Verykool USA Inc

Mobile phone

Main Model:SL5000
Serial Model: N/A

August 01, 2014

Report No.: 14070215-FCC-R5
(This report supersedes NONE)

Modifications made to the product : None

This Test Report is Issued Under the Authority of:		
Herith shi	Alex Liu	
Herith Shi **Compliance Engineer**	**Alex Liu** **Technical Manager**	

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Test result presented in this test report is applicable to the representative sample only.

RF Test Report

To: FCC Part 24(E); FCC Part 27: 2013

SIEMIC, INC.
Accessing global markets

Laboratory Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.

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SIEMIC (Shenzhen - China) Laboratories Accreditations for Conformity Assessment

Country/Region	Scope
USA	EMC , RF/Wireless , Telecom
Canada	EMC, RF/Wireless , Telecom
Taiwan	EMC, RF, Telecom , Safety
Hong Kong	RF/Wireless ,Telecom
Australia	EMC, RF, Telecom , Safety
Korea	EMI, EMS, RF , Telecom, Safety
Japan	EMI, RF/Wireless, Telecom
Singapore	EMC , RF , Telecom
Europe	EMC, RF, Telecom , Safety

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1. EXECUTIVE SUMMARY & EUT INFORMATION

The purpose of this test programmed was to demonstrate compliance of the Verykool USA Inc, Mobile phone and model: SL5000 against the current Stipulated Standards. The Mobile phone has demonstrated compliance with the FCC Part 24(E); FCC Part 27: 2013.

EUT Information		
EUT Description	:	Mobile phone
Main Model	:	SL5000
Serial Model		N/A
Antenna Gain	:	GSM850/ UMTS-FDD Band 5: -1.1 dBi PCS1900/ UMTS-FDD Band 2: -0.8 dBi UMTS-FDD Band 4: -0.8 dBi LTE Band 2/ Band 4: -0.8 dBi LTE Band 12/ Band 17: -2.5 dBi WIFI/ Bluetooth/ BLE: 0.8 dBi
Input Power	:	Battery: Model: SL5000 Spec: 3.7V 2000mAh Limited charger voltage: 4.2V Adapter: Model: DSA-5PFK-05 FUS 050100a Input: AC 100-240V; 50/60Hz 0.2A Output: DC 5.0V; 1A
Maximum Conducted AV Power to Antenna	:	LTE Band 2: 23.31 dBm LTE Band 4: 22.04 dBm LTE Band 12: 22.64 dBm LTE Band 17: 23.17 dBm
Maximum Radiated ERP/EIRP	:	LTE Band 2: 18.20 dBm / EIRP LTE Band 4: 18.34 dBm / EIRP LTE Band 12: 16.70dBm / ERP LTE Band 17: 17.26 dBm / ERP
Classification Per Stipulated Test Standard	:	FCC Part 24(E); FCC Part 27: 2013

2. TECHNICAL DETAILS

Purpose	**Compliance testing of Mobile phone with stipulated standard**
Applicant / Client	**Verykool USA Inc 3636 Nobel Drive, Suite 325, San Diego, CA 92122 USA**
Manufacturer	**Shenzhen Coship Electronics CO., LTD Rainbow Bldg., North, Hi-Tech Industrial Park, Nanshan District, Shenzhen, China, P.C.**
Laboratory performing the tests	**SIEMIC (Shenzhen - China) Laboratories Zone A, Floor 1, Building 2, Wan Ye Long Technology Park, South Side of Zhoushi Road, Bao'an District, Shenzhen, Guangdong, China Tel: +86-0755-2601 4629 / 2601 4953 Fax: +86-0755-2601 4953-810 Email: China@siemic.com.cn**
Test report reference number	**14070215-FCC-R5**
Date EUT received	**June 10, 2014**
Standard applied	**FCC Part 24(E); FCC Part 27: 2013**
Dates of test	**July 16 to July 31, 2014**
No of Units	**#1**
Equipment Category	**PCE**
Trade Name	**verykool**
RF Operating Frequency (ies)	**GSM850 TX : 824.2 ~ 848.8 MHz; RX : 869.2 ~ 893.8 MHz PCS1900 TX : 1850.2 ~ 1909.8 MHz; RX : 1930.2 ~ 1989.8 MHz UMTS-FDD Band 5 TX : 826.4 ~ 846.6 MHz; RX : 871.4 ~ 891.6 MHz UMTS-FDD Band 2 TX :1852.4 ~ 1907.6 MHz; RX : 1932.4 ~ 1987.6 MHz UMTS-FDD Band 4 TX :1712.4 ~ 1752.6 MHz; RX : 2112.4 ~ 2152.6 MHz 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 12 TX: 701.5 ~ 713.5 MHz; RX : 731.5 ~ 743.5 MHz LTE Band 17 TX: 706.5 ~ 713.5 MHz; RX : 736.5 ~ 743.5 MHz 802.11b/g/n: 2412-2462 MHz Bluetooth& BLE: 2402-2480 MHz**
Modulation	**GSM / GPRS: GMSK EGPRS: 8PSK UMTS-FDD: QPSK LTE: QPSK& 16QAM 802.11b/g/n: DSSS/OFDM Bluetooth: GFSK& π/4DQPSK&8DPSK BLE: GFSK**
GPRS/EGPRS Multi-slot class	**8/10/12**
FCC ID	**WA6SL5000**

3 MODIFICATION

NONE

3. TEST SUMMARY

The product was tested in accordance with the following specifications.
All testing has been performed according to below product classification:

PCE

Test Results Summary

Test Standard	Description	Product Class	Pass / Fail
§ 1.1307, § 2.1093	RF Exposure (SAR)	See Above	Pass
§2.1046; § 24.232 (c) § 27.50(c.10); § 27.50(d.4)	RF Output Power	See Above	Pass
§ 24. 232(d); § 27. 50(d)	Peak-Average Ratio	See Above	Pass
§ 2.1049 § 24.238 § 27.53	99% & -26 dB Occupied Bandwidth	See Above	Pass
§ 2.1051, § 24.238 (a) § 27.53(g)§ 27.53(h)	Spurious Emissions at Antenna Terminal	See Above	Pass
§ 2.1053 § 24.238 (a) § 27.53(i);§ 27.53(d)	Field Strength of Spurious Radiation	See Above	Pass
§ 24.238 (a) § 27.53(g);§ 27.53(h)	Out of band emission, Band Edge	See Above	Pass
§ 2.1055 § 24.235 § 27.54	Frequency stability vs. temperature Frequency stability vs. voltage	See Above	Pass

Note: Testing was performed by configuring EUT to maximum output power status, the declared output power class for different.

4. MEASUREMENTS, EXAMINATION AND DERIVED RESULTS

5.1 §1.1307, §2.1093- RF Exposure (SAR)

Test Result: Pass

The EUT is a portable device, thus requires SAR evaluation;
Please refer to SIEMIC SAR Report: 14070215-FCC-H

5.2 §2.1046; §24.232 (c) ;§ 27.50(c.10);§ 27.50(d.4)- RF Output Power

1. Conducted Measurement
   EUT was set for low, mid, high channel with modulated mode and highest RF output power.
   The spectrum analyzer was connected to the antenna terminal.
2. Conducted Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 40GHz is ±1.5dB.
3. Environmental Conditions

Temperature	23°C
Relative Humidity	55%
Atmospheric Pressure	1011mbar

4. Test date : July 16, 2014
   Tested By : Herith Shi

Procedures: (According with KDB 971168)

For Conducted Power:

1. The transmitter output port was connected to base station.
2. Set EUT at maximum power through base station.
3. Select lowest, middle, and highest channels for each band and different test mode.
4. The instrument must have an available measurement/resolution bandwidth that is equal to or exceeds the OBW. If this capability is available, then the following procedure can be used to determine the total peak output power.
   a) Set the RBW ⩾ OBW.
   b) Set VBW ⩾ 3 × RBW.
   c) Set span ⩾ 2 x RBW
   d) Sweep time = auto couple.
   e) Detector = peak.
   f) Ensure that the number of measurement points ⩾ span/RBW.
   g) Trace mode = max hold.
   h) Allow trace to fully stabilize.
   1) Use the peak marker function to determine the peak amplitude level.

For ERP/EIRP: (According with TIA 603D)

1. The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.
2. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.
3. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Sample Calculation:

EUT Field Strength (dBm) = Reading (Signal generator) + Antenna Gain (substitution antenna) - Cable loss (From Signal Generator to substitution antenna)

Test Result: Pass

Remark: Conducted Burst Average power for reporting purposes only

Conducted Power

LTE Mode:

LTE Band 2

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
20MHz	18700	1860.0	QPSK	1	0	0	22.93
				1	49	0	23.14
				1	99	0	22.87
				50	0	1	22.07
				50	24	1	22.24
				50	49	1	22.05
				100	0	1	22.17
			16QAM	1	0	1	22.15
				1	49	1	22.19
				1	99	1	22.23
				50	0	2	21.06
				50	24	2	21.26
				50	49	2	21.12
				100	0	2	21.24
	18900	1880.0	QPSK	1	0	0	23.16
				1	49	0	**23.31**
				1	99	0	23.02
				50	0	1	22.57
				50	24	1	**22.72**
				50	49	1	22.65
				100	0	1	22.70
			16QAM	1	0	1	22.24
				1	49	1	22.39
				1	99	1	22.25
				50	0	2	21.46
				50	24	2	21.51
				50	49	2	21.49
				100	0	2	21.54
	19100	1900.0	QPSK	1	0	0	23.03
				1	49	0	23.09
				1	99	0	23.04
				50	0	1	22.23
				50	24	1	22.60
				50	49	1	22.58
				100	0	1	22.43
			16QAM	1	0	1	22.47
				1	49	1	22.34
				1	99	1	22.46
				50	0	2	21.46
				50	24	2	21.45
				50	49	2	21.33
				100	0	2	21.51

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
15MHz	18675	1857.5	QPSK	1	0	0	21.98
				1	37	0	21.84
				1	74	0	22.04
				36	0	1	21.13
				36	16	1	21.07
				36	35	1	21.11
				75	0	1	21.09
			16QAM	1	0	1	21.18
				1	37	1	21.13
				1	74	1	21.07
				36	0	2	20.25
				36	16	2	20.36
				36	35	2	20.19
				75	0	2	20.24
	18900	1880.0	QPSK	1	0	0	22.03
				1	37	0	22.00
				1	74	0	21.51
				36	0	1	21.64
				36	16	1	21.79
				36	35	1	21.44
				75	0	1	21.46
			16QAM	1	0	1	21.56
				1	37	1	21.22
				1	74	1	21.35
				36	0	2	20.76
				36	16	2	20.59
				36	35	2	20.46
				75	0	2	20.36
	19125	1902.5	QPSK	1	0	0	21.88
				1	37	0	21.97
				1	74	0	22.16
				36	0	1	20.93
				36	16	1	21.03
				36	35	1	21.44
				75	0	1	20.94
			16QAM	1	0	1	20.99
				1	37	1	20.99
				1	74	1	21.06
				36	0	2	20.25
				36	16	2	20.33
				36	35	2	20.45
				75	0	2	20.27

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
10MHz	18650	1855	QPSK	1	0	0	21.78
				1	24	0	22.63
				1	49	0	22.30
				25	0	1	21.18
				25	12	1	21.37
				25	24	1	21.52
				50	0	1	21.33
			16QAM	1	0	1	21.16
				1	24	1	21.69
				1	49	1	21.49
				25	0	2	20.80
				25	12	2	20.97
				25	24	2	20.51
				50	0	2	20.80
	18900	1880.0	QPSK	1	0	0	22.20
				1	24	0	22.35
				1	49	0	21.88
				25	0	1	21.34
				25	12	1	21.29
				25	24	1	21.23
				50	0	1	21.13
			16QAM	1	0	1	21.38
				1	24	1	21.48
				1	49	1	21.36
				25	0	2	20.56
				25	12	2	20.53
				25	24	2	20.57
				50	0	2	20.30
	19150	1905	QPSK	1	0	0	21.82
				1	24	0	22.28
				1	49	0	21.80
				25	0	1	20.85
				25	12	1	21.53
				25	24	1	20.85
				50	0	1	20.70
			16QAM	1	0	1	21.09
				1	24	1	21.29
				1	49	1	20.70
				25	0	2	20.69
				25	12	2	20.63
				25	24	2	20.56
				50	0	2	20.43

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
5MHz	18625	1852.5	QPSK	1	0	0	21.99
				1	12	0	22.10
				1	24	0	21.96
				12	0	1	21.02
				12	6	1	21.21
				12	11	1	21.13
				25	0	1	21.26
			16QAM	1	0	1	21.21
				1	12	1	21.27
				1	24	1	21.04
				12	0	2	20.43
				12	6	2	20.50
				12	11	2	20.39
				25	0	2	20.42
	18900	1880.0	QPSK	1	0	0	21.70
				1	12	0	22.05
				1	24	0	21.61
				12	0	1	20.85
				12	6	1	21.13
				12	11	1	21.01
				25	0	1	21.05
			16QAM	1	0	1	21.20
				1	12	1	21.40
				1	24	1	21.15
				12	0	2	20.66
				12	6	2	20.75
				12	11	2	20.66
				25	0	2	20.77
	19175	1907.5	QPSK	1	0	0	21.60
				1	12	0	21.74
				1	24	0	21.95
				12	0	1	20.82
				12	6	1	20.91
				12	11	1	20.64
				25	0	1	20.46
			16QAM	1	0	1	20.57
				1	12	1	20.96
				1	24	1	21.04
				12	0	2	19.95
				12	6	2	19.93
				12	11	2	19.96
				25	0	2	19.97

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
3MHz	18625	1852.5	QPSK	1	0	0	21.87
				1	7	0	21.80
				1	14	0	21.91
				8	0	1	21.07
				8	4	1	21.13
				8	7	1	20.96
				15	0	1	21.06
			16QAM	1	0	1	20.65
				1	7	1	20.90
				1	14	1	20.97
				8	0	2	20.15
				8	4	2	20.23
				8	7	2	20.16
				15	0	2	20.31
	18900	1880.0	QPSK	1	0	0	21.67
				1	7	0	21.76
				1	14	0	21.66
				8	0	1	20.83
				8	4	1	20.89
				8	7	1	20.95
				15	0	1	21.00
			16QAM	1	0	1	21.00
				1	7	1	20.87
				1	14	1	20.87
				8	0	2	19.95
				8	4	2	19.97
				8	7	2	20.00
				15	0	2	19.91
	19175	1907.5	QPSK	1	0	0	21.72
				1	7	0	21.83
				1	14	0	21.80
				8	0	1	20.96
				8	4	1	21.03
				8	7	1	21.07
				15	0	1	21.05
			16QAM	1	0	1	20.97
				1	7	1	21.07
				1	14	1	21.02
				8	0	2	20.69
				8	4	2	20.88
				8	7	2	20.04
				15	0	2	19.99

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
1.4MHz	18607	1850.7	QPSK	1	0	0	21.73
				1	2	0	21.70
				1	5	0	21.81
				3	0	0	21.83
				3	1	0	21.85
				3	2	0	21.89
				6	0	1	20.98
			16QAM	1	0	1	20.92
				1	2	1	21.04
				1	5	1	20.87
				3	0	1	20.95
				3	1	1	20.99
				3	2	1	20.93
				6	0	2	20.36
	18900	1880.0	QPSK	1	0	0	21.91
				1	2	0	21.89
				1	5	0	21.92
				3	0	0	22.04
				3	1	0	21.97
				3	2	0	21.95
				6	0	1	20.95
			16QAM	1	0	1	21.05
				1	2	1	21.03
				1	5	1	21.10
				3	0	1	20.99
				3	1	1	21.06
				3	2	1	21.13
				6	0	2	20.56
	19193	1909.3	QPSK	1	0	0	21.89
				1	2	0	21.88
				1	5	0	22.12
				3	0	0	22.00
				3	1	0	22.06
				3	2	0	22.07
				6	0	1	21.00
			16QAM	1	0	1	21.14
				1	2	1	21.24
				1	5	1	21.64
				3	0	1	21.11
				3	1	1	21.09
				3	2	1	21.13
				6	0	2	21.10

LTE Band 4

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
20MHz	20050	1720.0	QPSK	1	0	0	21.83
				1	49	0	21.90
				1	99	0	21.88
				50	0	1	21.01
				50	24	1	21.16
				50	49	1	21.08
				100	0	1	21.03
			16QAM	1	0	1	21.13
				1	49	1	21.11
				1	99	1	21.14
				50	0	2	20.15
				50	24	2	20.12
				50	49	2	20.04
				100	0	2	20.06
	20175	1732.5	QPSK	1	0	0	21.92
				1	49	0	**22.04**
				1	99	0	21.86
				50	0	1	21.14
				50	24	1	**21.21**
				50	49	1	21.18
				100	0	1	21.02
			16QAM	1	0	1	21.01
				1	49	1	21.05
				1	99	1	20.84
				50	0	2	20.39
				50	24	2	20.43
				50	49	2	20.55
				100	0	2	20.54
	20300	1745.0	QPSK	1	0	0	21.60
				1	49	0	21.89
				1	99	0	21.60
				50	0	1	20.93
				50	24	1	20.90
				50	49	1	20.94
				100	0	1	20.68
			16QAM	1	0	1	20.86
				1	49	1	20.93
				1	99	1	20.84
				50	0	2	20.16
				50	24	2	20.24
				50	49	2	20.31
				100	0	2	20.65

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
15MHz	20025	1717.5	QPSK	1	0	0	21.47
				1	37	0	21.35
				1	74	0	21.11
				36	0	1	20.44
				36	16	1	20.25
				36	35	1	20.03
				75	0	1	20.33
			16QAM	1	0	1	20.50
				1	37	1	20.49
				1	74	1	20.40
				36	0	2	19.97
				36	16	2	20.02
				36	35	2	20.10
				75	0	2	19.54
	20175	1732.5	QPSK	1	0	0	21.20
				1	37	0	21.19
				1	74	0	21.44
				36	0	1	20.56
				36	16	1	20.54
				36	35	1	20.48
				75	0	1	20.41
			16QAM	1	0	1	20.95
				1	37	1	20.81
				1	74	1	20.95
				36	0	2	20.26
				36	16	2	20.17
				36	35	2	20.20
				75	0	2	19.50
	20325	1747.5	QPSK	1	0	0	21.34
				1	37	0	21.50
				1	74	0	21.47
				36	0	1	20.63
				36	16	1	20.59
				36	35	1	20.61
				75	0	1	20.65
			16QAM	1	0	1	20.37
				1	37	1	20.66
				1	74	1	20.71
				36	0	2	20.30
				36	16	2	20.26
				36	35	2	20.32
				75	0	2	19.95

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
10MHz	20000	1715.0	QPSK	1	0	0	21.61
				1	24	0	21.45
				1	49	0	21.15
				25	0	1	20.82
				25	12	1	20.77
				25	24	1	20.66
				50	0	1	20.81
			16QAM	1	0	1	21.04
				1	24	1	20.98
				1	49	1	20.99
				25	0	2	20.31
				25	12	2	20.29
				25	24	2	20.36
				50	0	2	20.34
	20175	1732.5	QPSK	1	0	0	21.34
				1	24	0	21.42
				1	49	0	21.66
				25	0	1	20.82
				25	12	1	20.79
				25	24	1	20.88
				50	0	1	20.82
			16QAM	1	0	1	20.60
				1	24	1	20.56
				1	49	1	20.48
				25	0	2	20.09
				25	12	2	19.81
				25	24	2	19.91
				50	0	2	19.91
	20350	1750.0	QPSK	1	0	0	21.48
				1	24	0	21.58
				1	49	0	21.80
				25	0	1	20.88
				25	12	1	20.99
				25	24	1	20.75
				50	0	1	20.90
			16QAM	1	0	1	20.93
				1	24	1	20.91
				1	49	1	20.99
				25	0	2	20.64
				25	12	2	20.75
				25	24	2	20.74
				50	0	2	20.38

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
5MHz	20000	1715.0	QPSK	1	0	0	21.54
				1	12	0	21.41
				1	24	0	21.37
				12	0	1	20.79
				12	6	1	20.67
				12	11	1	20.64
				25	0	1	20.35
			16QAM	1	0	1	21.01
				1	12	1	21.07
				1	24	1	21.07
				12	0	2	20.75
				12	6	2	20.62
				12	11	2	20.64
				25	0	2	20.67
	20175	1732.5	QPSK	1	0	0	21.49
				1	12	0	21.54
				1	24	0	21.46
				12	0	1	20.45
				12	6	1	20.67
				12	11	1	20.75
				25	0	1	20.64
			16QAM	1	0	1	20.70
				1	12	1	20.66
				1	24	1	20.57
				12	0	2	19.83
				12	6	2	19.62
				12	11	2	19.75
				25	0	2	19.51
	20350	1750.0	QPSK	1	0	0	21.33
				1	12	0	21.35
				1	24	0	21.21
				12	0	1	20.80
				12	6	1	20.85
				12	11	1	20.86
				25	0	1	20.69
			16QAM	1	0	1	20.83
				1	12	1	20.86
				1	24	1	20.84
				12	0	2	19.59
				12	6	2	19.53
				12	11	2	19.47
				25	0	2	19.43

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
3MHz	19965	1711.5	QPSK	1	0	0	21.42
				1	7	0	21.50
				1	14	0	21.49
				8	0	1	20.64
				8	4	1	20.60
				8	7	1	20.62
				15	0	1	20.67
			16QAM	1	0	1	20.97
				1	7	1	21.06
				1	14	1	20.96
				8	0	2	19.80
				8	4	2	19.86
				8	7	2	19.73
				15	0	2	19.76
	20175	1732.5	QPSK	1	0	0	21.29
				1	7	0	21.48
				1	14	0	21.37
				8	0	1	20.79
				8	4	1	20.78
				8	7	1	20.61
				15	0	1	20.79
			16QAM	1	0	1	20.62
				1	7	1	20.52
				1	14	1	20.83
				8	0	2	19.79
				8	4	2	19.87
				8	7	2	19.95
				15	0	2	19.51
	20385	1753.5	QPSK	1	0	0	21.48
				1	7	0	21.55
				1	14	0	21.54
				8	0	1	20.75
				8	4	1	20.83
				8	7	1	20.92
				15	0	1	20.82
			16QAM	1	0	1	20.60
				1	7	1	20.65
				1	14	1	20.52
				8	0	2	19.88
				8	4	2	19.85
				8	7	2	19.84
				15	0	2	19.98

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
1.4MHz	19957	1710.7	QPSK	1	0	0	21.53
				1	2	0	21.68
				1	5	0	21.55
				3	0	0	21.40
				3	1	0	21.57
				3	2	0	21.44
				6	0	1	20.69
			16QAM	1	0	1	20.78
				1	2	1	20.77
				1	5	1	20.85
				3	0	1	20.82
				3	1	1	20.88
				3	2	1	20.81
				6	0	2	20.05
	20175	1732.5	QPSK	1	0	0	21.23
				1	2	0	21.43
				1	5	0	21.39
				3	0	0	21.10
				3	1	0	21.12
				3	2	0	21.10
				6	0	1	20.91
			16QAM	1	0	1	20.91
				1	2	1	20.87
				1	5	1	20.70
				3	0	1	20.59
				3	1	1	20.42
				3	2	1	20.50
				6	0	2	19.49
	20393	1754.3	QPSK	1	0	0	21.67
				1	2	0	21.59
				1	5	0	21.71
				3	0	0	21.40
				3	1	0	21.42
				3	2	0	21.35
				6	0	1	20.83
			16QAM	1	0	1	20.89
				1	2	1	20.88
				1	5	1	20.77
				3	0	1	20.92
				3	1	1	20.87
				3	2	1	21.00
				6	0	2	19.92

LTE Band 12

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
10MHz	23010	699.0	QPSK	1	0	0	22.38
				1	24	0	22.43
				1	49	0	22.30
				25	0	1	21.58
				25	12	1	21.76
				25	24	1	21.52
				50	0	1	21.63
			16QAM	1	0	1	21.61
				1	24	1	21.51
				1	49	1	21.69
				25	0	2	21.50
				25	12	2	21.37
				25	24	2	21.51
				50	0	2	20.60
	23095	707.5	QPSK	1	0	0	22.31
				1	24	0	22.44
				1	49	0	**22.64**
				25	0	1	21.64
				25	12	1	21.75
				25	24	1	21.70
				50	0	1	21.82
			16QAM	1	0	1	21.77
				1	24	1	21.85
				1	49	1	21.87
				25	0	2	21.46
				25	12	2	21.48
				25	24	2	21.17
				50	0	2	20.99
	23179	715.9	QPSK	1	0	0	22.22
				1	24	0	22.18
				1	49	0	22.12
				25	0	1	21.85
				25	12	1	21.85
				25	24	1	21.70
				50	0	1	21.66
			16QAM	1	0	1	21.49
				1	24	1	21.69
				1	49	1	21.79
				25	0	2	20.69
				25	12	2	20.57
				25	24	2	20.56
				50	0	2	20.83

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
5MHz	23035	701.5	QPSK	1	0	0	21.15
				1	12	0	21.53
				1	24	0	21.42
				12	0	1	20.55
				12	6	1	20.60
				12	11	1	20.59
				25	0	1	20.70
			16QAM	1	0	1	20.61
				1	12	1	20.99
				1	24	1	20.56
				12	0	2	20.66
				12	6	2	20.65
				12	11	2	20.61
				25	0	2	20.82
	23095	707.5	QPSK	1	0	0	21.74
				1	12	0	21.47
				1	24	0	21.57
				12	0	1	20.98
				12	6	1	20.83
				12	11	1	20.76
				25	0	1	20.80
			16QAM	1	0	1	20.73
				1	12	1	20.48
				1	24	1	20.47
				12	0	2	20.17
				12	6	2	20.97
				12	11	2	20.88
				25	0	2	20.40
	23155	713.5	QPSK	1	0	0	21.63
				1	12	0	21.55
				1	24	0	21.45
				12	0	1	20.66
				12	6	1	20.85
				12	11	1	20.73
				25	0	1	20.78
			16QAM	1	0	1	20.71
				1	12	1	20.86
				1	24	1	20.79
				12	0	2	20.68
				12	6	2	20.86
				12	11	2	20.04
				25	0	2	20.29

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
3MHz	23025	700.5	QPSK	1	0	0	21.27
				1	7	0	20.65
				1	14	0	20.66
				8	0	1	19.77
				8	4	1	19.75
				8	7	1	19.78
				15	0	1	19.59
			16QAM	1	0	1	20.20
				1	7	1	19.89
				1	14	1	19.66
				8	0	2	19.79
				8	4	2	19.85
				8	7	2	19.98
				15	0	2	19.02
	23095	707.5	QPSK	1	0	0	21.65
				1	7	0	21.48
				1	14	0	21.52
				8	0	1	20.80
				8	4	1	20.68
				8	7	1	20.73
				15	0	1	20.75
			16QAM	1	0	1	20.85
				1	7	1	20.71
				1	14	1	20.84
				8	0	2	20.79
				8	4	2	20.77
				8	7	2	20.72
				15	0	2	20.86
	23165	714.5	QPSK	1	0	0	21.06
				1	7	0	20.94
				1	14	0	21.32
				8	0	1	20.95
				8	4	1	20.91
				8	7	1	20.83
				15	0	1	20.76
			16QAM	1	0	1	20.82
				1	7	1	20.85
				1	14	1	20.97
				8	0	2	20.49
				8	4	2	20.33
				8	7	2	20.05
				15	0	2	20.10

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
1.4MHz	23017	699.7	QPSK	1	0	0	21.07
				1	2	0	20.65
				1	5	0	20.34
				3	0	0	20.95
				3	1	0	20.67
				3	2	0	20.52
				6	0	1	20.18
			16QAM	1	0	1	21.16
				1	2	1	20.70
				1	5	1	20.58
				3	0	1	20.90
				3	1	1	20.54
				3	2	1	20.26
				6	0	2	20.36
	23095	707.5	QPSK	1	0	0	20.91
				1	2	0	20.92
				1	5	0	20.94
				3	0	0	20.94
				3	1	0	20.93
				3	2	0	20.95
				6	0	1	20.10
			16QAM	1	0	1	20.54
				1	2	1	20.58
				1	5	1	20.56
				3	0	1	20.48
				3	1	1	20.45
				3	2	1	20.42
				6	0	2	20.03
	23173	715.3	QPSK	1	0	0	20.62
				1	2	0	20.81
				1	5	0	20.91
				3	0	0	20.95
				3	1	0	20.92
				3	2	0	20.97
				6	0	1	20.65
			16QAM	1	0	1	20.54
				1	2	1	20.73
				1	5	1	20.26
				3	0	1	20.84
				3	1	1	20.06
				3	2	1	20.11
				6	0	2	20.16

LTE Band 17

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
10MHz	23780	709.0	QPSK	1	0	0	22.86
				1	24	0	22.80
				1	49	0	22.74
				25	0	1	22.28
				25	12	1	22.25
				25	24	1	22.36
				50	0	1	22.17
			16QAM	1	0	1	22.11
				1	24	1	22.36
				1	49	1	22.50
				25	0	2	21.82
				25	12	2	21.90
				25	24	2	21.94
				50	0	2	21.75
	23790	701.0	QPSK	1	0	0	22.89
				1	24	0	**23.17**
				1	49	0	22.97
				25	0	1	22.13
				25	12	1	22.59
				25	24	1	22.10
				50	0	1	22.23
			16QAM	1	0	1	22.64
				1	24	1	23.03
				1	49	1	23.02
				25	0	2	21.80
				25	12	2	21.86
				25	24	2	21.98
				50	0	2	21.86
	23800	711.0	QPSK	1	0	0	22.28
				1	24	0	22.68
				1	49	0	22.71
				25	0	1	21.87
				25	12	1	21.79
				25	24	1	21.78
				50	0	1	21.97
			16QAM	1	0	1	21.82
				1	24	1	21.97
				1	49	1	21.90
				25	0	2	20.98
				25	12	2	21.66
				25	24	2	21.87
				50	0	2	21.89

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
5MHz	23755	706.5	QPSK	1	0	0	22.50
				1	12	0	22.24
				1	24	0	22.49
				12	0	1	21.79
				12	6	1	21.75
				12	11	1	21.77
				25	0	1	21.68
			16QAM	1	0	1	21.90
				1	12	1	21.62
				1	24	1	21.60
				12	0	2	21.59
				12	6	2	21.62
				12	11	2	21.77
				25	0	2	21.50
	23790	710.0	QPSK	1	0	0	22.87
				1	12	0	23.10
				1	24	0	22.89
				12	0	1	22.79
				12	6	1	22.72
				12	11	1	22.83
				25	0	1	22.56
			16QAM	1	0	1	22.76
				1	12	1	22.92
				1	24	1	23.04
				12	0	2	21.94
				12	6	2	21.98
				12	11	2	21.96
				25	0	2	21.26
	23825	713.5	QPSK	1	0	0	23.00
				1	12	0	23.08
				1	24	0	23.11
				12	0	1	22.87
				12	6	1	22.65
				12	11	1	22.97
				25	0	1	22.76
			16QAM	1	0	1	22.30
				1	12	1	22.87
				1	24	1	22.38
				12	0	2	21.90
				12	6	2	21.99
				12	11	2	22.05
				25	0	2	21.90

ERP & EIRP (worst case)

EIRP for LTE Band 2 (Part 24E)

Frequency	Channel Bandwidth	Mode.	RB	Substituted level	Antenna Polarization	Antenna Gain correction	Cable Loss	Absolute Level	Limit (dBm)
1850.7	1.4	QPSK	1/0	10.55	V	7.88	0.85	17.58	33.01
1880	1.4	QPSK	1/0	11.17	V	7.88	0.85	**18.20**	33.01
1909.3	1.4	QPSK	1/0	10.67	V	7.88	0.85	17.7	33.01
1850.7	1.4	QPSK	1/0	10.09	H	7.88	0.85	17.12	33.01
1880	1.4	QPSK	1/0	9.68	H	7.88	0.85	16.71	33.01
1909.3	1.4	QPSK	1/0	9.77	H	7.88	0.85	16.8	33.01
1850.7	1.4	16-QAM	1/0	10.47	V	7.88	0.85	17.5	33.01
1880	1.4	16-QAM	1/0	10.83	V	7.88	0.85	17.86	33.01
1909.3	1.4	16-QAM	1/0	10.59	V	7.88	0.85	17.62	33.01
1850.7	1.4	16-QAM	1/0	10.01	H	7.88	0.85	17.04	33.01
1880	1.4	16-QAM	1/0	9.86	H	7.88	0.85	16.89	33.01
1909.3	1.4	16-QAM	1/0	9.73	H	7.88	0.85	16.76	33.01
1851.5	3	QPSK	1/0	10.64	V	7.88	0.85	17.67	33.01
1880	3	QPSK	1/0	11.16	V	7.88	0.85	18.19	33.01
1908.5	3	QPSK	1/0	10.74	V	7.88	0.85	17.77	33.01
1851.5	3	QPSK	1/0	9.74	H	7.88	0.85	16.77	33.01
1880	3	QPSK	1/0	9.66	H	7.88	0.85	16.69	33.01
1908.5	3	QPSK	1/0	9.81	H	7.88	0.85	16.84	33.01
1851.5	3	16-QAM	1/0	10.62	V	7.88	0.85	17.65	33.01
1880	3	16-QAM	1/0	10.84	V	7.88	0.85	17.87	33.01
1908.5	3	16-QAM	1/0	10.53	V	7.88	0.85	17.56	33.01
1851.5	3	16-QAM	1/0	9.73	H	7.88	0.85	16.76	33.01
1880	3	16-QAM	1/0	9.86	H	7.88	0.85	16.89	33.01
1908.5	3	16-QAM	1/0	10.06	H	7.88	0.85	17.09	33.01
1852.5	5	QPSK	1/24	10.47	V	7.88	0.85	17.5	33.01
1880	5	QPSK	1/0	10.89	V	7.88	0.85	17.92	33.01
1907.5	5	QPSK	1/24	10.73	V	7.88	0.85	17.76	33.01
1852.5	5	QPSK	1/24	9.84	H	7.88	0.85	16.87	33.01
1880	5	QPSK	1/0	9.73	H	7.88	0.85	16.76	33.01
1907.5	5	QPSK	1/24	9.89	H	7.88	0.85	16.92	33.01
1852.5	5	16-QAM	1/24	10.64	V	7.88	0.85	17.67	33.01
1880	5	16-QAM	1/0	11.02	V	7.88	0.85	18.05	33.01
1907.5	5	16-QAM	1/24	11.07	V	7.88	0.85	18.1	33.01
1852.5	5	16-QAM	1/24	9.79	H	7.88	0.85	16.82	33.01
1880	5	16-QAM	1/0	9.71	H	7.88	0.85	16.74	33.01
1907.5	5	16-QAM	1/24	9.81	H	7.88	0.85	16.84	33.01
1855	10	QPSK	1/0	10.64	V	7.88	0.85	17.67	33.01
1880	10	QPSK	1/0	10.84	V	7.88	0.85	17.87	33.01
1905	10	QPSK	1/49	10.75	V	7.88	0.85	17.78	33.01
1855	10	QPSK	1/0	9.76	H	7.88	0.85	16.79	33.01
1880	10	QPSK	1/0	10.08	H	7.88	0.85	17.11	33.01
1905	10	QPSK	1/49	9.87	H	7.88	0.85	16.9	33.01
1855	10	16-QAM	1/0	10.94	V	7.88	0.85	17.97	33.01
1880	10	16-QAM	1/0	10.79	V	7.88	0.85	17.82	33.01
1905	10	16-QAM	1/49	10.78	V	7.88	0.85	17.81	33.01
1855	10	16-QAM	1/0	10.11	H	7.88	0.85	17.14	33.01
1880	10	16-QAM	1/0	9.82	H	7.88	0.85	16.85	33.01
1857.5	15	QPSK	1/0	10.67	V	7.88	0.85	17.7	33.01
1880	15	QPSK	1/0	11.05	V	7.88	0.85	18.08	33.01
1902.5	15	QPSK	1/0	10.71	V	7.88	0.85	17.74	33.01

1857.5	15	QPSK	1/0	10.07	H	7.88	0.85	17.1	33.01
1880	15	QPSK	1/0	9.69	H	7.88	0.85	16.72	33.01
1902.5	15	QPSK	1/0	9.81	H	7.88	0.85	16.84	33.01
1857.5	15	16-QAM	1/0	10.49	V	7.88	0.85	17.52	33.01
1880	15	16-QAM	1/0	10.56	V	7.88	0.85	17.59	33.01
1902.5	15	16-QAM	1/0	10.62	V	7.88	0.85	17.65	33.01
1857.5	15	16-QAM	1/0	10.17	H	7.88	0.85	17.2	33.01
1880	15	16-QAM	1/0	9.84	H	7.88	0.85	16.87	33.01
1902.5	15	16-QAM	1/0	9.67	H	7.88	0.85	16.7	33.01
1860	20	QPSK	1/0	10.66	V	7.88	0.85	17.69	33.01
1880	20	QPSK	1/0	10.84	V	7.88	0.85	17.87	33.01
1900	20	QPSK	1/0	11.13	V	7.88	0.85	18.16	33.01
1860	20	QPSK	1/0	10.06	H	7.88	0.85	17.09	33.01
1880	20	QPSK	1/0	9.85	H	7.88	0.85	16.88	33.01
1900	20	QPSK	1/0	9.66	H	7.88	0.85	16.69	33.01
1860	20	16-QAM	1/0	10.64	V	7.88	0.85	17.67	33.01
1880	20	16-QAM	1/0	11.02	V	7.88	0.85	18.05	33.01
1900	20	16-QAM	1/0	10.73	V	7.88	0.85	17.76	33.01
1860	20	16-QAM	1/0	9.74	H	7.88	0.85	16.77	33.01
1880	20	16-QAM	1/0	10.02	H	7.88	0.85	17.05	33.01
1900	20	16-QAM	1/0	9.63	H	7.88	0.85	16.66	33.01

EIRP for LTE Band 4 (Part 27)

Frequency	Channel Bandwidth	Mode.	RB	Substituted level	Antenna Polarization	Antenna Gain correction	Cable Loss	Absolute Level	Limit (dBm)
1710.7	1.4	QPSK	1/0	10.72	V	7.95	0.79	17.88	30
1732.5	1.4	QPSK	1/0	10.64	V	7.95	0.79	17.8	30
1754.3	1.4	QPSK	1/0	10.81	V	7.95	0.79	17.97	30
1710.7	1.4	QPSK	1/0	9.83	H	7.95	0.79	16.99	30
1732.5	1.4	QPSK	1/0	9.75	H	7.95	0.79	16.91	30
1754.3	1.4	QPSK	1/0	9.66	H	7.95	0.79	16.82	30
1710.7	1.4	16-QAM	1/5	10.67	V	7.95	0.79	17.83	30
1732.5	1.4	16-QAM	1/0	10.56	V	7.95	0.79	17.72	30
1754.3	1.4	16-QAM	1/0	10.77	V	7.95	0.79	17.93	30
1710.7	1.4	16-QAM	1/5	9.79	H	7.95	0.79	16.95	30
1732.5	1.4	16-QAM	1/0	9.84	H	7.95	0.79	17	30
1754.3	1.4	16-QAM	1/0	9.68	H	7.95	0.79	16.84	30
1711.5	3	QPSK	1/0	10.49	V	7.95	0.79	17.65	30
1732.5	3	QPSK	1/0	10.62	V	7.95	0.79	17.78	30
1753.5	3	QPSK	1/0	11.02	V	7.95	0.79	18.18	30
1711.5	3	QPSK	1/0	9.94	H	7.95	0.79	17.1	30
1732.5	3	QPSK	1/0	9.57	H	7.95	0.79	16.73	30
1753.5	3	QPSK	1/0	10.05	H	7.95	0.79	17.21	30
1711.5	3	16-QAM	1/0	11.01	V	7.95	0.79	18.17	30
1732.5	3	16-QAM	1/0	10.82	V	7.95	0.79	17.98	30
1753.5	3	16-QAM	1/0	10.57	V	7.95	0.79	17.73	30
1711.5	3	16-QAM	1/0	9.64	H	7.95	0.79	16.8	30
1732.5	3	16-QAM	1/0	10.16	H	7.95	0.79	17.32	30
1753.5	3	16-QAM	1/0	9.76	H	7.95	0.79	16.92	30
1712.5	5	QPSK	1/0	10.55	V	7.95	0.79	17.71	30
1732.5	5	QPSK	1/0	11.04	V	7.95	0.79	18.2	30
1752.5	5	QPSK	1/24	11.02	V	7.95	0.79	18.18	30
1712.5	5	QPSK	1/0	10.02	H	7.95	0.79	17.18	30
1732.5	5	QPSK	1/0	9.98	H	7.95	0.79	17.14	30

1752.5	5	QPSK	1/24	9.62	H	7.95	0.79	16.78	30
1712.5	5	16-QAM	1/0	10.88	V	7.95	0.79	18.04	30
1732.5	5	16-QAM	1/0	11.05	V	7.95	0.79	18.21	30
1752.5	5	16-QAM	1/24	10.56	V	7.95	0.79	17.72	30
1712.5	5	16-QAM	1/0	9.76	H	7.95	0.79	16.92	30
1732.5	5	16-QAM	1/0	9.89	H	7.95	0.79	17.05	30
1752.5	5	16-QAM	1/24	9.67	H	7.95	0.79	16.83	30
1715	10	QPSK	1/0	10.98	V	7.95	0.79	18.14	30
1732.5	10	QPSK	1/49	10.85	V	7.95	0.79	18.01	30
1750	10	QPSK	1/0	10.55	V	7.95	0.79	17.71	30
1715	10	QPSK	1/0	9.83	H	7.95	0.79	16.99	30
1732.5	10	QPSK	1/49	9.74	H	7.95	0.79	16.9	30
1750	10	QPSK	1/0	9.89	H	7.95	0.79	17.05	30
1715	10	16-QAM	1/0	11.02	V	7.95	0.79	18.18	30
1732.5	10	16-QAM	1/49	11.11	V	7.95	0.79	18.27	30
1750	10	16-QAM	1/0	10.79	V	7.95	0.79	17.95	30
1715	10	16-QAM	1/0	10.02	H	7.95	0.79	17.18	30
1732.5	10	16-QAM	1/49	10.13	H	7.95	0.79	17.29	30
1750	10	16-QAM	1/0	9.87	H	7.95	0.79	17.03	30
1717.5	15	QPSK	1/0	10.89	V	7.95	0.79	18.05	30
1732.5	15	QPSK	1/74	10.58	V	7.95	0.79	17.74	30
1747.5	15	QPSK	1/0	10.84	V	7.95	0.79	18	30
1717.5	15	QPSK	1/0	10.02	H	7.95	0.79	17.18	30
1732.5	15	QPSK	1/74	9.99	H	7.95	0.79	17.15	30
1747.5	15	QPSK	1/0	9.77	H	7.95	0.79	16.93	30
1717.5	15	16-QAM	1/0	10.69	V	7.95	0.79	17.85	30
1732.5	15	16-QAM	1/74	10.74	V	7.95	0.79	17.9	30
1747.5	15	16-QAM	1/0	10.94	V	7.95	0.79	18.1	30
1717.5	15	16-QAM	1/0	9.97	H	7.95	0.79	17.13	30
1732.5	15	16-QAM	1/74	9.83	H	7.95	0.79	16.99	30
1747.5	15	16-QAM	1/0	9.75	H	7.95	0.79	16.91	30
1720	20	QPSK	1/99	10.88	V	7.95	0.79	18.04	30
1732.5	20	QPSK	1/99	11.13	V	7.95	0.79	18.29	30
1745	20	QPSK	1/0	10.76	V	7.95	0.79	17.92	30
1720	20	QPSK	1/99	9.87	H	7.95	0.79	17.03	30
1732.5	20	QPSK	1/99	9.59	H	7.95	0.79	16.75	30
1745	20	QPSK	1/0	10.14	H	7.95	0.79	17.3	30
1720	20	16-QAM	1/99	11.18	V	7.95	0.79	**18.34**	30
1732.5	20	16-QAM	1/99	10.89	V	7.95	0.79	18.05	30
1745	20	16-QAM	1/0	10.76	V	7.95	0.79	17.92	30
1720	20	16-QAM	1/99	10.03	H	7.95	0.79	17.19	30
1732.5	20	16-QAM	1/99	9.87	H	7.95	0.79	17.03	30

ERP for LTE Band 12 (Part 27)

Frequency	Channel Bandwidth	Mode.	RB	Substituted level	Antenna Polarization	Antenna Gain correction	Cable Loss	Absolute Level	Limit (dBm)
699.7	1.4	QPSK	1/5	10.17	V	6.9	0.42	16.65	34.77
707.5	1.4	QPSK	1/5	10.09	V	6.8	0.42	16.47	34.77
715.3	1.4	QPSK	1/5	10.15	V	6.8	0.42	16.53	34.77
699.7	1.4	QPSK	1/5	9.44	H	6.9	0.42	15.92	34.77
707.5	1.4	QPSK	1/5	9.57	H	6.8	0.42	15.95	34.77
715.3	1.4	QPSK	1/5	9.46	H	6.8	0.42	15.84	34.77
699.7	1.4	16-QAM	1/5	10.05	V	6.9	0.42	16.53	34.77
707.5	1.4	16-QAM	1/5	10.12	V	6.8	0.42	16.5	34.77
715.3	1.4	16-QAM	1/5	9.89	V	6.8	0.42	16.27	34.77
699.7	1.4	16-QAM	1/5	9.26	H	6.9	0.42	15.74	34.77
707.5	1.4	16-QAM	1/5	9.29	H	6.8	0.42	15.67	34.77
715.3	1.4	16-QAM	1/5	9.32	H	6.8	0.42	15.7	34.77
700.5	3	QPSK	1/14	9.99	V	6.9	0.42	16.47	34.77
707.5	3	QPSK	1/0	10.05	V	6.8	0.42	16.43	34.77
714.5	3	QPSK	1/14	10.07	V	6.8	0.42	16.45	34.77
700.5	3	QPSK	1/14	10.01	H	6.9	0.42	16.49	34.77
707.5	3	QPSK	1/0	9.82	H	6.8	0.42	16.2	34.77
714.5	3	QPSK	1/14	9.42	H	6.8	0.42	15.8	34.77
700.5	3	16-QAM	1/14	9.88	V	6.9	0.42	16.36	34.77
707.5	3	16-QAM	1/0	9.79	V	6.8	0.42	16.17	34.77
714.5	3	16-QAM	1/14	10.01	V	6.8	0.42	16.39	34.77
700.5	3	16-QAM	1/14	9.46	H	6.9	0.42	15.94	34.77
707.5	3	16-QAM	1/0	9.66	H	6.8	0.42	16.04	34.77
714.5	3	16-QAM	1/14	9.47	H	6.8	0.42	15.85	34.77
701.5	5	QPSK	1/24	10.22	V	6.9	0.42	**16.70**	34.77
707.5	5	QPSK	1/24	10.16	V	6.8	0.42	16.54	34.77
713.5	5	QPSK	1/24	9.67	V	6.8	0.42	16.05	34.77
701.5	5	QPSK	1/24	8.99	H	6.9	0.42	15.47	34.77
707.5	5	QPSK	1/24	9.16	H	6.8	0.42	15.54	34.77
713.5	5	QPSK	1/24	9.47	H	6.8	0.42	15.85	34.77
701.5	5	16-QAM	1/24	9.94	V	6.9	0.42	16.42	34.77
707.5	5	16-QAM	1/24	9.83	V	6.8	0.42	16.21	34.77
713.5	5	16-QAM	1/24	10.11	V	6.8	0.42	16.49	34.77
701.5	5	16-QAM	1/24	9.42	H	6.9	0.42	15.9	34.77
707.5	5	16-QAM	1/24	9.66	H	6.8	0.42	16.04	34.77
713.5	5	16-QAM	1/24	9.45	H	6.8	0.42	15.83	34.77
704	10	QPSK	1/49	9.93	V	6.8	0.42	16.31	34.77
707.5	10	QPSK	1/49	9.87	V	6.8	0.42	16.25	34.77
711	10	QPSK	1/49	9.86	V	6.8	0.42	16.24	34.77
704	10	QPSK	1/49	9.22	H	6.8	0.42	15.6	34.77
707.5	10	QPSK	1/49	9.31	H	6.8	0.42	15.69	34.77
711	10	QPSK	1/49	9.41	H	6.8	0.42	15.79	34.77
704	10	16-QAM	1/49	10.23	V	6.8	0.42	16.61	34.77
707.5	10	16-QAM	1/49	10.15	V	6.8	0.42	16.53	34.77
711	10	16-QAM	1/49	9.94	V	6.8	0.42	16.32	34.77
704	10	16-QAM	1/49	8.98	H	6.8	0.42	15.36	34.77
707.5	10	16-QAM	1/49	9.22	H	6.8	0.42	15.6	34.77
711	10	16-QAM	1/49	9.46	H	6.8	0.42	15.84	34.77

ERP for LTE Band 17 (Part 27)

Frequency	Channel Bandwidth	Mode.	RB	Substituted level	Antenna Polarization	Antenna Gain correction	Cable Loss	Absolute Level	Limit (dBm)
706.5	5	QPSK	1/0	10.19	V	6.8	0.42	16.57	34.77
710	5	QPSK	1/0	10.26	V	6.8	0.42	16.64	34.77
713.5	5	QPSK	1/0	10.02	V	6.8	0.42	16.40	34.77
706.5	5	QPSK	1/0	9.16	H	6.8	0.42	15.54	34.77
710	5	QPSK	1/0	8.97	H	6.8	0.42	15.35	34.77
713.5	5	QPSK	1/0	9.44	H	6.8	0.42	15.82	34.77
706.5	5	16-QAM	1/0	10.16	V	6.8	0.42	16.54	34.77
710	5	16-QAM	1/0	9.99	V	6.8	0.42	16.37	34.77
713.5	5	16-QAM	1/0	9.87	V	6.8	0.42	16.25	34.77
706.5	5	16-QAM	1/0	9.13	H	6.8	0.42	15.51	34.77
710	5	16-QAM	1/0	9.11	H	6.8	0.42	15.49	34.77
713.5	5	16-QAM	1/0	9.27	H	6.8	0.42	15.65	34.77
709	10	QPSK	1/0	10.88	V	6.8	0.42	**17.26**	34.77
710	10	QPSK	1/0	9.79	V	6.8	0.42	16.17	34.77
711	10	QPSK	1/0	10.03	V	6.8	0.42	16.41	34.77
709	10	QPSK	1/0	9.44	H	6.8	0.42	15.82	34.77
710	10	QPSK	1/0	9.37	H	6.8	0.42	15.75	34.77
711	10	QPSK	1/0	9.54	H	6.8	0.42	15.92	34.77
709	10	16-QAM	1/0	10.49	V	6.8	0.42	16.87	34.77
710	10	16-QAM	1/0	10.46	V	6.8	0.42	16.84	34.77
711	10	16-QAM	1/0	10.27	V	6.8	0.42	16.65	34.77
709	10	16-QAM	1/0	9.48	H	6.8	0.42	15.86	34.77
710	10	16-QAM	1/0	9.35	H	6.8	0.42	15.73	34.77
711	10	16-QAM	1/0	9.56	H	6.8	0.42	15.94	34.77

5.3 §24.232(d); § 27.50(d)- Peak-Average Ratio

1. Conducted Measurement
   EUT was set for low, mid, high channel with modulated mode and highest RF output power.
   The spectrum analyzer was connected to the antenna terminal.
2. Conducted Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 40GHz is ±1.5dB.
3. Environmental Conditions

Temperature	23°C
Relative Humidity	55%
Atmospheric Pressure	1011mbar

4. Test date : July 16, 2014
   Tested By : Herith Shi

Procedures: (According with KDB 971168)

1. The signal analyzer's CCDF measurement profile is enabled

2. Frequency = carrier center frequency

3. Measurement BW > Emission bandwidth of signal

4. The signal analyzer was set to collect one million samples to generate the CCDF curve

5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power

Test Result: Pass

LTE Band 2 (Part 24)

BW(MHz)	Frequency (MHz)	Mode	Modulation	Conducted power(dBm)		Peak-Average Ratio(PAR)
				Peak	Average	
1.4	1880	RB 1/0	QPSK	26.52	22.51	4.01
			16QAM	26.49	22.42	4.07
3	1880	RB 1/0	QPSK	26.15	22.09	4.06
			16QAM	26.05	22.07	3.98
5	1880	RB 1/0	QPSK	26.27	22.33	3.94
			16QAM	26.13	22.17	3.96
10	1880	RB 1/0	QPSK	26.47	22.14	4.33
			16QAM	26.35	22.05	4.30
15	1880	RB 1/0	QPSK	26.41	22.32	4.09
			16QAM	26.28	22.14	4.14
20	1880	RB 1/0	QPSK	26.36	22.22	4.14
			16QAM	26.30	22.16	4.14

LTE Band 4 (Part 27)

BW(MHz)	Frequency (MHz)	Mode	Modulation	Conducted power(dBm)		Peak-Average Ratio(PAR)
				Peak	Average	
1.4	1732.5	RB 1/0	QPSK	26.15	21.92	4.23
			16QAM	26.07	21.86	4.21
3	1732.5	RB 1/0	QPSK	26.12	21.85	4.27
			16QAM	26.02	21.81	4.21
5	1732.5	RB 1/0	QPSK	26.20	21.98	4.22
			16QAM	26.10	21.90	4.20
10	1732.5	RB 1/0	QPSK	26.19	21.80	4.39
			16QAM	26.12	21.73	4.39
15	1732.5	RB 1/0	QPSK	26.09	21.84	4.25
			16QAM	26.01	21.77	4.24
20	1732.5	RB 1/0	QPSK	26.25	21.88	4.37
			16QAM	26.14	21.71	4.43

LTE Band 17 (Part 27)

BW(MHz)	Frequency (MHz)	Mode	Modulation	Conducted power(dBm)		Peak-Average Ratio(PAR)
				Peak	Average	
1.4	1880	RB 1/0	QPSK	26.17	21.46	4.71
			16QAM	26.19	21.45	4.74
3	1880	RB 1/0	QPSK	26.13	21.36	4.77
			16QAM	26.10	21.37	4.73
5	1880	RB 1/0	QPSK	26.07	21.30	4.77
			16QAM	26.09	21.27	4.82
10	1880	RB 1/0	QPSK	26.12	21.29	4.83
			16QAM	26.15	21.23	4.92

LTE Band 4 (Part 27)

BW(MHz)	Frequency (MHz)	Mode	Modulation	Conducted power(dBm)		Peak-Average Ratio(PAR)
				Peak	Average	
5	1732.5	RB 1/0	QPSK	26.20	21.98	4.22
			16QAM	26.10	21.90	4.20
10	1732.5	RB 1/0	QPSK	26.19	21.80	4.39
			16QAM	26.12	21.73	4.39

5.4 §2.1049, §24.238, §27.53(a.5) - Occupied Bandwidth

1. Conducted Measurement
   EUT was set for low, mid, high channel with modulated mode and highest RF output power.
   The spectrum analyser was connected to the antenna terminal.
2. Environmental Conditions

Temperature	24°C
Relative Humidity	52%
Atmospheric Pressure	1017mbar

3. Conducted Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 40GHz is ±1.5dB.
4. Test date : July 23, 2014
   Tested By : Herith Shi

Procedures:

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.

2. The 99% and 26 dB occupied bandwidth (BW) of the middle channel for the highest RF powers.

3. Details according with KDB 971168 section 4.1 & 4.2.

Test Results: Pass

Please refer to the following plots.

