

**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  
Sharp Corporation

**Manufacturer:** 1 Takumi-cho, Sakai-ku, Sakai-Shi, Osaka 590-8522, Ja-  
pan

**Product Name:** Smart Phone

**Report Number:** ER/2018/30030

**FCC ID:** APYHRO00260

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

**Issue Date:** Apr. 11, 2018

**Date of Test:** Mar. 26, 2018(Conducted), Mar. 29, 2018(Radiated)

**Date of EUT Received:** Mar. 05, 2018

**We hereby certify that:**

The above equipment was tested by SGS Taiwan Ltd. Electronics & Communication Labor-  
atory 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 / Engineer**

**Approved By:**

*Jim Chang*

**Jim Chang / Asst. Manager**



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## Revision History

Report Number	Revision	Description	Effectuated Page	Issue Date	Revised By
ER/2018/30030	Rev.00	Initial creation of document	All	Apr. 11, 2018	Stefanie Yu / Clerk

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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	
	Battery:	Model No.: UBATIA286AFN2, Supplier: SHARP CORPORATION
IMEI:	004401116323961 / 004401116323763 / 004401116324449 004401116324365 / 004401116324209 / 004401116324753	

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

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

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

LTE Band	BW (MHz)	Operation Frequency (MHz)	LTE Band	BW (MHz)	Operation Frequency (MHz)
2	1.4	1850.7 - 1909.3	12	1.4	699.7 - 715.3
	3	1851.5 - 1908.5		3	700.5 - 714.5
	5	1852.5 - 1907.5		5	701.5 - 713.5
	10	1855.0 - 1905.0		10	704.0 - 711.0
	15	1857.5 - 1902.5	13	5	779.5 - 784.5
	20	1860.0 - 1900.0		10	782
4	1.4	1710.7 - 1754.3	17	5	706.5 - 713.5
	3	1711.5 - 1753.5		10	709.0 - 711.0
	5	1712.5 - 1752.5	38	5	2572.5 - 2617.5
	10	1715.0 - 1780.0		10	2575.0 - 2615.0
	15	1717.5 - 1747.5		15	2577.5 - 2612.5
	20	1720.0 - 1745.0		20	2580.0 - 2610.0
5	1.4	824.7 - 848.3			
	3	825.5 - 847.5			
	5	826.5 - 846.5			
	10	829.0 - 844.0			

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

	ERP / EIRP (dBm)	(W)	Type of Emission	
GSM 850	25.72	ERP	0.373	253KGXW
GPRS 850	26.01	ERP	0.399	<b>248KGXW</b>
GSM 1900	26.95	EIRP	0.495	253KGXW
GPRS 1900	<b>27.37</b>	EIRP	0.546	246KGXW

	ERP / EIRP (dBm)	(W)	Type of Emission	
WCDMA Band II	23.51	EIRP	0.224	4M13F9W
HSDPA Band II	<b>27.06</b>	EIRP	0.508	4M13F9W
HSUPA Band II	24.86	EIRP	0.306	<b>4M15F9W</b>
WCDMA Band IV	22.88	EIRP	0.194	4M13F9W
HSDPA Band IV	23.01	EIRP	0.200	4M14F9W
HSUPA Band IV	<b>23.03</b>	EIRP	0.201	4M12F9W
WCDMA Band V	24.74	ERP	0.298	4M12F9W
HSDPA Band V	<b>26.54</b>	ERP	0.451	4M14F9W
HSUPA Band V	25.32	ERP	0.340	4M13F9W

LTE Band	BW (MHz)	Modulation	ERP / EIRP (dBm)	(W)	Type of Emission	LTE Band	BW (MHz)	Modulation	ERP / EIRP (dBm)	(W)	Type of Emission		
2	1.4	QPSK	24.18	EIRP	0.262	1M09G7D	4	1.4	QPSK	22.43	EIRP	0.175	1M09G7D
	1.4	16QAM	24.37	EIRP	0.274	1M10W7D		1.4	16QAM	22.10	EIRP	0.162	1M10W7D
	1.4	64QAM	23.96	EIRP	0.249	1M10W7D		1.4	64QAM	21.38	EIRP	0.137	1M10W7D
	3	QPSK	24.03	EIRP	0.253	2M70G7D		3	QPSK	22.55	EIRP	0.180	2M70G7D
	3	16QAM	24.49	EIRP	0.281	2M70W7D		3	16QAM	22.37	EIRP	0.173	2M71W7D
	3	64QAM	23.34	EIRP	0.216	2M70W7D		3	64QAM	21.59	EIRP	0.144	2M70W7D
	5	QPSK	24.30	EIRP	0.269	4M50G7D		5	QPSK	21.89	EIRP	0.155	4M51G7D
	5	16QAM	24.60	EIRP	0.288	4M52W7D		5	16QAM	22.74	EIRP	0.188	4M50W7D
	5	64QAM	23.49	EIRP	0.223	4M51W7D		5	64QAM	21.49	EIRP	0.141	4M51W7D
	10	QPSK	23.74	EIRP	0.237	9M00G7D		10	QPSK	22.39	EIRP	0.173	8M99G7D
	10	16QAM	24.45	EIRP	0.279	8M98W7D		10	16QAM	22.52	EIRP	0.179	8M97W7D
	10	64QAM	23.17	EIRP	0.207	8M98W7D		10	64QAM	22.30	EIRP	0.170	8M97W7D
	15	QPSK	23.46	EIRP	0.222	13M5G7D		15	QPSK	22.98	EIRP	0.199	13M5G7D
	15	16QAM	23.58	EIRP	0.228	13M5W7D		15	16QAM	24.16	EIRP	0.261	13M5W7D
	15	64QAM	22.85	EIRP	0.193	13M5W7D		15	64QAM	22.75	EIRP	0.188	13M5W7D
	20	QPSK	23.28	EIRP	0.213	18M0G7D		20	QPSK	22.25	EIRP	0.168	17M9G7D
20	16QAM	24.48	EIRP	0.281	17M9W7D	20	16QAM	23.26	EIRP	0.212	18M0W7D		
20	64QAM	23.16	EIRP	0.207	18M0W7D	20	64QAM	22.17	EIRP	0.165	18M0W7D		

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LTE Band	BW (MHz)	Modulation	ERP / EIRP (dBm)	(W)	Type of Emission	LTE Band	BW (MHz)	Modulation	ERP / EIRP (dBm)	(W)	Type of Emission		
5	1.4	QPSK	18.19	ERP	0.066	1M09G7D	12	1.4	QPSK	22.61	ERP	0.182	1M10G7D
	1.4	16QAM	18.51	ERP	0.071	1M09W7D		1.4	16QAM	21.80	ERP	0.151	1M10W7D
	1.4	64QAM	18.07	ERP	0.064	1M09W7D		1.4	64QAM	21.17	ERP	0.131	1M10W7D
	3	QPSK	18.62	ERP	0.073	2M70G7D		3	QPSK	22.04	ERP	0.160	2M70G7D
	3	16QAM	19.10	ERP	0.081	2M71W7D		3	16QAM	22.99	ERP	0.199	2M71W7D
	3	64QAM	17.74	ERP	0.059	2M71W7D		3	64QAM	21.48	ERP	0.141	2M71W7D
	5	QPSK	19.73	ERP	0.094	4M51G7D		5	QPSK	22.53	ERP	0.179	4M51G7D
	5	16QAM	19.01	ERP	0.080	4M50W7D		5	16QAM	23.14	ERP	0.206	4M50W7D
	5	64QAM	18.53	ERP	0.071	4M51W7D		5	64QAM	22.13	ERP	0.163	4M51W7D
	10	QPSK	17.61	ERP	0.058	9M01G7D		10	QPSK	22.73	ERP	0.187	<b>9M03G7D</b>
	10	16QAM	19.37	ERP	0.086	8M96W7D		10	16QAM	22.63	ERP	0.183	8M98W7D
	10	64QAM	17.29	ERP	0.054	8M98W7D		10	64QAM	22.63	ERP	0.183	8M98W7D

LTE Band	BW (MHz)	Modulation	ERP / EIRP (dBm)	(W)	Type of Emission	
13	5	QPSK	21.57	ERP	0.144	4M51G7D
	5	16QAM	21.64	ERP	0.146	4M51W7D
	5	64QAM	21.33	ERP	0.136	4M50W7D
	10	QPSK	19.71	ERP	0.094	9M00G7D
	10	16QAM	19.95	ERP	0.099	8M95W7D
	10	64QAM	19.49	ERP	0.089	8M97W7D

LTE Band	BW (MHz)	Modulation	ERP / EIRP (dBm)	(W)	Type of Emission	LTE Band	BW (MHz)	Modulation	ERP / EIRP (dBm)	(W)	Type of Emission		
17	5	QPSK	21.95	ERP	0.157	4M50G7D	38	5	QPSK	23.35	EIRP	0.216	4M51G7D
	5	16QAM	22.33	ERP	0.171	4M52W7D		5	16QAM	23.00	EIRP	0.200	4M50W7D
	5	64QAM	21.39	ERP	0.138	4M50W7D		5	64QAM	22.45	EIRP	0.176	4M51W7D
	10	QPSK	21.54	ERP	0.143	9M00G7D		10	QPSK	23.70	EIRP	0.234	9M00G7D
	10	16QAM	21.99	ERP	0.158	8M99W7D		10	16QAM	23.71	EIRP	0.235	8M96W7D
	10	64QAM	20.58	ERP	0.114	8M98W7D		10	64QAM	23.61	EIRP	0.230	8M98W7D
						15		QPSK	23.34	EIRP	0.216	13M5G7D	
						15		16QAM	23.72	EIRP	0.236	13M5W7D	
						15		64QAM	22.42	EIRP	0.175	13M5W7D	
						20		QPSK	23.08	EIRP	0.203	17M9G7D	
						20		16QAM	23.46	EIRP	0.222	17M9W7D	
						20		64QAM	23.12	EIRP	0.189	17M9W7D	

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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)	11.2	10	21.2
High Band (Above 1 GHz)	11.6	10	21.6

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

Test Mode	DC voltage (V)	DC current (mA)
GPRS 850	3.85	0.7
GSM 1900		0.61
WCDMA B2		0.65
HSUPA B2		0.65
WCDMA B4		0.65
HSDPA B4		0.65
HSDPA B5		0.75
LTE Band 2		0.75
LTE Band 4		0.75
LTE Band 5		0.75
LTE Band 12		0.71
LTE Band 13		0.69
LTE Band 17		0.74
LTE Band 38		0.74

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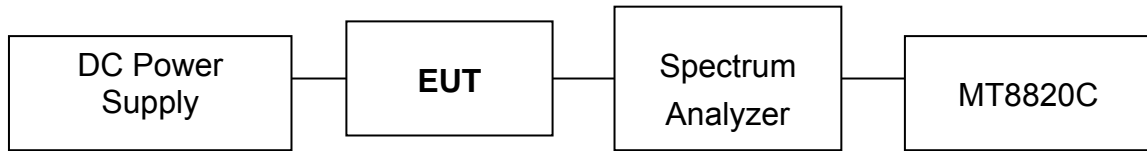
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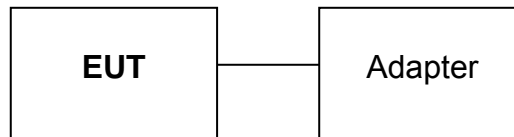
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## 2.6. Configuration of Tested System

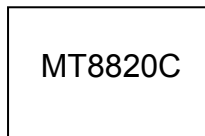
**Fig. 2-1 Configuration of Tested System (Fixed Channel-Conducted)**



**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(h) §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(h) §27.53(m)(4)	Field Strength of Spurious Radiation	Compliant
§24.232(d) §27.53(d) (5) §27.50(i) (B)	Peak to Average Ratio	Compliant
§2.1055(a)(1) §22.355 §24.235 §27.54	Frequency Stability	Compliant

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## 4. DESCRIPTION OF TEST MODES

### 4.1. The Worst Test Modes and Channel Details

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

BAND	ERP/EIRP	RADIATED EMISSION
GSM/GPRS 850	H-plan	H-plan
GSM/GPRS 1900	H-plan	H-plan
WCDMA/HSPA Band II	H-plan	H-plan
WCDMA/HSPA Band IV	H-plan	H-plan
WCDMA/HSPA Band V	H-plan	H-plan
LTE Band 2	H-plan	H-plan
LTE Band 4	H-plan	H-plan
LTE Band 5	H-plan	H-plan
LTE Band 12	H-plan	H-plan
LTE Band 13	H-plan	H-plan
LTE Band 17	H-plan	H-plan
LTE Bnad 38	H-plan	H-plan

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## GSM/GPRS MODE

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

## WCDMA/HSPA MODE

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
ERP	4132 to 4233	4132, 4183, 4233	WCDMA/HSPA Band V
EIRP	9262 to 9538 1312 to 1513	9262, 9400, 9583 1312, 1413, 1513	WCDMA/HSPA Band II WCDMA/HSPA Band IV
FREQUENCY STABILITY	4132 to 4233 1312 to 1513 9262 to 9538	4183 1413 9400	WCDMA Band II WCDMA Band IV WCDMA Band V
OCCUPIED BANDWIDTH	4132 to 4233 1312 to 1513 9262 to 9538	4132, 4183, 4233 1312, 1413, 1513 9262, 9400, 9583	WCDMA/HSPA Band II WCDMA/HSPA Band IV WCDMA/HSPA Band V
PEAK TO AVERAGE RATIO	4132 to 4233 1312 to 1513 9262 to 9538	4132, 4183, 4233 1312, 1413, 1513 9262, 9400, 9583	WCDMA/HSPA Band II WCDMA/HSPA Band IV WCDMA/HSPA Band V
BAND EDGE	4132 to 4233 1312 to 1513 9262 to 9538	4132, 4233 1312, 1513 9262, 9583	WCDMA Band II WCDMA Band IV WCDMA Band V
CONDCUDED EMISSION	4132 to 4233 1312 to 1513 9262 to 9538	4132, 4183, 4233 1312, 1413, 1513 9262, 9400, 9583	WCDMA Band II WCDMA Band IV WCDMA Band V
RADIATED EMISSION	4132 to 4233 1312 to 1513 9262 to 9538	4132, 4183, 4233 1312, 1413, 1513 9262, 9400, 9583	HSUPA Band II WCDMA Band IV WCDMA Band V

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**LTE Band 2 MODE**

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
EIRP	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK, 16QAM	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	18607 to 19193	18607, 18900, 19193	5MHz	16QAM	1 RB, 24 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	20050 to 20300	20050, 20175, 20300	15MHz	16QAM	1 RB, 74 RB Offest

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**LTE Band 5 MODE**

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

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**LTE Band 12 MODE**

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

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### LTE Band 13 MODE

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

### LTE Band 17 MODE

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

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**LTE Band 38 MODE**

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
EIRP	37775 to 38225	37775, 38000, 38225	5MHz	QPSK, 16QAM	1 RB/ 0,24 RB Offest
	37800 to 38200	37800 , 38000, 38200	10MHz	QPSK, 16QAM	1 RB/ 0,49 RB Offest
	37825 to 38175	37825 , 38000, 38175	15MHz	QPSK, 16QAM	1 RB/ 0,74 RB Offest
	37850 to 38150	37850 , 38000, 38150	20MHz	QPSK, 16QAM	1 RB/ 0,99 RB Offest
FREQUENCY STABILITY	37800 to 38200	37800 , 38000, 38200	10MHz	QPSK	Full RB
OCCUPIED BAND-WIDTH	37775 to 38225	37775, 38000, 38225	5MHz	QPSK, 16QAM	Full RB
	37800 to 38200	37800 , 38000, 38200	10MHz	QPSK, 16QAM	Full RB
	37825 to 38175	37825 , 38000, 38175	15MHz	QPSK, 16QAM	Full RB
	37850 to 38150	37850 , 38000, 38150	20MHz	QPSK, 16QAM	Full RB
PEAK TO AVERAGE RATIO	37775 to 38225	37775, 38000, 38225	5MHz	16QAM	Full RB
	37800 to 38200	37800 , 38000, 38200	10MHz	16QAM	Full RB
	37825 to 38175	37825 , 38000, 38175	15MHz	16QAM	Full RB
	37850 to 38150	37850 , 38000, 38150	20MHz	16QAM	Full RB
BAND EDGE	37775 to 38225	37775, 38000, 38225	5MHz	QPSK	1 RB/ 0,24 RB Offest Full RB
	37800 to 38200	37800 , 38000, 38200	10MHz	QPSK	1 RB/ 0,49 RB Offest Full RB
	37825 to 38175	37825 , 38000, 38175	15MHz	QPSK	1 RB/ 0,74 RB Offest Full RB
	37850 to 38150	37850 , 38000, 38150	20MHz	QPSK	1 RB/ 0,99 RB Offest Full RB
CONDCUDED EMISSION	37775 to 38225	37775, 38000, 38225	5MHz	QPSK	1 RB, 0 RB Offest
	37800 to 38200	37800 , 38000, 38200	10MHz	QPSK	1 RB, 0 RB Offest
	37825 to 38175	37825 , 38000, 38175	15MHz	QPSK	1 RB, 0 RB Offest
	37850 to 38150	37850 , 38000, 38150	20MHz	QPSK	1 RB, 0 RB Offest
RADIATED EMISSION	37825 to 38175	37825 , 38000, 38175	15MHz	16QAM	1 RB, 74 RB Offest
EMISSION MASK	37775 to 38225	37775, 38000, 38225	5MHz	QPSK	1 RB/ 0,24 RB Offest 25 RB/ 0 Offset
	37800 to 38200	37800 , 38000, 38200	10MHz	QPSK	1 RB/ 0,49 RB Offest 50 RB/ 0 Offset
	37825 to 38175	37825 , 38000, 38175	15MHz	QPSK	1 RB/ 0,74 RB Offest 75 RB/ 0 Offset
	37850 to 38150	37850 , 38000, 38150	10MHz	16QAM	1 RB/ 0 RB Offest

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## 5. MEASUREMENT UNCERTAINTY

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

### Radiated Spurious Emission:

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

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

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

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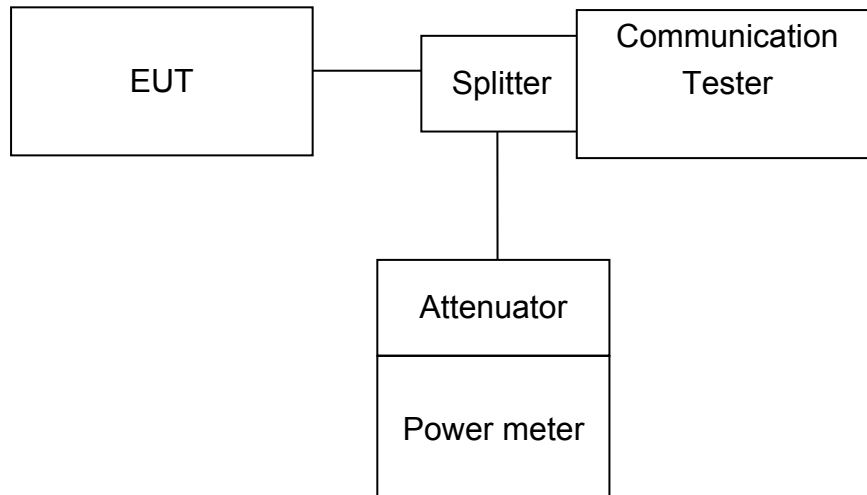
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## 6. RF CONDUCTED OUTPUT POWER MEASUREMENT

### 6.1. Standard Applicable

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

### 6.2. Test Set-up



**Note:** Measurement setup for testing on Antenna connector

### 6.3. Measurement Procedure

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

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

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#### 6.4. Measurement Equipment Used

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Radio Communication Analyer	Anritsu	MT8820C	6201465317	2018/01/17	2019/01/16
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

#### 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	Avg. Power (dBm)
GSM 850	824.2	128	32.11
	836.6	190	32.1
	848.8	251	32.03
GSM 1900	1850.2	512	29.32
	1880.0	661	29.08
	1909.8	810	29.37

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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 850	824.2	128	32.11	30.1	29.25	28.34
	836.6	190	32.1	30.08	29.28	28.4
	848.8	251	32.03	30	29.22	28.33
GPRS 1900	1850.2	512	29.32	27.04	24.99	24.26
	1880.0	661	29.08	26.73	24.78	24.01
	1909.8	810	29.37	27.09	25.07	24.29

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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:**

BNAD V	Avg. Power (dBm)		
	Channel		
	4132	4183	4233
WCDMA	23.23	23.22	23.14
HSDPA	22.29	22.22	22.15
HSUPA	22.23	22.19	22.21

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**LTE Result:**

LTE Band 2_Uplink frequency band : 1850 to 1910 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power (dBm)								
			QPSK			16QAM			64QAM		
			CH (Low) 18607	CH (Mid) 18900	CH (High) 19193	CH (Low) 18607	CH (Mid) 18900	CH (High) 19193	CH (Low) 18607	CH (Mid) 18900	CH (High) 19193
1.4	1	0	22.16	22.00	22.10	21.06	21.06	21.17	20.03	20.14	20.01
	1	5	22.06	22.12	22.10	21.13	21.04	21.18	20.16	20.18	20.20
	3	2	21.90	21.85	21.84	20.80	20.82	20.94	19.89	19.84	19.88
	6	0	21.06	21.17	21.07	20.14	20.10	20.09	19.09	19.07	19.20

LTE Band 2_Uplink frequency band : 1850 to 1910 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power (dBm)								
			QPSK			16QAM			64QAM		
			CH (Low) 18615	CH (Mid) 18900	CH (High) 19185	CH (Low) 18615	CH (Mid) 18900	CH (High) 19185	CH (Low) 18615	CH (Mid) 18900	CH (High) 19185
3	1	0	22.14	22.17	22.12	21.08	21.00	21.14	20.10	20.11	20.14
	1	14	22.11	22.17	22.08	21.15	21.18	21.02	20.10	20.15	20.03
	8	4	21.61	21.58	21.59	20.43	20.55	20.54	19.69	19.60	19.70
	15	0	21.14	21.07	21.14	20.18	20.15	20.01	19.16	19.05	19.18

LTE Band 2_Uplink frequency band : 1850 to 1910 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power (dBm)								
			QPSK			16QAM			64QAM		
			CH (Low) 18625	CH (Mid) 18900	CH (High) 19175	CH (Low) 18625	CH (Mid) 18900	CH (High) 19175	CH (Low) 18625	CH (Mid) 18900	CH (High) 19175
5	1	0	22.11	22.02	22.07	21.02	21.08	21.03	20.02	20.15	20.00
	1	24	22.17	22.01	22.03	21.08	21.01	21.11	20.14	20.12	20.01
	12	6	21.70	21.54	21.47	20.44	20.49	20.49	19.55	19.58	19.62
	25	0	21.12	21.04	21.07	20.17	20.03	20.13	19.12	19.08	19.10

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LTE Band 2_Uplink frequency band : 1850 to 1910 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power (dBm)								
			QPSK			16QAM			64QAM		
			CH (Low) 18650	CH (Mid) 18900	CH (High) 19150	CH (Low) 18650	CH (Mid) 18900	CH (High) 19150	CH (Low) 18650	CH (Mid) 18900	CH (High) 19150
10	1	0	22.07	22.11	22.10	21.09	21.19	21.17	20.12	20.10	20.10
	1	49	22.16	22.16	<b>22.17</b>	<b>21.20</b>	21.02	21.05	<b>20.15</b>	20.09	20.09
	25	12	21.69	21.47	21.66	20.62	20.53	20.49	19.63	19.44	19.66
	50	0	21.07	21.06	21.13	20.10	20.04	20.05	19.10	19.16	19.20

LTE Band 2_Uplink frequency band : 1850 to 1910 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power (dBm)								
			QPSK			16QAM			64QAM		
			CH (Low) 18675	CH (Mid) 18900	CH (High) 19125	CH (Low) 18675	CH (Mid) 18900	CH (High) 19125	CH (Low) 18675	CH (Mid) 18900	CH (High) 19125
15	1	0	22.16	22.15	22.08	21.10	21.07	21.01	<b>20.15</b>	20.10	20.09
	1	74	<b>22.18</b>	22.04	22.15	21.09	<b>21.19</b>	21.07	20.09	20.08	20.11
	36	19	21.44	21.57	21.55	20.46	20.53	20.40	19.69	19.41	19.61
	75	0	21.17	21.01	21.05	20.01	20.05	20.18	19.14	19.01	19.03

LTE Band 2_Uplink frequency band : 1850 to 1910 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power (dBm)								
			QPSK			16QAM			64QAM		
			CH (Low) 18700	CH (Mid) 18900	CH (High) 19100	CH (Low) 18700	CH (Mid) 18900	CH (High) 19100	CH (Low) 18700	CH (Mid) 18900	CH (High) 19100
20	1	0	22.10	22.12	<b>22.15</b>	21.07	21.04	21.08	20.12	20.04	20.01
	1	99	22.10	22.03	22.01	21.13	21.05	<b>21.16</b>	20.06	20.04	<b>20.13</b>
	50	25	21.55	21.41	21.41	20.48	20.53	20.53	19.48	19.50	19.58
	100	0	21.04	21.03	21.00	20.04	20.09	20.20	19.08	19.15	19.18

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LTE Band 4_Uplink frequency band : 1710 to 1755 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power (dBm)								
			QPSK			16QAM			64QAM		
			CH (Low) 19957	CH (Mid) 20175	CH (High) 20393	CH (Low) 19957	CH (Mid) 20175	CH (High) 20393	CH (Low) 19957	CH (Mid) 20175	CH (High) 20393
1.4	1	0	22.13	22.11	22.17	21.06	21.19	21.06	20.04	20.11	20.14
	1	5	22.01	22.12	22.11	21.00	21.11	21.03	20.05	20.09	20.00
	3	2	21.85	21.90	21.82	20.88	20.92	20.83	19.92	19.98	19.95
	6	0	21.02	21.16	21.05	20.02	20.17	20.03	19.19	19.05	19.10

LTE Band 4_Uplink frequency band : 1710 to 1755 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power (dBm)								
			QPSK			16QAM			64QAM		
			CH (Low) 19965	CH (Mid) 20175	CH (High) 20385	CH (Low) 19965	CH (Mid) 20175	CH (High) 20385	CH (Low) 19965	CH (Mid) 20175	CH (High) 20385
3	1	0	22.13	22.03	22.03	21.08	21.08	21.06	20.11	20.19	20.16
	1	14	22.02	22.16	22.03	21.16	21.01	21.06	20.14	20.13	20.19
	8	4	21.51	21.63	21.37	20.53	20.36	20.63	19.45	19.43	19.47
	15	0	21.09	21.19	21.09	20.08	20.02	20.14	19.03	19.19	19.04

LTE Band 4_Uplink frequency band : 1710 to 1755 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power (dBm)								
			QPSK			16QAM			64QAM		
			CH (Low) 19975	CH (Mid) 20175	CH (High) 20375	CH (Low) 19975	CH (Mid) 20175	CH (High) 20375	CH (Low) 19975	CH (Mid) 20175	CH (High) 20375
5	1	0	22.04	22.10	22.16	21.07	21.07	21.12	20.11	20.13	20.18
	1	24	22.14	22.13	22.11	21.04	21.01	21.03	20.06	20.07	20.12
	12	6	21.48	21.65	21.62	20.57	20.68	20.49	19.59	19.61	19.50
	25	0	21.11	21.20	21.18	20.02	20.13	20.06	19.17	19.05	19.18

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LTE Band 4_Uplink frequency band : 1710 to 1755 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power (dBm)								
			QPSK			16QAM			64QAM		
			CH (Low) 20000	CH (Mid) 20175	CH (High) 20350	CH (Low) 20000	CH (Mid) 20175	CH (High) 20350	CH (Low) 20000	CH (Mid) 20175	CH (High) 20350
10	1	0	22.15	22.01	22.15	21.03	21.08	21.01	20.20	20.09	20.04
	1	49	22.03	22.08	22.12	21.06	21.12	21.13	20.16	20.10	20.13
	25	12	21.60	21.45	21.59	20.42	20.25	20.21	19.56	19.64	19.53
	50	0	21.13	21.05	21.11	20.09	20.20	20.08	19.16	19.00	19.13

LTE Band 4_Uplink frequency band : 1710 to 1755 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power (dBm)								
			QPSK			16QAM			64QAM		
			CH (Low) 20025	CH (Mid) 20175	CH (High) 20325	CH (Low) 20025	CH (Mid) 20175	CH (High) 20325	CH (Low) 20025	CH (Mid) 20175	CH (High) 20325
15	1	0	22.05	22.09	22.05	21.00	21.16	21.07	20.15	20.06	20.07
	1	74	22.05	22.14	22.17	21.17	21.04	21.05	20.11	20.14	20.13
	36	19	21.61	21.67	21.54	20.66	20.59	20.35	19.60	19.38	19.48
	75	0	21.05	21.07	21.19	20.14	20.13	20.05	19.13	19.01	19.09

LTE Band 4_Uplink frequency band : 1710 to 1755 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power (dBm)								
			QPSK			16QAM			64QAM		
			CH (Low) 20050	CH (Mid) 20175	CH (High) 20300	CH (Low) 20050	CH (Mid) 20175	CH (High) 20300	CH (Low) 20050	CH (Mid) 20175	CH (High) 20300
20	1	0	22.02	22.12	22.10	20.20	21.19	21.01	20.10	20.07	20.06
	1	99	22.09	22.07	22.13	21.04	21.10	21.14	20.18	20.14	20.04
	50	25	21.46	21.48	21.60	20.66	20.50	20.55	19.50	19.66	19.45
	100	0	21.00	21.17	21.14	20.09	20.15	20.07	19.09	19.19	19.16

