



REPORT No.: SZ25110195W02

TEST REPORT

APPLICANT : Horizon Powered USA Inc.

PRODUCT NAME : 5G/LTE CBRS USB-C Dongle

MODEL NAME : DG505G

BRAND NAME : Horizon

FCC ID : 2BE94-DG505

STANDARD(S) : 47 CFR Part 2
47 CFR Part 96

RECEIPT DATE : 2024-04-07

TEST DATE : 2024-04-12 to 2024-04-27

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Change History		
Version	Date	Reason for change
1.0	2026-05-13	First edition



1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	Horizon Powered USA Inc.
Applicant Address:	8350 NW 52nd Terrace, Suite 301 Miami, Florida 33166 United States
Manufacturer:	Horizon Powered USA Inc.
Manufacturer Address:	8350 NW 52nd Terrace, Suite 301 Miami, Florida 33166 United States

1.2. Equipment Under Test (EUT) Description

Product Name:	5G/LTE CBRS USB-C Dongle	
Sample No.:	1#	
Hardware Version:	E	
Software Version:	DG505G.V2.00_604302D	
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	0.95dBi

Note 1: This test report is variant from the original report (Report No.: SZ24030252W02, FCC ID: 2BE94DG505G), based on the similarity between before, only changed the FCC ID, update software, the others are the same as before. The changes do not affect the test results.

Note 2: The EUT description presented in the report are provided by applicant and/or manufacturer, and the test laboratory is not responsible for the accuracy of the information. 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

LTE Band 48	Maximum E.R.P./E.I.R.P. (W)			
BW(MHz)	QPSK	16QAM	64QAM	256QAM
20	0.165	0.126	0.097	0.046
15	0.162	0.124	0.095	0.045
10	0.159	0.121	0.093	0.044
5	0.157	0.119	0.092	0.044
LTE Band 48	Emission Designator (99%OBW)			
BW(MHz)	QPSK	16QAM	64QAM	256QAM
20	17M9G7D	17M9W7D	17M8W7D	17M9W7D
15	13M4G7D	13M4W7D	13M4W7D	13M4W7D
10	8M95G7D	8M93W7D	8M97W7D	8M95W7D
5	4M48G7D	4M48W7D	4M48W7D	4M46W7D



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	Remark
2.1046, 96.41(b)	Transmitter Conducted Output Power and ERP/EIRP	Apr. 25, 2024	Yu Xiaoming Gan Jing	PASS _{Note1}	/
2.1049	Occupied Bandwidth	Apr. 25, 2024	Gan Jing	PASS _{Note1}	/
96.41(g)	Peak -Average Ratio	Apr. 25, 2024	Gan Jing	PASS _{Note1}	/
2.1055	Frequency Stability	Apr. 15, 2024	Gan Jing	PASS _{Note1}	/
2.1051, 96.41(e)	Conducted Spurious Emissions	Apr. 25, 2024	Gan Jing	PASS _{Note1}	/
2.1051, 96.41(e)	Band Edge	Apr. 25, 2024	Gan Jing	PASS _{Note1}	/
2.1053, 96.41(e)	Radiated Spurious Emissions	Apr. 12 to 27, 2024	Gao Jianrou	PASS _{Note1}	/

Note 1: The test results of these test items in this report refer to the test report (Report No.: SZ24030252W02).

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: Any additions, deviation, or exclusions from the method shall be noted in the "Remark".

Note 4: The antenna gain presented in the report are provided by applicant and/or manufacturer, and the test laboratory is not responsible for the accuracy of the information.



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.

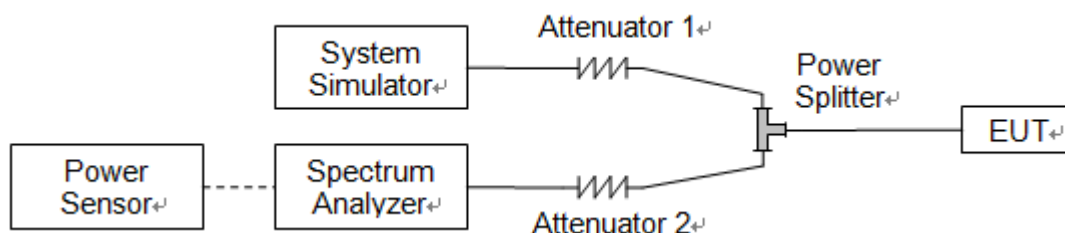
2.1.1. Requirement

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.

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.

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

$ERP \text{ (dBm)} = EIPR \text{ (dBm)} - 2.15$

**2.1.4.Result****Conducted Output Power:**

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	21.17	21.23	21.10
20	QPSK	1	49	20.67	20.69	20.71
20	QPSK	1	99	20.73	20.73	20.67
20	QPSK	50	0	20.27	20.30	20.03
20	QPSK	50	24	19.72	19.77	19.70
20	QPSK	50	50	19.72	19.85	19.50
20	QPSK	100	0	19.74	19.74	19.48
20	16QAM	1	0	20.00	20.05	19.85
20	16QAM	1	49	19.90	19.87	19.71
20	16QAM	1	99	19.88	19.93	19.74
20	16QAM	50	0	18.66	18.74	18.68
20	16QAM	50	24	18.68	18.77	18.49
20	16QAM	50	50	18.66	18.79	18.43
20	16QAM	100	0	18.69	18.73	18.53
20	64QAM	1	0	18.86	18.91	18.77
20	64QAM	1	49	18.86	18.82	18.69
20	64QAM	1	99	18.67	18.83	18.55
20	64QAM	50	0	18.66	18.80	18.52
20	64QAM	50	24	18.55	18.67	18.56
20	64QAM	50	50	18.71	18.66	18.47
20	64QAM	100	0	18.66	18.74	18.42
20	256QAM	1	0	15.67	15.68	15.40
20	256QAM	1	49	15.55	15.57	15.61
20	256QAM	1	99	15.55	15.37	15.45
20	256QAM	50	0	14.40	14.73	14.45
20	256QAM	50	24	14.46	14.63	14.58
20	256QAM	50	50	14.45	14.44	14.42
20	256QAM	100	0	14.45	14.65	14.30



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	21.09	21.15	21.02
15	QPSK	1	37	20.59	20.61	20.63
15	QPSK	1	74	20.65	20.65	20.59
15	QPSK	36	0	20.19	20.22	19.95
15	QPSK	36	20	19.64	19.69	19.62
15	QPSK	36	39	19.64	19.77	19.42
15	QPSK	75	0	19.66	19.66	19.40
15	16QAM	1	0	19.92	19.97	19.77
15	16QAM	1	37	19.82	19.79	19.63
15	16QAM	1	74	19.80	19.85	19.66
15	16QAM	36	0	18.58	18.66	18.60
15	16QAM	36	20	18.60	18.69	18.41
15	16QAM	36	39	18.58	18.71	18.35
15	16QAM	75	0	18.61	18.65	18.45
15	64QAM	1	0	18.78	18.83	18.69
15	64QAM	1	37	18.78	18.74	18.61
15	64QAM	1	74	18.59	18.75	18.47
15	64QAM	36	0	18.58	18.72	18.44
15	64QAM	36	20	18.47	18.59	18.48
15	64QAM	36	39	18.63	18.58	18.39
15	64QAM	75	0	18.58	18.66	18.34
15	256QAM	1	0	15.59	15.60	15.32
15	256QAM	1	37	15.47	15.49	15.53
15	256QAM	1	74	15.47	15.29	15.37
15	256QAM	36	0	14.32	14.65	14.37
15	256QAM	36	20	14.38	14.55	14.50
15	256QAM	36	39	14.37	14.36	14.34
15	256QAM	75	0	14.37	14.57	14.22



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	21.00	21.06	20.93
10	QPSK	1	25	20.50	20.52	20.54
10	QPSK	1	49	20.56	20.56	20.50
10	QPSK	25	0	20.10	20.13	19.86
10	QPSK	25	12	19.55	19.60	19.53
10	QPSK	25	25	19.55	19.68	19.33
10	QPSK	50	0	19.57	19.57	19.31
10	16QAM	1	0	19.83	19.88	19.68
10	16QAM	1	25	19.73	19.70	19.54
10	16QAM	1	49	19.71	19.76	19.57
10	16QAM	25	0	18.49	18.57	18.51
10	16QAM	25	12	18.51	18.60	18.32
10	16QAM	25	25	18.49	18.62	18.26
10	16QAM	50	0	18.52	18.56	18.36
10	64QAM		0	18.69	18.74	18.60
10	64QAM	1	25	18.69	18.65	18.52
10	64QAM	1	49	18.50	18.66	18.38
10	64QAM	25	0	18.49	18.63	18.35
10	64QAM	25	12	18.38	18.50	18.39
10	64QAM	25	25	18.54	18.49	18.30
10	64QAM	50	0	18.49	18.57	18.25
10	256QAM	1	0	15.50	15.51	15.23
10	256QAM	1	25	15.38	15.40	15.44
10	256QAM	1	49	15.38	15.20	15.28
10	256QAM	25	0	14.23	14.56	14.28
10	256QAM	25	12	14.29	14.46	14.41
10	256QAM	25	25	14.28	14.27	14.25
10	256QAM	50	0	14.28	14.48	14.13



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	20.94	21.00	20.87
5	QPSK	1	12	20.44	20.46	20.48
5	QPSK	1	24	20.50	20.50	20.44
5	QPSK	12	0	20.04	20.07	19.80
5	QPSK	12	7	19.49	19.54	19.47
5	QPSK	12	13	19.49	19.62	19.27
5	QPSK	25	0	19.51	19.51	19.25
5	16QAM	1	0	19.77	19.82	19.62
5	16QAM	1	12	19.67	19.64	19.48
5	16QAM	1	24	19.65	19.70	19.51
5	16QAM	12	0	18.43	18.51	18.45
5	16QAM	12	7	18.45	18.54	18.26
5	16QAM	12	13	18.43	18.56	18.20
5	16QAM	25	0	18.46	18.50	18.30
5	64QAM	1	0	18.63	18.68	18.54
5	64QAM	1	12	18.63	18.59	18.46
5	64QAM	1	24	18.44	18.60	18.32
5	64QAM	12	0	18.43	18.57	18.29
5	64QAM	12	7	18.32	18.44	18.33
5	64QAM	12	13	18.48	18.43	18.24
5	64QAM	25	0	18.43	18.51	18.19
5	256QAM	1	0	15.44	15.45	15.17
5	256QAM	1	12	15.32	15.34	15.38
5	256QAM	1	24	15.32	15.14	15.22
5	256QAM	12	0	14.17	14.50	14.22
5	256QAM	12	7	14.23	14.40	14.35
5	256QAM	12	13	14.22	14.21	14.19
5	256QAM	25	0	14.22	14.42	14.07

**Effective Radiated Power and Effective Isotropic Radiated Power:**

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	22.12	0.163	22.18	0.165	22.05	0.160
20	QPSK	1	49	21.62	0.145	21.64	0.146	21.66	0.147
20	QPSK	1	99	21.68	0.147	21.68	0.147	21.62	0.145
20	QPSK	50	0	21.22	0.132	21.25	0.133	20.98	0.125
20	QPSK	50	24	20.67	0.117	20.72	0.118	20.65	0.116
20	QPSK	50	50	20.67	0.117	20.80	0.120	20.45	0.111
20	QPSK	100	0	20.69	0.117	20.69	0.117	20.43	0.110
20	16QAM	1	0	20.95	0.124	21.00	0.126	20.80	0.120
20	16QAM	1	49	20.85	0.122	20.82	0.121	20.66	0.116
20	16QAM	1	99	20.83	0.121	20.88	0.122	20.69	0.117
20	16QAM	50	0	19.61	0.091	19.69	0.093	19.63	0.092
20	16QAM	50	24	19.63	0.092	19.72	0.094	19.44	0.088
20	16QAM	50	50	19.61	0.091	19.74	0.094	19.38	0.087
20	16QAM	100	0	19.64	0.092	19.68	0.093	19.48	0.089
20	64QAM	1	0	19.81	0.096	19.86	0.097	19.72	0.094
20	64QAM	1	49	19.81	0.096	19.77	0.095	19.64	0.092
20	64QAM	1	99	19.62	0.092	19.78	0.095	19.50	0.089
20	64QAM	50	0	19.61	0.091	19.75	0.094	19.47	0.089
20	64QAM	50	24	19.50	0.089	19.62	0.092	19.51	0.089
20	64QAM	50	50	19.66	0.092	19.61	0.091	19.42	0.087
20	64QAM	100	0	19.61	0.091	19.69	0.093	19.37	0.086
20	256QAM	1	0	16.62	0.046	16.63	0.046	16.35	0.043
20	256QAM	1	49	16.50	0.045	16.52	0.045	16.56	0.045
20	256QAM	1	99	16.50	0.045	16.32	0.043	16.40	0.044
20	256QAM	50	0	15.35	0.034	15.68	0.037	15.40	0.035
20	256QAM	50	24	15.41	0.035	15.58	0.036	15.53	0.036
20	256QAM	50	50	15.40	0.035	15.39	0.035	15.37	0.034
20	256QAM	100	0	15.40	0.035	15.60	0.036	15.25	0.033



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	22.04	0.160	22.10	0.162	21.97	0.157
15	QPSK	1	37	21.54	0.143	21.56	0.143	21.58	0.144
15	QPSK	1	74	21.60	0.145	21.60	0.145	21.54	0.143
15	QPSK	36	0	21.14	0.130	21.17	0.131	20.90	0.123
15	QPSK	36	20	20.59	0.115	20.64	0.116	20.57	0.114
15	QPSK	36	39	20.59	0.115	20.72	0.118	20.37	0.109
15	QPSK	75	0	20.61	0.115	20.61	0.115	20.35	0.108
15	16QAM	1	0	20.87	0.122	20.92	0.124	20.72	0.118
15	16QAM	1	37	20.77	0.119	20.74	0.119	20.58	0.114
15	16QAM	1	74	20.75	0.119	20.80	0.120	20.61	0.115
15	16QAM	36	0	19.53	0.090	19.61	0.091	19.55	0.090
15	16QAM	36	20	19.55	0.090	19.64	0.092	19.36	0.086
15	16QAM	36	39	19.53	0.090	19.66	0.092	19.30	0.085
15	16QAM	75	0	19.56	0.090	19.60	0.091	19.40	0.087
15	64QAM	1	0	19.73	0.094	19.78	0.095	19.64	0.092
15	64QAM	1	37	19.73	0.094	19.69	0.093	19.56	0.090
15	64QAM	1	74	19.54	0.090	19.70	0.093	19.42	0.087
15	64QAM	36	0	19.53	0.090	19.67	0.093	19.39	0.087
15	64QAM	36	20	19.42	0.087	19.54	0.090	19.43	0.088
15	64QAM	36	39	19.58	0.091	19.53	0.090	19.34	0.086
15	64QAM	75	0	19.53	0.090	19.61	0.091	19.29	0.085
15	256QAM	1	0	16.54	0.045	16.55	0.045	16.27	0.042
15	256QAM	1	37	16.42	0.044	16.44	0.044	16.48	0.044
15	256QAM	1	74	16.42	0.044	16.24	0.042	16.32	0.043
15	256QAM	36	0	15.27	0.034	15.60	0.036	15.32	0.034
15	256QAM	36	20	15.33	0.034	15.50	0.035	15.45	0.035
15	256QAM	36	39	15.32	0.034	15.31	0.034	15.29	0.034
15	256QAM	75	0	15.32	0.034	15.52	0.036	15.17	0.033



