

FCC Report (LTE)

Applicant: Mason America, Inc.

Address of Applicant: 300 Park Street , Suite 380, Birmingham, Michigan 48009, United States

Manufacturer: Mason America, Inc.

Address of Manufacturer: 300 Park Street , Suite 380, Birmingham, Michigan 48009, United States

Equipment Under Test (EUT)

Product Name: Smart phone

Model No.: D450A

Trade Mark: MASON

FCC ID: 2AJZP-D450A

Applicable standards: FCC CFR Title 47 Part 2
FCC CFR Title 47 Part 24 Subpart E
FCC CFR Title 47 Part 27

Date of sample receipt: May 10, 2018

Date of Test: May 11, 2018-June 04, 2018

Date of report issued: June 05, 2018

Test Result : PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Robinson Lo

Laboratory Manager

This results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

2 Version

Version No.	Date	Description
00	June 05, 2018	Original

Prepared By: _____ *Tiger Chen* _____ **Date:** _____ *June 05, 2018* _____
Project Engineer

Check By: _____ *Andy Wu* _____ **Date:** _____ *June 05, 2018* _____
Reviewer

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4 Test Summary

Test Item	Section in CFR 47	Result
RF Exposure (SAR)	Part 1.1307 Part 2.1093	Please refer to SAR report
RF Output Power	Part 2.1046 Part 24.232 (c) Part 27.50(c)(10)/(d)(4)	Pass
Peak-to-Average Power Ratio	Part 2.1046 Part 24.232 (d)	Pass
Modulation Characteristics	Part 2.1047	N/A
99% & -26 dB Occupied Bandwidth	Part 2.1049 Part 24.238 Part 27.53(h)/(g)	Pass
Spurious Emissions at Antenna Terminal	Part 2.1051 Part 24.238 (a) Part 27.53(h)/(g)	Pass
Field Strength of Spurious Radiation	Part 2.1053 Part 24.238 (a) Part 27.53(h)/(g)	Pass
Out of band emission, Band Edge	Part 24.238 (a) Part 27.53(h)/(g)	Pass
Frequency stability vs. temperature	Part 2.1055(a)(1)(b)	Pass
Frequency stability vs. voltage	Part 2.1055(d)(1)(2)	Pass

Pass: The EUT complies with the essential requirements in the standard.

N/A: Not applicable.

5 General Information

5.1 General Description of EUT

Product Name:	Smart phone
Model No.:	D450A
Serial No.:	MX-QD0201-R5FHN-7PAC8-VEFIPI
Tested Sample(s) ID:	GTS201805000172-1
Sample(s) Status	Engineer sample
Hardware Version:	H01
Software Version:	D450A-H01-S005
Support Networks:	LTE
Support Bands:	LTE Band 5, LTE Band 7
Channel Bandwidth:	LTE Band 5: 1.4MHz; 3MHz; 5MHz; 10MHz LTE Band 7: 5MHz; 10MHz; 15MHz; 20MHz
TX Frequency:	LTE Band 5: 824MHz~849MHz LTE Band 7: 2502.50MHz-2567.50MHz
Modulation type:	LTE Band 5/7: QPSK, 16QAM
Release	R8
Antenna type:	Integral antenna
Antenna gain:	LTE Band 5: -2.30dBi LTE Band 7: 0.75dBi
Power supply:	ADAPTER POWER Model: A138A-120150U-US2 Input: AC 100-240V, 50/60Hz, 0.5A Output: DC 5V, 2.5A/9V, 2A/12V, 1.5A DC 3.85V, 4000mAh Li-Pol 15.4Wh

5.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is filing to comply with Section Part 27 of the FCC CFR 47 Rules.

5.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures document on TIA/EIA 603 and FCC CFR 47.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057

5.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC —Registration No.: 381383**

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 381383, January 08, 2018.

- **Industry Canada (IC) —Registration No.: 9079A-2**

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-2, August 15, 2016.

5.5 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

Address: No. 301-309, 3/F., Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102

Tel: 0755-27798480

Fax: 0755-27798960

6 Test Instruments list

Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.0(L)*6.0(W)* 6.0(H)	GTS250	July 03 2015	July 02 2020
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June 28 2017	June 27 2018
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June 28 2017	June 27 2018
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS208	June 28 2017	June 27 2018
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June 28 2017	June 27 2018
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June 28 2017	June 27 2018
9	Coaxial Cable	GTS	N/A	GTS211	June 28 2017	June 27 2018
10	Coaxial cable	GTS	N/A	GTS210	June 28 2017	June 27 2018
11	Coaxial Cable	GTS	N/A	GTS212	June 28 2017	June 27 2018
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June 28 2017	June 27 2018
13	Amplifier(2GHz-20GHz)	HP	8349B	GTS206	June 28 2017	June 27 2018
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June 28 2017	June 27 2018
15	Band filter	Amindeon	82346	GTS219	June 28 2017	June 27 2018
16	Universal radio communication tester	Rohde & Schwarz	CMU200	GTS235	June 28 2017	June 27 2018
17	Signal Generator	Rohde & Schwarz	SML03	GTS236	June 28 2017	June 27 2018
18	Temp. Humidity/ Barometer	Oregon Scientific	BA-888	GTS248	June 28 2017	June 27 2018
19	D.C. Power Supply	Instek	PS-3030	GTS232	June 28 2017	June 27 2018
20	Splitter	Agilent	11636B	GTS237	June 28 2017	June 27 2018
21	Power meter	Anritsu	ML2495A	GTS540	June 28 2017	June 27 2018
22	Power Sensor	Anritsu	MA2411B	GTS541	June 28 2017	June 27 2018
23	Spectrum Analyzer	Agilent	E4440A	GTS533	June 28 2017	June 27 2018
24	Temp.&Humidity chamber	Chuang wei	GDS-225	GTS005-1	June 28 2017	June 27 2018
25	Highpass filter	Micro-Tronics	HPM50108	GTS549	June 28 2017	June 27 2018
26	Highpass filter	Micro-Tronics	HPM50111	GTS550	June 28 2017	June 27 2018

General used equipment:

Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Barometer	ChangChun	DYM3	GTS257	Jun. 28 2017	Jun. 27 2018

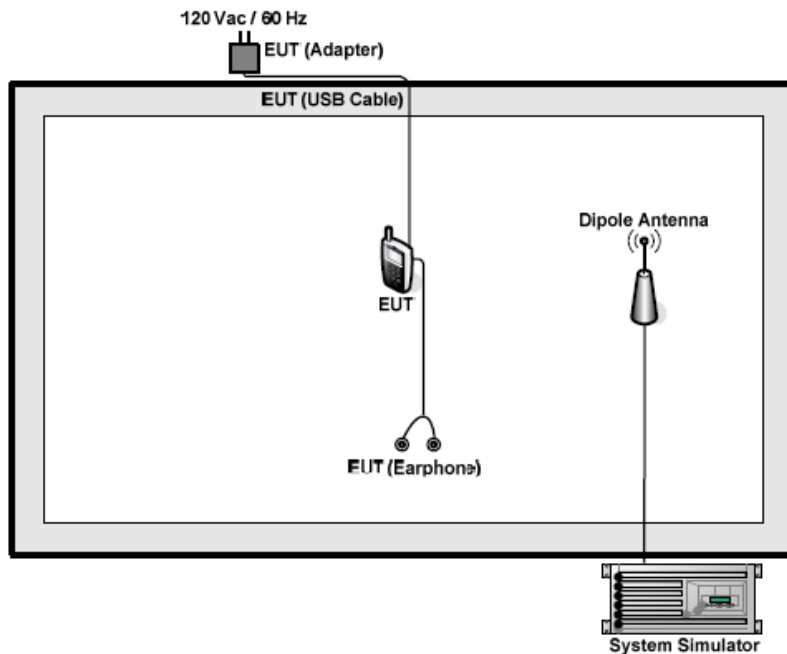
7 System test configuration

7.1 Test mode

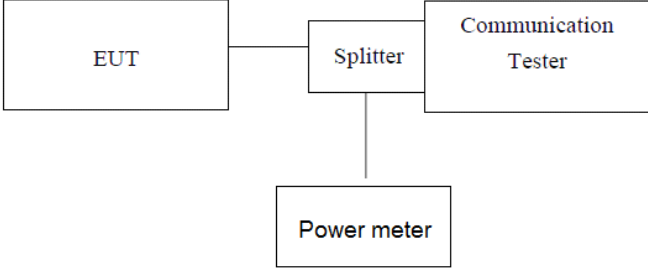
During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission.

Test modes		
Band	Radiated	Conducted
LTE Band 5	■ QPSK and 16QAM link	■ QPSK and 16QAM link
LTE Band 7	■ QPSK and 16QAM link	■ QPSK and 16QAM link

7.2 Configuration of Tested System



7.3 Conducted Output Power

Test Requirement:	Part 24.232 (c); Part 27.50(c)(10)/(d)(4)
Test Method:	FCC part2.1046
Limit:	LTE Band 5: 7W LTE Band 7: 2W
Test setup:	 <p style="text-align: center;"><i>Note: Measurement setup for testing on Antenna connector</i></p>
Test Procedure:	<ol style="list-style-type: none"> 1. The transmitter output port was connected to base station . 2. The RF output of EUT was connected to the power meter by RF cable and attenuator, the path loss was compensated to the results for each measurement. 3. Set EUT at maximum power through base station. 4. Select lowest, middle, and highest channels for each band and different modulation. 5. Measure the maximum burst average power.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 7.1 for details
Test results:	Pass

Measurement Data

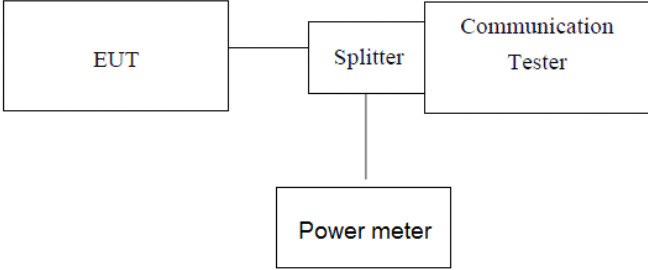
Band 5						
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 20407 824.7MHz	Channel 20525 836.5MHz	Channel 20643 848.3MHz
1.4MHz	QPSK	1	0	23.61	23.51	23.67
		1	13	23.58	23.64	23.69
		1	24	23.59	23.59	23.59
		12	0	23.46	23.57	23.61
		12	6	23.57	23.68	23.23
		12	13	23.61	23.29	23.29
		25	0	23.25	23.68	23.16
	16QAM	1	0	23.26	23.98	23.28
		1	13	23.25	23.88	23.40
		1	24	23.66	23.91	23.61
		12	0	23.55	23.58	23.51
		12	6	23.43	23.67	23.29
		12	13	23.39	23.59	23.51
		25	0	23.68	23.67	23.66
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 20415 825.5MHz	Channel 20525 836.5MHz	Channel 20635 847.5MHz
3MHz	QPSK	1	0	23.84	23.45	23.61
		1	25	23.67	23.63	23.54
		1	49	23.55	23.54	23.55
		25	0	23.68	23.32	23.41
		25	13	23.59	23.44	23.55
		25	25	23.94	23.51	23.51
		50	0	23.15	23.34	23.99
	16QAM	1	0	23.26	23.58	23.58
		1	25	23.51	23.9	23.67
		1	49	23.28	23.52	23.81
		25	0	23.84	23.66	23.83
		25	13	23.26	23.64	23.91
		25	25	23.61	23.42	23.64
		50	0	23.48	23.61	23.82

Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 20425 826.5MHz	Channel 20525 836.5MHz	Channel 20625 846.5MHz
5MHz	QPSK	1	0	23.56	23.71	23.57
		1	38	23.46	23.71	23.6
		1	74	23.54	23.89	23.77
		36	0	23.48	23.59	23.46
		36	18	23.59	23.83	23.74
		36	39	23.67	23.69	23.61
		75	0	23.82	24.16	23.92
	16QAM	1	0	23.74	23.94	23.69
		1	38	23.57	23.78	23.54
		1	74	23.69	23.91	23.69
		36	0	23.55	23.97	23.76
		36	18	23.62	23.88	23.64
		36	39	23.88	23.57	23.8
		75	0	23.56	23.71	23.57
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 20450 829MHz	Channel 20525 836.5MHz	Channel 20600 844MHz
10MHz	QPSK	1	0	23.55	23.6	23.35
		1	50	23.61	23.87	23.72
		1	99	23.25	23.59	23.35
		50	0	23.45	23.67	23.51
		50	25	23.61	23.76	23.58
		50	50	23.57	23.66	23.42
		100	0	23.52	23.67	23.36
	16QAM	1	0	23.51	23.73	23.53
		1	50	23.58	23.71	23.49
		1	99	23.91	24.12	23.95
		50	0	23.85	23.84	23.83
		50	25	23.91	23.84	23.7
		50	50	23.62	23.78	23.53
		100	0	23.66	23.77	23.66

Band 7						
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 20775 2502.5MHz	Channel 21100 2535MHz	Channel 21425 2567.5MHz
5MHz	QPSK	1	0	23.59	23.15	23.22
		1	13	23.64	23.19	23.24
		1	24	23.23	23.54	23.15
		12	0	23.34	23.26	23.16
		12	6	23.51	23.51	23.25
		12	13	23.52	23.43	23.46
		25	0	23.34	23.26	23.58
	16QAM	1	0	23.15	23.51	23.68
		1	13	23.54	23.43	23.49
		1	24	23.52	23.22	23.59
		12	0	23.58	23.16	23.61
		12	6	23.22	23.15	23.46
		12	13	23.11	23.24	23.25
		25	0	23.13	23.15	23.26
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 20800 2505.0MHz	Channel 21100 2535MHz	Channel 21400 2565.0MHz
10MHz	QPSK	1	0	23.15	23.73	23.46
		1	25	23.57	23.74	23.59
		1	49	23.68	23.71	23.18
		25	0	23.49	23.76	23.66
		25	13	23.28	23.59	23.55
		25	25	23.49	23.81	23.53
		50	0	23.39	23.59	23.49
	16QAM	1	0	23.19	23.68	23.58
		1	25	23.59	23.59	23.16
		1	49	23.68	23.67	23.13
		25	0	23.49	23.19	23.11
		25	13	23.83	23.29	23.12
		25	25	23.91	23.67	23.31
		50	0	23.81	23.51	23.33

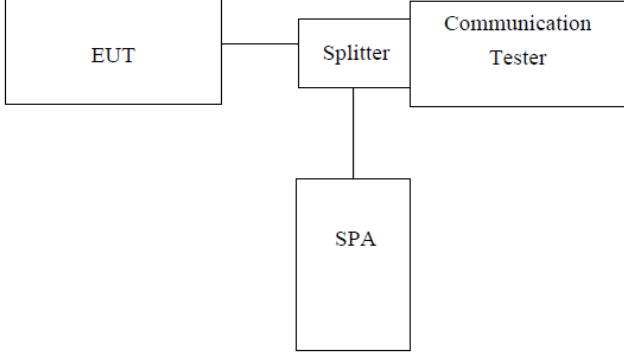
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 20825 2507.5MHz	Channel 21100 2535MHz	Channel 21375 2562.5MHz
15MHz	QPSK	1	0	23.64	23.64	23.59
		1	38	23.85	23.52	23.61
		1	74	23.91	23.16	23.49
		36	0	23.67	23.55	23.58
		36	18	23.81	23.44	23.61
		36	39	23.95	23.38	23.49
		75	0	23.59	23.62	23.51
	16QAM	1	0	23.46	23.53	23.62
		1	38	23.59	23.19	23.24
		1	74	23.49	23.58	23.66
		36	0	23.68	23.61	23.28
		36	18	23.66	23.53	23.54
		36	39	23.77	23.57	23.39
		75	0	23.84	23.19	23.68
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 20850 2510.0MHz	Channel 21100 2535MHz	Channel 21350 2560.0MHz
20MHz	QPSK	1	0	23.12	23.15	23.64
		1	50	23.26	23.16	23.59
		1	99	23.11	23.52	23.68
		50	0	23.62	23.46	23.51
		50	25	23.45	23.29	23.61
		50	50	23.92	23.61	23.59
		100	0	23.51	23.52	23.64
	16QAM	1	0	23.26	23.83	23.15
		1	50	23.15	23.73	23.38
		1	99	23.26	23.51	23.95
		50	0	23.52	23.46	23.18
		50	25	23.36	23.53	23.16
		50	50	23.34	23.18	23.16
		100	0	23.13	23.29	23.18

7.4 Peak-to-Average Power Ratio

Test Requirement:	Part 27.50(d)(5)
Test Method:	FCC part2.1046
Limit:	13db
Test setup:	 <p><i>Note: Measurement setup for testing on Antenna connector</i></p>
Test Procedure:	<ol style="list-style-type: none"> 1. The transmitter output port was connected to base station. 2. The RF output of EUT was connected to the power meter by RF cable and attenuator, the path loss was compensated to the results for each measurement. 3. Set EUT at maximum power through base station. 4. Select lowest, middle, and highest channels for each band and different modulation. 5. Measure the maximum burst average power. 6. Record the maximum peak-to-average ratio value.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 7.1 for details
Test results:	Pass

Test Band	Test mode	Peak to Average Power Ratio (dB)			Limit (dB)	Result
		Low Ch.	Middle Ch.	High Ch.		
LTE Band 5	LTE 1.4MHz Bandwidth	3.59	4.57	4.19	13	PASS
	LTE 3MHz Bandwidth	3.68	4.65	4.85	13	PASS
	LTE 5MHz Bandwidth	3.58	4.47	4.49	13	PASS
	LTE 10MHz Bandwidth	4.61	4.59	4.61	13	PASS
LTE Band 7	LTE 5MHz Bandwidth	4.85	5.07	5.04	13	PASS
	LTE 10MHz Bandwidth	4.62	4.58	4.59	13	PASS
	LTE 15MHz Bandwidth	5.79	5.77	5.75	13	PASS
	LTE 20MHz Bandwidth	6.56	6.53	6.54	13	PASS

7.5 Occupancy Bandwidth

Test Requirement:	Part 24.238; FCC Part 27.53(h)/(g)
Test Method:	FCC part2.1049
Test setup:	 <p><i>Note: Measurement setup for testing on Antenna connector</i></p>
Test Procedure:	<ol style="list-style-type: none"> 1. The EUT's output RF connector was connected with a short cable to the spectrum analyzer 2. RBW was set to about 1% of emission BW, VBW= 3 times RBW. 3. -26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 7.1 for details
Test results:	Pass

Measurement Data

QPSK mode:

EUT Mode	Channel Bandwidth	Channel	RB Configure		99% Occupy bandwidth (KHz)	-26dB bandwidth (KHz)
			RB Size	RB Offset		
LTE Band 5	1.4MHz	Low range	6	0	1099.4	1320
		Mid range	6	0	1097.1	1306
		High range	6	0	1104.5	1314
	3MHz	Low range	15	0	2688.6	2949
		Mid range	15	0	2680.2	2919
		High range	15	0	2680.0	2916
	5MHz	Low range	25	0	4533.9	4973
		Mid range	25	0	4527.4	5016
		High range	25	0	4504.0	4955
	10MHz	Low range	50	0	8293.8	9667
		Mid range	50	0	8951.9	9708
		High range	50	0	8930.8	9655

EUT Mode	Channel Bandwidth	Channel	RB Configure		99% Occupy bandwidth (KHz)	-26dB bandwidth (KHz)
			RB Size	RB Offset		
LTE Band 7	5MHz	Low range	25	0	4511.6	4970
		Mid range	25	0	4520.4	5045
		High range	25	0	4495.9	4977
	10MHz	Low range	50	0	8951.9	9722
		Mid range	50	0	8933.2	9688
		High range	50	0	8947.3	9765
	15MHz	Low range	75	0	13471.4	14793
		Mid range	75	0	13384.7	14554
		High range	75	0	13380.7	14498
	20MHz	Low range	100	0	17898.1	19244
		Mid range	100	0	17799.3	19205
		High range	100	0	17847.1	19213

16QAM mode:

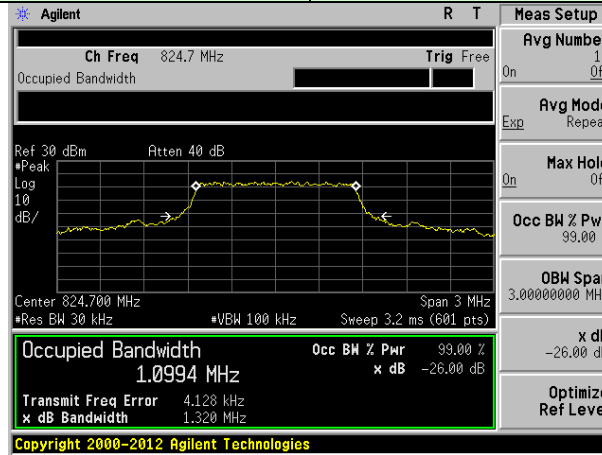
EUT Mode	Channel Bandwidth	Channel	RB Configure		99% Occupy bandwidth (KHz)	-26dB bandwidth (KHz)
			RB Size	RB Offset		
LTE Band 5	1.4MHz	Low range	6	0	1101.3	1356
		Mid range	6	0	1097.4	1293
		High range	6	0	1102.8	1317
	3MHz	Low range	15	0	2692.2	2938
		Mid range	15	0	2679.2	2939
		High range	15	0	2688.4	2913
	5MHz	Low range	25	0	4510.5	5009
		Mid range	25	0	4519.0	4992
		High range	25	0	4503.6	4970
	10MHz	Low range	50	0	8931.6	9756
		Mid range	50	0	8939.4	9663
		High range	50	0	8949.2	9733

EUT Mode	Channel Bandwidth	Channel	RB Configure		99% Occupy bandwidth (KHz)	-26dB bandwidth (KHz)
			RB Size	RB Offset		
LTE Band 7	5MHz	Low range	25	0	4506.3	5059
		Mid range	25	0	4510.0	4974
		High range	25	0	4488.8	4994
	10MHz	Low range	50	0	8959.2	9764
		Mid range	50	0	8935.1	9633
		High range	50	0	8953.5	9627
	15MHz	Low range	75	0	13445.3	14692
		Mid range	75	0	13376.6	14635
		High range	75	0	13393.6	14543
	20MHz	Low range	100	0	17861.9	19230
		Mid range	100	0	17801.4	19346
		High range	100	0	17830.0	19257

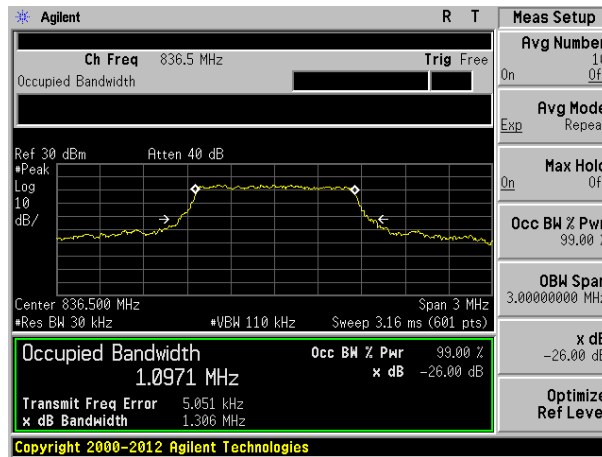
Test plot as follows:

QPSK mode:

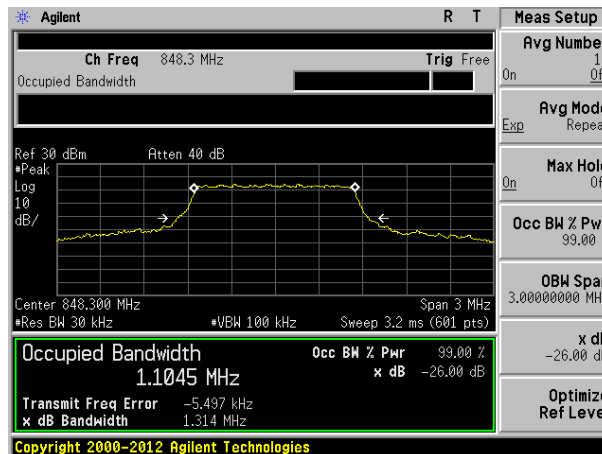
Test band: LTE Band 5	Channel Bandwidth: 1.4MHz
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Lowest channel

