REPORT No.: SZ18060085W05

TEST REPORT

APPLICANT	:	Hot Pepper, Inc.
PRODUCT NAME	:	4G Smart Phone
MODEL NAME	:	VLE5
BRAND NAME	:	Hot Pepper
FCC ID	:	2APD4-A80C
STANDARD(S)	:	47 CFR Part 22, Subpart H 47 CFR Part 24, Subpart E 47 CFR Part 27, Subpart M
TEST DATE	:	2018-07-05 to 2018-08-08
ISSUE DATE	:	2018-08-09

Tested by: Gao Mingzhou (Test Engineer)

Approved by: Peng Huarui (Supervisor)

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MORLAB

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Change History		
Issue	**Date**	**Reason for change**
1.0	2018-07-24	First edition
2.0	2018-08-09	Second 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 Smart Phone	
Serial No:	(N/A, marked #1 by test site)	
Hardware Version:	HXF-M 94V-0	
Software Version:	HPP-VLE5180706	
Modulation Type:	QPSK, 16QAM	
Operation Band:	Band 25 / 41	
Frequency Range:	LTE Band 25	Tx:1850MHz-1915MHz
		Rx:1930MHz-1995MHz
	LTE Band 41	Tx:2496MHz-2690MHz
		Rx:2496MHz-2690MHz
	LTE Band 26	Tx:824MHz-849MHz
		Rx:869MHz-894MHz
Channel Bandwidth	LTE Band 25	1.4MHz, 3 MHz, 5 MHz, 10MHz, 15 MHz, 20 MHz
	LTE Band 41	5 MHz, 10MHz, 15 MHz, 20 MHz
	LTE Band 26	1.4MHz, 3 MHz, 5 MHz, 10MHz, 15 MHz
Emission Designator:	1M07G7D (LTE Band 25, QPSK, BW 1.4MHz) 1M07W7D (LTE Band 25, 16QAM, BW 1.4MHz) 2M68G7D (LTE Band 25, QPSK, BW 3MHz) 2M68 W7D (LTE Band 25, 16QAM, BW 3MHz) 4M50G7D (LTE Band 25, QPSK, BW 5MHz) 4M50W7D (LTE Band 25, 16QAM, BW 5MHz) 8M92G7D (LTE Band 25, QPSK, BW 10MHz) 8M92W7D (LTE Band 25, 16QAM, BW 10MHz) 13M36G7D (LTE Band 25, QPSK, BW 15MHz)	

	13M38W7D (LTE Band 25, 16QAM, BW 15MHz) 17M92G7D (LTE Band 25, QPSK, BW 20MHz) 17M92W7D (LTE Band 25, 16QAM, BW 20MHz) 4M50G7D (LTE Band 41, QPSK, BW 5MHz) 4M49W7D (LTE Band 41, 16QAM, BW 5MHz) 8M91G7D (LTE Band 41, QPSK, BW 10MHz) 8M92W7D (LTE Band 41, 16QAM, BW 10MHz) 13M38G7D (LTE Band 41, QPSK, BW 15MHz) 13M38W7D (LTE Band 41, 16QAM, BW 15MHz) 17M84G7D (LTE Band 41, QPSK, BW 20MHz) 17M84W7D (LTE Band 41, 16QAM, BW 20MHz) 1M07G7D (LTE Band 26, QPSK, BW 1.4MHz) 1M08W7D (LTE Band 26, 16QAM, BW 1.4MHz) 2M68G7D (LTE Band 26, QPSK, BW 3MHz) 2M67 W7D (LTE Band 26, 16QAM, BW 3MHz) 4M48G7D (LTE Band 26, QPSK, BW 5MHz) 4M49W7D (LTE Band 26, 16QAM, BW 5MHz) 8M91G7D (LTE Band 26, QPSK, BW 10MHz) 8M94W7D (LTE Band 26, 16QAM, BW 10MHz) 13M37G7D (LTE Band 26, QPSK, BW 15MHz) 13M36W7D (LTE Band 26, 16QAM, BW 15MHz)	
Antenna Type:	PIFA Antenna	
Antenna Gain:	LTE Band25	-3.0 dBi
	LTE Band41	-3.0 dBi
	LTE Band26	-3.0 dBi
Operating voltage:	Normal(NV)	3.8V
	Lowest(LV)	3.5V
	Highest(HV)	4.4V

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 Standards and Results

The objective of the report is to perform testing according to Part 2, Part22, Part 24 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	Jul 05, 2018 Aug 08, 2018	Gao Mingzhou	PASS
2.1049	Occupied Bandwidth	Jul 05&09, 2018 Aug 08, 2018	Gao Mingzhou	PASS
2.1055, 24.235, 27.54, 22.355	Frequency Stability	Jul 09, 2018 Aug 08, 2018	Gao Mingzhou	PASS
24.232(d), 27.50(d)(5)	Peak to Average Radio	Jul 12, 2018 Aug 08, 2018	Gao Mingzhou	PASS
2.1051, 24.238, 27.53(m)(4) , 22.917(a)	Conducted Spurious Emissions	Jul 10&24, 2018 Aug 08, 2018	Gao Mingzhou	PASS
2.1051, 24.238, 27.53(m)(4), 22.917(a)	Band Edge	Jul 23, 2018 Aug 08, 2018	Gao Mingzhou	PASS
2.1046, 24.232(c), 27.50(h), 22.913(a)	Equivalent Isotropic Radiated Power	Jul 24, 2018 Aug 08, 2018	Wang Dalong	PASS
2.1053, 24.238, 27.53(m)(4) , 22.917(a)	Radiated Spurious Emissions	Jul 19, 2018 Aug 08, 2018	Wang Dalong	PASS
Note: The tests were performed according to the method of measurements prescribed in KDB971168 D01 v03 (Oct 27, 2017) and ANSI/TIA-603-E-2016.				

1.4. 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

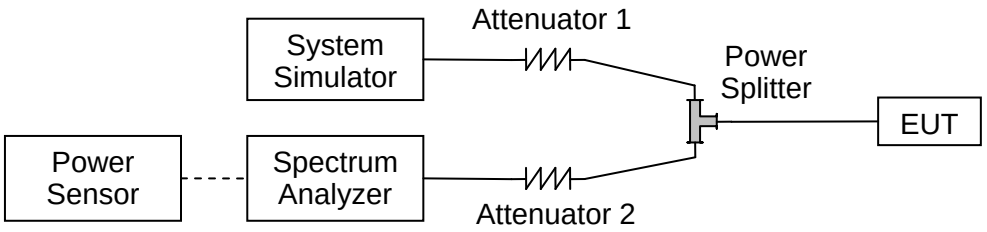
2. 47 CFR Part 2, Part22, Part 24E & 27M Requirements

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

2.1.4. Result

LTE Band25						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				26140	26365	26590
Frequency (MHz)				1860	1882.5	1905
20	QPSK	1	0	23.11	23.59	23.48
20	QPSK	1	49	23.39	23.17	23.43
20	QPSK	1	99	23.15	23.53	23.45
20	QPSK	50	0	22.35	22.39	22.34
20	QPSK	50	24	22.34	22.41	22.35
20	QPSK	50	50	22.17	22.35	22.33
20	QPSK	100	0	22.28	22.34	22.28
20	16QAM	1	0	21.34	21.64	22.75
20	16QAM	1	49	21.89	22.42	21.80
20	16QAM	1	99	21.49	21.22	21.89
20	16QAM	50	0	21.44	21.63	21.36
20	16QAM	50	24	21.23	21.40	21.39
20	16QAM	50	50	21.53	21.47	21.33
20	16QAM	100	0	21.40	21.44	21.37
Channel				26115	26365	26615
Frequency (MHz)				1857.5	1882.5	1907.5
15	QPSK	1	0	23.43	23.45	23.22
15	QPSK	1	37	23.39	23.40	23.41
15	QPSK	1	74	23.26	23.36	23.23
15	QPSK	36	0	22.30	22.28	22.36
15	QPSK	36	20	22.30	22.43	22.31
15	QPSK	36	39	22.33	22.35	22.34
15	QPSK	75	0	22.31	22.34	22.36
15	16QAM	1	0	21.52	22.44	22.38
15	16QAM	1	37	21.84	22.78	21.80
15	16QAM	1	74	21.64	21.25	22.11
15	16QAM	36	0	21.45	21.49	21.41
15	16QAM	36	20	21.39	21.62	21.49
15	16QAM	36	39	21.46	21.34	21.29
15	16QAM	75	0	21.39	21.39	21.39

Channel				26090	26365	26640
Frequency (MHz)				1855	1882.5	1910
10	QPSK	1	0	23.48	23.37	23.43
10	QPSK	1	25	23.34	23.48	23.41
10	QPSK	1	49	23.13	23.27	23.37
10	QPSK	25	0	22.36	22.36	22.29
10	QPSK	25	12	22.31	22.43	22.29
10	QPSK	25	25	22.23	22.36	22.22
10	QPSK	50	0	22.34	22.38	22.26
10	16QAM	1	0	22.05	21.92	22.09
10	16QAM	1	25	22.16	22.10	22.39
10	16QAM	1	49	21.44	21.43	21.22
10	16QAM	25	0	21.49	21.58	21.56
10	16QAM	25	12	21.51	21.55	21.48
10	16QAM	25	25	21.36	21.32	21.44
10	16QAM	50	0	21.49	21.44	21.57
Channel				26065	26365	26665
Frequency (MHz)				1852.5	1882.5	1912.5
5	QPSK	1	0	23.22	23.17	23.06
5	QPSK	1	12	23.32	23.12	23.11
5	QPSK	1	24	23.23	23.06	23.22
5	QPSK	12	0	22.21	22.37	22.11
5	QPSK	12	7	22.28	22.27	22.03
5	QPSK	12	13	22.21	22.36	22.13
5	QPSK	25	0	22.24	22.33	22.18
5	16QAM	1	0	22.23	22.04	21.80
5	16QAM	1	12	21.75	21.99	21.37
5	16QAM	1	24	21.77	22.27	21.51
5	16QAM	12	0	21.12	21.22	21.05
5	16QAM	12	7	21.13	21.31	21.03
5	16QAM	12	13	21.13	21.19	20.93
5	16QAM	25	0	21.28	21.27	21.24

Channel				26055	26365	26675
Frequency (MHz)				1851.5	1882.5	1913.5
3	QPSK	1	0	23.25	23.37	23.41
3	QPSK	1	8	23.26	23.30	23.35
3	QPSK	1	14	23.28	23.22	23.25
3	QPSK	8	0	22.42	22.32	22.32
3	QPSK	8	4	22.27	22.24	22.34
3	QPSK	8	7	22.37	22.25	22.32
3	QPSK	15	0	22.26	22.33	22.34
3	16QAM	1	0	22.06	21.68	21.99
3	16QAM	1	8	21.39	21.97	21.37
3	16QAM	1	14	21.56	21.94	21.57
3	16QAM	8	0	21.38	21.32	21.31
3	16QAM	8	4	21.35	21.52	21.32
3	16QAM	8	7	21.24	21.01	21.31
3	16QAM	15	0	21.39	21.32	21.41
Channel				26047	26365	26683
Frequency (MHz)				1850.7	1882.5	1914.3
1.4	QPSK	1	0	22.53	22.57	22.22
1.4	QPSK	1	3	22.66	22.48	22.48
1.4	QPSK	1	5	22.38	22.68	22.23
1.4	QPSK	3	0	22.64	22.77	22.46
1.4	QPSK	3	1	22.70	22.73	22.44
1.4	QPSK	3	3	22.65	22.69	22.51
1.4	QPSK	6	0	21.45	21.56	21.45
1.4	16QAM	1	0	21.06	21.57	21.43
1.4	16QAM	1	3	21.66	21.54	21.21
1.4	16QAM	1	5	21.13	21.23	21.23
1.4	16QAM	3	0	21.65	21.77	21.34
1.4	16QAM	3	1	21.63	21.65	21.54
1.4	16QAM	3	3	21.67	21.67	21.44
1.4	16QAM	6	0	20.81	20.67	20.62

LTE Band 41						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				39750	40620	41490
Frequency (MHz)				2506.0	2593.0	2680.0
20	QPSK	1	0	25.54	25.69	25.51
20	QPSK	1	49	25.37	25.52	25.66
20	QPSK	1	99	25.10	25.24	25.20
20	QPSK	50	0	25.29	25.37	24.46
20	QPSK	50	24	25.24	24.62	24.49
20	QPSK	50	50	25.01	24.58	24.57
20	QPSK	100	0	24.75	24.46	24.43
20	16QAM	1	0	24.78	24.22	24.22
20	16QAM	1	49	24.91	24.52	24.39
20	16QAM	1	99	24.58	23.99	23.92
20	16QAM	50	0	23.61	23.65	23.40
20	16QAM	50	24	23.83	23.76	23.53
20	16QAM	50	50	23.57	23.41	23.31
20	16QAM	100	0	23.61	23.53	23.40
Channel				39725	40620	41515
Frequency (MHz)				2503.5	2593.0	2682.5
15	QPSK	1	0	25.14	25.20	25.31
15	QPSK	1	37	25.06	25.47	25.24
15	QPSK	1	74	25.14	25.28	25.26
15	QPSK	36	0	24.74	24.42	24.27
15	QPSK	36	20	24.76	24.51	24.48
15	QPSK	36	39	24.59	24.42	24.40
15	QPSK	75	0	24.53	24.48	24.45
15	16QAM	1	0	24.57	24.30	24.25
15	16QAM	1	37	24.42	24.26	24.14
15	16QAM	1	74	24.14	24.04	23.89
15	16QAM	36	0	23.72	23.56	23.42
15	16QAM	36	20	23.75	23.55	23.53
15	16QAM	36	39	23.58	23.46	23.46
15	16QAM	75	0	23.53	23.52	23.40

Channel				39700	40620	41540
Frequency (MHz)				2501.0	2593.0	2685.0
10	QPSK	1	0	25.12	24.38	24.99
10	QPSK	1	25	25.29	24.38	25.12
10	QPSK	1	49	25.10	24.50	25.06
10	QPSK	25	0	24.41	24.49	24.08
10	QPSK	25	12	24.36	24.39	24.18
10	QPSK	25	25	24.13	24.33	23.92
10	QPSK	50	0	24.26	24.60	24.10
10	16QAM	1	0	24.06	23.96	23.65
10	16QAM	1	25	24.14	24.10	23.90
10	16QAM	1	49	23.73	23.93	23.54
10	16QAM	25	0	23.30	23.50	23.09
10	16QAM	25	12	23.50	23.61	23.42
10	16QAM	25	25	23.43	23.56	23.15
10	16QAM	50	0	23.31	23.62	23.09
Channel				39675	40620	41565
Frequency (MHz)				2498.5	2593	2678.5
5	QPSK	1	0	25.23	24.91	24.89
5	QPSK	1	12	25.31	25.26	25.12
5	QPSK	1	24	25.12	25.10	24.89
5	QPSK	12	0	24.34	24.27	24.16
5	QPSK	12	7	24.43	24.35	24.24
5	QPSK	12	13	24.33	24.24	24.13
5	QPSK	25	0	24.33	24.25	24.15
5	16QAM	1	0	24.07	24.01	23.75
5	16QAM	1	12	23.89	24.28	23.91
5	16QAM	1	24	23.78	24.05	23.69
5	16QAM	12	0	23.26	23.16	23.10
5	16QAM	12	7	23.22	23.24	23.08
5	16QAM	12	13	23.05	23.10	22.96
5	16QAM	25	0	23.46	23.03	23.26

LTE Band26						
BW [MHz]	Modulation	RB Size	RB Offset	Average Power Low Ch. / Freq.	Average Power Middle Ch. / Freq.	Average Power High Ch. / Freq.
Channel				26865	26915	26965
Frequency (MHz)				831.5	836.5	841.5
15	QPSK	1	0	23.54	23.50	23.19
15	QPSK	1	37	23.27	23.25	23.26
15	QPSK	1	74	22.95	22.97	23.20
15	QPSK	36	0	23.51	23.50	22.13
15	QPSK	36	20	22.11	22.12	22.15
15	QPSK	36	39	22.36	22.38	22.13
15	QPSK	75	0	22.94	22.91	22.18
15	16QAM	1	0	21.97	21.96	21.89
15	16QAM	1	37	21.41	21.42	21.42
15	16QAM	1	74	21.76	21.78	22.18
15	16QAM	36	0	21.05	21.04	21.14
15	16QAM	36	20	21.38	21.35	21.27
15	16QAM	36	39	21.26	21.27	21.22
15	16QAM	75	0	21.08	21.05	21.07
Channel				26840	26915	26990
Frequency (MHz)				829.0	836.5	844.0
10	QPSK	1	0	23.40	23.43	23.06
10	QPSK	1	25	23.28	23.25	23.22
10	QPSK	1	49	23.30	23.32	22.94
10	QPSK	25	0	22.26	22.24	22.17
10	QPSK	25	12	22.30	22.31	22.26
10	QPSK	25	25	22.15	22.14	22.32
10	QPSK	50	0	22.13	22.16	22.03
10	16QAM	1	0	21.50	21.52	21.93
10	16QAM	1	25	22.18	22.16	21.96
10	16QAM	1	49	21.87	21.85	21.45
10	16QAM	25	0	21.25	21.24	21.18
10	16QAM	25	12	21.39	21.37	21.22
10	16QAM	25	25	21.25	21.24	21.23
10	16QAM	50	0	21.22	21.21	21.13

Channel				26815	26915	27015
Frequency (MHz)				826.5	836.5	846.5
5	QPSK	1	0	23.24	23.23	23.03
5	QPSK	1	12	23.45	23.48	23.15
5	QPSK	1	24	23.27	23.29	23.00
5	QPSK	12	0	22.27	22.29	22.26
5	QPSK	12	7	22.43	22.46	22.15
5	QPSK	12	13	22.25	22.27	22.18
5	QPSK	25	0	22.33	22.38	22.14
5	16QAM	1	0	22.05	22.07	22.18
5	16QAM	1	12	22.09	22.13	21.90
5	16QAM	1	24	21.98	21.99	21.34
5	16QAM	12	0	21.25	21.28	21.01
5	16QAM	12	7	21.14	21.16	21.18
5	16QAM	12	13	21.09	21.14	21.13
5	16QAM	25	0	21.47	21.49	21.03
Channel				26805	26915	27025
Frequency (MHz)				825.5	836.5	847.5
3	QPSK	1	0	23.06	23.09	23.35
3	QPSK	1	8	23.22	23.25	23.21
3	QPSK	1	14	23.27	23.29	23.08
3	QPSK	8	0	22.32	22.35	23.32
3	QPSK	8	4	22.37	22.39	22.24
3	QPSK	8	7	22.19	22.21	22.17
3	QPSK	15	0	22.28	22.29	22.13
3	16QAM	1	0	22.01	22.06	21.98
3	16QAM	1	8	21.67	21.68	21.57
3	16QAM	1	14	21.89	21.93	21.53
3	16QAM	8	0	21.15	21.19	21.16
3	16QAM	8	4	21.26	21.28	21.16
3	16QAM	8	7	21.28	21.34	21.10
3	16QAM	15	0	21.38	21.43	21.14

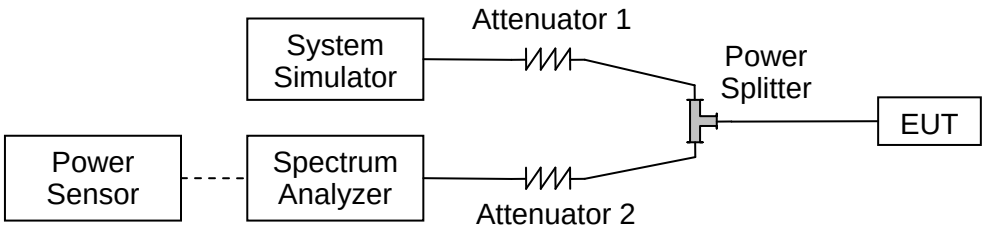
Channel				26797	26915	27033
Frequency (MHz)				824.7	836.5	848.3
1.4	QPSK	1	0	23.22	23.25	23.18
1.4	QPSK	1	3	23.28	23.35	23.19
1.4	QPSK	1	5	23.21	23.24	23.22
1.4	QPSK	3	0	23.43	23.47	23.17
1.4	QPSK	3	1	23.34	23.38	23.13
1.4	QPSK	3	3	23.26	23.28	23.34
1.4	QPSK	6	0	22.19	22.24	22.18
1.4	16QAM	1	0	22.29	22.32	22.45
1.4	16QAM	1	3	22.01	22.07	22.07
1.4	16QAM	1	5	22.22	22.28	22.01
1.4	16QAM	3	0	22.27	22.31	22.01
1.4	16QAM	3	1	22.36	22.37	22.31
1.4	16QAM	3	3	22.43	22.48	22.43
1.4	16QAM	6	0	21.11	21.17	21.44

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 25, BW: 1.4MHz					
Channel	Frequency (MHz)	QPSK		16QAM	
		99% Bandwidth (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)	26dB Bandwidth (MHz)
26047	1850.7	1.0734	1.217	1.0733	1.219
26365	1882.5	1.0735	1.224	1.0742	1.212
26683	1914.3	1.0731	1.211	1.0737	1.214

