



RF TEST REPORT

Applicant	Smawave Technology Co. ,Ltd
FCC ID	2AU8HSRT321
Product	Indoor CPE
Brand	smawave
Model	SRT321
Report No.	R2111A0978-R1
Issue Date	December 3, 2021

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 2 (2020)/ FCC CFR 47 Part 24E (2020)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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Summary of measurement results

No.	Test Case	Clause in FCC rules	Verdict
1	RF Power Output and Effective Isotropic Radiated Power	2.1046 24.232(c)	PASS
2	Occupied Bandwidth	2.1049	PASS
3	Band Edge Compliance	2.1051 /24.238(a)	PASS
4	Peak-to-Average Power Ratio	24.232/KDB 971168 D01(5.7)	PASS
5	Frequency Stability	2.1055 / 24.235	PASS
6	Spurious Emissions at Antenna Terminals	2.1051 / 24.238(a)	PASS
7	Radiates Spurious Emission	2.1053 / 24.238(a)	PASS
Date of Testing: November 20, 2021 ~ November 22, 2021			
Date of Sample Received: November 5, 2021			
Note: PASS: The EUT complies with the essential requirements in the standard. FAIL: The EUT does not comply with the essential requirements in the standard. All indications of Pass/Fail in this report are opinions expressed by TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.			



1. Test Laboratory

1.1. Notes of the test report

This report shall not be reproduced in full or partial, without the written approval of **TA technology (shanghai) co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

1.2. Test facility

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform measurements.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform measurement.

1.3. Testing Location

Company: TA Technology (Shanghai) Co., Ltd.
Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong
City: Shanghai
Post code: 201201
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Website: <http://www.ta-shanghai.com>
E-mail: xukai@ta-shanghai.com

2. General Description of Equipment under Test

2.1.Applicant and Manufacturer Information

Applicant	Smawave Technology Co. ,Ltd
Applicant address	3/F, Building 8, 1001 North Qinzhou Road, Xuhui District, Shanghai, China
Manufacturer	Smawave Technology Co. ,Ltd
Manufacturer address	3/F, Building 8, 1001 North Qinzhou Road, Xuhui District, Shanghai, China

2.2.General information

EUT Description			
Model	SRT321		
SN	RT321X02214300005		
Hardware Version	V1.0		
Software Version	ST_V2.1.4		
Power Supply	AC adapter		
Antenna Type	Dipole Antenna		
Antenna Gain	2.36dBi		
Test Mode(s)	LTE Band 2;		
Test Modulation	(LTE)QPSK,16QAM, 64QAM		
LTE Category	6		
Maximum E.I.R.P	23.78dBm		
Rated Power Supply Voltage	12V		
Operating Voltage	Minimum: 9V Maximum: 14V		
Operating Temperature	Lowest: -20°C Highest: +55°C		
Testing Temperature	Lowest: -30°C Highest: +50°C		
Operating Frequency Range(s)	Band	Tx (MHz)	Rx (MHz)
	LTE Band 2	1850 ~ 1910	1930 ~ 1990
EUT Accessory			
Adapter	Manufacturer: SHENZHEN TOPOW ELECTRONICS CO.,LTD Model: BY-SKY120200U71L		
Note: 1. The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant.			

3. Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test standards:

FCC CFR 47 Part 24E (2020)

FCC CFR47 Part 2 (2020)

Reference standard:

ANSI C63.26 (2015)

KDB 971168 D01 Power Meas License Digital Systems v03r01

4. Test Configuration

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes. EUT stand-up position (Z axis), lie-down position (X, Y axis). Receiver antenna polarization (horizontal and vertical), the worst emission was found in position (Z axis, horizontal polarization) and the worst case was recorded.

All mode and data rates and positions and RB size and modulations were investigated.

Subsequently, only the worst case emissions are reported.

The following testing in LTE is set based on the maximum RF Output Power.

Test modes are chosen to be reported as the worst case configuration below for LTE Band 2:

Test items	Bandwidth (MHz)						Modulation		RB			Test Channel		
	1.4	3	5	10	15	20	QPSK	16QAM/ 64QAM	1	50%	100%	L	M	H
RF Power Output and Effective Isotropic Radiated Power	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Occupied Bandwidth	O	O	O	O	O	O	O	O	-	-	O	O	O	O
Band Edge Compliance	O	O	O	O	O	O	O	O	O	-	O	O	-	O
Peak-to-Average Power Ratio	O	O	O	O	O	O	O	O	-	-	O	O	O	O
Frequency Stability	O	O	O	O	O	O	O	O	O	-	-	-	O	-
Spurious Emissions at Antenna Terminals	O	O	O	O	O	O	O	-	O	-	-	O	O	O
Radiates Spurious Emission	O	-	O	-	-	O	O	-	O	-	-	-	O	-
Note	1. The mark "O" means that this configuration is chosen for testing. 2. The mark "-" means that this configuration is not testing.													

5. Test Case Results

5.1.RF Power Output and Effective Isotropic Radiated Power

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

During the process of the testing, The EUT was connected to the Base Station Simulator with a known loss. The EUT is controlled by the Base Station Simulator test set to ensure max power transmission with proper modulation.

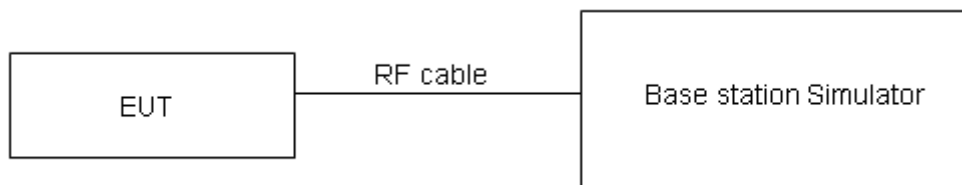
ERP can then be calculated as follows:

$EIRP \text{ (dBm)} = \text{Output Power (dBm)} - \text{Losses (dB)} + \text{Antenna Gain (dBi)}$

where:dBd refers to gain relative to an ideal dipole.

$EIRP \text{ (dBm)} = ERP \text{ (dBm)} + 2.15 \text{ (dB.)}$

Test Setup



Limits

No specific RF power output requirements in part 2.1046.

Rule Part 24.232(c) Mobile and portable stations are limited to 2 watts EIRP.

Rule Part 24.232(e) Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage.

Limit	$\leq 2 \text{ W}$ (33 dBm)
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Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 0.4 \text{ dB}$ for RF power output, $k = 2$, $U = 1.19 \text{ dB}$ for EIRP.



Test Results

Band	Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Power (dBm)	EIRP (dBm)
LTE band 2	1.4M	18607	1	#0	QPSK	20.52	22.88
	1.4M	18607	1	#Mid	QPSK	20.54	22.90
	1.4M	18607	1	#Max	QPSK	20.60	22.96
	1.4M	18607	3	#0	QPSK	20.44	22.80
	1.4M	18607	3	#Mid	QPSK	20.43	22.79
	1.4M	18607	3	#Max	QPSK	20.42	22.78
	1.4M	18607	6	#0	QPSK	20.33	22.69
	1.4M	18607	1	#0	QAM16	20.44	22.80
	1.4M	18607	1	#Mid	QAM16	20.49	22.85
	1.4M	18607	1	#Max	QAM16	20.53	22.89
	1.4M	18607	3	#0	QAM16	20.56	22.92
	1.4M	18607	3	#Mid	QAM16	20.56	22.92
	1.4M	18607	3	#Max	QAM16	20.57	22.93
	1.4M	18607	6	#0	QAM16	20.34	22.70
	1.4M	18900	1	#0	QPSK	18.95	21.31
	1.4M	18900	1	#Mid	QPSK	19.13	21.49
	1.4M	18900	1	#Max	QPSK	19.13	21.49
	1.4M	18900	3	#0	QPSK	18.98	21.34
	1.4M	18900	3	#Mid	QPSK	18.99	21.35
	1.4M	18900	3	#Max	QPSK	19.01	21.37
	1.4M	18900	6	#0	QPSK	19.09	21.45
	1.4M	18900	1	#0	QAM16	19.09	21.45
	1.4M	18900	1	#Mid	QAM16	19.28	21.64
	1.4M	18900	1	#Max	QAM16	19.24	21.60
	1.4M	18900	3	#0	QAM16	18.98	21.34
	1.4M	18900	3	#Mid	QAM16	18.98	21.34
	1.4M	18900	3	#Max	QAM16	19.02	21.38
	1.4M	18900	6	#0	QAM16	19.01	21.37
	1.4M	19193	1	#0	QPSK	20.68	23.04
	1.4M	19193	1	#Mid	QPSK	20.64	23.00
	1.4M	19193	1	#Max	QPSK	20.55	22.91
	1.4M	19193	3	#0	QPSK	20.44	22.80
	1.4M	19193	3	#Mid	QPSK	20.44	22.80
	1.4M	19193	3	#Max	QPSK	20.52	22.88
	1.4M	19193	6	#0	QPSK	20.54	22.90
	1.4M	19193	1	#0	QAM16	20.51	22.87
	1.4M	19193	1	#Mid	QAM16	20.46	22.82
	1.4M	19193	1	#Max	QAM16	20.39	22.75
	1.4M	19193	3	#0	QAM16	20.39	22.75