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LTE Band 5_Uplink frequency band : 824 to 849 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power (dBm)								
			QPSK			16QAM			64QAM		
			CH (Low) 20407	CH (Mid) 20525	CH (High) 20643	CH (Low) 20407	CH (Mid) 20525	CH (High) 20643	CH (Low) 20407	CH (Mid) 20525	CH (High) 20643
1.4	1	0	<b>23.98</b>	23.86	23.87	22.91	22.94	22.84	<b>21.99</b>	21.88	21.90
	1	5	23.81	23.84	<b>23.98</b>	22.82	<b>22.98</b>	22.96	21.93	21.94	21.91
	3	2	23.70	23.72	23.62	22.71	22.77	22.66	21.62	21.77	21.78
	6	0	22.84	22.93	22.88	21.80	21.92	21.84	20.96	20.88	20.84

LTE Band 5_Uplink frequency band : 824 to 849 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power (dBm)								
			QPSK			16QAM			64QAM		
			CH (Low) 20415	CH (Mid) 20525	CH (High) 20635	CH (Low) 20415	CH (Mid) 20525	CH (High) 20635	CH (Low) 20415	CH (Mid) 20525	CH (High) 20635
3	1	0	23.85	23.87	<b>23.90</b>	22.91	22.89	<b>22.92</b>	21.87	21.82	21.84
	1	14	23.85	23.80	23.83	22.82	22.90	22.82	21.89	21.95	<b>21.97</b>
	8	4	23.27	23.43	23.33	22.34	22.37	22.39	21.43	21.38	21.39
	15	0	22.93	22.82	22.86	21.95	21.93	21.91	20.89	20.97	20.90

LTE Band 5_Uplink frequency band : 824 to 849 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power (dBm)								
			QPSK			16QAM			64QAM		
			CH (Low) 20425	CH (Mid) 20525	CH (High) 20625	CH (Low) 20425	CH (Mid) 20525	CH (High) 20625	CH (Low) 20425	CH (Mid) 20525	CH (High) 20625
5	1	0	23.89	23.88	23.89	22.99	22.90	<b>23.00</b>	21.89	21.89	21.83
	1	24	23.93	23.92	<b>23.96</b>	22.90	22.96	22.93	21.84	<b>21.99</b>	21.91
	12	6	23.38	23.33	23.40	22.41	22.25	22.23	21.24	21.47	21.50
	25	0	23.00	22.83	22.98	21.97	21.91	21.86	20.82	20.81	20.87

LTE Band 5_Uplink frequency band : 824 to 849 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power (dBm)								
			QPSK			16QAM			64QAM		
			CH (Low) 20450	CH (Mid) 20525	CH (High) 20600	CH (Low) 20450	CH (Mid) 20525	CH (High) 20600	CH (Low) 20450	CH (Mid) 20525	CH (High) 20600
10	1	0	23.92	<b>23.98</b>	23.91	<b>22.95</b>	22.88	22.87	21.91	21.83	21.81
	1	49	23.92	23.87	23.84	22.91	22.92	22.80	<b>21.97</b>	21.83	21.87
	25	12	23.47	23.29	23.43	22.49	22.42	22.26	21.41	21.29	21.39
	50	0	22.94	22.88	22.90	21.97	21.99	21.95	20.91	20.96	20.92

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LTE Band 12_Uplink frequency band : 699 to 716 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power (dBm)								
			QPSK			16QAM			64QAM		
			CH (Low) 23017	CH (Mid) 23095	CH (High) 23173	CH (Low) 23017	CH (Mid) 23095	CH (High) 23173	CH (Low) 23017	CH (Mid) 23095	CH (High) 23173
1.4	1	0	22.82	22.84	22.89	21.85	21.88	21.90	20.92	20.91	20.81
	1	5	22.84	22.95	<b>22.96</b>	21.93	<b>21.94</b>	21.85	20.85	20.93	<b>20.99</b>
	3	2	22.79	22.74	22.69	21.77	21.72	21.68	20.79	20.76	20.60
	6	0	21.91	21.94	21.89	20.93	20.91	20.80	19.87	19.99	20.00

LTE Band 12_Uplink frequency band : 699 to 716 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power (dBm)								
			QPSK			16QAM			64QAM		
			CH (Low) 23025	CH (Mid) 23095	CH (High) 23165	CH (Low) 23025	CH (Mid) 23095	CH (High) 23165	CH (Low) 23025	CH (Mid) 23095	CH (High) 23165
3	1	0	22.94	<b>22.97</b>	22.93	21.82	<b>21.98</b>	<b>21.98</b>	20.93	<b>20.98</b>	20.91
	1	14	22.85	22.96	22.96	21.82	21.89	21.96	20.84	20.94	20.81
	8	4	22.33	22.33	22.46	21.20	21.29	21.41	20.35	20.19	20.47
	15	0	21.80	21.85	21.94	20.82	20.81	20.83	19.95	19.95	19.93

LTE Band 12_Uplink frequency band : 699 to 716 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power (dBm)								
			QPSK			16QAM			64QAM		
			CH (Low) 23035	CH (Mid) 23095	CH (High) 23155	CH (Low) 23035	CH (Mid) 23095	CH (High) 23155	CH (Low) 23035	CH (Mid) 23095	CH (High) 23155
5	1	0	22.92	22.91	22.86	21.84	21.80	21.90	20.94	20.97	20.93
	1	24	<b>22.95</b>	22.83	22.85	21.84	<b>21.91</b>	21.88	20.96	<b>20.99</b>	20.85
	12	6	22.35	22.45	22.23	21.26	21.47	21.24	20.35	20.26	20.20
	25	0	21.87	21.84	21.88	20.89	20.82	20.95	19.91	19.88	19.91

LTE Band 12_Uplink frequency band : 699 to 716 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power (dBm)								
			QPSK			16QAM			64QAM		
			CH (Low) 23060	CH (Mid) 23095	CH (High) 23130	CH (Low) 23060	CH (Mid) 23095	CH (High) 23130	CH (Low) 23060	CH (Mid) 23095	CH (High) 23130
10	1	0	22.89	22.82	<b>22.98</b>	21.94	21.88	21.86	20.87	20.91	20.86
	1	49	22.88	22.84	<b>22.98</b>	21.85	<b>21.96</b>	21.89	<b>21.00</b>	20.81	20.88
	25	12	22.32	22.29	22.42	21.39	21.42	21.35	20.37	20.33	20.47
	50	0	22.00	21.89	21.99	20.85	20.94	20.91	19.94	19.99	19.96

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LTE Band 13_Uplink frequency band : 777 to 787 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power (dBm)								
			QPSK			16QAM			64QAM		
			CH (Low) 23205	CH (Mid) 23230	CH (High) 23255	CH (Low) 23205	CH (Mid) 23230	CH (High) 23255	CH (Low) 23205	CH (Mid) 23230	CH (High) 23255
5	1	0	22.81	22.89	22.87	<b>21.99</b>	21.86	21.87	<b>20.99</b>	20.95	20.97
	1	24	<b>22.94</b>	22.83	22.90	21.91	21.86	<b>21.99</b>	<b>20.99</b>	20.91	20.96
	12	6	22.42	22.49	22.32	21.24	21.42	21.40	20.41	20.39	20.37
	25	0	21.84	21.88	21.84	20.93	20.85	20.81	19.93	19.93	19.81

LTE Band 13_Uplink frequency band : 777 to 787 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power (dBm)								
			QPSK			16QAM			64QAM		
			CH (Mid) 23230			CH (Mid) 23230			CH (Mid) 23230		
10	1	0	<b>22.96</b>			<b>21.94</b>			<b>20.68</b>		
	1	49	22.87			21.80			20.67		
	25	12	22.41			21.22			20.36		
	50	0	21.86			20.62			19.89		

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LTE Band 17_Uplink frequency band : 704 to 716 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power (dBm)								
			QPSK			16QAM			64QAM		
			CH (Low) 23755	CH (Mid) 23790	CH (High) 23825	CH (Low) 23755	CH (Mid) 23790	CH (High) 23825	CH (Low) 23755	CH (Mid) 23790	CH (High) 23825
5	1	0	22.80	22.81	22.88	<b>21.95</b>	21.88	21.88	20.87	20.88	20.88
	1	24	22.82	22.80	<b>22.91</b>	21.83	21.91	21.89	<b>20.99</b>	<b>20.99</b>	20.96
	12	6	22.48	22.40	22.37	21.40	21.14	21.39	20.38	20.29	20.43
	25	0	21.82	21.89	21.88	20.82	20.84	20.87	19.86	19.82	19.90

LTE Band 17_Uplink frequency band : 704 to 716 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power (dBm)								
			QPSK			16QAM			64QAM		
			CH (Low) 23780	CH (Mid) 23790	CH (High) 23800	CH (Low) 23780	CH (Mid) 23790	CH (High) 23800	CH (Low) 23780	CH (Mid) 23790	CH (High) 23800
10	1	0	22.91	<b>22.98</b>	22.92	21.91	<b>21.99</b>	21.84	20.88	20.85	20.85
	1	49	22.97	22.82	22.97	21.93	21.86	21.97	20.94	20.98	<b>21.00</b>
	25	12	22.37	22.37	22.29	21.40	21.40	21.49	20.43	20.29	20.50
	50	0	21.83	21.83	21.95	20.91	20.97	20.88	19.82	19.87	19.80

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LTE Band 38_Uplink frequency band : 2570 to 2620 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power (dBm)								
			QPSK			16QAM			64QAM		
			CH (Low) 37775	CH (Mid) 38000	CH (High) 38225	CH (Low) 37775	CH (Mid) 38000	CH (High) 38225	CH (Low) 37775	CH (Mid) 38000	CH (High) 38225
5	1	0	22.80	<b>22.95</b>	22.88	21.98	<b>21.99</b>	21.95	20.80	<b>20.93</b>	20.80
	1	24	22.82	22.91	22.81	21.88	21.82	21.91	20.90	20.89	20.92
	12	6	22.17	22.50	22.41	21.32	21.23	21.22	20.48	20.36	20.28
	25	0	21.82	21.90	21.87	20.85	20.99	20.81	19.91	19.85	19.94

LTE Band 38_Uplink frequency band : 2570 to 2620 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power (dBm)								
			QPSK			16QAM			64QAM		
			CH (Low) 37800	CH (Mid) 38000	CH (High) 38200	CH (Low) 37800	CH (Mid) 38000	CH (High) 38200	CH (Low) 37800	CH (Mid) 38000	CH (High) 38200
10	1	0	22.90	22.80	22.81	21.86	21.87	21.93	20.92	20.97	<b>20.98</b>
	1	49	22.87	22.88	<b>22.98</b>	<b>21.97</b>	21.82	21.81	20.89	20.89	20.90
	25	12	22.39	22.34	22.33	21.50	21.38	21.36	20.48	20.29	20.31
	50	0	21.90	21.82	21.94	20.97	20.83	20.98	19.90	19.89	19.81

LTE Band 38_Uplink frequency band : 2570 to 2620 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power (dBm)								
			QPSK			16QAM			64QAM		
			CH (Low) 37825	CH (Mid) 38000	CH (High) 38175	CH (Low) 37825	CH (Mid) 38000	CH (High) 38175	CH (Low) 37825	CH (Mid) 38000	CH (High) 38175
15	1	0	22.89	22.94	22.91	21.93	21.87	21.83	20.95	20.88	20.98
	1	74	22.91	22.87	<b>22.96</b>	21.90	21.84	<b>21.98</b>	20.83	20.90	20.87
	36	19	22.39	22.41	22.43	21.32	21.17	21.30	20.99	<b>21.00</b>	20.86
	75	0	21.90	21.85	21.81	20.91	20.98	20.81	20.43	20.45	20.42

LTE Band 38_Uplink frequency band : 2570 to 2620 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power (dBm)								
			QPSK			16QAM			64QAM		
			CH (Low) 37850	CH (Mid) 38000	CH (High) 38150	CH (Low) 37850	CH (Mid) 38000	CH (High) 38150	CH (Low) 37850	CH (Mid) 38000	CH (High) 38150
20	1	0	22.90	<b>22.99</b>	22.91	<b>21.97</b>	21.86	21.83	20.95	20.82	20.84
	1	99	22.97	22.98	<b>22.99</b>	21.90	21.91	21.87	<b>20.96</b>	20.90	20.83
	50	25	22.41	22.29	22.49	21.30	21.21	21.33	20.22	20.27	20.34
	100	0	21.84	21.94	21.80	20.85	20.83	20.82	19.87	19.97	19.80

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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:  $\beta$  values for transmitter characteristics tests with HS-DPCCH(FOR HSDPA)

Sub-test	$\beta_c$	$\beta_d$	$\beta_d$ (SF)	$\beta_c/\beta_d$	$\beta_{HS}$ (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) Channel			Power Class 3 Limitation (dBm)	Comments
		9262	9400	9538		
HSDPA II	1	22.44	22.35	22.32	20.3dBm – 25.7dBm	Pass
	2	22.43	22.33	22.30	20.3dBm – 25.7dBm	Pass
	3	21.98	21.97	21.77	19.8dBm – 25.7dBm	Pass
	4	21.97	21.90	21.79	19.8dBm – 25.7dBm	Pass

Mode	Sub test	Avg. Power (dBm) Channel			Power Class 3 Limitation (dBm)	Comments
		1312	1413	1513		
HSDPA IV	1	22.72	22.66	22.53	20.3dBm – 25.7dBm	Pass
	2	22.71	22.65	22.52	20.3dBm – 25.7dBm	Pass
	3	22.18	22.06	21.94	19.8dBm – 25.7dBm	Pass
	4	22.20	22.03	21.91	19.8dBm – 25.7dBm	Pass

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### HSPA (HSDPA & HSUPA) Release 6 MODE

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

#### HSPA SUB-TEST Setting

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

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

#### Results:

Mode	Sub test	Avg. Power (dBm) Channel			Power Class 3 Limitation (dBm)	Comments
		9262	9400	9538		
HSUPA II	1	22.55	<b>22.40</b>	22.25	18.8dBm – 25.7dBm	Pass
	2	21.89	21.92	21.77	16.8dBm – 25.7dBm	Pass
	3	22.48	22.41	22.33	17.8dBm – 25.7dBm	Pass
	4	22.19	22.18	22.16	16.8dBm – 25.7dBm	Pass
	5	22.56	22.46	22.26	18.8dBm – 25.7dBm	Pass

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Mode	Sub test	Avg. Power (dBm) Channel			Power Class 3 Limitation (dBm)	Comments
		1312	1413	1513		
HSDPA IV	1	22.73	22.57	<b>22.43</b>	20.3dBm – 25.7dBm	Pass
	2	22.15	22.07	21.90	20.3dBm – 25.7dBm	Pass
	3	22.70	22.52	22.44	19.8dBm – 25.7dBm	Pass
	4	22.19	22.20	22.15	19.8dBm – 25.7dBm	Pass
	5	22.75	22.61	22.45	19.8dBm – 25.7dBm	Pass

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## Minimum Communications Power Measurement

### PCS 1900 band

PCL	0	1	2	3	4	5	6	7	8
Output power (dBm)	29.36	27.21	25.34	23.61	21.12	19.55	17.87	15.24	13.45

PCL	9	10	11	12	13	14	15
Output power (dBm)	11.74	9.62	7.33	5.12	3.4	1.66	-0.98

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

### WCDMA/HSDPA/HSUPA band V

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

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

### 7.1. Standard Applicable

According to FCC §2.1046

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

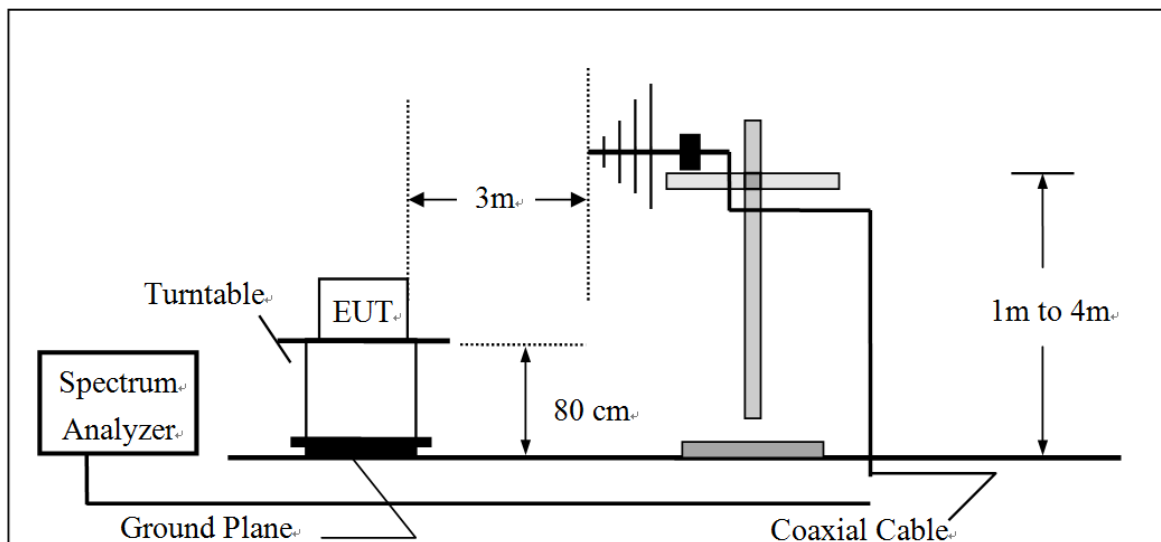
FCC 24.232(b) Mobile and portable stations are limited to 2W EIRP.

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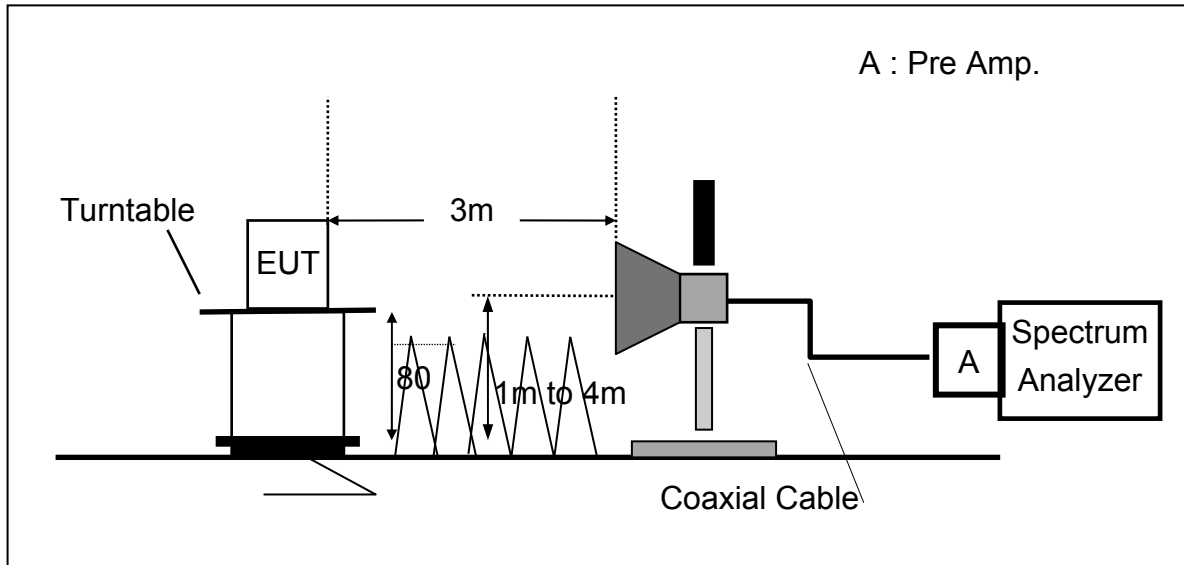
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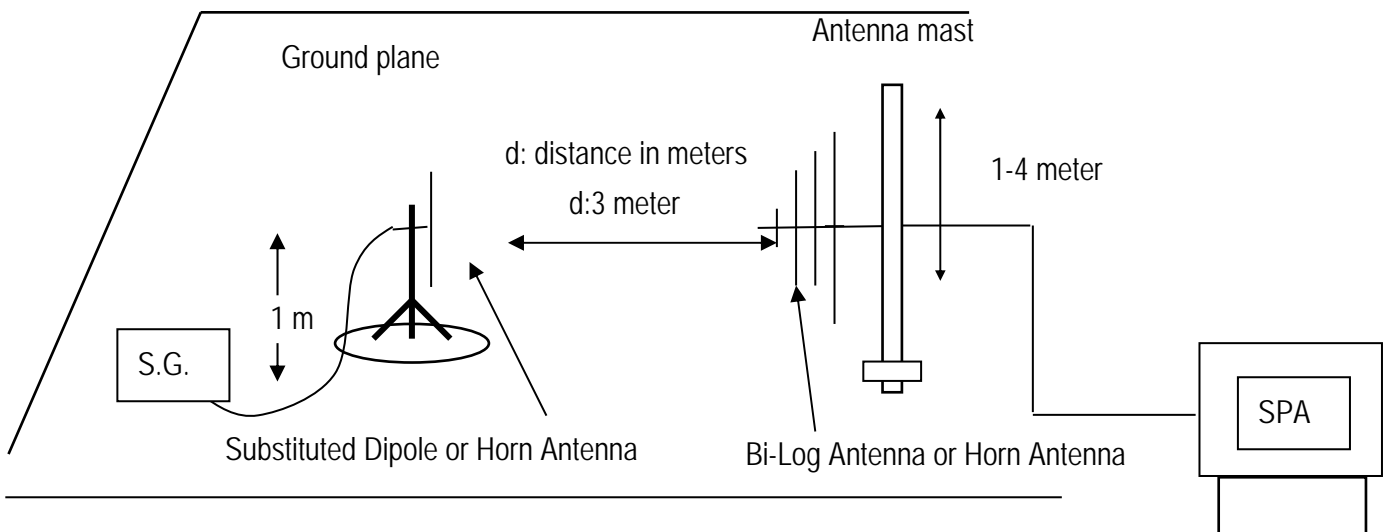
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(B) Radiated Power Test Set-UP Frequency Over 1 GHz



(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  $VBW > 3 \times RBW$ .
  - (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
Bi-log Antenna	SCHWAZBECK	VULB9168	300	2017/12/20	2018/12/19
Horn Antenna	Schwarzbeck	BBHA9120D	309	2018/01/04	2019/01/03
Horn Antenna	Schwarzbeck	BBHA9120D	1441	2017/08/04	2018/08/03
Spectrum Analyzer	Agilent	E4446A	MY51100003	2017/05/10	2018/05/09
EMI Test Receiver	R&S	ESCI7	100760	2017/06/06	2018/06/05
Network Analyzer	Anritsu	MS4644A	1216312	2017/05/25	2018/05/24
Radio Communication Analyer	Anritsu	MT8820C	6201465317	2018/01/15	2019/01/14
Pre-Amplifier	HP	8449B	3008A00578	2018/01/02	2019/01/01
Pre-Amplifier	HP	8447D	2944A07676	2018/01/02	2019/01/01
Attenuator	Mini-Circuit	BW-S10W2+	N/A	2018/01/02	2019/01/01
Filter 800-1000	Micro-Tronics	EWT	M1	2018/01/02	2019/01/01
1GHz High Pass Filter	Micro-Tronics	HPM50108	32	2018/01/02	2019/01/01
Low Loss Cable	Huber Suhner	966_RX	9	2018/01/02	2019/01/01
Low Loss Cable	Huber Suhner	966 TX	1	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	ERP	Limit
	MHz		V/H	dBm	dBd	dB	dBm	dBm
GSM 850	824.2	128	V	24.57	3.31	-2.92	24.95	38.45
			H	24.51	3.31	-2.92	24.9	38.45
	836.6	190	V	25.4	3.29	-2.96	25.72	38.45
			H	25.36	3.29	-2.96	25.68	38.45
	848.8	251	V	24.02	3.27	-3	24.28	38.45
			H	24.71	3.27	-3	24.98	38.45
GPRS 850	824.2	128	V	23.86	3.31	-2.92	24.24	38.45
			H	24.33	3.31	-2.92	24.71	38.45
	836.6	190	V	25.24	3.29	-2.96	25.56	38.45
			H	25.65	3.29	-2.96	25.97	38.45
	848.8	251	V	24.26	3.27	-3	24.52	38.45
			H	25.75	3.27	-3	26.01	38.45

EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dB <sub>i</sub>	dB	dBm	dBm
GSM 1900	1850.2	512	V	15.28	9.94	-4.46	20.76	33.00
			H	19.69	9.94	-4.46	25.17	33.00
	1880.0	661	V	16.29	10.03	-4.51	21.82	33.00
			H	21.43	10.03	-4.51	26.95	33.00
	1909.8	810	V	13.13	10.13	-4.55	18.7	33.00
			H	16.04	10.13	-4.55	21.62	33.00
GPRS 1900	1850.2	512	V	17.7	9.94	-4.46	23.18	33.00
			H	20.79	9.94	-4.46	26.27	33.00
	1880.0	661	V	17.09	10.03	-4.51	22.62	33.00
			H	21.85	10.03	-4.51	27.37	33.00
	1909.8	810	V	14.53	10.13	-4.55	20.1	33.00
			H	20.07	10.13	-4.55	25.65	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	16.85	9.94	-4.46	22.33	33.00
			H	18.03	9.95	-4.46	23.51	33.00
	1880.0	9400	V	9.42	10.03	-4.51	14.95	33.00
			H	19.98	10.03	-4.51	25.5	33.00
	1907.6	9538	V	10.58	10.12	-4.55	16.15	33.00
			H	17.31	10.12	-4.55	22.88	33.00
HSDPA Band II	1852.4	9262	V	19.19	9.94	-4.46	24.67	33.00
			H	20.92	9.95	-4.46	26.41	33.00
	1880.0	9400	V	14.11	10.04	-4.51	19.63	33.00
			H	21.54	10.04	-4.51	27.06	33.00
	1907.6	9538	V	15.56	10.12	-4.55	21.14	33.00
			H	19.54	10.12	-4.55	25.11	33.00
HSUPA Band II	1852.4	9262	V	17.83	9.95	-4.46	23.32	33.00
			H	19.38	9.95	-4.46	24.86	33.00
	1880.0	9400	V	12.1	10.03	-4.51	17.63	33.00
			H	20.28	10.03	-4.51	25.81	33.00
	1907.6	9538	V	11.59	10.12	-4.55	17.16	33.00
			H	18.47	10.12	-4.55	24.04	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	15.69	9.48	-4.31	20.86	30.00
			H	15.58	9.48	-4.31	20.76	30.00
	1732.6	1413	V	16.44	9.55	-4.31	21.69	30.00
			H	17.21	9.55	-4.31	22.45	30.00
	1752.6	1513	V	16.93	9.62	-4.33	22.21	30.00
			H	18.84	9.62	-4.33	22.88	30.00
HSDPA Band IV	1712.4	1312	V	16.07	9.48	-4.31	21.24	30.00
			H	15.77	9.48	-4.31	20.94	30.00
	1732.6	1413	V	15.34	9.55	-4.31	20.58	30.00
			H	17.29	9.55	-4.31	22.53	30.00
	1752.6	1513	V	15.58	9.62	-4.34	20.86	30.00
			H	17.72	9.62	-4.34	23.01	30.00
HSUPA Band IV	1712.4	1312	V	16.49	9.49	-4.31	21.66	30.00
			H	17.57	9.48	-4.31	22.74	30.00
	1732.6	1413	V	14.9	9.55	-4.31	20.14	30.00
			H	16.98	9.55	-4.31	22.22	30.00
	1752.6	1513	V	16.32	9.62	-4.34	21.6	30.00
			H	17.74	9.62	-4.34	23.03	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	ERP	Limit
	MHz		V/H	dBm	dBd	dB	dBm	dBm
WCDMA Band V	826.4	4132	V	16.31	9.94	-4.46	21.79	38.45
			H	17.45	9.95	-4.46	22.94	38.45
	836.6	4183	V	9.36	10.03	-4.51	14.88	38.45
			H	19.22	10.03	-4.51	24.74	38.45
	846.6	4233	V	9.61	10.12	-4.55	15.18	38.45
			H	16.34	10.12	-4.55	21.91	38.45
HSDPA Band V	826.4	4132	V	19.07	9.94	-4.46	24.55	38.45
			H	20.53	9.95	-4.46	26.02	38.45
	836.6	4183	V	13.59	10.04	-4.51	19.12	38.45
			H	20.98	10.04	-4.51	26.51	38.45
	846.6	4233	V	14.62	10.12	-4.55	20.19	38.45
			H	19.49	10.12	-4.55	25.06	38.45
HSUPA Band V	826.4	4132	V	17.06	9.95	-4.46	22.55	38.45
			H	18.91	9.95	-4.46	24.4	38.45
	836.6	4183	V	12.06	10.03	-4.51	17.58	38.45
			H	19.8	10.03	-4.51	25.32	38.45
	846.6	4233	V	11.08	10.12	-4.55	16.65	38.45
			H	18.39	10.12	-4.55	23.96	38.45