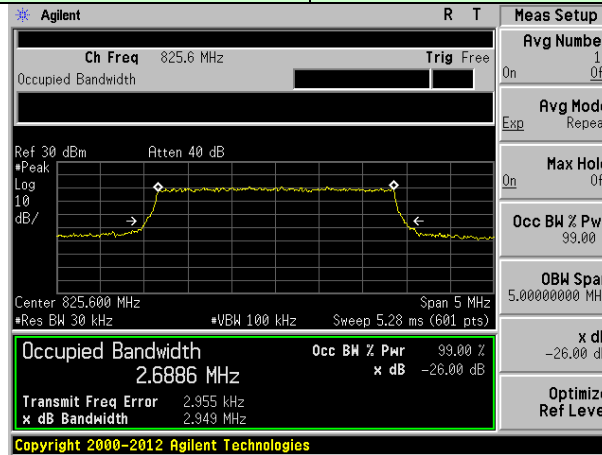


Middle channel

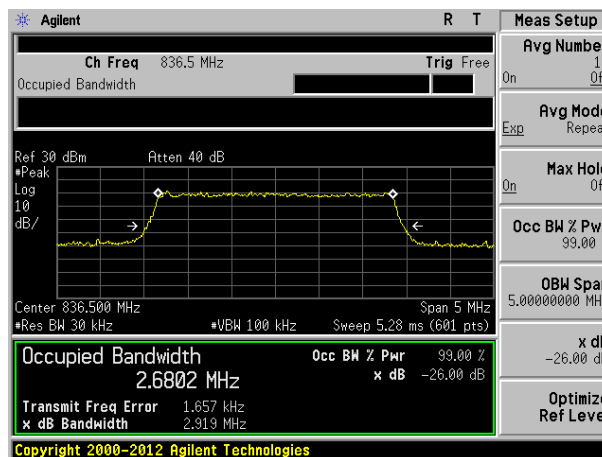


Highest channel

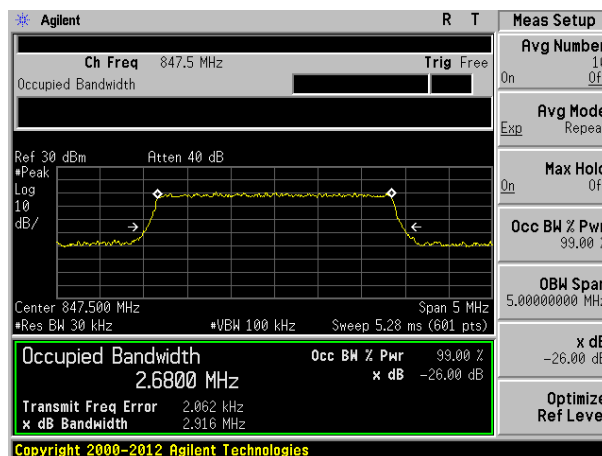
Test band: LTE Band 5 Channel Bandwidth: 3MHz



Lowest channel

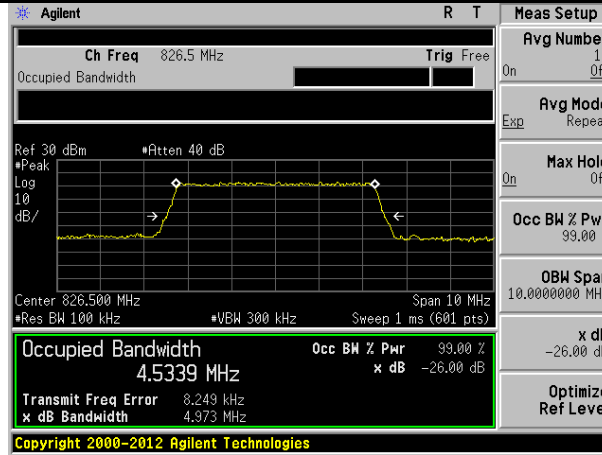


Middle channel

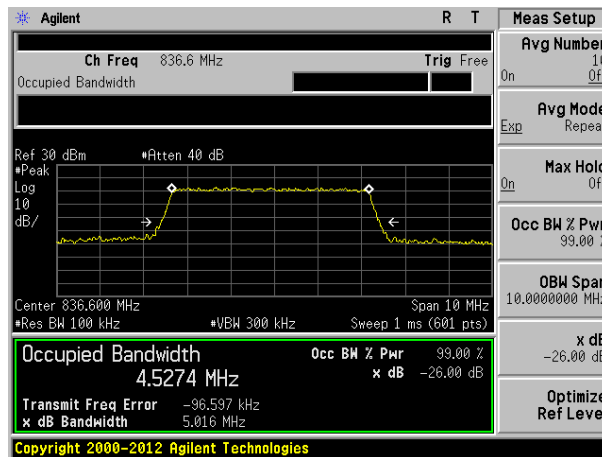


Highest channel

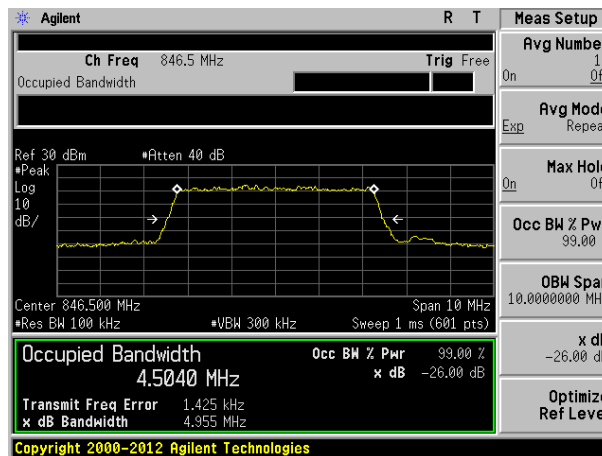
Test band: LTE Band 5 Channel Bandwidth: 5MHz



Lowest channel

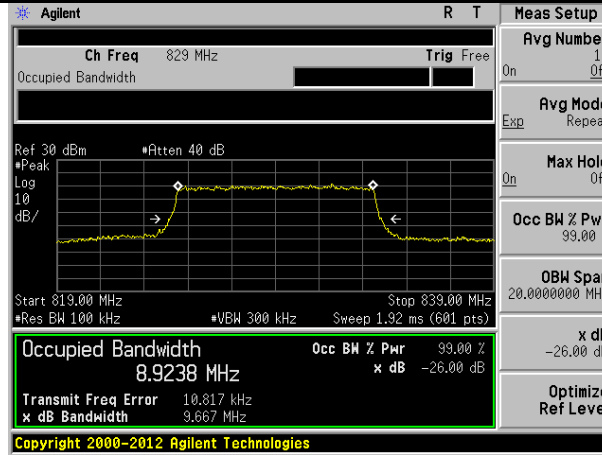


Middle channel

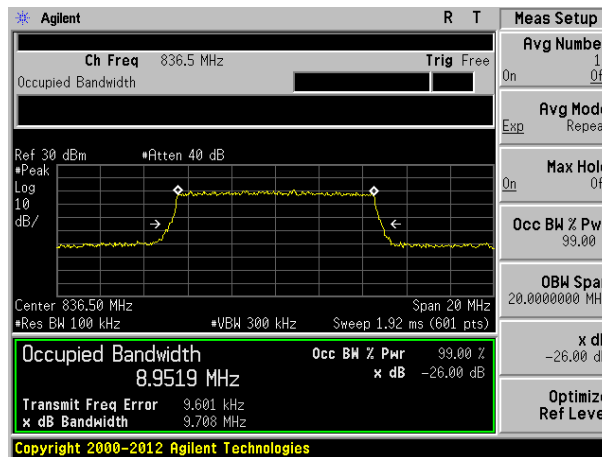


Highest channel

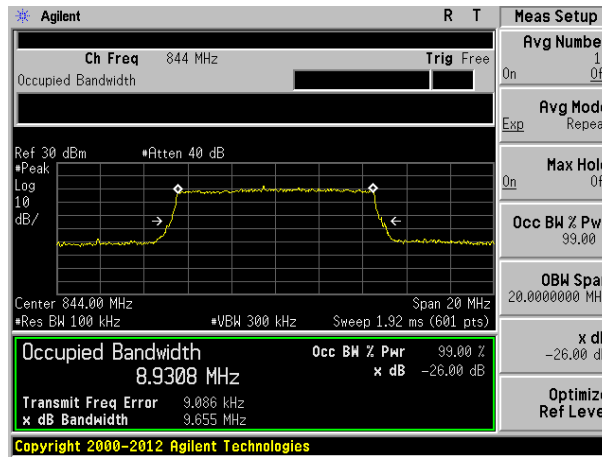
Test band: LTE Band 5 Channel Bandwidth: 10MHz



Lowest channel

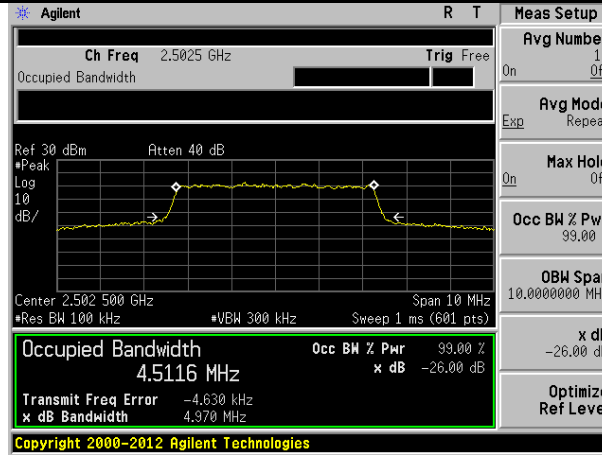


Middle channel

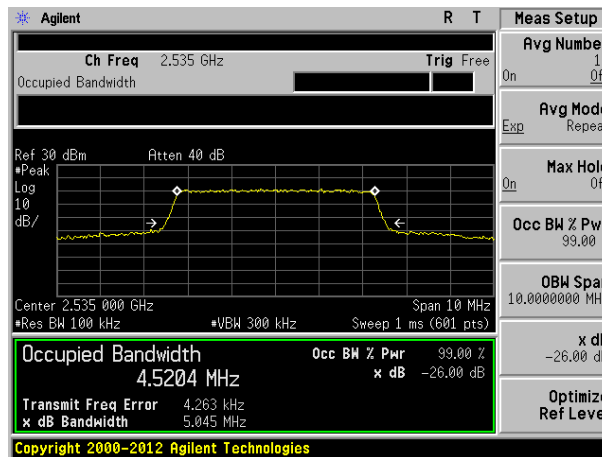


Highest channel

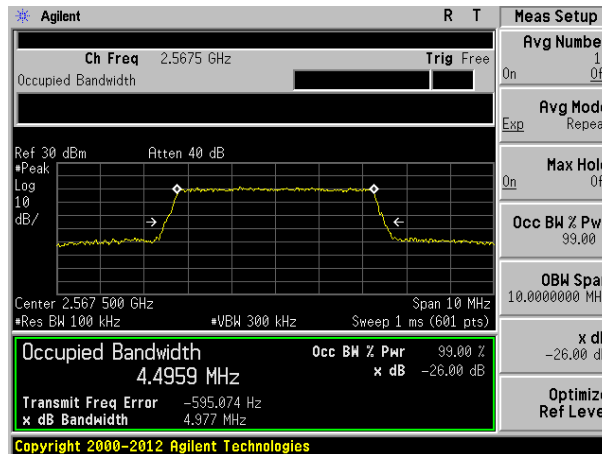
Test band: LTE Band 7 Channel Bandwidth: 5MHz



Lowest channel

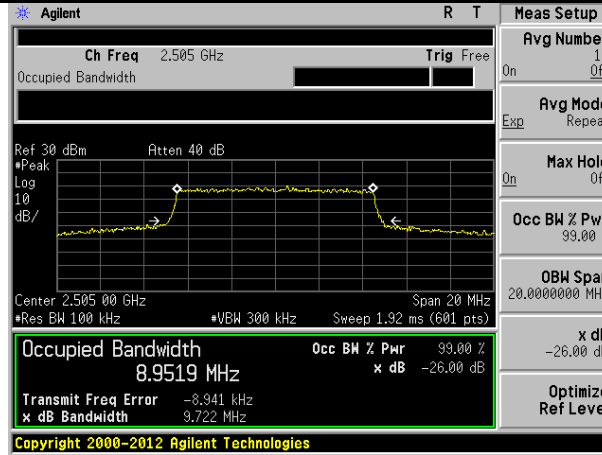


Middle channel

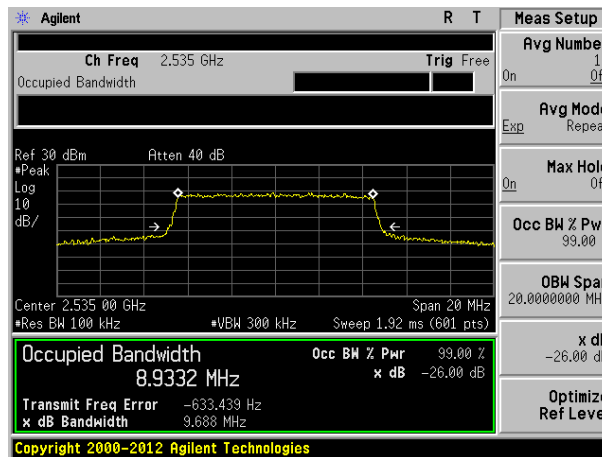


Highest channel

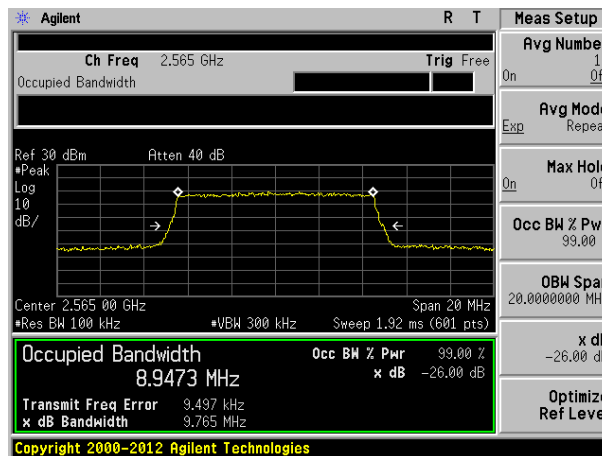
Test band: LTE Band 7 Channel Bandwidth: 10MHz



Lowest channel

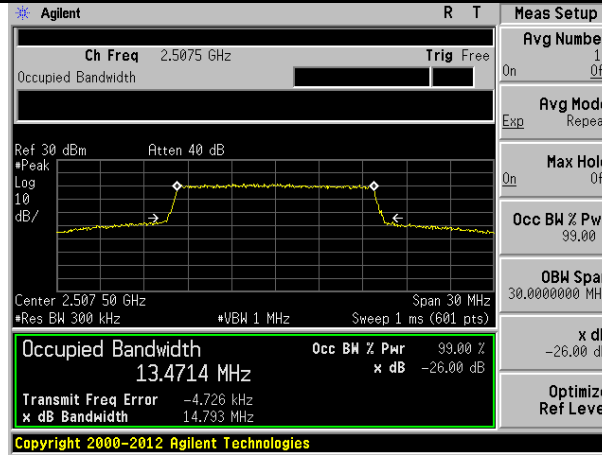


Middle channel

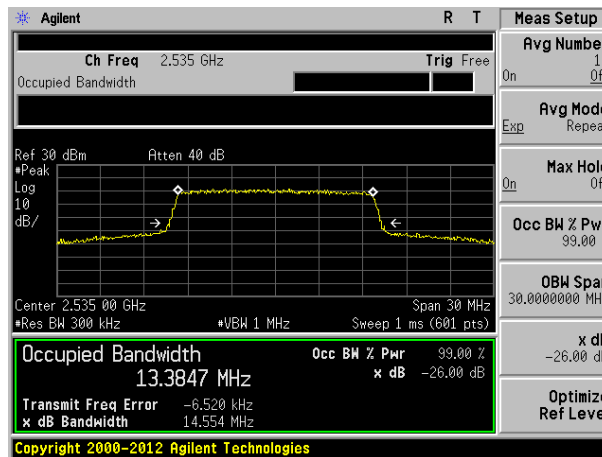


Highest channel

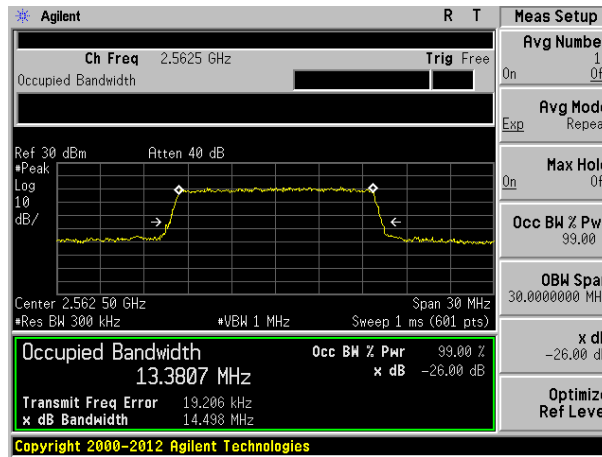
Test band: LTE Band 7 Channel Bandwidth: 15MHz



Lowest channel

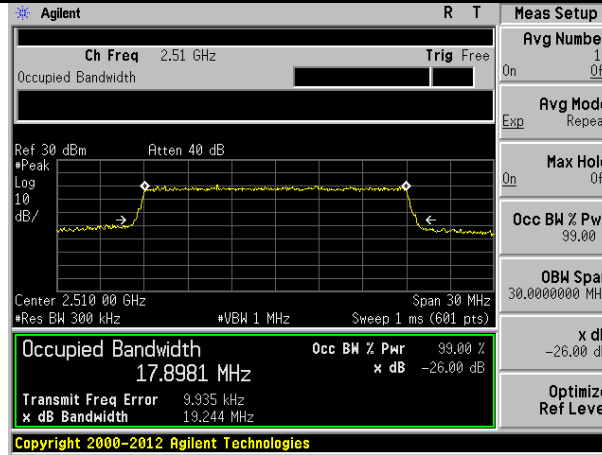


Middle channel

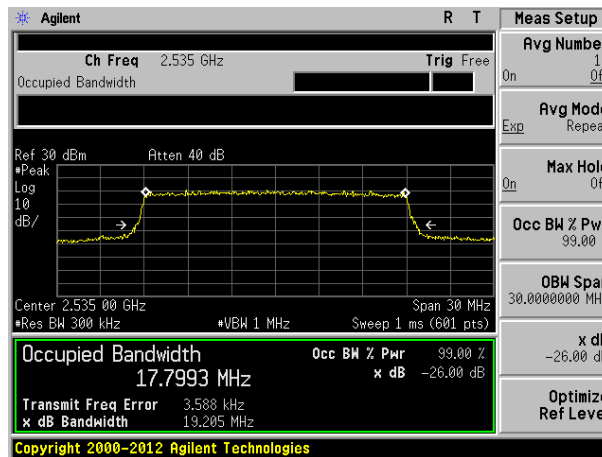


Highest channel

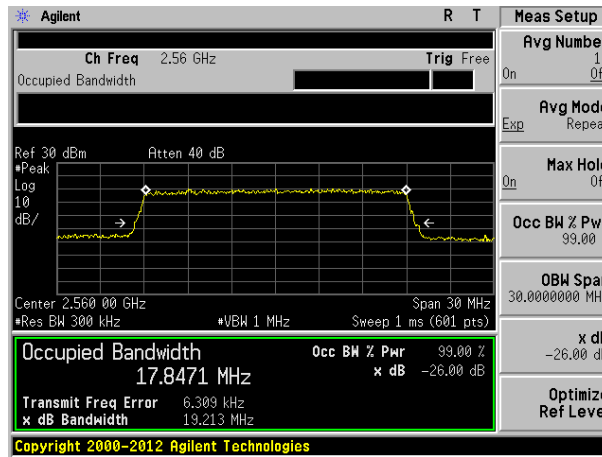
Test band: LTE Band 7 Channel Bandwidth: 20MHz



Lowest channel



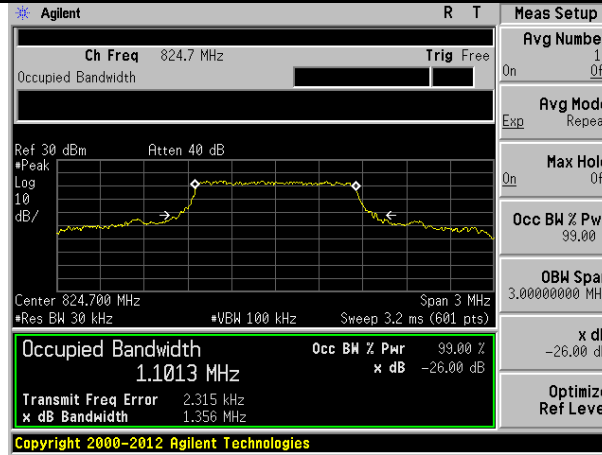
Middle channel



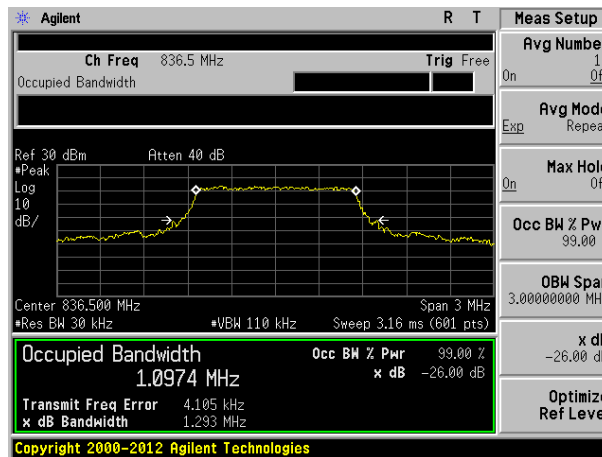
Highest channel

16QAM mode:

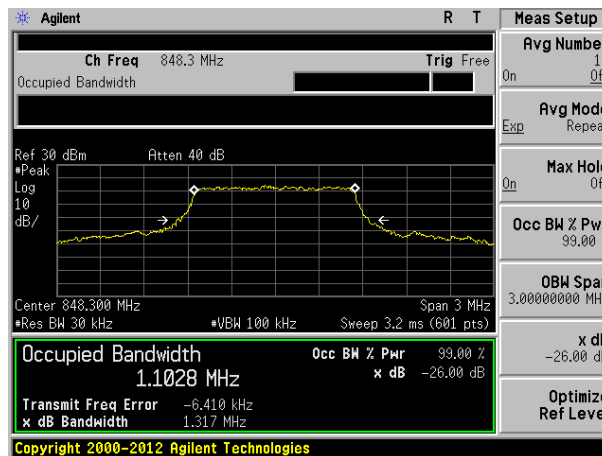
Test band: LTE Band 5	Channel Bandwidth: 1.4MHz
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Lowest channel

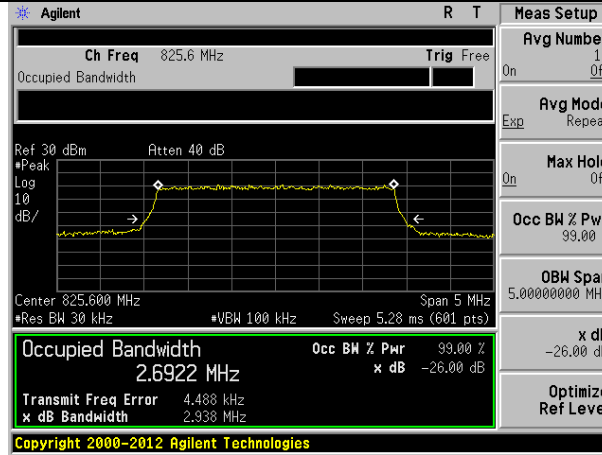


Middle channel

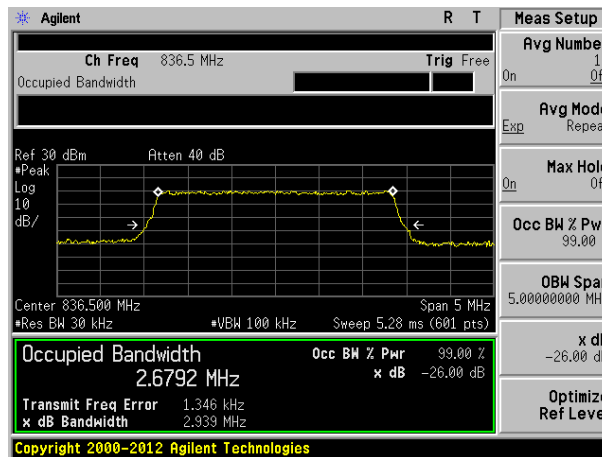


Highest channel

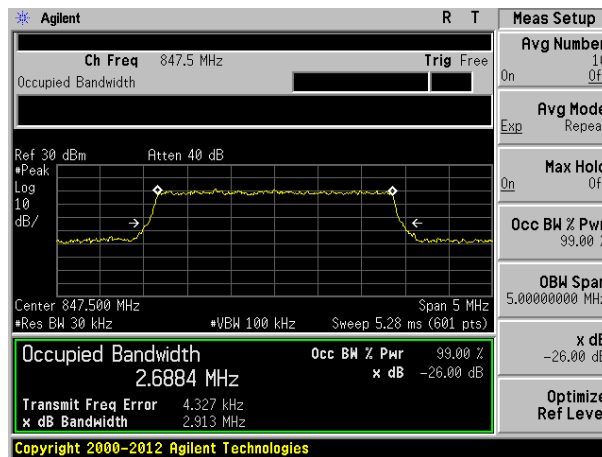
Test band: LTE Band 5 Channel Bandwidth: 3MHz