1.4M	19193	3	#Mid	QAM16	20.38	22.74
1.4M	19193	3	#Max	QAM16	20.46	22.82
1.4M	19193	6	#0	QAM16	20.52	22.88
3M	18615	1	#0	QPSK	20.33	22.69
3M	18615	1	#Mid	QPSK	20.19	22.55
3M	18615	1	#Max	QPSK	20.38	22.74
3M	18615	8	#0	QPSK	20.77	23.13
3M	18615	8	#Mid	QPSK	20.90	23.26
3M	18615	8	#Max	QPSK	20.53	22.89
3M	18615	15	#0	QPSK	20.51	22.87
3M	18615	1	#0	QAM16	20.68	23.04
3M	18615	1	#Mid	QAM16	20.56	22.92
3M	18615	1	#Max	QAM16	20.75	23.11
3M	18615	8	#0	QAM16	20.88	23.24
3M	18615	8	#Mid	QAM16	20.88	23.24
3M	18615	8	#Max	QAM16	20.51	22.87
3M	18615	15	#0	QAM16	20.47	22.83
3M	18900	1	#0	QPSK	18.68	21.04
3M	18900	1	#Mid	QPSK	18.98	21.34
3M	18900	1	#Max	QPSK	19.18	21.54
3M	18900	8	#0	QPSK	19.26	21.62
3M	18900	8	#Mid	QPSK	19.26	21.62
3M	18900	8	#Max	QPSK	18.98	21.34
3M	18900	15	#0	QPSK	18.91	21.27
3M	18900	1	#0	QAM16	18.81	21.17
3M	18900	1	#Mid	QAM16	19.09	21.45
3M	18900	1	#Max	QAM16	19.30	21.66
3M	18900	8	#0	QAM16	19.21	21.57
3M	18900	8	#Mid	QAM16	19.21	21.57
3M	18900	8	#Max	QAM16	19.07	21.43
3M	18900	15	#0	QAM16	18.94	21.30
3M	19185	1	#0	QPSK	20.00	22.36
3M	19185	1	#Mid	QPSK	20.34	22.70
3M	19185	1	#Max	QPSK	20.77	23.13
3M	19185	8	#0	QPSK	20.40	22.76
3M	19185	8	#Mid	QPSK	20.39	22.75
3M	19185	8	#Max	QPSK	20.39	22.75
3M	19185	15	#0	QPSK	20.38	22.74
3M	19185	1	#0	QAM16	19.85	22.21
3M	19185	1	#Mid	QAM16	20.17	22.53
3M	19185	1	#Max	QAM16	20.60	22.96
3M	19185	8	#0	QAM16	20.41	22.77
3M	19185	8	#Mid	QAM16	20.41	22.77



3M	19185	8	#Max	QAM16	20.52	22.88
3M	19185	15	#0	QAM16	20.39	22.75
5M	18625	1	#0	QPSK	20.37	22.73
5M	18625	1	#Mid	QPSK	20.41	22.77
5M	18625	1	#Max	QPSK	20.45	22.81
5M	18625	12	#0	QPSK	20.77	23.13
5M	18625	12	#Mid	QPSK	20.76	23.12
5M	18625	12	#Max	QPSK	20.51	22.87
5M	18625	25	#0	QPSK	20.45	22.81
5M	18625	1	#0	QAM16	20.79	23.15
5M	18625	1	#Mid	QAM16	20.70	23.06
5M	18625	1	#Max	QAM16	20.75	23.11
5M	18625	12	#0	QAM16	20.74	23.10
5M	18625	12	#Mid	QAM16	20.73	23.09
5M	18625	12	#Max	QAM16	20.47	22.83
5M	18625	25	#0	QAM16	20.45	22.81
5M	18900	1	#0	QPSK	18.49	20.85
5M	18900	1	#Mid	QPSK	19.02	21.38
5M	18900	1	#Max	QPSK	19.37	21.73
5M	18900	12	#0	QPSK	19.04	21.40
5M	18900	12	#Mid	QPSK	19.04	21.40
5M	18900	12	#Max	QPSK	19.20	21.56
5M	18900	25	#0	QPSK	19.01	21.37
5M	18900	1	#0	QAM16	18.66	21.02
5M	18900	1	#Mid	QAM16	19.19	21.55
5M	18900	1	#Max	QAM16	19.54	21.90
5M	18900	12	#0	QAM16	18.96	21.32
5M	18900	12	#Mid	QAM16	18.95	21.31
5M	18900	12	#Max	QAM16	19.12	21.48
5M	18900	25	#0	QAM16	18.94	21.30
5M	19175	1	#0	QPSK	19.61	21.97
5M	19175	1	#Mid	QPSK	20.01	22.37
5M	19175	1	#Max	QPSK	20.57	22.93
5M	19175	12	#0	QPSK	19.91	22.27
5M	19175	12	#Mid	QPSK	19.90	22.26
5M	19175	12	#Max	QPSK	20.42	22.78
5M	19175	25	#0	QPSK	19.97	22.33
5M	19175	1	#0	QAM16	19.87	22.23
5M	19175	1	#Mid	QAM16	20.27	22.63
5M	19175	1	#Max	QAM16	20.83	23.19
5M	19175	12	#0	QAM16	19.94	22.30
5M	19175	12	#Mid	QAM16	19.94	22.30
5M	19175	12	#Max	QAM16	20.45	22.81



5M	19175	25	#0	QAM16	19.96	22.32
10M	18650	1	#0	QPSK	20.82	23.18
10M	18650	1	#Mid	QPSK	20.63	22.99
10M	18650	1	#Max	QPSK	20.44	22.80
10M	18650	25	#0	QPSK	20.60	22.96
10M	18650	25	#Mid	QPSK	20.60	22.96
10M	18650	25	#Max	QPSK	20.49	22.85
10M	18650	50	#0	QPSK	20.48	22.84
10M	18650	1	#0	QAM16	21.05	23.41
10M	18650	1	#Mid	QAM16	20.89	23.25
10M	18650	1	#Max	QAM16	20.71	23.07
10M	18650	25	#0	QAM16	20.66	23.02
10M	18650	25	#Mid	QAM16	20.65	23.01
10M	18650	25	#Max	QAM16	20.57	22.93
10M	18650	50	#0	QAM16	20.48	22.84
10M	18900	1	#0	QPSK	18.62	20.98
10M	18900	1	#Mid	QPSK	19.31	21.67
10M	18900	1	#Max	QPSK	20.08	22.44
10M	18900	25	#0	QPSK	18.68	21.04
10M	18900	25	#Mid	QPSK	18.67	21.03
10M	18900	25	#Max	QPSK	19.40	21.76
10M	18900	50	#0	QPSK	19.21	21.57
10M	18900	1	#0	QAM16	18.73	21.09
10M	18900	1	#Mid	QAM16	19.43	21.79
10M	18900	1	#Max	QAM16	20.19	22.55
10M	18900	25	#0	QAM16	18.67	21.03
10M	18900	25	#Mid	QAM16	18.66	21.02
10M	18900	25	#Max	QAM16	19.40	21.76
10M	18900	50	#0	QAM16	19.16	21.52
10M	19150	1	#0	QPSK	19.60	21.96
10M	19150	1	#Mid	QPSK	19.87	22.23
10M	19150	1	#Max	QPSK	20.93	23.29
10M	19150	25	#0	QPSK	19.34	21.70
10M	19150	25	#Mid	QPSK	19.34	21.70
10M	19150	25	#Max	QPSK	20.03	22.39
10M	19150	50	#0	QPSK	19.62	21.98
10M	19150	1	#0	QAM16	19.42	21.78
10M	19150	1	#Mid	QAM16	19.70	22.06
10M	19150	1	#Max	QAM16	20.74	23.10
10M	19150	25	#0	QAM16	19.33	21.69
10M	19150	25	#Mid	QAM16	19.33	21.69
10M	19150	25	#Max	QAM16	20.06	22.42
10M	19150	50	#0	QAM16	19.62	21.98



15M	18675	1	#0	QPSK	21.11	23.47
15M	18675	1	#Mid	QPSK	20.54	22.90
15M	18675	1	#Max	QPSK	19.56	21.92
15M	18675	36	#0	QPSK	20.56	22.92
15M	18675	36	#Mid	QPSK	20.57	22.93
15M	18675	36	#Max	QPSK	19.82	22.18
15M	18675	75	#0	QPSK	20.31	22.67
15M	18675	1	#0	QAM16	21.35	23.71
15M	18675	1	#Mid	QAM16	20.81	23.17
15M	18675	1	#Max	QAM16	19.84	22.20
15M	18675	36	#0	QAM16	20.57	22.93
15M	18675	36	#Mid	QAM16	20.58	22.94
15M	18675	36	#Max	QAM16	19.83	22.19
15M	18675	75	#0	QAM16	20.33	22.69
15M	18900	1	#0	QPSK	18.76	21.12
15M	18900	1	#Mid	QPSK	19.31	21.67
15M	18900	1	#Max	QPSK	20.63	22.99
15M	18900	36	#0	QPSK	18.66	21.02
15M	18900	36	#Mid	QPSK	18.64	21.00
15M	18900	36	#Max	QPSK	19.73	22.09
15M	18900	75	#0	QPSK	19.30	21.66
15M	18900	1	#0	QAM16	18.86	21.22
15M	18900	1	#Mid	QAM16	19.42	21.78
15M	18900	1	#Max	QAM16	20.75	23.11
15M	18900	36	#0	QAM16	18.63	20.99
15M	18900	36	#Mid	QAM16	18.62	20.98
15M	18900	36	#Max	QAM16	19.85	22.21
15M	18900	75	#0	QAM16	19.23	21.59
15M	19125	1	#0	QPSK	20.32	22.68
15M	19125	1	#Mid	QPSK	19.41	21.77
15M	19125	1	#Max	QPSK	21.35	23.71
15M	19125	36	#0	QPSK	19.53	21.89
15M	19125	36	#Mid	QPSK	19.54	21.90
15M	19125	36	#Max	QPSK	19.74	22.10
15M	19125	75	#0	QPSK	20.02	22.38
15M	19125	1	#0	QAM16	20.33	22.69
15M	19125	1	#Mid	QAM16	19.43	21.79
15M	19125	1	#Max	QAM16	21.33	23.69
15M	19125	36	#0	QAM16	19.53	21.89
15M	19125	36	#Mid	QAM16	19.52	21.88
15M	19125	36	#Max	QAM16	19.72	22.08
15M	19125	75	#0	QAM16	20.01	22.37
20M	18700	1	#0	QPSK	21.26	23.62



