

Report No.SH16060006W02

FCC RF TEST REPORT

Issued to

Shanghai Rising Digital Co.,Ltd.

For

SECD-3I5A-02 display screen

Model Name : SECD-3I5A-02
Trade Name : RISING
Brand Name : RISING
Standard : 47 CFR Part 2
47 CFR Part 22 Subpart H
47 CFR Part 24 Subpart E
47 CFR Part 27
FCC ID : 2AJONSECD-3I5A-02
Test date : Jul.20,2016 to Jul.28,2016
Issue date : Jul.30,2016



Tested by Wu Hongfei

Approved by Gao Yanyan

Review by Xiao dong Wei

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DIRECTORY

General Information	4
1.1 Applicant.....	4
1.2 Manufacturer	4
1.3 Description of EUT	4
Facilities and Accreditations.....	6
1.4 Test Facility	6
1.5 Environmental Conditions	6
1.6 Measurement Uncertainty	6
1.7 List of Equipments Used.....	7
Test Standards and Results.....	8
Test Result	9
1.8 Conducted Output Power	9
1.9 Occupied Bandwidth.....	33
1.10 Peak-to-Average Ratio	61
1.11 Frequency Stability	64
1.12 Conducted Out of Band Emissions	68
1.13 Band Edge	74
1.14 Transmitter Radiated Power (EIRP/ERP)	97
1.15 Radiated Out of Band Emissions	107
Annex Photos of the EUT	130

**Change History**

Issue	Date	Reason for change
1.0	Jul.30,2016	First edition



General Information

1.1 Applicant

Shanghai Rising Digital Co.,Ltd.

No 318 ,Chuanda Road , Pudong New District, Shanghai,China

1.2 Manufacturer

Shanghai Rising Digital Co.,Ltd.

No 318 ,Chuanda Road , Pudong New District, Shanghai,China

1.3 Description of EUT

EUT Type: SECD-3I5A-02 display screen
Brand Name.....: RISING
Trade Name: RISING
Model Name: SECD-3I5A-02
Hardware Version.....: V109
Software Version: V1318
Antenna type.....: PCB and GPS antenna
Antenna gain.....: PCB 1.5 dBi
Frequency Range..... GSM 850MHz:
Tx: 824.20-848.80 MHz (at intervals of 200kHz);
Rx: 869.20-893.80 MHz (at intervals of 200kHz)
GSM 1900MHz
Tx: 1850.20-1909.80 MHz (at intervals of 200kHz);
Rx: 1930.20-1989.80 MHz (at intervals of 200kHz)
WCDMA Band II
Tx: 1852.4 - 1907.6MHz (at intervals of 200kHz);
Rx: 1932.4 - 1987.6MHz (at intervals of 200kHz)
WCDMA Band IV
Tx: 1712.4 - 1752.6 MHz (at intervals of 200kHz);
Rx: 2112.4 - 2152.6 MHz (at intervals of 200kHz)
WCDMA Band V
Tx: 826.4 - 846.6MHz (at intervals of 200kHz);
Rx: 871.4 - 891.6MHz (at intervals of 200kHz)

LTE Band 2
TX: 1852.5 ~ 1907.5 MHz
RX: 1932.5 ~ 1987.5 MHz
LTE Band 4



TX: 1712.5 ~ 1752.5 MHz
RX: 2112.5 ~ 2152.5 MHz
LTE Band 5
TX: 826.5 ~ 846.5 MHz
RX: 871.5 ~ 891.5 MHz
LTE Band 12
TX: 699.7 ~ 715.3 MHz
RX: 729.7~ 745.3MHz
LTE Band 17
TX: 706.5 ~ 713.5 MHz;
RX: 736.5 ~ 743.5 MHz
Bandwidth: Band 2: 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz
Band 4: 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz
Band 5: 1.4MHz / 3MHz / 5MHz / 10MHz
Band 12: 1.4MHz / 3MHz / 5MHz / 10MHz
Band 17: 5MHz / 10MHz
Modulation Type: QPSK,16QAM
Power.....: DC 24V

NOTE:

(1) For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.



Facilities and Accreditations

1.4 Test Facility

Shanghai Skylabs Co., Ltd. is a third party testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. FCC listed: 196218, IC listed: 21609.

The accreditation certificate number is L6644. A 9*6*6(m) fully anechoic chamber was used for the radiated spurious emissions test.

1.5 Environmental Conditions

Ambient temperature: 20~25°C

Relative humidity: 40~60%

Atmosphere pressure: 86-102kPa

1.6 Measurement Uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

Uncertainty of Conducted Emission: $\pm 1.76\text{dB}$

Uncertainty of Radiated Emission: $\pm 3.16\text{dB}$



1.7 List of Equipments Used

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
System Simulator	R&S	CMW500	100830	2015.9.22	1year
Spectrum Analyzer	Rohde&Schwarz	FSU26	200880	2016.6.17	1year
Spectrum Analyzer	Agilent	N9020A	MY55320135	2016.2.25	1year
Power Splitter	Weinschel	1506A	NW521	(n.a.)	(n.a.)
Power Splitter	Mini-Circuits	ZFRSC-183-S+	765001016	(n.a.)	(n.a.)
Attenuator 1	Mini-Circuits	10dB	(n.a.)	(n.a.)	(n.a.)
Attenuator 2	Resnet	10dB	(n.a.)	(n.a.)	(n.a.)
Attenuator 3	Resnet	3dB	(n.a.)	(n.a.)	(n.a.)
DC/AC Power supplier	NF	ES2000S	9087735	2015.10.17	1year
Temperature Chamber	YinHe Experimental Equip.	HL4003T	(n.a.)	2015.9.20	1year
Full/Half-Anechoic Chamber	CHENGYU	9.2×6.25×6.15m	SAR	2016.04.11	3year
Signal Generator	Rohde&Schwarz	SMF100A	101935	2015.9.22	1year
Broadband Trilog Antenna	Schwarzbeck	VULB 9163	9163-561	2016.07.25	2year
Substitution Broadband Trilog Antenna	Schwarzbeck	VULB 9163	9163-572	2016.07.25	2year
Broadband Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-1033	2016.07.25	2year
Substitution Broadband Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-1034	2016.07.25	2year
Broadband Horn Antenna	Schwarzbeck	BBHA 9170	BBHA91970171	2015.9.22	2year
Substitution Broadband Horn Antenna	Schwarzbeck	BBHA 9170	BBHA91970208	2015.9.22	2year
Test Antenna-Loop	Rohde&Schwarz	HFH2-Z2	860004/001	2015.9.22	2year
RF Cable	(n.a.)	0-25GHz	(n.a.)	(n.a.)	(n.a.)

NOTE:

Equipments listed above have been calibrated and are in the period of validation.



Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 2, Part 22, Part 24 and Part 27 for the EUT FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 2	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	47 CFR Part 22	Public Mobile Services
3	47 CFR Part 24	Personal Communications Services
4	47 CFR Part 27	Miscellaneous Wireless Communications Services

Test detailed items/section required by FCC rules and results are as below:

No.	FCC Rules	Description	Result
1	2.1046	Conducted Output Power	PASS
2	2.1049 22.917(b) 24.238(b) 27.53(h)(3) 27.53(m)(6)	Occupied Bandwidth	PASS
3	2.1055 22.355 24.235 27.54	Frequency Stability	PASS
4	24.232(d) 27.50(d)(5)	Peak-to-Average Ratio	PASS
5	2.1051 22.917(a) 24.238(a) 27.53(h)	Conducted Out of Band Emissions	PASS
6	2.1051 22.917(a) 24.238(a) 27.53(h) 27.53(m)	Band Edge	PASS
7	2.1046 22.913(a)(2) 24.232(c) 27.50(c)(10) 27.50(d)(4)	Transmitter Radiated Power (EIPR/ERP)	PASS
8	2.1053 22.917(a) 24.238(a) 27.53(h)	Radiated Out of Band Emissions	PASS



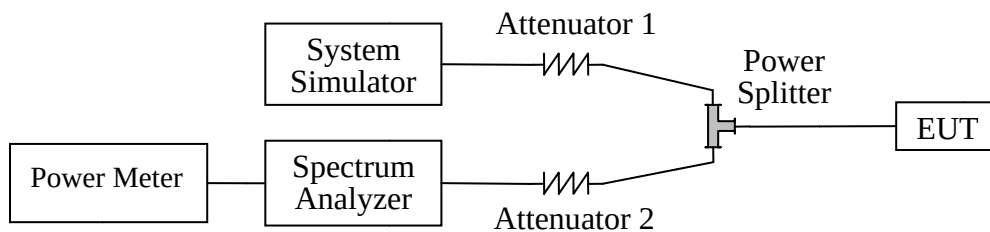
Test Result

1.8 Conducted Output Power

1.8.1 Requirement

According to FCC section 2.1046(a), for transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in FCC section 2.1033(c)(8).

1.8.2 Test Description



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



1.8.3 Test Result

LTE Band 2

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Tune up Power tolerant
20MHz	18700	1860.0	QPSK	1	0	0	21.98	22.5±1
				1	49	0	22.00	22.5±1
				1	99	0	22.05	22.5±1
				50	0	1	20.91	21.5±1
				50	24	1	20.94	21.5±1
				50	49	1	20.93	21.5±1
			16QAM	100	0	1	20.88	21.5±1
				1	0	1	20.76	21.5±1
				1	49	1	20.85	21.5±1
				1	99	1	20.86	21.5±1
				50	0	2	20.56	21.5±1
				50	24	2	20.59	21.5±1
				50	49	2	20.56	21.5±1
				100	0	2	20.89	21.5±1
	18900	1880.0	QPSK	1	0	0	22.00	21.5±1
				1	49	0	22.06	21.5±1
				1	99	0	22.10	21.5±1
				50	0	1	20.89	21.5±1
				50	24	1	20.88	21.5±1
				50	49	1	21.02	21.5±1
			16QAM	100	0	1	20.87	21.5±1
				1	0	1	21.46	21.5±1
				1	49	1	21.45	21.5±1
				1	99	1	21.52	21.5±1
				50	0	2	20.69	21.5±1
				50	24	2	20.86	21.5±1
				50	49	2	20.87	21.5±1
				100	0	2	21.91	21.5±1
	19100	1900.0	QPSK	1	0	0	22.06	21.5±1
				1	49	0	22.00	21.5±1
				1	99	0	21.75	21.5±1
				50	0	1	20.86	21.5±1
				50	24	1	20.85	21.5±1
				50	49	1	20.88	21.5±1
			16QAM	100	0	1	20.85	21.5±1
				1	0	1	21.28	21.5±1
				1	49	1	21.15	21.5±1
				1	99	1	21.04	21.5±1
				50	0	2	20.98	21.5±1
				50	24	2	20.95	21.5±1
				50	49	2	20.89	21.5±1
				100	0	2	20.63	21.5±1



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Tune up Power tolerant
15MHz	18675	1857.5	QPSK	1	0	0	21.75	22.5±1
				1	37	0	21.76	22.5±1
				1	74	0	21.79	22.5±1
				36	0	1	20.77	21.5±1
				36	16	1	20.75	21.5±1
				36	35	1	20.76	21.5±1
				75	0	1	20.64	21.5±1
			16QAM	1	0	1	21.42	21.3±1
				1	37	1	21.45	21.3±1
				1	74	1	21.50	21.3±1
				36	0	2	20.87	21.3±1
				36	16	2	20.86	21.3±1
				36	35	2	20.89	21.3±1
				75	0	2	20.68	21.3±1
	18900	1880.0	QPSK	1	0	0	21.64	21.3±1
				1	37	0	21.70	21.3±1
				1	74	0	21.73	21.3±1
				36	0	1	20.80	21.3±1
				36	16	1	20.79	21.3±1
				36	35	1	20.81	21.3±1
				75	0	1	20.65	21.3±1
			16QAM	1	0	1	21.36	21.3±1
				1	37	1	21.31	21.3±1
				1	74	1	21.27	21.3±1
				36	0	2	20.86	21.3±1
				36	16	2	20.89	21.3±1
				36	35	2	20.89	21.3±1
				75	0	2	20.77	21.3±1
	19125	1902.5	QPSK	1	0	0	21.76	21.3±1
				1	37	0	21.71	21.3±1
				1	74	0	21.62	21.3±1
				36	0	1	20.85	21.3±1
				36	16	1	20.87	21.3±1
				36	35	1	20.88	21.3±1
				75	0	1	20.83	21.3±1
			16QAM	1	0	1	20.76	20.3±1
				1	37	1	20.65	20.3±1
				1	74	1	20.48	20.3±1
				36	0	2	20.16	20.3±1
				36	16	2	20.18	20.3±1
				36	35	2	20.15	20.3±1
				75	0	2	20.82	20.3±1



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Tune up Power tolerant
10MHz	18650	1855	QPSK	1	0	0	21.95	22.5±1
				1	24	0	21.99	22.5±1
				1	49	0	22.02	22.5±1
				25	0	1	20.92	21.3±1
				25	12	1	20.95	21.3±1
				25	24	1	20.93	21.3±1
				50	0	1	20.81	21.3±1
			16QAM	1	0	1	20.54	21.3±1
				1	24	1	20.56	21.3±1
				1	49	1	20.66	21.3±1
				25	0	2	20.46	21.3±1
				25	12	2	20.43	21.3±1
				25	24	2	20.48	21.3±1
				50	0	2	20.88	21.3±1
	18900	1880.0	QPSK	1	0	0	21.79	21.3±1
				1	24	0	21.93	21.3±1
				1	49	0	21.93	21.3±1
				25	0	1	20.89	21.3±1
				25	12	1	20.88	21.3±1
				25	24	1	21.01	21.3±1
				50	0	1	20.81	21.3±1
			16QAM	1	0	1	20.58	20.3±1
				1	24	1	20.60	20.3±1
				1	49	1	20.64	20.3±1
				25	0	2	20.15	20.3±1
				25	12	2	20.19	20.3±1
				25	24	2	20.27	20.3±1
				50	0	2	20.86	20.3±1
	19150	1905	QPSK	1	0	0	21.99	21.3±1
				1	24	0	21.86	21.3±1
				1	49	0	21.61	21.3±1
				25	0	1	20.95	21.3±1
				25	12	1	20.96	21.3±1
				25	24	1	20.96	21.3±1
				50	0	1	20.76	21.3±1
			16QAM	1	0	1	21.64	21.3±1
				1	24	1	21.35	21.3±1
				1	49	1	21.16	21.3±1
				25	0	2	20.54	21.3±1
				25	12	2	20.65	21.3±1
				25	24	2	20.45	21.3±1
				50	0	2	20.87	21.3±1



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Tune up Power tolerant
5MHz	18625	1852.5	QPSK	1	0	0	21.98	22.5±1
				1	12	0	21.99	22.5±1
				1	24	0	22.10	22.5±1
				12	0	1	20.94	21.3±1
				12	6	1	20.95	21.3±1
				12	11	1	20.93	21.3±1
				25	0	1	20.93	21.3±1
			16QAM	1	0	1	20.98	21.3±1
				1	12	1	21.03	21.3±1
				1	24	1	21.06	21.3±1
				12	0	2	20.78	21.3±1
				12	6	2	20.76	21.3±1
				12	11	2	20.78	21.3±1
				25	0	2	20.82	21.3±1
	18900	1880.0	QPSK	1	0	0	21.64	21.3±1
				1	12	0	21.68	21.3±1
				1	24	0	21.80	21.3±1
				12	0	1	20.94	21.3±1
				12	6	1	20.96	21.3±1
				12	11	1	20.93	21.3±1
				25	0	1	20.88	21.3±1
			16QAM	1	0	1	20.91	21.3±1
				1	12	1	20.99	21.3±1
				1	24	1	21.00	21.3±1
				12	0	2	20.56	21.3±1
				12	6	2	20.59	21.3±1
				12	11	2	20.58	21.3±1
				25	0	2	20.94	21.3±1
	19175	1907.5	QPSK	1	0	0	21.91	21.3±1
				1	12	0	21.84	21.3±1
				1	24	0	21.66	21.3±1
				12	0	1	20.97	21.3±1
				12	6	1	20.96	21.3±1
				12	11	1	20.93	21.3±1
				25	0	1	20.88	21.3±1
			16QAM	1	0	1	20.52	21.3±1
				1	12	1	20.46	21.3±1
				1	24	1	20.44	21.3±1
				12	0	2	20.75	21.3±1
				12	6	2	20.56	21.3±1
				12	11	2	20.69	21.3±1
				25	0	2	20.40	21.3±1



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Tune up Power tolerant
3MHz	18625	1852.5	QPSK	1	0	0	21.93	22.5±1
				1	7	0	21.96	22.5±1
				1	14	0	21.90	22.5±1
				8	0	1	20.98	21.3±1
				8	4	1	20.95	21.3±1
				8	7	1	20.96	21.3±1
				15	0	1	20.91	21.3±1
			16QAM	1	0	1	20.51	21.3±1
				1	7	1	20.53	21.3±1
				1	14	1	20.56	21.3±1
				8	0	2	20.87	21.3±1
				8	4	2	20.53	21.3±1
				8	7	2	20.72	21.3±1
				15	0	2	20.93	21.3±1
	18900	1880.0	QPSK	1	0	0	21.88	21.3±1
				1	7	0	21.89	21.3±1
				1	14	0	21.88	21.3±1
				8	0	1	20.92	21.3±1
				8	4	1	20.96	21.3±1
				8	7	1	20.95	21.3±1
				15	0	1	21.01	21.3±1
			16QAM	1	0	1	20.60	21.3±1
				1	7	1	20.50	21.3±1
				1	14	1	20.40	21.3±1
				8	0	2	20.88	21.3±1
				8	4	2	20.98	21.3±1
				8	7	2	20.54	21.3±1
				15	0	2	20.47	21.3±1
	19175	1907.5	QPSK	1	0	0	21.78	21.3±1
				1	7	0	21.65	21.3±1
				1	14	0	21.55	21.3±1
				8	0	1	20.84	21.3±1
				8	4	1	20.83	21.3±1
				8	7	1	20.82	21.3±1
				15	0	1	20.87	21.3±1
			16QAM	1	0	1	21.18	21.3±1
				1	7	1	21.11	21.3±1
				1	14	1	21.16	21.3±1
				8	0	2	20.86	21.3±1
				8	4	2	20.88	21.3±1
				8	7	2	20.83	21.3±1
				15	0	2	20.48	21.3±1



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Tune up Power tolerant
1.4MHz	18607	1850.7	QPSK	1	0	0	21.85	22.5±1
				1	2	0	21.88	22.5±1
				1	5	0	21.89	22.5±1
				3	0	0	21.99	21.3±1
				3	1	0	21.95	21.3±1
				3	2	0	21.96	21.3±1
				6	0	1	20.89	21.3±1
			16QAM	1	0	1	20.35	21.3±1
				1	2	1	20.34	21.3±1
				1	5	1	20.36	21.3±1
				3	0	1	20.86	21.3±1
				3	1	1	20.58	21.3±1
				3	2	1	20.49	21.3±1
				6	0	2	20.89	21.3±1
	18900	1880.0	QPSK	1	0	0	21.97	21.3±1
				1	2	0	21.96	21.3±1
				1	5	0	21.91	21.3±1
				3	0	0	22.07	21.3±1
				3	1	0	22.03	21.3±1
				3	2	0	22.08	21.3±1
				6	0	1	21.00	21.3±1
			16QAM	1	0	1	20.57	21.3±1
				1	2	1	20.56	21.3±1
				1	5	1	20.59	21.3±1
				3	0	1	20.74	21.3±1
				3	1	1	20.88	21.3±1
				3	2	1	20.56	21.3±1
				6	0	2	20.85	21.3±1
	19193	1909.3	QPSK	1	0	0	21.76	21.3±1
				1	2	0	21.73	21.3±1
				1	5	0	21.78	21.3±1
				3	0	0	21.73	21.3±1
				3	1	0	21.76	21.3±1
				3	2	0	21.74	21.3±1
				6	0	1	20.86	21.3±1
			16QAM	1	0	1	20.58	21.3±1
				1	2	1	20.56	21.3±1
				1	5	1	20.54	21.3±1
				3	0	1	20.35	21.3±1
				3	1	1	20.39	21.3±1
				3	2	1	20.34	21.3±1
				6	0	2	20.81	21.3±1



LTE Band 4

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Tune up Power tolerant
20MHz	20050	1720.0	QPSK	1	0	0	21.55	21.3±1
				1	49	0	21.68	21.3±1
				1	99	0	21.89	21.3±1
				50	0	1	20.68	21.3±1
				50	24	1	20.79	21.3±1
				50	49	1	20.56	21.3±1
				100	0	1	20.31	21.3±1
			16QAM	1	0	1	20.35	21.3±1
				1	49	1	20.49	21.3±1
				1	99	1	20.86	21.3±1
				50	0	2	20.74	21.3±1
				50	24	2	20.58	21.3±1
				50	49	2	20.49	21.3±1
				100	0	2	20.36	21.3±1
	20175	1732.5	QPSK	1	0	0	21.55	21.3±1
				1	49	0	21.69	21.3±1
				1	99	0	21.81	21.3±1
				50	0	1	20.73	21.3±1
				50	24	1	20.75	21.3±1
				50	49	1	20.74	21.3±1
				100	0	1	20.73	21.3±1
			16QAM	1	0	1	20.88	21.3±1
				1	49	1	20.96	21.3±1
				1	99	1	21.09	21.3±1
				50	0	2	20.68	21.3±1
				50	24	2	20.86	21.3±1
				50	49	2	20.87	21.3±1
				100	0	2	20.76	21.3±1
	20300	1745.0	QPSK	1	0	0	21.94	21.3±1
				1	49	0	21.88	21.3±1
				1	99	0	21.62	21.3±1
				50	0	1	20.33	21.3±1
				50	24	1	20.43	21.3±1
				50	49	1	20.36	21.3±1
				100	0	1	20.39	21.3±1
			16QAM	1	0	1	21.31	21.3±1
				1	49	1	21.15	21.3±1
				1	99	1	20.89	21.3±1
				50	0	2	20.87	21.3±1
				50	24	2	20.86	21.3±1
				50	49	2	20.84	21.3±1
				100	0	2	20.51	21.3±1



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Tune up Power tolerant
15MHz	20025	1717.5	QPSK	1	0	0	21.55	21.3±1
				1	37	0	21.56	21.3±1
				1	74	0	21.76	21.3±1
				36	0	1	20.37	21.3±1
				36	16	1	20.36	21.3±1
				36	35	1	20.39	21.3±1
				75	0	1	20.87	21.3±1
			16QAM	1	0	1	20.76	21.3±1
				1	37	1	20.55	21.3±1
				1	74	1	20.42	21.3±1
				36	0	2	20.56	21.3±1
				36	16	2	20.78	21.3±1
				36	35	2	20.59	21.3±1
				75	0	2	20.45	21.3±1
	20175	1732.5	QPSK	1	0	0	21.68	21.3±1
				1	37	0	21.78	21.3±1
				1	74	0	21.95	21.3±1
				36	0	1	20.67	21.3±1
				36	16	1	20.65	21.3±1
				36	35	1	20.68	21.3±1
				75	0	1	20.75	21.3±1
			16QAM	1	0	1	20.66	21.3±1
				1	37	1	20.74	21.3±1
				1	74	1	21.05	21.3±1
				36	0	2	20.46	21.3±1
				36	16	2	20.49	21.3±1
				36	35	2	20.48	21.3±1
				75	0	2	20.73	21.3±1
	20325	1747.5	QPSK	1	0	0	21.78	21.3±1
				1	37	0	21.64	21.3±1
				1	74	0	21.59	21.3±1
				36	0	1	20.50	21.3±1
				36	16	1	20.53	21.3±1
				36	35	1	20.54	21.3±1
				75	0	1	20.42	21.3±1
			16QAM	1	0	1	21.44	21.3±1
				1	37	1	21.36	21.3±1
				1	74	1	21.15	21.3±1
				36	0	2	20.98	21.3±1
				36	16	2	20.92	21.3±1
				36	35	2	20.95	21.3±1
				75	0	2	20.48	21.3±1



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Tune up Power tolerant
10MHz	20000	1715.0	QPSK	1	0	0	21.59	21.3±1
				1	24	0	21.50	21.3±1
				1	49	0	21.42	21.3±1
				25	0	1	20.42	21.3±1
				25	12	1	20.45	21.3±1
				25	24	1	20.43	21.3±1
				50	0	1	20.55	21.3±1
			16QAM	1	0	1	20.71	21.3±1
				1	24	1	20.46	21.3±1
				1	49	1	20.88	21.3±1
				25	0	2	20.66	21.3±1
				25	12	2	20.45	21.3±1
				25	24	2	20.63	21.3±1
				50	0	2	20.50	21.3±1
	20175	1732.5	QPSK	1	0	0	21.87	21.3±1
				1	24	0	21.94	21.3±1
				1	49	0	21.88	21.3±1
				25	0	1	20.95	21.3±1
				25	12	1	20.96	21.3±1
				25	24	1	20.93	21.3±1
				50	0	1	20.82	21.3±1
			16QAM	1	0	1	20.57	20.3±1
				1	24	1	20.66	20.3±1
				1	49	1	20.75	20.3±1
				25	0	2	20.16	20.3±1
				25	12	2	20.13	20.3±1
				25	24	2	20.11	20.3±1
				50	0	2	20.93	20.3±1
	20350	1750.0	QPSK	1	0	0	21.42	21.3±1
				1	24	0	21.55	21.3±1
				1	49	0	21.68	21.3±1
				25	0	1	20.55	21.3±1
				25	12	1	20.56	21.3±1
				25	24	1	20.58	21.3±1
				50	0	1	20.42	21.3±1
			16QAM	1	0	1	21.14	21.3±1
				1	24	1	21.16	21.3±1
				1	49	1	21.20	21.3±1
				25	0	2	20.98	21.3±1
				25	12	2	20.95	21.3±1
				25	24	2	20.93	21.3±1
				50	0	2	20.51	21.3±1



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Tune up Power tolerant
10MHz	20000	1715.0	QPSK	1	0	0	21.59	21.3±1
				1	24	0	21.50	21.3±1
				1	49	0	21.42	21.3±1
				25	0	1	20.42	21.3±1
				25	12	1	20.45	21.3±1
				25	24	1	20.43	21.3±1
				50	0	1	20.55	21.3±1
			16QAM	1	0	1	20.71	21.3±1
				1	24	1	20.46	21.3±1
				1	49	1	20.88	21.3±1
				25	0	2	20.66	21.3±1
				25	12	2	20.45	21.3±1
				25	24	2	20.63	21.3±1
				50	0	2	20.50	21.3±1
	20175	1732.5	QPSK	1	0	0	21.87	21.3±1
				1	24	0	21.94	21.3±1
				1	49	0	21.88	21.3±1
				25	0	1	20.95	21.3±1
				25	12	1	20.96	21.3±1
				25	24	1	20.93	21.3±1
				50	0	1	20.82	21.3±1
			16QAM	1	0	1	20.57	20.3±1
				1	24	1	20.66	20.3±1
				1	49	1	20.75	20.3±1
				25	0	2	20.16	20.3±1
				25	12	2	20.13	20.3±1
				25	24	2	20.11	20.3±1
				50	0	2	20.93	20.3±1
	20350	1750.0	QPSK	1	0	0	21.42	21.3±1
				1	24	0	21.55	21.3±1
				1	49	0	21.68	21.3±1
				25	0	1	20.55	21.3±1
				25	12	1	20.56	21.3±1
				25	24	1	20.58	21.3±1
				50	0	1	20.42	21.3±1
			16QAM	1	0	1	21.14	21.3±1
				1	24	1	21.16	21.3±1
				1	49	1	21.20	21.3±1
				25	0	2	20.98	21.3±1
				25	12	2	20.95	21.3±1
				25	24	2	20.93	21.3±1
				50	0	2	20.51	21.3±1



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Tune up Power tolerant
5MHz	20000	1715.0	QPSK	1	0	0	21.72	21.3±1
				1	12	0	21.68	21.3±1
				1	24	0	21.60	21.3±1
				12	0	1	20.60	21.3±1
				12	6	1	20.63	21.3±1
				12	11	1	20.65	21.3±1
				25	0	1	20.52	21.3±1
			16QAM	1	0	1	20.73	21.3±1
				1	12	1	20.64	21.3±1
				1	24	1	20.55	21.3±1
				12	0	2	20.35	21.3±1
				12	6	2	20.36	21.3±1
				12	11	2	20.38	21.3±1
				25	0	2	20.59	21.3±1
	20175	1732.5	QPSK	1	0	0	21.99	21.3±1
				1	12	0	21.99	21.3±1
				1	24	0	22.03	21.3±1
				12	0	1	21.07	21.3±1
				12	6	1	21.03	21.3±1
				12	11	1	20.55	21.3±1
				25	0	1	20.93	21.3±1
			16QAM	1	0	1	20.61	21.3±1
				1	12	1	20.70	21.3±1
				1	24	1	20.77	21.3±1
				12	0	2	20.45	21.3±1
				12	6	2	20.48	21.3±1
				12	11	2	20.43	21.3±1
				25	0	2	20.83	21.3±1
	20350	1750.0	QPSK	1	0	0	21.40	21.3±1
				1	12	0	21.56	21.3±1
				1	24	0	21.74	21.3±1
				12	0	1	20.57	21.3±1
				12	6	1	20.56	21.3±1
				12	11	1	20.58	21.3±1
				25	0	1	20.59	21.3±1
			16QAM	1	0	1	20.66	21.3±1
				1	12	1	20.78	21.3±1
				1	24	1	20.91	21.3±1
				12	0	2	20.76	21.3±1
				12	6	2	20.75	21.3±1
				12	11	2	20.77	21.3±1
				25	0	2	20.56	21.3±1



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Tune up Power tolerant
3MHz	19965	1711.5	QPSK	1	0	0	21.64	21.3±1
				1	7	0	21.53	21.3±1
				1	14	0	21.48	21.3±1
				8	0	1	20.57	21.3±1
				8	4	1	20.53	21.3±1
				8	7	1	20.58	21.3±1
				15	0	1	20.53	21.3±1
			16QAM	1	0	1	20.77	21.3±1
				1	7	1	20.56	21.3±1
				1	14	1	20.42	21.3±1
				8	0	2	20.48	21.3±1
				8	4	2	20.46	21.3±1
				8	7	2	20.44	21.3±1
				15	0	2	20.53	21.3±1
	20175	1732.5	QPSK	1	0	0	22.07	21.3±1
				1	7	0	22.05	21.3±1
				1	14	0	22.02	21.3±1
				8	0	1	21.03	21.3±1
				8	4	1	21.01	21.3±1
				8	7	1	20.98	21.3±1
				15	0	1	21.02	21.3±1
			16QAM	1	0	1	20.74	21.3±1
				1	7	1	20.73	21.3±1
				1	14	1	20.72	21.3±1
				8	0	2	20.93	21.3±1
				8	4	2	20.96	21.3±1
				8	7	2	20.95	21.3±1
				15	0	2	20.52	21.3±1
	20385	1753.5	QPSK	1	0	0	21.46	21.3±1
				1	7	0	21.55	21.3±1
				1	14	0	21.66	21.3±1
				8	0	1	20.60	21.3±1
				8	4	1	20.00	21.3±1
				8	7	1	20.63	21.3±1
				15	0	1	20.64	21.3±1
			16QAM	1	0	1	21.06	21.3±1
				1	7	1	21.11	21.3±1
				1	14	1	21.19	21.3±1
				8	0	2	20.60	21.3±1
				8	4	2	20.64	21.3±1
				8	7	2	20.63	21.3±1
				15	0	2	20.83	21.3±1



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Tune up Power tolerant
1.4MHz	19957	1710.7	QPSK	1	0	0	21.65	21.3±1
				1	2	0	21.63	21.3±1
				1	5	0	21.69	21.3±1
				3	0	0	21.65	21.3±1
				3	1	0	21.63	21.3±1
				3	2	0	20.69	21.3±1
				6	0	1	21.24	21.3±1
			16QAM	1	0	1	21.26	21.3±1
				1	2	1	21.28	21.3±1
				1	5	1	21.15	21.3±1
				3	0	1	20.46	21.3±1
				3	1	1	20.58	21.3±1
				3	2	1	20.62	21.3±1
				6	0	2	22.21	21.3±1
	20175	1732.5	QPSK	1	0	0	22.15	21.3±1
				1	2	0	22.02	21.3±1
				1	5	0	21.94	21.3±1
				3	0	0	21.93	21.3±1
				3	1	0	21.96	21.3±1
				3	2	0	21.12	21.3±1
				6	0	1	20.78	21.3±1
			16QAM	1	0	1	20.77	21.3±1
				1	2	1	20.74	21.3±1
				1	5	1	20.56	21.3±1
				3	0	1	20.59	21.3±1
				3	1	1	20.54	21.3±1
				3	2	1	20.68	21.3±1
				6	0	2	21.58	21.3±1
	20393	1754.3	QPSK	1	0	0	21.68	21.3±1
				1	2	0	21.80	21.3±1
				1	5	0	21.65	21.3±1
				3	0	0	21.62	21.3±1
				3	1	0	21.00	21.3±1
				3	2	0	21.65	21.3±1
				6	0	1	21.76	21.3±1
			16QAM	1	0	1	20.61	21.3±1
				1	2	1	20.76	21.3±1
				1	5	1	20.44	21.3±1
				3	0	1	20.75	21.3±1
				3	1	1	20.59	21.3±1
				3	2	1	20.89	21.3±1
				6	0	2	20.74	21.3±1



LTE Band 5:

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Tune up Power tolerant
10MHz	20450	829	QPSK	1	0	0	22.78	22±1
				1	24	0	22.65	22±1
				1	49	0	22.48	22±1
				25	0	1	21.62	22±1
				25	12	1	21.63	22±1
				25	24	1	21.64	22±1
				50	0	1	21.26	22±1
			16QAM	1	0	1	21.34	21.3±1
				1	24	1	21.25	21.3±1
				1	49	1	21.02	21.3±1
				25	0	2	20.76	21.3±1
				25	12	2	20.72	21.3±1
				25	24	2	20.73	21.3±1
				50	0	2	20.35	21.3±1
	20525	836.5	QPSK	1	0	0	22.36	22±1
				1	24	0	22.46	22±1
				1	49	0	22.71	22±1
				25	0	1	21.29	22±1
				25	12	1	21.25	22±1
				25	24	1	21.26	22±1
				50	0	1	21.30	22±1
			16QAM	1	0	1	21.02	21.3±1
				1	24	1	21.15	21.3±1
				1	49	1	21.36	21.3±1
				25	0	2	20.68	21.3±1
				25	12	2	20.69	21.3±1
				25	24	2	20.65	21.3±1
				50	0	2	20.38	21.3±1
	20600	844	QPSK	1	0	0	22.47	22±1
				1	24	0	22.36	22±1
				1	49	0	22.27	22±1
				25	0	1	21.53	22±1
				25	12	1	21.56	22±1
				25	24	1	21.54	22±1
				50	0	1	21.39	22±1
			16QAM	1	0	1	22.08	21.3±1
				1	24	1	21.99	21.3±1
				1	49	1	21.92	21.3±1
				25	0	2	20.85	21.3±1
				25	12	2	20.83	21.3±1
				25	24	2	20.81	21.3±1
				50	0	2	20.43	21.3±1



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Tune up Power tolerant
5MHz	20425	826.5	QPSK	1	0	0	22.91	22±1
				1	12	0	22.85	22±1
				1	24	0	22.70	22±1
				12	0	1	21.74	22±1
				12	6	1	21.76	22±1
				12	11	1	21.72	22±1
				25	0	1	21.68	22±1
			16QAM	1	0	1	21.78	21.3±1
				1	12	1	21.75	21.3±1
				1	24	1	21.68	21.3±1
				12	0	2	20.84	21.3±1
				12	6	2	20.82	21.3±1
				12	11	2	20.83	21.3±1
				25	0	2	20.70	21.3±1
	20525	836.5	QPSK	1	0	0	22.39	22±1
				1	12	0	22.42	22±1
				1	24	0	22.57	22±1
				12	0	1	21.46	22±1
				12	6	1	21.45	22±1
				12	11	1	21.48	22±1
				25	0	1	21.34	22±1
			16QAM	1	0	1	21.59	21.3±1
				1	12	1	21.65	21.3±1
				1	24	1	21.70	21.3±1
				12	0	2	20.76	21.3±1
				12	6	2	20.72	21.3±1
				12	11	2	20.75	21.3±1
				25	0	2	20.38	21.3±1
	20625	846.5	QPSK	1	0	0	22.69	22±1
				1	12	0	22.59	22±1
				1	24	0	22.22	22±1
				12	0	1	21.74	22±1
				12	6	1	21.75	22±1
				12	11	1	21.76	22±1
				25	0	1	21.45	22±1
			16QAM	1	0	1	21.38	21.3±1
				1	12	1	21.25	21.3±1
				1	24	1	21.18	21.3±1
				12	0	2	20.78	21.3±1
				12	6	2	20.85	21.3±1
				12	11	2	20.83	21.3±1
				25	0	2	20.62	21.3±1



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Tune up Power tolerant
3MHz	20415	825.5	QPSK	1	0	0	22.79	22±1
				1	7	0	22.78	22±1
				1	14	0	22.70	22±1
				8	0	1	21.73	22±1
				8	4	1	21.74	22±1
				8	7	1	21.71	22±1
				15	0	1	21.70	22±1
			16QAM	1	0	1	21.36	21.3±1
				1	7	1	21.30	21.3±1
				1	14	1	20.98	21.3±1
				8	0	2	20.62	21.3±1
				8	4	2	20.65	21.3±1
				8	7	2	20.63	21.3±1
				15	0	2	20.71	21.3±1
	20525	836.5	QPSK	1	0	0	22.39	22±1
				1	7	0	22.45	22±1
				1	14	0	22.45	22±1
				8	0	1	21.40	22±1
				8	4	1	21.43	22±1
				8	7	1	21.45	22±1
				15	0	1	21.33	22±1
			16QAM	1	0	1	21.09	21.3±1
				1	7	1	21.10	21.3±1
				1	14	1	21.14	21.3±1
				8	0	2	20.27	20.3±1
				8	4	2	20.23	20.3±1
				8	7	2	20.25	20.3±1
				15	0	2	20.39	20.3±1
	20635	847.5	QPSK	1	0	0	22.32	22±1
				1	7	0	22.26	22±1
				1	14	0	22.16	22±1
				8	0	1	21.62	22±1
				8	4	1	21.65	22±1
				8	7	1	21.65	22±1
				15	0	1	21.49	22±1
			16QAM	1	0	1	22.07	21.3±1
				1	7	1	21.98	21.3±1
				1	14	1	21.82	21.3±1
				8	0	2	20.58	21.3±1
				8	4	2	20.56	21.3±1
				8	7	2	20.59	21.3±1
				15	0	2	20.63	21.3±1



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Tune up Power tolerant
1.4MHz	20407	824.7	QPSK	1	0	0	22.72	22±1
				1	2	0	22.70	22±1
				1	5	0	22.66	22±1
				3	0	0	22.85	22±1
				3	1	0	22.84	22±1
				3	2	0	22.82	22±1
				6	0	1	21.78	22±1
			16QAM	1	0	1	21.17	21.3±1
				1	2	1	21.16	21.3±1
				1	5	1	21.12	21.3±1
				3	0	1	20.88	21.3±1
				3	1	1	20.89	21.3±1
				3	2	1	20.86	21.3±1
				6	0	2	20.72	21.3±1
	20525	836.5	QPSK	1	0	0	22.48	22±1
				1	2	0	22.49	22±1
				1	5	0	22.52	22±1
				3	0	0	22.54	22±1
				3	1	0	22.56	22±1
				3	2	0	22.53	22±1
				6	0	1	21.47	22±1
			16QAM	1	0	1	21.12	21.3±1
				1	2	1	21.11	21.3±1
				1	5	1	21.10	21.3±1
				3	0	1	20.88	21.3±1
				3	1	1	20.89	21.3±1
				3	2	1	20.85	21.3±1
				6	0	2	20.36	21.3±1
	20643	848.3	QPSK	1	0	0	22.39	22±1
				1	2	0	22.30	22±1
				1	5	0	22.28	22±1
				3	0	0	22.41	22±1
				3	1	0	22.45	22±1
				3	2	0	22.43	22±1
				6	0	1	21.38	22±1
			16QAM	1	0	1	21.05	21.3±1
				1	2	1	21.04	21.3±1
				1	5	1	21.03	21.3±1
				3	0	1	20.87	21.3±1
				3	1	1	20.84	21.3±1
				3	2	1	20.82	21.3±1
				6	0	2	20.33	21.3±1



LTE Band 12:

