REPORT No.: SZ24040065W06

TEST REPORT

APPLICANT	:	Reliance Communications, LLC
PRODUCT NAME	:	Orbic SPEED X 5G
MODEL NAME	:	R5sH14
BRAND NAME	:	Orbic
FCC ID	:	2ABGH-R5SH14
STANDARD(S)	:	47 CFR Part 2 47 CFR Part 96
RECEIPT DATE	:	2023-09-26
TEST DATE	:	2023-10-11 to 2023-12-27
ISSUE DATE	:	2024-05-24

Edited by: Peng Mi (Rapporteur)

Approved by: Shen Junsheng (Supervisor)

MORLAB

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DIRECTORY

Change History		
Version	Date	Reason for change
1.0	2024-05-24	First edition

1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	Reliance Communications, LLC
Applicant Address:	555 Wireless Blvd. Hauppauge, NY 11788, USA
Manufacturer:	MeiG Smart Technology Co., Ltd
Manufacturer Address:	2nd Floor,Office Building,No.5 Lingxia Road,Fenghuang,Fuyong Street,Bao'an District,Shenzhen

1.2. Equipment Under Test (EUT) Description

Product Name:	Orbic SPEED X 5G	
Sample No.:	3#	
Hardware Version:	R5sH14_MB_V1.01	
Software Version:	R5sH14_V1.0.06	
Modulation Type:	QPSK, 16QAM, 64QAM, 256QAM	
Operation Band:	Band 48	
Frequency Range:	LTE Band 48	Tx: 3550MHz–3700MHz
		Rx: 3550MHz–3700MHz
Channel Bandwidth	LTE Band 48	5MHz, 10MHz, 15MHz, 20MHz
Antenna Type:	PIFA Antenna	
Antenna Gain:	LTE Band 48	ANT2: 0.7dBi; ANT5: 0.8dBi
Carrier Aggregation(UL):	48C	
Accessory Information:	Battery	
	Brand Name:	Orbic
	Model No.:	R562L5
	Serial No.:	N/A
	Capacity:	5000mAh
	Rated Voltage:	3.85V
	Charge Limit:	4.4V
	Manufacturer:	Shenzhen Aerospace Electronic Co.,Ltd

Accessory Information:	AC Adapter	
	Brand Name:	Orbic
	Model No.:	OACH023US1
	Serial No.:	N/A
	Rated Output:	5V⎓3A or 9V⎓2A or 12V⎓1.5A
	Rated Input:	100-240V~50/60Hz, 0.5A
	Manufacturer 1:	WATAI ELECTRONICS PRIVATE LIMITED
	Manufacturer 2:	KANGYIN ELECTRONIC TECHNOLOGY CO.,LTD
	USB Cable	
	Model No.:	OAUC023US1
	Manufacturer:	KANGYIN ELECTRONIC TECHNOLOGY CO.,LTD

Note 1: This is a variant report of original report (Report No.: SZ23070206W06, FCC ID: 2ABGH-R562L5). Based on the similarity between before, only change produce name, model name, hardware version, software version, FCC ID, remove mmW function, add CA and EN DC combinations, the others are the same as before. No other changes, all RF parameters remain the same. The changes do not affect the test results.

Note 2: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

1.3. Maximum E.R.P./E.I.R.P. and Emission Designator

ANT 2:

LTE Band 48	Maximum E.R.P./E.I.R.P. (W)			
BW(MHz)	QPSK	16QAM	64QAM	256QAM
20	0.193	0.156	0.124	0.062
15	0.191	0.158	0.123	0.061
10	0.189	0.158	0.123	0.062
5	0.190	0.156	0.123	0.061

ANT 5:

LTE Band 48	Maximum E.R.P./E.I.R.P. (W)			
BW(MHz)	QPSK	16QAM	64QAM	256QAM
20	0.192	0.160	0.126	0.063
15	0.191	0.159	0.124	0.062
10	0.190	0.159	0.125	0.062
5	0.191	0.157	0.124	0.062

LTE Band 48	Emission Designator (99%OBW)			
BW(MHz)	QPSK	16QAM	64QAM	256QAM
20	18M0G7D	18M0W7D	17M9W7D	18M0W7D
15	13M5G7D	13M5W7D	13M5W7D	13M5W7D
10	9M02G7D	8M99W7D	9M03W7D	9M03W7D
5	4M52G7D	4M53W7D	4M51W7D	4M53W7D

1.4. Test Standards and Results

The objective of the report is to perform testing according to Part 2 and Part 96 for the EUT FCC ID Certification:

No	Identity	Document Title
1	47 CFR Part 2	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	47 CFR Part 96	CITIZENS BROADBAND RADIO SERVICE

Test detailed items/section required by FCC rules and results are as below:

Section	Description	Test Date	Test Engineer	Result	Method Determination /Remark
2.1046, 96.41(b)	Transmitter Conducted Output Power and ERP/EIRP	Dec. 10, 2023	Zheng Jianhua Li Huaijie	PASS$_{Note1}$	No deviation
2.1049	Occupied Bandwidth	Oct. 17&19, 2023	Li Huaijie	PASS$_{Note1}$	No deviation
96.41(g)	Peak -Average Ratio	Oct. 17&19, 2023	Li Huaijie	PASS$_{Note1}$	No deviation
2.1055	Frequency Stability	Oct. 11, 2023	Li Huaijie	PASS$_{Note1}$	No deviation
2.1051, 96.41(e)	Conducted Spurious Emissions	Oct. 11&19, 2023	Li Huaijie	PASS$_{Note1}$	No deviation
2.1051, 96.41(e)	Band Edge	Oct. 11&18, 2023	Li Huaijie	PASS$_{Note1}$	No deviation
2.1053, 96.41(e)	Radiated Spurious Emissions	Dec. 27, 2023	Su Zhan	PASS$_{Note1}$	No deviation

Note 1: The test results of these test items in this report refer to the test report (Report No.: SZ23070206W06).

Note 2: The tests were performed according to the method of measurements prescribed in KDB 971168 D01 v03 and ANSI/TIA-603-E-2016.

Note 3: The path loss during the RF test is calibrated to correct the results by the offset setting in the test equipment. The ref offset 24.5dB contains two parts that cable loss 14.5dB and Attenuator 10dB.

Note 4: Additions to, deviation, or exclusions from the method shall be judged in the "method

determination" column of add, deviate or exclude from the specific method shall be explained in the "Remark" of the above table.

Note 5: When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% confidence intervals.

1.5. Environmental Conditions

During the measurement, the environmental conditions were within the listed ranges:

Temperature (°C):	15-35
Relative Humidity (%):	30-60
Atmospheric Pressure (kPa):	86-106

2. 47 CFR Part 2, Part 96 Requirements

2.1. Transmitter Conducted Output Power and E.R.P./E.I.R.P.

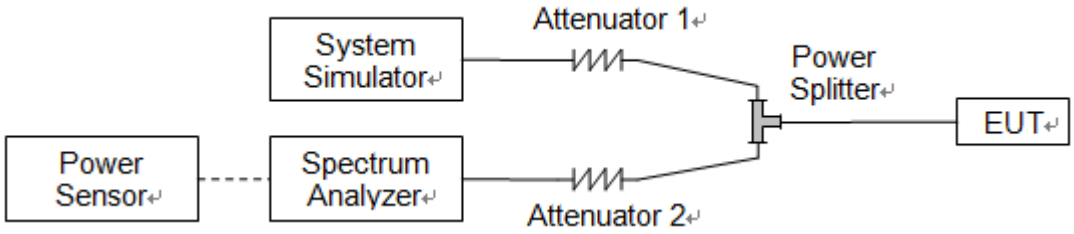
2.1.1. Requirement

According to FCC section 2.1046(a), for transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in FCC section 2.1033(c)(8).

The maximum effective isotropic radiated power (EIRP) and maximum Power Spectral Density (PSD) of any CBSD and End User Device must comply with the limits shown in the table as below. paragraph

Device	Maximum EIRP (dBm/10 megahertz)	Maximum PSD (dBm/MHz)
End User Device	23	n/a
Category A CBSD	30	20
Category B CBSD[1]	47	37

2.1.2. Test Description



The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power. A call is established between the EUT and the SS.

2.1.3.Test procedure

KDB 971168 D01v03 Section 5.2 and ANSI/TIA-603-E-2016.

EIRP (dBm) = Conducted Output Power (dBm) + Antenna Gain (dBi)
ERP (dBm) = EIPR (dBm) - 2.15

2.1.4.Result

Conducted Output Power:

ANT 2:

LTE Band 48						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				55340	55990	56640
Frequency (MHz)				3560	3625	3690
20	QPSK	1	0	22.09	22.15	21.98
20	QPSK	1	49	22.00	21.90	21.88
20	QPSK	1	99	22.09	22.05	21.87
20	QPSK	50	0	21.08	21.17	21.16
20	QPSK	50	24	21.14	21.05	20.87
20	QPSK	50	50	21.16	21.01	20.74
20	QPSK	100	0	21.15	21.17	21.04
20	16QAM	1	0	21.23	21.19	21.14
20	16QAM	1	49	21.16	21.13	21.09
20	16QAM	1	99	21.09	21.18	21.06
20	16QAM	50	0	20.24	20.06	19.91
20	16QAM	50	24	20.18	20.09	19.94
20	16QAM	50	50	20.15	19.94	19.90
20	16QAM	100	0	20.06	20.09	20.04
20	64QAM	1	0	20.14	20.12	20.06
20	64QAM	1	49	20.13	20.03	19.96
20	64QAM	1	99	20.07	20.07	20.01
20	64QAM	50	0	20.19	20.00	19.77
20	64QAM	50	24	20.09	20.03	19.95
20	64QAM	50	50	19.96	19.98	19.89
20	64QAM	100	0	20.22	20.21	20.11
20	256QAM	1	0	17.19	17.17	17.11
20	256QAM	1	49	17.18	17.08	17.01
20	256QAM	1	99	17.12	17.12	17.06
20	256QAM	50	0	17.24	17.05	16.82
20	256QAM	50	24	17.14	17.08	17.00
20	256QAM	50	50	17.01	17.03	16.94
20	256QAM	100	0	17.20	17.19	17.09

LTE Band 48						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				55315	55990	56665
Frequency (MHz)				3557.5	3625	3692.5
15	QPSK	1	0	22.01	22.11	21.86
15	QPSK	1	37	21.96	21.85	21.86
15	QPSK	1	74	21.97	21.92	21.83
15	QPSK	36	0	21.18	21.26	21.02
15	QPSK	36	20	21.14	21.12	20.92
15	QPSK	36	39	21.26	21.09	20.83
15	QPSK	75	0	21.17	21.09	20.88
15	16QAM	1	0	21.30	21.19	21.19
15	16QAM	1	37	21.18	21.22	21.10
15	16QAM	1	74	21.16	21.19	21.05
15	16QAM	36	0	20.28	20.09	19.97
15	16QAM	36	20	20.28	20.14	20.02
15	16QAM	36	39	20.15	19.96	20.00
15	16QAM	75	0	20.13	20.19	20.12
15	64QAM	1	0	20.14	20.17	20.07
15	64QAM	1	37	20.21	20.10	19.98
15	64QAM	1	74	20.15	20.07	20.08
15	64QAM	36	0	20.18	20.01	19.83
15	64QAM	36	20	20.09	20.04	20.02
15	64QAM	36	39	19.98	19.97	19.92
15	64QAM	75	0	20.15	20.09	20.09
15	256QAM	1	0	17.08	17.11	17.01
15	256QAM	1	37	17.15	17.04	16.92
15	256QAM	1	74	17.09	17.01	17.02
15	256QAM	36	0	17.12	16.95	16.77
15	256QAM	36	20	17.03	16.98	16.96
15	256QAM	36	39	16.96	16.95	16.90
15	256QAM	75	0	17.13	17.07	17.07

LTE Band 48						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				55290	55990	56690
Frequency (MHz)				3555	3625	3695
10	QPSK		0	21.97	22.07	21.86
10	QPSK	1	25	21.89	21.83	21.85
10	QPSK	1	49	22.02	21.92	21.87
10	QPSK	25	0	21.25	21.22	20.96
10	QPSK	25	12	21.24	21.15	20.88
10	QPSK	25	25	21.26	21.10	20.83
10	QPSK	50	0	21.22	21.16	20.90
10	16QAM	1	0	21.30	21.21	21.18
10	16QAM	1	25	21.21	21.14	21.11
10	16QAM	1	49	21.17	21.28	21.11
10	16QAM	25	0	20.24	20.09	19.93
10	16QAM	25	12	20.26	20.15	19.94
10	16QAM	25	25	20.19	19.98	19.91
10	16QAM	50	0	20.07	20.16	20.13
10	64QAM		0	20.20	20.13	20.11
10	64QAM	1	25	20.21	20.06	19.98
10	64QAM	1	49	20.06	20.10	20.02
10	64QAM	25	0	20.19	20.01	19.87
10	64QAM	25	12	20.16	20.04	20.04
10	64QAM	25	25	20.06	20.06	19.93
10	64QAM	50	0	20.21	20.17	20.07
10	256QAM	1	0	17.14	17.07	17.05
10	256QAM	1	25	17.15	17.00	16.92
10	256QAM	1	49	17.00	17.04	16.96
10	256QAM	25	0	17.13	16.95	16.81
10	256QAM	25	12	17.10	16.98	16.98
10	256QAM	25	25	17.00	17.00	16.87
10	256QAM	50	0	17.19	17.15	17.05

LTE Band 48						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				55265	55990	56175
Frequency (MHz)				3552.5	3625	3697.5
5	QPSK	1	0	21.95	22.09	21.94
5	QPSK	1	12	21.95	21.87	21.90
5	QPSK	1	24	22.01	21.90	21.89
5	QPSK	12	0	21.25	21.23	20.97
5	QPSK	12	7	21.17	21.08	20.94
5	QPSK	12	13	21.15	21.05	20.84
5	QPSK	25	0	21.15	21.10	20.84
5	16QAM	1	0	21.24	21.24	21.23
5	16QAM	1	12	21.17	21.13	21.13
5	16QAM	1	24	21.09	21.17	21.07
5	16QAM	12	0	20.24	20.13	19.91
5	16QAM	12	7	20.18	20.13	19.96
5	16QAM	12	13	20.18	19.98	19.93
5	16QAM	25	0	20.12	20.15	20.09
5	64QAM	1	0	20.19	20.15	20.08
5	64QAM	1	12	20.13	20.07	20.03
5	64QAM	1	24	20.08	20.16	20.10
5	64QAM	12	0	20.19	20.04	19.82
5	64QAM	12	7	20.04	19.98	19.92
5	64QAM	12	13	19.94	19.94	19.87
5	64QAM	25	0	20.14	20.16	20.08
5	256QAM	1	0	17.13	17.09	17.02
5	256QAM	1	12	17.07	17.01	16.97
5	256QAM	1	24	17.02	17.10	17.04
5	256QAM	12	0	17.17	17.02	16.80
5	256QAM	12	7	17.02	16.96	16.90
5	256QAM	12	13	16.92	16.92	16.85
5	256QAM	25	0	17.12	17.14	17.06

ANT 5:

LTE Band 48						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				55340	55990	56640
Frequency (MHz)				3560	3625	3690
20	QPSK	1	0	21.97	22.03	21.86
20	QPSK	1	49	21.88	21.78	21.76
20	QPSK	1	99	21.97	21.93	21.75
20	QPSK	50	0	21.20	21.21	21.04
20	QPSK	50	24	21.16	21.07	20.89
20	QPSK	50	50	21.18	21.03	20.76
20	QPSK	100	0	21.17	21.19	21.06
20	16QAM	1	0	21.25	21.21	21.16
20	16QAM	1	49	21.18	21.15	21.11
20	16QAM	1	99	21.11	21.20	21.08
20	16QAM	50	0	20.26	20.08	19.93
20	16QAM	50	24	20.20	20.11	19.96
20	16QAM	50	50	20.17	19.96	19.92
20	16QAM	100	0	20.08	20.11	20.06
20	64QAM	1	0	20.16	20.14	20.08
20	64QAM	1	49	20.15	20.05	19.98
20	64QAM	1	99	20.09	20.09	20.03
20	64QAM	50	0	20.21	20.02	19.79
20	64QAM	50	24	20.11	20.05	19.97
20	64QAM	50	50	19.98	20.00	19.91
20	64QAM	100	0	20.17	20.16	20.06
20	256QAM	1	0	17.14	17.12	17.06
20	256QAM	1	49	17.13	17.03	16.96
20	256QAM	1	99	17.07	17.07	17.01
20	256QAM	50	0	17.19	17.00	16.77
20	256QAM	50	24	17.09	17.03	16.95
20	256QAM	50	50	16.96	16.98	16.89
20	256QAM	100	0	17.15	17.14	17.04

LTE Band 48						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				55315	55990	56665
Frequency (MHz)				3557.5	3625	3692.5
15	QPSK	1	0	21.92	22.02	21.77
15	QPSK	1	37	21.87	21.76	21.77
15	QPSK	1	74	21.88	21.83	21.74
15	QPSK	36	0	21.09	21.17	20.93
15	QPSK	36	20	21.05	21.03	20.83
15	QPSK	36	39	21.17	21.00	20.74
15	QPSK	75	0	21.08	21.00	20.79
15	16QAM	1	0	21.21	21.10	21.10
15	16QAM	1	37	21.09	21.13	21.01
15	16QAM	1	74	21.07	21.10	20.96
15	16QAM	36	0	20.19	20.00	19.88
15	16QAM	36	20	20.19	20.05	19.93
15	16QAM	36	39	20.06	19.87	19.91
15	16QAM	75	0	20.04	20.10	20.03
15	64QAM	1	0	20.05	20.08	19.98
15	64QAM	1	37	20.12	20.01	19.89
15	64QAM	1	74	20.06	19.98	19.99
15	64QAM	36	0	20.09	19.92	19.74
15	64QAM	36	20	20.00	19.95	19.93
15	64QAM	36	39	19.93	19.92	19.87
15	64QAM	75	0	20.10	20.04	20.04
15	256QAM	1	0	17.03	17.06	16.96
15	256QAM	1	37	17.10	16.99	16.87
15	256QAM	1	74	17.04	16.96	16.97
15	256QAM	36	0	17.07	16.90	16.72
15	256QAM	36	20	16.98	16.93	16.91
15	256QAM	36	39	16.91	16.90	16.85
15	256QAM	75	0	17.08	17.02	17.02

LTE Band 48						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				55290	55990	56690
Frequency (MHz)				3555	3625	3695
10	QPSK		0	21.88	21.98	21.77
10	QPSK	1	25	21.80	21.74	21.76
10	QPSK	1	49	21.93	21.83	21.78
10	QPSK	25	0	21.16	21.13	20.87
10	QPSK	25	12	21.15	21.06	20.79
10	QPSK	25	25	21.17	21.01	20.74
10	QPSK	50	0	21.13	21.07	20.81
10	16QAM	1	0	21.21	21.12	21.09
10	16QAM	1	25	21.12	21.05	21.02
10	16QAM	1	49	21.08	21.19	21.02
10	16QAM	25	0	20.15	20.00	19.84
10	16QAM	25	12	20.17	20.06	19.85
10	16QAM	25	25	20.10	19.89	19.82
10	16QAM	50	0	19.98	20.07	20.04
10	64QAM		0	20.11	20.04	20.02
10	64QAM	1	25	20.12	19.97	19.89
10	64QAM	1	49	19.97	20.01	19.93
10	64QAM	25	0	20.10	19.92	19.78
10	64QAM	25	12	20.07	19.95	19.95
10	64QAM	25	25	19.97	19.97	19.84
10	64QAM	50	0	20.16	20.12	20.02
10	256QAM	1	0	17.09	17.02	17.00
10	256QAM	1	25	17.10	16.95	16.87
10	256QAM	1	49	16.95	16.99	16.91
10	256QAM	25	0	17.08	16.90	16.76
10	256QAM	25	12	17.05	16.93	16.93
10	256QAM	25	25	16.95	16.95	16.82
10	256QAM	50	0	17.14	17.10	17.00

LTE Band 48						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				55265	55990	56175
Frequency (MHz)				3552.5	3625	3697.5
5	QPSK	1	0	21.86	22.00	21.85
5	QPSK	1	12	21.86	21.78	21.81
5	QPSK	1	24	21.92	21.81	21.80
5	QPSK	12	0	21.16	21.14	20.88
5	QPSK	12	7	21.08	20.99	20.85
5	QPSK	12	13	21.06	20.96	20.75
5	QPSK	25	0	21.06	21.01	20.75
5	16QAM	1	0	21.15	21.15	21.14
5	16QAM	1	12	21.08	21.04	21.04
5	16QAM	1	24	21.00	21.08	20.98
5	16QAM	12	0	20.15	20.04	19.82
5	16QAM	12	7	20.09	20.04	19.87
5	16QAM	12	13	20.09	19.89	19.84
5	16QAM	25	0	20.03	20.06	20.00
5	64QAM	1	0	20.10	20.06	19.99
5	64QAM	1	12	20.04	19.98	19.94
5	64QAM	1	24	19.99	20.07	20.01
5	64QAM	12	0	20.14	19.99	19.77
5	64QAM	12	7	19.99	19.93	19.87
5	64QAM	12	13	19.89	19.89	19.82
5	64QAM	25	0	20.09	20.11	20.03
5	256QAM	1	0	17.08	17.04	16.97
5	256QAM	1	12	17.02	16.96	16.92
5	256QAM	1	24	16.97	17.05	16.99
5	256QAM	12	0	17.12	16.97	16.75
5	256QAM	12	7	16.97	16.91	16.85
5	256QAM	12	13	16.87	16.87	16.80
5	256QAM	25	0	17.07	17.09	17.01

Effective Radiated Power and Effective Isotropic Radiated Power:

ANT 2:

LTE Band 48				Measured E.I.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				55340		55990		56640	
Frequency (MHz)				3560		3625		3690	
				dBm	W	dBm	W	dBm	W
20	QPSK	1	0	22.79	0.190	22.85	0.193	22.68	0.185
20	QPSK	1	49	22.70	0.186	22.60	0.182	22.58	0.181
20	QPSK	1	99	22.79	0.190	22.75	0.188	22.57	0.181
20	QPSK	50	0	21.78	0.151	21.87	0.154	21.86	0.153
20	QPSK	50	24	21.84	0.153	21.75	0.150	21.57	0.144
20	QPSK	50	50	21.86	0.153	21.71	0.148	21.44	0.139
20	QPSK	100	0	21.85	0.153	21.87	0.154	21.74	0.149
20	16QAM	1	0	21.93	0.156	21.89	0.155	21.84	0.153
20	16QAM	1	49	21.86	0.153	21.83	0.152	21.79	0.151
20	16QAM	1	99	21.79	0.151	21.88	0.154	21.76	0.150
20	16QAM	50	0	20.94	0.124	20.76	0.119	20.61	0.115
20	16QAM	50	24	20.88	0.122	20.79	0.120	20.64	0.116
20	16QAM	50	50	20.85	0.122	20.64	0.116	20.60	0.115
20	16QAM	100	0	20.76	0.119	20.79	0.120	20.74	0.119
20	64QAM	1	0	20.84	0.121	20.82	0.121	20.76	0.119
20	64QAM	1	49	20.83	0.121	20.73	0.118	20.66	0.116
20	64QAM	1	99	20.77	0.119	20.77	0.119	20.71	0.118
20	64QAM	50	0	20.89	0.123	20.70	0.117	20.47	0.111
20	64QAM	50	24	20.79	0.120	20.73	0.118	20.65	0.116
20	64QAM	50	50	20.66	0.116	20.68	0.117	20.59	0.115
20	64QAM	100	0	20.92	0.124	20.91	0.123	20.81	0.121
20	256QAM	1	0	17.89	0.062	17.87	0.061	17.81	0.060
20	256QAM	1	49	17.88	0.061	17.78	0.060	17.71	0.059
20	256QAM	1	99	17.82	0.061	17.82	0.061	17.76	0.060
20	256QAM	50	0	17.94	0.062	17.75	0.060	17.52	0.056
20	256QAM	50	24	17.84	0.061	17.78	0.060	17.70	0.059
20	256QAM	50	50	17.71	0.059	17.73	0.059	17.64	0.058
20	256QAM	100	0	17.90	0.062	17.89	0.062	17.79	0.060

