



REPORT No.: SZ22050203W02

TEST REPORT

APPLICANT : Beijing Davinci Technology Co., Ltd

PRODUCT NAME : T-BOX

MODEL NAME : MTB-100A

BRAND NAME : **DAVINCI**

FCC ID : 2A7NPMTB100A

STANDARD(S) : 47 CFR Part 24, Subpart E
47 CFR Part 27, Subpart H&L

RECEIPT DATE : 2022-06-23

TEST DATE : 2022-07-05 to 2022-08-03

ISSUE DATE : 2022-08-19

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Change History		
Version	Date	Reason for change
1.0	2022-08-19	First edition



1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	Beijing Davinci Technology Co., Ltd
Applicant Address:	A517, ThuStar BaJia, Shuangqing Rd.Haidian, Beijing, China
Manufacturer:	Wuhan Intest Electronic Technology Co., Ltd.
Manufacturer Address:	No.308,Guanggu Avenue,Donghu New Technology Development Zone,Wuhan City,Hubei Province,China

1.2. Equipment Under Test (EUT) Description

Product Name:	T-BOX	
Sample No.:	2#	
Hardware Version:	H001	
Software Version:	S001	
Modulation Type:	QPSK, 16QAM	
Carrier Aggregation:	Not Support	
Operation Band:	Band 2 / 4 / 12	
Frequency Range:	LTE Band 2	Tx: 1850MHz–1910MHz
		Rx: 1930MHz–1990MHz
	LTE Band 4	Tx: 1710MHz–1755MHz
		Rx: 2110MHz–2155MHz
	LTE Band 12	Tx: 699MHz - 716MHz
		Rx: 729MHz – 746MHz
Channel Bandwidth:	LTE Band 2	1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
	LTE Band 4	1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
	LTE Band 12	1.4MHz, 3 MHz, 5 MHz, 10MHz
Antenna Type:	Fixed Internal Antenna	
Antenna Gain:	LTE Band 2	1.5dBi
	LTE Band 4	1.5dBi
	LTE Band 12	-1.0dBi



Accessory Information:	Battery	
	Brand Name:	N/A
	Model No.:	AAA600mAh
	Serial No.:	N/A
	Capacity:	600mAh
	Rated Voltage:	3.6V
	Charge Limit:	4.5V
	Manufacturer:	Shenzhen EPT Battery 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 2	Maximum E.R.P./E.I.R.P. (W)		Emission Designator (99%OBW)	
BW(MHz)	QPSK	16QAM	QPSK	16QAM
20	0.302	0.213	18M0G7D	17M9W7D
15	0.296	0.209	13M5G7D	13M5W7D
10	0.291	0.206	9M02G7D	8M98W7D
5	0.286	0.202	4M52G7D	4M52W7D
3	0.281	0.198	2M71G7D	2M72W7D
1.4	0.275	0.195	1M11G7D	1M11W7D
LTE Band 4	Maximum E.R.P./E.I.R.P. (W)		Emission Designator (99%OBW)	
BW(MHz)	QPSK	16QAM	QPSK	16QAM
20	0.292	0.210	18M0G7D	18M0W7D
15	0.286	0.206	13M5G7D	13M5W7D
10	0.281	0.201	8M99G7D	9M00W7D
5	0.275	0.197	4M52G7D	4M52W7D
3	0.269	0.193	2M71G7D	2M72W7D
1.4	0.264	0.189	1M10G7D	1M10W7D
LTE Band 12	Maximum E.R.P./E.I.R.P. (W)		Emission Designator (99%OBW)	
BW(MHz)	QPSK	16QAM	QPSK	16QAM
10	0.100	0.071	8M99G7D	9M00W7D
5	0.099	0.070	4M53G7D	4M51W7D
3	0.097	0.069	2M71G7D	2M72W7D
1.4	0.095	0.067	1M10G7D	1M11W7D



1.4. Test Standards and Results

The objective of the report is to perform testing according to Part 2, Part 24, Part 27 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 24	Personal Communications Services
3	47 CFR Part 27	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 24.232(c) 27.50(c)(10) 27.50(d)(4)	Transmitter Conducted Output Power and E.R.P./E.I.R.P.	Aug. 03, 2022	Chen Hao Li Huaijie	PASS	No deviation
2.1049	Occupied Bandwidth	Jul. 06, 2022	Li Huaijie	PASS	No deviation
2.1055 24.235 27.54	Frequency Stability	Jul. 06, 2022	Li Huaijie	PASS	No deviation
24.232(d), 27.50(d)(5)	Peak to Average Ratio	Jul. 06, 2022	Li Huaijie	PASS	No deviation
2.1051 24.238(a) 27.53(g) 27.53(h)	Conducted Spurious Emissions	Jul. 06, 2022	Li Huaijie	PASS	No deviation
2.1051 24.238(a) 27.53(g) 27.53(h)	Band Edge	Jul. 06, 2022	Li Huaijie	PASS	No deviation
2.1053 24.238(a) 27.53(g) 27.53(h)	Radiated Spurious Emissions	Jul. 19, 2022	Su Zhan	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 equipments. 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



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

According to FCC section 27.50 (c)(10) for LTE Band 12, Portable stations (hand-held devices) operating in the 704-716MHz band are limited to 3watts E.R.P.

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graph LR
    SS[System Simulator] -- Attenuator 1 --> PS[Power Splitter]
    SA[Spectrum Analyzer] -- Attenuator 2 --> PS
    PS --> EUT[EUT]
    PS -.-> PSen[Power Sensor]
    PSen -.-> SA
  
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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 50 Ohm; 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.

E.I.R.P. (dBm) = Conducted Output Power (dBm) + Antenna Gain (dBi)

E.R.P. (dBm) = E.I.R.P. (dBm) - 2.15

2.1.4. Result

Conducted Output Power:

LTE Band 2						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				18700	18900	19100
Frequency (MHz)				1860	1880	1900
20	QPSK	1	0	23.20	23.30	23.25
20	QPSK	1	49	23.15	23.25	23.20
20	QPSK	1	99	22.80	23.00	22.95
20	QPSK	50	0	21.74	22.00	21.90
20	QPSK	50	24	21.60	21.89	21.70
20	QPSK	50	50	21.67	21.93	21.83
20	QPSK	100	0	21.60	21.86	21.76
20	16QAM	1	0	21.53	21.79	21.69
20	16QAM	1	49	21.48	21.74	21.64
20	16QAM	1	99	21.43	21.69	21.59
20	16QAM	50	0	21.38	21.33	21.28
20	16QAM	50	24	21.33	21.21	21.23
20	16QAM	50	50	21.28	21.22	21.20
20	16QAM	100	0	21.23	21.20	21.39



LTE Band 2						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				18675	18900	19125
Frequency (MHz)				1857.5	1880	1902.5
15	QPSK	1	0	23.12	23.22	23.17
15	QPSK	1	37	23.07	23.17	23.12
15	QPSK	1	74	22.72	22.92	22.87
15	QPSK	36	0	21.66	21.92	21.82
15	QPSK	36	20	21.52	21.81	21.62
15	QPSK	36	39	21.59	21.85	21.75
15	QPSK	75	0	21.52	21.78	21.68
15	16QAM	1	0	21.45	21.71	21.61
15	16QAM	1	37	21.40	21.66	21.56
15	16QAM	1	74	21.35	21.61	21.51
15	16QAM	36	0	21.33	21.21	21.23
15	16QAM	36	20	21.28	21.22	21.20
15	16QAM	36	39	21.20	21.46	21.36
15	16QAM	75	0	21.15	21.41	21.31



LTE Band 2						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				18650	18900	19150
Frequency (MHz)				1855	1880	1905
10	QPSK	1	0	23.04	23.14	23.09
10	QPSK	1	25	22.99	23.09	23.04
10	QPSK	1	49	22.64	22.84	22.79
10	QPSK	25	0	21.58	21.84	21.74
10	QPSK	25	12	21.44	21.73	21.54
10	QPSK	25	25	21.51	21.77	21.67
10	QPSK	50	0	21.44	21.70	21.60
10	16QAM	1	0	21.37	21.63	21.53
10	16QAM	1	25	21.32	21.58	21.48
10	16QAM	1	49	21.27	21.53	21.43
10	16QAM	25	0	21.22	21.48	21.38
10	16QAM	25	12	21.17	21.43	21.33
10	16QAM	25	25	21.12	21.38	21.28
10	16QAM	50	0	21.07	21.33	21.23



LTE Band 2						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				18625	18900	19175
Frequency (MHz)				1852.5	1880	1907.5
5	QPSK	1	0	22.96	23.06	23.01
5	QPSK	1	12	22.91	23.01	22.96
5	QPSK	1	24	22.56	22.76	22.71
5	QPSK	12	0	21.50	21.76	21.66
5	QPSK	12	7	21.36	21.65	21.46
5	QPSK	12	13	21.43	21.69	21.59
5	QPSK	25	0	21.36	21.62	21.52
5	16QAM	1	0	21.29	21.55	21.45
5	16QAM	1	12	21.24	21.50	21.40
5	16QAM	1	24	21.19	21.45	21.35
5	16QAM	12	0	21.14	21.40	21.30
5	16QAM	12	7	21.09	21.35	21.25
5	16QAM	12	13	21.04	21.30	21.20
5	16QAM	25	0	20.99	21.25	21.15



LTE Band 2						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				18615	18900	19185
Frequency (MHz)				1851.5	1880	1908.5
3	QPSK	1	0	22.88	22.98	22.93
3	QPSK	1	8	22.83	22.93	22.88
3	QPSK	1	14	22.48	22.68	22.63
3	QPSK	8	0	21.42	21.68	21.58
3	QPSK	8	4	21.28	21.57	21.38
3	QPSK	8	7	21.35	21.61	21.51
3	QPSK	15	0	21.28	21.54	21.44
3	16QAM	1	0	21.21	21.47	21.37
3	16QAM	1	8	21.16	21.42	21.32
3	16QAM	1	14	21.11	21.37	21.27
3	16QAM	8	0	21.06	21.32	21.22
3	16QAM	8	4	21.01	21.27	21.17
3	16QAM	8	7	20.96	21.22	21.12
3	16QAM	15	0	20.91	21.17	21.07



LTE Band 2						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				18607	18900	19193
Frequency (MHz)				1850.7	1880	1909.3
1.4	QPSK	1	0	22.80	22.90	22.85
1.4	QPSK	1	3	22.75	22.85	22.80
1.4	QPSK	1	5	22.40	22.60	22.55
1.4	QPSK	3	0	22.10	22.05	22.06
1.4	QPSK	3	1	22.05	22.00	22.01
1.4	QPSK	3	3	21.64	21.89	22.00
1.4	QPSK	6	0	21.20	21.46	21.36
1.4	16QAM	1	0	21.13	21.39	21.29
1.4	16QAM	1	3	21.08	21.34	21.24
1.4	16QAM	1	5	21.03	21.29	21.19
1.4	16QAM	3	0	20.98	21.24	21.14
1.4	16QAM	3	1	20.93	21.19	21.09
1.4	16QAM	3	3	20.88	21.14	21.04
1.4	16QAM	6	0	20.83	21.09	20.99



LTE Band 4						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				20050	20175	20300
Frequency (MHz)				1720	1732.5	1745
20	QPSK	1	0	22.76	23.16	22.79
20	QPSK	1	49	23.08	23.10	23.01
20	QPSK	1	99	22.73	22.93	22.88
20	QPSK	50	0	21.67	21.93	21.83
20	QPSK	50	24	21.53	21.82	21.63
20	QPSK	50	50	21.60	21.86	21.76
20	QPSK	100	0	21.53	21.79	21.69
20	16QAM	1	0	21.46	21.72	21.62
20	16QAM	1	49	21.43	21.69	21.59
20	16QAM	1	99	21.38	21.64	21.54
20	16QAM	50	0	21.14	21.23	21.20
20	16QAM	50	24	21.28	21.18	21.22
20	16QAM	50	50	21.23	21.10	21.24
20	16QAM	100	0	21.12	21.11	21.32



LTE Band 4						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				20025	20175	20325
Frequency (MHz)				1717.5	1732.5	1747.5
15	QPSK	1	0	22.67	23.07	22.70
15	QPSK	1	37	22.99	23.01	22.92
15	QPSK	1	74	22.64	22.84	22.79
15	QPSK	36	0	21.58	21.84	21.74
15	QPSK	36	20	21.44	21.73	21.54
15	QPSK	36	39	21.51	21.77	21.67
15	QPSK	75	0	21.44	21.70	21.60
15	16QAM	1	0	21.37	21.63	21.53
15	16QAM	1	37	21.34	21.60	21.50
15	16QAM	1	74	21.29	21.55	21.45
15	16QAM	36	0	21.24	21.50	21.40
15	16QAM	36	20	21.19	21.45	21.35
15	16QAM	36	39	21.14	21.40	21.30
15	16QAM	75	0	21.09	21.35	21.25