**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
LTE BAND 2 BW: 1.4M QPSK RB: 1,0	1850.7	18607	V	19.05	9.77	-4.67	24.15	33.01
			H	13.95	9.77	-4.67	19.05	33.01
	1880.0	18900	V	18.77	9.85	-4.69	23.93	33.01
			H	13.66	9.85	-4.69	18.82	33.01
	1909.3	19193	V	17.33	9.94	-4.72	22.55	33.01
			H	12.52	9.94	-4.72	17.74	33.01
LTE BAND 2 BW: 1.4M QPSK RB: 1,5	1850.7	18607	V	19.07	9.77	-4.66	24.18	33.01
			H	12.53	9.77	-4.66	17.64	33.01
	1880.0	18900	V	17.46	9.85	-4.7	22.61	33.01
			H	13.69	9.85	-4.7	18.84	33.01
	1909.3	19193	V	16.92	9.94	-4.72	22.14	33.01
			H	12.97	9.94	-4.72	18.19	33.01
LTE BAND 2 BW: 1.4M 16QAM RB: 1,0	1850.7	18607	V	18.48	9.77	-4.67	23.58	33.01
			H	13.73	9.77	-4.67	18.83	33.01
	1880.0	18900	V	17.72	9.85	-4.69	22.88	33.01
			H	13.16	9.85	-4.69	18.32	33.01
	1909.3	19193	V	17.48	9.94	-4.72	22.7	33.01
			H	12.92	9.94	-4.72	18.14	33.01
LTE BAND 2 BW: 1.4M 16QAM RB: 1,5	1850.7	18607	V	19.26	9.77	-4.66	24.37	33.01
			H	12.82	9.77	-4.66	17.93	33.01
	1880.0	18900	V	17.58	9.85	-4.7	22.73	33.01
			H	12.76	9.85	-4.69	17.92	33.01
	1909.3	19193	V	18.18	9.94	-4.72	23.4	33.01
			H	13.28	9.94	-4.72	18.5	33.01
LTE BAND 2 BW: 1.4M 64QAM RB: 1,0	1850.7	18607	V	18.37	9.77	-4.67	23.47	33.01
			H	13.68	9.77	-4.67	18.78	33.01
	1880.0	18900	V	18.55	9.85	-4.69	23.71	33.01
			H	13.44	9.85	-4.69	18.6	33.01
	1909.3	19193	V	16.41	9.94	-4.72	21.63	33.01
			H	11.98	9.94	-4.72	17.2	33.01
LTE BAND 2 BW: 1.4M 64QAM RB: 1,5	1850.7	18607	V	18.85	9.77	-4.66	23.96	33.01
			H	12.08	9.77	-4.66	17.19	33.01
	1880.0	18900	V	16.95	9.85	-4.7	22.1	33.01
			H	12.78	9.85	-4.7	17.93	33.01
	1909.3	19193	V	16.2	9.94	-4.72	21.42	33.01
			H	12.43	9.94	-4.72	17.65	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	18.93	9.77	-4.67	24.03	33.01
			H	12.48	9.77	-4.67	17.58	33.01
	1880.0	18900	V	18.34	9.85	-4.69	23.5	33.01
			H	13.25	9.85	-4.69	18.41	33.01
	1908.5	19185	V	16.76	9.93	-4.72	21.97	33.01
			H	12.71	9.93	-4.72	17.92	33.01
LTE BAND 2 BW: 3M QPSK RB: 1,14	1851.5	18615	V	18.43	9.77	-4.67	23.53	33.01
			H	13.61	9.77	-4.66	18.72	33.01
	1880.0	18900	V	17.52	9.85	-4.7	22.67	33.01
			H	13.96	9.85	-4.7	19.11	33.01
	1908.5	19185	V	17.59	9.94	-4.72	22.81	33.01
			H	13.21	9.94	-4.72	18.43	33.01
LTE BAND 2 BW: 3M 16QAM RB: 1,0	1851.5	18615	V	18.87	9.77	-4.67	23.97	33.01
			H	14.27	9.77	-4.67	19.37	33.01
	1880.0	18900	V	18.24	9.85	-4.69	23.4	33.01
			H	12.89	9.85	-4.69	18.05	33.01
	1908.5	19185	V	17.3	9.93	-4.72	22.51	33.01
			H	12.68	9.93	-4.72	17.89	33.01
LTE BAND 2 BW: 3M 16QAM RB: 1,14	1851.5	18615	V	19.38	9.77	-4.66	24.49	33.01
			H	13.6	9.77	-4.67	18.7	33.01
	1880.0	18900	V	18.26	9.85	-4.7	23.41	33.01
			H	13.13	9.86	-4.7	18.29	33.01
	1908.5	19185	V	17.8	9.94	-4.72	23.02	33.01
			H	14.13	9.94	-4.72	19.35	33.01
LTE BAND 2 BW: 3M 64QAM RB: 1,0	1851.5	18615	V	18.17	9.77	-4.67	23.27	33.01
			H	12.18	9.77	-4.67	17.28	33.01
	1880.0	18900	V	18.18	9.85	-4.69	23.34	33.01
			H	12.82	9.85	-4.69	17.98	33.01
	1908.5	19185	V	16.15	9.93	-4.72	21.36	33.01
			H	12.02	9.93	-4.72	17.23	33.01
LTE BAND 2 BW: 3M 64QAM RB: 1,14	1851.5	18615	V	18.24	9.77	-4.67	23.34	33.01
			H	13.07	9.77	-4.66	18.18	33.01
	1880.0	18900	V	16.77	9.85	-4.7	21.92	33.01
			H	13.26	9.85	-4.7	18.41	33.01
	1908.5	19185	V	16.53	9.94	-4.72	21.75	33.01
			H	12.73	9.94	-4.72	17.95	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	19.2	9.77	-4.67	24.3	33.01
			H	12.35	9.77	-4.67	17.45	33.01
	1880.0	18900	V	18.15	9.84	-4.69	23.3	33.01
			H	13.14	9.84	-4.69	18.29	33.01
	1907.5	19175	V	16.31	9.93	-4.72	21.52	33.01
			H	11.76	9.93	-4.72	16.97	33.01
LTE BAND 2 BW: 5M QPSK RB: 1,24	1852.5	18625	V	17.95	9.78	-4.67	23.06	33.01
			H	13.88	9.77	-4.67	18.98	33.01
	1880.0	18900	V	17.48	9.86	-4.7	22.64	33.01
			H	13.03	9.86	-4.7	18.19	33.01
	1907.5	19175	V	17.3	9.94	-4.72	22.52	33.01
			H	12.66	9.94	-4.72	17.88	33.01
LTE BAND 2 BW: 5M 16QAM RB: 1,0	1852.5	18625	V	19.46	9.77	-4.67	24.56	33.01
			H	13.36	9.77	-4.67	18.46	33.01
	1880.0	18900	V	17.74	9.84	-4.69	22.89	33.01
			H	12.22	9.84	-4.69	17.37	33.01
	1907.5	19175	V	16.75	9.93	-4.72	21.96	33.01
			H	11.24	9.93	-4.72	16.45	33.01
LTE BAND 2 BW: 5M 16QAM RB: 1,24	1852.5	18625	V	19.49	9.78	-4.67	24.6	33.01
			H	13.21	9.78	-4.67	18.32	33.01
	1880.0	18900	V	17.76	9.86	-4.7	22.92	33.01
			H	13.78	9.86	-4.7	18.94	33.01
	1907.5	19175	V	17.29	9.94	-4.72	22.51	33.01
			H	13.8	9.94	-4.72	19.02	33.01
LTE BAND 2 BW: 5M 64QAM RB: 1,0	1852.5	18625	V	18.39	9.77	-4.67	23.49	33.01
			H	12.34	9.77	-4.67	17.44	33.01
	1880.0	18900	V	17.5	9.84	-4.69	22.65	33.01
			H	12.74	9.84	-4.69	17.89	33.01
	1907.5	19175	V	15.7	9.93	-4.72	20.91	33.01
			H	11.63	9.93	-4.72	16.84	33.01
LTE BAND 2 BW: 5M 64QAM RB: 1,24	1852.5	18625	V	17.27	9.78	-4.67	22.38	33.01
			H	12.92	9.77	-4.67	18.02	33.01
	1880.0	18900	V	16.77	9.86	-4.7	21.93	33.01
			H	12.33	9.86	-4.7	17.49	33.01
	1907.5	19175	V	17.12	9.94	-4.72	22.34	33.01
			H	12.07	9.94	-4.72	17.29	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	17.42	9.77	-4.67	22.52	33.01
			H	12.85	9.77	-4.67	17.95	33.01
	1880.0	18900	V	17.44	9.84	-4.69	22.59	33.01
			H	12.35	9.84	-4.69	17.5	33.01
	1905.0	19150	V	16.35	9.91	-4.71	21.55	33.01
			H	12.52	9.91	-4.71	17.72	33.01
LTE BAND 2 BW: 10M QPSK RB: 1,49	1855.0	18650	V	18.62	9.79	-4.67	23.74	33.01
			H	12.93	9.79	-4.67	18.05	33.01
	1880.0	18900	V	17.31	9.86	-4.7	22.47	33.01
			H	13.62	9.86	-4.7	18.78	33.01
	1905.0	19150	V	16.83	9.94	-4.72	22.05	33.01
			H	12.2	9.94	-4.72	17.42	33.01
LTE BAND 2 BW: 10M 16QAM RB: 1,0	1855.0	18650	V	19.35	9.77	-4.67	24.45	33.01
			H	12.67	9.77	-4.67	17.77	33.01
	1880.0	18900	V	16.62	9.84	-4.69	21.77	33.01
			H	11.69	9.84	-4.69	16.84	33.01
	1905.0	19150	V	16.01	9.91	-4.71	21.21	33.01
			H	12.87	9.91	-4.71	18.07	33.01
LTE BAND 2 BW: 10M 16QAM RB: 1,49	1855.0	18650	V	19.27	9.79	-4.67	24.39	33.01
			H	13.36	9.79	-4.67	18.48	33.01
	1880.0	18900	V	19.01	9.86	-4.7	24.17	33.01
			H	13.91	9.86	-4.7	19.07	33.01
	1905.0	19150	V	17.13	9.94	-4.72	22.35	33.01
			H	13.71	9.94	-4.72	18.93	33.01
LTE BAND 2 BW: 10M 64QAM RB: 1,0	1855.0	18650	V	17.12	9.77	-4.67	22.22	33.01
			H	11.99	9.77	-4.67	17.09	33.01
	1880.0	18900	V	16.66	9.84	-4.69	21.81	33.01
			H	12.01	9.84	-4.69	17.16	33.01
	1905.0	19150	V	16.16	9.91	-4.71	21.36	33.01
			H	12.26	9.91	-4.71	17.46	33.01
LTE BAND 2 BW: 10M 64QAM RB: 1,49	1855.0	18650	V	18.05	9.79	-4.67	23.17	33.01
			H	12.35	9.79	-4.67	17.47	33.01
	1880.0	18900	V	16.75	9.86	-4.7	21.91	33.01
			H	13.14	9.86	-4.7	18.3	33.01
	1905.0	19150	V	15.9	9.94	-4.72	21.12	33.01
			H	11.23	9.94	-4.72	16.45	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	18.05	9.77	-4.67	23.15	33.01
			H	12.94	9.77	-4.66	18.05	33.01
	1880.0	18900	V	17.3	9.83	-4.69	22.44	33.01
			H	12.05	9.83	-4.69	17.19	33.01
	1902.5	19125	V	17	9.9	-4.71	22.19	33.01
			H	12.63	9.9	-4.71	17.82	33.01
LTE BAND 2 BW: 15M QPSK RB: 1,74	1857.5	18675	V	18.34	9.8	-4.68	23.46	33.01
			H	13.16	9.8	-4.68	18.28	33.01
	1880.0	18900	V	18.2	9.87	-4.7	23.37	33.01
			H	13.38	9.87	-4.7	18.55	33.01
	1902.5	19125	V	17.23	9.94	-4.72	22.45	33.01
			H	12.4	9.94	-4.72	17.62	33.01
LTE BAND 2 BW: 15M 16QAM RB: 1,0	1857.5	18675	V	18.48	9.77	-4.67	23.58	33.01
			H	13.19	9.77	-4.67	18.29	33.01
	1880.0	18900	V	15.81	9.83	-4.69	20.95	33.01
			H	11.16	9.83	-4.69	16.3	33.01
	1902.5	19125	V	17.05	9.9	-4.71	22.24	33.01
			H	12.56	9.9	-4.71	17.75	33.01
LTE BAND 2 BW: 15M 16QAM RB: 1,74	1857.5	18675	V	17.48	9.8	-4.68	22.6	33.01
			H	12.79	9.8	-4.68	17.91	33.01
	1880.0	18900	V	18.07	9.87	-4.7	23.24	33.01
			H	14.37	9.87	-4.7	19.54	33.01
	1902.5	19125	V	17	9.94	-4.72	22.22	33.01
			H	12.75	9.94	-4.72	17.97	33.01
LTE BAND 2 BW: 15M 64QAM RB: 1,0	1857.5	18675	V	17.7	9.77	-4.67	22.8	33.01
			H	12.08	9.77	-4.66	17.19	33.01
	1880.0	18900	V	16.75	9.83	-4.69	21.89	33.01
			H	12.04	9.83	-4.69	17.18	33.01
	1902.5	19125	V	16.27	9.9	-4.71	21.46	33.01
			H	12.22	9.9	-4.71	17.41	33.01
LTE BAND 2 BW: 15M 64QAM RB: 1,74	1857.5	18675	V	17.73	9.8	-4.68	22.85	33.01
			H	12.81	9.8	-4.68	17.93	33.01
	1880.0	18900	V	17.63	9.87	-4.7	22.8	33.01
			H	12.79	9.87	-4.7	17.96	33.01
	1902.5	19125	V	16.56	9.94	-4.72	21.78	33.01
			H	12.09	9.94	-4.72	17.31	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	18.17	9.77	-4.66	23.28	33.01
			H	13.08	9.77	-4.66	18.19	33.01
	1880.0	18900	V	17.44	9.83	-4.69	22.58	33.01
			H	12.14	9.83	-4.69	17.28	33.01
	1900.0	19100	V	17.31	9.89	-4.71	22.49	33.01
			H	12.9	9.89	-4.71	18.08	33.01
LTE BAND 2 BW: 20M QPSK RB: 1,99	1860.0	18700	V	17.49	9.82	-4.68	22.63	33.01
			H	11.59	9.82	-4.68	16.73	33.01
	1880.0	18900	V	17.92	9.88	-4.7	23.1	33.01
			H	14.43	9.88	-4.7	19.61	33.01
	1900.0	19100	V	16.67	9.94	-4.72	21.89	33.01
			H	11.8	9.94	-4.72	17.02	33.01
LTE BAND 2 BW: 20M 16QAM RB: 1,0	1860.0	18700	V	18.39	9.77	-4.67	23.49	33.01
			H	12.89	9.77	-4.67	17.99	33.01
	1880.0	18900	V	17.07	9.83	-4.69	22.21	33.01
			H	11.65	9.83	-4.69	16.79	33.01
	1900.0	19100	V	19.3	9.89	-4.71	24.48	33.01
			H	14.26	9.89	-4.71	19.44	33.01
LTE BAND 2 BW: 15M 16QAM RB: 1,99	1860.0	18700	V	17.54	9.82	-4.68	22.68	33.01
			H	11.32	9.82	-4.68	16.46	33.01
	1880.0	18900	V	18.47	9.88	-4.7	23.65	33.01
			H	14.99	9.88	-4.7	20.17	33.01
	1900.0	19100	V	17.31	9.94	-4.72	22.53	33.01
			H	12.68	9.94	-4.72	17.9	33.01
LTE BAND 2 BW: 20M 64QAM RB: 1,0	1860.0	18700	V	18.05	9.77	-4.66	23.16	33.01
			H	12.4	9.77	-4.66	17.51	33.01
	1880.0	18900	V	16.64	9.83	-4.69	21.78	33.01
			H	11.83	9.83	-4.69	16.97	33.01
	1900.0	19100	V	17.12	9.89	-4.71	22.3	33.01
			H	12.28	9.89	-4.71	17.46	33.01
LTE BAND 2 BW: 15M 64QAM RB: 1,99	1860.0	18700	V	17.03	9.82	-4.68	22.17	33.01
			H	11.2	9.82	-4.68	16.34	33.01
	1880.0	18900	V	17.57	9.88	-4.7	22.75	33.01
			H	13.65	9.88	-4.7	18.83	33.01
	1900.0	19100	V	16.26	9.94	-4.72	21.48	33.01
			H	10.84	9.94	-4.72	16.06	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	17.32	9.33	-4.45	22.2	30.00
			H	10.99	9.34	-4.45	15.88	30.00
	1732.5	20175	V	17.52	9.39	-4.48	22.43	30.00
			H	10.85	9.39	-4.48	15.76	30.00
	1754.3	20393	V	16.43	9.46	-4.5	21.39	30.00
			H	10.09	9.46	-4.5	15.05	30.00
LTE BAND 4 BW: 1.4M QPSK RB: 1,5	1710.7	19957	V	17.54	9.34	-4.45	22.43	30.00
			H	11.11	9.33	-4.45	15.99	30.00
	1732.5	20175	V	17.2	9.4	-4.48	22.12	30.00
			H	10.79	9.4	-4.48	15.71	30.00
	1754.3	20393	V	16.28	9.47	-4.5	21.25	30.00
			H	9.86	9.47	-4.5	14.83	30.00
LTE BAND 4 BW: 1.4M 16QAM RB: 1,0	1710.7	19957	V	17.22	9.33	-4.45	22.1	30.00
			H	10.63	9.33	-4.45	15.51	30.00
	1732.5	20175	V	16.81	9.39	-4.48	21.72	30.00
			H	10.24	9.39	-4.48	15.15	30.00
	1754.3	20393	V	16.52	9.46	-4.49	21.49	30.00
			H	9.88	9.46	-4.49	14.85	30.00
LTE BAND 4 BW: 1.4M 16QAM RB: 1,5	1710.7	19957	V	16.54	9.34	-4.45	21.43	30.00
			H	10.87	9.33	-4.45	15.75	30.00
	1732.5	20175	V	16.7	9.4	-4.48	21.62	30.00
			H	9.73	9.4	-4.48	14.65	30.00
	1754.3	20393	V	16.84	9.47	-4.5	21.81	30.00
			H	9.78	9.47	-4.5	14.75	30.00
LTE BAND 4 BW: 1.4M 64QAM RB: 1,0	1710.7	19957	V	16.5	9.33	-4.45	21.38	30.00
			H	10.41	9.33	-4.45	15.29	30.00
	1732.5	20175	V	16.29	9.39	-4.48	21.2	30.00
			H	9.86	9.39	-4.48	14.77	30.00
	1754.3	20393	V	15.96	9.46	-4.49	20.93	30.00
			H	9.77	9.46	-4.49	14.74	30.00
LTE BAND 4 BW: 1.4M 64QAM RB: 1,5	1710.7	19957	V	16.14	9.34	-4.45	21.03	30.00
			H	10.41	9.33	-4.45	15.29	30.00
	1732.5	20175	V	16.24	9.4	-4.48	21.16	30.00
			H	8.75	9.4	-4.48	13.67	30.00
	1754.3	20393	V	16.17	9.47	-4.5	21.14	30.00
			H	8.86	9.47	-4.5	13.83	30.00

**Remark :**

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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: 3M QPSK RB: 1,0	1711.5	19965	V	17.52	9.33	-4.45	22.4	30.00
			H	11.68	9.33	-4.45	16.56	30.00
	1732.5	20175	V	16.73	9.39	-4.47	21.65	30.00
			H	9.76	9.39	-4.47	14.68	30.00
	1753.5	20385	V	17.14	9.46	-4.49	22.11	30.00
			H	10.46	9.46	-4.49	15.43	30.00
LTE BAND 4 BW: 3M QPSK RB: 1,14	1711.5	19965	V	17.67	9.33	-4.45	22.55	30.00
			H	11.06	9.33	-4.45	15.94	30.00
	1732.5	20175	V	17.52	9.4	-4.48	22.44	30.00
			H	10.7	9.4	-4.48	15.62	30.00
	1753.5	20385	V	16.56	9.47	-4.5	21.53	30.00
			H	9.82	9.47	-4.5	14.79	30.00
LTE BAND 4 BW: 3M 16QAM RB: 1,0	1711.5	19965	V	16.51	9.34	-4.45	21.4	30.00
			H	10.59	9.33	-4.45	15.47	30.00
	1732.5	20175	V	17.1	9.39	-4.47	22.02	30.00
			H	9.33	9.39	-4.47	14.25	30.00
	1753.5	20385	V	17.4	9.46	-4.49	22.37	30.00
			H	10.76	9.46	-4.49	15.73	30.00
LTE BAND 4 BW: 3M 16QAM RB: 1,14	1711.5	19965	V	17.34	9.33	-4.45	22.22	30.00
			H	12.03	9.33	-4.45	16.91	30.00
	1732.5	20175	V	16.52	9.4	-4.48	21.44	30.00
			H	10.25	9.4	-4.48	15.17	30.00
	1753.5	20385	V	17.33	9.47	-4.5	22.3	30.00
			H	9.99	9.47	-4.5	14.96	30.00
LTE BAND 4 BW: 3M 64QAM RB: 1,0	1711.5	19965	V	15.79	9.34	-4.45	20.68	30.00
			H	10.16	9.33	-4.45	15.04	30.00
	1732.5	20175	V	16.33	9.39	-4.47	21.25	30.00
			H	8.7	9.39	-4.47	13.62	30.00
	1753.5	20385	V	16.62	9.46	-4.49	21.59	30.00
			H	10.66	9.46	-4.49	15.63	30.00
LTE BAND 4 BW: 3M 64QAM RB: 1,14	1711.5	19965	V	16.69	9.33	-4.45	21.57	30.00
			H	11.52	9.33	-4.45	16.4	30.00
	1732.5	20175	V	16.13	9.4	-4.48	21.05	30.00
			H	9.8	9.4	-4.48	14.72	30.00
	1753.5	20385	V	16.46	9.47	-4.5	21.43	30.00
			H	9.39	9.47	-4.5	14.36	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	16.71	9.34	-4.45	21.6	30.00
			H	10.35	9.34	-4.45	15.24	30.00
	1732.5	20175	V	16.32	9.39	-4.47	21.24	30.00
			H	10.64	9.39	-4.47	15.56	30.00
	1752.5	20375	V	16.93	9.45	-4.49	21.89	30.00
			H	10.32	9.45	-4.49	15.28	30.00
LTE BAND 4 BW: 5M QPSK RB: 1,24	1712.5	19975	V	16.32	9.34	-4.45	21.21	30.00
			H	11.47	9.34	-4.45	16.36	30.00
	1732.5	20175	V	16.77	9.4	-4.48	21.69	30.00
			H	9.5	9.4	-4.48	14.42	30.00
	1752.5	20375	V	16.91	9.47	-4.5	21.88	30.00
			H	9.29	9.47	-4.5	14.26	30.00
LTE BAND 4 BW: 5M 16QAM RB: 1,0	1712.5	19975	V	17.14	9.34	-4.45	22.03	30.00
			H	11.35	9.34	-4.45	16.24	30.00
	1732.5	20175	V	17.82	9.39	-4.47	22.74	30.00
			H	10.51	9.39	-4.47	15.43	30.00
	1752.5	20375	V	16.51	9.45	-4.49	21.47	30.00
			H	11.77	9.45	-4.49	16.73	30.00
LTE BAND 4 BW: 5M 16QAM RB: 1,24	1712.5	19975	V	16.96	9.34	-4.45	21.85	30.00
			H	12.37	9.34	-4.45	17.26	30.00
	1732.5	20175	V	16.71	9.4	-4.48	21.63	30.00
			H	9.72	9.4	-4.48	14.64	30.00
	1752.5	20375	V	17.42	9.47	-4.5	22.39	30.00
			H	10.76	9.47	-4.5	15.73	30.00
LTE BAND 4 BW: 5M 64QAM RB: 1,0	1712.5	19975	V	16.02	9.34	-4.45	20.91	30.00
			H	9.37	9.34	-4.45	14.26	30.00
	1732.5	20175	V	15.51	9.39	-4.47	20.43	30.00
			H	10.04	9.39	-4.47	14.96	30.00
	1752.5	20375	V	16.5	9.45	-4.49	21.46	30.00
			H	9.66	9.45	-4.49	14.62	30.00
LTE BAND 4 BW: 5M 64QAM RB: 1,24	1712.5	19975	V	15.36	9.34	-4.45	20.25	30.00
			H	11.15	9.34	-4.45	16.04	30.00
	1732.5	20175	V	16.13	9.4	-4.48	21.05	30.00
			H	9.24	9.4	-4.48	14.16	30.00
	1752.5	20375	V	16.52	9.47	-4.5	21.49	30.00
			H	8.46	9.47	-4.5	13.43	30.00

**Remark :**

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

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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: 10M QPSK RB: 1,0	1715.0	20000	V	16.92	9.34	-4.45	21.81	30.00
			H	11.46	9.34	-4.45	16.35	30.00
	1732.0	20175	V	17.47	9.39	-4.47	22.39	30.00
			H	9.89	9.39	-4.47	14.81	30.00
	1750.0	20350	V	16.4	9.45	-4.49	21.36	30.00
			H	9.8	9.45	-4.49	14.76	30.00
LTE BAND 4 BW: 10M QPSK RB: 1,49	1715.0	20000	V	17.16	9.35	-4.46	22.05	30.00
			H	11.33	9.35	-4.46	16.22	30.00
	1732.0	20175	V	17.21	9.41	-4.48	22.14	30.00
			H	10.47	9.41	-4.48	15.4	30.00
	1750.0	20350	V	16.13	9.47	-4.5	21.1	30.00
			H	10	9.46	-4.5	14.96	30.00
LTE BAND 4 BW: 10M 16QAM RB: 1,0	1715.0	20000	V	17.01	9.34	-4.45	21.9	30.00
			H	11.74	9.33	-4.45	16.62	30.00
	1732.0	20175	V	16.93	9.39	-4.48	21.84	30.00
			H	10.25	9.39	-4.47	15.17	30.00
	1750.0	20350	V	17.56	9.45	-4.49	22.52	30.00
			H	10.89	9.45	-4.49	15.85	30.00
LTE BAND 4 BW: 10M 16QAM RB: 1,49	1715.0	20000	V	17.4	9.35	-4.46	22.29	30.00
			H	12.08	9.35	-4.46	16.97	30.00
	1732.0	20175	V	17.02	9.41	-4.48	21.95	30.00
			H	9.78	9.41	-4.48	14.71	30.00
	1750.0	20350	V	17.05	9.47	-4.5	22.02	30.00
			H	10.83	9.47	-4.5	15.8	30.00
LTE BAND 4 BW: 10M 64QAM RB: 1,0	1715.0	20000	V	16.74	9.34	-4.45	21.63	30.00
			H	11.35	9.34	-4.45	16.24	30.00
	1732.0	20175	V	17.38	9.39	-4.47	22.3	30.00
			H	9.41	9.39	-4.47	14.33	30.00
	1750.0	20350	V	15.46	9.45	-4.49	20.42	30.00
			H	9.5	9.45	-4.49	14.46	30.00
LTE BAND 4 BW: 10M 64QAM RB: 1,49	1715.0	20000	V	16.97	9.35	-4.46	21.86	30.00
			H	10.85	9.35	-4.46	15.74	30.00
	1732.0	20175	V	16.57	9.41	-4.48	21.5	30.00
			H	9.97	9.41	-4.48	14.9	30.00
	1750.0	20350	V	16.11	9.47	-4.5	21.08	30.00
			H	9.57	9.46	-4.5	14.53	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: 15M QPSK RB: 1,0	1717.5	20025	V	16.99	9.34	-4.45	21.88	30.00
			H	11.16	9.33	-4.45	16.04	30.00
	1732.5	20175	V	17.91	9.38	-4.47	22.82	30.00
			H	10.77	9.39	-4.47	15.69	30.00
	1747.5	20325	V	16.28	9.43	-4.49	21.22	30.00
			H	9.89	9.43	-4.49	14.83	30.00
LTE BAND 4 BW: 15M QPSK RB: 1,74	1717.5	20025	V	18.08	9.37	-4.47	22.98	30.00
			H	10.27	9.37	-4.47	15.17	30.00
	1732.5	20175	V	16.32	9.42	-4.48	21.26	30.00
			H	10.19	9.42	-4.48	15.13	30.00
	1747.5	20325	V	16.53	9.46	-4.5	21.49	30.00
			H	9.76	9.46	-4.5	14.72	30.00
LTE BAND 4 BW: 15M 16QAM RB: 1,0	1717.5	20025	V	16.59	9.34	-4.45	21.48	30.00
			H	10.92	9.34	-4.45	15.81	30.00
	1732.5	20175	V	17.75	9.39	-4.47	22.67	30.00
			H	9.75	9.38	-4.47	14.66	30.00
	1747.5	20325	V	16.42	9.43	-4.49	21.36	30.00
			H	9.65	9.43	-4.49	14.59	30.00
LTE BAND 4 BW: 15M 16QAM RB: 1,74	1717.5	20025	V	19.25	9.37	-4.46	24.16	30.00
			H	11.56	9.37	-4.47	16.46	30.00
	1732.5	20175	V	17.22	9.42	-4.48	22.16	30.00
			H	11.24	9.42	-4.48	16.18	30.00
	1747.5	20325	V	16.75	9.46	-4.5	21.71	30.00
			H	10.12	9.46	-4.5	15.08	30.00
LTE BAND 4 BW: 15M 64QAM RB: 1,0	1717.5	20025	V	16.4	9.34	-4.45	21.29	30.00
			H	11.04	9.33	-4.45	15.92	30.00
	1732.5	20175	V	16.95	9.38	-4.47	21.86	30.00
			H	10.6	9.39	-4.47	15.52	30.00
	1747.5	20325	V	15.99	9.43	-4.49	20.93	30.00
			H	9.56	9.43	-4.49	14.5	30.00
LTE BAND 4 BW: 15M 64QAM RB: 1,74	1717.5	20025	V	17.85	9.37	-4.47	22.75	30.00
			H	9.66	9.37	-4.47	14.56	30.00
	1732.5	20175	V	16.13	9.42	-4.48	21.07	30.00
			H	9.32	9.42	-4.48	14.26	30.00
	1747.5	20325	V	16.52	9.46	-4.5	21.48	30.00
			H	9.11	9.46	-4.5	14.07	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	17.36	9.34	-4.45	22.25	30.00	
			H	11.46	9.34	-4.45	16.35	30.00	
	1732.5	20175	V	16.37	9.37	-4.47	21.27	30.00	
			H	10.21	9.37	-4.47	15.11	30.00	
	1745.0	20300	V	16.74	9.41	-4.48	21.67	30.00	
			H	10.06	9.41	-4.48	14.99	30.00	
LTE BAND 4 BW: 20M QPSK RB: 1,99	1720.0	20050	V	16.24	9.38	-4.47	21.15	30.00	
			H	10.4	9.38	-4.47	15.31	30.00	
	1732.5	20175	V	17.26	9.42	-4.48	22.2	30.00	
			H	9.94	9.42	-4.48	14.88	30.00	
	1745.0	20300	V	16.04	9.46	-4.5	21	30.00	
			H	9.42	9.46	-4.5	14.38	30.00	
	LTE BAND 4 BW: 20M 16QAM RB: 1,0	1720.0	20050	V	16.29	9.33	-4.45	21.17	30.00
				H	11.67	9.33	-4.45	16.55	30.00
1732.5		20175	V	18.36	9.37	-4.47	23.26	30.00	
			H	11.36	9.37	-4.47	16.26	30.00	
1745.0		20300	V	16.5	9.41	-4.48	21.43	30.00	
			H	10.34	9.41	-4.48	15.27	30.00	
LTE BAND 4 BW: 20M 16QAM RB: 1,99		1720.0	20050	V	17.43	9.38	-4.47	22.34	30.00
				H	9.51	9.38	-4.47	14.42	30.00
	1732.5	20175	V	17.44	9.42	-4.48	22.38	30.00	
			H	10.52	9.42	-4.48	15.46	30.00	
	1745.0	20300	V	17.67	9.47	-4.5	22.64	30.00	
			H	10.81	9.46	-4.5	15.77	30.00	
	LTE BAND 4 BW: 20M 64QAM RB: 1,0	1720.0	20050	V	17.22	9.34	-4.45	22.11	30.00
				H	10.77	9.34	-4.45	15.66	30.00
1732.5		20175	V	15.53	9.37	-4.47	20.43	30.00	
			H	9.65	9.37	-4.47	14.55	30.00	
1745.0		20300	V	16.5	9.41	-4.48	21.43	30.00	
			H	9.62	9.41	-4.48	14.55	30.00	
LTE BAND 4 BW: 20M 64QAM RB: 1,99		1720.0	20050	V	15.78	9.38	-4.47	20.69	30.00
				H	9.68	9.38	-4.47	14.59	30.00
	1732.5	20175	V	17.23	9.42	-4.48	22.17	30.00	
			H	9.21	9.42	-4.48	14.15	30.00	
	1745.0	20300	V	15.77	9.46	-4.5	20.73	30.00	
			H	8.98	9.46	-4.5	13.94	30.00	