20M	18700	1	#Mid	QPSK	20.30	22.66
20M	18700	1	#Max	QPSK	18.99	21.35
20M	18700	50	#0	QPSK	20.96	23.32
20M	18700	50	#Mid	QPSK	20.97	23.33
20M	18700	50	#Max	QPSK	19.62	21.98
20M	18700	100	#0	QPSK	20.39	22.75
20M	18700	1	#0	QAM16	21.42	23.78
20M	18700	1	#Mid	QAM16	20.50	22.86
20M	18700	1	#Max	QAM16	19.17	21.53
20M	18700	50	#0	QAM16	20.96	23.32
20M	18700	50	#Mid	QAM16	20.97	23.33
20M	18700	50	#Max	QAM16	19.63	21.99
20M	18700	100	#0	QAM16	20.37	22.73
20M	18900	1	#0	QPSK	19.02	21.38
20M	18900	1	#Mid	QPSK	19.59	21.95
20M	18900	1	#Max	QPSK	21.16	23.52
20M	18900	50	#0	QPSK	18.86	21.22
20M	18900	50	#Mid	QPSK	18.99	21.35
20M	18900	50	#Max	QPSK	20.23	22.59
20M	18900	100	#0	QPSK	19.80	22.16
20M	18900	1	#0	QAM16	18.84	21.20
20M	18900	1	#Mid	QAM16	19.40	21.76
20M	18900	1	#Max	QAM16	20.96	23.32
20M	18900	50	#0	QAM16	18.95	21.31
20M	18900	50	#Mid	QAM16	18.94	21.30
20M	18900	50	#Max	QAM16	20.18	22.54
20M	18900	100	#0	QAM16	19.80	22.16
20M	19100	1	#0	QPSK	20.82	23.18
20M	19100	1	#Mid	QPSK	19.63	21.99
20M	19100	1	#Max	QPSK	21.30	23.66
20M	19100	50	#0	QPSK	20.17	22.53
20M	19100	50	#Mid	QPSK	20.18	22.54
20M	19100	50	#Max	QPSK	19.96	22.32
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20M	19100	1	#Mid	QAM16	19.42	21.78
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20M	19100	50	#Mid	QAM16	20.21	22.57
20M	19100	50	#Max	QAM16	20.01	22.37
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1.4M	18607	1	#Mid	QAM64	19.19	21.55



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1.4M	18900	1	#0	QAM64	17.92	20.28
1.4M	18900	1	#Mid	QAM64	18.07	20.43
1.4M	18900	1	#Max	QAM64	18.17	20.53
1.4M	18900	3	#0	QAM64	17.97	20.33
1.4M	18900	3	#Mid	QAM64	17.97	20.33
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1.4M	19193	1	#Max	QAM64	19.56	21.92
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1.4M	19193	3	#Mid	QAM64	19.27	21.63
1.4M	19193	3	#Max	QAM64	19.36	21.72
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3M	18615	8	#Mid	QAM64	19.62	21.98
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3M	18900	1	#0	QAM64	17.82	20.18
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5M	18625	12	#Max	QAM64	19.30	21.66
5M	18625	25	#0	QAM64	19.33	21.69
5M	18900	1	#0	QAM64	17.63	19.99
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10M	18650	25	#0	QAM64	19.42	21.78
10M	18650	25	#Mid	QAM64	19.42	21.78
10M	18650	25	#Max	QAM64	19.42	21.78
10M	18650	50	#0	QAM64	19.44	21.80
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10M	18900	1	#Mid	QAM64	18.34	20.70
10M	18900	1	#Max	QAM64	19.02	21.38
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10M	18900	25	#Max	QAM64	18.41	20.77
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10M	19150	25	#Mid	QAM64	18.22	20.58
10M	19150	25	#Max	QAM64	18.87	21.23
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15M	18675	1	#0	QAM64	20.14	22.50
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15M	18675	1	#Max	QAM64	18.76	21.12
15M	18675	36	#0	QAM64	19.47	21.83



15M	18675	36	#Mid	QAM64	19.47	21.83
15M	18675	36	#Max	QAM64	18.66	21.02
15M	18675	75	#0	QAM64	19.26	21.62
15M	18900	1	#0	QAM64	17.78	20.14
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15M	18900	36	#Max	QAM64	18.64	21.00
15M	18900	75	#0	QAM64	18.13	20.49
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20M	18700	50	#Max	QAM64	18.55	20.91
20M	18700	100	#0	QAM64	19.26	21.62
20M	18900	1	#0	QAM64	17.78	20.14
20M	18900	1	#Mid	QAM64	18.39	20.75
20M	18900	1	#Max	QAM64	19.99	22.35
20M	18900	50	#0	QAM64	17.84	20.20
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20M	18900	50	#Max	QAM64	19.15	21.51
20M	18900	100	#0	QAM64	18.69	21.05
20M	19100	1	#0	QAM64	19.66	22.02
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20M	19100	1	#Max	QAM64	20.01	22.37
20M	19100	50	#0	QAM64	19.36	21.72
20M	19100	50	#Mid	QAM64	19.37	21.73
20M	19100	50	#Max	QAM64	18.88	21.24
20M	19100	100	#0	QAM64	19.47	21.83

5.2.Occupied Bandwidth

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

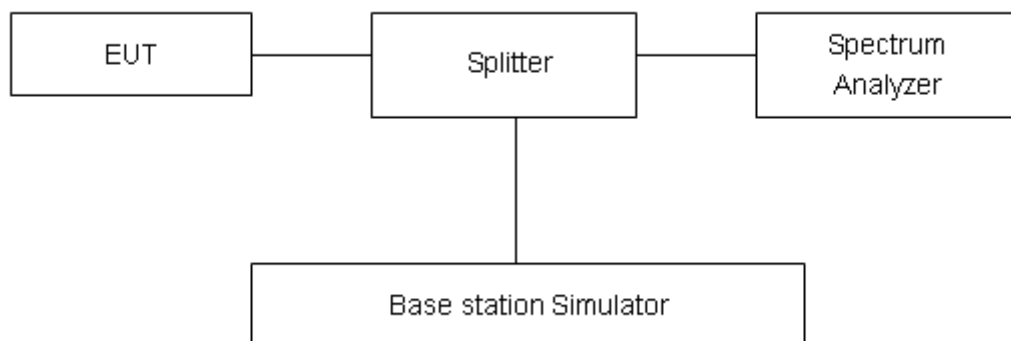
Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The occupied bandwidth is measured using spectrum analyzer.

RBW is set to $\geq 1\%EBW$, VBW is set to 3x RBW.

99% power and -26dBc occupied bandwidths are recorded. Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

No specific occupied bandwidth requirements in part 2.1049.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 624\text{Hz}$.

Test Result

LTE Band 2						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	1.4	18607	1850.7	1.116	1.482
			18900	1880.0	1.121	1.533
			19193	1909.3	1.119	1.489
		3	18615	1851.5	2.716	3.392
			18900	1880	2.729	3.267
			19185	1908.5	2.722	3.253
		5	18625	1852.5	4.553	5.360
			18900	1880	4.534	5.268
			19175	1907.5	4.524	5.184
		10	18650	1855	8.980	10.049
			18900	1880	8.989	10.061
			19150	1905	8.993	10.077
		15	18675	1857.5	13.415	14.581
			18900	1880	13.483	14.554
			19125	1902.5	13.523	14.671
		20	18700	1860	17.912	19.237
			18900	1880	17.959	19.302
			19100	1900	17.993	19.280
	16QAM	1.4	18607	1850.7	1.120	1.472
			18900	1880.0	1.106	1.446
			19193	1909.3	1.109	1.484
		3	18615	1851.5	2.708	3.409
			18900	1880	2.720	3.416
			19185	1908.5	2.723	3.350
		5	18625	1852.5	4.527	5.294
			18900	1880	4.548	5.235
			19175	1907.5	4.552	5.343
		10	18650	1855	8.964	10.003
			18900	1880	8.981	9.939
			19150	1905	9.003	10.010
		15	18675	1857.5	13.400	14.463
			18900	1880	13.467	14.631
			19125	1902.5	13.511	14.602
		20	18700	1860	17.916	19.175
			18900	1880	17.941	19.145