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Tune up Power tolerant
10MHz	23060	704	QPSK	1	0	0	22.57	22±1
				1	24	0	22.46	22±1
				1	49	0	22.29	22±1
				25	0	1	21.35	22±1
				25	12	1	21.34	22±1
				25	24	1	21.39	22±1
				50	0	1	21.22	22±1
			16QAM	1	0	1	21.05	20.3±1
				1	24	1	20.98	20.3±1
				1	49	1	20.88	20.3±1
				25	0	2	20.65	20.3±1
				25	12	2	20.64	20.3±1
				25	24	2	20.63	20.3±1
				50	0	2	20.27	20.3±1
	23095	707.5	QPSK	1	0	0	22.29	22±1
				1	24	0	22.30	22±1
				1	49	0	22.38	22±1
				25	0	1	21.21	22±1
				25	12	1	21.19	22±1
				25	24	1	21.10	22±1
				50	0	1	21.07	22±1
			16QAM	1	0	1	20.93	21.3±1
				1	24	1	21.02	21.3±1
				1	49	1	21.09	21.3±1
				25	0	2	20.65	21.3±1
				25	12	2	20.63	21.3±1
				25	24	2	20.68	21.3±1
				50	0	2	20.42	21.3±1
	23130	711	QPSK	1	0	0	22.04	21.3±1
				1	24	0	21.85	21.3±1
				1	49	0	21.65	21.3±1
				25	0	1	21.30	21.3±1
				25	12	1	21.36	21.3±1
				25	24	1	21.42	21.3±1
				50	0	1	21.01	21.3±1
			16QAM	1	0	1	21.65	21.3±1
				1	24	1	21.47	21.3±1
				1	49	1	21.25	21.3±1
				25	0	2	20.77	21.3±1
				25	12	2	20.74	21.3±1
				25	24	2	20.73	21.3±1
				50	0	2	20.82	21.3±1



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Tune up Power tolerant
5MHz	23035	701.5	QPSK	1	0	0	22.47	22±1
				1	12	0	22.45	22±1
				1	24	0	22.41	22±1
				12	0	1	21.61	22±1
				12	6	1	21.53	22±1
				12	11	1	21.64	22±1
				25	0	1	21.32	22±1
			16QAM	1	0	1	21.41	21.3±1
				1	12	1	21.35	21.3±1
				1	24	1	21.30	21.3±1
				12	0	2	20.76	21.3±1
				12	6	2	20.75	21.3±1
				12	11	2	20.74	21.3±1
				25	0	2	20.34	21.3±1
	23095	707.5	QPSK	1	0	0	22.21	22±1
				1	12	0	22.26	22±1
				1	24	0	22.31	22±1
				12	0	1	21.16	22±1
				12	6	1	21.19	22±1
				12	11	1	21.15	22±1
				25	0	1	21.23	22±1
			16QAM	1	0	1	21.39	21.3±1
				1	12	1	21.46	21.3±1
				1	24	1	21.50	21.3±1
				12	0	2	20.85	21.3±1
				12	6	2	20.83	21.3±1
				12	11	2	20.81	21.3±1
				25	0	2	20.67	21.3±1
	23155	713.5	QPSK	1	0	0	22.43	22±1
				1	12	0	22.06	22±1
				1	24	0	21.81	22±1
				12	0	1	21.37	22±1
				12	6	1	21.56	22±1
				12	11	1	21.39	22±1
				25	0	1	21.13	22±1
			16QAM	1	0	1	21.03	21.3±1
				1	12	1	20.88	21.3±1
				1	24	1	20.51	21.3±1
				12	0	2	20.53	21.3±1
				12	6	2	20.62	21.3±1
				12	11	2	20.64	21.3±1
				25	0	2	20.56	21.3±1



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Tune up Power tolerant
3MHz	23025	700.5	QPSK	1	0	0	22.46	22±1
				1	7	0	22.50	22±1
				1	14	0	22.51	22±1
				8	0	1	21.57	22±1
				8	4	1	21.56	22±1
				8	7	1	21.53	22±1
				15	0	1	21.47	22±1
			16QAM	1	0	1	21.12	21.3±1
				1	7	1	21.06	21.3±1
				1	14	1	21.06	21.3±1
				8	0	2	20.46	21.3±1
				8	4	2	20.45	21.3±1
				8	7	2	20.43	21.3±1
				15	0	2	20.54	21.3±1
	23095	707.5	QPSK	1	0	0	22.19	22±1
				1	7	0	22.20	22±1
				1	14	0	22.30	22±1
				8	0	1	21.31	22±1
				8	4	1	21.35	22±1
				8	7	1	21.36	22±1
				15	0	1	21.26	22±1
			16QAM	1	0	1	20.84	20.3±1
				1	7	1	20.88	20.3±1
				1	14	1	20.95	20.3±1
				8	0	2	20.24	20.3±1
				8	4	2	20.23	20.3±1
				8	7	2	20.25	20.3±1
				15	0	2	20.29	20.3±1
	23025	714.5	QPSK	1	0	0	22.06	21.3±1
				1	7	0	22.00	21.3±1
				1	14	0	21.60	21.3±1
				8	0	1	20.98	21.3±1
				8	4	1	20.95	21.3±1
				8	7	1	20.93	21.3±1
				15	0	1	20.98	21.3±1
			16QAM	1	0	1	21.72	21.3±1
				1	7	1	21.70	21.3±1
				1	14	1	21.26	21.3±1
				8	0	2	20.92	21.3±1
				8	4	2	20.96	21.3±1
				8	7	2	20.95	21.3±1
				15	0	2	20.79	21.3±1



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Tune up Power tolerant
1.4MHz	23017	699.7	QPSK	1	0	0	22.47	22±1
				1	2	0	22.46	22±1
				1	5	0	22.00	22±1
				3	0	0	22.54	22±1
				3	1	0	22.59	22±1
				3	2	0	22.53	22±1
				6	0	1	21.65	22±1
			16QAM	1	0	1	20.98	21.3±1
				1	2	1	21.16	21.3±1
				1	5	1	21.12	21.3±1
				3	0	1	20.75	21.3±1
				3	1	1	20.73	21.3±1
				3	2	1	20.78	21.3±1
				6	0	2	20.46	21.3±1
	23095	707.5	QPSK	1	0	0	22.10	21.3±1
				1	2	0	22.05	21.3±1
				1	5	0	22.03	21.3±1
				3	0	0	22.11	21.3±1
				3	1	0	22.15	21.3±1
				3	2	0	22.13	21.3±1
				6	0	1	21.18	21.3±1
			16QAM	1	0	1	20.79	21.3±1
				1	2	1	20.76	21.3±1
				1	5	1	20.78	21.3±1
				3	0	1	20.78	21.3±1
				3	1	1	20.79	21.3±1
				3	2	1	20.76	21.3±1
				6	0	2	20.57	21.3±1
	23173	715.3	QPSK	1	0	0	21.84	21.3±1
				1	2	0	21.79	21.3±1
				1	5	0	21.74	21.3±1
				3	0	0	21.91	21.3±1
				3	1	0	21.93	21.3±1
				3	2	0	21.86	21.3±1
				6	0	1	20.91	21.3±1
			16QAM	1	0	1	20.32	21.3±1
				1	2	1	21.24	21.3±1
				1	5	1	21.19	21.3±1
				3	0	1	20.52	21.3±1
				3	1	1	21.13	21.3±1
				3	2	1	21.13	21.3±1
				6	0	2	20.92	21.3±1



LTE Band 17:

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Tune up Power tolerant
10MHz	23780	709.0	QPSK	1	0	0	22.27	22±1
				1	24	0	22.25	22±1
				1	49	0	22.25	22±1
				25	0	1	21.06	22±1
				25	12	1	21.05	22±1
				25	24	1	21.03	22±1
				50	0	1	21.05	22±1
			16QAM	1	0	1	20.77	21.3±1
				1	24	1	20.77	21.3±1
				1	49	1	20.78	21.3±1
				25	0	2	20.46	21.3±1
				25	12	2	20.48	21.3±1
				25	24	2	20.43	21.3±1
				50	0	2	21.07	21.3±1
	23790	701.0	QPSK	1	0	0	22.05	21.3±1
				1	24	0	22.09	21.3±1
				1	49	0	22.11	21.3±1
				25	0	1	21.21	21.3±1
				25	12	1	21.22	21.3±1
				25	24	1	21.23	21.3±1
				50	0	1	21.10	21.3±1
			16QAM	1	0	1	20.64	21.3±1
				1	24	1	20.66	21.3±1
				1	49	1	20.73	21.3±1
				25	0	2	20.48	21.3±1
				25	12	2	20.48	21.3±1
				25	24	2	20.41	21.3±1
				50	0	2	21.19	21.3±1
	23800	711.0	QPSK	1	0	0	22.10	21.3±1
				1	24	0	21.96	21.3±1
				1	49	0	21.68	21.3±1
				25	0	1	21.10	21.3±1
				25	12	1	21.14	21.3±1
				25	24	1	21.45	21.3±1
				50	0	1	20.98	21.3±1
			16QAM	1	0	1	21.71	21.3±1
				1	24	1	21.56	21.3±1
				1	49	1	21.30	21.3±1
				25	0	2	20.59	21.3±1
				25	12	2	20.56	21.3±1
				25	24	2	20.51	21.3±1
				50	0	2	21.14	21.3±1



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	Tune up Power tolerant
5MHz	23755	706.5	QPSK	1	0	0	22.36	22±1
				1	12	0	22.35	22±1
				1	24	0	22.35	22±1
				12	0	1	21.13	22±1
				12	6	1	21.15	22±1
				12	11	1	21.14	22±1
				25	0	1	21.06	22±1
			16QAM	1	0	1	21.28	21.3±1
				1	12	1	21.26	21.3±1
				1	24	1	21.27	21.3±1
				12	0	2	20.58	21.3±1
				12	6	2	20.56	21.3±1
				12	11	2	20.57	21.3±1
				25	0	2	21.11	21.3±1
	23790	710.0	QPSK	1	0	0	22.11	21.3±1
				1	12	0	22.16	21.3±1
				1	24	0	22.30	21.3±1
				12	0	1	21.21	21.3±1
				12	6	1	21.23	21.3±1
				12	11	1	21.24	21.3±1
				25	0	1	21.32	21.3±1
			16QAM	1	0	1	21.76	21.3±1
				1	12	1	21.65	21.3±1
				1	24	1	21.55	21.3±1
				12	0	2	20.56	21.3±1
				12	6	2	20.53	21.3±1
				12	11	2	20.54	21.3±1
				25	0	2	21.31	21.3±1
	23825	713.5	QPSK	1	0	0	22.46	21.3±1
				1	12	0	22.26	21.3±1
				1	24	0	21.73	21.3±1
				12	0	1	21.32	21.3±1
				12	6	1	21.35	21.3±1
				12	11	1	21.36	21.3±1
				25	0	1	21.07	21.3±1
			16QAM	1	0	1	21.03	21.3±1
				1	12	1	20.78	21.3±1
				1	24	1	20.49	21.3±1
				12	0	2	20.45	21.3±1
				12	6	2	20.48	21.3±1
				12	11	2	20.43	21.3±1
				25	0	2	21.20	21.3±1



1.9 Occupied Bandwidth

1.9.1 Definition

According to FCC section 2.1049, 22.917(b), 24.238(b), 27.53(h)(3) and 27.53(m)(6), the occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

Occupied bandwidth is also known as the 99% emission bandwidth, or 26dB bandwidth taking the total RF output power as reference.

1.9.2 Test Description

See section 4.2.1 of this report.



1.9.3 Test Results

LTE Band 2:

BW(MHz)	Channel	Frequency (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
1.4	18607	1850.7	16QAM	1.1067	1.327
			QPSK	1.1045	1.335
1.4	18900	1880	16QAM	1.1036	1.321
			QPSK	1.1018	1.318
1.4	19193	1909.3	16QAM	1.1077	1.342
			QPSK	1.1011	1.353
3	18615	1851.5	16QAM	2.7400	3.141
			QPSK	2.7424	3.114
3	18900	1880	16QAM	2.7308	3.113
			QPSK	2.7349	3.123
3	19185	1908.5	16QAM	2.7560	3.183
			QPSK	2.7502	3.140
5	18625	1852.5	16QAM	4.5083	5.073
			QPSK	4.5012	5.056
5	18900	1880	16QAM	4.4945	5.079
			QPSK	4.5059	5.060
5	19175	1907.5	16QAM	4.5078	5.081
			QPSK	4.5010	5.023
10	18650	1855	16QAM	9.0460	10.084
			QPSK	9.0257	9.980
10	18900	1880	16QAM	9.0542	10.121
			QPSK	9.0054	10.134
10	19150	1905	16QAM	9.0465	10.240
			QPSK	9.0936	10.227
15	18675	1857.5	16QAM	13.4096	14.830
			QPSK	13.4439	14.852
15	18900	1880	16QAM	13.4171	14.903
			QPSK	13.4114	14.890
15	19125	1902.5	16QAM	13.4732	14.914
			QPSK	13.4590	14.904
20	18700	1860	16QAM	17.8284	19.505
			QPSK	17.8631	19.350
20	18900	1880	16QAM	17.8888	19.486
			QPSK	17.8471	19.587
20	19100	1900	16QAM	17.8447	19.271
			QPSK	17.8308	19.370



LTE Band 4

BW(MHz)	Channel	Frequency (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
1.4	19957	1710.7	16QAM	1.0971	1.315
			QPSK	1.0921	1.296
1.4	20175	1732.5	16QAM	1.0955	1.347
			QPSK	1.0968	1.308
1.4	20393	1754.3	16QAM	1.1021	1.301
			QPSK	1.1045	1.313
3	19965	1711.5	16QAM	2.7400	3.127
			QPSK	2.7312	3.154
3	20175	1732.5	16QAM	2.7545	3.171
			QPSK	2.7438	3.164
3	20385	1753.5	16QAM	2.7620	3.140
			QPSK	2.7740	3.144
5	19975	1712.5	16QAM	4.5011	5.105
			QPSK	4.5142	5.063
5	20175	1732.5	16QAM	4.5034	4.994
			QPSK	4.5060	5.129
5	20375	1752.5	16QAM	4.5091	5.077
			QPSK	4.5101	5.061
10	20000	1715	16QAM	9.0387	10.156
			QPSK	9.0401	10.227
10	20175	1732.5	16QAM	9.0716	10.179
			QPSK	9.0657	9.995
10	20350	1750	16QAM	9.0534	10.135
			QPSK	9.0569	10.036
15	20025	1717.5	16QAM	13.4216	14.757
			QPSK	13.4175	14.837
15	20175	1732.5	16QAM	13.4854	14.808
			QPSK	13.4634	14.958
15	20325	1747.5	16QAM	13.4535	14.886
			QPSK	13.4296	14.631
20	20050	1720	16QAM	17.8573	19.273
			QPSK	17.8518	19.389
20	20175	1732.5	16QAM	17.9143	19.561
			QPSK	17.8965	19.278
20	20300	1745	16QAM	17.8461	19.219
			QPSK	17.8308	19.209



LTE Band 5

BW(MHz)	Channel	Frequency (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
1.4	20407	824.7	16QAM	1.1094	1.312
			QPSK	1.0936	1.322
1.4	20525	936.5	16QAM	1.0962	1.326
			QPSK	1.1000	1.341
1.4	20643	949.3	16QAM	1.0950	1.311
			QPSK	1.0933	1.320
3	20415	825.5	16QAM	2.7339	3.170
			QPSK	2.7412	3.128
3	20525	936.5	16QAM	2.7356	3.176
			QPSK	2.7369	3.150
3	20635	847.5	16QAM	2.7398	3.152
			QPSK	2.7323	3.104
5	20425	826.5	16QAM	4.5002	5.019
			QPSK	4.4968	5.032
5	20525	936.5	16QAM	4.4929	5.100
			QPSK	4.4990	5.064
5	20625	846.5	16QAM	4.5106	5.034
			QPSK	4.5021	4.987
10	20450	829	16QAM	9.0440	9.998
			QPSK	9.0553	10.192
10	20525	936.5	16QAM	9.0572	10.054
			QPSK	9.0476	10.058
10	20800	844	16QAM	9.0381	9.977
			QPSK	8.9961	10.030



LTE Band 12

BW(MHz)	Channel	Frequency (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
1.4	23017	699.7	16QAM	1.0959	1.296
			QPSK	1.1059	1.318
1.4	23095	707.5	16QAM	1.1036	1.325
			QPSK	1.1044	1.342
1.4	23173	715.3	16QAM	1.0905	1.316
			QPSK	1.0912	1.311
3	23025	700.5	16QAM	2.7581	3.155
			QPSK	2.7488	3.154
3	23095	707.5	16QAM	2.7409	3.150
			QPSK	2.7515	3.126
3	23165	714.5	16QAM	2.7354	3.144
			QPSK	2.7332	3.126
5	23035	701.5	16QAM	4.5286	4.992
			QPSK	4.5383	5.157
5	23095	707.5	16QAM	4.4922	4.972
			QPSK	4.4786	5.039
5	23055	713.5	16QAM	4.5311	5.071
			QPSK	4.5075	5.048
10	23060	704	16QAM	8.9806	10.109
			QPSK	9.0203	10.104
10	23095	707.5	16QAM	9.0303	10.199
			QPSK	9.0150	9.934
10	23130	711	16QAM	9.1300	10.291
			QPSK	9.1449	10.078

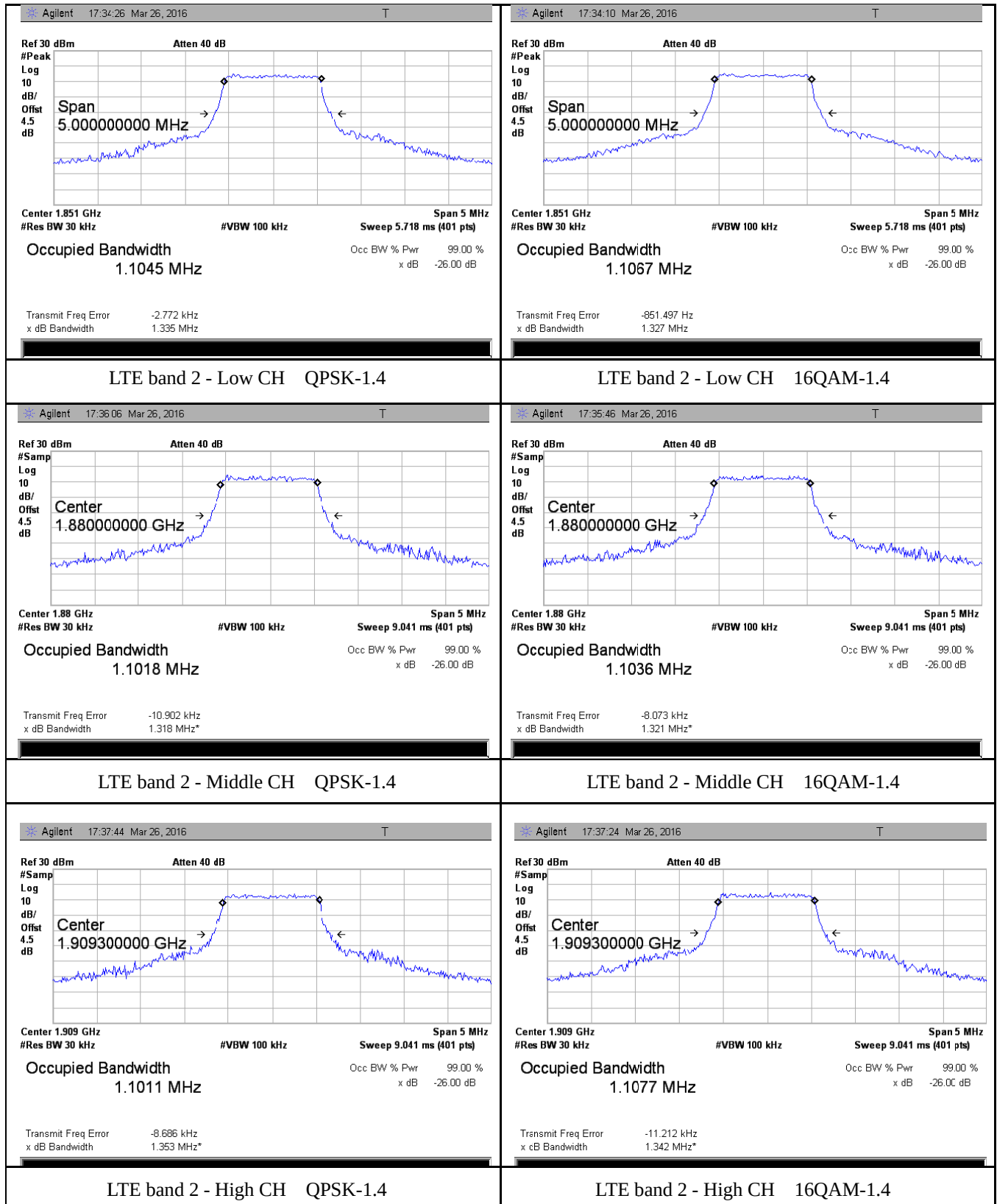


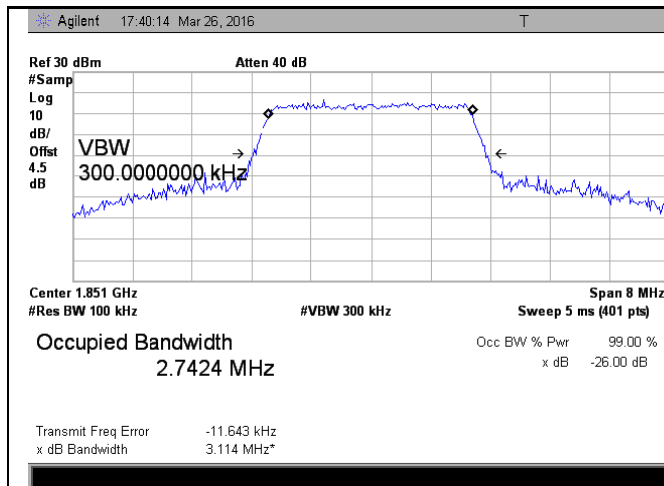
LTE Band 17

BW(MHz)	Channel	Frequency (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
5	23755	706.5	16QAM	4.4856	5.034
			QPSK	4.4902	4.980
5	23790	710	16QAM	4.5115	5.001
			QPSK	4.5241	5.143
5	23825	713.5	16QAM	4.5188	5.099
			QPSK	4.5245	5.085
10	23780	709	16QAM	9.0279	9.957
			QPSK	9.0642	10.047
10	23790	710	16QAM	9.0662	10.053
			QPSK	9.1003	10.145
10	23800	711	16QAM	9.1217	10.106
			QPSK	9.1435	9.977

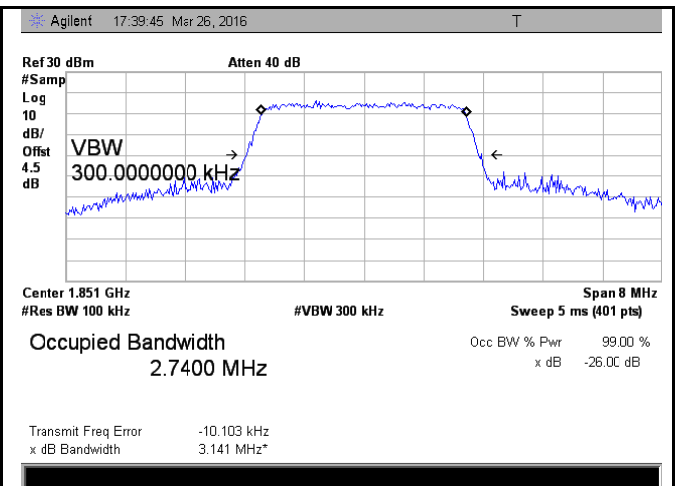


Test Plots:

