



RF TEST REPORT

Applicant ZTE Corporation
FCC ID SRQ-MF971V
Product LTE Ufi
Brand ZTE
Model MF971V
Report No. RXA1706-0172RF03
Issue Date June 30, 2017

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 2 (2017)/ FCC CFR47 Part 27C (2017)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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Summary of Measurement Results

Number	Test Case	Clause in FCC rules	Verdict
1	RF power output	2.1046	PASS
2	Effective Isotropic Radiated power	27.50(d)(4) /27.50(c)(10) /27.50(h)(2)	PASS
3	Occupied Bandwidth	2.1049	PASS
4	Band Edge Compliance	27.53(h) /27.53(g) /27.53(m)	PASS
5	Peak-to-Average Power Ratio	27.50(d)/KDB971168 D01(5.7)	PASS
6	Frequency Stability	2.1055 / 27.54	PASS
7	Spurious Emissions at Antenna Terminals	2.1051 27.53(h) /27.53(g) /27.53(m)	PASS
8	Radiates Spurious Emission	2.1053 /27.53(h) /27.53(g) /27.53(m)	PASS
Date of Testing: June 6, 2017~ June 20, 2017			
Note: PASS: The EUT complies with the essential requirements in the standard. FAIL: The EUT does not comply with the essential requirements in the standard.			

1 Test Laboratory

1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **TA technology (shanghai) co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein .Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above. This report must not be used by the client to claim product certification, approval, or endorsement by any government agencies.

1.2 Test facility

CNAS (accreditation number: L2264)

TA Technology (Shanghai) Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS).

FCC (recognition number is 428261)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

IC (recognition number is 8510A)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Canada to perform electromagnetic emission measurement.

VCCI (recognition number is C-4595, T-2154, R-4113, G-10766)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Japan to perform electromagnetic emission measurement.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

1.3 Testing Location

Company: TA Technology (Shanghai) Co., Ltd.
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2 General Description of Equipment under Test

Client Information

Applicant	ZTE Corporation
Applicant address	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China
Manufacturer	ZTE Corporation
Manufacturer address	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

General information

EUT Description			
Model:	MF971V		
IMEI:	869626020218022		
Hardware Version:	xz6A		
Software Version:	EN_ZTE_MF971V1.0.0B01		
Power Supply:	Battery/AC adapter		
Antenna Type:	Internal Antenna		
Test Mode(s):	LTE Band 4; LTE Band 7; LTE Band 12; LTE Band 17;		
Maximum E.I.R.P./ E.R.P.	LTE Band 4:	23.62dBm	
	LTE Band 7:	26.74dBm	
	LTE Band 12:	18.94dBm	
	LTE Band 17:	18.39dBm	
Rated Power Supply Voltage:	3.8V		
Extreme Voltage:	Minimum: 3.4V Maximum: 4.35V		
Extreme Temperature:	Lowest: -10°C Highest: +55°C		
Operating Frequency Range(s)	Mode	Tx (MHz)	Rx (MHz)
	LTE Band 4	1710 ~ 1755	2110 ~ 2155
	LTE Band 7	2500 ~ 2570	2620 ~ 2690
	LTE Band 12	699 ~ 716	729 ~ 746
	LTE Band 17	704 ~ 716	734 ~ 746
EUT Accessory			
Battery	Manufacturer: ZhongShan Tianmao Battery Co., Ltd. Model: Li3823T43P3h715345		
Adapter	Manufacture: CHENYANG Model : STC-A51A-Z		
USB Extend Cable	100cm Cable, Shielded		
Note: 1. The information of the EUT is declared by the manufacturer.			

3 Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test standards

FCC CFR47 Part 2 (2017)

FCC CFR47 Part 27C (2017)

ANSI/TIA-603-D (2010)

KDB 971168 D01 Power Meas License Digital Systems v02r02

4 Test Configuration

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes. EUT stand-up position (Z axis), lie-down position (X, Y axis). Receiver antenna polarization (horizontal and vertical), the worst emission was found in position (Z axis, vertical polarization) and the worst case was recorded.

All mode and data rates and positions and RB size and modulations were investigated.

Subsequently, only the worst case emissions are reported.

The following testing in LTE is set based on the maximum RF Output Power.

The following testing in different Bandwidth is set to detail in the following table:

Test modes are chosen to be reported as the worst case configuration below for LTE Band 4/7/12/17:

Test items	Modes	Bandwidth (MHz)						Modulation		RB			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	50%	100%	L	M	H
RF power output	LTE 4	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	LTE 7	-	-	O	O	O	O	O	O	O	O	O	O	O	O
	LTE 12	O	O	O	O	-	-	O	O	O	O	O	O	O	O
	LTE 17	-	-	O	O	-	-	O	O	O	O	O	O	O	O
Effective Isotropic Radiated power	LTE 4	O	O	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 7	-	-	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 12	O	O	O	O	-	-	O	O	-	-	O	O	O	O
	LTE 17	-	-	O	O	-	-	O	O	-	-	O	O	O	O
Occupied Bandwidth	LTE 4	O	O	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 7	-	-	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 12	O	O	O	O	-	-	O	O	-	-	O	O	O	O
	LTE 17	-	-	O	O	-	-	O	O	-	-	O	O	O	O
Band Edge Compliance	LTE 4	O	O	O	O	O	O	O	O	O	-	O	O	-	O
	LTE 7	-	-	O	O	O	O	O	O	O	-	O	O	-	O
	LTE 12	O	O	O	O	-	-	O	O	O	-	O	O	-	O
	LTE 17	-	-	O	O	-	-	O	O	O	-	O	O	-	O
Peak-to-Average Power Ratio	LTE 4	O	O	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 7	-	-	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 12	O	O	O	O	-	-	O	O	-	-	O	O	O	O
	LTE 17	-	-	O	O	-	-	O	O	-	-	O	O	O	O
Frequency Stability	LTE 4	O	O	O	O	O	O	O	O	-	-	O	-	O	-
	LTE 7	-	-	O	O	O	O	O	O	-	-	O	-	O	-
	LTE 12	O	O	O	O	-	-	O	O	-	-	O	-	O	-
	LTE 17	-	-	O	O	-	-	O	O	-	-	O	-	O	-



Spurious Emissions at Antenna Terminals	LTE 4	O	O	O	O	O	O	O	-	O	-	-	O	O	O
	LTE 7	-	-	O	O	O	O	O	-	O	-	-	O	O	O
	LTE 12	O	O	O	O	-	-	O	-	O	-	-	O	O	O
	LTE 17	-	-	O	O	-	-	O	-	O	-	-	O	O	O
Radiates Spurious Emission	LTE 4	O	O	O	O	O	O	O	-	O	-	-	O	O	O
	LTE 7	-	-	O	O	O	O	O	-	O	-	-	O	O	O
	LTE 12	O	O	O	O	-	-	O	-	O	-	-	O	O	O
	LTE 17	-	-	O	O	-	-	O	-	O	-	-	O	O	O
Note	1. The mark "O" means that this configuration is chosen for testing. 2. The mark "-" means that this configuration is not testing.														

5 Test Information

5.1 RF Power Output

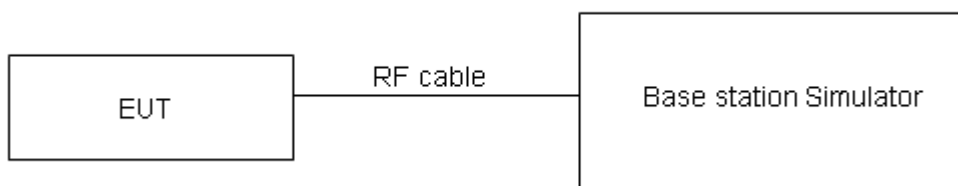
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

During the process of the testing, The EUT is controlled by the Base Station Simulator to ensure max power transmission and proper modulation.

Test Setup



The loss between RF output port of the EUT and the input port of the tester has been taken into consideration.

Limits

No specific RF power output requirements in part 2.1046.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U=0.4$ dB.

Test Results

LTE TDD Band 4				AV Conducted Power(dBm)		
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				19957/1710.7	20175/1732.5	20393/1754.3
1.4MHz	QPSK	1	0	21.46	21.76	21.58
		1	2	21.62	21.72	21.63
		1	5	21.68	21.66	21.50
		3	0	21.57	21.86	21.35
		3	2	21.66	21.70	21.55
		3	3	21.64	21.58	21.65
		6	0	20.57	20.79	20.51
	16QAM	1	0	20.90	20.84	20.68
		1	2	20.87	20.86	20.78
		1	5	20.85	20.85	20.70
		3	0	20.49	20.78	20.31
		3	2	20.69	20.82	20.57
		3	3	20.71	20.54	20.66
		6	0	19.65	19.78	19.49
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				19965/1711.5	20175/1732.5	20385/1753.5
3MHz	QPSK	1	0	21.48	21.80	21.61
		1	7	21.65	21.77	21.67
		1	14	21.71	21.71	21.54
		8	0	20.67	20.98	20.48
		8	4	20.78	20.80	20.67
		8	7	20.74	20.69	20.75
		15	0	20.60	20.83	20.54
	16QAM	1	0	20.93	20.86	20.71
		1	7	20.90	20.91	20.82
		1	14	20.87	20.89	20.73
		8	0	19.60	19.91	19.43
		8	4	19.80	19.95	19.69
		8	7	19.81	19.66	19.79
		15	0	19.68	19.82	19.52
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				19975/1712.5	20175/1732.5	20375/1752.5
5MHz	QPSK	1	0	21.45	21.78	21.57
		1	13	21.63	21.73	21.64
		1	24	21.68	21.66	21.50
		12	0	20.64	20.93	20.44
		12	6	20.76	20.76	20.62
		12	13	20.72	20.67	20.71
		25	0	20.58	20.82	20.52



	16QAM	1	0	20.90	20.82	20.68
		1	13	20.87	20.89	20.79
		1	24	20.84	20.87	20.69
		12	0	19.58	19.87	19.40
		12	6	19.77	19.90	19.65
		12	13	19.78	19.61	19.75
		25	0	19.66	19.78	19.47
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20000/1715	20175/1732.5	20350/1750
10MHz	QPSK	1	0	21.47	21.79	21.60
		1	25	21.66	21.78	21.68
		1	49	21.70	21.70	21.53
		25	0	20.67	20.98	20.48
		25	13	20.79	20.81	20.66
		25	25	20.74	20.71	20.76
		50	0	20.66	20.84	20.56
	16QAM	1	0	20.92	20.85	20.70
		1	25	20.90	20.93	20.82
		1	49	20.87	20.89	20.72
		25	0	19.61	19.92	19.44
		25	13	19.79	19.94	19.68
		25	25	19.81	19.66	19.79
		50	0	19.69	19.83	19.51
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20025/1717.5	20175/1732.5	20325/1747.5
15MHz	QPSK	1	0	21.46	21.75	21.58
		1	38	21.64	21.77	21.65
		1	74	21.67	21.65	21.49
		36	0	20.65	20.94	20.45
		36	18	20.76	20.76	20.62
		36	39	20.71	20.68	20.72
		75	0	20.64	20.80	20.51
	16QAM	1	0	20.87	20.83	20.68
		1	38	20.88	20.90	20.80
		1	74	20.84	20.85	20.69
		36	0	19.58	19.90	19.41
		36	18	19.76	19.89	19.64
		36	39	19.79	19.62	19.76
		75	0	19.66	19.78	19.47
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20050/1720	20175/1732.5	20300/1745
20MHz	QPSK	1	0	21.43	21.71	21.55
		1	50	21.63	21.73	21.63



		1	99	21.65	21.64	21.46
		50	0	20.62	20.89	20.41
		50	25	20.74	20.72	20.59
		50	50	20.68	20.63	20.68
		100	0	20.61	20.75	20.47
	16QAM	1	0	20.85	20.79	20.63
		1	50	20.84	20.88	20.76
		1	99	20.82	20.82	20.67
		50	0	19.55	19.86	19.38
		50	25	19.73	19.87	19.61
		50	50	19.76	19.57	19.72
		100	0	19.64	19.74	19.44

LTE FDD Band 7				Conducted Power(dBm)		
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20775/2502.5	21100/2535	21425/2567.5
5MHz	QPSK	1	0	21.49	21.58	21.49
		1	13	21.80	21.79	21.85
		1	24	21.62	21.16	21.28
		12	0	20.41	20.51	20.15
		12	6	20.23	20.60	20.49
		12	13	20.29	20.19	20.38
		25	0	20.37	20.42	20.37
	16QAM	1	0	20.53	20.37	20.58
		1	13	20.50	20.55	20.69
		1	24	20.15	20.22	20.42
		12	0	19.49	19.42	19.40
		12	6	19.44	19.37	19.44
		12	13	19.23	19.24	19.35
		25	0	19.31	19.32	19.30
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20800/2505	21100/2535	21400/2565
10MHz	QPSK	1	0	21.51	21.59	21.52
		1	25	21.83	21.84	21.89
		1	49	21.64	21.20	21.31
		25	0	20.44	20.56	20.19
		25	13	20.26	20.65	20.53
		25	25	20.31	20.23	20.43
		50	0	20.45	20.44	20.41
	16QAM	1	0	20.55	20.40	20.60
		1	25	20.53	20.59	20.72
		1	49	20.18	20.24	20.45



		25	0	19.52	19.47	19.44
		25	13	19.46	19.41	19.47
		25	25	19.26	19.29	19.39
		50	0	19.34	19.37	19.34
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20825/2507.5	21100/2535	21375/2562.5
15MHz	QPSK	1	0	21.50	21.55	21.50
		1	38	21.81	21.83	21.86
		1	74	21.61	21.15	21.27
		36	0	20.42	20.52	20.16
		36	18	20.23	20.60	20.49
		36	39	20.28	20.20	20.39
		75	0	20.43	20.40	20.36
	16QAM	1	0	20.50	20.38	20.58
		1	38	20.51	20.56	20.70
		1	74	20.15	20.20	20.42
		36	0	19.49	19.45	19.41
		36	18	19.43	19.36	19.43
		36	39	19.24	19.25	19.36
		75	0	19.31	19.32	19.30
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20850/2510	21100/2535	21350/2560
20MHz	QPSK	1	0	21.47	21.51	21.47
		1	50	21.80	21.79	21.84
		1	99	21.59	21.14	21.24
		50	0	20.39	20.47	20.12
		50	25	20.21	20.56	20.46
		50	50	20.25	20.15	20.35
		100	0	20.40	20.35	20.32
	16QAM	1	0	20.48	20.34	20.53
		1	50	20.47	20.54	20.66
		1	99	20.13	20.17	20.40
		50	0	19.46	19.41	19.38
		50	25	19.40	19.34	19.40
		50	50	19.21	19.20	19.32
		100	0	19.29	19.28	19.27

LTE FDD Band 12				AV Conducted Power(dBm)		
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				23017/699.7	23095/707.5	23173/715.3
1.4MHz	QPSK	1	0	23.08	23.27	23.05
		1	2	23.10	23.39	22.94
		1	5	23.07	23.40	23.14
		3	0	22.77	23.05	22.98
		3	2	22.96	22.99	23.06
		3	3	22.93	23.00	23.04
		6	0	22.11	22.04	22.07
	16QAM	1	0	22.00	22.28	22.05
		1	2	21.97	22.17	21.79
		1	5	22.24	22.50	21.92
		3	0	21.84	21.92	21.93
		3	2	22.07	22.09	22.07
		3	3	21.95	22.17	22.00
		6	0	21.13	20.94	21.14
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				23025/700.5	23095/707.5	23165/714.5
3MHz	QPSK	1	0	23.10	23.31	23.08
		1	7	23.13	23.44	22.98
		1	14	23.10	23.45	23.18
		8	0	21.87	22.17	22.11
		8	4	22.08	22.09	22.18
		8	7	22.03	22.11	22.14
		15	0	22.14	22.08	22.10
	16QAM	1	0	22.03	22.30	22.08
		1	7	22.00	22.22	21.83
		1	14	22.26	22.54	21.95
		8	0	20.95	21.05	21.05
		8	4	21.18	21.22	21.19
		8	7	21.05	21.29	21.13
		15	0	21.16	20.98	21.17
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				23035/701.5	23095/707.5	23155/713.5
5MHz	QPSK	1	0	23.07	23.29	23.04
		1	13	23.11	23.40	22.95
		1	24	23.07	23.40	23.14
		12	0	21.84	22.12	22.07
		12	6	22.06	22.05	22.13
		12	13	22.01	22.09	22.10
		25	0	22.12	22.07	22.08



	16QAM	1	0	22.00	22.26	22.05
		1	13	21.97	22.20	21.80
		1	24	22.23	22.52	21.91
		12	0	20.93	21.01	21.02
		12	6	21.15	21.17	21.15
		12	13	21.02	21.24	21.09
		25	0	21.14	20.94	21.12
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				23060/704	23095/707.5	23130/711
10MHz	QPSK	1	0	23.05	23.22	23.02
		1	25	23.11	23.40	22.94
		1	49	23.04	23.38	23.10
		25	0	21.82	22.08	22.04
		25	13	22.04	22.01	22.10
		25	25	21.97	22.05	22.07
		50	0	22.15	22.00	22.03
	16QAM	1	0	21.95	22.23	22.00
		1	25	21.94	22.19	21.77
		1	49	22.21	22.47	21.89
		25	0	20.90	21.00	21.00
		25	13	21.11	21.14	21.11
		25	25	21.00	21.20	21.06
		50	0	21.12	20.90	21.09

LTE FDD Band 17				Conducted Power(dBm)		
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				23755/706.5	23790/710	23825/713.5
5MHz	QPSK	1	0	23.19	23.24	23.03
		1	13	23.20	23.02	23.13
		1	24	23.05	23.12	23.30
		12	0	22.11	22.00	22.09
		12	6	22.22	22.07	22.32
		12	13	22.30	22.06	22.11
		25	0	22.01	22.41	22.00
	16QAM	1	0	22.27	22.41	22.15
		1	13	22.27	22.22	22.37
		1	24	22.19	22.49	22.25
		12	0	21.10	21.11	21.02
		12	6	21.18	21.26	21.28
		12	13	21.11	21.02	21.06
		25	0	21.18	21.29	21.23



Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				23780/709	23790/710	23800/711
10MHz	QPSK	1	0	23.17	23.17	23.01
		1	25	23.20	23.02	23.12
		1	49	23.02	23.10	23.26
		25	0	22.09	21.96	22.06
		25	13	22.20	22.03	22.29
		25	25	22.26	22.02	22.08
		50	0	22.04	22.34	21.95
	16QAM	1	0	22.22	22.38	22.10
		1	25	22.24	22.21	22.34
		1	49	22.17	22.44	22.23
		25	0	21.07	21.10	21.00
		25	13	21.14	21.23	21.24
		25	25	21.09	20.98	21.03
		50	0	21.16	21.25	21.20

5.2 Effective Isotropic Radiated Power

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

1. The testing follows FCC KDB 971168 v02r02 Section 5.8 and ANSI / TIA-603-D-2010 Section 2.2.12.
2. Above 30MHz: The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H). Above 1GHz: (Note: the FCC's permission to use 1.5m as an alternative per TCBC Conf call of Dec. 2, 2014.) The EUT is placed on a turntable 1.5 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).
3. A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
4. The EUT is then put into continuously transmitting mode at its maximum power level during the test. Set Test Receiver or Spectrum RBW=1MHz, VBW=3MHz, And the maximum value of the receiver should be recorded as (Pr).
5. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (PMea) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
6. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (Pcl) ,the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAg) should be recorded after test.
7. The measurement results are obtained as described below:

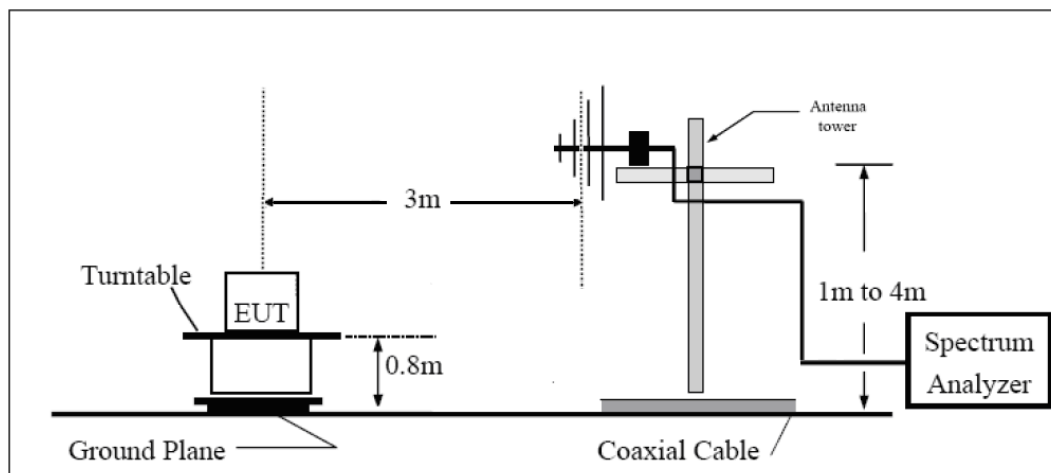
$$\text{Power(EIRP)} = \text{PMea} - \text{PAg} - \text{Pcl} + \text{Ga}$$
The measurement results are amend as described below:

$$\text{Power(EIRP)} = \text{PMea} - \text{Pcl} + \text{Ga}$$
8. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP

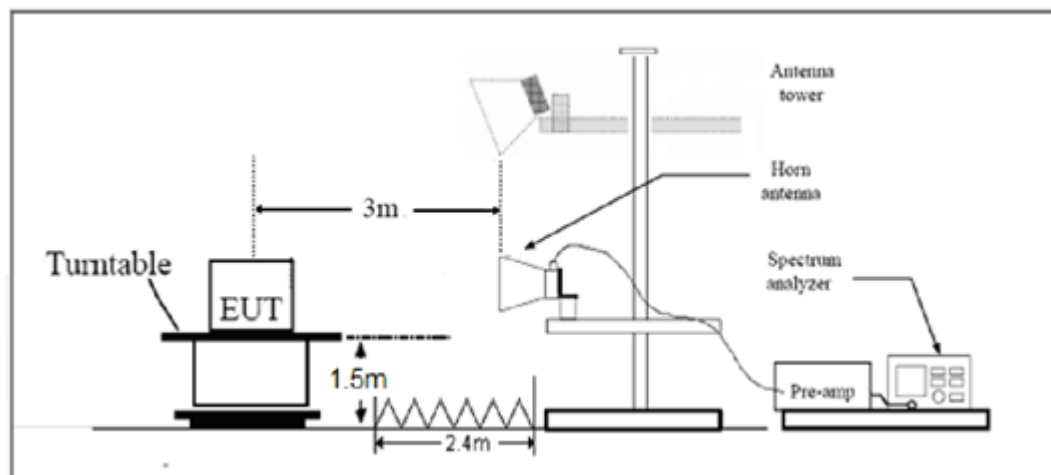
= EIRP-2.15dBi.

Test setup

30MHz~~~ 1GHz



Above 1GHz



Note: Area side:2.4mX3.6m

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the worst case was recorded.

Limits

Rule Part 27.50(c) (10) specifies that “Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP”

Rule Part 27.50(d) (4) specifies that “Fixed, mobile and portable (hand-held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP”

Rule Part 27.50(h) (2) specifies that “Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.”

