TEST REPORT

APPLICANT	:	Sonim Technologies, Inc.
PRODUCT NAME	:	Mobile Hotspot
MODEL NAME	:	H500B
BRAND NAME	:	Sonim
FCC ID	:	WYPH500B
STANDARD(S)	:	47 CFR Part 2 47 CFR Part 90, Subpart S&R
RECEIPT DATE	:	2023-11-01
TEST DATE	:	2023-11-14 to 2023-12-28
ISSUE DATE	:	2024-02-18

Edited by: Peng Mi (Rapporteur)

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Change History		
Version	Date	Reason for change
1.0	2024-02-18	First edition

1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	Sonim Technologies, Inc.
Applicant Address:	4445 Eastgate Mall, Suite 200, San Diego, CA 92121, USA
Manufacturer:	Sonim Technologies, Inc.
Manufacturer Address:	4445 Eastgate Mall, Suite 200, San Diego, CA 92121, USA

1.2. Equipment Under Test (EUT) Description

Product Name:	Mobile Hotspot	
Sample No.:	4#	
Hardware Version:	V1.0	
Software Version:	H50.0-01-5.4.0-11.08.00	
Modulation Type:	QPSK, 16QAM, 64QAM, 256QAM	
Operation Band:	Band 14 / 26	
Carrier Aggregation(UL):	CA_41C, CA_48C, CA_66B, CA_66C, CA_2A-4A, CA_2A-5A, CA_2A-7A, CA_2A-12A, CA_2A-13A, CA_2A-66A, CA_2A-71A, CA_4A-5A, CA_4A-7A, CA_4A-12A, CA_4A-13A, CA_4A-71A, CA_5A-7A, CA_5A-66A, CA_7A-12A, CA_12A-66A, CA_13A-66A, CA_66A-71A	
Frequency Range:	LTE Band 14	Tx: 788MHz–798MHz
		Rx: 758MHz–768MHz
	LTE Band 26	Tx: 814MHz–824MHz
		Rx: 859MHz–869MHz
Channel Bandwidth	LTE Band 14	5MHz, 10MHz
	LTE Band 26	1.4MHz, 3MHz, 5MHz, 10MHz
Antenna Type:	PIFA Antenna	
Antenna Gain:	LTE Band 14	ANT 4: -1.80dBi
	LTE Band 26	ANT 4: -1.14dBi

Accessory Information:	Battery	
	Brand Name:	sonim
	Model No.:	BAT-06000-01S
	Serial No.:	N/A
	Capacity:	6000mAh
	Rated Voltage:	3.85V
	Charge Limit:	4.4V
	Manufacturer:	Guangdong Fenghua New Energy Co.,Ltd.
	AC Adapter	
	Brand Name:	N/A
	Model No.:	1-CHUSQ302-097
	Serial No.:	N/A
	Rated Output:	5V⎓3A or 9V⎓2A or 12V⎓1.5A
	Rated Input:	100-240V～50/60Hz, 0.5A
	Manufacturer:	HUIZHOU PUAN ELEOTRONICS CO.,LTD

Note 1: 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 14	**Maximum E.R.P./E.I.R.P. (W)**				**Emission Designator (99%OBW)**			
BW(MHz)	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
10	0.084	0.068	0.054	0.025	8M97G7D	8M95W7D	8M98W7D	8M95W7D
5	0.083	0.069	0.053	0.025	4M53G7D	4M54W7D	4M53W7D	4M52W7D
LTE Band 26	**Maximum E.R.P./E.I.R.P. (W)**				**Emission Designator (99%OBW)**			
BW(MHz)	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
10	0.082	0.066	0.051	0.028	9M01G7D	8M99W7D	8M98W7D	8M99W7D
5	0.083	0.067	0.054	0.028	4M54G7D	4M51W7D	4M53W7D	4M52W7D
3	0.082	0.066	0.053	0.028	2M73G7D	2M71W7D	2M72W7D	2M72W7D
1.4	0.082	0.065	0.052	0.028	1M10G7D	1M11W7D	1M10W7D	1M11W7D

1.4. Test Standards and Results

The objective of the report is to perform testing according to Part 2 and Part 90 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 90	Miscellaneous Wireless Communications Services

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, 90.635(b)	Transmitter Conducted Output Power and ERP/EIRP	Nov. 14, 2023	Yu Xiaoming Gan Jing	PASS	No deviation
90.209	Occupied Bandwidth	Nov. 14, 2023	Gan Jing	PASS	No deviation
2.1055, 90.213	Frequency Stability	Nov. 14, 2023	Gan Jing	PASS	No deviation
2.1051, 90.691	Conducted Spurious Emissions	Nov. 14, 2023	Gan Jing	PASS	No deviation
2.1051, 90.691	Band Edge	Nov. 14, 2023	Gan Jing	PASS	No deviation
2.1053, 90.691	Radiated Spurious Emissions	Dec. 28, 2023	Gao Jianrou	PASS	No deviation

Note 1: The tests were performed according to the method of measurements prescribed in KDB971168 D01 v03 and ANSI/TIA-603-E-2016.

Note 2: 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 3: 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 4: 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 90S Requirements

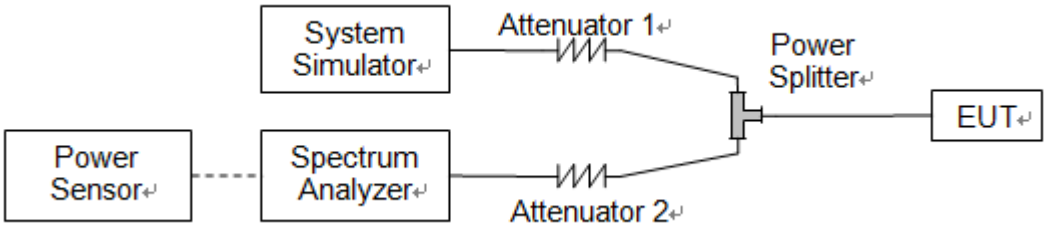
2.1. Transmitter Conducted Output Power and E.R.P./E.I.R.P.

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).

According to FCC section 90.635(b) for LTE Band 26, the maximum output power of the transmitter for mobile stations is 100 watts.

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

LTE Band 14						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				/	23330	/
Frequency (MHz)				/	793	/
10	QPSK	1	0	/	23.18	/
10	QPSK	1	25	/	23.10	/
10	QPSK	1	49	/	22.98	/
10	QPSK	25	0	/	22.12	/
10	QPSK	25	12	/	22.12	/
10	QPSK	25	25	/	22.04	/
10	QPSK	50	0	/	21.98	/
10	16QAM	1	0	/	22.30	/
10	16QAM	1	25	/	22.20	/
10	16QAM	1	49	/	22.11	/
10	16QAM	25	0	/	21.15	/
10	16QAM	25	12	/	21.13	/
10	16QAM	25	25	/	21.00	/
10	16QAM	50	0	/	21.03	/
10	64QAM	1	0	/	21.26	/
10	64QAM	1	25	/	21.21	/
10	64QAM	1	49	/	21.06	/
10	64QAM	25	0	/	20.24	/
10	64QAM	25	12	/	20.06	/
10	64QAM	25	25	/	20.08	/
10	64QAM	50	0	/	19.89	/
10	256QAM	1	0	/	18.01	/
10	256QAM	1	25	/	17.84	/
10	256QAM	1	49	/	17.69	/
10	256QAM	25	0	/	16.93	/
10	256QAM	25	12	/	16.82	/
10	256QAM	25	25	/	16.78	/
10	256QAM	50	0	/	16.89	/

LTE Band 14						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				23305	23330	23355
Frequency (MHz)				790.5	793	795.5
5	QPSK	1	0	23.05	23.12	23.10
5	QPSK	1	12	22.99	23.10	23.05
5	QPSK	1	24	22.89	22.91	22.86
5	QPSK	12	0	22.00	22.22	22.11
5	QPSK	12	7	21.90	21.99	22.00
5	QPSK	12	13	21.94	22.14	21.98
5	QPSK	25	0	21.95	22.04	22.04
5	16QAM	1	0	22.13	22.26	22.36
5	16QAM	1	12	22.18	22.15	22.08
5	16QAM	1	24	22.13	22.27	22.07
5	16QAM	12	0	21.06	21.06	21.18
5	16QAM	12	7	20.90	21.15	20.96
5	16QAM	12	13	21.03	21.00	20.91
5	16QAM	25	0	20.93	21.06	21.02
5	64QAM	1	0	21.06	21.07	21.17
5	64QAM	1	12	21.07	21.20	20.92
5	64QAM	1	24	21.01	20.97	20.84
5	64QAM	12	0	20.13	20.14	20.01
5	64QAM	12	7	19.87	20.08	20.11
5	64QAM	12	13	19.92	19.92	20.04
5	64QAM	25	0	19.96	19.88	19.84
5	256QAM	1	0	17.87	17.98	17.60
5	256QAM	1	12	17.72	17.77	17.82
5	256QAM	1	24	17.85	17.74	17.68
5	256QAM	12	0	16.56	16.91	16.68
5	256QAM	12	7	16.59	16.73	16.82
5	256QAM	12	13	16.73	16.80	16.61
5	256QAM	25	0	16.55	16.85	16.64

LTE Band 26						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				/	26740	/
Frequency (MHz)				/	819.0	/
10	QPSK	1	0	/	22.21	/
10	QPSK	1	25	/	22.45	/
10	QPSK	1	49	/	22.36	/
10	QPSK	25	0	/	21.71	/
10	QPSK	25	12	/	21.76	/
10	QPSK	25	25	/	21.72	/
10	QPSK	50	0	/	21.76	/
10	16QAM	1	0	/	21.51	/
10	16QAM	1	25	/	21.42	/
10	16QAM	1	49	/	21.36	/
10	16QAM	25	0	/	20.72	/
10	16QAM	25	12	/	20.78	/
10	16QAM	25	25	/	20.69	/
10	16QAM	50	0	/	20.80	/
10	64QAM	1	0	/	20.37	/
10	64QAM	1	25	/	20.37	/
10	64QAM	1	49	/	20.29	/
10	64QAM	25	0	/	19.67	/
10	64QAM	25	12	/	19.80	/
10	64QAM	25	25	/	19.75	/
10	64QAM	50	0	/	19.76	/
10	256QAM	1	0	/	17.58	/
10	256QAM	1	25	/	17.69	/
10	256QAM	1	49	/	17.58	/
10	256QAM	25	0	/	17.74	/
10	256QAM	25	12	/	17.75	/
10	256QAM	25	25	/	17.69	/
10	256QAM	50	0	/	17.76	/

LTE Band 26						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				26715	26740	26765
Frequency (MHz)				816.5	819.0	821.5
5	QPSK	1	0	22.20	22.26	22.46
5	QPSK	1	12	22.47	22.46	22.44
5	QPSK	1	24	22.28	22.23	22.24
5	QPSK	12	0	21.67	21.69	21.75
5	QPSK	12	7	21.73	21.77	21.79
5	QPSK	12	13	21.73	21.71	21.68
5	QPSK	25	0	21.76	21.76	21.72
5	16QAM	1	0	21.30	21.58	21.50
5	16QAM	1	12	21.27	21.42	21.39
5	16QAM	1	24	21.27	21.43	21.32
5	16QAM	12	0	20.58	20.65	20.65
5	16QAM	12	7	20.74	20.74	20.73
5	16QAM	12	13	20.70	20.72	20.69
5	16QAM	25	0	20.74	20.73	20.70
5	64QAM	1	0	20.27	20.40	20.40
5	64QAM	1	12	20.60	20.23	20.38
5	64QAM	1	24	20.27	20.30	20.30
5	64QAM	12	0	19.65	19.62	19.76
5	64QAM	12	7	19.80	19.78	19.68
5	64QAM	12	13	19.76	19.75	19.66
5	64QAM	25	0	19.72	19.71	19.73
5	256QAM	1	0	17.52	17.57	17.51
5	256QAM	1	12	17.72	17.73	17.80
5	256QAM	1	24	17.51	17.63	17.49
5	256QAM	12	0	17.65	17.67	17.70
5	256QAM	12	7	17.79	17.77	17.75
5	256QAM	12	13	17.74	17.68	17.71
5	256QAM	25	0	17.72	17.73	17.69

LTE Band 26						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				26705	26740	26775
Frequency (MHz)				815.5	819.0	822.5
3	QPSK	1	0	22.36	22.34	22.36
3	QPSK	1	8	22.45	22.45	22.42
3	QPSK	1	14	22.28	22.33	22.25
3	QPSK	8	0	21.76	21.61	21.51
3	QPSK	8	4	21.74	21.78	21.76
3	QPSK	8	7	21.71	21.71	21.71
3	QPSK	15	0	21.71	21.73	21.73
3	16QAM	1	0	21.44	21.37	21.34
3	16QAM	1	8	21.48	21.47	21.48
3	16QAM	1	14	21.35	21.20	21.30
3	16QAM	8	0	20.76	20.61	20.65
3	16QAM	8	4	20.74	20.70	20.71
3	16QAM	8	7	20.71	20.76	20.61
3	16QAM	15	0	20.75	20.74	20.71
3	64QAM	1	0	20.33	20.26	20.40
3	64QAM	1	8	20.27	20.57	20.32
3	64QAM	1	14	20.29	20.38	20.36
3	64QAM	8	0	19.71	19.50	19.65
3	64QAM	8	4	19.70	19.79	19.66
3	64QAM	8	7	19.69	19.74	19.75
3	64QAM	15	0	19.75	19.73	19.64
3	256QAM	1	0	17.49	17.53	17.58
3	256QAM	1	8	17.72	17.72	17.74
3	256QAM	1	14	17.57	17.60	17.61
3	256QAM	8	0	17.73	17.65	17.57
3	256QAM	8	4	17.79	17.70	17.71
3	256QAM	8	7	17.71	17.72	17.70
3	256QAM	15	0	17.75	17.70	17.69

LTE Band 26						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				26697	26740	26783
Frequency (MHz)				814.7	819.0	823.3
1.4	QPSK	1	0	22.37	22.37	22.25
1.4	QPSK	1	3	22.38	22.39	22.34
1.4	QPSK	1	5	22.33	22.36	22.30
1.4	QPSK	3	0	22.39	22.33	22.26
1.4	QPSK	3	1	22.41	22.34	22.35
1.4	QPSK	3	3	22.42	22.34	22.34
1.4	QPSK	6	0	21.69	21.70	21.66
1.4	16QAM	1	0	21.36	21.32	21.24
1.4	16QAM	1	3	21.39	21.41	21.37
1.4	16QAM	1	5	21.36	21.32	21.38
1.4	16QAM	3	0	21.24	21.34	21.22
1.4	16QAM	3	1	21.30	21.26	21.30
1.4	16QAM	3	3	21.35	21.34	21.30
1.4	16QAM	6	0	20.71	20.69	20.62
1.4	64QAM	1	0	20.32	20.25	20.25
1.4	64QAM	1	3	20.43	20.34	20.34
1.4	64QAM	1	5	20.42	20.41	20.32
1.4	64QAM	3	0	20.24	20.23	20.29
1.4	64QAM	3	1	20.30	20.37	20.27
1.4	64QAM	3	3	20.29	20.36	20.31
1.4	64QAM	6	0	19.68	19.67	19.56
1.4	256QAM	1	0	17.59	17.55	17.51
1.4	256QAM	1	3	17.64	17.56	17.72
1.4	256QAM	1	5	17.58	17.62	17.54
1.4	256QAM	3	0	17.70	17.73	17.66
1.4	256QAM	3	1	17.67	17.64	17.64
1.4	256QAM	3	3	17.64	17.69	17.69
1.4	256QAM	6	0	17.67	17.66	17.55

Effective Radiated Power and Effective Isotropic Radiated Power

LTE Band 14				Measured E.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				/		23330		/	
Frequency (MHz)				/		793		/	
				/	/	dBm	W	/	/
10	QPSK	1	0	/	/	19.23	0.084	/	/
10	QPSK	1	25	/	/	19.15	0.082	/	/
10	QPSK	1	49	/	/	19.03	0.080	/	/
10	QPSK	25	0	/	/	18.17	0.066	/	/
10	QPSK	25	12	/	/	18.17	0.066	/	/
10	QPSK	25	25	/	/	18.09	0.064	/	/
10	QPSK	50	0	/	/	18.03	0.064	/	/
10	16QAM	1	0	/	/	18.35	0.068	/	/
10	16QAM	1	25	/	/	18.25	0.067	/	/
10	16QAM	1	49	/	/	18.16	0.065	/	/
10	16QAM	25	0	/	/	17.20	0.052	/	/
10	16QAM	25	12	/	/	17.18	0.052	/	/
10	16QAM	25	25	/	/	17.05	0.051	/	/
10	16QAM	50	0	/	/	17.08	0.051	/	/
10	64QAM	1	0	/	/	17.31	0.054	/	/
10	64QAM	1	25	/	/	17.26	0.053	/	/
10	64QAM	1	49	/	/	17.11	0.051	/	/
10	64QAM	25	0	/	/	16.29	0.043	/	/
10	64QAM	25	12	/	/	16.11	0.041	/	/
10	64QAM	25	25	/	/	16.13	0.041	/	/
10	64QAM	50	0	/	/	15.94	0.039	/	/
10	256QAM	1	0	/	/	14.06	0.025	/	/
10	256QAM	1	25	/	/	13.89	0.024	/	/
10	256QAM	1	49	/	/	13.74	0.024	/	/
10	256QAM	25	0	/	/	12.98	0.020	/	/
10	256QAM	25	12	/	/	12.87	0.019	/	/
10	256QAM	25	25	/	/	12.83	0.019	/	/
10	256QAM	50	0	/	/	12.94	0.020	/	/

LTE Band 14				Measured E.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				23305		23330		23355	
Frequency (MHz)				790.5		793		795.5	
				dBm	W	dBm	W	dBm	W
5	QPSK	1	0	19.10	0.081	19.17	0.083	19.15	0.082
5	QPSK	1	12	19.04	0.080	19.15	0.082	19.10	0.081
5	QPSK	1	24	18.94	0.078	18.96	0.079	18.91	0.078
5	QPSK	12	0	18.05	0.064	18.27	0.067	18.16	0.065
5	QPSK	12	7	17.95	0.062	18.04	0.064	18.05	0.064
5	QPSK	12	13	17.99	0.063	18.19	0.066	18.03	0.064
5	QPSK	25	0	18.00	0.063	18.09	0.064	18.09	0.064
5	16QAM	1	0	18.18	0.066	18.31	0.068	18.41	0.069
5	16QAM	1	12	18.23	0.067	18.20	0.066	18.13	0.065
5	16QAM	1	24	18.18	0.066	18.32	0.068	18.12	0.065
5	16QAM	12	0	17.11	0.051	17.11	0.051	17.23	0.053
5	16QAM	12	7	16.95	0.050	17.20	0.052	17.01	0.050
5	16QAM	12	13	17.08	0.051	17.05	0.051	16.96	0.050
5	16QAM	25	0	16.98	0.050	17.11	0.051	17.07	0.051
5	64QAM	1	0	17.11	0.051	17.12	0.052	17.22	0.053
5	64QAM	1	12	17.12	0.052	17.25	0.053	16.97	0.050
5	64QAM	1	24	17.06	0.051	17.02	0.050	16.89	0.049
5	64QAM	12	0	16.18	0.041	16.19	0.042	16.06	0.040
5	64QAM	12	7	15.92	0.039	16.13	0.041	16.16	0.041
5	64QAM	12	13	15.97	0.040	15.97	0.040	16.09	0.041
5	64QAM	25	0	16.01	0.040	15.93	0.039	15.89	0.039
5	256QAM	1	0	13.92	0.025	14.03	0.025	13.65	0.023
5	256QAM	1	12	13.77	0.024	13.82	0.024	13.87	0.024
5	256QAM	1	24	13.90	0.025	13.79	0.024	13.73	0.024
5	256QAM	12	0	12.61	0.018	12.96	0.020	12.73	0.019
5	256QAM	12	7	12.64	0.018	12.78	0.019	12.87	0.019
5	256QAM	12	13	12.78	0.019	12.85	0.019	12.66	0.018
5	256QAM	25	0	12.60	0.018	12.90	0.019	12.69	0.019