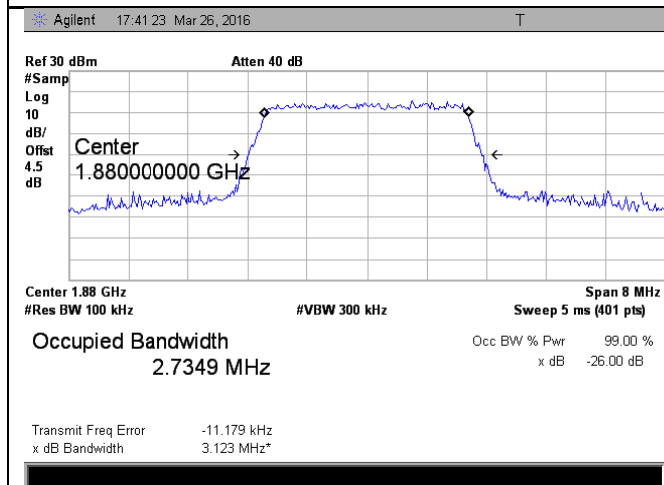




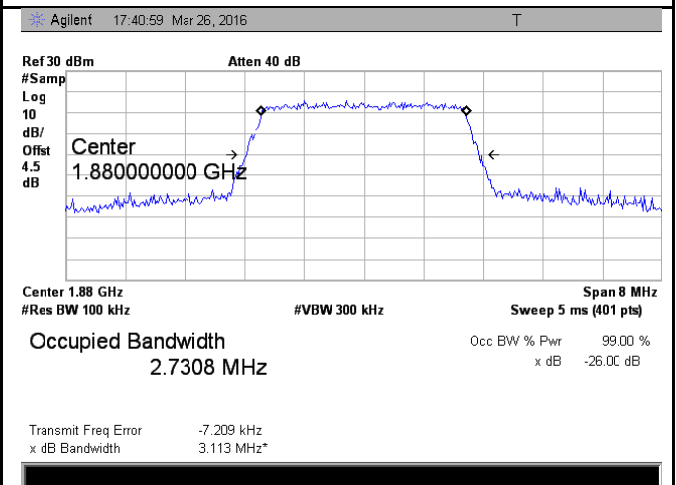
LTE band 2 - Low CH QPSK-3



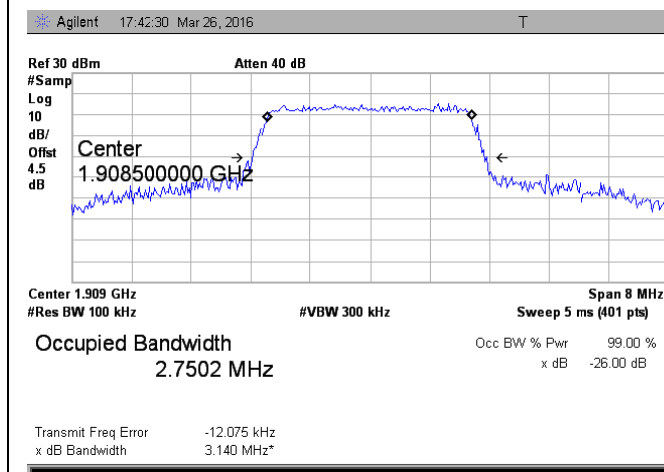
LTE band 2 - Low CH 16QAM-3



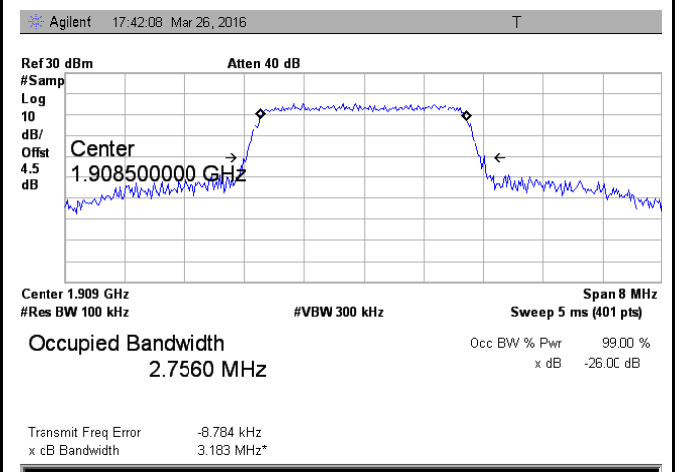
LTE band 2 - Middle CH QPSK-3



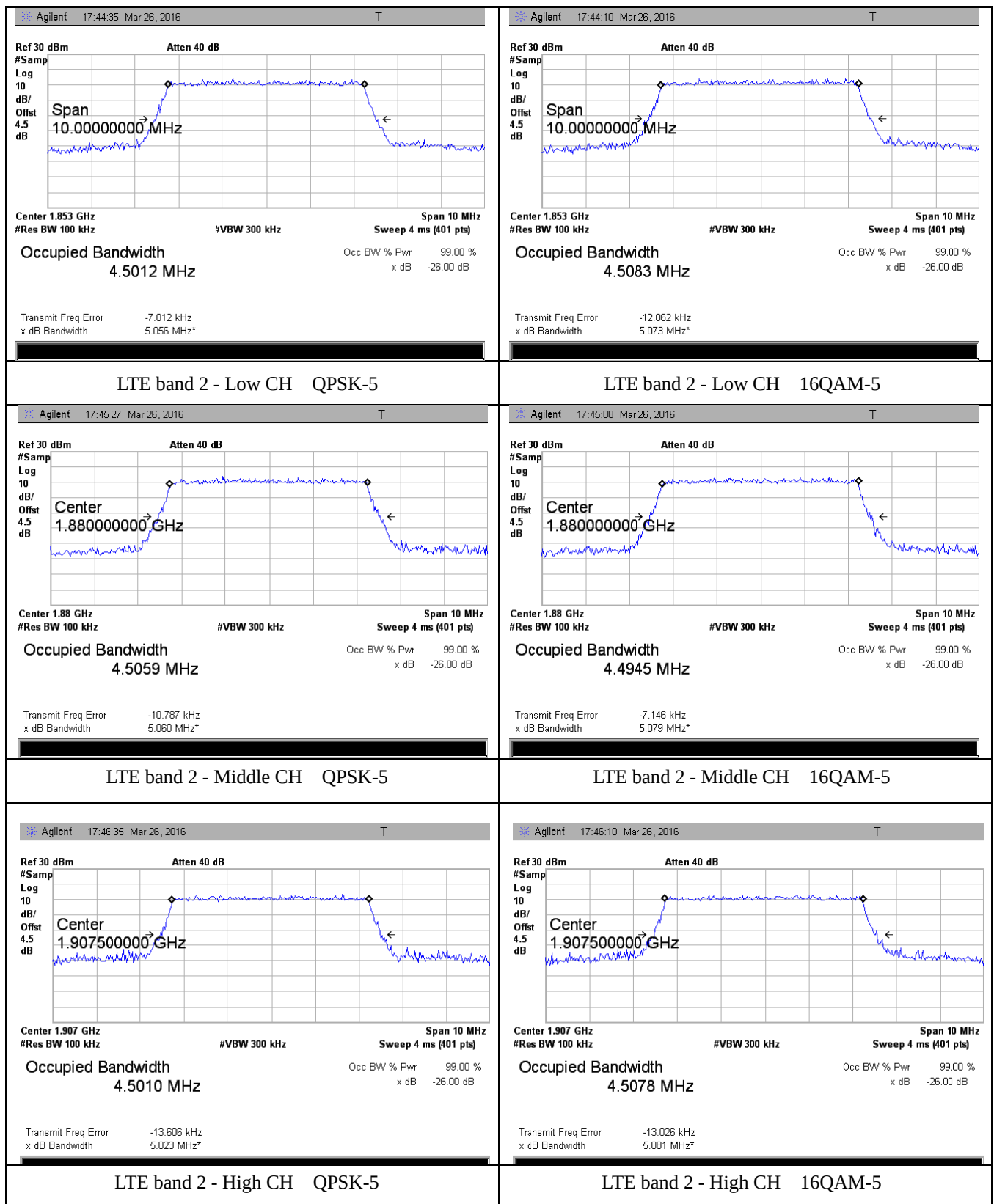
LTE band 2 - Middle CH 16QAM-3

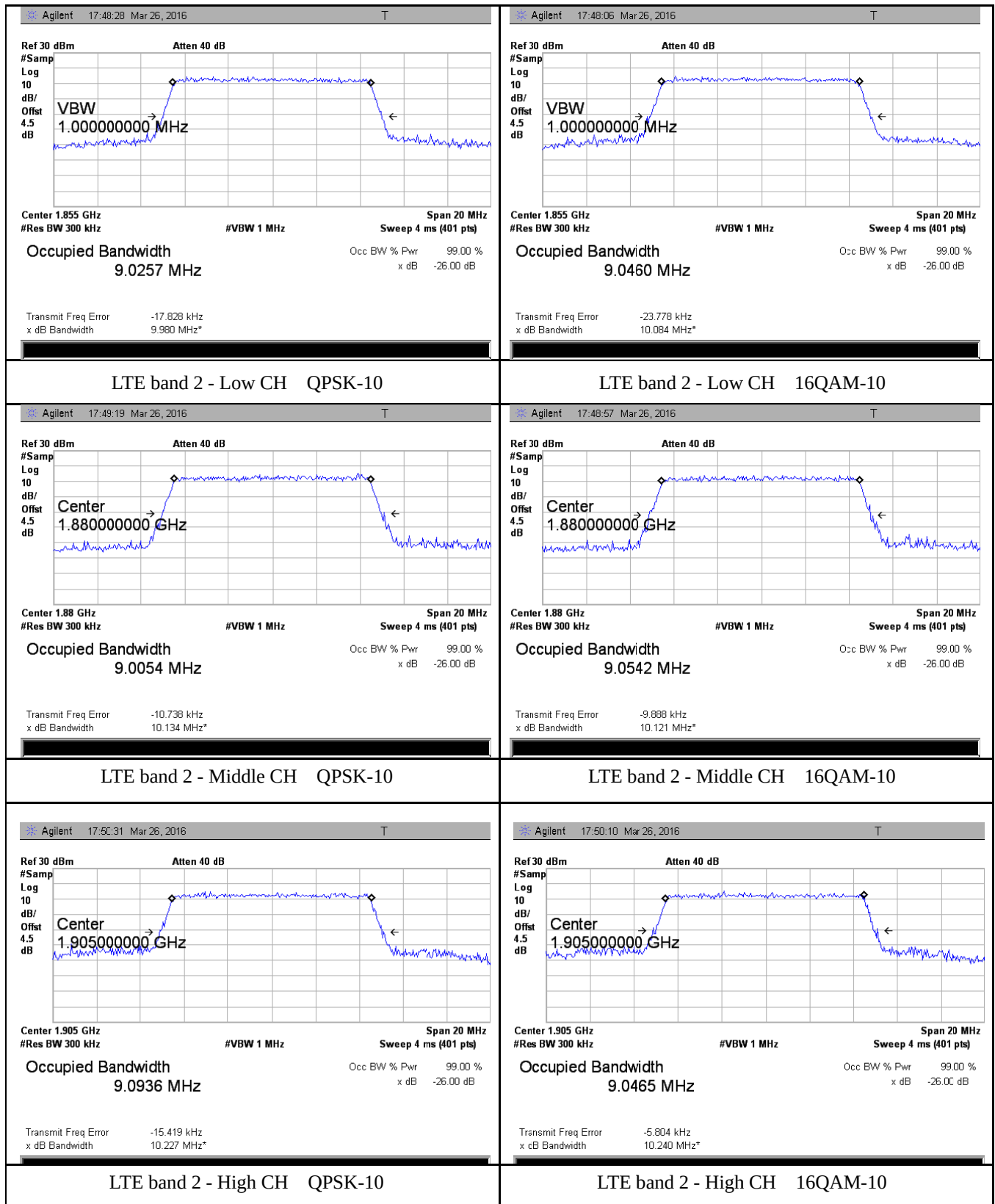


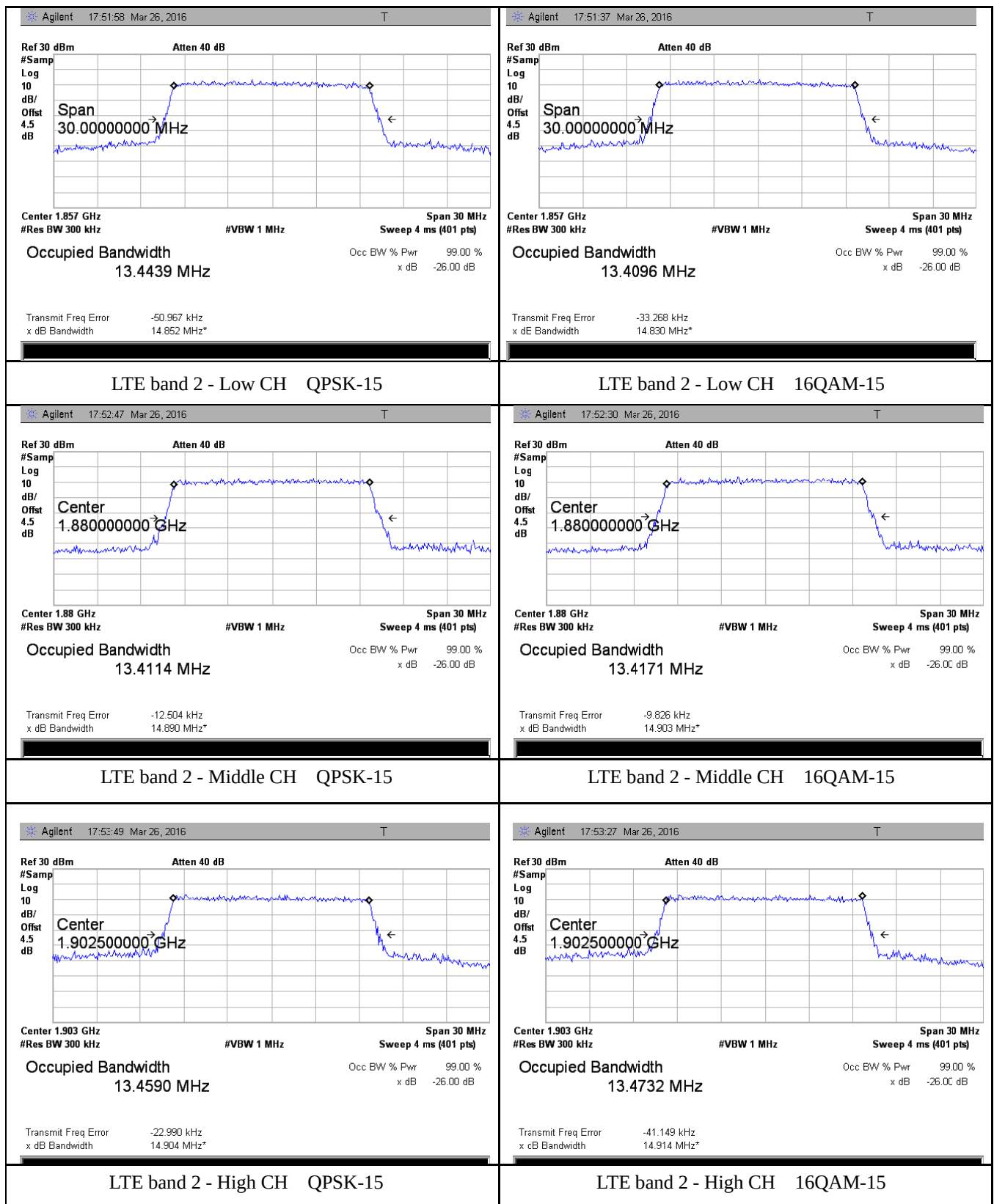
LTE band 2 - High CH QPSK-3

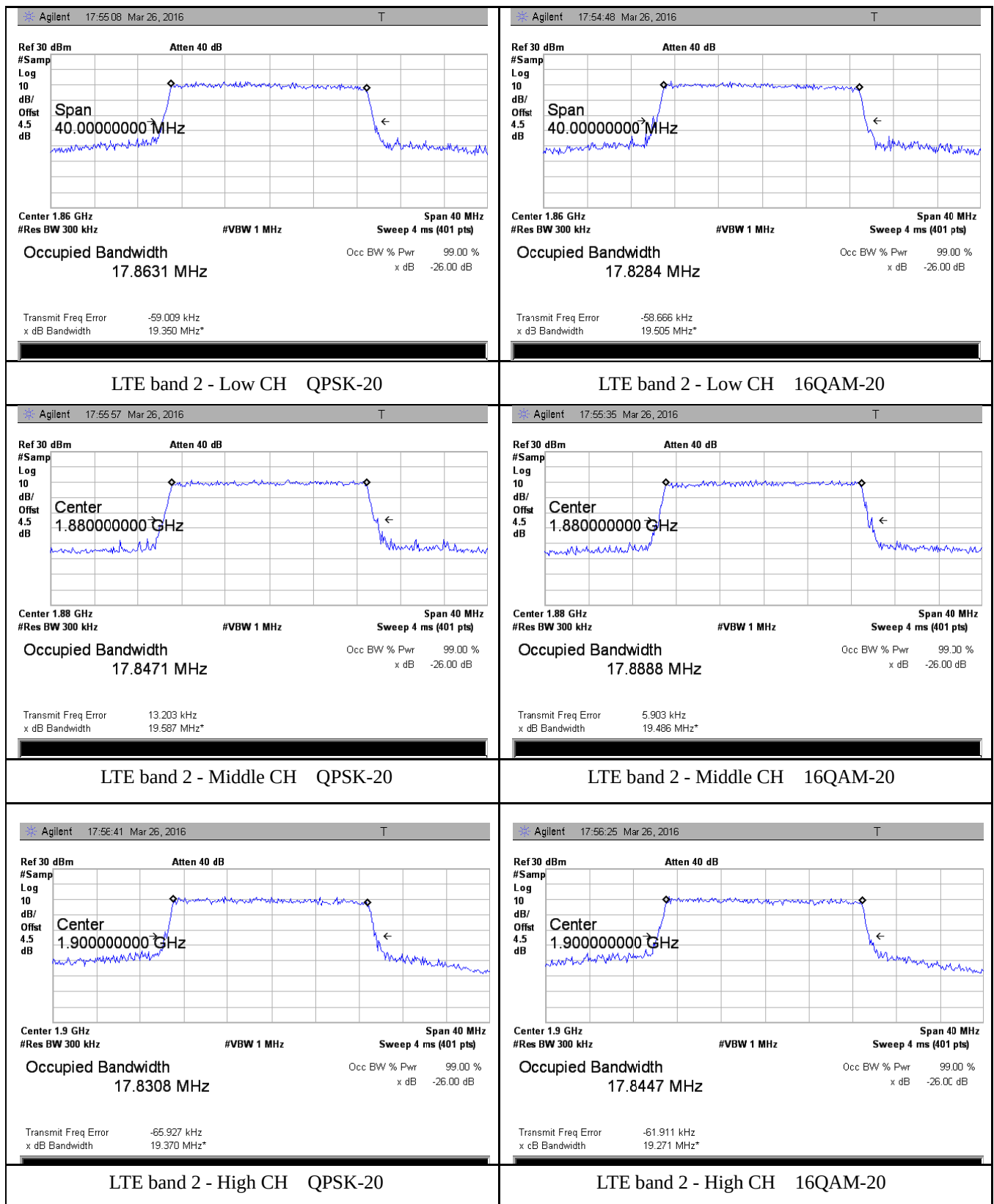


LTE band 2 - High CH 16QAM-3



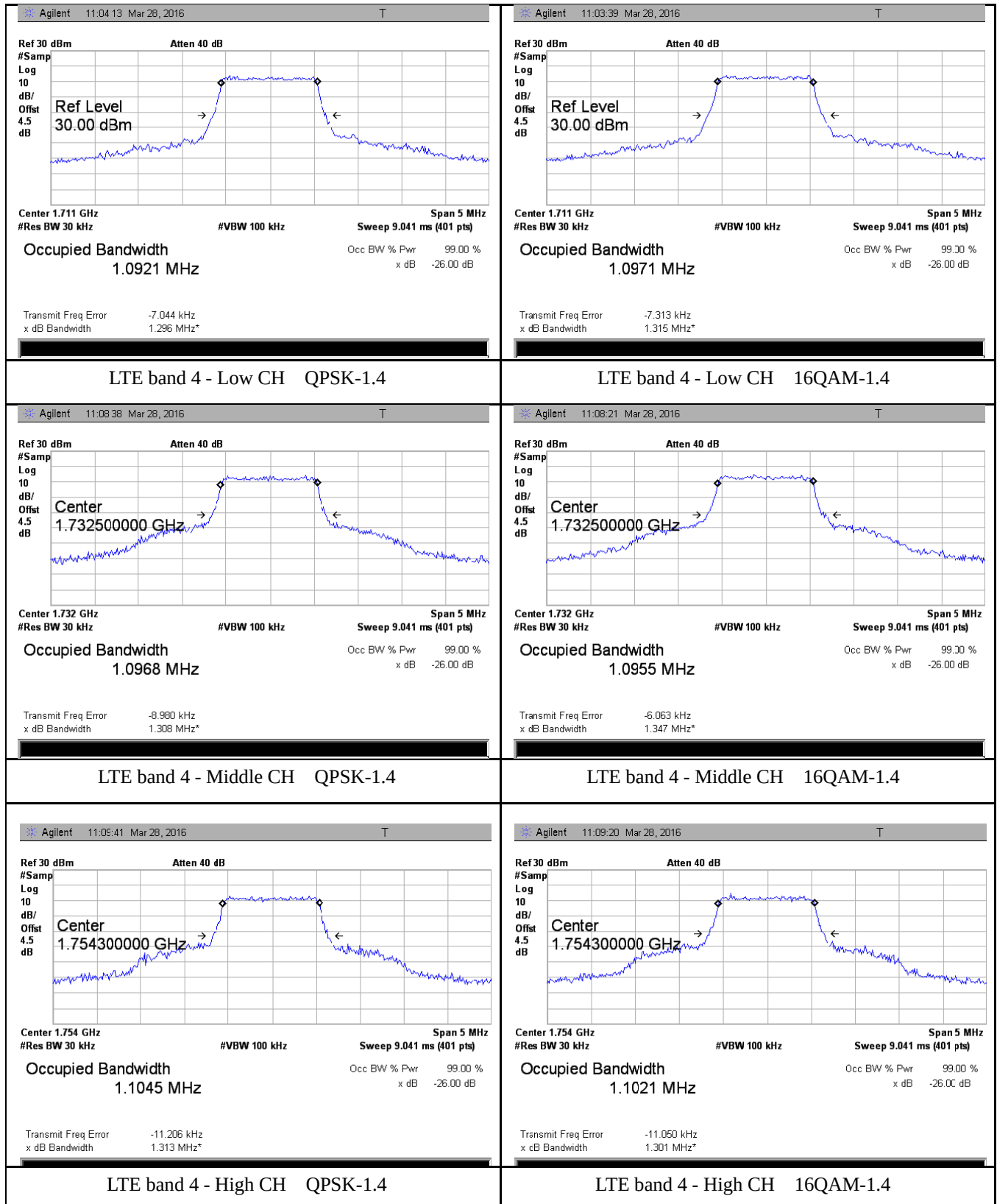


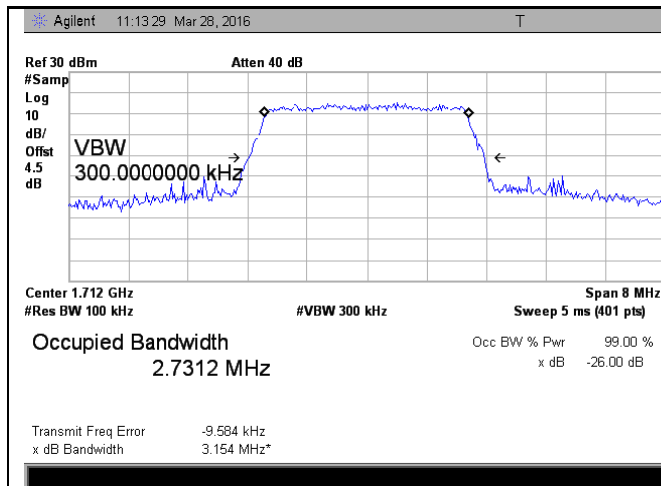




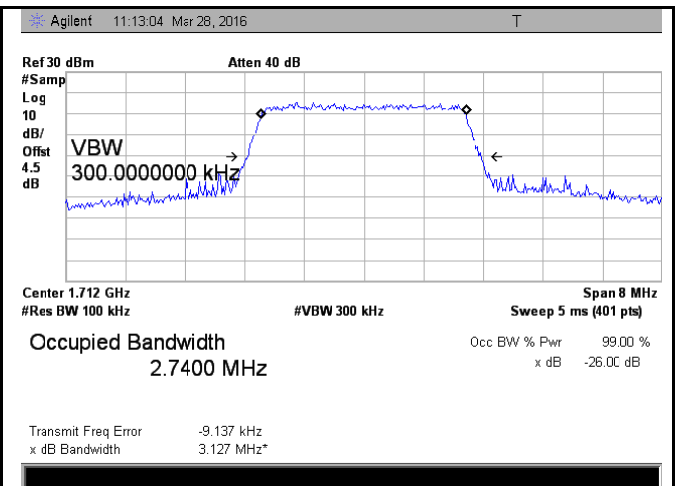


LTE Band 4:

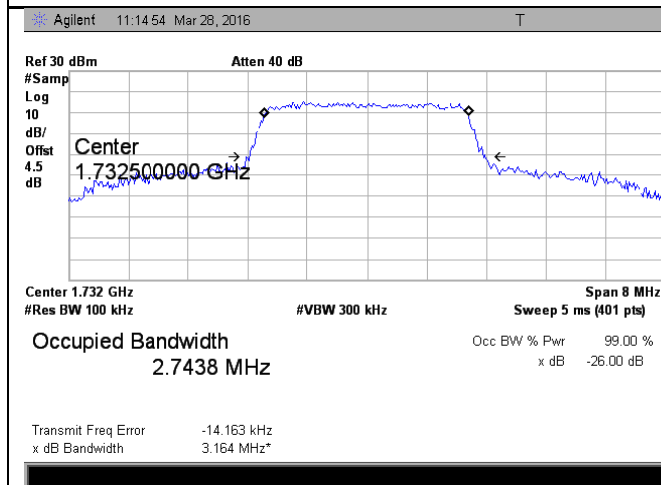




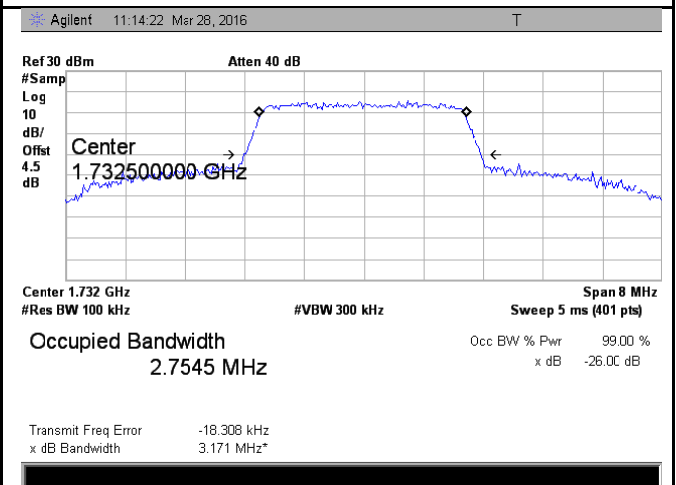
LTE band 4 - Low CH QPSK-3



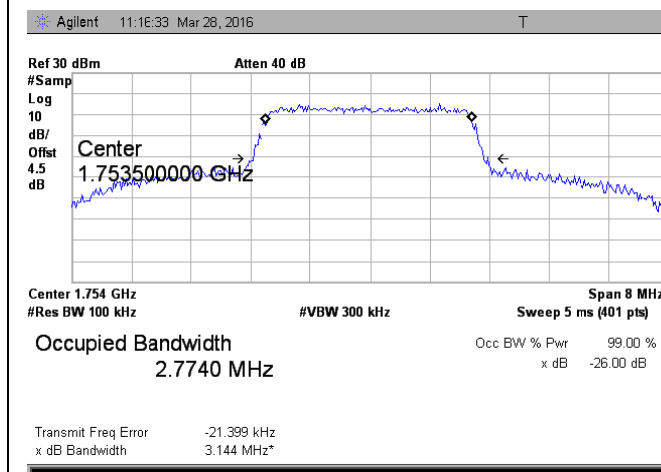
LTE band 4 - Low CH 16QAM-3



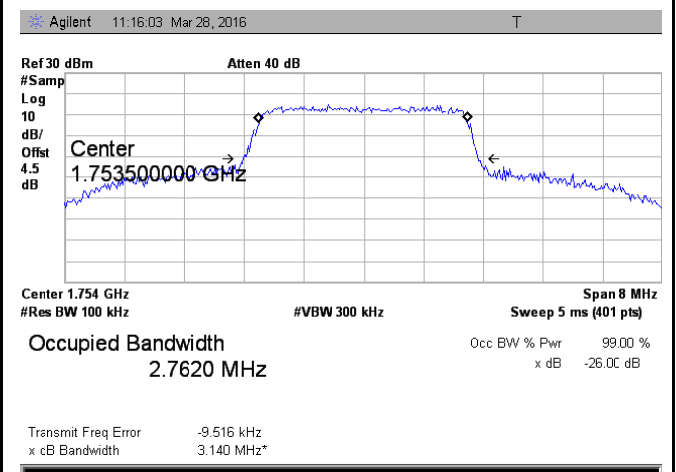
LTE band 4 - Middle CH QPSK-3



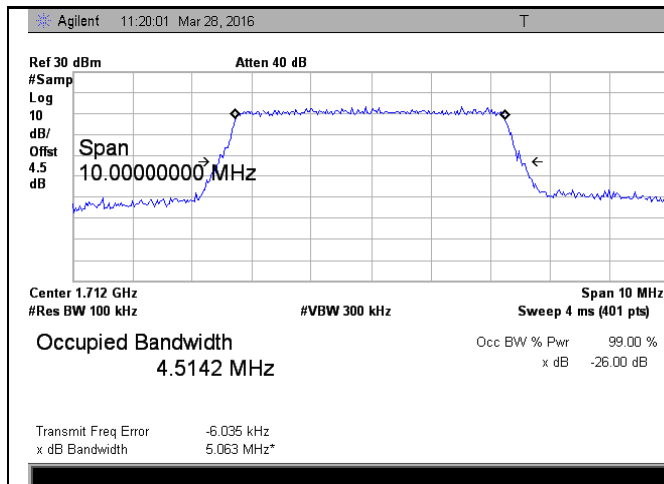
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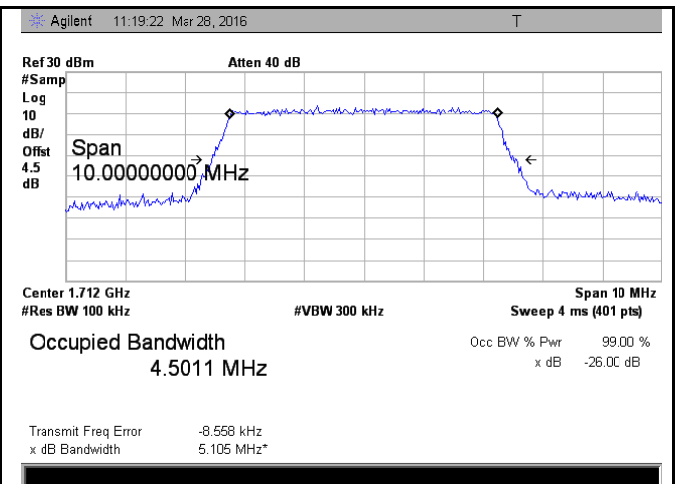
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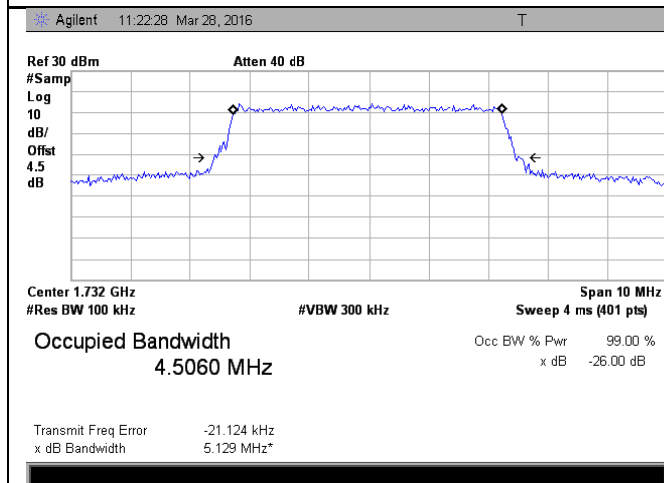
LTE band 4 - High CH 16QAM-3



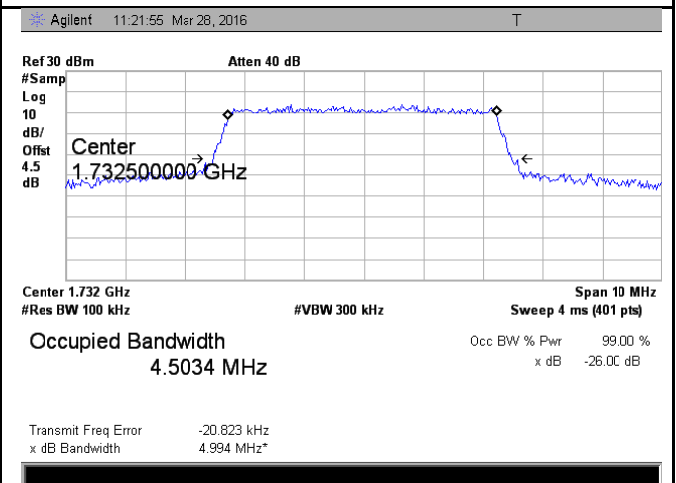
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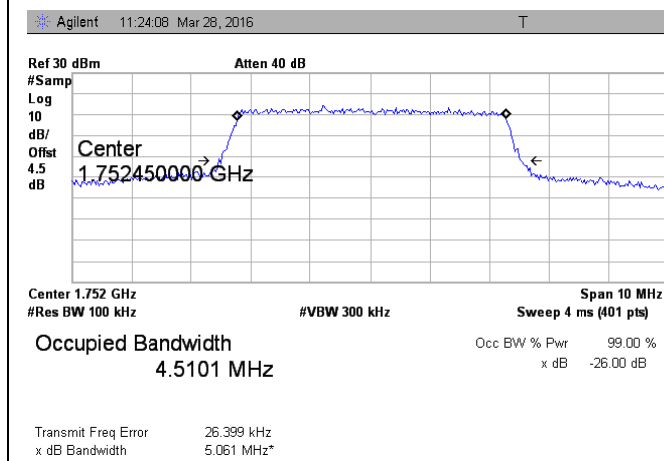
LTE band 4 - Low CH 16QAM-5



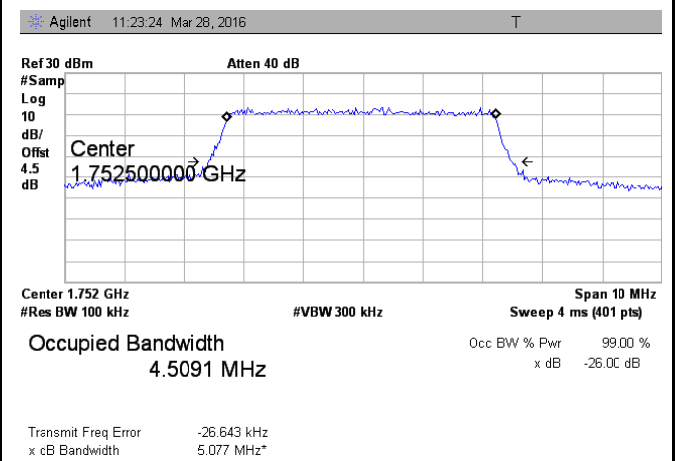
LTE band 4 - Middle CH QPSK-5



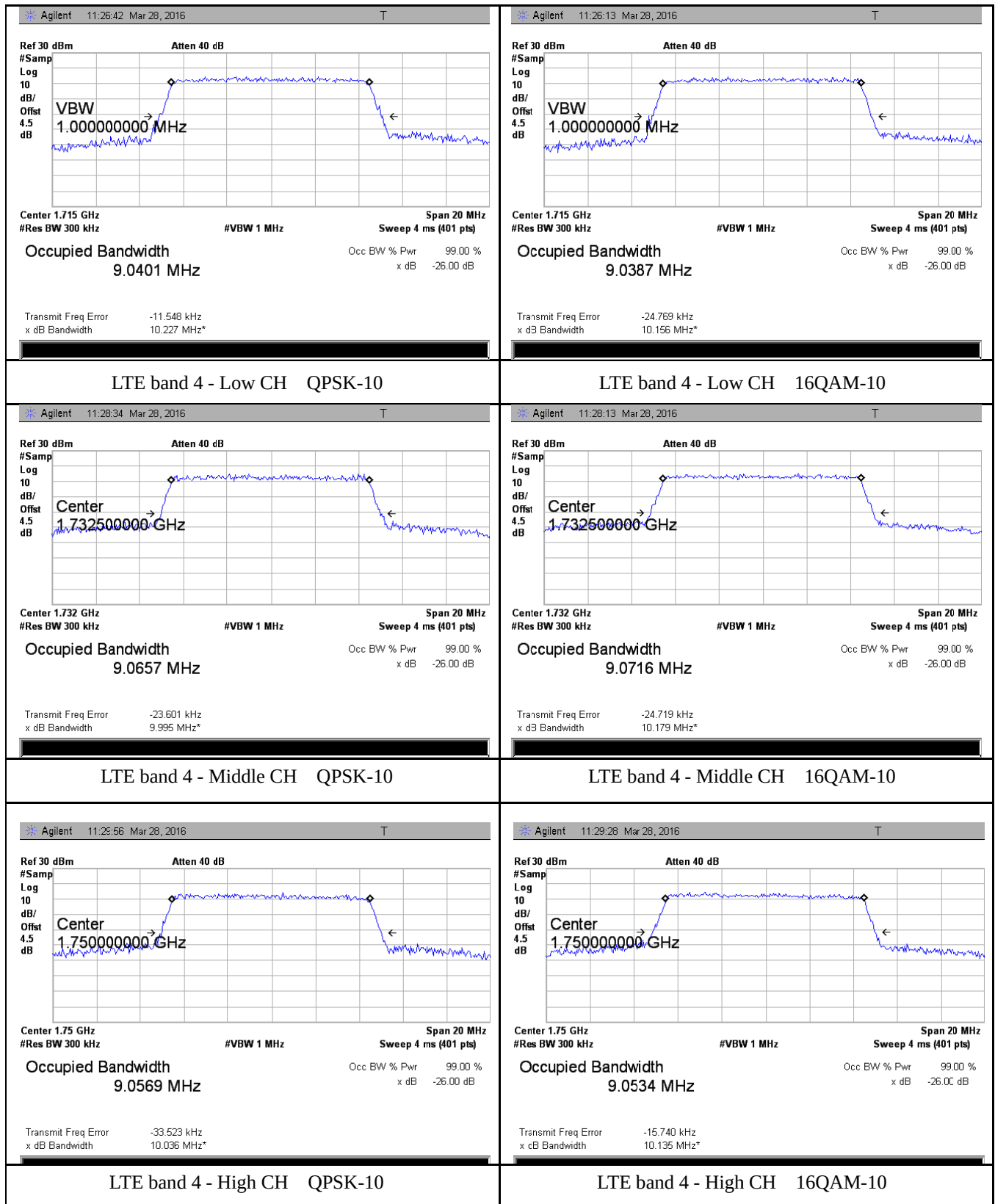
LTE band 4 - Middle CH 16QAM-5

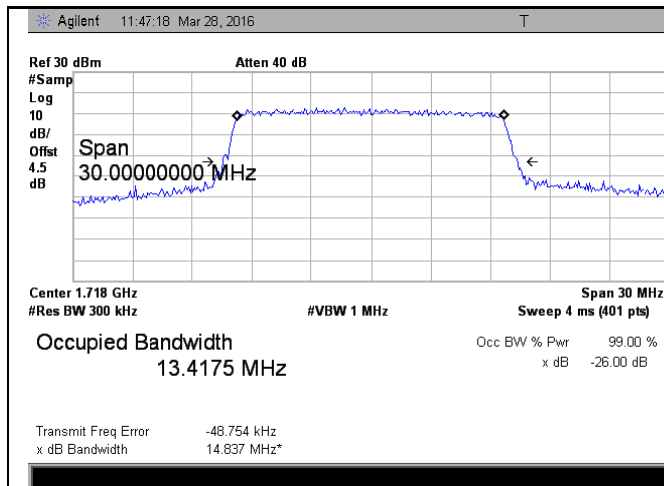


LTE band 4 - High CH QPSK-5

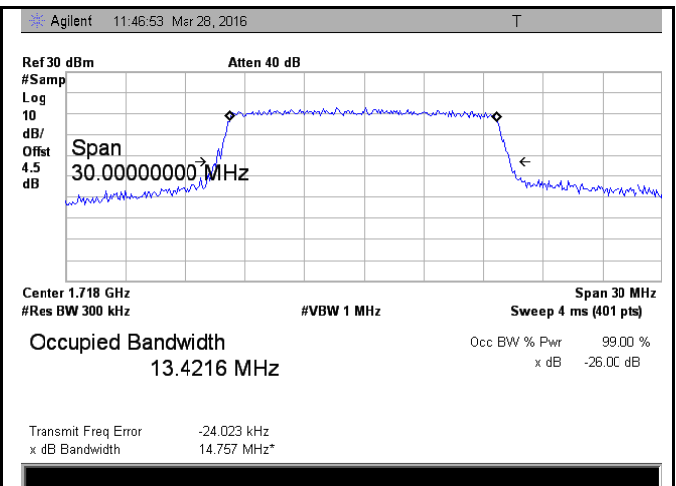


LTE band 4 - High CH 16QAM-5

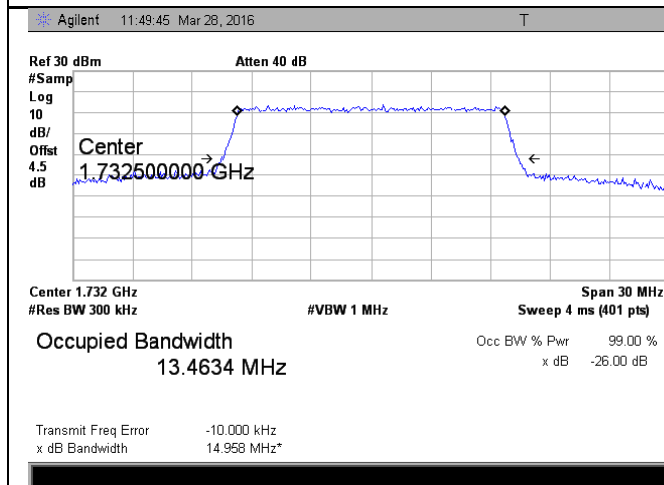




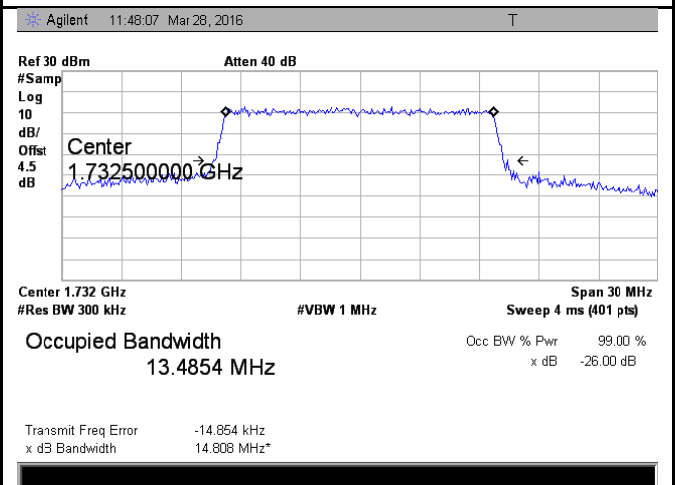
LTE band 4 - Low CH QPSK-15



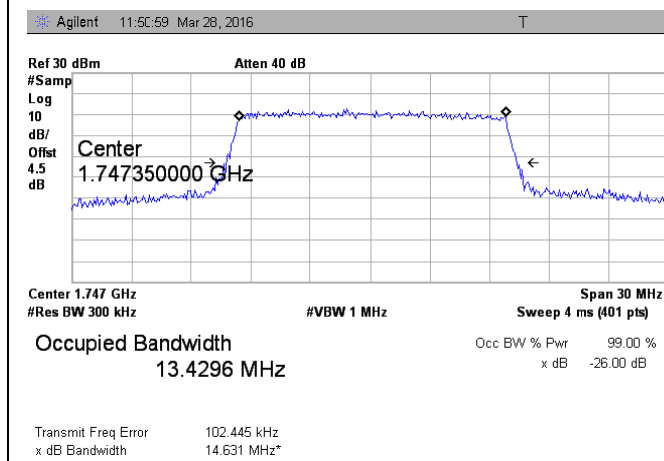
LTE band 4 - Low CH 16QAM-15



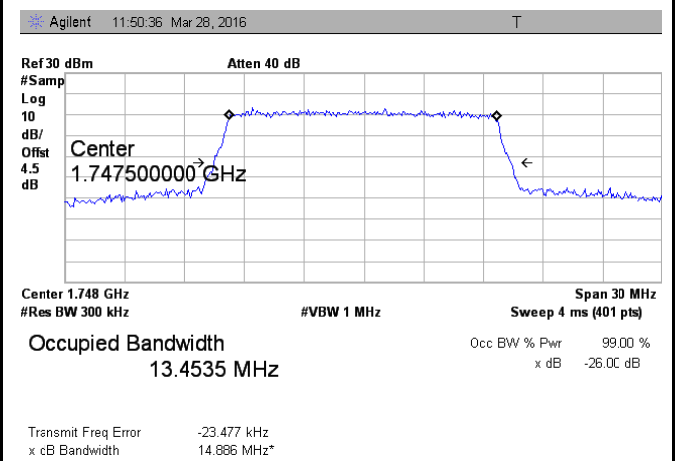
LTE band 4 - Middle CH QPSK-15



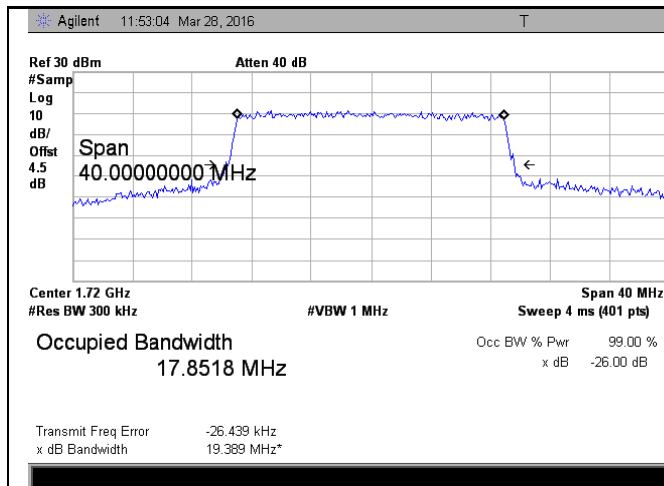
LTE band 4 - Middle CH 16QAM-15



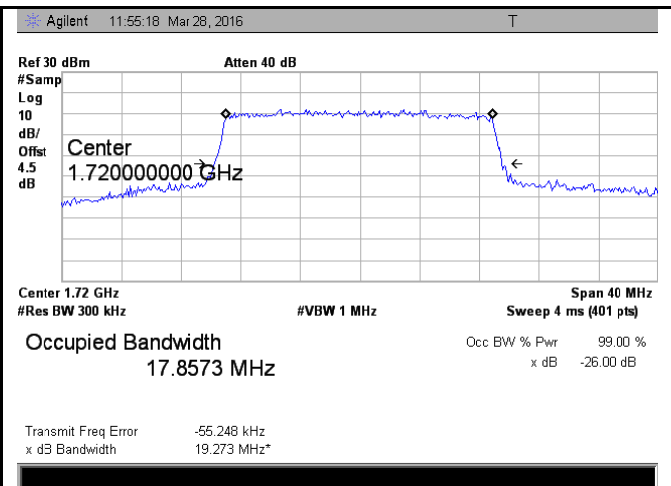
LTE band 4 - High CH QPSK-15



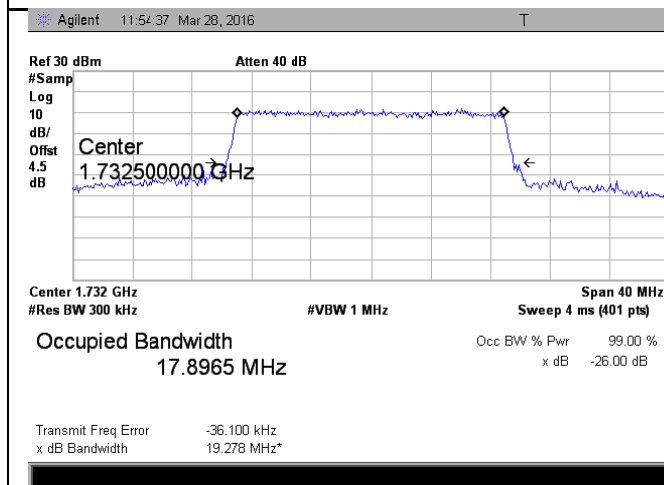
LTE band 4 - High CH 16QAM-15



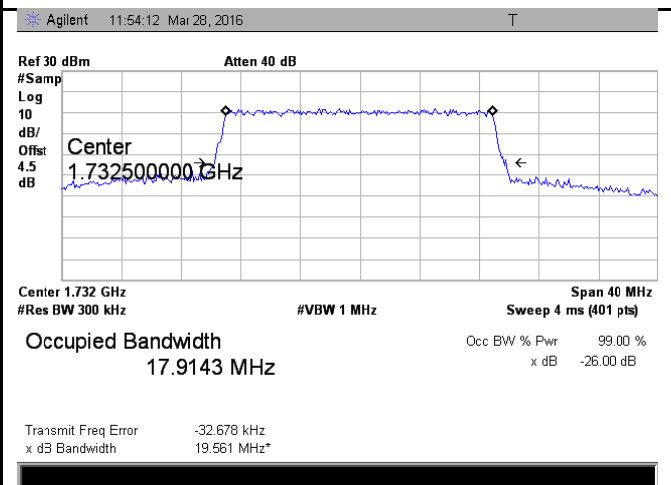
LTE band 4 - Low CH QPSK-20



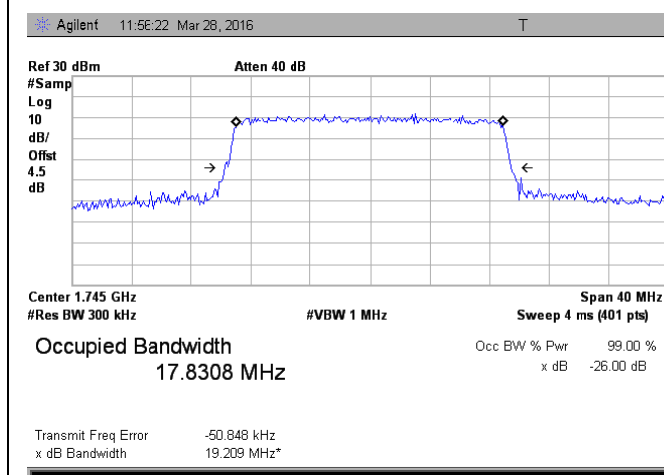
LTE band 4 - Low CH 16QAM-20



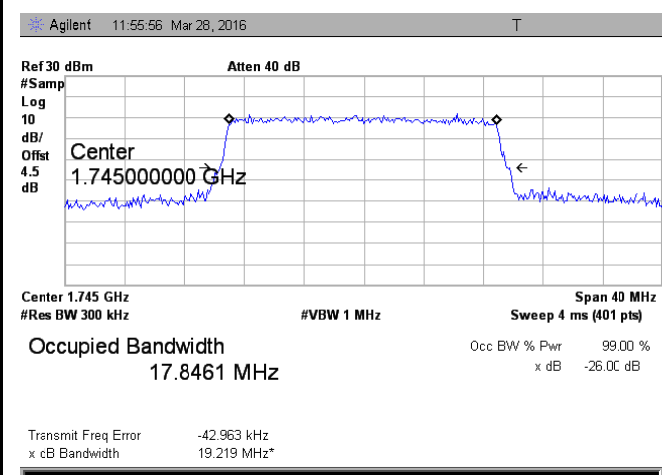
LTE band 4 - Middle CH QPSK-20



LTE band 4 - Middle CH 16QAM-20



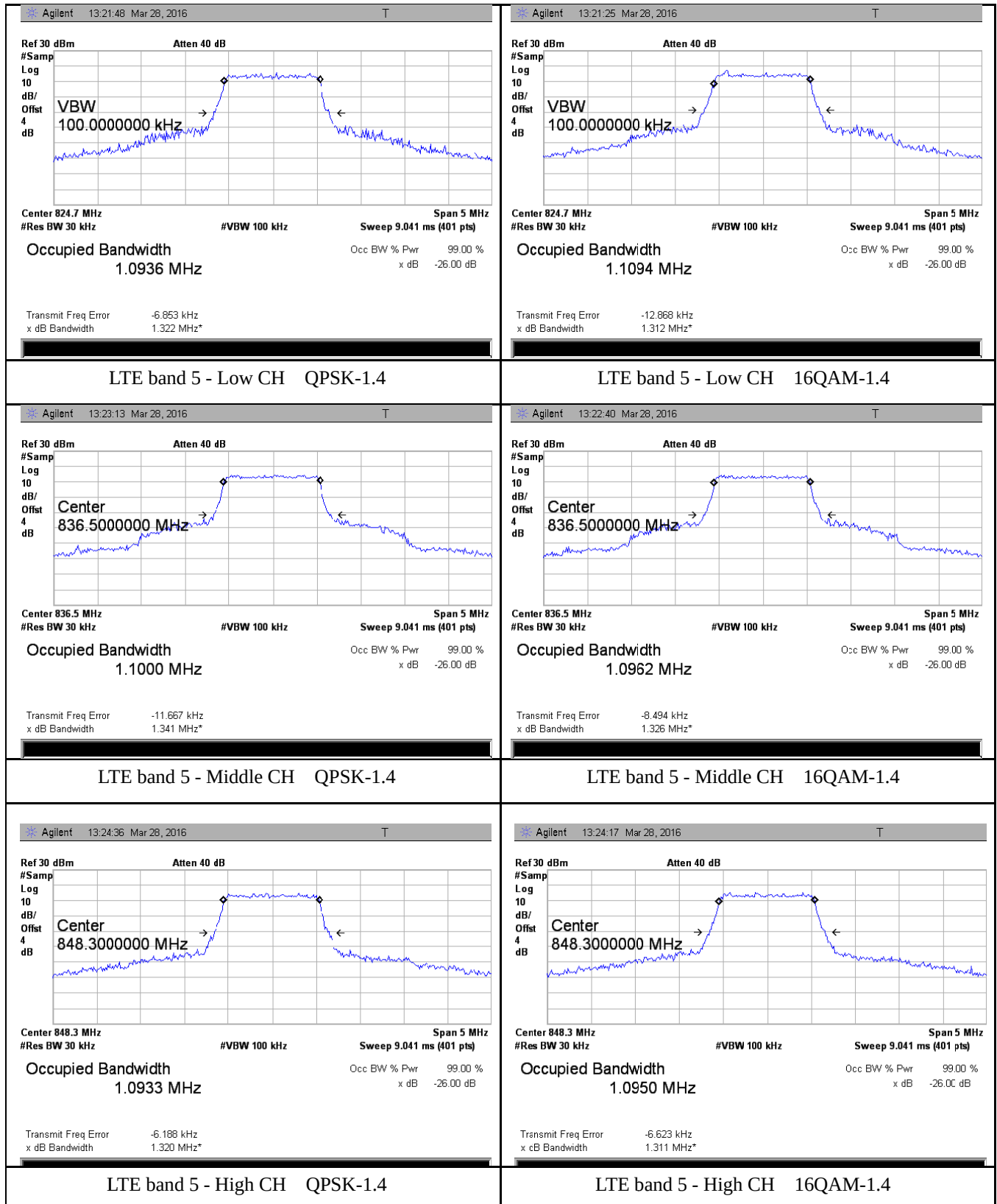
LTE band 4 - High CH QPSK-20

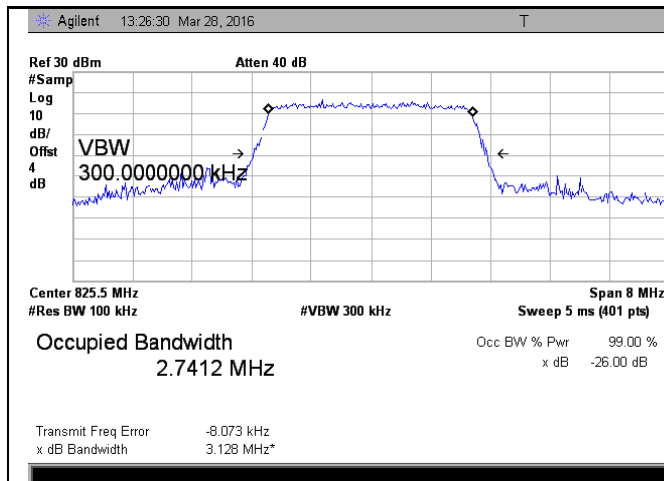


LTE band 4 - High CH 16QAM-20

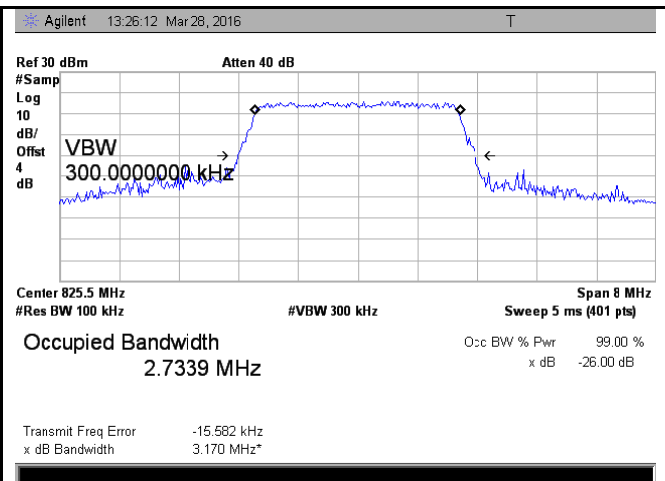


LTE Band 5:

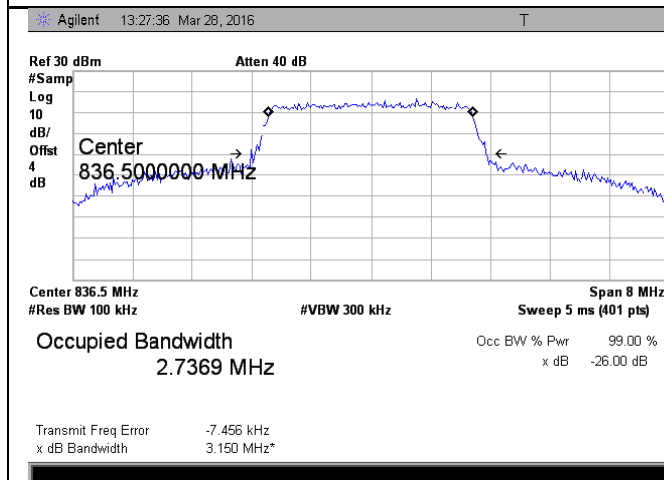




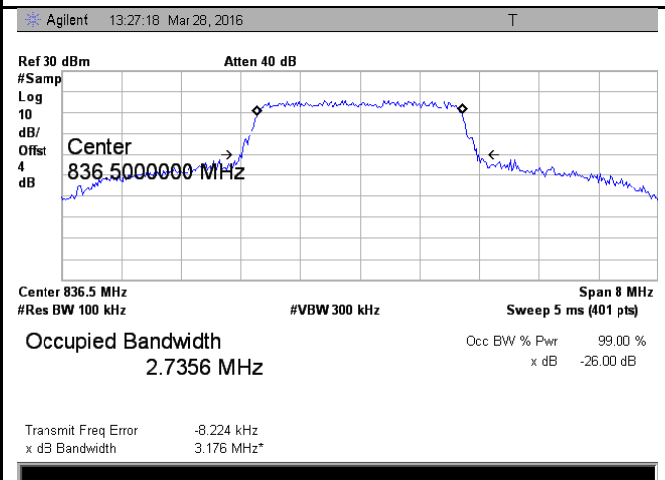
LTE band 5 - Low CH QPSK-3



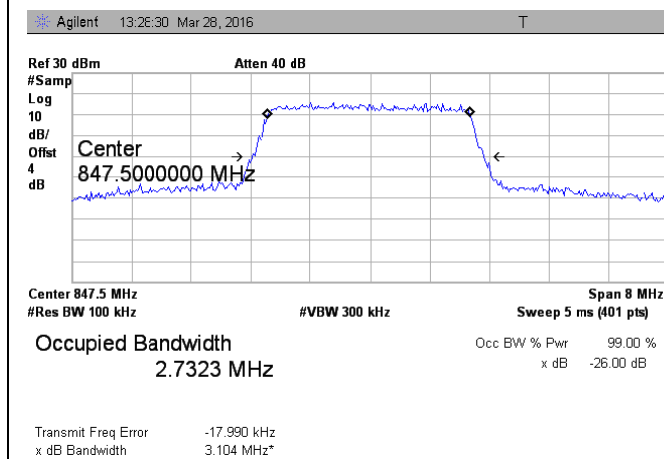
LTE band 5 - Low CH 16QAM-3



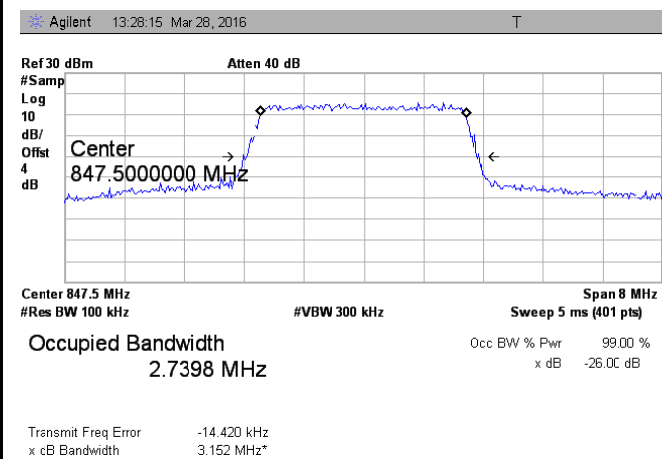
LTE band 5 - Middle CH QPSK-3



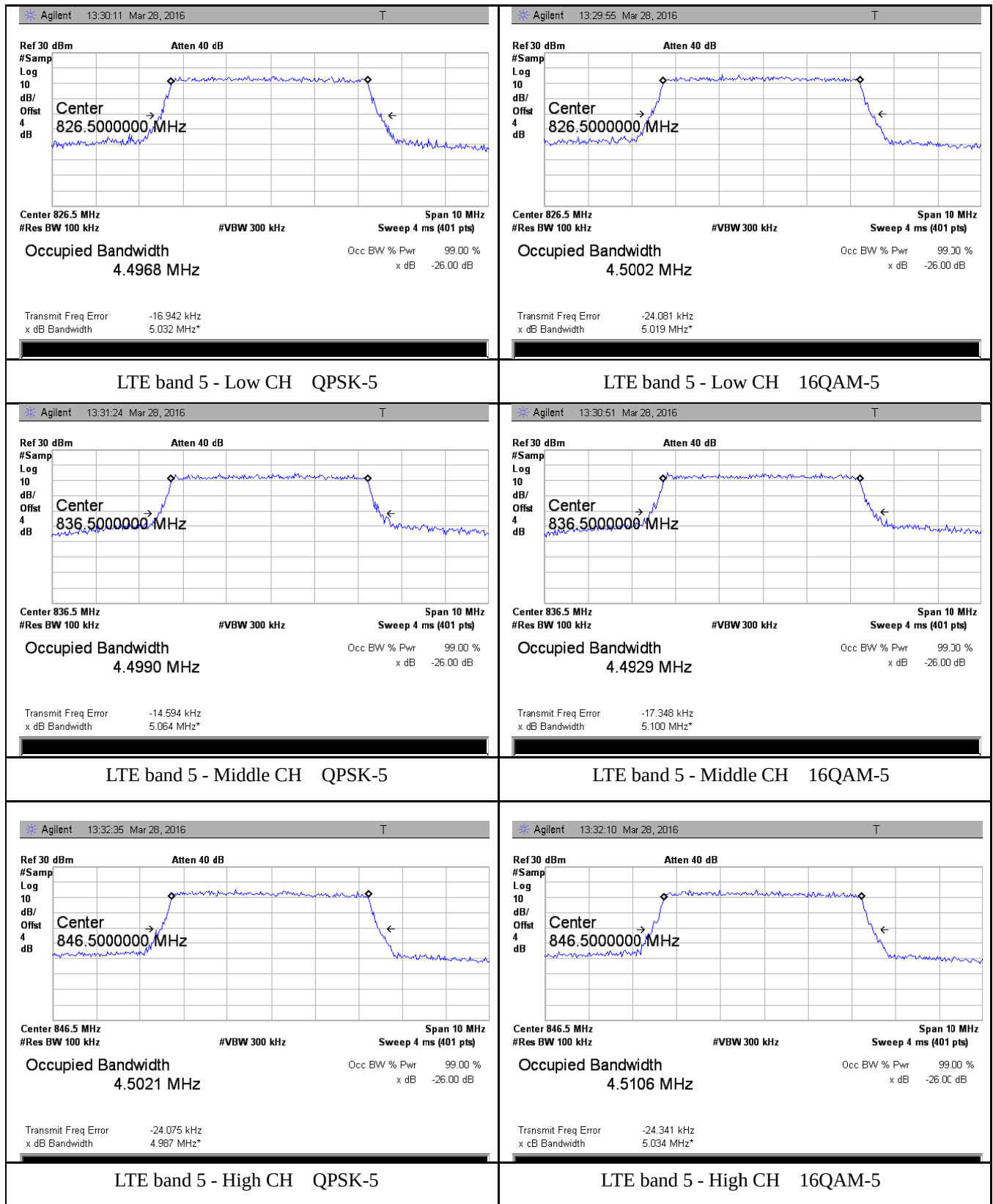
LTE band 5 - Middle CH 16QAM-3

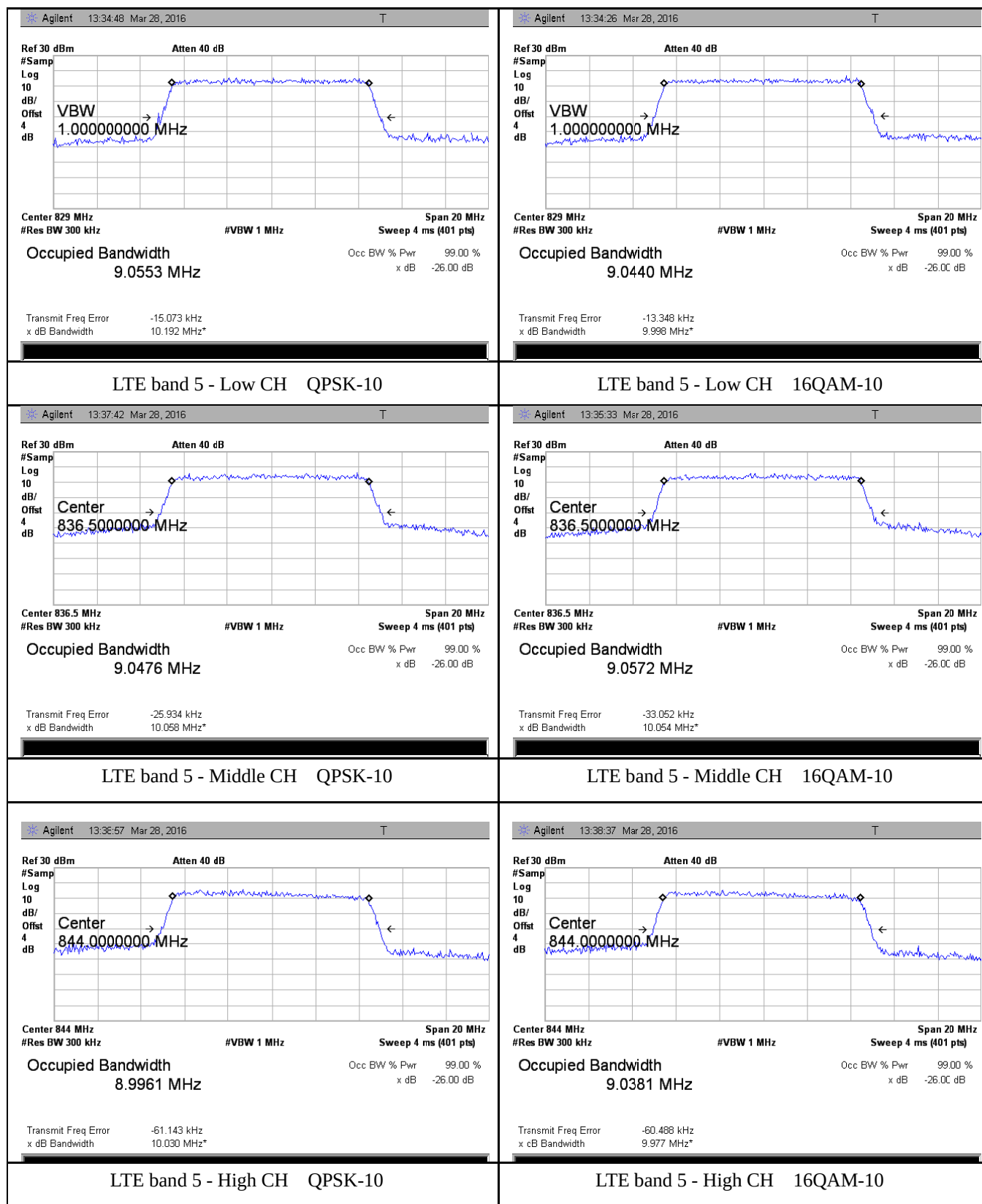


LTE band 5 - High CH QPSK-3



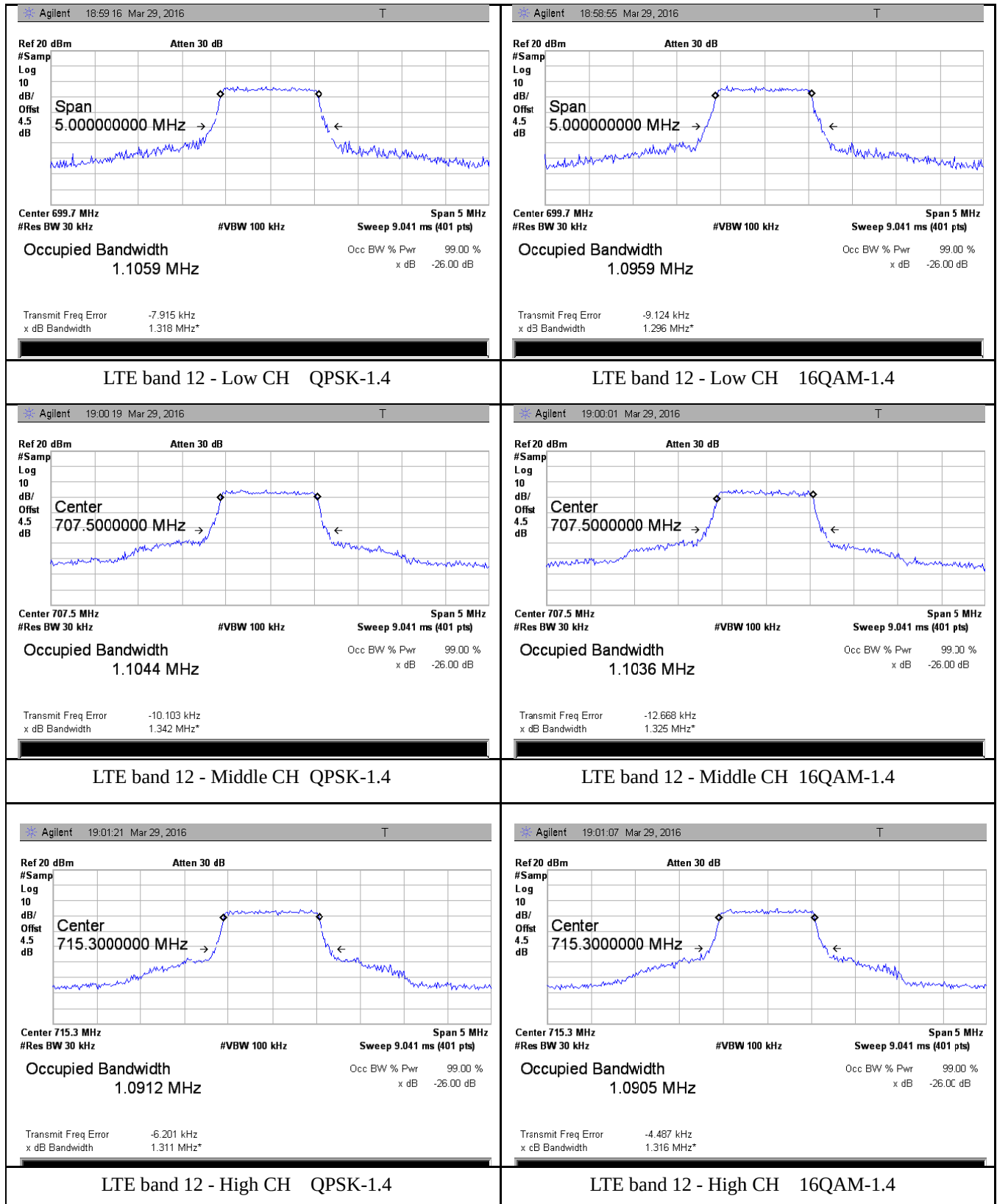
LTE band 5 - High CH 16QAM-3

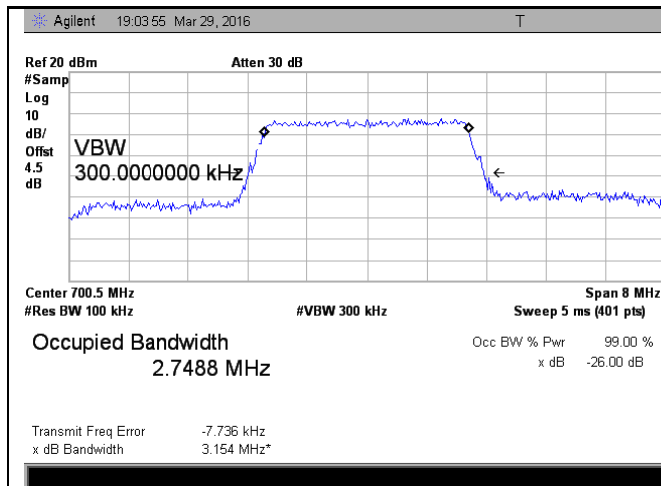




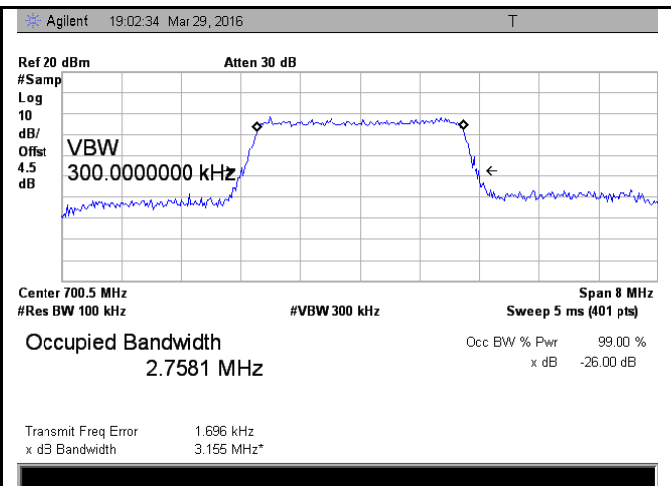


LTE Band 12:

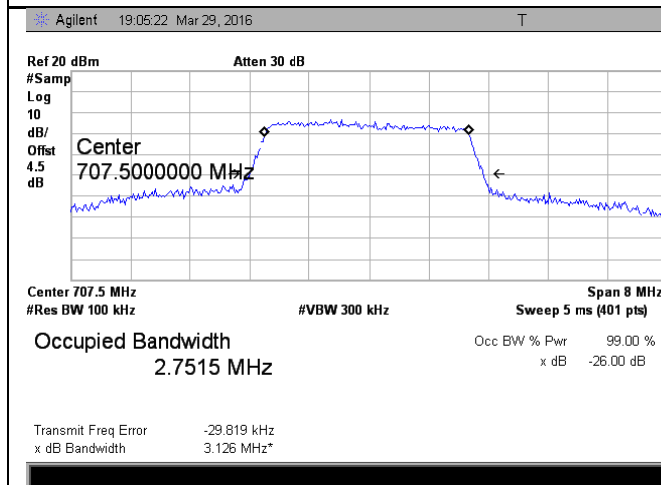




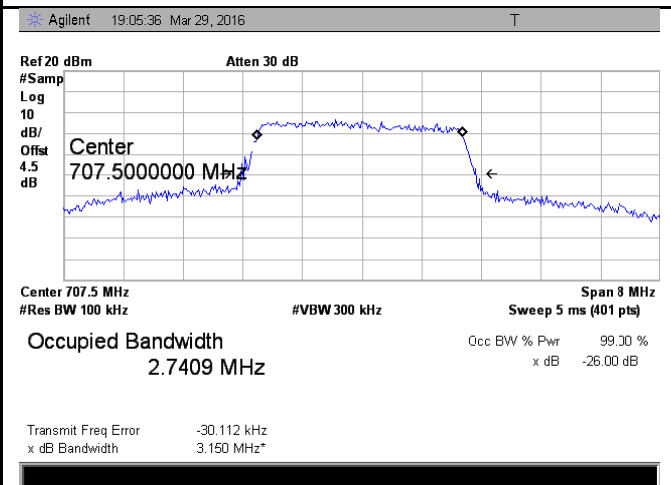
LTE band 12 - Low CH QPSK-3



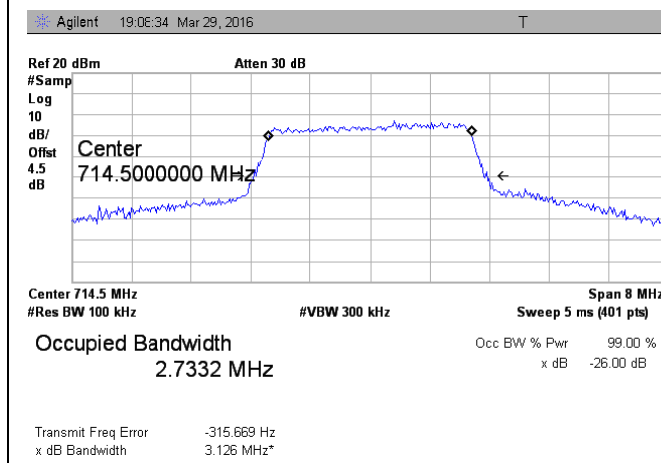
LTE band 12 - Low CH 16QAM-3



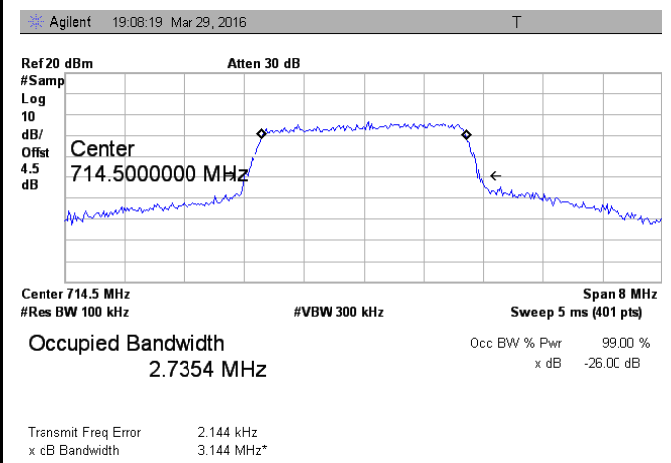
LTE band 12 - Middle CH QPSK-3



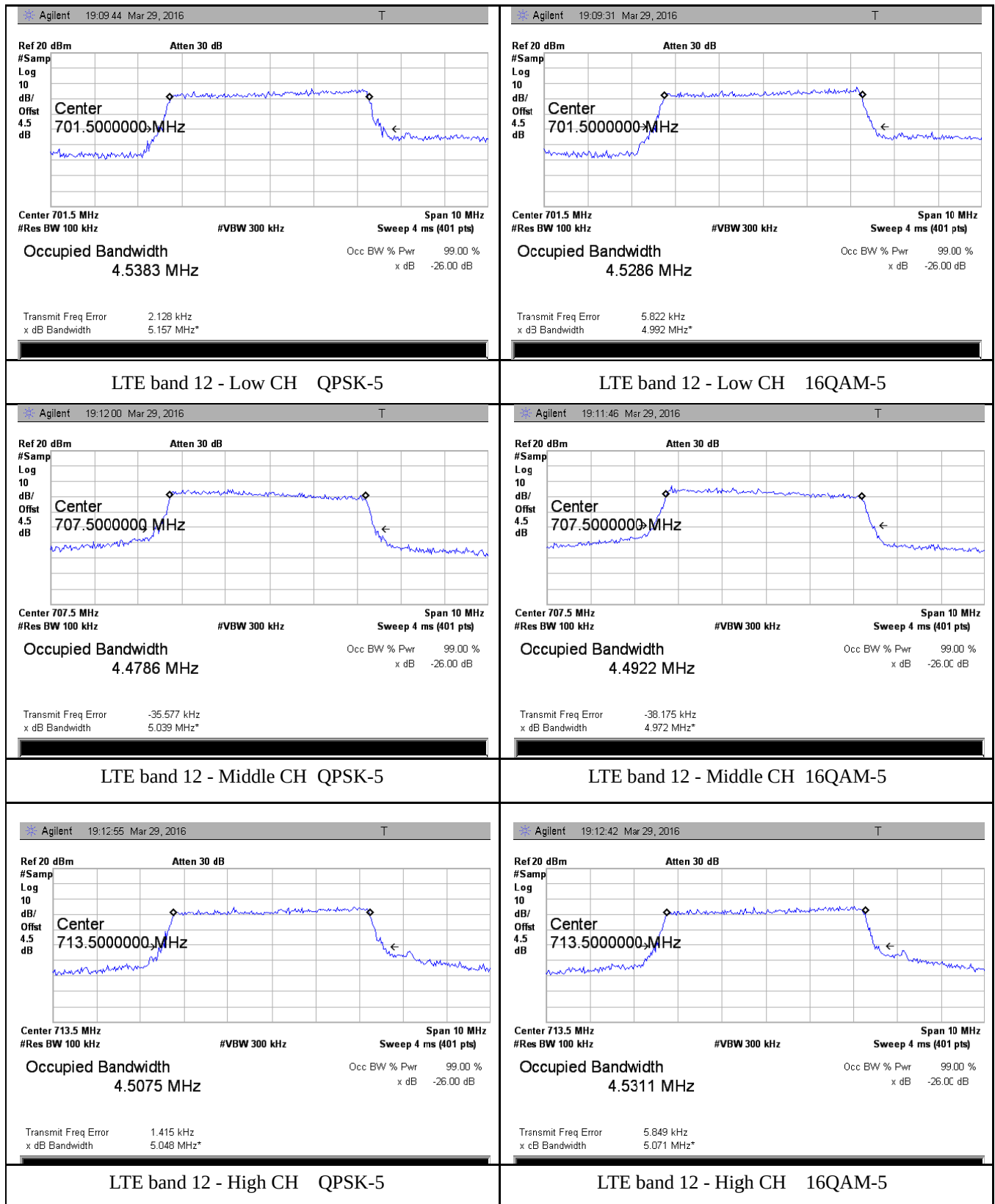
LTE band 12 - Middle CH 16QAM-3

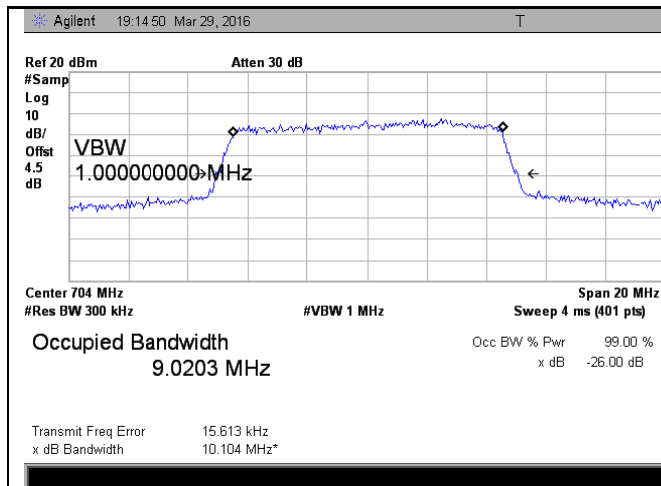


LTE band 12 - High CH QPSK-3

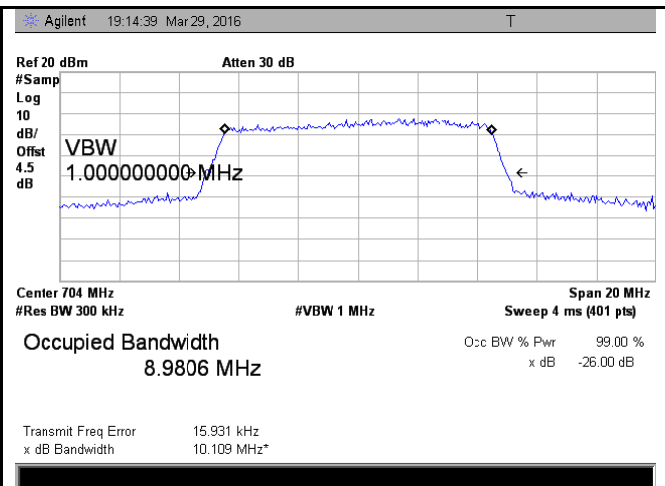


LTE band 12 - High CH 16QAM-3

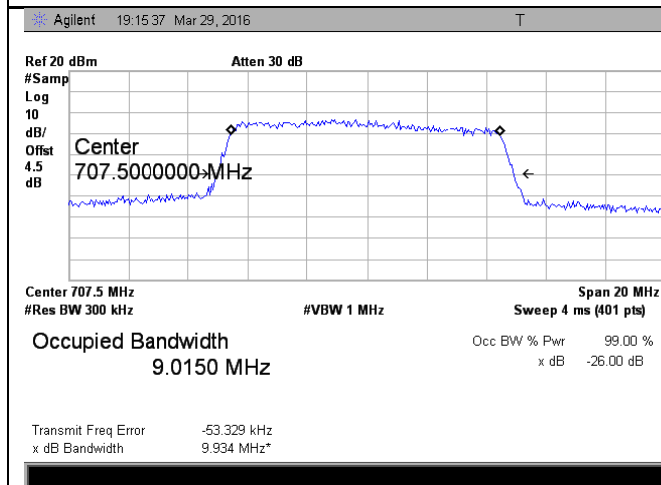




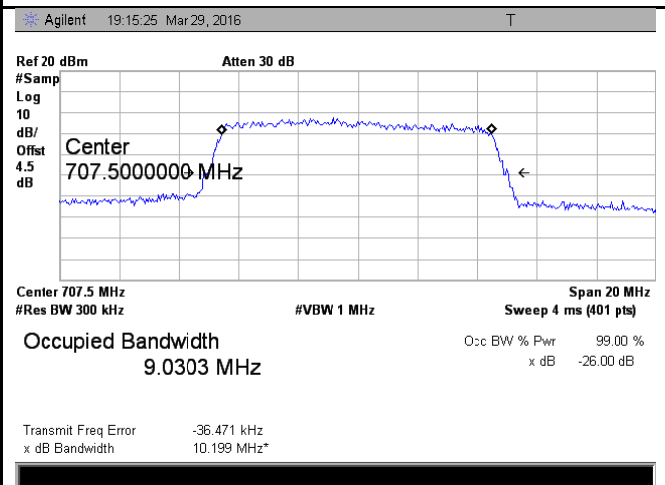
LTE band 12 - Low CH QPSK-10



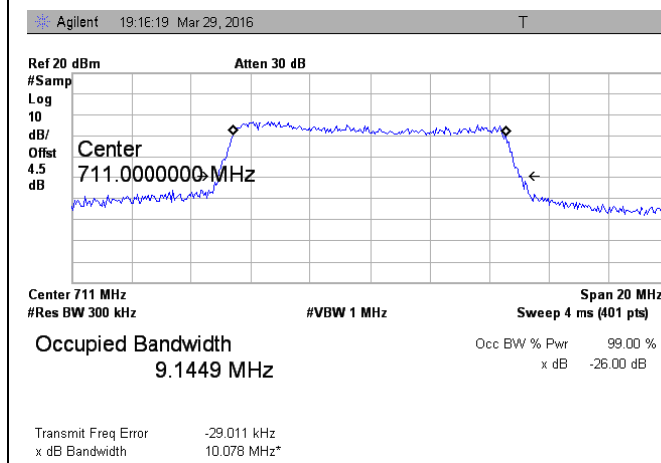
LTE band 12 - Low CH 16QAM-10



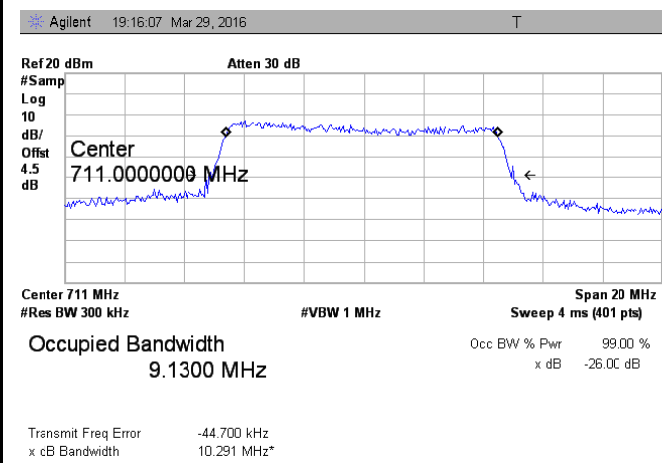
LTE band 12 - Middle CH QPSK-10



LTE band 12 - Middle CH 16QAM-10



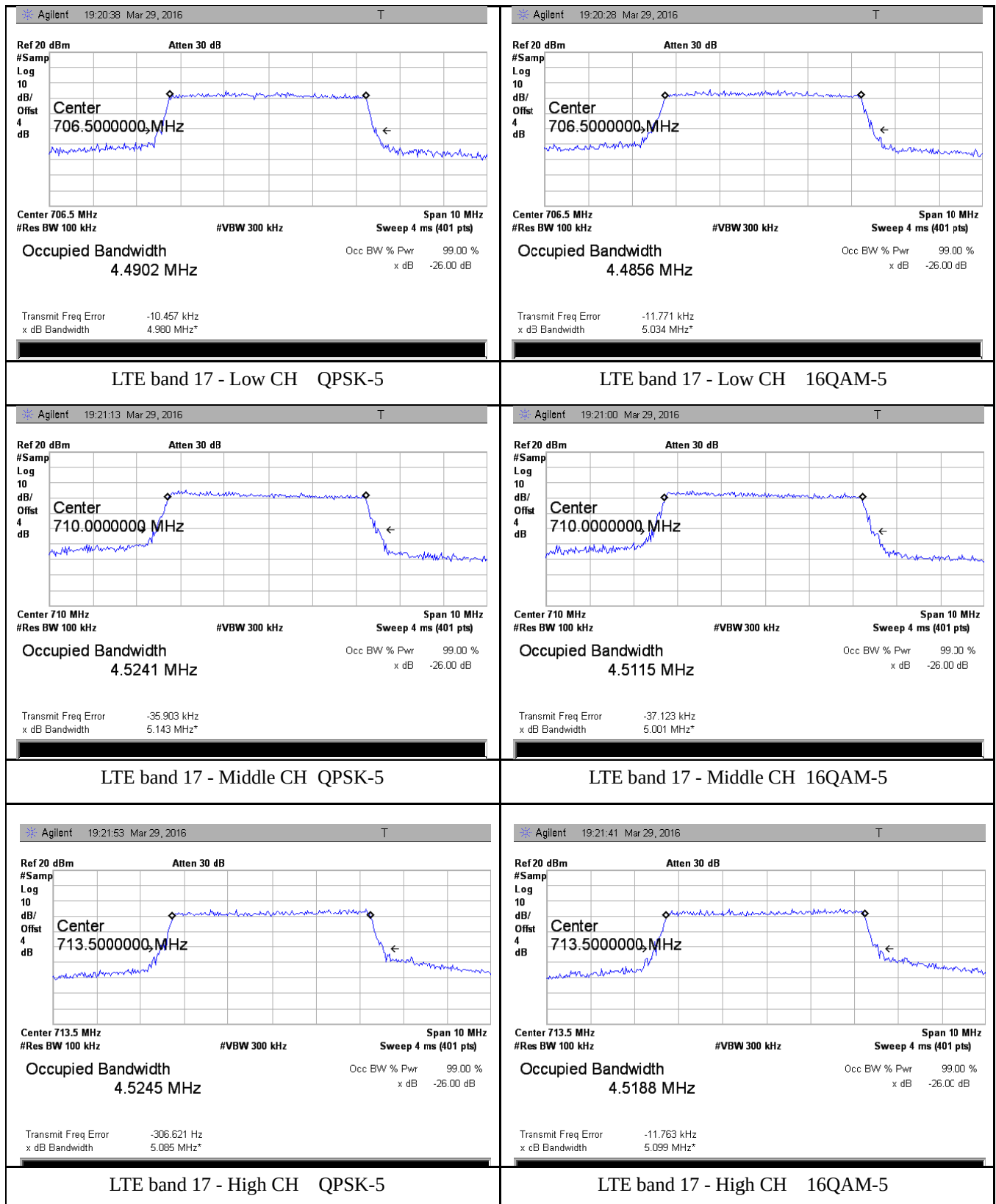
LTE band 12 - High CH QPSK-10

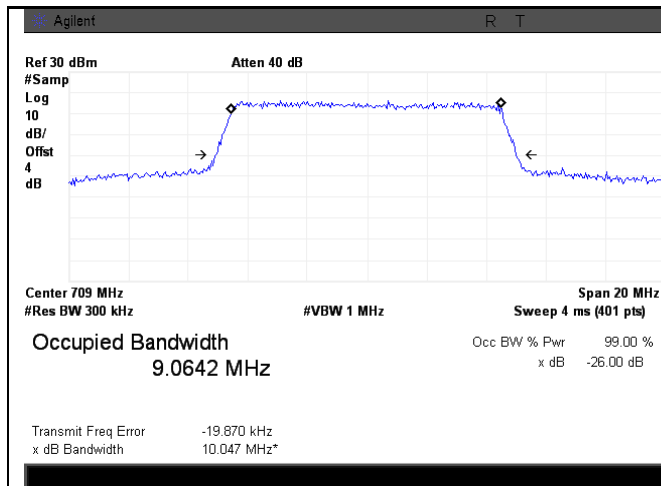


LTE band 12 - High CH 16QAM-10

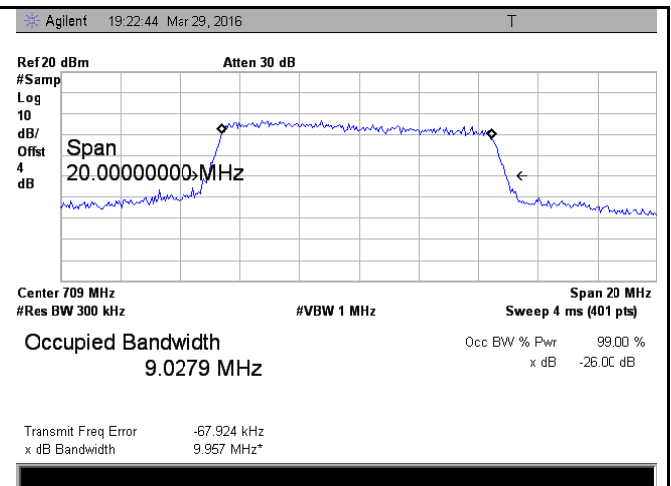


LTE Band 17

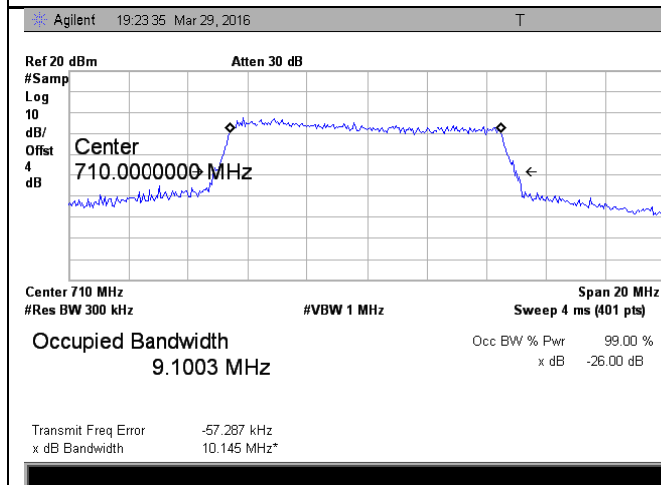




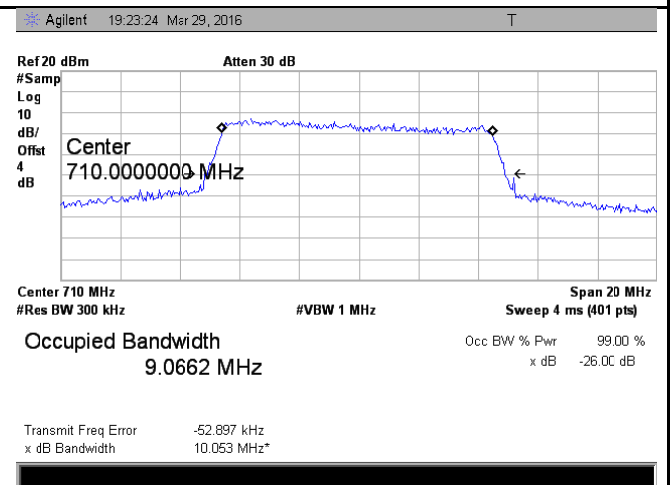
LTE band 17 - Low CH QPSK-10



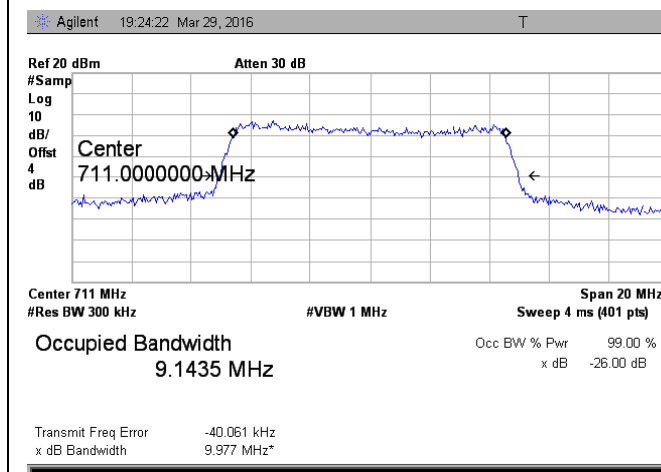
LTE band 17 - Low CH 16QAM-10



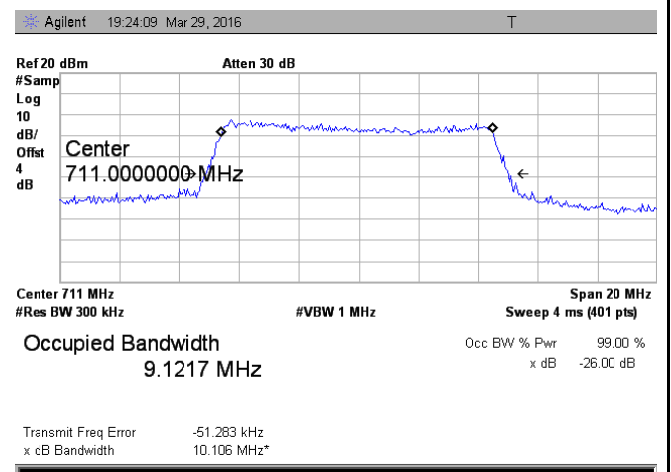
LTE band 17 - Middle CH QPSK-10



LTE band 17 - Middle CH 16QAM-10



LTE band 17 - High CH QPSK-10



LTE band 17 - High CH 16QAM-10

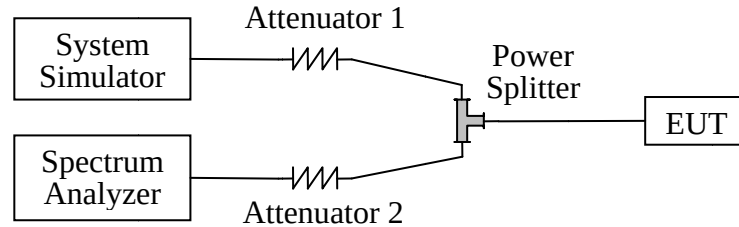


1.10 Peak-to-Average Ratio

1.10.1 Requirement

According to FCC section 24.232(d) and 27.50(d)(5), the peak to average ratio (PAR) of the transmission maynot exceed 13dB.