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
	MHz		V/H	dBm	dBd	dB	dBm	dBm
LTE BAND 5 BW: 1.4M QPSK RB: 1,0	824.7	20407	V	15.65	3.45	-3.17	15.93	38.45
			H	15.62	3.45	-3.17	15.9	38.45
	836.5	20525	V	18.02	3.45	-3.28	18.19	38.45
			H	15.37	3.45	-3.28	15.54	38.45
	848.3	20643	V	16.13	3.46	-3.35	16.24	38.45
			H	14.39	3.46	-3.36	14.49	38.45
LTE BAND 5 BW: 1.4M QPSK RB: 1,5	824.7	20407	V	16.8	3.45	-3.1	17.15	38.45
			H	16.7	3.45	-3.14	17.01	38.45
	836.5	20525	V	16.82	3.45	-3.3	16.97	38.45
			H	15.13	3.45	-3.3	15.28	38.45
	848.3	20643	V	15.39	3.46	-3.29	15.56	38.45
			H	13.76	3.46	-3.27	13.95	38.45
LTE BAND 5 BW: 1.4M 16QAM RB: 1,0	824.7	20407	V	17.02	3.45	-3.17	17.3	38.45
			H	16.74	3.45	-3.17	17.02	38.45
	836.5	20525	V	17.6	3.45	-3.28	17.77	38.45
			H	16.02	3.45	-3.28	16.19	38.45
	848.3	20643	V	15.58	3.46	-3.33	15.71	38.45
			H	14.67	3.46	-3.25	14.88	38.45
LTE BAND 5 BW: 1.4M 16QAM RB: 1,5	824.7	20407	V	16.84	3.45	-3.11	17.18	38.45
			H	18.16	3.45	-3.1	18.51	38.45
	836.5	20525	V	17.41	3.45	-3.3	17.56	38.45
			H	15.2	3.45	-3.3	15.35	38.45
	848.3	20643	V	14.54	3.46	-3.28	14.72	38.45
			H	14.08	3.46	-3.29	14.25	38.45
LTE BAND 5 BW: 1.4M 64QAM RB: 1,0	824.7	20407	V	15.39	3.45	-3.17	15.67	38.45
			H	15.1	3.45	-3.17	15.38	38.45
	836.5	20525	V	17.9	3.45	-3.28	18.07	38.45
			H	14.75	3.45	-3.28	14.92	38.45
	848.3	20643	V	16.05	3.46	-3.35	16.16	38.45
			H	13.64	3.46	-3.36	13.74	38.45
LTE BAND 5 BW: 1.4M 64QAM RB: 1,5	824.7	20407	V	16.03	3.45	-3.1	16.38	38.45
			H	16.19	3.45	-3.14	16.5	38.45
	836.5	20525	V	16.4	3.45	-3.3	16.55	38.45
			H	14.67	3.45	-3.3	14.82	38.45
	848.3	20643	V	15.11	3.46	-3.29	15.28	38.45
			H	13.38	3.46	-3.27	13.57	38.45

**Remark :**

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

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
	MHz		V/H	dBm	dBd	dB	dBm	dBm
LTE BAND 5 BW: 3M QPSK RB: 1,0	825.5	20415	V	15.75	3.45	-3.17	16.03	38.45
			H	18.34	3.45	-3.17	18.62	38.45
	836.5	20525	V	17.4	3.45	-3.28	17.57	38.45
			H	15.85	3.45	-3.28	16.02	38.45
	847.5	20635	V	15.78	3.46	-3.43	15.81	38.45
			H	14.5	3.46	-3.42	14.54	38.45
LTE BAND 5 BW: 3M QPSK RB: 1,14	825.5	20415	V	18.03	3.45	-3.16	18.32	38.45
			H	16.63	3.45	-3.16	16.92	38.45
	836.5	20525	V	16.38	3.45	-3.31	16.52	38.45
			H	14.31	3.45	-3.31	14.45	38.45
	847.5	20635	V	14.35	3.46	-3.29	14.52	38.45
			H	13.45	3.46	-3.29	13.62	38.45
LTE BAND 5 BW: 3M 16QAM RB: 1,0	825.5	20415	V	16.19	3.45	-3.18	16.46	38.45
			H	16.43	3.45	-3.17	16.71	38.45
	836.5	20525	V	18.26	3.45	-3.27	18.44	38.45
			H	16.32	3.45	-3.28	16.49	38.45
	847.5	20635	V	16.55	3.46	-3.43	16.58	38.45
			H	16.54	3.46	-3.42	16.58	38.45
LTE BAND 5 BW: 3M 16QAM RB: 1,14	825.5	20415	V	18.81	3.45	-3.16	19.1	38.45
			H	18.22	3.45	-3.15	18.52	38.45
	836.5	20525	V	15.99	3.45	-3.31	16.13	38.45
			H	14.73	3.45	-3.31	14.87	38.45
	847.5	20635	V	14.25	3.46	-3.3	14.41	38.45
			H	13.57	3.46	-3.28	13.75	38.45
LTE BAND 5 BW: 3M 64QAM RB: 1,0	825.5	20415	V	15.16	3.45	-3.17	15.44	38.45
			H	17.46	3.45	-3.17	17.74	38.45
	836.5	20525	V	16.76	3.45	-3.28	16.93	38.45
			H	15.03	3.45	-3.28	15.2	38.45
	847.5	20635	V	15.57	3.46	-3.43	15.6	38.45
			H	14.46	3.46	-3.42	14.5	38.45
LTE BAND 5 BW: 3M 64QAM RB: 1,14	825.5	20415	V	17.32	3.45	-3.16	17.61	38.45
			H	16.49	3.45	-3.16	16.78	38.45
	836.5	20525	V	16.3	3.45	-3.31	16.44	38.45
			H	13.4	3.45	-3.31	13.54	38.45
	847.5	20635	V	13.84	3.46	-3.29	14.01	38.45
			H	13.03	3.46	-3.29	13.2	38.45

**Remark :**

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

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
	MHz		V/H	dBm	dBd	dB	dBm	dBm
LTE BAND 5 BW: 5M QPSK RB: 1,0	826.5	20425	V	19.24	3.45	-3.17	19.52	38.45
			H	19.41	3.45	-3.13	19.73	38.45
	836.5	20525	V	17.65	3.45	-3.26	17.84	38.45
			H	16.16	3.45	-3.26	16.35	38.45
	846.5	20625	V	18.5	3.46	-3.4	18.56	38.45
			H	17.04	3.46	-3.4	17.1	38.45
LTE BAND 5 BW: 5M QPSK RB: 1,24	826.5	20425	V	18.19	3.45	-3.18	18.46	38.45
			H	17.26	3.45	-3.19	17.52	38.45
	836.5	20525	V	15.48	3.45	-3.32	15.61	38.45
			H	13.01	3.45	-3.32	13.14	38.45
	846.5	20625	V	14.09	3.46	-3.29	14.26	38.45
			H	13.45	3.46	-3.29	13.62	38.45
LTE BAND 5 BW: 5M 16QAM RB: 1,0	826.5	20425	V	18.26	3.45	-3.17	18.54	38.45
			H	16.25	3.45	-3.18	16.52	38.45
	836.5	20525	V	18.72	3.45	-3.26	18.91	38.45
			H	17.01	3.45	-3.26	17.2	38.45
	846.5	20625	V	16.25	3.46	-3.4	16.31	38.45
			H	14.97	3.46	-3.39	15.04	38.45
LTE BAND 5 BW: 5M 16QAM RB: 1,24	826.5	20425	V	18.75	3.45	-3.19	19.01	38.45
			H	17.47	3.45	-3.18	17.74	38.45
	836.5	20525	V	15.92	3.46	-3.33	16.05	38.45
			H	13.86	3.45	-3.32	13.99	38.45
	846.5	20625	V	14.85	3.46	-3.28	15.03	38.45
			H	14.36	3.46	-3.25	14.57	38.45
LTE BAND 5 BW: 5M 64QAM RB: 1,0	826.5	20425	V	18.25	3.45	-3.17	18.53	38.45
			H	16.02	3.45	-3.18	16.29	38.45
	836.5	20525	V	17.98	3.45	-3.26	18.17	38.45
			H	16.21	3.45	-3.26	16.4	38.45
	846.5	20625	V	15.44	3.46	-3.4	15.5	38.45
			H	14.59	3.46	-3.39	14.66	38.45
LTE BAND 5 BW: 5M 64QAM RB: 1,24	826.5	20425	V	17.93	3.45	-3.19	18.19	38.45
			H	17.37	3.45	-3.18	17.64	38.45
	836.5	20525	V	15.26	3.46	-3.33	15.39	38.45
			H	13.84	3.45	-3.32	13.97	38.45
	846.5	20625	V	14.19	3.46	-3.28	14.37	38.45
			H	13.43	3.46	-3.25	13.64	38.45

**Remark :**

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

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
	MHz		V/H	dBm	dBd	dB	dBm	dBm
LTE BAND 5 BW: 10M QPSK RB: 1,0	829.0	20450	V	16.64	3.45	-3.18	16.91	38.45
			H	15.58	3.45	-3.18	15.85	38.45
	836.5	20525	V	17.13	3.45	-3.23	17.35	38.45
			H	16.63	3.45	-3.23	16.85	38.45
	844.0	20600	V	14.71	3.46	-3.33	14.84	38.45
			H	12.12	3.46	-3.33	12.25	38.45
LTE BAND 5 BW: 10M QPSK RB: 1,49	829.0	20450	V	17.41	3.45	-3.25	17.61	38.45
			H	16.01	3.45	-3.25	16.21	38.45
	836.5	20525	V	14.8	3.46	-3.35	14.91	38.45
			H	12.74	3.46	-3.34	12.86	38.45
	844.0	20600	V	14.6	3.46	-3.3	14.76	38.45
			H	12.75	3.46	-3.31	12.9	38.45
LTE BAND 5 BW: 10M 16QAM RB: 1,0	829.0	20450	V	15.33	3.45	-3.17	15.61	38.45
			H	16.01	3.45	-3.18	16.28	38.45
	836.5	20525	V	19.15	3.45	-3.23	19.37	38.45
			H	17.64	3.45	-3.23	17.86	38.45
	844.0	20600	V	14.87	3.46	-3.34	14.99	38.45
			H	13.71	3.46	-3.35	13.82	38.45
LTE BAND 5 BW: 10M 16QAM RB: 1,49	829.0	20450	V	18.83	3.45	-3.25	19.03	38.45
			H	17.98	3.45	-3.25	18.18	38.45
	836.5	20525	V	15.78	3.46	-3.35	15.89	38.45
			H	12.76	3.46	-3.35	12.87	38.45
	844.0	20600	V	15.12	3.46	-3.34	15.24	38.45
			H	13.48	3.46	-3.32	13.62	38.45
LTE BAND 5 BW: 10M 64QAM RB: 1,0	829.0	20450	V	16.28	3.45	-3.18	16.55	38.45
			H	15.02	3.45	-3.18	15.29	38.45
	836.5	20525	V	16.41	3.45	-3.23	16.63	38.45
			H	16.05	3.45	-3.23	16.27	38.45
	844.0	20600	V	13.94	3.46	-3.33	14.07	38.45
			H	11.93	3.46	-3.33	12.06	38.45
LTE BAND 5 BW: 10M 64QAM RB: 1,49	829.0	20450	V	17.09	3.45	-3.25	17.29	38.45
			H	15.32	3.45	-3.25	15.52	38.45
	836.5	20525	V	14.68	3.46	-3.35	14.79	38.45
			H	12.22	3.46	-3.34	12.34	38.45
	844.0	20600	V	13.95	3.46	-3.3	14.11	38.45
			H	11.94	3.46	-3.31	12.09	38.45

**Remark :**

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
	MHz		V/H	dBm	dBd	dB	dBm	dBm
LTE BAND 12 BW: 1.4M QPSK RB: 1,0	699.7	23017	V	17.07	3.67	-2.09	18.65	34.77
			H	15.16	3.67	-2.1	16.73	34.77
	707.5	23095	V	19.26	3.65	-1.82	21.09	34.77
			H	18.2	3.65	-1.85	20	34.77
	715.3	23173	V	21.31	3.62	-2.32	22.61	34.77
			H	17.53	3.62	-2.3	18.85	34.77
LTE BAND 12 BW: 1.4M QPSK RB: 1,5	699.7	23017	V	18.21	3.68	-2.26	19.63	34.77
			H	14.98	3.67	-2.05	16.6	34.77
	707.5	23095	V	19.4	3.65	-1.88	21.17	34.77
			H	17.27	3.65	-1.91	19.01	34.77
	715.3	23173	V	20.07	3.62	-2.36	21.33	34.77
			H	17.6	3.62	-2.37	18.85	34.77
LTE BAND 12 BW: 1.4M 16QAM RB: 1,0	699.7	23017	V	17.48	3.67	-2.1	19.05	34.77
			H	15.94	3.67	-2.11	17.5	34.77
	707.5	23095	V	19.79	3.65	-1.82	21.62	34.77
			H	17.06	3.65	-1.82	18.89	34.77
	715.3	23173	V	20.48	3.62	-2.3	21.8	34.77
			H	17.83	3.62	-2.31	19.14	34.77
LTE BAND 12 BW: 1.4M 16QAM RB: 1,5	699.7	23017	V	18.18	3.68	-2.26	19.6	34.77
			H	15.15	3.67	-2	16.82	34.77
	707.5	23095	V	18.53	3.65	-1.87	20.31	34.77
			H	15.97	3.65	-1.89	17.73	34.77
	715.3	23173	V	20.56	3.62	-2.38	21.8	34.77
			H	17.95	3.62	-2.36	19.21	34.77
LTE BAND 12 BW: 1.4M 64QAM RB: 1,0	699.7	23017	V	17.06	3.67	-2.1	18.63	34.77
			H	15.74	3.67	-2.11	17.3	34.77
	707.5	23095	V	19.21	3.65	-1.82	21.04	34.77
			H	16.46	3.65	-1.82	18.29	34.77
	715.3	23173	V	19.5	3.62	-2.3	20.82	34.77
			H	17.15	3.62	-2.31	18.46	34.77
LTE BAND 12 BW: 1.4M 64QAM RB: 1,5	699.7	23017	V	17.99	3.68	-2.26	19.41	34.77
			H	14.69	3.67	-2	16.36	34.77
	707.5	23095	V	18.25	3.65	-1.87	20.03	34.77
			H	15.59	3.65	-1.89	17.35	34.77
	715.3	23173	V	19.93	3.62	-2.38	21.17	34.77
			H	17.35	3.62	-2.36	18.61	34.77

**Remark :**

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

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
	MHz		V/H	dBm	dBd	dB	dBm	dBm
LTE BAND 12 BW: 3M QPSK RB: 1,0	700.5	23025	V	17.71	3.67	-2.07	19.31	34.77
			H	15.98	3.67	-2.14	17.51	34.77
	707.5	23095	V	20.22	3.66	-1.84	22.04	34.77
			H	17.56	3.65	-1.82	19.39	34.77
	714.5	23165	V	20.03	3.62	-2.26	21.39	34.77
			H	16.14	3.62	-2.28	17.48	34.77
LTE BAND 12 BW: 3M QPSK RB: 1,14	700.5	23025	V	18.92	3.67	-2.17	20.42	34.77
			H	15.69	3.67	-2.17	17.19	34.77
	707.5	23095	V	19.26	3.65	-1.93	20.98	34.77
			H	16.44	3.65	-1.87	18.22	34.77
	714.5	23165	V	20.4	3.62	-2.31	21.71	34.77
			H	17.24	3.62	-2.32	18.54	34.77
LTE BAND 12 BW: 3M 16QAM RB: 1,0	700.5	23025	V	18.18	3.68	-2.22	19.64	34.77
			H	16.14	3.68	-2.18	17.64	34.77
	707.5	23095	V	21.16	3.66	-1.83	22.99	34.77
			H	18.22	3.66	-1.84	20.04	34.77
	714.5	23165	V	19.34	3.62	-2.27	20.69	34.77
			H	16.74	3.62	-2.3	18.06	34.77
LTE BAND 12 BW: 3M 16QAM RB: 1,14	700.5	23025	V	18.75	3.68	-2.18	20.25	34.77
			H	15.73	3.68	-2.19	17.22	34.77
	707.5	23095	V	19.36	3.65	-1.9	21.11	34.77
			H	16.63	3.65	-1.91	18.37	34.77
	714.5	23165	V	20.35	3.62	-2.36	21.61	34.77
			H	18.51	3.62	-2.36	19.77	34.77
LTE BAND 12 BW: 3M 64QAM RB: 1,0	700.5	23025	V	17.34	3.67	-2.07	18.94	34.77
			H	15.5	3.67	-2.14	17.03	34.77
	707.5	23095	V	19.66	3.66	-1.84	21.48	34.77
			H	17.29	3.65	-1.82	19.12	34.77
	714.5	23165	V	19.99	3.62	-2.26	21.35	34.77
			H	15.67	3.62	-2.28	17.01	34.77
LTE BAND 12 BW: 3M 64QAM RB: 1,14	700.5	23025	V	18.27	3.67	-2.17	19.77	34.77
			H	14.97	3.67	-2.17	16.47	34.77
	707.5	23095	V	19.16	3.65	-1.93	20.88	34.77
			H	15.7	3.65	-1.87	17.48	34.77
	714.5	23165	V	19.86	3.62	-2.31	21.17	34.77
			H	16.4	3.62	-2.32	17.7	34.77

**Remark :**

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

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
	MHz		V/H	dBm	dBd	dB	dBm	dBm
LTE BAND 12 BW: 5M QPSK RB: 1,0	701.5	23035	V	20.39	3.67	-2.02	22.04	34.77
			H	14.98	3.67	-2.1	16.55	34.77
	707.5	23095	V	20.77	3.66	-1.9	22.53	34.77
			H	18.5	3.66	-1.89	20.27	34.77
	713.5	23155	V	19.62	3.62	-2.3	20.94	34.77
			H	16	3.64	-2.08	17.56	34.77
LTE BAND 12 BW: 5M QPSK RB: 1,24	701.5	23035	V	19.83	3.67	-2.02	21.48	34.77
			H	16.84	3.67	-2.02	18.49	34.77
	707.5	23095	V	18.6	3.64	-1.99	20.25	34.77
			H	16.66	3.64	-1.98	18.32	34.77
	713.5	23155	V	20.64	3.62	-2.36	21.9	34.77
			H	17.57	3.62	-2.37	18.82	34.77
LTE BAND 12 BW: 5M 16QAM RB: 1,0	701.5	23035	V	18.02	3.67	-2.1	19.59	34.77
			H	14.97	3.67	-2.1	16.54	34.77
	707.5	23095	V	21.37	3.66	-1.89	23.14	34.77
			H	18.82	3.66	-1.88	20.6	34.77
	713.5	23155	V	19.23	3.64	-2.09	20.78	34.77
			H	16.53	3.64	-2.09	18.08	34.77
LTE BAND 12 BW: 5M 16QAM RB: 1,24	701.5	23035	V	19.53	3.67	-2.05	21.15	34.77
			H	17.08	3.67	-2.03	18.72	34.77
	707.5	23095	V	19.57	3.64	-1.99	21.22	34.77
			H	16.64	3.64	-1.97	18.31	34.77
	713.5	23155	V	20.61	3.62	-2.35	21.88	34.77
			H	17.79	3.62	-2.37	19.04	34.77
LTE BAND 12 BW: 5M 64QAM RB: 1,0	701.5	23035	V	19.7	3.67	-2.02	21.35	34.77
			H	14.02	3.67	-2.1	15.59	34.77
	707.5	23095	V	20.37	3.66	-1.9	22.13	34.77
			H	18.03	3.66	-1.89	19.8	34.77
	713.5	23155	V	18.96	3.62	-2.3	20.28	34.77
			H	15.4	3.64	-2.08	16.96	34.77
LTE BAND 12 BW: 5M 64QAM RB: 1,24	701.5	23035	V	18.92	3.67	-2.02	20.57	34.77
			H	16.66	3.67	-2.02	18.31	34.77
	707.5	23095	V	18.33	3.64	-1.99	19.98	34.77
			H	15.97	3.64	-1.98	17.63	34.77
	713.5	23155	V	19.86	3.62	-2.36	21.12	34.77
			H	17.11	3.62	-2.37	18.36	34.77

**Remark :**

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

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
	MHz		V/H	dBm	dBd	dB	dBm	dBm
LTE BAND 12 BW: 10M QPSK RB: 1,0	704.0	23060	V	19.57	3.66	-1.92	21.31	34.77
			H	16.74	3.66	-1.93	18.47	34.77
	707.5	23095	V	19.84	3.67	-2.08	21.43	34.77
			H	16.5	3.65	-1.82	18.33	34.77
	711.0	23130	V	20.3	3.65	-1.81	22.14	34.77
			H	16.37	3.65	-1.8	18.22	34.77
LTE BAND 12 BW: 10M QPSK RB: 1,49	704.0	23060	V	20.31	3.66	-1.87	22.1	34.77
			H	17.82	3.66	-1.86	19.62	34.77
	707.5	23095	V	19.08	3.64	-2.08	20.64	34.77
			H	16.59	3.64	-2.09	18.14	34.77
	711.0	23130	V	21.46	3.62	-2.35	22.73	34.77
			H	17.35	3.62	-2.35	18.62	34.77
LTE BAND 12 BW: 10M 16QAM RB: 1,0	704.0	23060	V	20.33	3.66	-1.93	22.06	34.77
			H	17.55	3.66	-1.92	19.29	34.77
	707.5	23095	V	19.72	3.67	-2.08	21.31	34.77
			H	16.7	3.66	-1.82	18.54	34.77
	711.0	23130	V	20.3	3.65	-1.81	22.14	34.77
			H	18.02	3.65	-1.8	19.87	34.77
LTE BAND 12 BW: 10M 16QAM RB: 1,49	704.0	23060	V	20.92	3.65	-1.94	22.63	34.77
			H	18.17	3.65	-1.87	19.95	34.77
	707.5	23095	V	19.23	3.63	-2.12	20.74	34.77
			H	16.73	3.63	-2.14	18.22	34.77
	711.0	23130	V	20.73	3.62	-2.34	22.01	34.77
			H	18.61	3.62	-2.34	19.89	34.77
LTE BAND 12 BW: 5M 64QAM RB: 1,0	704.0	23060	V	20.33	3.66	-1.93	22.06	34.77
			H	17.55	3.66	-1.92	19.29	34.77
	707.5	23095	V	19.72	3.67	-2.08	21.31	34.77
			H	16.7	3.66	-1.82	18.54	34.77
	711.0	23130	V	20.3	3.65	-1.81	22.14	34.77
			H	18.02	3.65	-1.8	19.87	34.77
LTE BAND 12 BW: 5M 64QAM RB: 1,24	704.0	23060	V	20.92	3.65	-1.94	22.63	34.77
			H	18.17	3.65	-1.87	19.95	34.77
	707.5	23095	V	19.23	3.63	-2.12	20.74	34.77
			H	16.73	3.63	-2.14	18.22	34.77
	711.0	23130	V	20.73	3.62	-2.34	22.01	34.77
			H	18.61	3.62	-2.34	19.89	34.77

**Remark :**

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

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Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
	MHz		V/H	dBm	dBd	dB	dBm	dBm
LTE BAND 13 BW: 5M QPSK RB: 1,0	779.5	23205	V	18.7	3.45	-2.83	19.32	34.77
			H	17.94	3.45	-2.83	18.56	34.77
	782.0	23230	V	20.42	3.45	-2.95	20.92	34.77
			H	19.78	3.45	-2.96	20.27	34.77
	784.5	23255	V	19.86	3.45	-3.22	20.09	34.77
			H	20.24	3.45	-3.22	20.47	34.77
LTE BAND 13 BW: 5M QPSK RB: 1,24	779.5	23205	V	20.68	3.45	-3.15	20.98	34.77
			H	21.26	3.45	-3.14	21.57	34.77
	782.0	23230	V	19.26	3.45	-3.41	19.3	34.77
			H	19.68	3.45	-3.45	19.68	34.77
	784.5	23255	V	19.18	3.45	-3.73	18.9	34.77
			H	19.92	3.45	-3.72	19.65	34.77
LTE BAND 13 BW: 5M 16QAM RB: 1,0	779.5	23205	V	18.29	3.45	-2.84	18.9	34.77
			H	18.77	3.45	-2.84	19.38	34.77
	782.0	23230	V	20.95	3.45	-2.94	21.46	34.77
			H	19.96	3.45	-2.92	20.49	34.77
	784.5	23255	V	19.39	3.45	-3.23	19.61	34.77
			H	20.66	3.45	-3.22	20.89	34.77
LTE BAND 13 BW: 5M 16QAM RB: 1,24	779.5	23205	V	21.32	3.45	-3.13	21.64	34.77
			H	21.32	3.45	-3.16	21.61	34.77
	782.0	23230	V	18.7	3.45	-3.47	18.68	34.77
			H	19.31	3.45	-3.47	19.29	34.77
	784.5	23255	V	19.23	3.45	-3.7	18.98	34.77
			H	19.71	3.45	-3.72	19.44	34.77
LTE BAND 13 BW: 5M 64QAM RB: 1,0	779.5	23205	V	18.03	3.45	-2.83	18.65	34.77
			H	17.42	3.45	-2.83	18.04	34.77
	782.0	23230	V	20.18	3.45	-2.95	20.68	34.77
			H	19.5	3.45	-2.96	19.99	34.77
	784.5	23255	V	19.62	3.45	-3.22	19.85	34.77
			H	19.67	3.45	-3.22	19.9	34.77
LTE BAND 13 BW: 5M 64QAM RB: 1,24	779.5	23205	V	20.44	3.45	-3.15	20.74	34.77
			H	21.02	3.45	-3.14	21.33	34.77
	782.0	23230	V	18.49	3.45	-3.41	18.53	34.77
			H	18.7	3.45	-3.45	18.7	34.77
	784.5	23255	V	18.64	3.45	-3.73	18.36	34.77
			H	19.55	3.45	-3.72	19.28	34.77

