequency band : 704 to 716 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	EIRP Limit (dBm)	Margin (dB)
5	23755	706.5	QPSK	1	0	22.85	11.80	13.95	34.77	-20.82
				1	24	22.98	11.93	14.08	34.77	-20.69
				12	6	21.95	10.90	13.05	34.77	-21.72
				25	0	21.82	10.77	12.92	34.77	-21.85
	23790	710	QPSK	1	0	22.66	11.61	13.76	34.77	-21.01
				1	24	22.85	11.80	13.95	34.77	-20.82
				12	6	21.99	10.94	13.09	34.77	-21.68
				25	0	21.77	10.72	12.87	34.77	-21.9
	23825	713.5	QPSK	1	0	22.89	11.84	13.99	34.77	-20.78
				1	24	22.85	11.80	13.95	34.77	-20.82
				12	6	22.05	11.00	13.15	34.77	-21.62
				25	0	21.79	10.74	12.89	34.77	-21.88
	23755	706.5	16QAM	1	0	22.09	11.04	13.19	34.77	-21.58
				1	24	22.14	11.09	13.24	34.77	-21.53
				12	6	20.99	9.94	12.09	34.77	-22.68
				25	0	20.83	9.78	11.93	34.77	-22.84
	23790	710	16QAM	1	0	21.98	10.93	13.08	34.77	-21.69
				1	24	22.30	11.25	13.40	34.77	-21.37
				12	6	21.03	9.98	12.13	34.77	-22.64
				25	0	20.87	9.82	11.97	34.77	-22.8
	23825	713.5	16QAM	1	0	22.29	11.24	13.39	34.77	-21.38
				1	24	22.13	11.08	13.23	34.77	-21.54
				12	6	20.95	9.90	12.05	34.77	-22.72
				25	0	20.78	9.73	11.88	34.77	-22.89
	23755	706.5	64QAM	1	0	21.05	10.00	12.15	34.77	-22.62
				1	24	21.21	10.16	12.31	34.77	-22.46
				12	6	20.11	9.06	11.21	34.77	-23.56
				25	0	19.82	8.77	10.92	34.77	-23.85
	23790	710	64QAM	1	0	21.13	10.08	12.23	34.77	-22.54
				1	24	21.34	10.29	12.44	34.77	-22.33
				12	6	20.09	9.04	11.19	34.77	-23.58
				25	0	19.89	8.84	10.99	34.77	-23.78
	23825	713.5	64QAM	1	0	21.41	10.36	12.51	34.77	-22.26
				1	24	21.23	10.18	12.33	34.77	-22.44
				12	6	19.92	8.87	11.02	34.77	-23.75
				25	0	19.85	8.80	10.95	34.77	-23.82

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Antenna gain (dBi) -8.9

LTE Band 17_Uplink frequency band : 704 to 716 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	EIRP Limit (dBm)	Margin (dB)
10	23780	709	QPSK	1	0	22.97	11.92	14.07	34.77	-20.7
				1	49	23.11	12.06	14.21	34.77	-20.56
				25	12	22.04	10.99	13.14	34.77	-21.63
				50	0	21.91	10.86	13.01	34.77	-21.76
	23790	710	QPSK	1	0	22.75	11.70	13.85	34.77	-20.92
				1	49	22.97	11.92	14.07	34.77	-20.7
				25	12	22.05	11.00	13.15	34.77	-21.62
				50	0	21.82	10.77	12.92	34.77	-21.85
	23800	711	QPSK	1	0	22.99	11.94	14.09	34.77	-20.68
				1	49	22.86	11.81	13.96	34.77	-20.81
				25	12	22.07	11.02	13.17	34.77	-21.6
				50	0	21.86	10.81	12.96	34.77	-21.81
	23780	709	16QAM	1	0	22.14	11.09	13.24	34.77	-21.53
				1	49	22.23	11.18	13.33	34.77	-21.44
				25	12	21.11	10.06	12.21	34.77	-22.56
				50	0	20.84	9.79	11.94	34.77	-22.83
	23790	710	16QAM	1	0	22.11	11.06	13.21	34.77	-21.56
				1	49	22.45	11.40	13.55	34.77	-21.22
				25	12	21.14	10.09	12.24	34.77	-22.53
				50	0	20.90	9.85	12.00	34.77	-22.77
	23800	711	16QAM	1	0	22.38	11.33	13.48	34.77	-21.29
				1	49	22.22	11.17	13.32	34.77	-21.45
				25	12	21.03	9.98	12.13	34.77	-22.64
				50	0	20.85	9.80	11.95	34.77	-22.82
	23780	709	64QAM	1	0	21.16	10.11	12.26	34.77	-22.51
				1	49	21.24	10.19	12.34	34.77	-22.43
				25	12	20.20	9.15	11.30	34.77	-23.47
				50	0	19.84	8.79	10.94	34.77	-23.83
	23790	710	64QAM	1	0	21.14	10.09	12.24	34.77	-22.53
				1	49	21.47	10.42	12.57	34.77	-22.2
				25	12	20.16	9.11	11.26	34.77	-23.51
				50	0	19.93	8.88	11.03	34.77	-23.74
	23800	711	64QAM	1	0	21.44	10.39	12.54	34.77	-22.23
				1	49	21.25	10.20	12.35	34.77	-22.42
				25	12	20.04	8.99	11.14	34.77	-23.63
				50	0	19.95	8.90	11.05	34.77	-23.72

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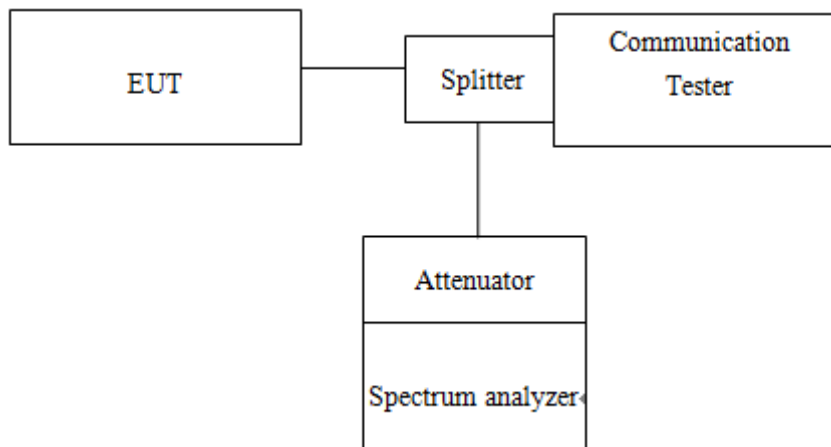
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7. OCCUPIED BANDWIDTH MEASUREMENT

7.1. Standard Applicable

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

7.2. Test Set-up



7.3. Measurement Procedure

99% & 26dB Bandwidth with detector peak

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

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7.4. Measurement Equipment Used

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EXA Spectrum Analyzer	Agilent	N9010A	MY50420195	05/02/2019	05/01/2020
Radio Communication Analyzer	Anritsu	MT8815B	6200711454	04/01/2019	03/31/2020
Radio Communication Analyzer	Anritsu	MT8820C	6200995019	04/01/2019	03/31/2020
DC Power Supply	Agilent	E3640A	MY52410006	12/04/2018	12/03/2019
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2019	01/01/2020
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2019	01/01/2020
Splitter	RF-LAMBAD	RFLT2W1G18G	11-JSPF412-018	01/02/2019	01/01/2020

7.5. Measurement Result

Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		GSM 850	GPRS 850	GSM 850	GPRS 850
824.2	128	0.24225	0.24424	0.3245	0.3220
836.6	190	0.24261	0.24314	0.3188	0.3116
848.8	251	0.24224	0.24287	0.3174	0.3164

Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		GSM 1900	GPRS 1900	GSM 1900	GPRS 1900
1850.2	512	0.24358	0.24206	0.3146	0.3175
1880.0	661	0.24631	0.24295	0.3085	0.3165
1909.8	810	0.24467	0.24804	0.3157	0.3173

Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		WCDMA II	HSDPA II	HSUPA II	WCDMA II	HSDPA II	HSUPA II
1852.40	9262	4.14100	4.15060	4.14810	4.706	4.717	4.704
1880.00	9400	4.14620	4.14970	4.15430	4.706	4.708	4.700
1907.60	9538	4.15770	4.14200	4.15490	4.695	4.698	4.706

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Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		WCDMA IV	HSDPA IV	HSUPA IV	WCDMA IV	HSDPA IV	HSUPA IV
1712.40	1312	4.15570	4.16200	4.14560	4.686	4.708	4.707
1732.60	1413	4.15350	4.14460	4.14040	4.710	4.705	4.717
1752.60	1513	4.14860	4.15870	4.14150	4.684	4.683	4.695

Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		WCDMA V	HSDPA V	HSUPA V	WCDMA V	HSDPA V	HSUPA V
826.40	4132	4.14110	4.14590	4.13860	4.669	4.704	4.673
836.60	4183	4.14010	4.13840	4.15970	4.693	4.701	4.688
846.60	4233	4.12090	4.13410	4.13320	4.677	4.694	4.668

LTE BAND 2 Channel bandwidth: 1.4MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1850.7	18607	1.0945	1.0966	1.0956	1.237	1.233	1.235
1880.0	18900	1.0936	1.0973	1.0965	1.235	1.239	1.239
1909.3	19193	1.0954	1.0965	1.0954	1.235	1.240	1.245

LTE BAND 2 Channel bandwidth: 3MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1851.5	18615	2.6970	2.6989	2.7026	3.013	3.028	2.998
1880.0	18900	2.6995	2.6995	2.7025	3.010	3.015	2.991
1908.5	19185	2.7012	2.7014	2.7038	3.003	3.016	2.997

LTE BAND 2 Channel bandwidth: 5MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1852.5	18625	4.5045	4.5012	4.5157	4.993	4.971	4.984
1880.0	18900	4.5077	4.5020	4.5077	4.986	4.986	4.990
1907.5	19175	4.5009	4.5080	4.5151	4.992	4.967	5.000

LTE BAND 2 Channel bandwidth: 10MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1855.0	18650	8.9808	8.9592	8.9814	9.793	9.799	9.834
1880.0	18900	9.0156	8.9638	8.9826	9.831	9.753	9.805
1905.0	19150	8.9993	8.9724	8.9917	9.836	9.757	9.797

LTE BAND 2 Channel bandwidth: 15MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1857.5	18675	13.497	13.455	13.431	14.654	14.732	14.691
1880.0	18900	13.472	13.468	13.455	14.638	14.663	14.757
1902.5	19125	13.508	13.479	13.474	14.751	14.690	14.714

LTE BAND 2 Channel bandwidth: 20MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1860.0	18700	17.915	17.974	17.965	19.456	19.408	19.527
1880.0	18900	17.914	17.961	17.937	19.448	19.416	19.555
1900.0	19100	17.981	17.991	17.976	19.474	19.507	19.545

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LTE BAND 4 Channel bandwidth: 1.4MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1710.7	19957	1.0955	1.0978	1.0962	1.239	1.241	1.236
1732.5	20175	1.0921	1.0978	1.0951	1.234	1.244	1.235
1754.3	20393	1.0953	1.0950	1.0958	1.237	1.242	1.230

LTE BAND 4 Channel bandwidth: 3MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1711.5	19965	2.6983	2.7021	2.7021	2.994	3.017	2.986
1732.5	20175	2.7022	2.7009	2.7039	3.022	3.017	2.985
1753.5	20385	2.6992	2.6965	2.7003	2.991	3.017	2.995

LTE BAND 4 Channel bandwidth: 5MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1712.5	19957	4.5050	4.5048	4.5030	4.972	4.979	4.960
1732.5	20175	4.5006	4.5003	4.5105	4.977	4.956	4.970
1752.5	20375	4.5026	4.5081	4.5101	4.989	4.940	4.965

LTE BAND 4 Channel bandwidth: 10MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1715.0	20000	9.0201	8.9692	8.9911	9.816	9.793	9.801
1732.5	20175	9.0168	8.9595	8.9856	9.811	9.788	9.831
1750.0	20350	9.0245	8.9658	8.9849	9.817	9.761	9.803

LTE BAND 4 Channel bandwidth: 15MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1717.5	20025	13.466	13.475	13.450	14.567	14.735	14.765
1732.5	20175	13.466	13.469	13.444	14.673	14.668	14.787
1747.5	20325	13.475	13.472	13.461	14.691	14.707	14.738

LTE BAND 4 Channel bandwidth: 20MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1720.0	20050	17.939	17.972	17.934	19.447	19.462	19.481
1732.5	20175	17.914	17.919	17.924	19.427	19.490	19.522
1745.0	20300	17.936	17.976	17.947	19.423	19.491	19.461

LTE BAND 5 Channel bandwidth: 1.4MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
824.7	20407	1.0946	1.0974	1.0927	1.237	1.230	1.236
836.5	20525	1.0944	1.0930	1.0962	1.237	1.243	1.233
848.3	20643	1.0922	1.0958	1.0934	1.238	1.236	1.232

LTE BAND 5 Channel bandwidth: 3MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
825.5	20415	2.7014	2.7015	2.7071	3.008	2.993	2.989
836.5	20525	2.6986	2.7034	2.7017	2.995	2.997	2.986
847.5	20635	2.6973	2.6987	2.7015	2.989	3.008	2.999

LTE BAND 5 Channel bandwidth: 5MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
826.5	20425	4.5053	4.5024	4.5139	5.003	4.957	4.952
836.5	20525	4.5033	4.5064	4.5093	4.987	4.990	4.959
846.5	20625	4.4948	4.5002	4.5020	4.970	4.973	4.959

LTE BAND 5 Channel bandwidth: 10MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
829.0	20450	9.0141	8.9737	9.0018	9.844	9.815	9.809
836.5	20525	8.9968	8.9537	8.9792	9.829	9.784	9.846
844.0	20600	9.0138	8.9746	9.0058	9.820	9.777	9.861

LTE BAND 12 Channel bandwidth: 1.4MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
699.7	23017	1.0982	1.1071	1.1026	1.216	1.218	1.231
707.5	23095	1.0932	1.0992	1.1009	1.233	1.215	1.240
715.3	23173	1.0960	1.0970	1.0956	1.228	1.244	1.220

LTE BAND 12 Channel bandwidth: 3MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
700.5	23025	2.6680	2.6878	2.6845	2.879	2.929	2.892
707.5	23095	2.6815	2.6817	2.6789	2.882	2.886	2.868
714.5	23165	2.6714	2.6953	2.6694	2.921	2.918	2.873

LTE BAND 12 Channel bandwidth: 5MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
701.5	23035	4.4912	4.5018	4.4667	4.847	4.949	4.745
707.5	23095	4.4987	4.5027	4.4999	4.922	4.975	4.950
713.5	23155	4.5048	4.4675	4.4461	4.999	4.799	4.720

LTE BAND 12 Channel bandwidth: 10MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
704.0	23060	9.0115	8.9616	8.9673	9.772	9.760	9.755
707.5	23095	9.0084	8.9801	8.9984	9.772	9.760	9.842
711.0	23130	8.9842	8.9194	8.9703	9.742	9.467	9.837

LTE BAND 13 Channel bandwidth: 5MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
779.5	23205	4.4918	4.4988	4.5043	4.979	4.966	4.948
782.0	23230	4.4671	4.5086	4.5061	4.787	4.969	4.955
784.5	23255	4.4817	4.5027	4.5062	4.840	4.992	4.959

LTE BAND 13 Channel bandwidth: 10MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
782.0	23230	8.978	8.944	8.979	9.733	9.746	9.833

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LTE BAND 17 Channel bandwidth: 5MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
706.5	23755	4.4992	4.4909	4.5172	4.973	4.803	4.996
710.0	23790	4.5025	4.4883	4.4897	5.003	4.758	4.814
713.5	23825	4.5032	4.5075	4.5011	5.000	4.983	4.883

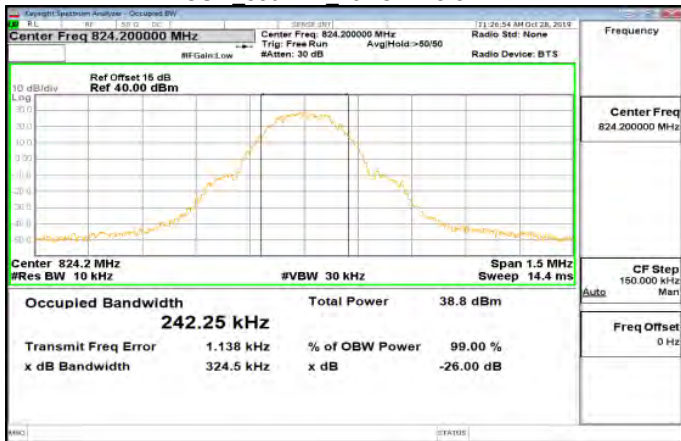
LTE BAND 17 Channel bandwidth: 10MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
709.0	23780	8.9968	8.9753	8.9819	9.801	9.736	9.827
710.0	23790	8.9916	8.9497	8.9709	9.516	9.760	9.812
711.0	23800	8.9385	8.9532	8.9789	9.506	9.743	9.759

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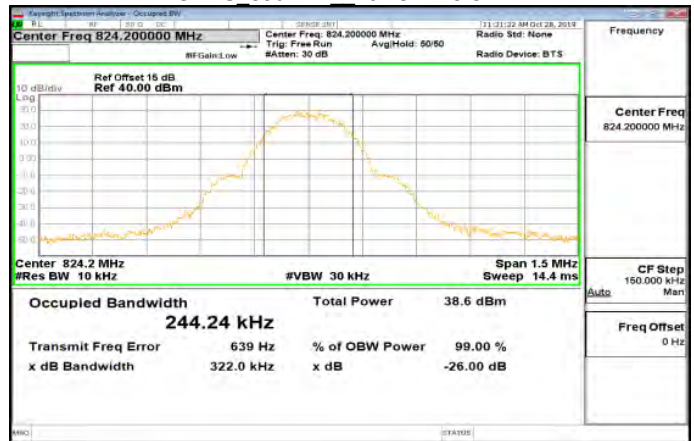
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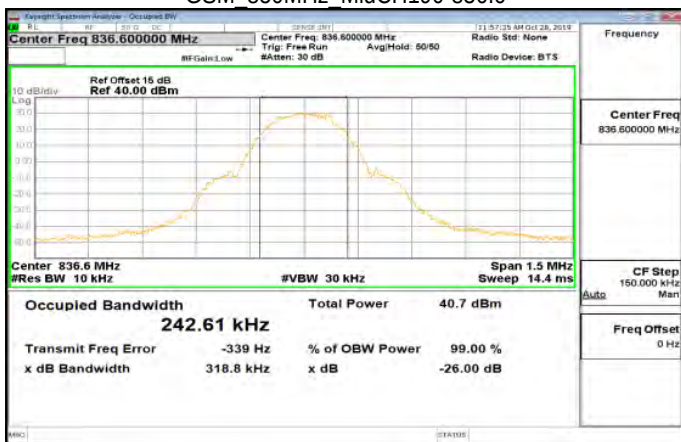
GSM 850MHz LowCH128-824.2



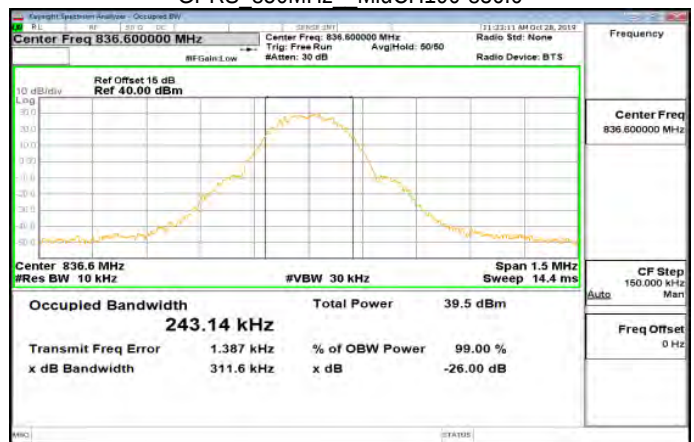
GPRS 850MHz LowCH128-824.2



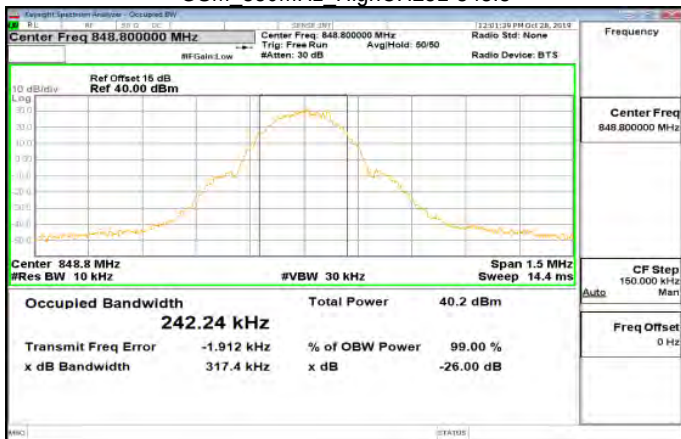
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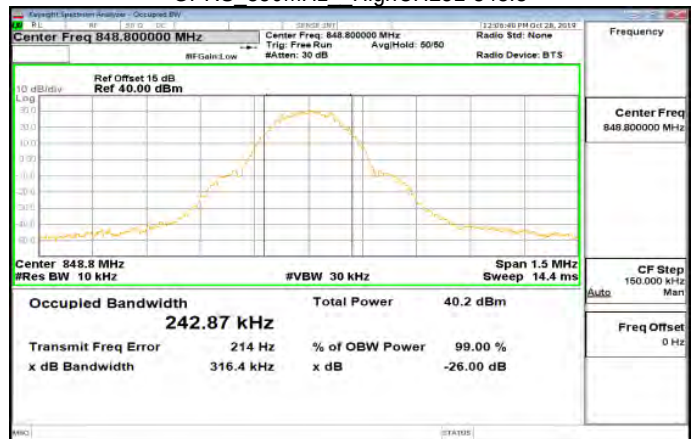
GPRS 850MHz MidCH190-836.6



GSM 850MHz HighCH251-848.8



GPRS 850MHz HighCH251-848.8

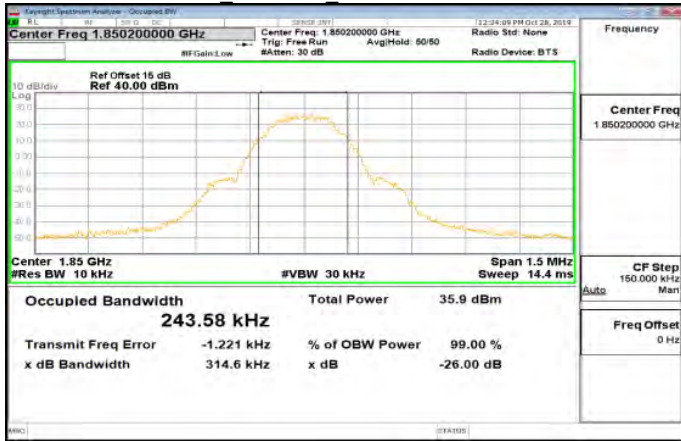


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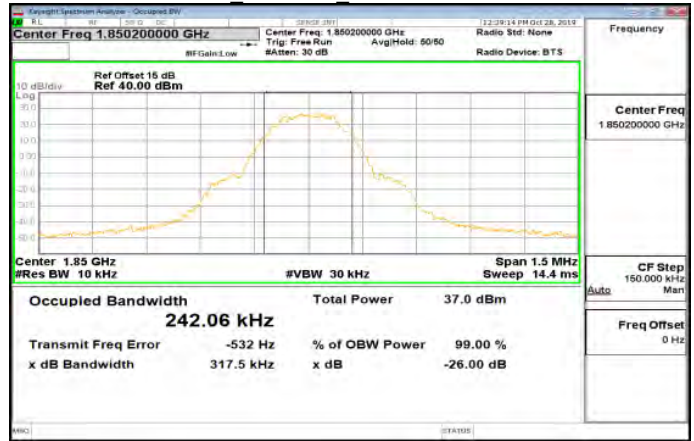
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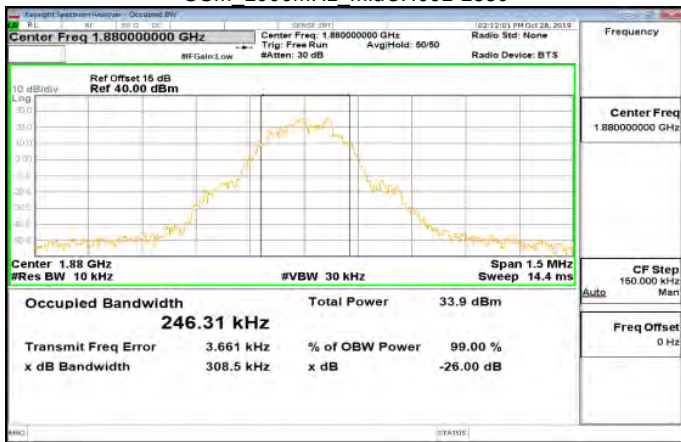
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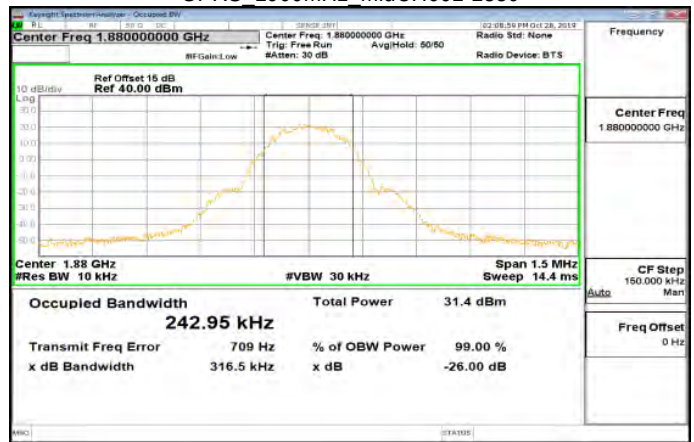
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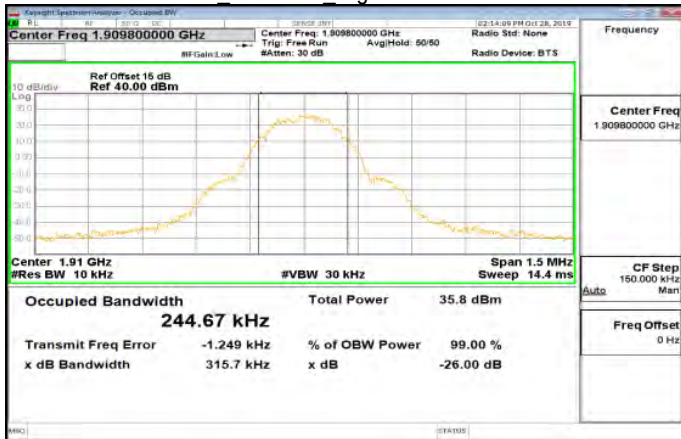
GSM 1900MHz MidCH661-1880



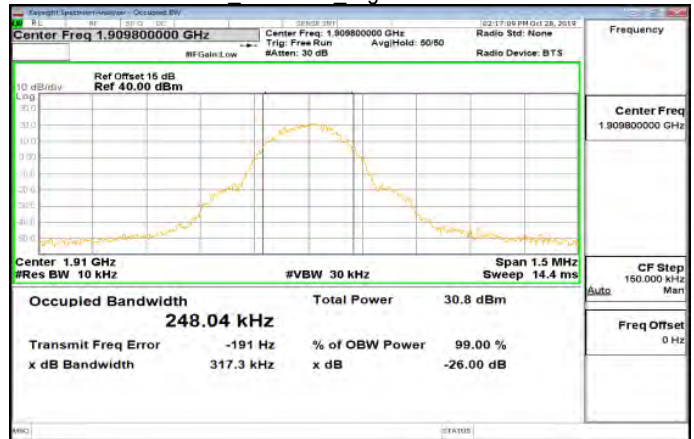
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GSM 1900MHz HighCH810-1909.8



GPRS 1900MHz HighCH810-1909.8

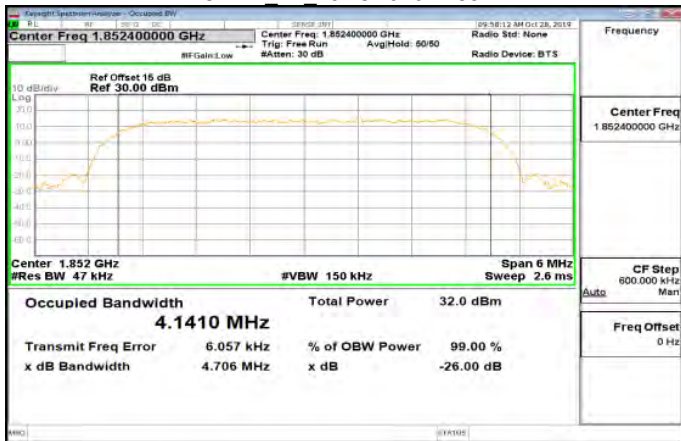


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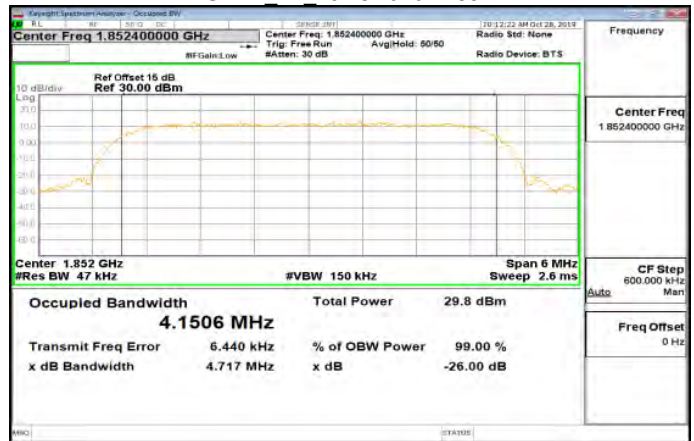
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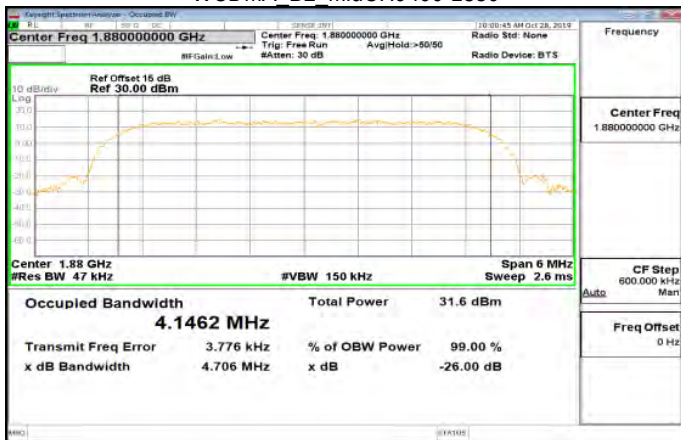
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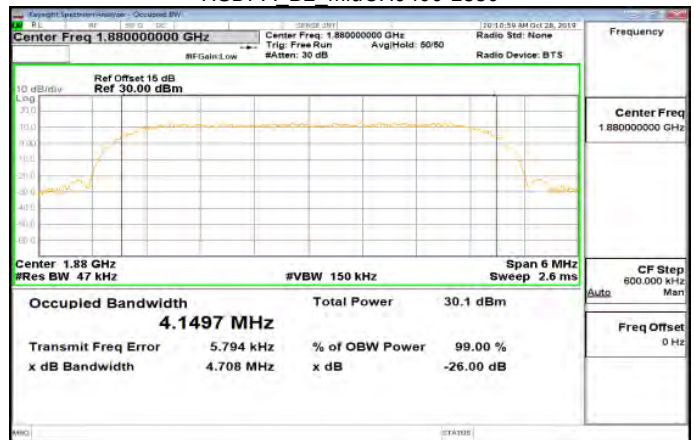
HSDPA B2 LowCH9262-1852.4