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	21.95	0.157	22.01	0.159	21.88	0.154
10	QPSK	1	25	21.45	0.140	21.47	0.140	21.49	0.141
10	QPSK	1	49	21.51	0.142	21.51	0.142	21.45	0.140
10	QPSK	25	0	21.05	0.127	21.08	0.128	20.81	0.121
10	QPSK	25	12	20.50	0.112	20.55	0.114	20.48	0.112
10	QPSK	25	25	20.50	0.112	20.63	0.116	20.28	0.107
10	QPSK	50	0	20.52	0.113	20.52	0.113	20.26	0.106
10	16QAM	1	0	20.78	0.120	20.83	0.121	20.63	0.116
10	16QAM	1	25	20.68	0.117	20.65	0.116	20.49	0.112
10	16QAM	1	49	20.66	0.116	20.71	0.118	20.52	0.113
10	16QAM	25	0	19.44	0.088	19.52	0.090	19.46	0.088
10	16QAM	25	12	19.46	0.088	19.55	0.090	19.27	0.085
10	16QAM	25	25	19.44	0.088	19.57	0.091	19.21	0.083
10	16QAM	50	0	19.47	0.089	19.51	0.089	19.31	0.085
10	64QAM	1	0	19.64	0.092	19.69	0.093	19.55	0.090
10	64QAM	1	25	19.64	0.092	19.60	0.091	19.47	0.089
10	64QAM	1	49	19.45	0.088	19.61	0.091	19.33	0.086
10	64QAM	25	0	19.44	0.088	19.58	0.091	19.30	0.085
10	64QAM	25	12	19.33	0.086	19.45	0.088	19.34	0.086
10	64QAM	25	25	19.49	0.089	19.44	0.088	19.25	0.084
10	64QAM	50	0	19.44	0.088	19.52	0.090	19.20	0.083
10	256QAM	1	0	16.45	0.044	16.46	0.044	16.18	0.041
10	256QAM	1	25	16.33	0.043	16.35	0.043	16.39	0.044
10	256QAM	1	49	16.33	0.043	16.15	0.041	16.23	0.042
10	256QAM	25	0	15.18	0.033	15.51	0.036	15.23	0.033
10	256QAM	25	12	15.24	0.033	15.41	0.035	15.36	0.034
10	256QAM	25	25	15.23	0.033	15.22	0.033	15.20	0.033
10	256QAM	50	0	15.23	0.033	15.43	0.035	15.08	0.032



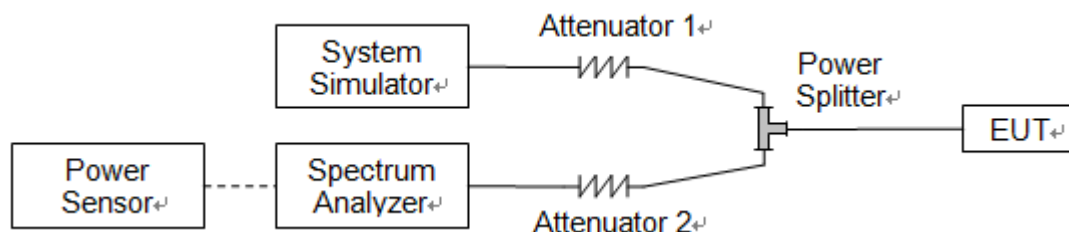
LTE Band 48				Measured E.I.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				55265		55990		56175	
Frequency (MHz)				3552.5		3625		3697.5	
				dBm	W	dBm	W	dBm	W
5	QPSK	1	0	21.89	0.155	21.95	0.157	21.82	0.152
5	QPSK	1	12	21.39	0.138	21.41	0.138	21.43	0.139
5	QPSK	1	24	21.45	0.140	21.45	0.140	21.39	0.138
5	QPSK	12	0	20.99	0.126	21.02	0.126	20.75	0.119
5	QPSK	12	7	20.44	0.111	20.49	0.112	20.42	0.110
5	QPSK	12	13	20.44	0.111	20.57	0.114	20.22	0.105
5	QPSK	25	0	20.46	0.111	20.46	0.111	20.20	0.105
5	16QAM	1	0	20.72	0.118	20.77	0.119	20.57	0.114
5	16QAM	1	12	20.62	0.115	20.59	0.115	20.43	0.110
5	16QAM	1	24	20.60	0.115	20.65	0.116	20.46	0.111
5	16QAM	12	0	19.38	0.087	19.46	0.088	19.40	0.087
5	16QAM	12	7	19.40	0.087	19.49	0.089	19.21	0.083
5	16QAM	12	13	19.38	0.087	19.51	0.089	19.15	0.082
5	16QAM	25	0	19.41	0.087	19.45	0.088	19.25	0.084
5	64QAM	1	0	19.58	0.091	19.63	0.092	19.49	0.089
5	64QAM	1	12	19.58	0.091	19.54	0.090	19.41	0.087
5	64QAM	1	24	19.39	0.087	19.55	0.090	19.27	0.085
5	64QAM	12	0	19.38	0.087	19.52	0.090	19.24	0.084
5	64QAM	12	7	19.27	0.085	19.39	0.087	19.28	0.085
5	64QAM	12	13	19.43	0.088	19.38	0.087	19.19	0.083
5	64QAM	25	0	19.38	0.087	19.46	0.088	19.14	0.082
5	256QAM	1	0	16.39	0.044	16.40	0.044	16.12	0.041
5	256QAM	1	12	16.27	0.042	16.29	0.043	16.33	0.043
5	256QAM	1	24	16.27	0.042	16.09	0.041	16.17	0.041
5	256QAM	12	0	15.12	0.033	15.45	0.035	15.17	0.033
5	256QAM	12	7	15.18	0.033	15.35	0.034	15.30	0.034
5	256QAM	12	13	15.17	0.033	15.16	0.033	15.14	0.033
5	256QAM	25	0	15.17	0.033	15.37	0.034	15.02	0.032

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.

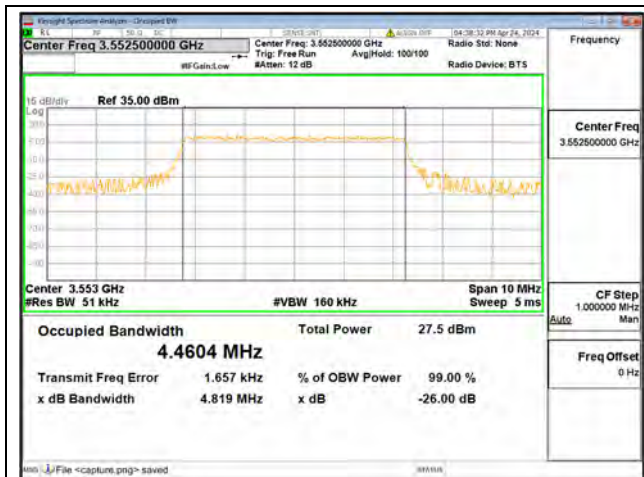
2.2.4. Test Result



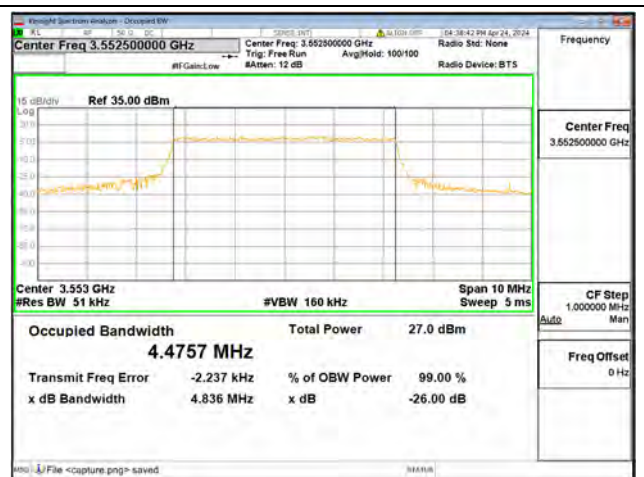
LTE Band	BW(MHz)	Channel Level	Channel	Frequency (MHz)	Modulation	99% BW (MHz)	26dB BW (MHz)	Verdict
B48	5	Low	55265	3552.5	QPSK	4.4604	4.8193	PASS
B48	5	Low	55265	3552.5	16QAM	4.4757	4.8364	PASS
B48	5	Low	55265	3552.5	64QAM	4.4791	4.8742	PASS
B48	5	Low	55265	3552.5	256QAM	4.4598	4.7996	PASS
B48	5	Mid	55990	3625	QPSK	4.4746	4.8287	PASS
B48	5	Mid	55990	3625	16QAM	4.4543	4.7407	PASS
B48	5	Mid	55990	3625	64QAM	4.4628	4.8510	PASS
B48	5	Mid	55990	3625	256QAM	4.4586	4.8433	PASS
B48	5	High	56715	3697.5	QPSK	4.4780	4.8197	PASS
B48	5	High	56715	3697.5	16QAM	4.4664	4.8175	PASS
B48	5	High	56715	3697.5	64QAM	4.4611	4.7727	PASS
B48	5	High	56715	3697.5	256QAM	4.4635	4.8048	PASS
B48	10	Low	55290	3555	QPSK	8.9402	9.5083	PASS
B48	10	Low	55290	3555	16QAM	8.9343	9.8193	PASS
B48	10	Low	55290	3555	64QAM	8.9606	9.5610	PASS
B48	10	Low	55290	3555	256QAM	8.9511	9.4395	PASS
B48	10	Mid	55990	3625	QPSK	8.9532	9.3864	PASS
B48	10	Mid	55990	3625	16QAM	8.9249	9.5605	PASS
B48	10	Mid	55990	3625	64QAM	8.9699	9.9276	PASS
B48	10	Mid	55990	3625	256QAM	8.9078	9.4148	PASS
B48	10	High	56690	3695	QPSK	8.9306	9.3439	PASS
B48	10	High	56690	3695	16QAM	8.9135	9.4464	PASS
B48	10	High	56690	3695	64QAM	8.9226	9.3695	PASS
B48	10	High	56690	3695	256QAM	8.9331	9.4253	PASS
B48	15	Low	55315	3557.5	QPSK	13.399	14.405	PASS
B48	15	Low	55315	3557.5	16QAM	13.437	14.478	PASS
B48	15	Low	55315	3557.5	64QAM	13.439	14.406	PASS
B48	15	Low	55315	3557.5	256QAM	13.423	14.350	PASS
B48	15	Mid	55990	3625	QPSK	13.407	14.254	PASS
B48	15	Mid	55990	3625	16QAM	13.398	14.076	PASS
B48	15	Mid	55990	3625	64QAM	13.386	14.272	PASS
B48	15	Mid	55990	3625	256QAM	13.411	13.896	PASS
B48	15	High	56665	3692.5	QPSK	13.340	14.196	PASS
B48	15	High	56665	3692.5	16QAM	13.390	14.394	PASS
B48	15	High	56665	3692.5	64QAM	13.421	14.046	PASS



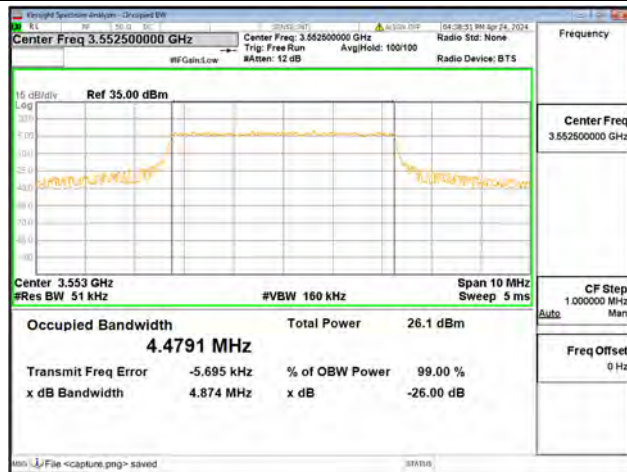
B48	15	High	56665	3692.5	256QAM	13.393	14.312	PASS
B48	20	Low	55340	3560	QPSK	17.861	19.019	PASS
B48	20	Low	55340	3560	16QAM	17.824	19.035	PASS
B48	20	Low	55340	3560	64QAM	17.849	18.973	PASS
B48	20	Low	55340	3560	256QAM	17.853	18.768	PASS
B48	20	Mid	55990	3625	QPSK	17.855	18.694	PASS
B48	20	Mid	55990	3625	16QAM	17.887	18.881	PASS
B48	20	Mid	55990	3625	64QAM	17.787	19.079	PASS
B48	20	Mid	55990	3625	256QAM	17.836	18.701	PASS
B48	20	High	56640	3690	QPSK	17.803	18.881	PASS
B48	20	High	56640	3690	16QAM	17.868	18.617	PASS
B48	20	High	56640	3690	64QAM	17.821	18.684	PASS
B48	20	High	56640	3690	256QAM	17.790	18.720	PASS