LTE Band 48				Measured E.I.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				55315		55990		56665	
Frequency (MHz)				3557.5		3625		3692.5	
				dBm	W	dBm	W	dBm	W
15	QPSK	1	0	22.71	0.187	22.81	0.191	22.56	0.180
15	QPSK	1	37	22.66	0.185	22.55	0.180	22.56	0.180
15	QPSK	1	74	22.67	0.185	22.62	0.183	22.53	0.179
15	QPSK	36	0	21.88	0.154	21.96	0.157	21.72	0.149
15	QPSK	36	20	21.84	0.153	21.82	0.152	21.62	0.145
15	QPSK	36	39	21.96	0.157	21.79	0.151	21.53	0.142
15	QPSK	75	0	21.87	0.154	21.79	0.151	21.58	0.144
15	16QAM	1	0	22.00	0.158	21.89	0.155	21.89	0.155
15	16QAM	1	37	21.88	0.154	21.92	0.156	21.80	0.151
15	16QAM	1	74	21.86	0.153	21.89	0.155	21.75	0.150
15	16QAM	36	0	20.98	0.125	20.79	0.120	20.67	0.117
15	16QAM	36	20	20.98	0.125	20.84	0.121	20.72	0.118
15	16QAM	36	39	20.85	0.122	20.66	0.116	20.70	0.117
15	16QAM	75	0	20.83	0.121	20.89	0.123	20.82	0.121
15	64QAM	1	0	20.84	0.121	20.87	0.122	20.77	0.119
15	64QAM	1	37	20.91	0.123	20.80	0.120	20.68	0.117
15	64QAM	1	74	20.85	0.122	20.77	0.119	20.78	0.120
15	64QAM	36	0	20.88	0.122	20.71	0.118	20.53	0.113
15	64QAM	36	20	20.79	0.120	20.74	0.119	20.72	0.118
15	64QAM	36	39	20.68	0.117	20.67	0.117	20.62	0.115
15	64QAM	75	0	20.85	0.122	20.79	0.120	20.79	0.120
15	256QAM	1	0	17.78	0.060	17.81	0.060	17.71	0.059
15	256QAM	1	37	17.85	0.061	17.74	0.059	17.62	0.058
15	256QAM	1	74	17.79	0.060	17.71	0.059	17.72	0.059
15	256QAM	36	0	17.82	0.061	17.65	0.058	17.47	0.056
15	256QAM	36	20	17.73	0.059	17.68	0.059	17.66	0.058
15	256QAM	36	39	17.66	0.058	17.65	0.058	17.60	0.058
15	256QAM	75	0	17.83	0.061	17.77	0.060	17.77	0.060

LTE Band 48				Measured E.I.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				55290		55990		56690	
Frequency (MHz)				3555		3625		3695	
				dBm	W	dBm	W	dBm	W
10	QPSK	1	0	22.67	0.185	22.77	0.189	22.56	0.180
10	QPSK	1	25	22.59	0.182	22.53	0.179	22.55	0.180
10	QPSK	1	49	22.72	0.187	22.62	0.183	22.57	0.181
10	QPSK	25	0	21.95	0.157	21.92	0.156	21.66	0.147
10	QPSK	25	12	21.94	0.156	21.85	0.153	21.58	0.144
10	QPSK	25	25	21.96	0.157	21.80	0.151	21.53	0.142
10	QPSK	50	0	21.92	0.156	21.86	0.153	21.60	0.145
10	16QAM	1	0	22.00	0.158	21.91	0.155	21.88	0.154
10	16QAM	1	25	21.91	0.155	21.84	0.153	21.81	0.152
10	16QAM	1	49	21.87	0.154	21.98	0.158	21.81	0.152
10	16QAM	25	0	20.94	0.124	20.79	0.120	20.63	0.116
10	16QAM	25	12	20.96	0.125	20.85	0.122	20.64	0.116
10	16QAM	25	25	20.89	0.123	20.68	0.117	20.61	0.115
10	16QAM	50	0	20.77	0.119	20.86	0.122	20.83	0.121
10	64QAM	1	0	20.90	0.123	20.83	0.121	20.81	0.121
10	64QAM	1	25	20.91	0.123	20.76	0.119	20.68	0.117
10	64QAM	1	49	20.76	0.119	20.80	0.120	20.72	0.118
10	64QAM	25	0	20.89	0.123	20.71	0.118	20.57	0.114
10	64QAM	25	12	20.86	0.122	20.74	0.119	20.74	0.119
10	64QAM	25	25	20.76	0.119	20.76	0.119	20.63	0.116
10	64QAM	50	0	20.91	0.123	20.87	0.122	20.77	0.119
10	256QAM	1	0	17.84	0.061	17.77	0.060	17.75	0.060
10	256QAM	1	25	17.85	0.061	17.70	0.059	17.62	0.058
10	256QAM	1	49	17.70	0.059	17.74	0.059	17.66	0.058
10	256QAM	25	0	17.83	0.061	17.65	0.058	17.51	0.056
10	256QAM	25	12	17.80	0.060	17.68	0.059	17.68	0.059
10	256QAM	25	25	17.70	0.059	17.70	0.059	17.57	0.057
10	256QAM	50	0	17.89	0.062	17.85	0.061	17.75	0.060

LTE Band 48				Measured E.I.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				55265		55990		56175	
Frequency (MHz)				3552.5		3625		3697.5	
				dBm	W	dBm	W	dBm	W
5	QPSK	1	0	22.65	0.184	22.79	0.190	22.64	0.184
5	QPSK	1	12	22.65	0.184	22.57	0.181	22.60	0.182
5	QPSK	1	24	22.71	0.187	22.60	0.182	22.59	0.182
5	QPSK	12	0	21.95	0.157	21.93	0.156	21.67	0.147
5	QPSK	12	7	21.87	0.154	21.78	0.151	21.64	0.146
5	QPSK	12	13	21.85	0.153	21.75	0.150	21.54	0.143
5	QPSK	25	0	21.85	0.153	21.80	0.151	21.54	0.143
5	16QAM	1	0	21.94	0.156	21.94	0.156	21.93	0.156
5	16QAM	1	12	21.87	0.154	21.83	0.152	21.83	0.152
5	16QAM	1	24	21.79	0.151	21.87	0.154	21.77	0.150
5	16QAM	12	0	20.94	0.124	20.83	0.121	20.61	0.115
5	16QAM	12	7	20.88	0.122	20.83	0.121	20.66	0.116
5	16QAM	12	13	20.88	0.122	20.68	0.117	20.63	0.116
5	16QAM	25	0	20.82	0.121	20.85	0.122	20.79	0.120
5	64QAM	1	0	20.89	0.123	20.85	0.122	20.78	0.120
5	64QAM	1	12	20.83	0.121	20.77	0.119	20.73	0.118
5	64QAM	1	24	20.78	0.120	20.86	0.122	20.80	0.120
5	64QAM	12	0	20.89	0.123	20.74	0.119	20.52	0.113
5	64QAM	12	7	20.74	0.119	20.68	0.117	20.62	0.115
5	64QAM	12	13	20.64	0.116	20.64	0.116	20.57	0.114
5	64QAM	25	0	20.84	0.121	20.86	0.122	20.78	0.120
5	256QAM	1	0	17.83	0.061	17.79	0.060	17.72	0.059
5	256QAM	1	12	17.77	0.060	17.71	0.059	17.67	0.058
5	256QAM	1	24	17.72	0.059	17.80	0.060	17.74	0.059
5	256QAM	12	0	17.87	0.061	17.72	0.059	17.50	0.056
5	256QAM	12	7	17.72	0.059	17.66	0.058	17.60	0.058
5	256QAM	12	13	17.62	0.058	17.62	0.058	17.55	0.057
5	256QAM	25	0	17.82	0.061	17.84	0.061	17.76	0.060

ANT 5:

LTE Band 48				Measured E.I.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				55340		55990		56640	
Frequency (MHz)				3560		3625		3690	
				dBm	W	dBm	W	dBm	W
20	QPSK	1	0	22.77	0.189	22.83	0.192	22.66	0.185
20	QPSK	1	49	22.68	0.185	22.58	0.181	22.56	0.180
20	QPSK	1	99	22.77	0.189	22.73	0.187	22.55	0.180
20	QPSK	50	0	22.00	0.158	22.01	0.159	21.84	0.153
20	QPSK	50	24	21.96	0.157	21.87	0.154	21.69	0.148
20	QPSK	50	50	21.98	0.158	21.83	0.152	21.56	0.143
20	QPSK	100	0	21.97	0.157	21.99	0.158	21.86	0.153
20	16QAM	1	0	22.05	0.160	22.01	0.159	21.96	0.157
20	16QAM	1	49	21.98	0.158	21.95	0.157	21.91	0.155
20	16QAM	1	99	21.91	0.155	22.00	0.158	21.88	0.154
20	16QAM	50	0	21.06	0.128	20.88	0.122	20.73	0.118
20	16QAM	50	24	21.00	0.126	20.91	0.123	20.76	0.119
20	16QAM	50	50	20.97	0.125	20.76	0.119	20.72	0.118
20	16QAM	100	0	20.88	0.122	20.91	0.123	20.86	0.122
20	64QAM	1	0	20.96	0.125	20.94	0.124	20.88	0.122
20	64QAM	1	49	20.95	0.124	20.85	0.122	20.78	0.120
20	64QAM	1	99	20.89	0.123	20.89	0.123	20.83	0.121
20	64QAM	50	0	21.01	0.126	20.82	0.121	20.59	0.115
20	64QAM	50	24	20.91	0.123	20.85	0.122	20.77	0.119
20	64QAM	50	50	20.78	0.120	20.80	0.120	20.71	0.118
20	64QAM	100	0	20.97	0.125	20.96	0.125	20.86	0.122
20	256QAM	1	0	17.94	0.062	17.92	0.062	17.86	0.061
20	256QAM	1	49	17.93	0.062	17.83	0.061	17.76	0.060
20	256QAM	1	99	17.87	0.061	17.87	0.061	17.81	0.060
20	256QAM	50	0	17.99	0.063	17.80	0.060	17.57	0.057
20	256QAM	50	24	17.89	0.062	17.83	0.061	17.75	0.060
20	256QAM	50	50	17.76	0.060	17.78	0.060	17.69	0.059
20	256QAM	100	0	17.95	0.062	17.94	0.062	17.84	0.061

LTE Band 48				Measured E.I.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				55315		55990		56665	
Frequency (MHz)				3557.5		3625		3692.5	
				dBm	W	dBm	W	dBm	W
15	QPSK	1	0	22.72	0.187	22.82	0.191	22.57	0.181
15	QPSK	1	37	22.67	0.185	22.56	0.180	22.57	0.181
15	QPSK	1	74	22.68	0.185	22.63	0.183	22.54	0.179
15	QPSK	36	0	21.89	0.155	21.97	0.157	21.73	0.149
15	QPSK	36	20	21.85	0.153	21.83	0.152	21.63	0.146
15	QPSK	36	39	21.97	0.157	21.80	0.151	21.54	0.143
15	QPSK	75	0	21.88	0.154	21.80	0.151	21.59	0.144
15	16QAM	1	0	22.01	0.159	21.90	0.155	21.90	0.155
15	16QAM	1	37	21.89	0.155	21.93	0.156	21.81	0.152
15	16QAM	1	74	21.87	0.154	21.90	0.155	21.76	0.150
15	16QAM	36	0	20.99	0.126	20.80	0.120	20.68	0.117
15	16QAM	36	20	20.99	0.126	20.85	0.122	20.73	0.118
15	16QAM	36	39	20.86	0.122	20.67	0.117	20.71	0.118
15	16QAM	75	0	20.84	0.121	20.90	0.123	20.83	0.121
15	64QAM	1	0	20.85	0.122	20.88	0.122	20.78	0.120
15	64QAM	1	37	20.92	0.124	20.81	0.121	20.69	0.117
15	64QAM	1	74	20.86	0.122	20.78	0.120	20.79	0.120
15	64QAM	36	0	20.89	0.123	20.72	0.118	20.54	0.113
15	64QAM	36	20	20.80	0.120	20.75	0.119	20.73	0.118
15	64QAM	36	39	20.73	0.118	20.72	0.118	20.67	0.117
15	64QAM	75	0	20.90	0.123	20.84	0.121	20.84	0.121
15	256QAM	1	0	17.83	0.061	17.86	0.061	17.76	0.060
15	256QAM	1	37	17.90	0.062	17.79	0.060	17.67	0.058
15	256QAM	1	74	17.84	0.061	17.76	0.060	17.77	0.060
15	256QAM	36	0	17.87	0.061	17.70	0.059	17.52	0.056
15	256QAM	36	20	17.78	0.060	17.73	0.059	17.71	0.059
15	256QAM	36	39	17.71	0.059	17.70	0.059	17.65	0.058
15	256QAM	75	0	17.88	0.061	17.82	0.061	17.82	0.061

LTE Band 48				Measured E.I.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				55290		55990		56690	
Frequency (MHz)				3555		3625		3695	
				dBm	W	dBm	W	dBm	W
10	QPSK	1	0	22.68	0.185	22.78	0.190	22.57	0.181
10	QPSK	1	25	22.60	0.182	22.54	0.179	22.56	0.180
10	QPSK	1	49	22.73	0.187	22.63	0.183	22.58	0.181
10	QPSK	25	0	21.96	0.157	21.93	0.156	21.67	0.147
10	QPSK	25	12	21.95	0.157	21.86	0.153	21.59	0.144
10	QPSK	25	25	21.97	0.157	21.81	0.152	21.54	0.143
10	QPSK	50	0	21.93	0.156	21.87	0.154	21.61	0.145
10	16QAM	1	0	22.01	0.159	21.92	0.156	21.89	0.155
10	16QAM	1	25	21.92	0.156	21.85	0.153	21.82	0.152
10	16QAM	1	49	21.88	0.154	21.99	0.158	21.82	0.152
10	16QAM	25	0	20.95	0.124	20.80	0.120	20.64	0.116
10	16QAM	25	12	20.97	0.125	20.86	0.122	20.65	0.116
10	16QAM	25	25	20.90	0.123	20.69	0.117	20.62	0.115
10	16QAM	50	0	20.78	0.120	20.87	0.122	20.84	0.121
10	64QAM	1	0	20.91	0.123	20.84	0.121	20.82	0.121
10	64QAM	1	25	20.92	0.124	20.77	0.119	20.69	0.117
10	64QAM	1	49	20.77	0.119	20.81	0.121	20.73	0.118
10	64QAM	25	0	20.90	0.123	20.72	0.118	20.58	0.114
10	64QAM	25	12	20.87	0.122	20.75	0.119	20.75	0.119
10	64QAM	25	25	20.77	0.119	20.77	0.119	20.64	0.116
10	64QAM	50	0	20.96	0.125	20.92	0.124	20.82	0.121
10	256QAM	1	0	17.89	0.062	17.82	0.061	17.80	0.060
10	256QAM	1	25	17.90	0.062	17.75	0.060	17.67	0.058
10	256QAM	1	49	17.75	0.060	17.79	0.060	17.71	0.059
10	256QAM	25	0	17.88	0.061	17.70	0.059	17.56	0.057
10	256QAM	25	12	17.85	0.061	17.73	0.059	17.73	0.059
10	256QAM	25	25	17.75	0.060	17.75	0.060	17.62	0.058
10	256QAM	50	0	17.94	0.062	17.90	0.062	17.80	0.060

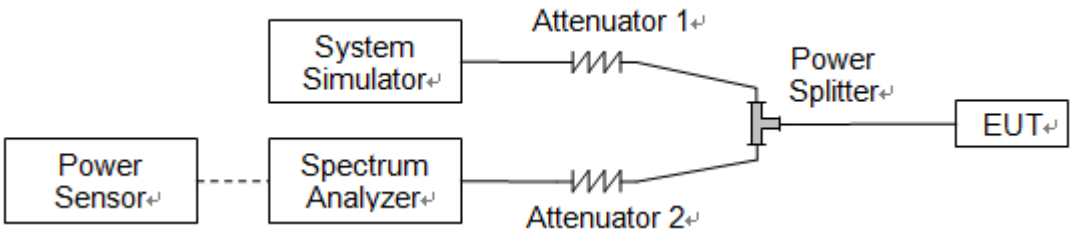
LTE Band 48				Measured E.I.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				55265		55990		56175	
Frequency (MHz)				3552.5		3625		3697.5	
				dBm	W	dBm	W	dBm	W
5	QPSK	1	0	22.66	0.185	22.80	0.191	22.65	0.184
5	QPSK	1	12	22.66	0.185	22.58	0.181	22.61	0.182
5	QPSK	1	24	22.72	0.187	22.61	0.182	22.60	0.182
5	QPSK	12	0	21.96	0.157	21.94	0.156	21.68	0.147
5	QPSK	12	7	21.88	0.154	21.79	0.151	21.65	0.146
5	QPSK	12	13	21.86	0.153	21.76	0.150	21.55	0.143
5	QPSK	25	0	21.86	0.153	21.81	0.152	21.55	0.143
5	16QAM	1	0	21.95	0.157	21.95	0.157	21.94	0.156
5	16QAM	1	12	21.88	0.154	21.84	0.153	21.84	0.153
5	16QAM	1	24	21.80	0.151	21.88	0.154	21.78	0.151
5	16QAM	12	0	20.95	0.124	20.84	0.121	20.62	0.115
5	16QAM	12	7	20.89	0.123	20.84	0.121	20.67	0.117
5	16QAM	12	13	20.89	0.123	20.69	0.117	20.64	0.116
5	16QAM	25	0	20.83	0.121	20.86	0.122	20.80	0.120
5	64QAM	1	0	20.90	0.123	20.86	0.122	20.79	0.120
5	64QAM	1	12	20.84	0.121	20.78	0.120	20.74	0.119
5	64QAM	1	24	20.79	0.120	20.87	0.122	20.81	0.121
5	64QAM	12	0	20.94	0.124	20.79	0.120	20.57	0.114
5	64QAM	12	7	20.79	0.120	20.73	0.118	20.67	0.117
5	64QAM	12	13	20.69	0.117	20.69	0.117	20.62	0.115
5	64QAM	25	0	20.89	0.123	20.91	0.123	20.83	0.121
5	256QAM	1	0	17.88	0.061	17.84	0.061	17.77	0.060
5	256QAM	1	12	17.82	0.061	17.76	0.060	17.72	0.059
5	256QAM	1	24	17.77	0.060	17.85	0.061	17.79	0.060
5	256QAM	12	0	17.92	0.062	17.77	0.060	17.55	0.057
5	256QAM	12	7	17.77	0.060	17.71	0.059	17.65	0.058
5	256QAM	12	13	17.67	0.058	17.67	0.058	17.60	0.058
5	256QAM	25	0	17.87	0.061	17.89	0.062	17.81	0.060

2.2. Occupied Bandwidth

2.2.1.Requirement

According to FCC section 2.1049, 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 radiated by a given emission. Occupied bandwidth is also known as the 99% emission bandwidth.

2.2.2.Test Description



The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power. A call is established between the EUT and the SS.

2.2.3.Test procedure

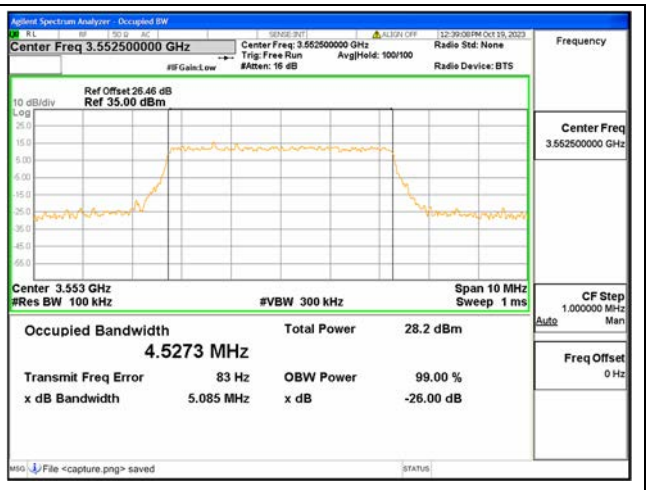
KDB 971168 D01v03 Section 4.1 and ANSI/TIA-603-E-2016.

