

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT
INTENTIONAL RADIATOR CERTIFICATION TO
FCC PART 22 SUBPART H, PART 24 SUBPART E and PART 27 SUBPART
B, C & SUBPART L 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-Shi, Osaka 590-8522, Japan

Product Name: Smart Phone

Report Number: ER/2018/90159

FCC ID: APYHRO00267

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

Issue Date: Oct. 16, 2018

Date of Test: Aug. 01, 2018 ~ Sep. 04, 2018

Date of EUT Received: Aug. 01, 2018

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.

Tested By:

Marcus Tseng
Marcus Tseng / Sr. Engineer

Approved By:

CHUN-CHIEH CHEN
CHUN CHIEH CHEN / Asst. Supervisor



Testing Laboratory
0513

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Revision History

Report Number	Revision	Description	Effectuated Page	Issue Date	Revised By
ER/2018/90159	Rev.00	Initial creation of document	All	Oct. 16, 2018	Elle Chang

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1. GENERAL PRODUCT INFORMATION

1.1. Product Description

General:

Product Name:	Smart Phone
Hardware Version:	DVT
Software Version:	N/A
Power Supply:	3.85V from Rechargeable Li-ion Battery
IMEI:	004401116522950 / 004401116524261 / 004401116523123

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

Operating Frequency (MHz)		
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

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

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

	ERP / EIRP (dBm)		(W)	Type of Emission
GSM 1900	23.95	EIRP	0.248	247KGXW
GPRS 1900	24.85	EIRP	0.306	250KGXW

	ERP / EIRP (dBm)		(W)	Type of Emission
WCDMA Band II	22.77	EIRP	0.189	4M12F9W
HSDPA Band II	25.57	EIRP	0.361	4M12F9W
HSUPA Band II	23.25	EIRP	0.211	4M13F9W
WCDMA Band IV	20.33	EIRP	0.108	4M12F9W
HSDPA Band IV	24.36	EIRP	0.273	4M13F9W
HSUPA Band IV	21.72	EIRP	0.149	4M13F9W

LTE Band	BW (MHz)	Modulation	ERP / EIRP (dBm)		(W)	Type of Emission
2	1.4	QPSK	25.45	EIRP	0.351	1M10G7D
	1.4	16QAM	25.55	EIRP	0.359	1M10D7W
	3	QPSK	25.5	EIRP	0.355	2M70G7D
	3	16QAM	25.24	EIRP	0.334	2M70D7W
	5	QPSK	25.34	EIRP	0.342	4M49G7D
	5	16QAM	24.85	EIRP	0.306	4M49D7W
	10	QPSK	25.26	EIRP	0.336	9M01G7D
	10	16QAM	24.84	EIRP	0.305	8M96D7W
	15	QPSK	25.33	EIRP	0.341	13M5G7D
	15	16QAM	24.84	EIRP	0.305	13M4D7W
	20	QPSK	24.96	EIRP	0.313	17M9G7D
	20	16QAM	25.8	EIRP	0.380	17M9D7W

LTE Band	BW (MHz)	Modulation	ERP / EIRP (dBm)		(W)	Type of Emission
4	1.4	QPSK	25.37	EIRP	0.344	1M10G7D
	1.4	16QAM	25.07	EIRP	0.321	1M10D7W
	3	QPSK	26.64	EIRP	0.461	2M70G7D
	3	16QAM	26.33	EIRP	0.430	2M70D7W
	5	QPSK	26.79	EIRP	0.478	4M50G7D
	5	16QAM	26.48	EIRP	0.445	4M49D7W
	10	QPSK	26.53	EIRP	0.450	9M00G7D
	10	16QAM	26.15	EIRP	0.412	8M95D7W
	15	QPSK	26.25	EIRP	0.423	13M5G7D
	15	16QAM	25.82	EIRP	0.382	13M4D7W
	20	QPSK	26.25	EIRP	0.423	17M9G7D
	20	16QAM	25.86	EIRP	0.386	17M9D7W

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1.4. Test Methodology of Applied Standards

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

ANSI C63.26-2015

KDB971168 D01 Power Meas license Digital System v03

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 code 0513)

FCC Registration Numbers are: 509634 / TW0001

1.6. Special Accessories

No special accessories were used during testing.

1.7. Equipment Modifications

There were no modifications incorporated into the EUT.

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2. SYSTEM TEST CONFIGURATION

2.1. EUT Configuration

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

2.2. EUT Exercise

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

2.3. Test Procedure

2.3.1 Conducted Measurement at Antenna Port

According to measurement procured 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.

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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	21	21.2
High Band (Above 1 GHz)	0.5	21.36	21.56

2.5. Final Amplifier Voltage and Current Information:

Test Mode	DC voltage (V)	DC current (mA)
GSM 1900	3.85	574.9
WCDMA B2		563.2
WCDMA B4		565.5
LTE Band 2		1146.700
LTE Band 4		1149.100

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2.6. Configuration of Tested System

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

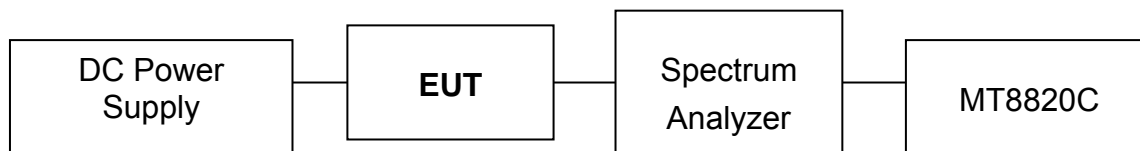
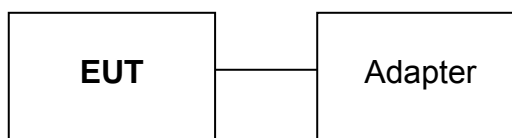


Fig. 2-2 Configuration of Tested System (Fixed Channel-Radiated)



Remote Side

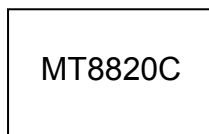


Table 2-1 Equipment Used in

Item	Equipment	Mfr/Brand	Model/ Type No.	Series No.	Data Cable	Power Cord
1.	Radio Communication Analyzer	Anritsu	MT8820C	6201465317	shielded	Un-shielded

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3. SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§2.1046(a)	RF Power Output	Compliant
§2.1046(a) §22.913(a)(5) §24.232(c) §27.50(c)(10) §27.50(h)(2)	ERP/ EIRP measurement	Compliant
§2.1049(h)	99% & 26dB Occupied Bandwidth	Compliant
§2.1051 §22.917(a) §24.238(a) §27.53(g) §27.53(m)(4)	Out of Band Emissions at Antenna Terminals and Band Edge / Emission mask requirements	Compliant
§2.1053 §22.917(a) §24.238(a) §27.53(g) §27.53(m)(4)	Field Strength of Spurious Radiation	Compliant
§24.232(d) §22.913	Peak to Average Ratio	Compliant
§2.1055(a)(1) §22.355 §24.235 §27.54	Frequency Stability	Compliant

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4. DESCRIPTION OF TEST MODES

4.1. The Worst Test Modes and Channel Details

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

BAND	ERP/EIRP	RADIATED EMISSION
GSM/GPRS 1900	H-plan	H-plan
WCDMA/HSPA Band II	H-plan	H -plan
WCDMA/HSPA Band IV	H -plan	H -plan
LTE Band 2	H-plan	H-plan
LTE Band 4	H-plan	H-plan

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GSM/GPRS MODE

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

WCDMA/HSPA MODE

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
EIRP	9262 to 9538 1312 to 1513	9262, 9400, 9583 1312, 1413, 1513	WCDMA/HSPA Band II WCDMA/HSPA Band IV
FREQUENCY STABILITY	1312 to 1513 9262 to 9538	1413 9400	WCDMA Band II WCDMA Band IV
OCCUPIED BANDWIDTH	1312 to 1513 9262 to 9538	1312, 1413, 1513 9262, 9400, 9583	WCDMA/HSPA Band II WCDMA/HSPA Band IV
PEAK TO AVERAGE RATIO	1312 to 1513 9262 to 9538	1312, 1413, 1513 9262, 9400, 9583	WCDMA/HSPA Band II WCDMA/HSPA Band IV
BAND EDGE	1312 to 1513 9262 to 9538	1312, 1513 9262, 9583	WCDMA Band II WCDMA Band IV
CONDCUDED EMISSION	1312 to 1513 9262 to 9538	1312, 1413, 1513 9262, 9400, 9583	WCDMA Band II WCDMA Band IV
RADIATED EMISSION	1312 to 1513 9262 to 9538	1312, 1413, 1513 9262, 9400, 9583	WCDMA Band II WCDMA Band IV

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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	1 RB/ 0,5 RB Offest
	18615 to 19185	18615, 18900, 19185	3MHz	QPSK, 16QAM	1 RB/ 0,14 RB Offest
	18625 to 19175	18625, 18900, 19175	5MHz	QPSK, 16QAM	1 RB/ 0,24 RB Offest
	18650 to 19150	18650, 18900, 19150	10MHz	QPSK, 16QAM	1 RB/ 0,49 RB Offest
	18675 to 19125	18675, 18900, 19125	15MHz	QPSK, 16QAM	1 RB/ 0,74 RB Offest
	18700 to 19100	18700, 18900, 19100	20MHz	QPSK, 16QAM	1 RB/ 0,99 RB Offest
FREQUENCY STABILITY	18650 to 19150	18900	10MHz	QPSK	Full RB
OCCUPIED BAND-WIDTH	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK, 16QAM	Full RB
	18615 to 19185	18615, 18900, 19185	3MHz	QPSK, 16QAM	Full RB
	18625 to 19175	18625, 18900, 19175	5MHz	QPSK, 16QAM	Full RB
	18650 to 19150	18650, 18900, 19150	10MHz	QPSK, 16QAM	Full RB
	18675 to 19125	18675, 18900, 19125	15MHz	QPSK, 16QAM	Full RB
	18700 to 19100	18700, 18900, 19100	20MHz	QPSK, 16QAM	Full RB
PEAK TO AVERAGE RATIO	18607 to 19193	18607, 18900, 19193	1.4MHz	16QAM	Full RB
	18615 to 19185	18615, 18900, 19185	3MHz	16QAM	Full RB
	18625 to 19175	18625, 18900, 19175	5MHz	16QAM	Full RB
	18650 to 19150	18650, 18900, 19150	10MHz	16QAM	Full RB
	18675 to 19125	18675, 18900, 19125	15MHz	16QAM	Full RB
	18700 to 19100	18700, 18900, 19100	20MHz	16QAM	Full RB
BAND EDGE	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	18650 to 19150	18650, 18900, 19150	10MHz	16QAM	1 RB, 49 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	1 RB/ 0,5 RB Offest
	19965 to 22385	19965, 20175, 22385	3MHz	QPSK, 16QAM	1 RB/ 0,14 RB Offest
	19975 to 20375	19975, 20175, 20375	5MHz	QPSK, 16QAM	1 RB/ 0,24 RB Offest
	20000 to 20350	20000, 20175, 20350	10MHz	QPSK, 16QAM	1 RB/ 0,49 RB Offest
	20025 to 20325	20025, 20175, 20325	15MHz	QPSK, 16QAM	1 RB/ 0,74 RB Offest
	20050 to 20300	20050, 20175, 20300	20MHz	QPSK, 16QAM	1 RB/ 0,99 RB Offest
FREQUENCY STABILITY	20000 to 20350	20175	10MHz	QPSK	Full RB
OCCUPIED BAND-WIDTH	19957 to 19393	19957, 20175, 19393	1.4MHz	QPSK, 16QAM	Full RB
	19965 to 22385	19965, 20175, 22385	3MHz	QPSK, 16QAM	Full RB
	19975 to 20375	19975, 20175, 20375	5MHz	QPSK, 16QAM	Full RB
	20000 to 20350	20000, 20175, 20350	10MHz	QPSK, 16QAM	Full RB
	20025 to 20325	20025, 20175, 20325	15MHz	QPSK, 16QAM	Full RB
	20050 to 20300	20050, 20175, 20300	20MHz	QPSK, 16QAM	Full RB
PEAK TO AVERAGE RATIO	19957 to 19393	19957, 20175, 19393	1.4MHz	16QAM	Full RB
	19965 to 22385	19965, 20175, 22385	3MHz	16QAM	Full RB
	19975 to 20375	19975, 20175, 20375	5MHz	16QAM	Full RB
	20000 to 20350	20000, 20175, 20350	10MHz	16QAM	Full RB
	20025 to 20325	20025, 20175, 20325	15MHz	16QAM	Full RB
	20050 to 20300	20050, 20175, 20300	20MHz	16QAM	Full RB
BAND EDGE	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	19975 to 20375	19975, 20175, 20375	5MHz	16QAM	1 RB, 24 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

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

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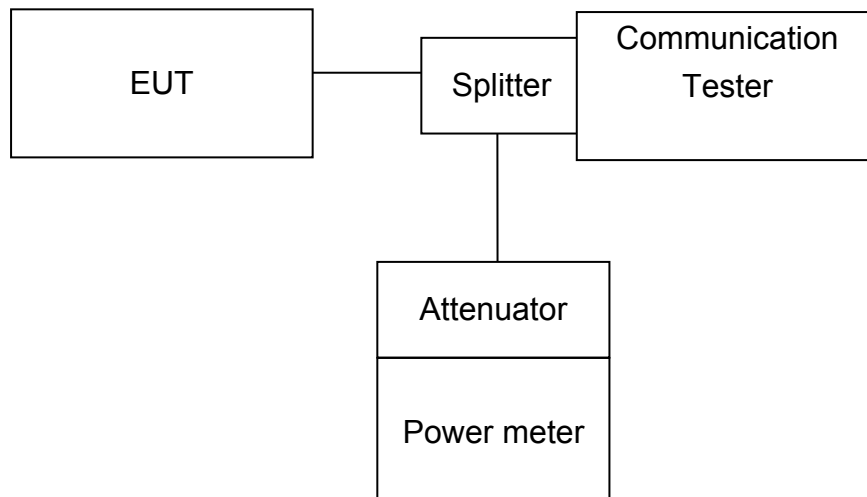
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6. RF CONDUCTED OUTPUT POWER MEASUREMENT

6.1. Standard Applicable

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

6.2. Test Set-up



Note: Measurement setup for testing on Antenna connector

6.3. Measurement Procedure

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

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

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6.4. Measurement Equipment Used

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
PXA Spectrum Analyzer	Agilent	N9030A	MY53120760	2018/04/09	2019/04/08
Radio Communication Analyzer	Anritsu	MT8815B	6200711454	2018/04/05	2019/04/04
DC Power Supply	Anritsu	E3640A	MY52410006	2017/11/28	2018/11/27
Temperature Chamber	TERCHY	MHG-120LF	911009	2018/05/18	2019/05/17
Attenuator	Mini-Circuit	BW-S10W2+	2	2018/01/02	2019/01/01
Splitter	RF-LAMBDA	RFLT2W1G18G	11-JSPF412-018	2018/01/02	2019/01/01
Coaxial Cables	N/A	WK CE Cable	N/A	2018/01/02	2019/01/01

6.5. Measurement Result

RF Conducted Output Power

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

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

EUT Mode	Freq. (MHz)	CH	Conducted Avg. Power (dBm)	EIRP (dBm)	Limit (dBm)	Margin (dB)
GSM 1900	1850.2	512	29.10	29.10	33.00	-3.90
	1880.0	661	29.14	29.14	33.00	-3.86
	1909.8	810	29.08	29.08	33.00	-3.92

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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 1900	1850.2	512	29.10	26.77	24.97	23.90
	1880.0	661	29.14	26.82	24.96	23.86
	1909.8	810	29.08	26.83	24.93	23.85

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WCDMA MODE:

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

Results:

WCDMA/HSUPA/HSDPA Band II Result:

EUT Mode	Freq. (MHz)	CH	Conducted Avg. Power (dBm)	EIRP (dBm)	Limit (dBm)	Margin (dB)
WCDMA	1852.4	9262	22.32	22.32	33.00	-10.68
	1880.0	9400	22.12	22.12	33.00	-10.88
	1907.6	9538	21.96	21.96	33.00	-11.04
HSDPA	1852.4	9262	21.29	21.29	33.00	-11.71
	1880.0	9400	21.33	21.33	33.00	-11.67
	1907.6	9538	21.34	21.34	33.00	-11.66
HSUPA	1852.4	9262	21.34	21.34	33.00	-11.66
	1880.0	9400	21.41	21.41	33.00	-11.59
	1907.6	9538	21.29	21.29	33.00	-11.71

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WCDMA/HSUPA/HSDPA
Band IV Result:

EUT Mode	Freq. (MHz)	CH	Conducted Avg. Power (dBm)	EIRP (dBm)	Limit (dBm)	Margin (dB)
WCDMA	1712.4	1312	22.20	22.20	30.00	-7.80
	1732.6	1413	22.32	22.32	30.00	-7.68
	1752.6	1513	22.42	22.42	30.00	-7.58
HSDPA	1712.4	1312	21.49	21.49	30.00	-8.51
	1732.6	1413	21.51	21.51	30.00	-8.49
	1752.6	1513	21.63	21.63	30.00	-8.37
HSUPA	1712.4	1312	21.44	21.44	30.00	-8.56
	1732.6	1413	21.50	21.50	30.00	-8.50
	1752.6	1513	21.61	21.61	30.00	-8.39

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LTE Result:
FDD Band 2

BW(MHz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)
1.4	QPSK	1 RB	0	1850.7	18607	22.19
				1880	18900	22.32
				1909.3	19193	22.22
			2	1850.7	18607	22.27
				1880	18900	22.43
				1909.3	19193	22.29
			5	1850.7	18607	22.17
				1880	18900	22.34
				1909.3	19193	22.25
		3 RB	0	1850.7	18607	22.29
				1880	18900	22.37
				1909.3	19193	22.28
			2	1850.7	18607	22.51
				1880	18900	22.56
				1909.3	19193	22.30
			3	1850.7	18607	22.44
				1880	18900	22.59
				1909.3	19193	22.38
		6RB		1850.7	18607	21.20
				1880	18900	21.33
				1909.3	19193	21.28
	16-QAM	1 RB	0	1850.7	18607	21.28
				1880	18900	20.92
				1909.3	19193	21.38
			2	1850.7	18607	20.96
				1880	18900	21.03
				1909.3	19193	21.03
			5	1850.7	18607	20.92
				1880	18900	21.09
				1909.3	19193	21.42
		3 RB	0	1850.7	18607	21.18
				1880	18900	21.42
				1909.3	19193	21.29
			2	1850.7	18607	21.17
				1880	18900	21.46
				1909.3	19193	21.41
			3	1850.7	18607	21.02
				1880	18900	21.46
				1909.3	19193	21.00
		6RB		1850.7	18607	20.19
				1880	18900	20.27
				1909.3	19193	20.20

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BW(MHz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	
3	QPSK	1 RB	0	1851.5	18615	22.31	
				1880	18900	22.17	
				1908.5	19185	22.06	
			7	1851.5	18615	22.37	
				1880	18900	22.62	
				1908.5	19185	22.30	
			14	1851.5	18615	22.15	
				1880	18900	22.25	
				1908.5	19185	22.15	
		8 RB	0	1851.5	18615	21.38	
				1880	18900	21.35	
				1908.5	19185	21.43	
			4	1851.5	18615	21.28	
				1880	18900	21.38	
				1908.5	19185	21.38	
			7	1851.5	18615	21.22	
				1880	18900	21.37	
				1908.5	19185	21.44	
		15RB			1851.5	18615	21.19
					1880	18900	21.38
					1908.5	19185	21.28
		16-QAM	1 RB	0	1851.5	18615	21.29
					1880	18900	21.18
					1908.5	19185	21.08
				7	1851.5	18615	21.06
					1880	18900	21.10
					1908.5	19185	21.36
	14			1851.5	18615	20.71	
				1880	18900	21.02	
				1908.5	19185	21.24	
	8 RB		0	1851.5	18615	20.33	
				1880	18900	20.29	
				1908.5	19185	20.46	
			4	1851.5	18615	20.34	
				1880	18900	20.40	
				1908.5	19185	20.53	
			7	1851.5	18615	20.33	
				1880	18900	20.50	
				1908.5	19185	20.58	
	15RB			1851.5	18615	20.35	
				1880	18900	20.32	
				1908.5	19185	20.34	

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BW(MHz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	
5	QPSK	1 RB	0	1852.5	18625	22.16	
				1880	18900	22.19	
				1907.5	19175	22.09	
			12	1852.5	18625	22.44	
				1880	18900	22.46	
				1907.5	19175	22.36	
			24	1852.5	18625	22.33	
				1880	18900	22.04	
				1907.5	19175	22.08	
		12 RB	0	1852.5	18625	21.32	
				1880	18900	21.39	
				1907.5	19175	21.34	
			6	1852.5	18625	21.32	
				1880	18900	21.35	
				1907.5	19175	21.38	
			13	1852.5	18625	21.22	
				1880	18900	21.33	
				1907.5	19175	21.40	
		25RB			1852.5	18625	21.24
					1880	18900	21.34
					1907.5	19175	21.29
	16-QAM	1 RB	0	1852.5	18625	21.23	
				1880	18900	21.03	
				1907.5	19175	21.05	
			12	1852.5	18625	21.26	
				1880	18900	21.31	
				1907.5	19175	21.33	
			24	1852.5	18625	20.75	
				1880	18900	20.74	
				1907.5	19175	20.90	
			12 RB	0	1852.5	18625	20.31
					1880	18900	20.28
					1907.5	19175	20.07
				6	1852.5	18625	20.41
					1880	18900	20.45
					1907.5	19175	20.24
				13	1852.5	18625	20.43
					1880	18900	20.16
					1907.5	19175	20.34
		25RB			1852.5	18625	20.21
					1880	18900	20.30
					1907.5	19175	20.28

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BW(MHz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	
10	QPSK	1 RB	0	1855	18650	22.36	
				1880	18900	22.21	
				1905	19150	22.14	
			25	1855	18650	22.32	
				1880	18900	22.41	
				1905	19150	22.44	
			49	1855	18650	22.46	
				1880	18900	22.13	
				1905	19150	22.38	
		25 RB	0	1855	18650	21.29	
				1880	18900	21.40	
				1905	19150	21.33	
			12	1855	18650	21.27	
				1880	18900	21.35	
				1905	19150	21.32	
			25	1855	18650	21.30	
				1880	18900	21.25	
				1905	19150	21.35	
		50RB			1855	18650	21.24
					1880	18900	21.42
					1905	19150	21.32
	16-QAM	1 RB	0	1855	18650	21.31	
				1880	18900	20.98	
				1905	19150	21.10	
			25	1855	18650	21.11	
				1880	18900	21.20	
				1905	19150	20.98	
			49	1855	18650	20.88	
				1880	18900	21.12	
				1905	19150	21.40	
			25 RB	0	1855	18650	20.29
					1880	18900	20.34
					1905	19150	20.59
				12	1855	18650	20.45
					1880	18900	20.31
					1905	19150	20.37
				25	1855	18650	20.25
					1880	18900	20.27
					1905	19150	20.51
		50RB			1855	18650	20.41
					1880	18900	20.49
					1905	19150	20.29