Part 27.50(c)(10)Limit (ERP)	$\leq 3 \text{ W}$ (34.77 dBm)
Part 27.50(d)(4)Limit (EIRP)	$\leq 1 \text{ W}$ (30 dBm)
Part 27.50(h)(2) Limit (EIRP)	$\leq 2 \text{ W}$ (33 dBm)

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 1.19 \text{ dB}$

Test Results

LTE Band 4								
Bandwidth	Frequency (MHz)	Ant Pot (H/V)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	Conclusion
1.4MHz (QPSK)	1710.7	H	-33.00	-54.30	0.00	1.44	22.74	Pass
	1732.5	H	-33.66	-54.32	0.00	1.57	22.22	Pass
	1754.3	H	-34.59	-54.10	0.00	1.72	21.23	Pass
	1710.7	V	-34.28	-54.35	0.00	1.44	21.51	Pass
	1732.5	V	-33.78	-54.41	0.00	1.57	22.20	Pass
	1754.3	V	-33.30	-54.52	0.00	1.72	22.94	Pass
1.4MHz (16QAM)	1710.7	H	-33.32	-54.30	0.00	1.44	22.42	Pass
	1732.5	H	-33.97	-54.32	0.00	1.57	21.91	Pass
	1754.3	H	-35.00	-54.10	0.00	1.72	20.82	Pass
	1710.7	V	-34.49	-54.35	0.00	1.44	21.30	Pass
	1732.5	V	-34.08	-54.41	0.00	1.57	21.90	Pass
	1754.3	V	-33.62	-54.52	0.00	1.72	22.62	Pass
3MHz (QPSK)	1711.5	H	-32.61	-54.33	0.00	1.44	23.16	Pass
	1732.5	H	-33.75	-54.32	0.00	1.57	22.13	Pass
	1753.5	H	-34.77	-54.11	0.00	1.72	21.06	Pass
	1711.5	V	-34.08	-54.35	0.00	1.44	21.71	Pass
	1732.5	V	-33.74	-54.41	0.00	1.57	22.24	Pass
	1753.5	V	-33.61	-54.48	0.00	1.72	22.59	Pass
3MHz (16QAM)	1711.5	H	-32.92	-54.33	0.00	1.44	22.85	Pass
	1732.5	H	-34.06	-54.32	0.00	1.57	21.82	Pass
	1753.5	H	-35.08	-54.11	0.00	1.72	20.75	Pass
	1711.5	V	-34.39	-54.35	0.00	1.44	21.40	Pass
	1732.5	V	-34.05	-54.41	0.00	1.57	21.93	Pass
	1753.5	V	-33.95	-54.48	0.00	1.72	22.25	Pass
5MHz (QPSK)	1712.5	H	-33.62	-54.34	0.00	1.44	22.16	Pass
	1732.5	H	-34.25	-54.32	0.00	1.57	21.63	Pass
	1752.5	H	-34.21	-54.13	0.00	1.72	21.63	Pass
	1712.5	V	-34.93	-54.38	0.00	1.44	20.89	Pass
	1732.5	V	-34.75	-54.41	0.00	1.57	21.23	Pass
	1752.5	V	-34.96	-54.47	0.00	1.72	21.23	Pass
5MHz (16QAM)	1712.5	H	-33.93	-54.34	0.00	1.44	21.85	Pass
	1732.5	H	-34.55	-54.32	0.00	1.57	21.33	Pass
	1752.5	H	-34.54	-54.13	0.00	1.72	21.30	Pass
	1712.5	V	-35.25	-54.38	0.00	1.44	20.57	Pass
	1732.5	V	-35.00	-54.41	0.00	1.57	20.98	Pass
	1752.5	V	-35.20	-54.47	0.00	1.72	20.99	Pass
10MHz (QPSK)	1715	H	-32.15	-54.33	0.00	1.44	23.62	Pass
	1732.5	H	-32.62	-54.32	0.00	1.57	23.26	Pass
	1750	H	-32.96	-54.12	0.00	1.66	22.82	Pass



	1715	V	-35.58	-54.32	0.00	1.44	20.18	Pass
	1732.5	V	-35.31	-54.41	0.00	1.57	20.67	Pass
	1750	V	-35.07	-54.52	0.00	1.66	21.11	Pass
10MHz (16QAM)	1715	H	-32.45	-54.33	0.00	1.44	23.32	Pass
	1732.5	H	-32.93	-54.32	0.00	1.57	22.95	Pass
	1750	H	-33.27	-54.12	0.00	1.66	22.51	Pass
	1715	V	-36.26	-54.32	0.00	1.44	19.50	Pass
	1732.5	V	-35.63	-54.41	0.00	1.57	20.35	Pass
	1750	V	-35.38	-54.52	0.00	1.66	20.80	Pass
15MHz (QPSK)	1717.5	H	-32.62	-54.35	0.00	1.49	23.21	Pass
	1732.5	H	-32.33	-54.32	0.00	1.57	23.55	Pass
	1747.5	H	-33.28	-54.17	0.00	1.66	22.55	Pass
	1717.5	V	-36.03	-54.39	0.00	1.49	19.85	Pass
	1732.5	V	-34.94	-54.41	0.00	1.57	21.04	Pass
	1747.5	V	-33.62	-54.51	0.00	1.66	22.55	Pass
15MHz (16QAM)	1717.5	H	-32.91	-54.35	0.00	1.49	22.92	Pass
	1732.5	H	-32.63	-54.32	0.00	1.57	23.25	Pass
	1747.5	H	-33.59	-54.17	0.00	1.66	22.24	Pass
	1717.5	V	-36.33	-54.39	0.00	1.49	19.55	Pass
	1732.5	V	-35.25	-54.41	0.00	1.57	20.73	Pass
	1747.5	V	-33.96	-54.51	0.00	1.66	22.21	Pass
20MHz (QPSK)	1720	H	-32.80	-54.37	0.00	1.49	23.06	Pass
	1732.5	H	-32.46	-54.32	0.00	1.57	23.42	Pass
	1745	H	-33.40	-54.23	0.00	1.63	22.46	Pass
	1720	V	-36.77	-54.44	0.00	1.49	19.16	Pass
	1732.5	V	-35.72	-54.41	0.00	1.57	20.26	Pass
	1745	V	-36.19	-54.59	0.00	1.63	20.03	Pass
20MHz (16QAM)	1720	H	-33.21	-54.37	0.00	1.49	22.65	Pass
	1732.5	H	-32.77	-54.32	0.00	1.57	23.11	Pass
	1745	H	-33.80	-54.23	0.00	1.63	22.06	Pass
	1720	V	-37.16	-54.44	0.00	1.49	18.77	Pass
	1732.5	V	-36.11	-54.41	0.00	1.57	19.87	Pass
	1745	V	-36.57	-54.59	0.00	1.63	19.65	Pass

LTE Band 7								
Band width	Frequency (MHz)	Ant Pot (H/V)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	Conclusion
5MHz (QPSK)	2502.5	H	-36.07	-59.64	0.00	1.81	25.38	Pass
	2535	H	-39.53	-59.72	0.00	1.81	22.00	Pass
	2567.5	H	-40.08	-59.98	0.00	1.83	21.73	Pass
	2502.5	V	-35.87	-59.31	0.00	1.81	25.25	Pass
	2535	V	-34.52	-59.11	0.00	1.81	26.40	Pass
	2567.5	V	-35.40	-59.59	0.00	1.83	26.02	Pass



5MHz (16QAM)	2502.5	H	-36.12	-59.64	0.00	1.81	25.33	Pass
	2535	H	-39.83	-59.72	0.00	1.81	21.70	Pass
	2567.5	H	-40.39	-59.98	0.00	1.83	21.42	Pass
	2502.5	V	-36.17	-59.31	0.00	1.81	24.95	Pass
	2535	V	-34.82	-59.11	0.00	1.81	26.10	Pass
	2567.5	V	-35.71	-59.59	0.00	1.83	25.71	Pass
10MHz (QPSK)	2505	H	-36.23	-59.61	0.00	1.82	25.20	Pass
	2535	H	-35.56	-59.72	0.00	1.81	25.97	Pass
	2565	H	-36.24	-60.02	0.00	1.81	25.59	Pass
	2505	V	-35.89	-59.33	0.00	1.82	25.26	Pass
	2535	V	-34.37	-59.11	0.00	1.81	26.55	Pass
	2565	V	-35.22	-59.59	0.00	1.81	26.18	Pass
10MHz (16QAM)	2505	H	-36.53	-59.61	0.00	1.82	24.90	Pass
	2535	H	-35.88	-59.72	0.00	1.81	25.65	Pass
	2565	H	-36.55	-60.02	0.00	1.81	25.28	Pass
	2505	V	-36.20	-59.33	0.00	1.82	24.95	Pass
	2535	V	-34.62	-59.11	0.00	1.81	26.30	Pass
	2565	V	-35.55	-59.59	0.00	1.81	25.85	Pass
15MHz (QPSK)	2507.5	H	-34.91	-59.71	0.00	1.80	26.60	Pass
	2535	H	-35.61	-59.72	0.00	1.81	25.92	Pass
	2562.5	H	-36.40	-60.08	0.00	1.82	25.50	Pass
	2507.5	V	-35.37	-59.29	0.00	1.80	25.72	Pass
	2535	V	-34.79	-59.72	0.00	1.81	26.74	Pass
	2562.5	V	-35.17	-59.46	0.00	1.82	26.11	Pass
15MHz (16QAM)	2507.5	H	-35.21	-59.71	0.00	1.80	26.30	Pass
	2535	H	-35.93	-59.72	0.00	1.81	25.60	Pass
	2562.5	H	-36.72	-60.08	0.00	1.82	25.18	Pass
	2507.5	V	-35.68	-59.29	0.00	1.80	25.41	Pass
	2535	V	-35.14	-59.72	0.00	1.81	26.39	Pass
	2562.5	V	-35.48	-59.46	0.00	1.82	25.80	Pass
20MHz (QPSK)	2510	H	-35.01	-59.52	0.00	1.77	26.28	Pass
	2535	H	-35.51	-59.72	0.00	1.81	26.02	Pass
	2560	H	-36.44	-60.01	0.00	1.82	25.39	Pass
	2510	V	-35.20	-59.09	0.00	1.77	25.66	Pass
	2535	V	-34.91	-59.72	0.00	1.81	26.62	Pass
	2560	V	-35.31	-59.52	0.00	1.82	26.03	Pass
20MHz (16QAM)	2510	H	-35.31	-59.52	0.00	1.77	25.98	Pass
	2535	H	-35.83	-59.72	0.00	1.81	25.70	Pass
	2560	H	-36.75	-60.01	0.00	1.82	25.08	Pass
	2510	V	-35.53	-59.09	0.00	1.77	25.33	Pass
	2535	V	-35.23	-59.72	0.00	1.81	26.30	Pass
	2560	V	-35.62	-59.52	0.00	1.82	25.72	Pass

LTE Band 12								
andwidth	Frequency (MHz)	Ant Pot (H/V)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	ERP (dBm)	Conclusion
1.4MHz (QPSK)	699.7	H	-32.29	-49.12	0.00	2.04	18.87	Pass
	707.5	H	-33.92	-49.39	0.00	2.03	17.51	Pass
	715.3	H	-33.83	-49.76	0.00	1.99	17.92	Pass
	699.7	V	-46.15	-48.91	0.00	2.04	4.81	Pass
	707.5	V	-45.79	-49.12	0.00	2.03	5.36	Pass
	715.3	V	-44.93	-49.43	0.00	1.99	6.50	Pass
1.4MHz (16QAM)	699.7	H	-32.61	-49.12	0.00	2.04	18.55	Pass
	707.5	H	-34.23	-49.39	0.00	2.03	17.20	Pass
	715.3	H	-34.18	-49.76	0.00	1.99	17.57	Pass
	699.7	V	-46.45	-48.91	0.00	2.04	4.51	Pass
	707.5	V	-46.10	-49.12	0.00	2.03	5.05	Pass
	715.3	V	-45.26	-49.43	0.00	1.99	6.17	Pass
3MHz (QPSK)	700.5	H	-32.48	-49.15	0.00	2.04	18.71	Pass
	707.5	H	-33.36	-49.39	0.00	2.03	18.07	Pass
	714.5	H	-33.95	-49.73	0.00	2.00	17.78	Pass
	700.5	V	-46.40	-48.94	0.00	2.04	4.58	Pass
	707.5	V	-45.79	-49.12	0.00	2.03	5.36	Pass
	714.5	V	-45.20	-49.37	0.00	2.00	6.17	Pass
3MHz (16QAM)	700.5	H	-32.79	-49.15	0.00	2.04	18.40	Pass
	707.5	H	-33.68	-49.39	0.00	2.03	17.75	Pass
	714.5	H	-34.25	-49.73	0.00	2.00	17.48	Pass
	700.5	V	-46.72	-48.94	0.00	2.04	4.26	Pass
	707.5	V	-46.10	-49.12	0.00	2.03	5.05	Pass
	714.5	V	-45.51	-49.37	0.00	2.00	5.86	Pass
5MHz (QPSK)	701.5	H	-32.28	-49.17	0.00	2.04	18.94	Pass
	707.5	H	-32.92	-49.39	0.00	2.03	18.51	Pass
	713.5	H	-33.31	-49.72	0.00	2.01	18.41	Pass
	701.5	V	-47.16	-48.95	0.00	2.04	3.83	Pass
	707.5	V	-45.97	-49.12	0.00	2.03	5.18	Pass
	713.5	V	-45.67	-49.35	0.00	2.01	5.69	Pass
5MHz (16QAM)	701.5	H	-32.59	-49.17	0.00	2.04	18.63	Pass
	707.5	H	-33.25	-49.39	0.00	2.03	18.18	Pass
	713.5	H	-33.62	-49.72	0.00	2.01	18.10	Pass
	701.5	V	-47.49	-48.95	0.00	2.04	3.50	Pass
	707.5	V	-46.30	-49.12	0.00	2.03	4.85	Pass
	713.5	V	-46.00	-49.35	0.00	2.01	5.36	Pass
10MHz (QPSK)	704	H	-32.36	-49.25	0.00	2.04	18.93	Pass
	707.5	H	-32.86	-49.39	0.00	2.03	18.57	Pass
	711	H	-33.32	-49.65	0.00	2.02	18.35	Pass



	704	V	-47.16	-49.00	0.00	2.04	3.88	Pass
	707.5	V	-46.65	-49.12	0.00	2.03	4.50	Pass
	711	V	-46.26	-49.33	0.00	2.02	5.08	Pass
10MHz (16QAM)	704	H	-32.69	-49.25	0.00	2.04	18.60	Pass
	707.5	H	-33.18	-49.39	0.00	2.03	18.25	Pass
	711	H	-33.62	-49.65	0.00	2.02	18.05	Pass
	704	V	-47.47	-49.00	0.00	2.04	3.57	Pass
	707.5	V	-46.97	-49.12	0.00	2.03	4.18	Pass
	711	V	-46.57	-49.33	0.00	2.02	4.77	Pass

LTE Band 17								
Bandwidth	Frequency (MHz)	Ant Pot (H/V)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	ERP (dBm)	Conclusion
5MHz (QPSK)	706.5	H	-31.00	-47.47	0.00	1.92	18.39	Pass
	710	H	-31.84	-47.75	0.00	1.90	17.82	Pass
	713.5	H	-31.71	-47.72	0.00	1.91	17.91	Pass
	706.5	V	-44.46	-47.33	0.00	1.92	4.79	Pass
	710	V	-44.80	-47.49	0.00	1.90	4.60	Pass
	713.5	V	-43.95	-47.43	0.00	1.91	5.39	Pass
5MHz (16QAM)	706.5	H	-31.33	-47.47	0.00	1.92	18.06	Pass
	710	H	-32.16	-47.75	0.00	1.90	17.50	Pass
	713.5	H	-32.02	-47.72	0.00	1.91	17.60	Pass
	706.5	V	-44.78	-47.33	0.00	1.92	4.47	Pass
	710	V	-45.14	-47.49	0.00	1.90	4.26	Pass
	713.5	V	-44.27	-47.43	0.00	1.91	5.07	Pass
10MHz (QPSK)	709	H	-31.31	-47.70	0.00	1.91	18.30	Pass
	710	H	-31.63	-47.75	0.00	1.90	18.03	Pass
	711	H	-31.68	-47.76	0.00	1.90	17.99	Pass
	709	V	-44.62	-47.49	0.00	1.91	4.77	Pass
	710	V	-44.72	-47.49	0.00	1.90	4.68	Pass
	711	V	-44.52	-47.48	0.00	1.90	4.86	Pass
10MHz (16QAM)	709	H	-31.61	-47.70	0.00	1.91	18.00	Pass
	710	H	-31.96	-47.75	0.00	1.90	17.70	Pass
	711	H	-32.02	-47.76	0.00	1.90	17.65	Pass
	709	V	-44.94	-47.49	0.00	1.91	4.45	Pass
	710	V	-45.03	-47.49	0.00	1.90	4.37	Pass
	711	V	-44.83	-47.48	0.00	1.90	4.55	Pass

Note: 1. EIRP= E.R.P+2.15

5.3 Occupied Bandwidth

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The occupied bandwidth is measured using spectrum analyzer.

RBW is set to 51 kHz, VBW is set to 160 kHz for LTE Band 4/12 (1.4MHz).

RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 4/12 (3MHz).

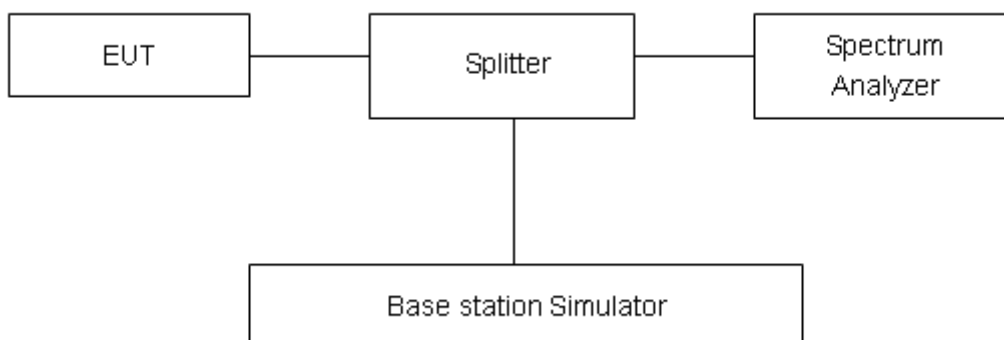
RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 4/7/12/17 (5MHz).

RBW is set to 300 kHz, VBW is set to 1MHz for LTE Band 4/7/12/17 (10MHz).

RBW is set to 300 kHz, VBW is set to 1MHz for LTE Band 4/7 (15MHz/20MHz).

99% power and -26dBc occupied bandwidths are recorded. Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

No specific occupied bandwidth requirements in part 2.1049.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U=624\text{Hz}$.

Test Result

LTE Band 4						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	1.4	19957	1710.7	1.1230	1.343
			20175	1732.5	1.1156	1.371
			20393	1754.3	1.1337	1.307
		3	19965	1711.5	2.7546	3.093
			20175	1732.5	2.7468	3.118
			20385	1753.5	2.7443	3.076
		5	19975	1712.5	4.5070	5.010
			20175	1732.5	4.5307	4.949
			20375	1752.5	4.5108	4.965
		10	20000	1715	9.0417	10.01
			20175	1732.5	9.0387	9.993
			20350	1750	9.0521	9.969
		15	20025	1717.5	13.509	14.79
			20175	1732.5	13.486	14.69
			20325	1747.5	13.536	14.79
		20	20050	1720	17.965	19.39
			20175	1732.5	17.902	19.25
			20300	1745	17.969	19.34
	16QAM	1.4	19957	1710.7	1.1123	1.270
			20175	1732.5	1.1152	1.282
			20393	1754.3	1.1122	1.304
		3	19965	1711.5	2.7384	3.066
			20175	1732.5	2.7562	3.083
			20385	1753.5	2.7337	3.090
		5	19975	1712.5	4.5294	4.967
			20175	1732.5	4.5101	4.976
			20375	1752.5	4.5264	4.963
		10	20000	1715	9.0324	9.989
			20175	1732.5	9.0177	9.898
			20350	1750	9.0424	9.960
		15	20025	1717.5	13.509	14.62
			20175	1732.5	13.460	14.64
			20325	1747.5	13.522	14.68
		20	20050	1720	17.954	19.45
			20175	1732.5	17.933	19.13
			20300	1745	17.949	19.39

LTE Band 7						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	5	20775	2502.5	4.5143	4.985
			21100	2535	4.5307	4.965
			21425	2567.5	4.5067	4.947
		10	20800	2505	9.0606	10.08
			21100	2535	9.0382	9.987
			21400	2565	9.0306	9.952
		15	20825	2507.5	13.456	14.64
			21100	2535	13.531	14.85
			21375	2562.5	13.510	14.76
		20	20850	2510	17.894	19.21
			21100	2535	17.926	19.26
			21350	2560	17.926	19.30
	16QAM	5	20775	2502.5	4.5377	4.988
			21100	2535	4.5068	4.975
			21425	2567.5	4.5235	5.011
		10	20800	2505	9.0319	9.934
			21100	2535	9.0394	10.01
			21400	2565	9.0373	9.985
		15	20825	2507.5	13.486	14.75
			21100	2535	13.525	14.70
			21375	2562.5	13.514	14.61
		20	20850	2510	17.919	19.31
			21100	2535	17.968	19.35
			21350	2560	17.937	19.44

LTE Band 12						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	1.4	23017	699.7	1.1121	1.283
			23095	707.5	1.1129	1.277
			23173	715.3	1.1141	1.282
		3	23025	700.5	2.7482	3.066
			23095	707.5	2.7560	3.104
			23165	714.5	2.7486	3.079
		5	23035	701.5	4.5238	4.937
			23095	707.5	4.5050	4.956



		10	23155	713.5	4.5310	5.008
			23060	704	9.0486	10.01
			23095	707.5	9.0110	9.981
			23130	711	9.0448	9.963
	16QAM	1.4	23017	699.7	1.1117	1.276
			23095	707.5	1.1107	1.281
			23173	715.3	1.1059	1.279
		3	23025	700.5	2.7412	3.073
			23095	707.5	2.7516	3.094
			23165	714.5	2.7443	3.095
		5	23035	701.5	4.5372	4.988
			23095	707.5	4.5024	4.984
			23155	713.5	4.5235	5.012
		10	23060	704	9.0504	9.906
			23095	707.5	9.0125	9.912
			23130	711	9.0357	9.990