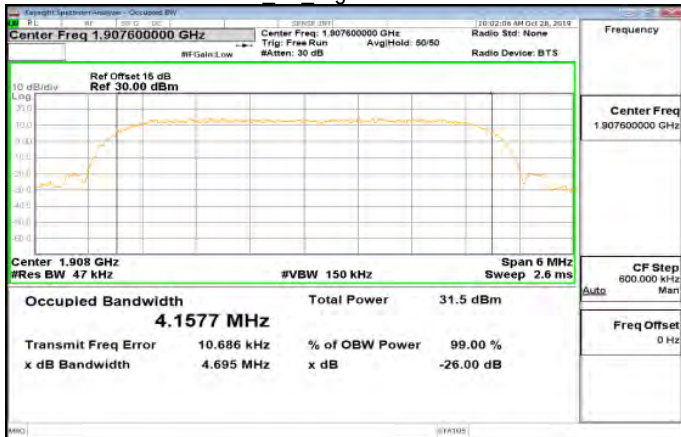
WCDMA B2 MidCH9400-1880



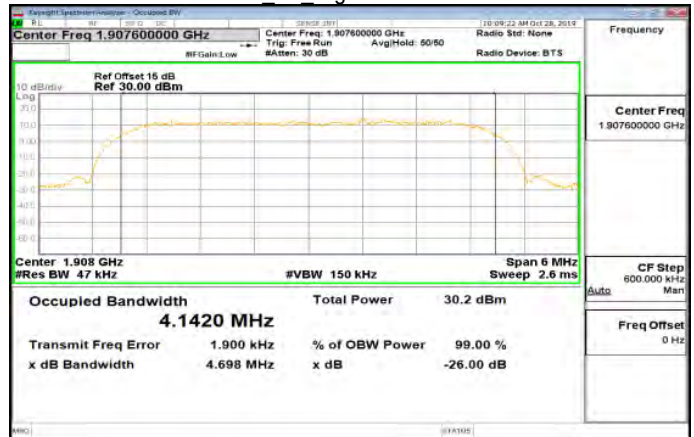
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WCDMA B2 HighCH9538-1907.6



HSDPA B2 HighCH9538-1907.6

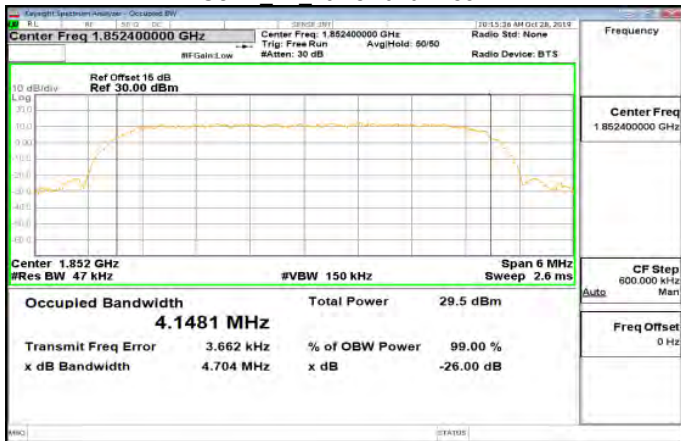


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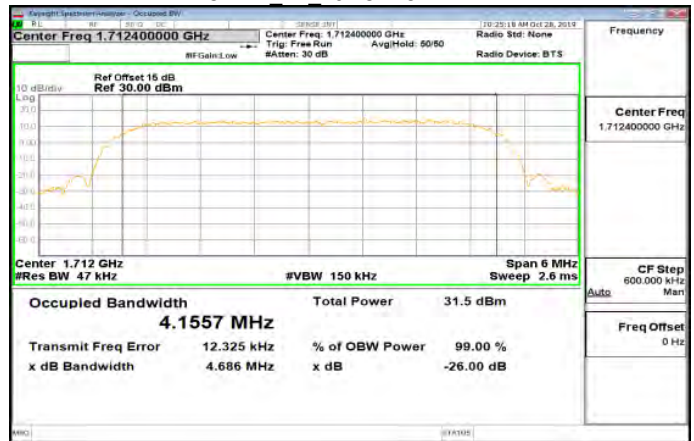
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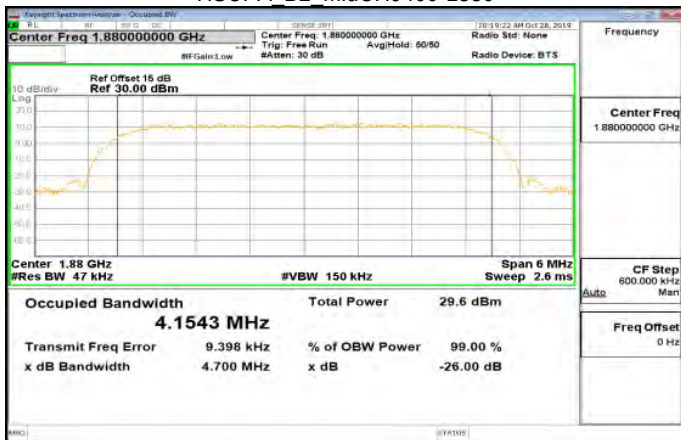
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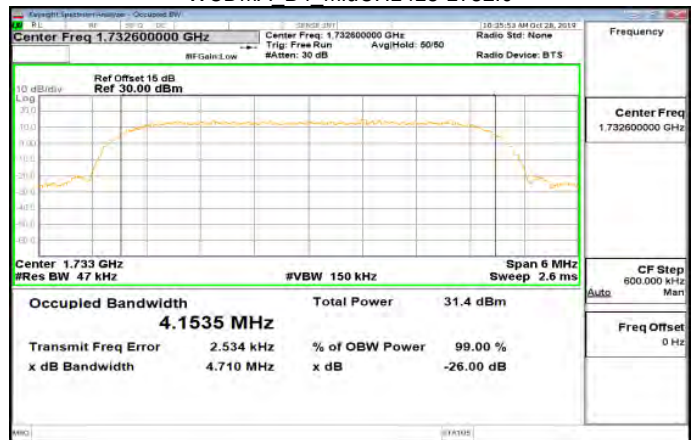
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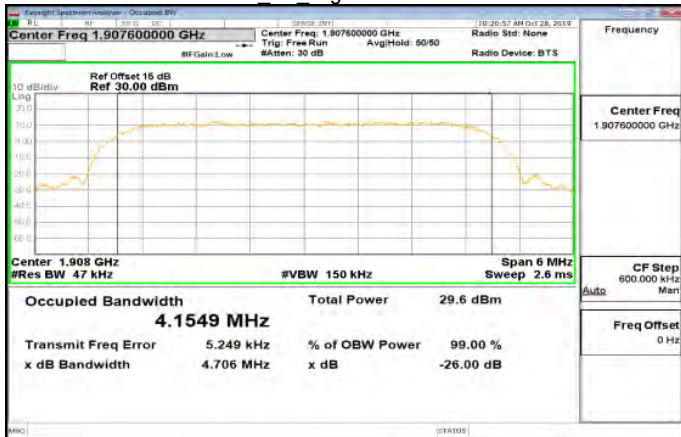
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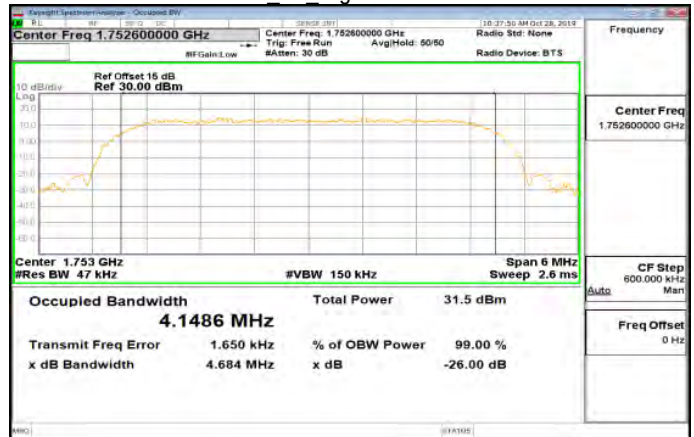
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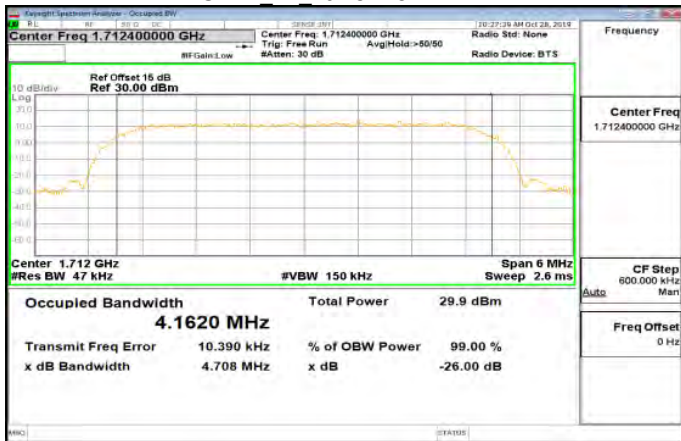


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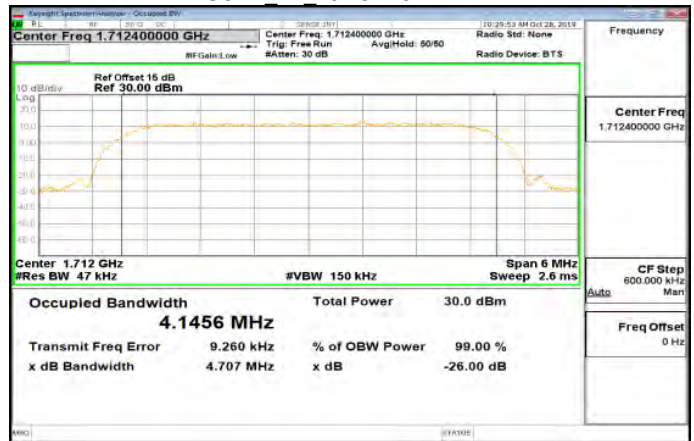
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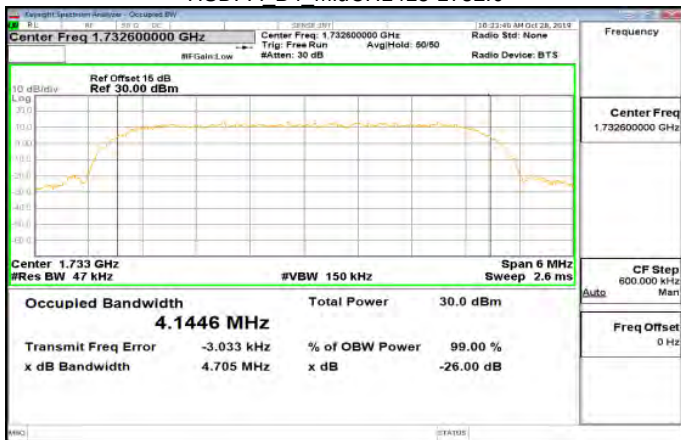
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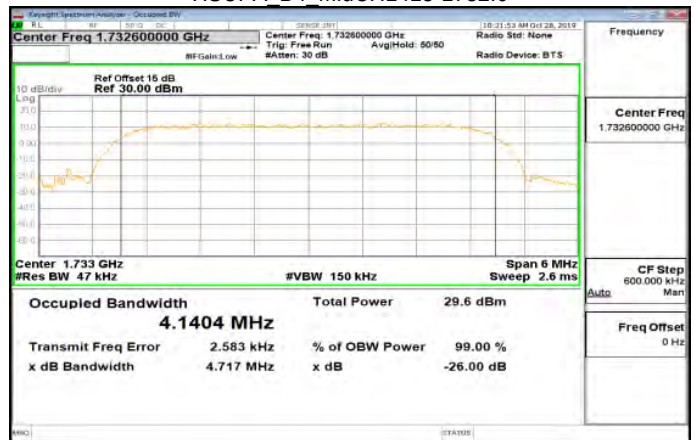
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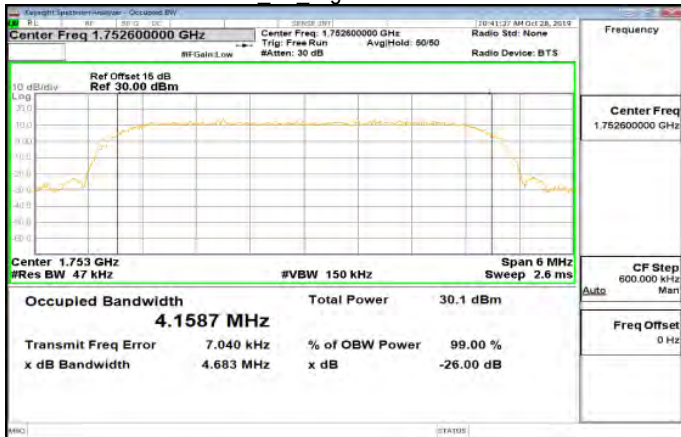
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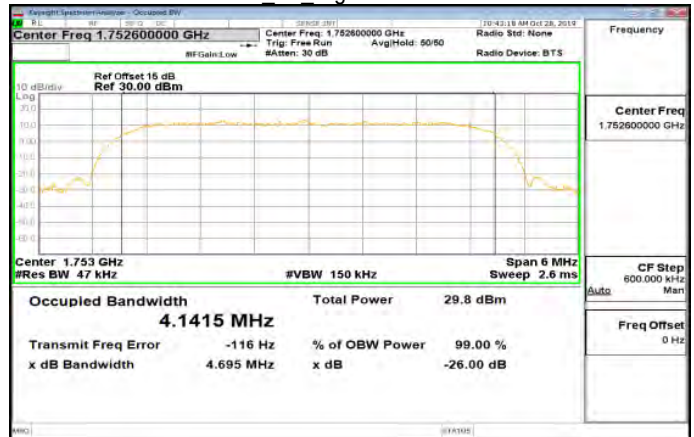
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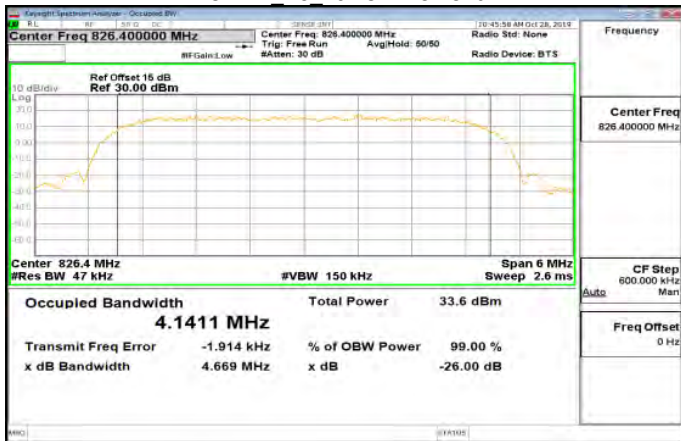


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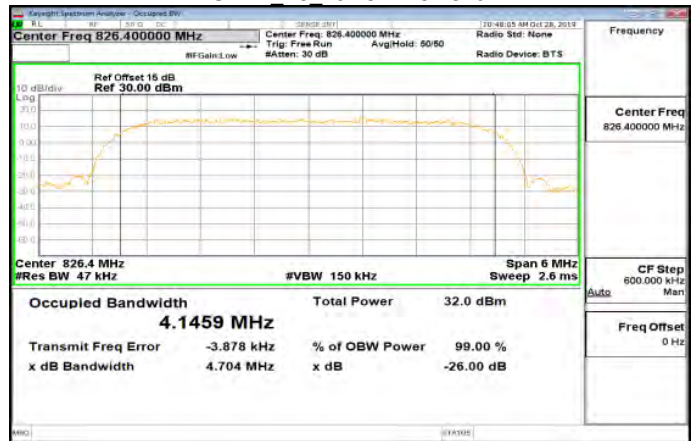
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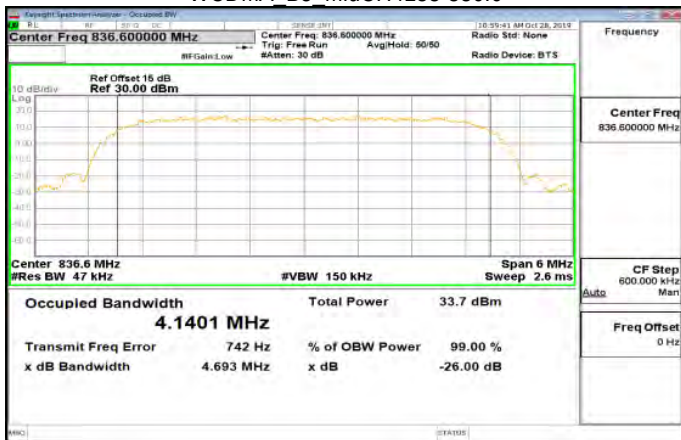
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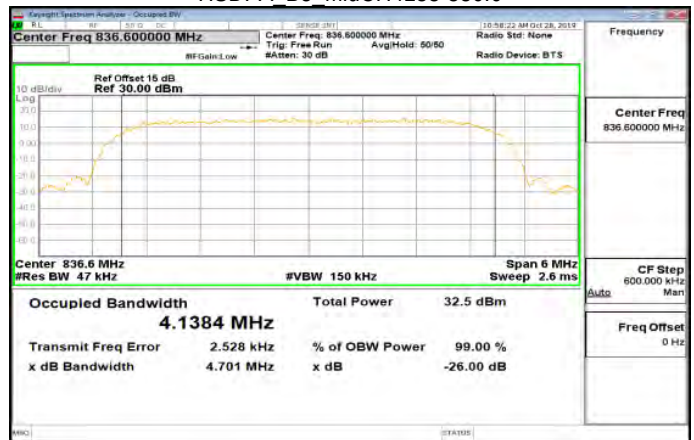
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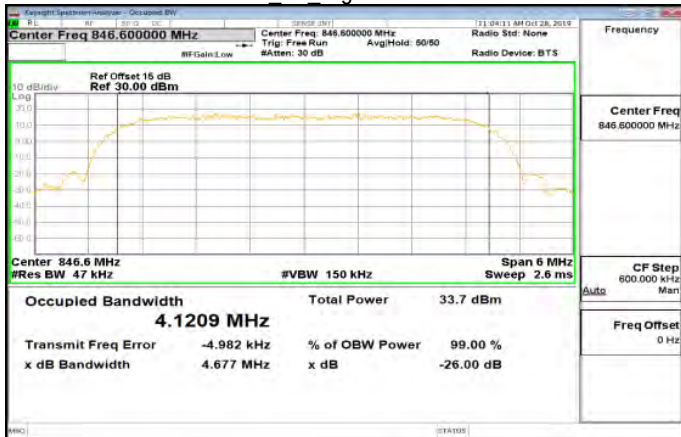
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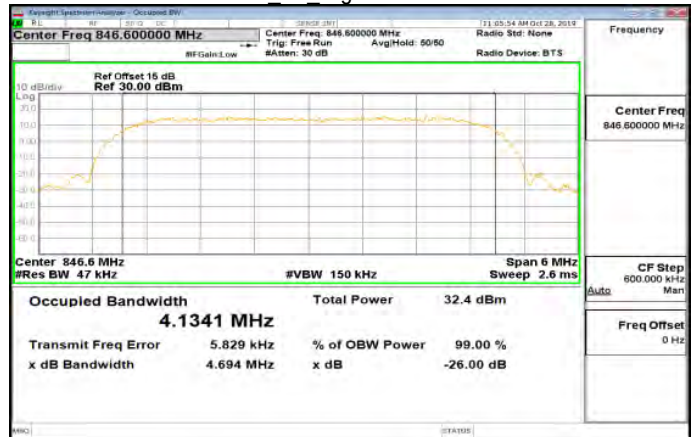
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WCDMA B5 HighCH4233-846.6



HSDPA B5 HighCH4233-846.6

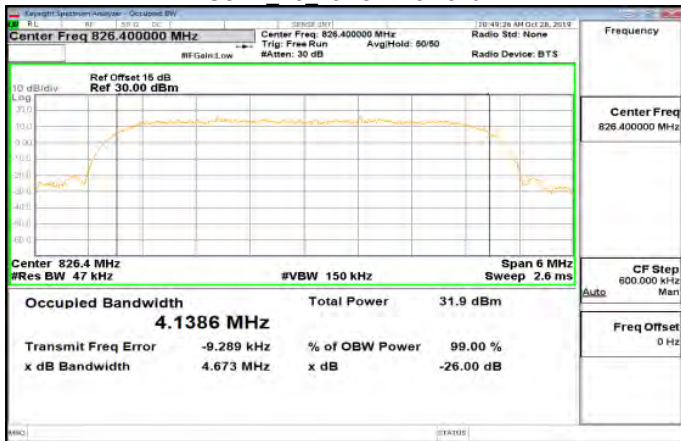


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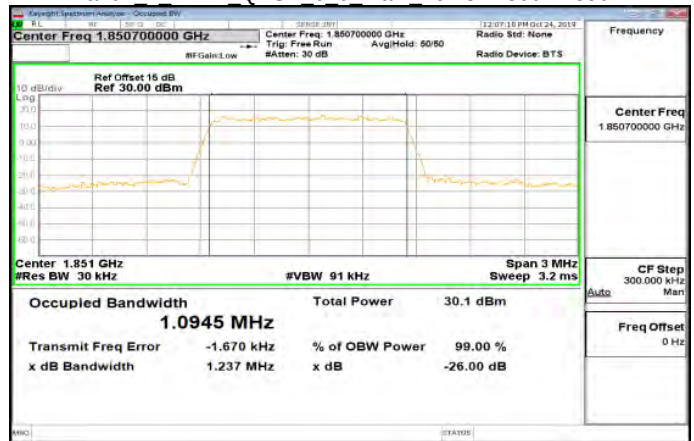
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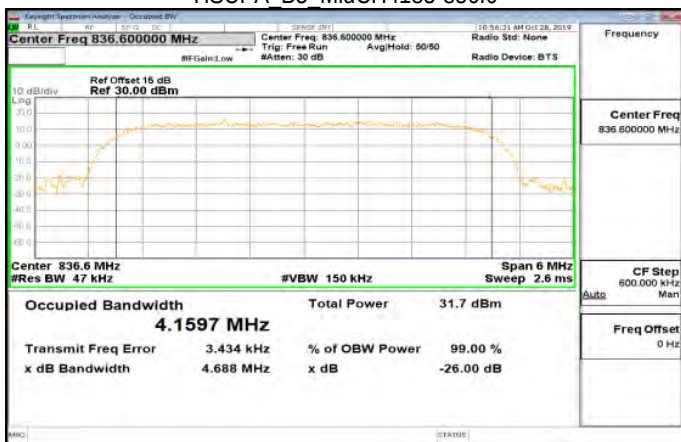
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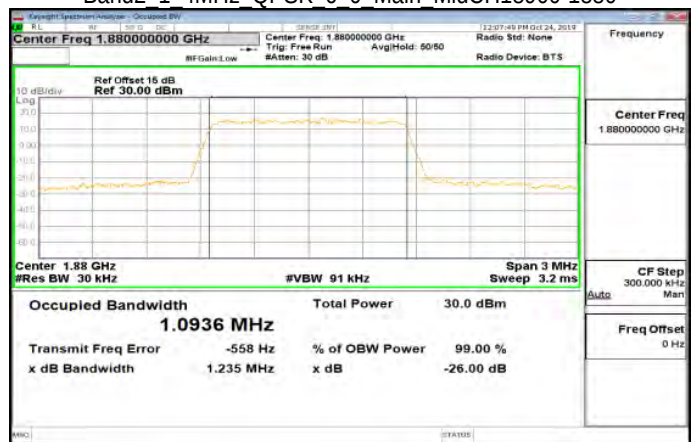
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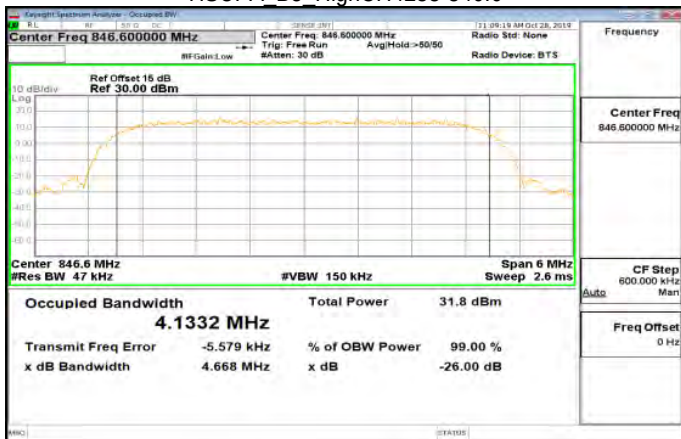
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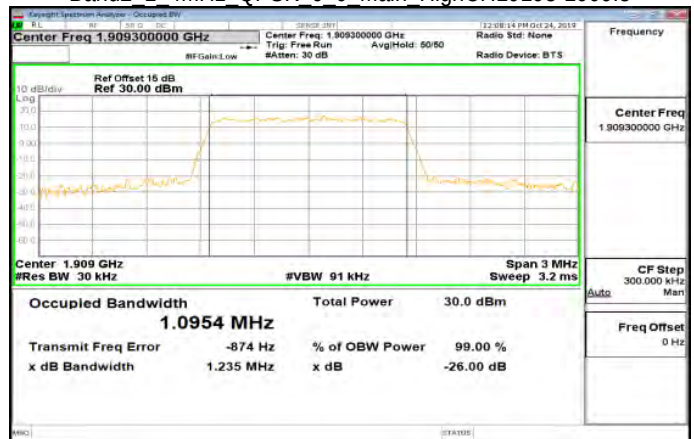
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HSUPA B5 HighCH4233-846.6



Band2 1 4MHz QPSK 6 0 Main HighCH19193-1909.3

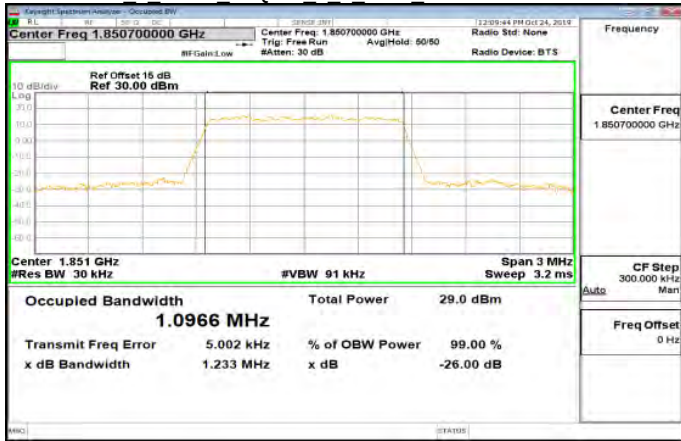


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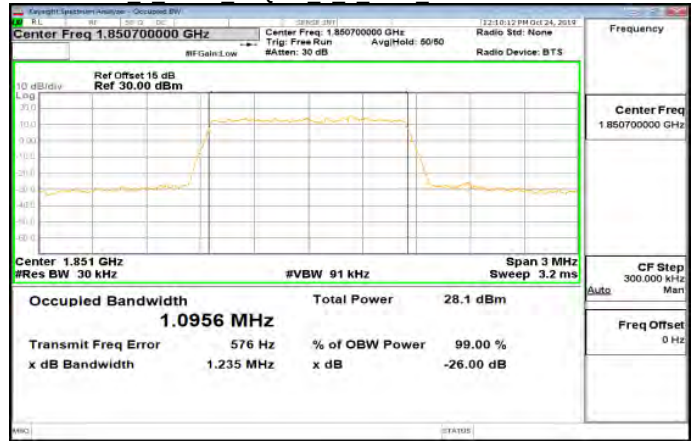
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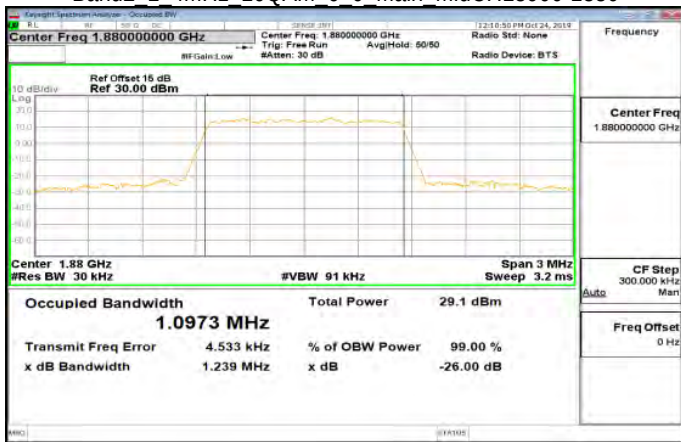
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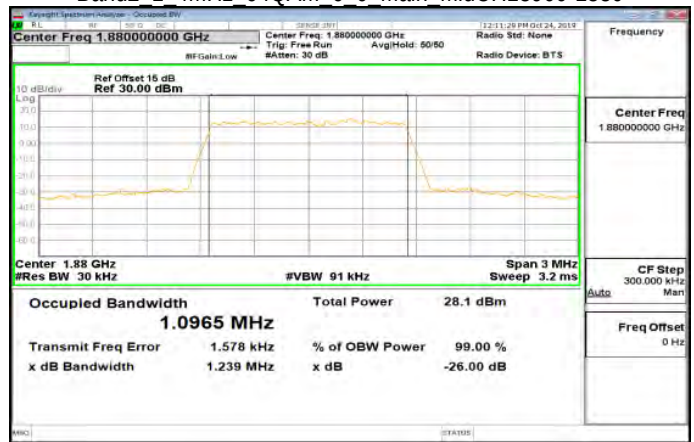
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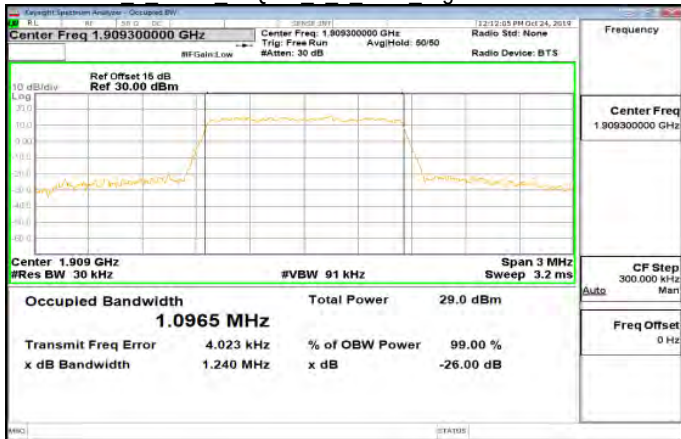
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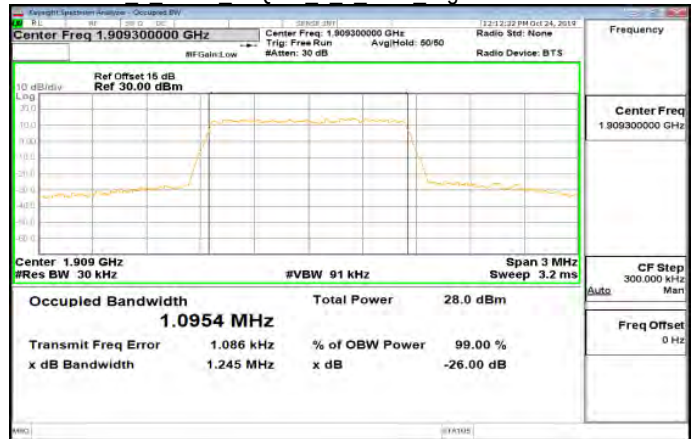
Band2 1 4MHz 64QAM 6 0 Main MidCH18900-1880