LTE Band 4						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				20000	20175	20350
Frequency (MHz)				1715	1732.5	1750
10	QPSK	1	0	22.58	22.98	22.61
10	QPSK	1	25	22.90	22.92	22.83
10	QPSK	1	49	22.55	22.75	22.70
10	QPSK	25	0	21.49	21.75	21.65
10	QPSK	25	12	21.35	21.64	21.45
10	QPSK	25	25	21.42	21.68	21.58
10	QPSK	50	0	21.35	21.61	21.51
10	16QAM	1	0	21.28	21.54	21.44
10	16QAM	1	25	21.25	21.51	21.41
10	16QAM	1	49	21.20	21.46	21.36
10	16QAM	25	0	21.15	21.41	21.31
10	16QAM	25	12	21.10	21.36	21.26
10	16QAM	25	25	21.05	21.31	21.21
10	16QAM	50	0	21.00	21.26	21.16



LTE Band 4						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				19975	20175	20375
Frequency (MHz)				1712.5	1732.5	1752.5
5	QPSK	1	0	22.49	22.89	22.52
5	QPSK	1	12	22.81	22.83	22.74
5	QPSK	1	24	22.46	22.66	22.61
5	QPSK	12	0	21.40	21.66	21.56
5	QPSK	12	7	21.26	21.55	21.36
5	QPSK	12	13	21.33	21.59	21.49
5	QPSK	25	0	21.26	21.52	21.42
5	16QAM	1	0	21.19	21.45	21.35
5	16QAM	1	12	21.16	21.42	21.32
5	16QAM	1	24	21.11	21.37	21.27
5	16QAM	12	0	21.06	21.32	21.22
5	16QAM	12	7	21.01	21.27	21.17
5	16QAM	12	13	20.96	21.22	21.12
5	16QAM	25	0	20.91	21.17	21.07



LTE Band 4						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				19965	20175	20385
Frequency (MHz)				1711.5	1732.5	1753.5
3	QPSK	1	0	22.40	22.80	22.43
3	QPSK	1	8	22.72	22.74	22.65
3	QPSK	1	14	22.37	22.57	22.52
3	QPSK	8	0	21.31	21.57	21.47
3	QPSK	8	4	21.17	21.46	21.27
3	QPSK	8	7	21.24	21.50	21.40
3	QPSK	15	0	21.17	21.43	21.33
3	16QAM	1	0	21.10	21.36	21.26
3	16QAM	1	8	21.07	21.33	21.23
3	16QAM	1	14	21.02	21.28	21.18
3	16QAM	8	0	20.97	21.23	21.13
3	16QAM	8	4	20.92	21.18	21.08
3	16QAM	8	7	20.87	21.13	21.03
3	16QAM	15	0	20.82	21.08	20.98



LTE Band 4						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				19957	20175	20393
Frequency (MHz)				1710.7	1732.5	1754.3
1.4	QPSK	1	0	22.31	22.71	22.34
1.4	QPSK	1	3	22.63	22.65	22.56
1.4	QPSK	1	5	22.28	22.48	22.43
1.4	QPSK	3	0	21.22	21.48	21.38
1.4	QPSK	3	1	21.08	21.37	21.18
1.4	QPSK	3	3	21.15	21.41	21.31
1.4	QPSK	6	0	21.08	21.34	21.24
1.4	16QAM	1	0	21.01	21.27	21.17
1.4	16QAM	1	3	20.98	21.24	21.14
1.4	16QAM	1	5	20.93	21.19	21.09
1.4	16QAM	3	0	20.88	21.14	21.04
1.4	16QAM	3	1	20.83	21.09	20.99
1.4	16QAM	3	3	20.78	21.04	20.94
1.4	16QAM	6	0	20.73	20.99	20.89



LTE Band 12						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				23060	23095	23130
Frequency (MHz)				704	707.5	711
10	QPSK	1	0	23.10	23.15	23.05
10	QPSK	1	25	23.01	23.03	22.94
10	QPSK	1	49	22.66	22.86	22.81
10	QPSK	25	0	21.60	21.86	21.76
10	QPSK	25	12	21.46	21.75	21.56
10	QPSK	25	25	21.53	21.79	21.69
10	QPSK	50	0	21.46	21.72	21.62
10	16QAM	1	0	21.39	21.65	21.55
10	16QAM	1	25	21.33	21.59	21.49
10	16QAM	1	49	21.28	21.54	21.44
10	16QAM	25	0	21.23	21.49	21.39
10	16QAM	25	12	21.18	21.44	21.34
10	16QAM	25	25	21.13	21.39	21.29
10	16QAM	50	0	21.08	21.34	21.24



LTE Band 12						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				23035	23095	23155
Frequency (MHz)				701.5	707.5	713.5
5	QPSK	1	0	23.05	23.10	23.02
5	QPSK	1	12	22.96	22.98	22.89
5	QPSK	1	24	22.61	22.81	22.76
5	QPSK	12	0	21.55	21.81	21.71
5	QPSK	12	7	21.41	21.70	21.51
5	QPSK	12	13	21.48	21.74	21.64
5	QPSK	25	0	21.41	21.67	21.57
5	16QAM	1	0	21.34	21.60	21.50
5	16QAM	1	12	21.28	21.54	21.44
5	16QAM	1	24	21.23	21.49	21.39
5	16QAM	12	0	21.18	21.44	21.34
5	16QAM	12	7	21.13	21.39	21.29
5	16QAM	12	13	21.08	21.34	21.24
5	16QAM	25	0	21.03	21.29	21.19



LTE Band 12						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				23025	23095	23165
Frequency (MHz)				700.5	707.5	714.5
3	QPSK	1	0	22.96	23.01	22.93
3	QPSK	1	8	22.87	22.89	22.80
3	QPSK	1	14	22.52	22.72	22.67
3	QPSK	8	0	21.46	21.72	21.62
3	QPSK	8	4	21.32	21.61	21.42
3	QPSK	8	7	21.39	21.65	21.55
3	QPSK	15	0	21.32	21.58	21.48
3	16QAM	1	0	21.25	21.51	21.41
3	16QAM	1	8	21.19	21.45	21.35
3	16QAM	1	14	21.14	21.40	21.30
3	16QAM	8	0	21.09	21.35	21.25
3	16QAM	8	4	21.04	21.30	21.20
3	16QAM	8	7	20.99	21.25	21.15
3	16QAM	15	0	20.94	21.20	21.10



LTE Band 12						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				23017	23095	23173
Frequency (MHz)				699.7	707.5	715.3
1.4	QPSK	1	0	22.87	22.92	22.84
1.4	QPSK	1	3	22.78	22.80	22.71
1.4	QPSK	1	5	22.43	22.63	22.58
1.4	QPSK	3	0	21.37	21.63	21.53
1.4	QPSK	3	1	21.23	21.52	21.33
1.4	QPSK	3	3	21.30	21.56	21.46
1.4	QPSK	6	0	21.23	21.49	21.39
1.4	16QAM	1	0	21.16	21.42	21.32
1.4	16QAM	1	3	21.10	21.36	21.26
1.4	16QAM	1	5	21.05	21.31	21.21
1.4	16QAM	3	0	21.00	21.26	21.16
1.4	16QAM	3	1	20.95	21.21	21.11
1.4	16QAM	3	3	20.90	21.16	21.06
1.4	16QAM	6	0	20.85	21.11	21.01

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

LTE Band 2				Measured E.I.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				18700		18900		19100	
Frequency (MHz)				1860		1880		1900	
				dBm	W	dBm	W	dBm	W
20	QPSK	1	0	24.70	0.295	24.80	0.302	24.75	0.299
20	QPSK	1	49	24.65	0.292	24.75	0.299	24.70	0.295
20	QPSK	1	99	24.30	0.269	24.50	0.282	24.45	0.279
20	QPSK	50	0	23.24	0.211	23.50	0.224	23.40	0.219
20	QPSK	50	24	23.10	0.204	23.39	0.218	23.20	0.209
20	QPSK	50	50	23.17	0.207	23.43	0.220	23.33	0.215
20	QPSK	100	0	23.10	0.204	23.36	0.217	23.26	0.212
20	16QAM	1	0	23.03	0.201	23.29	0.213	23.19	0.208
20	16QAM	1	49	22.98	0.199	23.24	0.211	23.14	0.206
20	16QAM	1	99	22.93	0.196	23.19	0.208	23.09	0.204
20	16QAM	50	0	22.88	0.194	22.83	0.192	22.78	0.190
20	16QAM	50	24	22.83	0.192	22.71	0.187	22.73	0.187
20	16QAM	50	50	22.78	0.190	22.72	0.187	22.70	0.186
20	16QAM	100	0	22.73	0.187	22.70	0.186	22.89	0.195



LTE Band 2				Measured E.I.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				18675		18900		19125	
Frequency (MHz)				1857.5		1880		1902.5	
				dBm	W	dBm	W	dBm	W
15	QPSK	1	0	24.62	0.290	24.72	0.296	24.67	0.293
15	QPSK	1	37	24.57	0.286	24.67	0.293	24.62	0.290
15	QPSK	1	74	24.22	0.264	24.42	0.277	24.37	0.274
15	QPSK	36	0	23.16	0.207	23.42	0.220	23.32	0.215
15	QPSK	36	20	23.02	0.200	23.31	0.214	23.12	0.205
15	QPSK	36	39	23.09	0.204	23.35	0.216	23.25	0.211
15	QPSK	75	0	23.02	0.200	23.28	0.213	23.18	0.208
15	16QAM	1	0	22.95	0.197	23.21	0.209	23.11	0.205
15	16QAM	1	37	22.90	0.195	23.16	0.207	23.06	0.202
15	16QAM	1	74	22.85	0.193	23.11	0.205	23.01	0.200
15	16QAM	36	0	22.83	0.192	22.71	0.187	22.73	0.187
15	16QAM	36	20	22.78	0.190	22.72	0.187	22.70	0.186
15	16QAM	36	39	22.70	0.186	22.96	0.198	22.86	0.193
15	16QAM	75	0	22.65	0.184	22.91	0.195	22.81	0.191



LTE Band 2				Measured E.I.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				18650		18900		19150	
Frequency (MHz)				1855		1880		1905	
				dBm	W	dBm	W	dBm	W
10	QPSK	1	0	24.54	0.284	24.64	0.291	24.59	0.288
10	QPSK	1	25	24.49	0.281	24.59	0.288	24.54	0.284
10	QPSK	1	49	24.14	0.259	24.34	0.272	24.29	0.269
10	QPSK	25	0	23.08	0.203	23.34	0.216	23.24	0.211
10	QPSK	25	12	22.94	0.197	23.23	0.210	23.04	0.201
10	QPSK	25	25	23.01	0.200	23.27	0.212	23.17	0.207
10	QPSK	50	0	22.94	0.197	23.20	0.209	23.10	0.204
10	16QAM	1	0	22.87	0.194	23.13	0.206	23.03	0.201
10	16QAM	1	25	22.82	0.191	23.08	0.203	22.98	0.199
10	16QAM	1	49	22.77	0.189	23.03	0.201	22.93	0.196
10	16QAM	25	0	22.72	0.187	22.98	0.199	22.88	0.194
10	16QAM	25	12	22.67	0.185	22.93	0.196	22.83	0.192
10	16QAM	25	25	22.62	0.183	22.88	0.194	22.78	0.190
10	16QAM	50	0	22.57	0.181	22.83	0.192	22.73	0.187



LTE Band 2				Measured E.I.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				18625		18900		19175	
Frequency (MHz)				1852.5		1880		1907.5	
				dBm	W	dBm	W	dBm	W
5	QPSK	1	0	24.46	0.279	24.56	0.286	24.51	0.282
5	QPSK	1	12	24.41	0.276	24.51	0.282	24.46	0.279
5	QPSK	1	24	24.06	0.255	24.26	0.267	24.21	0.264
5	QPSK	12	0	23.00	0.200	23.26	0.212	23.16	0.207
5	QPSK	12	7	22.86	0.193	23.15	0.207	22.96	0.198
5	QPSK	12	13	22.93	0.196	23.19	0.208	23.09	0.204
5	QPSK	25	0	22.86	0.193	23.12	0.205	23.02	0.200
5	16QAM	1	0	22.79	0.190	23.05	0.202	22.95	0.197
5	16QAM	1	12	22.74	0.188	23.00	0.200	22.90	0.195
5	16QAM	1	24	22.69	0.186	22.95	0.197	22.85	0.193
5	16QAM	12	0	22.64	0.184	22.90	0.195	22.80	0.191
5	16QAM	12	7	22.59	0.182	22.85	0.193	22.75	0.188
5	16QAM	12	13	22.54	0.179	22.80	0.191	22.70	0.186
5	16QAM	25	0	22.49	0.177	22.75	0.188	22.65	0.184