1.10.2 Test Description



1.10.3 Test Result

LTE Band 2

BW(MHz)	Frequency (MHz)	Mode	Modulation	Conducted Power (dBm)		Peak-Average Ratio (PAR)
				Peak	Average	
1.4	1880	RB 1/0	QPSK	25.43	21.97	2.30
			16QAM	25.53	20.57	2.31
3	1880	RB 1/0	QPSK	25.34	21.88	1.77
			16QAM	25.24	20.6	3.03
5	1880	RB 1/0	QPSK	25	21.64	2.01
			16QAM	47	20.91	2.71
10	1880	RB 1/0	QPSK	25.43	21.79	2.22
			16QAM	25.36	20.58	3.52
15	1880	RB 1/0	QPSK	25.36	21.64	2.37
			16QAM	25.39	21.36	3.37
20	1880	RB 1/0	QPSK	25.43	22.00	2.03
			16QAM	25.46	21.46	3.17



LTE Band 4

BW(MHz)	Frequency (MHz)	Mode	Modulation	Conducted Power (dBm)		Peak-Average Ratio (PAR)
				Peak	Average	
1.4	1732.5	RB 1/0	QPSK	25.63	22.21	2.96
			16QAM	25.34	20.78	3.44
3	1732.5	RB 1/0	QPSK	25.46	22.07	3.06
			16QAM	25.42	20.74	3.37
5	1732.5	RB 1/0	QPSK	25.39	21.72	3.23
			16QAM	25.38	20.73	2.75
10	1732.5	RB 1/0	QPSK	25.48	21.87	3.85
			16QAM	25.47	20.57	3.22
15	1732.5	RB 1/0	QPSK	25.41	21.68	2.9
			16QAM	25.39	20.66	3.17
20	1732.5	RB 1/0	QPSK	25.46	21.55	3.86
			16QAM	25.43	20.88	3.98

LTE Band 5

BW(MHz)	Frequency (MHz)	Mode	Modulation	Conducted Power (dBm)		Peak-Average Ratio (PAR)
				Peak	Average	
1.4	836.5	RB 1/0	QPSK	25.36	22.48	1.89
			16QAM	25.46	21.12	2.78
3	836.5	RB 1/0	QPSK	25.44	22.39	1.91
			16QAM	25.42	21.09	2.97
5	836.5	RB 1/0	QPSK	25.42	22.39	1.74
			16QAM	25.48	21.59	2.32
10	836.5	RB 1/0	QPSK	25.44	22.36	1.74
			16QAM	25.35	21.02	2.39



LTE Band 12

BW(MHz)	Frequency (MHz)	Mode	Modulation	Conducted Power (dBm)		Peak-Average Ratio (PAR)
				Peak	Average	
1.4	707.5	RB 1/0	QPSK	25.63	22.1	1.89
			16QAM	25.46	20.79	2.78
3	707.5	RB 1/0	QPSK	25.62	22.19	1.91
			16QAM	25.53	20.87	2.97
5	707.5	RB 1/0	QPSK	25.13	22.21	1.74
			16QAM	25.47	21.39	2.32
10	707.5	RB 1/0	QPSK	25.64	22.29	1.74
			16QAM	25.39	20.93	2.39

LTE Band 17

BW(MHz)	Frequency (MHz)	Mode	Modulation	Conducted Power (dBm)		Peak-Average Ratio (PAR)
				Peak	Average	
5	710	RB 1/0	QPSK	25.45	22.11	1.63
			16QAM	25.48	21.76	2.85
10	710	RB 1/0	QPSK	25.35	22.05	2.14
			16QAM	25.47	20.64	2.95



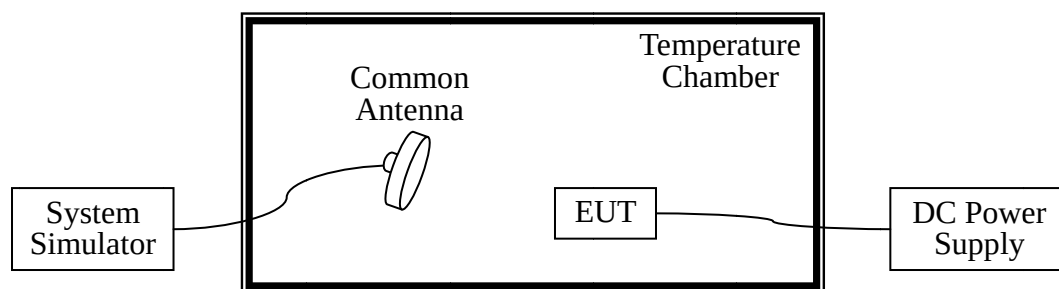
1.11 Frequency Stability

1.11.1 Requirement

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

- (a) The temperature is varied from -30°C to $+50^{\circ}\text{C}$ at intervals of not more than 10°C .
- (b) The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided.

1.11.2 Test Description



1.11.3 Test Setup

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



1.11.4 Test Results

For hand carried, battery powered equipment, reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer; the normal temperature here used is 20°C. The frequency deviation limit is ± 2.5 ppm.

LTE Band 2

Middle Channel, $f_o = 1880$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-10	3.7	-6	0.0027	2.5
0		-12	0.0059	2.5
10		-8	0.0037	2.5
20		-11	0.0053	2.5
30		-11	0.0064	2.5
40		-10	0.0048	2.5
50		-11	0.0064	2.5
55		-7	0.0032	2.5
25	4.2	-10	0.0059	2.5
	3.5	-9	0.0053	2.5

LTE Band 4

Middle Channel, $f_o = 1732.5$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-10	3.7	-13	0.0087	2.5
0		-14	0.0092	2.5
10		-10	0.0063	2.5
20		-10	0.0063	2.5
30		-11	0.0058	2.5
40		-11	0.0069	2.5
50		-12	0.0075	2.5
55		-12	0.0069	2.5
25	4.2	-14	0.0087	2.5
	3.5	-15	0.0092	2.5



LTE Band 5

Middle Channel, $f_o = 836.5$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-10	3.7	8	0.0084	2.5
0		7	0.0072	2.5
10		6	0.0084	2.5
20		8	0.0108	2.5
30		11	0.0120	2.5
40		12	0.0155	2.5
50		10	0.0108	2.5
55		11	0.0120	2.5
25	4.2	9	0.0096	2.5
	3.5	12	0.0132	2.5

LTE Band 12

Middle Channel, $f_o = 1880$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-10	3.7	-8	0.0027	2.5
0		-11	0.0059	2.5
10		-10	0.0037	2.5
20		-12	0.0053	2.5
30		-10	0.0064	2.5
40		-9	0.0048	2.5
50		-10	0.0064	2.5
55		-8	0.0032	2.5
25	4.2	-11	0.0059	2.5
	3.5	-10	0.0053	2.5



LTE Band 17

Middle Channel, $f_0 = 710$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-10	3.7	8	0.0099	2.5
0		8	0.0099	2.5
10		4	0.0042	2.5
20		5	0.0085	2.5
30		5	0.0056	2.5
40		6	0.0070	2.5
50		10	0.0155	2.5
55		9	0.0113	2.5
25	4.2	9	0.0127	2.5
	3.5	12	0.0155	2.5

NOTE:

- (1) The EUT stops transmitting at temperatures -10°C, 55°C
- (2) The manufacturer declared that the EUT could work properly between temperatures -20°C~60°C.
- (3) Normal Voltage = 3.7V; Max Voltage= 4.2V; Min Voltage=3.5V.
- (4) The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.



1.12 Conducted Out of Band Emissions

1.12.1 Requirement

According to FCC section 2.1051, 22.917(a), 24.238(a), 27.53(h), 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 $43 + 10 \cdot \log(P)$ dB. This calculated to be -13dBm.

1.12.2 Test Description

See section 4.2.1 of this report.

1.12.3 Test Results

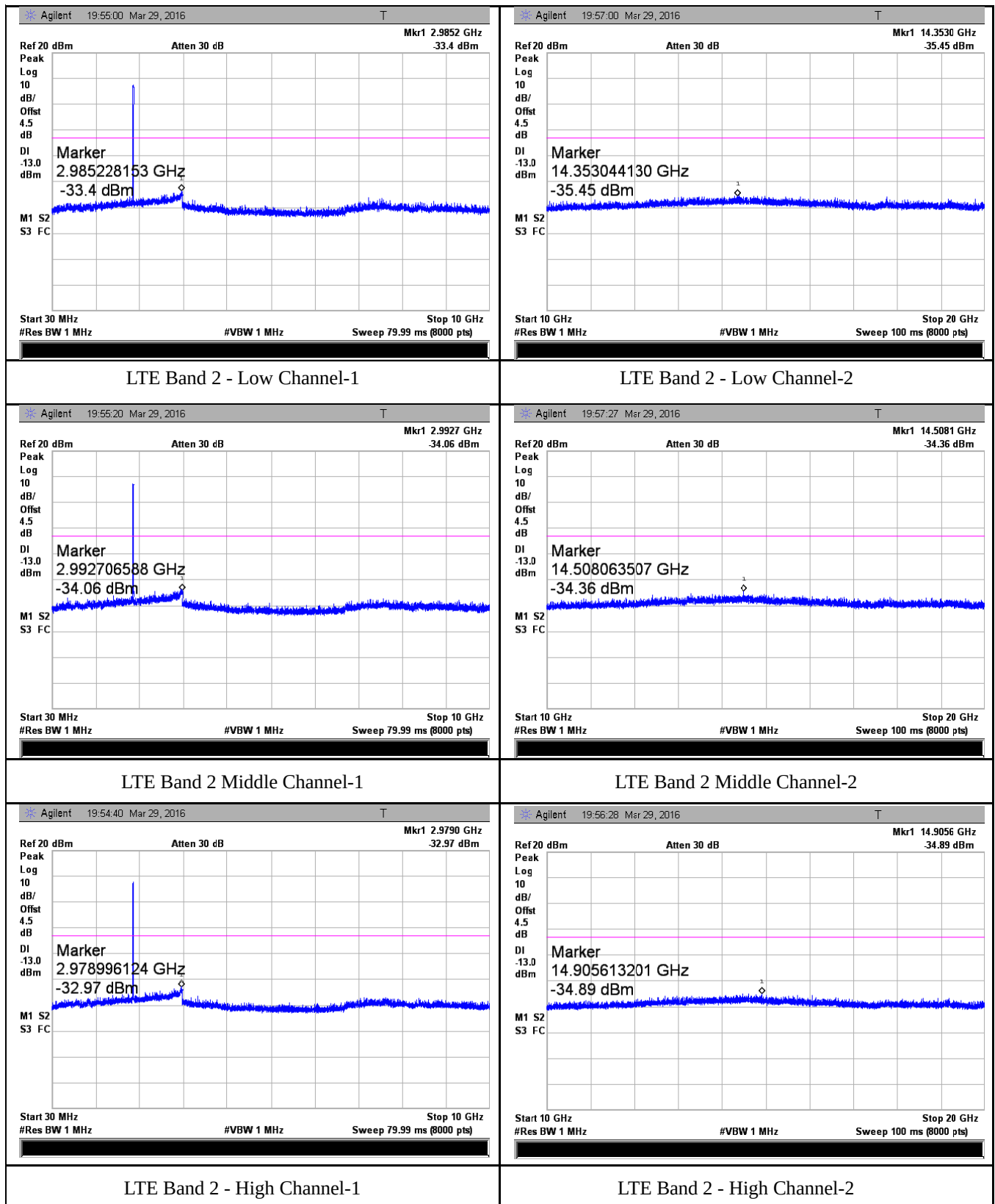
The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the out of band emissions. Only the worst RB size/offset presented.

Compliant. See attached pots.



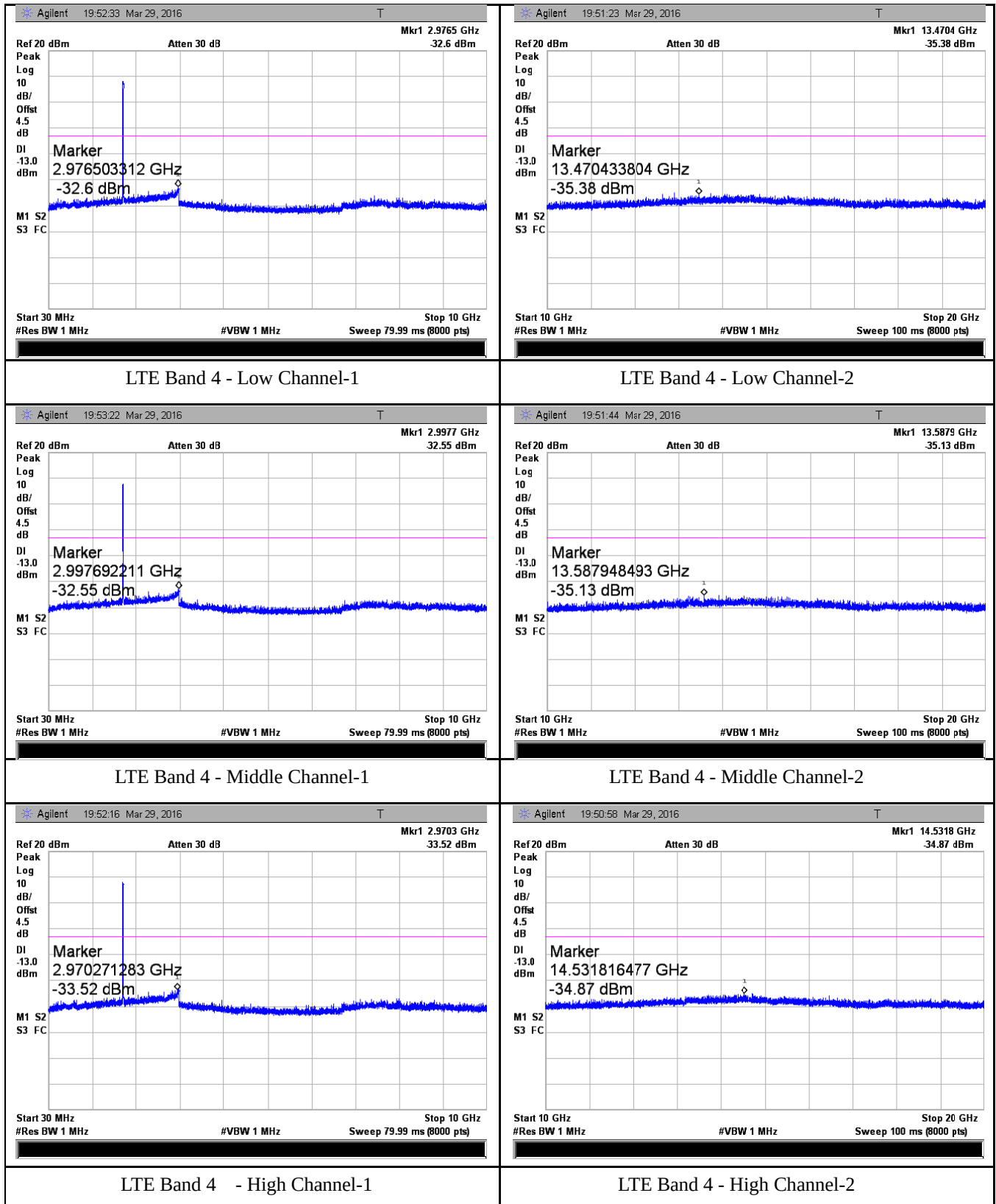
Test Plots:

LTE Band 2



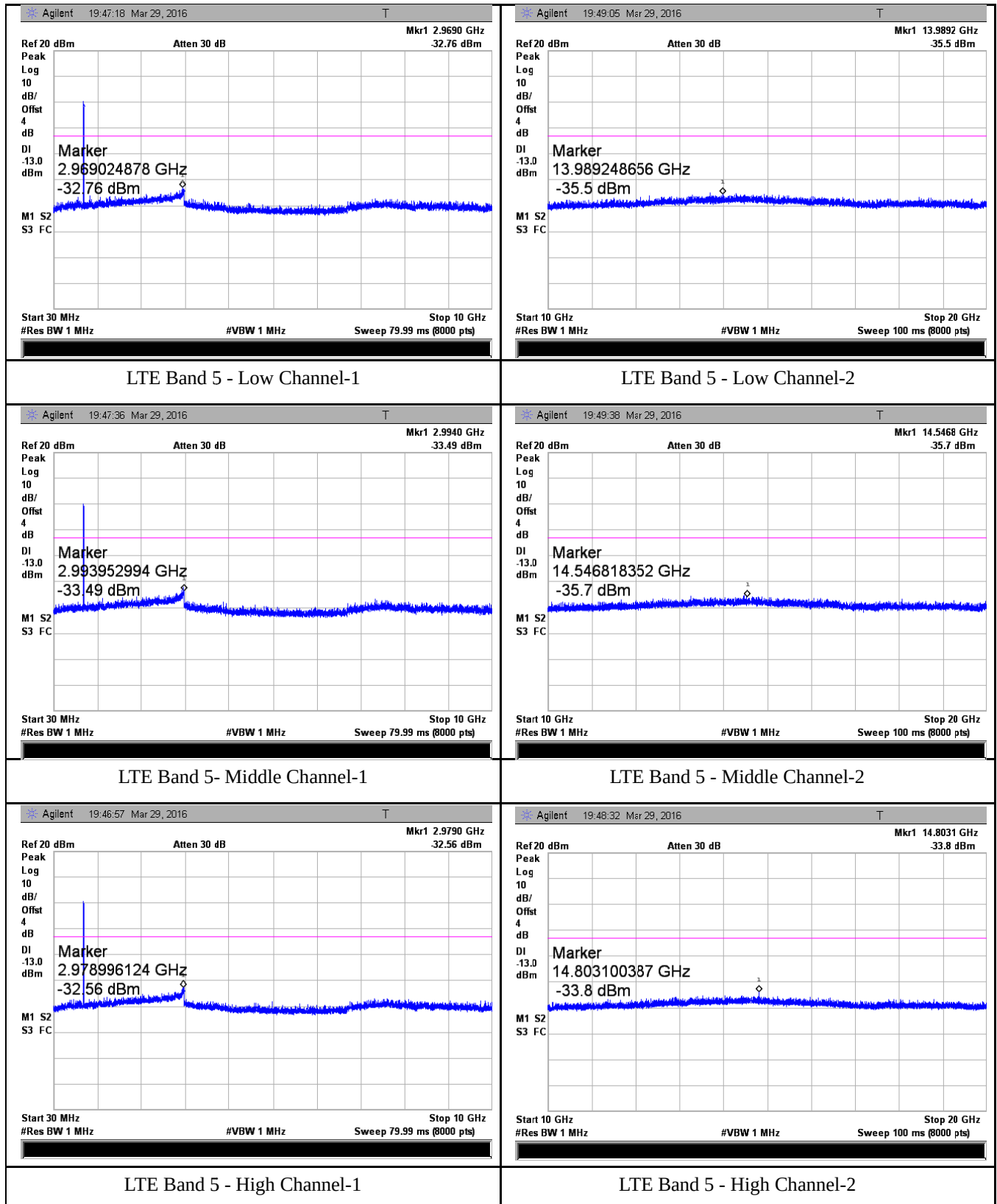


LTE Band 4



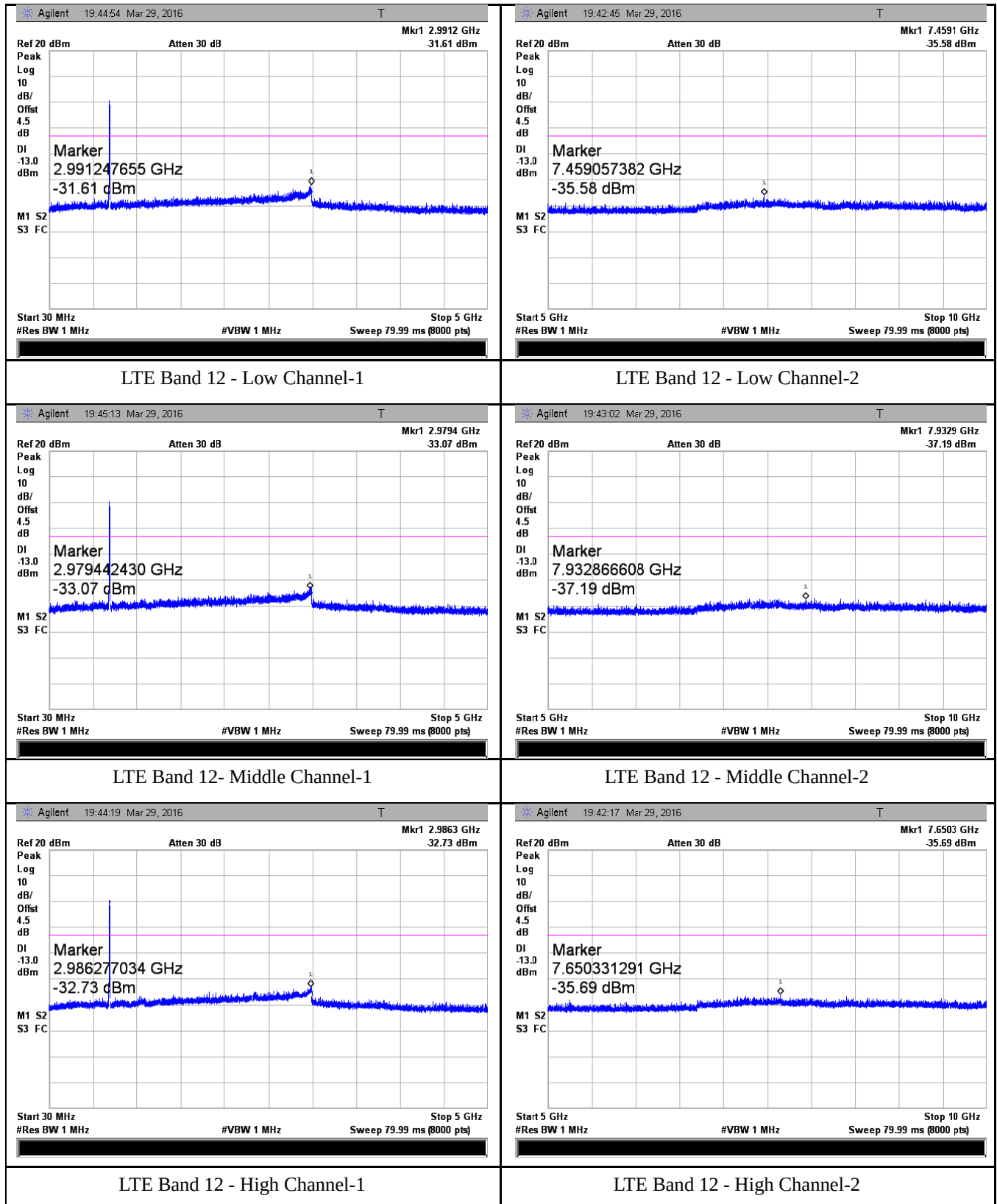


LTE Band 5



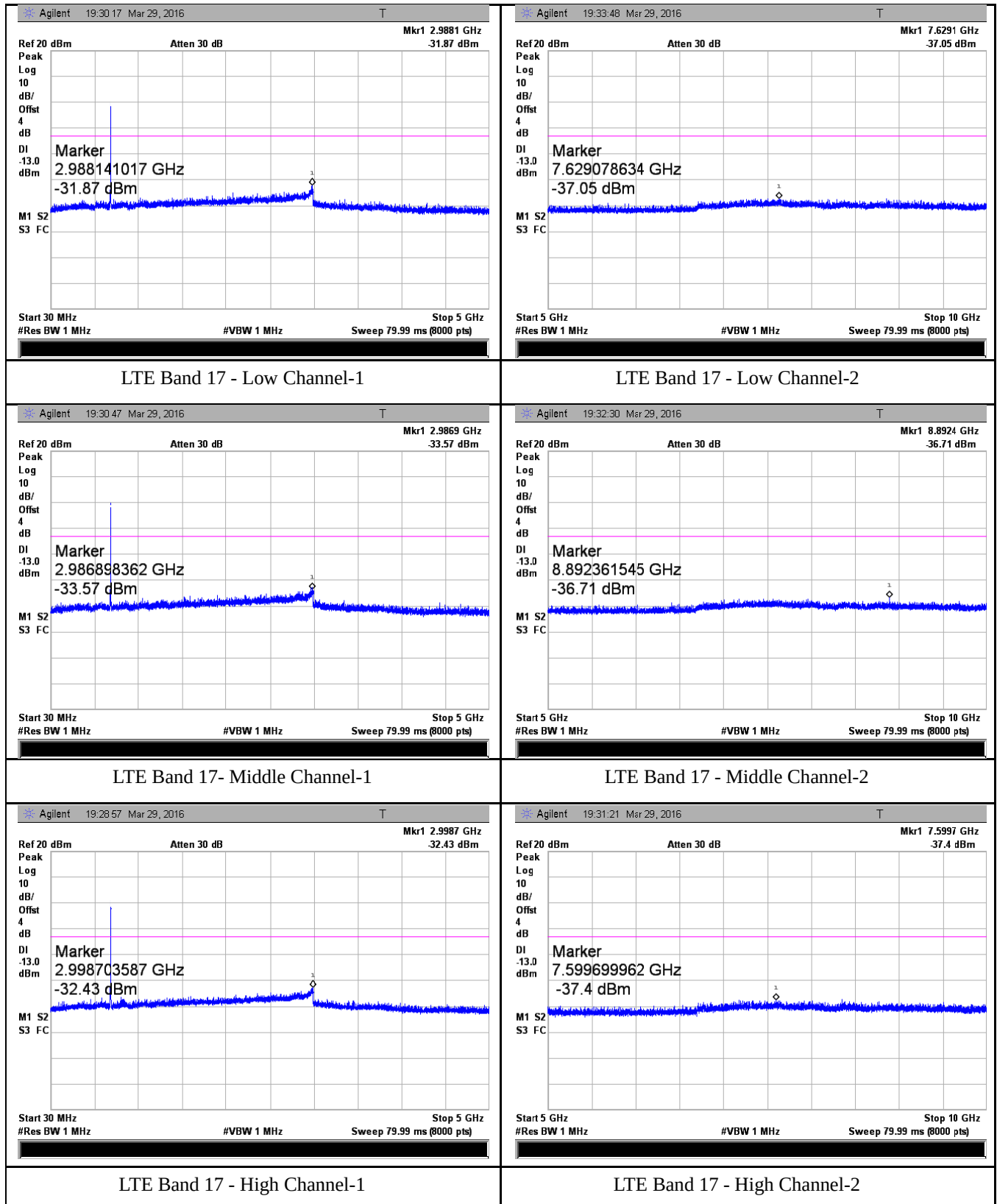


LTE Band 12





LTE Band 17

**NOTE:**

The power of the EUT transmitting frequency should be ignored.



1.13 Band Edge

1.13.1 Requirement

22.917(a)

For operations in the 824 – 849 MHz band, the FCC limit is $43 + 10\log_{10}(P[\text{Watts}])$ dB below the transmitter power $P(\text{Watts})$ in a 100kHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

24.238 (a)

For operations in the 1850-1910 and 1930-1990 MHz band, the FCC limit is $43 + 10\log_{10}(P[\text{Watts}])$ dB below the transmitter power $P(\text{Watts})$ in a 1MHz bandwidth. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

27.53 (g)

For operations in the 698 -746 MHz band, the FCC limit is $43 + 10\log_{10}(P[\text{Watts}])$ dB below the transmitter power $P(\text{Watts})$ in a 100 kHz bandwidth. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

27.53 (h)

For operations in the 1710 – 1755 MHz band, the FCC limit is $43 + 10\log_{10}(P[\text{Watts}])$ dB below the transmitter power $P(\text{Watts})$ in a 1 MHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

1.13.2 Test Description

See section 4.2.1 of this report.



1.13.3 Test Results

The lowest and highest channels are tested to verify the band edge emissions.

LTE Band 2

BW(MHz)	Channel	Frequency (MHz)	Mode	Emission (dBm)	Limit (dBm)
1.4	18607	1850.7	QPSK	-20.00	-13
			16QAM	-27.13	-13
1.4	18900	1909.3	QPSK	-19.92	-13
			16QAM	-20.19	-13
3	18615	1851.5	QPSK	-15.60	-13
			16QAM	-14.42	-13
3	19185	1908.5	QPSK	-14.41	-13
			16QAM	-16.92	-13
5	18625	1852.5	QPSK	-15.69	-13
			16QAM	-16.40	-13
5	19175	1907.5	QPSK	-18.29	-13
			16QAM	-18.62	-13
10	18650	1855	QPSK	-30.08	-13
			16QAM	-29.00	-13
10	19150	1905	QPSK	-31.28	-13
			16QAM	-28.75	-13
15	18675	1857.5	QPSK	-22.06	-13
			16QAM	-22.43	-13
15	19125	1902.5	QPSK	-22.59	-13
			16QAM	-21.91	-13
20	18700	1860	QPSK	-23.14	-13
			16QAM	-23.89	-13
20	19100	1900	QPSK	-23.81	-13
			16QAM	-24.52	-13



LTE Band 4

BW(MHz)	Channel	Frequency (MHz)	Mode	Emission (dBm)	Limit (dBm)
1.4	19957	1710.7	QPSK	-24.99	-13
			16QAM	-26.45	-13
1.4	20393	1754.3	QPSK	-20.90	-13
			16QAM	-21.69	-13
3	19965	1711.5	QPSK	-16.30	-13
			16QAM	-20.11	-13
3	20385	1753.5	QPSK	-16.97	-13
			16QAM	-16.52	-13
5	19975	1712.5	QPSK	-17.87	-13
			16QAM	-18.52	-13
5	20375	1752.5	QPSK	-18.38	-13
			16QAM	-18.63	-13
10	20000	1715	QPSK	-20.71	-13
			16QAM	-18.00	-13
10	20350	1750	QPSK	-20.62	-13
			16QAM	-20.62	-13
15	20025	1717.5	QPSK	-18.34	-13
			16QAM	-22.03	-13
15	20325	1747.5	QPSK	-25.30	-13
			16QAM	-24.41	-13
20	20050	1720	QPSK	-24.50	-13
			16QAM	-19.58	-13
20	20300	1745	QPSK	-29.67	-13
			16QAM	-26.46	-13



LTE Band 5

BW(MHz)	Channel	Frequency (MHz)	Mode	Emission (dBm)	Limit (dBm)
1.4	20407	824.7	QPSK	-19.95	-13
			16QAM	-20.37	-13
1.4	20643	848.3	QPSK	-21.75	-13
			16QAM	-25.33	-13
3	20415	825.5	QPSK	-13.77	-13
			16QAM	-14.85	-13
3	20635	847.5	QPSK	-16.83	-13
			16QAM	-15.16	-13
5	20425	826.5	QPSK	-16.68	-13
			16QAM	-15.76	-13
5	20625	846.5	QPSK	-22.74	-13
			16QAM	-21.02	-13
10	20450	829	QPSK	-14.48	-13
			16QAM	-17.00	-13
10	20800	844	QPSK	-21.74	-13
			16QAM	-21.68	-13

LTE Band 12

BW(MHz)	Channel	Frequency (MHz)	Mode	Emission (dBm)	Limit (dBm)
1.4	23017	699.7	QPSK	-22.16	-13
			16QAM	-22.44	-13
1.4	23173	715.3	QPSK	-24.39	-13
			16QAM	-24.85	-13
3	23025	700.5	QPSK	-13.79	-13
			16QAM	-14.23	-13
3	23165	714.5	QPSK	-16.62	-13
			16QAM	-16.50	-13
5	23035	701.5	QPSK	-16.35	-13
			16QAM	-18.03	-13
5	23155	713.5	QPSK	-17.19	-13
			16QAM	-16.77	-13
10	23060	704	QPSK	-17.62	-13
			16QAM	-19.09	-13
10	23130	711	QPSK	-21.19	-13
			16QAM	-21.05	-13



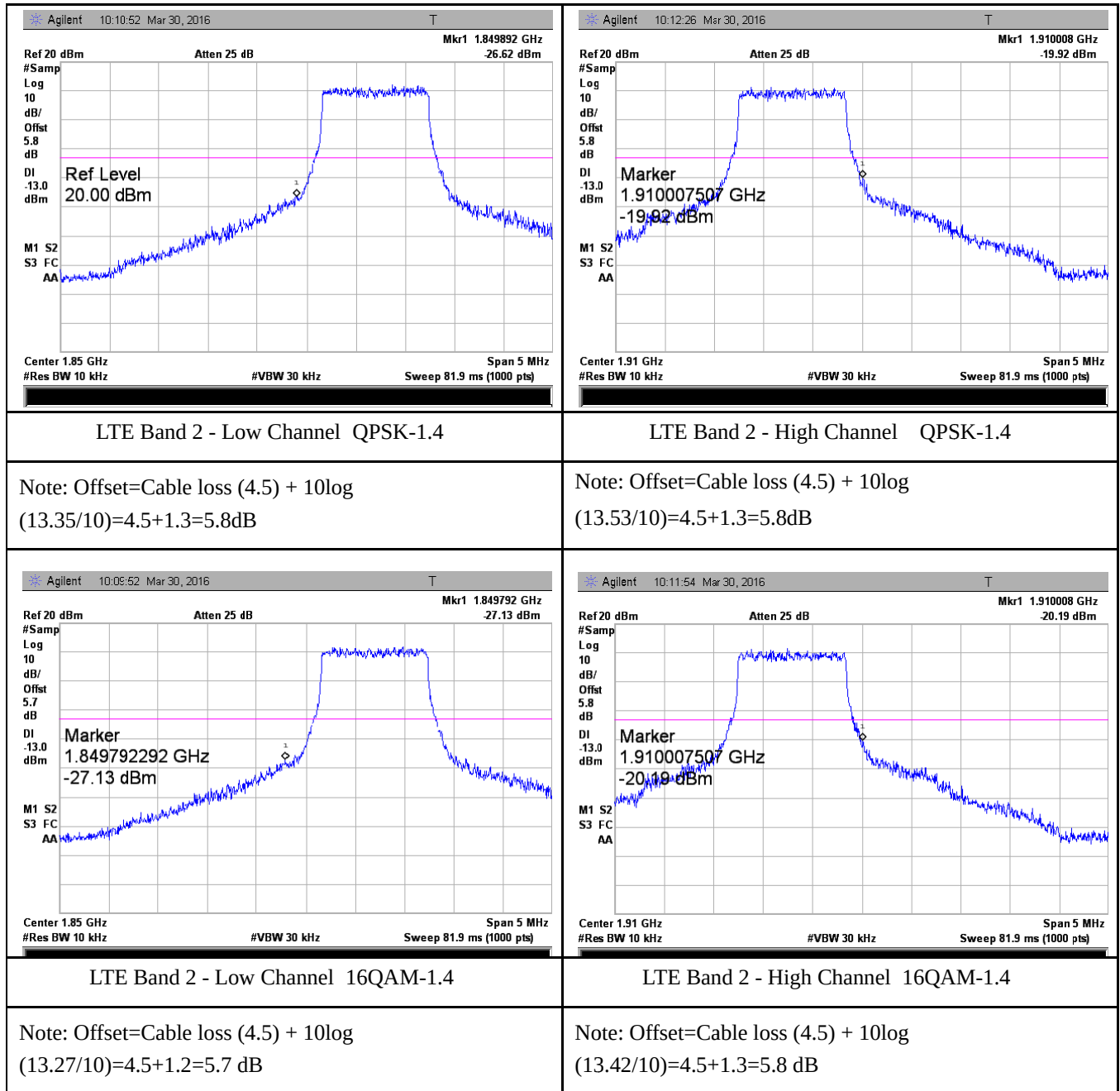
LTE Band 17

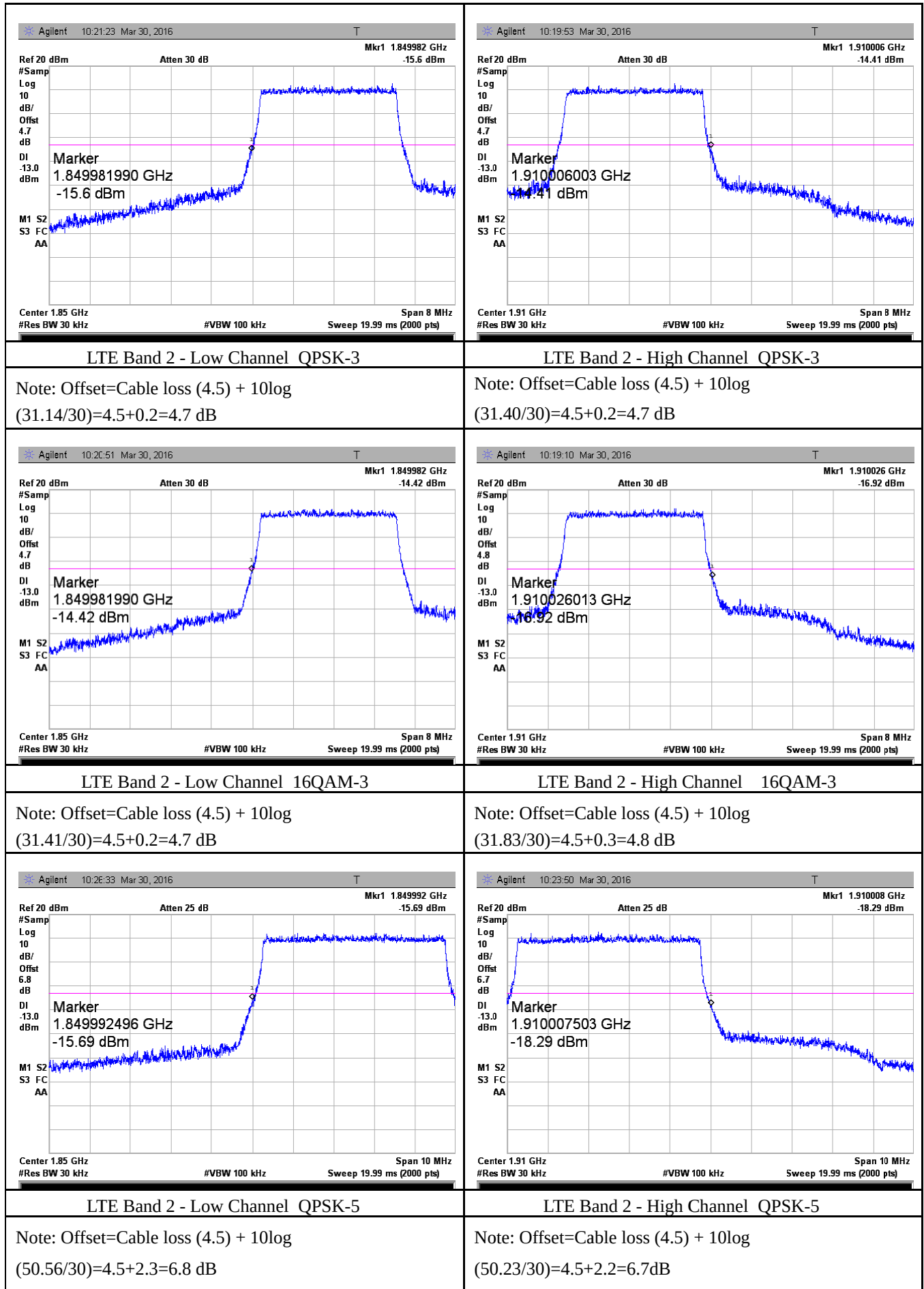
BW(MHz)	Channel	Frequency (MHz)	Mode	Emission (dBm)	Limit (dBm)
5	23755	706.5	QPSK	-17.65	-13
			16QAM	-19.35	-13
5	23825	713.5	QPSK	-18.86	-13
			16QAM	-18.03	-13
10	23780	709	QPSK	-19.04	-13
			16QAM	-18.89	-13
10	23800	711	QPSK	-20.00	-13
			16QAM	-19.66	-13