Lowest channel

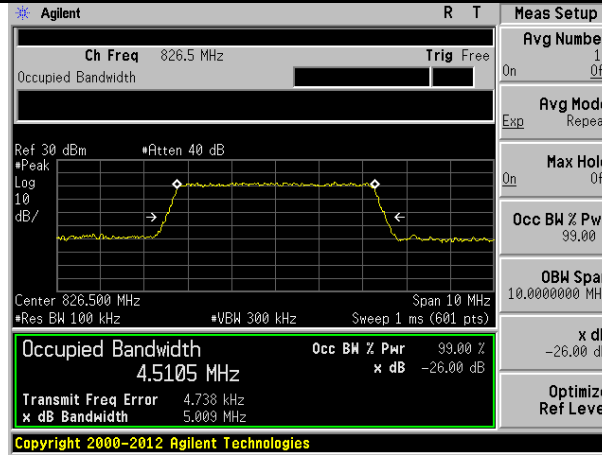


Middle channel

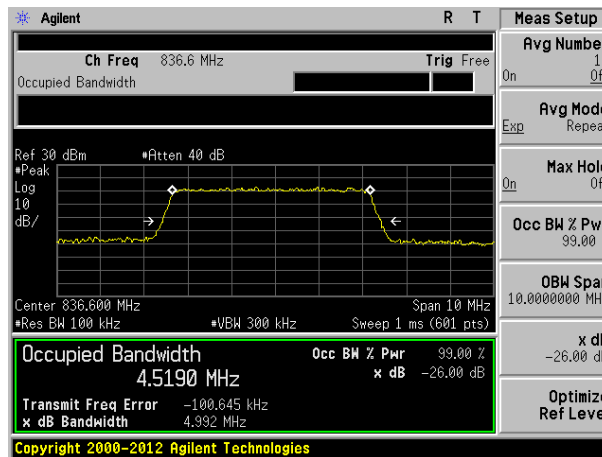


Highest channel

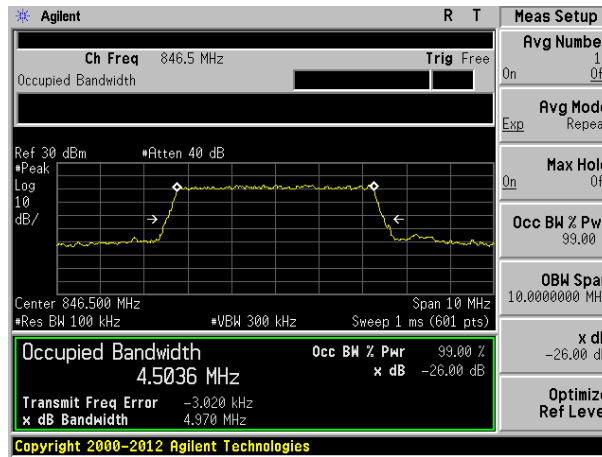
Test band: LTE Band 5 Channel Bandwidth: 5MHz



Lowest channel

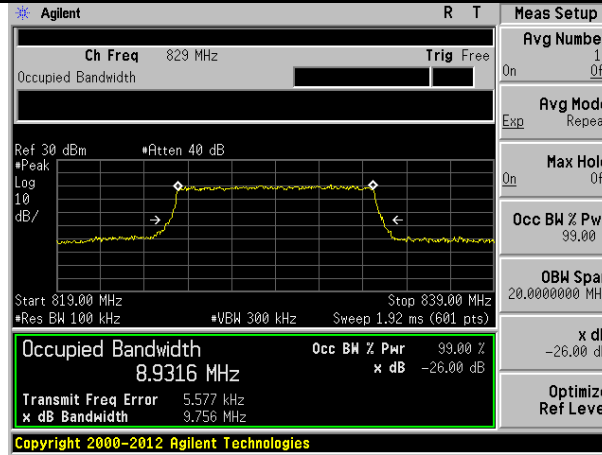


Middle channel

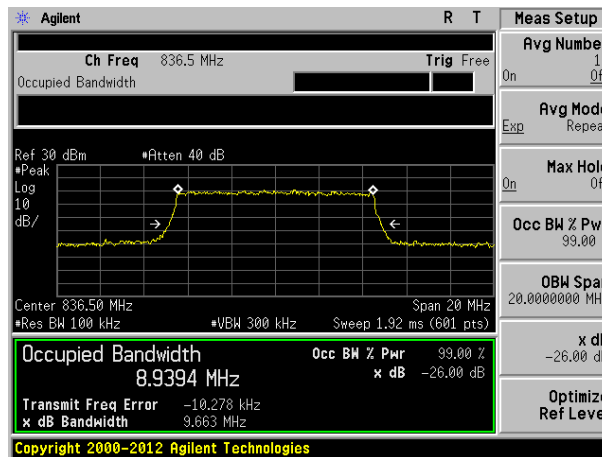


Highest channel

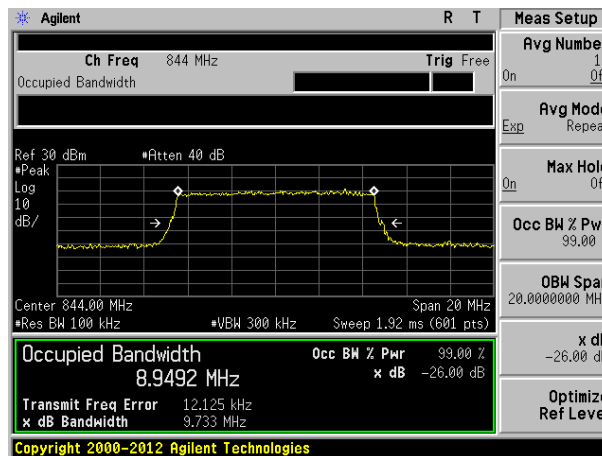
Test band: LTE Band 5 Channel Bandwidth: 10MHz



Lowest channel

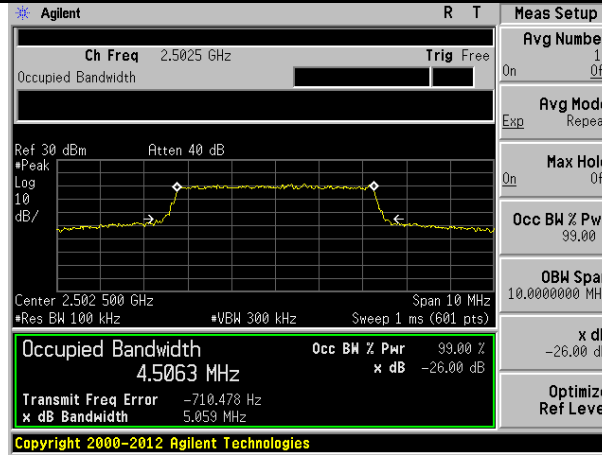


Middle channel

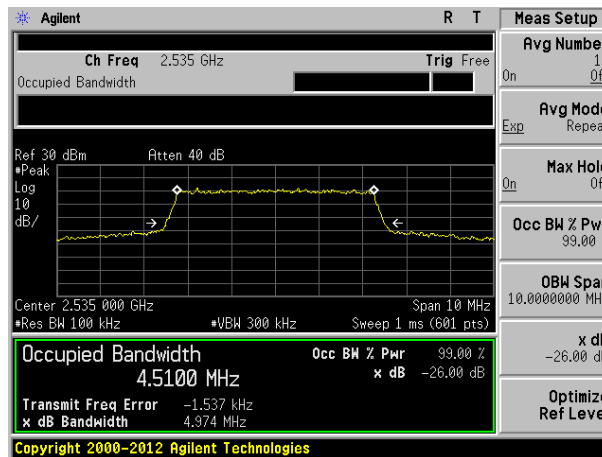


Highest channel

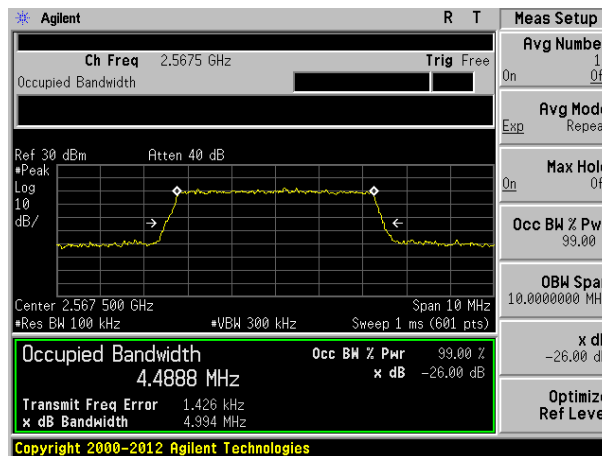
Test band: LTE Band 7 Channel Bandwidth: 5MHz



Lowest channel

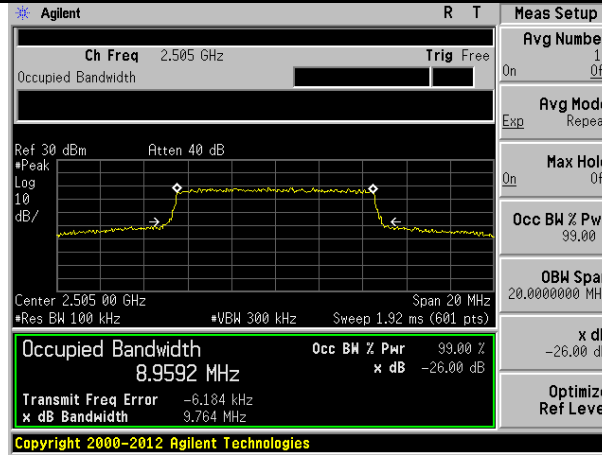


Middle channel

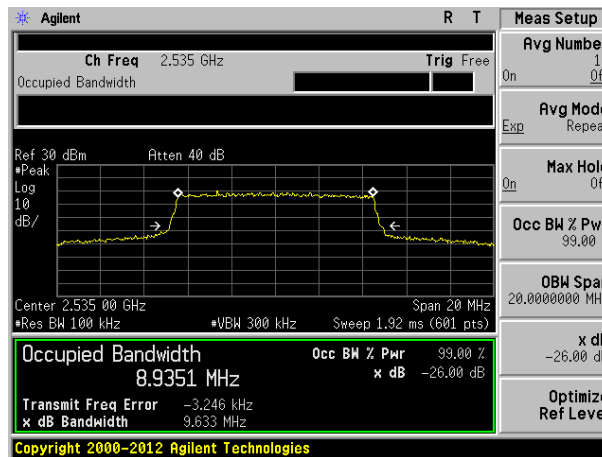


Highest channel

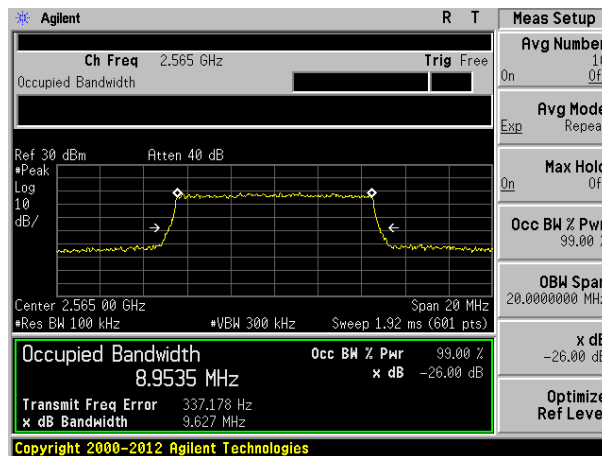
Test band: LTE Band 7 Channel Bandwidth: 10MHz



Lowest channel

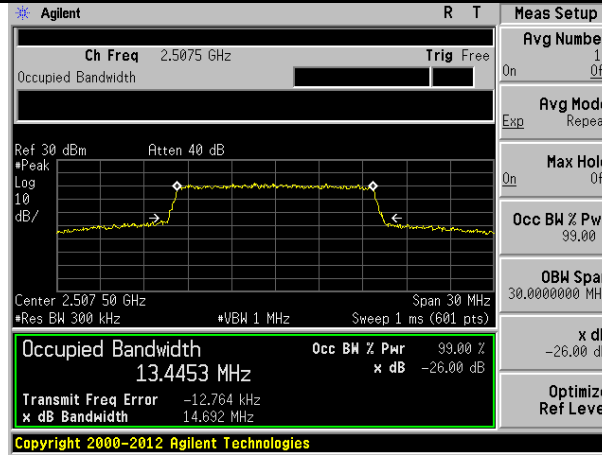


Middle channel

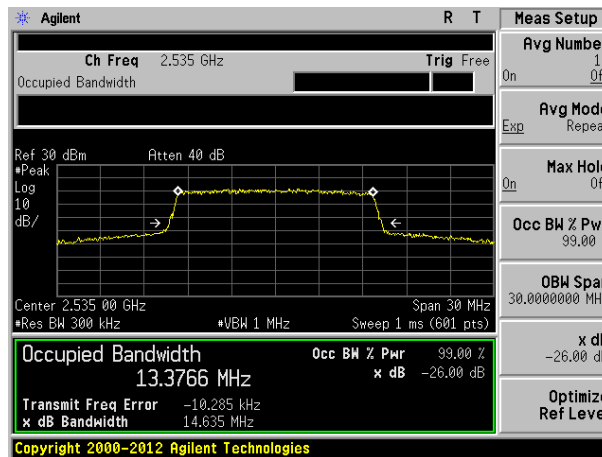


Highest channel

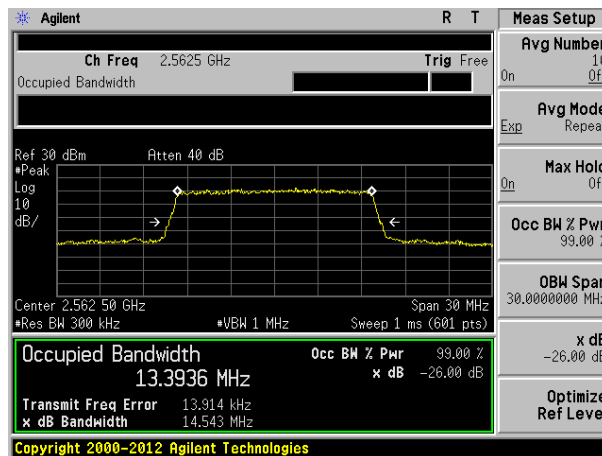
Test band: LTE Band 7 Channel Bandwidth: 15MHz



Lowest channel

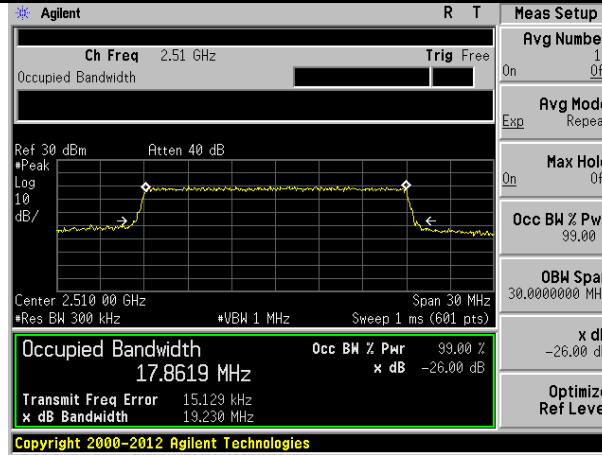


Middle channel

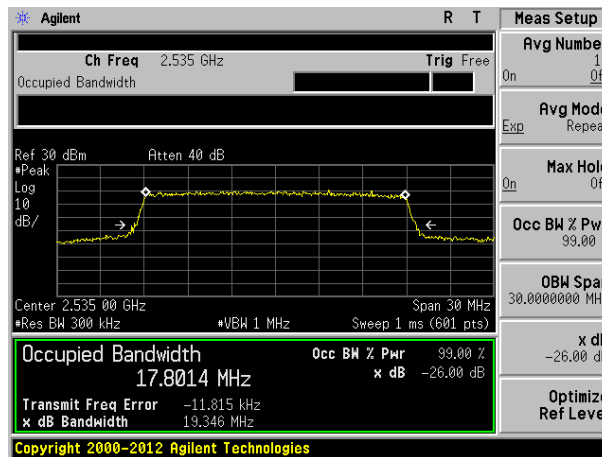


Highest channel

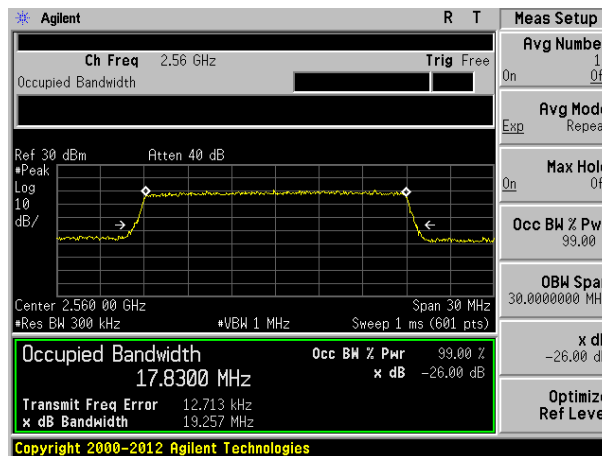
Test band: LTE Band 7 Channel Bandwidth: 20MHz



Lowest channel



Middle channel



Highest channel

7.6 MODULATION CHARACTERISTIC

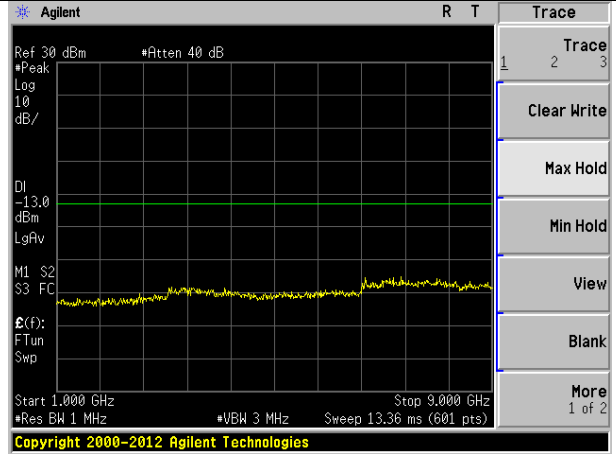
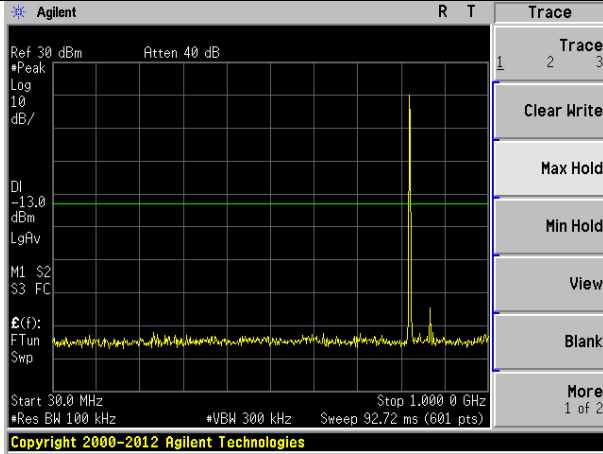
According to FCC § 2.1047(d), Part 27 there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

7.7 Out of band emission at antenna terminals

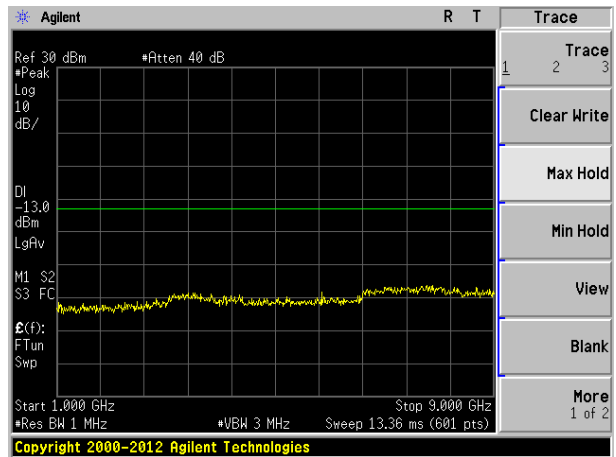
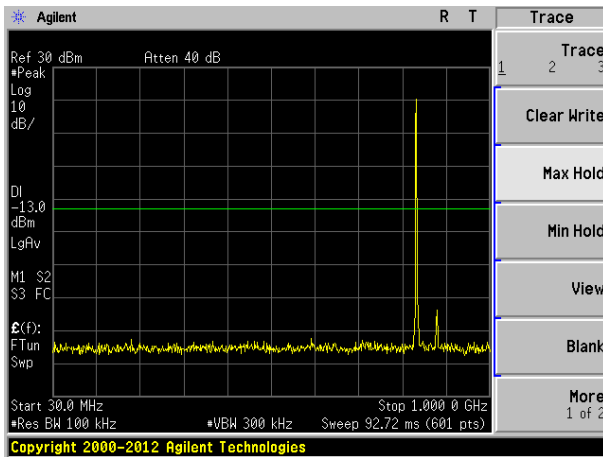
Test Requirement:	Part 24.238 (a); FCC Part 27.53(h)/(g)
Test Method:	FCC part2.1051
Limit:	-13dBm
Test setup:	<pre> graph LR EUT[EUT] --- Splitter[Splitter] Splitter --- CT[Communication Tester] Splitter --- Filter[Filter] Filter --- SPA[SPA] </pre> <p><i>Note: Measurement setup for testing on Antenna connector</i></p>
Test Procedure:	<ol style="list-style-type: none"> 1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. 2 The resolution bandwidth of the spectrum analyzer was set at 1MHz, sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic. 3 For the out of band: Set the RBW, VBW = 1MHz, Start=30MHz, Stop= 10th harmonic. 4 Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 7.1 for details
Test results:	Pass

Test plot as follows:

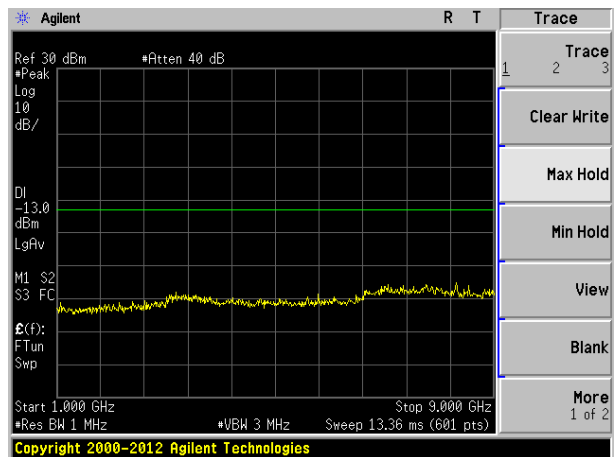
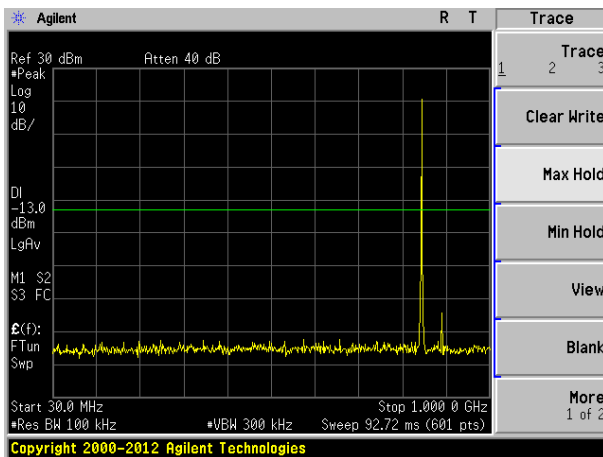
Test Mode: LTE Band 5 Channel Bandwidth: 1.4MHz



