



TEST REPORT

MANUFACTURER : Hot Pepper, Inc.

PRODUCT NAME : 4G Feature Phone

MODEL NAME : HPP-LF2

BRAND NAME : Hot Pepper

FCC ID : 2APD4-A90L

STANDARD(S) : 47 CFR Part 22, Subpart H
47 CFR Part 24, Subpart E
47 CFR Part 27, Subpart F&H&L&M

RECEIPT DATE : 2019-08-12

TEST DATE : 2019-08-12 to 2019-08-21

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Edited by :

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Change History		
Version	Date	Reason for change
1.0	2020-01-20	First edition



1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	Hot Pepper, Inc.
Applicant Address:	5151 California Ave., Suite 100, Irvine 92617, USA
Manufacturer:	Hot Pepper, Inc.
Manufacturer Address:	5151 California Ave., Suite 100, Irvine 92617, USA

1.2. Equipment Under Test (EUT) Description

Product Name:	4G Feature Phone	
Serial No:	(N/A, marked #1 by test site)	
Hardware Version:	A90L_MAINBOARD_P1	
Software Version:	HPP-LF2-V1.0.3-190809	
Modulation Type:	QPSK 16QAM	
Operation Band:	Band 2 / 4 / 5 / 13	
Frequency Range:	LTE Band 2	Tx: 1850.7MHz -1909.3MHz
		Rx: 1930.7MHz -1989.3MHz
	LTE Band 4	Tx: 1710.7MHz -1754.3MHz
		Rx: 2110.7MHz - 2154.3MHz
	LTE Band 5	Tx: 824.7MHz -848.3MHz
		Rx: 869.7MHz – 893.3MHz
	LTE Band 13	Tx: 779.5MHz - 784.5MHz
		Rx: 748.5MHz – 753.5MHz
Antenna Type:	Fixed Internal	
Antenna Gain:	LTE Band2:-0.9dbi; LTE Band4:-0.8dbi LTE Band5:-1.2dbi LTE Band13:-1.5dbi	
Accessory Information::	Battery	
	Manufacturer:	Shenzhen HUATIAN TONG



		TECHNOLOGY CO.LTD
	Brand Name:	Hot Pepper
	Model No.:	HPP-LF2
	Serial No.:	(N/A, marked #1 by test site)
	Capacity:	1700mAh
	Rated Voltage:	3.80V
	Charge Limit:	4.35V
Accessory Information:	AC Adapter	
	Manufacturer:	Shenzhen Tianyin Electronics Co.,Ltd.
	Brand Name:	Hot Pepper
	Model No.:	TPA-46B050100UU
	Serial No.:	(N/A, marked #1 by test site)
	Rated Input:	100-240V ~ 50/60Hz 0.2A
	Rated Output:	5V=1.0A

Note 1: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.



1.3. Test Channel

Band	Bandwidth (MHz)	Low Channel		Middle Channel		High Channel	
		Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
2	1.4	18607	1850.7	18900	1880	19193	1909.3
	3	18615	1851.7	18900	1880	19185	1908.5
	5	18625	1852.5	18900	1880	19175	1907.5
	10	18650	1855	18900	1880	19150	1905
	15	18675	1857.5	18900	1880	19125	1902.5
	20	18700	1860	18900	1880	19100	1900
4	1.4	19957	1710.7	20175	1732.5	20393	1754.3
	3	19965	1711.5	20175	1732.5	20385	1753.5
	5	19975	1712.5	20175	1732.5	20375	1752.5
	10	20000	1715	20175	1732.5	20350	1750
	15	20025	1717.5	20175	1732.5	20325	1747.5
	20	20050	1720	20175	1732.5	20300	1745
5	1.4	20407	824.7	20525	836.5	20643	848.3
	3	20415	825.5	20525	836.5	20635	847.5
	5	20425	826.5	20525	836.5	20625	846.5
	10	20450	829	20525	836.5	20600	844
13	5	23205	779.5	23230	782	23255	784.5
	10	/	/	23230	782	/	/

1.4. Emission Designator

LTE B2	Emission Designator (99%OBW)	
BW(MHz)	QPSK	16QAM
1.4	1M10G7D	1M10W7D
3	2M69G7D	2M69W7D
5	4M53G7D	4M53W7D
10	9M03G7D	9M01W7D
15	13M51G7D	13M53W7D
20	18M04G7D	18M02W7D
LTE B4	Emission Designator (99%OBW)	
BW(MHz)	QPSK	16QAM
1.4	1M10G7D	1M10W7D
3	2M69G7D	2M69W7D
5	4M53G7D	4M52W7D
10	9M00G7D	9M00W7D
15	13M50G7D	13M48W7D
20	17M99G7D	18M96W7D
LTE B5	Emission Designator (99%OBW)	
BW(MHz)	QPSK	16QAM
1.4	1M09G7D	1M10W7D
3	2M70G7D	2M69W7D
5	4M53G7D	4M53W7D
10	9M02G7D	9M01W7D
LTE B13	Emission Designator (99%OBW)	
BW(MHz)	QPSK	16QAM
5	4M53G7D	4M52W7D
10	8M97G7D	8M97W7D

1.5. Test Standards and Results

The objective of the report is to perform testing according to Part 2 and 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 22	Public Mobile Services



3	47 CFR Part 24	Personal Communications Services
4	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
2.1046	Transmitter Conducted Output Power	Aug 14, 2019	Lai Huihuang	PASS
2.1049	Occupied Bandwidth	Aug 13, 2019 Aug 19, 2019	Lai Huihuang	PASS
2.1055, 22.355, 24.235, 27.54	Frequency Stability	Aug 13, 2019 Aug 19, 2019	Lai Huihuang	PASS
22.913(d), 24.232(d), 27.50(d)(5)	Peak to Average Radio	Aug 13, 2019 Aug 19, 2019	Lai Huihuang	PASS
2.1051, 22.917(a), 24.238, 27.53(c), 27.53(g), 27.53 (h) 27.53(m)	Conducted Spurious Emissions	Aug 13, 2019 Aug 19, 2019	Lai Huihuang	PASS
2.1051, 22.917(a), 24.238, 27.53(c), 27.53(g), 27.53 (h) 27.53(m)	Band Edge	Aug 13, 2019 Aug 19, 2019	Lai Huihuang	PASS
22.913(a)(2), 24.232(c), 27.50(a)(3), 27.50(b)(10), 2 7.50(c)(10), 27.50(d)(4), 27.50(h)(2)	Transmitter Radiated Power (EIPR/ERP)	Aug 21, 2019 Aug 24, 2019	Yaming Luo	PASS
2.1051, 22.917(a), 24.238, 27.53(c), 27.53(g), 27.53 (h) 27.53(m)	Radiated Spurious Emissions	Aug 21, 2019 Aug 24, 2019	Yaming Luo	PASS
Note: The tests were performed according to the method of measurements prescribed in KDB971168 D01 v03r01 and ANSI/TIA-603-E-2016.				



1.6. 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

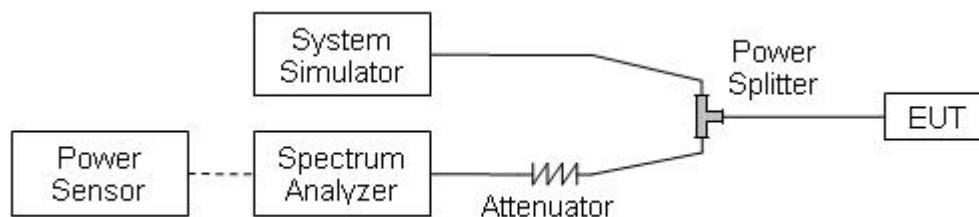
2. 47 CFR Part 2, Part 22H, Part 24E and 27 F&H&L&M Requirements

2.1. Transmitter Conducted Output Power

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).

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 D01v03r01 Section 5.2 and ANSI/TIA-603-E-2016.



2.1.4. Result

LTE Band 2						
Bandwidth	Modulation	RB	RB	Low Channel	Middle Channel	High Channel
MHz		Size	Offset	dBm	dBm	dBm
1.4	QPSK	1	0	22.38	22.54	22.51
		1	3	22.66	22.72	22.61
		1	5	22.61	22.39	22.60
		3	0	22.68	22.56	22.44
		3	1	22.71	22.72	22.48
		3	3	22.62	22.50	22.42
	16-QAM	6	0	21.77	21.66	21.85
		1	0	21.53	21.42	21.81
		1	3	21.77	21.75	21.83
		1	5	21.55	21.91	21.46
		3	0	21.87	21.84	21.86
		3	1	21.99	21.96	21.69
		3	3	21.68	21.93	21.59
		6	0	20.85	20.78	20.46
3	QPSK	1	0	22.62	22.41	22.46
		1	8	22.51	22.42	22.47
		1	14	22.66	22.55	22.58
		8	0	21.63	21.62	21.74
		8	4	21.76	21.67	21.63
		8	7	21.77	21.73	21.63
		15	0	21.66	21.65	21.68
	16-QAM	1	0	21.59	21.42	21.86
		1	8	21.38	21.52	21.90
		1	14	21.46	21.53	21.37
		8	0	20.88	20.54	20.69
		8	4	20.62	20.77	20.66
		8	7	20.56	20.65	20.69
		15	0	20.69	20.62	20.56
5	QPSK	1	0	22.46	22.41	22.44
		1	12	22.71	22.77	22.71
		1	24	22.53	22.56	22.64
		12	0	21.65	21.54	21.49
		12	7	21.72	21.60	21.61



		12	13	21.56	21.52	21.50
		25	0	21.65	21.58	21.55
	16-QAM	1	0	21.70	21.89	21.48
		1	12	21.87	21.76	21.72
		1	24	21.67	21.50	21.48
		12	0	20.67	20.66	20.65
		12	7	20.75	20.72	20.64
		12	13	20.77	20.68	20.62
		25	0	20.61	20.54	20.51
10	QPSK	1	0	22.54	22.36	22.43
		1	24	22.64	22.58	22.50
		1	49	22.57	22.31	22.55
		25	0	21.59	21.57	21.56
		25	12	21.66	21.58	21.51
		25	25	21.69	21.54	21.50
		50	0	21.62	21.57	21.50
	16-QAM	1	0	21.79	21.88	21.42
		1	24	21.56	21.48	21.39
		1	49	21.51	21.41	21.41
		25	0	20.66	20.72	20.65
		25	12	20.78	20.57	20.61
		25	25	20.79	20.54	20.44
		50	0	20.67	20.57	20.45
15	QPSK	1	0	22.49	22.47	22.14
		1	37	22.49	22.29	22.30
		1	74	22.41	22.22	22.39
		36	0	21.64	21.49	21.48
		36	20	21.56	21.45	21.47
		36	39	21.60	21.40	21.44
		75	0	21.63	21.60	21.56
	16-QAM	1	0	22.01	21.51	21.60
		1	37	21.85	21.87	21.73
		1	74	21.57	21.51	21.65
		36	0	20.40	20.61	20.46
		36	20	20.41	20.44	20.41
		36	39	20.54	20.41	20.47
		75	0	20.63	20.53	20.57
20	QPSK	1	0	22.54	22.56	22.59



		1	49	22.79	22.55	22.53
		1	99	22.57	22.54	22.57
		50	0	21.49	21.37	21.49
		50	24	21.46	21.35	21.38
		50	50	21.47	21.33	21.27
		100	0	21.45	21.26	21.40
		100	0	21.45	21.26	21.40
	16-QAM	1	0	21.56	21.75	21.45
		1	49	21.78	21.66	21.82
		1	99	21.37	21.36	21.46
		50	0	20.52	20.49	20.50
		50	24	20.65	20.39	20.45
		50	50	20.64	20.47	20.29
		100	0	20.58	20.44	20.40

LTE Band 4						
Bandwidth	Modulation	RB	RB	Low Channel	Middle Channel	High Channel
MHz		Size	Offset	dBm	dBm	dBm
1.4	QPSK	1	0	22.13	21.83	21.87
		1	3	22.30	22.01	22.04
		1	5	22.12	21.85	21.91
		3	0	21.99	21.96	21.90
		3	1	22.27	21.94	22.00
		3	3	22.28	21.93	22.00
		6	0	21.23	20.91	20.96
	16-QAM	1	0	21.20	20.83	21.00
		1	3	21.33	21.00	21.22
		1	5	21.22	20.84	21.02
		3	0	21.90	21.96	21.90
		3	1	21.93	21.04	21.96
		3	3	21.93	21.90	21.71
		6	0	20.65	20.62	20.89
3	QPSK	1	0	22.62	22.54	22.69
		1	8	22.71	22.58	22.62
		1	14	22.58	22.68	22.57
		8	0	21.71	21.69	21.67
		8	4	21.78	21.66	21.63
		8	7	21.71	21.53	21.65
		15	0	21.74	21.67	21.64



	16-QAM	1	0	21.61	21.66	21.99
		1	8	21.51	21.98	21.54
		1	14	21.95	21.50	21.61
		8	0	20.92	20.65	20.83
		8	4	20.75	20.80	20.84
		8	7	20.62	20.78	20.78
		15	0	20.72	20.61	20.70
5	QPSK	1	0	22.13	21.86	21.78
		1	12	22.18	21.93	21.92
		1	24	22.10	21.78	21.86
		12	0	21.14	20.95	20.86
		12	7	21.17	20.88	20.87
		12	13	21.20	20.84	20.92
		25	0	21.17	20.88	20.94
	16-QAM	1	0	21.73	21.61	21.71
		1	12	21.78	21.15	21.88
		1	24	21.63	21.60	21.09
		12	0	20.80	20.69	20.89
		12	7	20.82	20.72	20.75
		12	13	20.86	20.71	20.68
		25	0	20.69	20.64	20.68
10	QPSK	1	0	22.78	22.56	22.63
		1	24	22.92	22.70	22.71
		1	49	22.71	22.55	22.54
		25	0	21.18	21.05	21.01
		25	12	21.21	21.00	21.02
		25	25	21.22	20.93	21.00
		50	0	21.23	20.96	21.03
	16-QAM	1	0	21.21	21.50	21.06
		1	24	21.32	21.54	21.22
		1	49	21.14	21.43	21.09
		25	0	20.78	20.93	20.84
		25	12	20.97	20.75	20.77
		25	25	20.93	20.63	20.70
		50	0	20.72	20.62	20.64
15	QPSK	1	0	22.76	22.56	22.67
		1	37	22.90	22.85	22.81
		1	74	22.65	22.59	22.57



		36	0	21.69	21.84	21.75
		36	20	21.74	21.67	21.83
		36	39	21.78	21.64	21.63
		75	0	21.79	21.75	21.81
	16-QAM	1	0	21.96	21.35	21.63
		1	37	21.17	21.71	21.82
		1	74	21.87	21.48	21.46
		36	0	20.79	20.66	20.67
		36	20	20.67	20.66	20.64
		36	39	20.76	20.63	20.70
		75	0	20.66	20.68	20.74
20	QPSK	1	0	22.94	22.85	22.81
		1	49	22.30	22.35	22.42
		1	99	22.40	22.42	22.39
		50	0	21.78	21.75	21.77
		50	24	21.76	21.70	21.70
		50	50	21.72	21.52	21.63
		100	0	21.65	21.67	21.65
	16-QAM	1	0	21.94	21.75	21.73
		1	49	21.42	21.96	21.50
		1	99	21.95	21.92	21.30
		50	0	20.59	20.67	20.76
		50	24	20.68	20.66	20.71
		50	50	20.62	20.61	20.71
		100	0	20.97	20.93	20.99

LTE Band 5						
Bandwidth	Modulation	RB	RB	Low Channel	Middle Channel	High Channel
MHz		Size	Offset	dBm	dBm	dBm
1.4	QPSK	1	0	22.30	22.10	22.28
		1	3	22.48	22.32	22.40
		1	5	22.25	22.10	22.32
		3	0	22.25	22.15	22.20
		3	1	22.23	22.17	22.19
		3	3	22.23	22.18	22.14
		6	0	21.31	21.25	21.30
	16-QAM	1	0	21.22	21.34	21.02
		1	3	21.46	21.51	21.16



		1	5	21.20	21.32	20.99
		3	0	21.42	21.16	21.15
		3	1	21.42	21.18	21.14
		3	3	21.42	21.24	21.12
		6	0	20.29	20.17	20.20
3	QPSK	1	0	22.25	22.10	22.29
		1	8	22.16	22.09	22.34
		1	14	22.16	22.14	22.40
		8	0	21.32	21.24	21.30
		8	4	21.30	21.24	21.28
		8	7	21.29	21.25	21.25
		15	0	21.31	21.19	21.19
	16-QAM	1	0	21.56	21.36	21.11
		1	8	21.46	21.33	21.07
		1	14	21.46	21.33	21.09
		8	0	20.32	20.14	20.25
		8	4	20.28	20.16	20.25
		8	7	20.26	20.20	20.19
		15	0	20.25	20.03	20.15
5	QPSK	1	0	22.20	22.08	22.06
		1	12	22.23	22.22	22.17
		1	24	22.12	22.06	22.03
		12	0	21.28	21.18	21.20
		12	7	21.26	21.17	21.17
		12	13	21.25	21.19	21.16
		25	0	21.29	21.20	21.25
	16-QAM	1	0	21.42	21.24	21.42
		1	12	21.55	21.36	21.46
		1	24	21.35	21.22	21.24
		12	0	20.20	20.09	20.27
		12	7	20.21	20.15	20.24
		12	13	20.23	20.16	20.21
		25	0	20.28	20.15	20.21
10	QPSK	1	0	22.18	22.13	22.25
		1	24	22.48	22.32	22.51
		1	49	22.10	22.13	22.32
		25	0	21.28	21.22	21.29
		25	12	21.29	21.23	21.30