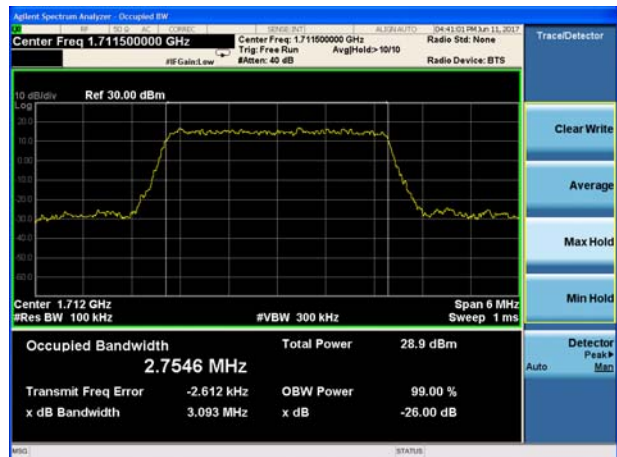
LTE Band 17						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(kHz)	-26dBc Bandwidth(kHz)
100%	QPSK	5	23755	706.5	4.5054	4.970
			23790	710	4.5258	4.991
			23825	713.5	4.5204	4.976
		10	23780	709	8.9879	9.930
			23790	710	9.0160	9.946
			23800	711	9.0493	9.954
	16QAM	5	23755	706.5	4.5245	4.996
			23790	710	4.5040	4.994
			23825	713.5	4.5175	5.022
		10	23780	709	8.9825	9.950
			23790	710	9.0458	9.931
			23800	711	9.0393	9.925



LTE Band 4 QPSK 1.4MHz CH-Low



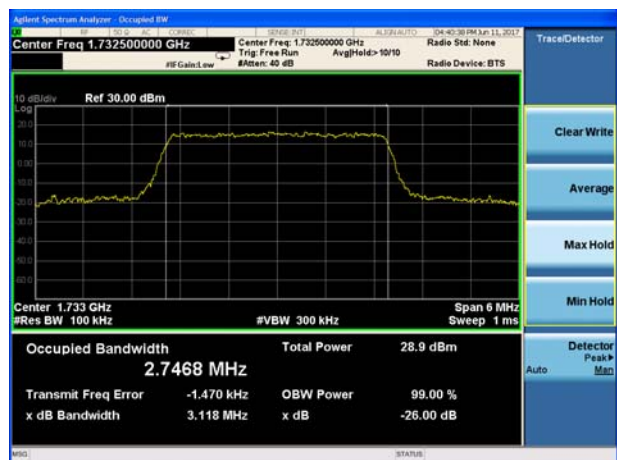
LTE Band 4 QPSK 3MHz CH-Low



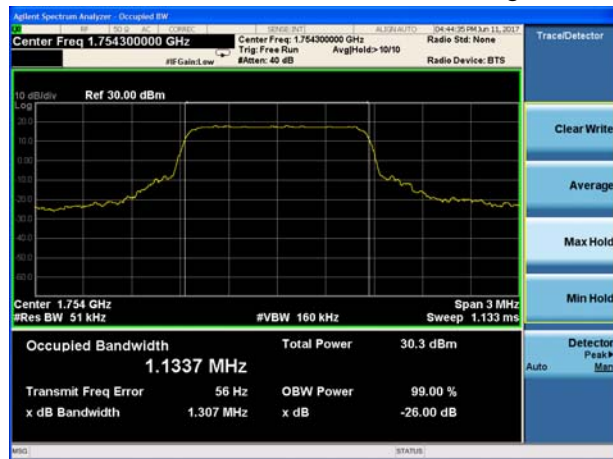
LTE Band 4 QPSK 1.4MHz CH-Middle



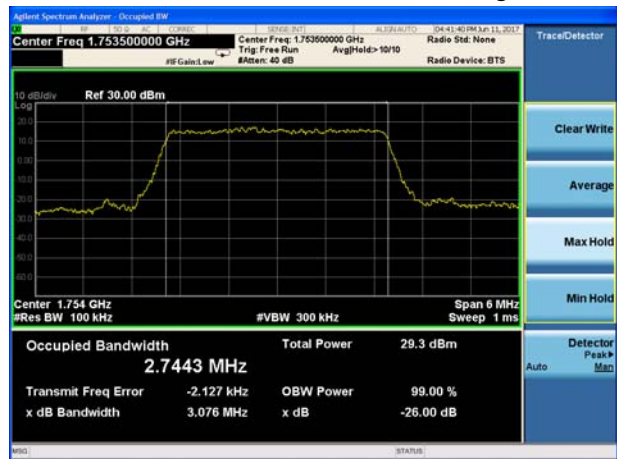
LTE Band 4 QPSK 3MHz CH-Middle



LTE Band 4 QPSK 1.4MHz CH-High

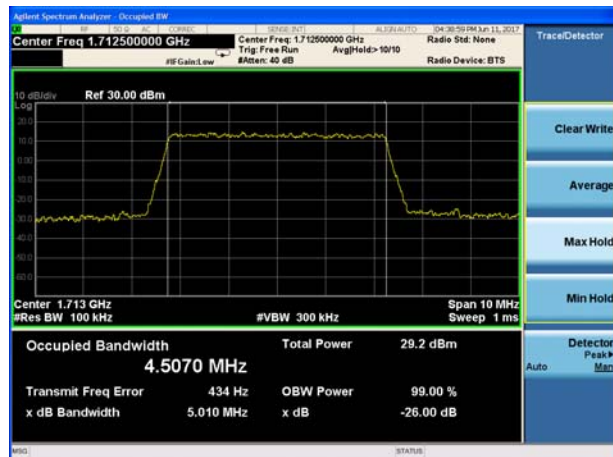


LTE Band 4 QPSK 3MHz CH-High

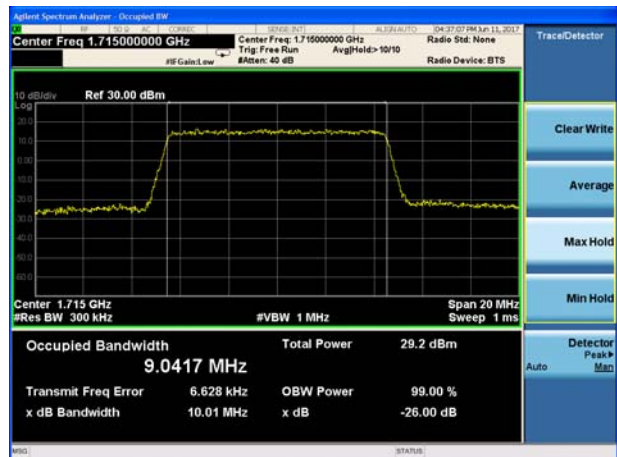




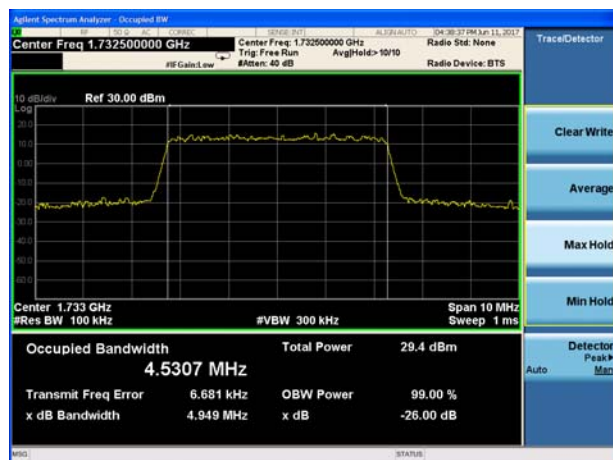
LTE Band 4 QPSK 5MHz CH-Low



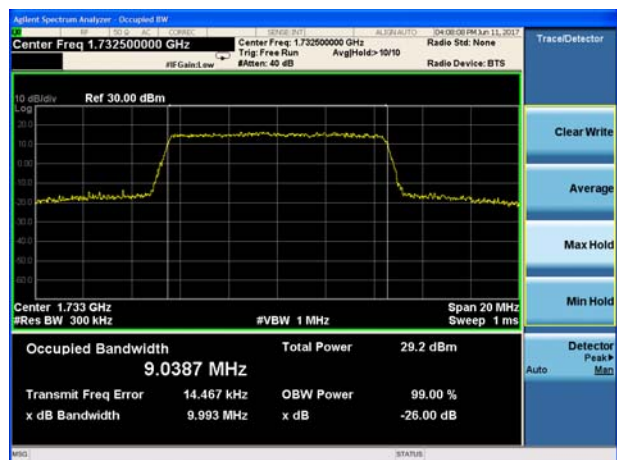
LTE Band 4 QPSK 10MHz CH-Low



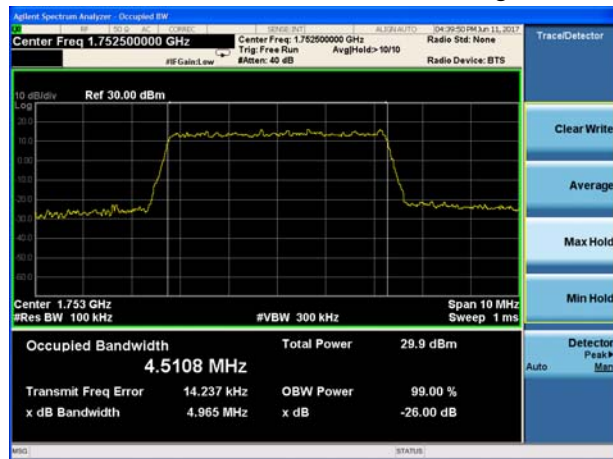
LTE Band 4 QPSK 5MHz CH-Middle



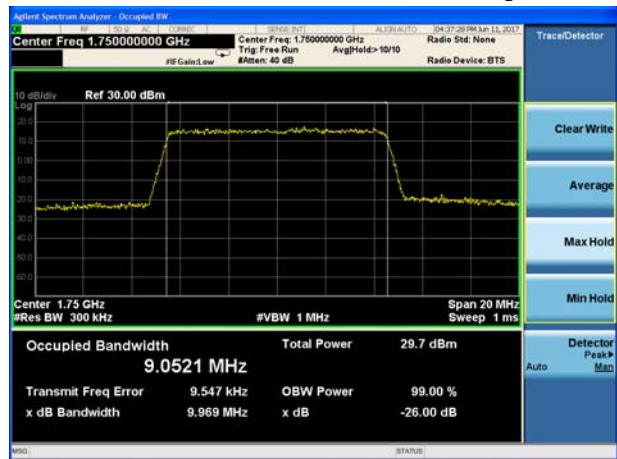
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LTE Band 4 QPSK 5MHz CH-High

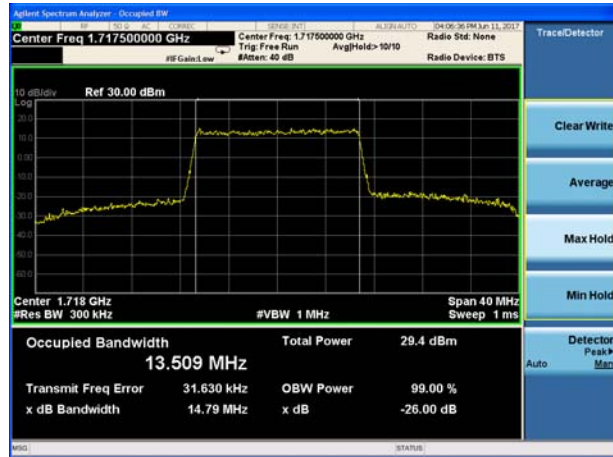


LTE Band 4 QPSK 10MHz CH-High





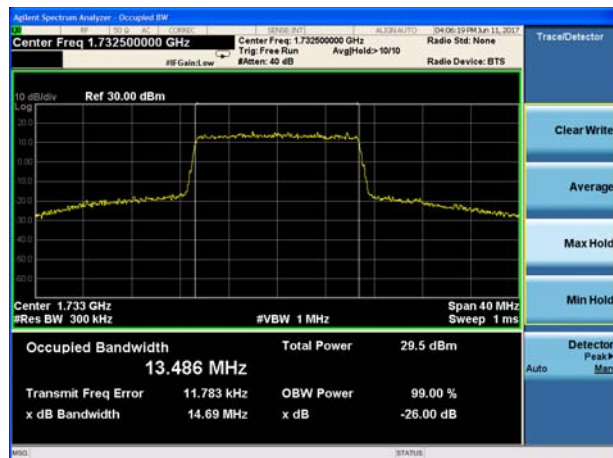
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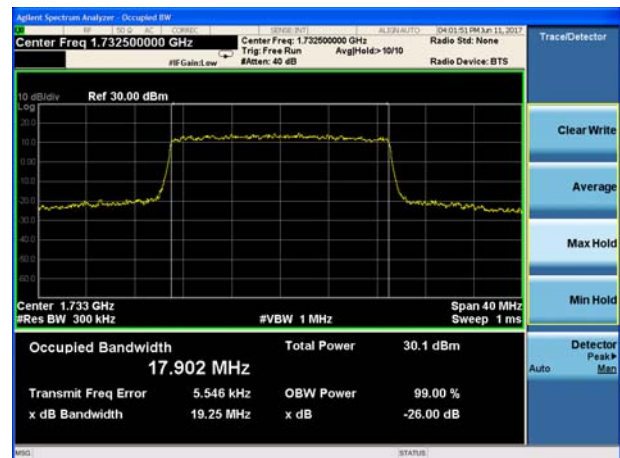
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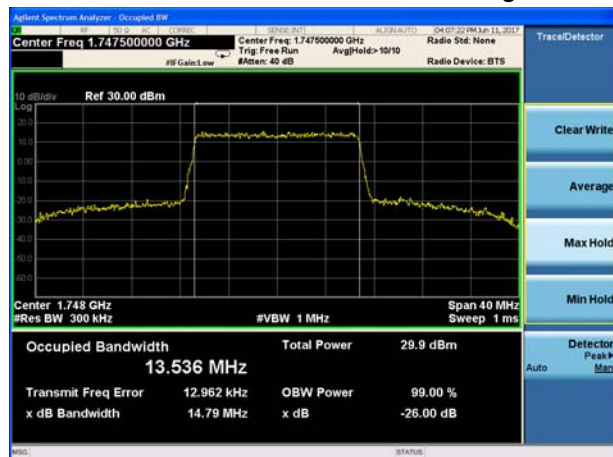
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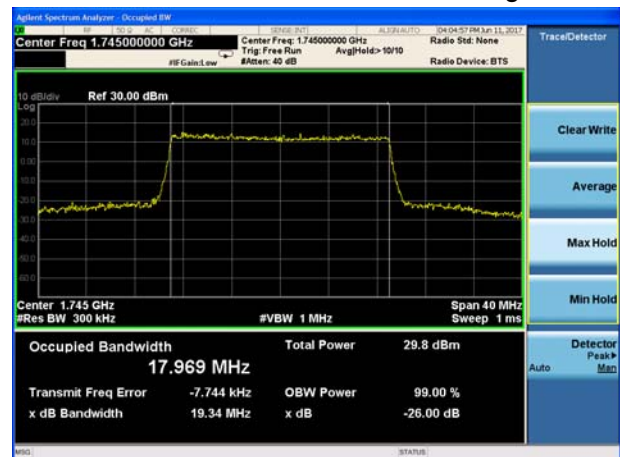
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LTE Band 4 QPSK 15MHz CH-High



LTE Band 4 QPSK 20MHz CH-High

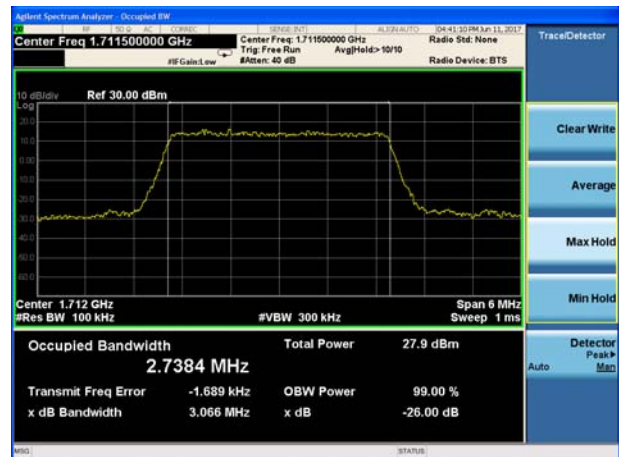




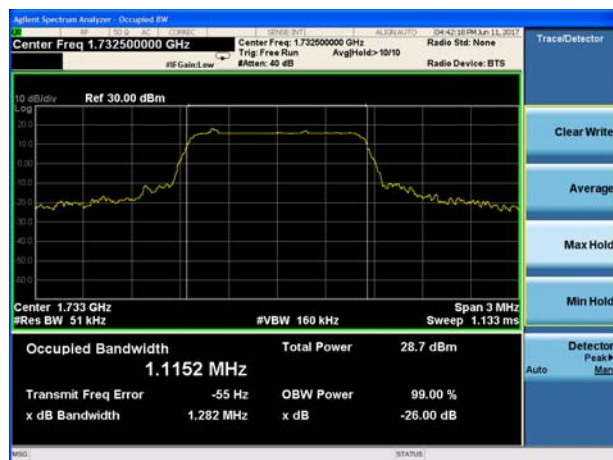
LTE Band 4 16QAM 1.4MHz CH-Low



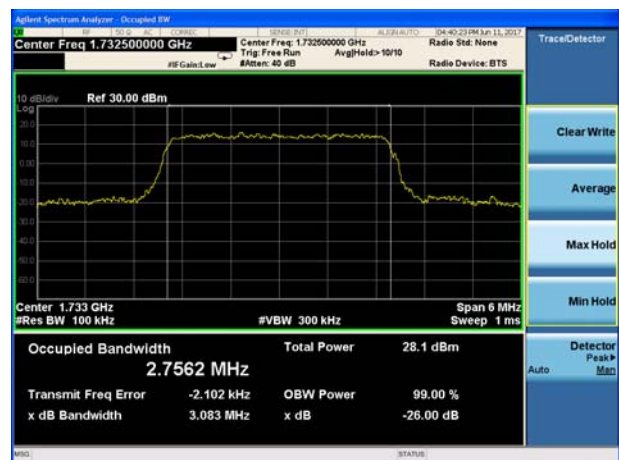
LTE Band 4 16QAM 3MHz CH-Low



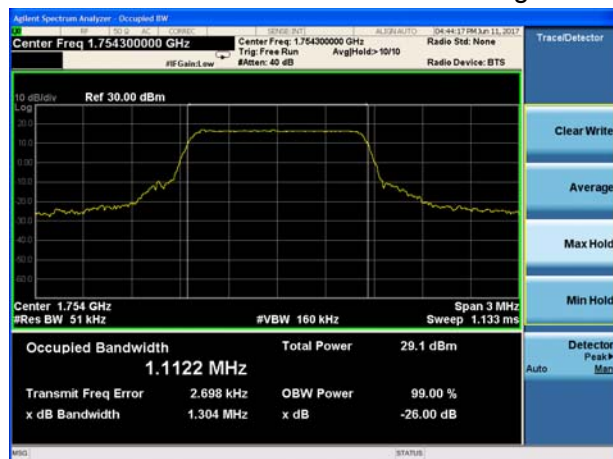
LTE Band 4 16QAM 1.4MHz CH-Middle



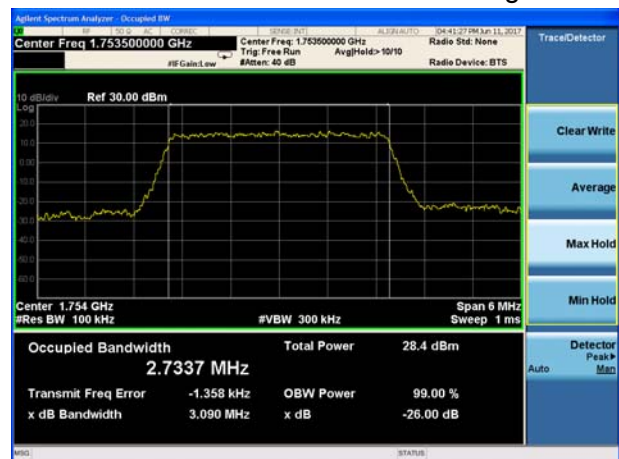
LTE Band 4 16QAM 3MHz CH-Middle



LTE Band 4 16QAM 1.4MHz CH-High

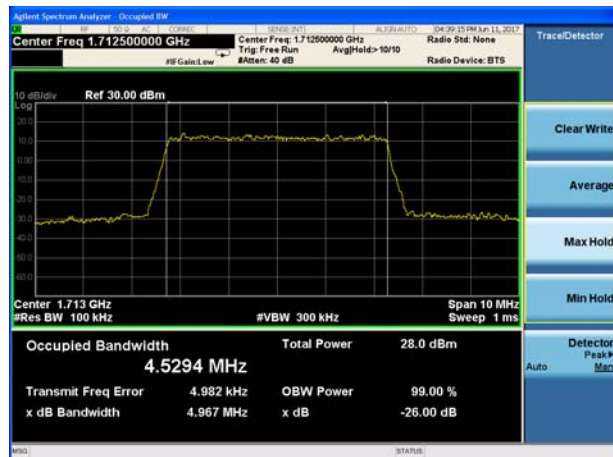


LTE Band 4 16QAM 3MHz CH-High

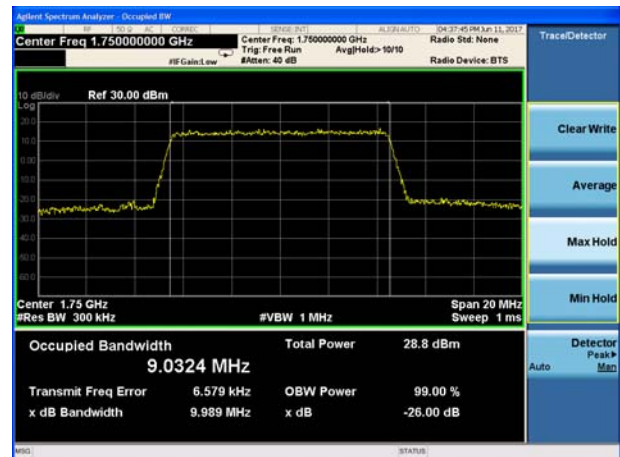




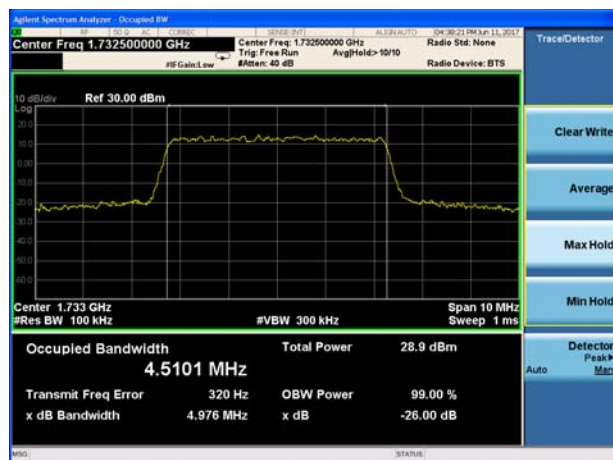
LTE Band 4 16QAM 5MHz CH-Low



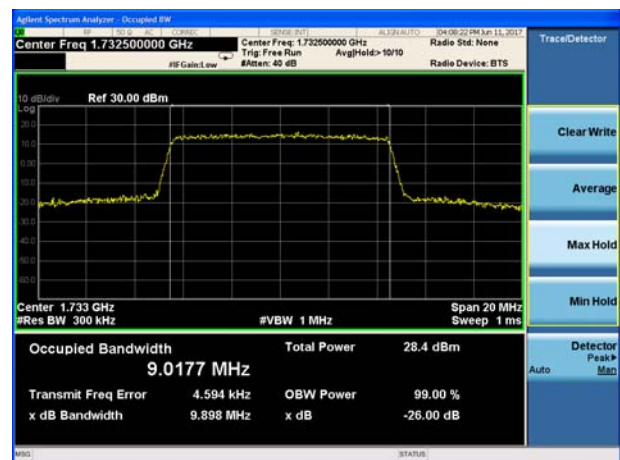
LTE Band 4 16QAM 10MHz CH-Low



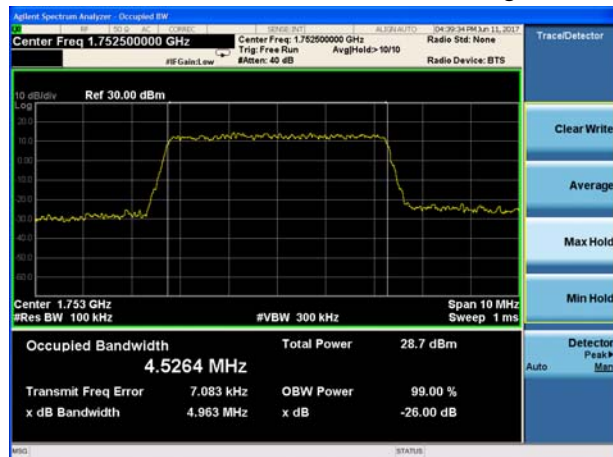
LTE Band 4 16QAM 5MHz CH-Middle



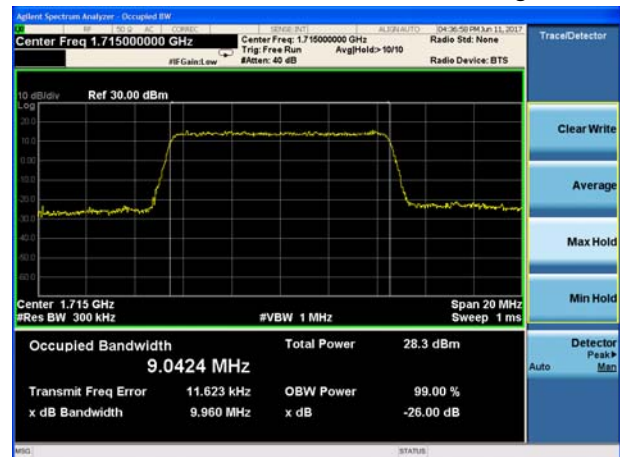
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LTE Band 4 16QAM 5MHz CH-High