LTE Band 26				Measured E.R.P.			
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.	Middle Ch. / Freq.		High Ch. / Freq.
Channel				/	26740		/
Frequency (MHz)				/	819		/
				/	dBm	W	/
10	QPSK	1	0	/	18.92	0.078	/
10	QPSK	1	25	/	19.16	0.082	/
10	QPSK	1	49	/	19.07	0.081	/
10	QPSK	25	0	/	18.42	0.070	/
10	QPSK	25	12	/	18.47	0.070	/
10	QPSK	25	25	/	18.43	0.070	/
10	QPSK	50	0	/	18.47	0.070	/
10	16QAM	1	0	/	18.22	0.066	/
10	16QAM	1	25	/	18.13	0.065	/
10	16QAM	1	49	/	18.07	0.064	/
10	16QAM	25	0	/	17.43	0.055	/
10	16QAM	25	12	/	17.49	0.056	/
10	16QAM	25	25	/	17.40	0.055	/
10	16QAM	50	0	/	17.51	0.056	/
10	64QAM	1	0	/	17.08	0.051	/
10	64QAM	1	25	/	17.08	0.051	/
10	64QAM	1	49	/	17.00	0.050	/
10	64QAM	25	0	/	16.38	0.043	/
10	64QAM	25	12	/	16.51	0.045	/
10	64QAM	25	25	/	16.46	0.044	/
10	64QAM	50	0	/	16.47	0.044	/
10	256QAM	1	0	/	14.29	0.027	
10	256QAM	1	25	/	14.40	0.028	/
10	256QAM	1	49	/	14.29	0.027	/
10	256QAM	25	0	/	14.45	0.028	/
10	256QAM	25	12	/	14.46	0.028	/
10	256QAM	25	25	/	14.40	0.028	/
10	256QAM	50	0	/	14.47	0.028	/

LTE Band 26				Measured E.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				26715		26740		26765	
Frequency (MHz)				816.5		819.0		821.5	
				dBm	W	dBm	W	dBm	W
5	QPSK	1	0	18.91	0.078	18.97	0.079	19.17	0.083
5	QPSK	1	12	19.18	0.083	19.17	0.083	19.15	0.082
5	QPSK	1	24	18.99	0.079	18.94	0.078	18.95	0.079
5	QPSK	12	0	18.38	0.069	18.40	0.069	18.46	0.070
5	QPSK	12	7	18.44	0.070	18.48	0.070	18.50	0.071
5	QPSK	12	13	18.44	0.070	18.42	0.070	18.39	0.069
5	QPSK	25	0	18.47	0.070	18.47	0.070	18.43	0.070
5	16QAM	1	0	18.01	0.063	18.29	0.067	18.21	0.066
5	16QAM	1	12	17.98	0.063	18.13	0.065	18.10	0.065
5	16QAM	1	24	17.98	0.063	18.14	0.065	18.03	0.064
5	16QAM	12	0	17.29	0.054	17.36	0.054	17.36	0.054
5	16QAM	12	7	17.45	0.056	17.45	0.056	17.44	0.055
5	16QAM	12	13	17.41	0.055	17.43	0.055	17.40	0.055
5	16QAM	25	0	17.45	0.056	17.44	0.055	17.41	0.055
5	64QAM	1	0	16.98	0.050	17.11	0.051	17.11	0.051
5	64QAM	1	12	17.31	0.054	16.94	0.049	17.09	0.051
5	64QAM	1	24	16.98	0.050	17.01	0.050	17.01	0.050
5	64QAM	12	0	16.36	0.043	16.33	0.043	16.47	0.044
5	64QAM	12	7	16.51	0.045	16.49	0.045	16.39	0.044
5	64QAM	12	13	16.47	0.044	16.46	0.044	16.37	0.043
5	64QAM	25	0	16.43	0.044	16.42	0.044	16.44	0.044
5	256QAM	1	0	14.23	0.026	14.28	0.027	14.22	0.026
5	256QAM	1	12	14.43	0.028	14.44	0.028	14.51	0.028
5	256QAM	1	24	14.22	0.026	14.34	0.027	14.20	0.026
5	256QAM	12	0	14.36	0.027	14.38	0.027	14.41	0.028
5	256QAM	12	7	14.50	0.028	14.48	0.028	14.46	0.028
5	256QAM	12	13	14.45	0.028	14.39	0.027	14.42	0.028
5	256QAM	25	0	14.43	0.028	14.44	0.028	14.40	0.028

LTE Band 26				Measured E.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				26705		26740		26775	
Frequency (MHz)				815.5		819.0		822.5	
				dBm	W	dBm	W	dBm	W
3	QPSK	1	0	19.07	0.081	19.05	0.080	19.07	0.081
3	QPSK	1	8	19.16	0.082	19.16	0.082	19.13	0.082
3	QPSK	1	14	18.99	0.079	19.04	0.080	18.96	0.079
3	QPSK	8	0	18.47	0.070	18.32	0.068	18.22	0.066
3	QPSK	8	4	18.45	0.070	18.49	0.071	18.47	0.070
3	QPSK	8	7	18.42	0.070	18.42	0.070	18.42	0.070
3	QPSK	15	0	18.42	0.070	18.44	0.070	18.44	0.070
3	16QAM	1	0	18.15	0.065	18.08	0.064	18.05	0.064
3	16QAM	1	8	18.19	0.066	18.18	0.066	18.19	0.066
3	16QAM	1	14	18.06	0.064	17.91	0.062	18.01	0.063
3	16QAM	8	0	17.47	0.056	17.32	0.054	17.36	0.054
3	16QAM	8	4	17.45	0.056	17.41	0.055	17.42	0.055
3	16QAM	8	7	17.42	0.055	17.47	0.056	17.32	0.054
3	16QAM	15	0	17.46	0.056	17.45	0.056	17.42	0.055
3	64QAM	1	0	17.04	0.051	16.97	0.050	17.11	0.051
3	64QAM	1	8	16.98	0.050	17.28	0.053	17.03	0.050
3	64QAM	1	14	17.00	0.050	17.09	0.051	17.07	0.051
3	64QAM	8	0	16.42	0.044	16.21	0.042	16.36	0.043
3	64QAM	8	4	16.41	0.044	16.50	0.045	16.37	0.043
3	64QAM	8	7	16.40	0.044	16.45	0.044	16.46	0.044
3	64QAM	15	0	16.46	0.044	16.44	0.044	16.35	0.043
3	256QAM	1	0	14.20	0.026	14.24	0.027	14.29	0.027
3	256QAM	1	8	14.43	0.028	14.43	0.028	14.45	0.028
3	256QAM	1	14	14.28	0.027	14.31	0.027	14.32	0.027
3	256QAM	8	0	14.44	0.028	14.36	0.027	14.28	0.027
3	256QAM	8	4	14.50	0.028	14.41	0.028	14.42	0.028
3	256QAM	8	7	14.42	0.028	14.43	0.028	14.41	0.028
3	256QAM	15	0	14.46	0.028	14.41	0.028	14.40	0.028

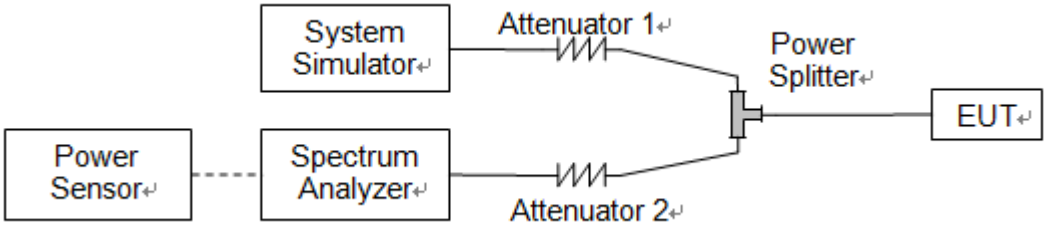
LTE Band 26				Measured E.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				26697		26740		26783	
Frequency (MHz)				814.7		819.0		823.3	
				dBm	W	dBm	W	dBm	W
1.4	QPSK	1	0	19.08	0.081	19.08	0.081	18.96	0.079
1.4	QPSK	1	3	19.09	0.081	19.10	0.081	19.05	0.080
1.4	QPSK	1	5	19.04	0.080	19.07	0.081	19.01	0.080
1.4	QPSK	3	0	19.10	0.081	19.04	0.080	18.97	0.079
1.4	QPSK	3	1	19.12	0.082	19.05	0.080	19.06	0.081
1.4	QPSK	3	3	19.13	0.082	19.05	0.080	19.05	0.080
1.4	QPSK	6	0	18.40	0.069	18.41	0.069	18.37	0.069
1.4	16QAM	1	0	18.07	0.064	18.03	0.064	17.95	0.062
1.4	16QAM	1	3	18.10	0.065	18.12	0.065	18.08	0.064
1.4	16QAM	1	5	18.07	0.064	18.03	0.064	18.09	0.064
1.4	16QAM	3	0	17.95	0.062	18.05	0.064	17.93	0.062
1.4	16QAM	3	1	18.01	0.063	17.97	0.063	18.01	0.063
1.4	16QAM	3	3	18.06	0.064	18.05	0.064	18.01	0.063
1.4	16QAM	6	0	17.42	0.055	17.40	0.055	17.33	0.054
1.4	64QAM	1	0	17.03	0.050	16.96	0.050	16.96	0.050
1.4	64QAM	1	3	17.14	0.052	17.05	0.051	17.05	0.051
1.4	64QAM	1	5	17.13	0.052	17.12	0.052	17.03	0.050
1.4	64QAM	3	0	16.95	0.050	16.94	0.049	17.00	0.050
1.4	64QAM	3	1	17.01	0.050	17.08	0.051	16.98	0.050
1.4	64QAM	3	3	17.00	0.050	17.07	0.051	17.02	0.050
1.4	64QAM	6	0	16.39	0.044	16.38	0.043	16.27	0.042
1.4	256QAM	1	0	14.30	0.027	14.26	0.027	14.22	0.026
1.4	256QAM	1	3	14.35	0.027	14.27	0.027	14.43	0.028
1.4	256QAM	1	5	14.29	0.027	14.33	0.027	14.25	0.027
1.4	256QAM	3	0	14.41	0.028	14.44	0.028	14.37	0.027
1.4	256QAM	3	1	14.38	0.027	14.35	0.027	14.35	0.027
1.4	256QAM	3	3	14.35	0.027	14.40	0.028	14.40	0.028
1.4	256QAM	6	0	14.38	0.027	14.37	0.027	14.26	0.027

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.

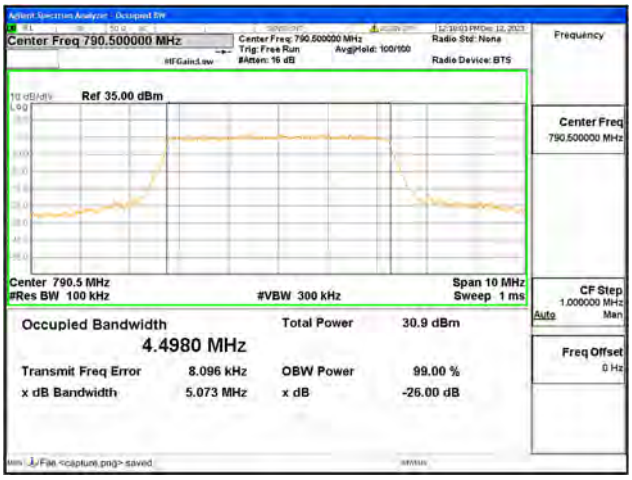
2.2.4. Test Result

LTE Band	BW(MHz)	Channel Level	Channel	Frequency (MHz)	Modulation	99% BW (MHz)	26dB BW (MHz)	Verdict
B14	5	Low	23305	790.5	QPSK	4.50	5.07	PASS
B14	5	Low	23305	790.5	16QAM	4.51	5.09	PASS
B14	5	Low	23305	790.5	64QAM	4.51	5.06	PASS
B14	5	Low	23305	790.5	256QAM	4.51	5.10	PASS
B14	5	Mid	23330	793	QPSK	4.52	5.09	PASS
B14	5	Mid	23330	793	16QAM	4.51	5.11	PASS
B14	5	Mid	23330	793	64QAM	4.51	5.07	PASS
B14	5	Mid	23330	793	256QAM	4.51	5.13	PASS
B14	5	High	23355	795.5	QPSK	4.53	5.21	PASS
B14	5	High	23355	795.5	16QAM	4.54	5.13	PASS
B14	5	High	23355	795.5	64QAM	4.53	5.10	PASS
B14	5	High	23355	795.5	256QAM	4.52	5.11	PASS
B14	10	Mid	23330	793	QPSK	8.97	9.89	PASS
B14	10	Mid	23330	793	16QAM	8.95	9.91	PASS
B14	10	Mid	23330	793	64QAM	8.98	9.92	PASS
B14	10	Mid	23330	793	256QAM	8.95	9.88	PASS

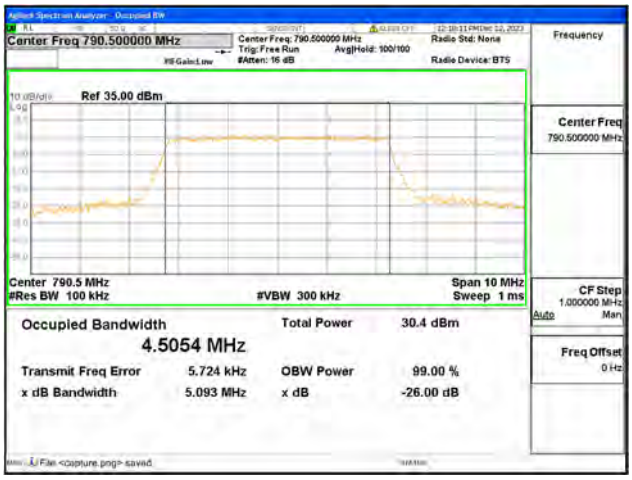
LTE Band	BW (MHz)	Channel Level	Channel	Frequency (MHz)	Modulation	99% BW (MHz)	26dB BW (MHz)	Verdict
B26 Part90	1.4	Low	26697	814.7	QPSK	1.10	1.33	PASS
B26 Part90	1.4	Low	26697	814.7	16QAM	1.11	1.37	PASS
B26 Part90	1.4	Low	26697	814.7	64QAM	1.10	1.32	PASS
B26 Part90	1.4	Low	26697	814.7	256QAM	1.10	1.34	PASS
B26 Part90	1.4	Mid	26740	819	QPSK	1.10	1.38	PASS
B26 Part90	1.4	Mid	26740	819	16QAM	1.10	1.33	PASS
B26 Part90	1.4	Mid	26740	819	64QAM	1.10	1.37	PASS
B26 Part90	1.4	Mid	26740	819	256QAM	1.10	1.35	PASS
B26 Part90	1.4	High	26783	823.3	QPSK	1.10	1.38	PASS
B26 Part90	1.4	High	26783	823.3	16QAM	1.11	1.37	PASS
B26 Part90	1.4	High	26783	823.3	64QAM	1.10	1.34	PASS
B26 Part90	1.4	High	26783	823.3	256QAM	1.11	1.35	PASS
B26 Part90	3	Low	26705	815.5	QPSK	2.71	3.06	PASS
B26 Part90	3	Low	26705	815.5	16QAM	2.70	3.06	PASS
B26 Part90	3	Low	26705	815.5	64QAM	2.72	3.06	PASS
B26 Part90	3	Low	26705	815.5	256QAM	2.71	3.05	PASS
B26 Part90	3	Mid	26740	819	QPSK	2.71	3.08	PASS
B26	3	Mid	26740	819	16QAM	2.71	3.07	PASS

Part90								
B26 Part90	3	Mid	26740	819	64QAM	2.71	2.99	PASS
B26 Part90	3	Mid	26740	819	256QAM	2.72	3.06	PASS
B26 Part90	3	High	26775	822.5	QPSK	2.73	3.01	PASS
B26 Part90	3	High	26775	822.5	16QAM	2.71	3.06	PASS
B26 Part90	3	High	26775	822.5	64QAM	2.72	3.09	PASS
B26 Part90	3	High	26775	822.5	256QAM	2.71	3.07	PASS
B26 Part90	5	Low	26715	816.5	QPSK	4.54	5.13	PASS
B26 Part90	5	Low	26715	816.5	16QAM	4.51	5.09	PASS
B26 Part90	5	Low	26715	816.5	64QAM	4.53	5.09	PASS
B26 Part90	5	Low	26715	816.5	256QAM	4.51	5.11	PASS
B26 Part90	5	Mid	26740	819	QPSK	4.53	5.22	PASS
B26 Part90	5	Mid	26740	819	16QAM	4.51	5.19	PASS
B26 Part90	5	Mid	26740	819	64QAM	4.52	5.17	PASS
B26 Part90	5	Mid	26740	819	256QAM	4.52	5.15	PASS
B26 Part90	5	High	26765	821.5	QPSK	4.54	5.11	PASS
B26 Part90	5	High	26765	821.5	16QAM	4.51	5.08	PASS
B26 Part90	5	High	26765	821.5	64QAM	4.52	5.08	PASS
B26 Part90	5	High	26765	821.5	256QAM	4.52	5.15	PASS
B26	10	Low	26740	819	QPSK	8.99	9.90	PASS

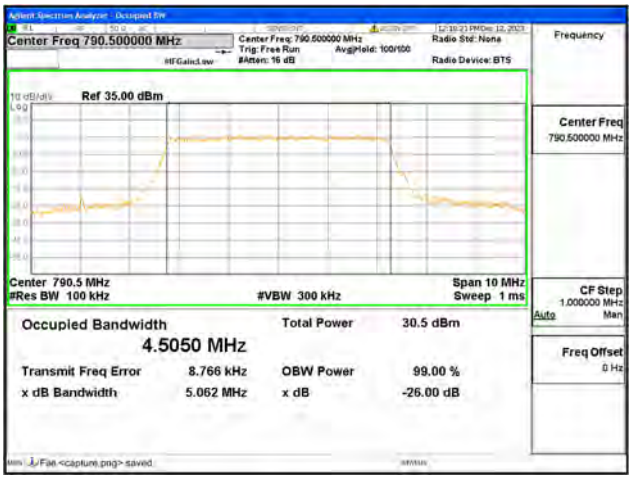
Part90								
B26 Part90	10	Low	26740	819	16QAM	8.99	9.96	PASS
B26 Part90	10	Low	26740	819	64QAM	8.98	10.00	PASS
B26 Part90	10	Low	26740	819	256QAM	8.99	9.95	PASS
B26 Part90	10	Mid	26740	819	QPSK	8.98	10.01	PASS
B26 Part90	10	Mid	26740	819	16QAM	8.99	9.95	PASS
B26 Part90	10	Mid	26740	819	64QAM	8.98	9.91	PASS
B26 Part90	10	Mid	26740	819	256QAM	8.99	10.06	PASS
B26 Part90	10	High	26740	819	QPSK	9.01	10.06	PASS
B26 Part90	10	High	26740	819	16QAM	8.98	9.98	PASS
B26 Part90	10	High	26740	819	64QAM	8.98	9.91	PASS
B26 Part90	10	High	26740	819	256QAM	8.99	10.00	PASS