		25	25	21.32	21.24	21.34
		50	0	21.31	21.21	21.31
	16-QAM	1	0	21.46	21.26	21.14
		1	24	21.57	21.48	21.24
		1	49	21.34	21.32	21.15
		25	0	20.32	20.22	20.27
		25	12	20.34	20.15	20.27
		25	25	20.37	20.20	20.28
		50	0	20.29	20.20	20.30

LTE Band 13						
Bandwidth	Modulation	RB	RB	Low Channel	Middle Channel	High Channel
MHz		Size	Offset	dBm	dBm	dBm
5	QPSK	1	0	23.56	23.41	23.38
		1	12	23.57	23.52	23.54
		1	24	23.52	23.35	23.46
		12	0	22.16	22.17	22.24
		12	7	22.19	22.24	22.23
		12	13	22.27	22.25	22.20
		50	0	22.18	22.20	22.18
	16-QAM	1	0	22.30	22.32	22.17
		1	12	22.46	22.44	22.24
		1	24	22.38	22.40	22.15
		12	0	21.05	21.06	21.13
		12	7	21.05	21.15	21.13
		12	13	21.05	21.27	21.13
		50	0	21.10	21.13	21.16
10	QPSK	1	0	/	23.82	/
		1	24	/	23.48	/
		1	49	/	23.43	/
		25	0	/	22.16	/
		25	12	/	22.17	/
		25	25	/	22.20	/
		50	0	/	22.16	/
	16-QAM	1	0	/	22.17	/
		1	24	/	22.33	/
		1	49	/	22.46	/
		25	0	/	21.18	/



REPORT No. : XM19070036W05

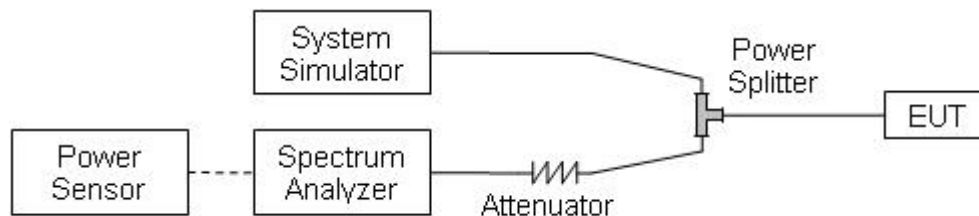
		25	12	/	21.18	/
		25	25	/	21.19	/
		50	0	/	21.14	/

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 D01v03r01 Section 4.1 and ANSI/TIA-603-E-2016.



2.2.4. Test Result

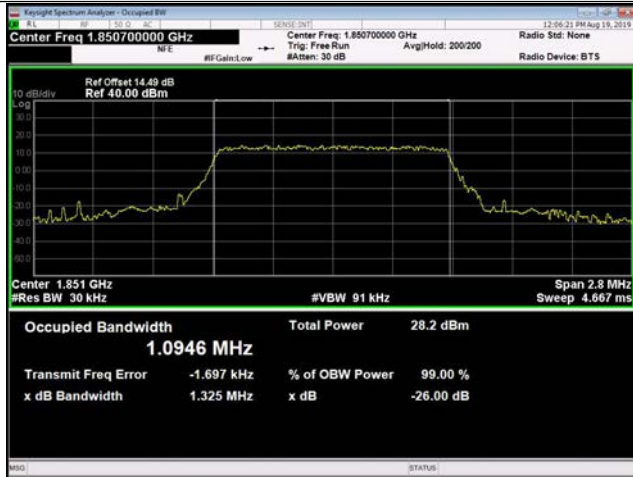
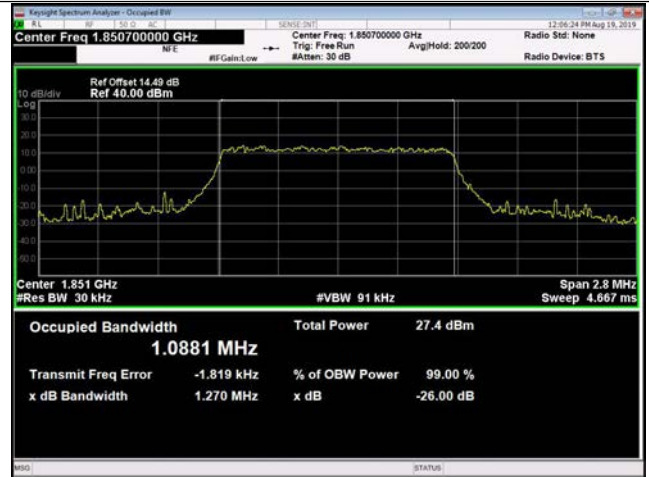
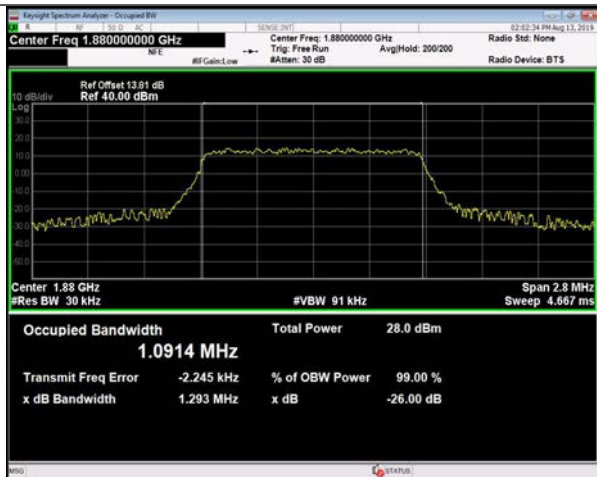
LTE Band 2							
BW	Modulation	Low Channel		Middle Channel		High Channel	
		OBW	26dB BW	OBW	26dB BW	OBW	26dB BW
MHz		MHz	MHz	MHz	MHz	MHz	MHz
1.4	QPSK	1.095	1.325	1.091	1.293	1.091	1.292
	16QAM	1.088	1.270	1.095	1.285	1.100	1.311
3	QPSK	2.691	3.056	2.689	2.902	2.693	2.917
	16QAM	2.687	2.909	2.692	2.937	2.687	2.933
5	QPSK	4.529	5.193	4.531	5.205	4.508	5.207
	16QAM	4.515	5.123	4.517	5.150	4.530	5.183
10	QPSK	9.016	10.042	9.033	10.138	9.013	10.184
	16QAM	9.013	9.955	8.999	10.047	9.011	10.105
15	QPSK	13.490	15.023	13.491	15.224	13.517	15.046
	16QAM	13.474	14.749	13.487	14.860	13.539	14.823
20	QPSK	17.994	19.688	17.947	19.491	18.044	18.565
	16QAM	17.968	19.909	18.014	19.964	18.015	19.631

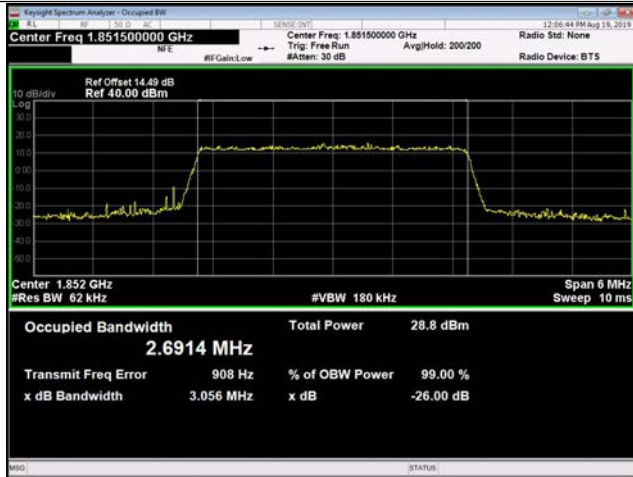
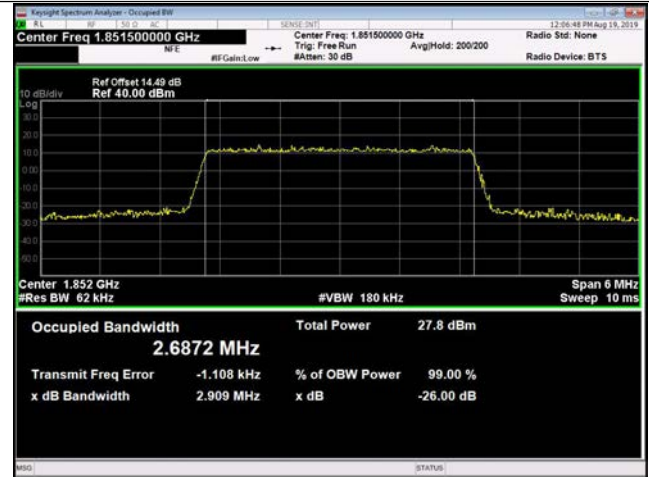
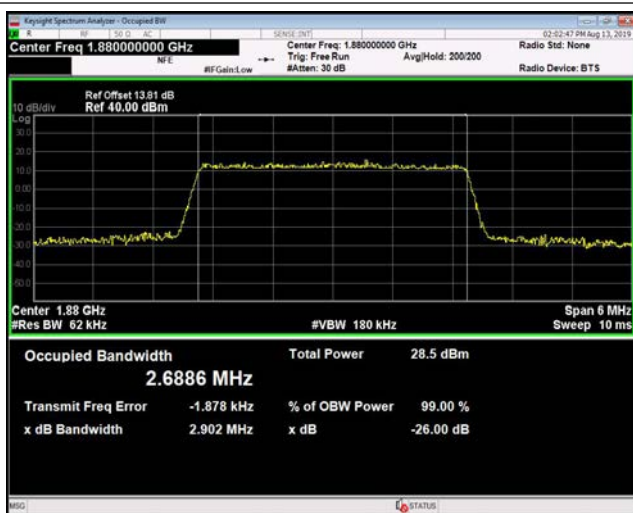
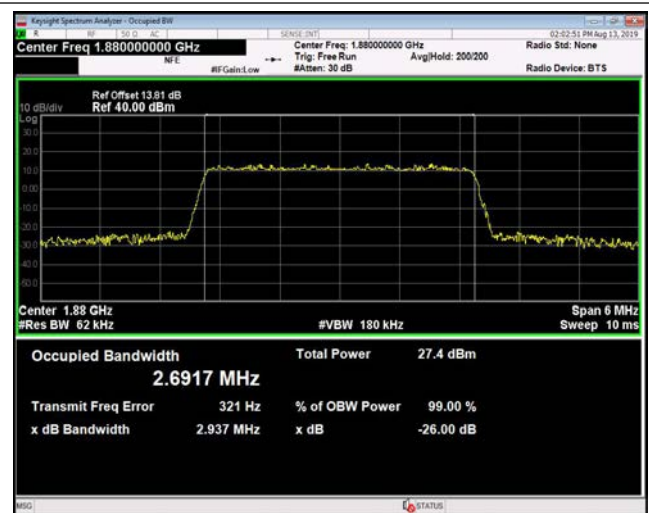
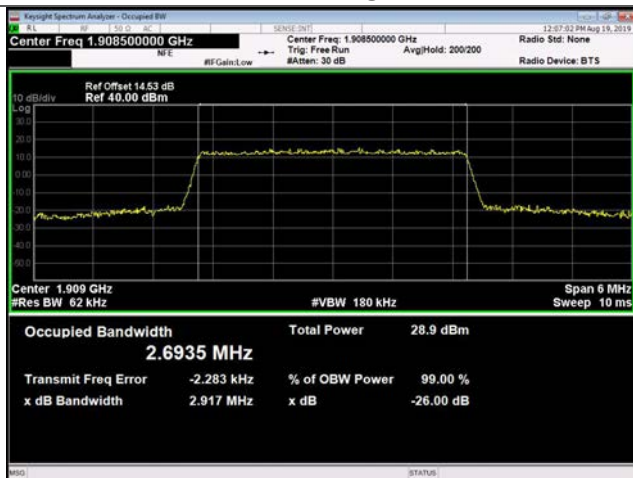
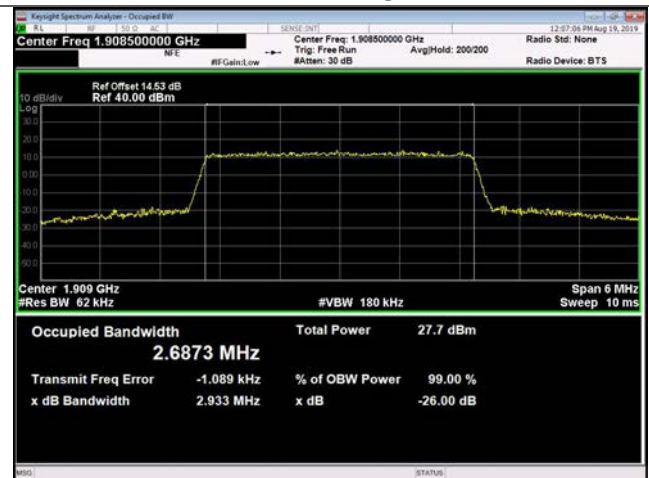
LTE Band 4							
BW	Modulation	Low Channel		Middle Channel		High Channel	
		OBW	26dB BW	OBW	26dB BW	OBW	26dB BW
MHz		MHz	MHz	MHz	MHz	MHz	MHz
1.4	QPSK	1.103	1.289	1.089	1.272	1.100	1.298
	16QAM	1.088	1.287	1.096	1.304	1.086	1.282
3	QPSK	2.694	2.928	2.684	2.907	2.680	2.892
	16QAM	2.656	2.904	2.683	2.902	2.686	2.917
5	QPSK	4.528	5.206	4.511	5.126	4.513	5.155
	16QAM	4.507	5.081	4.515	5.126	4.508	4.990
10	QPSK	8.989	10.05	9.008	10.01	8.980	10.14
	16QAM	8.975	10.03	9.001	10.07	8.974	10.10
15	QPSK	13.447	14.71	13.501	14.99	13.46	14.98
	16QAM	13.464	14.86	13.482	14.67	13.445	14.67
20	QPSK	17.943	19.670	17.962	19.440	17.989	19.57
	16QAM	17.902	19.490	17.956	19.58	17.950	19.650

