




FCC Radio Test Report

FCC ID: 2AM8GCHAMELEON5R

Original Grant

Report No. : TB-FCC178948
Applicant : Guangzhou Lie Dun Electronics Technology CO.,Ltd
Equipment Under Test (EUT)
EUT Name : RUGGEDIZED HAND-HELD DEVICE
Model No. : CHAMELEON 5R SINGLE
Series Model No. : CHAMELEON 5R DUAL
Brand Name : CHAMELEON
Sample ID : 20190923-01-1#& 20190923-01-2#
Receipt Date : 2019-12-16
Test Date : 2019-12-17 to 2021-02-27
Issue Date : 2021-03-09
Standards : 47 CFR Part 2, 22(H), 24(E), 27
Test Method : ANSI C63.26 2015
Conclusions : **PASS**

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

Test/Witness Engineer : 
Engineer Supervisor : 
Engineer Manager : 



This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

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Revision History

Report No.	Version	Description	Issued Date
TB-FCC178948	Rev.01	Initial issue of report	2021-03-09

1. General Information about EUT

1.1 Client Information

Applicant	:	Guangzhou Lie Dun Electronics Technology CO.,Ltd
Address	:	No.4 plant of No.43 South International Trade Avenue, Hualong Town, Panyu District, Guangzhou, Guangdong, China
Manufacturer	:	Guangzhou Lie Dun Electronics Technology CO.,Ltd
Address	:	No.4 plant of No.43 South International Trade Avenue, Hualong Town, Panyu District, Guangzhou, Guangdong, China

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	RUGGEDIZED HAND-HELD DEVICE
Models No.	:	CHAMELEON 5R SINGLE, CHAMELEON 5R DUAL
Model Difference	:	All these models are identical in the same PCB, layout and electrical circuit, The only difference is size.
Product Description	:	LTE Band 2:TX: 1850MHz-1910MHz, RX: 1930MHz-1990MHz LTE Band 4:TX: 1710MHz-1755MHz, RX: 2110MHz-2155MHz LTE Band 5:TX: 824MHz-849MHz, RX: 869MHz-894MHz LTE Band 7:TX: 2500MHz~2570MHz, RX: 2620MHz~2690MHz LTE Band 26:TX: 824MHz-849MHz, RX: 869MHz-894MHz LTE Band 41:TX: 2496MHz-2690MHz, RX: 2496MHz-2690MHz
	:	Antenna Type: 4.5dBi PIFA Antenna
	:	Modulation Type: QPSK, 16QAM
	:	Bandwidth: LTE Band 2: 1.4MHz/3MHz/5MHz/10MHz/15MHz/20MHz LTE Band 4: 1.4MHz/3MHz/5MHz/10MHz/15MHz/20MHz LTE Band 5: 1.4MHz/3MHz/5MHz/10MHz LTE Band 7: 5MHz/10MHz/15MHz/20MHz LTE Band 26: 1.4MHz/3MHz/5MHz/10MHz/15MHz LTE Band 41: 5MHz/10MHz/15MHz/20MHz
Power Rating	:	DC 5V from Adapter(P12DUSB050200 US) Input: 100-240V~, 50/60Hz, 0.3A Output: DC 5V 2A DC 3.85V 7100mAh/27Wh by rechargeable Li-ion battery.
Software Version	:	CH501_V0.37_qfil_user_20201109
Hardware Version	:	5FBD61_V1.03_PCB
Remark	:	The antenna gain and adapter provided by the applicant, the verified for the RF conduction test provided by TOBY test lab.

Note:

(1) For a more detailed features description, please refer to the manufacturer's specifications or

the User's Manual.

(2) Channel List

LTE Band 2(1.4MHz)		LTE Band 2(3MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
18607	1850.70	18615	1851.50
18608	1850.80	18608	1850.80
.....
18899	1879.90	18899	1879.90
18900	1880.00	18900	1880.00
18901	1880.10	18901	1880.10
.....
19192	1909.20	19192	1909.20
19193	1909.30	19185	1908.50
LTE Band 2(5MHz)		LTE Band 2(10MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
18625	1852.50	18650	1855.00
18616	1851.60	18626	1854.90
.....
18899	1879.90	18899	1879.90
18900	1880.00	18900	1880.00
18901	1880.10	18901	1880.10
.....
19154	1908.40	19174	1907.90
19175	1907.50	19150	1905.00
LTE Band 2(15MHz)		LTE Band 2(20MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
18675	1857.50	18700	1860.00
18676	1857.60	18701	1860.10
.....
18899	1879.90	18899	1879.90
18900	1880.00	18900	1880.00
18901	1880.10	18901	1880.10
.....
19124	1902.40	19099	1899.90
19125	1902.50	19100	1900.00

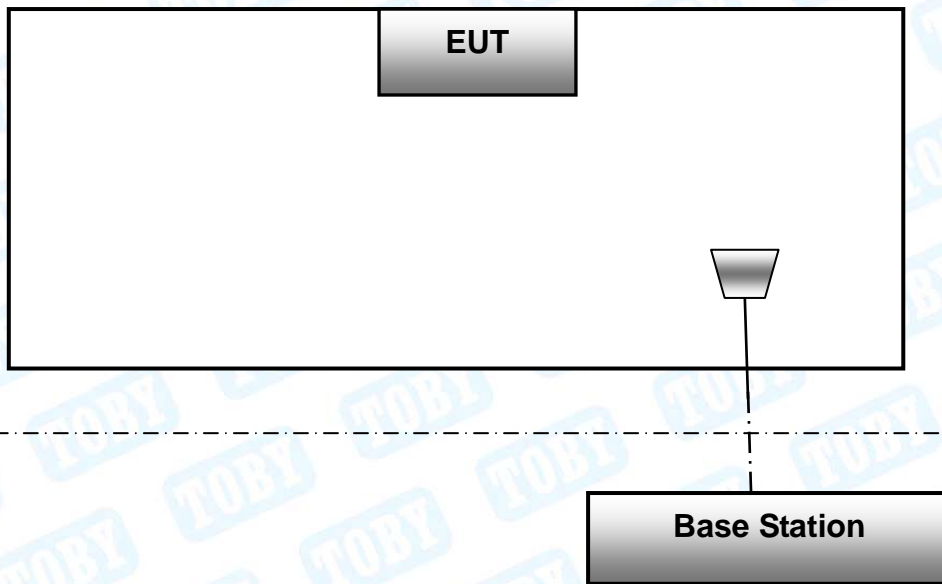
LTE Band 4(1.4MHz)		LTE Band 4(3MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
19957	1710.70	19965	1711.50
19958	1710.80	19966	1711.60
.....
20174	1732.40	20174	1732.40
20175	1732.50	20175	1732.50
20176	1732.60	20176	1732.60
.....
20392	1754.20	20384	1753.40
20393	1754.30	20385	1753.50
LTE Band 4(5MHz)		LTE Band 4(10MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
19975	1712.50	20000	1715.00
19976	1712.60	20001	1715.10
.....
20174	1732.40	20174	1732.40
20175	1732.50	20175	1732.50
20176	1732.60	20176	1732.60
.....
20374	1752.40	20349	1749.90
20375	1752.50	20350	1750.00
LTE Band 4(15MHz)		LTE Band 4(20MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
20025	1717.50	20050	1720.00
20026	1717.60	20051	1720.10
.....
20174	1732.40	20174	1732.40
20175	1732.50	20175	1732.50
20176	1732.60	20176	1732.60
.....
20324	1747.40	20299	1744.90
20325	1747.50	20300	1745.00

LTE Band 5(1.4MHz)		LTE Band 5(3MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
20407	824.70	20415	825.50
20408	824.80	20416	825.60
.....
20524	836.40	20524	836.40
20525	836.50	20525	836.50
20526	836.60	20526	836.60
.....
20643	848.20	20634	847.40
20643	848.30	20635	847.50
LTE Band 5(5MHz)		LTE Band 5(10MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
20425	826.50	20450	829.00
20426	826.60	20451	829.10
.....
20524	836.40	20524	836.40
20525	836.50	20525	836.50
20526	836.60	20526	836.60
.....
20624	846.40	20599	843.90
20625	846.50	20600	844.00
LTE Band 7(5MHz)		LTE Band 7(10MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
20775	2502.50	20800	2505.00
20776	2502.60	20801	2505.10
.....
21099	2534.90	21099	2534.90
21100	2535.00	21100	2535.00
21101	2535.10	21101	2535.10
.....
21424	2567.40	21399	2561.90
21425	2567.50	21400	2565.00
LTE Band 7(15MHz)		LTE Band 7(20MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
20825	2507.50	20850	2510.00
20826	2505.80	20851	2510.10
.....
21099	2534.90	21099	2534.90
21100	2535.00	21100	2535.00
21101	2535.10	21101	2535.10
.....
21374	2562.40	21349	2559.90
21375	2562.50	21350	2560.00

LTE Band 26(1.4MHz)		LTE Band 26(3MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
26797	824.70	26805	825.50
26798	824.60	26806	825.60
.....
26914	836.40	26914	836.40
26915	836.50	26915	836.50
26916	836.60	26916	836.60
.....
27032	848.20	27024	847.40
27033	848.30	27025	847.50
LTE Band 26(5MHz)		LTE Band 26(10MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
26815	826.50	26840	829.00
26698	816.60	26751	814.60
.....
26914	836.40	26914	836.40
26915	836.50	26915	836.50
26916	836.60	26916	836.60
.....
27014	846.40	26989	843.90
27015	846.50	26990	844.00
LTE Band 26(15MHz)			
Channel	Frequency (MHz)		
26865	831.50		
26866	831.60		
.....		
26914	836.40		
26915	836.50		
26916	836.60		
.....		
26964	841.40		
26965	841.50		

LTE Band 41(5MHz)		LTE Band 41(10MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
39675	2498.50	39700	2501.00
39676	2498.60	39701	2501.10
.....
40619	2592.90	40619	2592.90
40620	2593.00	40620	2593.00
40621	2593.10	40621	2593.10
.....
41564	2687.40	41564	2684.90
41565	2687.50	41540	2685.00
LTE Band 41(15MHz)		LTE Band 41(20MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
39725	2503.50	39750	2506.00
39726	2503.60	39751	2506.10
.....
40619	2592.90	40619	2592.90
40620	2593.00	40620	2593.00
40621	2593.10	40621	2593.10
.....
41564	2682.40	41564	2679.90
41515	2682.50	41490	2680.00

1.3 Block Diagram Showing the Configuration of System Tested



The above block diagram of setup is the normal mode. And more detail please refer to the test setup of each test item of bellow.

1.4 Description of Support Units

The EUT has been tested as an independent unit.

1.5 Description of Test Mode

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 v03r01 and ANSI C63.26 2015 Power Meas. License Digital Systems with maximum output power. Radiated measurements are performed by rotating the EUT in three different ortho-gonal test planes to find the maximum emission.

Remark:

1. The mark “v ” means that this configuration is chosen for testing
2. The mark “--” means that this bandwidth is not supported.
3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated

ITEMS	Band	Bandwidth (MHz)						Modulation		RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	L	M	H
RF Output Power	2	V	V	V	V	V	V	V	V	V	V	V	V	V	V
	4	V	V	V	V	V	V	V	V	V	V	V	V	V	V
	5	V	V	V	V	--	--	V	V	V	V	V	V	V	V
	7	--	--	V	V	V	V	V	V	V	V	V	V	V	V
	26	V	V	V	V	V	--	V	V	V	V	V	V	V	V
	41	7	--	--	V	V	V	V	V	V	V	V	V	V	V
Peak-to-Average Ratio	2	--	--	--	--	--	V	V	V			V	V	V	V
	4	--	--	--	--	--	V	V	V			V	V	V	V
	5	--	--	--	V	--	--	V	V			V	V	V	V
	7	--	--	--	--	--	V	V	V			V	V	V	V
	26	--	--	--	--	V	--	V	V			V	V	V	V
	41	--	--	--	--	--	V	V	V			V	V	V	V
99% & -26 dB Occupied Bandwidth	2	V	V	V	V	V	V	V	V			V	V	V	V
	4	V	V	V	V	V	V	V	V			V	V	V	V
	5	V	V	V	V	--	--	V	V			V	V	V	V
	7	--	--	V	V	V	V	V	V			V	V	V	V
	26	V	V	V	V	V	--	V	V			V	V	V	V
	41	--	--	V	V	V	V	V	V			V	V	V	V
Spurious Emissions at Antenna Terminal	2	V	V	V	V	V	V	V				V	V	V	V
	4	V	V	V	V	V	V	V				V	V	V	V
	5	V	V	V	V	--	--	V				V	V	V	V
	7	--	--	V	V	V	V	V				V	V	V	V
	26	V	V	V	V	V	--	V				V	V	V	V
	41	--	--	V	V	V	V	V				V	V	V	V
Field Strength of Spurious Radiation	2	--	--	--	--	--	V	V				V		V	
	4	--	--	--	--	--	V	V				V		V	
	5	--	--	--	V	--	--	V				V		V	
	7	--	--	--	--	--	V	V				V		V	

	26	--	--	--	--	V	--	V				V		V	
	41	--	--	--	--	--	V	V				V	V	V	V
Out of band emission, Band Edge	2	V	V	V	V	V	V	V	V			V	V		V
	4	V	V	V	V	V	V	V	V			V	V		V
	5	V	V	V	V	--	--	V	V			V	V		V
	7	--	--	V	V	V	V	V	V			V	V		V
	26	V	V	V	V	V	--	V	V			V	V		V
	41	--	--	V	V	V	V	V	V			V	V		V
Frequency stability	2	--	--	--	--	--	V	V		V					V
	4	--	--	--	--	--	V	V		V					V
	5	--	--	--	V	--	--	V		V					V
	7	--	--	--	--	--	V	V		V					V
	26	--	--	--	--	V	--	V		V					V
	41	--	--	--	--	--	V	V		V					V

Note: (1) During the testing procedure, the EUT is in link mode with base station emulator at maximum power level in each test mode.

(2) The EUT is considered a portable unit; it was pre-tested on the positioned of each 3 axis, X-plane, Y-plane and Z-plane. The worst case was found positioned on Z-plane as the normal use. Therefore only the test data of this Z-plane was used for radiated emission measurement test.

1.6 Measurement Uncertainty

Test Item	Parameters	Expanded Uncertainty (U_{Lab})
RF Power, conducted	/	± 0.82 dB
Radiated Emission	Level Accuracy: 9kHz to 30 MHz	± 4.60 dB
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	± 4.40 dB
Radiated Emission	Level Accuracy: Above 1000MHz	± 4.20 dB

1.7 Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1/F.,Building 6, Rundongsheng Industrial Zone, Longzhu, Xixiang, Bao'an District, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

CNAS (L5813)

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

A2LA Certificate No.: 4750.01

The laboratory has been accredited by American Association for Laboratory Accreditation(A2LA) to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the technical competence in the field of Electrical Testing. And the A2LA Certificate No.: 4750.01.FCC Accredited Test Site Number: 854351. Designation Number: CN1223.

IC Registration No.: (11950A)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A.

2. Test Summary

Test Item	Section in CFR 47	Sample ID	Result
RF Output Power	Part 2.1046 Part 22.913(a)(2) Part 24.232(c) Part 27.50 (b)(10) Part 27.50 (d)(4) Part 27.50 (h)(2)	20190923-01-2#	PASS
Peak-to-Average Ratio	Part 24.232(d) Part 27.50(d)(5)	20190923-01-2#	PASS
99% & -26 dB Occupied Bandwidth	Part 2.1049 Part 22.917(a) Part 24.238(b) Part 27.53(h) Part 27.53(m)	20190923-01-2#	PASS
Spurious Emissions at Antenna Terminal	Part 2.1051 Part 24.238(a) Part 27.53 (h) Part 27.53(m)	20190923-01-1#	PASS
Field Strength of Spurious Radiation	Part 2.1053 Part 22.917(a) Part 24.238(a) Part 27.53 (h) Part 27.53(m)	20190923-01-2#	PASS
Out of band emission, Band Edge	Part 24.238(a) Part 22.917(a) Part 27.53 (h) Part 27.53(m)	20190923-01-2#	PASS
Frequency stability vs. temperature	Part 27.54 Part 24.235 Part 22.355 Part 2.1055(a)(1)(b)	20190923-01-2#	PASS
Frequency stability vs. voltage	Part 27.54 Part 24.235 Part 22.355 Part 2.1055(d)(2)	20190923-01-2#	PASS

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

3. Test Equipment

Radiation Emission Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 13, 2019	Jul. 12, 2020
EMI Test Receiver	Rohde & Schwarz	ESPI	100010/007	Jul. 13, 2019	Jul. 12, 2020
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	Jul. 13, 2019	Jul. 12, 2020
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar.03, 2019	Mar. 02, 2020
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar.03, 2019	Mar. 02, 2020
Horn Antenna	ETS-LINDGREN	BBHA 9170	BBHA9170582	Mar.03, 2019	Mar. 02, 2020
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jul. 13, 2019	Jul. 12, 2020
Pre-amplifier	Sonoma	310N	185903	Mar.03, 2019	Mar. 02, 2020
Pre-amplifier	HP	8449B	3008A00849	Mar.03, 2019	Mar. 02, 2020
Pre-amplifier	SKET	LNPA_1840G-50	SK201904032	Mar.03, 2019	Mar. 02, 2020
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar.03, 2019	Mar. 02, 2020
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A
Antenna Conducted Emission					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 13, 2019	Jul. 12, 2020
Spectrum Analyzer	Rohde & Schwarz	ESPI	100010/007	Jul. 13, 2019	Jul. 12, 2020
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	144382	Sep. 16, 2019	Sep. 15, 2020
Universal Radio Communication Tester	Rohde&Schwarz	CMU200	103903	Jul. 13, 2019	Jul. 12, 2020
MXA Signal Analyzer	Agilent	N9020A	MY49100060	Sep. 16, 2019	Sep. 15, 2020
Vector Signal Generator	Agilent	N5182A	MY50141294	Sep. 16, 2019	Sep. 15, 2020
Analog Signal Generator	Agilent	N5181A	MY50141953	Sep. 16, 2019	Sep. 15, 2020
RF Power Sensor	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO26	Sep. 16, 2019	Sep. 15, 2020
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO29	Sep. 16, 2019	Sep. 15, 2020
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO31	Sep. 16, 2019	Sep. 15, 2020
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO33	Sep. 16, 2019	Sep. 15, 2020
<p>Note: The test equipments of the above project valid until 2020 year. Because of the EUT test time across 2020 and 2021 year, So the new calibrated equipment please see below test equipments.</p>					

Radiation Emission Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 06, 2020	Jul. 05, 2021
EMI Test Receiver	Rohde & Schwarz	ESPI	100010/007	Jul. 06, 2020	Jul. 05, 2021
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	Jul. 06, 2020	Jul. 05, 2021
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	144382	Sep. 11, 2020	Sep. 10, 2021
Universal Radio Communication Tester	Rohde&Schwarz	CMU200	103903	Jul. 06, 2020	Jul. 05, 2021
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar.01, 2020	Feb. 28, 2022
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar.01, 2020	Feb. 28, 2022
Horn Antenna	ETS-LINDGREN	BBHA 9170	BBHA9170582	Mar.01, 2020	Feb. 28, 2022
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jul. 07, 2020	Jul. 06, 2021
Pre-amplifier	Sonoma	310N	185903	Mar.01, 2020	Feb. 28, 2021
Pre-amplifier	HP	8449B	3008A00849	Mar.01, 2020	Feb. 28, 2021
Pre-amplifier	SKET	LNPA_1840G-50	SK201904032	Mar.01, 2020	Feb. 28, 2021
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar.01, 2020	Feb. 28, 2021
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A
Antenna Conducted Emission					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 06, 2020	Jul. 05, 2021
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	144382	Sep. 11, 2020	Sep. 10, 2021
Universal Radio Communication Tester	Rohde&Schwarz	CMU200	103903	Jul. 06, 2020	Jul. 05, 2021
Spectrum Analyzer	Rohde & Schwarz	ESPI	100010/007	Jul. 06, 2020	Jul. 05, 2021
MXA Signal Analyzer	Agilent	N9020A	MY49100060	Sep. 11, 2020	Sep. 10, 2021
Vector Signal Generator	Agilent	N5182A	MY50141294	Sep. 11, 2020	Sep. 10, 2021
Analog Signal Generator	Agilent	N5181A	MY50141953	Sep. 11, 2020	Sep. 10, 2021
RF Power Sensor	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO26	Sep. 11, 2020	Sep. 10, 2021
	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO29	Sep. 11, 2020	Sep. 10, 2021
	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO31	Sep. 11, 2020	Sep. 10, 2021
	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO33	Sep. 11, 2020	Sep. 10, 2021

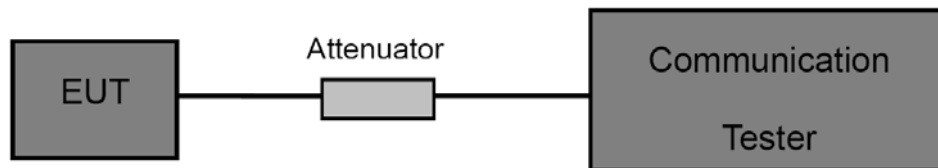
4. Conducted RF Output Power

4.1 Test Standard and Limit

4.1.1 Test Standard

FCC part 2.1046, FCC part 22.913(a)(2),
FCC part 24.232(c), FCC Part 27.50(b)&(d),
FCC Part 27.50 (h)

4.2 Test Setup



4.3 Test Procedure

- (1) The EUT is coupled to the Base Station with the suitable Attenuator, the path loss is calibrated to correct the reading.
- (2) A call is set up by the Base Station to the generic call set up procedure.
- (3) Set EUT at maximum power level through base station by power level command.
- (4) Then read record the power value from the Base Station in dBm.

4.4 EUT Operating Condition

The EUT was continuously connected with the Base station and transmitting in the max power during the test.

4.5 Deviation From Test Standard

No deviation

4.6 Test Data

Please refer to the Attachment A.

5. Peak-Average Ratio

5.1 Test Standard and Limit

5.1.1 Test Standard

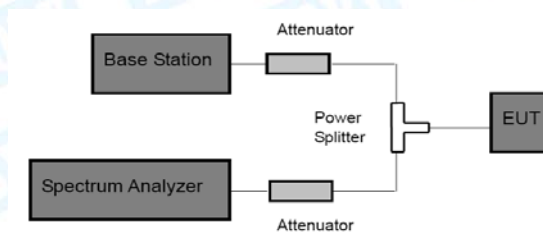
FCC part 24.232(d)
FCC Part 27.50(d), FCC Part 27.50 (h)

5.1.2 Test Limit

Peak-to-Average Ratio

The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

5.2 Test Setup



5.3 Test Procedure

According with KDB 971168

- (1) The signal analyzer's CCDF measurement profile is enabled.
- (2) Frequency = carrier center frequency.
- (3) Measurement BW > Emission bandwidth of signal.
- (4) The signal analyzer was set to collect one million samples to generate the CCDF curve.
- (5) Set the EUT working in highest power level, measured and recorded the 0.1% as PAPR level.
- (6) The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which of the transmitter is operating at maximum power.

5.4 EUT Operating Condition

The EUT was continuously connected with the Base station and transmitting in the max power during the test.

5.5 Deviation From Test Standard

No deviation

5.6 Test Data

Please refer to the Attachment B.

6. Occupied Bandwidth

6.1 Test Standard and Limit

6.1.1 Test Standard

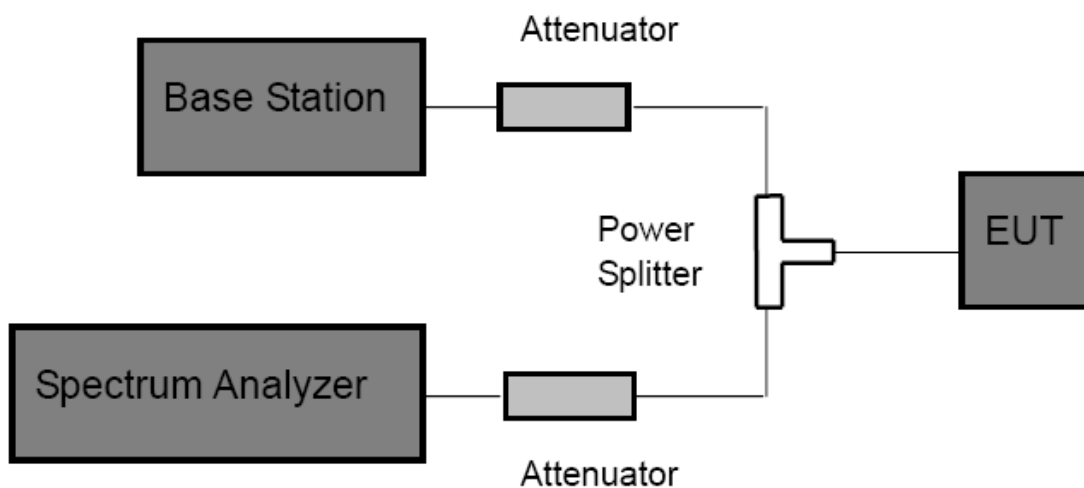
FCC Part 2: 2.1049, FCC Part 22.917(a),
FCC part 24.238(b)
FCC Part 27.53(h)
FCC Part 27.53(m)

6.1.2 Test Requirement

According to FCC section 2.1049, the occupied bandwidth is the frequency bandwidth such that below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

Occupied bandwidth is also known as 99% power and -26dBC occupied bandwidths.

6.2 Test Setup



6.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and Base station via power splitter as show in the block diagram above.
- (2) The resolution bandwidth of the Spectrum Analyzer is set to at least 1% of the occupied bandwidth. VBW= 3 times RBW.
- (3) The low, middle and the high channels are selected to perform tests respectively.
- (4) Set the frequency range of the Spectrum Analyzer suitably to capture the waveform; search peak; make a line whose value is 26dB lower than the peak; mark two points which the line intersected the waveform at; finally record the delta of the two points as the occupied bandwidth and the plot.
- (5) Set the Spectrum Analyzer Occupied bandwidth function to measure the 99% occupied bandwidth.

6.4 EUT Operating Condition

The EUT was continuously connected with the Base station and transmitting in the max power during the test.

6.5 Deviation From Test Standard

No deviation

6.6 Test Data

Please refer to the Attachment C.

7. Out of Band Emission at Antenna Terminals

7.1 Test Standard and Limit

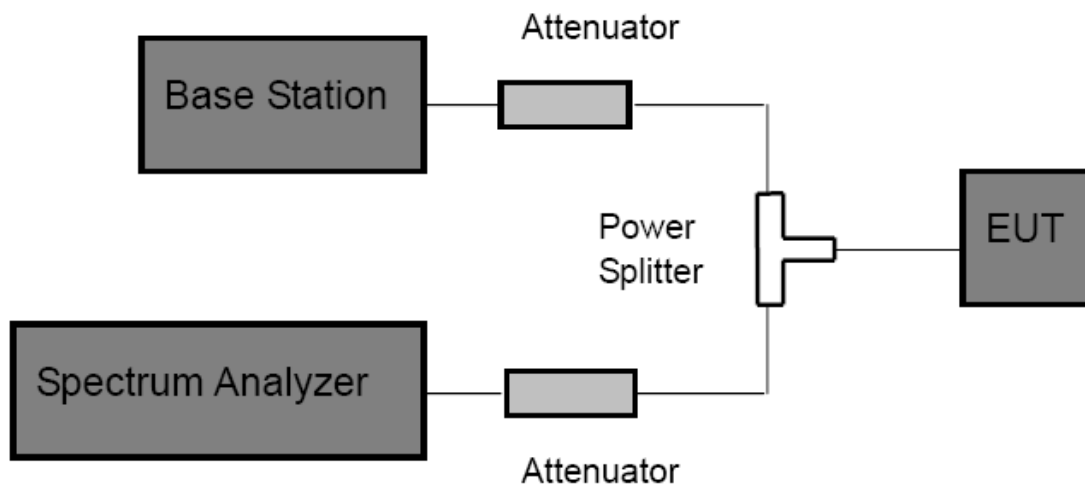
7.1.1 Test Standard

FCC Part 2: 2.1051, 2.1057
FCC Part 22.917(a), FCC part 24.238(a)
FCC Part 27.53 (h), FCC Part 27.53(m)

7.1.2 Test Limit

Band 7: For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power(P) by a factor of at least $43+10\log(P)$ dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

7.2 Test Setup



7.3 Test Procedure

- 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 100 kHz when below 1GHz, 1MHz when above 1 GHz; 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=100 kHz, VBW=300 kHz when below 1 GHz, RBW =1 MHz, VBW=3 MHz when above 1 GHz, 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.

7.4 EUT Operating Condition

The EUT was continuously connected with the Base station and transmitting in the max power during the test.

7.5 Deviation From Test Standard

No deviation

7.6 Test Data

Please refer to the Attachment D.

8. Band Edge Test

8.1 Test Standard and Limit

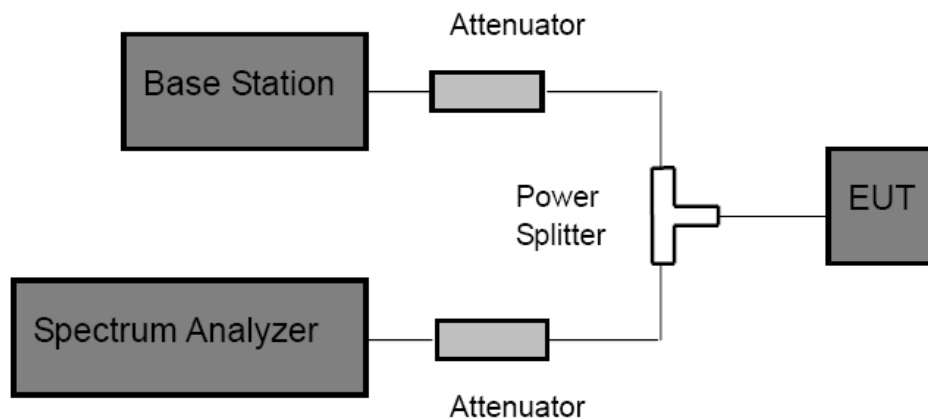
8.1.1 Test Standard

FCC Part 2: 2.1051, 2.1057
FCC Part 22.917(a), FCC part 24.238(a)
FCC Part 27.53 (h), FCC Part 27.53(m)

8.1.2 Test Limit

Band 7: For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power(P) by a factor of at least $43+10\log(P)$ dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

8.2 Test Setup



8.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and Base station via power splitter as show in the block diagram above.
- (2) 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.

8.4 EUT Operating Condition

The EUT was continuously connected with the Base station and transmitting in the max power during the test.

8.5 Deviation From Test Standard

No deviation

8.6 Test Data

Please refer to the Attachment E.

9. Radiated Output Power

9.1 Test Standard and Limit

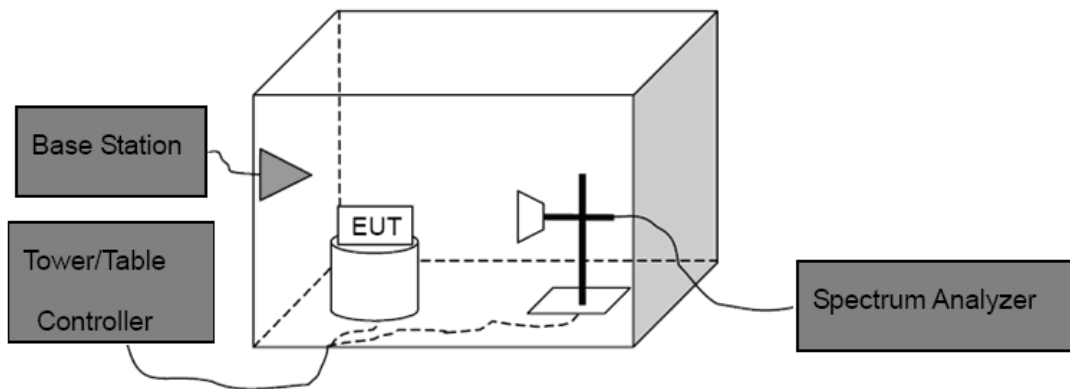
9.1.1 Test Standard

FCC Part 2.1046, FCC Part 22.913(a)(2),
FCC part 24.232(c)
FCC part 27.50(c), FCC part 27.50(d)

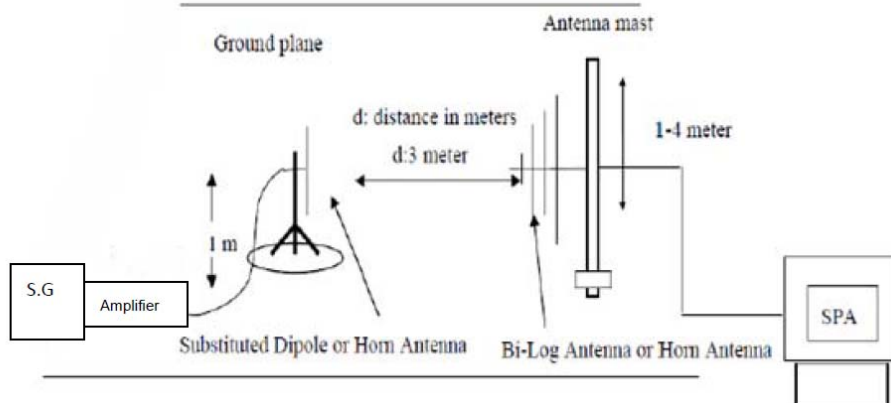
9.1.2 Test Limit

E.I.R.P	E.I.R.P	E.R.P	E.I.R.P
LTE Band 2	LTE Band 4	LTE Band 5	LTE Band 7
2W(33 dBm)	1W(30 dBm)	7W(38.45dBm)	2W(33 dBm)
E.R.P	E.I.R.P		
LTE Band 26	LTE Band 41		
7W(38.45dBm)	2W(33 dBm)		

9.2 Test Setup



Above 1G



Substituted Method

9.3 Test Procedure

- (1) The EUT was placed on a non-conductive rotating platform with 0.8 meter height in an anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer with RBW=3 MHz, VBW=3 MHz and peak detector settings.
- (2) During the measurement, the EUT was enforced in maximum power and linked with the Base Station. The highest was recorded from analyzer power level (LVT) from the 360 degrees rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations.
- (3) Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to C63.26. The EUT was replaced by dipole antenna (for frequency below 1 GHz) or Horn antenna (for frequency above 1 GHz) at same location with same polarize of receiver antenna and then a known power of each measure frequency from S.G. was applied into the dipole antenna or Horn antenna through a TX cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna.

Note: In test, the S.G Connect the Pre-amplifier(Sonoma 310N Pre-amplifier for frequency below 1 GHz, HP 8449B Pre-amplifier for frequency above 1 GHz)

Then the EUT's EIRP and ERP was calculated with the correction factor:

$ERP = S.G.Level + Antenna\ Gain\ Cord.(dBd) - Cable\ Loss(dB)$

$EIRP = S.G.Level + Antenna\ Gain\ Cord.(dBi) - Cable\ Loss(dB)$

9.4 EUT Operating Condition

The EUT was continuously connected with the Base station and transmitting in the max power during the test.

9.5 Deviation From Test Standard

No deviation

9.6 Test Data

Please refer to the Attachment F.

10. Radiated Out Band of Emissions

10.1 Test Standard and Limit

10.1.1 Test Standard

FCC Part 2: 2.1053, FCC Part 22.917(a)

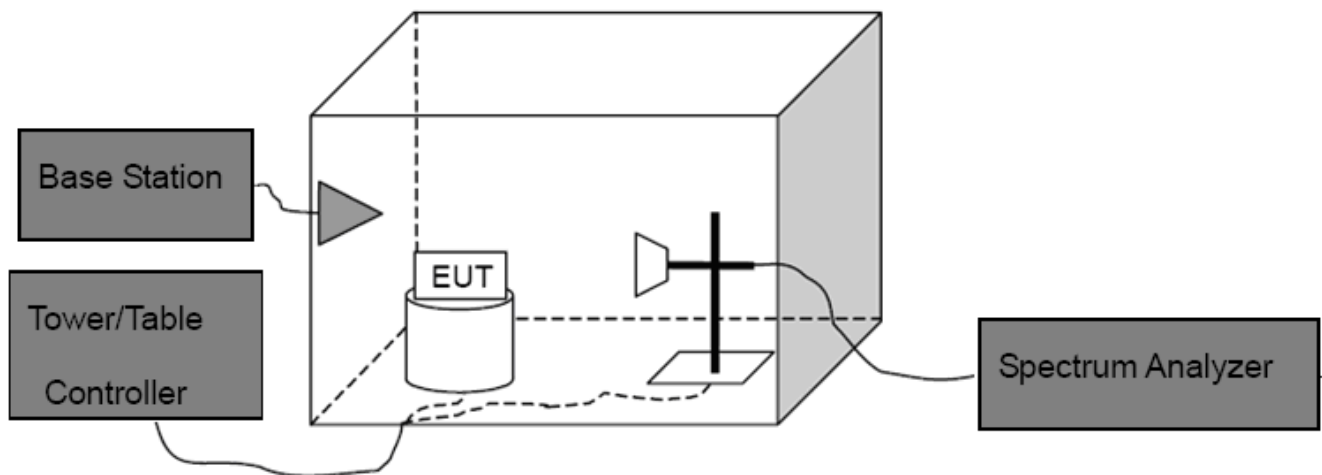
FCC part 24.238(a)

FCC Part 27.53 (h), FCC Part 27.53(m)

10.1.2 Test Limit

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power(P) by a factor of at least $43+10\log(P)$ dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

10.2 Test Setup



10.3 Test Procedure

- (1) The test system setup as show in the block diagram above.
- (2) The EUT was placed on an non-conductive rotating platform in an anechoic chamber. The radiated spurious emissions from 30MHz to 10^{th} harmonious of fundamental frequency were measured at 3 m with a test antenna and a spectrum analyzer with RBW=1 MHz, VBW=1 MHz, peak detector settings.
- (3) During the measurement, the EUT was enforced in maximum power and linked with a base station. All the spurious emissions at 3m were measured by rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations.
- (4) When found the maximum level of emissions from the EUT. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB= $10 \log(\text{TX power in Watts}/0.001)$ -the absolute level

Spurious attenuation limit in dB=43+10 log(power out in Watts)

10.4 EUT Operating Condition

The EUT was continuously connected with the Base station and transmitting in the max power during the test.

10.5 Deviation From Test Standard

No deviation

10.6 Test Data

Please refer to the Attachment G.

11. Frequency Stability

11.1 Test Standard and Limit

11.1.1 Test Standard

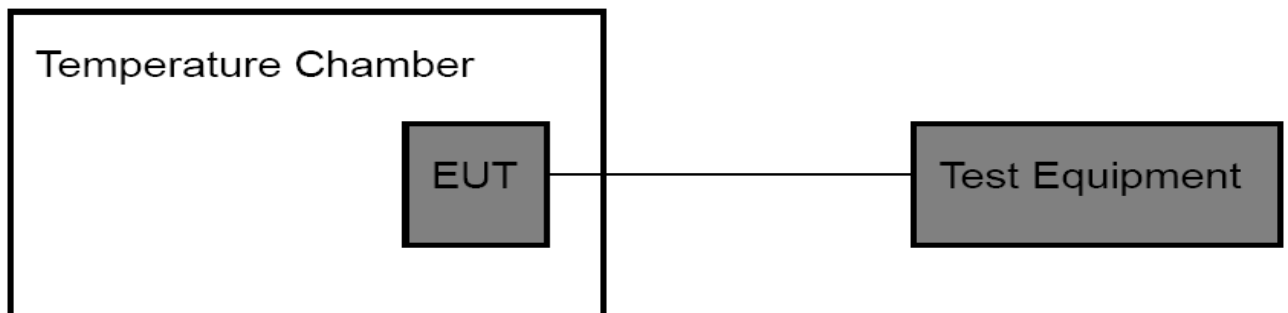
FCC Part 2.1055(a)(1)(b) FCC Part 22.355
FCC Part 24.235, Part 27.54

11.1.2 Limit

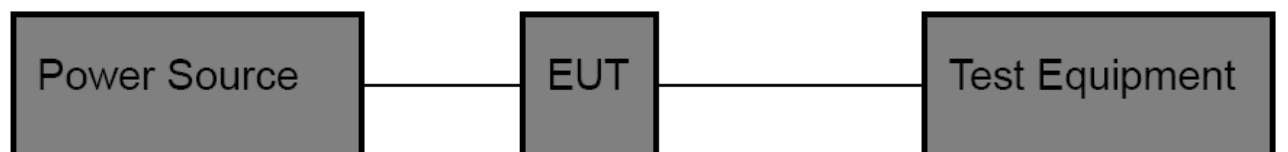
Limit
$\pm 2.5\text{ppm}$

11.2 Test Setup

For Temperature Test:



For Voltage Test:



11.3 Test Procedure

Test Procedures for Temperature Variation:

- (1) The EUT was set up in the thermal chamber and connected with the base station.
- (2) With power off, the temperature was decreased to -30°C and the EUT was stabilized for three hours. Power was applied and the maximum change in frequency was recorded within one minute.
- (3) With power off, the temperature was raised in 10°C set up to 50°C and the EUT was stabilized for three hours. Power was applied and the maximum change in frequency was recorded within one minute.
- (4) If the EUT cannot be turned on at -30°C , the testing lowest temperature will be raised in 10°C step until the EUT can be turned on.

Test Procedures for Voltage Variation:

- (1) The EUT was placed in a temperature chamber at $25 \pm 5^{\circ}\text{C}$ and connected with the base station.
- (2) Reduce the input voltage to specify extreme voltage variation (+/- 15%) and endpoint, record the maximum frequency change.
- (3) The variation in frequency was measured for the worst case.

11.4 EUT Operating Condition

The Equipment Under Test was set to Communication with the Base Station.

11.5 Deviation From Test Standard

No deviation

11.6 Test Data

Please refer to the Attachment H.

ATTACHMENT A--CONDUCTED RF OUTPUT POWER

FDD-LTE Band 2						
Channel Bandwidth: 1.4 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	23.56	23.62	23.69	PASS
	1	3	23.64	23.75	23.68	PASS
	1	5	23.65	23.71	23.67	PASS
	3	0	23.53	23.66	23.62	PASS
	3	1	23.61	23.72	23.61	PASS
	3	3	23.51	23.64	23.56	PASS
	6	0	22.51	22.75	22.58	PASS
16QAM	1	0	22.48	22.65	22.36	PASS
	1	3	22.48	22.66	22.57	PASS
	1	5	22.20	22.52	22.53	PASS
	3	0	22.58	22.75	22.53	PASS
	3	1	22.59	22.73	22.55	PASS
	3	3	22.59	22.69	22.56	PASS
	6	0	21.46	21.58	21.49	PASS
Channel Bandwidth: 3 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	23.54	23.74	23.74	PASS
	1	7	23.64	23.72	23.67	PASS
	1	14	23.47	23.63	23.53	PASS
	8	0	22.57	22.77	22.59	PASS
	8	4	22.57	22.77	22.59	PASS
	8	7	22.57	22.72	22.57	PASS
	15	0	22.60	22.79	22.60	PASS
16QAM	1	0	22.37	22.58	22.39	PASS
	1	7	22.23	22.56	22.46	PASS
	1	14	22.19	22.30	22.27	PASS
	8	0	21.40	21.59	21.53	PASS
	8	4	21.36	21.65	21.50	PASS
	8	7	21.41	21.59	21.47	PASS
	15	0	21.49	21.56	21.44	PASS

FDD-LTE Band 2						
Channel Bandwidth: 5 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	23.45	23.70	23.54	PASS
	1	12	23.87	24.08	23.77	PASS
	1	24	23.52	23.63	23.48	PASS
	12	0	22.61	22.79	22.60	PASS
	12	6	22.60	22.73	22.62	PASS
	12	11	22.60	22.71	22.58	PASS
	25	0	22.57	22.77	22.56	PASS
16QAM	1	0	22.38	22.41	22.24	PASS
	1	12	22.70	22.85	22.53	PASS
	1	24	22.38	22.46	22.23	PASS
	12	0	21.51	21.63	21.49	PASS
	12	6	21.52	21.65	21.51	PASS
	12	11	21.44	21.58	21.44	PASS
	25	0	21.48	21.60	21.48	PASS
Channel Bandwidth: 10 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	23.69	23.83	23.90	PASS
	1	24	23.80	24.01	23.83	PASS
	1	49	23.81	23.74	23.77	PASS
	25	0	22.60	22.78	22.74	PASS
	25	12	22.63	22.84	22.68	PASS
	25	24	22.61	22.73	22.60	PASS
	50	0	22.60	22.81	22.61	PASS
16QAM	1	0	22.45	22.74	22.64	PASS
	1	24	22.58	22.73	22.77	PASS
	1	49	22.31	22.70	22.35	PASS
	25	0	21.51	21.69	21.54	PASS
	25	12	21.55	21.74	21.47	PASS
	25	24	21.52	21.67	21.50	PASS
	50	0	21.47	21.69	21.50	PASS

FDD-LTE Band 2						
Channel Bandwidth: 15 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	23.78	23.72	23.62	PASS
	1	37	24.06	24.05	23.80	PASS
	1	74	23.89	23.66	23.45	PASS
	36	0	22.64	22.79	22.80	PASS
	36	16	22.68	22.79	22.75	PASS
	36	35	22.73	22.73	22.65	PASS
	75	0	22.66	22.81	22.71	PASS
16QAM	1	0	22.40	22.63	22.59	PASS
	1	37	22.65	22.99	22.64	PASS
	1	74	22.65	22.55	22.57	PASS
	36	0	21.52	21.67	21.65	PASS
	36	16	21.56	21.67	21.65	PASS
	36	35	21.67	21.64	21.49	PASS
	75	0	21.55	21.65	21.61	PASS
Channel Bandwidth: 20 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	23.49	23.86	23.77	PASS
	1	49	23.77	23.88	23.97	PASS
	1	99	23.77	23.59	23.68	PASS
	50	0	22.68	22.77	22.67	PASS
	50	24	22.75	22.78	22.73	PASS
	50	49	22.78	22.78	22.64	PASS
	100	0	22.70	22.81	22.66	PASS
16QAM	1	0	22.45	22.49	22.65	PASS
	1	49	22.72	22.87	22.83	PASS
	1	99	22.72	22.40	22.62	PASS
	50	0	21.50	21.69	21.57	PASS
	50	24	21.65	21.67	21.66	PASS
	50	49	21.65	21.69	21.49	PASS
	100	0	21.56	21.69	21.53	PASS

FDD-LTE Band 4						
Channel Bandwidth: 1.4 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	23.46	23.37	23.46	PASS
	1	3	23.56	23.45	23.65	PASS
	1	5	23.50	23.33	23.58	PASS
	3	0	23.34	23.46	23.42	PASS
	3	1	23.49	23.53	23.54	PASS
	3	3	23.39	23.45	23.51	PASS
	6	0	22.42	22.52	22.52	PASS
16QAM	1	0	22.11	22.34	22.25	PASS
	1	3	22.27	22.44	22.49	PASS
	1	5	22.09	22.18	22.37	PASS
	3	0	22.42	22.61	22.34	PASS
	3	1	22.45	22.68	22.42	PASS
	3	3	22.42	22.60	22.44	PASS
	6	0	21.29	21.37	21.48	PASS
Channel Bandwidth: 3 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	23.46	23.55	23.30	PASS
	1	7	23.46	23.46	23.33	PASS
	1	14	23.39	23.40	23.45	PASS
	8	0	22.47	22.56	22.43	PASS
	8	4	22.42	22.50	22.39	PASS
	8	7	22.43	22.42	22.39	PASS
	15	0	22.45	22.53	22.41	PASS
16QAM	1	0	22.07	22.37	22.08	PASS
	1	7	22.05	22.44	22.03	PASS
	1	14	21.97	22.34	22.33	PASS
	8	0	21.28	21.39	21.31	PASS
	8	4	21.30	21.49	21.37	PASS
	8	7	21.33	21.33	21.27	PASS
	15	0	21.28	21.48	21.25	PASS

FDD-LTE Band 4						
Channel Bandwidth: 5 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	23.30	23.45	23.28	PASS
	1	12	23.64	23.60	23.70	PASS
	1	24	23.19	23.36	23.61	PASS
	12	0	22.46	22.54	22.44	PASS
	12	6	22.47	22.56	22.45	PASS
	12	11	22.39	22.39	22.50	PASS
	25	0	22.43	22.51	22.48	PASS
16QAM	1	0	22.23	22.20	21.93	PASS
	1	12	22.35	22.57	22.36	PASS
	1	24	22.04	22.12	22.27	PASS
	12	0	21.37	21.41	21.32	PASS
	12	6	21.31	21.45	21.29	PASS
	12	11	21.30	21.39	21.36	PASS
	25	0	21.30	21.47	21.25	PASS
Channel Bandwidth: 10 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	23.51	23.54	23.45	PASS
	1	24	23.53	23.68	23.55	PASS
	1	49	23.49	23.55	23.82	PASS
	25	0	22.42	22.56	22.32	PASS
	25	12	22.38	22.52	22.39	PASS
	25	24	22.35	22.56	22.43	PASS
	50	0	22.36	22.53	22.38	PASS
16QAM	1	0	22.29	22.32	22.25	PASS
	1	24	22.13	22.48	22.21	PASS
	1	49	22.15	22.19	22.39	PASS
	25	0	21.36	21.41	21.29	PASS
	25	12	21.28	21.42	21.27	PASS
	25	24	21.24	21.38	21.35	PASS
	50	0	21.25	21.39	21.25	PASS

FDD-LTE Band 4						
Channel Bandwidth: 15 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	23.51	23.39	23.46	PASS
	1	37	23.75	23.57	23.56	PASS
	1	74	23.55	23.39	23.49	PASS
	36	0	22.29	22.51	22.31	PASS
	36	16	22.33	22.54	22.35	PASS
	36	35	22.39	22.49	22.31	PASS
	75	0	22.44	22.49	22.35	PASS
16QAM	1	0	22.20	22.30	22.50	PASS
	1	37	22.51	22.57	22.62	PASS
	1	74	22.40	22.25	22.32	PASS
	36	0	21.24	21.40	21.25	PASS
	36	16	21.26	21.45	21.25	PASS
	36	35	21.28	21.37	21.23	PASS
	75	0	21.31	21.44	21.24	PASS
Channel Bandwidth: 20 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	23.32	23.65	23.59	PASS
	1	49	23.52	23.70	23.47	PASS
	1	99	23.58	23.61	23.51	PASS
	50	0	22.34	22.57	22.63	PASS
	50	24	22.41	22.58	22.39	PASS
	50	49	22.48	22.53	22.36	PASS
	100	0	22.41	22.53	22.43	PASS
16QAM	1	0	22.34	22.46	22.60	PASS
	1	49	22.25	22.74	22.40	PASS
	1	99	22.39	22.28	22.32	PASS
	50	0	21.24	21.43	21.45	PASS
	50	24	21.31	21.44	21.26	PASS
	50	49	21.39	21.42	21.25	PASS
	100	0	21.33	21.41	21.33	PASS

FDD-LTE Band 5						
Channel Bandwidth: 1.4 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	24.35	24.24	24.22	PASS
	1	3	24.51	24.35	24.25	PASS
	1	5	24.40	24.37	24.26	PASS
	3	0	24.20	24.22	24.25	PASS
	3	1	24.24	24.23	24.26	PASS
	3	3	24.20	24.26	24.17	PASS
	6	0	23.29	23.33	23.27	PASS
16QAM	1	0	23.03	22.98	23.07	PASS
	1	3	23.11	23.05	23.22	PASS
	1	5	22.89	23.03	23.15	PASS
	3	0	23.28	23.21	23.21	PASS
	3	1	23.34	23.37	23.42	PASS
	3	3	23.27	23.16	23.23	PASS
	6	0	22.17	22.09	22.21	PASS
Channel Bandwidth: 3 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	24.24	24.28	24.37	PASS
	1	7	24.29	24.26	24.23	PASS
	1	14	24.20	24.26	24.24	PASS
	8	0	23.29	23.25	23.30	PASS
	8	4	23.30	23.26	23.32	PASS
	8	7	23.27	23.25	23.27	PASS
	15	0	23.30	23.28	23.27	PASS
16QAM	1	0	22.91	23.02	23.00	PASS
	1	7	22.95	23.05	22.89	PASS
	1	14	23.05	23.04	22.90	PASS
	8	0	22.27	22.17	22.22	PASS
	8	4	22.21	22.13	22.27	PASS
	8	7	22.22	22.19	22.20	PASS
	15	0	22.22	22.16	22.17	PASS

FDD-LTE Band 5						
Channel Bandwidth: 5 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	24.16	24.15	24.28	PASS
	1	12	24.49	24.57	24.44	PASS
	1	24	24.14	24.15	24.11	PASS
	12	0	23.24	23.28	23.24	PASS
	12	6	23.21	23.32	23.24	PASS
	12	11	23.11	23.24	23.20	PASS
	25	0	23.23	23.22	23.29	PASS
16QAM	1	0	22.96	22.84	22.97	PASS
	1	12	23.21	23.16	23.09	PASS
	1	24	22.96	22.72	22.78	PASS
	12	0	22.08	22.10	22.11	PASS
	12	6	22.08	22.16	22.20	PASS
	12	11	22.10	22.09	22.13	PASS
	25	0	22.20	22.14	22.15	PASS
Channel Bandwidth: 10 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	24.36	24.23	24.41	PASS
	1	24	24.46	24.37	24.58	PASS
	1	49	24.23	24.35	24.36	PASS
	25	0	23.25	23.29	23.28	PASS
	25	12	23.30	23.28	23.28	PASS
	25	24	23.22	23.27	23.27	PASS
	50	0	23.24	23.28	23.26	PASS
16QAM	1	0	22.90	23.08	23.09	PASS
	1	24	23.18	23.09	23.26	PASS
	1	49	22.61	23.12	22.93	PASS
	25	0	22.23	22.20	22.12	PASS
	25	12	22.16	22.17	22.16	PASS
	25	24	22.16	22.21	22.16	PASS
	50	0	22.18	22.21	22.16	PASS

FDD-LTE Band 7						
Channel Bandwidth: 5 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	23.82	23.59	23.55	PASS
	1	12	24.09	23.77	23.78	PASS
	1	24	23.64	23.50	23.62	PASS
	12	0	22.85	22.57	22.42	PASS
	12	6	22.92	22.62	22.41	PASS
	12	11	22.65	22.56	22.34	PASS
	25	0	22.78	22.54	22.45	PASS
16QAM	1	0	22.79	22.36	22.27	PASS
	1	12	22.80	22.69	22.49	PASS
	1	24	22.42	22.21	22.12	PASS
	12	0	21.80	21.50	21.51	PASS
	12	6	21.75	21.45	21.56	PASS
	12	11	21.75	21.49	21.42	PASS
	25	0	21.75	21.59	21.51	PASS
Channel Bandwidth: 10 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	23.91	23.74	23.81	PASS
	1	24	23.91	23.78	23.69	PASS
	1	49	23.72	23.59	23.59	PASS
	25	0	22.82	22.53	22.66	PASS
	25	12	22.75	22.54	22.41	PASS
	25	24	22.62	22.49	22.48	PASS
	50	0	22.64	22.54	22.51	PASS
16QAM	1	0	22.55	22.45	22.30	PASS
	1	24	22.53	22.46	22.40	PASS
	1	49	22.38	22.36	22.33	PASS
	25	0	21.71	21.53	21.68	PASS
	25	12	21.73	21.55	21.48	PASS
	25	24	21.66	21.52	21.53	PASS
	50	0	21.67	21.50	21.43	PASS

FDD-LTE Band 7						
Channel Bandwidth: 15 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	23.83	23.49	23.63	PASS
	1	37	24.01	23.74	23.78	PASS
	1	74	23.83	23.52	23.50	PASS
	36	0	22.60	22.51	22.47	PASS
	36	16	22.64	22.49	22.42	PASS
	36	35	22.62	22.48	22.47	PASS
	75	0	22.62	22.50	22.55	PASS
16QAM	1	0	22.53	22.48	22.29	PASS
	1	37	22.61	22.66	22.72	PASS
	1	74	22.53	22.41	22.34	PASS
	36	0	21.60	21.50	21.47	PASS
	36	16	21.61	21.49	21.45	PASS
	36	35	21.59	21.47	21.38	PASS
	75	0	21.60	21.50	21.53	PASS
Channel Bandwidth: 20 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	23.57	23.68	23.41	PASS
	1	49	23.60	23.74	23.63	PASS
	1	99	23.48	23.58	23.37	PASS
	50	0	22.67	22.45	22.44	PASS
	50	24	22.66	22.45	22.48	PASS
	50	49	22.57	22.37	22.43	PASS
	100	0	22.55	22.46	22.51	PASS
16QAM	1	0	22.51	22.38	22.30	PASS
	1	49	22.65	22.60	22.49	PASS
	1	99	22.47	22.29	22.44	PASS
	50	0	21.54	21.42	21.49	PASS
	50	24	21.45	21.40	21.45	PASS
	50	49	21.60	21.40	21.47	PASS
	100	0	21.56	21.41	21.53	PASS

FDD-LTE Band 26						
Channel Bandwidth: 1.4 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	24.11	24.04	23.82	PASS
	1	3	24.10	24.05	23.92	PASS
	1	5	24.00	24.08	23.86	PASS
	3	0	23.84	23.99	23.96	PASS
	3	1	23.97	24.05	23.92	PASS
	3	3	23.98	23.92	23.92	PASS
	6	0	23.01	23.00	23.03	PASS
16QAM	1	0	22.73	22.93	22.83	PASS
	1	3	22.79	22.94	22.92	PASS
	1	5	22.78	22.94	22.88	PASS
	3	0	23.09	22.93	22.92	PASS
	3	1	23.05	23.08	22.98	PASS
	3	3	22.92	23.04	22.88	PASS
	6	0	21.98	22.03	22.03	PASS
Channel Bandwidth: 3 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	23.97	24.01	23.97	PASS
	1	7	23.97	23.98	23.97	PASS
	1	14	23.94	23.94	23.99	PASS
	8	0	23.01	23.06	23.04	PASS
	8	4	22.99	23.04	22.97	PASS
	8	7	23.00	23.04	22.92	PASS
	15	0	22.98	23.04	23.01	PASS
16QAM	1	0	22.72	23.02	22.81	PASS
	1	7	22.71	23.01	22.57	PASS
	1	14	22.74	22.93	22.61	PASS
	8	0	22.02	21.94	22.09	PASS
	8	4	21.93	22.06	21.86	PASS
	8	7	21.86	21.97	21.92	PASS
	15	0	21.97	22.00	21.96	PASS

FDD-LTE Band 26						
Channel Bandwidth: 5 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	23.91	24.05	23.87	PASS
	1	12	24.24	24.37	24.24	PASS
	1	24	23.85	23.87	23.81	PASS
	12	0	22.99	23.08	22.98	PASS
	12	6	23.05	23.11	22.97	PASS
	12	11	22.98	22.97	22.97	PASS
	25	0	23.06	23.06	23.01	PASS
16QAM	1	0	22.82	23.07	22.64	PASS
	1	12	22.99	23.20	23.08	PASS
	1	24	22.69	22.73	22.54	PASS
	12	0	21.95	21.97	21.91	PASS
	12	6	21.97	22.02	21.91	PASS
	12	11	21.93	21.92	21.87	PASS
	25	0	22.00	21.97	21.97	PASS
Channel Bandwidth: 10 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	24.06	24.14	24.26	PASS
	1	24	24.39	24.19	24.16	PASS
	1	49	24.23	23.85	23.92	PASS
	25	0	23.05	23.11	22.89	PASS
	25	12	23.17	23.09	22.90	PASS
	25	24	23.18	23.02	22.99	PASS
	50	0	23.16	23.04	22.99	PASS
16QAM	1	0	22.98	23.05	22.86	PASS
	1	24	22.95	23.08	22.99	PASS
	1	49	22.79	22.62	22.52	PASS
	25	0	22.00	21.97	21.83	PASS
	25	12	22.11	21.93	21.89	PASS
	25	24	22.10	21.98	21.85	PASS
	50	0	22.13	22.03	21.83	PASS