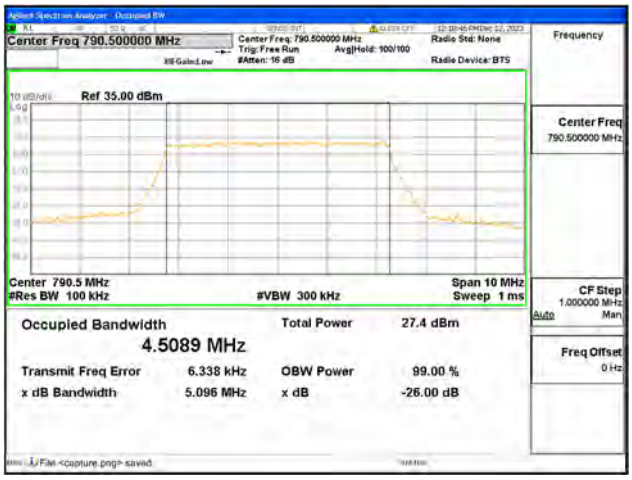
B14 / 5MHz / QPSK/ Low CH



B14 / 5MHz / 16QAM/ Low CH



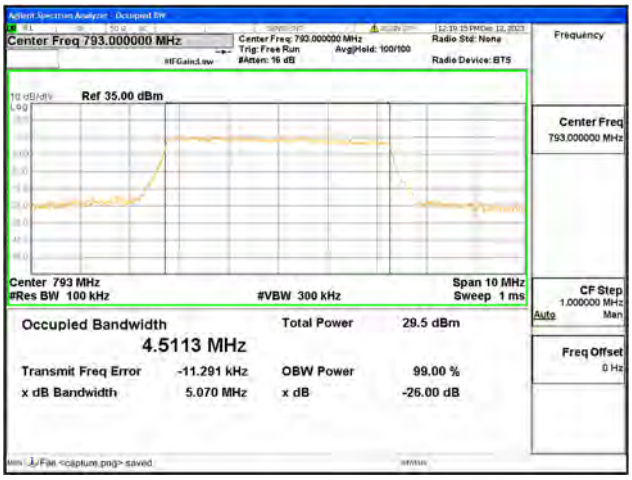
B14 / 5MHz / 64QAM/ Low CH



B14 / 5MHz / 256QAM/ Low CH

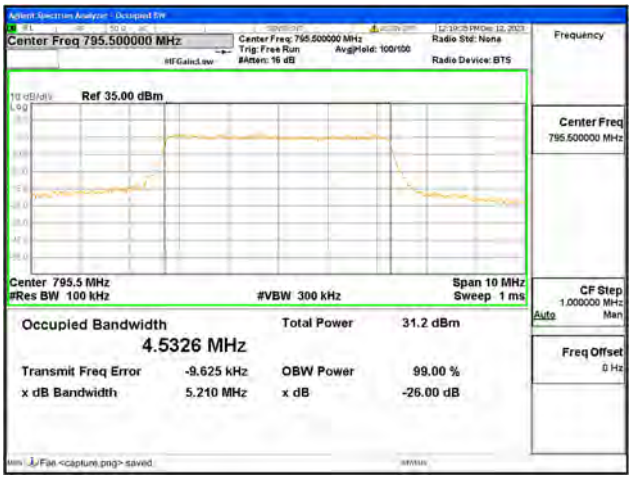
B14 / 5MHz / QPSK/ Mid CH

B14 / 5MHz / 16QAM/ Mid CH

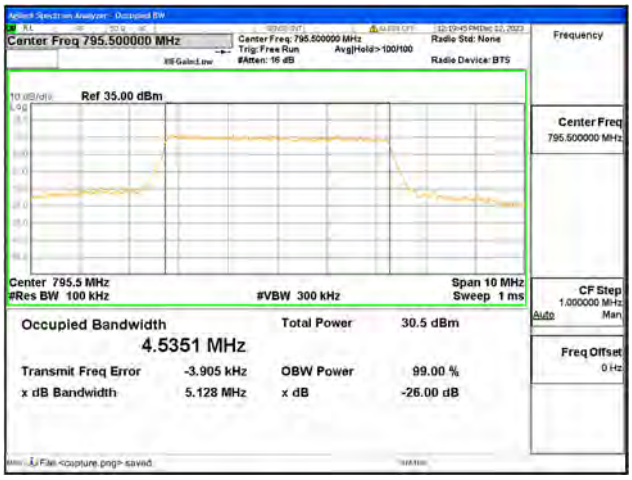


B14 / 5MHz / 64QAM/ Mid CH

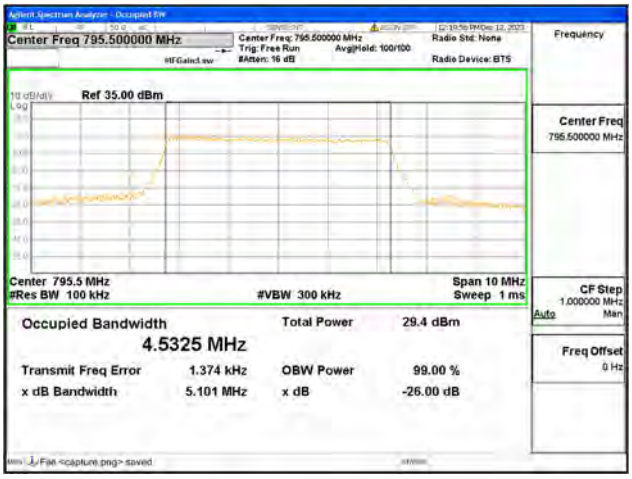
B14 / 5MHz / 256QAM/ Mid CH



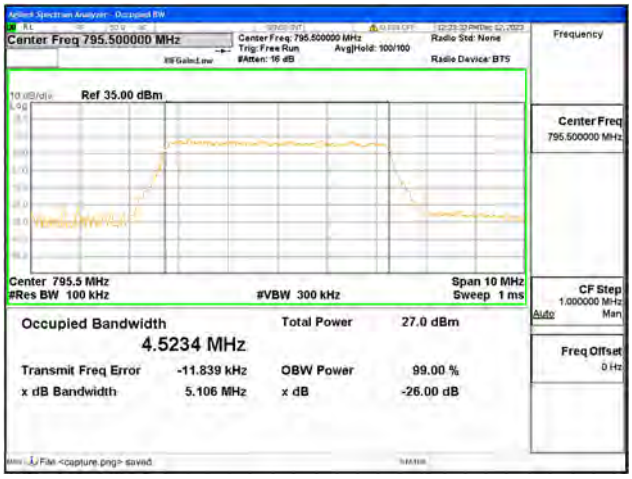
B14 / 5MHz / QPSK/ High CH



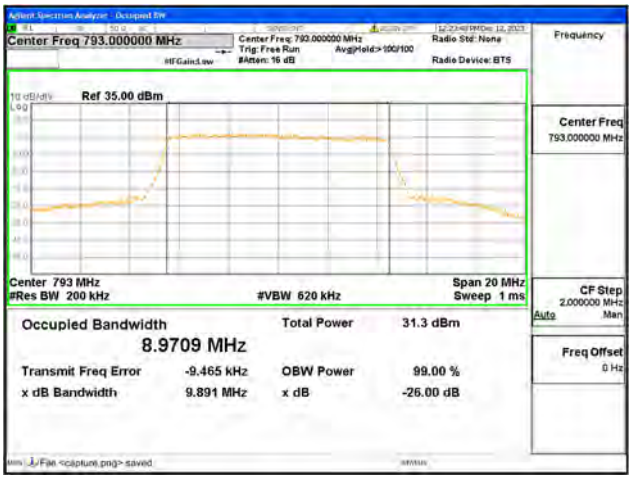
B14 / 5MHz / 16QAM/ High CH



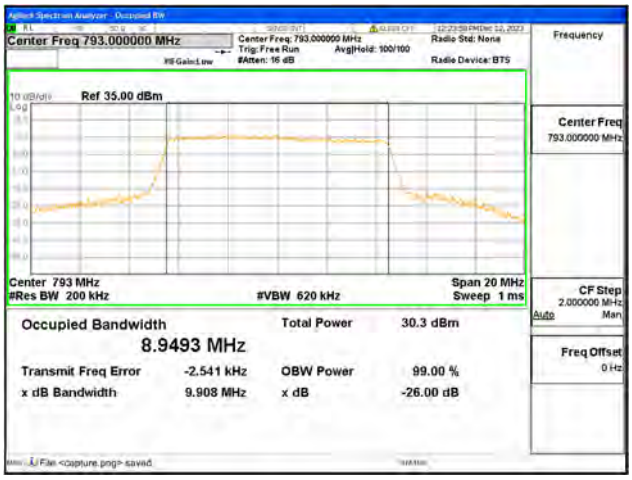
B14 / 5MHz / 64QAM/ High CH



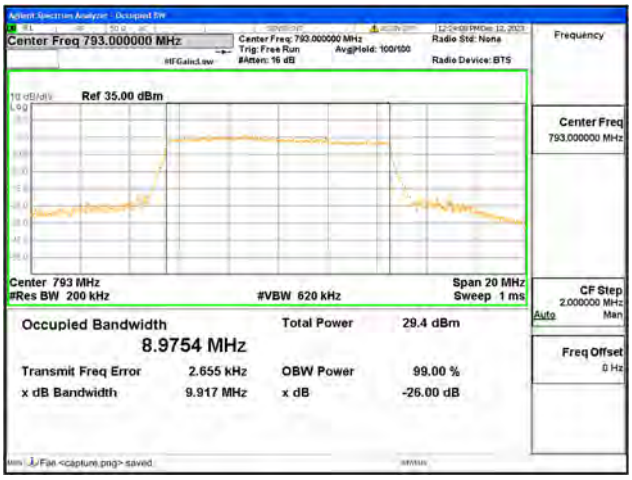
B14 / 5MHz / 256QAM/ High CH



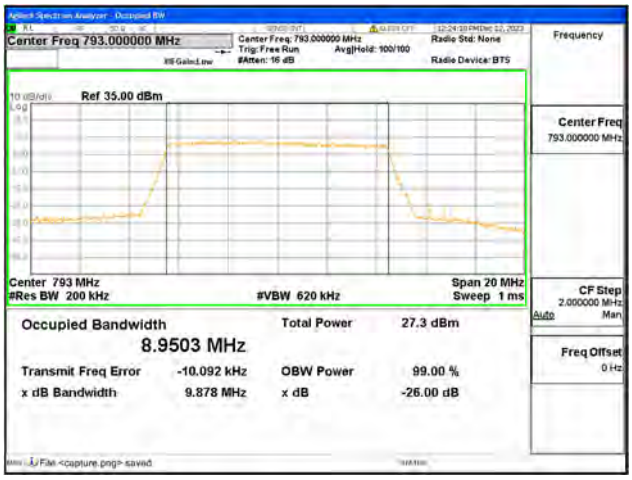
B14 / 10MHz / QPSK/ Mid CH



B14 / 10MHz / 16QAM/ Mid CH



B14 / 10MHz / 64QAM/ Mid CH



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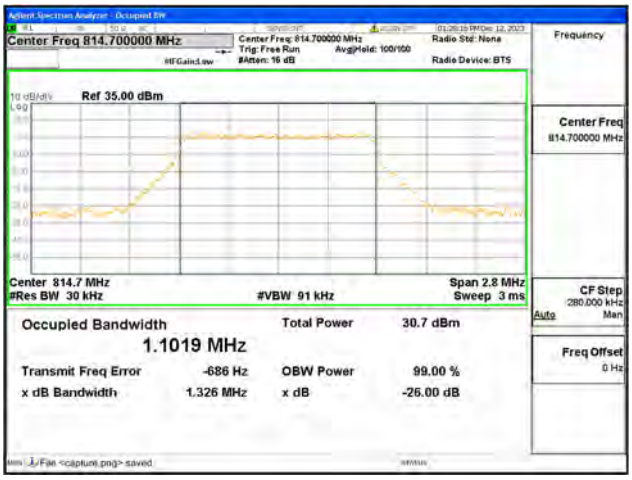
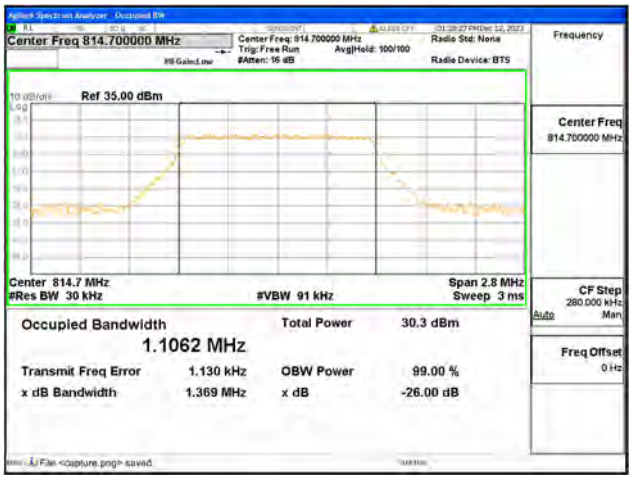
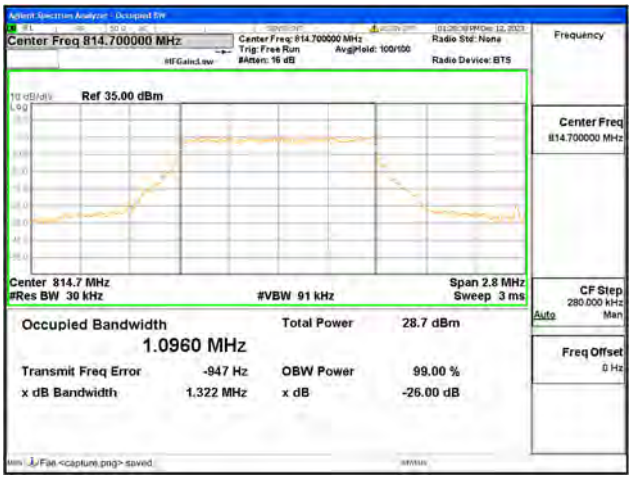