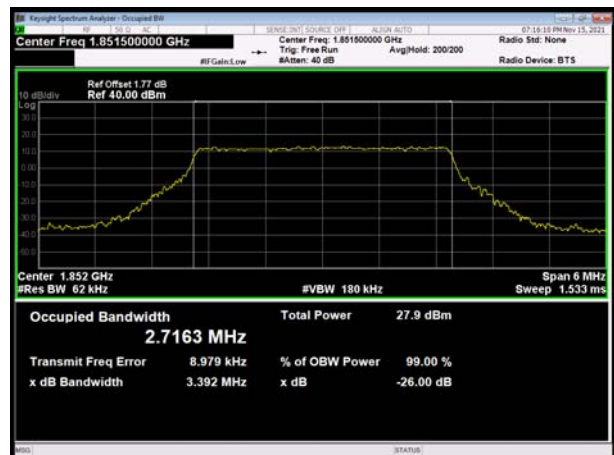
	64QAM		19100	1900	17.980	19.227
			18607	1850.7	1.108	1.473
		1.4	18900	1880.0	1.124	1.453
			19193	1909.3	1.105	1.482
			18615	1851.5	2.711	3.294
		3	18900	1880	2.718	3.431
			19185	1908.5	2.716	3.330
			18625	1852.5	4.518	5.257
		5	18900	1880	4.548	5.342
			19175	1907.5	4.542	5.346
			18650	1855	8.950	9.891
		10	18900	1880	9.000	9.894
			19150	1905	9.011	9.974
			18675	1857.5	13.401	14.374
		15	18900	1880	13.446	14.410
			19125	1902.5	13.537	14.578
			18700	1860	17.888	19.238
		20	18900	1880	17.970	19.288
			19100	1900	17.974	19.235