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BW(MHz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	
15	QPSK	1 RB	0	1857.5	18675	22.28	
				1880	18900	22.20	
				1902.5	19125	22.09	
			36	1857.5	18675	22.27	
				1880	18900	22.42	
				1902.5	19125	22.27	
			74	1857.5	18675	22.29	
				1880	18900	22.36	
				1902.5	19125	22.26	
		36 RB	0	1857.5	18675	21.28	
				1880	18900	21.33	
				1902.5	19125	21.34	
			18	1857.5	18675	21.22	
				1880	18900	21.36	
				1902.5	19125	21.40	
			37	1857.5	18675	21.31	
				1880	18900	21.32	
				1902.5	19125	21.28	
		75RB			1857.5	18675	21.29
					1880	18900	21.32
					1902.5	19125	21.31
		16-QAM	1 RB	0	1857.5	18675	21.44
					1880	18900	21.22
					1902.5	19125	21.05
				36	1857.5	18675	21.29
					1880	18900	21.26
					1902.5	19125	21.26
	74			1857.5	18675	21.31	
				1880	18900	21.19	
				1902.5	19125	21.34	
	36 RB		0	1857.5	18675	20.33	
				1880	18900	20.39	
				1902.5	19125	20.33	
			18	1857.5	18675	20.39	
				1880	18900	20.45	
				1902.5	19125	20.41	
			37	1857.5	18675	20.35	
				1880	18900	20.33	
				1902.5	19125	20.18	
	75RB			1857.5	18675	20.32	
				1880	18900	20.47	
				1902.5	19125	20.32	

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BW(MHz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	
20	QPSK	1 RB	0	1860	18700	22.23	
				1880	18900	22.09	
				1900	19100	22.14	
			50	1860	18700	22.61	
				1880	18900	22.66	
				1900	19100	22.02	
			99	1860	18700	22.01	
				1880	18900	22.47	
				1900	19100	22.01	
		50 RB	0	1860	18700	21.39	
				1880	18900	21.45	
				1900	19100	21.32	
			25	1860	18700	21.30	
				1880	18900	21.36	
				1900	19100	21.33	
			50	1860	18700	21.25	
				1880	18900	21.30	
				1900	19100	21.22	
		100RB			1860	18700	21.30
					1880	18900	21.42
					1900	19100	21.38
	16-QAM	1 RB	0	1860	18700	21.35	
				1880	18900	21.50	
				1900	19100	21.38	
			50	1860	18700	20.92	
				1880	18900	21.58	
				1900	19100	20.98	
			99	1860	18700	20.95	
				1880	18900	20.97	
				1900	19100	20.93	
		50 RB	0	1860	18700	20.55	
				1880	18900	20.42	
				1900	19100	20.22	
			25	1860	18700	20.47	
				1880	18900	20.45	
				1900	19100	20.19	
			50	1860	18700	20.27	
				1880	18900	20.44	
				1900	19100	20.19	
		100RB			1860	18700	20.33
					1880	18900	20.51
					1900	19100	20.17

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FDD Band 4

BW(MHz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	
1.4	QPSK	1 RB	0	1710.7	19957	21.99	
				1732.5	20175	22.10	
				1754.3	20393	22.22	
			2	1710.7	19957	22.05	
				1732.5	20175	22.12	
				1754.3	20393	22.15	
			5	1710.7	19957	22.08	
				1732.5	20175	22.03	
				1754.3	20393	22.12	
		3 RB	0	1710.7	19957	22.22	
				1732.5	20175	22.18	
				1754.3	20393	22.24	
			2	1710.7	19957	22.18	
				1732.5	20175	22.11	
				1754.3	20393	22.43	
			3	1710.7	19957	22.30	
				1732.5	20175	22.05	
				1754.3	20393	22.39	
		6RB			1710.7	19957	21.08
					1732.5	20175	20.99
					1754.3	20393	21.15
	16-QAM	1 RB	0	1710.7	19957	21.32	
				1732.5	20175	20.77	
				1754.3	20393	21.26	
			2	1710.7	19957	21.16	
				1732.5	20175	21.06	
				1754.3	20393	20.77	
			5	1710.7	19957	21.48	
				1732.5	20175	21.07	
				1754.3	20393	21.22	
		3 RB	0	1710.7	19957	21.09	
				1732.5	20175	21.10	
				1754.3	20393	21.12	
			2	1710.7	19957	21.13	
				1732.5	20175	21.03	
				1754.3	20393	21.31	
			3	1710.7	19957	21.10	
				1732.5	20175	21.11	
				1754.3	20393	21.39	
		6RB			1710.7	19957	19.87
					1732.5	20175	19.97
					1754.3	20393	20.04

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BW(MHz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	
3	QPSK	1 RB	0	1711.5	19965	21.94	
				1732.5	20175	21.91	
				1753.5	20385	22.21	
			7	1711.5	19965	22.31	
				1732.5	20175	22.15	
				1753.5	20385	22.45	
			14	1711.5	19965	21.92	
				1732.5	20175	21.96	
				1753.5	20385	22.22	
		8 RB	0	1711.5	19965	21.16	
				1732.5	20175	21.09	
				1753.5	20385	21.12	
			4	1711.5	19965	21.09	
				1732.5	20175	21.12	
				1753.5	20385	21.13	
			7	1711.5	19965	21.15	
				1732.5	20175	21.10	
				1753.5	20385	21.16	
		15RB			1711.5	19965	21.07
					1732.5	20175	21.04
					1753.5	20385	21.14
		16-QAM	1 RB	0	1711.5	19965	20.73
					1732.5	20175	20.80
					1753.5	20385	20.73
				7	1711.5	19965	20.77
					1732.5	20175	21.03
					1753.5	20385	21.12
	14			1711.5	19965	20.87	
				1732.5	20175	20.89	
				1753.5	20385	20.80	
	8 RB		0	1711.5	19965	20.07	
				1732.5	20175	20.17	
				1753.5	20385	20.14	
			4	1711.5	19965	20.13	
				1732.5	20175	20.18	
				1753.5	20385	20.21	
			7	1711.5	19965	20.18	
				1732.5	20175	19.97	
				1753.5	20385	20.14	
	15RB			1711.5	19965	20.02	
				1732.5	20175	19.90	
				1753.5	20385	20.21	

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BW(MHz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	
5	QPSK	1 RB	0	1712.5	19975	21.88	
				1732.5	20175	21.98	
				1752.5	20375	22.13	
			12	1712.5	19975	22.39	
				1732.5	20175	22.03	
				1752.5	20375	22.18	
			24	1712.5	19975	21.89	
				1732.5	20175	21.81	
				1752.5	20375	21.98	
		12 RB	0	1712.5	19975	21.00	
				1732.5	20175	21.05	
				1752.5	20375	21.25	
			6	1712.5	19975	21.08	
				1732.5	20175	21.05	
				1752.5	20375	21.34	
			13	1712.5	19975	21.07	
				1732.5	20175	21.02	
				1752.5	20375	21.20	
		25RB			1712.5	19975	21.07
					1732.5	20175	20.97
					1752.5	20375	21.17
		16-QAM	1 RB	0	1712.5	19975	20.71
					1732.5	20175	20.79
					1752.5	20375	21.02
				12	1712.5	19975	20.88
					1732.5	20175	20.99
					1752.5	20375	21.01
	24			1712.5	19975	20.97	
				1732.5	20175	20.86	
				1752.5	20375	21.25	
	12 RB		0	1712.5	19975	20.14	
				1732.5	20175	20.09	
				1752.5	20375	20.36	
			6	1712.5	19975	20.16	
				1732.5	20175	20.14	
				1752.5	20375	20.19	
			13	1712.5	19975	20.02	
				1732.5	20175	20.00	
				1752.5	20375	20.07	
	25RB			1712.5	19975	20.05	
				1732.5	20175	20.00	
				1752.5	20375	20.06	

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BW(MHz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	
10	QPSK	1 RB	0	1715	20000	22.12	
				1732.5	20175	22.15	
				1750	20350	22.26	
			25	1715	20000	22.15	
				1732.5	20175	22.13	
				1750	20350	22.43	
			49	1715	20000	22.03	
				1732.5	20175	22.08	
				1750	20350	22.11	
		25 RB	0	1715	20000	21.08	
				1732.5	20175	20.99	
				1750	20350	21.19	
			12	1715	20000	21.15	
				1732.5	20175	21.01	
				1750	20350	21.24	
			25	1715	20000	21.05	
				1732.5	20175	20.99	
				1750	20350	21.22	
		50RB			1715	20000	21.19
					1732.5	20175	21.01
					1750	20350	21.21
		16-QAM	1 RB	0	1715	20000	20.81
					1732.5	20175	20.88
					1750	20350	21.34
	25			1715	20000	21.29	
				1732.5	20175	21.22	
				1750	20350	21.41	
	49			1715	20000	20.71	
				1732.5	20175	20.99	
				1750	20350	20.97	
	25 RB			0	1715	20000	20.07
					1732.5	20175	20.15
					1750	20350	20.23
				12	1715	20000	20.11
					1732.5	20175	20.09
					1750	20350	20.39
				25	1715	20000	20.07
					1732.5	20175	20.10
					1750	20350	20.11
	50RB			1715	20000	20.16	
				1732.5	20175	20.17	
				1750	20350	20.29	

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BW(MHz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)
15	QPSK	1 RB	0	1717.5	20025	22.38
				1732.5	20175	22.26
				1747.5	20325	22.27
			36	1717.5	20025	22.38
				1732.5	20175	22.31
				1747.5	20325	22.36
			74	1717.5	20025	22.34
				1732.5	20175	21.94
				1747.5	20325	22.25
		36 RB	0	1717.5	20025	21.37
				1732.5	20175	21.25
				1747.5	20325	21.38
			18	1717.5	20025	21.25
				1732.5	20175	21.22
				1747.5	20325	21.38
			37	1717.5	20025	21.22
				1732.5	20175	21.31
				1747.5	20325	21.34
			75RB	1717.5	20025	21.25
				1732.5	20175	21.10
				1747.5	20325	21.37
	16-QAM	1 RB	0	1717.5	20025	21.19
				1732.5	20175	21.23
				1747.5	20325	21.50
			36	1717.5	20025	21.02
				1732.5	20175	21.11
				1747.5	20325	21.04
			74	1717.5	20025	20.92
				1732.5	20175	21.02
				1747.5	20325	21.42
		36 RB	0	1717.5	20025	20.32
				1732.5	20175	20.17
				1747.5	20325	20.37
			18	1717.5	20025	20.33
				1732.5	20175	20.10
				1747.5	20325	20.32
			37	1717.5	20025	20.20
				1732.5	20175	20.11
				1747.5	20325	20.26
			75RB	1717.5	20025	20.32
				1732.5	20175	20.12
				1747.5	20325	20.36

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BW(MHz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	
20	QPSK	1 RB	0	1720	20050	22.12	
				1732.5	20175	22.08	
				1745	20300	22.15	
			50	1720	20050	22.49	
				1732.5	20175	22.39	
				1745	20300	22.65	
			99	1720	20050	22.23	
				1732.5	20175	22.31	
				1745	20300	22.30	
		50 RB	0	1720	20050	21.30	
				1732.5	20175	21.27	
				1745	20300	21.41	
			25	1720	20050	21.27	
				1732.5	20175	21.23	
				1745	20300	21.39	
			50	1720	20050	21.28	
				1732.5	20175	21.18	
				1745	20300	21.37	
		100RB			1720	20050	21.31
					1732.5	20175	21.18
					1745	20300	21.38
		16-QAM	1 RB	0	1720	20050	21.19
					1732.5	20175	21.09
					1745	20300	21.08
				50	1720	20050	21.51
					1732.5	20175	21.48
					1745	20300	21.30
	99			1720	20050	21.14	
				1732.5	20175	20.98	
				1745	20300	20.82	
	50 RB			0	1720	20050	20.30
					1732.5	20175	20.32
					1745	20300	20.31
				25	1720	20050	20.19
					1732.5	20175	20.25
					1745	20300	20.44
				50	1720	20050	20.22
					1732.5	20175	20.08
					1745	20300	20.37
	100RB			1720	20050	20.25	
				1732.5	20175	20.00	
				1745	20300	20.21	

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HSDPA Release 6 MODE:

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

HSDPA SUB-TEST Setting

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

Sub-test	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.

Results:

Mode	Sub test	Avg. Power (dBm)			Power Class 3 Limitation (dBm)	Comments
		Channel				
		9262.00	9400.00	9538.00		
HSDPA II	1	21.29	21.33	21.34	20.3dBm – 25.7dBm	Pass
	2	20.87	20.92	20.84	20.3dBm – 25.7dBm	Pass
	3	20.88	20.92	20.83	19.8dBm – 25.7dBm	Pass
	4	20.87	20.91	20.83	19.8dBm – 25.7dBm	Pass

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Mode	Sub test	Avg. Power (dBm)			Power Class 3 Limitation (dBm)	Comments
		Channel				
		1312.00	1413.00	1513.00		
HSDPA IV	1	21.49	21.51	21.63	20.3dBm – 25.7dBm	Pass
	2	20.94	21.03	21.15	20.3dBm – 25.7dBm	Pass
	3	20.99	21.03	21.15	19.8dBm – 25.7dBm	Pass
	4	21.01	21.02	21.14	19.8dBm – 25.7dBm	Pass

HSPA (HSDPA & HSUPA) Release 6 MODE

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

HSPA SUB-TEST Setting

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

Sub-test	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-TFCl	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)			Power Class 3 Limitation (dBm)	Comments
		Channel				
		9262.00	9400.00	9538.00		
HSUPA II	1	21.34	21.41	21.29	17.3dBm – 25.7dBm	Pass
	2	19.36	19.43	19.39	16.8dBm – 25.7dBm	Pass
	3	20.33	20.47	20.41	17.8dBm – 25.7dBm	Pass
	4	19.46	19.52	19.45	16.8dBm – 25.7dBm	Pass
	5	21.41	21.43	21.32	20.3dBm – 25.7dBm	Pass

Mode	Sub test	Avg. Power (dBm)			Power Class 3 Limitation (dBm)	Comments
		Channel				
		1312.00	1413.00	1513.00		
HSUPA IV	1	21.44	21.50	21.61	17.3dBm – 25.7dBm	Pass
	2	19.44	19.47	19.53	16.8dBm – 25.7dBm	Pass
	3	20.46	20.48	20.52	17.8dBm – 25.7dBm	Pass
	4	19.42	19.54	19.62	16.8dBm – 25.7dBm	Pass
	5	21.41	21.45	21.51	20.3dBm – 25.7dBm	Pass

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Minimum Communications Power Measurement

PCS 1900 band

PCL	0	1	2	3	4	5	6	7	8
Output power (dBm)	29.77	27.11	25.45	23.6	21.15	19.55	17.7	15.17	13.24

PCL	9	10	11	12	13	14	15
Output power (dBm)	11.6	9.42	7.79	5.22	3.57	1.6	0.3

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

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7. EFFECTIVE RADIATED POWER AND EQUIVALENT ISOTROPIC RADIATED POWER MEASUREMENT

7.1. Standard Applicable

According to FCC §2.1046

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

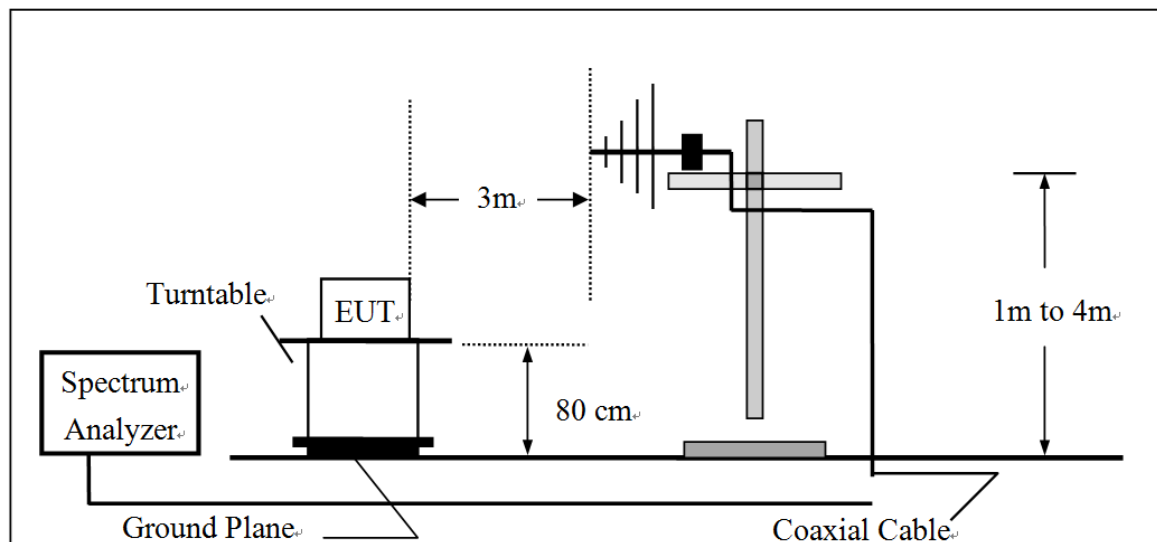
FCC 24.232(b) Mobile and portable stations are limited to 2W EIRP.

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

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

7.2. Test SET-UP

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



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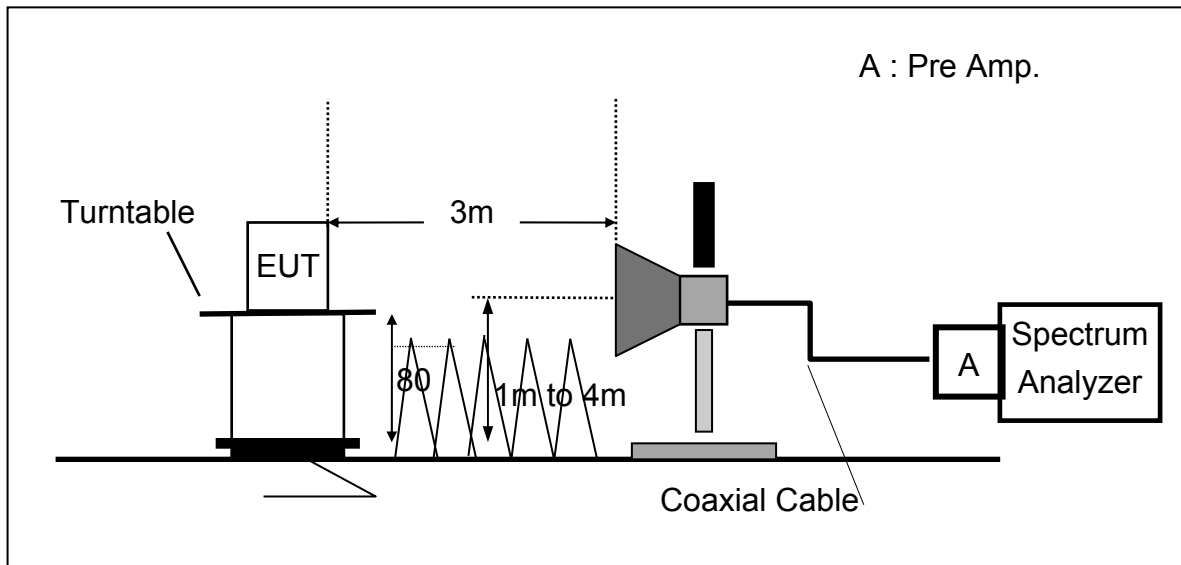
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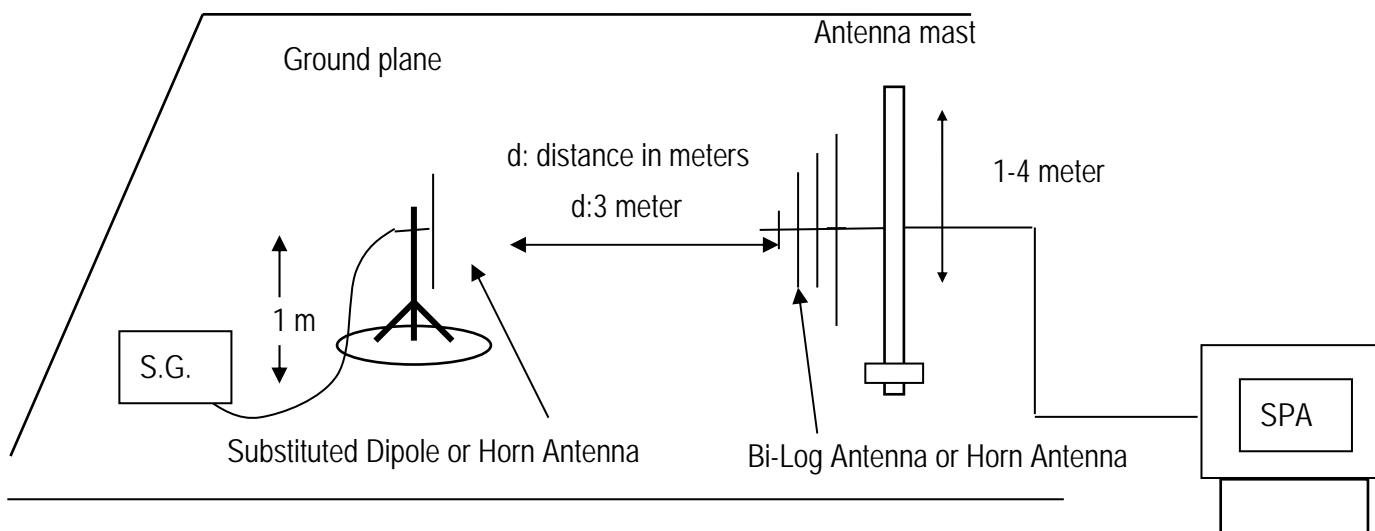
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(B) Radiated Power Test Set-UP Frequency Over 1 GHz



(C) Substituted Method Test Set-UP



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7.3. Measurement Procedure

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

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

Activate trace averaging routine over a minimum of 10 sweeps;

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

Activate the band/interval power marker function;

Record the band power level;

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

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

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7.4. Measurement Equipment Used

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Bi-log Antenna	SCHWAZBECK	VULB9168	378	2017/12/29	2018/12/28
Horn Antenna	Schwarzbeck	BBHA9120D	1441	2018/08/16	2019/08/15
Horn Antenna	Schwarzbeck	BBHA9170	184	2017/12/12	2018/12/11
Loop Antenna	ETS.LINDGREN	6502	148045	2017/09/26	2018/09/25
3m Site NSA	SGS	966 chamber	N/A	2018/01/02	2019/01/01
Spectrum Analyzer	Agilent	E4446A	MY51100003	2018/05/15	2019/05/14
EMI Test Receiver	R&S	ESCI7	100335	2018/02/02	2019/02/01
Pre-Amplifier	HP	8449B	3008A00578	2018/01/02	2019/01/01
Pre-Amplifier	HP	8447D	2944A07676	2018/01/02	2019/01/01
Pre-Amplifier	EMC Instru-ments	EMC184045B	980135	2017/10/27	2018/10/26
Attenuator	Mini-Circuit	BW-S10W2+	2	2018/01/02	2019/01/01
2GHz High Pass Filter	Micro-Tronics	HPM50110	36	2018/01/02	2019/01/01
Filter 5150-5350 MHz	Micro-Tronics	BRM50703	1	2018/01/02	2019/01/01
Low Loss Cable	Huber Suhner	966_RX	9	2018/01/02	2019/01/01