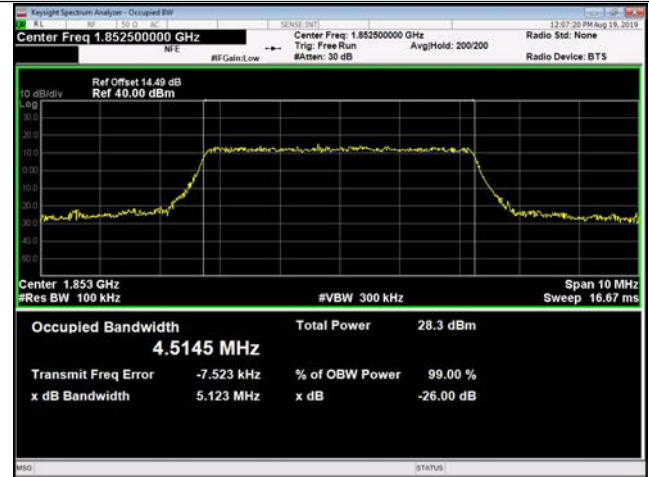
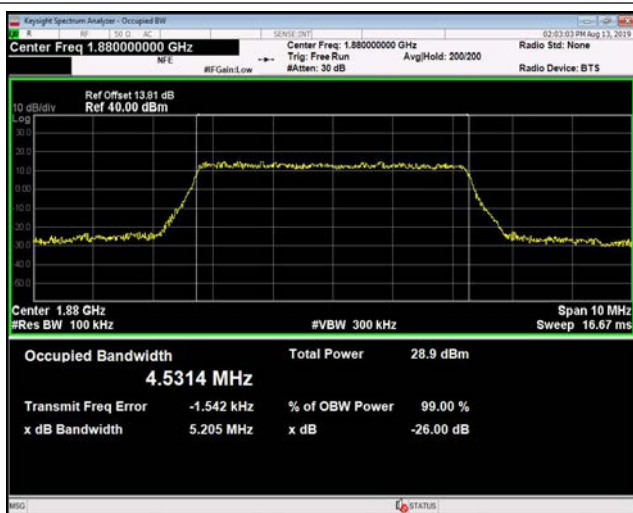
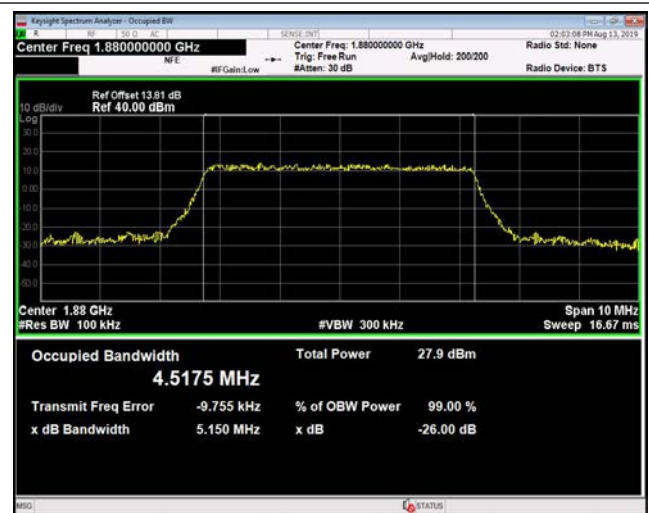
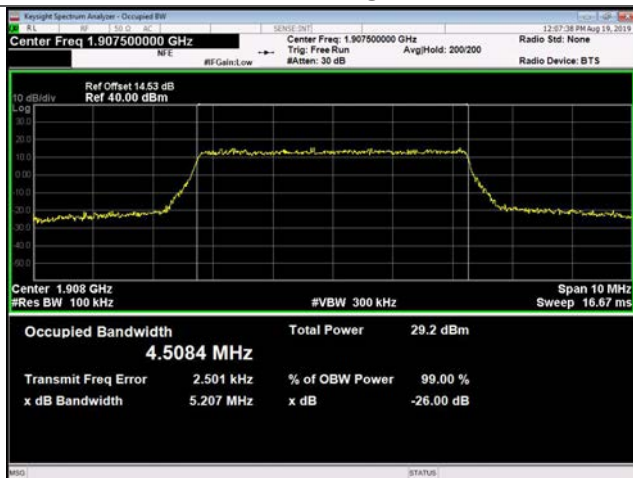
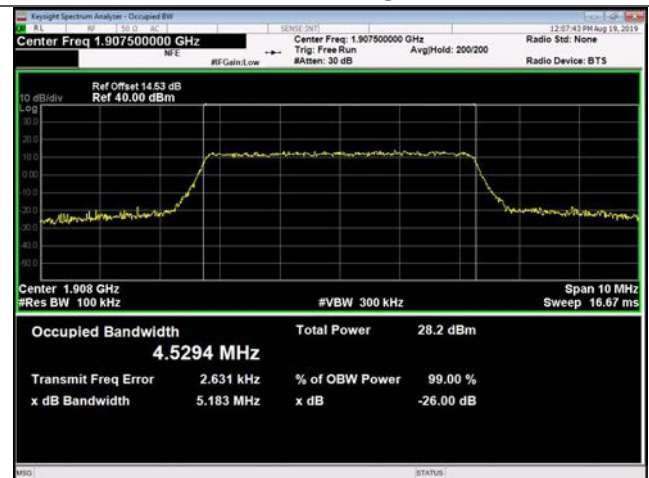


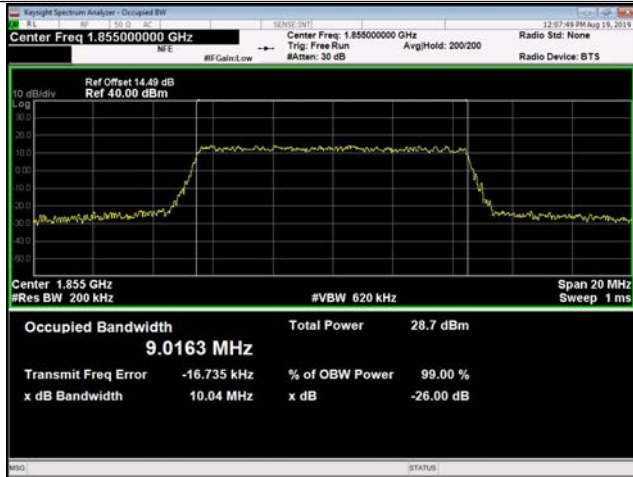
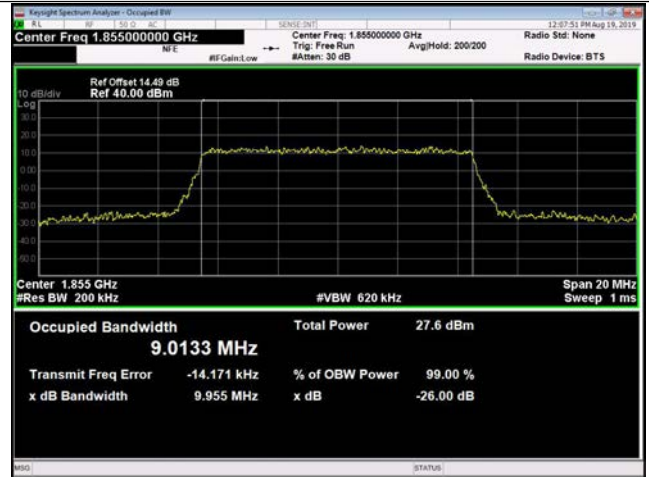
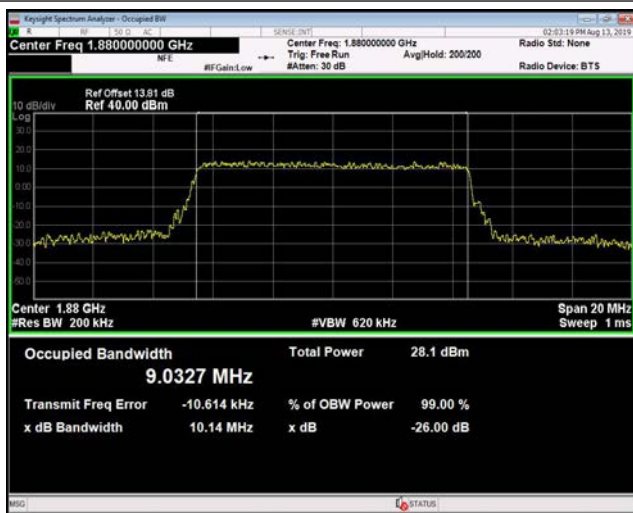
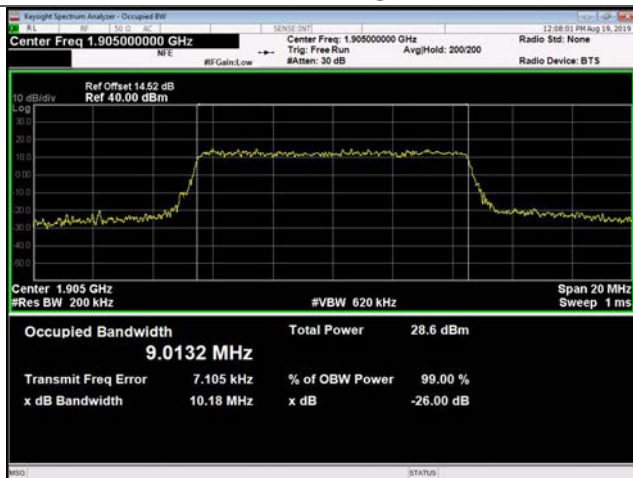
LTE Band 5							
BW	Modulation	Low Channel		Middle Channel		High Channel	
		OBW	26dB BW	OBW	26dB BW	OBW	26dB BW
MHz		MHz	MHz	MHz	MHz	MHz	MHz
1.4	QPSK	1.088	1.298	1.094	1.2286	1.093	1.281
	16QAM	1.088	1.276	1.098	1.294	1.092	1.289
3	QPSK	2.695	2.918	2.695	2.895	2.695	2.915
	16QAM	2.689	2.917	2.687	2.906	2.687	2.928
5	QPSK	4.528	5.152	4.531	4.929	4.509	5.139
	16QAM	4.517	5.135	4.506	5.204	4.531	5.237
10	QPSK	9.021	9.900	8.978	10.003	9.006	10.085
	16QAM	9.012	9.934	8.966	10.003	9.002	9.967

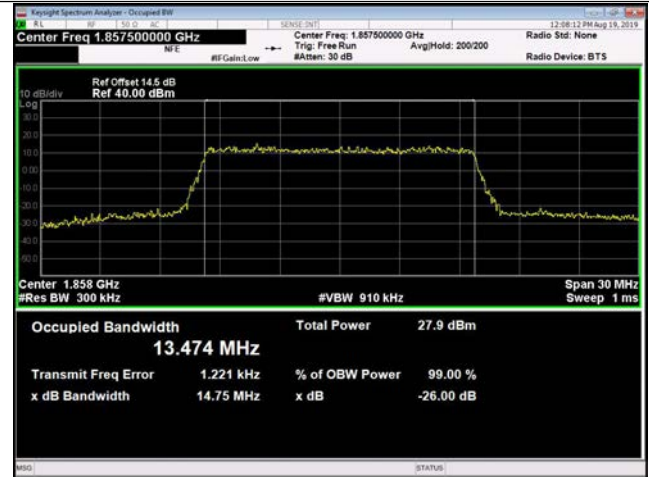
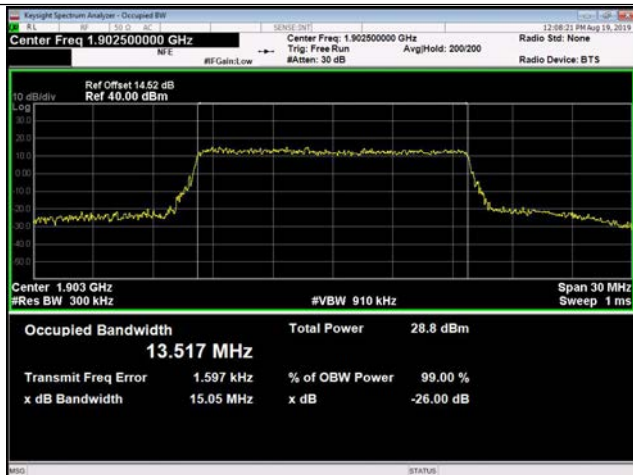
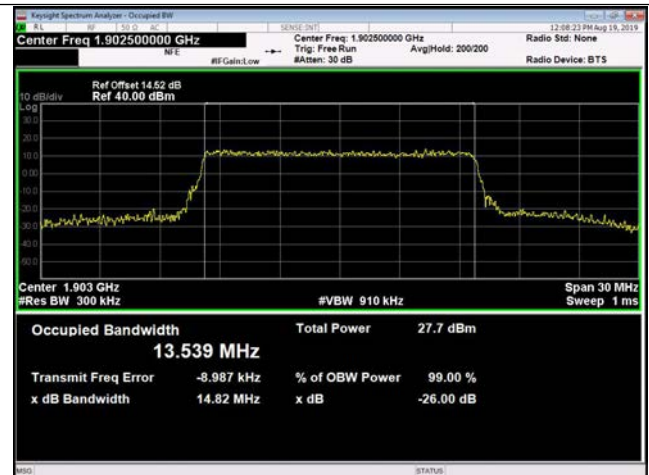
LTE Band 13							
BW	Modulation	Low Channel		Middle Channel		High Channel	
		OBW	26dB BW	OBW	26dB BW	OBW	26dB BW
MHz		MHz	MHz	MHz	MHz	MHz	MHz
5	QPSK	4.5123	5.134	4.5122	5.204	4.526	5.412
	16QAM	4.5111	5.163	4.5145	5.160	4.5140	5.160
10	QPSK	/	/	8.9738	10.03	/	/
	16QAM	/	/	8.9742	9.943	/	/

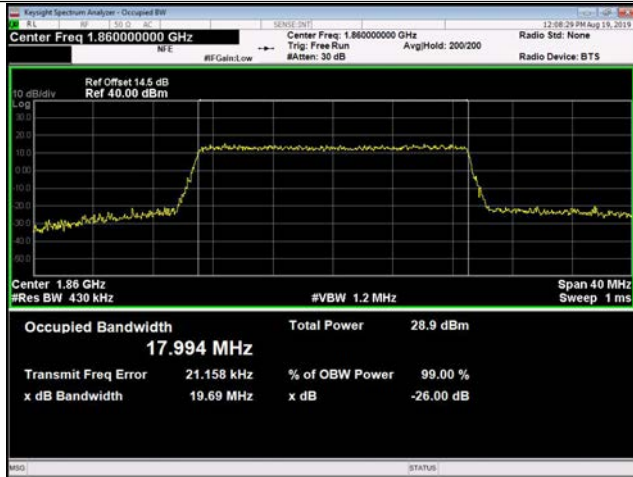
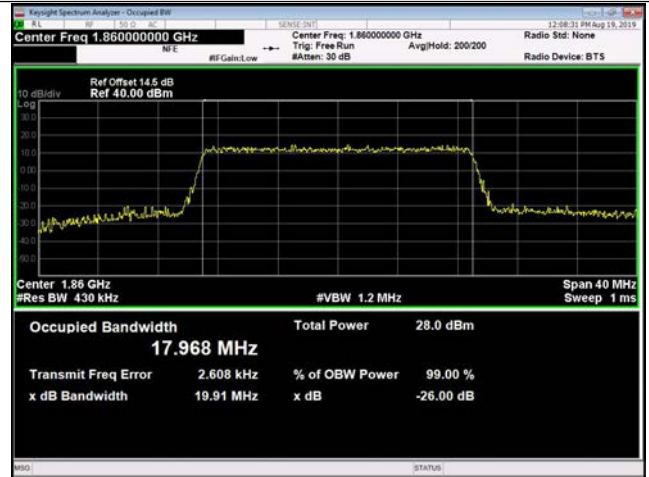
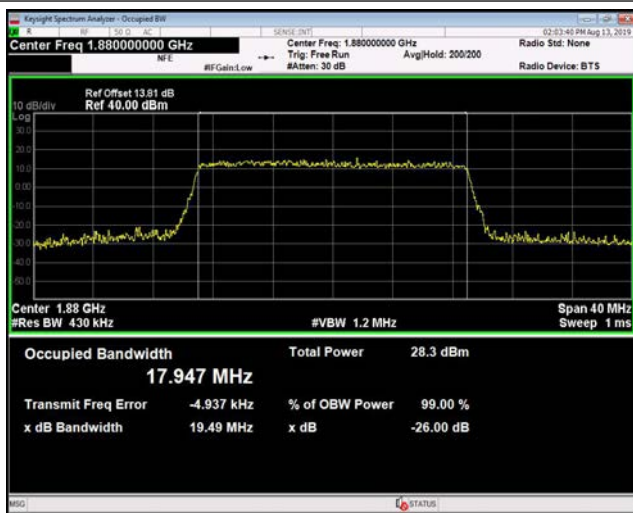
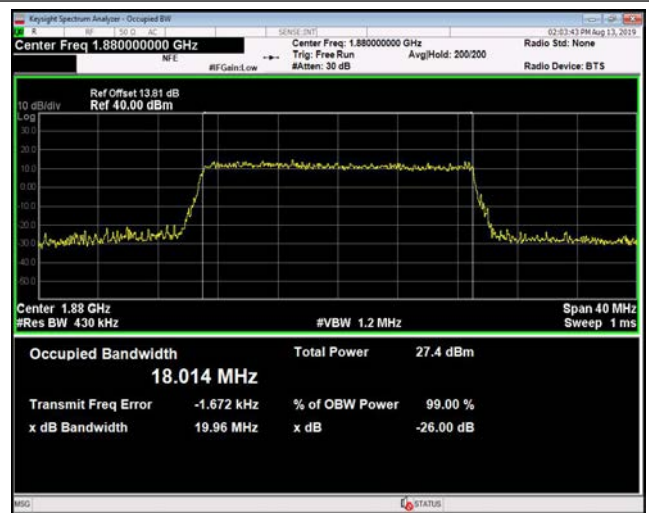
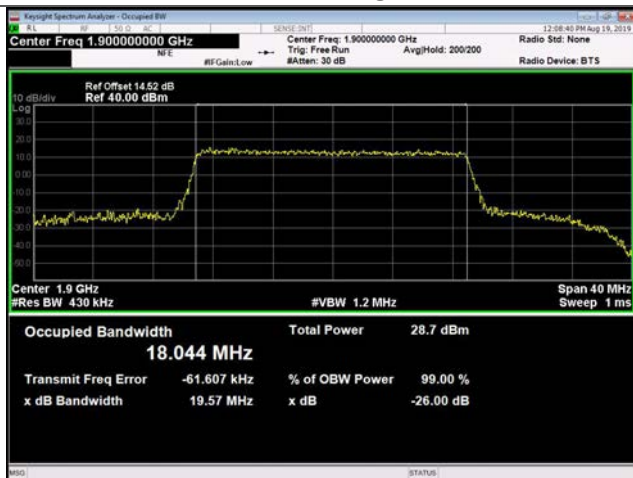
**LTE Band 2 _ 99% Bandwidth & 26dB Bandwidth****1.4MHz / QPSK / Low Channel****1.4MHz / 16QAM / Low Channel****1.4MHz / QPSK / Middle Channel I****1.4MHz / 16QAM / Middle Channel****1.4MHz / QPSK / High Channel****1.4MHz / 16QAM / High Channel**

**LTE Band 2 _ 99% Bandwidth & 26dB Bandwidth****3MHz / QPSK / Low Channel****3MHz / 16QAM / Low Channel****3MHz / QPSK / Middle Channel****3MHz / 16QAM / Middle Channel****3MHz / QPSK / High Channel****3MHz / 16QAM / High Channel**