FDD-LTE Band 26						
Channel Bandwidth: 15 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	24.17	24.07	23.87	PASS
	1	37	24.37	24.34	24.15	PASS
	1	74	24.23	23.86	23.77	PASS
	36	0	23.11	22.97	22.88	PASS
	36	16	23.20	22.97	22.92	PASS
	36	35	23.03	22.93	22.89	PASS
	75	0	23.01	22.90	22.85	PASS
16QAM	1	0	22.82	22.91	22.71	PASS
	1	37	22.99	22.93	23.13	PASS
	1	74	22.57	22.69	22.72	PASS
	36	0	22.08	21.99	21.88	PASS
	36	16	22.02	21.96	21.85	PASS
	36	35	21.97	21.88	21.83	PASS
	75	0	22.04	21.96	21.86	PASS

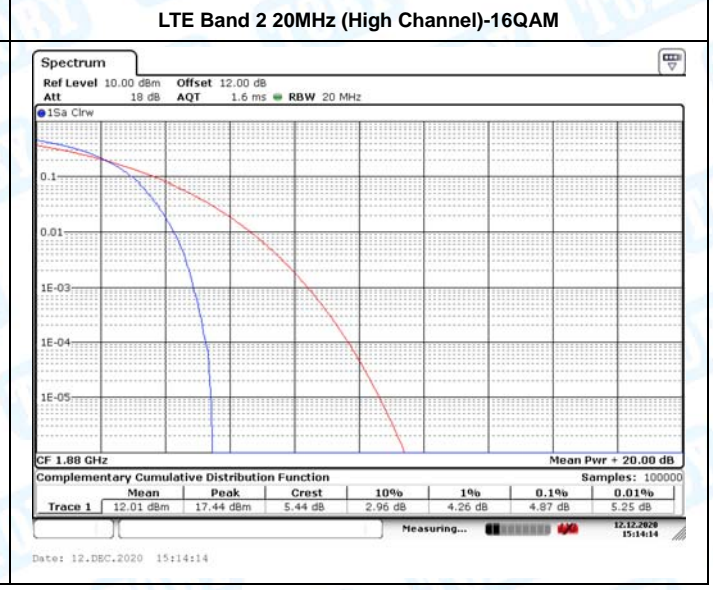
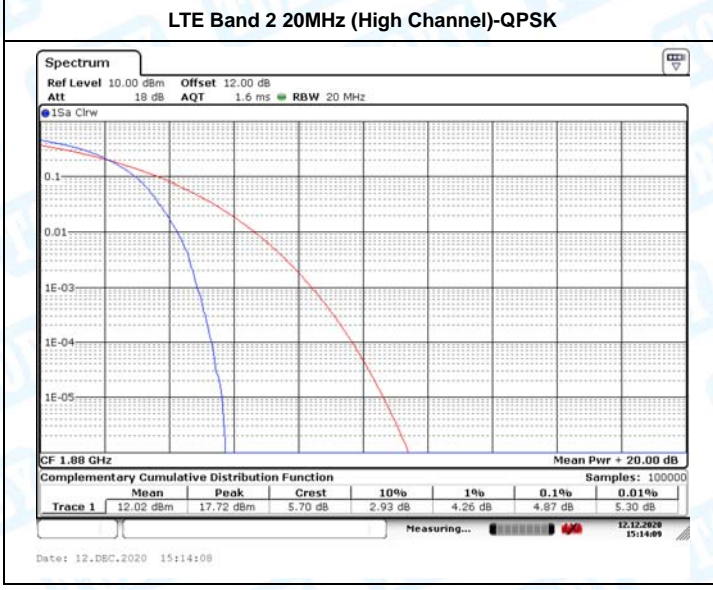
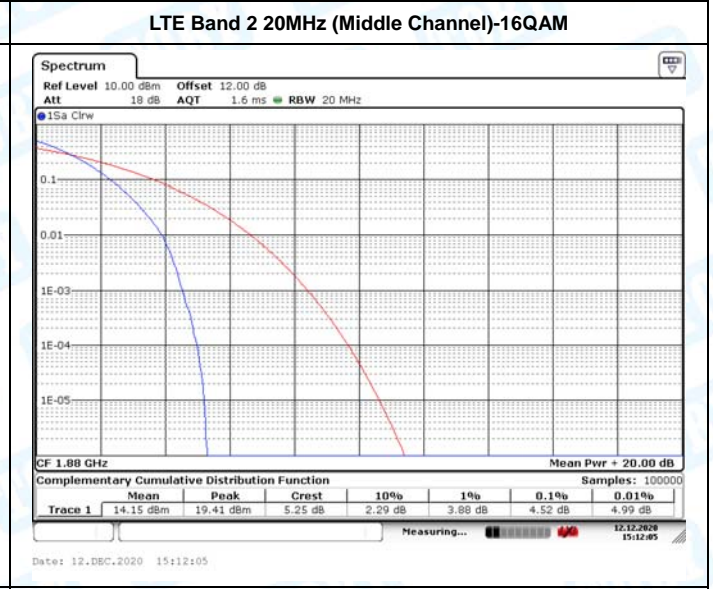
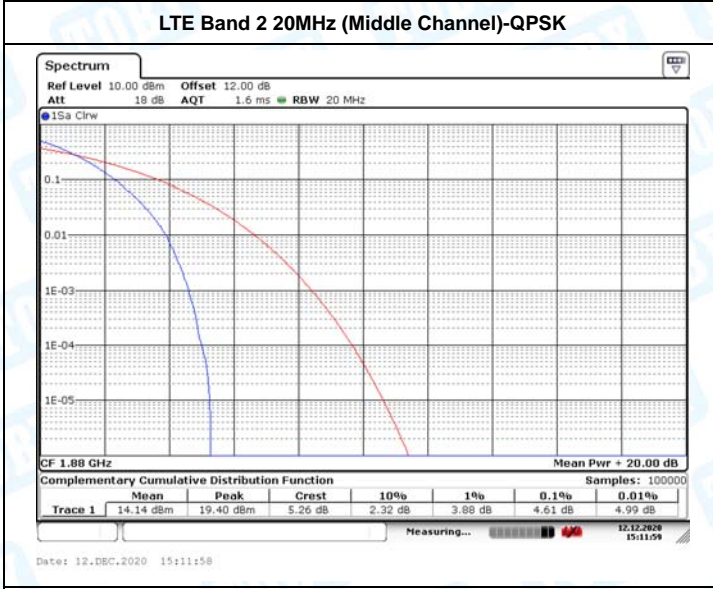
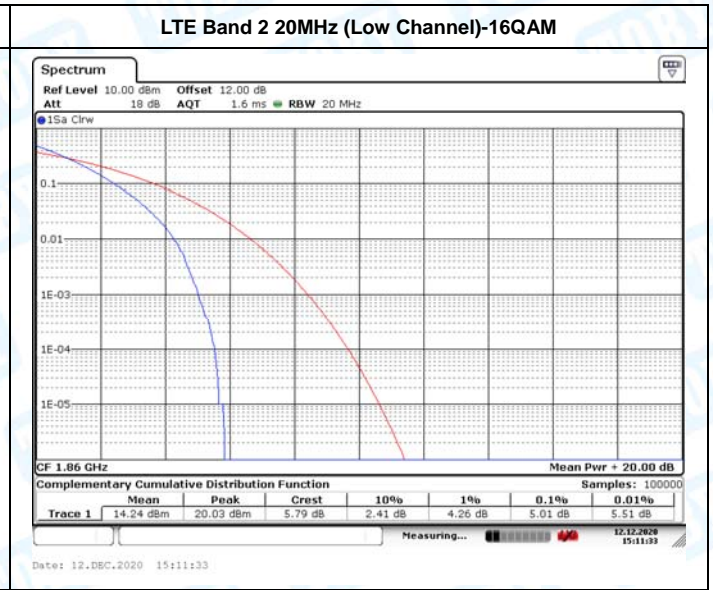
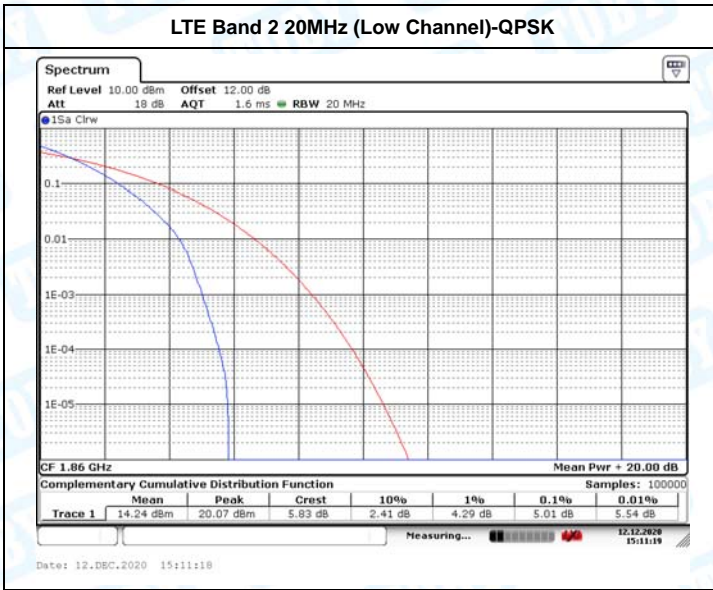
FDD-LTE Band 41						
Channel Bandwidth: 5 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	22.62	22.86	22.96	PASS
	1	12	23.28	23.28	23.41	PASS
	1	24	22.74	22.86	22.90	PASS
	12	0	21.71	22.03	22.17	PASS
	12	6	21.83	22.06	21.98	PASS
	12	11	21.81	22.01	21.80	PASS
	25	0	21.85	22.12	22.00	PASS
16QAM	1	0	21.27	21.86	21.97	PASS
	1	12	21.92	22.34	22.01	PASS
	1	24	21.58	21.83	21.76	PASS
	12	0	20.68	21.07	21.13	PASS
	12	6	20.78	21.08	21.04	PASS
	12	11	20.78	21.00	21.05	PASS
	25	0	20.75	21.09	21.05	PASS
Channel Bandwidth: 10 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	22.76	22.97	23.11	PASS
	1	24	23.08	23.17	23.17	PASS
	1	49	23.08	23.01	22.98	PASS
	25	0	21.88	22.14	22.01	PASS
	25	12	21.93	22.05	22.02	PASS
	25	24	21.98	22.20	22.17	PASS
	50	0	21.90	22.14	22.08	PASS
16QAM	1	0	21.38	22.07	22.05	PASS
	1	24	21.62	22.22	22.11	PASS
	1	49	21.70	22.05	21.79	PASS
	25	0	20.85	21.03	21.07	PASS
	25	12	20.89	21.13	21.09	PASS
	25	24	20.93	21.13	21.07	PASS
	50	0	20.85	21.12	21.17	PASS

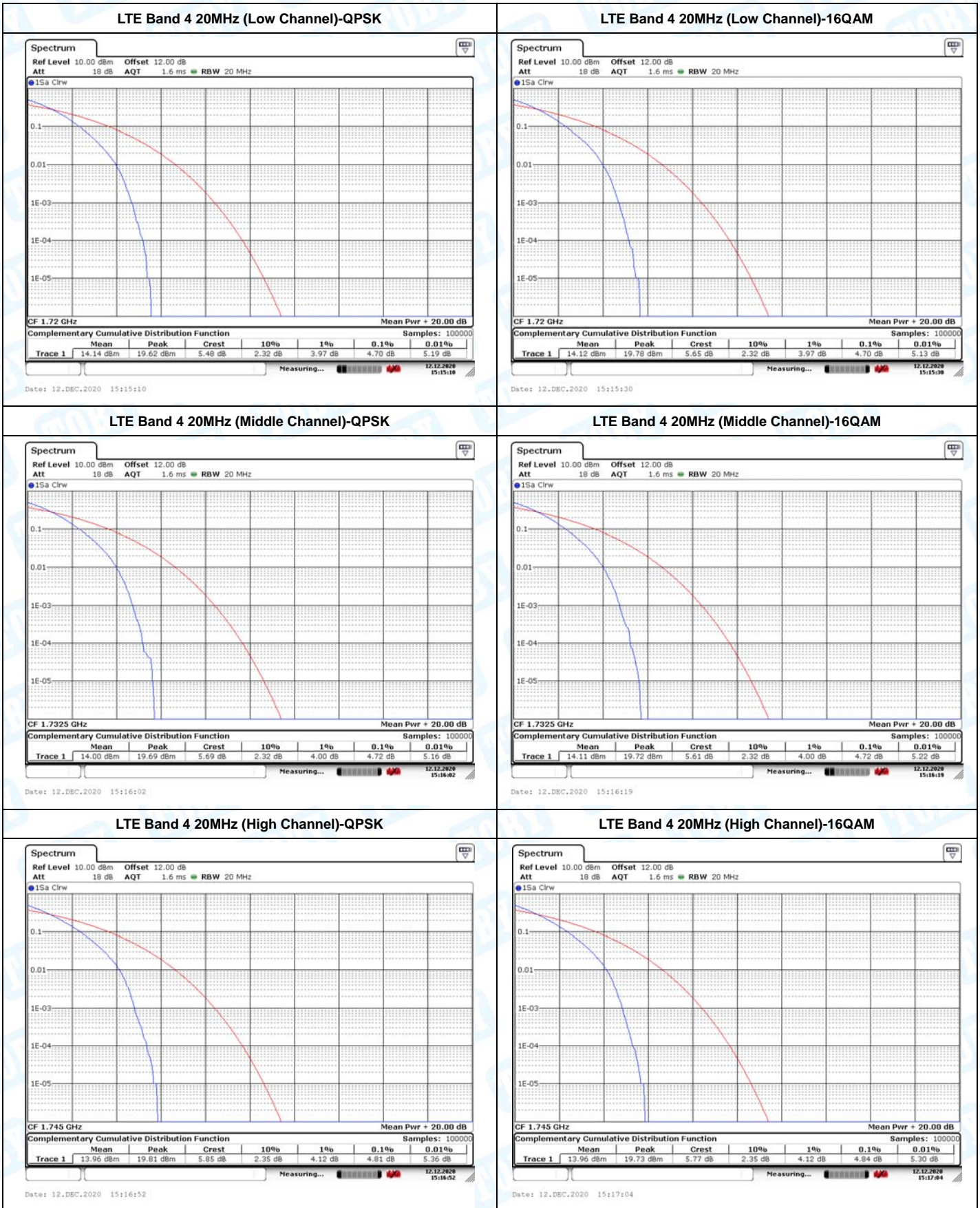
FDD-LTE Band 41						
Channel Bandwidth: 15 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	22.74	23.04	23.11	PASS
	1	37	23.04	23.23	23.46	PASS
	1	74	23.13	23.00	22.99	PASS
	36	0	21.74	22.11	22.12	PASS
	36	16	21.87	22.14	21.97	PASS
	36	35	22.00	22.08	22.03	PASS
	75	0	21.87	22.11	22.01	PASS
16QAM	1	0	21.17	22.03	22.05	PASS
	1	37	21.68	22.40	22.18	PASS
	1	74	21.60	22.09	21.74	PASS
	36	0	20.69	20.99	21.13	PASS
	36	16	20.85	21.13	21.02	PASS
	36	35	20.96	21.21	21.08	PASS
	75	0	20.83	21.19	21.19	PASS
Channel Bandwidth: 20 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	22.45	23.00	23.13	PASS
	1	49	22.90	23.28	23.40	PASS
	1	99	22.87	23.02	22.97	PASS
	50	0	21.76	22.13	22.00	PASS
	50	24	21.98	22.12	22.08	PASS
	50	49	22.03	22.00	22.01	PASS
	100	0	21.93	22.23	22.07	PASS
16QAM	1	0	21.40	22.07	21.97	PASS
	1	49	21.92	22.25	22.29	PASS
	1	99	21.66	21.93	21.85	PASS
	50	0	20.73	20.92	21.11	PASS
	50	24	21.02	21.12	21.12	PASS
	50	49	21.06	21.09	21.01	PASS
	100	0	20.90	21.30	21.08	PASS

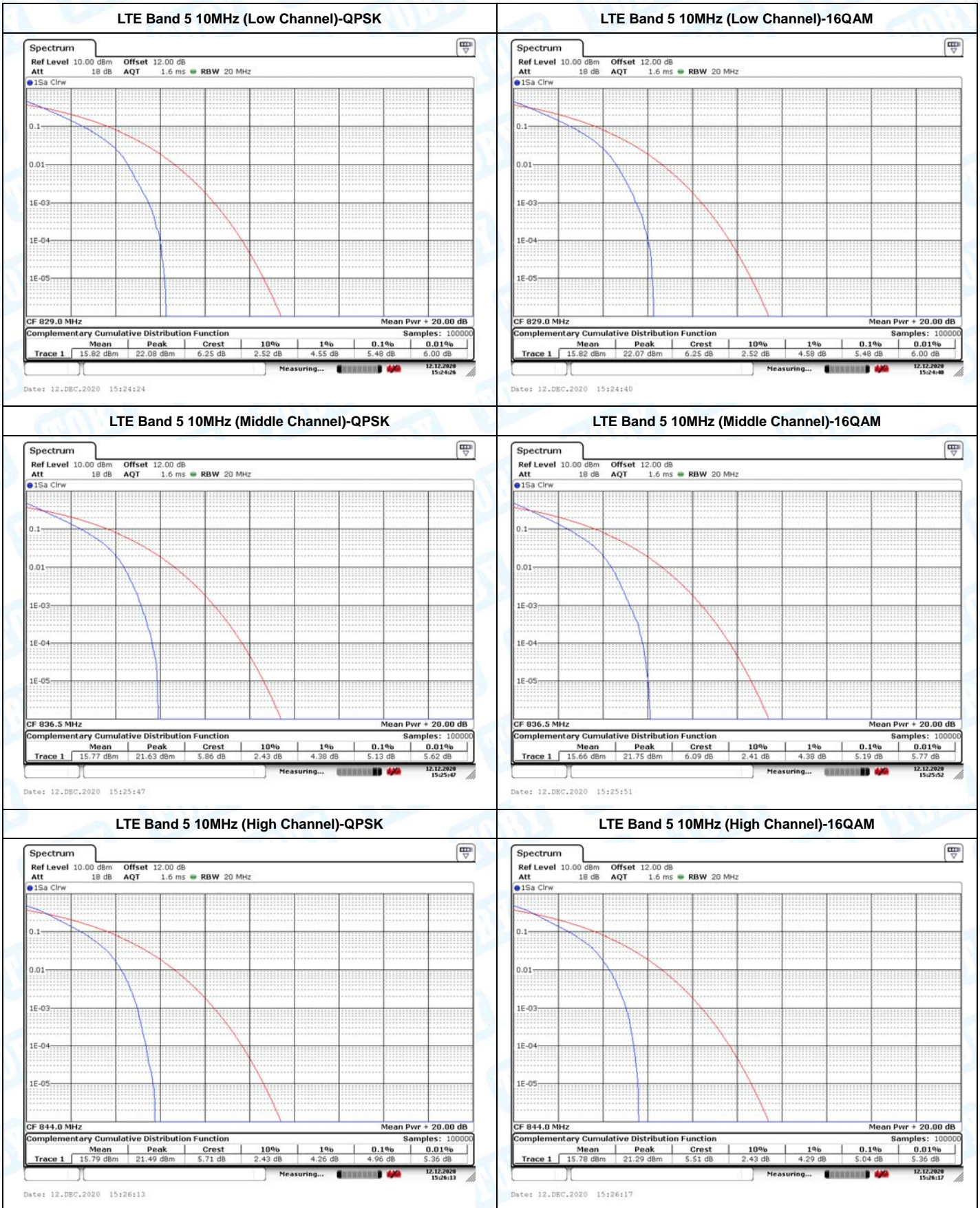
ATTACHMENT B--PEAK-AVERAGE RATIO

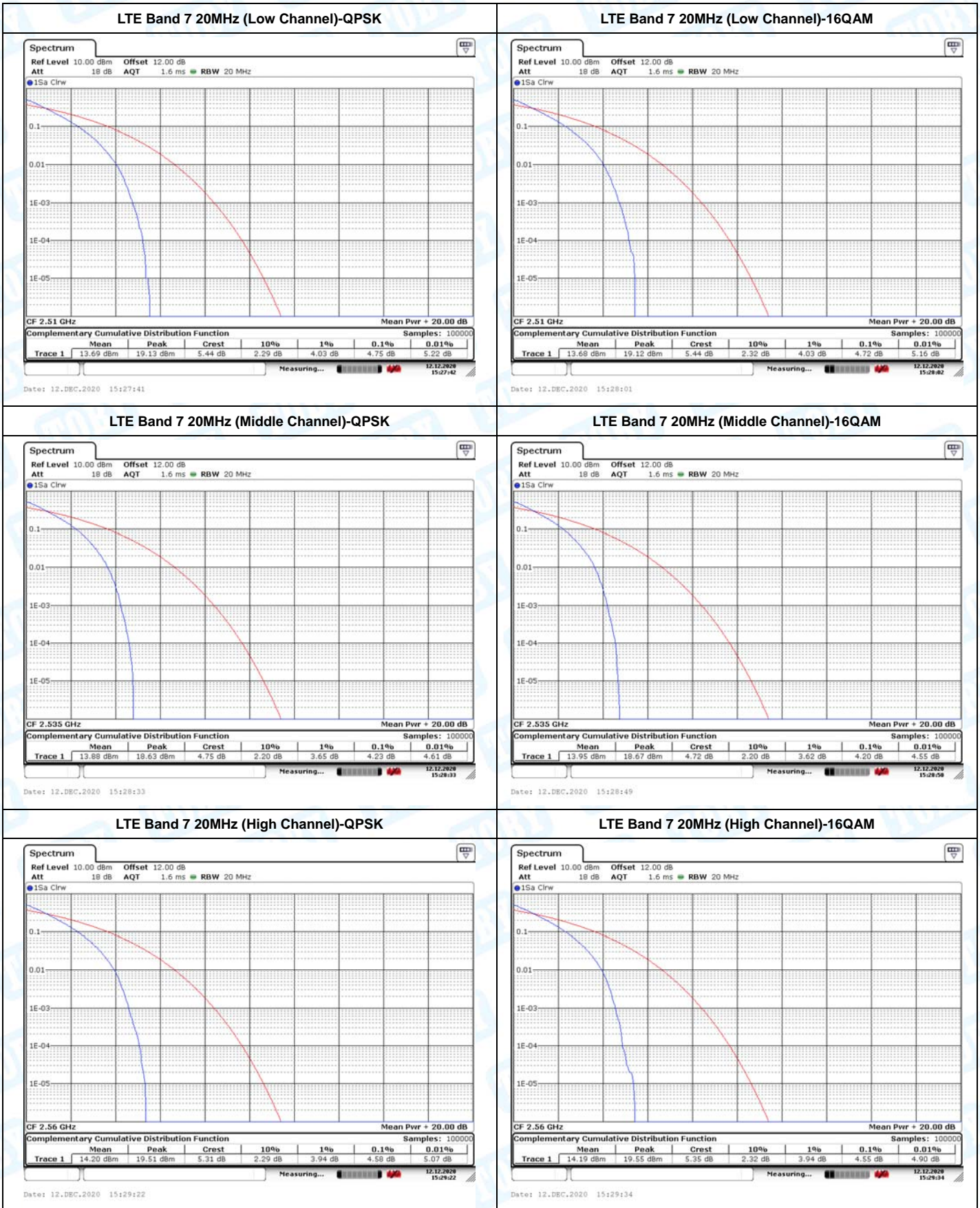
Test Mode	Modulation	RB Size	RB Offset	PAPR with 0.1% probability (dB)	Limit (dB)	Result
LTE BAND 2 20MHz (Low Channel)	QPSK	100	0	5.01	≤13	PASS
	16QAM	100	0	5.01	≤13	PASS
LTE BAND 2 20MHz (Middle Channel)	QPSK	100	0	4.61	≤13	PASS
	16QAM	100	0	4.52	≤13	PASS
LTE BAND 2 20MHz (High Channel)	QPSK	100	0	4.87	≤13	PASS
	16QAM	100	0	4.87	≤13	PASS
LTE BAND 4 20MHz (Low Channel)	QPSK	100	0	4.70	≤13	PASS
	16QAM	100	0	4.70	≤13	PASS
LTE BAND 4 20MHz (Middle Channel)	QPSK	100	0	4.72	≤13	PASS
	16QAM	100	0	4.72	≤13	PASS
LTE BAND 4 20MHz (High Channel)	QPSK	100	0	4.81	≤13	PASS
	16QAM	100	0	4.84	≤13	PASS
LTE BAND 5 10MHz (Low Channel)	QPSK	50	0	5.48	≤13	PASS
	16QAM	50	0	5.48	≤13	PASS
LTE BAND 5 10MHz (Middle Channel)	QPSK	50	0	5.13	≤13	PASS
	16QAM	50	0	5.19	≤13	PASS
LTE BAND 5 10MHz (High Channel)	QPSK	50	0	4.96	≤13	PASS
	16QAM	50	0	5.04	≤13	PASS
LTE BAND 7 20MHz (Low Channel)	QPSK	100	0	4.75	≤13	PASS
	16QAM	100	0	4.72	≤13	PASS
LTE BAND 7 20MHz (Middle Channel)	QPSK	100	0	4.23	≤13	PASS
	16QAM	100	0	4.20	≤13	PASS
LTE BAND 7 20MHz (High Channel)	QPSK	100	0	4.58	≤13	PASS
	16QAM	100	0	4.55	≤13	PASS
LTE BAND 26 15MHz (Low Channel)	QPSK	75	0	5.16	≤13	PASS
	16QAM	75	0	5.16	≤13	PASS
LTE BAND 26 15MHz (Middle Channel)	QPSK	75	0	5.13	≤13	PASS
	16QAM	75	0	5.13	≤13	PASS
LTE BAND 26 15MHz (High Channel)	QPSK	75	0	5.13	≤13	PASS
	16QAM	75	0	5.10	≤13	PASS
LTE BAND 41 20MHz (Low Channel)	QPSK	100	0	4.54	≤13	PASS
	16QAM	100	0	4.99	≤13	PASS
LTE BAND 41 20MHz (Middle Channel)	QPSK	100	0	4.75	≤13	PASS
	16QAM	100	0	5.04	≤13	PASS
LTE BAND 41 20MHz (High Channel)	QPSK	100	0	4.90	≤13	PASS
	16QAM	100	0	4.75	≤13	PASS

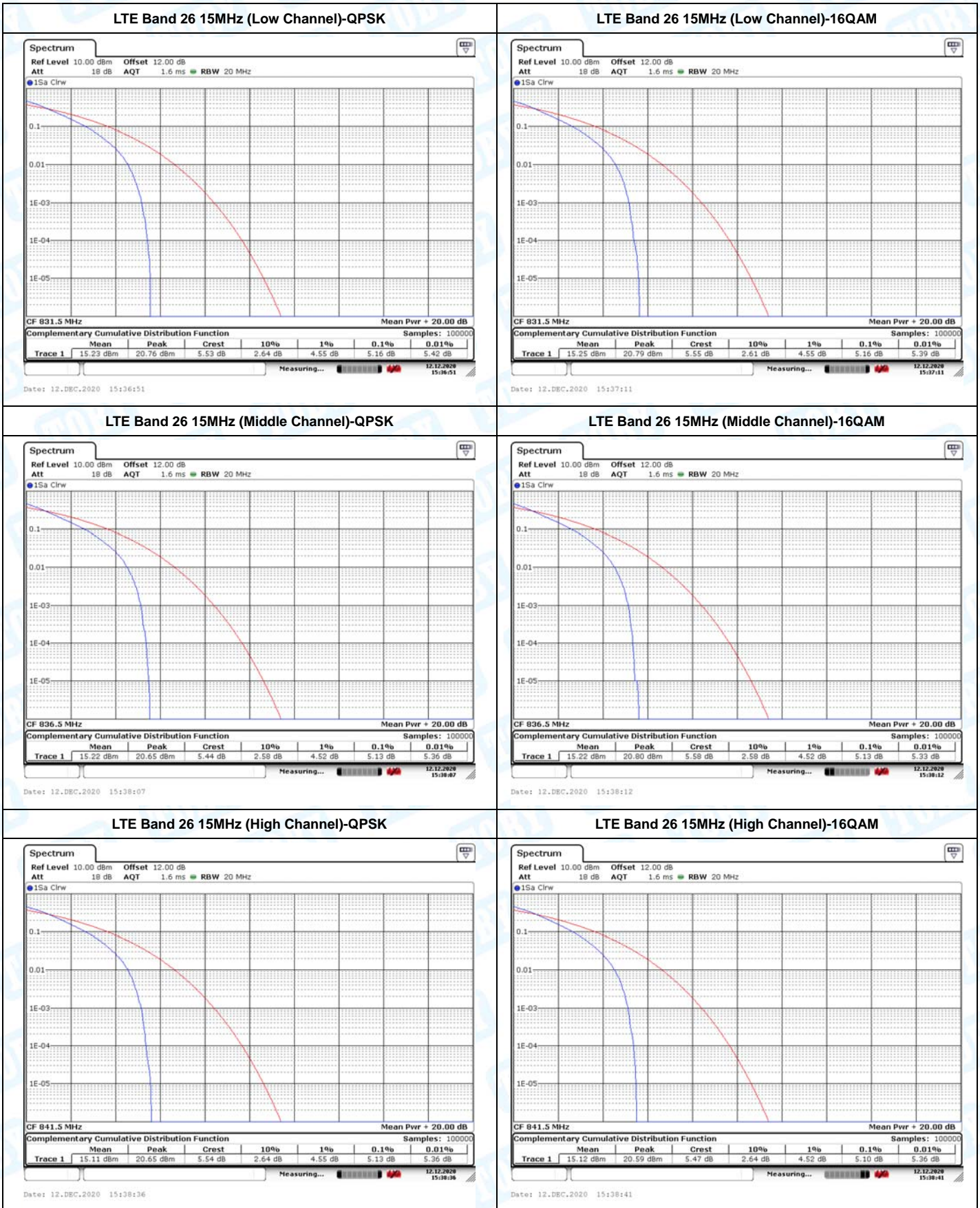
Note: Only show the worst case data.

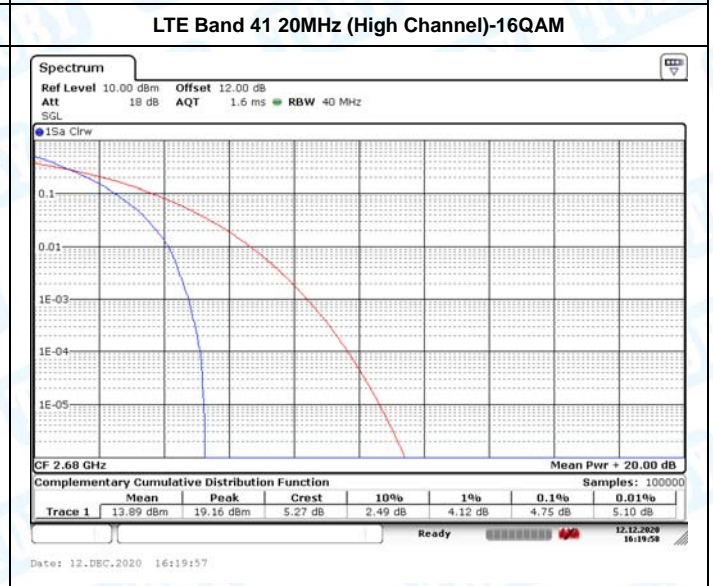
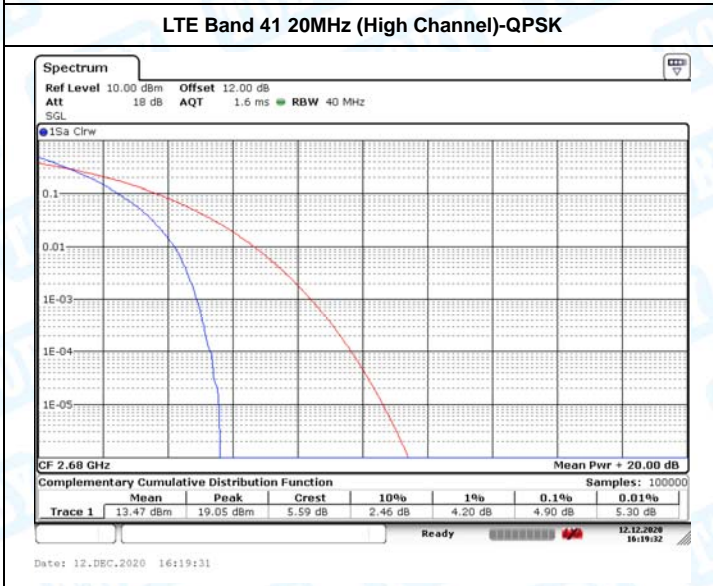
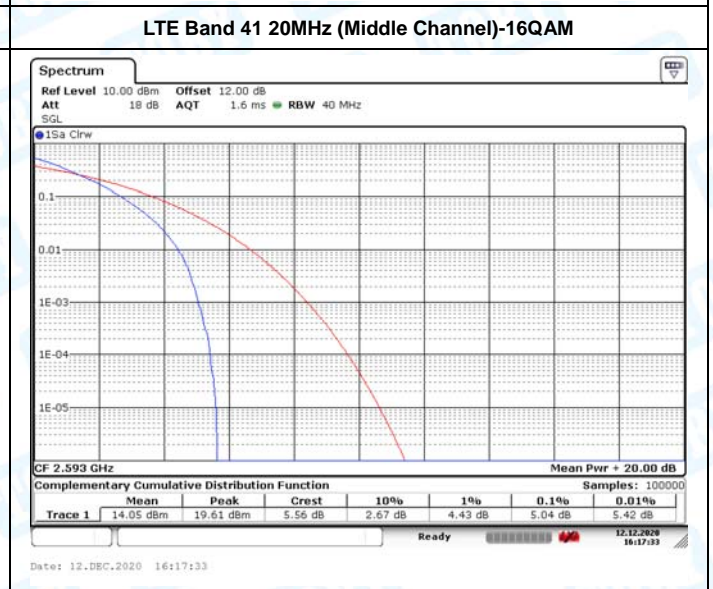
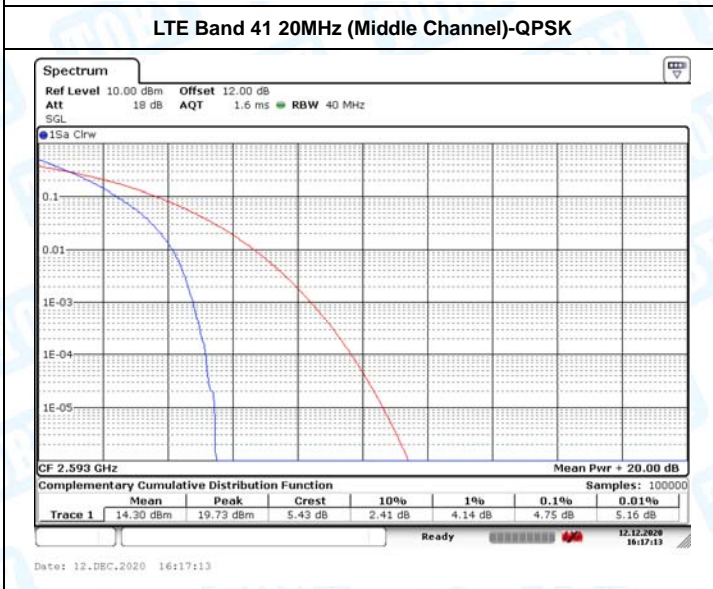
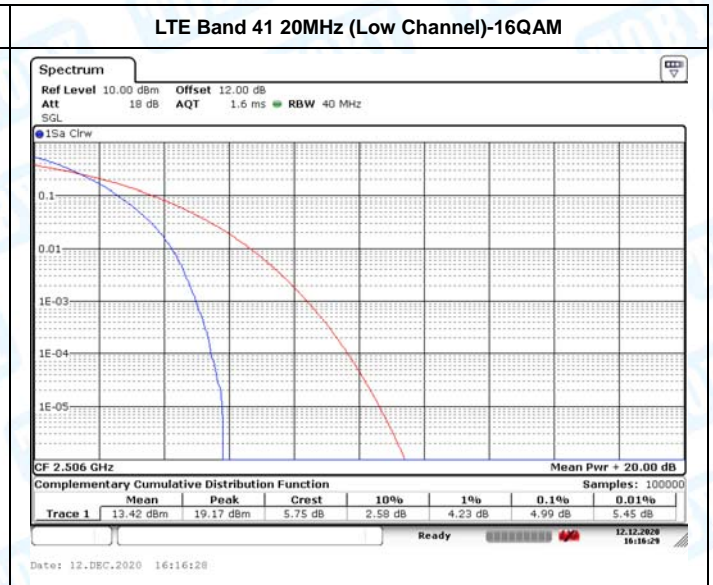
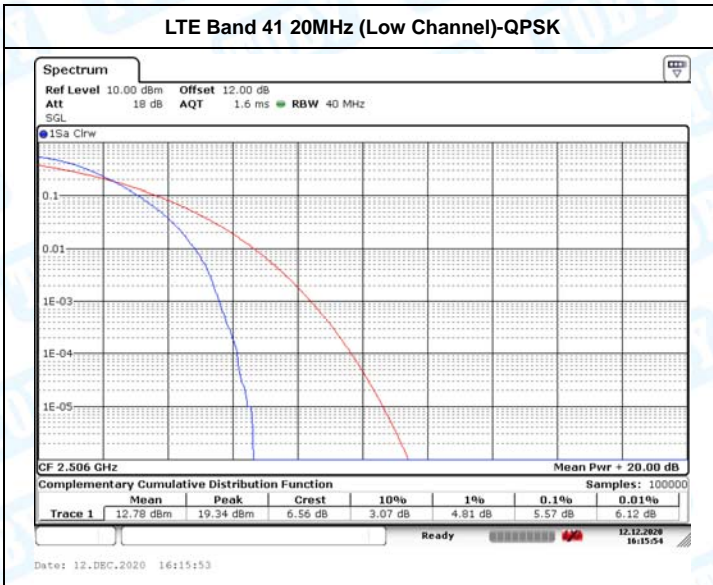












ATTACHMENT C--OCCUPY BANDWIDTH

LTE Band 2					
Mode	Channel	Frequency (MHz)	Modulation	99% OBW (MHz)	-26dB Bandwidth (MHz)
1.4MHz	18607	1850.70	QPSK	1.0909	1.283
			16QAM	1.0913	1.283
	18900	1880.00	QPSK	1.0980	1.313
			16QAM	1.0984	1.274
	19193	1909.30	QPSK	1.0944	1.295
			16QAM	1.0937	1.299
3MHz	18615	1851.50	QPSK	2.6752	2.955
			16QAM	2.6832	2.884
	18900	1880.00	QPSK	2.6788	2.904
			16QAM	2.6777	2.956
	19185	1908.50	QPSK	2.6637	2.944
			16QAM	2.6732	2.904
5MHz	18625	1852.50	QPSK	4.4755	4.950
			16QAM	4.4840	4.920
	18900	1880.00	QPSK	4.5003	5.020
			16QAM	4.5038	5.019
	19175	1907.50	QPSK	4.4932	4.956
			16QAM	4.5112	4.979
10MHz	18650	1855.00	QPSK	8.9289	9.557
			16QAM	8.9417	9.575
	18900	1880.00	QPSK	8.9158	9.585
			16QAM	8.9416	9.670
	19150	1905.00	QPSK	8.9304	9.528
			16QAM	8.9169	9.615
15MHz	18675	1857.50	QPSK	13.3817	14.709
			16QAM	13.3888	14.569
	18900	1880.00	QPSK	13.4172	14.822
			16QAM	13.4004	14.589
	19125	1902.50	QPSK	13.3868	14.826
			16QAM	13.4021	14.578
20MHz	18700	1860.00	QPSK	18.4610	21.252
			16QAM	18.4800	21.031
	18900	1880.00	QPSK	18.3626	21.470
			16QAM	18.4290	21.212
	19100	1900.00	QPSK	18.3906	21.259
			16QAM	18.3886	20.879

LTE Band 4					
Mode	Channel	Frequency (MHz)	Modulation	99% OBW (MHz)	-26dB Bandwidth (MHz)
1.4MHz	19957	1710.70	QPSK	1.0907	1.299
			16QAM	1.0853	1.269
	20175	1732.50	QPSK	1.0947	1.288
			16QAM	1.0864	1.308
	20393	1754.30	QPSK	1.0977	1.263
			16QAM	1.0863	1.306
3MHz	19965	1711.50	QPSK	2.6565	2.903
			16QAM	2.6725	2.897
	20175	1732.50	QPSK	2.6766	2.914
			16QAM	2.6634	2.901
	20385	1753.50	QPSK	2.6771	2.932
			16QAM	2.6815	2.921
5MHz	19975	1712.50	QPSK	4.4747	4.960
			16QAM	4.4913	4.970
	20175	1732.50	QPSK	4.4853	4.955
			16QAM	4.4980	4.952
	20375	1752.50	QPSK	4.5053	5.003
			16QAM	4.4915	5.033
10MHz	20000	1715.00	QPSK	8.9116	9.501
			16QAM	8.8766	9.437
	20175	1732.50	QPSK	8.9198	9.590
			16QAM	8.8238	9.567
	20350	1750.00	QPSK	8.9129	9.767
			16QAM	8.8843	9.736
15MHz	20025	1717.50	QPSK	13.3938	14.502
			16QAM	13.3564	14.643
	20175	1732.50	QPSK	13.4250	14.599
			16QAM	13.3923	14.604
	20325	1747.50	QPSK	13.3930	14.622
			16QAM	13.4342	14.760
20MHz	20050	1720.00	QPSK	18.3502	21.068
			16QAM	18.4462	21.026
	20175	1732.50	QPSK	18.4467	21.010
			16QAM	18.3918	21.118
	20300	1745.00	QPSK	18.4249	21.231
			16QAM	18.4557	21.038

LTE Band 5					
Mode	Channel	Frequency (MHz)	Modulation	99% OBW (MHz)	-26dB Bandwidth (MHz)
1.4MHz	20407	824.70	QPSK	1.0905	1.274
			16QAM	1.0883	1.294
	20525	836.50	QPSK	1.0909	1.264
			16QAM	1.0885	1.273
	20643	848.30	QPSK	1.0834	1.253
			16QAM	1.0900	1.285
3MHz	20415	825.50	QPSK	2.6671	2.933
			16QAM	2.6716	2.881
	20525	836.50	QPSK	2.6792	2.852
			16QAM	2.6751	2.906
	20635	847.50	QPSK	2.6659	2.878
			16QAM	2.6840	2.894
5MHz	20425	826.50	QPSK	4.4822	4.912
			16QAM	4.5022	4.939
	20525	836.50	QPSK	4.4936	4.959
			16QAM	4.4821	4.963
	20625	846.50	QPSK	4.4845	4.915
			16QAM	4.4962	4.968
10MHz	20450	829.00	QPSK	8.9188	9.483
			16QAM	8.9154	9.561
	20525	836.50	QPSK	8.9011	9.666
			16QAM	8.9163	9.498
	20600	844.00	QPSK	8.8904	9.511
			16QAM	8.9314	9.592

LTE Band 7					
Mode	Channel	Frequency (MHz)	Modulation	99% OBW (MHz)	-26dB Bandwidth (MHz)
5MHz	20775	2502.50	QPSK	4.5053	4.975
			16QAM	4.5009	5.006
	21100	2535.00	QPSK	4.4918	4.831
			16QAM	4.4856	4.885
	21425	2567.50	QPSK	4.4930	5.002
			16QAM	4.5059	4.971
10MHz	20800	2505.00	QPSK	8.8963	9.524
			16QAM	9.9496	9.616
	21100	2535.00	QPSK	8.9037	9.689
			16QAM	8.9362	9.473
	21400	2565.00	QPSK	8.9565	9.544
			16QAM	8.9223	9.497
15MHz	20825	2507.50	QPSK	13.3995	14.557
			16QAM	13.4816	14.624
	21100	2535.00	QPSK	13.4034	14.818
			16QAM	13.3892	14.737
	21375	2562.50	QPSK	13.3782	14.593
			16QAM	13.3915	14.658
20MHz	20850	2510.00	QPSK	18.5329	21.123
			16QAM	18.5002	21.207
	21100	2535.00	QPSK	18.4923	21.407
			16QAM	18.4291	21.324
	21350	2560.00	QPSK	18.4341	21.077
			16QAM	18.3939	21.292

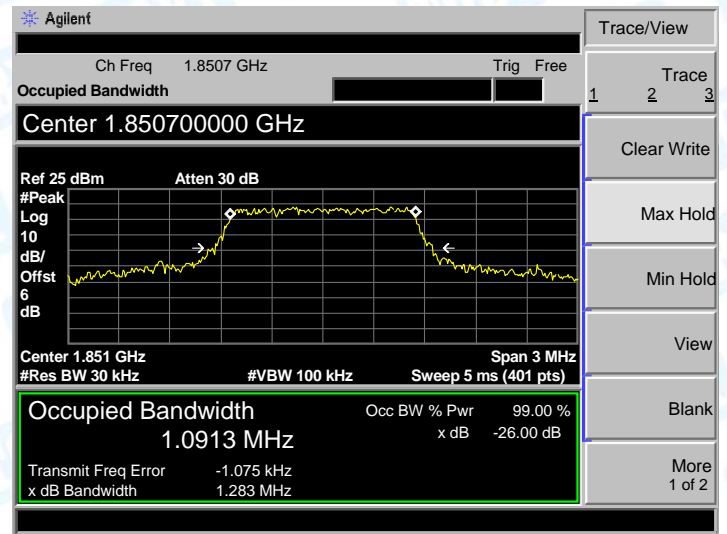
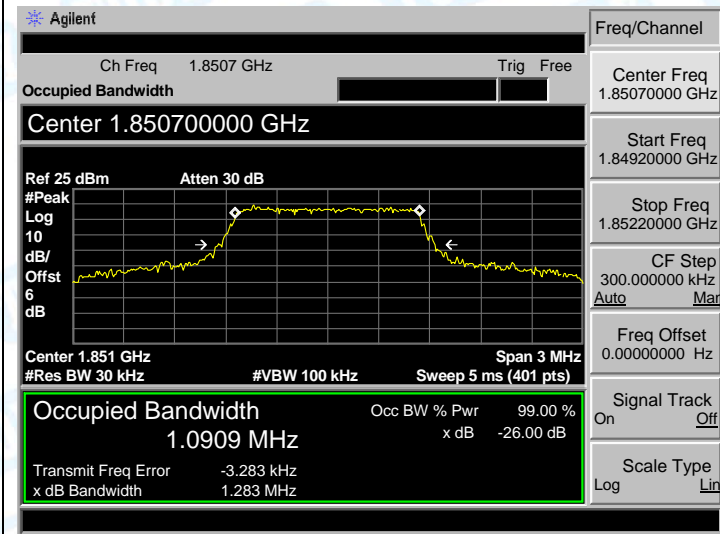
LTE Band 26					
Mode	Channel	Frequency (MHz)	Modulation	99% OBW (MHz)	-26dB Bandwidth (MHz)
1.4MHz	26997	814.70	QPSK	1.0855	1.243
			16QAM	1.0905	1.237
	26915	836.50	QPSK	1.0950	1.273
			16QAM	1.0810	1.251
	27033	848.30	QPSK	1.1068	1.299
			16QAM	1.0896	1.286
3MHz	26805	825.50	QPSK	2.6698	2.927
			16QAM	2.6679	2.937
	26915	836.50	QPSK	2.6918	2.9140
			16QAM	2.6688	2.889
	27025	847.50	QPSK	2.6645	2.933
			16QAM	2.6795	2.915
5MHz	26815	826.50	QPSK	4.5135	5.045
			16QAM	4.5046	4.952
	26915	836.50	QPSK	4.4826	4.917
			16QAM	4.5036	4.964
	27015	846.50	QPSK	4.4835	4.957
			16QAM	4.5093	4.961
10MHz	26840	829.00	QPSK	8.9332	9.766
			16QAM	8.9109	9.527
	26915	836.50	QPSK	8.8951	9.622
			16QAM	8.9239	9.433
	26990	844.00	QPSK	8.9093	9.609
			16QAM	8.9072	9.530
15MHz	26865	831.5	QPSK	13.3775	14.633
			16QAM	13.3528	14.607
	26915	836.50	QPSK	13.38/03	14.635
			16QAM	13.3844	14.705
	26965	841.50	QPSK	13.3871	14.564
			16QAM	13.4179	14.684

LTE Band 41					
Mode	Channel	Frequency (MHz)	Modulation	99% OBW (MHz)	-26dB Bandwidth (MHz)
5MHz	39675	2498.50	QPSK	4.4805	5.017
			16QAM	4.4658	4.909
	40620	2593.00	QPSK	4.4893	5.641
			16QAM	4.5011	6.261
	41540	2687.50	QPSK	4.5048	4.932
			16QAM	4.4419	4.962
10MHz	39700	2501.00	QPSK	8.8746	9.832
			16QAM	8.9231	9.681
	40620	2593.00	QPSK	8.8999	9.334
			16QAM	8.8873	9.545
	41565	2685.00	QPSK	8.9477	9.626
			16QAM	8.9040	9.762
15MHz	39725	2503.50	QPSK	13.3760	14.569
			16QAM	13.4031	15.618
	40620	2593.00	QPSK	13.3604	14.432
			16QAM	13.4111	16.682
	41515	2682.50	QPSK	13.4265	14.971
			16QAM	13.3201	14.570
20MHz	39750	2506.00	QPSK	18.3673	23.165
			16QAM	18.3713	21.236
	40620	2593.00	QPSK	18.4295	23.761
			16QAM	18.3586	21.612
	41590	2680.00	QPSK	18.2764	21.118
			16QAM	18.3740	21.251

Occupancy Bandwidth Test Plot

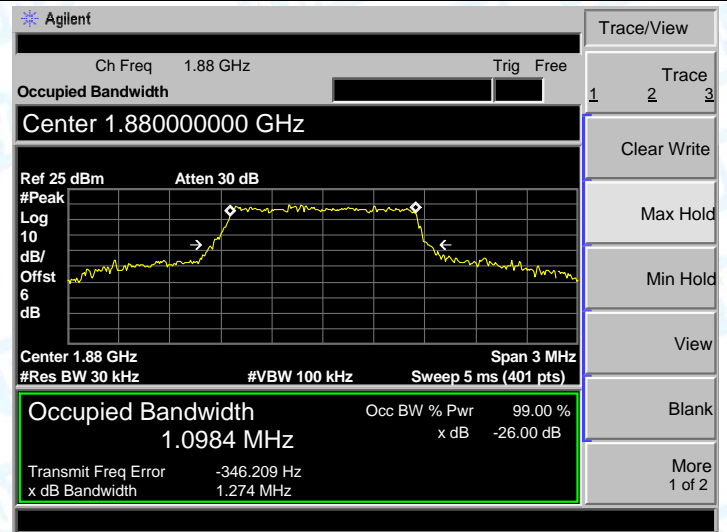
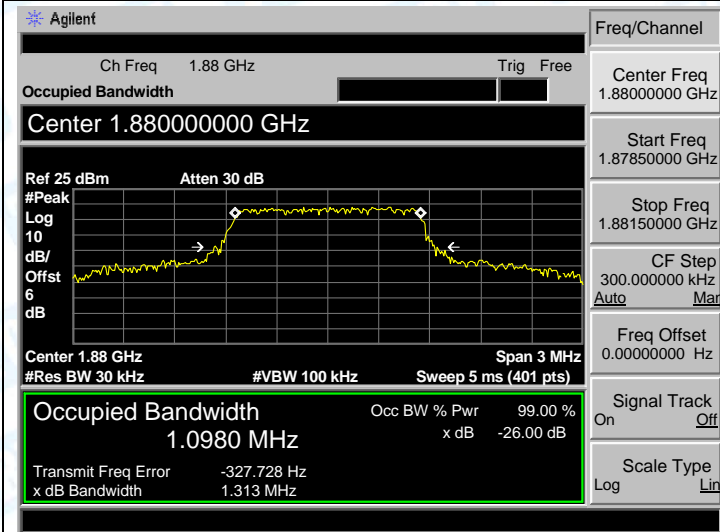
LTE BAND 2 (1.4MHz QPSK-Low CH)

LTE BAND 2 (1.4MHz 16QAM-Low CH)



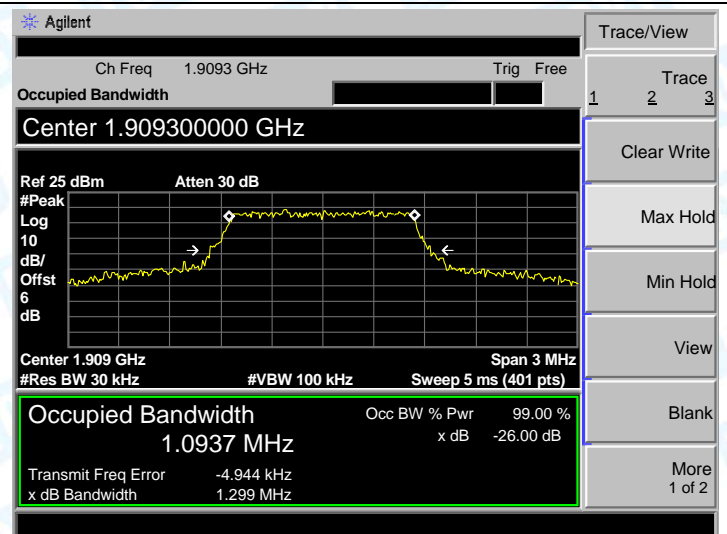
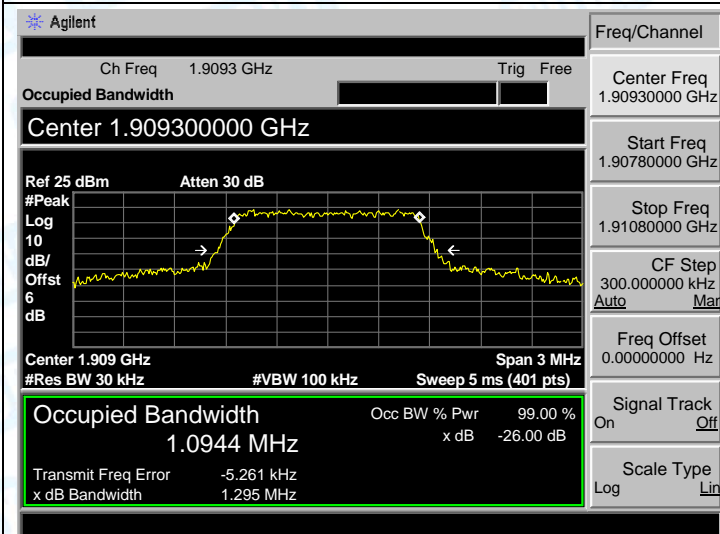
LTE BAND 2 (1.4MHz QPSK-Middle CH)

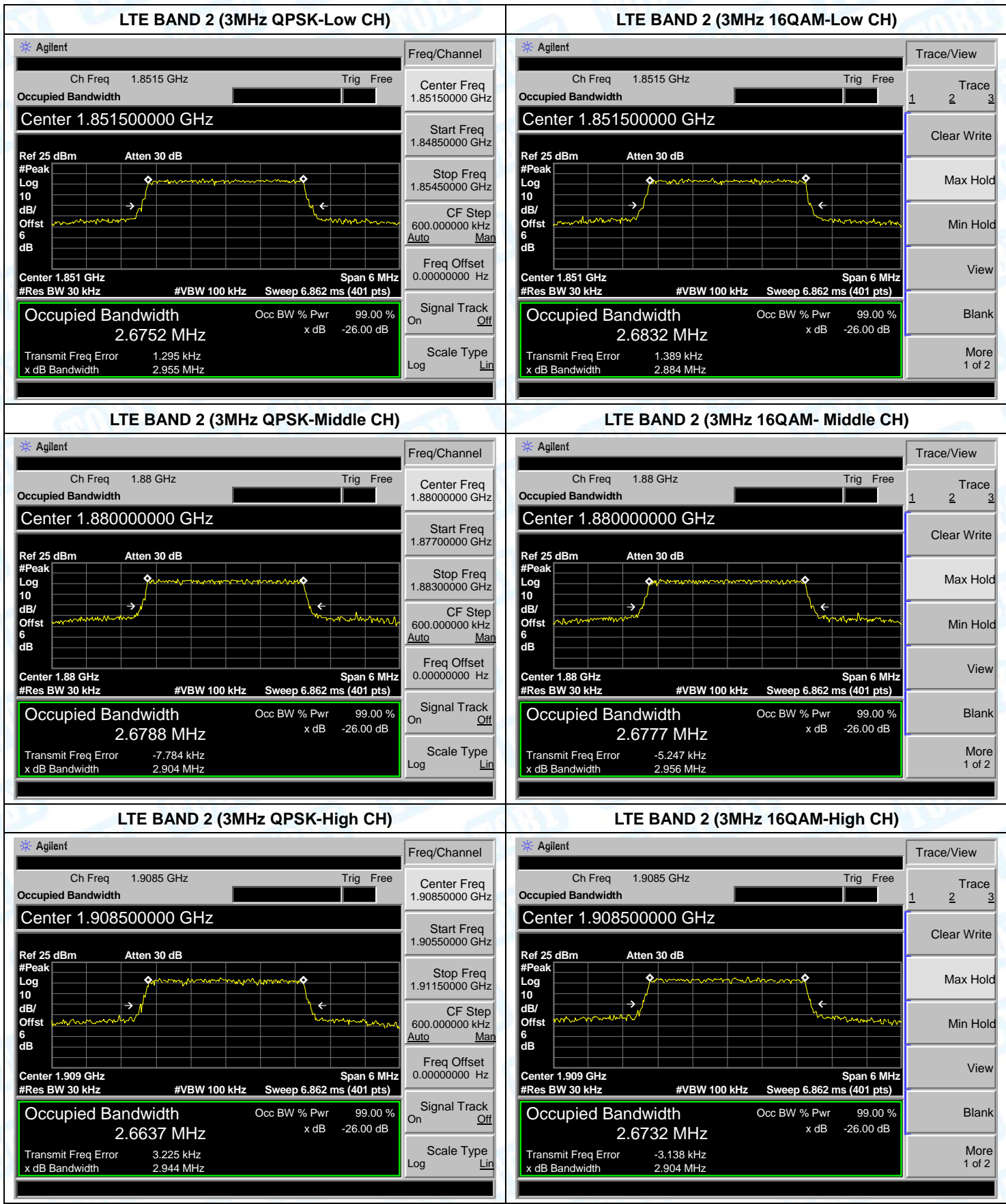
LTE BAND 2 (1.4MHz 16QAM- Middle CH)

