



RF TEST REPORT

Applicant Beijing Chusudu Technology Co., Ltd.
FCC ID 2AQ5PAUTORINGA2
Product Vehicular wireless terminal(with 4G function)
Brand AutoRing
Model A2
Report No. R1807A0315-R3V1
Issue Date October 24, 2018

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(b)(10) /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(f) /27.53(c) /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(f) /27.53(m)	PASS
8	Radiates Spurious Emission	2.1053 /27.53(h) /27.53(g) /27.53(m) /27.53(f)	PASS
Date of Testing: July 8 ,2018 ~ August 1 ,2018			
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.

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 (Designation number: CN1179, Test Firm Registration Number: 446626)

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	Beijing Chusudu Technology Co., Ltd.
Applicant address	Dongsheng Plaza A,5th Floor,8 Zhongguancun East Rd, Haidian District, Beijing, China
Manufacturer	Beijing Chusudu Technology Co., Ltd.
Manufacturer address	Dongsheng Plaza A,5th Floor,8 Zhongguancun East Rd, Haidian District, Beijing, China

General information

EUT Description			
Model	A2		
IMEI	863346039069490		
Hardware Version	V3.1		
Software Version	RC108_D2_MT2_C1_BOM_V3.1_S20180622		
Power Supply	External Power Supply		
Antenna Type	Internal Antenna		
Antenna Gain	WCDMA Band IV: -0.6dBi LTE Band 4: -0.6dBi LTE Band 7/41: -0.8dBi LTE Band 12/13/17: 0.8dBi		
Test Mode(s)	WCDMA Band IV; LTE Band 4, LTE Band 7, LTE Band 12, LTE Band 13, LTE Band 17, LTE Band 41;		
Test Modulation	(WCDMA)QPSK, 16QAM; (LTE)QPSK 16QAM;		
HSDPA UE Category	24		
HSUPA UE Category	7		
LTE Category	4		
Maximum E.I.R.P./ E.R.P.	WCDMA Band IV:	21.58 dBm	
	LTE Band 4:	22.47dBm	
	LTE Band 7:	19.78dBm	
	LTE Band 12:	14.54dBm	
	LTE Band 13:	11.88dBm	
	LTE Band 17:	14.03dBm	
	LTE Band 41:	18.54dBm	
Rated Power Supply Voltage:	3.7V		
Extreme Voltage	Minimum: 3.2V Maximum: 4.2V		
Extreme Temperature	Lowest:- 20°C Highest: +70°C		
Operating Frequency Range(s)	Mode	Tx (MHz)	Rx (MHz)



	WCDMA Band IV	1710 ~ 1755	2110 ~ 2155
	LTE Band 4	1710 ~ 1755	2110 ~ 2155
	LTE Band 7	2500 ~ 2570	2620 ~ 2690
	LTE Band 12	699 ~ 716	729 ~ 746
	LTE Band 13	777 ~ 787	746 ~ 756
	LTE Band 17	704 ~ 716	734 ~ 746
	LTE Band 41	2496 ~ 2690	2496 ~ 2690
EUT Accessory			
AutoRing A2 Power Cable	Manufacturer: Shenzhen GuanLiJie Technology Co.,Ltd Model: AutoRing A2 Power cord		
Camera	Manufacturer: Beijing Chusudu Technology Co., Ltd. Model: MMT-AHD-H65		
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-E (2016)

KDB 971168 D01 Power Meas License Digital Systems v03r01

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 (X axis, horizontal 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 WCDMA/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 WCDMA Band IV:

Test items	Modes/Modulation
	WCDMA Band IV
RF power output	RMC HSDPA/HSUPA DC-HSDPA
Effective Isotropic Radiated power	RMC
Occupied Bandwidth	RMC
Band Edge Compliance	RMC
Peak-to-Average Power Ratio	RMC
Frequency Stability	RMC
Spurious Emissions at Antenna Terminals	RMC
Radiates Spurious Emission	RMC

Test modes are chosen to be reported as the worst case configuration below for LTE Band 4/7/12/13/17/41:

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 13	-	-	O	O	-	-	O	O	O	O	O	O	O	O
	LTE 17	-	-	O	O	-	-	O	O	O	O	O	O	O	O
	LTE 41	-	-	O	O	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	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 13	-	-	O	O	-	-	O	O	O	O	O	O	O	O
	LTE 17	-	-	O	O	-	-	O	O	O	O	O	O	O	O
	LTE 41	-	-	O	O	O	O	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 13	-	-	O	O	-	-	O	O	-	-	O	O	O	O
	LTE 17	-	-	O	O	-	-	O	O	-	-	O	O	O	O
	LTE 41	-	-	O	O	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 13	-	-	O	O	-	-	O	O	O	-	O	O	-	O
	LTE 17	-	-	O	O	-	-	O	O	O	-	O	O	-	O
	LTE 41	-	-	O	O	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 13	-	-	O	O	-	-	O	O	-	-	O	O	O	O
	LTE 17	-	-	O	O	-	-	O	O	-	-	O	O	O	O
	LTE 41	-	-	O	O	O	O	O	O	-	-	O	O	O	O
Frequency Stability	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 13	-	-	O	O	-	-	O	O	O	O	O	O	O	O
	LTE 17	-	-	O	O	-	-	O	O	O	O	O	O	O	O
	LTE 41	-	-	O	O	O	O	O	O	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 13	-	-	O	O	-	-	O	-	O	-	-	O	O	O
	LTE 17	-	-	O	O	-	-	O	-	O	-	-	O	O	O
	LTE 41	-	-	O	O	O	O	O	-	O	-	-	O	O	O
Radiates Spurious Emission	LTE 4	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 13	-	-	O	O	-	-	O	-	O	-	-	O	O	O
	LTE 17	-	-	O	O	-	-	O	-	O	-	-	O	O	O
	LTE 41	-	-	O	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 Case Results

5.1 RF Power Output

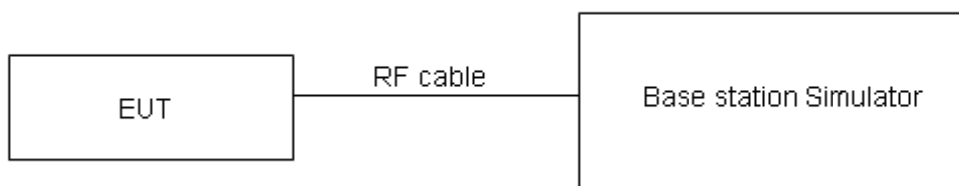
Ambient condition

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

WCDMA Band IV		AV Conducted Power(dBm)		
		Channel 1312	Channel 1413	Channel 1513
		1712.4 (MHz)	1732.6 (MHz)	1752.6(MHz)
RMC		23.18	23.12	23.19
HSDPA	Sub - Test 1	22.21	22.17	22.26
	Sub - Test 2	22.26	22.22	22.26
	Sub - Test 3	21.77	21.72	21.81
	Sub - Test 4	21.74	21.71	21.80
HSUPA	Sub - Test 1	22.24	22.21	22.28
	Sub - Test 2	22.27	22.21	22.30
	Sub - Test 3	21.76	21.78	21.84
	Sub - Test 4	22.23	22.18	22.25
	Sub - Test 5	22.22	22.20	22.23
DC-HSDPA	Sub - Test 1	23.05	22.99	23.06
	Sub - Test 2	23.03	22.98	23.05
	Sub - Test 3	22.52	22.47	22.54
	Sub - Test 4	22.51	22.46	22.53
HSPA+	16QAM	22.88	22.81	22.90

LTE 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	23.84	23.89	23.83
		1	2	23.61	23.61	23.27
		1	5	23.73	23.14	22.98
		3	0	23.53	23.89	23.51
		3	2	23.53	23.44	23.15
		3	3	23.54	23.43	23.11
		6	0	22.57	22.77	22.40
	16QAM	1	0	23.07	23.35	22.84
		1	2	22.90	23.11	22.26
		1	5	22.91	22.10	21.93
		3	0	22.61	22.90	22.58
		3	2	22.64	22.61	22.45
		3	3	22.60	22.50	22.20
		6	0	21.64	21.85	21.48
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				19965/1711.5	20175/1732.5	20385/1753.5
3MHz	QPSK	1	0	23.86	23.93	23.86
		1	7	23.64	23.66	23.31
		1	14	23.76	23.19	23.02
		8	0	22.63	23.01	22.64
		8	4	22.65	22.54	22.27
		8	7	22.64	22.54	22.21
		15	0	22.60	22.81	22.43
	16QAM	1	0	23.10	23.37	22.87
		1	7	22.93	23.16	22.30
		1	14	22.93	22.14	21.96
		8	0	21.72	22.03	21.70
		8	4	21.75	21.74	21.57
		8	7	21.70	21.62	21.33
		15	0	21.67	21.89	21.51
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				19975/1712.5	20175/1732.5	20375/1752.5
5MHz	QPSK	1	0	23.83	23.91	23.82
		1	13	23.62	23.62	23.28
		1	24	23.73	23.14	22.98
		12	0	22.60	22.96	22.60
		12	6	22.63	22.50	22.22
		12	13	22.62	22.52	22.17
		25	0	22.58	22.80	22.41



	16QAM	1	0	23.07	23.33	22.84
		1	13	22.90	23.14	22.27
		1	24	22.90	22.12	21.92
		12	0	21.70	21.99	21.67
		12	6	21.72	21.69	21.53
		12	13	21.67	21.57	21.29
		25	0	21.65	21.85	21.46
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20000/1715	20175/1732.5	20350/1750
10MHz	QPSK	1	0	23.85	23.92	23.85
		1	25	23.65	23.67	23.32
		1	49	23.75	23.18	23.01
		25	0	22.63	23.01	22.64
		25	13	22.66	22.55	22.26
		25	25	22.64	22.56	22.22
		50	0	22.66	22.82	22.45
	16QAM	1	0	23.09	23.36	22.86
		1	25	22.93	23.18	22.30
		1	49	22.93	22.14	21.95
		25	0	21.73	22.04	21.71
		25	13	21.74	21.73	21.56
		25	25	21.70	21.62	21.33
		50	0	21.68	21.90	21.50
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20025/1717.5	20175/1732.5	20325/1747.5
15MHz	QPSK	1	0	23.84	23.88	23.83
		1	38	23.63	23.66	23.29
		1	74	23.72	23.13	22.97
		36	0	22.61	22.97	22.61
		36	18	22.63	22.50	22.22
		36	39	22.61	22.53	22.18
		75	0	22.64	22.78	22.40
	16QAM	1	0	23.04	23.34	22.84
		1	38	22.91	23.15	22.28
		1	74	22.90	22.10	21.92
		36	0	21.70	22.02	21.68
		36	18	21.71	21.68	21.52
		36	39	21.68	21.58	21.30
		75	0	21.65	21.85	21.46
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20050/1720	20175/1732.5	20300/1745
20MHz	QPSK	1	0	23.81	23.84	23.80
		1	50	23.62	23.62	23.27



		1	99	23.70	23.12	22.94
		50	0	22.58	22.92	22.57
		50	25	22.61	22.46	22.19
		50	50	22.58	22.48	22.14
		100	0	22.61	22.73	22.36
	16QAM	1	0	23.02	23.30	22.79
		1	50	22.87	23.13	22.24
		1	99	22.88	22.07	21.90
		50	0	21.67	21.98	21.65
		50	25	21.68	21.66	21.49
		50	50	21.65	21.53	21.26
		100	0	21.63	21.81	21.43

LTE 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	22.62	23.37	23.21
		1	13	22.72	23.04	23.26
		1	24	22.98	23.24	23.00
		12	0	21.82	22.20	22.38
		12	6	21.90	22.25	22.34
		12	13	22.00	22.31	22.35
		25	0	21.88	22.17	22.22
	16QAM	1	0	22.18	22.55	22.22
		1	13	21.91	22.25	22.25
		1	24	22.05	22.51	22.26
		12	0	20.83	21.01	20.73
		12	6	20.91	21.06	20.68
		12	13	20.93	21.14	20.80
		25	0	20.96	21.12	20.86
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20800/2505	21100/2535	21400/2565
10MHz	QPSK	1	0	22.64	23.38	23.24
		1	25	22.75	23.09	23.30
		1	49	23.00	23.28	23.03
		25	0	21.85	22.25	22.42
		25	13	21.93	22.30	22.38
		25	25	22.02	22.35	22.40
		50	0	21.96	22.19	22.26
	16QAM	1	0	22.20	22.58	22.24
		1	25	21.94	22.29	22.28
		1	49	22.08	22.53	22.29



		25	0	20.86	21.06	20.77
		25	13	20.93	21.10	20.71
		25	25	20.96	21.19	20.84
		50	0	20.99	21.17	20.90
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20825/2507.5	21100/2535	21375/2562.5
15MHz	QPSK	1	0	22.63	23.34	23.22
		1	38	22.73	23.08	23.27
		1	74	22.97	23.23	22.99
		36	0	21.83	22.21	22.39
		36	18	21.90	22.25	22.34
		36	39	21.99	22.32	22.36
		75	0	21.94	22.15	22.21
	16QAM	1	0	22.15	22.56	22.22
		1	38	21.92	22.26	22.26
		1	74	22.05	22.49	22.26
		36	0	20.83	21.04	20.74
		36	18	20.90	21.05	20.67
		36	39	20.94	21.15	20.81
		75	0	20.96	21.12	20.86
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20850/2510	21100/2535	21350/2560
20MHz	QPSK	1	0	22.60	23.30	23.19
		1	50	22.72	23.04	23.25
		1	99	22.95	23.22	22.96
		50	0	21.80	22.16	22.35
		50	25	21.88	22.21	22.31
		50	50	21.96	22.27	22.32
		100	0	21.91	22.10	22.17
	16QAM	1	0	22.13	22.52	22.17
		1	50	21.88	22.24	22.22
		1	99	22.03	22.46	22.24
		50	0	20.80	21.00	20.71
		50	25	20.87	21.03	20.64
		50	50	20.91	21.10	20.77
		100	0	20.94	21.08	20.83

LTE Band 12				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	23.70	23.66	22.64
		1	2	23.65	23.59	22.63



		1	5	23.59	23.64	22.62
		3	0	23.47	23.58	22.64
		3	2	23.45	23.55	22.60
		3	3	23.52	23.58	22.74
		6	0	22.48	22.70	21.74
	16QAM	1	0	22.75	23.30	22.67
		1	2	22.79	23.28	22.67
		1	5	22.74	23.30	22.62
		3	0	22.44	22.62	22.68
		3	2	22.51	22.78	22.69
		3	3	22.52	22.69	22.64
		6	0	21.55	21.75	21.77
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				23025/700.5	23095/707.5	23165/714.5
3MHz	QPSK	1	0	23.71	23.69	22.66
		1	7	23.69	23.65	22.68
		1	14	23.61	23.68	22.65
		8	0	22.57	22.70	21.77
		8	4	22.58	22.66	21.71
		8	7	22.62	22.71	21.85
		15	0	22.57	22.75	21.79
	16QAM	1	0	22.77	23.31	22.69
		1	7	22.82	23.35	22.71
		1	14	22.76	23.34	22.64
		8	0	21.56	21.76	21.81
		8	4	21.61	21.90	21.80
		8	7	21.62	21.81	21.77
		15	0	21.59	21.80	21.79
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				23035/701.5	23095/707.5	23155/713.5
5MHz	QPSK	1	0	23.70	23.65	22.64
		1	13	23.67	23.64	22.65
		1	24	23.58	23.63	22.61
		12	0	22.55	22.66	21.74
		12	6	22.55	22.61	21.67
		12	13	22.59	22.68	21.81
		25	0	22.55	22.71	21.74
	16QAM	1	0	22.72	23.29	22.67
		1	13	22.80	23.32	22.69
		1	24	22.73	23.30	22.61
		12	0	21.53	21.74	21.78
		12	6	21.58	21.85	21.76
		12	13	21.60	21.77	21.74



Bandwidth	Modulation	25	0	21.56	21.75	21.75
		RB size	RB offset	Channel/Frequency (MHz)		
				23060/704	23095/707.5	23130/711
10MHz	QPSK	1	0	23.67	23.61	22.61
		1	25	23.66	23.60	22.63
		1	49	23.56	23.62	22.58
		25	0	22.52	22.61	21.70
		25	13	22.53	22.57	21.64
		25	25	22.56	22.63	21.77
		50	0	22.52	22.66	21.70
	16QAM	1	0	22.70	23.25	22.62
		1	25	22.76	23.30	22.65
		1	49	22.71	23.27	22.59
		25	0	21.50	21.70	21.75
		25	13	21.55	21.83	21.73
		25	25	21.57	21.72	21.70
		50	0	21.54	21.71	21.72

LTE Band 13				AV Conducted Power(dBm)		
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				23205/779.5	23230/782	23255/784.5
5MHz	QPSK	1	0	20.57	20.62	20.63
		1	13	20.60	20.61	20.60
		1	24	20.54	20.57	20.54
		12	0	20.60	20.58	20.61
		12	6	20.35	20.67	20.66
		12	13	20.61	20.60	20.60
		25	0	20.55	20.69	20.56
	16QAM	1	0	20.63	20.95	20.49
		1	13	20.65	20.92	20.50
		1	24	20.62	20.91	20.44
		12	0	20.57	20.59	20.60
		12	6	20.61	20.48	20.54
		12	13	20.54	20.70	20.57
		25	0	20.57	20.59	20.63
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				/	23230/782	/
10MHz	QPSK	1	0	/	20.63	/
		1	25	/	20.62	/
		1	49	/	20.60	/
		25	0	/	20.57	/
		25	13	/	20.61	/
		25	25	/	20.56	/



		50	0	/	20.62	/
	16QAM	1	0	/	20.86	/
		1	25	/	20.87	/
		1	49	/	20.86	/
		25	0	/	20.61	/
		25	13	/	20.65	/
		25	25	/	20.68	/
		50	0	/	20.59	/

LTE Band 17				AV Conducted Power(dBm)		
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				23755/706.5	23790/710	23825/713.5
5MHz	QPSK	1	0	23.53	23.60	23.65
		1	13	23.51	23.61	23.65
		1	24	23.54	23.58	23.67
		12	0	22.53	22.63	22.64
		12	6	22.54	22.69	22.60
		12	13	22.58	22.67	22.66
		25	0	22.57	22.67	22.68
	16QAM	1	0	22.69	23.18	22.69
		1	13	22.70	23.16	22.67
		1	24	22.65	23.14	22.60
		12	0	21.57	21.70	21.75
		12	6	21.59	21.67	21.77
		12	13	21.61	21.74	21.76
		25	0	21.56	21.69	21.70
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				23780/709	23790/710	23800/711
10MHz	QPSK	1	0	23.50	23.56	23.62
		1	25	23.50	23.57	23.63
		1	49	23.52	23.57	23.64
		25	0	22.50	22.58	22.60
		25	13	22.52	22.65	22.57
		25	25	22.55	22.62	22.62
		50	0	22.54	22.62	22.64
	16QAM	1	0	22.67	23.14	22.64
		1	25	22.66	23.14	22.63
		1	49	22.63	23.11	22.58
		25	0	21.54	21.66	21.72
		25	13	21.56	21.65	21.74
		25	25	21.58	21.69	21.72
		50	0	21.54	21.65	21.67