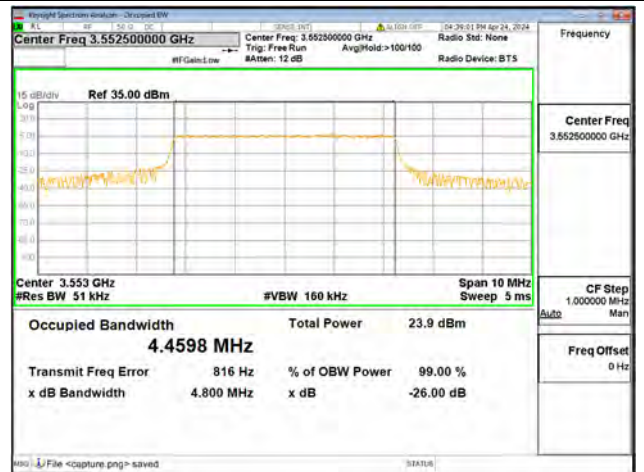
B48 / 5MHz / QPSK/ Low CH



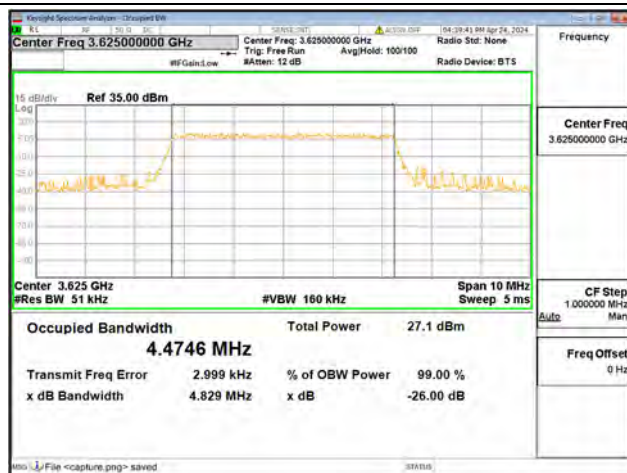
B48 / 5MHz / 16QAM/ Low CH



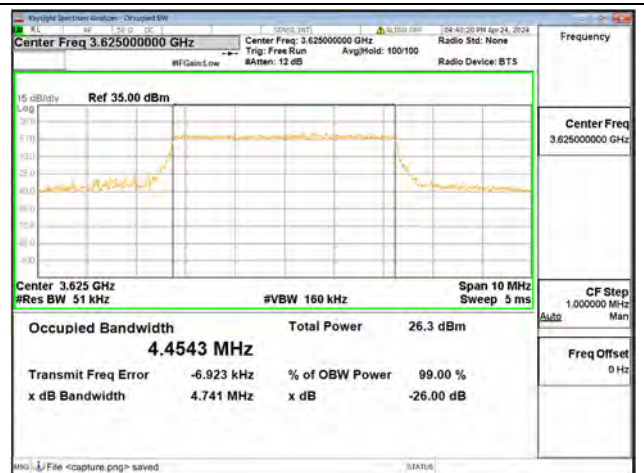
B48 / 5MHz / 64QAM/ Low CH



B48 / 5MHz / 256QAM/ Low CH



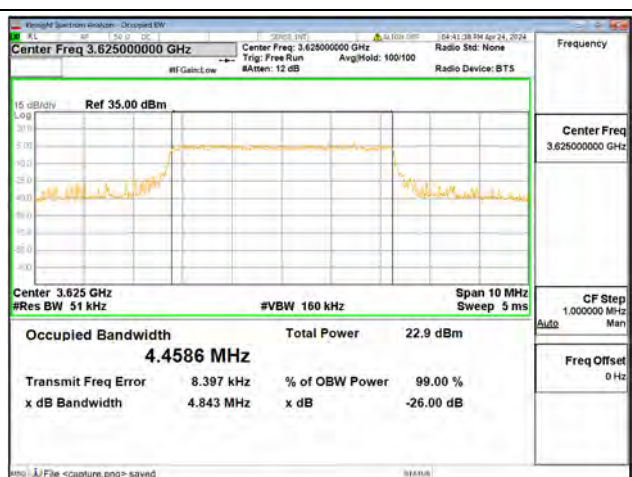
B48 / 5MHz / QPSK/ Mid CH



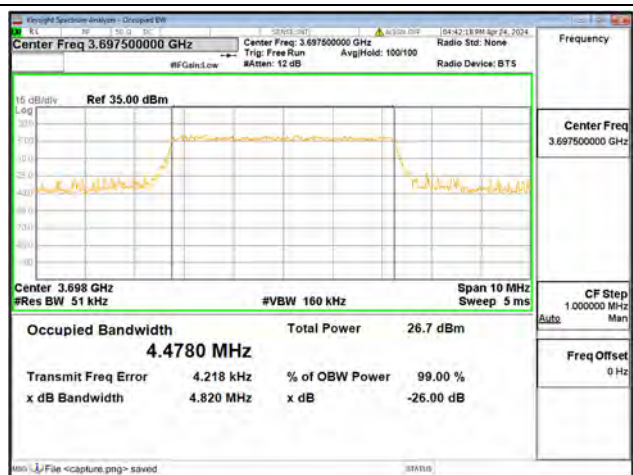
B48 / 5MHz / 16QAM/ Mid CH



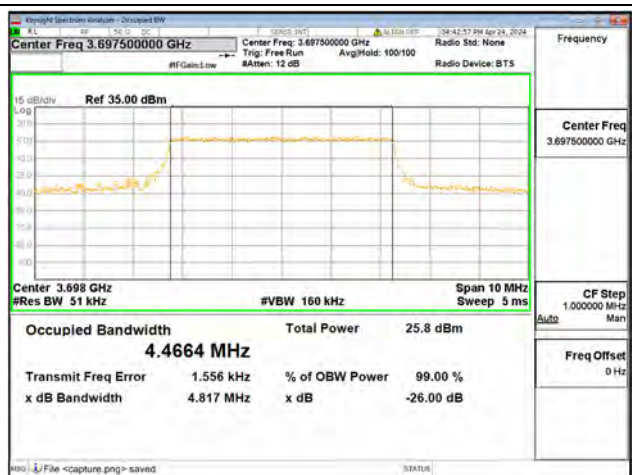
B48 / 5MHz / 64QAM/ Mid CH



B48 / 5MHz / 256QAM/ Mid CH



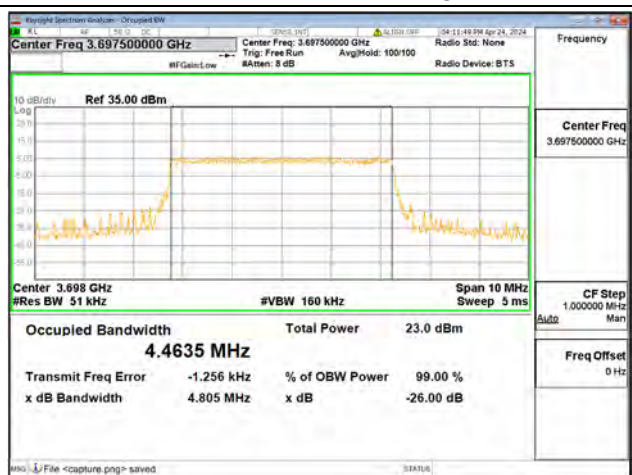
B48 / 5MHz / QPSK/ High CH



B48 / 5MHz / 16QAM/ High CH



B48 / 5MHz / 64QAM/ High CH



B48 / 5MHz / 256QAM/ High CH



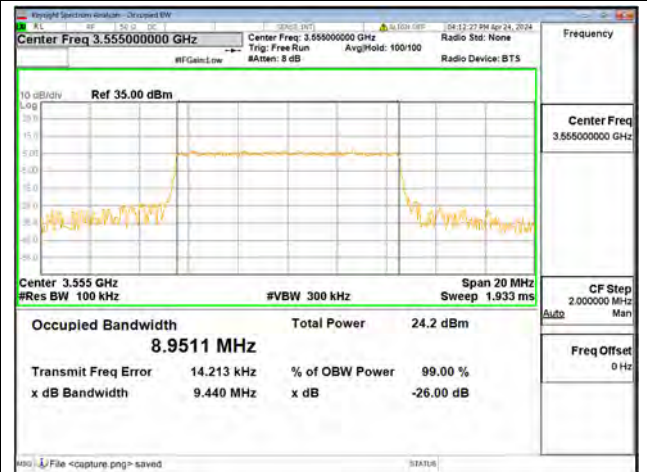
B48 / 10MHz / QPSK/ Low CH



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



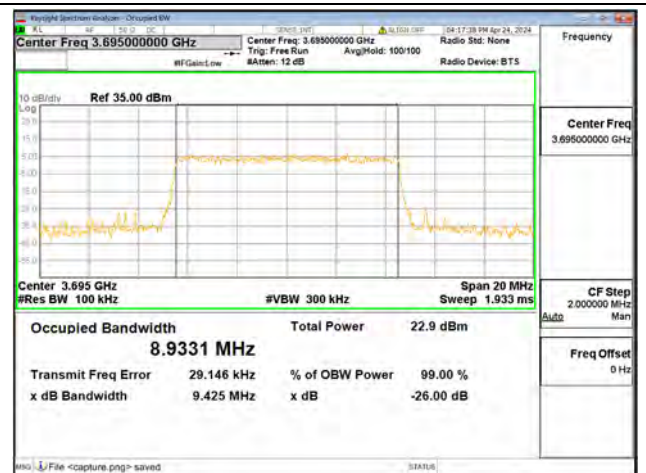
B48 / 10MHz / QPSK/ High CH



B48 / 10MHz / 16QAM/ High CH



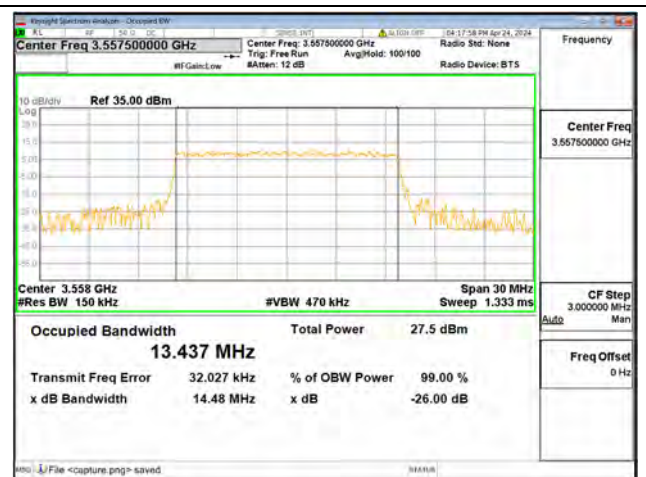
B48 / 10MHz / 64QAM/ High CH



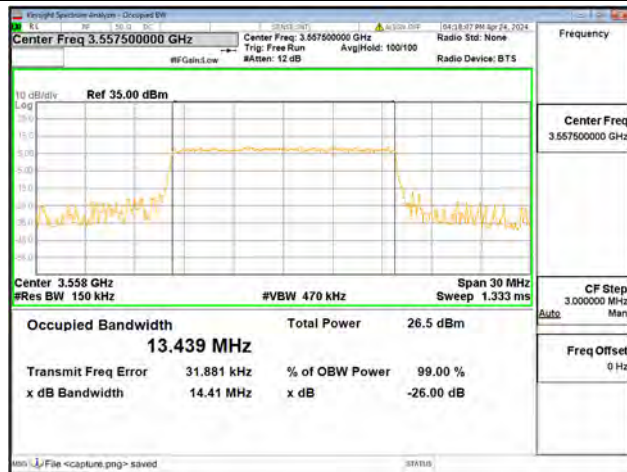
B48 / 10MHz / 256QAM/ High CH



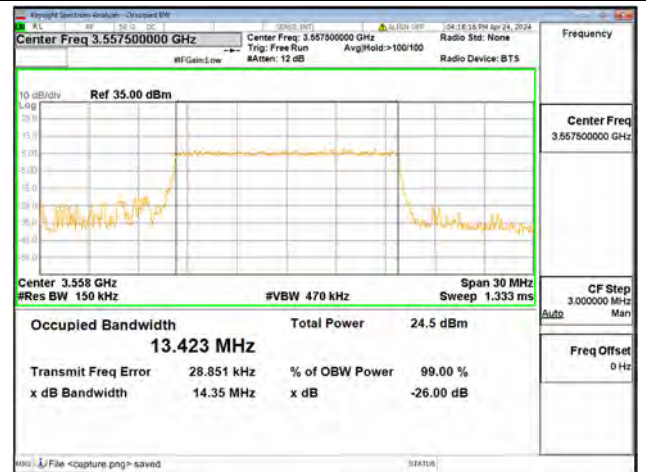
B48 / 15MHz / QPSK/ Low CH



B48 / 15MHz / 16QAM/ Low CH



B48 / 15MHz / 64QAM/ Low CH



B48 / 15MHz / 256QAM/ Low CH



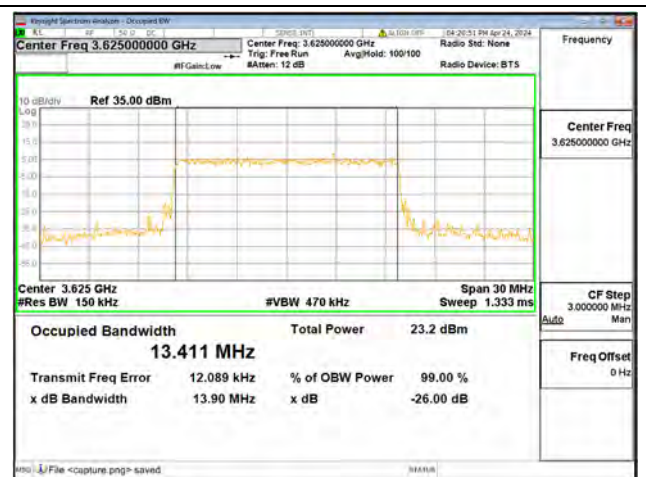
B48 / 15MHz / QPSK/ Mid CH



B48 / 15MHz / 16QAM/ Mid CH



B48 / 15MHz / 64QAM/ Mid CH



B48 / 15MHz / 256QAM/ Mid CH



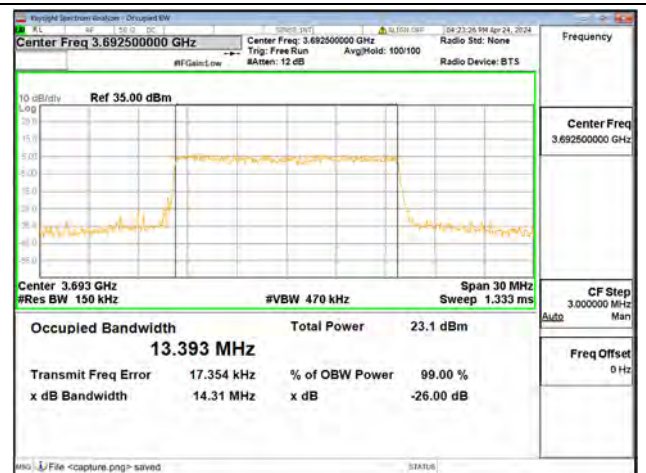
B48 / 15MHz / QPSK/ High CH



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



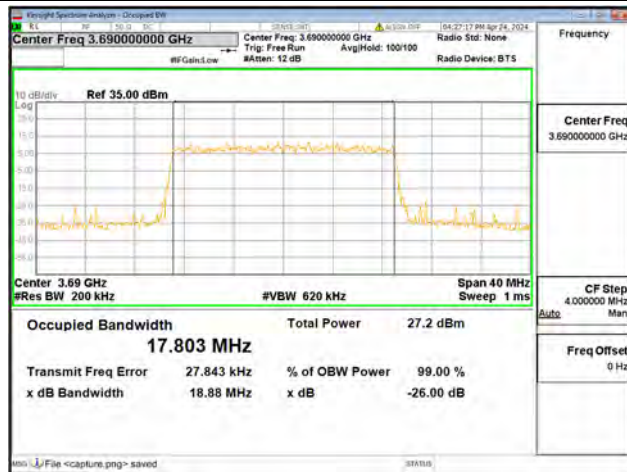
B48 / 20MHz / 16QAM/ Mid CH



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

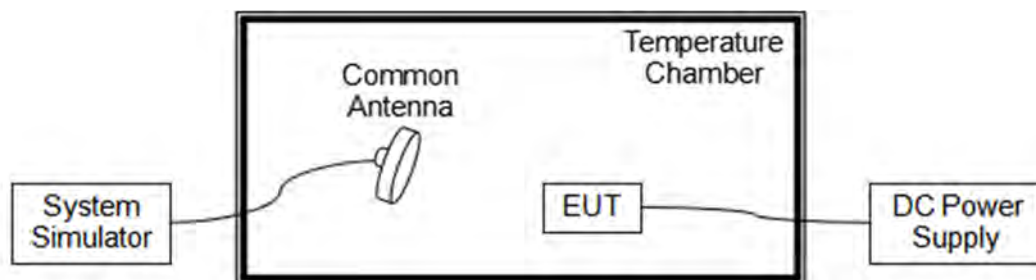
2.3.1. Requirement

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 $+50^{\circ}\text{C}$ 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 -15°C to 55°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 5.00V, 5.50V and 4.50V, which are specified by the applicant; the normal temperature here used is 20°C.