LTE Band 25, BW: 3MHz					
Channel	Frequency (MHz)	QPSK		16QAM	
		99% Bandwidth (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)	26dB Bandwidth (MHz)
26055	1851.5	2.6725	2.839	2.6744	2.862
26365	1882.5	2.6776	2.837	2.6781	2.845
26675	1913.5	2.6746	2.857	2.6732	2.831
LTE Band 25, BW: 5MHz					
Channel	Frequency (MHz)	QPSK		16QAM	
		99% Bandwidth (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)	26dB Bandwidth (MHz)
26065	1852.5	4.4917	4.900	4.4879	4.926
26365	1882.5	4.4941	5.012	4.4957	4.957
26665	1912.5	4.4952	4.943	4.4892	4.964
LTE Band 25, BW: 10MHz					
Channel	Frequency (MHz)	QPSK		16QAM	
		99% Bandwidth (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)	26dB Bandwidth (MHz)
26090	1855.0	8.9181	9.667	8.9217	9.674
26365	1882.5	8.9214	9.569	8.9052	9.603
26640	1910.0	8.9096	9.643	8.8932	9.542
LTE Band 25, BW: 15MHz					
Channel	Frequency (MHz)	QPSK		16QAM	
		99% Bandwidth (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)	26dB Bandwidth (MHz)
26115	1857.5	13.357	14.25	13.353	14.10
26365	1882.5	13.347	14.16	13.353	14.15
26615	1907.5	13.344	14.17	13.381	14.12
LTE Band 25, BW: 20MHz					
Channel	Frequency (MHz)	QPSK		16QAM	
		99% Bandwidth (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)	26dB Bandwidth (MHz)
26140	1860.0	17.813	18.89	17.817	18.89
26365	1882.5	17.811	18.81	17.790	18.71
26590	1905.0	17.923	19.40	17.917	19.41

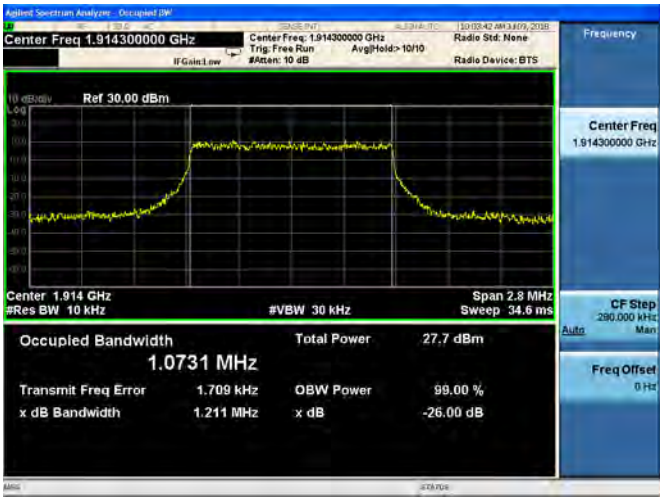
LTE Band 25 99%&26dB Bandwidth

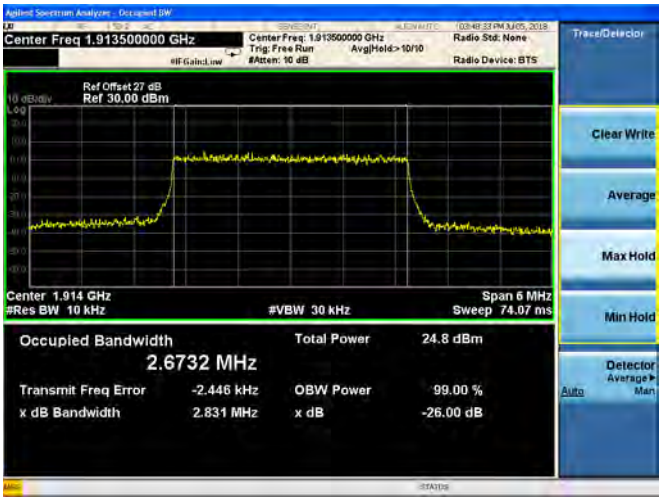
1.4MHz/QPSK/Low CH

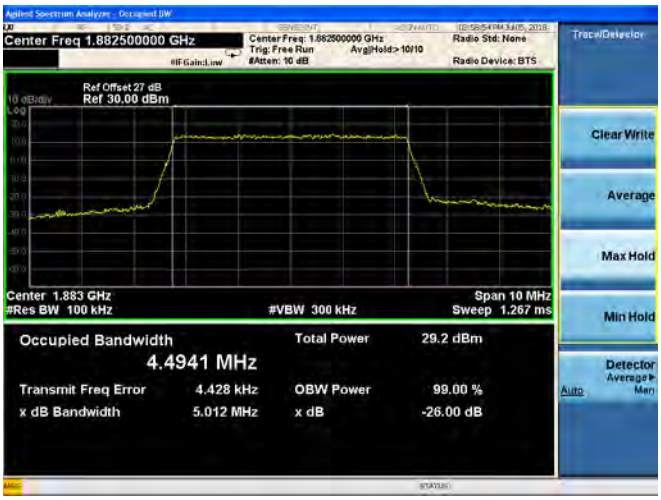
1.4MHz/16QAM/Low CH

1.4MHz/QPSK/Mid CH

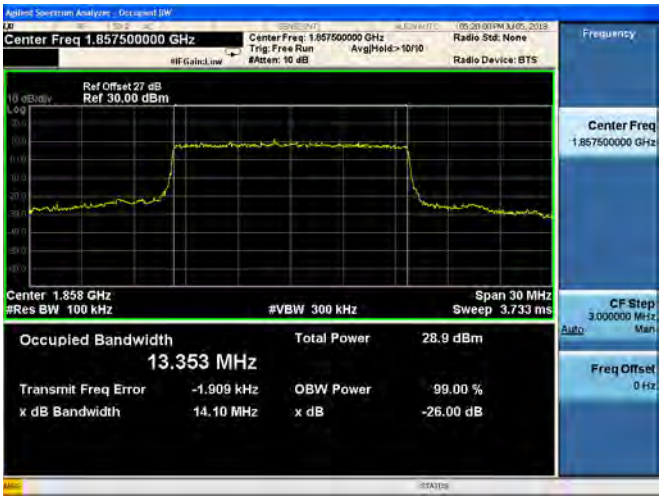
1.4MHz/16QAM/Mid CH

1.4MHz/QPSK/High CH	1.4MHz/16QAM/High CH
	

3MHz/QPSK/Low CH	3MHz/16QAM/Low CH
3MHz/QPSK/Mid CH	**3MHz/16QAM/Mid CH**
3MHz/QPSK/High CH	**3MHz/16QAM/High CH**
	

5MHz/QPSK/Low CH	5MHz/16QAM/Low CH
5MHz/QPSK/Mid CH	**5MHz/16QAM/Mid CH**
	
5MHz/QPSK/High CH	**5MHz/16QAM/High CH**

10MHz/QPSK/Low CH	10MHz/16QAM/Low CH
10MHz/QPSK/Mid CH	**10MHz/16QAM/Mid CH**
10MHz/QPSK/High CH	**10MHz/16QAM/High CH**

15MHz/QPSK/Low CH	15MHz/16QAM/Low CH
	
15MHz/QPSK/Mid CH	**15MHz/16QAM/Mid CH**
15MHz/QPSK/High CH	**15MHz/16QAM/High CH**

20MHz/QPSK/Low CH	20MHz/16QAM/Low CH
20MHz/QPSK/Mid CH	**20MHz/16QAM/Mid CH**
20MHz/QPSK/High CH	**20MHz/16QAM/High CH**

LTE Band 41, BW: 5MHz					
Channel	Frequency (MHz)	QPSK		16QAM	
		99% Bandwidth (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)	26dB Bandwidth (MHz)
39675	2498.5	4.4482	4.767	4.4502	4.715
40620	2593.0	4.4968	5.078	4.4935	5.021
41565	2678.5	4.4690	4.932	4.4704	4.825
LTE Band 41, BW: 10MHz					
Channel	Frequency (MHz)	QPSK		16QAM	
		99% Bandwidth (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)	26dB Bandwidth (MHz)
39700	2501.0	8.9114	9.809	8.9171	9.903
40620	2593.0	8.9158	9.598	8.9193	9.678
41540	2685.0	8.8921	9.546	8.8944	9.644
LTE Band 41, BW: 15MHz					
Channel	Frequency (MHz)	QPSK		16QAM	
		99% Bandwidth (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)	26dB Bandwidth (MHz)
39725	2503.5	13.369	14.59	13.370	14.36
40620	2593.0	13.373	14.12	13.375	14.30
41515	2682.5	13.383	14.45	13.380	14.43
LTE Band 41, BW: 20MHz					
Channel	Frequency (MHz)	QPSK		16QAM	
		99% Bandwidth (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)	26dB Bandwidth (MHz)
39750	2506.0	17.820	19.57	17.837	19.58
40620	2593.0	17.835	19.07	17.837	18.88
41490	2680.0	17.816	19.13	17.843	19.13

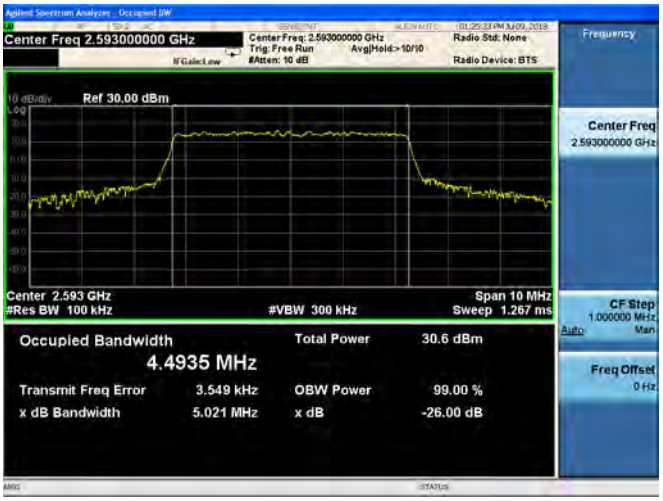
LTE Band 41 99%&26dB Bandwidth

5MHz/QPSK/Low CH

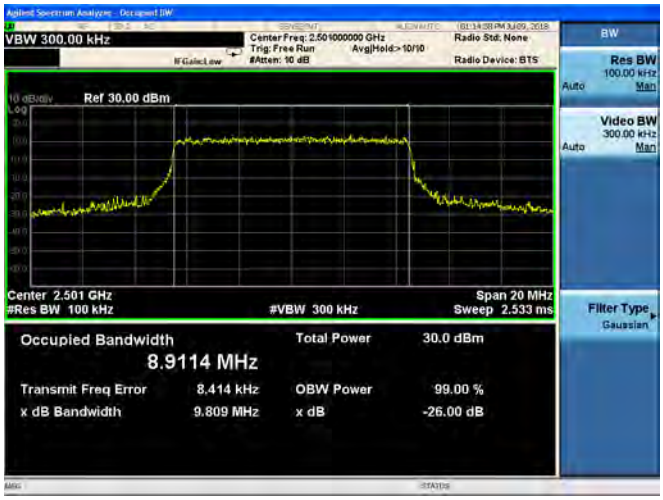
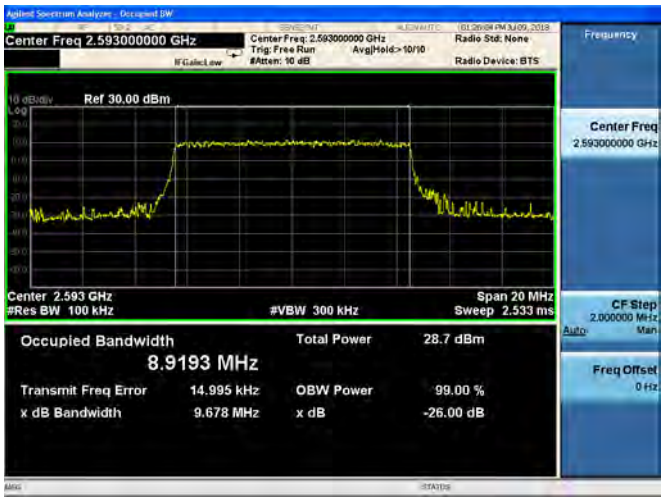
5MHz/16QAM/Low CH

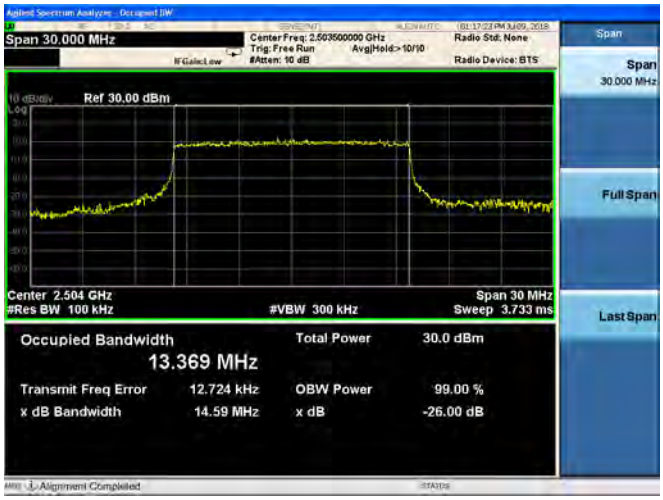
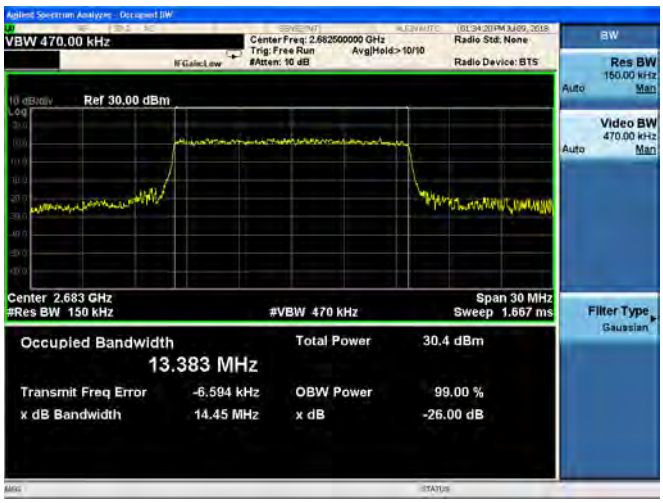
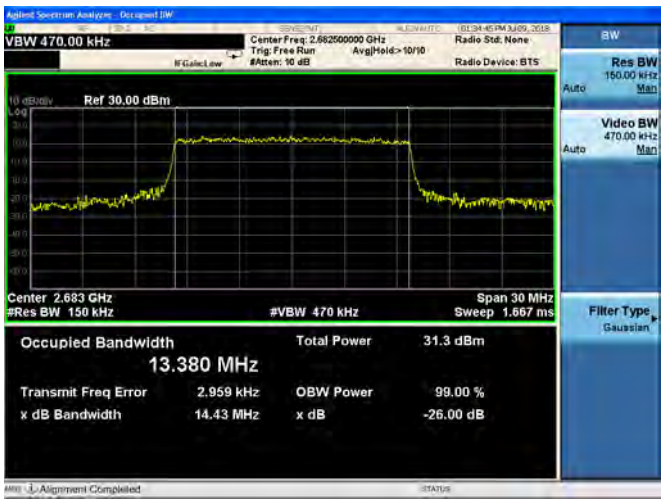
5MHz/QPSK/Mid CH

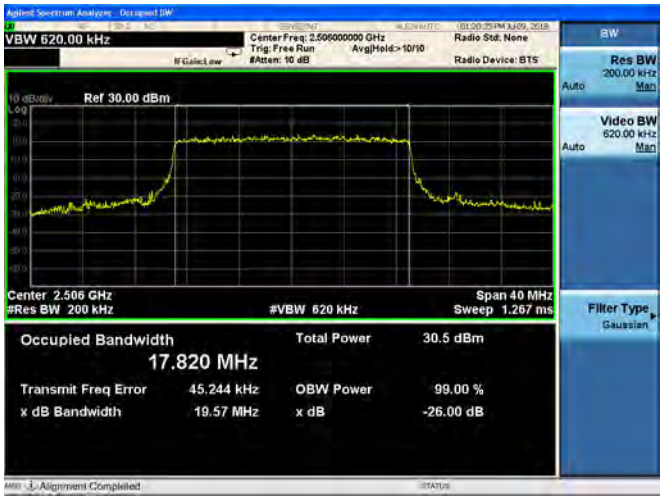
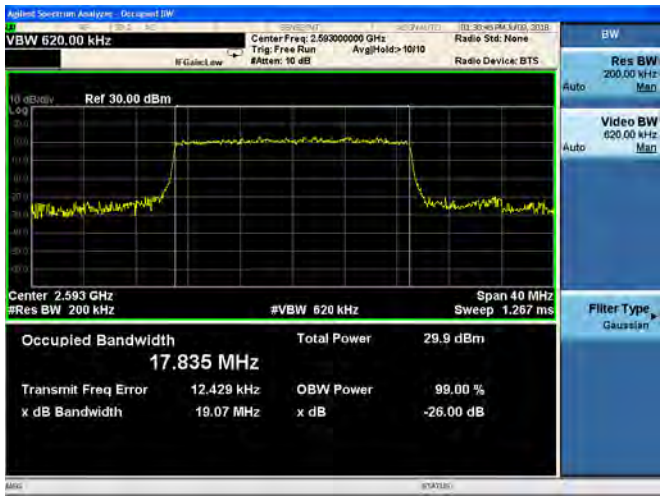
5MHz/16QAM/Mid CH



5MHz/QPSK/High CH	5MHz/16QAM/High CH

10MHz/QPSK/Low CH	10MHz/16QAM/Low CH
	
10MHz/QPSK/Mid CH	**10MHz/16QAM/Mid CH**
	
10MHz/QPSK/High CH	**10MHz/16QAM/High CH**

15MHz/QPSK/Low CH	15MHz/16QAM/Low CH
	
15MHz/QPSK/Mid CH	**15MHz/16QAM/Mid CH**
15MHz/QPSK/High CH	**15MHz/16QAM/High CH**
	

20MHz/QPSK/Low CH	20MHz/16QAM/Low CH
	
20MHz/QPSK/Mid CH	**20MHz/16QAM/Mid CH**
	
20MHz/QPSK/High CH	**20MHz/16QAM/High CH**

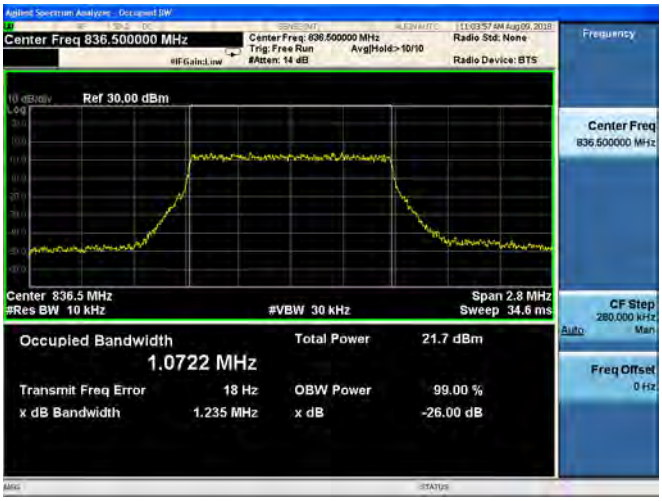
LTE Band 26, BW: 1.4MHz					
Channel	Frequency (MHz)	QPSK		16QAM	
		99% Bandwidth (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)	26dB Bandwidth (MHz)
26797	824.7	1.0728	1.229	1.0732	1.221
26915	836.5	1.0722	1.235	1.0725	1.206
27033	848.3	1.0725	1.228	1.0751	1.222
LTE Band 26, BW: 3MHz					
Channel	Frequency (MHz)	QPSK		16QAM	
		99% Bandwidth (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)	26dB Bandwidth (MHz)
26805	825.5	2.6715	2.847	2.6722	2.848
26915	836.5	2.6750	2.847	2.6715	2.849
27025	847.5	2.6749	2.860	2.6716	2.846
LTE Band 26, BW: 5MHz					
Channel	Frequency (MHz)	QPSK		16QAM	
		99% Bandwidth (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)	26dB Bandwidth (MHz)
26815	826.5	4.4743	4.750	4.4777	4.479
26915	836.5	4.4808	4.759	4.4939	4.758
27015	846.5	4.4776	4.763	4.4631	4.800
LTE Band 26, BW: 10MHz					
Channel	Frequency (MHz)	QPSK		16QAM	
		99% Bandwidth (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)	26dB Bandwidth (MHz)
26840	829.0	8.9026	9.297	8.9115	9.433
26915	836.5	8.8785	9.243	8.9005	9.267
26990	844.0	8.9078	9.254	8.9357	9.432
LTE Band 26, BW: 15MHz					
Channel	Frequency (MHz)	QPSK		16QAM	
		99% Bandwidth (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)	26dB Bandwidth (MHz)
26865	831.5	13.371	13.76	13.357	13.84
26915	836.5	13.326	13.76	13.342	13.81
26965	841.5	13.369	13.88	13.332	13.77