LTE Band 41				AV Conducted Power(dBm)		
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				39675/2498.5	40620/2593	41565/2687.5
5MHz	QPSK	1	0	23.61	23.74	23.97
		1	13	23.56	23.63	23.96
		1	24	23.64	23.71	23.98
		12	0	22.53	22.66	22.86
		12	6	22.55	22.62	22.82
		12	13	22.67	22.54	22.91
		25	0	22.44	22.56	22.90
	16QAM	1	0	22.62	22.33	22.96
		1	13	22.59	22.69	23.00
		1	24	22.57	22.75	23.04
		12	0	21.76	21.46	21.82
		12	6	21.73	21.65	21.95
		12	13	21.73	21.54	21.88
		25	0	21.60	21.46	21.81
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				39700/2501	40620/2593	41540/2685
10MHz	QPSK	1	0	23.63	23.75	24.00
		1	25	23.59	23.68	24.00
		1	49	23.66	23.75	24.01
		25	0	22.56	22.71	22.90
		25	13	22.58	22.67	22.86
		25	25	22.69	22.58	22.96
		50	0	22.52	22.58	22.94
	16QAM	1	0	22.64	22.36	22.98
		1	25	22.62	22.73	23.03
		1	49	22.60	22.77	23.07
		25	0	21.79	21.51	21.86
		25	13	21.75	21.69	21.98
		25	25	21.76	21.59	21.92
		50	0	21.63	21.51	21.85
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				39725/2503.5	40620/2593	41515/2682.5
15MHz	QPSK	1	0	23.62	23.71	23.98
		1	38	23.57	23.67	23.97
		1	74	23.63	23.70	23.97
		36	0	22.54	22.67	22.87



		36	18	22.55	22.62	22.82
		36	39	22.66	22.55	22.92
		75	0	22.50	22.54	22.89
	16QAM	1	0	22.59	22.34	22.96
		1	38	22.60	22.70	23.01
		1	74	22.57	22.73	23.04
		36	0	21.76	21.49	21.83
		36	18	21.72	21.64	21.94
		36	39	21.74	21.55	21.89
		75	0	21.60	21.46	21.81
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				39750/2506	40620/2593	41490/2680
20MHz	QPSK	1	0	23.59	23.67	23.95
		1	50	23.56	23.63	23.95
		1	99	23.61	23.69	23.94
		50	0	22.51	22.62	22.83
		50	25	22.53	22.58	22.79
		50	50	22.63	22.50	22.88
		100	0	22.47	22.49	22.85
	16QAM	1	0	22.57	22.30	22.91
		1	50	22.56	22.68	22.97
		1	99	22.55	22.70	23.02
		50	0	21.73	21.45	21.80
		50	25	21.69	21.62	21.91
		50	50	21.71	21.50	21.85
		100	0	21.58	21.42	21.78

5.2 Effective Isotropic Radiated Power

Ambient condition

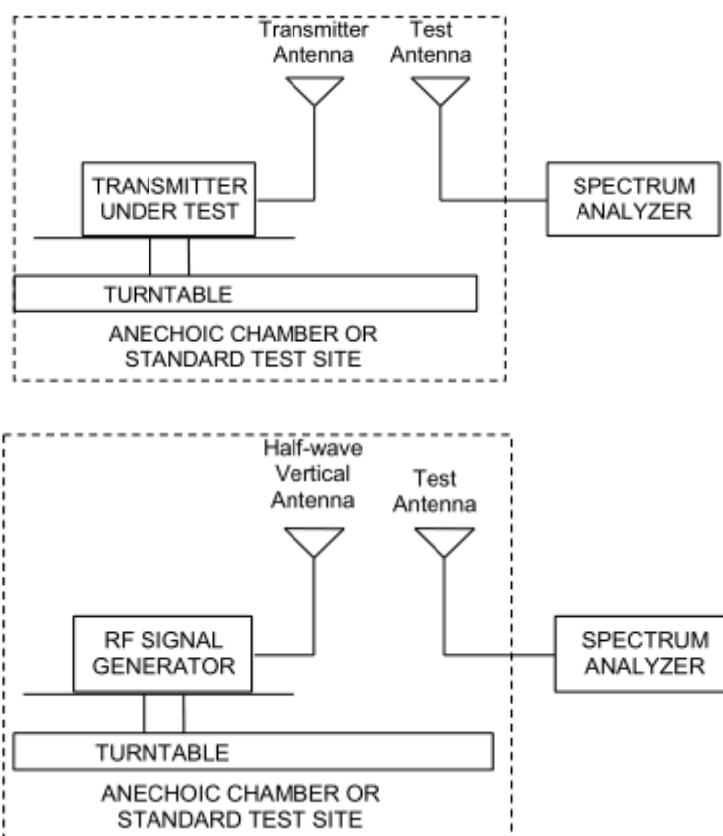
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

1. The testing follows FCC KDB 971168 D01 v03r01 Section 5.8 and ANSI/TIA-603-E (2016).
 - a) Connect the equipment as illustrated. Mount the equipment with the manufacturer specified antenna in a vertical orientation on a manufacturer specified mounting surface located on a non-conducting rotating platform of a RF anechoic chamber (preferred) or a standard radiation site.
 - b) Key the transmitter, then rotate the EUT 360° azimuthally and record spectrum analyzer power level (LVL) measurements at angular increments that are sufficiently small to permit resolution of all peaks. If a standard radiation test site is used, raise and lower the test antenna to obtain a maximum reading at each angular increment. (Note: several batteries may be needed to offset the effect of battery voltage droop, which should not exceed 5% of the manufactured specified battery voltage during transmission).
 - c) Replace the transmitter under test with a vertically polarized half-wave dipole (or an antenna whose gain is known relative to an ideal half-wave dipole). The center of the antenna should be at the same location as the center of the antenna under test.
 - d) Connect the antenna to a signal generator with a known output power and record the path loss (in dB) as LOSS. If a standard radiation test site is used, raise and lower the test antenna to obtain a maximum reading. $LOSS = \text{Generator Output Power (dBm)} - \text{Analyzer reading (dBm)}$
 - e) Determine the effective radiated output power at each angular position from the readings in steps b) and d) using the following equation: $ERP \text{ (dBm)} = LVL \text{ (dBm)} + LOSS \text{ (dB)}$
 - f) The maximum ERP is the maximum value determined in the preceding step.
 - g) When calculating ERP, in addition to knowing the antenna radiation and matching characteristics, it is necessary to know the loss values of all elements (e.g. transmission line attenuation, mismatches, filters, combiners) interposed between the point where transmitter output power is measured, and the point where power is applied to the antenna. ERP can then be calculated as follows:
 $EIRP \text{ (dBm)} = \text{Output Power (dBm)} - \text{Losses (dB)} + \text{Antenna Gain (dBd)}$
 where: dBd refers to gain relative to an ideal dipole.
 $EIRP \text{ (dBm)} = ERP \text{ (dBm)} + 2.15 \text{ (dB.)}$

The RB allocation refers to section 5.1, using the maximum output power configuration.

Test setup



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(b) (10) specifies that “Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP”

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

The measurement is performed for both of horizontal and vertical antenna Polarization, and only the data of worst mode is recorded in this report.

Mode	Channel	Frequency (MHz)	Polarization	EIRP (dBm)	Limit (dBm)	Conclusion
WCDMA Band IV	Low	1712.4	Horizontal	18.14	30	Pass
	Mid	1732.6	Horizontal	20.09	30	Pass
	High	1752.6	Horizontal	21.58	30	Pass

LTE Band 4						
Bandwidth	Channel	Frequency (MHz)	Polarization	EIRP (dBm)	Limit (dBm)	Conclusion
1.4 MHz (QPSK)	Low	1710.7	Horizontal	20.02	30	Pass
	Mid	1732.5	Horizontal	21.87	30	Pass
	High	1754.3	Horizontal	22.34	30	Pass
3 MHz (QPSK)	Low	1711.5	Horizontal	20.13	30	Pass
	Mid	1732.5	Horizontal	21.89	30	Pass
	High	1753.5	Horizontal	22.42	30	Pass
5 MHz (QPSK)	Low	1712.5	Horizontal	20.17	30	Pass
	Mid	1732.5	Horizontal	21.89	30	Pass
	High	1752.5	Horizontal	22.25	30	Pass
10 MHz (QPSK)	Low	1715	Horizontal	20.34	30	Pass
	Mid	1732.5	Horizontal	21.67	30	Pass
	High	1750	Horizontal	22.21	30	Pass
15 MHz (QPSK)	Low	1717.5	Horizontal	20.56	30	Pass
	Mid	1732.5	Horizontal	21.89	30	Pass
	High	1747.5	Horizontal	22.16	30	Pass
20 MHz (QPSK)	Low	1720	Horizontal	19.88	30	Pass
	Mid	1732.5	Horizontal	21.90	30	Pass
	High	1745	Horizontal	22.47	30	Pass
1.4 MHz (16QAM)	Low	1710.7	Horizontal	19.64	30	Pass
	Mid	1732.5	Horizontal	21.34	30	Pass
	High	1754.3	Horizontal	22.01	30	Pass
3 MHz (16QAM)	Low	1711.5	Horizontal	19.78	30	Pass
	Mid	1732.5	Horizontal	21.36	30	Pass
	High	1753.5	Horizontal	22.05	30	Pass
5 MHz (16QAM)	Low	1712.5	Horizontal	19.72	30	Pass
	Mid	1732.5	Horizontal	21.48	30	Pass
	High	1752.5	Horizontal	21.88	30	Pass
10 MHz (16QAM)	Low	1715	Horizontal	19.96	30	Pass
	Mid	1732.5	Horizontal	21.21	30	Pass
	High	1750	Horizontal	21.86	30	Pass
15 MHz	Low	1717.5	Horizontal	20.05	30	Pass



(16QAM)	Mid	1732.5	Horizontal	21.47	30	Pass
	High	1747.5	Horizontal	21.87	30	Pass
20 MHz (16QAM)	Low	1720	Horizontal	19.52	30	Pass
	Mid	1732.5	Horizontal	21.76	30	Pass
	High	1745	Horizontal	22.01	30	Pass

LTE Band 7						
Band width	Channel	Frequency (MHz)	Polarization	EIRP (dBm)	Limit (dBm)	Conclusion
5 MHz (QPSK)	Low	2502.5	Horizontal	19.58	33	Pass
	Mid	2535	Horizontal	18.56	33	Pass
	High	2567.5	Horizontal	19.67	33	Pass
10 MHz (QPSK)	Low	2505	Horizontal	19.64	33	Pass
	Mid	2535	Horizontal	18.89	33	Pass
	High	2565	Horizontal	19.78	33	Pass
15 MHz (QPSK)	Low	2507.5	Horizontal	19.48	33	Pass
	Mid	2535	Horizontal	19.02	33	Pass
	High	2562.5	Horizontal	18.87	33	Pass
20 MHz (QPSK)	Low	2510	Horizontal	19.48	33	Pass
	Mid	2535	Horizontal	19.03	33	Pass
	High	2560	Horizontal	19.19	33	Pass
5 MHz (16QAM)	Low	2502.5	Horizontal	19.01	33	Pass
	Mid	2535	Horizontal	18.18	33	Pass
	High	2567.5	Horizontal	19.26	33	Pass
10 MHz (16QAM)	Low	2505	Horizontal	19.34	33	Pass
	Mid	2535	Horizontal	18.36	33	Pass
	High	2565	Horizontal	19.35	33	Pass
15 MHz (16QAM)	Low	2507.5	Horizontal	19.03	33	Pass
	Mid	2535	Horizontal	18.75	33	Pass
	High	2562.5	Horizontal	18.52	33	Pass
20 MHz (16QAM)	Low	2510	Horizontal	19.02	33	Pass
	Mid	2535	Horizontal	18.68	33	Pass
	High	2560	Horizontal	18.73	33	Pass

LTE Band 12						
Bandwidth	Channel	Frequency (MHz)	Polarization	ERP (dBm)	Limit (dBm)	Conclusion
1.4 MHz (QPSK)	Low	699.7	Horizontal	14.54	34.77	Pass
	Mid	707.5	Horizontal	13.42	34.77	Pass
	High	715.3	Horizontal	13.38	34.77	Pass
3 MHz (QPSK)	Low	700.5	Horizontal	12.97	34.77	Pass
	Mid	707.5	Horizontal	13.75	34.77	Pass
	High	714.5	Horizontal	12.74	34.77	Pass
5 MHz (QPSK)	Low	701.5	Horizontal	12.00	34.77	Pass
	Mid	707.5	Horizontal	13.89	34.77	Pass
	High	713.5	Horizontal	13.12	34.77	Pass
10 MHz (QPSK)	Low	704	Horizontal	13.44	34.77	Pass
	Mid	707.5	Horizontal	13.58	34.77	Pass
	High	711	Horizontal	13.12	34.77	Pass
1.4 MHz (16QAM)	Low	699.7	Horizontal	13.56	34.77	Pass
	Mid	707.5	Horizontal	13.07	34.77	Pass
	High	715.3	Horizontal	12.10	34.77	Pass
3 MHz (16QAM)	Low	700.5	Horizontal	12.62	34.77	Pass
	Mid	707.5	Horizontal	13.40	34.77	Pass
	High	714.5	Horizontal	12.10	34.77	Pass
5 MHz (16QAM)	Low	701.5	Horizontal	11.65	34.77	Pass
	Mid	707.5	Horizontal	13.54	34.77	Pass
	High	713.5	Horizontal	12.77	34.77	Pass
10 MHz (16QAM)	Low	704	Horizontal	13.09	34.77	Pass
	Mid	707.5	Horizontal	13.23	34.77	Pass
	High	711	Horizontal	12.77	34.77	Pass

LTE Band 13						
Bandwidth	Channel	Frequency (MHz)	Polarization	ERP (dBm)	Limit (dBm)	Conclusion
5MHz (QPSK)	Low	779.5	Horizontal	11.78	34.77	Pass
	Mid	782	Horizontal	11.58	34.77	Pass
	High	784.5	Horizontal	11.79	34.77	Pass
10MHz (QPSK)	Mid	782	Horizontal	11.88	34.77	Pass
5MHz (16QAM)	Low	779.5	Horizontal	11.47	34.77	Pass
	Mid	782	Horizontal	11.29	34.77	Pass
	High	784.5	Horizontal	11.50	34.77	Pass
10MHz (16QAM)	Mid	782	Horizontal	11.43	34.77	Pass

LTE Band 17						
Bandwidth	Channel	Frequency (MHz)	Polarization	ERP (dBm)	Limit (dBm)	Conclusion
5MHz (QPSK)	Low	706.5	Horizontal	13.93	34.77	Pass
	Mid	710	Horizontal	13.73	34.77	Pass
	High	713.5	Horizontal	13.94	34.77	Pass
10MHz (QPSK)	Low	709	Horizontal	14.03	34.77	Pass
	Mid	710	Horizontal	13.62	34.77	Pass
	High	711	Horizontal	13.44	34.77	Pass
5MHz (16QAM)	Low	706.5	Horizontal	13.11	34.77	Pass
	Mid	710	Horizontal	13.04	34.77	Pass
	High	713.5	Horizontal	13.42	34.77	Pass
10MHz (16QAM)	Low	709	Horizontal	13.01	34.77	Pass
	Mid	710	Horizontal	12.83	34.77	Pass
	High	711	Horizontal	13.04	34.77	Pass

LTE Band 41						
Band width	Channel	Frequency (MHz)	Polarization	EIRP (dBm)	Limit (dBm)	Conclusion
5 MHz (QPSK)	Low	2498.5	Horizontal	17.32	33	Pass
	Mid	2593	Horizontal	17.18	33	Pass
	High	2687.5	Horizontal	18.54	33	Pass
10 MHz (QPSK)	Low	2501	Horizontal	17.02	33	Pass
	Mid	2593	Horizontal	16.89	33	Pass
	High	2685	Horizontal	17.42	33	Pass
15 MHz (QPSK)	Low	2503.5	Horizontal	17.43	33	Pass
	Mid	2593	Horizontal	17.89	33	Pass
	High	2682.5	Horizontal	18.21	33	Pass
20 MHz (QPSK)	Low	2506	Horizontal	17.22	33	Pass
	Mid	2593	Horizontal	17.15	33	Pass
	High	2680	Horizontal	18.54	33	Pass
5 MHz (16QAM)	Low	2498.5	Horizontal	17.01	33	Pass
	Mid	2593	Horizontal	16.78	33	Pass
	High	2687.5	Horizontal	18.03	33	Pass
10 MHz (16QAM)	Low	2501	Horizontal	16.77	33	Pass
	Mid	2593	Horizontal	16.35	33	Pass
	High	2685	Horizontal	17.03	33	Pass
15 MHz (16QAM)	Low	2503.5	Horizontal	17.21	33	Pass
	Mid	2593	Horizontal	17.42	33	Pass
	High	2682.5	Horizontal	17.79	33	Pass
20 MHz (16QAM)	Low	2506	Horizontal	16.89	33	Pass
	Mid	2593	Horizontal	16.87	33	Pass
	High	2680	Horizontal	18.03	33	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 WCDMA Band IV.

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).

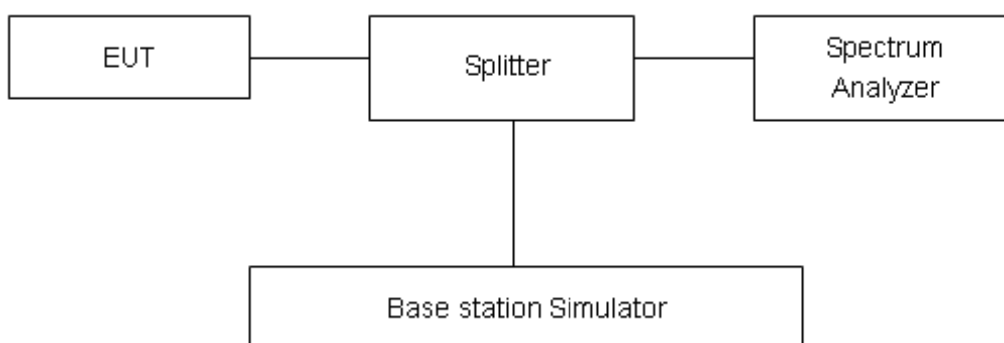
RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 4/7/12/13/17/41 (5MHz).

RBW is set to 300 kHz, VBW is set to 1MHz for LTE Band 4/7/12/13/17/41 (10MHz).