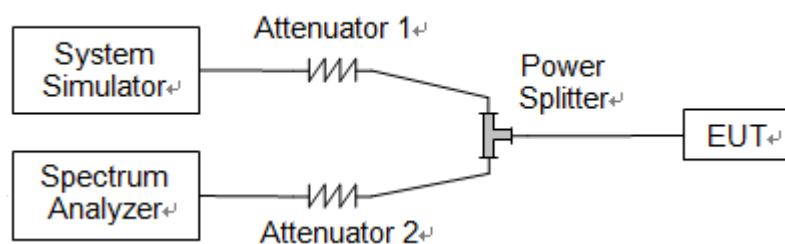
LTE Band 48, 256QAM, Channel 55990, Frequency 3625.0MHz Limit =Within Authorized Band					
Voltage (%)	Power (VDC)	Temp(°C)	Fre. Dev.(Hz)	Deviation (ppm)	Result
Normal	5.00	+20(Ref)	18	0.005	PASS
Normal		-15	15	0.004	
Normal		-10	13	0.004	
Normal		0	-5	-0.001	
Normal		+10	17	0.005	
Normal		+20	19	0.005	
Normal		+30	16	0.004	
Normal		+40	13	0.004	
Normal		+50	19	0.005	
Normal		+55	15	0.004	
High	5.50	+20	0	0.000	
BATT.ENDPOINT	4.50	+20	14	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

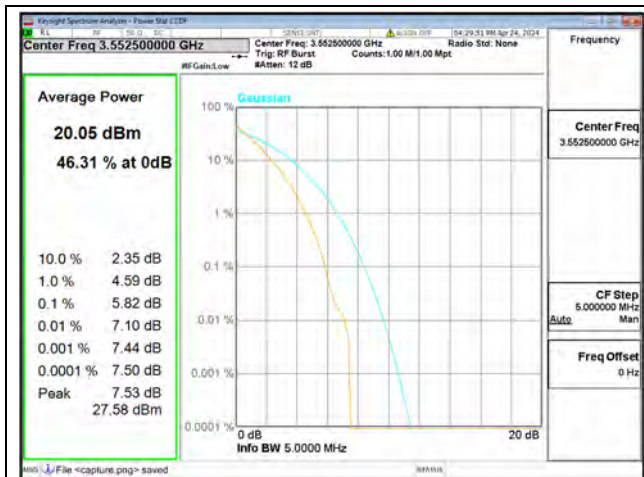


LTE Band	BW(MHz)	Channel Level	Channel	Frequency (MHz)	Modulation	Peak to Average Radio(dB)	P/F
B48	5	Low	55265	3552.5	QPSK	5.82	PASS
B48	5	Low	55265	3552.5	16QAM	6.46	PASS
B48	5	Low	55265	3552.5	64QAM	6.82	PASS
B48	5	Low	55265	3552.5	256QAM	6.51	PASS
B48	5	Mid	55990	3625	QPSK	5.83	PASS
B48	5	Mid	55990	3625	16QAM	6.39	PASS
B48	5	Mid	55990	3625	64QAM	6.91	PASS
B48	5	Mid	55990	3625	256QAM	6.52	PASS
B48	5	High	56715	3697.5	QPSK	5.83	PASS
B48	5	High	56715	3697.5	16QAM	6.44	PASS
B48	5	High	56715	3697.5	64QAM	6.89	PASS
B48	5	High	56715	3697.5	256QAM	6.55	PASS
B48	10	Low	55290	3555	QPSK	5.68	PASS
B48	10	Low	55290	3555	16QAM	6.34	PASS
B48	10	Low	55290	3555	64QAM	6.56	PASS
B48	10	Low	55290	3555	256QAM	6.43	PASS
B48	10	Mid	55990	3625	QPSK	5.70	PASS
B48	10	Mid	55990	3625	16QAM	6.45	PASS
B48	10	Mid	55990	3625	64QAM	6.63	PASS
B48	10	Mid	55990	3625	256QAM	6.38	PASS
B48	10	High	56690	3695	QPSK	5.74	PASS
B48	10	High	56690	3695	16QAM	6.35	PASS
B48	10	High	56690	3695	64QAM	6.63	PASS
B48	10	High	56690	3695	256QAM	6.39	PASS
B48	15	Low	55315	3557.5	QPSK	5.65	PASS
B48	15	Low	55315	3557.5	16QAM	6.39	PASS
B48	15	Low	55315	3557.5	64QAM	6.37	PASS
B48	15	Low	55315	3557.5	256QAM	6.40	PASS
B48	15	Mid	55990	3625	QPSK	5.66	PASS
B48	15	Mid	55990	3625	16QAM	6.60	PASS
B48	15	Mid	55990	3625	64QAM	6.50	PASS
B48	15	Mid	55990	3625	256QAM	6.42	PASS
B48	15	High	56665	3692.5	QPSK	5.64	PASS
B48	15	High	56665	3692.5	16QAM	6.32	PASS
B48	15	High	56665	3692.5	64QAM	6.57	PASS

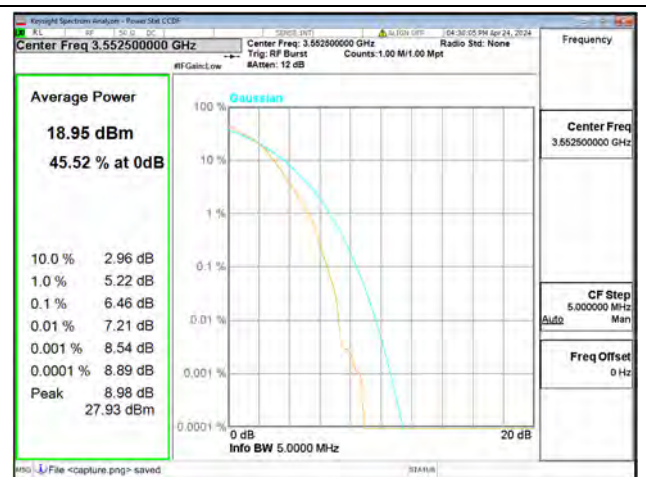


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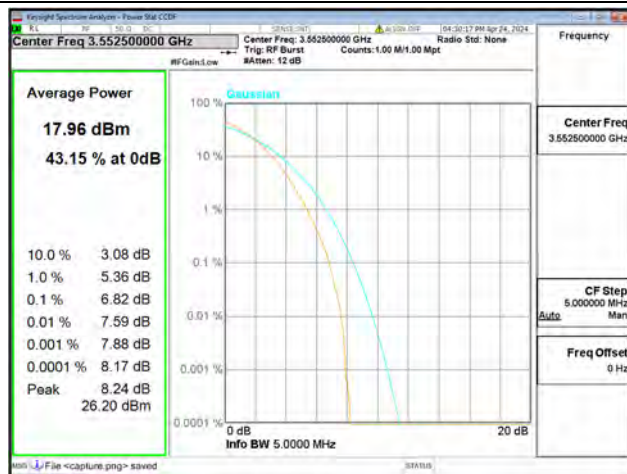
B48	15	High	56665	3692.5	256QAM	6.47	PASS
B48	20	Low	55340	3560	QPSK	5.75	PASS
B48	20	Low	55340	3560	16QAM	6.29	PASS
B48	20	Low	55340	3560	64QAM	6.55	PASS
B48	20	Low	55340	3560	256QAM	6.43	PASS
B48	20	Mid	55990	3625	QPSK	5.81	PASS
B48	20	Mid	55990	3625	16QAM	6.30	PASS
B48	20	Mid	55990	3625	64QAM	6.68	PASS
B48	20	Mid	55990	3625	256QAM	6.48	PASS
B48	20	High	56640	3690	QPSK	5.76	PASS
B48	20	High	56640	3690	16QAM	6.31	PASS
B48	20	High	56640	3690	64QAM	6.62	PASS
B48	20	High	56640	3690	256QAM	6.53	PASS