LTE Band 26 99%&26dB Bandwidth

1.4MHz/QPSK/Low CH

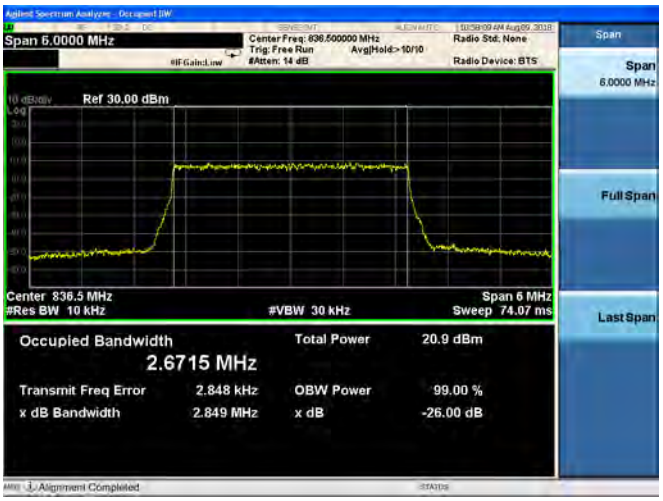
1.4MHz/16QAM/Low CH

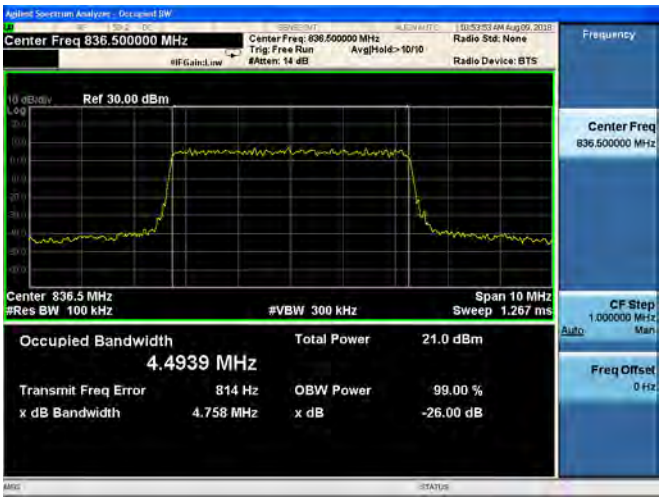
1.4MHz/QPSK/Mid CH

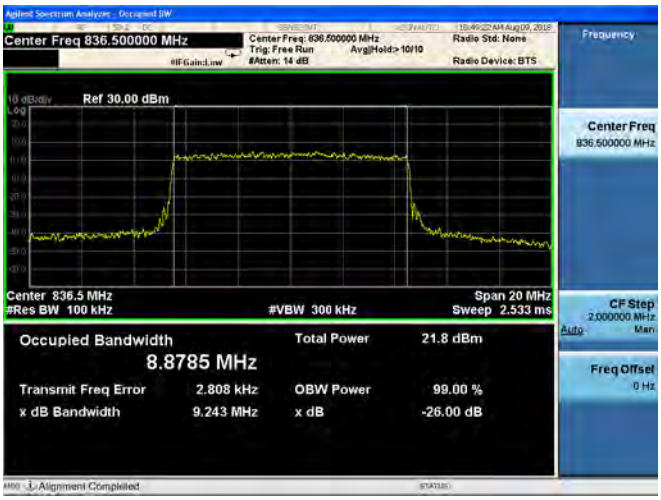


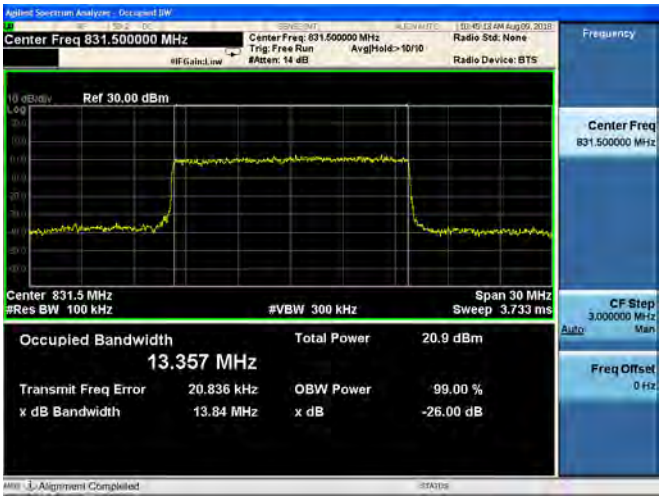
1.4MHz/16QAM/Mid CH

1.4MHz/QPSK/High CH	1.4MHz/16QAM/High CH

3MHz/QPSK/Low CH	3MHz/16QAM/Low CH
3MHz/QPSK/Mid CH	**3MHz/16QAM/Mid CH**
	
3MHz/QPSK/High CH	**3MHz/16QAM/High CH**

5MHz/QPSK/Low CH	5MHz/16QAM/Low CH
5MHz/QPSK/Mid CH	**5MHz/16QAM/Mid CH**
	
5MHz/QPSK/High CH	**5MHz/16QAM/High CH**

10MHz/QPSK/Low CH	10MHz/16QAM/Low CH
10MHz/QPSK/Mid CH	**10MHz/16QAM/Mid CH**
	
10MHz/QPSK/High CH	**10MHz/16QAM/High CH**

15MHz/QPSK/Low CH	15MHz/16QAM/Low CH
	
15MHz/QPSK/Mid CH	**15MHz/16QAM/Mid CH**
15MHz/QPSK/High CH	**15MHz/16QAM/High CH**

2.3. Frequency Stability

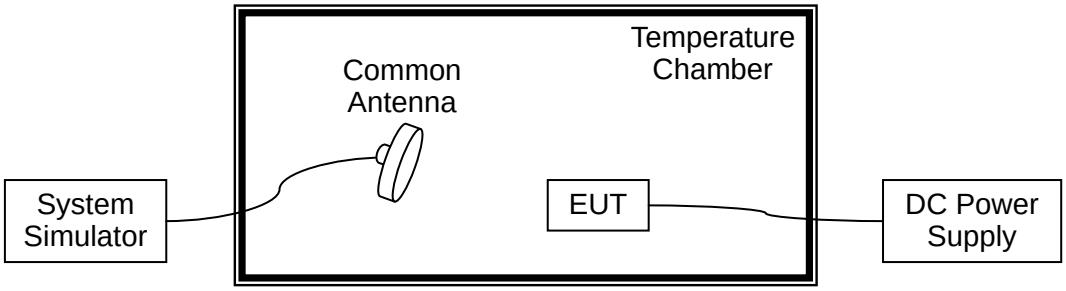
2.3.1. Requirement

According to FCC section 2.1055 & 22.355 & 27.54 & 24.235, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. According to FCC section 2.1055, the test conditions are:

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

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

2.3.2. Test Description



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

2.3.3. Test procedure

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

2.3.4. Test Result

The nominal, highest and lowest extreme voltages are separately 3.8VDC, 4.4VDC and 3.5VDC, which are specified by the applicant; the normal temperature here used is 20°C. The frequency deviation limit is ±2.5ppm.

The testing was performed using one RB and Bandwidth setting for each band.

LTE Band 25 – QPSK - Channel 26365 – Frequency 1882.5MHz – RB 6/0 Limit: 1882.5MHz*1ppm=1880.0Hz				
Voltage (%)	**Power (VDC)**	**Temp (°C)**	**Fre. Dev. (Hz)**	**Result**
100	3.8V	-30	12.54	PASS
100		-20	20.77	
100		-10	-12.96	
100		0	1.78	
100		+10	8.97	
100		+20	12.77	
100		+30	-9.67	
100		+40	-5.88	
100		+50	8.64	
115	4.4V	+20	21.15	
85	3.5V	+20	-19.66	

LTE Band 41 – QPSK - Channel 40620 – Frequency 2593MHz – RB 6/0 Limit: 2593MHz*1ppm=1880.0Hz				
Voltage (%)	**Power (VDC)**	**Temp (°C)**	**Fre. Dev. (Hz)**	**Result**
100	3.8V	-30	13.81	PASS
100		-20	20.55	
100		-10	21.38	
100		0	4.75	
100		+10	12.99	
100		+20	14.31	
100		+30	15.66	
100		+40	8.13	
100		+50	7.32	
115	4.4V	+20	-12.20	
85	3.5V	+20	10.45	

LTE Band 26 – QPSK - Channel 26915 – Frequency 836.5MHz – RB 6/0 Limit: 836.5MHz*2.5ppm=2091.25Hz				
Voltage (%)	**Power (VDC)**	**Temp (°C)**	**Fre. Dev. (Hz)**	**Result**
100	3.8V	-30	2.34	PASS
100		-20	6.82	
100		-10	14.24	
100		0	-7.86	
100		+10	-9.81	
100		+20	-12.43	
100		+30	13.50	
100		+40	16.88	
100		+50	-13.07	
115	4.4V	+20	12.67	
85	3.5V	+20	6.84	

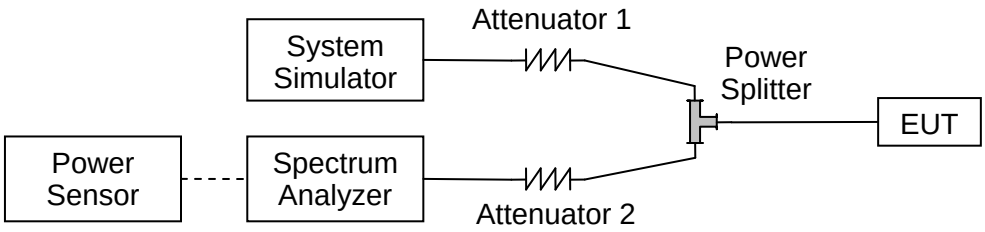
2.4. Peak to Average Ratio

2.4.1. Requirement

According to FCC section 24.232(d) & 27.50(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 D01v03 Section 5.7 and ANSI/TIA-603-E-2016.

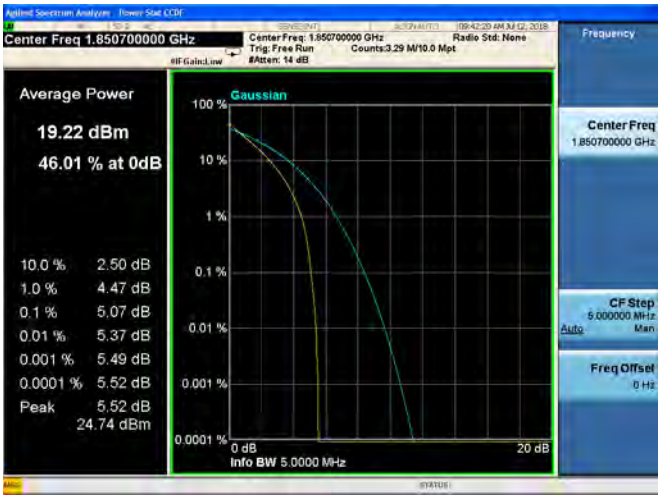
2.4.4. Test Result

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

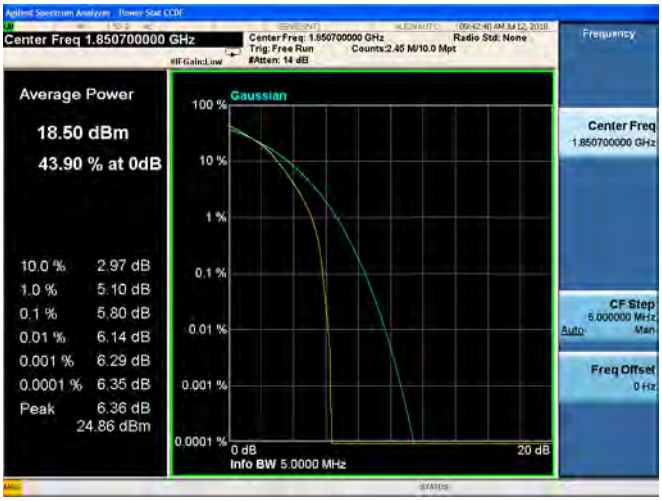
LTE Band 25, BW: 1.4MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
26047	1850.7	5.07	5.80
26365	1882.5	5.68	6.43
26683	1914.3	4.65	5.40
LTE Band 25, BW: 3MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
26055	1851.5	5.48	5.95
26365	1882.5	5.78	6.55
26675	1913.5	4.86	5.66
LTE Band 25, BW: 5MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
26065	1852.5	5.09	5.44
26365	1882.5	5.59	6.25
26665	1912.5	5.65	6.23
LTE Band 25, BW: 10MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
26090	1855	4.67	5.58
26365	1882.5	4.75	6.23
26640	1910	5.65	6.21
LTE Band 25, BW: 15MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
26115	1857.5	6.18	6.75
26365	1882.5	5.79	6.13
26615	1907.5	5.79	7.01
LTE Band 25, BW: 20MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
26140	1860	6.36	6.68
26365	1882.5	6.41	6.90
26590	1905	5.78	6.14

LTE Band 25 Peak to Average Ratio

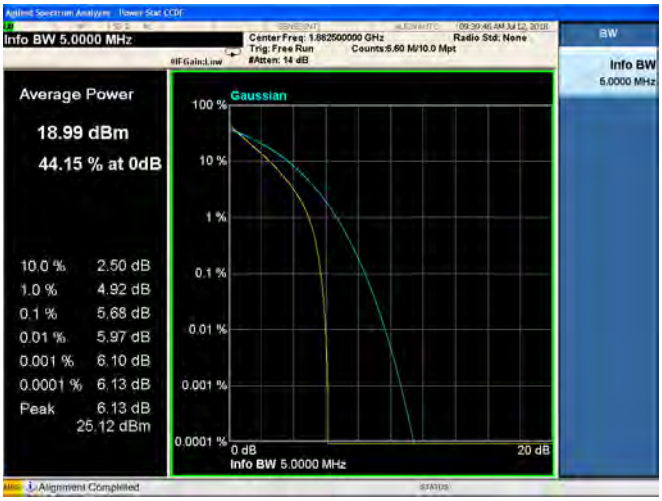
1.4MHz/QPSK/Low CH



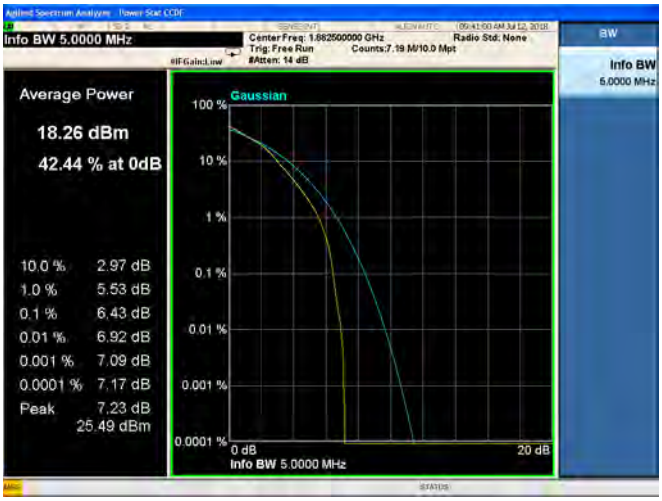
1.4MHz/16QAM/Low CH

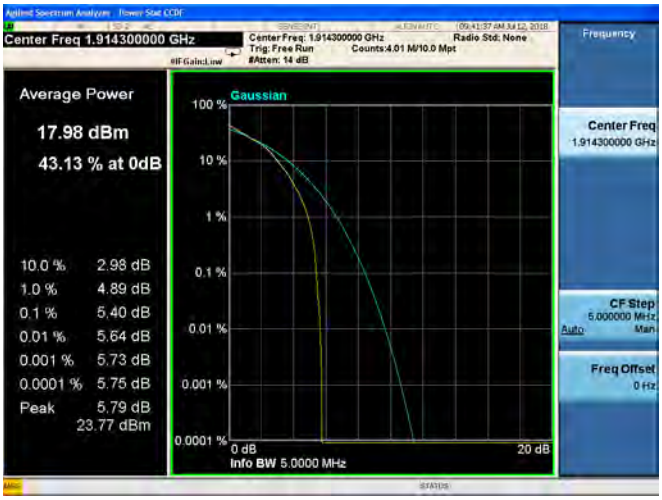


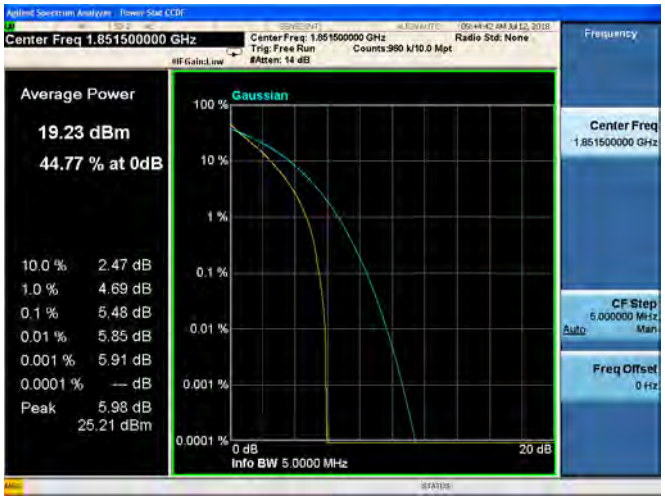
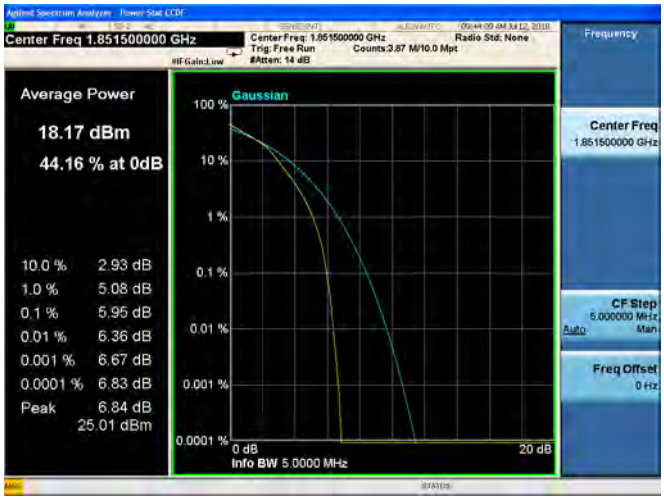
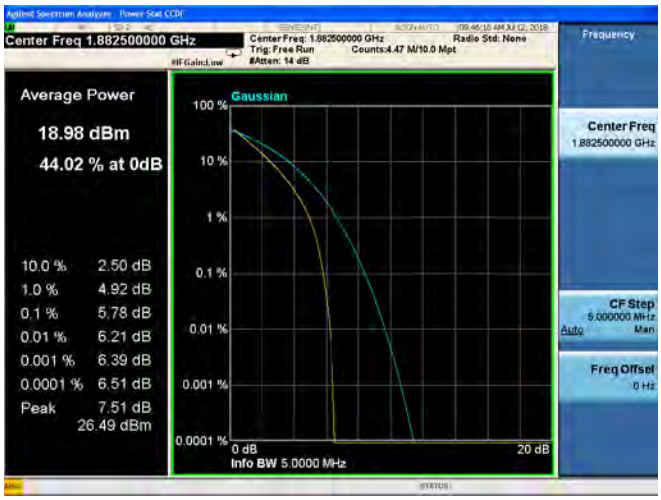
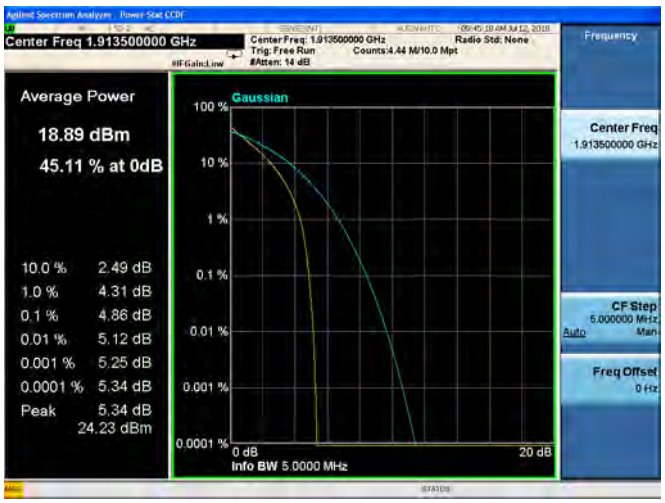
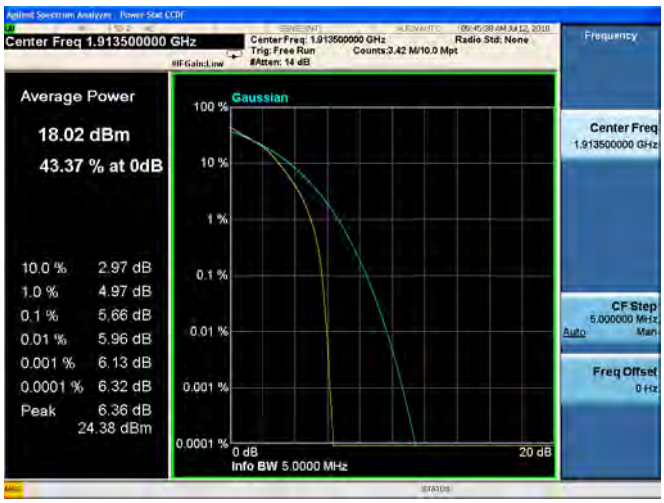
1.4MHz/QPSK/Mid CH