RBW is set to 300 kHz, VBW is set to 1MHz for LTE Band 4/7/41 (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

Mode	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
WCDMA Band IV (RMC)	1312	1712.4	4.2058	4.843
	1413	1732.6	4.2015	4.833
	1513	1752.6	4.2022	4.840

LTE Band 4						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	1.4	19957	1710.7	1.1209	1.322
			20175	1732.5	1.1311	1.309
			20393	1754.3	1.1303	1.329
		3	19965	1711.5	2.7459	3.043
			20175	1732.5	2.7395	3.044
			20385	1753.5	2.7392	3.059
		5	19975	1712.5	4.5298	5.109
			20175	1732.5	4.5426	5.066
			20375	1752.5	4.5203	5.082
		10	20000	1715	9.0360	10.120
			20175	1732.5	9.0598	10.180
			20350	1750	9.0678	10.150
		15	20025	1717.5	13.4800	14.930
			20175	1732.5	13.5120	15.020
			20325	1747.5	13.5000	14.960
		20	20050	1720	17.9070	19.350
			20175	1732.5	17.9150	19.420
			20300	1745	17.9340	19.550
	16QAM	1.4	19957	1710.7	1.1292	1.310
			20175	1732.5	1.1207	1.320
			20393	1754.3	1.1210	1.312
		3	19965	1711.5	2.7359	3.052
			20175	1732.5	2.7516	3.053
			20385	1753.5	2.7314	3.040
		5	19975	1712.5	4.5404	5.083
			20175	1732.5	4.5247	5.067
			20375	1752.5	4.5539	5.120
		10	20000	1715	9.0458	10.150
			20175	1732.5	9.0538	10.080



		20350	1750	9.0577	10.140
	15	20025	1717.5	13.5170	14.900
		20175	1732.5	13.5030	14.880
		20325	1747.5	13.5120	14.920
	20	20050	1720	17.9350	19.510
		20175	1732.5	17.9480	19.460
		20300	1745	17.9110	19.410

LTE Band 7						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	5	20775	2502.5	4.5292	5.098
			21100	2535	4.5450	5.099
			21425	2567.5	4.5221	5.043
		10	20800	2505	9.0274	10.150
			21100	2535	9.0653	10.190
			21400	2565	9.0677	10.170
		15	20825	2507.5	13.4650	14.880
			21100	2535	13.5230	14.970
			21375	2562.5	13.4980	14.940
		20	20850	2510	17.9020	19.380
			21100	2535	17.9360	19.380
			21350	2560	17.9570	19.590
	16QAM	5	20775	2502.5	4.5481	5.089
			21100	2535	4.5262	5.081
			21425	2567.5	4.5533	5.120
		10	20800	2505	9.0448	10.150
			21100	2535	9.0579	10.130
			21400	2565	9.0465	10.130
		15	20825	2507.5	13.5050	14.890
			21100	2535	13.5170	14.850
			21375	2562.5	13.5100	14.920
		20	20850	2510	17.9310	19.540
			21100	2535	17.9620	19.390
			21350	2560	17.9140	19.470

LTE Band 12						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	1.4	23017	699.7	1.1269	1.312
			23095	707.5	1.1217	1.316
			23173	715.3	1.1334	1.303
		3	23025	700.5	2.7410	3.036
			23095	707.5	2.7400	3.057
			23165	714.5	2.7403	3.038
		5	23035	701.5	4.5273	5.103
			23095	707.5	4.5452	5.080
			23155	713.5	4.5224	5.085
		10	23060	704	9.0419	10.120
			23095	707.5	9.0911	10.180
			23130	711	9.0742	10.140
	16QAM	1.4	23017	699.7	1.1213	1.302
			23095	707.5	1.1294	1.314
			23173	715.3	1.1224	1.318
		3	23025	700.5	2.7338	3.038
			23095	707.5	2.7481	3.056
			23165	714.5	2.7364	3.045
		5	23035	701.5	4.5464	5.099
			23095	707.5	4.5323	5.074
			23155	713.5	4.5541	5.114
		10	23060	704	9.0506	10.080
			23095	707.5	9.0929	10.100
			23130	711	9.0660	10.130

LTE Band 13						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	5	23205	779.5	4.5238	5.092
			23230	782	4.5426	5.079
			23255	784.5	4.5224	5.078
		10	23230	782	9.0561	10.120
	16QAM	5	23205	779.5	4.5467	5.084
			23230	782	4.5271	5.078
			23255	784.5	4.5535	5.107
		10	23230	782	9.0621	10.070

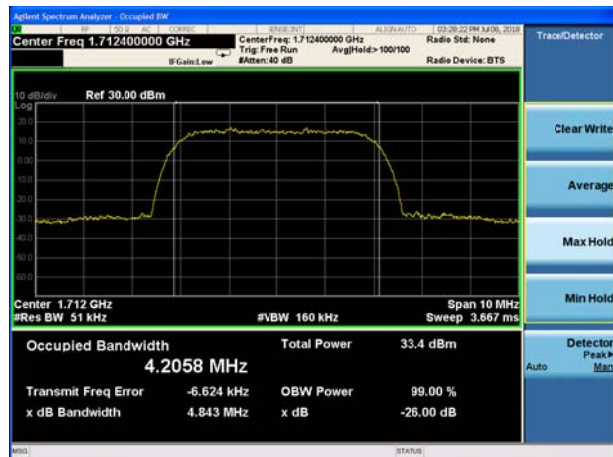


LTE Band 17						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	5	23755	706.5	4.5331	5.105
			23790	710	4.5414	5.086
			23825	713.5	4.5206	5.051
		10	23780	709	9.0614	10.160
			23790	710	9.0823	10.190
			23800	711	9.0862	10.180
	16QAM	5	23755	706.5	4.5539	5.113
			23790	710	4.5291	5.073
			23825	713.5	4.5508	5.084
		10	23780	709	9.0855	10.150
			23790	710	9.0828	10.000
			23800	711	9.0657	10.150

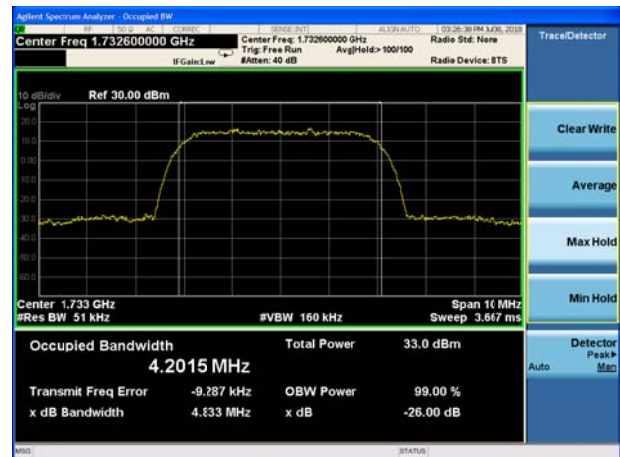
LTE Band 41						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	5	39675	2498.5	4.5125	5.034
			40620	2593	4.5269	4.986
			41565	2687.5	4.5212	5.078
		10	39700	2501	9.0384	10.170
			40620	2593	9.0623	10.130
			41540	2685	9.0711	10.130
		15	39725	2503.5	13.4510	14.810
			40620	2593	13.5000	14.860
			41515	2682.5	13.4540	14.830
		20	39750	2506	17.8870	19.290
			40620	2593	17.9430	19.310
			41490	2680	17.9170	19.520
	16QAM	5	39675	2498.5	4.5365	5.071
			40620	2593	4.5125	5.038
			41565	2687.5	4.5282	5.080
		10	39700	2501	9.0056	10.000
			40620	2593	9.0495	10.040
			41540	2685	9.0388	10.060
		15	39725	2503.5	13.5370	14.900
			40620	2593	13.5040	14.840
			41515	2682.5	13.5300	14.870
		20	39750	2506	17.8890	19.330
			40620	2593	17.9230	19.440
			41490	2680	17.8820	19.340



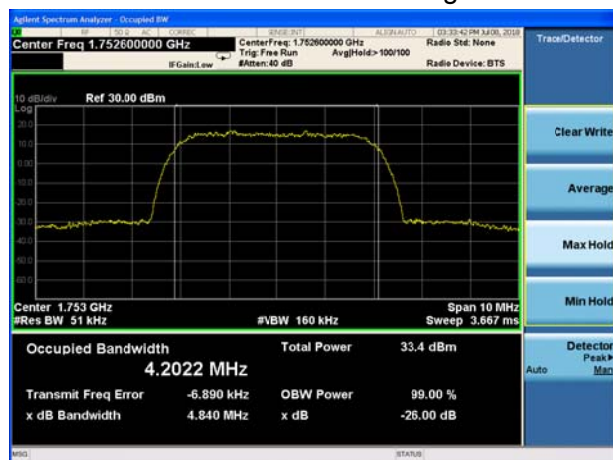
WCDMA Band IV CH-Low



WCDMA Band IV CH Middle



WCDMA Band IV CH High

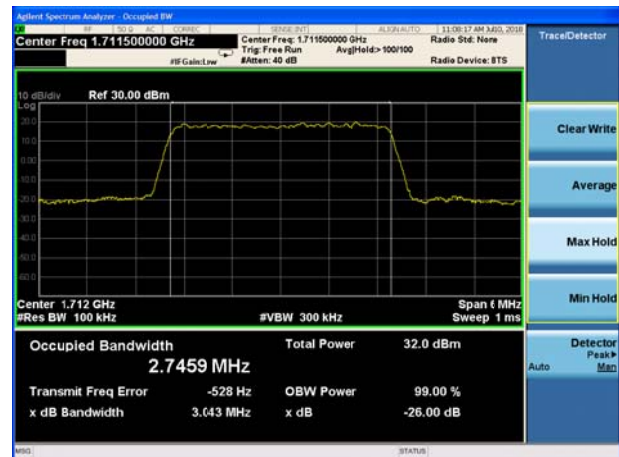




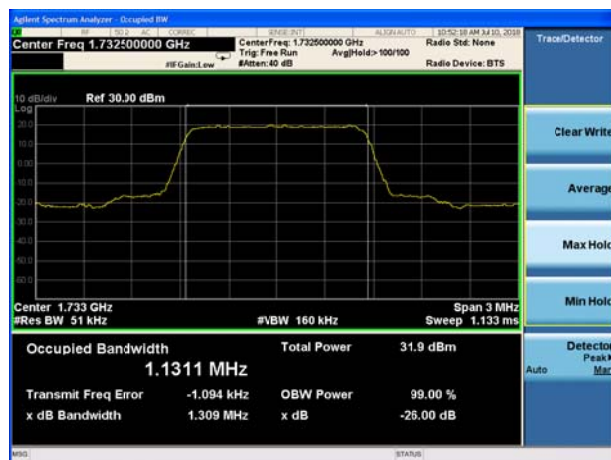
LTE Band 4 QPSK 1.4MHz CH-Low



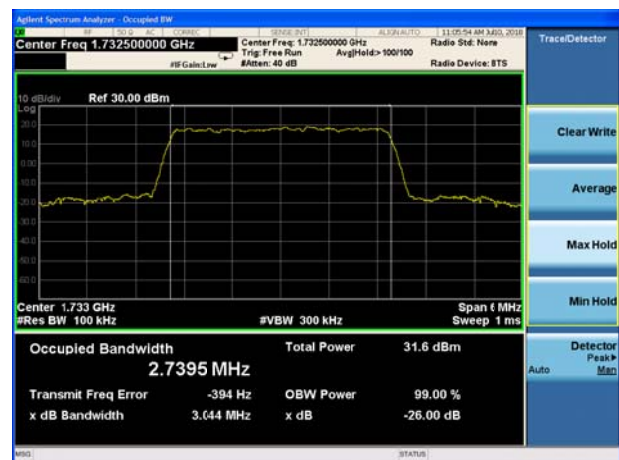
LTE Band 4 QPSK 3MHz CH-Low



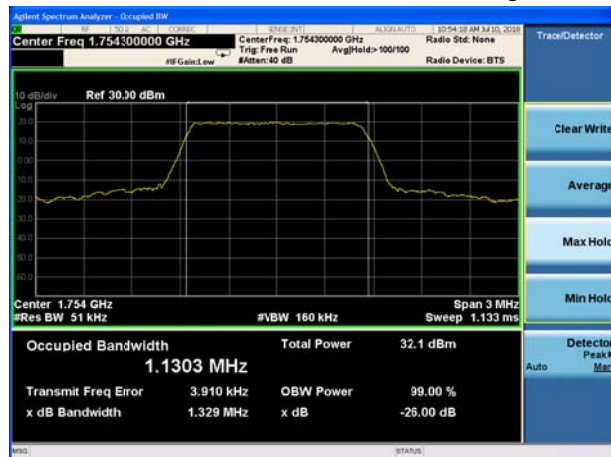
LTE Band 4 QPSK 1.4MHz CH-Middle



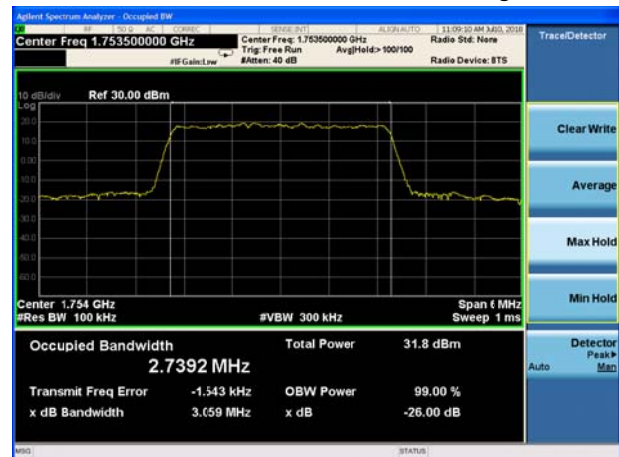
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LTE Band 4 QPSK 1.4MHz CH-High