LTE Band 2				Measured E.I.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				18615		18900		19185	
Frequency (MHz)				1851.5		1880		1908.5	
				dBm	W	dBm	W	dBm	W
3	QPSK	1	0	24.38	0.274	24.48	0.281	24.43	0.277
3	QPSK	1	8	24.33	0.271	24.43	0.277	24.38	0.274
3	QPSK	1	14	23.98	0.250	24.18	0.262	24.13	0.259
3	QPSK	8	0	22.92	0.196	23.18	0.208	23.08	0.203
3	QPSK	8	4	22.78	0.190	23.07	0.203	22.88	0.194
3	QPSK	8	7	22.85	0.193	23.11	0.205	23.01	0.200
3	QPSK	15	0	22.78	0.190	23.04	0.201	22.94	0.197
3	16QAM	1	0	22.71	0.187	22.97	0.198	22.87	0.194
3	16QAM	1	8	22.66	0.185	22.92	0.196	22.82	0.191
3	16QAM	1	14	22.61	0.182	22.87	0.194	22.77	0.189
3	16QAM	8	0	22.56	0.180	22.82	0.191	22.72	0.187
3	16QAM	8	4	22.51	0.178	22.77	0.189	22.67	0.185
3	16QAM	8	7	22.46	0.176	22.72	0.187	22.62	0.183
3	16QAM	15	0	22.41	0.174	22.67	0.185	22.57	0.181



LTE Band 2				Measured E.I.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				18607		18900		19193	
Frequency (MHz)				1850.7		1880		1909.3	
				dBm	W	dBm	W	dBm	W
1.4	QPSK	1	0	24.30	0.269	24.40	0.275	24.35	0.272
1.4	QPSK	1	3	24.25	0.266	24.35	0.272	24.30	0.269
1.4	QPSK	1	5	23.90	0.245	24.10	0.257	24.05	0.254
1.4	QPSK	3	0	23.60	0.229	23.55	0.226	23.56	0.227
1.4	QPSK	3	1	23.55	0.226	23.50	0.224	23.51	0.224
1.4	QPSK	3	3	23.14	0.206	23.39	0.218	23.50	0.224
1.4	QPSK	6	0	22.70	0.186	22.96	0.198	22.86	0.193
1.4	16QAM	1	0	22.63	0.183	22.89	0.195	22.79	0.190
1.4	16QAM	1	3	22.58	0.181	22.84	0.192	22.74	0.188
1.4	16QAM	1	5	22.53	0.179	22.79	0.190	22.69	0.186
1.4	16QAM	3	0	22.48	0.177	22.74	0.188	22.64	0.184
1.4	16QAM	3	1	22.43	0.175	22.69	0.186	22.59	0.182
1.4	16QAM	3	3	22.38	0.173	22.64	0.184	22.54	0.179
1.4	16QAM	6	0	22.33	0.171	22.59	0.182	22.49	0.177



LTE Band 4				Measured E.I.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				20050		20175		20300	
Frequency (MHz)				1720		1732.5		1745	
				dBm	W	dBm	W	dBm	W
20	QPSK	1	0	24.26	0.267	24.66	0.292	24.29	0.269
20	QPSK	1	49	24.58	0.287	24.60	0.288	24.51	0.282
20	QPSK	1	99	24.23	0.265	24.43	0.277	24.38	0.274
20	QPSK	50	0	23.17	0.207	23.43	0.220	23.33	0.215
20	QPSK	50	24	23.03	0.201	23.32	0.215	23.13	0.206
20	QPSK	50	50	23.10	0.204	23.36	0.217	23.26	0.212
20	QPSK	100	0	23.03	0.201	23.29	0.213	23.19	0.208
20	16QAM	1	0	22.96	0.198	23.22	0.210	23.12	0.205
20	16QAM	1	49	22.93	0.196	23.19	0.208	23.09	0.204
20	16QAM	1	99	22.88	0.194	23.14	0.206	23.04	0.201
20	16QAM	50	0	22.64	0.184	22.73	0.187	22.70	0.186
20	16QAM	50	24	22.78	0.190	22.68	0.185	22.72	0.187
20	16QAM	50	50	22.73	0.187	22.60	0.182	22.74	0.188
20	16QAM	100	0	22.62	0.183	22.61	0.182	22.82	0.191



LTE Band 4				Measured E.I.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				20025		20175		20325	
Frequency (MHz)				1717.5		1732.5		1747.5	
				dBm	W	dBm	W	dBm	W
15	QPSK	1	0	24.17	0.261	24.57	0.286	24.20	0.263
15	QPSK	1	37	24.49	0.281	24.51	0.282	24.42	0.277
15	QPSK	1	74	24.14	0.259	24.34	0.272	24.29	0.269
15	QPSK	36	0	23.08	0.203	23.34	0.216	23.24	0.211
15	QPSK	36	20	22.94	0.197	23.23	0.210	23.04	0.201
15	QPSK	36	39	23.01	0.200	23.27	0.212	23.17	0.207
15	QPSK	75	0	22.94	0.197	23.20	0.209	23.10	0.204
15	16QAM	1	0	22.87	0.194	23.13	0.206	23.03	0.201
15	16QAM	1	37	22.84	0.192	23.10	0.204	23.00	0.200
15	16QAM	1	74	22.79	0.190	23.05	0.202	22.95	0.197
15	16QAM	36	0	22.74	0.188	23.00	0.200	22.90	0.195
15	16QAM	36	20	22.69	0.186	22.95	0.197	22.85	0.193
15	16QAM	36	39	22.64	0.184	22.90	0.195	22.80	0.191
15	16QAM	75	0	22.59	0.182	22.85	0.193	22.75	0.188



LTE Band 4				Measured E.I.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				20000		20175		20350	
Frequency (MHz)				1715		1732.5		1750	
				dBm	W	dBm	W	dBm	W
10	QPSK	1	0	24.08	0.256	24.48	0.281	24.11	0.258
10	QPSK	1	25	24.40	0.275	24.42	0.277	24.33	0.271
10	QPSK	1	49	24.05	0.254	24.25	0.266	24.20	0.263
10	QPSK	25	0	22.99	0.199	23.25	0.211	23.15	0.207
10	QPSK	25	12	22.85	0.193	23.14	0.206	22.95	0.197
10	QPSK	25	25	22.92	0.196	23.18	0.208	23.08	0.203
10	QPSK	50	0	22.85	0.193	23.11	0.205	23.01	0.200
10	16QAM	1	0	22.78	0.190	23.04	0.201	22.94	0.197
10	16QAM	1	25	22.75	0.188	23.01	0.200	22.91	0.195
10	16QAM	1	49	22.70	0.186	22.96	0.198	22.86	0.193
10	16QAM	25	0	22.65	0.184	22.91	0.195	22.81	0.191
10	16QAM	25	12	22.60	0.182	22.86	0.193	22.76	0.189
10	16QAM	25	25	22.55	0.180	22.81	0.191	22.71	0.187
10	16QAM	50	0	22.50	0.178	22.76	0.189	22.66	0.185



LTE Band 4				Measured E.I.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				19975		20175		20375	
Frequency (MHz)				1712.5		1732.5		1752.5	
				dBm	W	dBm	W	dBm	W
5	QPSK	1	0	23.99	0.251	24.39	0.275	24.02	0.252
5	QPSK	1	12	24.31	0.270	24.33	0.271	24.24	0.265
5	QPSK	1	24	23.96	0.249	24.16	0.261	24.11	0.258
5	QPSK	12	0	22.90	0.195	23.16	0.207	23.06	0.202
5	QPSK	12	7	22.76	0.189	23.05	0.202	22.86	0.193
5	QPSK	12	13	22.83	0.192	23.09	0.204	22.99	0.199
5	QPSK	25	0	22.76	0.189	23.02	0.200	22.92	0.196
5	16QAM	1	0	22.69	0.186	22.95	0.197	22.85	0.193
5	16QAM	1	12	22.66	0.185	22.92	0.196	22.82	0.191
5	16QAM	1	24	22.61	0.182	22.87	0.194	22.77	0.189
5	16QAM	12	0	22.56	0.180	22.82	0.191	22.72	0.187
5	16QAM	12	7	22.51	0.178	22.77	0.189	22.67	0.185
5	16QAM	12	13	22.46	0.176	22.72	0.187	22.62	0.183
5	16QAM	25	0	22.41	0.174	22.67	0.185	22.57	0.181



LTE Band 4				Measured E.I.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				19965		20175		20385	
Frequency (MHz)				1711.5		1732.5		1753.5	
				dBm	W	dBm	W	dBm	W
3	QPSK	1	0	23.90	0.245	24.30	0.269	23.93	0.247
3	QPSK	1	8	24.22	0.264	24.24	0.265	24.15	0.260
3	QPSK	1	14	23.87	0.244	24.07	0.255	24.02	0.252
3	QPSK	8	0	22.81	0.191	23.07	0.203	22.97	0.198
3	QPSK	8	4	22.67	0.185	22.96	0.198	22.77	0.189
3	QPSK	8	7	22.74	0.188	23.00	0.200	22.90	0.195
3	QPSK	15	0	22.67	0.185	22.93	0.196	22.83	0.192
3	16QAM	1	0	22.60	0.182	22.86	0.193	22.76	0.189
3	16QAM	1	8	22.57	0.181	22.83	0.192	22.73	0.187
3	16QAM	1	14	22.52	0.179	22.78	0.190	22.68	0.185
3	16QAM	8	0	22.47	0.177	22.73	0.187	22.63	0.183
3	16QAM	8	4	22.42	0.175	22.68	0.185	22.58	0.181
3	16QAM	8	7	22.37	0.173	22.63	0.183	22.53	0.179
3	16QAM	15	0	22.32	0.171	22.58	0.181	22.48	0.177



LTE Band 4				Measured E.I.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				19957		20175		20393	
Frequency (MHz)				1710.7		1732.5		1754.3	
				dBm	W	dBm	W	dBm	W
1.4	QPSK	1	0	23.81	0.240	24.21	0.264	23.84	0.242
1.4	QPSK	1	3	24.13	0.259	24.15	0.260	24.06	0.255
1.4	QPSK	1	5	23.78	0.239	23.98	0.250	23.93	0.247
1.4	QPSK	3	0	22.72	0.187	22.98	0.199	22.88	0.194
1.4	QPSK	3	1	22.58	0.181	22.87	0.194	22.68	0.185
1.4	QPSK	3	3	22.65	0.184	22.91	0.195	22.81	0.191
1.4	QPSK	6	0	22.58	0.181	22.84	0.192	22.74	0.188
1.4	16QAM	1	0	22.51	0.178	22.77	0.189	22.67	0.185
1.4	16QAM	1	3	22.48	0.177	22.74	0.188	22.64	0.184
1.4	16QAM	1	5	22.43	0.175	22.69	0.186	22.59	0.182
1.4	16QAM	3	0	22.38	0.173	22.64	0.184	22.54	0.179
1.4	16QAM	3	1	22.33	0.171	22.59	0.182	22.49	0.177
1.4	16QAM	3	3	22.28	0.169	22.54	0.179	22.44	0.175
1.4	16QAM	6	0	22.23	0.167	22.49	0.177	22.39	0.173



LTE Band 12				Measured E.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				23060		23095		23130	
Frequency (MHz)				704		707.5		711	
				dBm	W	dBm	W	dBm	W
10	QPSK	1	0	19.95	0.099	20.00	0.100	19.90	0.098
10	QPSK	1	25	19.86	0.097	19.88	0.097	19.79	0.095
10	QPSK	1	49	19.51	0.089	19.71	0.094	19.66	0.092
10	QPSK	25	0	18.45	0.070	18.71	0.074	18.61	0.073
10	QPSK	25	12	18.31	0.068	18.60	0.072	18.41	0.069
10	QPSK	25	25	18.38	0.069	18.64	0.073	18.54	0.071
10	QPSK	50	0	18.31	0.068	18.57	0.072	18.47	0.070
10	16QAM	1	0	18.24	0.067	18.50	0.071	18.40	0.069
10	16QAM	1	25	18.18	0.066	18.44	0.070	18.34	0.068
10	16QAM	1	49	18.13	0.065	18.39	0.069	18.29	0.067
10	16QAM	25	0	18.08	0.064	18.34	0.068	18.24	0.067
10	16QAM	25	12	18.03	0.064	18.29	0.067	18.19	0.066
10	16QAM	25	25	17.98	0.063	18.24	0.067	18.14	0.065
10	16QAM	50	0	17.93	0.062	18.19	0.066	18.09	0.064



LTE Band 12				Measured E.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				23035		23095		23155	
Frequency (MHz)				701.5		707.5		713.5	
				dBm	W	dBm	W	dBm	W
5	QPSK	1	0	19.90	0.098	19.95	0.099	19.87	0.097
5	QPSK	1	12	19.81	0.096	19.83	0.096	19.74	0.094
5	QPSK	1	24	19.46	0.088	19.66	0.092	19.61	0.091
5	QPSK	12	0	18.40	0.069	18.66	0.073	18.56	0.072
5	QPSK	12	7	18.26	0.067	18.55	0.072	18.36	0.069
5	QPSK	12	13	18.33	0.068	18.59	0.072	18.49	0.071
5	QPSK	25	0	18.26	0.067	18.52	0.071	18.42	0.070
5	16QAM	1	0	18.19	0.066	18.45	0.070	18.35	0.068
5	16QAM	1	12	18.13	0.065	18.39	0.069	18.29	0.067
5	16QAM	1	24	18.08	0.064	18.34	0.068	18.24	0.067
5	16QAM	12	0	18.03	0.064	18.29	0.067	18.19	0.066
5	16QAM	12	7	17.98	0.063	18.24	0.067	18.14	0.065
5	16QAM	12	13	17.93	0.062	18.19	0.066	18.09	0.064
5	16QAM	25	0	17.88	0.061	18.14	0.065	18.04	0.064