2.2.4.Test Result

LTE Band	BW(MHz)	Channel Level	Channel	Frequency (MHz)	Modulation	99% BW (MHz)	26dB BW (MHz)	P/F
B48	5	Low	55265	3552.5	QPSK	4.52	5.10	PASS
B48	5	Low	55265	3552.5	16QAM	4.53	5.09	PASS
B48	5	Low	55265	3552.5	64QAM	4.51	5.15	PASS
B48	5	Low	55265	3552.5	256QAM	4.51	5.06	PASS
B48	5	Mid	55990	3625	QPSK	4.51	5.04	PASS
B48	5	Mid	55990	3625	16QAM	4.51	5.01	PASS
B48	5	Mid	55990	3625	64QAM	4.51	4.99	PASS
B48	5	Mid	55990	3625	256QAM	4.53	4.97	PASS
B48	5	High	56715	3697.5	QPSK	4.50	5.02	PASS
B48	5	High	56715	3697.5	16QAM	4.49	5.00	PASS
B48	5	High	56715	3697.5	64QAM	4.49	4.98	PASS
B48	5	High	56715	3697.5	256QAM	4.49	5.14	PASS
B48	10	Low	55290	3555	QPSK	9.02	9.96	PASS
B48	10	Low	55290	3555	16QAM	8.99	9.99	PASS
B48	10	Low	55290	3555	64QAM	8.99	9.97	PASS
B48	10	Low	55290	3555	256QAM	9.03	9.96	PASS
B48	10	Mid	55990	3625	QPSK	8.97	9.85	PASS
B48	10	Mid	55990	3625	16QAM	8.96	9.72	PASS
B48	10	Mid	55990	3625	64QAM	9.00	9.74	PASS
B48	10	Mid	55990	3625	256QAM	8.99	9.69	PASS
B48	10	High	56690	3695	QPSK	8.98	9.91	PASS
B48	10	High	56690	3695	16QAM	8.97	9.80	PASS
B48	10	High	56690	3695	64QAM	9.03	10.05	PASS
B48	10	High	56690	3695	256QAM	9.00	9.95	PASS
B48	15	Low	55315	3557.5	QPSK	13.47	14.87	PASS
B48	15	Low	55315	3557.5	16QAM	13.46	14.76	PASS
B48	15	Low	55315	3557.5	64QAM	13.46	14.56	PASS
B48	15	Low	55315	3557.5	256QAM	13.49	14.77	PASS
B48	15	Mid	55990	3625	QPSK	13.43	14.54	PASS
B48	15	Mid	55990	3625	16QAM	13.47	14.91	PASS
B48	15	Mid	55990	3625	64QAM	13.47	14.44	PASS
B48	15	Mid	55990	3625	256QAM	13.47	14.65	PASS
B48	15	High	56665	3692.5	QPSK	13.52	14.75	PASS
B48	15	High	56665	3692.5	16QAM	13.45	14.62	PASS
B48	15	High	56665	3692.5	64QAM	13.41	14.65	PASS

B48	15	High	56665	3692.5	256QAM	13.46	14.79	PASS
B48	20	Low	55340	3560	QPSK	17.98	19.79	PASS
B48	20	Low	55340	3560	16QAM	17.96	19.60	PASS
B48	20	Low	55340	3560	64QAM	17.94	19.77	PASS
B48	20	Low	55340	3560	256QAM	17.98	19.72	PASS
B48	20	Mid	55990	3625	QPSK	17.90	19.31	PASS
B48	20	Mid	55990	3625	16QAM	17.89	19.37	PASS
B48	20	Mid	55990	3625	64QAM	17.93	19.42	PASS
B48	20	Mid	55990	3625	256QAM	17.95	19.23	PASS
B48	20	High	56640	3690	QPSK	17.94	19.46	PASS
B48	20	High	56640	3690	16QAM	17.94	19.25	PASS
B48	20	High	56640	3690	64QAM	17.93	19.41	PASS
B48	20	High	56640	3690	256QAM	17.95	19.39	PASS