Note:
LTE: Band 2
LTE: Band 4
LTE: Band 12
LTE: Band 17

1: Low Channel
2: Middle Channel
3: High Channel

LTE Band 2 (Part 24E)

BW(MHz)	Channel	Frequency (MHz)	Mode	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
1.4	18607	1850.7	QPSK	1.0999	1.332
			16QAM	1.0940	1.312
1.4	18900	1880	QPSK	1.0945	1.285
			16QAM	1.1066	1.296
1.4	18900	1909.3	QPSK	1.1006	1.281
			16QAM	1.0922	1.289
3	18615	1851.5	QPSK	2.7513	3.097
			16QAM	2.7498	3.126
3	18900	1880	QPSK	2.7438	3.101
			16QAM	2.7595	3.132
3	19185	1908.5	QPSK	2.7539	3.104
			16QAM	2.7405	3.117
5	18625	1852.5	QPSK	4.5001	5.003
			16QAM	4.5135	5.004
5	18900	1880	QPSK	4.5097	4.991
			16QAM	4.5114	5.019
5	19175	1907.5	QPSK	4.4912	4.944
			16QAM	4.4997	5.065
10	18650	1855	QPSK	9.0020	10.100
			16QAM	9.0027	9.973
10	18900	1880	QPSK	9.0675	10.106
			16QAM	9.0648	10.119
10	19150	1905	QPSK	9.0522	10.099
			16QAM	9.0575	10.018
15	18675	1857.5	QPSK	13.4085	14.665
			16QAM	13.3822	14.654
15	18900	1880	QPSK	13.4913	14.595
			16QAM	13.4640	14.714
15	19125	1902.5	QPSK	13.5170	14.656
			16QAM	13.5310	14.770
20	18700	1860	QPSK	17.7587	19.069
			16QAM	17.7651	19.292
20	18900	1880	QPSK	17.8322	19.149
			16QAM	17.8167	19.274
20	19100	1900	QPSK	17.9594	19.270
			16QAM	17.9197	19.286

LTE Band 4 (Part 27)

BW(MHz)	Channel	Frequency (MHz)	Mode	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
1.4	19957	1710.7	QPSK	1.0949	1.334
			16QAM	1.0973	1.305
1.4	20175	1732.5	QPSK	1.0903	1.288
			16QAM	1.1017	1.313
1.4	20393	1754.3	QPSK	1.0916	1.285
			16QAM	1.0960	1.288
3	19965	1711.5	QPSK	2.7523	3.128
			16QAM	2.7539	3.092
3	20175	1732.5	QPSK	2.7508	3.123
			16QAM	2.7372	3.066
3	20385	1753.5	QPSK	2.7514	3.115
			16QAM	2.7377	3.091
5	19975	1712.5	QPSK	4.5083	5.060
			16QAM	4.5117	5.027
5	20175	1732.5	QPSK	4.4974	5.032
			16QAM	4.5001	5.005
5	20375	1752.5	QPSK	4.5057	5.027
			16QAM	4.4990	5.009
10	20000	1715	QPSK	9.0623	10.084
			16QAM	9.0408	10.077
10	20175	1732.5	QPSK	9.0262	10.172
			16QAM	9.0333	10.040
10	20350	1750	QPSK	9.0423	10.031
			16QAM	9.0480	9.995
15	20025	1717.5	QPSK	13.4862	14.608
			16QAM	13.4819	14.700
15	20175	1732.5	QPSK	13.4151	14.516
			16QAM	13.3856	14.672
15	20325	1747.5	QPSK	13.4683	14.700
			16QAM	13.4134	14.585
20	20050	1720	QPSK	17.9085	19.526
			16QAM	17.9128	19.696
20	20175	1732.5	QPSK	17.7636	19.221
			16QAM	17.8223	19.226
20	20300	1745	QPSK	17.8266	19.263
			16QAM	17.8049	19.109

LTE Band 12 (Part 27)

BW(MHz)	Channel	Frequency (MHz)	Mode	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
1.4	23017	699.7	QPSK	1.1003	1.309
			16QAM	1.0887	1.257
1.4	23095	707.5	QPSK	1.0987	1.306
			16QAM	1.0993	1.302
1.4	23173	715.3	QPSK	1.1018	1.288
			16QAM	1.0992	1.288
3	23025	700.5	QPSK	2.7312	3.092
			16QAM	2.7397	3.107
3	23095	707.5	QPSK	2.7455	3.098
			16QAM	2.7527	3.065
3	23165	714.5	QPSK	2.7536	3.114
			16QAM	2.7378	3.097
5	23035	701.5	QPSK	4.4964	4.976
			16QAM	4.4992	4.952
5	23095	707.5	QPSK	4.5072	4.967
			16QAM	4.5002	4.980
5	23155	713.5	QPSK	4.5145	4.980
			16QAM	4.5154	5.036
10	23060	704	QPSK	9.0525	10.084
			16QAM	9.0761	9.901
10	23095	707.5	QPSK	8.9879	10.074
			16QAM	8.9742	9.955
10	23130	711	QPSK	9.0710	10.128
			16QAM	9.0710	10.046

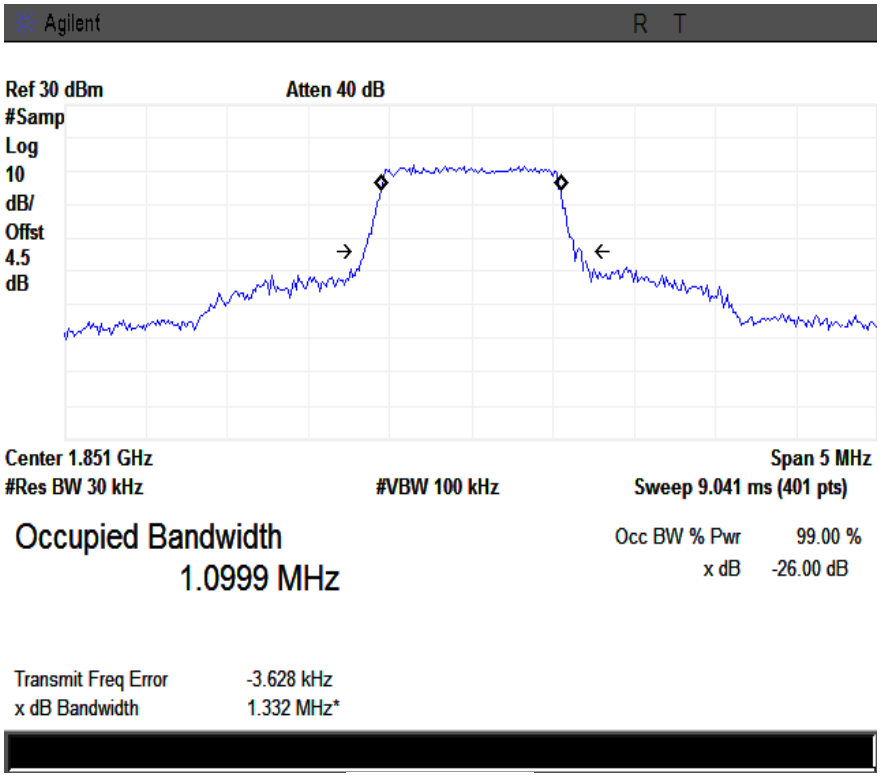
LTE Band 17 (Part 27)

BW(MHz)	Channel	Frequency (MHz)	Mode	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
5	23755	706.5	QPSK	4.5209	5.019
			16QAM	4.5270	5.016
5	23790	710	QPSK	4.5042	5.001
			16QAM	4.5051	5.009
5	23825	713.5	QPSK	4.5072	5.007
			16QAM	4.5117	4.962
10	23780	709	QPSK	9.0842	10.033
			16QAM	9.0839	10.158
10	23790	710	QPSK	9.0230	10.196
			16QAM	9.0302	10.162
10	23800	711	QPSK	9.0180	9.955
			16QAM	9.0271	10.088

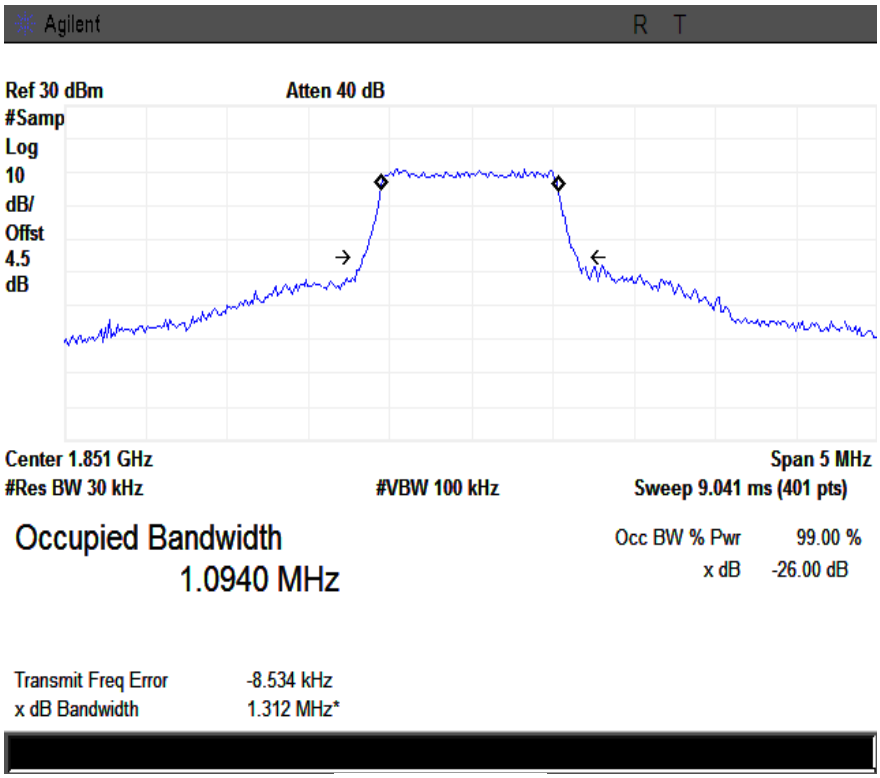
99% Occupied Bandwidth & 26 dB Bandwidth

LTE Band 2 Mode:

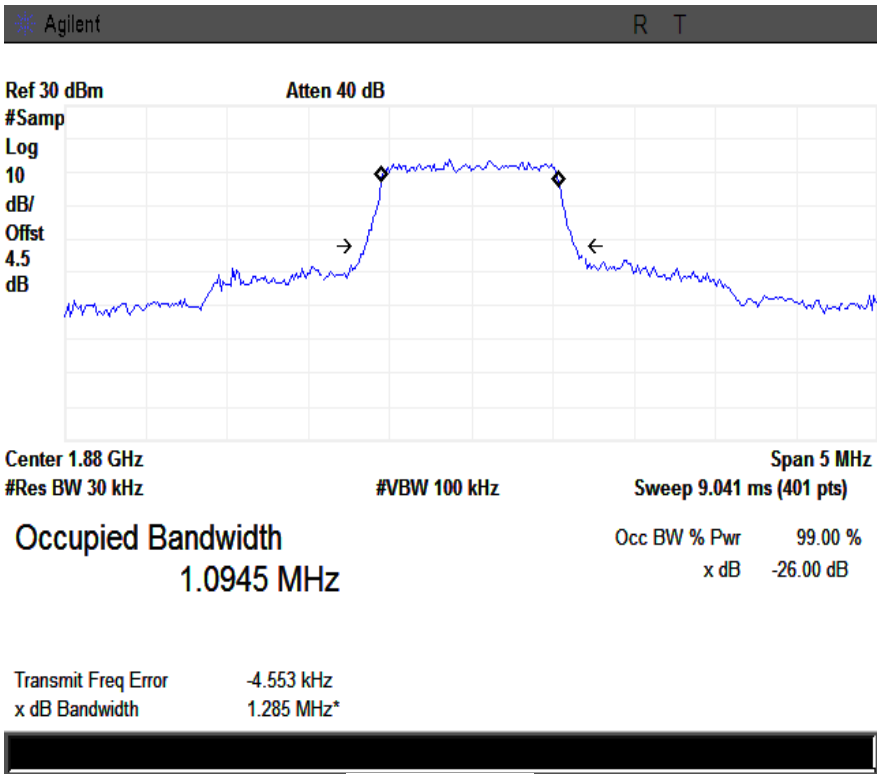
1.4MHz



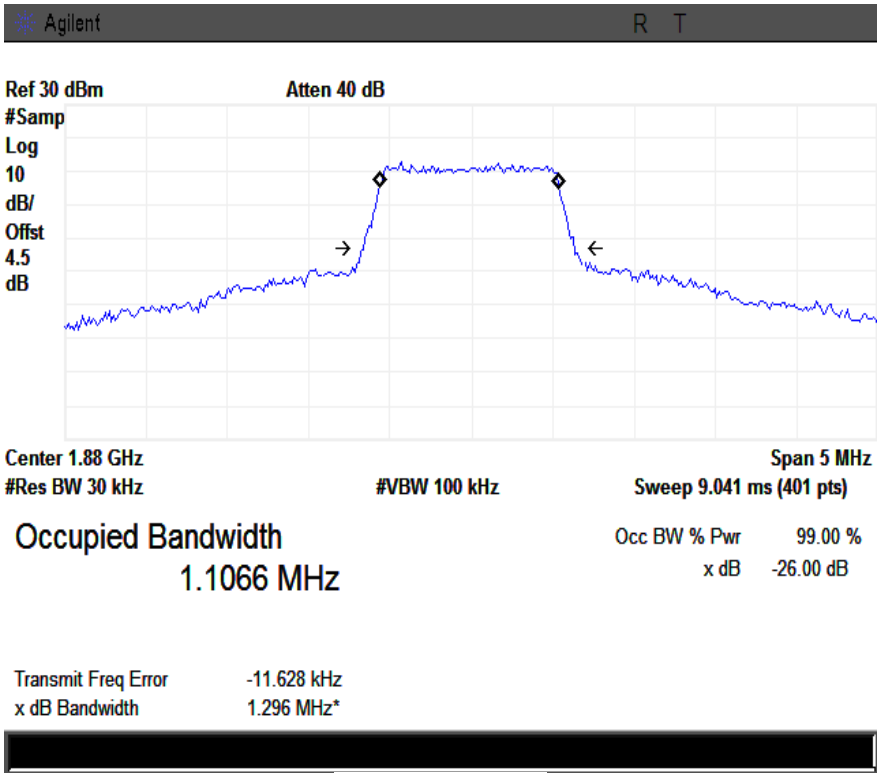
1-QPSK-1.4M



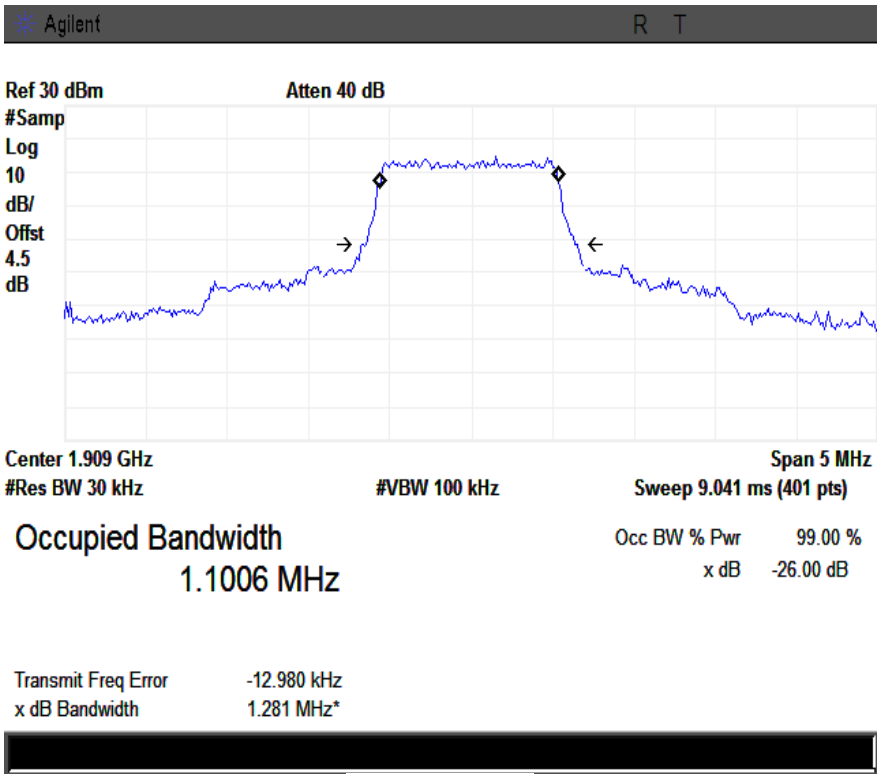
1-16QAM-1.4M



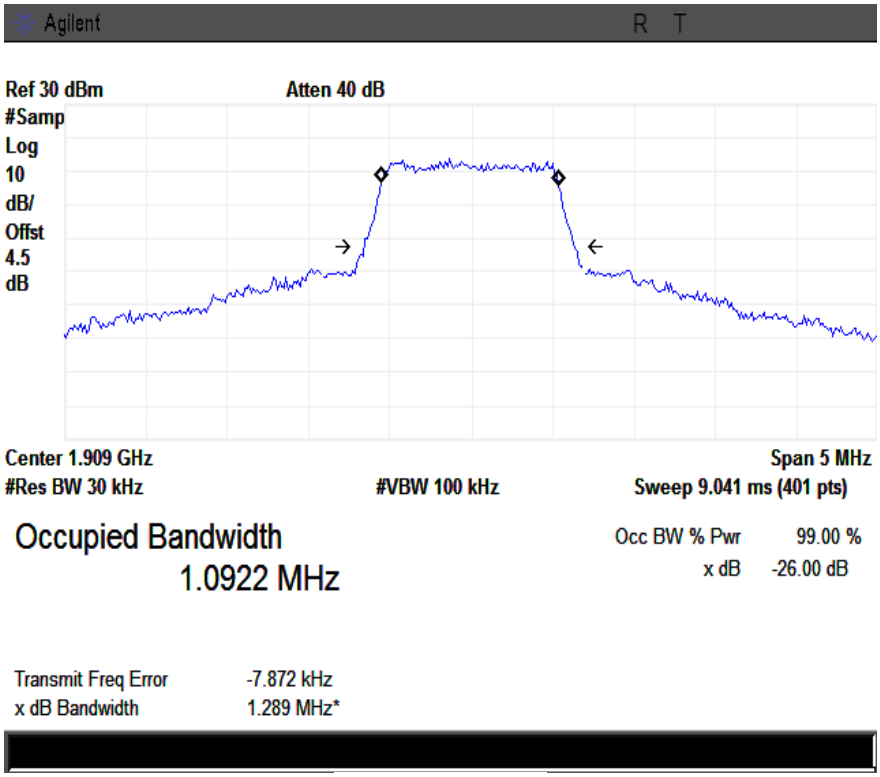
2-QPSK-1.4M



2-16QAM-1.4M



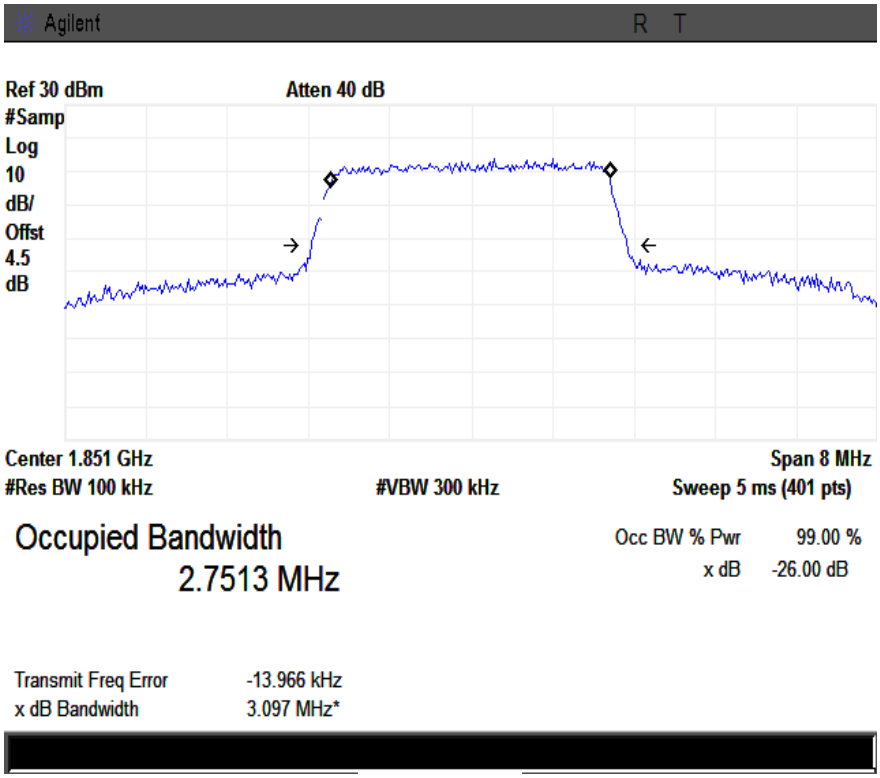
3-QPSK-1.4M



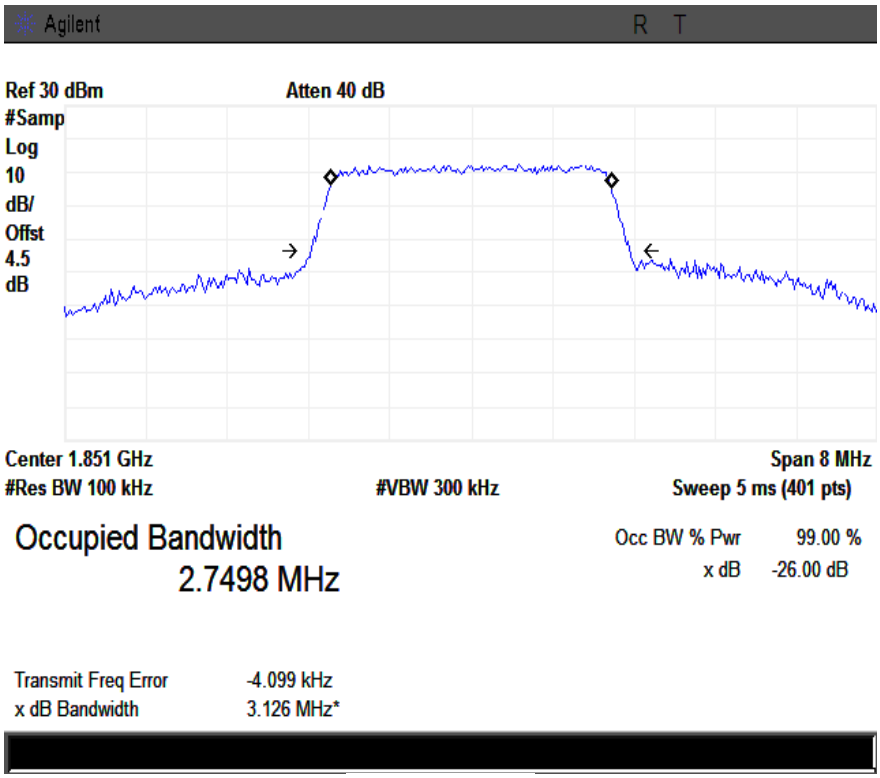
3-16QAM-1.4M

LTE Band 2 Mode:

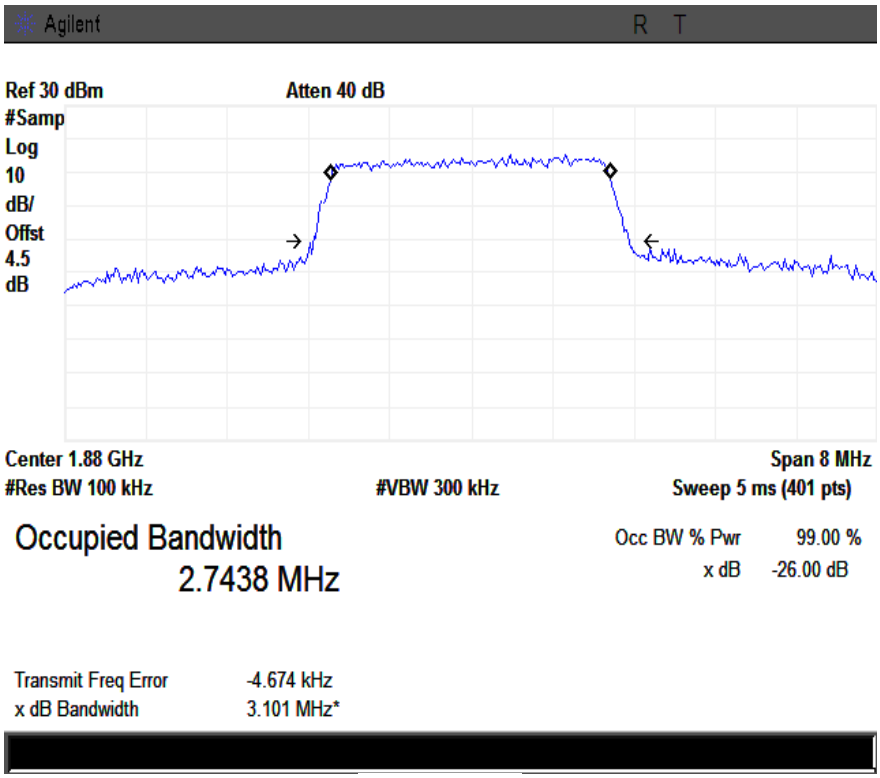
3MHz



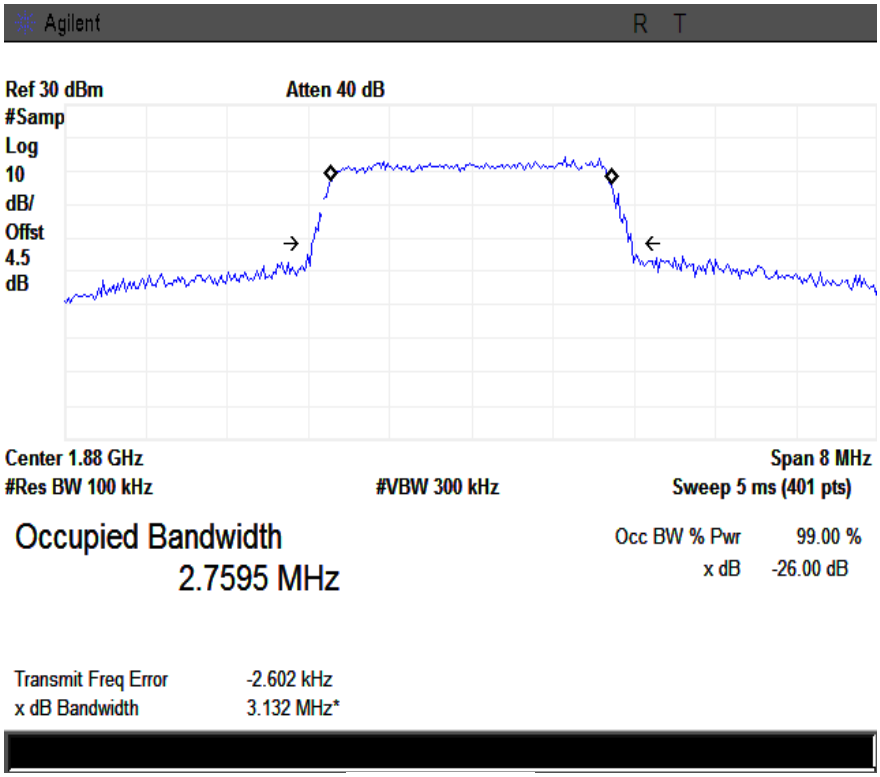
1-QPSK-3M



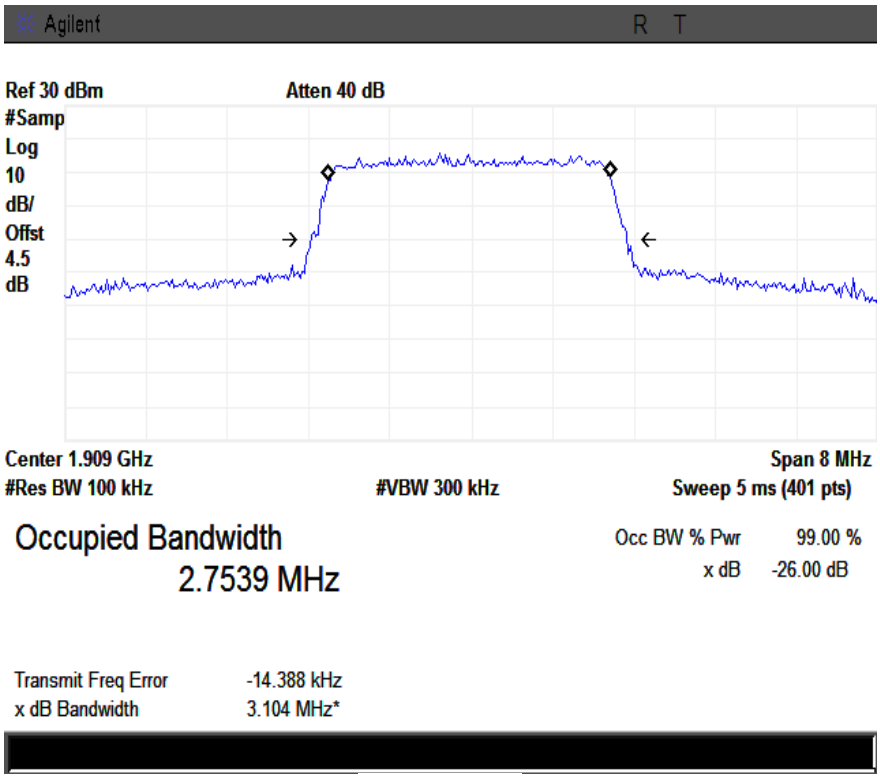
1-16QAM-3M



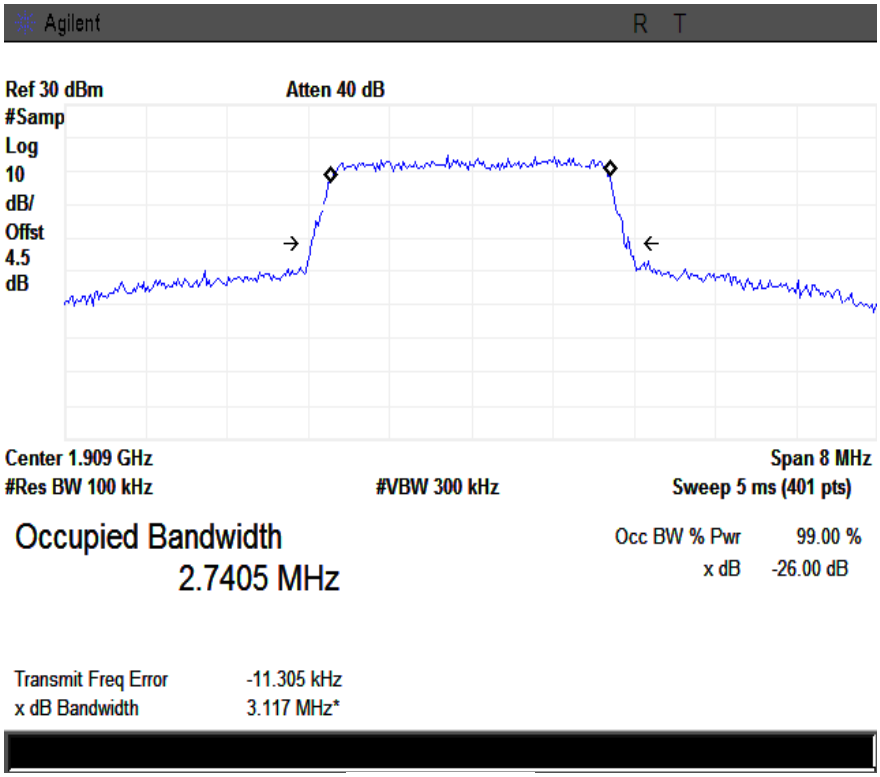
2-QPSK-3M



2-16QAM-3M



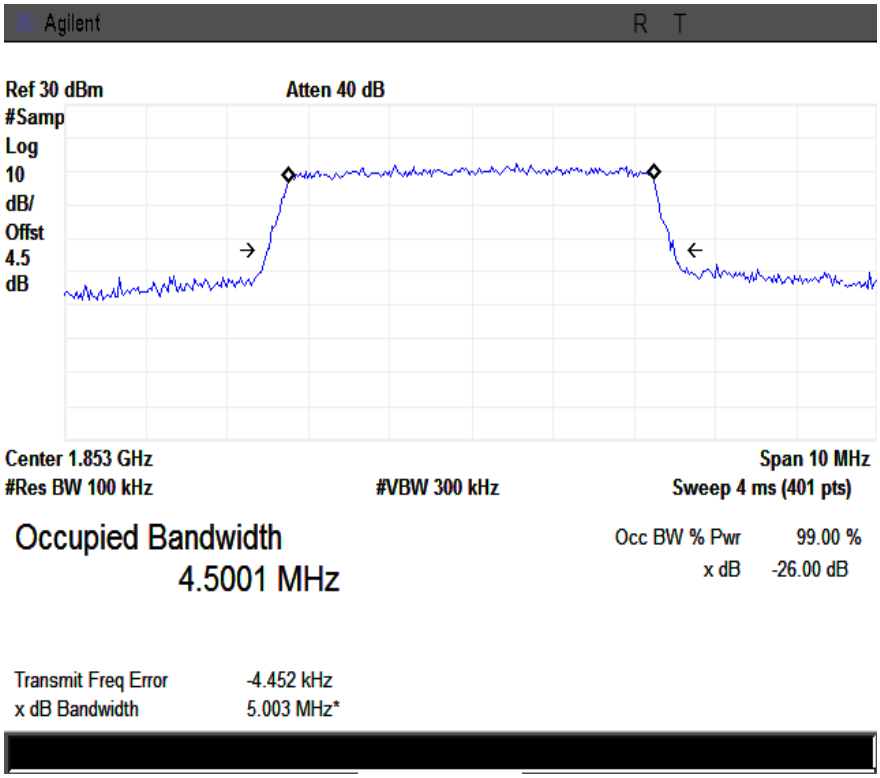
3-QPSK-3M



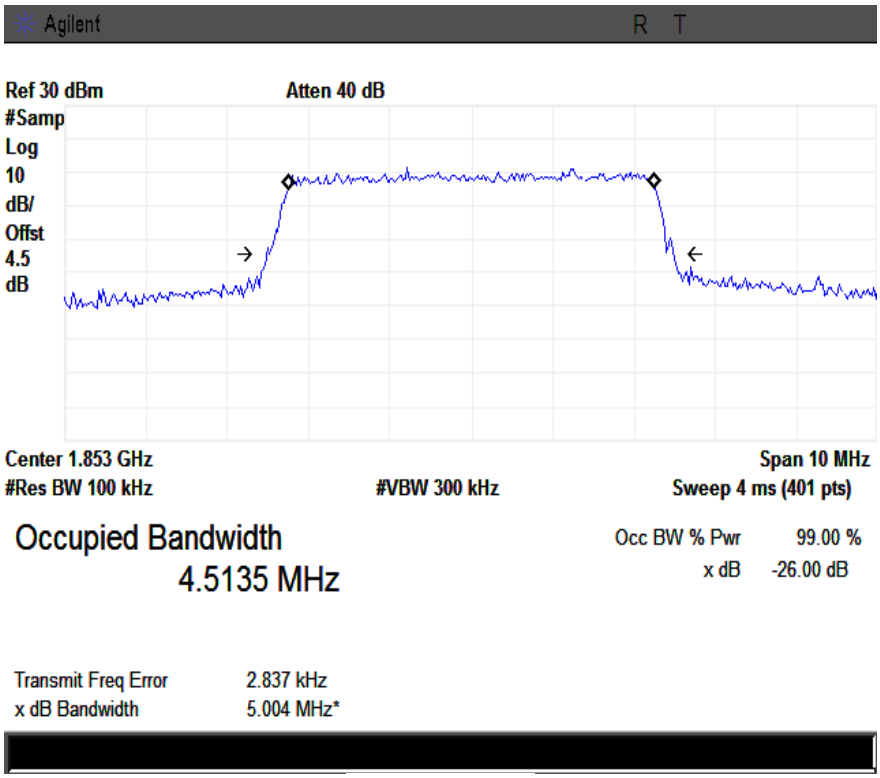
3-16QAM-3M

LTE Band 2 Mode:

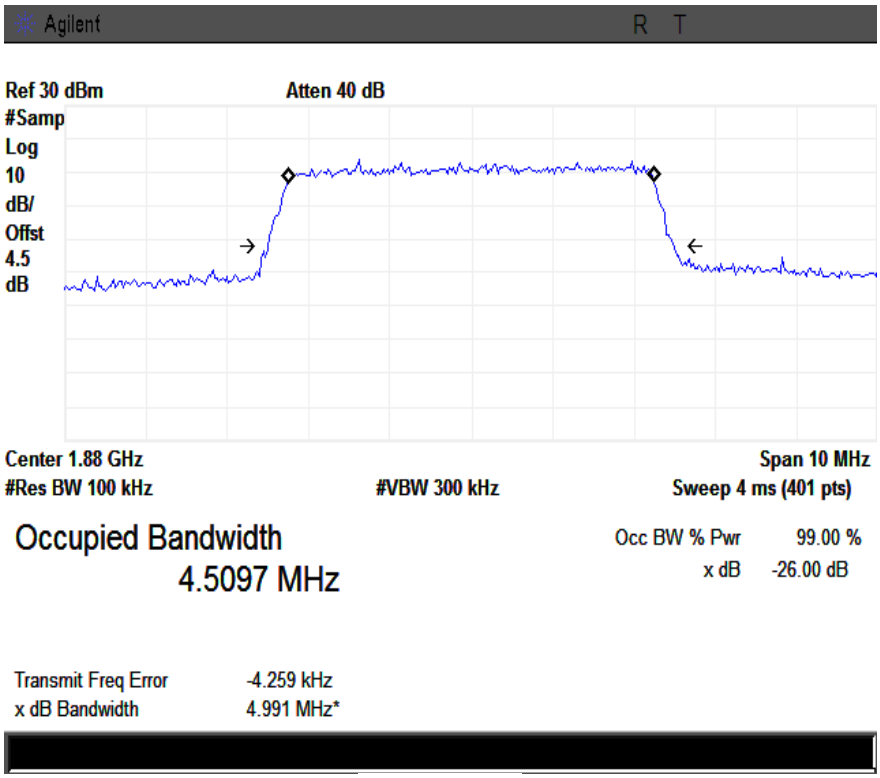
5MHz



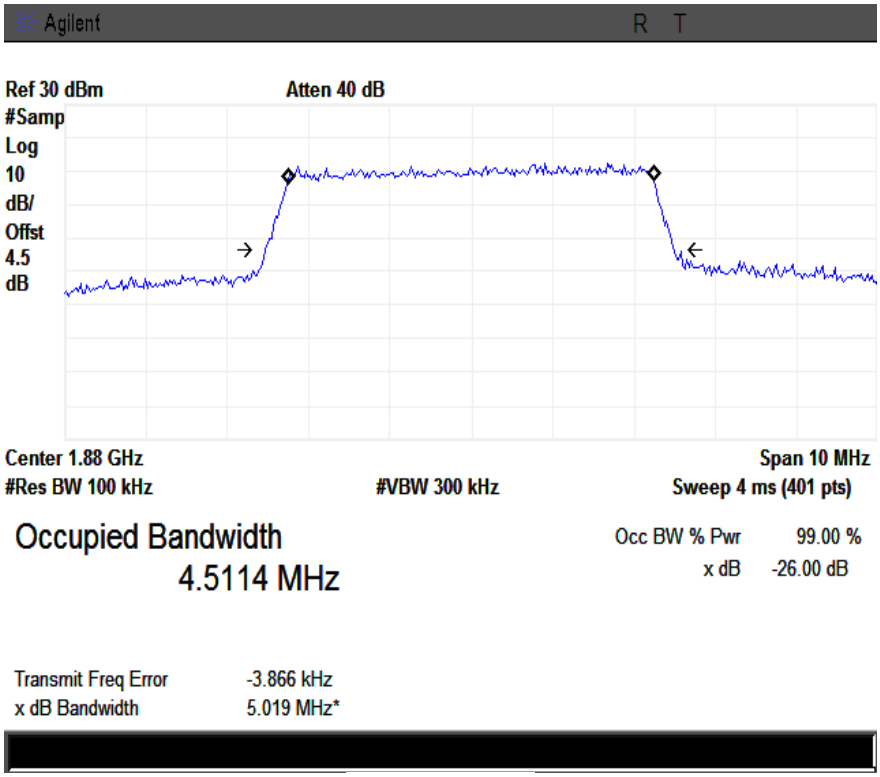
1-QPSK-5M



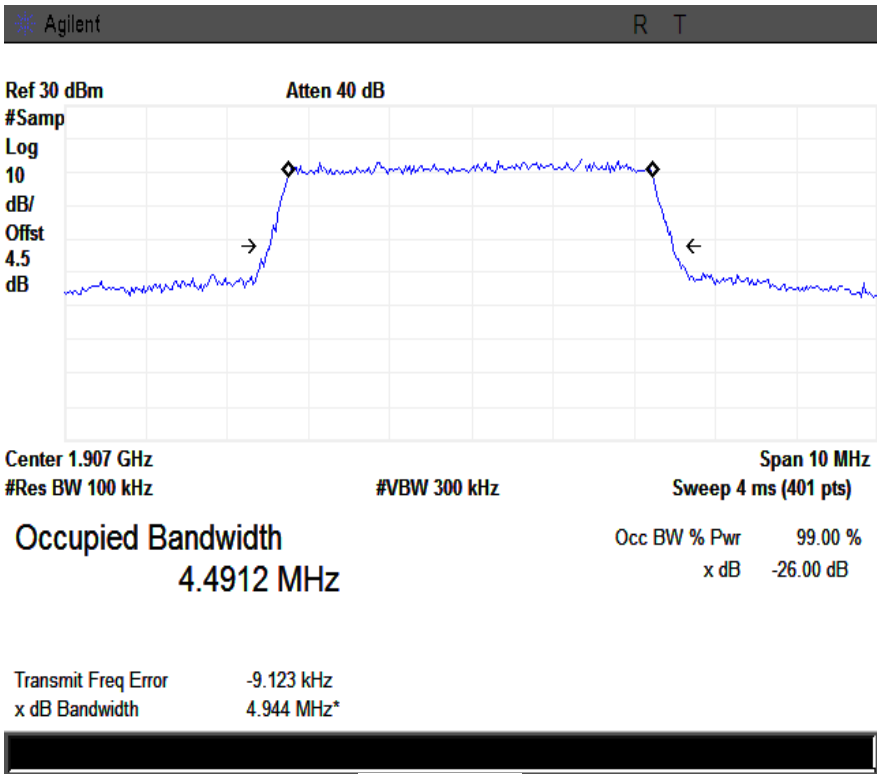
1-16QAM-5M



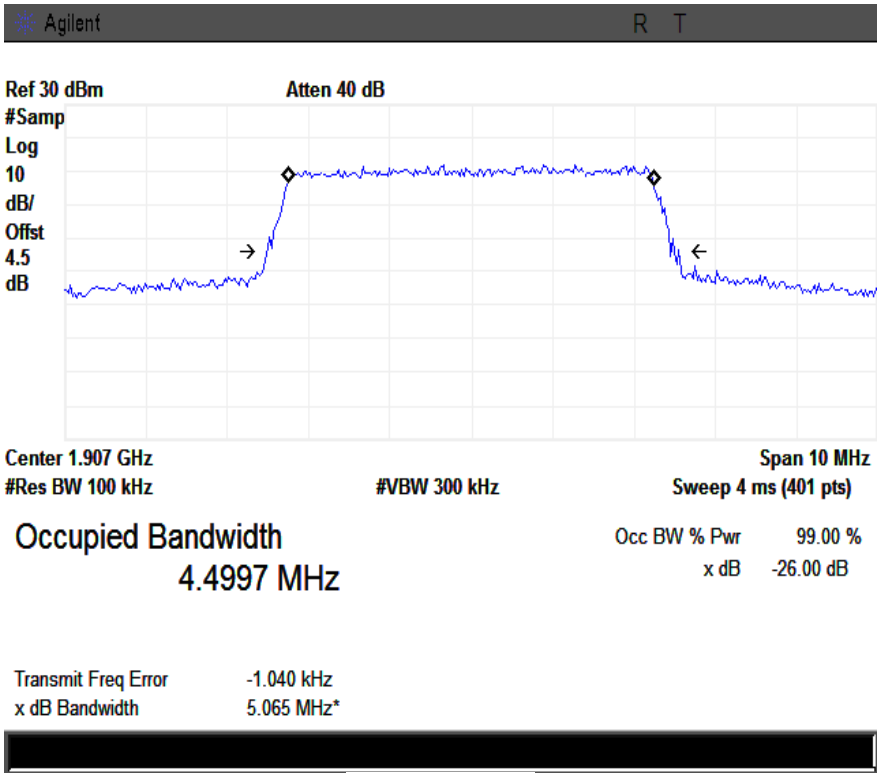
2-QPSK-5M



2-16QAM-5M



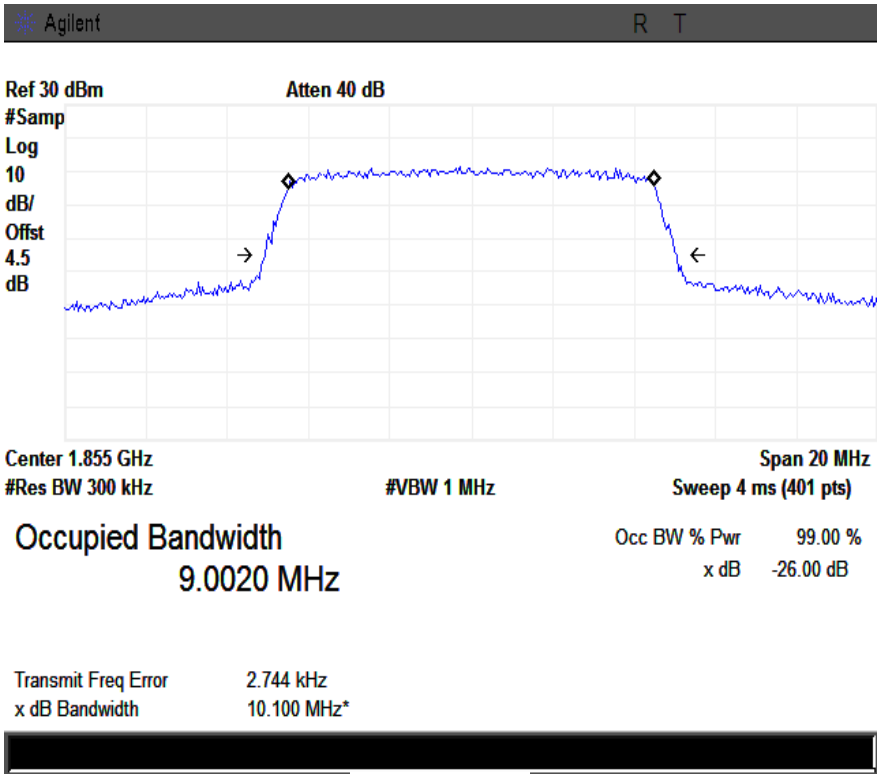
3-QPSK-5M



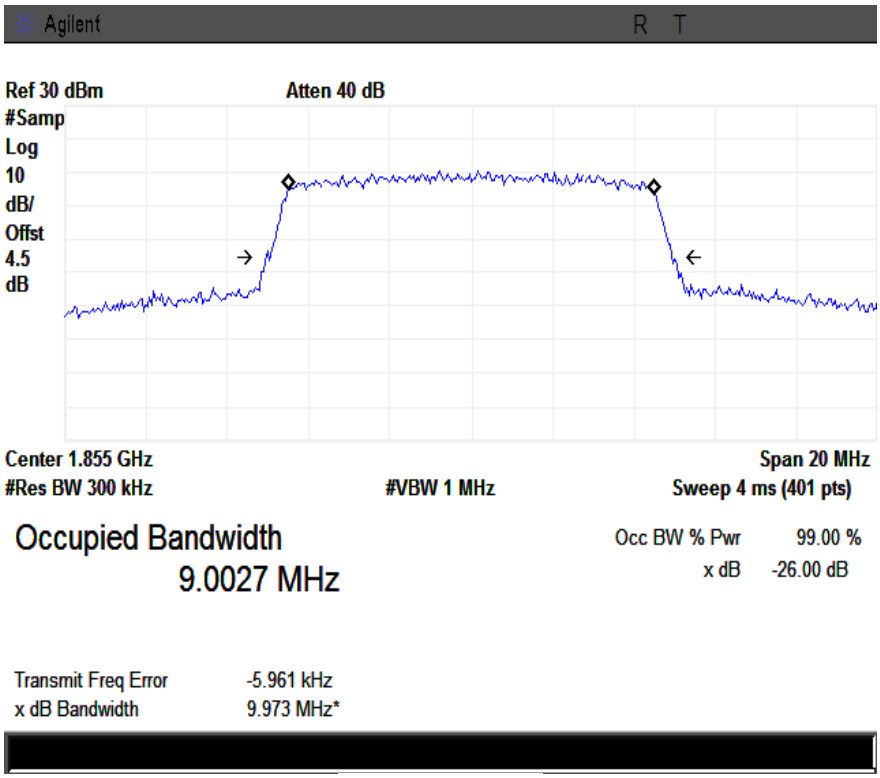
3-16QAM-5M

LTE Band 2 Mode:

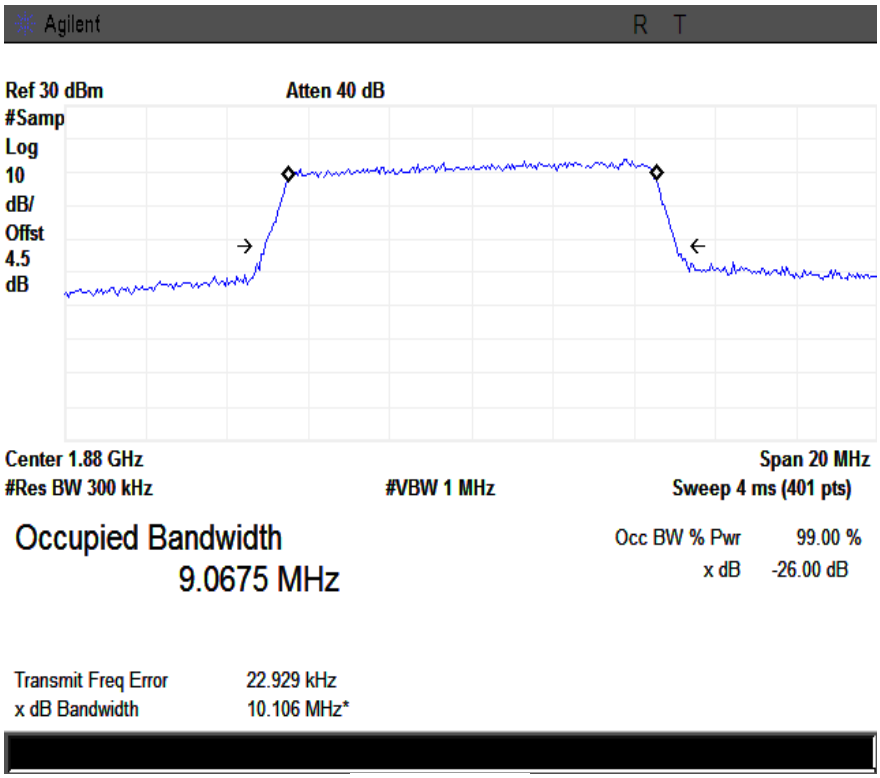
10MHz



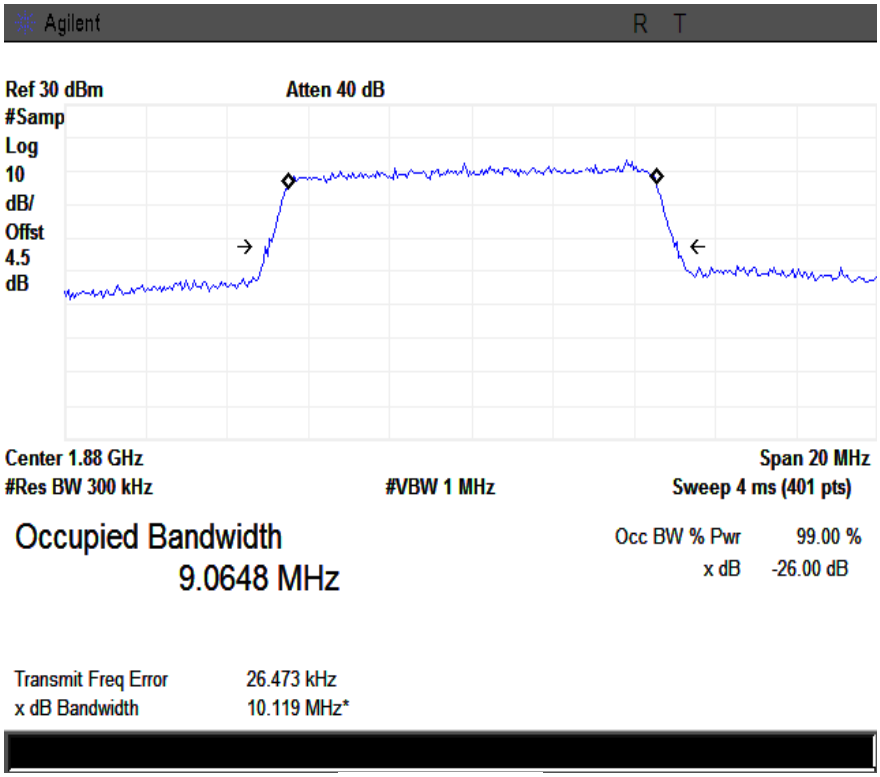
1-QPSK-10M



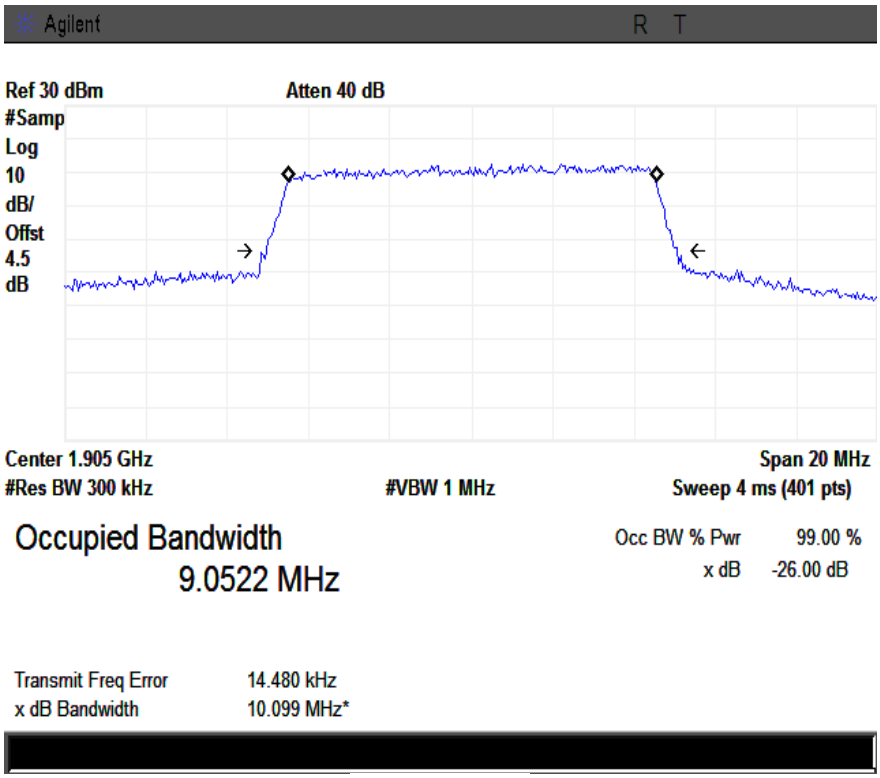
1-16QAM-10M



2-QPSK-10M



2-16QAM-10M



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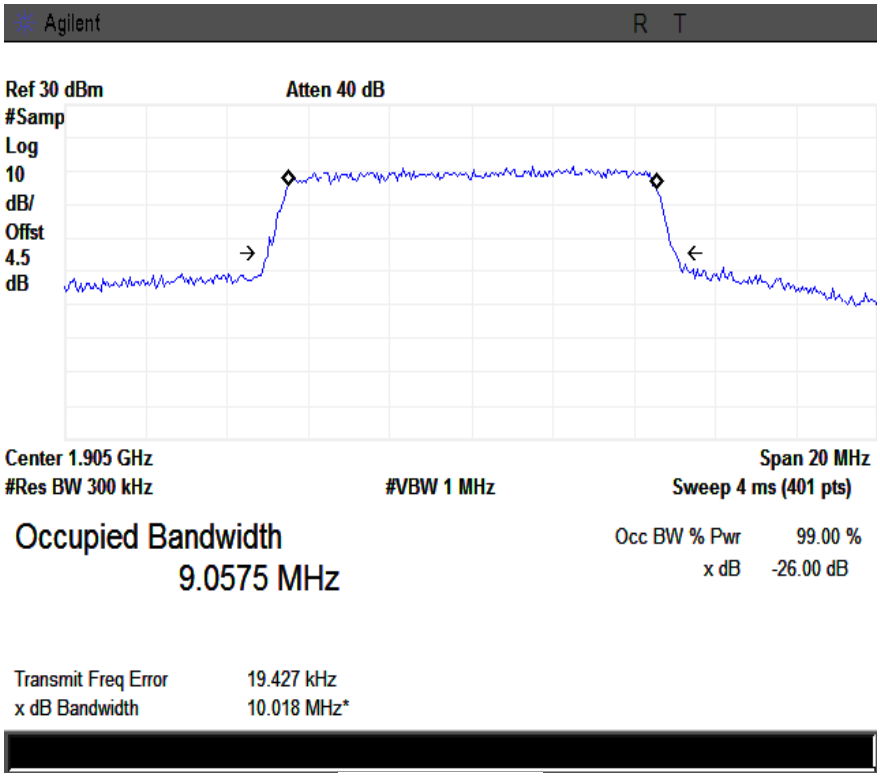
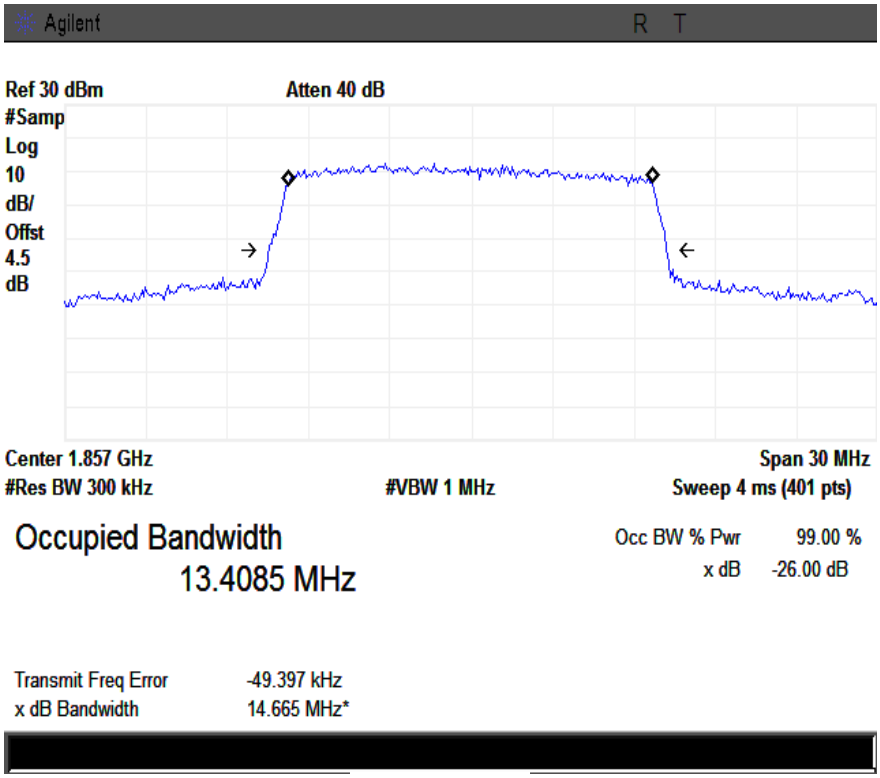


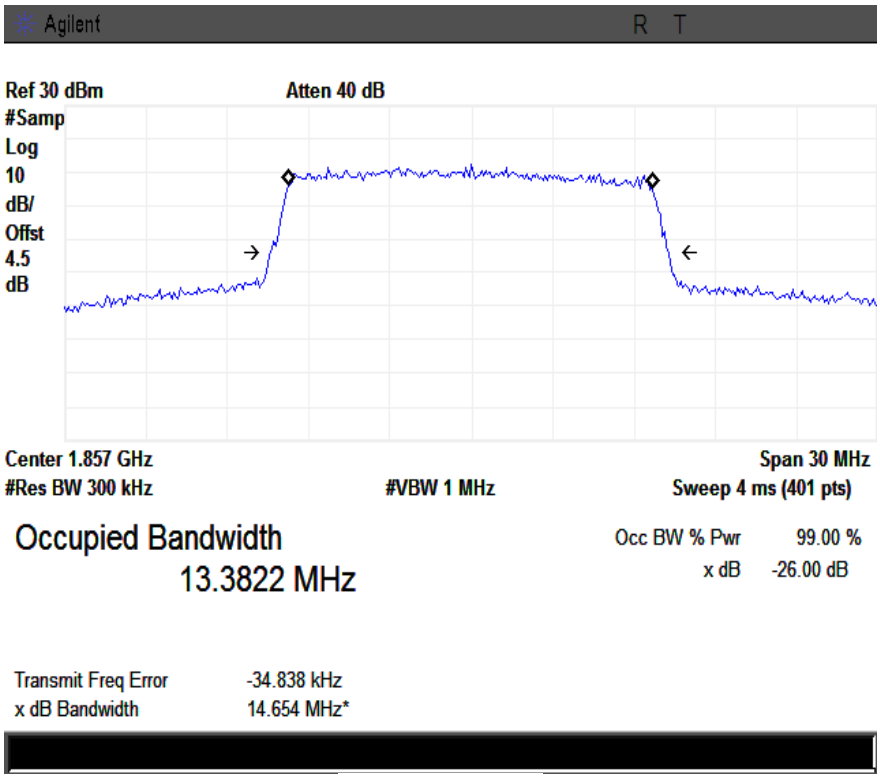
3-16QAM-10M

LTE Band 2 Mode:

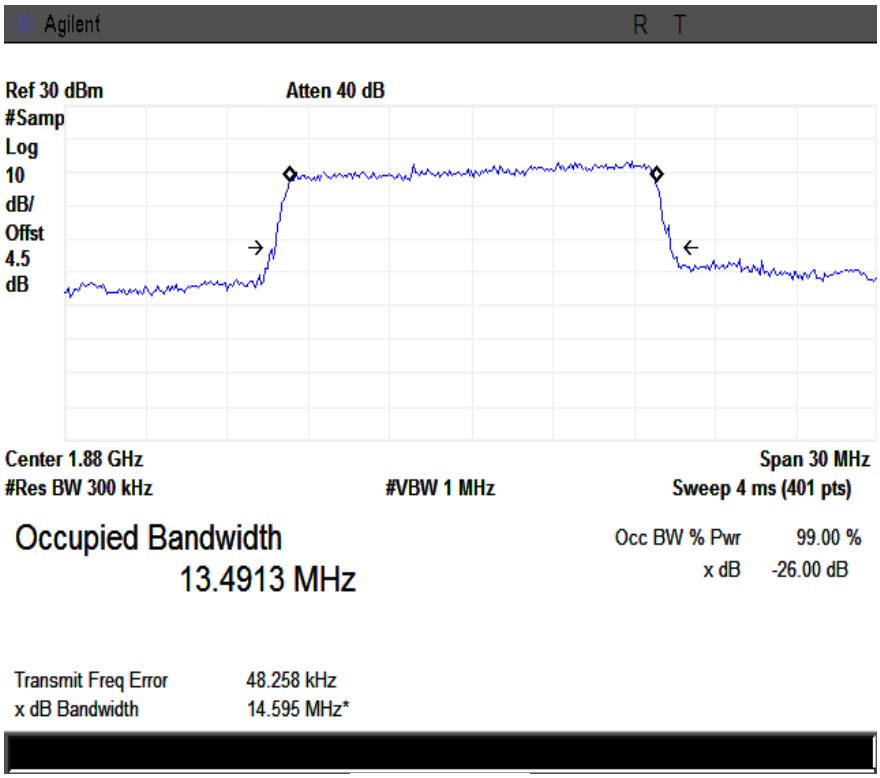
15MHz



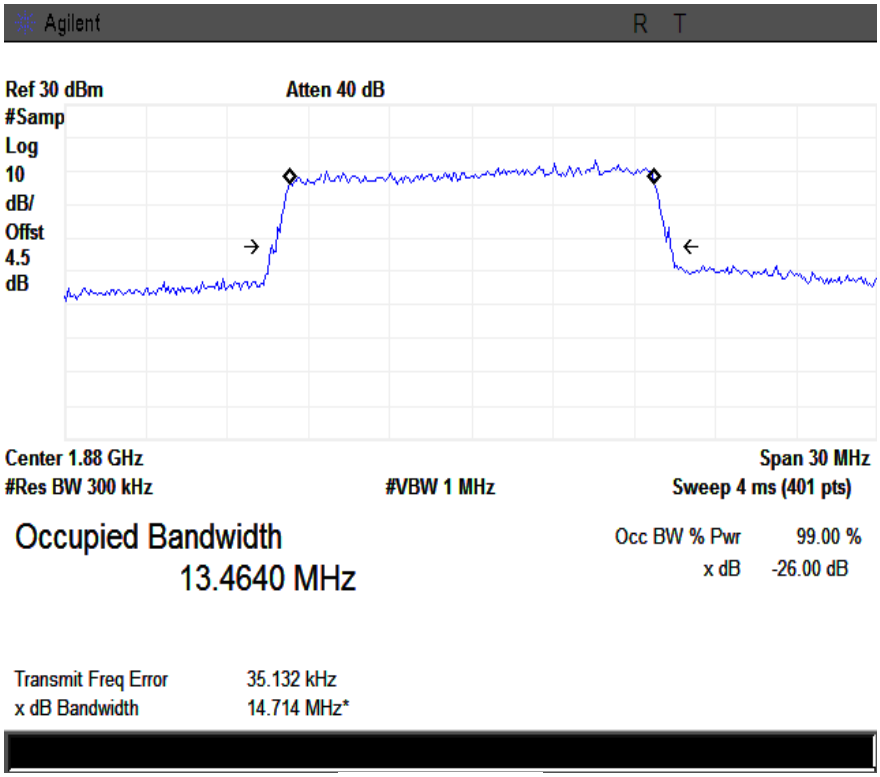
1-QPSK-15M



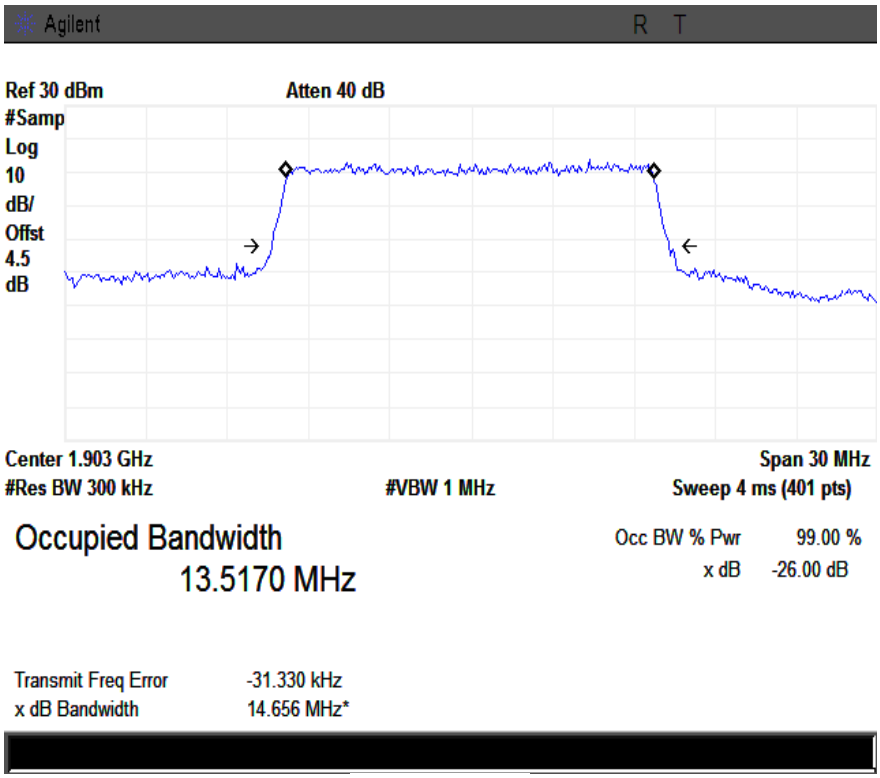
1-16QAM-15M



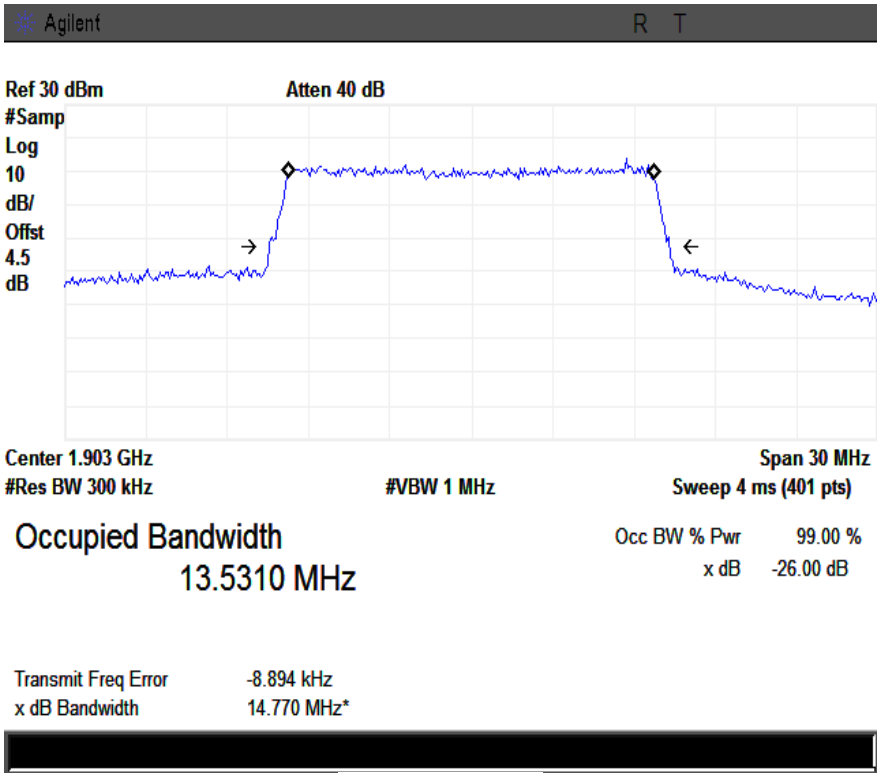
2-QPSK-15M



2-16QAM-15M



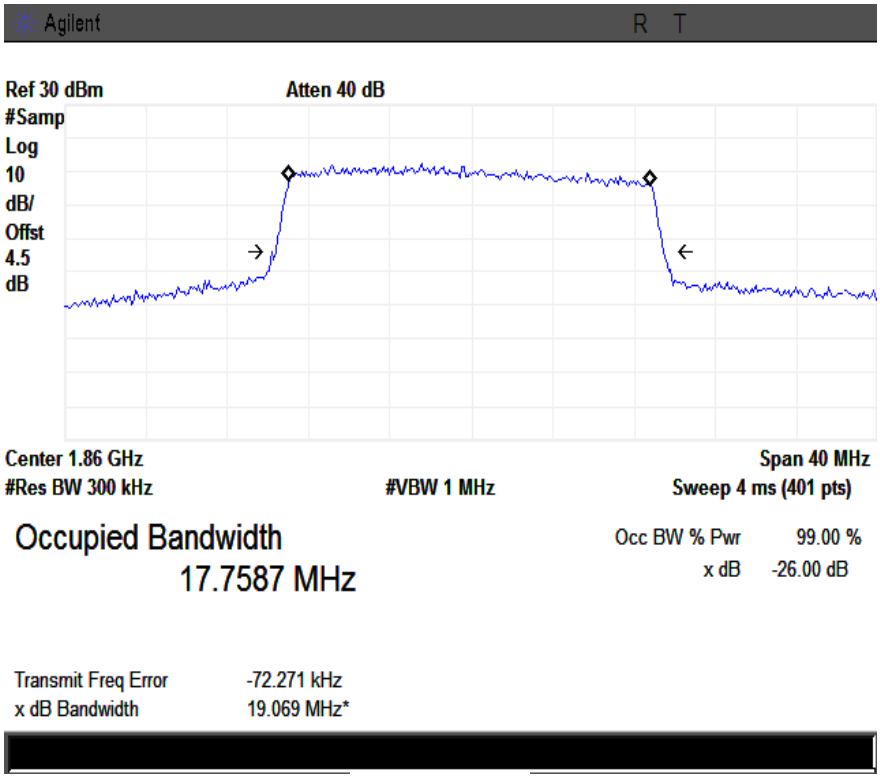
3-QPSK-15M



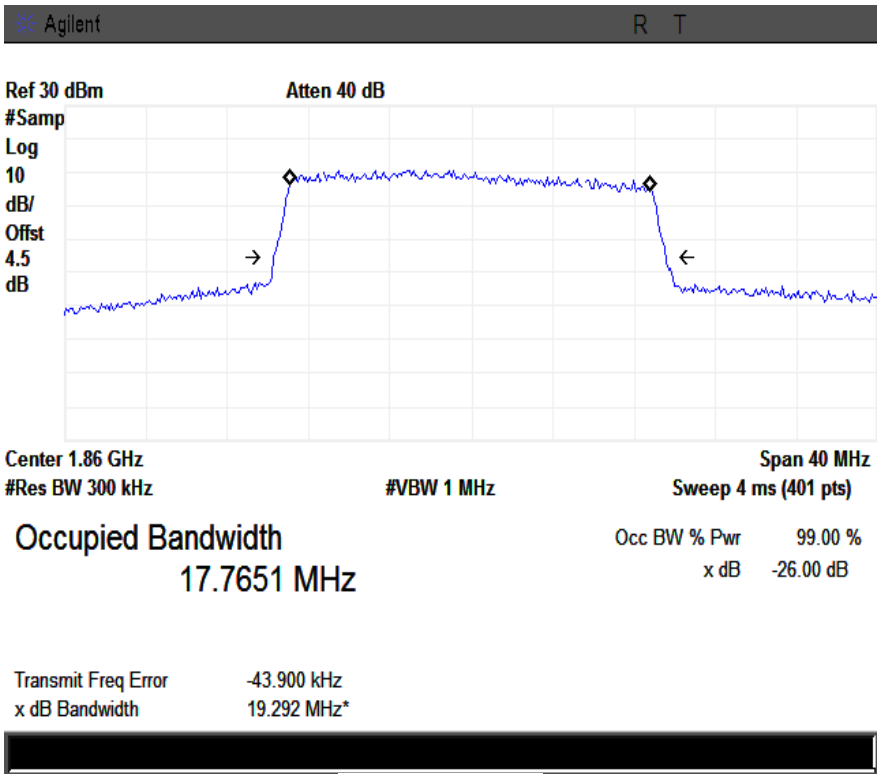
3-16QAM-15M

LTE Band 2 Mode:

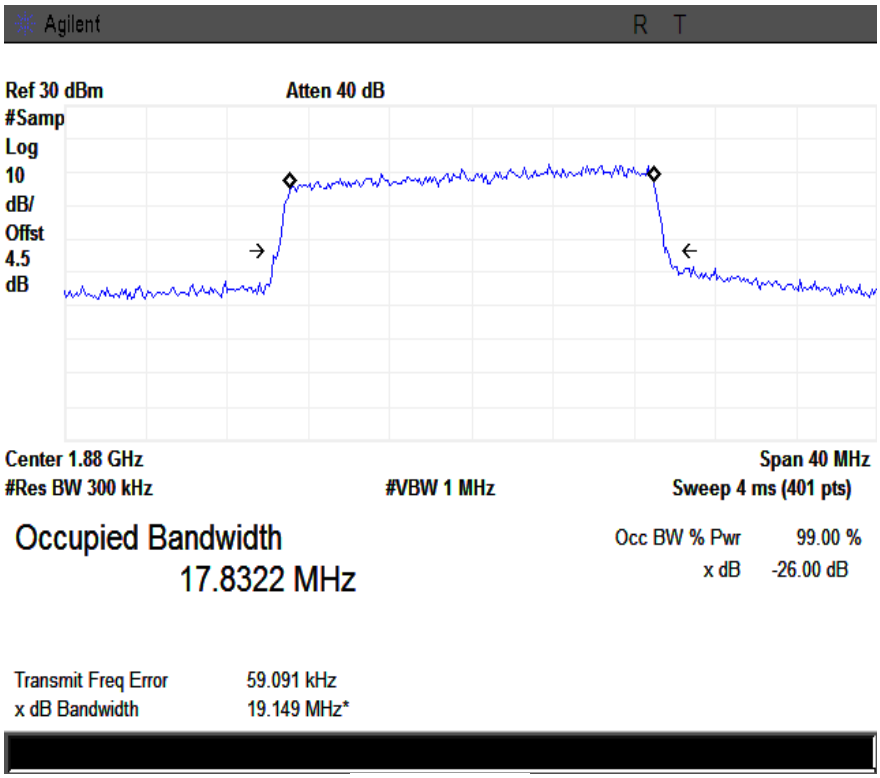
20MHz



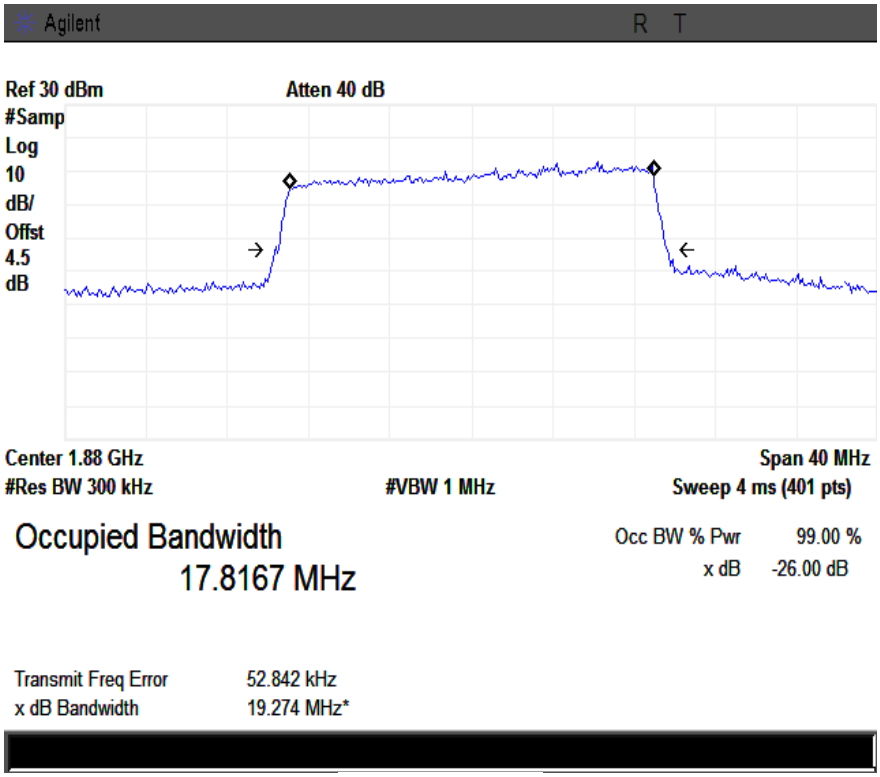
1-QPSK-20M



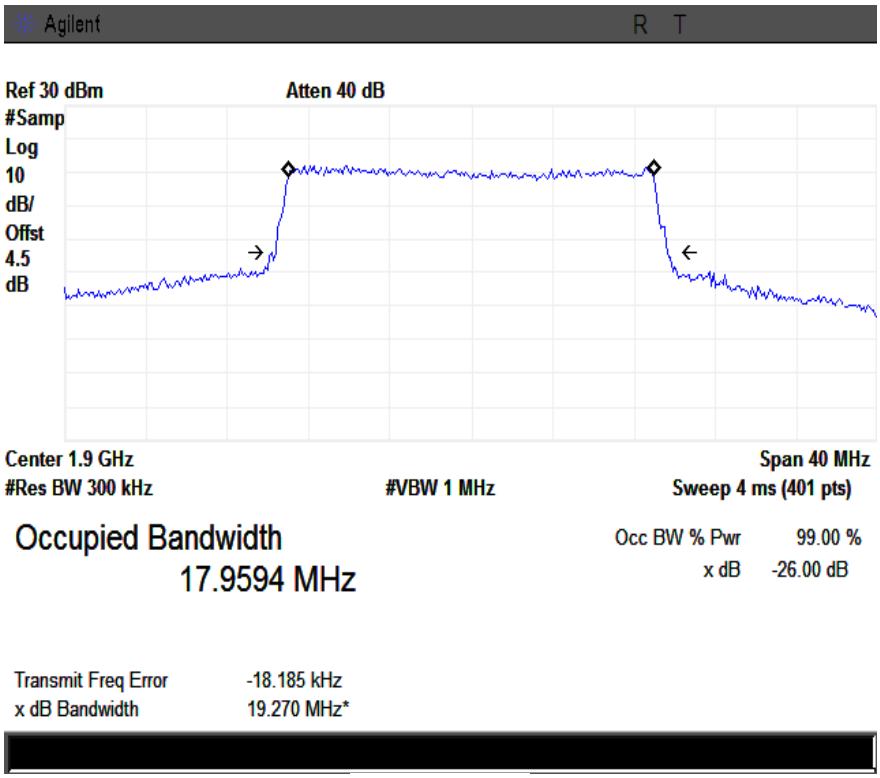
1-16QAM-20M



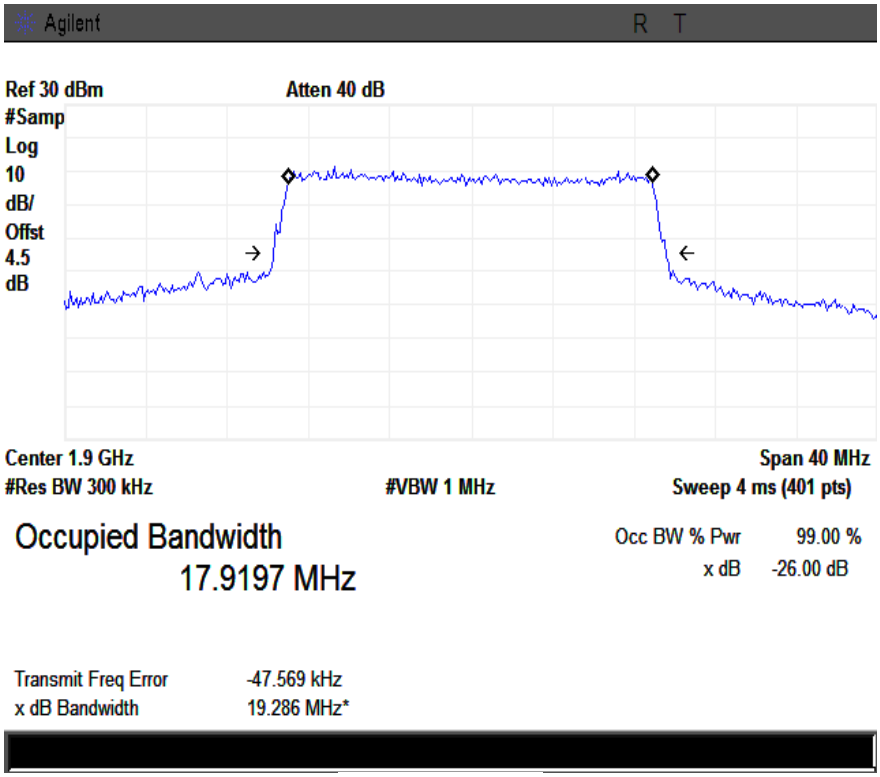
2-QPSK-20M



2-16QAM-20M



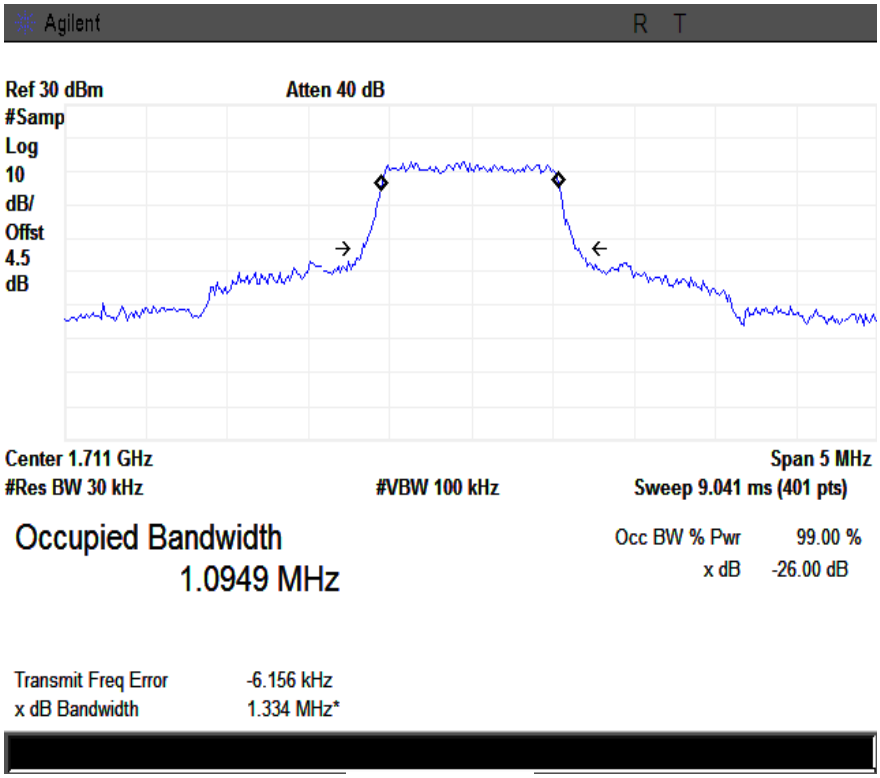
3-QPSK-20M



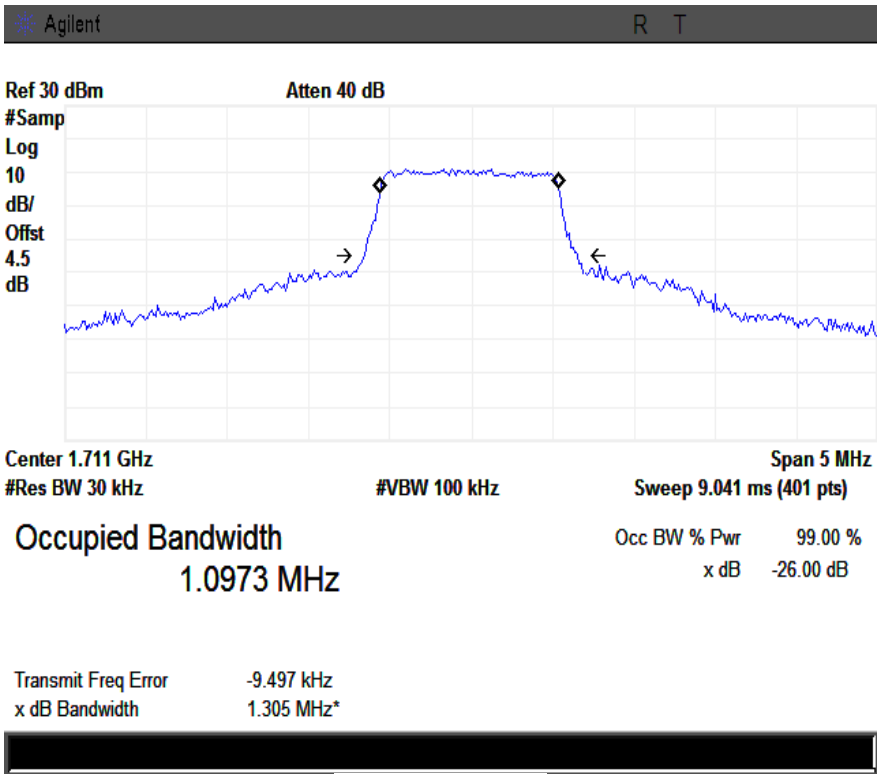
3-16QAM-20M

LTE Band 4 Mode:

1.4MHz



1-QPSK-1.4M



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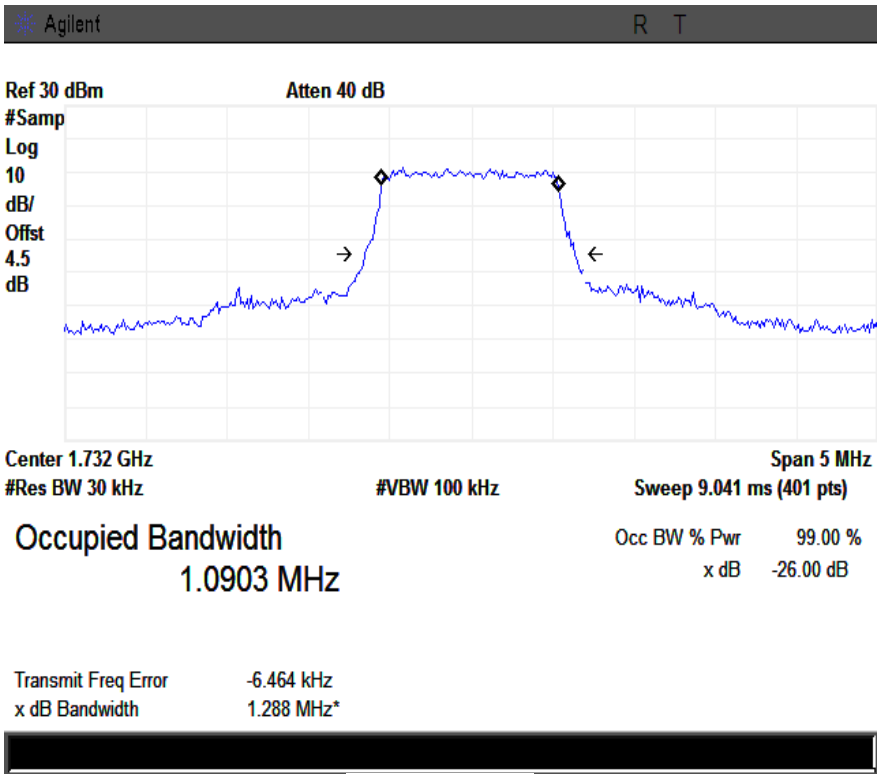
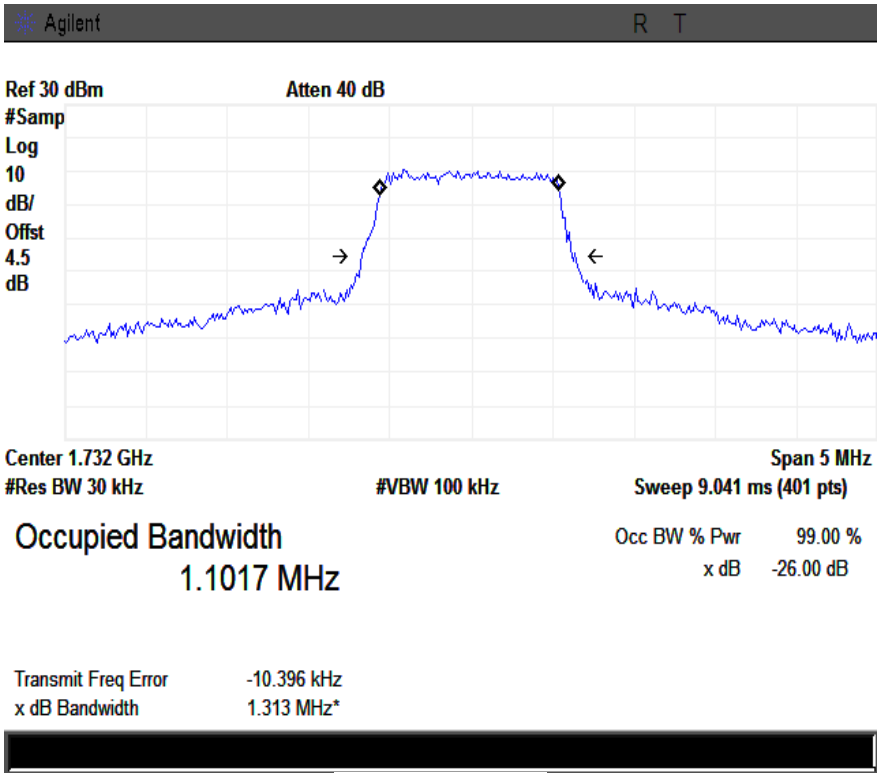


2-QPSK-1.4M



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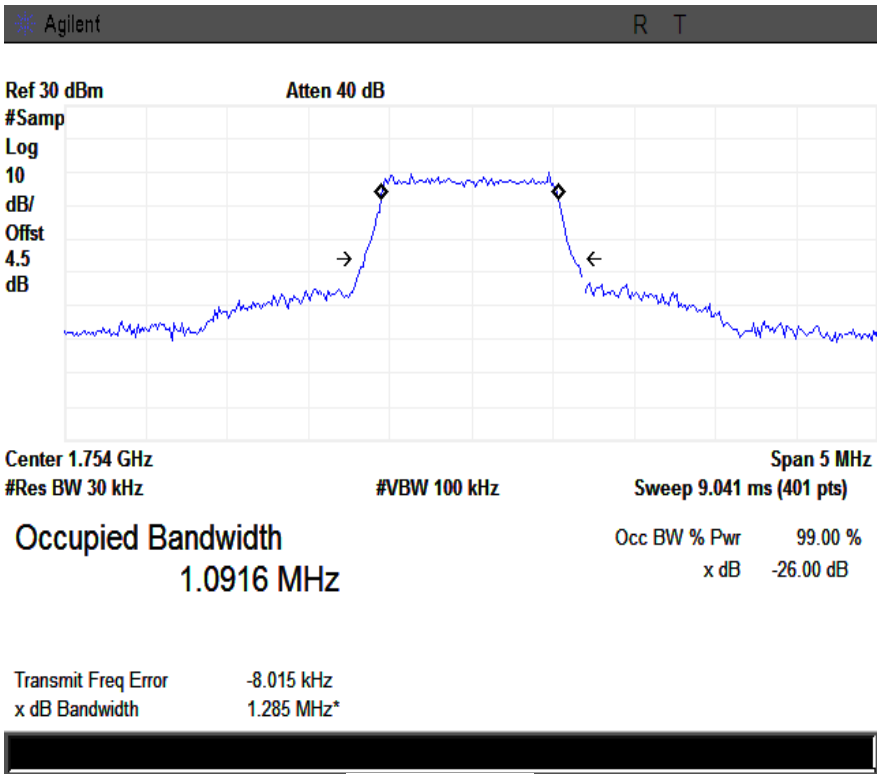
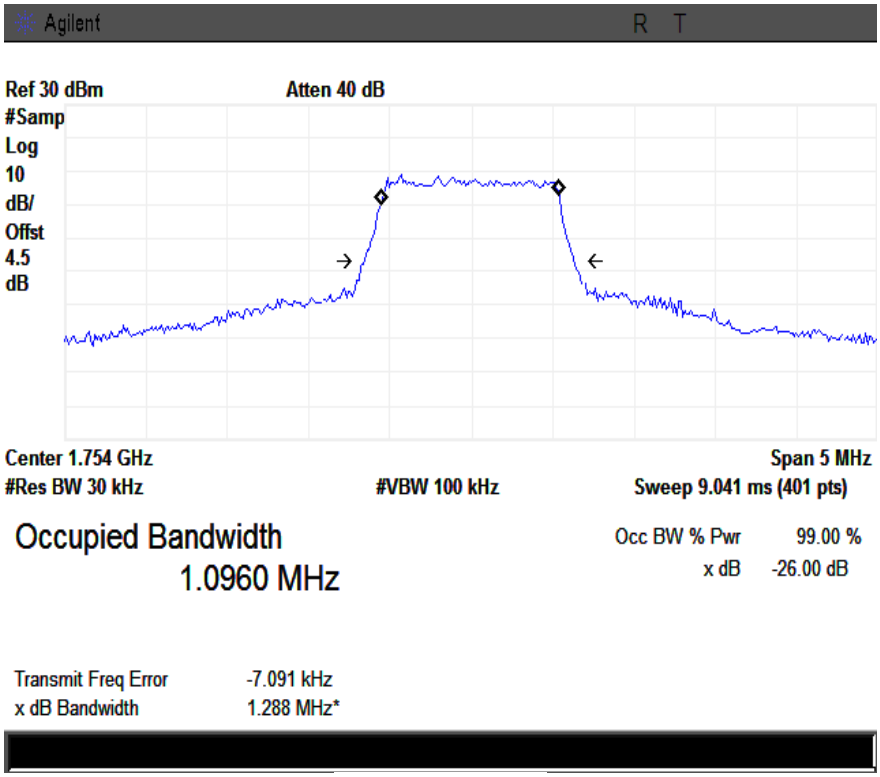


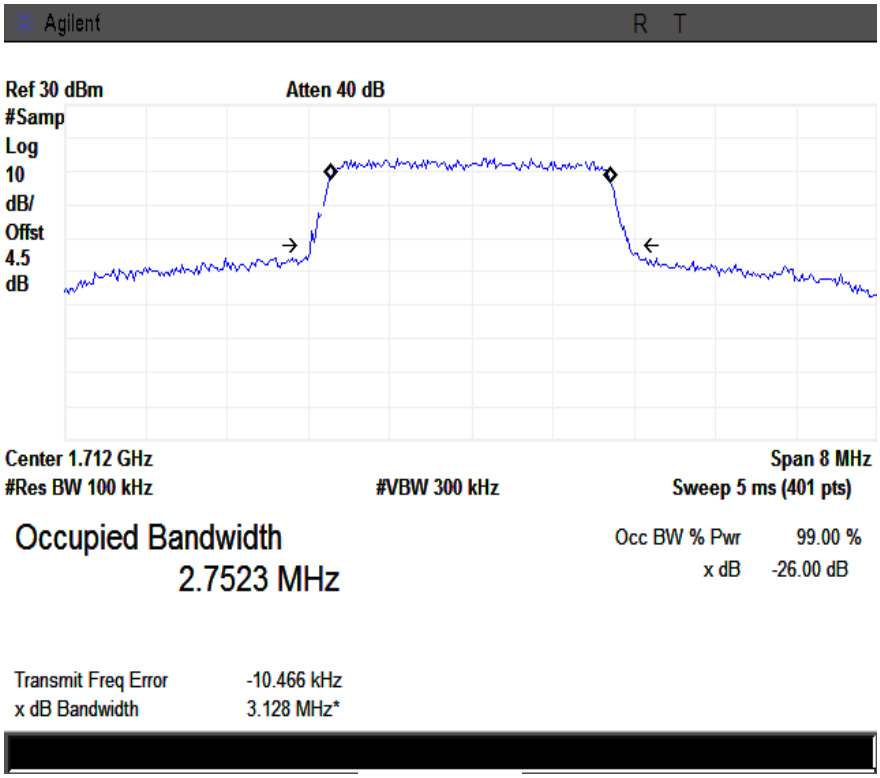
3-QPSK-1.4M



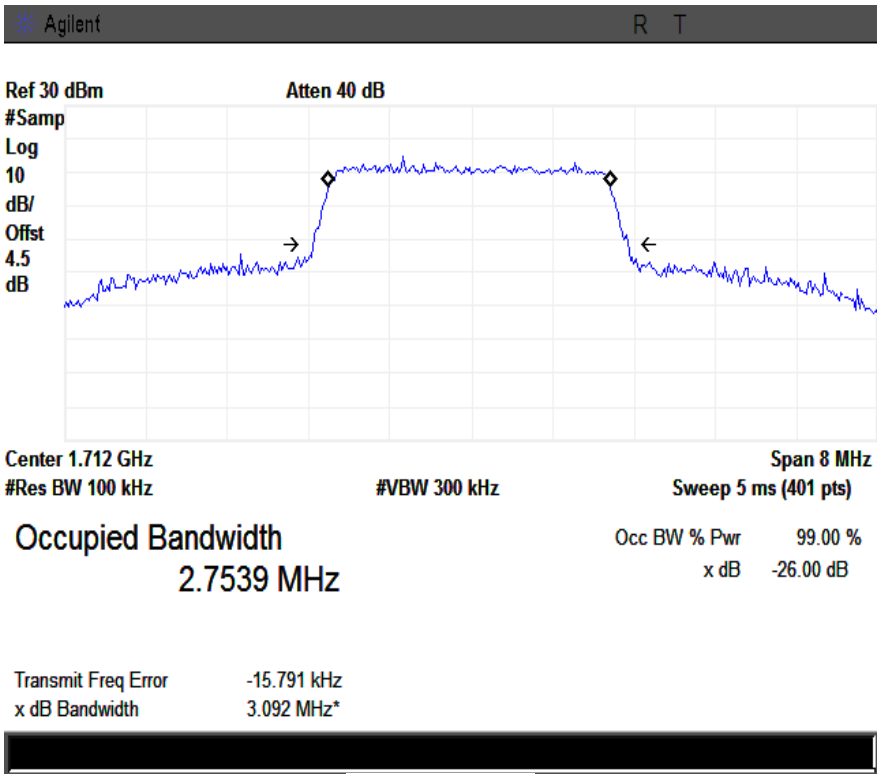
3-16QAM-1.4M

LTE Band 4 Mode:

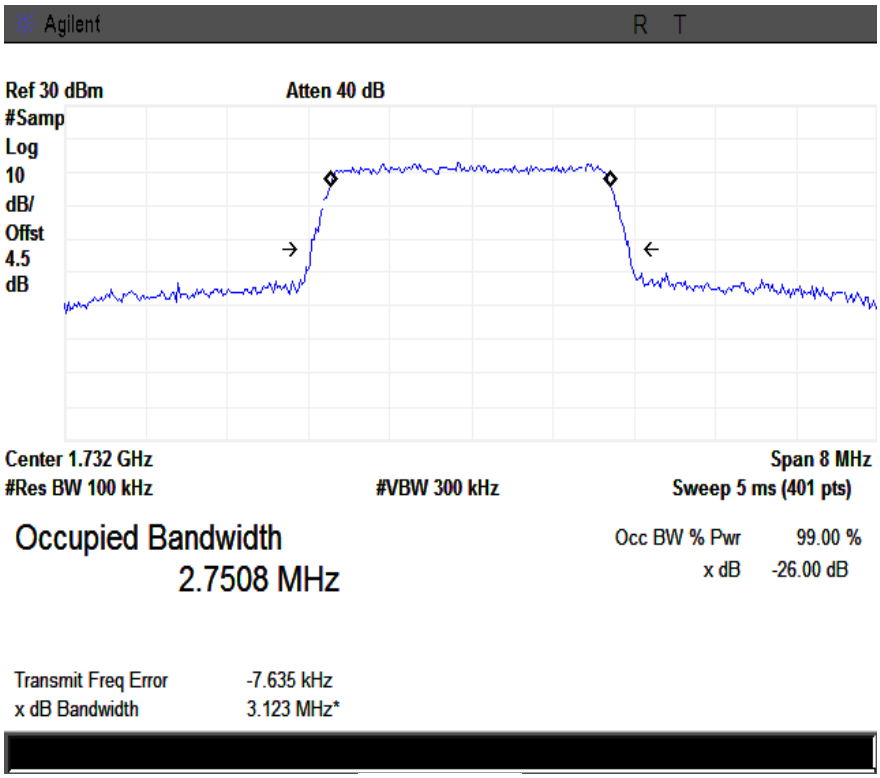
3MHz



1-QPSK-3M



1-16QAM-3M



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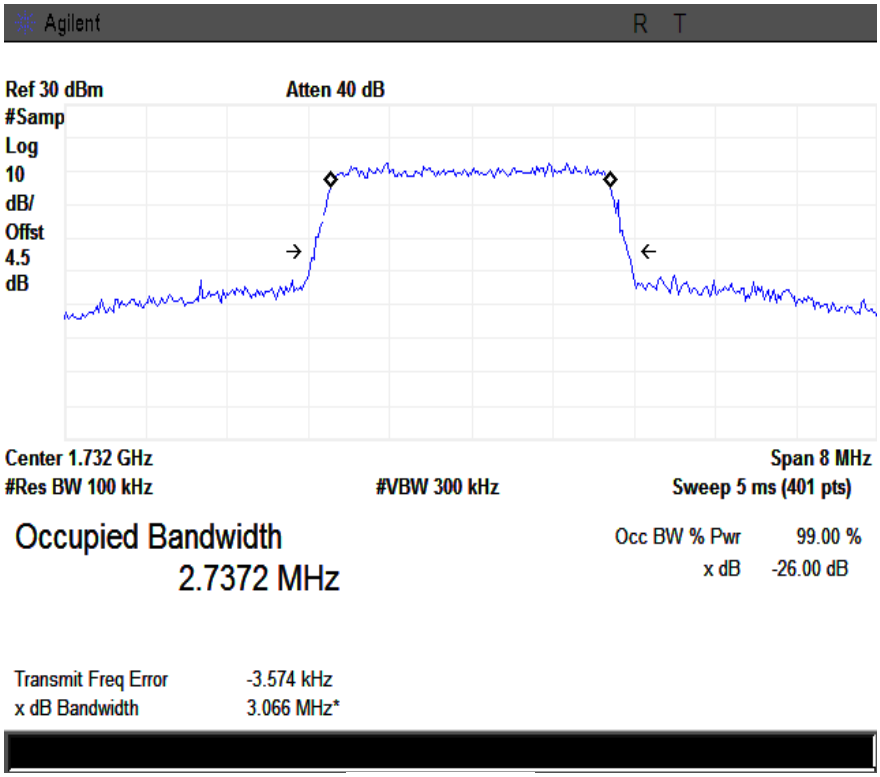

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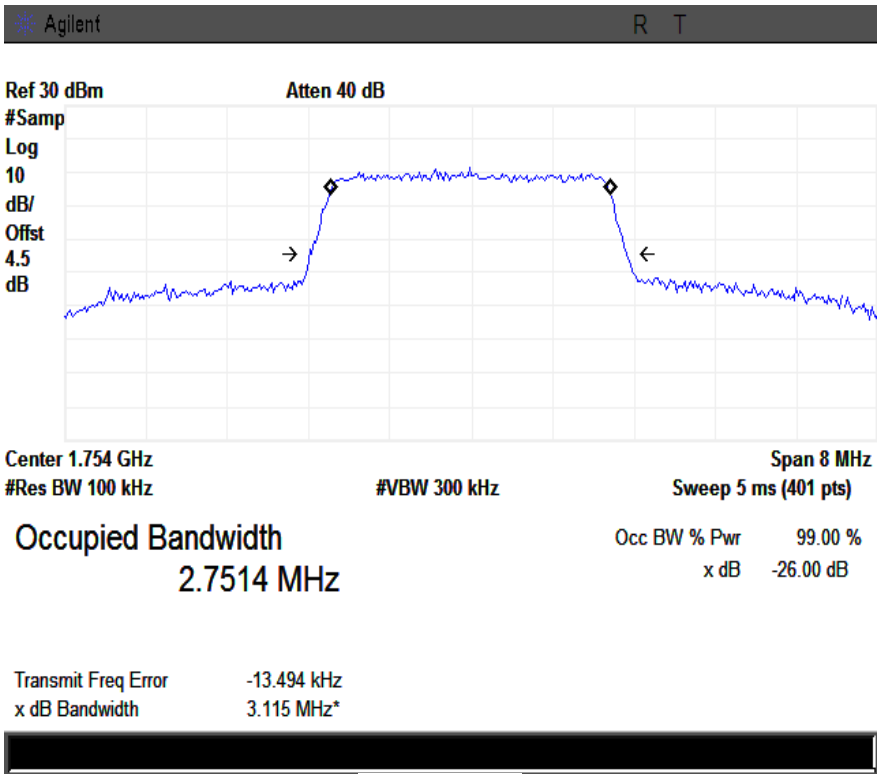
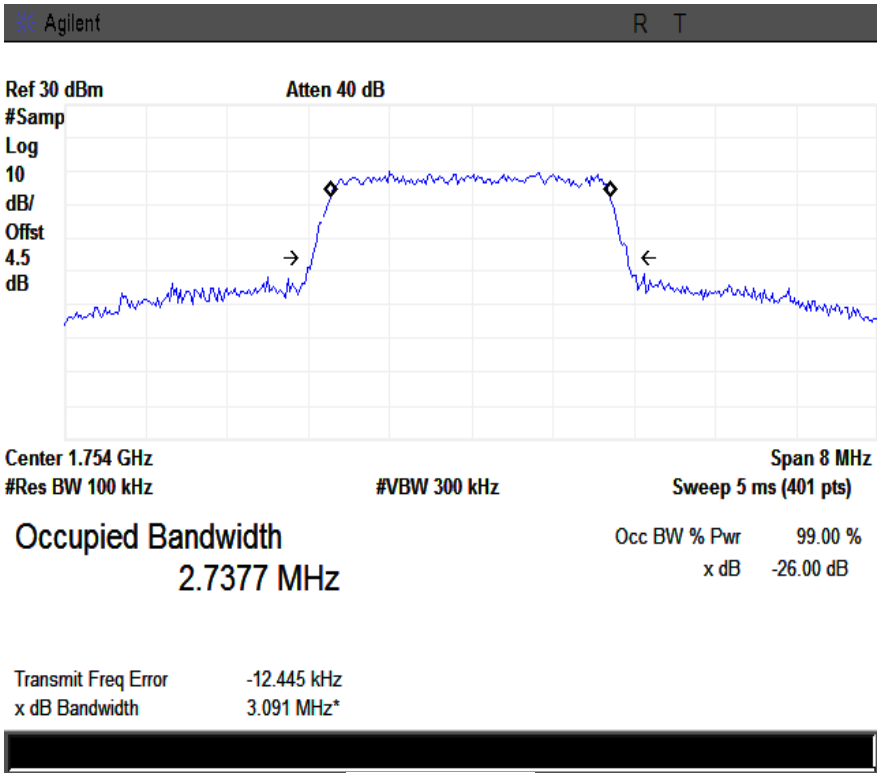


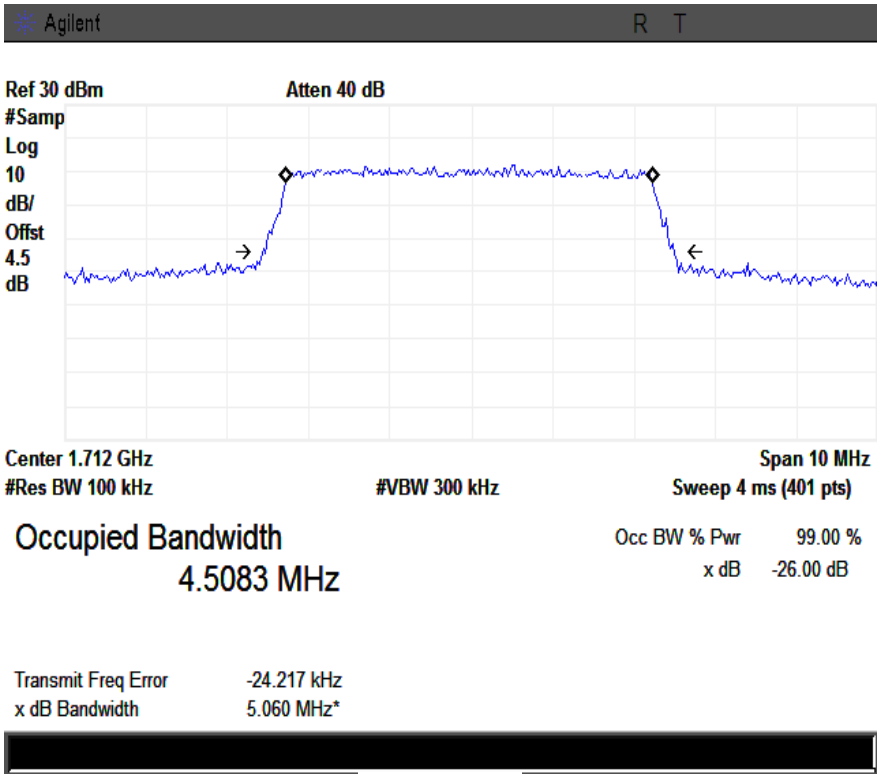
3-QPSK-3M



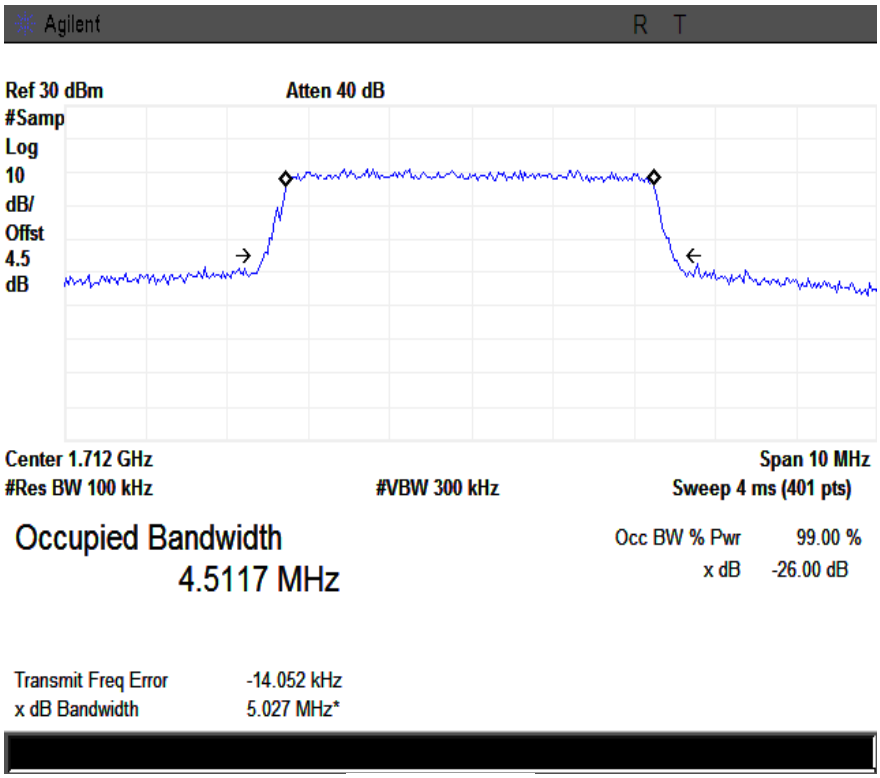
3-16QAM-3M

LTE Band 4 Mode:

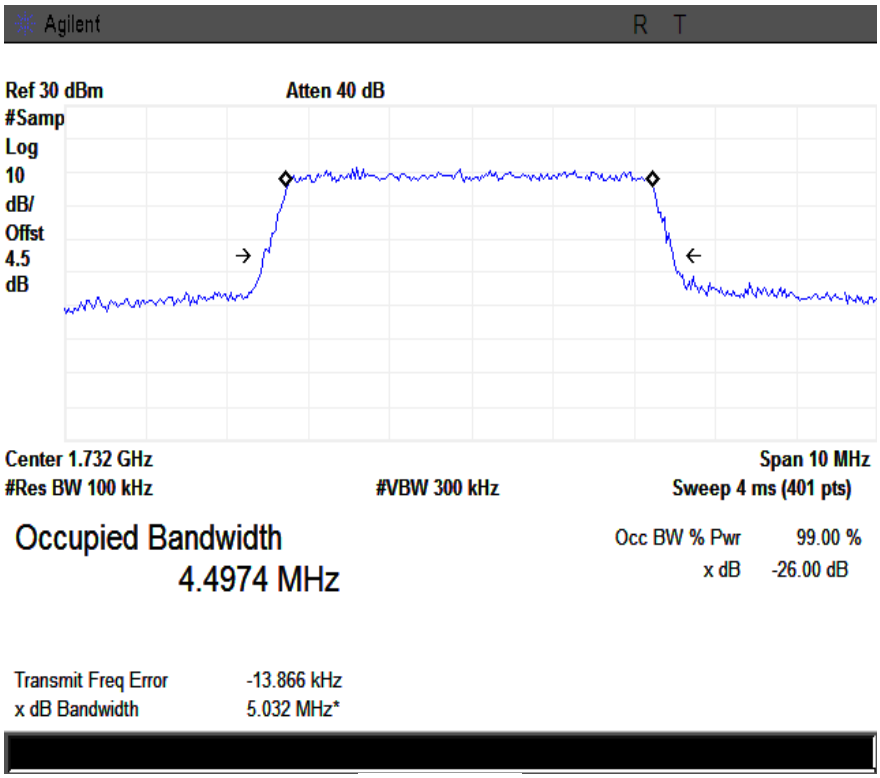
5MHz



1-QPSK-5M



1-16QAM-5M



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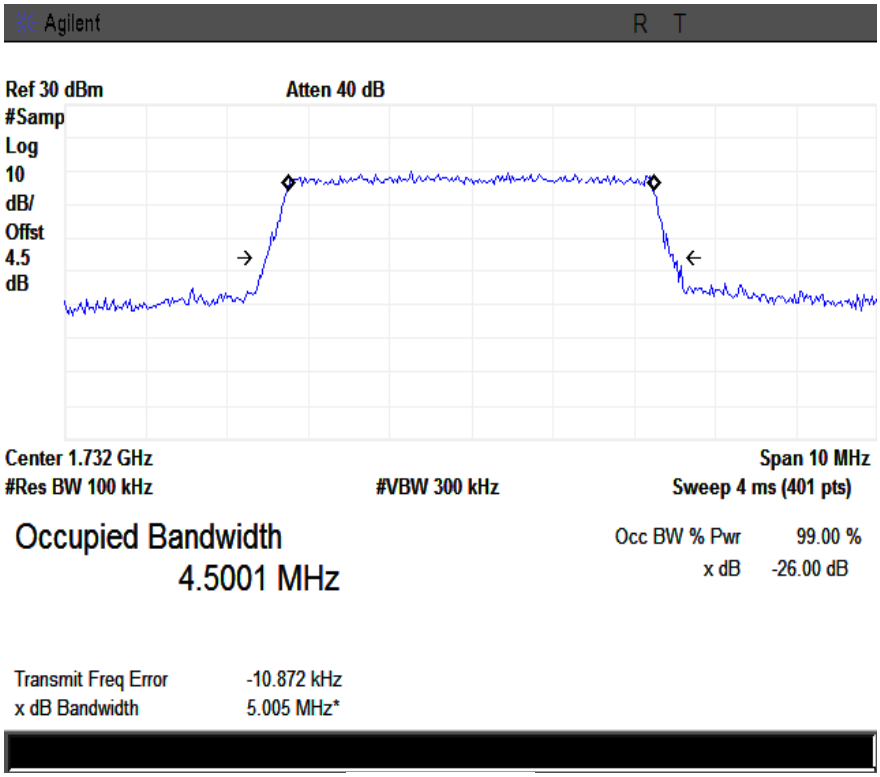

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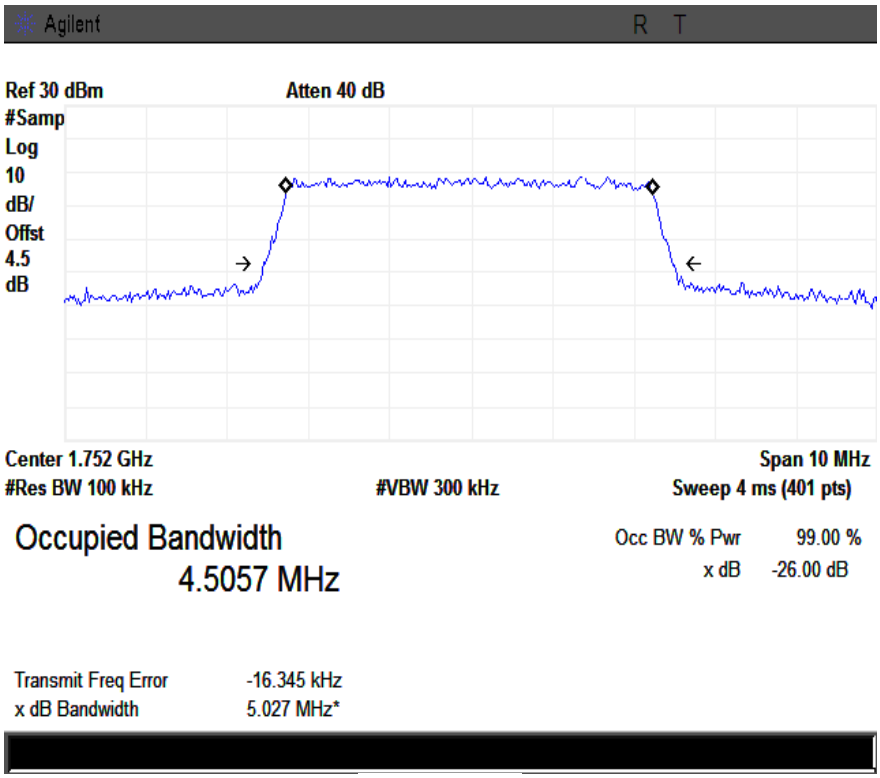

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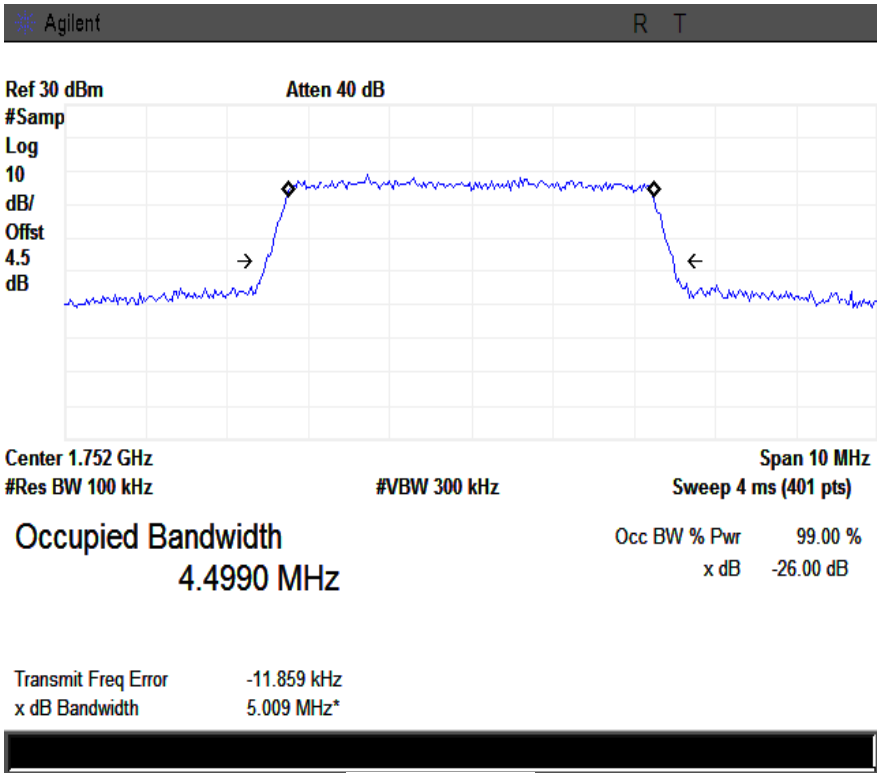
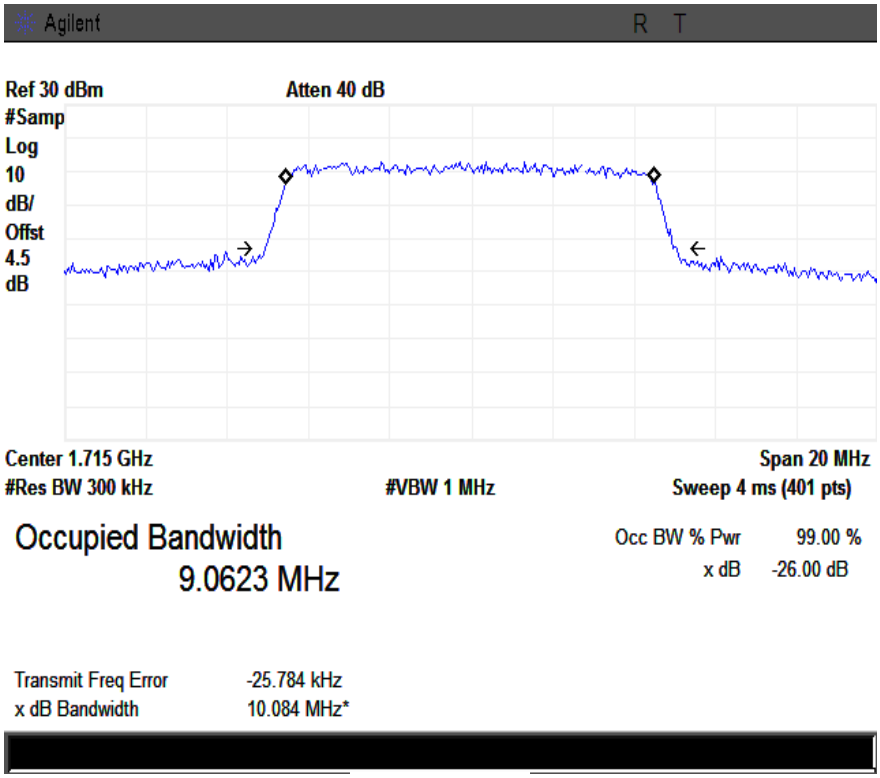


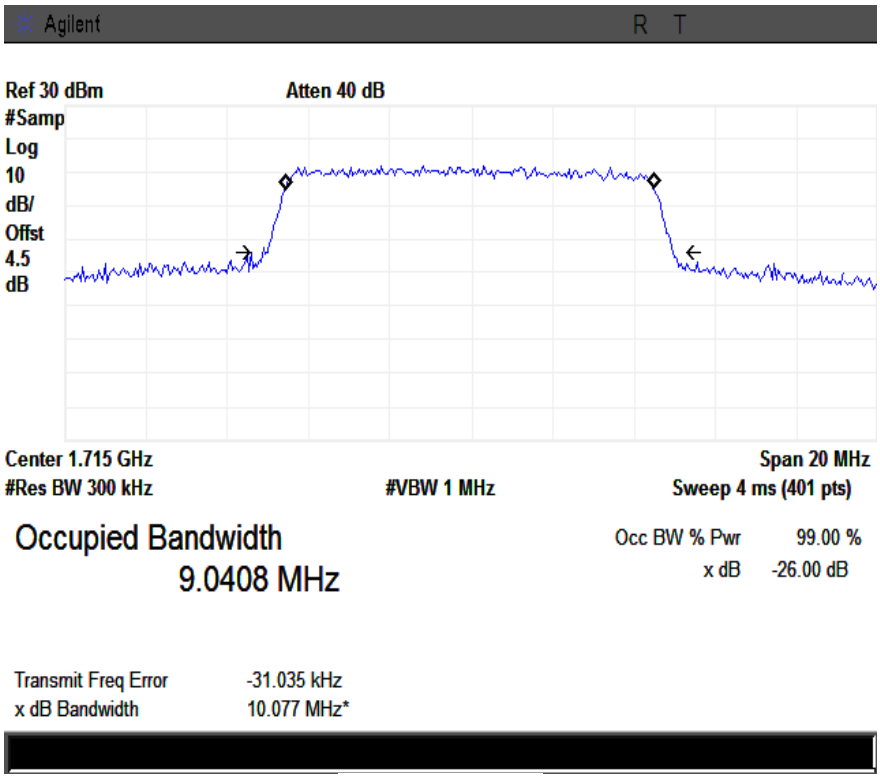
3-16QAM-5M

LTE Band 4 Mode:

10MHz



1-QPSK-10M



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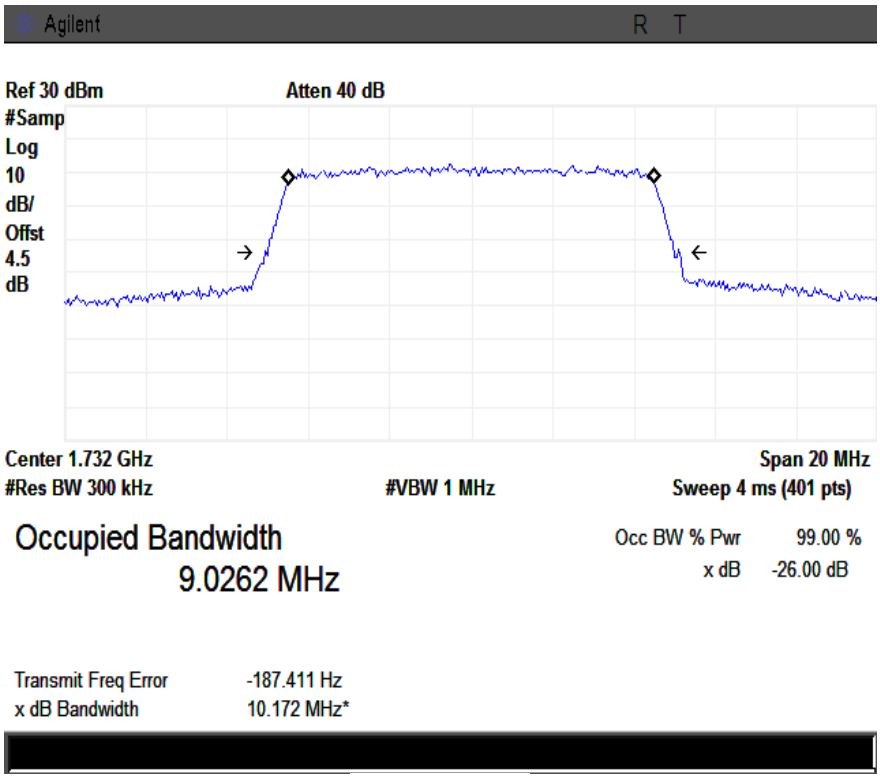
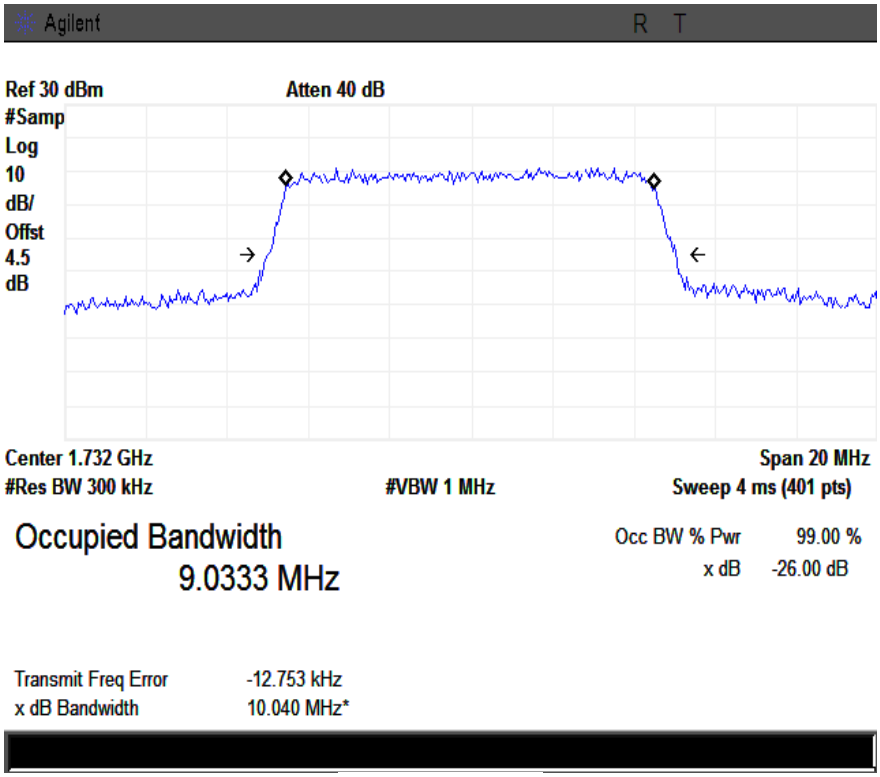


2-QPSK-10M



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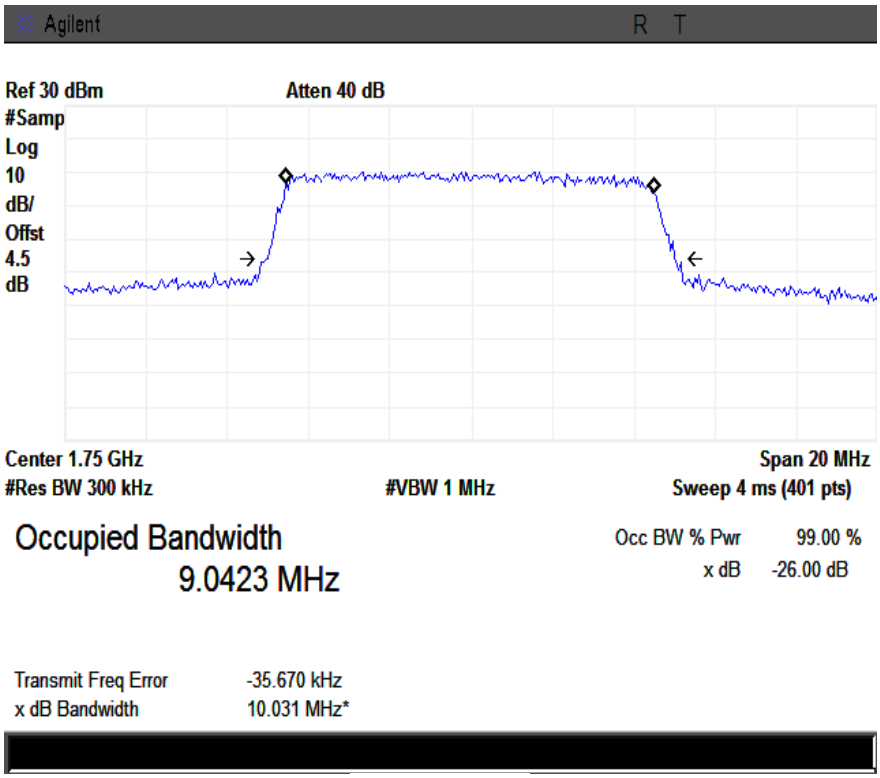

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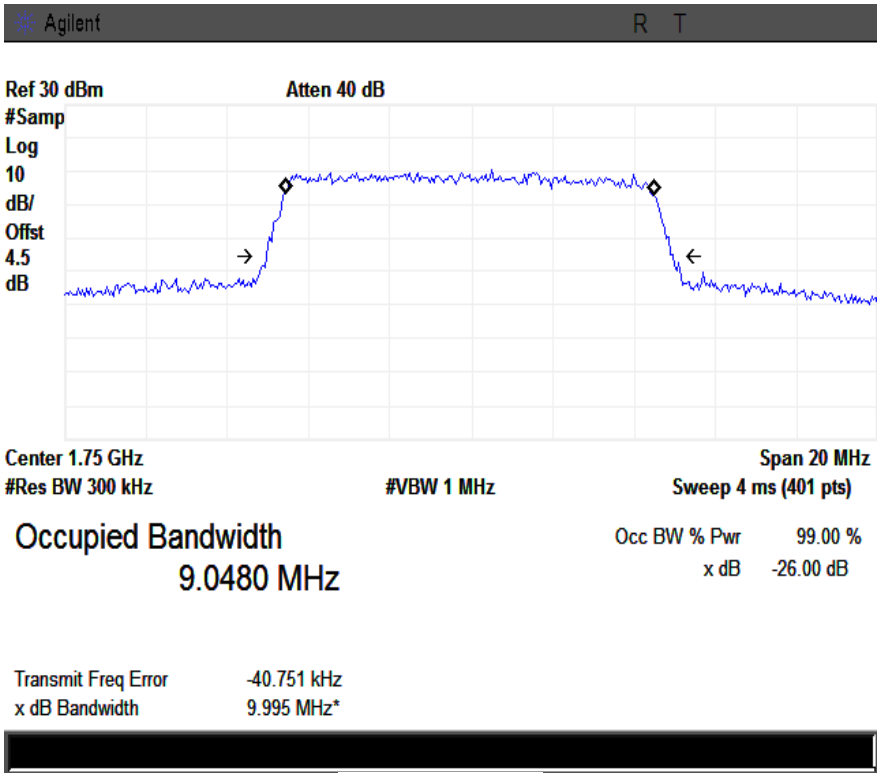
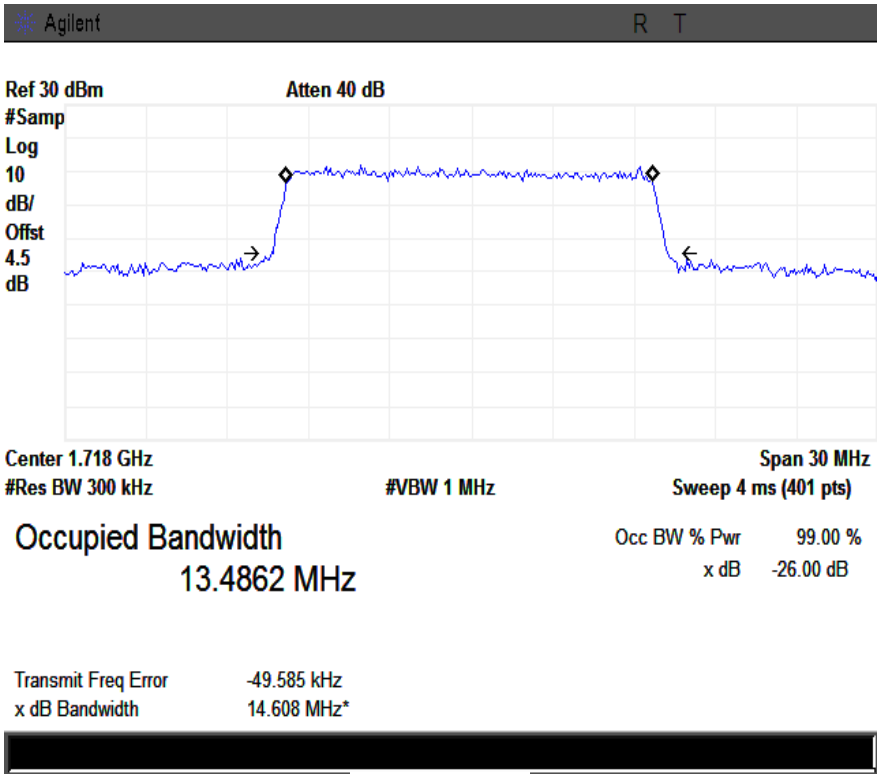


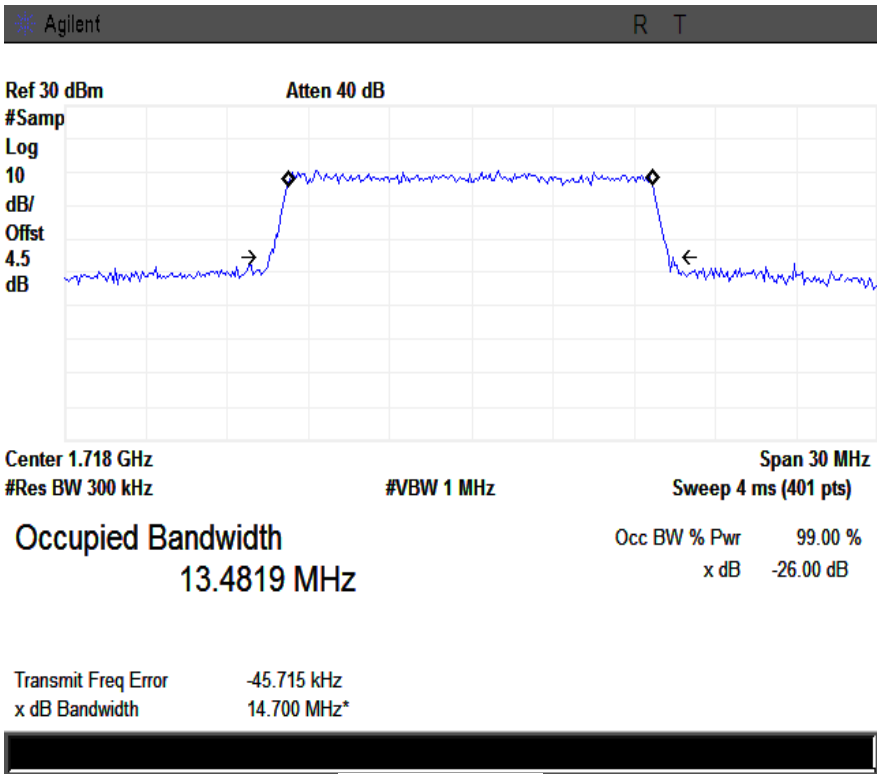
3-16QAM-10M

LTE Band 4 Mode:

15MHz



1-QPSK-15M



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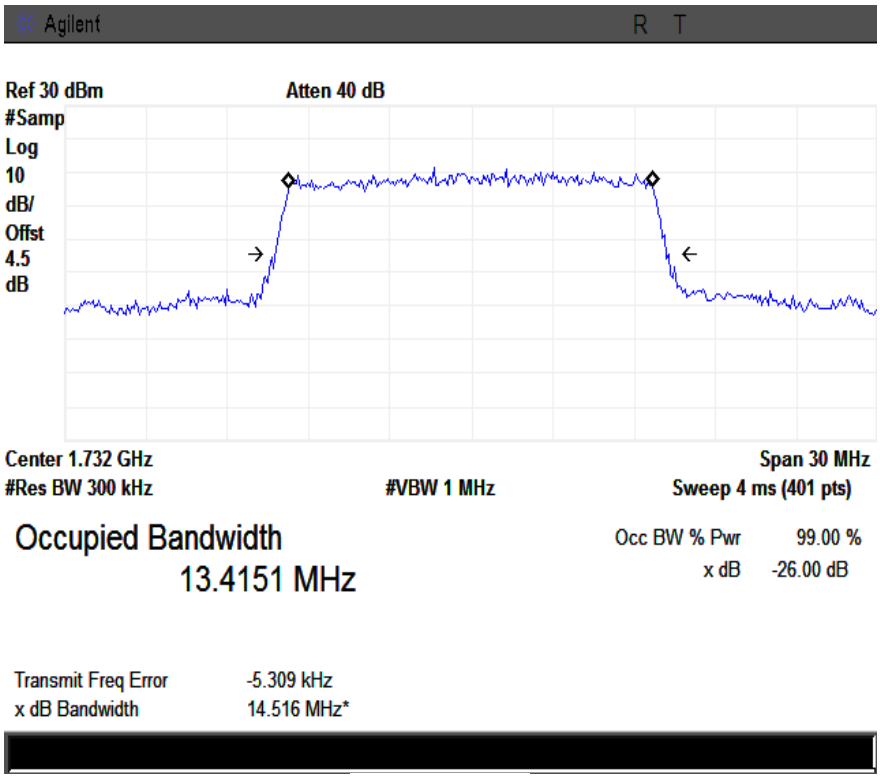
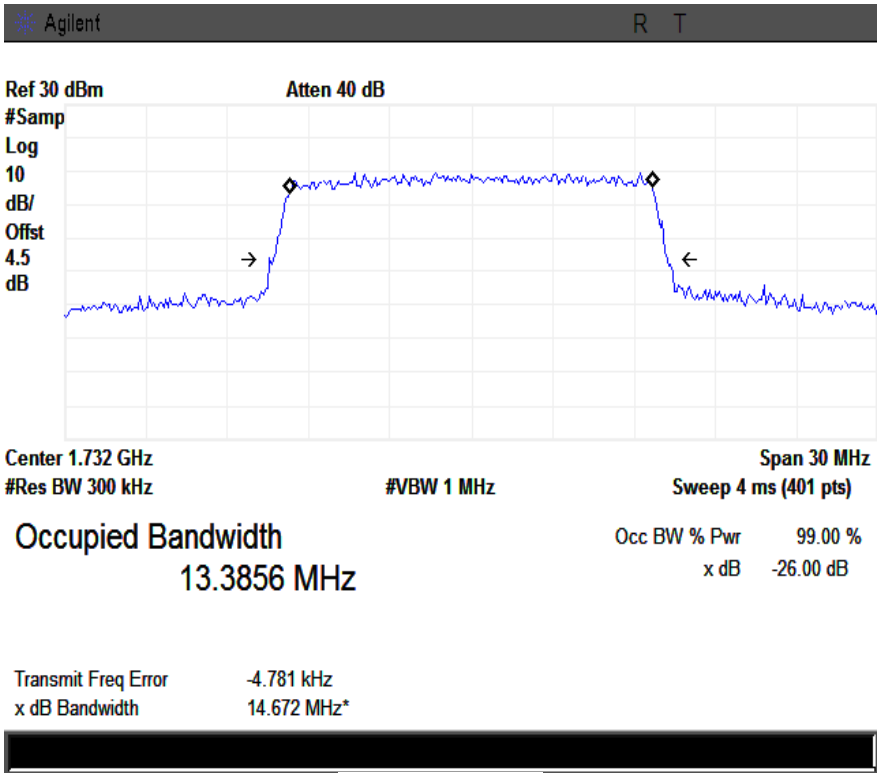


2-QPSK-15M



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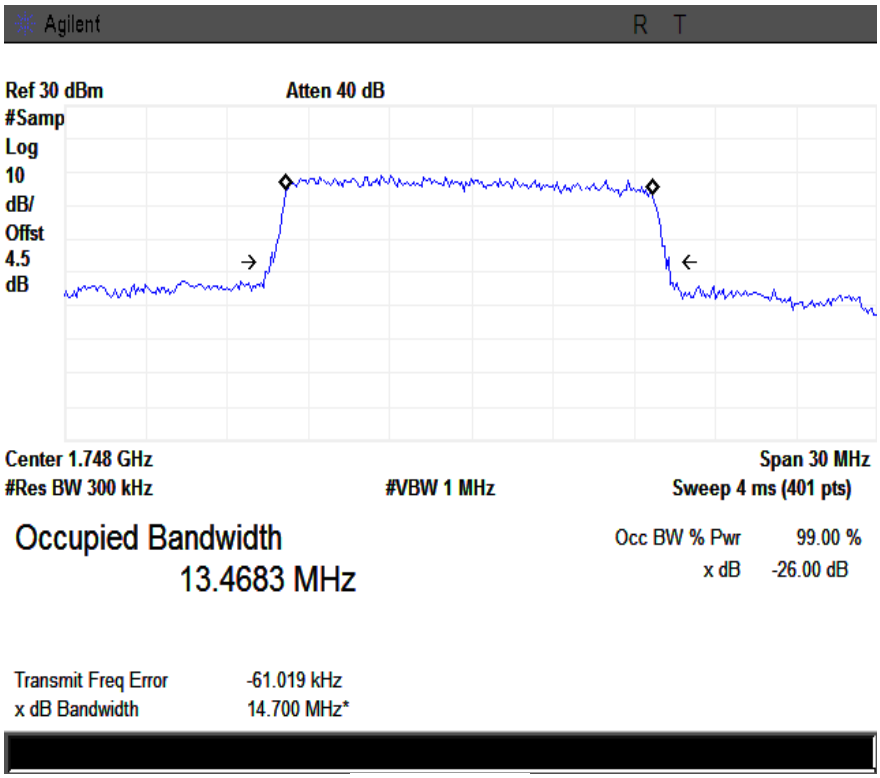

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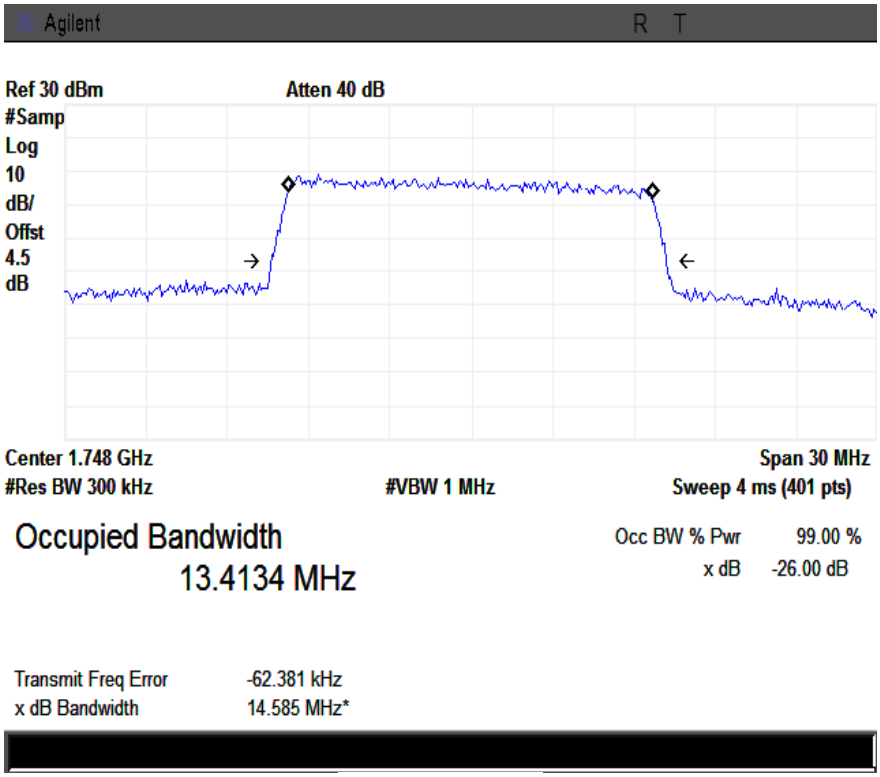
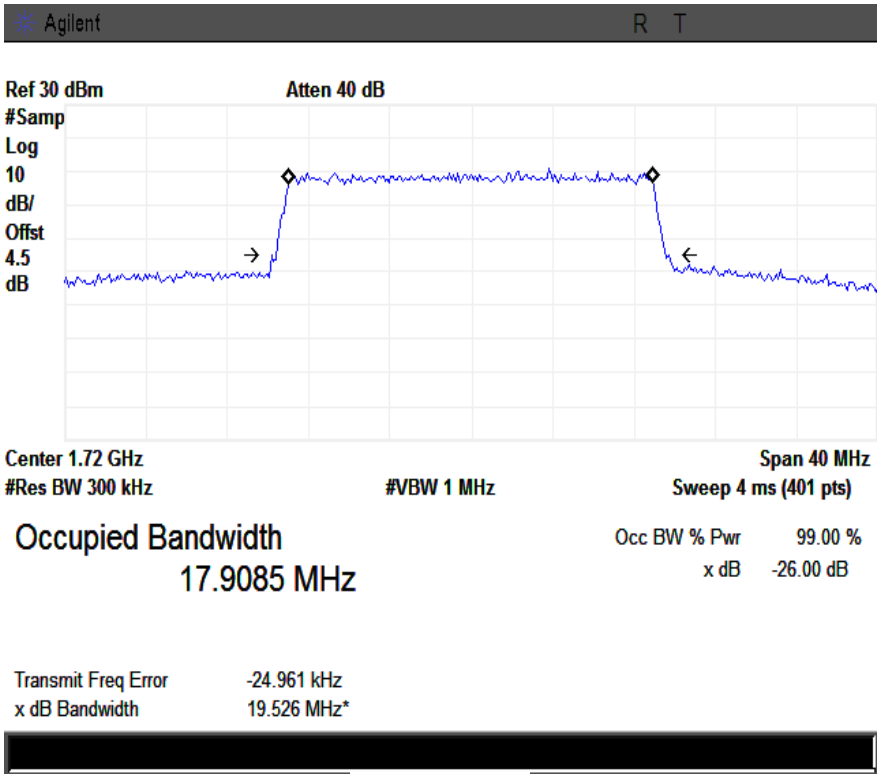


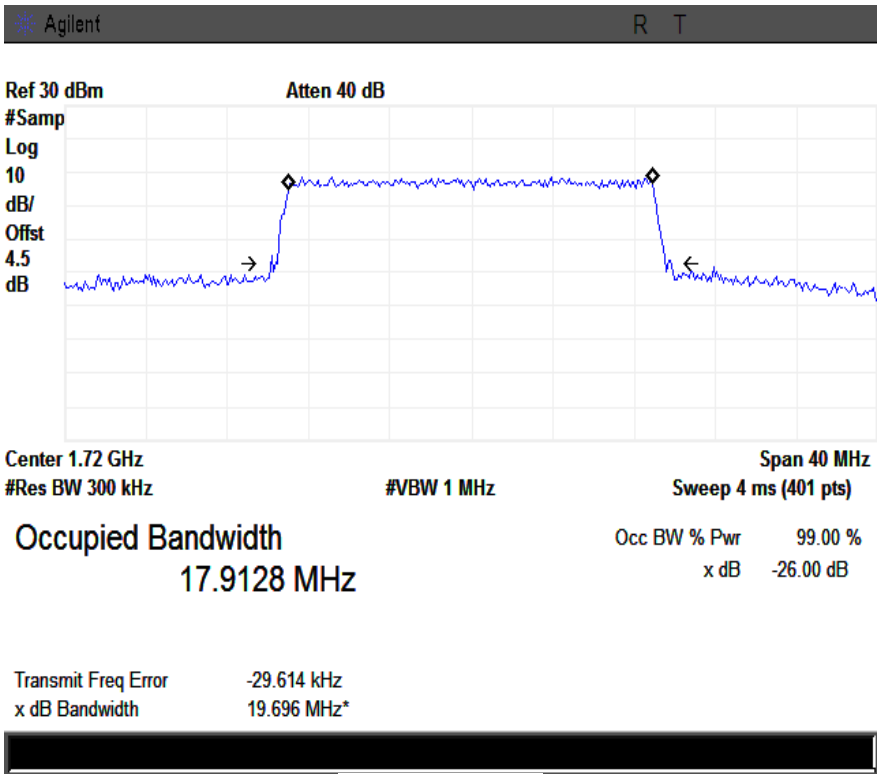
3-16QAM-15M

LTE Band 4 Mode:

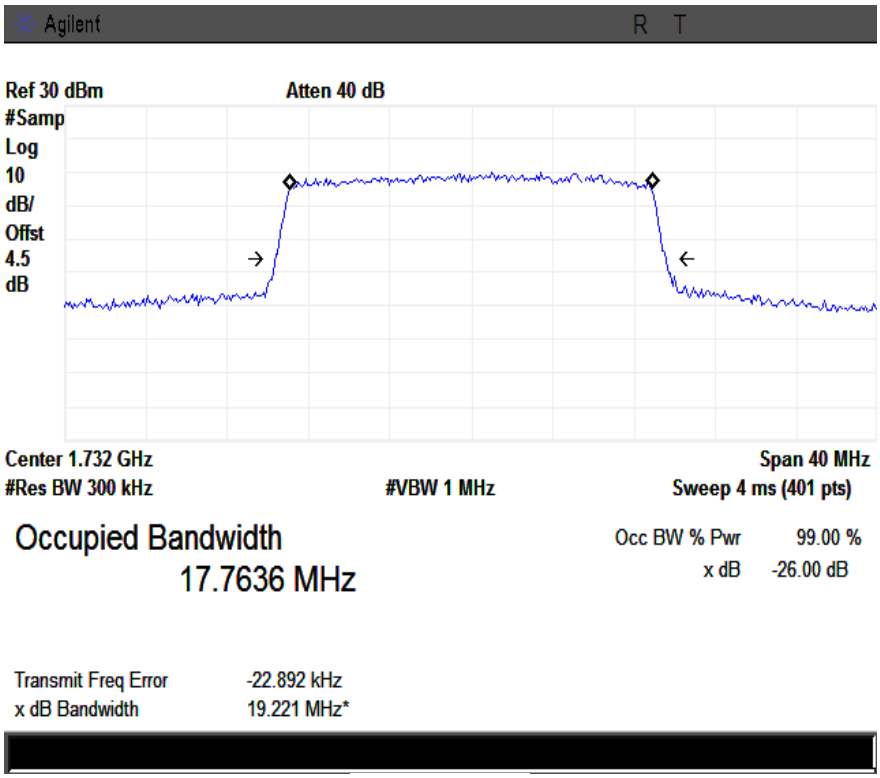
20MHz



1-QPSK-20M



1-16QAM-20M



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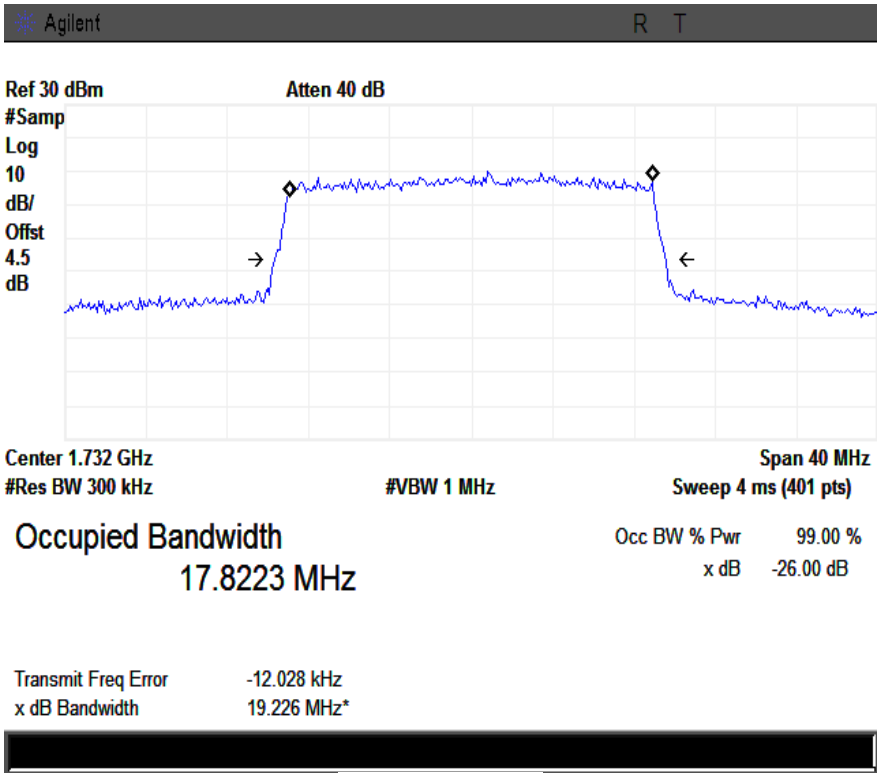

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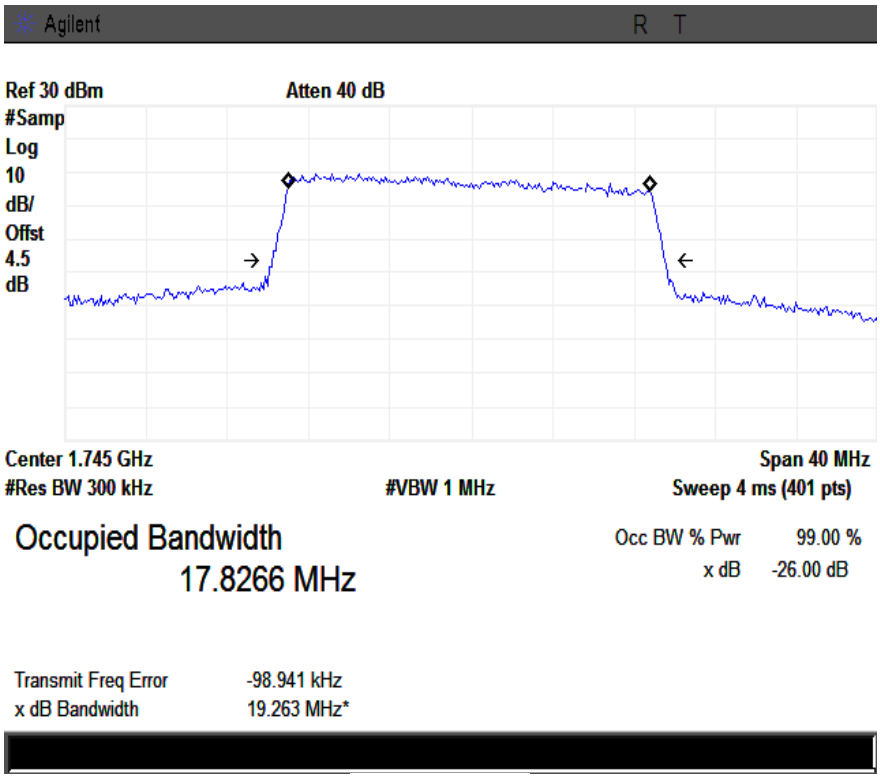

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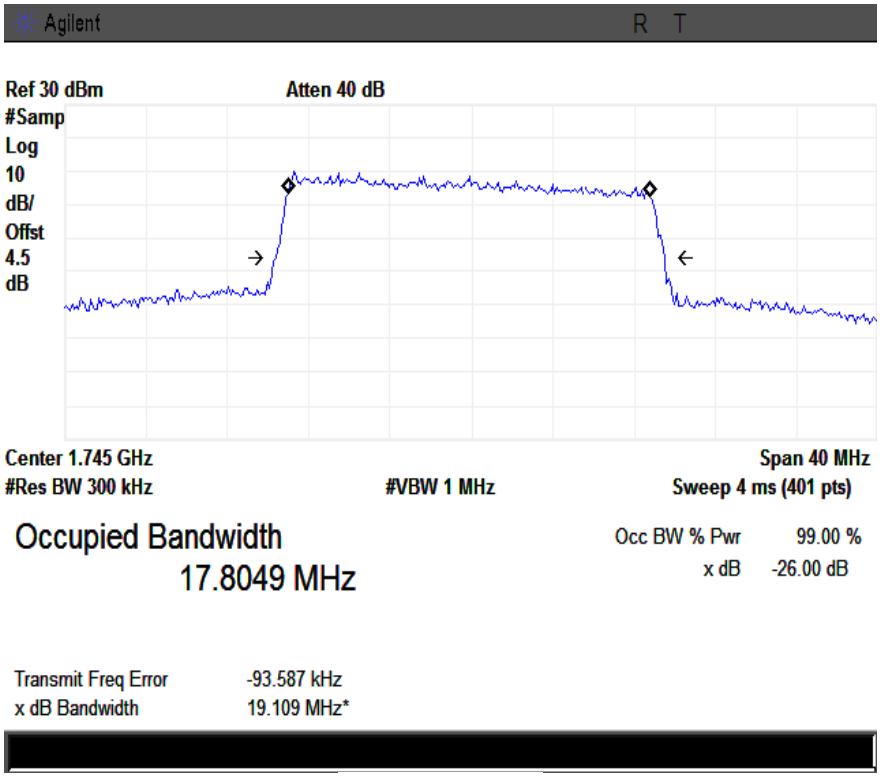
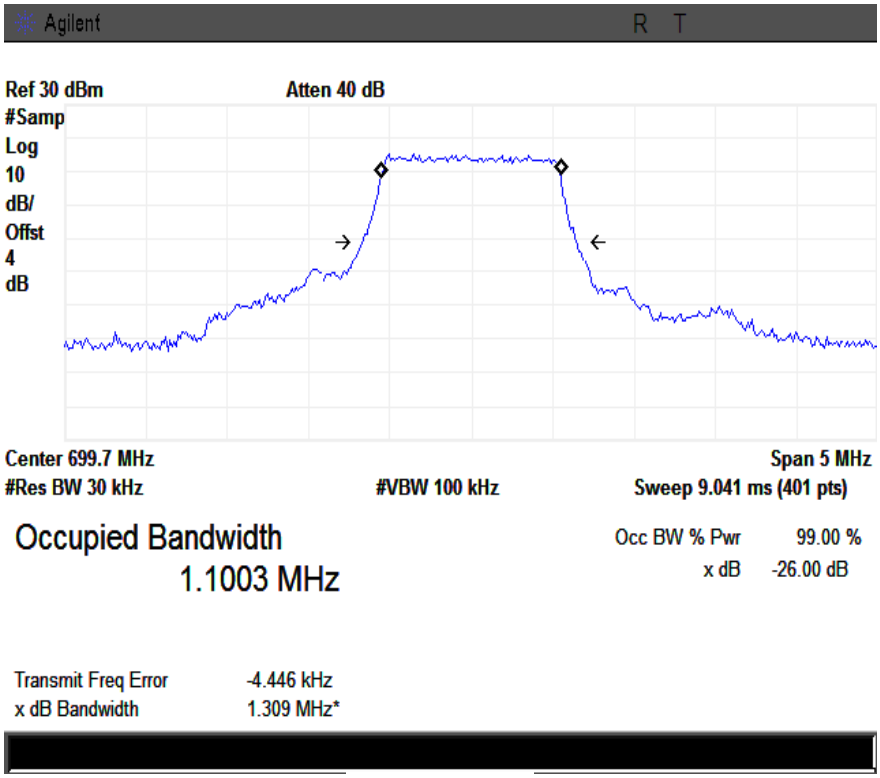


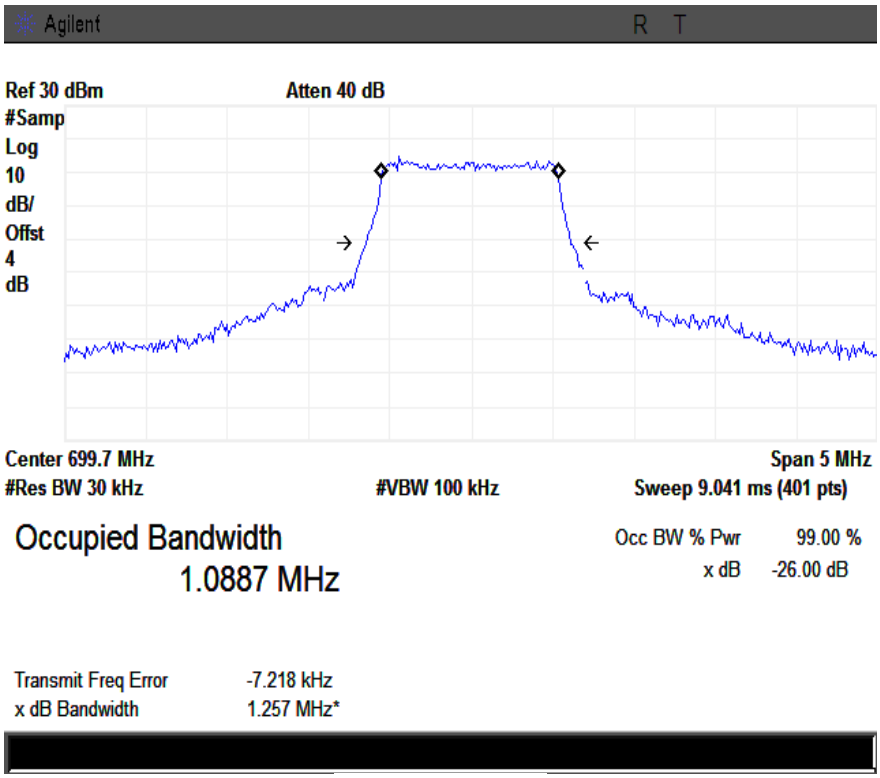
3-16QAM-20M

LTE Band 12 Mode:

1.4MHz



1-QPSK-1.4M



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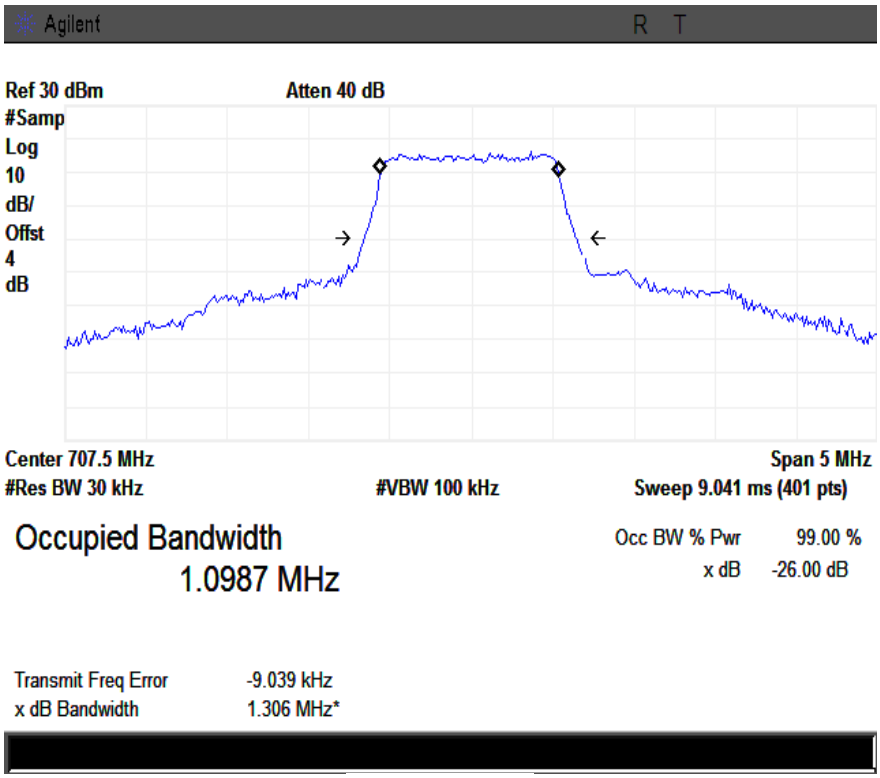
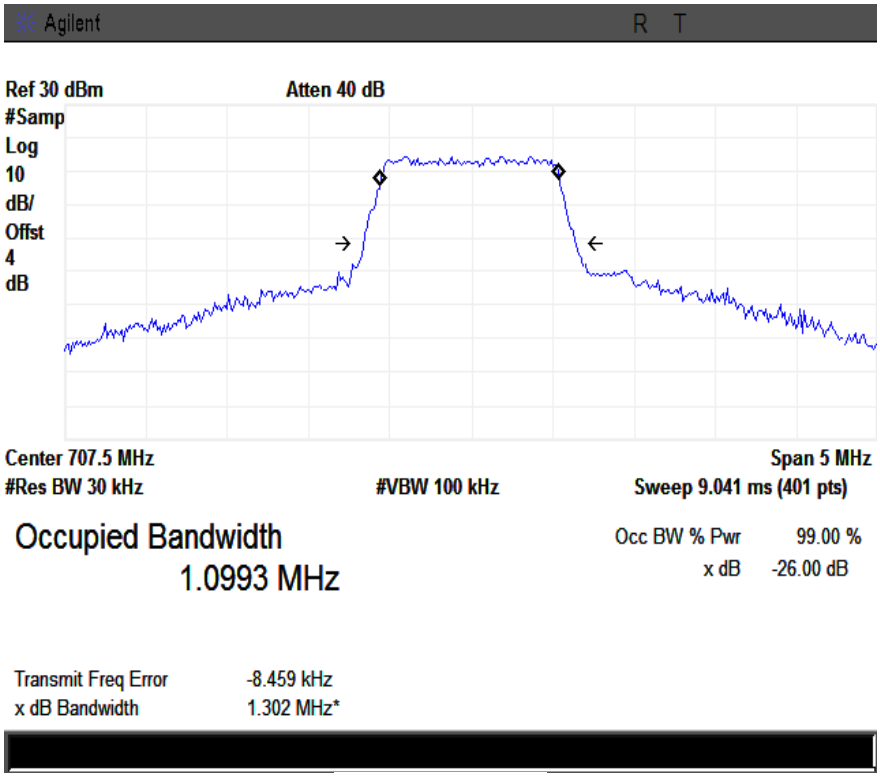
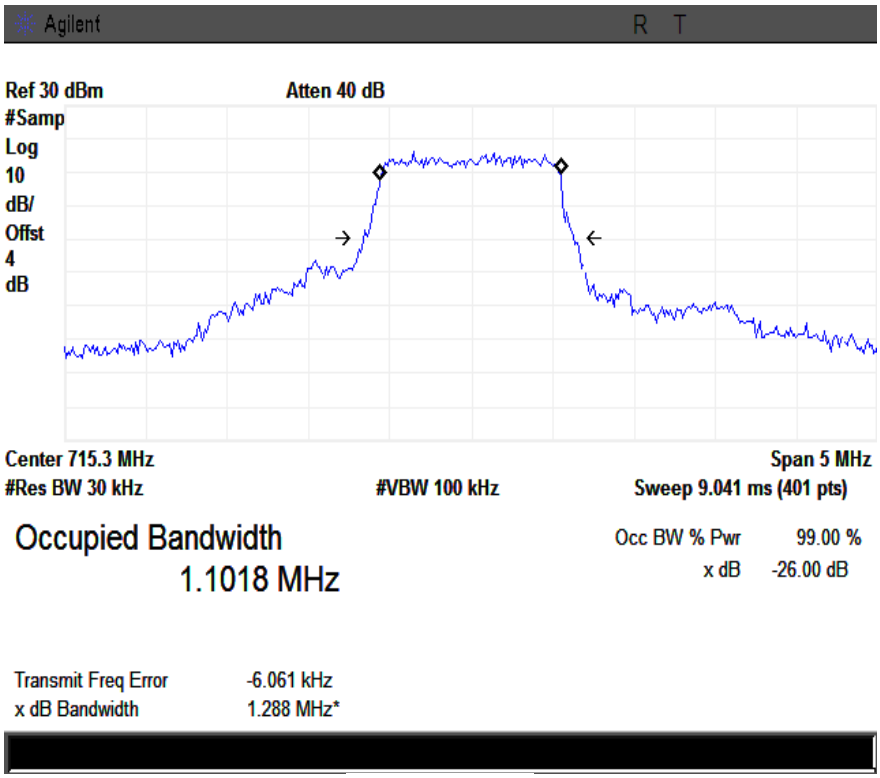


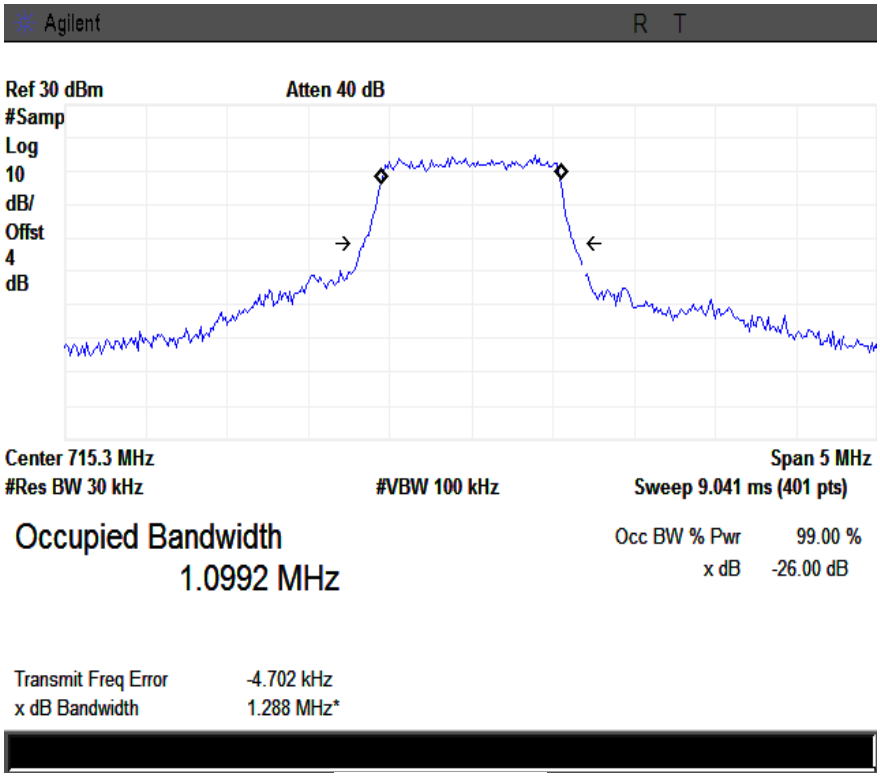
2-QPSK-1.4M



2-16QAM-1.4M



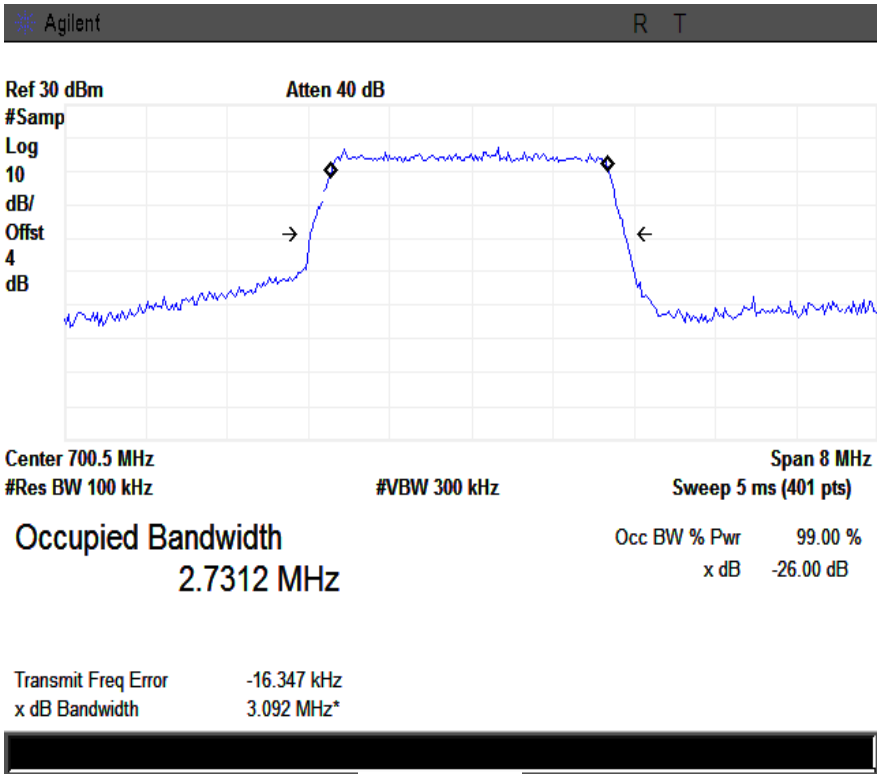
3-QPSK-1.4M



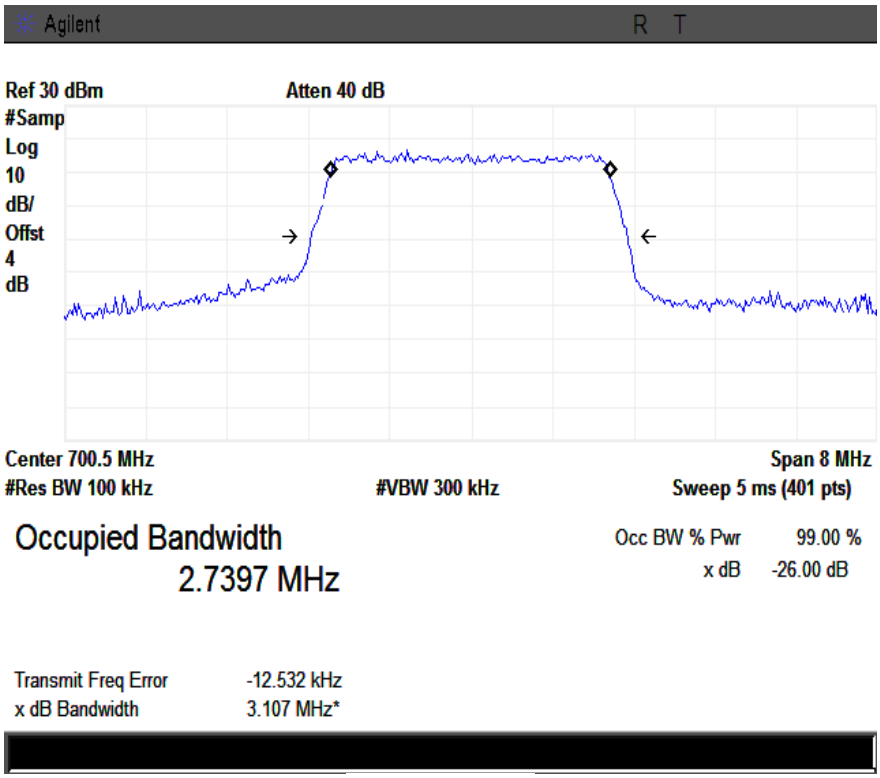
3-16QAM-1.4M

LTE Band 12 Mode:

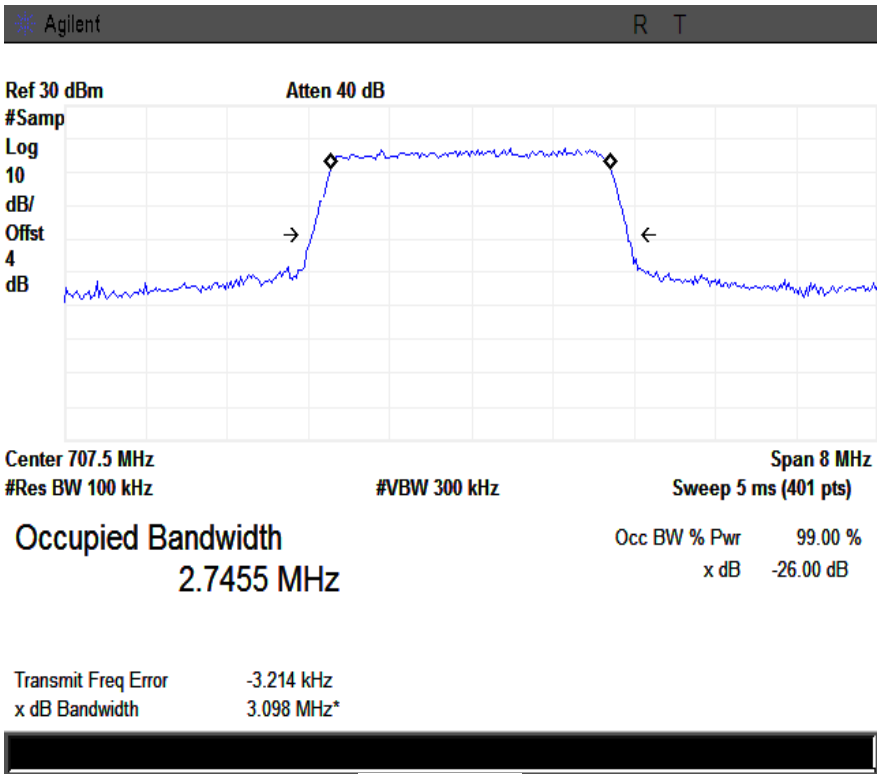
3MHz



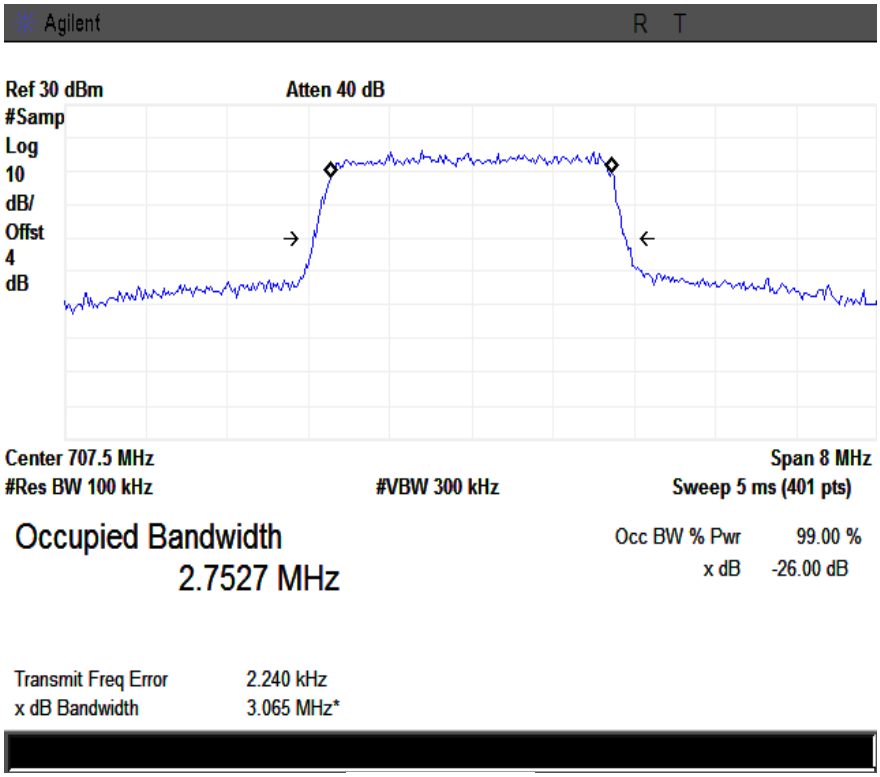
1-QPSK-3M



1-16QAM-3M



2-QPSK-3M



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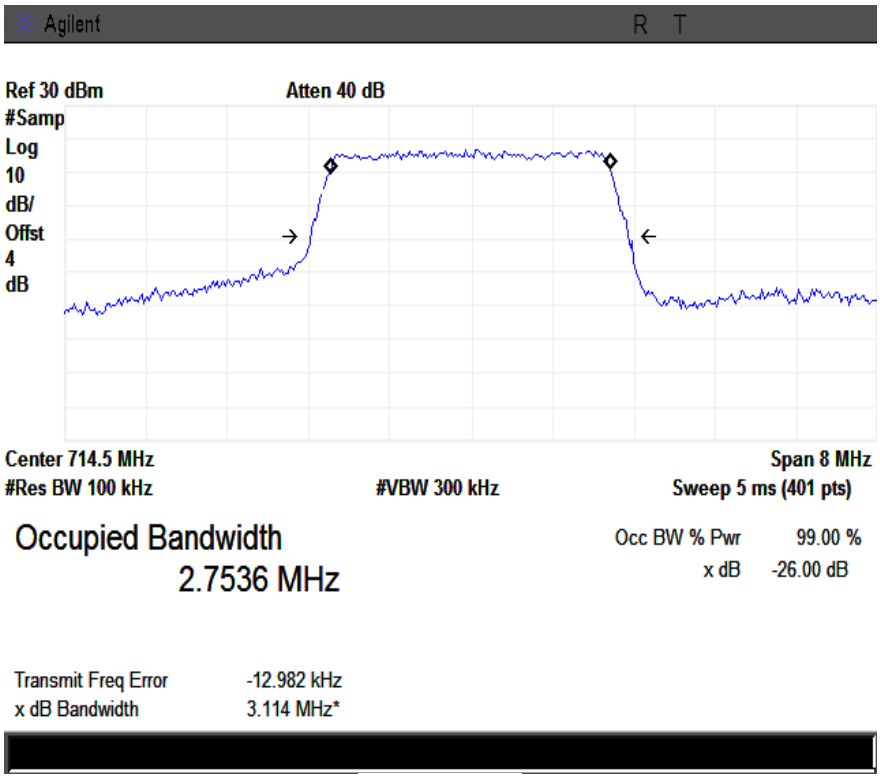
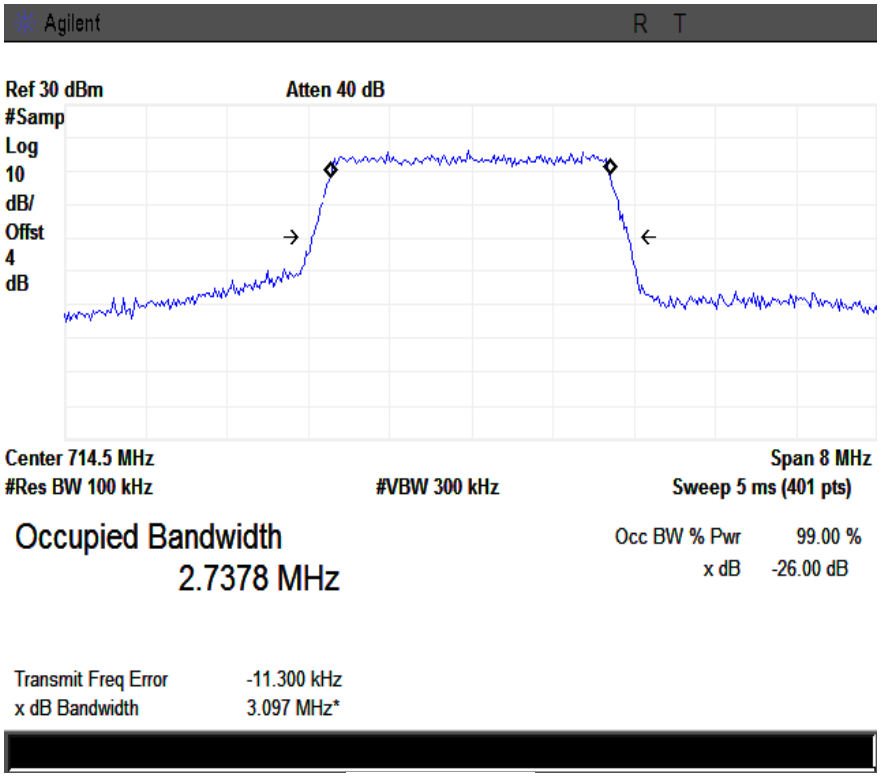