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

EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
GSM 1900	1850.2	512	V	16.72	9.77	-4.66	21.82	33.00
			H	18.84	9.77	-4.66	23.95	33.00
	1880.0	661	V	15.32	9.86	-4.7	20.48	33.00
			H	18.84	9.86	-4.7	24	33.00
	1909.8	810	V	14.4	9.94	-4.72	19.62	33.00
			H	18	9.94	-4.72	23.22	33.00
GPRS 1900	1850.2	512	V	17.58	9.77	-4.66	22.68	33.00
			H	19.01	9.77	-4.66	24.11	33.00
	1880.0	661	V	16.71	9.86	-4.7	21.87	33.00
			H	19.69	9.86	-4.7	24.85	33.00
	1909.8	810	V	15.91	9.94	-4.72	21.14	33.00
			H	18.85	9.94	-4.72	24.07	33.00

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

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
WCDMA Band II	1852.4	9262	V	14.96	9.77	-4.67	20.07	33.00
			H	9.5	9.77	-4.67	14.61	33.00
	1880.0	9400	V	15.6	9.86	-4.7	20.76	33.00
			H	17.61	9.86	-4.7	22.77	33.00
	1907.6	9538	V	14.58	9.94	-4.72	19.8	33.00
			H	15.9	9.93	-4.72	21.11	33.00
HSDPA Band II	1852.4	9262	V	16.53	9.77	-4.67	21.64	33.00
			H	13.17	9.78	-4.67	18.28	33.00
	1880.0	9400	V	19.7	9.86	-4.7	24.86	33.00
			H	20.41	9.86	-4.7	25.57	33.00
	1907.6	9538	V	18.29	9.94	-4.72	23.5	33.00
			H	18.14	9.94	-4.72	23.36	33.00
HSUPA Band II	1852.4	9262	V	16.22	9.77	-4.67	21.32	33.00
			H	10.41	9.77	-4.67	15.52	33.00
	1880.0	9400	V	17.34	9.86	-4.7	22.5	33.00
			H	18.1	9.85	-4.7	23.25	33.00
	1907.6	9538	V	16.84	9.93	-4.72	22.05	33.00
			H	16.98	9.93	-4.72	22.19	33.00

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

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
WCDMA Band IV	1712.4	1312	V	14.49	9.77	-4.67	19.6	30.00
			H	8.42	9.77	-4.67	13.52	30.00
	1732.6	1413	V	14.93	9.86	-4.7	20.09	30.00
			H	15.17	9.86	-4.7	20.33	30.00
	1752.6	1513	V	13.63	9.94	-4.72	18.84	30.00
			H	14.66	9.94	-4.72	19.87	30.00
HSDPA Band IV	1712.4	1312	V	15.97	9.77	-4.67	21.08	30.00
			H	11	9.77	-4.67	16.11	30.00
	1732.6	1413	V	18.7	9.86	-4.7	23.86	30.00
			H	19.2	9.86	-4.7	24.36	30.00
	1752.6	1513	V	17.25	9.94	-4.72	22.47	30.00
			H	17.65	9.94	-4.72	22.87	30.00
HSUPA Band IV	1712.4	1312	V	14.85	9.77	-4.67	19.96	30.00
			H	9.69	9.77	-4.67	14.8	30.00
	1732.6	1413	V	15.29	9.86	-4.7	20.45	30.00
			H	16.56	9.85	-4.7	21.72	30.00
	1752.6	1513	V	15.64	9.93	-4.72	20.85	30.00
			H	15.72	9.94	-4.72	20.93	30.00

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

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 2 BW: 1.4M QPSK RB: 1,0	1850.7	18607	V	17.36	9.77	-4.67	22.47	33.01
			H	19.77	9.77	-4.67	24.87	33.01
	1880.0	18900	V	12.72	9.85	-4.69	17.88	33.01
			H	20.29	9.85	-4.69	25.45	33.01
	1909.3	19193	V	18.77	9.94	-4.72	23.99	33.01
			H	19.87	9.94	-4.72	25.09	33.01
LTE BAND 2 BW: 1.4M QPSK RB: 1,5	1850.7	18607	V	17.49	9.77	-4.66	22.59	33.01
			H	19.99	9.77	-4.66	25.09	33.01
	1880.0	18900	V	18.62	9.85	-4.69	23.78	33.01
			H	20.28	9.85	-4.7	25.44	33.01
	1909.3	19193	V	18.8	9.94	-4.72	24.02	33.01
			H	19.26	9.94	-4.72	24.48	33.01
LTE BAND 2 BW: 1.4M 16QAM RB: 1,0	1850.7	18607	V	17.17	9.77	-4.67	22.27	33.01
			H	19.56	9.77	-4.67	24.67	33.01
	1880.0	18900	V	18.24	9.85	-4.69	23.4	33.01
			H	20.4	9.85	-4.69	25.55	33.01
	1909.3	19193	V	18.65	9.94	-4.72	23.87	33.01
			H	19.08	9.94	-4.72	24.29	33.01
LTE BAND 2 BW: 1.4M 16QAM RB: 1,5	1850.7	18607	V	17.34	9.77	-4.66	22.44	33.01
			H	19.72	9.77	-4.66	24.82	33.01
	1880.0	18900	V	18.23	9.85	-4.7	23.39	33.01
			H	19.88	9.85	-4.7	25.03	33.01
	1909.3	19193	V	18.46	9.94	-4.72	23.67	33.01
			H	19.04	9.94	-4.72	24.26	33.01

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

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 2 BW: 3M QPSK RB: 1,0	1851.5	18615	V	17.79	9.77	-4.67	22.89	33.01
			H	19.85	9.77	-4.67	24.96	33.01
	1880.0	18900	V	18.66	9.85	-4.69	23.81	33.01
			H	20.34	9.85	-4.69	25.5	33.01
	1908.5	19185	V	18.95	9.93	-4.72	24.16	33.01
			H	19.55	9.93	-4.72	24.76	33.01
LTE BAND 2 BW: 3M QPSK RB: 1,14	1851.5	18615	V	18.01	9.77	-4.66	23.12	33.01
			H	20.29	9.77	-4.66	25.39	33.01
	1880.0	18900	V	18.62	9.85	-4.7	23.78	33.01
			H	20.28	9.85	-4.7	25.44	33.01
	1908.5	19185	V	18.77	9.94	-4.72	23.99	33.01
			H	19.37	9.94	-4.72	24.59	33.01
LTE BAND 2 BW: 3M 16QAM RB: 1,0	1851.5	18615	V	17.18	9.77	-4.67	22.28	33.01
			H	19.57	9.77	-4.67	24.68	33.01
	1880.0	18900	V	18.19	9.85	-4.69	23.34	33.01
			H	20.08	9.85	-4.69	25.24	33.01
	1908.5	19185	V	18.8	9.93	-4.72	24.01	33.01
			H	19.42	9.93	-4.72	24.64	33.01
LTE BAND 2 BW: 3M 16QAM RB: 1,14	1851.5	18615	V	17.58	9.77	-4.66	22.69	33.01
			H	19.67	9.77	-4.67	24.77	33.01
	1880.0	18900	V	18.5	9.85	-4.7	23.65	33.01
			H	19.92	9.85	-4.7	25.08	33.01
	1908.5	19185	V	18.46	9.94	-4.72	23.68	33.01
			H	19.21	9.94	-4.72	24.43	33.01

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

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 2 BW: 5M QPSK RB: 1,0	1852.5	18625	V	17.46	9.77	-4.67	22.56	33.01
			H	19.89	9.77	-4.67	25	33.01
	1880.0	18900	V	18.39	9.84	-4.69	23.54	33.01
			H	20.13	9.84	-4.69	25.28	33.01
	1907.5	19175	V	18.75	9.93	-4.72	23.96	33.01
			H	19.46	9.93	-4.72	24.67	33.01
LTE BAND 2 BW: 5M QPSK RB: 1,24	1852.5	18625	V	18	9.78	-4.67	23.11	33.01
			H	20.22	9.78	-4.67	25.33	33.01
	1880.0	18900	V	18.37	9.86	-4.7	23.53	33.01
			H	20.18	9.86	-4.7	25.34	33.01
	1907.5	19175	V	18.75	9.94	-4.72	23.96	33.01
			H	19.23	9.94	-4.72	24.45	33.01
LTE BAND 2 BW: 5M 16QAM RB: 1,0	1852.5	18625	V	16.93	9.77	-4.67	22.04	33.01
			H	19.33	9.77	-4.67	24.44	33.01
	1880.0	18900	V	18	9.84	-4.69	23.15	33.01
			H	19.64	9.84	-4.69	24.79	33.01
	1907.5	19175	V	18.3	9.93	-4.72	23.51	33.01
			H	18.86	9.93	-4.72	24.07	33.01
LTE BAND 2 BW: 5M 16QAM RB: 1,24	1852.5	18625	V	17.71	9.78	-4.67	22.82	33.01
			H	19.59	9.78	-4.67	24.7	33.01
	1880.0	18900	V	17.95	9.86	-4.7	23.11	33.01
			H	19.69	9.86	-4.7	24.85	33.01
	1907.5	19175	V	18.33	9.94	-4.72	23.54	33.01
			H	19.02	9.94	-4.72	24.23	33.01

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

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 2 BW: 10M QPSK RB: 1,0	1855.0	18650	V	17.39	9.77	-4.67	22.5	33.01
			H	19.83	9.77	-4.67	24.94	33.01
	1880.0	18900	V	18.4	9.84	-4.69	23.55	33.01
			H	20.04	9.84	-4.69	25.19	33.01
	1905.0	19150	V	18.52	9.91	-4.71	23.72	33.01
			H	19.31	9.91	-4.71	24.51	33.01
LTE BAND 2 BW: 10M QPSK RB: 1,49	1855.0	18650	V	18.37	9.79	-4.67	23.49	33.01
			H	20.14	9.79	-4.67	25.26	33.01
	1880.0	18900	V	17.97	9.86	-4.7	23.13	33.01
			H	19.93	9.86	-4.7	25.09	33.01
	1905.0	19150	V	18.62	9.94	-4.72	23.84	33.01
			H	19.22	9.94	-4.72	24.44	33.01
LTE BAND 2 BW: 10M 16QAM RB: 1,0	1855.0	18650	V	16.89	9.77	-4.67	22	33.01
			H	19.41	9.77	-4.67	24.52	33.01
	1880.0	18900	V	17.92	9.84	-4.69	23.07	33.01
			H	19.48	9.84	-4.69	24.63	33.01
	1905.0	19150	V	18.08	9.91	-4.71	23.27	33.01
			H	18.84	9.91	-4.71	24.04	33.01
LTE BAND 2 BW: 10M 16QAM RB: 1,49	1855.0	18650	V	17.8	9.79	-4.67	22.92	33.01
			H	19.72	9.79	-4.67	24.84	33.01
	1880.0	18900	V	17.44	9.86	-4.7	22.6	33.01
			H	19.33	9.86	-4.7	24.5	33.01
	1905.0	19150	V	18.18	9.94	-4.72	23.39	33.01
			H	18.69	9.94	-4.72	23.9	33.01

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

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 2 BW: 15M QPSK RB: 1,0	1857.5	18675	V	17.83	9.77	-4.66	22.93	33.01
			H	19.88	9.77	-4.66	24.98	33.01
	1880.0	18900	V	19	9.83	-4.69	24.14	33.01
			H	19.91	9.83	-4.69	25.06	33.01
	1902.5	19125	V	18.88	9.9	-4.71	24.07	33.01
			H	19.66	9.9	-4.71	24.85	33.01
LTE BAND 2 BW: 15M QPSK RB: 1,74	1857.5	18675	V	18.78	9.8	-4.68	23.91	33.01
			H	20.2	9.8	-4.68	25.33	33.01
	1880.0	18900	V	18.37	9.87	-4.7	23.54	33.01
			H	19.96	9.87	-4.7	25.13	33.01
	1902.5	19125	V	19.02	9.94	-4.72	24.23	33.01
			H	19.23	9.94	-4.72	24.45	33.01
LTE BAND 2 BW: 15M 16QAM RB: 1,0	1857.5	18675	V	17.05	9.77	-4.66	22.15	33.01
			H	19.43	9.77	-4.66	24.54	33.01
	1880.0	18900	V	18.38	9.83	-4.69	23.52	33.01
			H	19.4	9.83	-4.69	24.55	33.01
	1902.5	19125	V	18.32	9.9	-4.71	23.5	33.01
			H	19.2	9.9	-4.71	24.38	33.01
LTE BAND 2 BW: 15M 16QAM RB: 1,74	1857.5	18675	V	18.3	9.8	-4.68	23.43	33.01
			H	19.71	9.8	-4.68	24.84	33.01
	1880.0	18900	V	17.77	9.87	-4.7	22.94	33.01
			H	19.3	9.87	-4.7	24.47	33.01
	1902.5	19125	V	18.5	9.94	-4.72	23.72	33.01
			H	18.87	9.94	-4.72	24.08	33.01

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

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 2 BW: 20M QPSK RB: 1,0	1860.0	18700	V	17.55	9.78	-4.67	22.65	33.01
			H	19.74	9.77	-4.67	24.85	33.01
	1880.0	18900	V	18.63	9.83	-4.69	23.77	33.01
			H	19.61	9.83	-4.69	24.75	33.01
	1900.0	19100	V	18.43	9.89	-4.71	23.61	33.01
			H	19.58	9.89	-4.71	24.76	33.01
LTE BAND 2 BW: 20M QPSK RB: 1,99	1860.0	18700	V	18.73	9.82	-4.68	23.86	33.01
			H	19.82	9.82	-4.68	24.96	33.01
	1880.0	18900	V	18.29	9.88	-4.7	23.46	33.01
			H	19.72	9.88	-4.7	24.89	33.01
	1900.0	19100	V	18.86	9.94	-4.72	24.07	33.01
			H	19.25	9.94	-4.72	24.47	33.01
LTE BAND 2 BW: 20M 16QAM RB: 1,0	1860.0	18700	V	17.16	9.77	-4.67	22.27	33.01
			H	20.68	9.79	-4.67	25.8	33.01
	1880.0	18900	V	18.21	9.83	-4.69	23.35	33.01
			H	19.2	9.83	-4.69	24.34	33.01
	1900.0	19100	V	17.89	9.89	-4.71	23.07	33.01
			H	19.14	9.89	-4.71	24.32	33.01
LTE BAND 2 BW: 15M 16QAM RB: 1,99	1860.0	18700	V	18.2	9.82	-4.68	23.34	33.01
			H	19.34	9.82	-4.68	24.48	33.01
	1880.0	18900	V	17.91	9.88	-4.7	23.08	33.01
			H	19.26	9.88	-4.7	24.43	33.01
	1900.0	19100	V	18.43	9.94	-4.72	23.64	33.01
			H	18.83	9.94	-4.72	24.05	33.01

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

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 4 BW: 1.4M QPSK RB: 1,0	1710.7	19957	V	16.9	9.33	-4.45	21.78	30.00
			H	20.3	9.34	-4.45	25.19	30.00
	1732.5	20175	V	17.19	9.39	-4.48	22.11	30.00
			H	20.07	9.39	-4.48	24.99	30.00
	1754.3	20393	V	17.18	9.46	-4.5	22.15	30.00
			H	20.2	9.46	-4.5	25.17	30.00
LTE BAND 4 BW: 1.4M QPSK RB: 1,5	1710.7	19957	V	17.1	9.33	-4.45	21.98	30.00
			H	20.49	9.33	-4.45	25.37	30.00
	1732.5	20175	V	17.1	9.4	-4.48	22.02	30.00
			H	20.06	9.4	-4.48	24.98	30.00
	1754.3	20393	V	17.35	9.47	-4.5	22.32	30.00
			H	20.3	9.47	-4.5	25.27	30.00
LTE BAND 4 BW: 1.4M 16QAM RB: 1,0	1710.7	19957	V	16.69	9.33	-4.45	21.57	30.00
			H	20.18	9.34	-4.45	25.07	30.00
	1732.5	20175	V	16.82	9.39	-4.48	21.74	30.00
			H	19.81	9.39	-4.48	24.73	30.00
	1754.3	20393	V	17.24	9.46	-4.5	22.21	30.00
			H	19.95	9.46	-4.5	24.92	30.00
LTE BAND 4 BW: 1.4M 16QAM RB: 1,5	1710.7	19957	V	16.66	9.33	-4.45	21.54	30.00
			H	20	9.33	-4.45	24.88	30.00
	1732.5	20175	V	16.8	9.4	-4.48	21.73	30.00
			H	19.83	9.4	-4.48	24.75	30.00
	1754.3	20393	V	16.97	9.47	-4.5	21.94	30.00
			H	19.8	9.47	-4.5	24.77	30.00

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

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 4 BW: 3M QPSK RB: 1,0	1711.5	19965	V	17.17	9.33	-4.45	22.05	30.00
			H	21.5	9.33	-4.45	26.39	30.00
	1732.5	20175	V	17.37	9.39	-4.47	22.28	30.00
			H	21.07	9.39	-4.47	25.99	30.00
	1753.5	20385	V	17.42	9.46	-4.49	22.39	30.00
			H	20.85	9.46	-4.49	25.81	30.00
LTE BAND 4 BW: 3M QPSK RB: 1,14	1711.5	19965	V	17.45	9.33	-4.45	22.33	30.00
			H	21.75	9.33	-4.45	26.64	30.00
	1732.5	20175	V	17.23	9.4	-4.48	22.16	30.00
			H	20.96	9.4	-4.48	25.88	30.00
	1753.5	20385	V	17.65	9.47	-4.5	22.62	30.00
			H	20.86	9.47	-4.5	25.83	30.00
LTE BAND 4 BW: 3M 16QAM RB: 1,0	1711.5	19965	V	16.87	9.33	-4.45	21.76	30.00
			H	20.82	9.33	-4.45	25.71	30.00
	1732.5	20175	V	17.04	9.39	-4.47	21.95	30.00
			H	20.73	9.39	-4.47	25.64	30.00
	1753.5	20385	V	17.94	9.47	-4.5	22.91	30.00
			H	20.57	9.46	-4.49	25.53	30.00
LTE BAND 4 BW: 3M 16QAM RB: 1,14	1711.5	19965	V	17.02	9.33	-4.45	21.9	30.00
			H	21.45	9.33	-4.45	26.33	30.00
	1732.5	20175	V	16.82	9.4	-4.48	21.75	30.00
			H	20.71	9.4	-4.48	25.63	30.00
	1753.5	20385	V	17.44	9.47	-4.5	22.41	30.00
			H	20.51	9.47	-4.5	25.48	30.00

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

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 4 BW: 5M QPSK RB: 1,0	1712.5	19975	V	17.18	9.33	-4.45	22.07	30.00
			H	21.43	9.34	-4.45	26.31	30.00
	1732.5	20175	V	10.11	9.39	-4.47	15.03	30.00
			H	21.01	9.39	-4.47	25.93	30.00
	1752.5	20375	V	17.47	9.45	-4.49	22.44	30.00
			H	11.67	9.46	-4.49	16.63	30.00
LTE BAND 4 BW: 5M QPSK RB: 1,24	1712.5	19975	V	17.35	9.34	-4.45	22.24	30.00
			H	21.9	9.34	-4.45	26.79	30.00
	1732.5	20175	V	10.55	9.4	-4.48	15.48	30.00
			H	20.76	9.4	-4.48	25.68	30.00
	1752.5	20375	V	17.84	9.47	-4.5	22.81	30.00
			H	10.51	9.4	-4.48	15.43	30.00
LTE BAND 4 BW: 5M 16QAM RB: 1,0	1712.5	19975	V	17.52	9.33	-4.45	22.4	30.00
			H	21.07	9.34	-4.45	25.95	30.00
	1732.5	20175	V	17.06	9.4	-4.48	21.99	30.00
			H	20.63	9.39	-4.47	25.55	30.00
	1752.5	20375	V	17.08	9.45	-4.49	22.04	30.00
			H	20.29	9.45	-4.49	25.25	30.00
LTE BAND 4 BW: 5M 16QAM RB: 1,24	1712.5	19975	V	17.27	9.33	-4.45	22.15	30.00
			H	21.59	9.34	-4.45	26.48	30.00
	1732.5	20175	V	16.57	9.4	-4.48	21.5	30.00
			H	20.61	9.4	-4.48	25.53	30.00
	1752.5	20375	V	17.35	9.47	-4.5	22.32	30.00
			H	20.4	9.47	-4.5	25.37	30.00

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

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 4 BW: 10M QPSK RB: 1,0	1715.0	20000	V	16.9	9.34	-4.45	21.79	30.00
			H	21.38	9.34	-4.45	26.26	30.00
	1732.0	20175	V	17.08	9.39	-4.47	22	30.00
			H	20.88	9.39	-4.47	25.8	30.00
	1750.0	20350	V	16.8	9.45	-4.49	21.75	30.00
			H	20.33	9.45	-4.49	25.29	30.00
LTE BAND 4 BW: 10M QPSK RB: 1,49	1715.0	20000	V	17.15	9.35	-4.46	22.04	30.00
			H	21.64	9.35	-4.46	26.53	30.00
	1732.0	20175	V	16.44	9.41	-4.48	21.37	30.00
			H	20.69	9.41	-4.48	25.62	30.00
	1750.0	20350	V	17.65	9.47	-4.5	22.62	30.00
			H	21.07	9.47	-4.5	26.04	30.00
LTE BAND 4 BW: 10M 16QAM RB: 1,0	1715.0	20000	V	16.44	9.34	-4.45	21.33	30.00
			H	20.94	9.34	-4.45	25.83	30.00
	1732.0	20175	V	16.66	9.39	-4.47	21.58	30.00
			H	20.49	9.39	-4.47	25.41	30.00
	1750.0	20350	V	16.32	9.45	-4.49	21.28	30.00
			H	19.9	9.45	-4.49	24.86	30.00
LTE BAND 4 BW: 10M 16QAM RB: 1,49	1715.0	20000	V	16.82	9.35	-4.46	21.72	30.00
			H	21.25	9.35	-4.46	26.15	30.00
	1732.0	20175	V	15.98	9.41	-4.48	20.91	30.00
			H	20.23	9.41	-4.48	25.16	30.00
	1750.0	20350	V	17.13	9.47	-4.5	22.1	30.00
			H	20.12	9.47	-4.5	25.09	30.00

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Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 4 BW: 15M QPSK RB: 1,0	1717.5	20025	V	16.9	9.34	-4.45	21.78	30.00
			H	21.14	9.34	-4.45	26.02	30.00
	1732.5	20175	V	17.02	9.38	-4.47	21.93	30.00
			H	20.89	9.38	-4.47	25.8	30.00
	1747.5	20325	V	16.16	9.43	-4.49	21.11	30.00
			H	20.18	9.43	-4.49	25.12	30.00
LTE BAND 4 BW: 15M QPSK RB: 1,74	1717.5	20025	V	17.43	9.37	-4.47	22.33	30.00
			H	21.35	9.37	-4.47	26.25	30.00
	1732.5	20175	V	16.32	9.42	-4.48	21.25	30.00
			H	20.48	9.42	-4.48	25.41	30.00
	1747.5	20325	V	17.49	9.46	-4.5	22.46	30.00
			H	20.35	9.43	-4.48	25.29	30.00
LTE BAND 4 BW: 15M 16QAM RB: 1,0	1717.5	20025	V	16.5	9.34	-4.45	21.39	30.00
			H	20.92	9.34	-4.45	25.81	30.00
	1732.5	20175	V	16.65	9.38	-4.47	21.56	30.00
			H	20.59	9.38	-4.47	25.5	30.00
	1747.5	20325	V	15.77	9.43	-4.48	20.71	30.00
			H	19.85	9.43	-4.48	24.79	30.00
LTE BAND 4 BW: 15M 16QAM RB: 1,74	1717.5	20025	V	16.91	9.37	-4.46	21.82	30.00
			H	20.92	9.37	-4.46	25.82	30.00
	1732.5	20175	V	15.73	9.42	-4.48	20.67	30.00
			H	19.98	9.42	-4.48	24.92	30.00
	1747.5	20325	V	17.1	9.46	-4.5	22.07	30.00
			H	20.06	9.46	-4.5	25.03	30.00