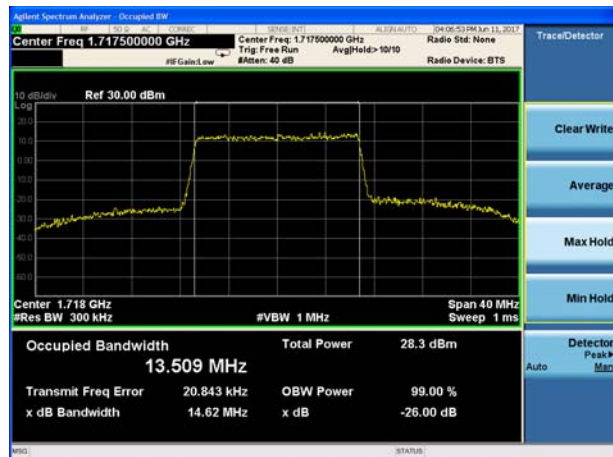


LTE Band 4 16QAM 10MHz CH-High

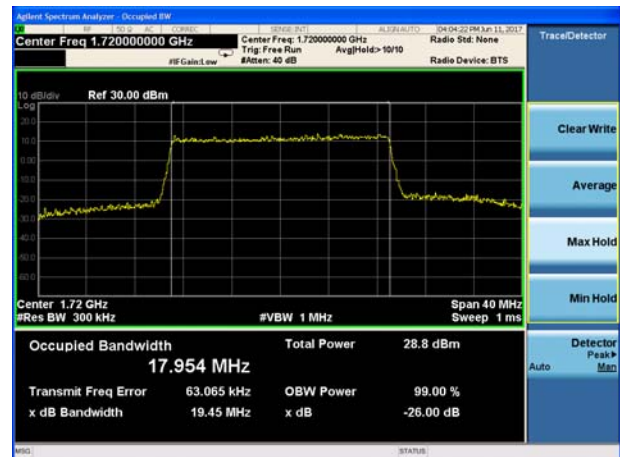




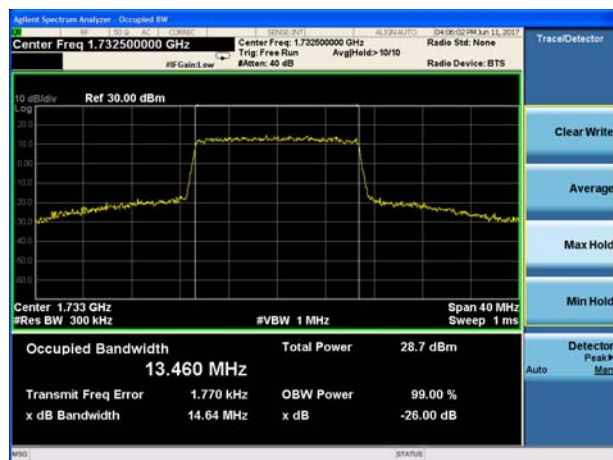
LTE Band 4 16QAM 15MHz CH-Low



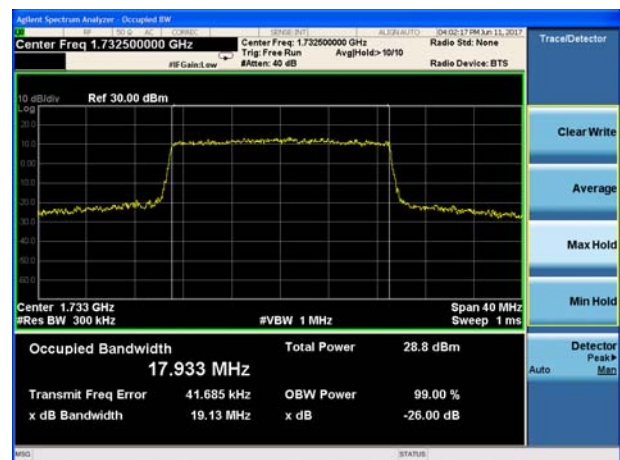
LTE Band 4 16QAM 20MHz CH-Low



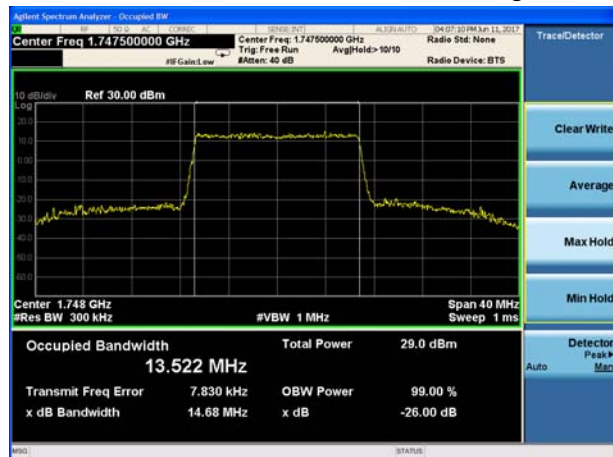
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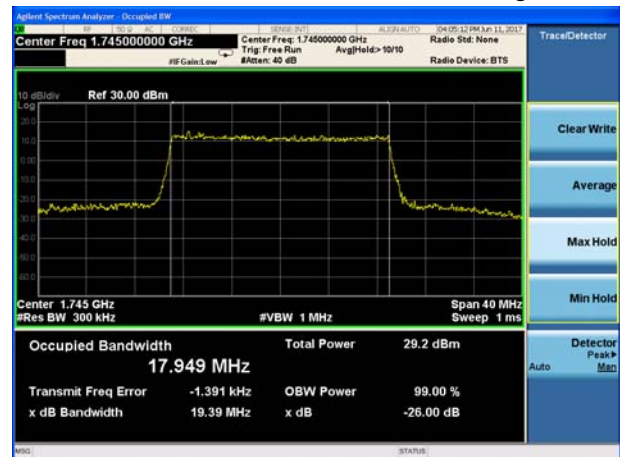
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LTE Band 4 16QAM 15MHz CH-High



LTE Band 4 16QAM 20MHz CH-High





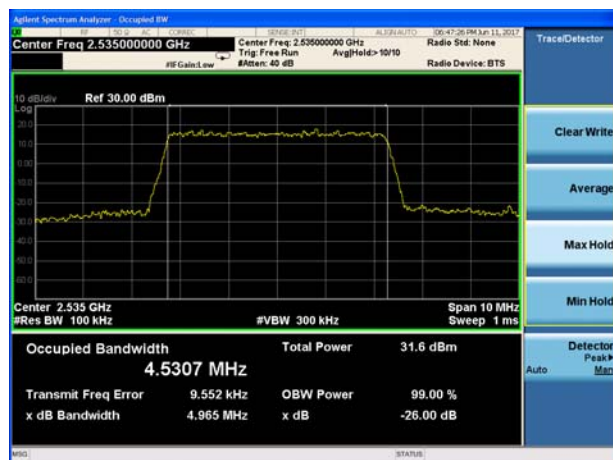
LTE Band 7 QPSK 5MHz CH-Low



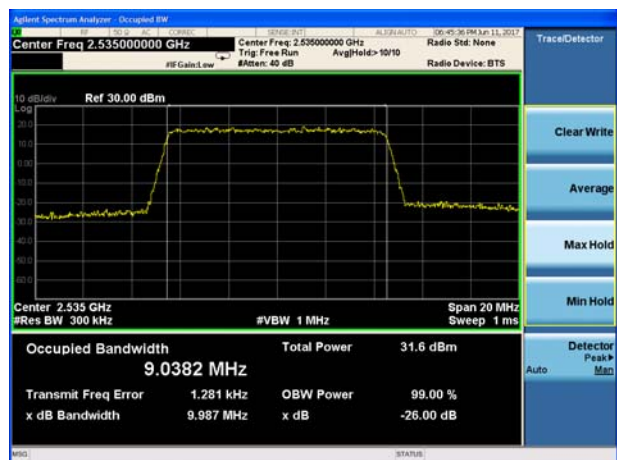
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LTE Band 7 QPSK 5MHz CH-Middle



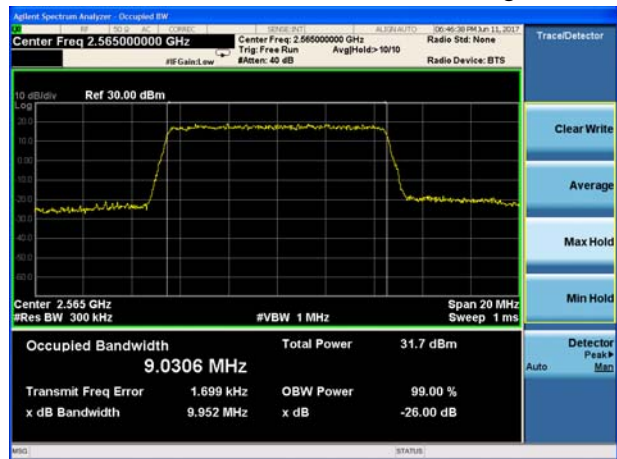
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LTE Band 7 QPSK 5MHz CH-High

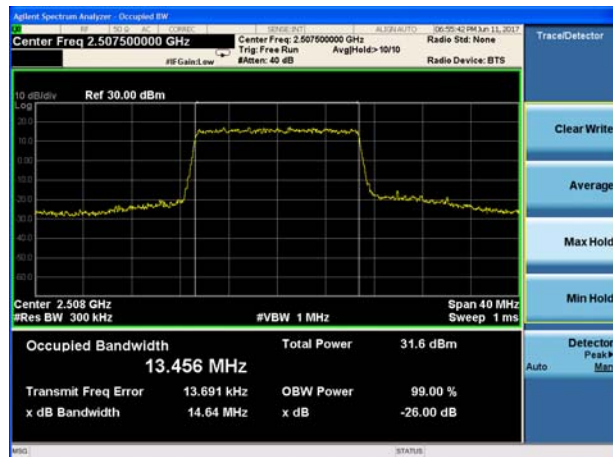


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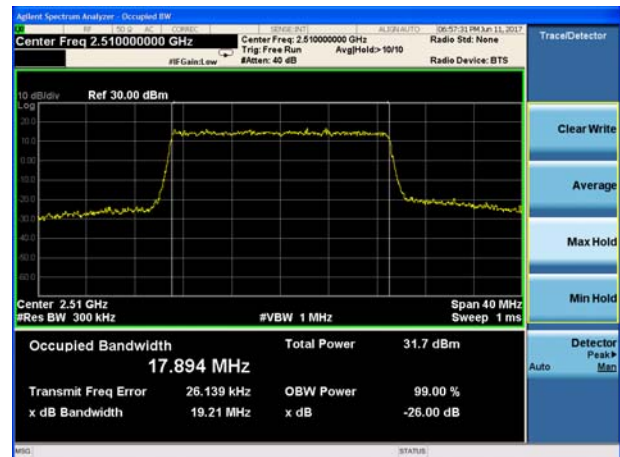




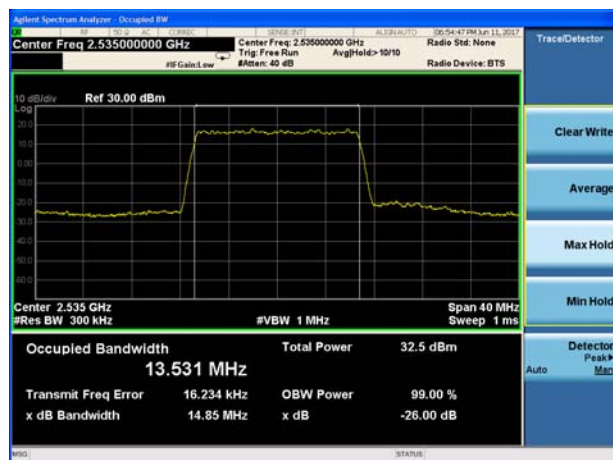
LTE Band 7 QPSK 15MHz CH-Low



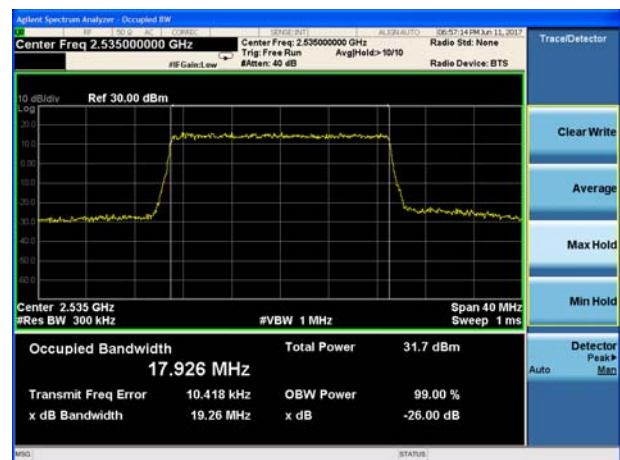
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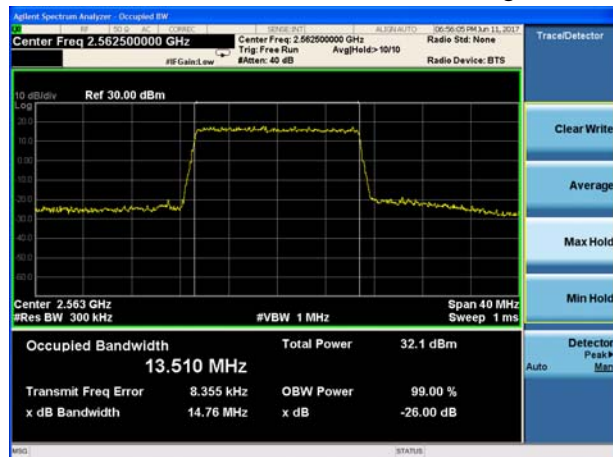
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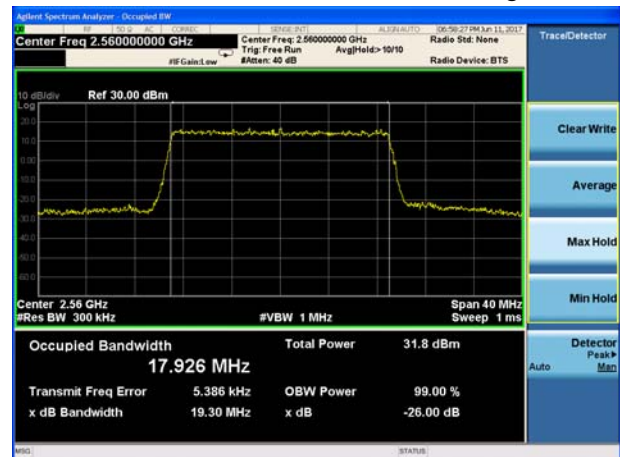
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LTE Band 7 QPSK 15MHz CH-High



LTE Band 7 QPSK 20MHz CH-High

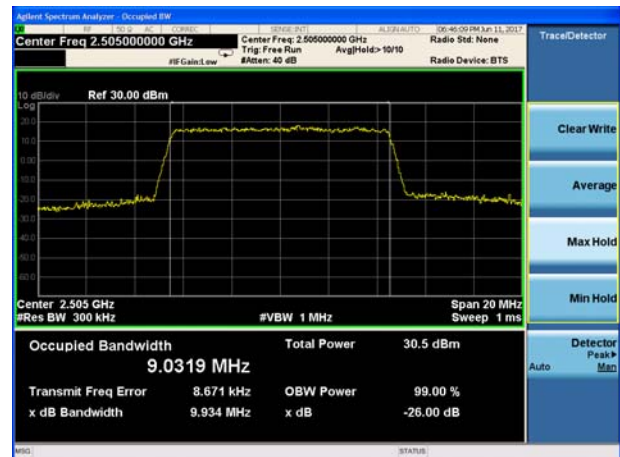




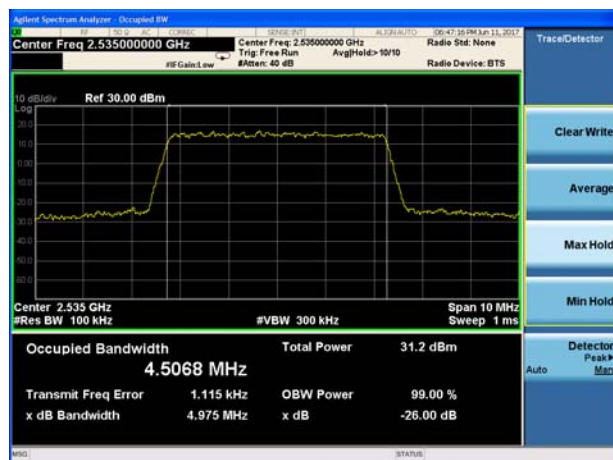
LTE Band 7 16QAM 5MHz CH-Low



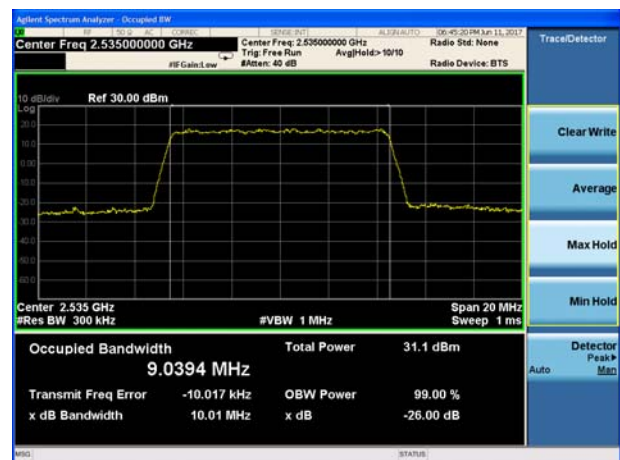
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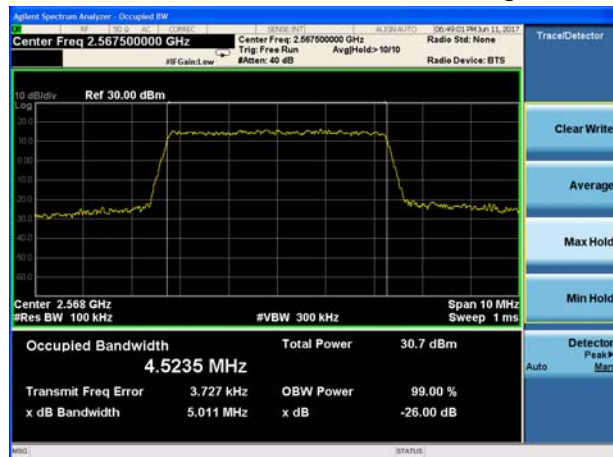
LTE Band 7 16QAM 5MHz CH-Middle



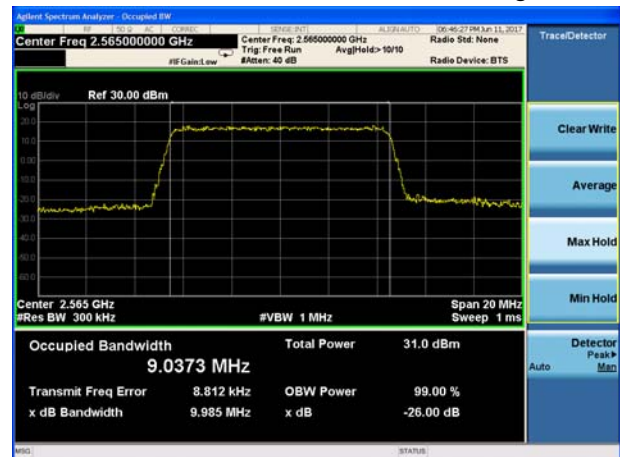
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LTE Band 7 16QAM 5MHz CH-High