Lowest channel

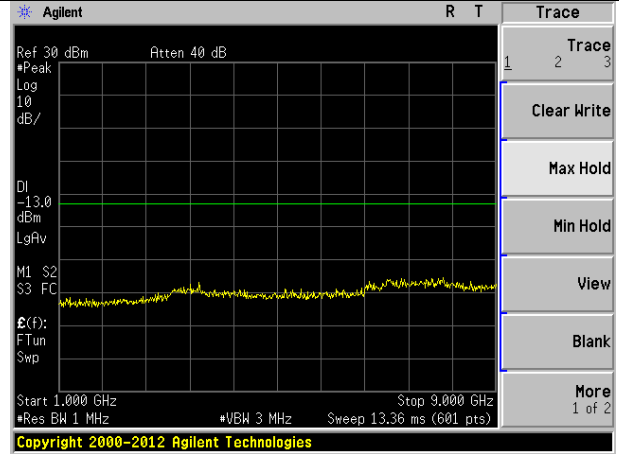
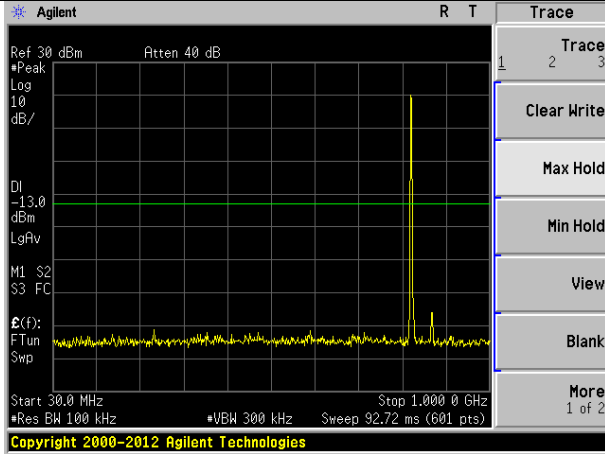


Middle channel

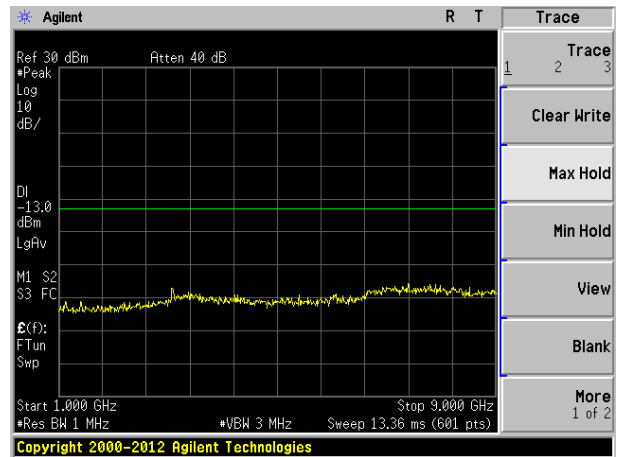
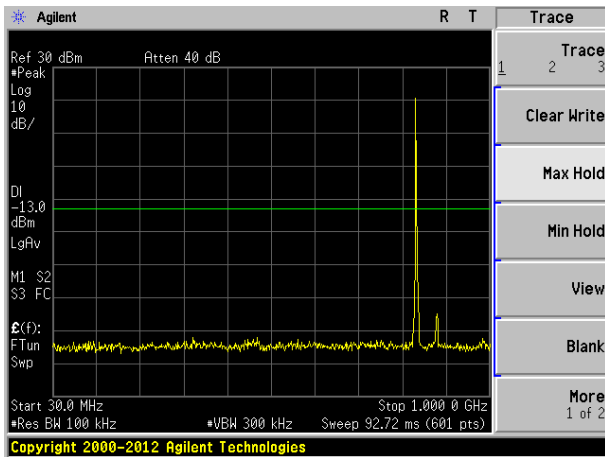


Highest channel

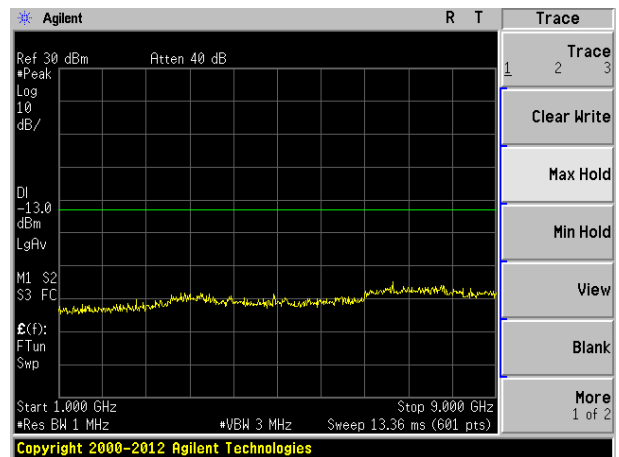
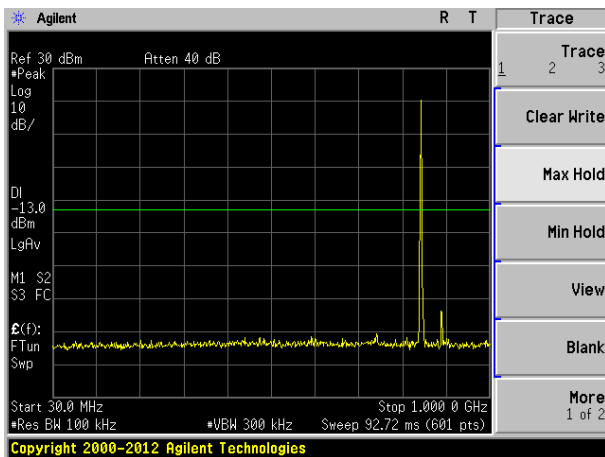
Test Mode: LTE Band 5 Channel Bandwidth: 3MHz



Lowest channel

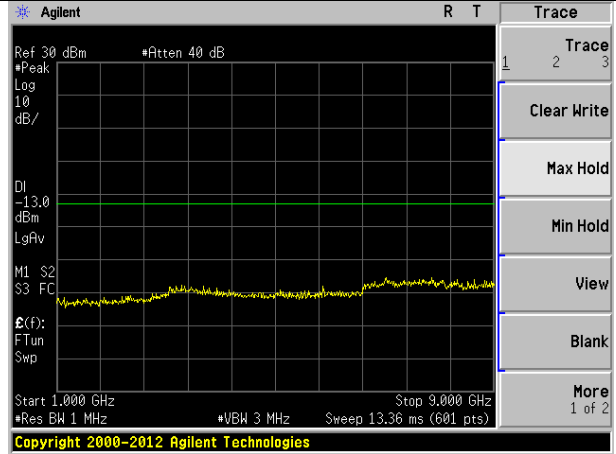
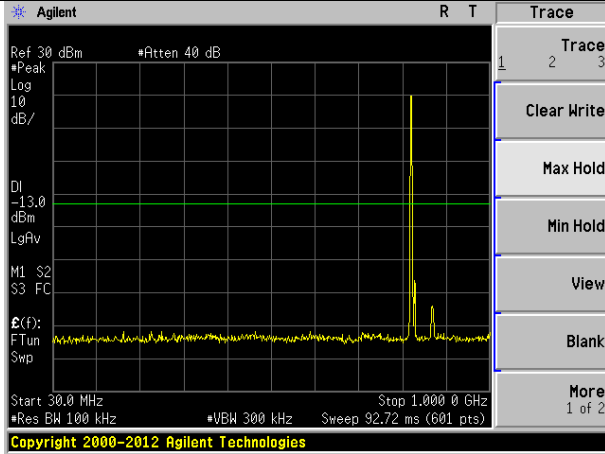


Middle channel

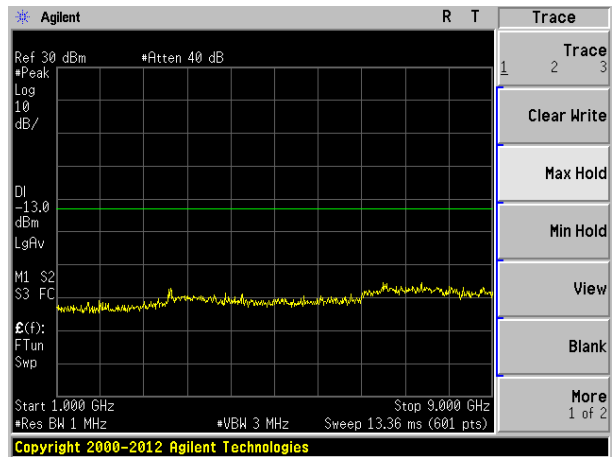
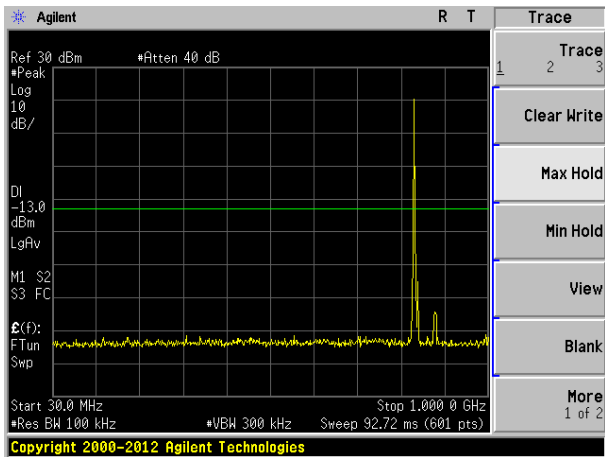


Highest channel

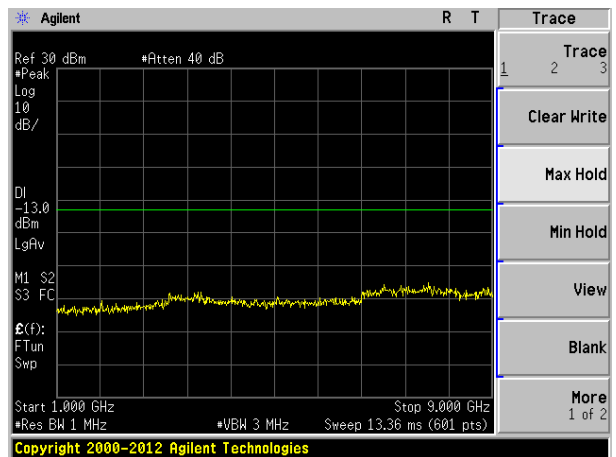
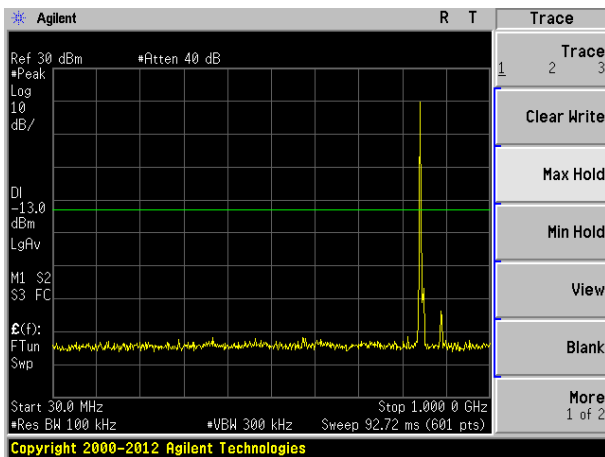
Test Mode: LTE Band 5 Channel Bandwidth: 5MHz



Lowest channel

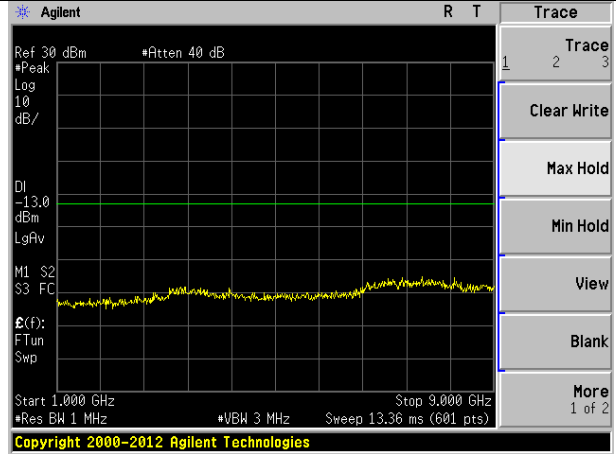
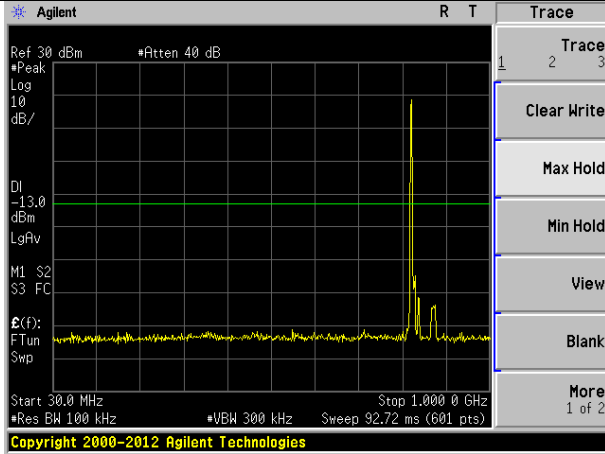


Middle channel

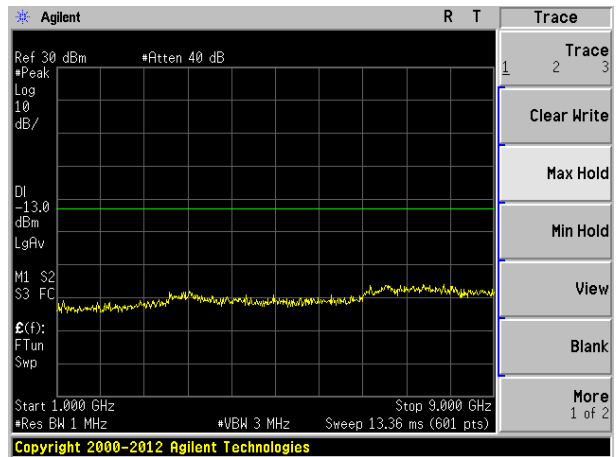
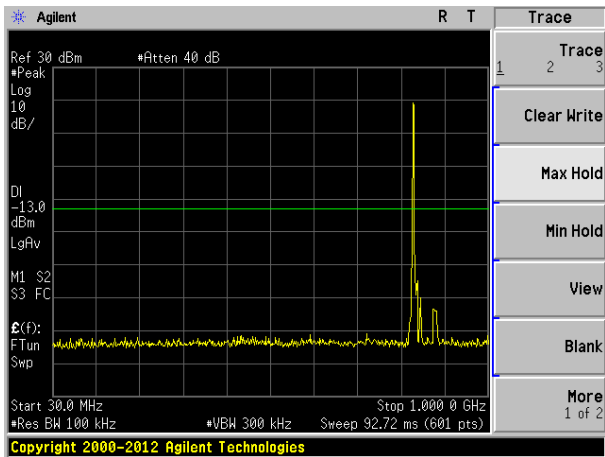


Highest channel

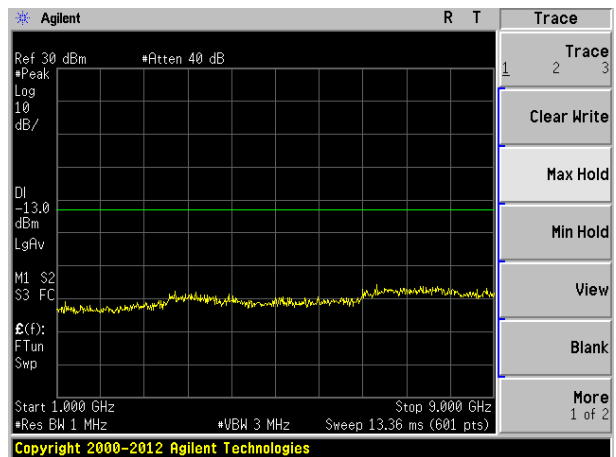
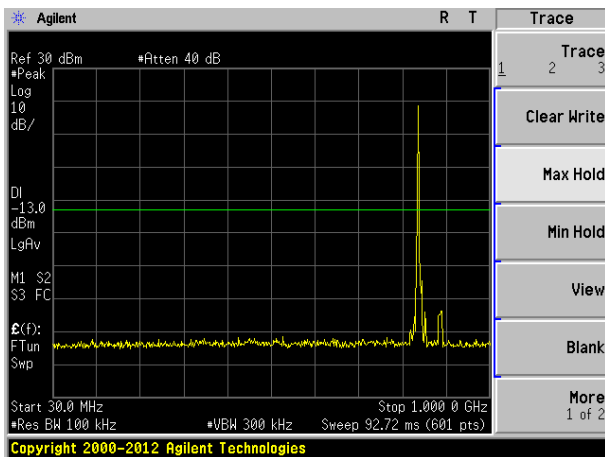
Test Mode: LTE Band 5 Channel Bandwidth: 10MHz



Lowest channel

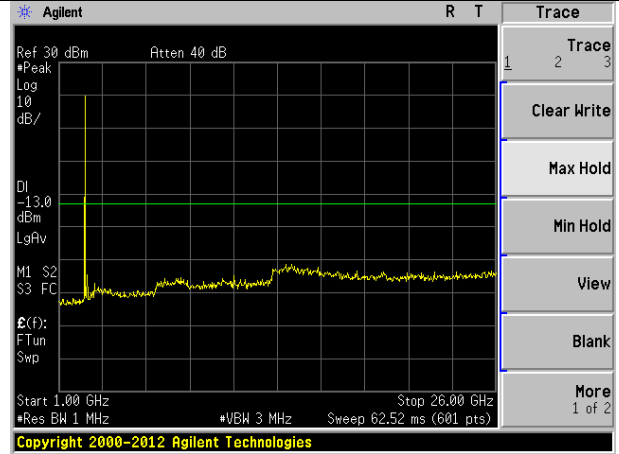
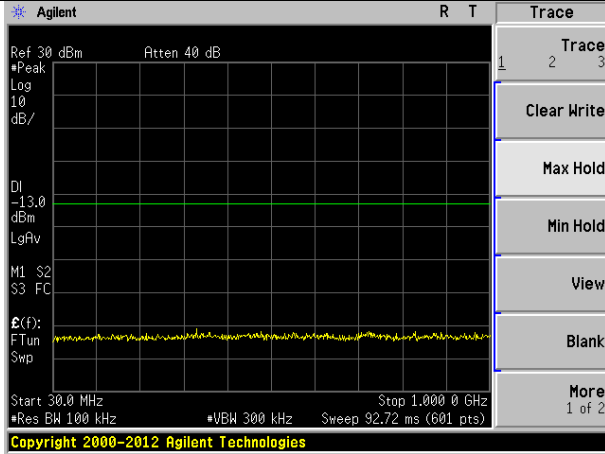


Middle channel

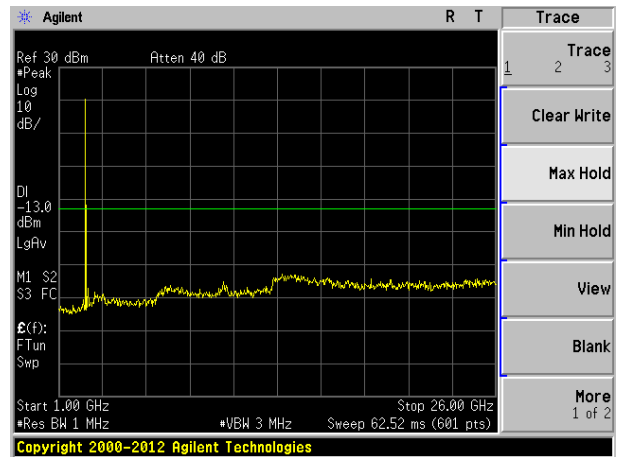
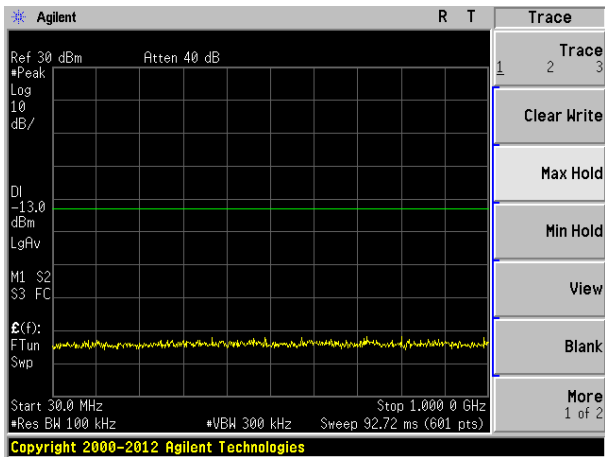


Highest channel

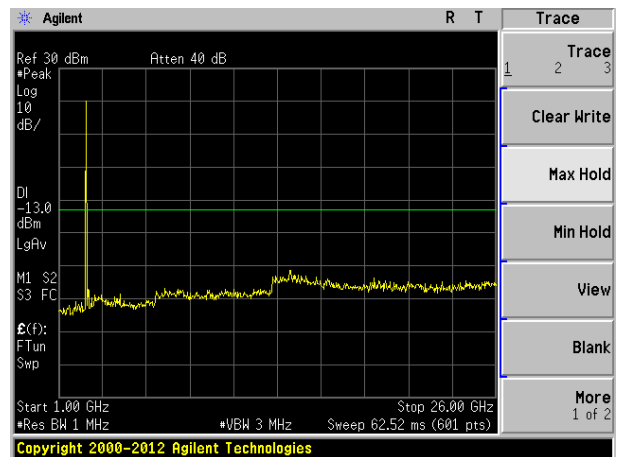
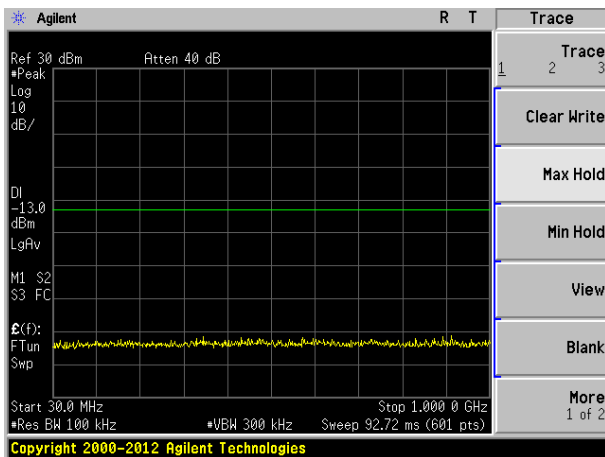
Test Mode: LTE Band 7 Channel Bandwidth: 5MHz



Lowest channel

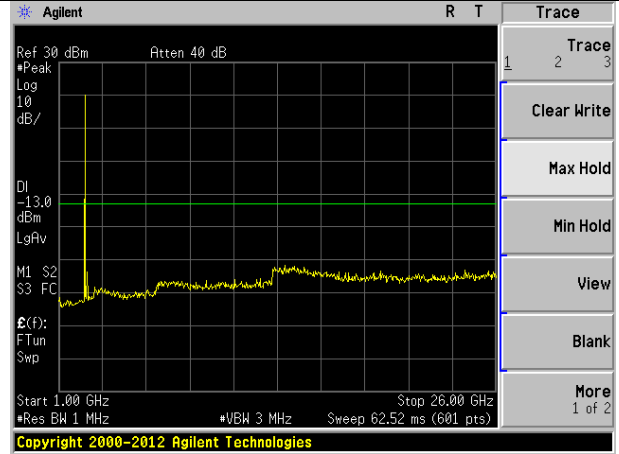
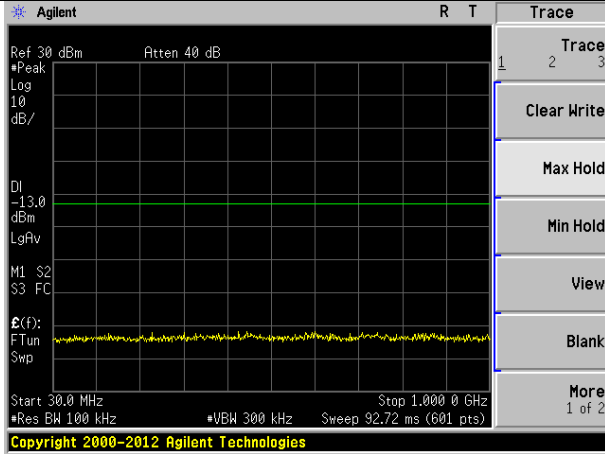