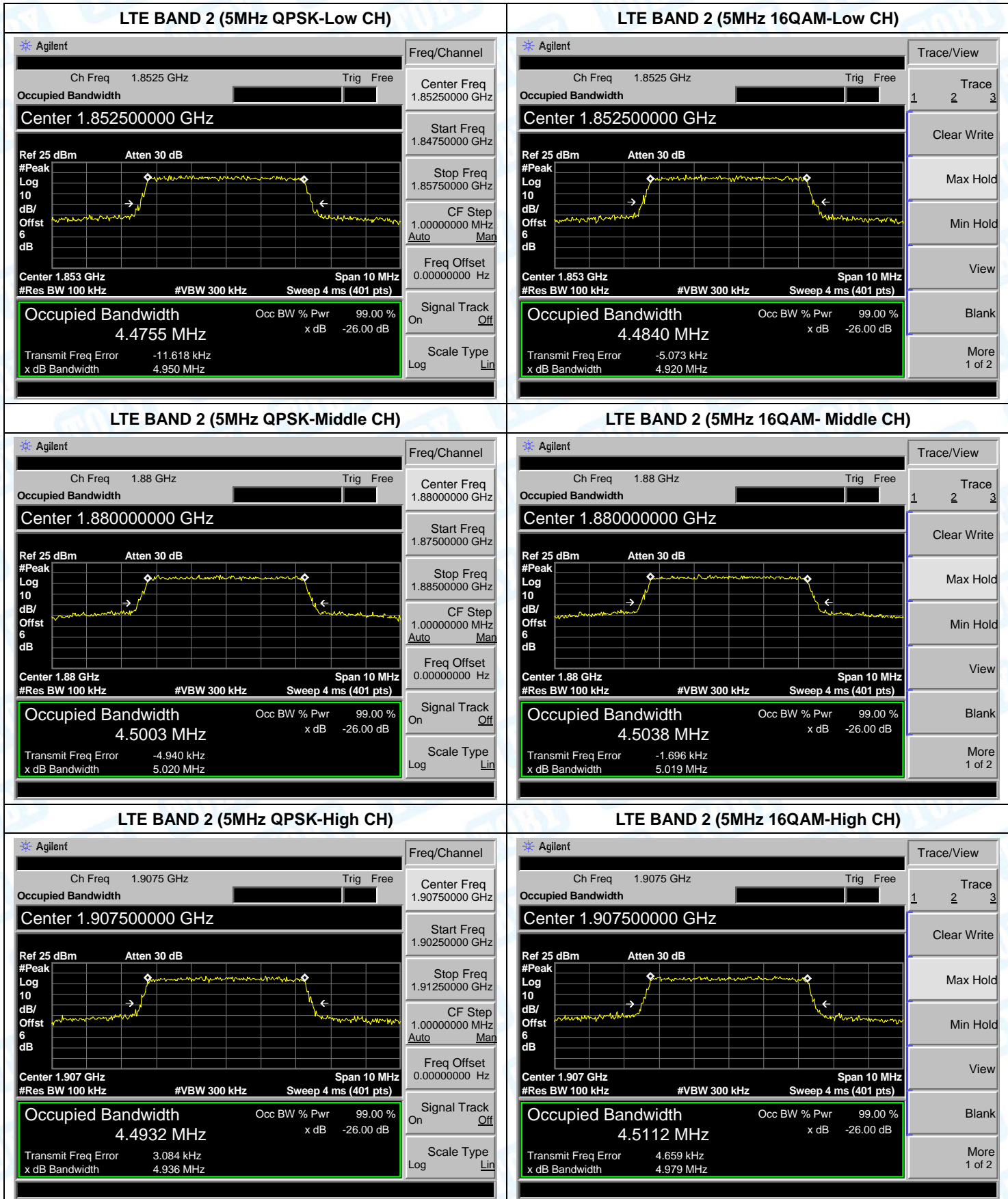


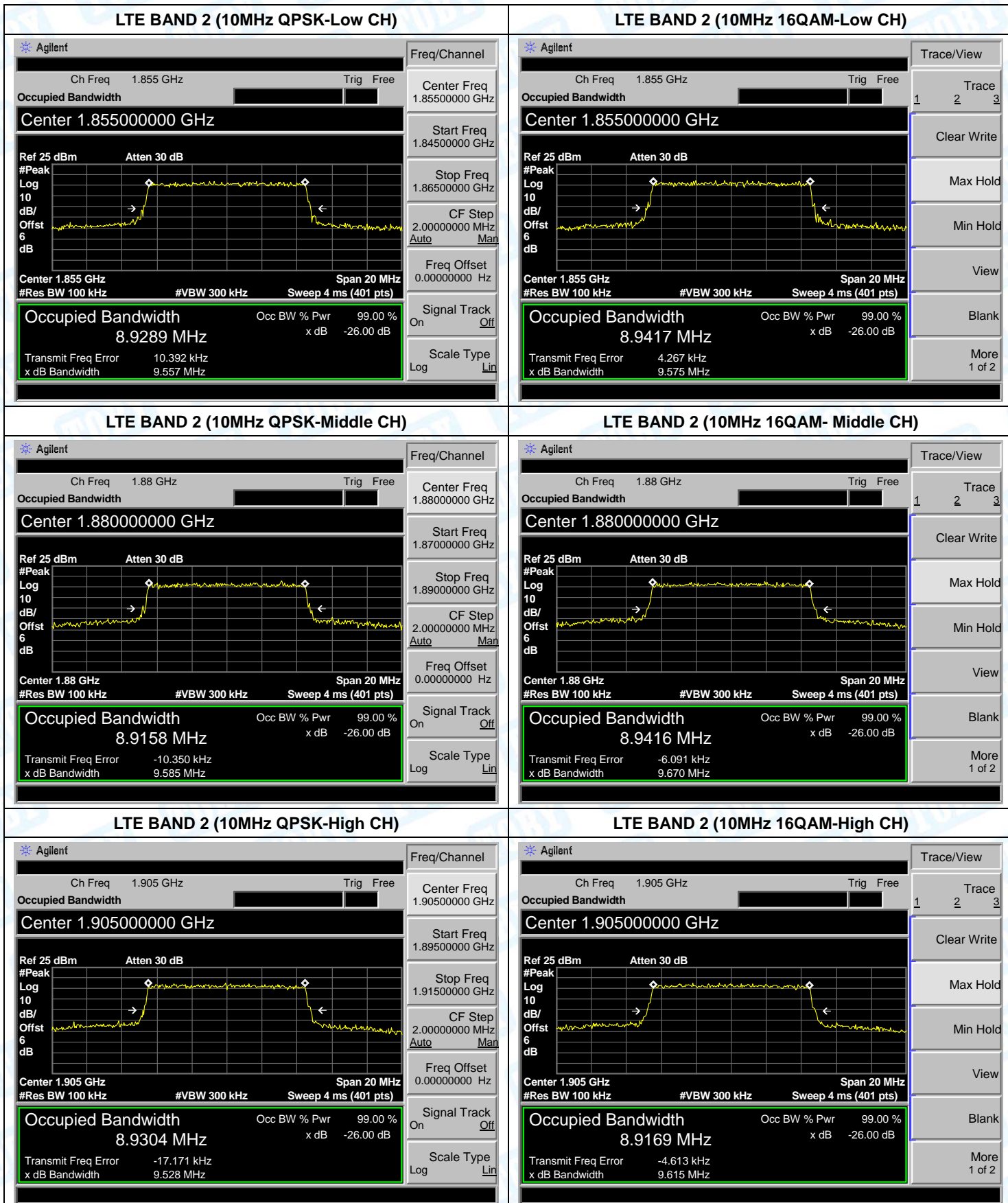
LTE BAND 2 (1.4MHz QPSK-High CH)

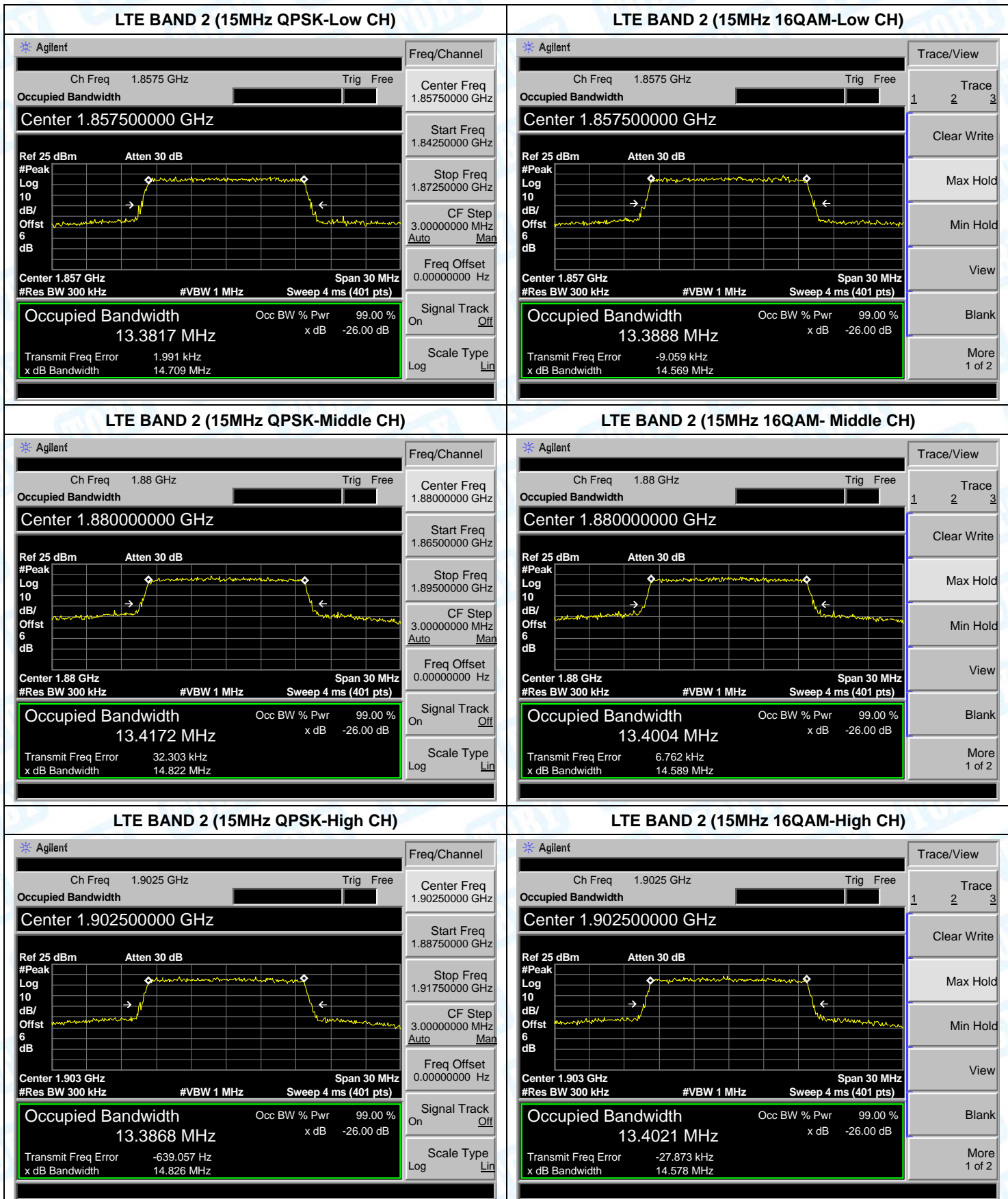
LTE BAND 2 (1.4MHz 16QAM-High CH)

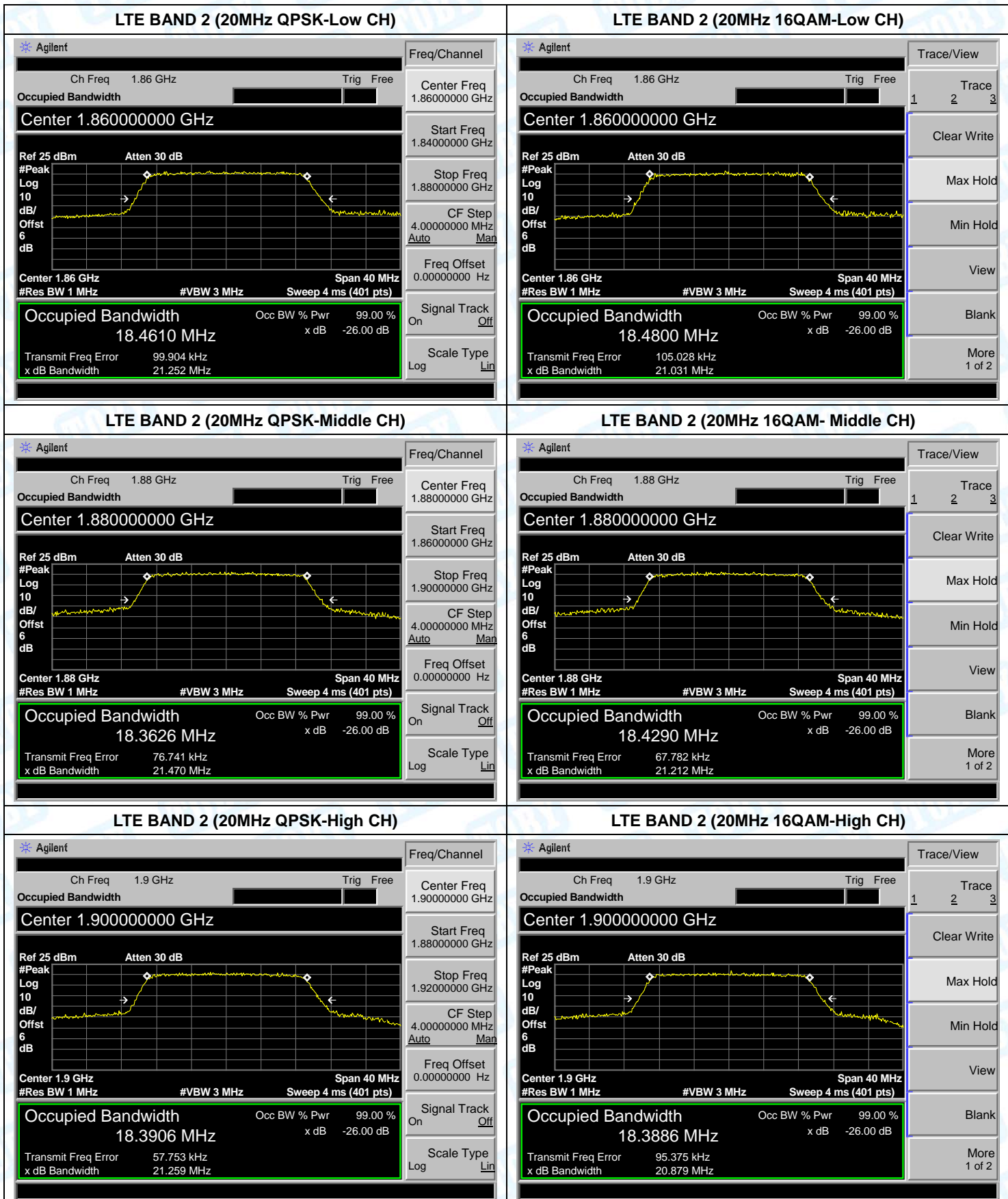








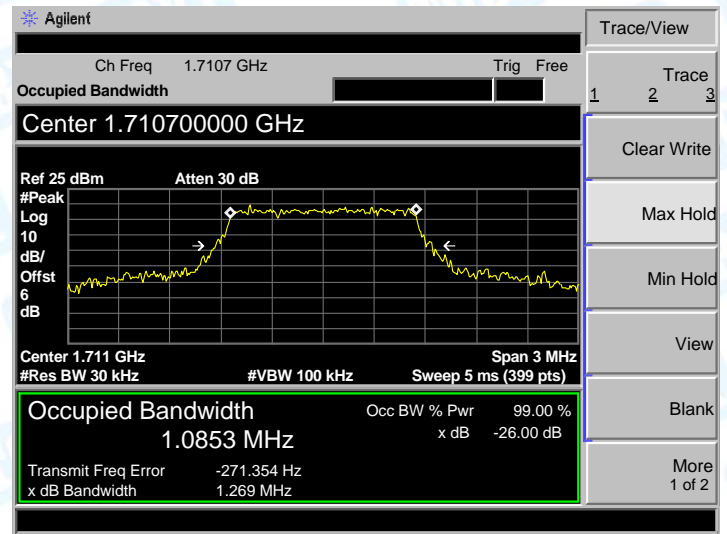
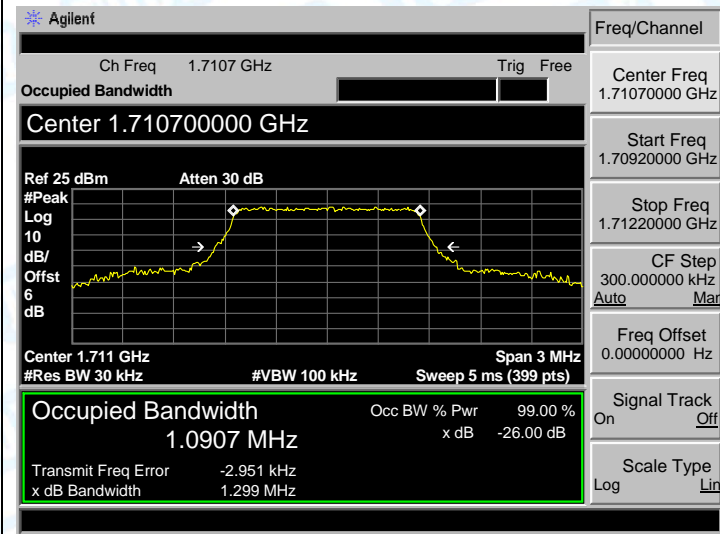




Occupancy Bandwidth Test Plot

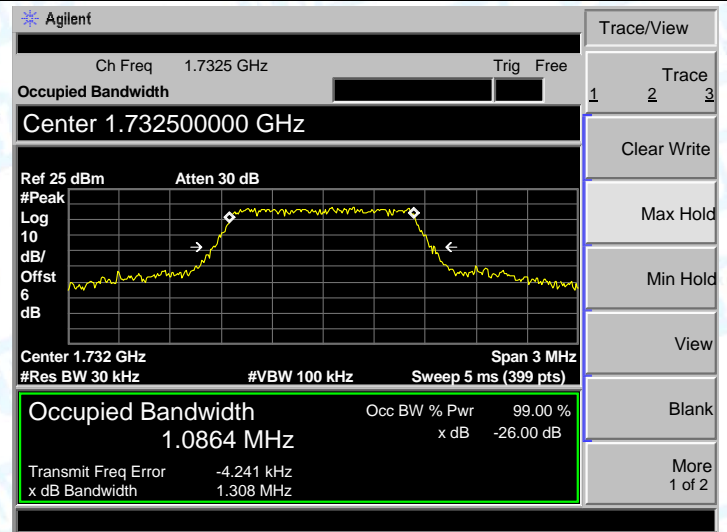
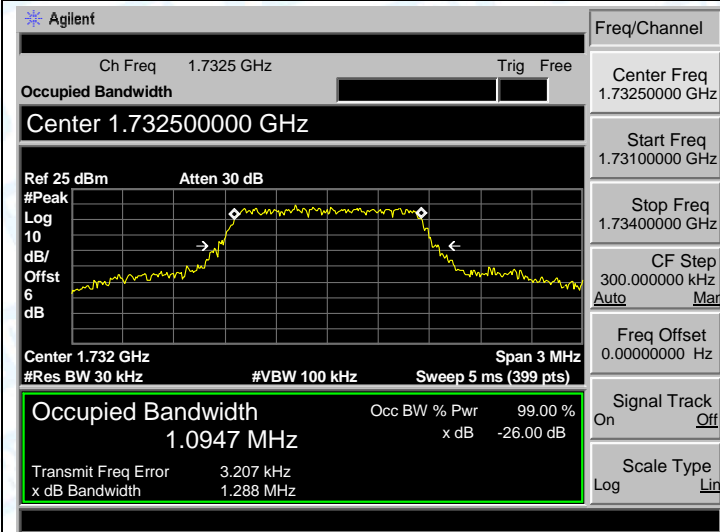
LTE BAND 4 (1.4MHz QPSK-Low CH)

LTE BAND 4 (1.4MHz 16QAM-Low CH)



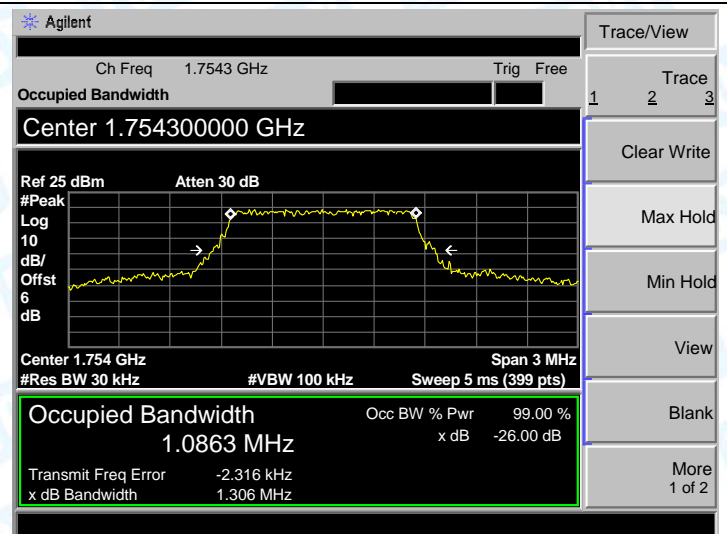
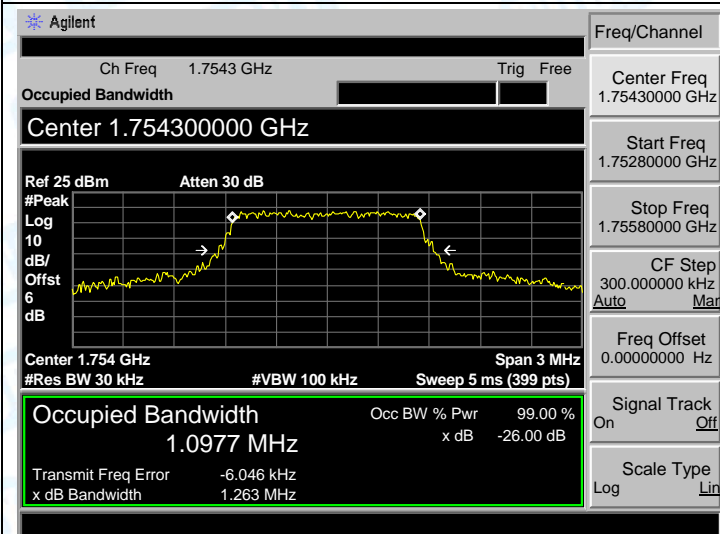
LTE BAND 4 (1.4MHz QPSK-Middle CH)

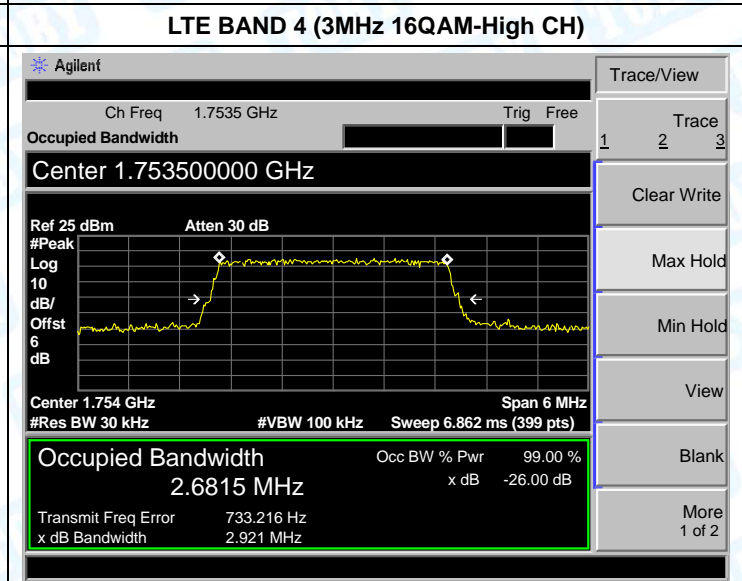
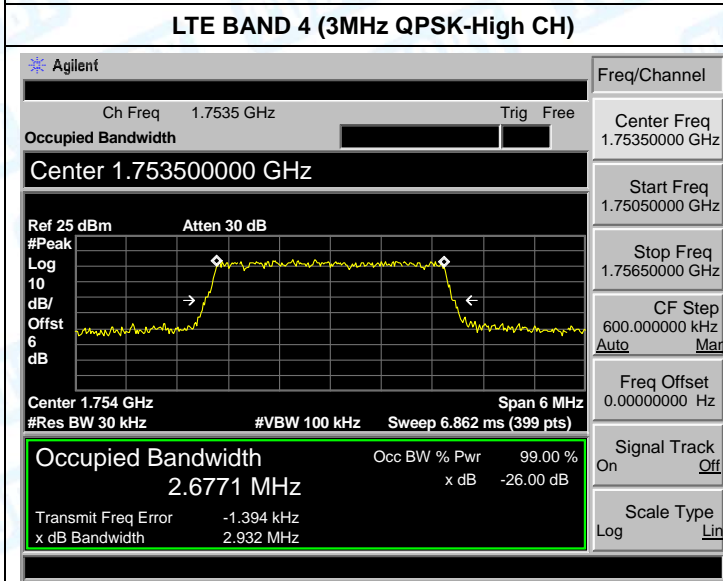
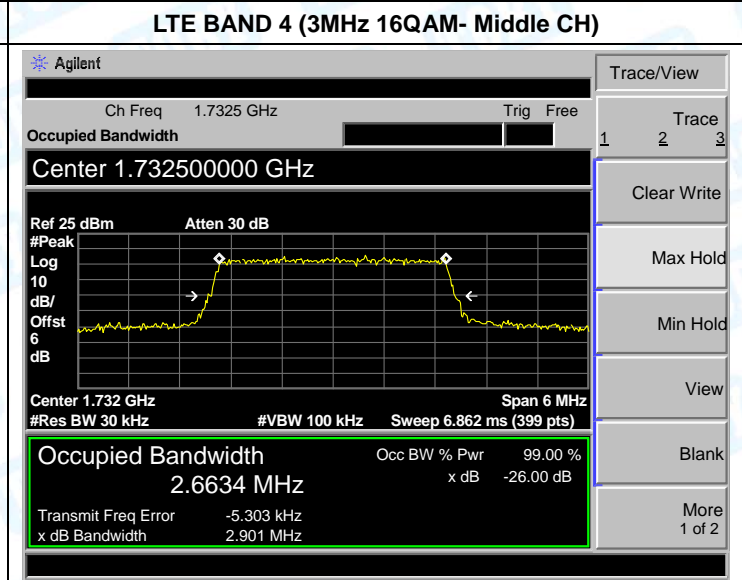
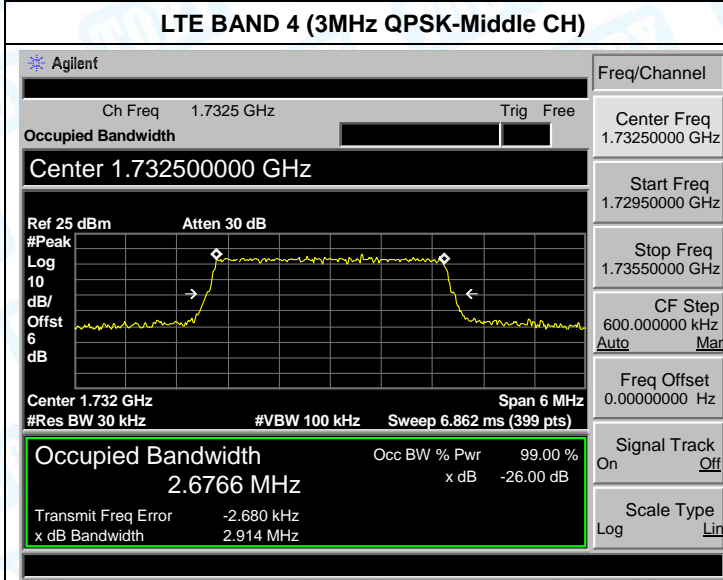
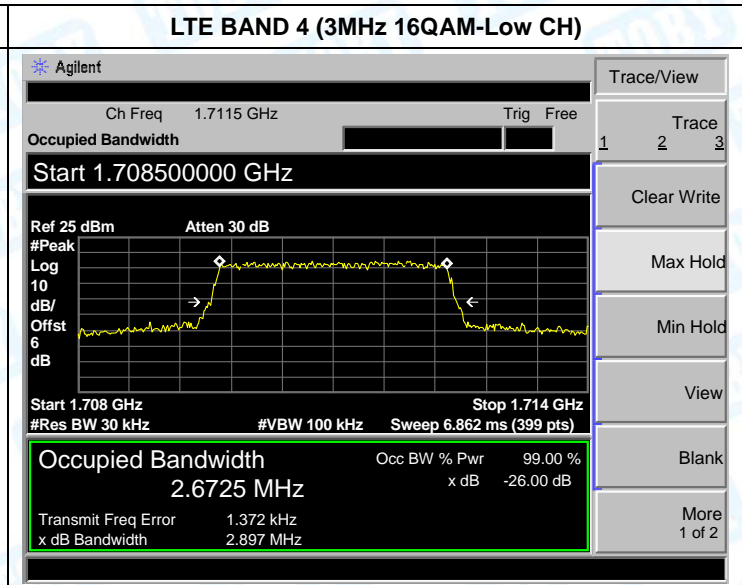
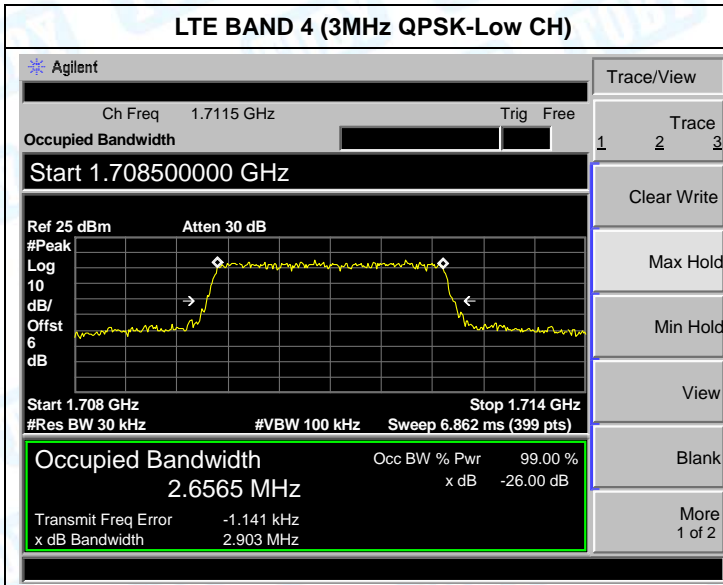
LTE BAND 4 (1.4MHz 16QAM- Middle CH)

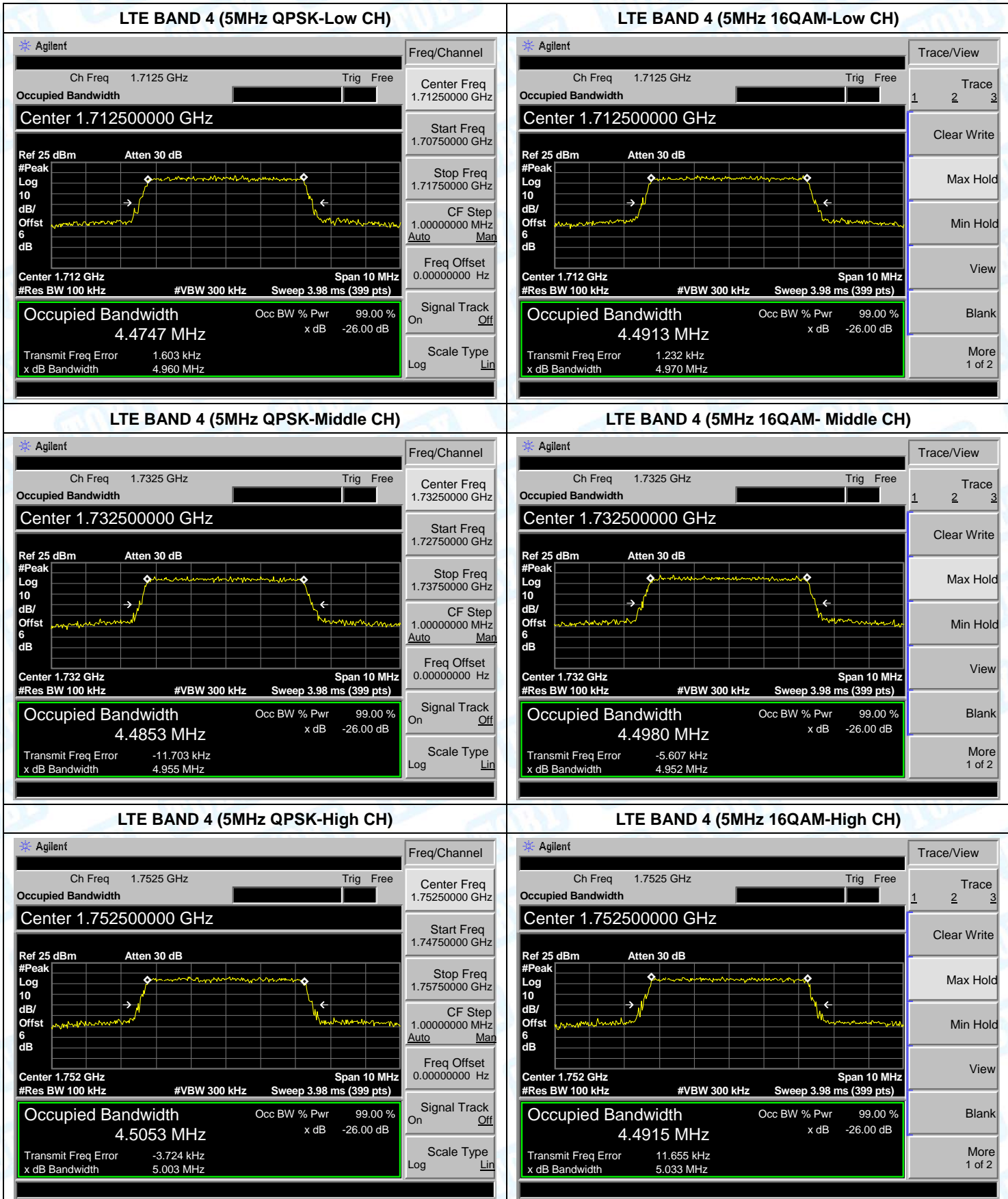


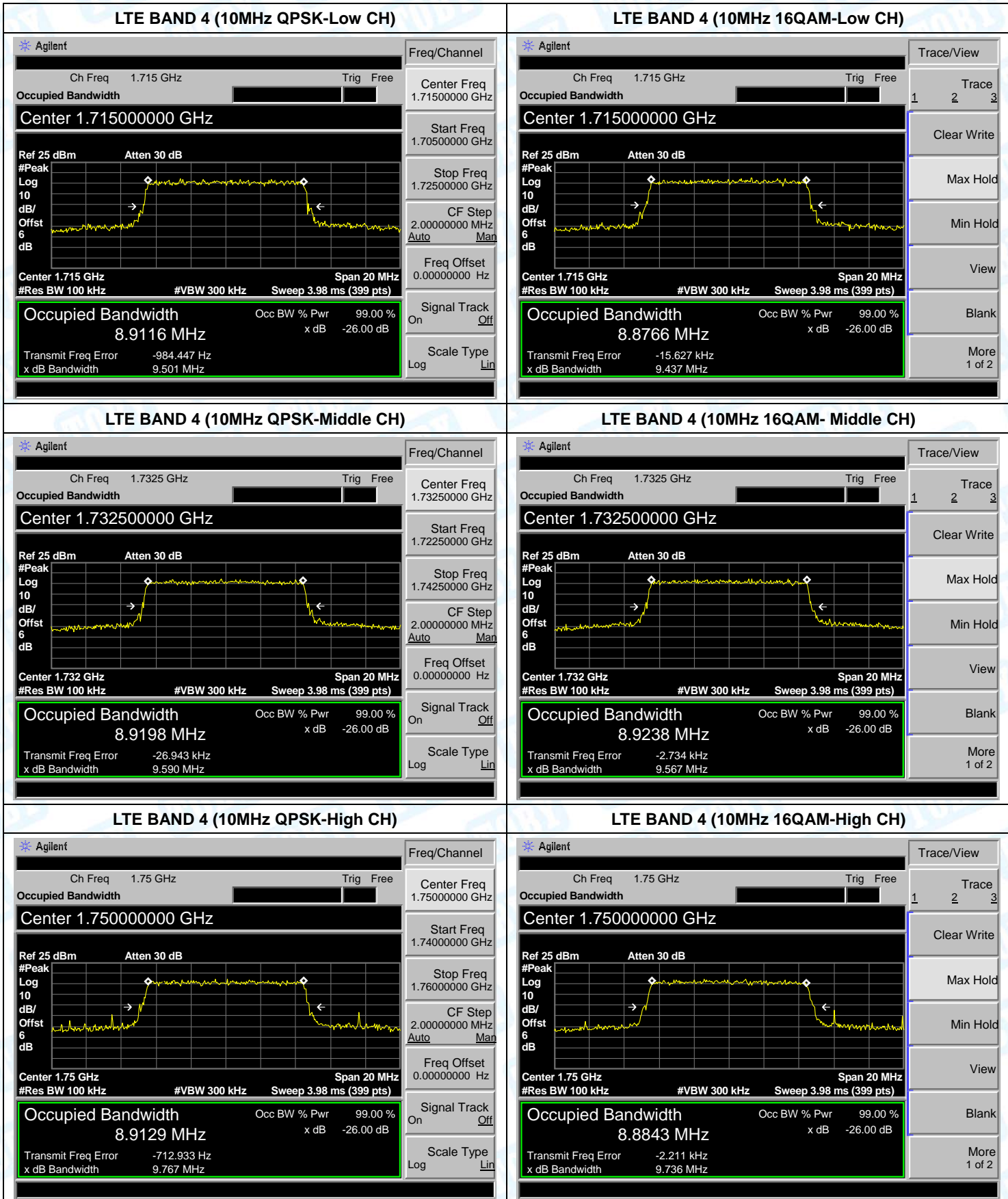
LTE BAND 4 (1.4MHz QPSK-High CH)

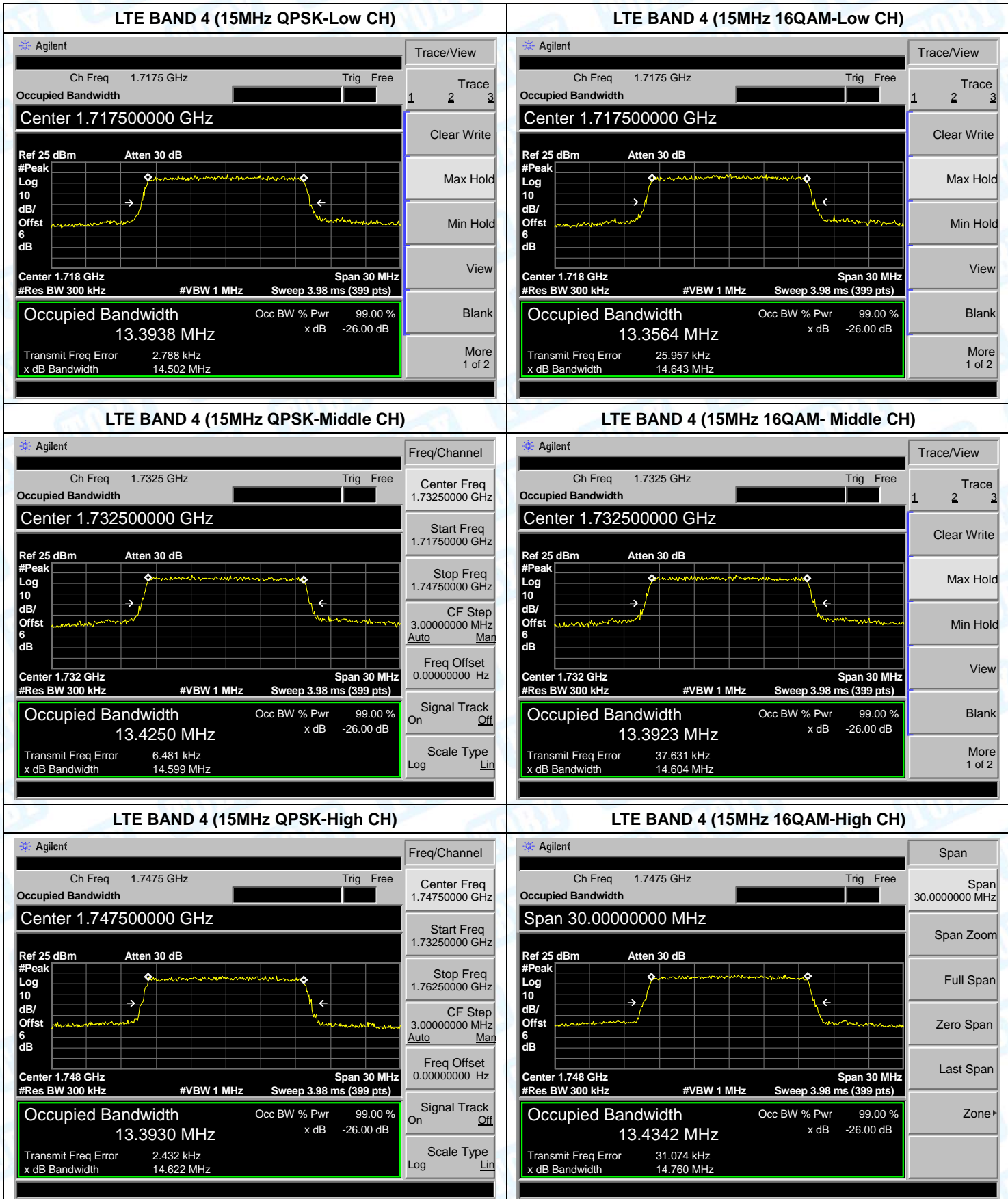
LTE BAND 4 (1.4MHz 16QAM-High CH)

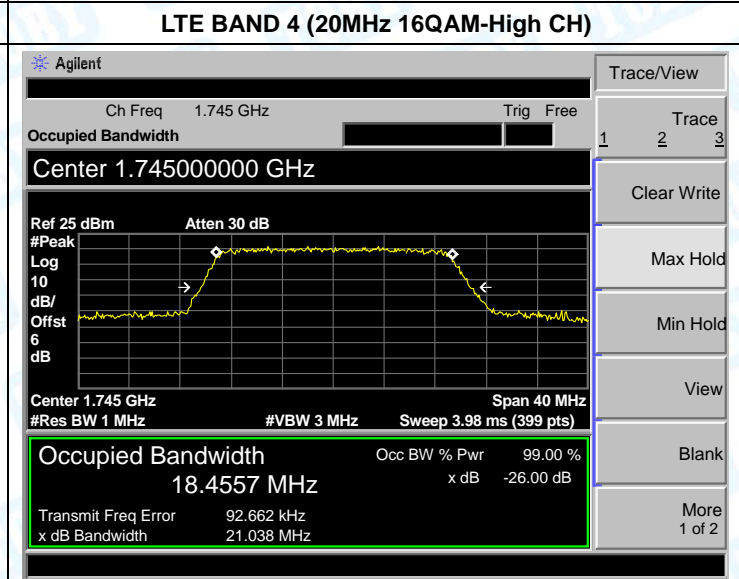
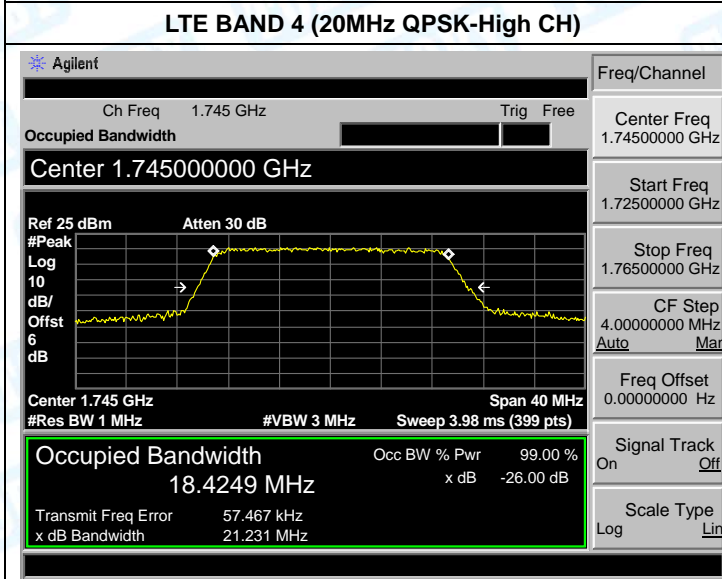
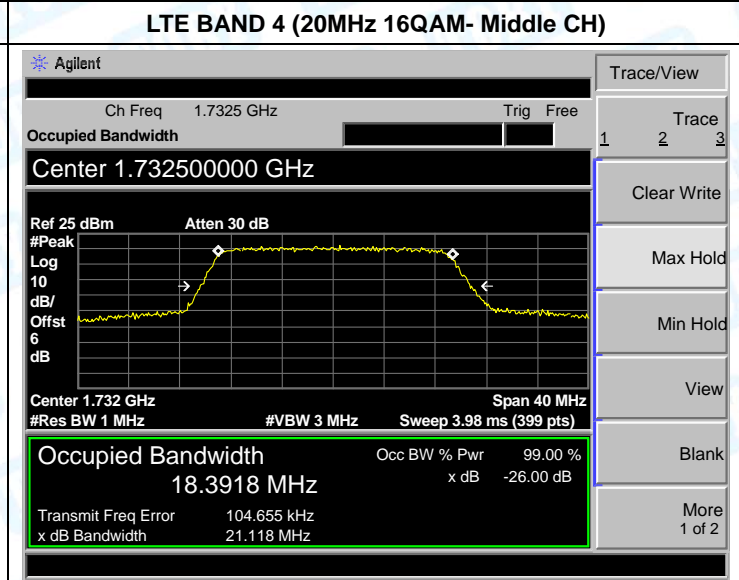
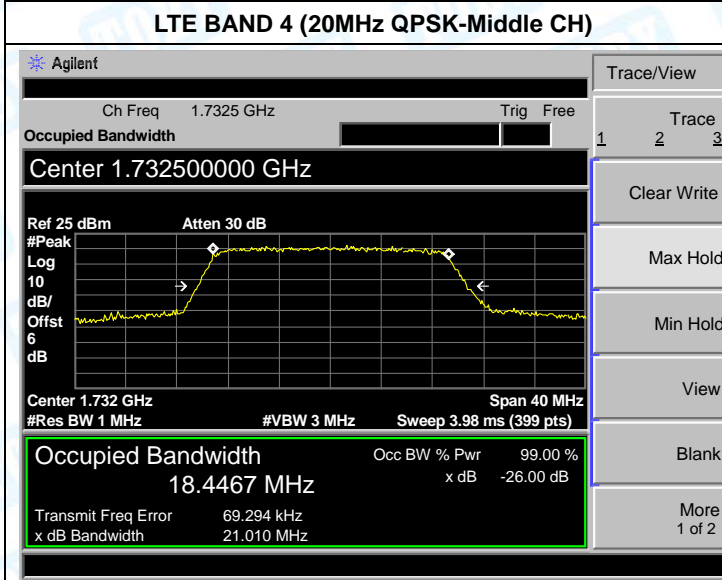
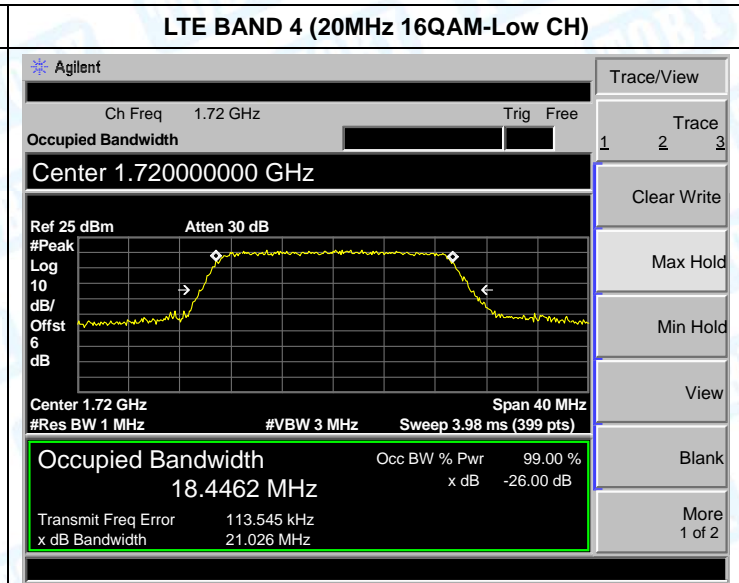
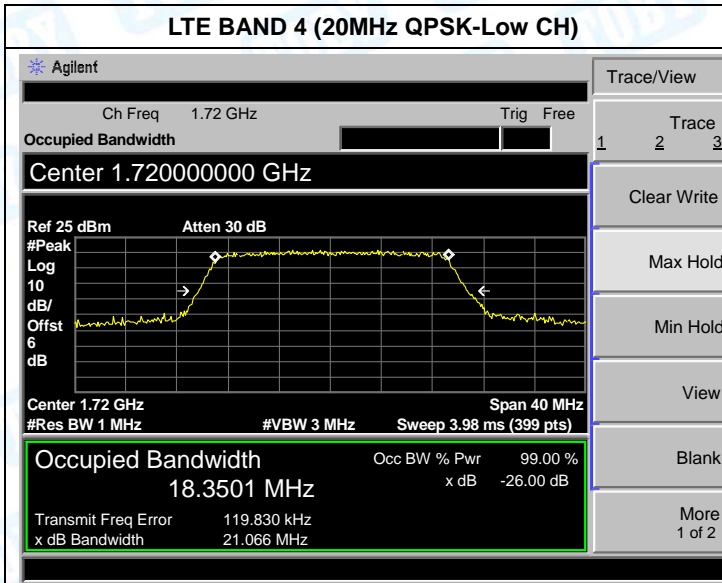




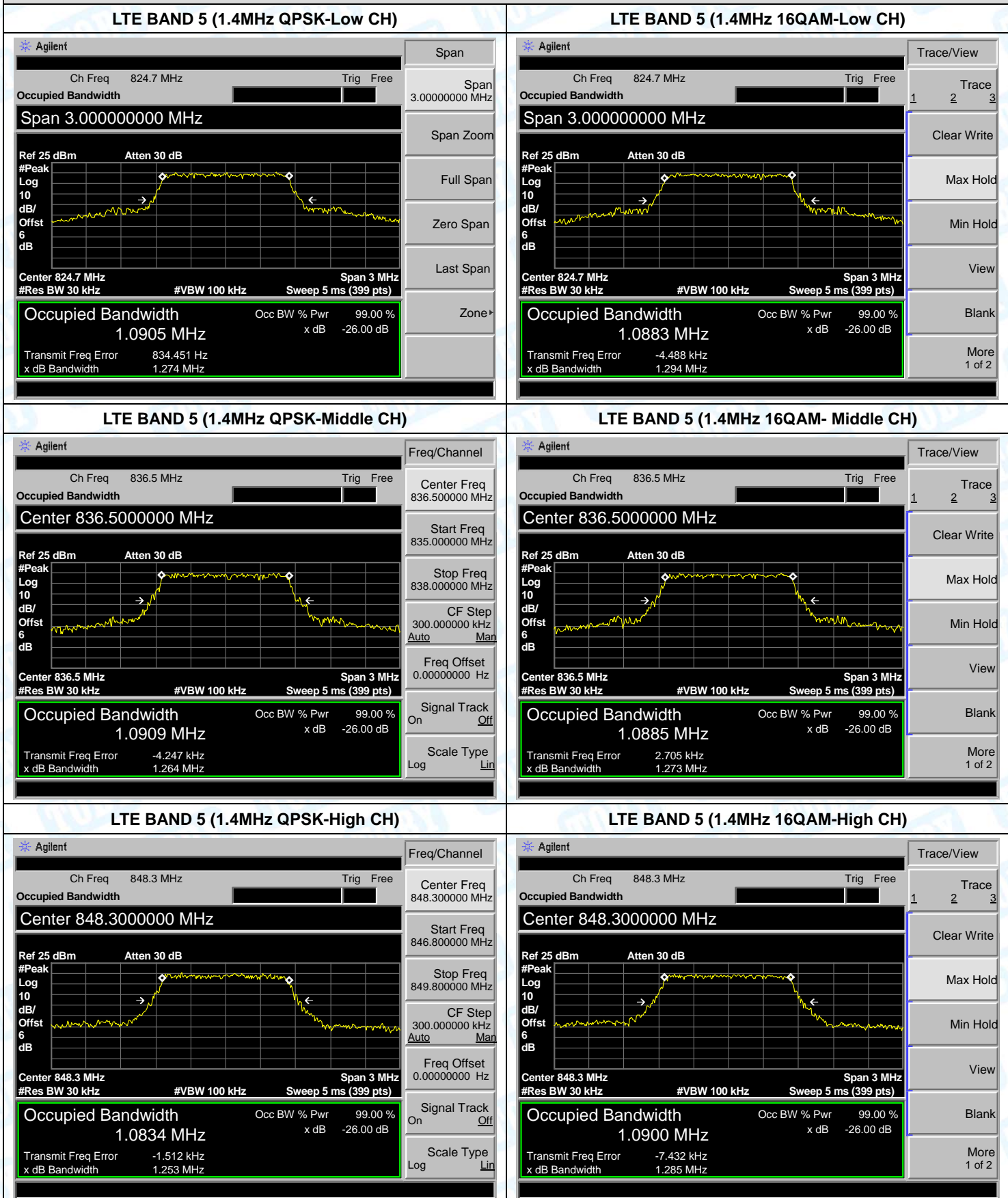


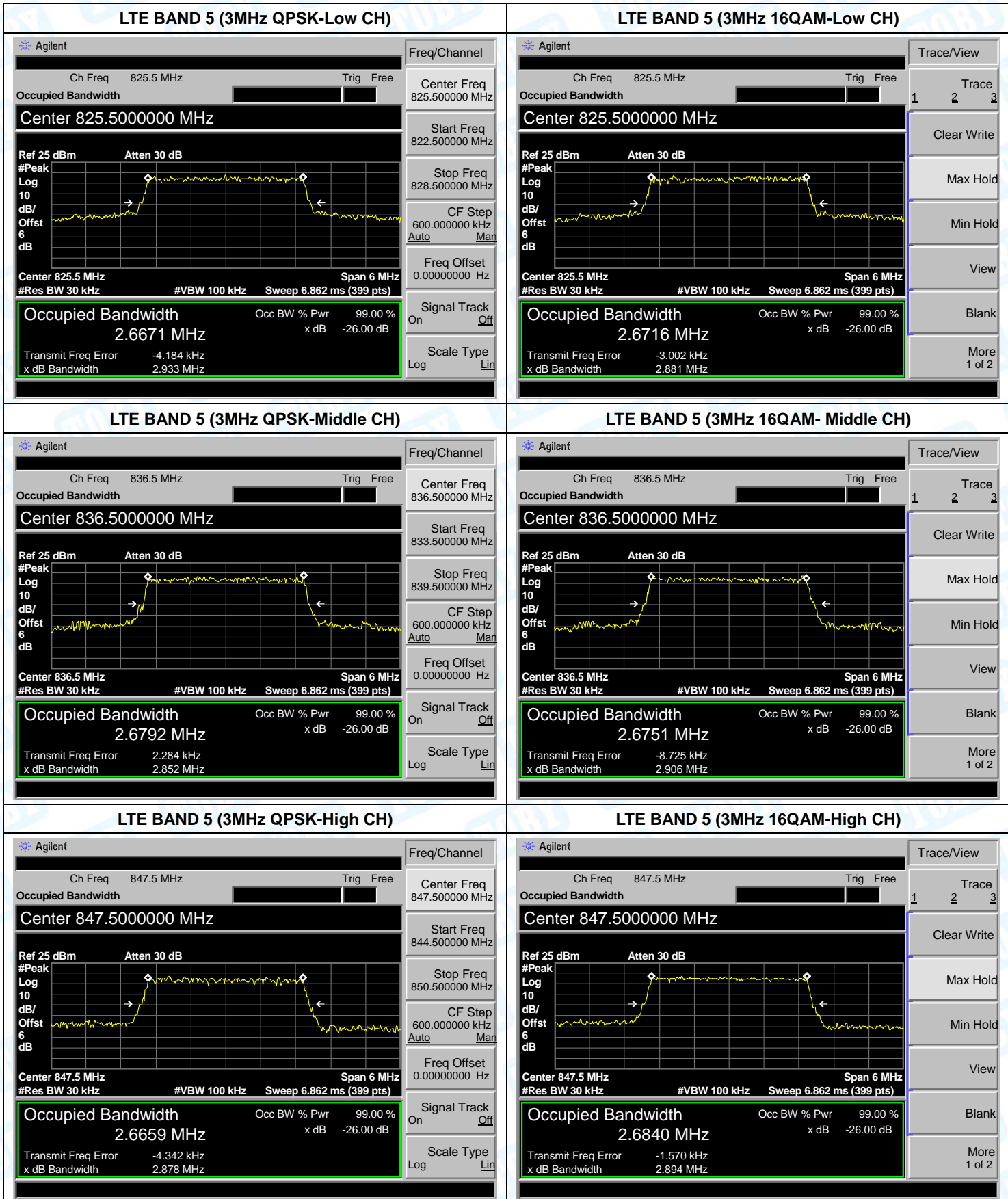


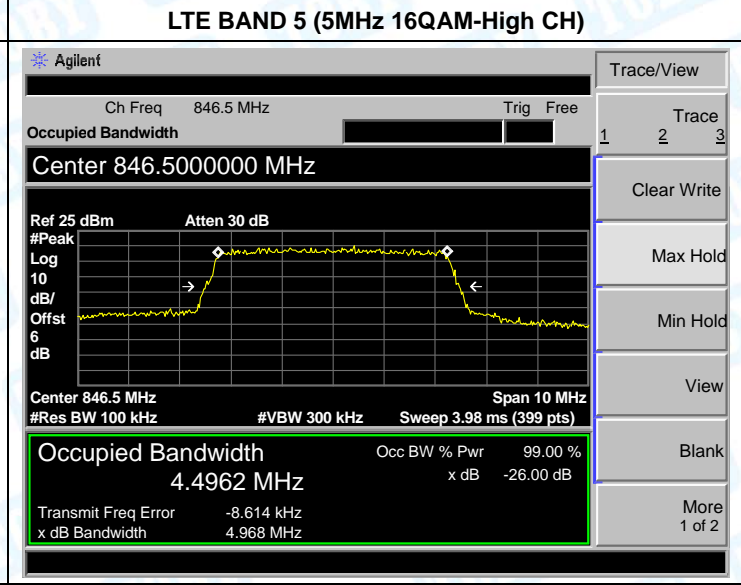
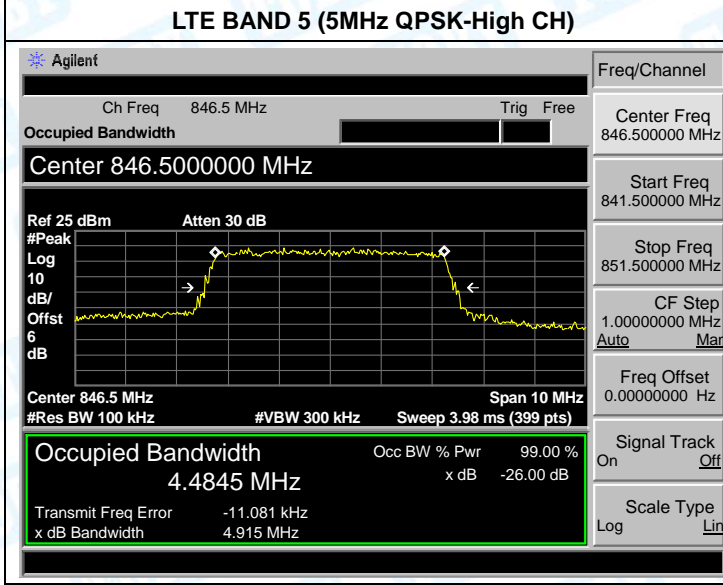
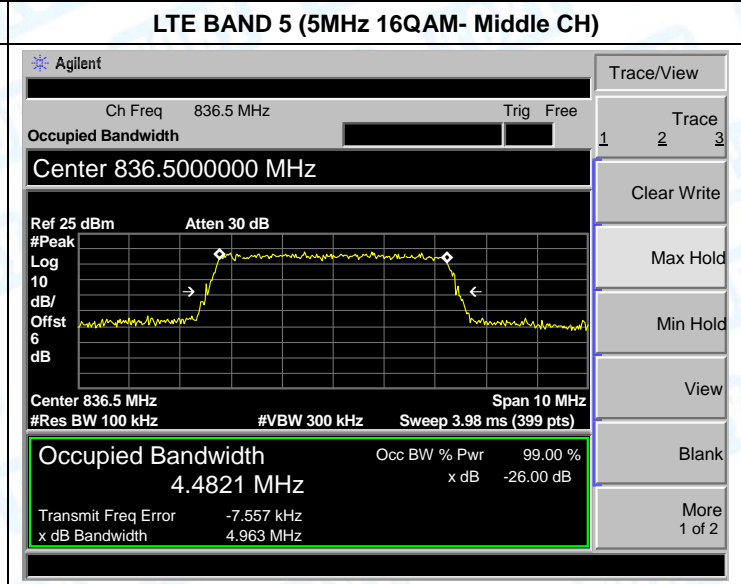
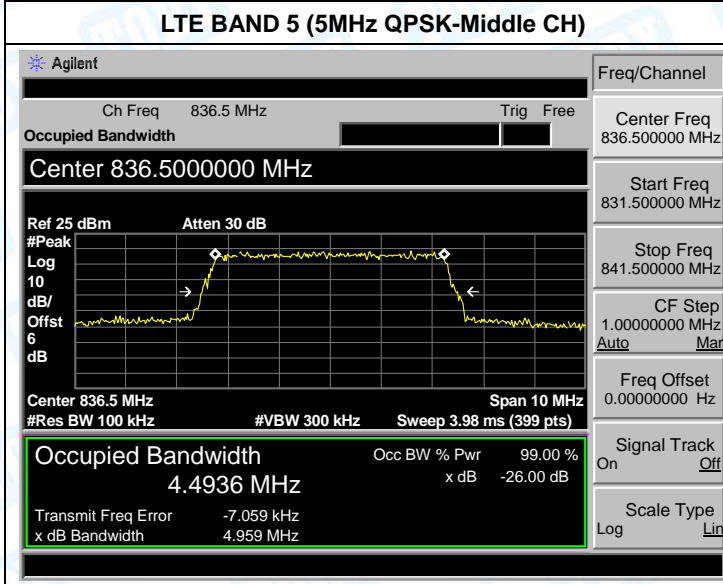
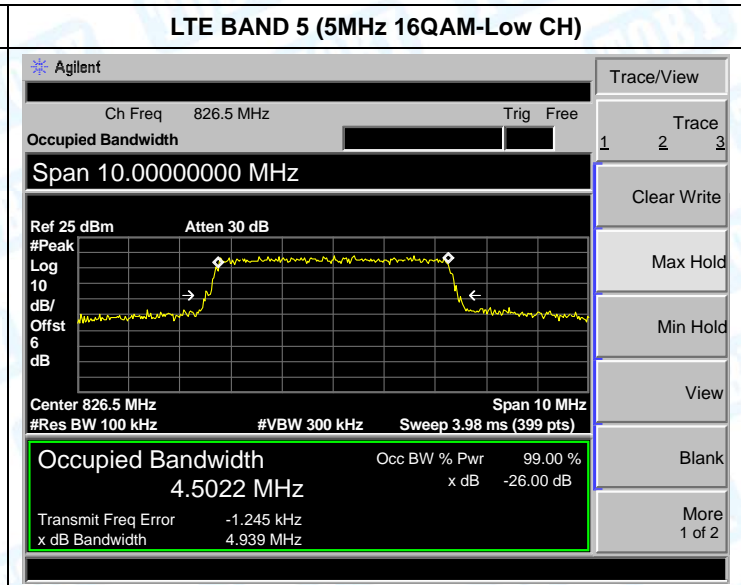
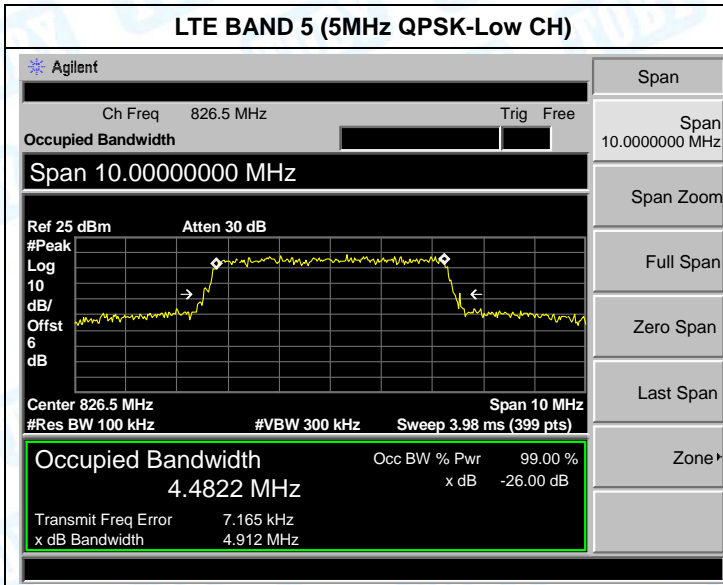