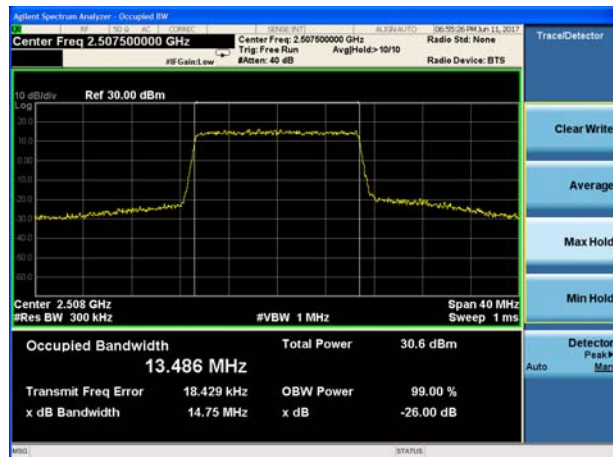


LTE Band 7 16QAM 10MHz CH-High

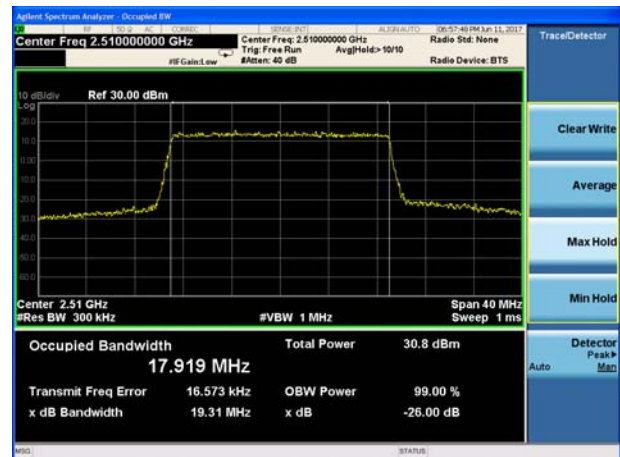




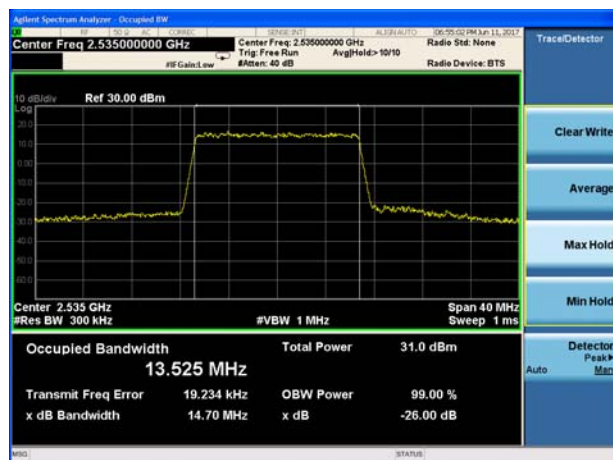
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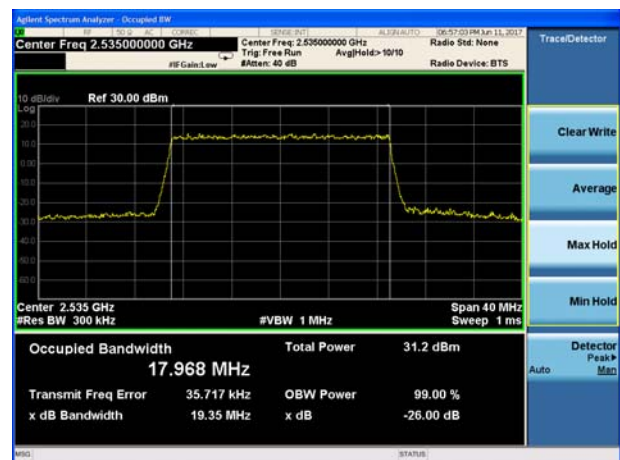
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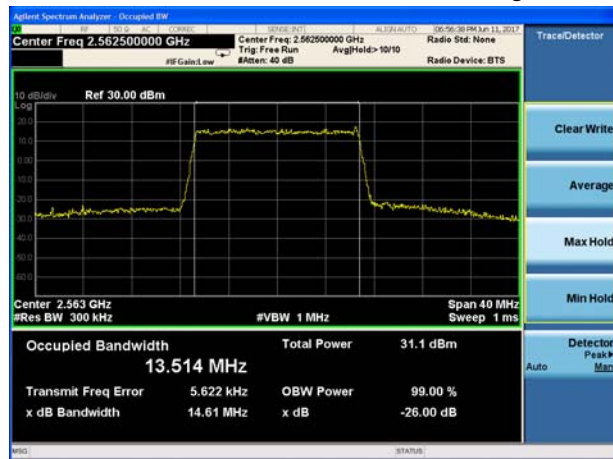
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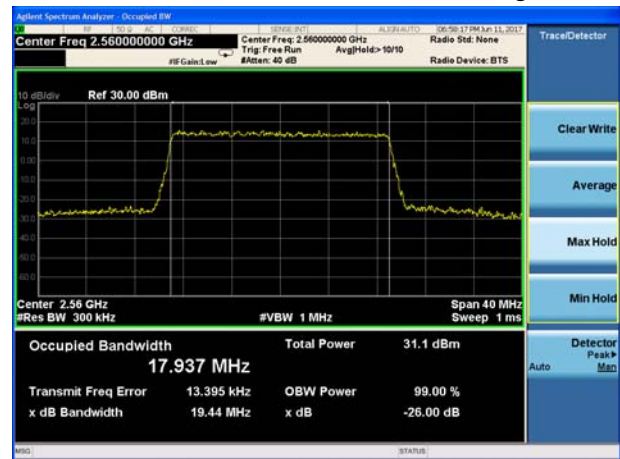
LTE Band 7 16QAM 20MHz CH-Middle