**LTE Band 2 _ 99% Bandwidth & 26dB Bandwidth****5MHz / QPSK / Low Channel****5MHz / 16QAM / Low Channel****5MHz / QPSK / Middle Channel****5MHz / 16QAM / Middle Channel****5MHz / QPSK / High Channel****5MHz / 16QAM / High Channel**

**LTE Band 2 _ 99% Bandwidth & 26dB Bandwidth****10MHz / QPSK / Low Channel****10MHz / 16QAM / Low Channel****10MHz / QPSK / Middle Channel****10MHz / 16QAM / Middle Channel****10MHz / QPSK / High Channel****10MHz / 16QAM / High Channel**

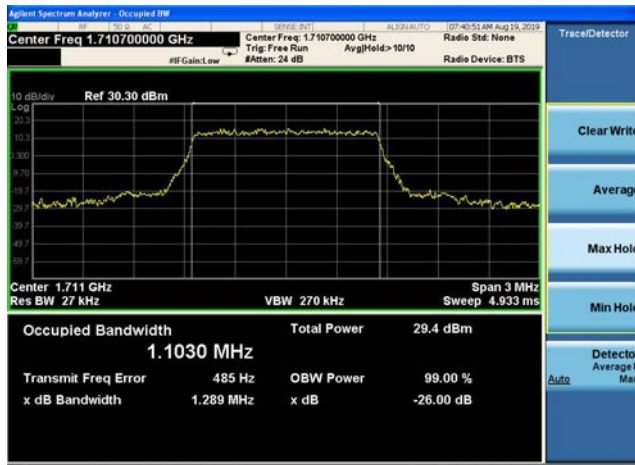
**LTE Band 2 _ 99% Bandwidth & 26dB Bandwidth****15MHz / QPSK / Low Channel****15MHz / 16QAM / Low Channel****15MHz / QPSK / Middle Channel****15MHz / 16QAM / Middle Channel****15MHz / QPSK / High Channel****15MHz / 16QAM / High Channel**

**LTE Band 2 _ 99% Bandwidth & 26dB Bandwidth****20MHz / QPSK / Low Channel****20MHz / 16QAM / Low Channel****20MHz / QPSK / Middle Channel****20MHz / 16QAM / Middle Channel****20MHz / QPSK / High Channel****20MHz / 16QAM / High Channel**