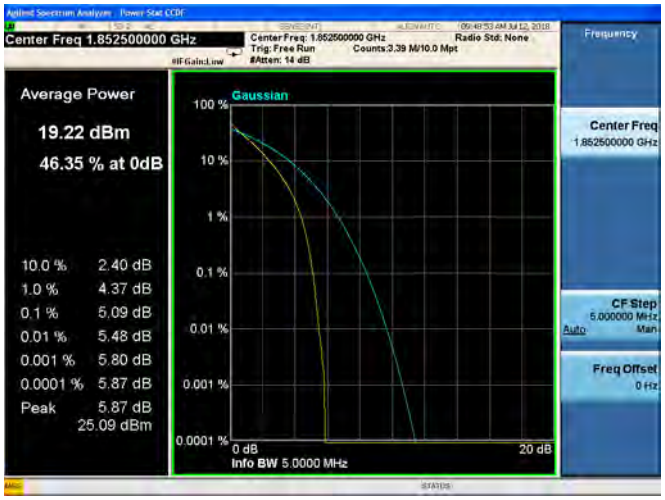
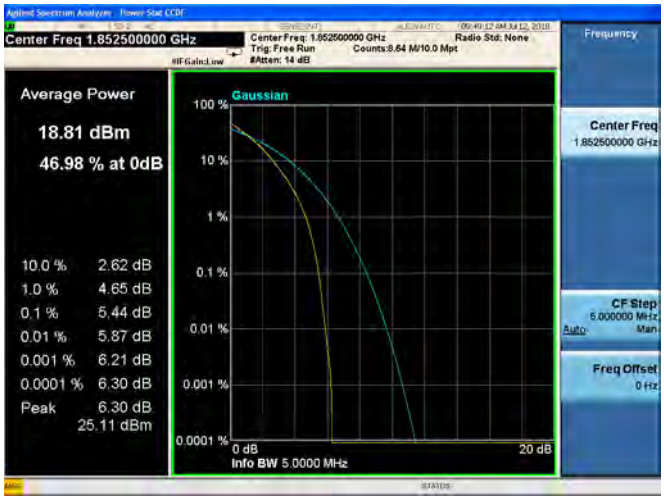
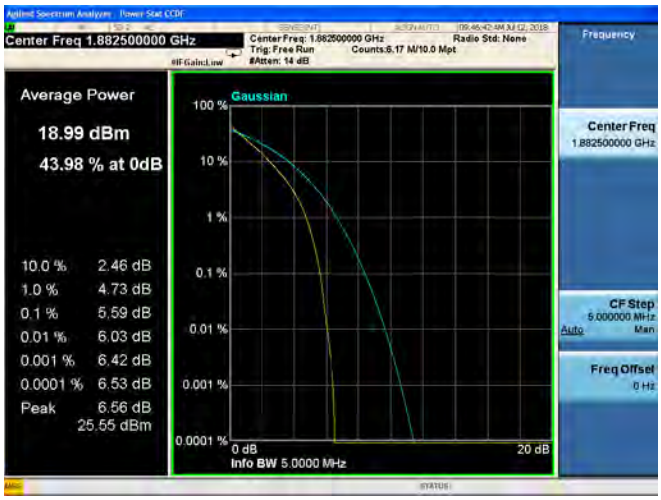
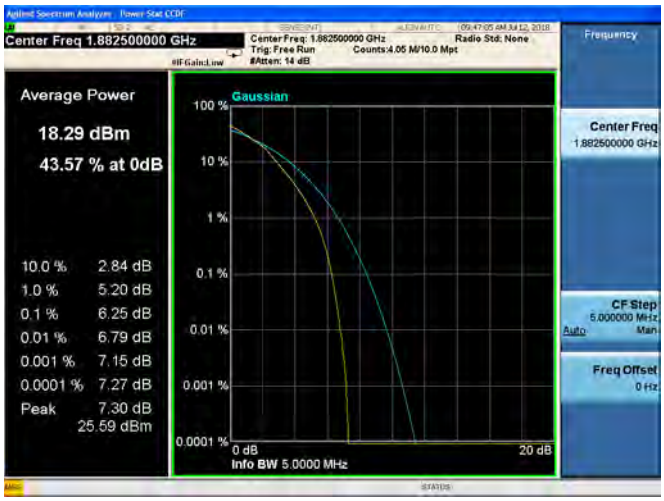
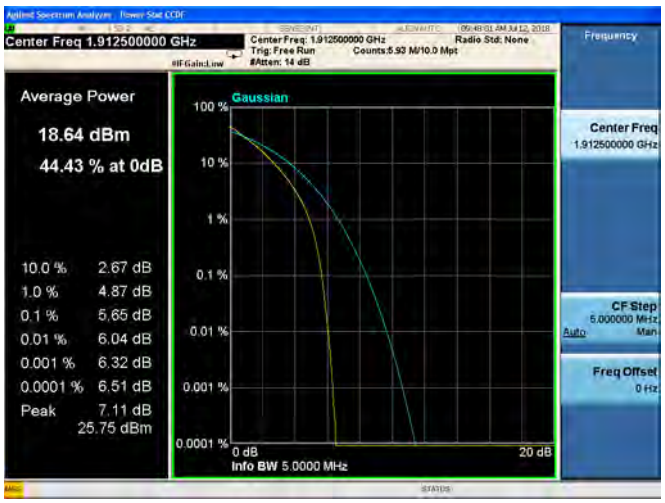
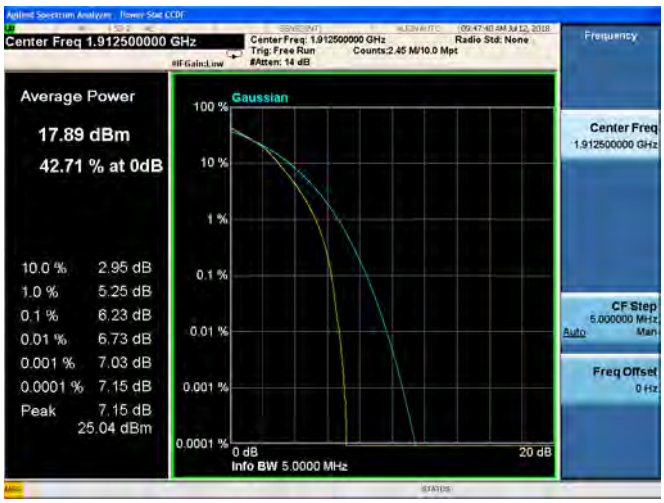


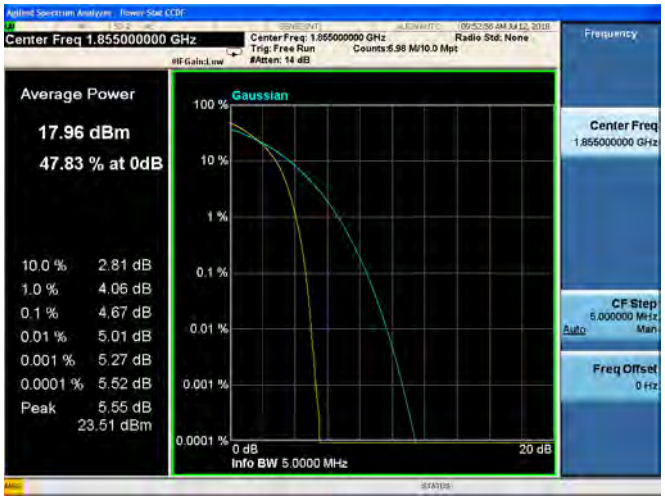
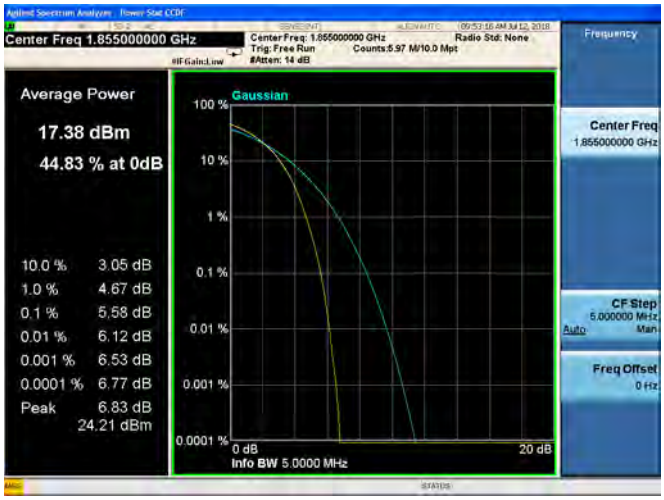
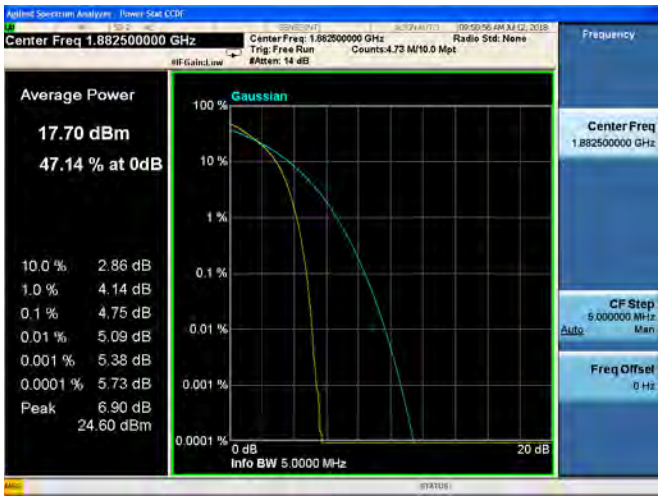
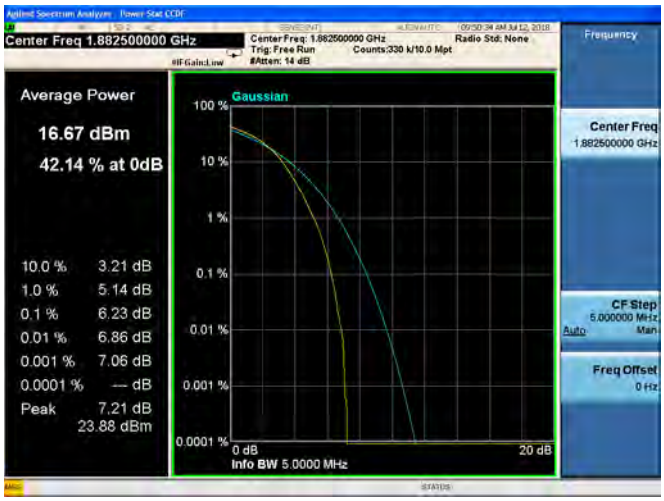
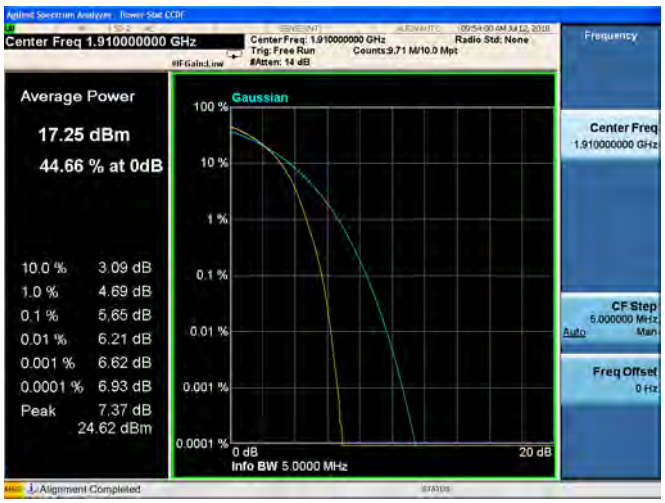
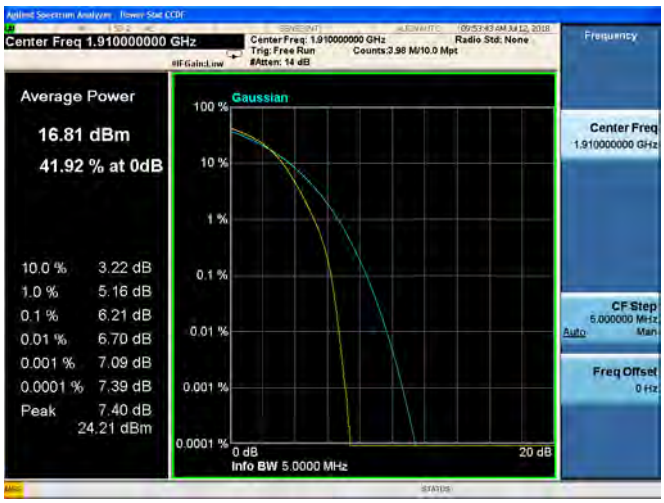
1.4MHz/16QAM/Mid CH

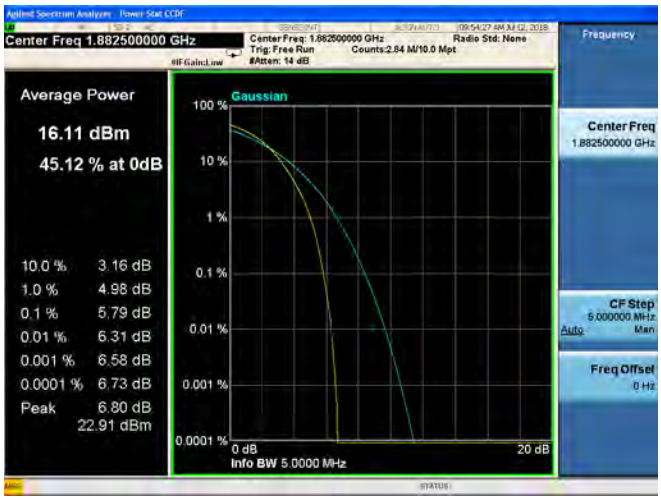
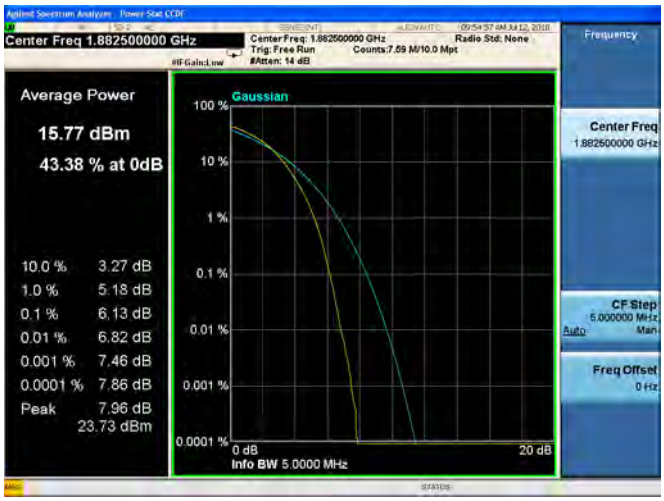
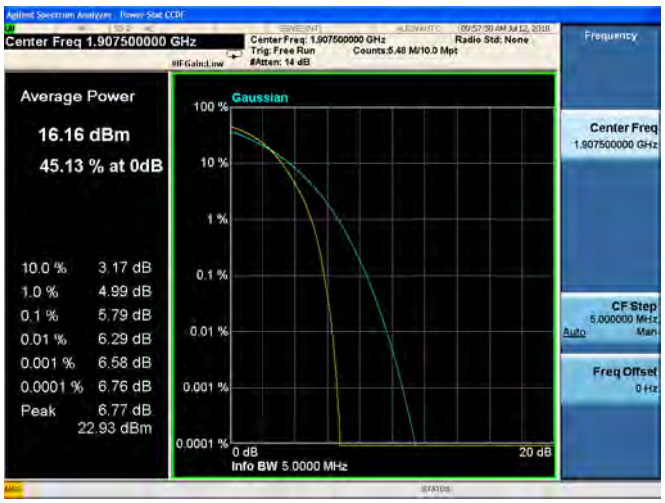
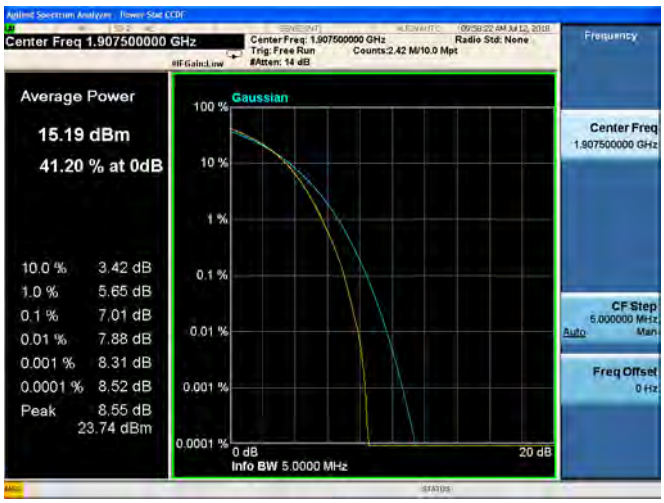


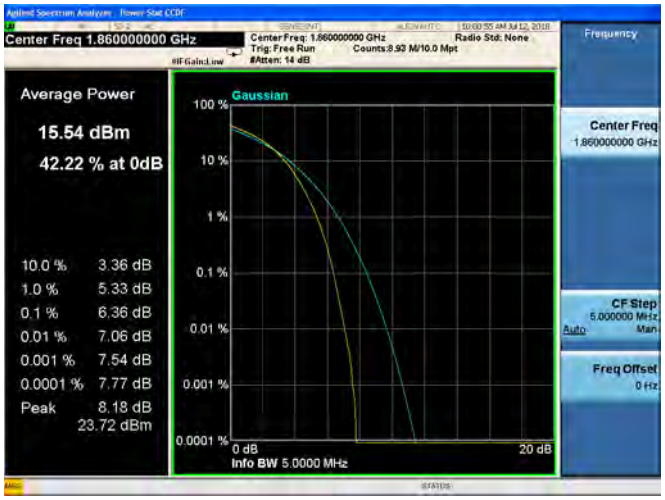
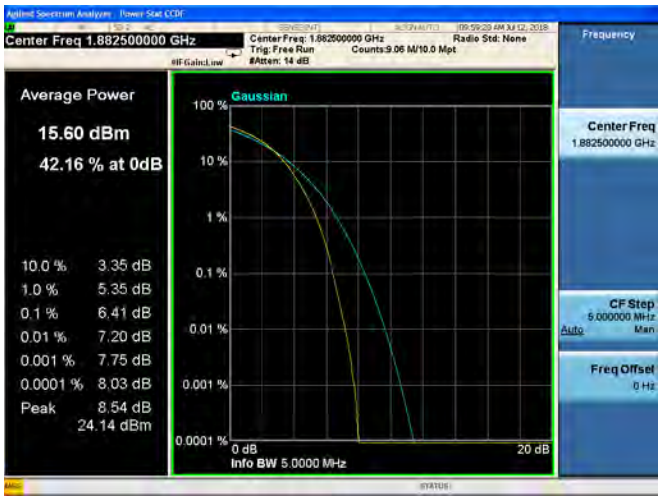
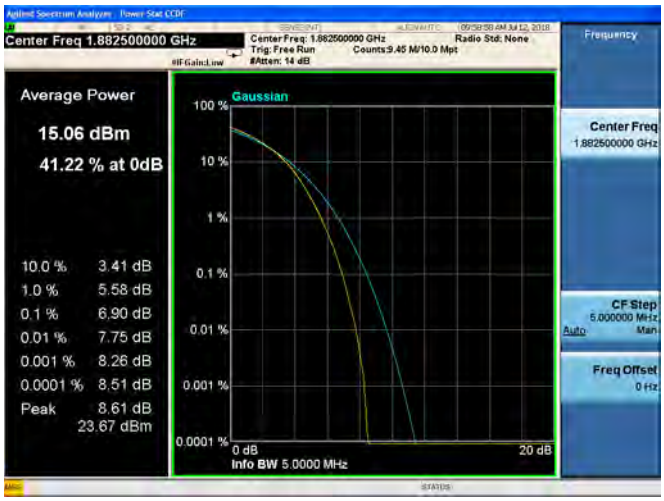
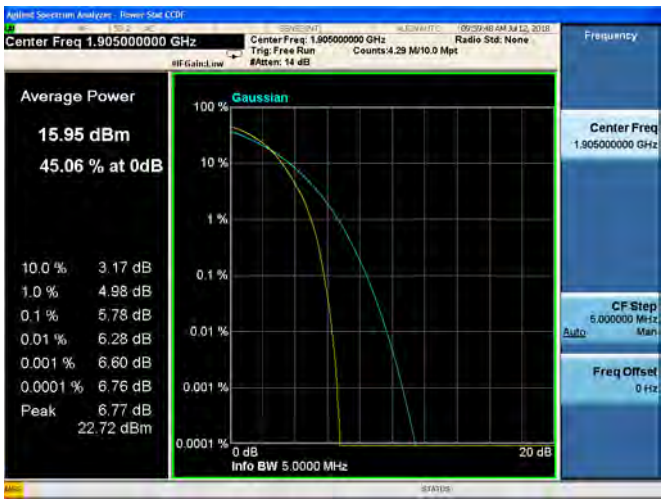
1.4MHz/QPSK/High CH	1.4MHz/16QAM/High CH
	