**Remark :**

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

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Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
	MHz		V/H	dBm	dBd	dB	dBm	dBm
LTE BAND 13 BW: 10M QPSK RB: 1,0	782.0	23230	V	18.69	3.45	-3.02	19.12	34.77
			H	19.02	3.45	-2.97	19.5	34.77
LTE BAND 13 BW: 10M QPSK RB: 1,49	782.0	23230	V	19.86	3.45	-3.6	19.71	34.77
			H	19.63	3.45	-3.58	19.5	34.77
LTE BAND 13 BW: 10M 16QAM RB: 1,0	782.0	23230	V	19.49	3.45	-3.31	19.63	34.77
			H	19.58	3.45	-3.08	19.95	34.77
LTE BAND 13 BW: 10M 16QAM RB: 1,49	782.0	23230	V	18.61	3.45	-3.68	18.38	34.77
			H	18.77	3.45	-3.69	18.53	34.77
LTE BAND 13 BW: 10M 64QAM RB: 1,0	782.0	23230	V	18.34	3.45	-3.02	18.77	34.77
			H	18.53	3.45	-2.97	19.01	34.77
LTE BAND 13 BW: 10M 64QAM RB: 1,49	782.0	23230	V	19.64	3.45	-3.6	19.49	34.77
			H	19.42	3.45	-3.58	19.29	34.77

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

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
	MHz		V/H	dBm	dBd	dB	dBm	dBm
LTE BAND 17 BW: 5M QPSK RB: 1,0	706.5	23755	V	20.15	3.65	-1.85	21.95	34.77
			H	16.9	3.65	-1.85	18.7	34.77
	710.0	23790	V	18.91	3.65	-1.87	20.69	34.77
			H	15.74	3.65	-1.87	17.52	34.77
	713.5	23825	V	20.2	3.62	-2.33	21.49	34.77
			H	18.04	3.62	-2.33	19.33	34.77
LTE BAND 17 BW: 5M QPSK RB: 1,24	706.5	23755	V	19.24	3.65	-1.93	20.96	34.77
			H	16.25	3.65	-1.92	17.98	34.77
	710.0	23790	V	18.03	3.63	-2.15	19.51	34.77
			H	16.98	3.63	-2.14	18.47	34.77
	713.5	23825	V	19.6	3.62	-2.36	20.86	34.77
			H	18.96	3.62	-2.36	20.22	34.77
LTE BAND 17 BW: 5M 16QAM RB: 1,0	706.5	23755	V	20.28	3.65	-1.84	22.09	34.77
			H	17.38	3.65	-1.84	19.19	34.77
	710.0	23790	V	19.59	3.65	-1.86	21.38	34.77
			H	17.06	3.65	-1.87	18.84	34.77
	713.5	23825	V	18.95	3.64	-2.08	20.51	34.77
			H	16.25	3.64	-2.08	17.81	34.77
LTE BAND 17 BW: 5M 16QAM RB: 1,24	706.5	23755	V	18.4	3.65	-1.92	20.13	34.77
			H	17.15	3.65	-1.92	18.88	34.77
	710.0	23790	V	19.22	3.63	-2.15	20.7	34.77
			H	16.9	3.63	-2.15	18.38	34.77
	713.5	23825	V	21.07	3.62	-2.36	22.33	34.77
			H	19.32	3.62	-2.35	20.59	34.77
LTE BAND 17 BW: 5M 64QAM RB: 1,0	706.5	23755	V	19.58	3.65	-1.85	21.38	34.77
			H	16.46	3.65	-1.85	18.26	34.77
	710.0	23790	V	18.47	3.65	-1.87	20.25	34.77
			H	14.79	3.65	-1.87	16.57	34.77
	713.5	23825	V	20.1	3.62	-2.33	21.39	34.77
			H	17.97	3.62	-2.33	19.26	34.77
LTE BAND 17 BW: 5M 64QAM RB: 1,24	706.5	23755	V	18.28	3.65	-1.93	20	34.77
			H	15.85	3.65	-1.92	17.58	34.77
	710.0	23790	V	17.49	3.63	-2.15	18.97	34.77
			H	16.64	3.63	-2.14	18.13	34.77
	713.5	23825	V	19.39	3.62	-2.36	20.65	34.77
			H	18.59	3.62	-2.36	19.85	34.77

**Remark :**

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

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
	MHz		V/H	dBm	dBd	dB	dBm	dBm
LTE BAND 17 BW: 10M QPSK RB: 1,0	709.0	23780	V	19.65	3.65	-1.85	21.45	34.77
			H	16.93	3.65	-1.85	18.73	34.77
	710.0	23790	V	18.6	3.65	-1.87	20.38	34.77
			H	16.3	3.65	-1.87	18.08	34.77
	711.0	23800	V	19.25	3.62	-2.33	20.54	34.77
			H	16.58	3.62	-2.33	17.87	34.77
LTE BAND 17 BW: 10M QPSK RB: 1,49	709.0	23780	V	18.11	3.65	-1.93	19.83	34.77
			H	16.09	3.65	-1.92	17.82	34.77
	710.0	23790	V	18.15	3.63	-2.15	19.63	34.77
			H	16.3	3.63	-2.14	17.79	34.77
	711.0	23800	V	20.28	3.62	-2.36	21.54	34.77
			H	17.64	3.62	-2.36	18.9	34.77
LTE BAND 17 BW: 10M 16QAM RB: 1,0	709.0	23780	V	19.41	3.65	-1.84	21.22	34.77
			H	18.2	3.65	-1.84	20.01	34.77
	710.0	23790	V	18.77	3.65	-1.86	20.56	34.77
			H	16.25	3.65	-1.87	18.03	34.77
	711.0	23800	V	18.75	3.64	-2.08	20.31	34.77
			H	15.58	3.64	-2.08	17.14	34.77
LTE BAND 17 BW: 10M 16QAM RB: 1,49	709.0	23780	V	18.93	3.65	-1.92	20.66	34.77
			H	16.68	3.65	-1.92	18.41	34.77
	710.0	23790	V	17.88	3.63	-2.15	19.36	34.77
			H	16.38	3.63	-2.15	17.86	34.77
	711.0	23800	V	20.73	3.62	-2.36	21.99	34.77
			H	18.28	3.62	-2.35	19.55	34.77
LTE BAND 17 BW: 10M 64QAM RB: 1,0	709.0	23780	V	18.73	3.65	-1.85	20.53	34.77
			H	16.75	3.65	-1.85	18.55	34.77
	710.0	23790	V	17.89	3.65	-1.87	19.67	34.77
			H	16.07	3.65	-1.87	17.85	34.77
	711.0	23800	V	19.14	3.62	-2.33	20.43	34.77
			H	16.4	3.62	-2.33	17.69	34.77
LTE BAND 17 BW: 10M 64QAM RB: 1,49	709.0	23780	V	18.04	3.65	-1.93	19.76	34.77
			H	15.17	3.65	-1.92	16.9	34.77
	710.0	23790	V	17.68	3.63	-2.15	19.16	34.77
			H	15.54	3.63	-2.14	17.03	34.77
	711.0	23800	V	19.32	3.62	-2.36	20.58	34.77
			H	18.72	3.62	-2.36	19.98	34.77

**Remark :**

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

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EUT			Measurement					
Operation Band	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	EIRP	Limit
	MHz		V/H	dBm	dBi	dB	dBm	dBm
LTE BAND 38 BW: 5M QPSK RB: 1,0	2572.5	37775	V	18.37	10.61	-5.63	23.35	33.00
			H	15.88	10.61	-5.62	20.87	33.00
	2595.0	38000	V	15.93	10.64	-5.64	20.93	33.00
			H	13.2	10.64	-5.65	18.19	33.00
2617.5	38225	V	16.45	10.67	-5.67	21.45	33.00	
		H	14.47	10.67	-5.67	19.47	33.00	
LTE BAND 38 BW: 5M QPSK RB: 1,24	2572.5	37775	V	18.27	10.61	-5.63	23.25	33.00
			H	15.04	10.61	-5.63	20.02	33.00
	2595.0	38000	V	16.24	10.64	-5.65	21.23	33.00
			H	14.13	10.64	-5.65	19.12	33.00
2617.5	38225	V	16.08	10.68	-5.68	21.08	33.00	
		H	14.39	10.68	-5.68	19.39	33.00	
LTE BAND 38 BW: 5M 16QAM RB: 1,0	2572.5	37775	V	18.01	10.61	-5.62	23	33.00
			H	14.83	10.61	-5.62	19.82	33.00
	2595.0	38000	V	15.89	10.64	-5.64	20.89	33.00
			H	12.68	10.64	-5.64	17.68	33.00
2617.5	38225	V	15.9	10.67	-5.67	20.9	33.00	
		H	14.52	10.67	-5.67	19.52	33.00	
LTE BAND 38 BW: 5M 16QAM RB: 1,24	2572.5	37775	V	17.39	10.61	-5.63	22.37	33.00
			H	14.91	10.61	-5.63	19.89	33.00
	2595.0	38000	V	15.81	10.65	-5.65	20.81	33.00
			H	13.11	10.64	-5.65	18.1	33.00
2617.5	38225	V	16.68	10.68	-5.68	21.68	33.00	
		H	14.52	10.68	-5.68	19.52	33.00	
LTE BAND 38 BW: 5M 64QAM RB: 1,0	2572.5	37775	V	17.46	10.61	-5.62	22.45	33.00
			H	14.37	10.61	-5.62	19.36	33.00
	2595.0	38000	V	15.05	10.64	-5.64	20.05	33.00
			H	12.09	10.64	-5.64	17.09	33.00
2617.5	38225	V	15.5	10.67	-5.67	20.5	33.00	
		H	14.22	10.67	-5.67	19.22	33.00	
LTE BAND 38 BW: 5M 64QAM RB: 1,24	2572.5	37775	V	17.29	10.61	-5.63	22.27	33.00
			H	14.03	10.61	-5.63	19.01	33.00
	2595.0	38000	V	15.11	10.65	-5.65	20.11	33.00
			H	12.33	10.64	-5.65	17.32	33.00
2617.5	38225	V	16.25	10.68	-5.68	21.25	33.00	
		H	14.24	10.68	-5.68	19.24	33.00	

**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 38 BW: 10M QPSK RB: 1,0	2575.0	37800	V	18.72	10.61	-5.63	23.7	33.00
			H	15.05	10.61	-5.63	20.03	33.00
	2595.0	38000	V	17.44	10.64	-5.64	22.44	33.00
			H	13.03	10.64	-5.64	18.03	33.00
	2615.0	38200	V	15.95	10.66	-5.66	20.95	33.00
			H	14.28	10.66	-5.66	19.28	33.00
LTE BAND 38 BW: 10M QPSK RB: 1,49	2575.0	37800	V	17.12	10.62	-5.63	22.11	33.00
			H	14.82	10.62	-5.63	19.81	33.00
	2595.0	38000	V	15.41	10.65	-5.65	20.41	33.00
			H	13.16	10.65	-5.65	18.16	33.00
	2615.0	38200	V	16.43	10.68	-5.68	21.43	33.00
			H	14.9	10.68	-5.68	19.9	33.00
LTE BAND 38 BW: 10M 16QAM RB: 1,0	2575.0	37800	V	18.72	10.61	-5.62	23.71	33.00
			H	14.61	10.61	-5.63	19.59	33.00
	2595.0	38000	V	15.61	10.63	-5.64	20.6	33.00
			H	12.97	10.64	-5.64	17.97	33.00
	2615.0	38200	V	16.56	10.66	-5.66	21.56	33.00
			H	14.49	10.66	-5.66	19.49	33.00
LTE BAND 38 BW: 10M 16QAM RB: 1,49	2575.0	37800	V	18.24	10.62	-5.63	23.23	33.00
			H	13.56	10.62	-5.63	18.55	33.00
	2595.0	38000	V	15.47	10.65	-5.65	20.47	33.00
			H	13.83	10.65	-5.65	18.83	33.00
	2615.0	38200	V	16.61	10.68	-5.68	21.61	33.00
			H	15.09	10.68	-5.68	20.09	33.00
LTE BAND 38 BW: 10M 64QAM RB: 1,0	2575.0	37800	V	18.63	10.61	-5.63	23.61	33.00
			H	14.26	10.61	-5.63	19.24	33.00
	2595.0	38000	V	17.4	10.64	-5.64	22.4	33.00
			H	12.18	10.64	-5.64	17.18	33.00
	2615.0	38200	V	15.05	10.66	-5.66	20.05	33.00
			H	13.83	10.66	-5.66	18.83	33.00
LTE BAND 38 BW: 10M 64QAM RB: 1,49	2575.0	37800	V	16.38	10.62	-5.63	21.37	33.00
			H	13.96	10.62	-5.63	18.95	33.00
	2595.0	38000	V	15.34	10.65	-5.65	20.34	33.00
			H	13.08	10.65	-5.65	18.08	33.00
	2615.0	38200	V	16.36	10.68	-5.68	21.36	33.00
			H	14.51	10.68	-5.68	19.51	33.00

**Remark :**

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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 38 BW: 15M QPSK RB: 1,0	2577.5	37825	V	18.35	10.61	-5.62	23.34	33.00
			H	14.91	10.61	-5.62	19.9	33.00
	2595.0	38000	V	17.03	10.63	-5.64	22.02	33.00
			H	13.46	10.63	-5.64	18.45	33.00
	2612.5	38175	V	15.89	10.66	-5.66	20.89	33.00
			H	14.55	10.66	-5.66	19.55	33.00
LTE BAND 38 BW: 15M QPSK RB: 1,74	2577.5	37825	V	17.13	10.63	-5.64	22.12	33.00
			H	14.11	10.63	-5.64	19.1	33.00
	2595.0	38000	V	16.26	10.65	-5.65	21.26	33.00
			H	14.02	10.65	-5.65	19.02	33.00
	2612.5	38175	V	15.97	10.68	-5.68	20.97	33.00
			H	13.94	10.68	-5.68	18.94	33.00
LTE BAND 38 BW: 15M 16QAM RB: 1,0	2577.5	37825	V	18.73	10.61	-5.62	23.72	33.00
			H	14.9	10.61	-5.62	19.89	33.00
	2595.0	38000	V	16.04	10.63	-5.64	21.03	33.00
			H	12.92	10.63	-5.64	17.91	33.00
	2612.5	38175	V	16.23	10.66	-5.66	21.23	33.00
			H	13.88	10.66	-5.66	18.88	33.00
LTE BAND 38 BW: 15M 16QAM RB: 1,74	2577.5	37825	V	16.09	10.62	-5.63	21.08	33.00
			H	12.85	10.63	-5.64	17.84	33.00
	2595.0	38000	V	15.52	10.65	-5.65	20.52	33.00
			H	13.94	10.65	-5.65	18.94	33.00
	2612.5	38175	V	16.66	10.68	-5.68	21.66	33.00
			H	14.07	10.68	-5.68	19.07	33.00
LTE BAND 38 BW: 15M 64QAM RB: 1,0	2577.5	37825	V	17.43	10.61	-5.62	22.42	33.00
			H	14.17	10.61	-5.62	19.16	33.00
	2595.0	38000	V	16.87	10.63	-5.64	21.86	33.00
			H	12.55	10.63	-5.64	17.54	33.00
	2612.5	38175	V	15.56	10.66	-5.66	20.56	33.00
			H	13.77	10.66	-5.66	18.77	33.00
LTE BAND 38 BW: 15M 64QAM RB: 1,74	2577.5	37825	V	16.23	10.63	-5.64	21.22	33.00
			H	13.88	10.63	-5.64	18.87	33.00
	2595.0	38000	V	15.91	10.65	-5.65	20.91	33.00
			H	14	10.65	-5.65	19	33.00
	2612.5	38175	V	15.76	10.68	-5.68	20.76	33.00
			H	13.7	10.68	-5.68	18.7	33.00

**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 38 BW: 20M QPSK RB: 1,0	2580.0	37850	V	18.09	10.61	-5.62	23.08	33.00
			H	14.74	10.61	-5.62	19.73	33.00
	2595.0	38000	V	18.3	10.61	-5.62	23.29	33.00
			H	15.45	10.61	-5.62	20.44	33.00
2610.0	38150	V	15.08	10.65	-5.65	20.08	33.00	
		H	14.43	10.65	-5.65	19.43	33.00	
LTE BAND 38 BW: 20M QPSK RB: 1,99	2580.0	37850	V	16.75	10.63	-5.64	21.74	33.00
			H	12.78	10.64	-5.64	17.78	33.00
	2595.0	38000	V	16.81	10.64	-5.64	21.81	33.00
			H	13.66	10.64	-5.64	18.66	33.00
2610.0	38150	V	16.24	10.68	-5.68	21.24	33.00	
		H	14.39	10.68	-5.68	19.39	33.00	
LTE BAND 38 BW: 20M 16QAM RB: 1,0	2580.0	37850	V	18.47	10.61	-5.62	23.46	33.00
			H	14.88	10.61	-5.63	19.86	33.00
	2595.0	38000	V	18.16	10.61	-5.62	23.15	33.00
			H	15.18	10.61	-5.62	20.17	33.00
2610.0	38150	V	15.44	10.65	-5.65	20.44	33.00	
		H	13.88	10.65	-5.65	18.88	33.00	
LTE BAND 38 BW: 20M 16QAM RB: 1,99	2580.0	37850	V	16.1	10.63	-5.64	21.09	33.00
			H	12.5	10.63	-5.64	17.49	33.00
	2595.0	38000	V	16.24	10.63	-5.64	21.23	33.00
			H	12.76	10.63	-5.64	17.75	33.00
2610.0	38150	V	16.62	10.68	-5.68	21.62	33.00	
		H	14.28	10.68	-5.68	19.28	33.00	
LTE BAND 38 BW: 20M 64QAM RB: 1,0	2580.0	37850	V	17.77	10.61	-5.62	22.76	33.00
			H	13.86	10.61	-5.62	18.85	33.00
	2595.0	38000	V	18.13	10.61	-5.62	23.12	33.00
			H	14.68	10.61	-5.62	19.67	33.00
2610.0	38150	V	15.03	10.65	-5.65	20.03	33.00	
		H	13.49	10.65	-5.65	18.49	33.00	
LTE BAND 38 BW: 20M 64QAM RB: 1,99	2580.0	37850	V	16.36	10.63	-5.64	21.35	33.00
			H	11.89	10.64	-5.64	16.89	33.00
	2595.0	38000	V	16.59	10.64	-5.64	21.59	33.00
			H	13.52	10.64	-5.64	18.52	33.00
2610.0	38150	V	15.75	10.68	-5.68	20.75	33.00	
		H	14.05	10.68	-5.68	19.05	33.00	

**Remark :**

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

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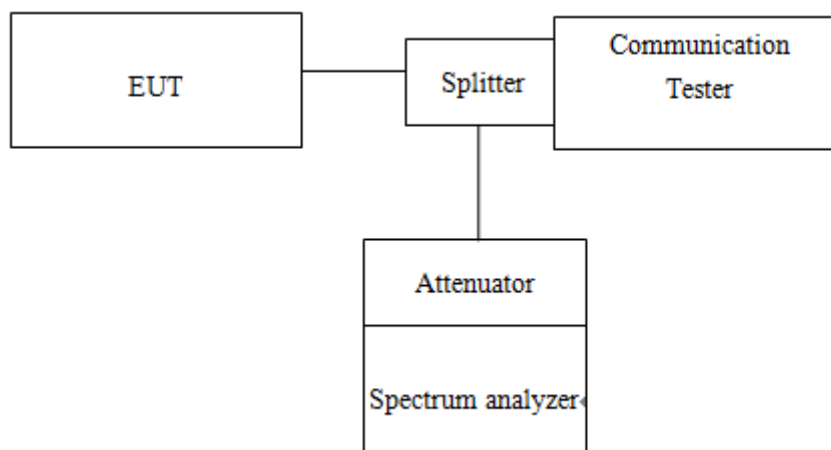
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## 8. OCCUPIED BANDWIDTH MEASUREMENT

### 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.
EXA Spectrum Analyzer	Agilent	N9010A	MY54200716	2017/10/16	2018/10/15
Radio Communication Analyser	Anritsu	MT8820C	6201465317	2018/01/17	2019/01/16
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
Temperature Chamber	TERCHY	MHG-120LF	911009	2017/05/19	2018/5/18

#### 8.5. Measurement Result

Freq. (MHz)	CH	99% BW (MHz)	99% BW (MHz)	26 dB BW (MHz)	26 dB BW (MHz)
		GSM 850	GPRS 850	GSM 850	GPRS 850
824.2	128	<b>0.25335</b>	0.24417	0.30390	0.31540
836.6	190	0.24992	0.24617	0.31830	<b>0.31970</b>
848.8	251	0.24469	<b>0.24807</b>	<b>0.31900</b>	0.31610

Freq. (MHz)	CH	99% BW (MHz)	99% BW (MHz)	26 dB BW (MHz)	26 dB BW (MHz)
		GSM 1900	GPRS 1900	GSM 1900	GPRS 1900
1850.2	512	0.24464	<b>0.24606</b>	<b>0.32160</b>	0.31640
1880.0	661	<b>0.25279</b>	0.24515	0.31640	0.31180
1909.8	810	0.24558	0.24376	0.31690	<b>0.32210</b>

Freq. (MHz)	CH	99% BW (MHz)	99% BW (MHz)	99% BW (MHz)	26 dB BW (MHz)	26 dB BW (MHz)	26 dB BW (MHz)
		WCDMA II	HSDPA II	HSUPA II	WCDMA II	HSDPA II	HSUPA II
1852.40	9262	4.1249	<b>4.1252</b>	4.1229	4.6740	4.6660	4.6880
1880.00	9400	4.1314	4.1245	4.1266	4.6670	<b>4.7030</b>	<b>4.6980</b>
1907.60	9538	<b>4.1336</b>	4.1219	<b>4.1514</b>	<b>4.7010</b>	4.6890	4.6760

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Freq. (MHz)	CH	99% BW (MHz)	99% BW (MHz)	99% BW (MHz)	26 dB BW (MHz)	26 dB BW (MHz)	26 dB BW (MHz)
		WCDMA IV	HSDPA IV	HSUPA IV	WCDMA IV	HSDPA IV	HSUPA IV
1712.40	1312	4.1256	<b>4.1380</b>	4.1174	<b>4.6780</b>	<b>4.7020</b>	<b>4.6890</b>
1732.60	1413	<b>4.1270</b>	4.1292	4.1215	4.6760	4.6860	4.6780
1752.60	1513	4.1268	4.1322	4.1160	4.6680	4.6810	4.6550

Freq. (MHz)	CH	99% BW (MHz)	99% BW (MHz)	99% BW (MHz)	26 dB BW (MHz)	26 dB BW (MHz)	26 dB BW (MHz)
		WCDMA V	HSDPA V	HSUPA V	WCDMA V	HSDPA V	HSUPA V
826.40	4132	4.1065	4.1309	<b>4.1332</b>	4.6510	4.6770	4.6710
836.60	4183	4.1159	<b>4.1410</b>	4.1289	4.6790	<b>4.6890</b>	4.6570
846.60	4233	<b>4.1244</b>	4.1045	4.1190	<b>4.6980</b>	4.6670	<b>4.6950</b>

LTE BAND 2 Channel bandwidth: 1.4MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1850.7	18607	<b>1.0947</b>	<b>1.0974</b>	1.0956	1.2338	<b>1.2379</b>	<b>1.2459</b>
1880.0	18900	1.0904	1.0928	1.0954	<b>1.2418</b>	1.2305	1.2305
1909.3	19193	1.0932	1.0899	<b>1.0968</b>	1.2285	1.2305	1.2296

LTE BAND 2 Channel bandwidth: 3MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1851.5	18615	2.6974	2.6994	<b>2.7032</b>	2.9732	<b>3.0094</b>	2.9934
1880.0	18900	2.6987	2.6976	2.6959	2.9864	3.0020	2.9880
1908.5	19185	<b>2.7023</b>	<b>2.7029</b>	2.6963	<b>2.9906</b>	3.0030	<b>3.0051</b>

LTE BAND 2 Channel bandwidth: 5MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1852.5	18625	<b>4.5016</b>	<b>4.5152</b>	<b>4.5146</b>	<b>4.9776</b>	<b>4.9567</b>	4.9244
1880.0	18900	4.4934	4.4994	4.4958	4.9705	4.9244	4.9452
1907.5	19175	4.4945	4.4932	4.5088	4.9581	4.9386	<b>4.9525</b>

LTE BAND 2 Channel bandwidth: 10MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1855.0	18650	8.9725	8.9621	8.9637	9.775	<b>9.753</b>	9.721
1880.0	18900	<b>9.0037</b>	<b>8.9770</b>	8.9716	<b>9.851</b>	9.731	<b>9.770</b>
1905.0	19150	8.9855	8.9617	<b>8.9761</b>	9.837	9.749	9.652

LTE BAND 2 Channel bandwidth: 15MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1857.5	18675	13.435	<b>13.490</b>	13.490	14.566	14.629	14.595
1880.0	18900	13.439	13.480	<b>13.495</b>	14.571	14.621	14.540
1902.5	19125	<b>13.472</b>	13.474	13.453	<b>14.649</b>	<b>14.698</b>	<b>14.720</b>

LTE BAND 2 Channel bandwidth: 20MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1860.0	18700	17.932	17.903	17.915	19.504	<b>19.507</b>	19.309
1880.0	18900	<b>17.963</b>	17.933	<b>17.993</b>	19.373	19.267	<b>19.588</b>
1900.0	19100	17.953	<b>17.940</b>	17.980	<b>19.564</b>	19.476	19.409

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LTE BAND 4 Channel bandwidth: 1.4MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1710.7	19957	1.0934	1.0983	<b>1.0989</b>	1.2403	<b>1.2364</b>	<b>1.2398</b>
1732.5	20175	<b>1.0944</b>	1.0970	1.0952	1.2376	1.2359	1.2369
1754.3	20393	1.0907	<b>1.0999</b>	1.0939	<b>1.2413</b>	1.2362	1.2320

LTE BAND 4 Channel bandwidth: 3MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1711.5	19965	2.7016	2.7049	2.7009	2.9864	<b>3.0098</b>	2.9910
1732.5	20175	<b>2.7045</b>	<b>2.7076</b>	<b>2.7015</b>	<b>3.0014</b>	2.9848	<b>3.0032</b>
1753.5	20385	2.6951	2.7012	2.7004	2.9815	2.9903	2.9894

LTE BAND 4 Channel bandwidth: 5MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1712.5	19957	4.4951	4.5015	4.5039	4.9400	4.9104	4.9069
1732.5	20175	<b>4.5070</b>	4.4985	<b>4.5123</b>	<b>4.9693</b>	4.9467	<b>4.9572</b>
1752.5	20375	4.4981	<b>4.5018</b>	4.5084	4.9193	<b>5.0101</b>	4.9327

LTE BAND 4 Channel bandwidth: 10MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1715.0	20000	8.9760	8.9587	<b>8.9704</b>	<b>9.788</b>	9.785	<b>9.761</b>
1732.5	20175	<b>8.9939</b>	<b>8.9698</b>	8.9598	9.684	9.760	9.729
1750.0	20350	8.9628	8.9577	8.9470	9.727	<b>9.790</b>	9.745

LTE BAND 4 Channel bandwidth: 15MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1717.5	20025	13.493	<b>13.479</b>	13.448	14.573	<b>14.720</b>	14.547
1732.5	20175	<b>13.505</b>	13.457	13.471	<b>14.677</b>	14.716	<b>14.773</b>
1747.5	20325	13.448	13.459	<b>13.477</b>	14.646	14.595	14.636

LTE BAND 4 Channel bandwidth: 20MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1720.0	20050	17.898	17.892	17.920	19.320	19.170	19.424
1732.5	20175	<b>17.918</b>	<b>17.972</b>	17.934	19.359	<b>19.487</b>	19.276
1745.0	20300	17.911	17.955	<b>18.004</b>	<b>19.385</b>	19.383	<b>19.576</b>

LTE BAND 5 Channel bandwidth: 1.4MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
824.7	20407	1.0922	<b>1.0940</b>	<b>1.0941</b>	1.2309	<b>1.2430</b>	1.2305
836.5	20525	<b>1.0948</b>	1.0924	1.0914	1.2339	1.2415	<b>1.2341</b>
848.3	20643	1.0924	1.0931	1.0939	<b>1.2398</b>	1.2337	1.2322

LTE BAND 5 Channel bandwidth: 3MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
825.5	20415	<b>2.6977</b>	<b>2.7061</b>	2.7020	2.9948	2.9960	2.9813
836.5	20525	2.6929	2.6992	2.6996	<b>3.0100</b>	<b>3.0019</b>	3.0095
847.5	20635	2.6892	2.6956	<b>2.7050</b>	2.9486	2.9669	<b>3.0101</b>

LTE BAND 5 Channel bandwidth: 5MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
826.5	20425	4.4958	4.5033	4.4947	4.9774	<b>4.9929</b>	4.9603
836.5	20525	<b>4.5081</b>	4.4899	<b>4.5107</b>	4.9404	4.9663	4.9189
846.5	20625	4.5076	<b>4.5047</b>	4.5077	<b>4.9887</b>	4.9637	<b>4.9649</b>

LTE BAND 5 Channel bandwidth: 10MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
829.0	20450	<b>9.0101</b>	8.9556	8.9459	<b>9.857</b>	9.699	9.761
836.5	20525	8.9847	<b>8.9591</b>	<b>8.9774</b>	9.741	<b>9.769</b>	9.762
844.0	20600	8.9660	8.9567	8.9621	9.778	9.711	<b>9.785</b>

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LTE BAND 12 Channel bandwidth: 1.4MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
699.7	23017	<b>1.0963</b>	<b>1.1024</b>	1.0978	1.2347	<b>1.2386</b>	<b>1.2439</b>
707.5	23095	1.0906	1.0933	1.0973	1.2281	1.2372	1.2400
715.3	23173	1.0938	1.0964	<b>1.1011</b>	<b>1.2382</b>	1.2377	1.2367

LTE BAND 12 Channel bandwidth: 3MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
700.5	23025	<b>2.7039</b>	2.7031	<b>2.7073</b>	2.9800	<b>3.0215</b>	2.9760
707.5	23095	2.7010	<b>2.7083</b>	2.7061	2.9620	3.0007	2.9960
714.5	23165	2.6979	2.7078	2.7044	<b>2.9889</b>	3.0147	<b>3.0164</b>