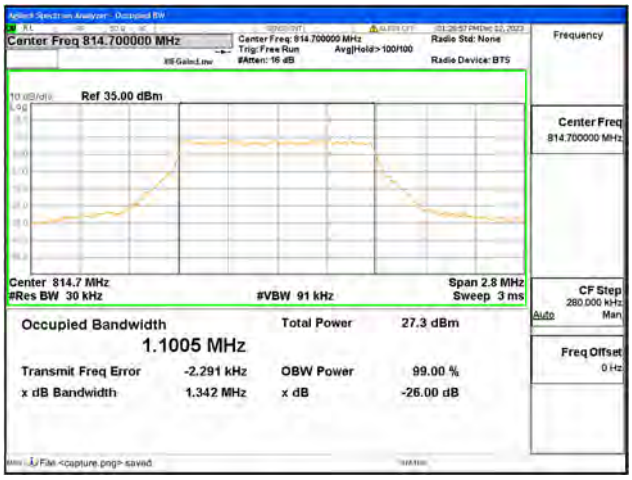
B26 Part90 / 1.4MHz / QPSK/ Low CH



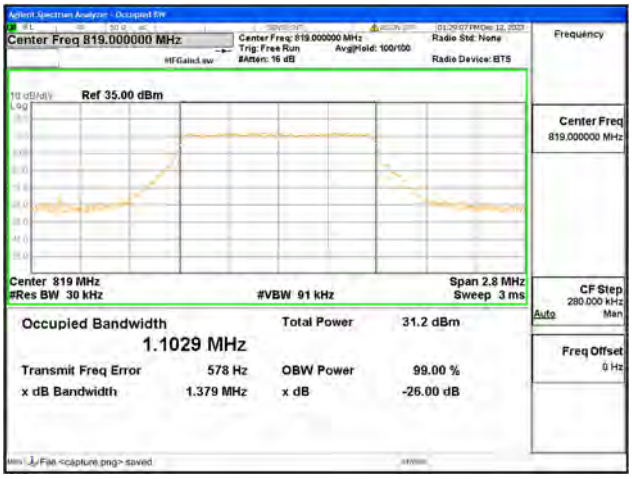
B26 Part90 / 1.4MHz / 16QAM/ Low CH



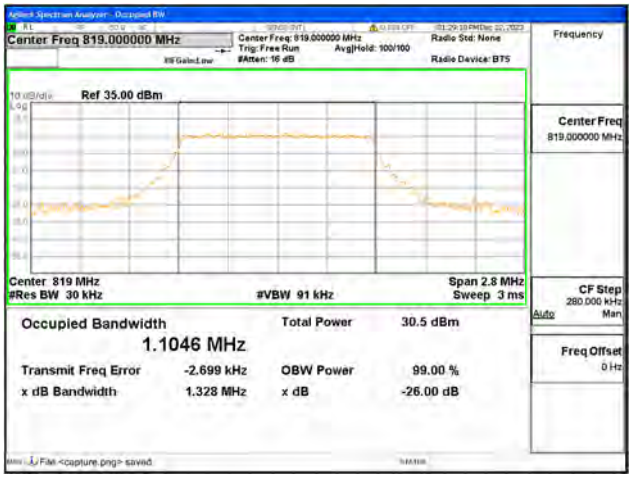
B26 Part90 / 1.4MHz / 64QAM/ Low CH



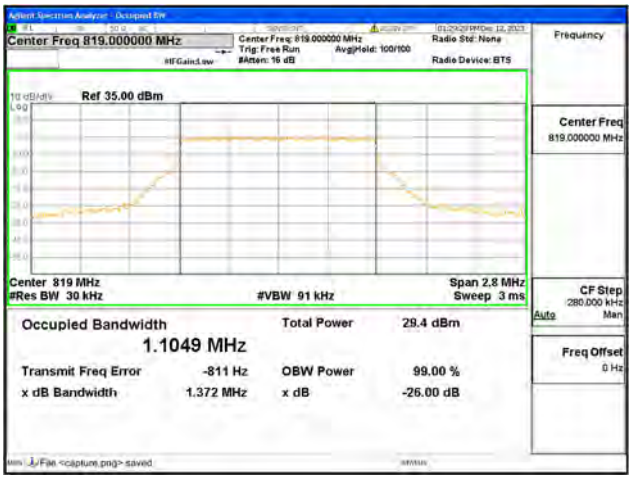
B26 Part90 / 1.4MHz / 256QAM/ Low CH



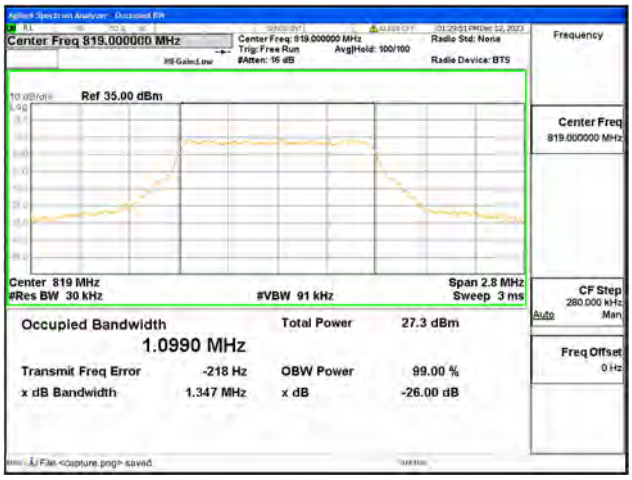
B26 Part90 / 1.4MHz / QPSK/ Mid CH



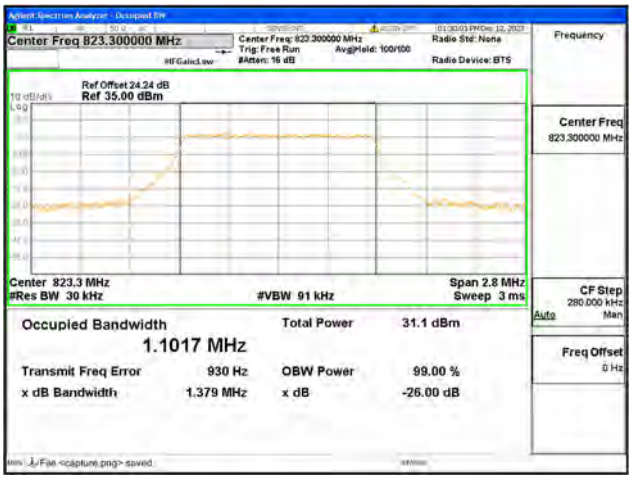
B26 Part90 / 1.4MHz / 16QAM/ Mid CH



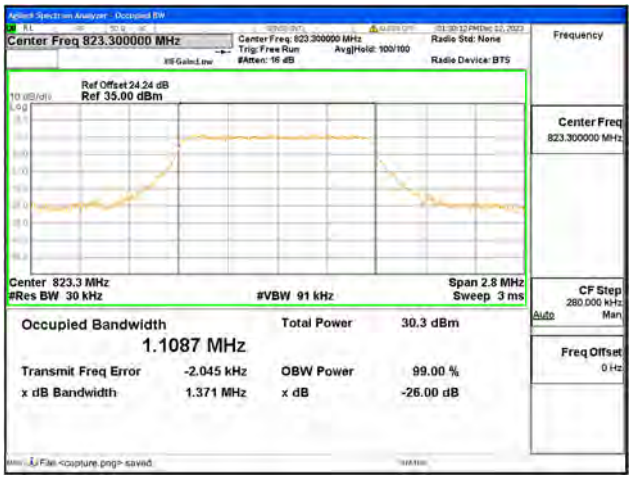
B26 Part90 / 1.4MHz / 64QAM/ Mid CH



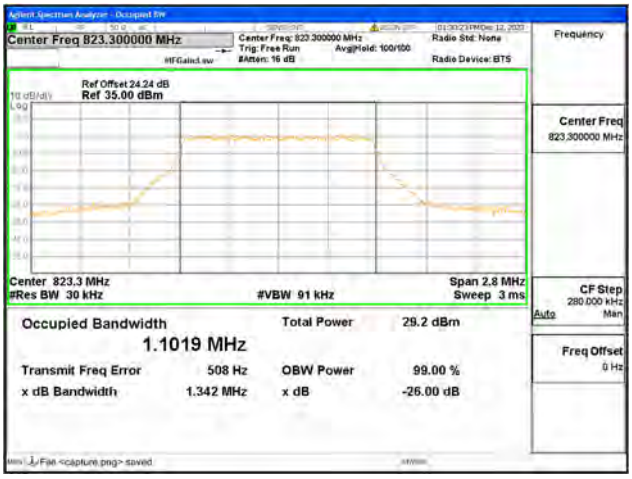
B26 Part90 / 1.4MHz / 256QAM/ Mid CH



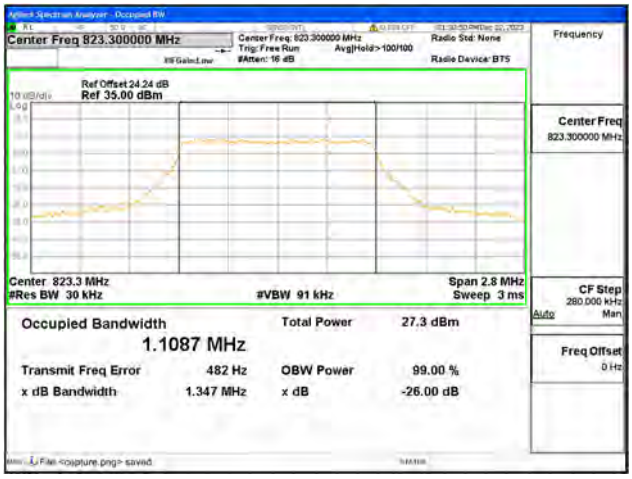
B26 Part90 / 1.4MHz / QPSK/ High CH



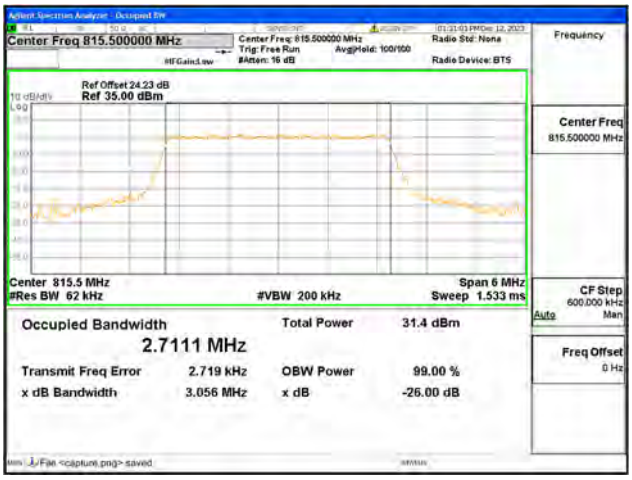
B26 Part90 / 1.4MHz / 16QAM/ High CH



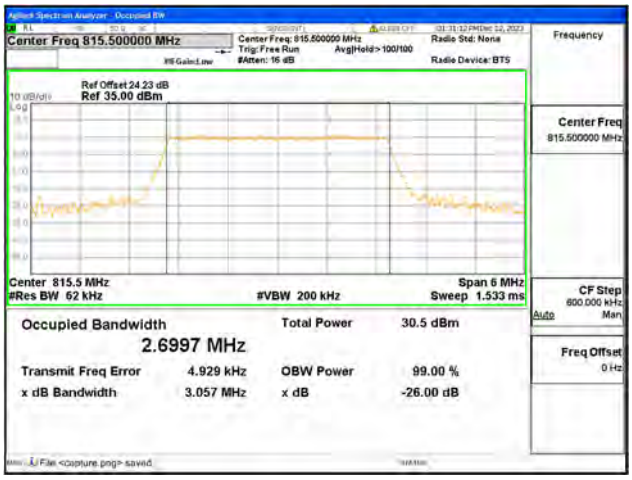
B26 Part90 / 1.4MHz / 64QAM/ High CH



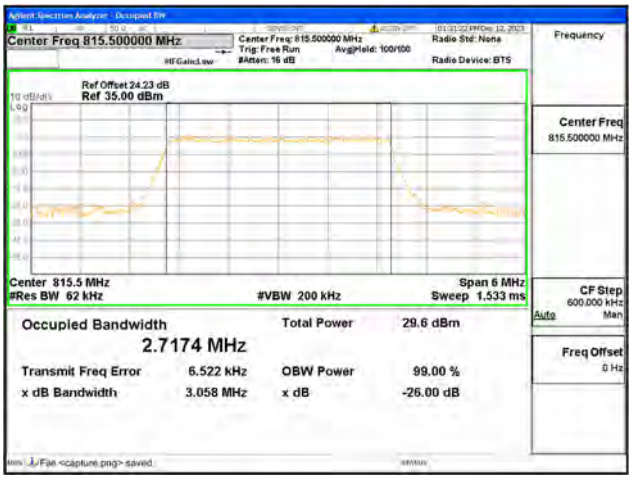
B26 Part90 / 1.4MHz / 256QAM/ High CH



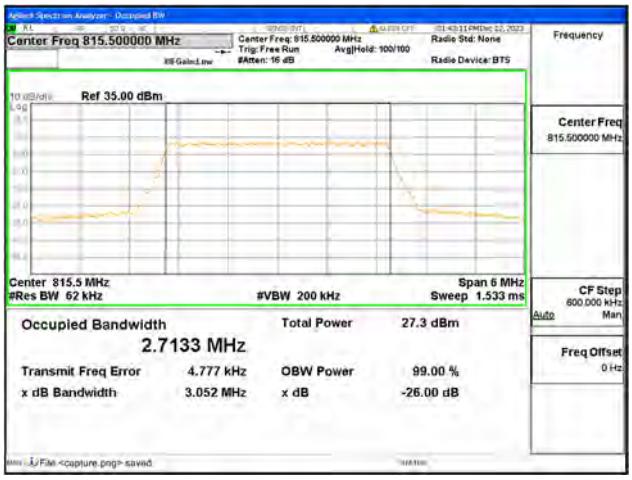
B26 Part90 / 3MHz / QPSK/ Low CH



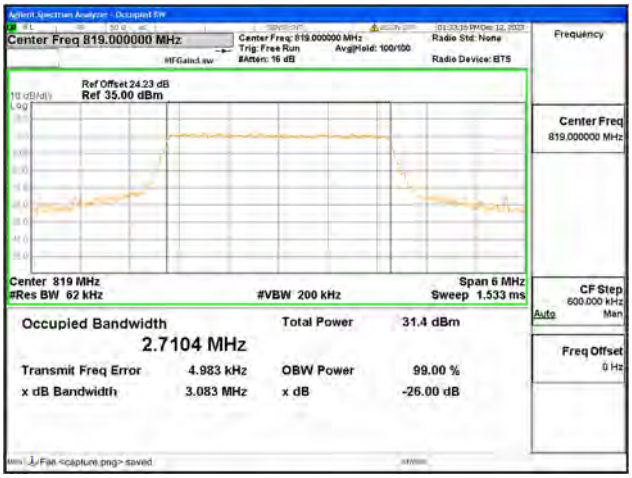
B26 Part90 / 3MHz / 16QAM/ Low CH



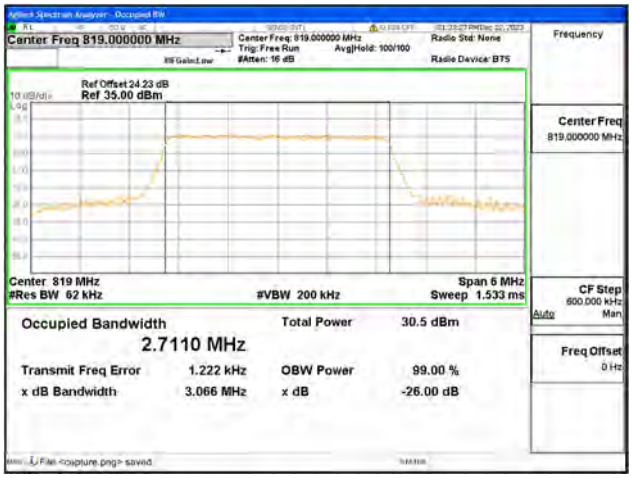
B26 Part90 / 3MHz / 64QAM/ Low CH



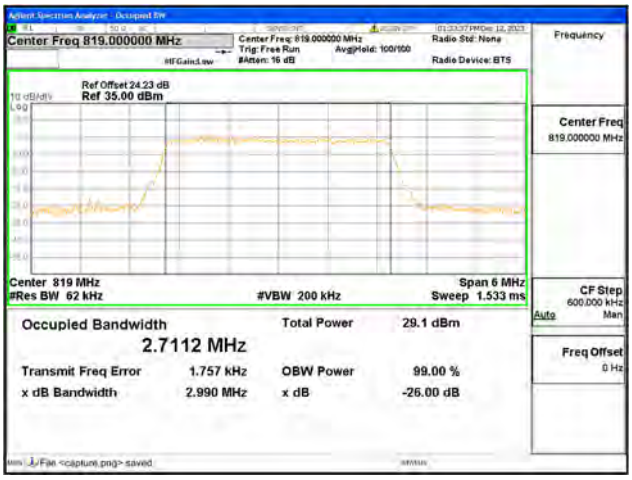
B26 Part90 / 3MHz / 256QAM/ Low CH



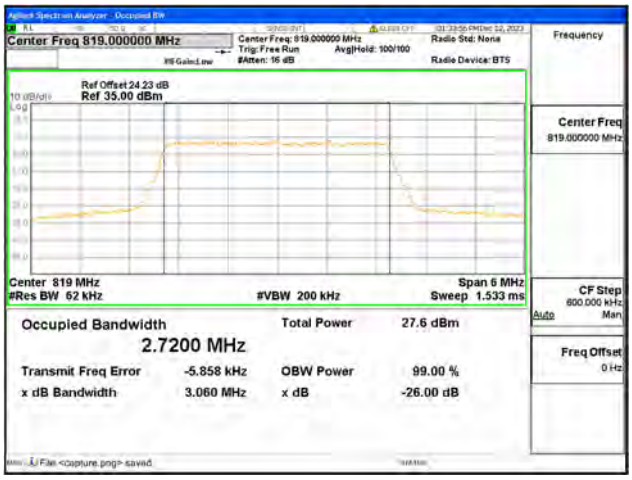
B26 Part90 / 3MHz / QPSK/ Mid CH



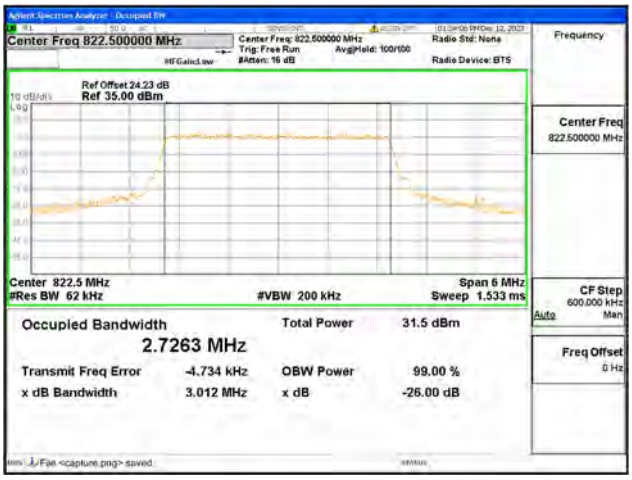
B26 Part90 / 3MHz / 16QAM/ Mid CH



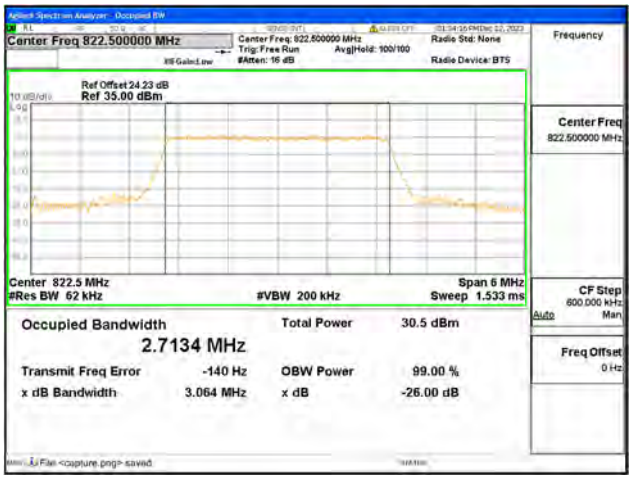
B26 Part90 / 3MHz / 64QAM/ Mid CH



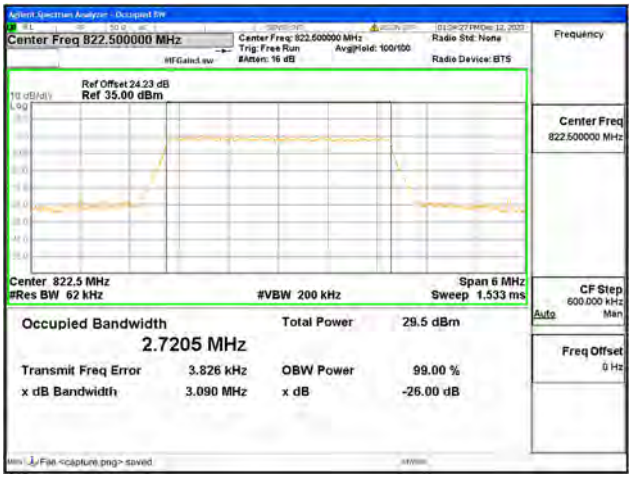
B26 Part90 / 3MHz / 256QAM/ Mid CH



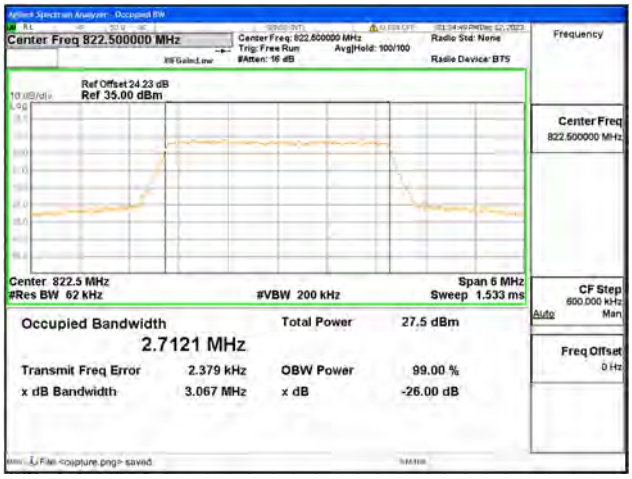
B26 Part90 / 3MHz / QPSK/ High CH



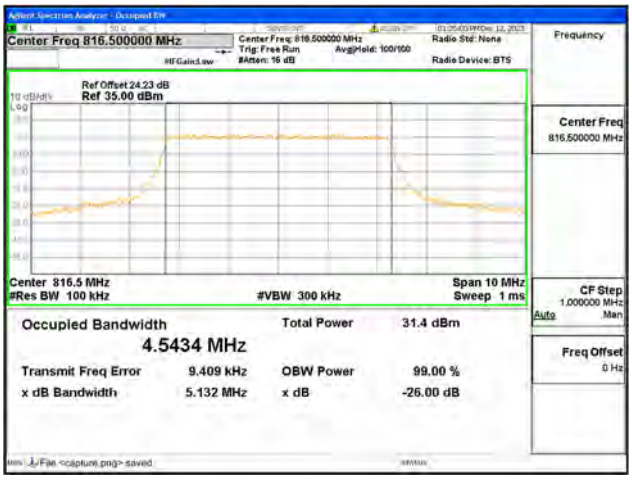
B26 Part90 / 3MHz / 16QAM/ High CH



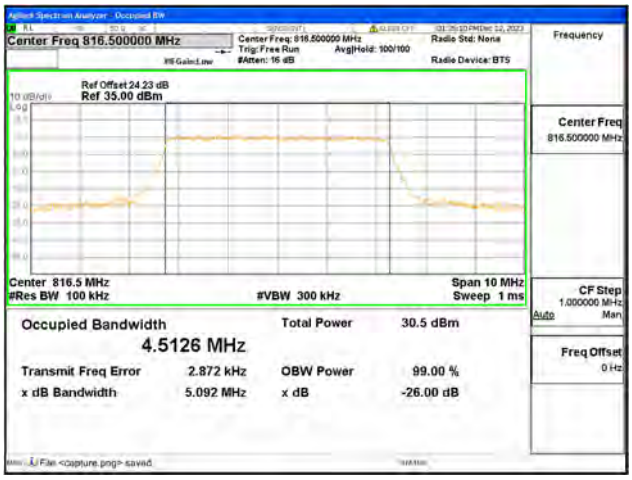
B26 Part90 / 3MHz / 64QAM/ High CH



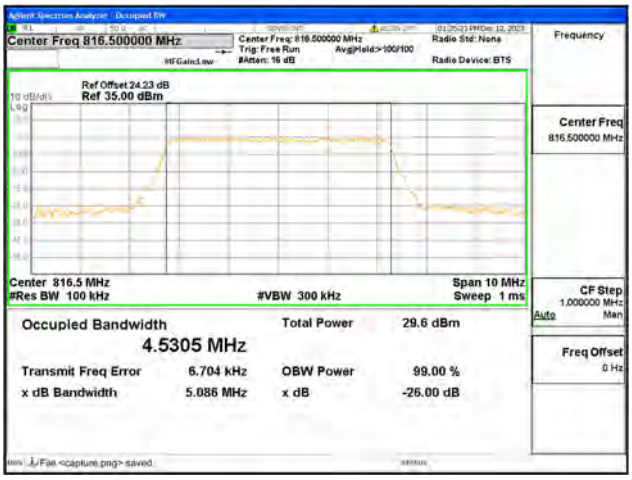
B26 Part90 / 3MHz / 256QAM/ High CH



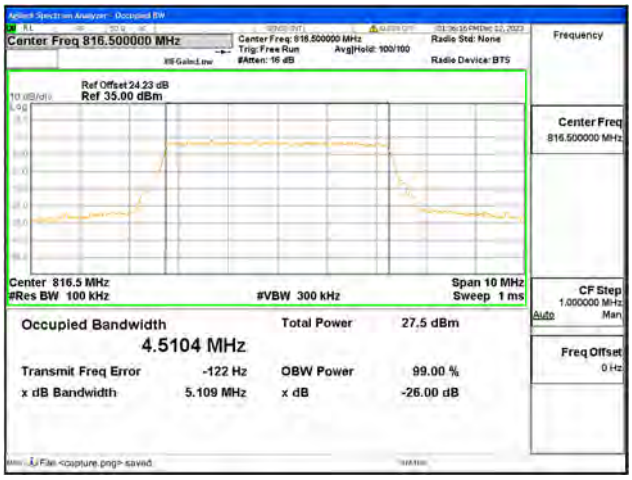
B26 Part90 / 5MHz / QPSK/ Low CH



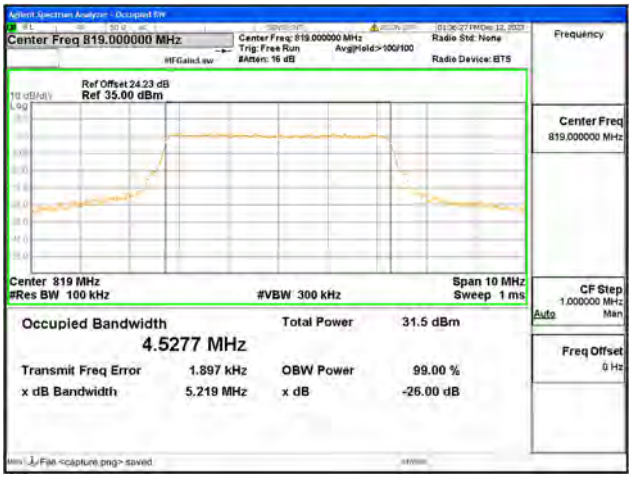
B26 Part90 / 5MHz / 16QAM/ Low CH