LTE Band 7 16QAM 15MHz CH-High



LTE Band 7 16QAM 20MHz CH-High

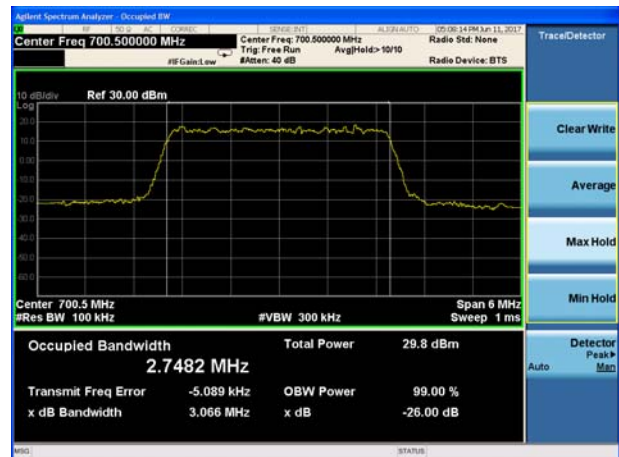




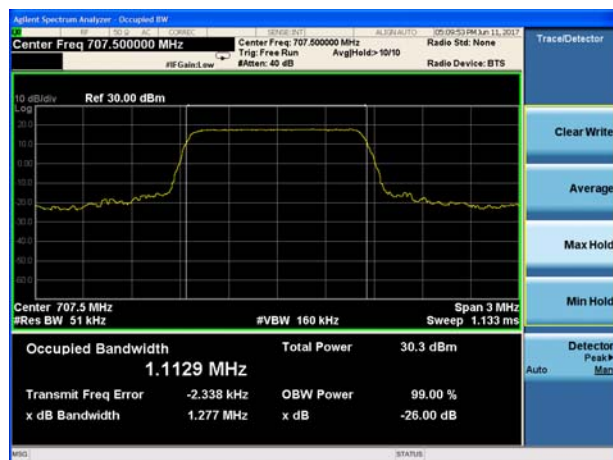
LTE Band 12 QPSK 1.4MHz CH-Low



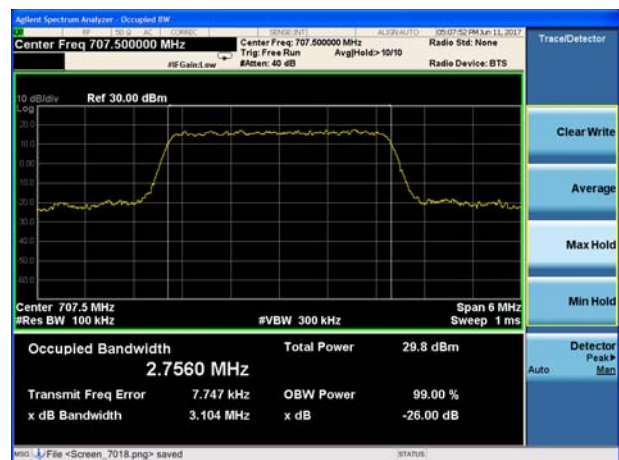
LTE Band 12 QPSK 3MHz CH-Low



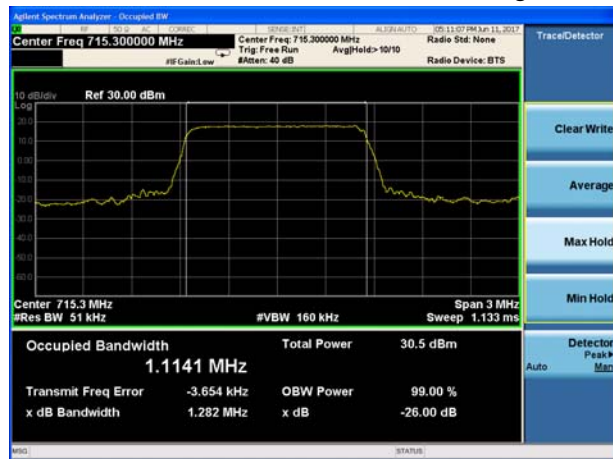
LTE Band 12 QPSK 1.4MHz CH-Middle



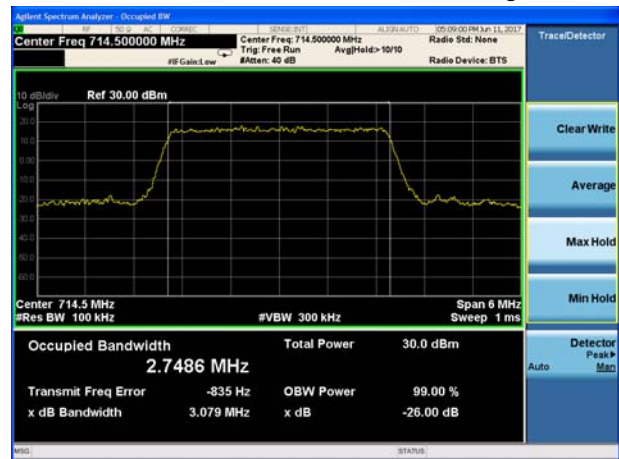
LTE Band 12 QPSK 3MHz CH-Middle



LTE Band 12 QPSK 1.4MHz CH-High

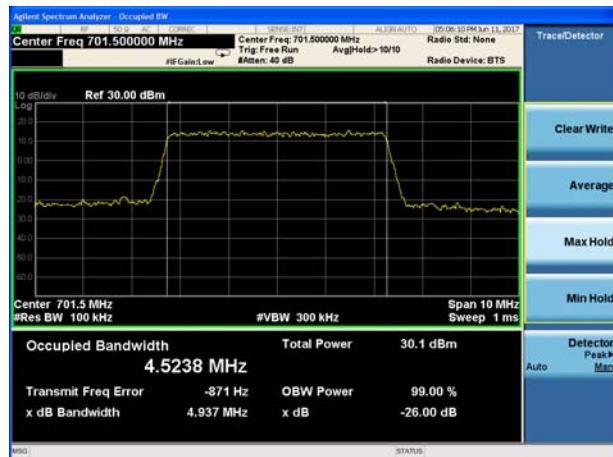


LTE Band 12 QPSK 3MHz CH-High

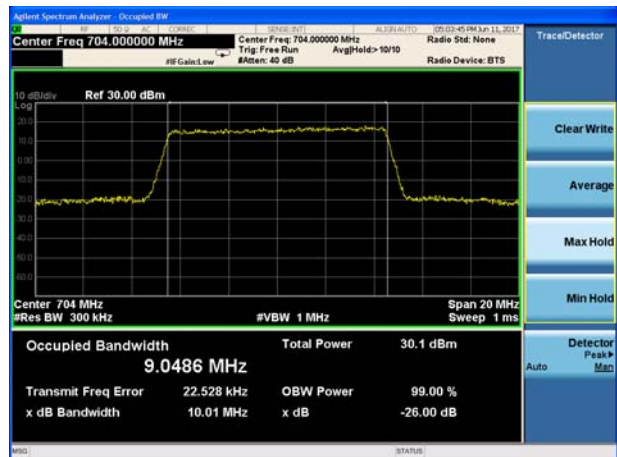




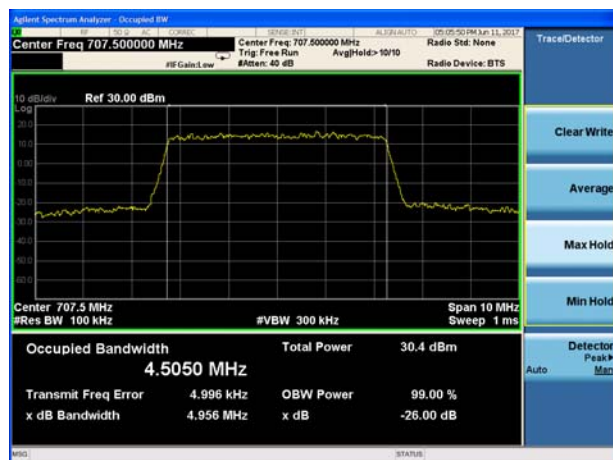
LTE Band 12 QPSK 5MHz CH-Low



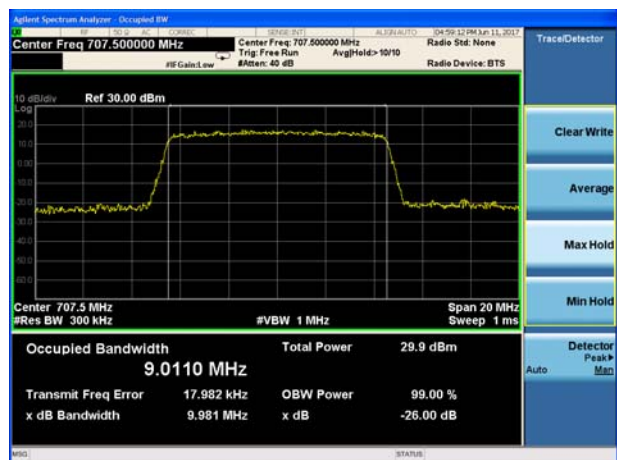
LTE Band 12 QPSK 10MHz CH-Low



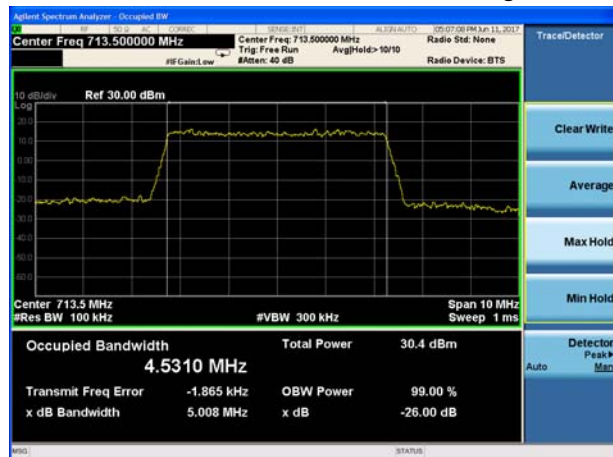
LTE Band 12 QPSK 5MHz CH-Middle



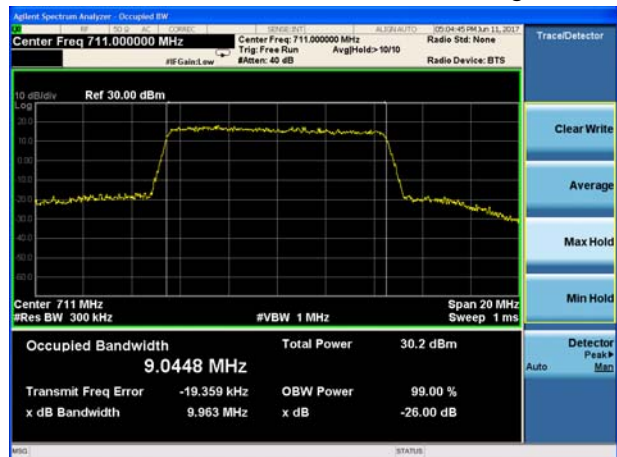
LTE Band 12 QPSK 10MHz CH-Middle



LTE Band 12 QPSK 5MHz CH-High



LTE Band 12 QPSK 10MHz CH-High

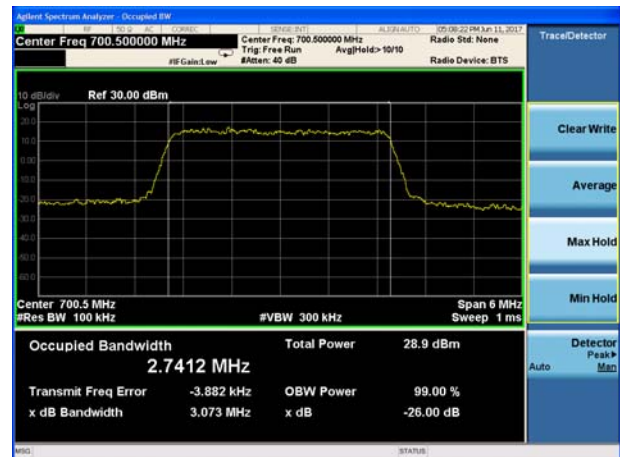




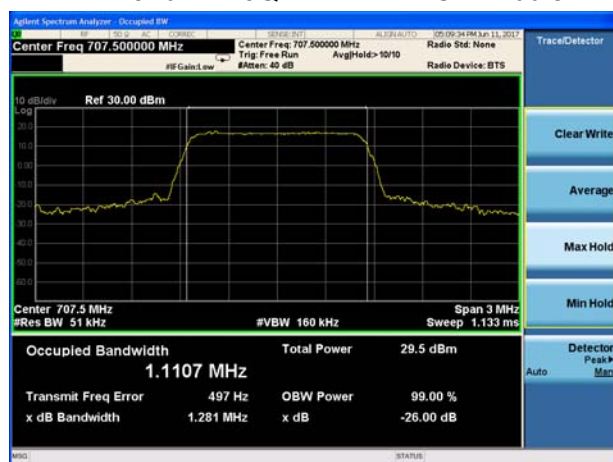
LTE Band 12 16QAM 1.4MHz CH-Low



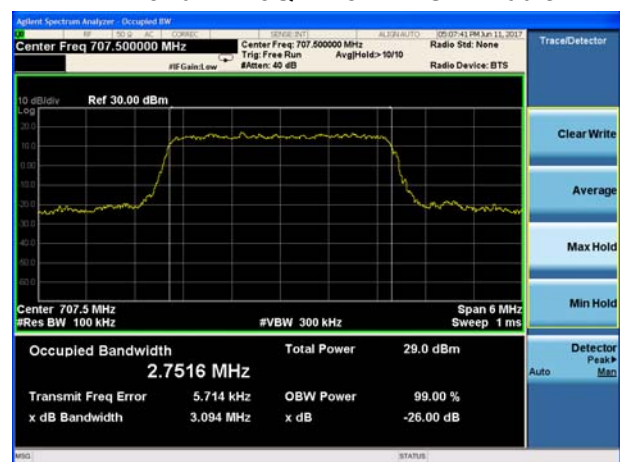
LTE Band 12 16QAM 3MHz CH-Low



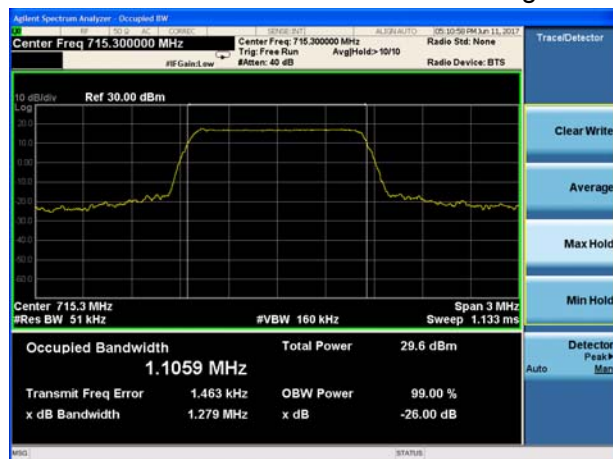
LTE Band 12 16QAM 1.4MHz CH-Middle



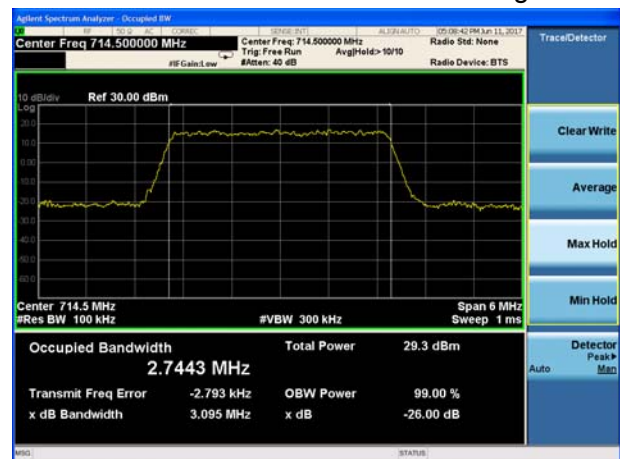
LTE Band 12 16QAM 3MHz CH-Middle



LTE Band 12 16QAM 1.4MHz CH-High

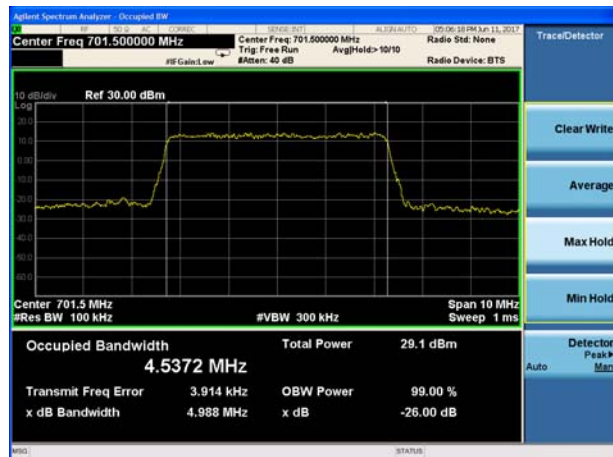


LTE Band 12 16QAM 3MHz CH-High

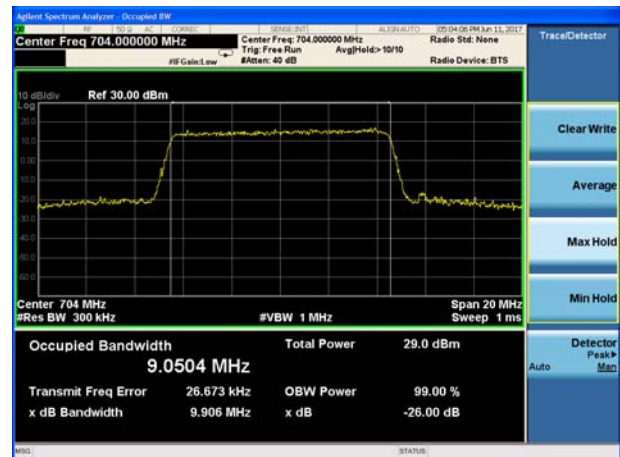




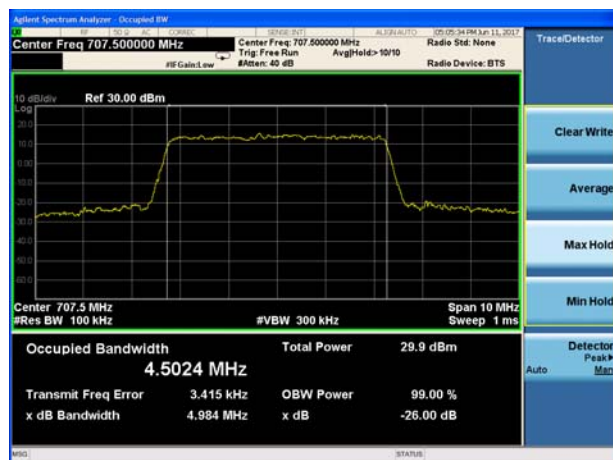
LTE Band 12 16QAM 5MHz CH-Low



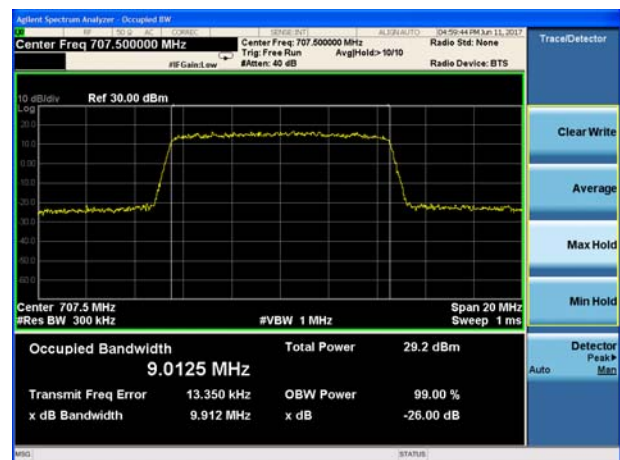
LTE Band 12 16QAM 10MHz CH-Low



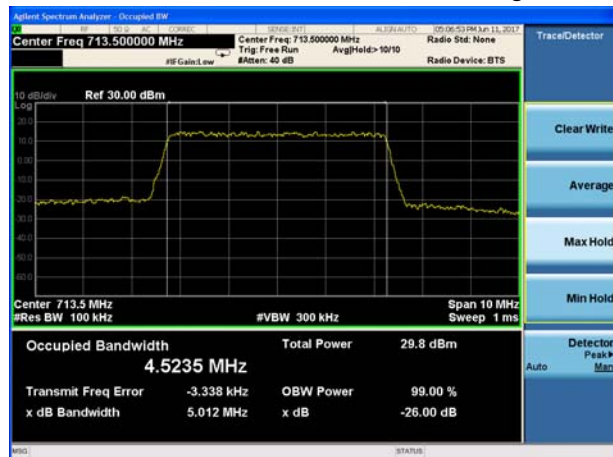
LTE Band 12 16QAM 5MHz CH-Middle



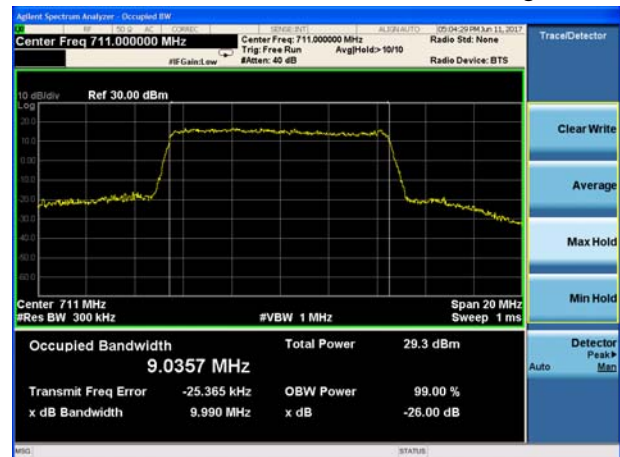
LTE Band 12 16QAM 10MHz CH-Middle



LTE Band 12 16QAM 5MHz CH-High

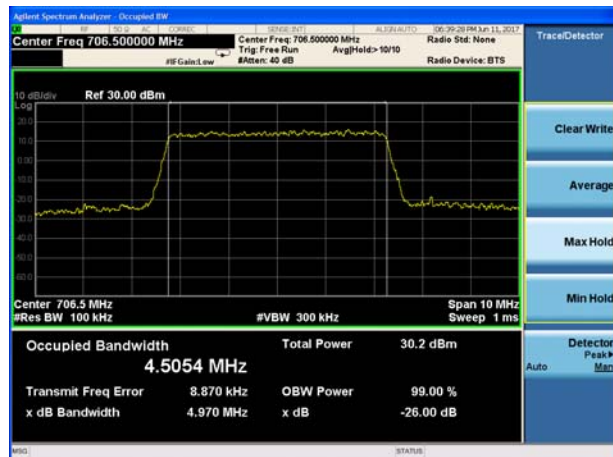


LTE Band 12 16QAM 10MHz CH-High

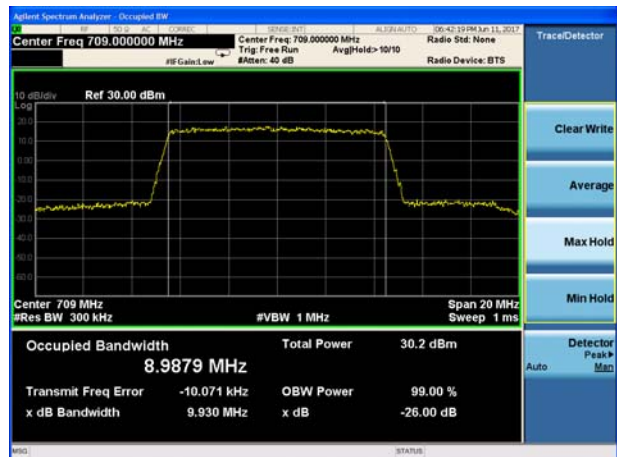




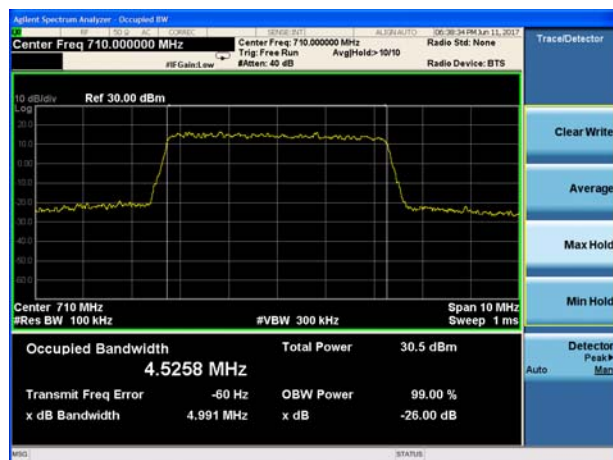
LTE Band 17 QPSK 5MHz CH-Low



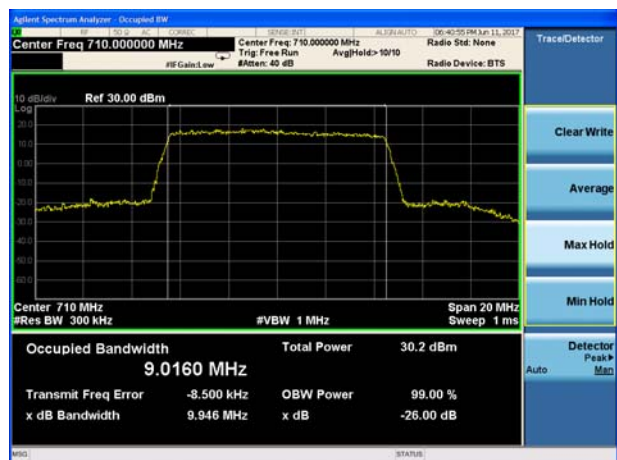
LTE Band 17 QPSK 10MHz CH-Low



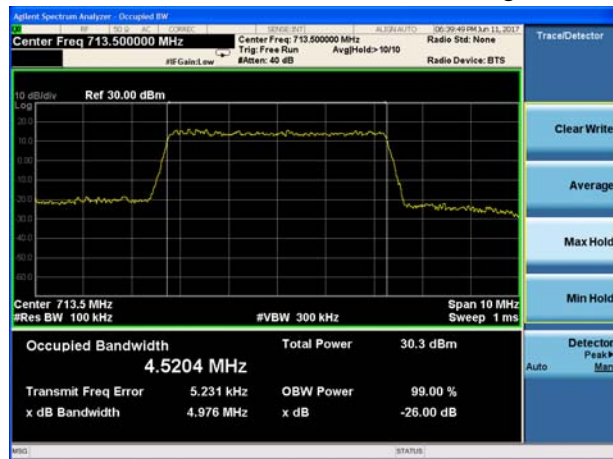
LTE Band 17 QPSK 5MHz CH-Middle



LTE Band 17 QPSK 10MHz CH-Middle



LTE Band 17 QPSK 5MHz CH-High

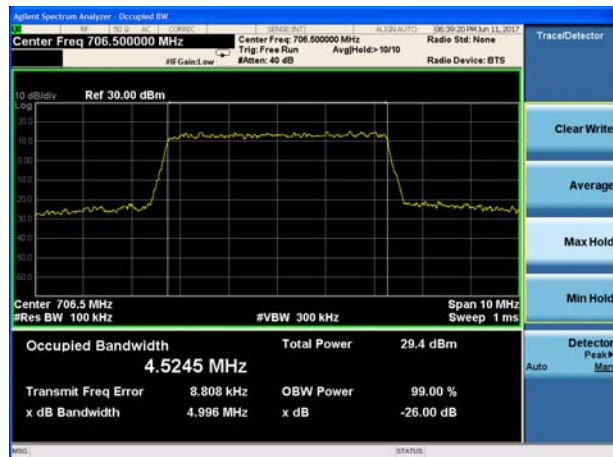


LTE Band 17 QPSK 10MHz CH-High

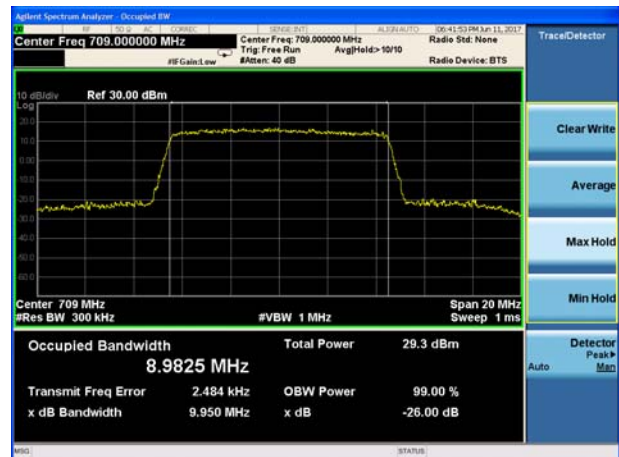




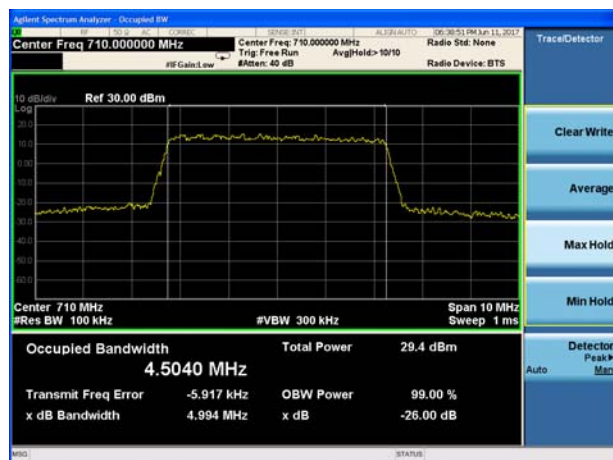
LTE Band 17 16QAM 5MHz CH-Low



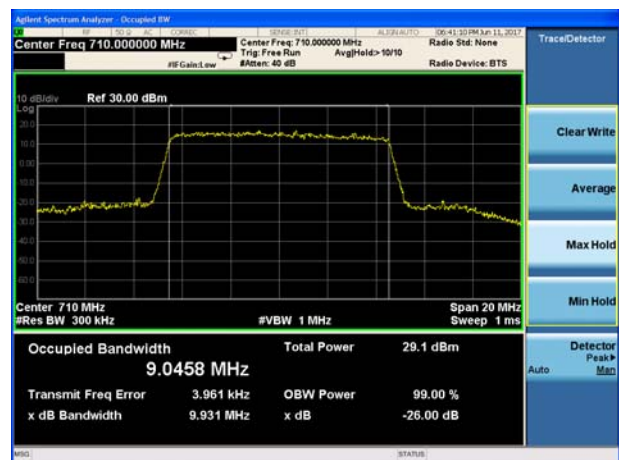
LTE Band 17 16QAM 10MHz CH-Low



LTE Band 17 16QAM 5MHz CH-Middle



LTE Band 17 16QAM 10MHz CH-Middle



LTE Band 17 16QAM 5MHz CH-High



LTE Band 17 16QAM 10MHz CH-High



5.4 Band Edge Compliance

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

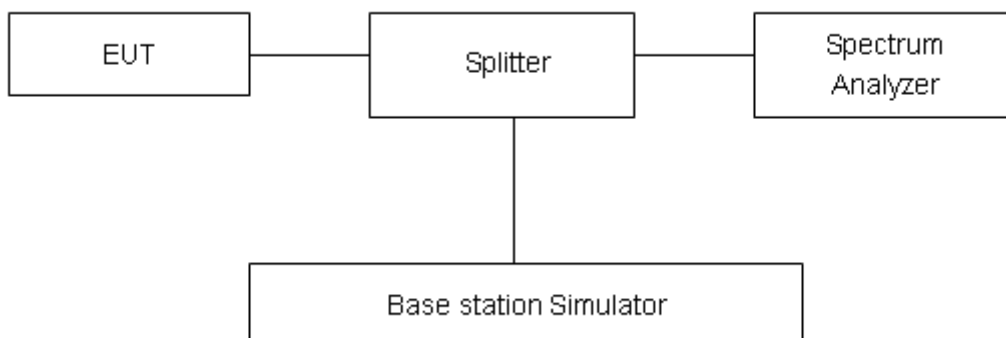
Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The band edge of the lowest and highest channels were measured.

The testing follows KDB 971168 v02r02 Section 6.0

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The band edges of low and high channels for the highest RF powers were measured.
3. For LTE Band 41 Set RBW $\geq$ 1% EBW in the 1MHz band immediately outside and adjacent to the band edge. Beyond the 1 MHz band from the band edge, RBW=1MHz was used.
RBW is set to 15 kHz, VBW is set to 51 kHz for LTE Band 4/12 (1.4MHz).
RBW is set to 30 kHz, VBW is set to 100 kHz for LTE Band 4/12 (3MHz).
RBW is set to 51 kHz, VBW is set to 160 kHz for LTE Band 4/7/12/17 (5MHz).
RBW is set to 100 kHz, VBW is set to 300kHz for LTE Band 4/7/12/17 (10MHz).
RBW is set to 150 kHz, VBW is set to 510 kHz for LTE Band 4/7 (15MHz).
RBW is set to 200 kHz, VBW is set to 620 kHz for LTE Band 4/7 (20MHz) on spectrum analyzer.
4. Set spectrum analyzer with RMS detector.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
6. Checked that all the results comply with the emission limit line.

Test Setup



Limits

Rule Part 27.53(h)/ specifies that “ for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10} (P)$ dB”

Part 27.53(g) specifies that “ For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log_{10} (P)$ dB.”

Part 27.53(m) (4)/ specifies that “for BRS and EBS stations. For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(4) of this section. In addition, the attenuation factor shall not be less that $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

Example:

The limit line is derived from $43 + 10 \log (P)$ dB below the transmitter power P(Watts)

= P(W)- $[43 + 10 \log (P)]$ (dB)

= $[30 + 10 \log (P)]$ (dBm) - $[43 + 10 \log (P)]$ (dB) = -13dBm.

Measurement Uncertainty

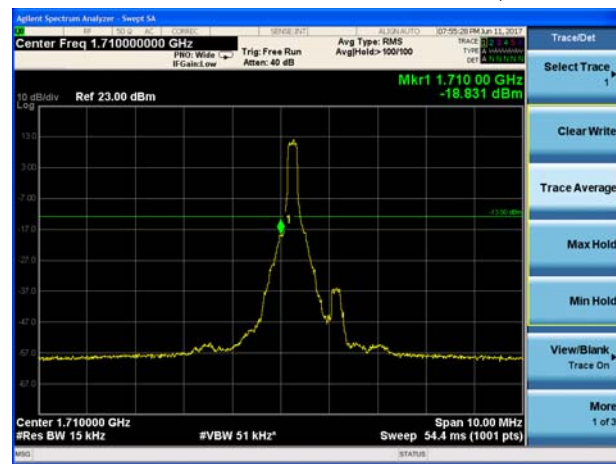
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$, $U=0.684$ dB.



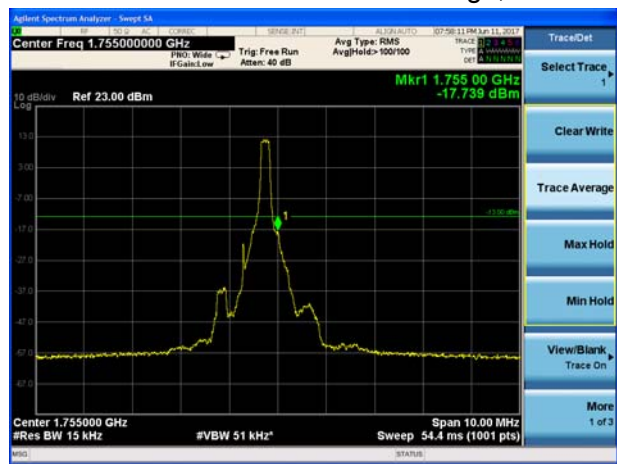
Test Result

All the test traces in the plots shows the test results clearly.