3MHz/QPSK/Low CH	3MHz/16QAM/Low CH
	
3MHz/QPSK/Mid CH	**3MHz/16QAM/Mid CH**
	
3MHz/QPSK/High CH	**3MHz/16QAM/High CH**
	

5MHz/QPSK/Low CH	5MHz/16QAM/Low CH
	
5MHz/QPSK/Mid CH	**5MHz/16QAM/Mid CH**
	
5MHz/QPSK/High CH	**5MHz/16QAM/High CH**
	

10MHz/QPSK/Low CH	10MHz/16QAM/Low CH
	
10MHz/QPSK/Mid CH	**10MHz/16QAM/Mid CH**
	
10MHz/QPSK/High CH	**10MHz/16QAM/High CH**
	

15MHz/QPSK/Low CH	15MHz/16QAM/Low CH
15MHz/QPSK/Mid CH	**15MHz/16QAM/Mid CH**
	
15MHz/QPSK/High CH	**15MHz/16QAM/High CH**
	

20MHz/QPSK/Low CH	20MHz/16QAM/Low CH
	
20MHz/QPSK/Mid CH	**20MHz/16QAM/Mid CH**
	
20MHz/QPSK/High CH	**20MHz/16QAM/High CH**
	

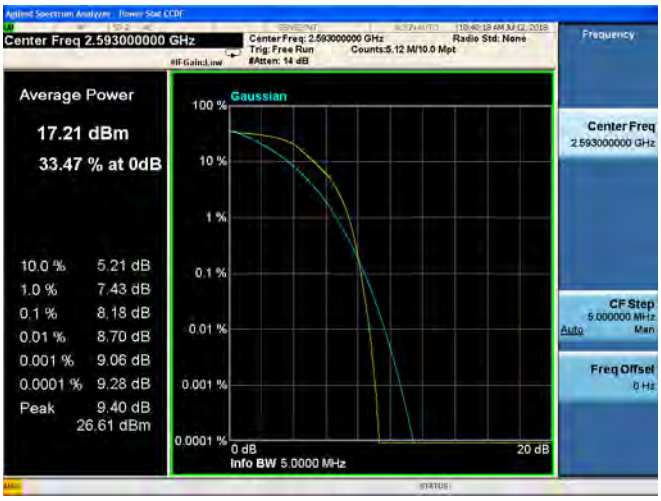
LTE Band 41, BW: 5MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
39675	2498.5	7.78	8.76
40620	2593.0	8.18	8.11
41565	2678.5	8.21	8.66
LTE Band 41, BW: 10MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
39700	2501.0	7.75	8.70
40620	2593.0	8.53	8.74
41540	2685.0	8.77	8.44
LTE Band 41, BW: 15MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
39725	2503.5	9.73	10.38
40620	2593.0	9.71	9.97
41515	2682.5	9.59	10.31
LTE Band 41, BW: 20MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
39750	2506.0	10.04	10.08
40620	2593.0	10.38	10.53
41490	2680.0	10.63	11.04

LTE Band 41 Peak to Average Ratio

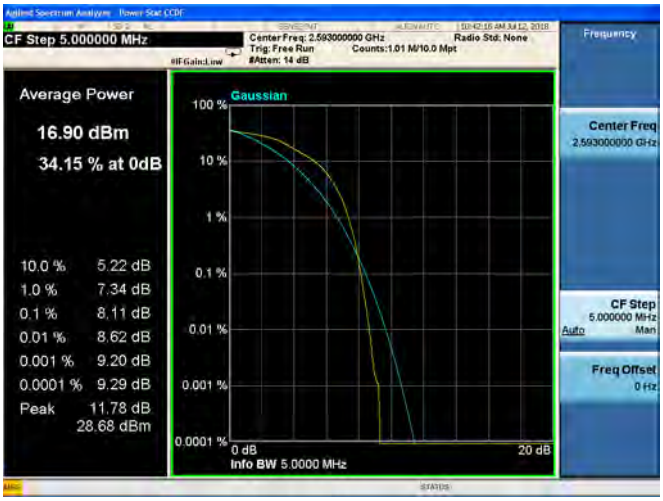
5MHz/QPSK/Low CH

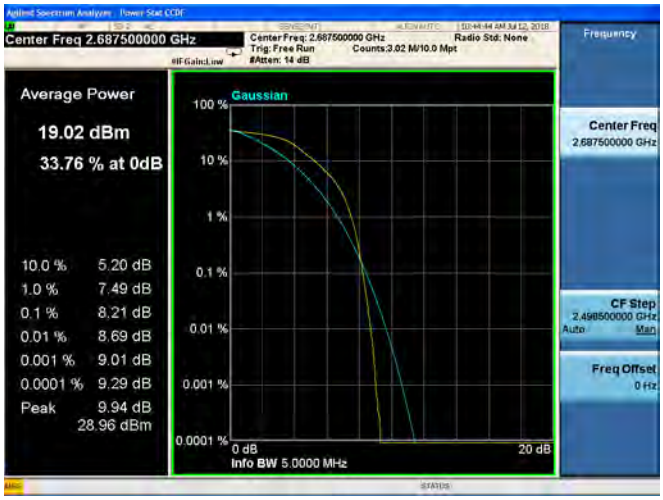
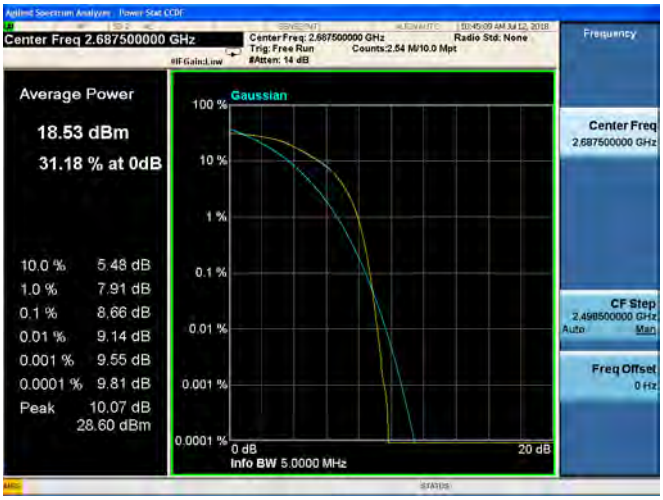
5MHz/16QAM/Low CH

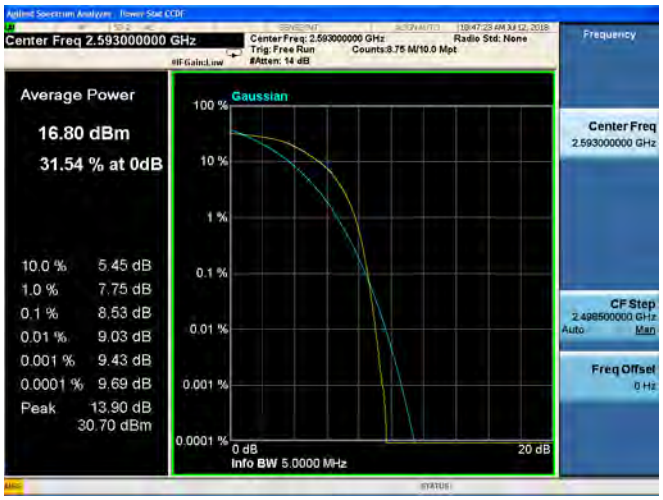
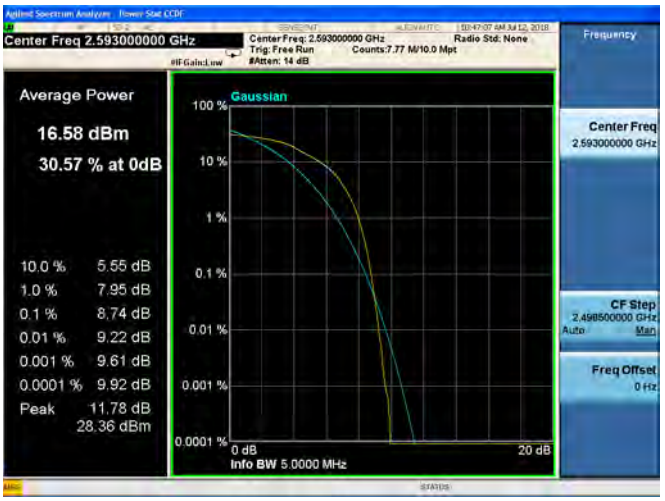
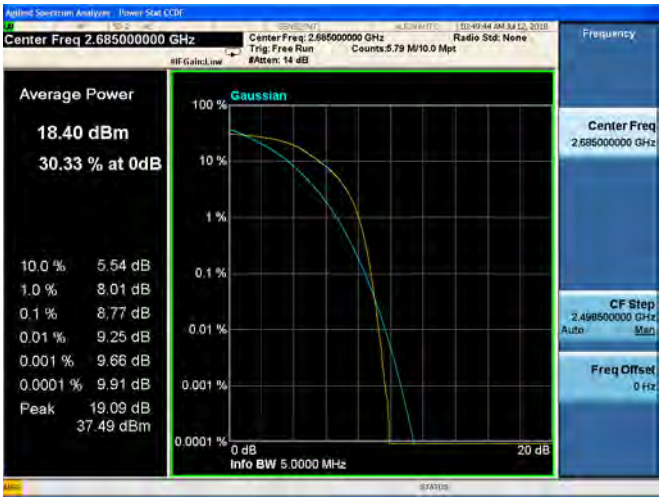
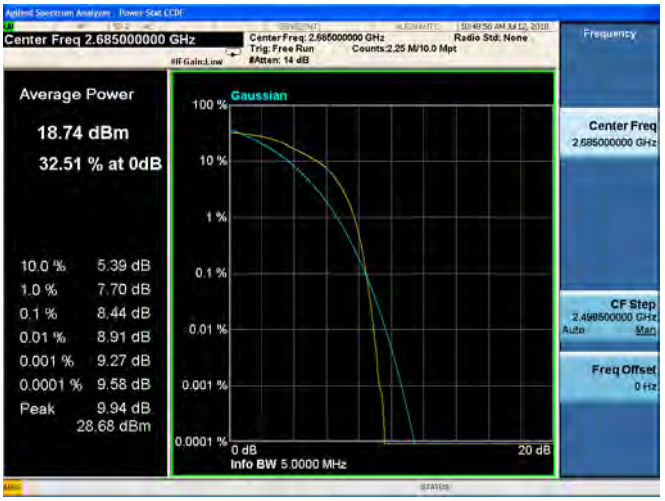
5MHz/QPSK/Mid CH

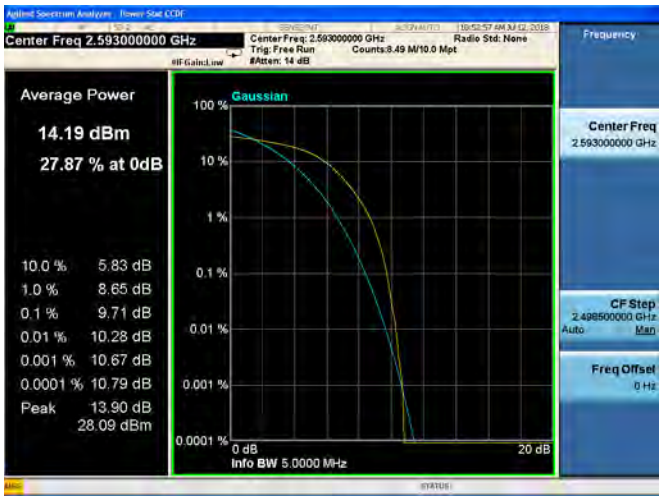
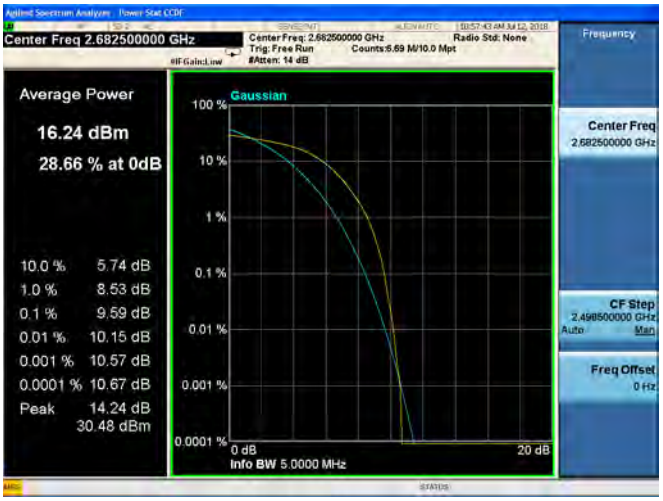


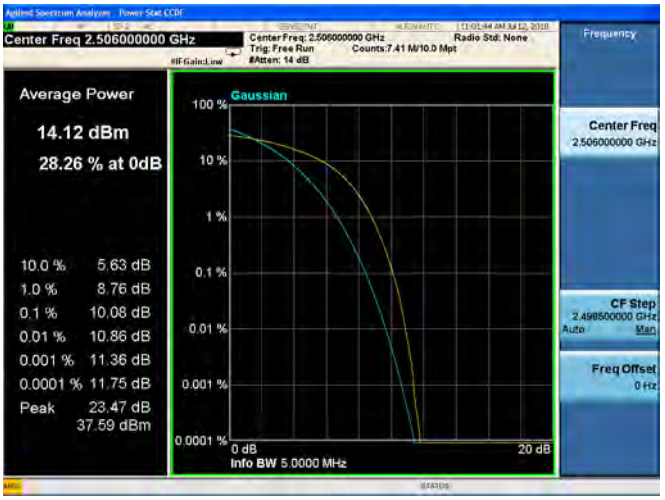
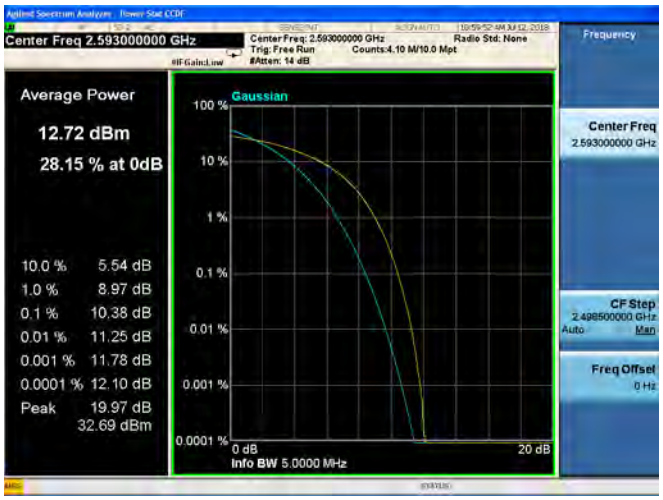
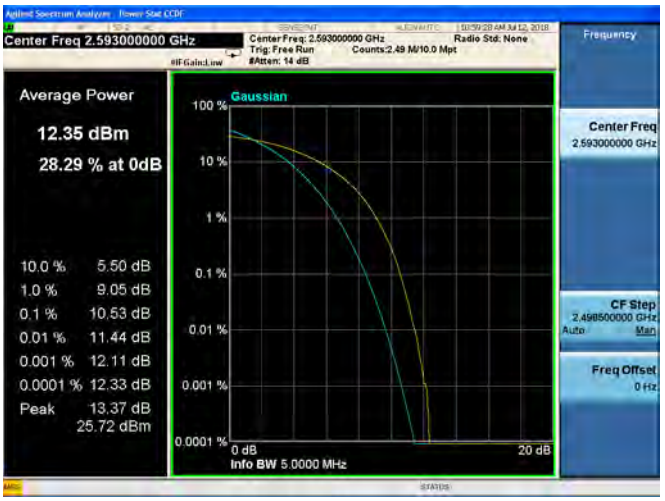
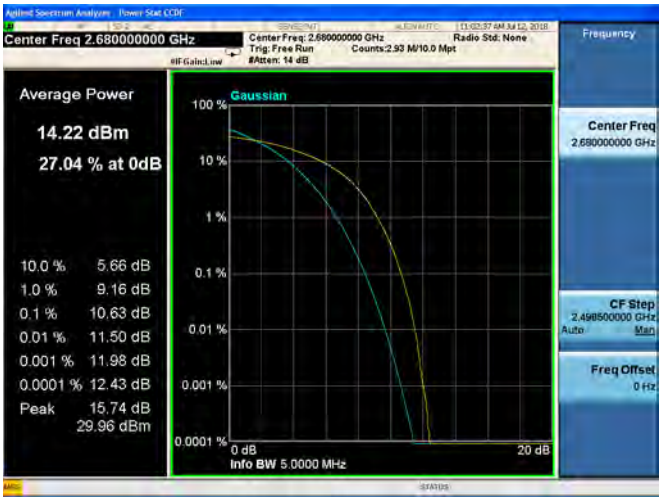
5MHz/16QAM/Mid CH



5MHz/QPSK/High CH	5MHz/16QAM/High CH
	

10MHz/QPSK/Low CH	10MHz/16QAM/Low CH
10MHz/QPSK/Mid CH	**10MHz/16QAM/Mid CH**
	
10MHz/QPSK/High CH	**10MHz/16QAM/High CH**
	

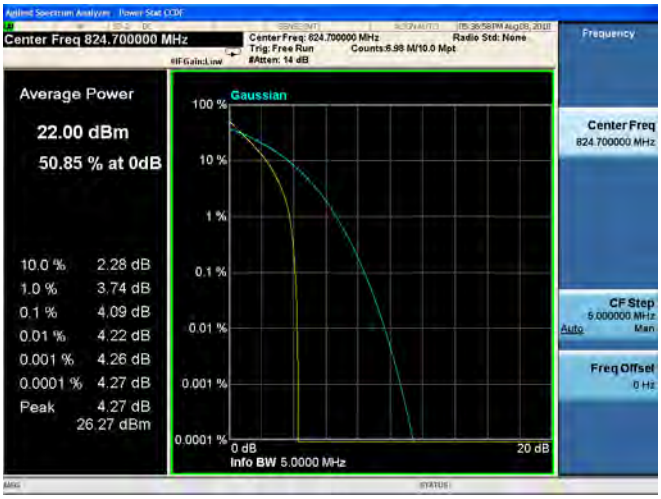
15MHz/QPSK/Low CH	15MHz/16QAM/Low CH
15MHz/QPSK/Mid CH	**15MHz/16QAM/Mid CH**
	
15MHz/QPSK/High CH	**15MHz/16QAM/High CH**
	

20MHz/QPSK/Low CH	20MHz/16QAM/Low CH
	
20MHz/QPSK/Mid CH	**20MHz/16QAM/Mid CH**
	
20MHz/QPSK/High CH	**20MHz/16QAM/High CH**
	

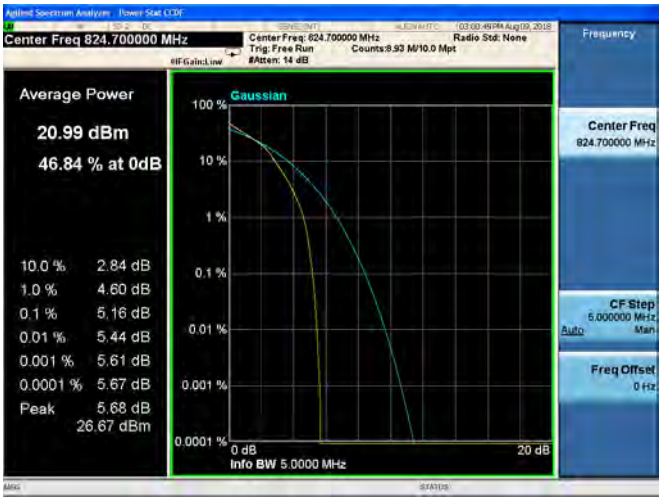
LTE Band 26, BW: 1.4MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
26797	824.7	4.09	5.16
26915	836.5	5.35	5.74
27033	848.3	4.39	5.36
LTE Band 26, BW: 3MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
26805	825.5	4.39	5.15
26915	836.5	5.15	5.87
27025	847.5	5.01	5.76
LTE Band 26, BW: 5MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
26815	826.5	4.75	5.52
26915	836.5	5.11	5.89
27015	846.5	5.21	6.11
LTE Band 26, BW: 10MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
26840	829.0	4.74	6.06
26915	836.5	4.65	6.04
26990	844.0	4.86	6.37
LTE Band 26, BW: 15MHz			
Channel	Frequency (MHz)	Peak to Average Ratio(dB)	
		QPSK	16QAM
26865	831.5	5.85	6.90
26915	836.5	5.74	6.79
26965	841.5	5.83	6.86