Middle channel

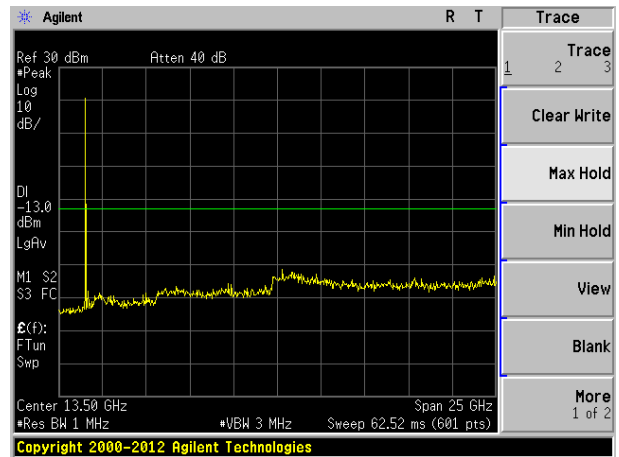
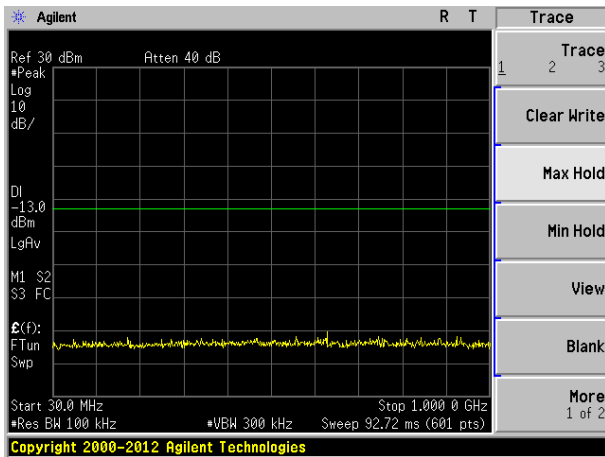


Highest channel

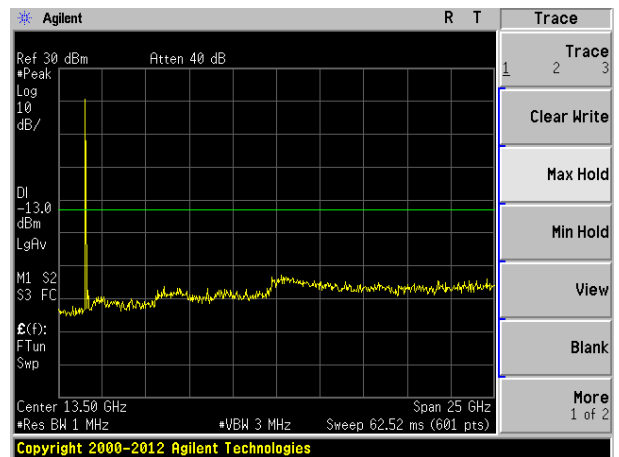
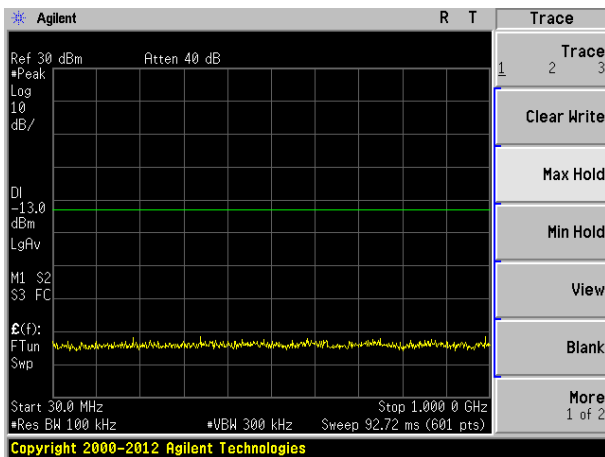
Test Mode: LTE Band 7 Channel Bandwidth: 10MHz



Lowest channel

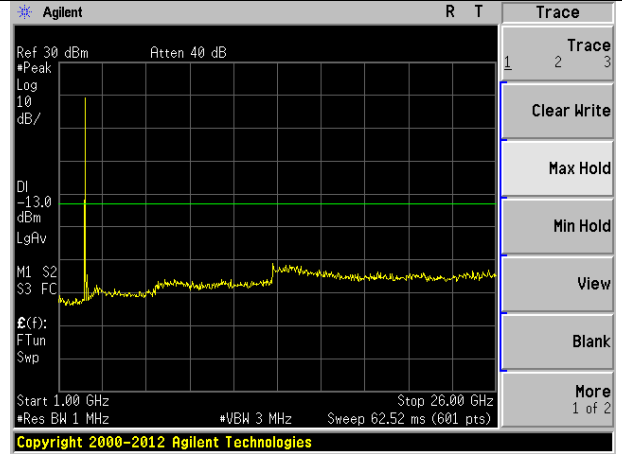
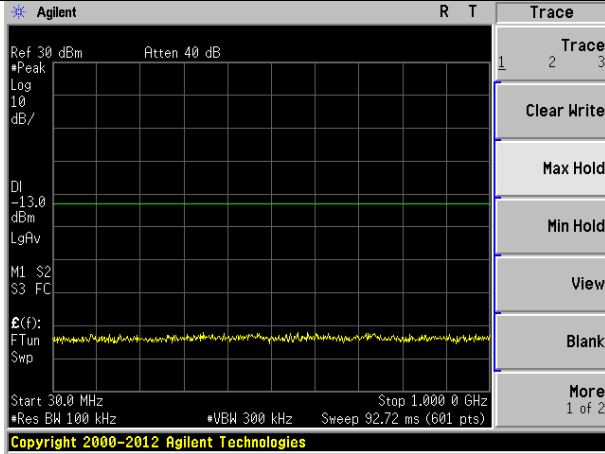


Middle channel

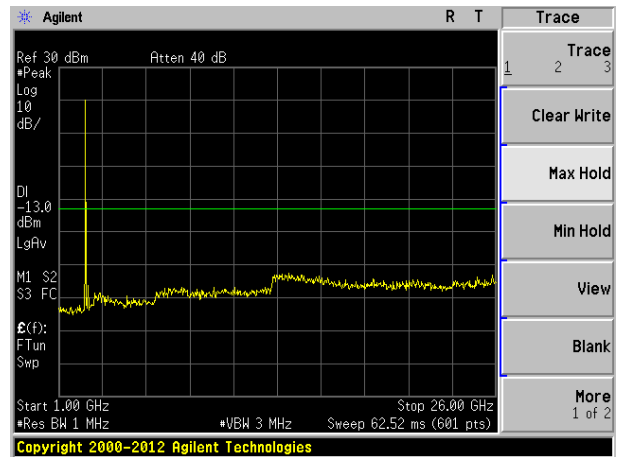
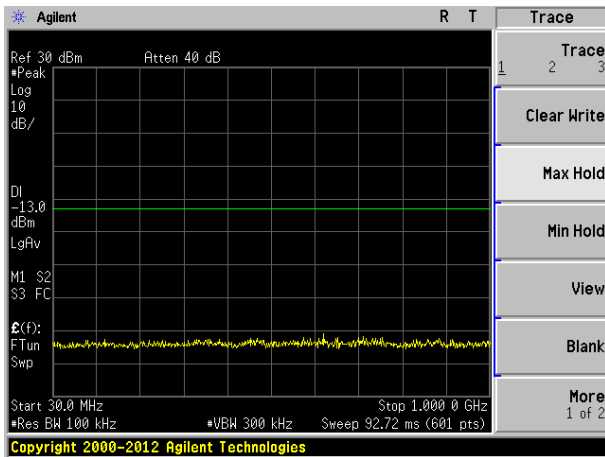


Highest channel

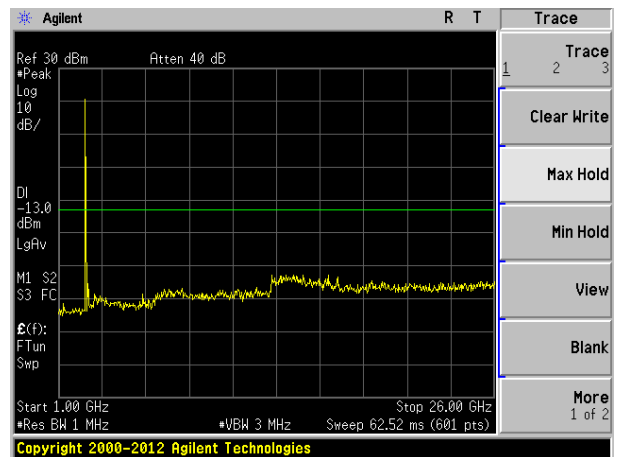
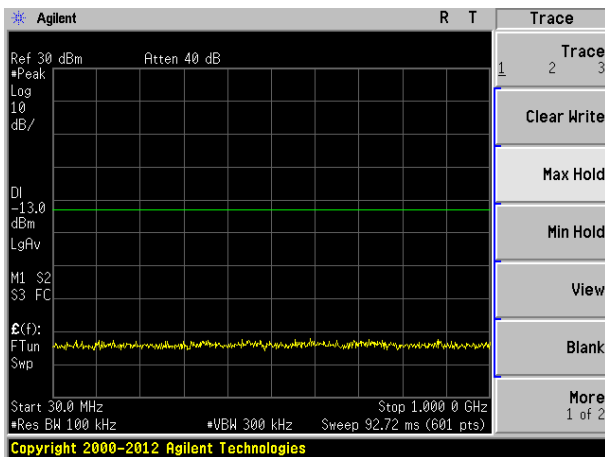
Test Mode: LTE Band 7 Channel Bandwidth: 15MHz



Lowest channel

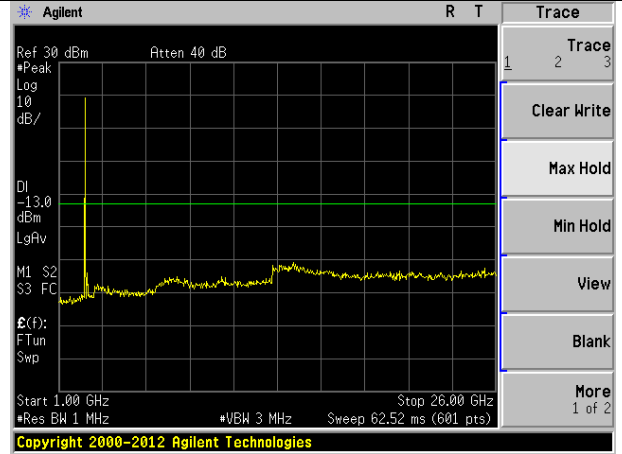
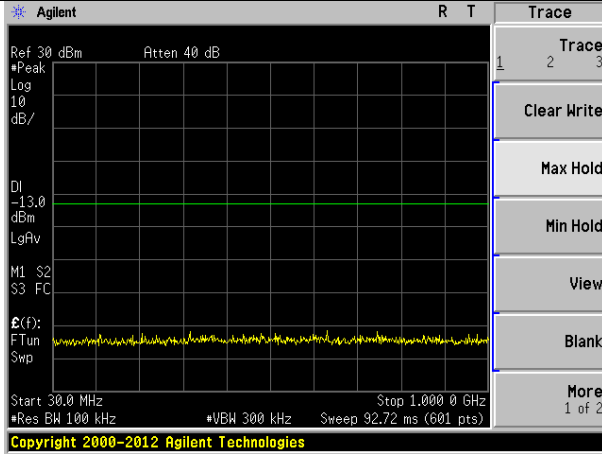


Middle channel

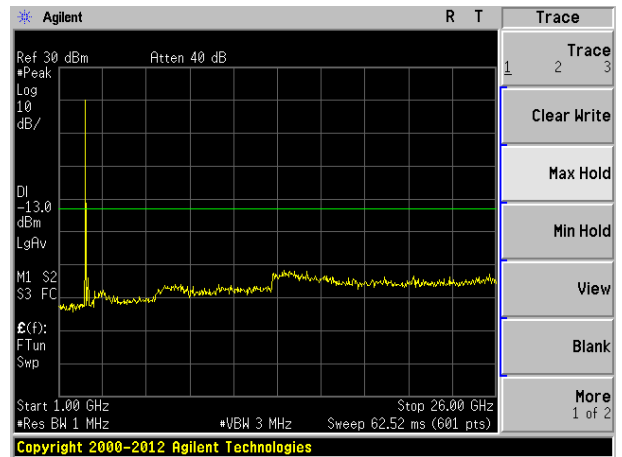
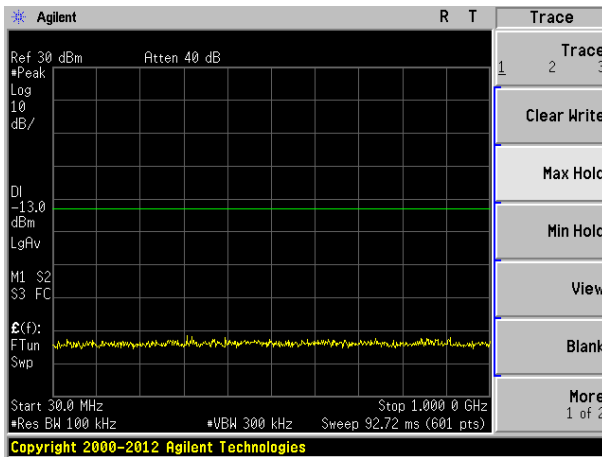


Highest channel

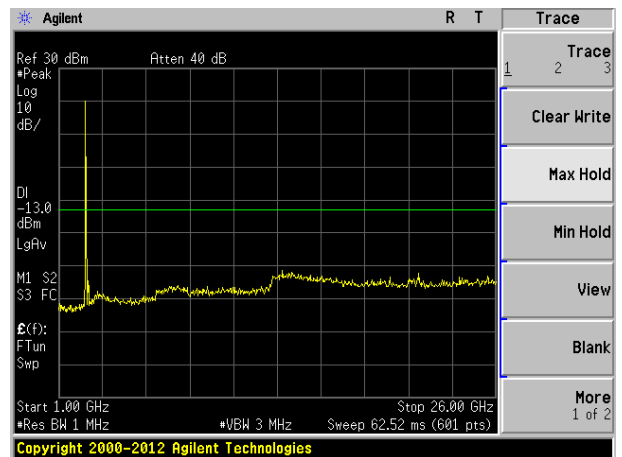
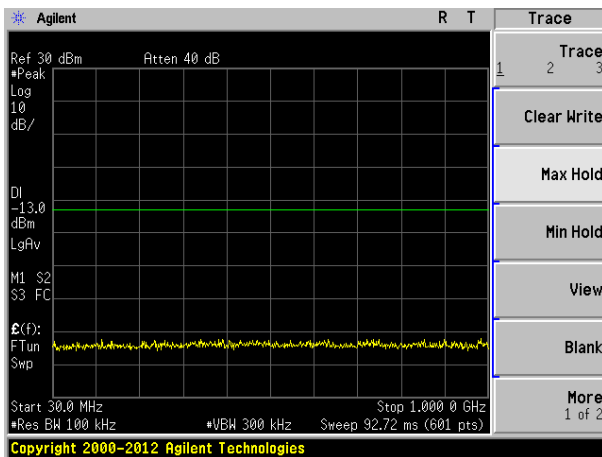
Test Mode: LTE Band 7 Channel Bandwidth: 20MHz



Lowest channel



Middle channel

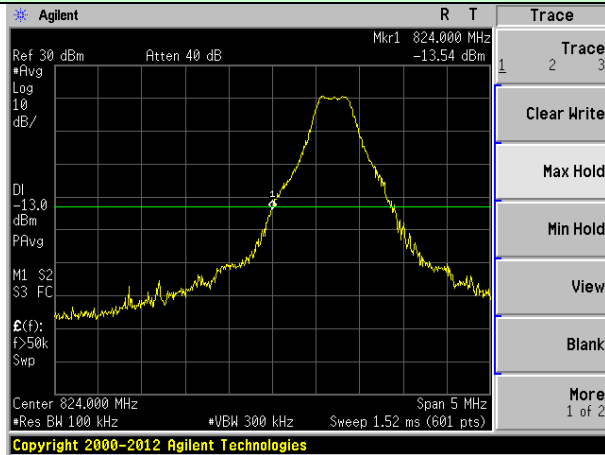


Highest channel

Band Edge:

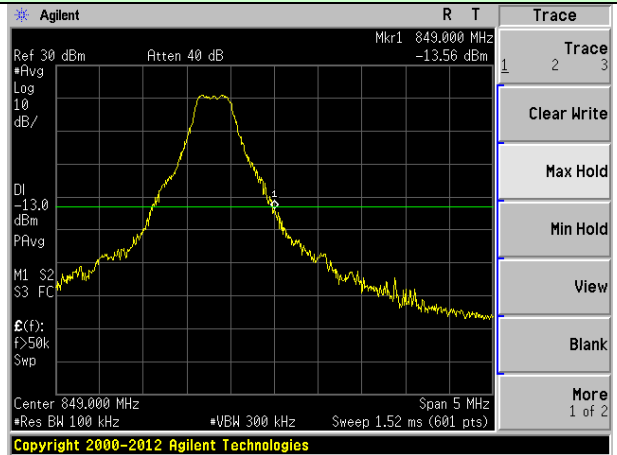
LTE Band 5(QPSK mode):

1.4MHz Bandwidth (RB size:1# RB offset:0#)



Lowest channel

1.4MHz Bandwidth (RB size:1# RB offset:5#)



Highest channel

1.4MHz Bandwidth (RB size:3# RB offset:0#)



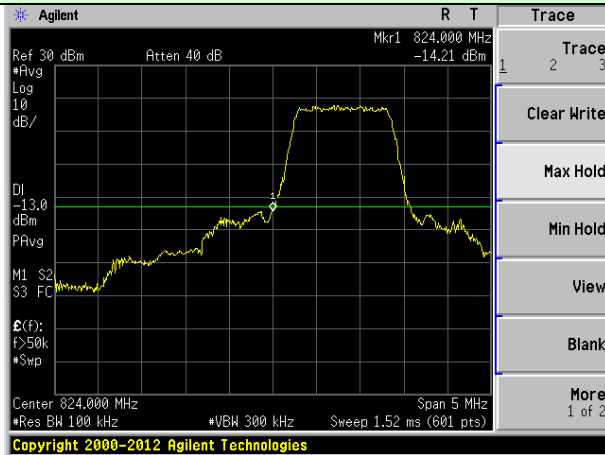
Lowest channel

1.4MHz Bandwidth (RB size:3# RB offset:2#)



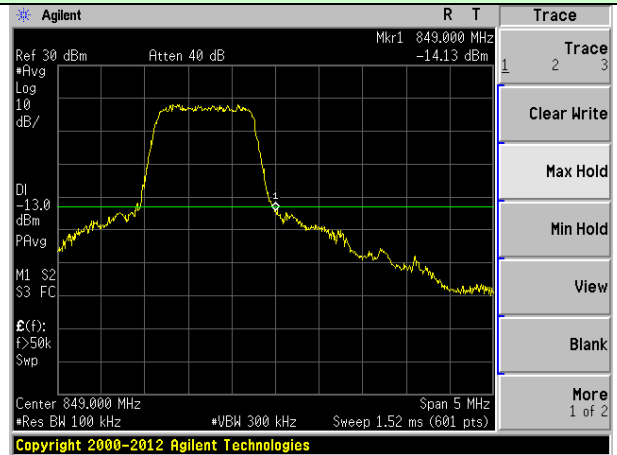
Highest channel

1.4MHz Bandwidth (RB size:6# RB offset:0#)



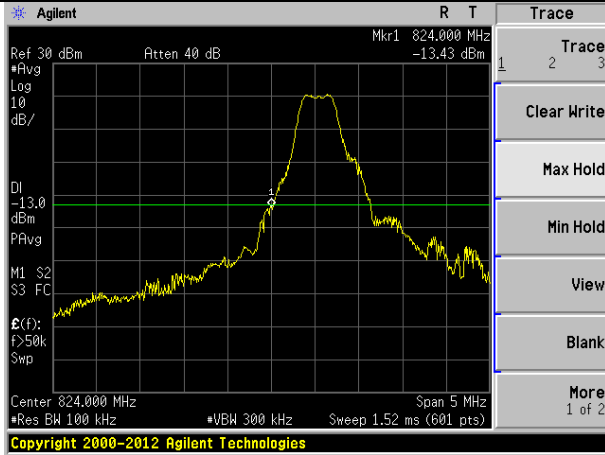
Lowest channel

1.4MHz Bandwidth (RB size:6# RB offset:0#)

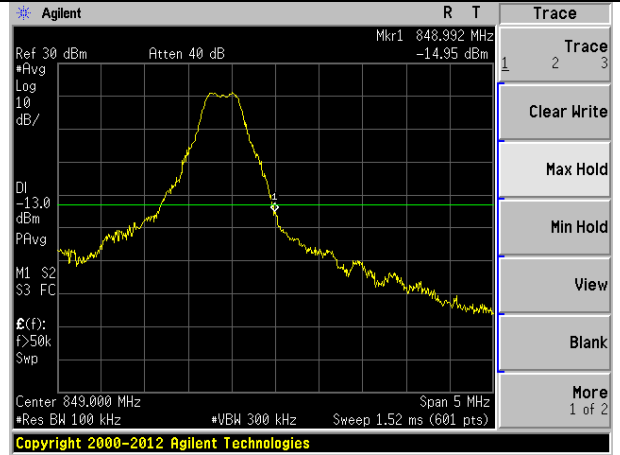


Highest channel

3MHz Bandwidth (RB size:1# RB offset:0#) 3MHz Bandwidth (RB size:1# RB offset:14#)

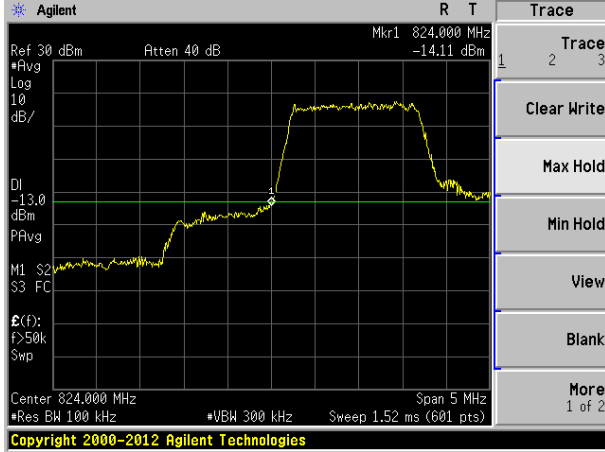


Lowest channel

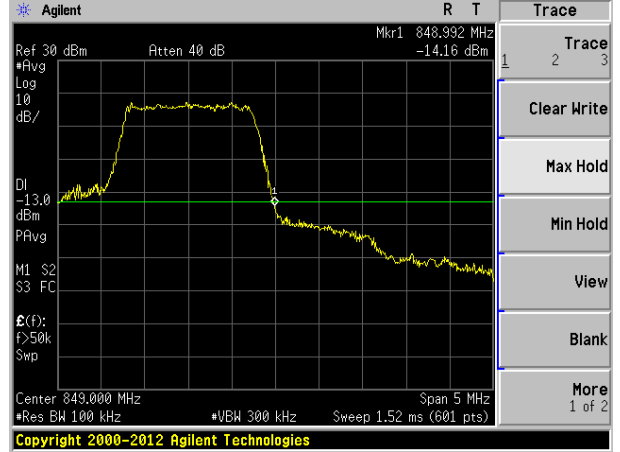


Highest channel

3MHz Bandwidth (RB size:8# RB offset:0#) 3MHz Bandwidth (RB size:8# RB offset:7#)

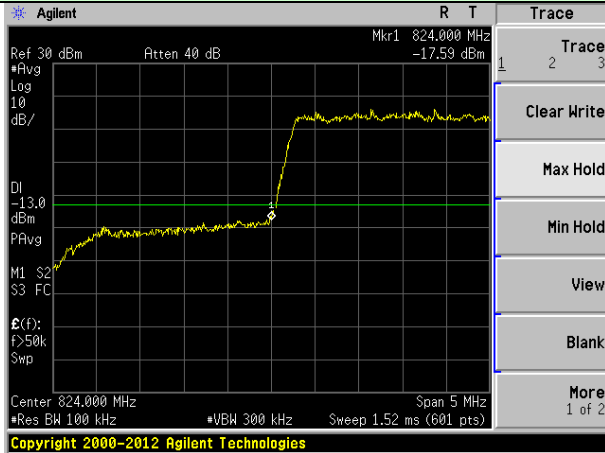


Lowest channel

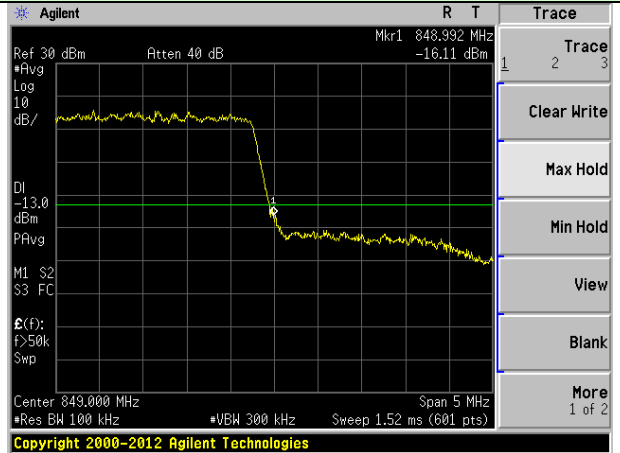


Highest channel

3MHz Bandwidth (RB size:15# RB offset:0#) 3MHz Bandwidth (RB size:15# RB offset:0#)