LTE BAND 12 Channel bandwidth: 5MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
701.5	23035	<b>4.5063</b>	<b>4.5010</b>	4.5049	4.9065	<b>4.9781</b>	4.9571
707.5	23095	4.4986	4.4899	<b>4.5102</b>	4.9356	4.9674	<b>4.9798</b>
713.5	23155	4.4936	4.4951	4.5053	<b>4.9575</b>	4.9288	4.8973

LTE BAND 12 Channel bandwidth: 10MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
704.0	23060	9.0031	<b>8.9815</b>	<b>8.9804</b>	9.814	<b>9.788</b>	<b>9.811</b>
707.5	23095	<b>9.0263</b>	8.9647	<b>8.9804</b>	<b>9.871</b>	9.729	9.716
711.0	23130	8.9971	8.9678	8.9542	9.766	9.713	9.693

LTE BAND 13 Channel bandwidth: 5MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
779.5	23205	4.4940	<b>4.5089</b>	4.4957	<b>4.9956</b>	4.9159	4.9397
782.0	23230	<b>4.5086</b>	4.4961	<b>4.5048</b>	4.9515	<b>4.9235</b>	4.9292
784.5	23255	4.5008	4.5072	4.5019	4.9539	4.9179	<b>4.9770</b>

LTE BAND 13 Channel bandwidth: 10MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
782.0	23230	<b>8.998</b>	<b>8.952</b>	<b>8.969</b>	<b>9.749</b>	<b>9.712</b>	<b>9.771</b>

LTE BAND 17 Channel bandwidth: 5MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
706.5	23755	<b>4.5009</b>	<b>4.5189</b>	4.5016	4.9796	4.9608	4.9288
710.0	23790	4.4972	4.5024	<b>4.5030</b>	4.9729	<b>4.9899</b>	<b>4.9553</b>
713.5	23825	4.4930	4.4878	4.4981	<b>4.9967</b>	4.9128	4.9233

LTE BAND 17 Channel bandwidth: 10MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
709.0	23780	<b>8.9960</b>	<b>8.9933</b>	8.9757	9.778	<b>9.817</b>	<b>9.806</b>
710.0	23790	8.9721	8.9688	<b>8.9836</b>	<b>9.798</b>	9.739	9.742
711.0	23780	8.9830	8.9359	8.9692	9.730	9.455	9.703

LTE BAND 38 Channel bandwidth: 5MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
2572.5	37775	4.5059	4.4949	4.4997	4.9454	4.8606	<b>4.9605</b>
2595.0	38000	<b>4.5100</b>	4.4906	4.5128	4.9342	<b>4.9658</b>	4.9298
2617.5	38225	4.4857	<b>4.4964</b>	4.4992	<b>5.0034</b>	4.9293	4.8591

LTE BAND 38 Channel bandwidth: 10MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
2575.0	37800	8.9819	8.9555	8.9647	9.676	9.749	<b>9.739</b>
2595.0	38000	<b>8.9850</b>	8.9611	8.9746	9.721	9.783	9.661
2615.0	38200	8.9836	<b>8.9621</b>	<b>8.9806</b>	<b>9.756</b>	<b>9.845</b>	9.735

LTE BAND 38 Channel bandwidth: 15MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
2577.5	37825	13.461	13.449	13.442	14.556	<b>14.566</b>	14.500
2595.0	38000	<b>13.478</b>	<b>13.474</b>	<b>13.459</b>	<b>14.623</b>	14.545	14.512
2612.5	38175	13.470	13.464	13.433	14.560	14.465	<b>14.614</b>

LTE BAND 38 Channel bandwidth: 20MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
2580.0	37850	17.908	17.894	17.856	19.239	19.270	<b>19.359</b>
2595.0	38000	17.889	<b>17.900</b>	17.870	<b>19.297</b>	19.289	19.290
2610.0	38150	<b>17.936</b>	17.897	<b>17.946</b>	19.218	<b>19.297</b>	19.257

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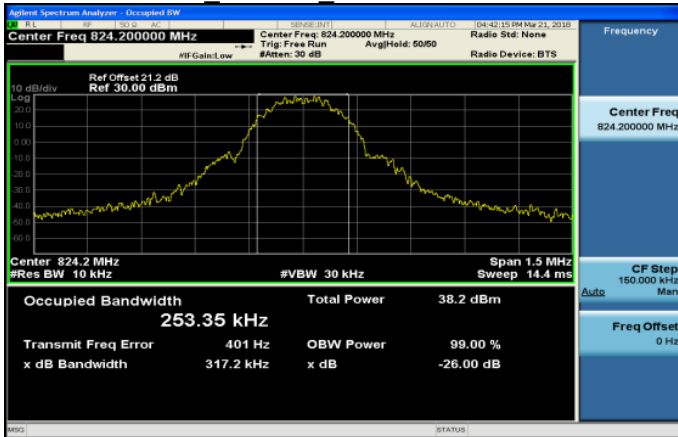
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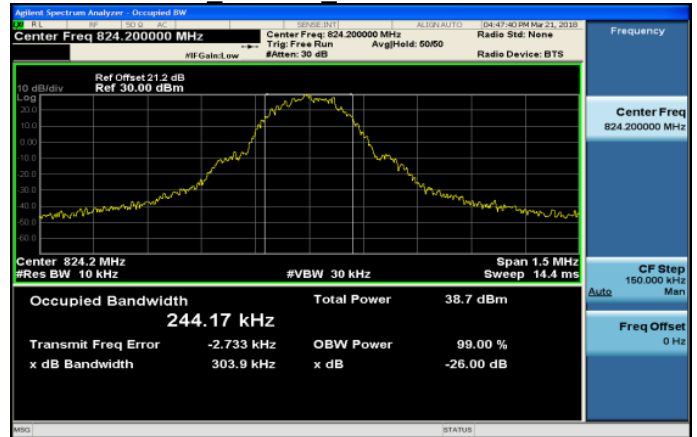
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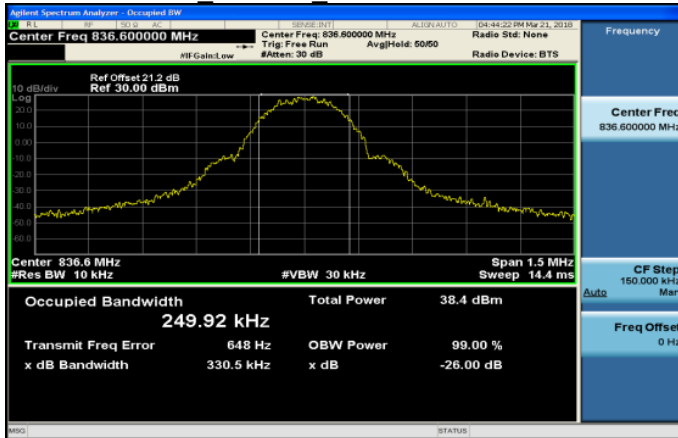
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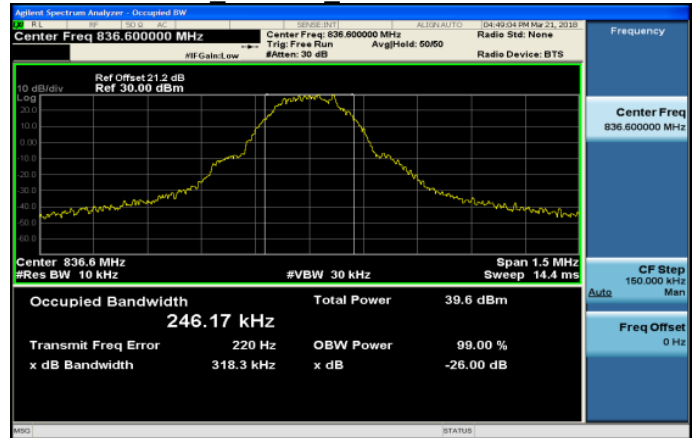
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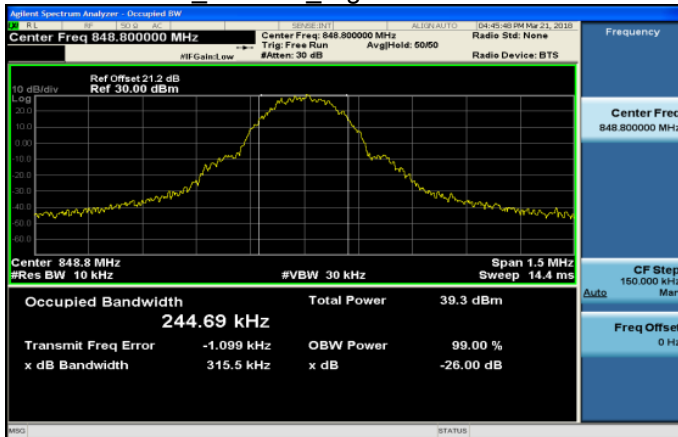
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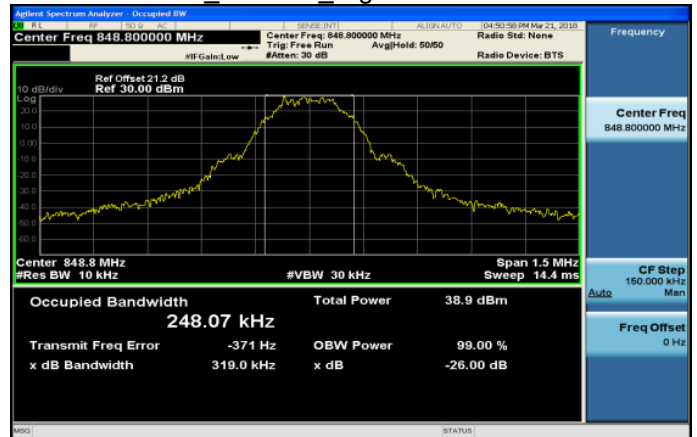
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GSM 850MHz HighCH251-848.8



GPRS 850MHz HighCH251-848.8



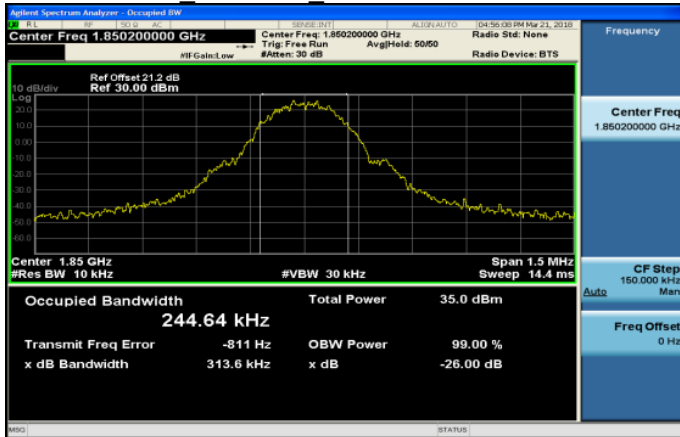
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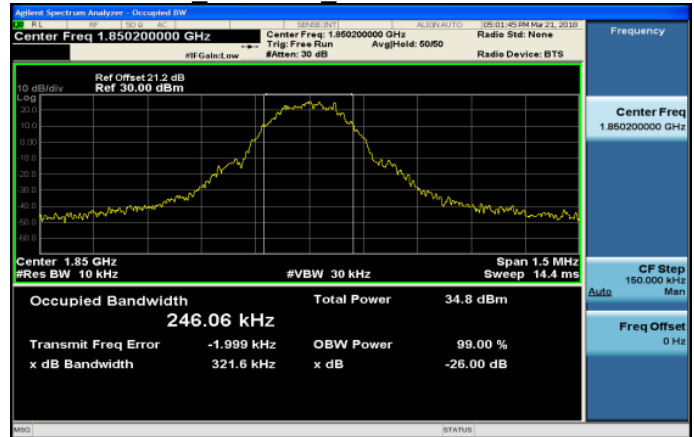
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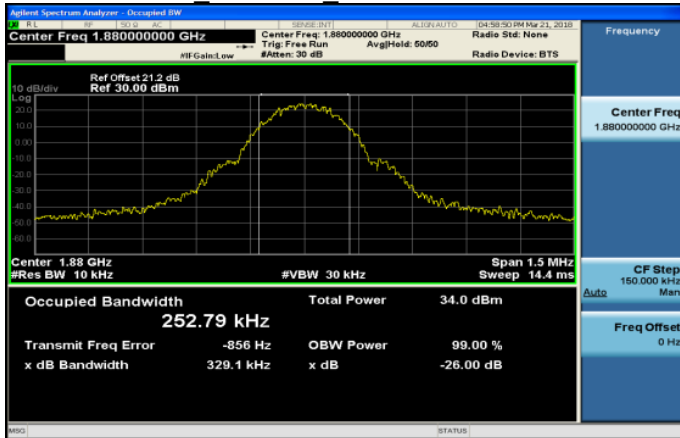
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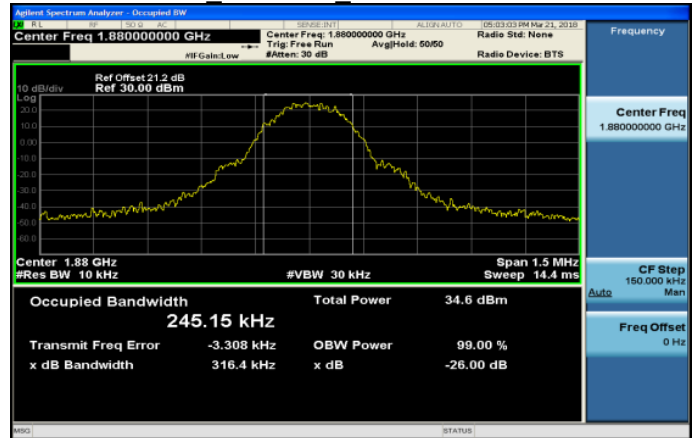
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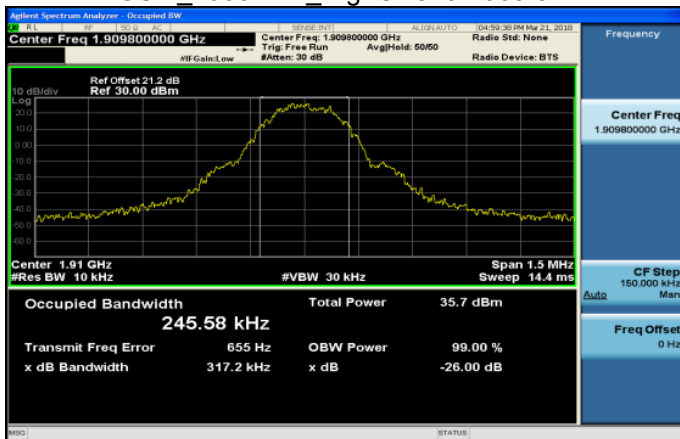
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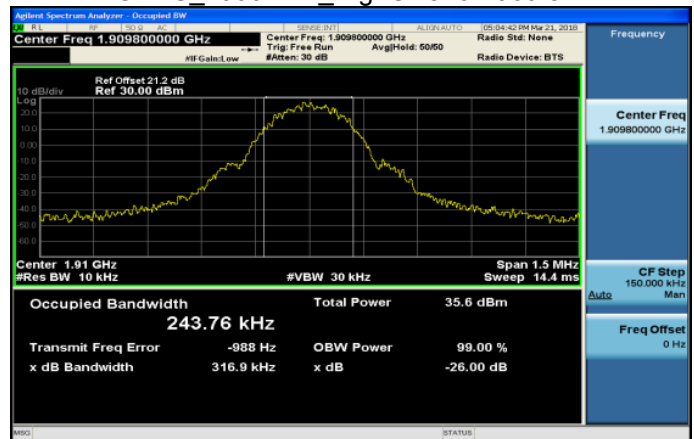
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GSM 1900MHz HighCH810-1909.8



GPRS 1900MHz HighCH810-1909.8



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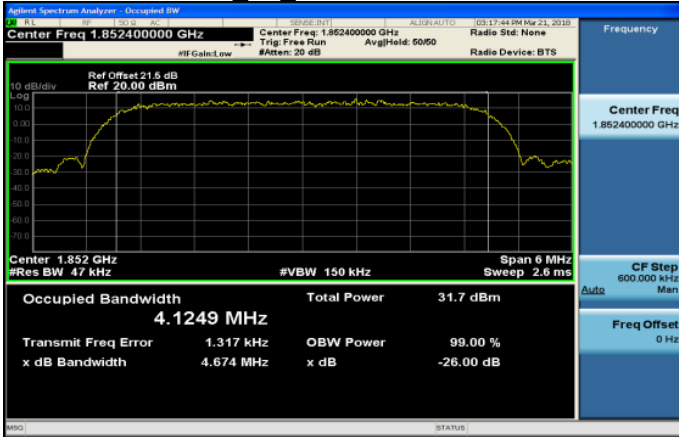
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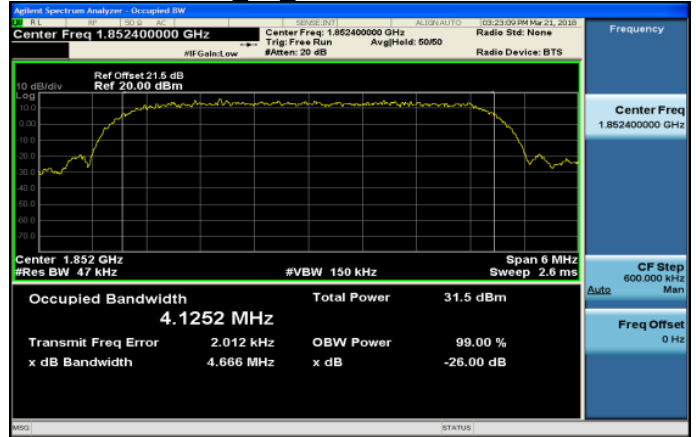
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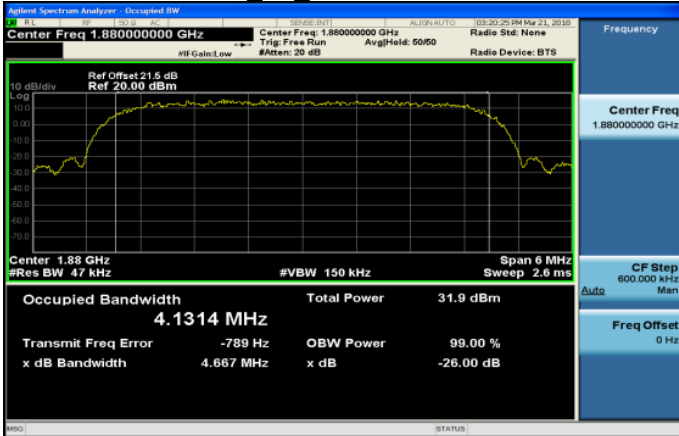
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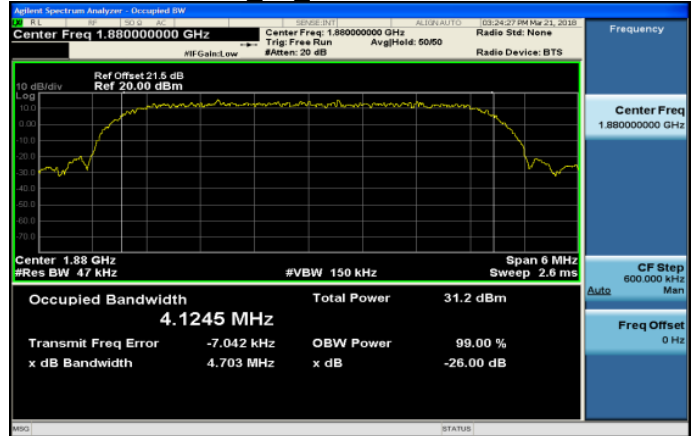
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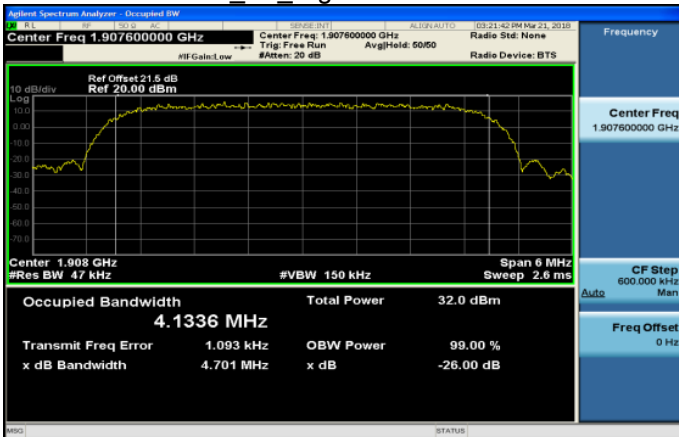
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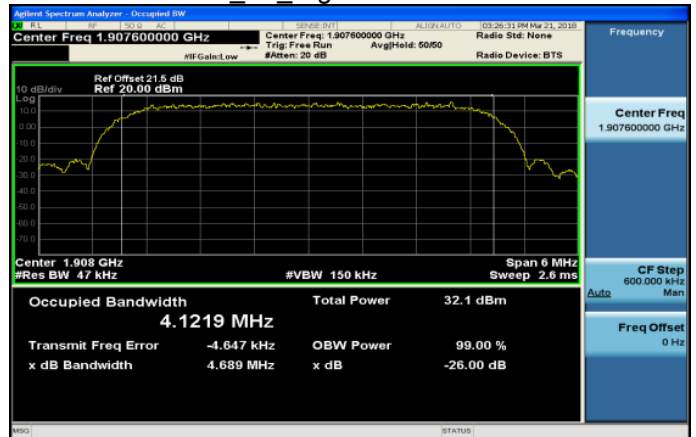
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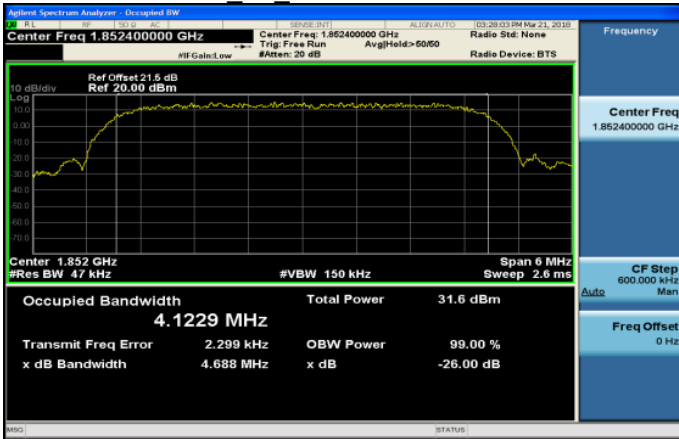


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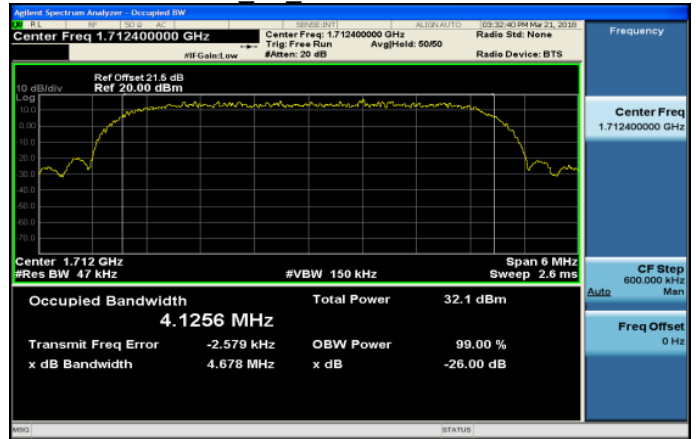
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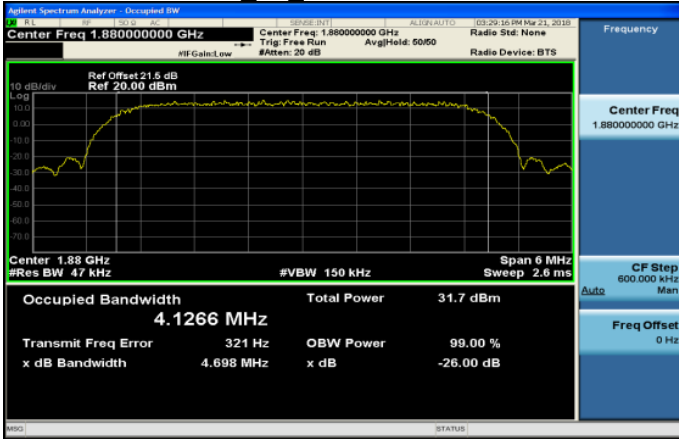
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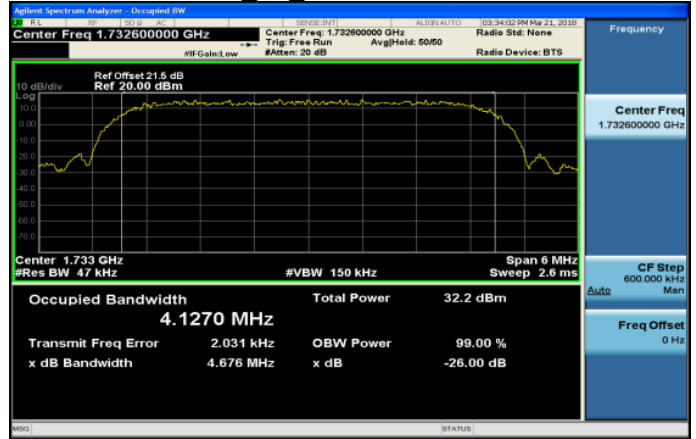
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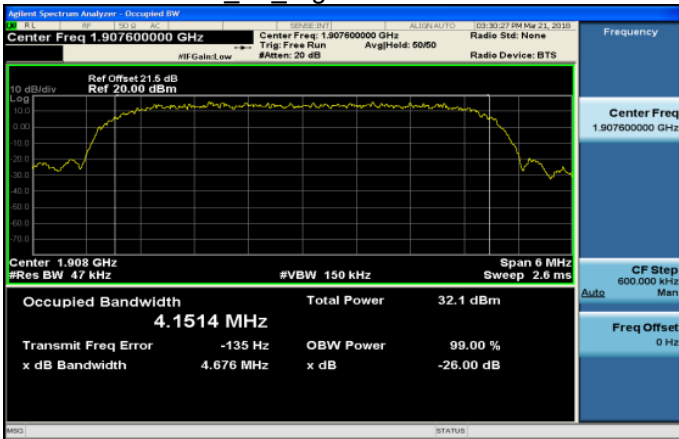
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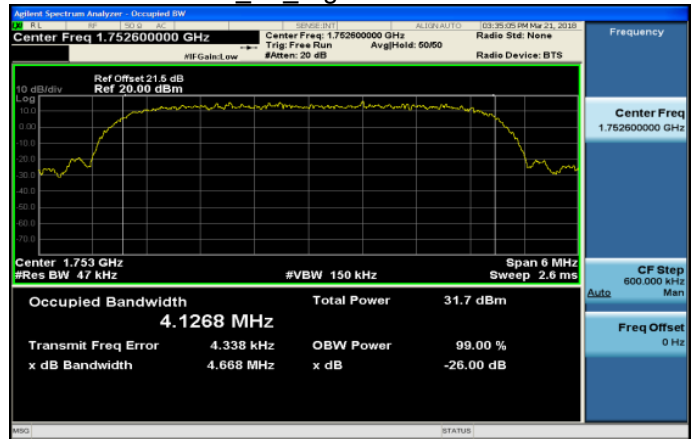
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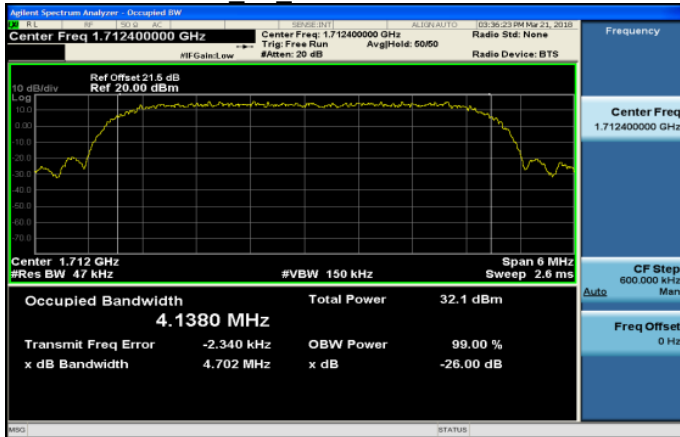