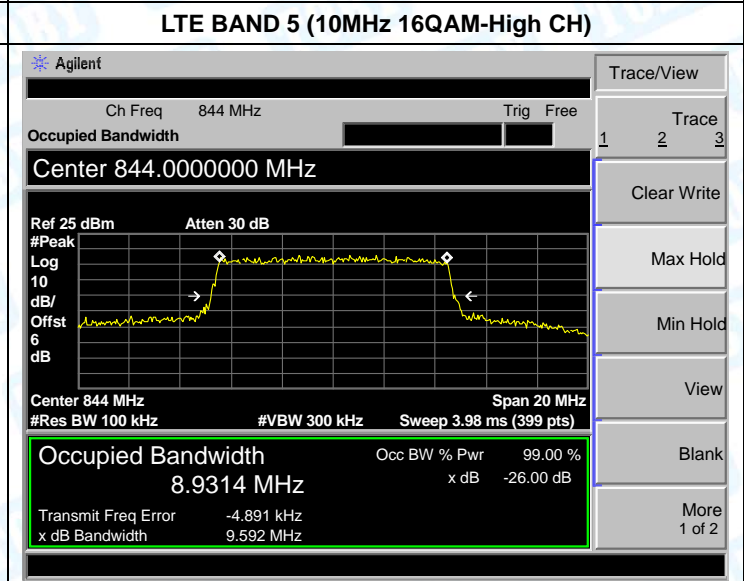
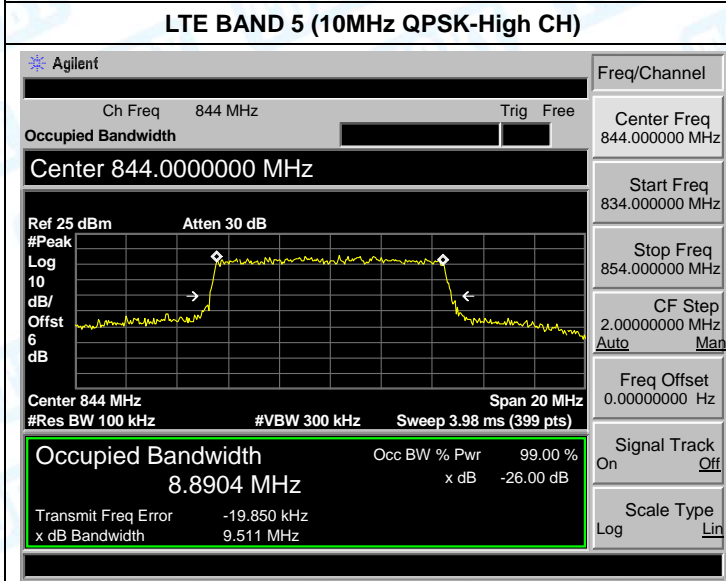
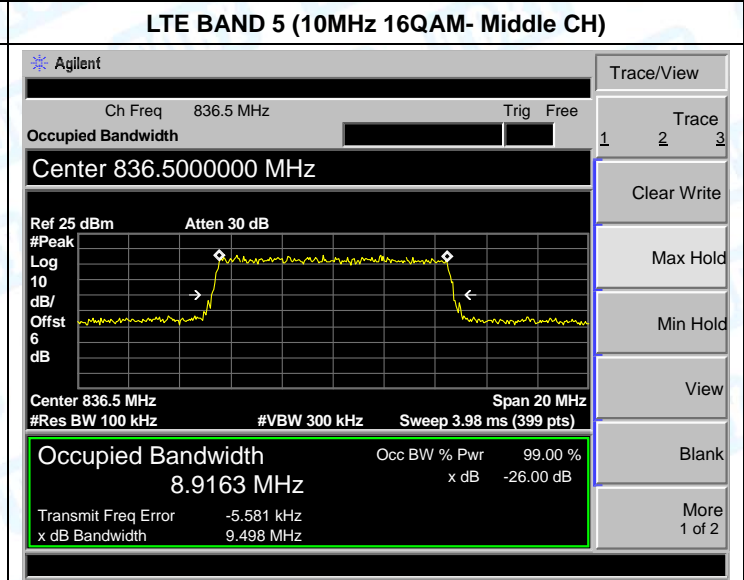
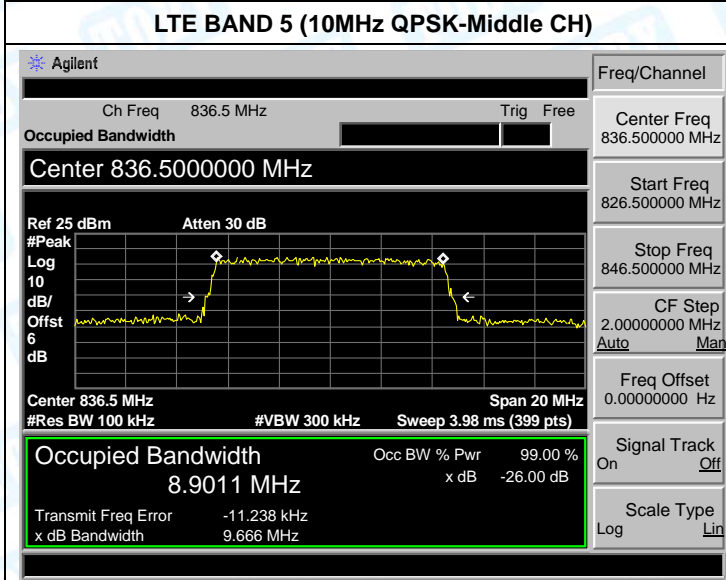
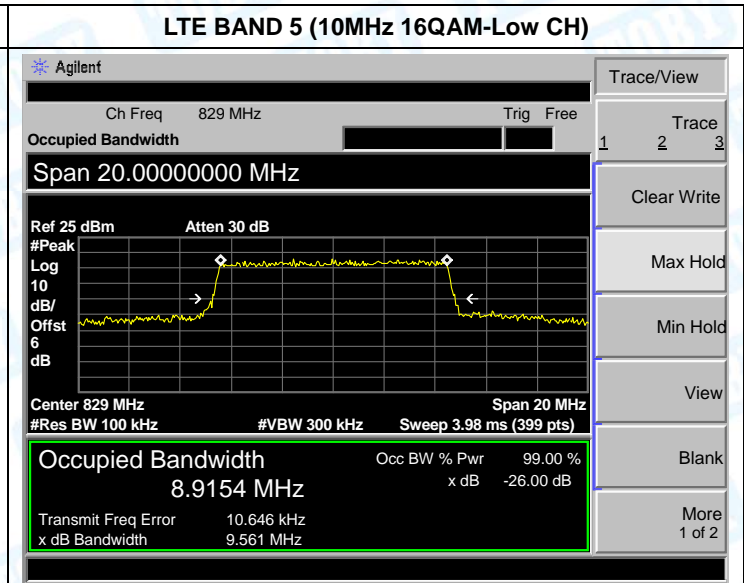
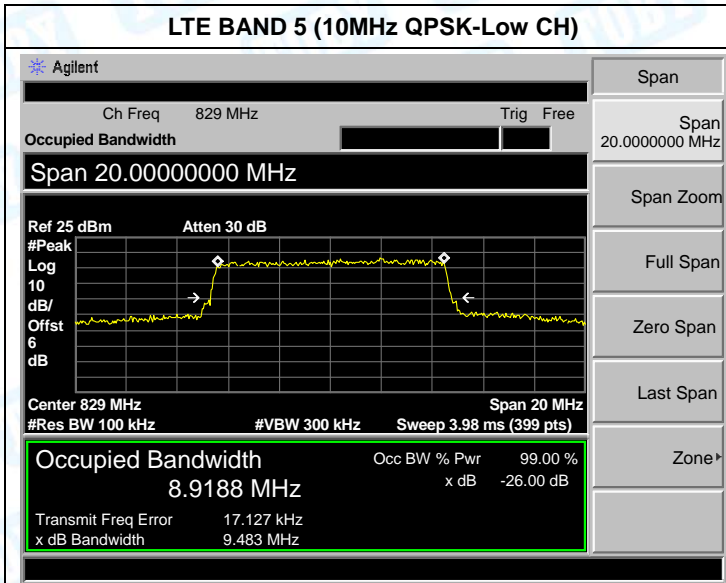


Occupancy Bandwidth Test Plot





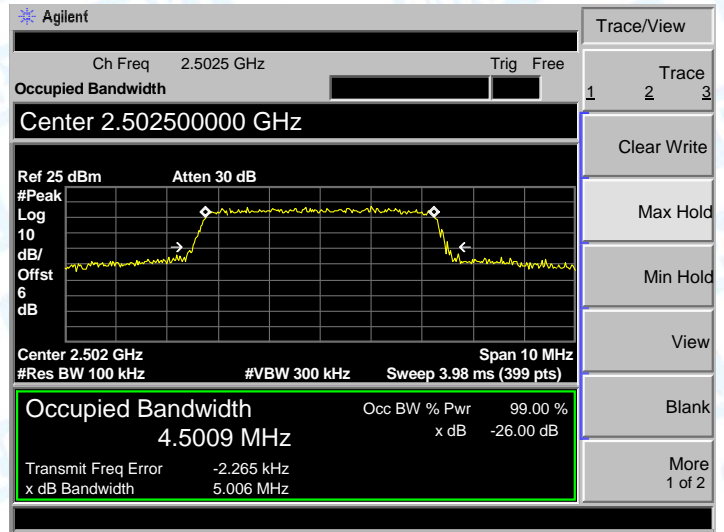
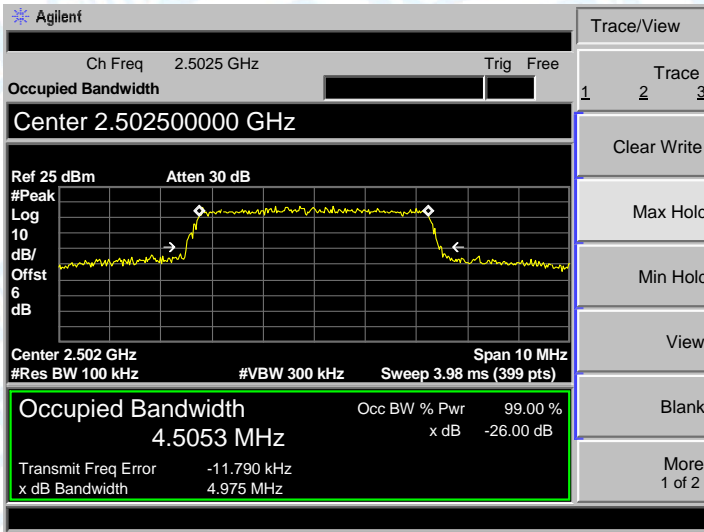




Occupancy Bandwidth Test Plot

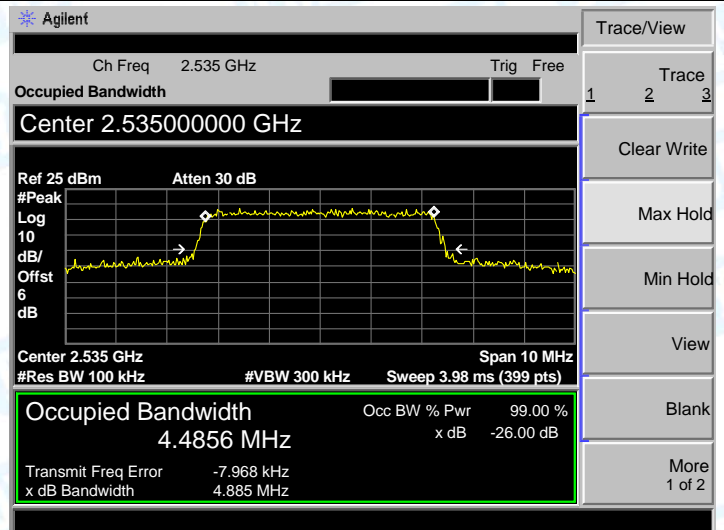
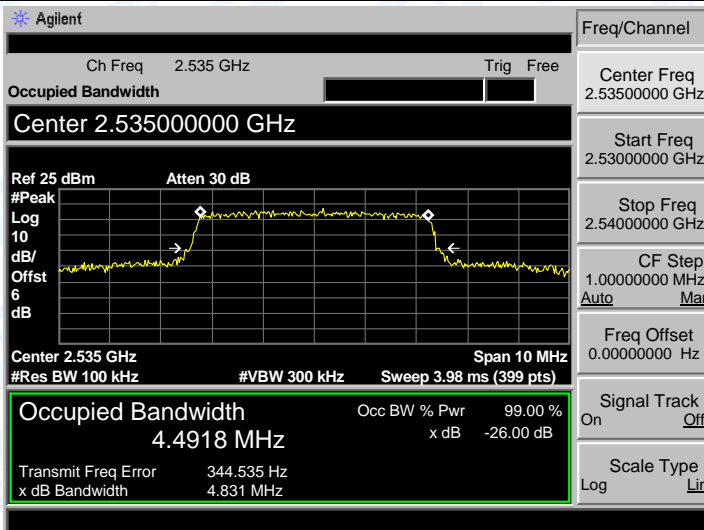
LTE BAND 7 (5MHz QPSK-Low CH)

LTE BAND 7 (5MHz 16QAM-Low CH)



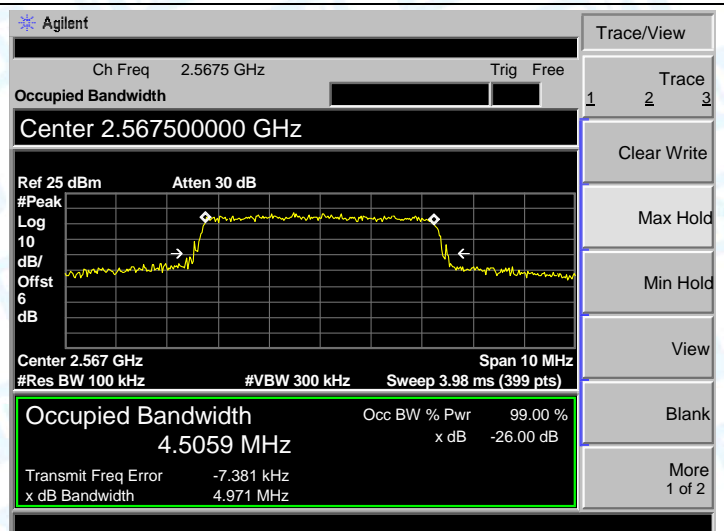
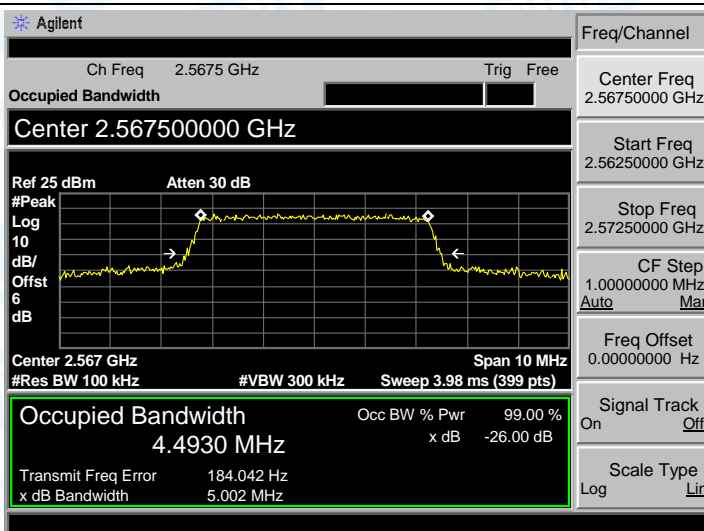
LTE BAND 7 (5MHz QPSK-Middle CH)

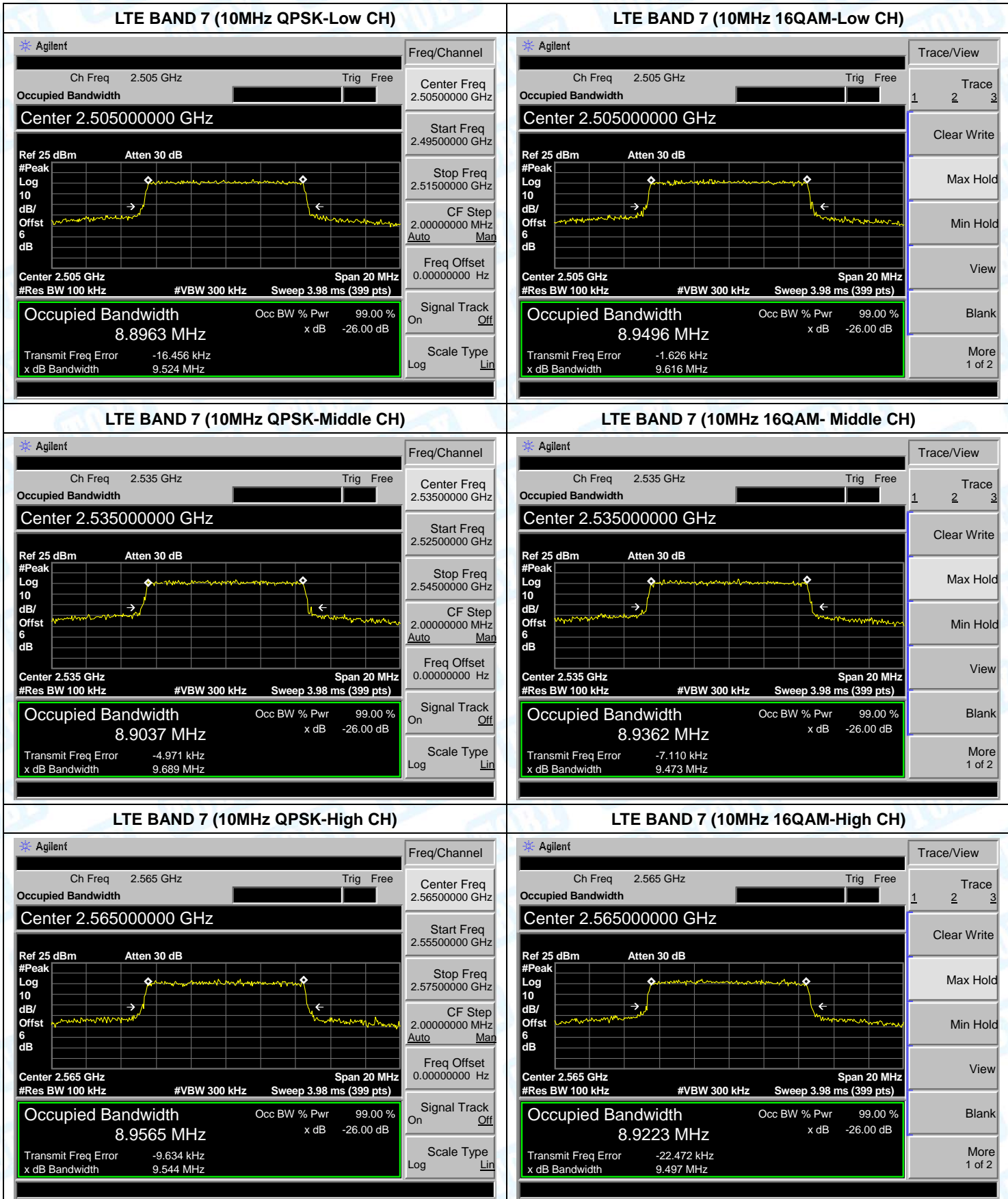
LTE BAND 7 (5MHz 16QAM- Middle CH)

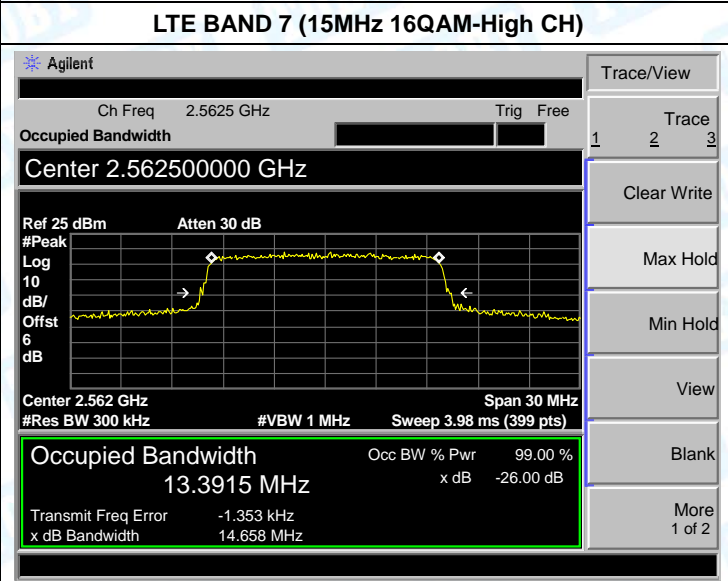
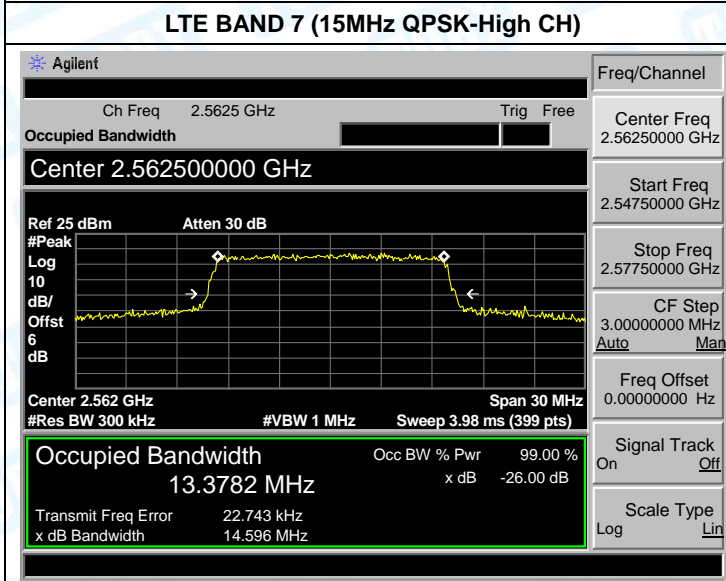
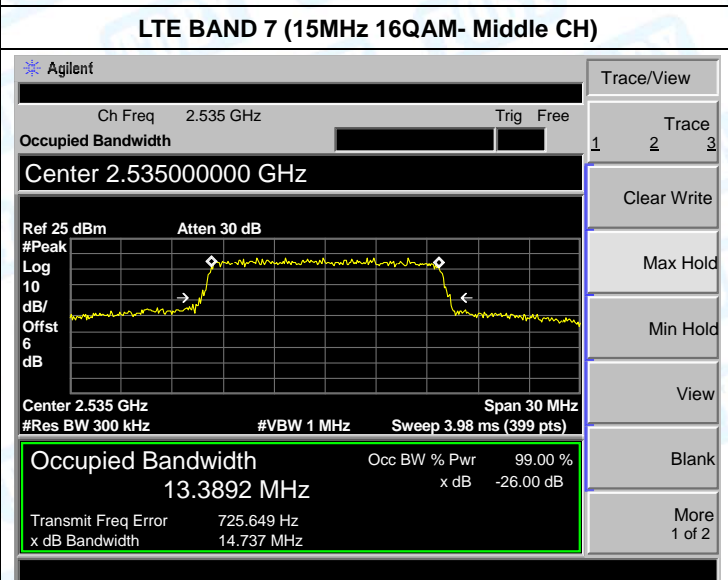
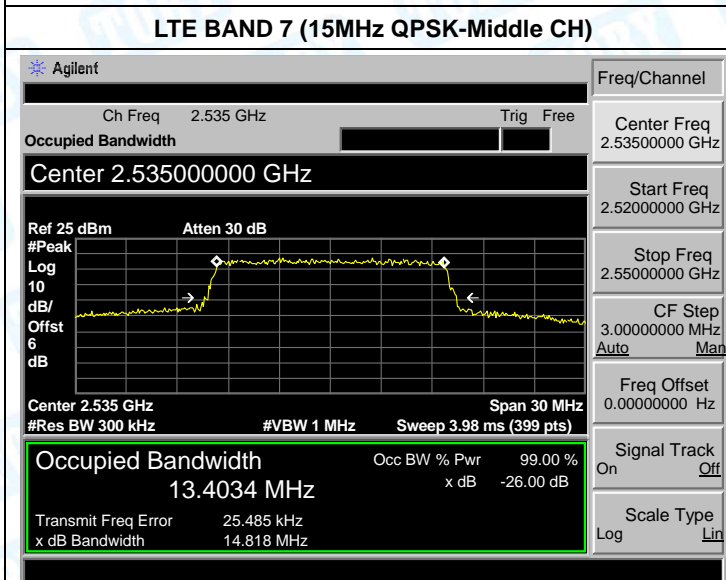
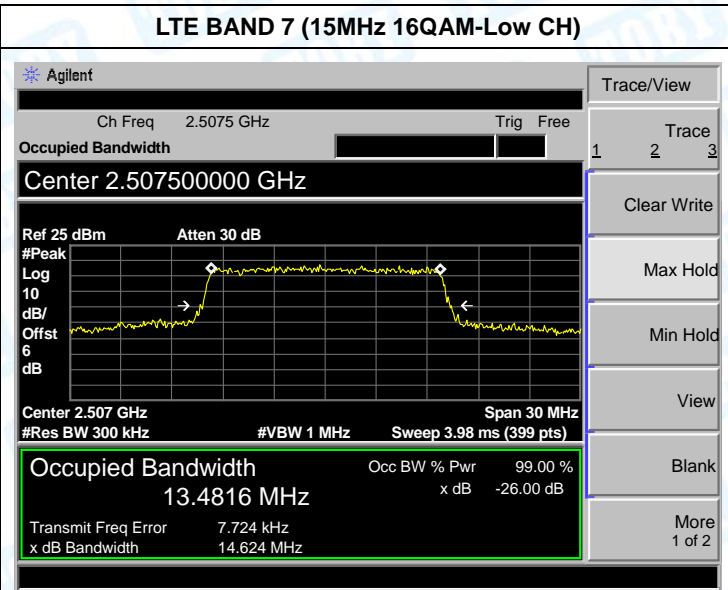
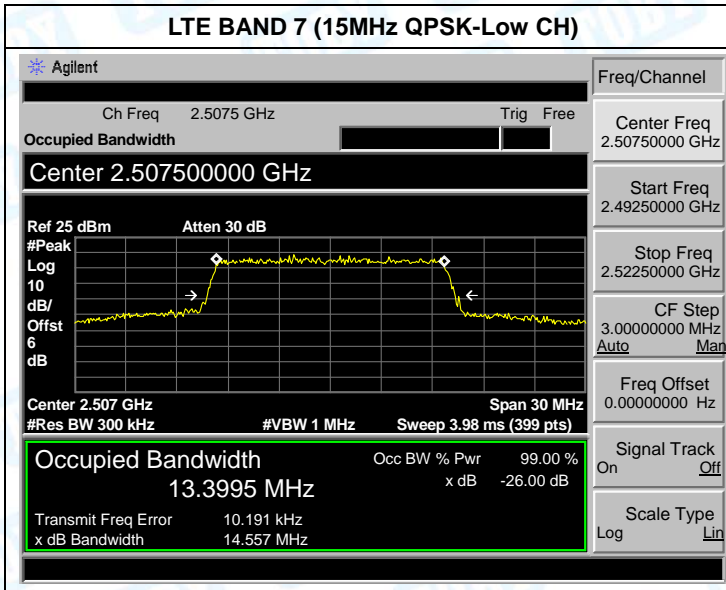


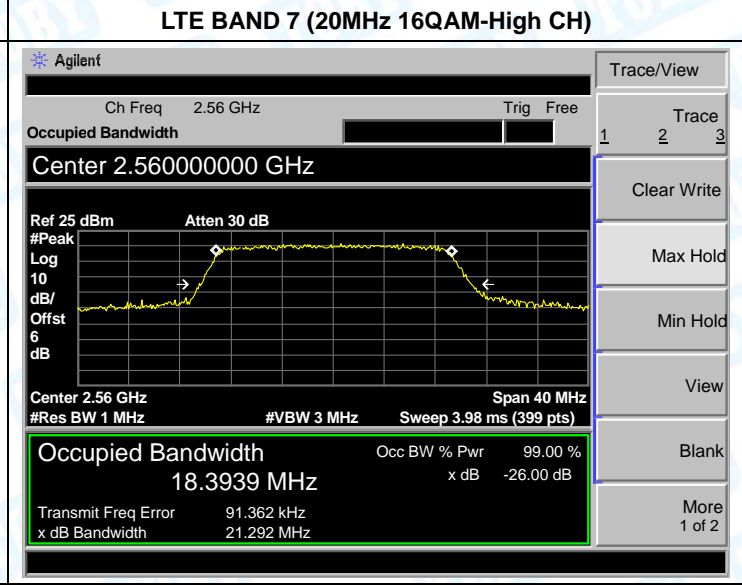
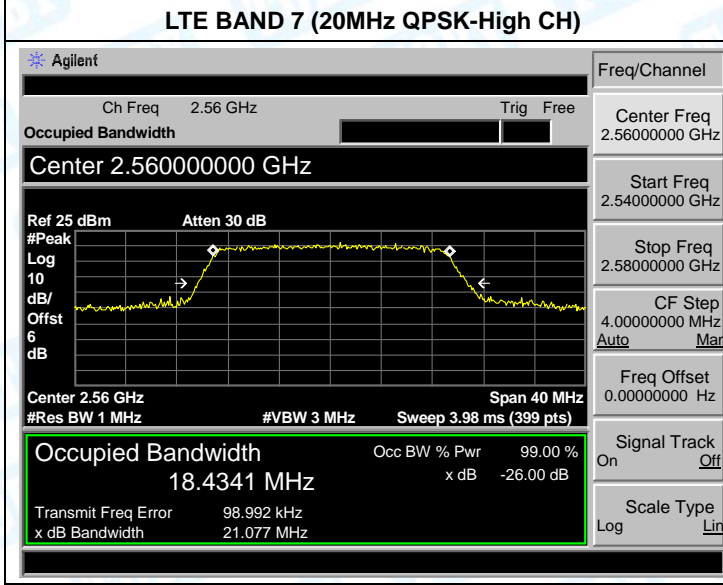
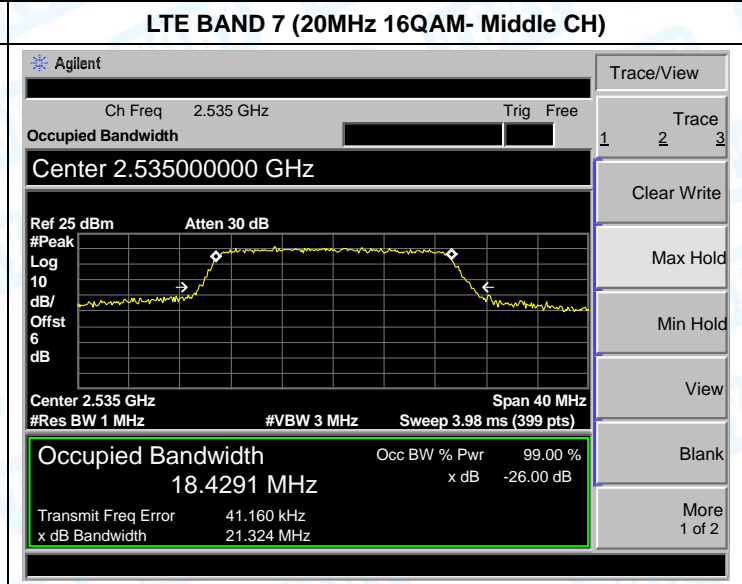
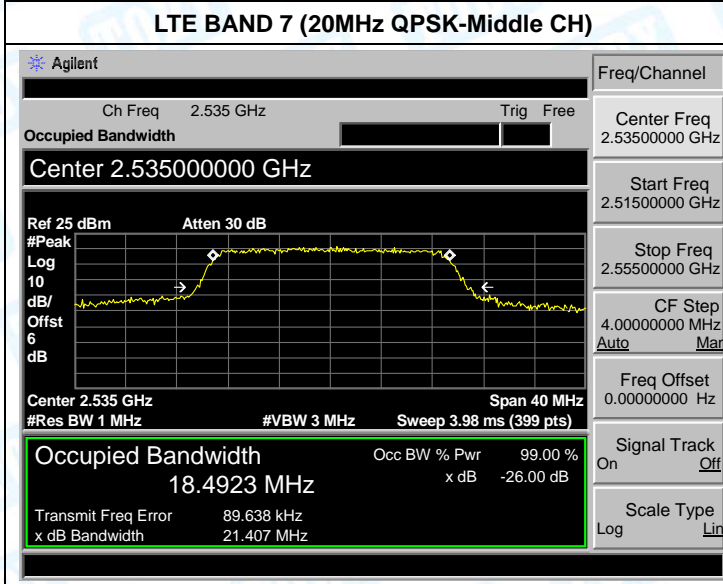
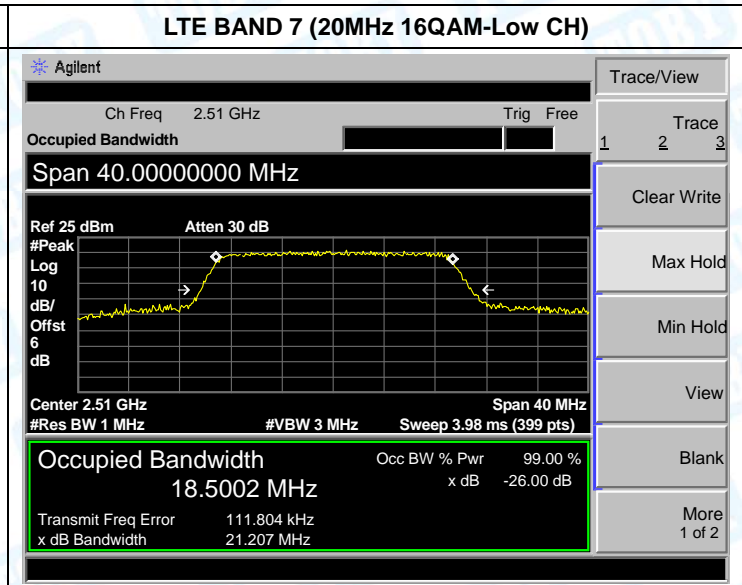
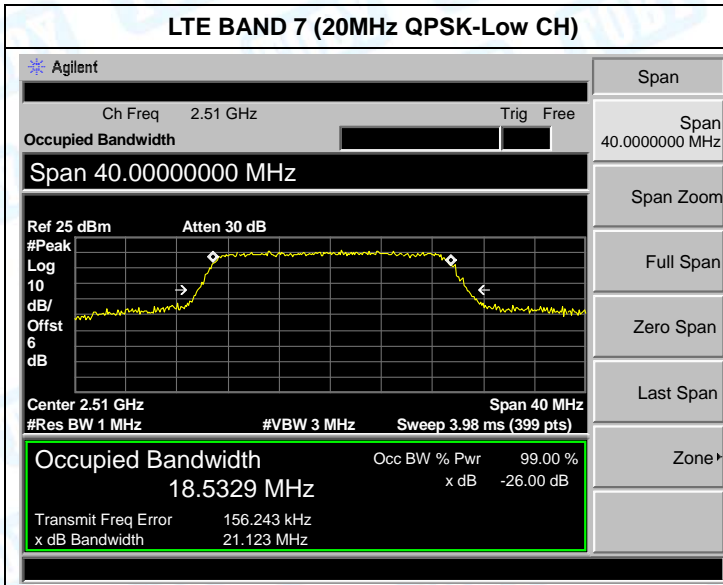
LTE BAND 7 (5MHz QPSK-High CH)

LTE BAND 7 (5MHz 16QAM-High CH)

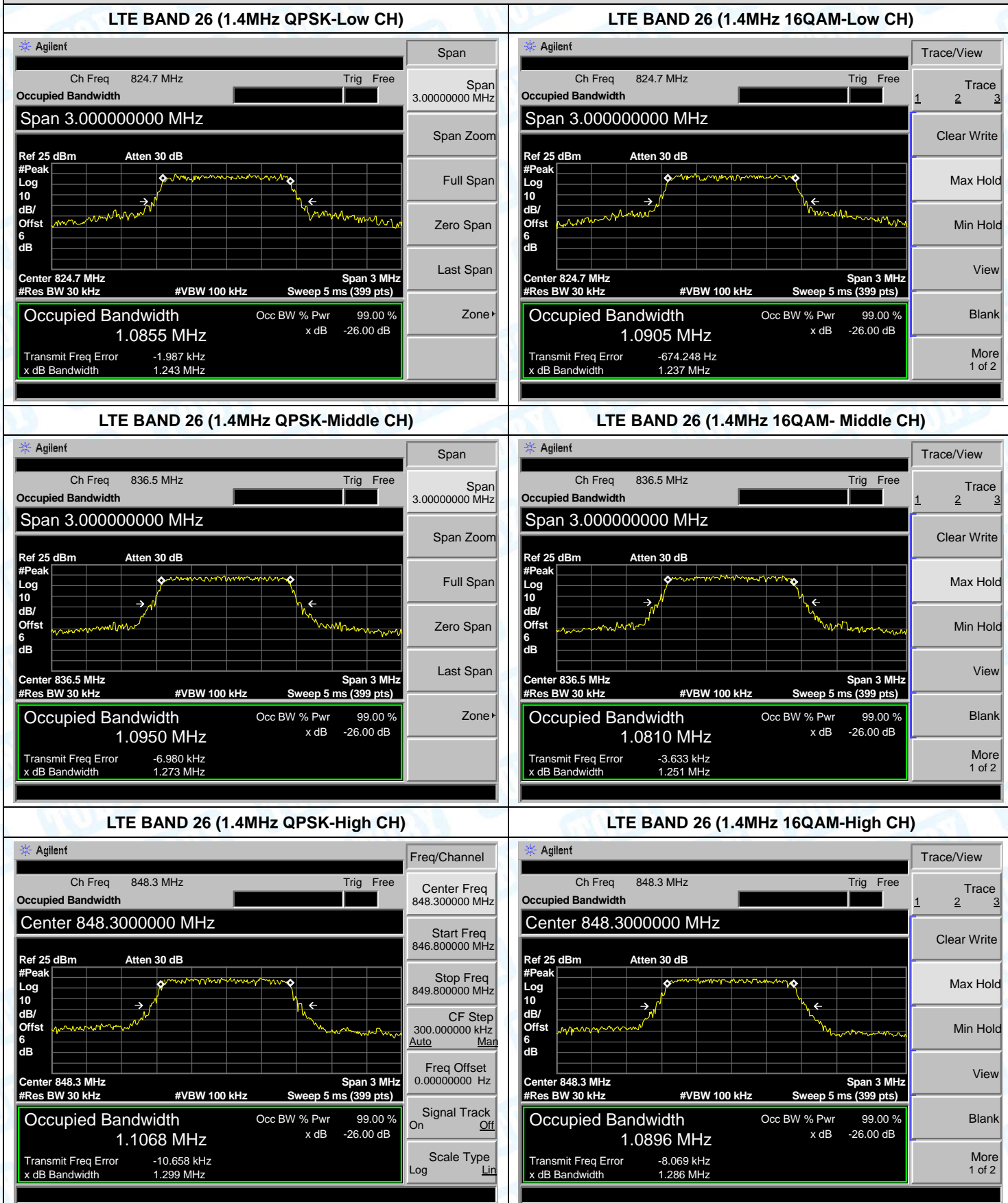


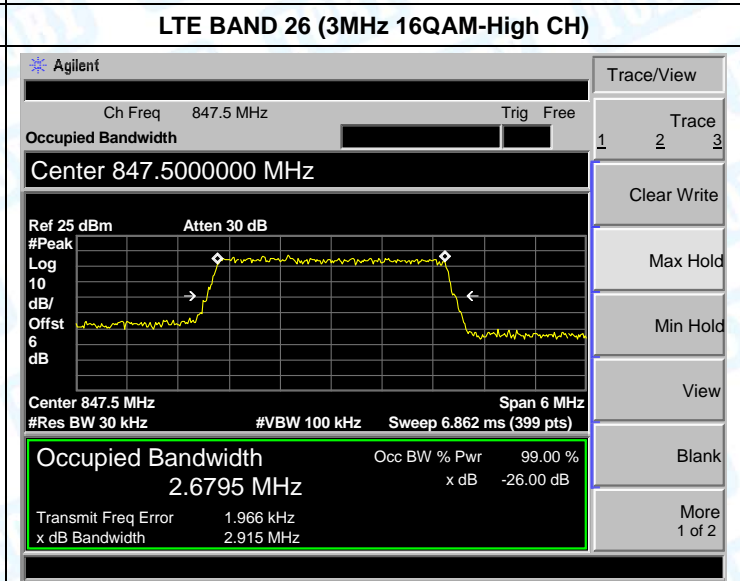
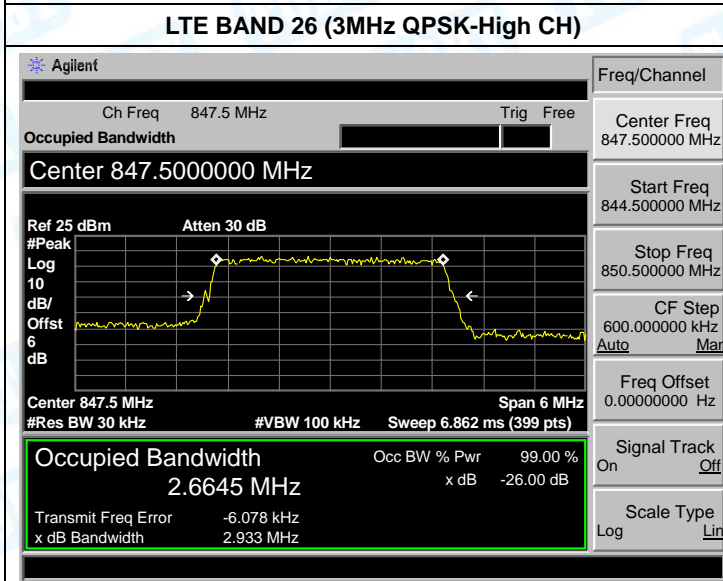
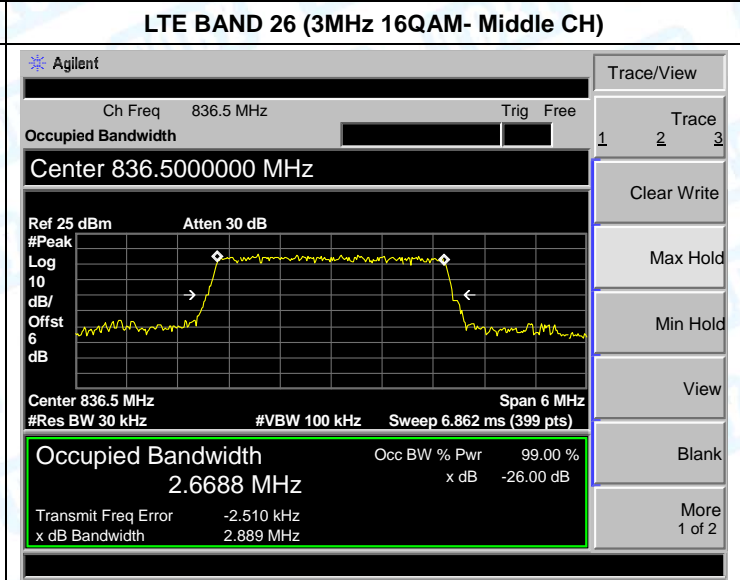
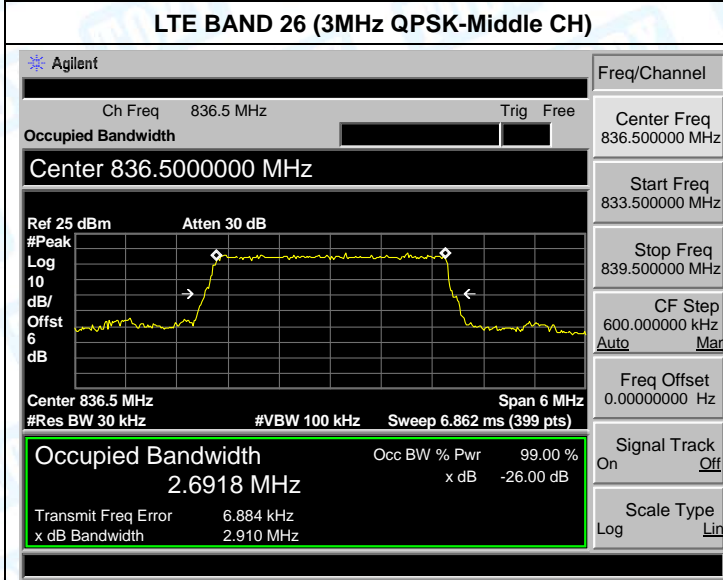
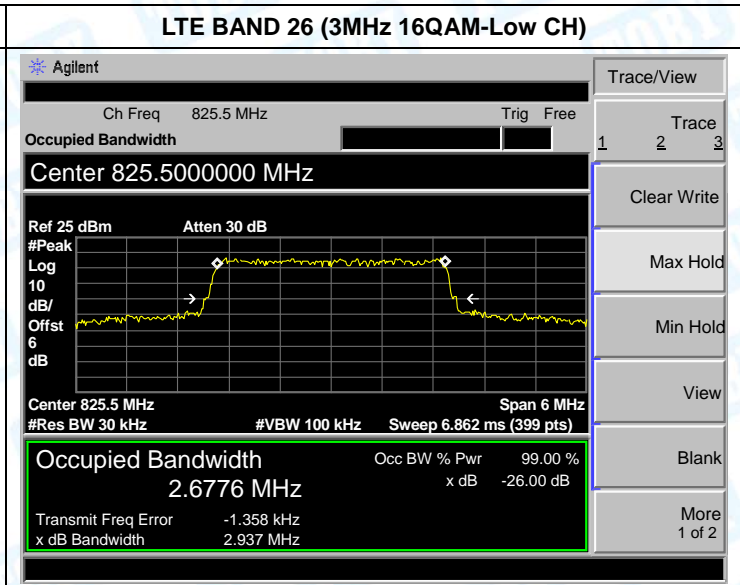
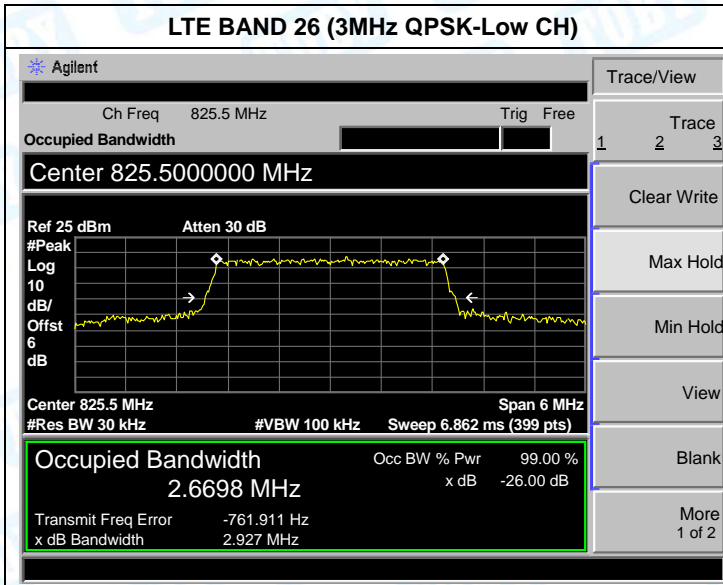


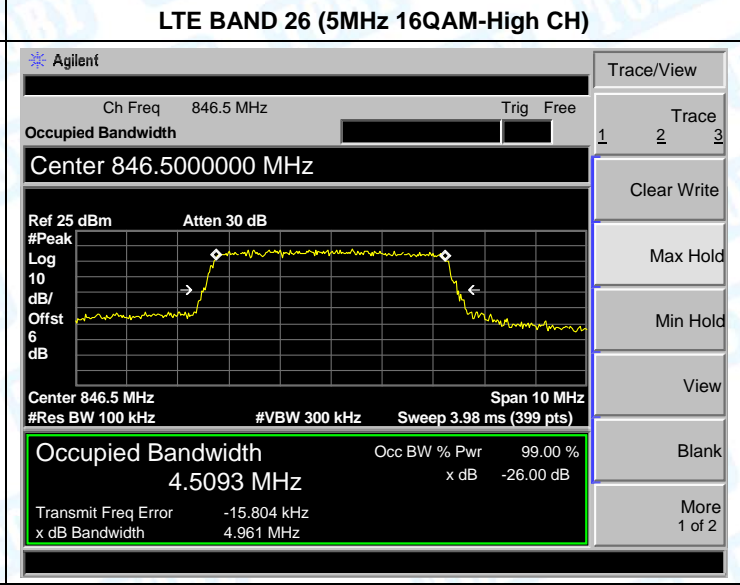
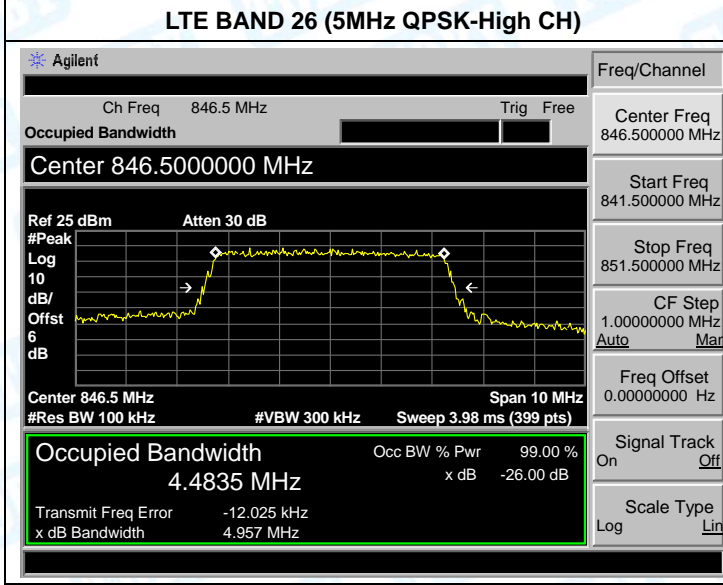
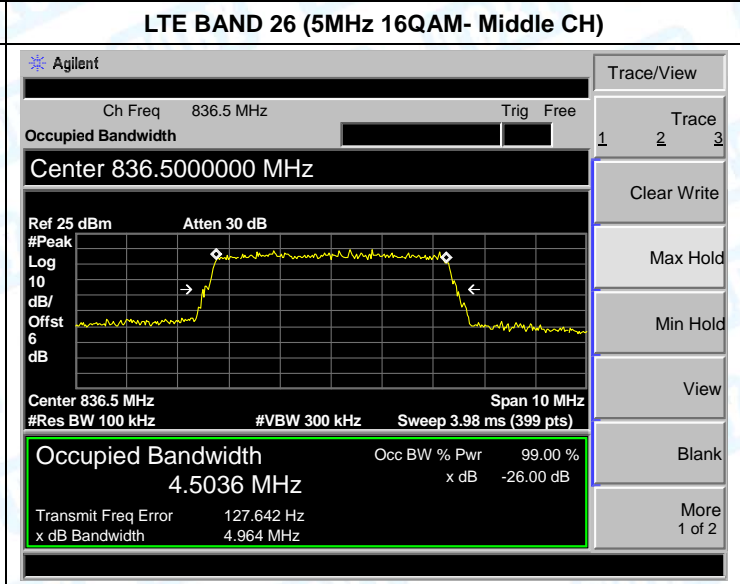
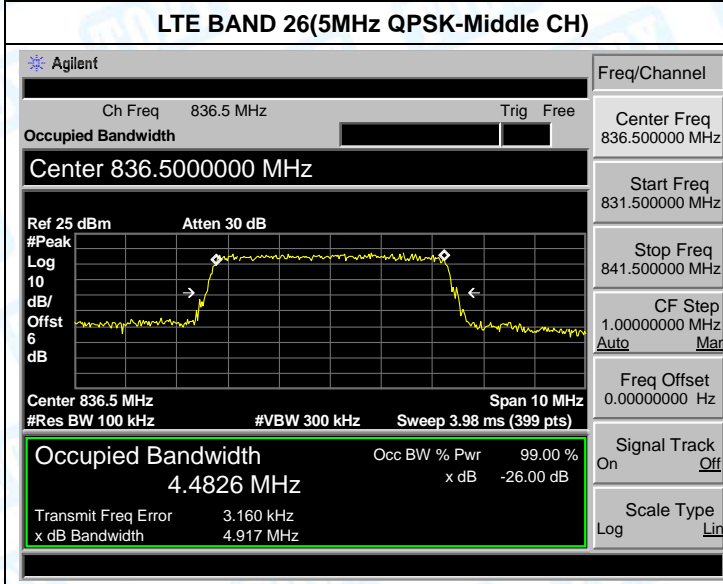
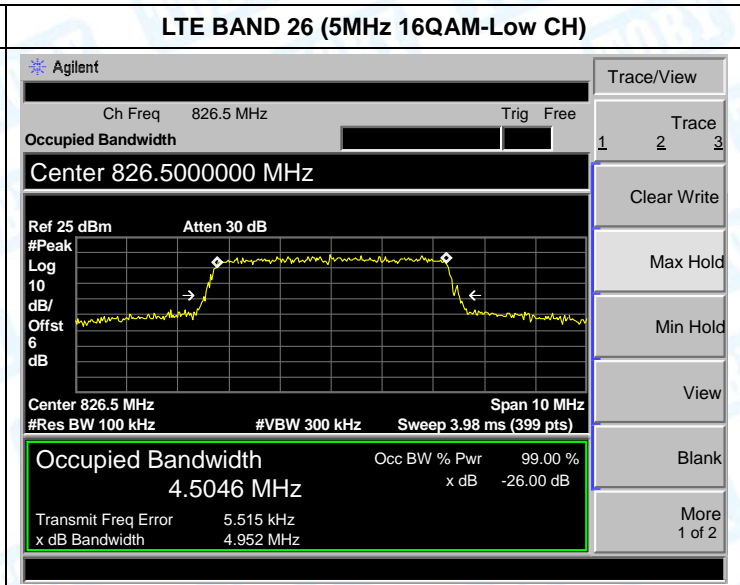
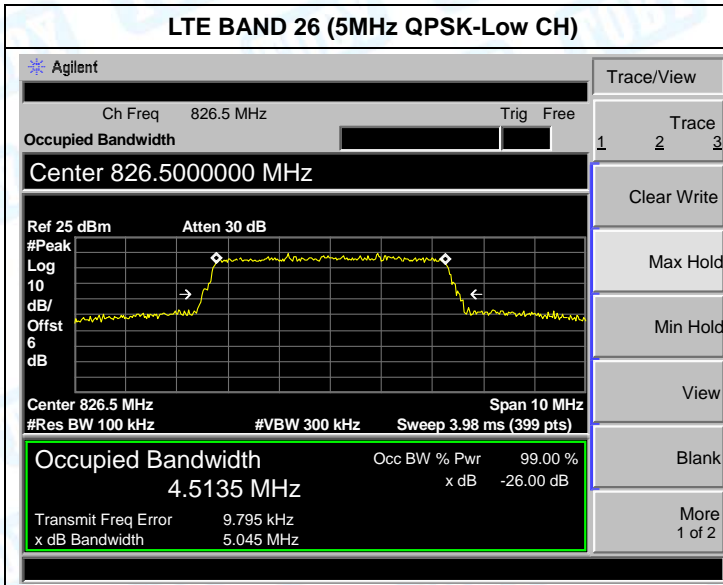