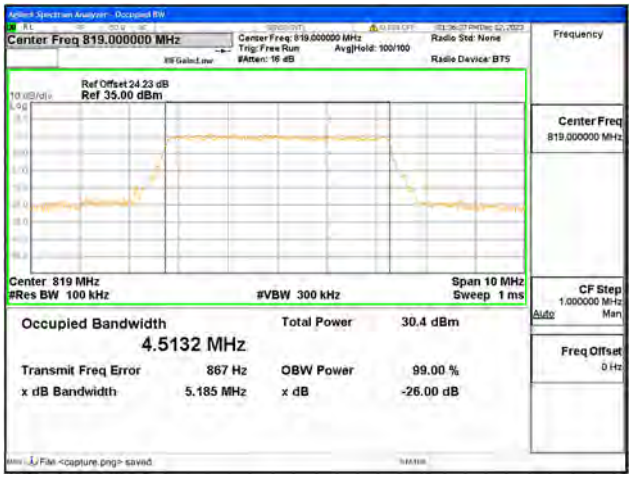
B26 Part90 / 5MHz / 64QAM/ Low CH



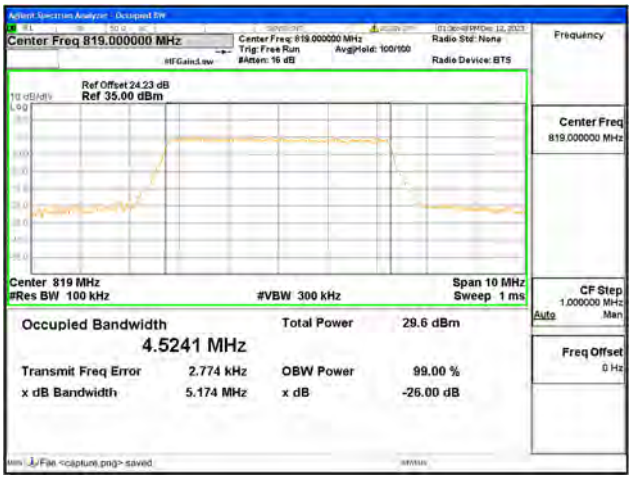
B26 Part90 / 5MHz / 256QAM/ Low CH



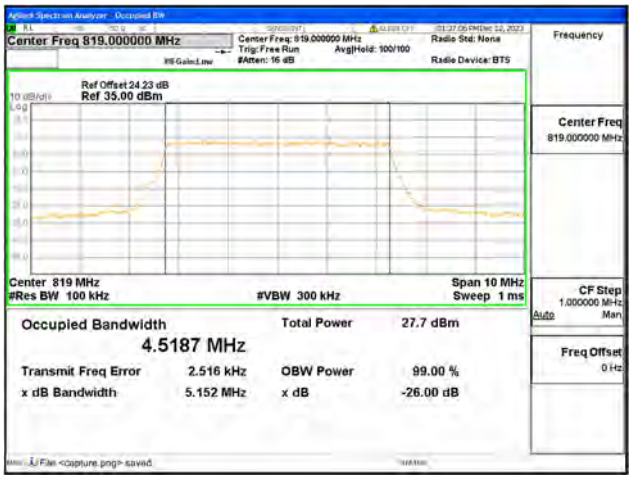
B26 Part90 / 5MHz / QPSK/ Mid CH



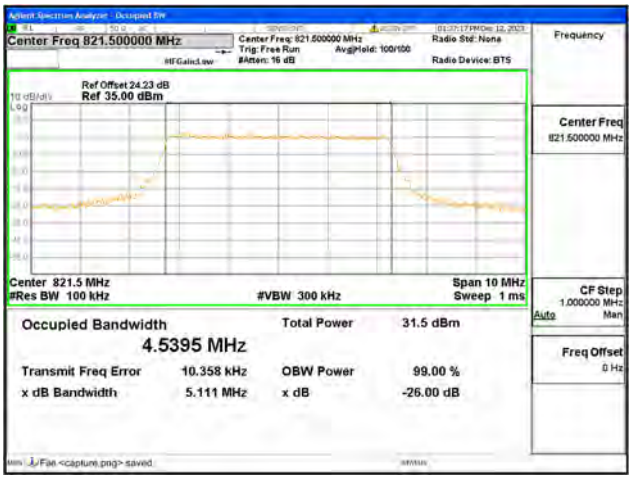
B26 Part90 / 5MHz / 16QAM/ Mid CH



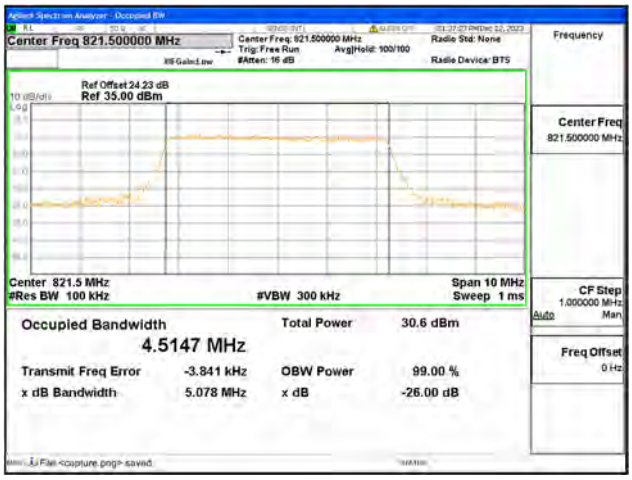
B26 Part90 / 5MHz / 64QAM/ Mid CH



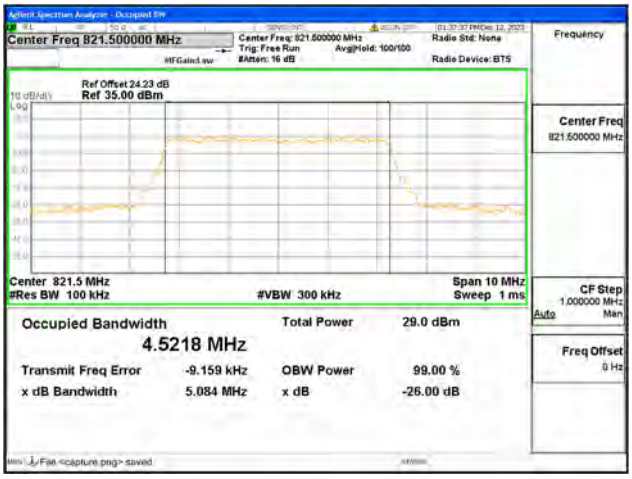
B26 Part90 / 5MHz / 256QAM/ Mid CH



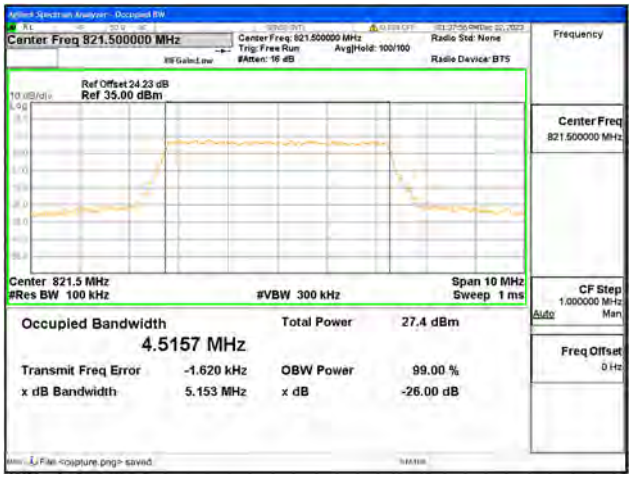
B26 Part90 / 5MHz / QPSK/ High CH



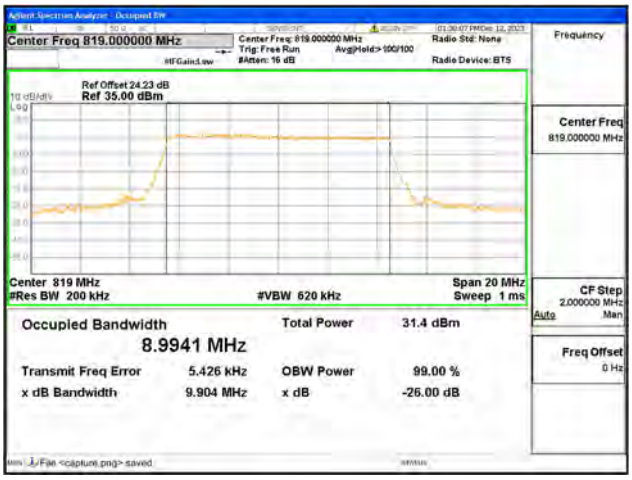
B26 Part90 / 5MHz / 16QAM/ High CH



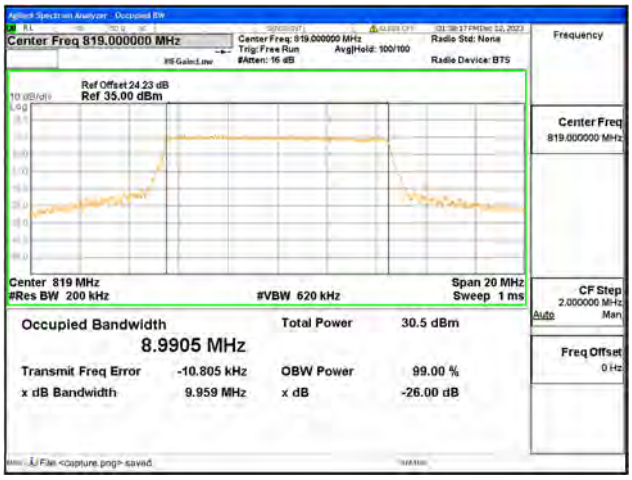
B26 Part90 / 5MHz / 64QAM/ High CH



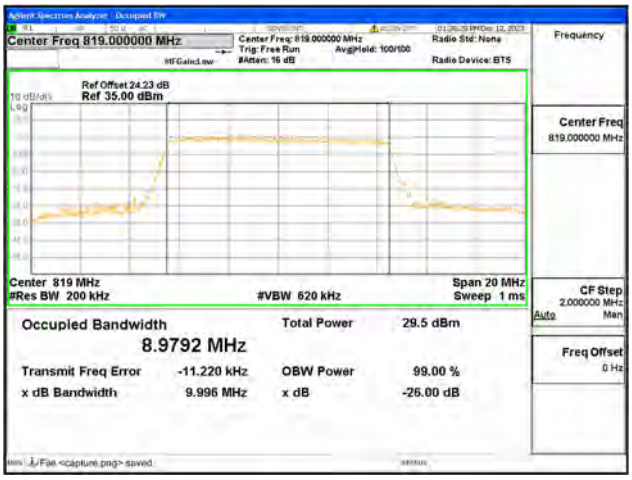
B26 Part90 / 5MHz / 256QAM/ High CH



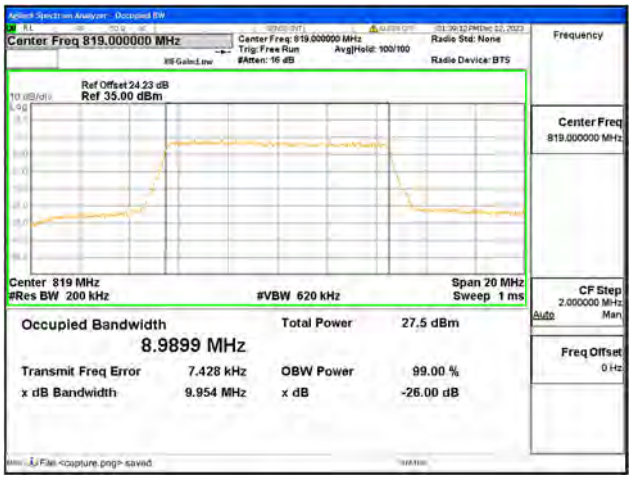
B26 Part90 / 10MHz / QPSK/ Low CH



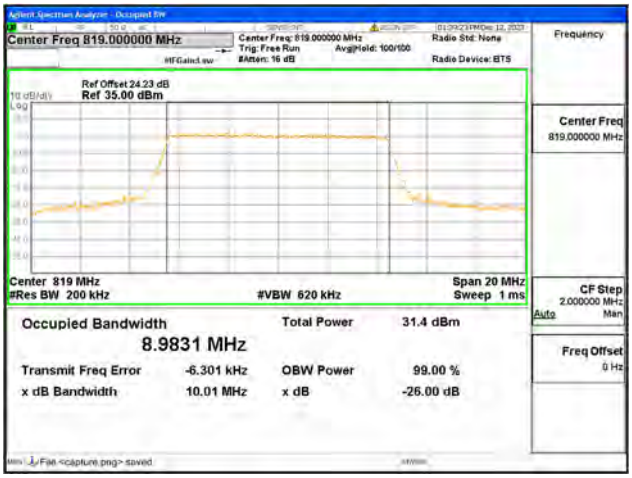
B26 Part90 / 10MHz / 16QAM/ Low CH



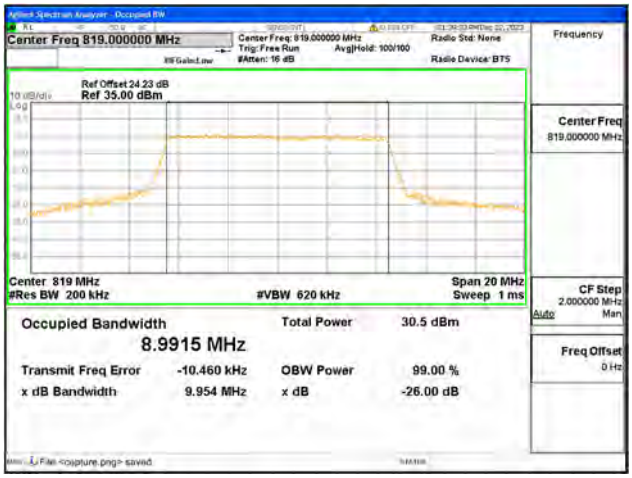
B26 Part90 / 10MHz / 64QAM/ Low CH



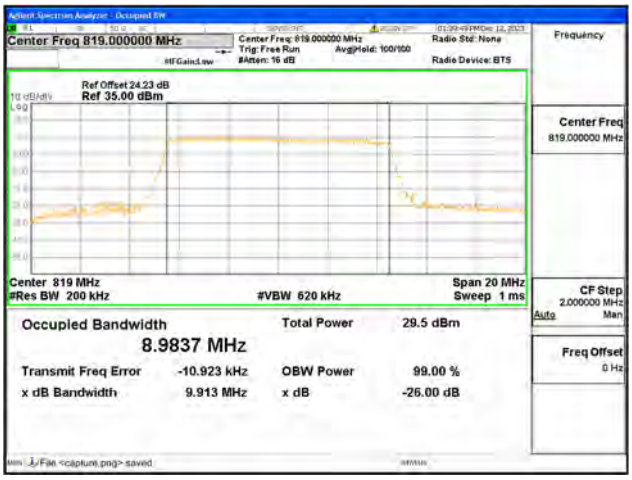
B26 Part90 / 10MHz / 256QAM/ Low CH



B26 Part90 / 10MHz / QPSK/ Mid CH

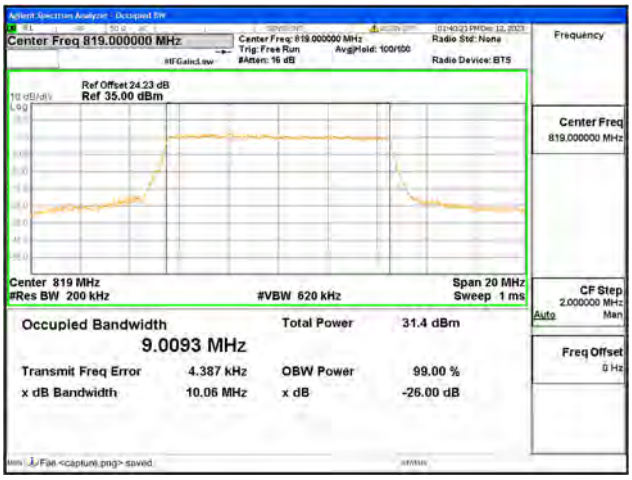


B26 Part90 / 10MHz / 16QAM/ Mid CH

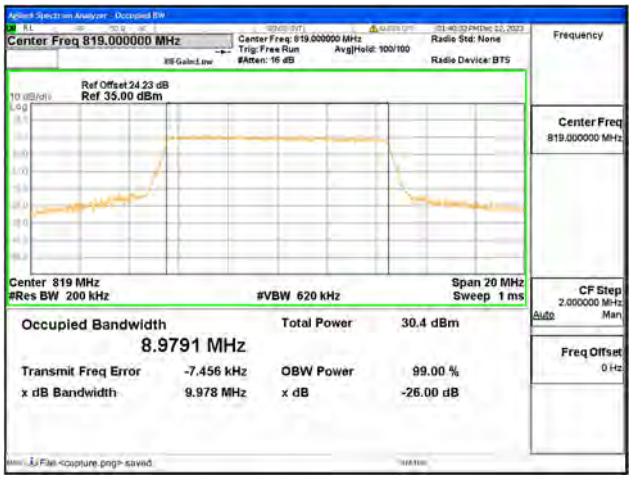


B26 Part90 / 10MHz / 64QAM/ Mid CH

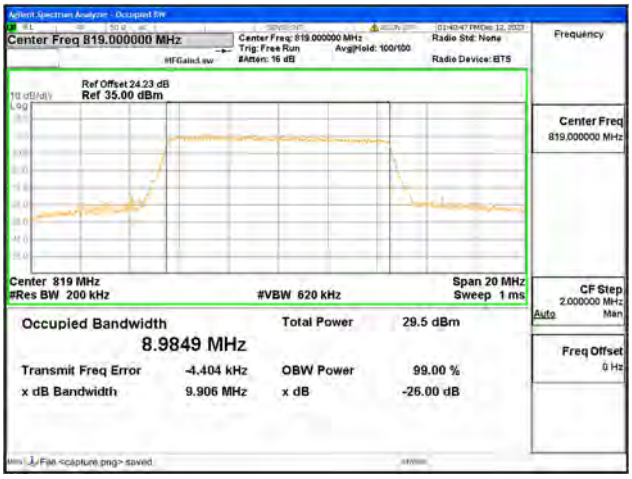
B26 Part90 / 10MHz / 256QAM/ Mid CH



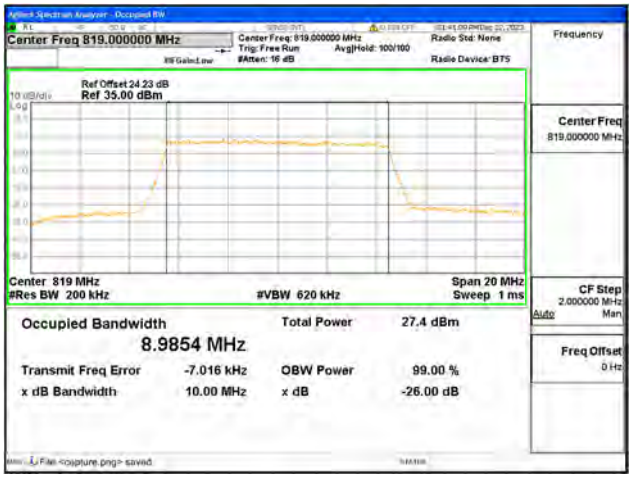
B26 Part90 / 10MHz / QPSK/ High CH



B26 Part90 / 10MHz / 16QAM/ High CH



B26 Part90 / 10MHz / 64QAM/ High CH



B26 Part90 / 10MHz / 256QAM/ High CH

2.3. Frequency Stability

2.3.1. Requirement

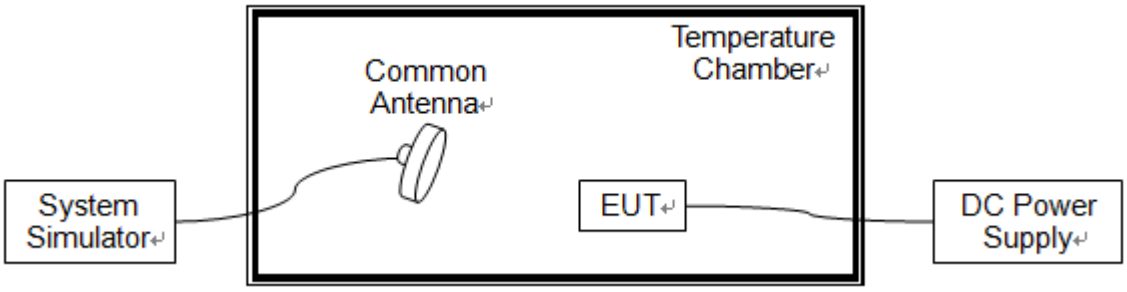
According to FCC section 2.1055 & 90.213, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. According to FCC section 2.1055, the test conditions are:

(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 -20°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 3.85V, 4.20V and 3.40V, which are specified by the applicant; the normal temperature here used is 20°C.