B48 / 5MHz / QPSK/ Low CH

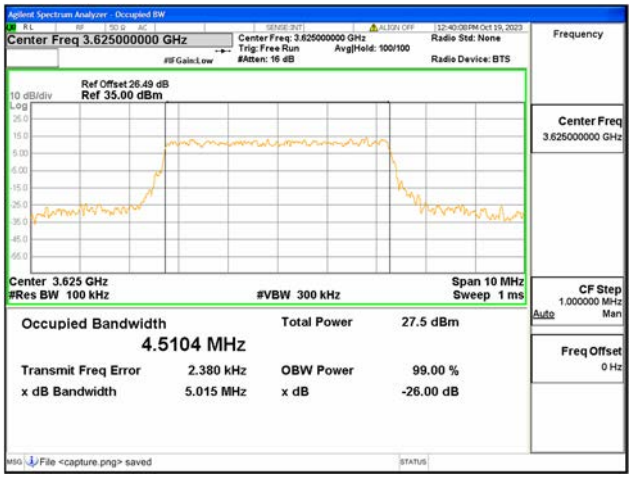


B48 / 5MHz / 16QAM/ Low CH

B48 / 5MHz / 64QAM/ Low CH

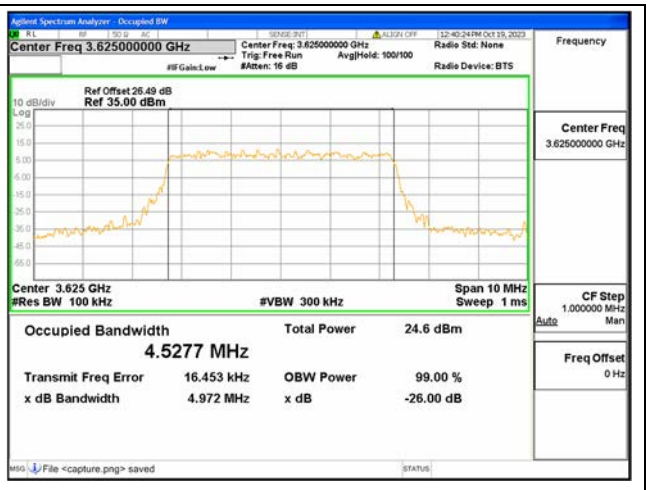
B48 / 5MHz / 256QAM/ Low CH

B48 / 5MHz / QPSK/ Mid CH

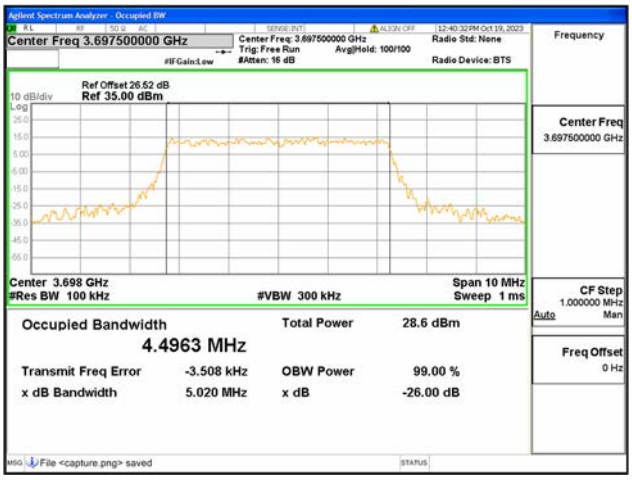


B48 / 5MHz / 16QAM/ Mid CH

B48 / 5MHz / 64QAM/ Mid CH

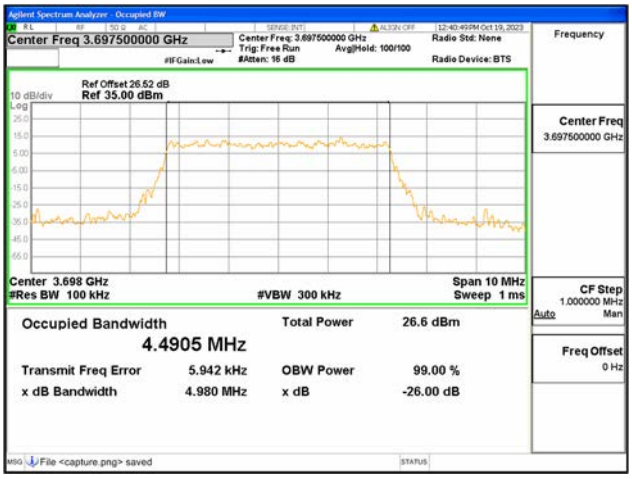


B48 / 5MHz / 256QAM/ Mid CH



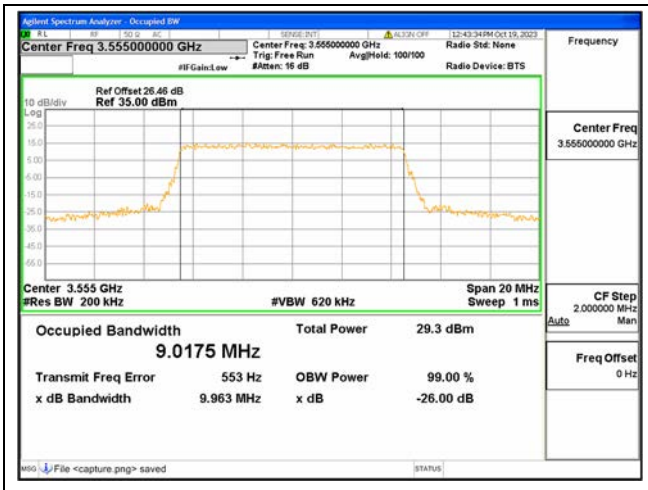
B48 / 5MHz / QPSK/ High CH

B48 / 5MHz / 16QAM/ High CH

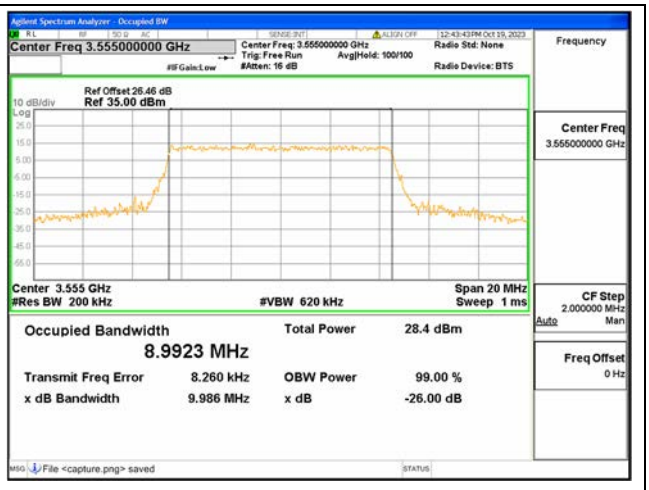


B48 / 5MHz / 64QAM/ High CH

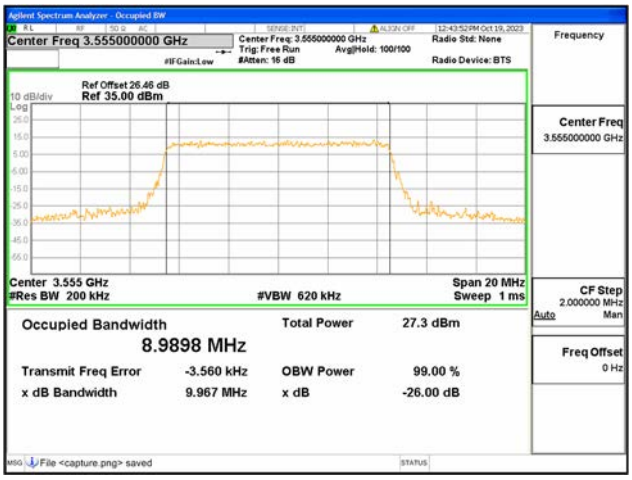
B48 / 5MHz / 256QAM/ High CH



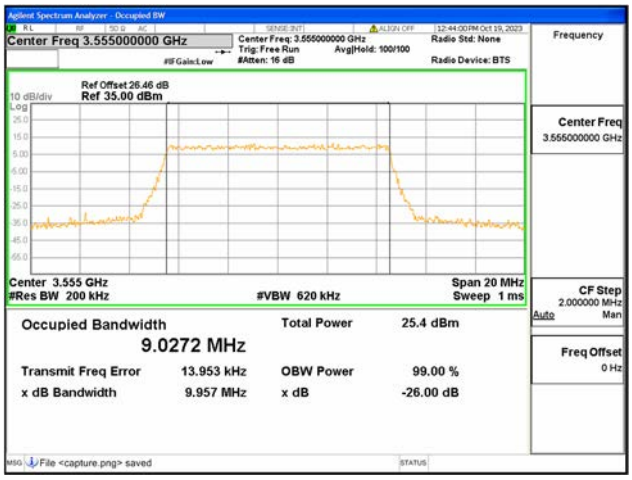
B48 / 10MHz / QPSK/ Low CH



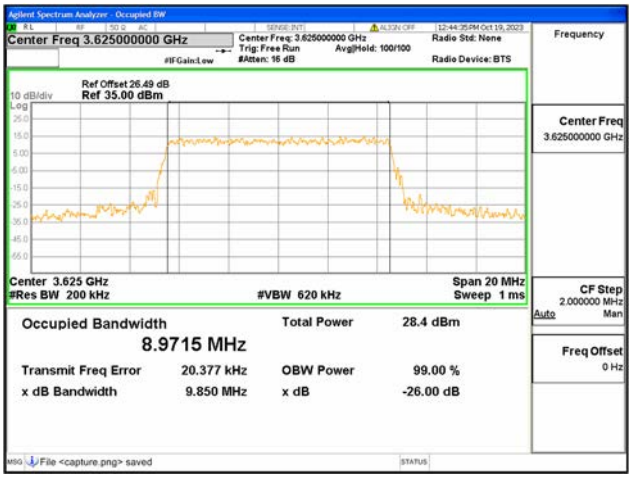
B48 / 10MHz / 16QAM/ Low CH



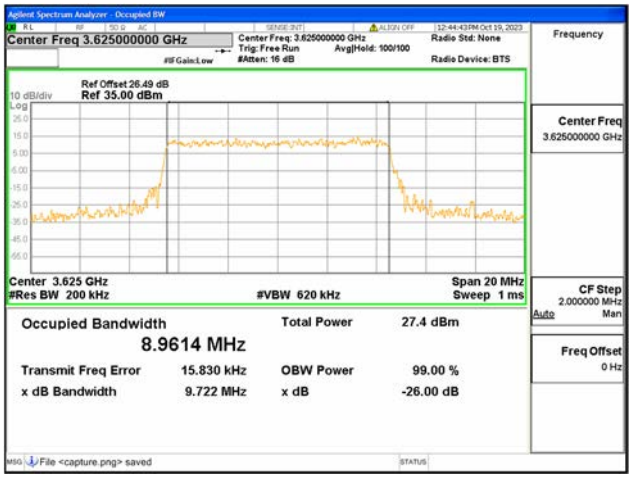
B48 / 10MHz / 64QAM/ Low CH



B48 / 10MHz / 256QAM/ Low CH

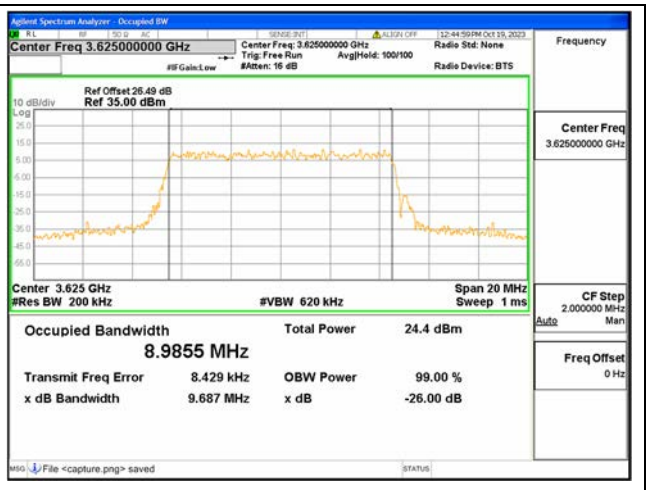


B48 / 10MHz / QPSK/ Mid CH

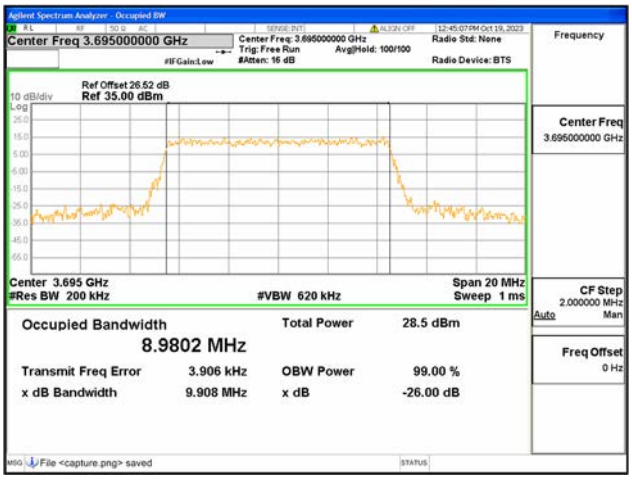


B48 / 10MHz / 16QAM/ Mid CH

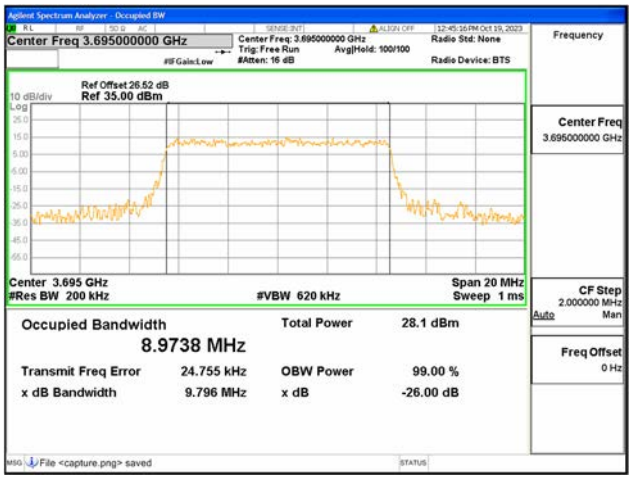
B48 / 10MHz / 64QAM/ Mid CH



B48 / 10MHz / 256QAM/ Mid CH

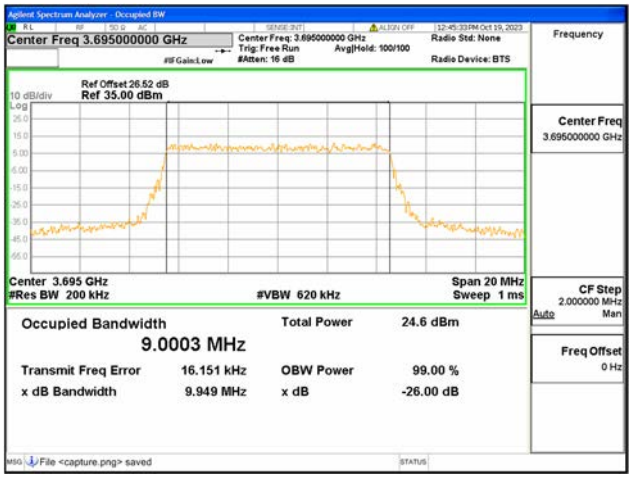


B48 / 10MHz / QPSK/ High CH

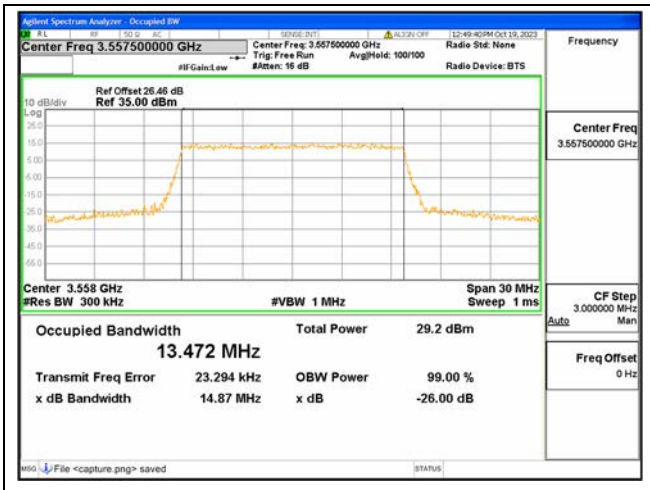


B48 / 10MHz / 16QAM/ High CH

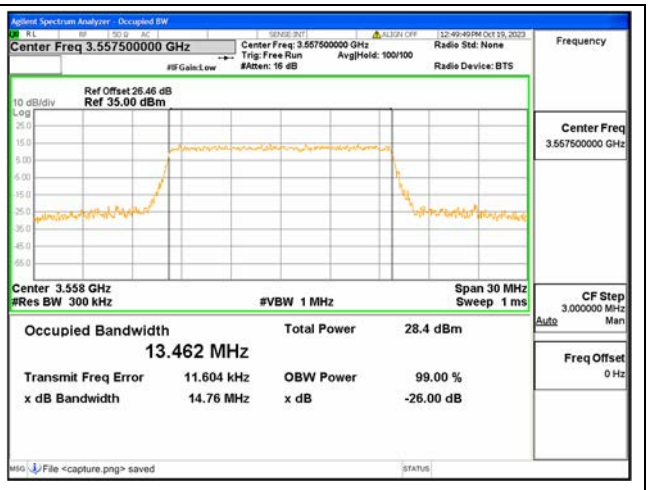
B48 / 10MHz / 64QAM/ High CH



B48 / 10MHz / 256QAM/ High CH

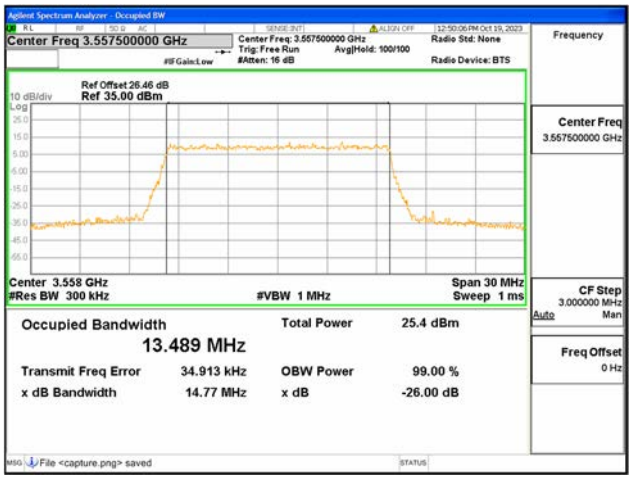


B48 / 15MHz / QPSK/ Low CH

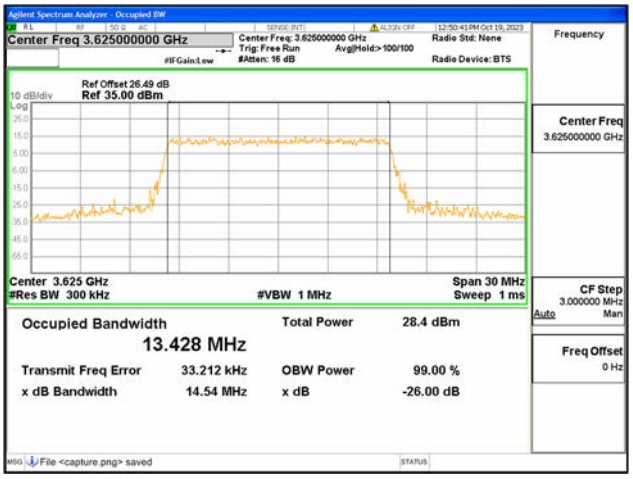


B48 / 15MHz / 16QAM/ Low CH

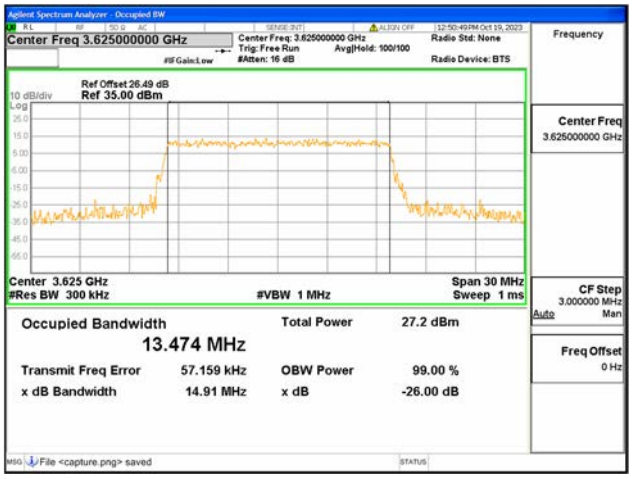
B48 / 15MHz / 64QAM/ Low CH



B48 / 15MHz / 256QAM/ Low CH

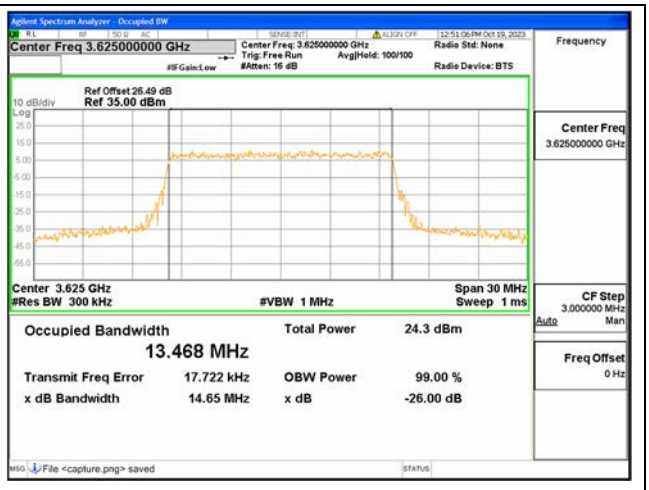


B48 / 15MHz / QPSK/ Mid CH

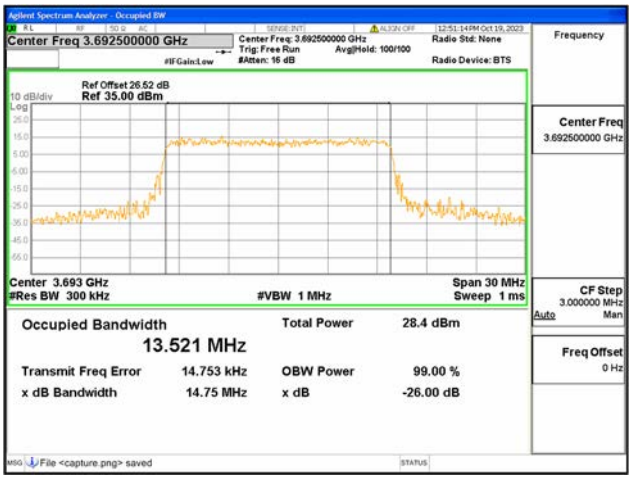


B48 / 15MHz / 16QAM/ Mid CH

B48 / 15MHz / 64QAM/ Mid CH

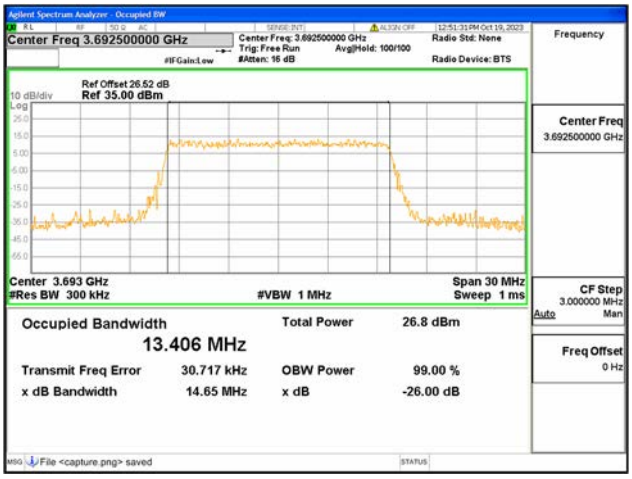


B48 / 15MHz / 256QAM/ Mid CH

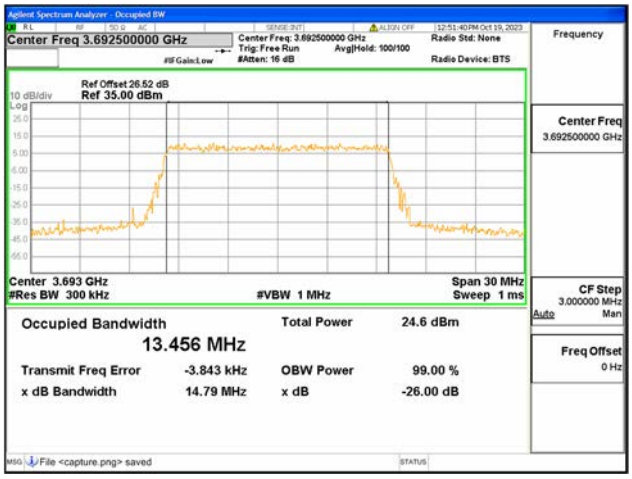


B48 / 15MHz / QPSK/ High CH

B48 / 15MHz / 16QAM/ High CH

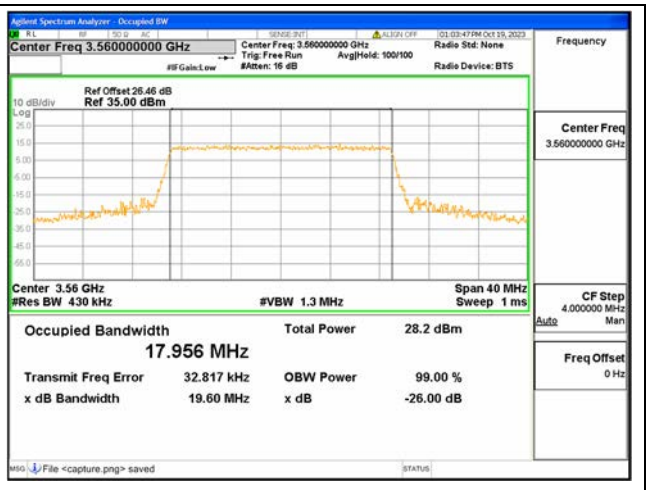


B48 / 15MHz / 64QAM/ High CH

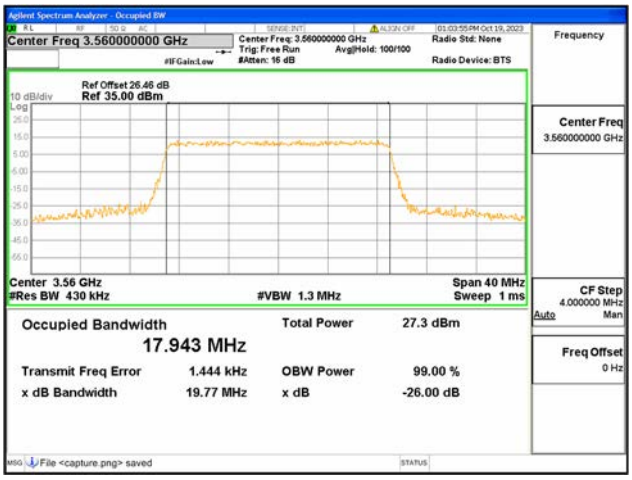


B48 / 15MHz / 256QAM/ High CH

B48 / 20MHz / QPSK/ Low CH

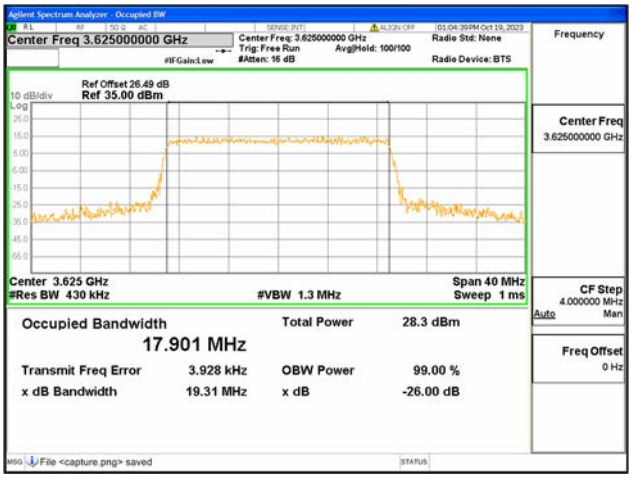


B48 / 20MHz / 16QAM/ Low CH

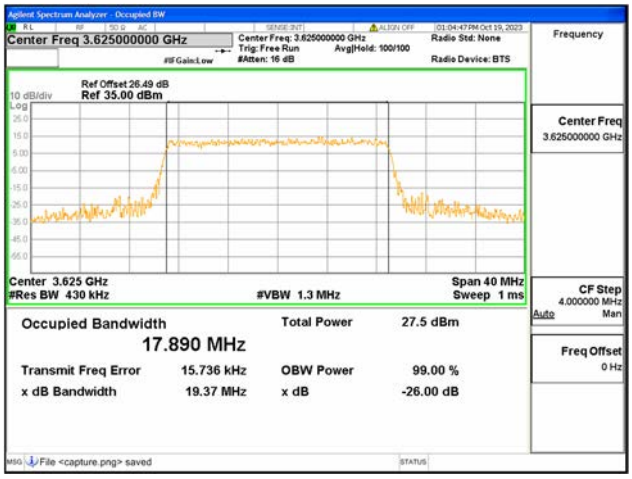


B48 / 20MHz / 64QAM/ Low CH

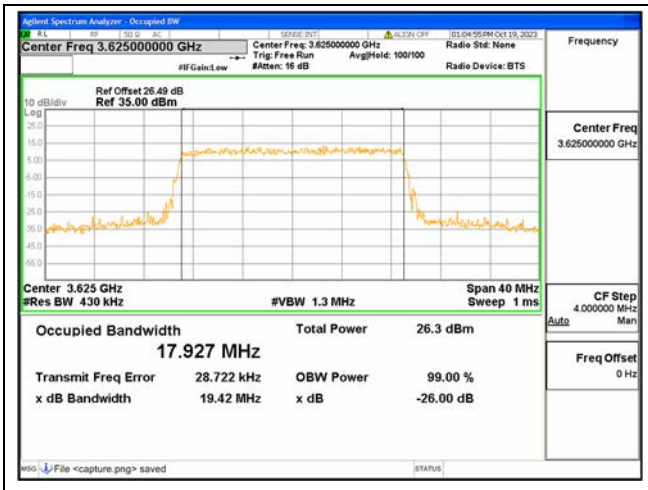
B48 / 20MHz / 256QAM/ Low CH



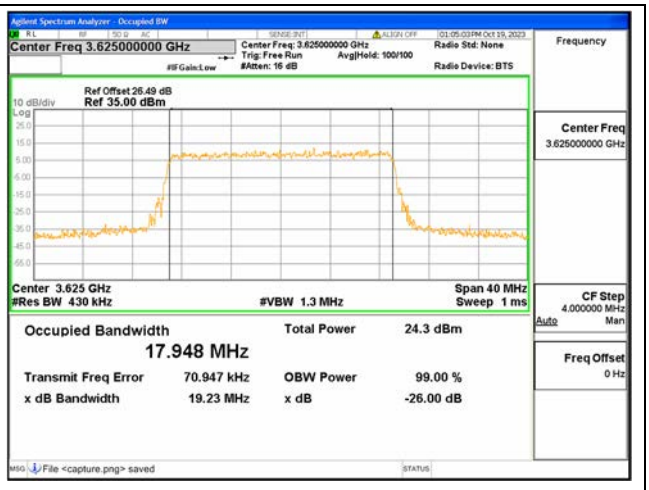
B48 / 20MHz / QPSK/ Mid CH



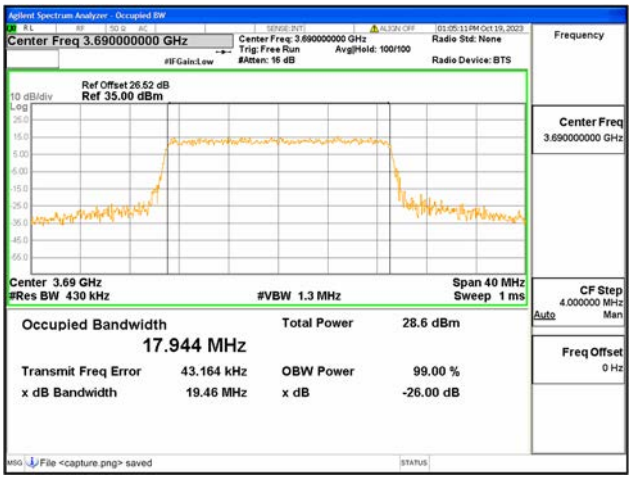
B48 / 20MHz / 16QAM/ Mid CH



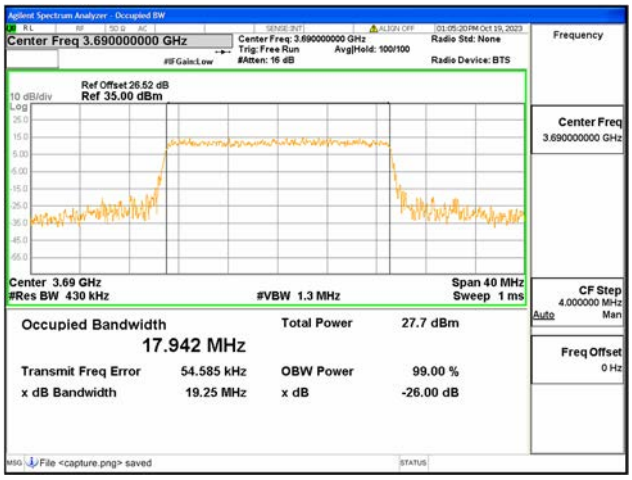
B48 / 20MHz / 64QAM/ Mid CH



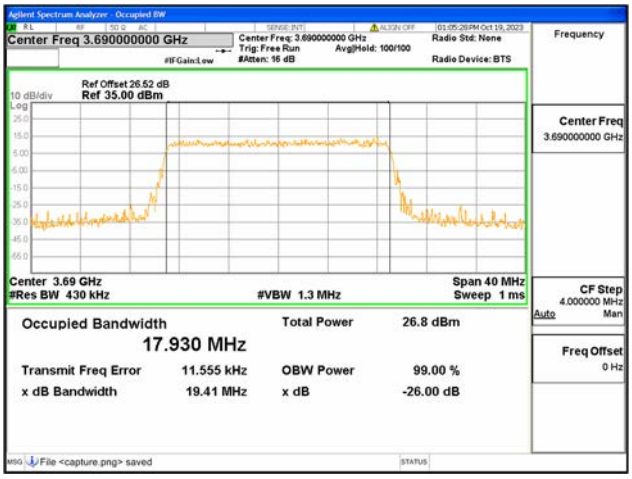
B48 / 20MHz / 256QAM/ Mid CH



B48 / 20MHz / QPSK/ High CH



B48 / 20MHz / 16QAM/ High CH



B48 / 20MHz / 64QAM/ High CH

B48 / 20MHz / 256QAM/ High CH

2.3. Frequency Stability

2.3.1.Requirement

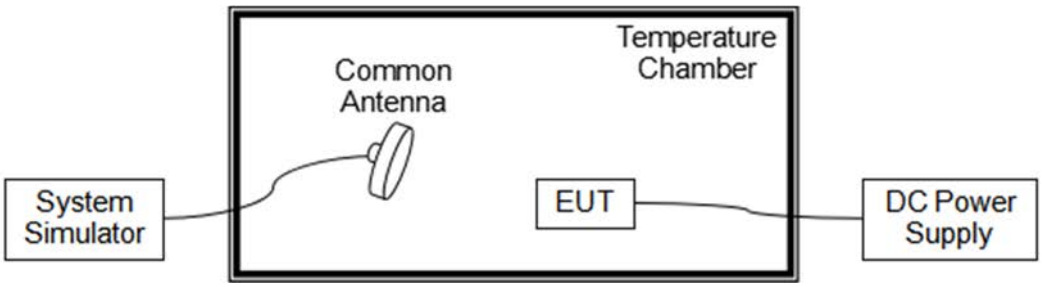
According to FCC section 2.1055 & 90.213, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. According to FCC section 2.1055, the test conditions are:

(a) The temperature is varied from -30°C to +50°C at intervals of not more than 10°C.

(b) For hand carried battery powered equipment, the primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacture. The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided.

Note: The operating temperature of EUT is from 0°C to 40°C, which are specified by the applicant.

2.3.2.Test Description



The EUT which is powered by the DC Power Supply directly, is located in the Temperature Chamber. The EUT is commanded by the System Simulator (SS) to operate at the maximum output power. A call is established between the EUT and the SS via a Common Antenna.

2.3.3.Test procedure

KDB 971168 D01v03 Section 9.0 and ANSI/TIA-603-E-2016.

2.3.4.Test Result

The nominal, highest and lowest extreme voltages are separately 3.80V, 4.30V and 3.60V, which are specified by the applicant; the normal temperature here used is 20°C.

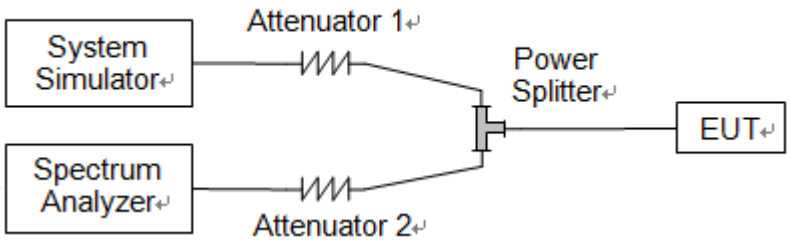
LTE Band 48, 256QAM, QPSK, Channel 55990, Frequency 3625.0MHz Limit =Within Authorized Band					
Voltage (%)	**Power (VDC)**	**Temp(°C)**	**Fre. Dev.(Hz)**	**Deviation (ppm)**	**Result**
Normal	3.80	+20(Ref)	8	0.002	PASS
Normal		0	14	0.004	
Normal		+10	18	0.005	
Normal		+20	13	0.004	
Normal		+30	-4	-0.001	
Normal		+40	20	**0.006**	
High	4.30	+20	-11	-0.003	
BATT.ENDPOINT	3.60	+20	13	0.004	

2.4. Peak to Average Radio

2.4.1.Requirement

According to FCC 96.41(g), the peak-to-average power ratio (PAPR) of any CBSD transmitter output power must not exceed 13 dB.

2.4.2.Test Description



The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power. A call is established between the EUT and the SS.

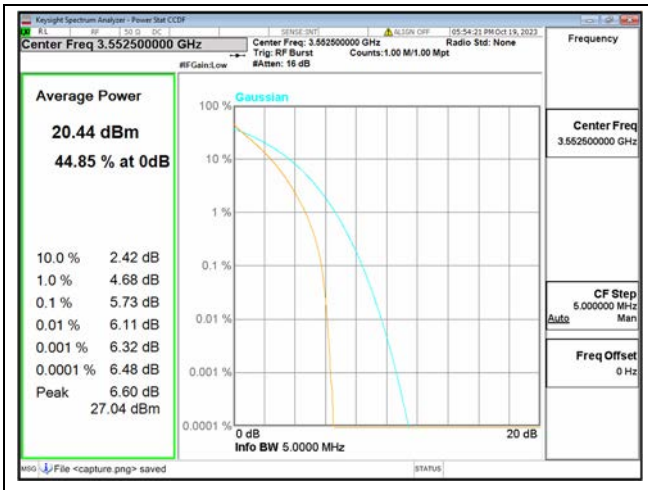
2.4.3.Test procedure

KDB 971168 D01v03 Section 5.7 and ANSI/TIA-603-E-2016.

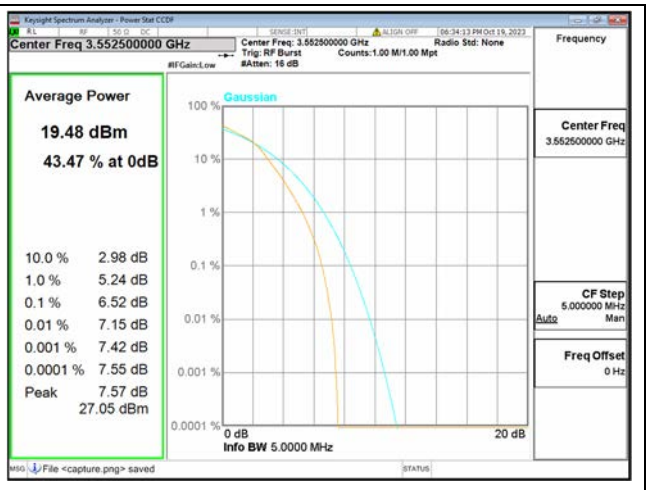
2.4.4.Test Result

LTE Band	BW(MHz)	Channel Level	Channel	Frequency (MHz)	Modulation	Peak to Average Radio(dB)	P/F
B48	5	Low	55265	3552.5	QPSK	5.73	PASS
B48	5	Low	55265	3552.5	16QAM	6.52	PASS
B48	5	Low	55265	3552.5	64QAM	6.85	PASS
B48	5	Low	55265	3552.5	256QAM	6.88	PASS
B48	5	Mid	55990	3625	QPSK	5.54	PASS
B48	5	Mid	55990	3625	16QAM	6.36	PASS
B48	5	Mid	55990	3625	64QAM	6.47	PASS
B48	5	Mid	55990	3625	256QAM	6.90	PASS
B48	5	High	56715	3697.5	QPSK	5.58	PASS
B48	5	High	56715	3697.5	16QAM	6.37	PASS
B48	5	High	56715	3697.5	64QAM	6.68	PASS
B48	5	High	56715	3697.5	256QAM	6.80	PASS
B48	10	Low	55290	3555	QPSK	5.71	PASS
B48	10	Low	55290	3555	16QAM	6.50	PASS
B48	10	Low	55290	3555	64QAM	6.79	PASS
B48	10	Low	55290	3555	256QAM	6.88	PASS
B48	10	Mid	55990	3625	QPSK	5.77	PASS
B48	10	Mid	55990	3625	16QAM	6.36	PASS
B48	10	Mid	55990	3625	64QAM	6.78	PASS
B48	10	Mid	55990	3625	256QAM	6.84	PASS
B48	10	High	56690	3695	QPSK	5.57	PASS
B48	10	High	56690	3695	16QAM	6.41	PASS
B48	10	High	56690	3695	64QAM	6.68	PASS
B48	10	High	56690	3695	256QAM	6.79	PASS
B48	15	Low	55315	3557.5	QPSK	5.60	PASS
B48	15	Low	55315	3557.5	16QAM	6.49	PASS
B48	15	Low	55315	3557.5	64QAM	6.83	PASS
B48	15	Low	55315	3557.5	256QAM	6.84	PASS
B48	15	Mid	55990	3625	QPSK	5.41	PASS
B48	15	Mid	55990	3625	16QAM	6.29	PASS
B48	15	Mid	55990	3625	64QAM	6.67	PASS
B48	15	Mid	55990	3625	256QAM	6.79	PASS
B48	15	High	56665	3692.5	QPSK	5.44	PASS
B48	15	High	56665	3692.5	16QAM	6.27	PASS
B48	15	High	56665	3692.5	64QAM	6.72	PASS