LTE Band 26 Peak to Average Ratio

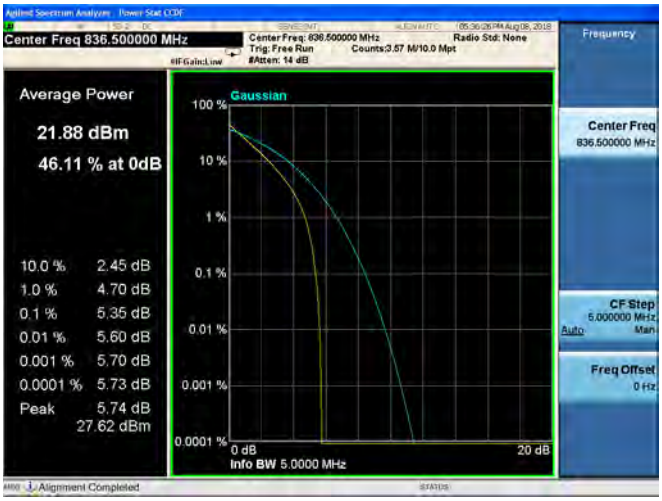
1.4MHz/QPSK/Low CH



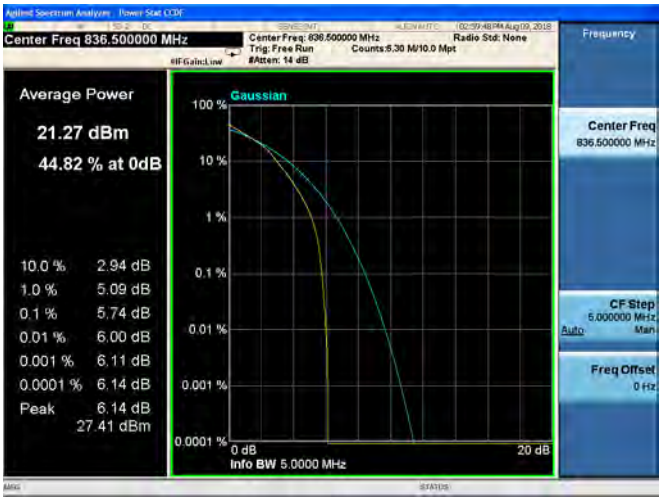
1.4MHz/16QAM/Low CH

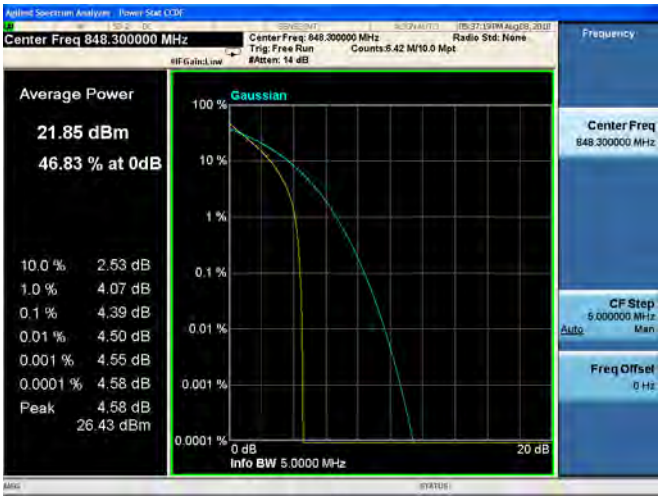


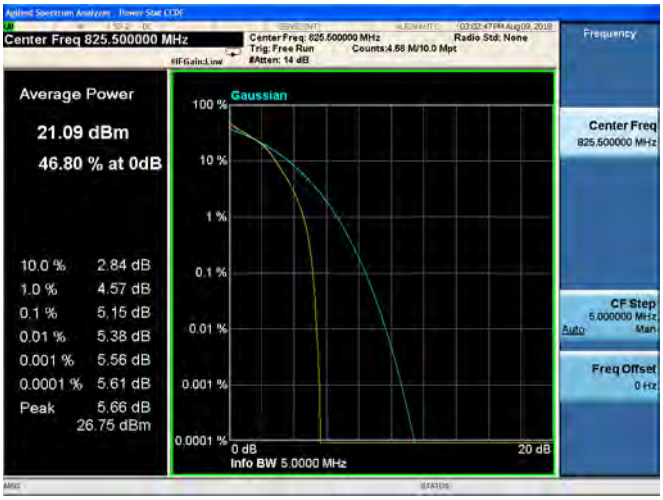
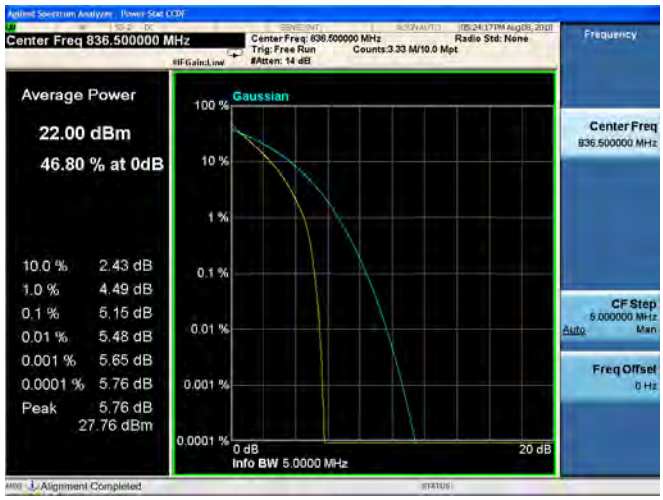
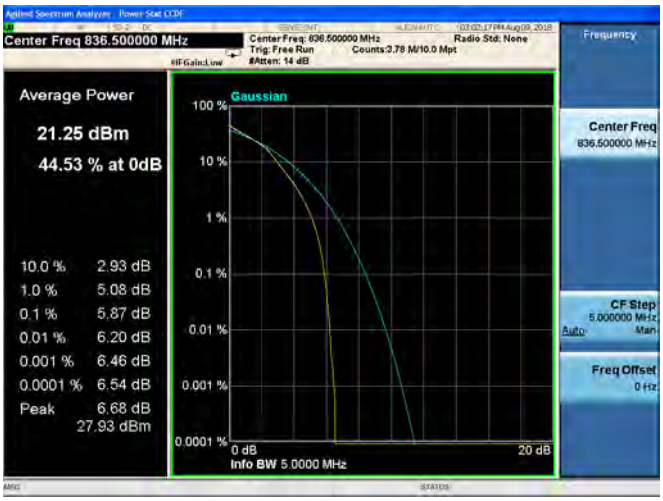
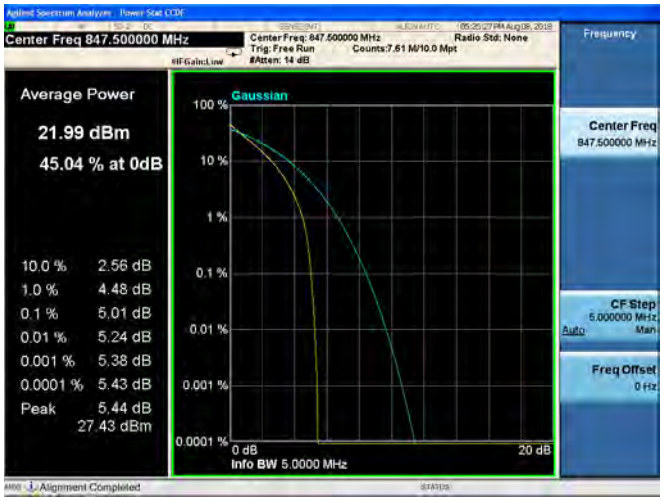
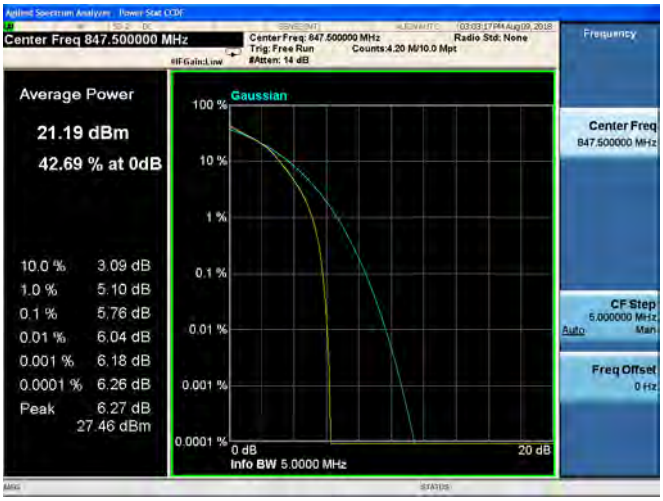
1.4MHz/QPSK/Mid CH

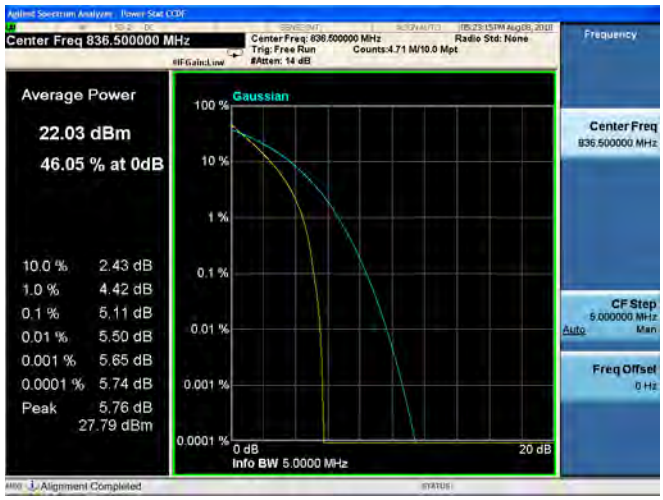
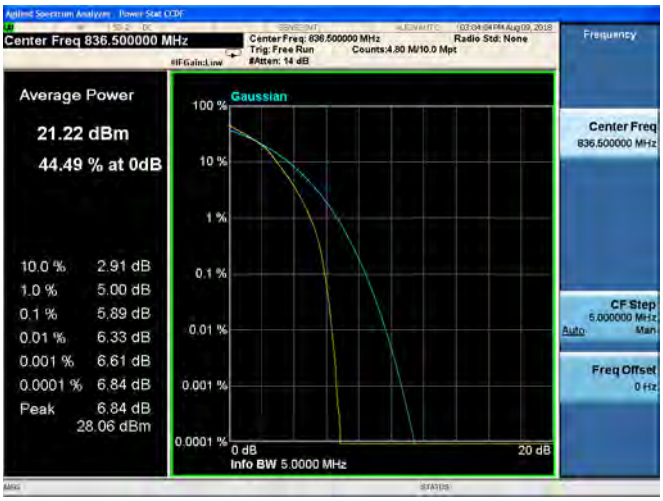
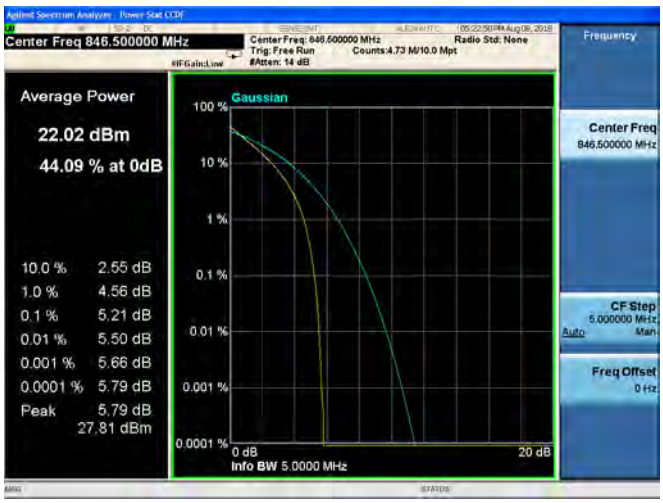
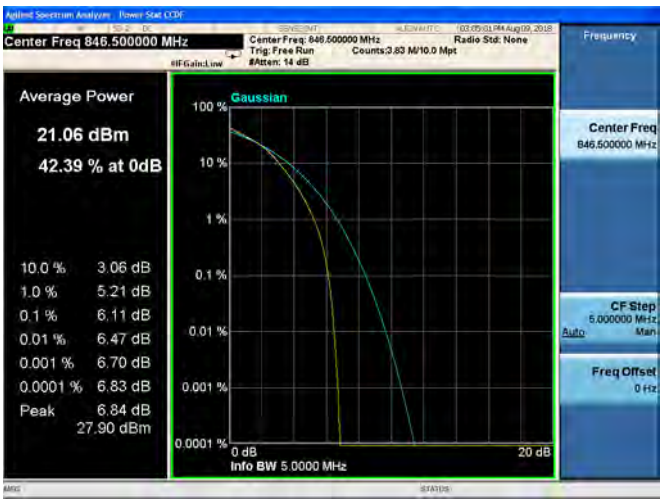


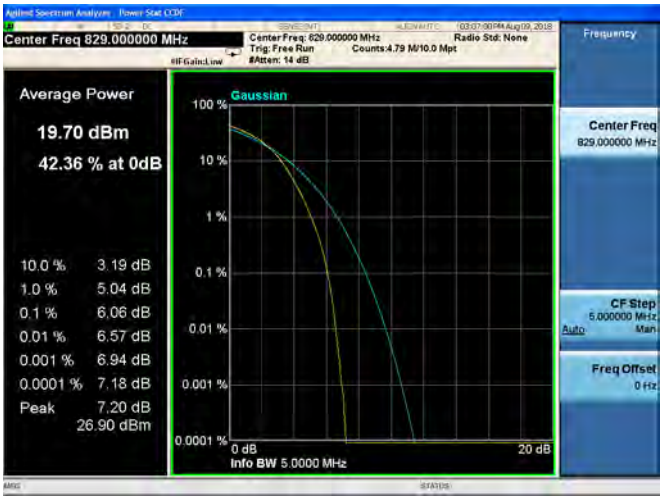
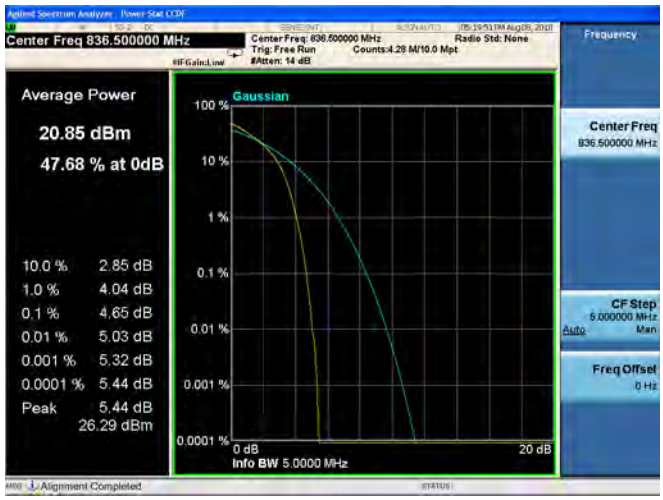
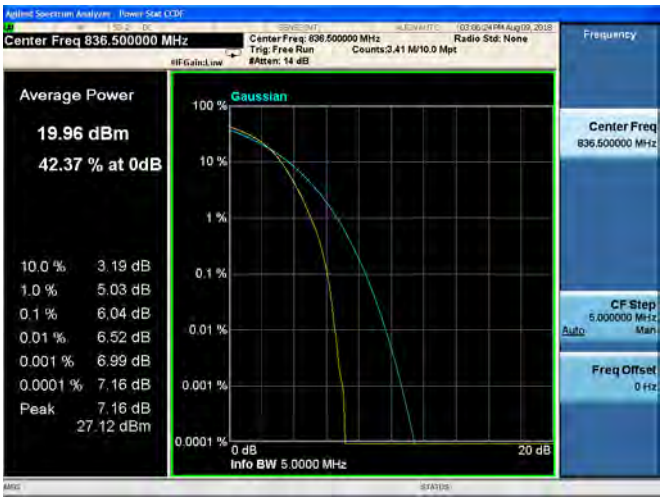
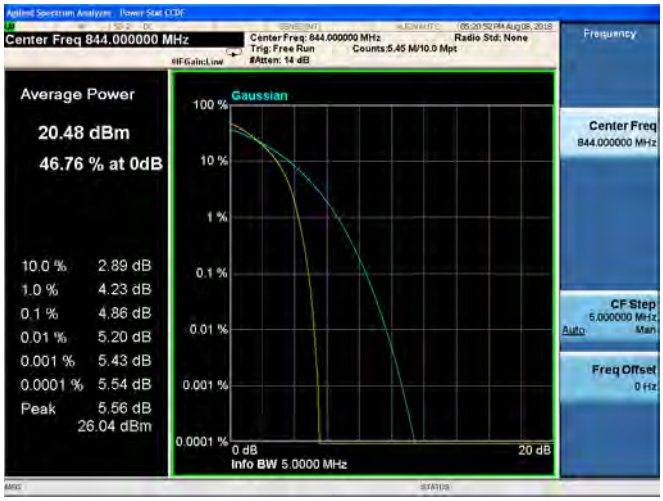
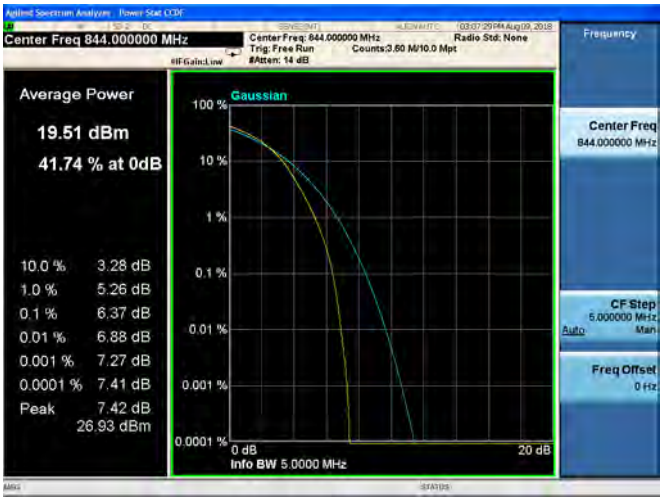
1.4MHz/16QAM/Mid CH

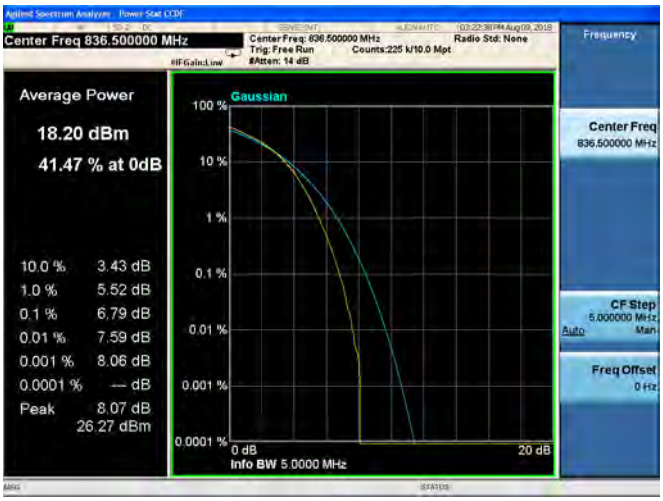
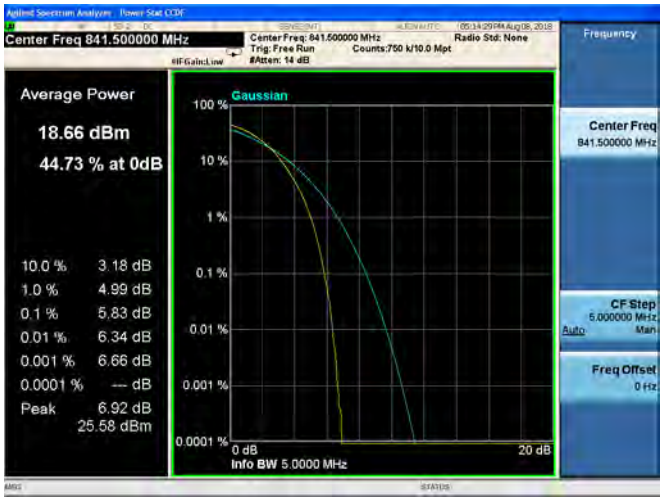
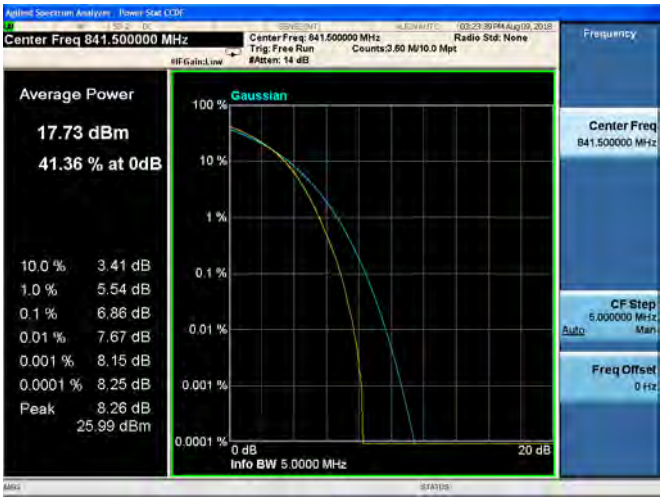


1.4MHz/QPSK/High CH	1.4MHz/16QAM/High CH
	

3MHz/QPSK/Low CH	3MHz/16QAM/Low CH
	
3MHz/QPSK/Mid CH	**3MHz/16QAM/Mid CH**
	
3MHz/QPSK/High CH	**3MHz/16QAM/High CH**
	

5MHz/QPSK/Low CH	5MHz/16QAM/Low CH
5MHz/QPSK/Mid CH	**5MHz/16QAM/Mid CH**
	
5MHz/QPSK/High CH	**5MHz/16QAM/High CH**
	

10MHz/QPSK/Low CH	10MHz/16QAM/Low CH
	
10MHz/QPSK/Mid CH	**10MHz/16QAM/Mid CH**
	
10MHz/QPSK/High CH	**10MHz/16QAM/High CH**
	

15MHz/QPSK/Low CH	15MHz/16QAM/Low CH
15MHz/QPSK/Mid CH	**15MHz/16QAM/Mid CH**
	
15MHz/QPSK/High CH	**15MHz/16QAM/High CH**
	

2.5. Conducted Spurious Emissions

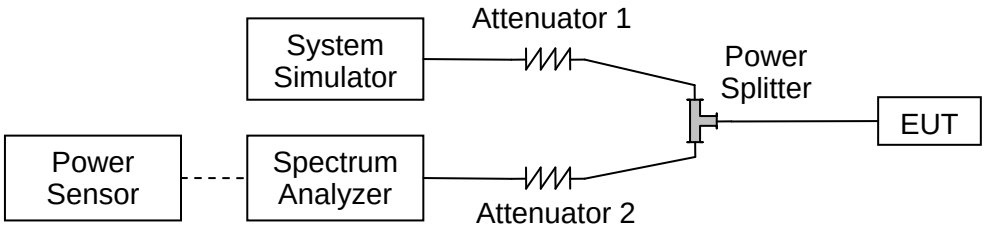
2.5.1. Requirement

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

Additional requirement for LTE Band 41:

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 55 + 10 log(P) dB. This calculated to be -25dBm.