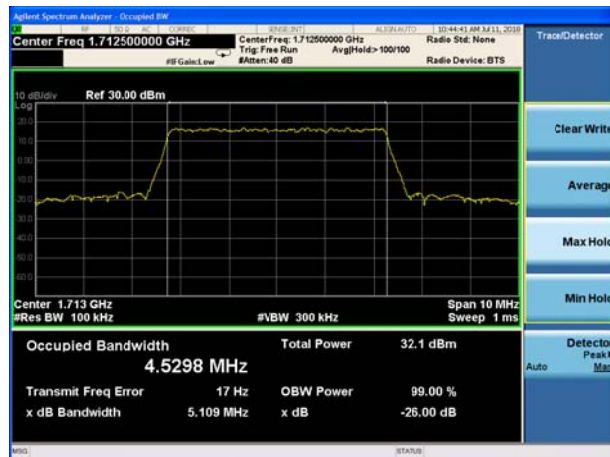


LTE Band 4 QPSK 3MHz CH-High

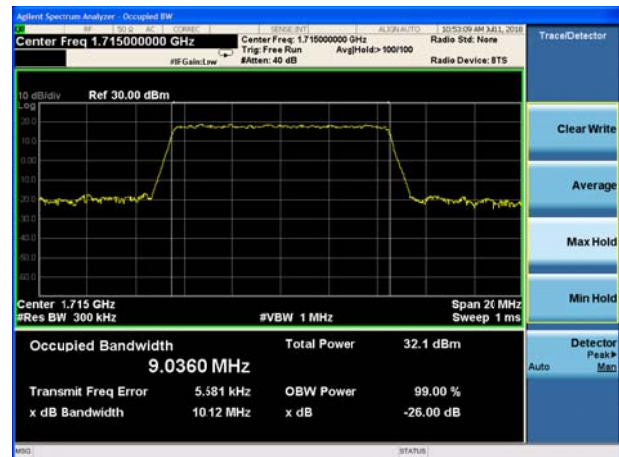




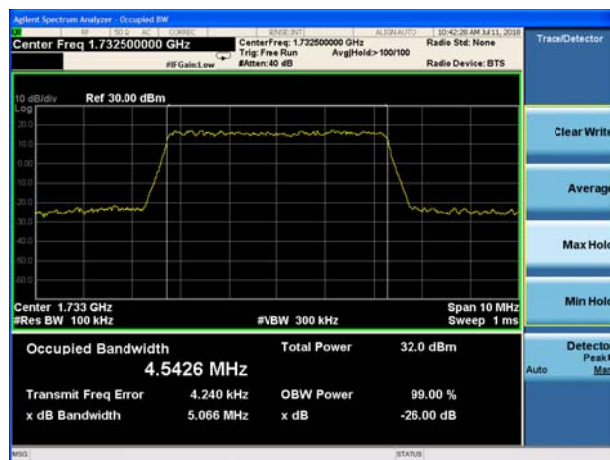
LTE Band 4 QPSK 5MHz CH-Low



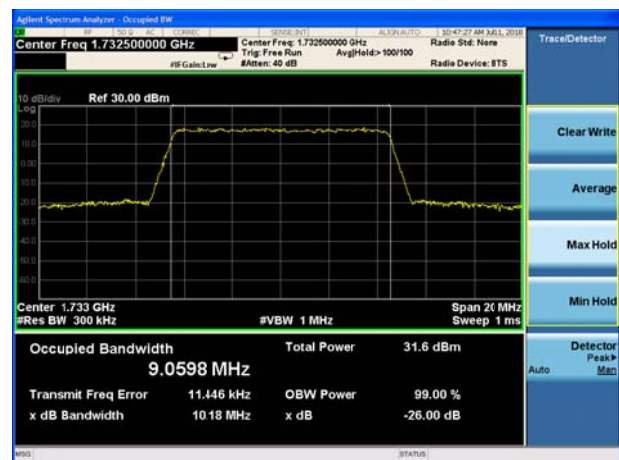
LTE Band 4 QPSK 10MHz CH-Low



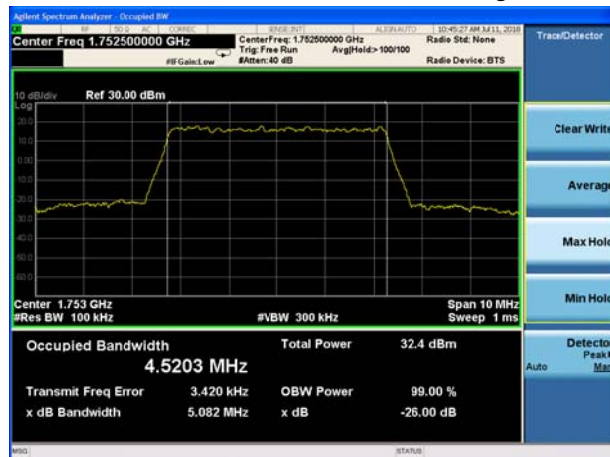
LTE Band 4 QPSK 5MHz CH-Middle



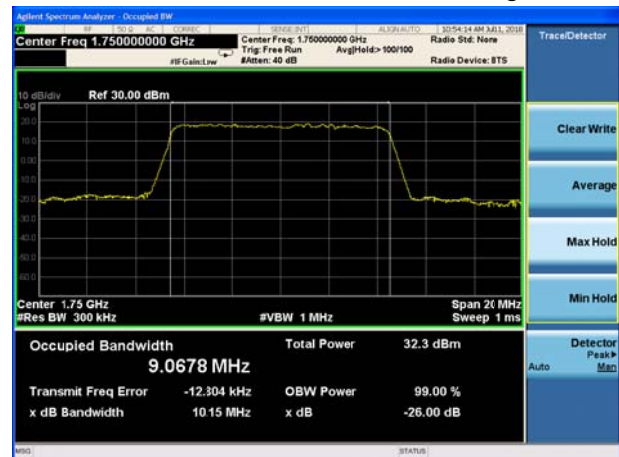
LTE Band 4 QPSK 10MHz CH-Middle



LTE Band 4 QPSK 5MHz CH-High

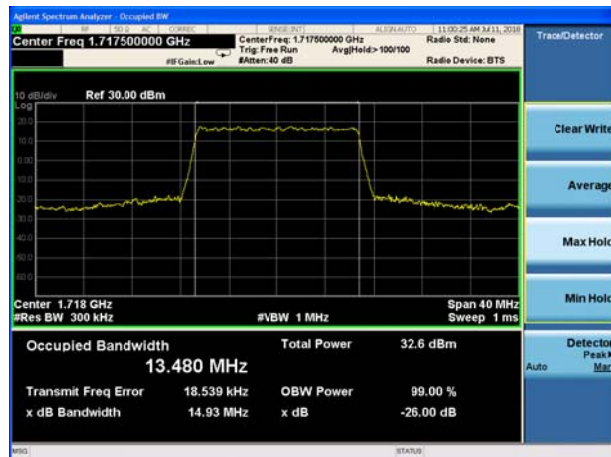


LTE Band 4 QPSK 10MHz CH-High

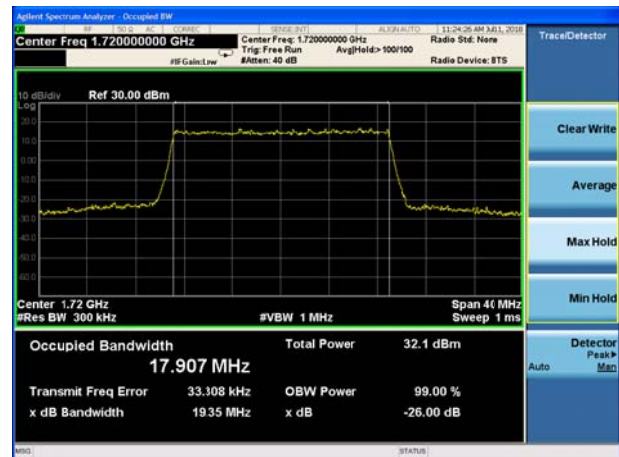




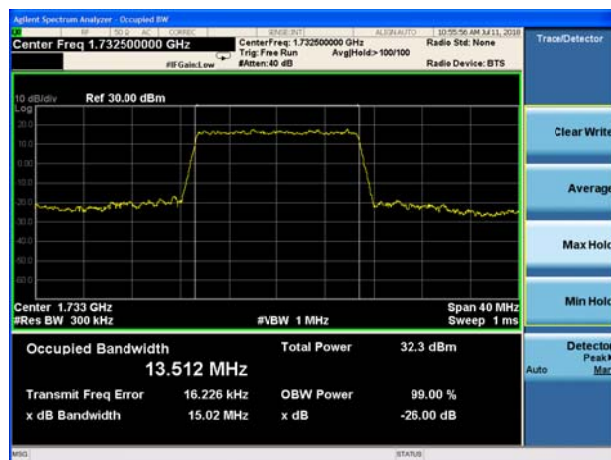
LTE Band 4 QPSK 15MHz CH-Low



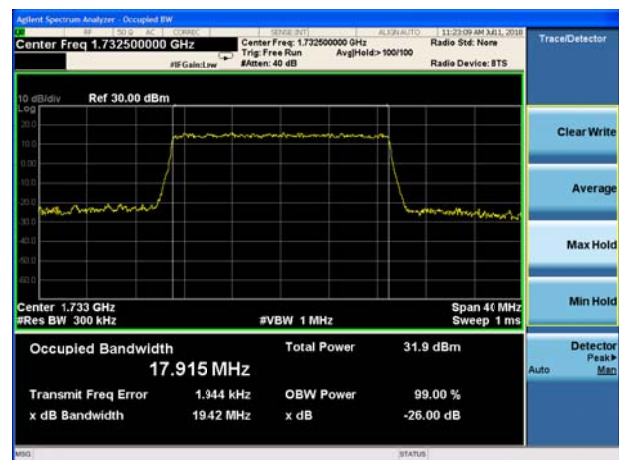
LTE Band 4 QPSK 20MHz CH-Low



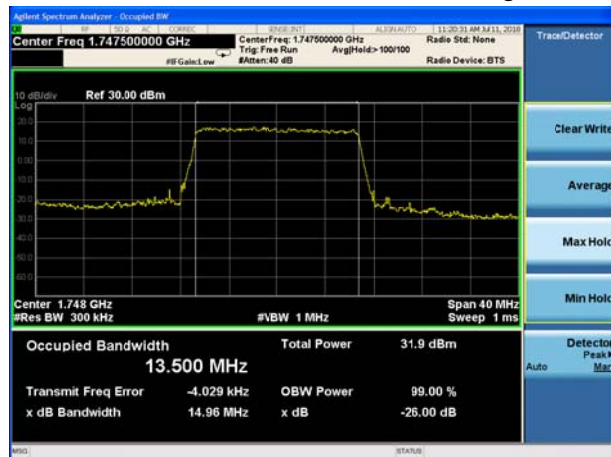
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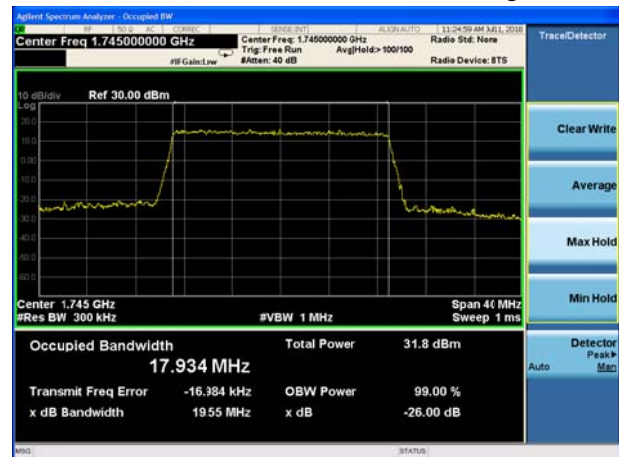
LTE Band 4 QPSK 20MHz CH-Middle



LTE Band 4 QPSK 15MHz CH-High

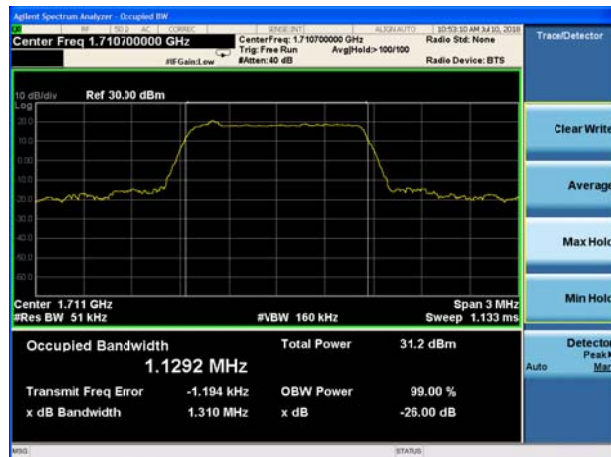


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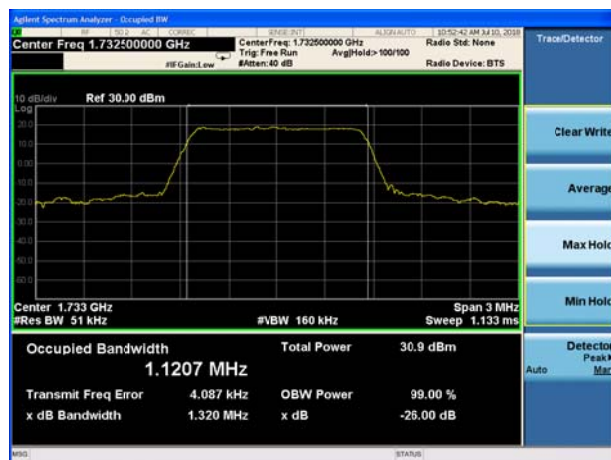
LTE Band 4 16QAM 1.4MHz CH-Low



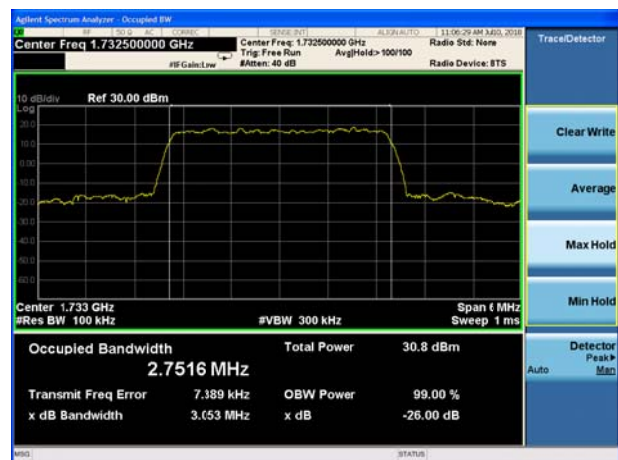
LTE Band 4 16QAM 3MHz CH-Low



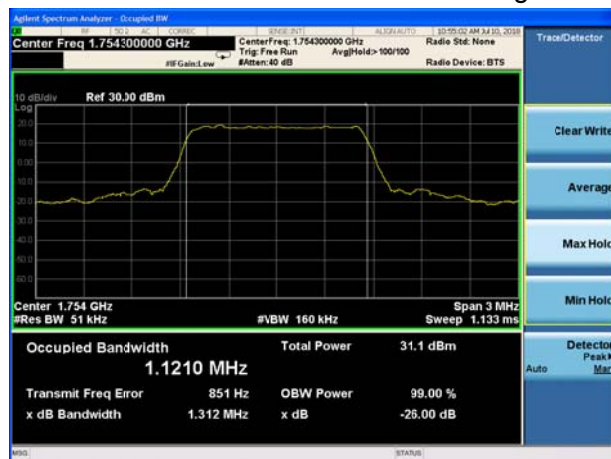
LTE Band 4 16QAM 1.4MHz CH-Middle



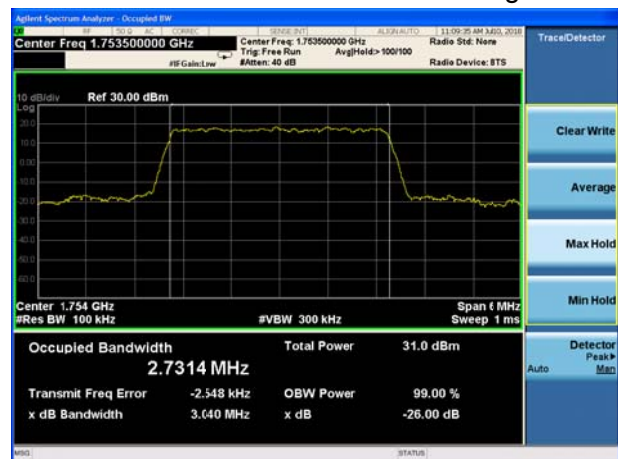
LTE Band 4 16QAM 3MHz CH-Middle



LTE Band 4 16QAM 1.4MHz CH-High

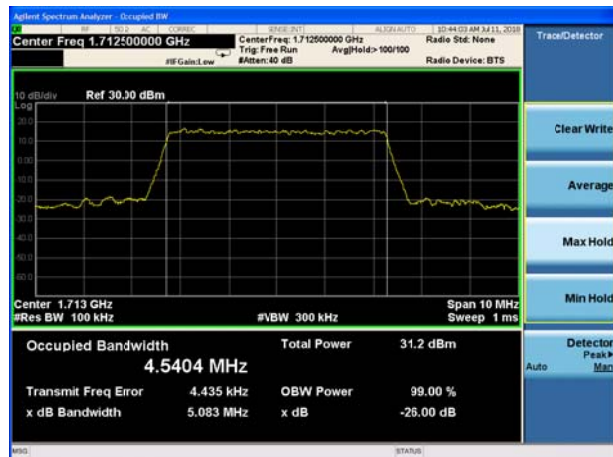


LTE Band 4 16QAM 3MHz CH-High

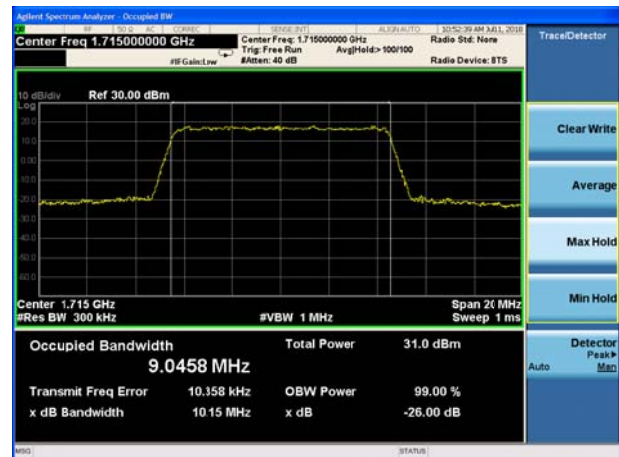




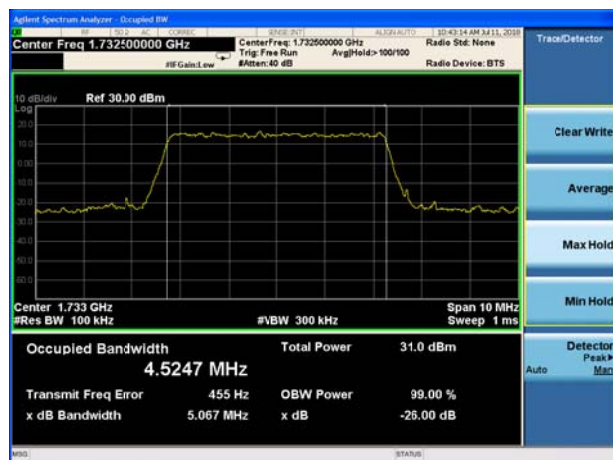
LTE Band 4 16QAM 5MHz CH-Low



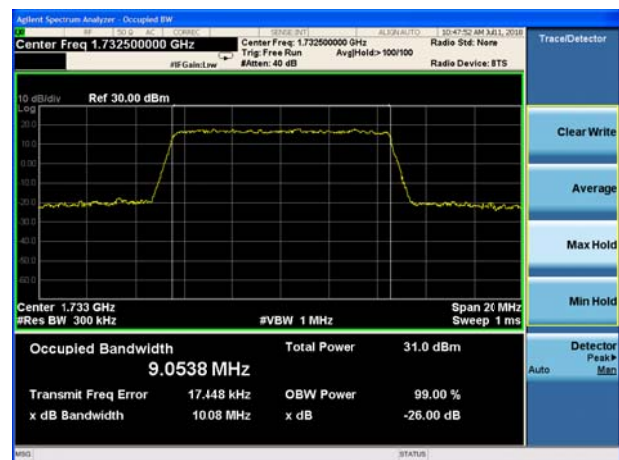
LTE Band 4 16QAM 10MHz CH-Low



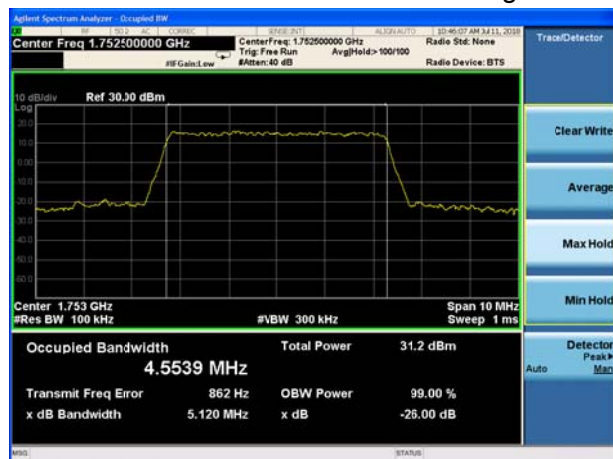
LTE Band 4 16QAM 5MHz CH-Middle



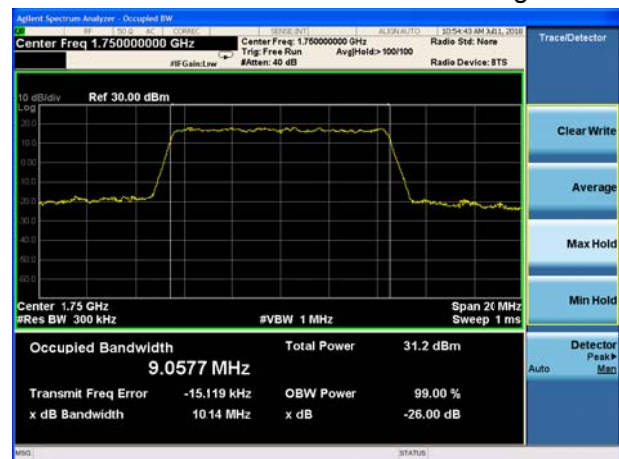
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LTE Band 4 16QAM 5MHz CH-High

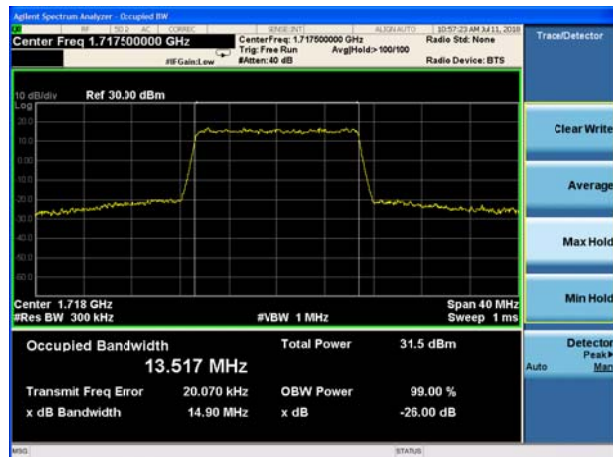


LTE Band 4 16QAM 10MHz CH-High

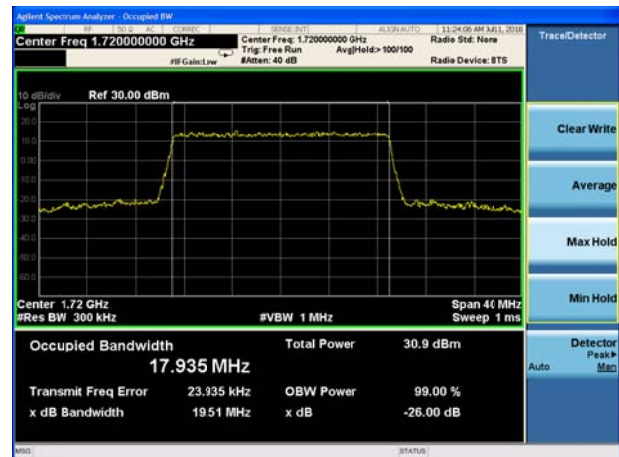




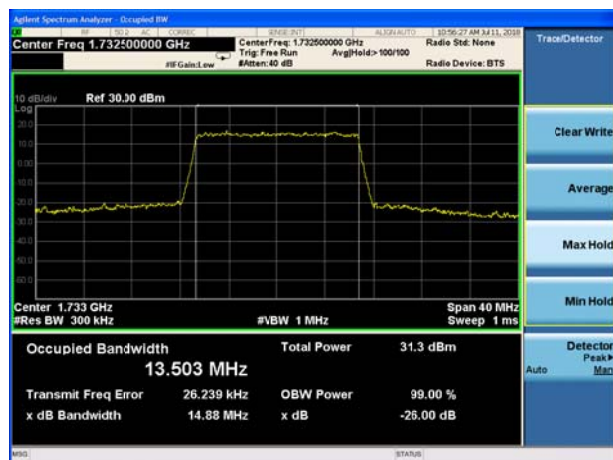
LTE Band 4 16QAM 15MHz CH-Low



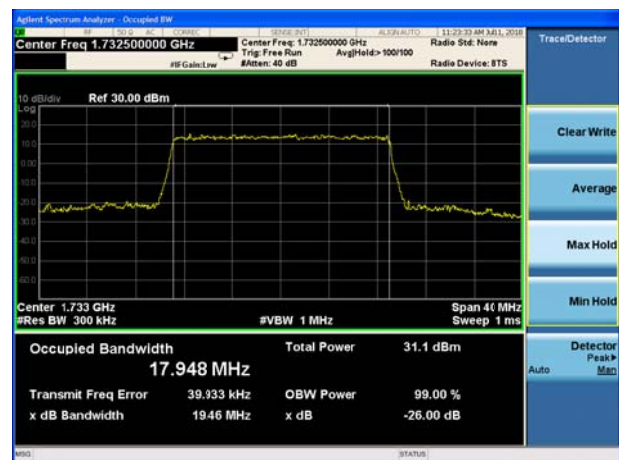
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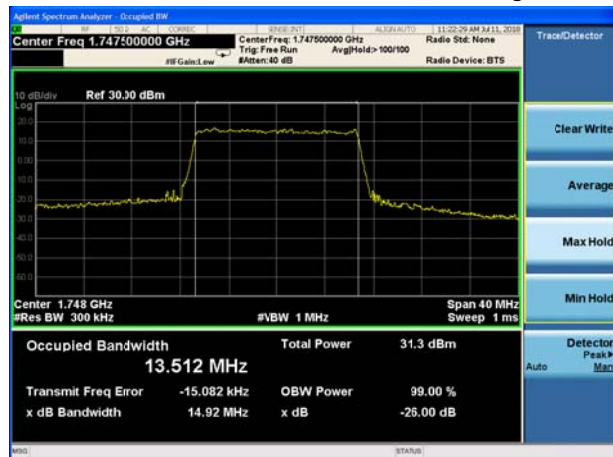
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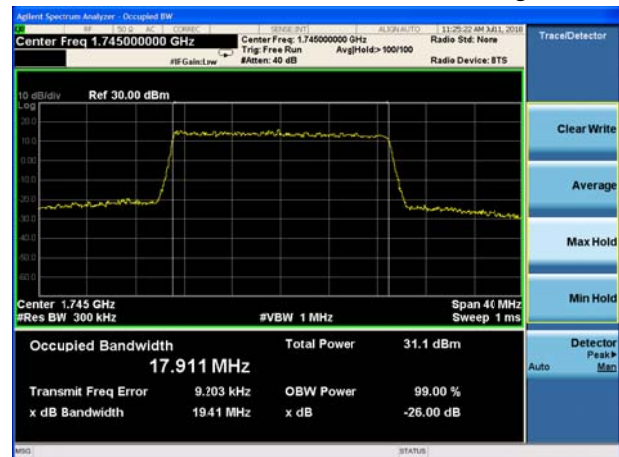
LTE Band 4 16QAM 20MHz CH-Middle