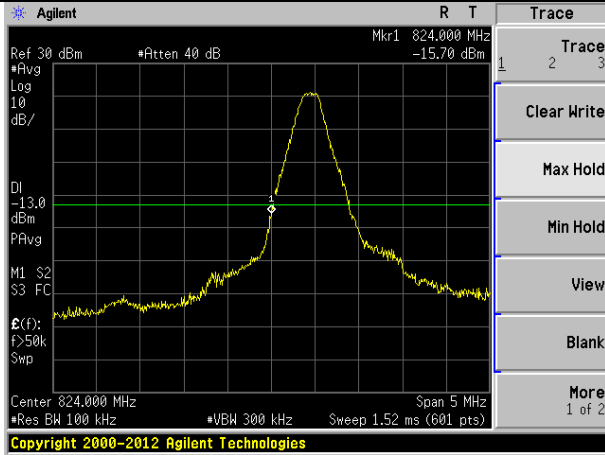


Lowest channel

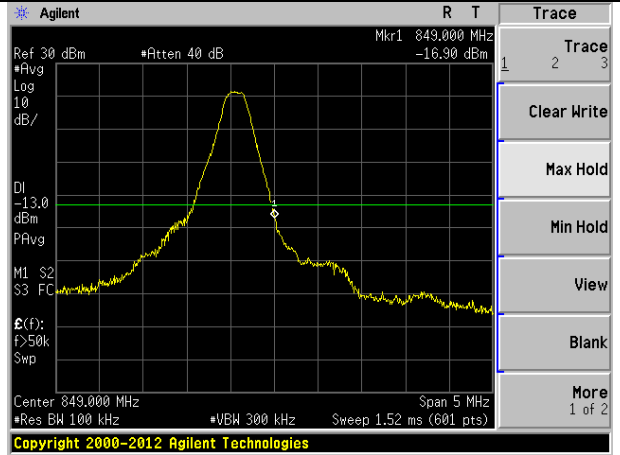


Highest channel

5MHz Bandwidth (RB size:1# RB offset:0#) 5MHz Bandwidth (RB size:1# RB offset:24#)

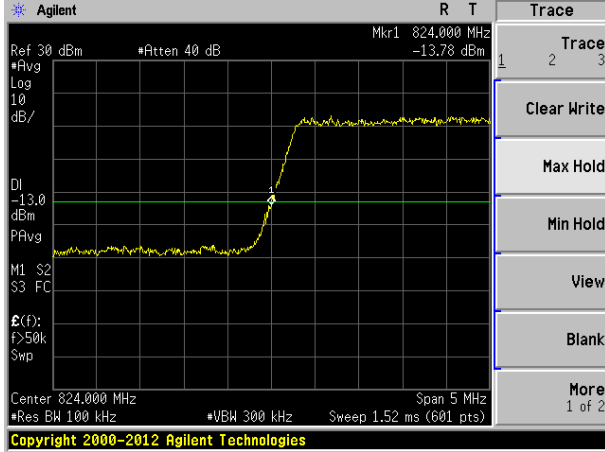


Lowest channel

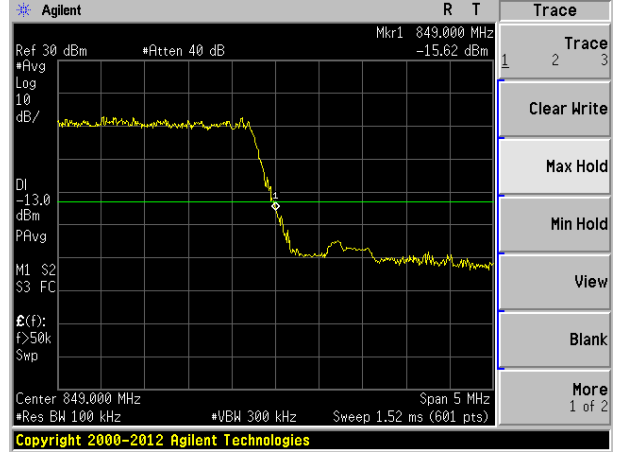


Highest channel

5MHz Bandwidth (RB size:12# RB offset:0#) 5MHz Bandwidth (RB size:12# RB offset:13#)

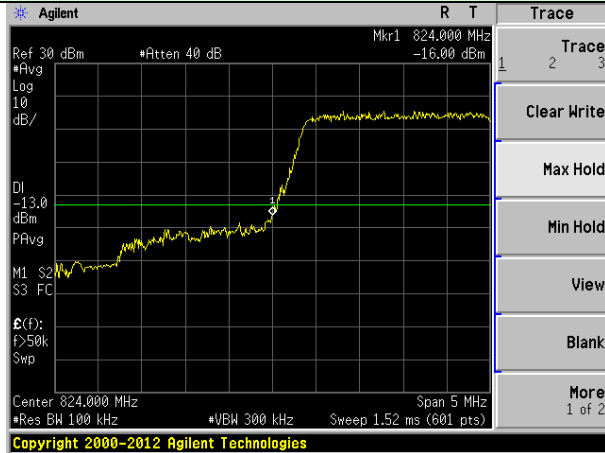


Lowest channel

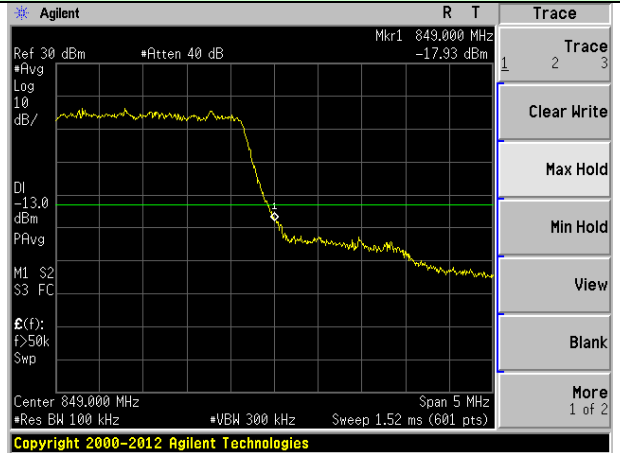


Highest channel

5MHz Bandwidth (RB size:25# RB offset:0#) 5MHz Bandwidth (RB size:25# RB offset:0#)

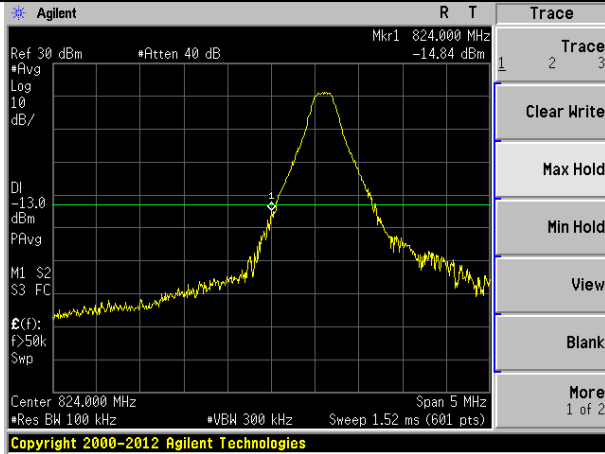


Lowest channel

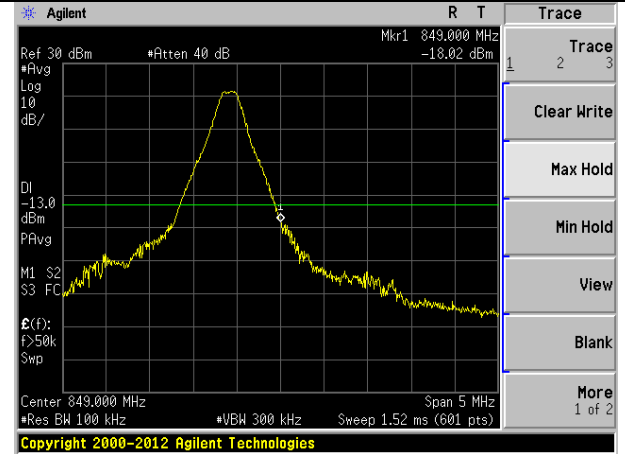


Highest channel

10MHz Bandwidth (RB size:1# RB offset:0#) 10MHz Bandwidth (RB size:1# RB offset:49#)

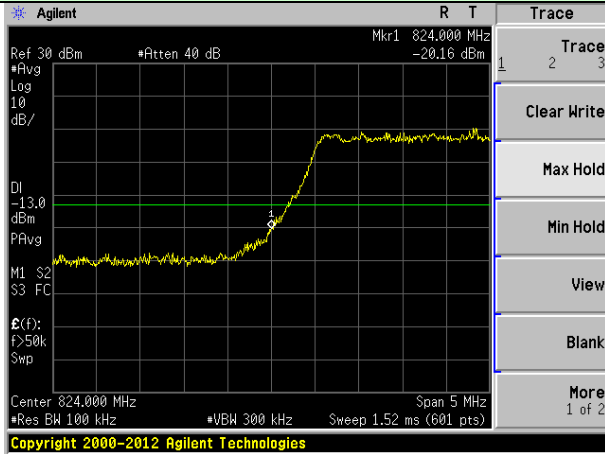


Lowest channel

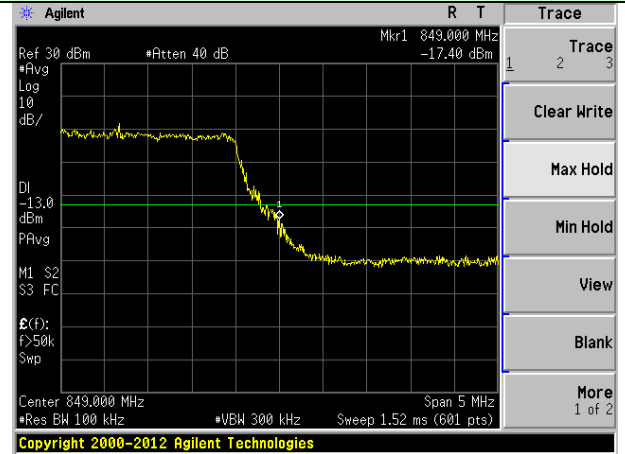


Highest channel

10MHz Bandwidth (RB size:25# RB offset:0#) 10MHz Bandwidth (RB size:25# RB offset:25#)

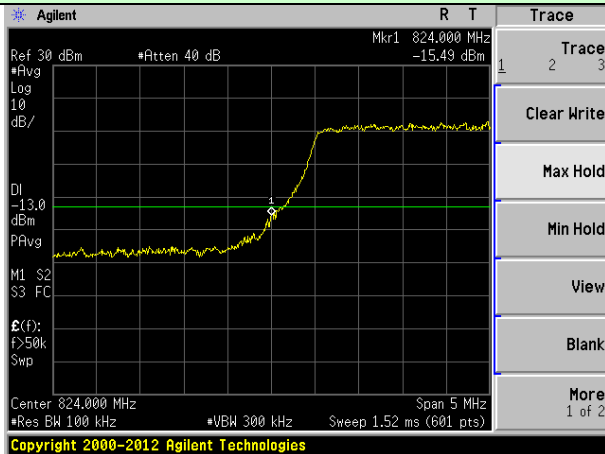


Lowest channel

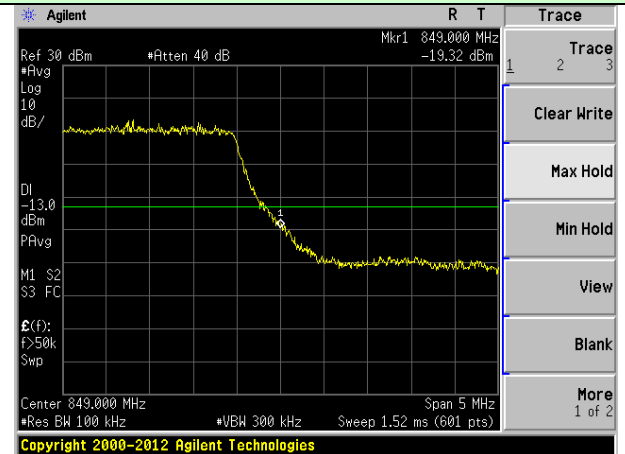


Highest channel

10MHz Bandwidth (RB size:50# RB offset:0#) 10MHz Bandwidth (RB size:50# RB offset:0#)



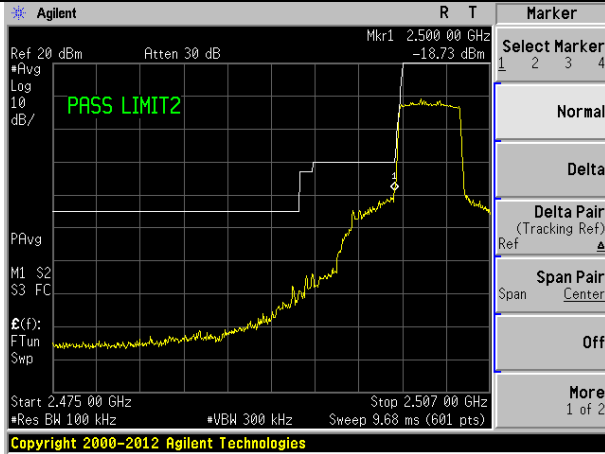
Lowest channel



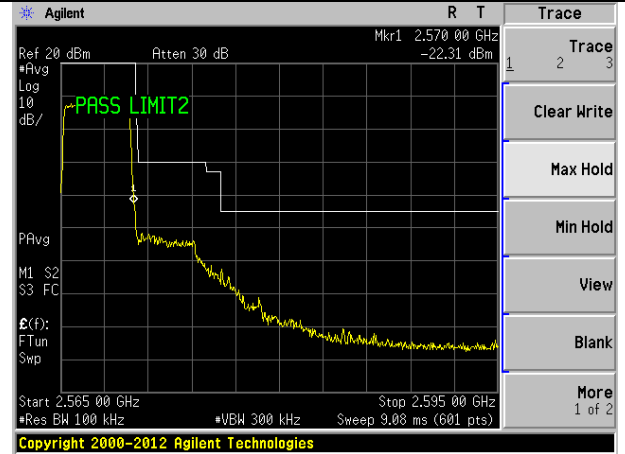
Highest channel

LTE Band 7(QPSK mode)

Test Mode: LTE Band 7 Channel Bandwidth: 5MHz

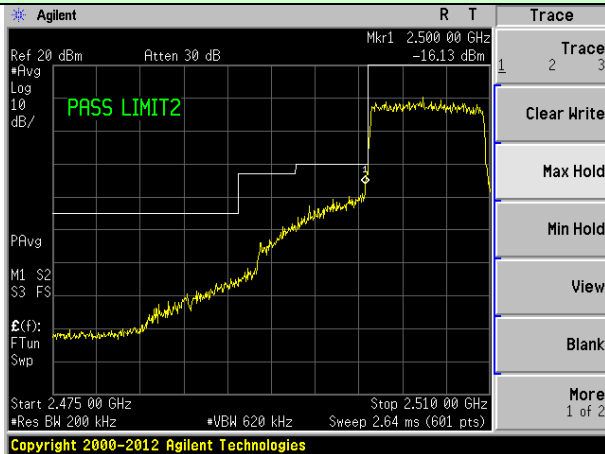


Lowest channel

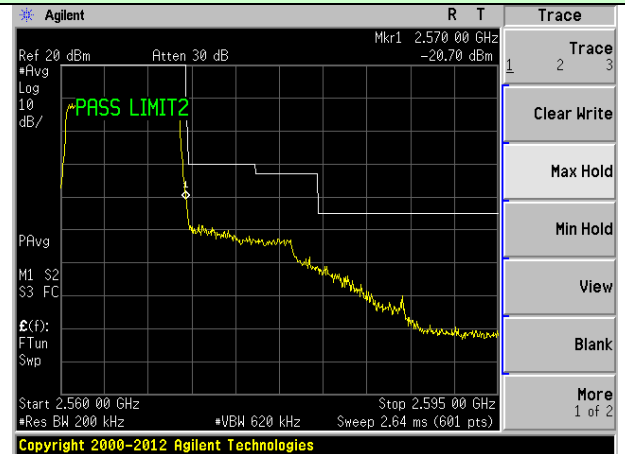


Highest channel

Test Mode: LTE Band 7 Channel Bandwidth: 10MHz

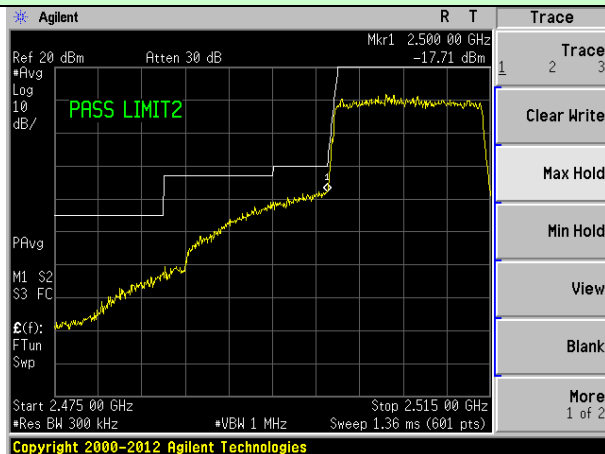


Lowest channel

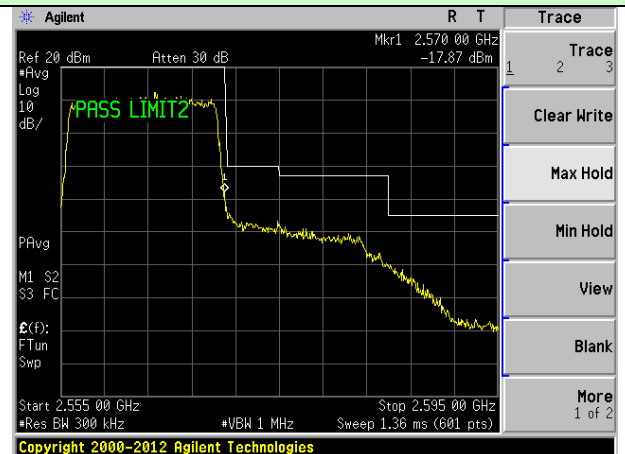


Highest channel

Test Mode: LTE Band 7 Channel Bandwidth: 15MHz

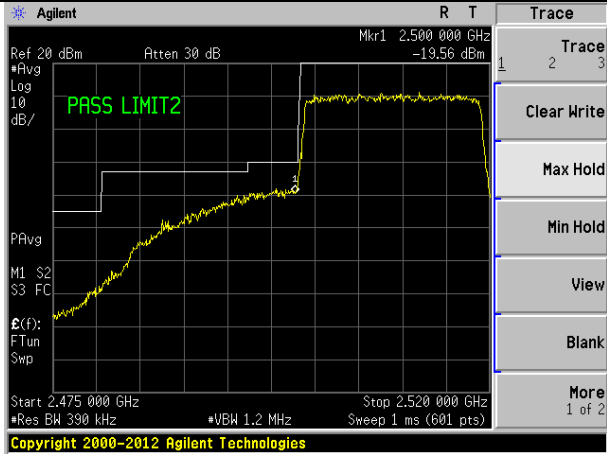


Lowest channel

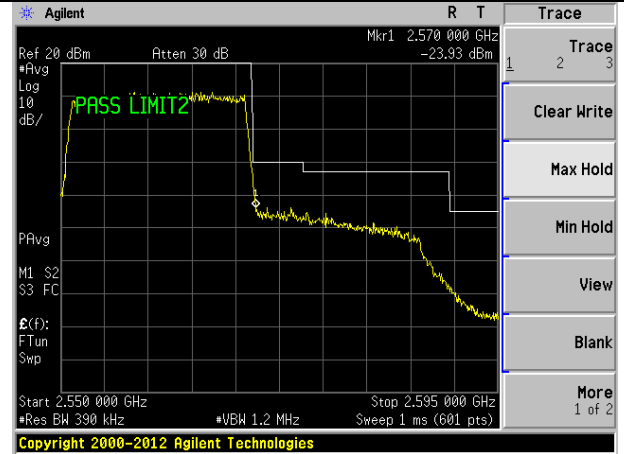


Highest channel

Test Mode: LTE Band 7 Channel Bandwidth: 20MHz



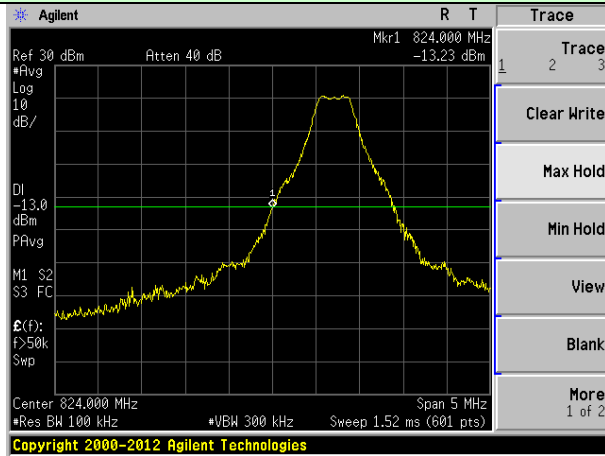
Lowest channel



Highest channel

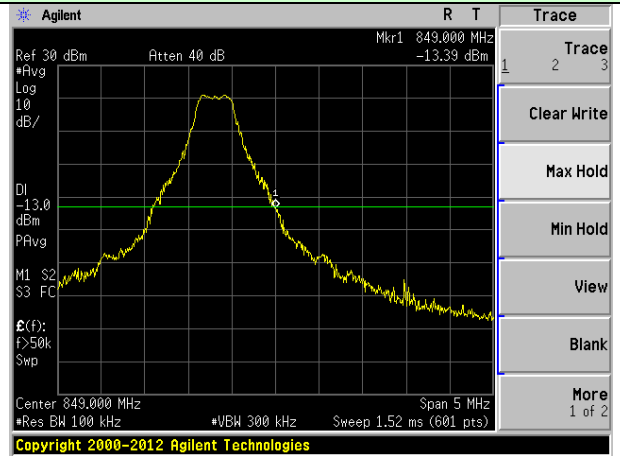
LTE Band 5 (16QAM mode):

1.4MHz Bandwidth (RB size:1# RB offset:0#)



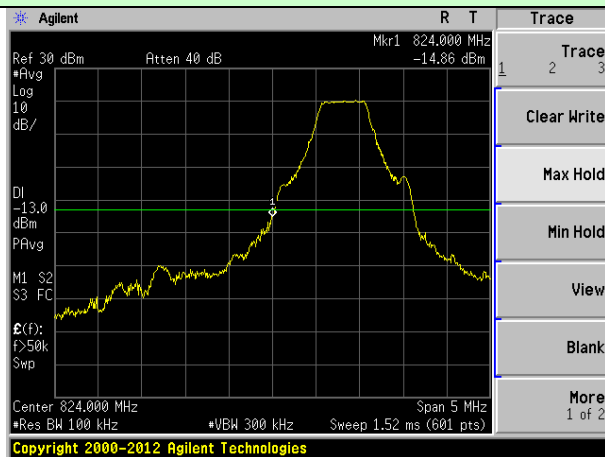
Lowest channel

1.4MHz Bandwidth (RB size:1# RB offset:5#)



Highest channel

1.4MHz Bandwidth (RB size:3# RB offset:0#)



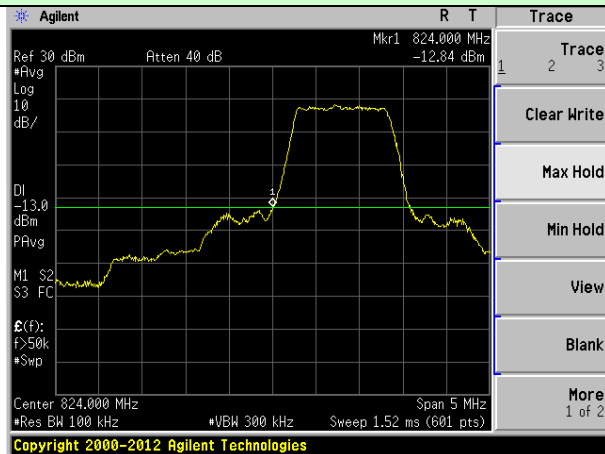
Lowest channel

1.4MHz Bandwidth (RB size:3# RB offset:2#)