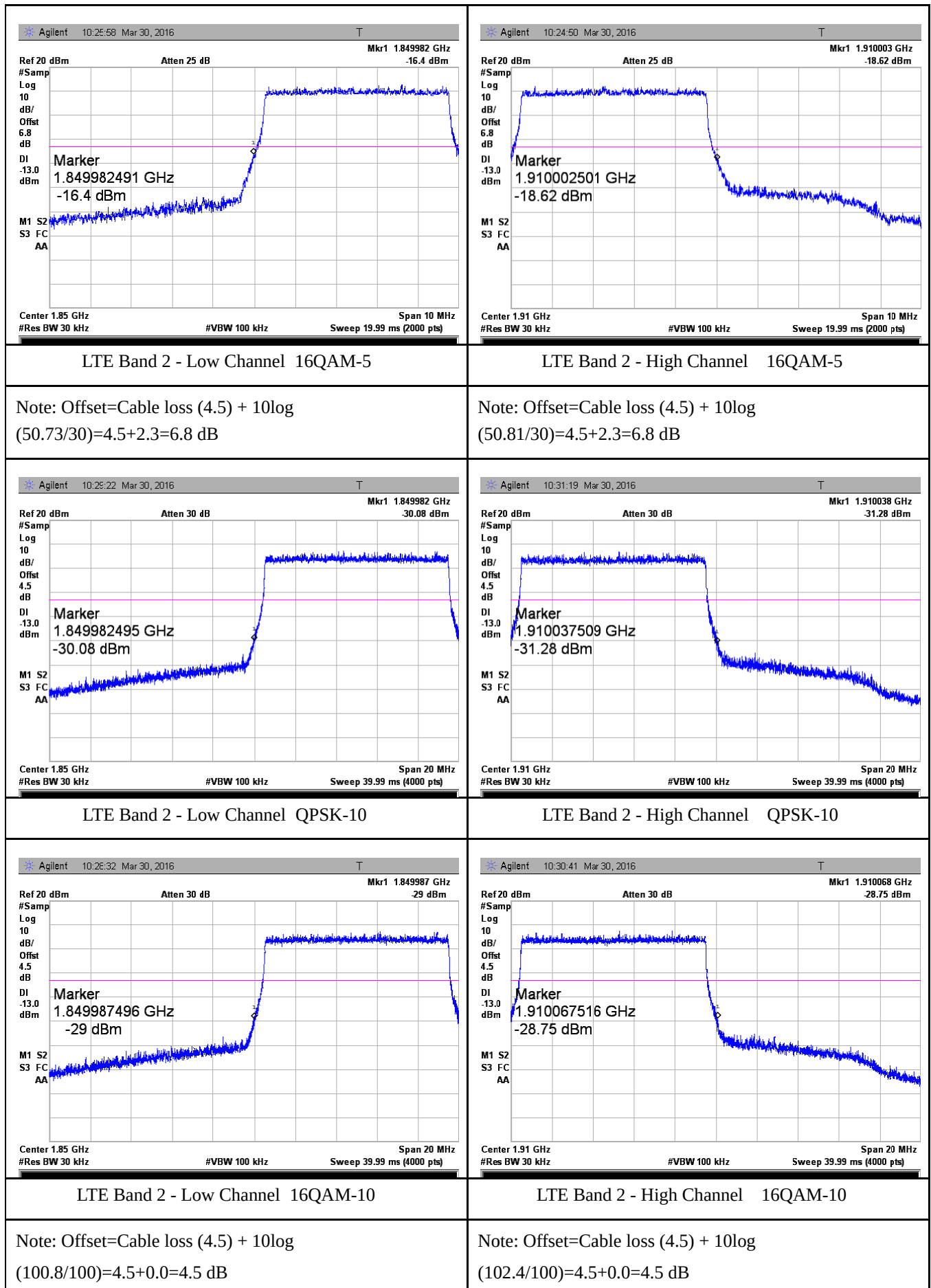


Test Plots:

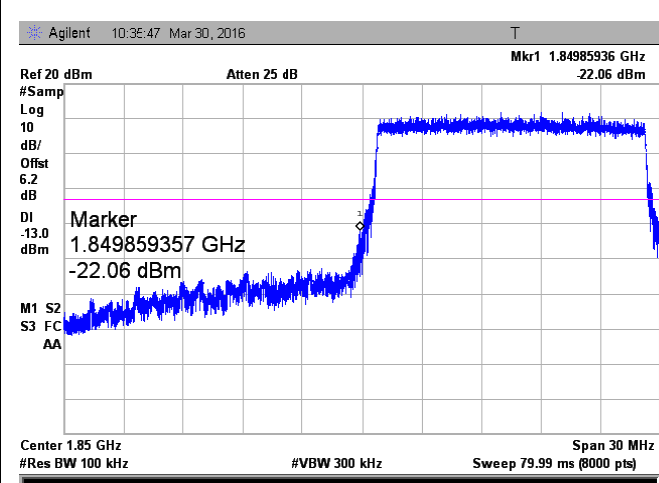
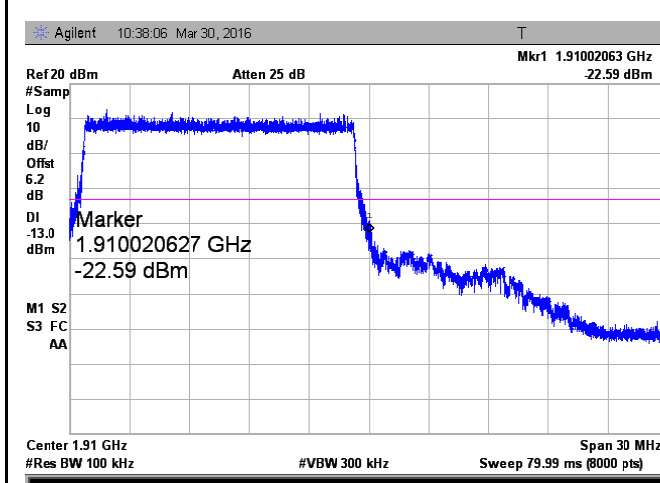
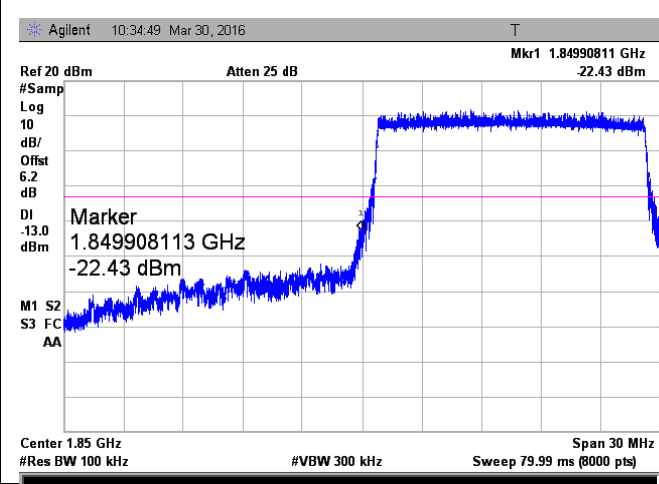
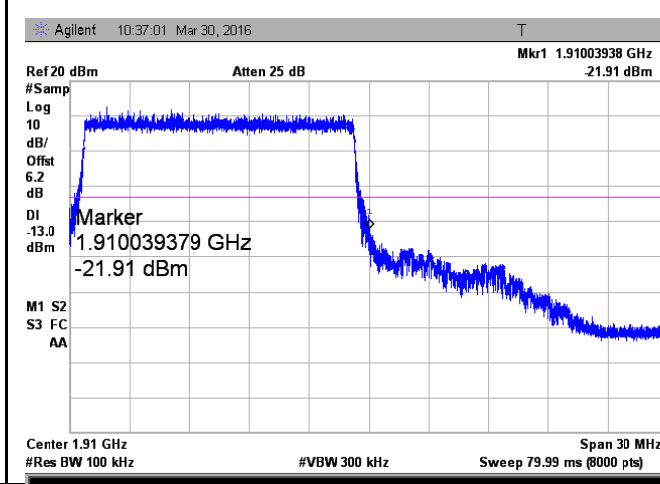
LTE Band 2



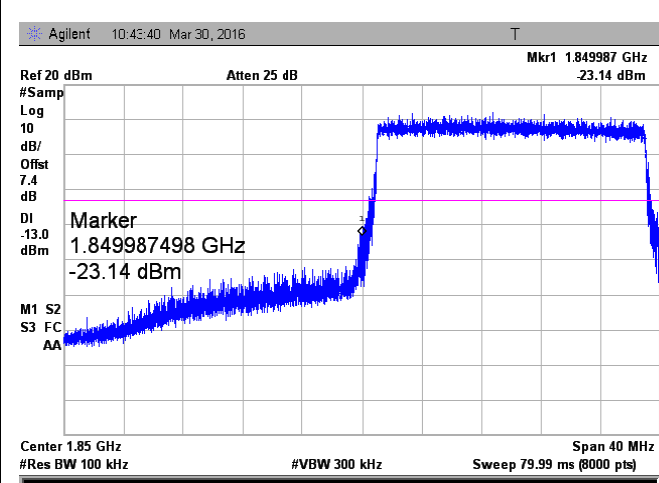
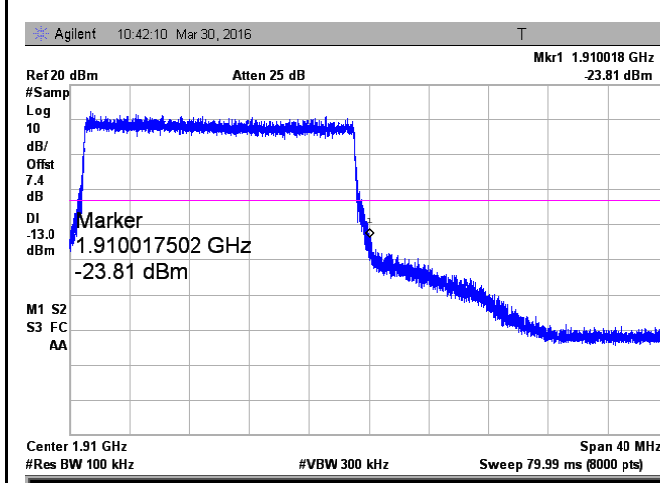
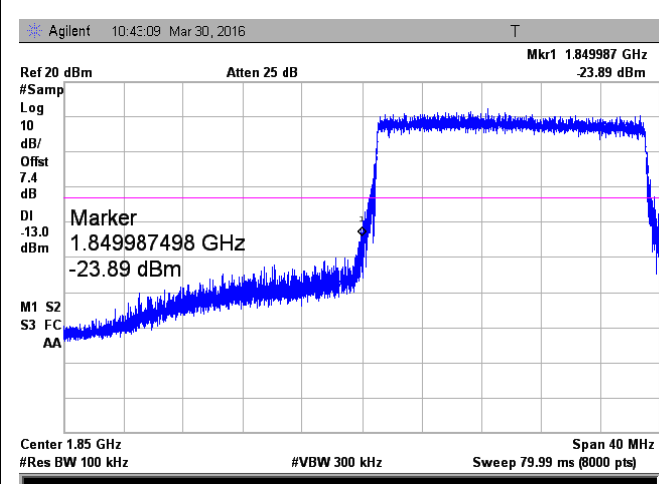
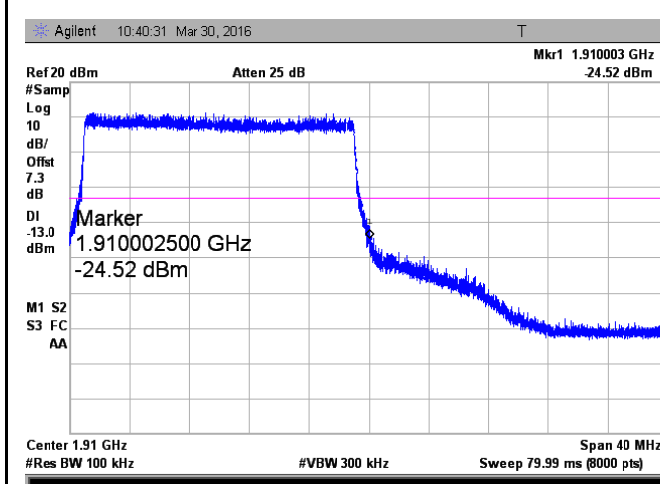






	
LTE Band 2 - Low Channel QPSK-15	LTE Band 2 - High Channel QPSK-15
Note: Offset=Cable loss (4.5) + 10log (148.52/100)=4.5+1.7=6.2dB	Note: Offset=Cable loss (4.5) + 10log (149.04/100)=4.5+1.7=6.2 dB
	
LTE Band 2 - Low Channel 16QAM-15	LTE Band 2 - High Channel 16QAM-15
Note: Offset=Cable loss (4.5) + 10log (148.3/100)=4.5+1.7=6.2 dB	Note: Offset=Cable loss (4.5) + 10log (149.14/100)=4.5+1.7=6.2 dB

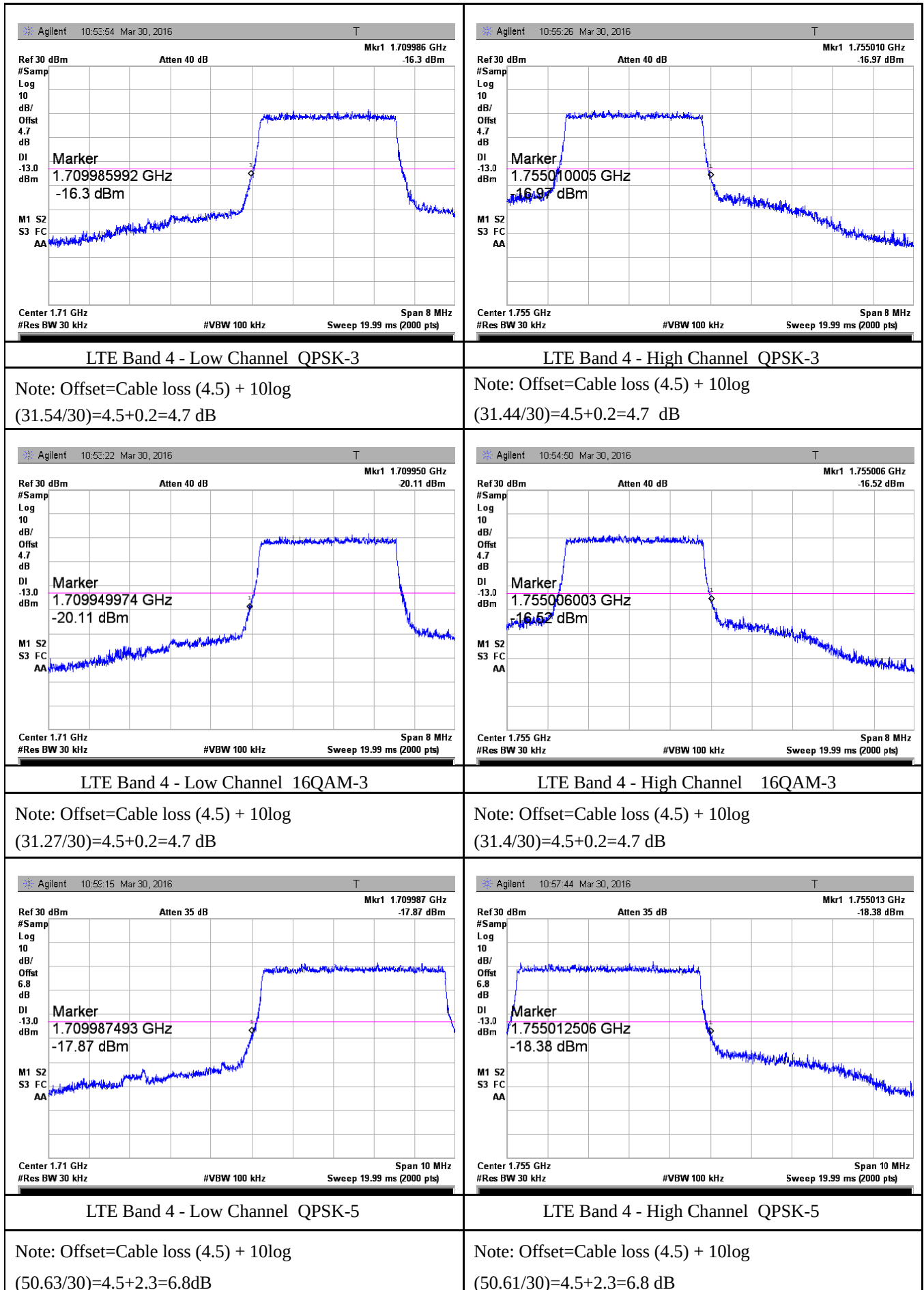


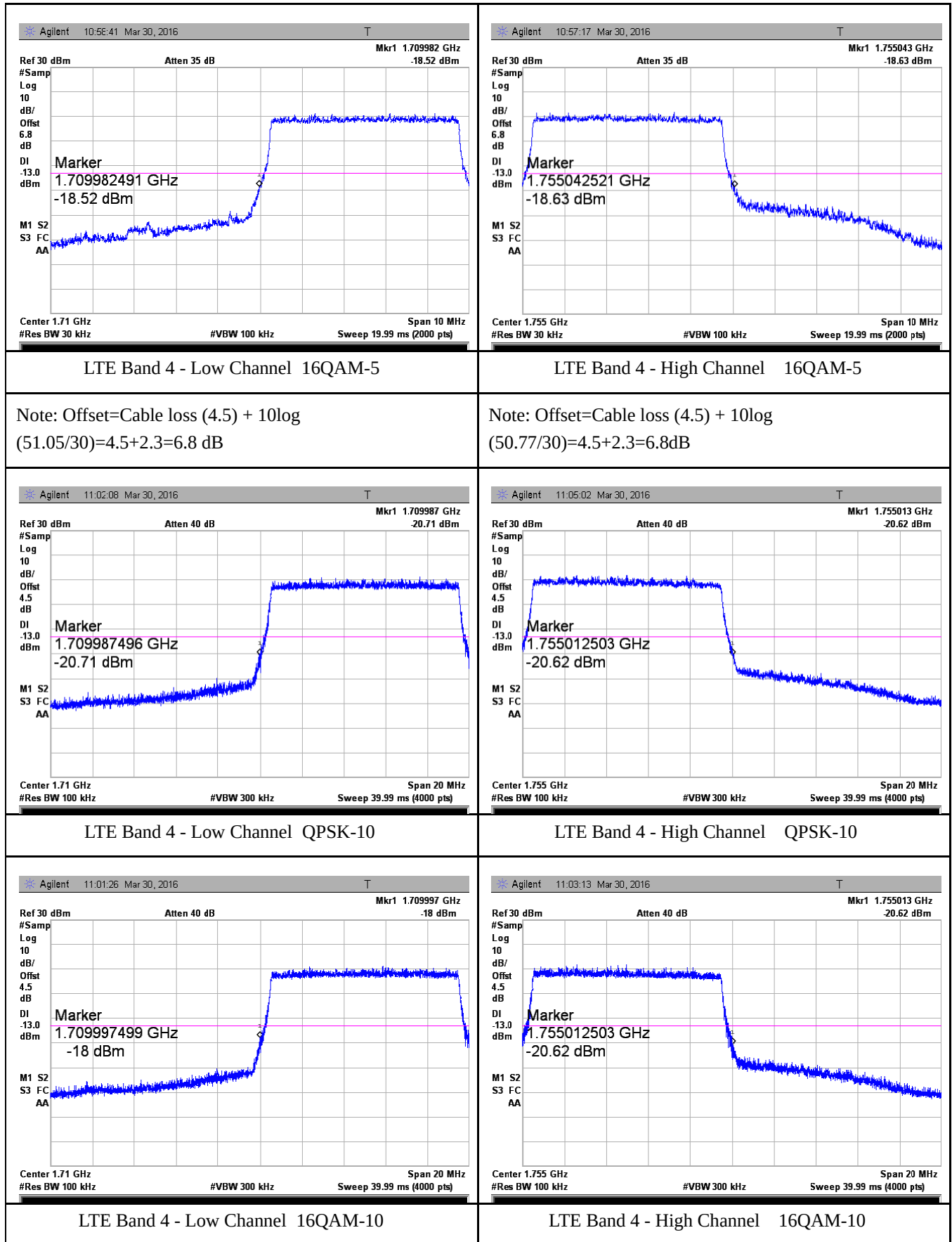
	
LTE Band 2 - Low Channel QPSK-20	LTE Band 2 - High Channel QPSK-20
Note: Offset=Cable loss (4.5) + 10log (193.5/100)=4.5+2.9=7.4 dB	Note: Offset=Cable loss (4.5) + 10log (193.7/100)=4.5+2.9=7.4 dB
	
LTE Band 2 - Low Channel 16QAM-20	LTE Band 2 - High Channel 16QAM-20
Note: Offset=Cable loss (4.5) + 10log (195.05/100)=4.5+2.9=7.4 dB	Note: Offset=Cable loss (4.5) + 10log (192.71/100)=4.5+2.8=7.3 dB

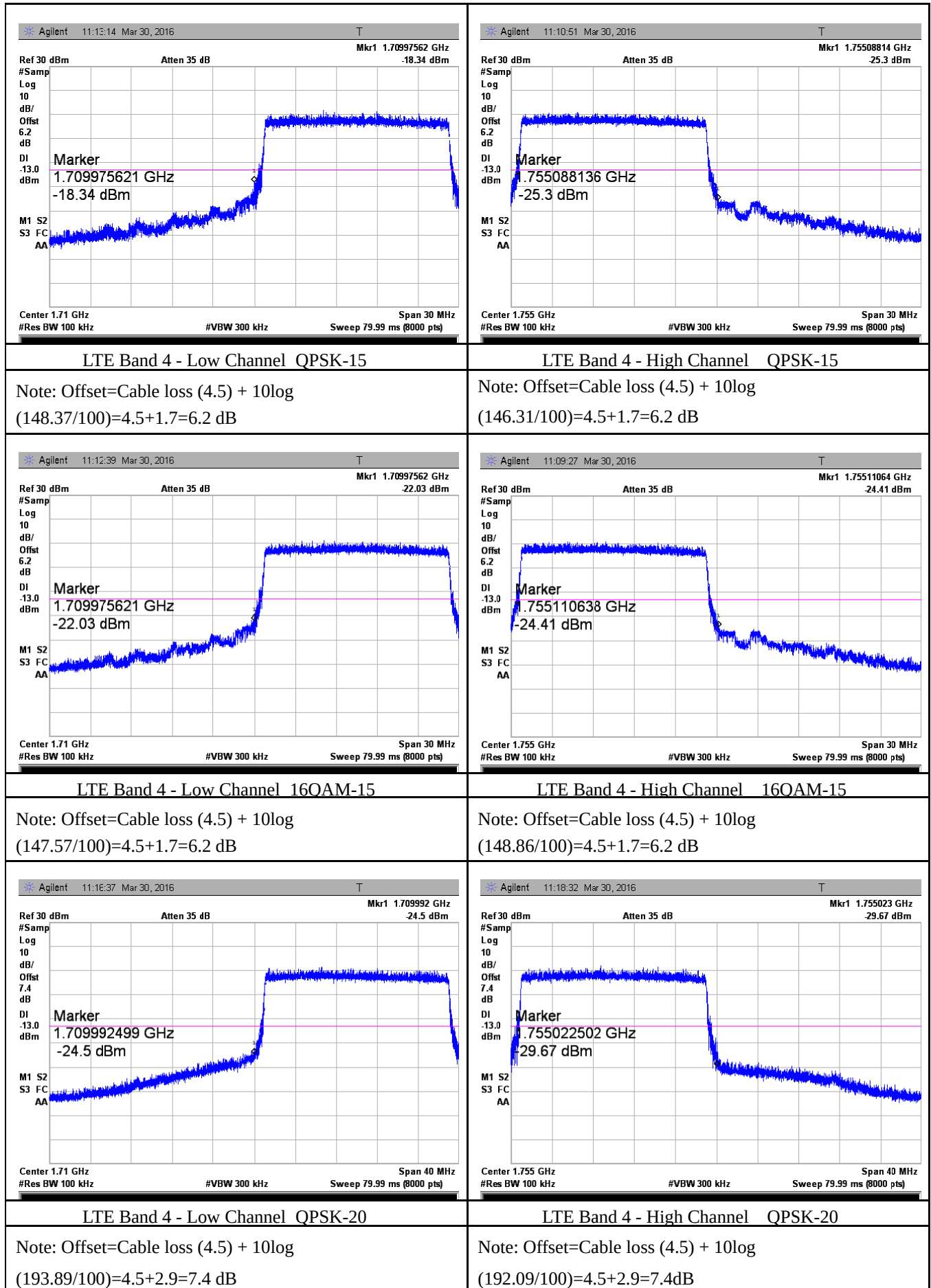


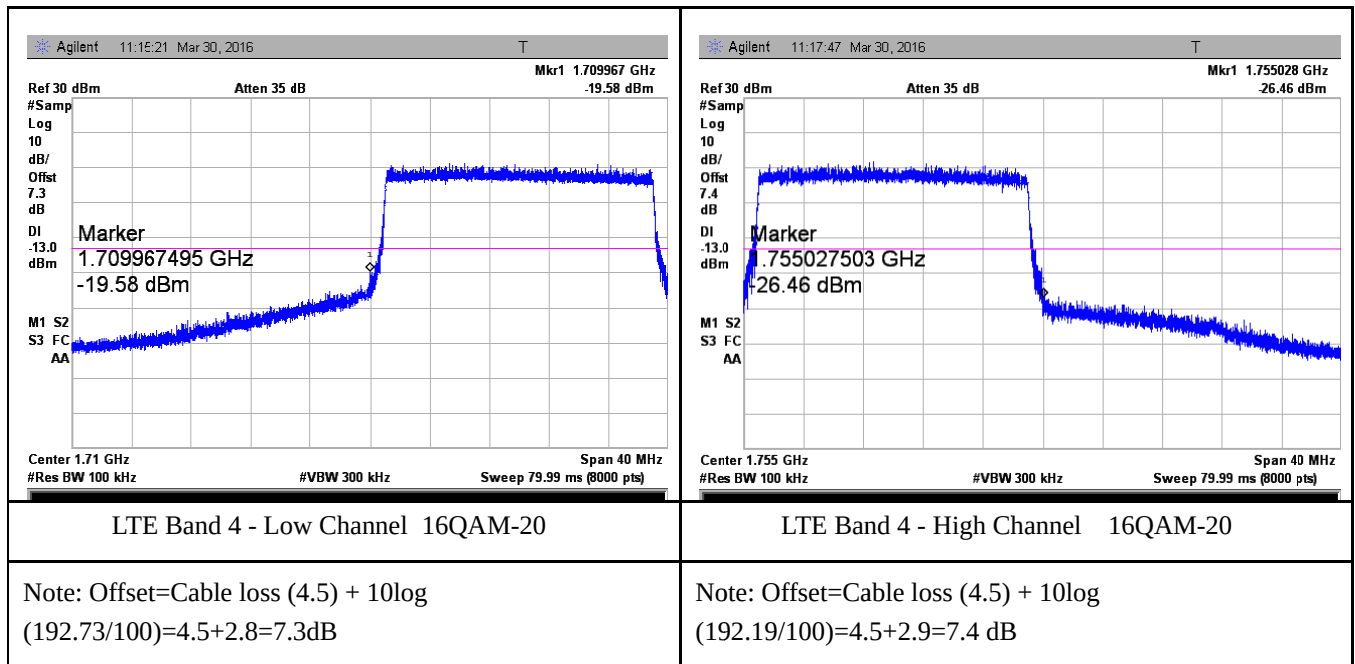
LTE Band 4

LTE Band 4 - Low Channel QPSK-1.4	LTE Band 4 - High Channel QPSK-1.4
Note: Offset=Cable loss (4.5) + 10log (12.96/10)=4.5+1.1=5.6dB	Note: Offset=Cable loss (4.5) + 10log (13.13/10)=4.5+1.2=5.7dB
LTE Band 4 - Low Channel 16QAM-1.4	LTE Band 4 - High Channel 16QAM-1.4
Note: Offset=Cable loss (4.5) + 10log (13.15/10)=4.5+1.2=5.7dB	Note: Offset=Cable loss (4.5) + 10log (13.01/10)=4.5+1.1=5.6 dB



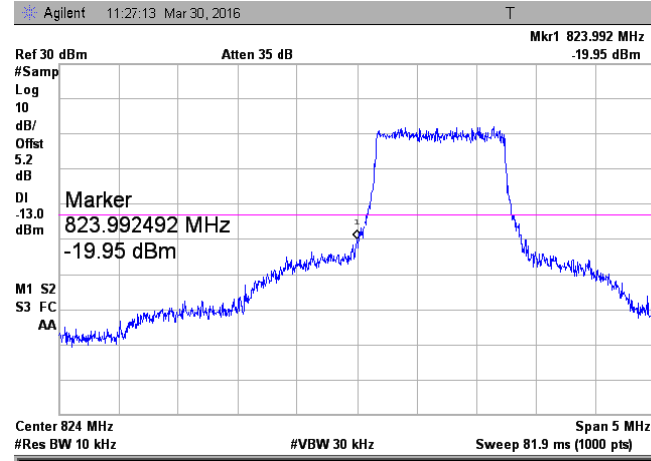
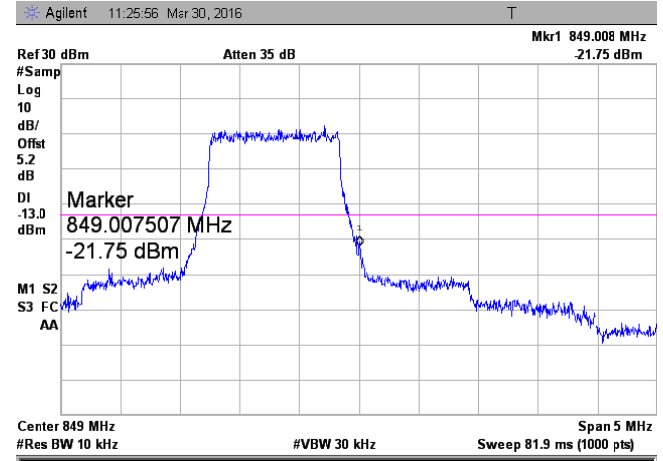
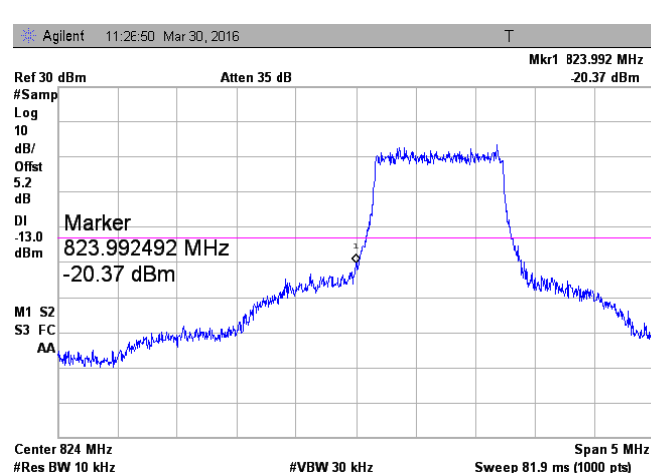
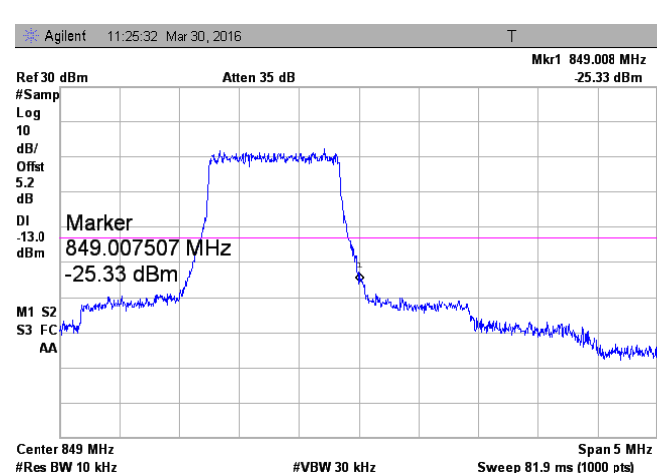


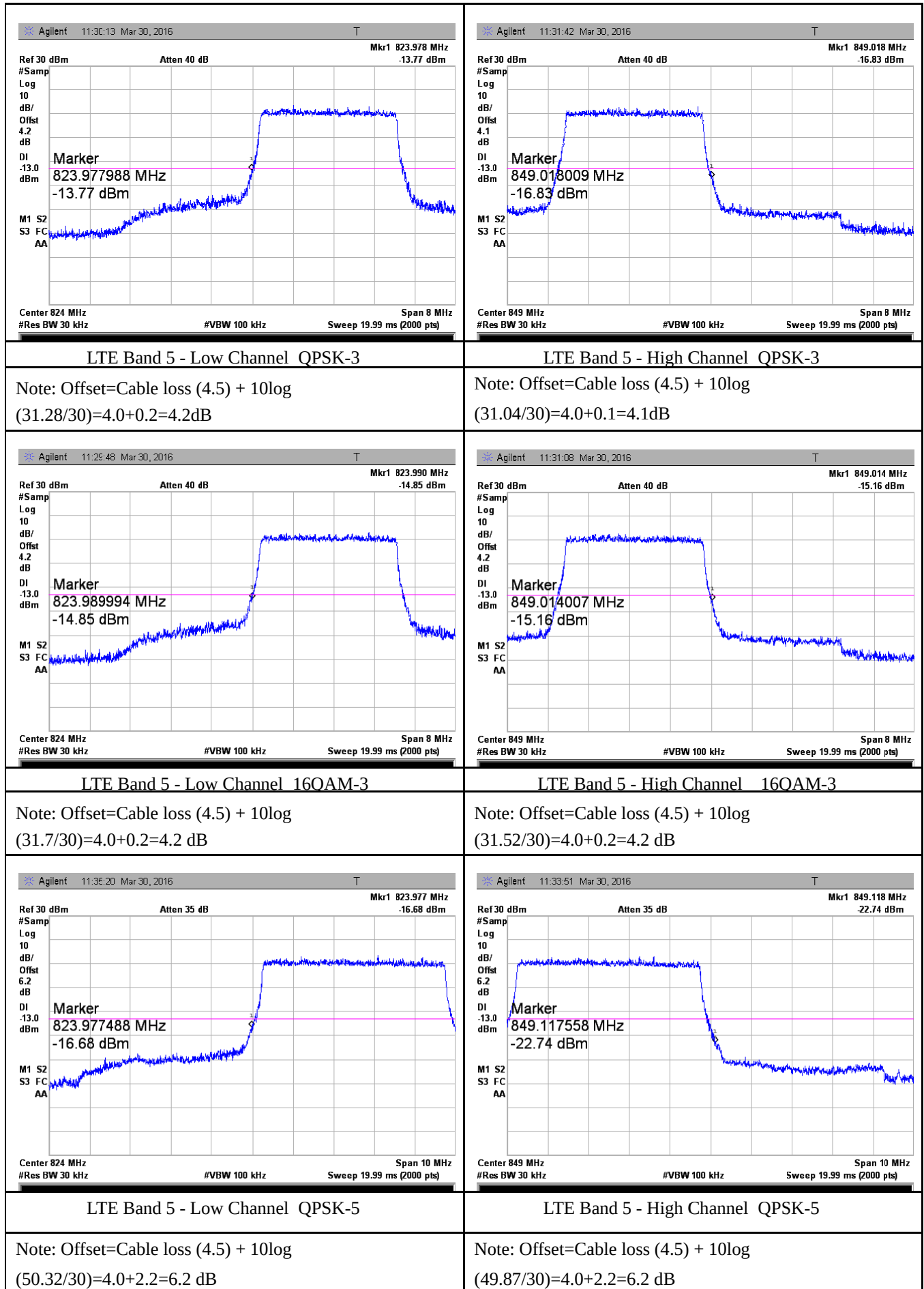


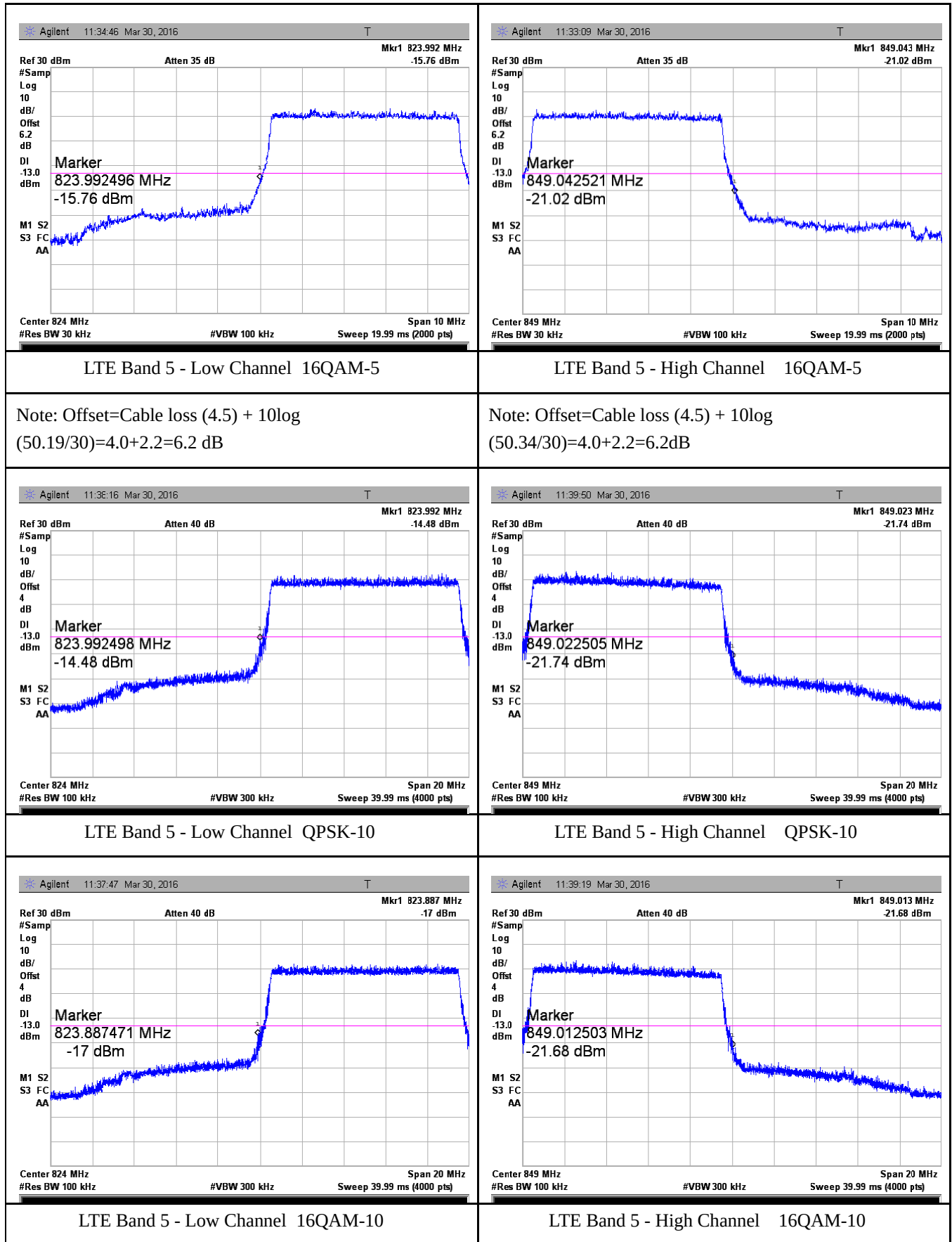




LTE Band 5

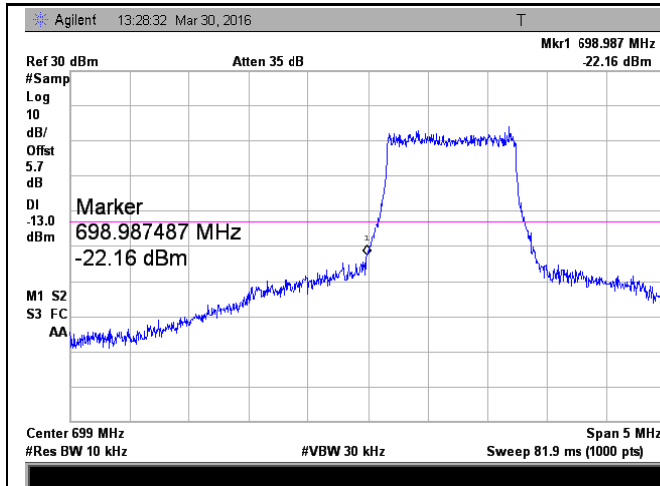
 Agilent 11:27:13 Mar 30, 2016 T Ref 30 dBm Atten 35 dB Mkr1 823.992 MHz -19.95 dBm Marker 823.992492 MHz -19.95 dBm Center 824 MHz #Res BW 10 kHz #VBW 30 kHz Span 5 MHz Sweep 81.9 ms (1000 pts)	 Agilent 11:25:56 Mar 30, 2016 T Ref 30 dBm Atten 35 dB Mkr1 849.008 MHz -21.75 dBm Marker 849.007507 MHz -21.75 dBm Center 849 MHz #Res BW 10 kHz #VBW 30 kHz Span 5 MHz Sweep 81.9 ms (1000 pts)
LTE Band 5 - Low Channel QPSK-1.4	LTE Band 5 - High Channel QPSK-1.4
Note: Offset=Cable loss (4.5) + 10log (13.22/10)=4.0+1.2=5.2dB	Note: Offset=Cable loss (4.5) + 10log (13.20/10)=4.0+1.2=5.2 dB
 Agilent 11:26:50 Mar 30, 2016 T Ref 30 dBm Atten 35 dB Mkr1 823.992 MHz -20.37 dBm Marker 823.992492 MHz -20.37 dBm Center 824 MHz #Res BW 10 kHz #VBW 30 kHz Span 5 MHz Sweep 81.9 ms (1000 pts)	 Agilent 11:25:32 Mar 30, 2016 T Ref 30 dBm Atten 35 dB Mkr1 849.008 MHz -25.33 dBm Marker 849.007507 MHz -25.33 dBm Center 849 MHz #Res BW 10 kHz #VBW 30 kHz Span 5 MHz Sweep 81.9 ms (1000 pts)
LTE Band 5 - Low Channel 16QAM-1.4	LTE Band 5 - High Channel 16QAM-1.4
Note: Offset=Cable loss (4.5) + 10log (13.12/10)=4.0+1.2=5.2 dB	Note: Offset=Cable loss (4.5) + 10log (13.11/10)=4.0+1.2=5.2 dB