LTE Band 2 1.4MHz QPSK CH-Low



LTE Band 2 3MHz QPSK CH-Low



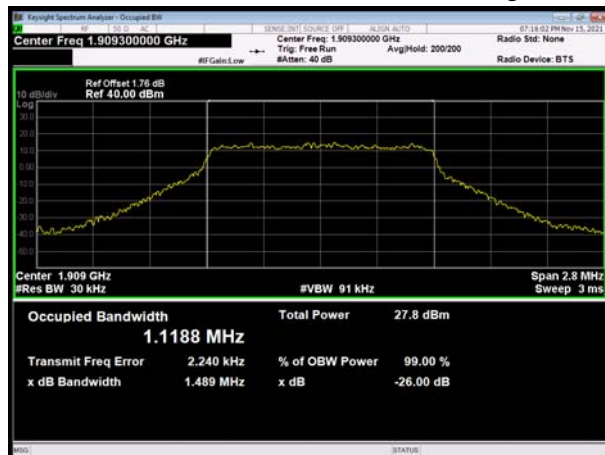
LTE Band 2 1.4MHz QPSK CH-Middle



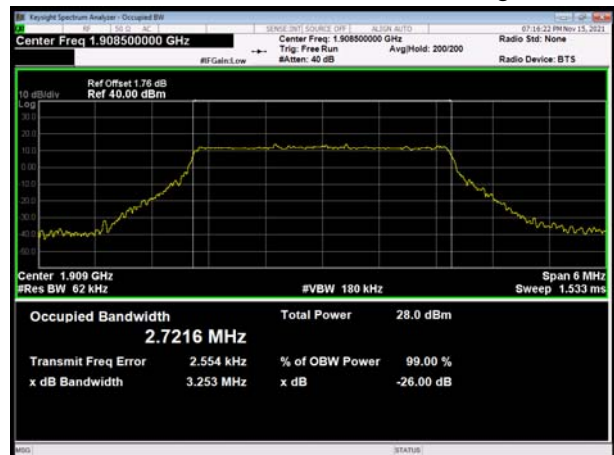
LTE Band 2 3MHz QPSK CH-Middle



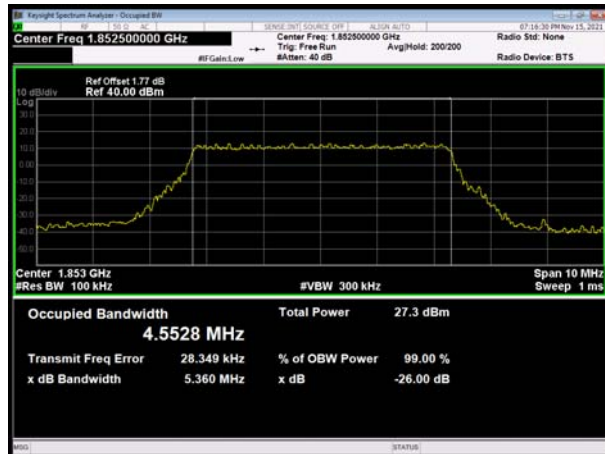
LTE Band 2 1.4MHz QPSK CH-High



LTE Band 2 3MHz QPSK CH-High



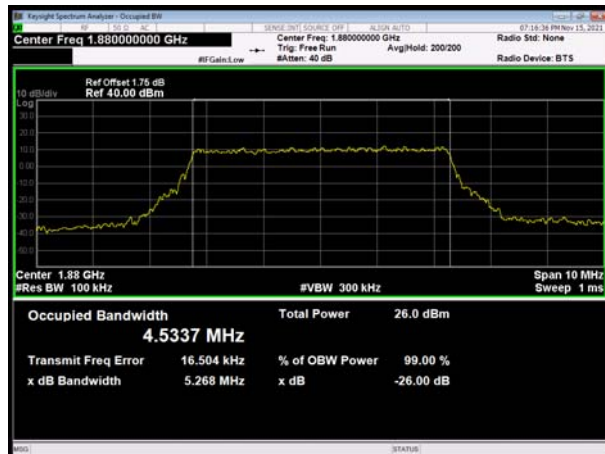
LTE Band 2 5MHz QPSK CH-Low



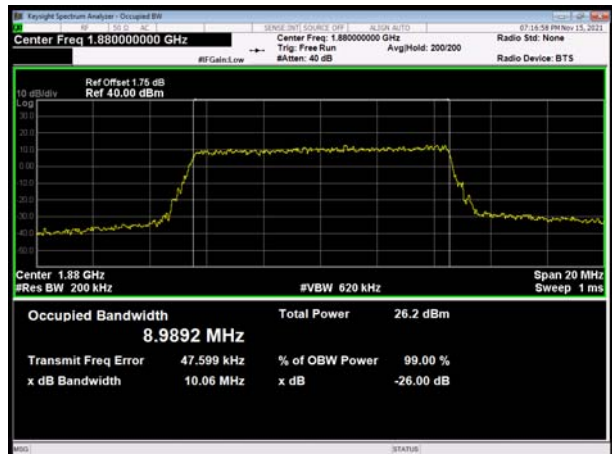
LTE Band 2 10MHz QPSK CH-Low



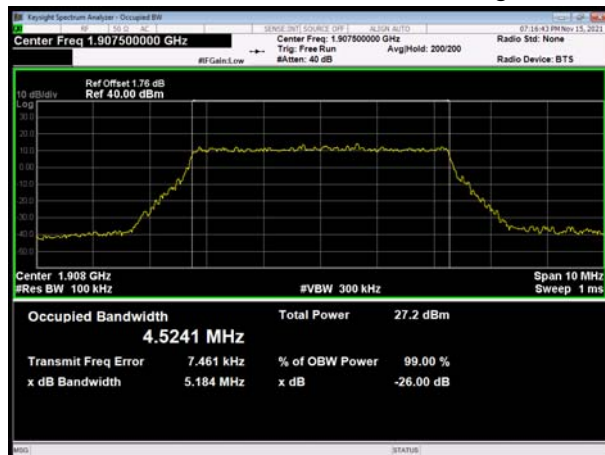
LTE Band 2 5MHz QPSK CH-Middle



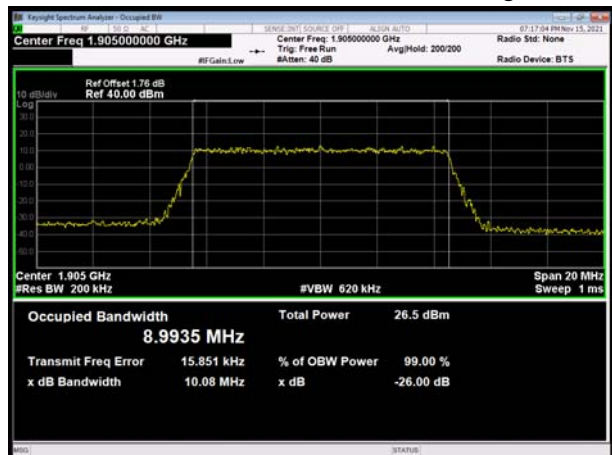
LTE Band 2 10MHz QPSK CH-Middle



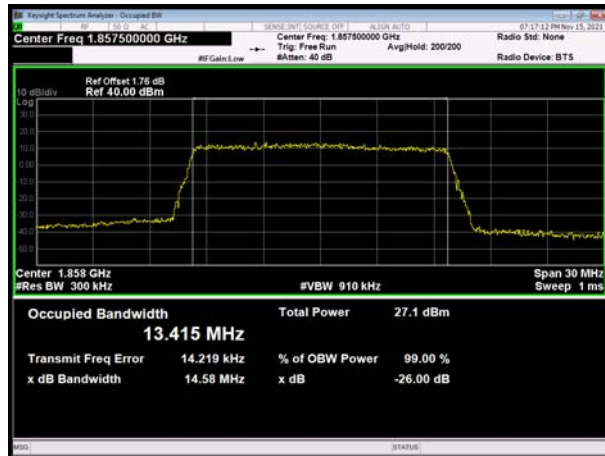
LTE Band 2 5MHz QPSK CH-High



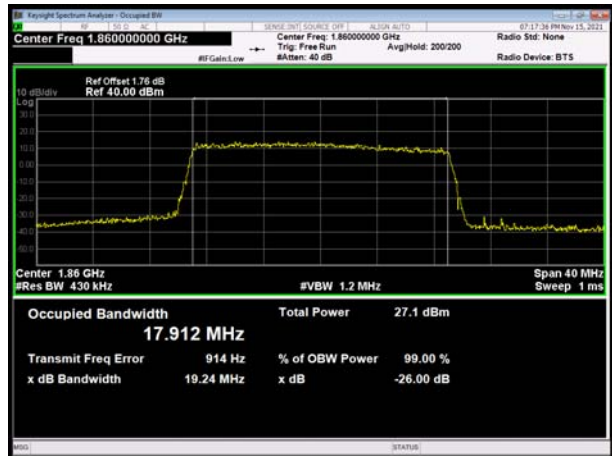
LTE Band 2 10MHz QPSK CH-High



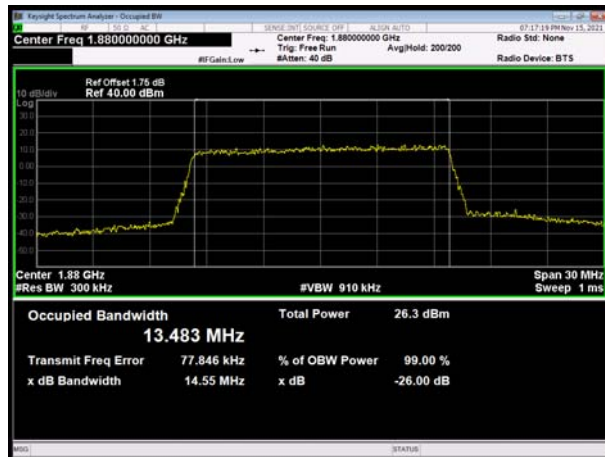
LTE Band 2 15MHz QPSK CH-Low



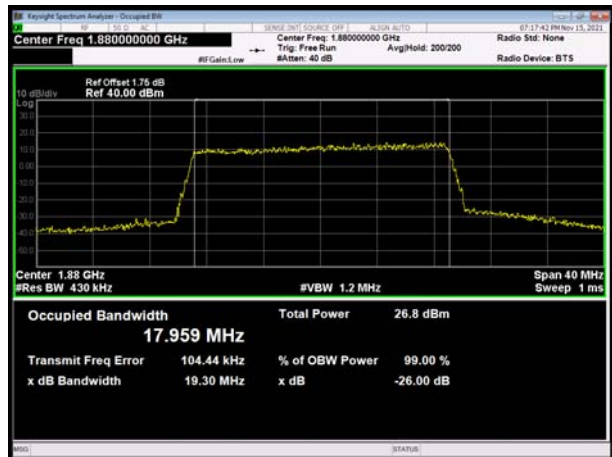
LTE Band 2 20MHz QPSK CH-Low



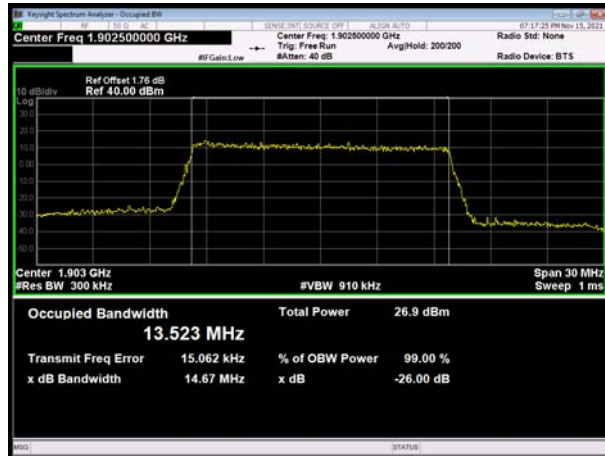
LTE Band 2 15MHz QPSK CH-Middle



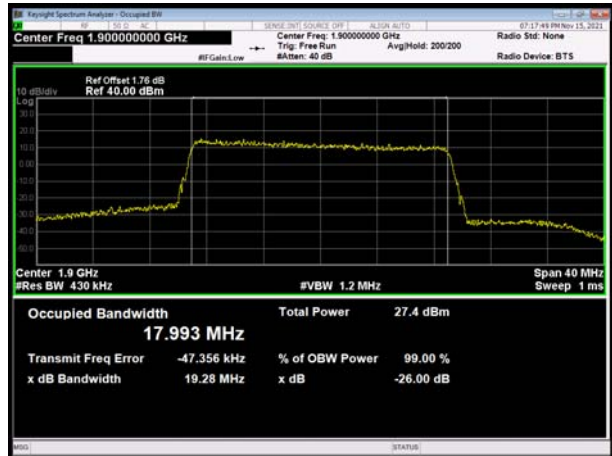
LTE Band 2 20MHz QPSK CH-Middle