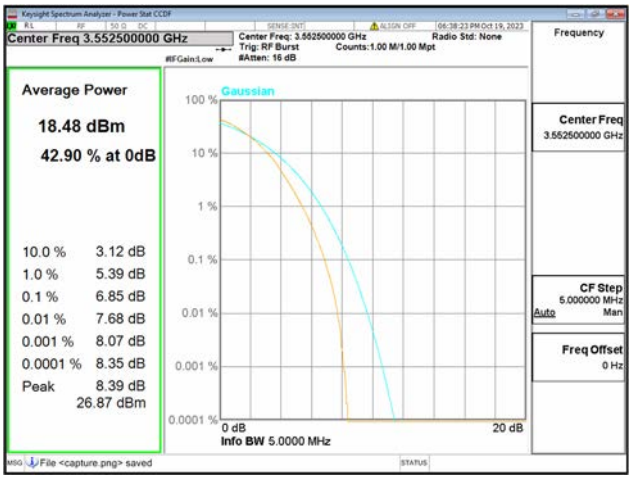
B48	15	High	56665	3692.5	256QAM	6.82	PASS
B48	20	Low	55340	3560	QPSK	5.58	PASS
B48	20	Low	55340	3560	16QAM	6.45	PASS
B48	20	Low	55340	3560	64QAM	6.82	PASS
B48	20	Low	55340	3560	256QAM	6.83	PASS
B48	20	Mid	55990	3625	QPSK	5.51	PASS
B48	20	Mid	55990	3625	16QAM	6.34	PASS
B48	20	Mid	55990	3625	64QAM	6.68	PASS
B48	20	Mid	55990	3625	256QAM	6.79	PASS
B48	20	High	56640	3690	QPSK	5.53	PASS
B48	20	High	56640	3690	16QAM	6.37	PASS
B48	20	High	56640	3690	64QAM	6.72	PASS
B48	20	High	56640	3690	256QAM	6.80	PASS