LTE Band 12				Measured E.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				23025		23095		23165	
Frequency (MHz)				700.5		707.5		714.5	
				dBm	W	dBm	W	dBm	W
3	QPSK	1	0	19.81	0.096	19.86	0.097	19.78	0.095
3	QPSK	1	8	19.72	0.094	19.74	0.094	19.65	0.092
3	QPSK	1	14	19.37	0.086	19.57	0.091	19.52	0.090
3	QPSK	8	0	18.31	0.068	18.57	0.072	18.47	0.070
3	QPSK	8	4	18.17	0.066	18.46	0.070	18.27	0.067
3	QPSK	8	7	18.24	0.067	18.50	0.071	18.40	0.069
3	QPSK	15	0	18.17	0.066	18.43	0.070	18.33	0.068
3	16QAM	1	0	18.10	0.065	18.36	0.069	18.26	0.067
3	16QAM	1	8	18.04	0.064	18.30	0.068	18.20	0.066
3	16QAM	1	14	17.99	0.063	18.25	0.067	18.15	0.065
3	16QAM	8	0	17.94	0.062	18.20	0.066	18.10	0.065
3	16QAM	8	4	17.89	0.062	18.15	0.065	18.05	0.064
3	16QAM	8	7	17.84	0.061	18.10	0.065	18.00	0.063
3	16QAM	15	0	17.79	0.060	18.05	0.064	17.95	0.062



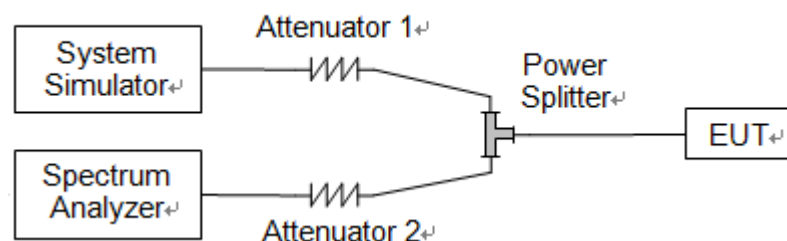
LTE Band 12				Measured E.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				23017		23095		23173	
Frequency (MHz)				699.7		707.5		715.3	
				dBm	W	dBm	W	dBm	W
1.4	QPSK	1	0	19.72	0.094	19.77	0.095	19.69	0.093
1.4	QPSK	1	3	19.63	0.092	19.65	0.092	19.56	0.090
1.4	QPSK	1	5	19.28	0.085	19.48	0.089	19.43	0.088
1.4	QPSK	3	0	18.22	0.066	18.48	0.070	18.38	0.069
1.4	QPSK	3	1	18.08	0.064	18.37	0.069	18.18	0.066
1.4	QPSK	3	3	18.15	0.065	18.41	0.069	18.31	0.068
1.4	QPSK	6	0	18.08	0.064	18.34	0.068	18.24	0.067
1.4	16QAM	1	0	18.01	0.063	18.27	0.067	18.17	0.066
1.4	16QAM	1	3	17.95	0.062	18.21	0.066	18.11	0.065
1.4	16QAM	1	5	17.90	0.062	18.16	0.065	18.06	0.064
1.4	16QAM	3	0	17.85	0.061	18.11	0.065	18.01	0.063
1.4	16QAM	3	1	17.80	0.060	18.06	0.064	17.96	0.063
1.4	16QAM	3	3	17.75	0.060	18.01	0.063	17.91	0.062
1.4	16QAM	6	0	17.70	0.059	17.96	0.063	17.86	0.061

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 2				
BW(MHz)	Channel Level	Modulation	99% BW(MHz)	26dB BW(MHz)
1.4	Low	QPSK	1.11	1.30
	Low	16QAM	1.11	1.34
	Mid	QPSK	1.10	1.30
	Mid	16QAM	1.10	1.32
	High	QPSK	1.10	1.30
	High	16QAM	1.10	1.32
3	Low	QPSK	2.71	2.99
	Low	16QAM	2.71	2.99
	Mid	QPSK	2.71	3.00
	Mid	16QAM	2.71	3.02
	High	QPSK	2.71	3.00
	High	16QAM	2.72	3.00
5	Low	QPSK	4.52	5.00
	Low	16QAM	4.52	5.03
	Mid	QPSK	4.52	5.01
	Mid	16QAM	4.51	5.01
	High	QPSK	4.51	5.01
	High	16QAM	4.50	5.01
10	Low	QPSK	9.02	9.90
	Low	16QAM	8.97	9.89
	Mid	QPSK	8.99	9.86
	Mid	16QAM	8.98	9.93
	High	QPSK	8.99	9.90
	High	16QAM	8.98	9.79
15	Low	QPSK	13.47	14.71
	Low	16QAM	13.46	14.75
	Mid	QPSK	13.43	14.71
	Mid	16QAM	13.45	14.55
	High	QPSK	13.43	14.65
	High	16QAM	13.40	14.74
20	Low	QPSK	17.95	19.43
	Low	16QAM	17.92	19.53
	Mid	QPSK	17.90	19.38
	Mid	16QAM	17.89	19.41
	High	QPSK	17.90	19.42
	High	16QAM	17.86	19.33



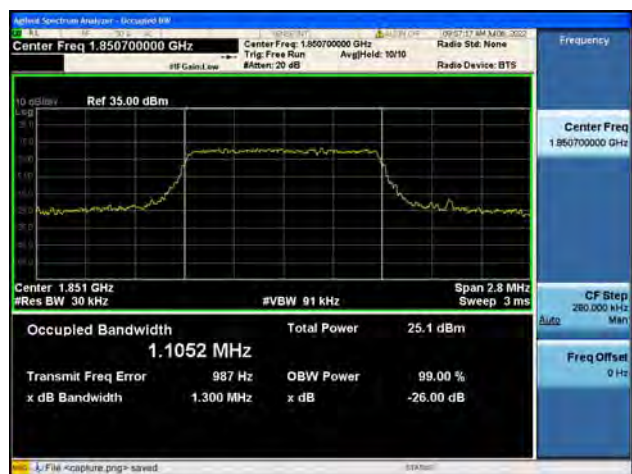
LTE Band 4				
BW(MHz)	Channel Level	Modulation	99% BW(MHz)	26dB BW(MHz)
1.4	Low	QPSK	1.10	1.30
	Low	16QAM	1.10	1.30
	Mid	QPSK	1.10	1.28
	Mid	16QAM	1.10	1.34
	High	QPSK	1.10	1.31
	High	16QAM	1.10	1.31
3	Low	QPSK	2.71	2.99
	Low	16QAM	2.71	3.00
	Mid	QPSK	2.71	2.99
	Mid	16QAM	2.72	3.01
	High	QPSK	2.71	3.00
	High	16QAM	2.71	2.98
5	Low	QPSK	4.52	5.03
	Low	16QAM	4.52	5.01
	Mid	QPSK	4.50	5.00
	Mid	16QAM	4.52	5.03
	High	QPSK	4.52	5.01
	High	16QAM	4.51	5.02
10	Low	QPSK	8.97	9.91
	Low	16QAM	8.98	9.81
	Mid	QPSK	8.96	9.84
	Mid	16QAM	8.97	9.80
	High	QPSK	8.99	9.82
	High	16QAM	9.00	9.88
15	Low	QPSK	13.47	14.57
	Low	16QAM	13.46	14.67
	Mid	QPSK	13.41	14.68
	Mid	16QAM	13.37	14.61
	High	QPSK	13.44	14.72
	High	16QAM	13.47	14.66
20	Low	QPSK	17.90	19.38
	Low	16QAM	17.90	19.39
	Mid	QPSK	17.79	19.27
	Mid	16QAM	17.78	19.35
	High	QPSK	17.98	19.45
	High	16QAM	18.00	19.52



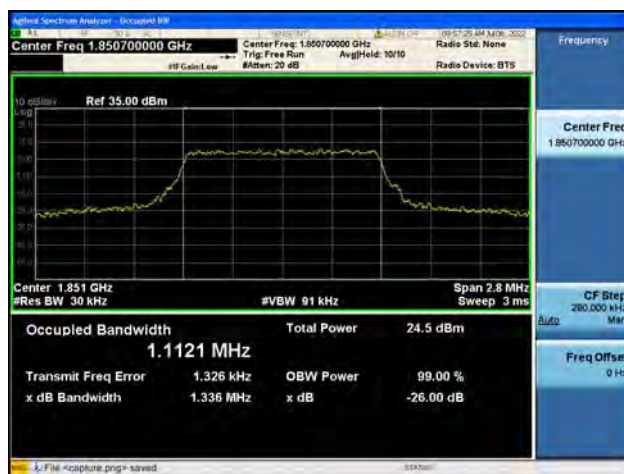
LTE Band 12				
BW(MHz)	Channel Level	Modulation	99% BW(MHz)	26dB BW(MHz)
1.4	Low	QPSK	1.10	1.29
	Low	16QAM	1.11	1.30
	Mid	QPSK	1.10	1.30
	Mid	16QAM	1.11	1.29
	High	QPSK	1.10	1.27
	High	16QAM	1.10	1.30
3	Low	QPSK	2.70	2.99
	Low	16QAM	2.72	2.99
	Mid	QPSK	2.71	2.99
	Mid	16QAM	2.71	2.99
	High	QPSK	2.71	2.99
	High	16QAM	2.71	3.00
5	Low	QPSK	4.51	4.99
	Low	16QAM	4.51	4.97
	Mid	QPSK	4.52	5.04
	Mid	16QAM	4.50	5.00
	High	QPSK	4.53	5.02
	High	16QAM	4.51	5.01
10	Low	QPSK	8.99	9.92
	Low	16QAM	8.99	9.89
	Mid	QPSK	8.98	9.81
	Mid	16QAM	9.00	9.92
	High	QPSK	8.92	9.82
	High	16QAM	8.95	9.84