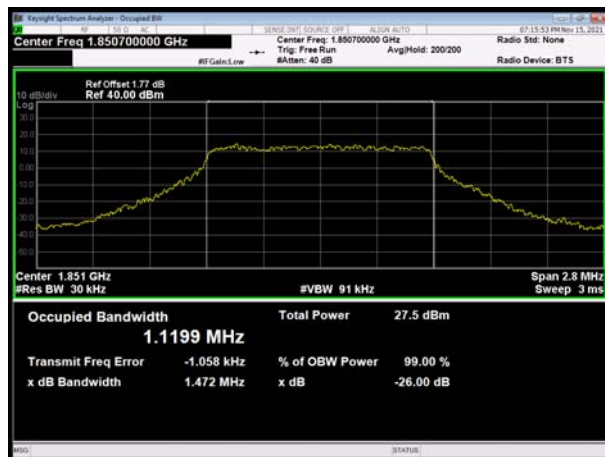
LTE Band 2 15MHz QPSK CH-High



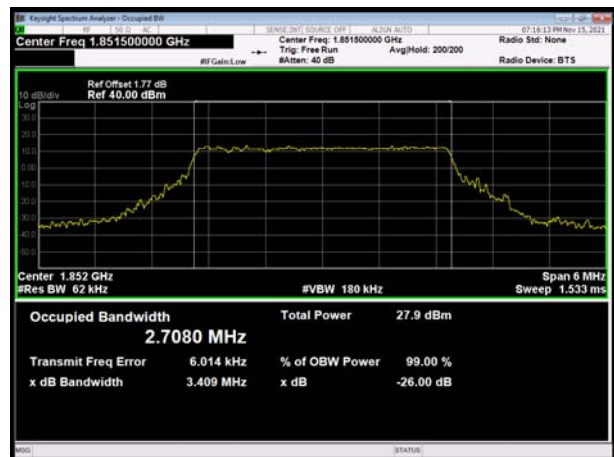
LTE Band 2 20MHz QPSK CH-High



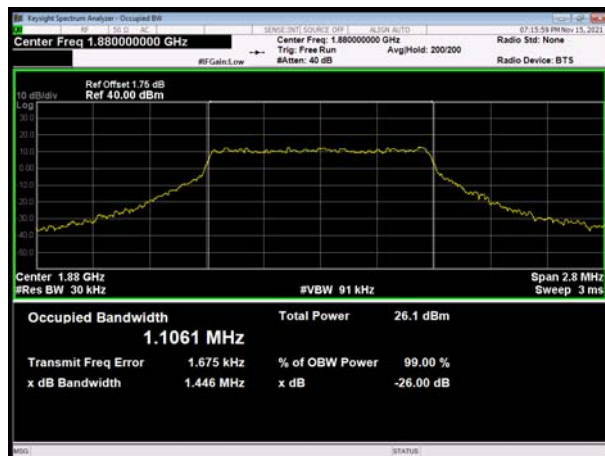
LTE Band 2 1.4MHz 16QAM CH-Low



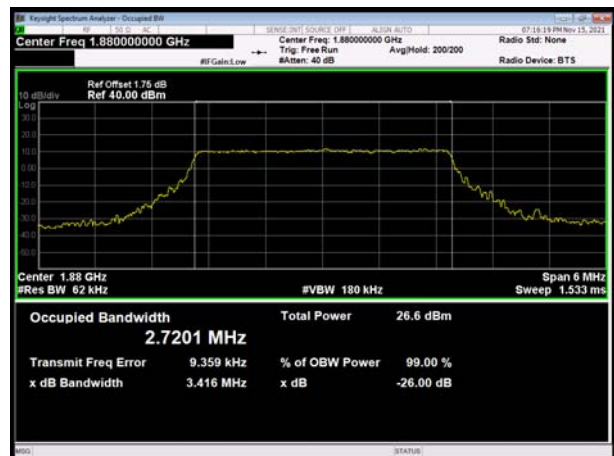
LTE Band 2 3MHz 16QAM CH-Low



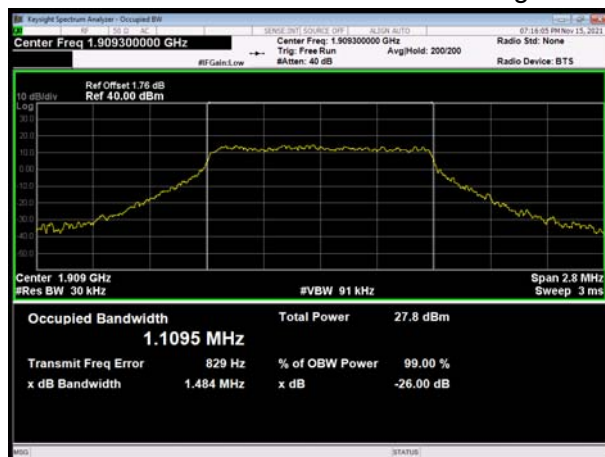
LTE Band 2 1.4MHz 16QAM CH-Middle



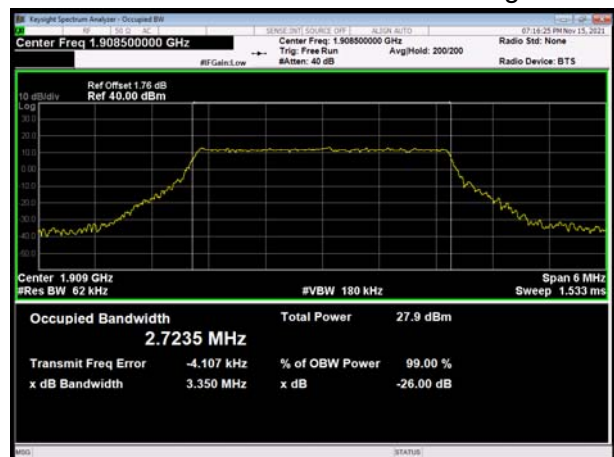
LTE Band 2 3MHz 16QAM CH-Middle



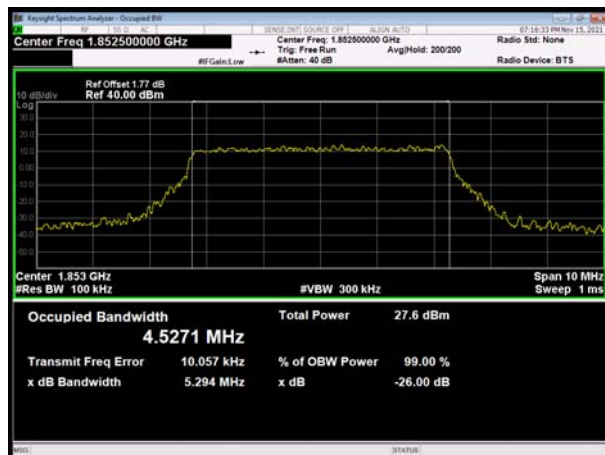
LTE Band 2 1.4MHz 16QAM CH-High



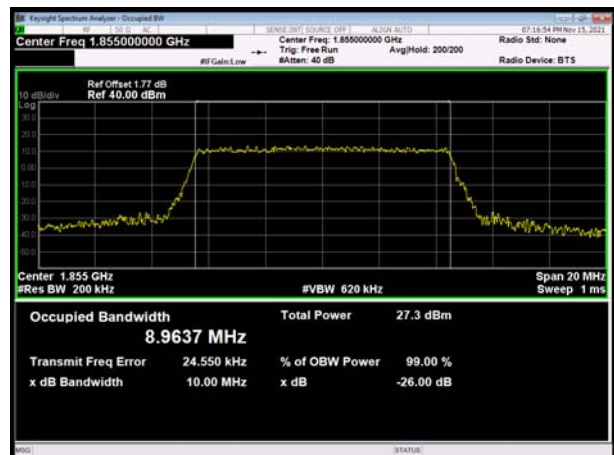
LTE Band 2 3MHz 16QAM CH-High



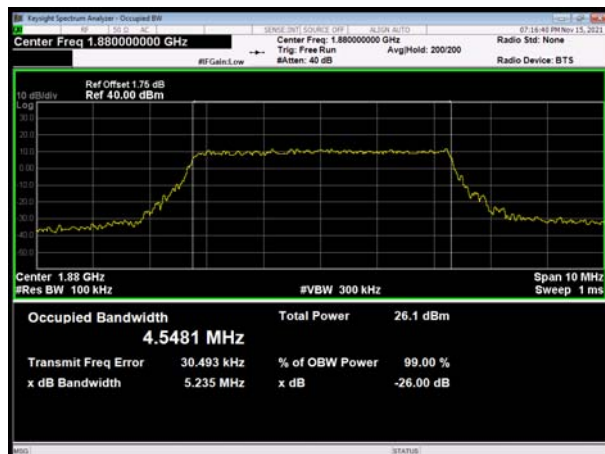
LTE Band 2 5MHz 16QAM CH-Low



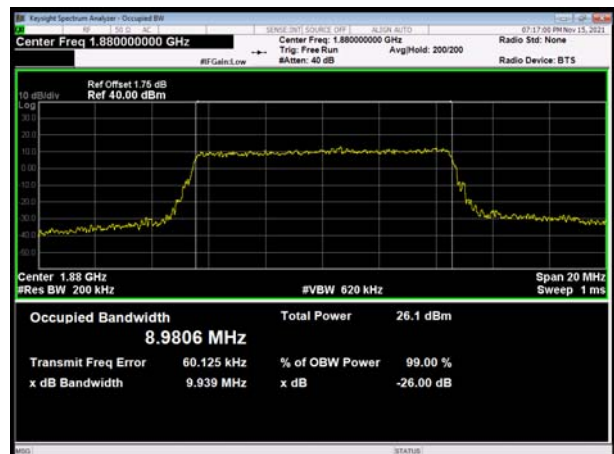
LTE Band 2 10MHz 16QAM CH-Low



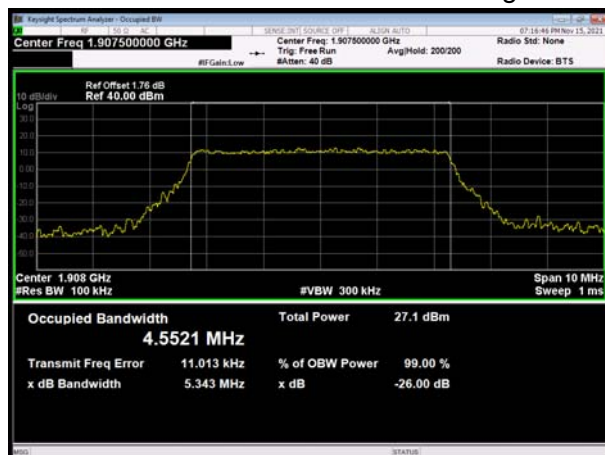
LTE Band 2 5MHz 16QAM CH-Middle



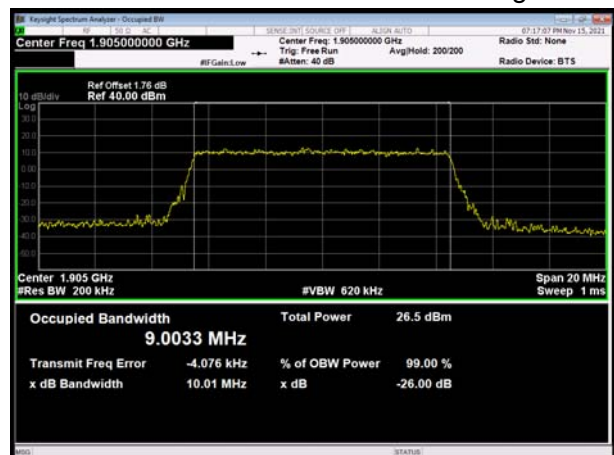
LTE Band 2 10MHz 16QAM CH-Middle



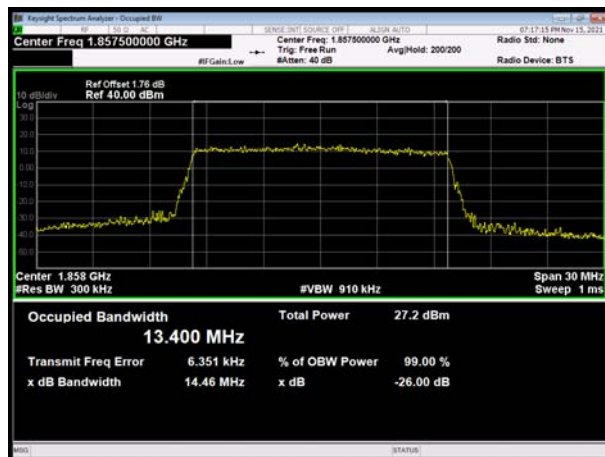
LTE Band 2 5MHz 16QAM CH-High



LTE Band 2 10MHz 16QAM CH-High



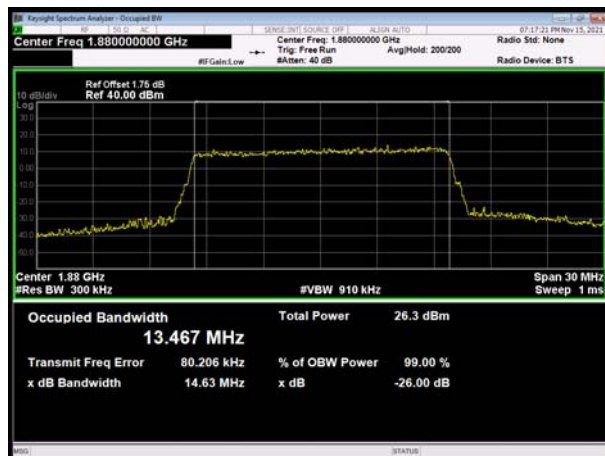
LTE Band 2 15MHz 16QAM CH-Low