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

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 4 BW: 20M QPSK RB: 1,0	1720.0	20050	V	16.52	9.34	-4.45	21.41	30.00
			H	21.36	9.34	-4.45	26.25	30.00
	1732.5	20175	V	16.91	9.38	-4.47	21.82	30.00
			H	21.17	9.38	-4.47	26.08	30.00
	1745.0	20300	V	16.5	9.42	-4.48	21.43	30.00
			H	20.5	9.42	-4.48	25.44	30.00
LTE BAND 4 BW: 20M QPSK RB: 1,99	1720.0	20050	V	17.11	9.38	-4.47	22.02	30.00
			H	21.04	9.38	-4.47	25.95	30.00
	1732.5	20175	V	16.26	9.42	-4.48	21.2	30.00
			H	20.45	9.42	-4.48	25.39	30.00
	1745.0	20300	V	17.35	9.46	-4.5	22.32	30.00
			H	20.7	9.41	-4.48	25.63	30.00
LTE BAND 4 BW: 20M 16QAM RB: 1,0	1720.0	20050	V	16.29	9.34	-4.45	21.17	30.00
			H	20.87	9.34	-4.45	25.76	30.00
	1732.5	20175	V	16.68	9.37	-4.47	21.58	30.00
			H	20.95	9.37	-4.47	25.86	30.00
	1745.0	20300	V	15.82	9.41	-4.48	20.75	30.00
			H	20.23	9.41	-4.48	25.16	30.00
LTE BAND 4 BW: 20M 16QAM RB: 1,99	1720.0	20050	V	16.67	9.38	-4.47	21.58	30.00
			H	20.63	9.38	-4.47	25.55	30.00
	1732.5	20175	V	15.73	9.42	-4.48	20.67	30.00
			H	19.98	9.42	-4.48	24.92	30.00
	1745.0	20300	V	16.94	9.46	-4.5	21.91	30.00
			H	20.11	9.46	-4.5	25.08	30.00

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

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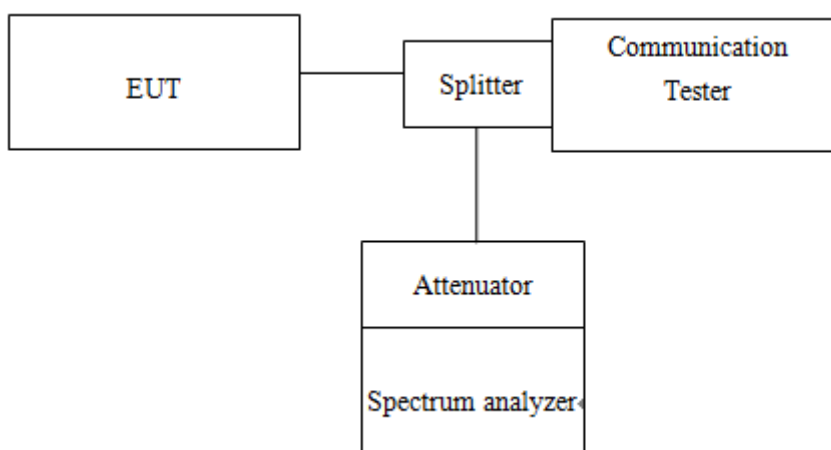
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8. OCCUPIED BANDWIDTH MEASUREMENT

8.1. Standard Applicable

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

8.2. Test Set-up



8.3. Measurement Procedure

99% & 26dB Bandwidth with detector peak

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

99% Bandwidth with detector sample

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

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8.4. Measurement Equipment Used

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
PXA Spectrum Analyzer	Agilent	N9030A	MY53120760	2018/04/09	2019/04/08
Radio Communication Analyer	Anritsu	MT8815B	6200711454	2018/04/05	2019/04/04
DC Power Supply	Anritsu	E3640A	MY52410006	2017/11/28	2018/11/27
Temperature Chamber	TERCHY	MHG-120LF	911009	2018/05/18	2019/05/17
Attenuator	Mini-Circuit	BW-S10W2+	2	2018/01/02	2019/01/01
Splitter	RF-LAMBAD	RFLT2W1G18G	11-JSPF412-018	2018/01/02	2019/01/01
Coaxial Cables	N/A	WK CE Cable	N/A	2018/01/02	2019/01/01

8.5. Measurement Result

Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		GSM 1900	GPRS 1900	GSM 1900	GPRS 1900
1850.2	512	0.24706	0.24816	0.315	0.322
1880.0	661	0.24548	0.25049	0.314	0.323
1909.8	810	0.24582	0.24701	0.316	0.321

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	4.11740	4.11070	4.10650	4.679	4.674	4.662
1880.00	9400	4.11390	4.11130	4.12660	4.683	4.679	4.689
1907.60	9538	4.11160	4.12030	4.11610	4.686	4.711	4.665

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	4.11380	4.10310	4.12100	4.679	4.659	4.685
1732.60	1413	4.11210	4.11180	4.13080	4.656	4.690	4.684
1752.60	1513	4.12300	4.12840	4.11480	4.654	4.696	4.657

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LTE BAND 2 Channel bandwidth: 1.4MHz						LTE BAND 2 Channel bandwidth: 3MHz					
Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)		Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM			QPSK	16QAM	QPSK	16QAM
1850.7	18607	1.0964	1.0987	1.272	1.285	1851.5	18615	2.6946	2.6977	2.979	2.984
1880.0	18900	1.0950	1.0977	1.280	1.280	1880.0	18900	2.6976	2.6922	2.986	2.931
1909.3	19193	1.0952	1.0991	1.301	1.286	1908.5	19185	2.6961	2.6982	2.961	2.988
LTE BAND 2 Channel bandwidth: 5MHz						LTE BAND 2 Channel bandwidth: 10MHz					
Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)		Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM			QPSK	16QAM	QPSK	16QAM
1852.5	18625	4.4852	4.4874	5.011	4.945	1855.0	18650	8.9771	8.9476	9.871	9.752
1880.0	18900	4.4916	4.4943	5.017	5.015	1880.0	18900	8.9955	8.9532	9.834	9.808
1907.5	19175	4.4927	4.4904	5.011	5.004	1905.0	19150	9.0112	8.9604	9.861	9.780
LTE BAND 2 Channel bandwidth: 15MHz						LTE BAND 2 Channel bandwidth: 20MHz					
Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)		Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM			QPSK	16QAM	QPSK	16QAM
1857.5	18675	13.432	13.417	14.640	14.760	1860.0	18700	17.880	17.887	19.315	19.364
1880.0	18900	13.405	13.419	14.612	14.566	1880.0	18900	17.904	17.878	19.405	19.318
1902.5	19125	13.496	13.449	14.577	14.786	1900.0	19100	17.900	17.932	19.228	19.451
LTE BAND 4 Channel bandwidth: 1.4MHz						LTE BAND 4 Channel bandwidth: 3MHz					
Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)		Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM			QPSK	16QAM	QPSK	16QAM
1710.7	19957	1.0953	1.0973	1.280	1.297	1711.5	19965	2.6977	2.6963	2.958	2.991
1732.5	20175	1.0961	1.1012	1.276	1.285	1732.5	20175	2.6945	2.6971	2.972	2.979
1754.3	20393	1.0948	1.0985	1.279	1.297	1753.5	20385	2.6943	2.6951	2.990	2.974
LTE BAND 4 Channel bandwidth: 5MHz						LTE BAND 4 Channel bandwidth: 10MHz					
Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)		Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM			QPSK	16QAM	QPSK	16QAM
1712.5	19957	4.4924	4.4849	4.992	4.951	1715.0	20000	8.9596	8.9453	9.744	9.840
1732.5	20175	4.4969	4.4852	4.968	5.018	1732.5	20175	8.9960	8.9460	9.862	9.831
1752.5	20375	4.4931	4.4855	5.029	4.982	1750.0	20350	8.9868	8.9484	9.801	9.827
LTE BAND 4 Channel bandwidth: 15MHz						LTE BAND 4 Channel bandwidth: 20MHz					
Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)		Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM			QPSK	16QAM	QPSK	16QAM
1717.5	20025	13.419	13.420	14.595	14.690	1720.0	20050	17.857	17.910	19.391	19.355
1732.5	20175	13.412	13.441	14.713	14.653	1732.5	20175	17.906	17.932	19.380	19.460
1747.5	20325	13.450	13.433	14.652	14.643	1745.0	20300	17.895	17.912	19.349	19.440

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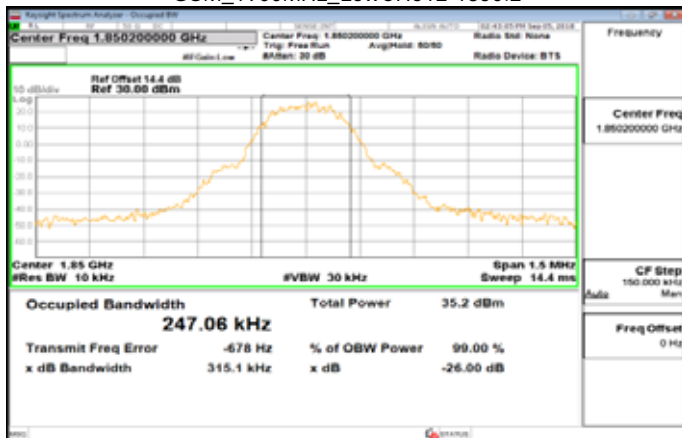
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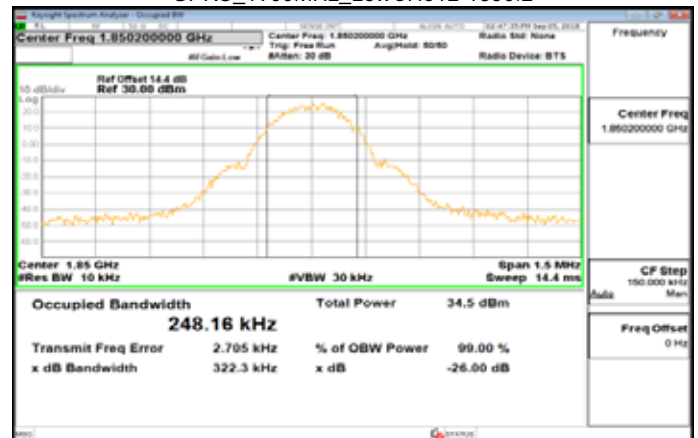
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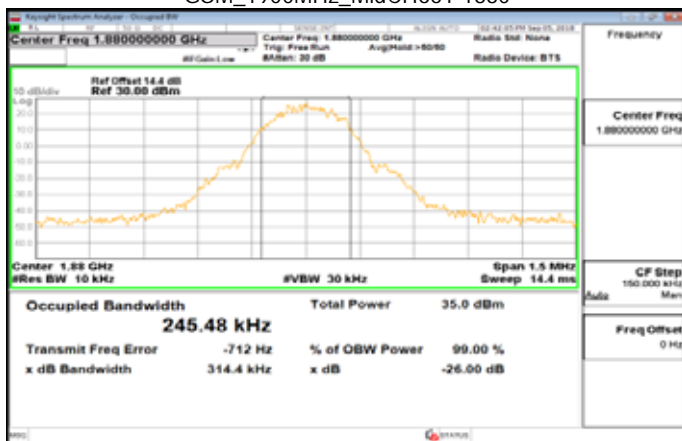
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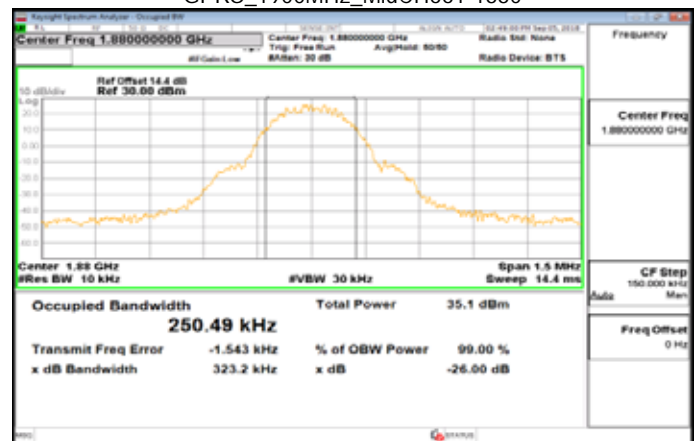
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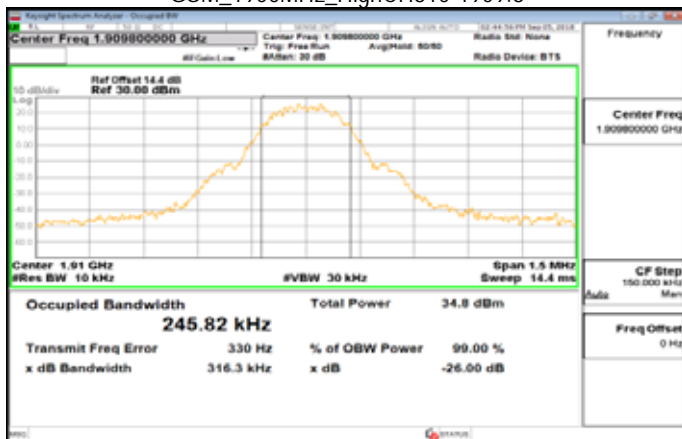
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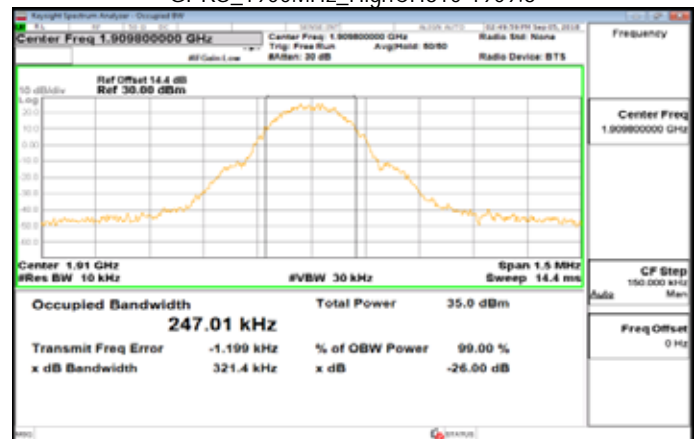
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GSM_1900MHz_HighCH810-1909.8



GPRS_1900MHz_HighCH810-1909.8



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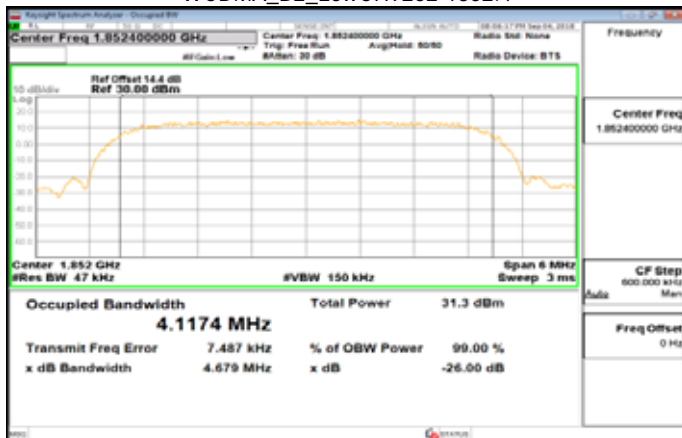
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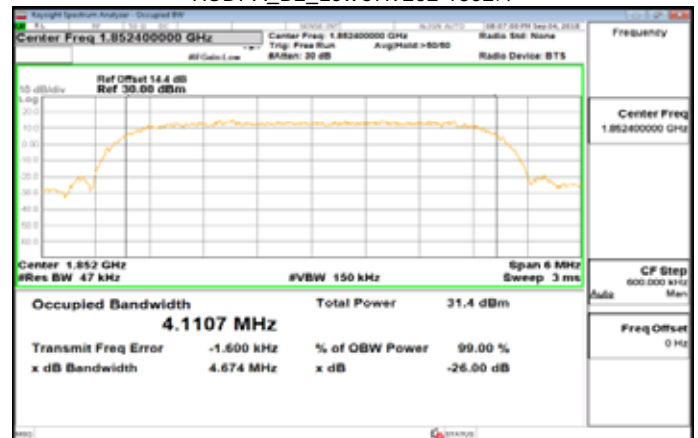
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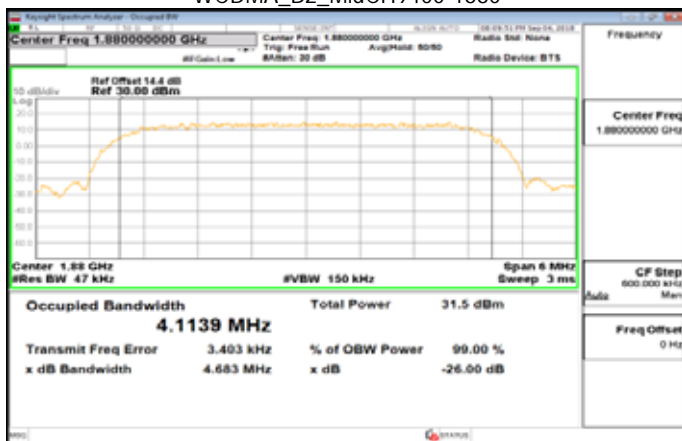
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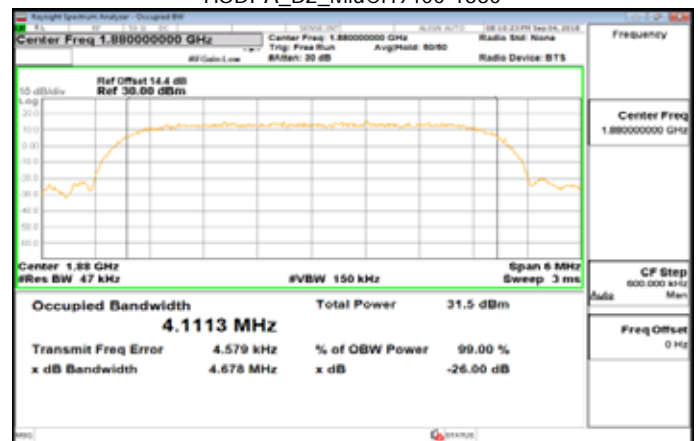
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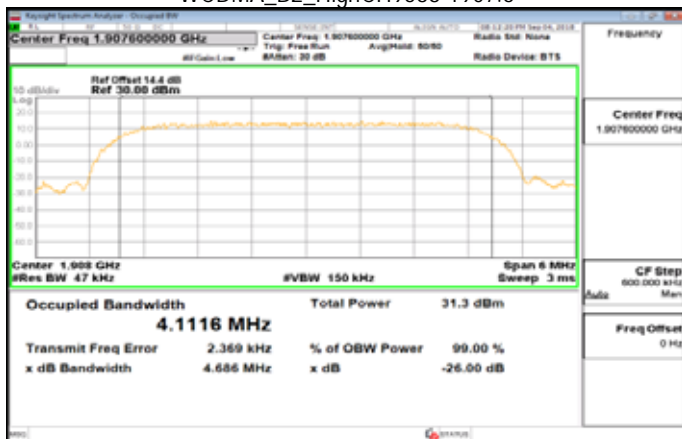
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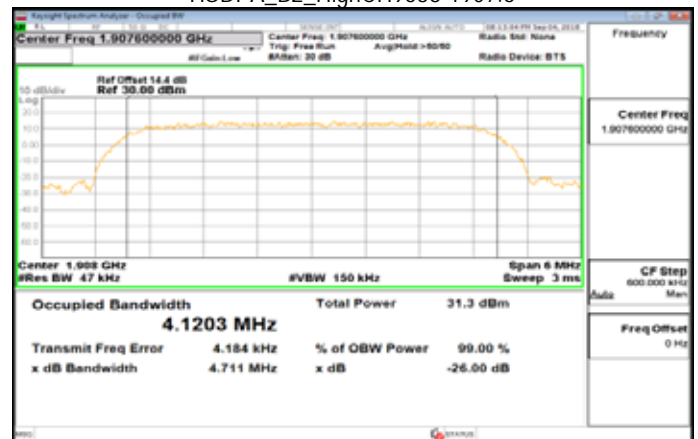
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WCDMA_B2_HighCH9538-1907.6