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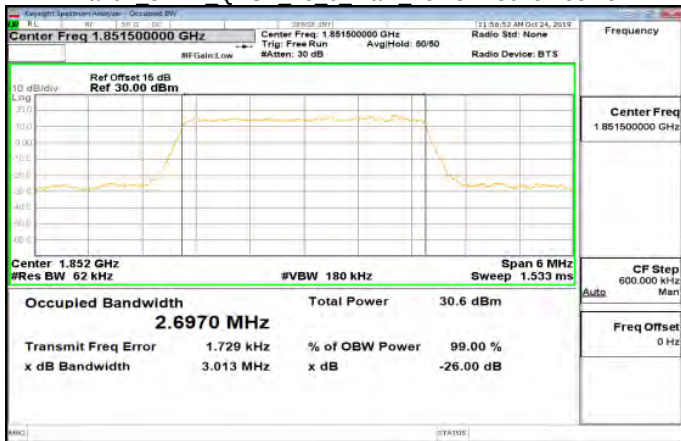


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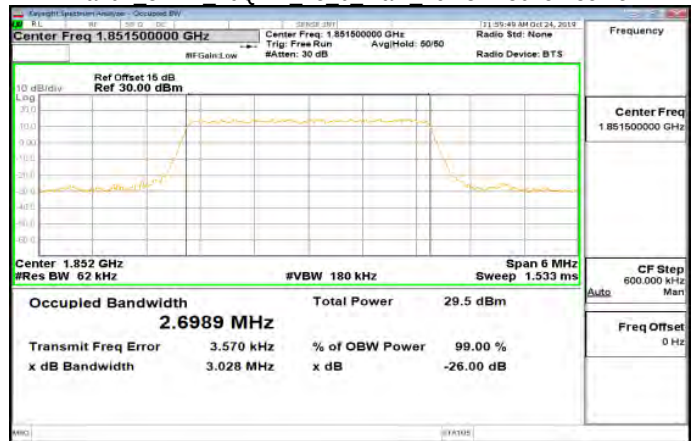
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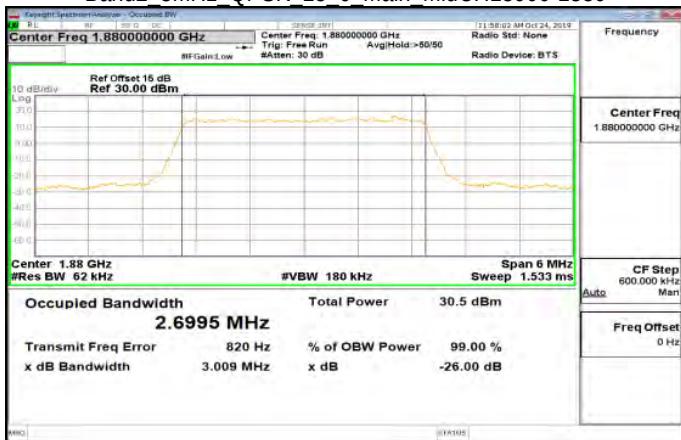
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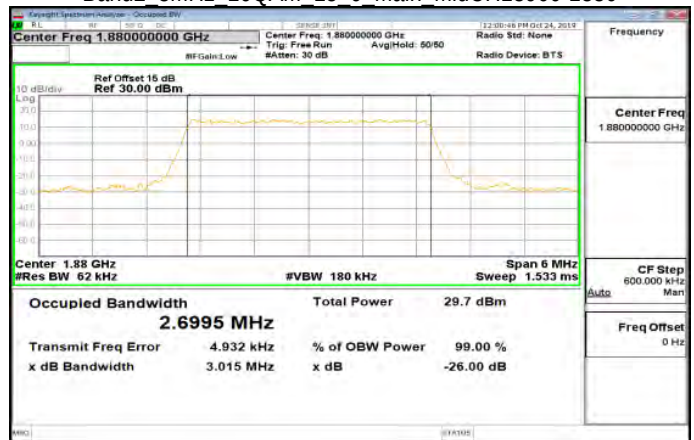
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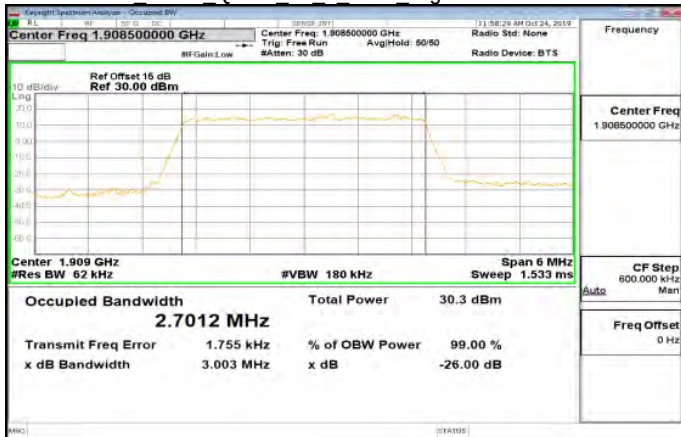
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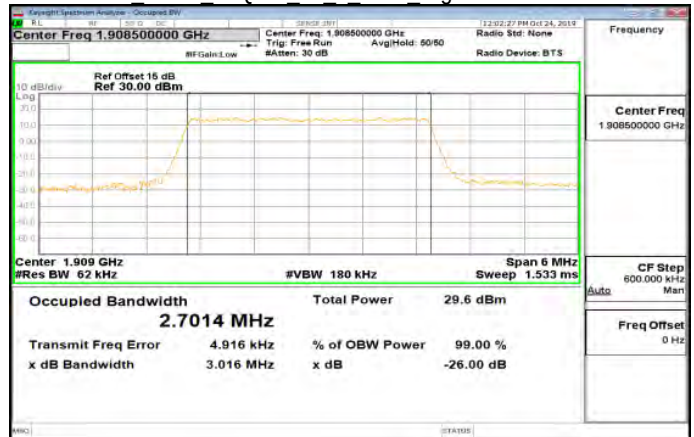
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Band2 3MHz QPSK 15 0 Main HighCH19185-1908.5



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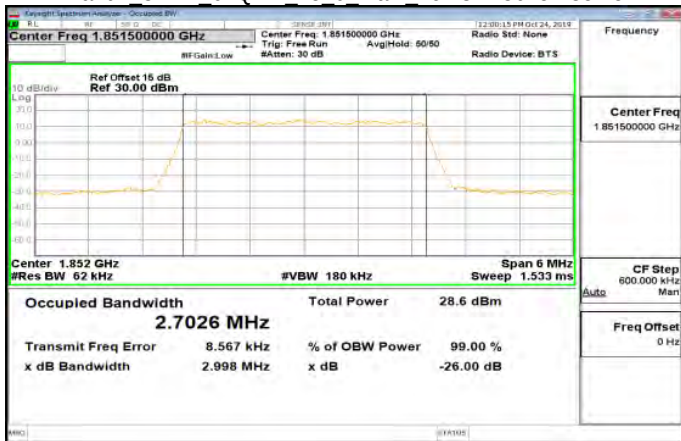


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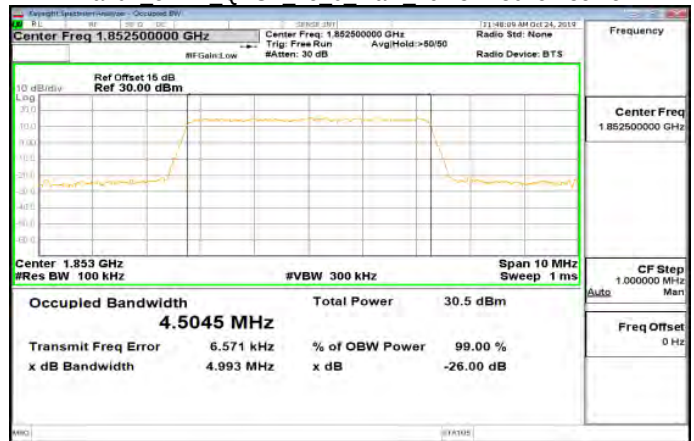
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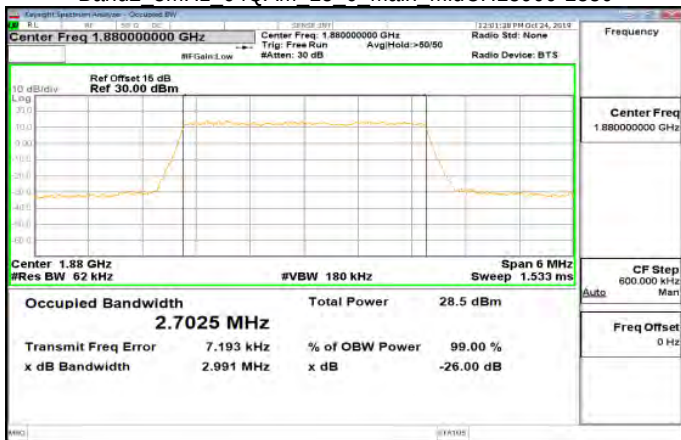
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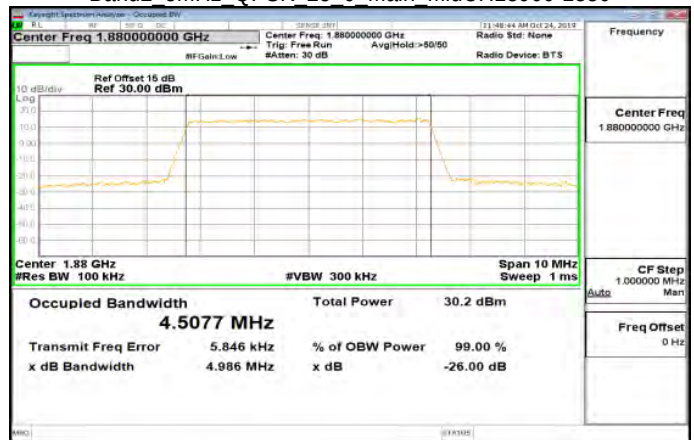
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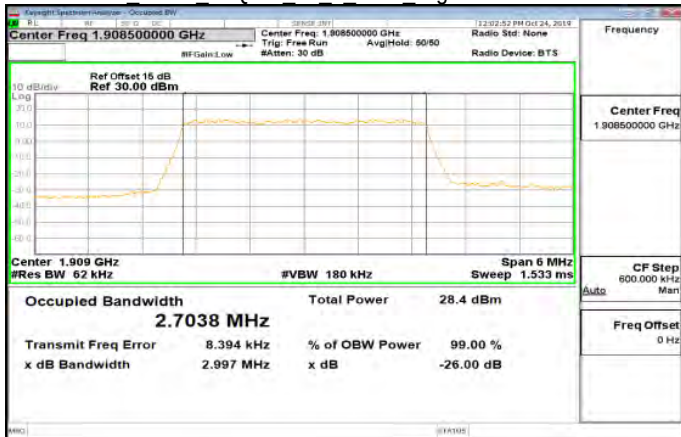
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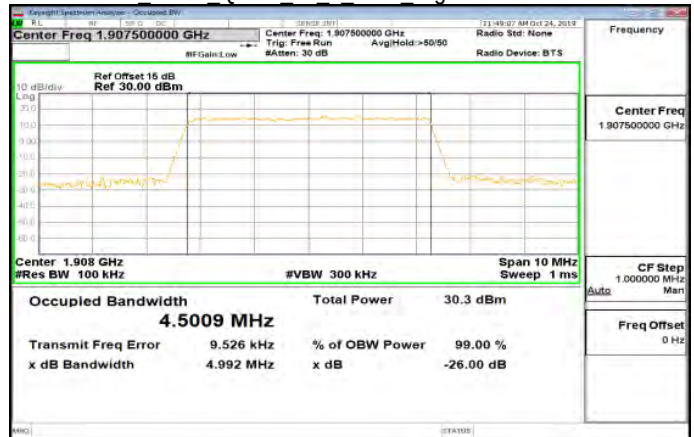
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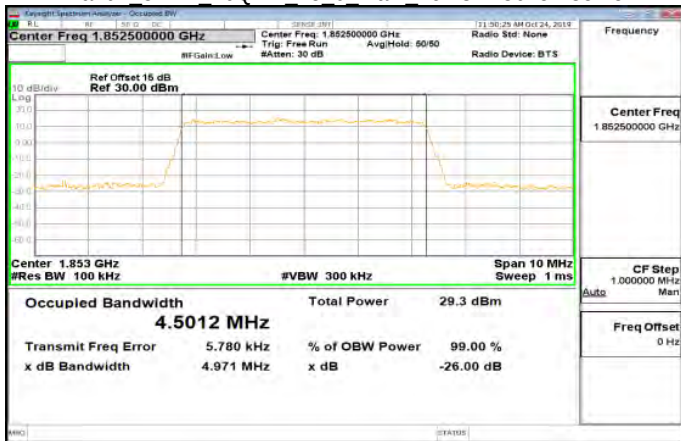


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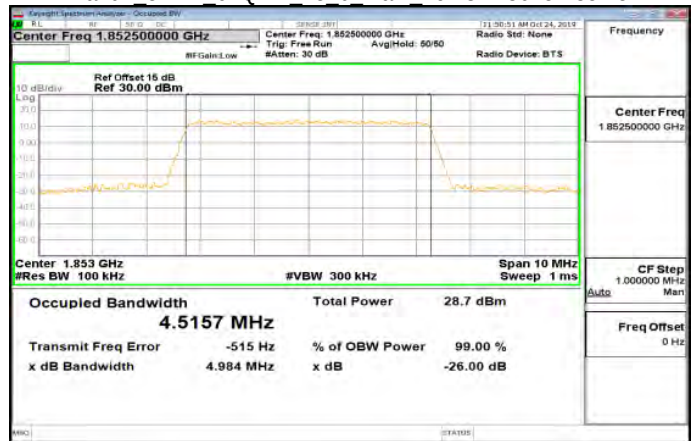
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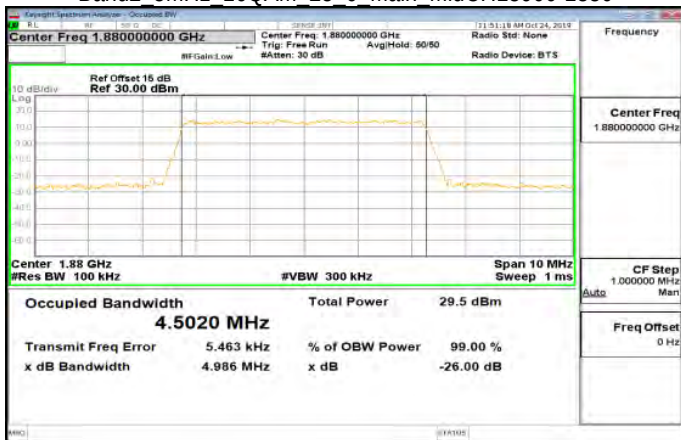
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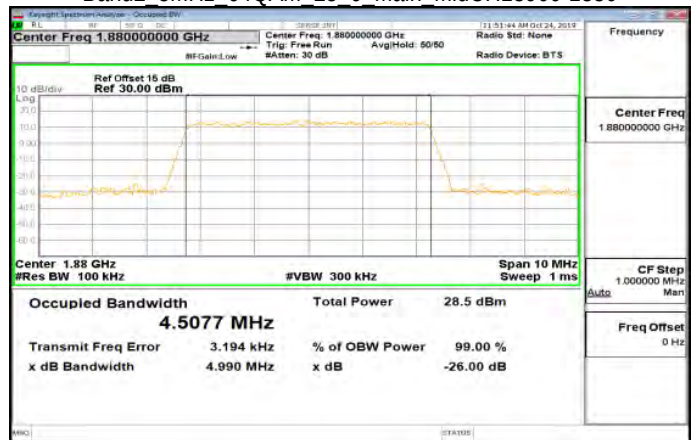
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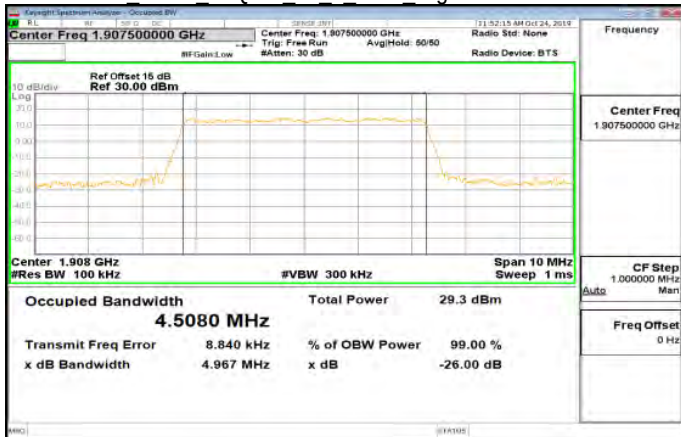
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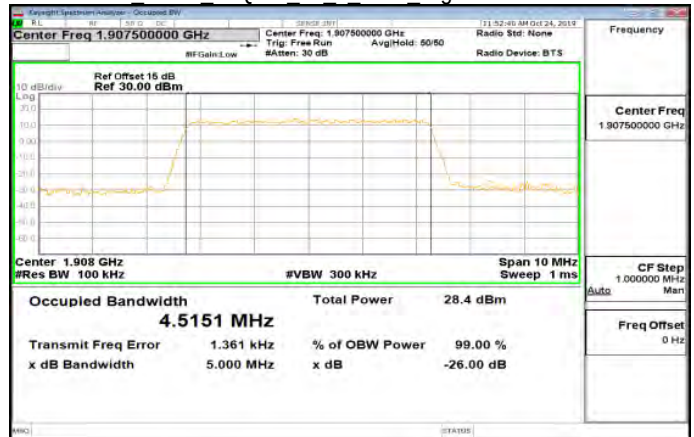
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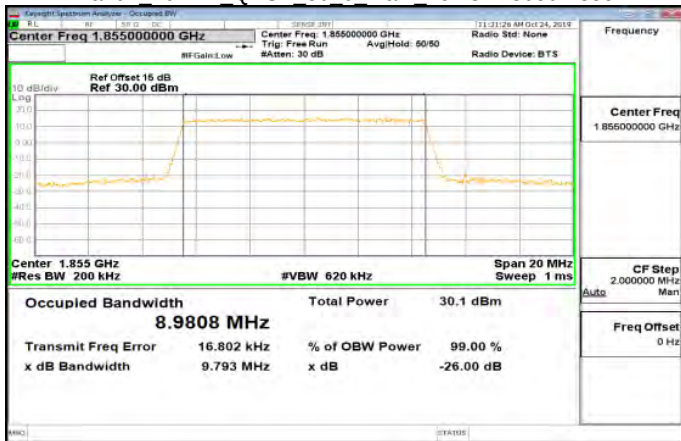


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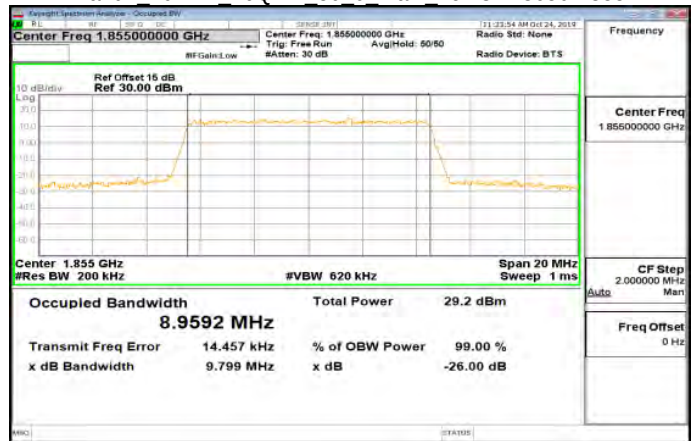
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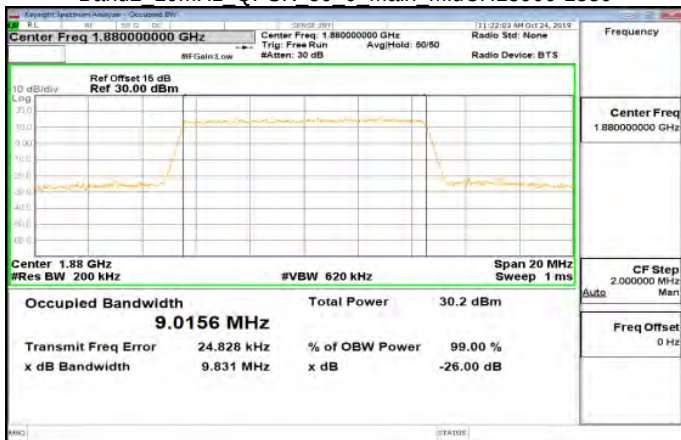
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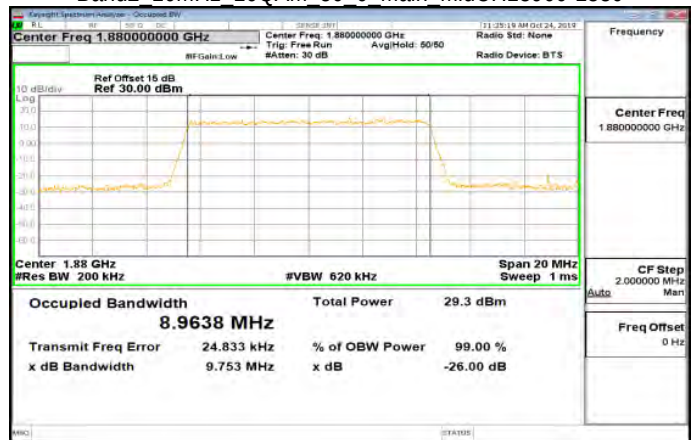
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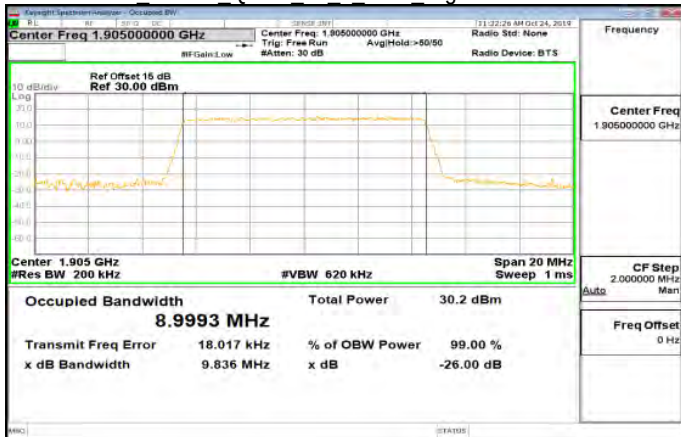
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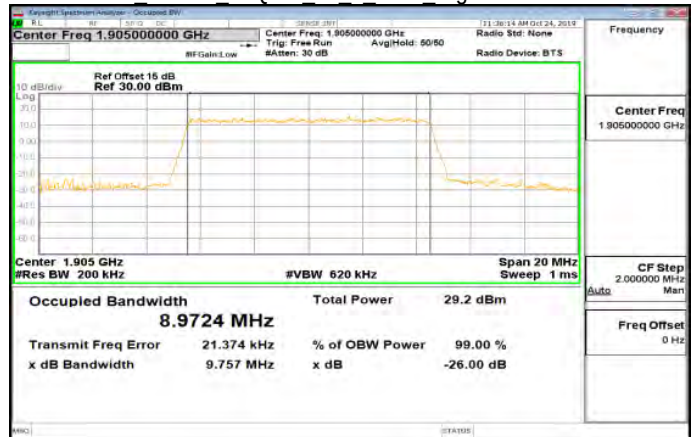
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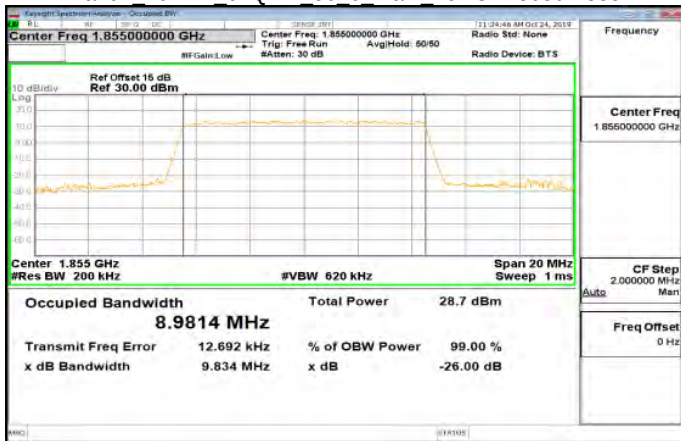


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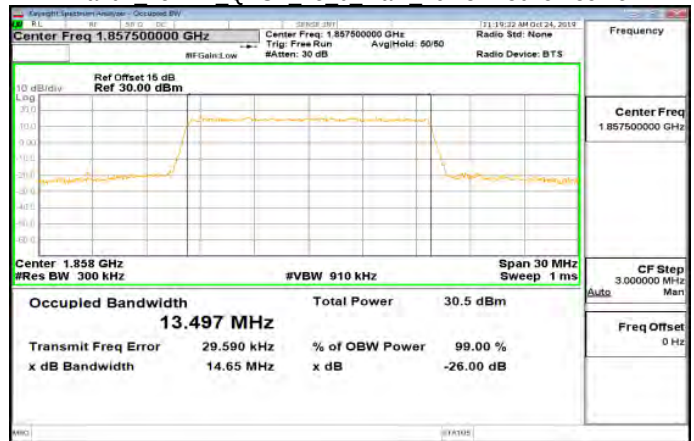
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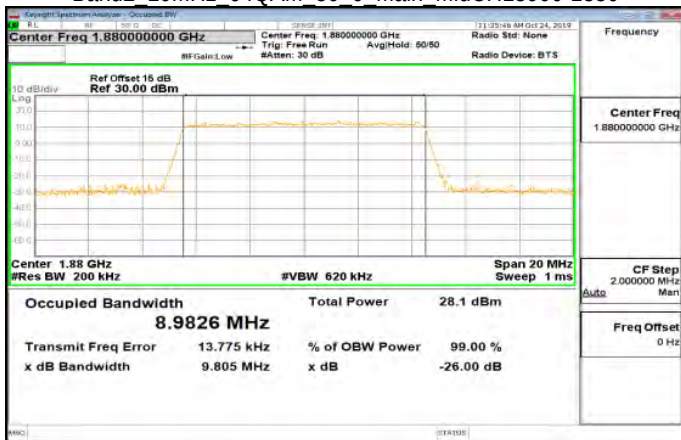
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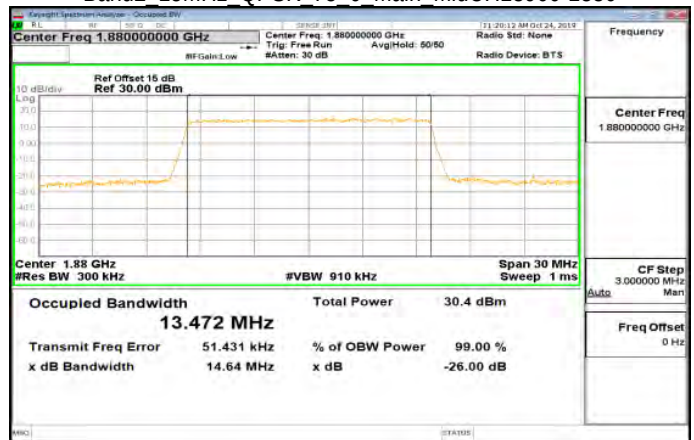
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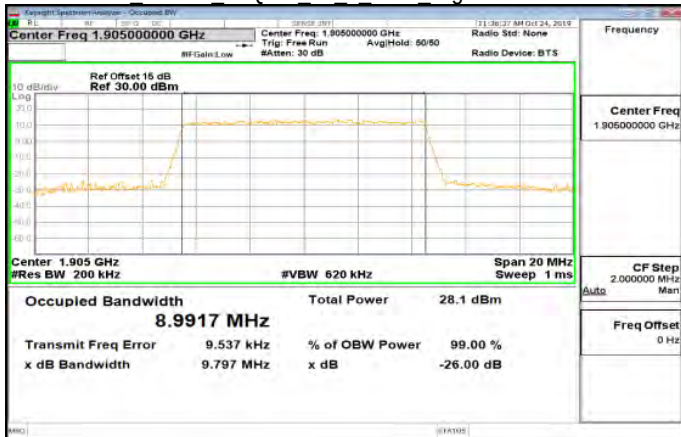
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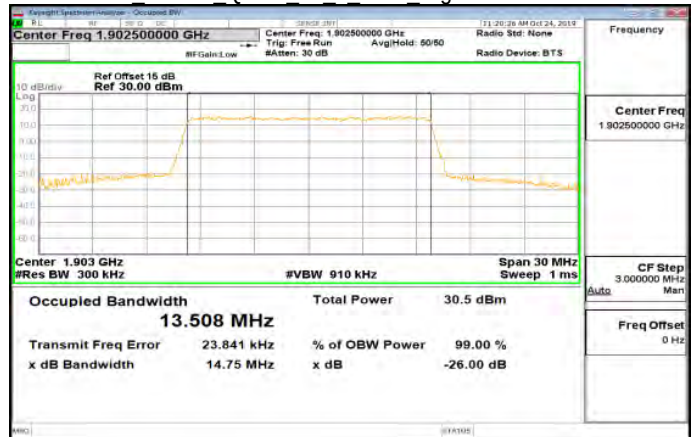
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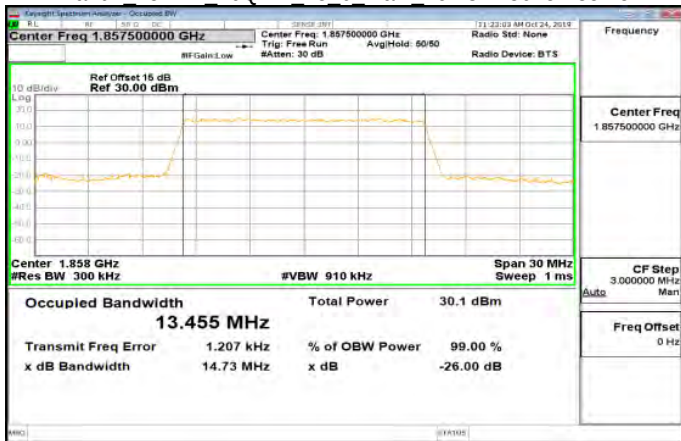