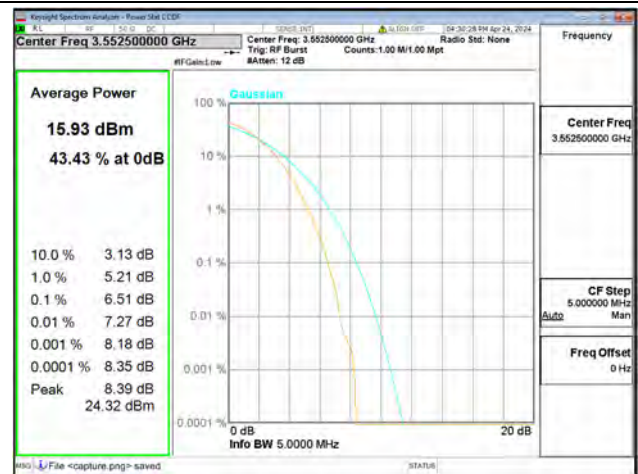
B48 / 5MHz / Low CH / QPSK



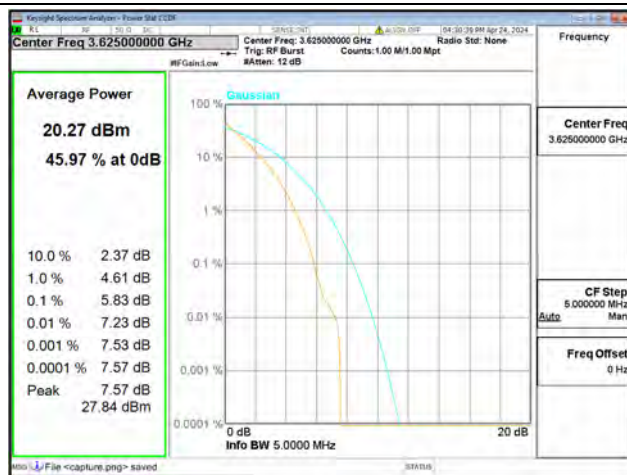
B48 / 5MHz / Low CH / 16QAM



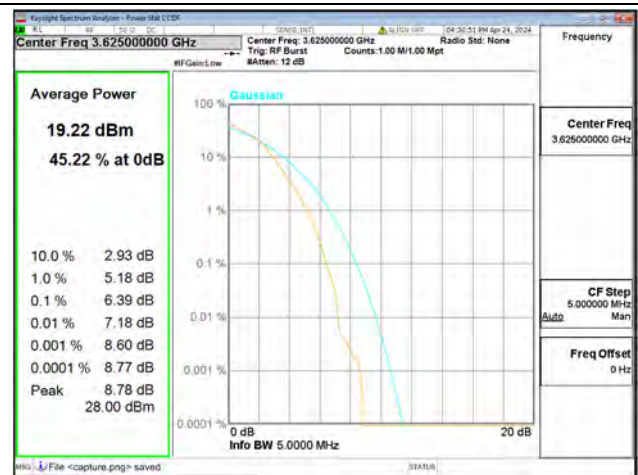
B48 / 5MHz / Low CH / 64QAM



B48 / 5MHz / Low CH / 256QAM



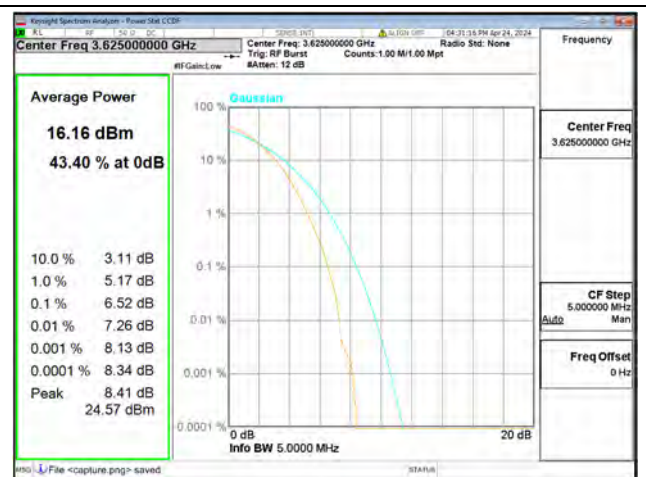
B48 / 5MHz / Mid CH / QPSK



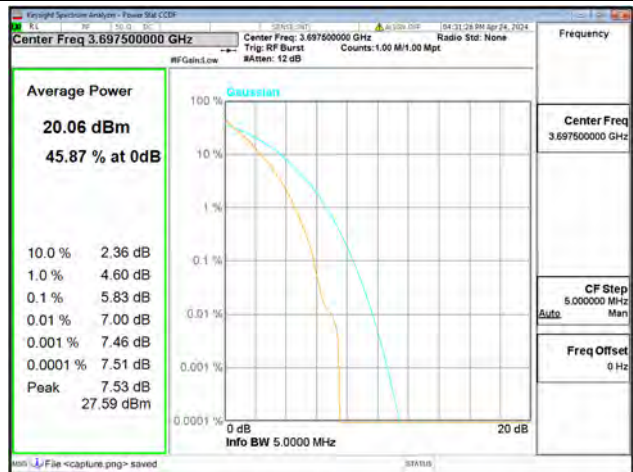
B48 / 5MHz / Mid CH / 16QAM



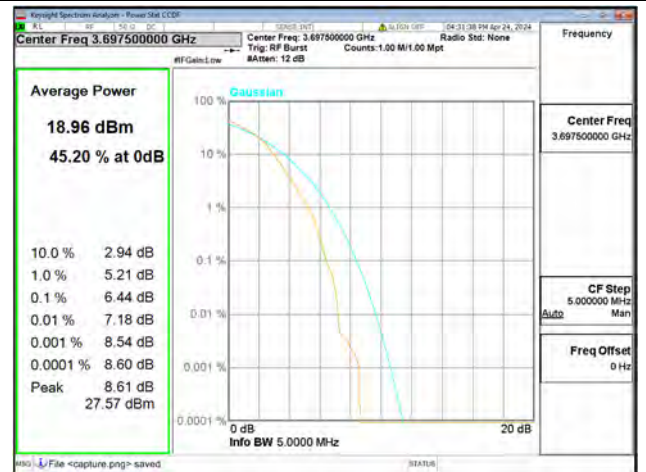
B48 / 5MHz / Mid CH / 64QAM



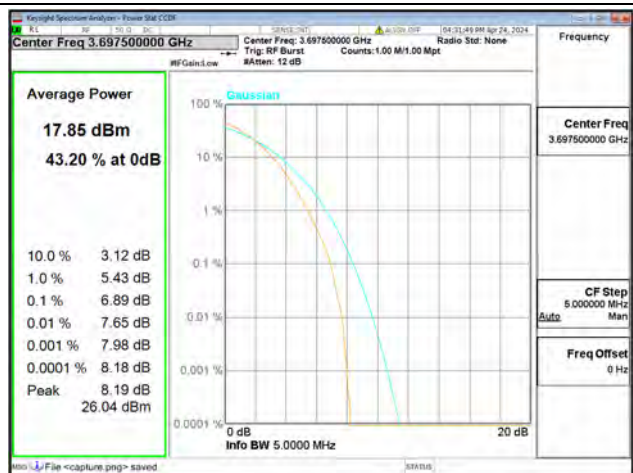
B48 / 5MHz / Mid CH / 256QAM



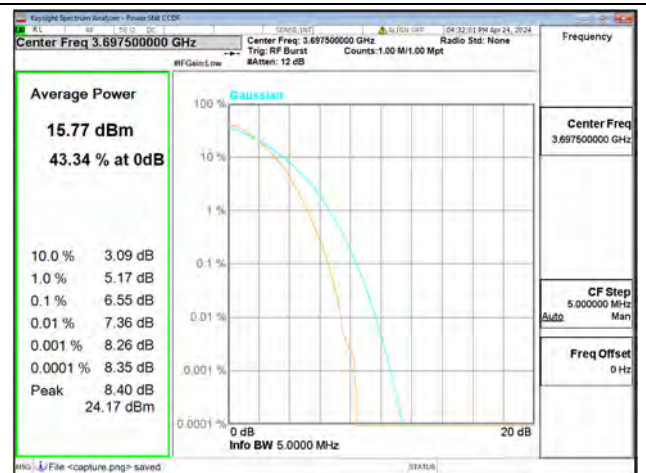
B48 / 5MHz / High CH / QPSK



B48 / 5MHz / High CH / 16QAM



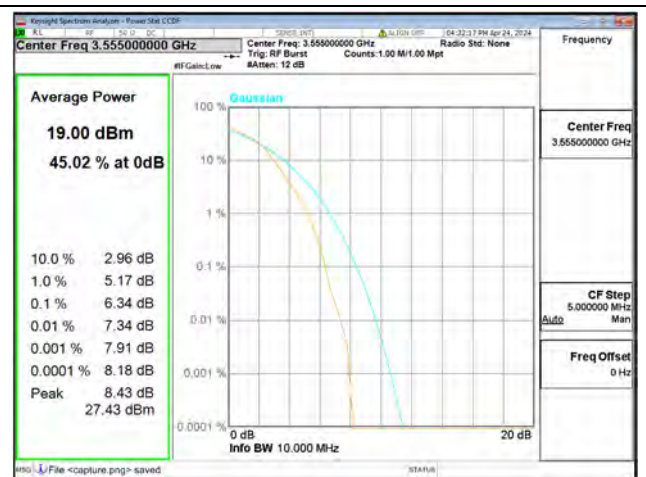
B48 / 5MHz / High CH / 64QAM



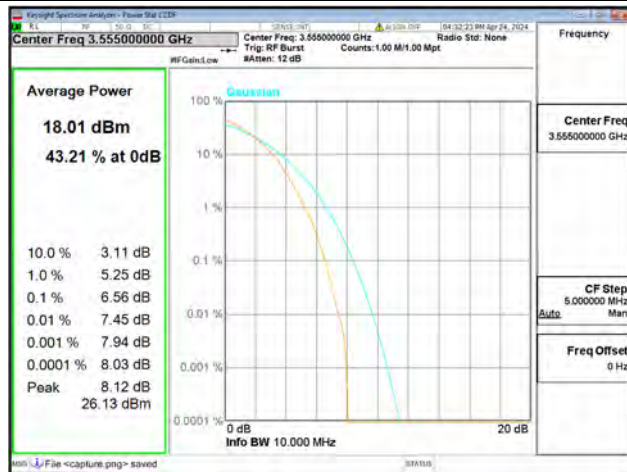
B48 / 5MHz / High CH / 256QAM



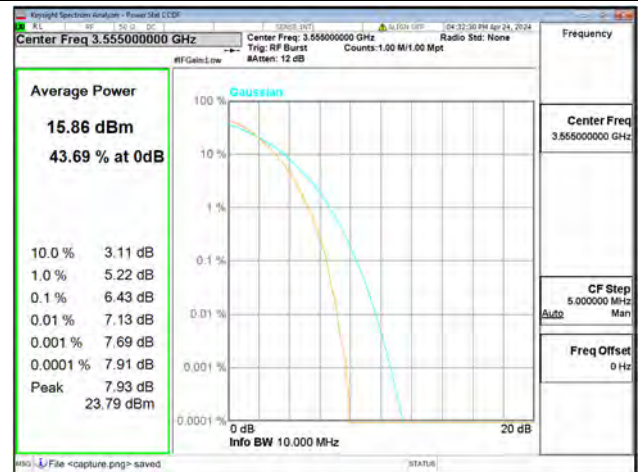
B48 / 10MHz / Low CH / QPSK



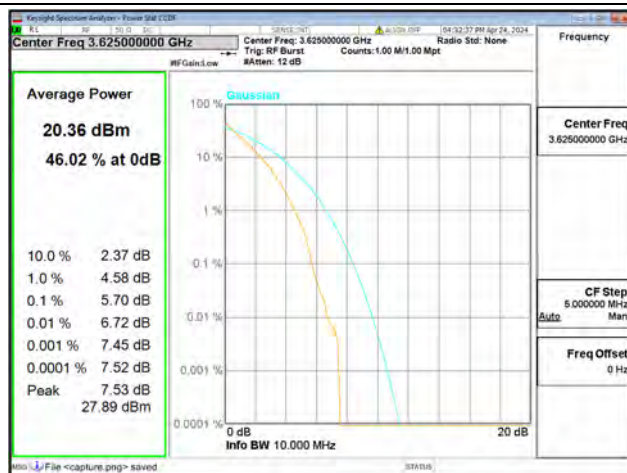
B48 / 10MHz / Low CH / 16QAM



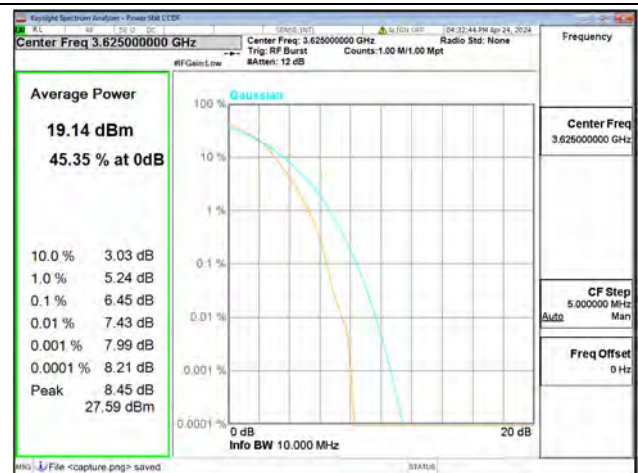
B48 / 10MHz / Low CH / 64QAM



B48 / 10MHz / Low CH / 256QAM



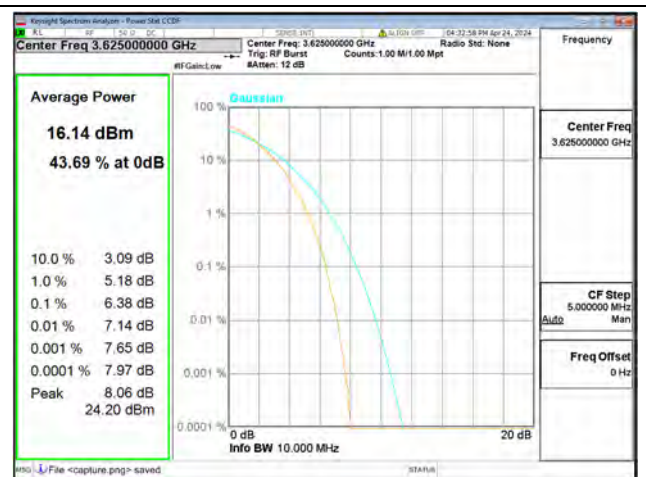
B48 / 10MHz / Mid CH / QPSK



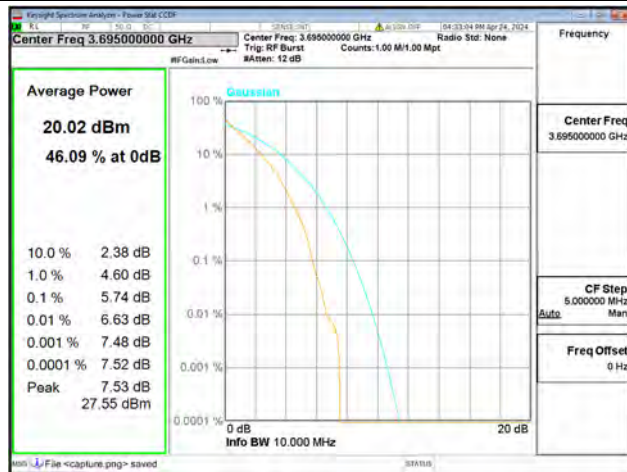
B48 / 10MHz / Mid CH / 16QAM



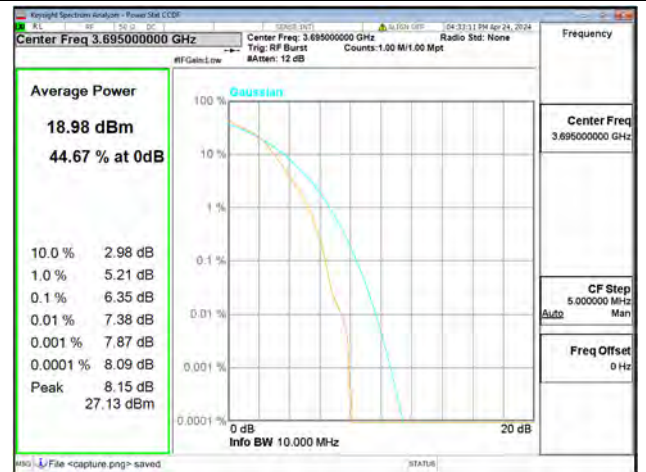
B48 / 10MHz / Mid CH / 64QAM



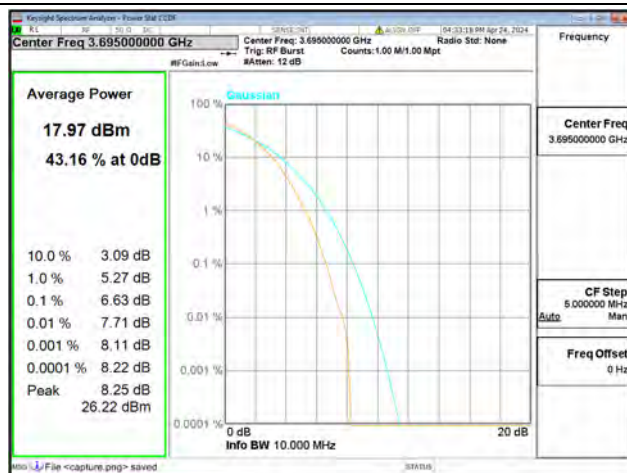
B48 / 10MHz / Mid CH / 256QAM



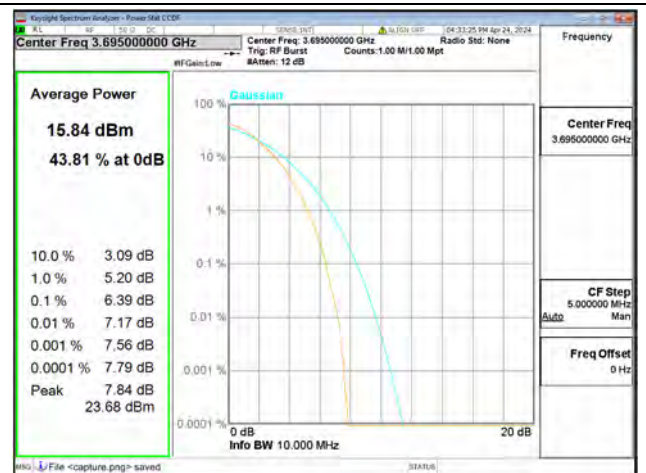
B48 / 10MHz / High CH / QPSK



B48 / 10MHz / High CH / 16QAM



B48 / 10MHz / High CH / 64QAM



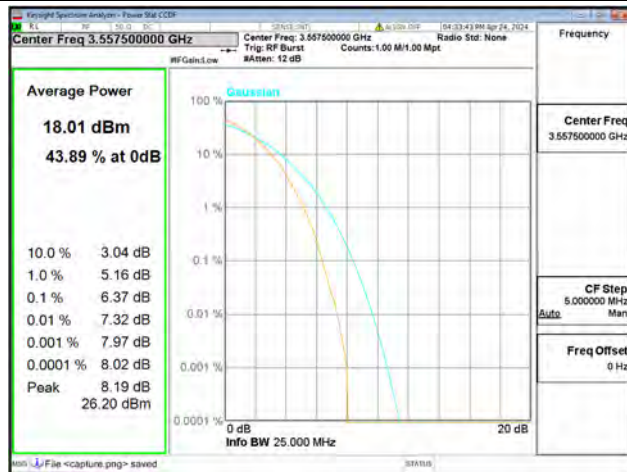
B48 / 10MHz / High CH / 256QAM



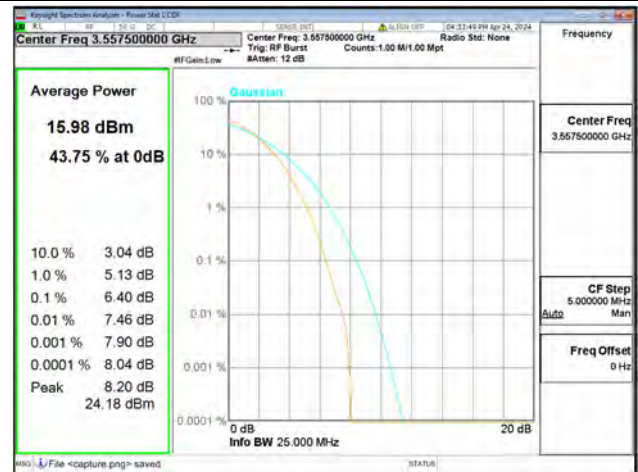