LTE Band 14, 256QAM, Channel 23330, Frequency 793.0MHz Limit=±2.5ppm					
Voltage (%)	**Power (VDC)**	**Temp (°C)**	**Fre. Dev. (Hz)**	**Deviation (ppm)**	**Result**
Normal	3.85	+20(Ref)	20	**0.025**	PASS
Normal		-20	-12	-0.015	
Normal		-10	17	0.021	
Normal		0	13	0.016	
Normal		+10	-7	-0.009	
Normal		+20	15	0.019	
Normal		+30	18	0.023	
Normal		+40	16	0.020	
Normal		+50	18	0.023	
Normal		+55	-6	-0.008	
High	4.20	+20	15	0.019	
BATT.ENDPOINT	3.40	+20	20	**0.025**	

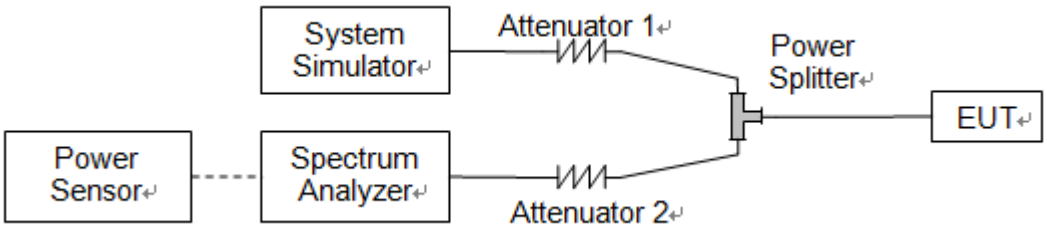
LTE Band 26, 256QAM, Channel 26740, Frequency 819MHz Limit =±2.5ppm					
Voltage (%)	**Power (VDC)**	**Temp(°C)**	**Fre. Dev.(Hz)**	**Deviation (ppm)**	**Result**
Normal	3.85	+20(Ref)	1	0.001	PASS
Normal		-20	15	0.018	
Normal		-10	7	0.009	
Normal		0	15	0.018	
Normal		+10	19	**0.023**	
Normal		+20	13	0.016	
Normal		+30	-17	-0.021	
Normal		+40	-12	-0.015	
Normal		+50	15	0.018	
Normal		+55	-6	-0.007	
High	4.20	+20	19	**0.023**	
BATT.ENDPOINT	3.40	+20	17	0.021	

2.4. Conducted Spurious Emissions

2.4.1. Requirement

According to FCC section 2.1051, the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43+10*log(P)dB. This calculated to be -13dBm.

2.4.2. Test Description

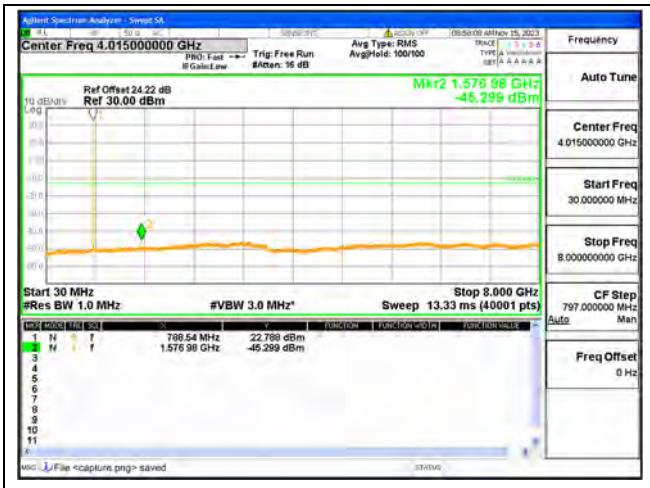


The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum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

2.4.3. Test procedure

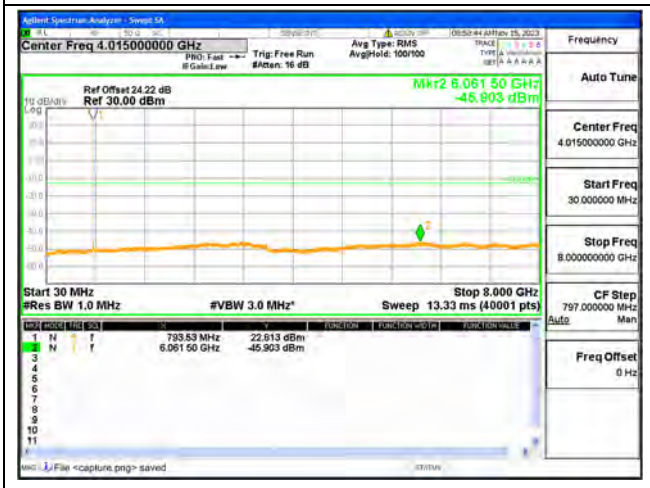
KDB 971168 D01v03 Section 6.0 and ANSI/TIA-603-E-2016.

2.4.4. Test Result

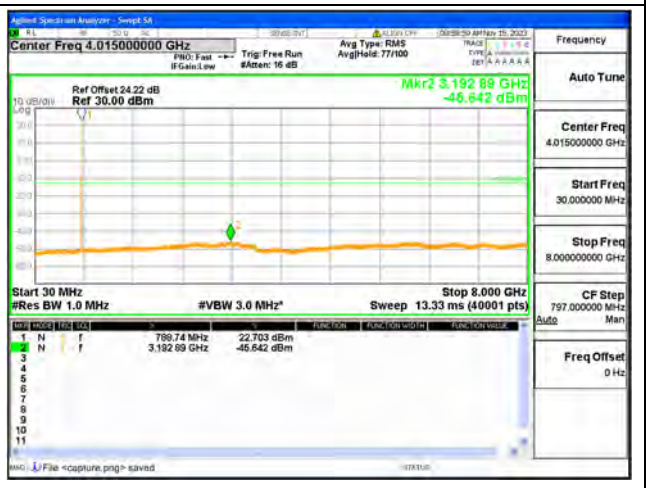


B14 / 5MHz / Low CH / QPSK

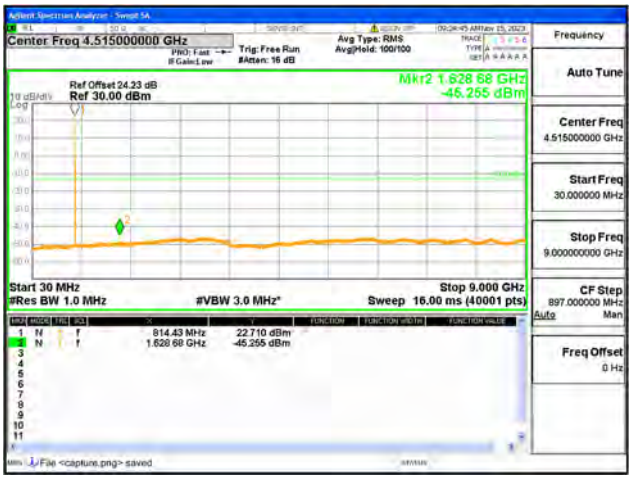
B14 / 5MHz / Mid CH / QPSK



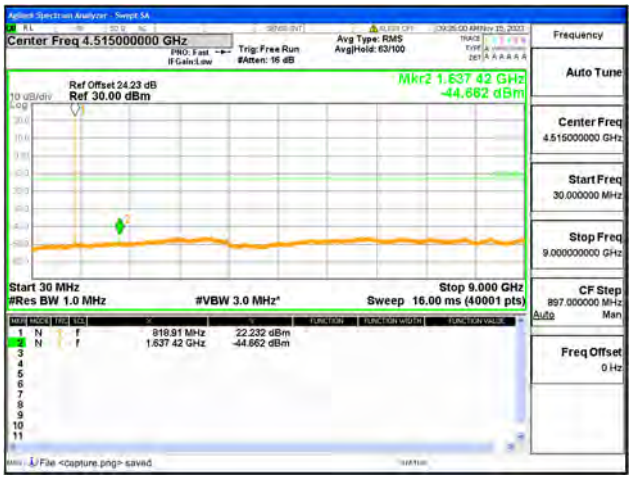
B14 / 5MHz / High CH / QPSK



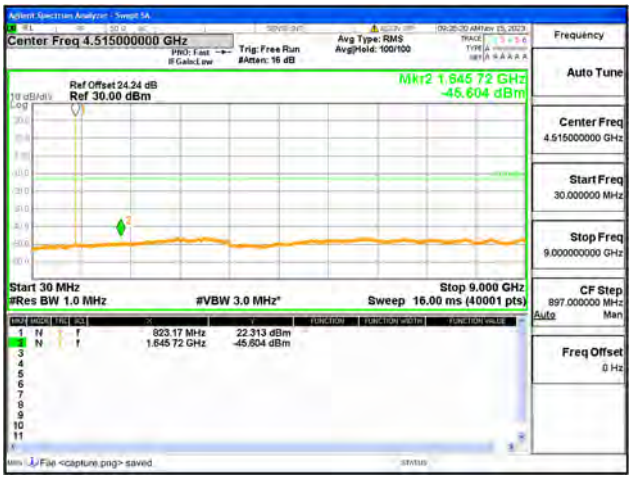
B14 / 10MHz / Mid CH / QPSK



B26 Part90 / 1.4MHz / Low CH / QPSK

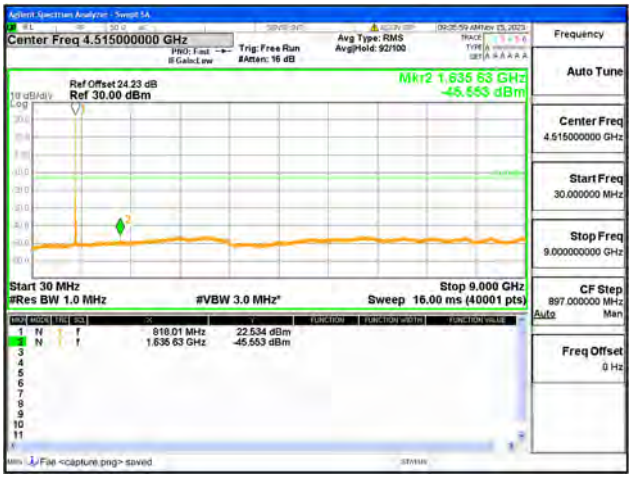


B26 Part90 / 1.4MHz / Mid CH / QPSK

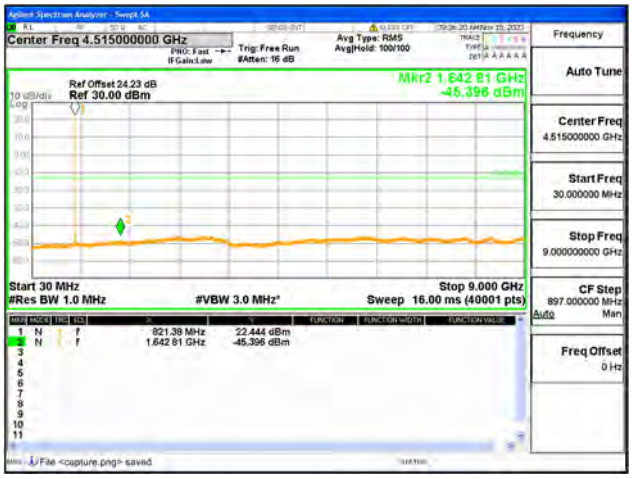


B26 Part90 / 1.4MHz / High CH / QPSK

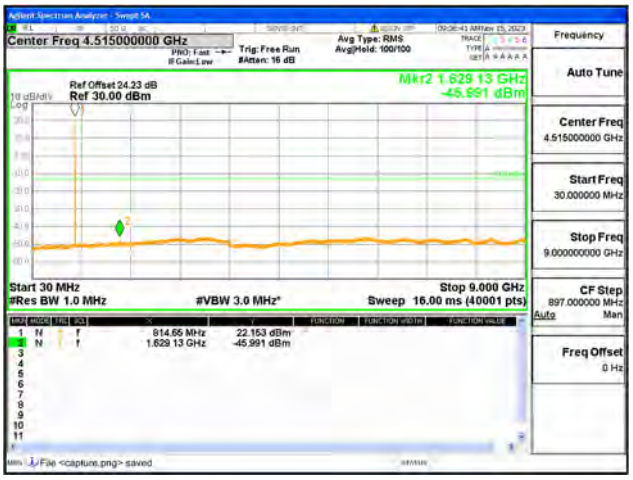
B26 Part90 / 3MHz / Low CH / QPSK



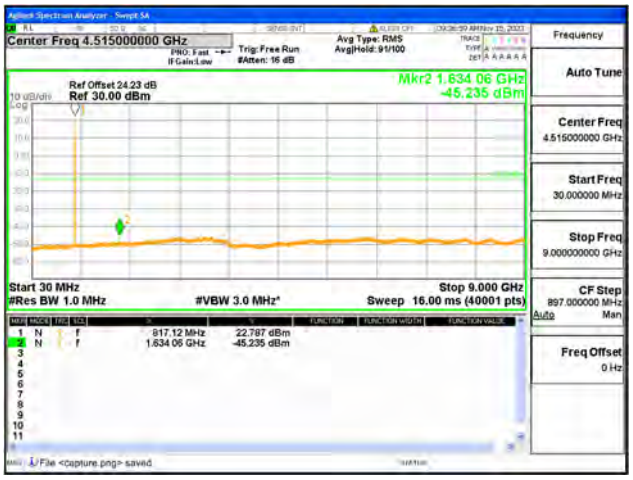
B26 Part90 / 3MHz / Mid CH / QPSK



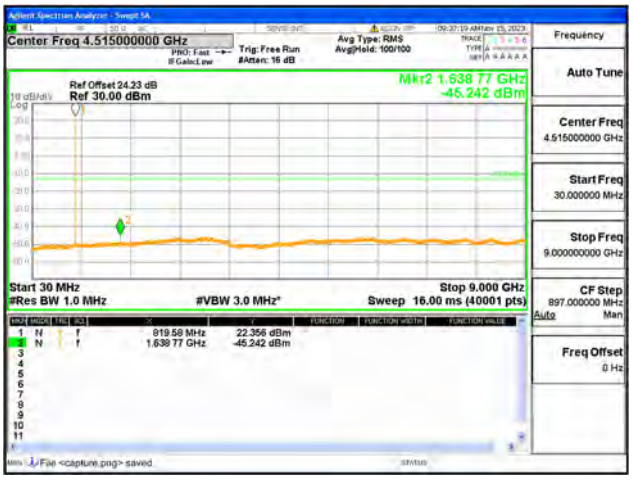
B26 Part90 / 3MHz / High CH / QPSK



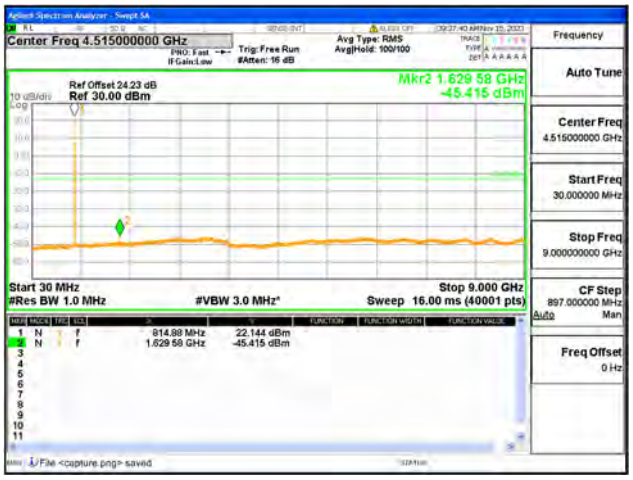
B26 Part90 / 5MHz / Low CH / QPSK



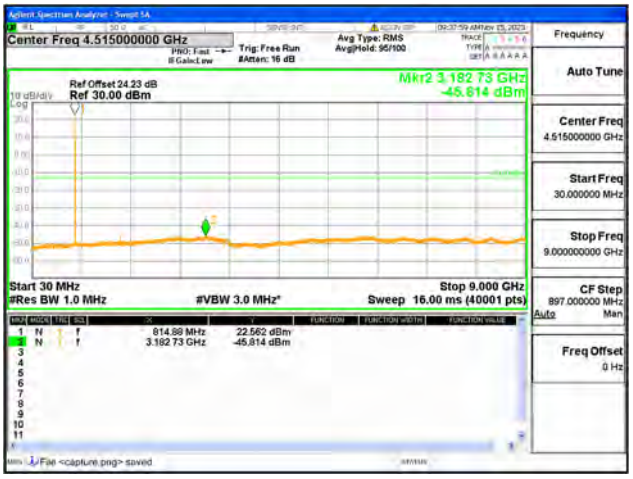
B26 Part90 / 5MHz / Mid CH / QPSK



B26 Part90 / 5MHz / High CH / QPSK



B26 Part90 / 10MHz / Low CH / QPSK



B26 Part90 / 10MHz / Mid CH / QPSK

B26 Part90 / 10MHz / High CH / QPSK

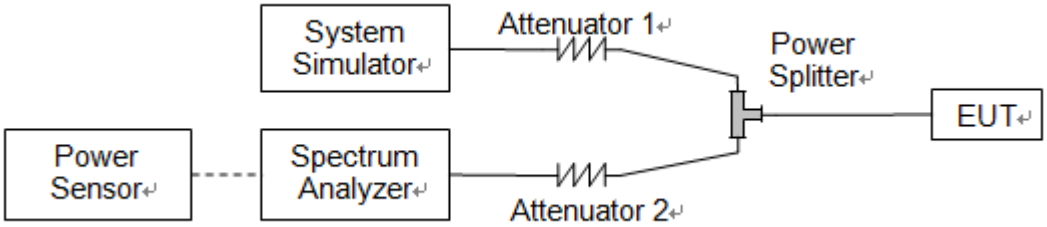
2.5. Band Edge

2.5.1. Requirement

Band26

According to FCC section 90.961(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

2.5.2. Test Description

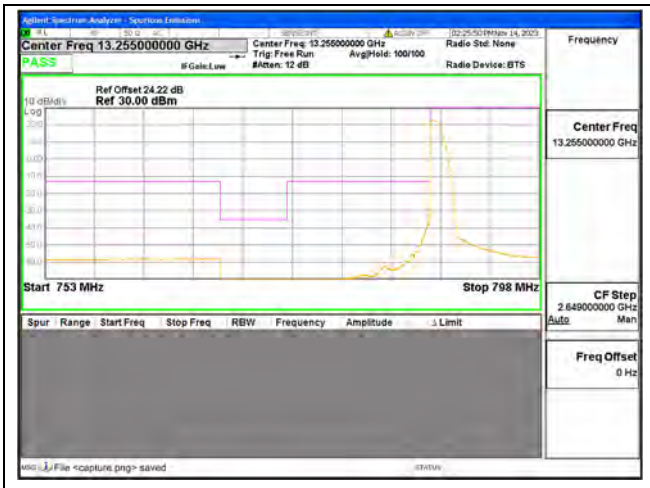


The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum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

2.5.3. Test procedure

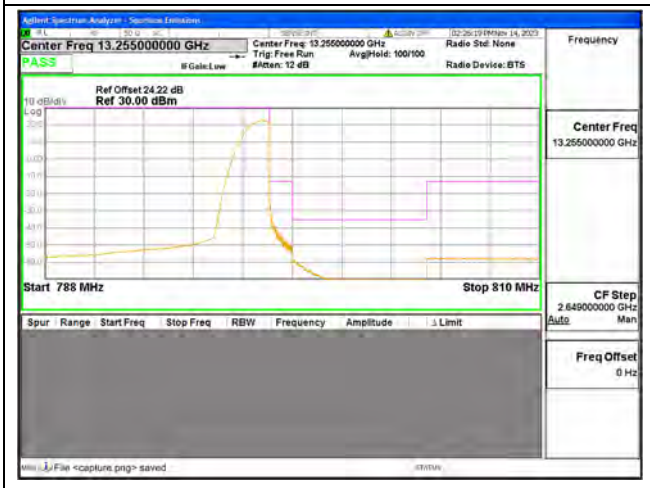
KDB 971168 D01v03 Section 6.0 and ANSI/TIA-603-E-2016.