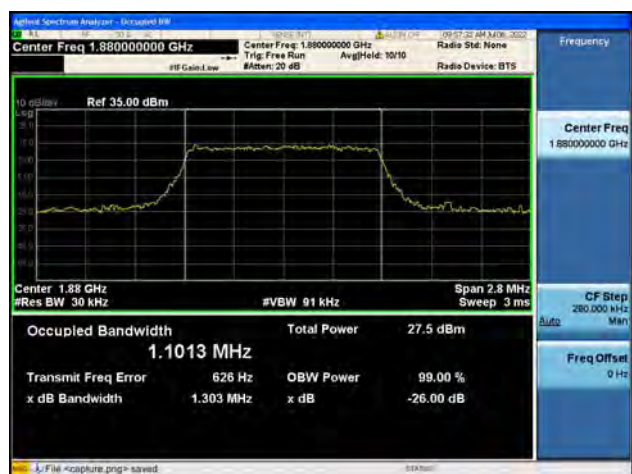
B2 / 1.4MHz / QPSK/ Low CH



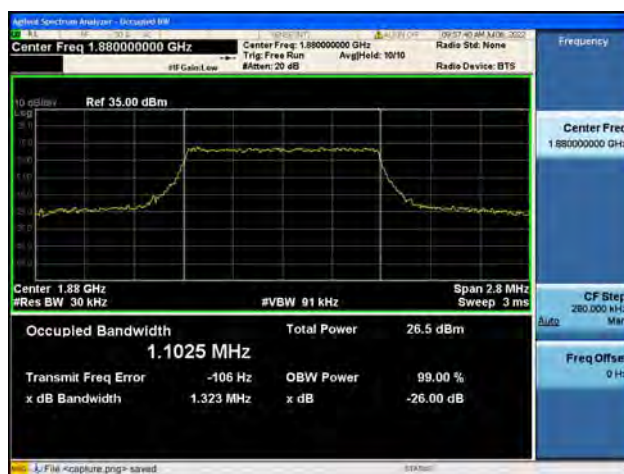
B2 / 1.4MHz / 16QAM/ Low CH



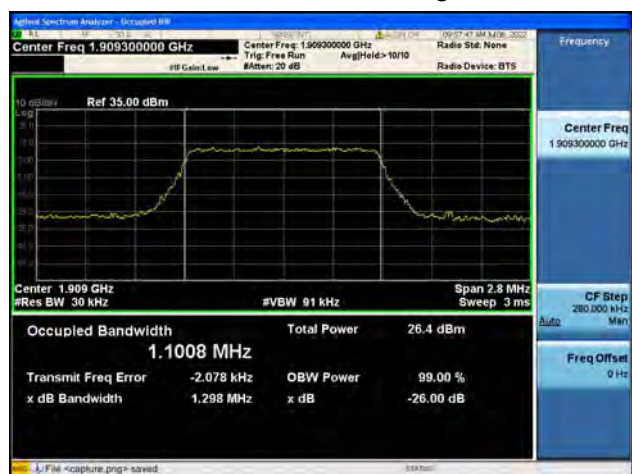
B2 / 1.4MHz / QPSK/ Mid CH



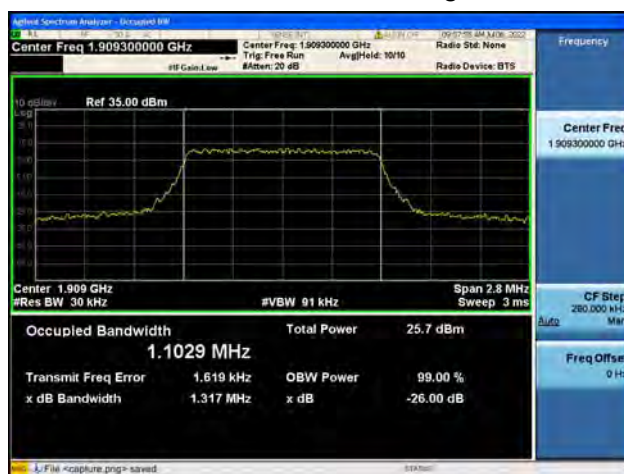
B2 / 1.4MHz / 16QAM/ Mid CH



B2 / 1.4MHz / QPSK/ High CH

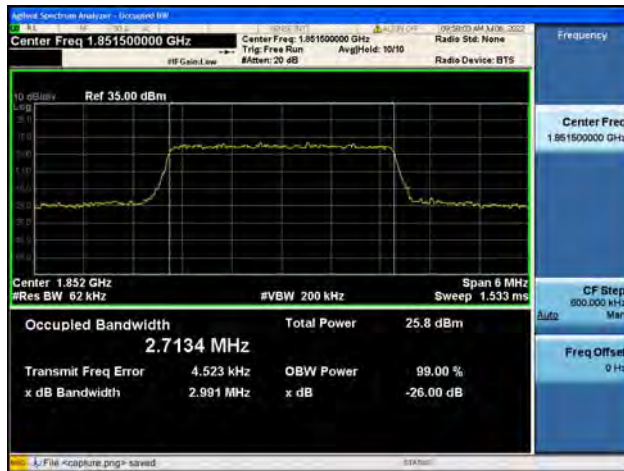


B2 / 1.4MHz / 16QAM/ High CH

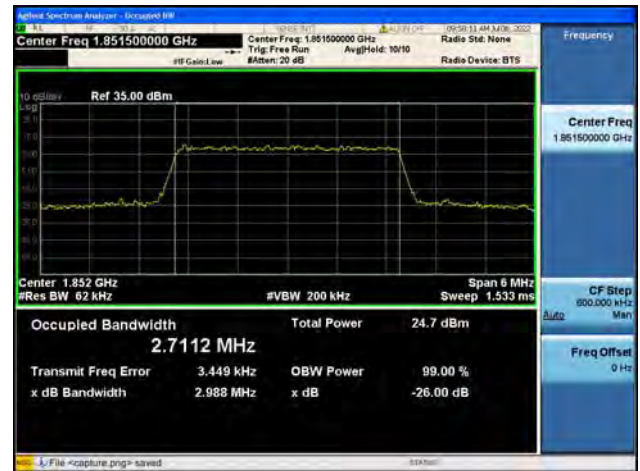




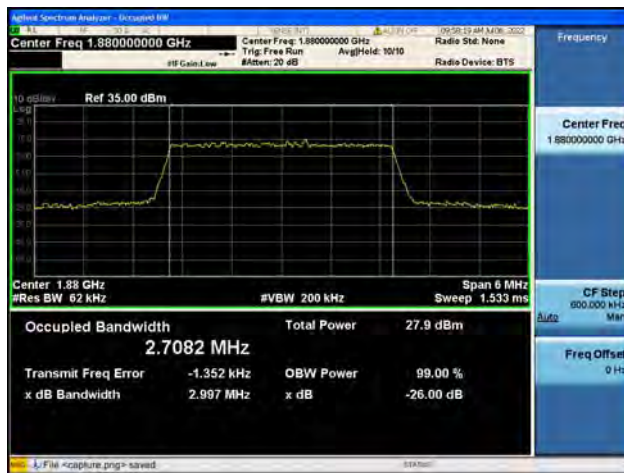
B2 / 3MHz / QPSK/ Low CH



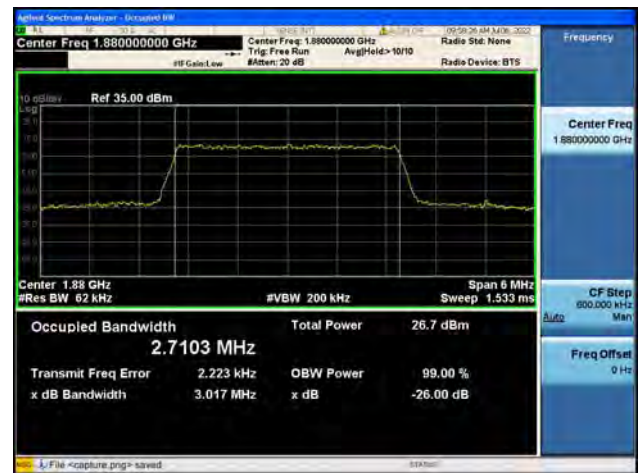
B2 / 3MHz / 16QAM/ Low CH



B2 / 3MHz / QPSK/ Mid CH



B2 / 3MHz / 16QAM/ Mid CH



B2 / 3MHz / QPSK/ High CH

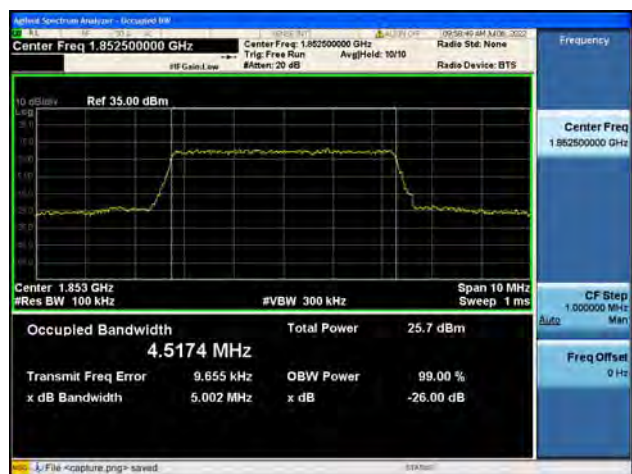


B2 / 3MHz / 16QAM/ High CH

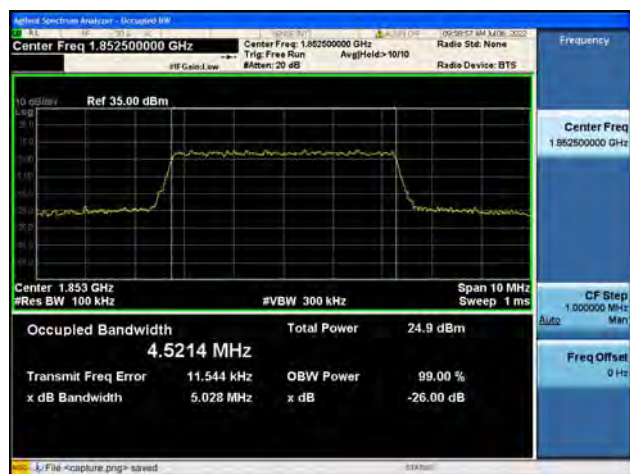




B2 / 5MHz / QPSK/ Low CH



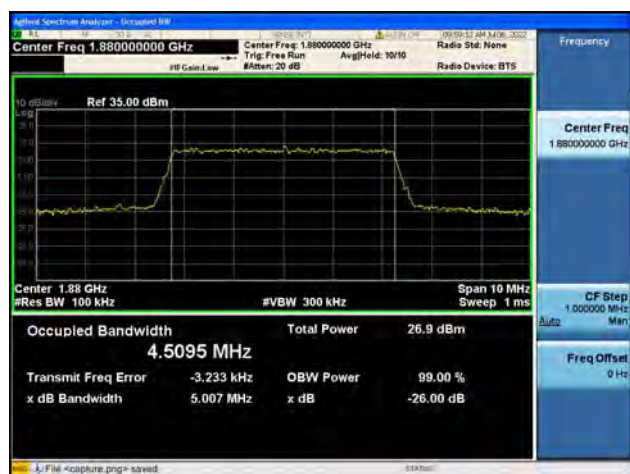
B2 / 5MHz / 16QAM/ Low CH



B2 / 5MHz / QPSK/ Mid CH



B2 / 5MHz / 16QAM/ Mid CH



B2 / 5MHz / QPSK/ High CH



B2 / 5MHz / 16QAM/ High CH





B2 / 10MHz / QPSK/ Low CH



B2 / 10MHz / 16QAM/ Low CH



B2 / 10MHz / QPSK/ Mid CH



B2 / 10MHz / 16QAM/ Mid CH



B2 / 10MHz / QPSK/ High CH

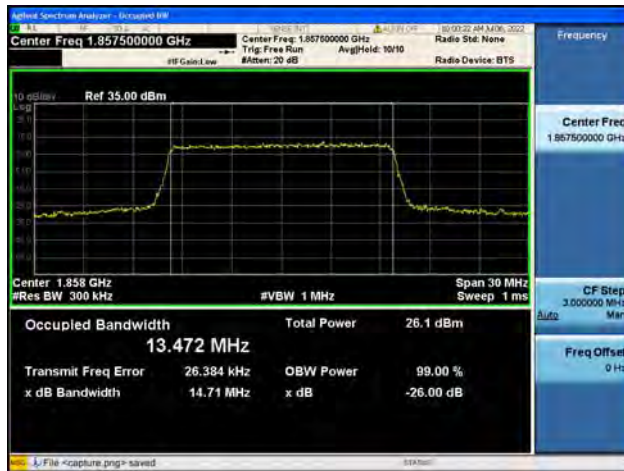


B2 / 10MHz / 16QAM/ High CH

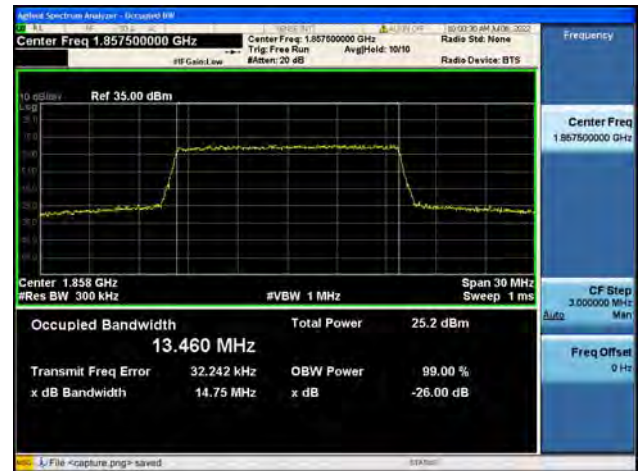




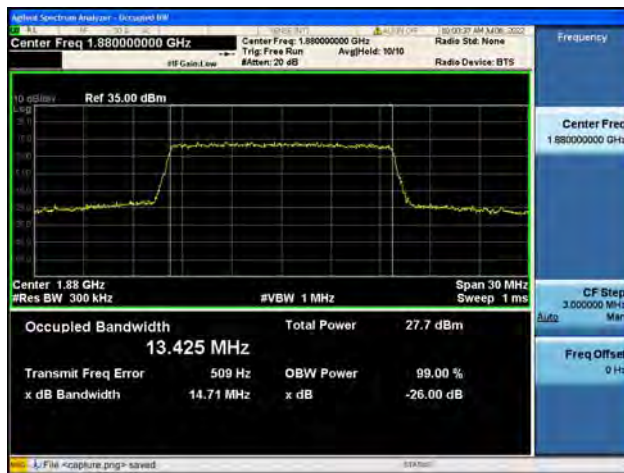
B2 / 15MHz / QPSK/ Low CH



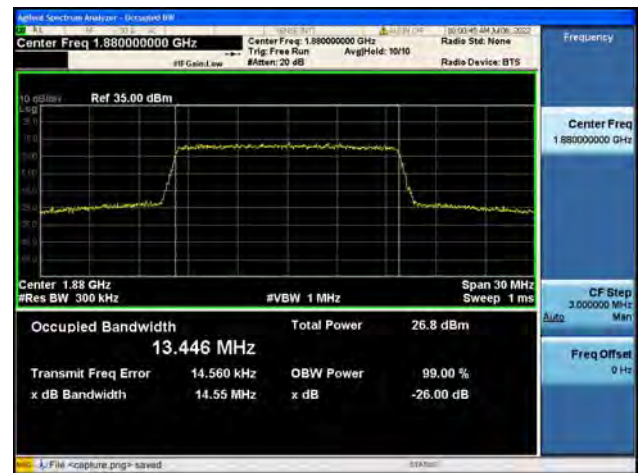
B2 / 15MHz / 16QAM/ Low CH



B2 / 15MHz / QPSK/ Mid CH



B2 / 15MHz / 16QAM/ Mid CH



B2 / 15MHz / QPSK/ High CH

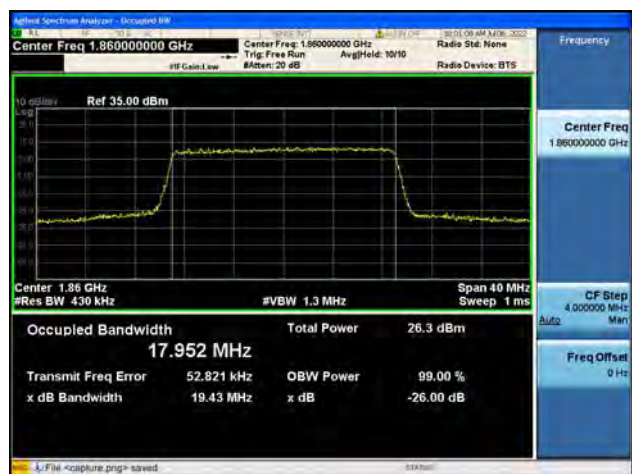


B2 / 15MHz / 16QAM/ High CH





B2 / 20MHz / QPSK/ Low CH



B2 / 20MHz / 16QAM/ Low CH



B2 / 20MHz / QPSK/ Mid CH



B2 / 20MHz / 16QAM/ Mid CH



B2 / 20MHz / QPSK/ High CH

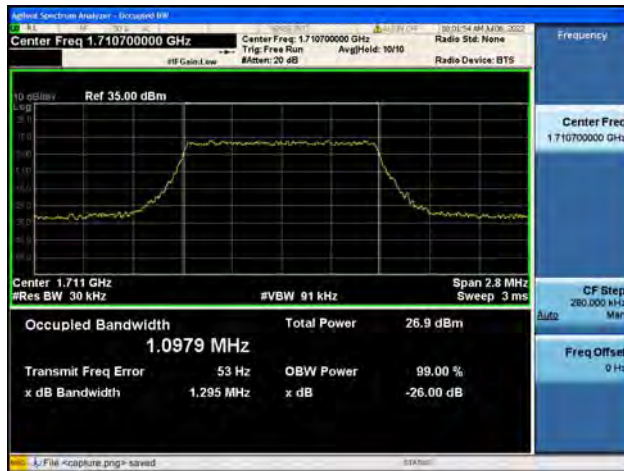


B2 / 20MHz / 16QAM/ High CH





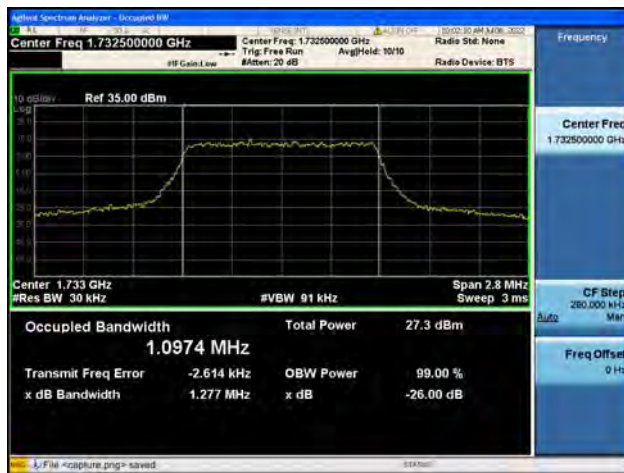
B4 / 1.4MHz / QPSK/ Low CH



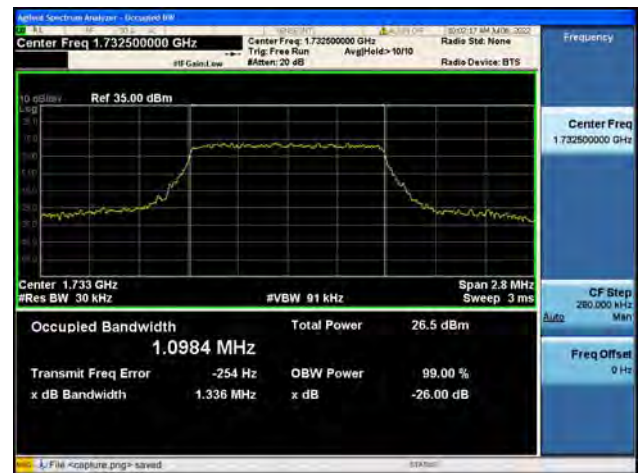
B4 / 1.4MHz / 16QAM/ Low CH



B4 / 1.4MHz / QPSK/ Mid CH



B4 / 1.4MHz / 16QAM/ Mid CH



B4 / 1.4MHz / QPSK/ High CH

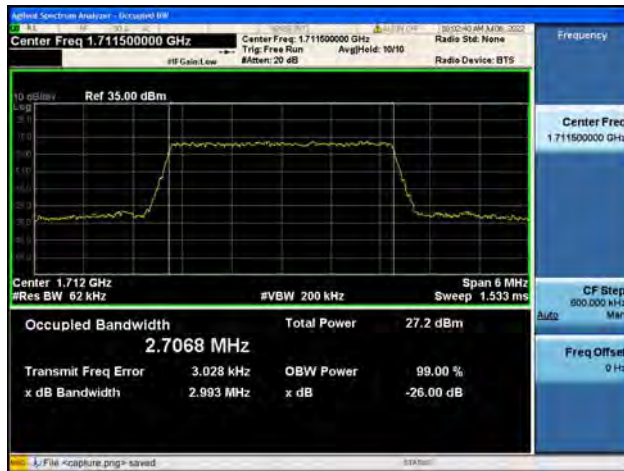


B4 / 1.4MHz / 16QAM/ High CH





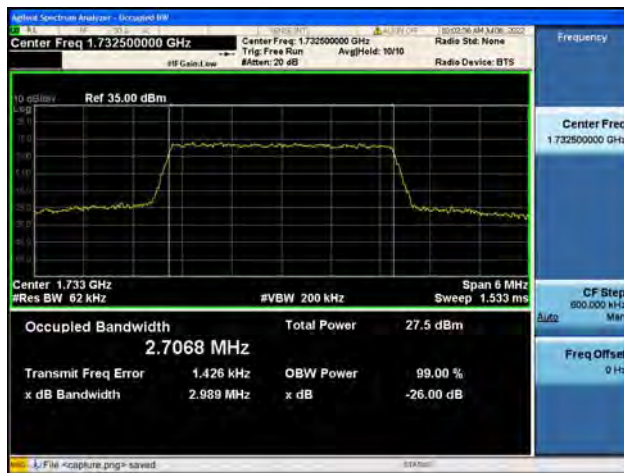
B4 / 3MHz / QPSK/ Low CH



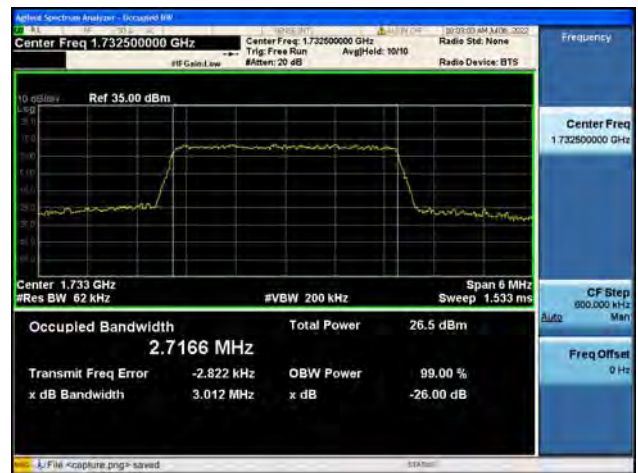