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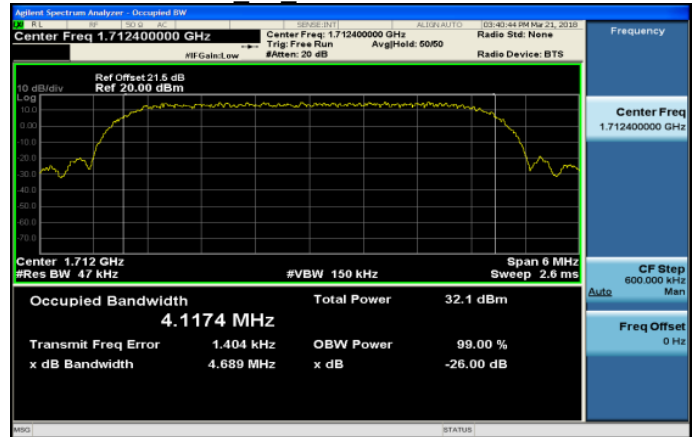
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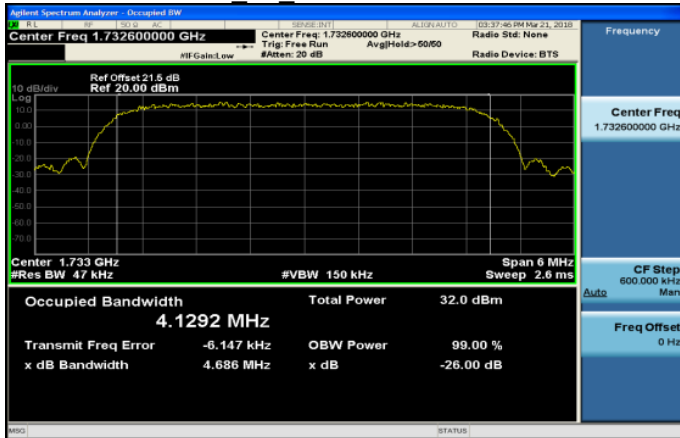
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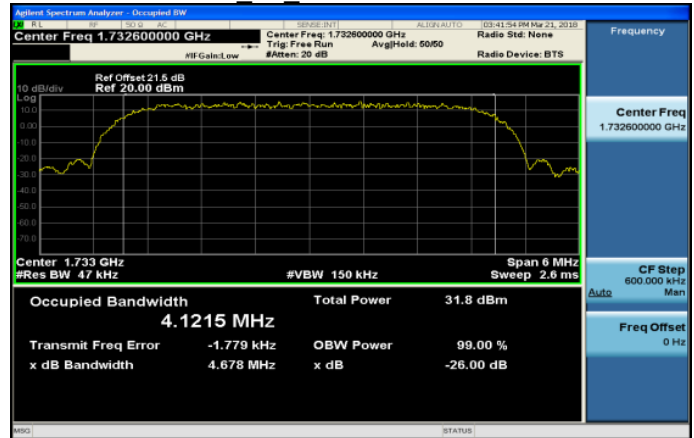
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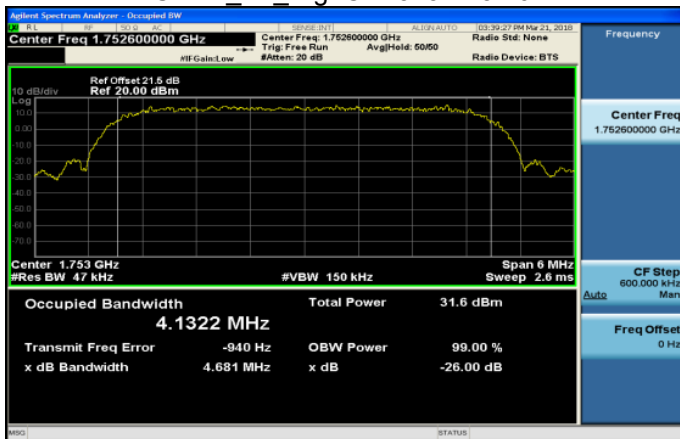
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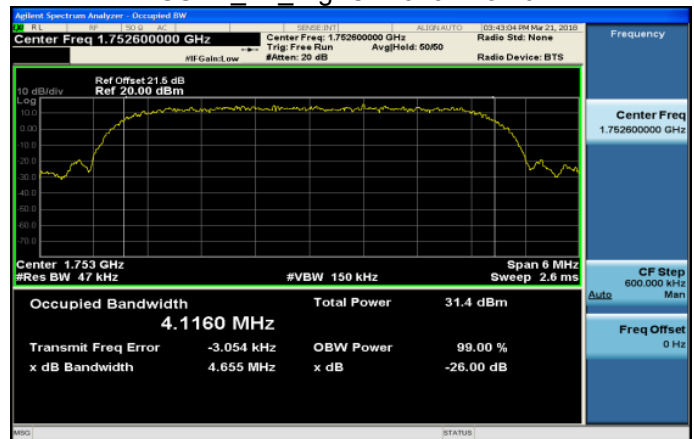
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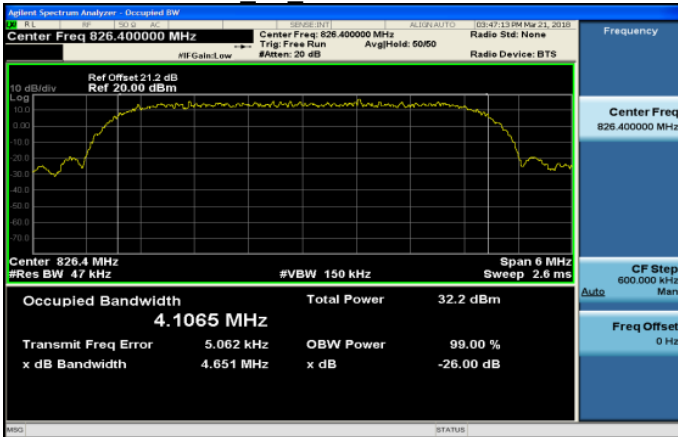


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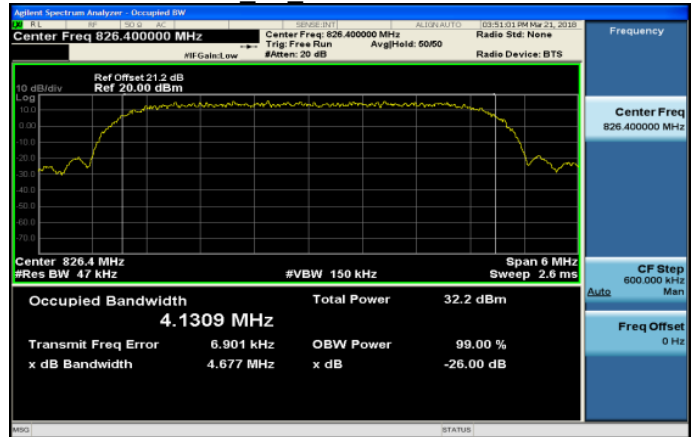
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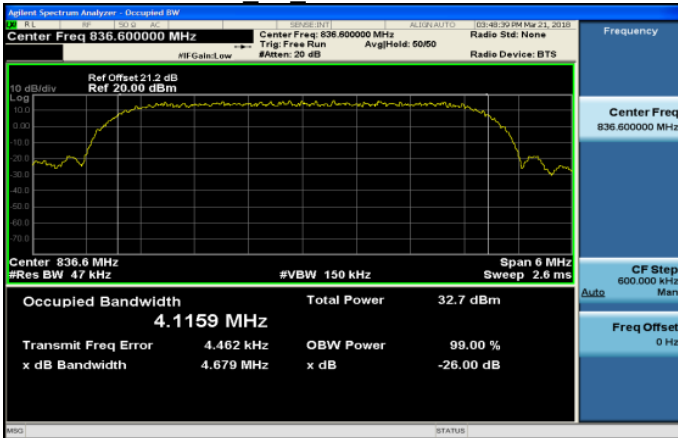
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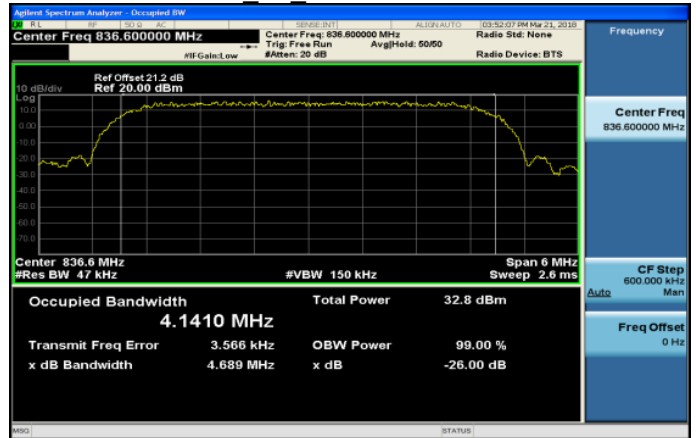
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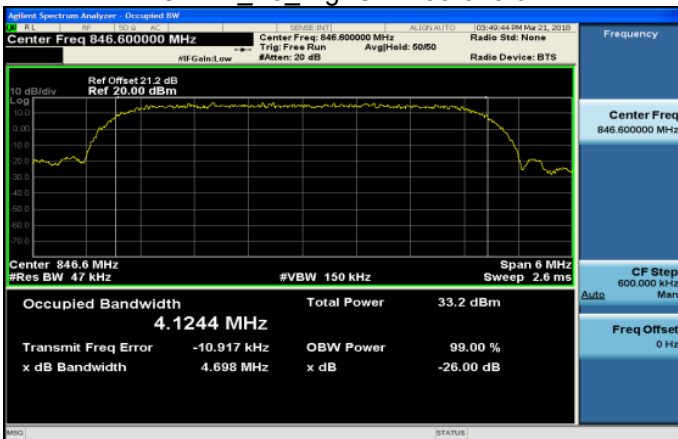
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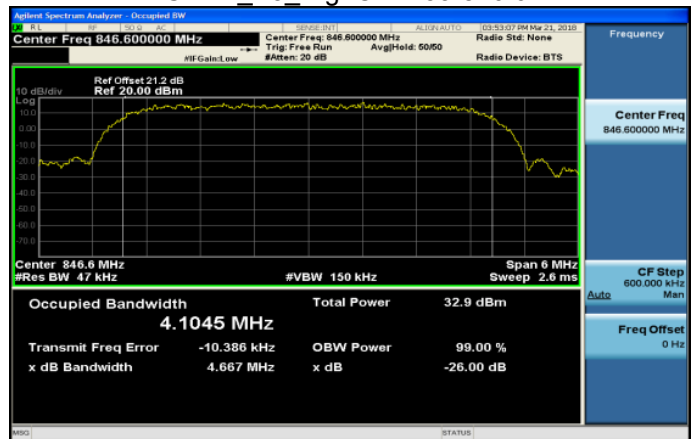
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WCDMA B5 HighCH4233-846.6



HSDPA B5 HighCH4233-846.6



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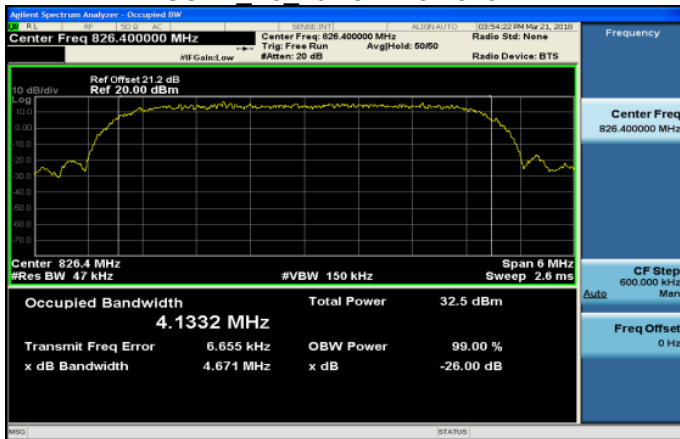
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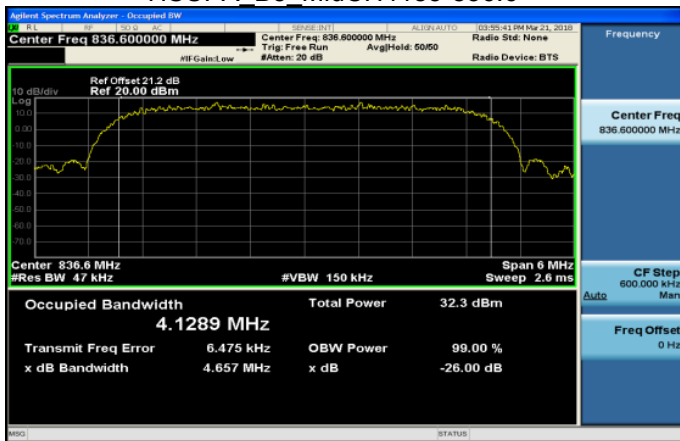
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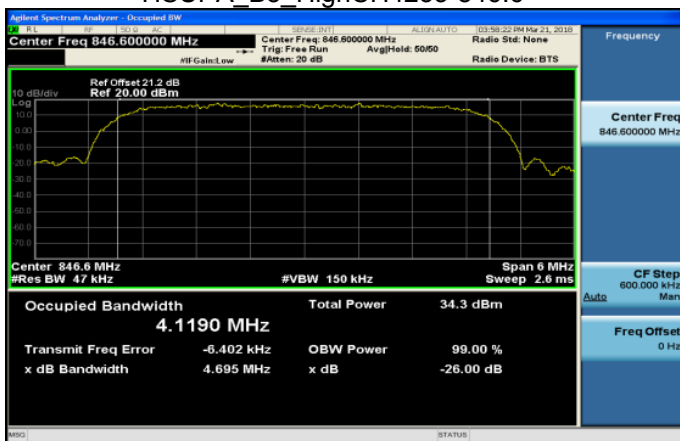
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### HSUPA B5 MidCH4183-836.6



### HSUPA B5 HighCH4233-846.6



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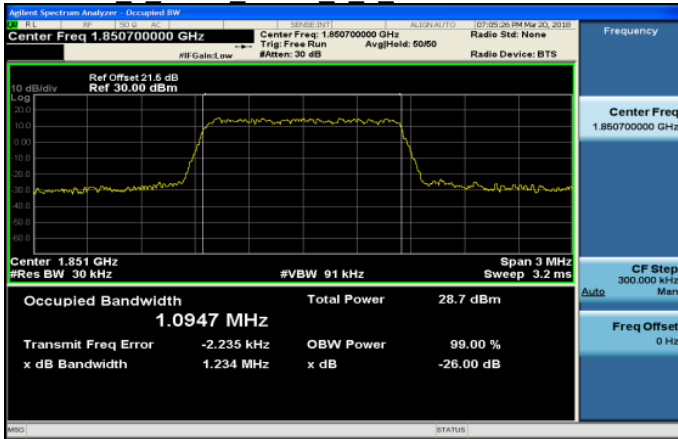
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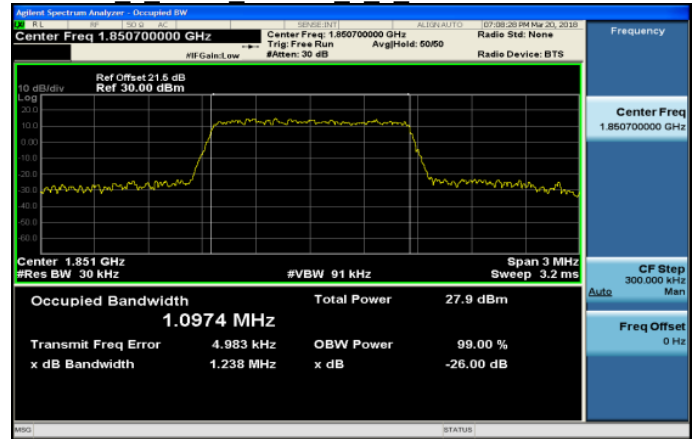




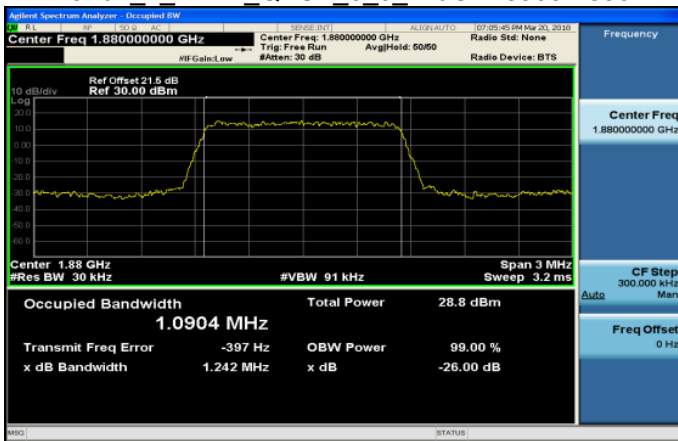
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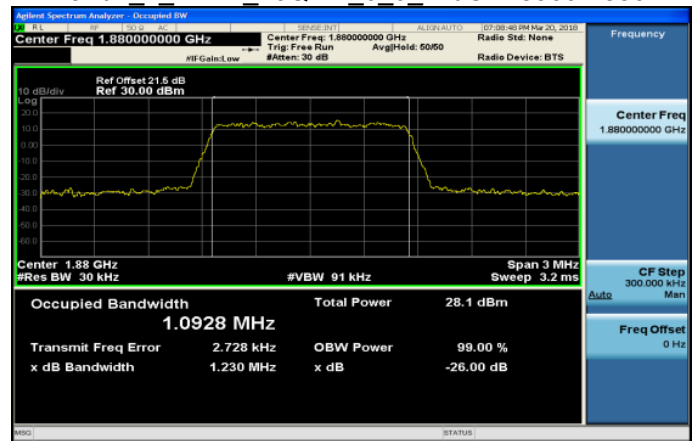
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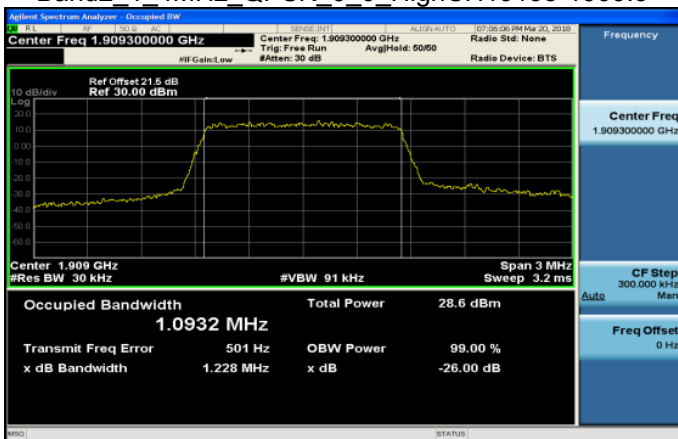
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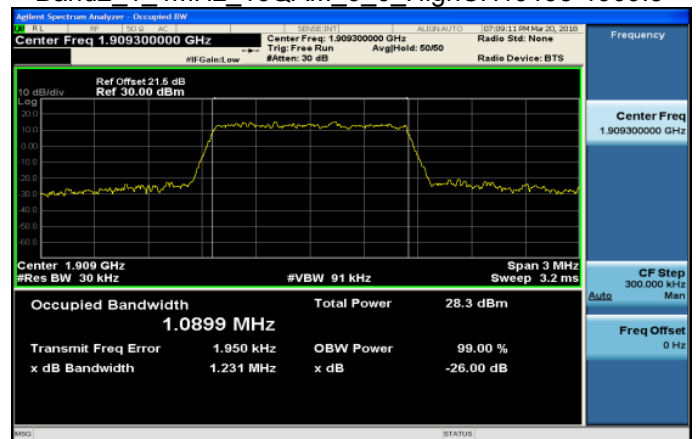
Band2 1 4MHz 16QAM 6 0 MidCH18900-1880



Band2 1 4MHz QPSK 6 0 HighCH19193-1909.3



Band2 1 4MHz 16QAM 6 0 HighCH19193-1909.3



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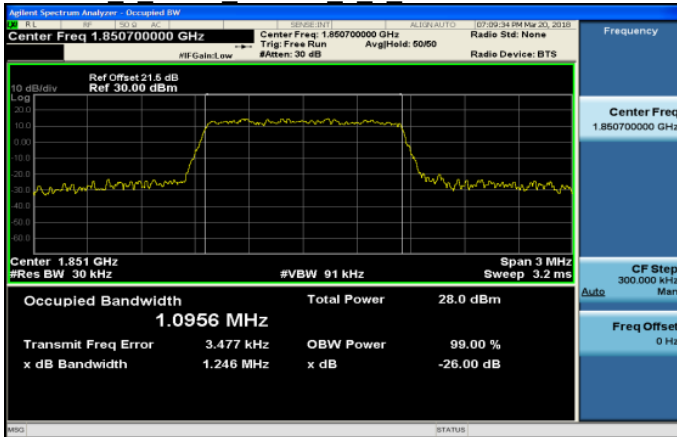
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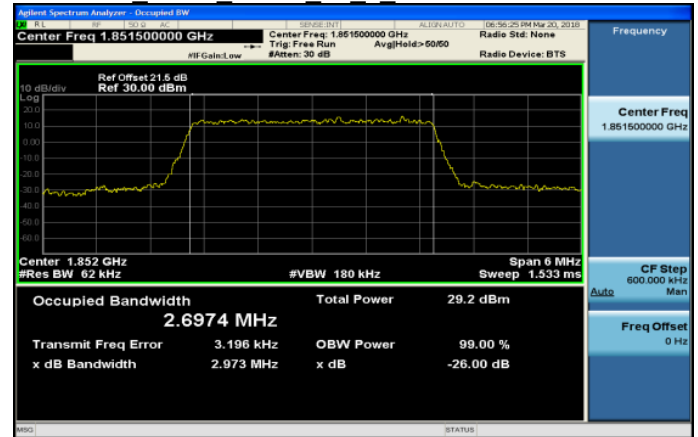
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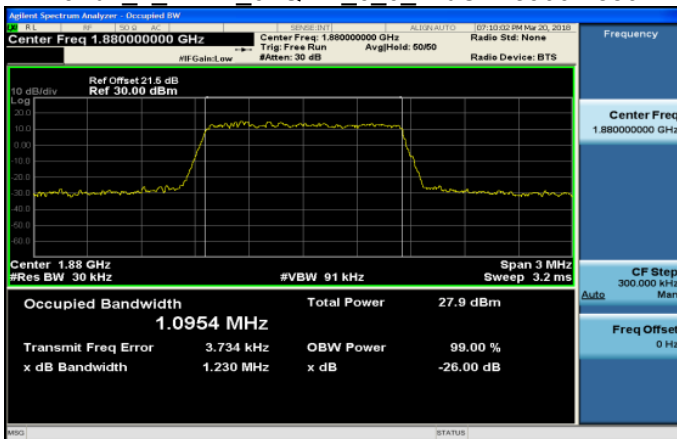
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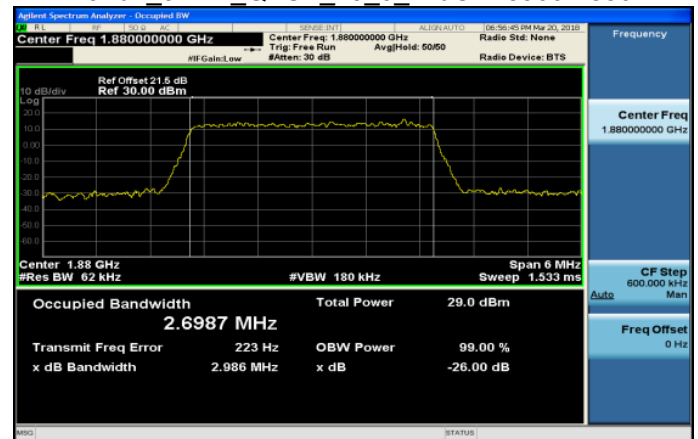
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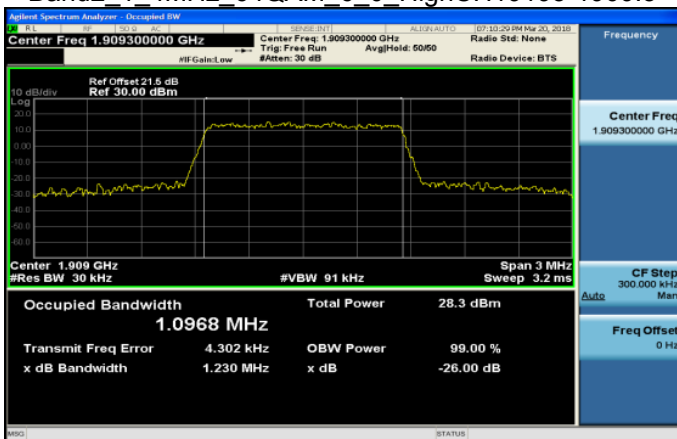
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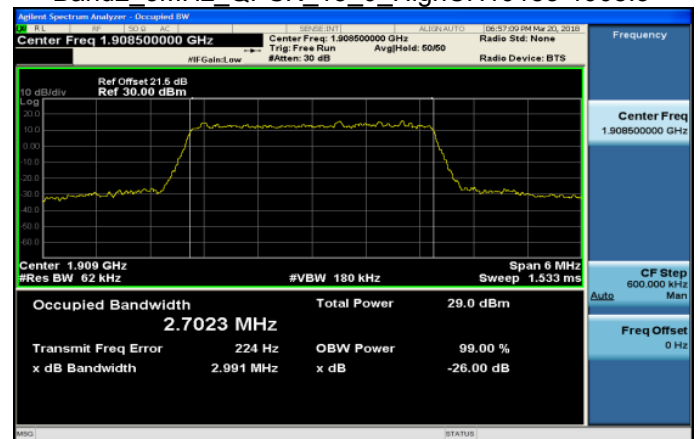
Band2 3MHz QPSK 15 0 MidCH18900-1880



Band2 1 4MHz 64QAM 6 0 HighCH19193-1909.3



Band2 3MHz QPSK 15 0 HighCH19185-1908.5



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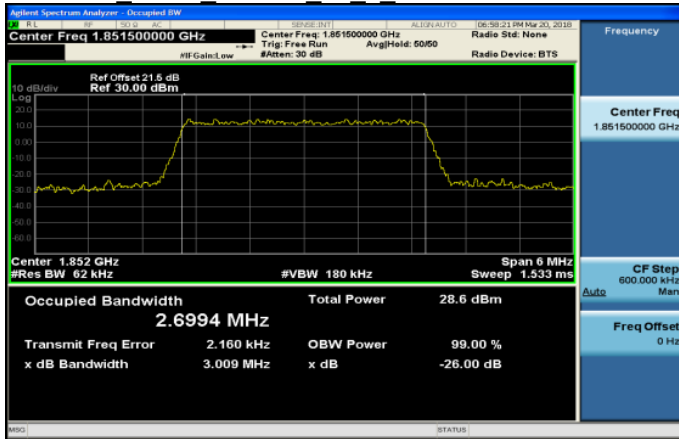
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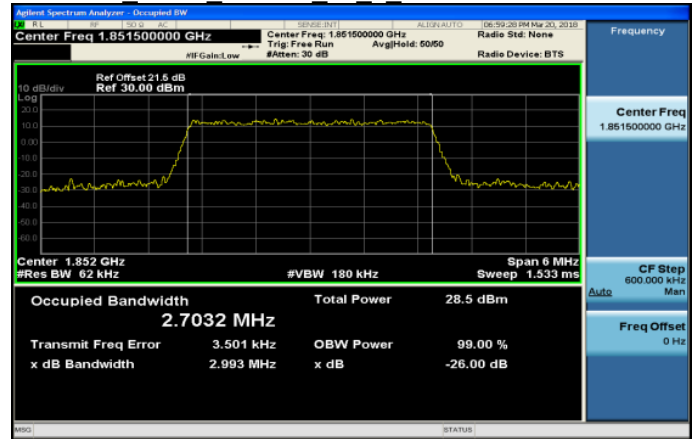
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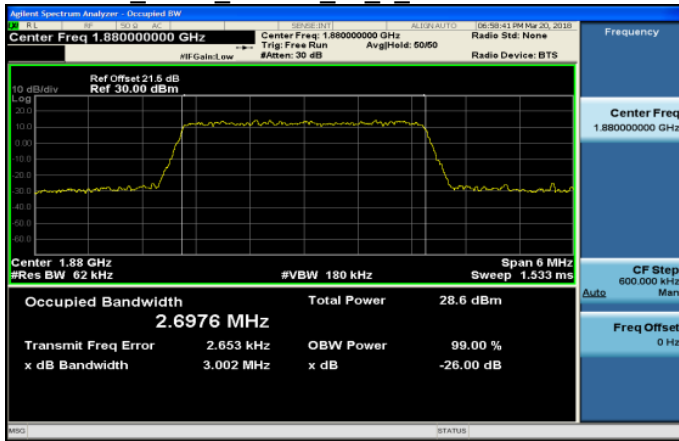
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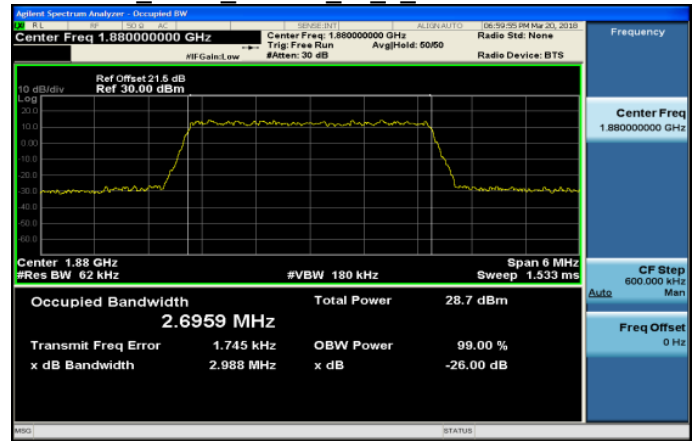
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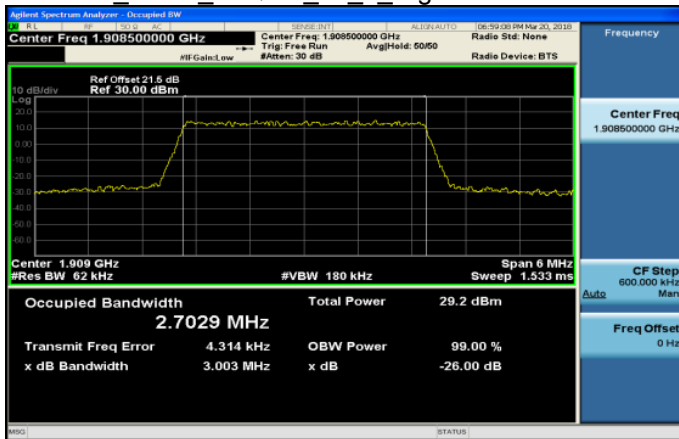
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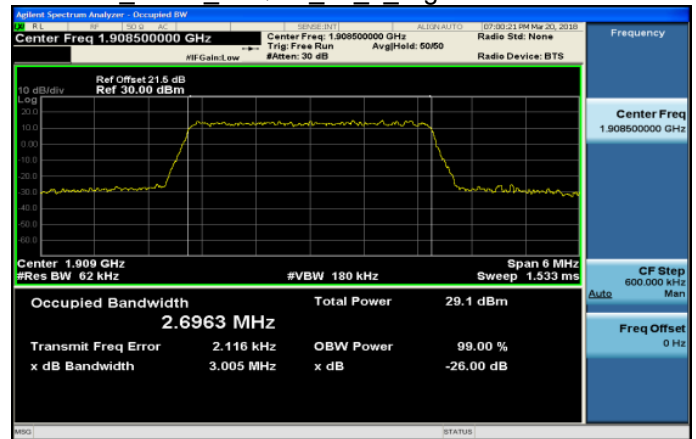
Band2 3MHz 64QAM 15 0 MidCH18900-1880