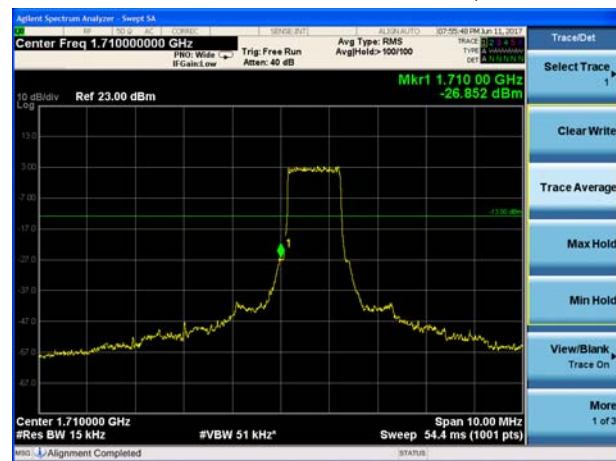
LTE Band 4 QPSK 1.4MHz CH-Low, 1 RB



LTE Band 4 QPSK 1.4MHz CH-High, 1 RB



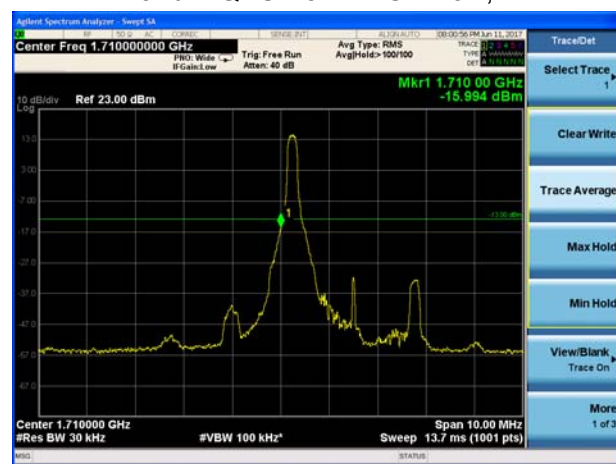
LTE Band 4 QPSK 1.4MHz CH-Low, 100%RB



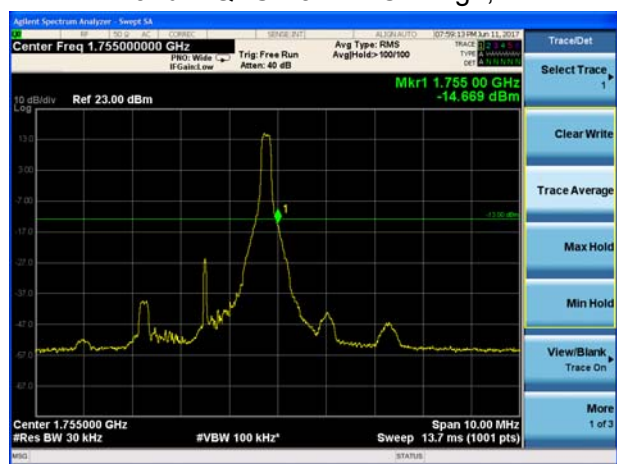
LTE Band 4 QPSK 1.4MHz CH-High, 100%RB



LTE Band 4 QPSK 3MHz CH-Low, 1 RB



LTE Band 4 QPSK 3MHz CH-High, 1 RB





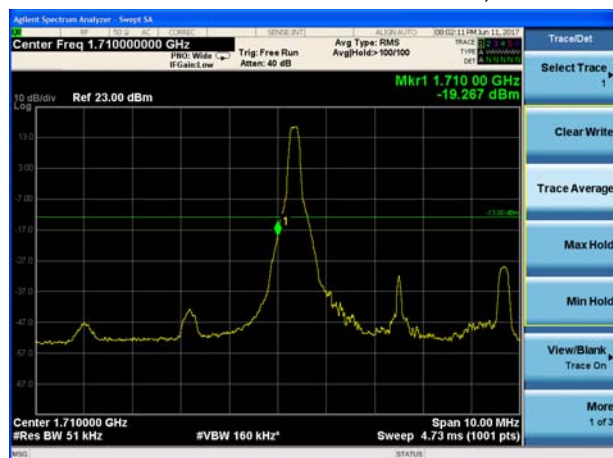
LTE Band 4 QPSK 3MHz CH-Low, 100%RB



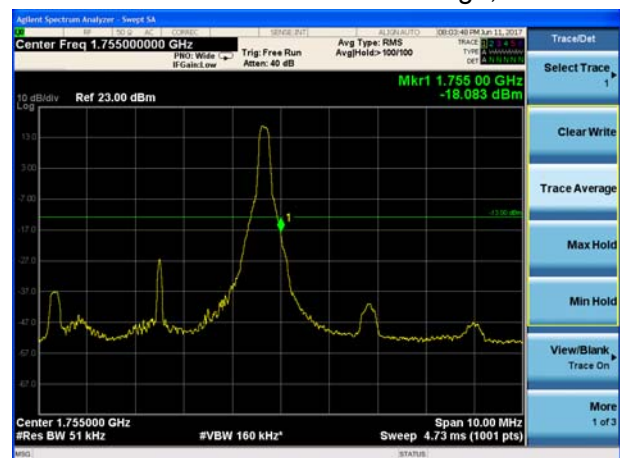
LTE Band 4 QPSK 3MHz CH-High, 100%RB



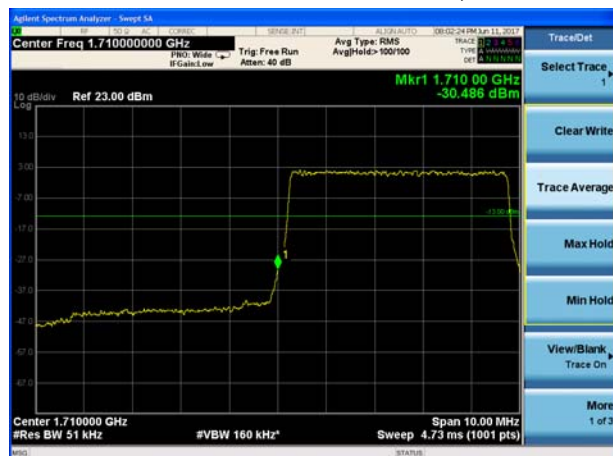
LTE Band 4 QPSK 5MHz CH-Low, 1 RB



LTE Band 4 QPSK 5MHz CH-High, 1 RB



LTE Band 4 QPSK 5MHz CH-Low, 100%RB



LTE Band 4 QPSK 5MHz CH-High, 100%RB





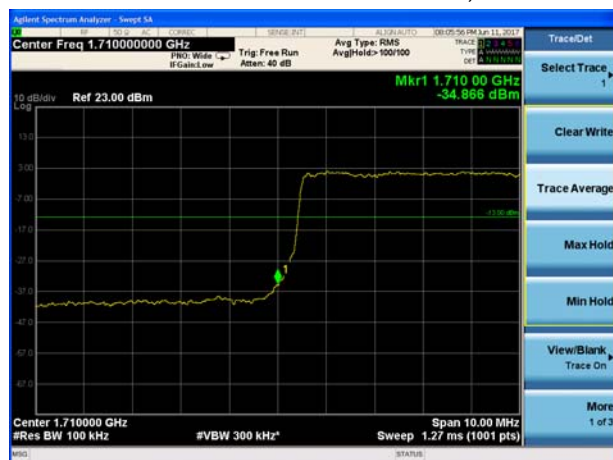
LTE Band 4 QPSK 10MHz CH-Low, 1 RB



LTE Band 4 QPSK 10MHz CH-High, 1 RB



LTE Band 4 QPSK 10MHz CH-Low, 100%RB



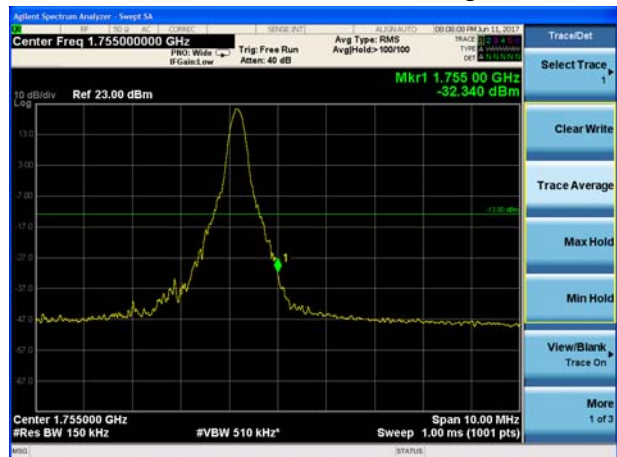
LTE Band 4 QPSK 10MHz CH-High, 100%RB



LTE Band 4 QPSK 15MHz CH-Low, 1 RB



LTE Band 4 QPSK 15MHz CH-High, 1 RB





LTE Band 4 QPSK 15MHz CH-Low, 100%RB



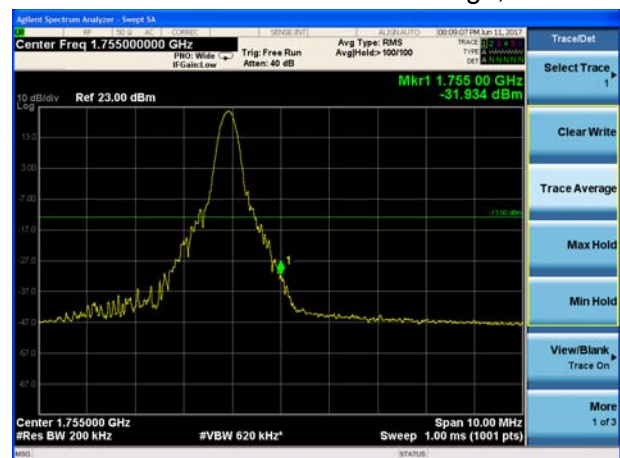
LTE Band 4 QPSK 15MHz CH-High, 100%RB



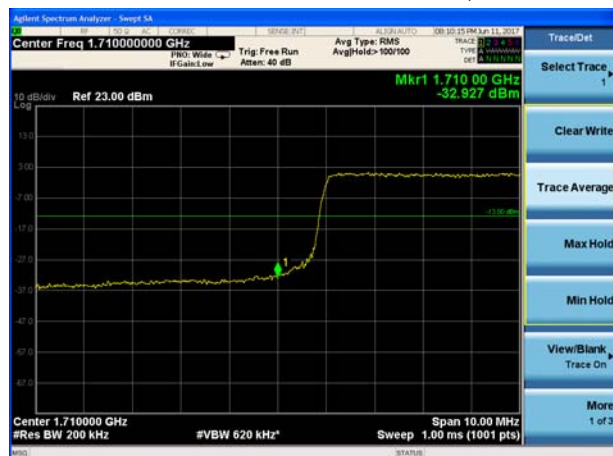
LTE Band 4 QPSK 20MHz CH-Low, 1 RB



LTE Band 4 QPSK 20MHz CH-High, 1 RB



LTE Band 4 QPSK 20MHz CH-Low, 100%RB

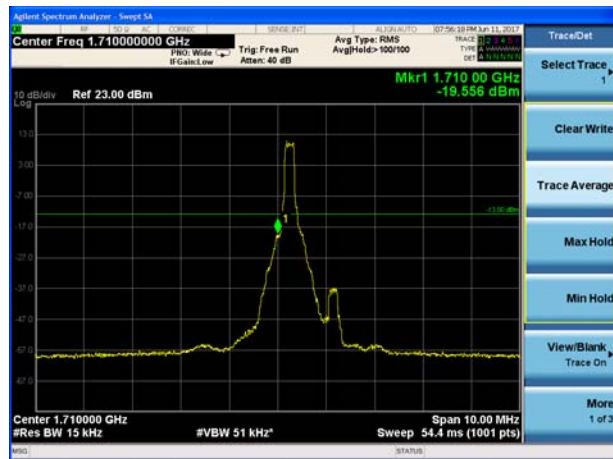


LTE Band 4 QPSK 20MHz CH-High, 100%RB

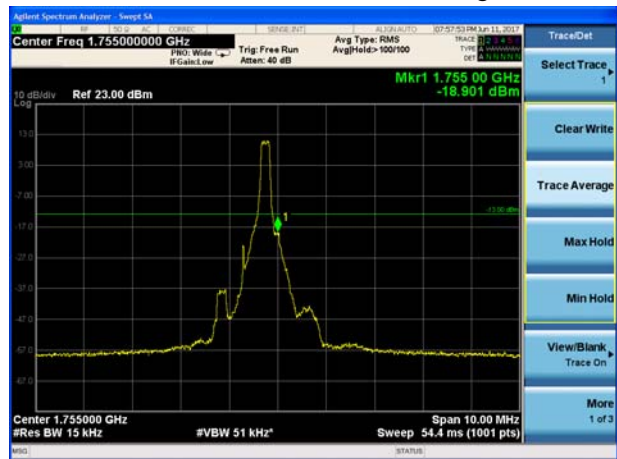




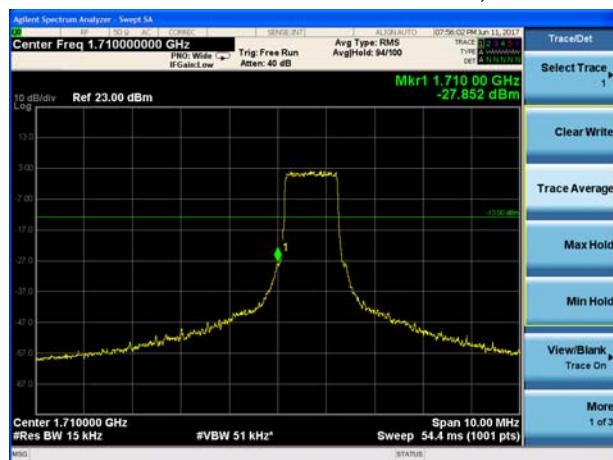
LTE Band 4 16QAM 1.4MHz CH-Low, 1 RB



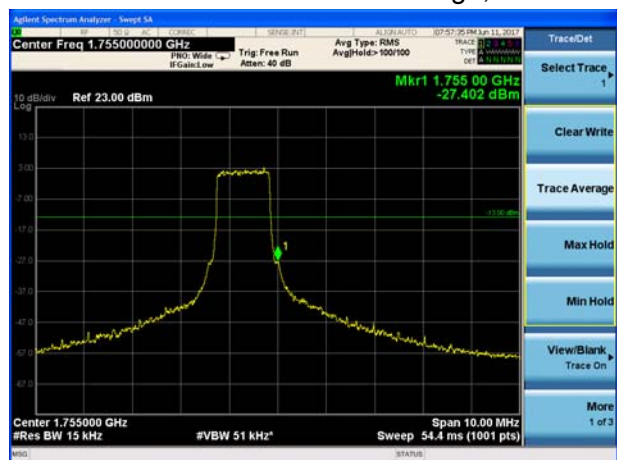
LTE Band 4 16QAM 1.4MHz CH-High, 1 RB



LTE Band 4 16QAM 1.4MHz CH-Low, 100%RB



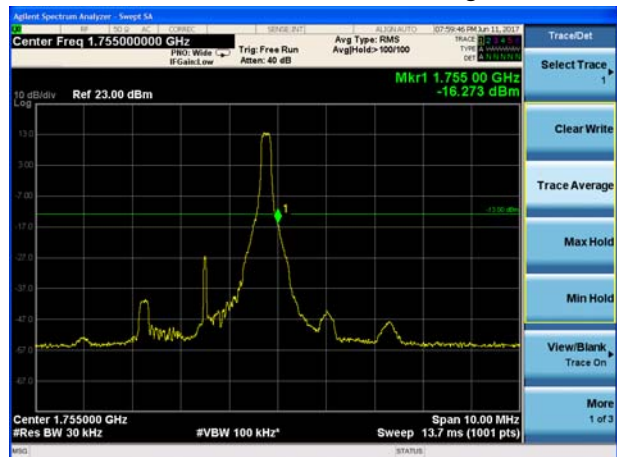
LTE Band 4 16QAM 1.4MHz CH-High, 100%RB



LTE Band 4 16QAM 3MHz CH-Low, 1 RB



LTE Band 4 16QAM 3MHz CH-High, 1 RB





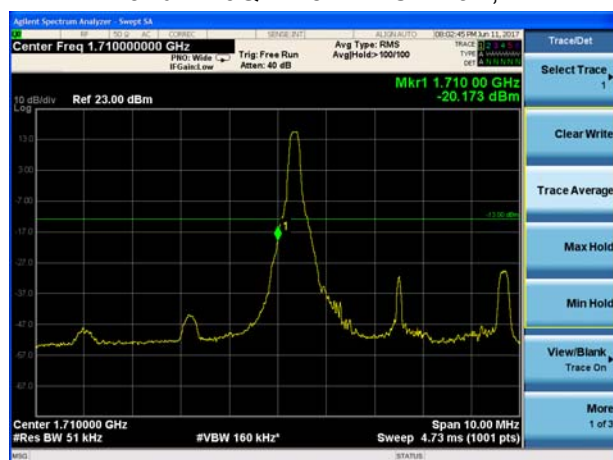
LTE Band 4 16QAM 3MHz CH-Low, 100%RB



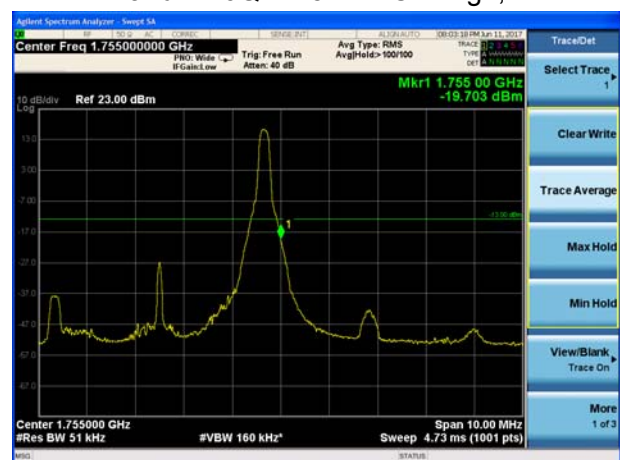
LTE Band 4 16QAM 3MHz CH-High, 100%RB



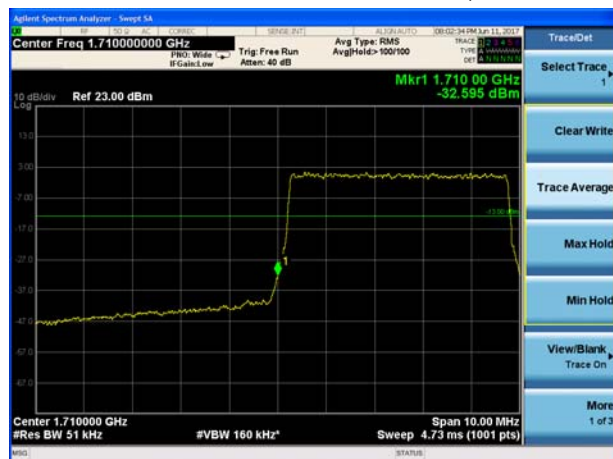
LTE Band 4 16QAM 5MHz CH-Low, 1 RB



LTE Band 4 16QAM 5MHz CH-High, 1 RB



LTE Band 4 16QAM 5MHz CH-Low, 100%RB

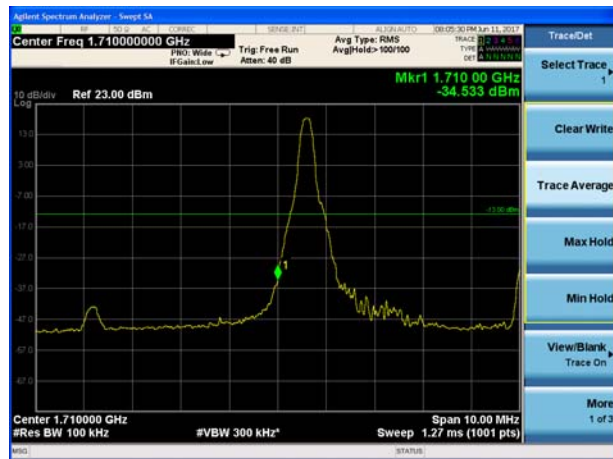


LTE Band 4 16QAM 5MHz CH-High, 100%RB





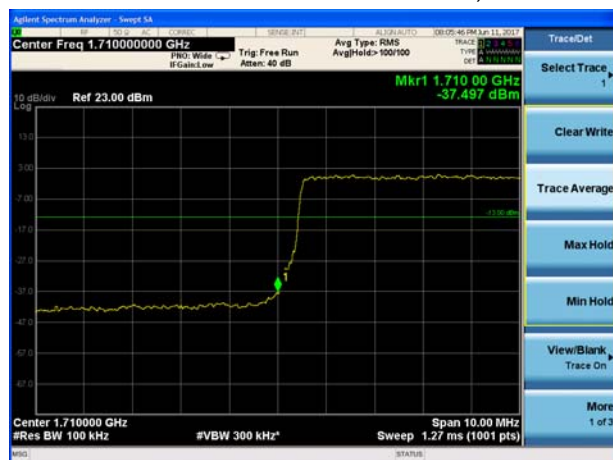
LTE Band 4 16QAM 10MHz CH-Low, 1 RB



LTE Band 4 16QAM 10MHz CH-High, 1 RB



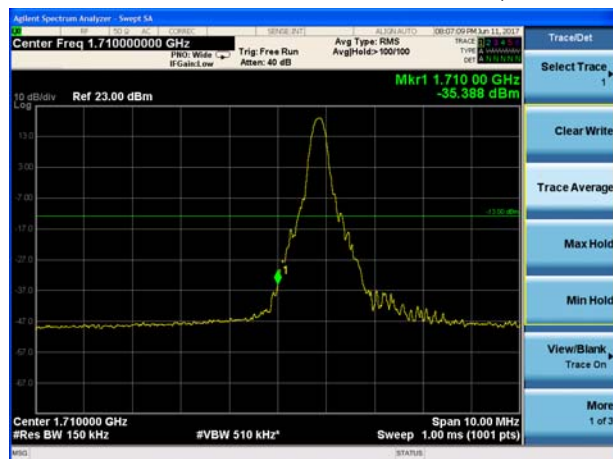
LTE Band 4 16QAM 10MHz CH-Low, 100%RB



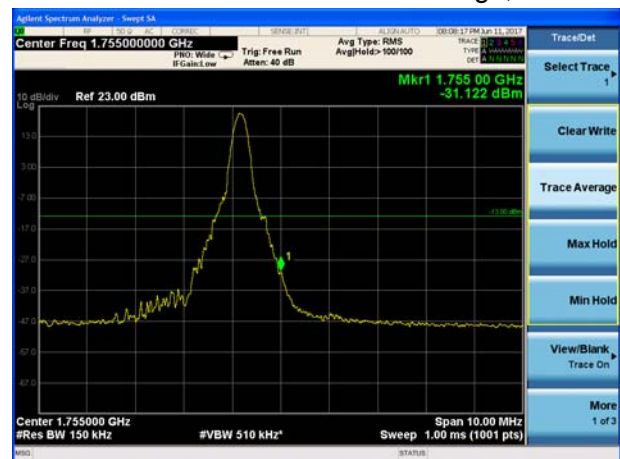
LTE Band 4 16QAM 10MHz CH-High, 100%RB



LTE Band 4 16QAM 15MHz CH-Low, 1 RB



LTE Band 4 16QAM 15MHz CH-High, 1 RB





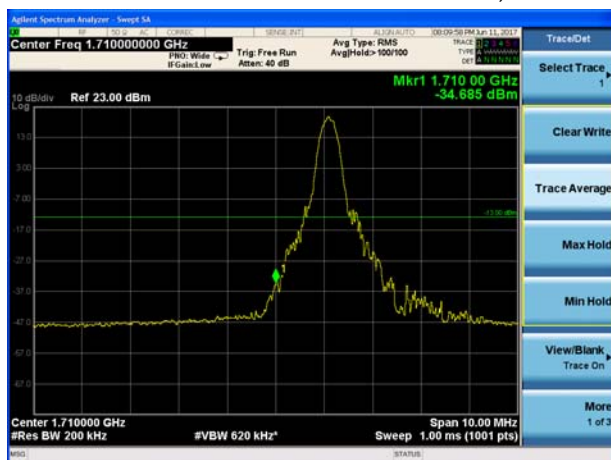
LTE Band 4 16QAM 15MHz CH-Low, 100%RB