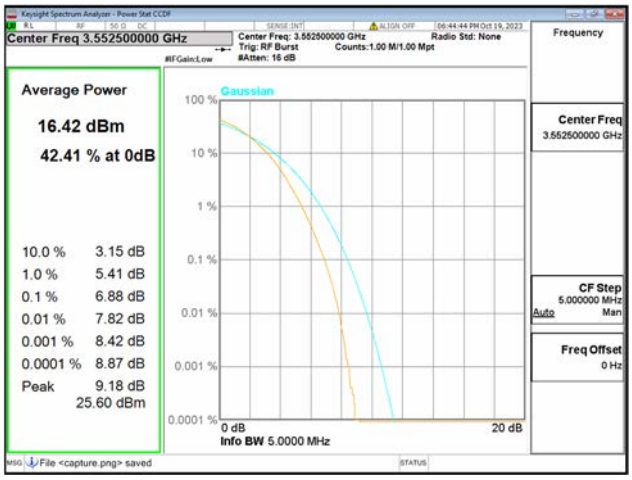
B48 / 5MHz / Low CH / QPSK



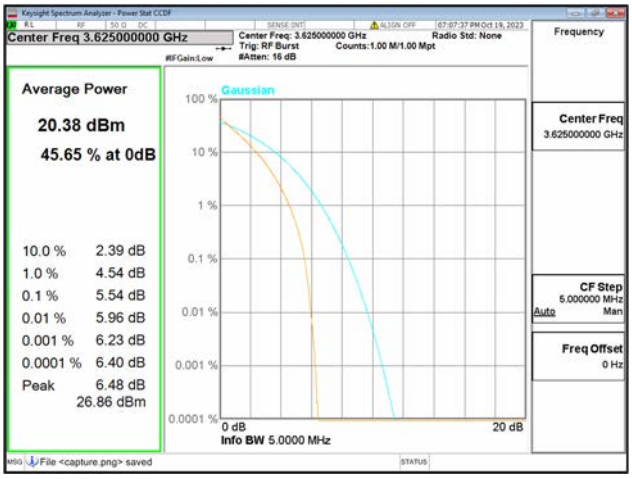
B48 / 5MHz / Low CH / 16QAM



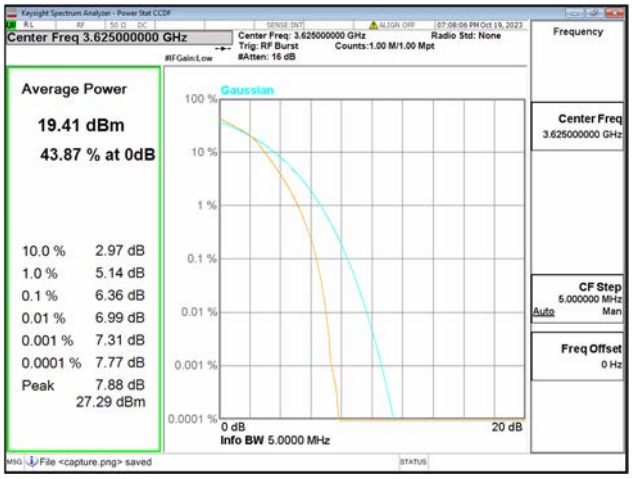
B48 / 5MHz / Low CH / 64QAM



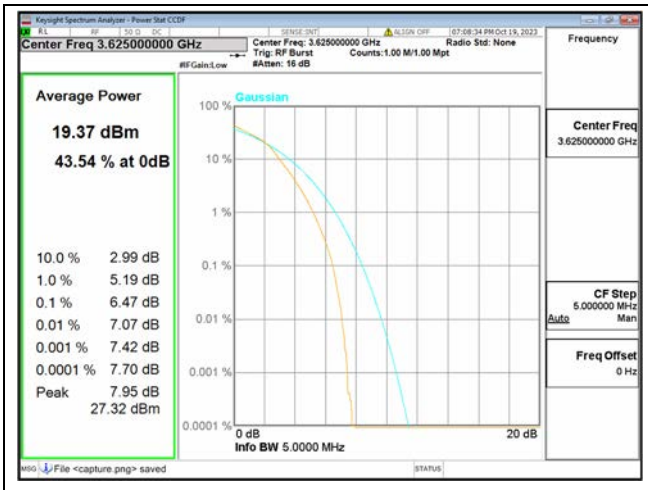
B48 / 5MHz / Low CH / 256QAM



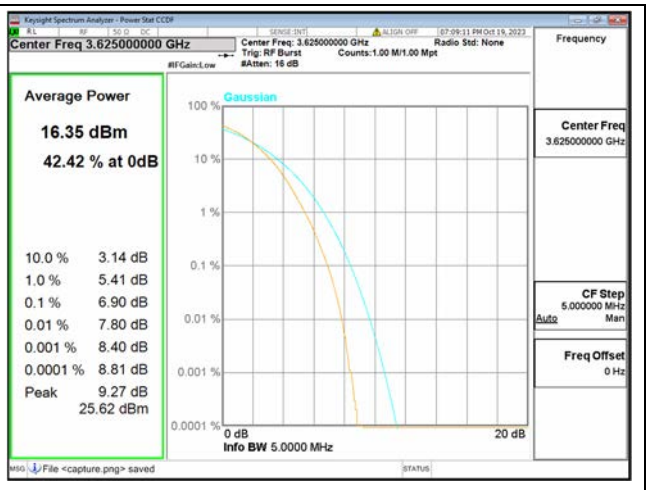
B48 / 5MHz / Mid CH / QPSK



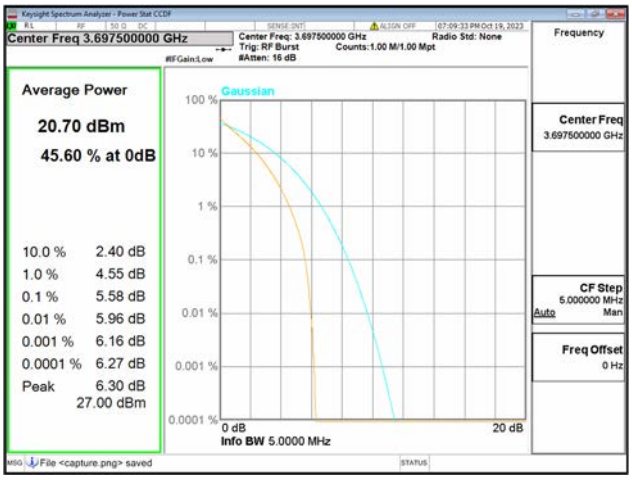
B48 / 5MHz / Mid CH / 16QAM



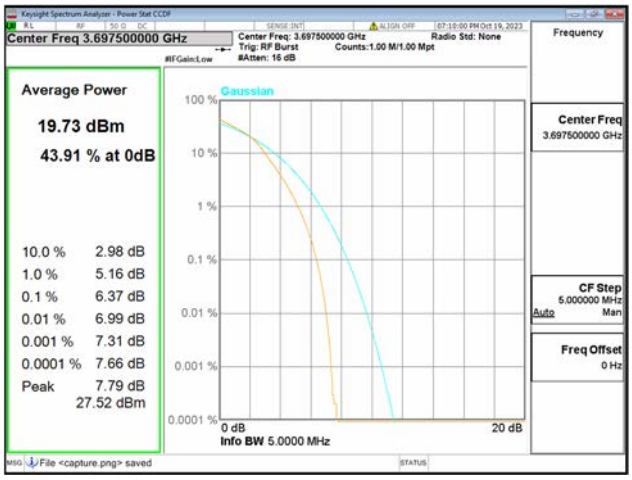
B48 / 5MHz / Mid CH / 64QAM



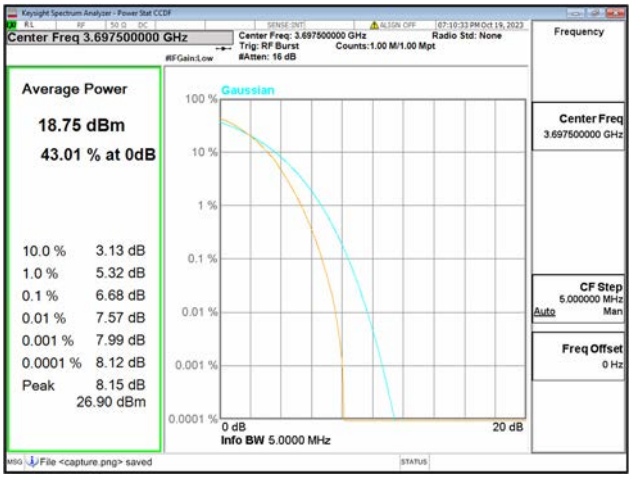
B48 / 5MHz / Mid CH / 256QAM



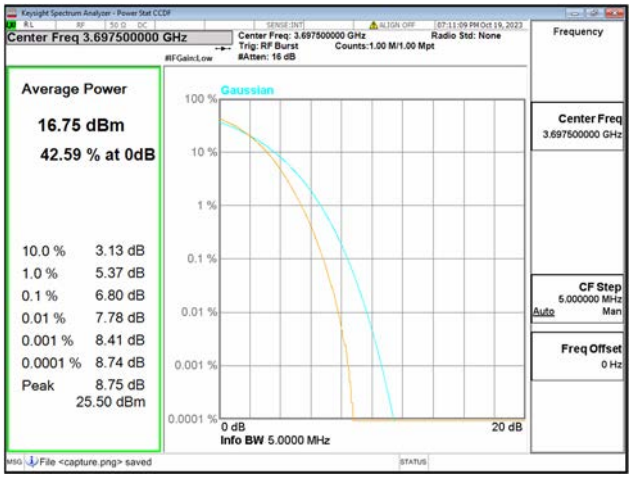
B48 / 5MHz / High CH / QPSK



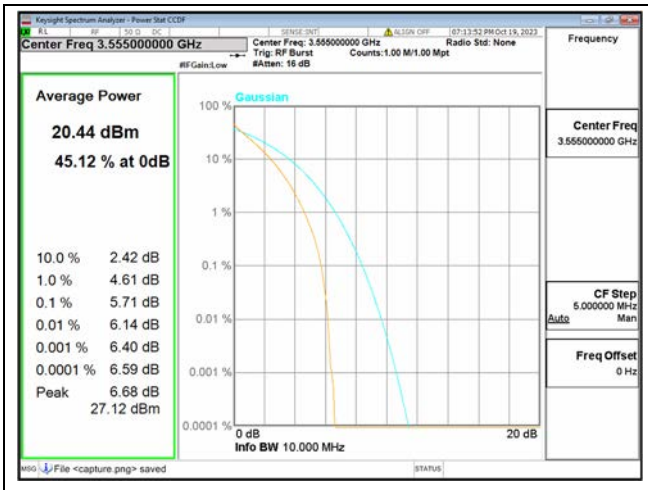
B48 / 5MHz / High CH / 16QAM



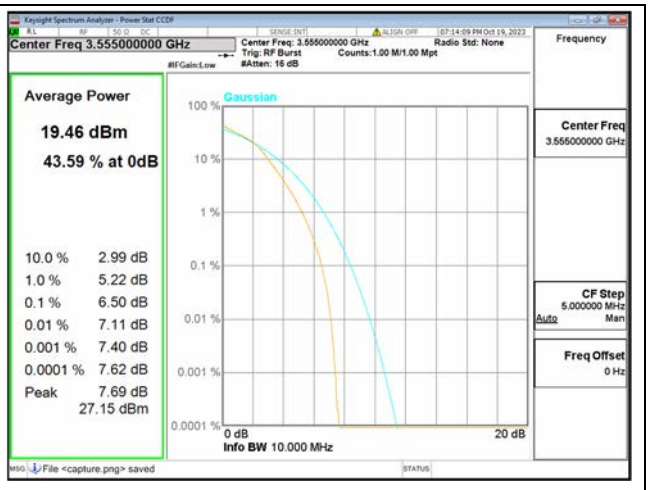
B48 / 5MHz / High CH / 64QAM



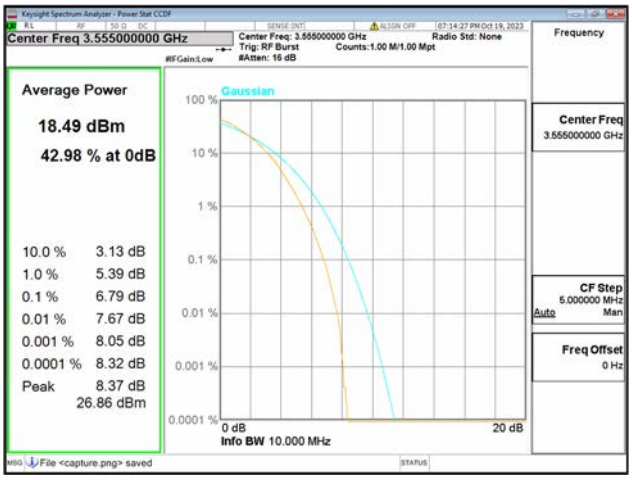
B48 / 5MHz / High CH / 256QAM



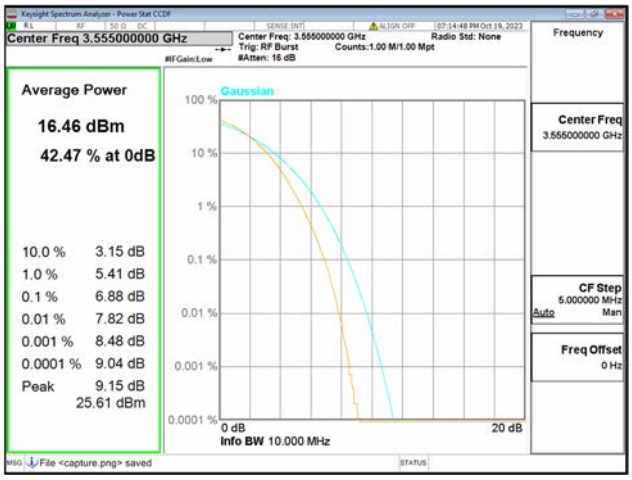
B48 / 10MHz / Low CH / QPSK



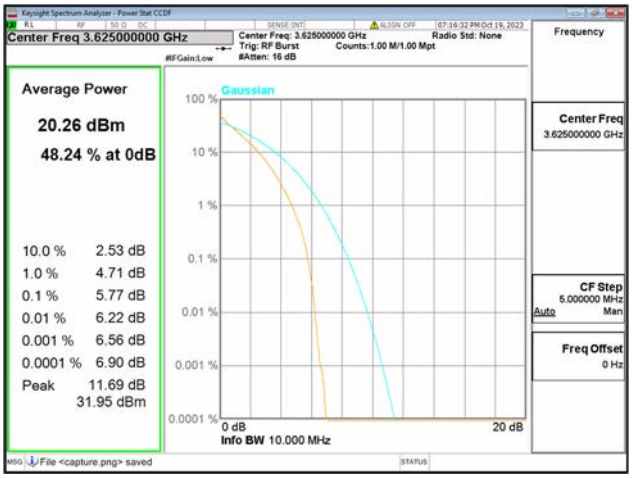
B48 / 10MHz / Low CH / 16QAM



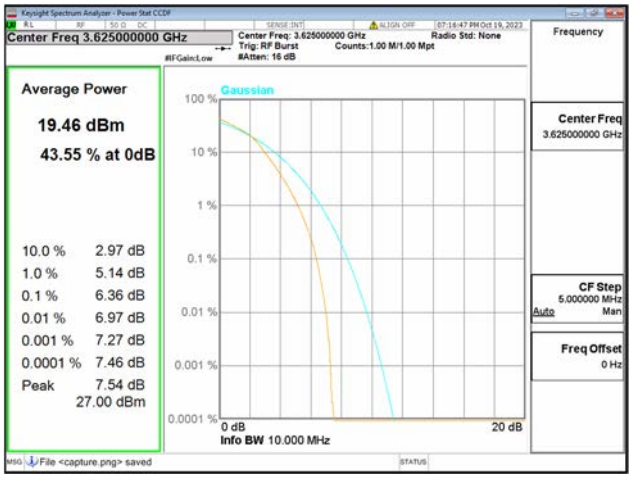
B48 / 10MHz / Low CH / 64QAM



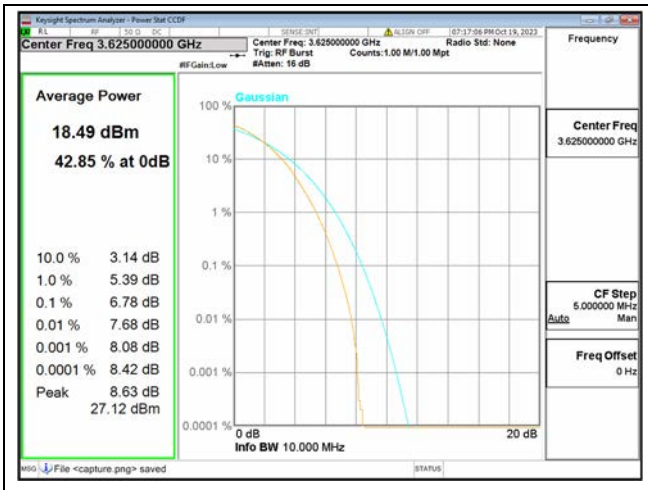
B48 / 10MHz / Low CH / 256QAM



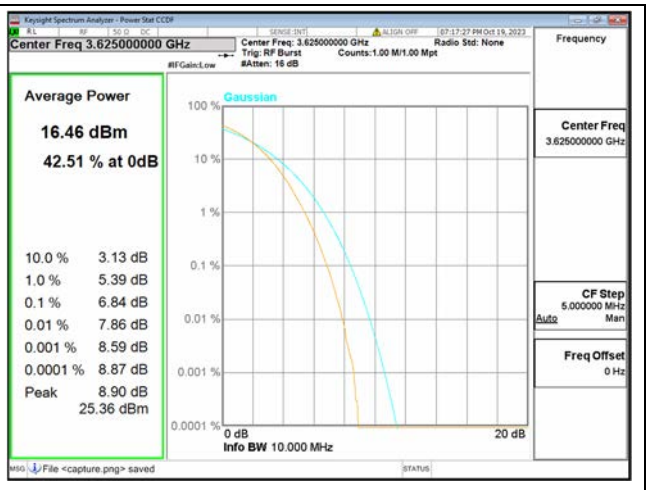
B48 / 10MHz / Mid CH / QPSK



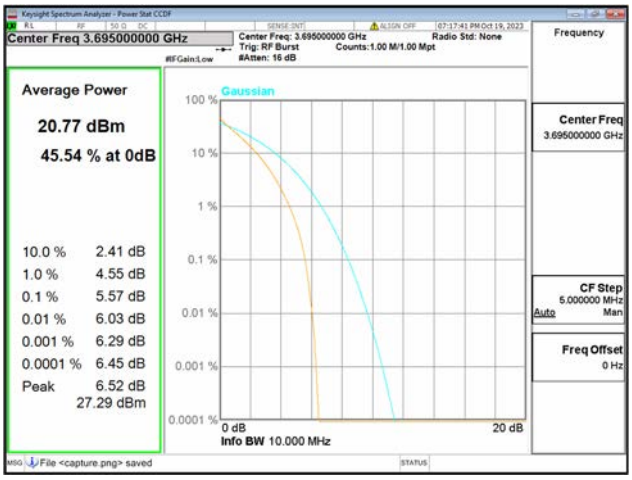
B48 / 10MHz / Mid CH / 16QAM



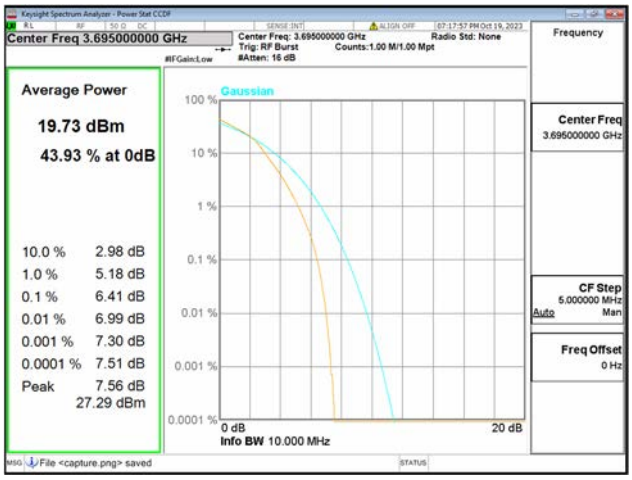
B48 / 10MHz / Mid CH / 64QAM



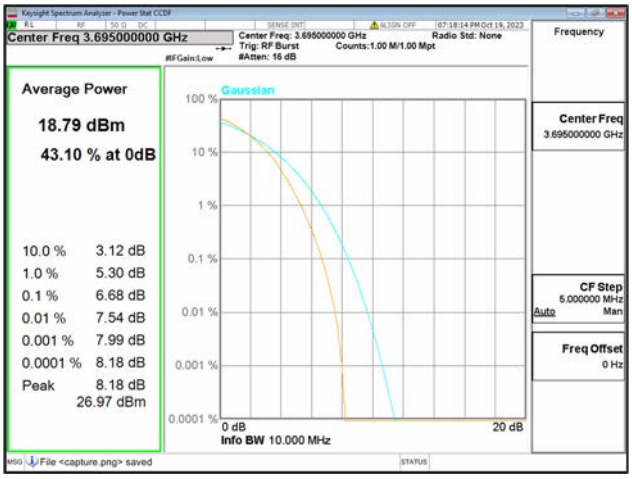
B48 / 10MHz / Mid CH / 256QAM



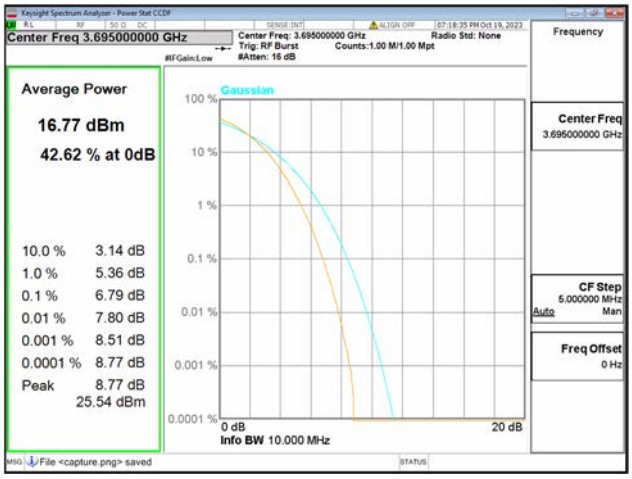
B48 / 10MHz / High CH / QPSK



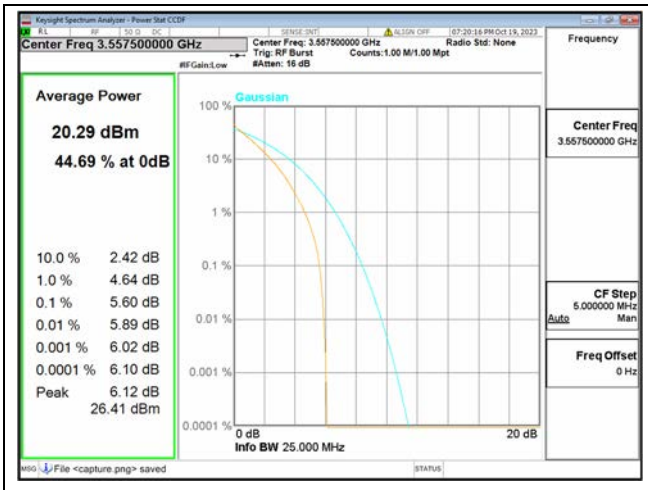
B48 / 10MHz / High CH / 16QAM



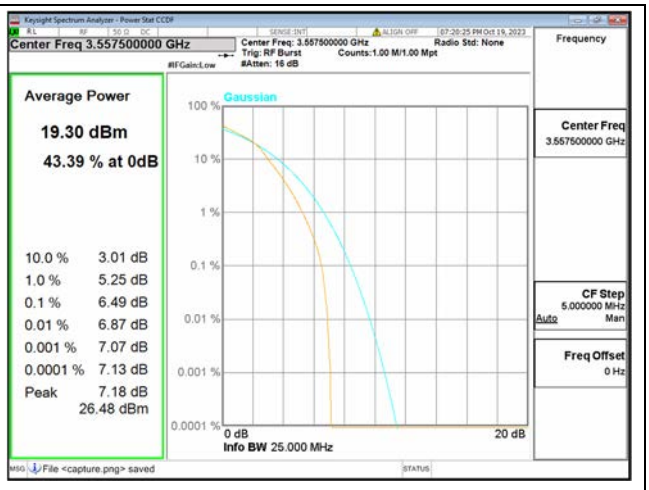
B48 / 10MHz / High CH / 64QAM



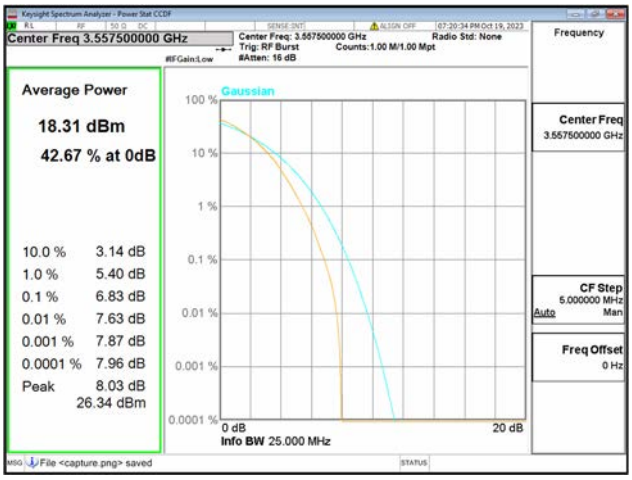
B48 / 10MHz / High CH / 256QAM



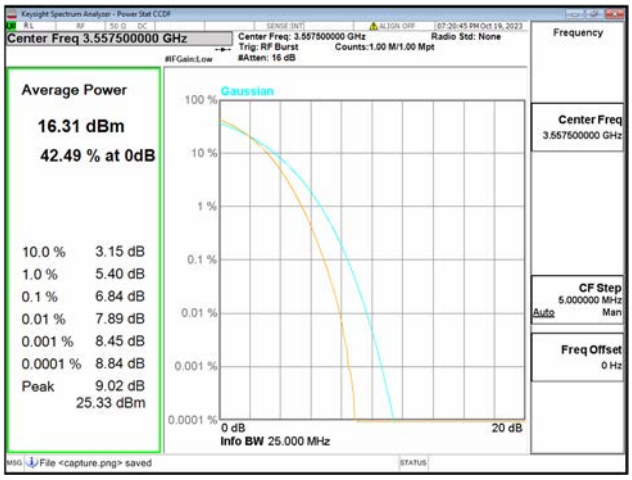
B48 / 15MHz / Low CH / QPSK



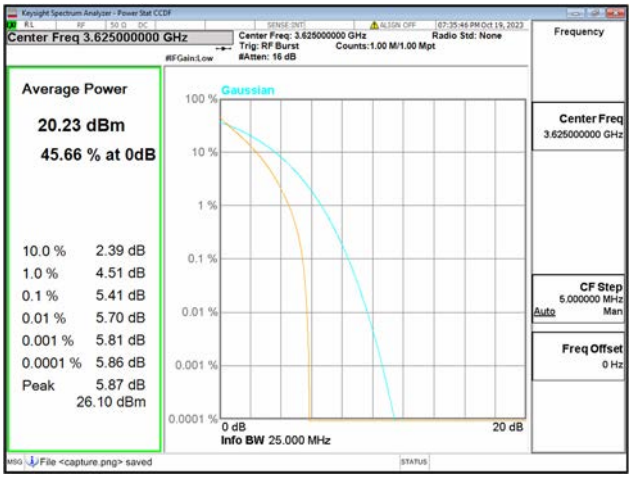
B48 / 15MHz / Low CH / 16QAM



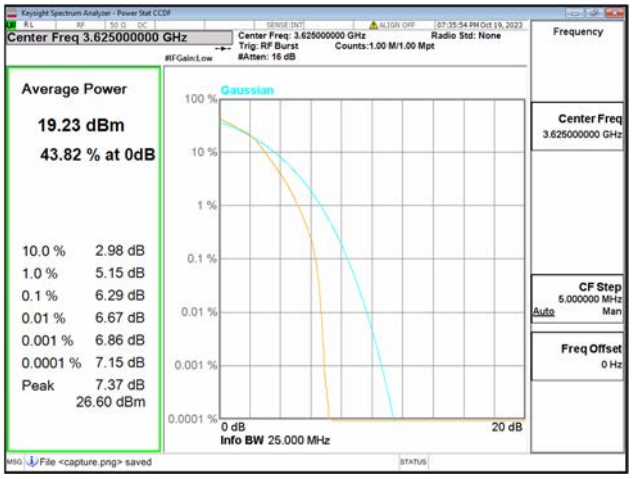
B48 / 15MHz / Low CH / 64QAM



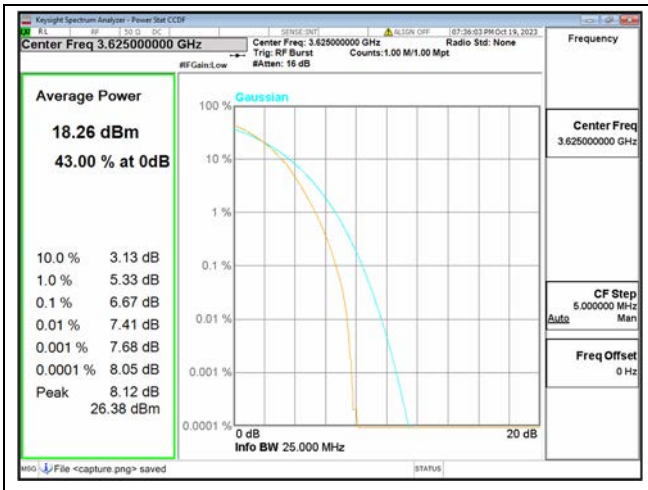
B48 / 15MHz / Low CH / 256QAM



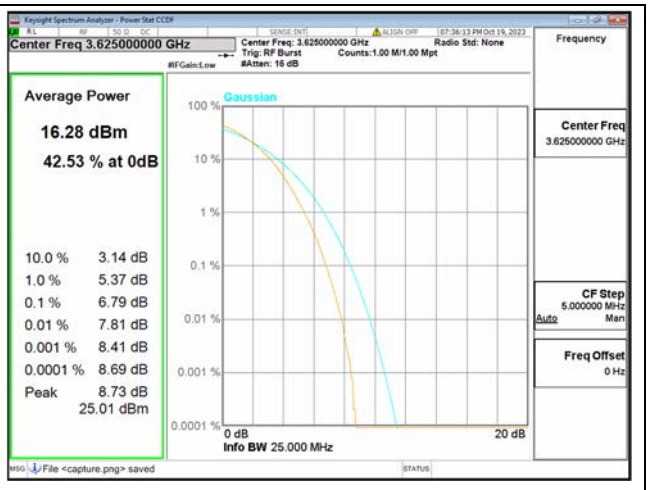
B48 / 15MHz / Mid CH / QPSK



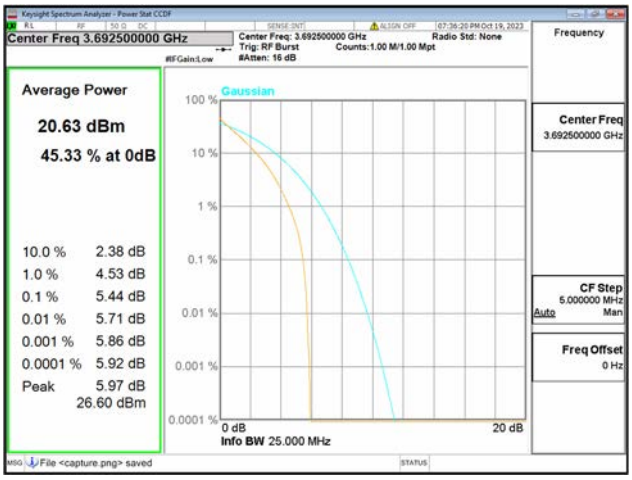
B48 / 15MHz / Mid CH / 16QAM



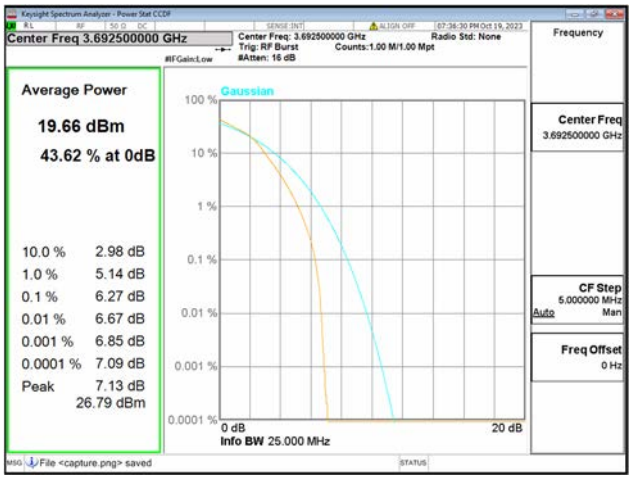
B48 / 15MHz / Mid CH / 64QAM



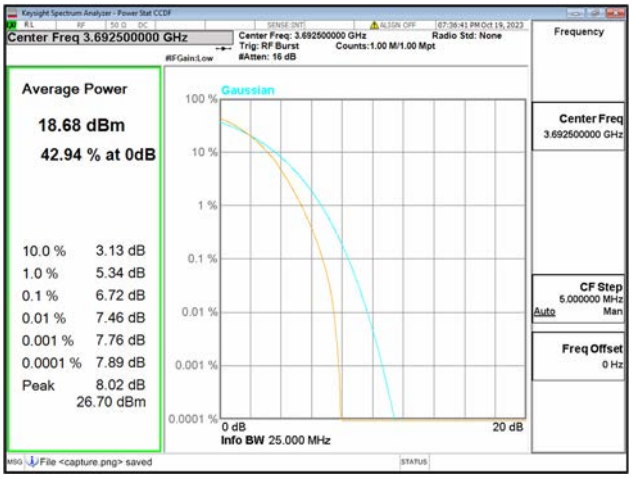
B48 / 15MHz / Mid CH / 256QAM



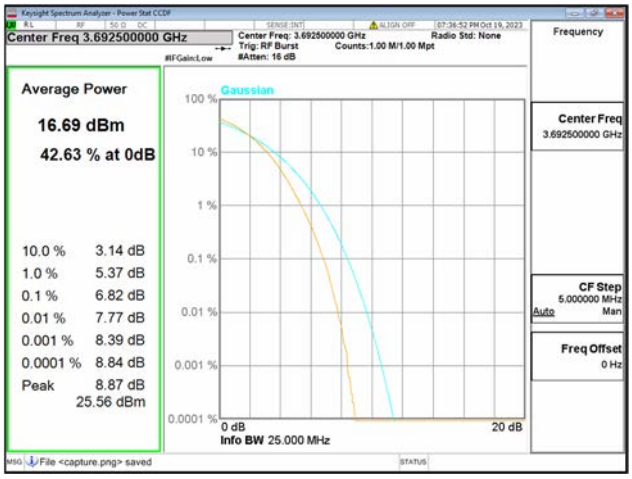
B48 / 15MHz / High CH / QPSK



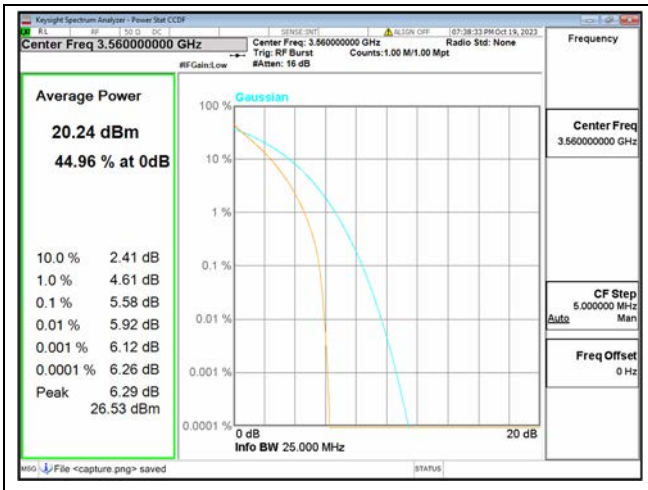
B48 / 15MHz / High CH / 16QAM



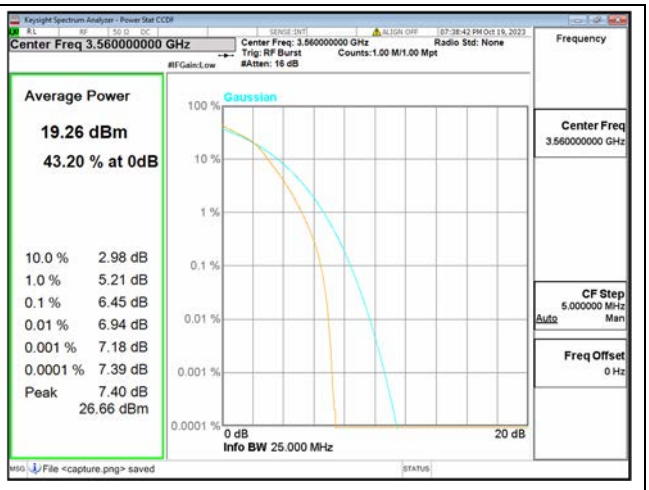
B48 / 15MHz / High CH / 64QAM



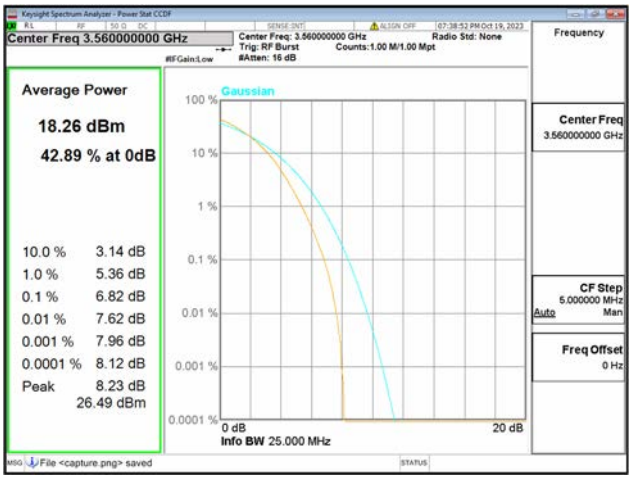
B48 / 15MHz / High CH / 256QAM



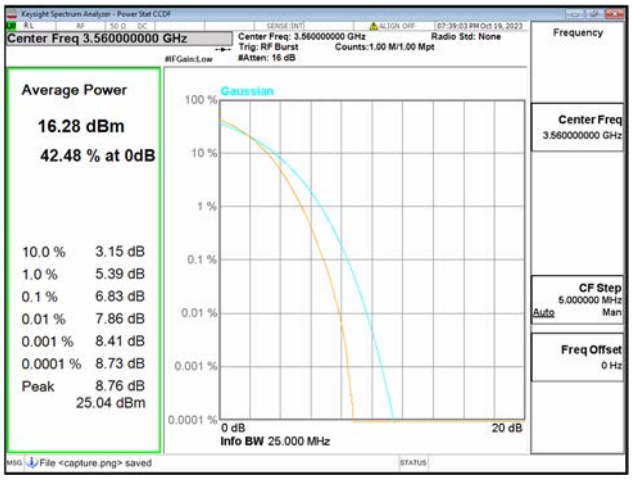
B48 / 20MHz / Low CH / QPSK



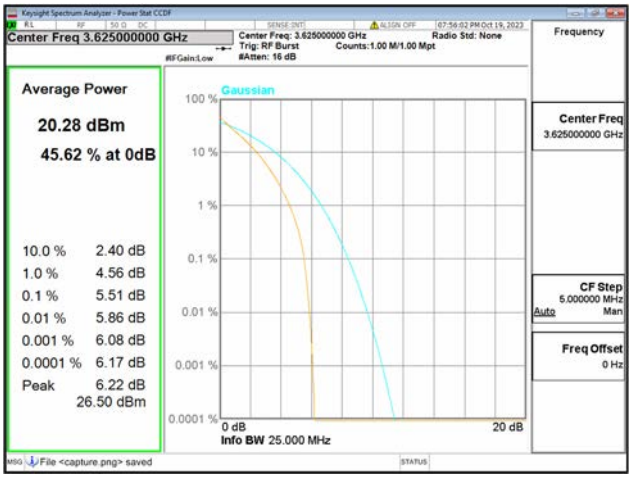
B48 / 20MHz / Low CH / 16QAM



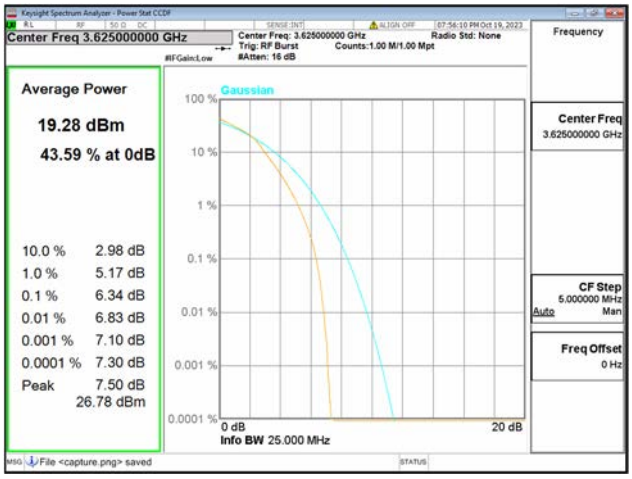
B48 / 20MHz / Low CH / 64QAM



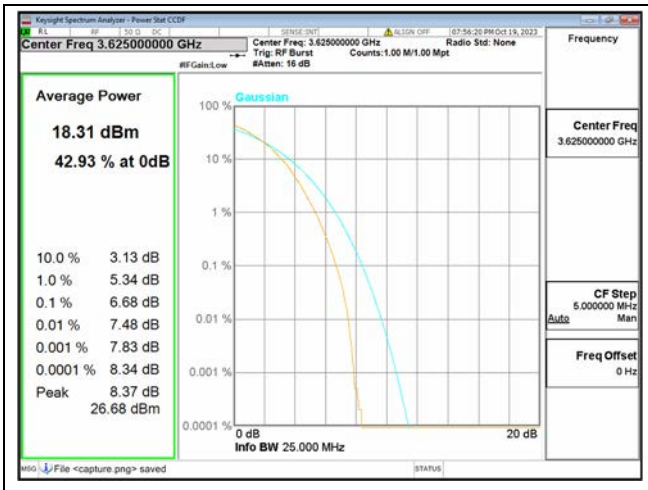
B48 / 20MHz / Low CH / 256QAM



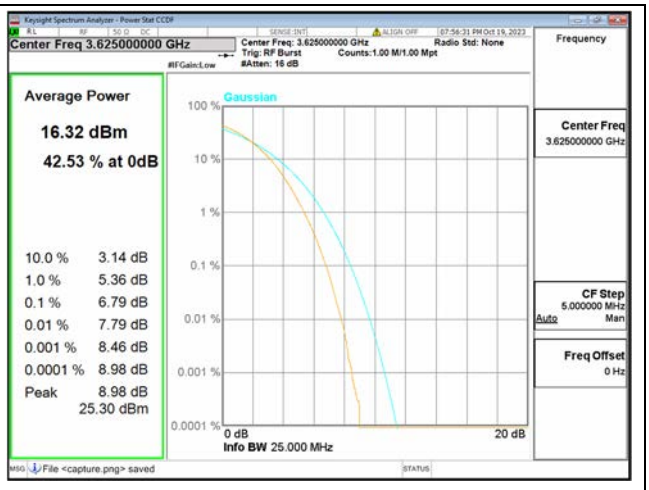
B48 / 20MHz / Mid CH / QPSK



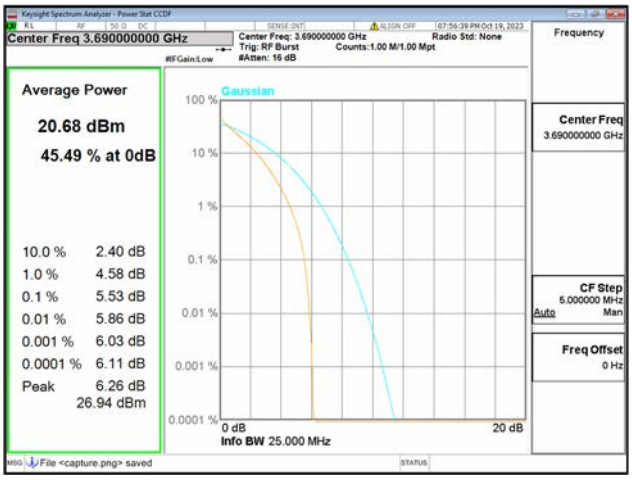
B48 / 20MHz / Mid CH / 16QAM



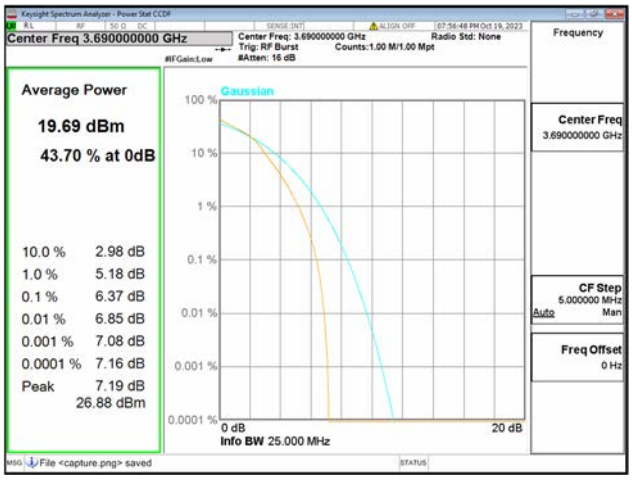
B48 / 20MHz / Mid CH / 64QAM



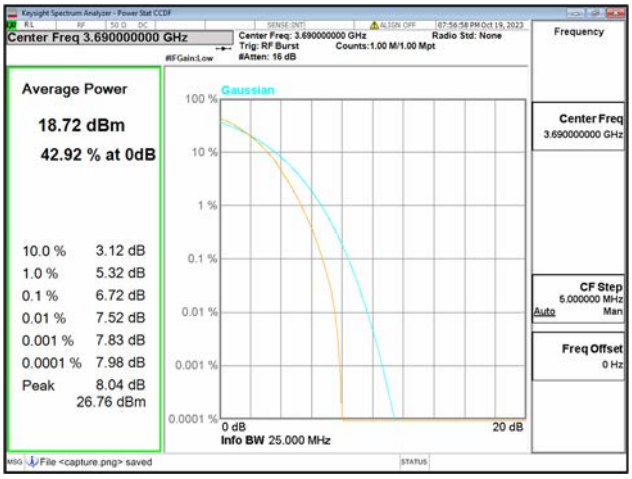
B48 / 20MHz / Mid CH / 256QAM



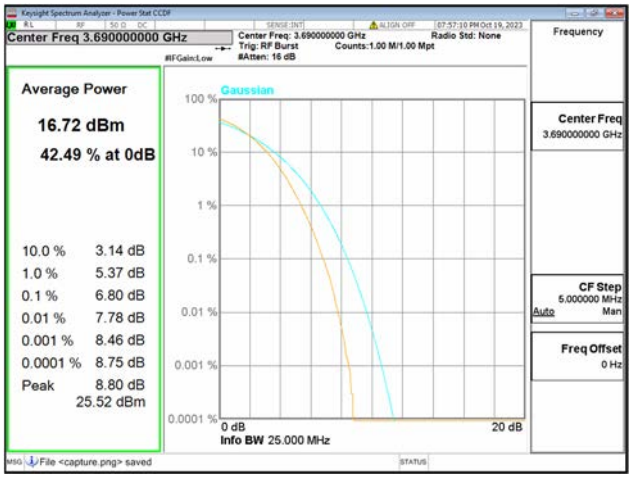
B48 / 20MHz / High CH / QPSK



B48 / 20MHz / High CH / 16QAM



B48 / 20MHz / High CH / 64QAM



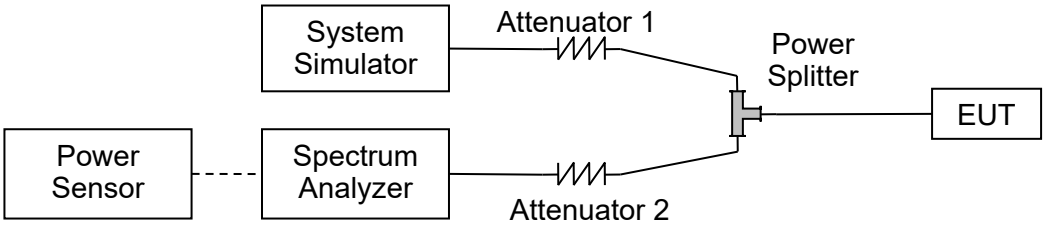
B48 / 20MHz / High CH / 256QAM

2.5. Conducted Spurious Emissions

2.5.1.Requirement