B48 / 15MHz / Low CH / QPSK



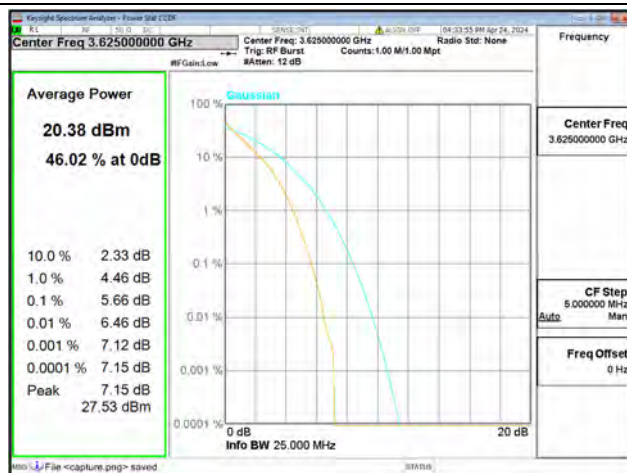
B48 / 15MHz / Low CH / 16QAM



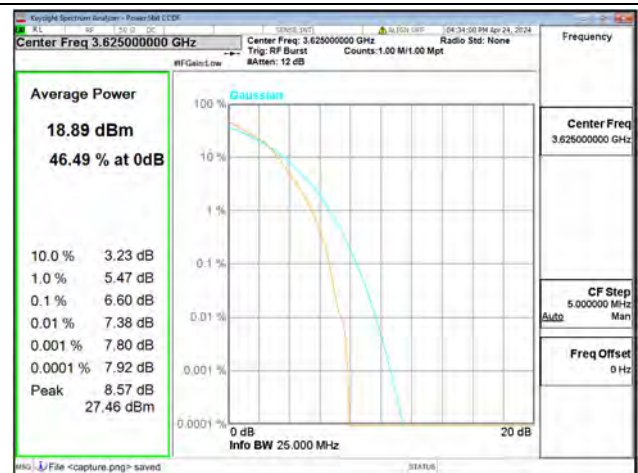
B48 / 15MHz / Low CH / 64QAM



B48 / 15MHz / Low CH / 256QAM



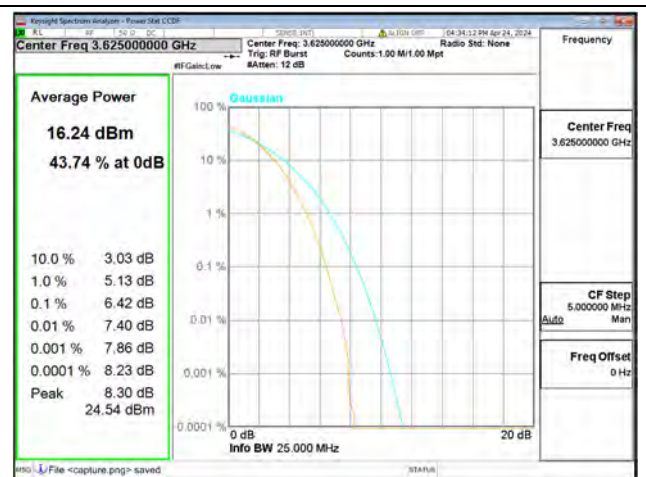
B48 / 15MHz / Mid CH / QPSK



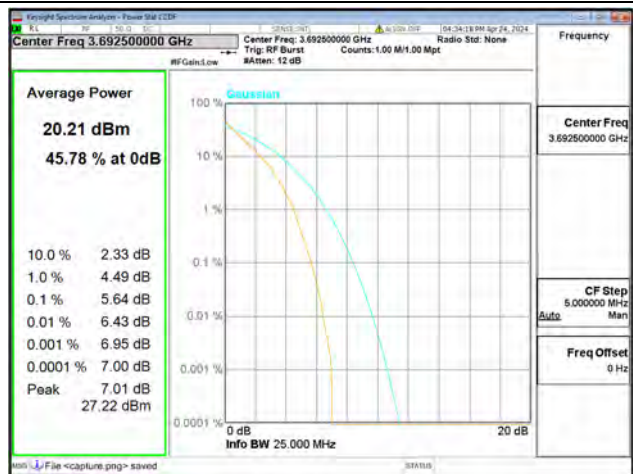
B48 / 15MHz / Mid CH / 16QAM



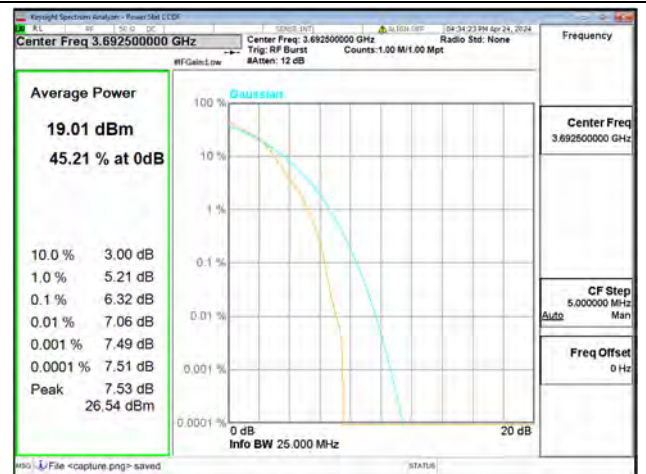
B48 / 15MHz / Mid CH / 64QAM



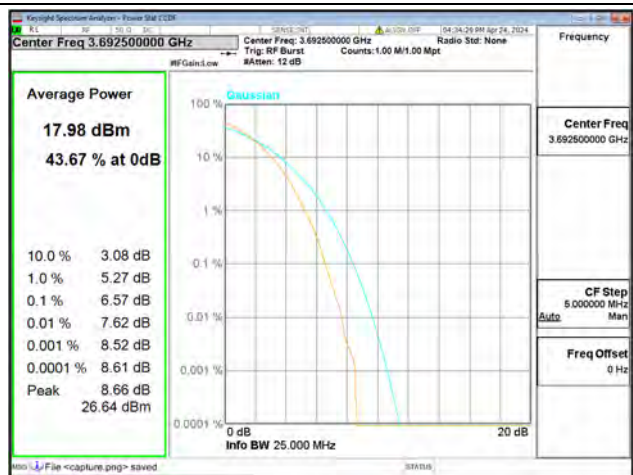
B48 / 15MHz / Mid CH / 256QAM



B48 / 15MHz / High CH / QPSK



B48 / 15MHz / High CH / 16QAM



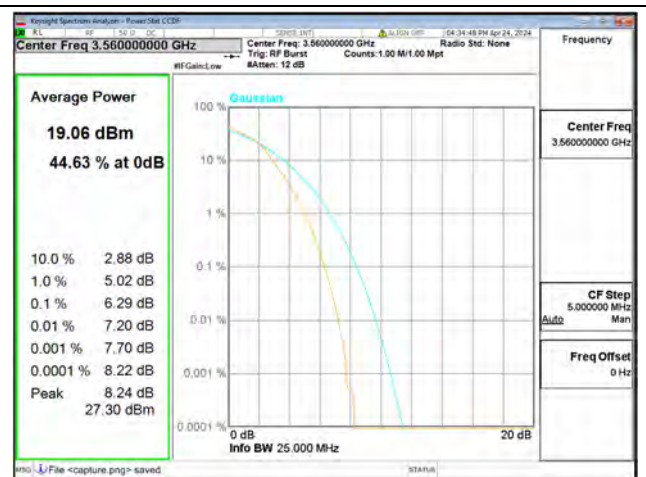
B48 / 15MHz / High CH / 64QAM



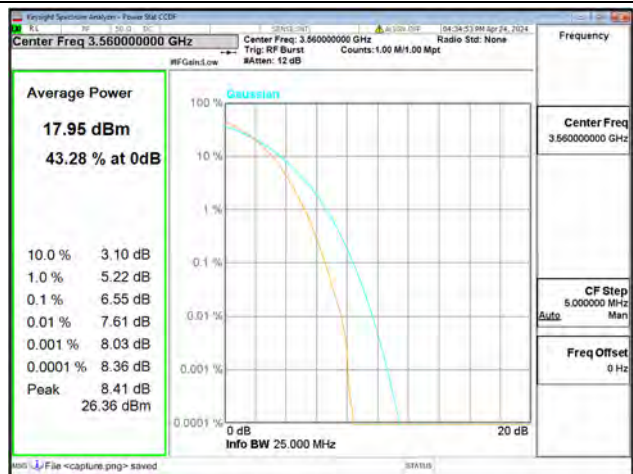
B48 / 15MHz / High CH / 256QAM



B48 / 20MHz / Low CH / QPSK



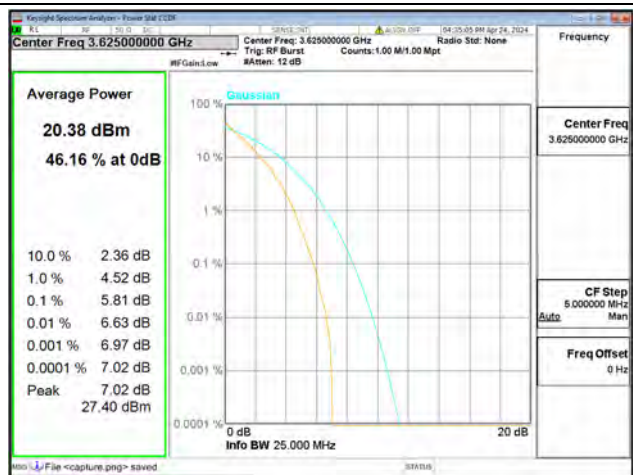
B48 / 20MHz / Low CH / 16QAM



B48 / 20MHz / Low CH / 64QAM



B48 / 20MHz / Low CH / 256QAM



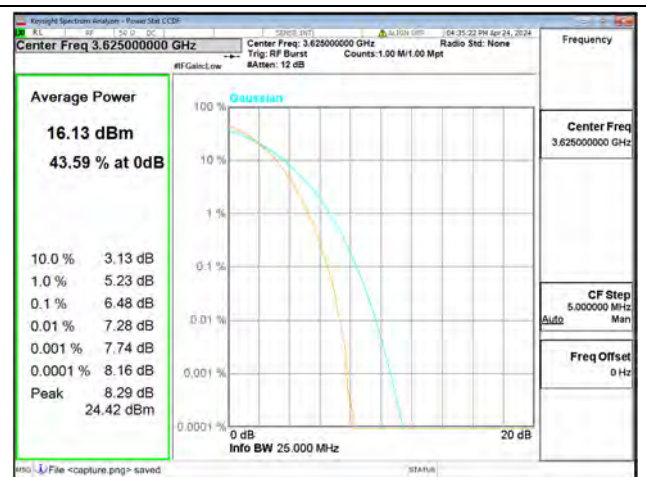
B48 / 20MHz / Mid CH / QPSK



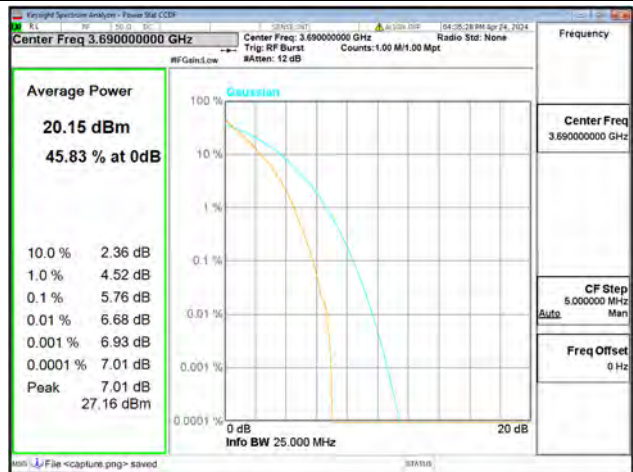
B48 / 20MHz / Mid CH / 16QAM



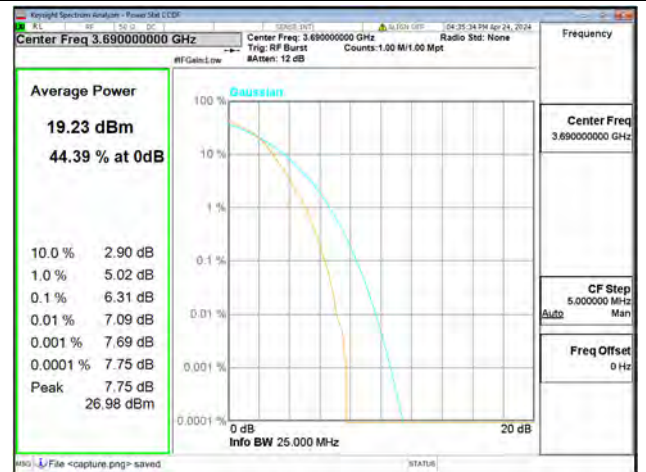
B48 / 20MHz / Mid CH / 64QAM



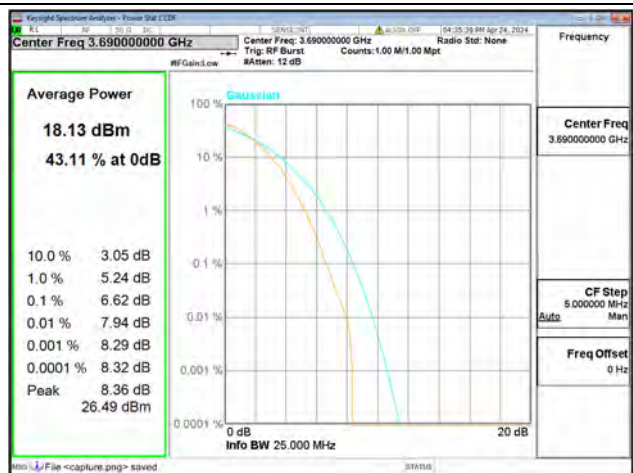
B48 / 20MHz / Mid CH / 256QAM



B48 / 20MHz / High CH / QPSK



B48 / 20MHz / High CH / 16QAM



B48 / 20MHz / High CH / 64QAM



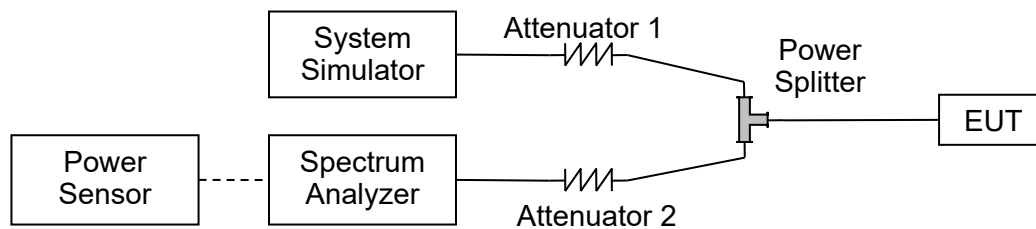
B48 / 20MHz / High CH / 256QAM

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



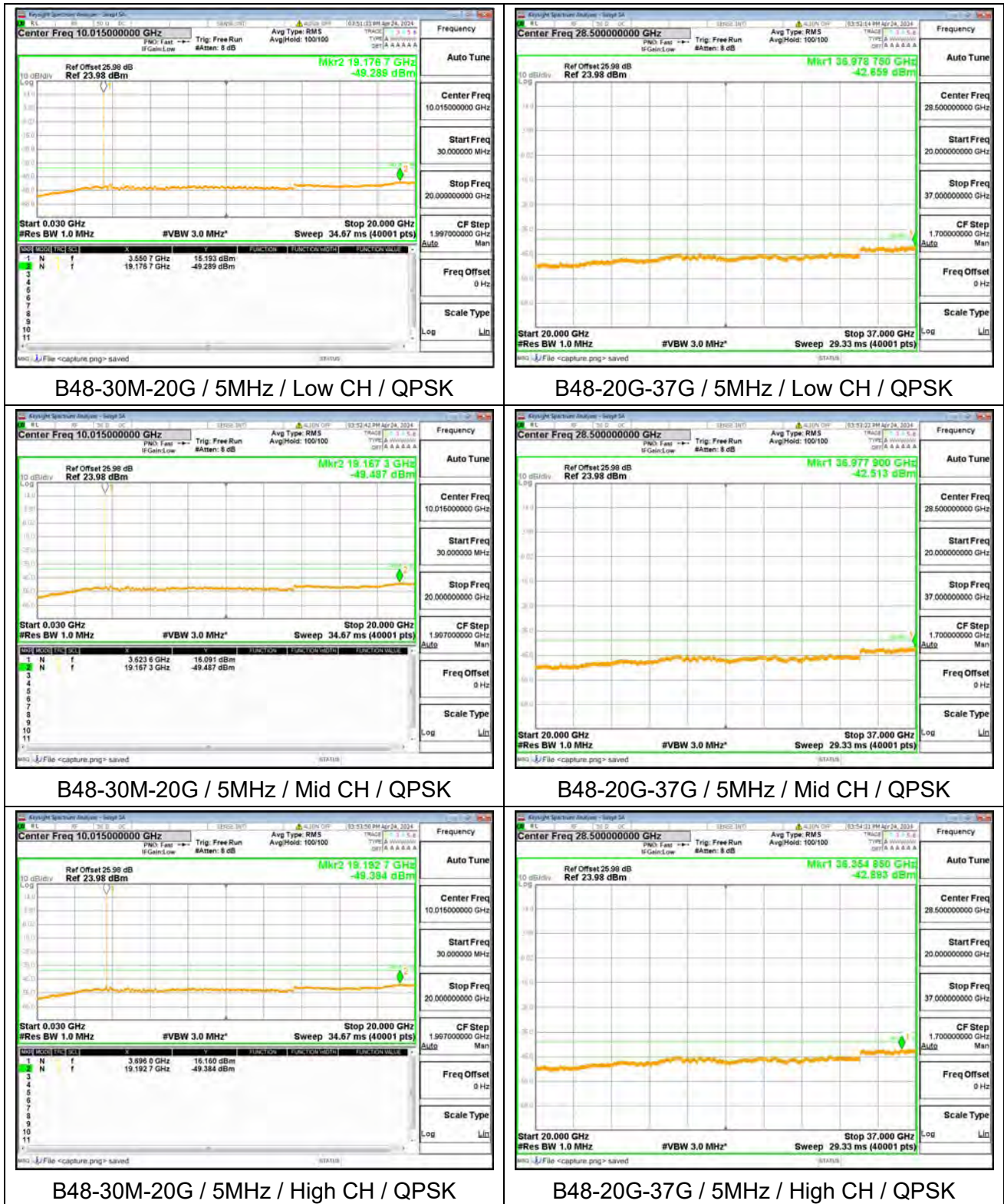
The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum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