LTE Band 4 _ 99% Bandwidth & 26dB Bandwidth

1.4MHz / QPSK / Low Channel



1.4MHz / 16QAM / Low Channel



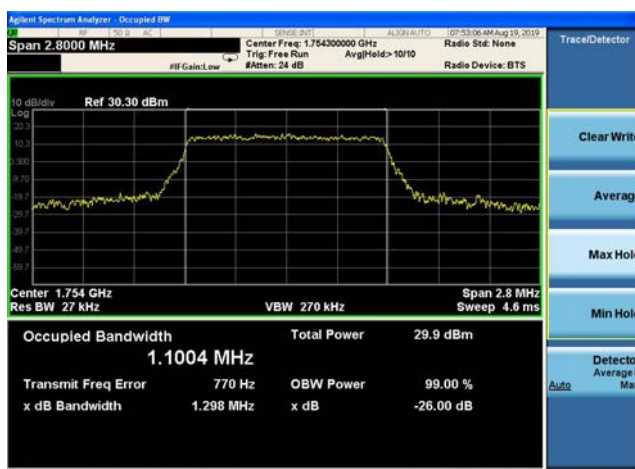
1.4MHz / QPSK / Middle Channel



1.4MHz / 16QAM / Middle Channel



1.4MHz / QPSK / High Channel



1.4MHz / 16QAM / High Channel





LTE Band 4 _ 99% Bandwidth & 26dB Bandwidth

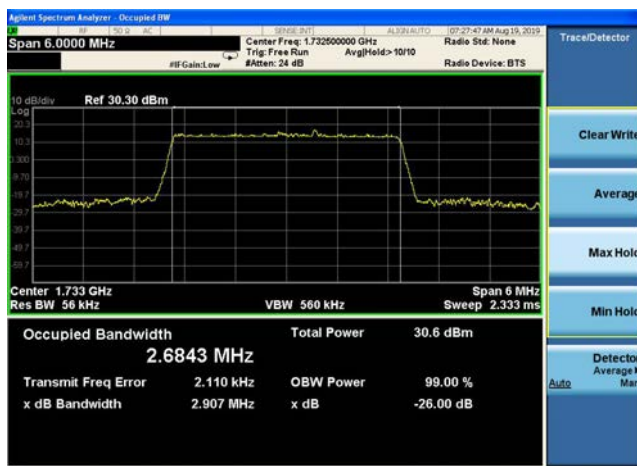
3MHz / QPSK / Low Channel



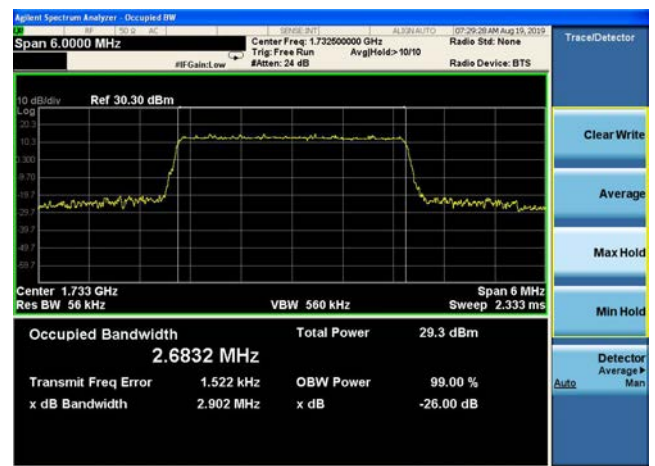
3MHz / 16QAM / Low Channel



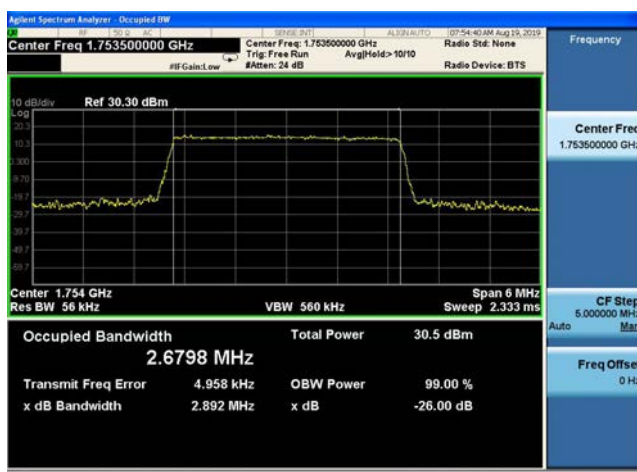
3MHz / QPSK / Middle Channel



3MHz / 16QAM / Middle Channel



3MHz / QPSK / High Channel



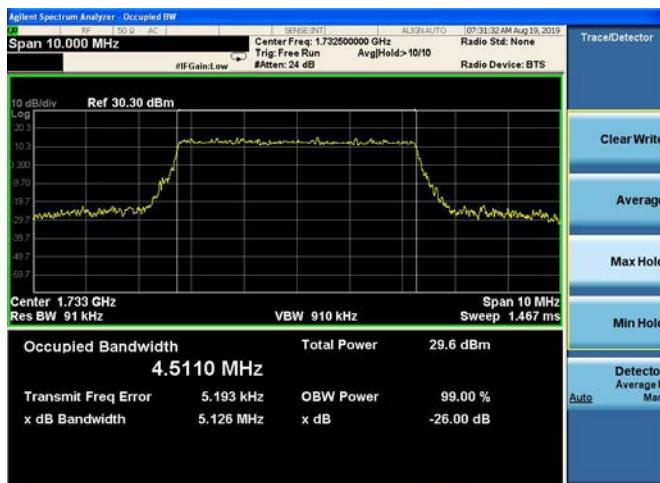
3MHz / 16QAM / High Channel





LTE Band 4 _ 99% Bandwidth & 26dB Bandwidth

5MHz / QPSK / Low Channel



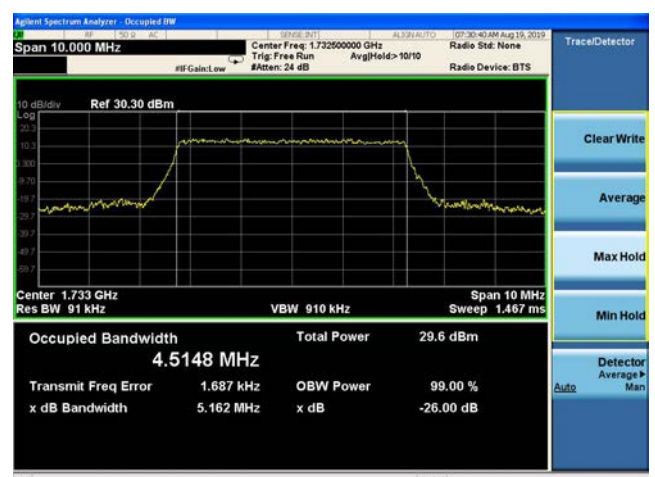
5MHz / 16QAM / Low Channel



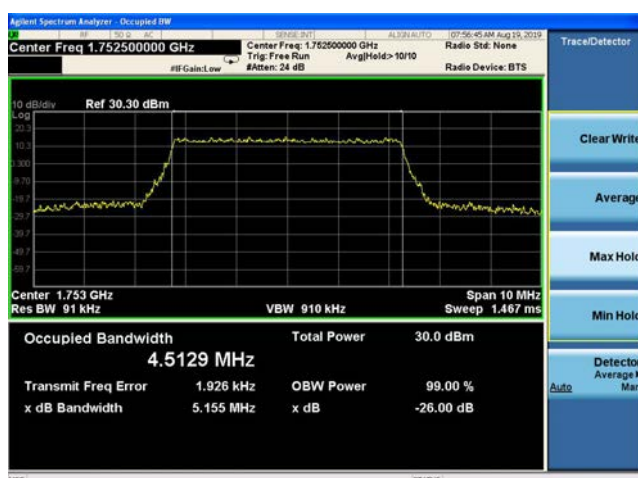
5MHz / QPSK / Middle Channel



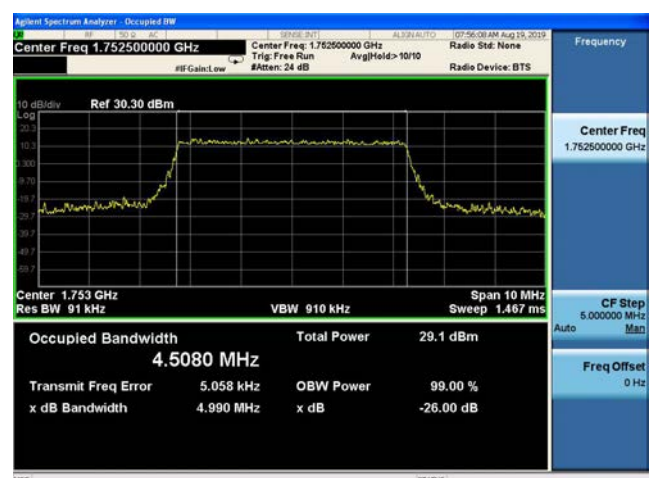
5MHz / 16QAM / Middle Channel



5MHz / QPSK / High Channel



5MHz / 16QAM / High Channel



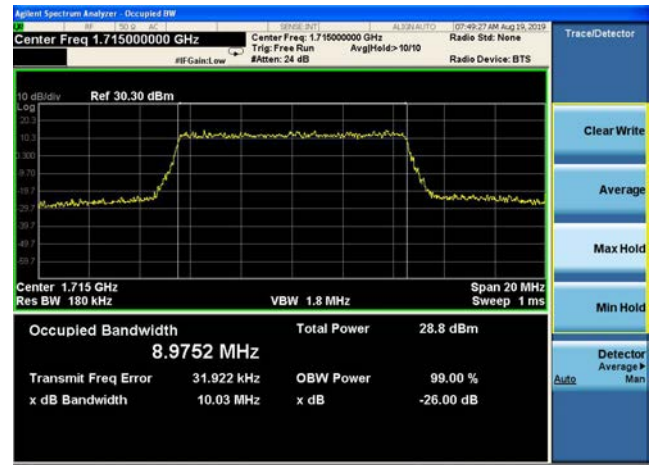


LTE Band 4 _ 99% Bandwidth & 26dB Bandwidth

10MHz / QPSK / Low Channel



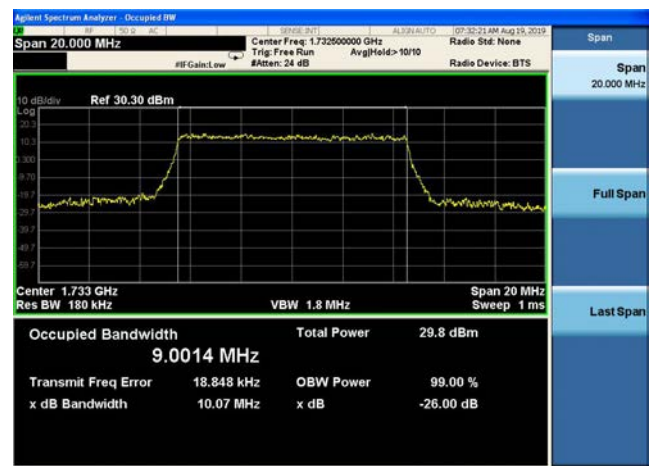
10MHz / 16QAM / Low Channel



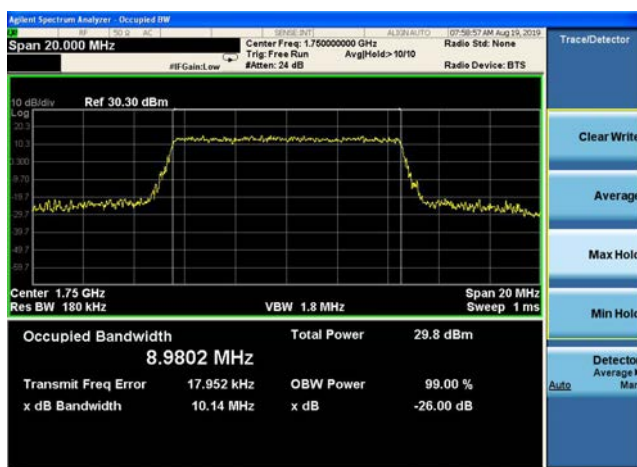
10MHz / QPSK / Middle Channel



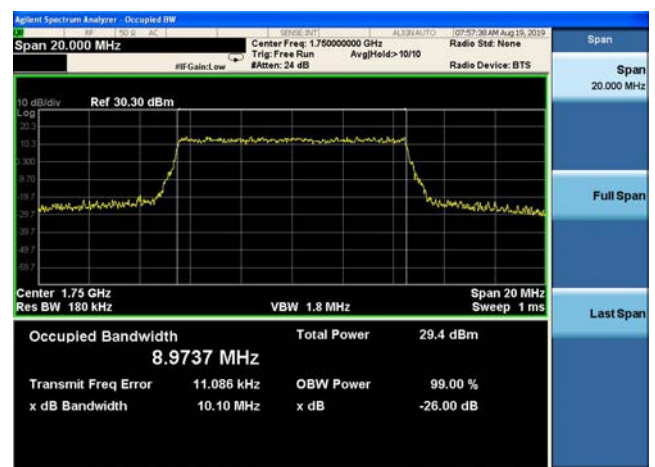
10MHz / 16QAM / Middle Channel

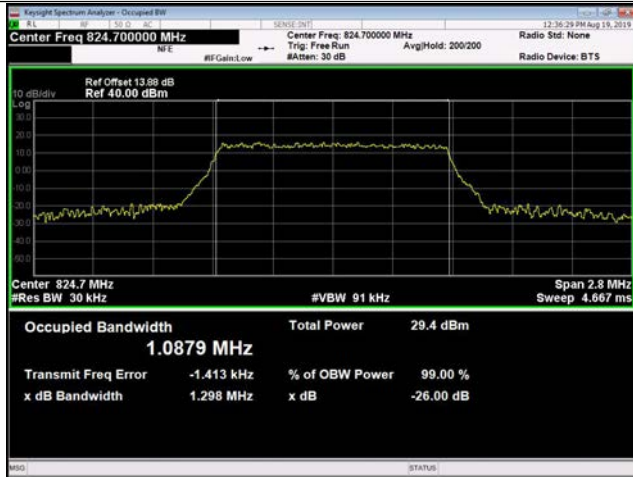
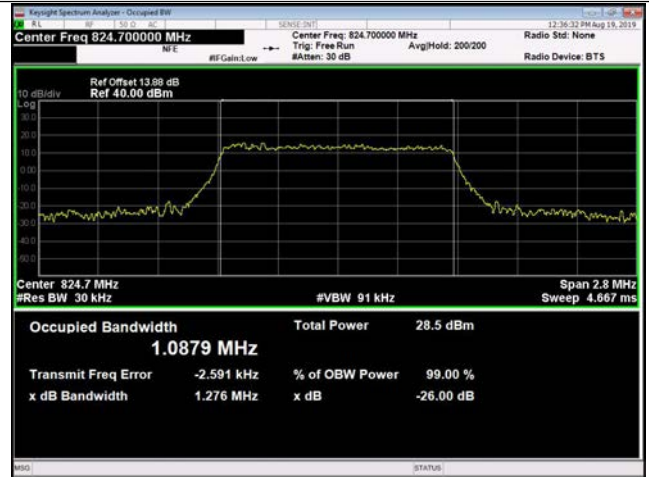
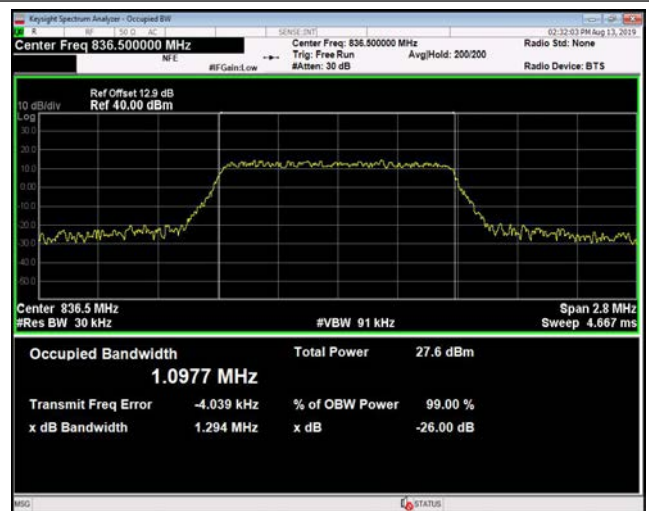
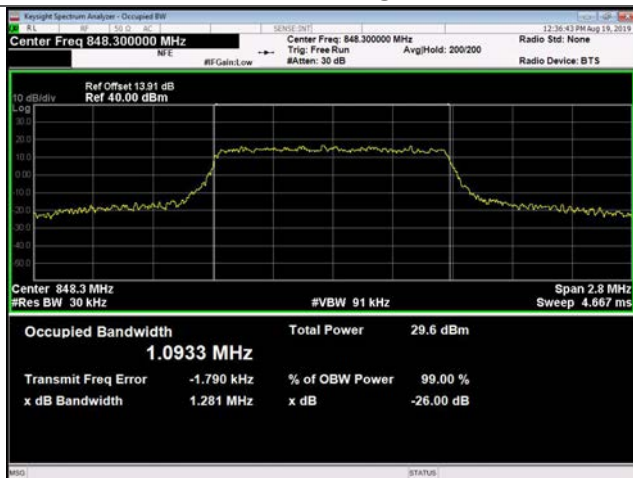


10MHz / QPSK / High Channel



10MHz / 16QAM / High Channel



**LTE Band 5 _ 99% Bandwidth & 26dB Bandwidth****1.4MHz / QPSK / Low Channel****1.4MHz / 16QAM / Low Channel****1.4MHz / QPSK / Middle Channel****1.4MHz / 16QAM / Middle Channel****1.4MHz / QPSK / High Channel****1.4MHz / 16QAM / High Channel**



LTE Band 5 _ 99% Bandwidth & 26dB Bandwidth

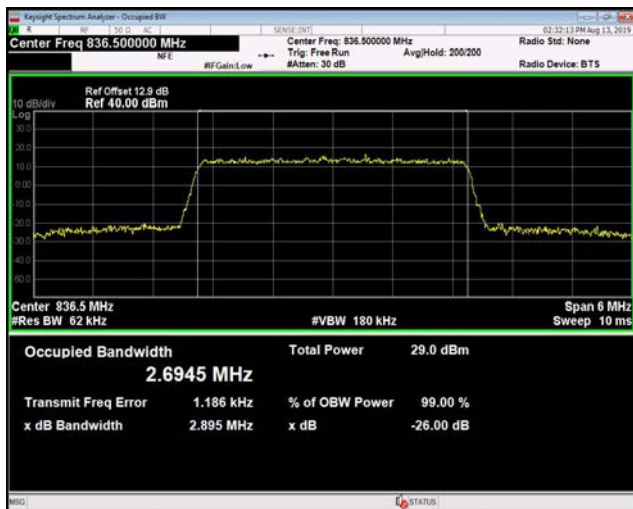
3MHz / QPSK / Low Channel



3MHz / 16QAM / Low Channel



3MHz / QPSK / Middle Channel



3MHz / 16QAM / Middle Channel



3MHz / QPSK / High Channel



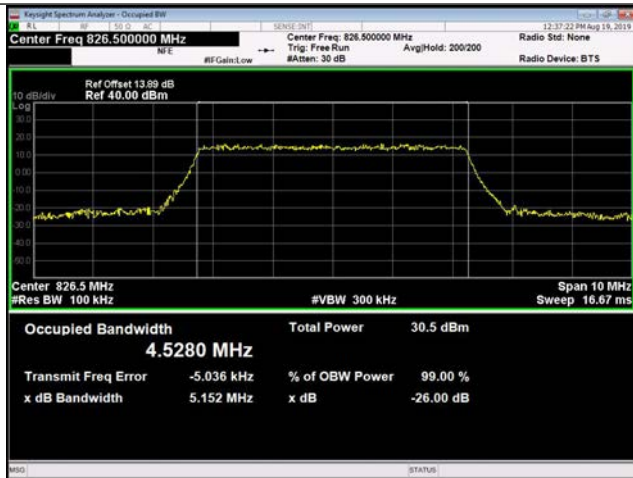
3MHz / 16QAM / High Channel



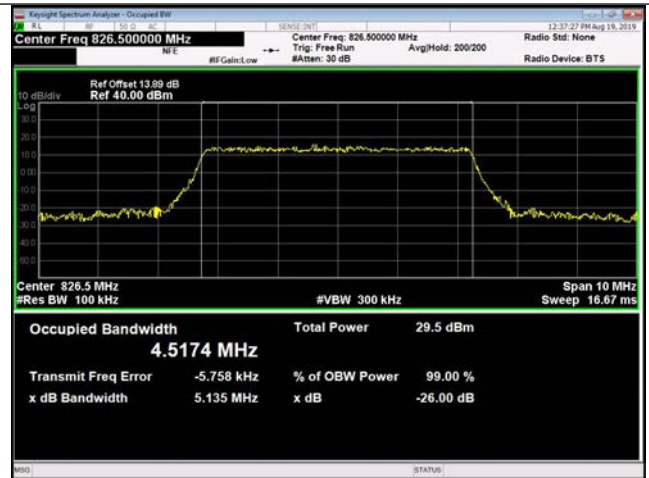


LTE Band 5 _ 99% Bandwidth & 26dB Bandwidth

5MHz / QPSK / Low Channel



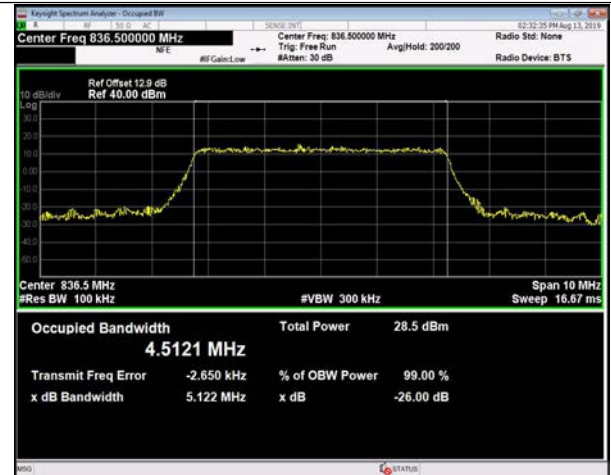
5MHz / 16QAM / Low Channel



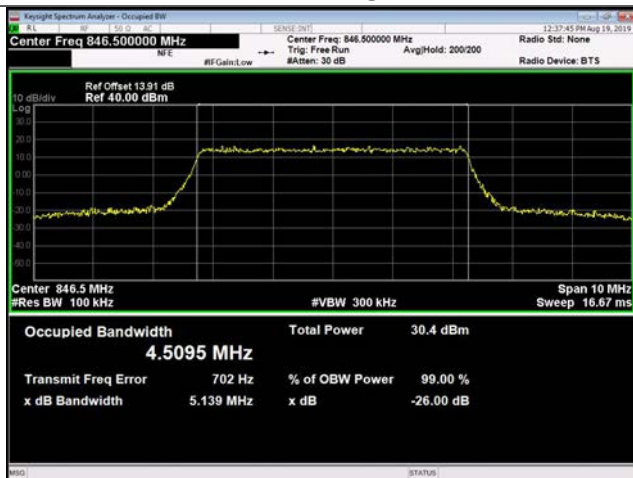
5MHz / QPSK / Middle Channel



5MHz / 16QAM / Middle Channel



5MHz / QPSK / High Channel



5MHz / 16QAM / High Channel





LTE Band 5 _ 99% Bandwidth & 26dB Bandwidth

10MHz / QPSK / Low Channel



10MHz / 16QAM / Low Channel



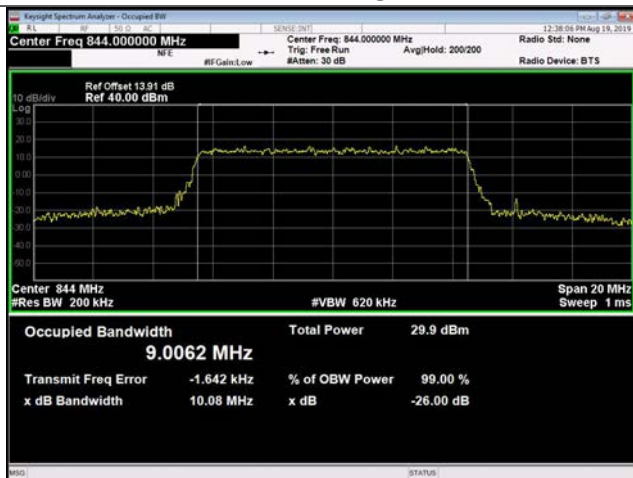
10MHz / QPSK / Middle Channel



10MHz / 16QAM / Middle Channel



10MHz / QPSK / High Channel



10MHz / 16QAM / High Channel





LTE Band 13 _ 99% Bandwidth & 26dB Bandwidth

5MHz / QPSK / Low Channel



5MHz / 16QAM / Low Channel



5MHz / QPSK / Middle Channel



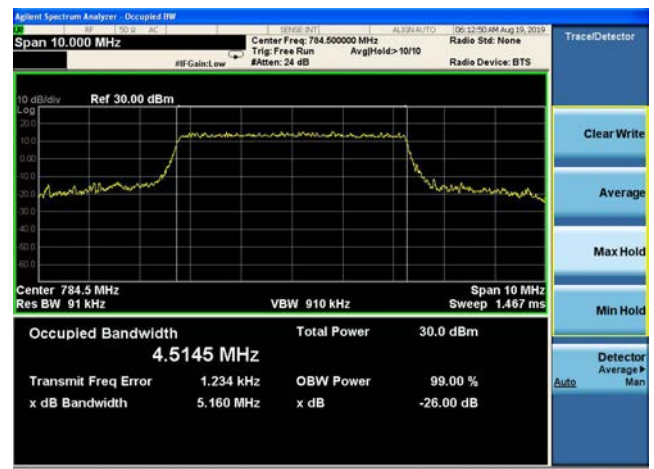
5MHz / 16QAM / Middle Channel



5MHz / QPSK / High Channel



5MHz / 16QAM / High Channel



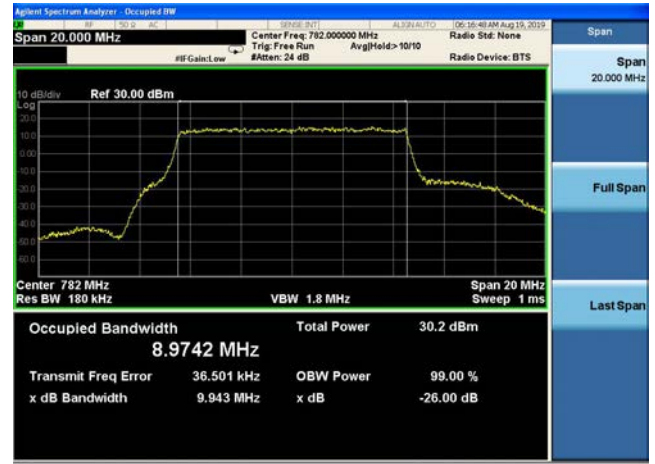


LTE Band 13 _ 99% Bandwidth & 26dB Bandwidth

10MHz / QPSK / Middle Channel



10MHz / 16QAM / Middle Channel





2.3. Frequency Stability

2.3.1. Requirement

According to FCC section 2.1055 & 27.54&24.235&22.355, 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 -15°C to +55°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.

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 D01v03r01 Section 9.0 and ANSI/TIA-603-E-2016.



2.3.4. Test Result

The nominal, highest and lowest extreme voltages are separately 3.85Vdc, 4.35 Vdc and 3.5 Vdc, 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				
Power (VDC)	Temp (°C)	Fre. Dev. (Hz)	Deviation	Result
			(ppm)	
3.8	+20(Ref)	23	0.012	PASS
	-15	25	0.013	
	-5	-62	-0.033	
	+5	54	0.029	
	+15	-25	-0.013	
	+25	-48	-0.026	
	+35	31	0.016	
	+45	32	0.017	
	+55	42	0.022	
4.35	+20	16	0.009	PASS
3.5	+20	-36	-0.019	

LTE Band 4, QPSK, Channel 20175, Frequency 1732.5MHz				
Limit =Within Authorized Band				
Power (VDC)	Temp (°C)	Fre. Dev. (Hz)	Deviation	Result
			(ppm)	
3.8	+20(Ref)	4.3	0.002	PASS
	-15	-77	-0.044	
	-5	46	0.027	
	+5	4	0.002	
	+15	-65	-0.038	
	+25	52	0.030	
	+35	31	0.018	
	+45	32	0.018	
	+55	35.2	0.020	
4.35	+20	25	0.014	PASS
3.5	+20	-56	-0.032	



LTE Band 5, QPSK, Channel 20525, Frequency 836.5MHz				
Limit =Within Authorized Band				
Power (VDC)	Temp (°C)	Fre. Dev. (Hz)	Deviation (ppm)	Result
3.8	+20(Ref)	5.3	0.006	PASS
	-15	-87	-0.104	
	-5	43	0.051	
	+5	14	0.017	
	+15	-75	-0.090	
	+25	35	0.042	
	+35	31	0.037	
	+45	12	0.014	
	+55	35.6	0.043	
4.35	+20	8	0.010	PASS
3.5	+20	-66	-0.079	

LTE Band 13, QPSK, Channel 23230, Frequency 782MHz				
Limit =Within Authorized Band				
Power (VDC)	Temp (°C)	Fre. Dev. (Hz)	Deviation (ppm)	Result
3.85	+20(Ref)	13	0.017	PASS
	-15	33	0.042	
	-5	54	0.069	
	+5	-96	-0.123	
	+15	39	0.050	
	+25	38	0.049	
	+35	21	0.027	
	+45	14	0.018	
	+55	-33	-0.042	
4.4	+20	35	0.045	PASS
3.5	+20	54	0.069	

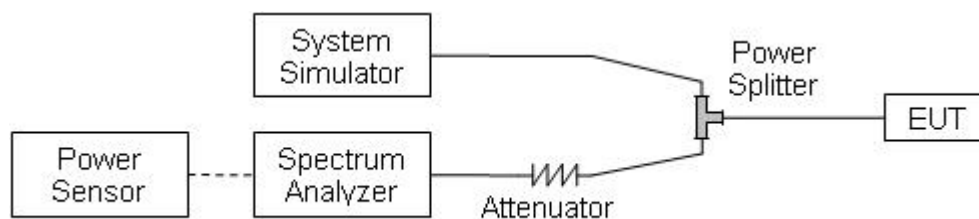
2.4. Peak to Average Ratio

2.4.1. Requirement

According to FCC section 24.232(d)&27.50(d)(5)&22.913(d), the peak to average ratio (PAR) of the transmission may not exceed 13dB.

2.4.2. Test Description

A. Test Set:



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 D01v03r01 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%.