HSDPA_B2_HighCH9538-1907.6



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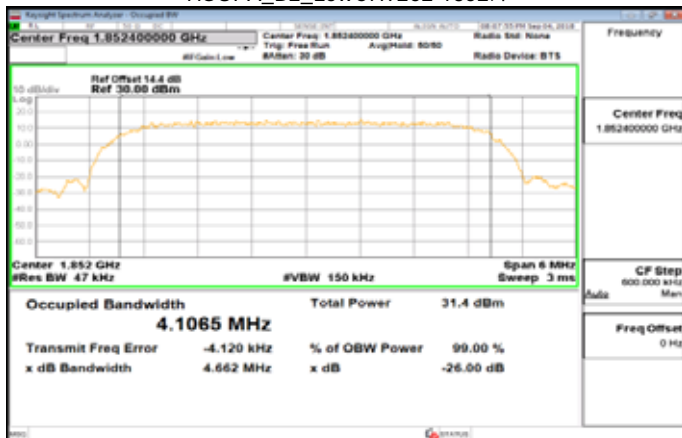
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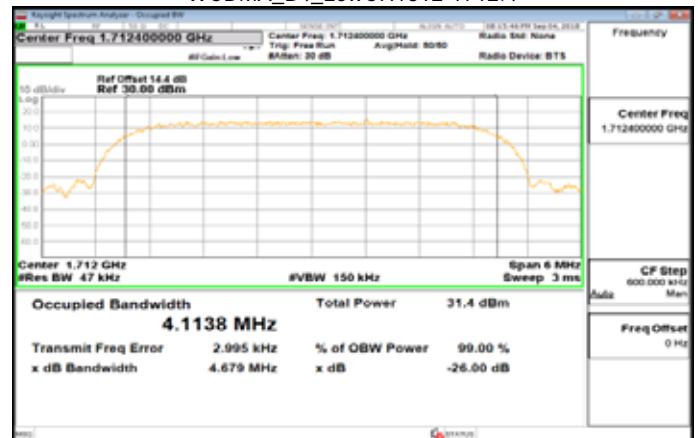
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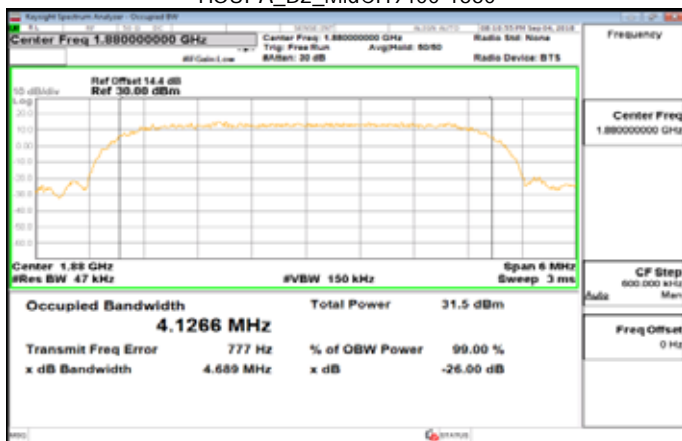
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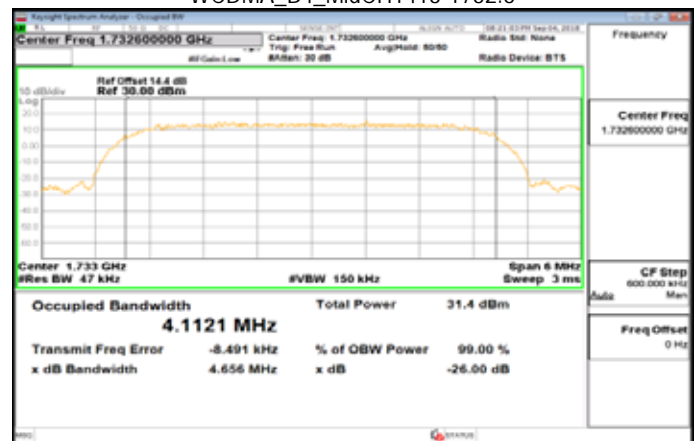
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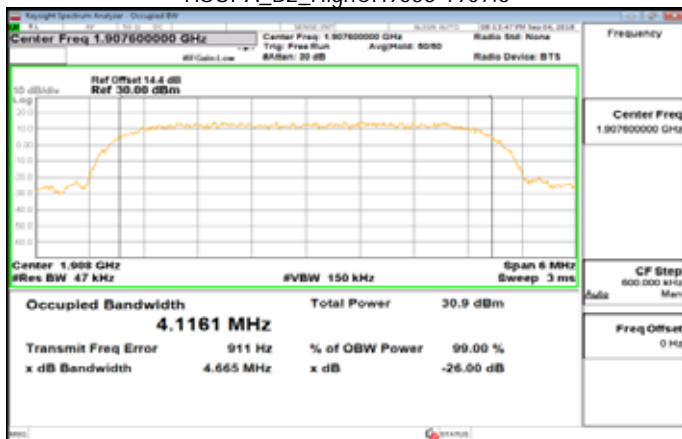
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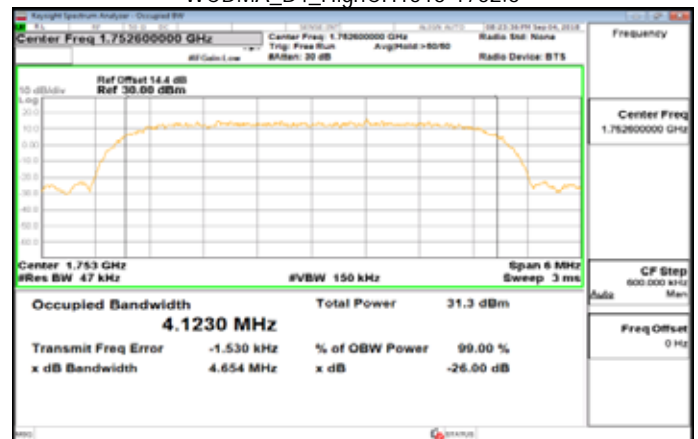
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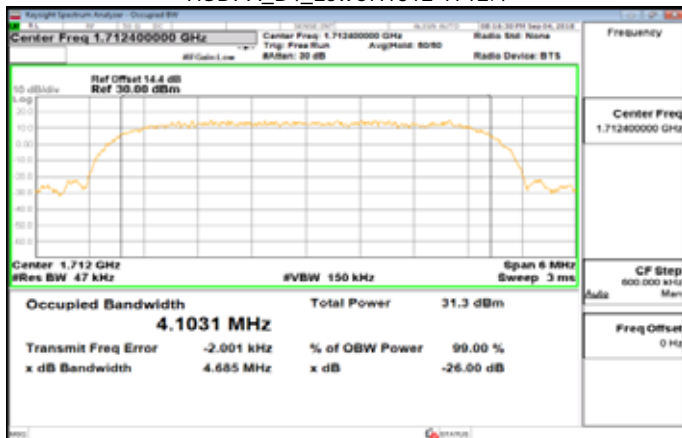
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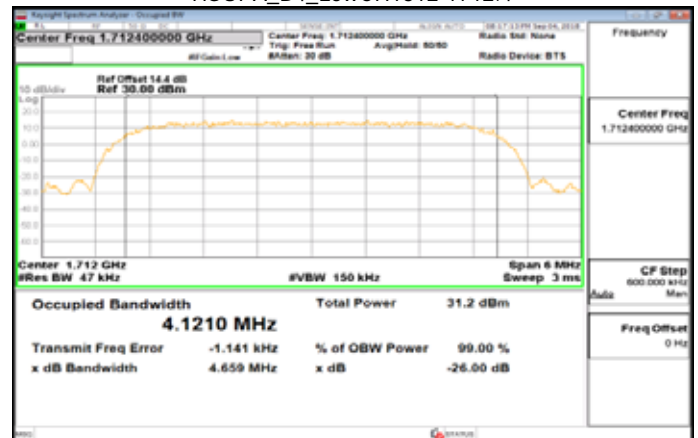
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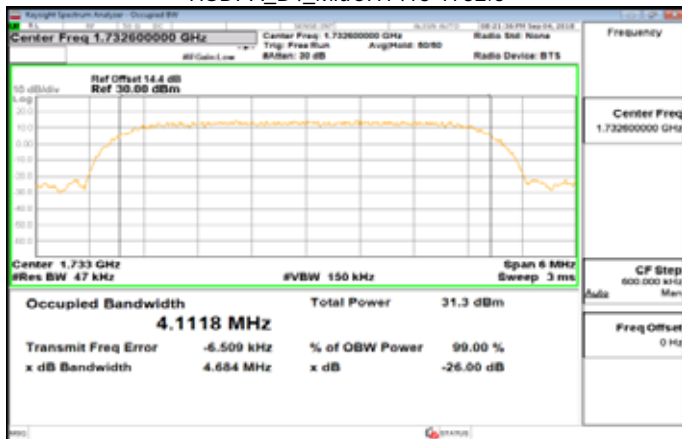
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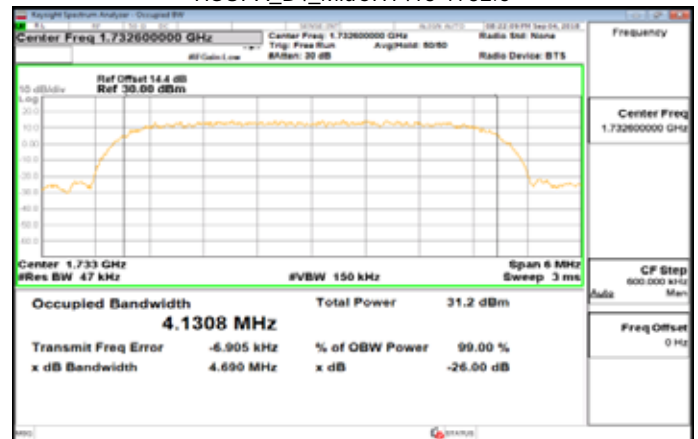
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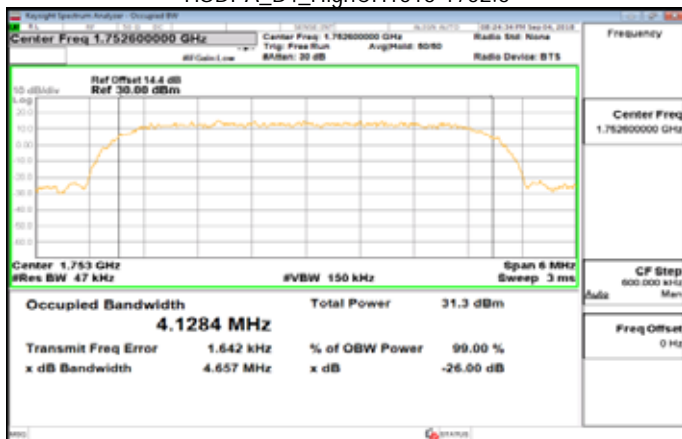
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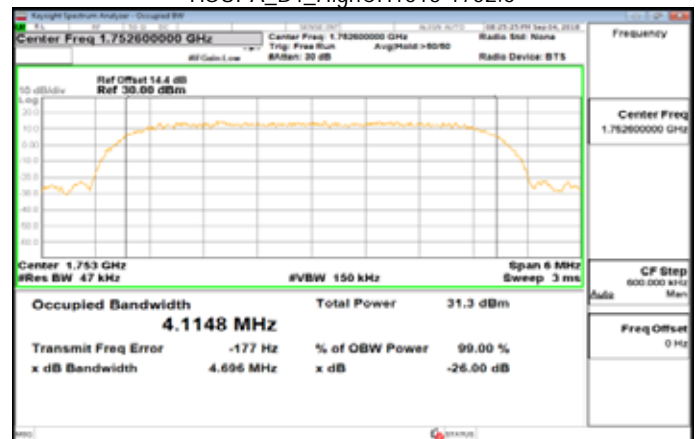
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HSUPA_B4_HighCH1513-1752.6



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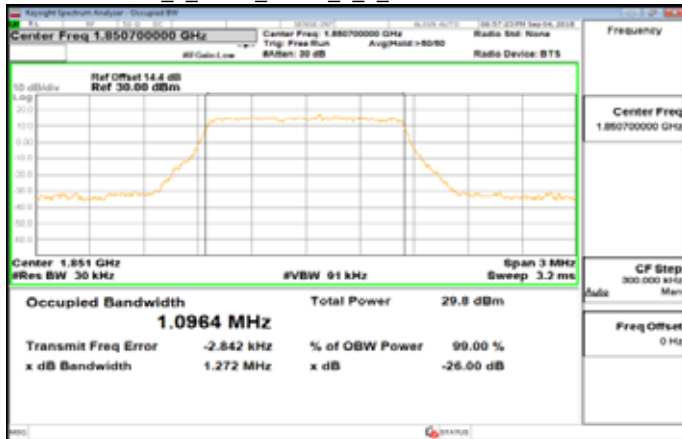
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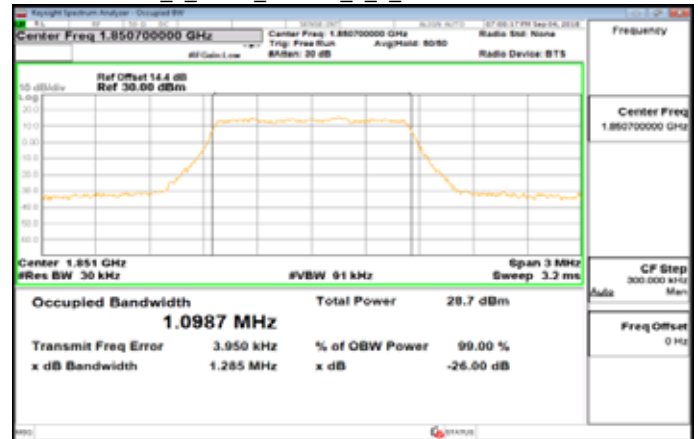
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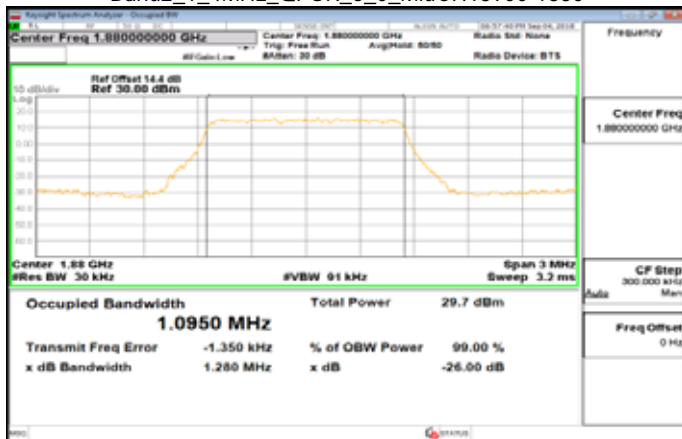
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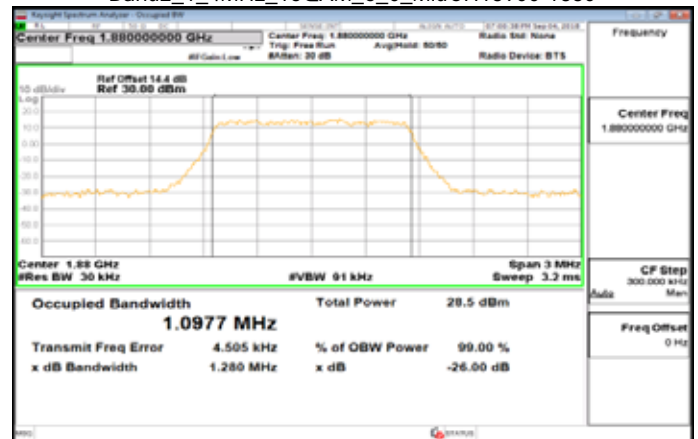
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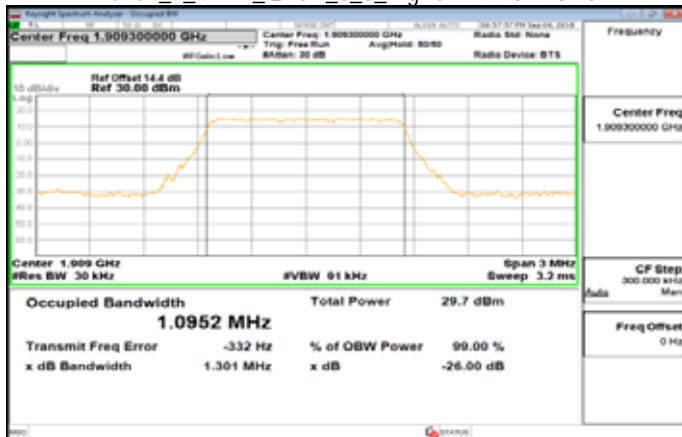
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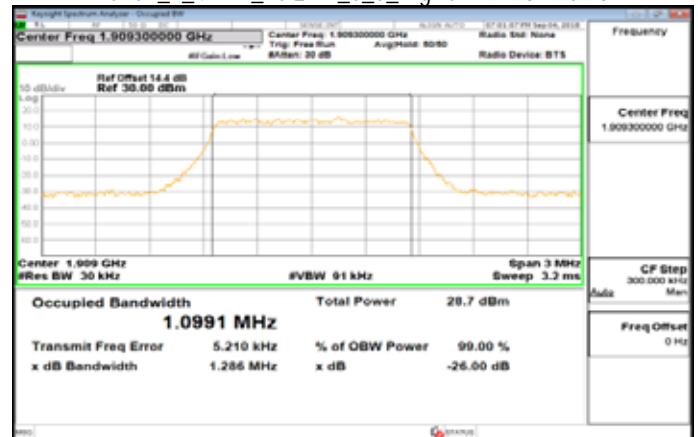
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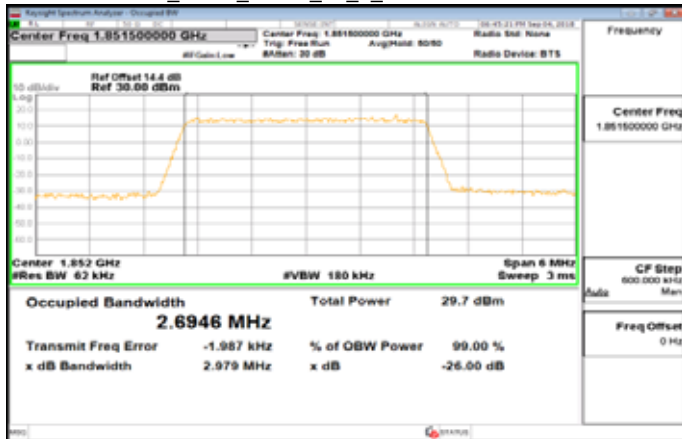
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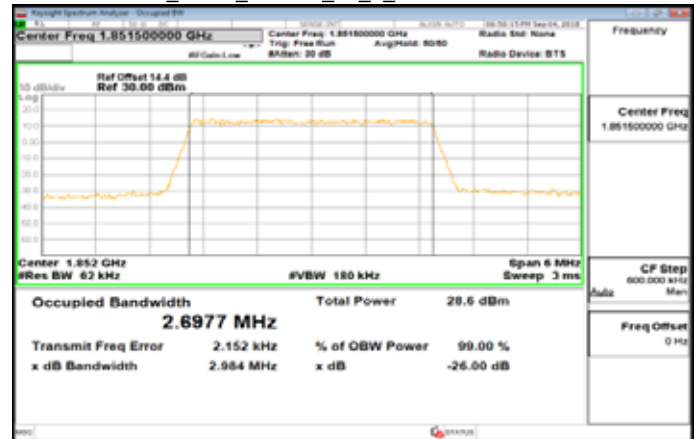
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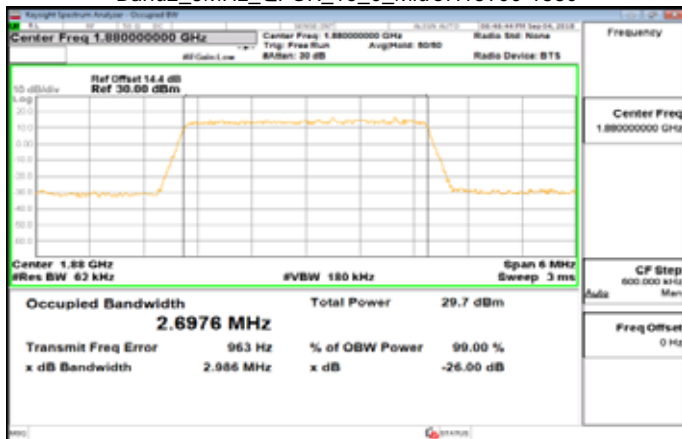
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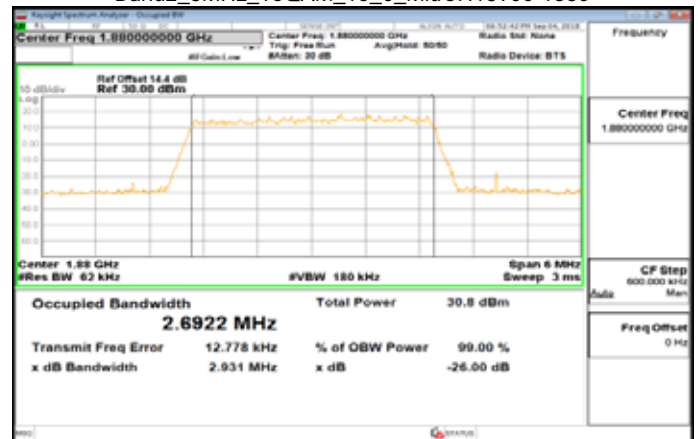
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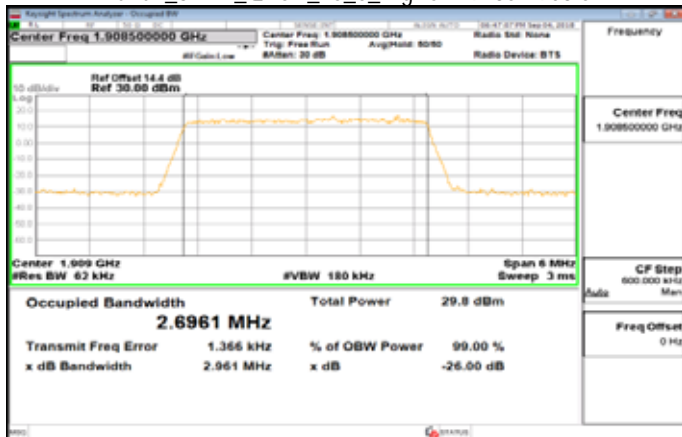
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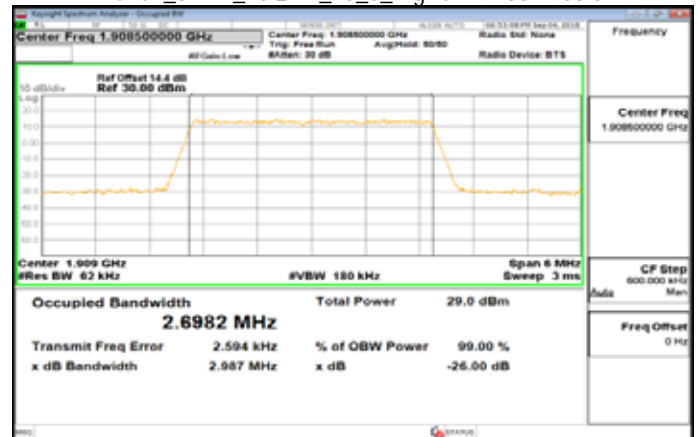
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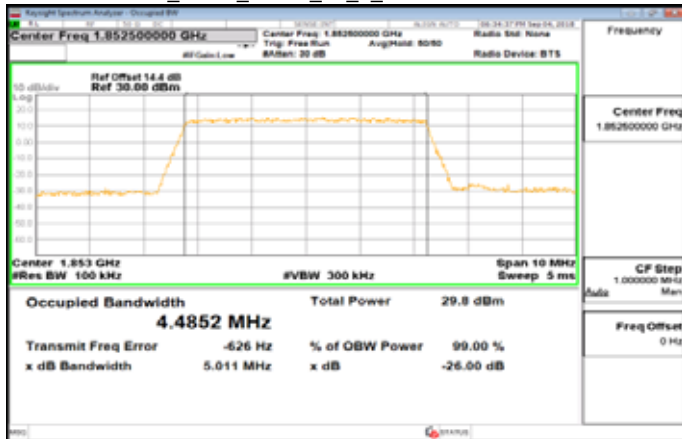
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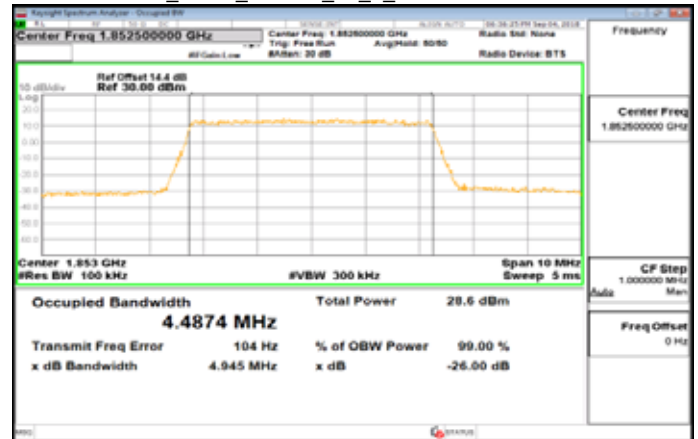
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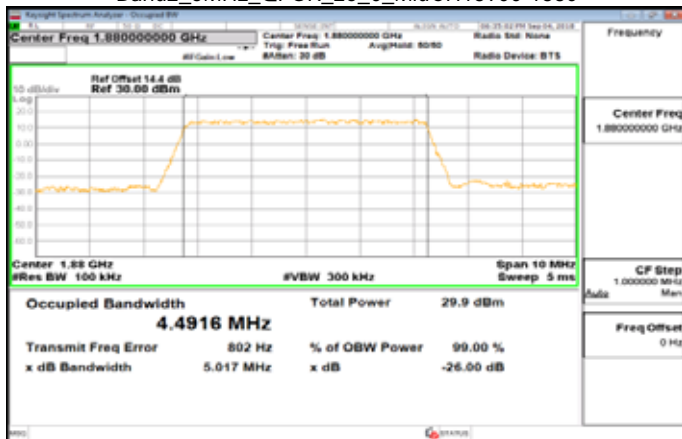
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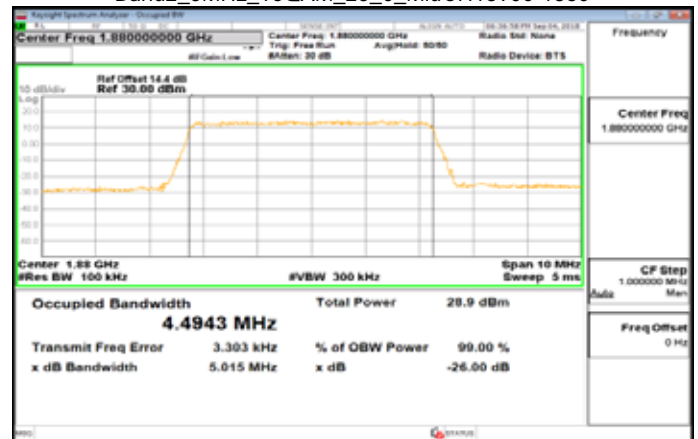
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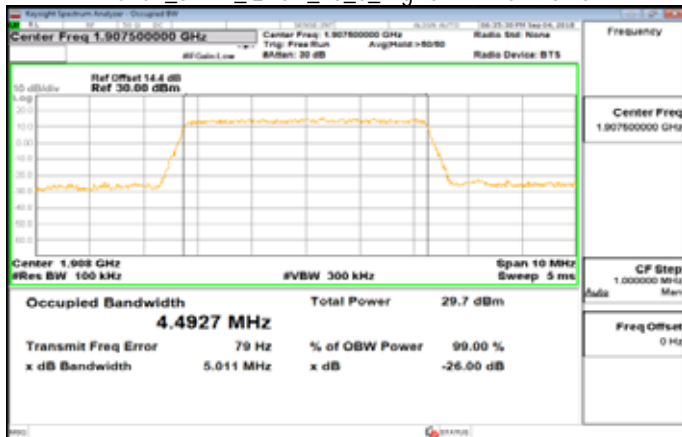
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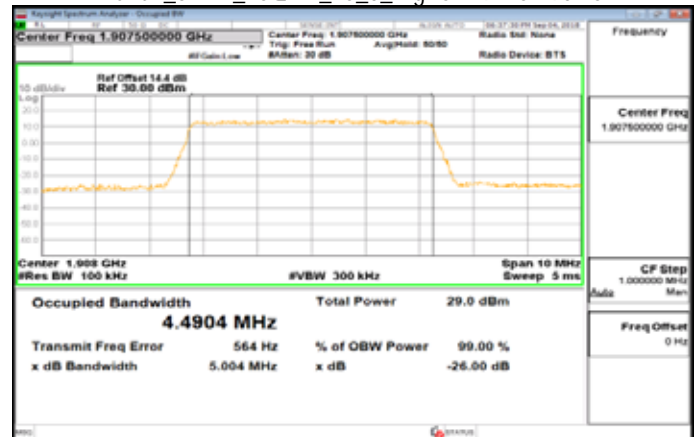
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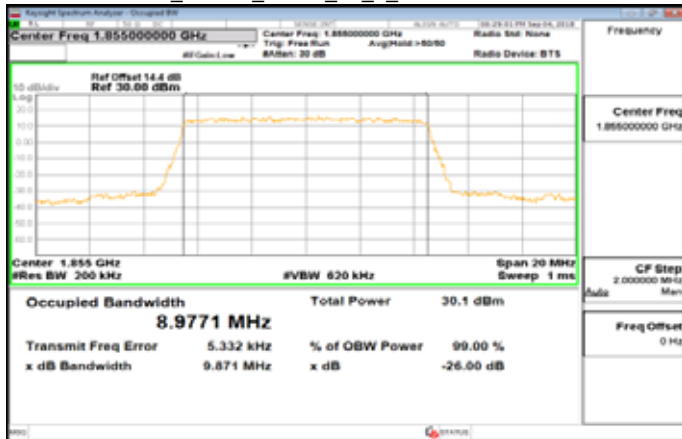
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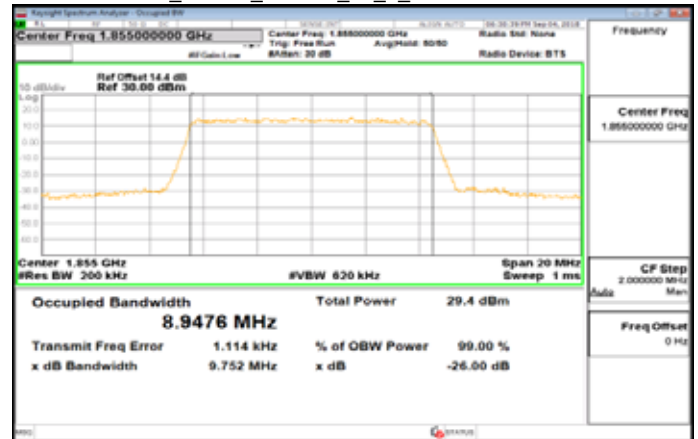
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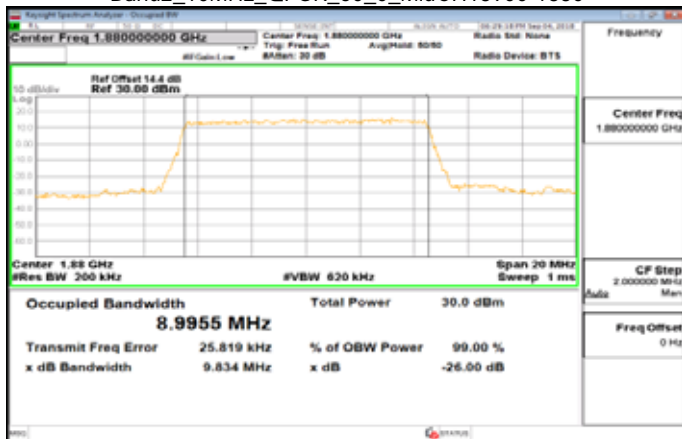
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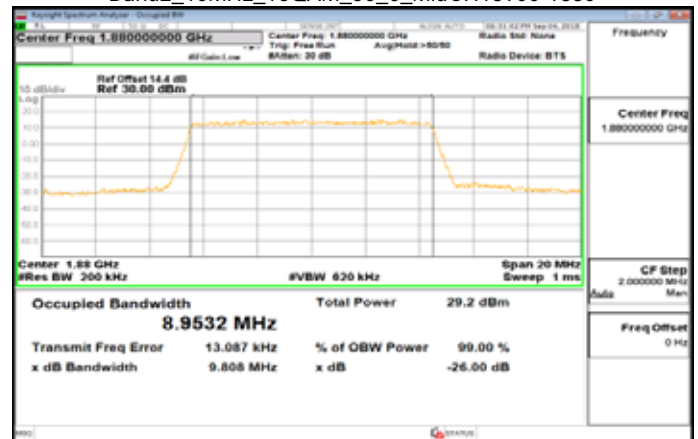
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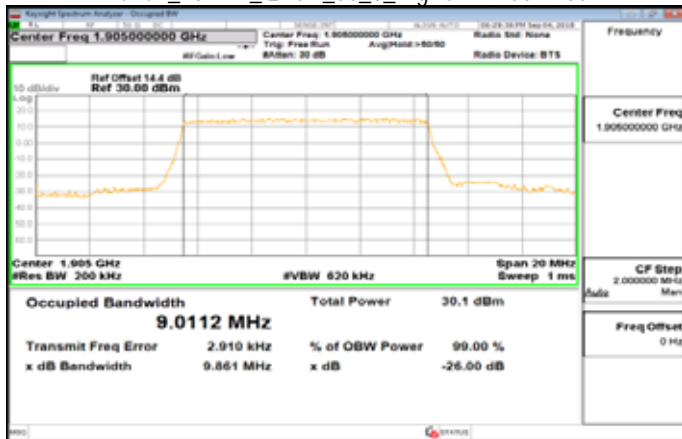
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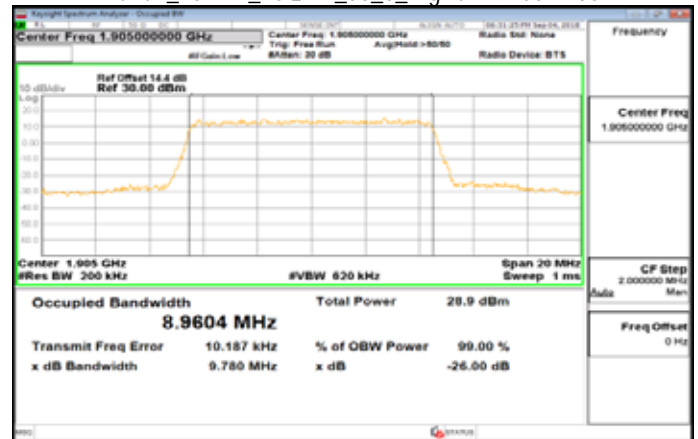
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Band2_10MHz_QPSK_50_0_HighCH19150-1905