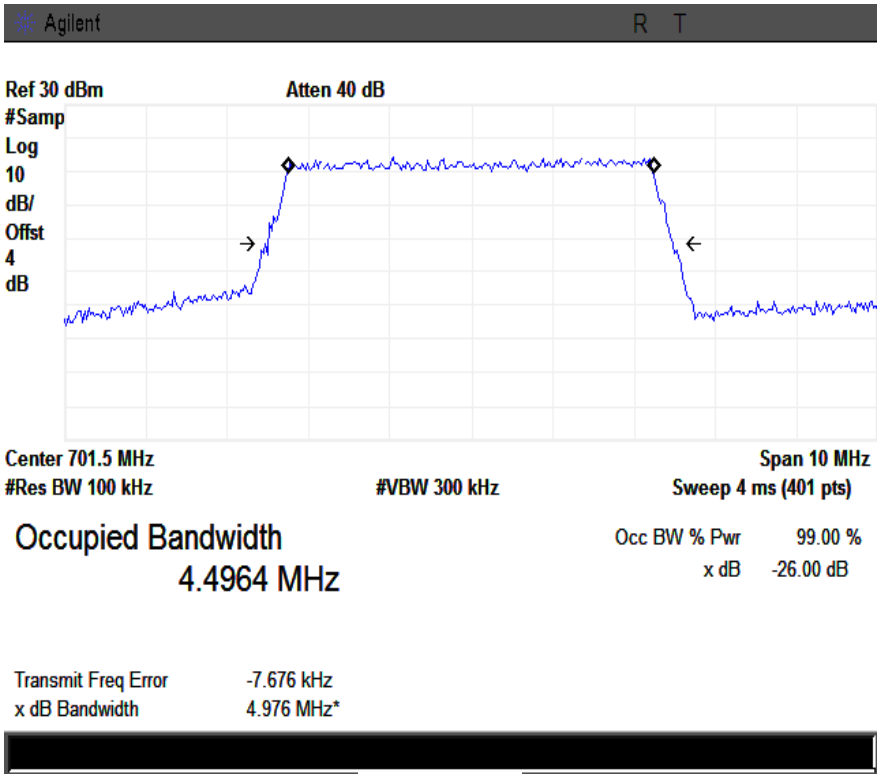
3-QPSK-3M



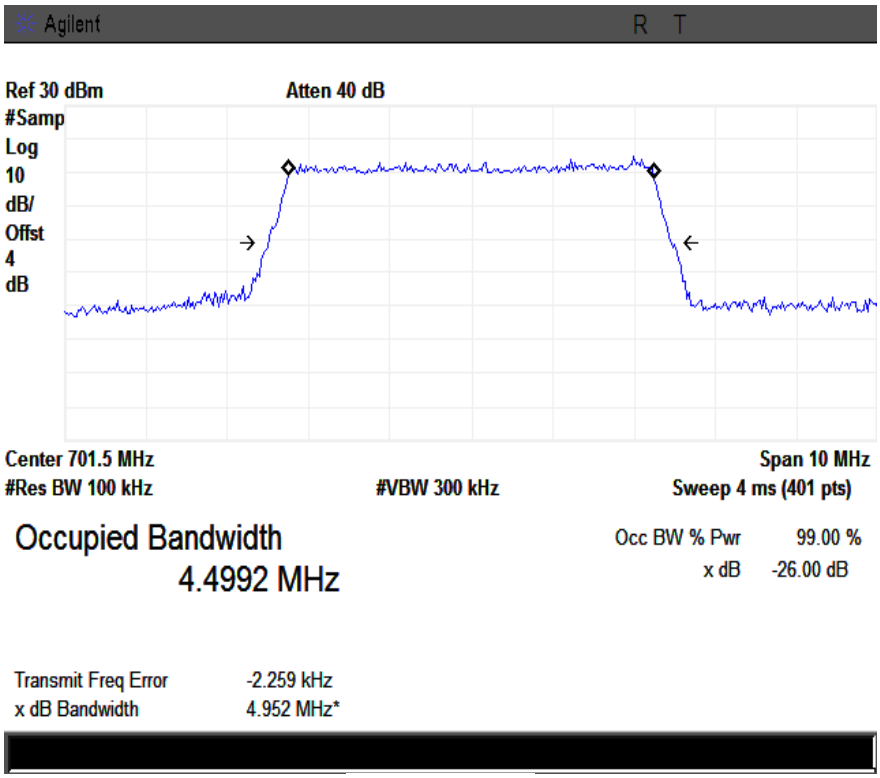
3-16QAM-3M

LTE Band 12 Mode:

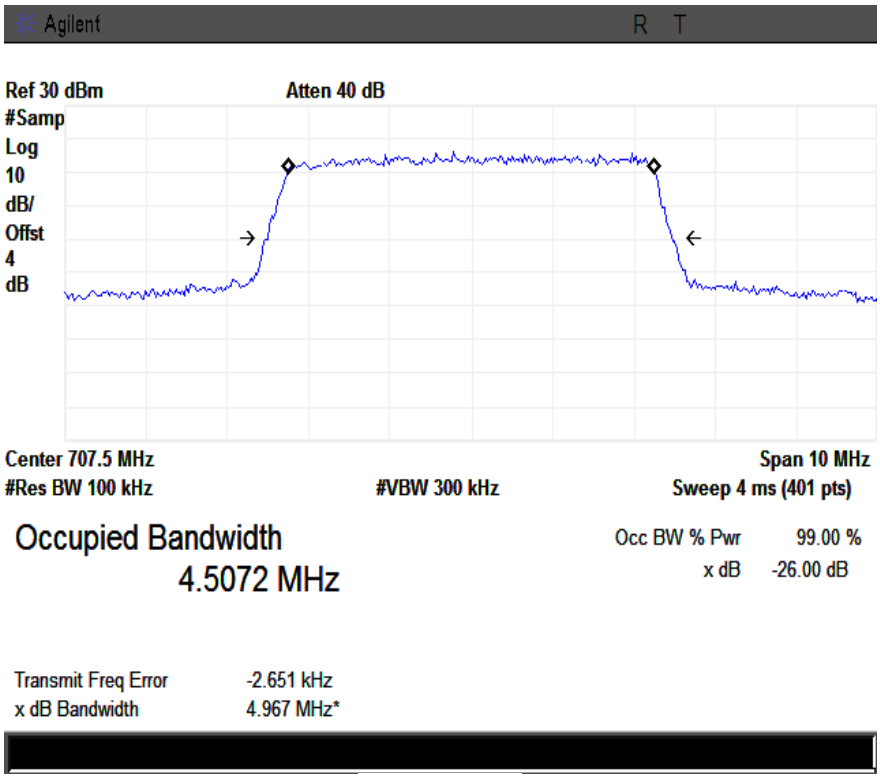
5MHz



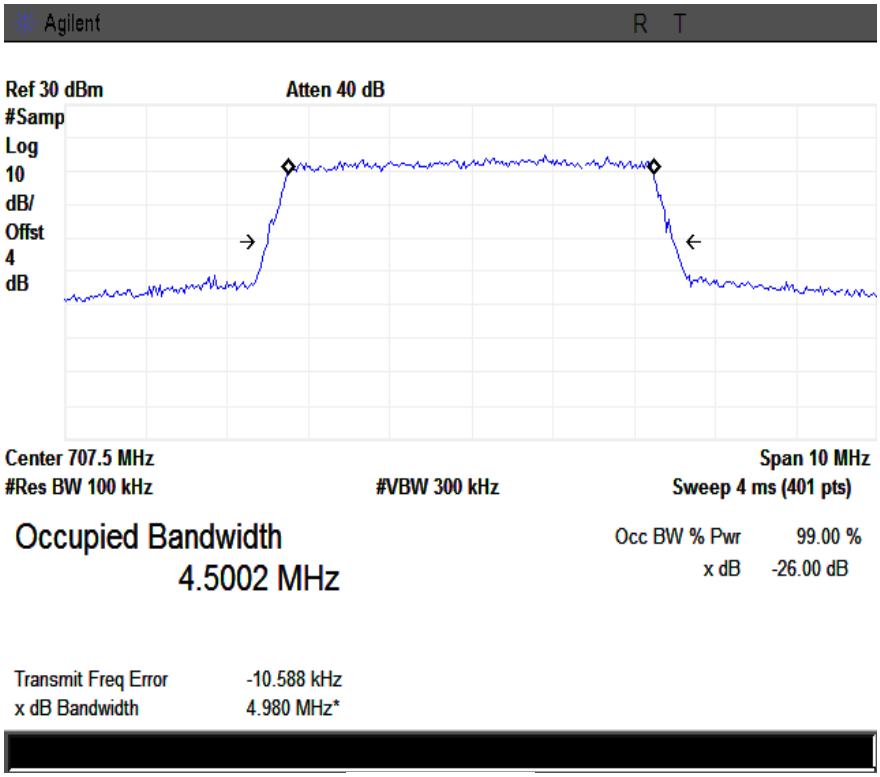
1-QPSK-5M



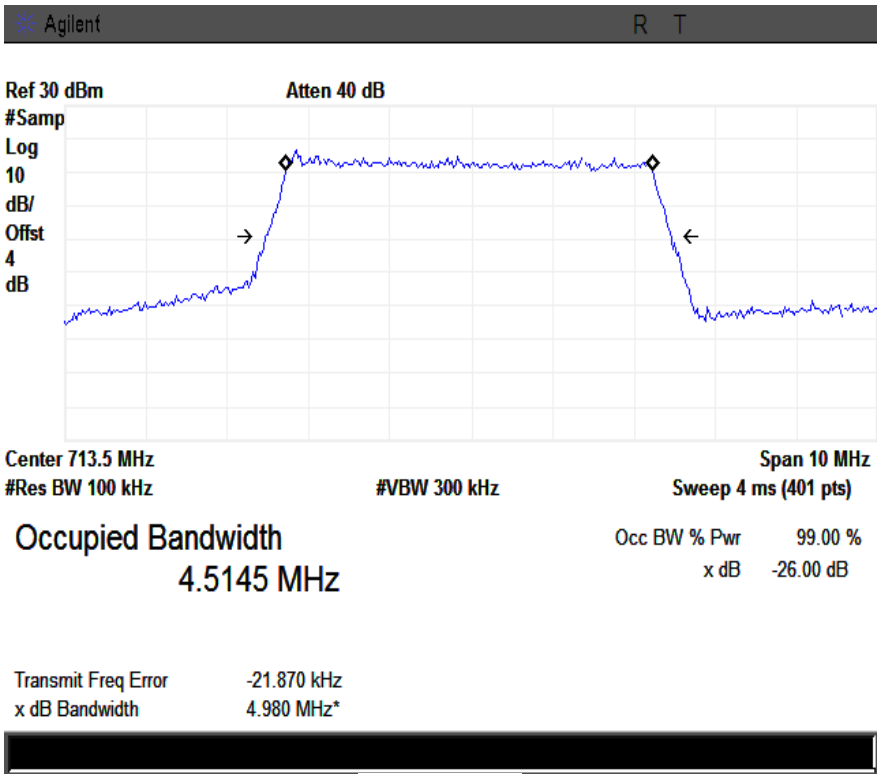
1-16QAM-5M



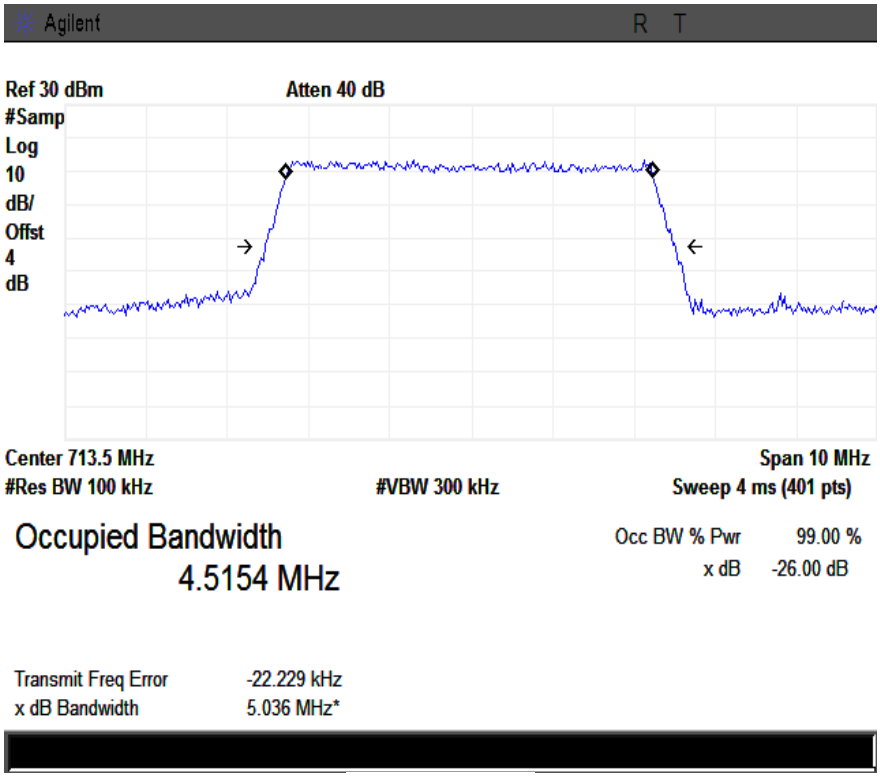
2-QPSK-5M



2-16QAM-5M



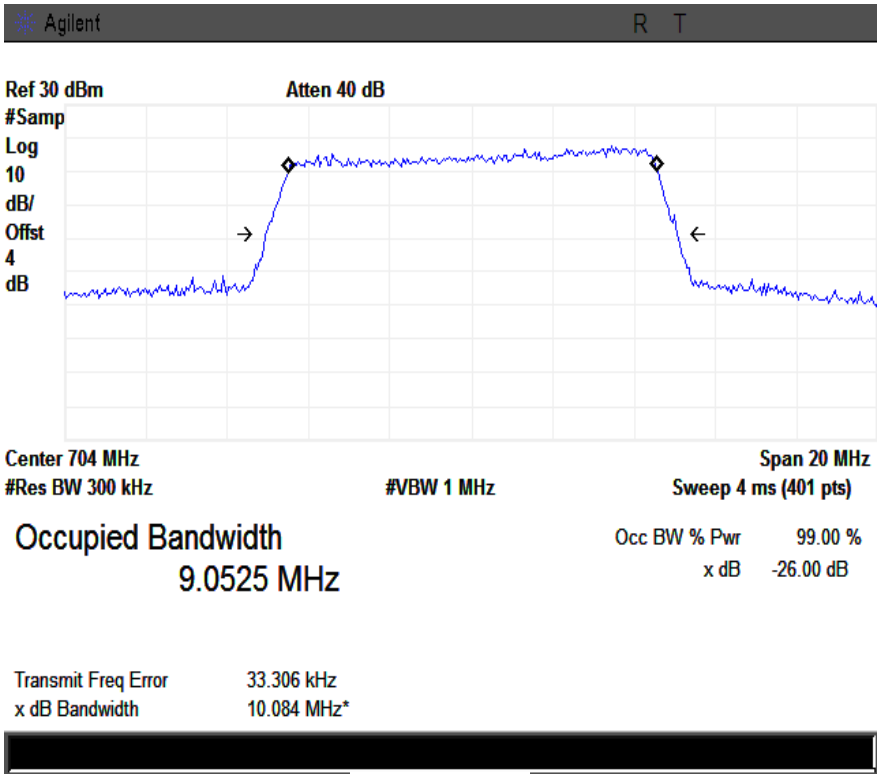
3-QPSK-5M



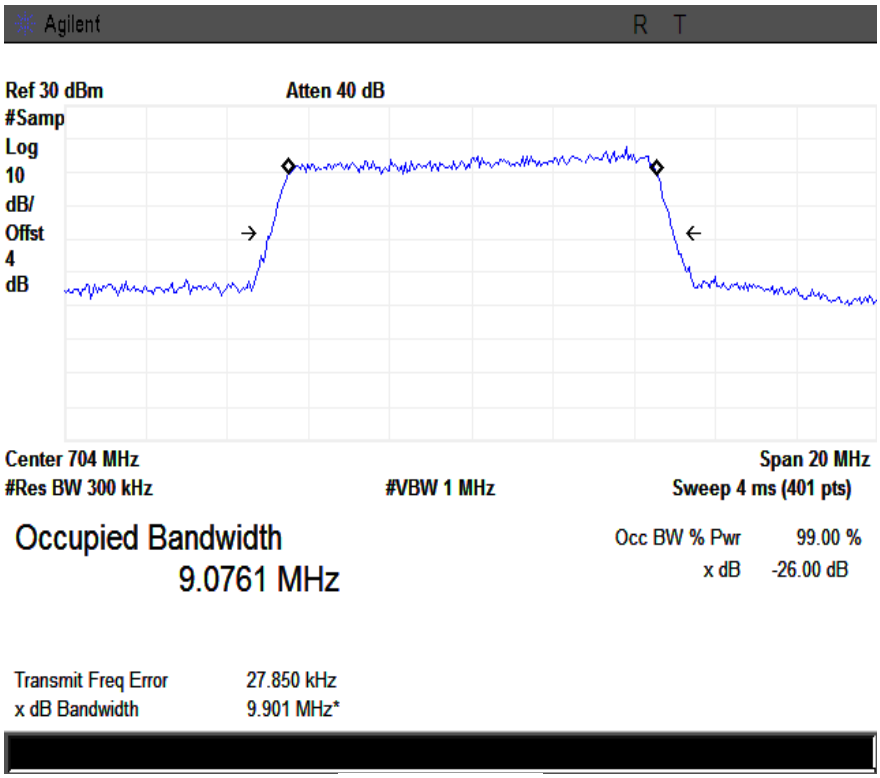
3-16QAM-5M

LTE Band 12 Mode:

10MHz



1-QPSK-10M



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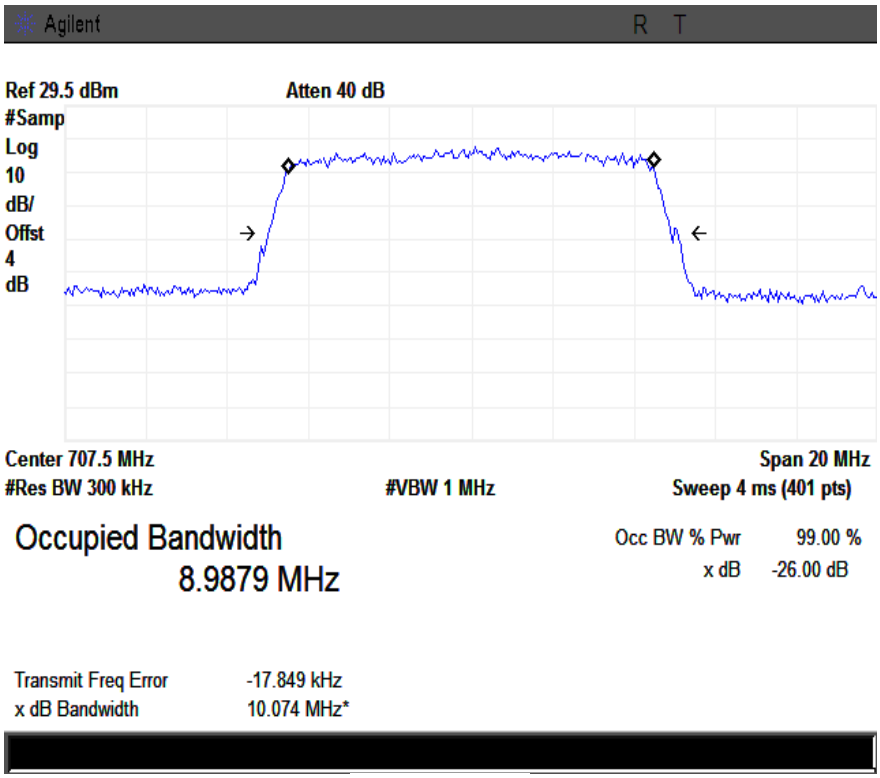

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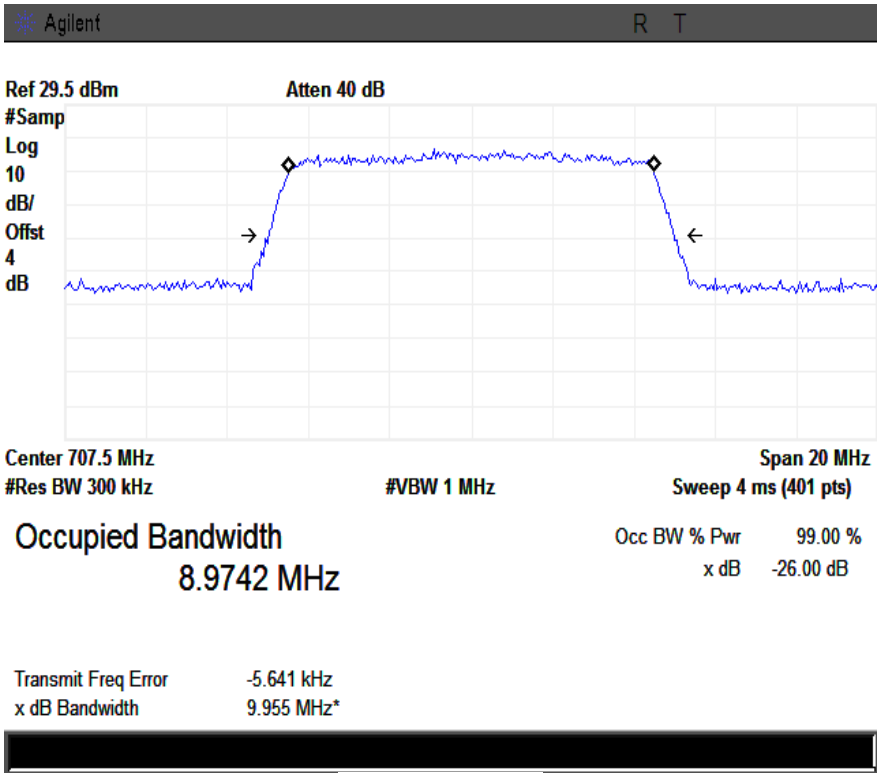

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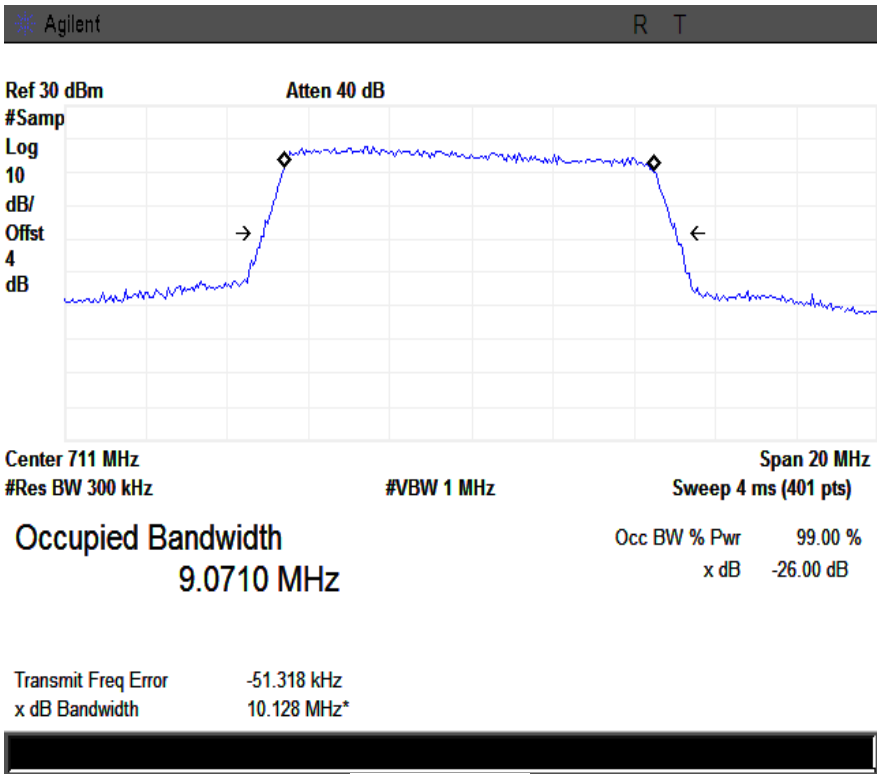

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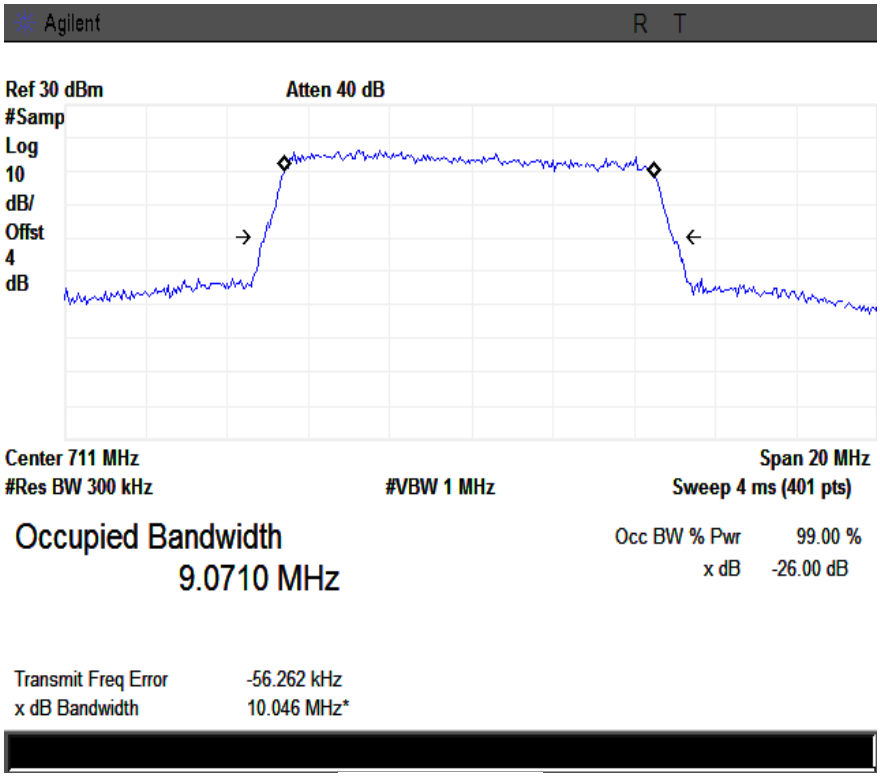
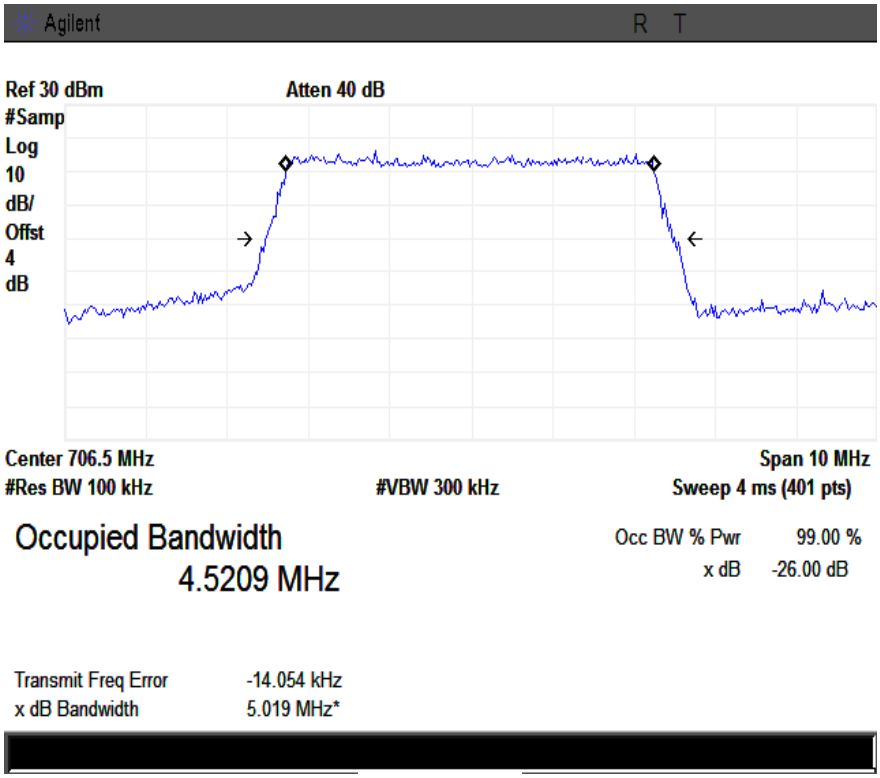


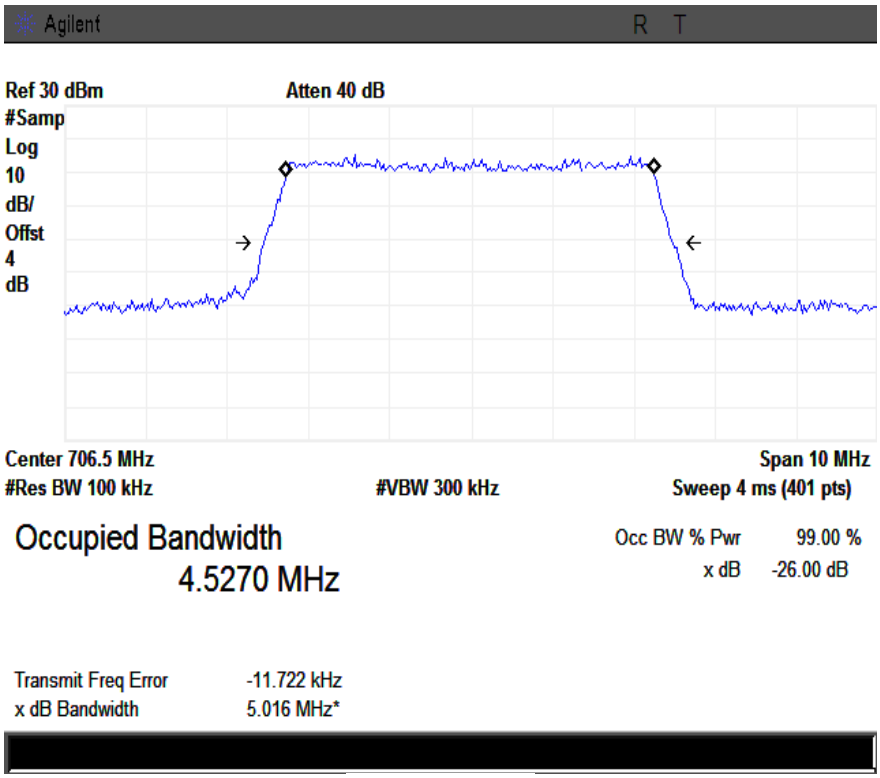
3-16QAM-10M

LTE Band 17 Mode:

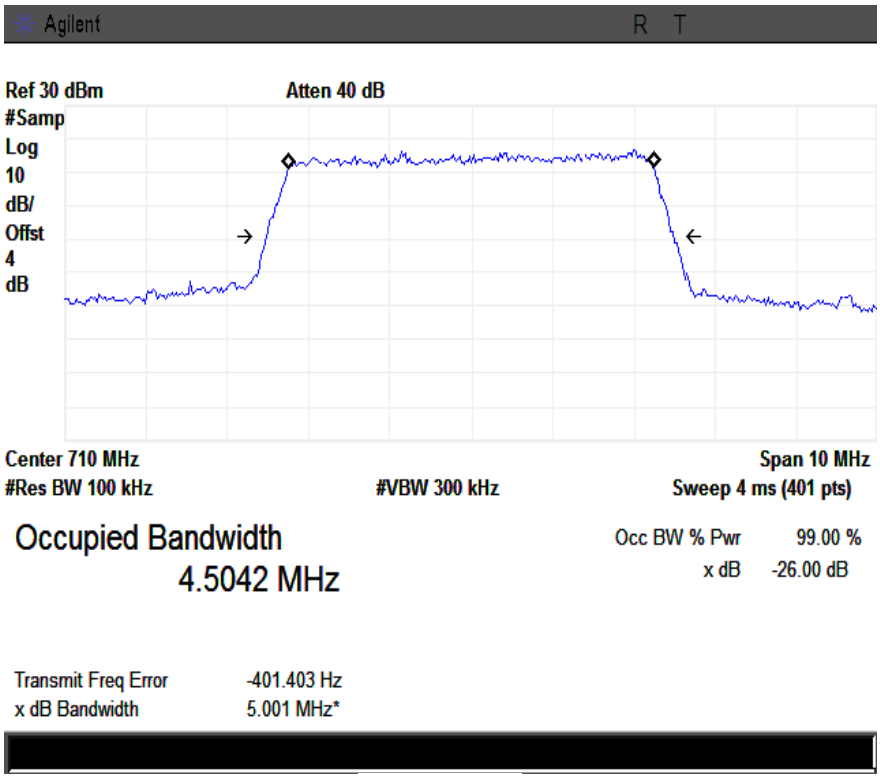
5MHz



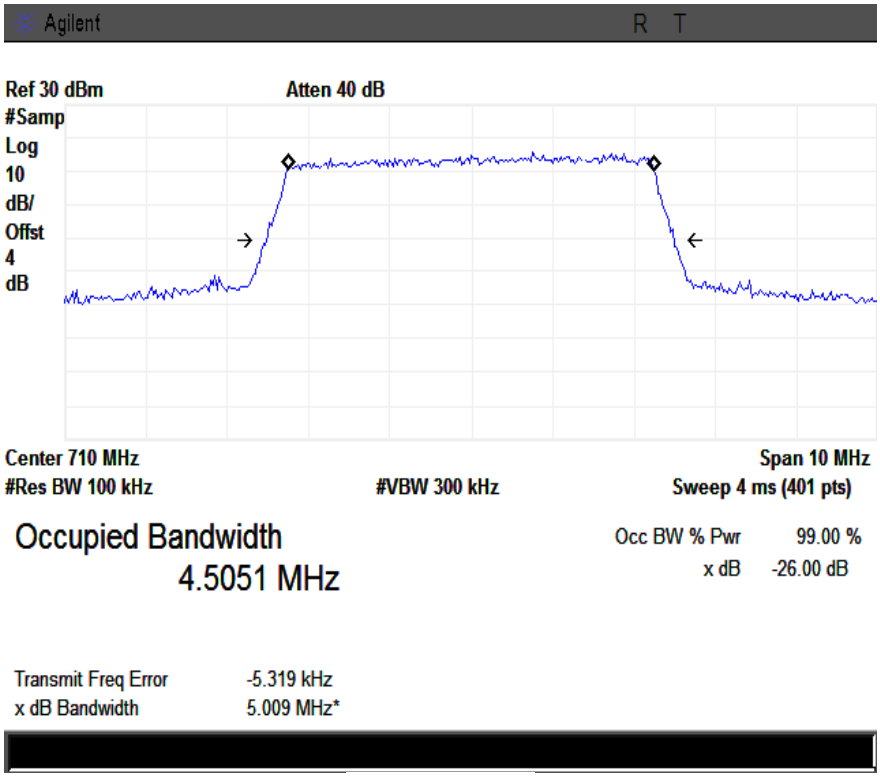
1-QPSK-5M



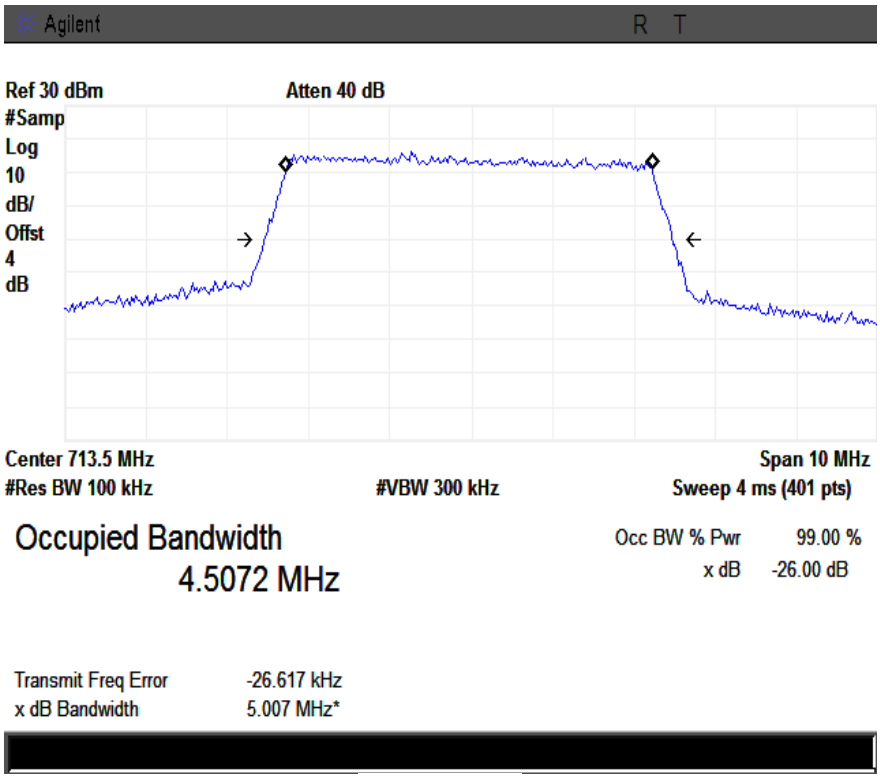
1-16QAM-5M



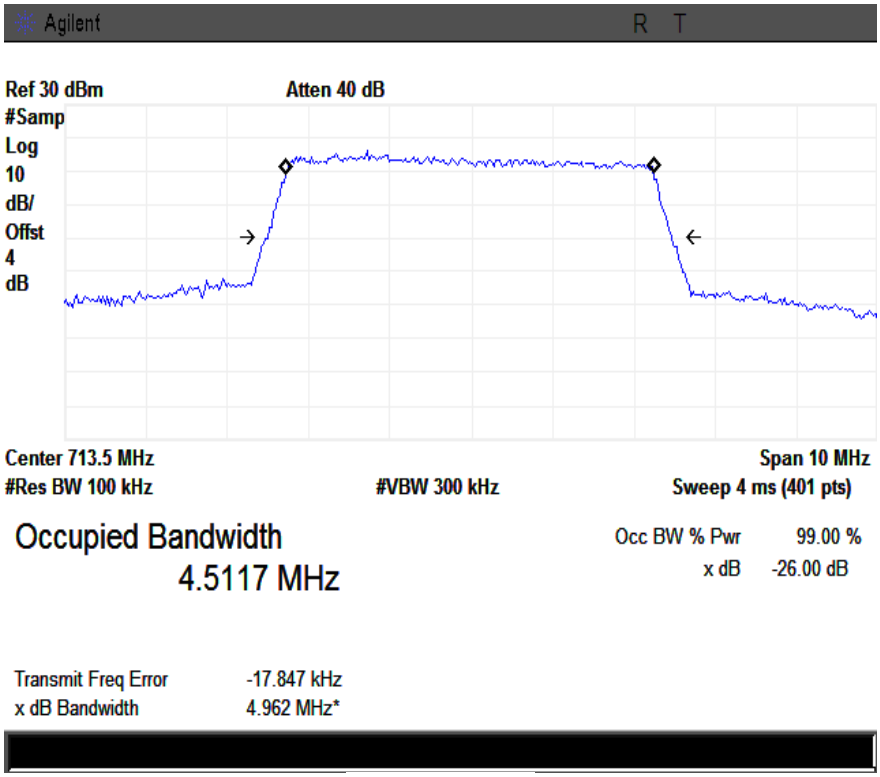
2-QPSK-5M



2-16QAM-5M



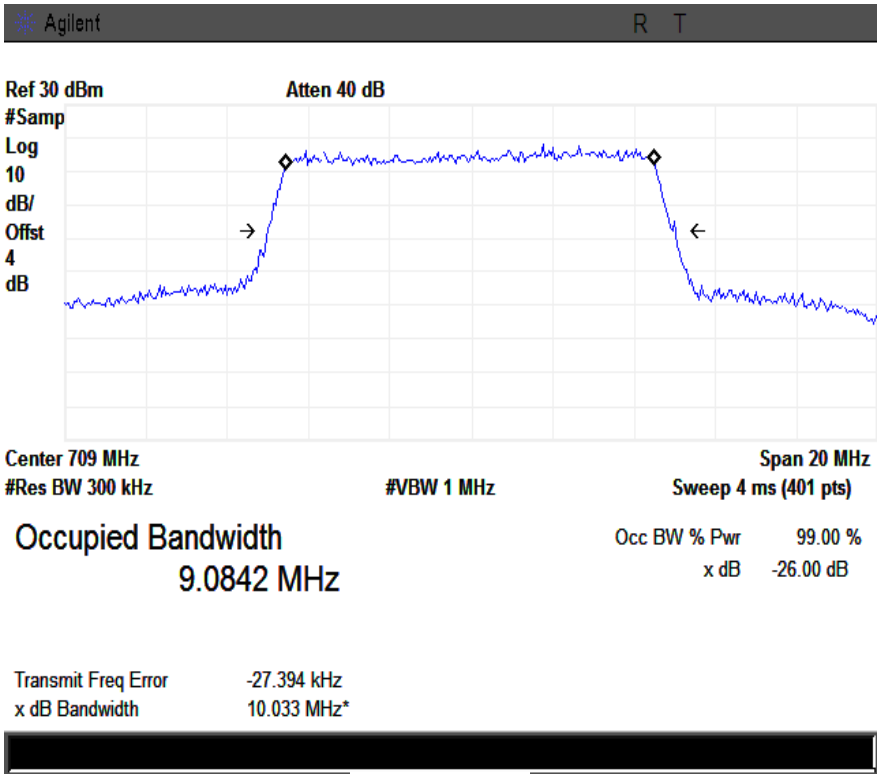
3-QPSK-5M



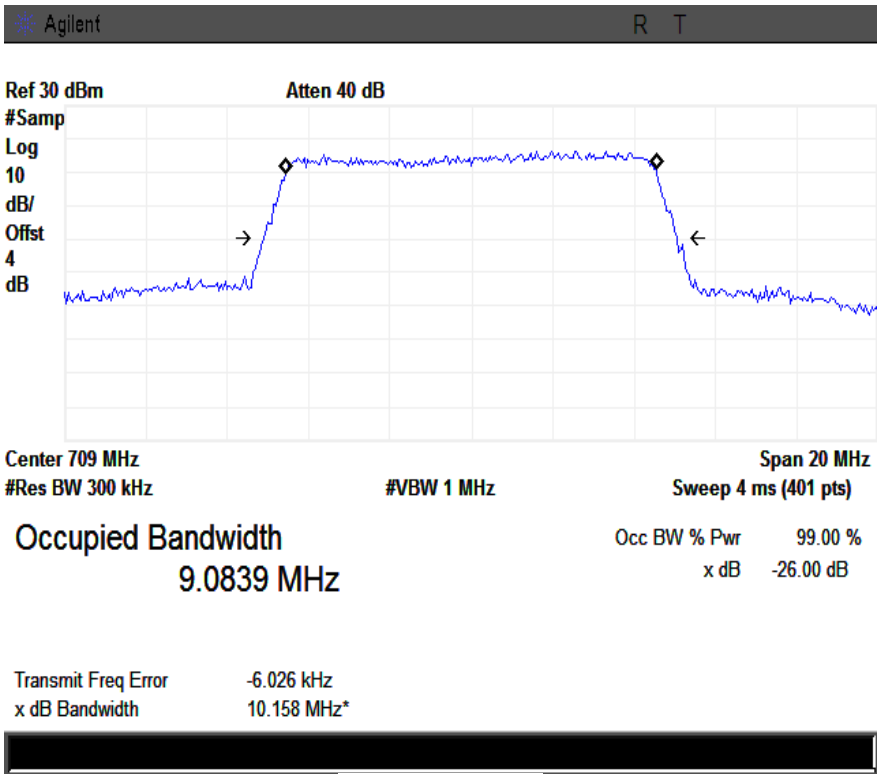
3-16QAM-5M

LTE Band 17 Mode:

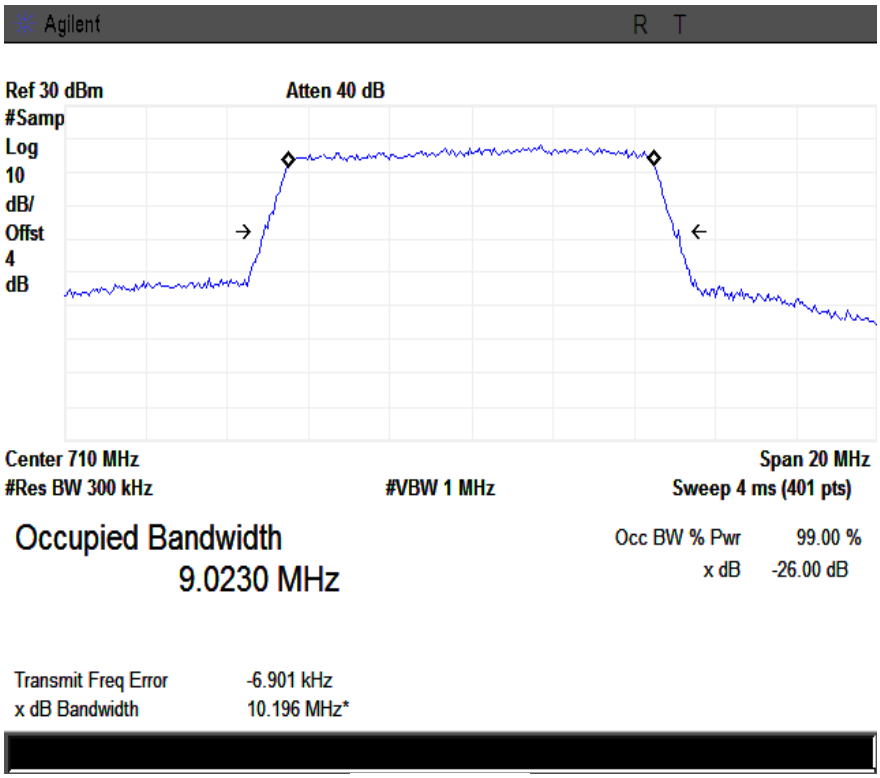
10MHz



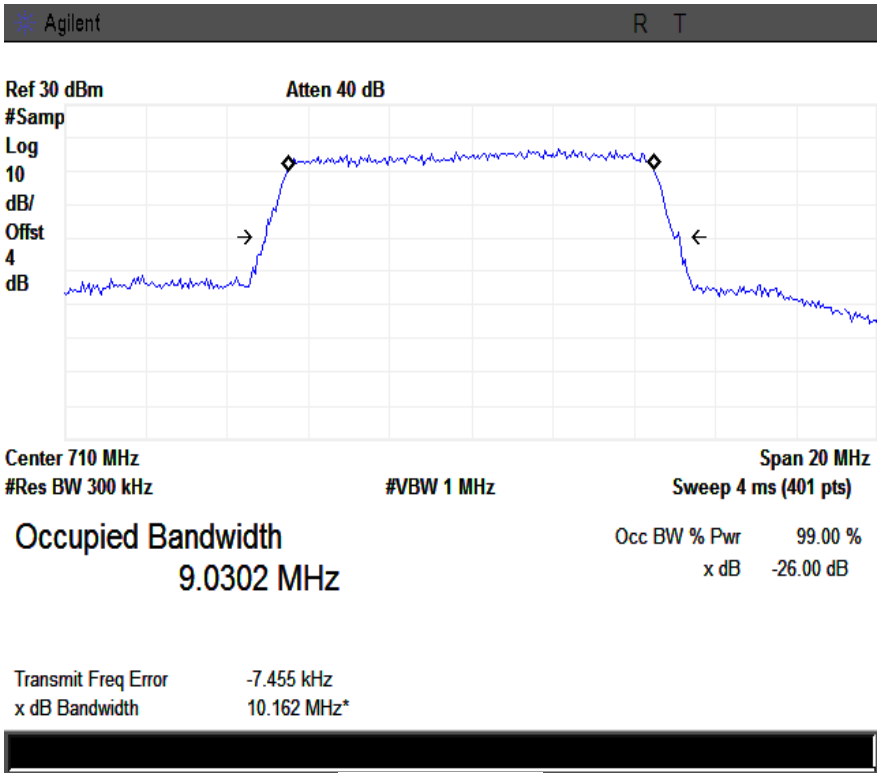
1-QPSK-10M



1-16QAM-10M



2-QPSK-10M



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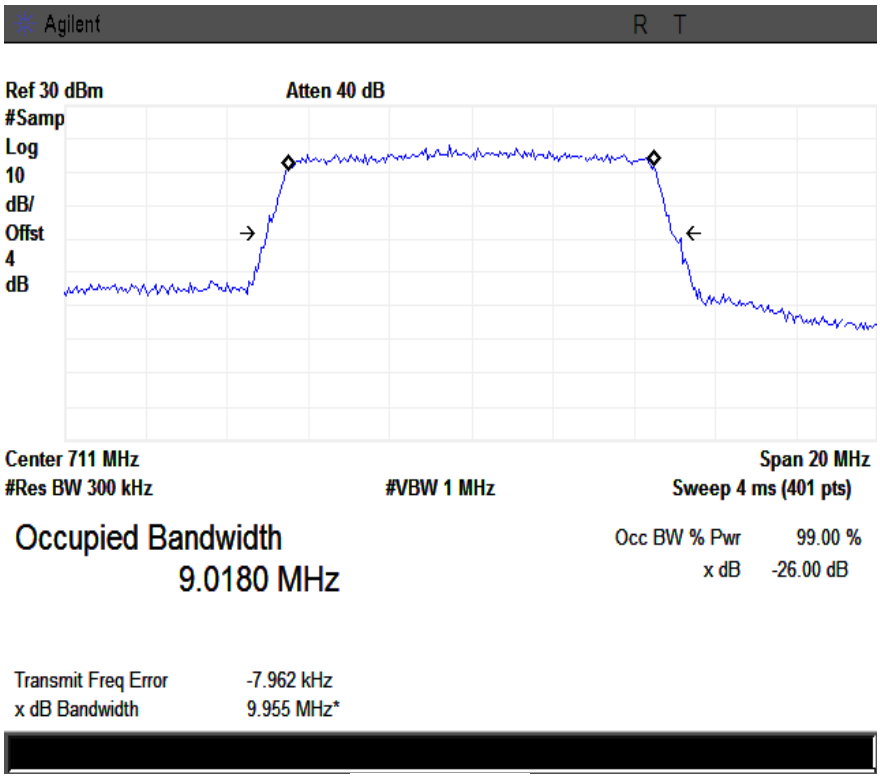
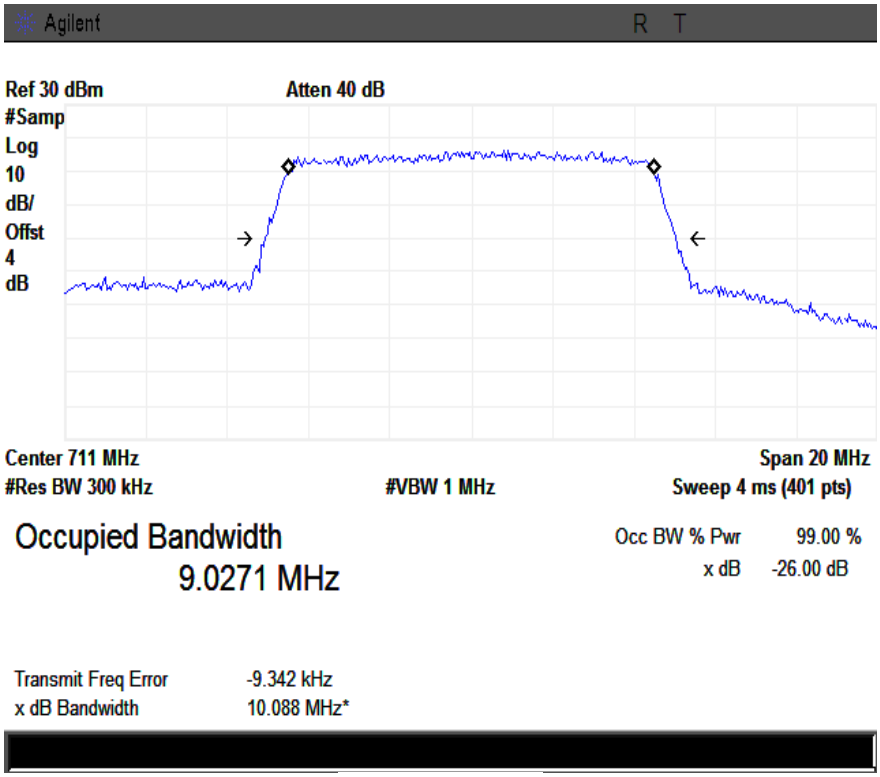


3-QPSK-10M



3-16QAM-10M

5.5 §2.1051, §24.238(a), §27.53(h) - Spurious Emissions at Antenna Terminals

1. Conducted Measurement
   EUT was set for low, mid, high channel with modulated mode and highest RF output power.
   The spectrum analyzer was connected to the antenna terminal.
2. Conducted Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 40GHz is ±1.5dB.
3. Environmental Conditions

Temperature	23°C
Relative Humidity	52%
Atmospheric Pressure	1017mbar

4. Test date : July 21, 2014
   Tested By : Herith Shi

Standard Requirement:

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

Procedures:

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The Band Edges of low and high channels for the highest RF powers were measured. Setting RBW as roughly BW/100.
3. Details according with KDB 971168 section 6.0.

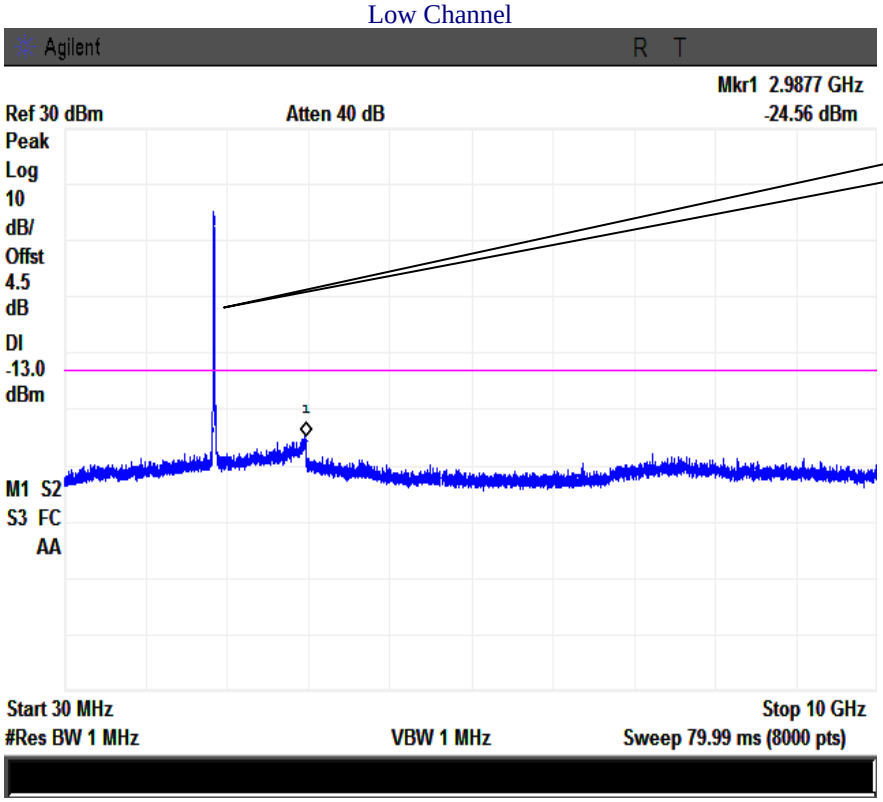
Test Result: Pass

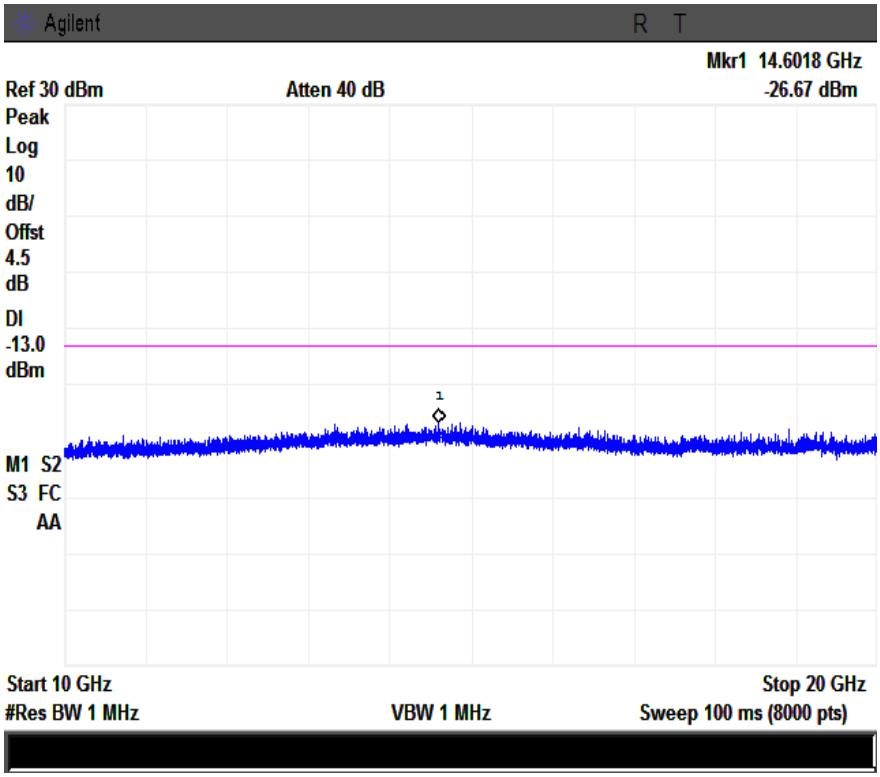
Refer to the attached plots.