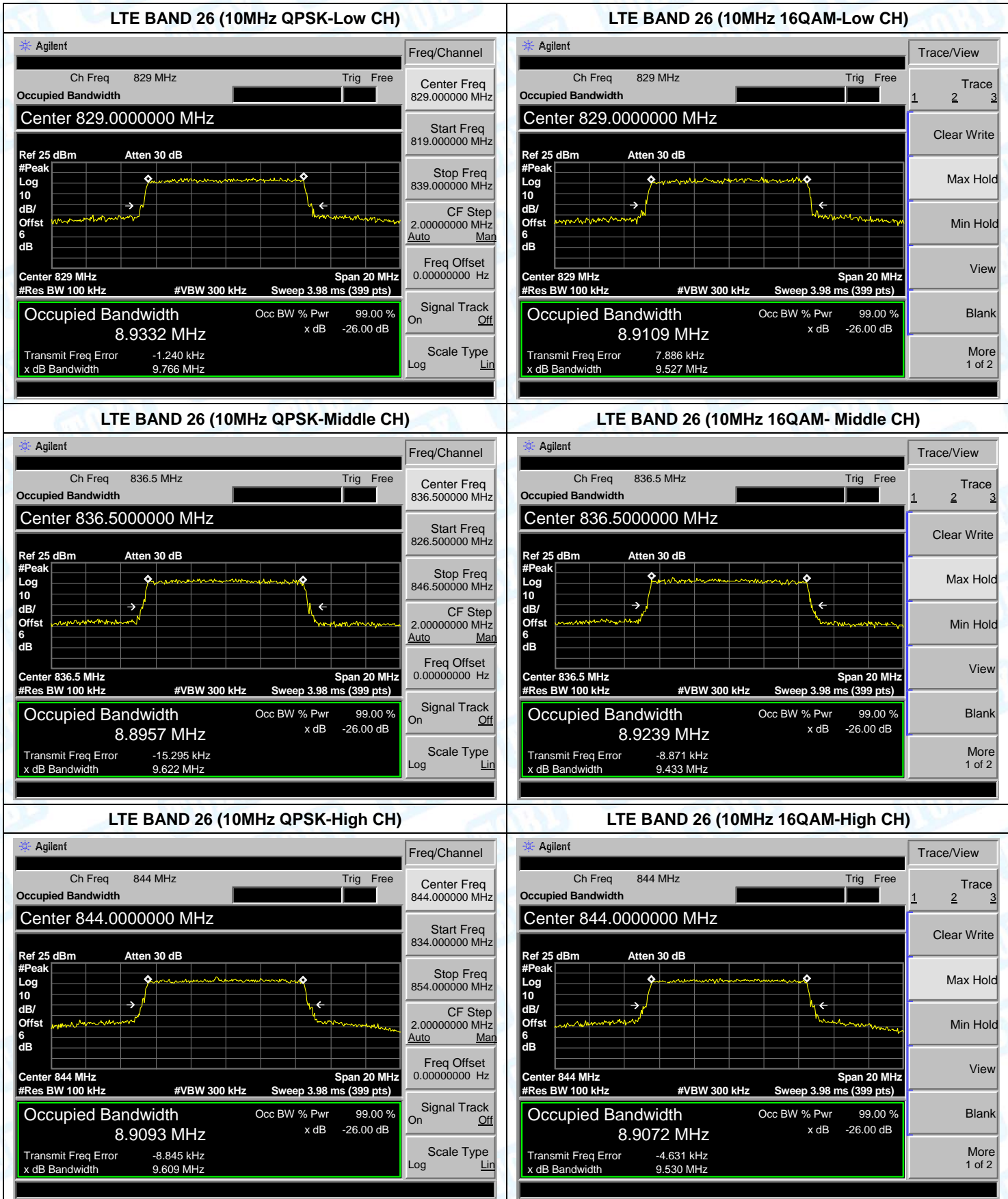


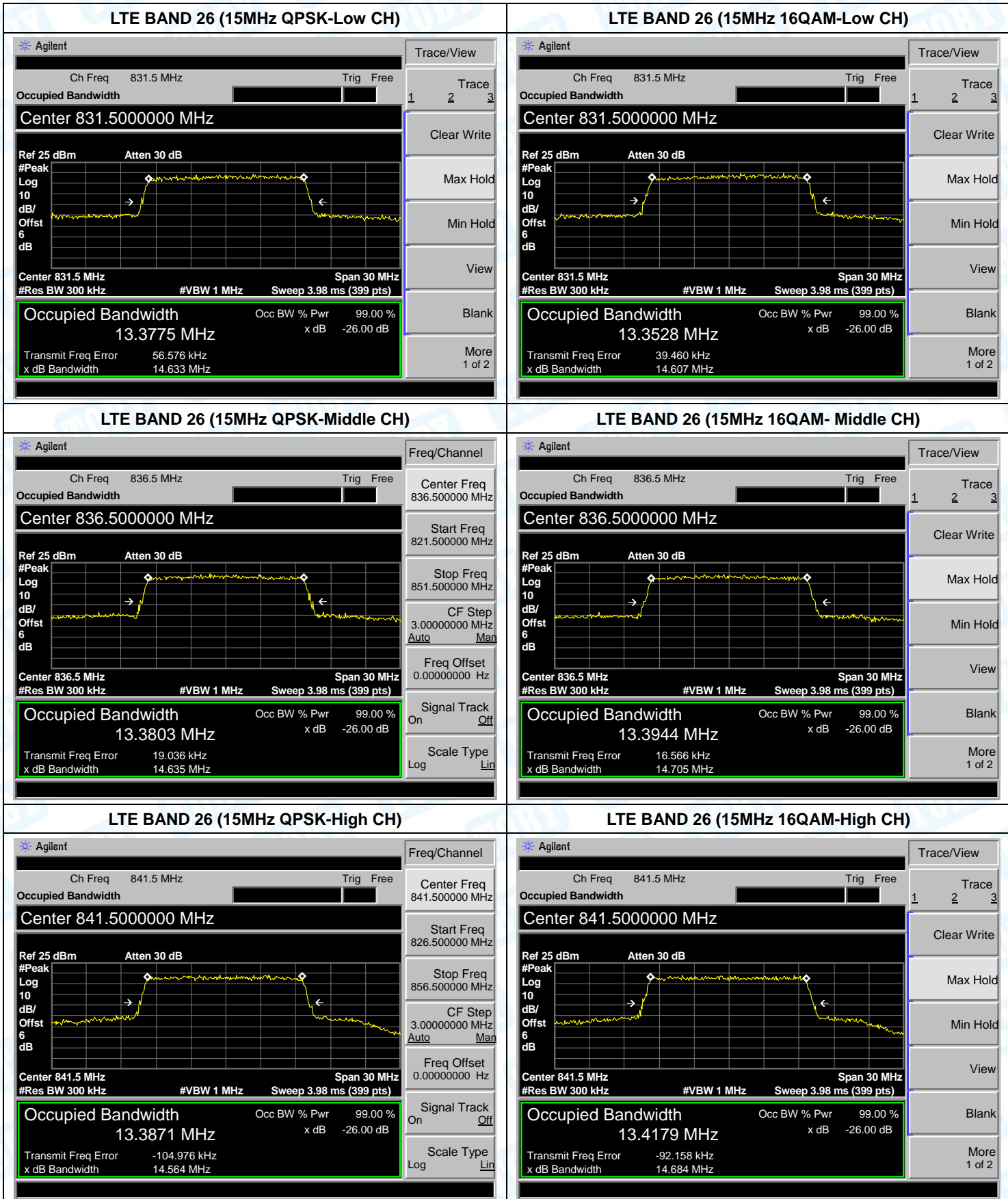
Occupancy Bandwidth Test Plot



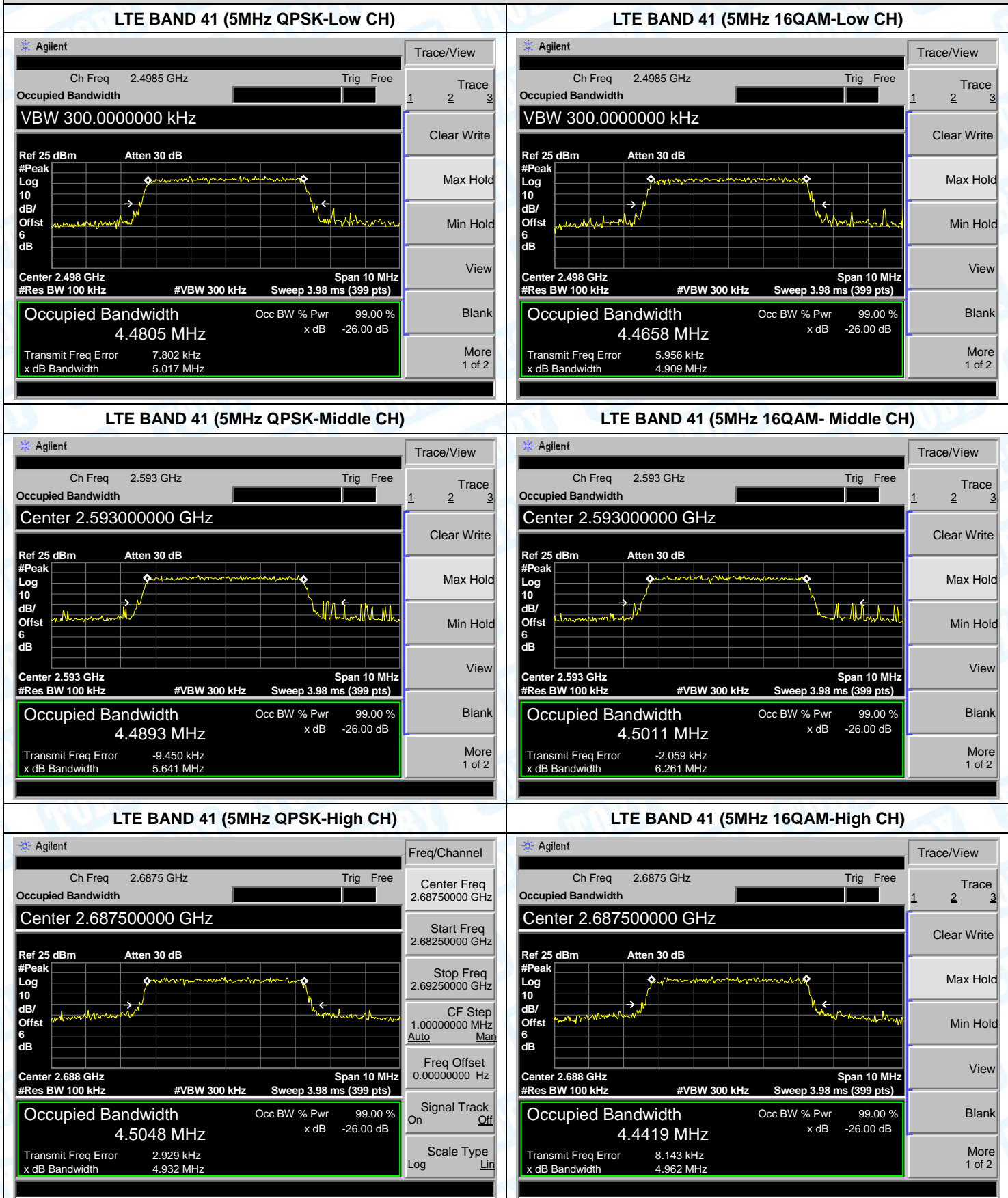


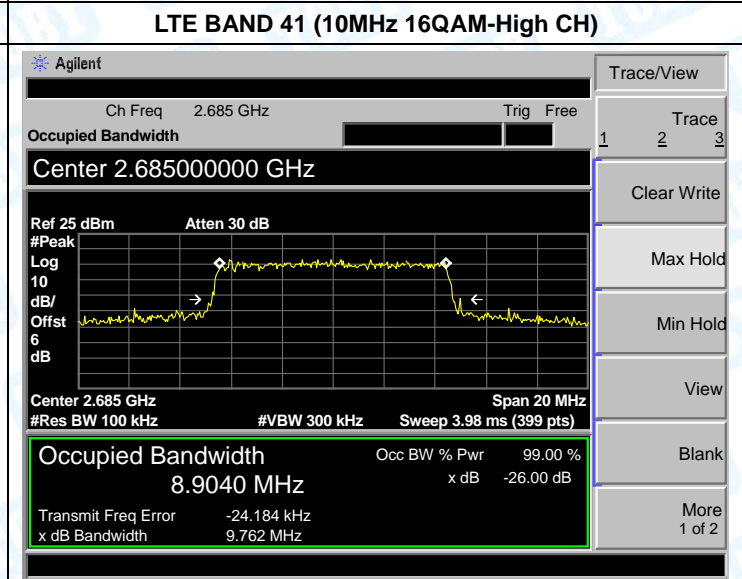
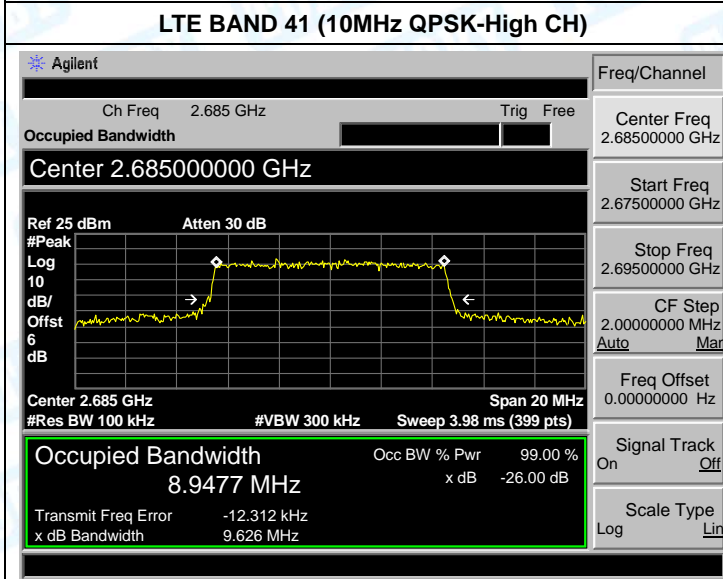
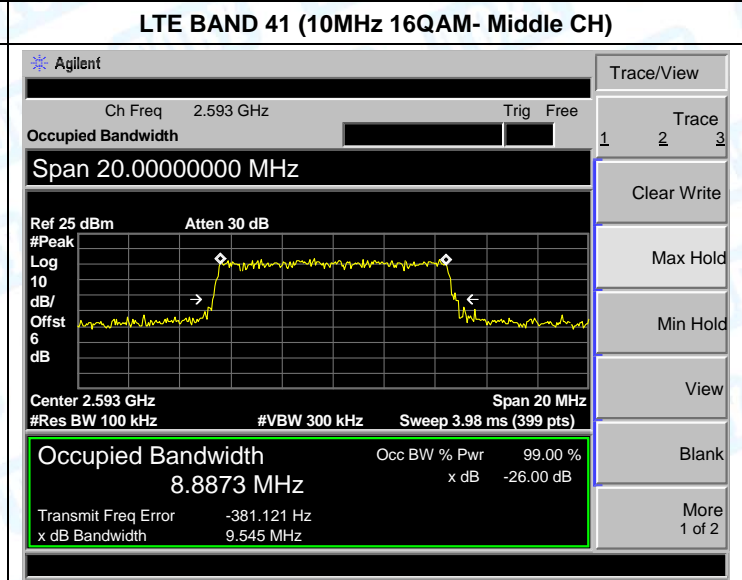
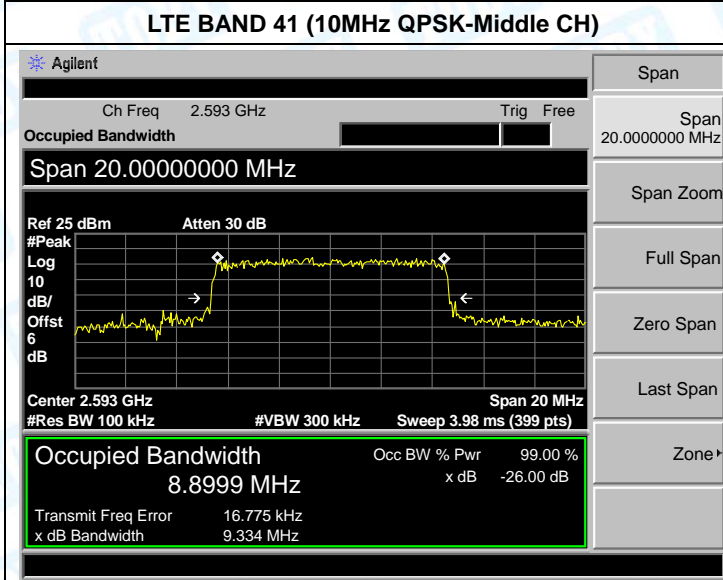
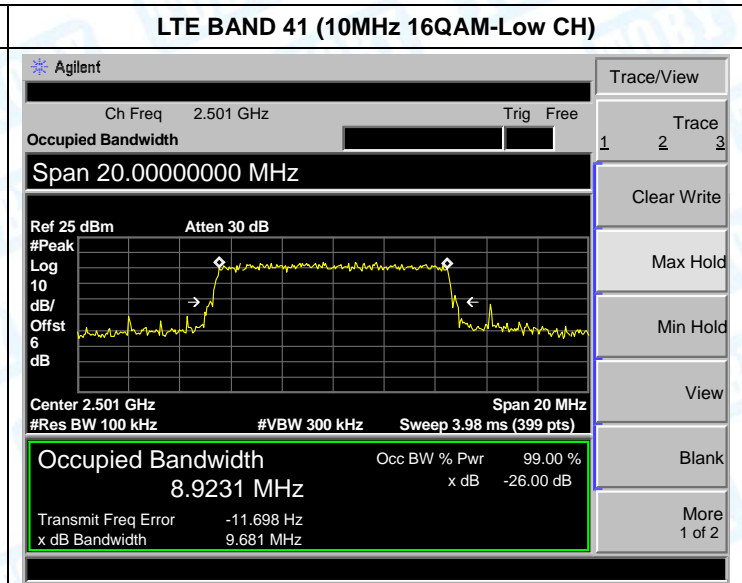
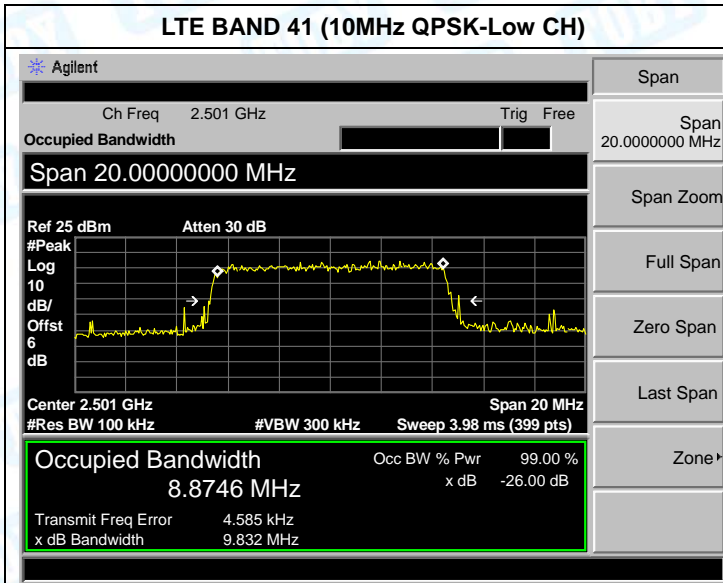


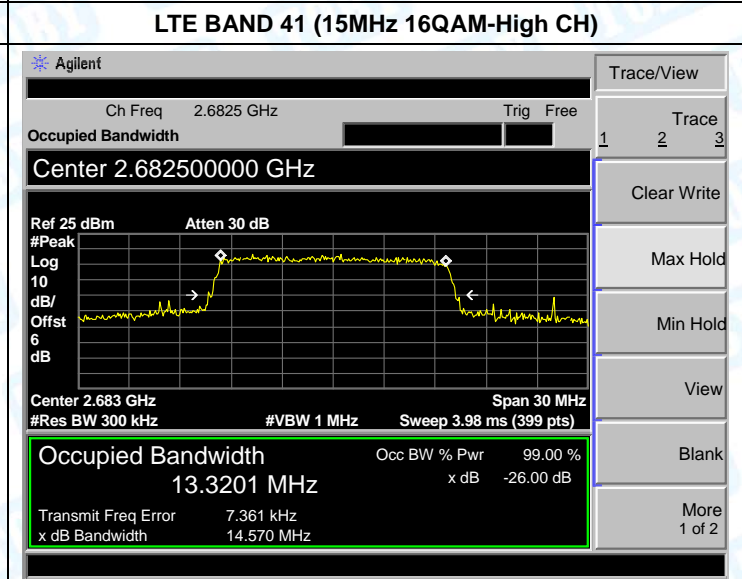
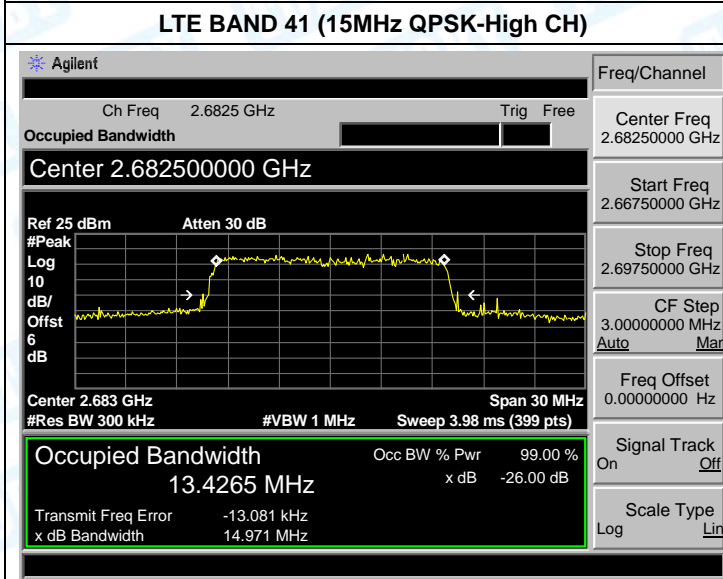
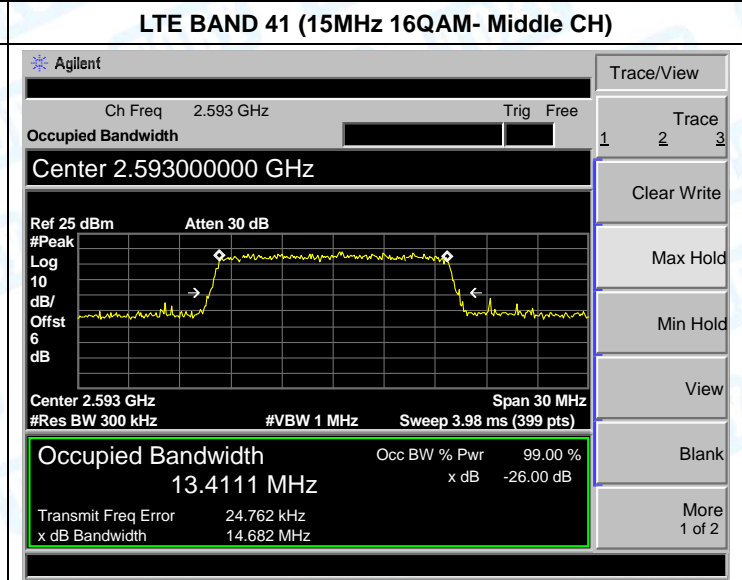
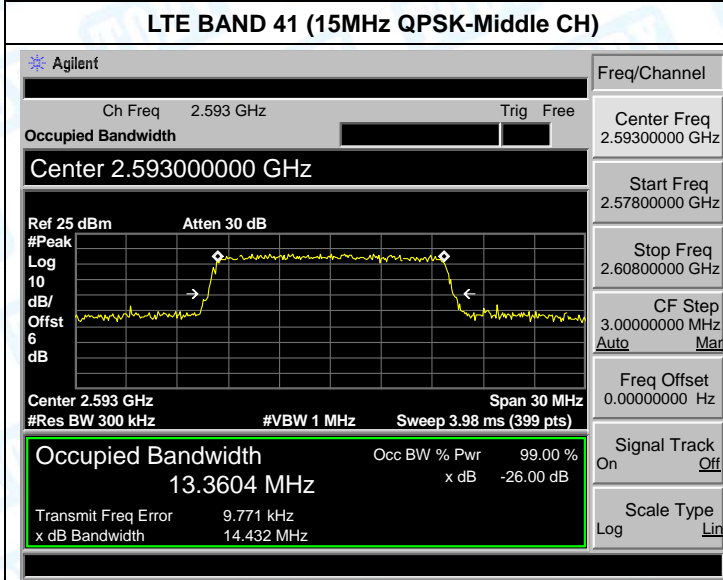
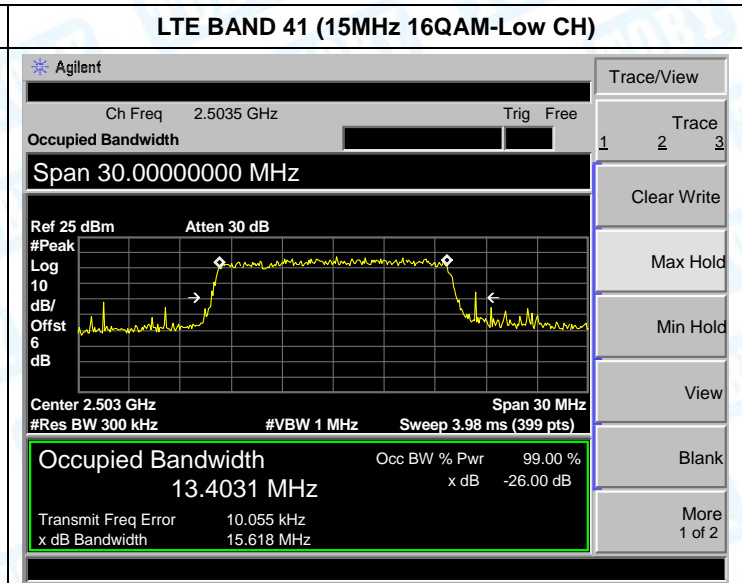
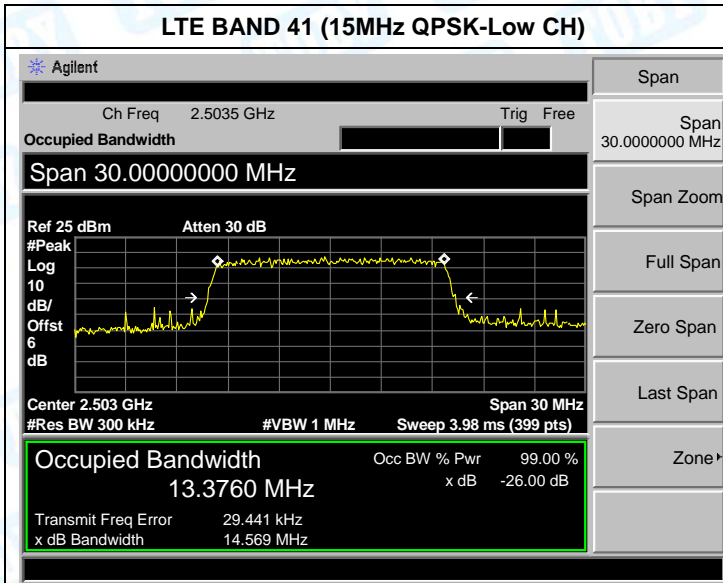


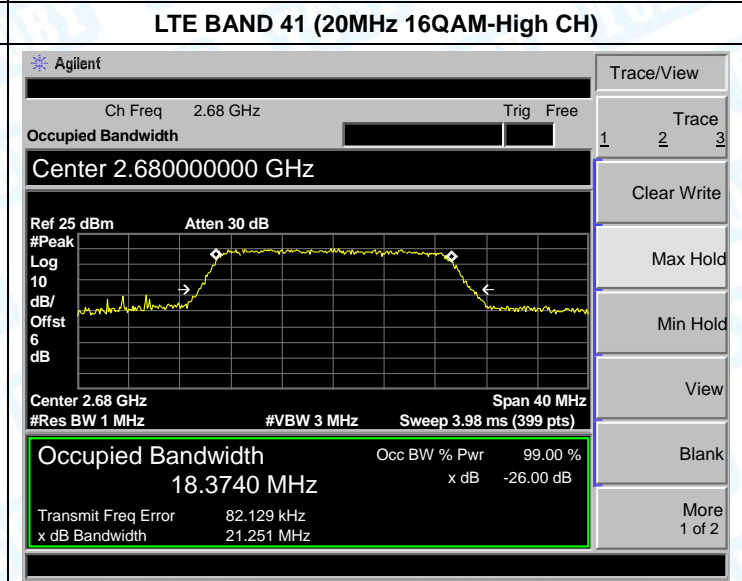
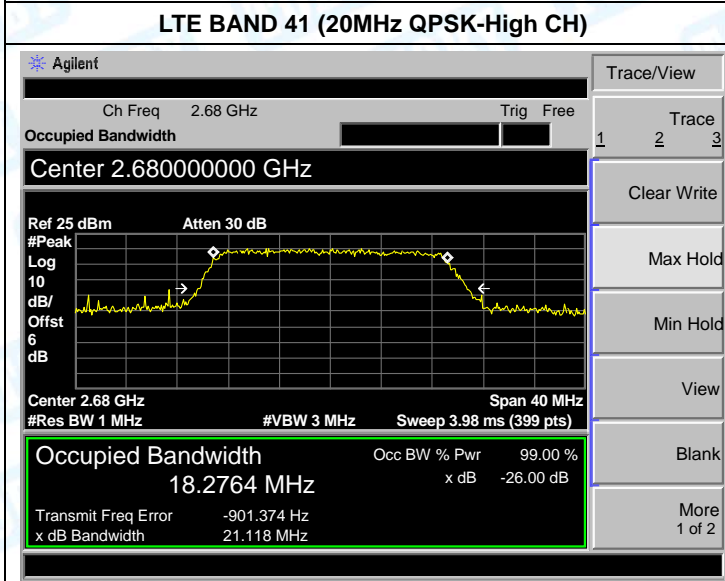
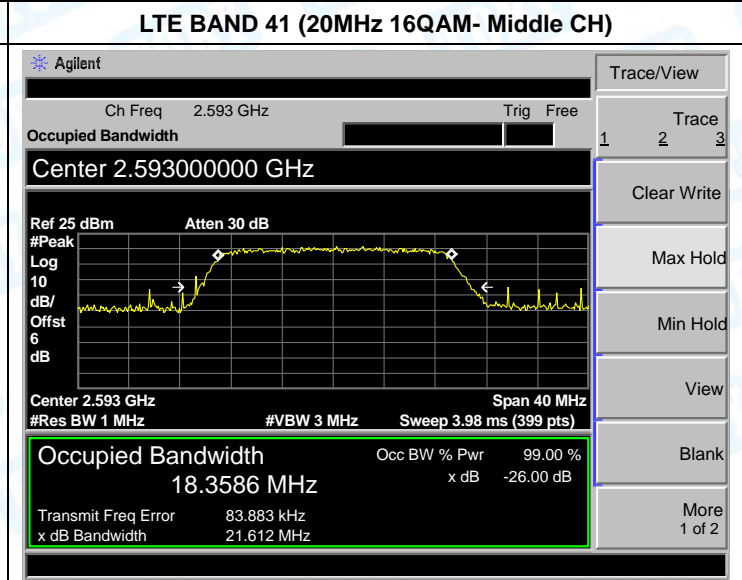
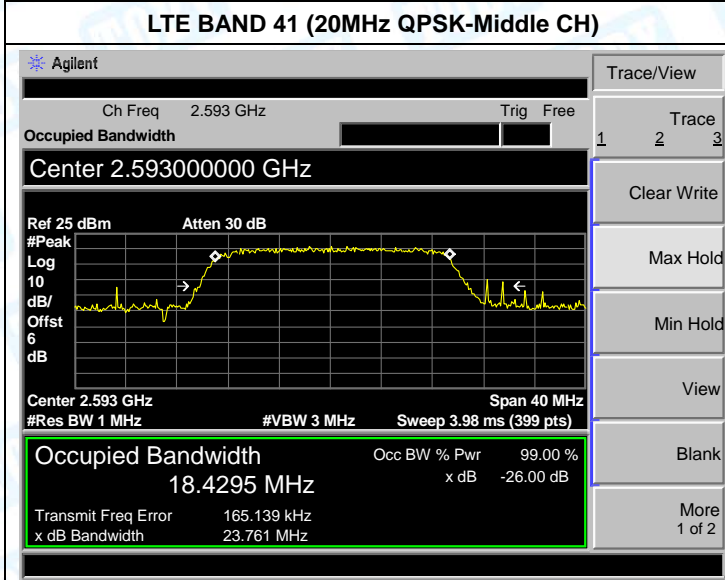
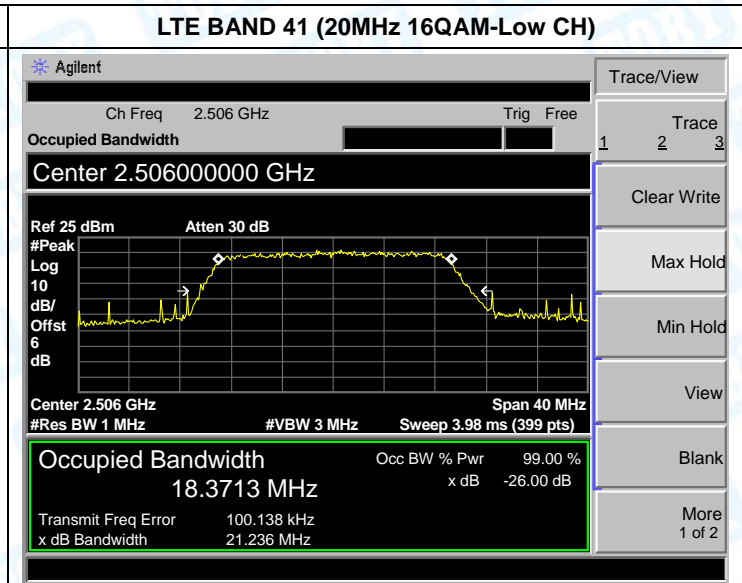
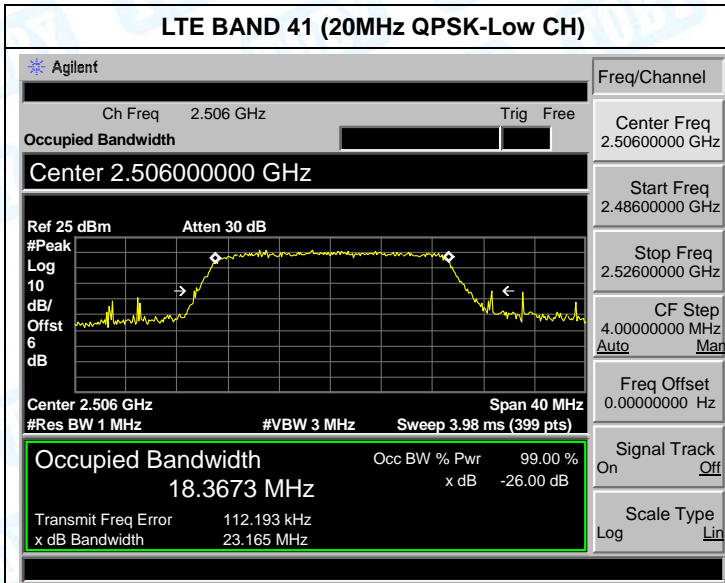


Occupancy Bandwidth Test Plot



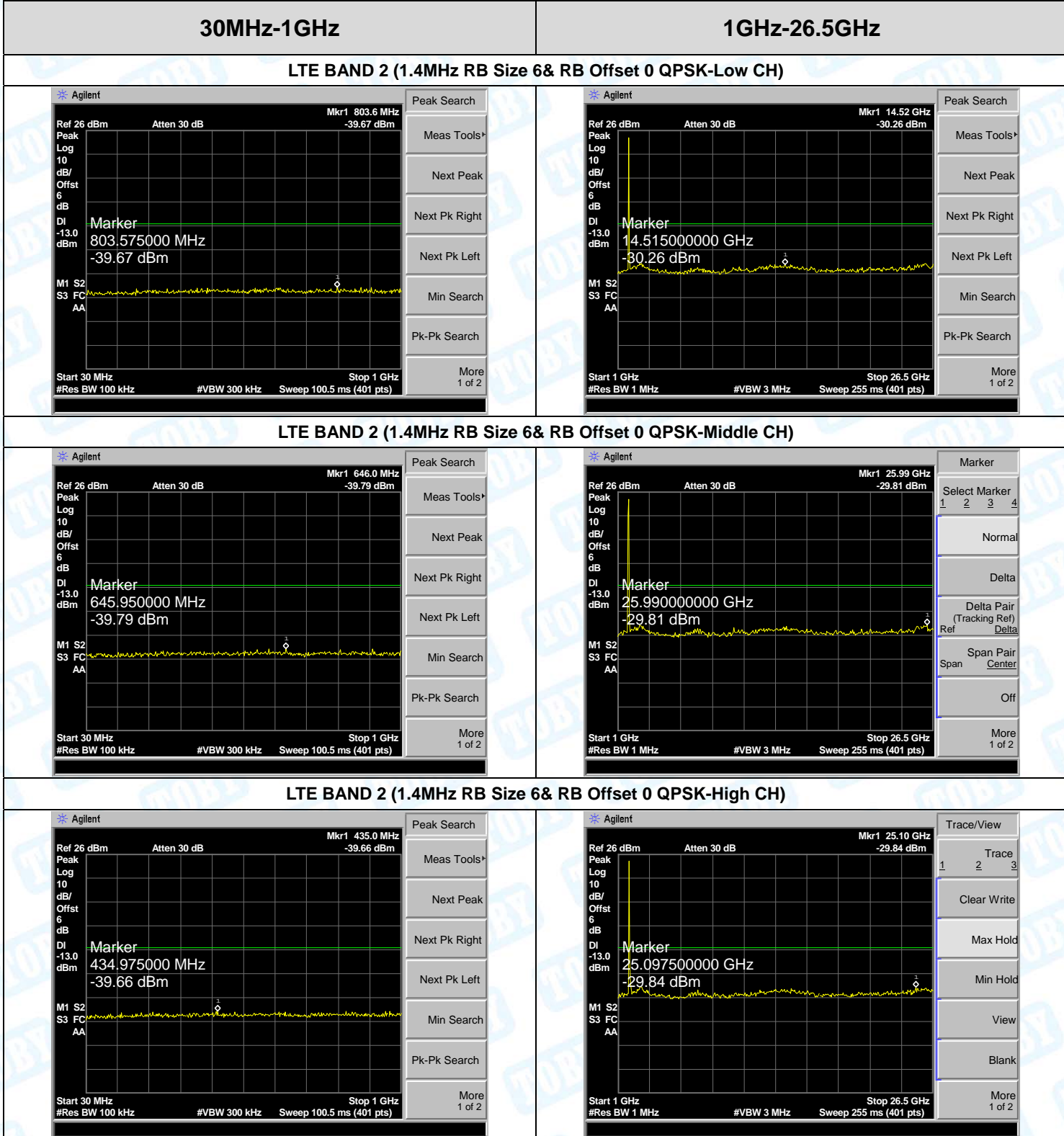






ATTACHMENT D--OUT OF BAND EMISSION AT ANTENNA TERMINALS

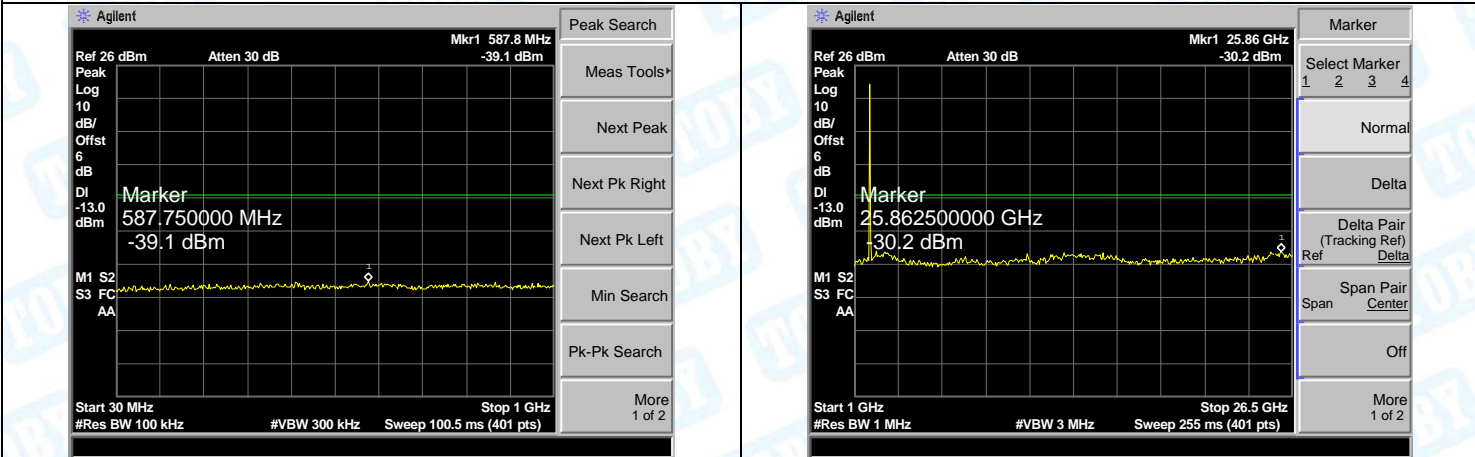
Only show the worst case(LTE BAND 2/4/5/7/26/41 QPSK Mode)



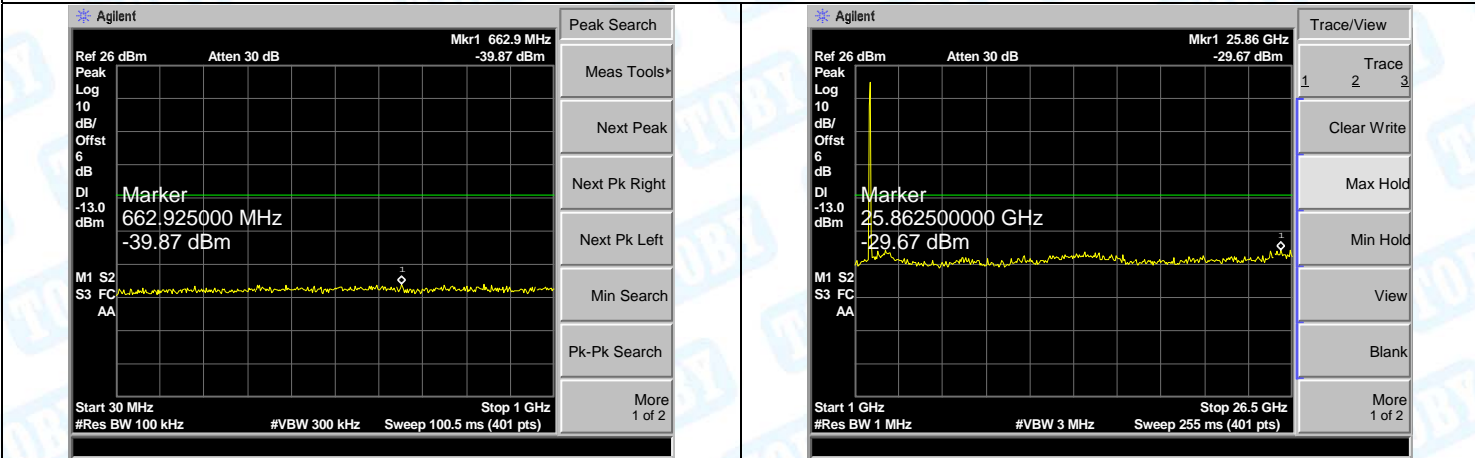
30MHz-1GHz

1GHz-26.5GHz

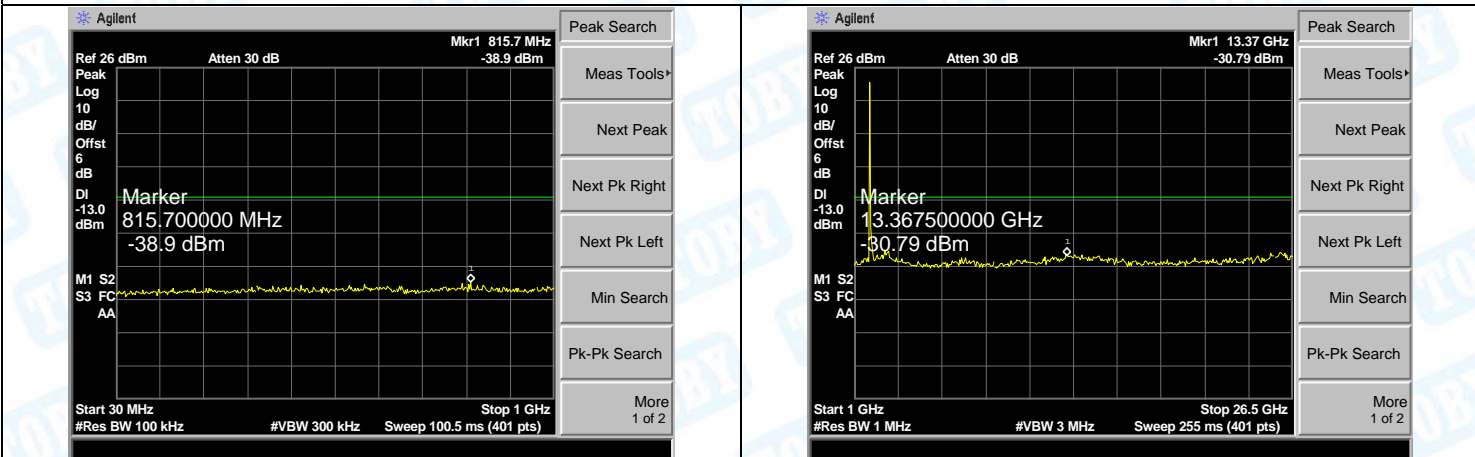
LTE BAND 2 (3MHz RB Size 15& RB Offset 0 QPSK-Low CH)



LTE BAND 2 (3MHz RB Size 15& RB Offset 0 QPSK-Middle CH)

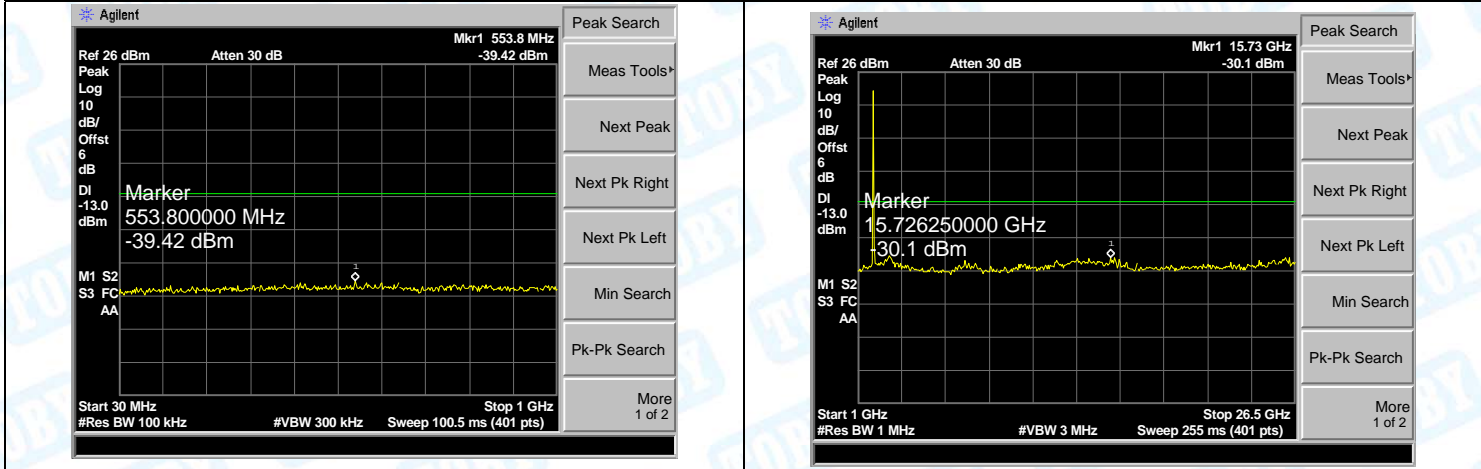


LTE BAND 2 (3MHz RB Size 15& RB Offset 0 QPSK-High CH)

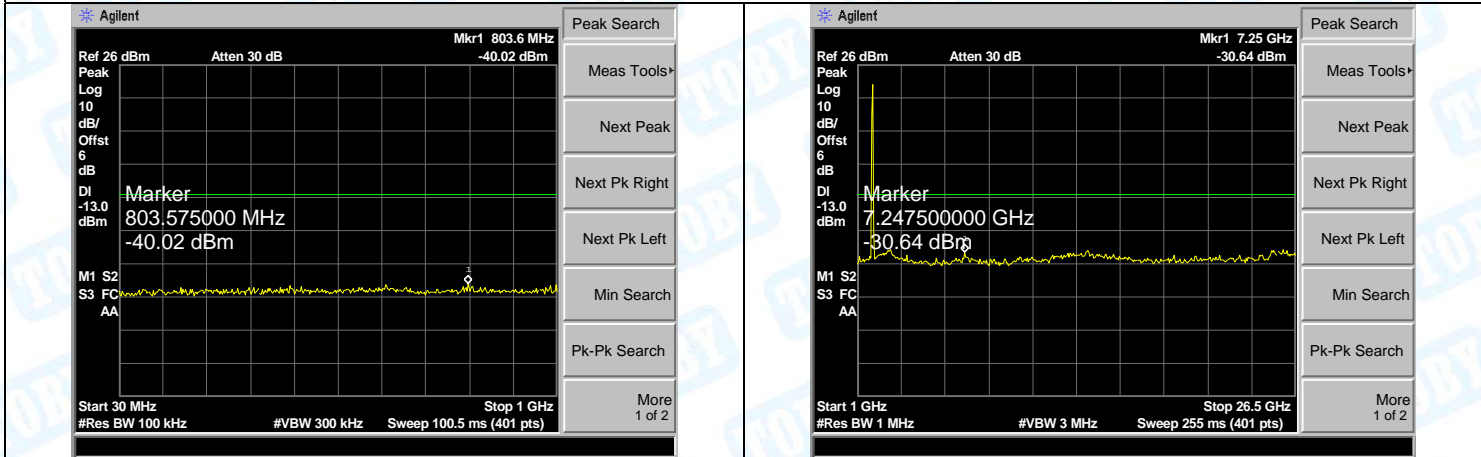


30MHz-1GHz	1GHz-26.5GHz
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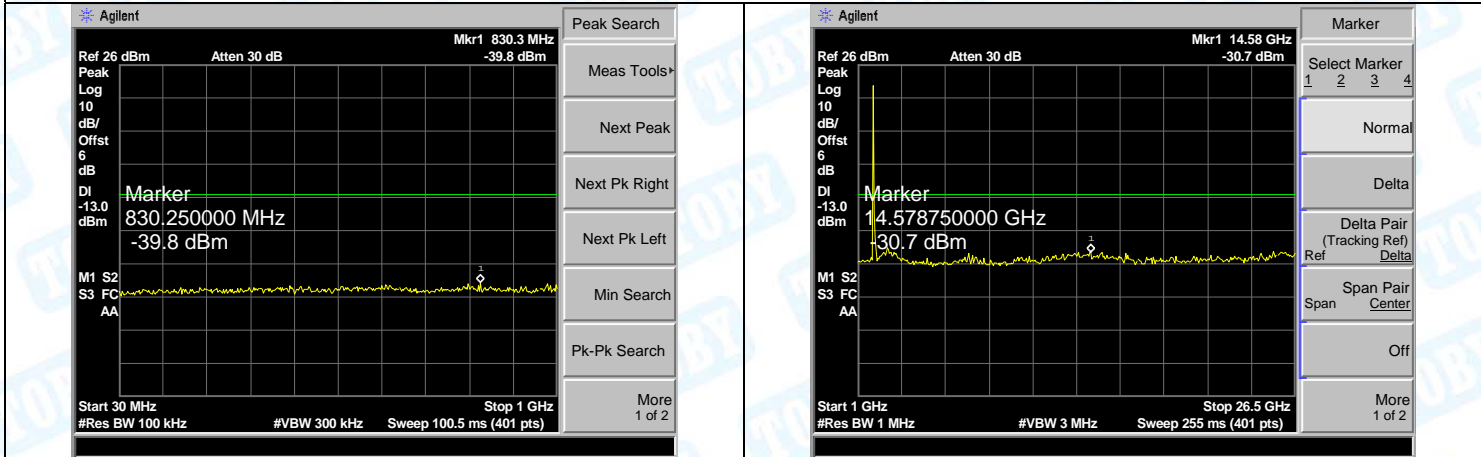
LTE BAND 2 (5MHz RB Size 25& RB Offset 0 QPSK-Low CH)



LTE BAND 2 (5MHz RB Size 25& RB Offset 0 QPSK-Middle CH)

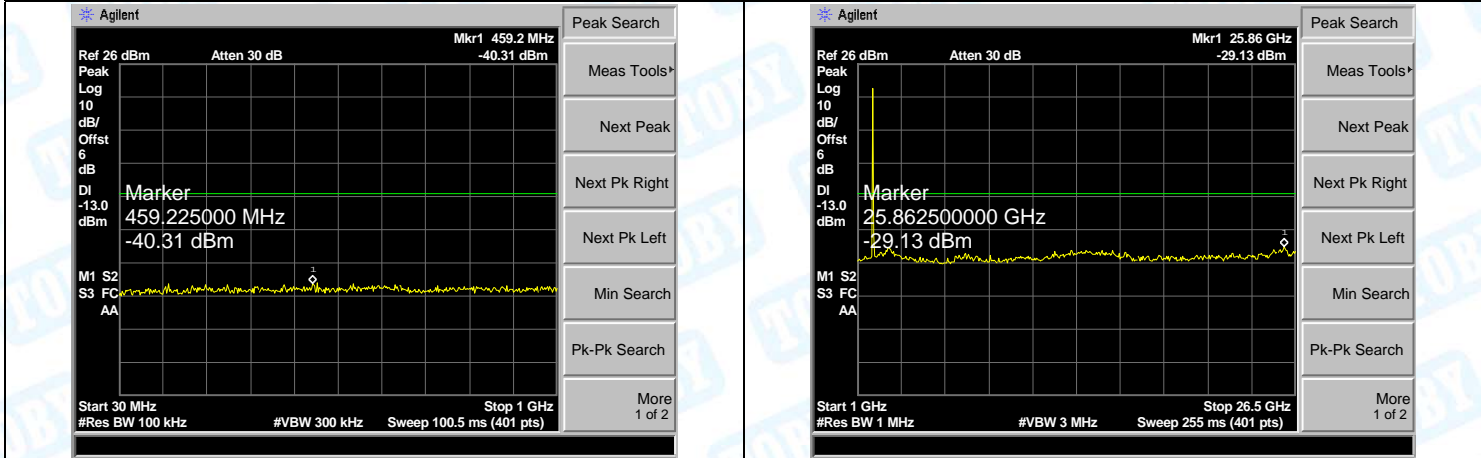


LTE BAND 2 (5MHz RB Size 25& RB Offset 0 QPSK-High CH)