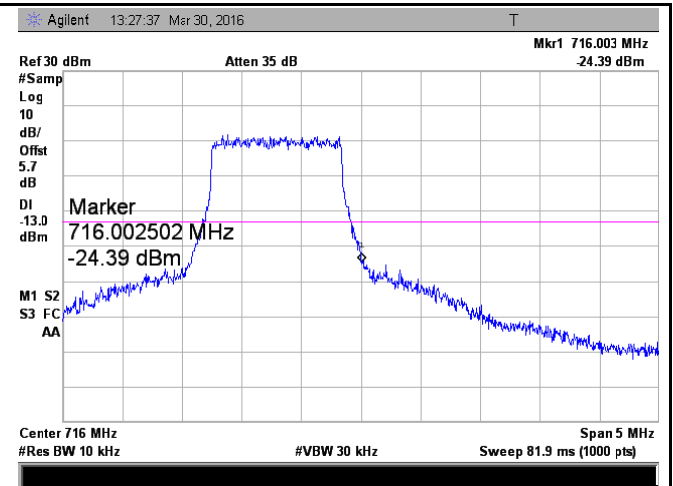


LTE Band 12



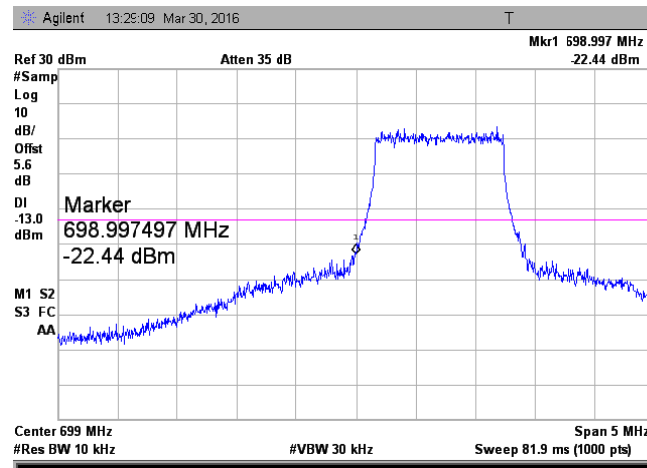
LTE Band 12 - Low Channel QPSK-1.4

Note: Offset=Cable loss (4.5) + 10log
(13.18/10)=4.5+1.2=5.7 dB



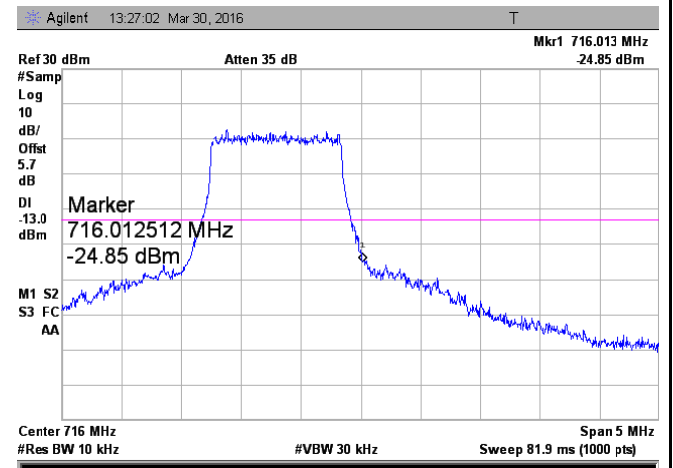
LTE Band 12 - High Channel QPSK-1.4

Note: Offset=Cable loss (4.5) + 10log
(13.11/10)=4.5+1.2=5.7 dB



LTE Band 12 - Low Channel 16QAM-1.4

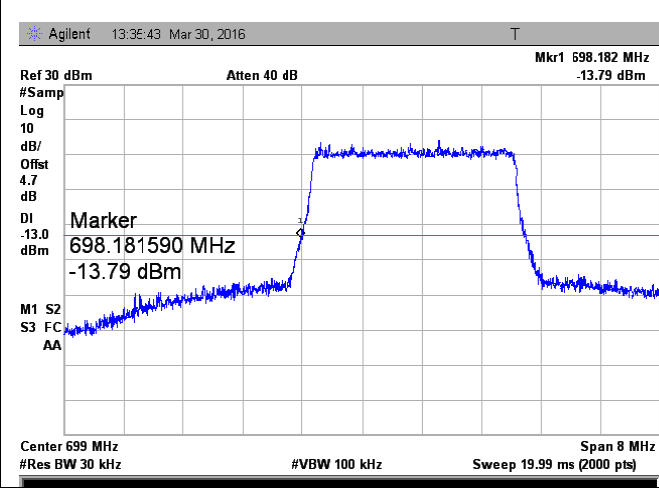
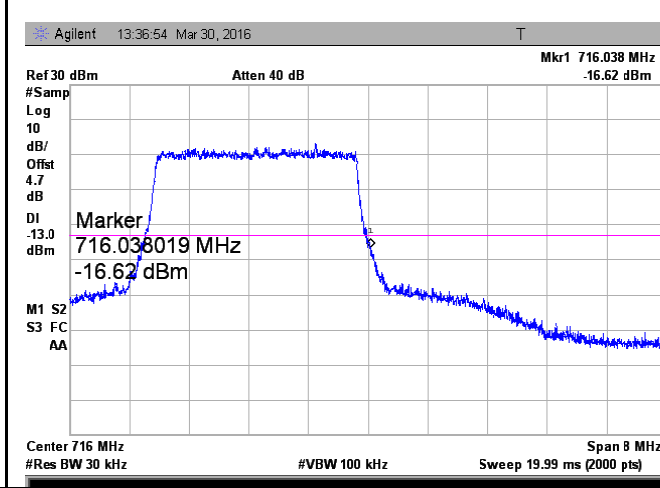
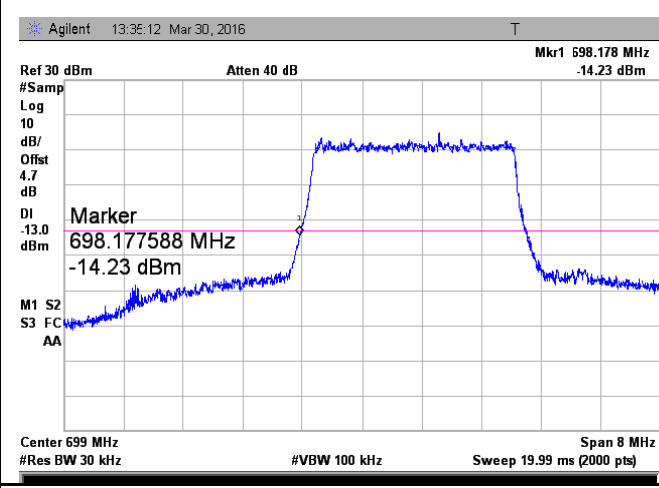
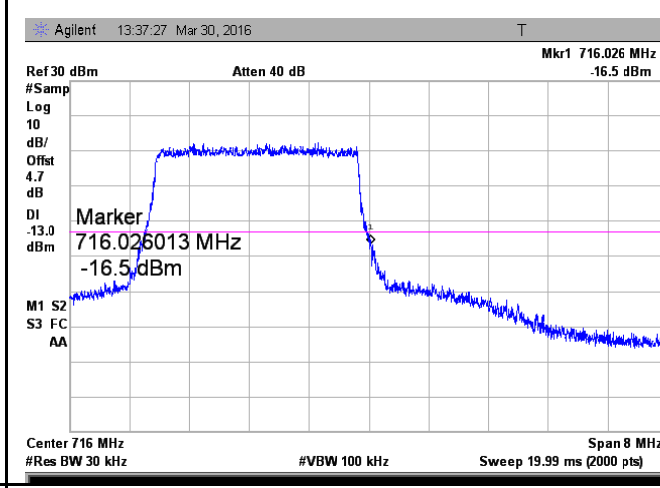
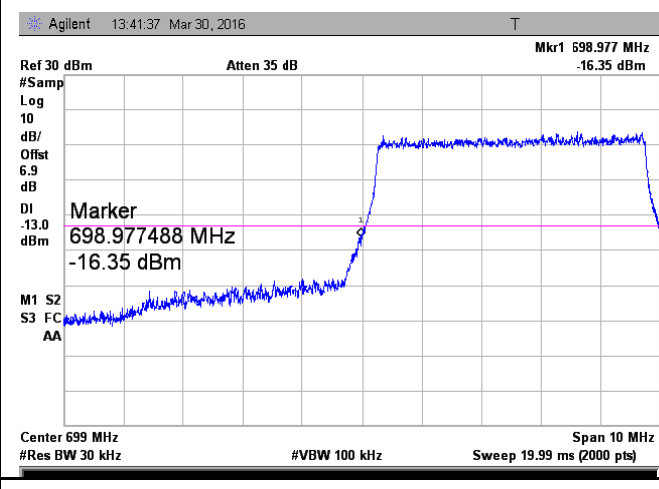
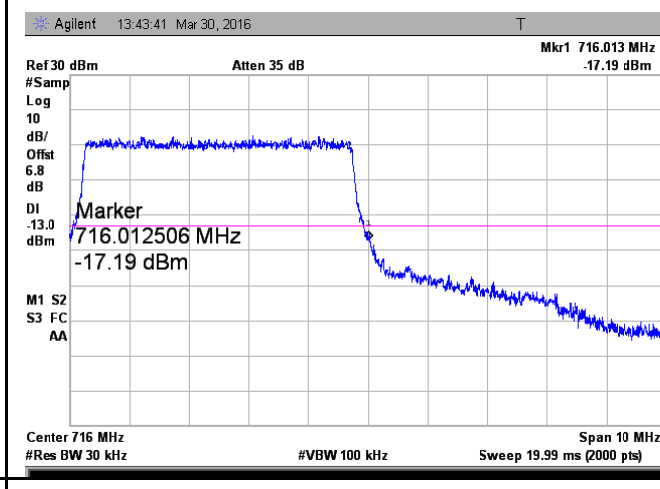
Note: Offset=Cable loss (4.5) + 10log
(12.96/10)=4.5+1.1=5.6 dB

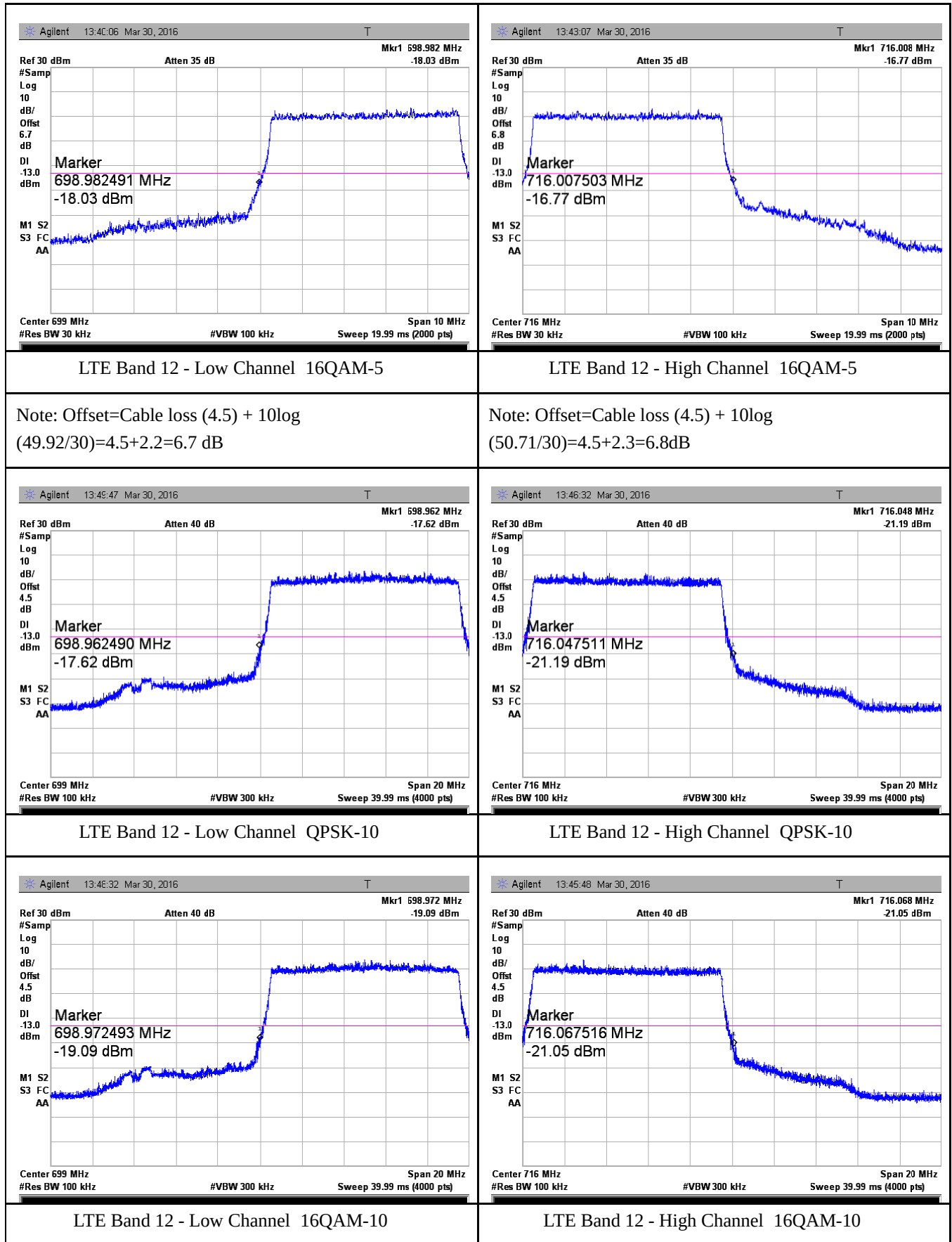


LTE Band 12 - High Channel 16QAM-1.4

Note: Offset=Cable loss (4.5) + 10log
(13.16/10)=4.5+1.2=5.7dB

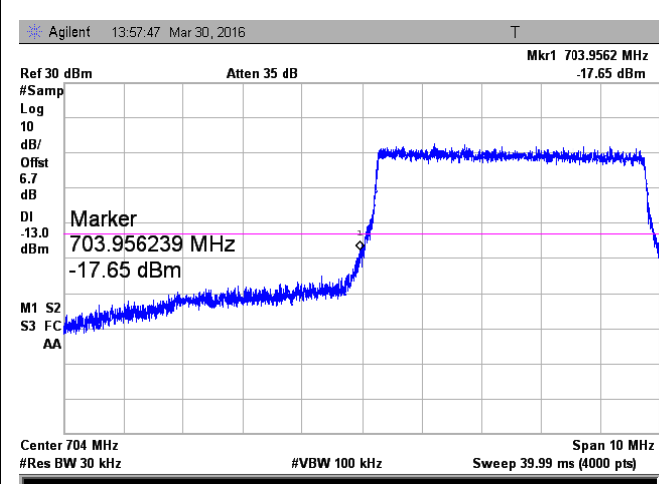
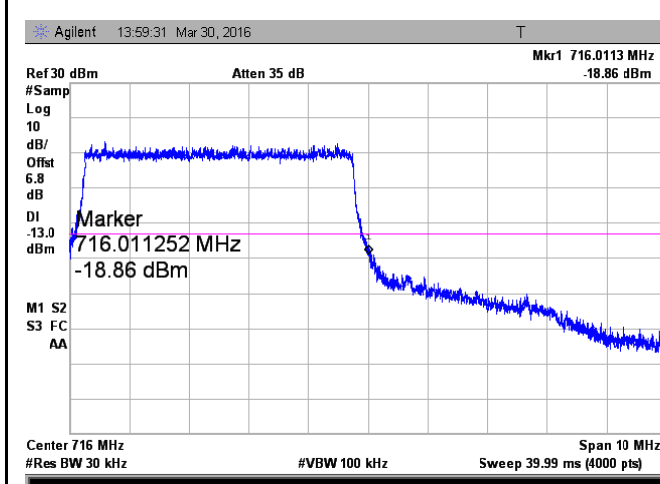
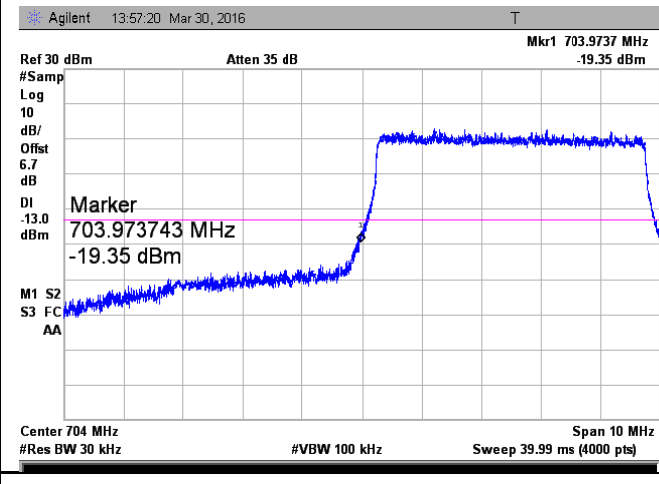
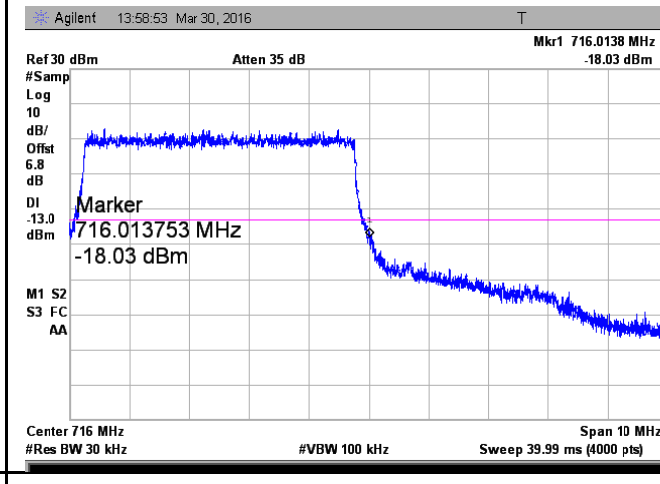


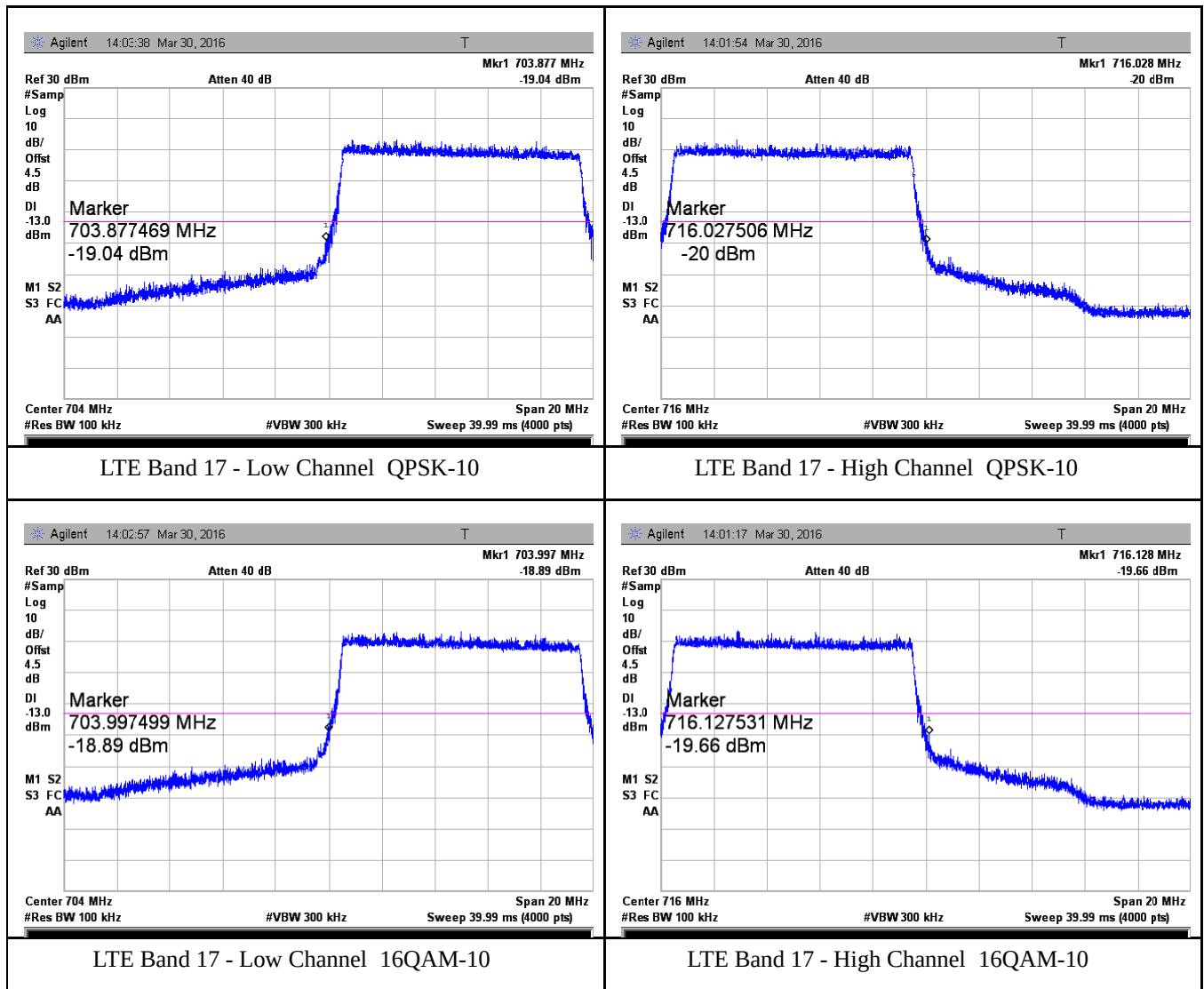
 Agilent 13:35:43 Mar 30, 2016 T Ref 30 dBm Atten 40 dB Mkr1 698.182 MHz -13.79 dBm Marker 698.181590 MHz -13.79 dBm Center 699 MHz #Res BW 30 kHz #VBW 100 kHz Sweep 19.99 ms (2000 pts) Span 8 MHz	 Agilent 13:36:54 Mar 30, 2016 T Ref 30 dBm Atten 40 dB Mkr1 716.038 MHz -16.62 dBm Marker 716.038019 MHz -16.62 dBm Center 716 MHz #Res BW 30 kHz #VBW 100 kHz Sweep 19.99 ms (2000 pts) Span 8 MHz
LTE Band 12 - Low Channel QPSK-3	LTE Band 12 - High Channel QPSK-3
Note: Offset=Cable loss (4.5) + 10log (31.54/30)=4.5+0.2=4.7 dB	Note: Offset=Cable loss (4.5) + 10log (31.26/30)=4.5+0.2=4.7 dB
 Agilent 13:35:12 Mar 30, 2016 T Ref 30 dBm Atten 40 dB Mkr1 698.178 MHz -14.23 dBm Marker 698.177588 MHz -14.23 dBm Center 699 MHz #Res BW 30 kHz #VBW 100 kHz Sweep 19.99 ms (2000 pts) Span 8 MHz	 Agilent 13:37:27 Mar 30, 2016 T Ref 30 dBm Atten 40 dB Mkr1 716.026 MHz -16.5 dBm Marker 716.026013 MHz -16.5 dBm Center 716 MHz #Res BW 30 kHz #VBW 100 kHz Sweep 19.99 ms (2000 pts) Span 8 MHz
LTE Band 12 - Low Channel 16QAM-3	LTE Band 12 - High Channel 16QAM-3
Note: Offset=Cable loss (4.5) + 10log (31.55/30)=4.5+0.2=4.7 dB	Note: Offset=Cable loss (4.5) + 10log (31.44/30)=4.5+0.2=4.7 dB
 Agilent 13:41:37 Mar 30, 2016 T Ref 30 dBm Atten 35 dB Mkr1 698.977 MHz -16.35 dBm Marker 698.977488 MHz -16.35 dBm Center 699 MHz #Res BW 30 kHz #VBW 100 kHz Sweep 19.99 ms (2000 pts) Span 10 MHz	 Agilent 13:43:41 Mar 30, 2016 T Ref 30 dBm Atten 35 dB Mkr1 716.013 MHz -17.19 dBm Marker 716.012506 MHz -17.19 dBm Center 716 MHz #Res BW 30 kHz #VBW 100 kHz Sweep 19.99 ms (2000 pts) Span 10 MHz
LTE Band 12 - Low Channel QPSK-5	LTE Band 12 - High Channel QPSK-5
Note: Offset=Cable loss (4.5) + 10log (51.57/30)=4.5+2.4=6.9dB	Note: Offset=Cable loss (4.5) + 10log (50.48/30)=4.5+2.3=6.8 dB





LTE Band 17

 Agilent 13:57:47 Mar 30, 2016 T Ref 30 dBm Atten 35 dB Mkr1 703.9562 MHz -17.65 dBm Marker 703.956239 MHz -17.65 dBm Center 704 MHz #Res BW 30 kHz #VBW 100 kHz Span 10 MHz Sweep 39.99 ms (4000 pts)	 Agilent 13:59:31 Mar 30, 2016 T Ref 30 dBm Atten 35 dB Mkr1 716.0113 MHz -18.86 dBm Marker 716.011252 MHz -18.86 dBm Center 716 MHz #Res BW 30 kHz #VBW 100 kHz Span 10 MHz Sweep 39.99 ms (4000 pts)
LTE Band 17 - Low Channel QPSK-5	LTE Band 17 - High Channel QPSK-5
Note: Offset=Cable loss (4.0) + 10log (49.8/30)=4.5+2.2=6.7 dB	Note: Offset=Cable loss (4.0) + 10log (50.85/30)=4.5+2.3=6.8 dB
 Agilent 13:57:20 Mar 30, 2016 T Ref 30 dBm Atten 35 dB Mkr1 703.9737 MHz -19.35 dBm Marker 703.973743 MHz -19.35 dBm Center 704 MHz #Res BW 30 kHz #VBW 100 kHz Span 10 MHz Sweep 39.99 ms (4000 pts)	 Agilent 13:58:53 Mar 30, 2016 T Ref 30 dBm Atten 35 dB Mkr1 716.0138 MHz -18.03 dBm Marker 716.013753 MHz -18.03 dBm Center 716 MHz #Res BW 30 kHz #VBW 100 kHz Span 10 MHz Sweep 39.99 ms (4000 pts)
LTE Band 17 - Low Channel 16QAM-5	LTE Band 17 - High Channel 16QAM-5
Note: Offset=Cable loss (4.0) + 10log (50.34/30)=4.5+2.2=6.7 dB	Note: Offset=Cable loss (4.0) + 10log (50.99/30)=4.5+2.3=6.8 dB



NOTE:

The power of the EUT transmitting frequency should be ignored.



1.14 Transmitter Radiated Power (EIRP/ERP)

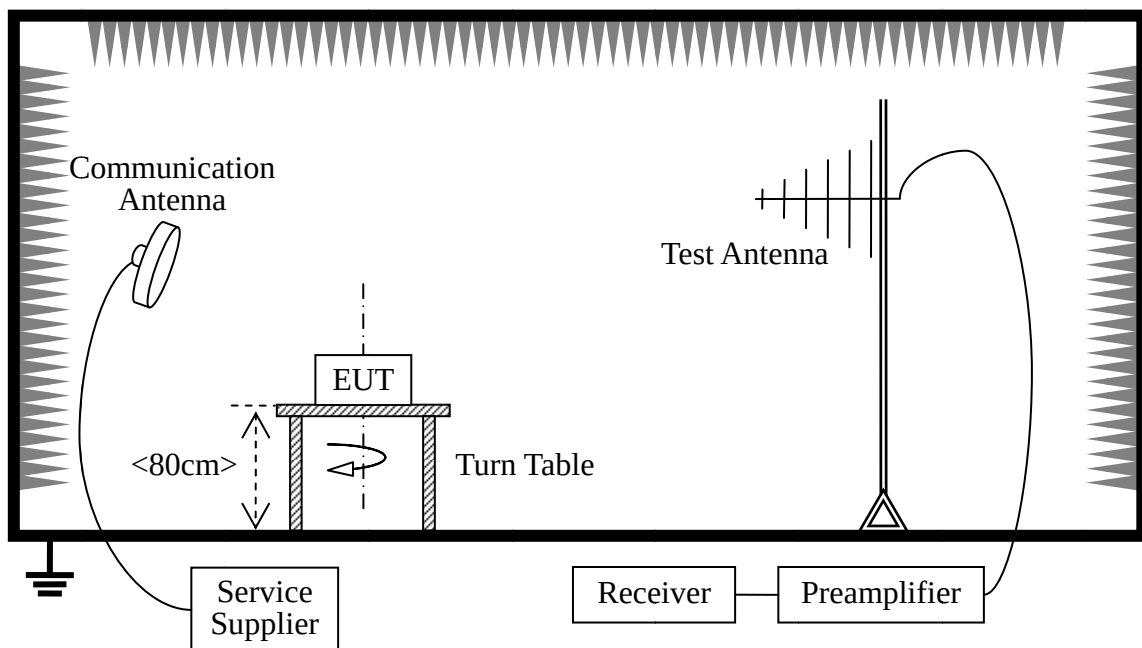
1.14.1 Requirement

According to FCC section 2.1046, 22.913(a)(2), 24.232(c), 27.50(c)(10) and 27.50(d)(4)

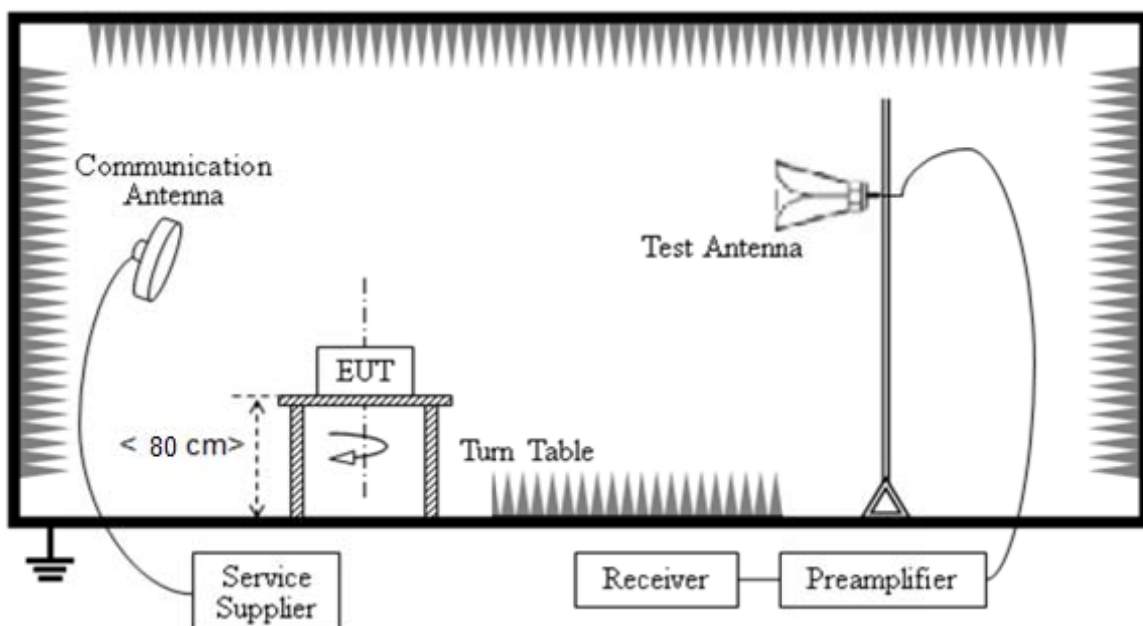
Mobile and portable (hand-held) stations operating are limited to average ERP of 7 watts with LTE band 5 and 3 watts with LTE band 12 / 17.

Mobile and portable (hand-held) stations operating are limited to average EIRP of 2 watts with LTE band 2 and 1 watt with LTE band 4.

1.14.2 Test Description

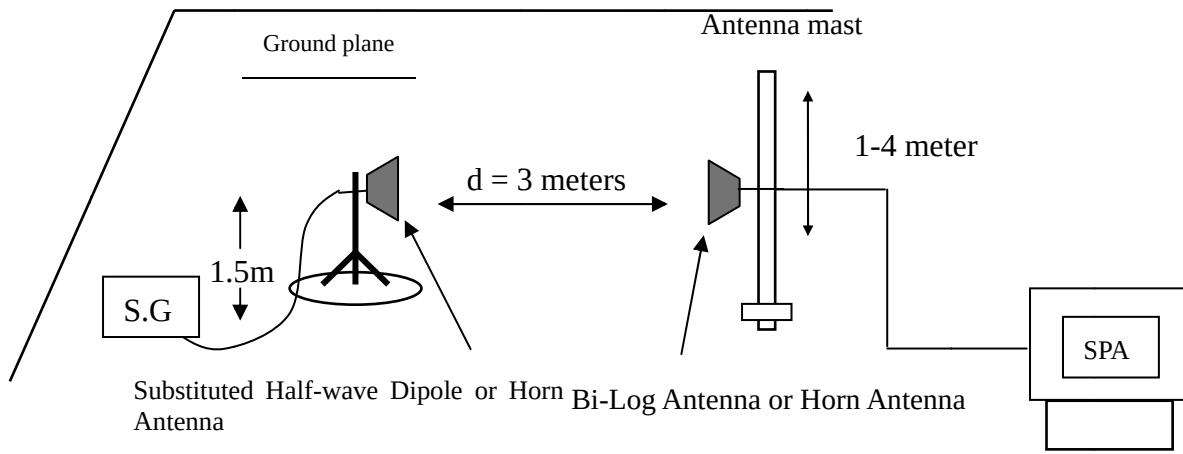


Radiated Emissions 30-1000MHz





Radiated Emissions above 1000MHz



Substituted method

1.14.3 Test Procedure

The measurements procedures in TIA-603C-2004 are used.

1. EUT was placed on a 0.8 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1-4m. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.
2. The EUT is then put into continuously transmitting mode at its maximum power level during the test. And the maximum value of the receiver should be recorded as (P_r).
3. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
4. The cable loss (P_{cl}) between the Signal Source with the Substitution Antenna and the Substitution Antenna Gain (G_a) should be recorded after test. The measurement results are obtained as described below:
$$\text{Power(EIRP)} = P_{Mea} + P_{cl} + G_a$$
5. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15dBi) and known input power.
6. ERP can be calculated from EIRP by subtracting the gain of the dipole, $ERP = EIRP - 2.15\text{dBi}$.



1.14.4 Test Results

The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. The lowest, middle and highest channels are tested. All modes are tested.