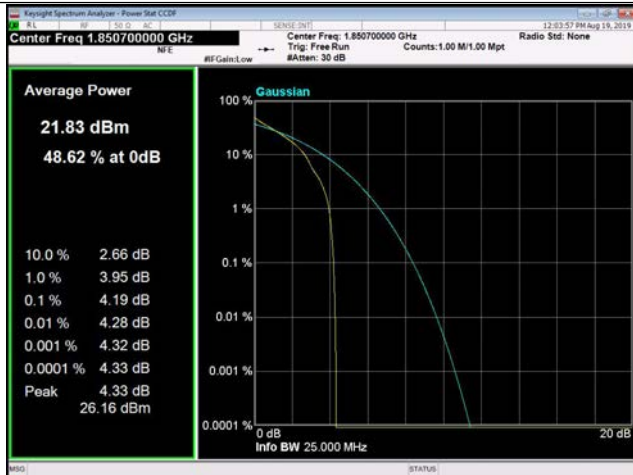
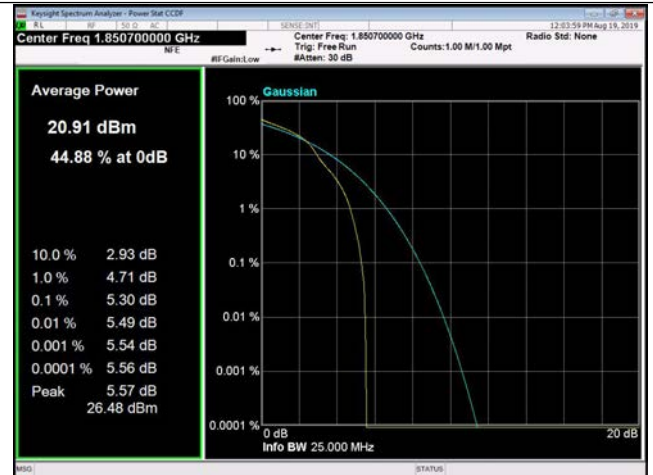
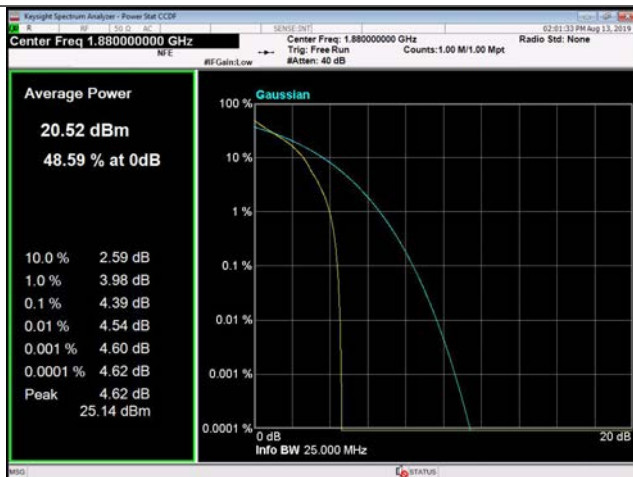
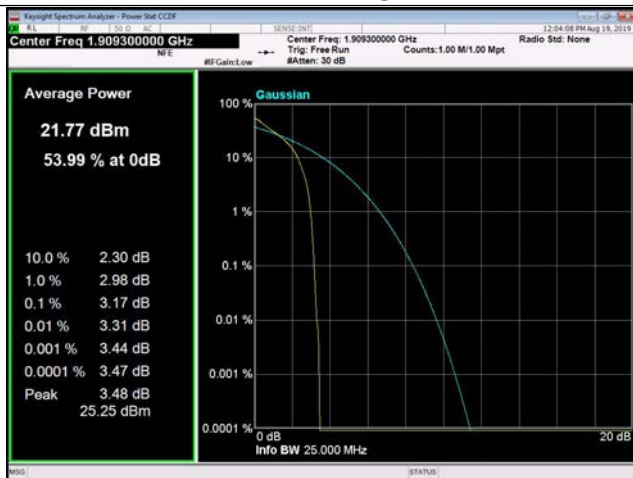
LTE Band 2			
Bandwidth (MHz)	Channel	Peak to Average Ratio(dB)	
		QPSK	16QAM
1.4	Low	4.19	5.30
	Middle	4.39	5.35
	High	3.17	4.37
3	Low	4.13	5.05
	Middle	4.37	5.16
	High	3.37	4.38
5	Low	5.02	5.71
	Middle	4.53	5.30
	High	5.04	5.73
10	Low	4.20	5.11
	Middle	4.32	5.22
	High	4.03	4.94
15	Low	4.21	5.14
	Middle	5.26	5.11
	High	4.14	5.04
20	Low	4.34	5.11
	Middle	4.29	4.07
	High	5.37	5.83

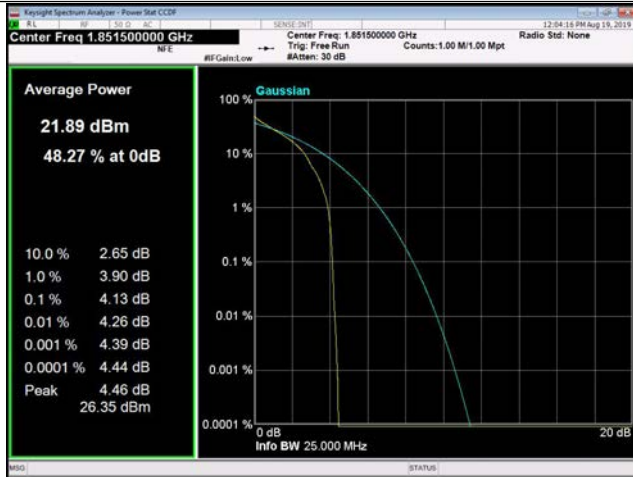
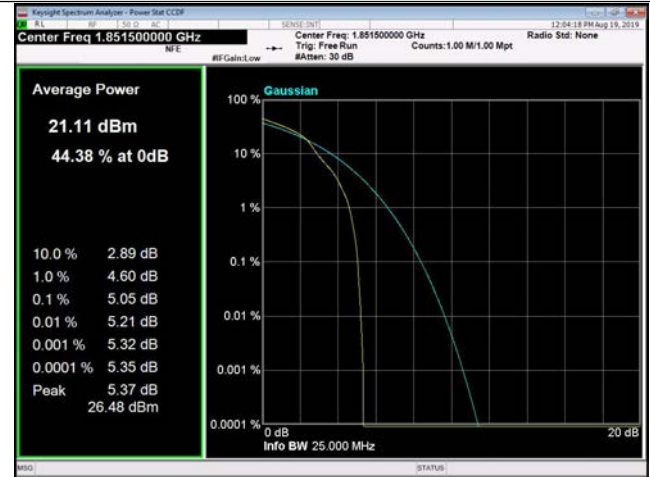
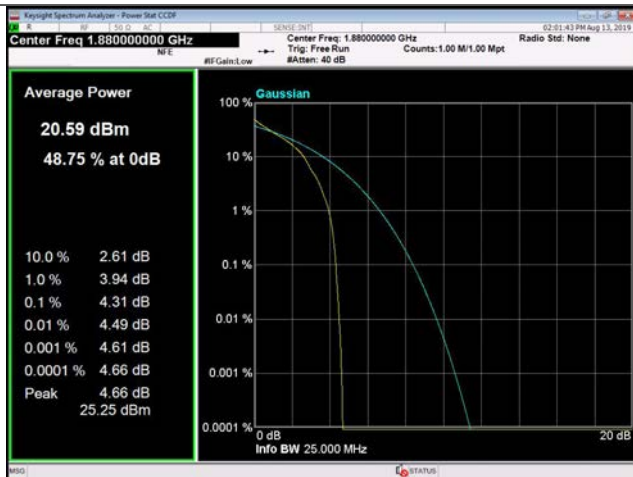
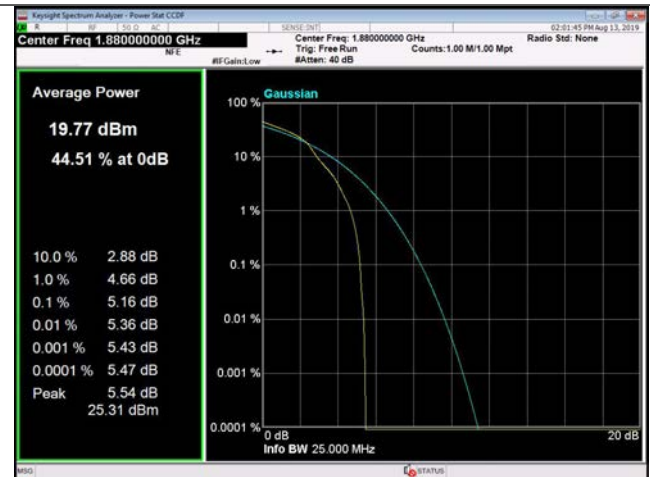
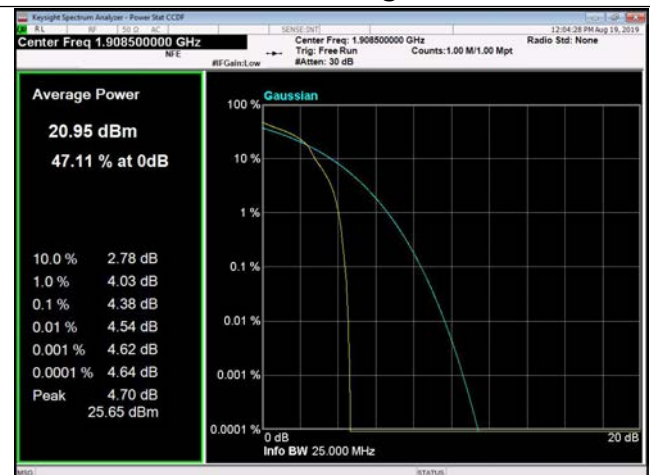


LTE Band 4			
Bandwidth (MHz)	Channel	Peak to Average Ratio(dB)	
		QPSK	16QAM
1.4	Low	5.86	5.67
	Middle	6.03	6.00
	High	4.73	5.58
3	Low	5.34	6.13
	Middle	5.40	5.55
	High	5.13	6.04
5	Low	5.89	6.25
	Middle	5.41	6.24
	High	5.15	5.40
10	Low	5.89	6.11
	Middle	5.82	6.15
	High	5.79	6.07
15	Low	5.04	5.22
	Middle	6.09	6.26
	High	5.99	6.27
20	Low	5.21	6.25
	Middle	5.65	6.20
	High	5.50	6.25

LTE Band 5			
Bandwidth (MHz)	Channel	Peak to Average Ratio(dB)	
		QPSK	16QAM
1.4	Low	4.78	5.71
	Middle	4.09	5.06
	High	3.88	4.86
3	Low	4.96	5.86
	Middle	3.99	4.85
	High	4.25	5.21
5	Low	5.05	5.85
	Middle	4.19	4.94
	High	4.48	5.40
10	Low	5.00	5.85
	Middle	4.24	5.08
	High	4.74	5.63

LTE Band 13			
Bandwidth (MHz)	Channel	Peak to Average Ratio(dB)	
		QPSK	16QAM
5	Low	4.67	5.35
	Middle	4.76	5.39
	High	4.59	4.71
10	Low	/	/
	Middle	4.60	5.40
	High	/	/

**LTE Band 2 _ Peak-to-Average Radio****1.4MHz / QPSK / Low Channel****1.4MHz / 16QAM / Low Channel****1.4MHz / QPSK / Middle Channel****1.4MHz / 16QAM / Middle Channel****1.4MHz / QPSK / High Channel****1.4MHz / 16QAM / High Channel**

**LTE Band 2 _ Peak-to-Average Radio****3MHz / QPSK / Low Channel****3MHz / 16QAM / Low Channel****3MHz / QPSK / Middle Channel****3MHz / 16QAM / Middle Channel****3MHz / QPSK / High Channel****3MHz / 16QAM / High Channel**