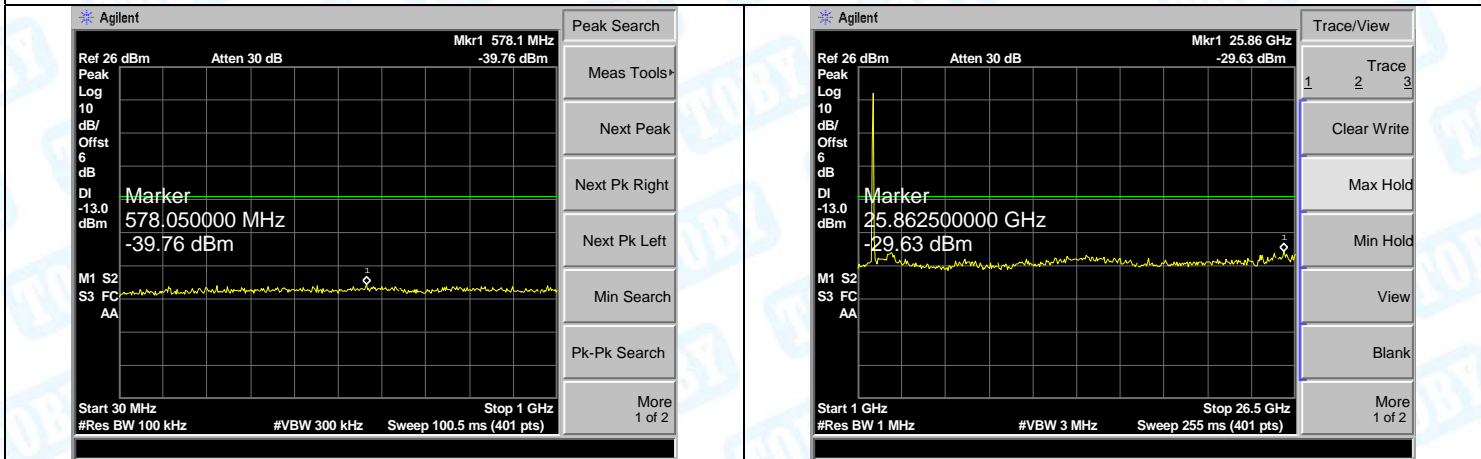


30MHz-1GHz	1GHz-26.5GHz
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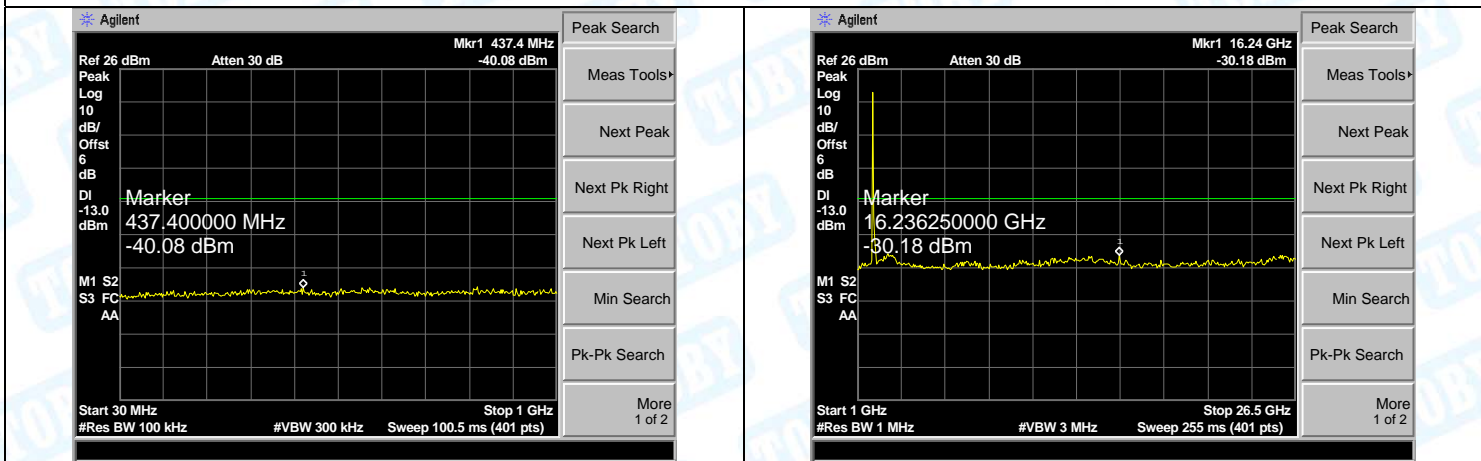
LTE BAND 2 (10MHz RB Size 50& RB Offset 0 QPSK-Low CH)



LTE BAND 2 (10MHz RB Size 50& RB Offset 0 QPSK-Middle CH)



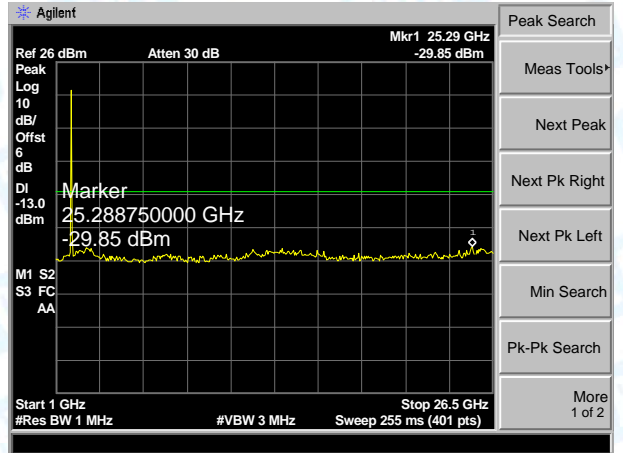
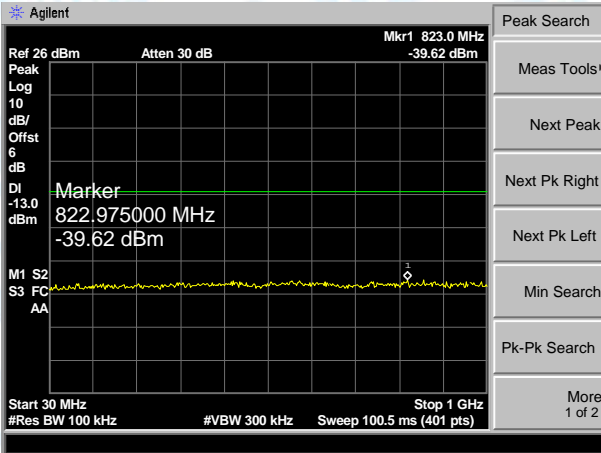
LTE BAND 2 (10MHz RB Size 50& RB Offset 0 QPSK-High CH)



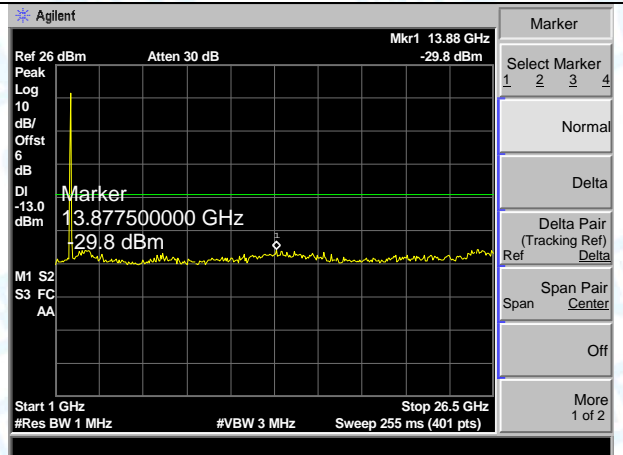
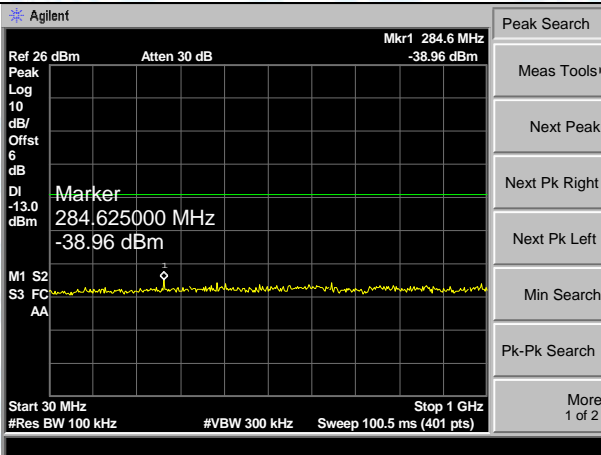
30MHz-1GHz

1GHz-26.5GHz

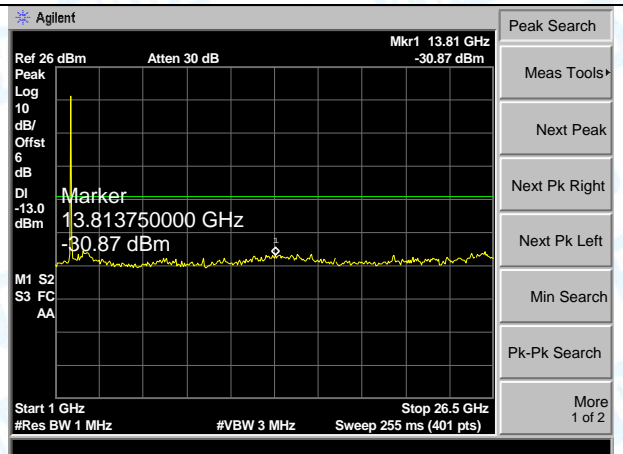
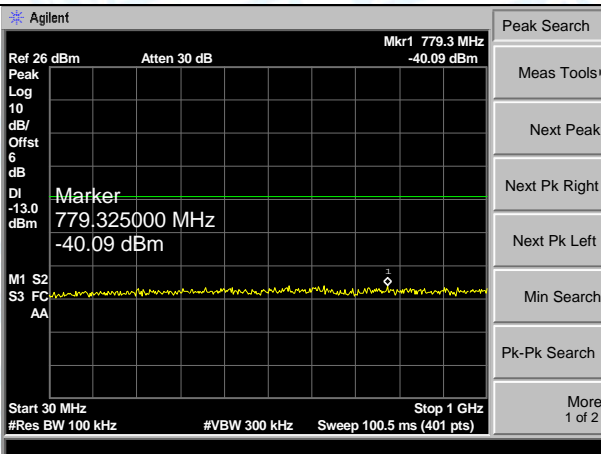
LTE BAND 2 (15MHz RB Size 75& RB Offset 0 QPSK-Low CH)



LTE BAND 2 (15MHz RB Size 75& RB Offset 0 QPSK-Middle CH)

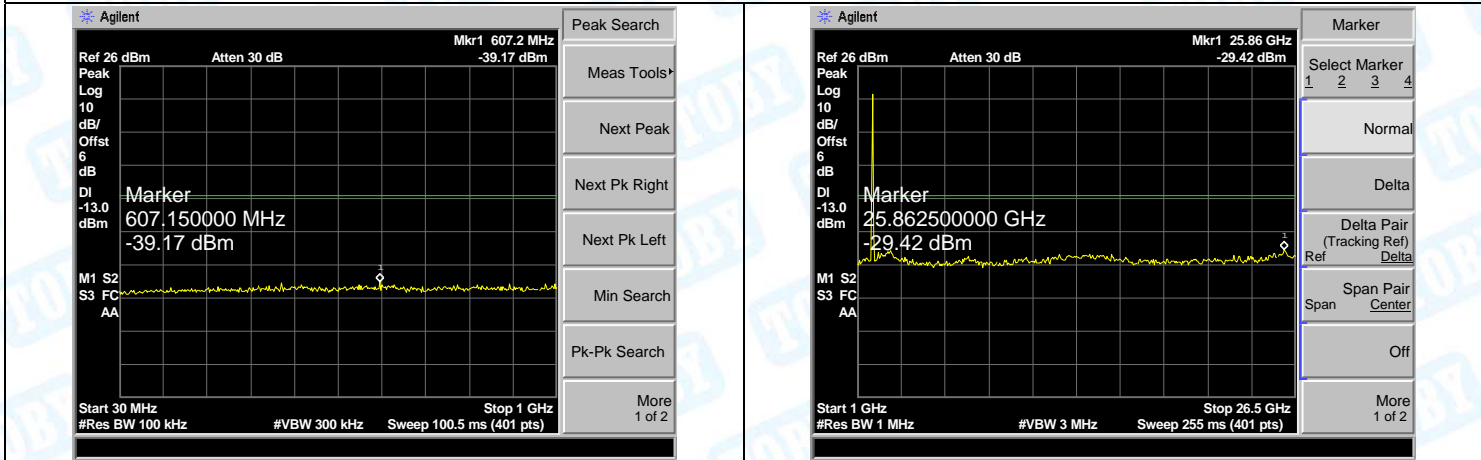


LTE BAND 2 (15MHz RB Size 75& RB Offset 0 QPSK-High CH)

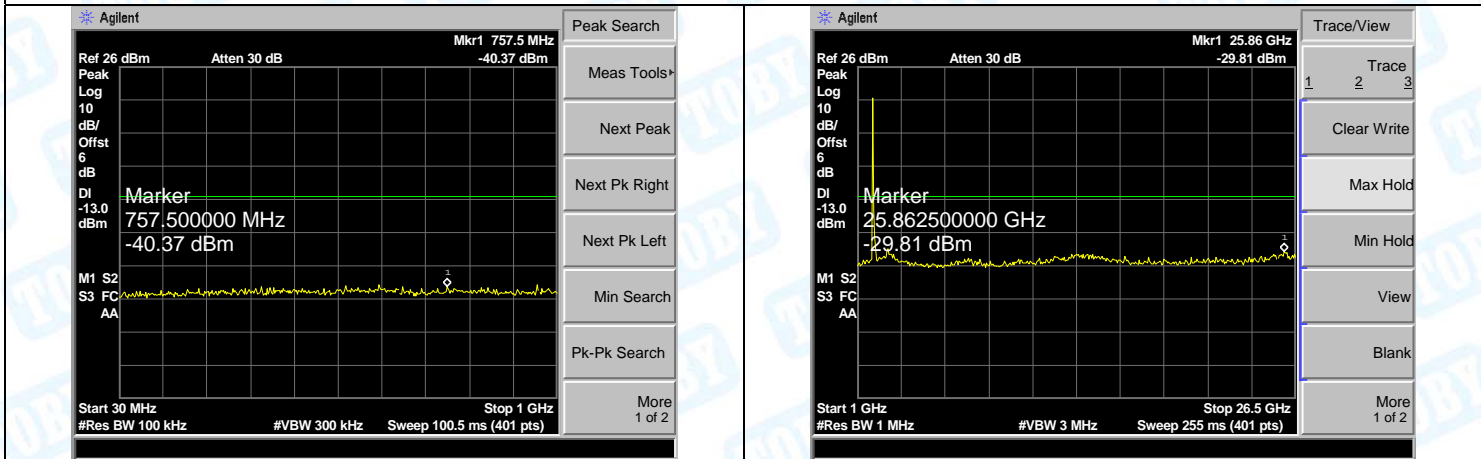


30MHz-1GHz	1GHz-26.5GHz
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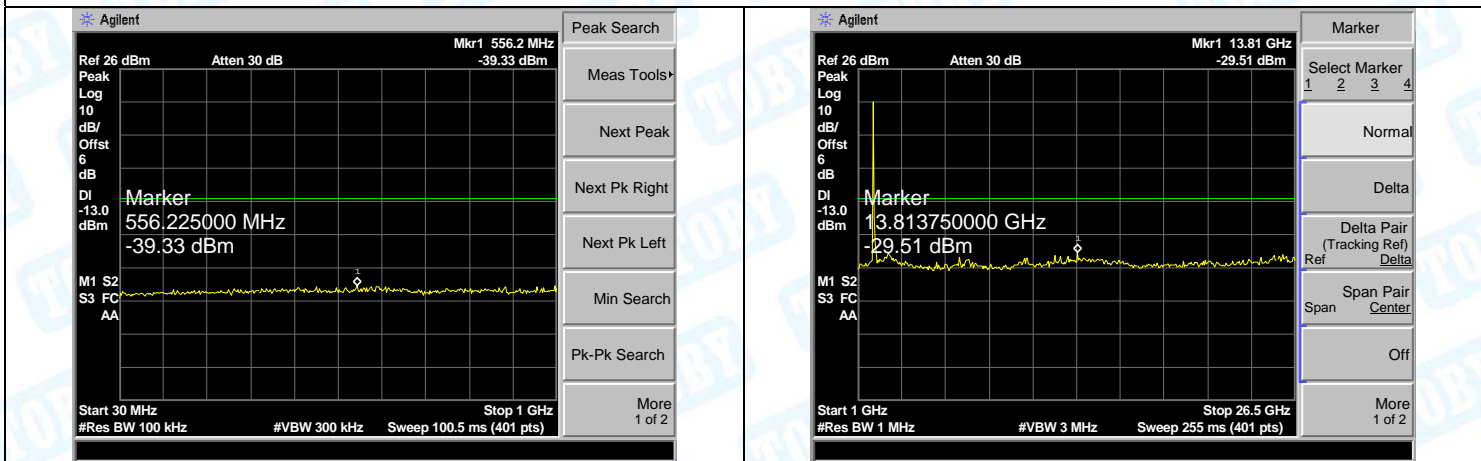
LTE BAND 2 (20MHz RB Size 100& RB Offset 0 QPSK-Low CH)



LTE BAND 2 (20MHz RB Size 100& RB Offset 0 QPSK-Middle CH)



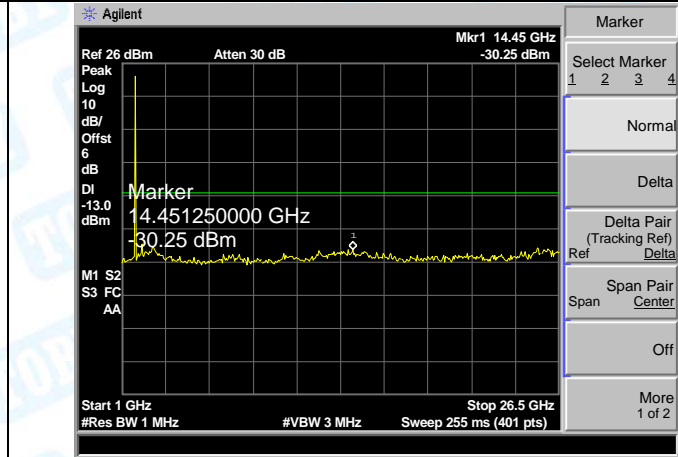
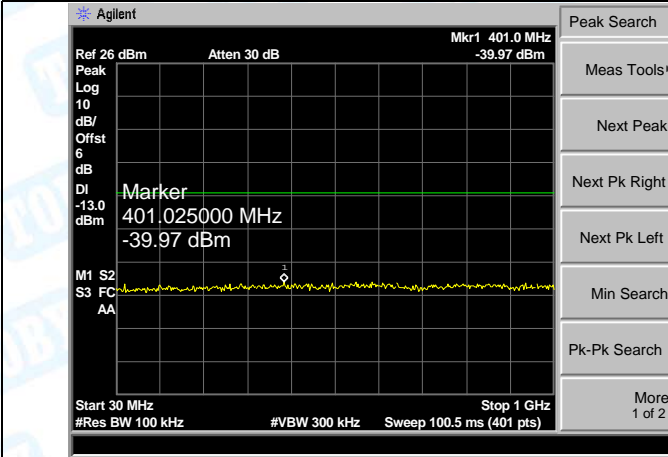
LTE BAND 2 (20MHz RB Size 100& RB Offset 0 QPSK-High CH)



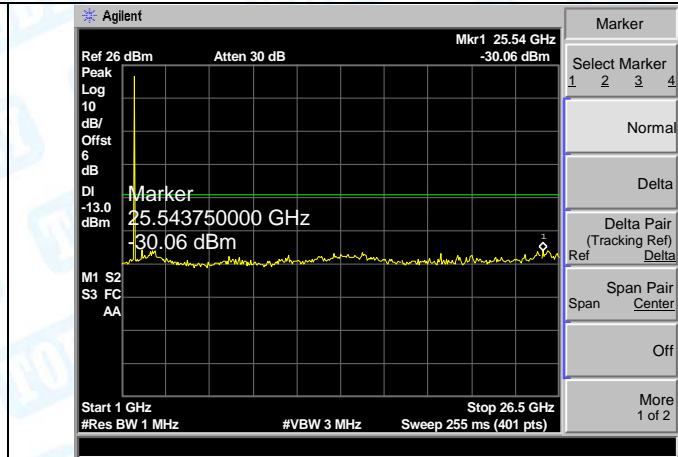
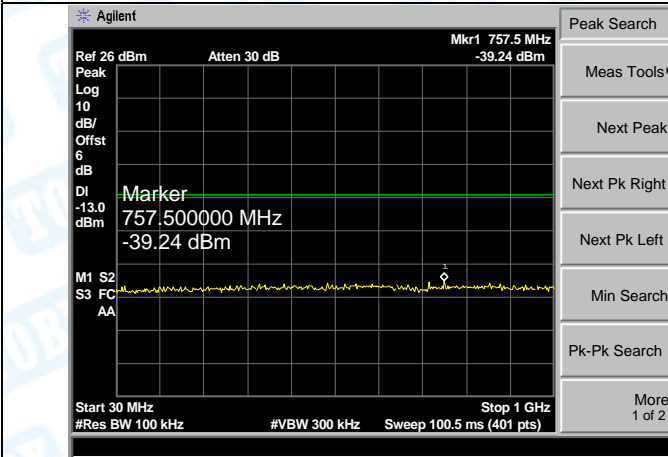
30MHz-1GHz

1GHz-26.5GHz

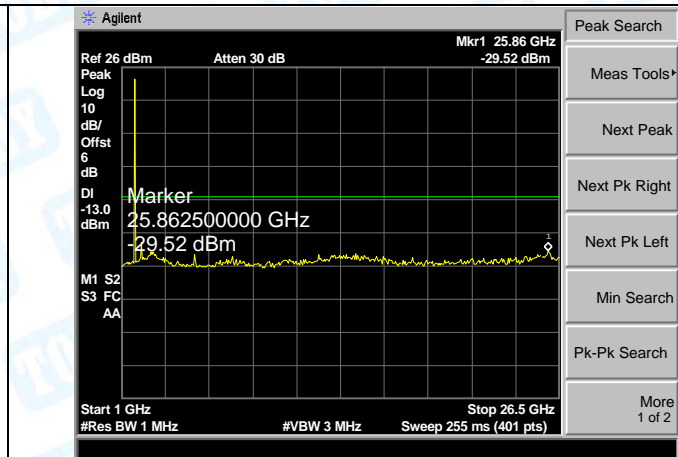
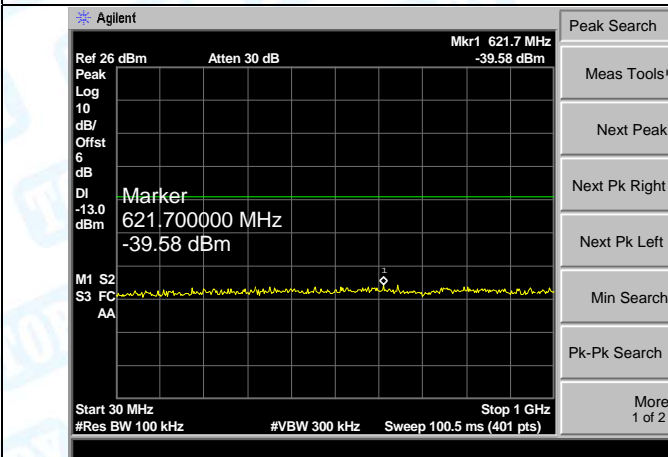
LTE BAND 4 (1.4MHz RB Size 6& RB Offset 0 QPSK-Low CH)



LTE BAND 4 (1.4MHz RB Size 6& RB Offset 0 QPSK-Middle CH)

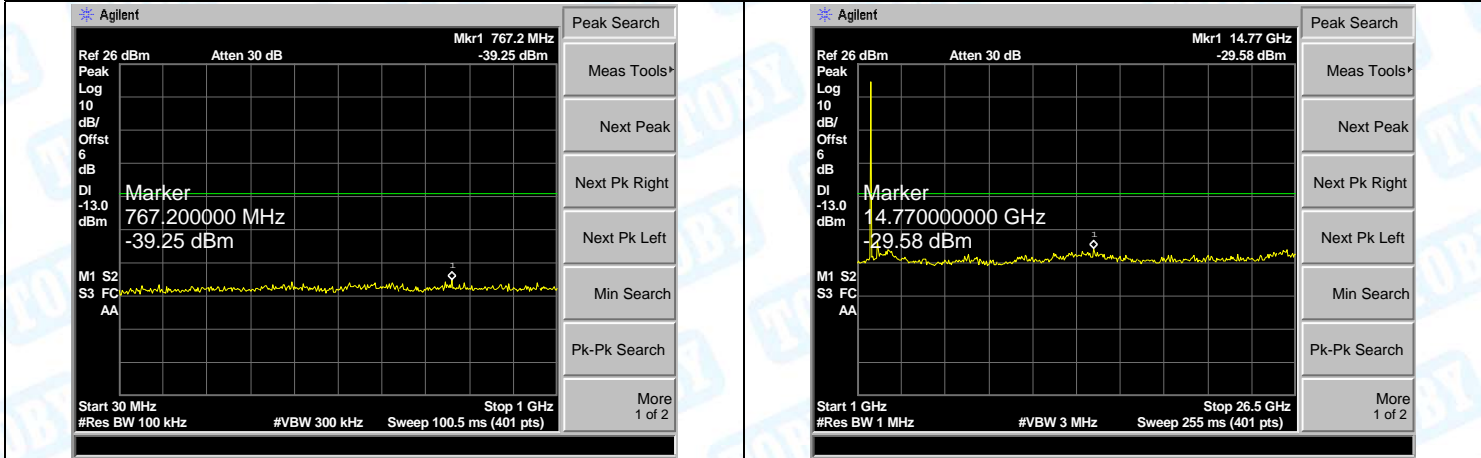


LTE BAND 4 (1.4MHz RB Size 6& RB Offset 0 QPSK-High CH)

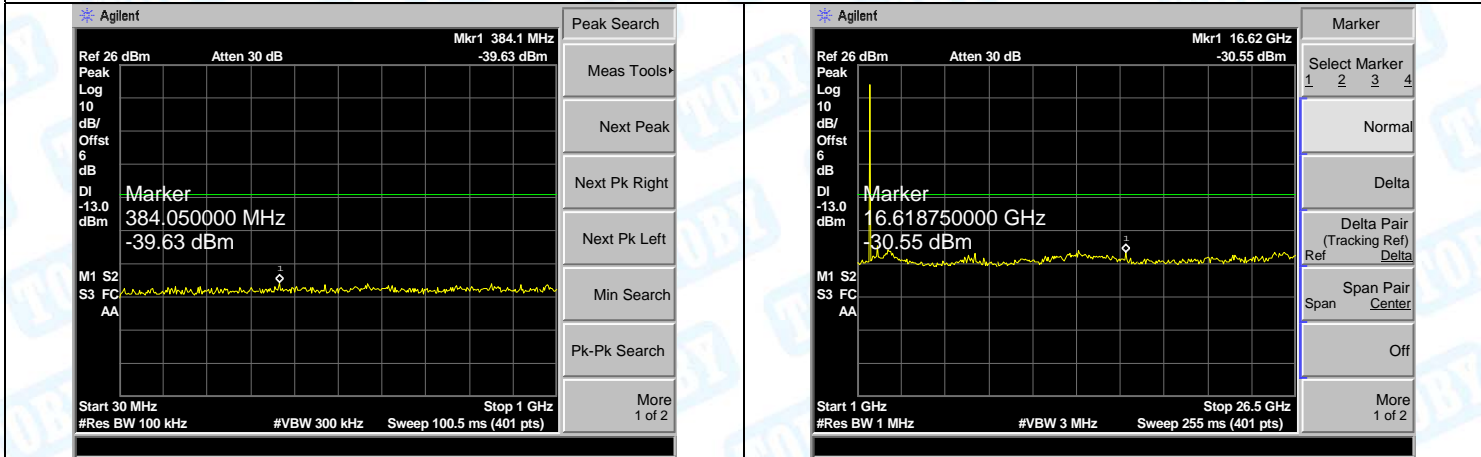


30MHz-1GHz **1GHz-26.5GHz**

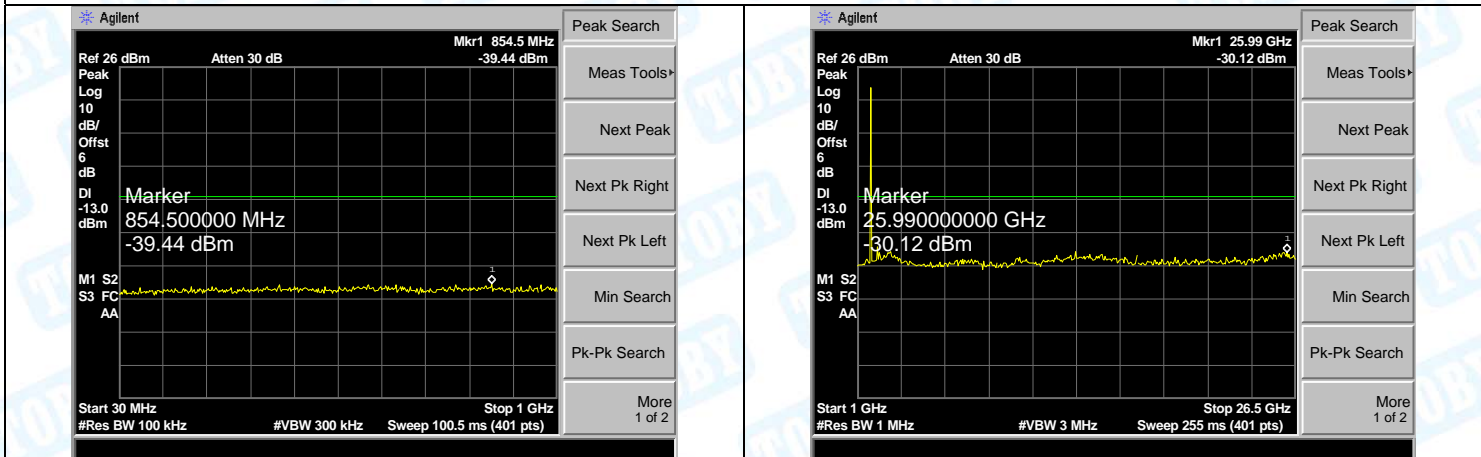
LTE BAND 4 (3MHz RB Size 15& RB Offset 0 QPSK-Low CH)



LTE BAND 4 (3MHz RB Size 15& RB Offset 0 QPSK-Middle CH)



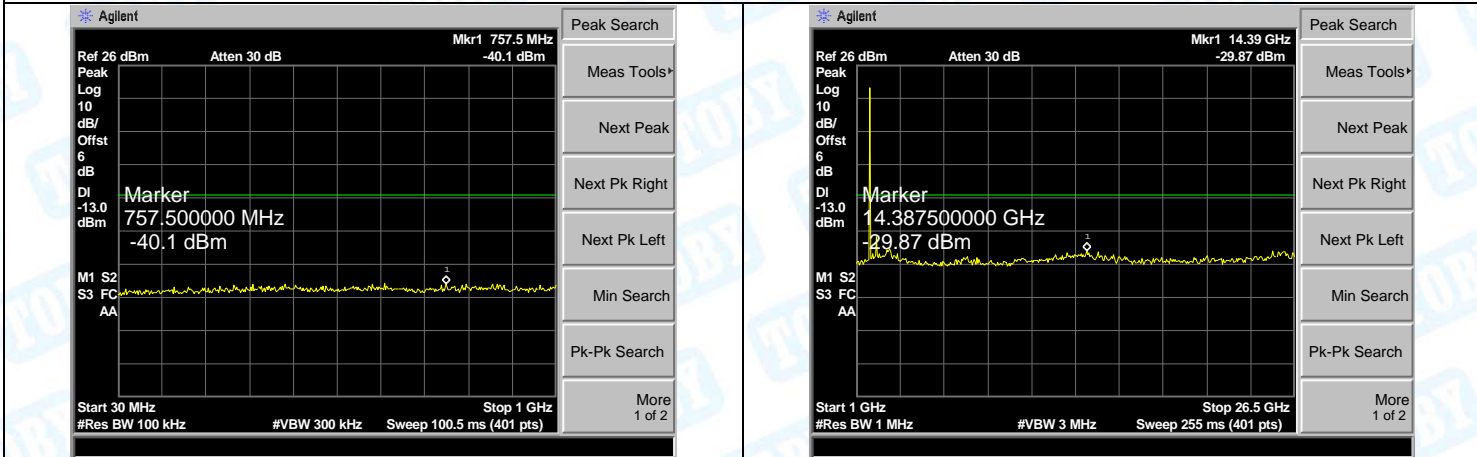
LTE BAND 4 (3MHz RB Size 15& RB Offset 0 QPSK-High CH)



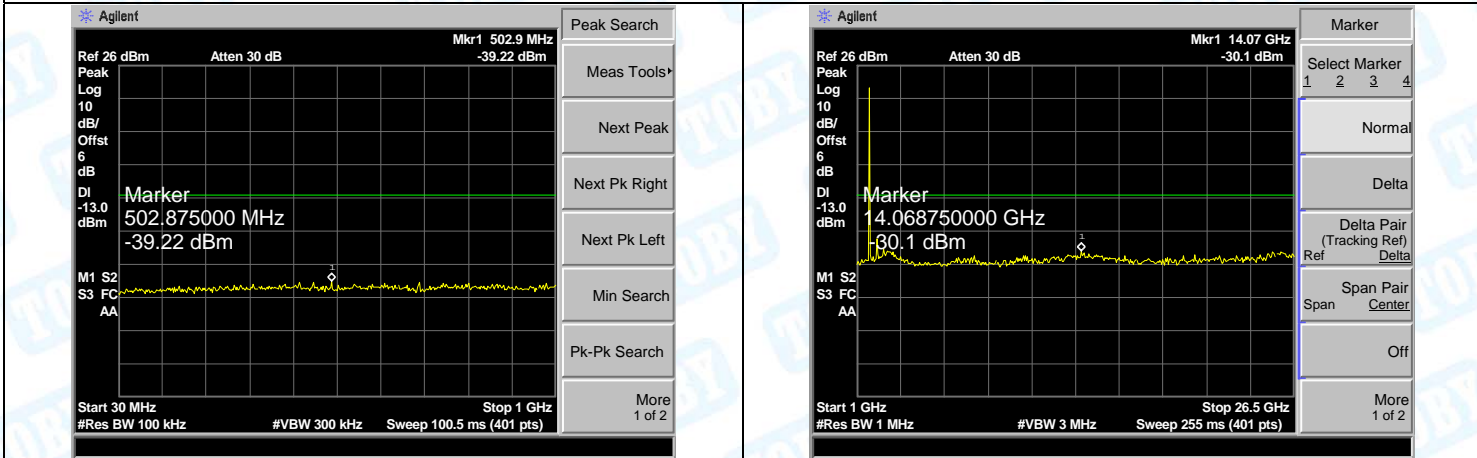
30MHz-1GHz

1GHz-26.5GHz

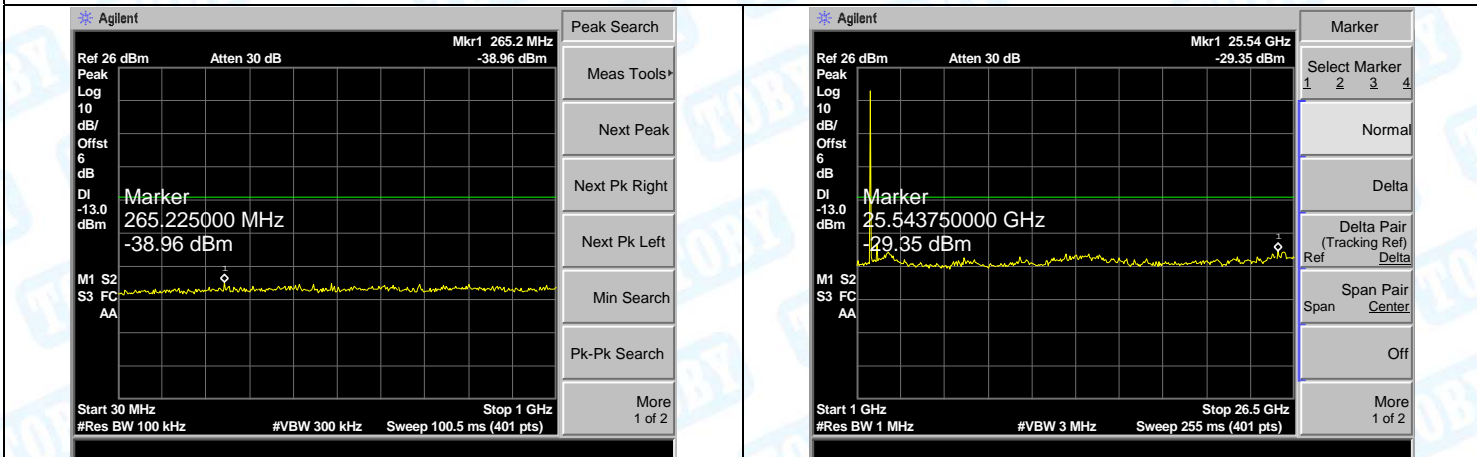
LTE BAND 4 (5MHz RB Size 25& RB Offset 0 QPSK-Low CH)



LTE BAND 4 (5MHz RB Size 25& RB Offset 0 QPSK-Middle CH)

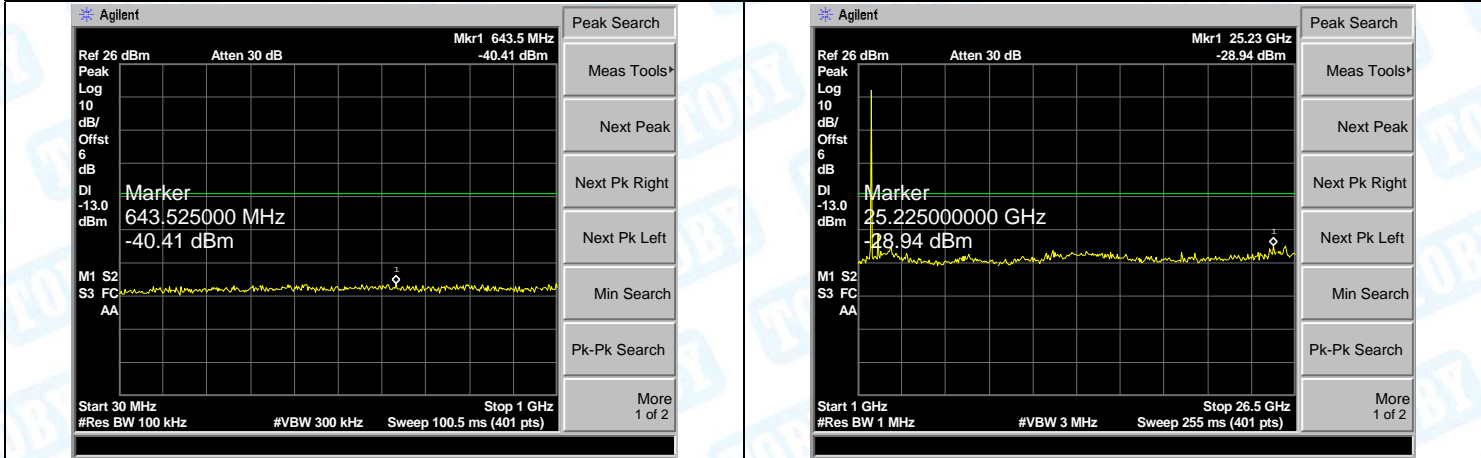


LTE BAND 4 (5MHz RB Size 25& RB Offset 0 QPSK-High CH)

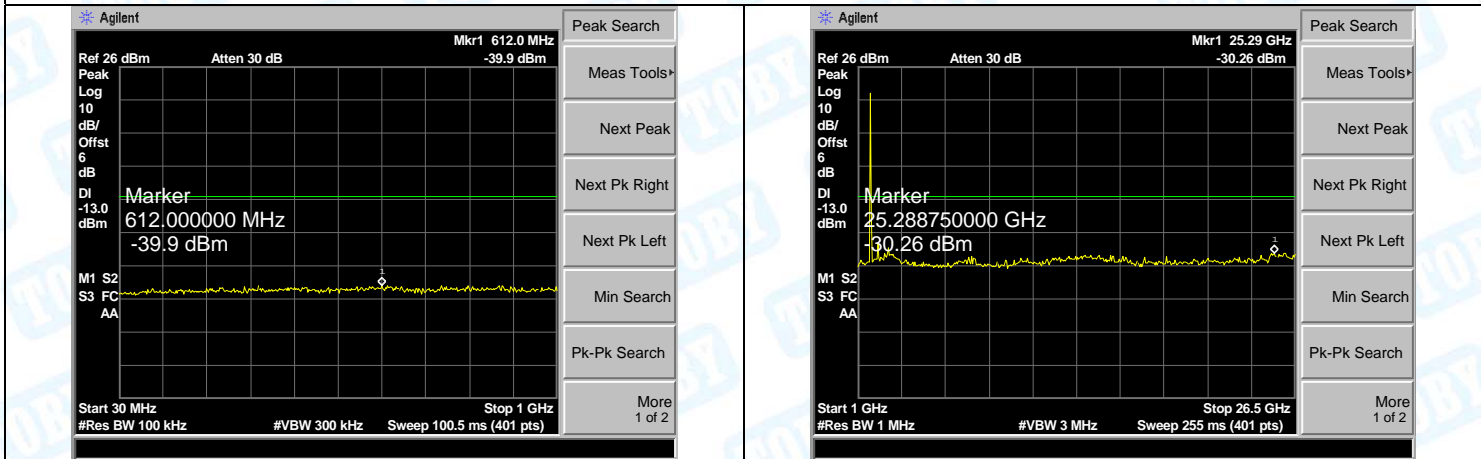


30MHz-1GHz	1GHz-26.5GHz
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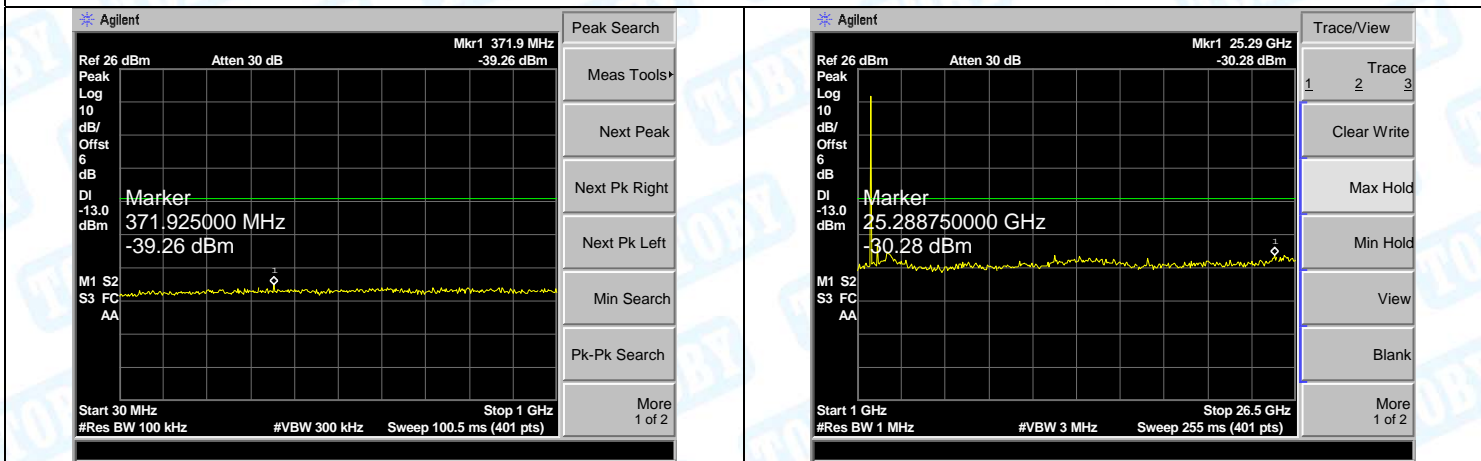
LTE BAND 4 (10MHz RB Size 50& RB Offset 0 QPSK-Low CH)



LTE BAND 4 (10MHz RB Size 50& RB Offset 0 QPSK-Middle CH)

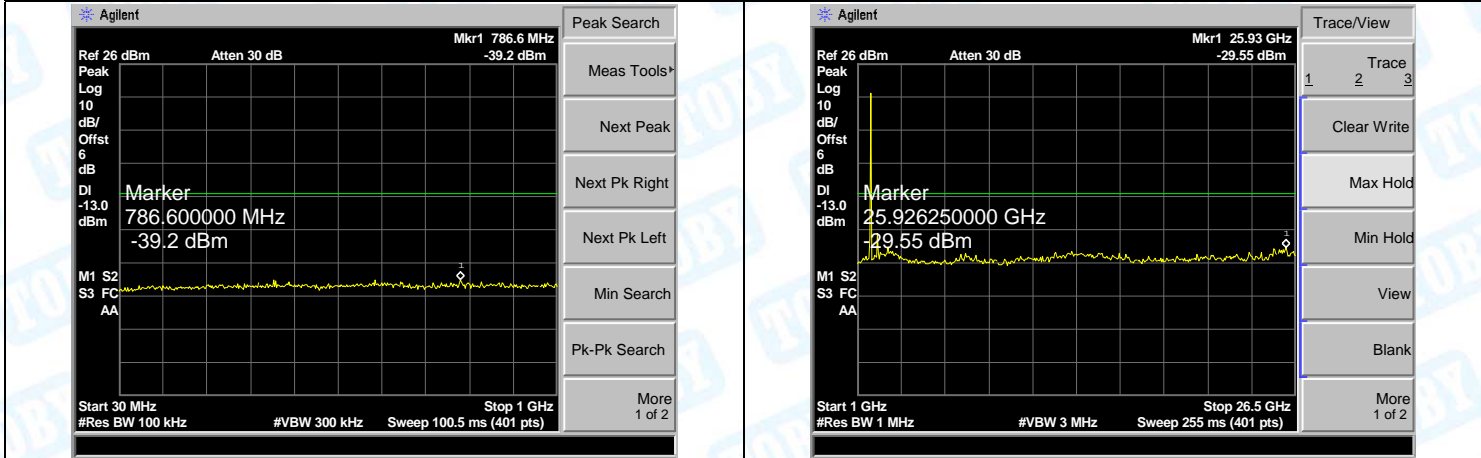


LTE BAND 4 (10MHz RB Size 50& RB Offset 0 QPSK-High CH)

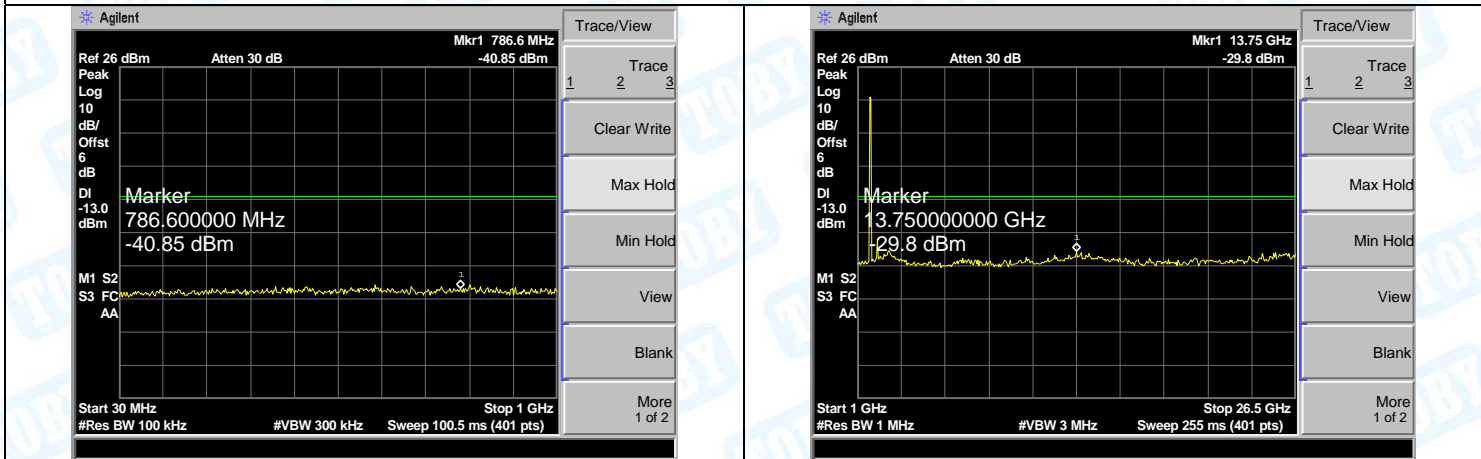


30MHz-1GHz	1GHz-26.5GHz
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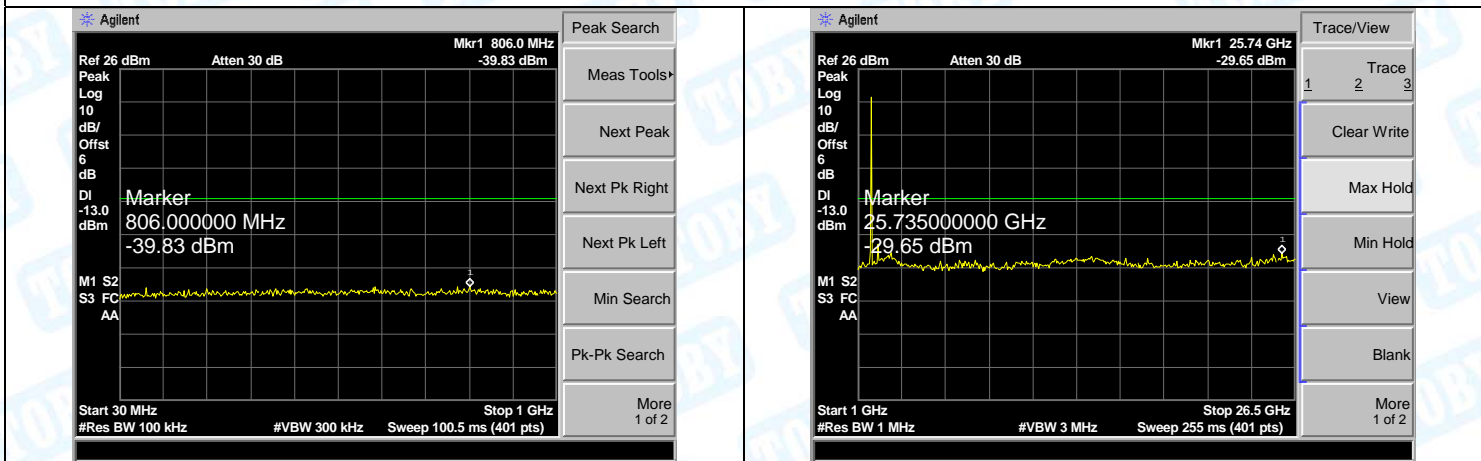
LTE BAND 4 (15MHz RB Size 75& RB Offset 0 QPSK-Low CH)



LTE BAND 4 (15MHz RB Size 75& RB Offset 0 QPSK-Middle CH)

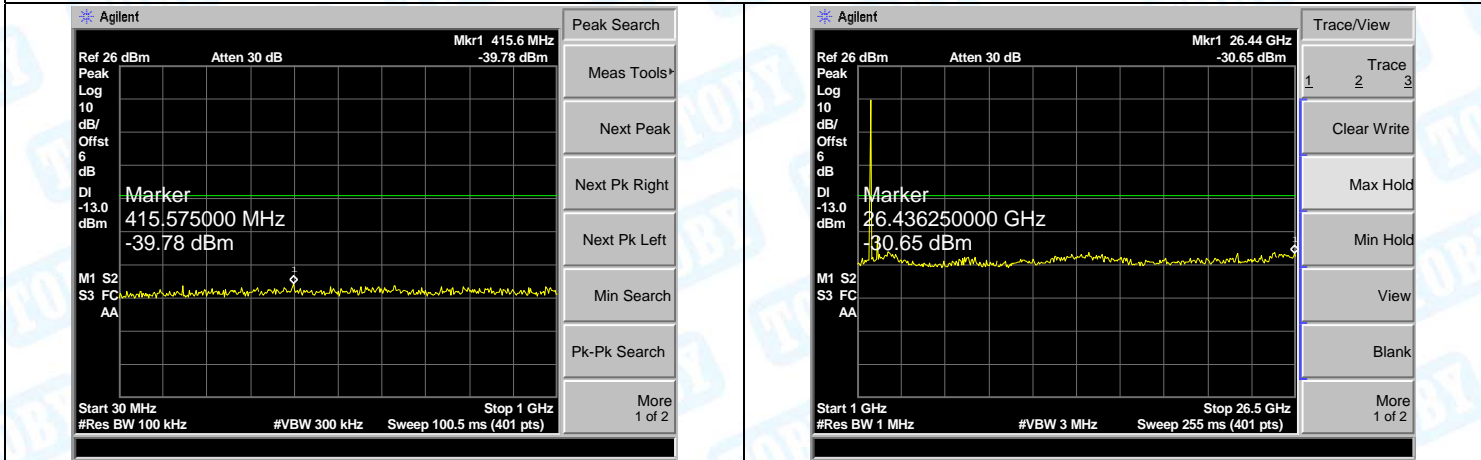


LTE BAND 4 (15MHz RB Size 75& RB Offset 0 QPSK-High CH)

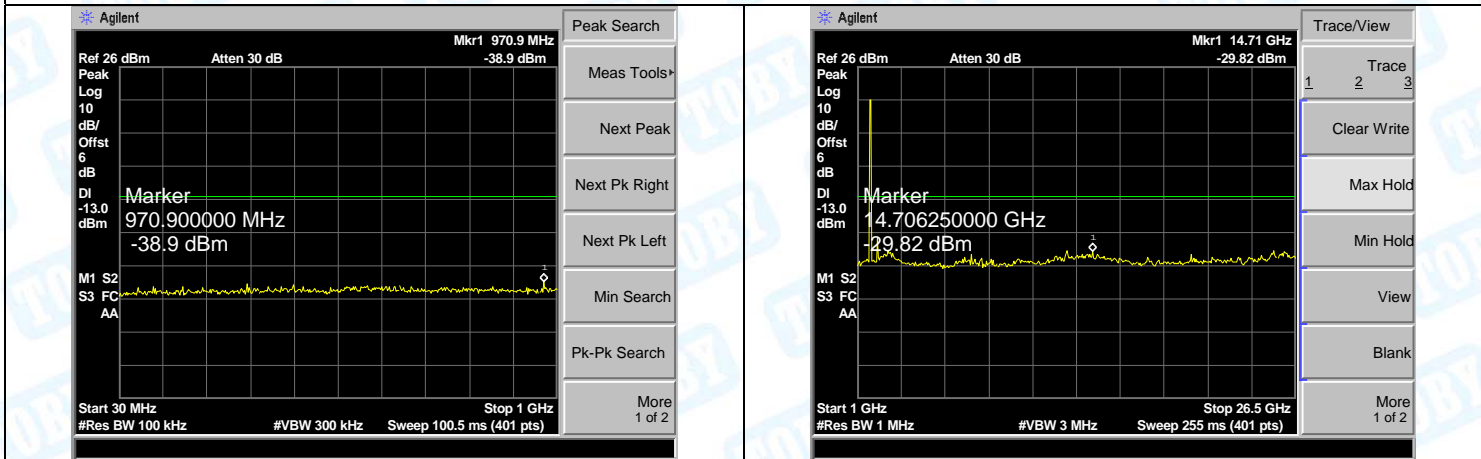


30MHz-1GHz	1GHz-26.5GHz
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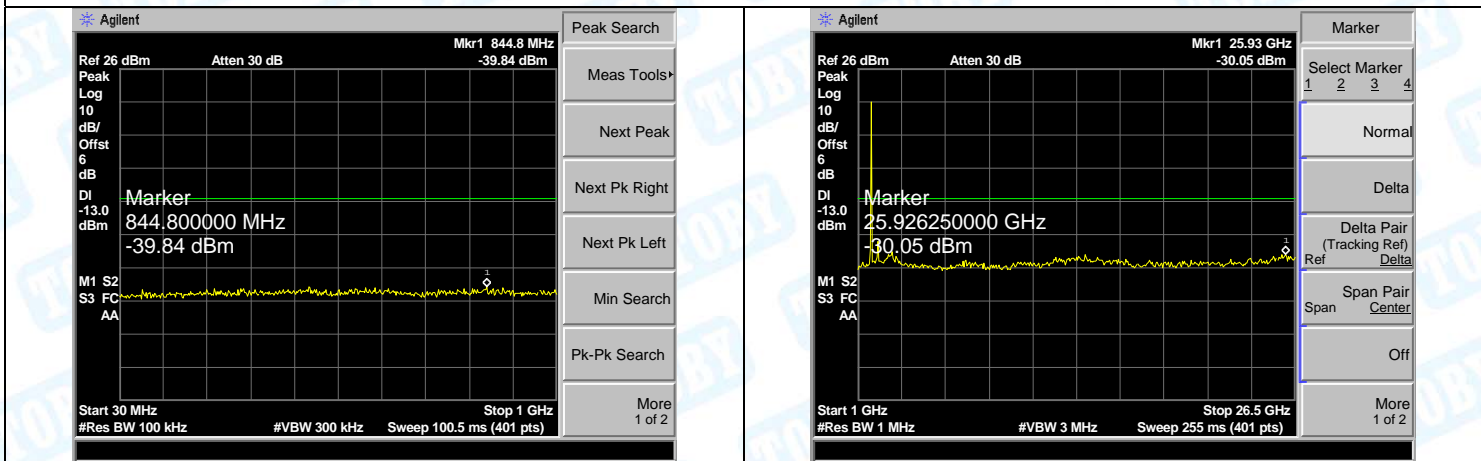
LTE BAND 4 (20MHz RB Size 100& RB Offset 0 QPSK-Low CH)



LTE BAND 4 (20MHz RB Size 100& RB Offset 0 QPSK-Middle CH)



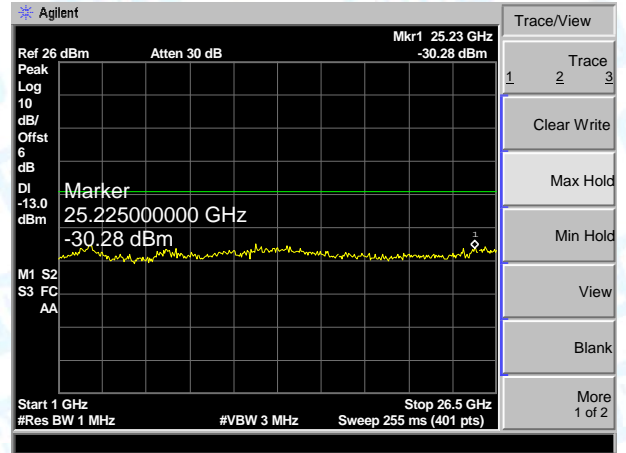
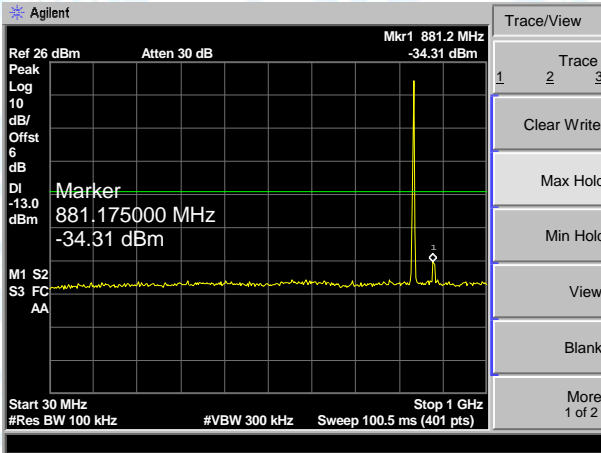
LTE BAND 4 (20MHz RB Size 100& RB Offset 0 QPSK-High CH)