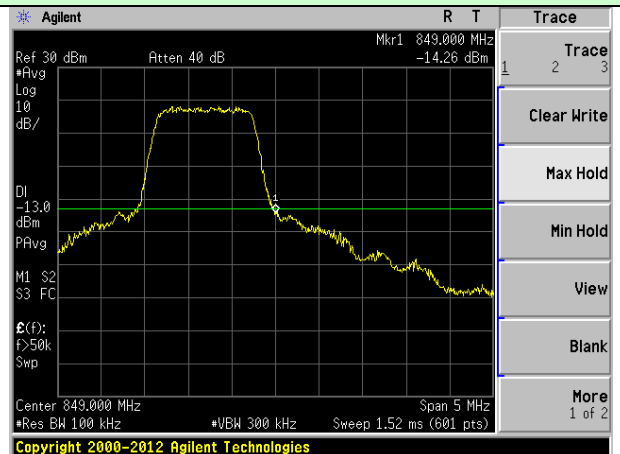
Highest channel

1.4MHz Bandwidth (RB size:6# RB offset:0#)



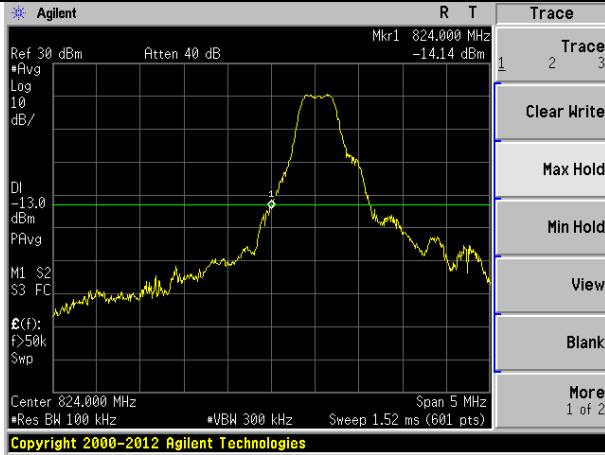
Lowest channel

1.4MHz Bandwidth (RB size:6# RB offset:0#)

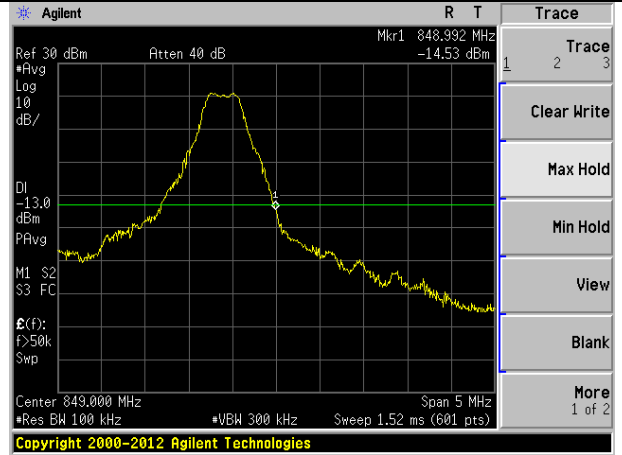


Highest channel

3MHz Bandwidth (RB size:1# RB offset:0#) 3MHz Bandwidth (RB size:1# RB offset:14#)

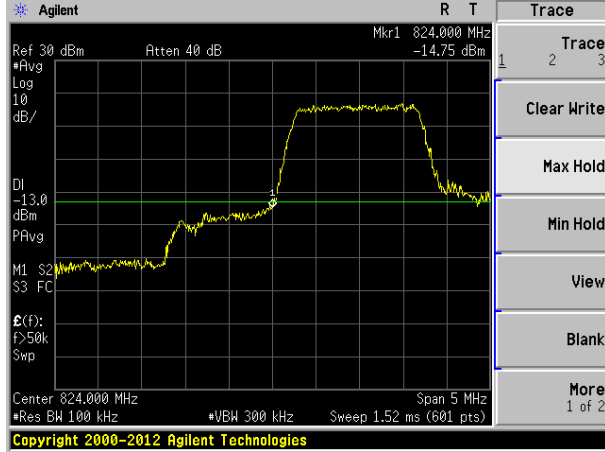


Lowest channel

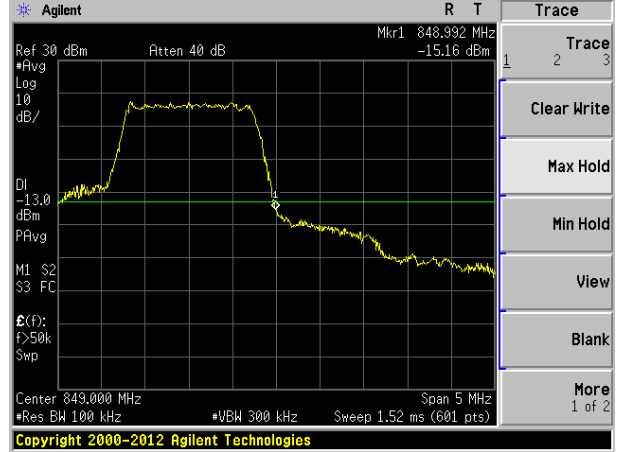


Highest channel

3MHz Bandwidth (RB size:8# RB offset:0#) 3MHz Bandwidth (RB size:8# RB offset:7#)

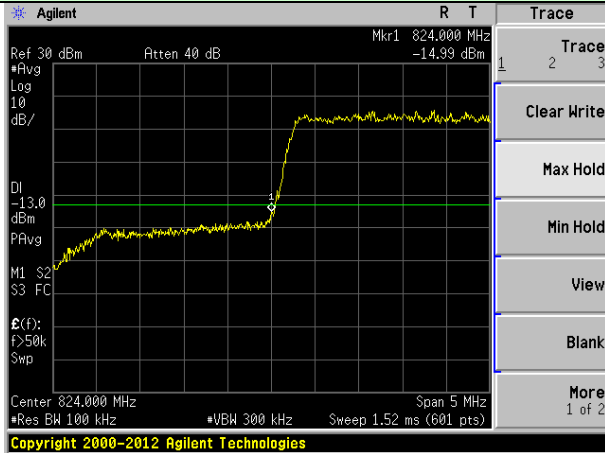


Lowest channel

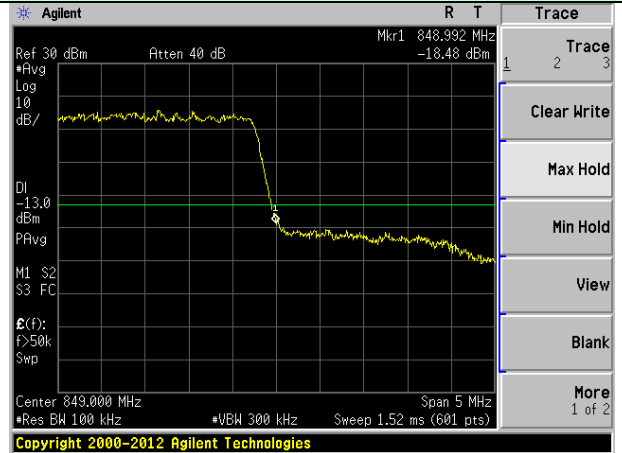


Highest channel

3MHz Bandwidth (RB size:15# RB offset:0#) 3MHz Bandwidth (RB size:15# RB offset:0#)

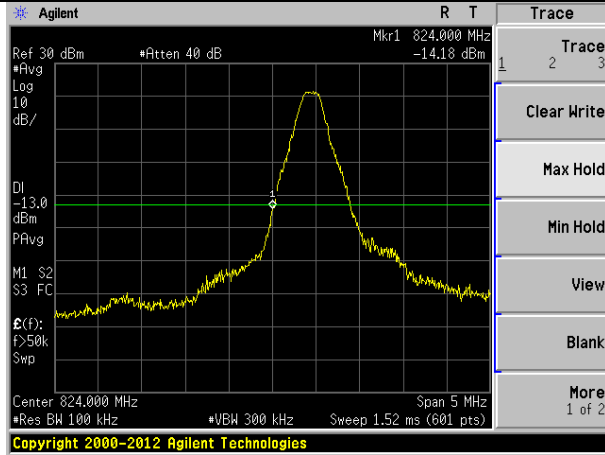


Lowest channel

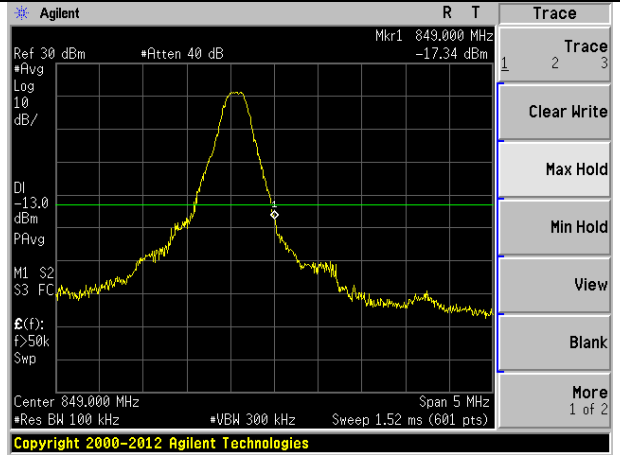


Highest channel

5MHz Bandwidth (RB size:1# RB offset:0#) 5MHz Bandwidth (RB size:1# RB offset:24#)

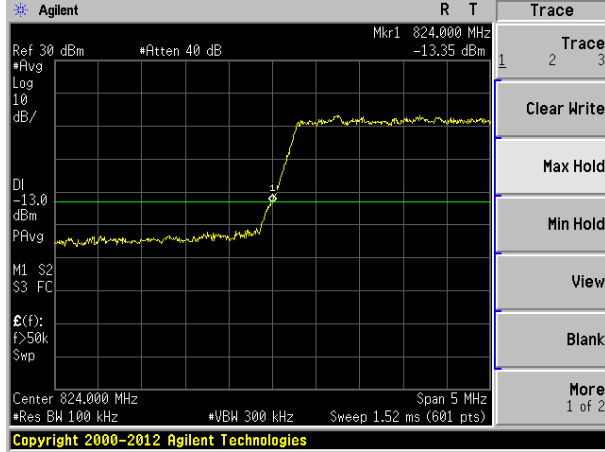


Lowest channel

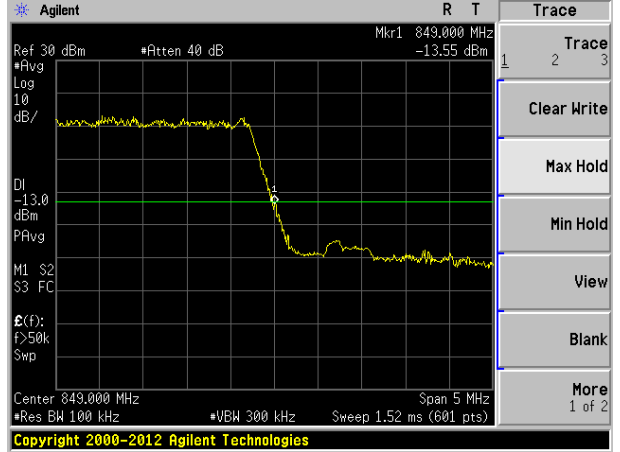


Highest channel

5MHz Bandwidth (RB size:12# RB offset:0#) 5MHz Bandwidth (RB size:12# RB offset:13#)

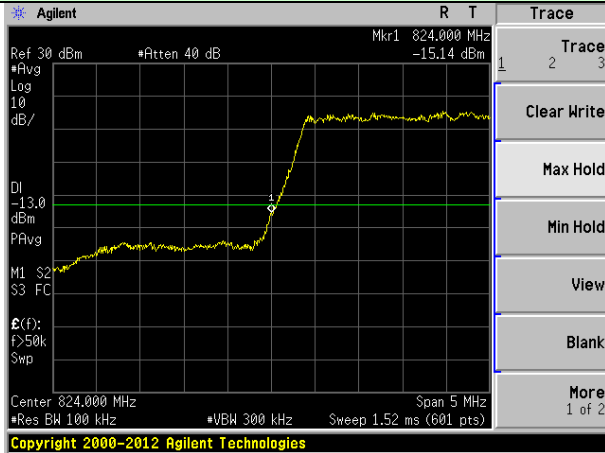


Lowest channel

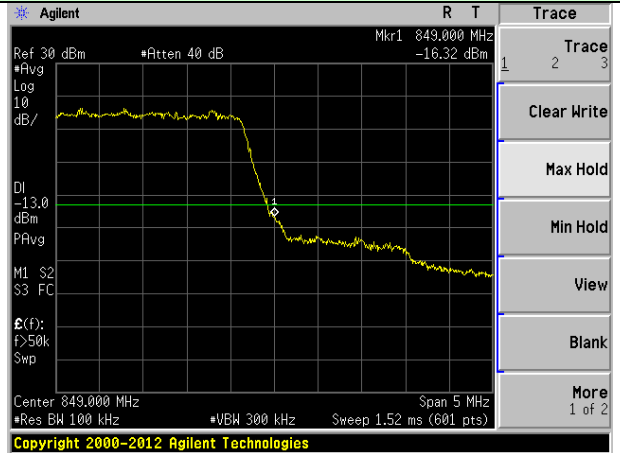


Highest channel

5MHz Bandwidth (RB size:25# RB offset:0#) 5MHz Bandwidth (RB size:25# RB offset:0#)

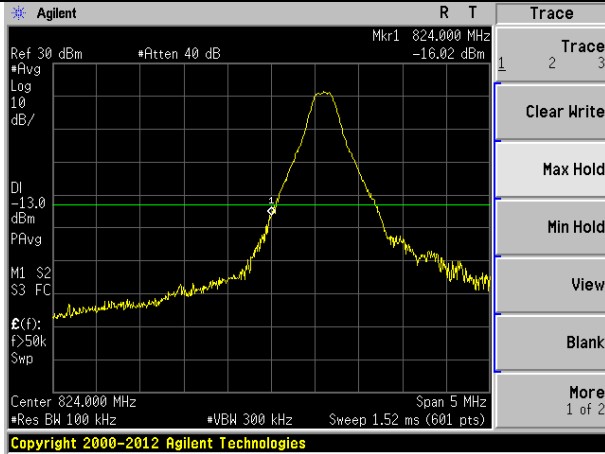


Lowest channel

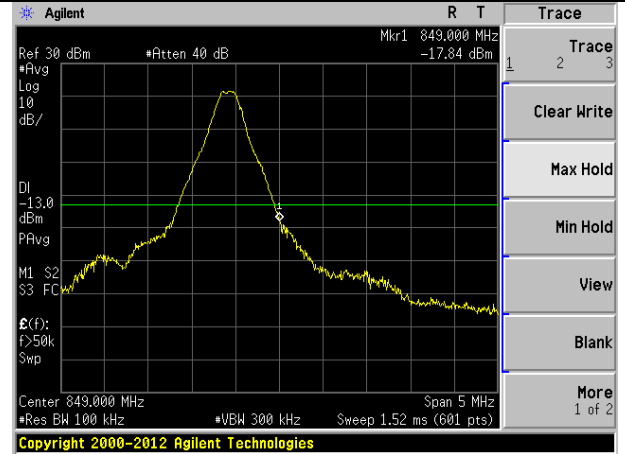


Highest channel

10MHz Bandwidth (RB size:1# RB offset:0#) 10MHz Bandwidth (RB size:1# RB offset:49#)

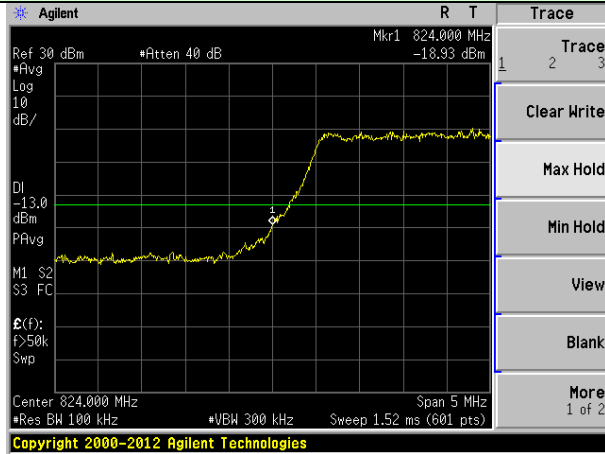


Lowest channel

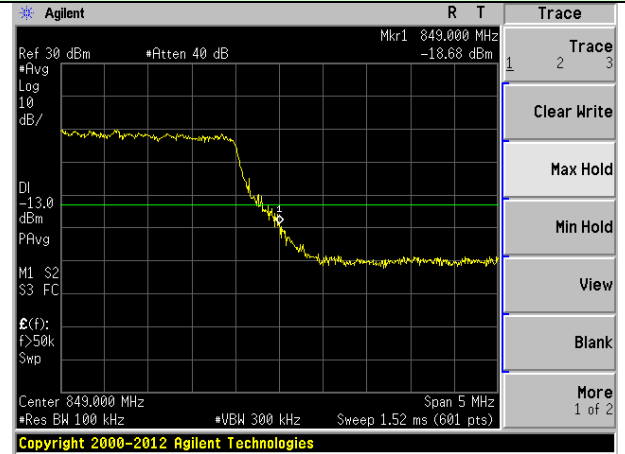


Highest channel

10MHz Bandwidth (RB size:25# RB offset:0#) 10MHz Bandwidth (RB size:25# RB offset:25#)

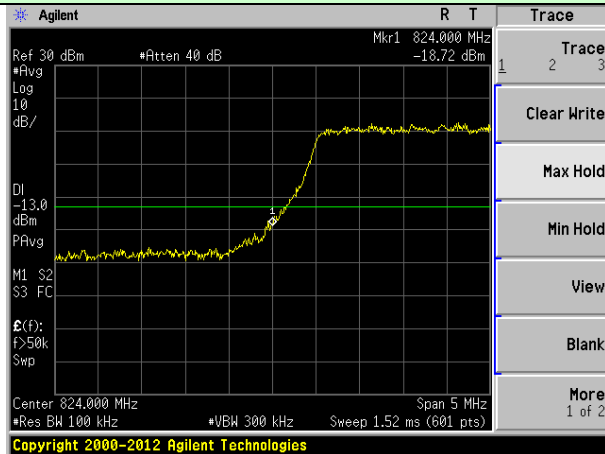


Lowest channel

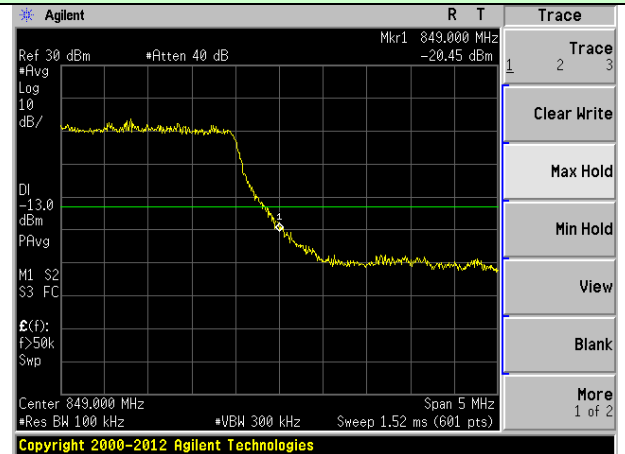


Highest channel

10MHz Bandwidth (RB size:50# RB offset:0#) 10MHz Bandwidth (RB size:50# RB offset:0#)



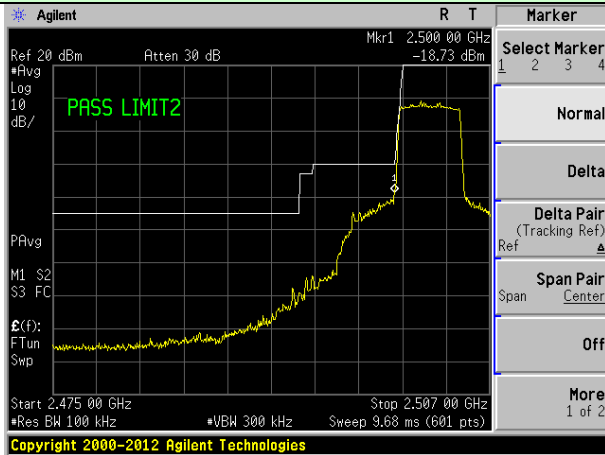
Lowest channel



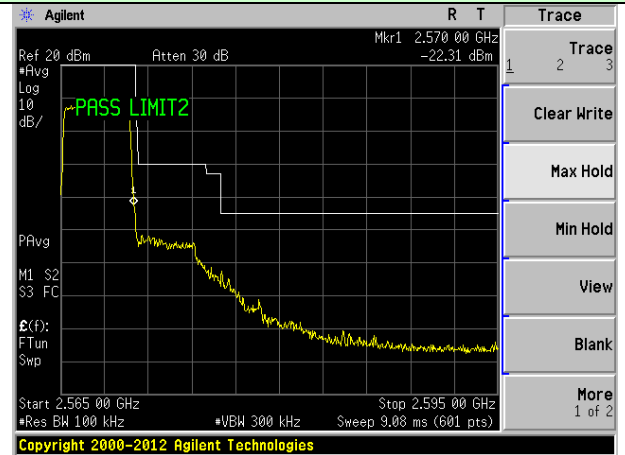
Highest channel

LTE Band 7(16QAM mode):

Test Mode: LTE Band 7 Channel Bandwidth: 5MHz

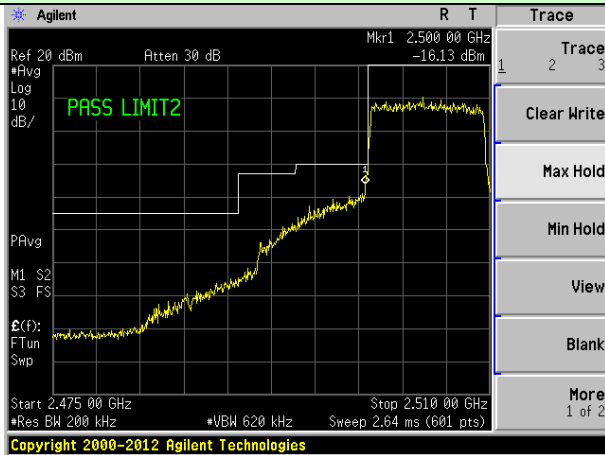


Lowest channel

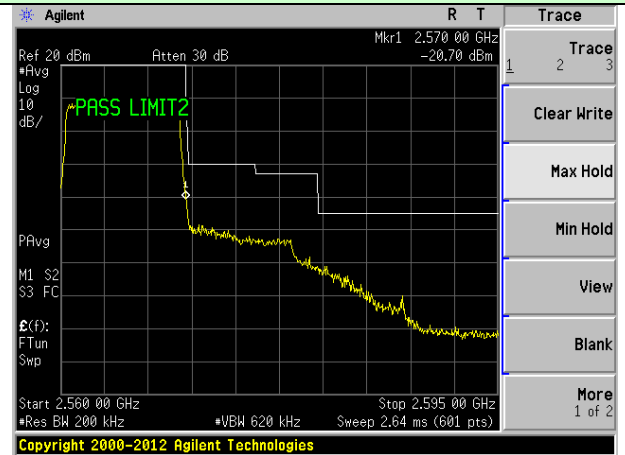


Highest channel

Test Mode: LTE Band 7 Channel Bandwidth: 10MHz

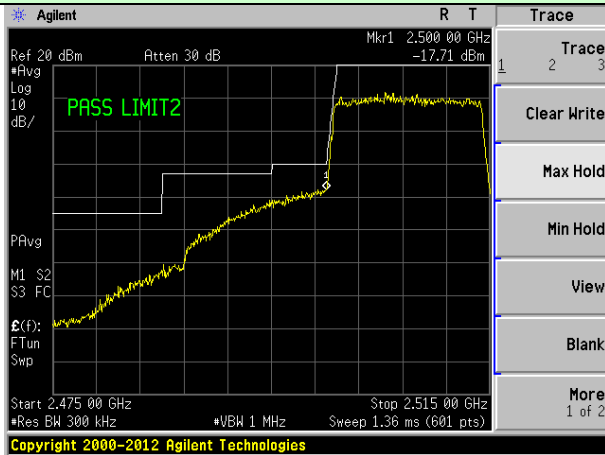


Lowest channel

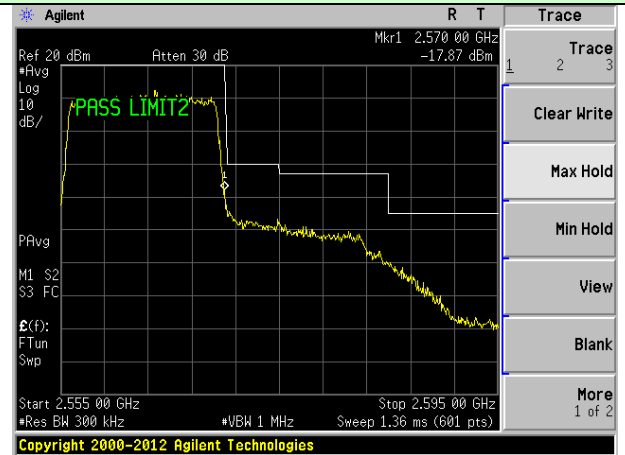


Highest channel

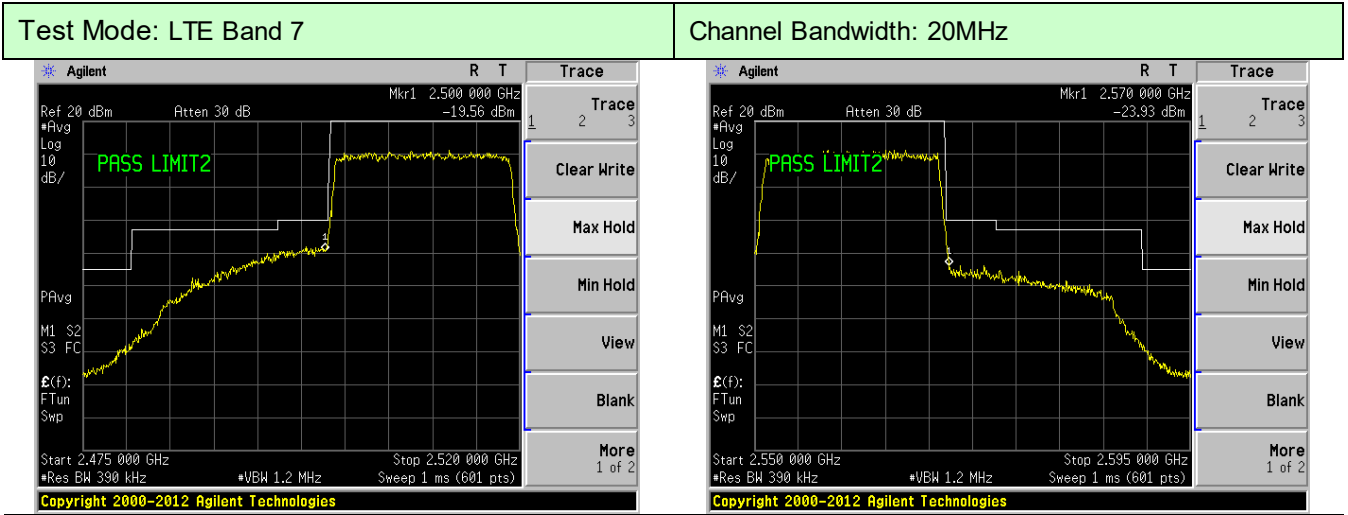
Test Mode: LTE Band 7 Channel Bandwidth: 15MHz