According to FCC section 96.41(e), the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed −40dBm/MHz.

2.5.2.Test Description



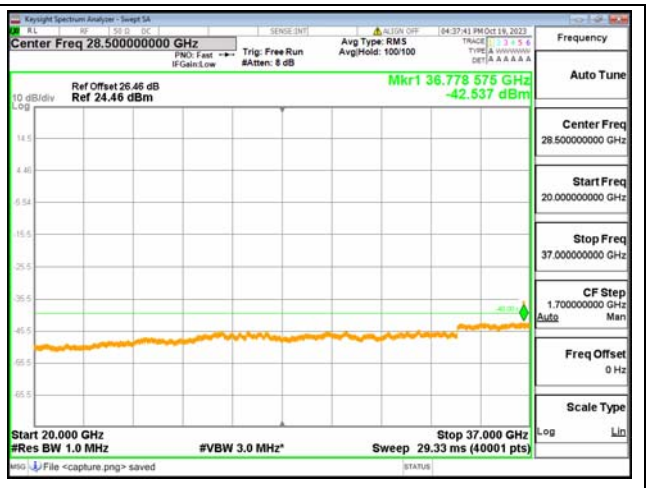
The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power. A call is established between the EUT and the SS.

2.5.1.Test procedure

KDB 971168 D01v03 Section 6.0 and ANSI/TIA-603-E-2016.

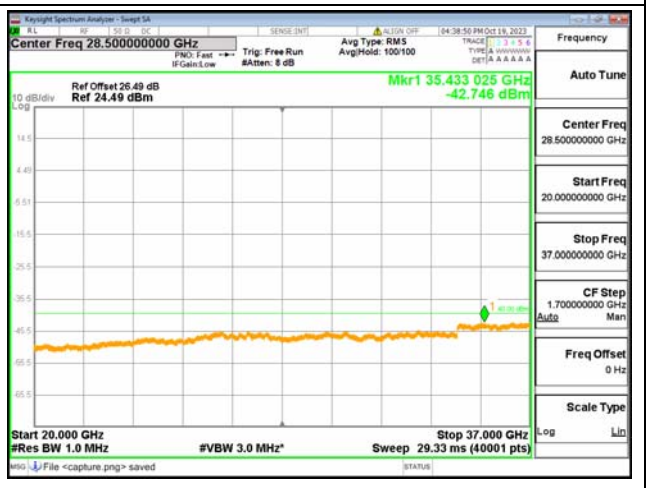
2.5.2.Test Result

B48-30M-20G / 5MHz / Low CH / QPSK



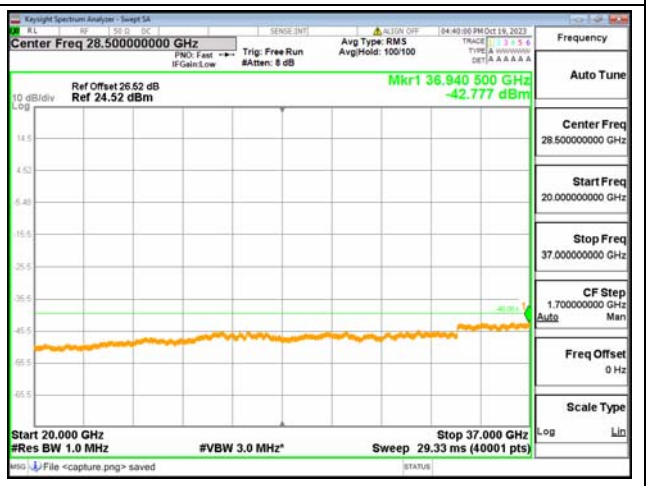
B48-20G-37G / 5MHz / Low CH / QPSK

B48-30M-20G / 5MHz / Mid CH / QPSK



B48-20G-37G / 5MHz / Mid CH / QPSK

B48-30M-20G / 5MHz / High CH / QPSK

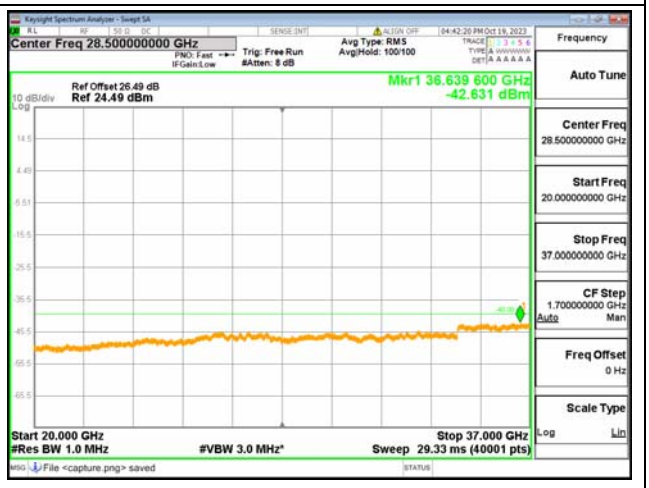


B48-20G-37G / 5MHz / High CH / QPSK

B48-30M-20G / 10MHz / Low CH / QPSK

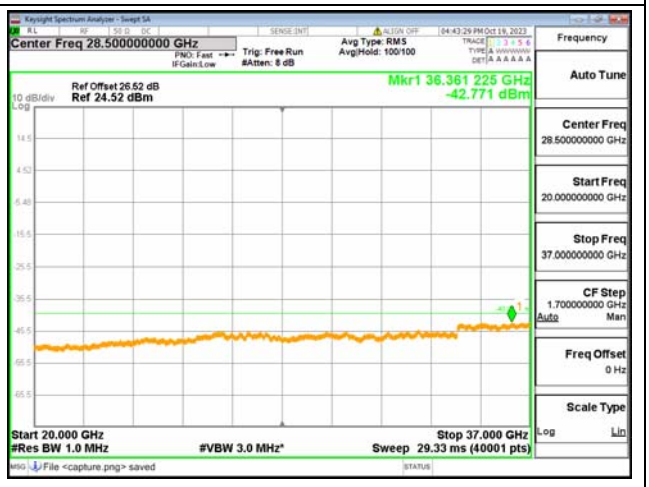
B48-20G-37G / 10MHz / Low CH / QPSK

B48-30M-20G / 10MHz / Mid CH / QPSK



B48-20G-37G / 10MHz / Mid CH / QPSK

B48-30M-20G / 10MHz / High CH / QPSK

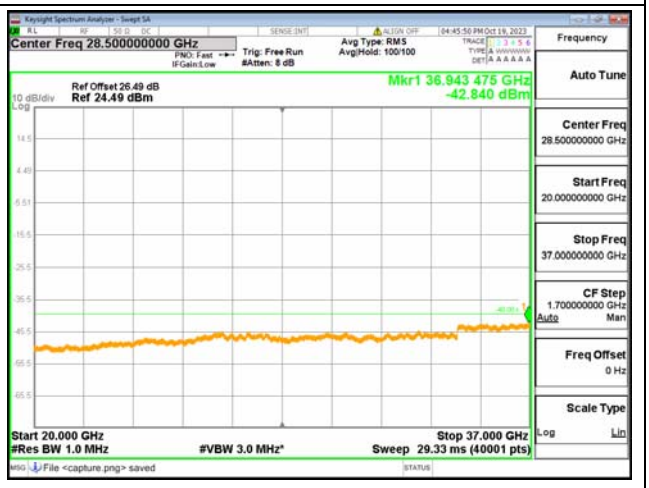


B48-20G-37G / 10MHz / High CH / QPSK

B48-30M-20G / 15MHz / Low CH / QPSK

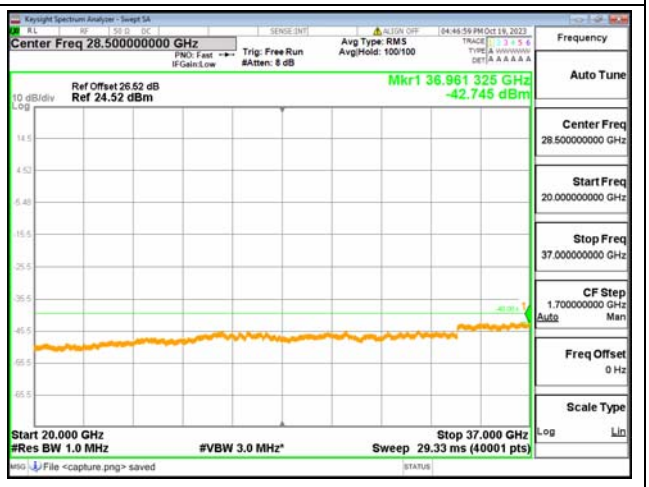
B48-20G-37G / 15MHz / Low CH / QPSK

B48-30M-20G / 15MHz / Mid CH / QPSK



B48-20G-37G / 15MHz / Mid CH / QPSK

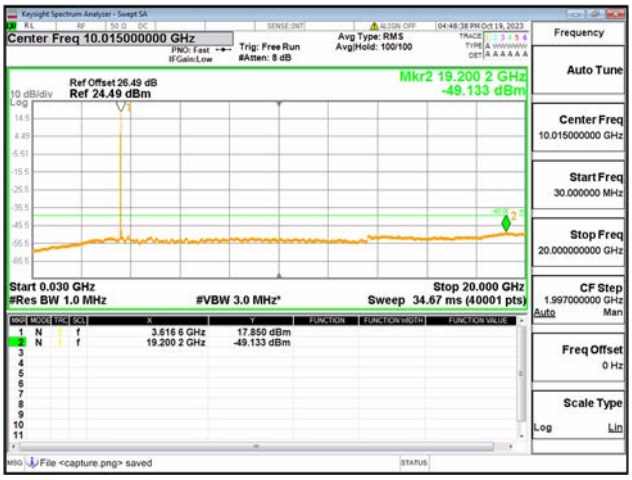
B48-30M-20G / 15MHz / High CH / QPSK



B48-20G-37G / 15MHz / High CH / QPSK

B48-30M-20G / 20MHz / Low CH / QPSK

B48-20G-37G / 20MHz / Low CH / QPSK



B48-30M-20G / 20MHz / Mid CH / QPSK

B48-20G-37G / 20MHz / Mid CH / QPSK

B48-30M-20G / 20MHz / High CH / QPSK

B48-20G-37G / 20MHz / High CH / QPSK

2.6. Band Edge

2.6.1.Requirement

Part 96.41(e)(1)(i)

For channel and frequency assignments made by the SAS to CBSDs, the conducted power of any CBSD emission outside the fundamental emission bandwidth as specified in paragraph (e)(3) of this section (whether the emission is inside or outside of the authorized band) shall not exceed −13 dBm/MHz within 0-10 megahertz above the upper SAS-assigned channel edge and within 0-10 megahertz below the lower SAS-assigned channel edge. At all frequencies greater than 10 megahertz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the conducted power of any CBSD emission shall not exceed −25 dBm/MHz.

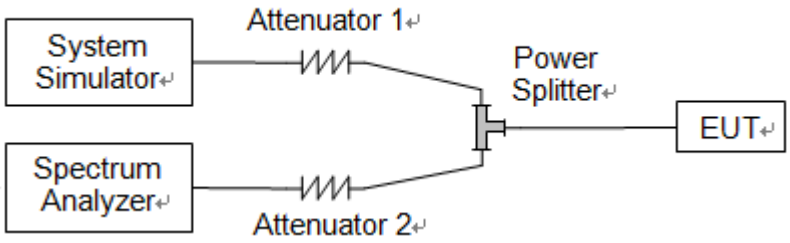
Part 96.41(e)(1)(ii)

For channel and frequency assignments made by a CBSD to End User Devices, the conducted power of any End User Device emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed −13 dBm/MHz within 0 to B megahertz (where B is the bandwidth in megahertz of the assigned channel or multiple contiguous channels of the End User Device) above the upper CBSD-assigned channel edge and within 0 to B megahertz below the lower CBSD-assigned channel edge. At all frequencies greater than B megahertz above the upper CBSD assigned channel edge and less than B megahertz below the lower CBSD-assigned channel edge, the conducted power of any End User Device emission shall not exceed −25 dBm/MHz.

Part 96.41(e)(2)

For CBSDs and End User Devices, the conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed −25 dBm/MHz, and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed −40dBm/MHz.

2.6.2.Test Description



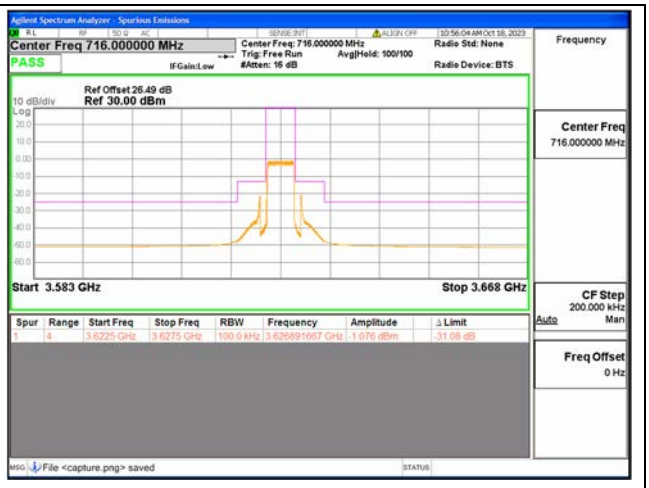
The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power. A call is established between the EUT and the SS.

2.6.3.Test procedure

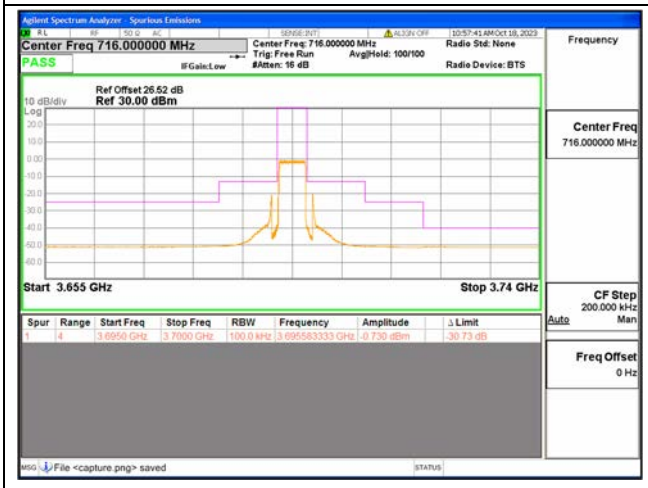
KDB 971168 D01v03 Section 6.0 and ANSI/TIA-603-E-2016.