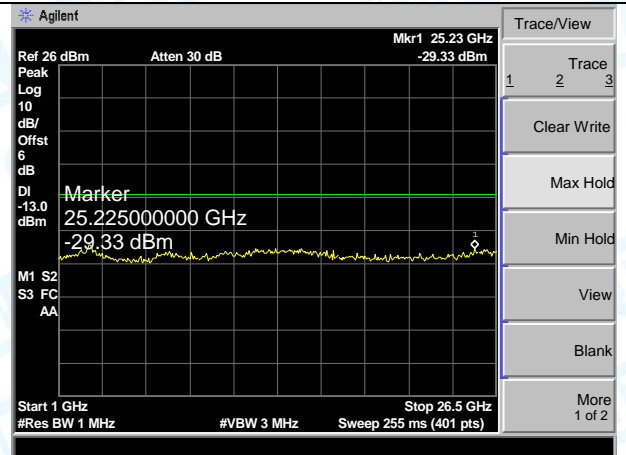
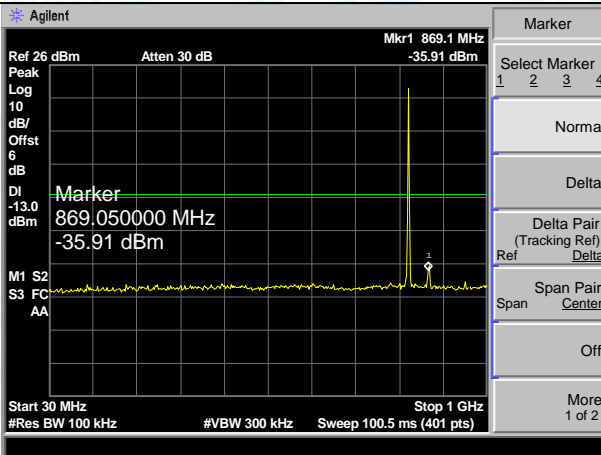
30MHz-1GHz

1GHz-26.5GHz

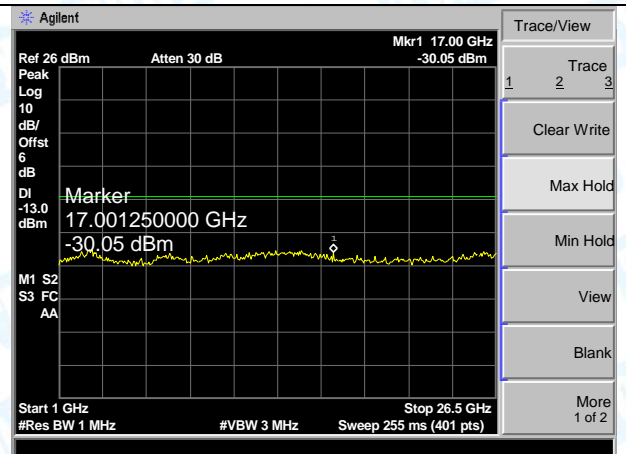
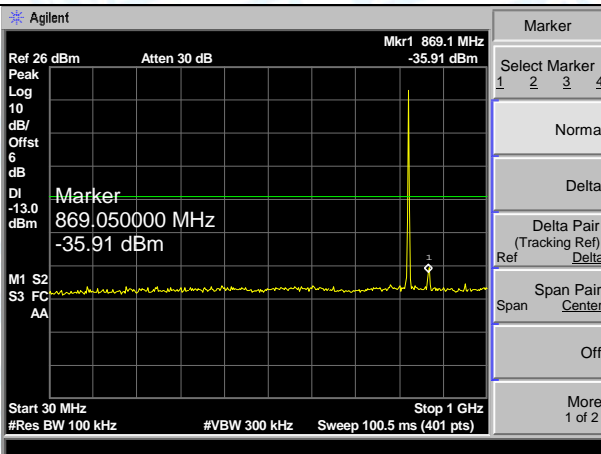
LTE BAND 5 (1.4MHz RB Size 6& RB Offset 0 QPSK-Low CH)



LTE BAND 5 (1.4MHz RB Size 6& RB Offset 0 QPSK-Middle CH)



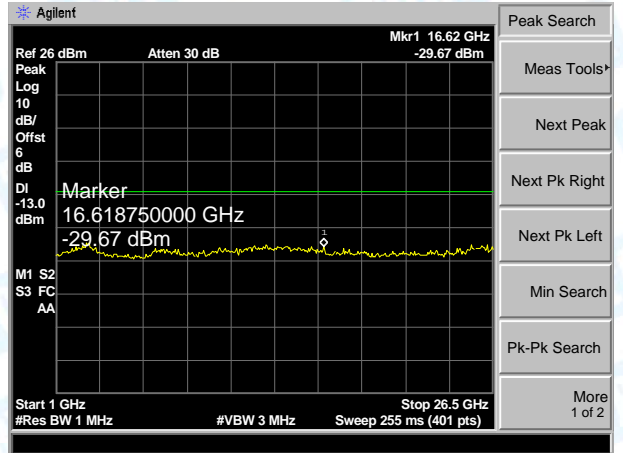
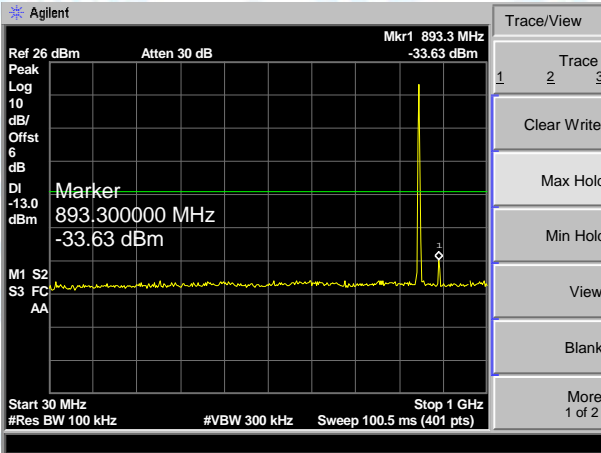
LTE BAND 5 (1.4MHz RB Size 6& RB Offset 0 QPSK-High CH)



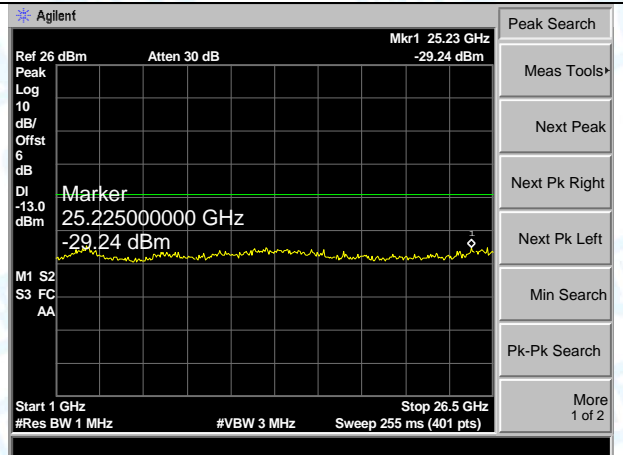
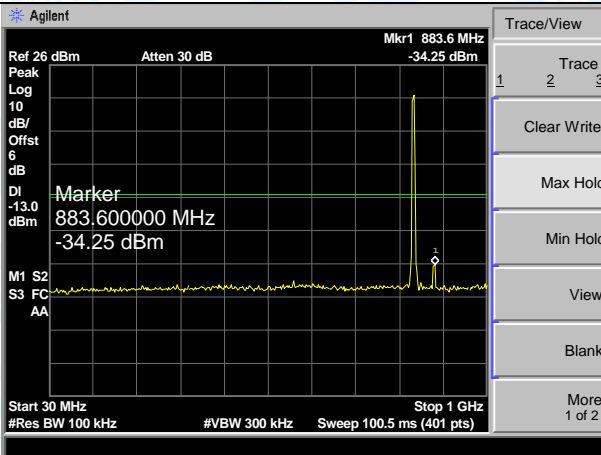
30MHz-1GHz

1GHz-26.5GHz

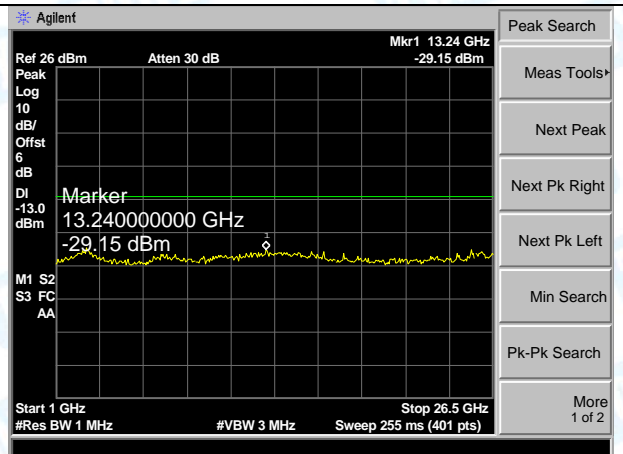
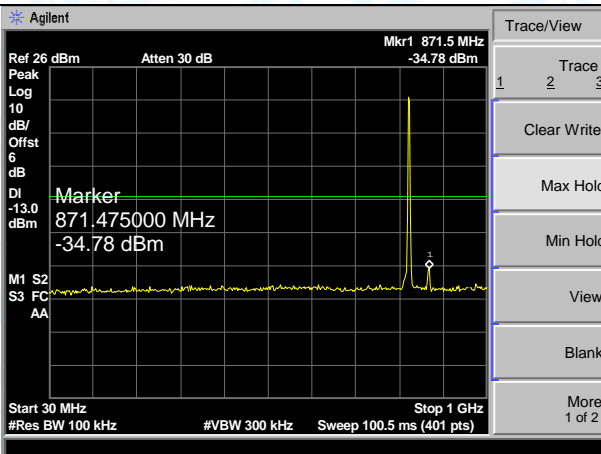
LTE BAND 5 (3MHz RB Size 15& RB Offset 0 QPSK-Low CH)



LTE BAND 5 (3MHz RB Size 15& RB Offset 0 QPSK-Middle CH)

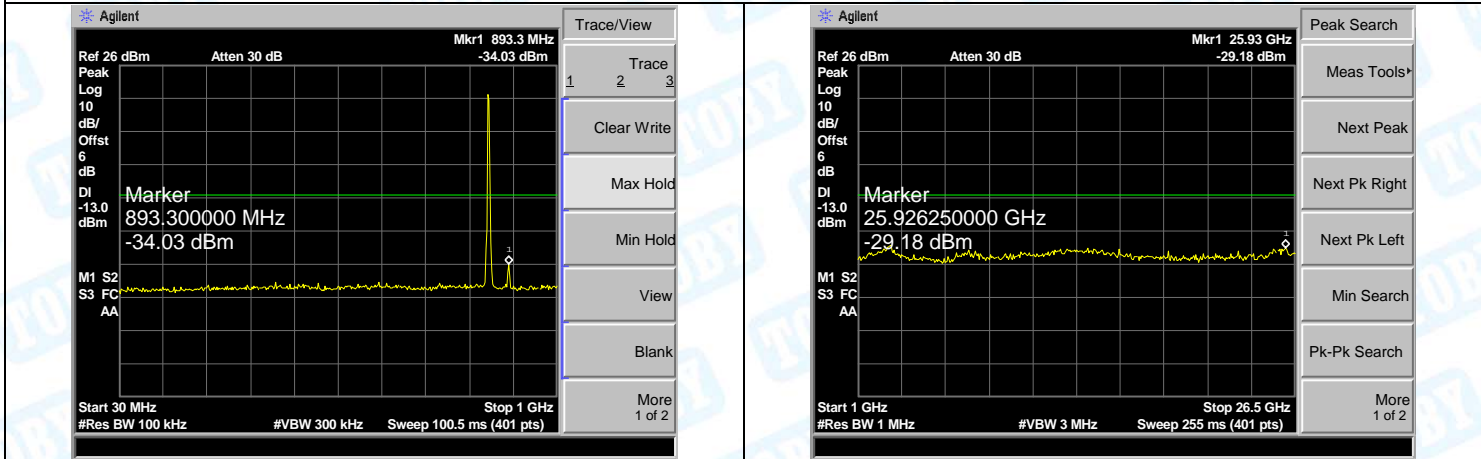


LTE BAND 5 (3MHz RB Size 15& RB Offset 0 QPSK-High CH)

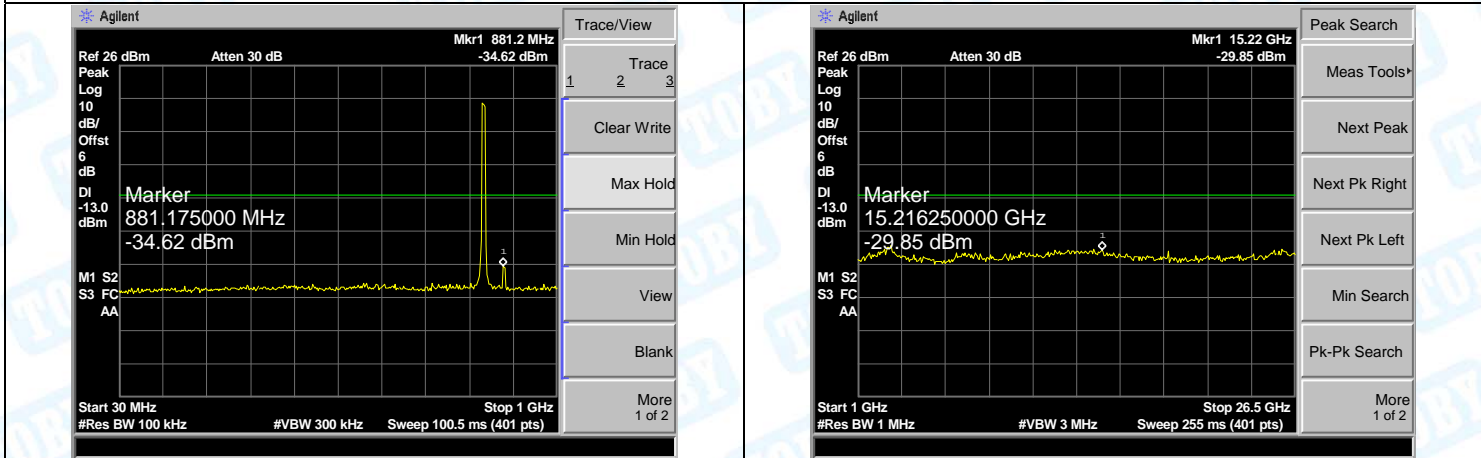


30MHz-1GHz **1GHz-26.5GHz**

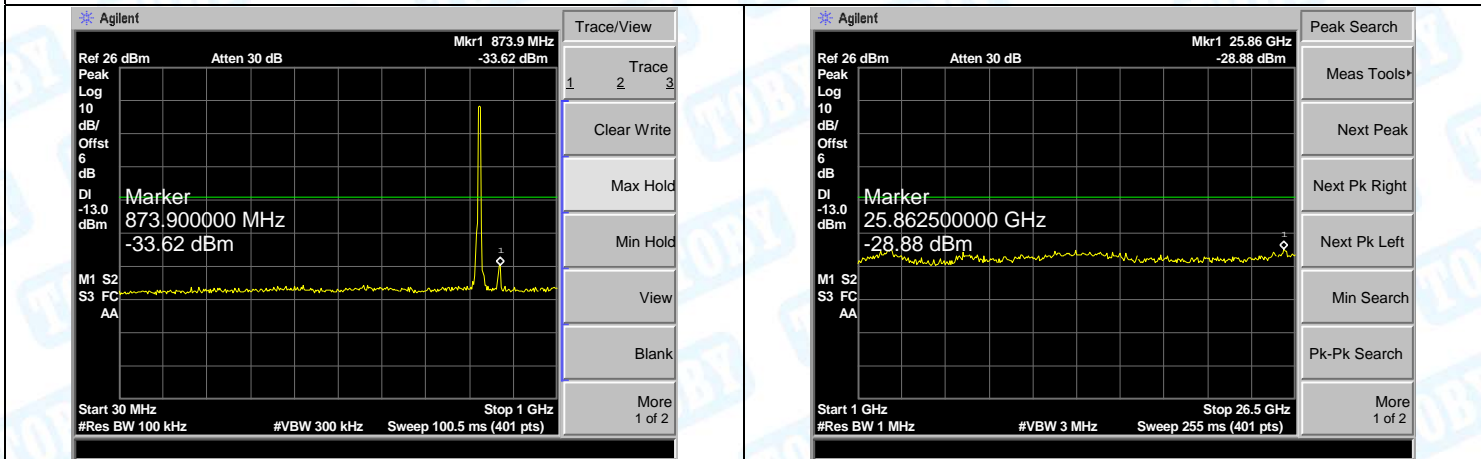
LTE BAND 5 (5MHz RB Size 25& RB Offset 0 QPSK-Low CH)



LTE BAND 5 (5MHz RB Size 25& RB Offset 0 QPSK-Middle CH)

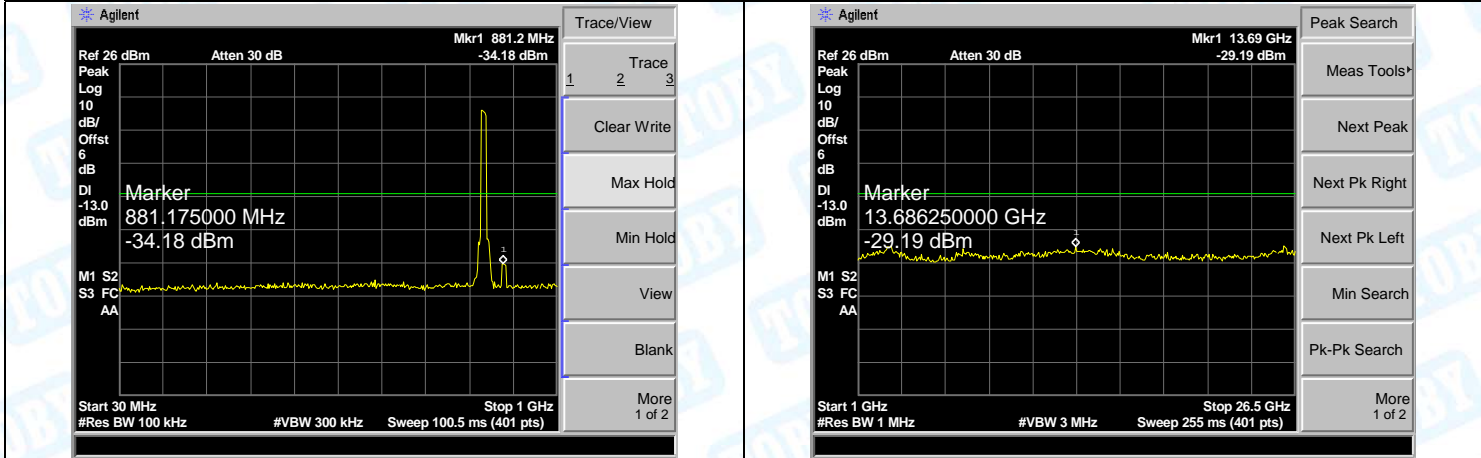


LTE BAND 5 (5MHz RB Size 25& RB Offset 0 QPSK-High CH)

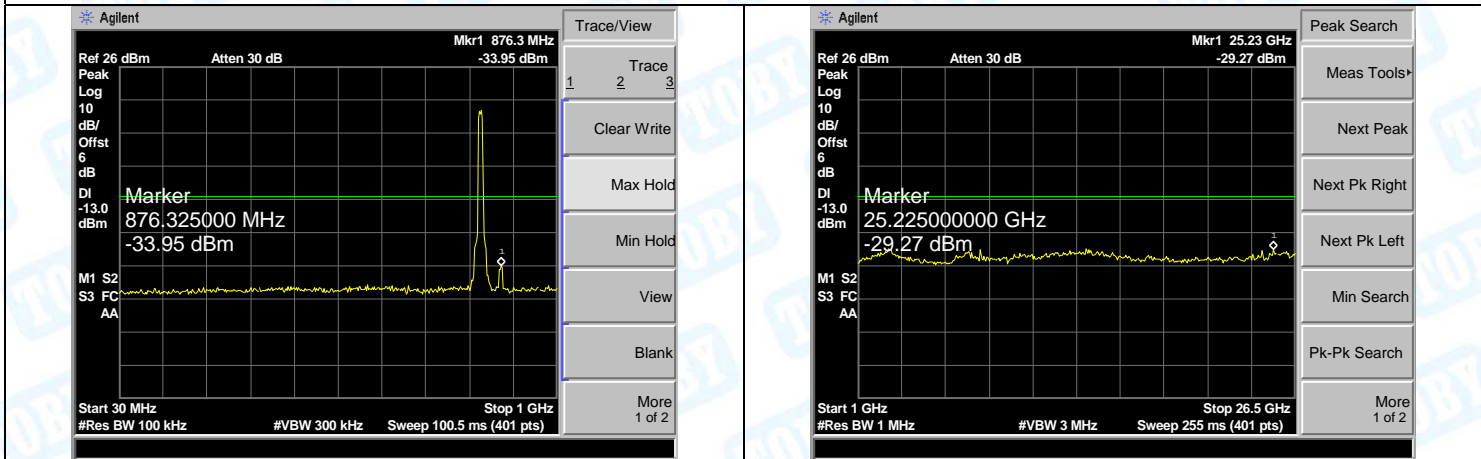


30MHz-1GHz	1GHz-26.5GHz
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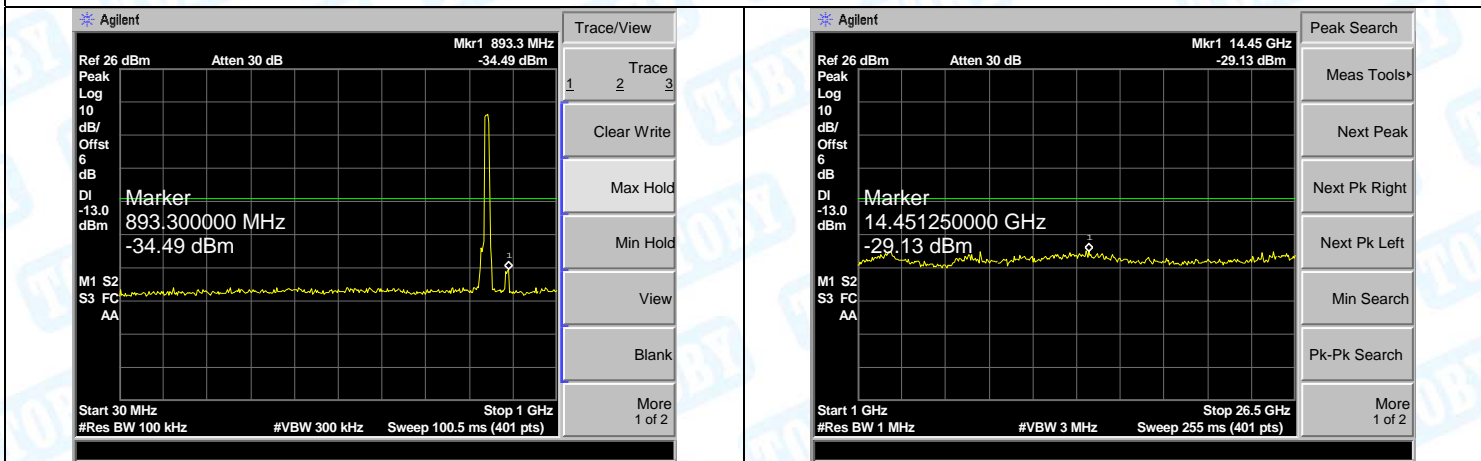
LTE BAND 5 (10MHz RB Size 50& RB Offset 0 QPSK-Low CH)



LTE BAND 5 (10MHz RB Size 50& RB Offset 0 QPSK-Middle CH)

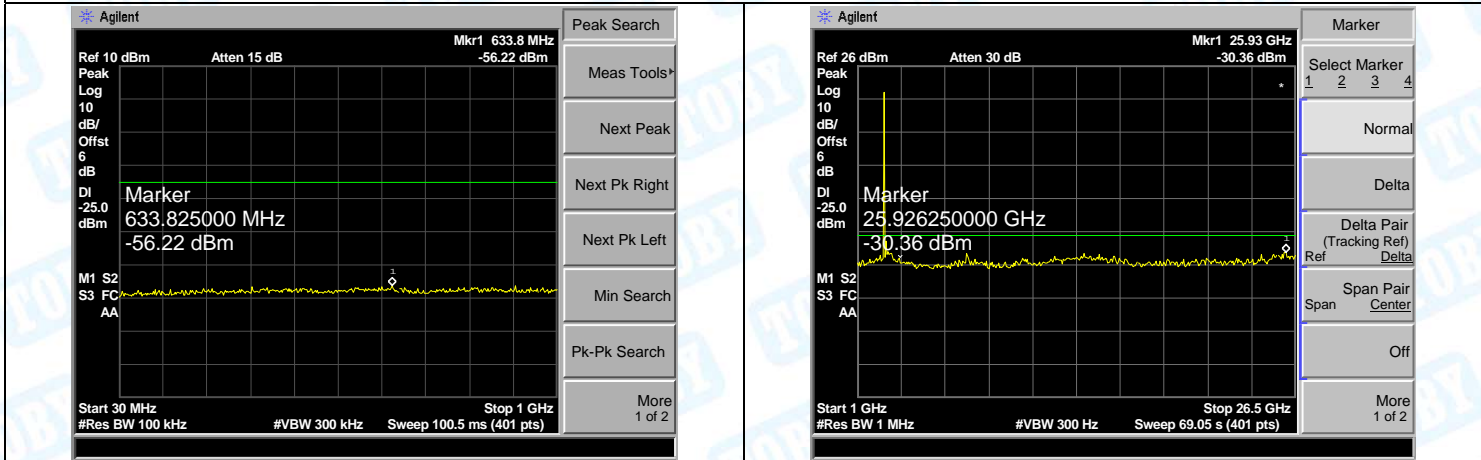


LTE BAND 5 (10MHz RB Size 50& RB Offset 0 QPSK-High CH)

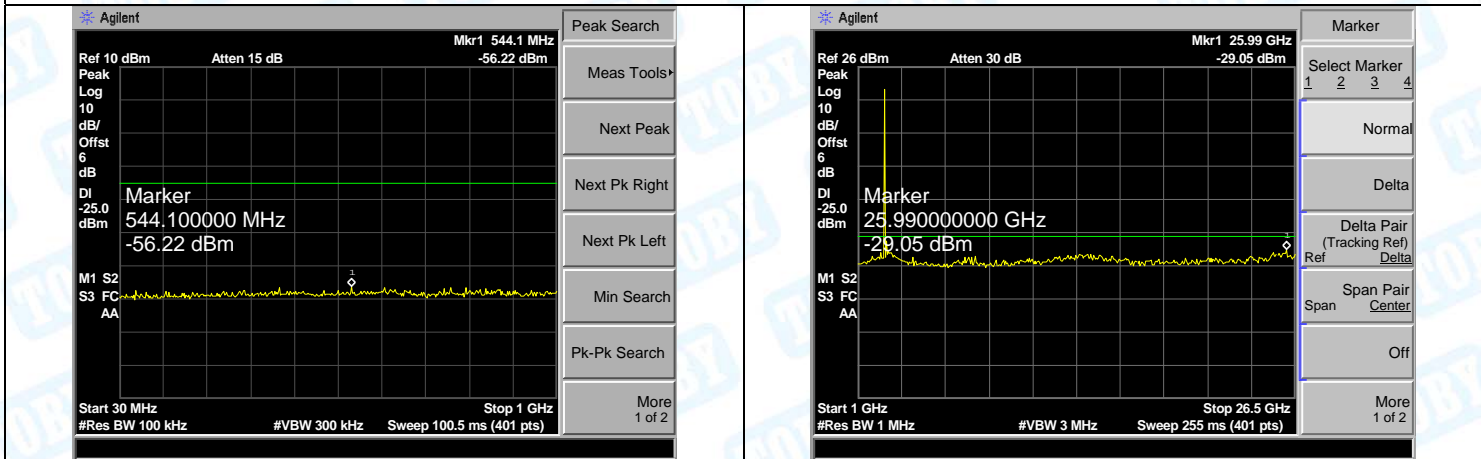


30MHz-1GHz	1GHz-26.5GHz
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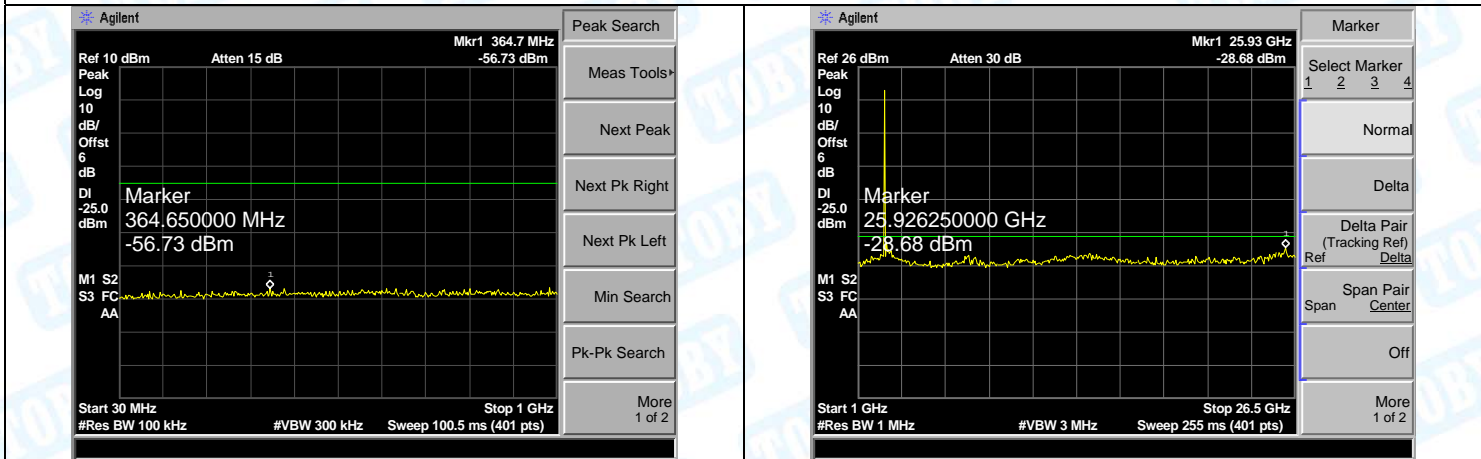
LTE BAND 7 (5MHz RB Size 25& RB Offset 0 QPSK-Low CH)



LTE BAND 7 (5MHz RB Size 25& RB Offset 0 QPSK-Middle CH)

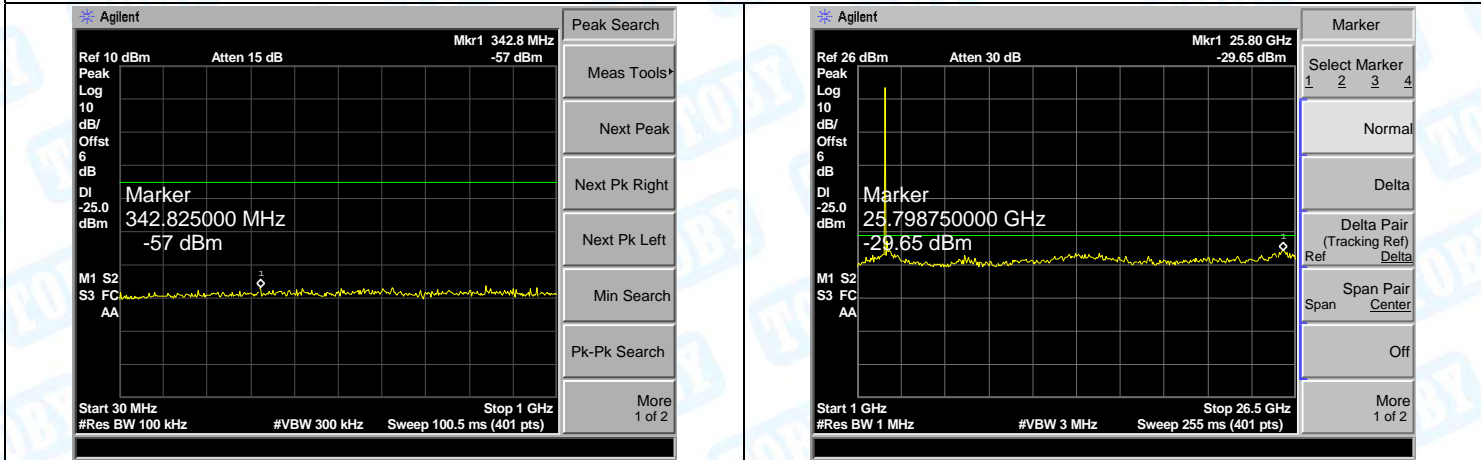


LTE BAND 7 (5MHz RB Size 25& RB Offset 0 QPSK-High CH)

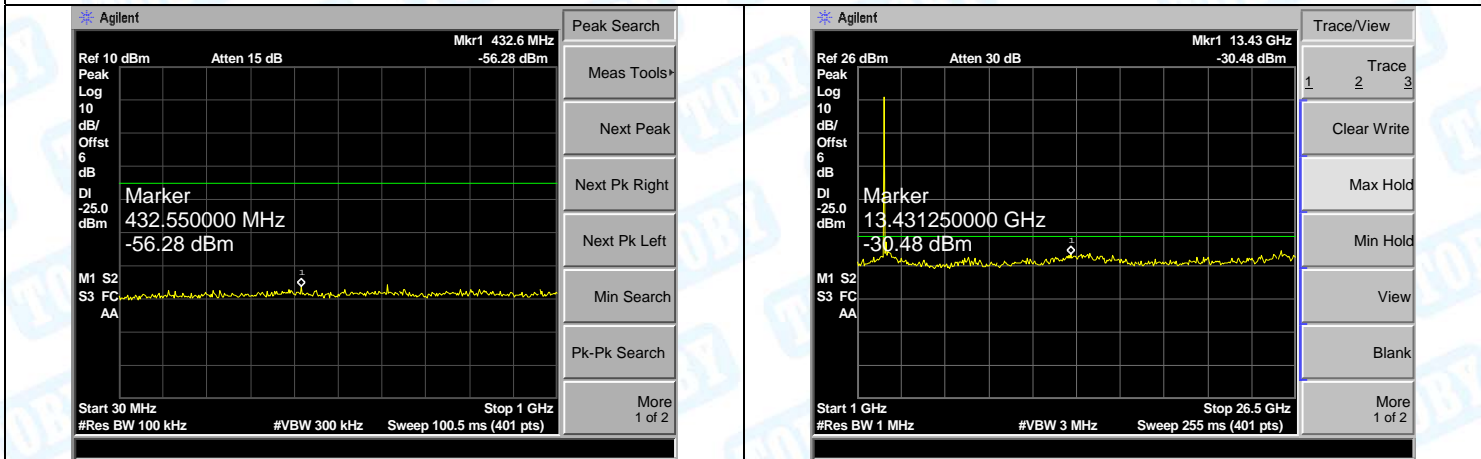


30MHz-1GHz	1GHz-26.5GHz
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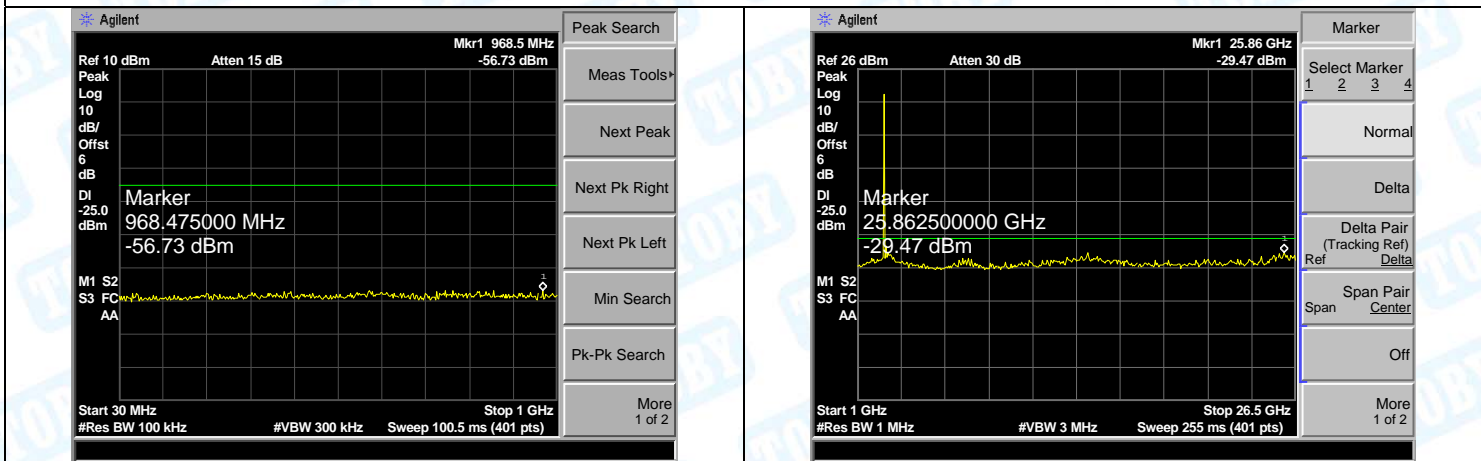
LTE BAND 7 (10MHz RB Size 50& RB Offset 0 QPSK-Low CH)



LTE BAND 7 (10MHz RB Size 50& RB Offset 0 QPSK-Middle CH)



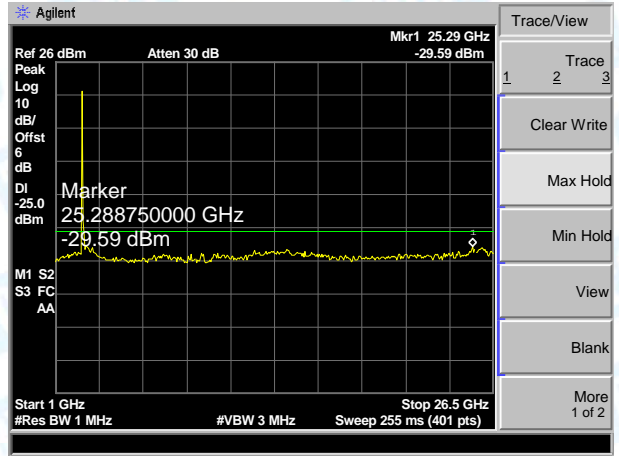
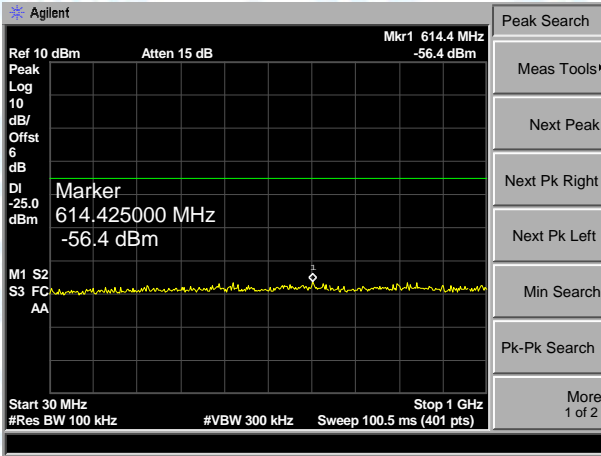
LTE BAND 7 (10MHz RB Size 50& RB Offset 0 QPSK-High CH)



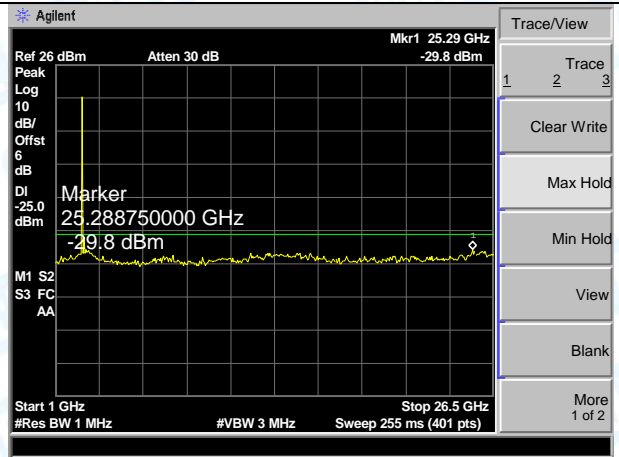
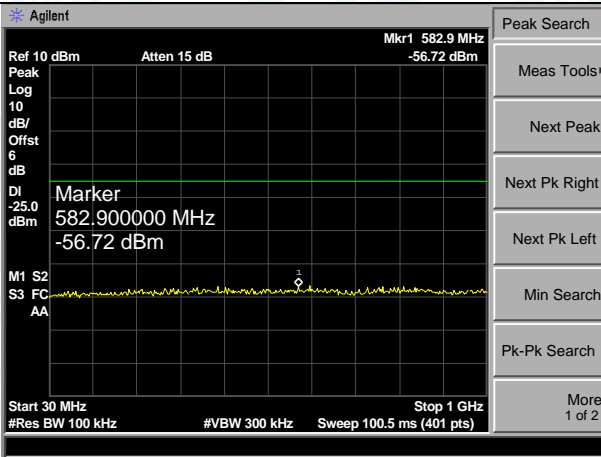
30MHz-1GHz

1GHz-26.5GHz

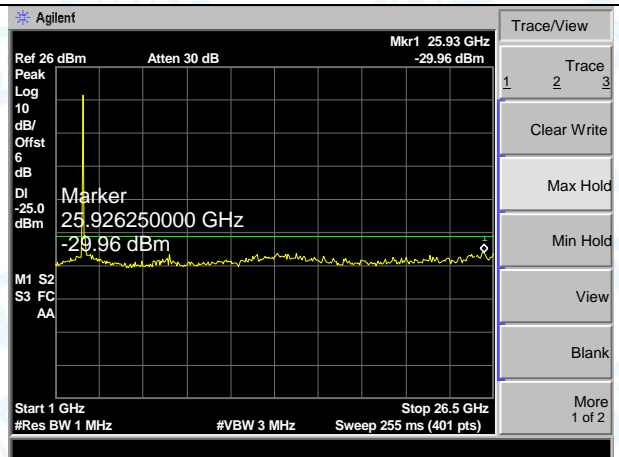
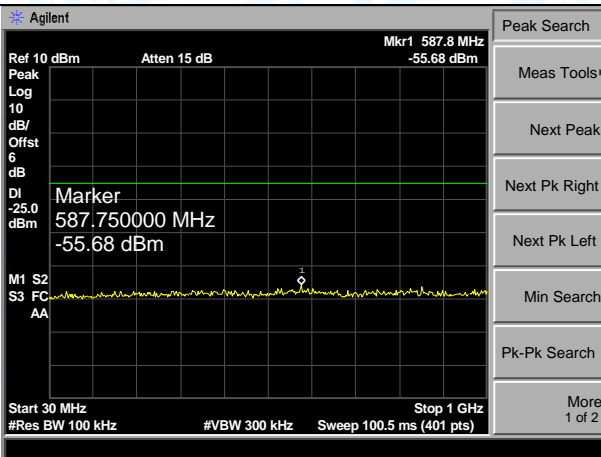
LTE BAND 7 (15MHz RB Size 75& RB Offset 0 QPSK-Low CH)



LTE BAND 7 (15MHz RB Size 75& RB Offset 0 QPSK-Middle CH)



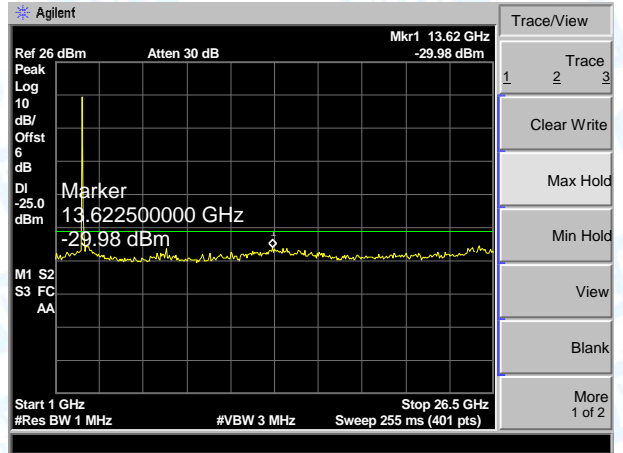
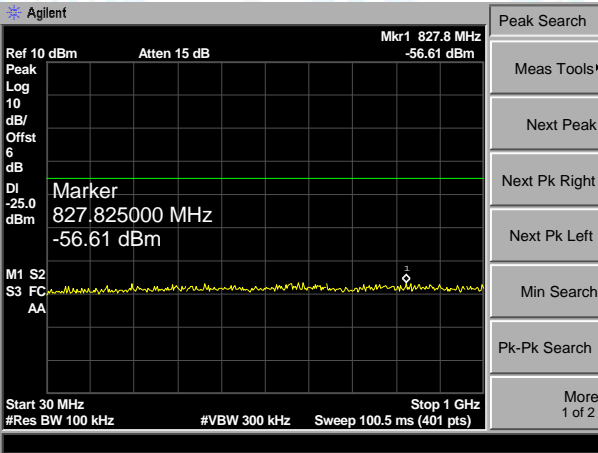
LTE BAND 7 (15MHz RB Size 75& RB Offset 0 QPSK-High CH)



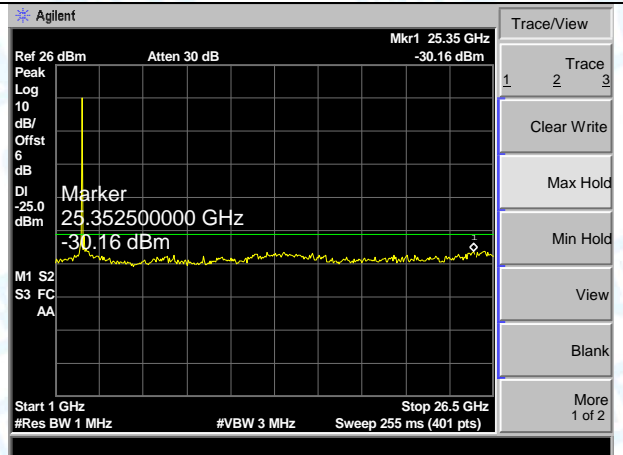
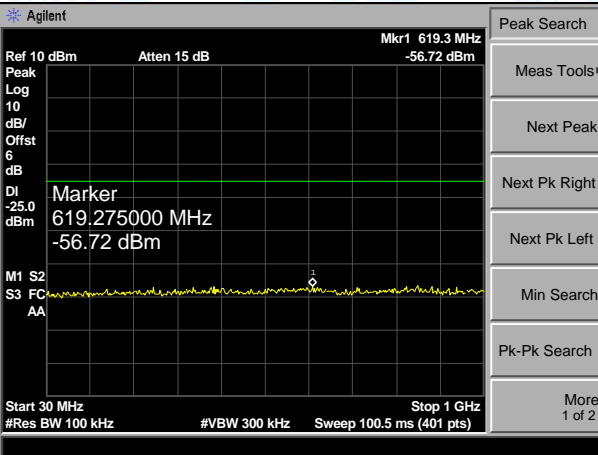
30MHz-1GHz

1GHz-26.5GHz

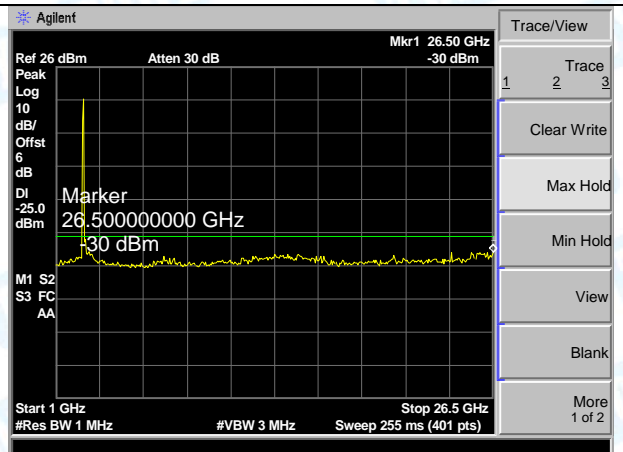
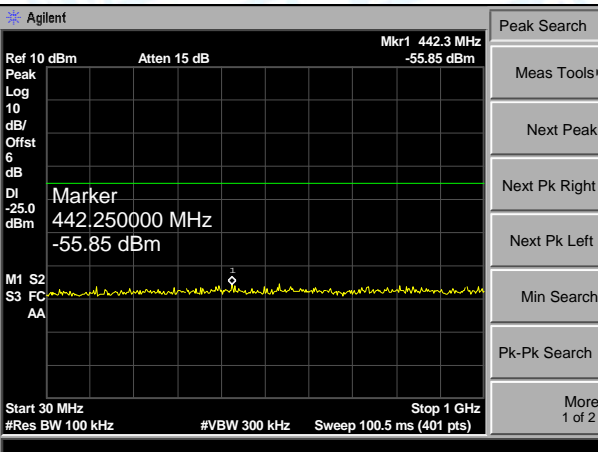
LTE BAND 7 (20MHz RB Size 100& RB Offset 0 QPSK-Low CH)



LTE BAND 7 (20MHz RB Size 100& RB Offset 0 QPSK-Middle CH)



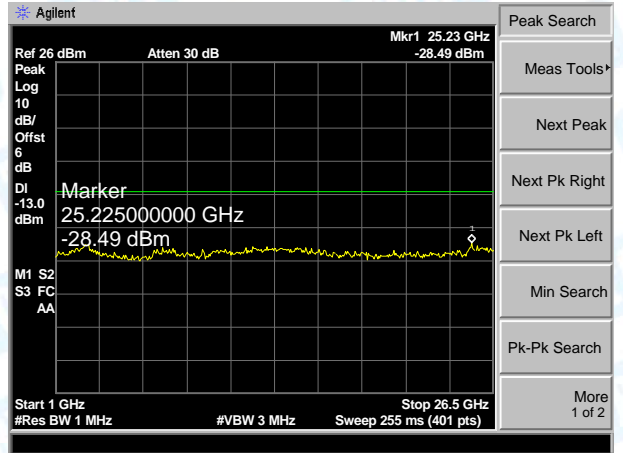
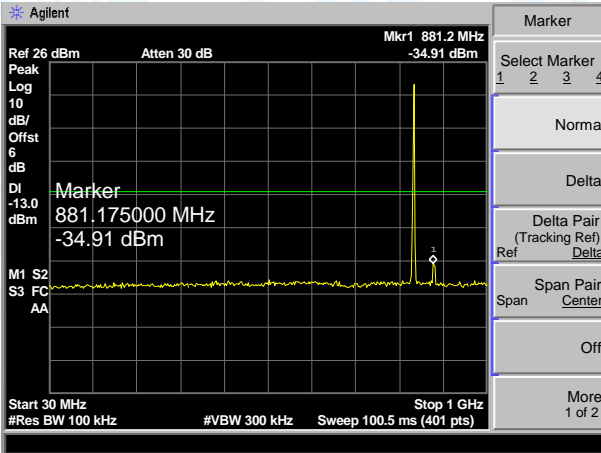
LTE BAND 7 (20MHz RB Size 100& RB Offset 0 QPSK-High CH)



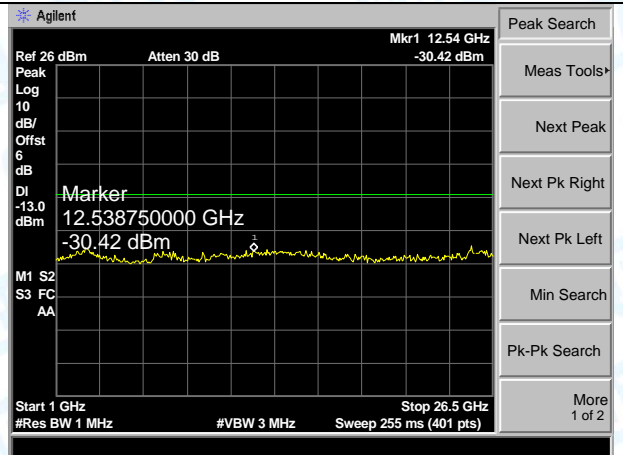
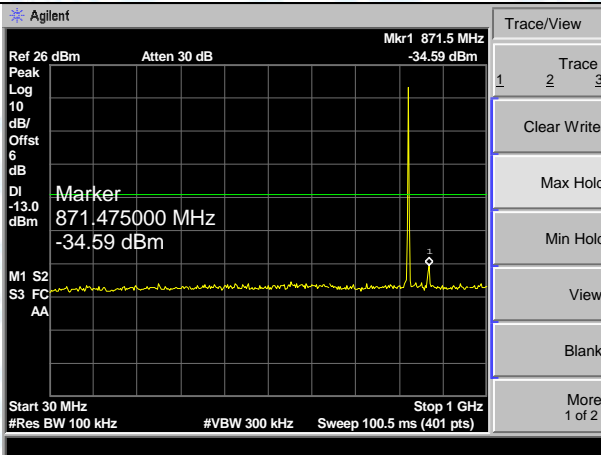
30MHz-1GHz

1GHz-26.5GHz

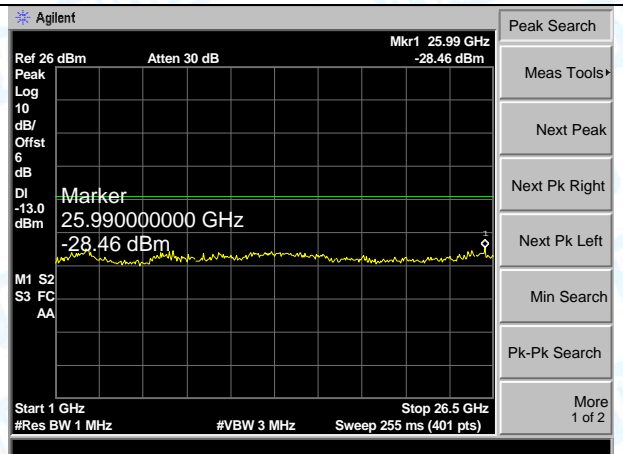
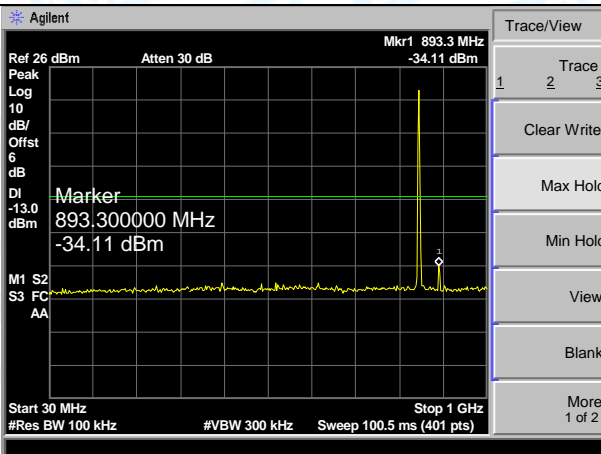
LTE BAND 26 (1.4MHz RB Size 6& RB Offset 0 QPSK-Low CH)



LTE BAND 26 (1.4MHz RB Size 6& RB Offset 0 QPSK-Middle CH)



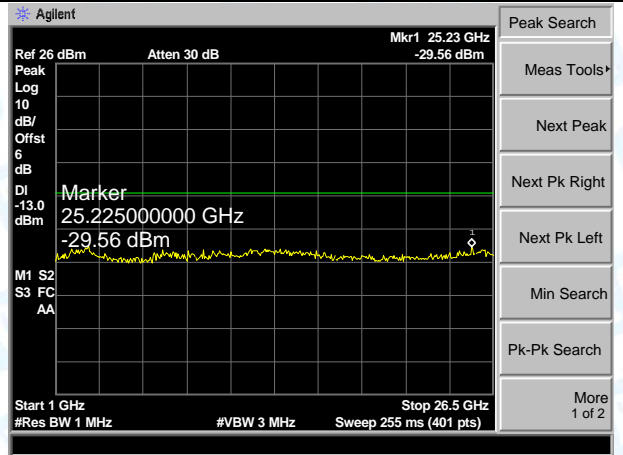
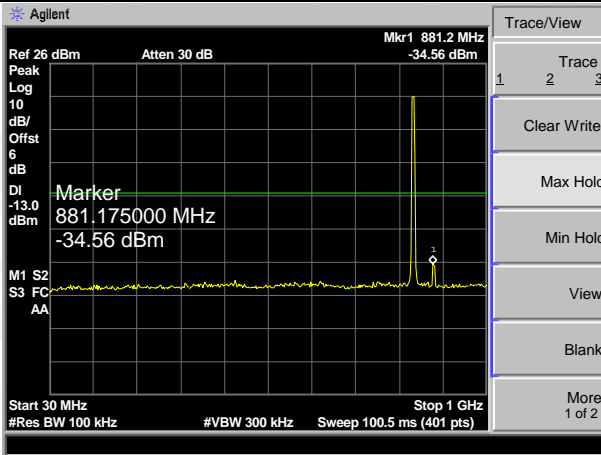
LTE BAND 26 (1.4MHz RB Size 6& RB Offset 0 QPSK-High CH)



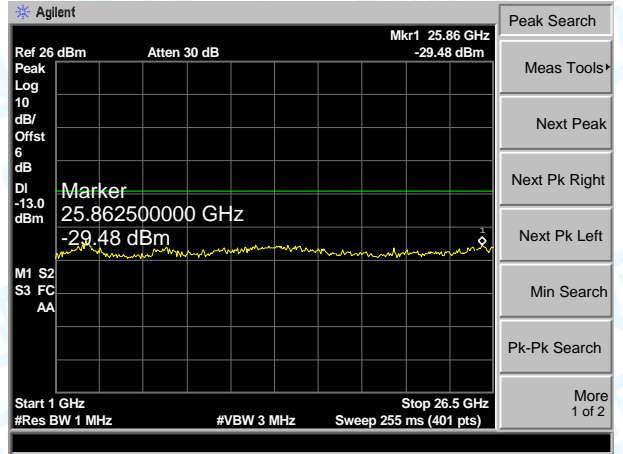
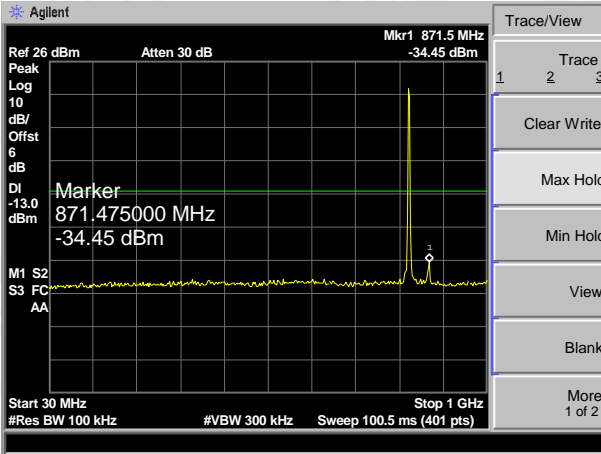
30MHz-1GHz