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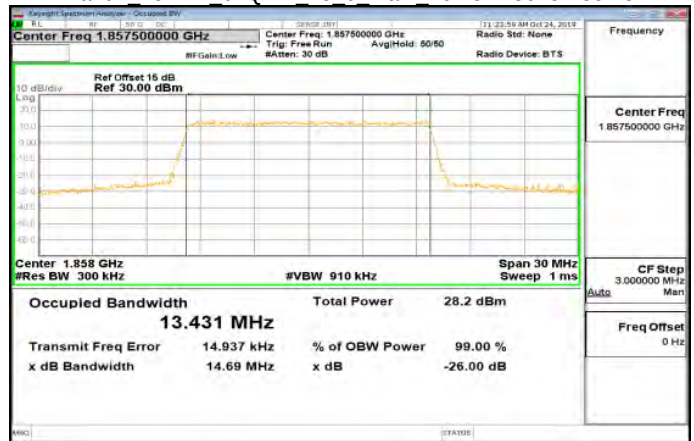
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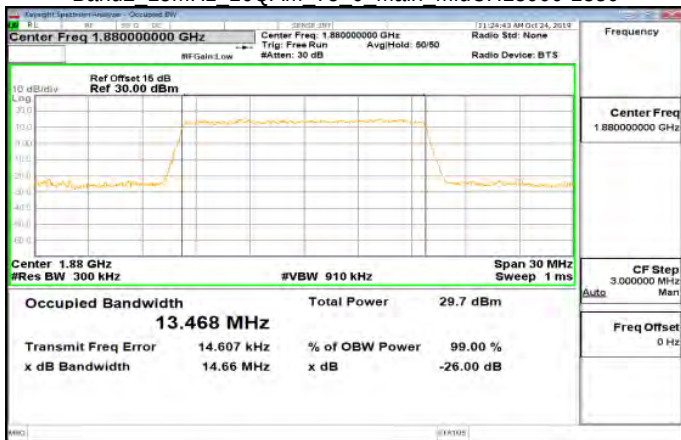
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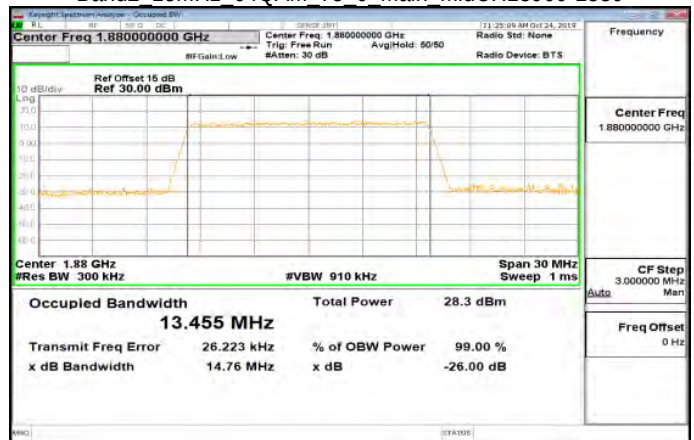
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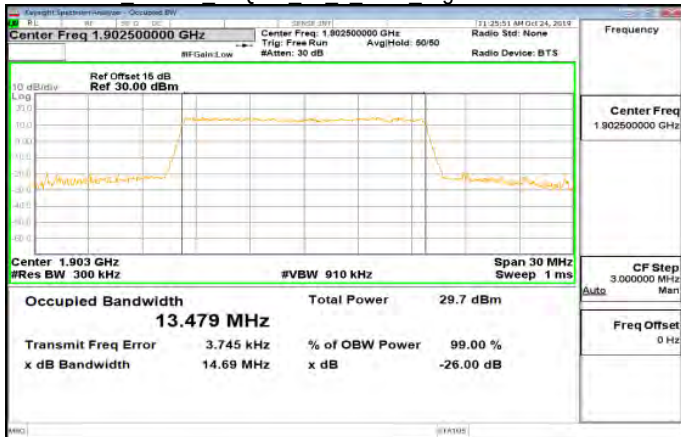
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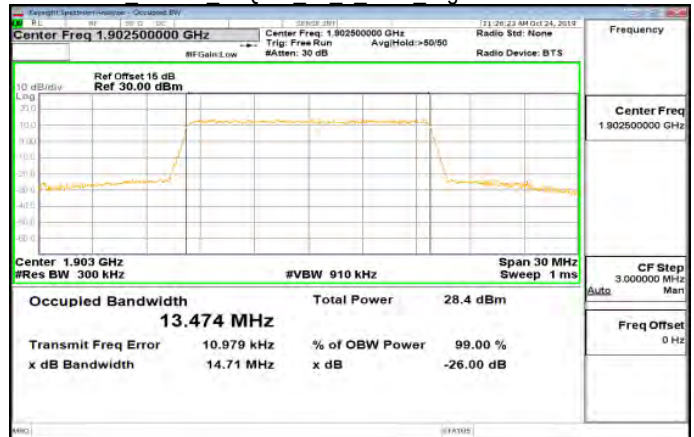
Band2 15MHz 64QAM 75.0 Main MidCH18900-1880



Band2 15MHz 16QAM 75.0 Main HighCH19125-1902.5



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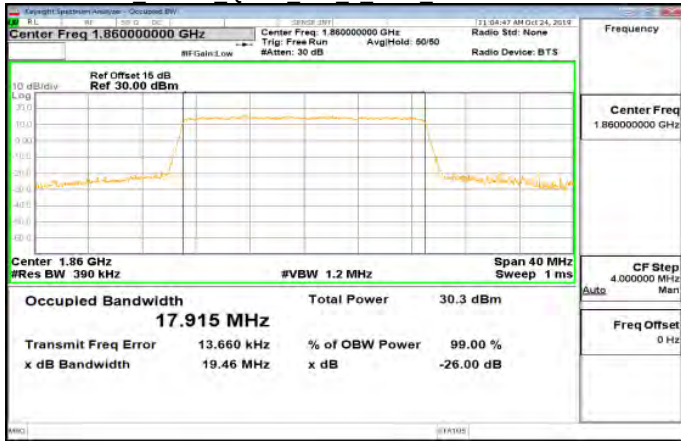


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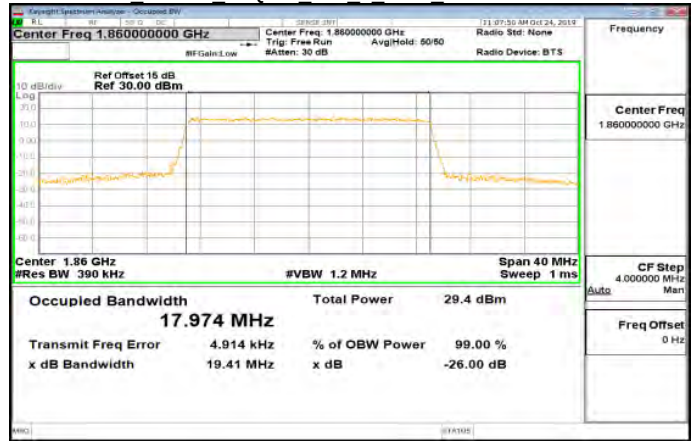
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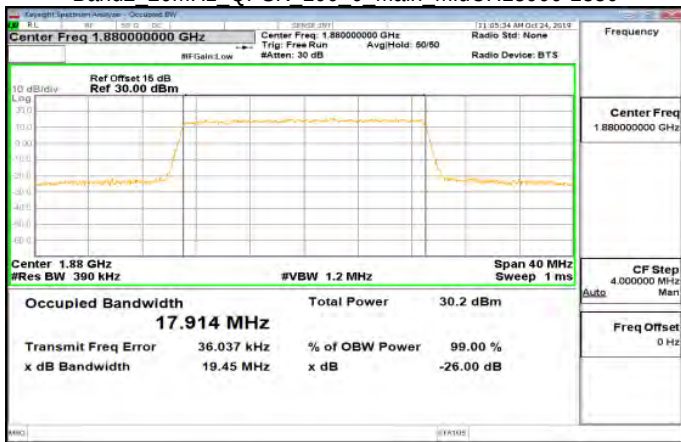
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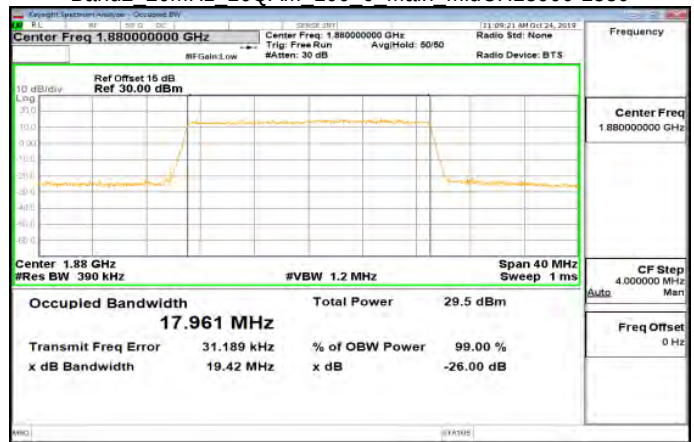
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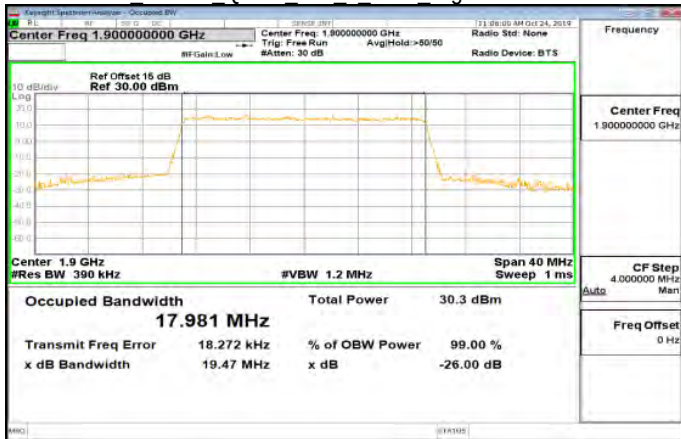
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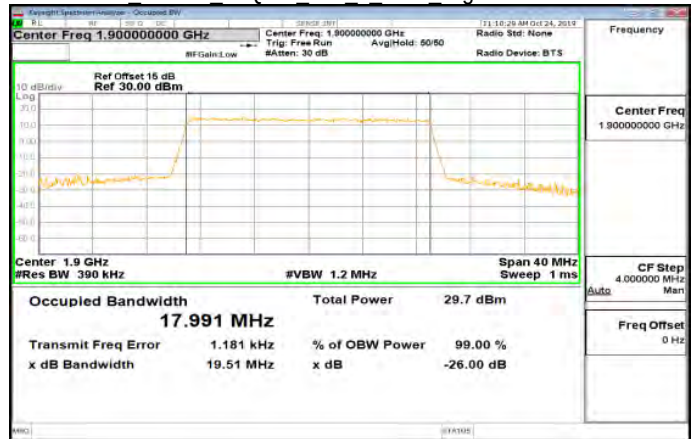
Band2 20MHz 16QAM 100 0 Main MidCH18900-1880



Band2 20MHz QPSK 100 0 Main HighCH19100-1900



Band2 20MHz 16QAM 100 0 Main HighCH19100-1900

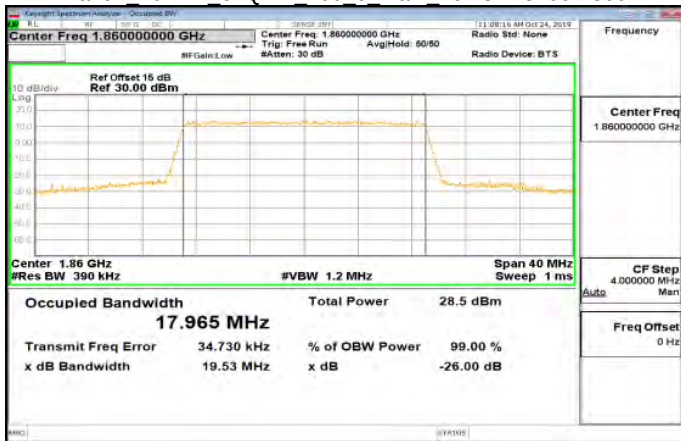


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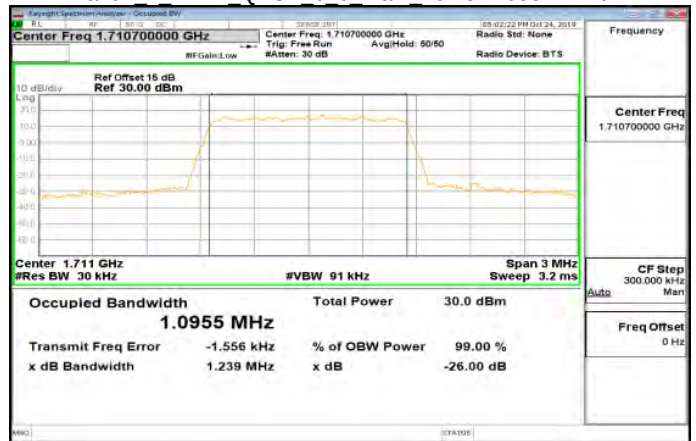
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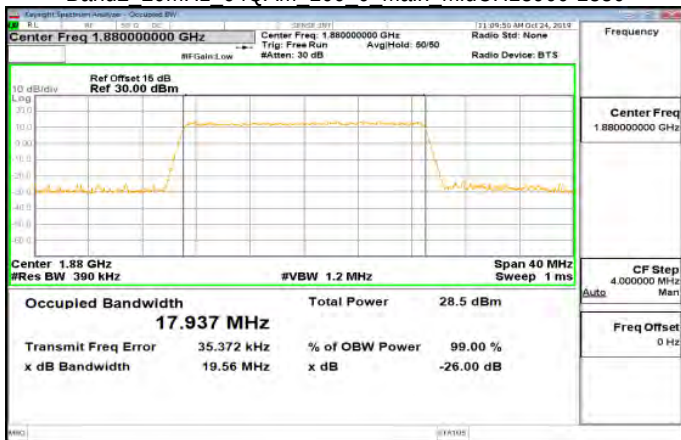
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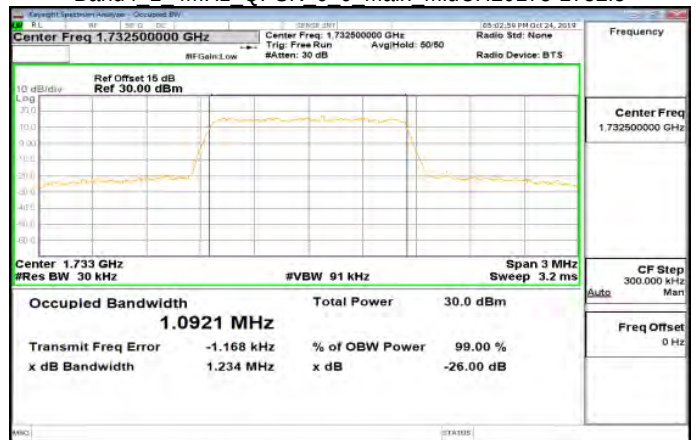
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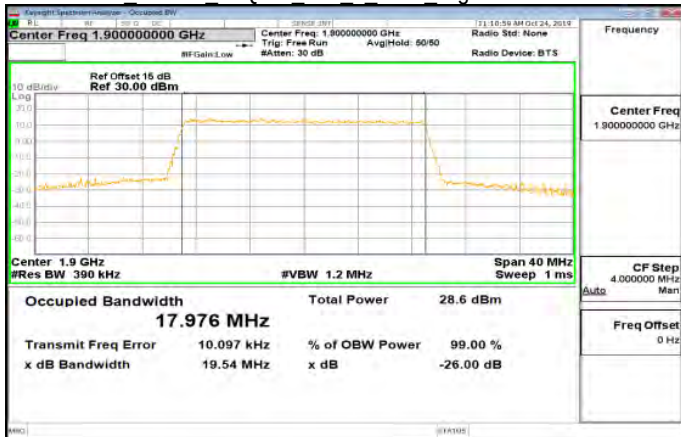
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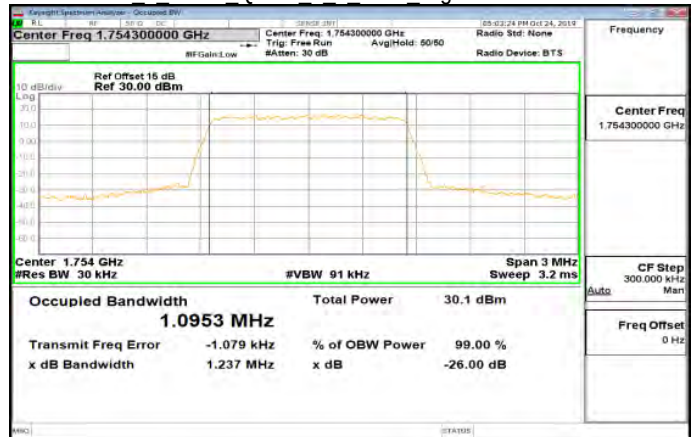
Band4 1 4MHz QPSK 6 0 Main MidCH20175-1732.5



Band2 20MHz 64QAM 100 0 Main HighCH19100-1900



Band4 1 4MHz QPSK 6 0 Main HighCH20393-1754.3

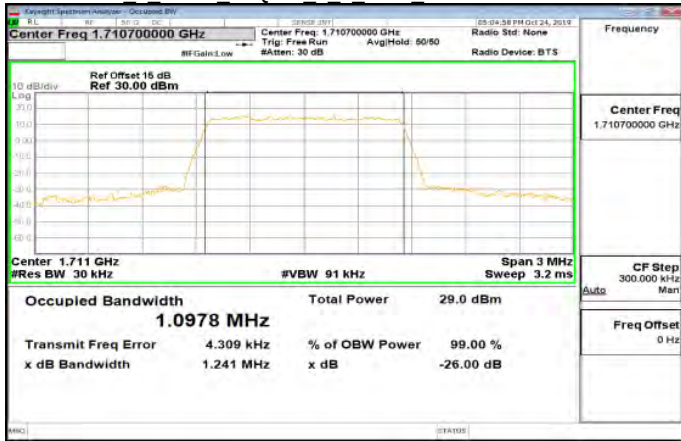


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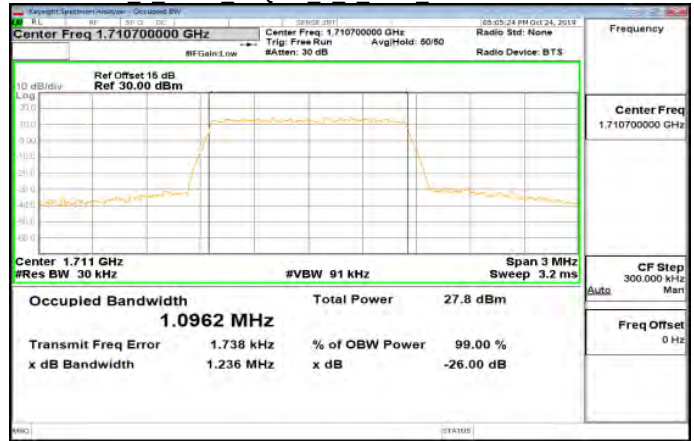
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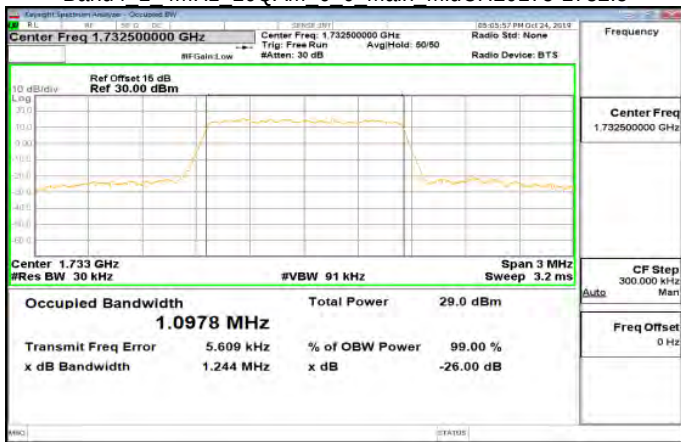
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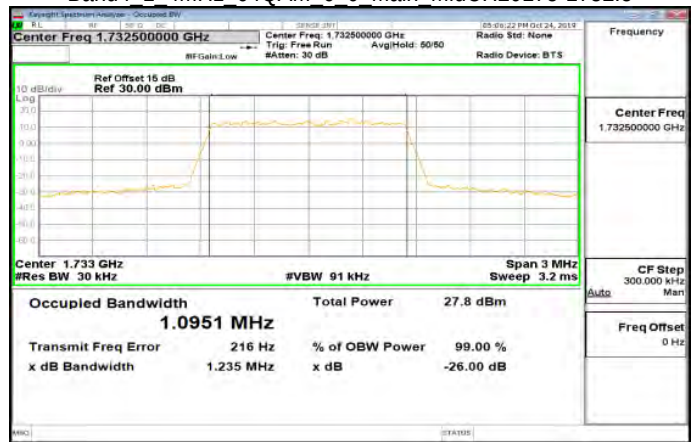
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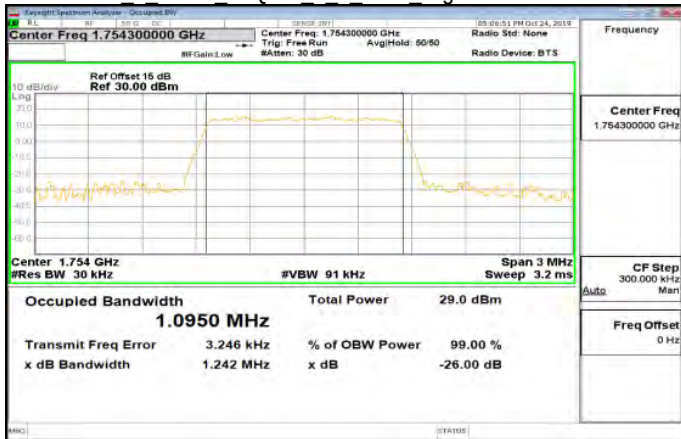
Band4 1 4MHz 16QAM 6 0 Main MidCH20175-1732.5



Band4 1 4MHz 64QAM 6 0 Main MidCH20175-1732.5



Band4 1 4MHz 16QAM 6 0 Main HighCH20393-1754.3



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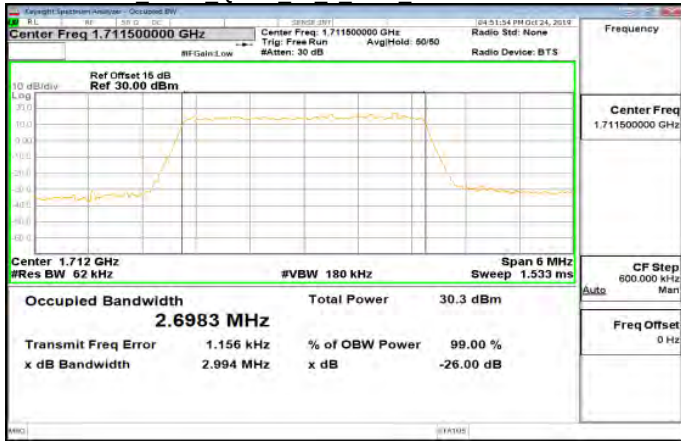


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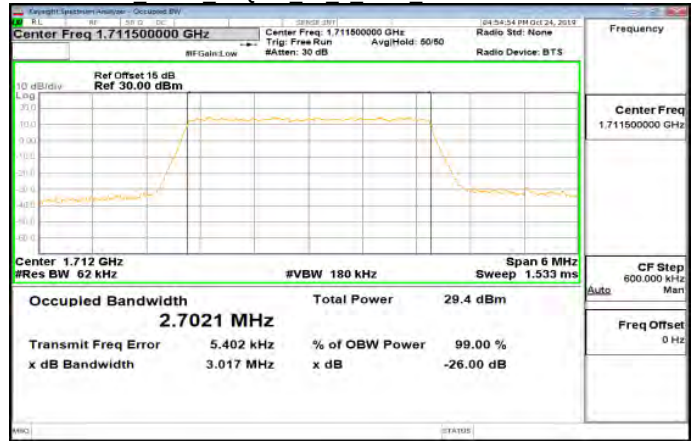
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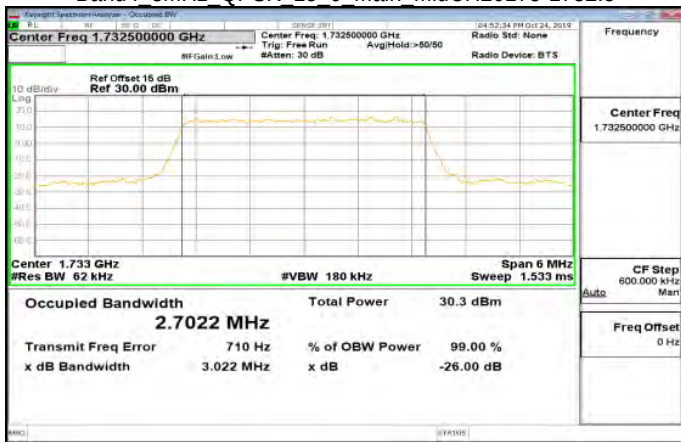
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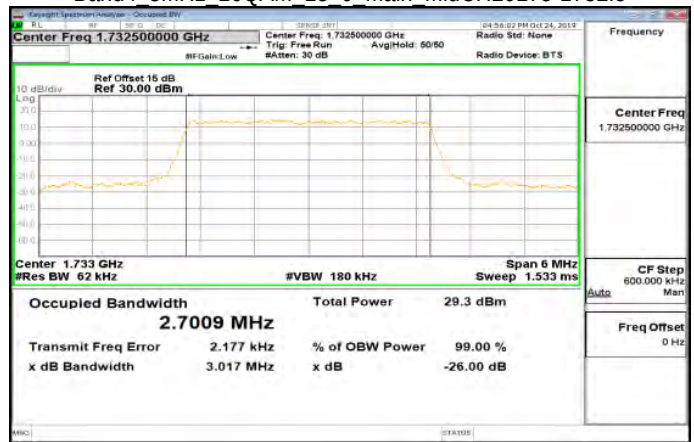
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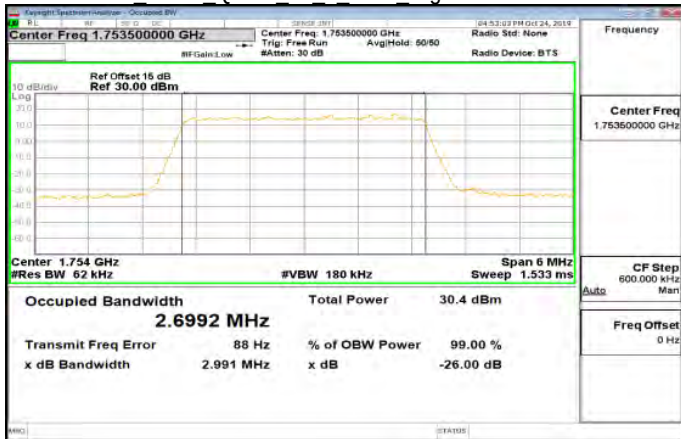
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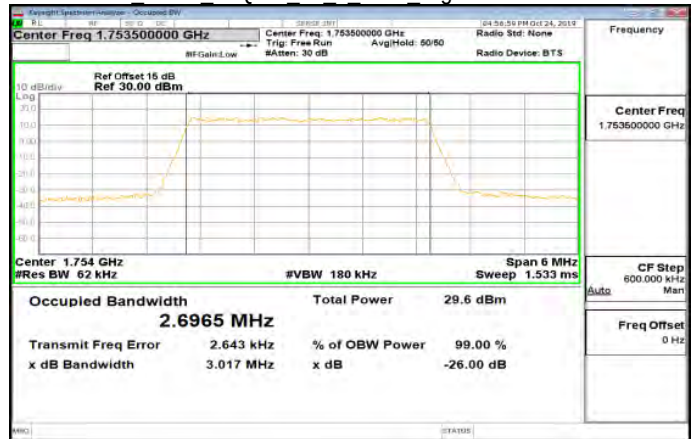
Band4 3MHz 16QAM 15 0 Main MidCH20175-1732.5



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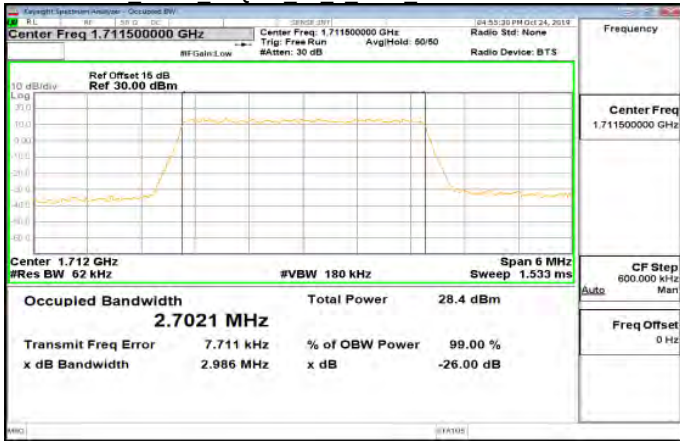