2.6.4.Test Result

B48 / 5MHz / Low CH / QPSK / FULL RB



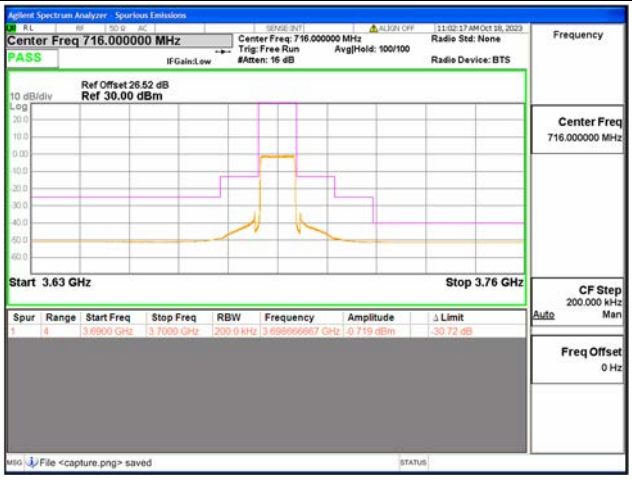
B48 / 5MHz / Mid CH / QPSK / FULL RB



B48 / 5MHz / High CH / QPSK / FULL RB

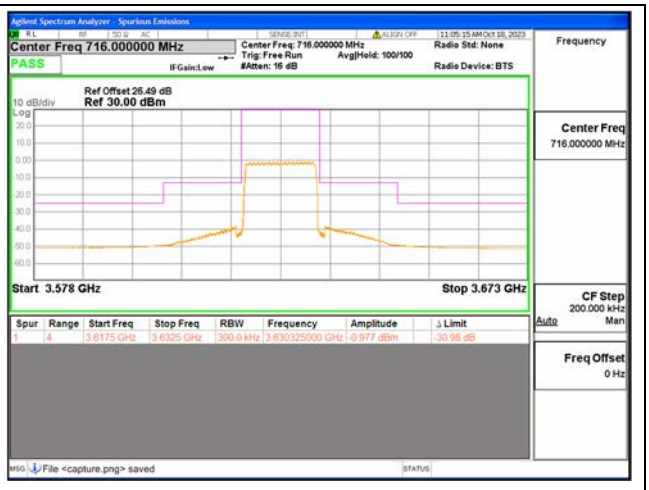
B48 / 10MHz / Low CH / QPSK / FULL RB

B48 / 10MHz / Mid CH / QPSK / FULL RB



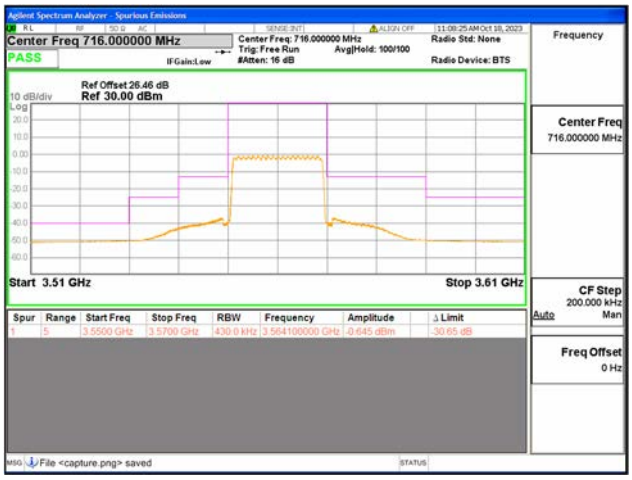
B48 / 10MHz / High CH / QPSK / FULL RB

B48 / 15MHz / Low CH / QPSK / FULL RB



B48 / 15MHz / Mid CH / QPSK / FULL RB

B48 / 15MHz / High CH / QPSK / FULL RB



B48 / 20MHz / Low CH / QPSK / FULL RB

B48 / 20MHz / Mid CH / QPSK / FULL RB

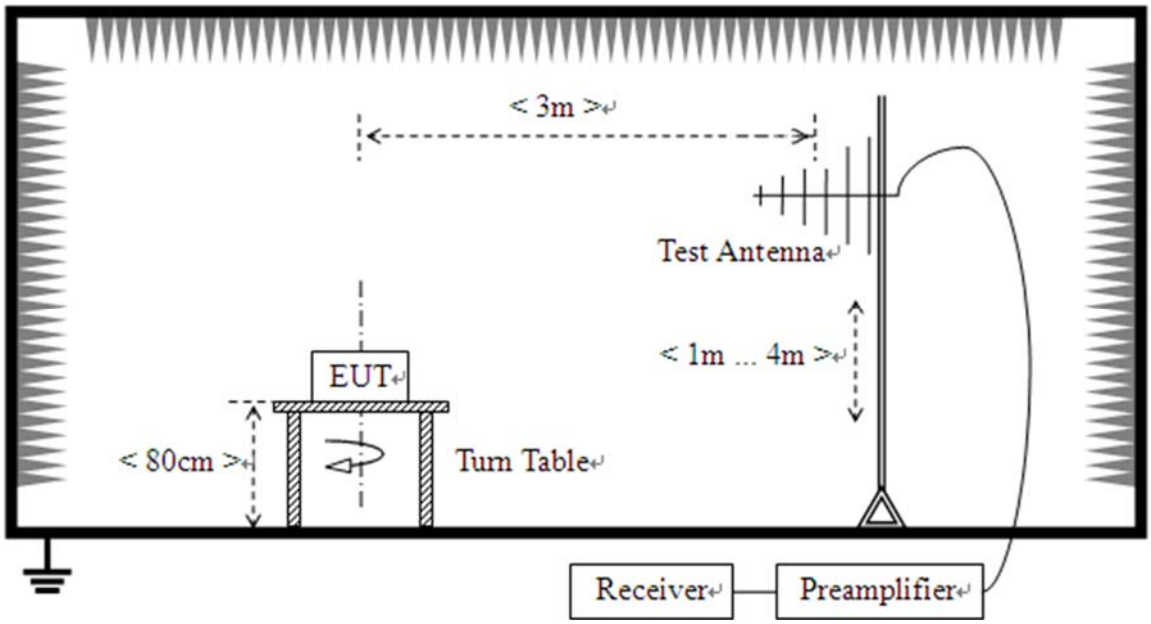
B48 / 20MHz / High CH / QPSK / FULL RB

2.7. Radiated Spurious Emissions

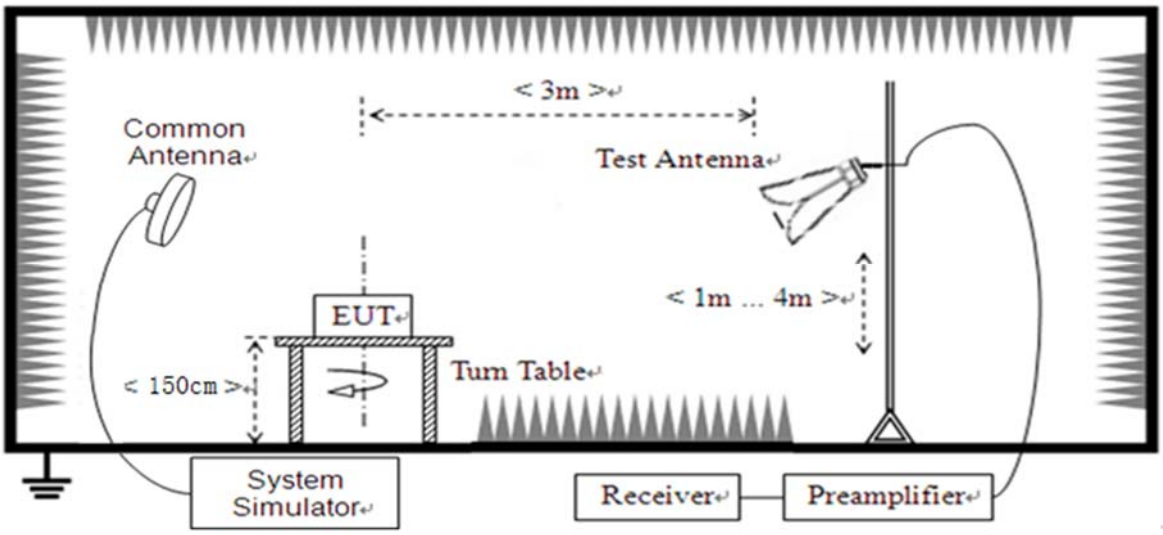
2.7.1.Requirement

The power of any emissions below 3530 MHz or above 3720 MHz shall not exceed −40dBm/MHz.

2.7.2.Test Description



(For the test frequency from 30MHz to1GHz)



(For the test frequency above 1GHz)

The EUT is located in a 3m Full-Anechoic Chamber, the cable loss, air loss and so on of the site as factors are pre-calibrated using the "Substitution" method, and calculated to correct the reading.
A call is established between the EUT and the SS via a Common Antenna. The EUT is commanded by the SS to operate at the maximum and minimum output power, and only the test result of the maximum output power was recorded.
In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) and Horn Test Antenna (above 1GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground and the Turn Table is actuated to turn from 0° to 360°to determine the maximum value of the radiated power. The emission levels at both horizontal and vertical polarizations should be tested. The Filters consists of Notch Filters and High Pass Filter.

Note: when doing measurements above 1GHz, the EUT has been within the 3dB cone width of the horn antenna during horizontal antenna.

2.7.3.Test procedure

KDB 971168 D01v03 Section 5.8 and ANSI/TIA-603-E-2016.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements.

For measurements above 1GHz the resolution bandwidth is set to 1MHz, the video band width is set to 3MHz for peak measurements.

2.7.4.Test Result

The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. The lowest, middle and highest channels are tested to verify the out of band emissions.

The substitution corrections are obtained as described below:

$A_{SUBST} = P_{SUBST\_TX} - P_{SUBST\_RX} - L_{SUBST\_CABLES} + G_{SUBST\_TX\_ANT}$

$A_{TOT} = L_{CABLES} + A_{SUBST}$

Where A_{SUBST} is the final substitution correction including receive antenna gain.

P_{SUBST_TX} is signal generator level,

P_{SUBST_RX} is receiver level,

L_{SUBST_CABLES} is cable losses including TX cable,

$G_{SUBST\_TX\_ANT}$ is substitution antenna gain.

A_{TOT} is total correction factor including cable loss and substitution correction

During the test, the data of A_{TOT} was added in the test spectrum analyze, so spectrum analyze reading is the final values which contain the data of A_{TOT}.

Note1: The power of the EUT transmitting frequency should be ignored.

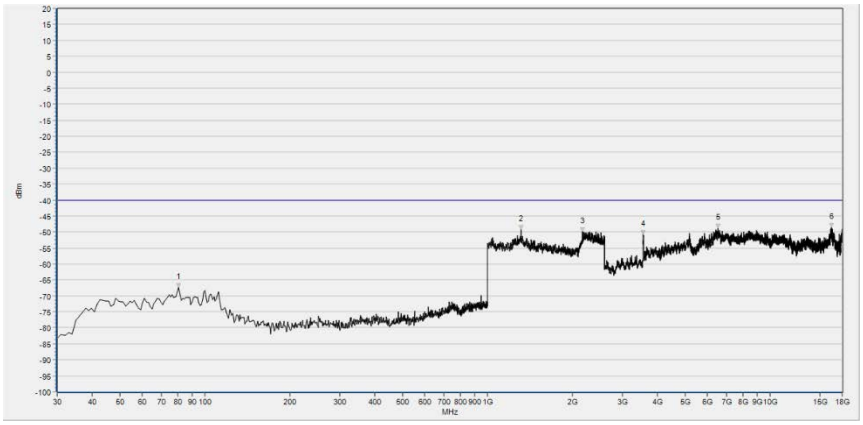
Note2: All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Note3: All bandwidth and modulation were considered and evaluated respectively by performing full test for each band, only the worst cases (Max Bandwidth and QPSK mode) were recorded in this test report.

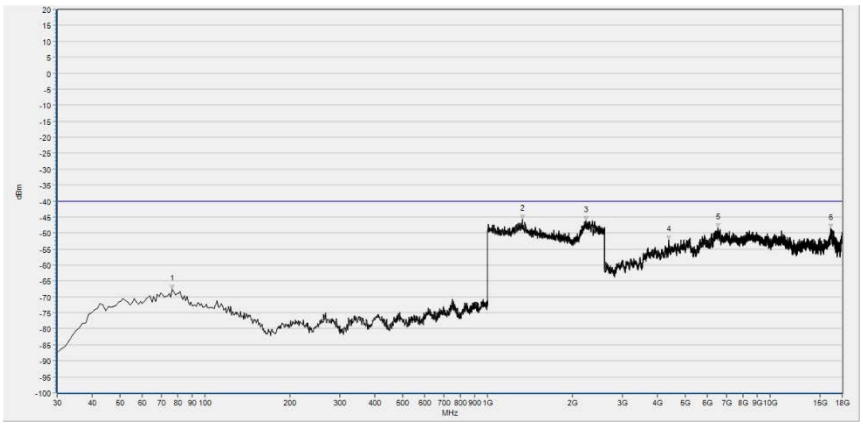
Note 4: N/A means the frequency is the basic frequency or the base station frequency, they are no need to verdict.

Note5: The amplitude of emissions(18GHz to 10th harmonics) which are attenuated more than 20 dB below the limit are not be reported.

LTE Band 48, 20MHz BW, Low Channel, QPSK

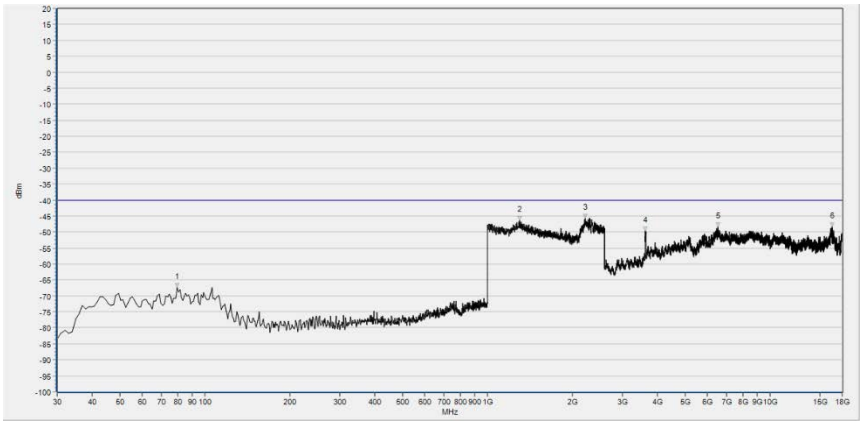


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	80.490	-67.45	-40.00	Horizontal	PASS
2	1313.914	-49.20	-40.00	Horizontal	PASS
3	2170.771	-50.03	-40.00	Horizontal	PASS
4	3561.152	-50.89	-40.00	Horizontal	N/A
5	6537.027	-48.83	-40.00	Horizontal	PASS
6	16536.707	-48.70	-40.00	Horizontal	PASS

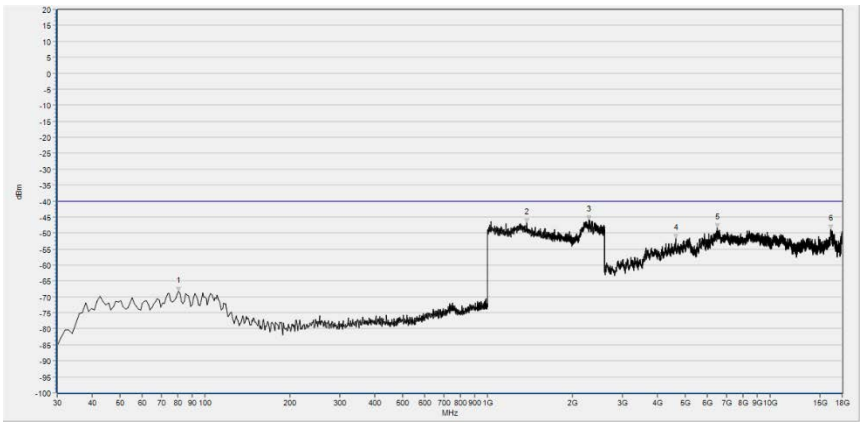


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	76.607	-67.64	-40.00	Vertical	PASS
2	1329.930	-45.66	-40.00	Vertical	PASS
3	2225.225	-46.16	-40.00	Vertical	PASS
4	4377.516	-52.20	-40.00	Vertical	PASS
5	6530.866	-48.49	-40.00	Vertical	PASS
6	16404.241	-48.49	-40.00	Vertical	PASS

LTE Band 48, 20MHz BW, Mid Channel, QPSK

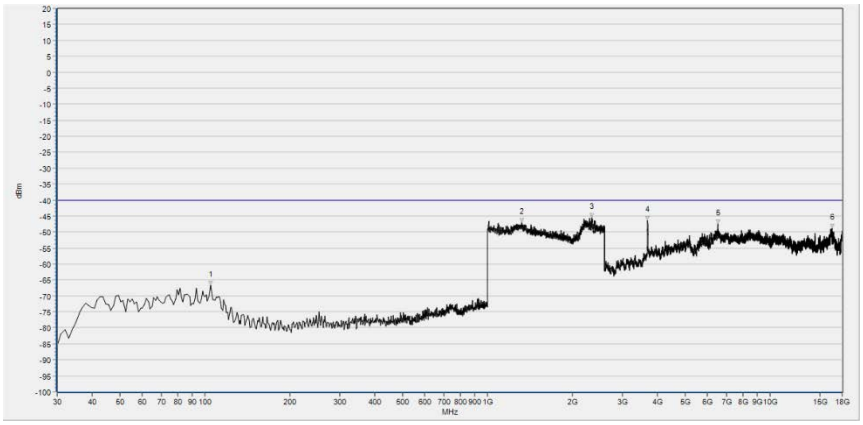


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	79.520	-67.36	-40.00	Horizontal	PASS
2	1299.499	-46.42	-40.00	Horizontal	PASS
3	2214.014	-45.78	-40.00	Horizontal	PASS
4	3616.603	-49.80	-40.00	Horizontal	N/A
5	6543.189	-48.45	-40.00	Horizontal	PASS
6	16558.272	-48.38	-40.00	Horizontal	PASS

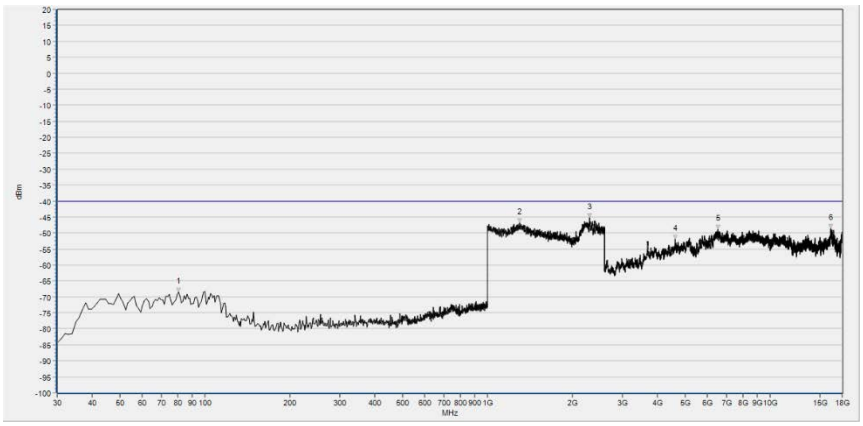


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	80.490	-68.18	-40.00	Vertical	PASS
2	1379.580	-46.77	-40.00	Vertical	PASS
3	2289.289	-45.88	-40.00	Vertical	PASS
4	4630.126	-51.80	-40.00	Vertical	PASS
5	6518.544	-48.46	-40.00	Vertical	PASS
6	16391.918	-48.92	-40.00	Vertical	PASS

LTE Band 48, 20MHz BW, High Channel, QPSK



No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	104.765	-66.76	-40.00	Horizontal	PASS
2	1320.320	-47.04	-40.00	Horizontal	PASS
3	2337.337	-45.45	-40.00	Horizontal	PASS
4	3687.457	-46.47	-40.00	Horizontal	N/A
5	6524.705	-47.46	-40.00	Horizontal	PASS
6	16545.949	-48.89	-40.00	Horizontal	PASS



No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	80.490	-68.52	-40.00	Vertical	PASS
2	1301.101	-46.85	-40.00	Vertical	PASS
3	2300.501	-45.17	-40.00	Vertical	PASS
4	4614.723	-51.92	-40.00	Vertical	PASS
5	6524.705	-48.72	-40.00	Vertical	PASS
6	16444.289	-48.50	-40.00	Vertical	PASS

2.8. End User Device Additional Requirements (CBSD Protocol)

2.8.1.Requirement

According to FCC section Part 96.47,

(a) End User Devices may operate only if they can positively receive and decode an authorization signal transmitted by a CBSD, including the frequencies and power limits for their operation. An End User Device must discontinue operations, change frequencies, or change its operational power level within 10 seconds of receiving instructions from its associated CBSD.

(b) Any device operated at higher power than specified for End User Devices in Part 96.41 will be classified as, and subject to, the operational requirements of a CBSD.

2.8.2.Test Description

End user device additional requirements (CBSD Protocol) are tested per the test procedures listedbelow. During testing, the EUT is connected to a certified CBSD (kingsignal LBS7320 FCC ID: 2AVFNLBS7320) as a companion device to show compliance with Part 96.47.End User Devices may operate only if they can positively receive and decode an authorizationsignal transmitted by a CBSD, including the frequencies and power limits for their operationAn End User Device must discontinue operations, change frequencies, or change its operationapower level within 10 seconds of receiving instructions from its associated CBSD.

2.8.3.Test Procedure

KDB 940660 D01 Part 96 CBRS Eqpt v02.

2.8.4.Test Result

The EUT was connected via an RF cable to a certified CBSD and spectrum analyzer

Test Graph 1:

a. Setup frequency with 3610MHz - 3630MHz

b. Check EUT Tx frequency.

c. Disable AP service and check EUT stop transmission within 10s.

Test Graph 2:

a. Setup frequency with 3660MHz - 3680MHz

b. Check EUT Tx frequency.

c. Disable AP service and check EUT stop transmission within 10s

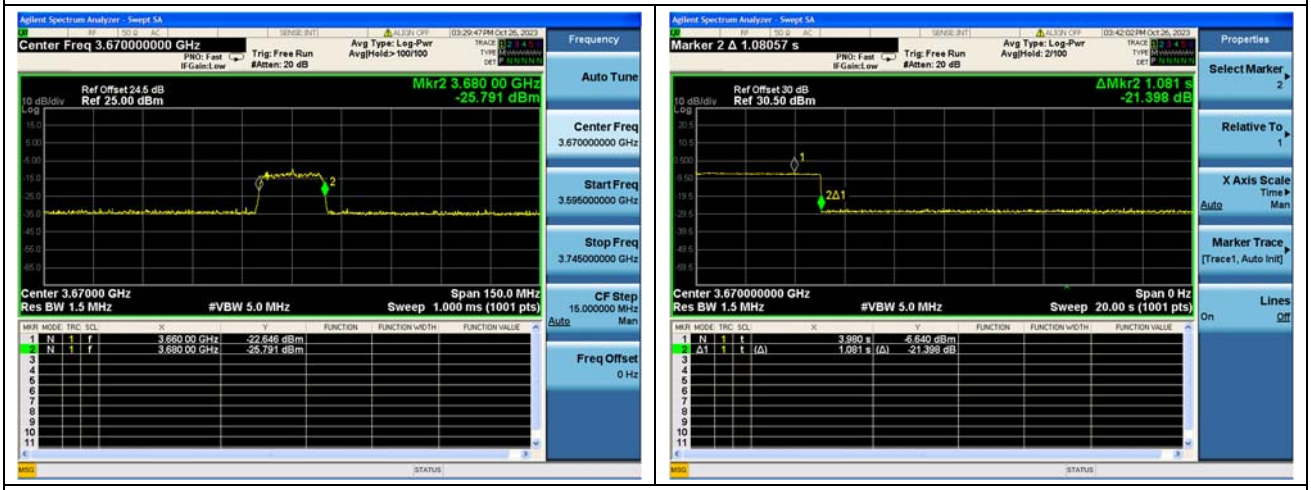
Test Graph 1

Note:

Marker 1: CBSD sends instructions to discontinue LTE operations.

Marker 2: EUT discontinues operation

Test Graph 2



Note:

Marker 1: CBSD sends instructions to discontinue LTE operations.

Marker 2: EUT discontinues operation

Annex A Test Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for test performed on the EUT as specified in CISPR 16-1-2:

Test Items	Uncertainty
Output Power	±2.22 dB
Bandwidth	±5%
Conducted Spurious Emission	±2.77 dB
Band Edge	±2.77 dB
Equivalent Isotropic Radiated Power	±2.22 dB
Radiated Spurious Emissions	±6 dB

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

Annex B Testing Laboratory Information

1. Identification of the Responsible Testing Laboratory

Laboratory Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Laboratory Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

3. Facilities and Accreditations

All measurement facilities used to collect the measurement data are located at FL.3, Building A, FeiYang Science Park, Block 67, BaoAn District, Shenzhen, 518101 P. R. China. The test site is constructed in conformance with the requirements of ANSI C63.10-2013and CISPR Publication 22; the FCC designation number is CN1192, the test firm registration number is 226174.

4. Test Equipment Utilized

4.1 Conducted Test Equipment

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
EXA Signal Analyzer	MY51511149	N9020A	Agilent	2023.06.21	2024.06.20
Communication Test Station	6200995016	MT8820C	Anritsu	2023.06.21	2024.06.20
Temperature Chamber	S022177101 00089002	KMT-36LF 1A0	KOMEG	2023.09.19	2024.09.18

4.2 List of Software Used

Description	Manufacturer	Software Version
Morlab FCC LTE Test System	MORLAB	V6.45
MORLAB EMCR	MORLAB	V1.2

4.3 Radiated Test Equipment

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
System Simulator	152038	CMW500	R&S	2022.10.11	2023.10.10
				2023.10.17	2024.10.16
Receiver	MY54130016	N9038A	Agilent	2023.06.21	2024.06.20
Test Antenna - Bi-Log	9163-519	VULB 9163	Schwarzbeck	2023.07.01	2024.06.30
Test Antenna - Horn	9120D-963	BBHA 9120D	Schwarzbeck	2023.06.27	2024.06.26
RF Coaxial Cable (DC-18GHz)	MRE001	PE330	Pasternack	2023.06.27	2024.06.26
RF Coaxial Cable (DC-18GHz)	MRE002	CLU18	Pasternack	2023.06.27	2024.06.26
RF Coaxial Cable (DC-18GHz)	MRE003	CLU18	Pasternack	2023.06.27	2024.06.26
RF Coaxial Cable (DC-40GHz)	22290045	QA360-40-KK-0.5	Qualwave	2023.07.04	2024.07.03
RF Coaxial Cable (DC-40GHz)	22290046	QA360-40-KK F-2	Qualwave	2023.07.04	2024.07.03
Preamplifier (10MHz-6GHz)	46732	S10M100L3802	LUCIX CORP.	2023.07.04	2024.07.03
Preamplifier (2GHz-18GHz)	61171/61172	S020180L3203	LUCIX CORP.	2023.06.27	2024.06.26
Preamplifier (18GHz-40GHz)	DS77209	DCLNA0118-40C-S	Decentest	2023.06.27	2024.06.26
Notch Filter	N/A	WRCGV -LTE B48	Wainwright	N/A	N/A
Anechoic Chamber	N/A	9m*6m*6m	CRT	2022.05.10	2025.05.09

END OF REPORT