B4 / 3MHz / 16QAM/ Low CH



B4 / 3MHz / QPSK/ Mid CH



B4 / 3MHz / 16QAM/ Mid CH



B4 / 3MHz / QPSK/ High CH



B4 / 3MHz / 16QAM/ High CH

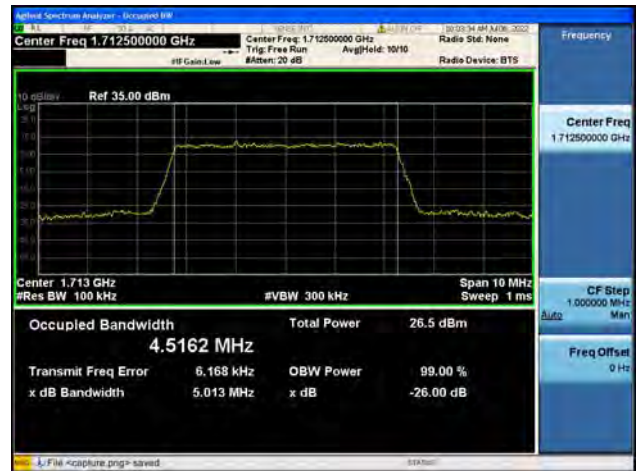




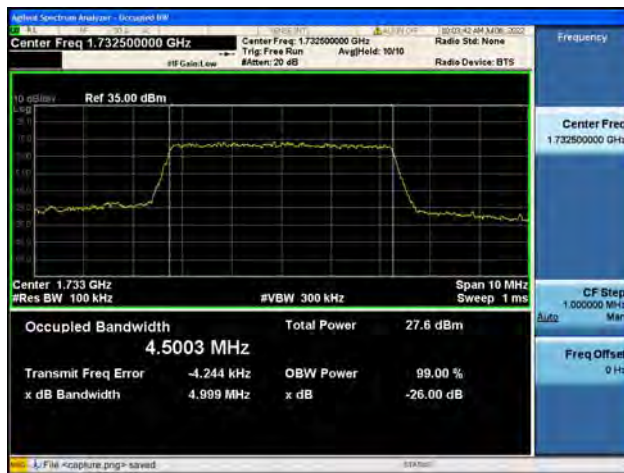
B4 / 5MHz / QPSK/ Low CH



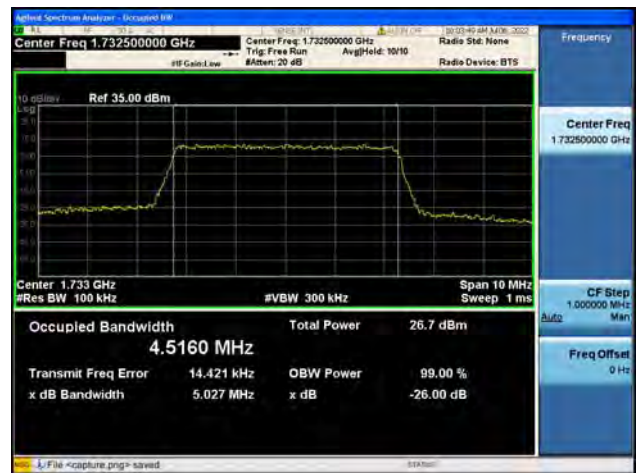
B4 / 5MHz / 16QAM/ Low CH



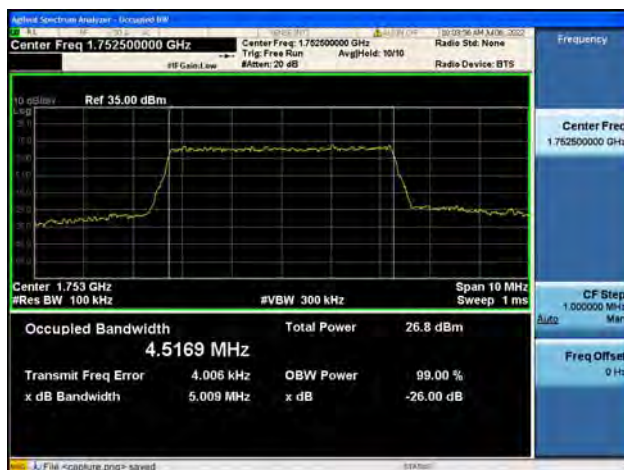
B4 / 5MHz / QPSK/ Mid CH



B4 / 5MHz / 16QAM/ Mid CH



B4 / 5MHz / QPSK/ High CH

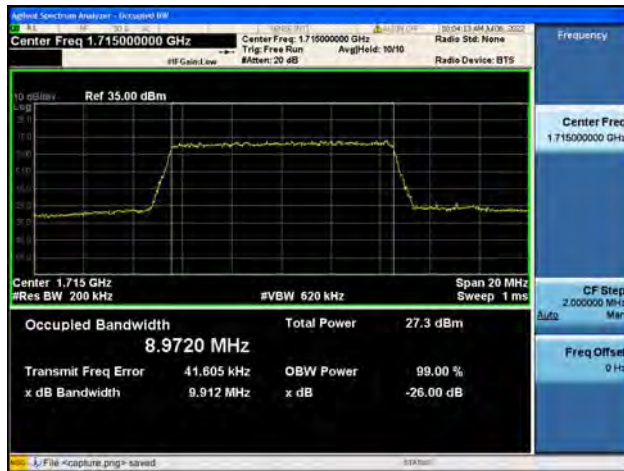


B4 / 5MHz / 16QAM/ High CH

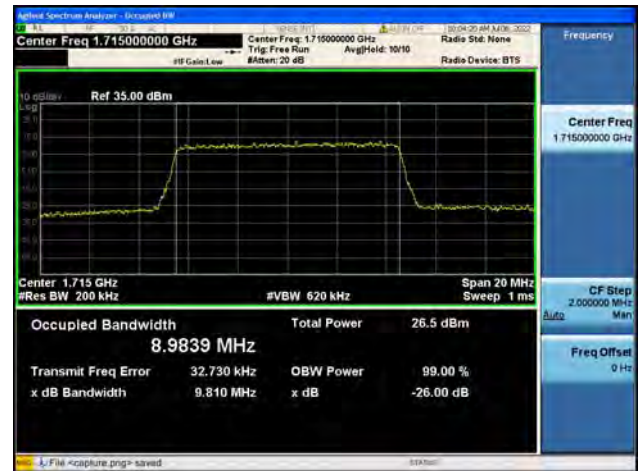




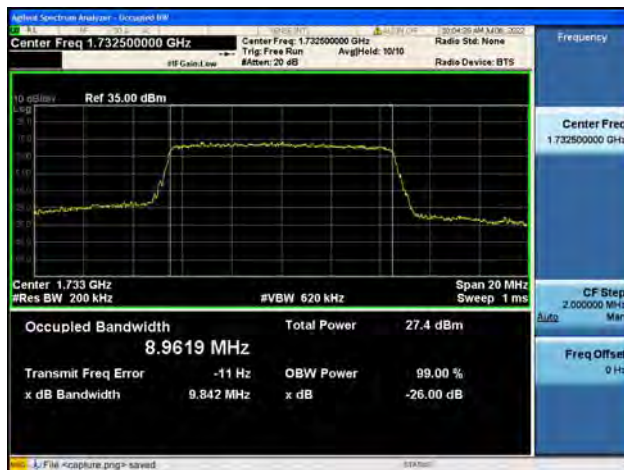
B4 / 10MHz / QPSK/ Low CH



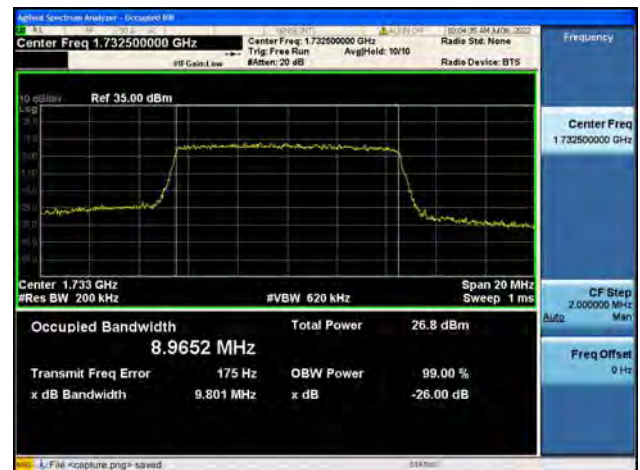
B4 / 10MHz / 16QAM/ Low CH



B4 / 10MHz / QPSK/ Mid CH



B4 / 10MHz / 16QAM/ Mid CH



B4 / 10MHz / QPSK/ High CH

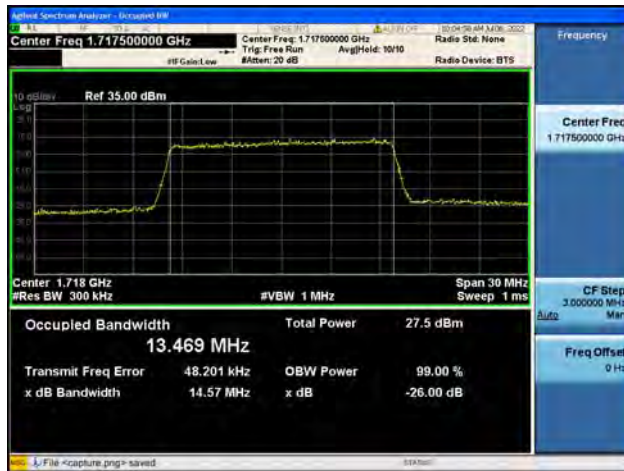


B4 / 10MHz / 16QAM/ High CH

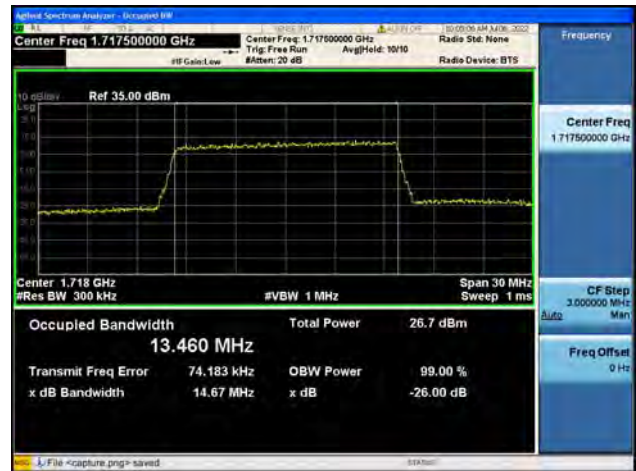




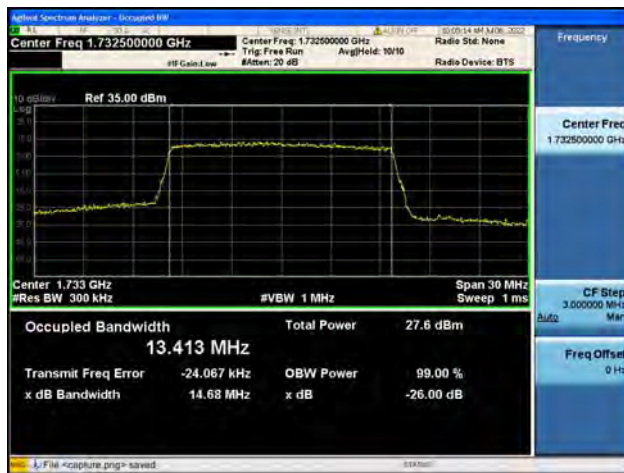
B4 / 15MHz / QPSK/ Low CH



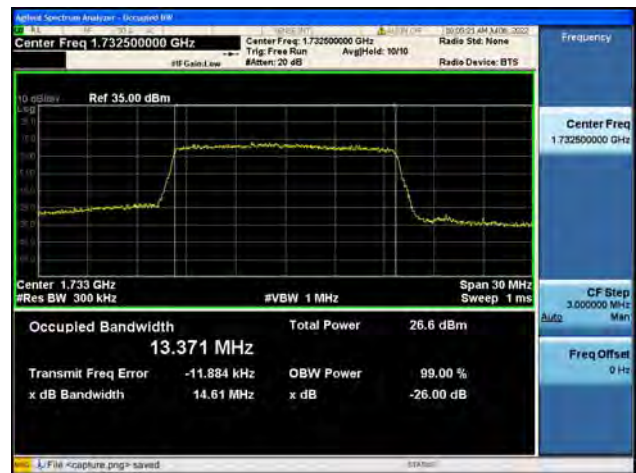
B4 / 15MHz / 16QAM/ Low CH



B4 / 15MHz / QPSK/ Mid CH



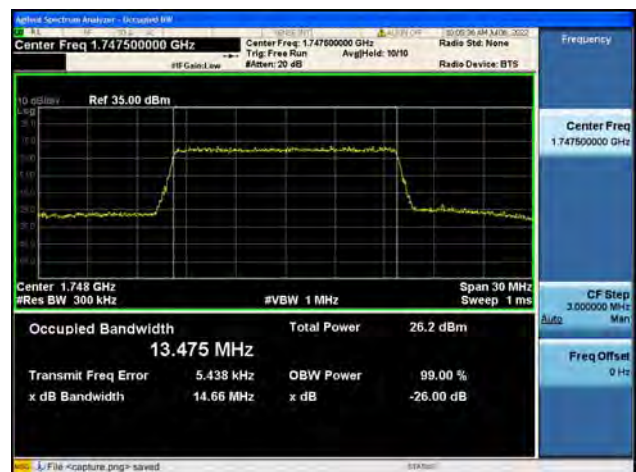
B4 / 15MHz / 16QAM/ Mid CH



B4 / 15MHz / QPSK/ High CH



B4 / 15MHz / 16QAM/ High CH

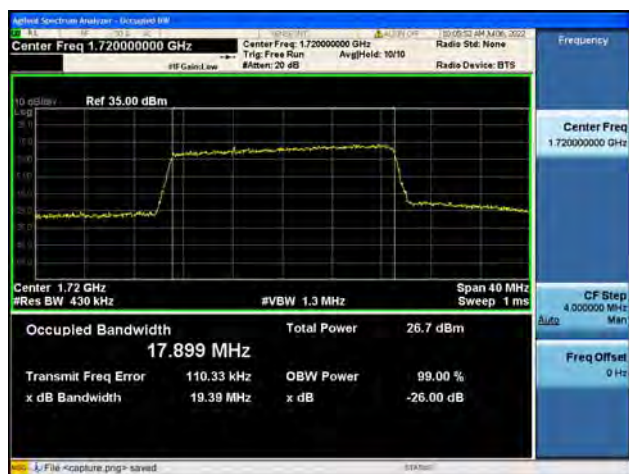




B4 / 20MHz / QPSK/ Low CH



B4 / 20MHz / 16QAM/ Low CH



B4 / 20MHz / QPSK/ Mid CH



B4 / 20MHz / 16QAM/ Mid CH



B4 / 20MHz / QPSK/ High CH

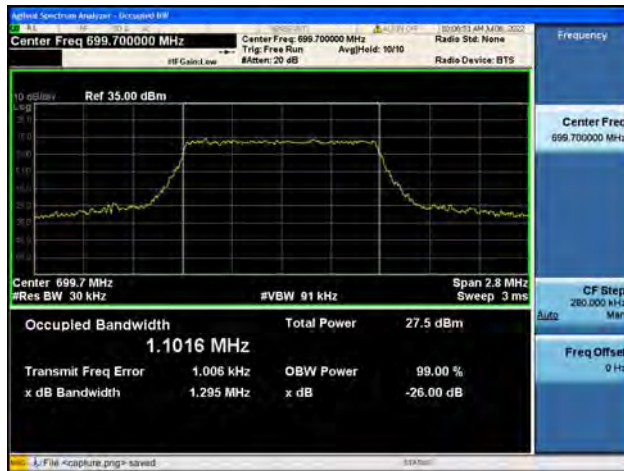


B4 / 20MHz / 16QAM/ High CH

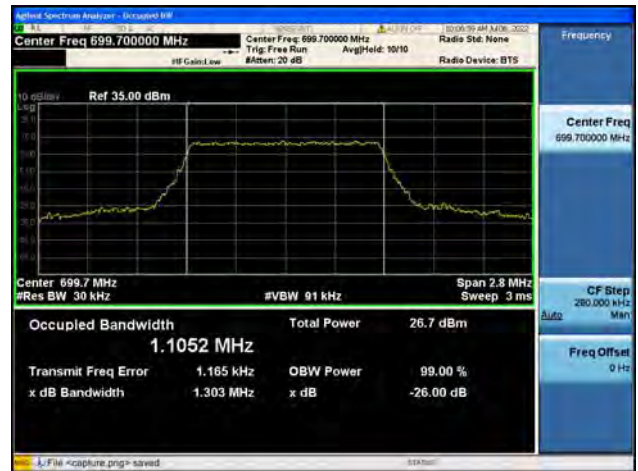




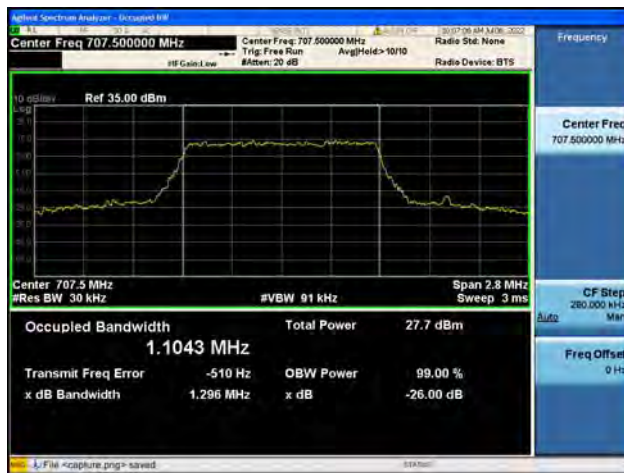
B12 / 1.4MHz / QPSK/ Low CH



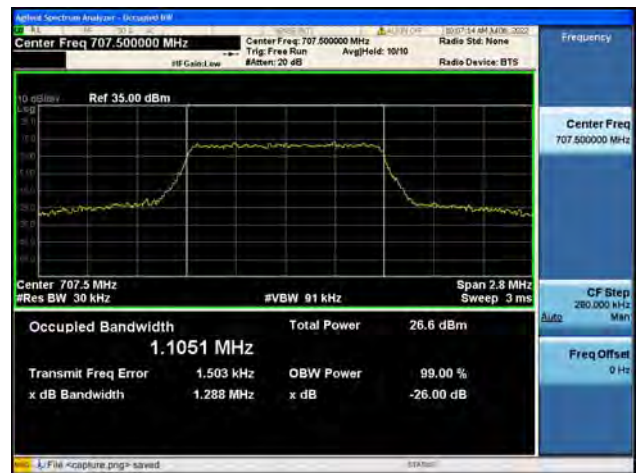
B12 / 1.4MHz / 16QAM/ Low CH



B12 / 1.4MHz / QPSK/ Mid CH



B12 / 1.4MHz / 16QAM/ Mid CH



B12 / 1.4MHz / QPSK/ High CH



B12 / 1.4MHz / 16QAM/ High CH

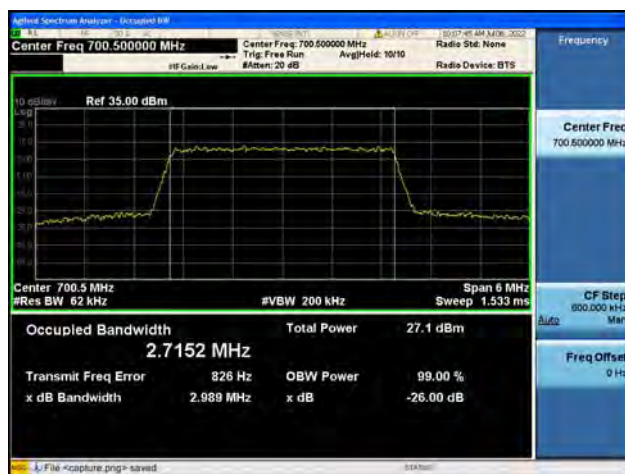




B12 / 3MHz / QPSK/ Low CH



B12 / 3MHz / 16QAM/ Low CH



B12 / 3MHz / QPSK/ Mid CH



B12 / 3MHz / 16QAM/ Mid CH



B12 / 3MHz / QPSK/ High CH

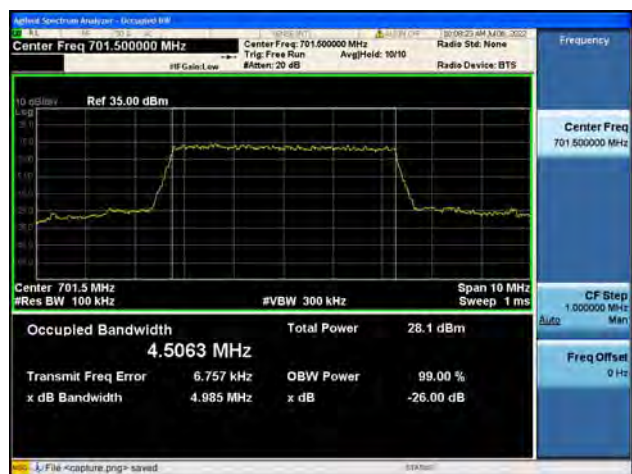


B12 / 3MHz / 16QAM/ High CH





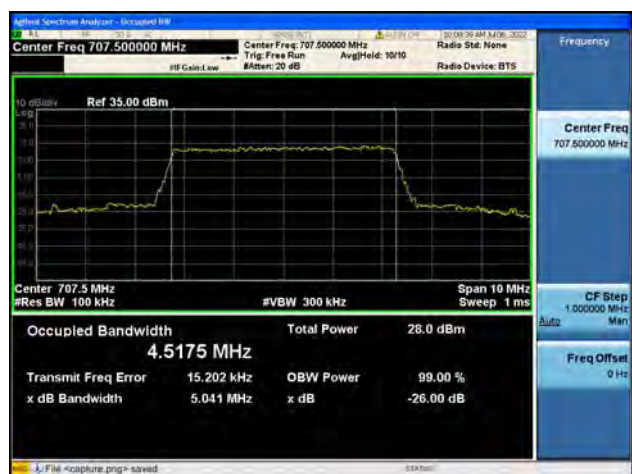
B12 / 5MHz / QPSK/ Low CH



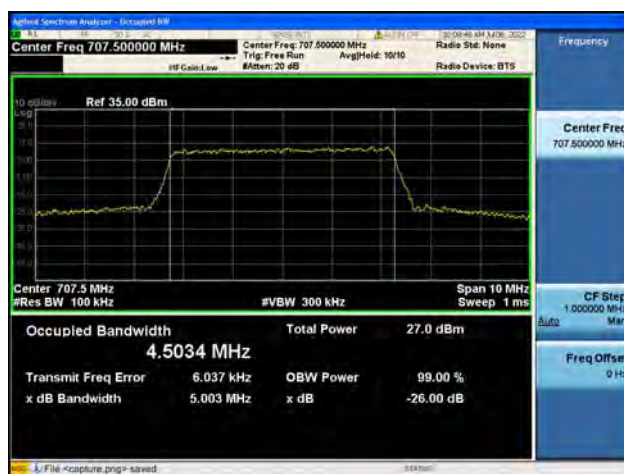
B12 / 5MHz / 16QAM/ Low CH