LTE Band 2:

LTE Band 2 / 1.4MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	0	20.49	0.1119	19.04	0.0802
Middle		1	0	19.89	0.0975	18.32	0.0679
Highest		1	0	19.10	0.0813	17.60	0.0575
Lowest	16QAM	1	0	19.90	0.0977	18.40	0.0692
Middle		1	0	18.53	0.0713	18.10	0.0646
Highest		1	0	18.65	0.0733	17.42	0.0552
Limit	EIRP < 2W			Result		Pass	

LTE Band 2 / 3MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	0	20.45	0.1109	19.03	0.0800
Middle		1	0	19.93	0.0984	18.30	0.0676
Highest		1	0	19.18	0.0828	17.72	0.0592
Lowest	16QAM	1	0	19.55	0.0902	18.10	0.0646
Middle		1	0	18.50	0.0708	18.06	0.0640
Highest		1	0	18.73	0.0746	17.51	0.0564
Limit	EIRP < 2W			Result		Pass	

LTE Band 2 / 5MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	0	20.16	0.1038	18.84	0.0766
Middle		1	0	20.10	0.1023	18.42	0.0695
Highest		1	0	19.23	0.0838	17.75	0.0596
Lowest	16QAM	1	0	19.29	0.0849	17.91	0.0618
Middle		1	0	18.54	0.0714	18.16	0.0655
Highest		1	0	18.74	0.0748	17.55	0.0569
Limit	EIRP < 2W			Result		Pass	



LTE Band 2 / 10MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	0	20.46	0.1112	18.63	0.0729
Middle		1	0	20.28	0.1067	18.79	0.0757
Highest		1	0	19.48	0.0887	17.86	0.0611
Lowest	16QAM	1	0	19.41	0.0873	17.61	0.0577
Middle		1	0	19.39	0.0869	17.83	0.0607
Highest		1	0	18.73	0.0746	17.10	0.0513
Limit	EIRP < 2W			Result		Pass	

LTE Band 2 / 15MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	0	20.04	0.1009	18.45	0.0700
Middle		1	0	20.39	0.1094	18.72	0.0745
Highest		1	0	19.71	0.0935	18.21	0.0662
Lowest	16QAM	1	0	19.35	0.0861	17.73	0.0593
Middle		1	0	18.79	0.0757	18.41	0.0693
Highest		1	0	18.97	0.0789	17.45	0.0556
Limit	EIRP < 2W			Result		Pass	

LTE Band 2 / 20MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	0	20.72	0.1180	18.82	0.0762
Middle		1	0	20.64	0.1159	18.81	0.0760
Highest		1	0	19.52	0.0895	18.15	0.0653
Lowest	16QAM	1	0	19.25	0.0841	17.69	0.0587
Middle		1	0	18.48	0.0705	17.92	0.0619
Highest		1	0	18.75	0.0750	17.36	0.0545
Limit	EIRP < 2W			Result		Pass	



LTE Band4

LTE Band 4 / 1.4MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	0	22.77	0.189	19.89	0.097
Middle		1	0	22.84	0.192	20.04	0.101
Highest		1	0	22.41	0.174	19.50	0.089
Lowest	16QAM	1	0	22.61	0.182	20.28	0.107
Middle		1	0	21.87	0.154	19.33	0.086
Highest		1	0	22.77	0.189	20.18	0.104
Limit	EIRP < 1W			Result		Pass	

LTE Band 4 / 3MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	0	22.59	0.182	20.01	0.100
Middle		1	0	22.38	0.173	20.00	0.100
Highest		1	0	22.30	0.170	19.77	0.095
Lowest	16QAM	1	0	22.00	0.158	19.88	0.097
Middle		1	0	22.27	0.169	20.19	0.104
Highest		1	0	22.53	0.179	19.95	0.099
Limit	EIRP < 1W			Result		Pass	

LTE Band 4 / 5MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	0	22.75	0.188	20.27	0.106
Middle		1	0	22.73	0.187	19.75	0.094
Highest		1	0	21.79	0.151	20.39	0.109
Lowest	16QAM	1	0	22.70	0.186	20.27	0.106
Middle		1	0	22.19	0.166	19.62	0.092
Highest		1	0	21.79	0.151	19.47	0.089
Limit	EIRP < 1W			Result		Pass	



LTE Band 4 / 10MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	0	21.98	0.158	20.22	0.105
Middle		1	0	22.38	0.173	20.19	0.104
Highest		1	0	22.31	0.170	19.60	0.091
Lowest	16QAM	1	0	22.13	0.163	19.34	0.086
Middle		1	0	22.88	0.194	19.86	0.097
Highest		1	0	22.78	0.190	19.59	0.091
Limit	EIRP < 1W			Result		Pass	

LTE Band 4 / 15MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	0	22.35	0.172	19.29	0.085
Middle		1	0	21.61	0.145	20.45	0.111
Highest		1	0	22.68	0.185	20.07	0.102
Lowest	16QAM	1	0	21.94	0.156	20.46	0.111
Middle		1	0	21.97	0.157	19.54	0.090
Highest		1	0	22.00	0.158	19.23	0.084
Limit	EIRP < 1W			Result		Pass	

LTE Band 4 / 20MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	0	21.70	0.148	19.44	0.088
Middle		1	0	22.65	0.184	19.29	0.085
Highest		1	0	22.04	0.160	20.17	0.104
Lowest	16QAM	1	0	22.43	0.175	20.44	0.111
Middle		1	0	21.93	0.156	19.76	0.095
Highest		1	0	22.88	0.194	19.22	0.084
Limit	EIRP < 1W			Result		Pass	



LTE Band 5

LTE Band 5 / 1.4MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	ERP(dBm)	EIRP(W)	ERP(dBm)	EIRP(W)
Lowest	QPSK	1	0	16.12	0.0409	7.14	0.0052
Middle		1	0	16.25	0.0422	7.30	0.0054
Highest		1	0	16.20	0.0417	7.46	0.0056
Lowest	16QAM	1	0	15.23	0.0333	6.24	0.0042
Middle		1	0	15.58	0.0361	6.63	0.0046
Highest		1	0	15.53	0.0357	6.79	0.0048
Limit	ERP < 7W			Result		Pass	

LTE Band 5 / 3MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	ERP(dBm)	EIRP(W)	ERP(dBm)	EIRP(W)
Lowest	QPSK	1	0	15.81	0.0381	7.01	0.0050
Middle		1	0	16.01	0.0399	7.28	0.0053
Highest		1	0	16.03	0.0401	7.43	0.0055
Lowest	16QAM	1	0	15.19	0.0330	6.22	0.0042
Middle		1	0	15.08	0.0322	6.40	0.0044
Highest		1	0	15.20	0.0331	6.59	0.0046
Limit	ERP < 7W			Result		Pass	

LTE Band 5 / 5MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	ERP(dBm)	EIRP(W)	ERP(dBm)	EIRP(W)
Lowest	QPSK	1	0	15.58	0.0361	6.65	0.0046
Middle		1	0	16.20	0.0417	7.33	0.0054
Highest		1	0	16.25	0.0422	7.47	0.0056
Lowest	16QAM	1	0	15.16	0.0328	6.20	0.0042
Middle		1	0	15.61	0.0364	6.61	0.0046
Highest		1	0	15.61	0.0364	6.81	0.0048
Limit	ERP < 7W			Result		Pass	



LTE Band 5 / 10MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	ERP(dBm)	EIRP(W)	ERP(dBm)	EIRP(W)
Lowest	QPSK	1	0	15.77	0.0378	6.61	0.0046
Middle		1	0	16.02	0.0400	6.91	0.0049
Highest		1	0	15.94	0.0393	6.97	0.0050
Lowest	16QAM	1	0	16.61	0.0458	5.44	0.0035
Middle		1	0	15.37	0.0344	6.22	0.0042
Highest		1	0	15.19	0.0330	6.19	0.0042
Limit	ERP < 7W			Result		Pass	

LTE Band 12

LTE Band 12 / 1.4MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	ERP(dBm)	EIRP(W)	ERP(dBm)	EIRP(W)
Lowest	QPSK	1	0	14.00	0.0251	-2.71	0.0005
Middle		1	0	13.57	0.0228	-2.75	0.0005
Highest		1	0	14.12	0.0258	-2.46	0.0006
Lowest	16QAM	1	0	13.54	0.0226	-3.35	0.0005
Middle		1	0	12.97	0.0198	-3.40	0.0005
Highest		1	0	13.27	0.0212	-3.40	0.0005
Limit	ERP < 3W			Result		Pass	

LTE Band 12 / 3MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	ERP(dBm)	EIRP(W)	ERP(dBm)	EIRP(W)
Lowest	QPSK	1	0	14.06	0.0255	-2.64	0.0005
Middle		1	0	13.65	0.0232	-2.99	0.0005
Highest		1	0	13.92	0.0247	-3.21	0.0005
Lowest	16QAM	1	0	13.38	0.0218	-3.36	0.0005
Middle		1	0	12.87	0.0194	-3.71	0.0004
Highest		1	0	13.17	0.0207	-3.95	0.0004
Limit	ERP < 3W			Result		Pass	



LTE Band 12 / 5MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	ERP(dBm)	EIRP(W)	ERP(dBm)	EIRP(W)
Lowest	QPSK	1	0	14.29	0.0269	-2.60	0.0005
Middle		1	0	13.83	0.0242	-3.33	0.0005
Highest		1	0	14.23	0.0265	-3.19	0.0005
Lowest	16QAM	1	0	13.59	0.0229	-3.40	0.0005
Middle		1	0	13.05	0.0202	-4.10	0.0004
Highest		1	0	13.56	0.0227	-3.87	0.0004
Limit	ERP < 3W			Result		Pass	

LTE Band 12 / 10MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	ERP(dBm)	EIRP(W)	ERP(dBm)	EIRP(W)
Lowest	QPSK	1	0	14.34	0.0272	-2.53	0.0006
Middle		1	0	13.72	0.0236	-3.18	0.0005
Highest		1	0	13.99	0.0251	-2.37	0.0006
Lowest	16QAM	1	0	13.54	0.0226	-3.40	0.0005
Middle		1	0	12.95	0.0197	-3.96	0.0004
Highest		1	0	13.20	0.0209	-3.16	0.0005
Limit	ERP < 3W			Result		Pass	

LTE Band 17

LTE Band 17 / 5MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	ERP(dBm)	EIRP(W)	ERP(dBm)	EIRP(W)
Lowest	QPSK	1	0	13.66	0.0232	-3.60	0.0004
Middle		1	0	13.76	0.0238	-2.54	0.0006
Highest		1	0	14.20	0.0263	-3.56	0.0004
Lowest	16QAM	1	0	12.89	0.0195	-4.38	0.0004
Middle		1	0	13.03	0.0201	-3.28	0.0005
Highest		1	0	13.53	0.0225	-4.25	0.0004
Limit	ERP < 3W			Result		Pass	



LTE Band 17 / 10MHz							
Channel	Modulation	RB		Horizontal		Vertical	
		Size	Offset	ERP(dBm)	EIRP(W)	ERP(dBm)	EIRP(W)
Lowest	QPSK	1	0	14.11	0.0258	-2.63	0.0005
Middle		1	0	14.14	0.0259	-2.38	0.0006
Highest		1	0	14.06	0.0255	-2.33	0.0006
Lowest	16QAM	1	0	13.37	0.0217	-3.34	0.0005
Middle		1	0	13.35	0.0216	-3.17	0.0005
Highest		1	0	13.29	0.0213	-3.09	0.0005
Limit	ERP < 3W			Result		Pass	



1.15 Radiated Out of Band Emissions

1.15.1 Requirement

According to FCC section 2.1053, 22.917(a), 24.238(a) and 27.53(h), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. This calculated to be -13dBm.

1.15.2 Test Description

See section 4.7.2 of this report.

1.15.3 Test Procedure

1. The lowest, middle and the highest channel were selected to perform tests respectively.
2. The EUT was placed on a rotatable non-conductive table 0.8 meters above the ground.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
5. The height of the receiving antenna is varied between one meter and four meters to search for the maximum spurious emission for both horizontal and vertical polarizations.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking record of maximum spurious emission.
7. A substituted antenna was in place of the EUT and was driven by a signal generator.
8. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
9. Taking the record of output power at antenna port.
10. Repeat step 7 to step 8 for another polarization.
11. $EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$
12. $ERP \text{ (dBm)} = EIRP - 2.15$
13. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
14. The limit line is derived from $43 + 10 \log(P)$ dB below the transmitter power P(Watts)
 $= P(W) - [43 + 10 \log(P)] \text{ (dB)}$
 $= [30 + 10 \log(P)] \text{ (dBm)} - [43 + 10 \log(P)] \text{ (dB)}$
 $= -13 \text{ dBm}.$



1.15.4 Test Results

LTE Band 2

LTE Band 2 / 1.4MHz / QPSK / RB Size 1 Offset 0					
Measured Max. Spurious Emission(dBm)					
Channel	Polarization	Frequency	Level(dBm)	Limit(dBm)	Verdict
Lowest	H	3704	-57.53	-13	Pass
	H	5556	-49.02	-13	Pass
	H	7404	-50.44	-13	Pass
	H	9256	-49.62	-13	Pass
	H	12956	-40.41	-13	Pass
	V	3704	-61.64	-13	Pass
	V	5556	-53.57	-13	Pass
	V	7404	-54.36	-13	Pass
	V	9256	-51.56	-13	Pass
	V	12956	-45.98	-13	Pass
Middle	H	3764	-58.64	-13	Pass
	H	5644	-49.43	-13	Pass
	H	7524	-53.76	-13	Pass
	H	9400	-50.54	-13	Pass
	H	13160	-41.02	-13	Pass
	V	3764	-61.47	-13	Pass
	V	5644	-54.97	-13	Pass
	V	7524	-55.26	-13	Pass
	V	9400	-53.65	-13	Pass
	V	13160	-45.09	-13	Pass
Highest	H	3820	-60.26	-13	Pass
	H	5732	-49.79	-13	Pass
	H	7640	-52.61	-13	Pass
	H	9548	-50.46	-13	Pass
	V	3820	-62.76	-13	Pass
	V	5732	-53.47	-13	Pass
	V	7640	-55.04	-13	Pass
	V	9548	-53.06	-13	Pass



LTE Band 2 / 3MHz / QPSK / RB Size 1 Offset 0					
Measured Max. Spurious Emission(dBm)					
Channel	Polarization	Frequency	Level(dBm)	Limit(dBm)	Verdict
Lowest	H	3704	-57.02	-13	Pass
	H	5556	-49.11	-13	Pass
	H	7404	-50.58	-13	Pass
	H	9256	-49.26	-13	Pass
	V	12956	-39.69	-13	Pass
	V	3704	-61.67	-13	Pass
	V	5556	-53.70	-13	Pass
	V	7404	-54.24	-13	Pass
	V	9256	-52.11	-13	Pass
	V	12956	-46.13	-13	Pass
Middle	H	3760	-59.49	-13	Pass
	H	5640	-48.64	-13	Pass
	H	7520	-53.72	-13	Pass
	H	9396	-50.39	-13	Pass
	V	13156	-40.51	-13	Pass
	V	3760	-62.04	-13	Pass
	V	5640	-54.68	-13	Pass
	V	7520	-55.38	-13	Pass
	V	9396	-54.00	-13	Pass
	V	13156	-45.19	-13	Pass
Highest	H	3820	-59.44	-13	Pass
	H	5724	-51.45	-13	Pass
	H	7632	-39.52	-13	Pass
	H	9540	-50.73	-13	Pass
	V	13356	-41.69	-13	Pass
	V	3820	-62.75	-13	Pass
	V	5724	-55.53	-13	Pass
	V	7632	-55.58	-13	Pass
	V	9540	-53.72	-13	Pass
	V	13356	-44.56	-13	Pass



LTE Band 2 / 5MHz / QPSK / RB Size 1 Offset 0					
Measured Max. Spurious Emission(dBm)					
Channel	Polarization	Frequency	Level(dBm)	Limit(dBm)	Verdict
Lowest	H	3704	-56.82	-13	Pass
	H	5556	-49.66	-13	Pass
	H	7404	-50.89	-13	Pass
	H	9256	-49.78	-13	Pass
	V	12956	-39.56	-13	Pass
	V	3704	-61.48	-13	Pass
	V	5556	-53.68	-13	Pass
	V	7404	-54.59	-13	Pass
	V	9256	-52.02	-13	Pass
	V	12956	-46.09	-13	Pass
Middle	H	3760	-58.89	-13	Pass
	H	5636	-50.01	-13	Pass
	H	7516	-53.68	-13	Pass
	H	9392	-50.23	-13	Pass
	V	13148	-40.98	-13	Pass
	V	3760	-62.26	-13	Pass
	V	5636	-55.37	-13	Pass
	V	7516	-55.64	-13	Pass
	V	9392	-53.98	-13	Pass
	V	13148	-45.41	-13	Pass
Highest	H	3816	-58.11	-13	Pass
	H	5720	-50.59	-13	Pass
	H	7624	-52.83	-13	Pass
	V	3816	-61.94	-13	Pass
	V	5720	-54.38	-13	Pass
	V	7624	-55.79	-13	Pass



LTE Band 2 / 10MHz / QPSK / RB Size 1 Offset 0					
Measured Max. Spurious Emission(dBm)					
Channel	Polarization	Frequency	Level(dBm)	Limit(dBm)	Verdict
Lowest	H	3704	-56.60	-13	Pass
	H	5556	-49.48	-13	Pass
	H	7408	-51.01	-13	Pass
	H	9256	-49.32	-13	Pass
	H	11108	-50.26	-13	Pass
	H	12960	-41.01	-13	Pass
	V	3704	-48.27	-13	Pass
	V	5556	-54.43	-13	Pass
	V	7408	-54.61	-13	Pass
	V	9256	-52.04	-13	Pass
	V	11108	-51.02	-13	Pass
	V	12960	-46.29	-13	Pass
Middle	H	3756	-59.07	-13	Pass
	H	5632	-49.83	-13	Pass
	H	13132	-40.61	-13	Pass
	V	3756	-62.27	-13	Pass
	V	5632	-56.06	-13	Pass
	V	13132	-45.14	-13	Pass
Highest	H	3804	-56.18	-13	Pass
	H	5704	-52.41	-13	Pass
	H	7608	-52.04	-13	Pass
	H	9508	-50.94	-13	Pass
	H	11412	-50.02	-13	Pass
	H	13308	-41.21	-13	Pass
	V	3804	-60.17	-13	Pass
	V	5704	-56.89	-13	Pass
	V	7608	-55.49	-13	Pass
	V	9508	-53.54	-13	Pass
	V	11412	-51.21	-13	Pass
	V	13308	-44.63	-13	Pass



LTE Band 2 / 15MHz / QPSK / RB Size 1 Offset 0					
Measured Max. Spurious Emission(dBm)					
Channel	Polarization	Frequency	Level(dBm)	Limit(dBm)	Verdict
Lowest	H	3704	-58.33	-13	Pass
	H	5556	-49.25	-13	Pass
	H	7408	-50.48	-13	Pass
	H	9260	-50.12	-13	Pass
	H	12960	-40.14	-13	Pass
	V	3704	-62.17	-13	Pass
	V	5556	-54.01	-13	Pass
	V	7408	-54.18	-13	Pass
	V	9260	-39.57	-13	Pass
	V	12960	-46.26	-13	Pass
Middle	H	3752	-59.24	-13	Pass
	H	5624	-50.17	-13	Pass
	H	7496	-53.22	-13	Pass
	H	9372	-50.18	-13	Pass
	V	13116	-41.17	-13	Pass
	V	3752	-62.43	-13	Pass
	V	5624	-55.97	-13	Pass
	V	7496	-55.27	-13	Pass
	V	9372	-53.69	-13	Pass
	V	13116	-45.68	-13	Pass
Highest	H	3796	-54.47	-13	Pass
	H	5692	-47.51	-13	Pass
	H	7588	-49.58	-13	Pass
	H	9484	-49.26	-13	Pass
	H	13276	-40.11	-13	Pass
	V	3796	-59.08	-13	Pass
	V	5692	-53.47	-13	Pass
	V	7588	-54.12	-13	Pass
	V	9484	-52.65	-13	Pass
	V	13276	-44.25	-13	Pass



LTE Band 2 / 20MHz / QPSK / RB Size 1 Offset 0					
Measured Max. Spurious Emission(dBm)					
Channel	Polarization	Frequency	Level(dBm)	Limit(dBm)	Verdict
Lowest	H	3708	-59.01	-13	Pass
	H	5556	-50.07	-13	Pass
	H	7408	-50.38	-13	Pass
	H	9260	-49.48	-13	Pass
	H	12960	-40.17	-13	Pass
	V	3708	-62.39	-13	Pass
	V	5556	-54.41	-13	Pass
	V	7408	-54.16	-13	Pass
	V	9260	-52.19	-13	Pass
	V	12960	-46.43	-13	Pass
Middle	H	3748	-59.52	-13	Pass
	H	5616	-51.01	-13	Pass
	H	7488	-39.27	-13	Pass
	H	9360	-50.18	-13	Pass
	H	13100	-40.77	-13	Pass
	V	3748	-62.57	-13	Pass
	V	5616	-56.01	-13	Pass
	V	7488	-55.02	-13	Pass
	V	9360	-53.86	-13	Pass
	V	13100	-45.54	-13	Pass
Highest	H	3788	-58.21	-13	Pass
	H	5676	-48.41	-13	Pass
	H	7568	-51.26	-13	Pass
	H	9460	-50.03	-13	Pass
	H	13240	-41.02	-13	Pass
	V	3788	-61.97	-13	Pass
	V	5676	-54.69	-13	Pass
	V	7568	-55.27	-13	Pass
	V	9460	-52.12	-13	Pass
	V	13240	-44.56	-13	Pass



LTE Band 4

LTE Band 4 / 1.4MHz / QPSK / RB Size 1 Offset 0					
Measured Max. Spurious Emission(dBm)					
Channel	Polarization	Frequency	Level(dBm)	Limit(dBm)	Verdict
Lowest	H	3420	-57.60	-13	Pass
	H	5128	-48.53	-13	Pass
	H	6843	-34.06	-13	Pass
	H	8551	-50.14	-13	Pass
	V	3420	-62.95	-13	Pass
	V	5128	-54.22	-13	Pass
	V	6843	-41.20	-13	Pass
	V	8551	-52.11	-13	Pass
Middle	H	3462	-57.04	-13	Pass
	H	5198	-43.82	-13	Pass
	H	6927	-36.44	-13	Pass
	H	8663	-46.11	-13	Pass
	V	3462	-61.79	-13	Pass
	V	5198	-50.73	-13	Pass
	V	6927	-41.06	-13	Pass
	V	8663	-49.68	-13	Pass
Highest	H	3511	-58.76	-13	Pass
	H	5261	-45.77	-13	Pass
	H	7018	-39.56	-13	Pass
	H	8768	-46.57	-13	Pass
	V	3511	-61.86	-13	Pass
	V	5261	-50.08	-13	Pass
	V	7018	-44.24	-13	Pass
	V	8768	-50.54	-13	Pass



LTE Band 4 / 3MHz / QPSK / RB Size 1 Offset 0					
Measured Max. Spurious Emission(dBm)					
Channel	Polarization	Frequency	Level(dBm)	Limit(dBm)	Verdict
Lowest	H	3420	-57.82	-13	Pass
	H	5128	-47.67	-13	Pass
	H	6843	-33.60	-13	Pass
	H	8551	-44.84	-13	Pass
	V	3420	-62.70	-13	Pass
	V	5128	-54.19	-13	Pass
	V	6843	-40.95	-13	Pass
	V	8551	-48.16	-13	Pass
Middle	H	3462	-53.88	-13	Pass
	H	5191	-44.78	-13	Pass
	H	6927	-37.24	-13	Pass
	H	8656	-45.66	-13	Pass
	V	3462	-61.03	-13	Pass
	V	5191	-48.41	-13	Pass
	V	6927	-40.72	-13	Pass
	V	8656	-50.02	-13	Pass
Highest	H	3504	-59.02	-13	Pass
	H	5254	-45.49	-13	Pass
	H	7011	-40.52	-13	Pass
	H	8761	-47.52	-13	Pass
	V	3504	-62.43	-13	Pass
	V	5254	-49.66	-13	Pass
	V	7011	-44.67	-13	Pass
	V	8761	-51.42	-13	Pass



LTE Band 4 / 5MHz / QPSK / RB Size 1 Offset 0					
Measured Max. Spurious Emission(dBm)					
Channel	Polarization	Frequency	Level(dBm)	Limit(dBm)	Verdict
Lowest	H	3420	-57.10	-13	Pass
	H	5128	-50.82	-13	Pass
	H	6843	-33.70	-13	Pass
	H	8551	-49.51	-13	Pass
	V	3420	-60.64	-13	Pass
	V	5128	-54.19	-13	Pass
	V	6843	-40.25	-13	Pass
	V	8551	-51.71	-13	Pass
Middle	H	3462	-55.87	-13	Pass
	H	5191	-45.96	-13	Pass
	H	6920	-35.78	-13	Pass
	H	8649	-45.83	-13	Pass
	V	3462	-60.47	-13	Pass
	V	5191	-49.64	-13	Pass
	V	6920	-38.94	-13	Pass
	V	8649	-48.61	-13	Pass
Highest	H	3504	-58.48	-13	Pass
	H	5254	-49.47	-13	Pass
	H	7004	-38.85	-13	Pass
	H	8754	-47.55	-13	Pass
	V	3504	-62.21	-13	Pass
	V	5254	-51.50	-13	Pass
	V	7004	-43.24	-13	Pass
	V	8754	-50.76	-13	Pass



LTE Band 4 / 10MHz / QPSK / RB Size 1 Offset 0					
Measured Max. Spurious Emission(dBm)					
Channel	Polarization	Frequency	Level(dBm)	Limit(dBm)	Verdict
Lowest	H	3420	-57.05	-13	Pass
	H	5132	-48.93	-13	Pass
	H	6843	-34.06	-13	Pass
	V	3420	-61.82	-13	Pass
	V	5132	-53.63	-13	Pass
	V	6843	-40.14	-13	Pass
Middle	H	3455	-55.66	-13	Pass
	H	5184	-47.30	-13	Pass
	H	6913	-36.28	-13	Pass
	H	8642	-46.93	-13	Pass
	V	3455	-61.01	-13	Pass
	V	5184	-51.61	-13	Pass
	V	6913	-40.03	-13	Pass
	V	8642	-49.98	-13	Pass
Highest	H	3490	-58.01	-13	Pass
	H	5240	-49.36	-13	Pass
	H	6983	-38.14	-13	Pass
	H	8726	-48.09	-13	Pass
	V	3490	-61.87	-13	Pass
	V	5240	-51.25	-13	Pass
	V	6983	-41.01	-13	Pass
	V	8726	-50.86	-13	Pass



LTE Band 4 / 15MHz / QPSK / RB Size 1 Offset 0					
Measured Max. Spurious Emission(dBm)					
Channel	Polarization	Frequency	Level(dBm)	Limit(dBm)	Verdict
Lowest	H	3420	-57.05	-13	Pass
	H	5135	-48.74	-13	Pass
	H	6843	-34.92	-13	Pass
	V	3420	-61.45	-13	Pass
	V	5135	-53.50	-13	Pass
	V	6843	-41.91	-13	Pass
Middle	H	3455	-55.10	-13	Pass
	H	5177	-48.01	-13	Pass
	H	6906	-35.58	-13	Pass
	H	8628	-47.03	-13	Pass
	V	3455	-60.95	-13	Pass
	V	5177	-51.63	-13	Pass
	V	6906	-40.06	-13	Pass
	V	8628	-48.99	-13	Pass
Highest	H	3483	-56.79	-13	Pass
	H	5226	-46.50	-13	Pass
	H	6962	-37.01	-13	Pass
	H	8705	-47.83	-13	Pass
	V	3483	-62.01	-13	Pass
	V	5226	-48.39	-13	Pass
	V	6962	-40.71	-13	Pass
	V	8705	-50.06	-13	Pass



LTE Band 4 / 20MHz / QPSK / RB Size 1 Offset 0					
Measured Max. Spurious Emission(dBm)					
Channel	Polarization	Frequency	Level(dBm)	Limit(dBm)	Verdict
Lowest	H	3420	-58.82	-13	Pass
	H	5135	-49.60	-13	Pass
	H	6843	-35.10	-13	Pass
	H	8558	-50.62	-13	Pass
	V	3420	-61.67	-13	Pass
	V	5135	-53.17	-13	Pass
	V	6843	-40.94	-13	Pass
	V	8558	-51.79	-13	Pass
Middle	H	3448	-55.35	-13	Pass
	H	5170	-47.10	-13	Pass
	H	6892	-36.82	-13	Pass
	H	8621	-48.03	-13	Pass
	V	3448	-61.29	-13	Pass
	V	5170	-50.84	-13	Pass
	V	6892	-42.86	-13	Pass
	V	8621	-50.57	-13	Pass
Highest	H	3476	-55.44	-13	Pass
	H	5212	-46.03	-13	Pass
	H	6948	-33.84	-13	Pass
	H	8684	-46.53	-13	Pass
	V	3476	-61.04	-13	Pass
	V	5212	-48.22	-13	Pass
	V	6948	-38.65	-13	Pass
	V	8684	-48.56	-13	Pass



LTE Band 5

LTE Band 5 / 1.4MHz / QPSK / RB Size 1 Offset 0					
Measured Max. Spurious Emission(dBm)					
Channel	Polarization	Frequency	Level(dBm)	Limit(dBm)	Verdict
Lowest	H	1651	-61.72	-13	Pass
	H	2476	-64.92	-13	Pass
	H	3302	-65.30	-13	Pass
	V	1651	-66.83	-13	Pass
	V	2476	-65.03	-13	Pass
	V	3302	-66.07	-13	Pass
Middle	H	1675	-60.82	-13	Pass
	H	2512	-63.90	-13	Pass
	H	3346	-64.61	-13	Pass
	V	1675	-66.59	-13	Pass
	V	2512	-64.29	-13	Pass
	V	3346	-66.22	-13	Pass
Highest	H	1699	-61.50	-13	Pass
	H	2545	-66.15	-13	Pass
	H	3394	-63.87	-13	Pass
	V	1699	-65.79	-13	Pass
	V	2545	-65.30	-13	Pass
	V	3394	-65.60	-13	Pass



LTE Band 5 / 3MHz / QPSK / RB Size 1 Offset 0					
Measured Max. Spurious Emission(dBm)					
Channel	Polarization	Frequency	Level(dBm)	Limit(dBm)	Verdict
Lowest	H	1651	-61.71	-13	Pass
	H	2476	-65.04	-13	Pass
	H	3301	-65.31	-13	Pass
	V	1651	-67.08	-13	Pass
	V	2476	-64.50	-13	Pass
	V	3301	-66.18	-13	Pass
Middle	H	1672	-65.66	-13	Pass
	H	2509	-63.73	-13	Pass
	H	3343	-64.32	-13	Pass
	V	1672	-69.80	-13	Pass
	V	2509	-64.15	-13	Pass
	V	3343	-66.21	-13	Pass
Highest	H	1696	-63.42	-13	Pass
	H	2542	-65.41	-13	Pass
	H	3388	-64.14	-13	Pass
	V	1696	-66.77	-13	Pass
	V	2542	-65.10	-13	Pass
	V	3388	-65.62	-13	Pass



LTE Band 5 / 5MHz / QPSK / RB Size 1 Offset 0					
Measured Max. Spurious Emission(dBm)					
Channel	Polarization	Frequency	Level(dBm)	Limit(dBm)	Verdict
Lowest	H	1651	-61.96	-13	Pass
	H	2476	-65.07	-13	Pass
	H	3302	-65.29	-13	Pass
	V	1651	-67.01	-13	Pass
	V	2476	-64.49	-13	Pass
	V	3302	-66.18	-13	Pass
Middle	H	1672	-63.64	-13	Pass
	H	2506	-63.85	-13	Pass
	H	3340	-64.16	-13	Pass
	V	1672	-69.26	-13	Pass
	V	2506	-64.25	-13	Pass
	V	3340	-66.12	-13	Pass
Highest	H	1693	-67.13	-13	Pass
	H	2536	-65.28	-13	Pass
	H	3385	-65.40	-13	Pass
	V	1693	-68.10	-13	Pass
	V	2536	-64.04	-13	Pass
	V	3385	-65.90	-13	Pass



LTE Band 5 / 10MHz / QPSK / RB Size 1 Offset 0					
Measured Max. Spurious Emission(dBm)					
Channel	Polarization	Frequency	Level(dBm)	Limit(dBm)	Verdict
Lowest	H	1651	-63.71	-13	Pass
	H	2476	-63.30	-13	Pass
	H	3301	-65.11	-13	Pass
	V	1651	-68.37	-13	Pass
	V	2476	-63.42	-13	Pass
	V	3301	-66.43	-13	Pass
Middle	H	1666	-67.54	-13	Pass
	H	2500	-63.45	-13	Pass
	H	3331	-64.44	-13	Pass
	V	1666	-71.43	-13	Pass
	V	2500	-62.90	-13	Pass
	V	3331	-66.21	-13	Pass
Highest	H	1688	-62.75	-13	Pass
	H	2532	-64.85	-13	Pass
	H	3376	-65.07	-13	Pass
	V	1688	-67.26	-13	Pass
	V	2532	-63.25	-13	Pass
	V	3376	-66.04	-13	Pass



LTE Band 12

LTE Band 12 / 1.4MHz / QPSK / RB Size 1 Offset 0					
Measured Max. Spurious Emission(dBm)					
Channel	Polarization	Frequency	Level(dBm)	Limit(dBm)	Verdict
Lowest	H	1402	-68.28	-13	Pass
	H	2101	-61.67	-13	Pass
	H	2800	-63.36	-13	Pass
	V	1402	-70.38	-13	Pass
	V	2101	-61.73	-13	Pass
	V	2800	-64.69	-13	Pass
Middle	H	1417	-68.07	-13	Pass
	H	2125	-64.42	-13	Pass
	H	2830	-65.63	-13	Pass
	V	1417	-70.52	-13	Pass
	V	2125	-64.79	-13	Pass
	V	2830	-65.39	-13	Pass
Highest	H	1432	-64.45	-13	Pass
	H	2149	-65.42	-13	Pass
	H	2863	-65.56	-13	Pass
	V	1432	-66.36	-13	Pass
	V	2149	-65.17	-13	Pass
	V	2863	-64.92	-13	Pass



LTE Band 12 / 3MHz / QPSK / RB Size 1 Offset 0					
Measured Max. Spurious Emission(dBm)					
Channel	Polarization	Frequency	Level(dBm)	Limit(dBm)	Verdict
Lowest	H	1398	-65.87	-13	Pass
	H	2097	-59.08	-13	Pass
	H	2796	-61.37	-13	Pass
	V	1398	-69.97	-13	Pass
	V	2097	-59.61	-13	Pass
	V	2796	-64.37	-13	Pass
Middle	H	1412	-65.90	-13	Pass
	H	2118	-63.96	-13	Pass
	H	2824	-65.06	-13	Pass
	V	1412	-70.13	-13	Pass
	V	2118	-64.28	-13	Pass
	V	2824	-65.70	-13	Pass
Highest	H	1424	-62.72	-13	Pass
	H	2144	-60.42	-13	Pass
	H	2856	-63.14	-13	Pass
	V	1424	-69.72	-13	Pass
	V	2144	-61.97	-13	Pass
	V	2856	-63.39	-13	Pass



LTE Band 12 / 5MHz / QPSK / RB Size 1 Offset 0					
Measured Max. Spurious Emission(dBm)					
Channel	Polarization	Frequency	Level(dBm)	Limit(dBm)	Verdict
Lowest	H	1400	-67.55	-13	Pass
	H	2096	-56.18	-13	Pass
	H	2800	-62.18	-13	Pass
	V	1400	-69.92	-13	Pass
	V	2096	-58.84	-13	Pass
	V	2800	-64.22	-13	Pass
Middle	H	1408	-63.87	-13	Pass
	H	2120	-62.65	-13	Pass
	H	2820	-66.14	-13	Pass
	V	1408	-69.98	-13	Pass
	V	2120	-64.13	-13	Pass
	V	2820	-64.97	-13	Pass
Highest	H	1424	-66.16	-13	Pass
	H	2136	-57.23	-13	Pass
	H	2848	-62.96	-13	Pass
	V	1424	-69.78	-13	Pass
	V	2136	-58.93	-13	Pass
	V	2848	-63.34	-13	Pass



LTE Band 12 / 10MHz / QPSK / RB Size 1 Offset 0					
Measured Max. Spurious Emission(dBm)					
Channel	Polarization	Frequency	Level(dBm)	Limit(dBm)	Verdict
Lowest	H	1400	-66.16	-13	Pass
	H	2096	-57.25	-13	Pass
	H	2800	-61.98	-13	Pass
	V	1400	-69.77	-13	Pass
	V	2096	-58.06	-13	Pass
	V	2800	-63.47	-13	Pass
Middle	H	1408	-61.70	-13	Pass
	H	2112	-60.00	-13	Pass
	H	2816	-64.07	-13	Pass
	V	1408	-68.41	-13	Pass
	V	2112	-61.56	-13	Pass
	V	2816	-64.31	-13	Pass
Highest	H	1416	-65.54	-13	Pass
	H	2120	-63.31	-13	Pass
	H	2824	-65.73	-13	Pass
	V	1416	-70.61	-13	Pass
	V	2120	-62.64	-13	Pass
	V	2824	-65.24	-13	Pass



LTE Band 17

LTE Band 17 / 5MHz / QPSK / RB Size 1 Offset 0					
Measured Max. Spurious Emission(dBm)					
Channel	Polarization	Frequency	Level(dBm)	Limit(dBm)	Verdict
Lowest	H	1408	-68.58	-13	Pass
	H	2112	-62.35	-13	Pass
	H	2816	-66.10	-13	Pass
	V	1408	-69.72	-13	Pass
	V	2112	-62.66	-13	Pass
	V	2816	-65.92	-13	Pass
Middle	H	1416	-67.57	-13	Pass
	H	2122	-62.27	-13	Pass
	H	2830	-65.28	-13	Pass
	V	1416	-70.74	-13	Pass
	V	2122	-61.63	-13	Pass
	V	2830	-65.16	-13	Pass
Highest	H	1422	-65.49	-13	Pass
	H	2136	-57.33	-13	Pass
	H	2848	-62.16	-13	Pass
	V	1422	-69.85	-13	Pass
	V	2136	-56.71	-13	Pass
	V	2848	-62.69	-13	Pass



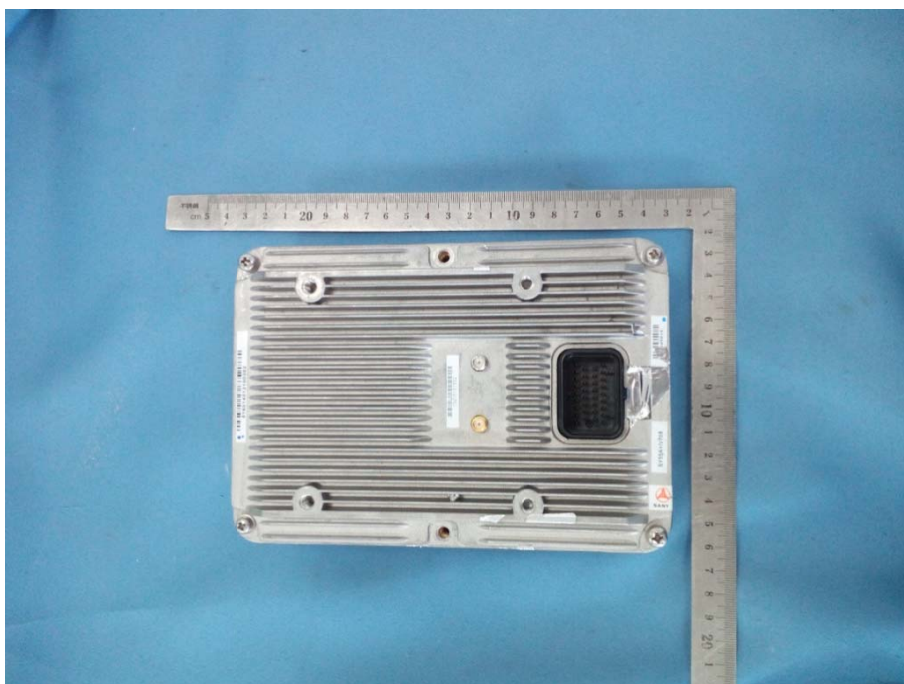
LTE Band 17 / 10MHz / QPSK / RB Size 1 Offset 0					
Measured Max. Spurious Emission(dBm)					
Channel	Polarization	Frequency	Level(dBm)	Limit(dBm)	Verdict
Lowest	H	1408	-63.57	-13	Pass
	H	2112	-61.27	-13	Pass
	H	2816	-65.18	-13	Pass
	V	1408	-69.11	-13	Pass
	V	2112	-61.82	-13	Pass
	V	2816	-65.08	-13	Pass
Middle	H	1408	-66.45	-13	Pass
	H	2120	-62.27	-13	Pass
	H	2820	-65.88	-13	Pass
	V	1408	-69.50	-13	Pass
	V	2120	-61.64	-13	Pass
	V	2820	-65.43	-13	Pass
Highest	H	1416	-66.46	-13	Pass
	H	2118	-62.35	-13	Pass
	H	2824	-66.35	-13	Pass
	V	1416	-69.49	-13	Pass
	V	2118	-63.28	-13	Pass
	V	2824	-64.96	-13	Pass

NOTE:

- 1) The power of the EUT transmitting frequency should be ignored.
- 2) All spurious emission tests were performed in X,Y,Z axis direction. Only the worst axis test condition was recored in this test report.
- 3) The emission levels of below 1 GHz are very lower than the limit(<-40dBm) and not show in this report.



Annex Photos of the EUT







**** END OF REPORT ****