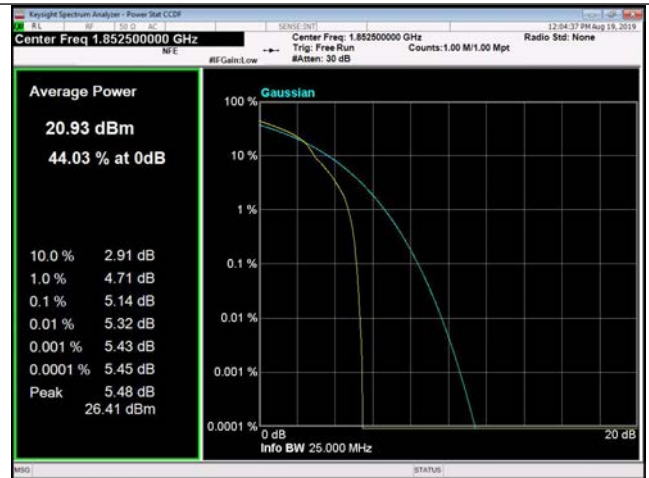


LTE Band 2 _ Peak-to-Average Ratio

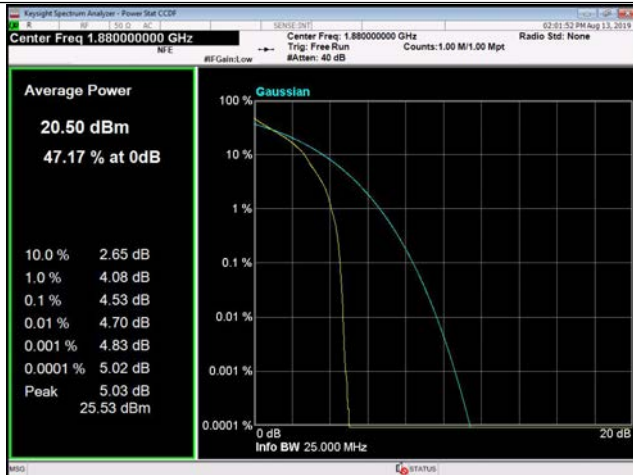
5MHz / QPSK / Low Channel



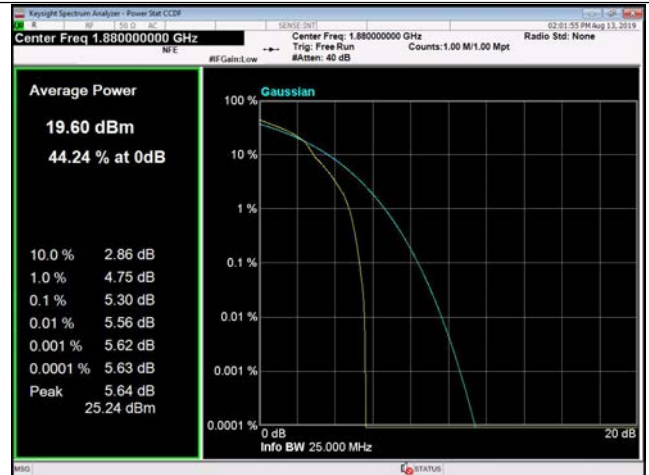
5MHz / 16QAM / Low Channel



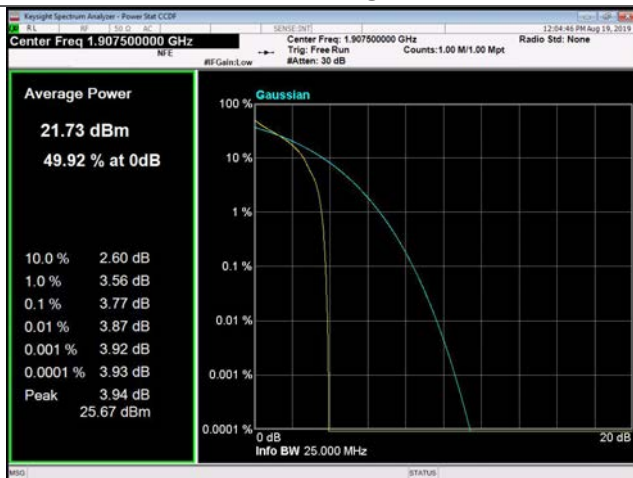
5MHz / QPSK / Middle Channel



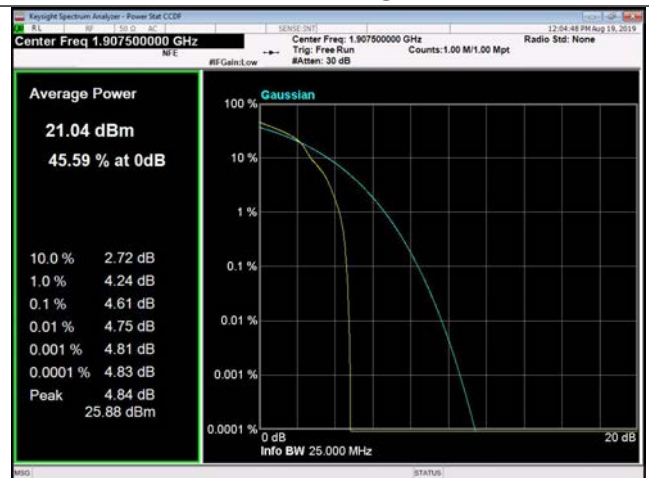
5MHz / 16QAM / Middle Channel



5MHz / QPSK / High Channel



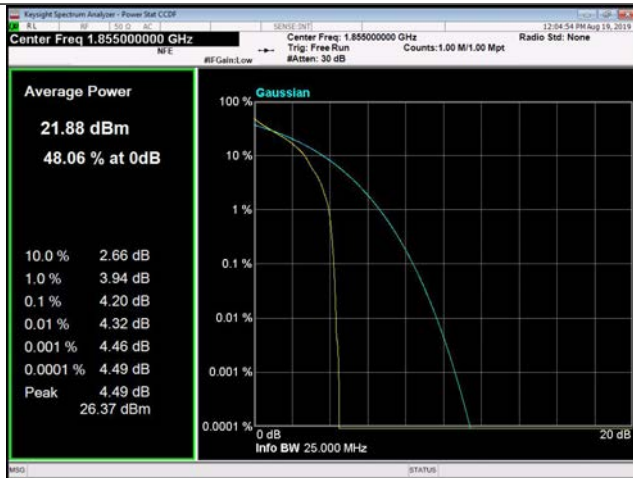
5MHz / 16QAM / High Channel



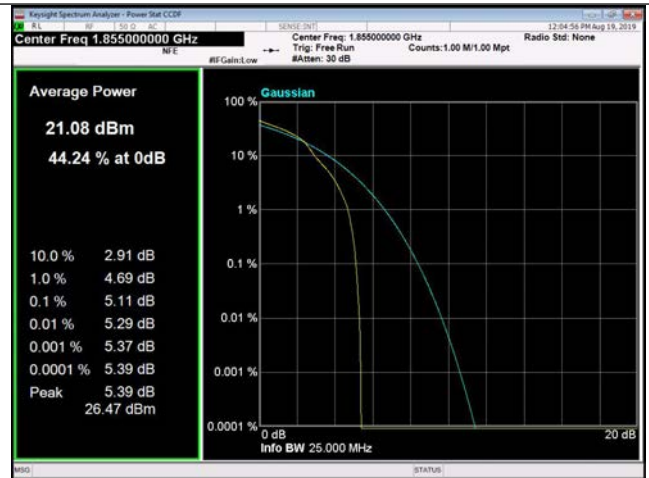


LTE Band 2 _ Peak-to-Average Ratio

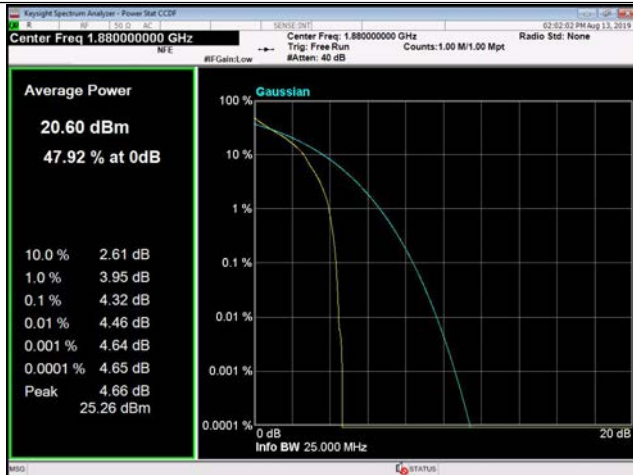
10MHz / QPSK / Low Channel



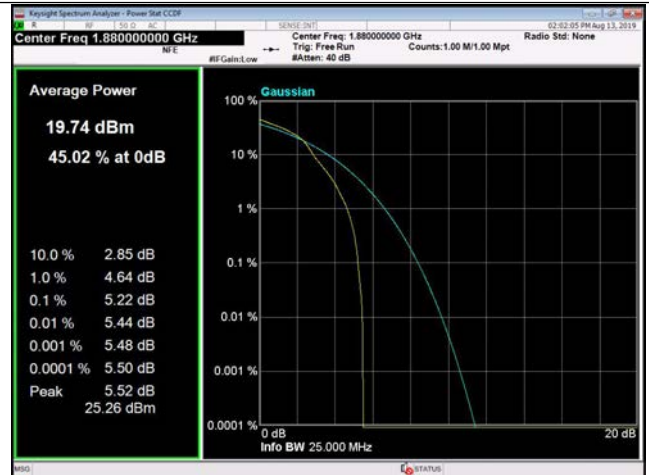
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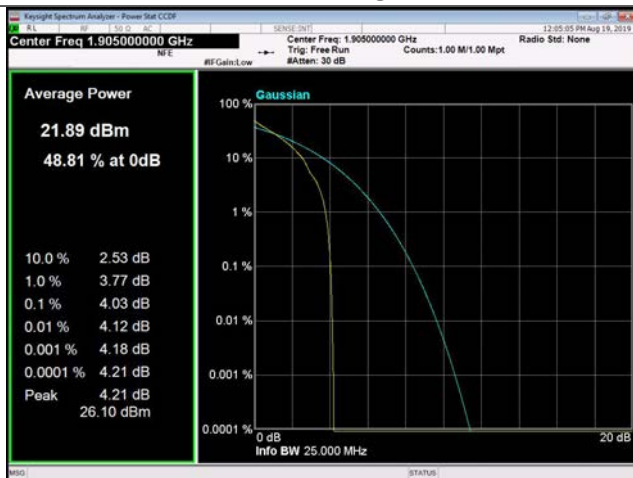
10MHz / QPSK / Middle Channel



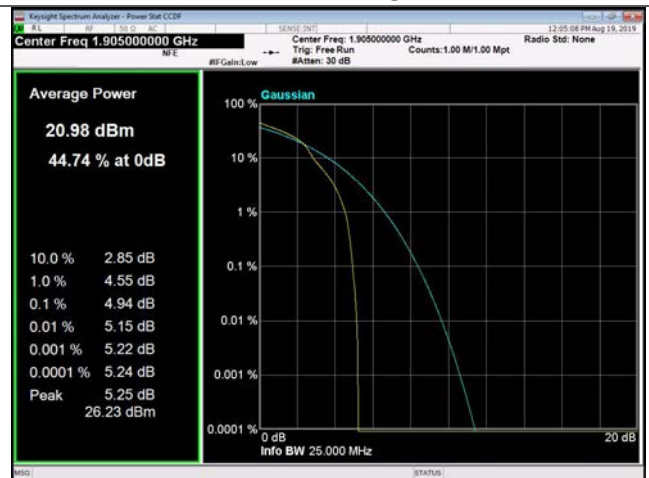
10MHz / 16QAM / Middle Channel



10MHz / QPSK / High Channel



10MHz / 16QAM / High Channel



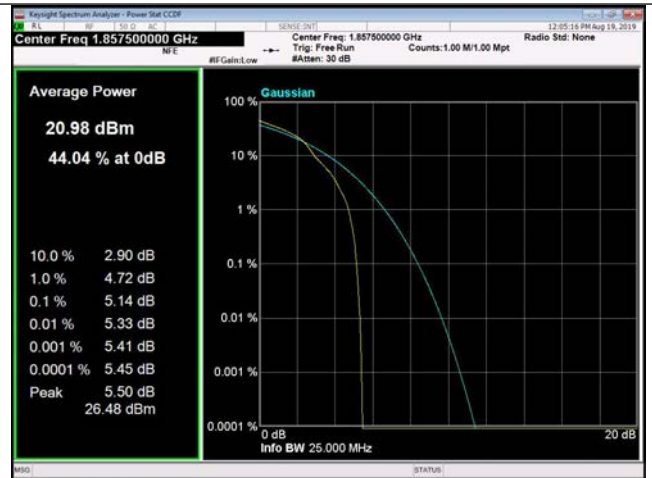


LTE Band 2 _ Peak-to-Average Ratio

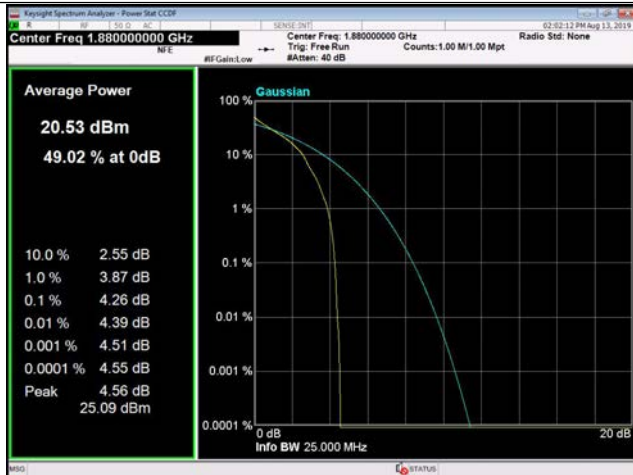
15MHz / QPSK / Low Channel



15MHz / 16QAM / Low Channel



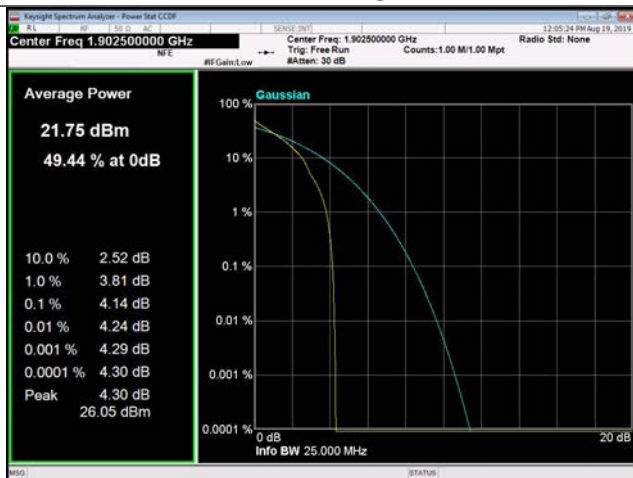
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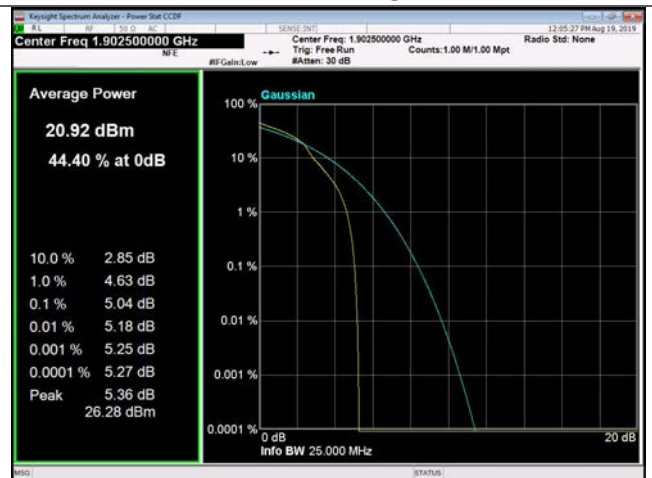
15MHz / 16QAM / Middle Channel



15MHz / QPSK / High Channel



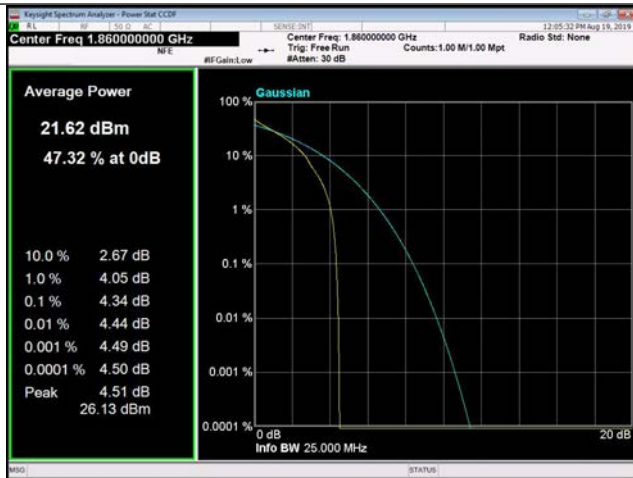
15MHz / 16QAM / High Channel



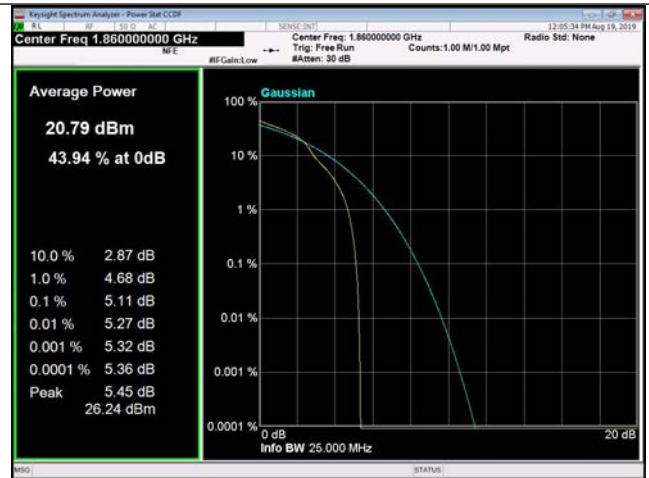


LTE Band 2 _ Peak-to-Average Ratio

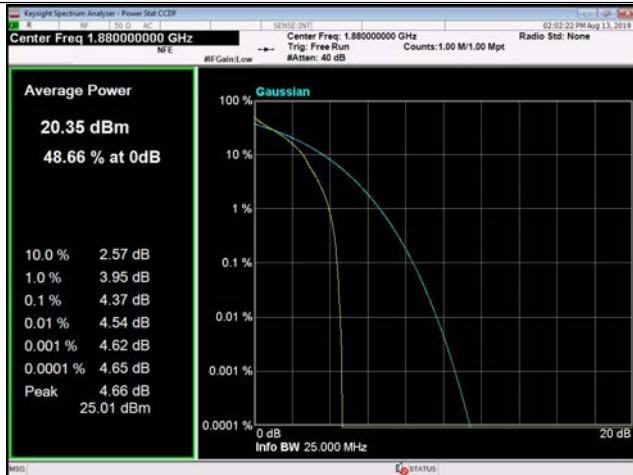
20MHz / QPSK / Low Channel



20MHz / 16QAM / Low Channel



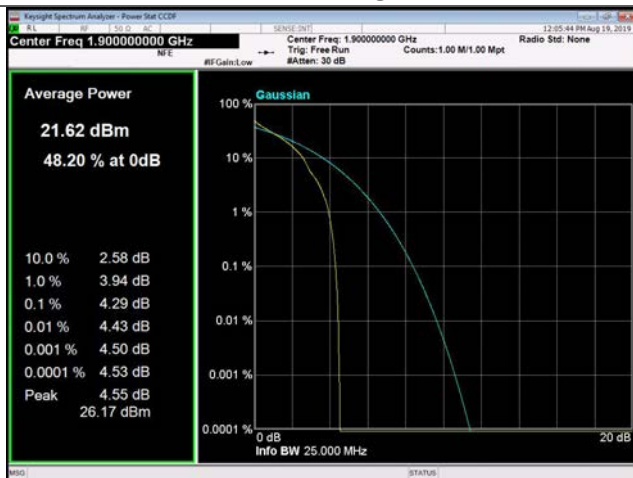
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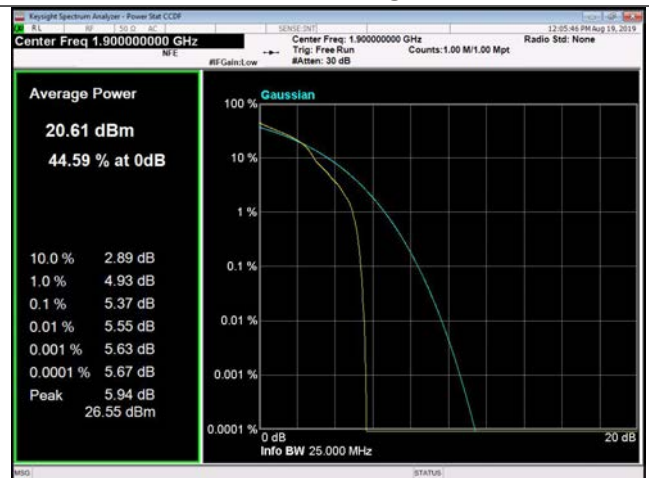
20MHz / 16QAM / Middle Channel