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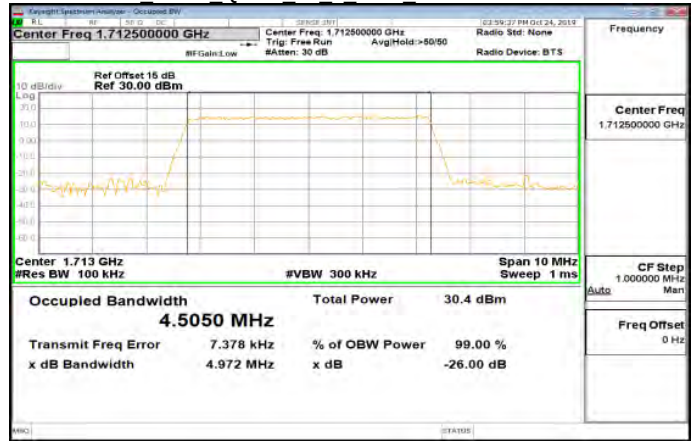
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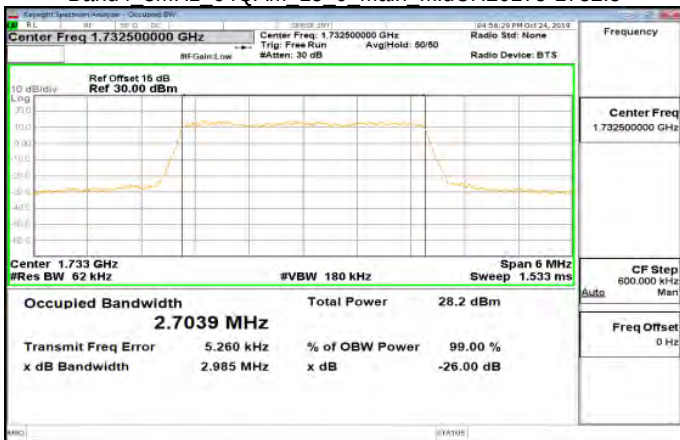
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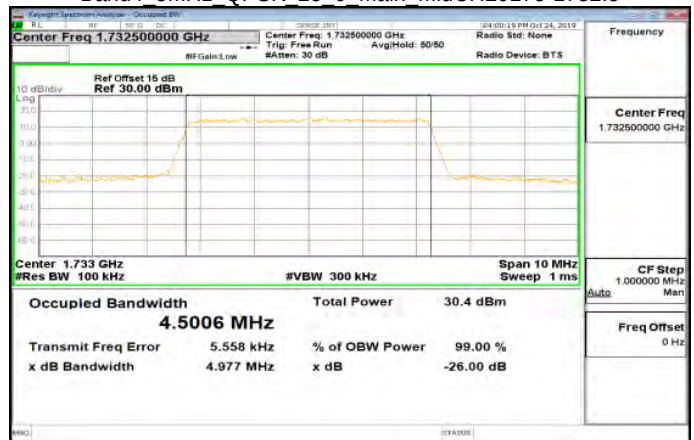
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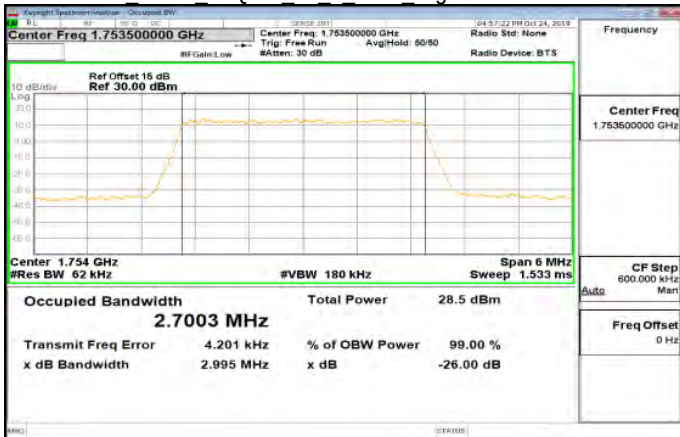
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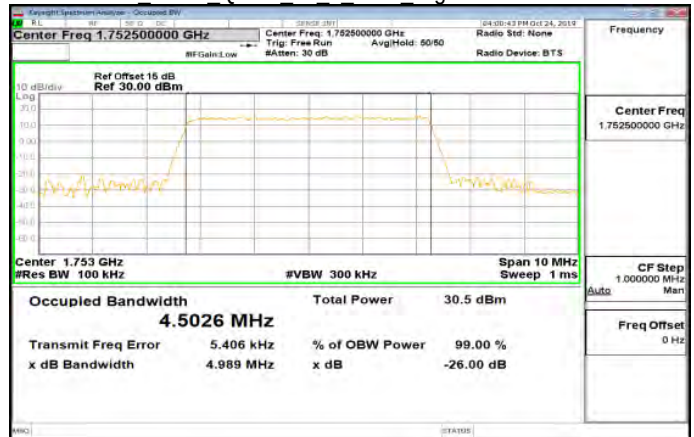
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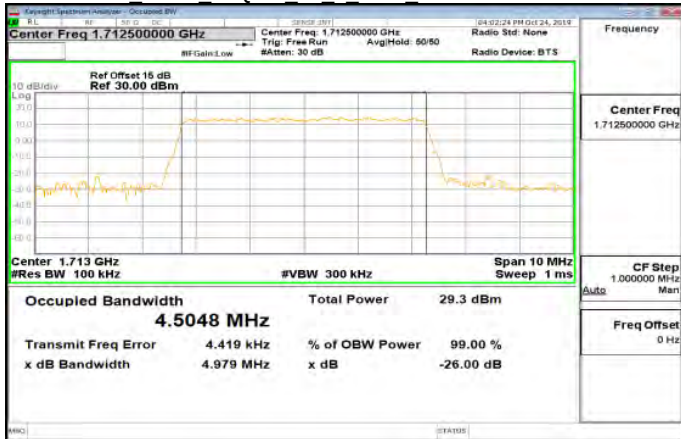


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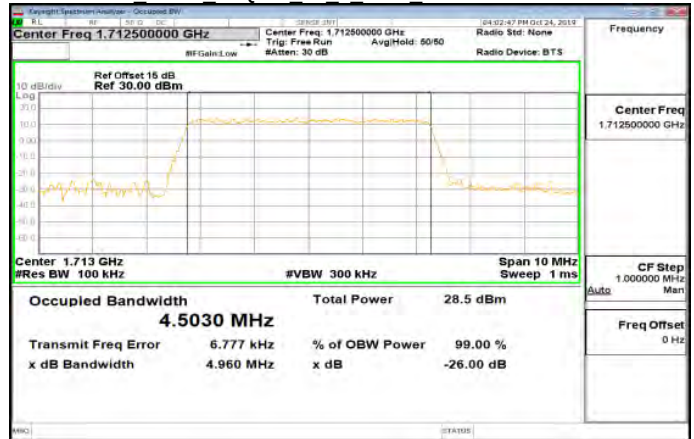
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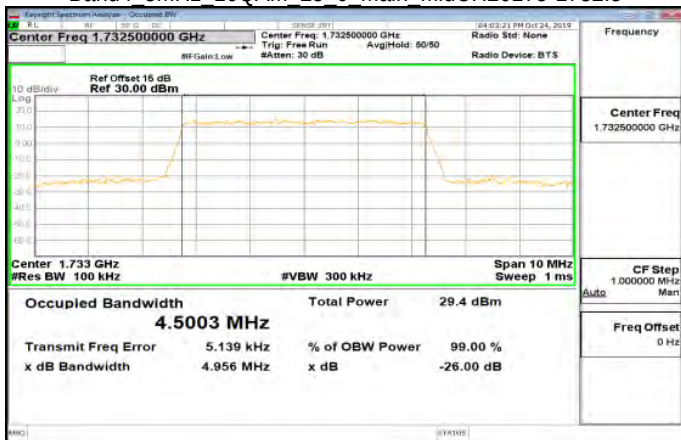
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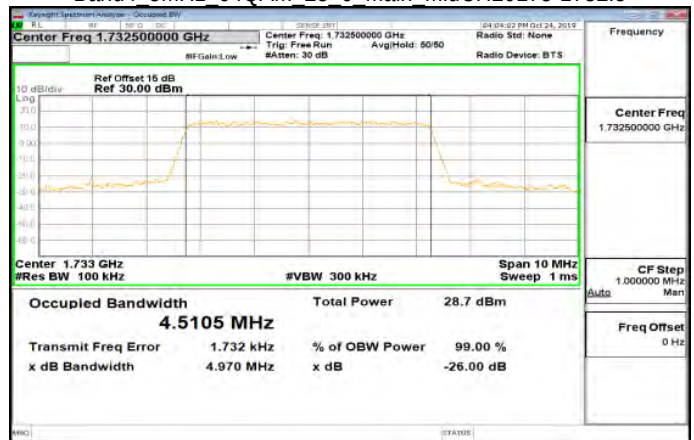
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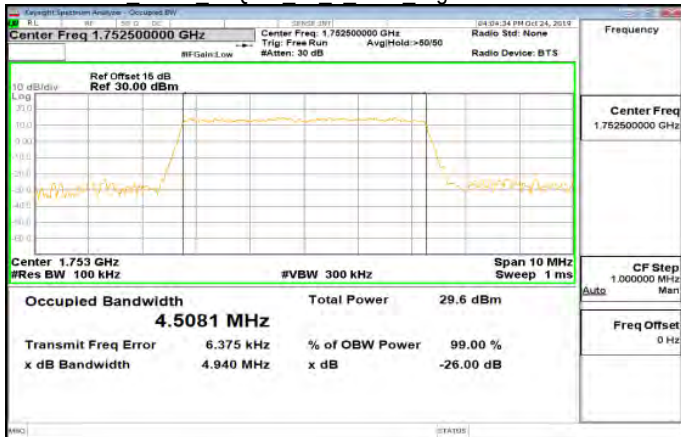
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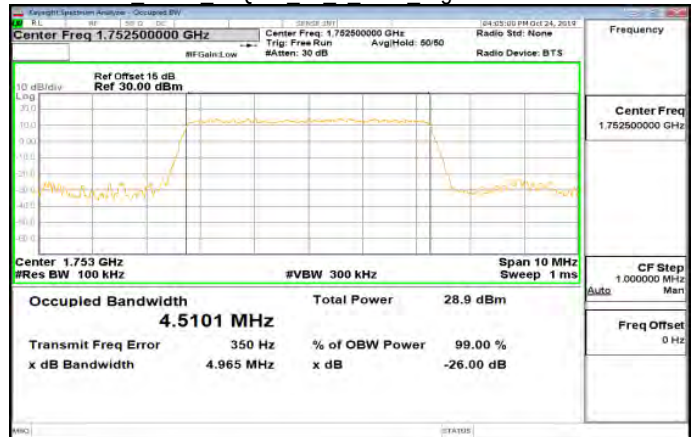
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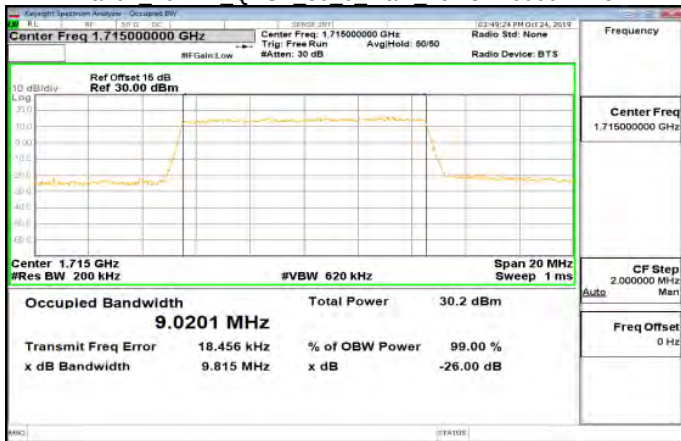


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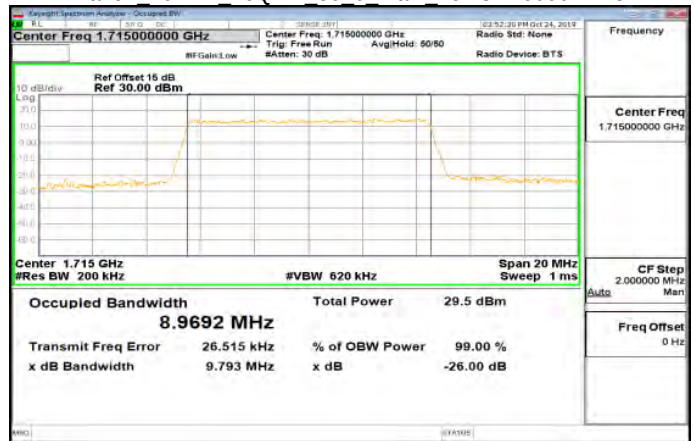
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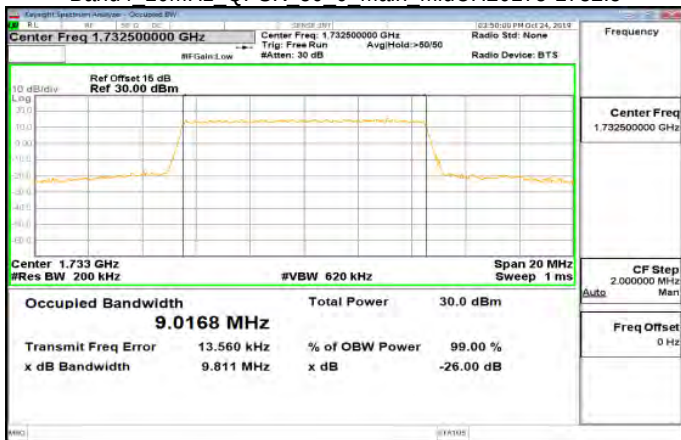
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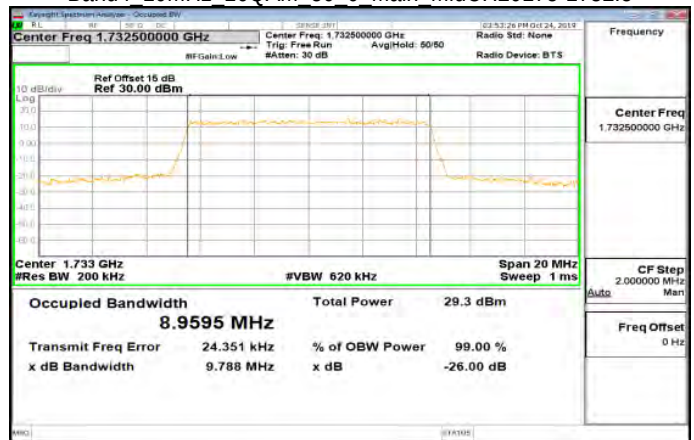
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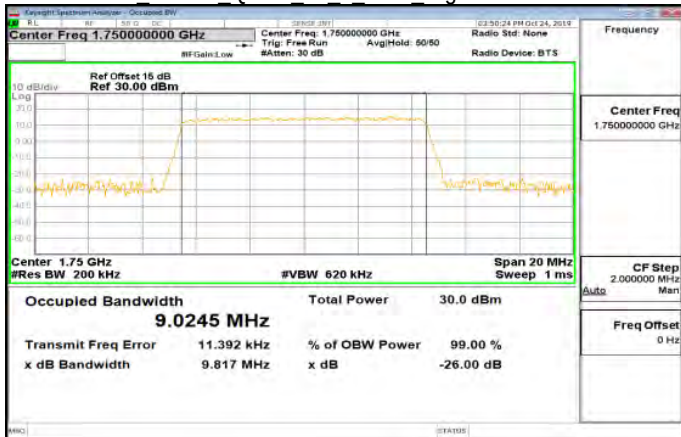
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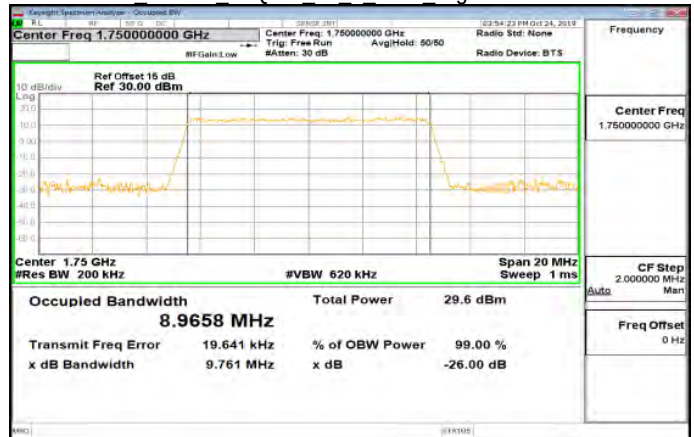
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Band4 10MHz QPSK 50 0 Main HighCH20350-1750



Band4 10MHz 16QAM 50 0 Main HighCH20350-1750

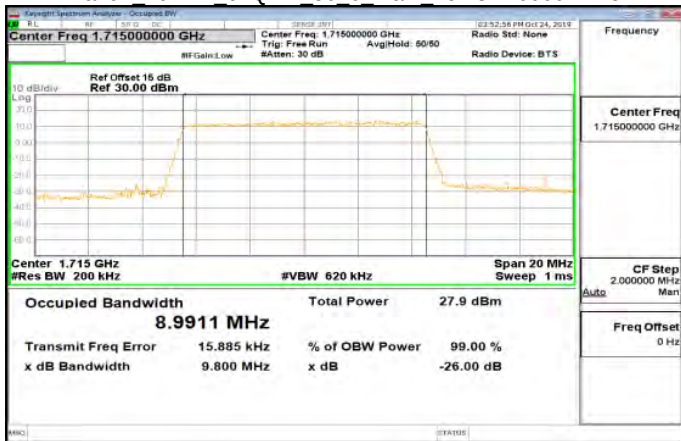


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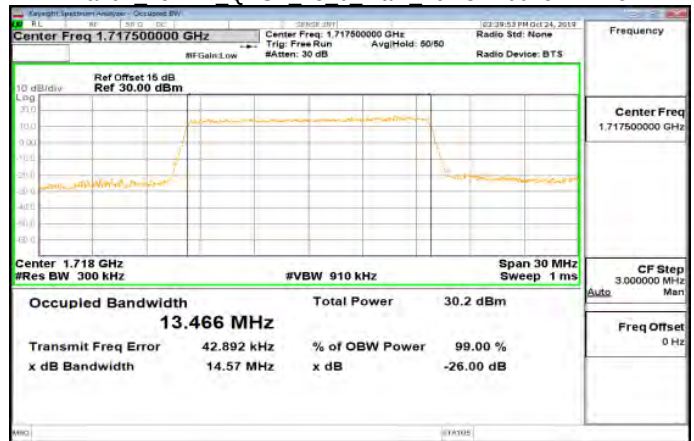
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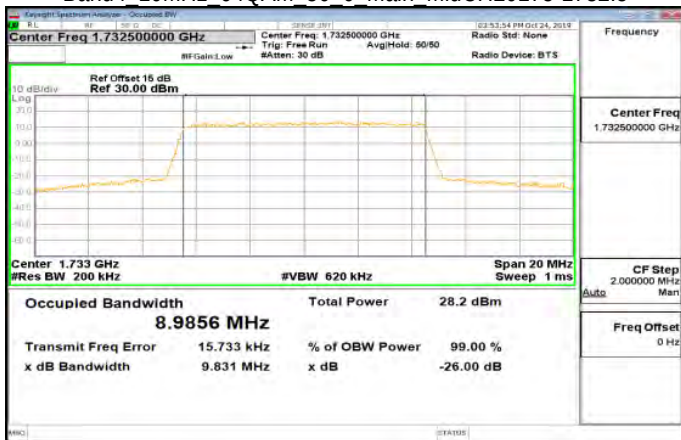
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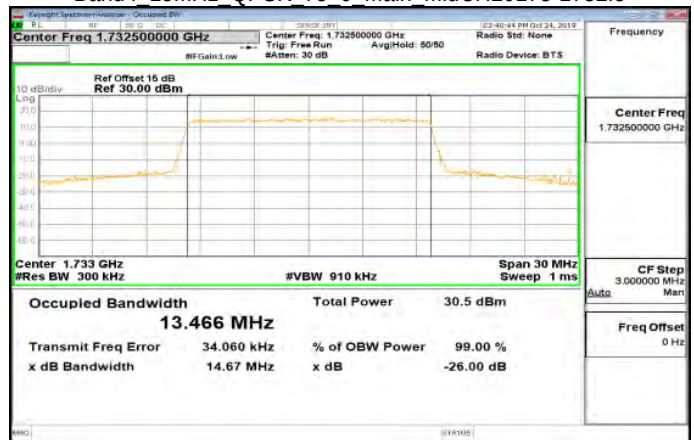
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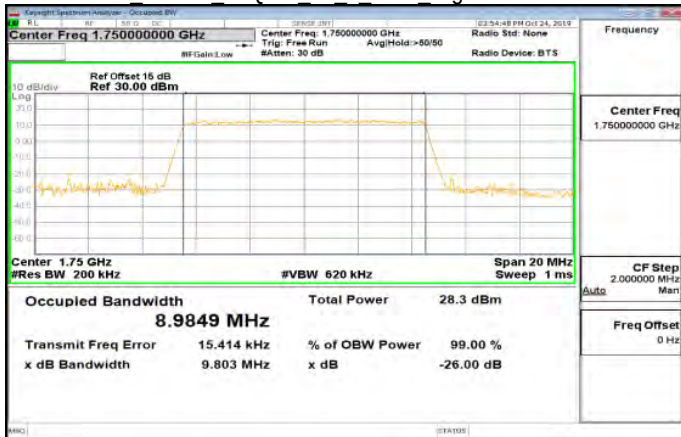
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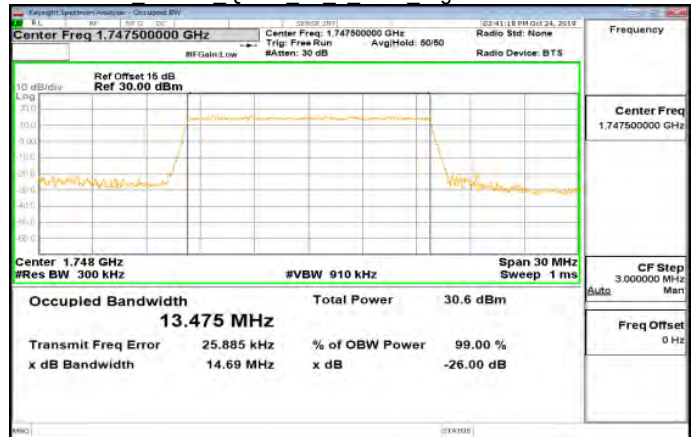
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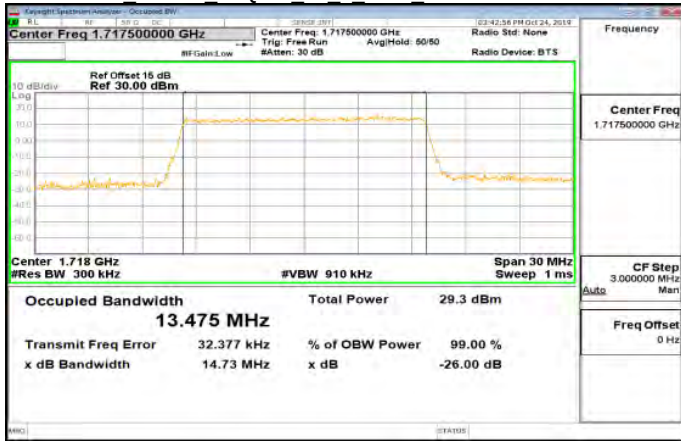


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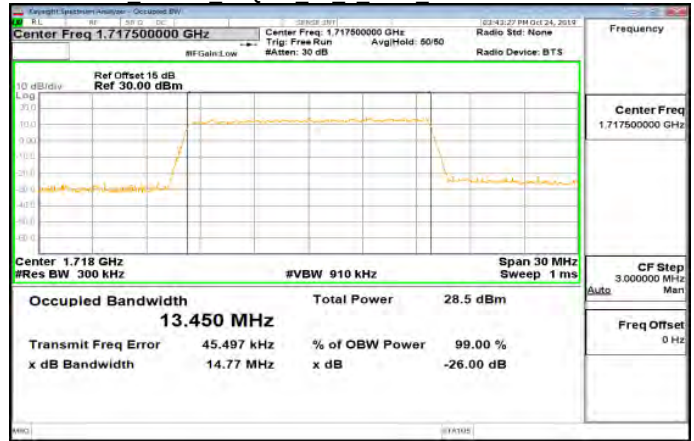
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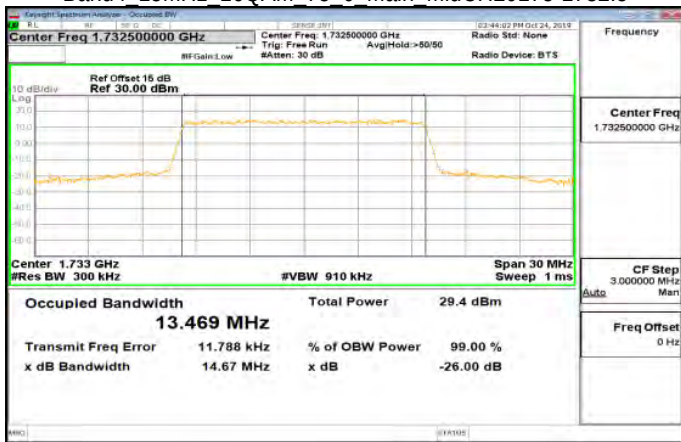
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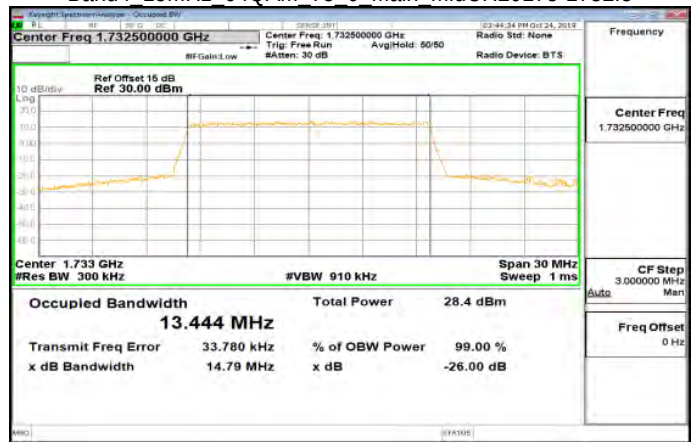
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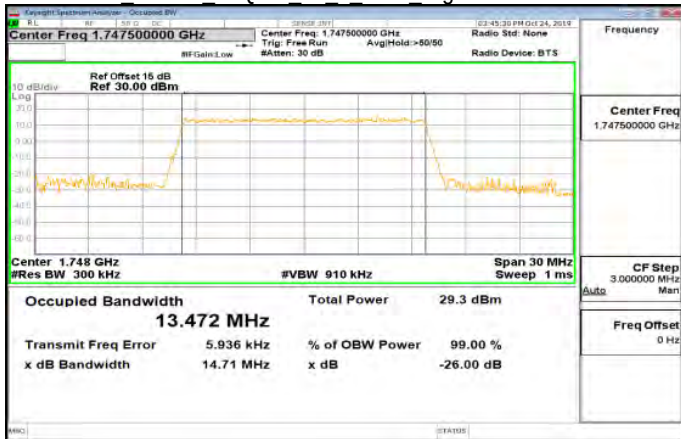
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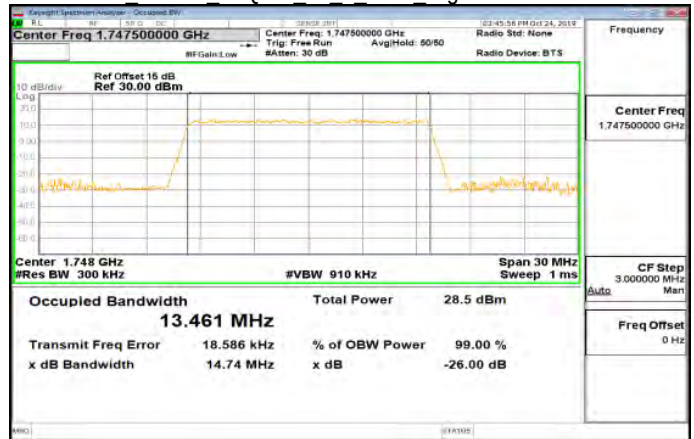
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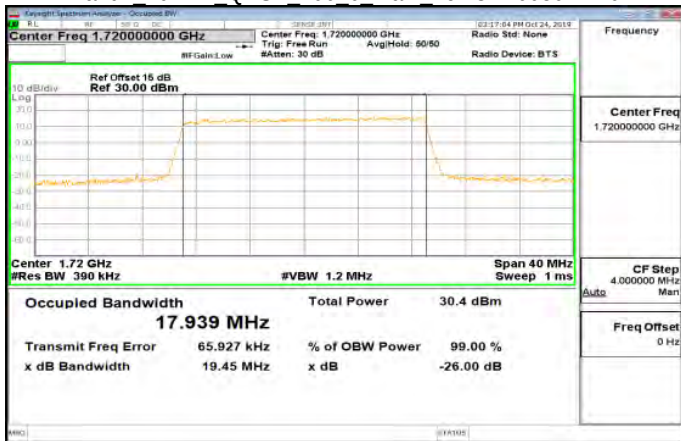