2.5.4. Test Result



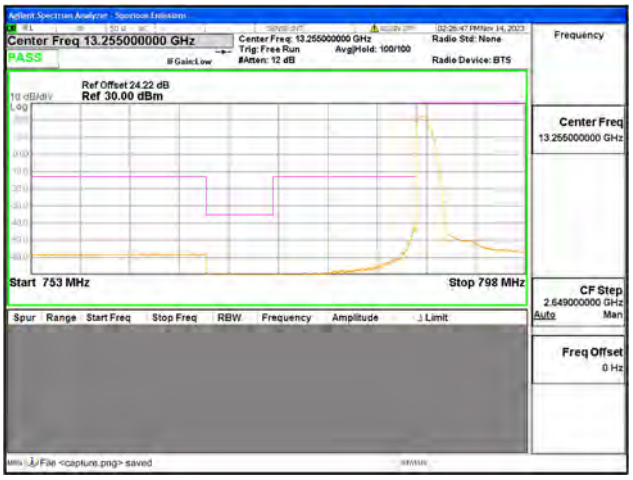
B14 / 5MHz / Low CH / QPSK / 1 RB

B14 / 5MHz / Low CH / QPSK / FULL RB



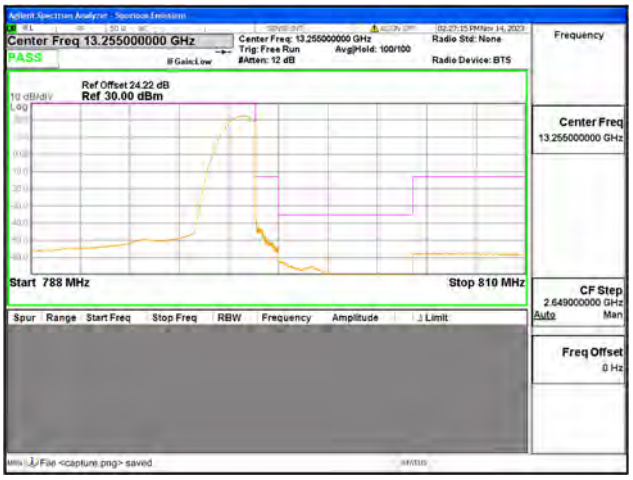
B14 / 5MHz / High CH / QPSK / 1 RB

B14 / 5MHz / High CH / QPSK / FULL RB

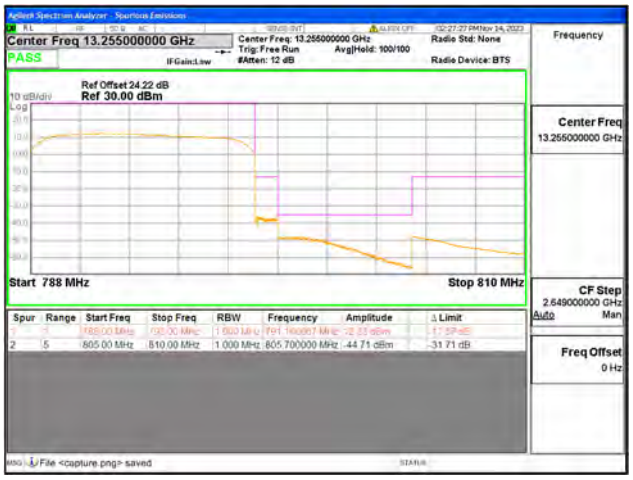


B14 / 10MHz / Low CH / QPSK / 1 RB

B14 / 10MHz / Low CH / QPSK / FULL RB

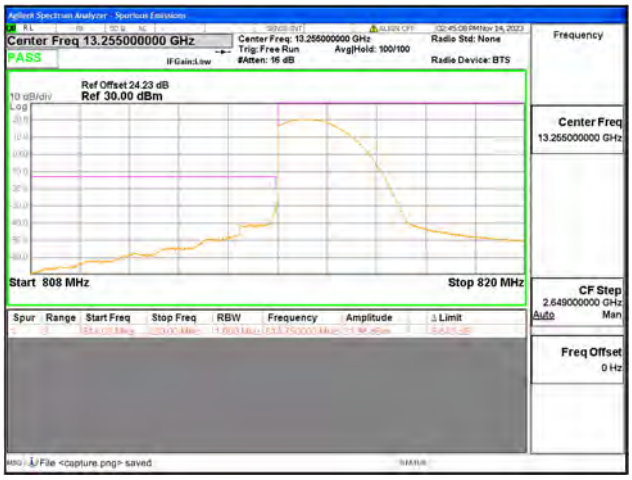


B14 / 10MHz / High CH / QPSK / 1 RB



B14 / 10MHz / High CH / QPSK / FULL RB

B26 Part90 / 1.4MHz / Low CH / QPSK / 1 RB



B26 Part90 / 1.4MHz / Low CH / QPSK / FULL RB

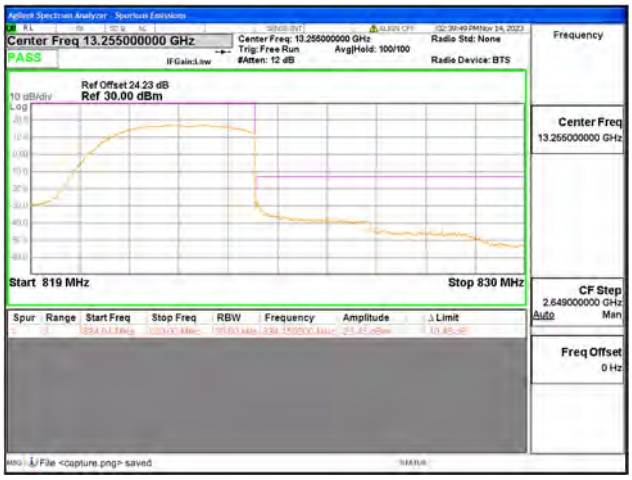
B26 Part90 / 1.4MHz / High CH / QPSK / 1 RB

B26 Part90 / 1.4MHz / High CH / QPSK / FULL RB

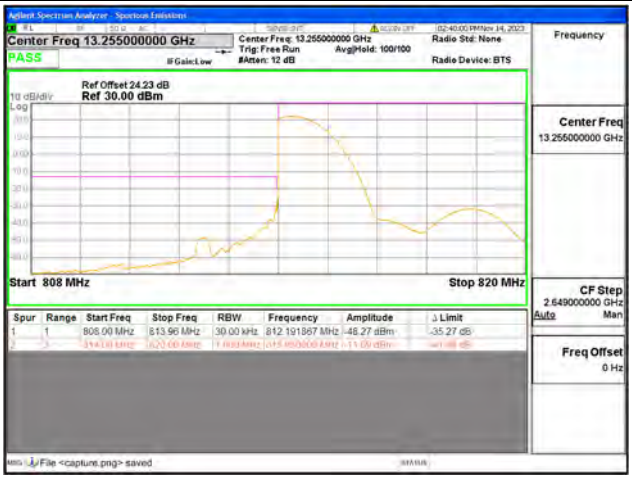
B26 Part90 / 3MHz / Low CH / QPSK / 1 RB

B26 Part90 / 3MHz / Low CH / QPSK / FULL RB

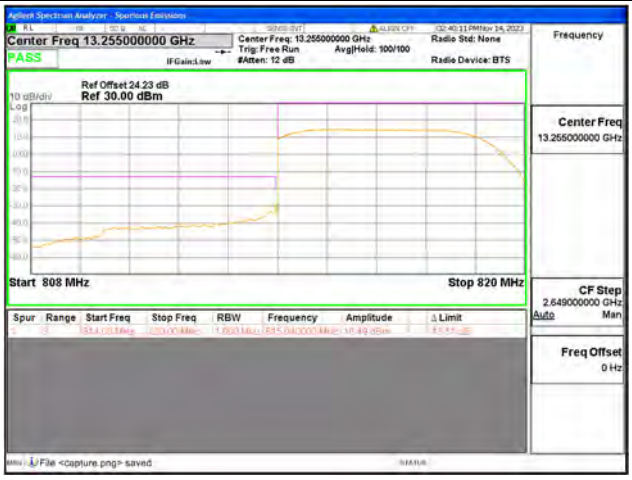
B26 Part90 / 3MHz / High CH / QPSK / 1 RB



B26 Part90 / 3MHz / High CH / QPSK / FULL RB



B26 Part90 / 5MHz / Low CH / QPSK / 1 RB



B26 Part90 / 5MHz / Low CH / QPSK / FULL RB

B26 Part90 / 5MHz / High CH / QPSK / 1 RB

B26 Part90 / 5MHz / High CH / QPSK / FULL RB

B26 Part90 / 10MHz / Low CH / QPSK / 1 RB

B26 Part90 / 10MHz / Low CH / QPSK / FULL RB

B26 Part90 / 10MHz / High CH / QPSK / 1 RB

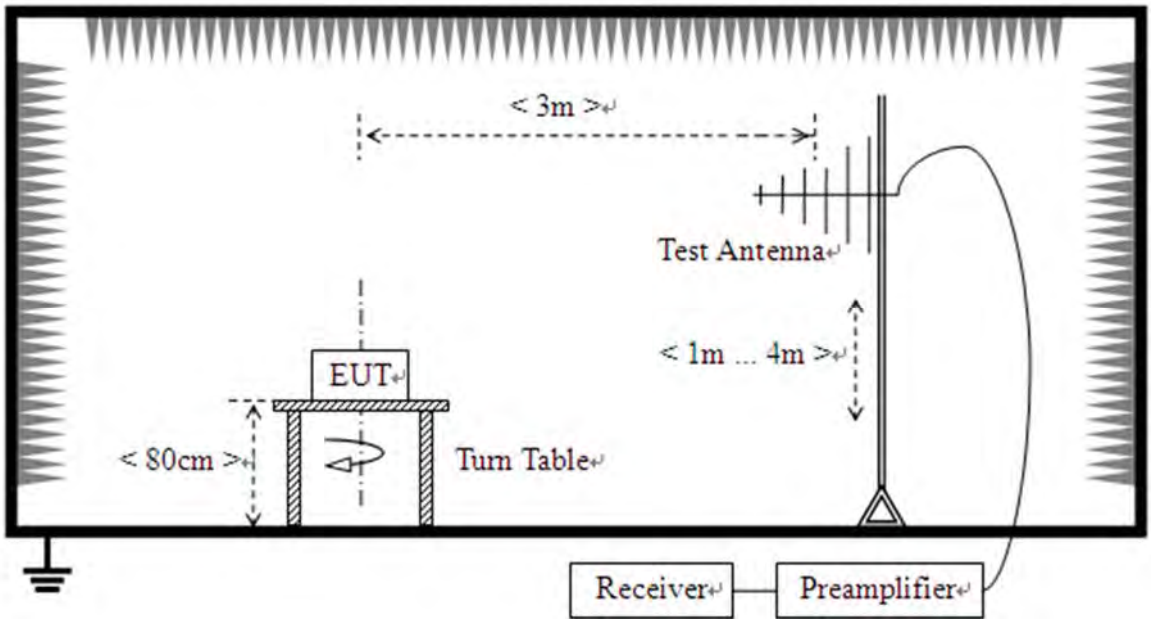
B26 Part90 / 10MHz / High CH / QPSK / FULL RB

2.6. Radiated Spurious Emissions

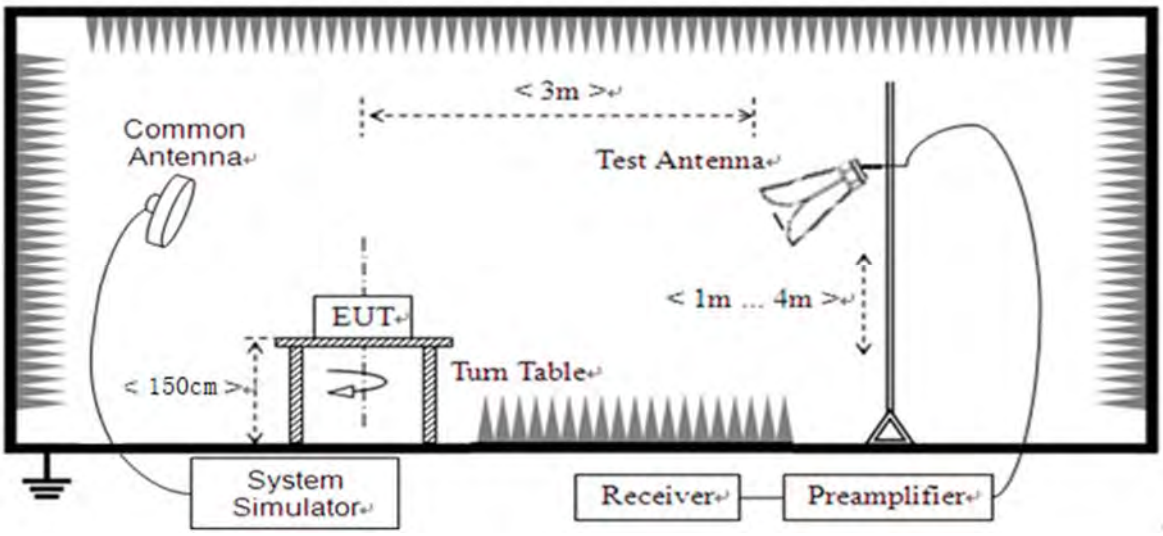
2.6.1. Requirement

According to FCC section 2.1051, the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43+10*log(P)dB. This calculated to be -13dBm.

2.6.2. 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.

2.6.3. Test procedure

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

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

2.6.4. 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.

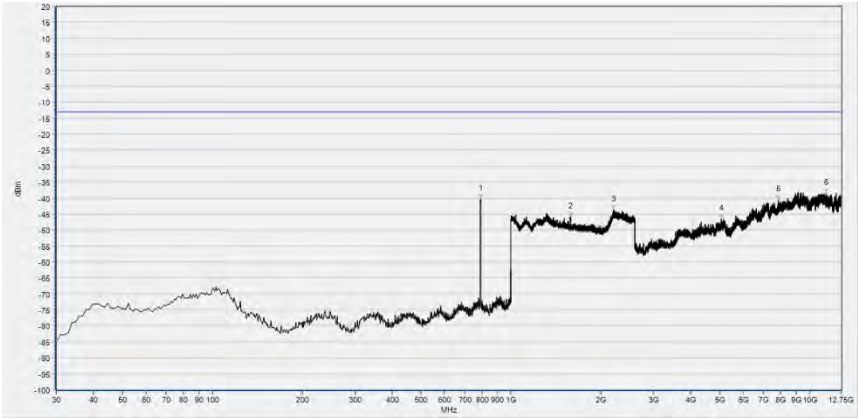
Note3: All bandwidth and modulation were considered and evaluated respectively by performing full test for each band, only the worst cases (Max Bandwidth and QPSK mode) were recorded in this test report.

Note4: N/A means the frequency is the basic frequency or the base station frequency, they are no need to verdict.

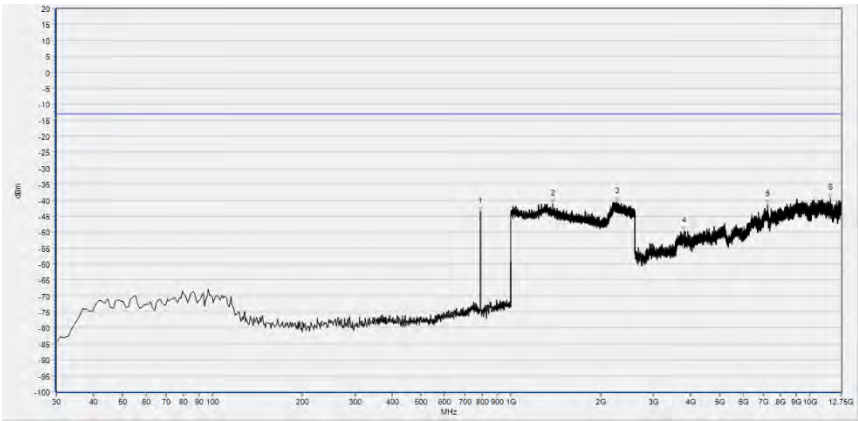
Note5: The amplitude of emissions (18GHz to 10th harmonics) which are attenuated more than 20 dB below the limit are not be reported.