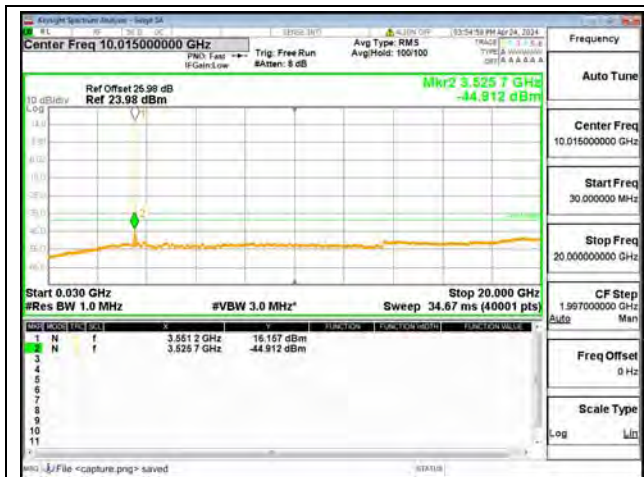
2.5.1. Test procedure

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



2.5.2. Test Result





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



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



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



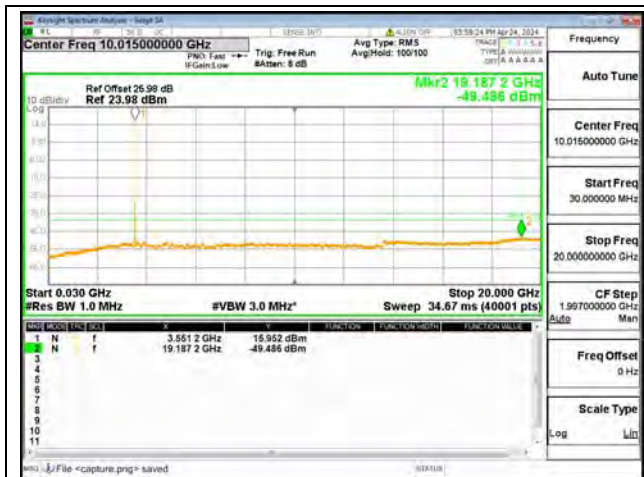
B48-20G-37G / 10MHz / Mid CH / QPSK



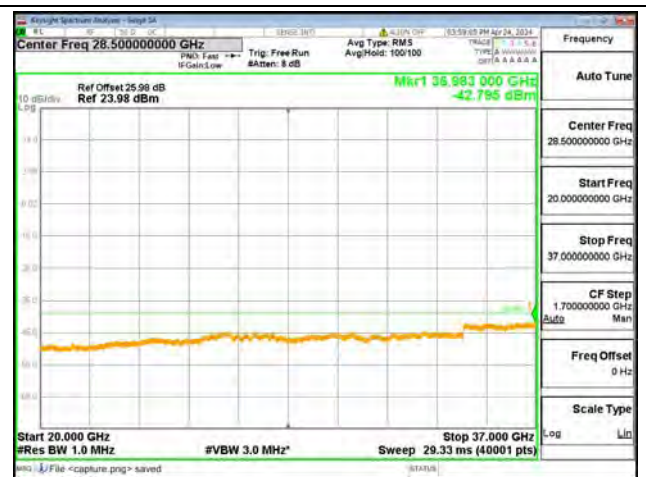
B48-30M-20G / 10MHz / High CH / QPSK



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



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



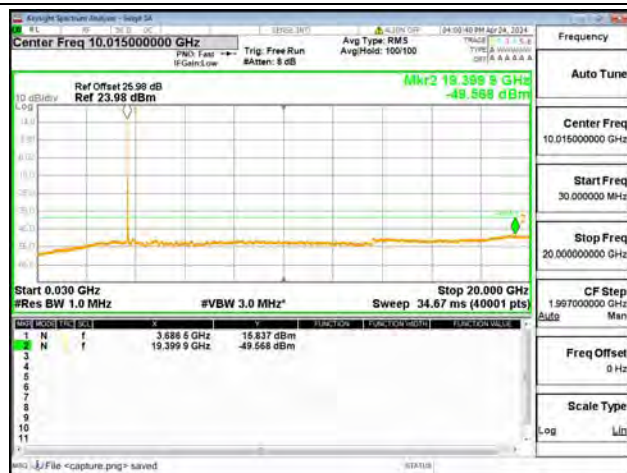
B48-20G-37G / 15MHz / Low CH / QPSK



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



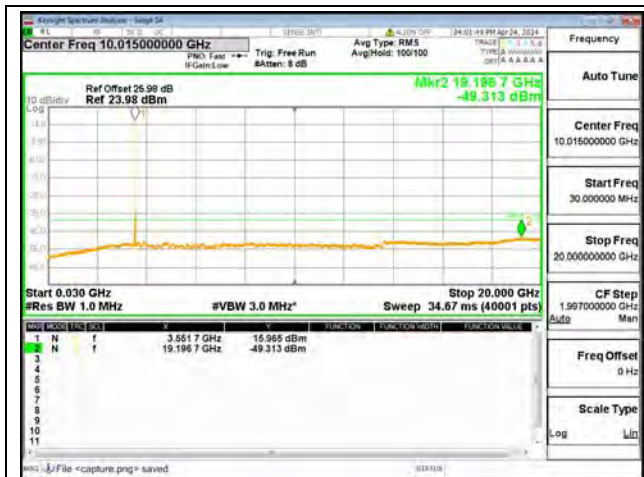
B48-20G-37G / 15MHz / Mid CH / QPSK



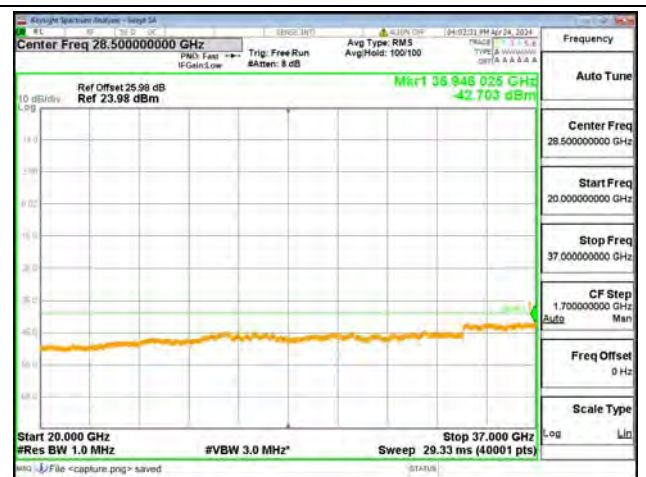
B48-30M-20G / 15MHz / High CH / QPSK



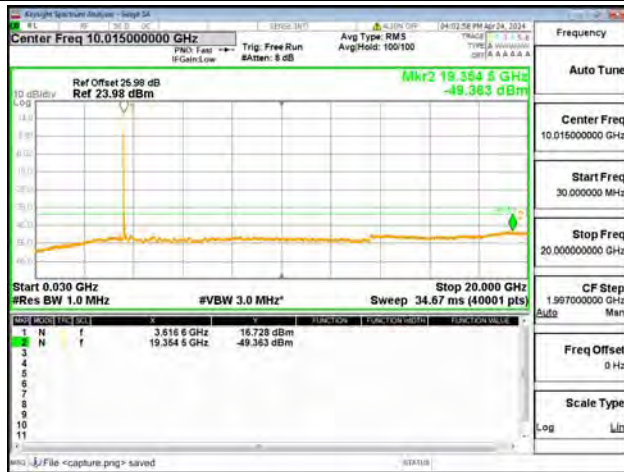
B48-20G-37G / 15MHz / High CH / QPSK



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



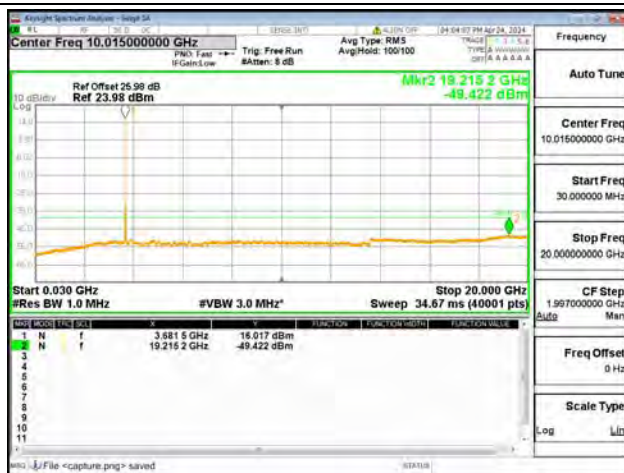
B48-20G-37G / 20MHz / Low CH / QPSK



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.

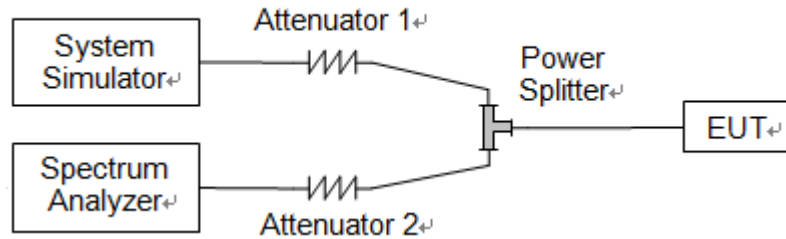
Part 96.41(e)(1)(ii)

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 -40 dBm/MHz.

2.6.2. Test Description



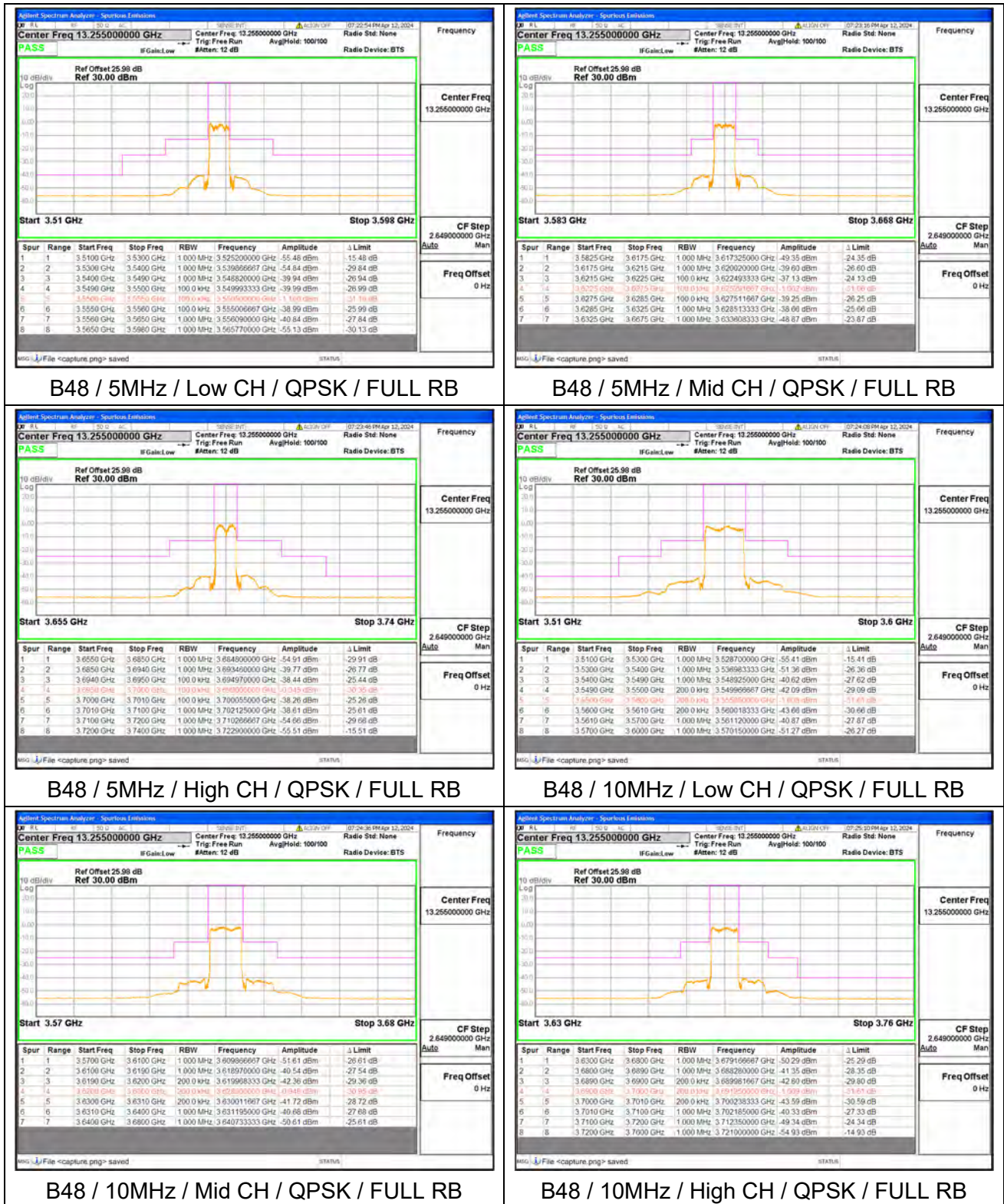
The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum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

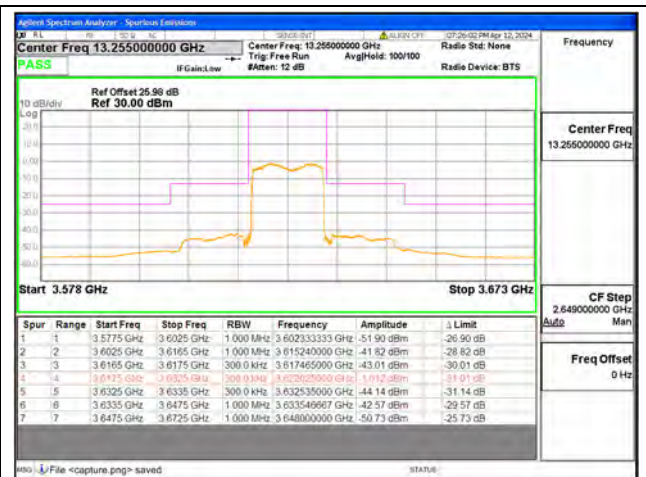


2.6.4. Test Result

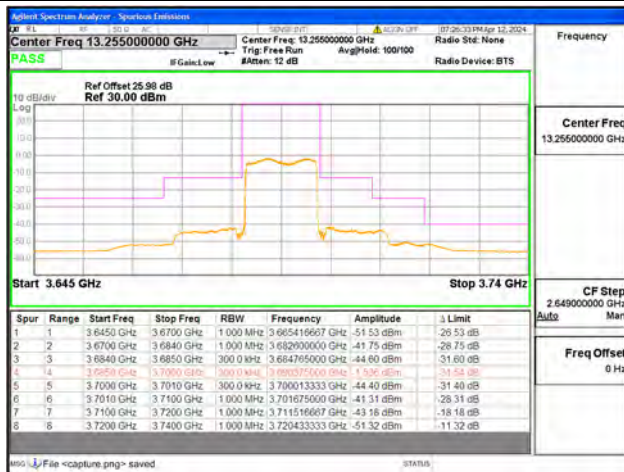




B48 / 15MHz / Low CH / QPSK / FULL RB



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



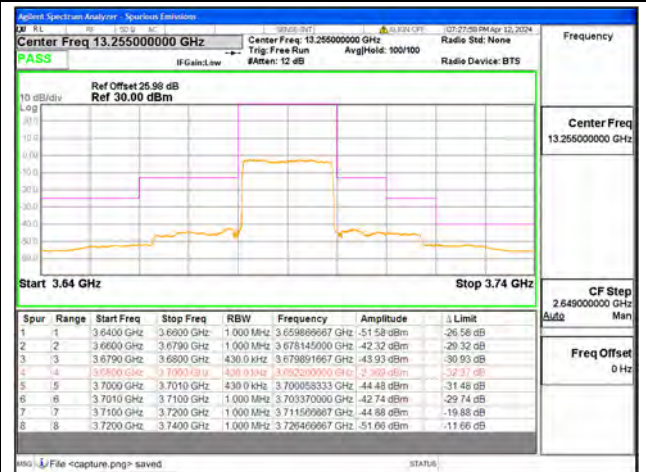
B48 / 15MHz / High CH / QPSK / FULL RB



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



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



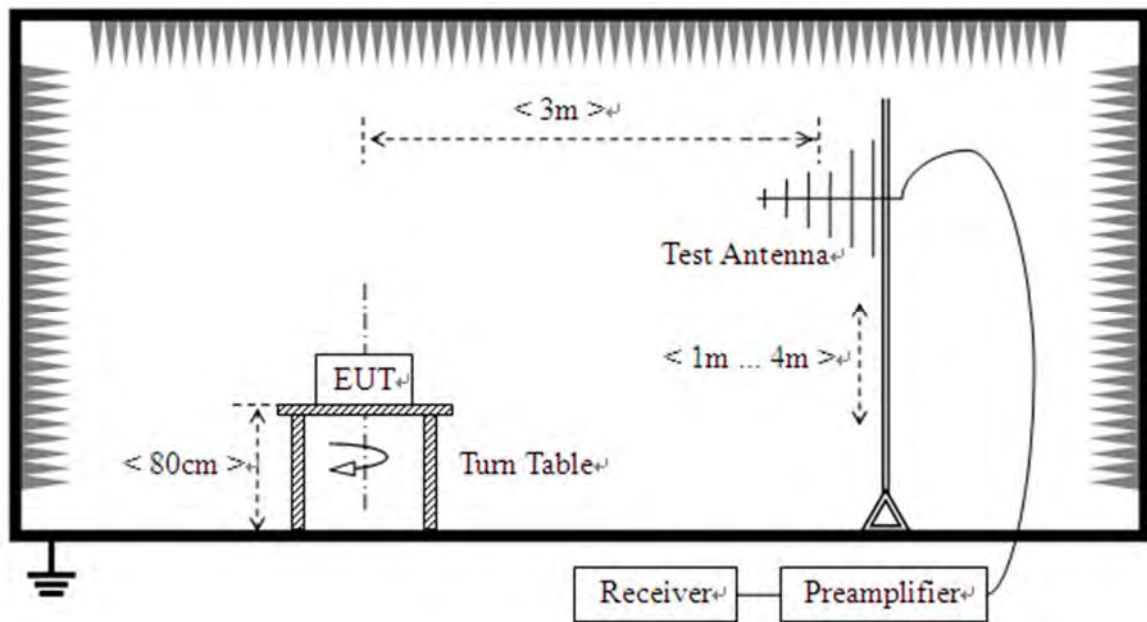
B48 / 20MHz / High CH / QPSK / FULL RB

2.7. Radiated Spurious Emissions

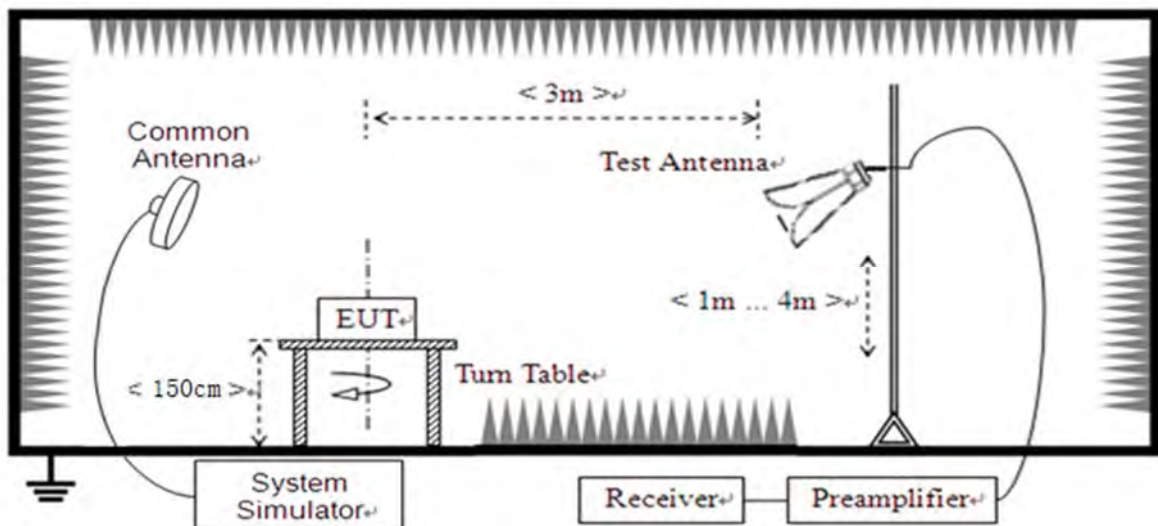
2.7.1. Requirement

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 to 1GHz)



(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:

$$A_{\text{SUBST}} = P_{\text{SUBST_TX}} - P_{\text{SUBST_RX}} - L_{\text{SUBST_CABLES}} + G_{\text{SUBST_TX_ANT}}$$

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

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

$P_{\text{SUBST_TX}}$ is signal generator level,

$P_{\text{SUBST_RX}}$ is receiver level,

$L_{\text{SUBST_CABLES}}$ is cable losses including TX cable,

$G_{\text{SUBST_TX_ANT}}$ 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.