2.5.2. Test Description

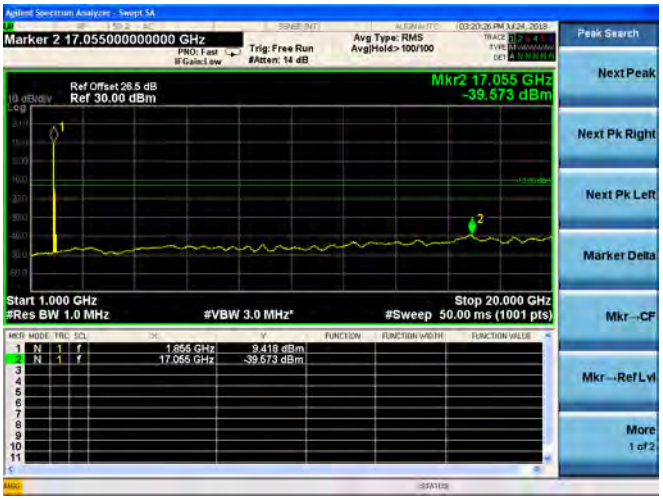
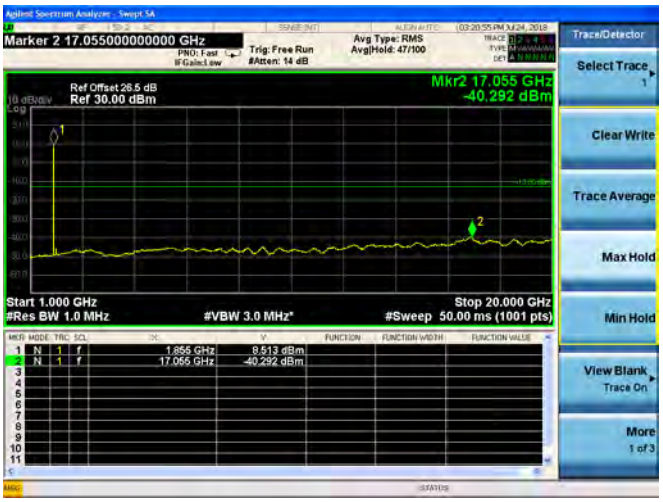


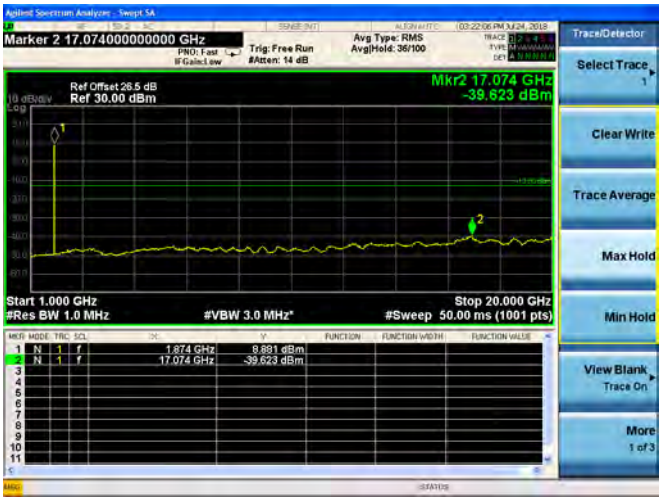
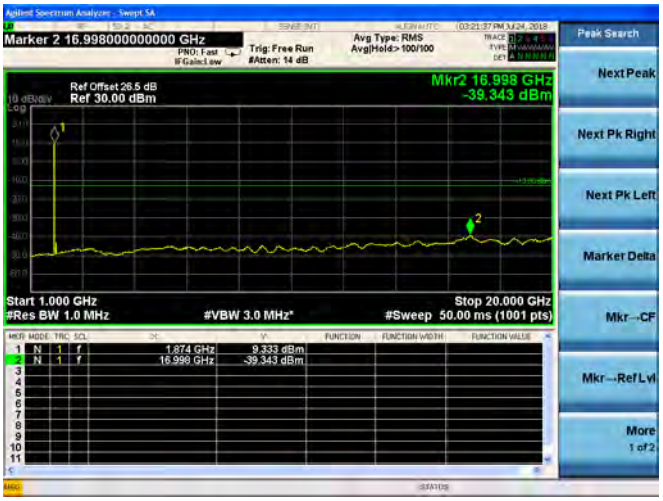
The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum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

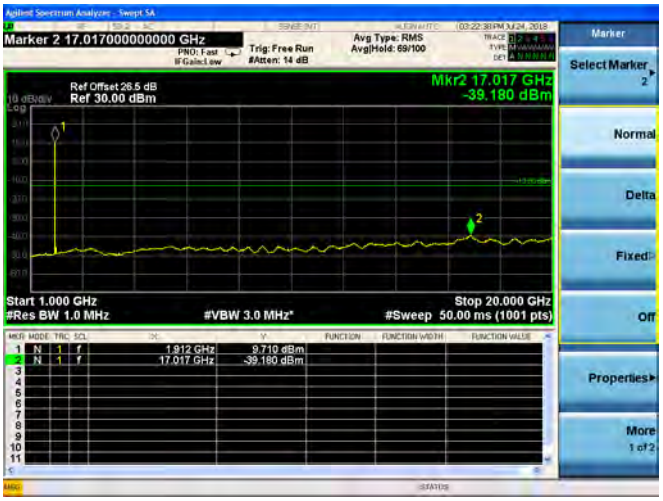
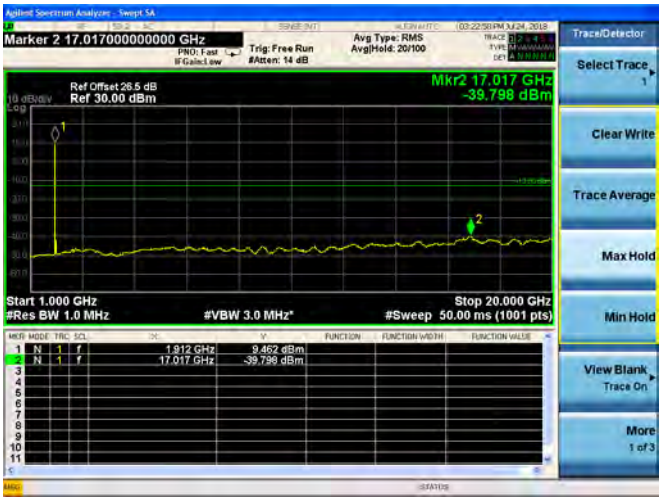
2.5.3. Test procedure

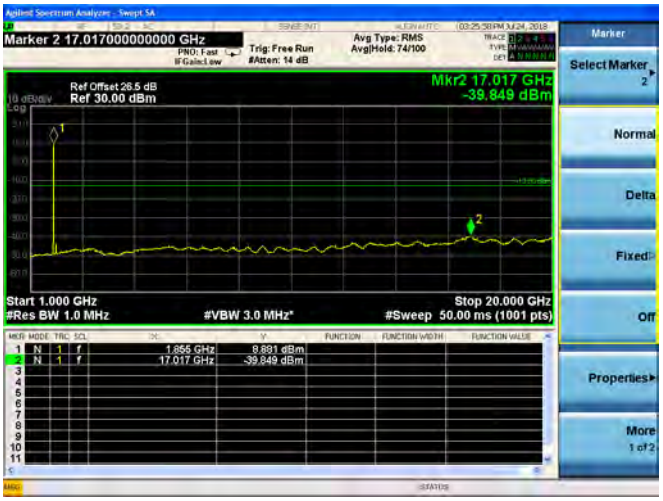
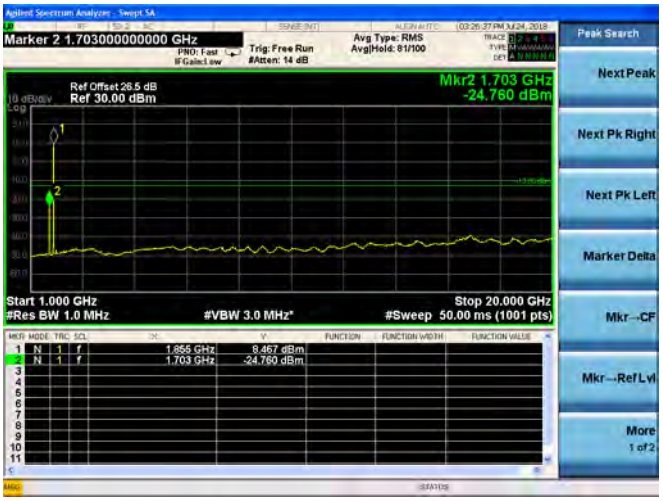
KDB 971168 D01v03 Section 6.0 and ANSI/TIA-603-E-2016.

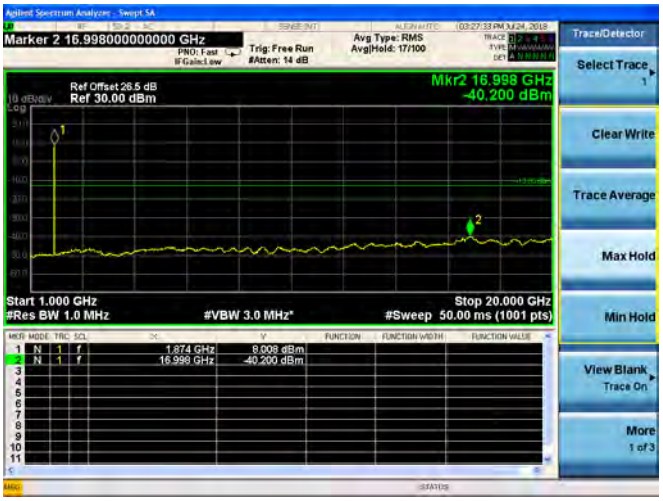
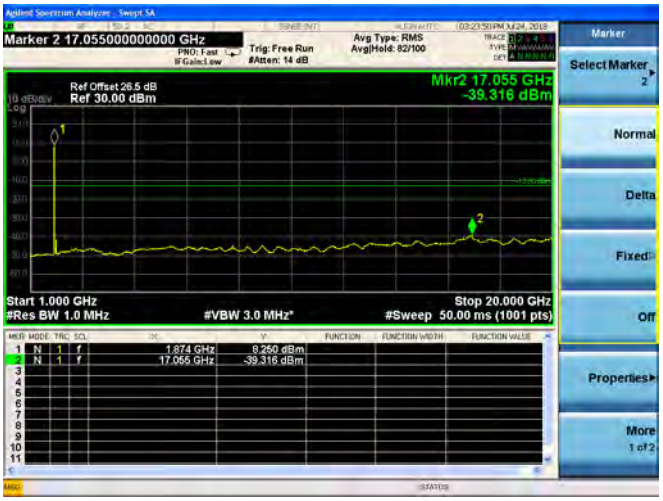
2.5.4. Test Result

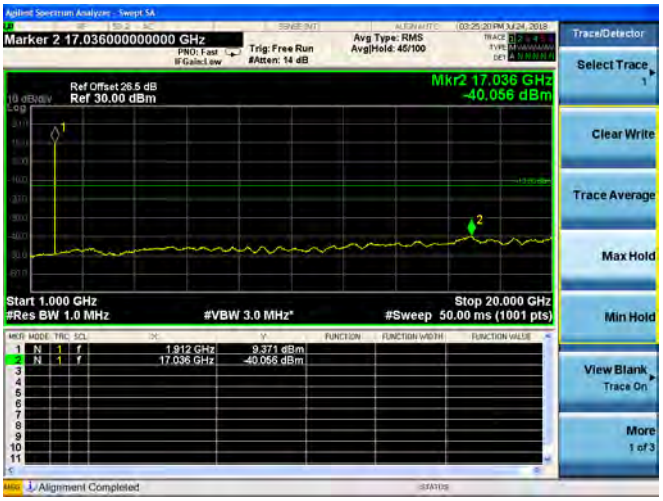
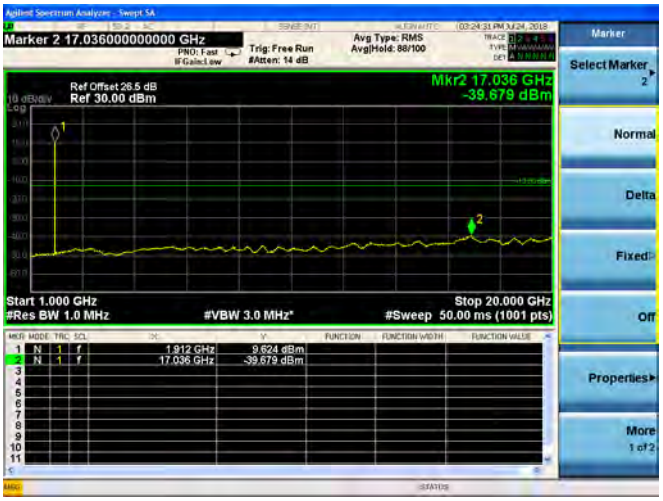
LTE Band 25 1.4MHz BW Low Channel	
QPSK	
	
16QAM	
	

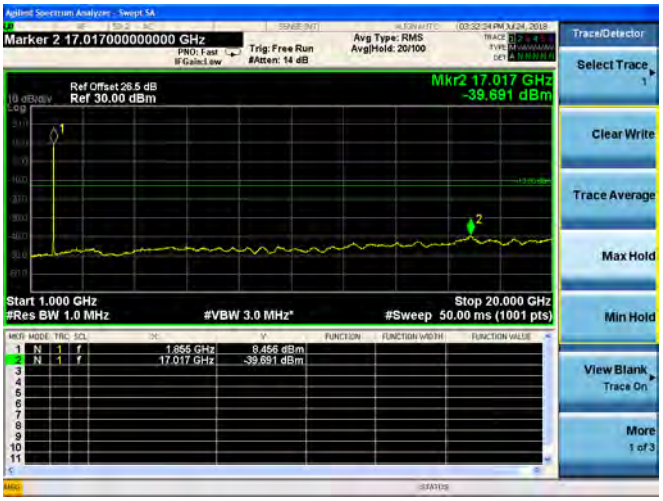
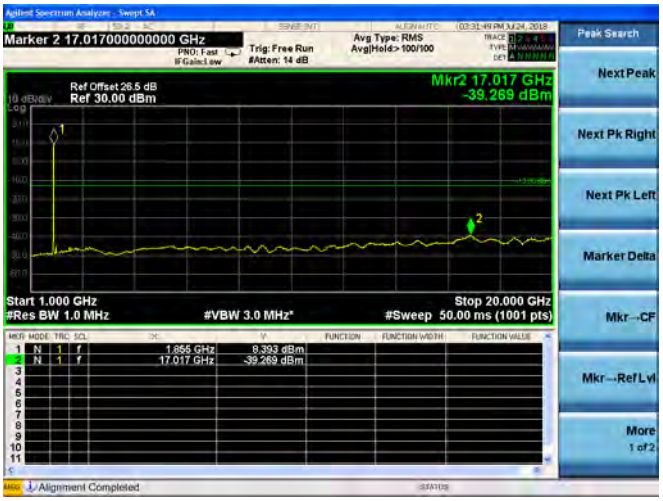
LTE Band 25 1.4MHz BW Mid Channel	
QPSK	
	
16QAM	
	

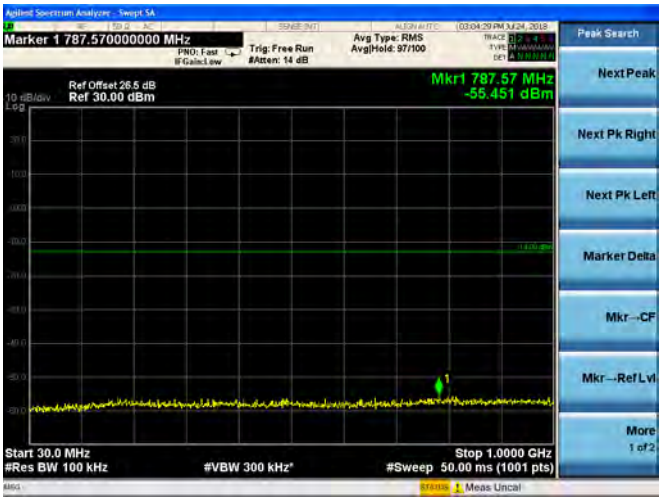
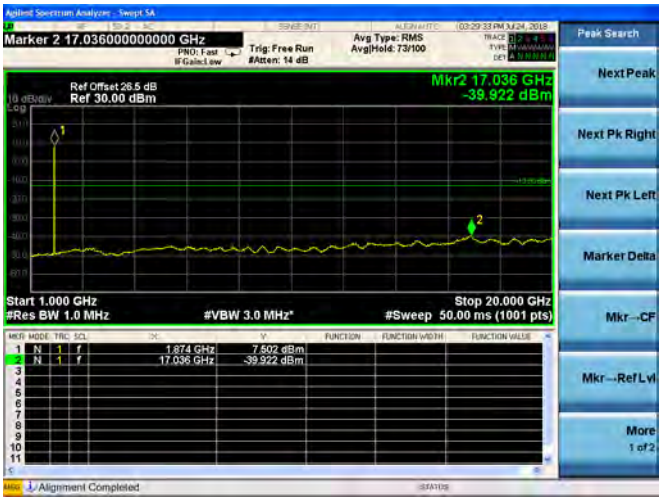
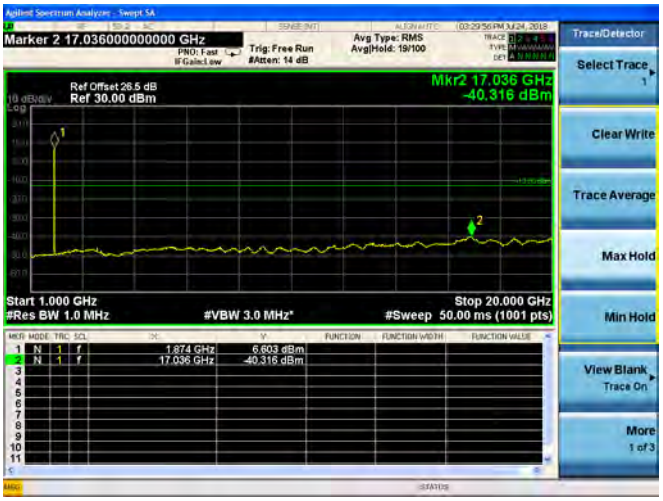
LTE Band 25 1.4MHz BW High Channel	
QPSK	
	
16QAM	
	

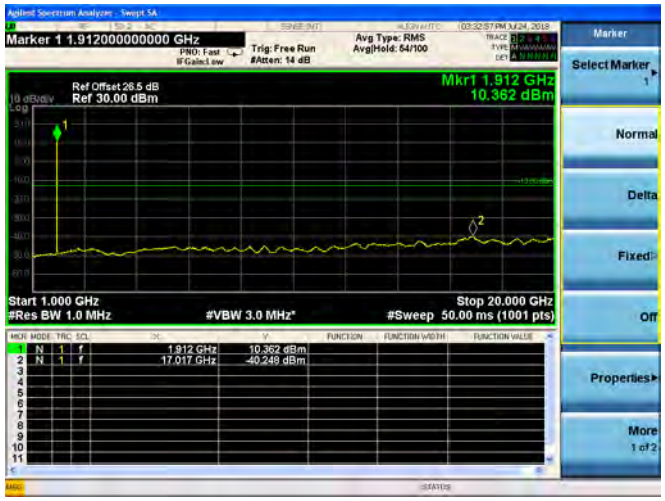
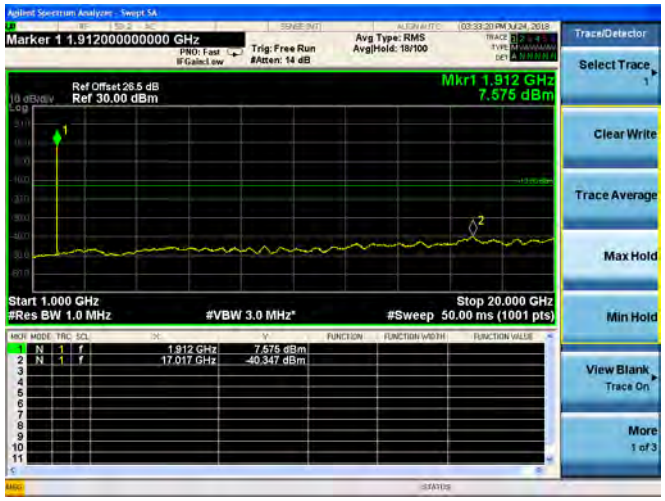
LTE Band 25 3MHz BW Low Channel	
QPSK	
	
16QAM	
	

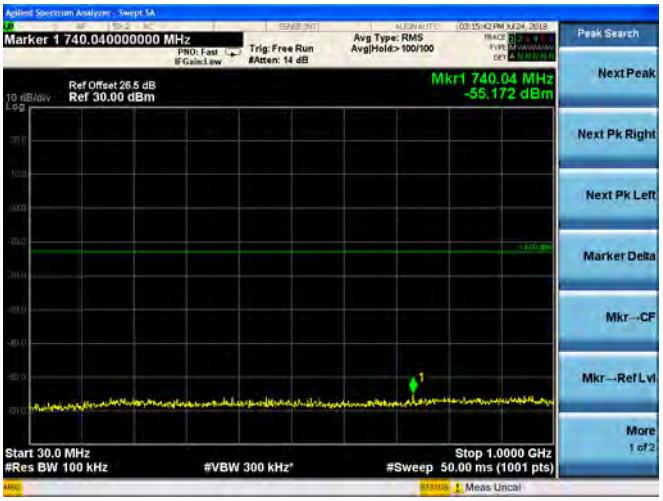
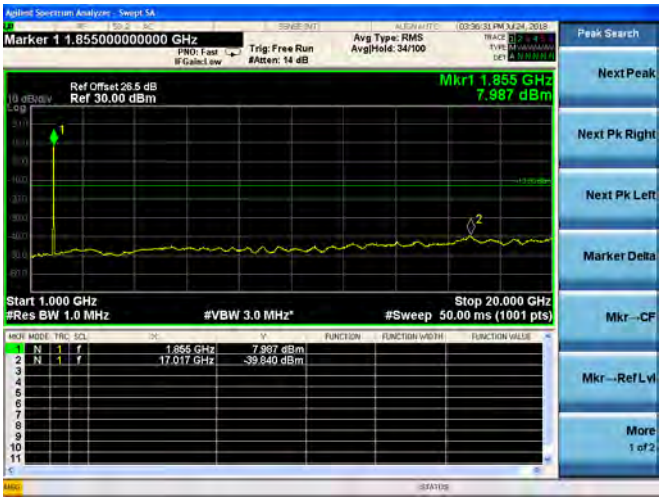
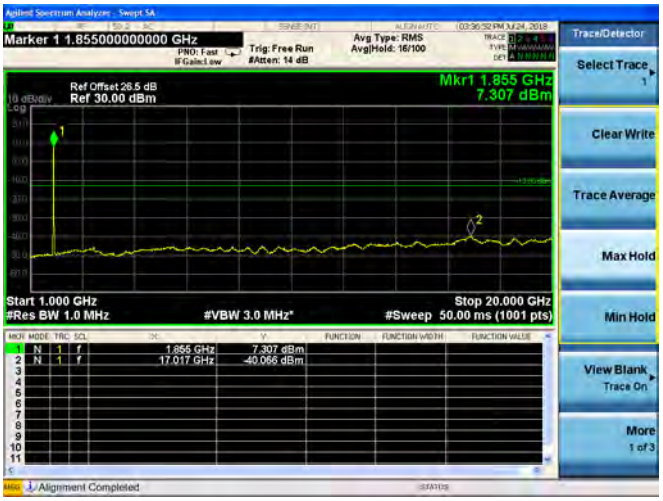
LTE Band 25 3MHz BW Mid Channel	
QPSK	
	