Band2_10MHz_16QAM_50_0_HighCH19150-1905



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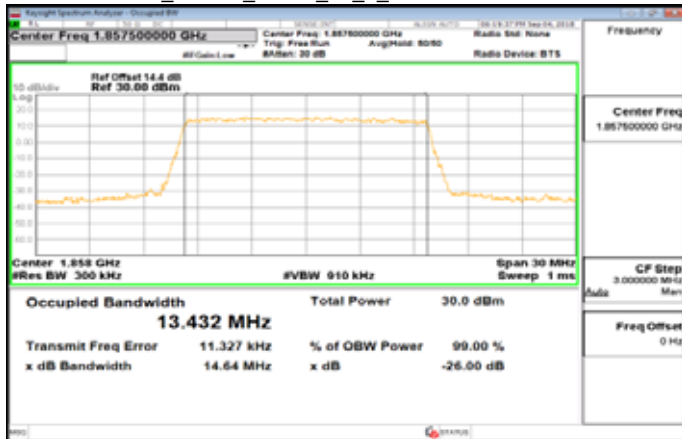
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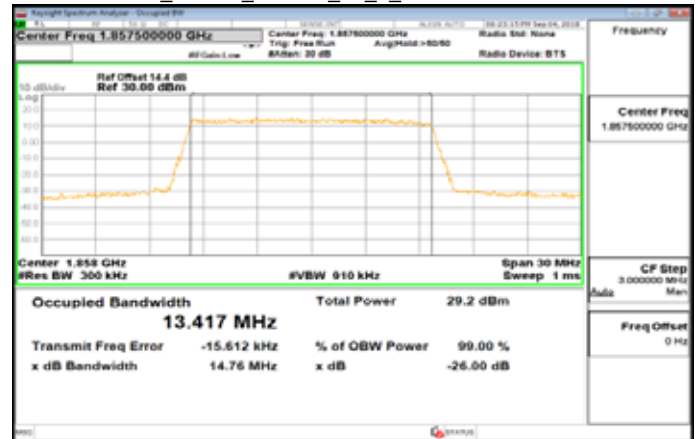
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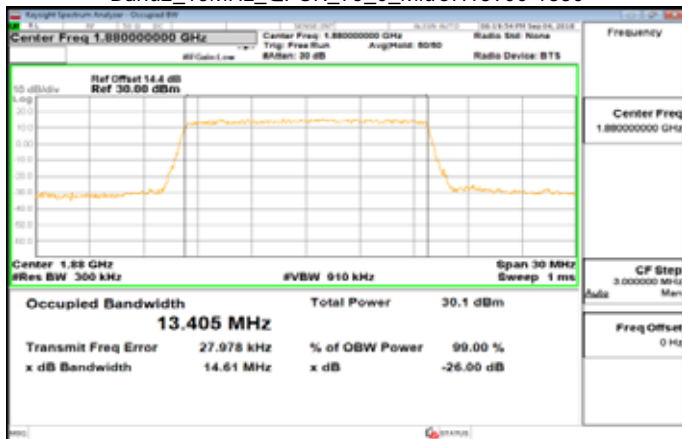
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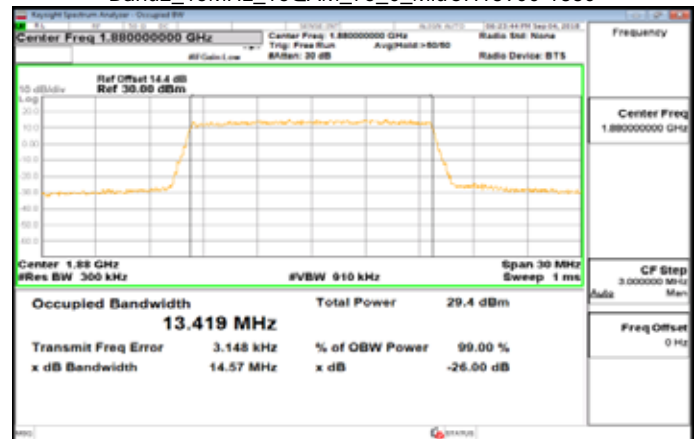
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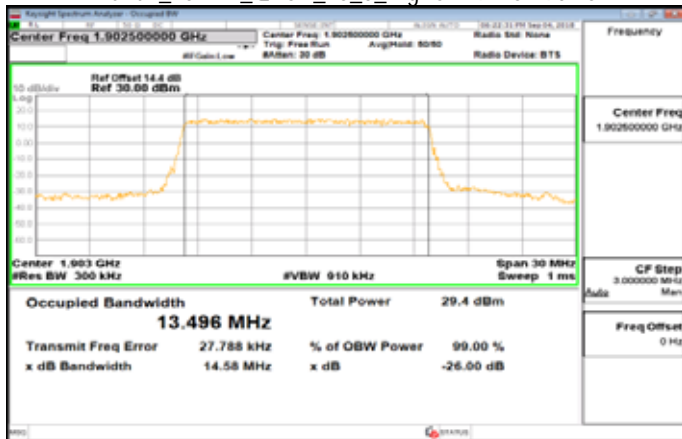
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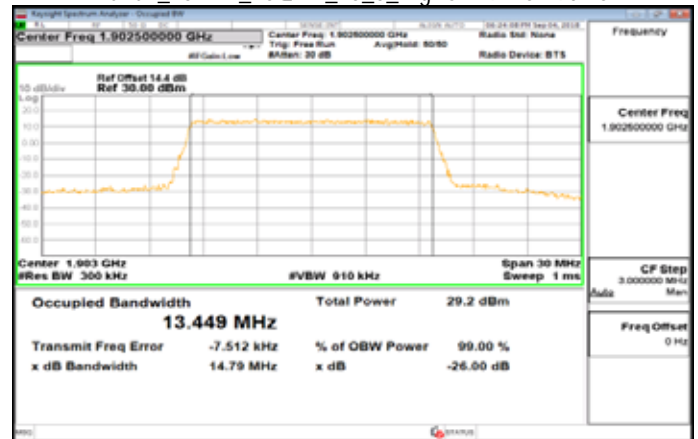
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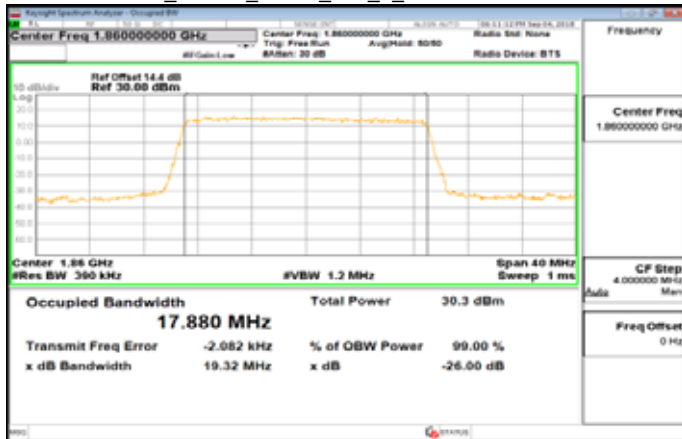
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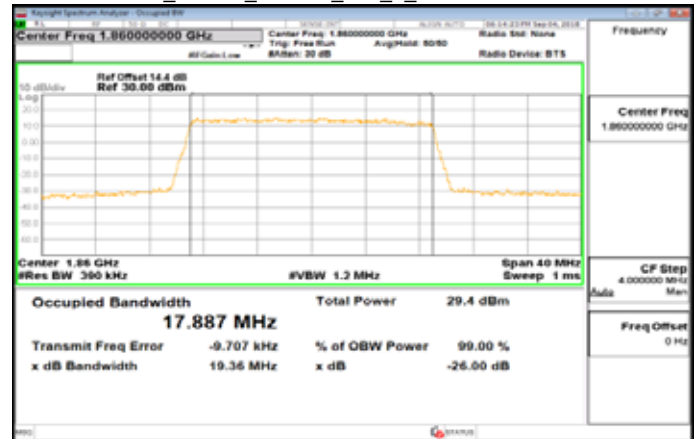
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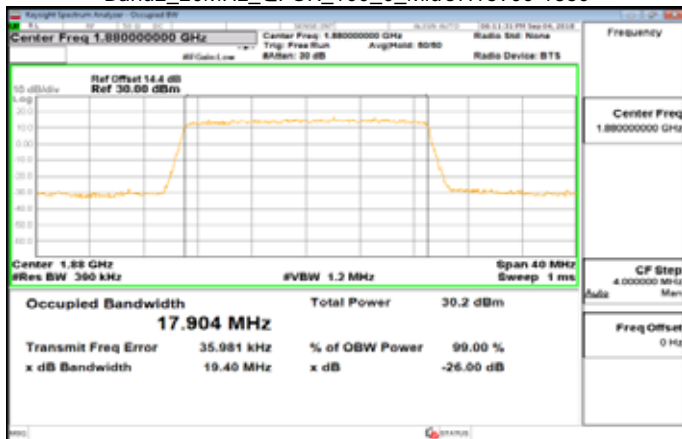
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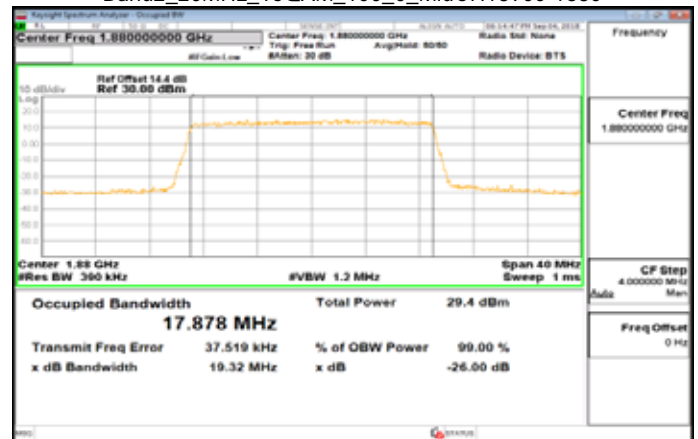
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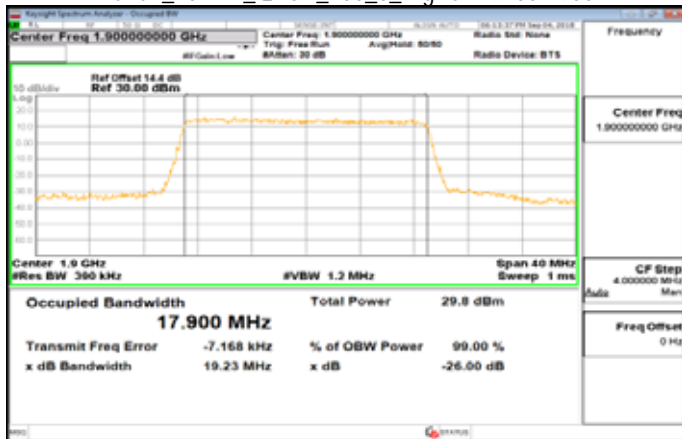
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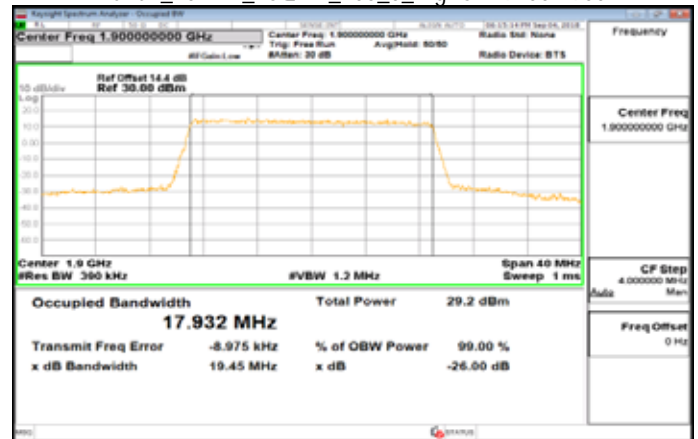
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Band2_20MHz_QPSK_100_0_HighCH19100-1900