Band2 3MHz 16QAM 15 0 HighCH19185-1908.5



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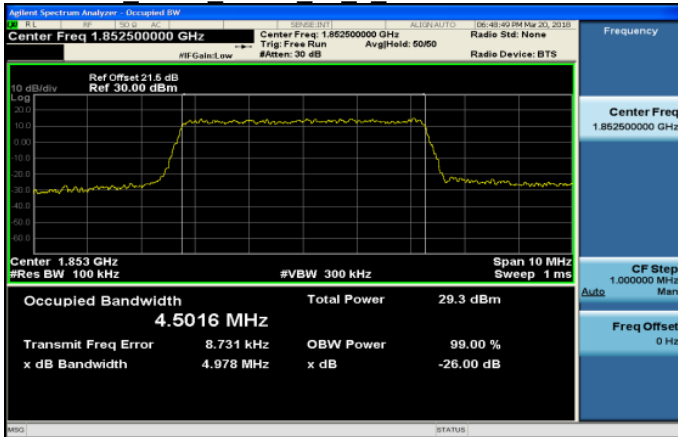
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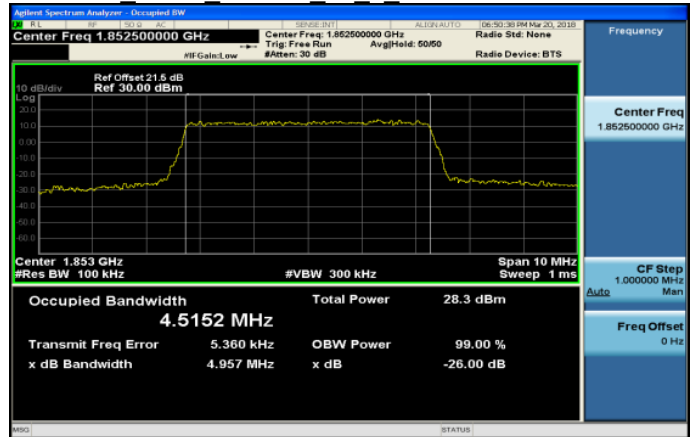
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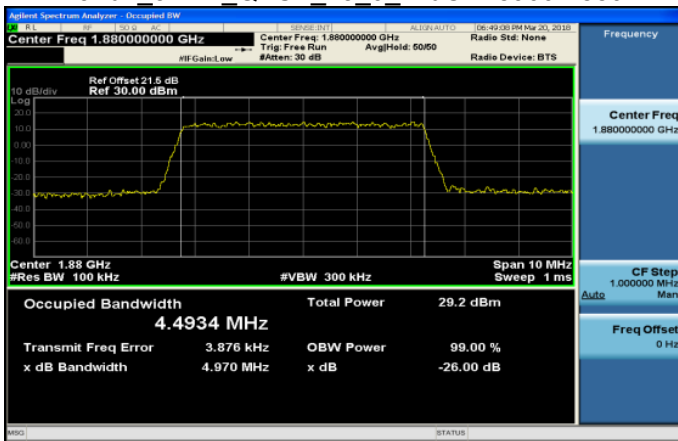
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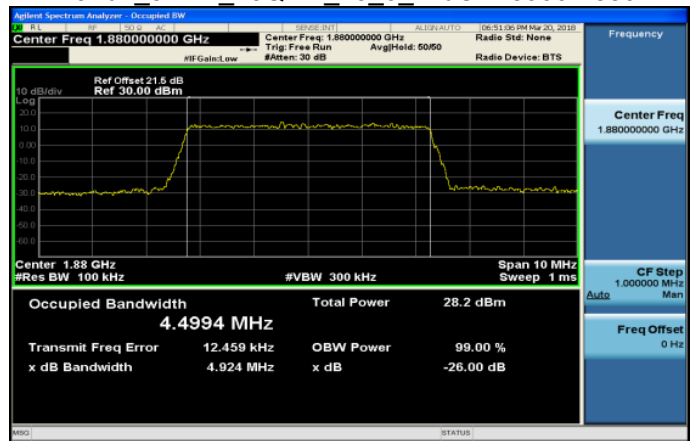
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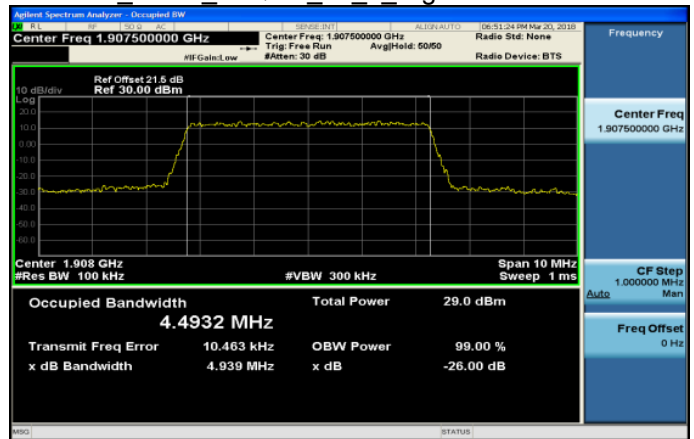
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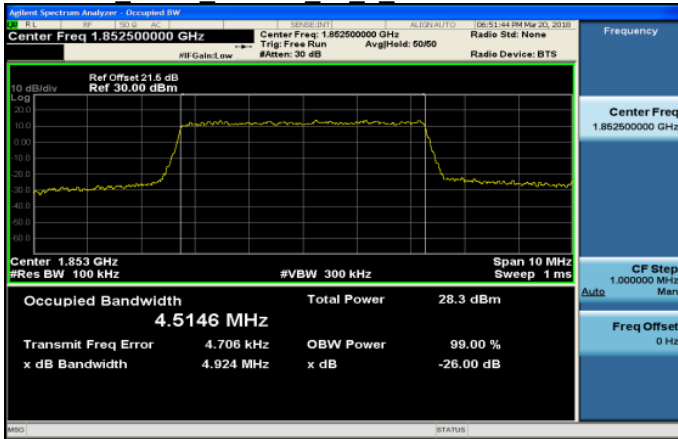
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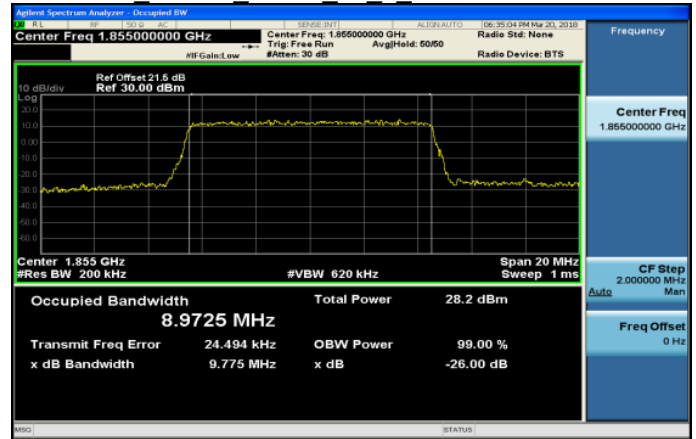
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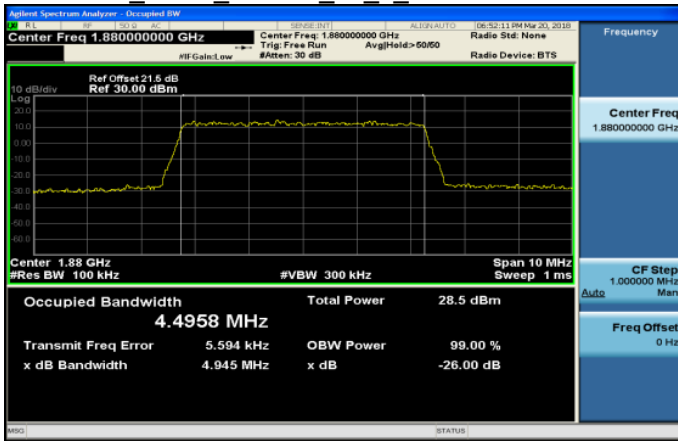
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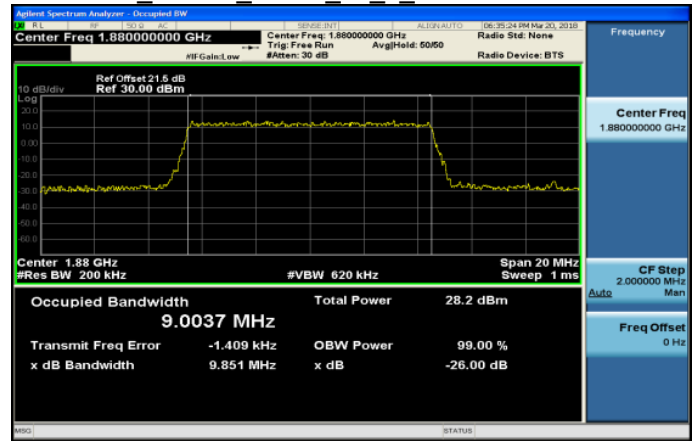
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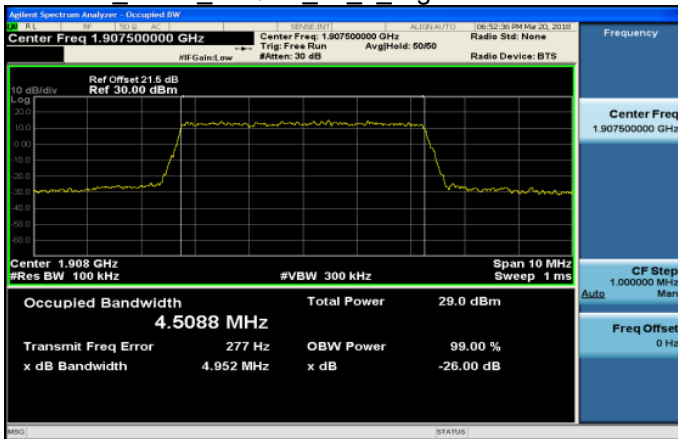
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Band2 10MHz QPSK 50 0 MidCH18900-1880



Band2 5MHz 64QAM 25 0 HighCH19175-1907.5



Band2 10MHz QPSK 50 0 HighCH19150-1905



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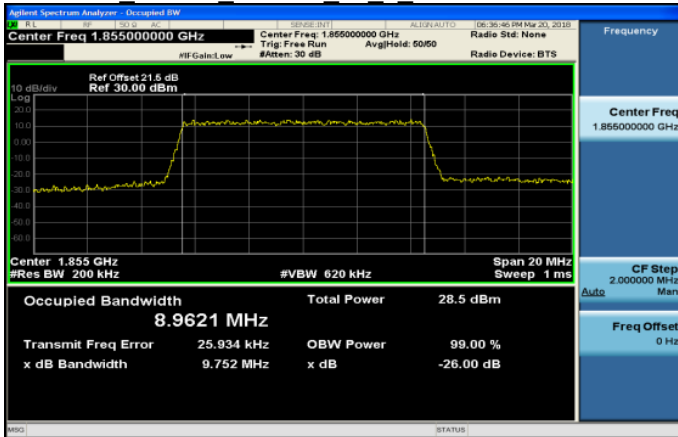
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f (886-2) 2298-0488

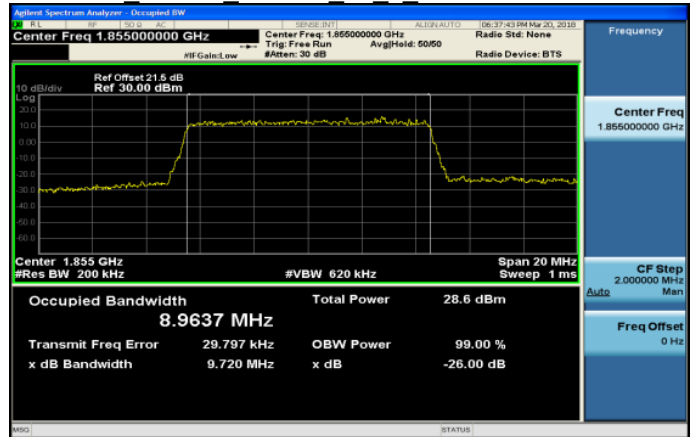
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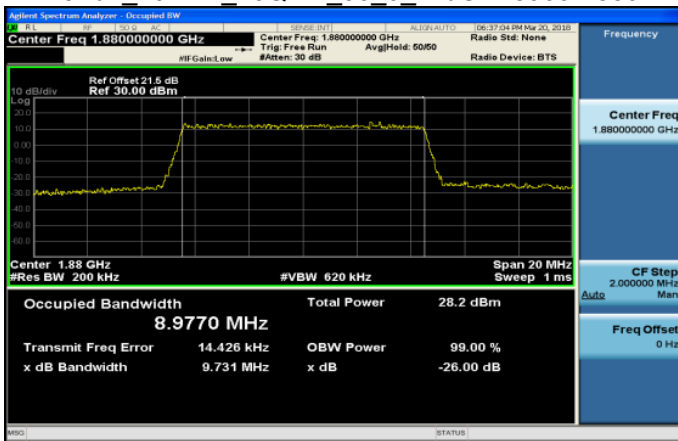
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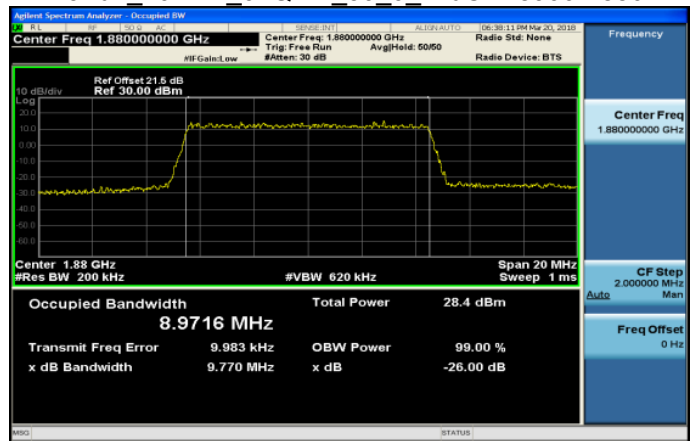
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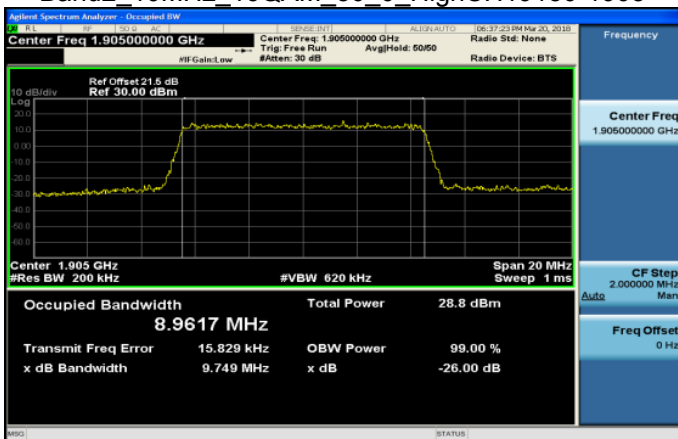
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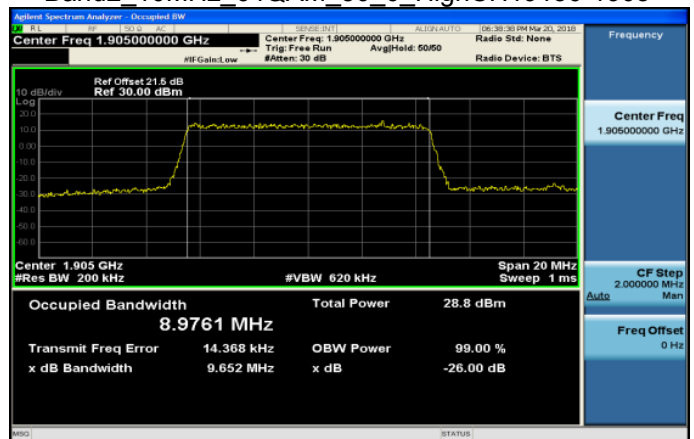
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Band2 10MHz 16QAM 50 0 HighCH19150-1905



Band2 10MHz 64QAM 50 0 HighCH19150-1905



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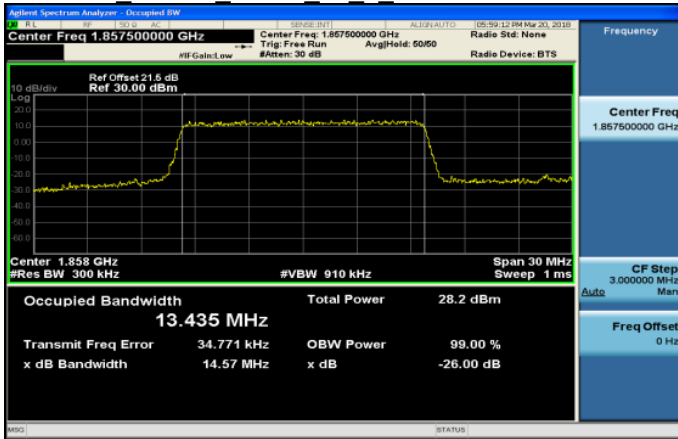
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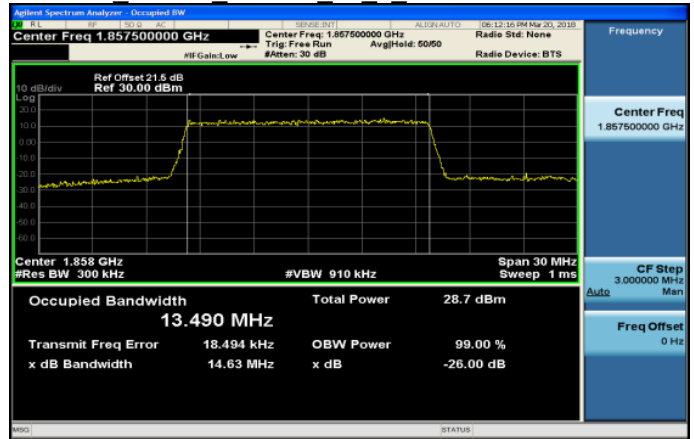
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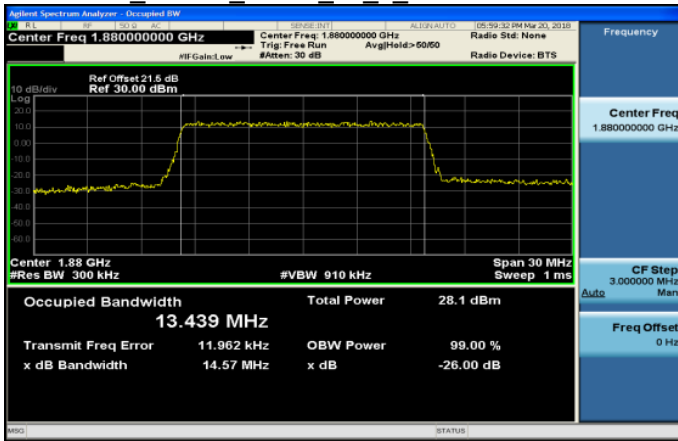
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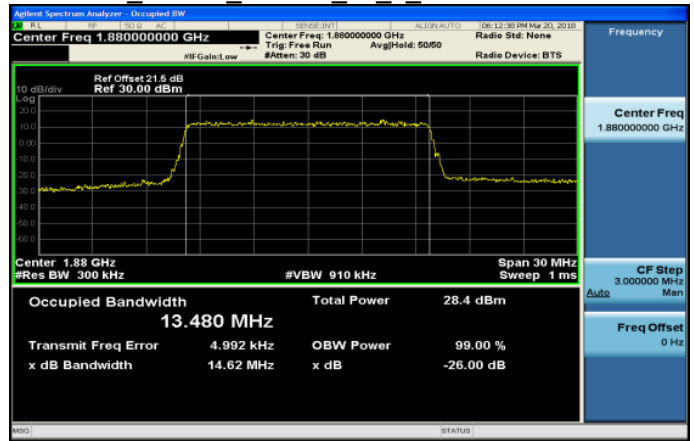
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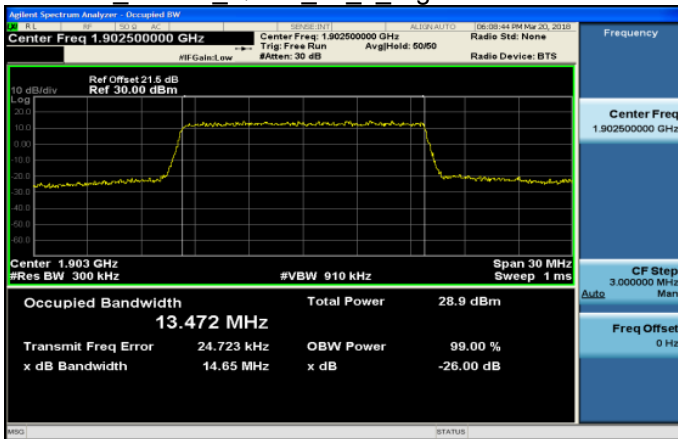
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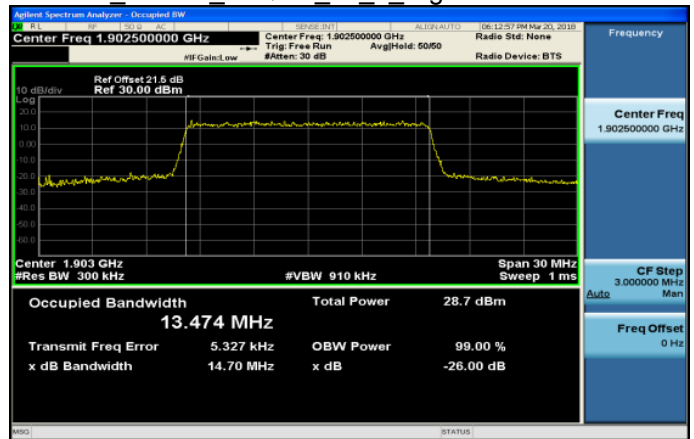
Band2 15MHz 16QAM 75 0 MidCH18900-1880



Band2 15MHz QPSK 75 0 HighCH19125-1902.5



Band2 15MHz 16QAM 75 0 HighCH19125-1902.5



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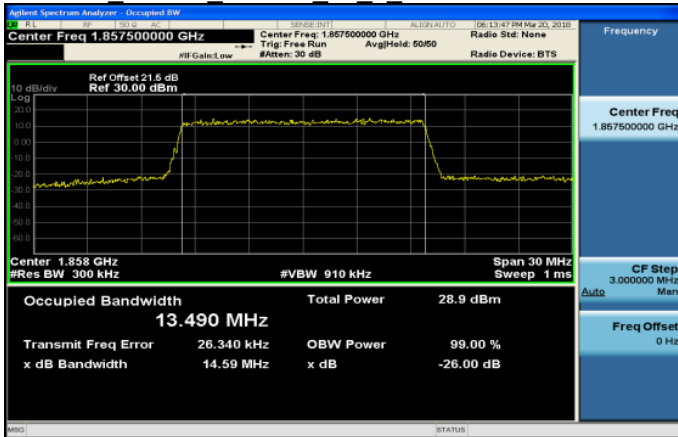
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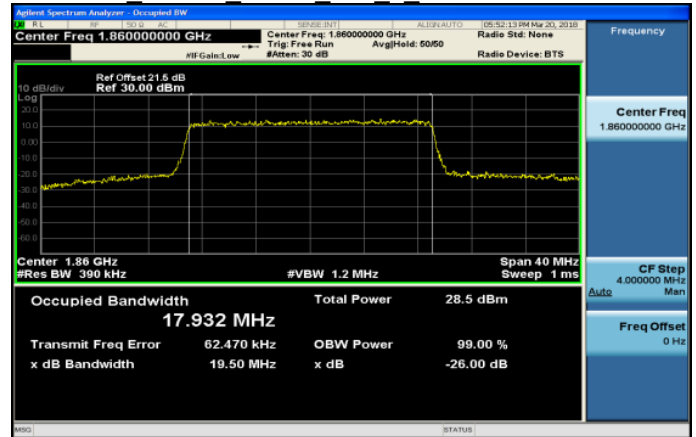
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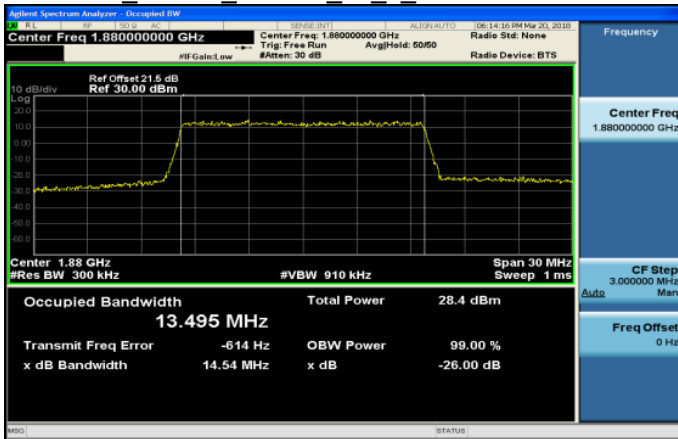
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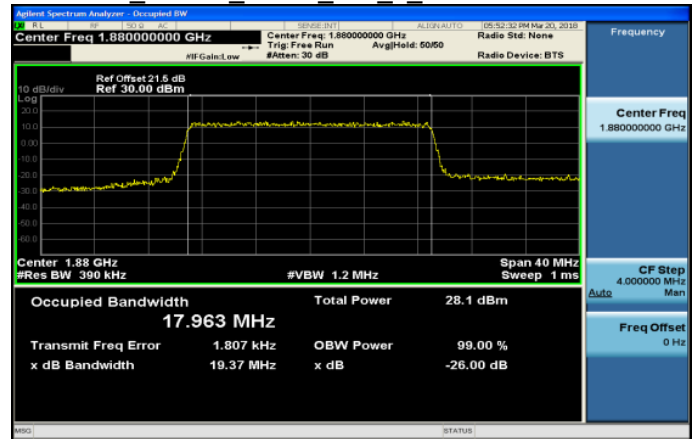
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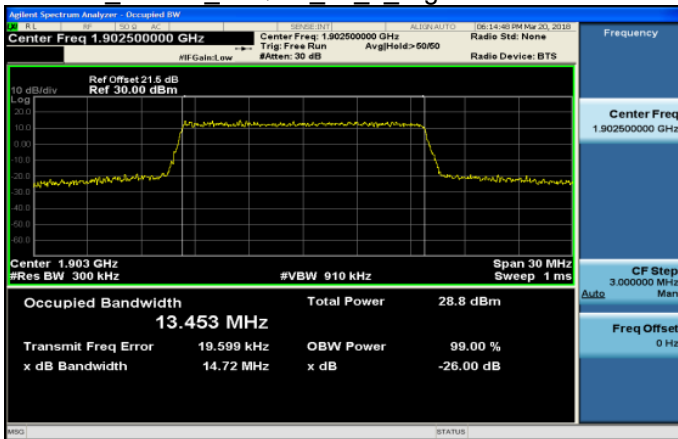
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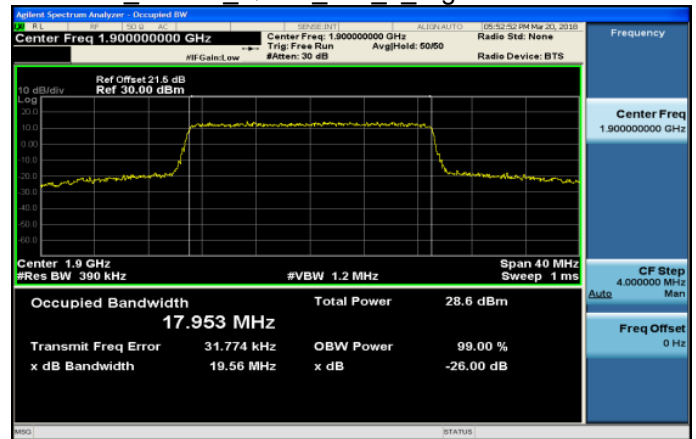
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Band2\_15MHz\_64QAM\_75\_0\_HighCH19125-1902.5



Band2\_20MHz\_QPSK\_100\_0\_HighCH19100-1900



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