LTE Band 4 16QAM 15MHz CH-High



LTE Band 4 16QAM 20MHz CH-High

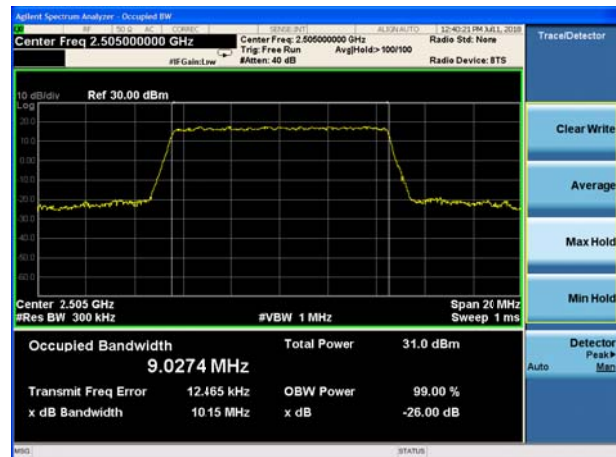




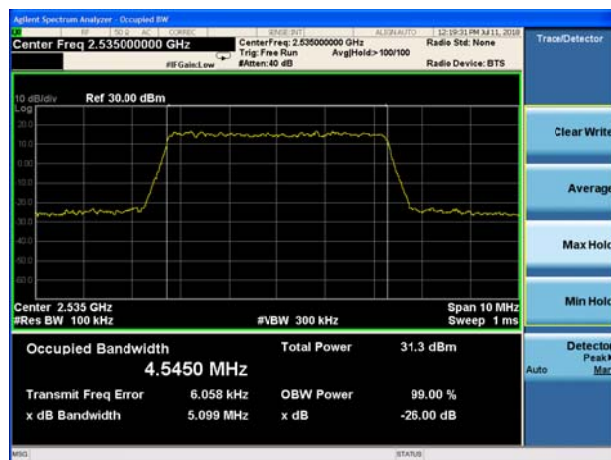
LTE Band 7 QPSK 5MHz CH-Low



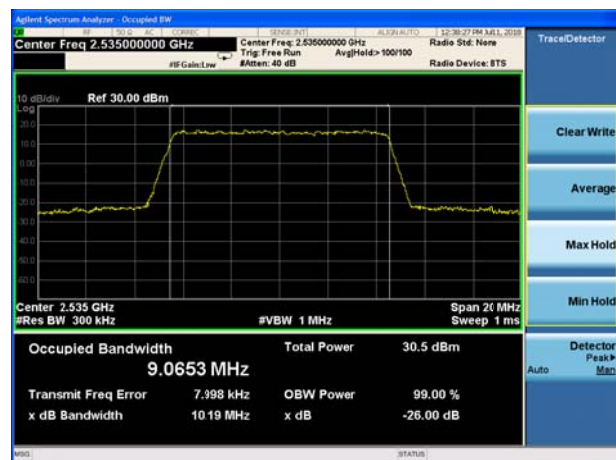
LTE Band 7 QPSK 10MHz CH-Low



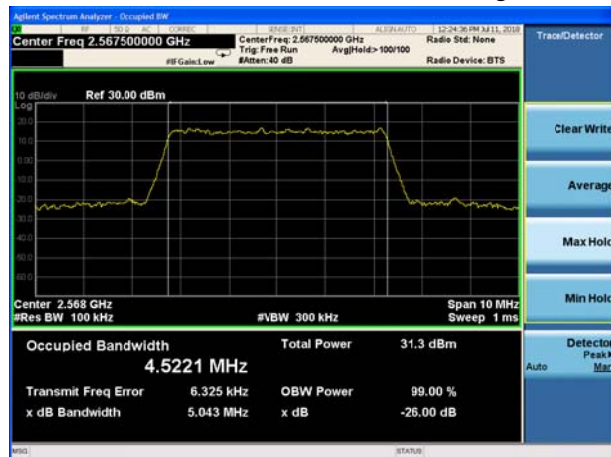
LTE Band 7 QPSK 5MHz CH-Middle



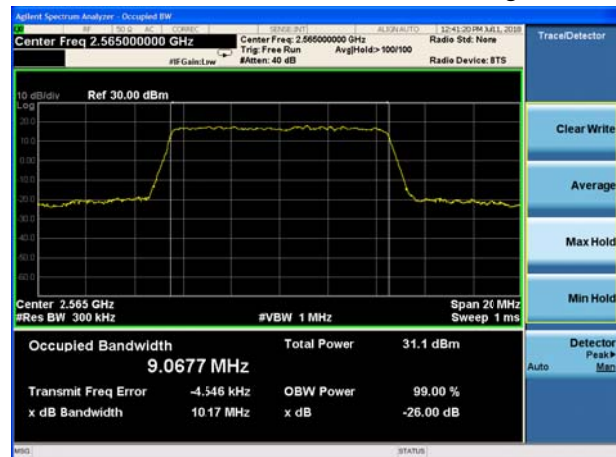
LTE Band 7 QPSK 10MHz CH-Middle



LTE Band 7 QPSK 5MHz CH-High

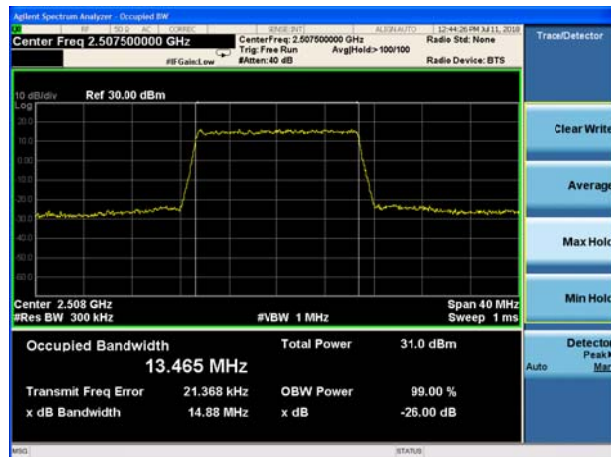


LTE Band 7 QPSK 10MHz CH-High

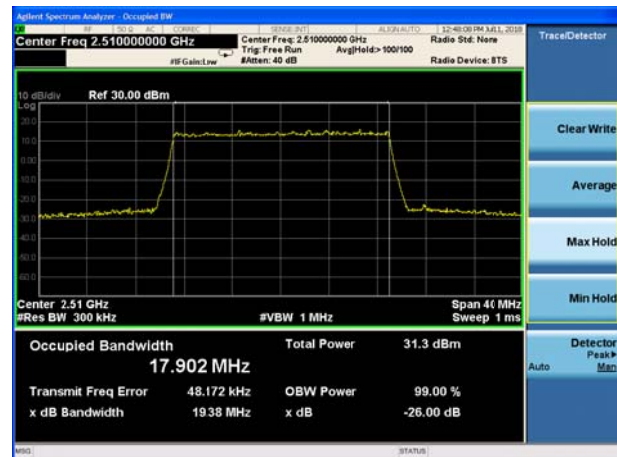




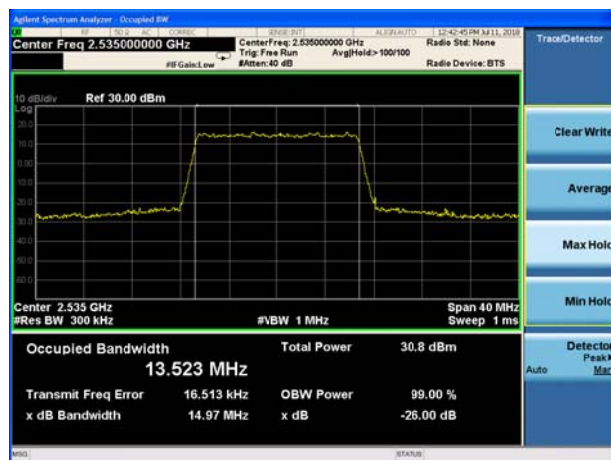
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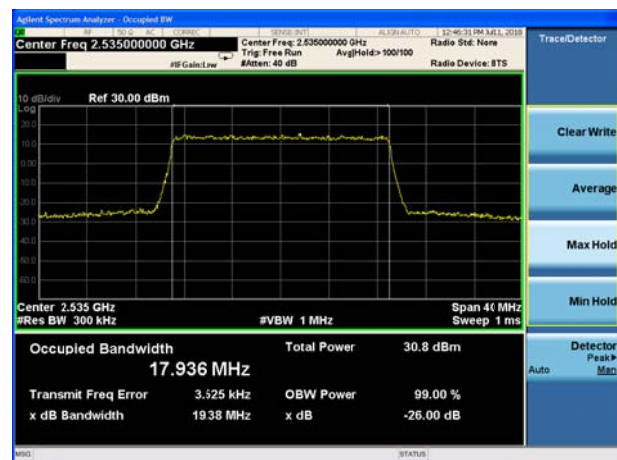
LTE Band 7 QPSK 20MHz CH-Low