B12 / 5MHz / QPSK/ Mid CH



B12 / 5MHz / 16QAM/ Mid CH



B12 / 5MHz / QPSK/ High CH



B12 / 5MHz / 16QAM/ High CH





B12 / 10MHz / QPSK/ Low CH



B12 / 10MHz / 16QAM/ Low CH



B12 / 10MHz / QPSK/ Mid CH



B12 / 10MHz / 16QAM/ Mid CH



B12 / 10MHz / QPSK/ High CH



B12 / 10MHz / 16QAM/ High CH



2.3. Frequency Stability

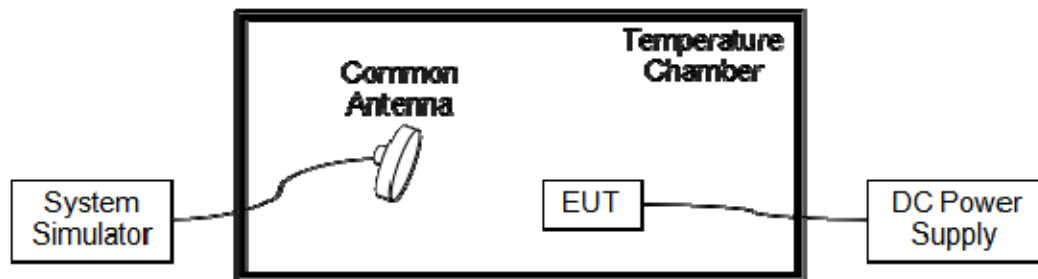
2.3.1. Requirement

According to FCC section 2.1055, 24.235, 27.54, 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 -20°C to $+70^{\circ}\text{C}$, 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 12.00V, 13.80V and 10.20V, which are specified by the applicant; the normal temperature here used is 20°C.

LTE Band 2, QPSK, Channel 18900, Frequency 1880.0MHz Limit =Within Authorized Band					
Voltage (%)	Power (VDC)	Temp(°C)	Fre. Dev. (Hz)	Deviation (ppm)	Result
100	12.00	+20(Ref)	20	0.011	PASS
100		-20	-45	-0.024	
100		-10	-14	-0.007	
100		0	16	0.009	
100		+10	19	0.010	
100		+20	-57	-0.030	
100		+30	38	0.020	
100		+40	42	0.022	
100		+50	-35	-0.019	
100		+60	-23	-0.012	
100		+70	52	0.028	
115	13.80	+20	-47	-0.025	
85	10.20	+20	-17	-0.009	



LTE Band 4, QPSK, Channel 20175, Frequency 1732.5MHz Limit =Within Authorized Band					
Voltage (%)	Power (VDC)	Temp(°C)	Fre. Dev. (Hz)	Deviation (ppm)	Result
100	12.00	+20(Ref)	-23	-0.013	PASS
100		-20	42	0.024	
100		-10	19	0.011	
100		0	-24	-0.014	
100		+10	37	0.021	
100		+20	-53	-0.031	
100		+30	14	0.008	
100		+40	38	0.022	
100		+50	-49	-0.028	
100		+60	-31	-0.018	
100		+70	36	0.021	
115	13.80	+20	-59	-0.034	
85	10.20	+20	50	0.029	

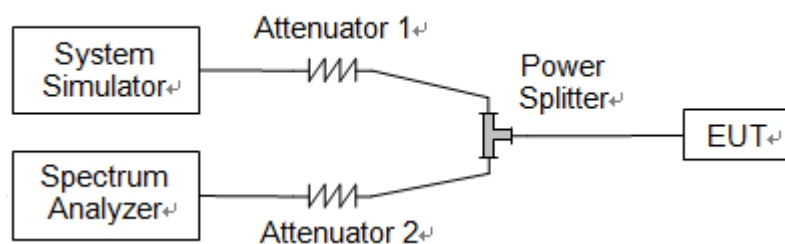
LTE Band 12, QPSK, Channel 23095, Frequency 707.5MHz Limit =Within Authorized Band					
Voltage (%)	Power (VDC)	Temp(°C)	Fre. Dev. (Hz)	Deviation (ppm)	Result
100	12.00	+20(Ref)	-27	-0.038	PASS
100		-20	37	0.052	
100		-10	-38	-0.054	
100		0	-45	-0.064	
100		+10	27	0.038	
100		+20	50	0.071	
100		+30	-54	-0.076	
100		+40	16	0.023	
100		+50	44	0.062	
100		+60	25	0.035	
100		+70	-35	-0.049	
115	13.80	+20	-32	-0.045	
85	10.20	+20	16	0.023	

2.4. Peak to Average Radio

2.4.1. Requirement

According to FCC section 24.232(d) and 27.50(d), the peak to average ratio (PAR) of the transmission may not exceed 13dB.