LTE Band 2 (Part 24E)

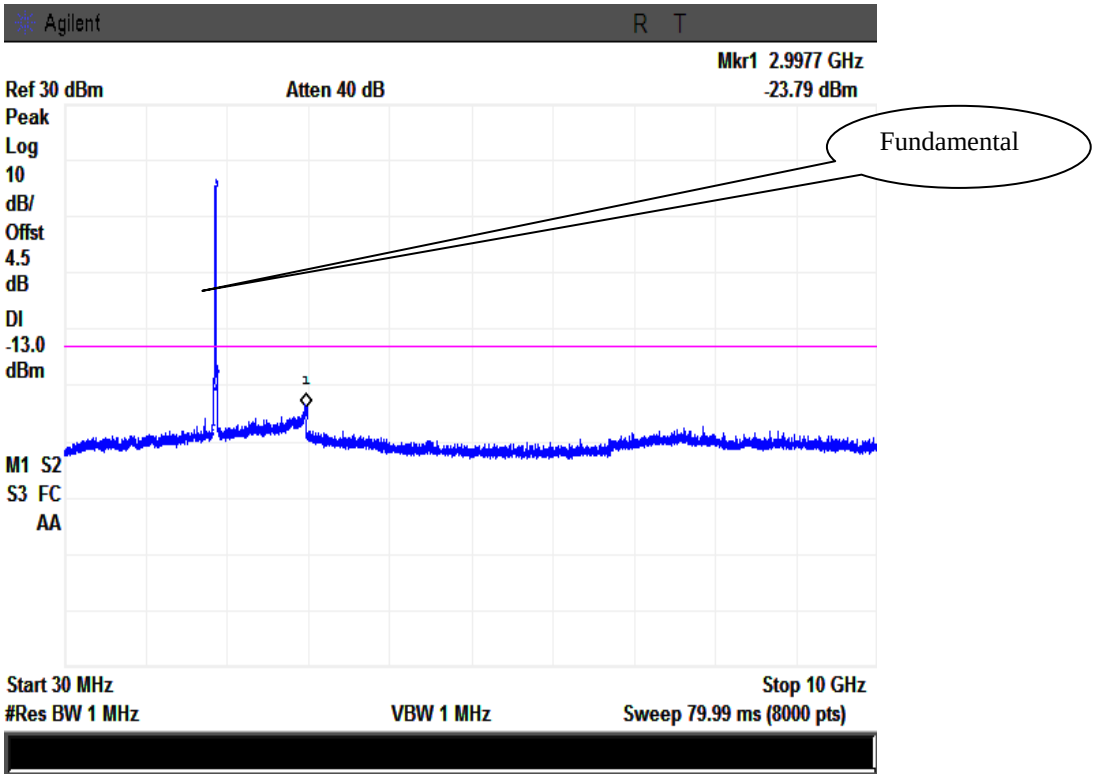
30MHz -5GHz-LTE Band 2

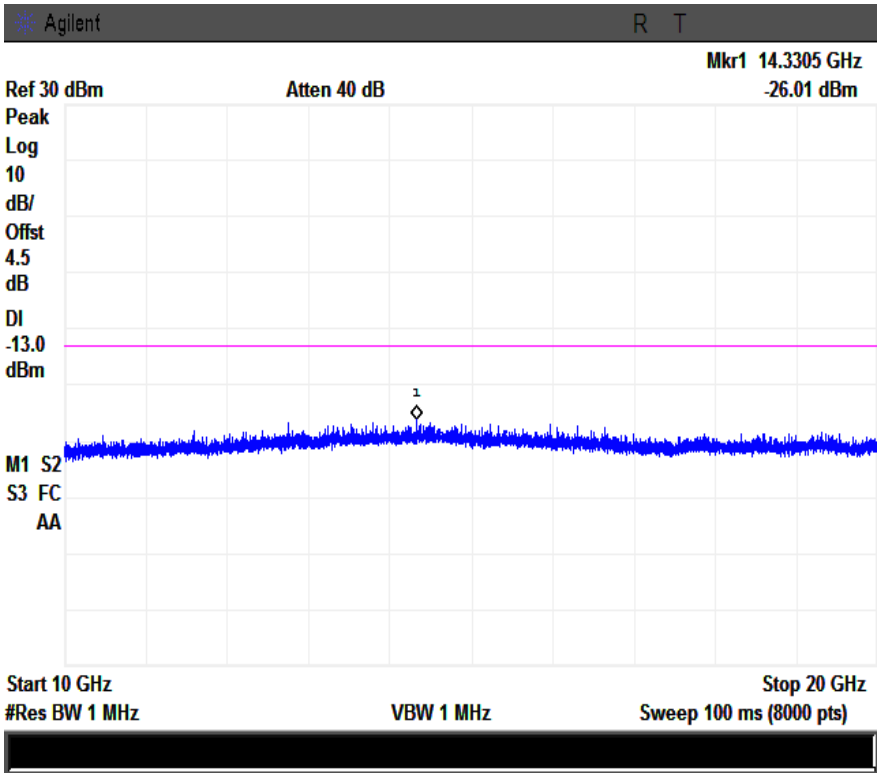
Low Channel



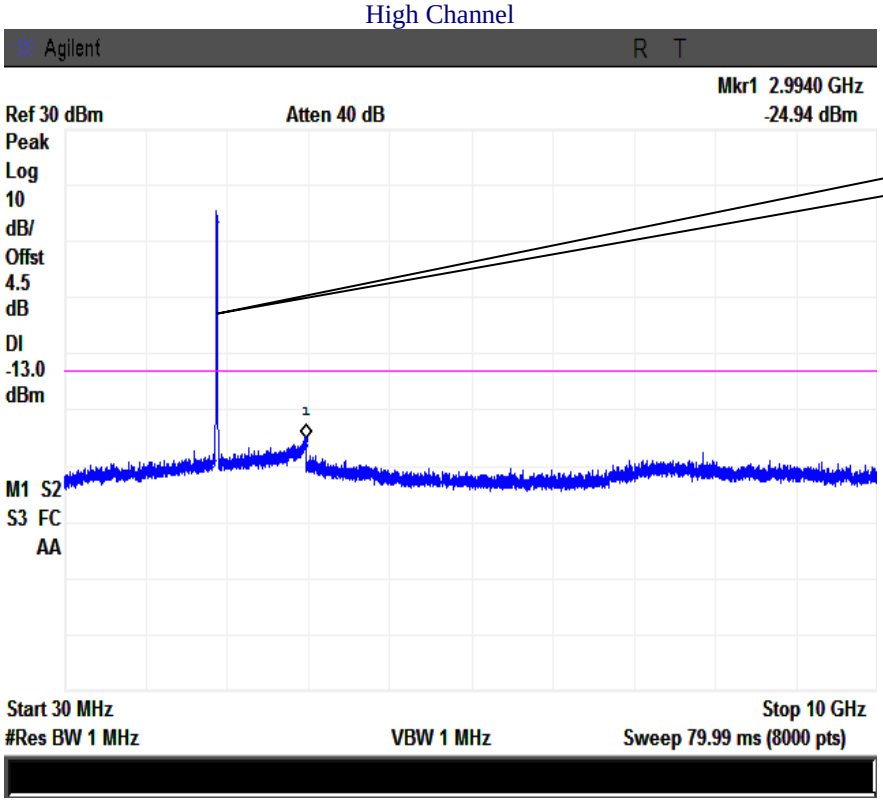


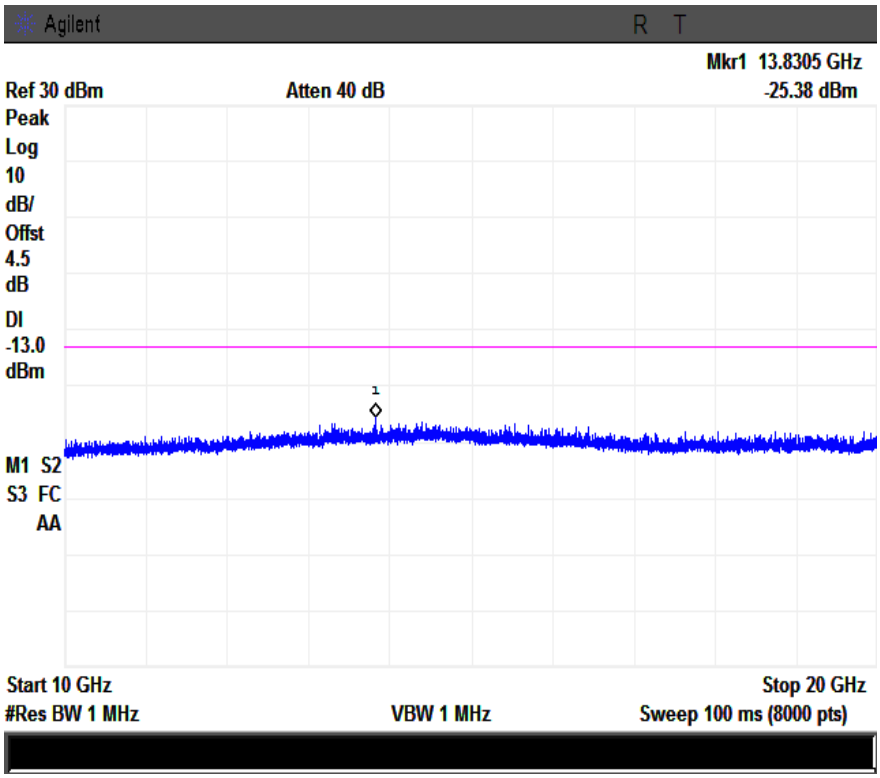
Middle Channel





High Channel

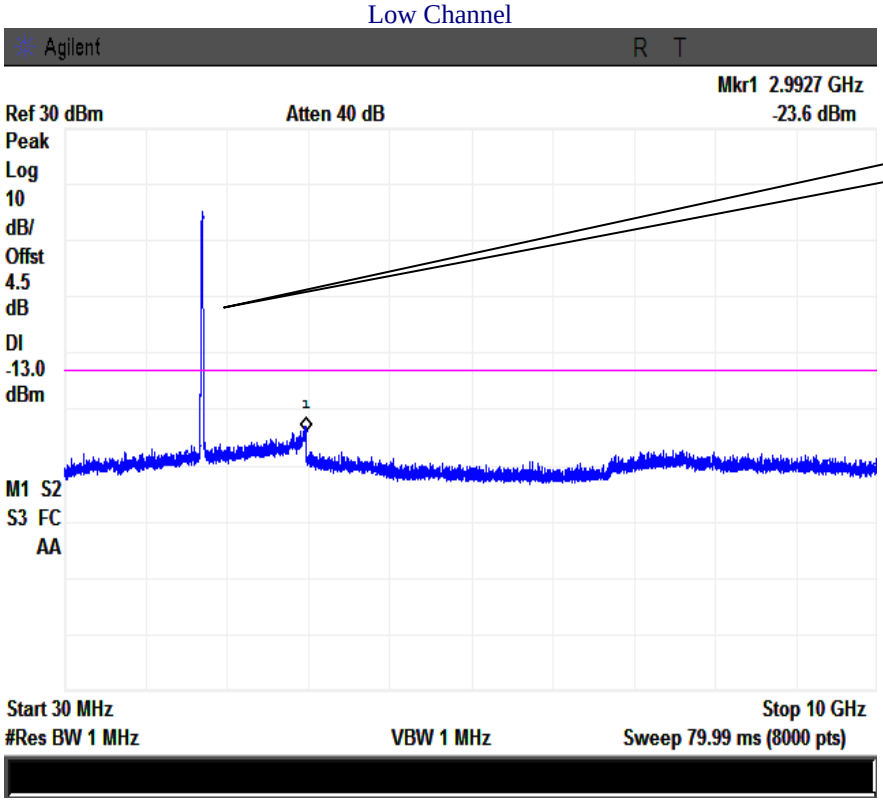


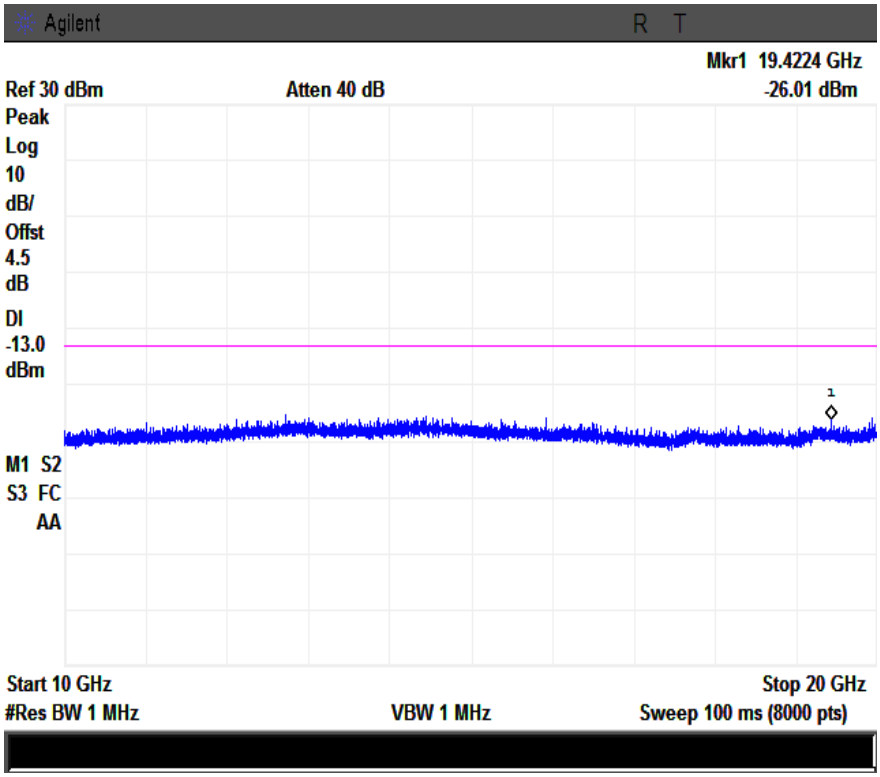


LTE Band 4 (Part 27)

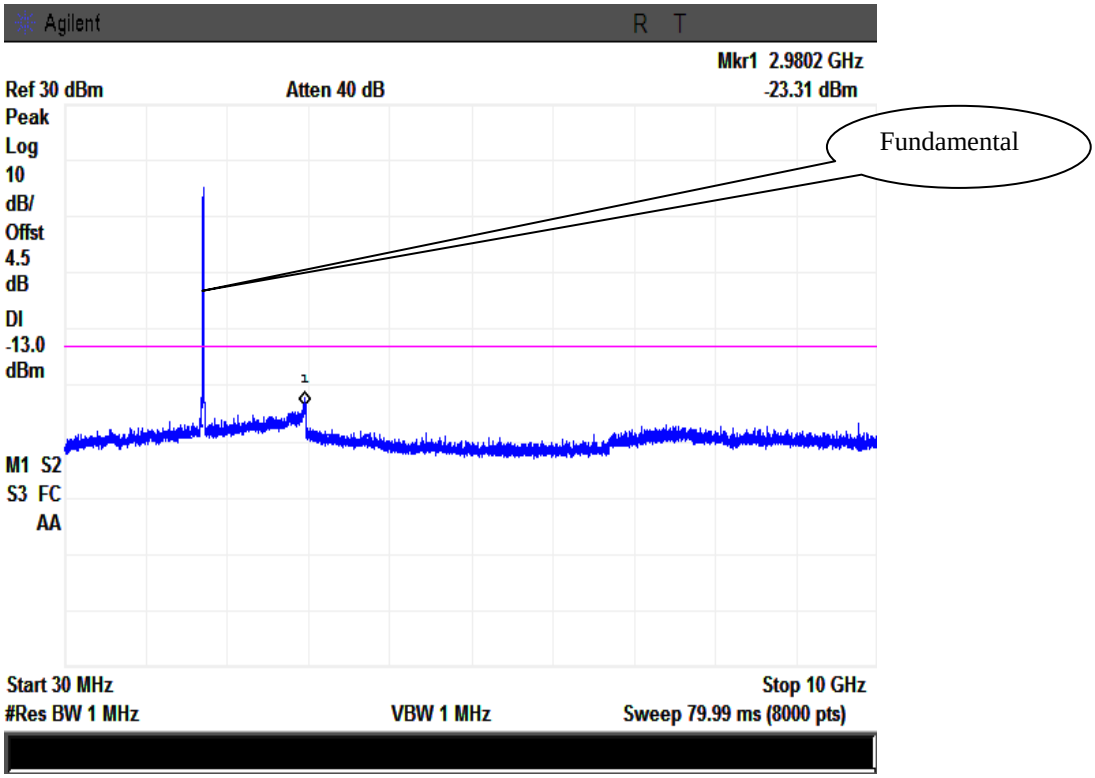
30MHz -5GHz-LTE Band 4

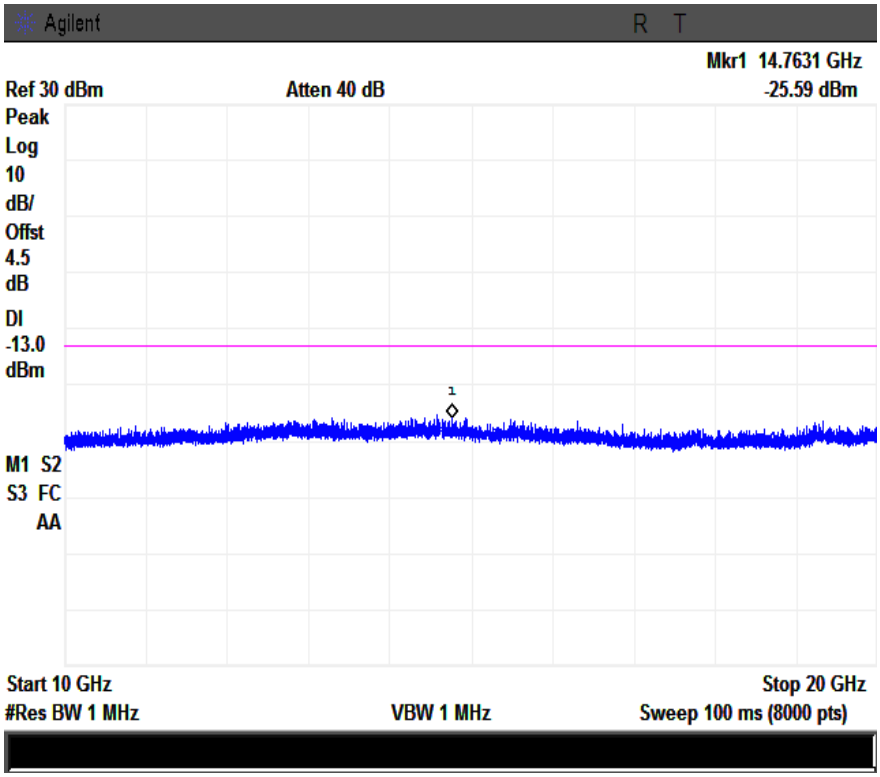
Low Channel



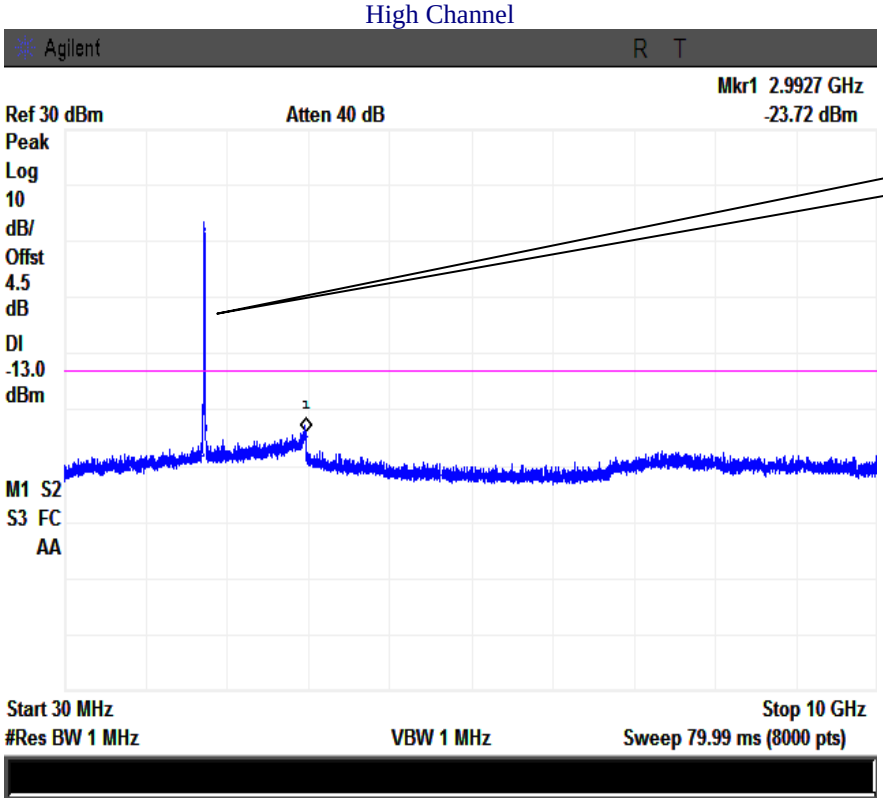


Middle Channel

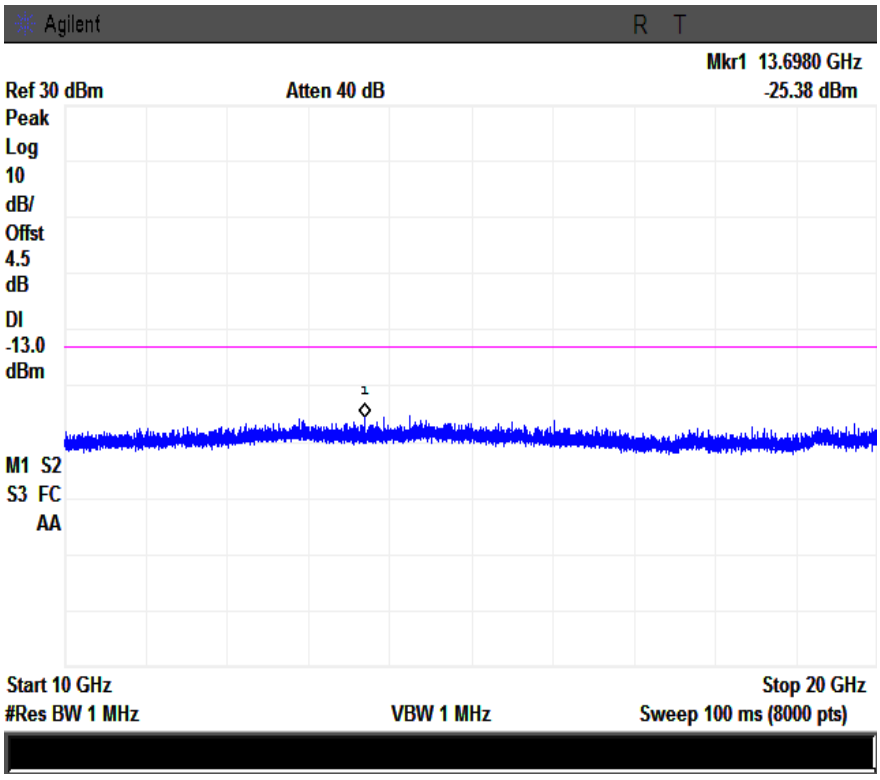




High Channel



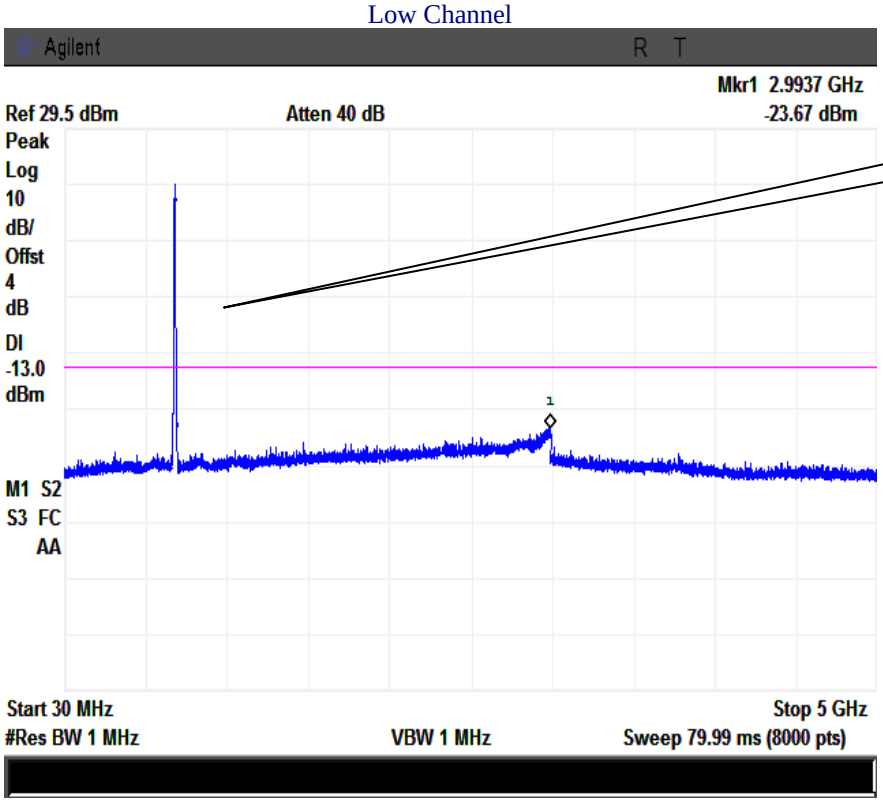
Fundamental

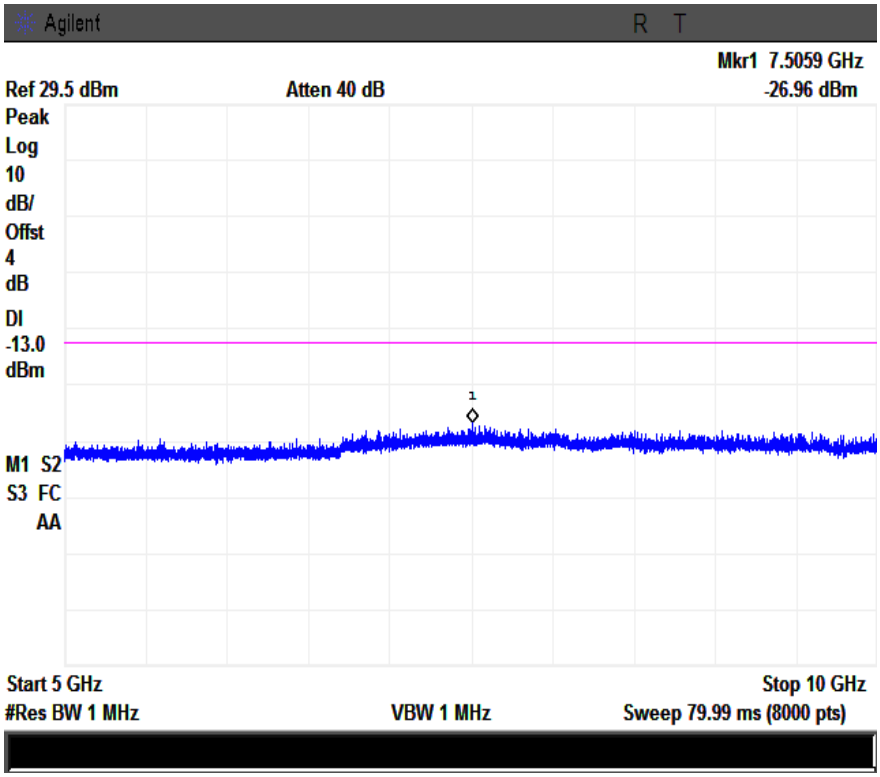


LTE Band 12 (Part 27)

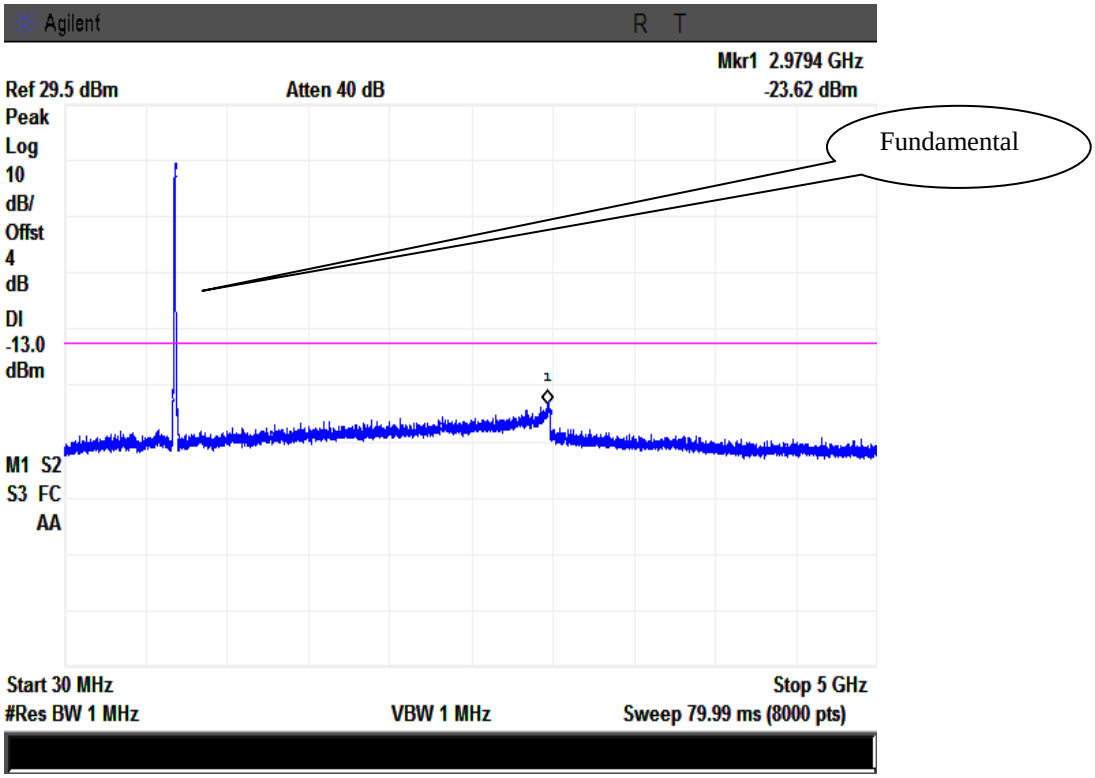
30MHz -5GHz-LTE Band 12

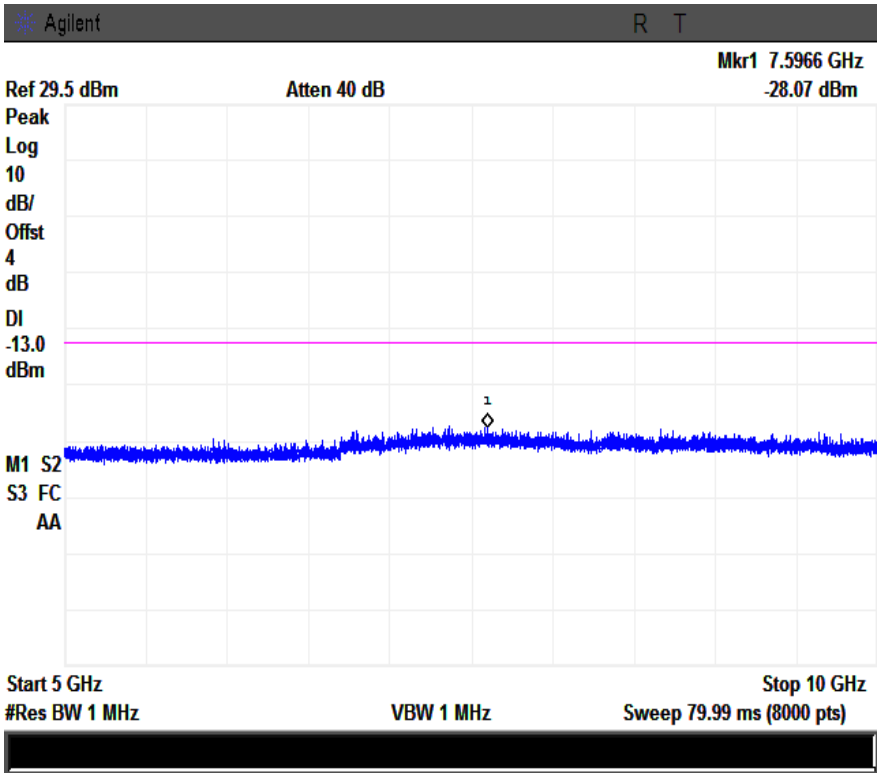
Low Channel



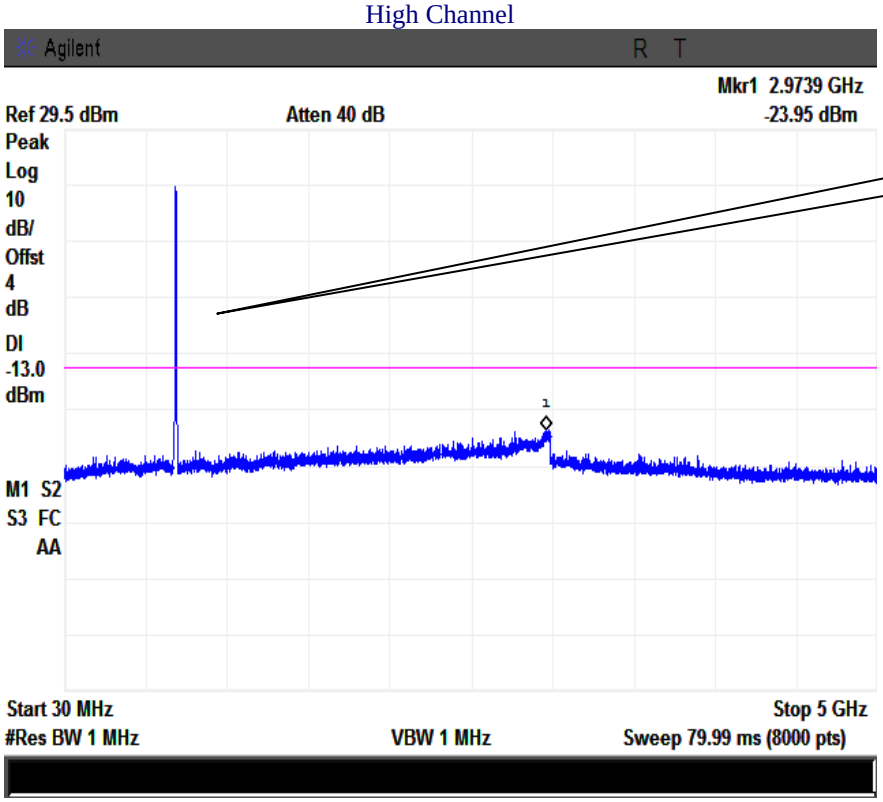


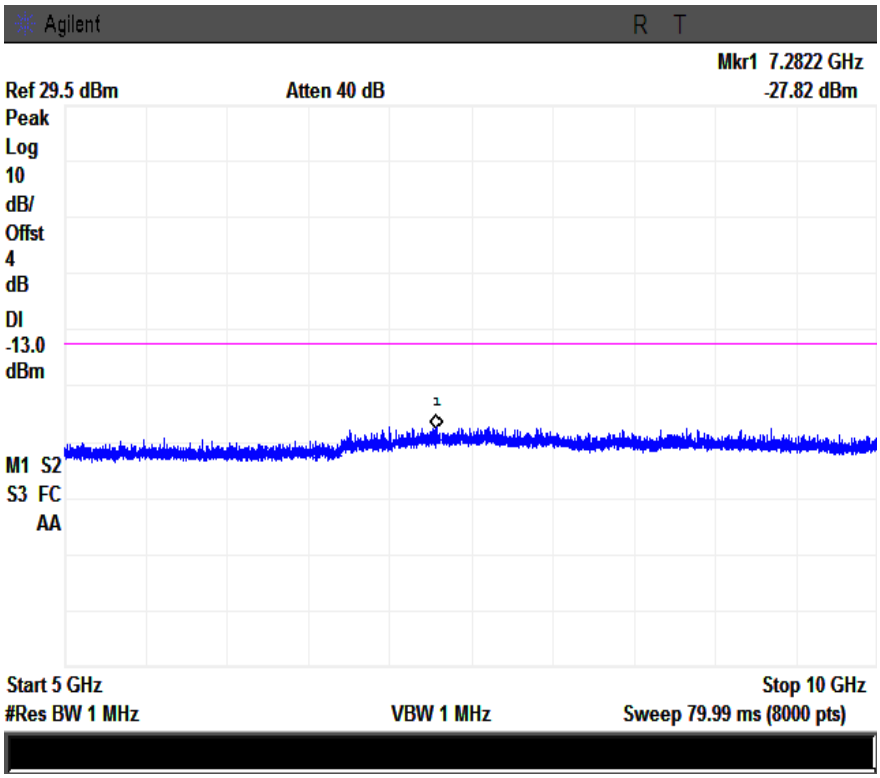
Middle Channel





High Channel

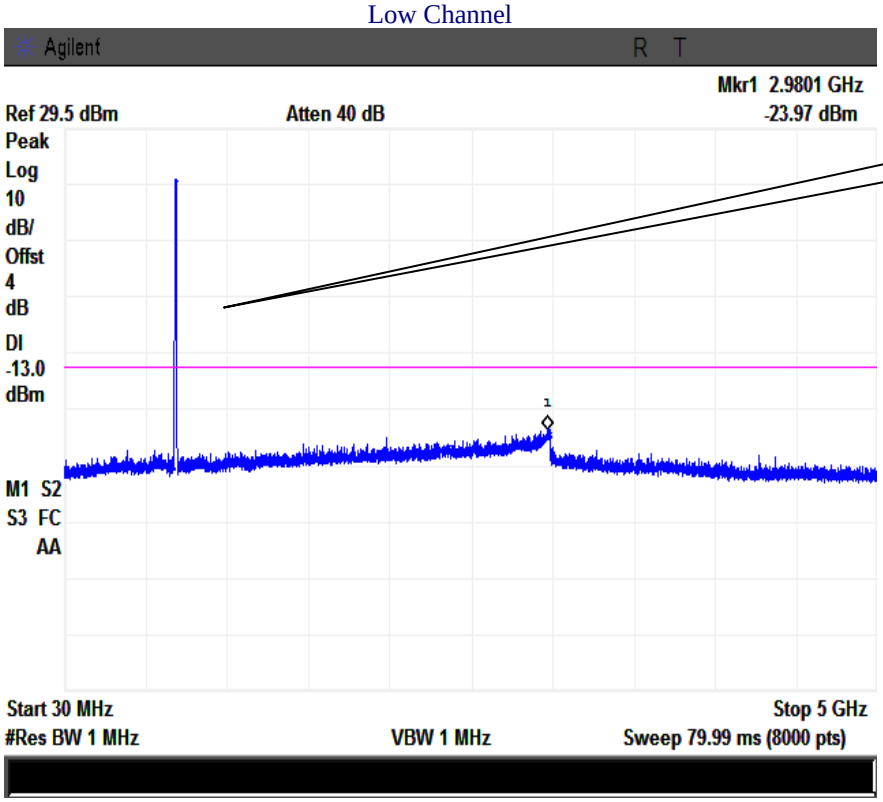


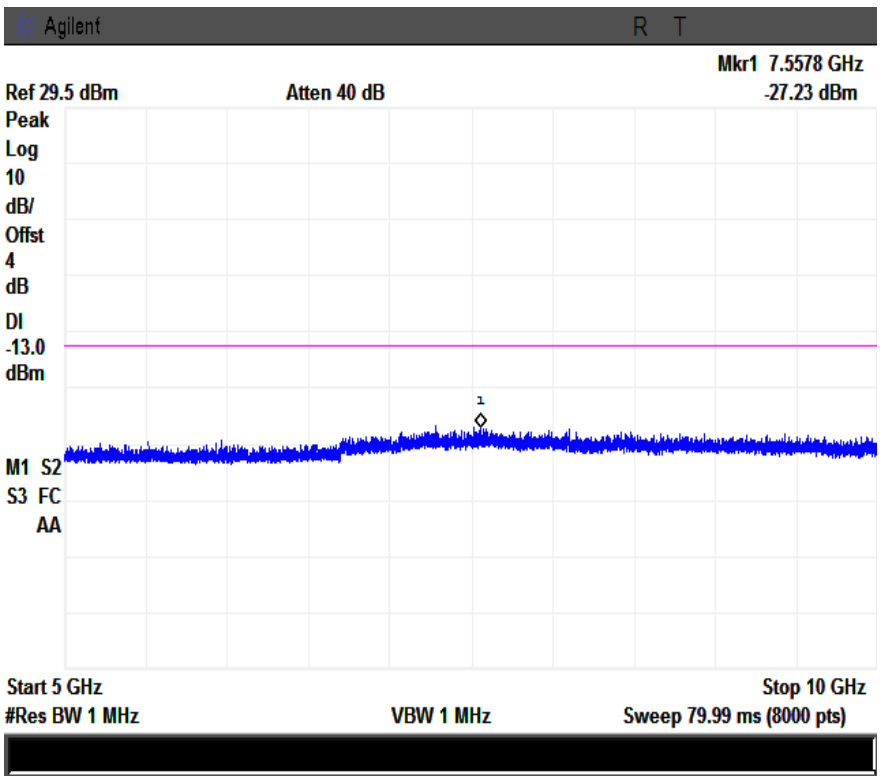


LTE Band 17 (Part 27)

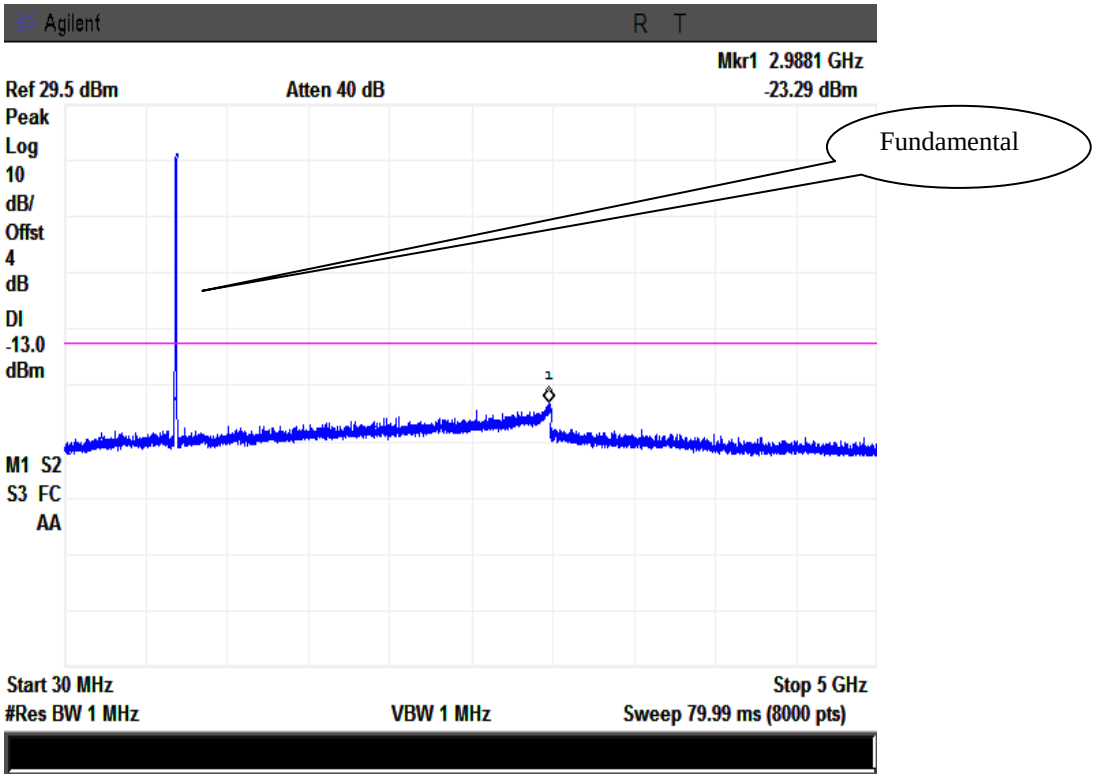
30MHz -5GHz-LTE Band 17

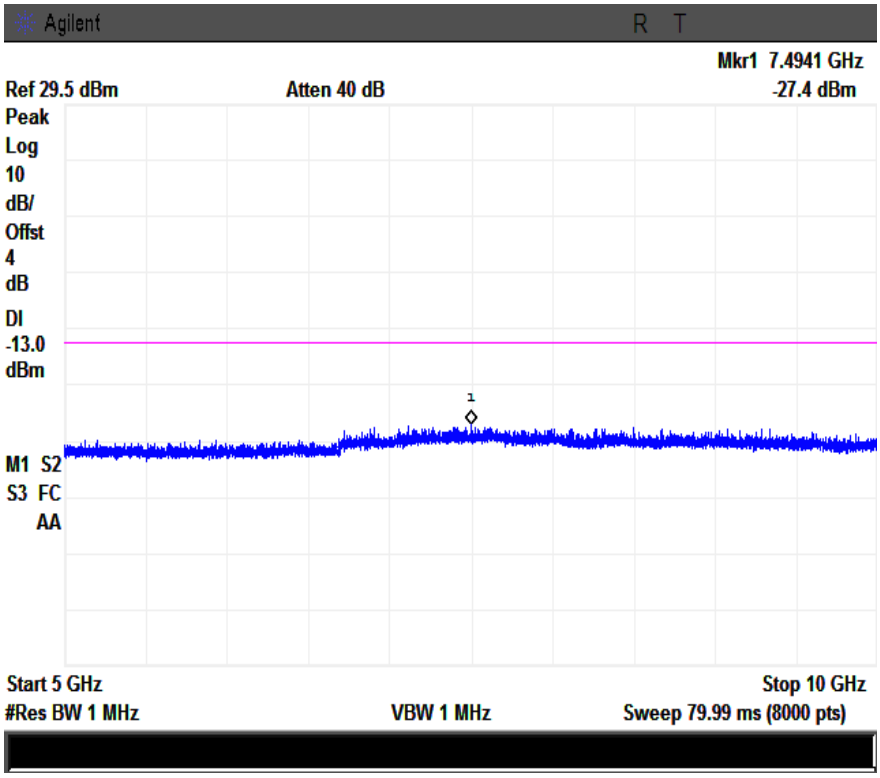
Low Channel



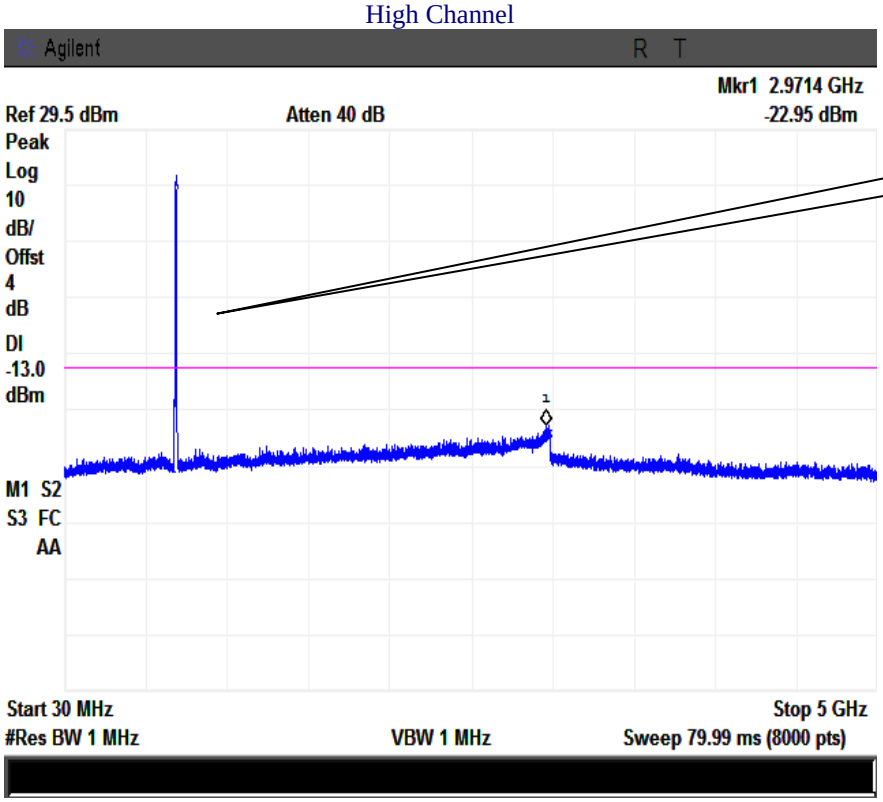


Middle Channel

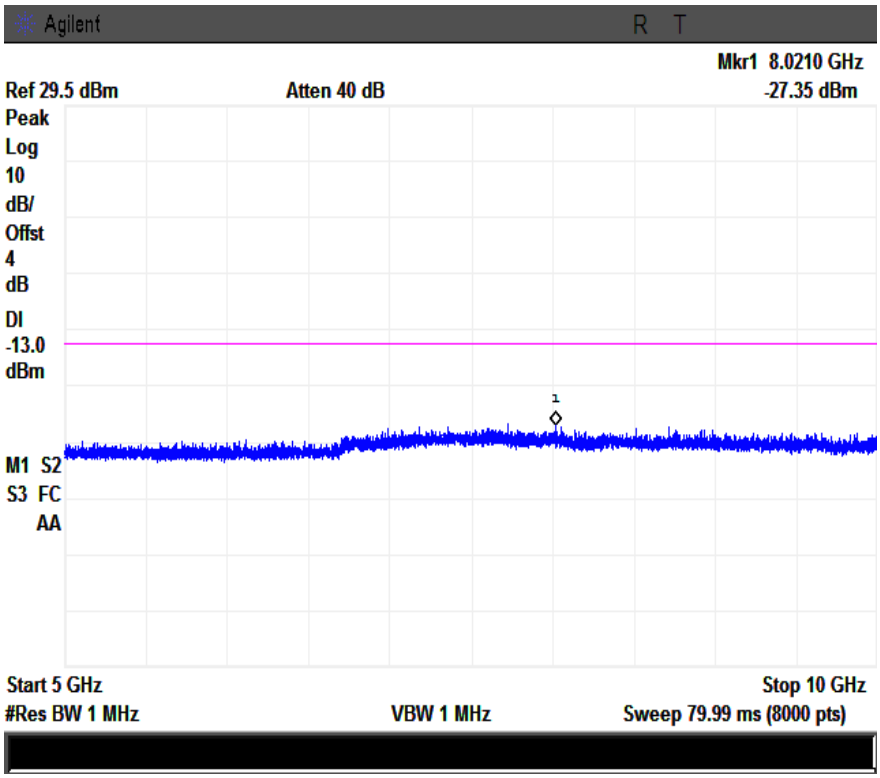




High Channel



Fundamental



5.6 §2.1053, §24.238 & § 27.53(h) - Spurious Radiated Emissions

1. All possible modes of operation were investigated. Only the 6 worst case emissions measured, using the correct CISPR detectors, are reported. All other emissions were relatively insignificant.
2. A "-ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
3. Radiated Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 1GHz – 40GH is ±6.0dB (for EUTs < 0.5m X 0.5m X 0.5m).
4. Environmental Conditions

Temperature	24°C
Relative Humidity	53%
Atmospheric Pressure	1010mbar

5. Test date : July 28, 2014
   Tested By : Herith Shi

Standard Requirement:

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 43 + 10 log (P) dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

Procedures: (According with TIA 603D)

1. The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.
2. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.
3. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Sample Calculation:

EUT Field Strength (dBm) = Reading (Signal generator) + Antenna Gain (substitution antenna) - Cable loss (From Signal Generator to substitution antenna)

Test Result: Pass

LTE Band 2 (Part 24E)

Low channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
3720	-47.58	V	10.25	2.73	-40.06	-13	-27.06
3720	-48.22	H	10.25	2.73	-40.7	-13	-27.7
255.5	-54.67	V	6.7	0.24	-48.21	-13	-35.21
638.5	-49.88	H	6.5	0.39	-43.77	-13	-30.77

Middle channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
3760	-47.47	V	10.25	2.73	-39.95	-13	-26.95
3760	-48.34	H	10.25	2.73	-40.82	-13	-27.82
256.3	-54.52	V	6.7	0.24	-48.06	-13	-35.06
640.2	-50.13	H	6.5	0.39	-44.02	-13	-31.02

High channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
3800	-47.63	V	10.36	2.73	-40	-13	-27
3800	-48.37	H	10.36	2.73	-40.74	-13	-27.74
254.7	-54.61	V	6.7	0.24	-48.15	-13	-35.15
636.6	-49.79	H	6.5	0.39	-43.68	-13	-30.68

LTE Band 4 (Part 27)

Low channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
3440	-47.36	V	10.06	2.52	-39.82	-13	-26.82
3440	-48.13	H	10.06	2.52	-40.59	-13	-27.59
257.4	-54.39	V	6.7	0.24	-47.93	-13	-34.93
640.2	-50.22	H	6.5	0.39	-44.11	-13	-31.11

Middle channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
3465	-47.55	V	10.09	2.52	-39.98	-13	-26.98
3465	-48.29	H	10.09	2.52	-40.72	-13	-27.72
256.9	-54.72	V	6.7	0.24	-48.26	-13	-35.26
639.8	-50.17	H	6.5	0.39	-44.06	-13	-31.06

High channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
3490	-47.69	V	10.09	2.52	-40.12	-13	-27.12
3490	-48.37	H	10.09	2.52	-40.8	-13	-27.8
254.6	-54.82	V	6.7	0.24	-48.36	-13	-35.36
639.4	-50.09	H	6.5	0.39	-43.98	-13	-30.98

LTE Band 12 (Part 27)

Low channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1408	-40.66	V	7.65	0.75	-33.76	-13	-20.76
1408	-41.72	H	7.65	0.75	-34.82	-13	-21.82
254.8	-54.78	V	6.7	0.24	-48.32	-13	-35.32
639.3	-49.99	H	6.5	0.39	-43.88	-13	-30.88

Middle channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1415	-41.15	V	7.65	0.75	-34.25	-13	-21.25
1415	-41.55	H	7.65	0.75	-34.65	-13	-21.65
257.4	-55.02	V	6.7	0.24	-48.56	-13	-35.56
641.7	-49.87	H	6.5	0.39	-43.76	-13	-30.76

High channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1422	-40.83	V	7.65	0.75	-33.93	-13	-20.93
1422	-41.78	H	7.65	0.75	-34.88	-13	-21.88
257.2	-55.11	V	6.7	0.24	-48.65	-13	-35.65
640.7	-49.76	H	6.5	0.39	-43.65	-13	-30.65

LTE Band 17 (Part 27)

Low channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1418	-41.22	V	7.65	0.75	-34.32	-13	-21.32
1418	-42.19	H	7.65	0.75	-35.29	-13	-22.29
254.4	-54.86	V	6.7	0.24	-48.4	-13	-35.4
636.4	-50.07	H	6.5	0.39	-43.96	-13	-30.96

Middle channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1420	-40.77	V	7.65	0.75	-33.87	-13	-20.87
1420	-42.26	H	7.65	0.75	-35.36	-13	-22.36
253.7	-54.73	V	6.7	0.24	-48.27	-13	-35.27
636.5	-50.16	H	6.5	0.39	-44.05	-13	-31.05

High channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1422	-41.02	V	7.65	0.75	-34.12	-13	-21.12
1422	-42.04	H	7.65	0.75	-35.14	-13	-22.14
254.9	-54.66	V	6.7	0.24	-48.2	-13	-35.2
637.6	-50.22	H	6.5	0.39	-44.11	-13	-31.11

5.7 §24.238(a), §27.53(h) - Band Edge

1. Conducted Measurement
   EUT was set for low, mid, high channel with modulated mode and highest RF output power.
   The spectrum analyzer was connected to the antenna terminal.
2. Conducted Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 40GHz is ±1.5dB.
3. Environmental Conditions

Temperature	23°C
Relative Humidity	53%
Atmospheric Pressure	1014mbar

4. Test date : July 24, 2014
   Tested By : Herith Shi

Standard Requirement:

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

Procedures:

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The Band Edges of low and high channels for the highest RF powers were measured. Setting RBW as roughly BW/100.
3. Details according with KDB 971168 section 6.0.

Test Result: Pass

Refer to the attached plots.