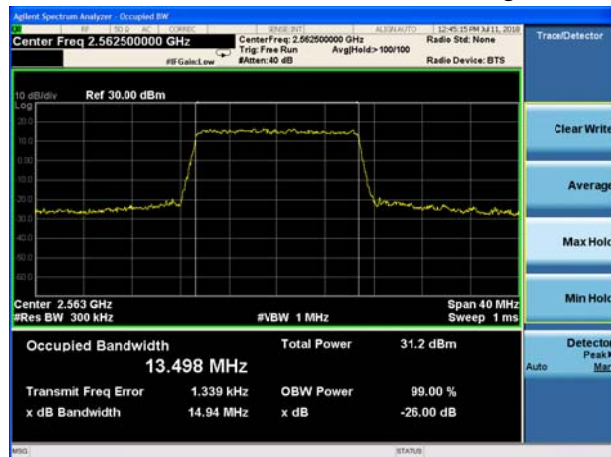
LTE Band 7 QPSK 15MHz CH-Middle



LTE Band 7 QPSK 20MHz CH-Middle



LTE Band 7 QPSK 15MHz CH-High

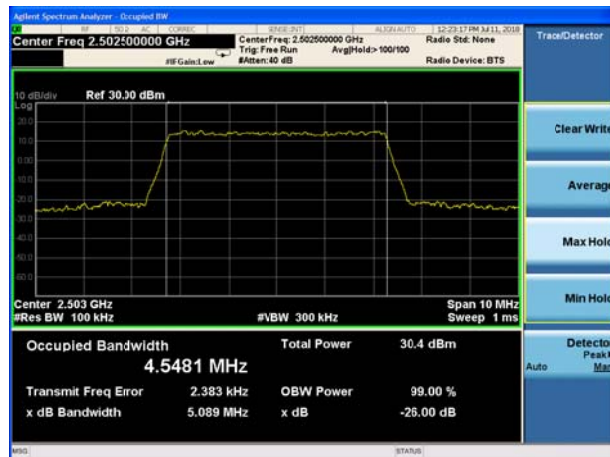


LTE Band 7 QPSK 20MHz CH-High

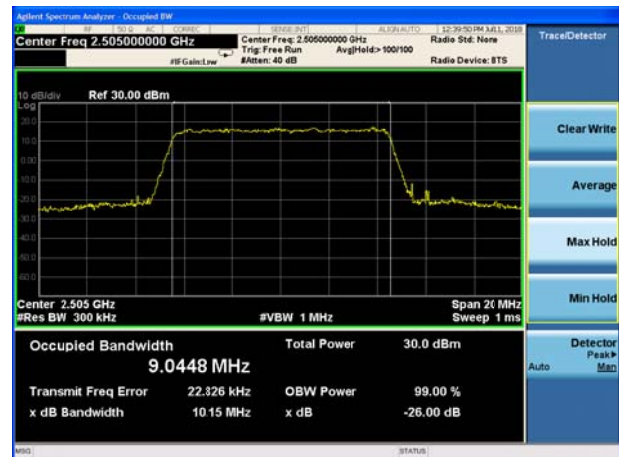




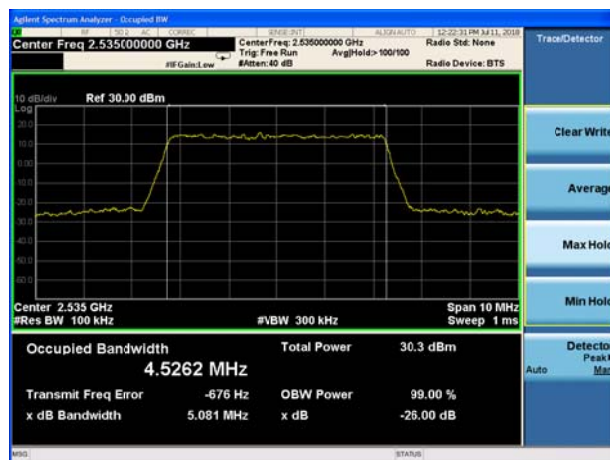
LTE Band 7 16QAM 5MHz CH-Low



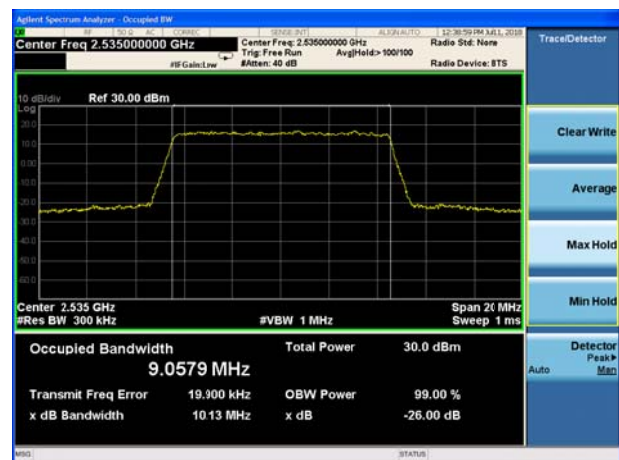
LTE Band 7 16QAM 10MHz CH-Low



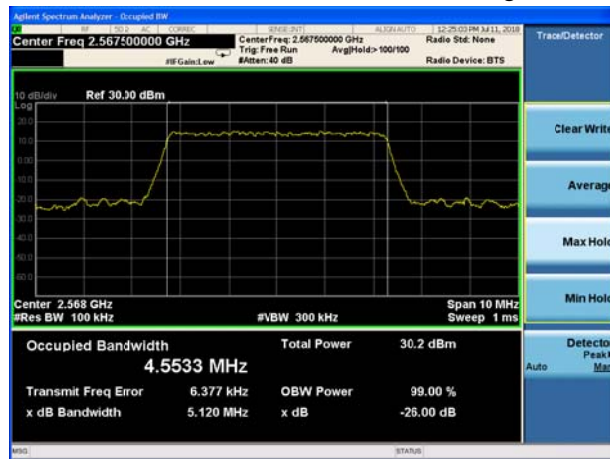
LTE Band 7 16QAM 5MHz CH-Middle



LTE Band 7 16QAM 10MHz CH-Middle



LTE Band 7 16QAM 5MHz CH-High

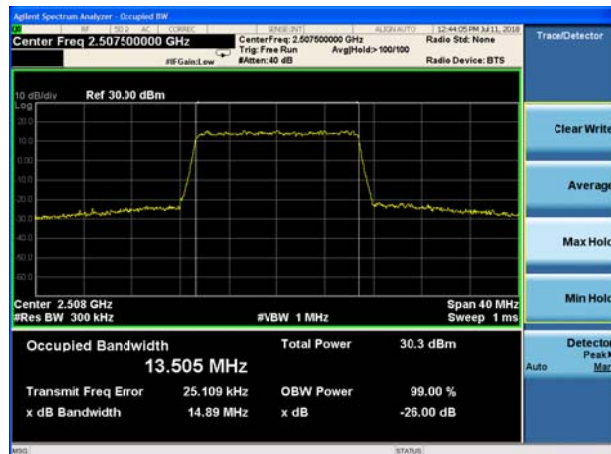


LTE Band 7 16QAM 10MHz CH-High

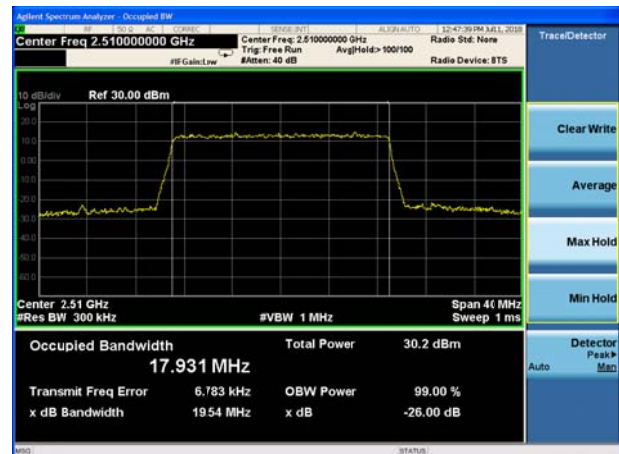




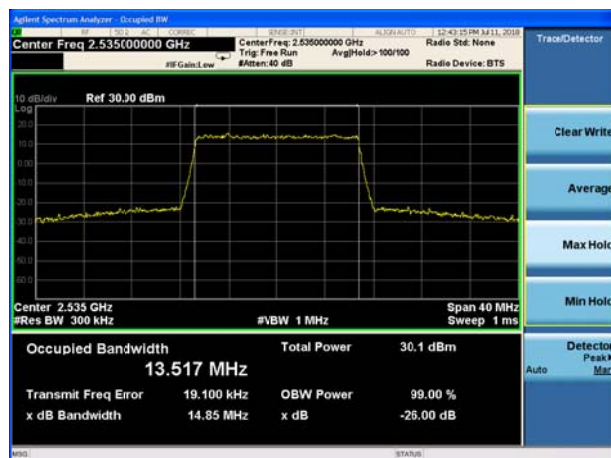
LTE Band 7 16QAM 15MHz CH-Low



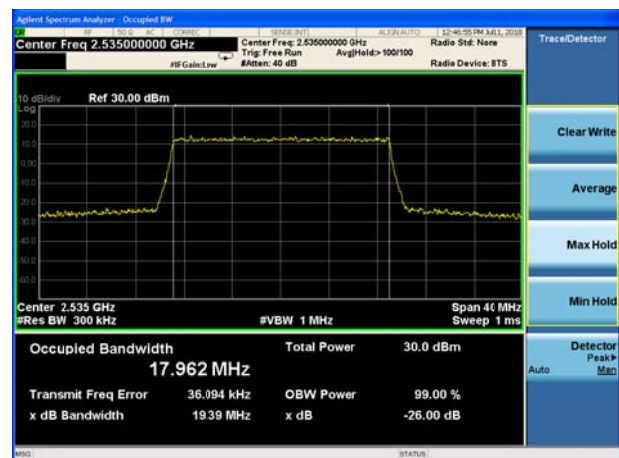
LTE Band 7 16QAM 20MHz CH-Low



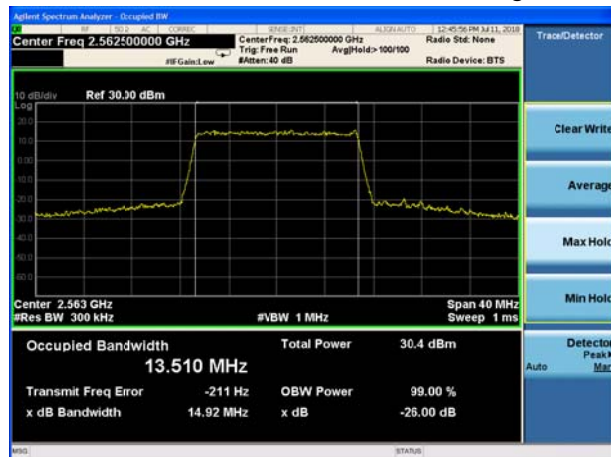
LTE Band 7 16QAM 15MHz CH-Middle



LTE Band 7 16QAM 20MHz CH-Middle



LTE Band 7 16QAM 15MHz CH-High



LTE Band 7 16QAM 20MHz CH-High

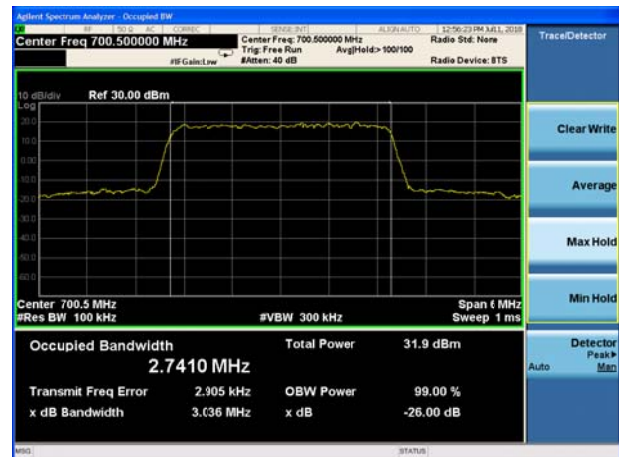




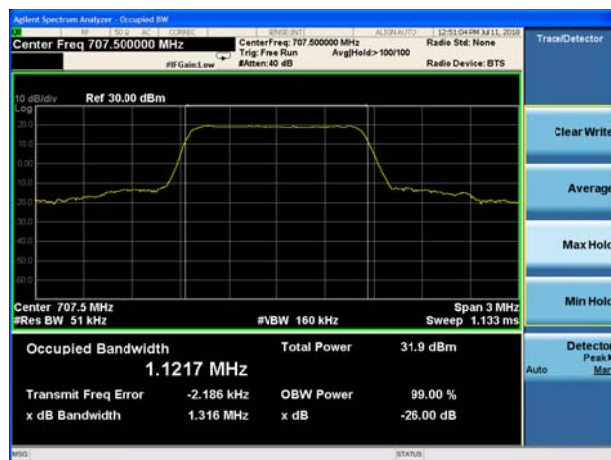
LTE Band 12 QPSK 1.4MHz CH-Low



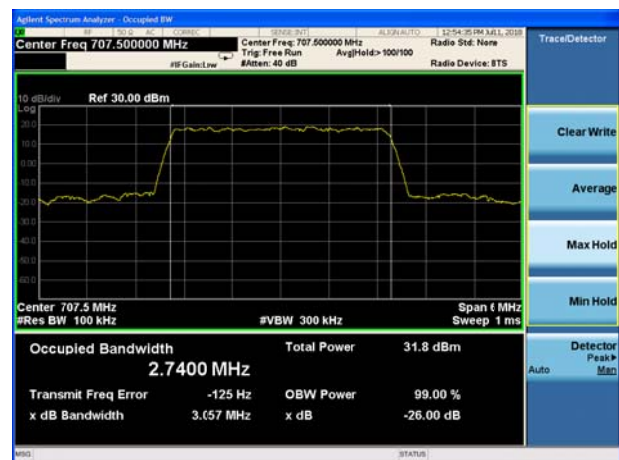
LTE Band 12 QPSK 3MHz CH-Low



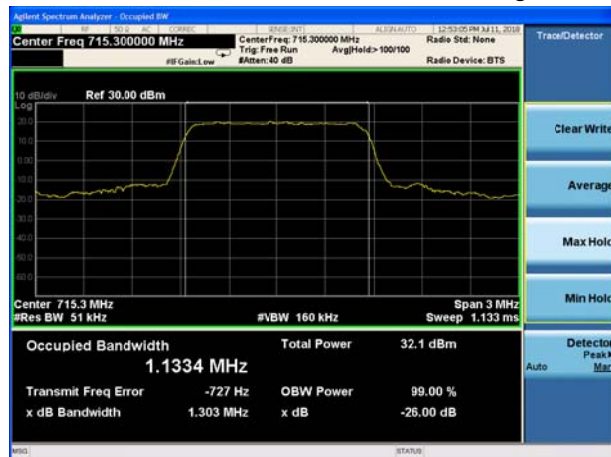
LTE Band 12 QPSK 1.4MHz CH-Middle



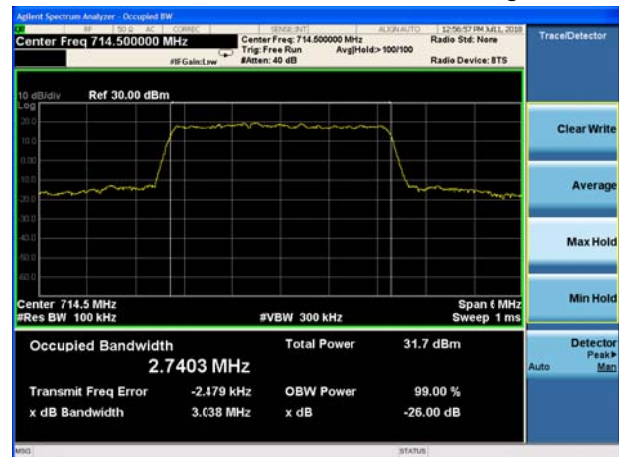
LTE Band 12 QPSK 3MHz CH-Middle



LTE Band 12 QPSK 1.4MHz CH-High



LTE Band 12 QPSK 3MHz CH-High





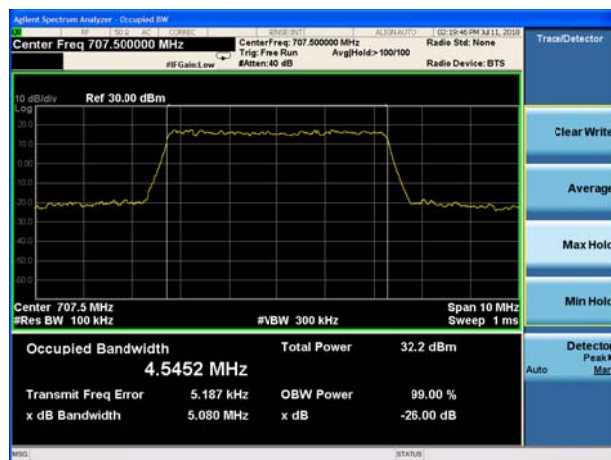
LTE Band 12 QPSK 5MHz CH-Low



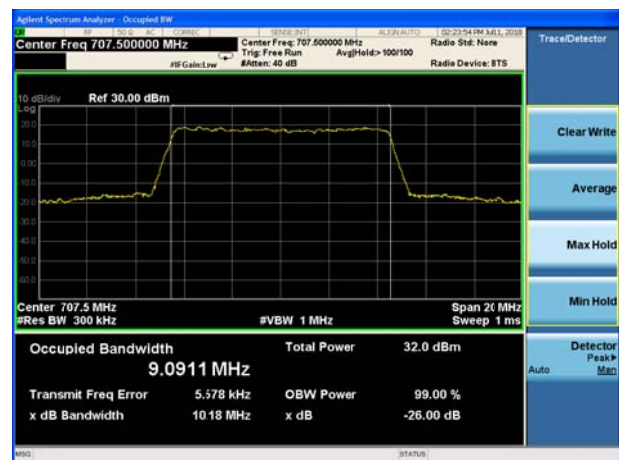
LTE Band 12 QPSK 10MHz CH-Low



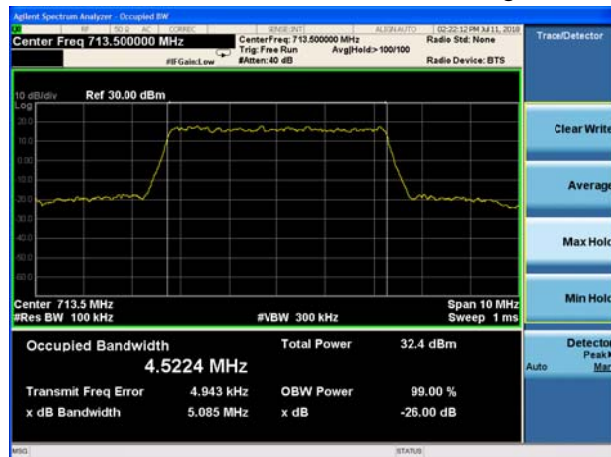
LTE Band 12 QPSK 5MHz CH-Middle



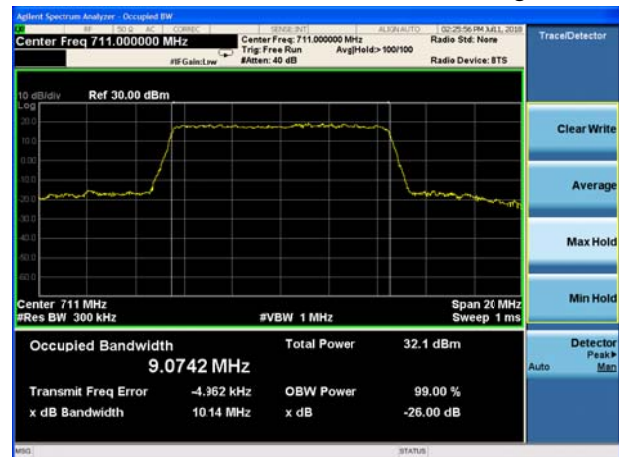
LTE Band 12 QPSK 10MHz CH-Middle



LTE Band 12 QPSK 5MHz CH-High



LTE Band 12 QPSK 10MHz CH-High





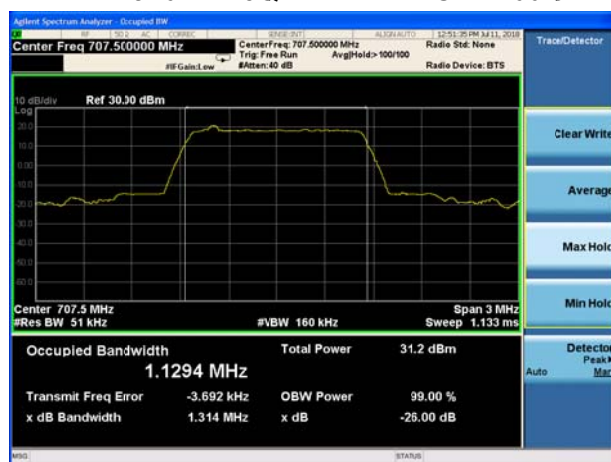
LTE Band 12 16QAM 1.4MHz CH-Low



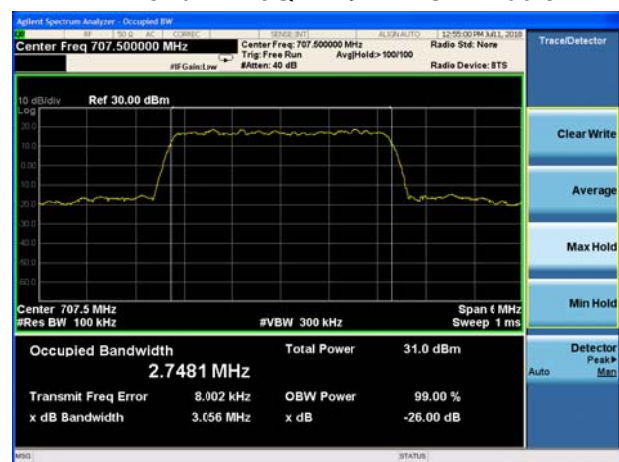
LTE Band 12 16QAM 3MHz CH-Low



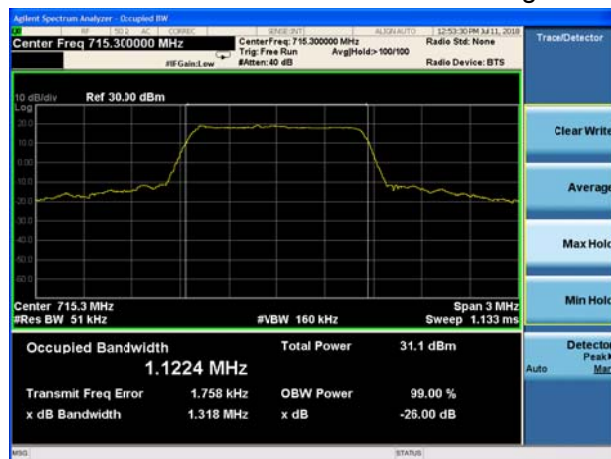
LTE Band 12 16QAM 1.4MHz CH-Middle



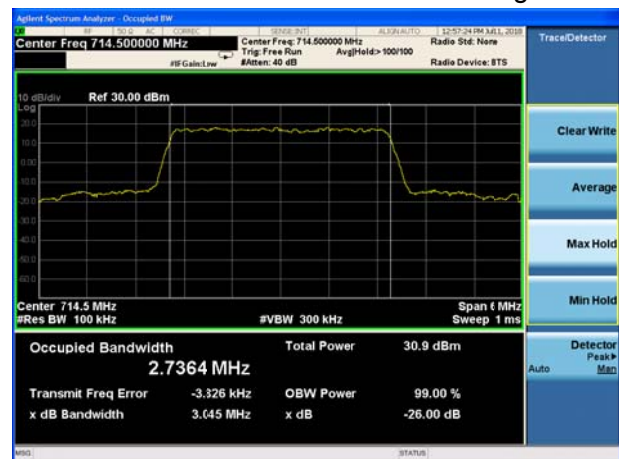
LTE Band 12 16QAM 3MHz CH-Middle



LTE Band 12 16QAM 1.4MHz CH-High

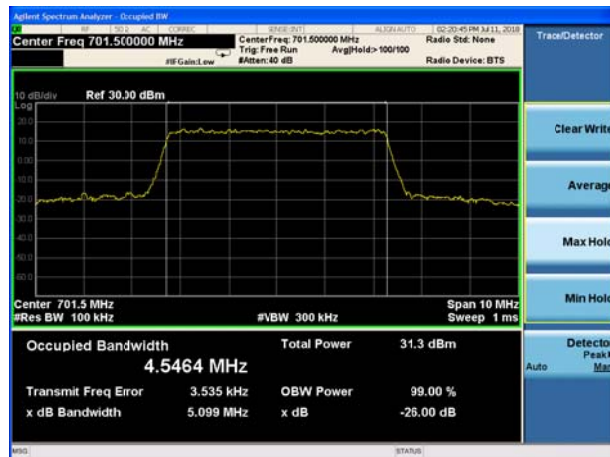


LTE Band 12 16QAM 3MHz CH-High





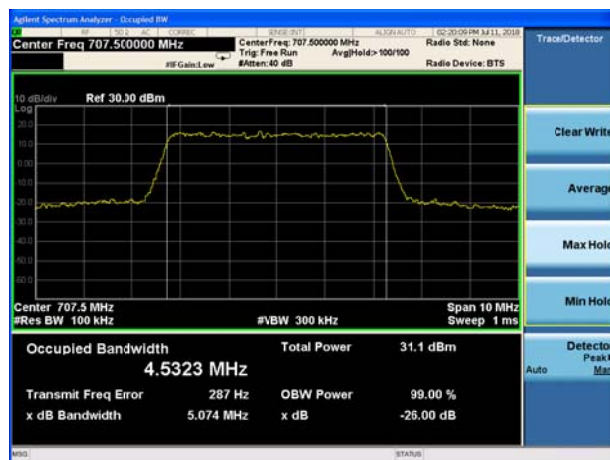
LTE Band 12 16QAM 5MHz CH-Low