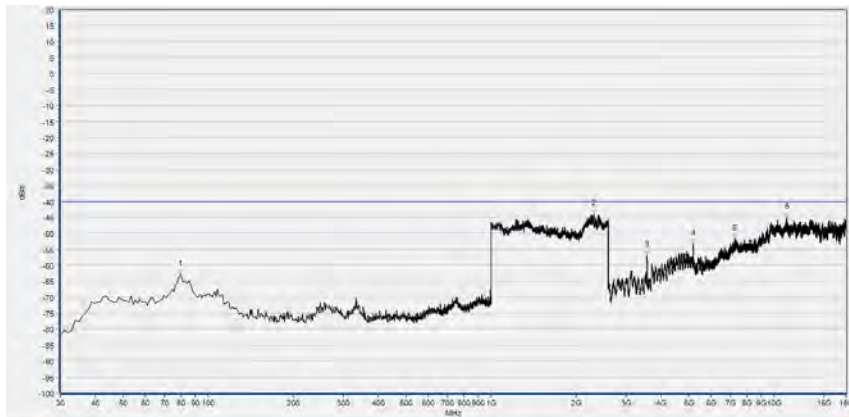
Note2: All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

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.

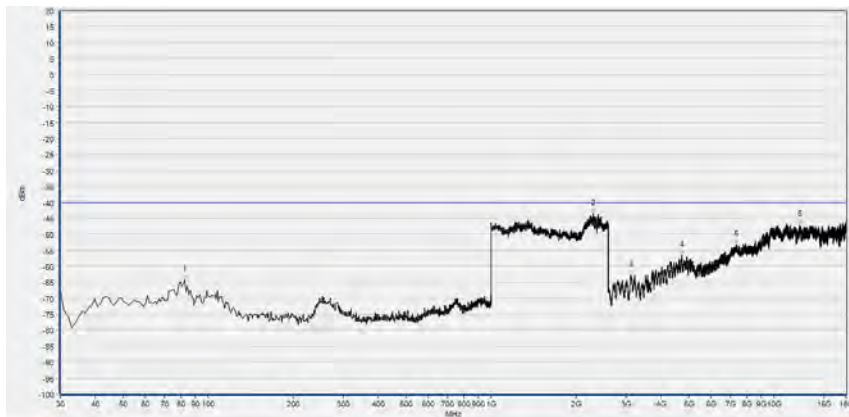
Note 4: N/A means the frequency is the basic frequency or the base station frequency, they are no need to verdict.

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

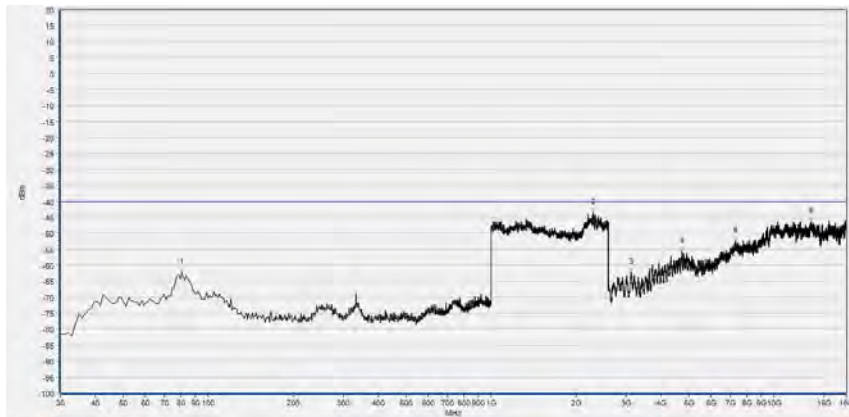


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	79.520	-62.83	-40.00	Horizontal	PASS
2	2306.907	-43.94	-40.00	Horizontal	PASS
3	3554.991	-56.97	-40.00	Horizontal	N/A
4	5175.395	-53.21	-40.00	Horizontal	PASS
5	7264.053	-51.74	-40.00	Horizontal	PASS
6	11120.984	-45.12	-40.00	Horizontal	PASS

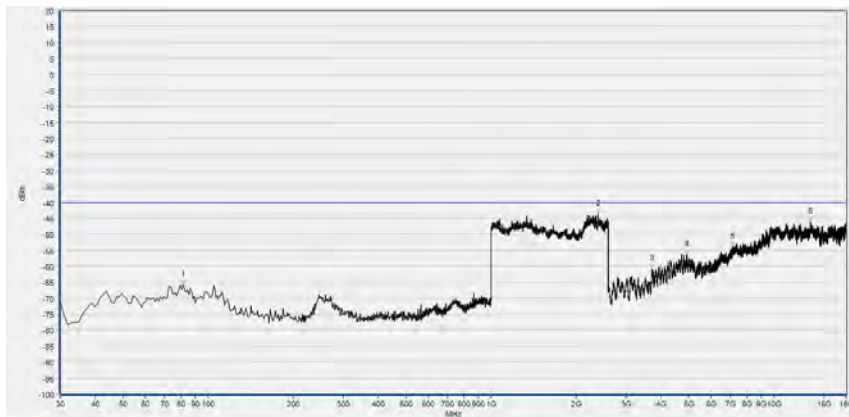


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	82.432	-64.19	-40.00	Vertical	PASS
2	2297.297	-43.56	-40.00	Vertical	PASS
3	3120.624	-62.88	-40.00	Vertical	PASS
4	4719.464	-56.61	-40.00	Vertical	PASS
5	7371.874	-53.37	-40.00	Vertical	PASS
6	12356.311	-47.02	-40.00	Vertical	PASS

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

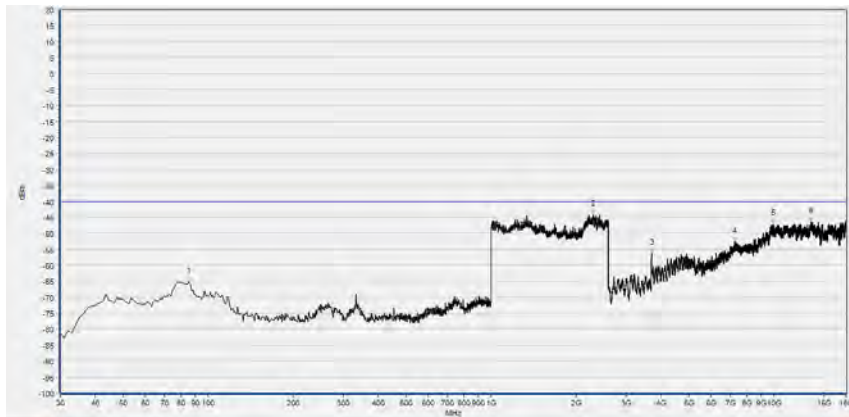


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	80.490	-62.19	-40.00	Horizontal	PASS
2	2298.899	-43.42	-40.00	Horizontal	PASS
3	3129.866	-62.25	-40.00	Horizontal	PASS
4	4716.383	-55.87	-40.00	Horizontal	PASS
5	7304.101	-52.36	-40.00	Horizontal	PASS
6	13573.155	-46.40	-40.00	Horizontal	PASS



No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	81.461	-65.86	-40.00	Vertical	PASS
2	2394.995	-43.67	-40.00	Vertical	PASS
3	3709.022	-60.81	-40.00	Vertical	PASS
4	4913.543	-56.34	-40.00	Vertical	PASS
5	7137.748	-53.87	-40.00	Vertical	PASS
6	13489.978	-46.09	-40.00	Vertical	PASS

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



No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	85.345	-65.12	-40.00	Horizontal	PASS
2	2303.704	-44.09	-40.00	Horizontal	PASS
3	3690.538	-56.11	-40.00	Horizontal	N/A
4	7257.892	-52.59	-40.00	Horizontal	PASS
5	9938.028	-46.96	-40.00	Horizontal	PASS
6	13551.590	-46.48	-40.00	Horizontal	PASS



No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	80.490	-64.80	-40.00	Vertical	PASS
2	2295.696	-43.78	-40.00	Vertical	PASS
3	3126.785	-62.35	-40.00	Vertical	PASS
4	4633.207	-56.89	-40.00	Vertical	PASS
5	7307.181	-52.68	-40.00	Vertical	PASS
6	13687.137	-45.99	-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 listed below. 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 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 operation power 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:

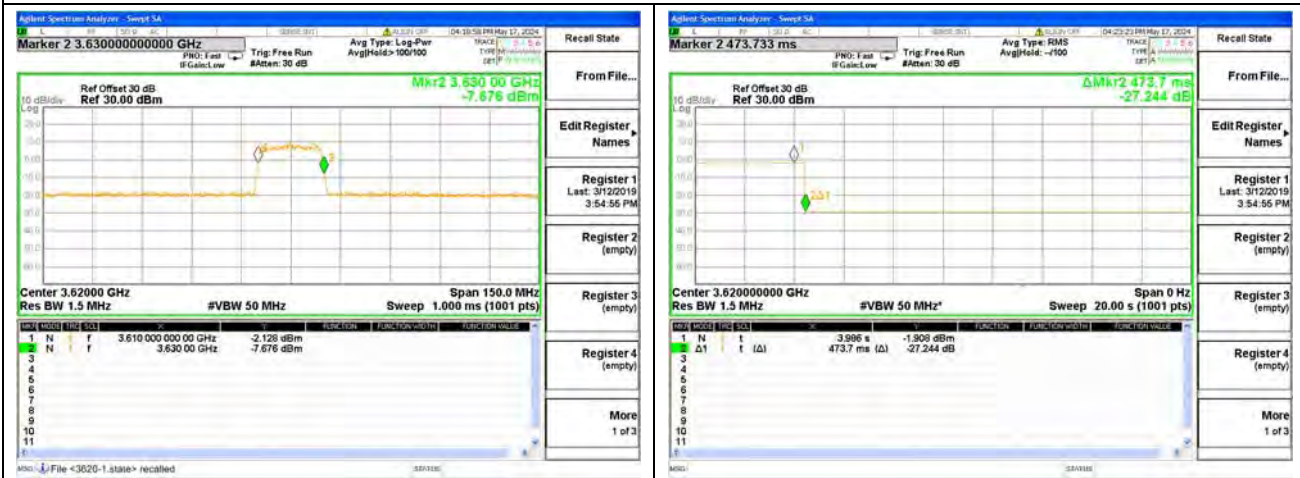
- a. Setup frequency with 3610MHz - 3630MHz
- b. Check EUT Tx frequency.
- c. Disable AP service and check EUT stop transmission within 10s.

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

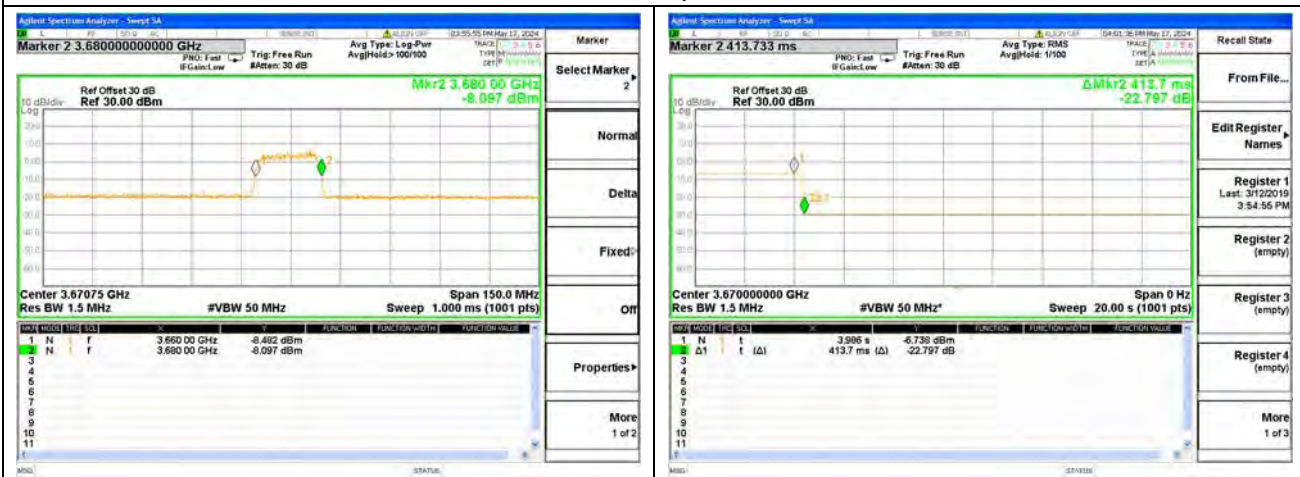


Note:

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	$\pm 5\%$
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 C63.10-2013 and CISPR Publication 22; the FCC designation number is CN1192, the test firm registration number is 226174.



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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	2023.09.19	2024.09.18
Temperature Chamber	S022177101 00089002	KMT-36LF 1A0	KOMEG	2023.09.19	2024.09.18

4.2 List of Software Used

Description	Manufacturer	Software Version
MOR-2023E Test System	MORLAB	V7.99
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	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	S10M100L380 2	LUCIX CORP.	2023.07.04	2024.07.03
Preamplifier (2GHz-18GHz)	61171/61172	S020180L320 3	LUCIX CORP.	2023.06.27	2024.06.26
Preamplifier (18GHz-40GHz)	DS77209	DCLNA0118-4 0C-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



Notes

1. The report shall have report stamp or our company stamp.
2. The report shall be invalid without all the signatures of the editor and approver.
3. The report shall not be changed.
4. Any objections must be raised to Morlab within 15 days since the date when the report is received. It will not be taken into consideration beyond this limit.
5. Conformity declaration:
 - ☒ Morlab issues a statement of conformity based on the corresponding standards (default)
 - ☐ Morlab issues a statement of conformity based on the applicant requirement
6. Use of uncertainty of measurement for decisions on conformity (decision rule):

No decision rule is specified by the testing standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty ("simple acceptance" decision rule).

_____ END OF REPORT _____