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

Record the maximum PAPR level associated with a probability of 0.1%.



LTE Band 2					
BW(MHz)	Channel Level	Modulation	PAR Radio(dB)	Limit(dB)	Verdict
1.4	Low	QPSK	4.40	<=13	PASS
	Low	16QAM	5.24	<=13	PASS
	Mid	QPSK	4.87	<=13	PASS
	Mid	16QAM	5.62	<=13	PASS
	High	QPSK	4.87	<=13	PASS
	High	16QAM	5.71	<=13	PASS
3	Low	QPSK	4.54	<=13	PASS
	Low	16QAM	5.29	<=13	PASS
	Mid	QPSK	4.96	<=13	PASS
	Mid	16QAM	5.71	<=13	PASS
	High	QPSK	5.08	<=13	PASS
	High	16QAM	5.84	<=13	PASS
5	Low	QPSK	4.81	<=13	PASS
	Low	16QAM	5.53	<=13	PASS
	Mid	QPSK	5.02	<=13	PASS
	Mid	16QAM	5.75	<=13	PASS
	High	QPSK	5.17	<=13	PASS
	High	16QAM	5.94	<=13	PASS
10	Low	QPSK	5.01	<=13	PASS
	Low	16QAM	5.69	<=13	PASS
	Mid	QPSK	5.06	<=13	PASS
	Mid	16QAM	5.81	<=13	PASS
	High	QPSK	5.26	<=13	PASS
	High	16QAM	6.01	<=13	PASS
15	Low	QPSK	4.99	<=13	PASS
	Low	16QAM	5.76	<=13	PASS
	Mid	QPSK	4.97	<=13	PASS
	Mid	16QAM	5.74	<=13	PASS
	High	QPSK	5.22	<=13	PASS
	High	16QAM	6.08	<=13	PASS
20	Low	QPSK	5.11	<=13	PASS
	Low	16QAM	5.89	<=13	PASS
	Mid	QPSK	5.04	<=13	PASS
	Mid	16QAM	5.77	<=13	PASS
	High	QPSK	5.23	<=13	PASS
	High	16QAM	6.10	<=13	PASS



LTE Band 4					
BW(MHz)	Channel Level	Modulation	PAR Radio(dB)	Limit(dB)	Verdict
1.4	Low	QPSK	4.72	<=13	PASS
	Low	16QAM	5.59	<=13	PASS
	Mid	QPSK	4.84	<=13	PASS
	Mid	16QAM	5.69	<=13	PASS
	High	QPSK	4.76	<=13	PASS
	High	16QAM	5.69	<=13	PASS
3	Low	QPSK	4.99	<=13	PASS
	Low	16QAM	5.78	<=13	PASS
	Mid	QPSK	5.04	<=13	PASS
	Mid	16QAM	5.77	<=13	PASS
	High	QPSK	5.17	<=13	PASS
	High	16QAM	6.01	<=13	PASS
5	Low	QPSK	5.11	<=13	PASS
	Low	16QAM	5.90	<=13	PASS
	Mid	QPSK	5.05	<=13	PASS
	Mid	16QAM	5.85	<=13	PASS
	High	QPSK	5.25	<=13	PASS
	High	16QAM	6.10	<=13	PASS
10	Low	QPSK	5.29	<=13	PASS
	Low	16QAM	6.05	<=13	PASS
	Mid	QPSK	5.12	<=13	PASS
	Mid	16QAM	5.87	<=13	PASS
	High	QPSK	5.32	<=13	PASS
	High	16QAM	6.13	<=13	PASS
15	Low	QPSK	5.33	<=13	PASS
	Low	16QAM	6.20	<=13	PASS
	Mid	QPSK	5.05	<=13	PASS
	Mid	16QAM	5.87	<=13	PASS
	High	QPSK	5.21	<=13	PASS
	High	16QAM	6.05	<=13	PASS
20	Low	QPSK	5.32	<=13	PASS
	Low	16QAM	6.20	<=13	PASS
	Mid	QPSK	4.95	<=13	PASS
	Mid	16QAM	5.87	<=13	PASS
	High	QPSK	5.28	<=13	PASS
	High	16QAM	6.02	<=13	PASS