LTE Band 2 (Part 24E)

BW(MHz)	Channel	Frequency (MHz)	Mode	Emission (dBm)	Limit (dBm)
1.4	18607	1850.7	QPSK	-25.31	-13
			16QAM	-26.12	-13
1.4	18900	1909.3	QPSK	-23.27	-13
			16QAM	-24.79	-13
3	18615	1851.5	QPSK	-16.10	-13
			16QAM	-18.52	-13
3	19185	1908.5	QPSK	-18.93	-13
			16QAM	-16.81	-13
5	18625	1852.5	QPSK	-20.44	-13
			16QAM	-22.40	-13
5	19175	1907.5	QPSK	-19.82	-13
			16QAM	-20.56	-13
10	18650	1855	QPSK	-24.47	-13
			16QAM	-22.46	-13
10	19150	1905	QPSK	-19.06	-13
			16QAM	-19.98	-13
15	18675	1857.5	QPSK	-26.27	-13
			16QAM	-25.42	-13
15	19125	1902.5	QPSK	-21.45	-13
			16QAM	-21.94	-13
20	18700	1860	QPSK	-26.83	-13
			16QAM	-26.58	-13
20	19100	1900	QPSK	-22.33	-13
			16QAM	-23.12	-13

LTE Band 4 (Part 27)

BW(MHz)	Channel	Frequency (MHz)	Mode	Emission (dBm)	Limit (dBm)
1.4	19957	1710.7	QPSK	-21.12	-13
			16QAM	-21.95	-13
1.4	20393	1754.3	QPSK	-23.37	-13
			16QAM	-25.0	-13
3	19965	1711.5	QPSK	-14.85	-13
			16QAM	-16.34	-13
3	20385	1753.5	QPSK	-17.25	-13
			16QAM	-18.40	-13
5	19975	1712.5	QPSK	-15.69	-13
			16QAM	-17.50	-13
5	20375	1752.5	QPSK	-17.99	-13
			16QAM	-19.12	-13
10	20000	1715	QPSK	-17.77	-13
			16QAM	-17.54	-13
10	20350	1750	QPSK	-20.23	-13
			16QAM	-24.26	-13
15	20025	1717.5	QPSK	-16.08	-13
			16QAM	-18.86	-13
15	20325	1747.5	QPSK	-24.48	-13
			16QAM	-25.63	-13
20	20050	1720	QPSK	-19.33	-13
			16QAM	-18.15	-13
20	20300	1745	QPSK	-26.35	-13
			16QAM	-29.03	-13

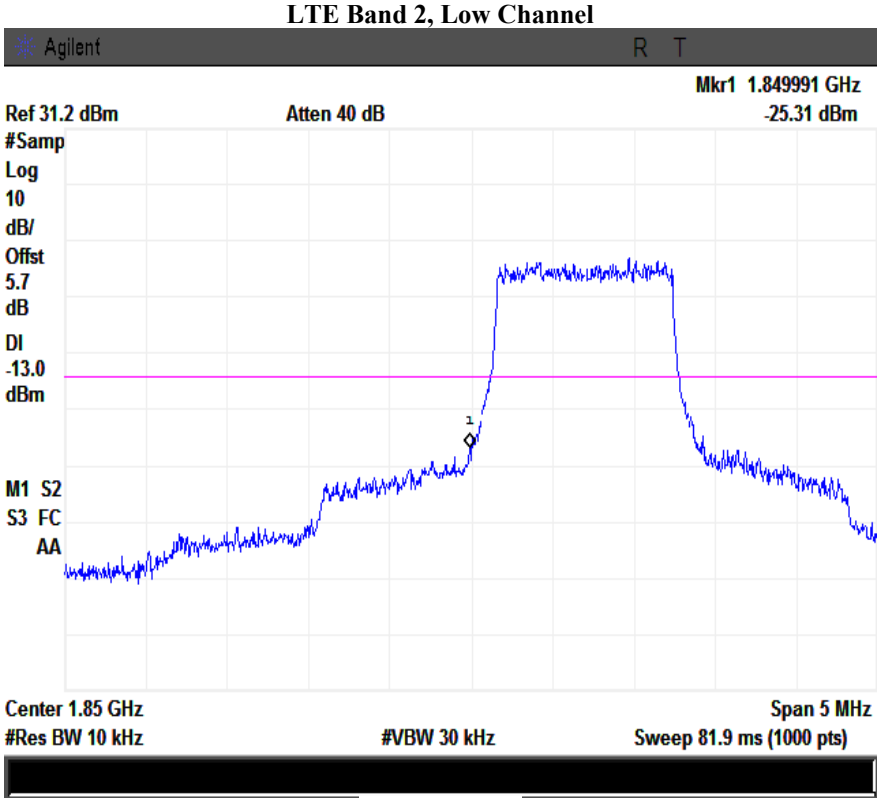
LTE Band 12 (Part 27)

BW(MHz)	Channel	Frequency (MHz)	Mode	Emission (dBm)	Limit (dBm)
1.4	23017	699.7	QPSK	-22.47	-13
			16QAM	-23.44	-13
1.4	23173	715.3	QPSK	-25.85	-13
			16QAM	-25.87	-13
3	23025	700.5	QPSK	-21.89	-13
			16QAM	-18.47	-13
3	23165	714.5	QPSK	-16.79	-13
			16QAM	-17.84	-13
5	23035	701.5	QPSK	-18.74	-13
			16QAM	-20.31	-13
5	23155	713.5	QPSK	-20.30	-13
			16QAM	-21.96	-13
10	23060	704	QPSK	-22.69	-13
			16QAM	-23.72	-13
10	23130	711	QPSK	-20.59	-13
			16QAM	-20.59	-13

LTE Band 17 (Part 27)

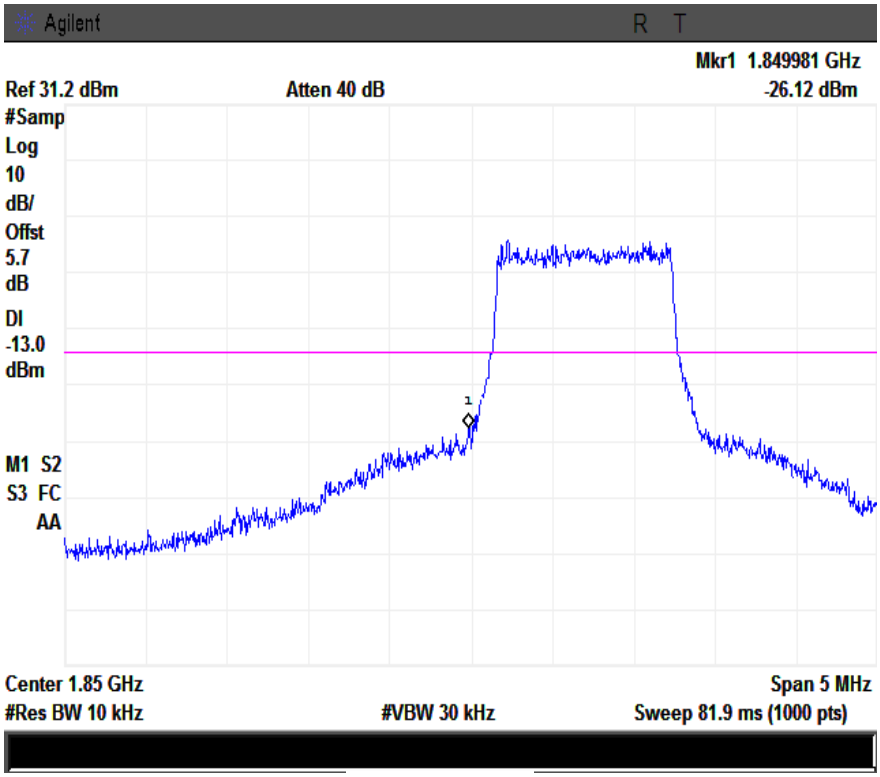
BW(MHz)	Channel	Frequency (MHz)	Mode	Emission (dBm)	Limit (dBm)
5	23755	706.5	QPSK	-18.01	-13
			16QAM	-19.73	-13
5	23825	713.5	QPSK	-19.33	-13
			16QAM	-18.42	-13
10	23780	709	QPSK	-20.43	-13
			16QAM	-20.83	-13
10	23800	711	QPSK	-23.20	-13
			16QAM	-22.58	-13

LTE Band 2, Low Channel



L-QPSK-1.4

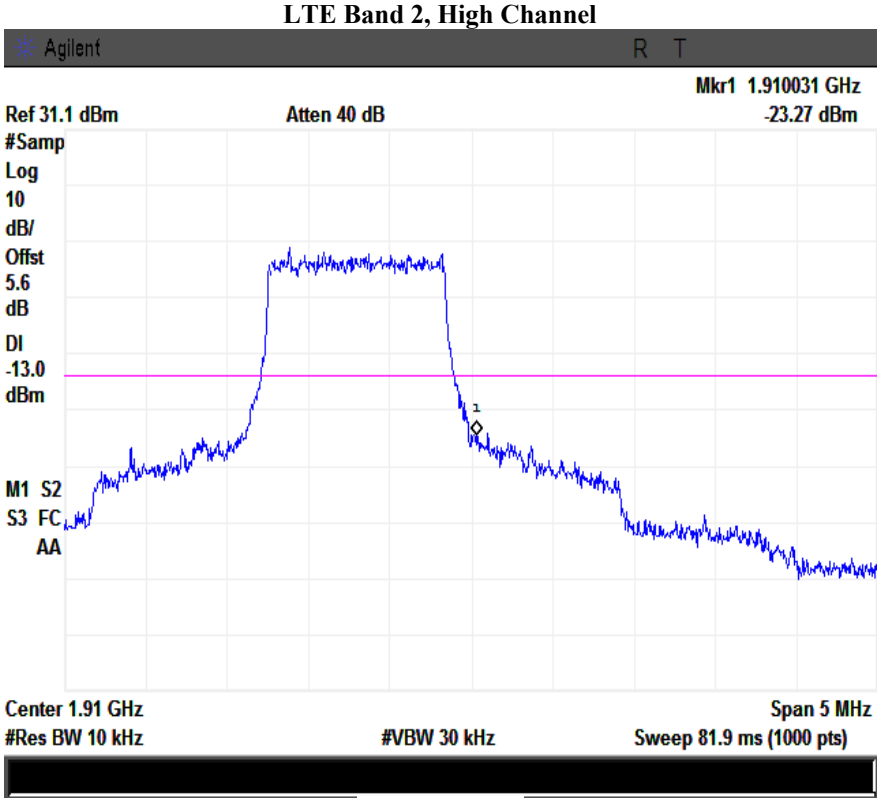
Note: Offset=Cable loss (4.5) + 10log (13.3/10)=4.5+1.2=5.7 dB



L-16QAM-1.4

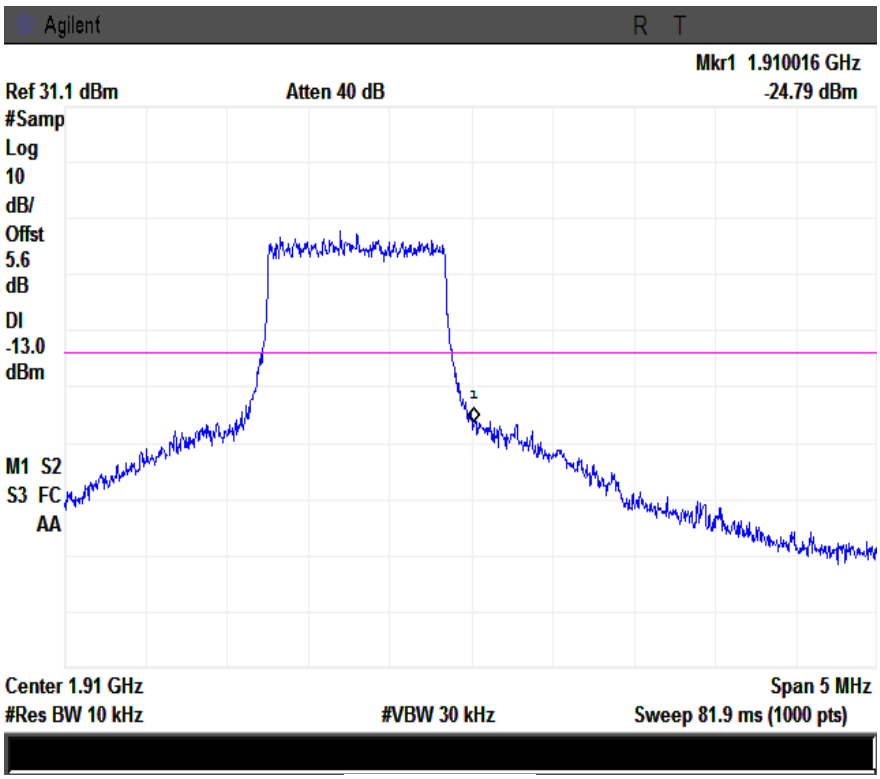
Note: Offset=Cable loss (4.5) + 10log (13.1/10)=4.5+1.2=5.7 dB

LTE Band 2, High Channel



H-QPSK-1.4

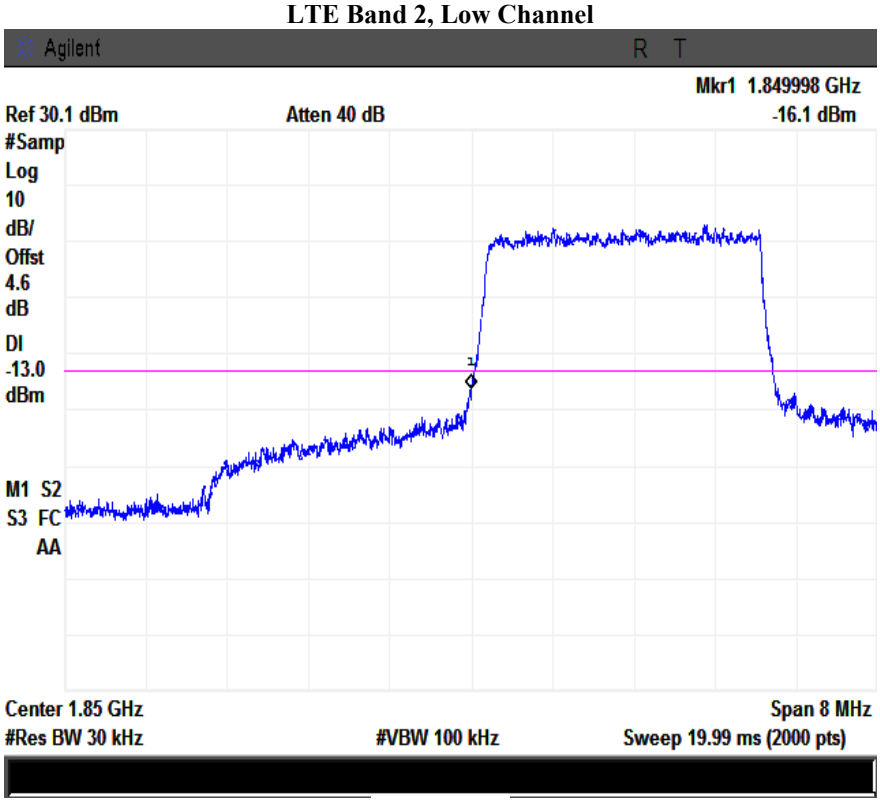
Note: Offset=Cable loss (4.5) + 10log (12.8/10)=4.5+1.1=5.6 dB



H-16QAM-1.4

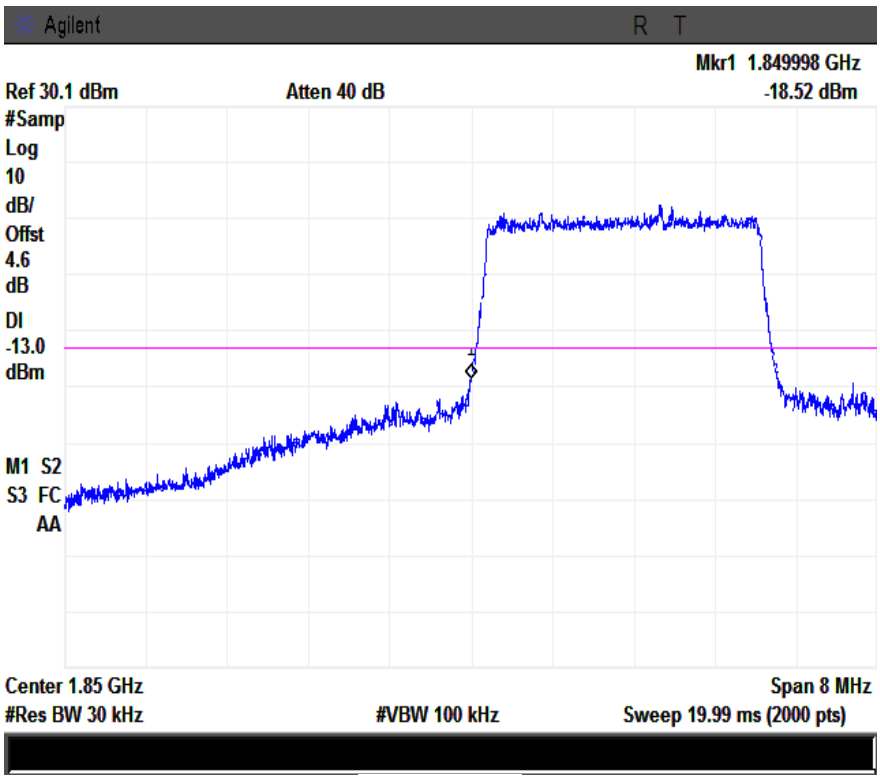
Note: Offset=Cable loss (4.5) + 10log (12.9/10)=4.5+1.1=5.6 dB

LTE Band 2, Low Channel



L-QPSK-3

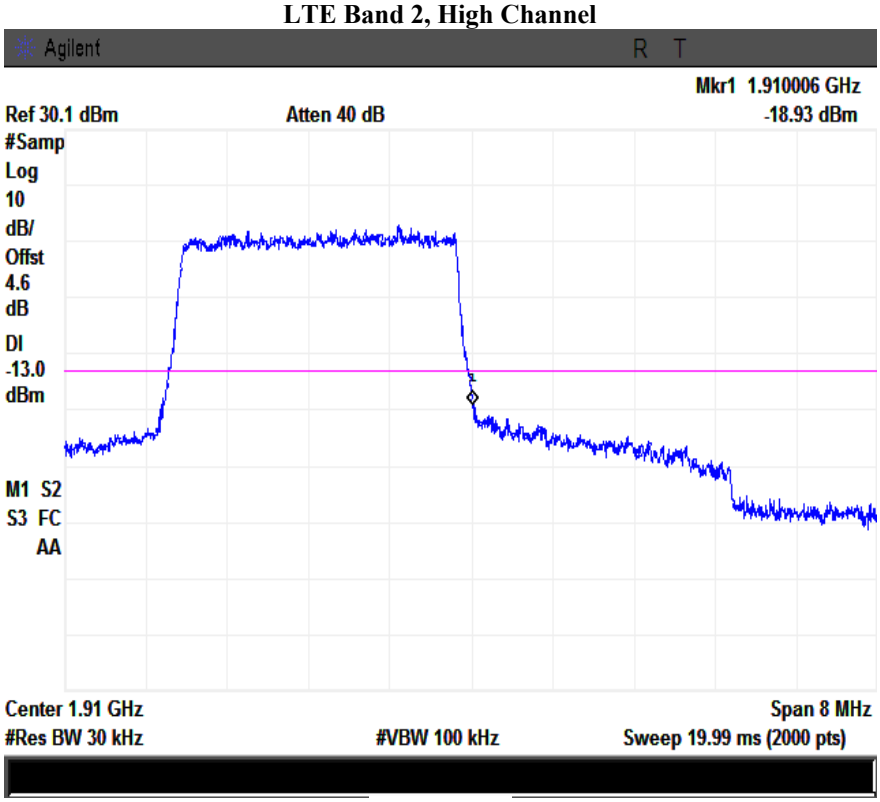
Note: Offset=Cable loss (4.5) + 10log (31.0/30)=4.5+0.1=4.6 dB



L-16QAM-3

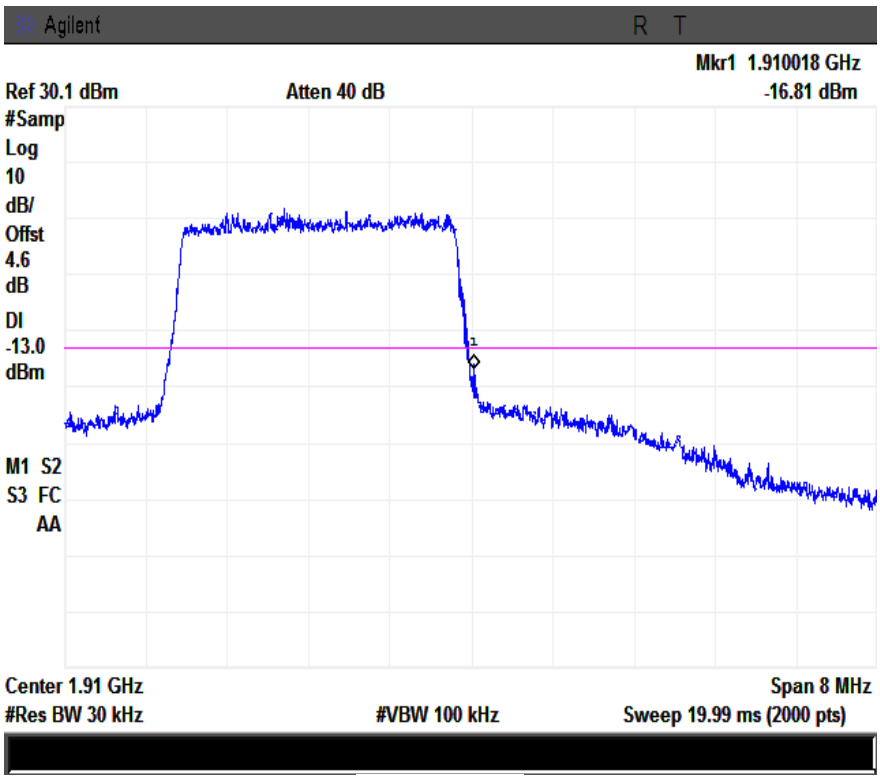
Note: Offset=Cable loss (4.5) + 10log (31.3/30)=4.5+0.1=4.6 dB

LTE Band 2, High Channel



H-QPSK-3

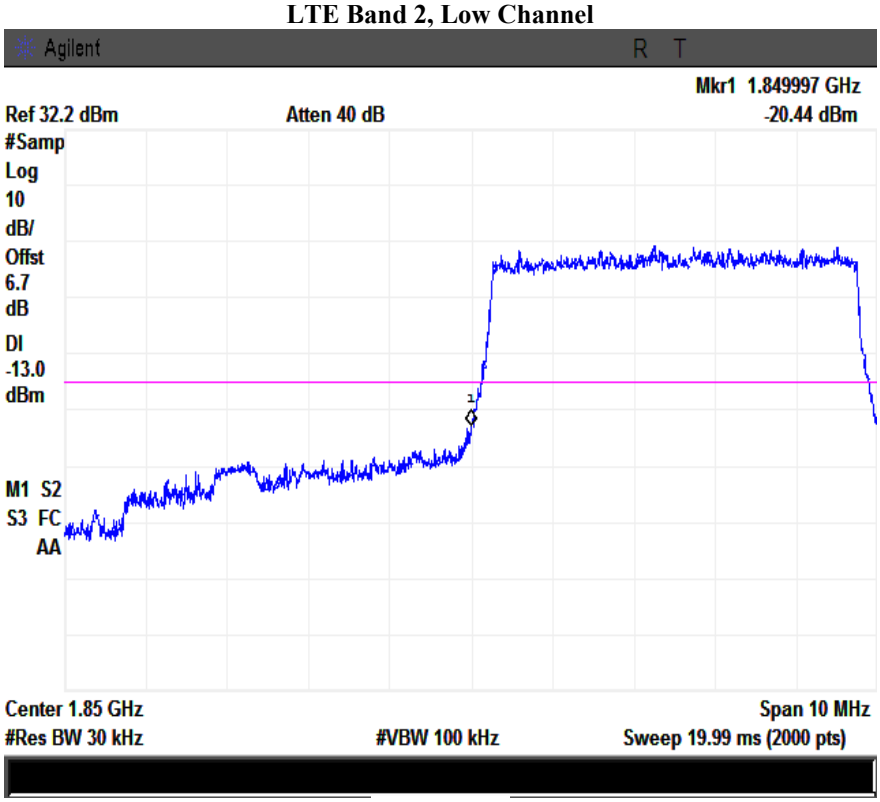
Note: Offset=Cable loss (4.5) + 10log (31.0/30)=4.5+0.1=4.6 dB



H-16QAM-3

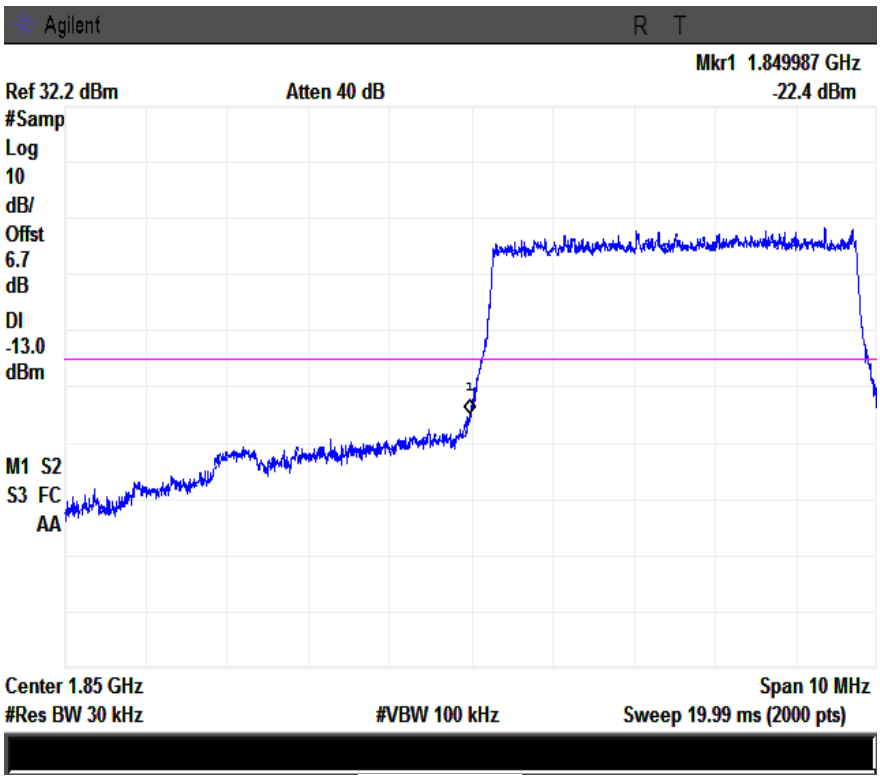
Note: Offset=Cable loss (4.5) + 10log (31.1/30)=4.5+0.1=4.6 dB

LTE Band 2, Low Channel



L-QPSK-5

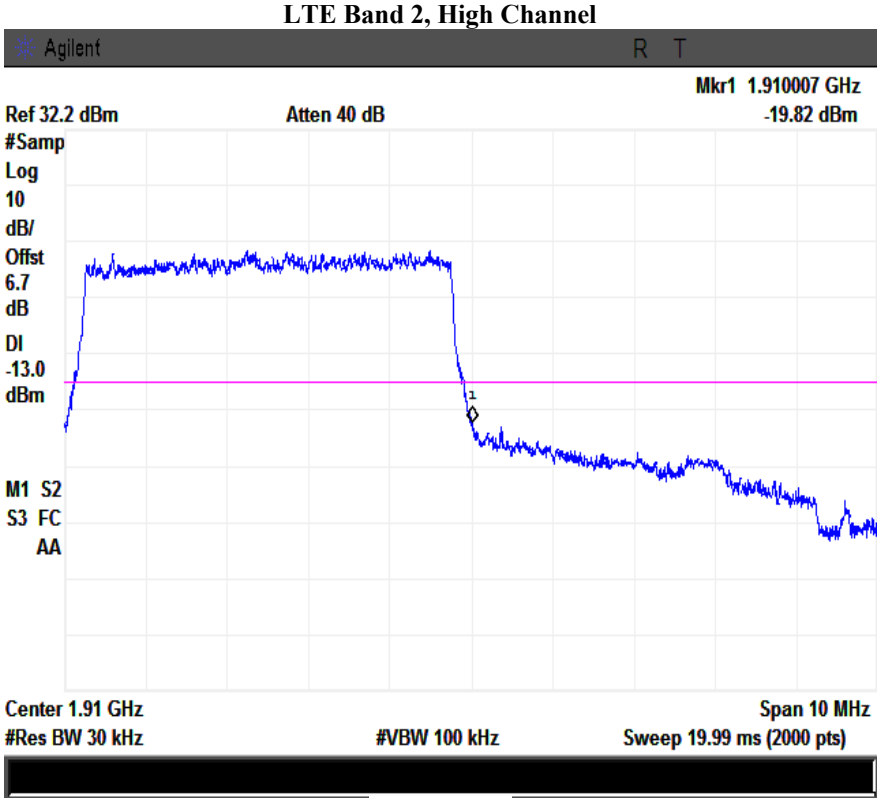
Note: Offset=Cable loss (4.5) + 10log (50.0/30)=4.5+2.2=6.7 dB



L-16QAM-5

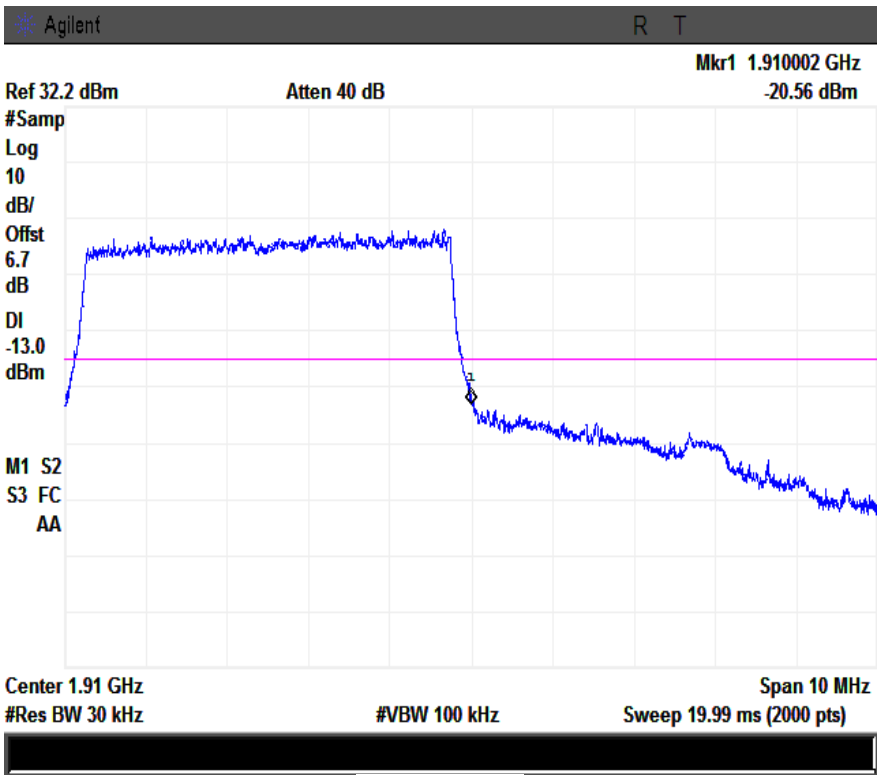
Note: Offset=Cable loss (4.5) + 10log (50.0/30)=4.5+2.2=6.7 dB

LTE Band 2, High Channel



H-QPSK-5

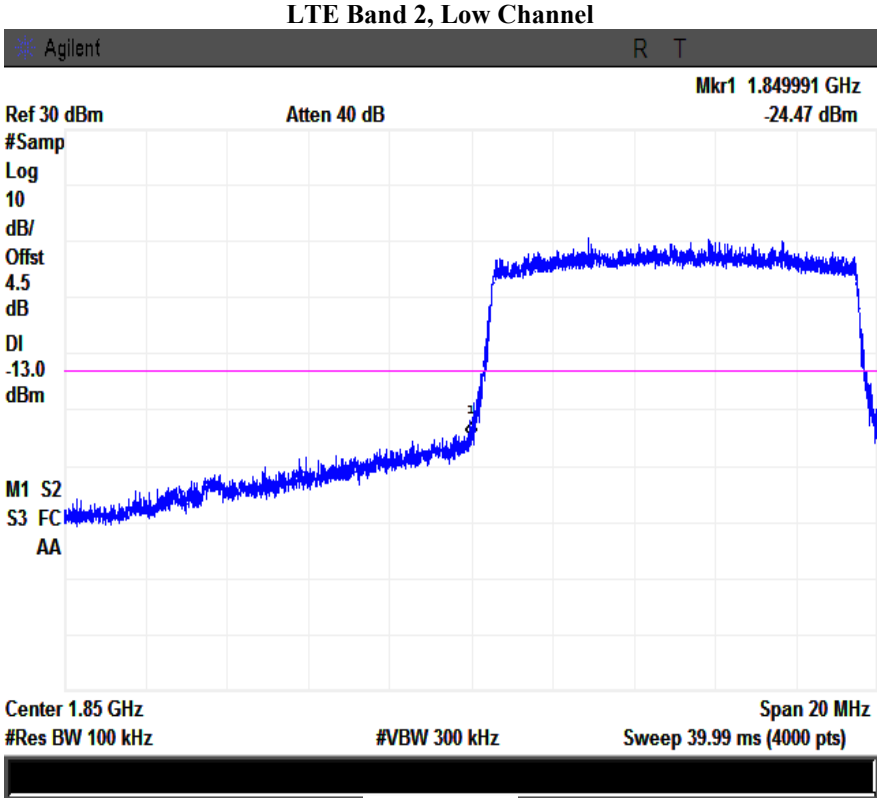
Note: Offset=Cable loss (4.5) + 10log (49.4/30)=4.5+2.2=6.7 dB



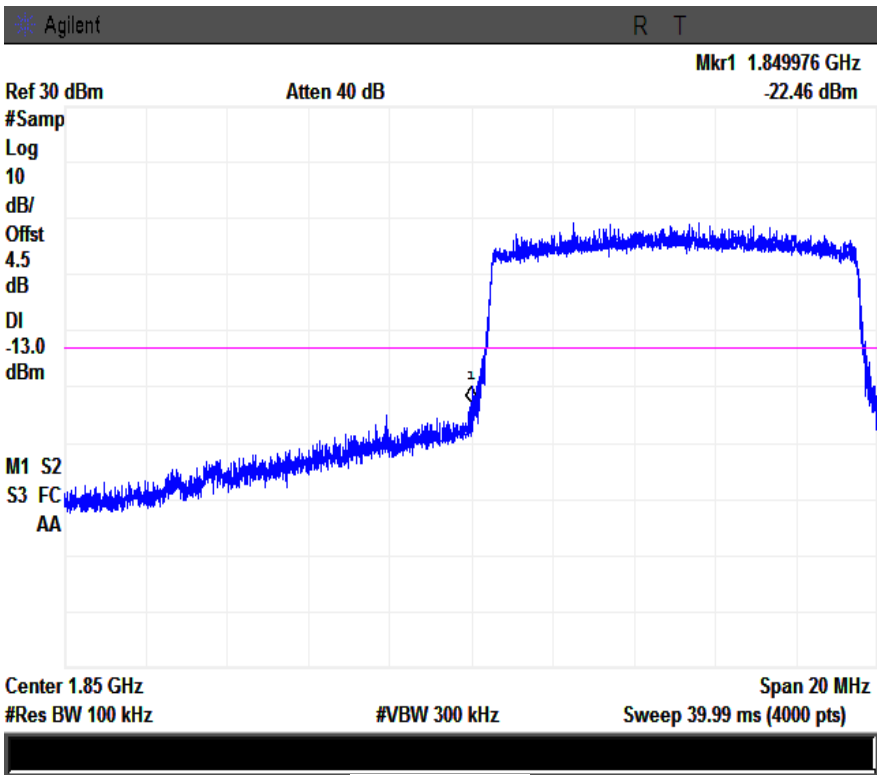
H-16QAM-5

Note: Offset=Cable loss (4.5) + 10log (50.7/30)=4.5+2.2=6.7 dB

LTE Band 2, Low Channel

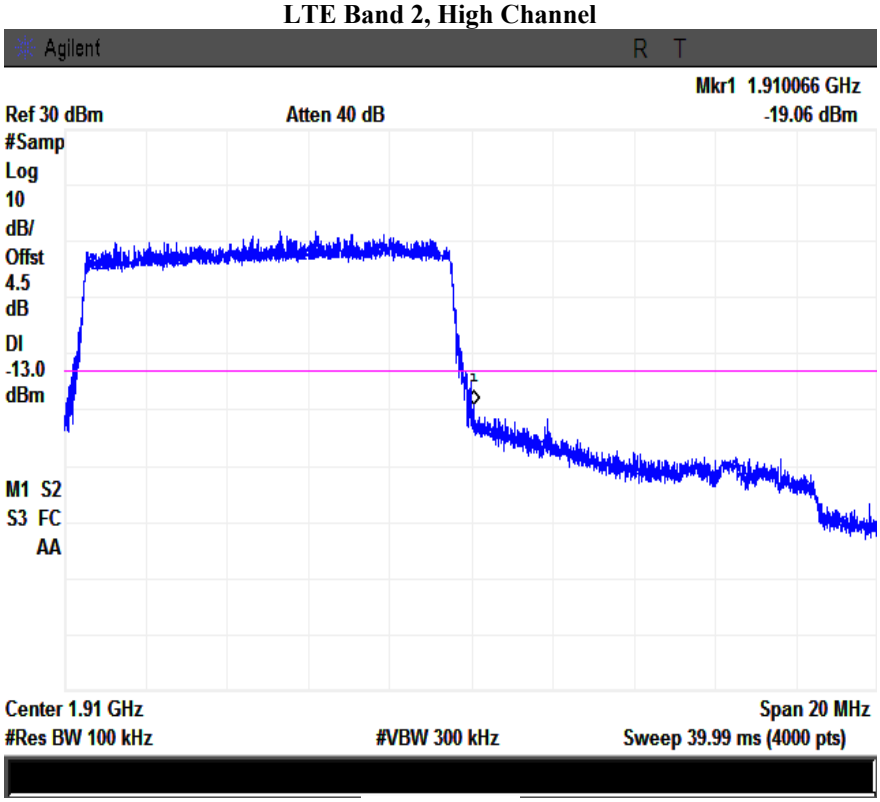


L-QPSK-10

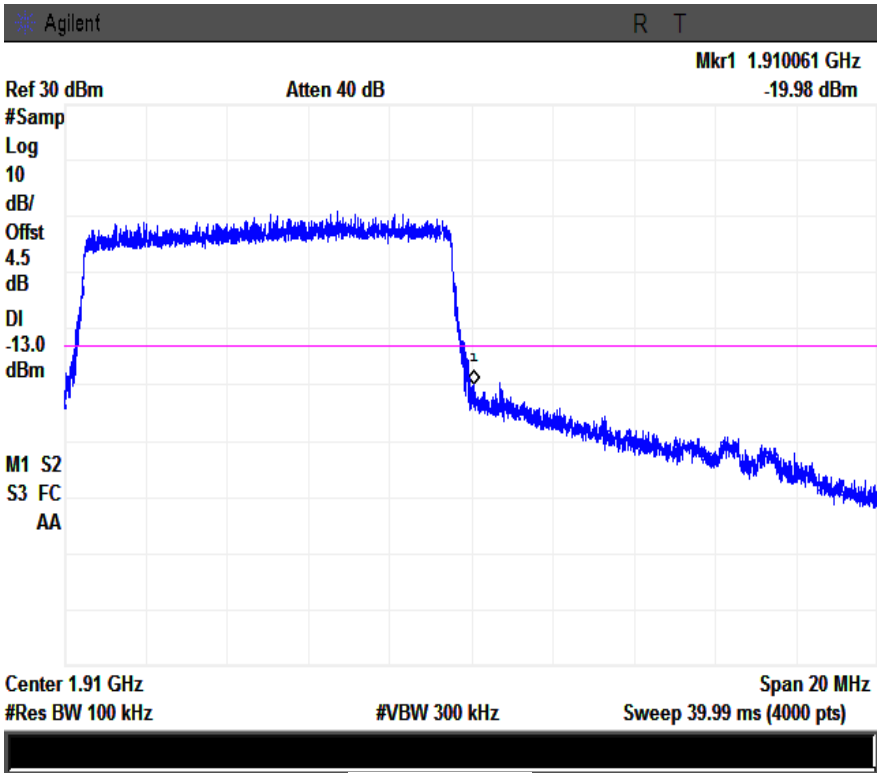


L-16QAM-10

LTE Band 2, High Channel

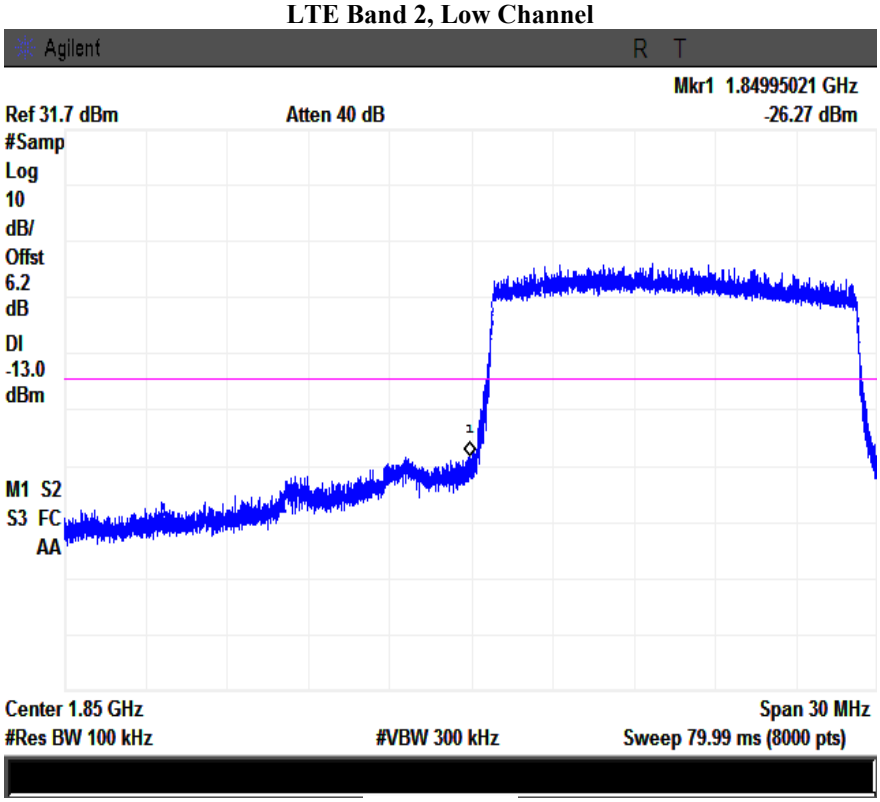


H-QPSK-10



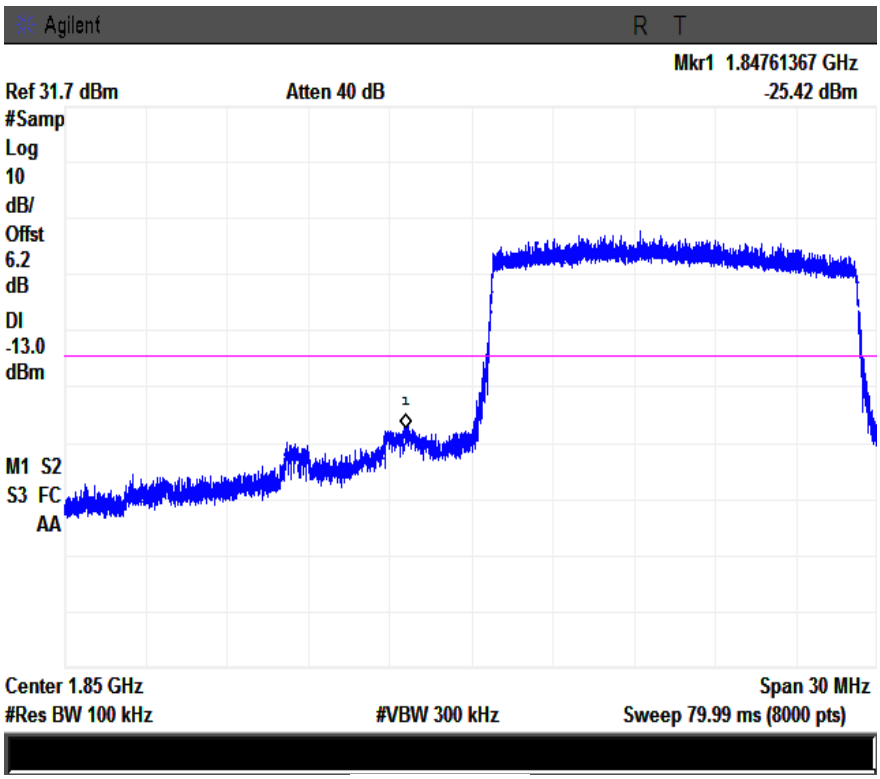
H-16QAM-10

LTE Band 2, Low Channel



L-QPSK-15

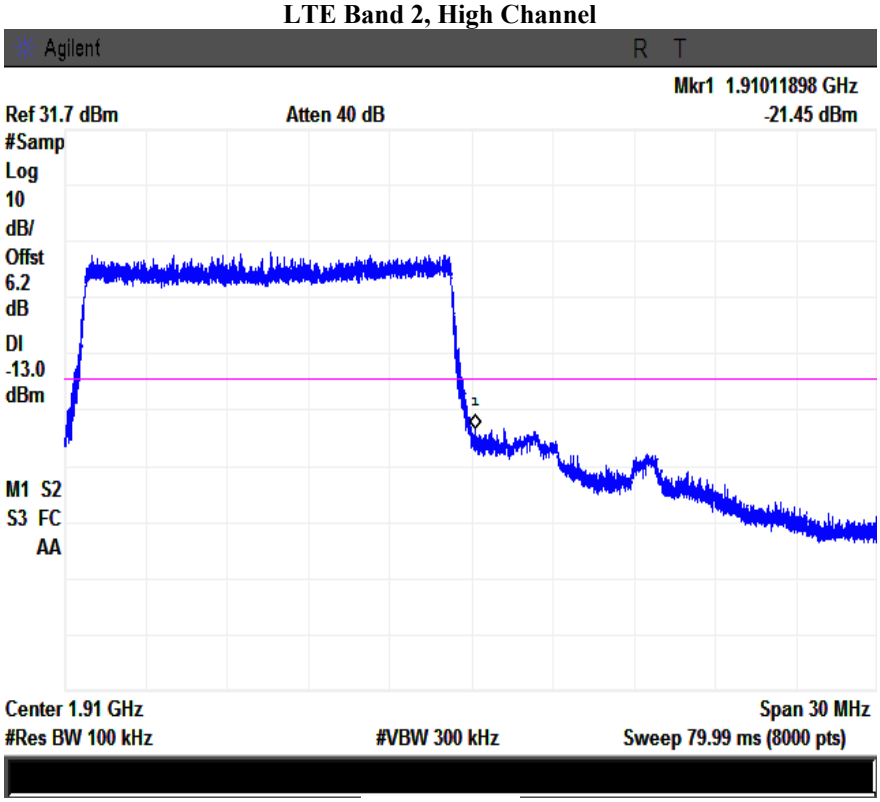
Note: Offset=Cable loss (4.5) + 10log (146.7/100)=4.5+1.7=6.2 dB



L-16QAM-15

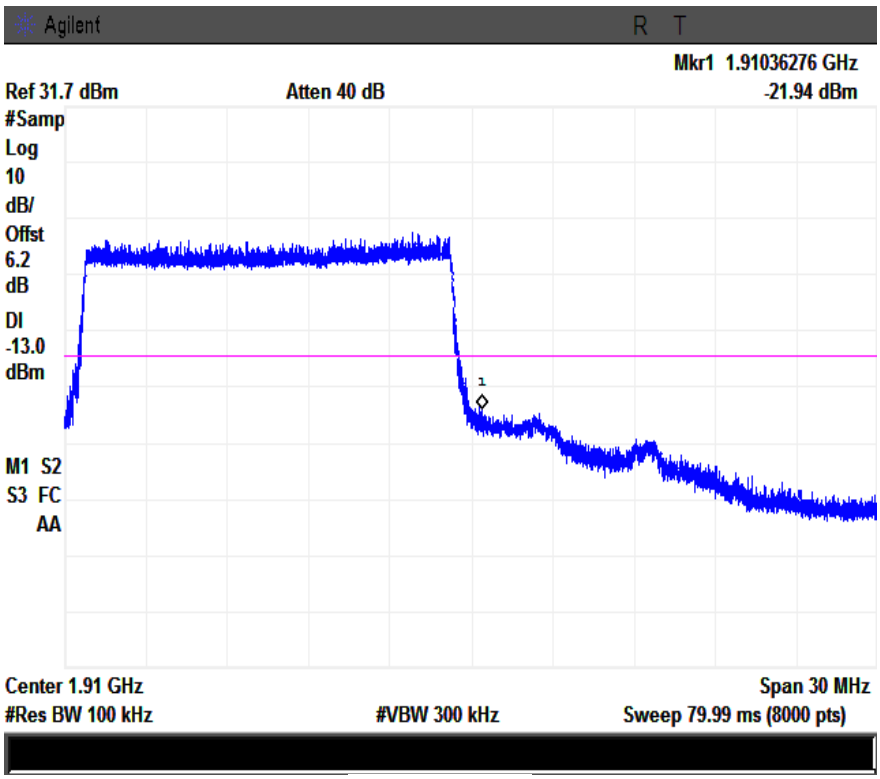
Note: Offset=Cable loss (4.5) + 10log (146.6/100)=4.5+1.7=6.2 dB

LTE Band 2, High Channel



H-QPSK-15

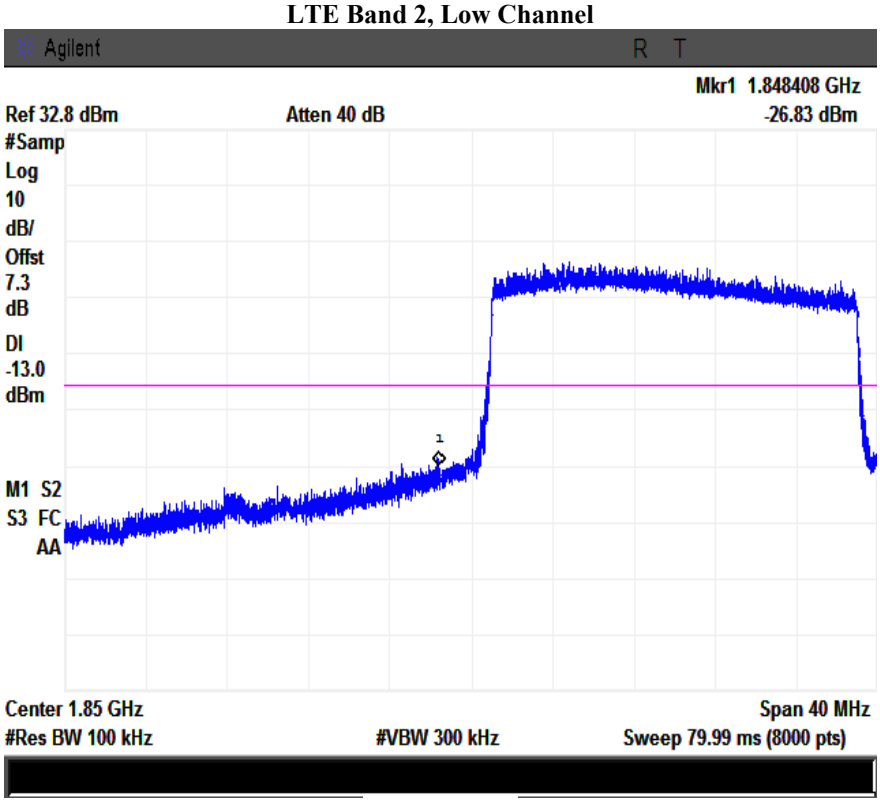
Note: Offset=Cable loss (4.5) + 10log (146.6/100)=4.5+1.7=6.2 dB



H-16QAM-15

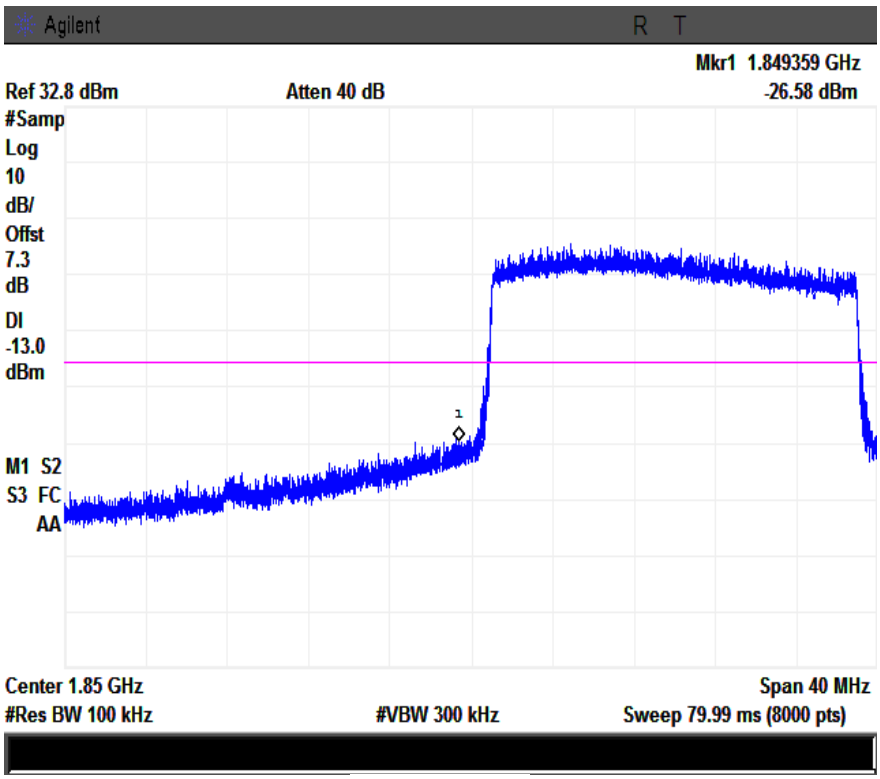
Note: Offset=Cable loss (4.5) + 10log (147.7/100)=4.5+1.7=6.2 dB

LTE Band 2, Low Channel



L-QPSK-20

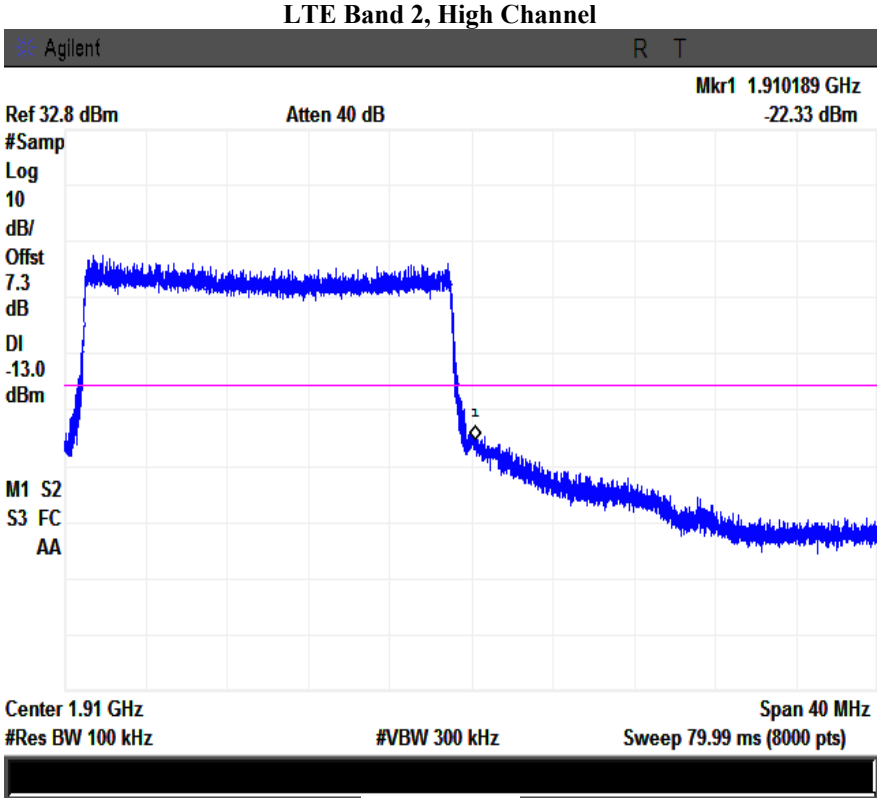
Note: Offset=Cable loss (4.5) + 10log (190.7/100)=4.5+2.8=7.3 dB



L-16QAM-20

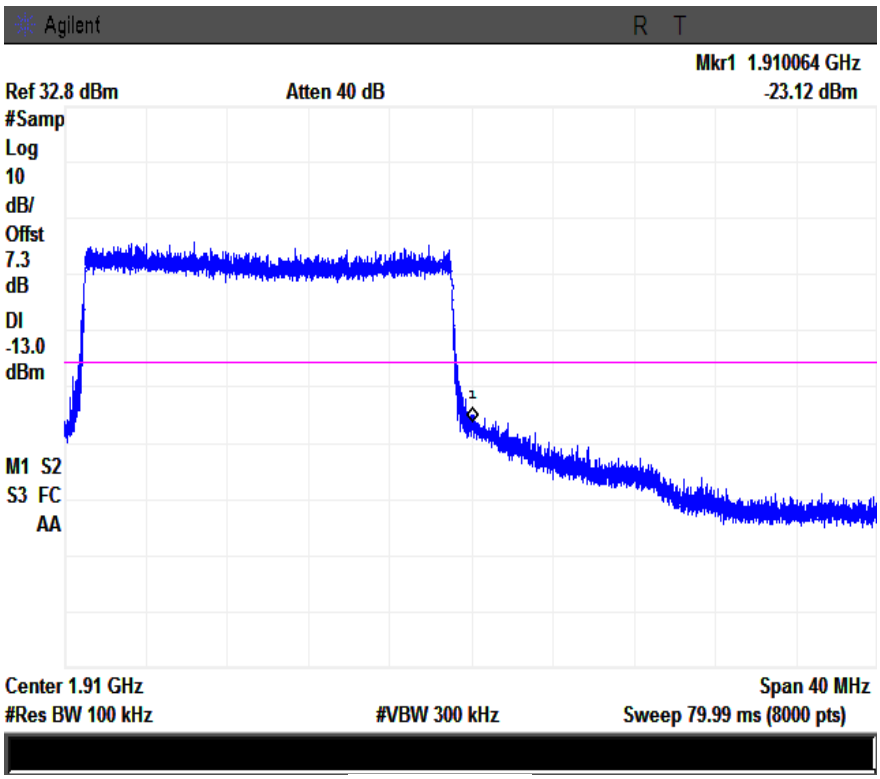
Note: Offset=Cable loss (4.5) + 10log (192.9/100)=4.5+2.8=7.3 dB

LTE Band 2, High Channel



H-QPSK-20

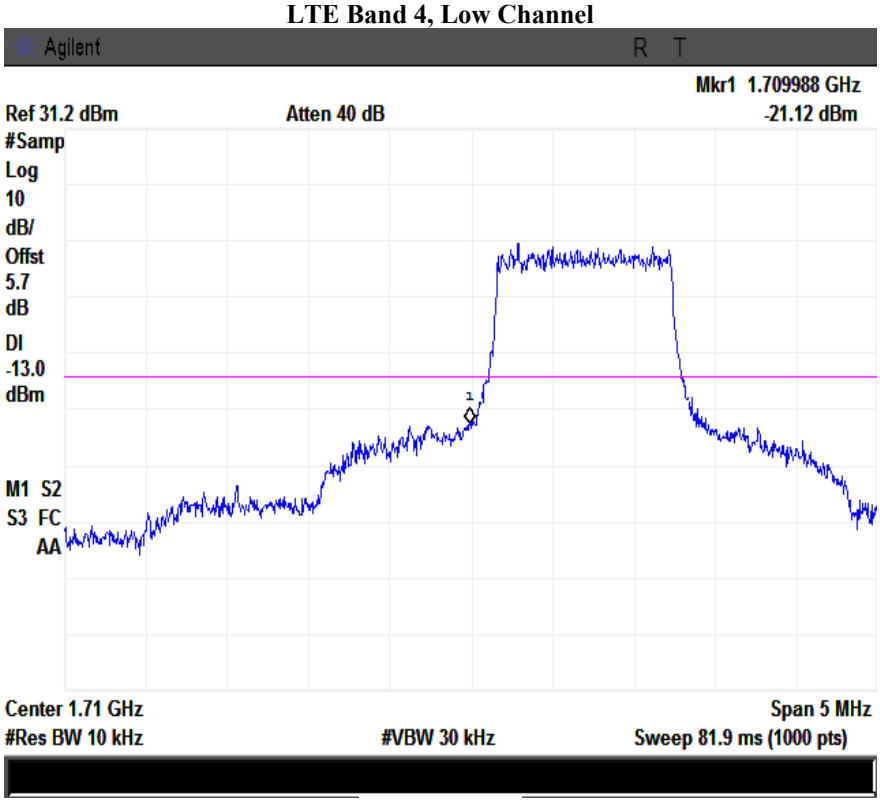
Note: Offset=Cable loss (4.5) + 10log (192.7/100)=4.5+2.8=7.3 dB



H-16QAM-20

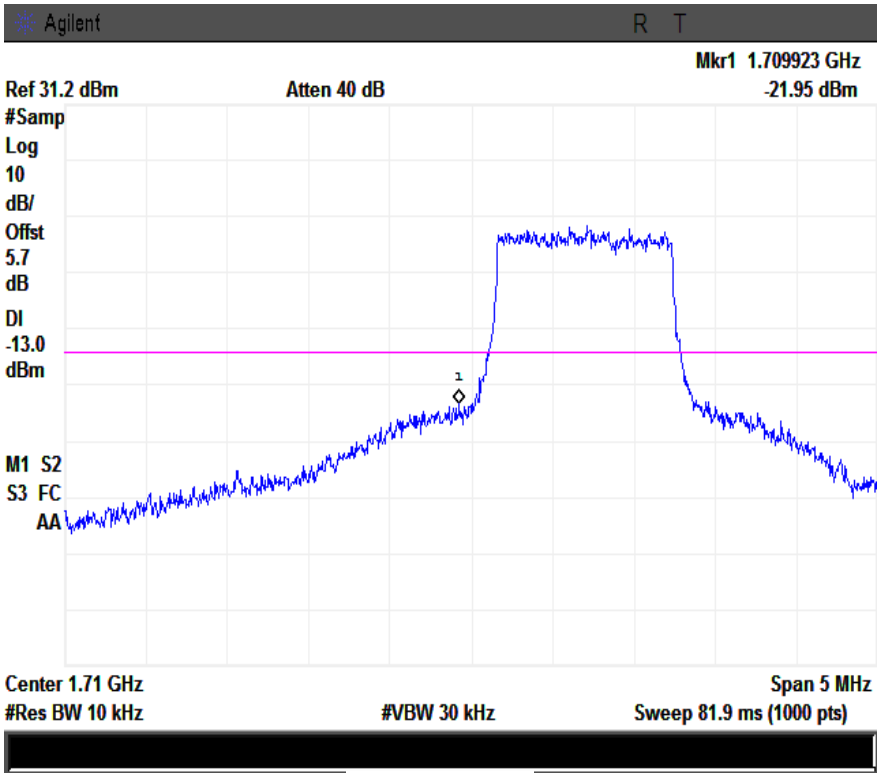
Note: Offset=Cable loss (4.5) + 10log (192.9/100)=4.5+2.8=7.3 dB

LTE Band 4, Low Channel



L-QPSK-1.4

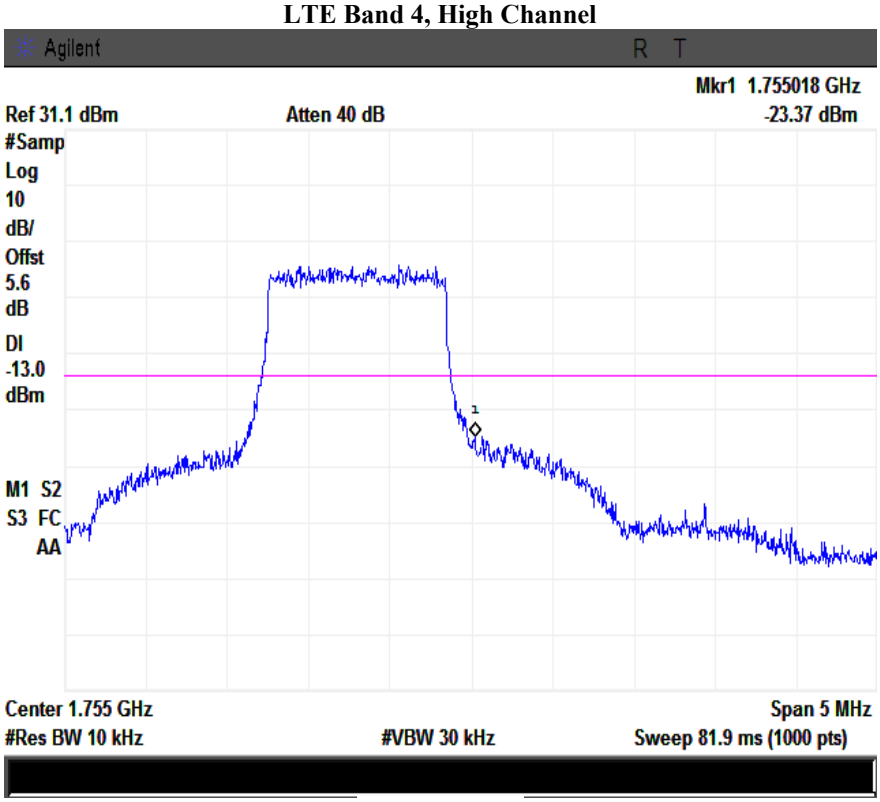
Note: Offset=Cable loss (4.5) + 10log (13.3/10)=4.5+1.2=5.7 dB



L-16QAM-1.4

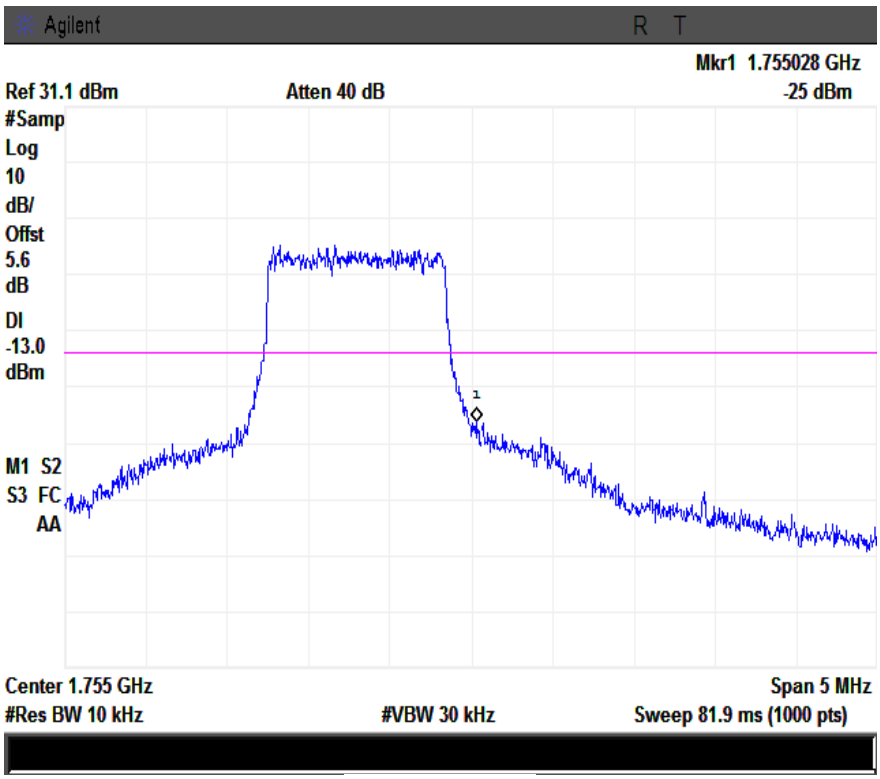
Note: Offset=Cable loss (4.5) + 10log (13.1/10)=4.5+1.2=5.7 dB