Lowest channel



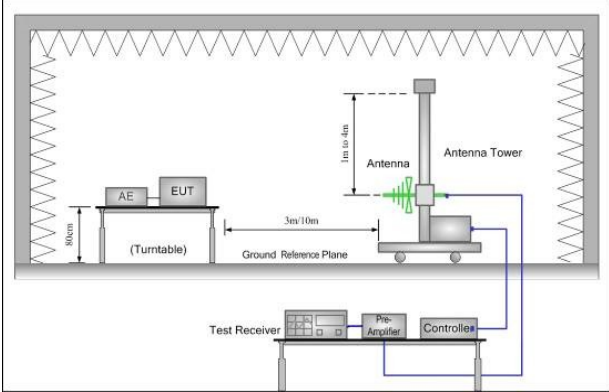
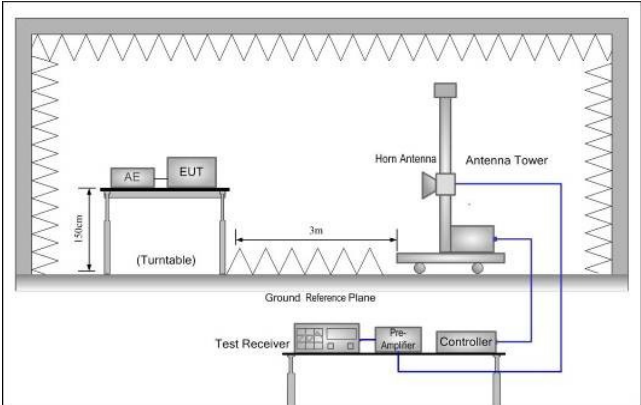
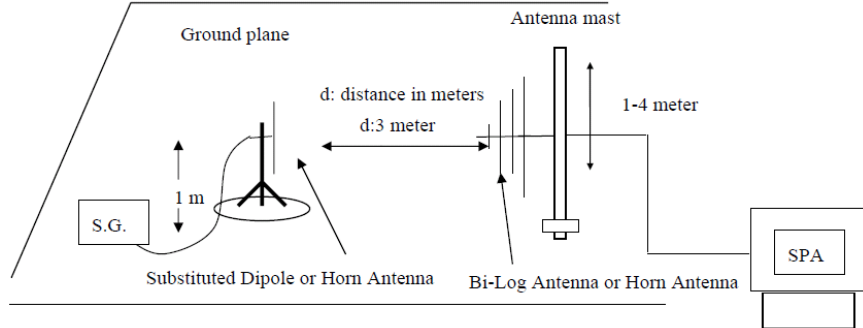
Highest channel



Lowest channel

Highest channel

7.8 ERP, EIRP Measurement

Test Requirement:	Part 24.238 (a); Part 27.50(c)(10)/(d)(4)
Test Method:	FCC part2.1046
Limit:	LTE Band 5: 7W (EIRP) LTE Band 7: 2W (EIRP)
Test setup:	<p>Below 1GHz</p>  <p>Above 1GHz</p>  <p>Substituted method:</p> 

<p>Test Procedure:</p>	<ol style="list-style-type: none"> 1. The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. 2. During the measurement, the EUT was communication with the station. The highest emission was recorded with the rotation of the turntable and the lowering of the test antenna from 4m to 1m. The reading was recorded and the field strength (E in dBuV/m) was calculated. 3. ERP in frequency band 777–787MHz were measured using a substitution method. The EUT was replaced by dipole antenna connected, the S.G. output was recorded and ERP was calculated asfollows: $\text{ERP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBd)} - \text{Cable Loss (dB)}$ 4. EIRP in frequency band 1710–1755MHz were measured using a substitution method. The EUT was replaced by or horn antenna connected, the S.G. output was recorded and EIRP was calculated as follows: $\text{EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable Loss (dB)}$
<p>Test Instruments:</p>	<p>Refer to section 6.0 for details</p>
<p>Test mode:</p>	<p>Refer to section 7.1 for details</p>
<p>Test results:</p>	<p>Pass</p>

Measurement Data

Remark: All conditions have been considered and test, only the worst case report.

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 5 (1.4MHz)	Lowest	H	V	20.25	33.00	Pass
			H	21.50		
	Middle	H	V	21.56	33.00	Pass
			H	21.07		
	Highest	H	V	21.28	33.00	Pass
			H	21.08		

	S.G. output (dBm)		Antenna gain(dBi)	Cable loss(dB)
	V	H		
Lowest	V	22.3	2.5	4.55
	H	23.55		
Middle	V	23.66	2.5	4.6
	H	23.17		
Highest	V	23.43	2.5	4.65
	H	23.23		

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 5 (3MHz)	Lowest	H	V	20.18	33.00	Pass
			H	21.22		
	Middle	H	V	20.46	33.00	Pass
			H	21.30		
	Highest	H	V	21.18	33.00	Pass
			H	20.97		

	S.G. output (dBm)		Antenna gain(dBi)	Cable loss(dB)
	V	H		
Lowest	V	22.23	2.5	4.55
	H	23.27		
Middle	V	22.56	2.5	4.6
	H	23.4		
Highest	V	23.33	2.5	4.65
	H	23.12		

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 5 (5MHz)	Lowest	H	V	20.13	33.00	Pass
			H	21.95		
	Middle	H	V	21.38	33.00	Pass
			H	20.86		
	Highest	H	V	21.49	33.00	Pass
			H	20.89		

	S.G. output (dBm)		Antenna gain(dBi)	Cable loss(dB)
	V	H		
Lowest	V	22.18	2.5	4.55
	H	24		
Middle	V	23.48	2.5	4.6
	H	22.96		
Highest	V	23.64	2.5	4.65
	H	23.04		

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP (dBm)	Limit (dBm)	Result
LTE Band 5 (10MHz)	Lowest	H	V	21.09	33.00	Pass
			H	21.25		
	Middle	H	V	21.32	33.00	Pass
			H	20.79		
	Highest	H	V	21.96	33.00	Pass
			H	21.05		

	S.G. output (dBm)		Antenna gain(dBi)	Cable loss(dB)
	V	H		
Lowest	V	23.14	2.5	4.55
	H	23.3		
Middle	V	23.42	2.5	4.6
	H	22.89		
Highest	V	24.11	2.5	4.65
	H	23.2		

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 7(5MHz)	Lowest	H	V	20.06	30.00	Pass
			H	21.21		
	Middle	H	V	20.28	30.00	Pass
			H	20.76		
	Highest	H	V	21.91	30.00	Pass
			H	20.78		

	S.G. output (dBm)		Antenna gain(dBi)	Cable loss(dB)
Lowest	V	22.15	3.4	5.49
	H	23.3		
Middle	V	22.4	3.4	5.52
	H	22.88		
Highest	V	24.06	3.4	5.55
	H	22.93		

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 7(10MHz)	Lowest	H	V	21.03	30.00	Pass
			H	21.17		
	Middle	H	V	21.77	30.00	Pass
			H	21.71		
	Highest	H	V	21.97	30.00	Pass
			H	20.74		

	S.G. output (dBm)		Antenna gain(dBi)	Cable loss(dB)
Lowest	V	23.12	3.4	5.49
	H	23.26		
Middle	V	23.89	3.4	5.52
	H	23.83		
Highest	V	24.12	3.4	5.55
	H	22.89		

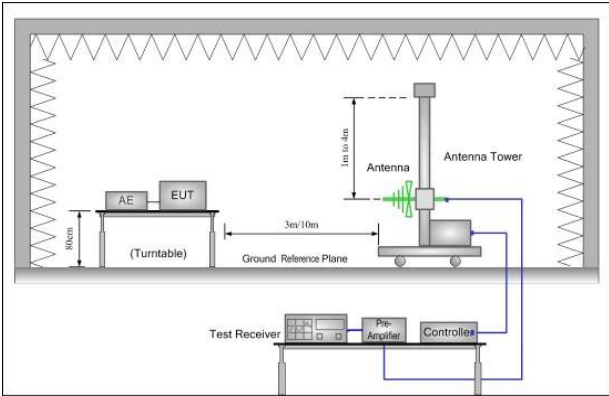
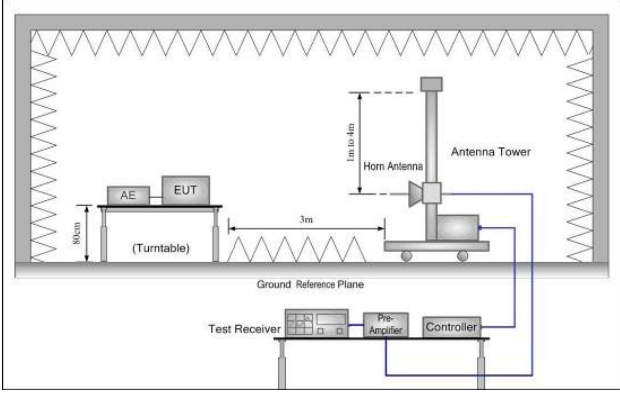
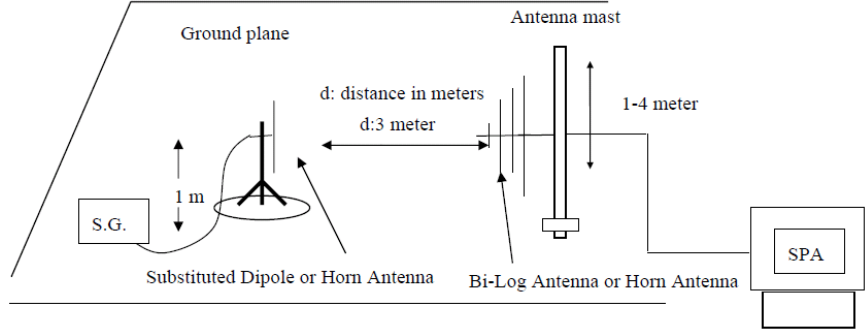
EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 7(15MHz)	Lowest	H	V	20.03	30.00	Pass
			H	21.83		
	Middle	H	V	21.78	30.00	Pass
			H	20.70		
	Highest	H	V	21.98	30.00	Pass
			H	20.75		

	S.G. output (dBm)		Antenna gain(dBi)	Cable loss(dB)
Lowest	V	22.12	3.4	5.49
	H	23.92		
Middle	V	23.9	3.4	5.52
	H	22.82		
Highest	V	24.13	3.4	5.55
	H	22.9		

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 7(20MHz)	Lowest	H	V	20.14	30.00	Pass
			H	21.57		
	Middle	H	V	21.40	30.00	Pass
			H	20.88		
	Highest	H	V	20.12	30.00	Pass
			H	21.51		

	S.G. output (dBm)		Antenna gain(dBi)	Cable loss(dB)
Lowest	V	22.23	3.4	5.49
	H	23.66		
Middle	V	23.52	3.4	5.52
	H	23		
Highest	V	22.27	3.4	5.55
	H	23.66		

7.9 Field strength of spurious radiation measurement

Test Requirement:	Part 24.238 (a); FCC Part 27.53(h)/(g)
Test Method:	FCC part2.1053
Limit:	Band 5/7:-13dBm
Test setup:	<p>Below 1GHz</p>  <p>Above 1GHz</p>  <p>Substituted method:</p> 

<p>Test Procedure:</p>	<ol style="list-style-type: none"> 1. The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. 2. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations. 3. The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method. 4. The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency. $\text{ERP / EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain(dB/dBi)} - \text{Cable Loss (dB)}$
<p>Test Instruments:</p>	<p>Refer to section 6.0 for details</p>
<p>Test mode:</p>	<p>Refer to section 7.1 for details</p>
<p>Test results:</p>	<p>Pass</p>

Measurement Data

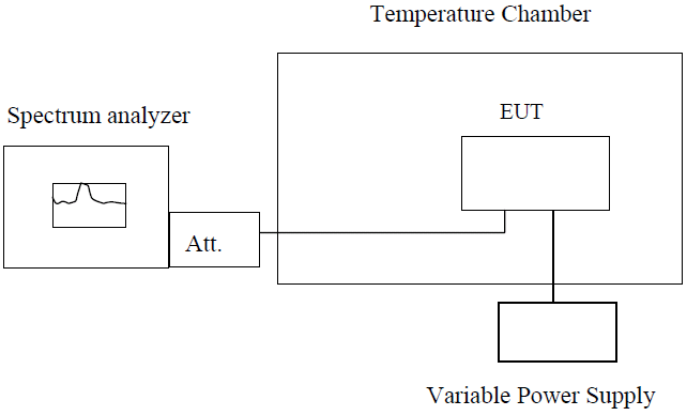
Remark:

1. The emission behaviour belongs to narrowband spurious emission.
2. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Test mode:		LTE Band 5(10MHz)		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result	
	Polarization	Level (dBm)			
1658.00	Vertical	-56.04	-13.00	Pass	
2487.00	V	-58.77			
3316.00	V	-51.03			
4145.00	V	-53.19			
4974.00	V	-50.33			
1658.00	Horizontal	-51.27	-13.00	Pass	
2487.00	H	-50.14			
3316.00	H	-52.70			
4145.00	H	-50.43			
4974.00	H	-50.96			
Test mode:		LTE Band 5(10MHz)		Test channel:	Middle
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result	
	Polarization	Level (dBm)			
1673.00	Vertical	-57.16	-13.00	Pass	
2509.50	V	-59.44			
3346.00	V	-51.34			
4182.50	V	-53.15			
5019.00	V	-50.95			
1673.00	Horizontal	-54.54	-13.00	Pass	
2509.50	H	-54.78			
3346.00	H	-56.09			
4182.50	H	-58.38			
5019.00	H	-53.12			
Test mode:		LTE Band 5(10MHz)		Test channel:	Highest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result	
	Polarization	Level (dBm)			
1688.00	Vertical	-57.20	-13.00	Pass	
2532.00	V	-53.24			
3376.00	V	-50.93			
4220.00	V	-52.55			
5064.00	V	-52.14			
1688.00	Horizontal	-51.11	-13.00	Pass	
2532.00	H	-52.01			
3376.00	H	-53.18			
4220.00	H	-54.23			
5064.00	H	-50.11			

Test mode:		LTE Band 7(20MHz)		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result	
	Polarization	Level (dBm)			
5020.00	Vertical	-53.53	-13.00	Pass	
7530.00	V	-52.97			
10040.00	V	-50.02			
12550.00	V	-51.94			
15060.00	V	-50.69			
5020.00	Horizontal	-50.22	-13.00	Pass	
7530.00	H	-53.68			
10040.00	H	-55.10			
12550.00	H	-54.56			
15060.00	H	-51.33			
Test mode:		LTE Band 7(20MHz)		Test channel:	Middle
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result	
	Polarization	Level (dBm)			
5070.00	Vertical	-53.49	-13.00	Pass	
7605.00	V	-53.00			
10140.00	V	-50.10			
12675.00	V	-51.09			
15210.00	V	-51.41			
5070.00	Horizontal	-53.32	-13.00	Pass	
7605.00	H	-51.87			
10140.00	H	-53.34			
12675.00	H	-54.87			
15210.00	H	-50.18			
Test mode:		LTE Band 7(20MHz)		Test channel:	Highest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result	
	Polarization	Level (dBm)			
5120.00	Vertical	-54.54	-13.00	Pass	
7680.00	V	-53.98			
10240.00	V	-51.03			
12800.00	V	-50.95			
15360.00	V	-50.44			
5120.00	Horizontal	-52.23	-13.00	Pass	
7680.00	H	-52.69			
10240.00	H	-54.11			
12800.00	H	-51.57			
15360.00	H	-50.39			

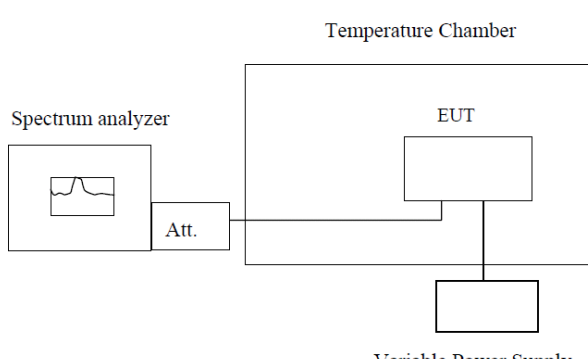
7.10 Frequency stability V.S. Temperature measurement

Test Requirement:	FCC Part2.1055(a)(1)(b)
Test Method:	FCC Part2.1055(a)(1)(b)
Limit:	2.5ppm
Test setup:	 <p>Note : Measurement setup for testing on Antenna connector</p>
Test procedure:	<ol style="list-style-type: none"> 1. The equipment under test was connected to an external DC power supply and input rated voltage. 2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. 3. The EUT was placed inside the temperature chamber. 4. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25°C operating frequency as reference frequency. 5. Turn EUT off and set the chamber temperature to -20°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. 6. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 7.1 for details
Test results:	Pass

Measurement Data

Reference Frequency: LTE Band 5 Middle channel=20525 channel=836.5MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.85	-30	29	0.0155	2.5	Pass
	-20	33	0.0175		
	-10	28	0.0148		
	0	23	0.0122		
	10	27	0.0142		
	20	23	0.0122		
	30	38	0.0201		
	40	34	0.0181		
	50	33	0.0175		
Reference Frequency: LTE Band7 Middle channel=21100 channel=2535MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.85	-30	24	0.0140	2.5	Pass
	-20	27	0.0154		
	-10	23	0.0132		
	0	20	0.0118		
	10	22	0.0125		
	20	19	0.0111		
	30	33	0.0190		
	40	28	0.0161		
	50	27	0.0154		

7.11 Frequency stability V.S. Voltage measurement

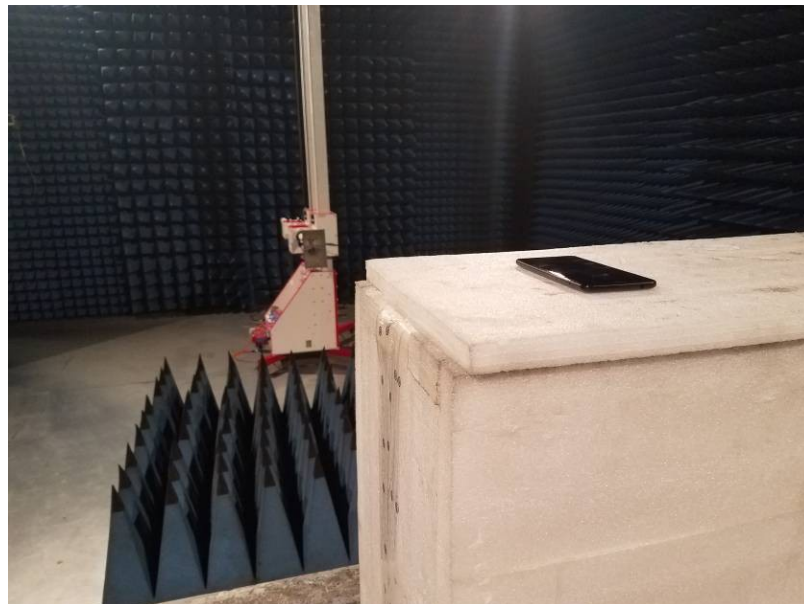
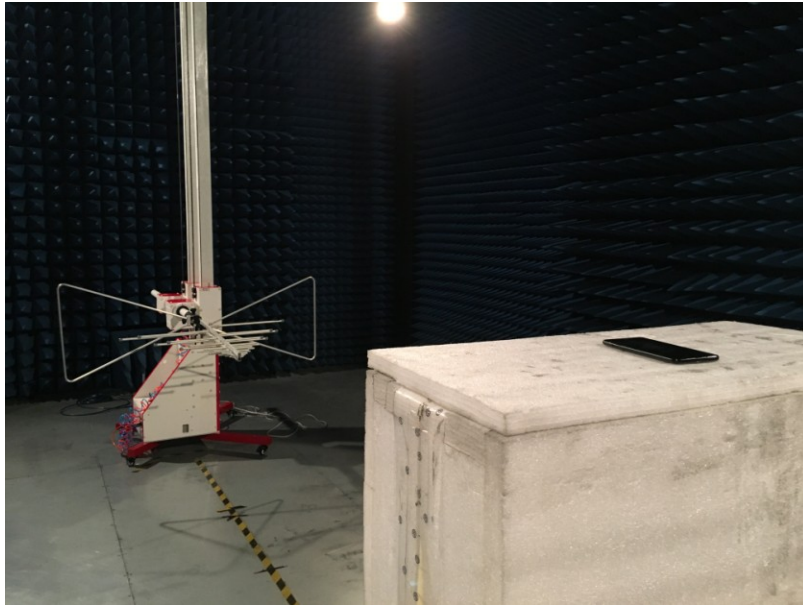
Test Requirement:	FCC Part2.1055(d)(1)(2)
Test Method:	FCC Part2.1055(d)(1)(2)
Limit:	2.5ppm
Test setup:	 <p style="text-align: center;">Temperature Chamber</p> <p style="text-align: center;">Spectrum analyzer</p> <p style="text-align: center;">Att.</p> <p style="text-align: center;">EUT</p> <p style="text-align: center;">Variable Power Supply</p> <p>Note : Measurement setup for testing on Antenna connector</p>
Test procedure:	<ol style="list-style-type: none"> 1. Set chamber temperature to 25°C. Use a variable DC power source to power the EUT and set the voltage to rated voltage. 2. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency. 3. Reduce the input voltage to specified extreme voltage variation (+/- 15%) and endpoint, record the maximum frequency change.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 7.1 for details
Test results:	Pass

Measurement Data

Reference Frequency: LTE Band 5 Middle channel=20525 channel=836.5MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	18	0.0096	2.5	Pass
	3.85	21	0.0110		
	3.5	23	0.0124		
Reference Frequency: LTE Band 7 Middle channel=21100 channel=2535MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	30	0.0172	2.5	Pass
	3.85	22	0.0127		
	3.5	25	0.0142		

8 Test Setup Photo

Radiated Emission



9 EUT Constructional Details

Reference to the test report No. : GTS201805000172F01

-----End-----