ANT 4:

LTE Band 14, 5MHz BW, Low Channel, QPSK

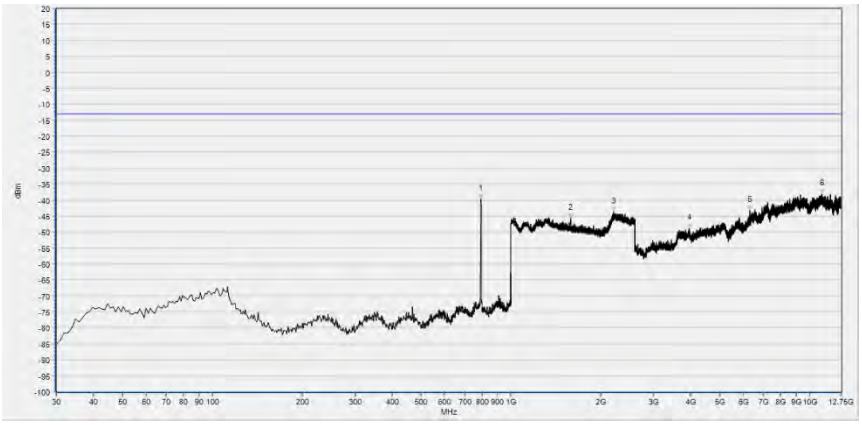


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	792.420	-40.28	-13.00	Horizontal	N/A
2	1580.712	-45.82	-13.00	Horizontal	PASS
3	2206.883	-43.75	-13.00	Horizontal	PASS
4	5062.284	-46.60	-13.00	Horizontal	PASS
5	7869.731	-40.47	-13.00	Horizontal	PASS
6	11330.587	-38.48	-13.00	Horizontal	PASS

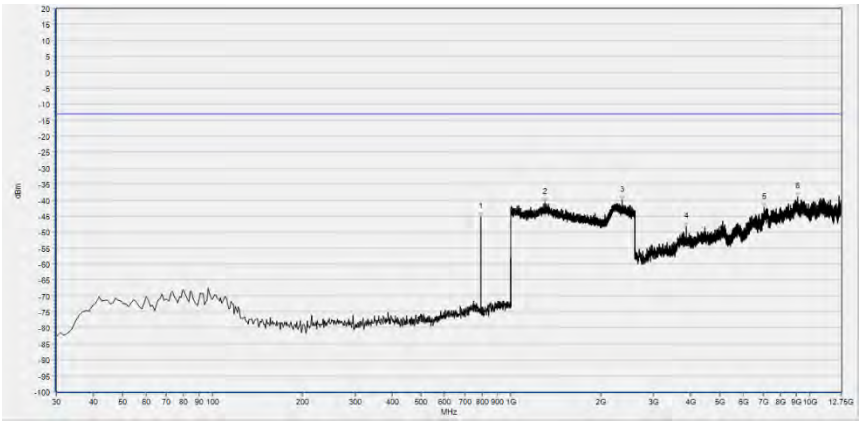


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	789.510	-43.66	-13.00	Vertical	N/A
2	1379.672	-41.25	-13.00	Vertical	PASS
3	2263.225	-40.62	-13.00	Vertical	PASS
4	3794.226	-49.67	-13.00	Vertical	PASS
5	7240.316	-41.42	-13.00	Vertical	PASS
6	11738.507	-39.42	-13.00	Vertical	PASS

LTE Band 14, 5MHz BW, Mid Channel, QPSK

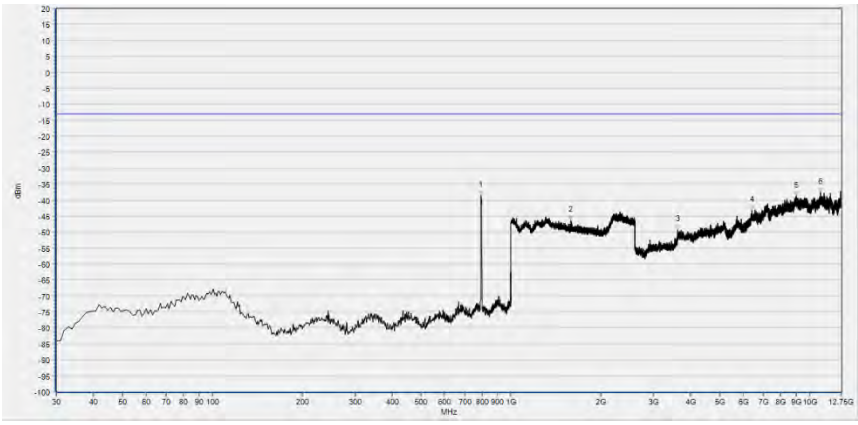


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	790.480	-39.73	-13.00	Horizontal	N/A
2	1585.834	-45.74	-13.00	Horizontal	PASS
3	2208.804	-43.63	-13.00	Horizontal	PASS
4	3943.735	-48.89	-13.00	Horizontal	PASS
5	6310.038	-43.16	-13.00	Horizontal	PASS
6	10987.270	-38.09	-13.00	Horizontal	PASS

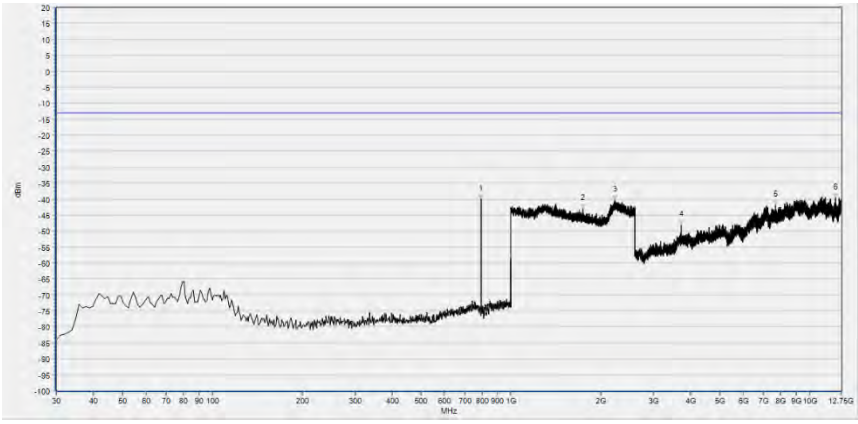


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	791.450	-45.32	-13.00	Vertical	N/A
2	1297.719	-40.88	-13.00	Vertical	PASS
3	2354.782	-40.08	-13.00	Vertical	PASS
4	3856.983	-48.34	-13.00	Vertical	PASS
5	7042.817	-42.30	-13.00	Vertical	PASS
6	9137.789	-38.92	-13.00	Vertical	PASS

LTE Band 14, 5MHz BW, High Channel, QPSK

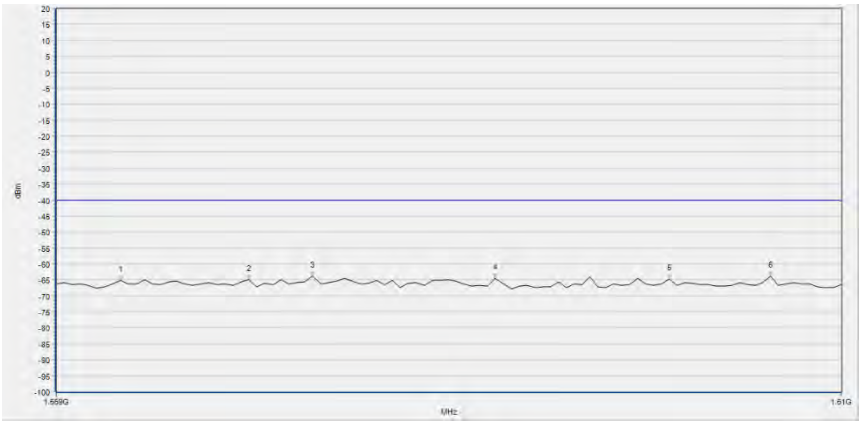


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	794.360	-38.45	-13.00	Horizontal	N/A
2	1587.755	-46.45	-13.00	Horizontal	PASS
3	3618.876	-49.24	-13.00	Horizontal	PASS
4	6402.328	-43.13	-13.00	Horizontal	PASS
5	8993.817	-38.83	-13.00	Horizontal	PASS
6	10865.448	-37.63	-13.00	Horizontal	PASS

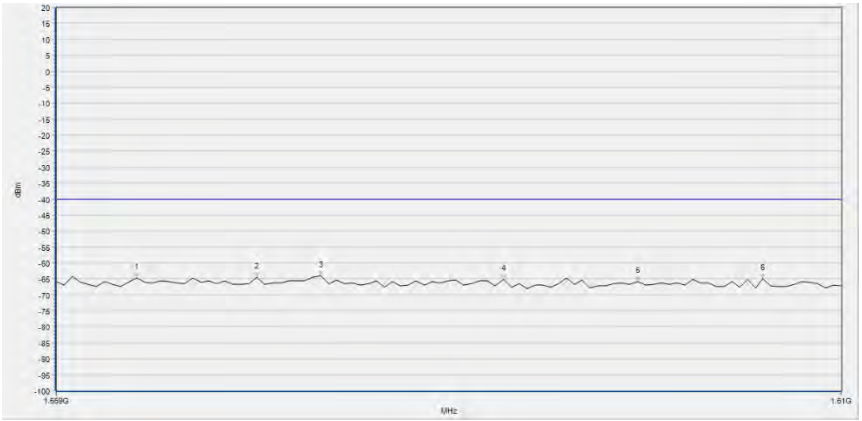


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	794.360	-50.02	-13.00	Vertical	N/A
2	1739.496	-43.03	-13.00	Vertical	PASS
3	2223.529	-40.41	-13.00	Vertical	PASS
4	3724.086	-48.12	-13.00	Vertical	PASS
5	7698.072	-41.86	-13.00	Vertical	PASS
6	12203.646	-39.62	-13.00	Vertical	PASS

LTE Band 14,1559MHz-1610MHz, 5MHz BW, Mid Channel, QPSK

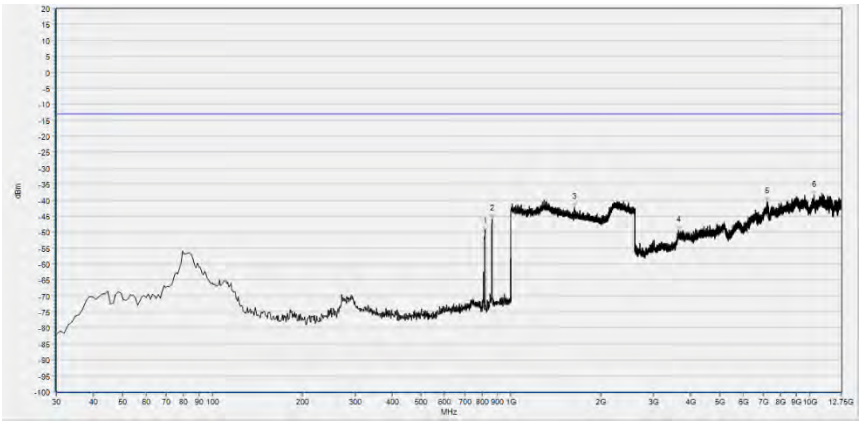


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	1563.121	-65.19	-40.00	Horizontal	PASS
2	1571.364	-64.82	-40.00	Horizontal	PASS
3	1575.485	-63.78	-40.00	Horizontal	PASS
4	1587.333	-64.45	-40.00	Horizontal	PASS
5	1598.667	-64.70	-40.00	Horizontal	PASS
6	1605.364	-63.86	-40.00	Horizontal	PASS

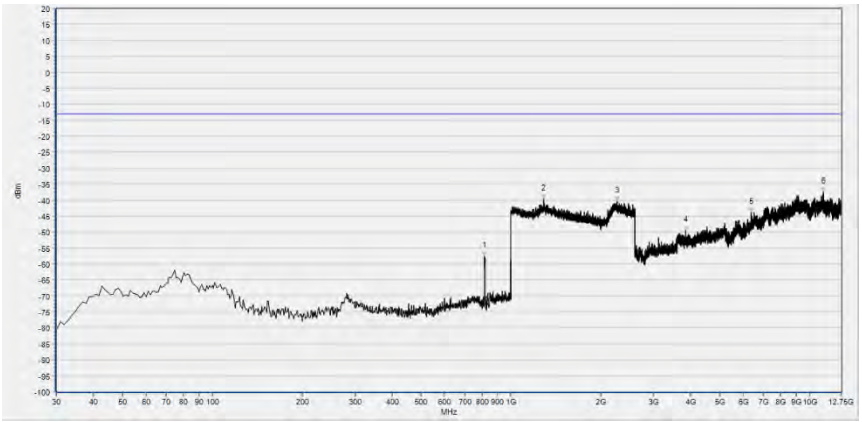


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	1564.152	-64.72	-40.00	Vertical	PASS
2	1571.879	-64.38	-40.00	Vertical	PASS
3	1576.000	-63.91	-40.00	Vertical	PASS
4	1587.848	-65.08	-40.00	Vertical	PASS
5	1596.606	-65.74	-40.00	Vertical	PASS
6	1604.848	-64.95	-40.00	Vertical	PASS

LTE Band 26, 5MHz BW, Low Channel, QPSK

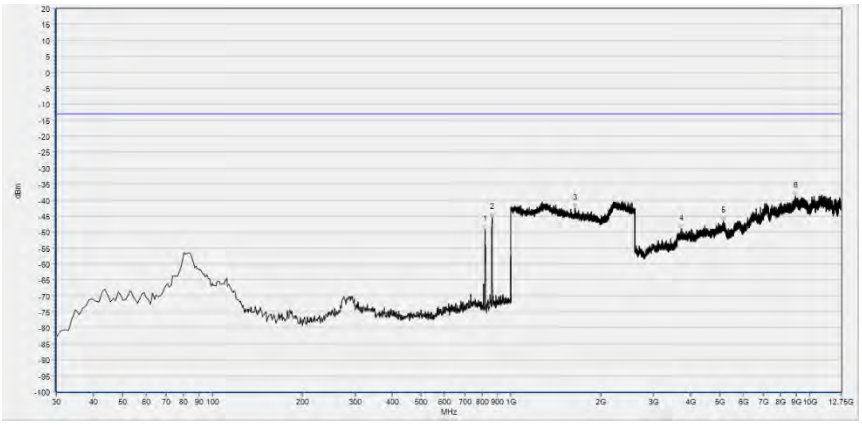


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	816.670	-49.88	-13.00	Horizontal	N/A
2	863.230	-45.94	-13.00	Horizontal	N/A
3	1629.372	-42.24	-13.00	Horizontal	PASS
4	3633.642	-49.59	-13.00	Horizontal	PASS
5	7196.017	-40.52	-13.00	Horizontal	PASS
6	10337.552	-38.58	-13.00	Horizontal	PASS

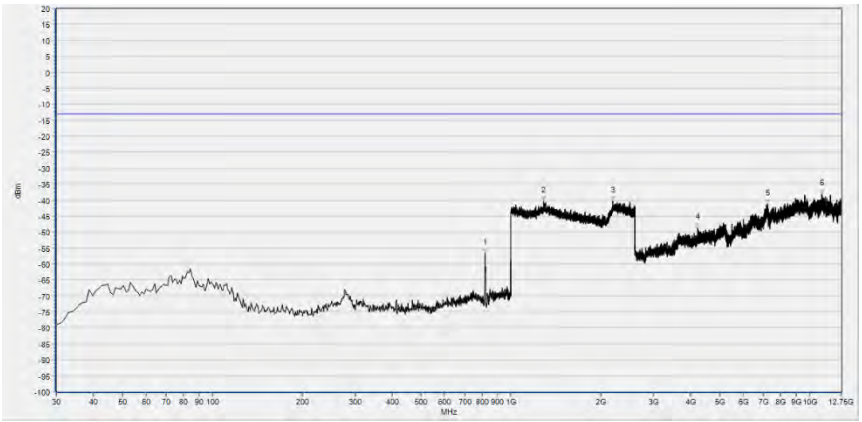


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	814.730	-57.48	-13.00	Vertical	N/A
2	1284.914	-39.63	-13.00	Vertical	PASS
3	2260.664	-40.32	-13.00	Vertical	PASS
4	3845.908	-49.55	-13.00	Vertical	PASS
5	6361.720	-43.83	-13.00	Vertical	PASS
6	11133.088	-37.37	-13.00	Vertical	PASS

LTE Band 26, 5MHz BW, Mid Channel, QPSK

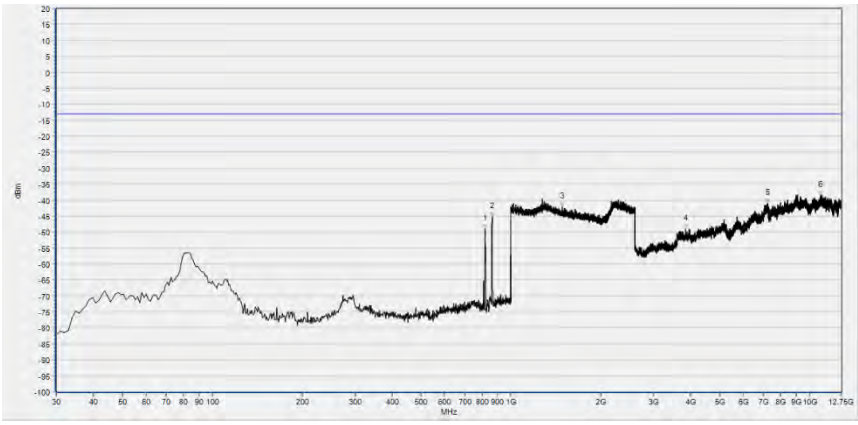


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	816.670	-49.28	-13.00	Horizontal	N/A
2	864.200	-45.56	-13.00	Horizontal	N/A
3	1635.774	-42.58	-13.00	Horizontal	PASS
4	3727.778	-49.10	-13.00	Horizontal	PASS
5	5143.499	-46.59	-13.00	Horizontal	PASS
6	8977.205	-38.87	-13.00	Horizontal	PASS

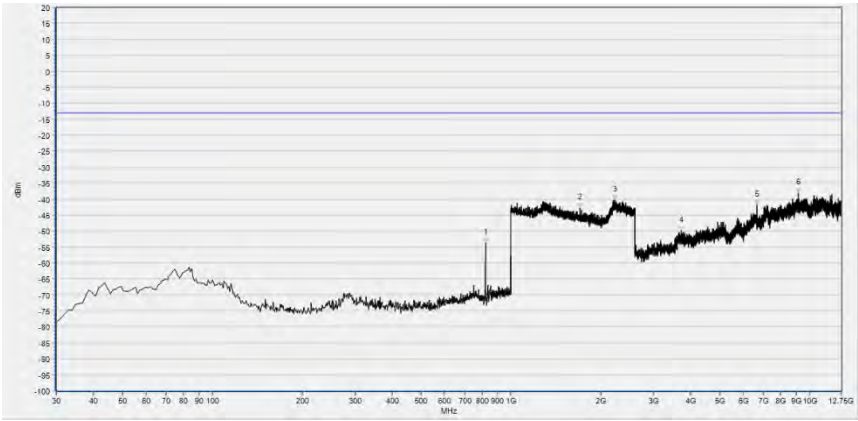


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	817.640	-56.55	-13.00	Vertical	N/A
2	1284.274	-40.41	-13.00	Vertical	PASS
3	2192.157	-40.39	-13.00	Vertical	PASS
4	4209.529	-48.57	-13.00	Vertical	PASS
5	7220.013	-41.26	-13.00	Vertical	PASS
6	10961.429	-38.05	-13.00	Vertical	PASS

LTE Band 26, 5MHz BW, High Channel, QPSK



No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	816.670	-49.00	-13.00	Horizontal	N/A
2	865.170	-45.34	-13.00	Horizontal	N/A
3	1486.595	-42.22	-13.00	Horizontal	PASS
4	3838.525	-49.12	-13.00	Horizontal	PASS
5	7242.162	-40.90	-13.00	Horizontal	PASS
6	10869.140	-38.52	-13.00	Horizontal	PASS



No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	822.490	-53.66	-13.00	Vertical	N/A
2	1703.001	-42.75	-13.00	Vertical	PASS
3	2223.529	-40.40	-13.00	Vertical	PASS
4	3709.320	-50.01	-13.00	Vertical	PASS
5	6651.509	-41.96	-13.00	Vertical	PASS
6	9154.401	-38.16	-13.00	Vertical	PASS

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 Equipments Utilized

4.1 Conducted Test Equipments

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 Equipments

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-KKF-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 B14	Wainwright	N/A	N/A
Notch Filter	N/A	WRCGV -LTE B26	Wainwright	N/A	N/A
Anechoic Chamber	N/A	9m*6m*6m	CRT	2022.05.10	2025.05.09

END OF REPORT