LTE Band 4 16QAM 15MHz CH-High, 100%RB



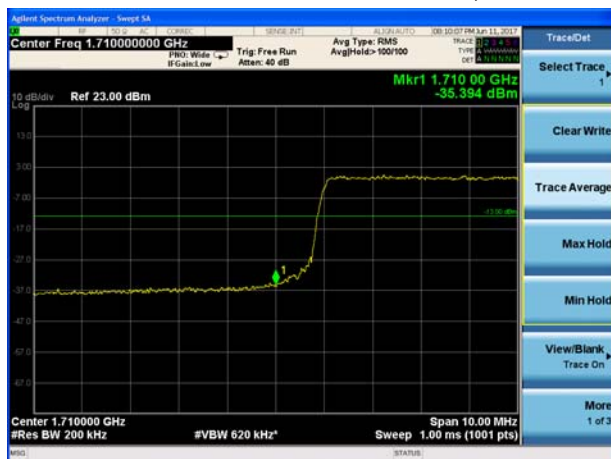
LTE Band 4 16QAM 20MHz CH-Low, 1 RB



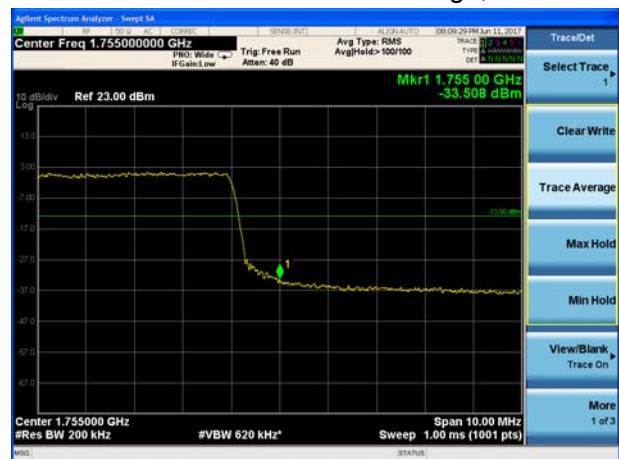
LTE Band 4 16QAM 20MHz CH-High, 1 RB



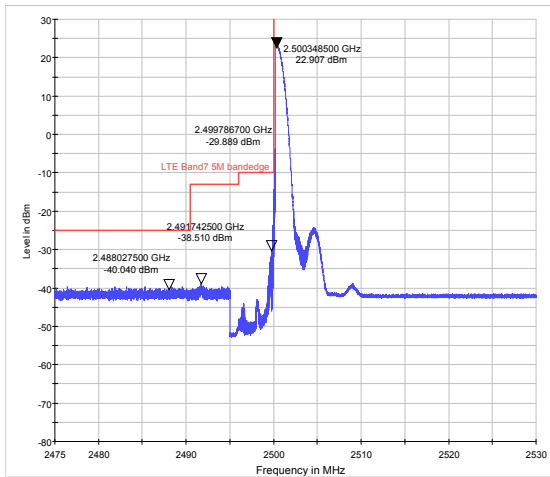
LTE Band 4 16QAM 20MHz CH-Low, 100%RB



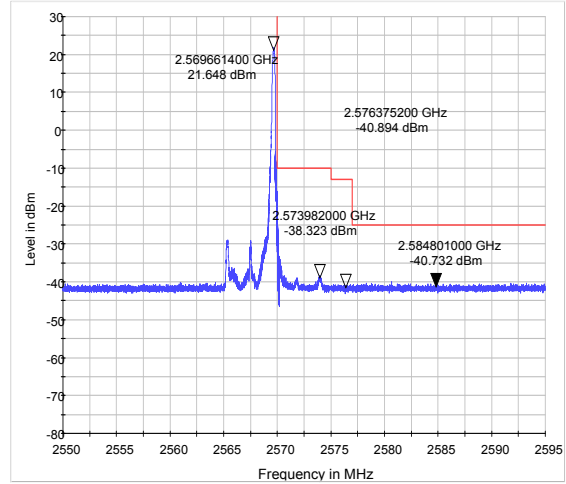
LTE Band 4 16QAM 20MHz CH-High, 100%RB



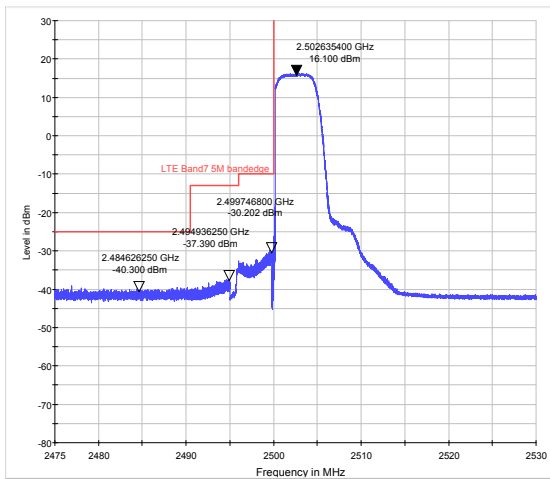
LTE Band 7 QPSK 5MHz CH-Low, 1RB



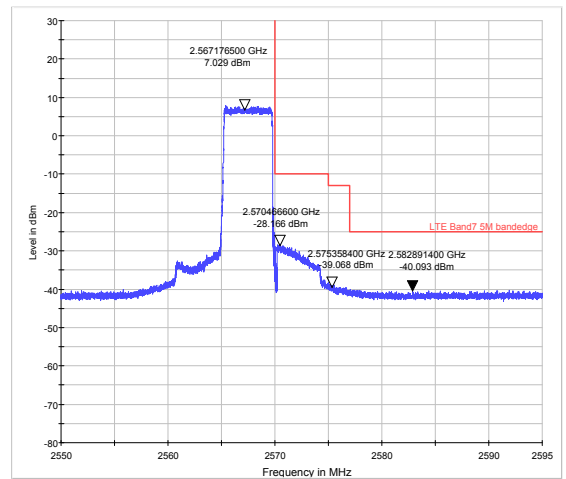
LTE Band 7 QPSK 5MHz CH-High, 1RB



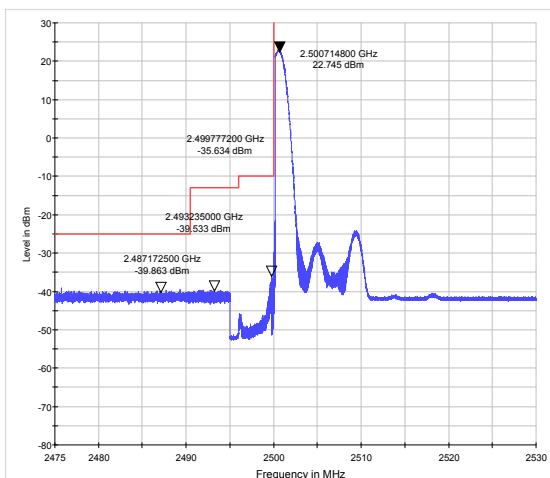
LTE Band 7 QPSK 5MHz CH-Low, 100%RB



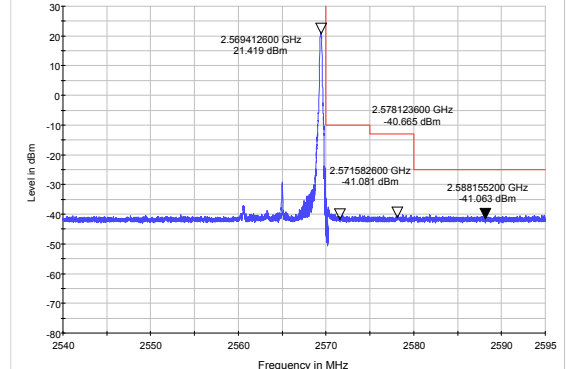
LTE Band 7 QPSK 5MHz CH-High, 100%RB



LTE Band 7 QPSK 10MHz CH-Low, 1 RB

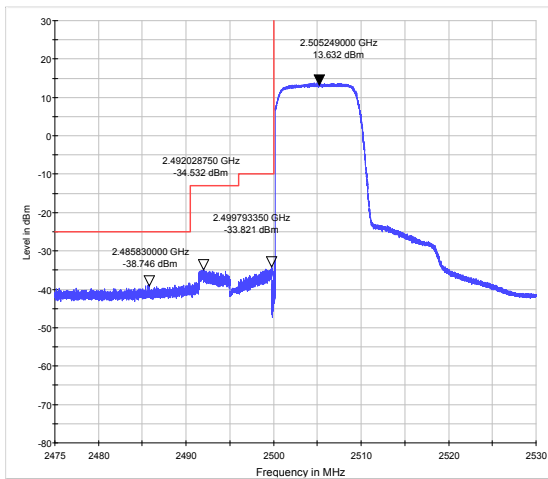


LTE Band 7 QPSK 10MHz CH-High, 1 RB

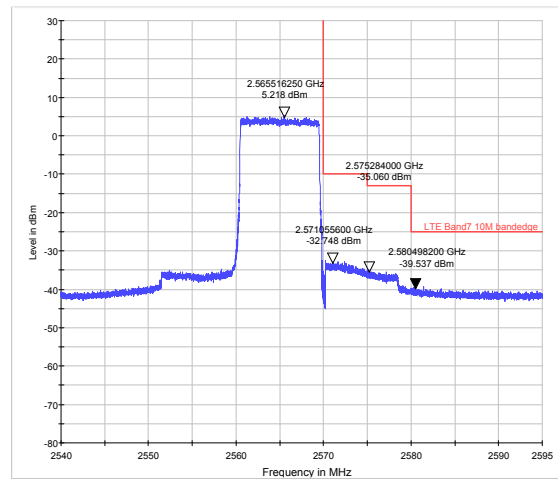




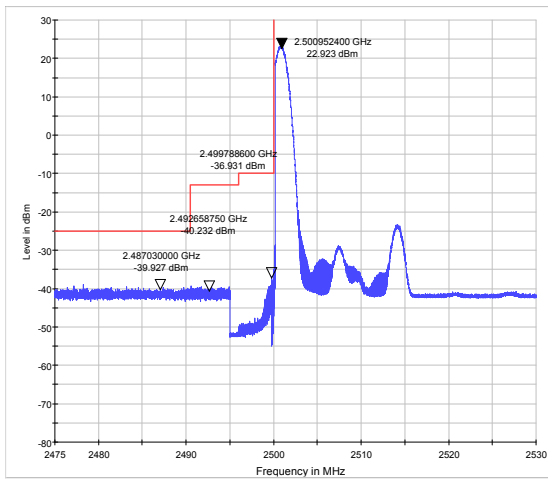
LTE Band 7 QPSK 10MHz CH-Low, 100%RB



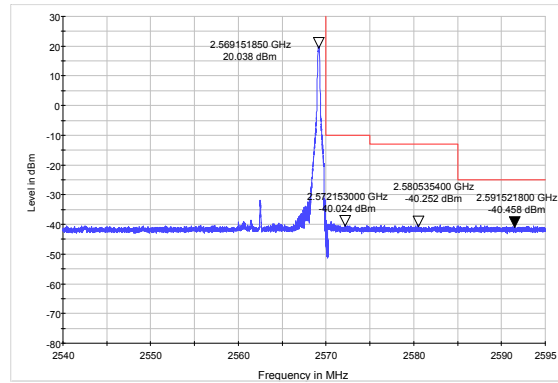
LTE Band 7 QPSK 10MHz CH-High, 100%RB



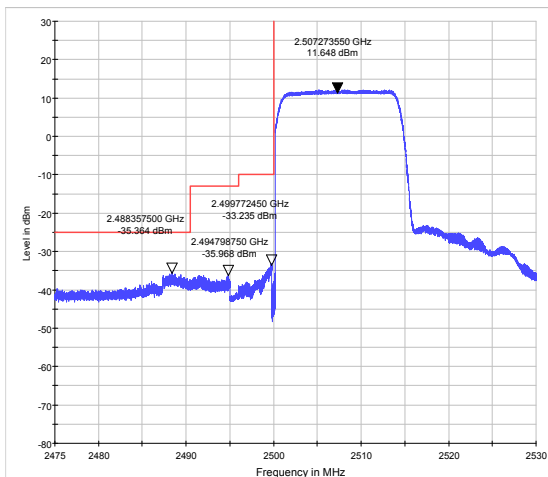
LTE Band 7 QPSK 15MHz CH-Low, 1 RB



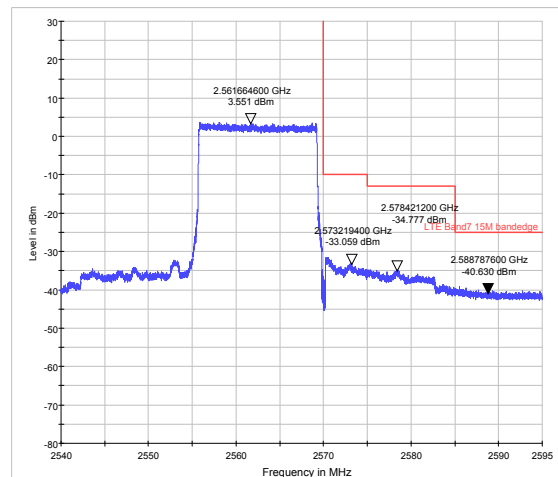
LTE Band 7 QPSK 15MHz CH-High, 1 RB



LTE Band 7 QPSK 15MHz CH-Low, 100%RB

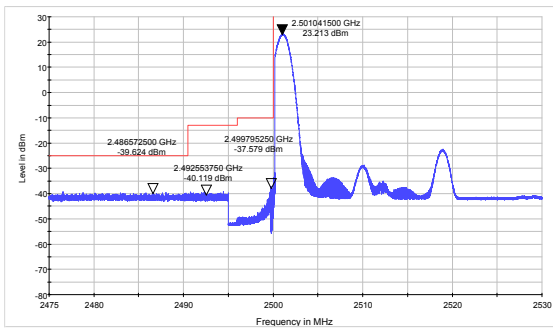


LTE Band 7 QPSK 15MHz CH-High, 100%RB

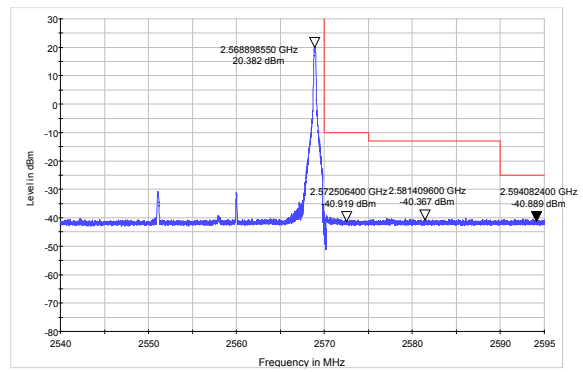




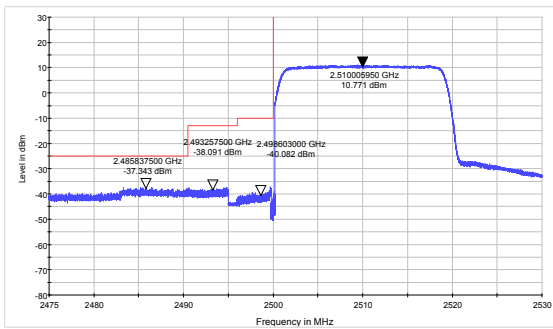
LTE Band 7 QPSK 20MHz CH-Low, 1 RB



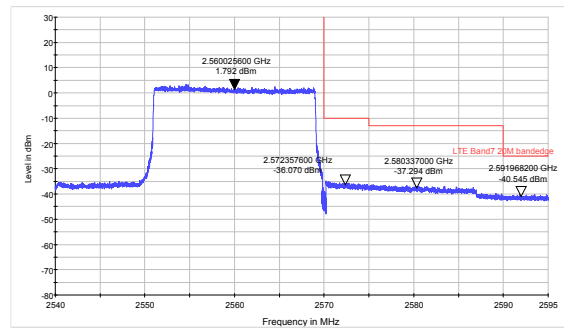
LTE Band 7 QPSK 20MHz CH-High, 1 RB



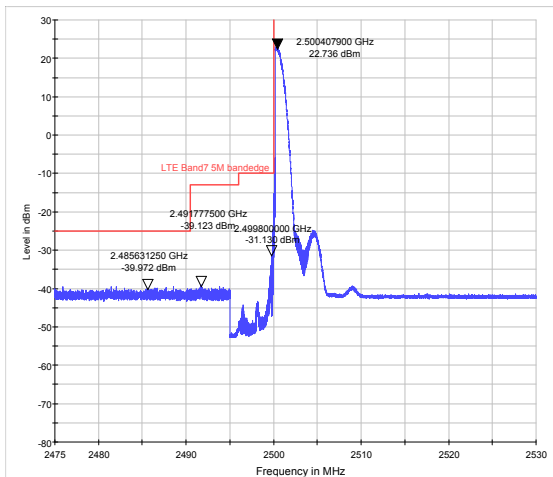
LTE Band 7 QPSK 20MHz CH-Low, 100%RB



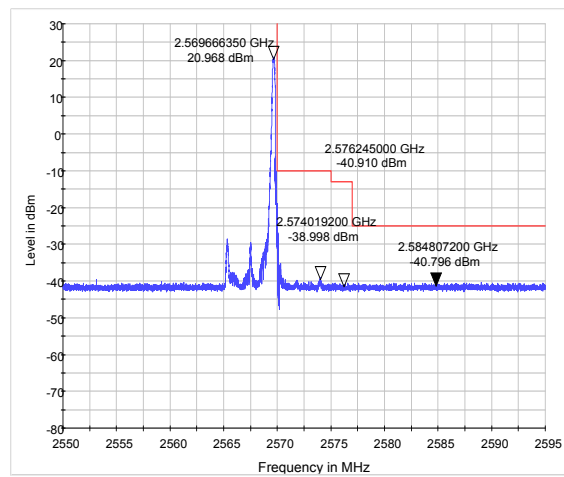
LTE Band 7 QPSK 20MHz CH-High, 100%RB



LTE Band 7 16QAM 5MHz CH-Low, 1 RB

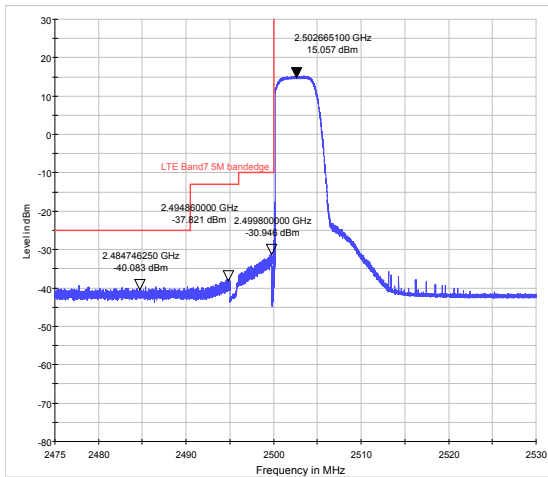


LTE Band 7 16QAM 5MHz CH-High, 1 RB

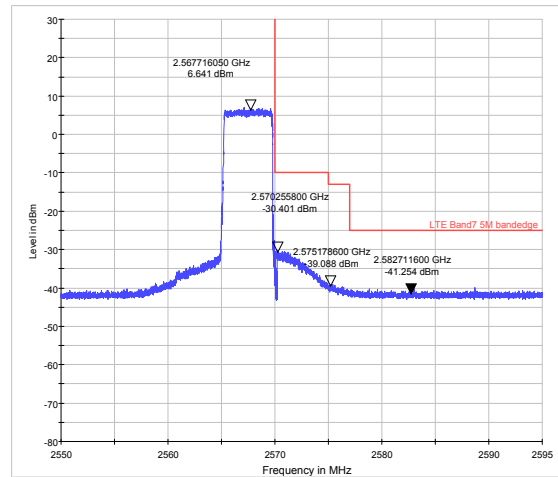




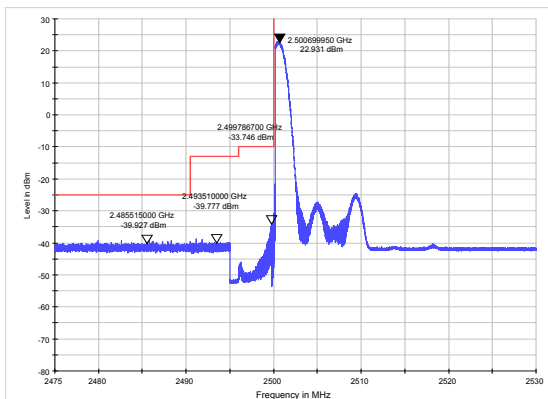
LTE Band 7 16QAM 5MHz CH-Low, 100%RB



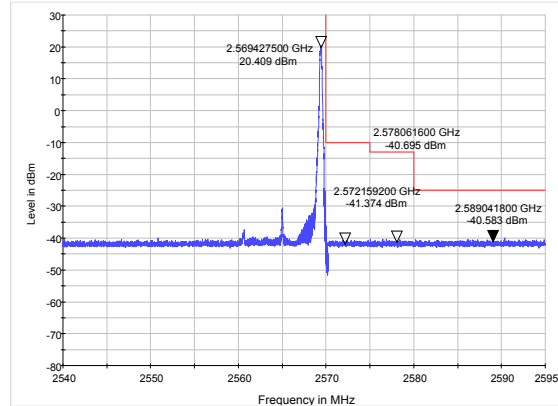
LTE Band 7 16QAM 5MHz CH-High, 100%RB



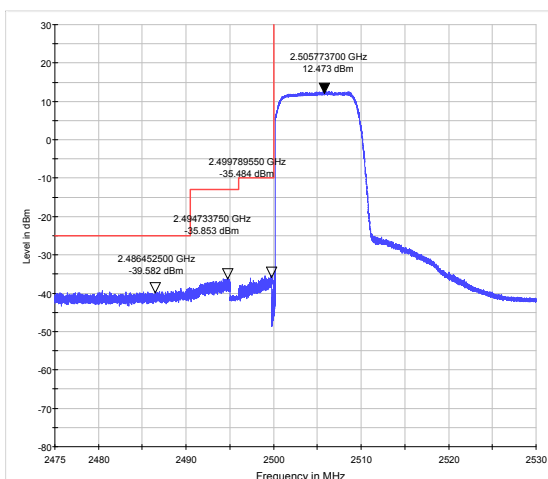
LTE Band 7 16QAM 10MHz CH-Low, 1 RB



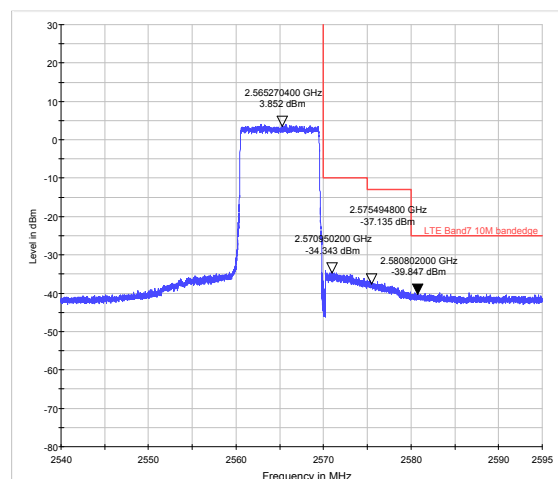
LTE Band 7 16QAM 10MHz CH-High, 1 RB



LTE Band 7 16QAM 10MHz CH-Low, 100%RB

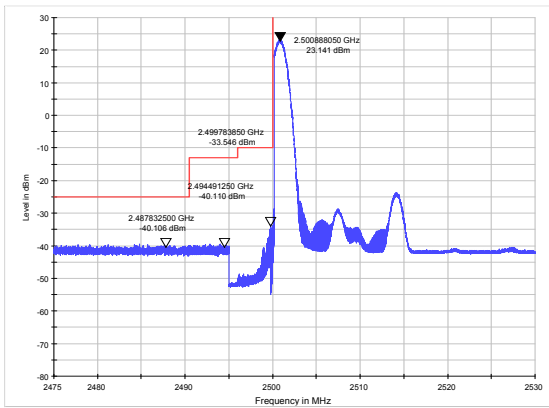


LTE Band 7 16QAM 10MHz CH-High, 100%RB

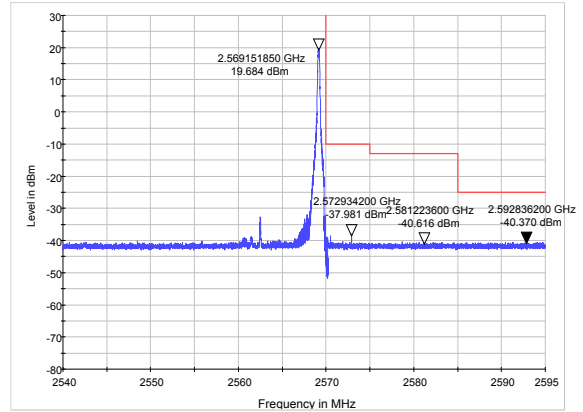




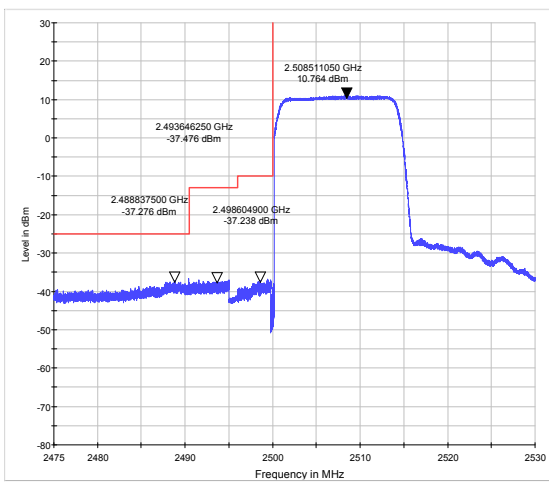
LTE Band 7 16QAM 15MHz CH-Low, 1 RB



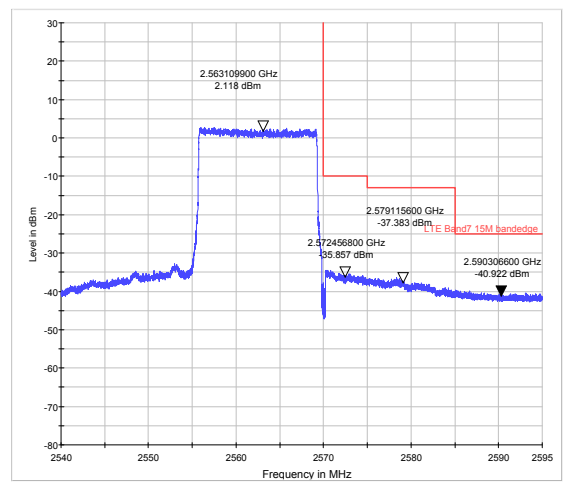
LTE Band 7 16QAM 15MHz CH-High, 1 RB



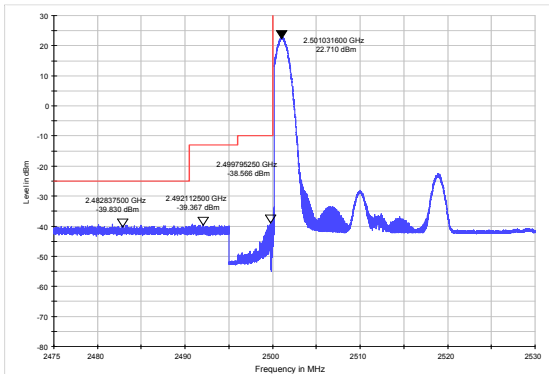
LTE Band 7 16QAM 15MHz CH-Low, 100%RB



LTE Band 7 16QAM 15MHz CH-High, 100%RB



LTE Band 7 16QAM 20MHz CH-Low, 1 RB



LTE Band 7 16QAM 20MHz CH-High, 1 RB