Band2_20MHz_16QAM_100_0_HighCH19100-1900



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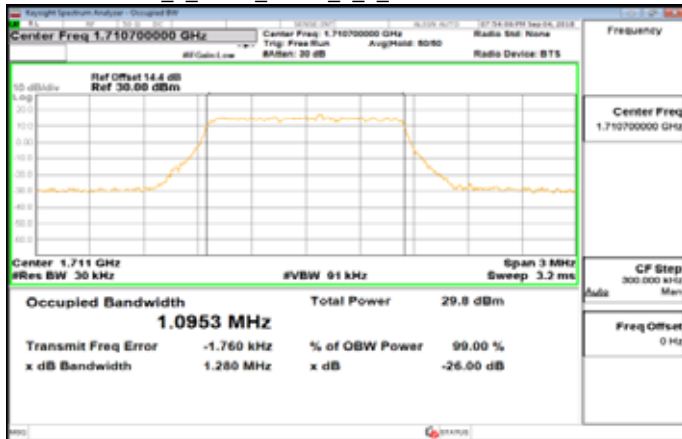
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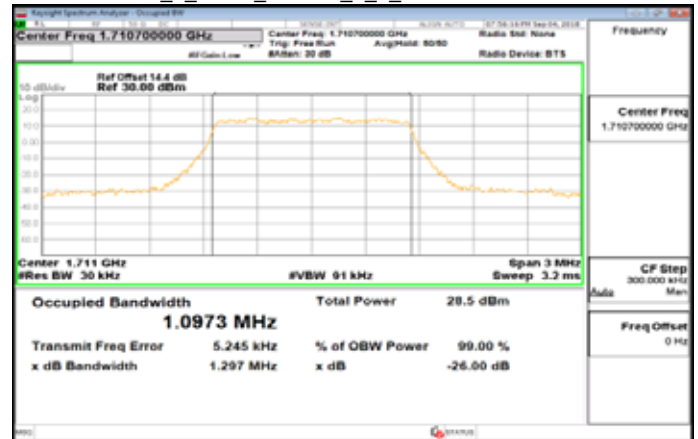
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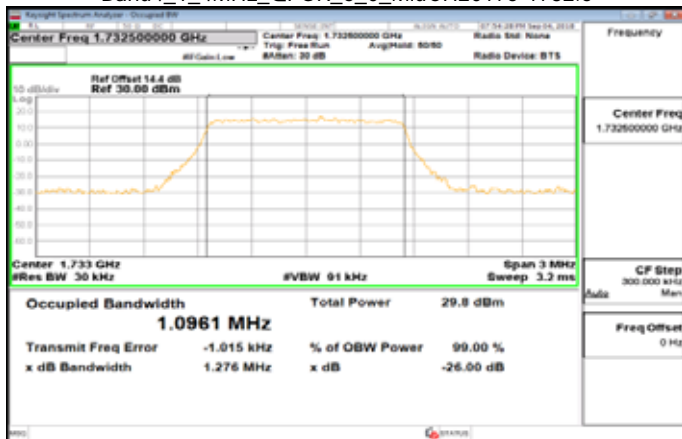
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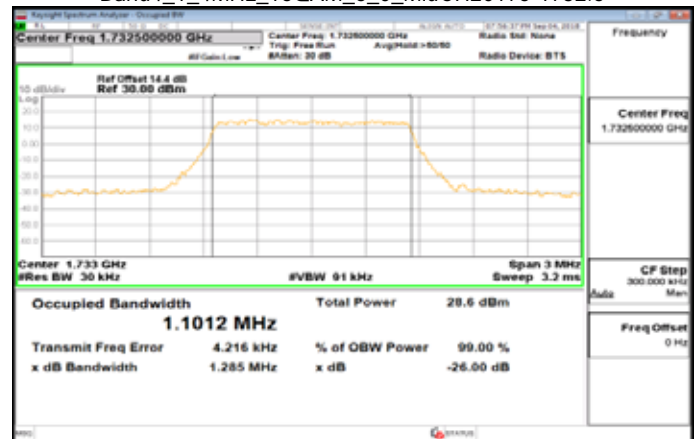
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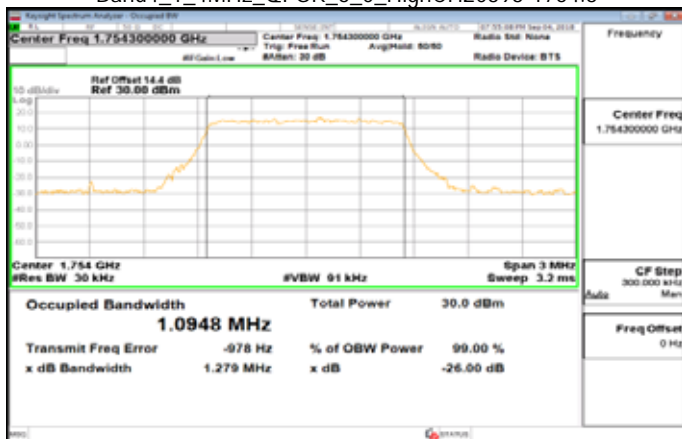
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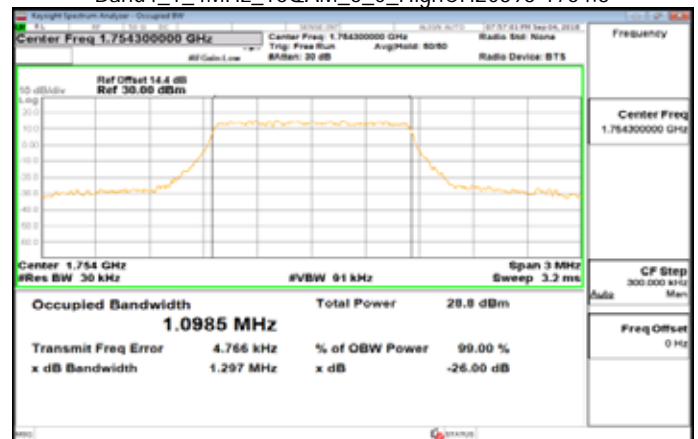
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Band4_1_4MHz_16QAM_6_0_HighCH20393-1754.3



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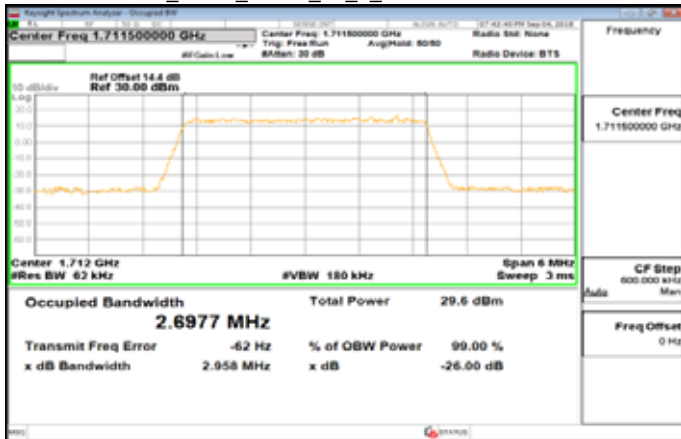
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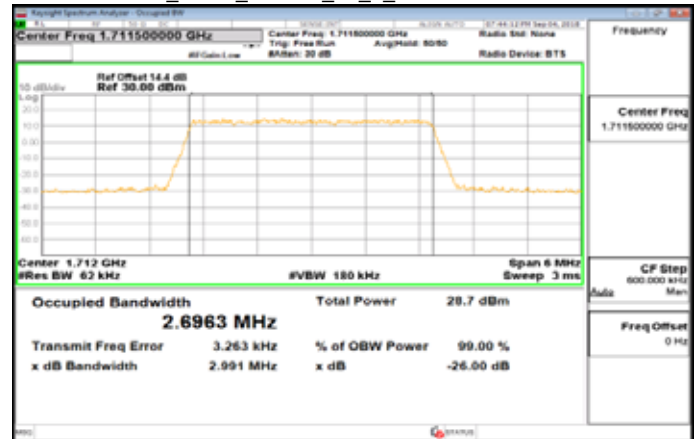
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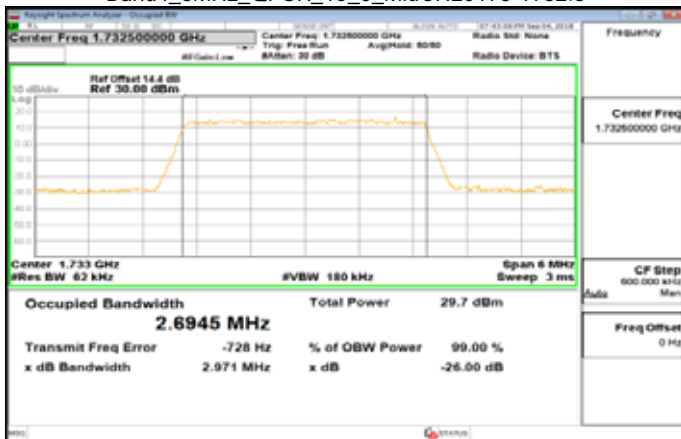
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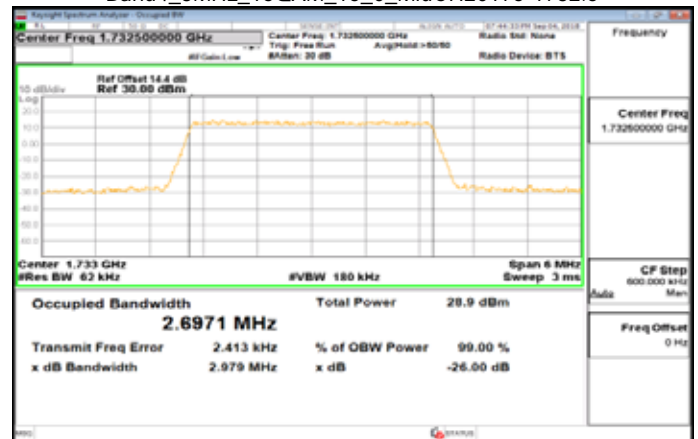
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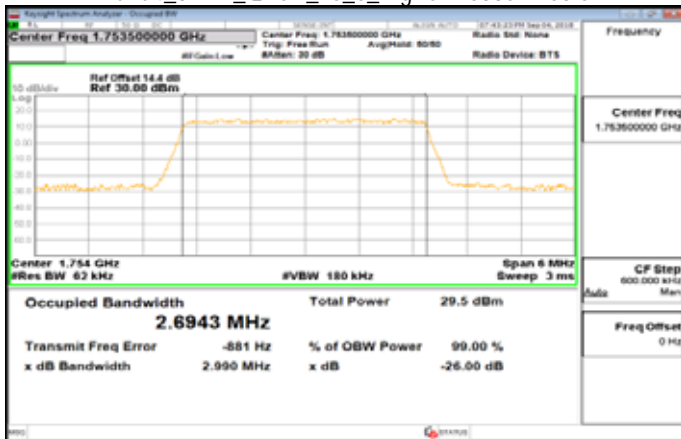
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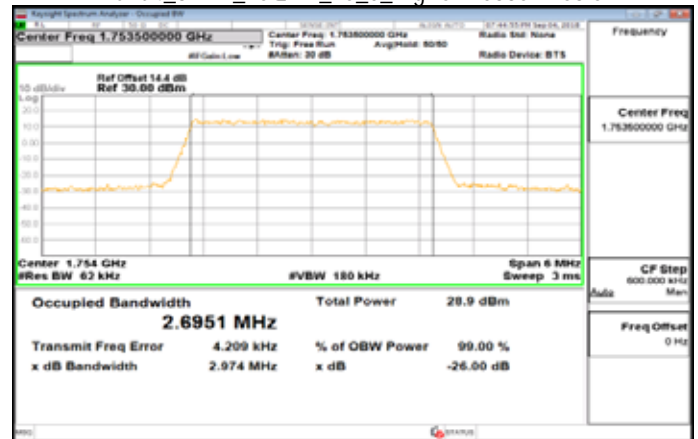
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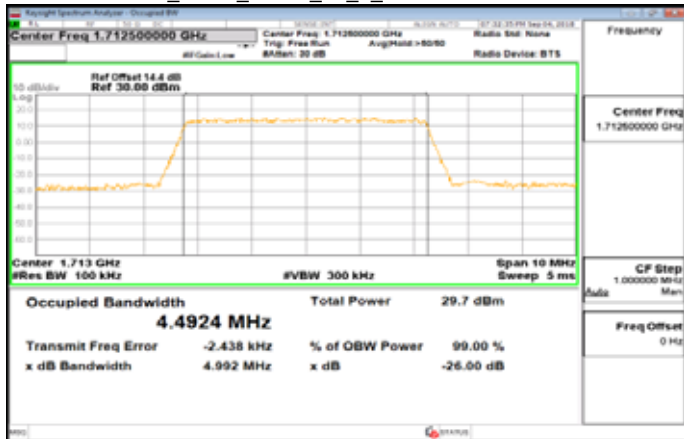
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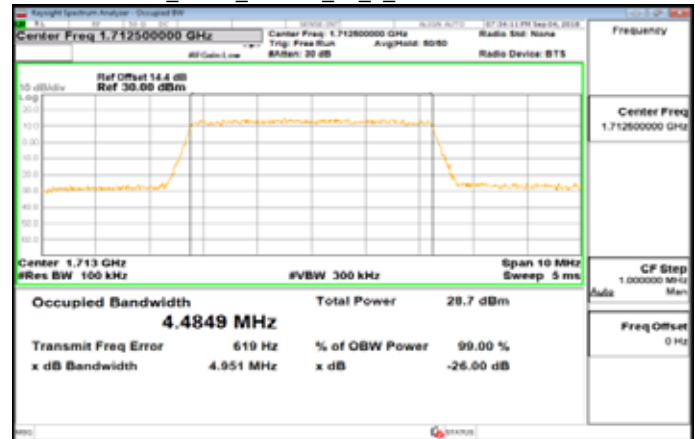
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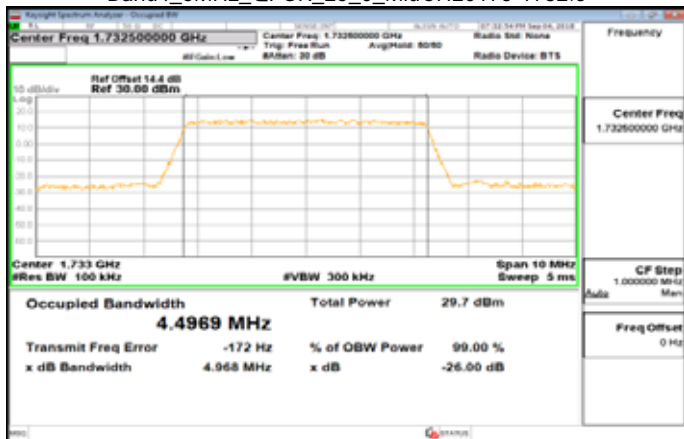
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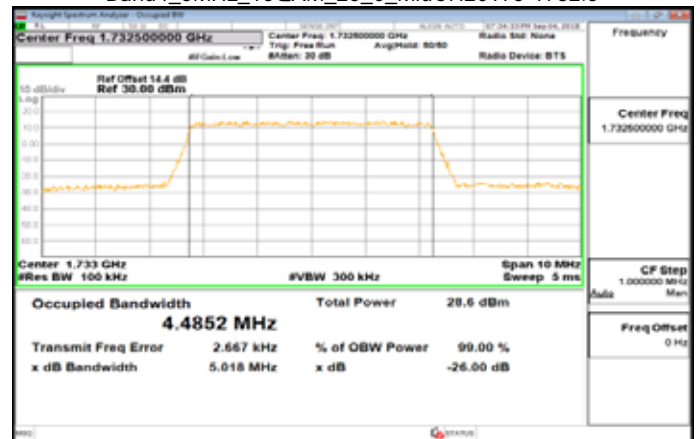
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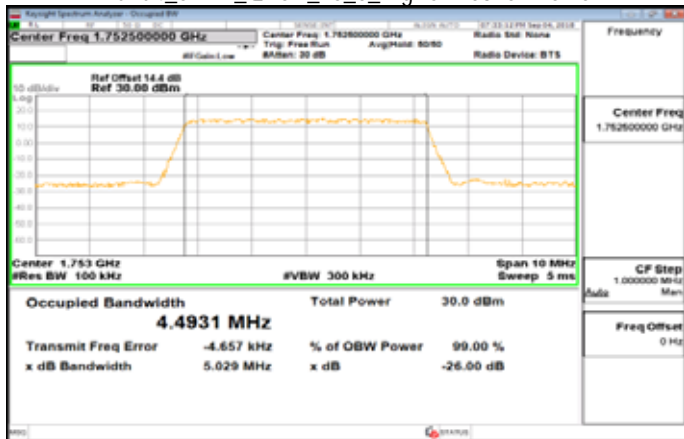
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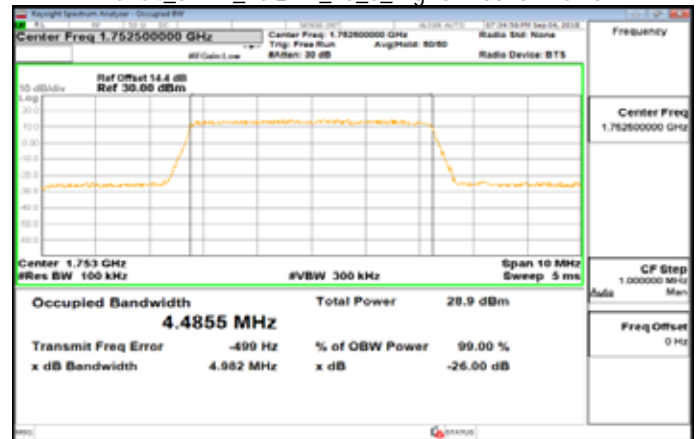
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Band4_5MHz_16QAM_25_0_HighCH20375-1752.5



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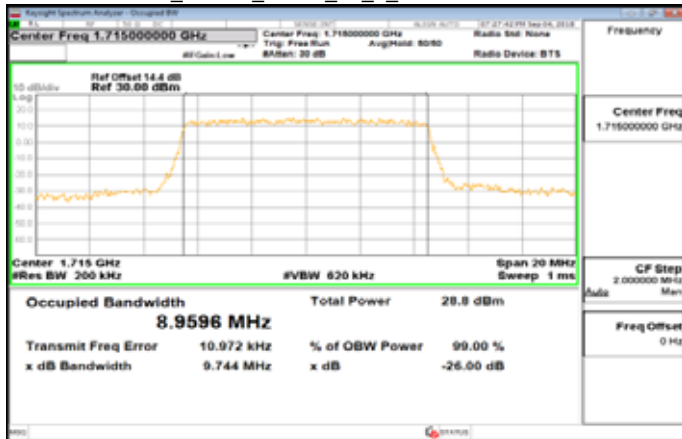
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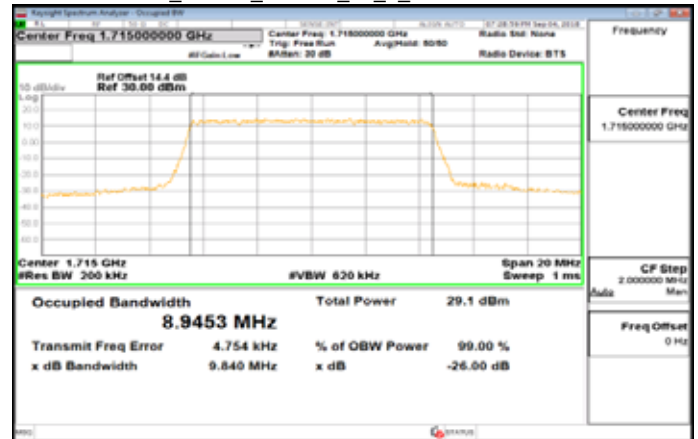
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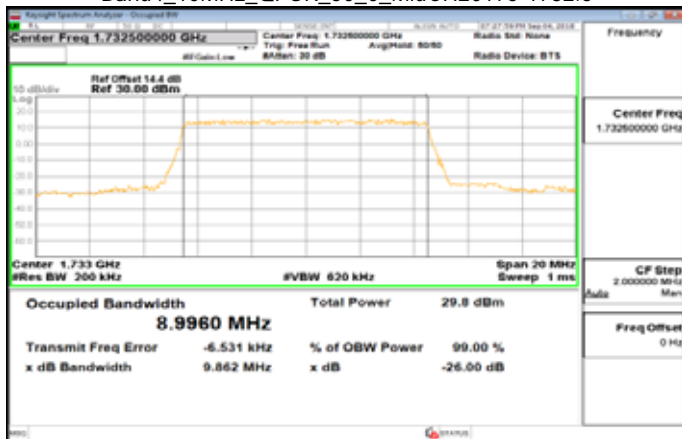
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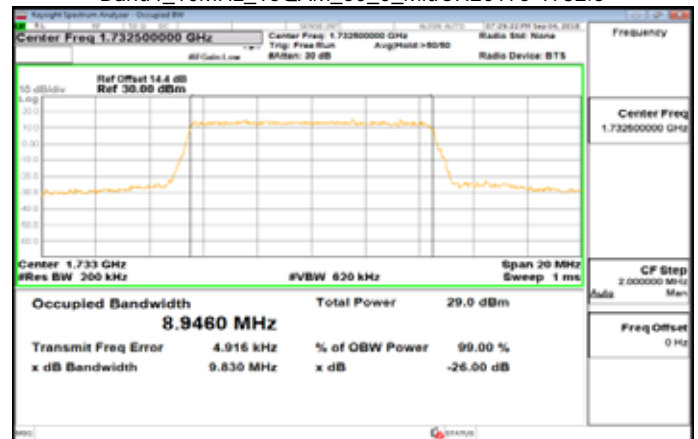
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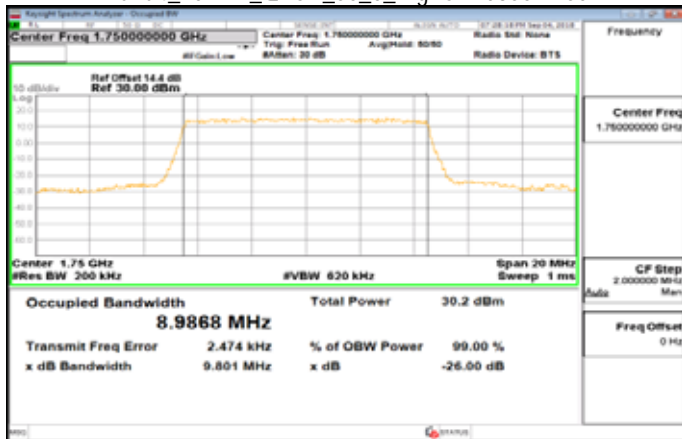
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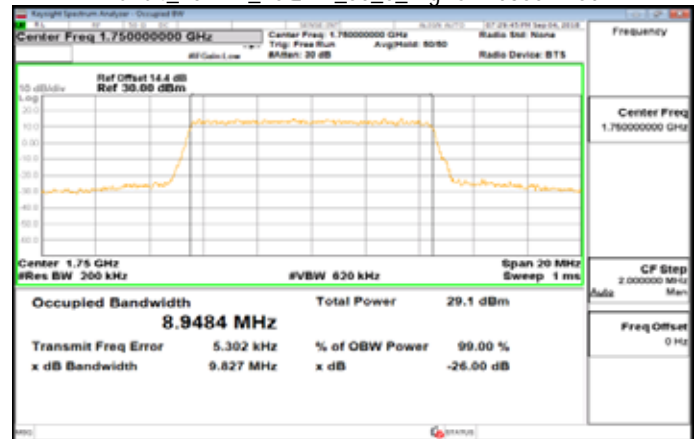
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Band4_10MHz_16QAM_50_0_HighCH20350-1750