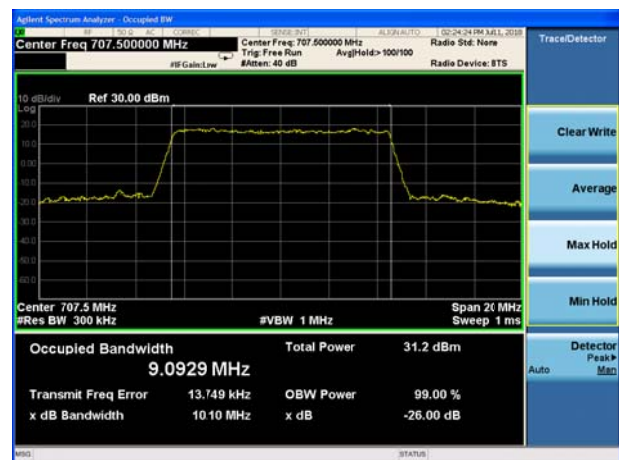
LTE Band 12 16QAM 10MHz CH-Low



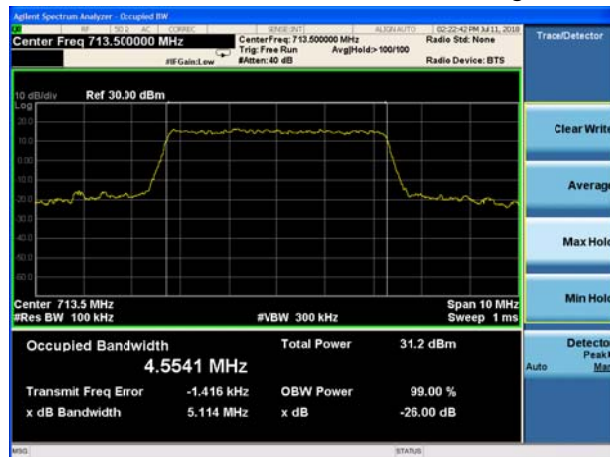
LTE Band 12 16QAM 5MHz CH-Middle



LTE Band 12 16QAM 10MHz CH-Middle



LTE Band 12 16QAM 5MHz CH-High

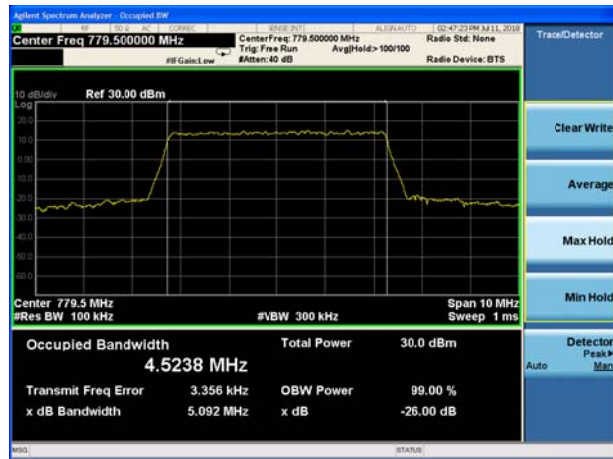


LTE Band 12 16QAM 10MHz CH-High

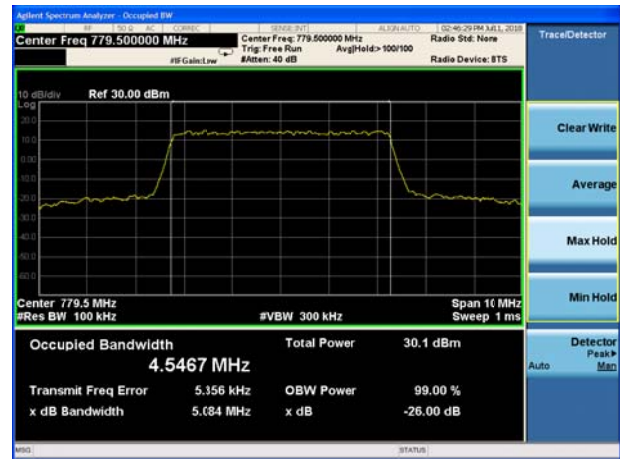




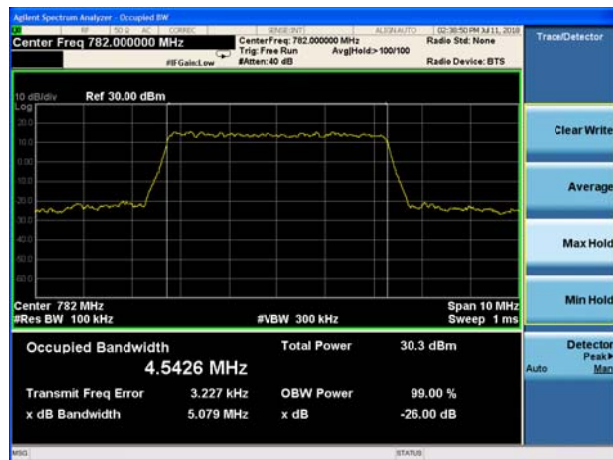
LTE Band 13 QPSK 5MHz CH-Low



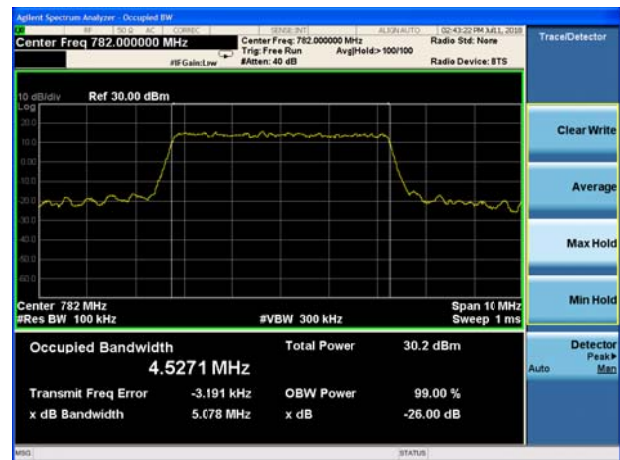
LTE Band 13 16QAM 5MHz CH-Low



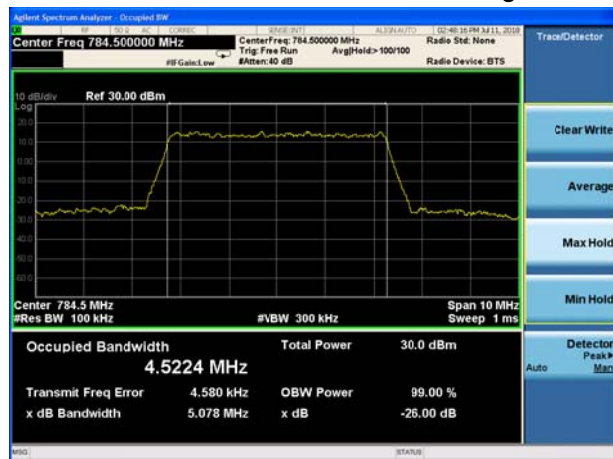
LTE Band 13 QPSK 5MHz CH-Middle



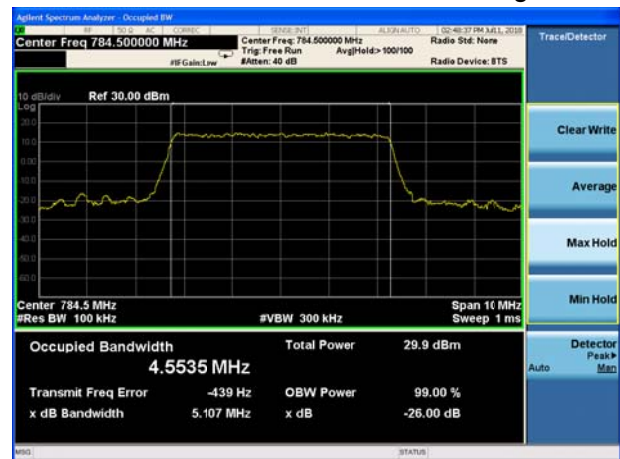
LTE Band 13 16QAM 5MHz CH-Middle



LTE Band 13 QPSK 5MHz CH-High

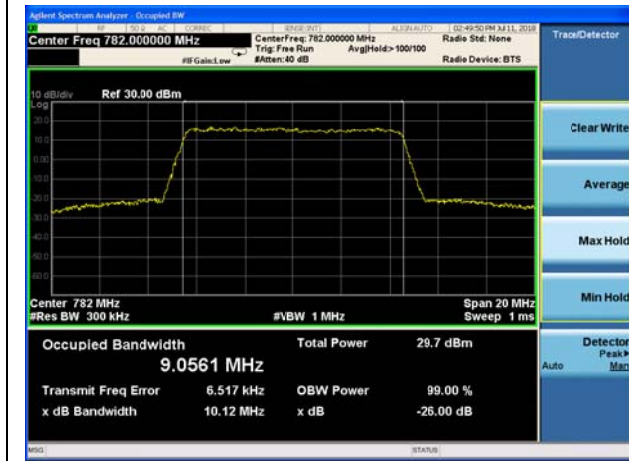


LTE Band 13 16QAM 5MHz CH-High





LTE Band 13 QPSK 10MHz CH-Middle

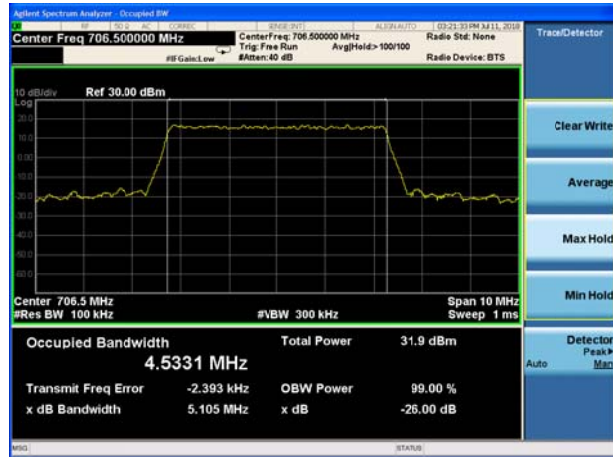


LTE Band 13 16QAM 10MHz CH-Middle





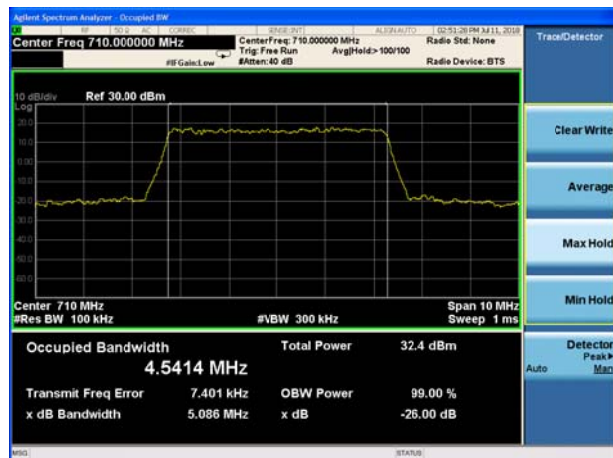
LTE Band 17 QPSK 5MHz CH-Low



LTE Band 17 QPSK 10MHz CH-Low



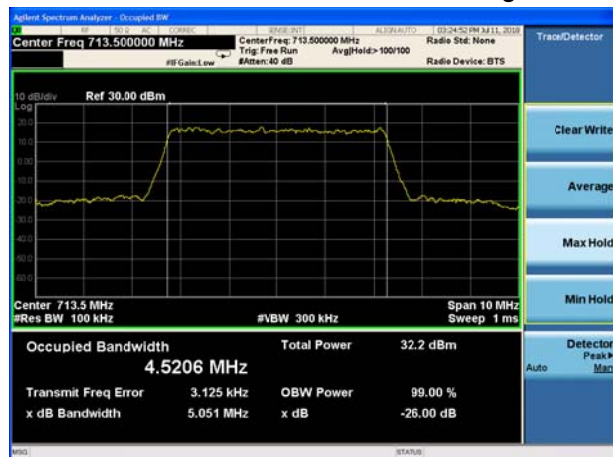
LTE Band 17 QPSK 5MHz CH-Middle



LTE Band 17 QPSK 10MHz CH-Middle



LTE Band 17 QPSK 5MHz CH-High

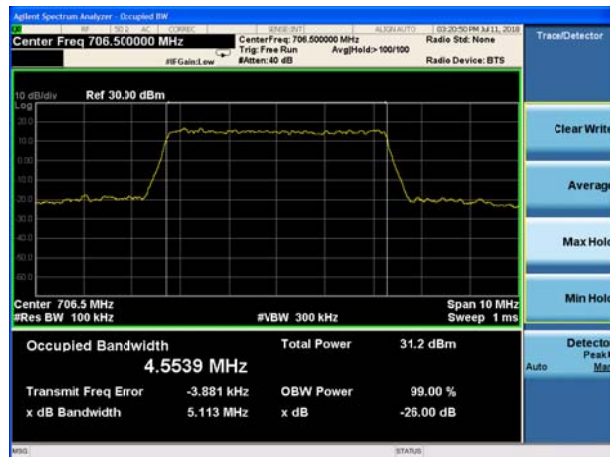


LTE Band 17 QPSK 10MHz CH-High





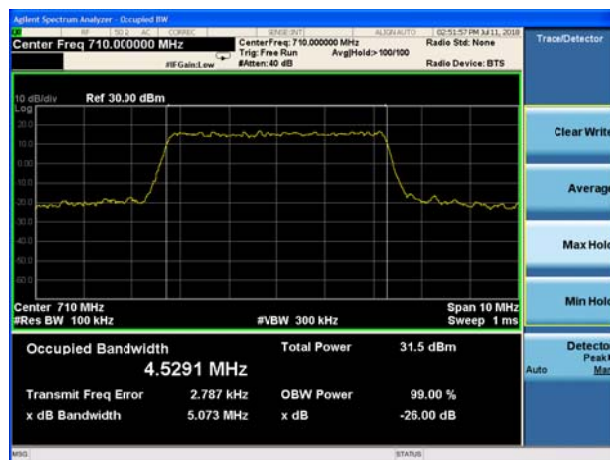
LTE Band 17 16QAM 5MHz CH-Low



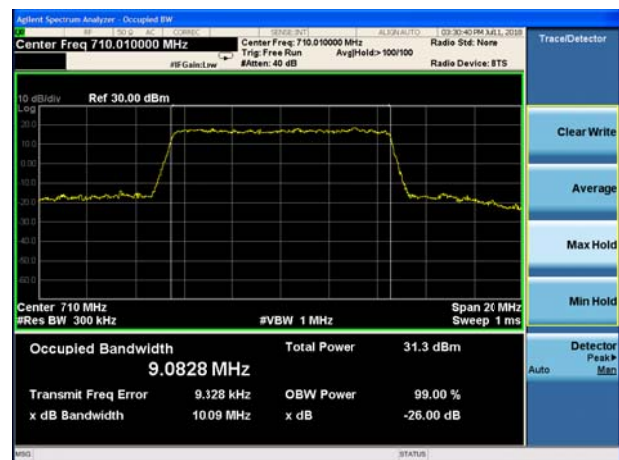
LTE Band 17 16QAM 10MHz CH-Low



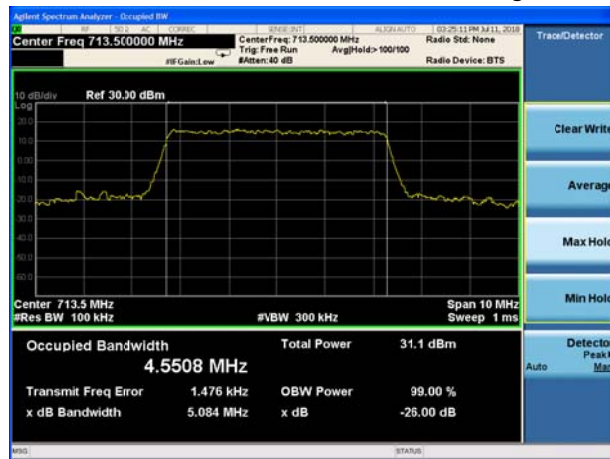
LTE Band 17 16QAM 5MHz CH-Middle



LTE Band 17 16QAM 10MHz CH-Middle



LTE Band 17 16QAM 5MHz CH-High

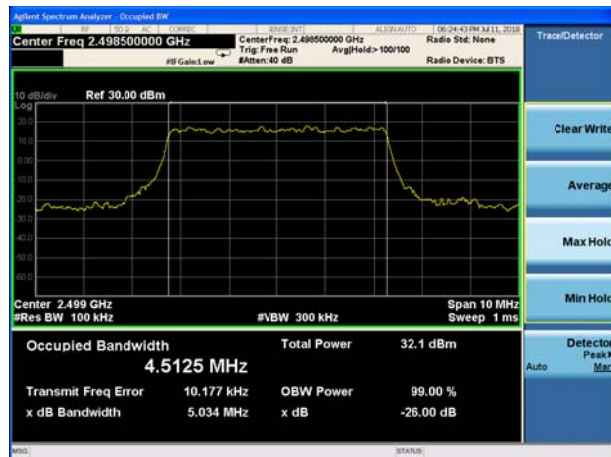


LTE Band 17 16QAM 10MHz CH-High





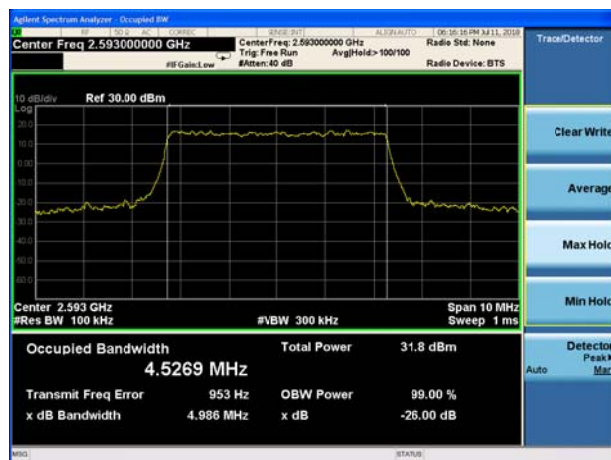
LTE Band 41 QPSK 5MHz CH-Low



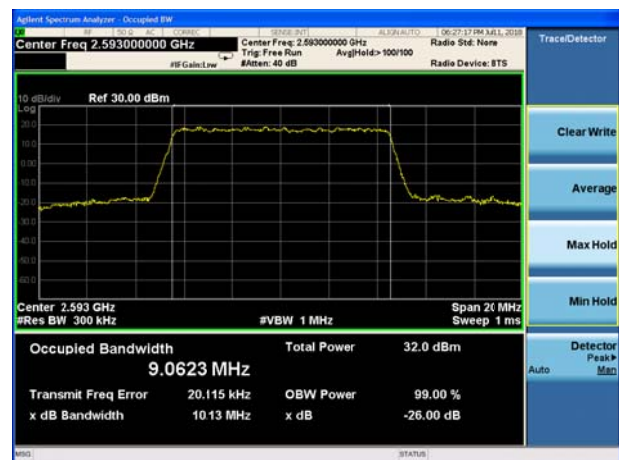
LTE Band 41 QPSK 10MHz CH-Low



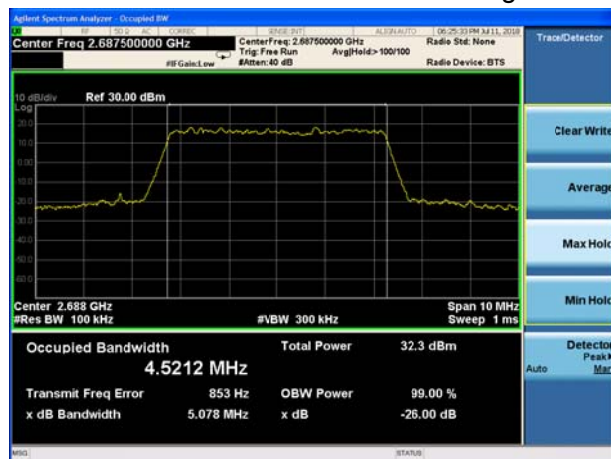
LTE Band 41 QPSK 5MHz CH-Middle



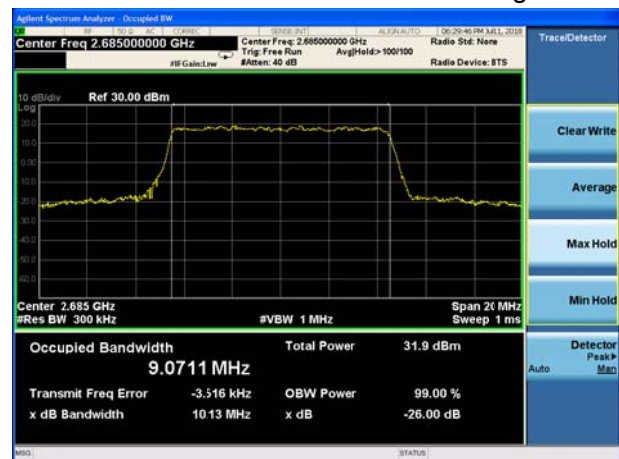
LTE Band 41 QPSK 10MHz CH-Middle



LTE Band 41 QPSK 5MHz CH-High

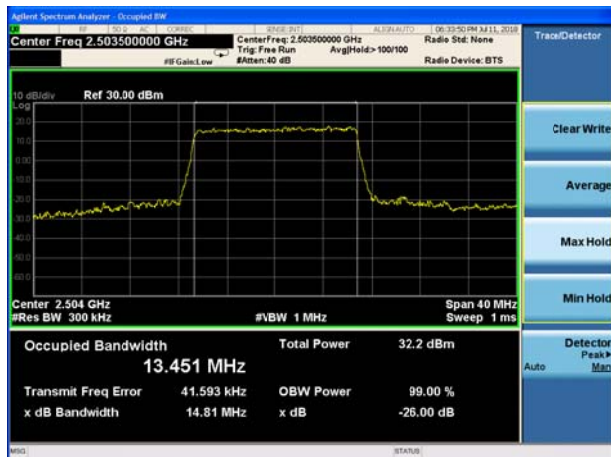


LTE Band 41 QPSK 10MHz CH-High

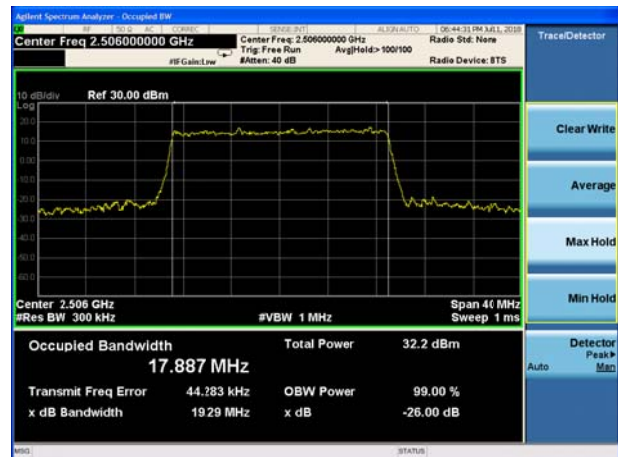




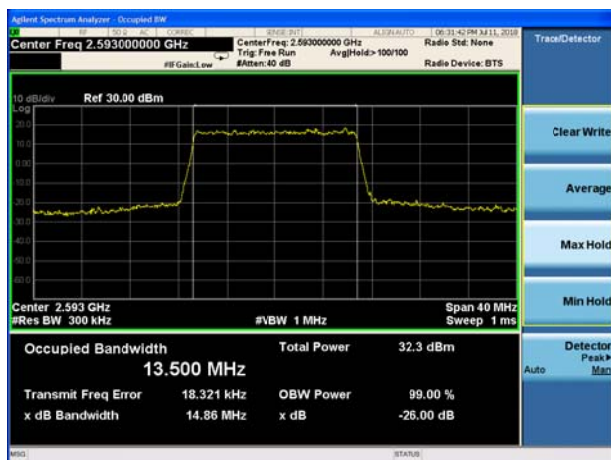
LTE Band 41 QPSK 15MHz CH-Low



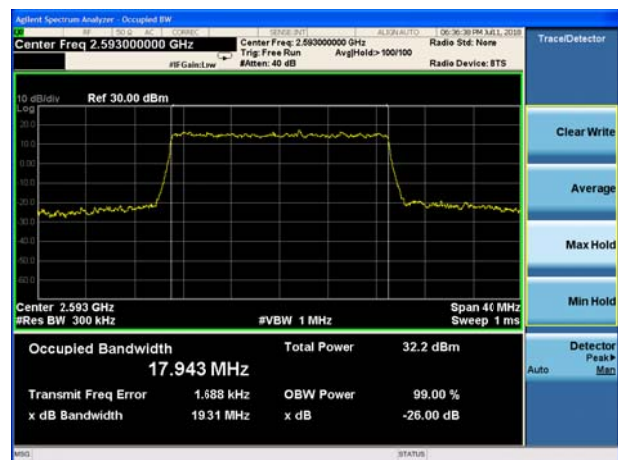
LTE Band 41 QPSK 20MHz CH-Low



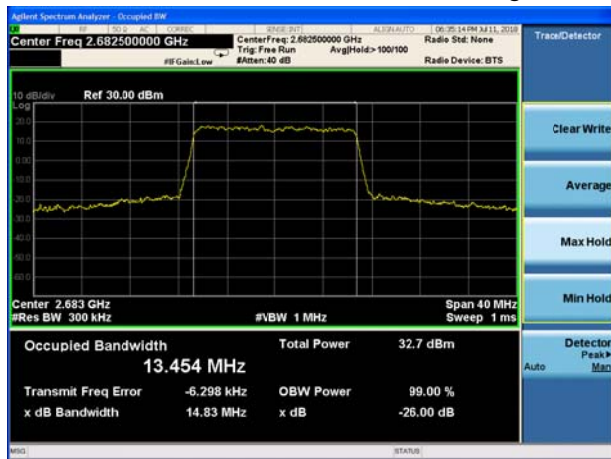
LTE Band 41 QPSK 15MHz CH-Middle



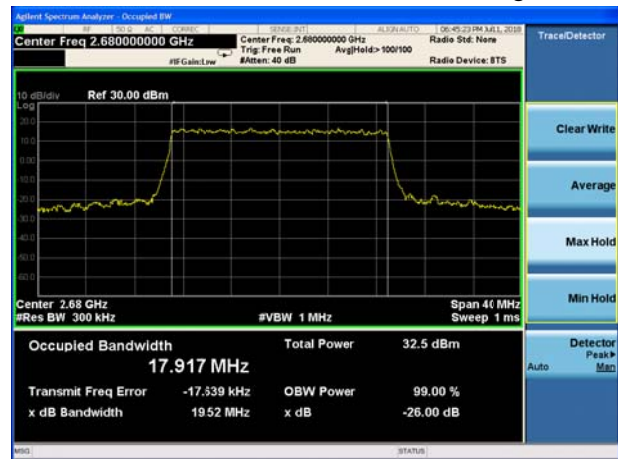