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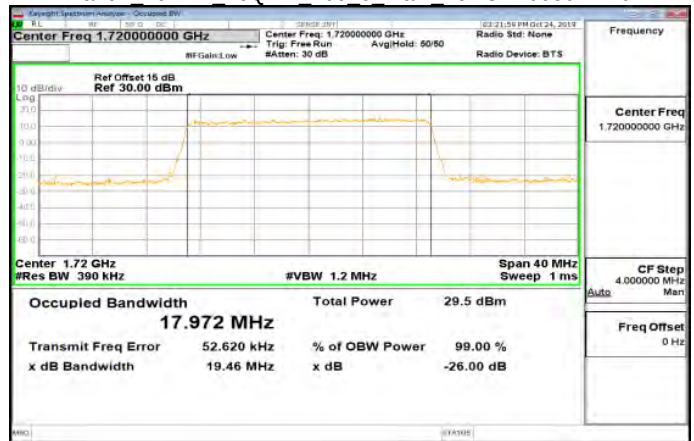
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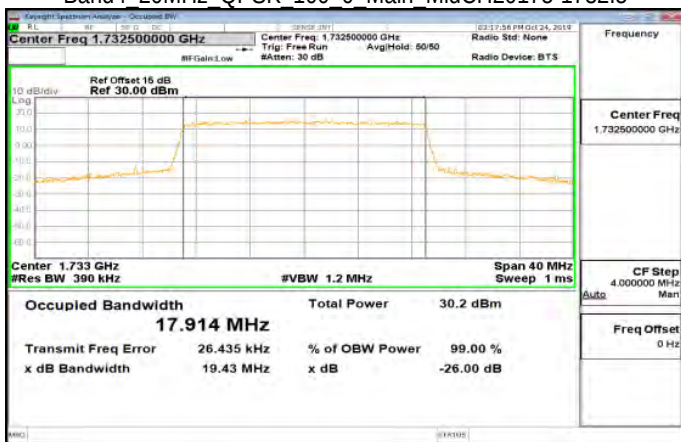
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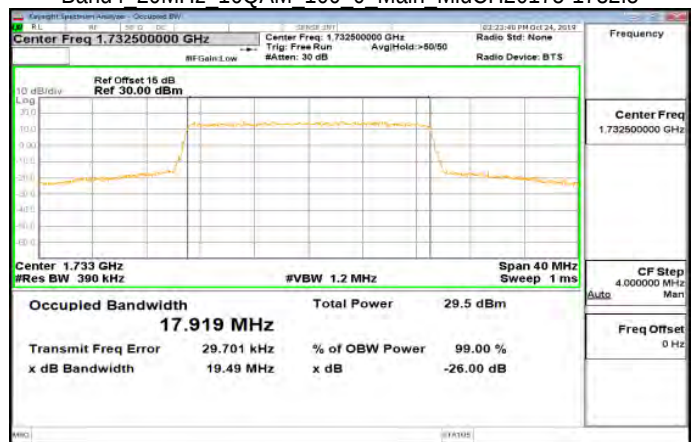
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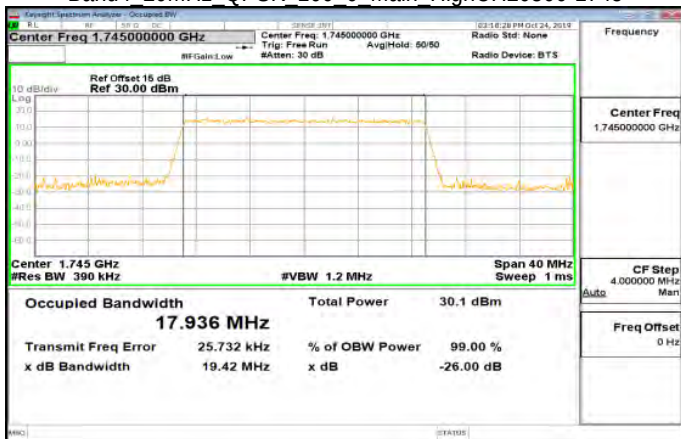
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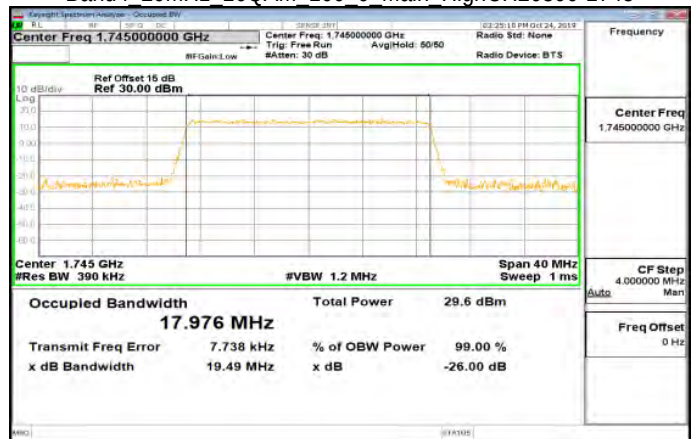
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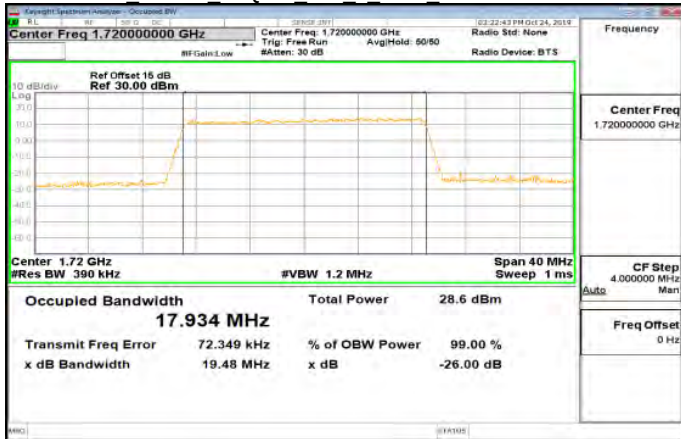


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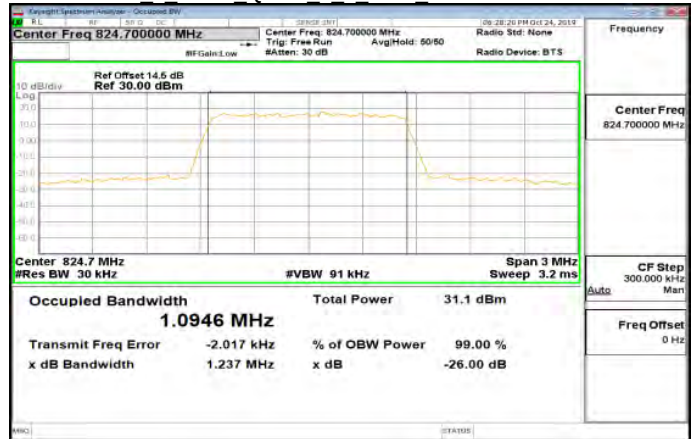
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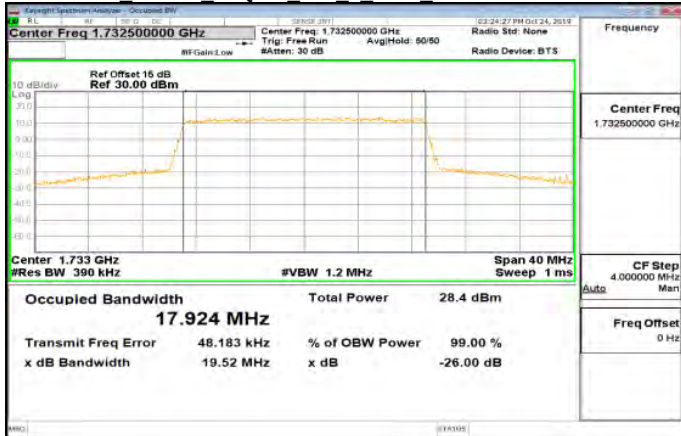
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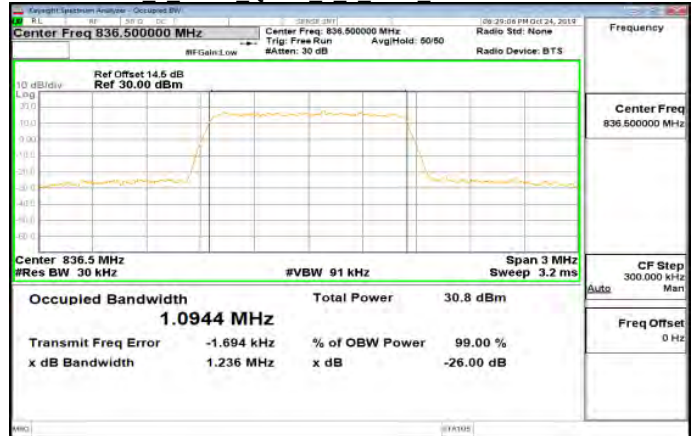
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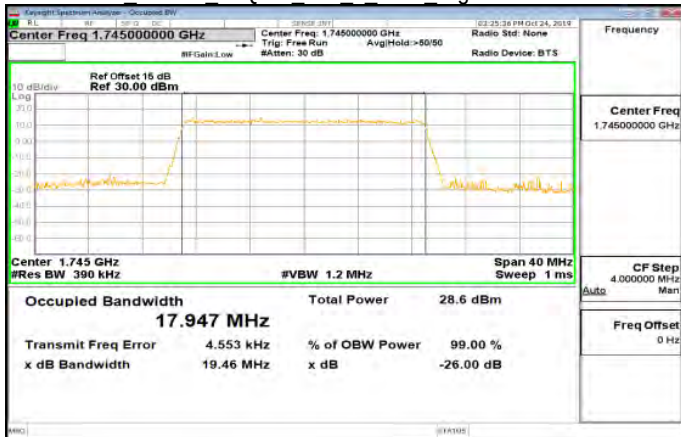
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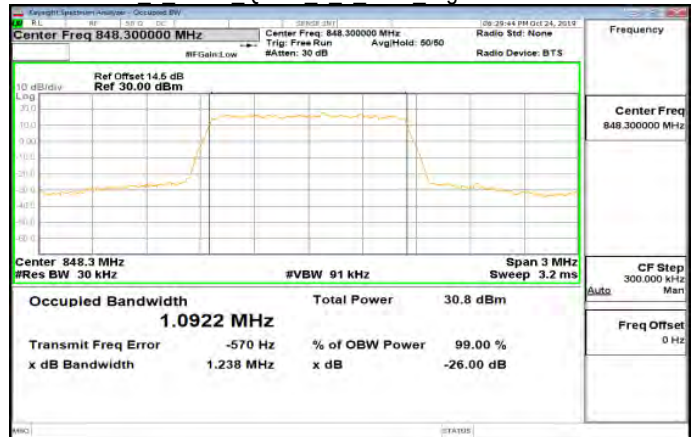
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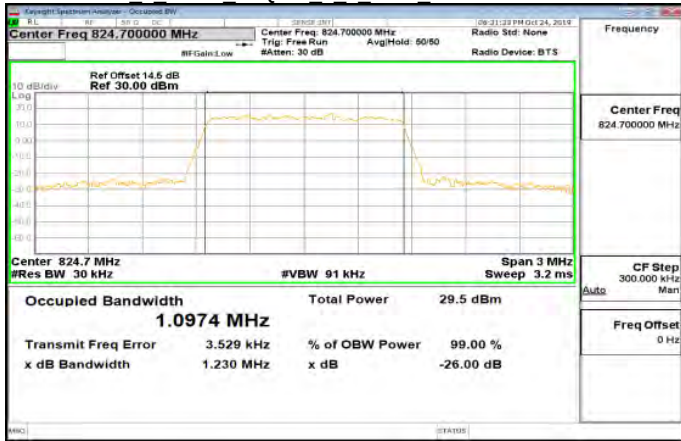


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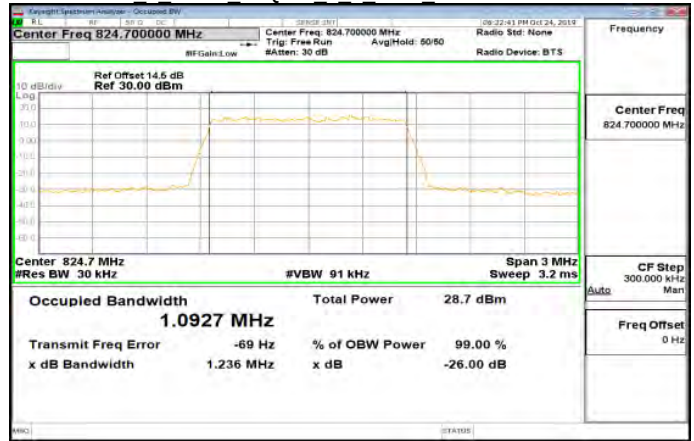
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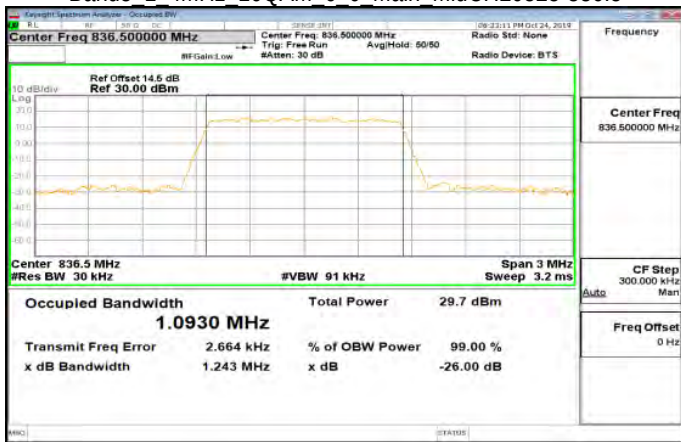
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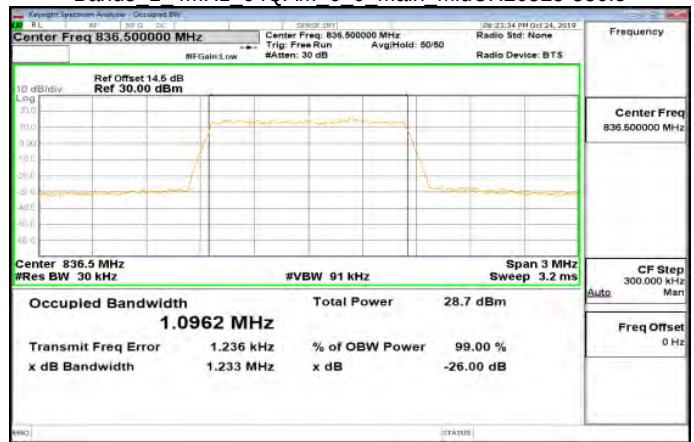
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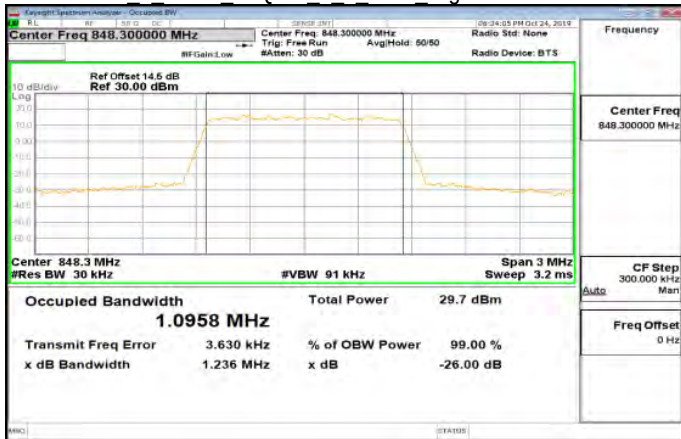
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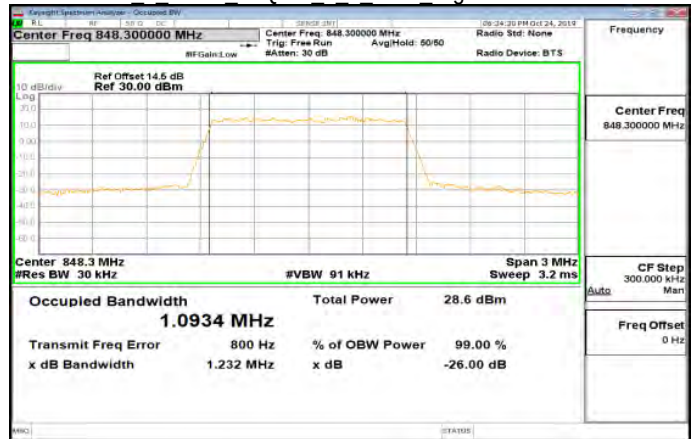
Band5 1 4MHz 64QAM 6 0 Main MidCH20525-836.5



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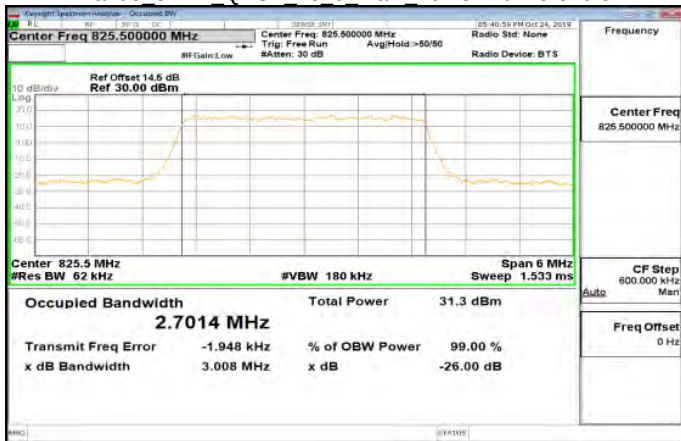


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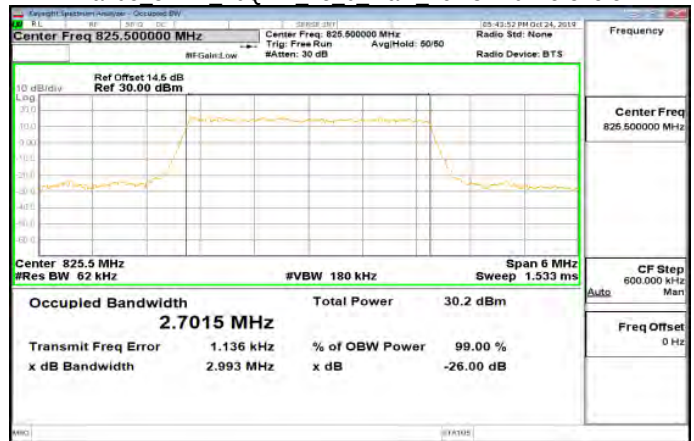
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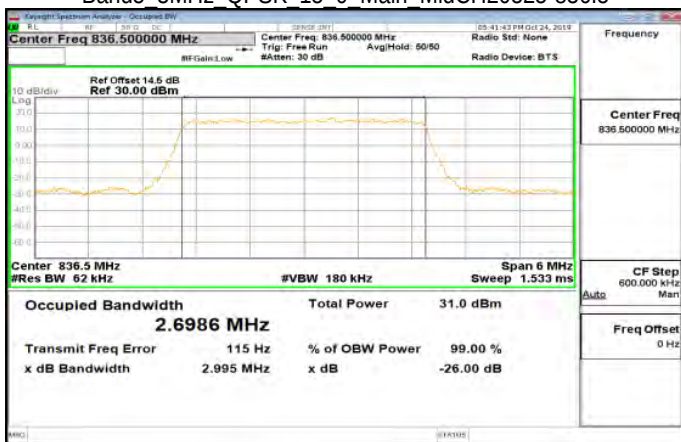
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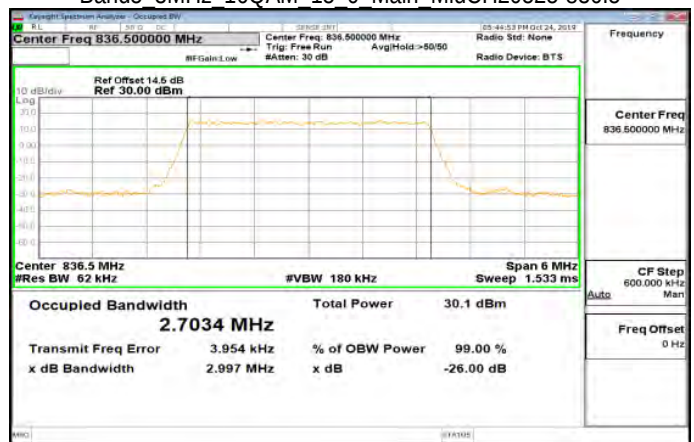
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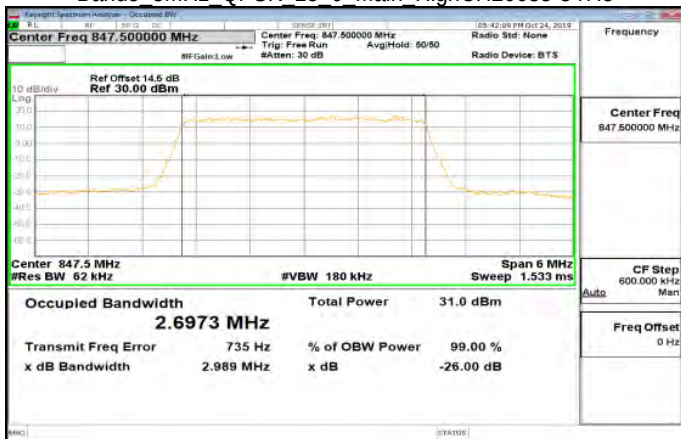
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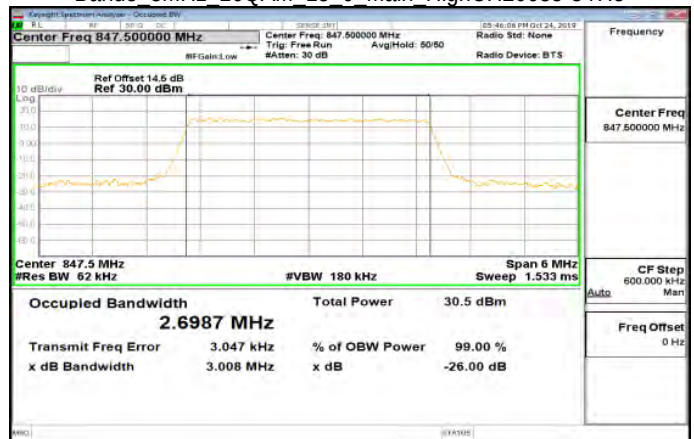
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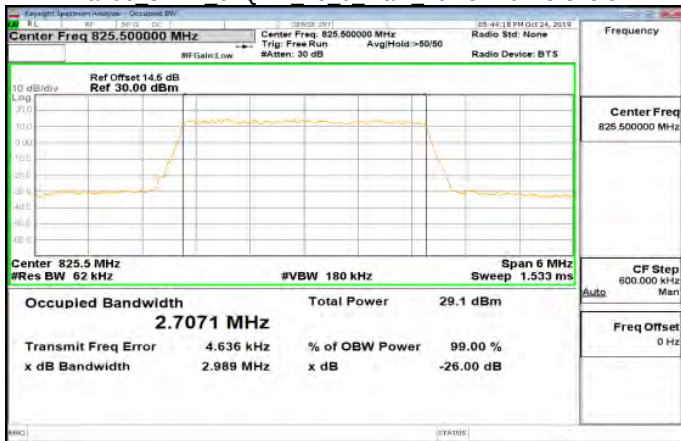


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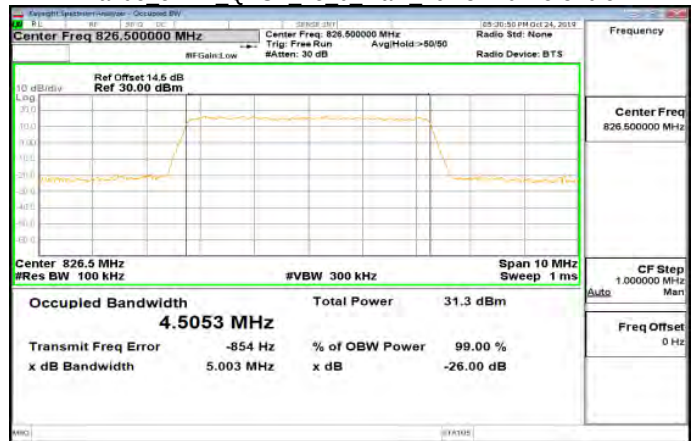
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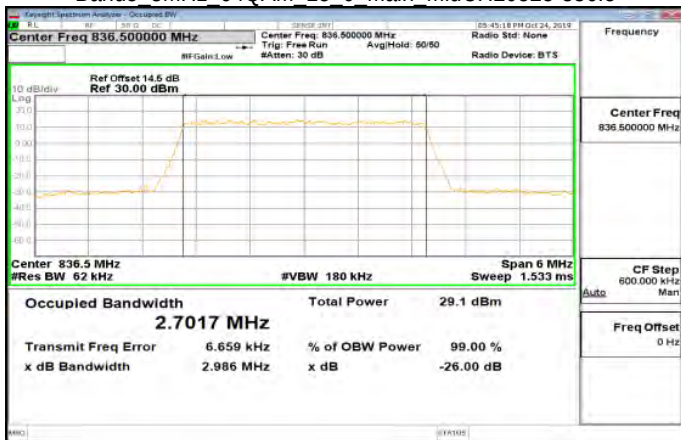
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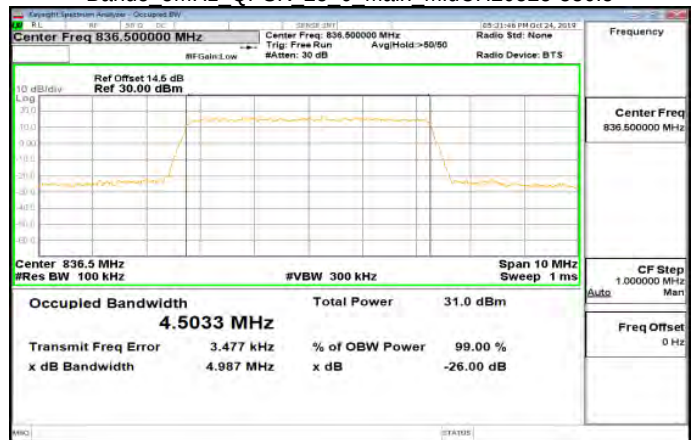
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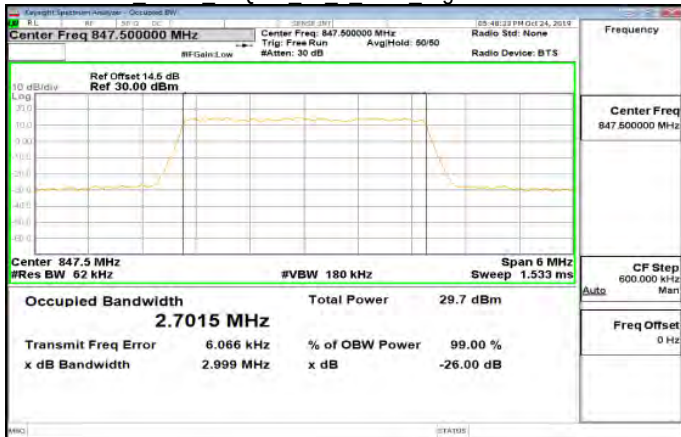
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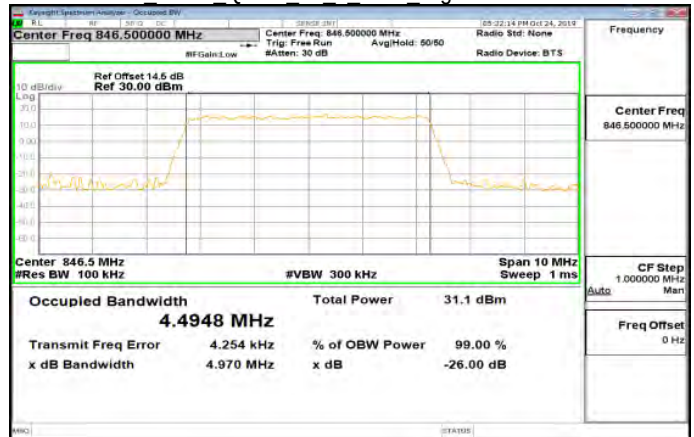
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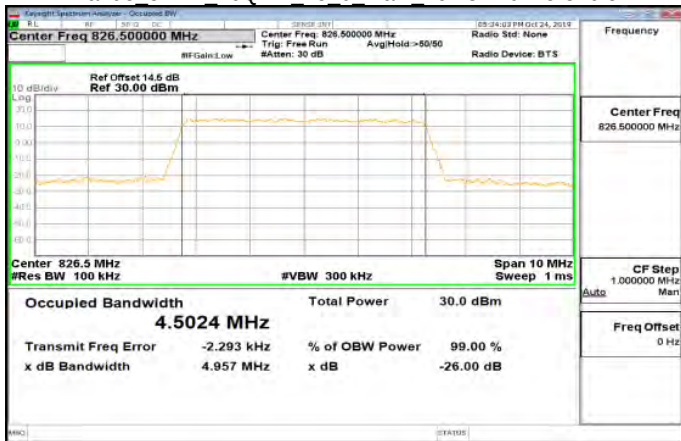