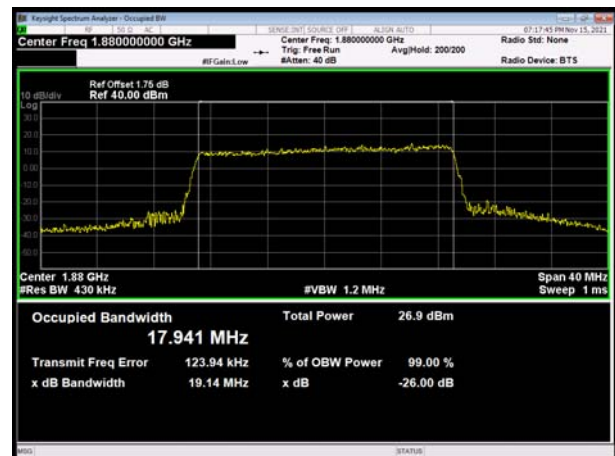
LTE Band 2 20MHz 16QAM CH-Low



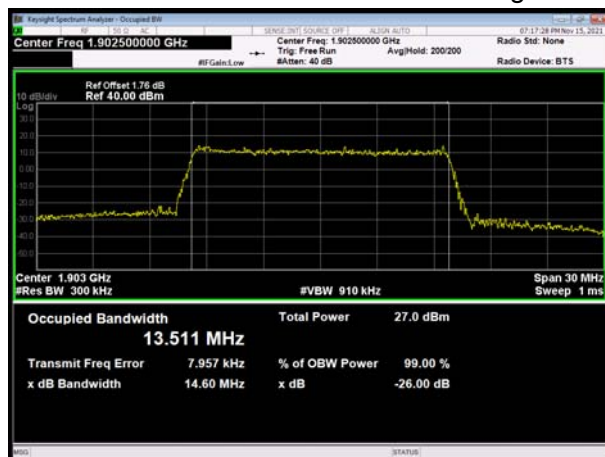
LTE Band 2 15MHz 16QAM CH-Middle



LTE Band 2 20MHz 16QAM CH-Middle



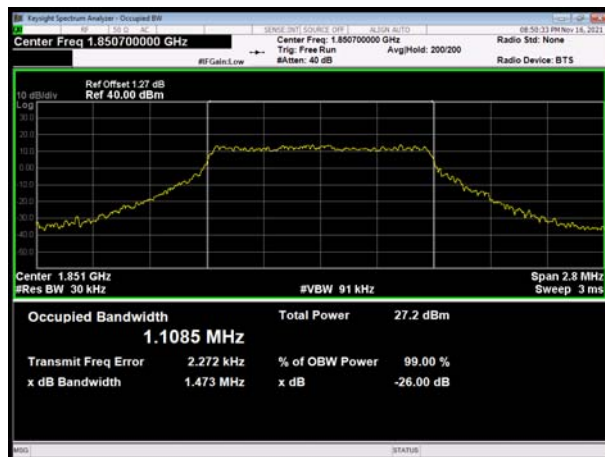
LTE Band 2 15MHz 16QAM CH-High



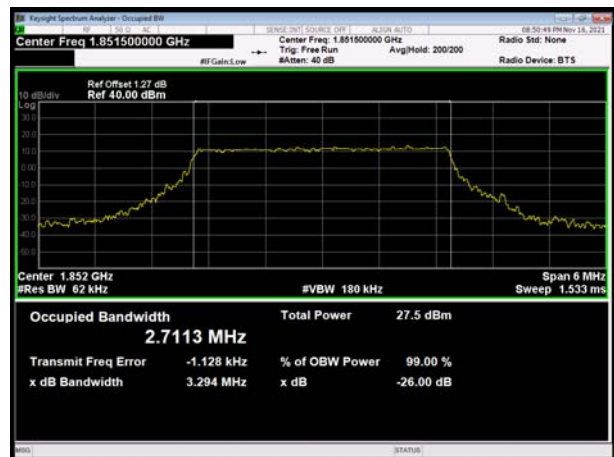
LTE Band 2 20MHz 16QAM CH-High



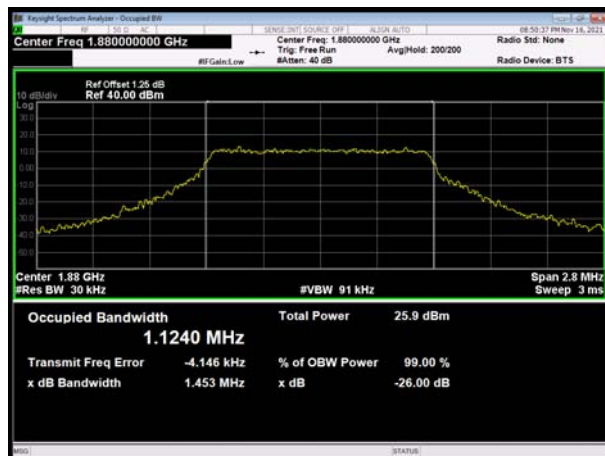
LTE Band 2 1.4MHz 64QAM CH-Low



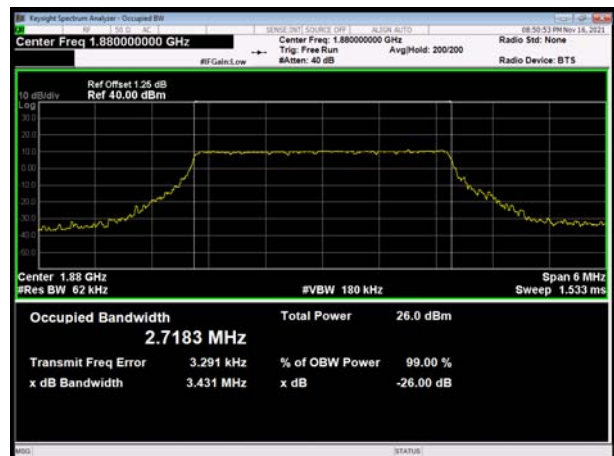
LTE Band 2 3MHz 64QAM CH-Low



LTE Band 2 1.4MHz 64QAM CH-Middle



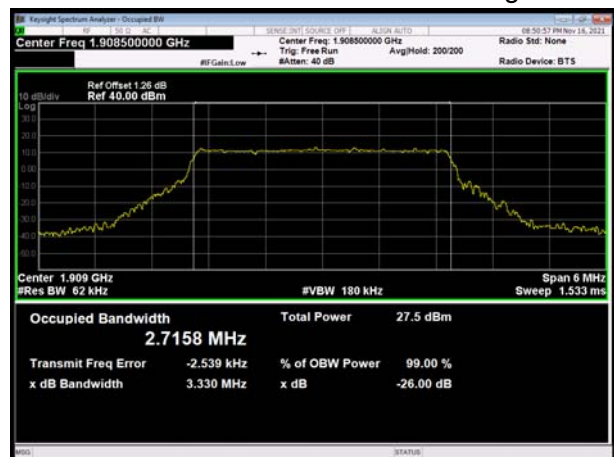
LTE Band 2 3MHz 64QAM CH-Middle



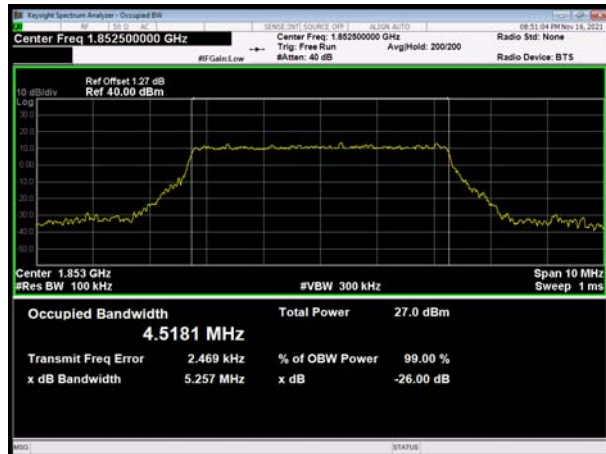
LTE Band 2 1.4MHz 64QAM CH-High



LTE Band 2 3MHz 64QAM CH-High



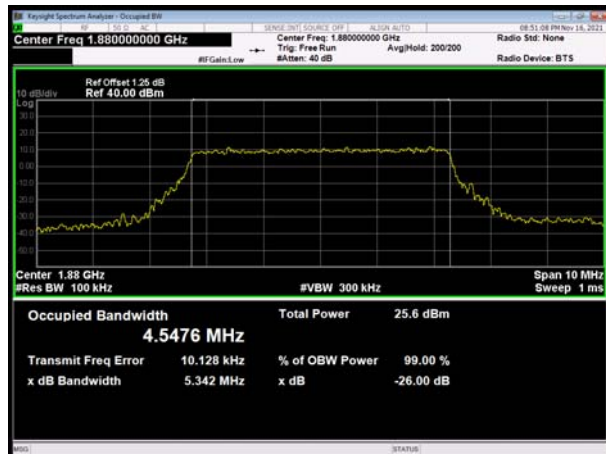
LTE Band 2 5MHz 64QAM CH-Low



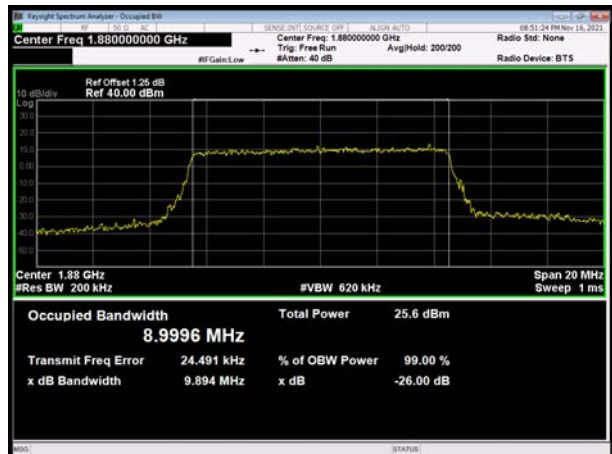
LTE Band 2 10MHz 64QAM CH-Low



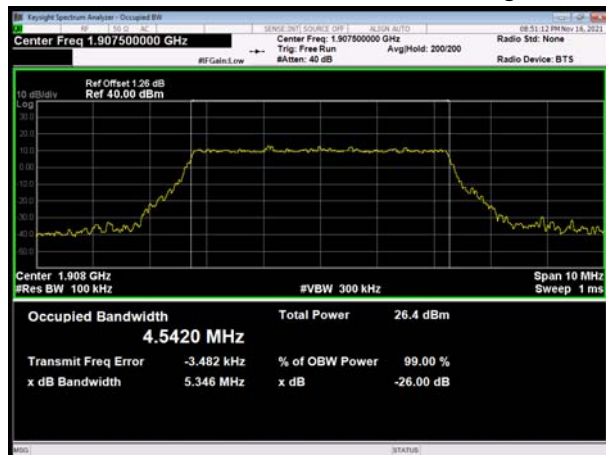
LTE Band 2 5MHz 64QAM CH-Middle



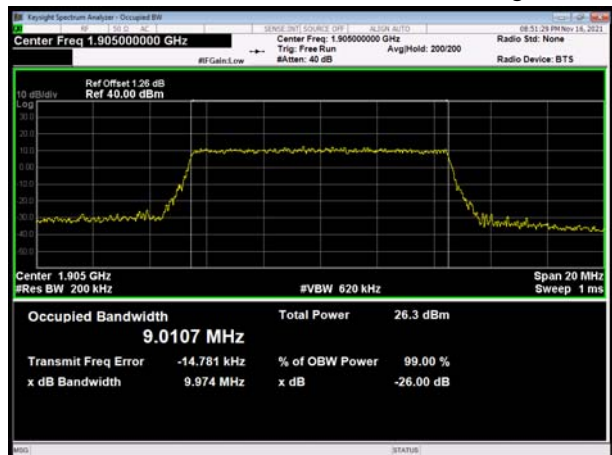
LTE Band 2 10MHz 64QAM CH-Middle



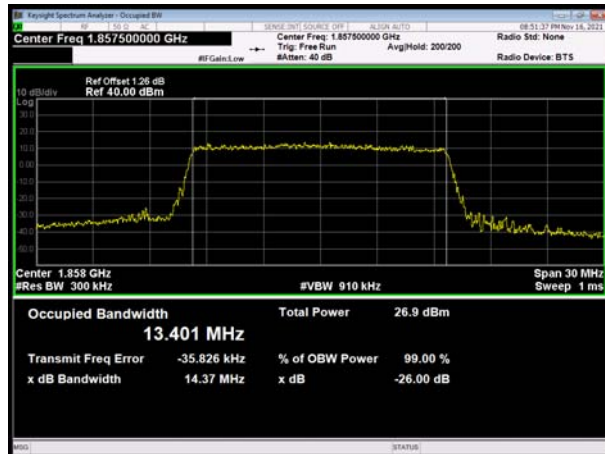