LTE Band 41 QPSK 20MHz CH-Middle



LTE Band 41 QPSK 15MHz CH-High

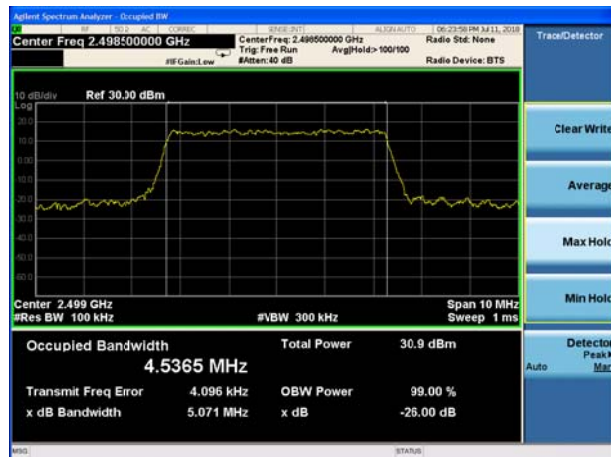


LTE Band 41 QPSK 20MHz CH-High





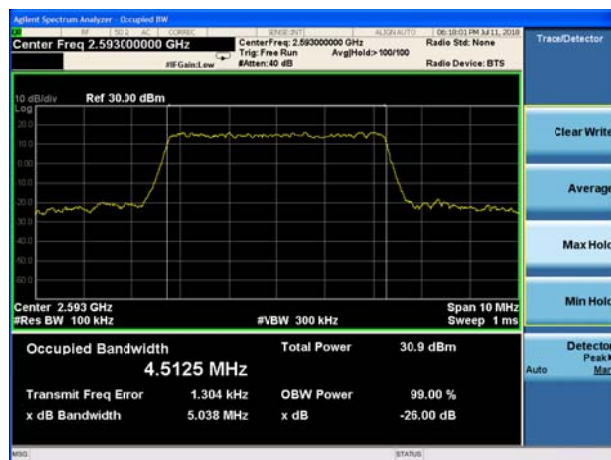
LTE Band 41 16QAM 5MHz CH-Low



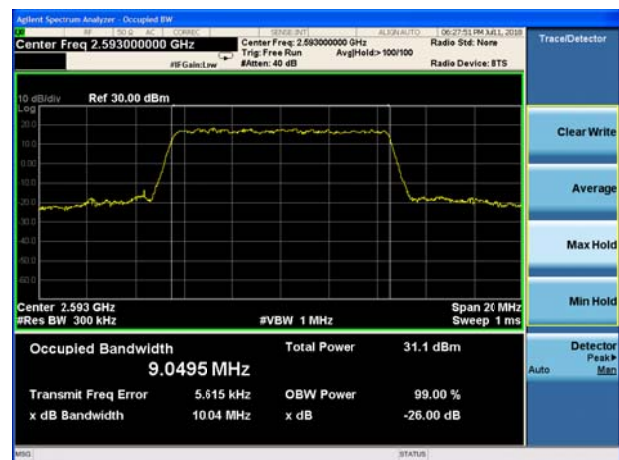
LTE Band 41 16QAM 10MHz CH-Low



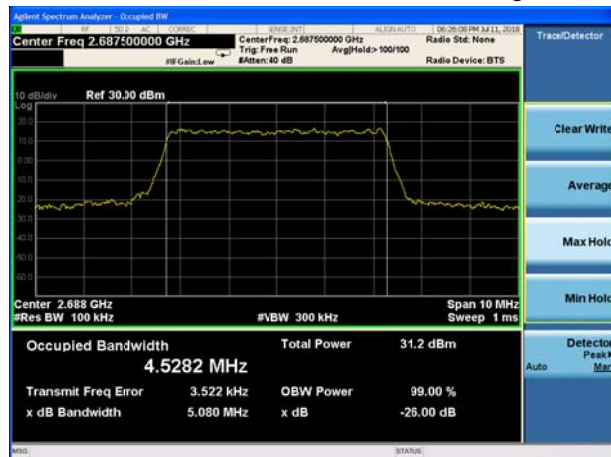
LTE Band 41 16QAM 5MHz CH-Middle



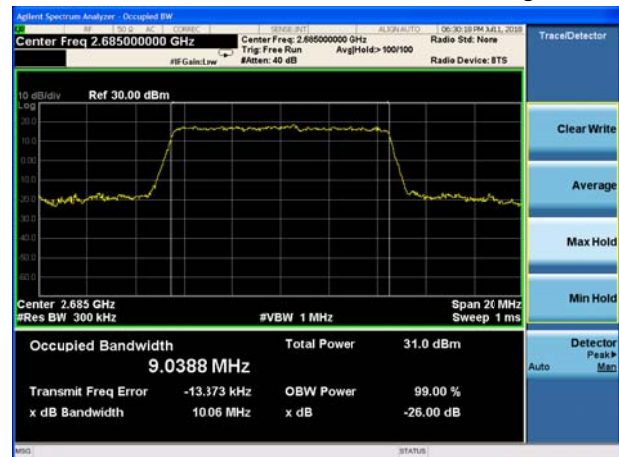
LTE Band 41 16QAM 10MHz CH-Middle



LTE Band 41 16QAM 5MHz CH-High

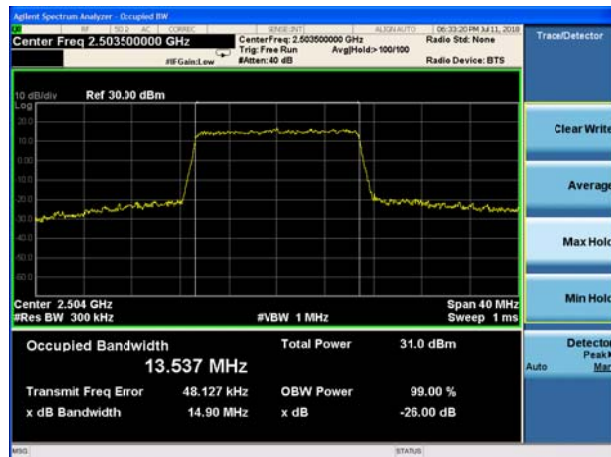


LTE Band 41 16QAM 10MHz CH-High

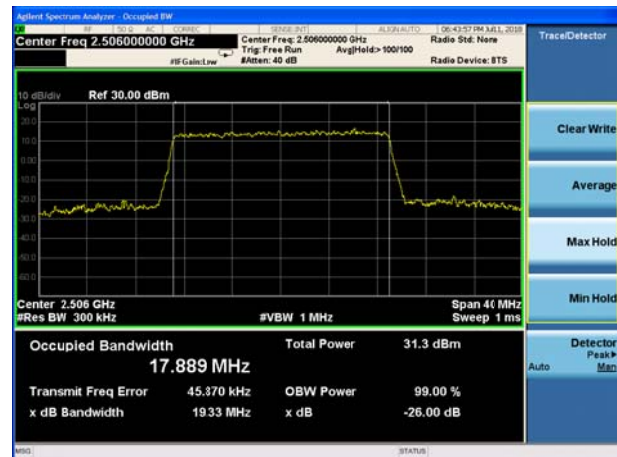




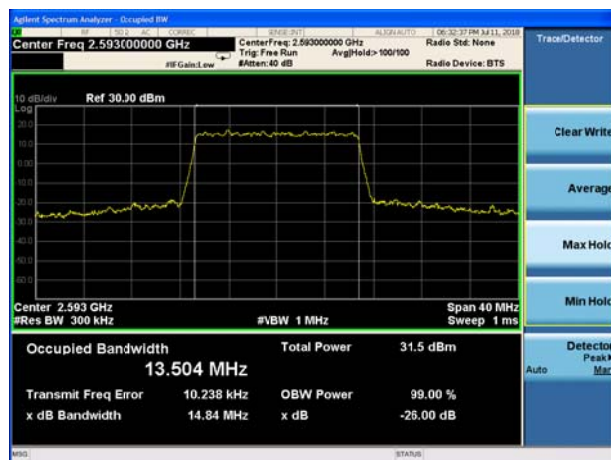
LTE Band 41 16QAM 15MHz CH-Low



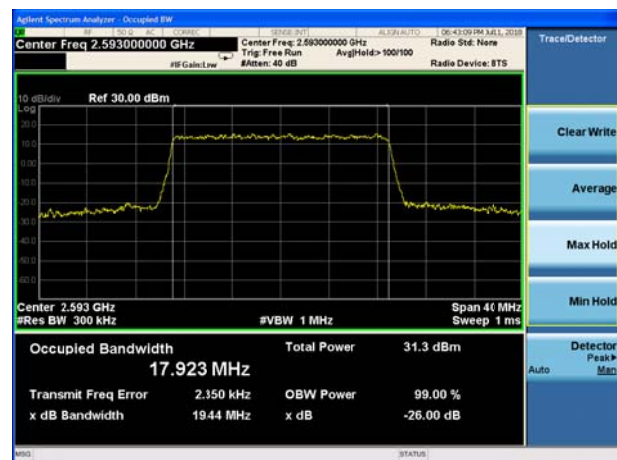
LTE Band 41 16QAM 20MHz CH-Low



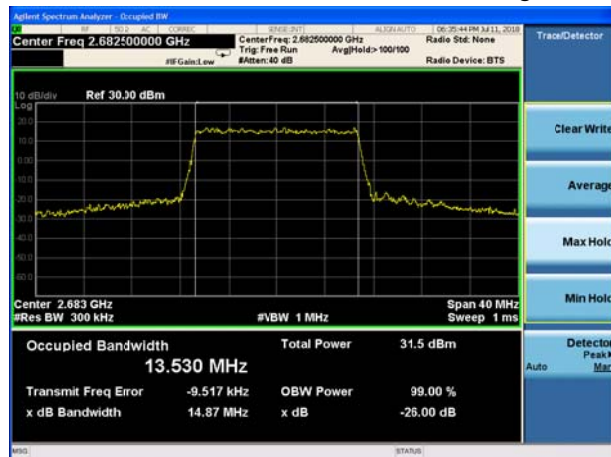
LTE Band 41 16QAM 15MHz CH-Middle



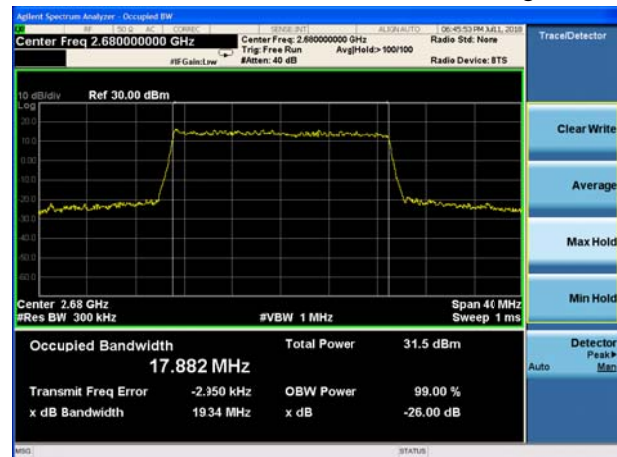
LTE Band 41 16QAM 20MHz CH-Middle



LTE Band 41 16QAM 15MHz CH-High



LTE Band 41 16QAM 20MHz 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 D01 v03r01 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 51 kHz, VBW is set to 160 kHz for WCDMA Band IV.
 RBW is set to 15 kHz, VBW is set to 51 kHz for LTE Band 4 (1.4MHz).
 RBW is set to 30 kHz, VBW is set to 100 kHz for LTE Band 4 (3MHz).
 RBW is set to 51 kHz, VBW is set to 160 kHz for LTE Band 4 (5MHz).
 RBW is set to 100 kHz, VBW is set to 300kHz for LTE Band 4 (10MHz).
 RBW is set to 150 kHz, VBW is set to 510 kHz for LTE Band 4 (15MHz).
 RBW is set to 200 kHz, VBW is set to 620 kHz for LTE Band 4 (20MHz).
 RBW is set to 50kHz, VBW is set to 200 kHz for LTE Band 7 (5MHz).
 RBW is set to 100 kHz, VBW is set to 300kHz for LTE Band 7 (10MHz).
 RBW is set to 200 kHz, VBW is set to 1 MHz for LTE Band 7 (15MHz/20MHz).
 RBW is set to 100 kHz, VBW is set to 300kHz for LTE Band 12(1.4MHz/3MHz/5MHz/10MHz).
 RBW is set to 10 kHz, VBW is set to 30 kHz for LTE Band 13 (763MHz~775MHz).
 RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 13 (775MHz~777MHz).
 RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 13 (787MHz~793MHz).
 RBW is set to 10 kHz, VBW is set to 30 kHz for LTE Band 13 (793MHz~805MHz).
 RBW is set to 100 kHz, VBW is set to 300kHz for LTE Band 17(5MHz/10MHz).
 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