16QAM	
	

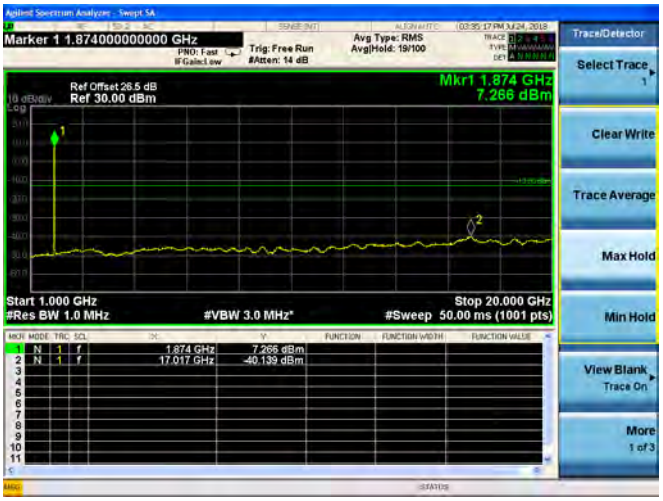
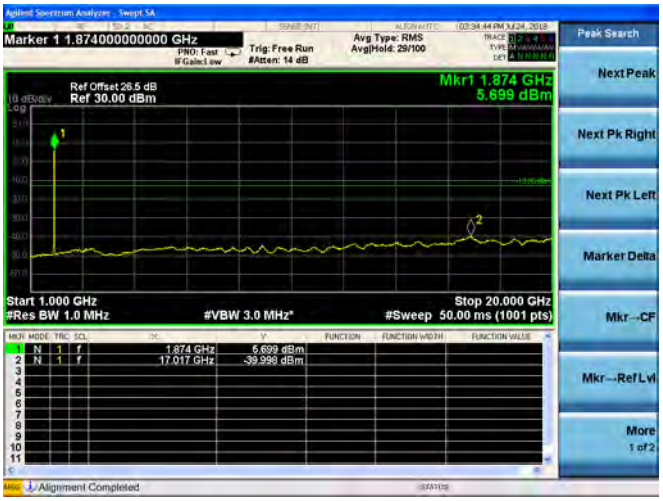
LTE Band 25 3MHz BW High Channel	
QPSK	
	
16QAM	
	

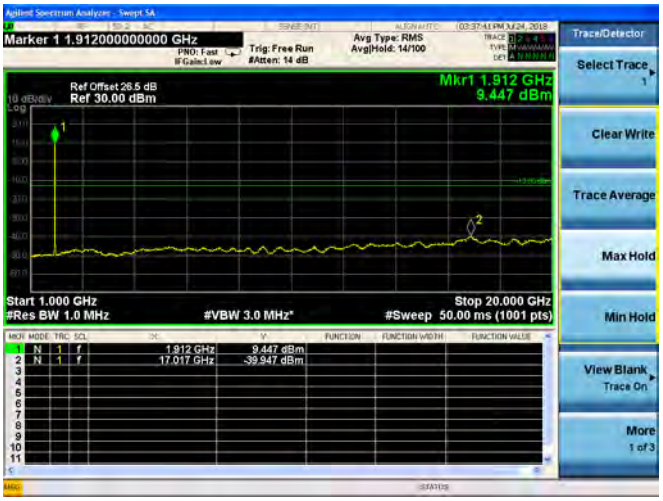
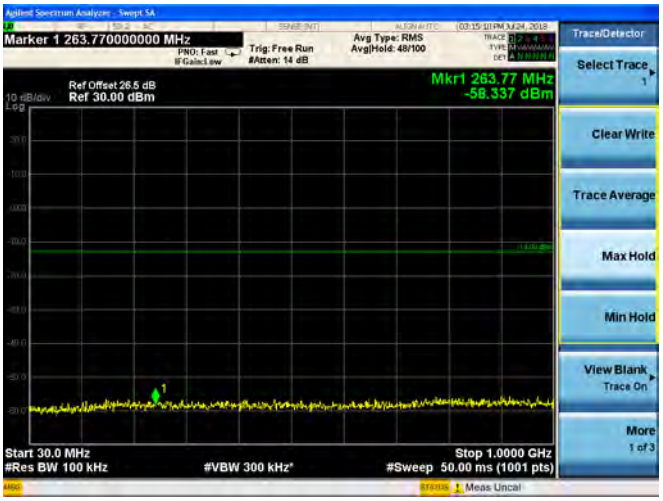
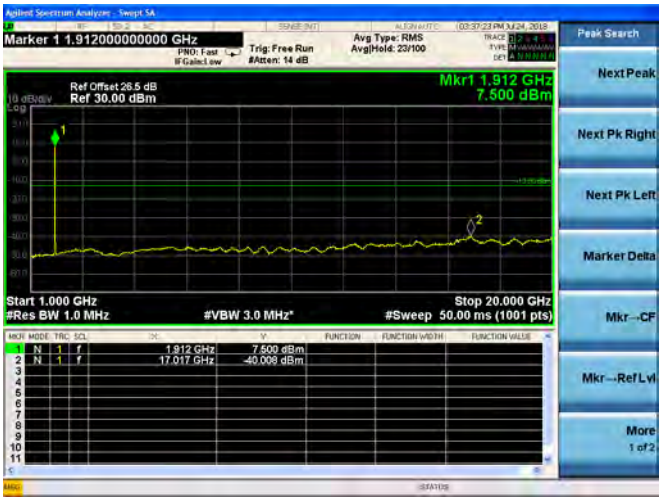
LTE Band 25 5MHz BW Low Channel	
QPSK	
	
16QAM	
	

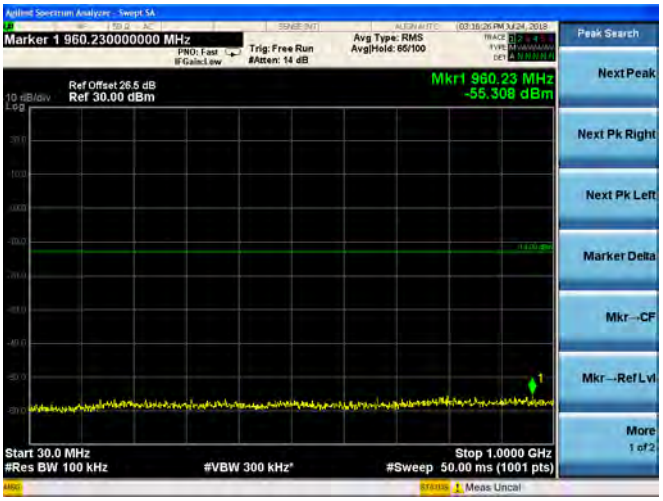
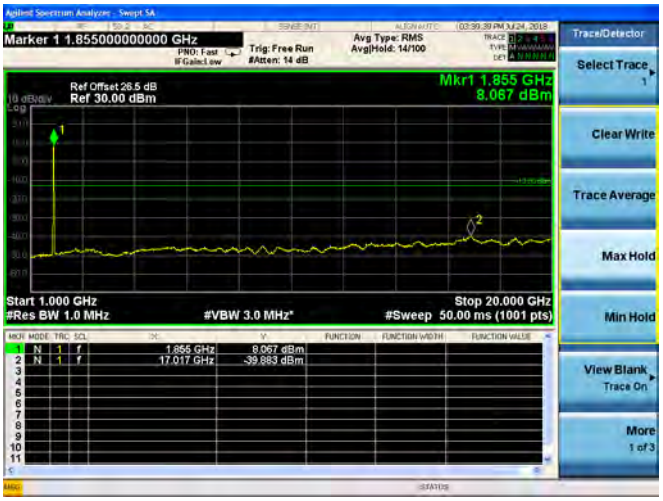
LTE Band 25 5MHz BW Mid Channel	
QPSK	
	
16QAM	
	

LTE Band 25 5MHz BW High Channel	
QPSK	
	
16QAM	
	

LTE Band 25 10MHz BW Low Channel	
QPSK	
	
16QAM	
	

LTE Band 25 10MHz BW Mid Channel	
QPSK	
	
16QAM	
	

LTE Band 25 10MHz BW High Channel	
QPSK	
	
16QAM	
	

LTE Band 25 15MHz BW Low Channel	
QPSK	
	
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	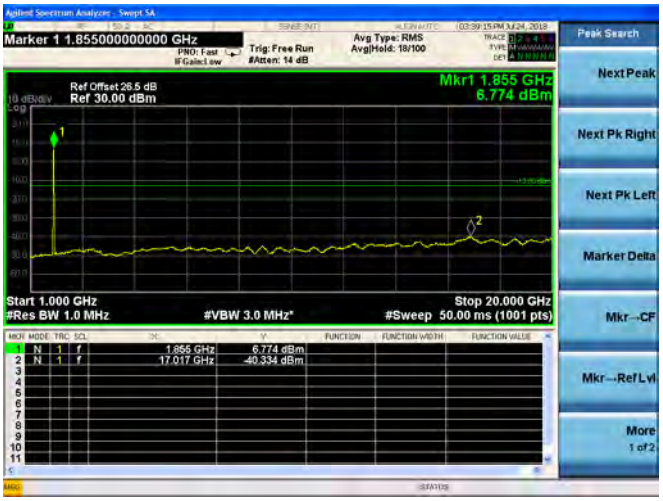

LTE Band 25 15MHz BW Mid Channel	
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	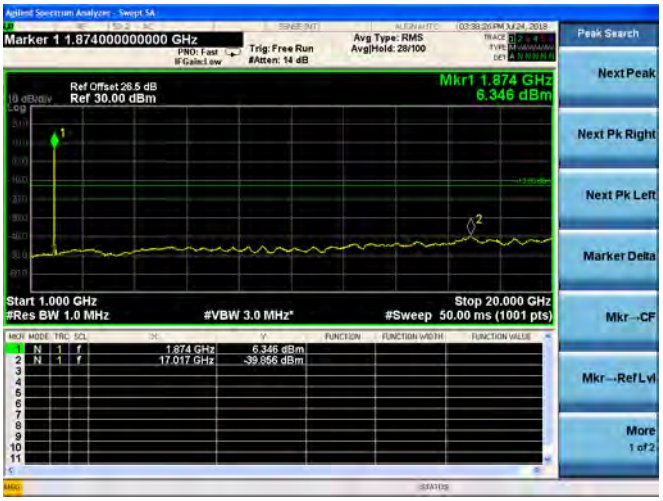
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	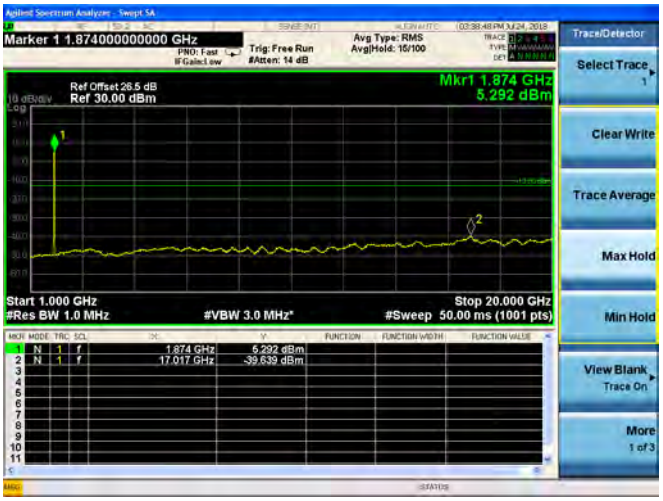

LTE Band 25 15MHz BW High Channel	
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	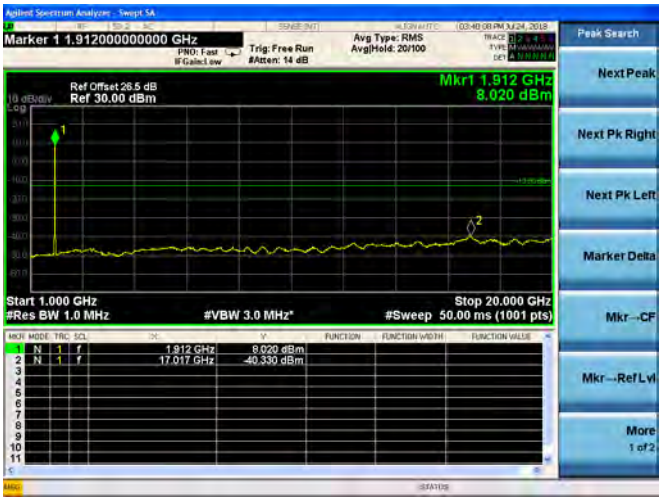
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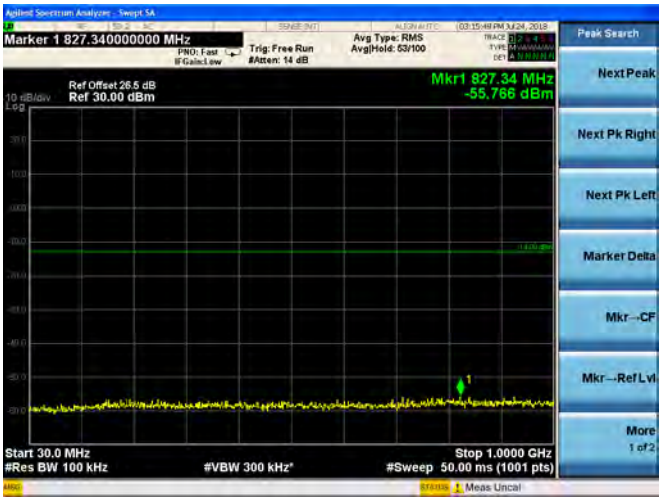	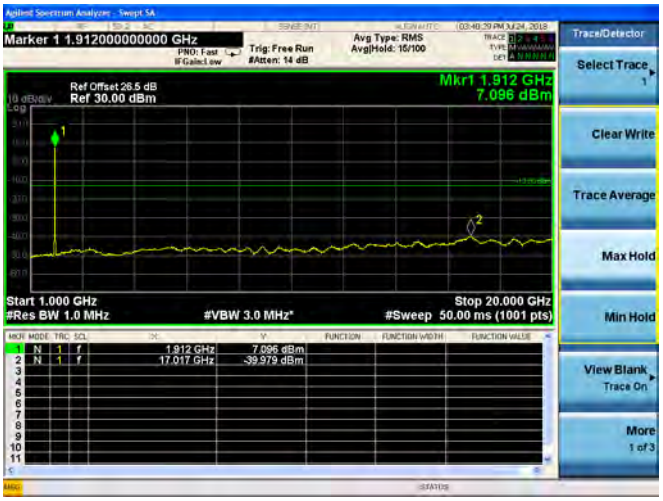

LTE Band 25 20MHz BW Low Channel	
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	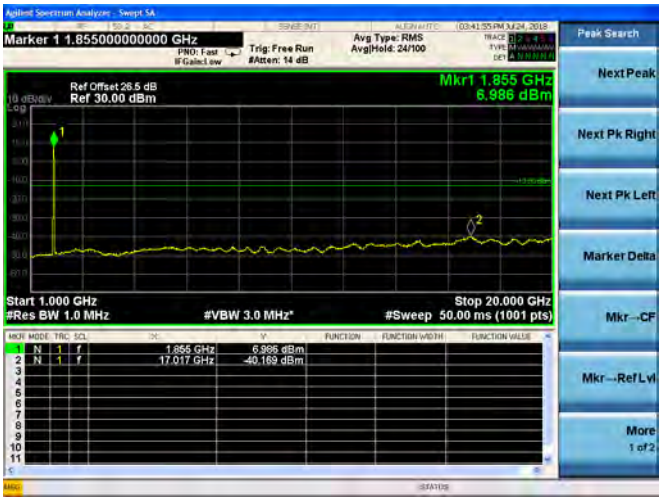
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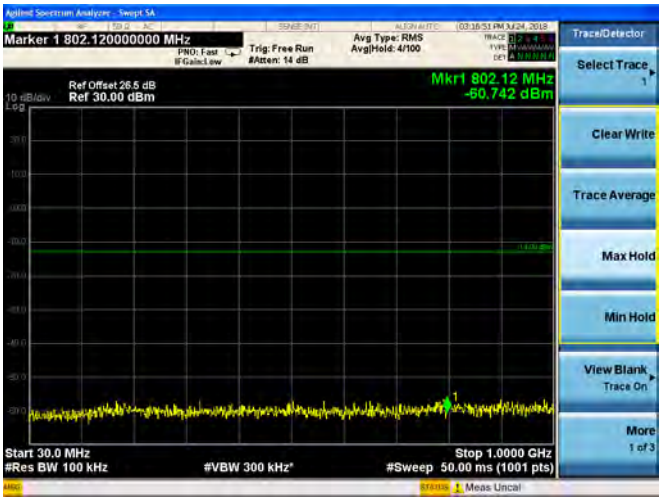	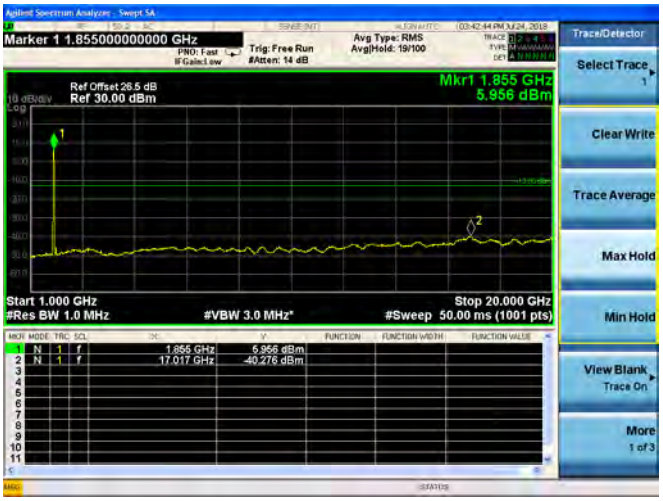

LTE Band 25 20MHz BW Mid Channel	
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	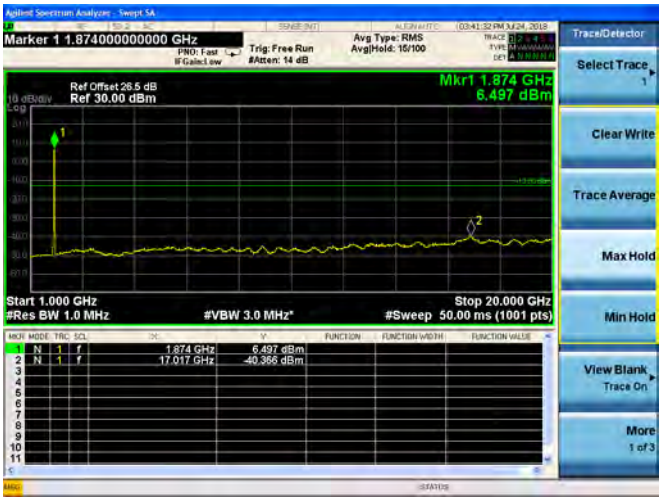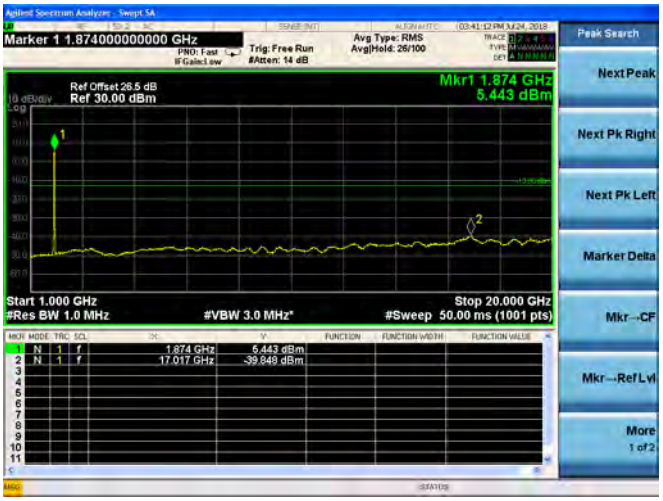
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