LTE Band 2 5MHz 64QAM CH-High



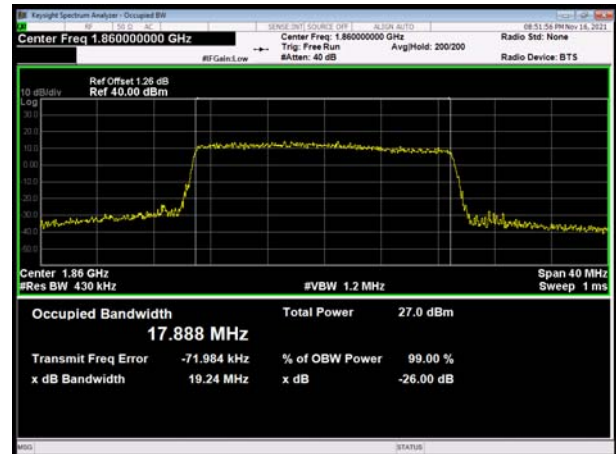
LTE Band 2 10MHz 64QAM CH-High



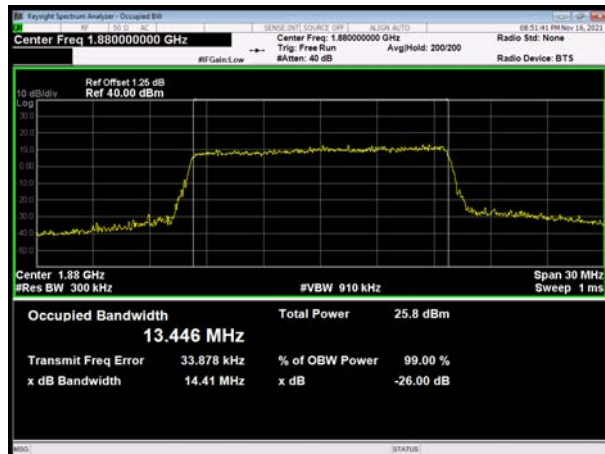
LTE Band 2 15MHz 64QAM CH-Low



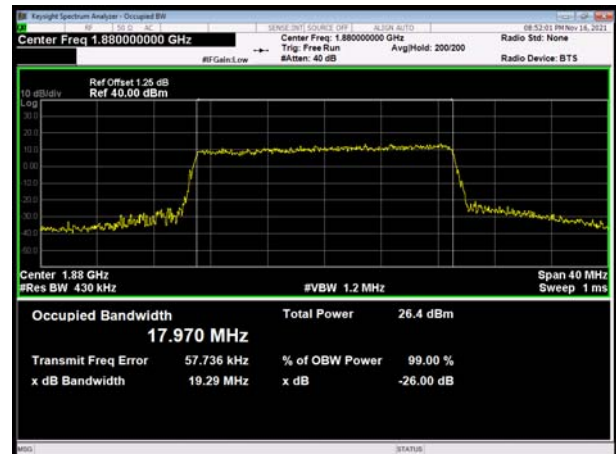
LTE Band 2 20MHz 64QAM CH-Low



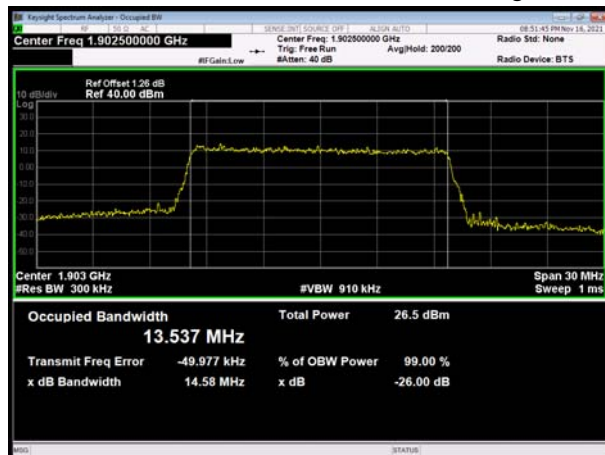
LTE Band 2 15MHz 64QAM CH-Middle



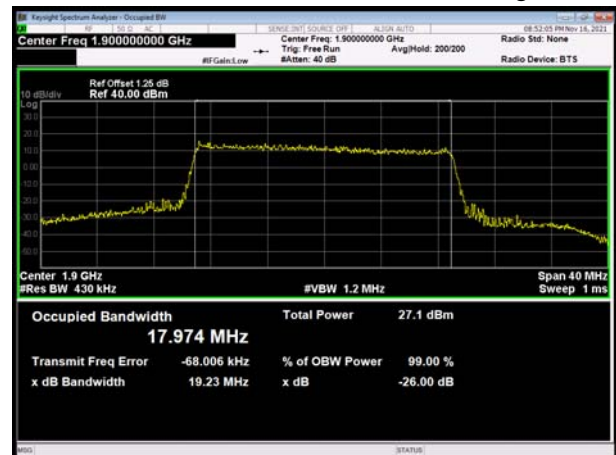
LTE Band 2 20MHz 64QAM CH-Middle



LTE Band 2 15MHz 64QAM CH-High



LTE Band 2 20MHz 64QAM CH-High



5.3. Band Edge Compliance

Ambient condition

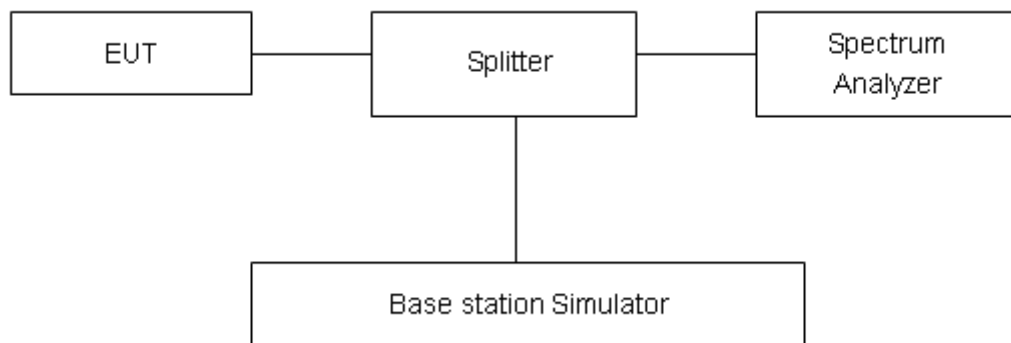
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The band edge of the lowest and highest channels were measured. The Average detector is used and RBW is set to $\geq 1\%EBW$, VBW is set to 3x RBW.

Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

Rule Part 24.238(a) specifies that “on any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10} (P)$ dB.”

Limit	-13 dBm
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Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$, $U=0.684\text{dB}$.