20MHz / QPSK / High Channel



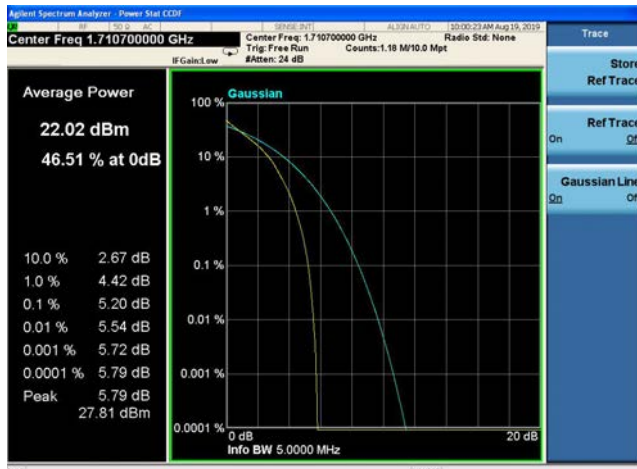
20MHz / 16QAM / High Channel





LTE Band 4 _ Peak-to-Average Ratio

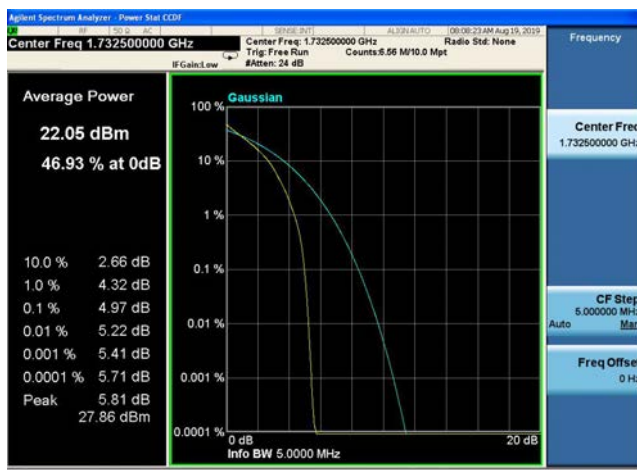
1.4MHz / QPSK / Low Channel



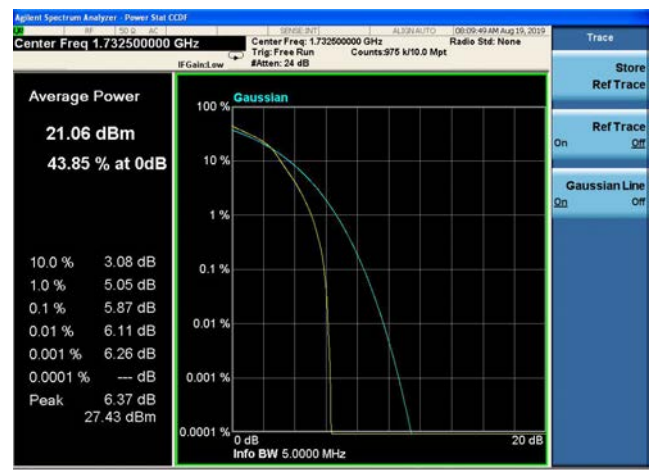
1.4MHz / 16QAM / Low Channel



1.4MHz / QPSK / Middle Channel



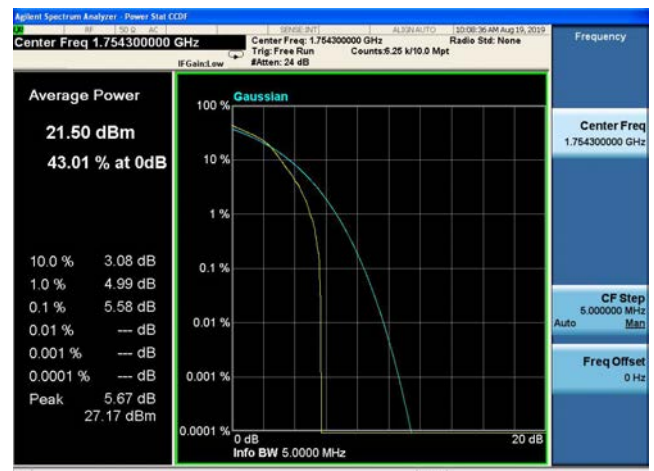
1.4MHz / 16QAM / Middle Channel



1.4MHz / QPSK / High Channel



1.4MHz / 16QAM / High Channel





LTE Band 4 _ Peak-to-Average Radio

3MHz / QPSK / Low Channel



3MHz / 16QAM / Low Channel



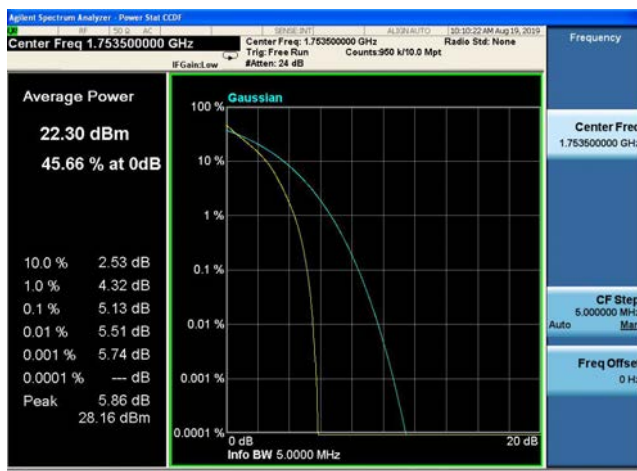
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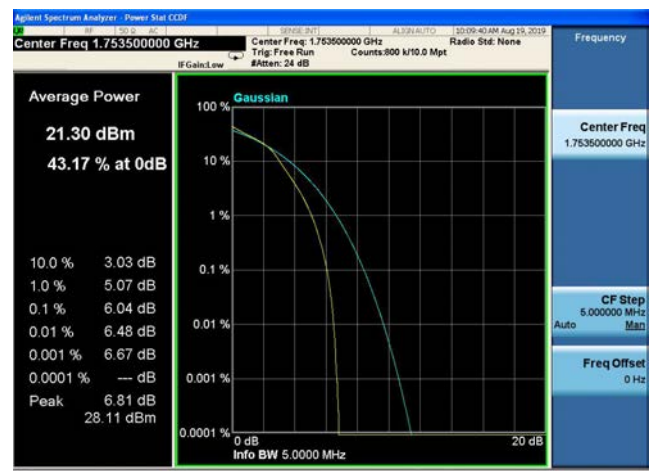
3MHz / 16QAM / Middle Channel



3MHz / QPSK / High Channel



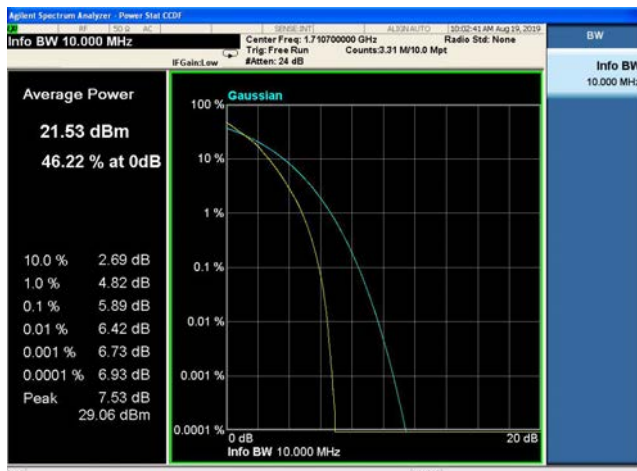
3MHz / 16QAM / High Channel





LTE Band 4 _ Peak-to-Average Ratio

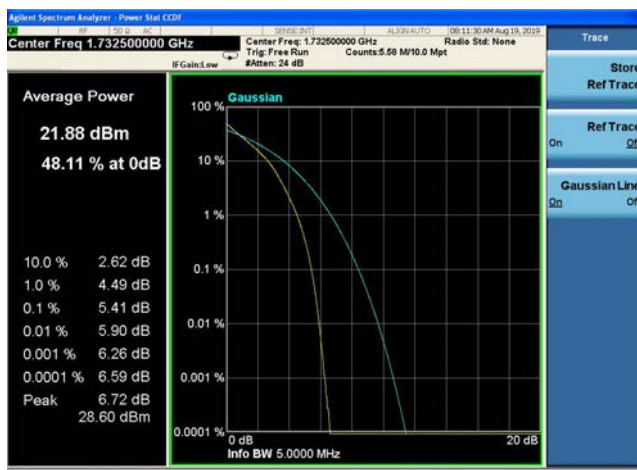
5MHz / QPSK / Low Channel



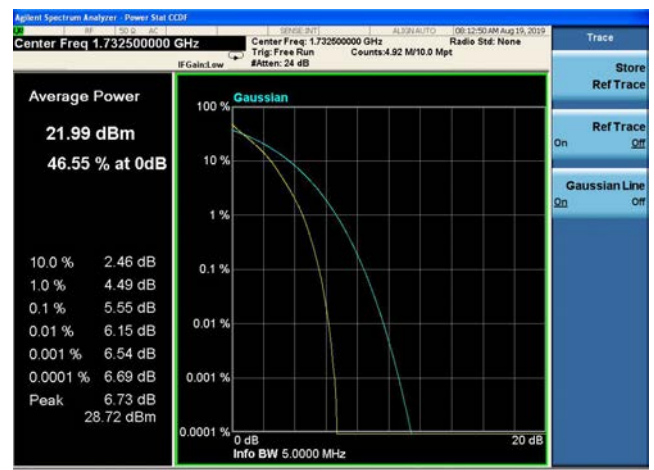
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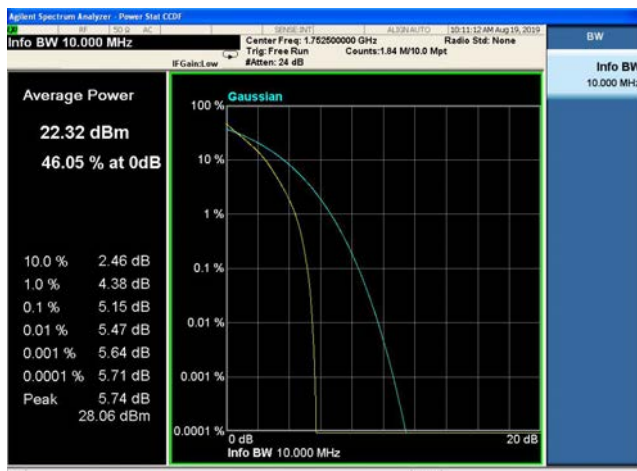
5MHz / QPSK / Middle Channel



5MHz / 16QAM / Middle Channel



5MHz / QPSK / High Channel



5MHz / 16QAM / High Channel





LTE Band 4 _ Peak-to-Average Radio

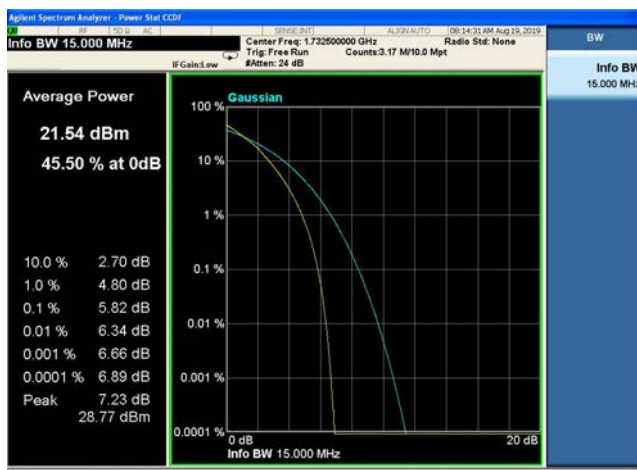
10MHz / QPSK / Low Channel



10MHz / 16QAM / Low Channel



10MHz / QPSK / Middle Channel



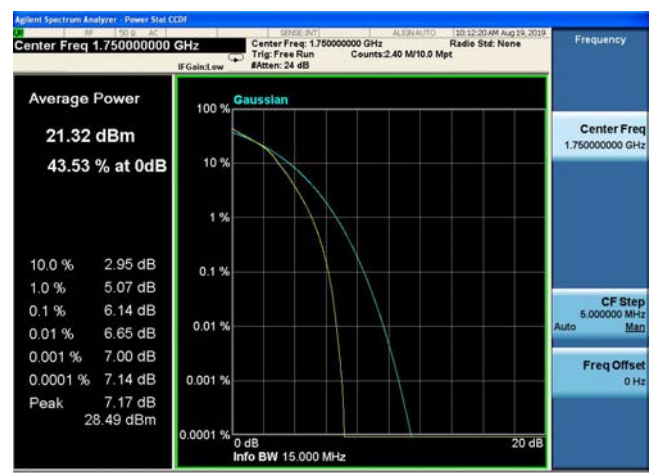
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10MHz / QPSK / High Channel

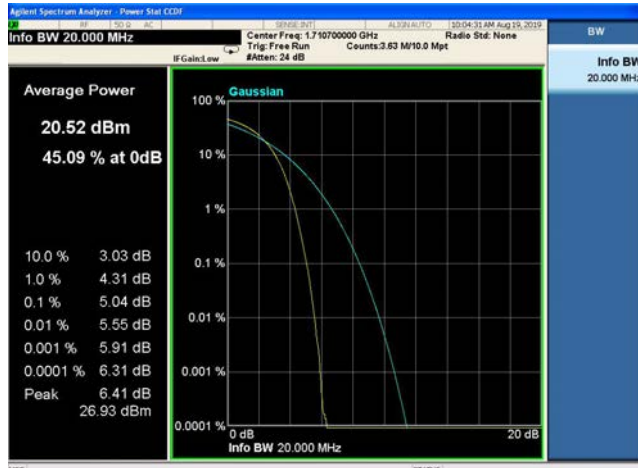


10MHz / 16QAM / High Channel



LTE Band 4 _ Peak-to-Average Radio

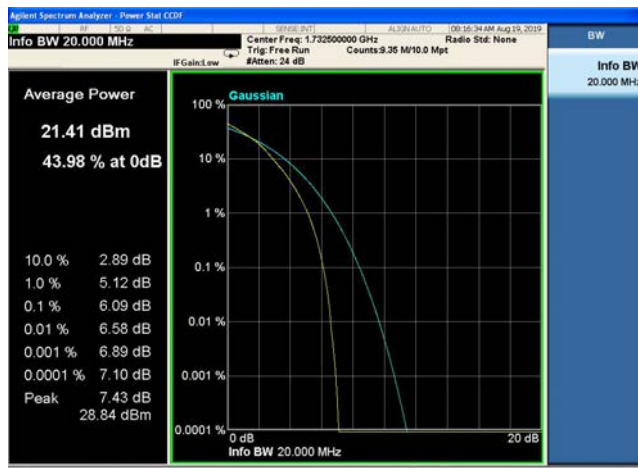
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15MHz / 16QAM / Low Channel



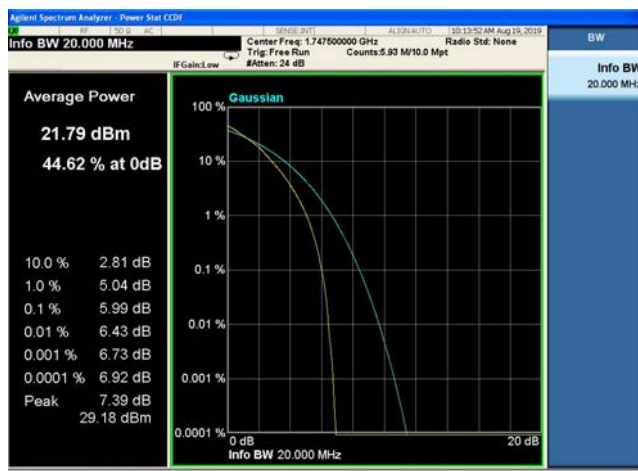
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15MHz / 16QAM / Middle Channel



15MHz / QPSK / High Channel



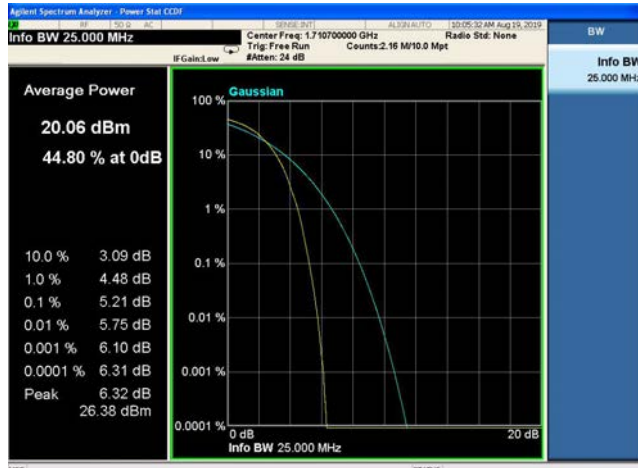
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LTE Band 4 _ Peak-to-Average Radio

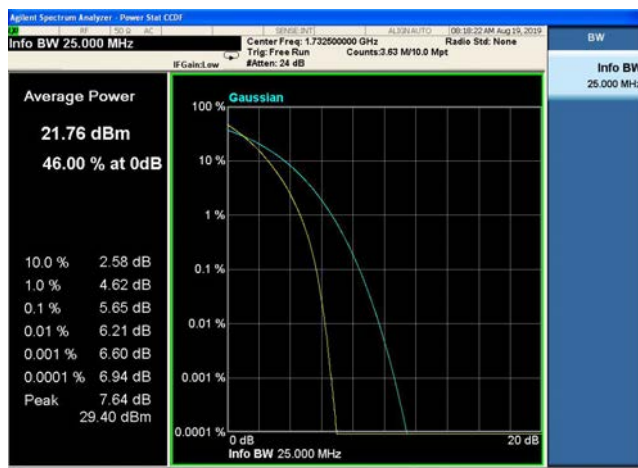
20MHz / QPSK / Low Channel



20MHz / 16QAM / Low Channel



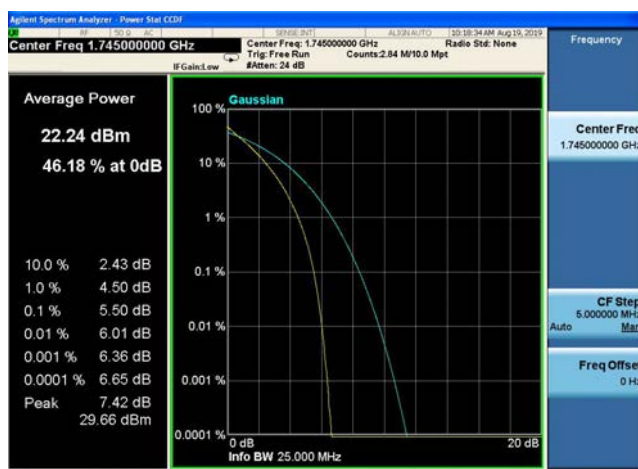
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20MHz / 16QAM / Middle Channel



20MHz / QPSK / High Channel



20MHz / 16QAM / High Channel