1GHz-26.5GHz

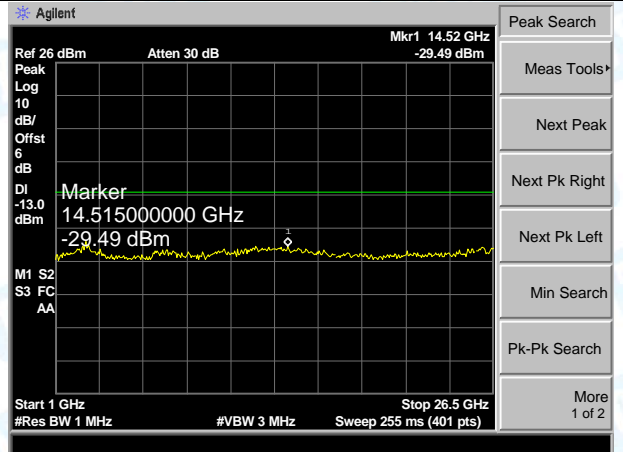
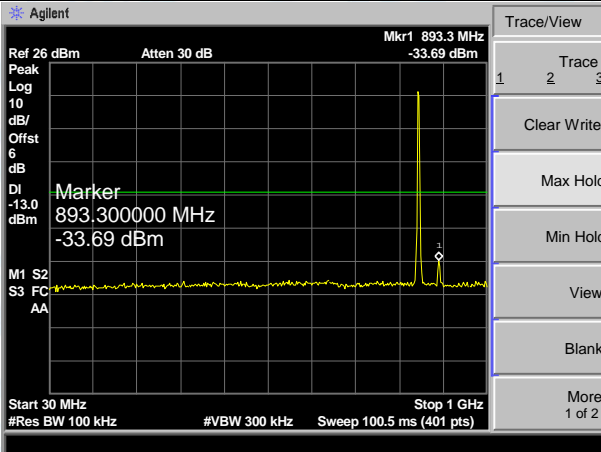
LTE BAND 26 (3MHz RB Size 15& RB Offset 0 QPSK-Low CH)



LTE BAND 26 (3MHz RB Size 15& RB Offset 0 QPSK-Middle CH)

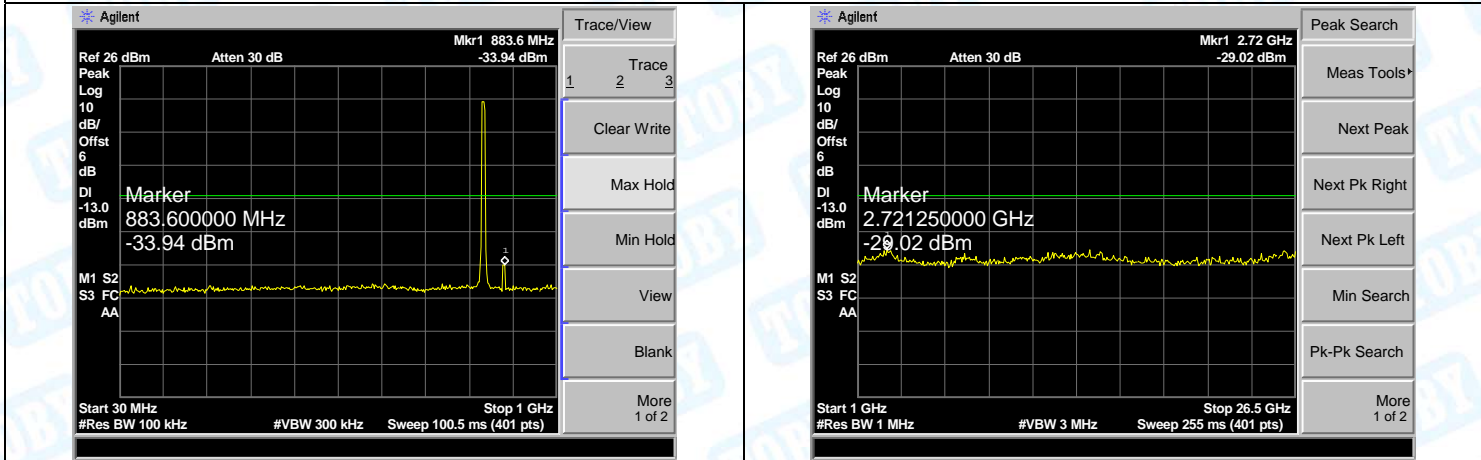


LTE BAND 26 (3MHz RB Size 15& RB Offset 0 QPSK-High CH)

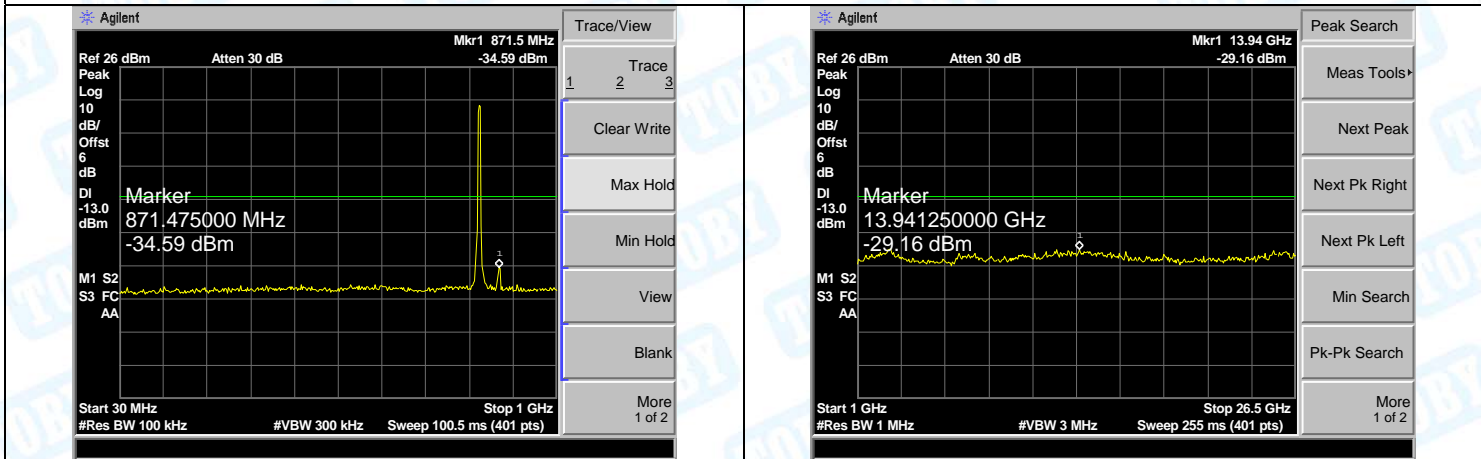


30MHz-1GHz	1GHz-26.5GHz
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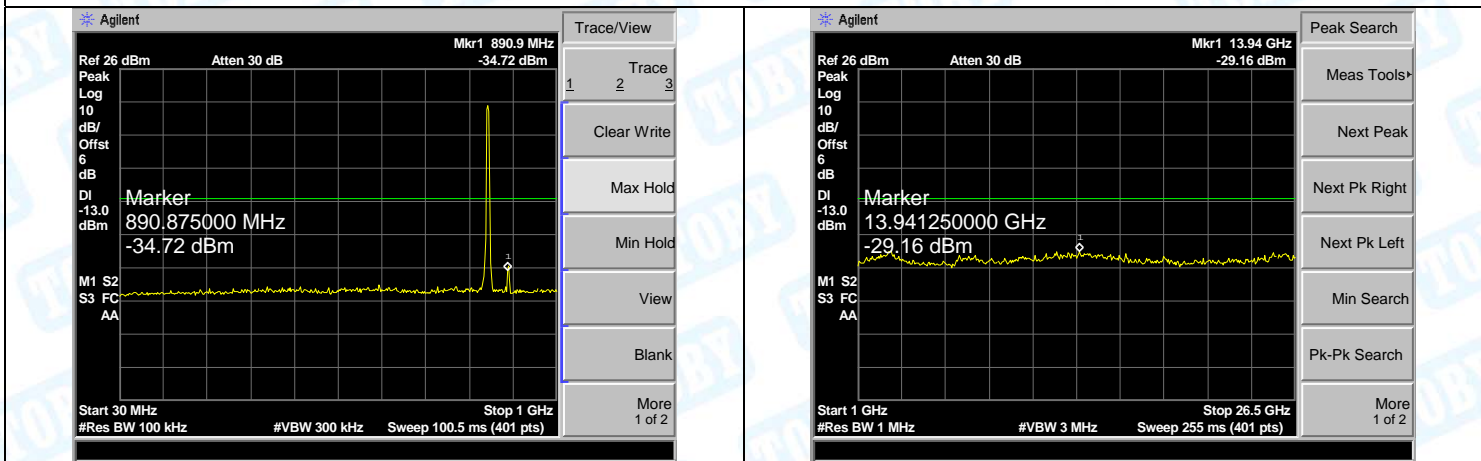
LTE BAND 26 (5MHz RB Size 25& RB Offset 0 QPSK-Low CH)



LTE BAND 26 (5MHz RB Size 25& RB Offset 0 QPSK-Middle CH)



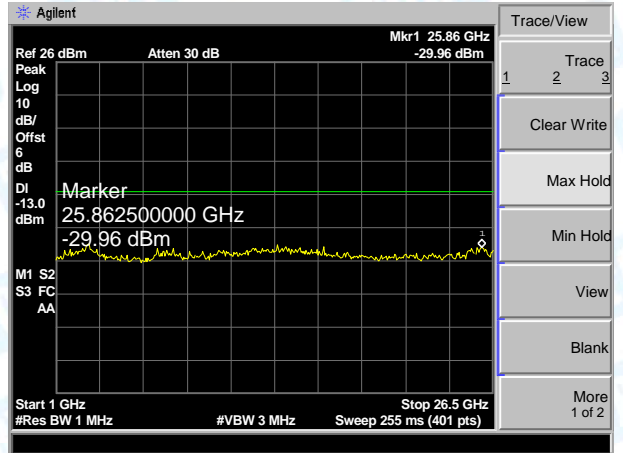
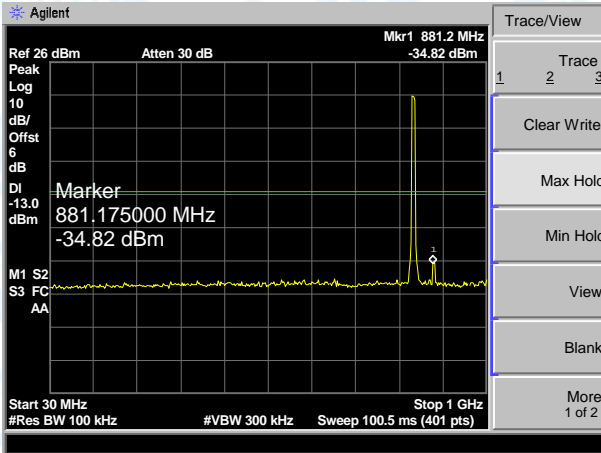
LTE BAND 26 (5MHz RB Size 25& RB Offset 0 QPSK-High CH)



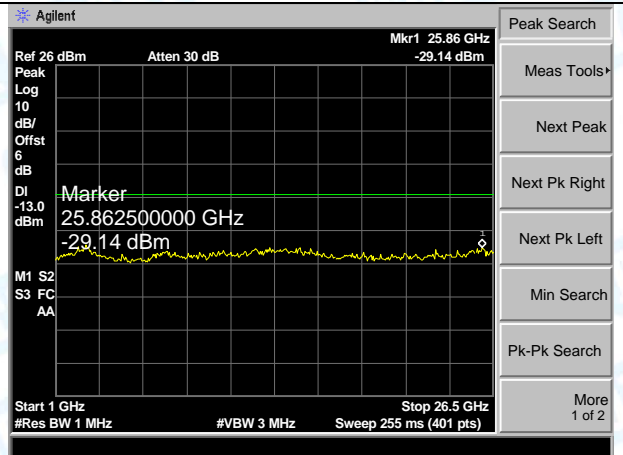
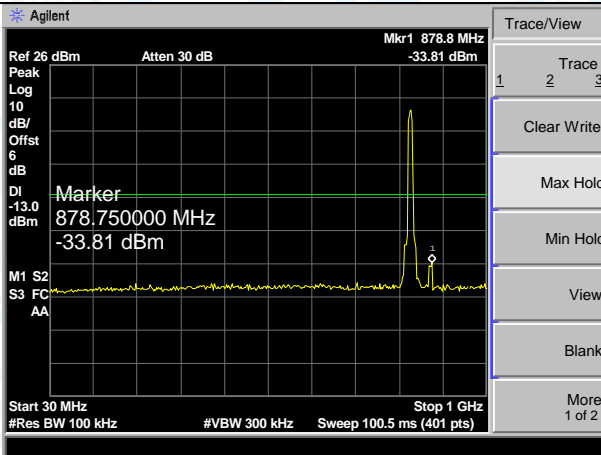
30MHz-1GHz

1GHz-26.5GHz

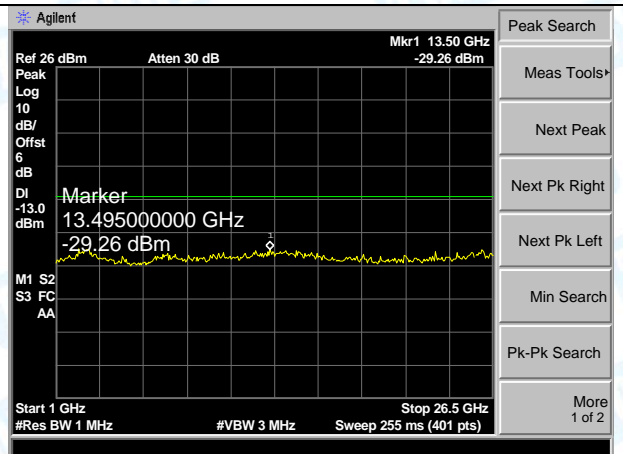
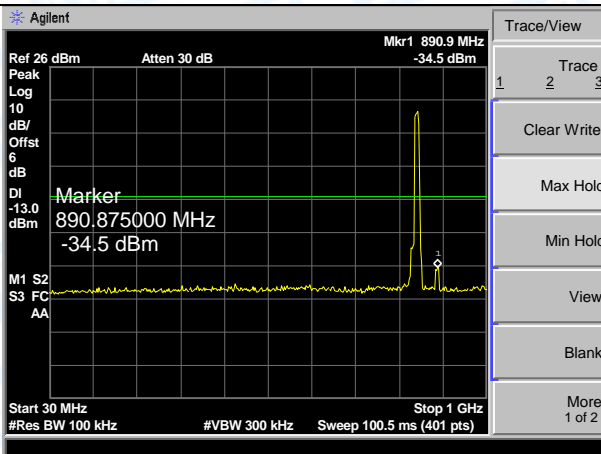
LTE BAND 26 (10MHz RB Size 50& RB Offset 0 QPSK-Low CH)



LTE BAND 26 (10MHz RB Size 50& RB Offset 0 QPSK-Middle CH)



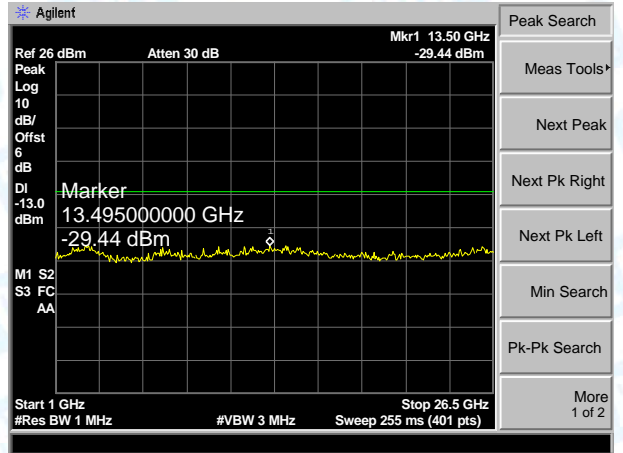
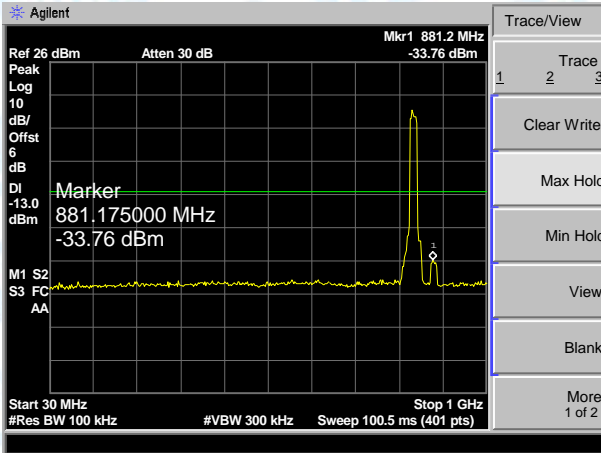
LTE BAND 26 (10MHz RB Size 50& RB Offset 0 QPSK-High CH)



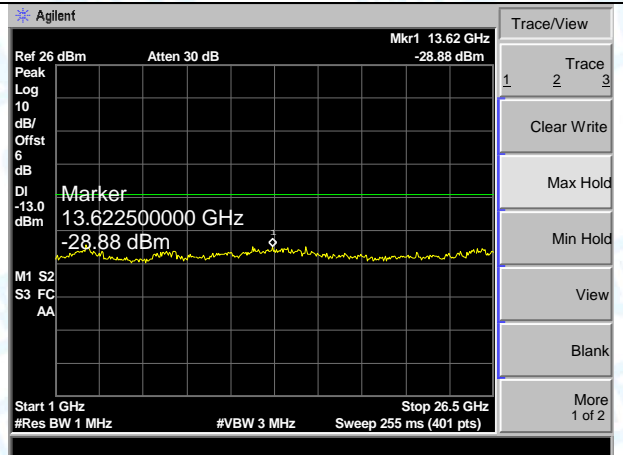
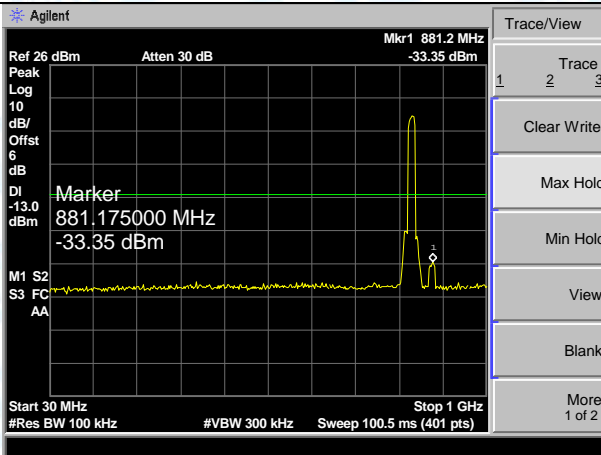
30MHz-1GHz

1GHz-26.5GHz

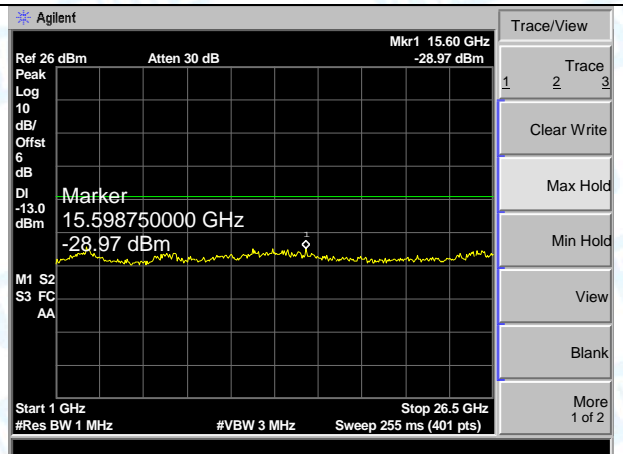
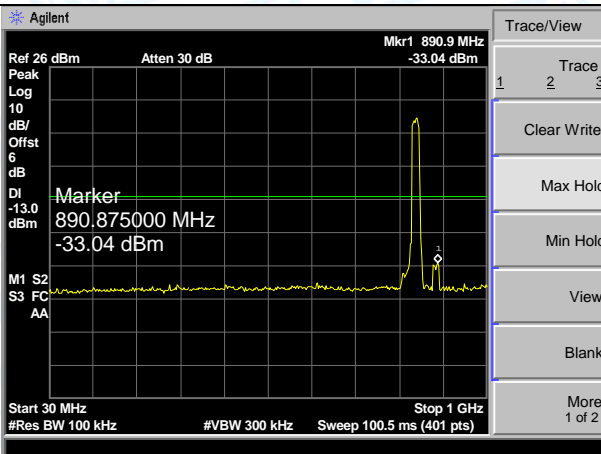
LTE BAND 26 (15MHz RB Size 75& RB Offset 0 QPSK-Low CH)



LTE BAND 26 (15MHz RB Size 75& RB Offset 0 QPSK-Middle CH)



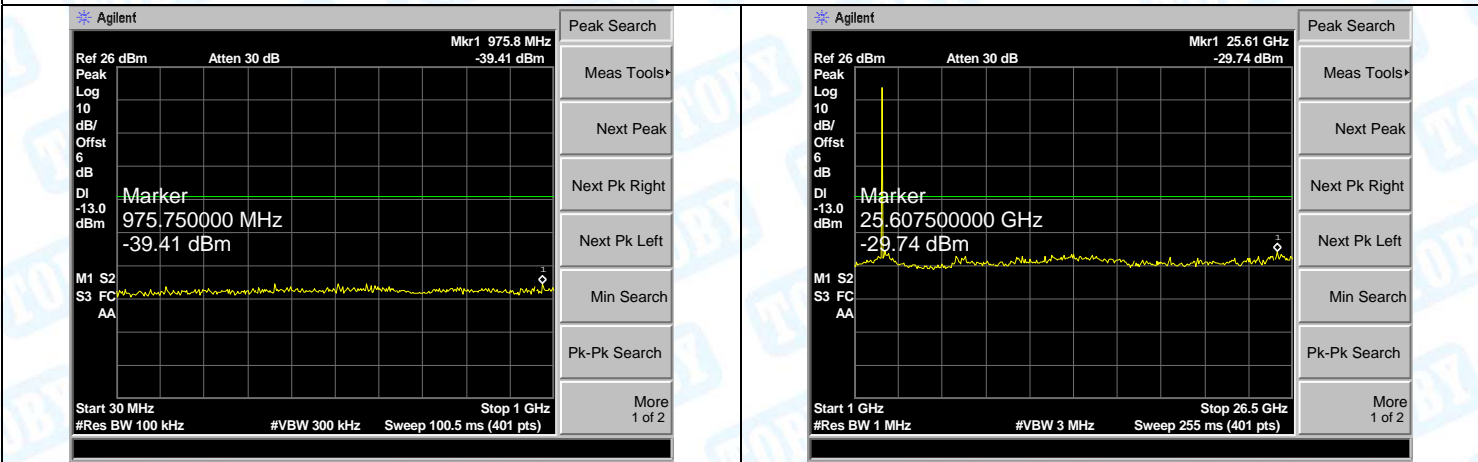
LTE BAND 26 (15MHz RB Size 75& RB Offset 0 QPSK-High CH)



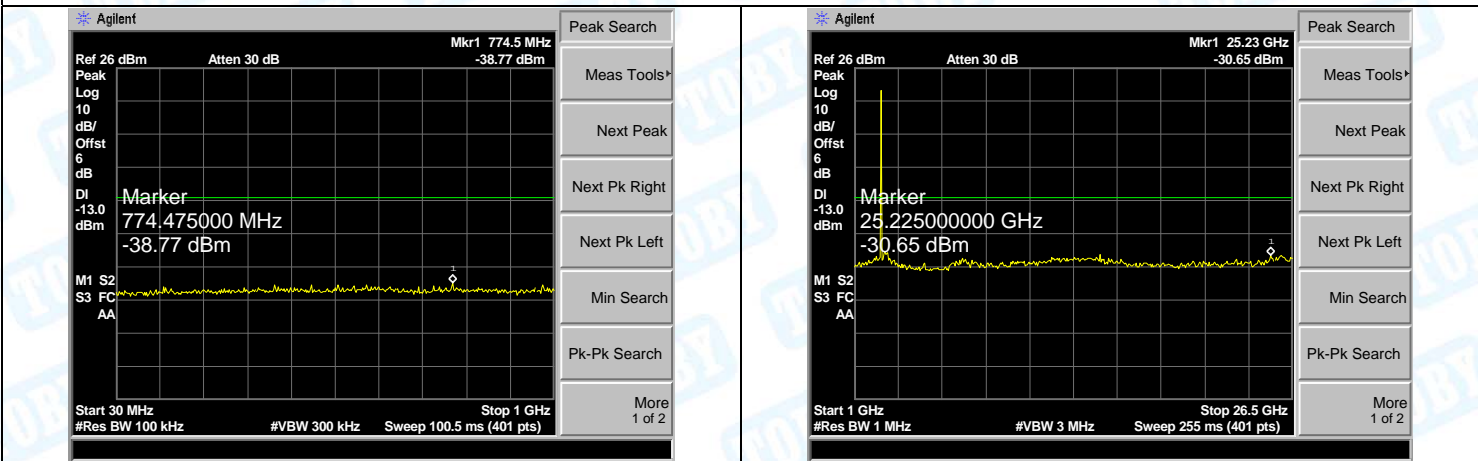
30MHz-1GHz

1GHz-26.5GHz

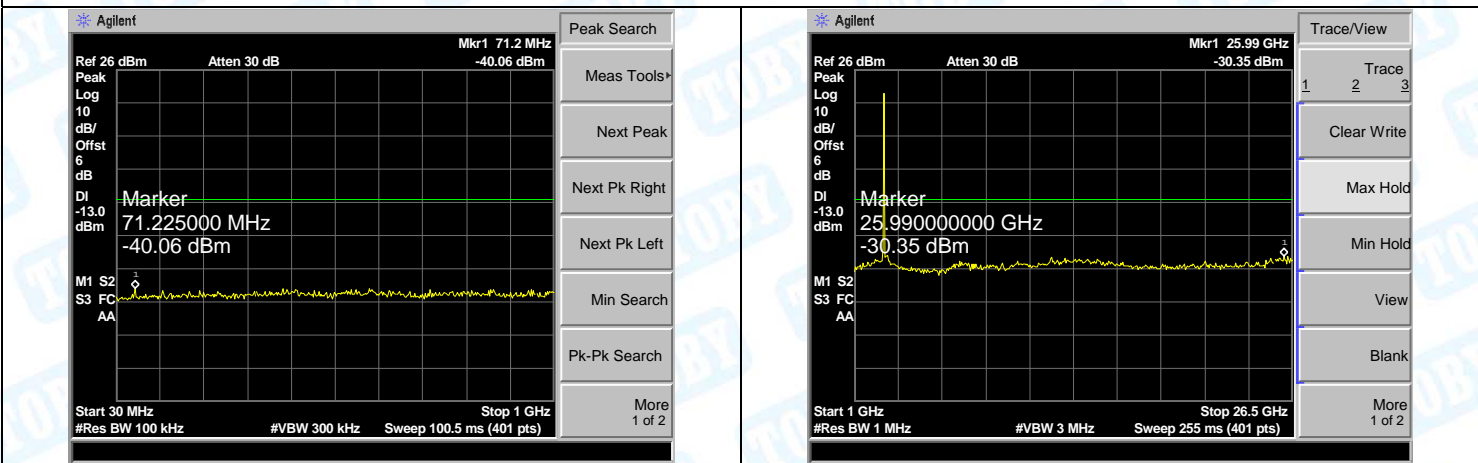
LTE BAND 41 (5MHz RB Size 25& RB Offset 0 QPSK-Low CH)



LTE BAND 41(5MHz RB Size 25& RB Offset 0 QPSK-Middle CH)

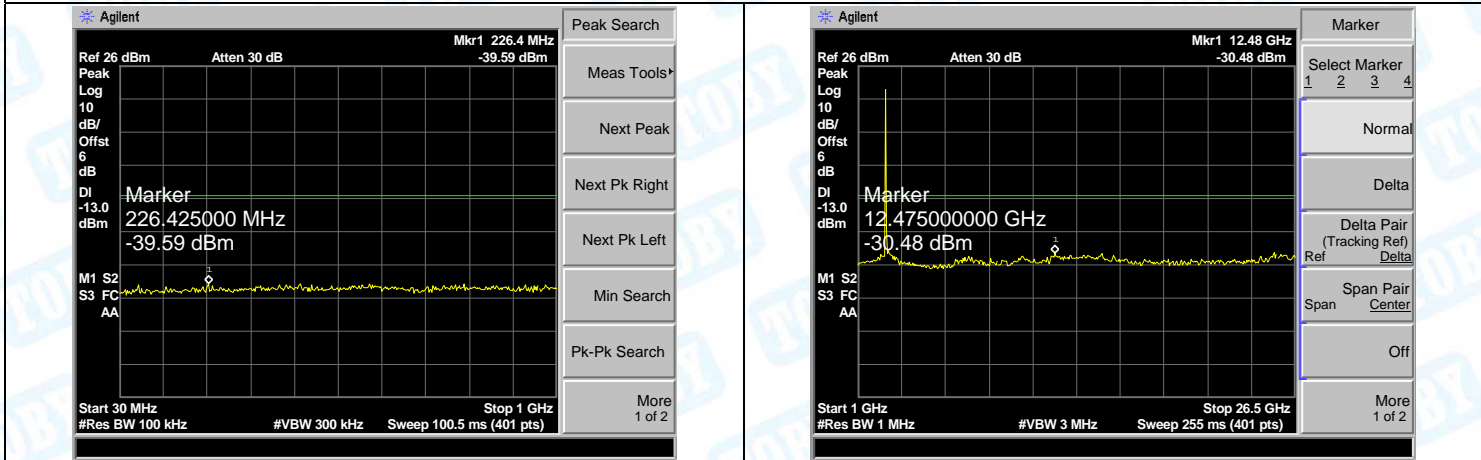


LTE BAND 41 (5MHz RB Size 25& RB Offset 0 QPSK-High CH)

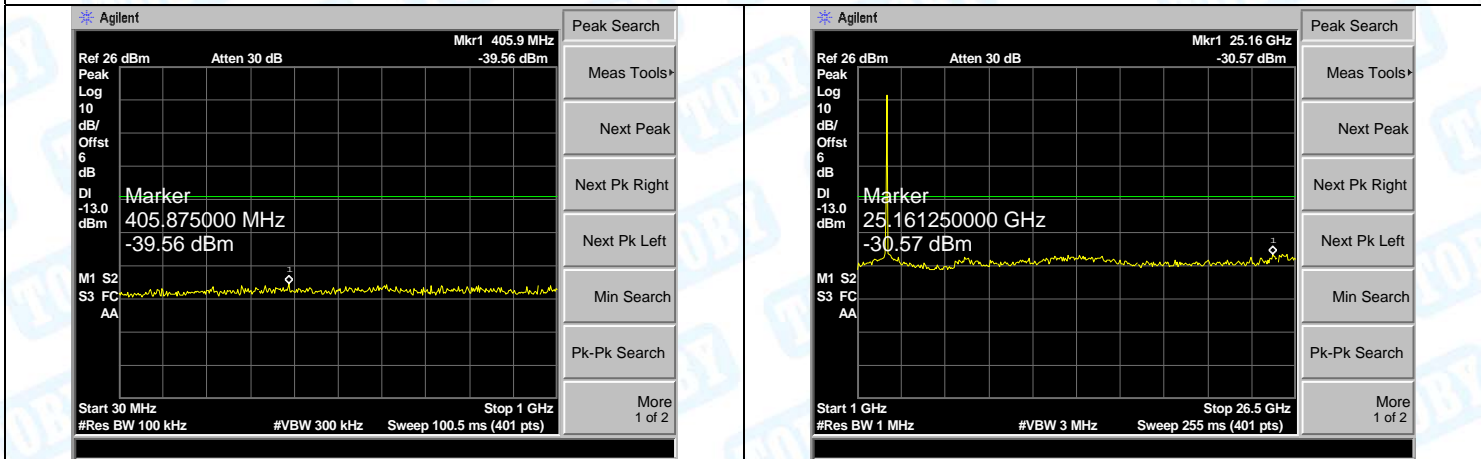


30MHz-1GHz	1GHz-26.5GHz
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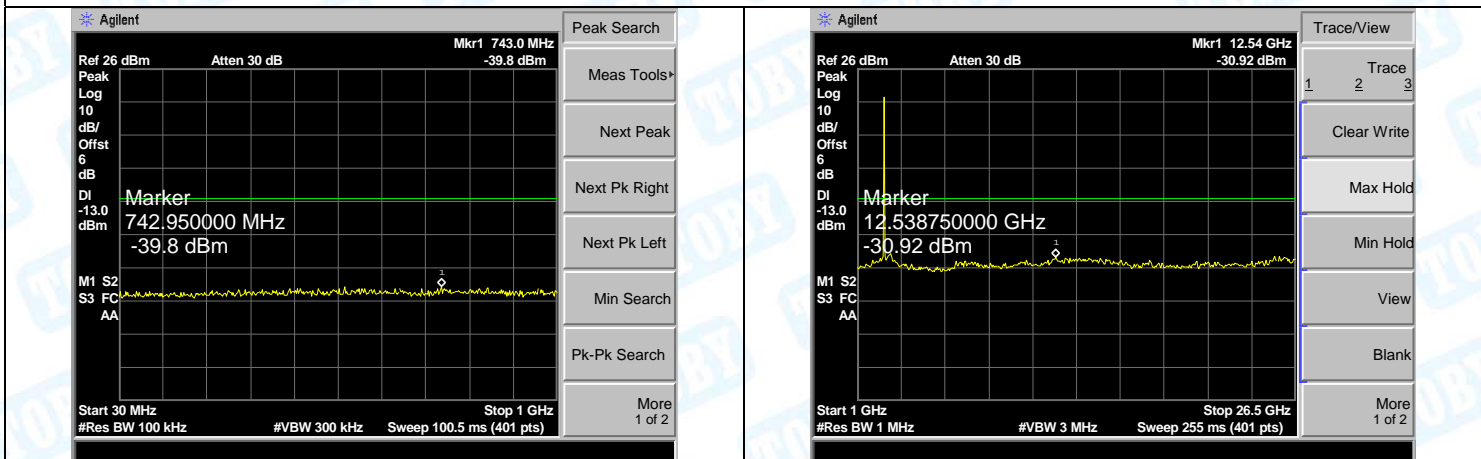
LTE BAND 41 (10MHz RB Size 50& RB Offset 0 QPSK-Low CH)



LTE BAND 41 (10MHz RB Size 50& RB Offset 0 QPSK-Middle CH)

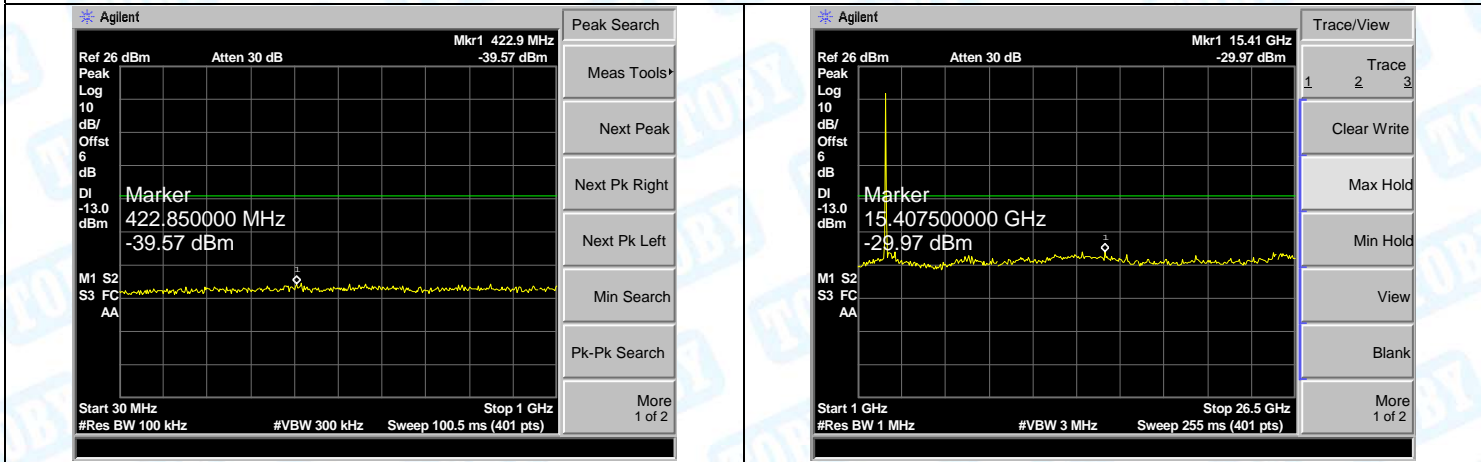


LTE BAND 41 (10MHz RB Size 50& RB Offset 0 QPSK-High CH)

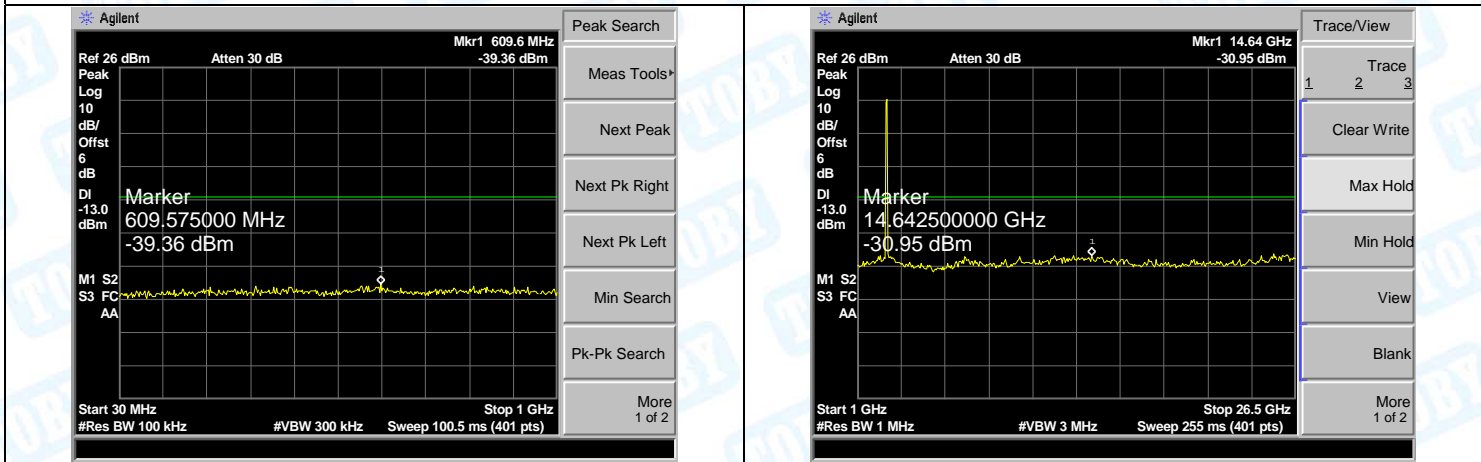


30MHz-1GHz	1GHz-26.5GHz
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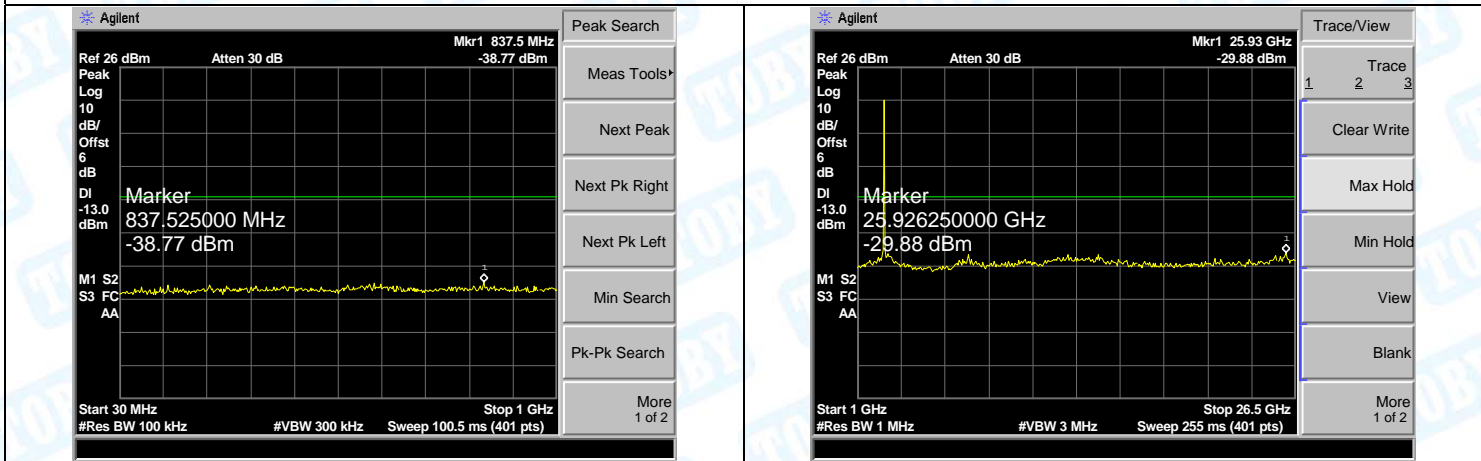
LTE BAND 41 (15MHz RB Size 75& RB Offset 0 QPSK-Low CH)



LTE BAND 41 (15MHz RB Size 75& RB Offset 0 QPSK-Middle CH)

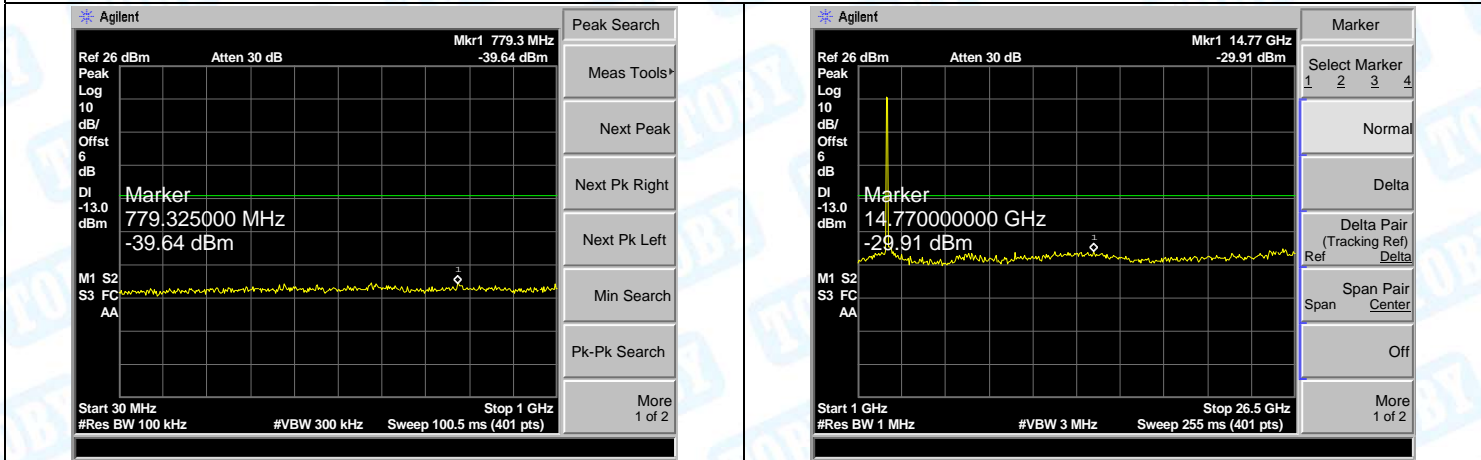


LTE BAND 41 (15MHz RB Size 75& RB Offset 0 QPSK-High CH)

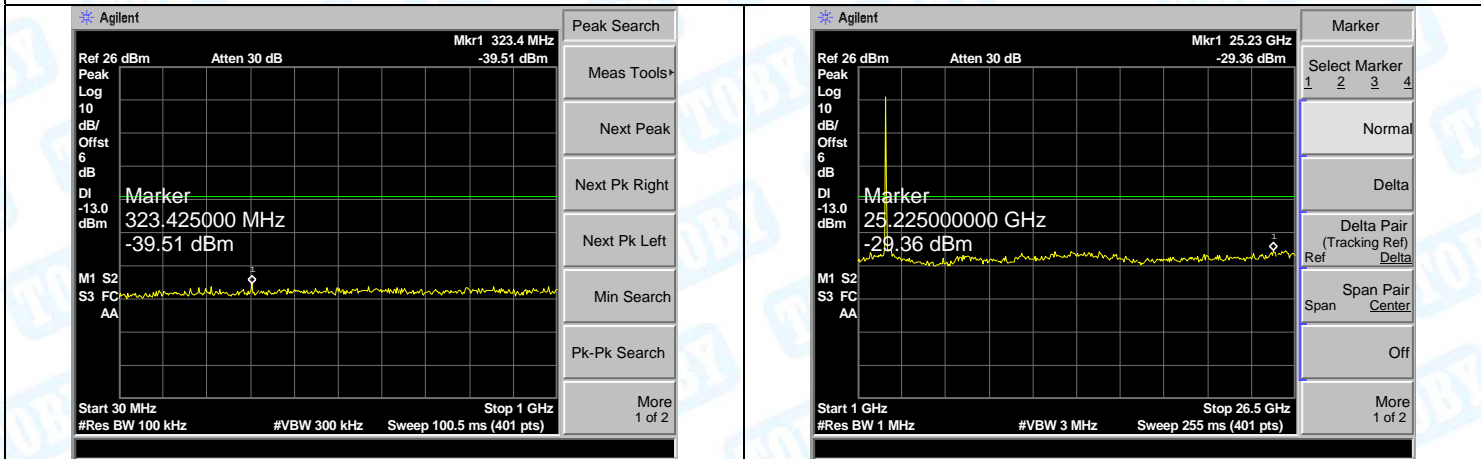


30MHz-1GHz	1GHz-26.5GHz
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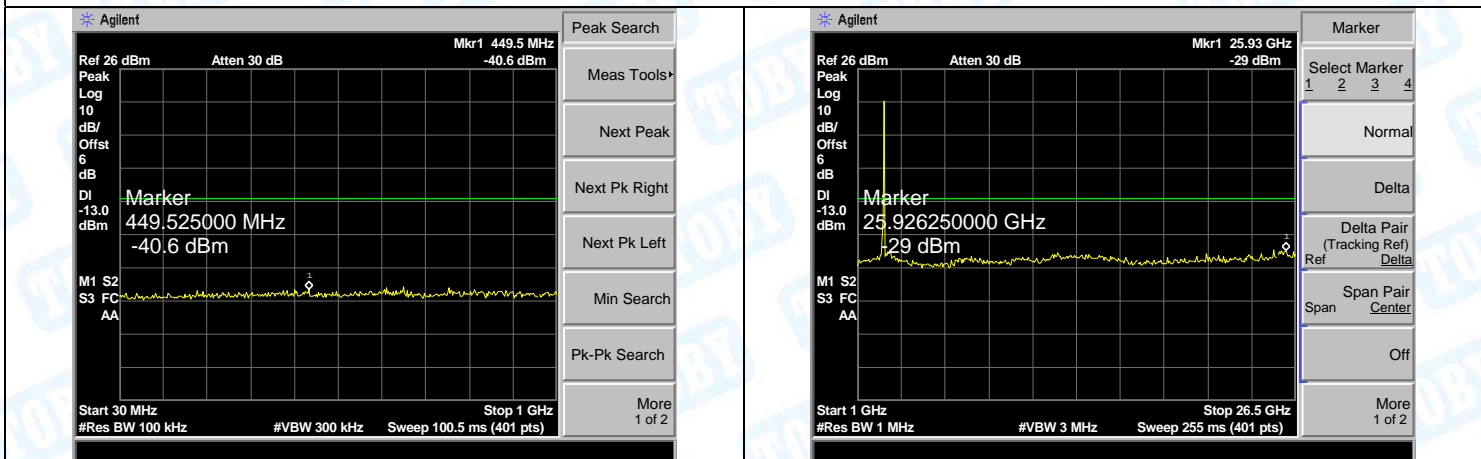
LTE BAND 41 (20MHz RB Size 100& RB Offset 0 QPSK-Low CH)



LTE BAND 41 (20MHz RB Size 100& RB Offset 0 QPSK-Middle CH)



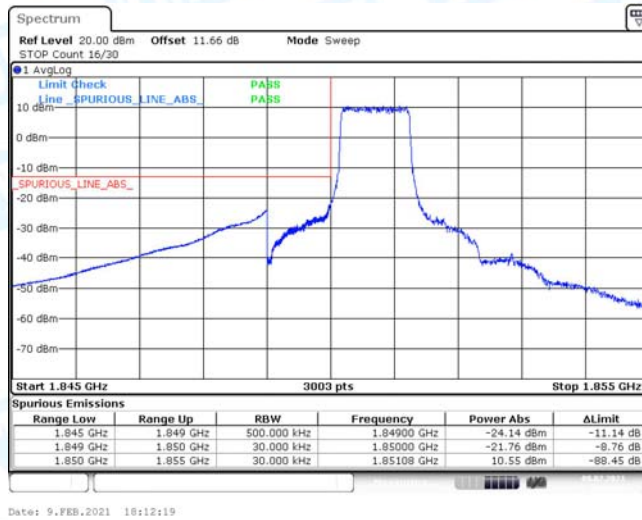
LTE BAND 41 (20MHz RB Size 100& RB Offset 0 QPSK-High CH)



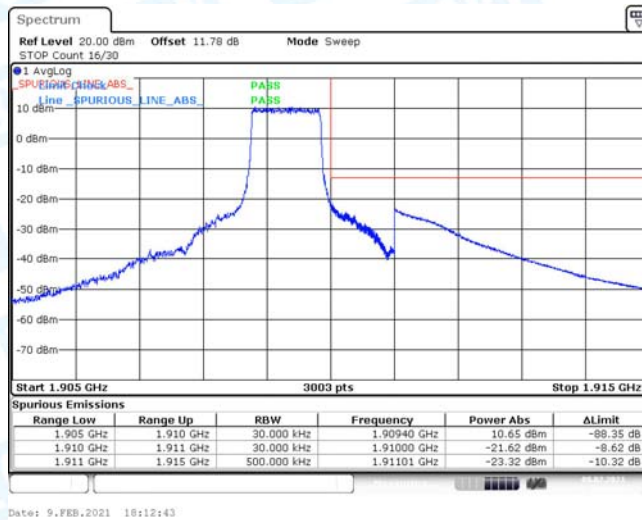
ATTACHMENT E--BAND EDGE TEST

Only show the worst case(max RB size).

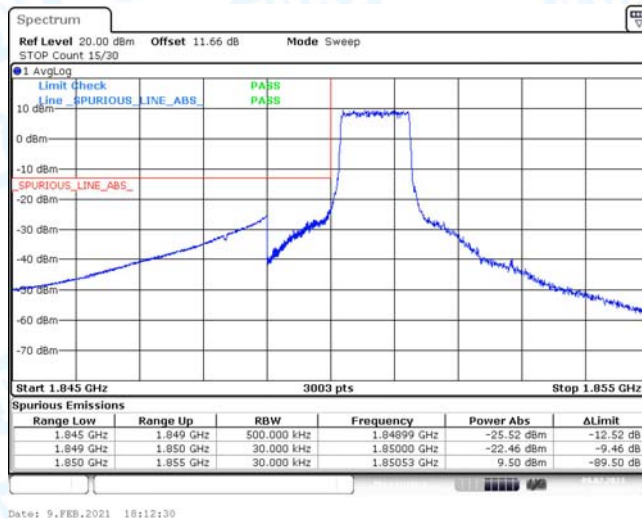
Band2-1.4MHz-QPSK-18607-6RB#0



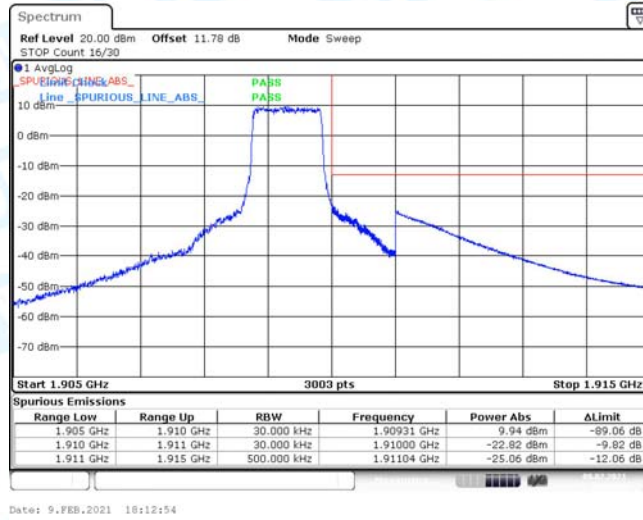
Band2-1.4MHz-QPSK-19193-6RB#0



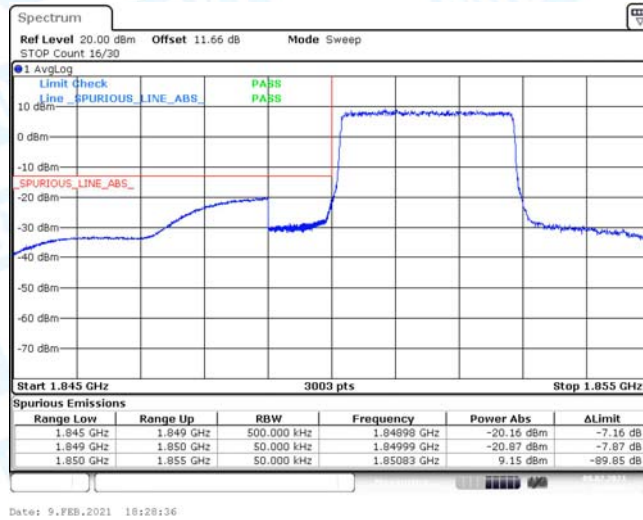
Band2-1.4MHz-16QAM-18607-6RB#0



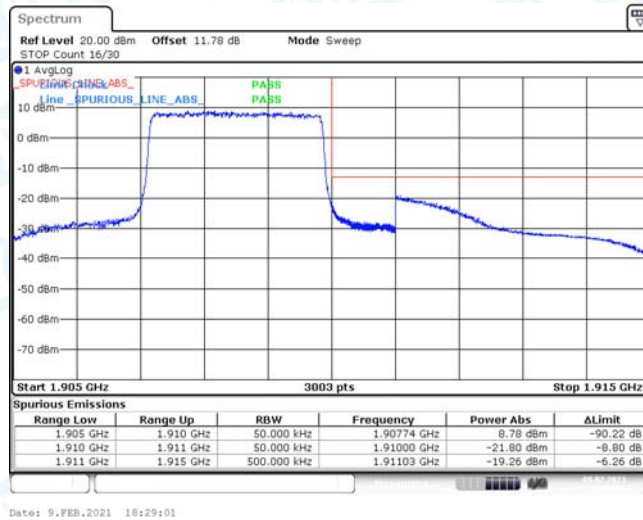
Band2-1.4MHz-16QAM-19193-6RB#0



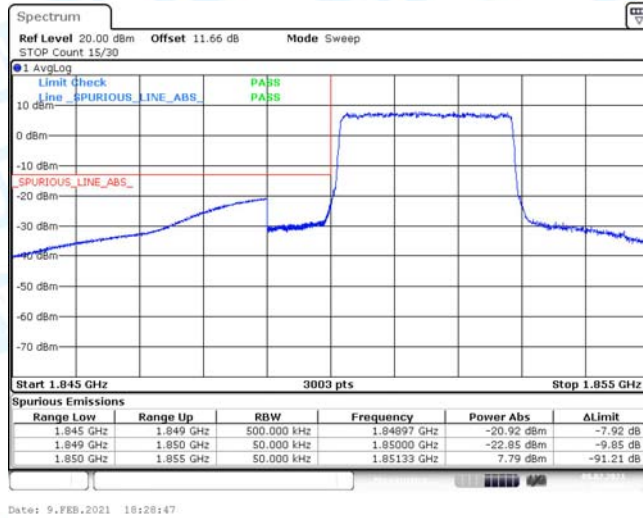
Band2-3MHz-QPSK-18615-15RB#0



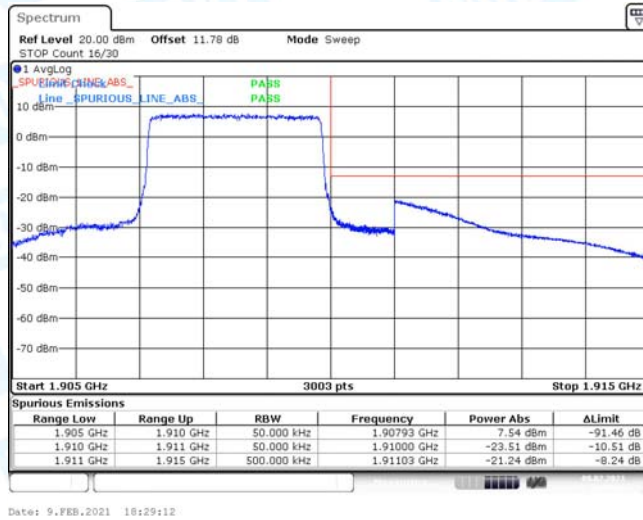
Band2-3MHz-QPSK-19185-15RB#0



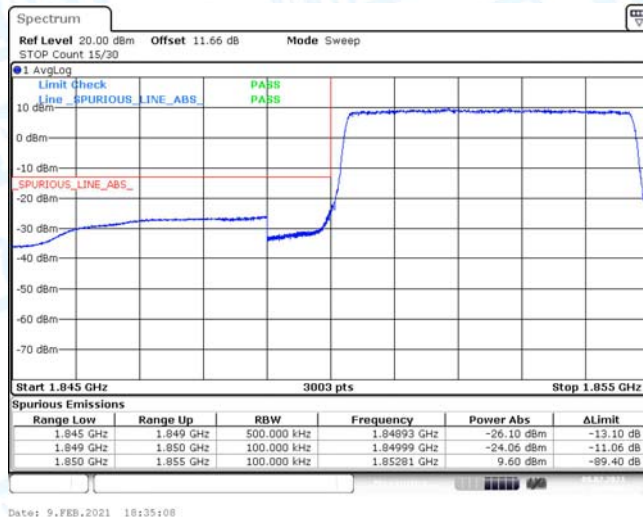
Band2-3MHz-16QAM-18615-15RB#0



Band2-3MHz-16QAM-19185-15RB#0



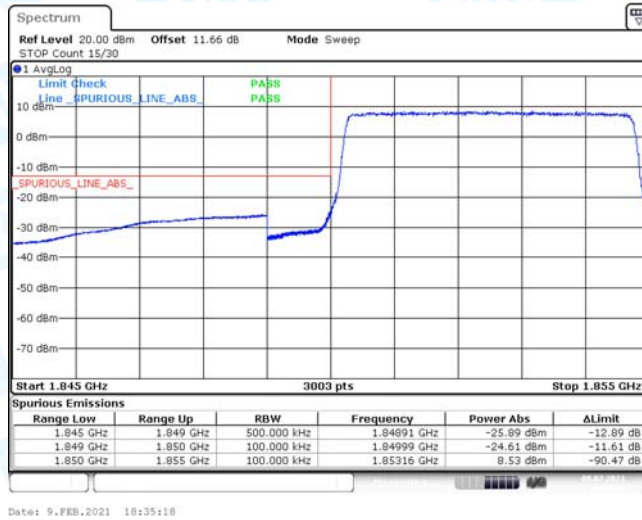
Band2-5MHz-QPSK-18625-25RB#0



Band2-5MHz-QPSK-19175-25RB#0



Band2-5MHz-16QAM-18625-25RB#0



Band2-5MHz-16QAM-19175-25RB#0