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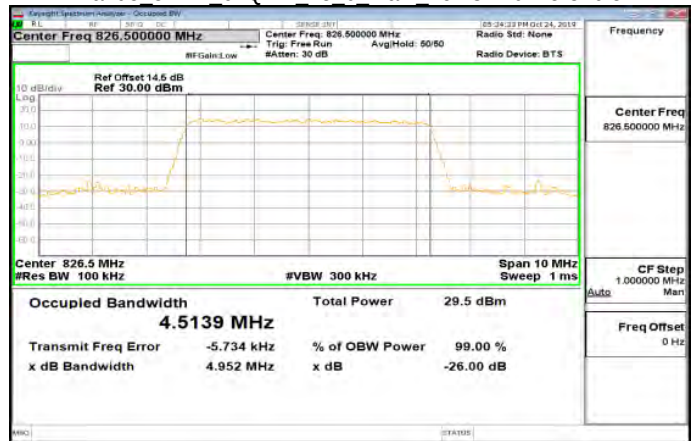
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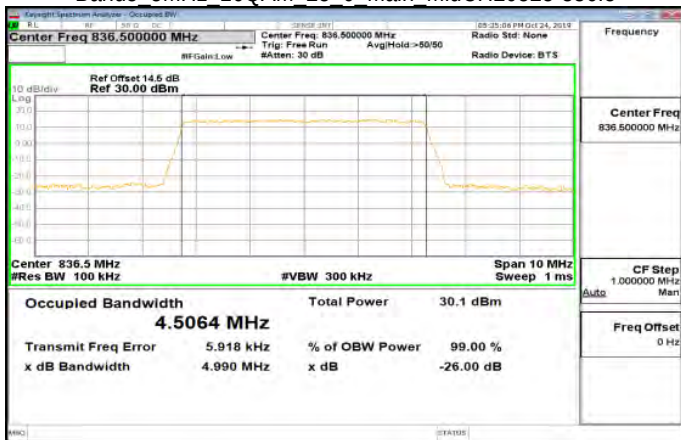
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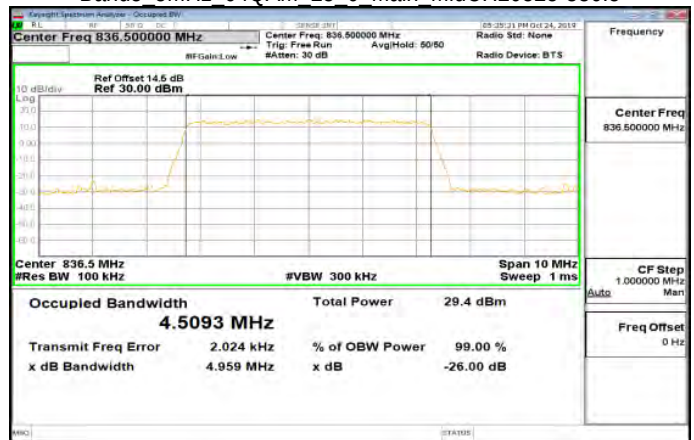
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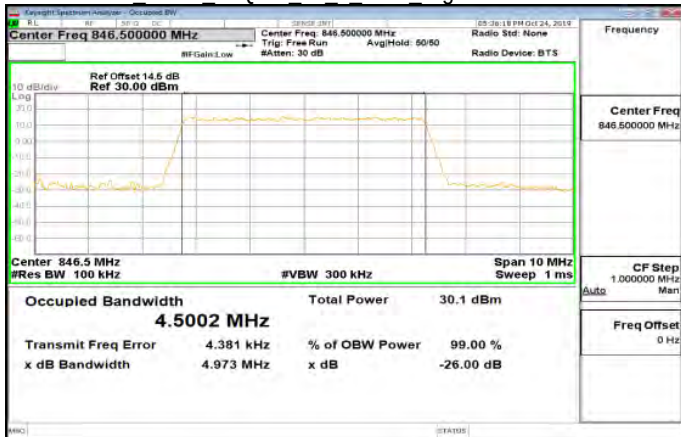
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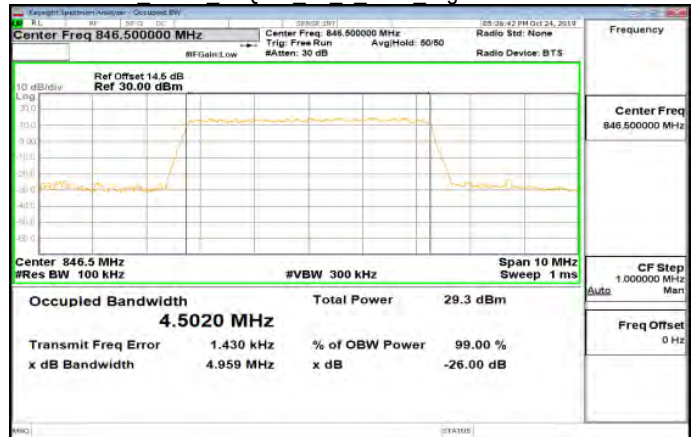
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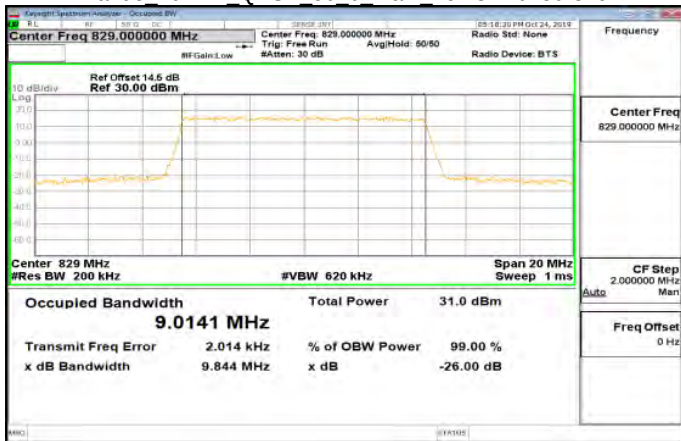


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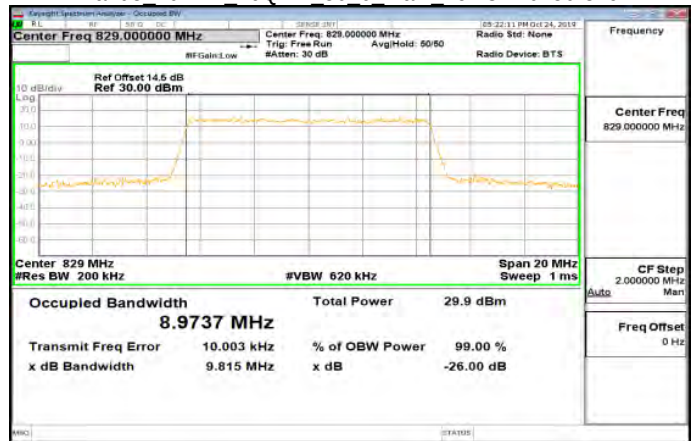
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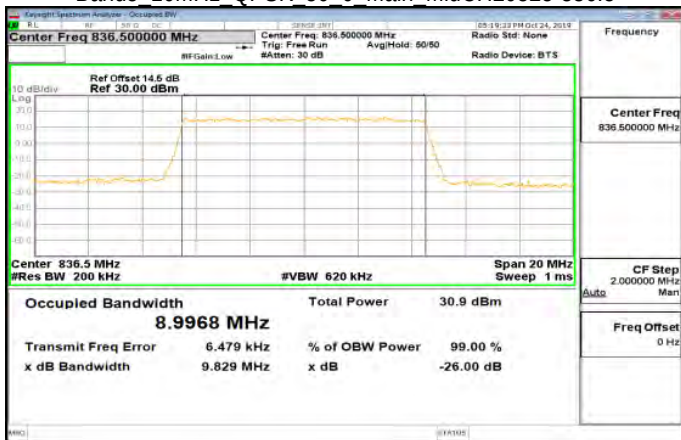
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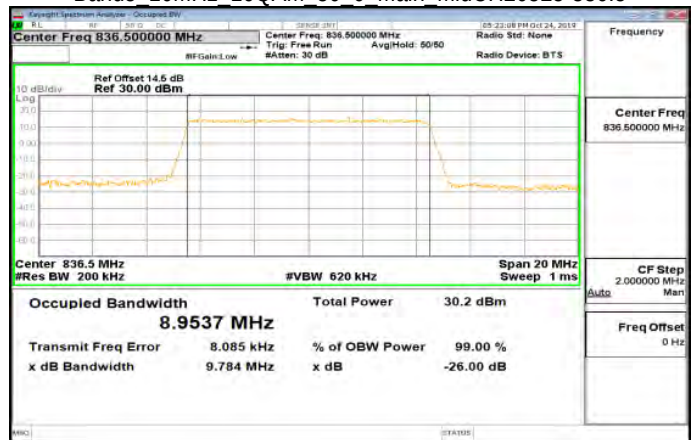
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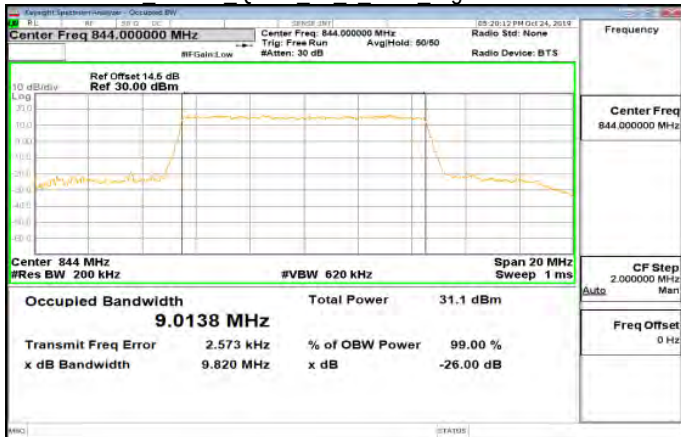
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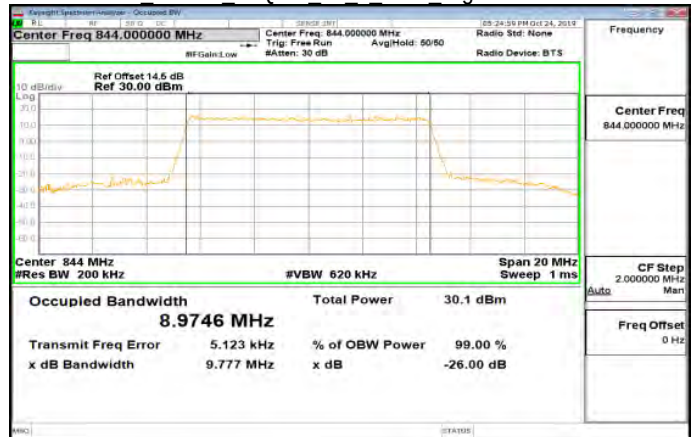
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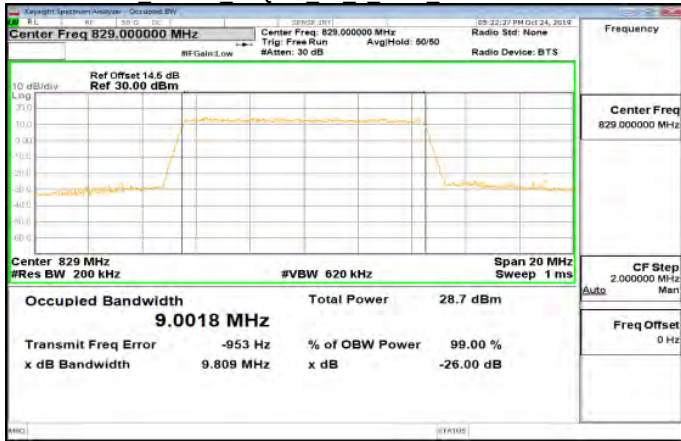


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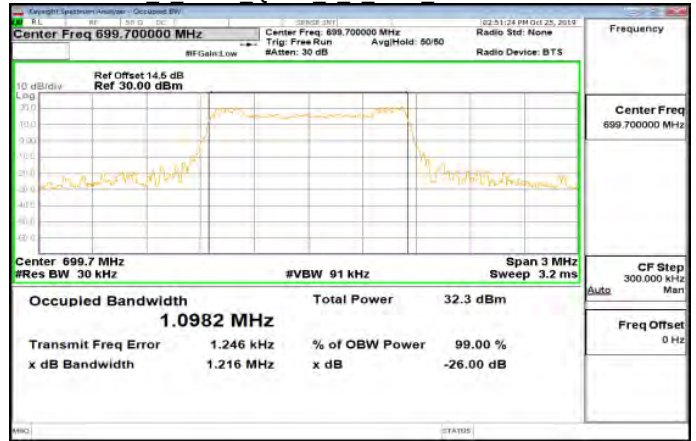
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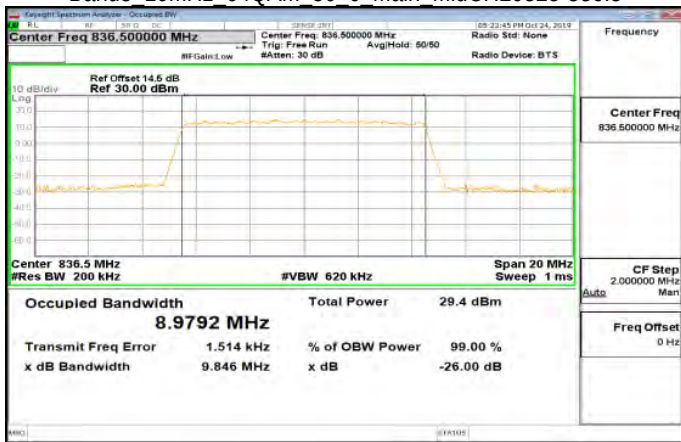
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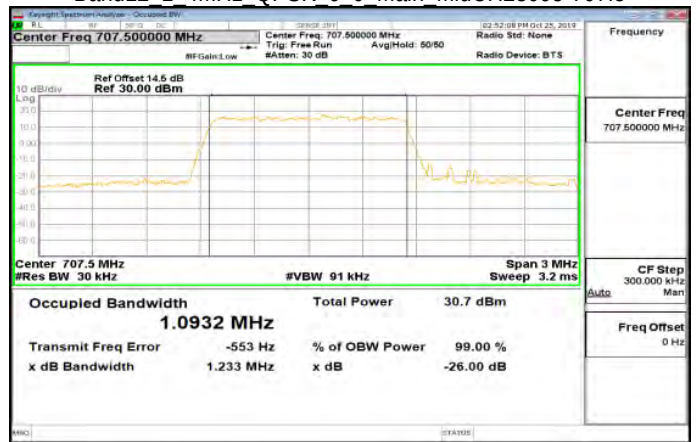
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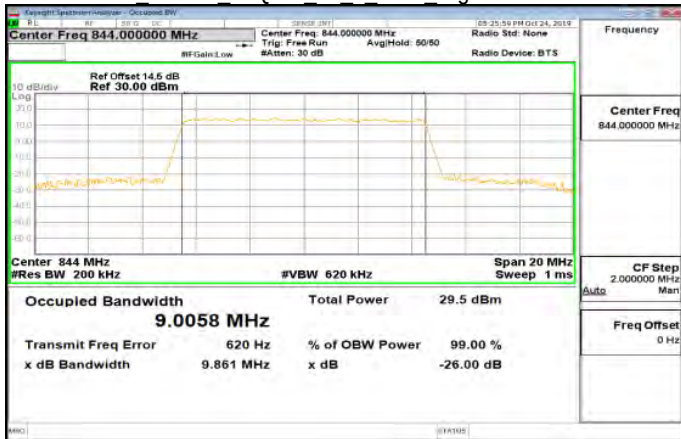
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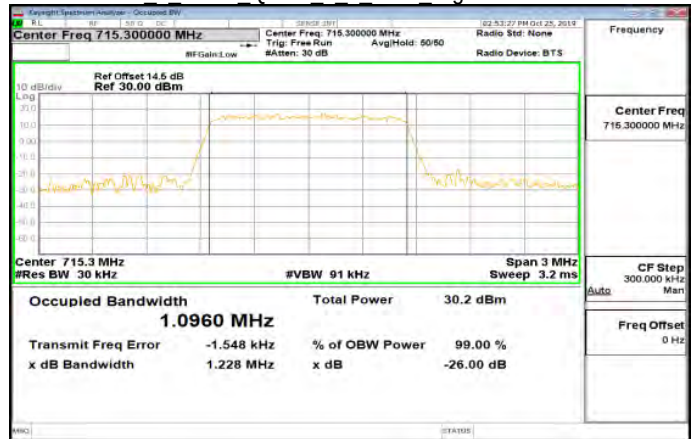
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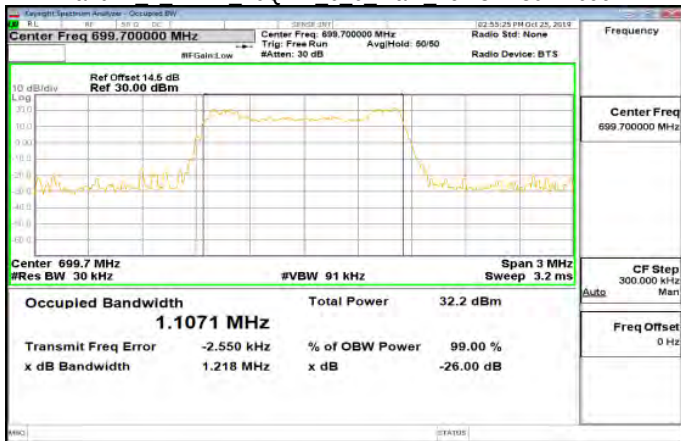


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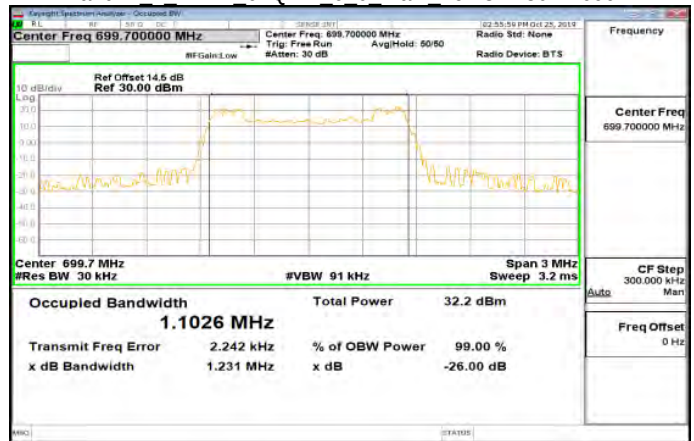
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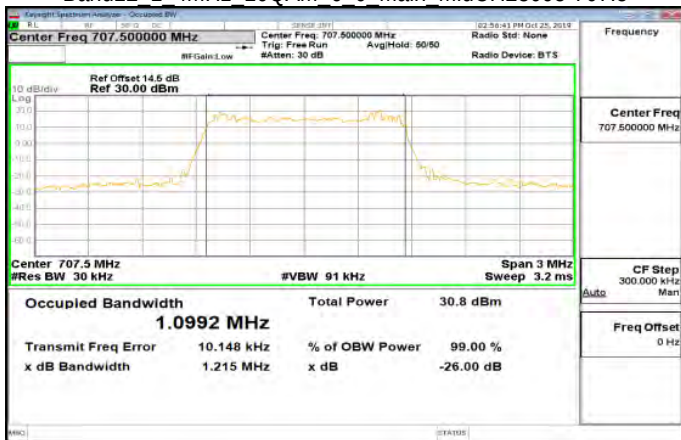
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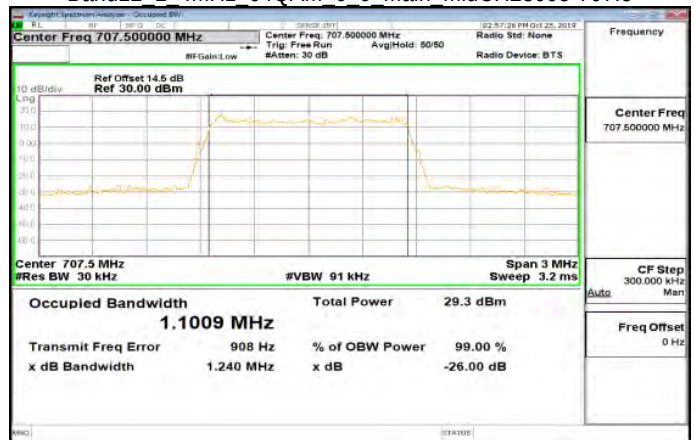
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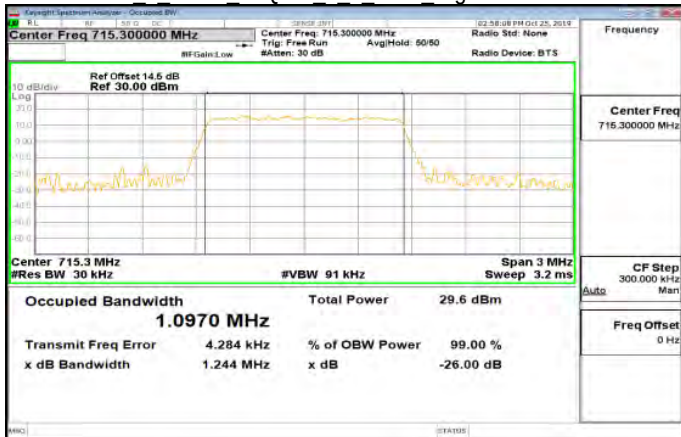
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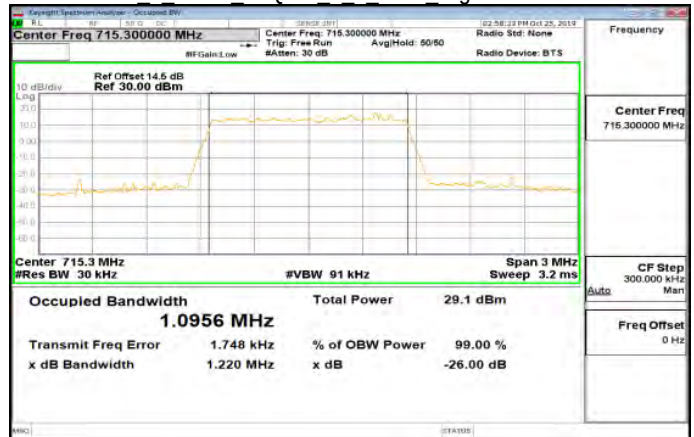
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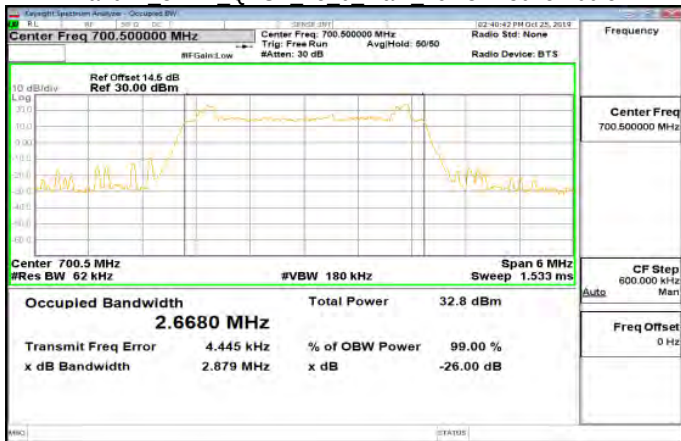


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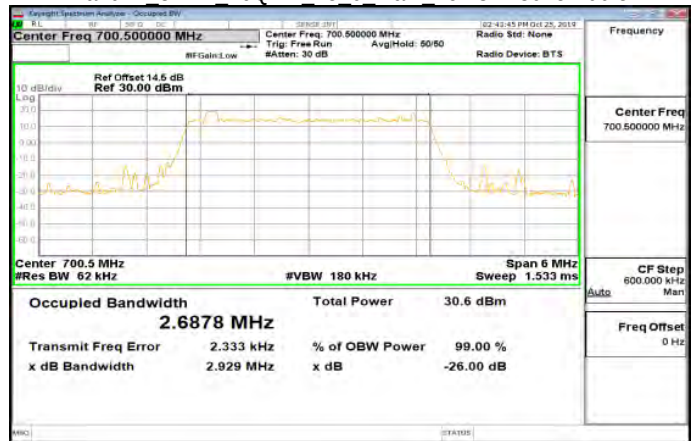
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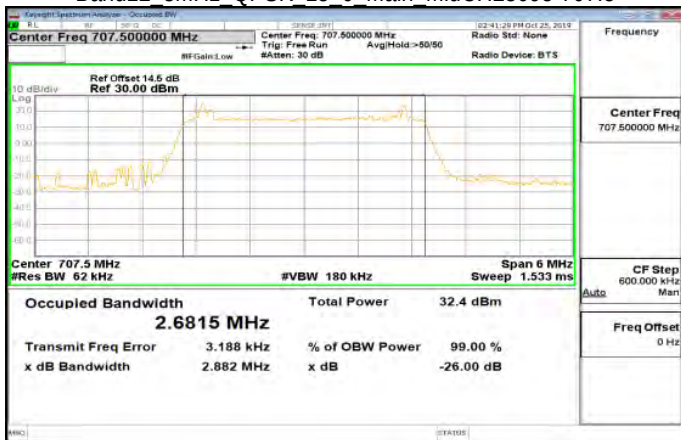
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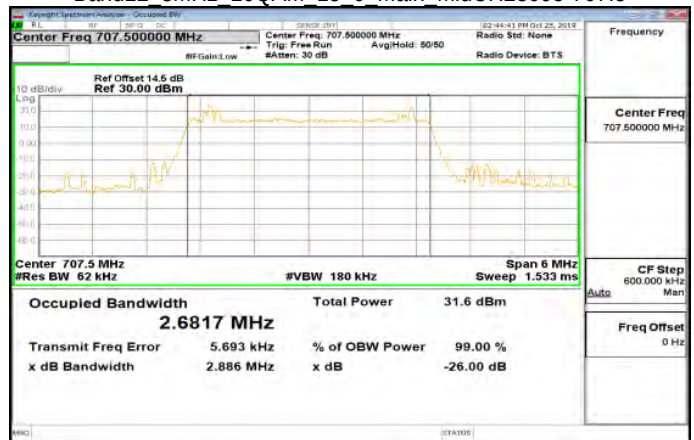
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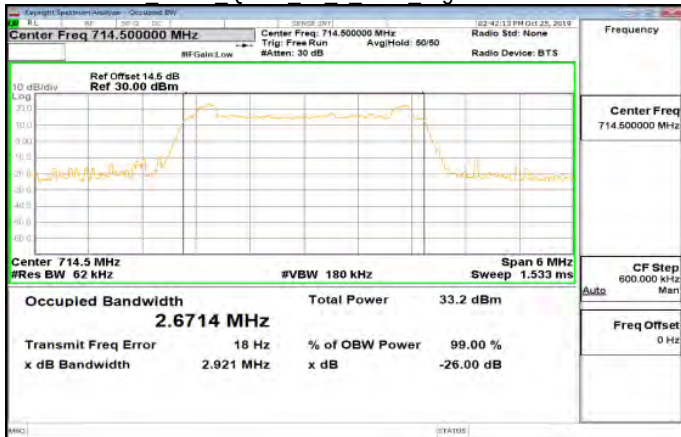
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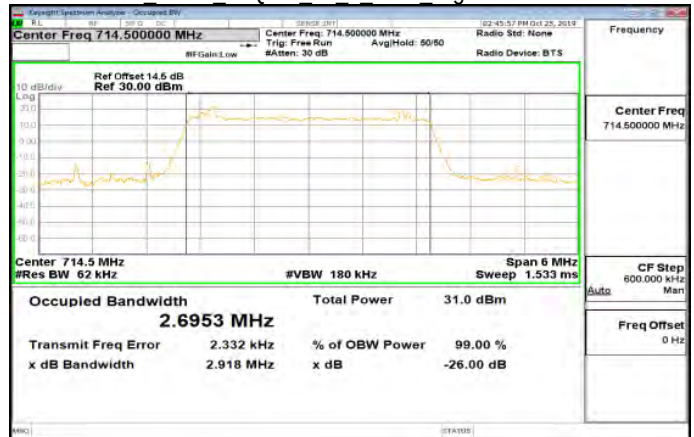
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Band12 3MHz QPSK 15 0 Main HighCH23165-714.5



Band12 3MHz 16QAM 15 0 Main HighCH23165-714.5

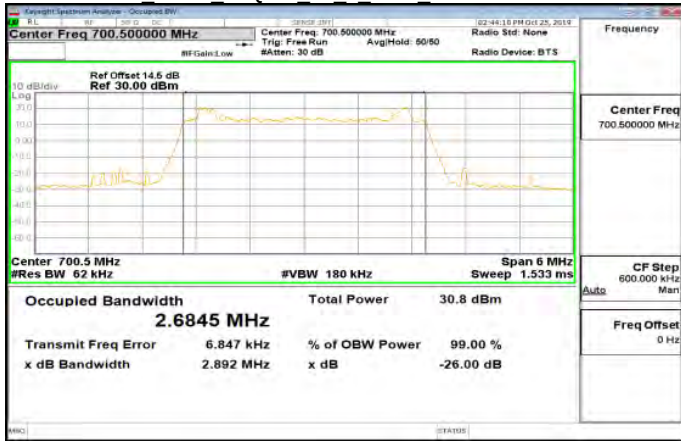


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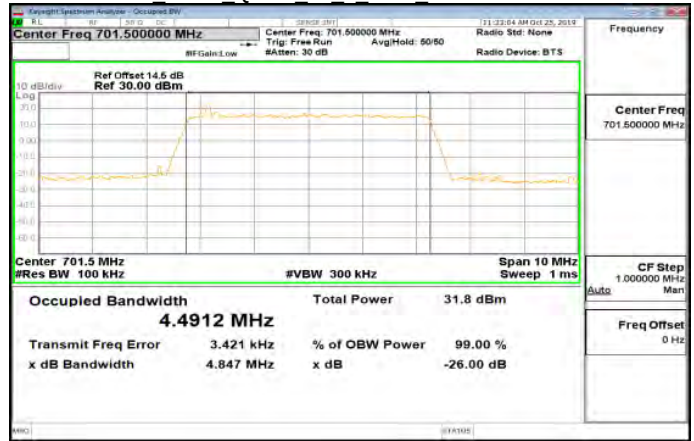
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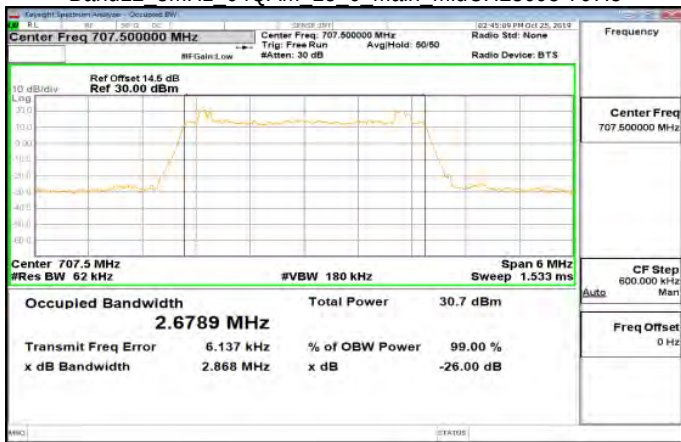
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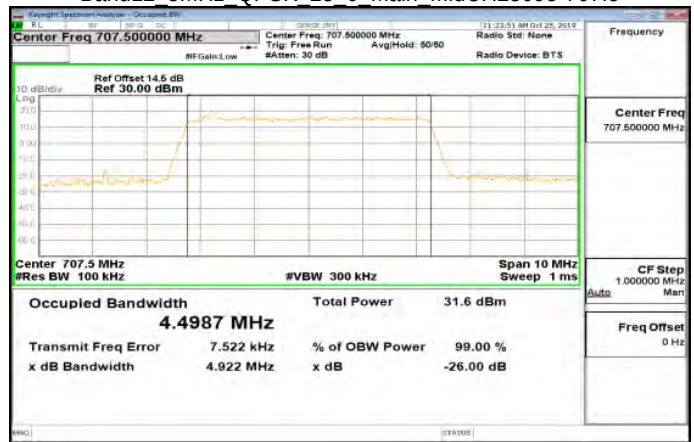
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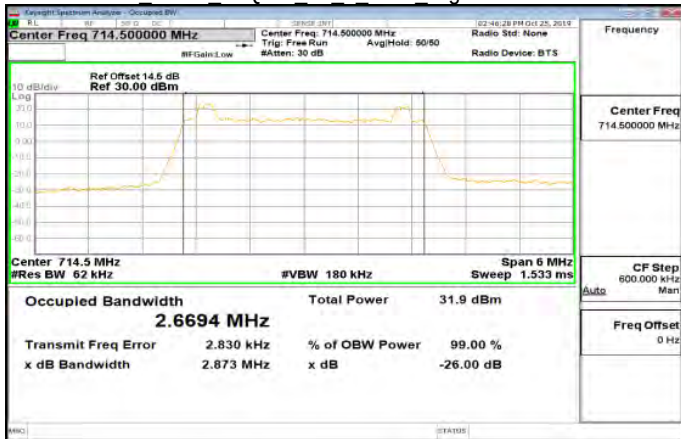
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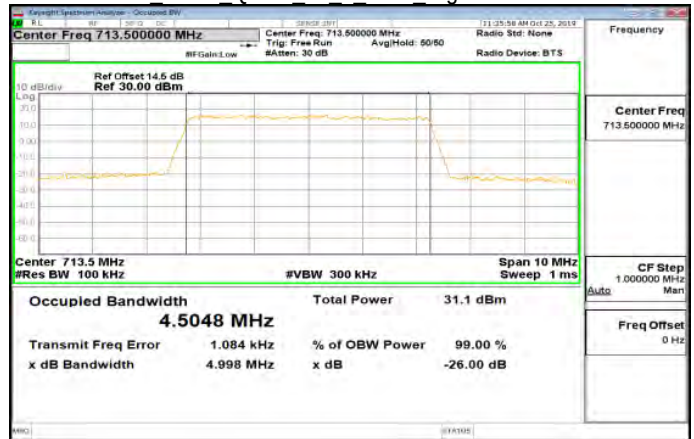
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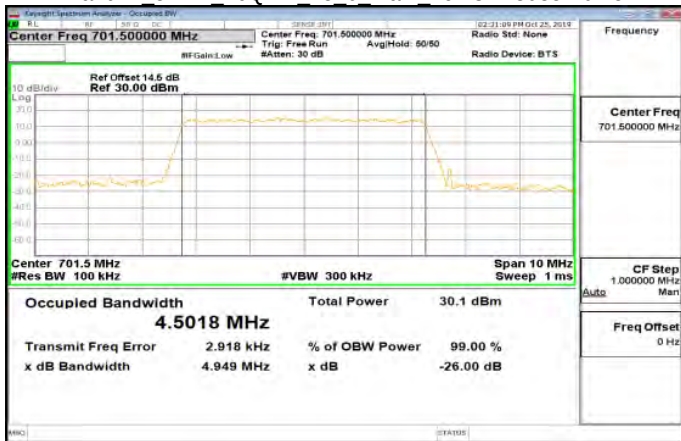