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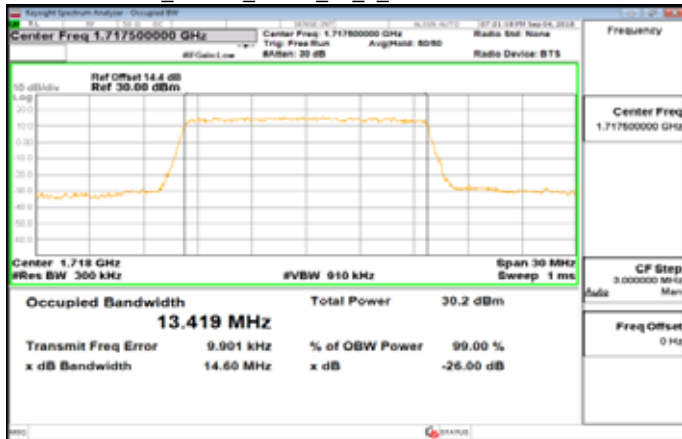
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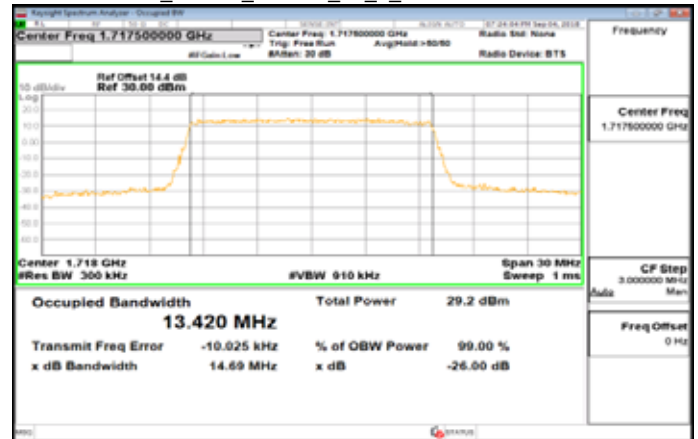
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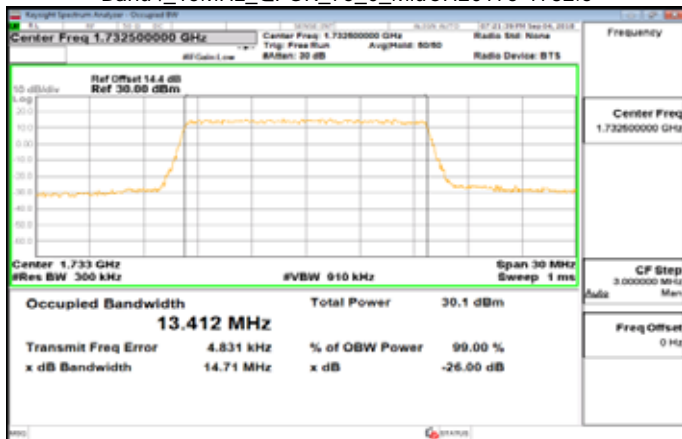
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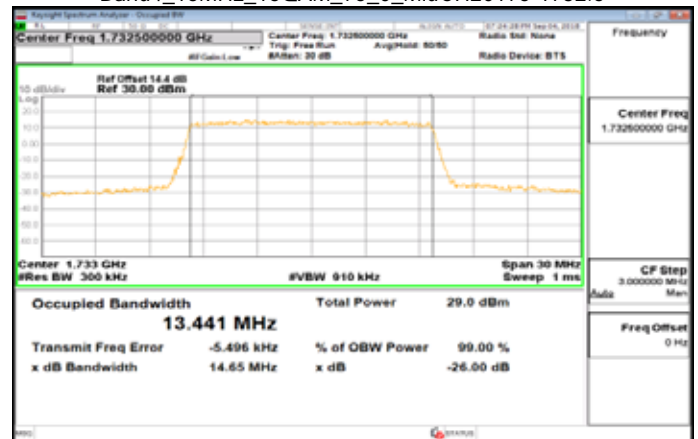
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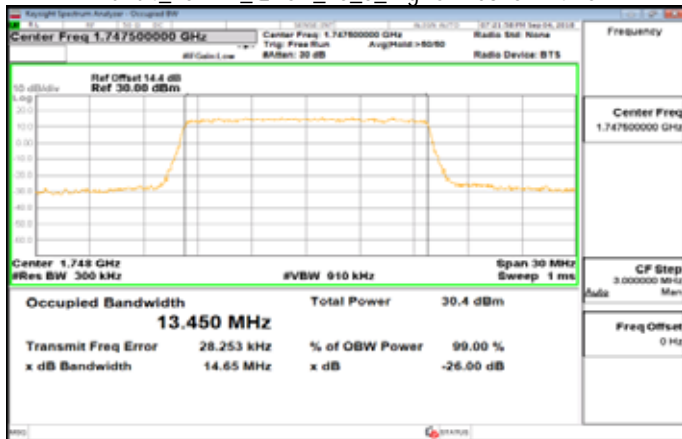
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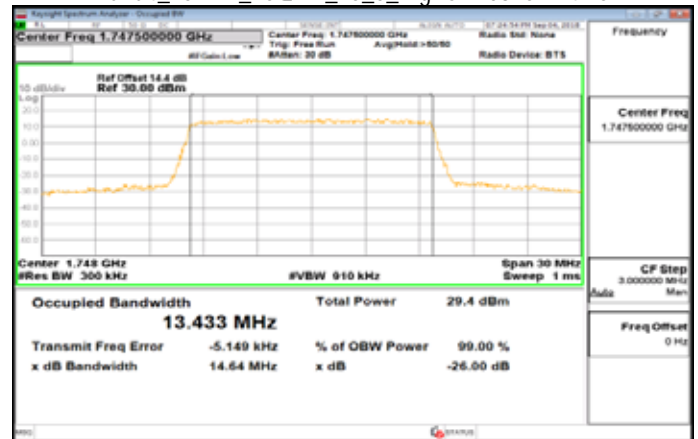
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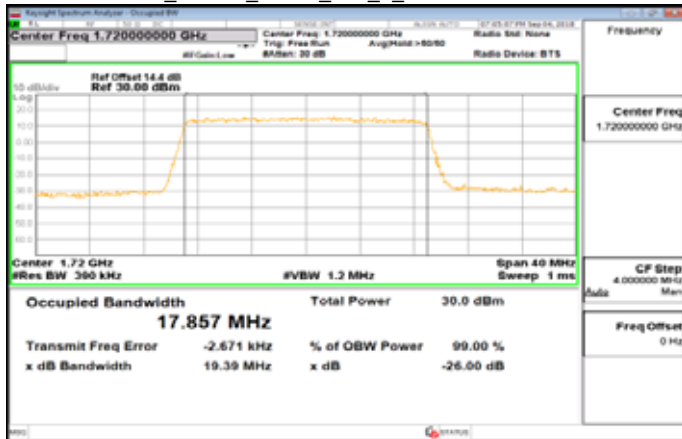
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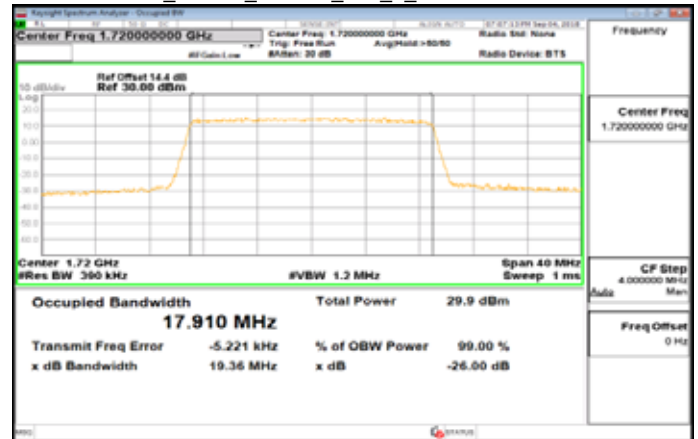
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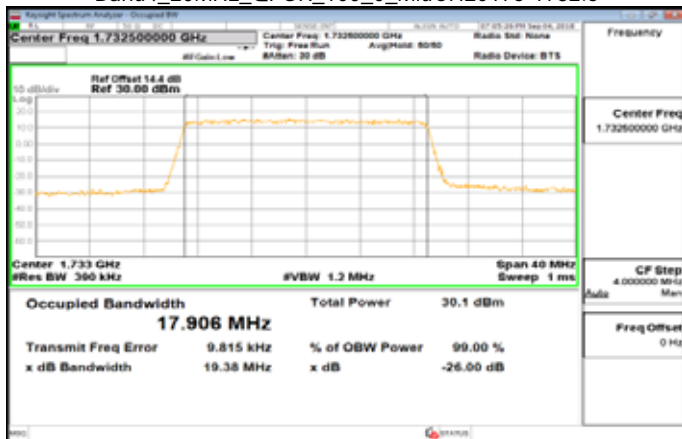
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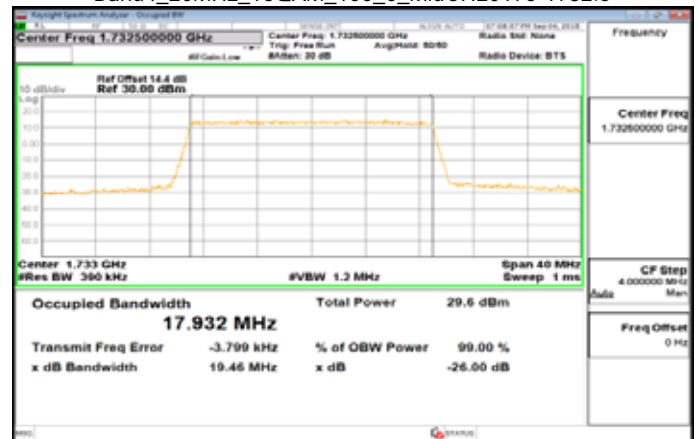
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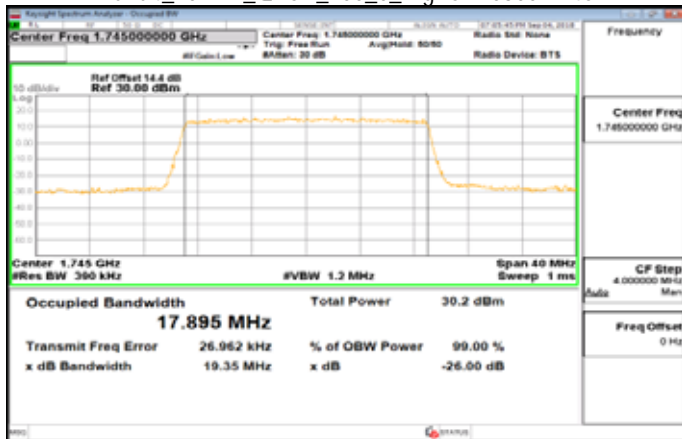
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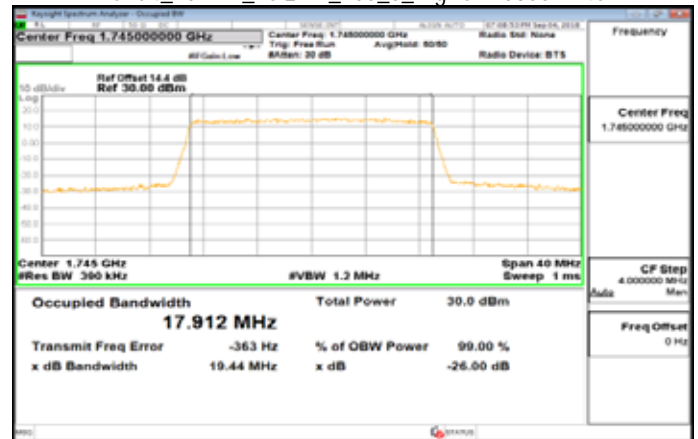
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Band4_20MHz_QPSK_100_0_HighCH20300-1745



Band4_20MHz_16QAM_100_0_HighCH20300-1745



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9. OUT OF BAND EMISSION AT ANTENNA TERMINALS

9.1. Standard Applicable

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

FCC §27.53(g)

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

FCC §27.53(h) (3)

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

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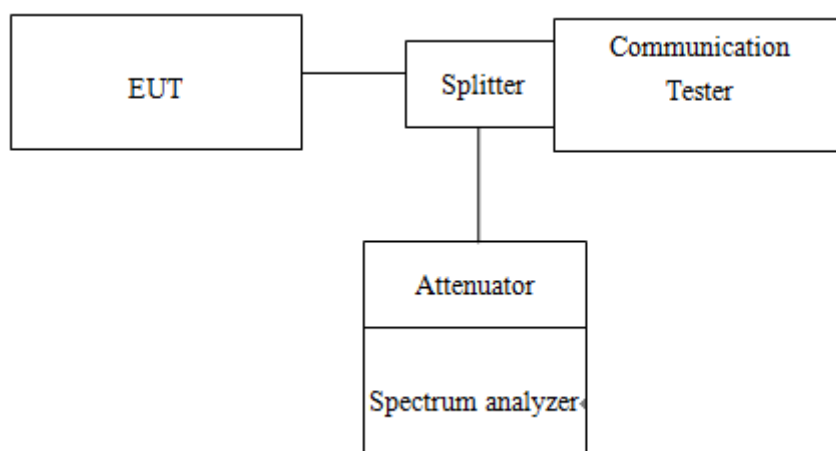
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FCC §27.53(m) (4)

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

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

9.2. Test SET-UP



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9.3. Measurement Procedure

Conducted Emission

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

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

Band Edge

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

9.4. Measurement Equipment Used

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
PXA Spectrum Analyzer	Agilent	N9030A	MY53120760	2018/04/09	2019/04/08
Radio Communication Analyser	Anritsu	MT8815B	6200711454	2018/04/05	2019/04/04
DC Power Supply	Anritsu	E3640A	MY52410006	2017/11/28	2018/11/27
Temperature Chamber	TERCHY	MHG-120LF	911009	2018/05/18	2019/05/17
Attenuator	Mini-Circuit	BW-S10W2+	2	2018/01/02	2019/01/01
Splitter	RF-LAMBDA	RFLT2W1G18G	11-JSPF412-018	2018/01/02	2019/01/01
Coaxial Cables	N/A	WK CE Cable	N/A	2018/01/02	2019/01/01

9.5. Measurement Result:

Refer to next pages.

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

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Band Edge
GSM_1900MHz_LowCH512-1850.2



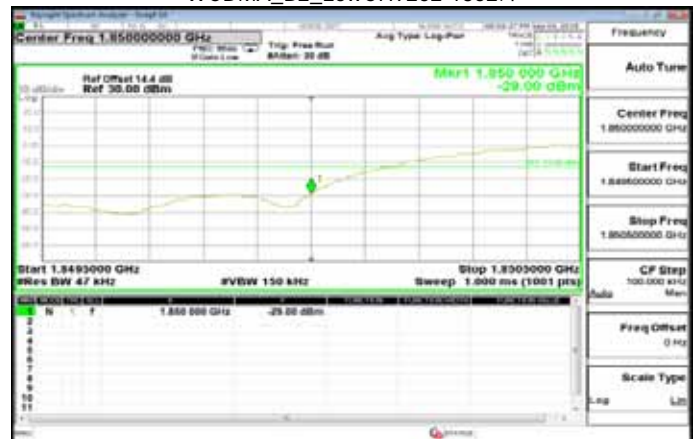
GPRS_1900MHz_HighCH810-1909.8



GSM_1900MHz_HighCH810-1909.8



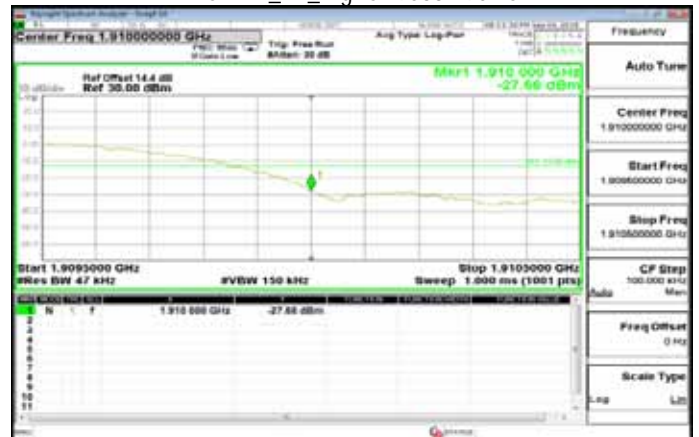
WCDMA_B2_LowCH9262-1852.4



GPRS_1900MHz_LowCH512-1850.2



WCDMA_B2_HighCH9538-1907.6



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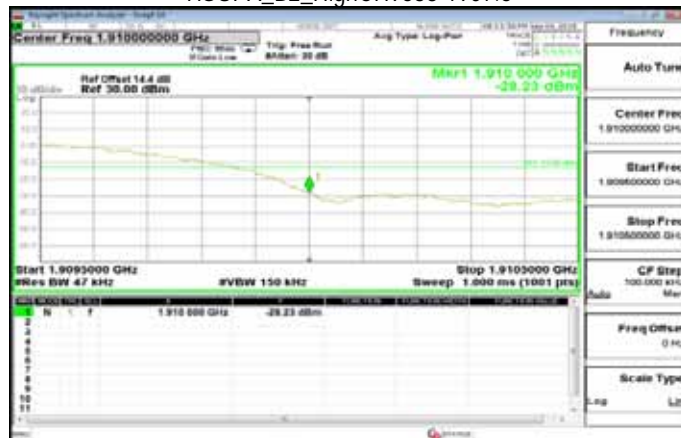
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HSDPA_B2_LowCH9262-1852.4



HSUPA_B2_HighCH9538-1907.6



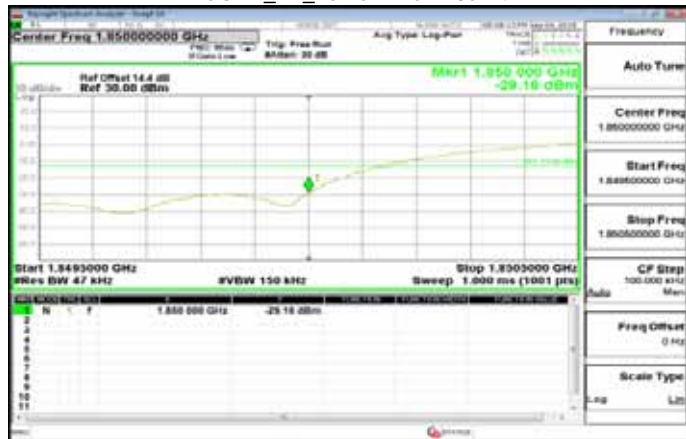
HSDPA_B2_HighCH9538-1907.6



WCDMA_B4_LowCH1312-1712.4



HSUPA_B2_LowCH9262-1852.4



WCDMA_B4_HighCH1513-1752.6



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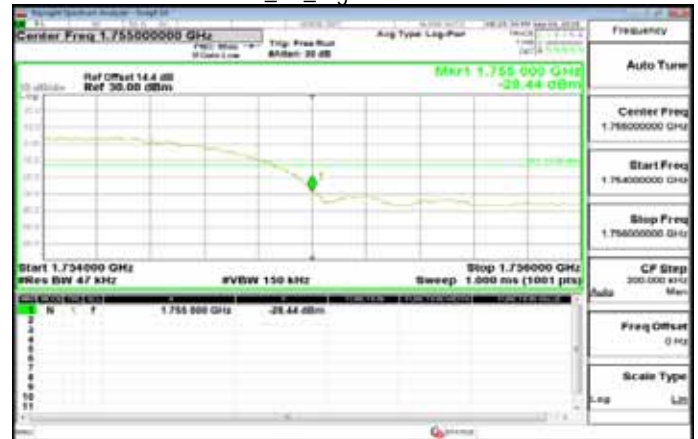
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HSDPA_B4_LowCH1312-1712.4



HSUPA_B4_HighCH1513-1752.6



HSDPA_B4_HighCH1513-1752.6



Band2_1_4MHz_QPSK_1_0_LowCH1867-1850.7



HSUPA_B4_LowCH1312-1712.4



Band2_1_4MHz_QPSK_1_5_HighCH1913-1909.3



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Band2_1_4MHz_QPSK_6_0_LowCH18607-1850.7



Band2_3MHz_QPSK_1_14_HighCH19185-1908.5



Band2_1_4MHz_QPSK_6_0_HighCH19193-1909.3



Band2_3MHz_QPSK_15_0_LowCH18615-1851.5



Band2_3MHz_QPSK_1_0_LowCH18615-1851.5



Band2_3MHz_QPSK_15_0_HighCH19185-1908.5



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Band2_5MHz_QPSK_1_0_LowCH18625-1852.5



Band2_5MHz_QPSK_25_0_HighCH19175-1907.5



Band2_5MHz_QPSK_1_24_HighCH19175-1907.5



Band2_10MHz_QPSK_1_0_LowCH18650-1855



Band2_5MHz_QPSK_25_0_LowCH18625-1852.5



Band2_10MHz_QPSK_1_49_HighCH19150-1905



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Band2_15MHz_QPSK_1_74_HighCH19125-1902.5



Band2_10MHz_QPSK_50_0_HighCH19150-1905



Band2_15MHz_QPSK_75_0_LowCH18675-1857.5



Band2_15MHz_QPSK_1_0_LowCH18675-1857.5



Band2_15MHz_QPSK_75_0_HighCH19125-1902.5



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Band2_20MHz_QPSK_100_0_HighCH19100-1900



Band2_20MHz_QPSK_1_99_HighCH19100-1900



Band4_1_4MHz_QPSK_1_0_LowCH19957-1710.7



Band2_20MHz_QPSK_100_0_LowCH18700-1860



Band4_1_4MHz_QPSK_1_5_HighCH20393-1754.3



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Band4_3MHz_QPSK_1_14_HighCH20385-1753.5



Band4_1_4MHz_QPSK_6_0_HighCH20393-1754.3



Band4_3MHz_QPSK_15_0_LowCH19965-1711.5



Band4_3MHz_QPSK_1_0_LowCH19965-1711.5



Band4_3MHz_QPSK_15_0_HighCH20385-1753.5



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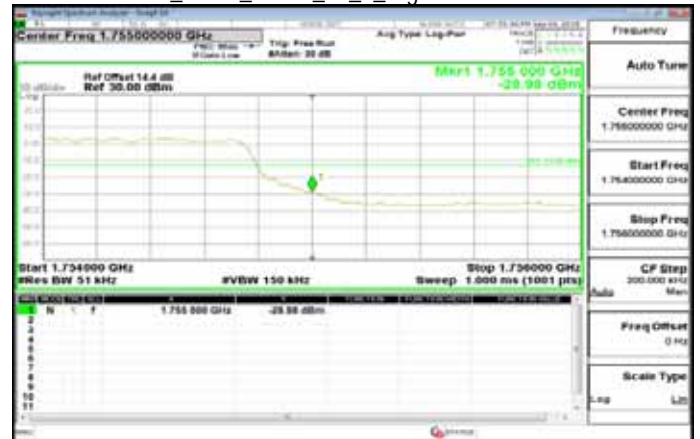
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Band4_5MHz_QPSK_25_0_HighCH20375-1752.5



Band4_5MHz_QPSK_1_24_HighCH20375-1752.5



Band4_10MHz_QPSK_1_0_LowCH20000-1715



Band4_5MHz_QPSK_25_0_LowCH19975-1712.5



Band4_10MHz_QPSK_1_49_HighCH20350-1750



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Band4_15MHz_QPSK_1_74_HighCH20325-1747.5



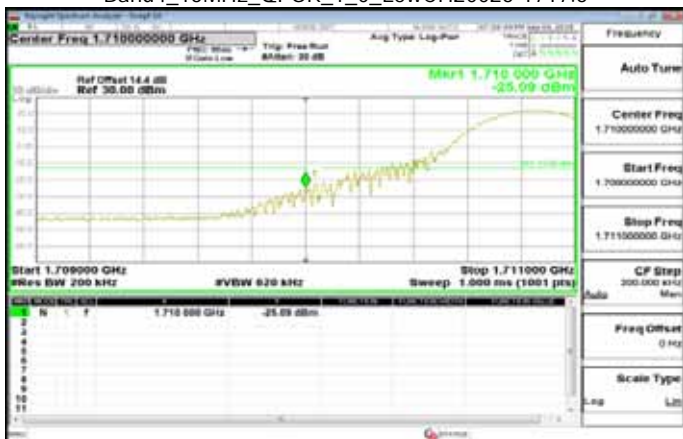
Band4_10MHz_QPSK_50_0_HighCH20350-1750



Band4_15MHz_QPSK_75_0_LowCH20025-1717.5



Band4_15MHz_QPSK_1_0_LowCH20025-1717.5



Band4_15MHz_QPSK_75_0_HighCH20325-1747.5



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