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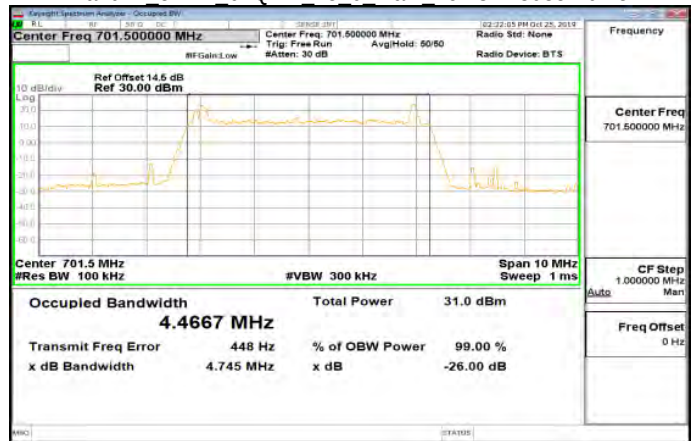
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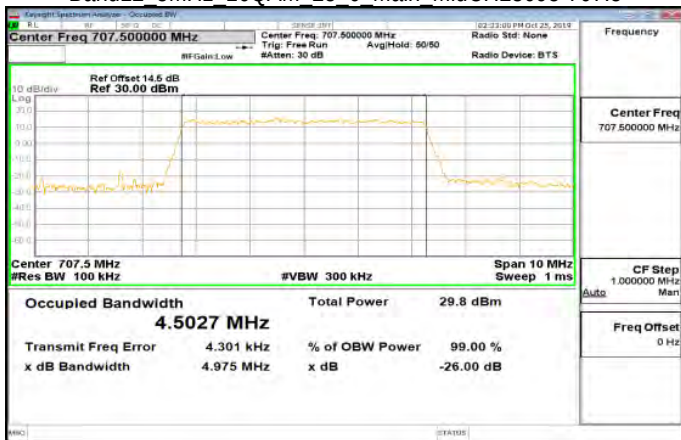
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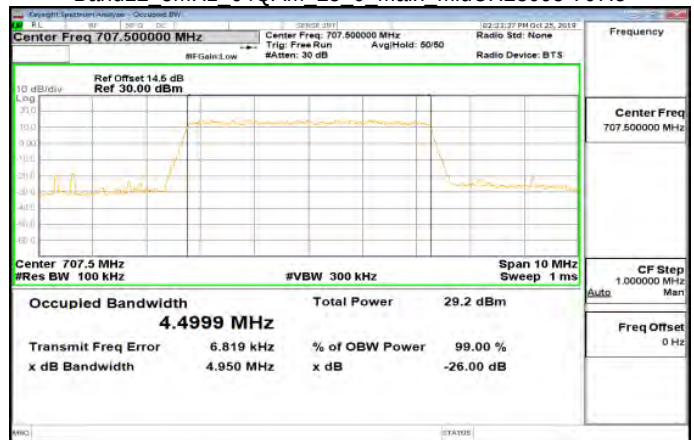
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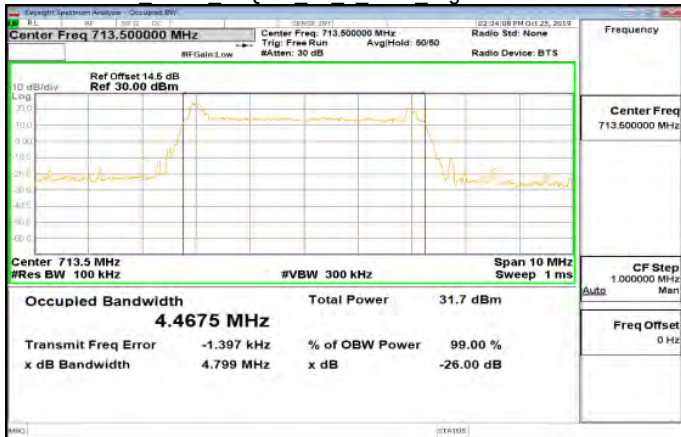
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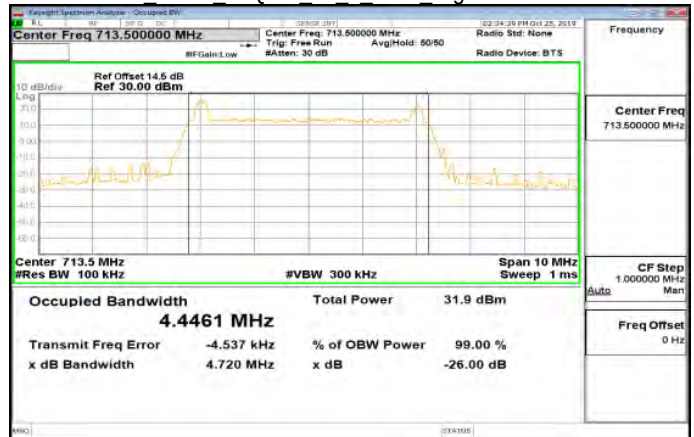
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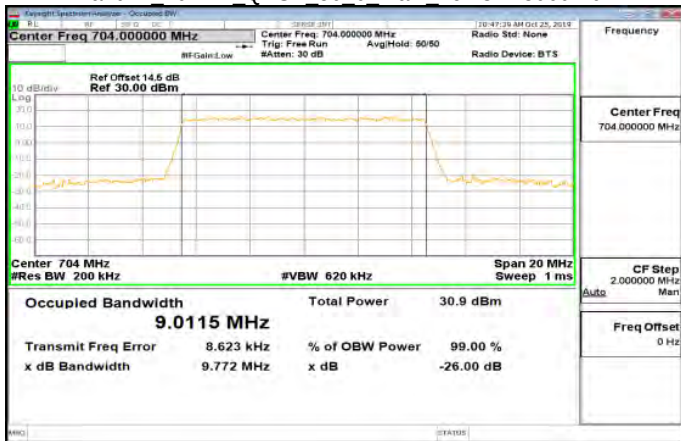


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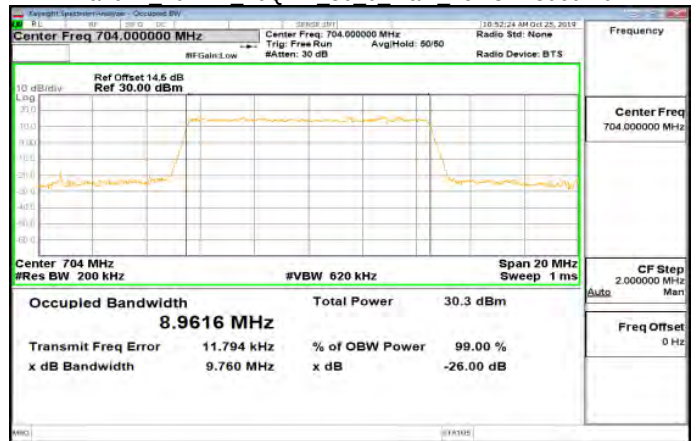
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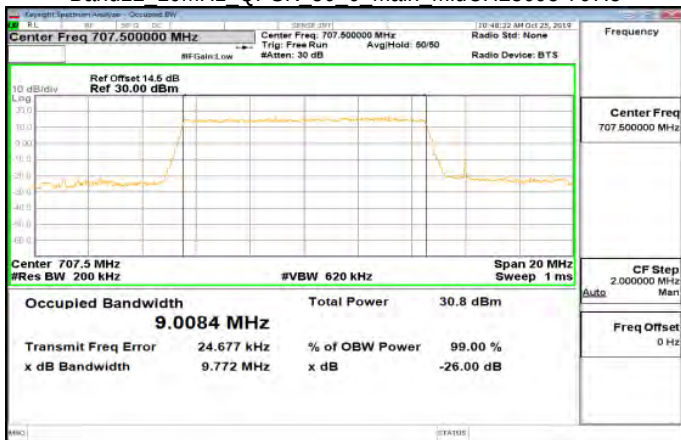
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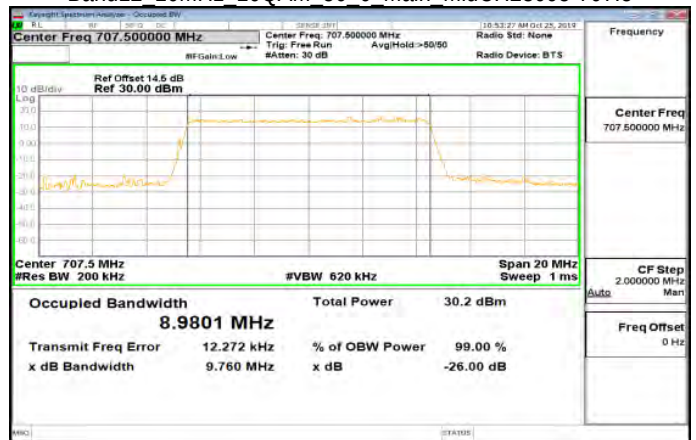
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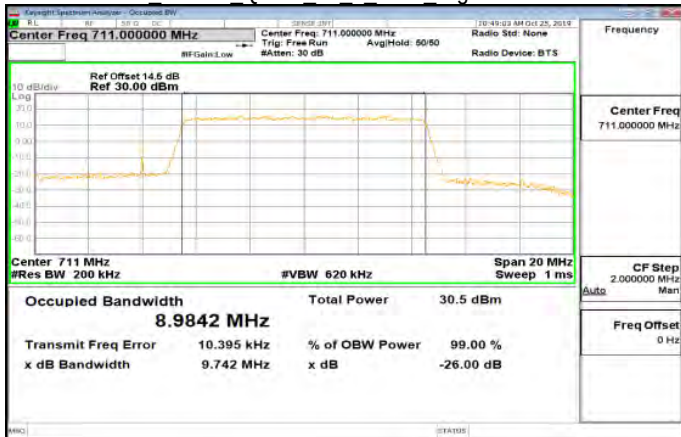
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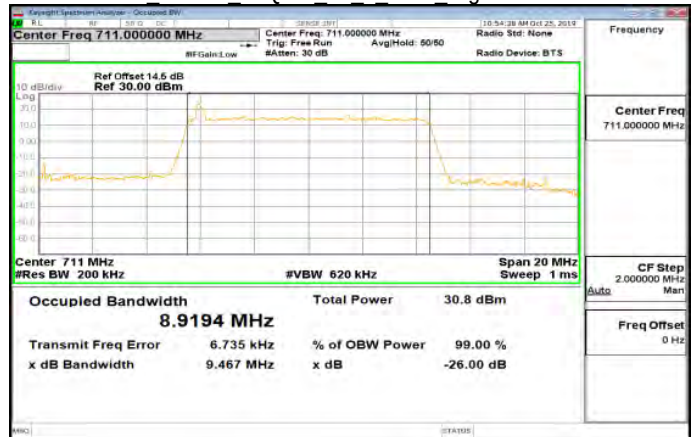
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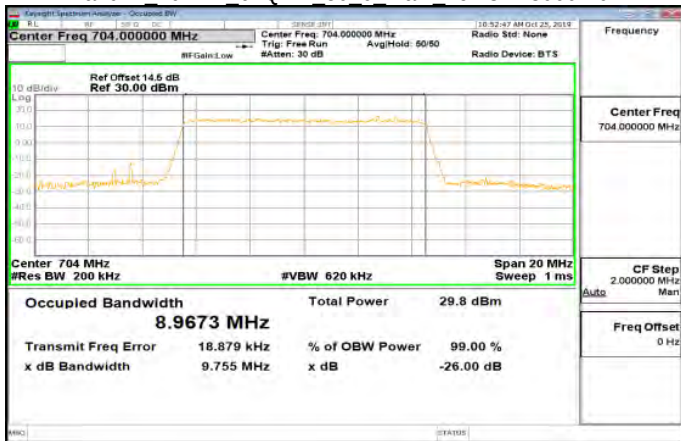


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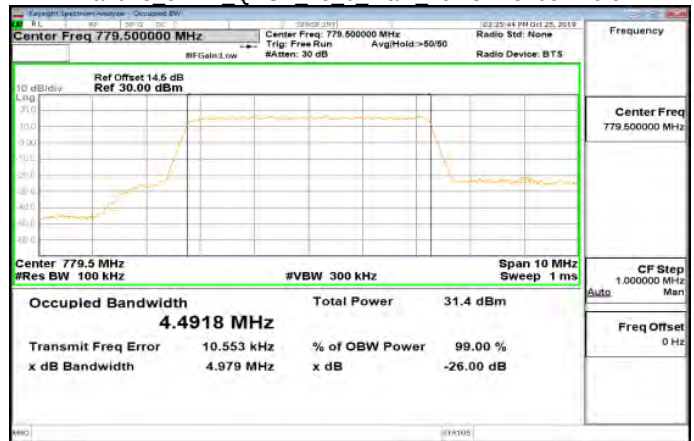
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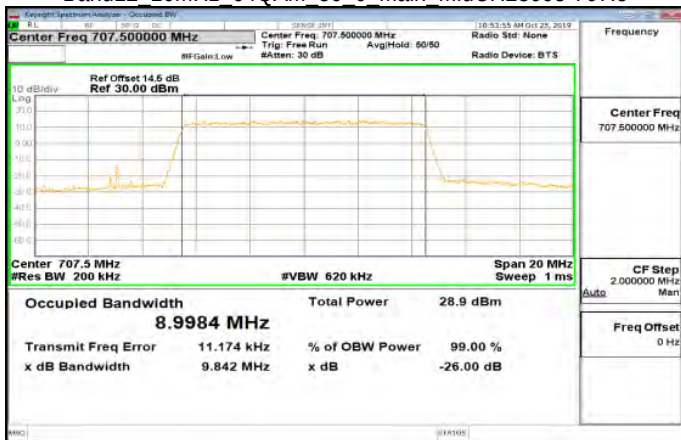
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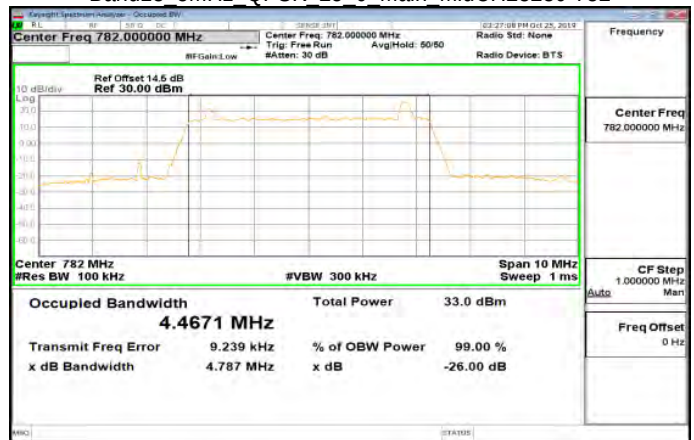
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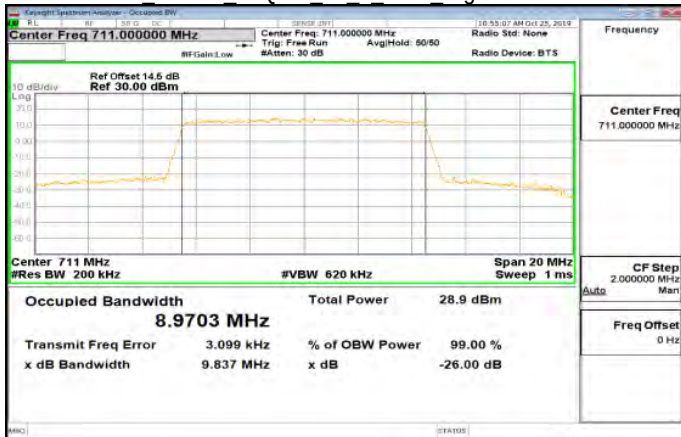
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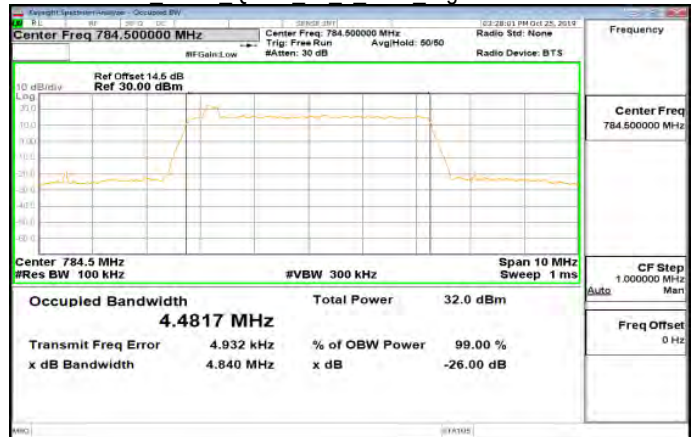
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Band12 10MHz 64QAM 50 0 Main HighCH23130-711



Band13 5MHz QPSK 25 0 Main HighCH23255-784.5

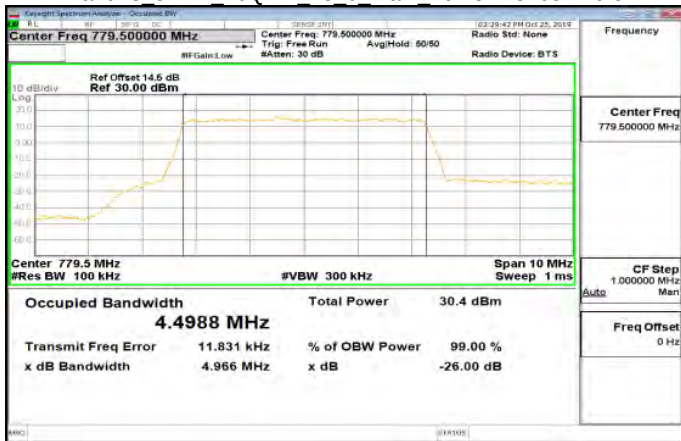


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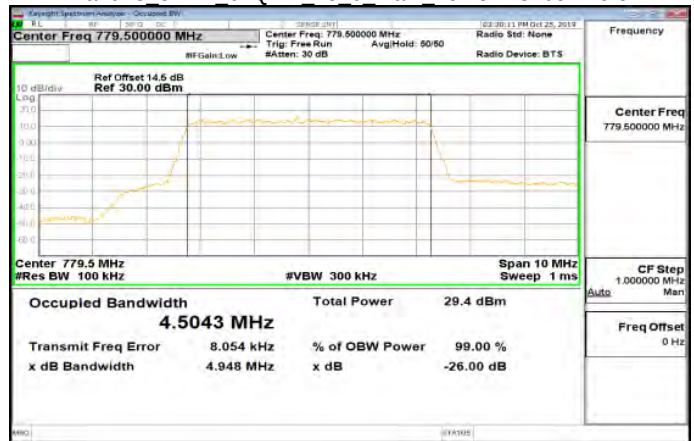
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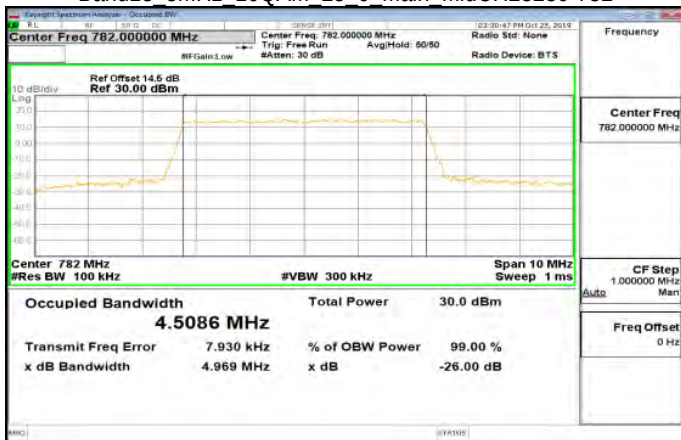
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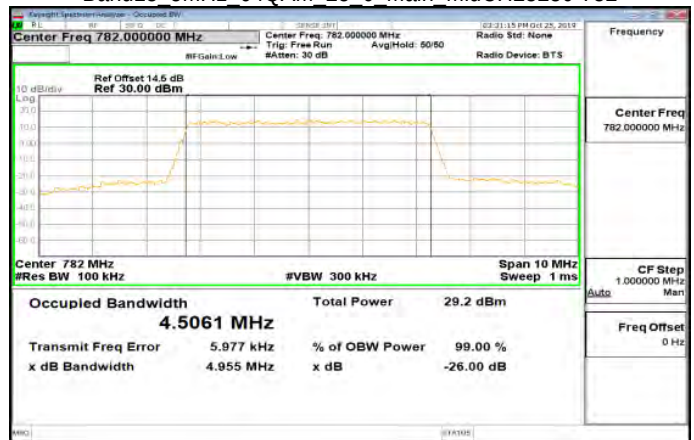
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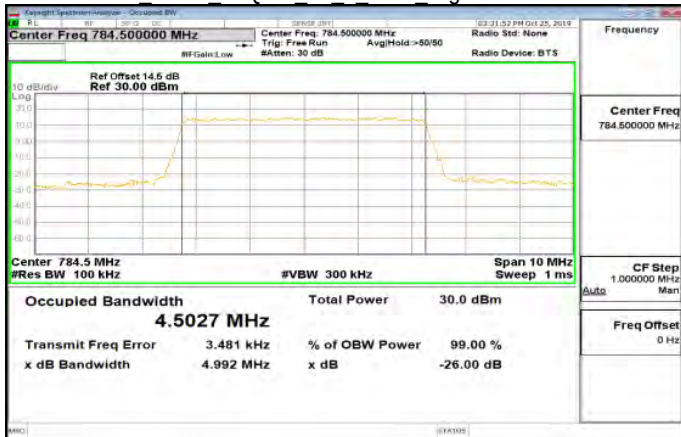
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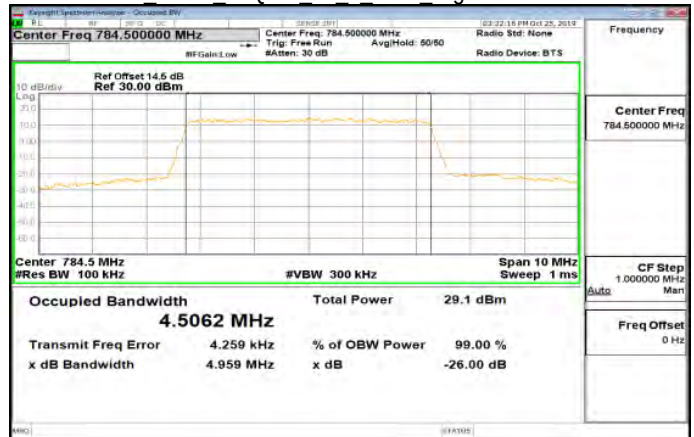
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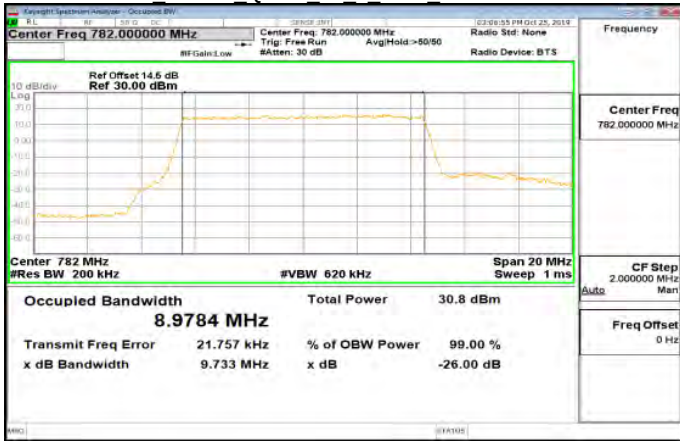


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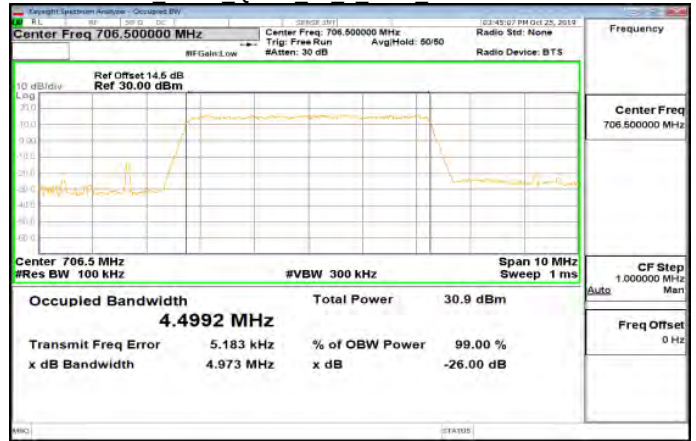
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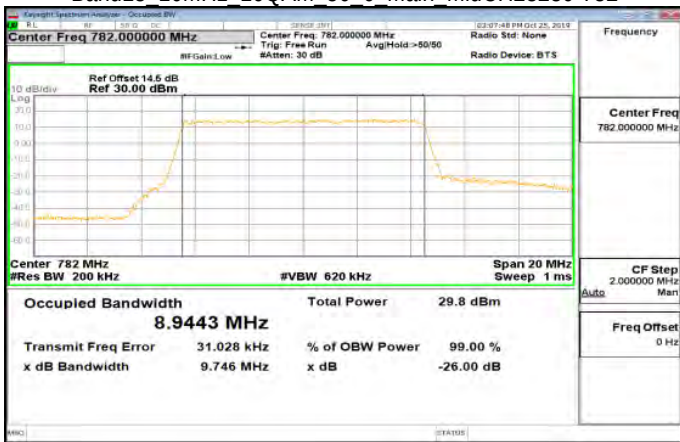
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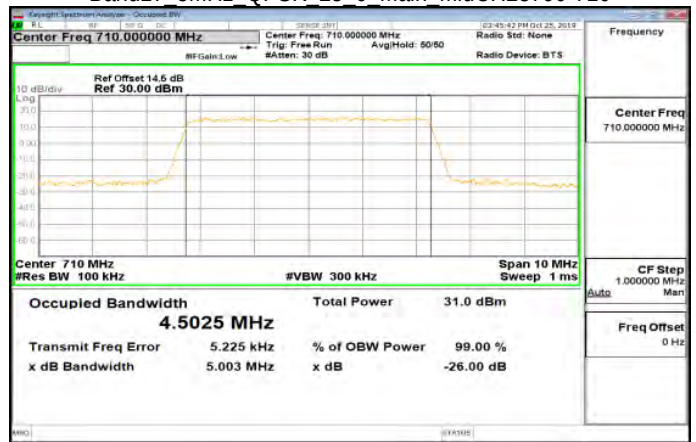
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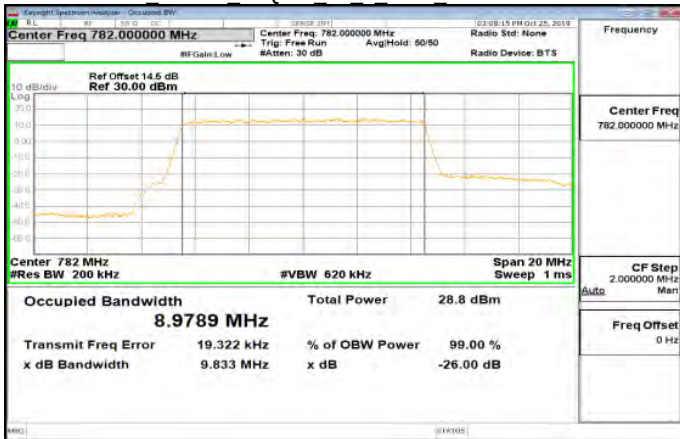
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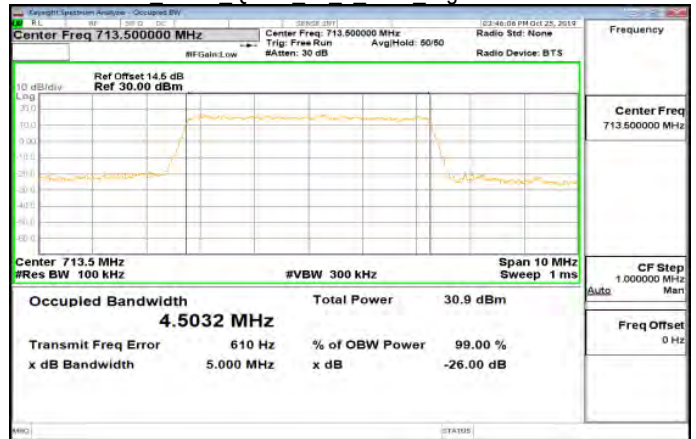
Band17 5MHz QPSK 25 0 Main MidCH23790-710



Band13 10MHz 64QAM 50 0 Main MidCH23230-782



Band17 5MHz QPSK 25 0 Main HighCH23825-713.5



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

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