LTE Band 4, High Channel



H-QPSK-1.4

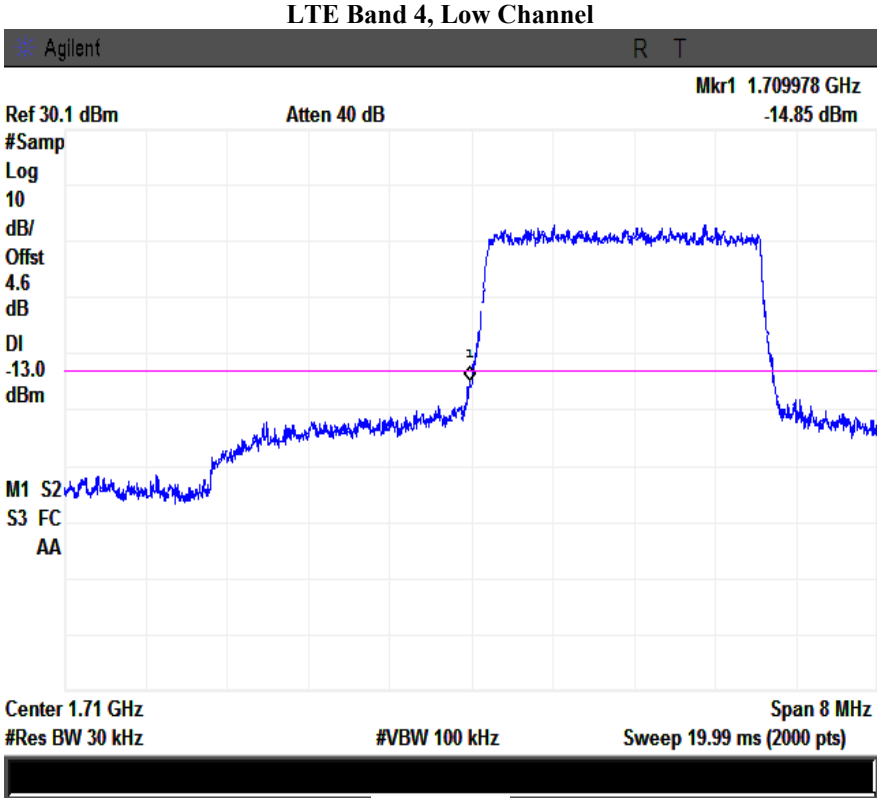
Note: Offset=Cable loss (4.5) + 10log (12.9/10)=4.5+1.1=5.6 dB



H-16QAM-1.4

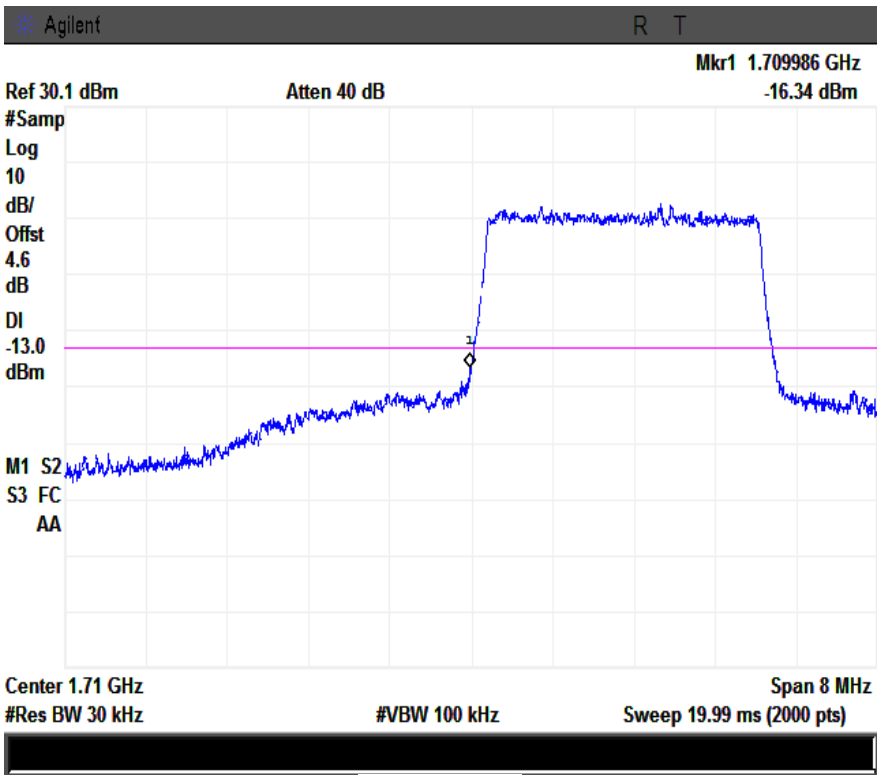
Note: Offset=Cable loss (4.5) + 10log (12.9/10)=4.5+1.1=5.6 dB

LTE Band 4, Low Channel



L-QPSK-3

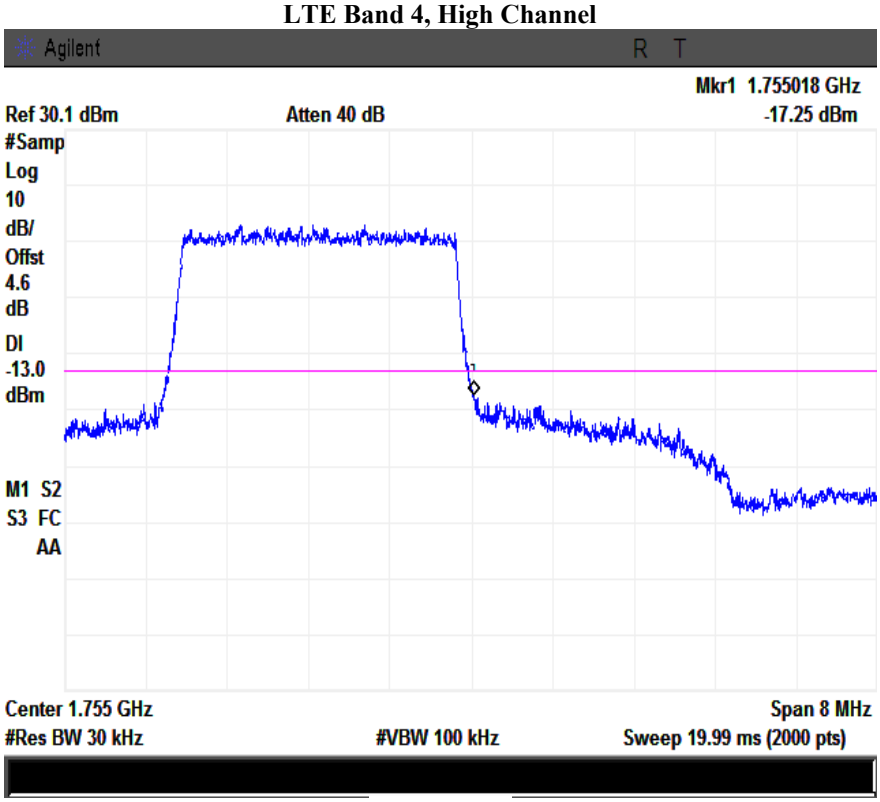
Note: Offset=Cable loss (4.5) + 10log (31.3/30)=4.5+0.1=4.6 dB



L-16QAM-3

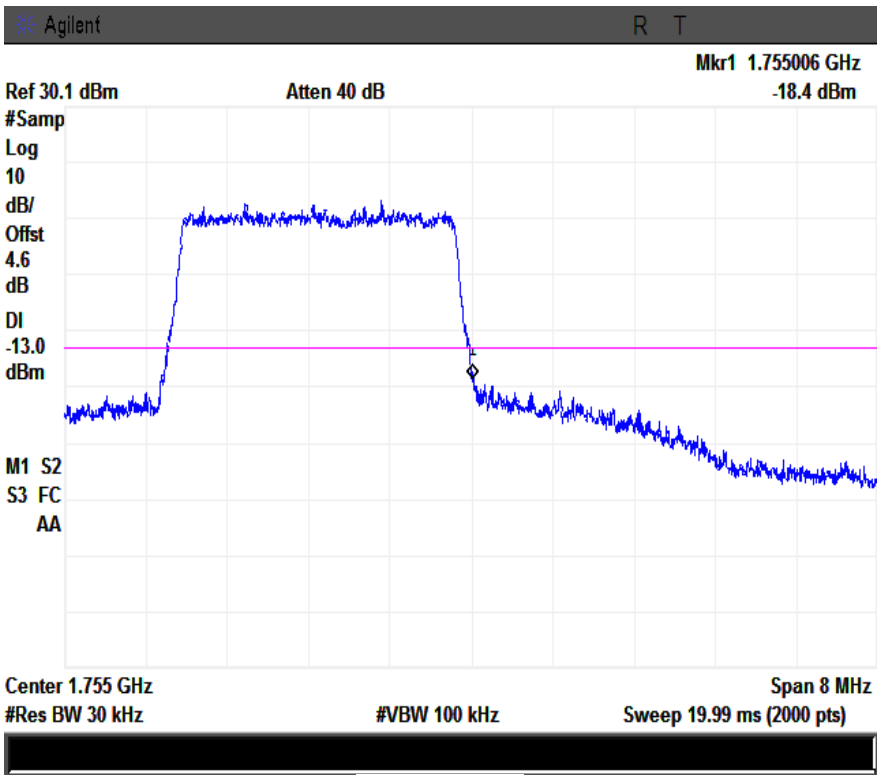
Note: Offset=Cable loss (4.5) + 10log (30.9/30)=4.5+0.1=4.6 dB

LTE Band 4, High Channel



H-QPSK-3

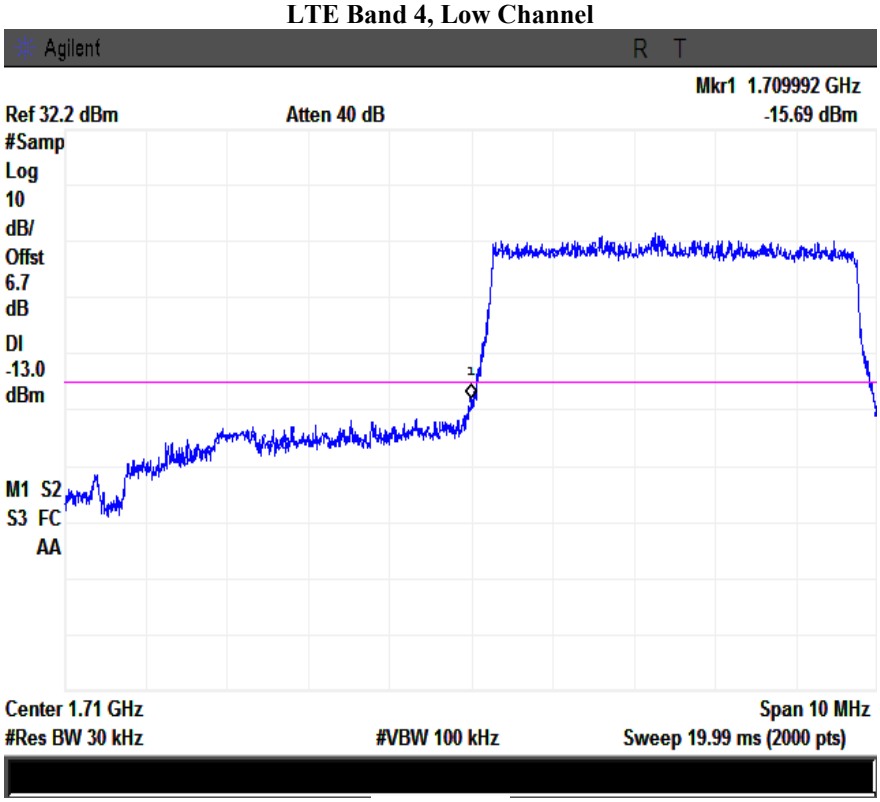
Note: Offset=Cable loss (4.5) + 10log (31.2/30)=4.5+0.1=4.6 dB



H-16QAM-3

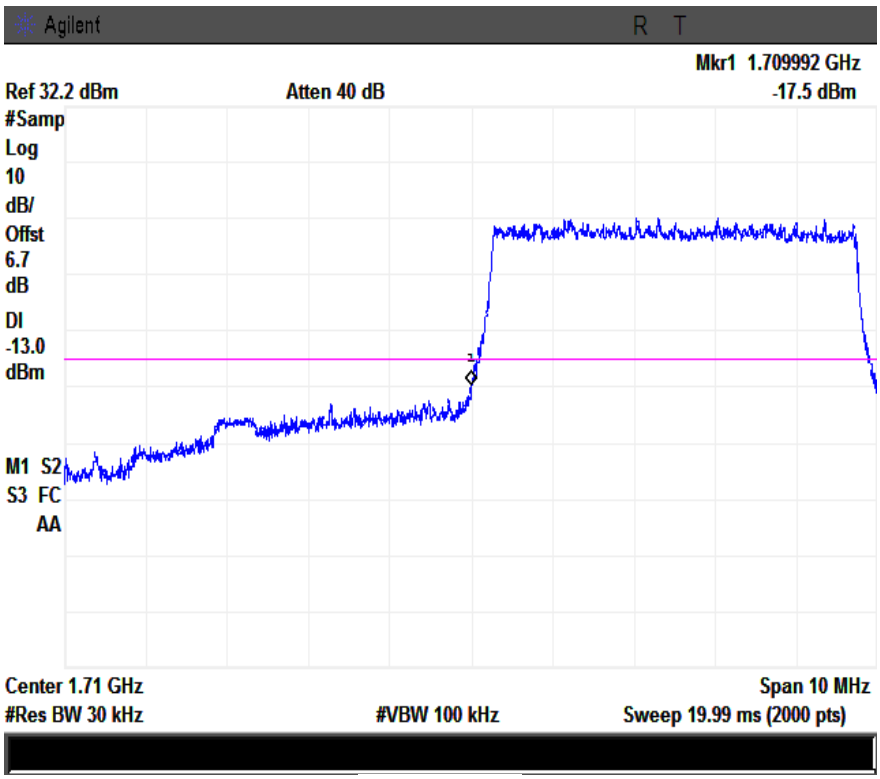
Note: Offset=Cable loss (4.5) + 10log (30.9/30)=4.5+0.1=4.6 dB

LTE Band 4, Low Channel



L-QPSK-5

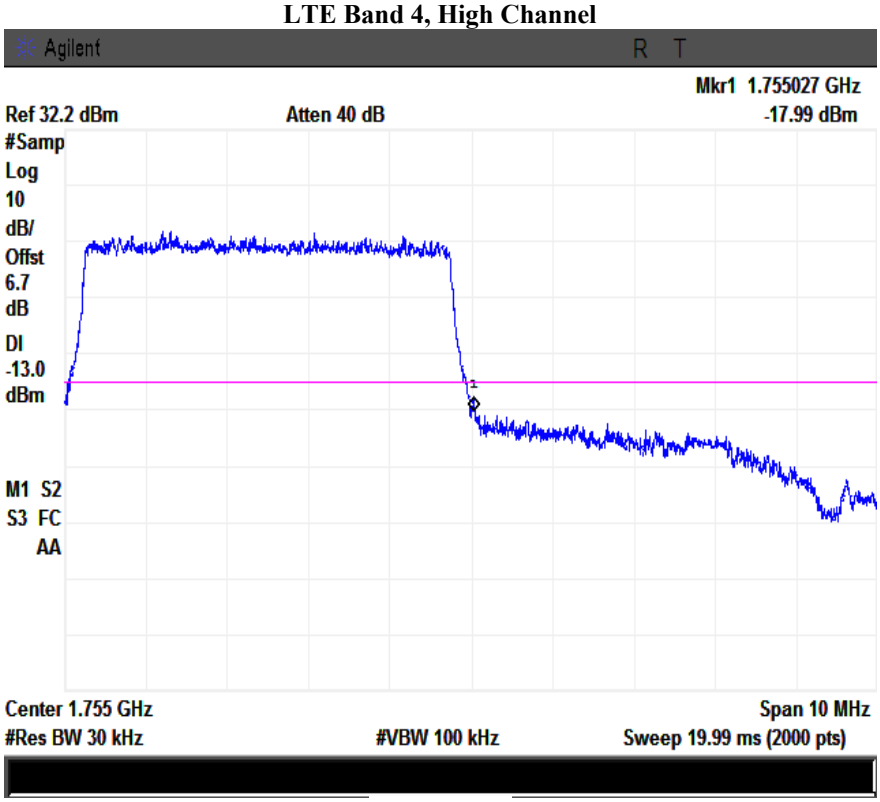
Note: Offset=Cable loss (4.5) + 10log (50.6/30)=4.5+2.2=6.7 dB



L-16QAM-5

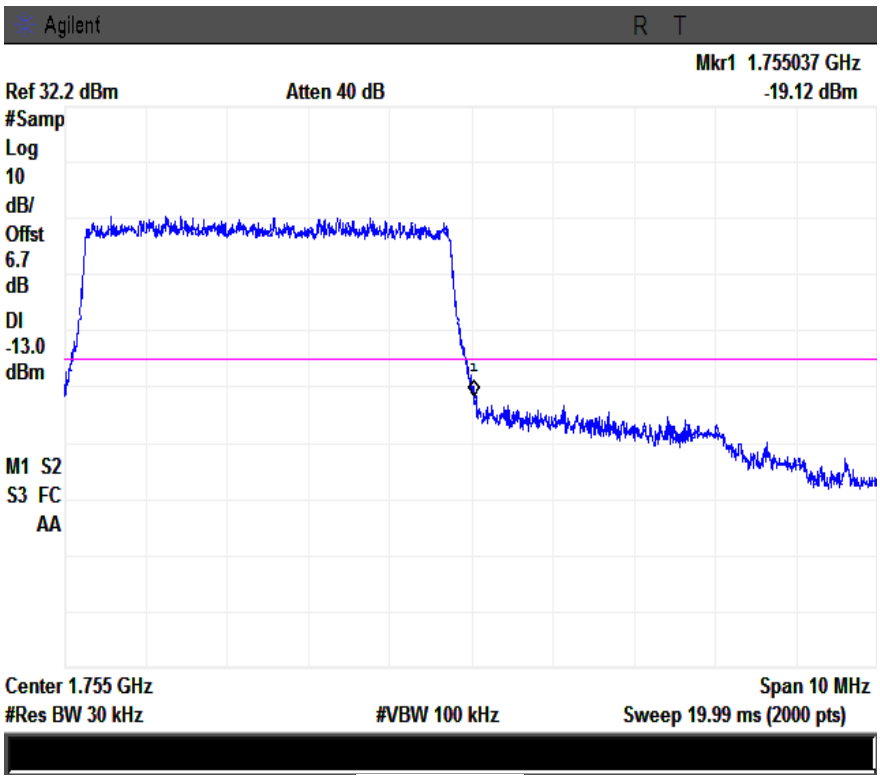
Note: Offset=Cable loss (4.5) + 10log (50.3/30)=4.5+2.2=6.7 dB

LTE Band 4, High Channel



H-QPSK-5

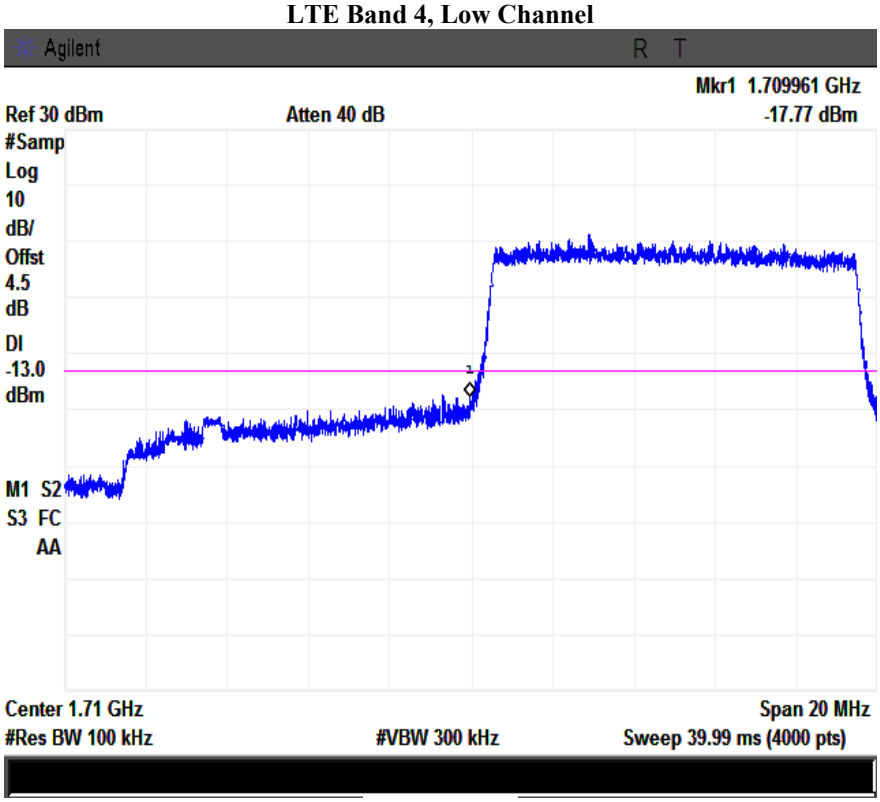
Note: Offset=Cable loss (4.5) + 10log (50.3/30)=4.5+2.2=6.7 dB



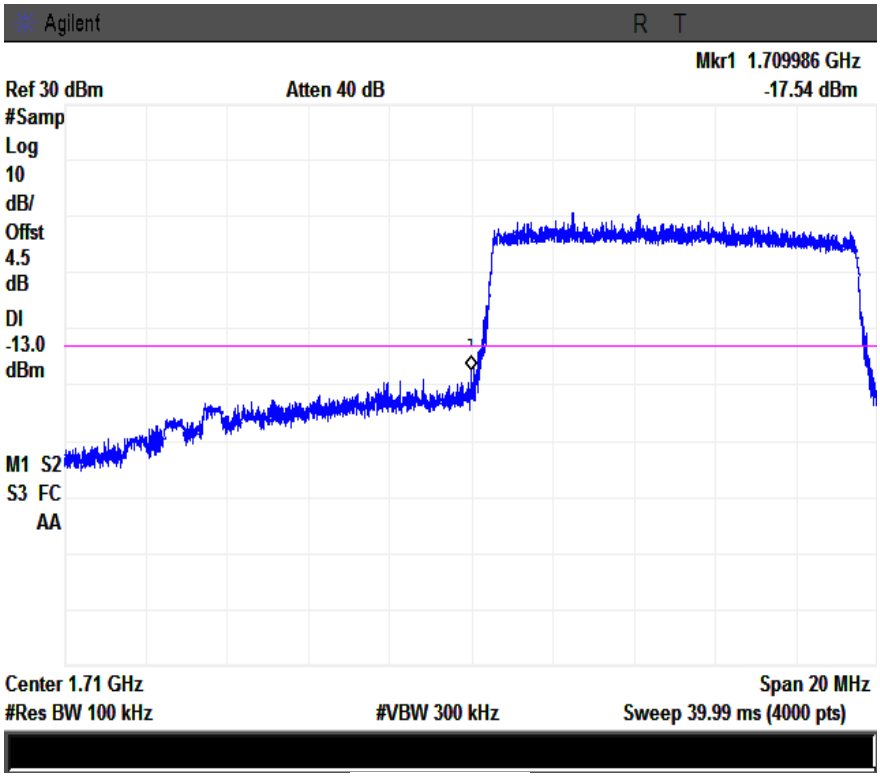
H-16QAM-5

Note: Offset=Cable loss (4.5) + 10log (50.1/30)=4.5+2.2=6.7 dB

LTE Band 4, Low Channel

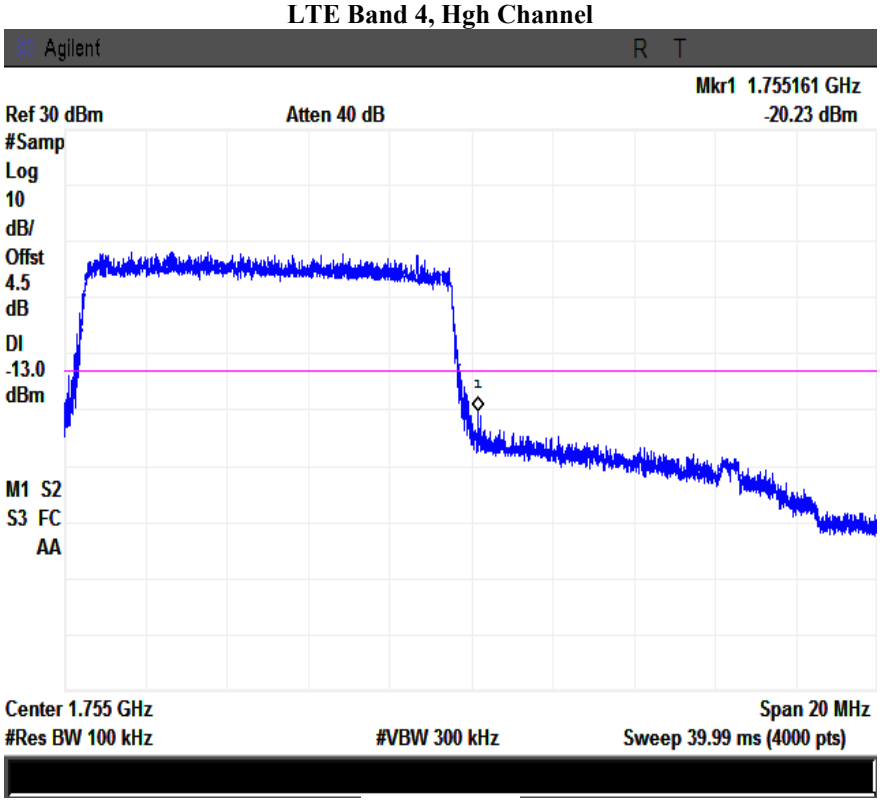


L-QPSK-10

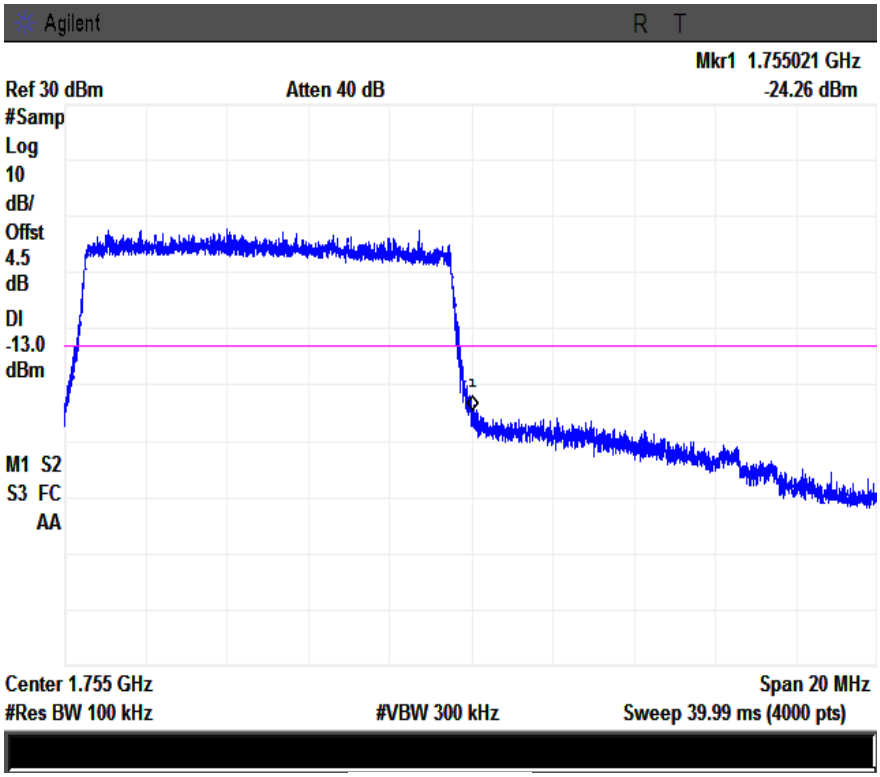


L-16QAM-10

LTE Band 4, Hgh Channel

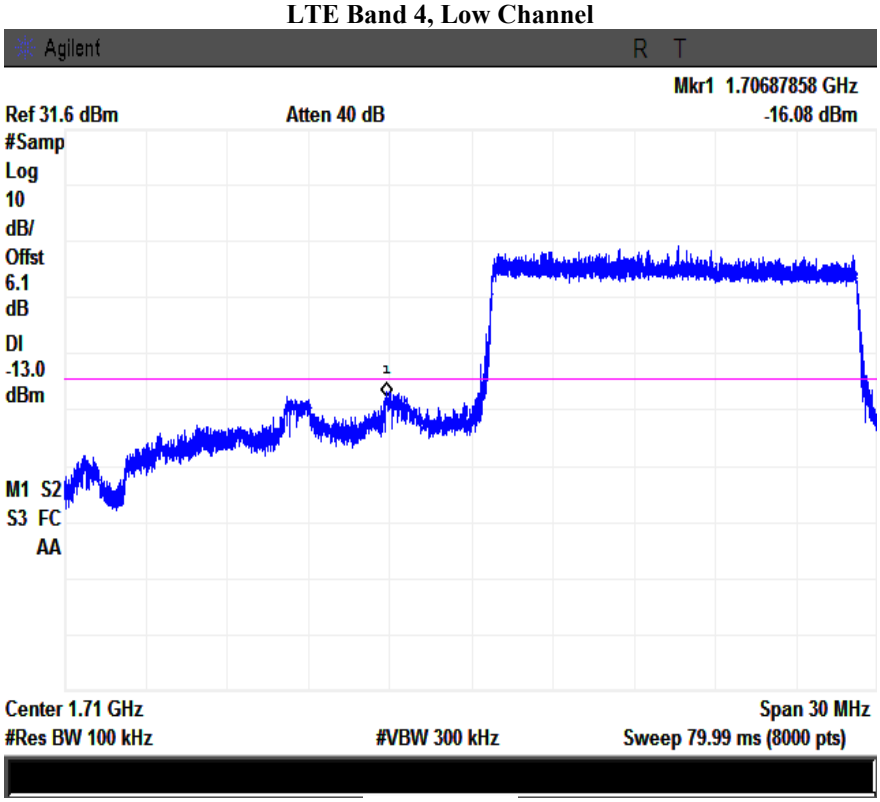


H-QPSK-10



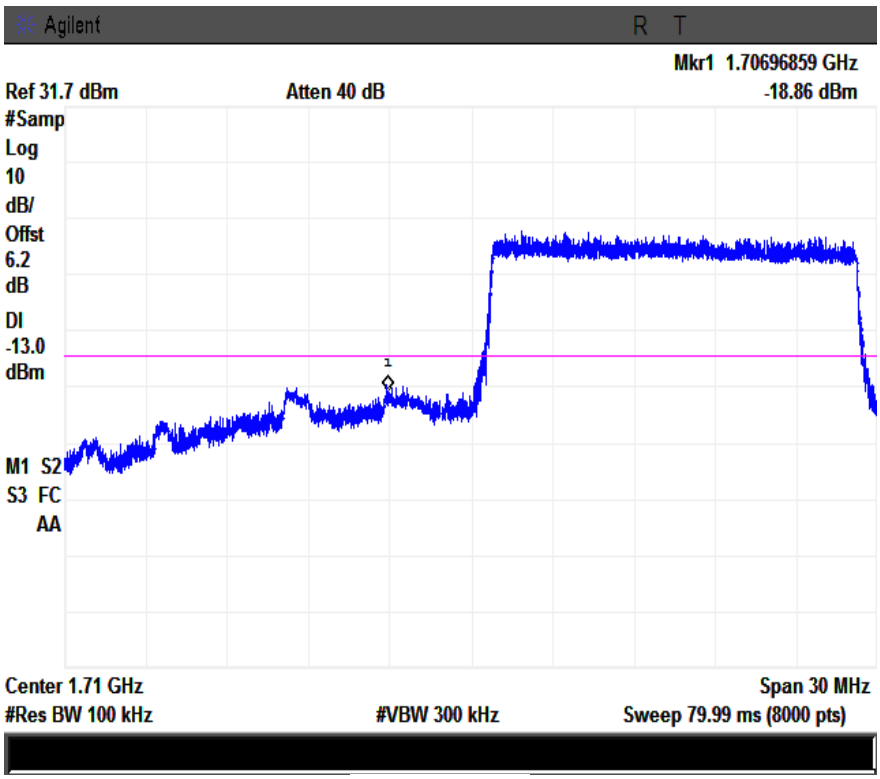
H-16QAM-10

LTE Band 4, Low Channel



L-QPSK-15

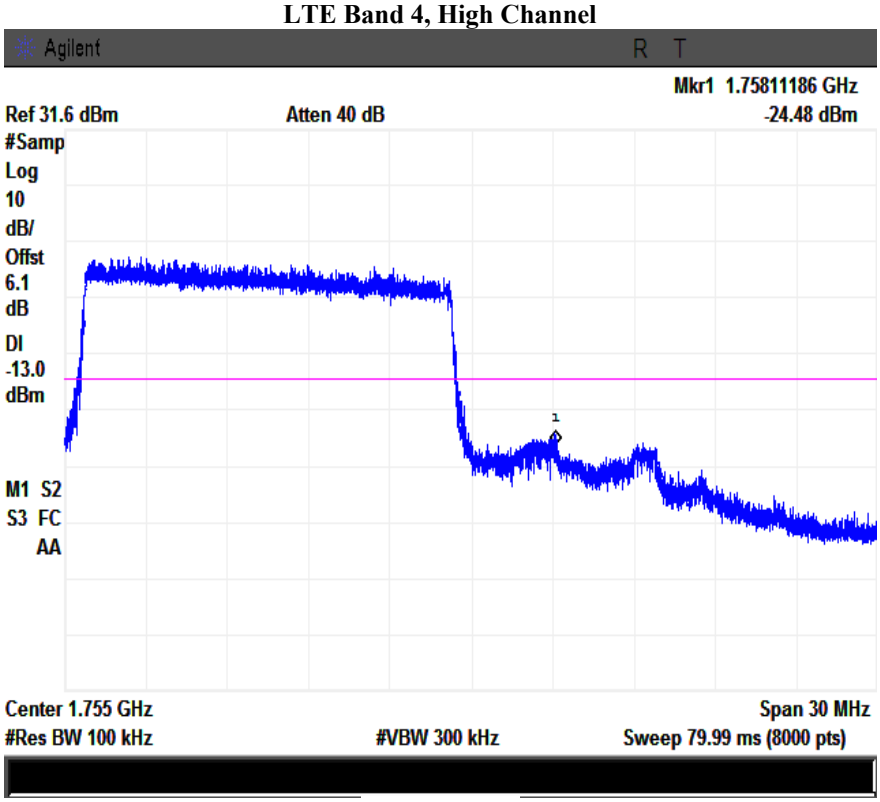
Note: Offset=Cable loss (4.5) + 10log (146.1/100)=4.5+1.6=6.1 dB



L-16QAM-15

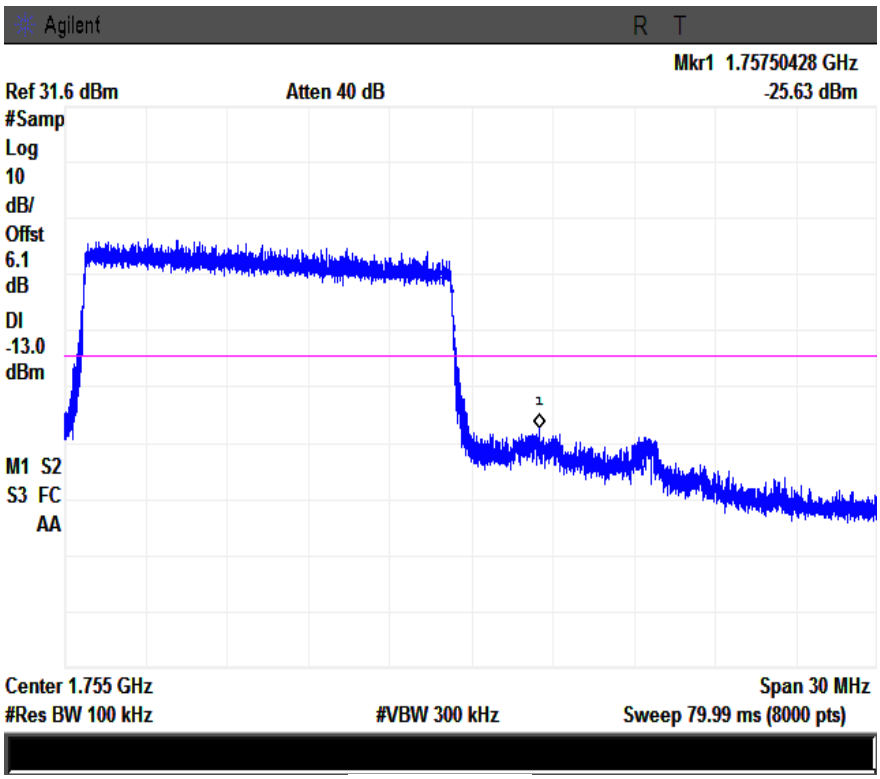
Note: Offset=Cable loss (4.5) + 10log (147/100)=4.5+1.7=6.2 dB

LTE Band 4, High Channel



H-QPSK-15

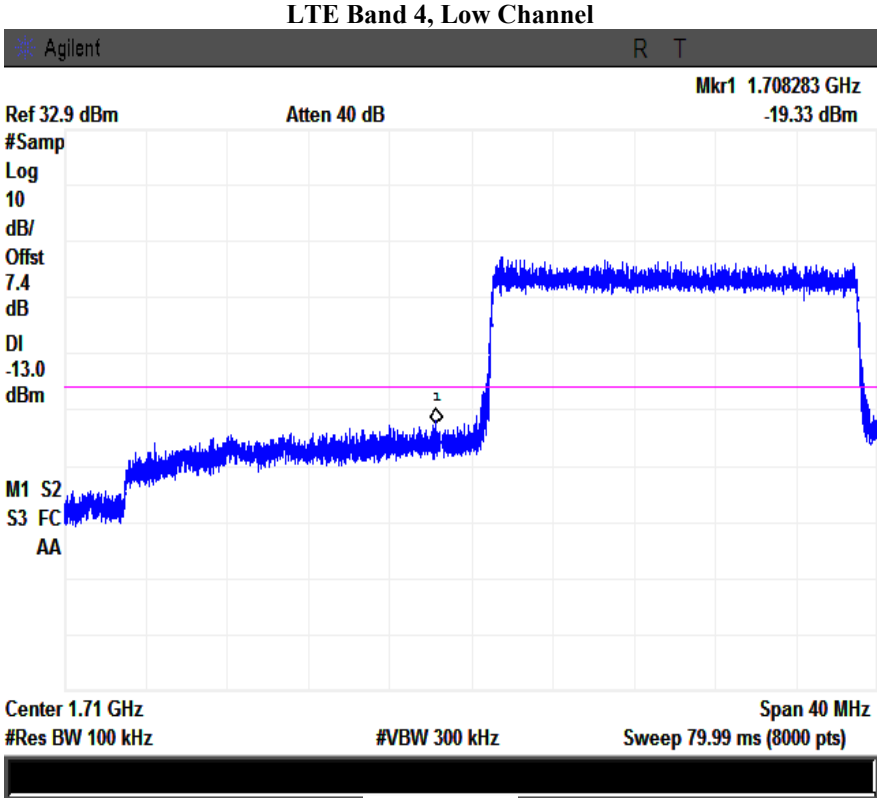
Note: Offset=Cable loss (4.5) + 10log (147/100)=4.5+1.7=6.2 dB



H-16QAM-15

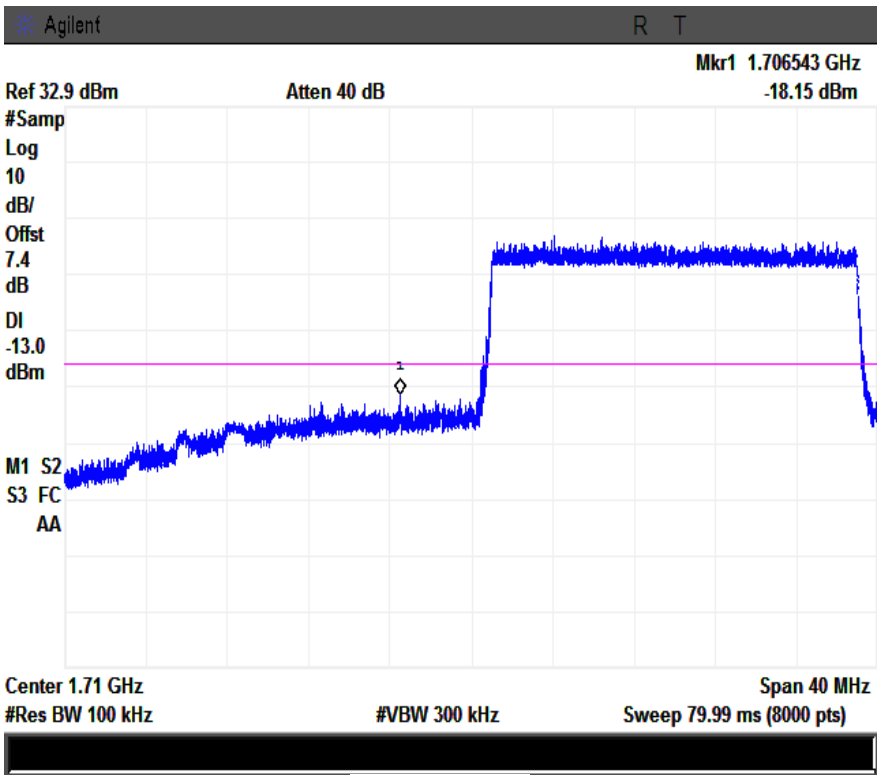
Note: Offset=Cable loss (4.5) + 10log (145.9/100)=4.5+1.6=6.1 dB

LTE Band 4, Low Channel



L-QPSK-20

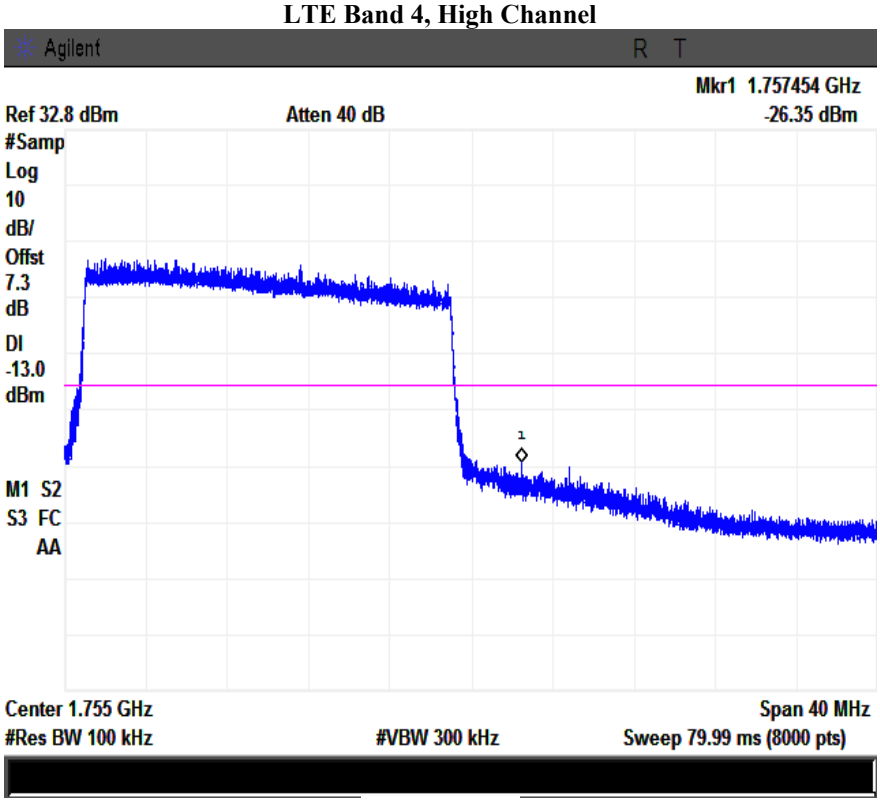
Note: Offset=Cable loss (4.5) + 10log (195.3/100)=4.5+2.9=7.4 dB



L-16QAM-20

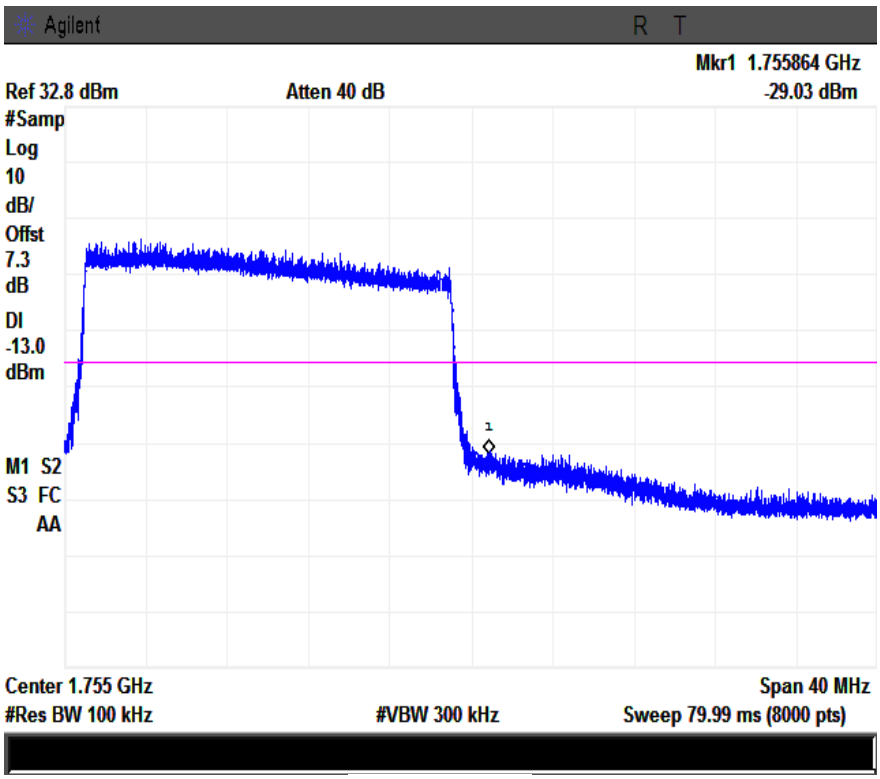
Note: Offset=Cable loss (4.5) + 10log (197.0/100)=4.5+2.9=7.4 dB

LTE Band 4, High Channel



H-QPSK-20

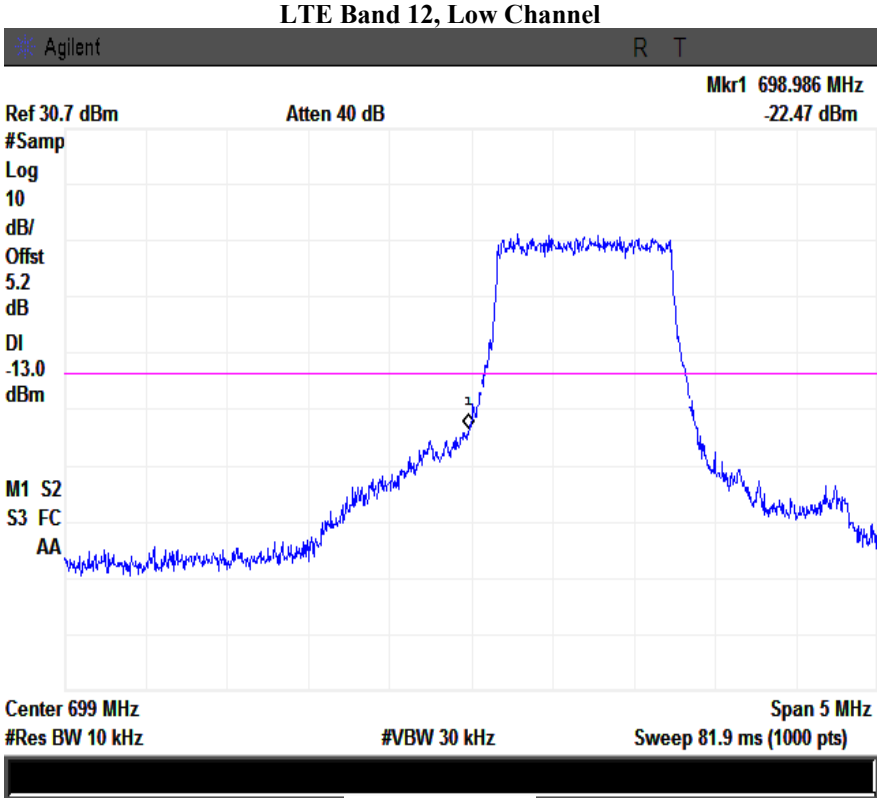
Note: Offset=Cable loss (4.5) + 10log (192.6/100)=4.5+2.8=7.3 dB



H-16QAM-20

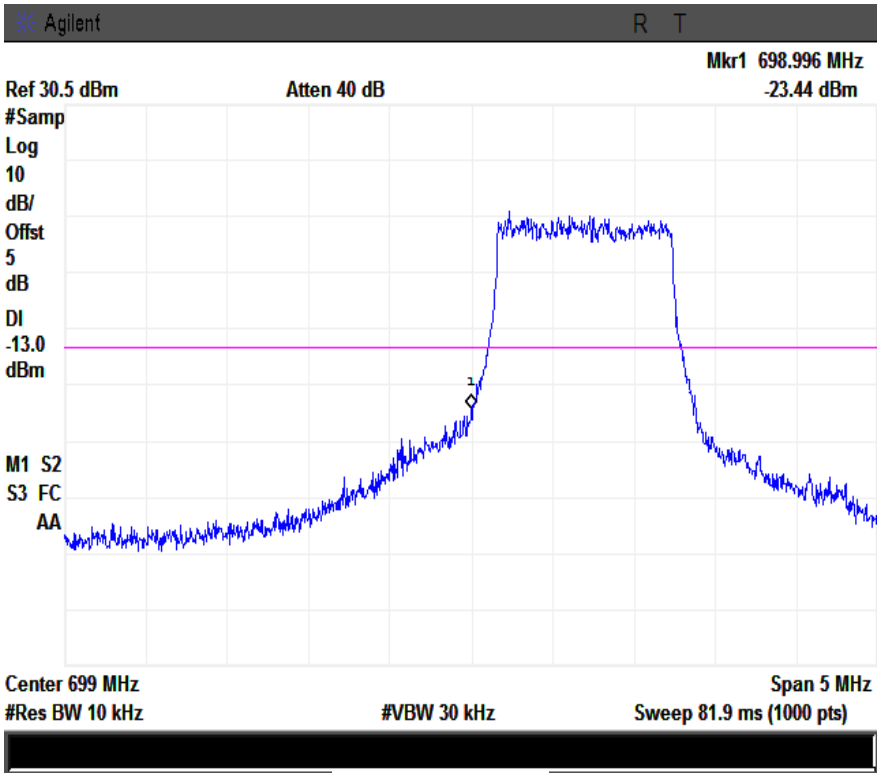
Note: Offset=Cable loss (4.5) + 10log (191.1/100)=4.5+2.8=7.3 dB

LTE Band 12, Low Channel



L-QPSK-1.4M

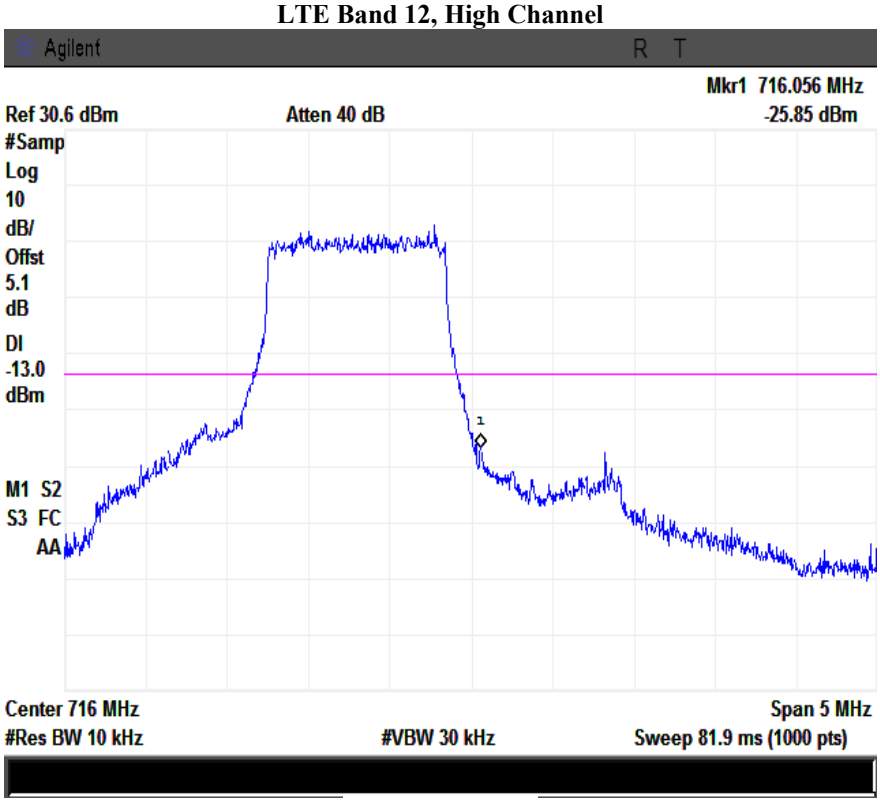
Note: Offset=Cable loss (4.0) + 10log (13.1/10)=4.0+1.2=5.2 dB



L-16QAM-1.4M

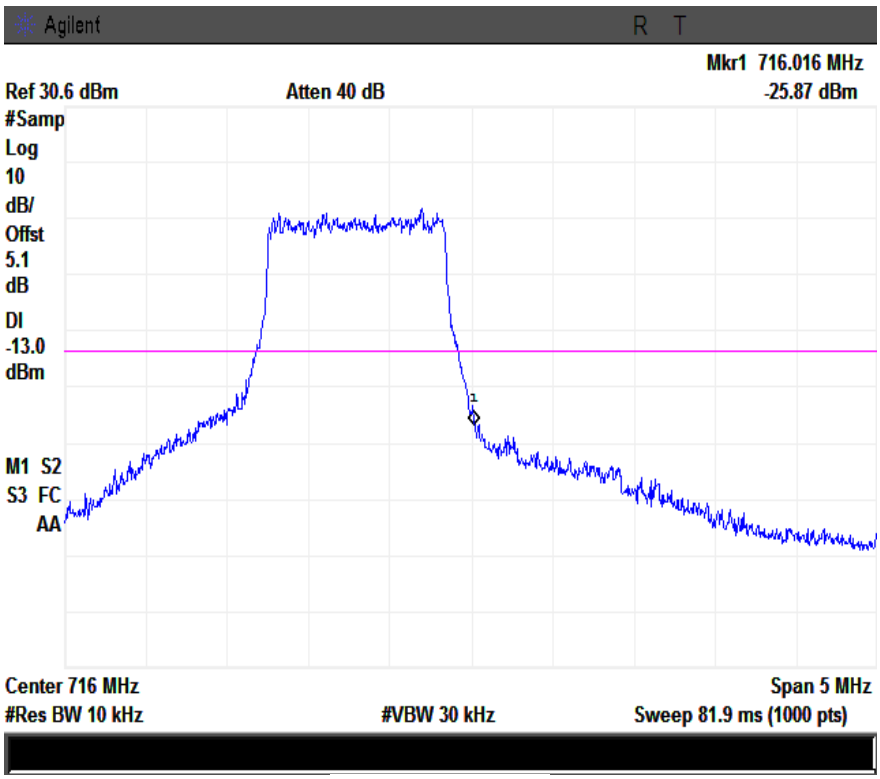
Note: Offset=Cable loss (4.0) + 10log (12.6/10)=4.0+1.0=5.0 dB

LTE Band 12, High Channel



H-QPSK-1.4M

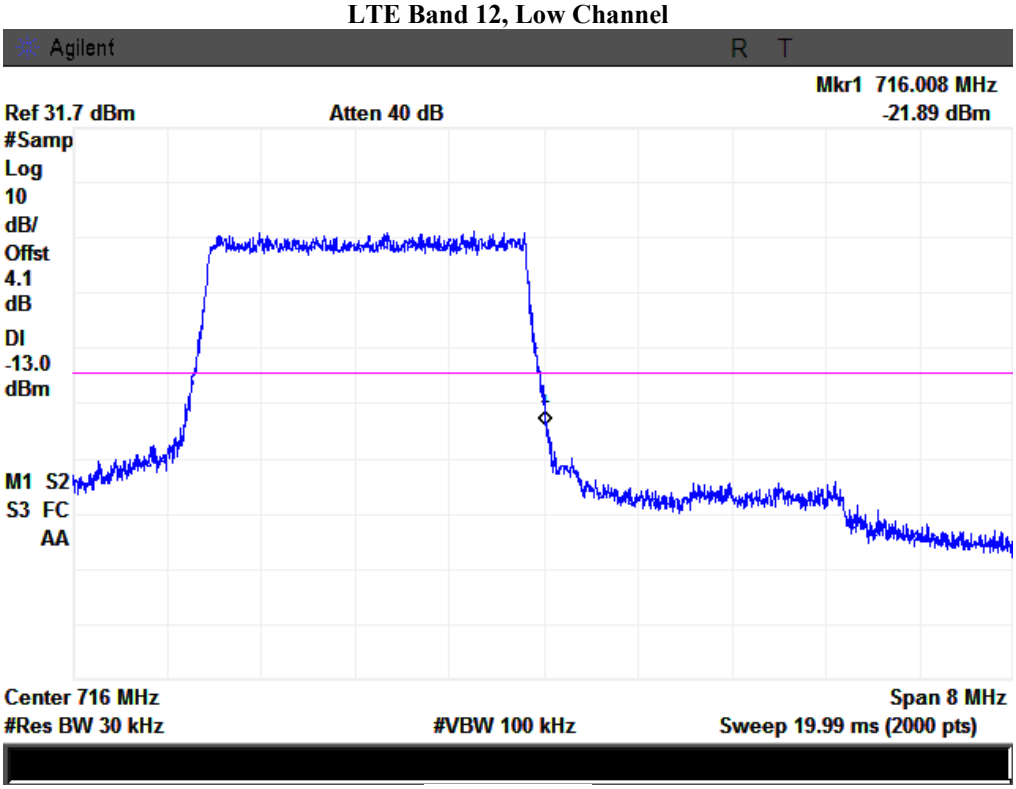
Note: Offset=Cable loss (4.0) + 10log (12.9/10)=4.0+1.1=5.1 dB



H-16QAM-1.4M

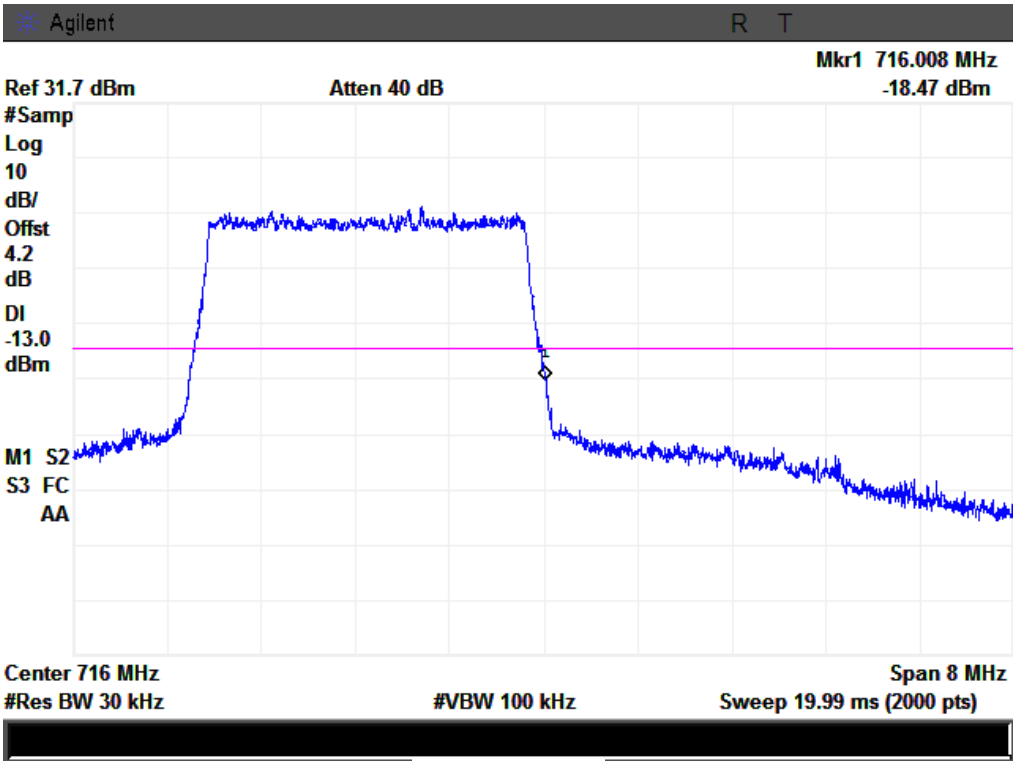
Note: Offset=Cable loss (4.0) + 10log (12.9/10)=4.0+1.1=5.1 dB

LTE Band 12, Low Channel



L-QPSK-3M

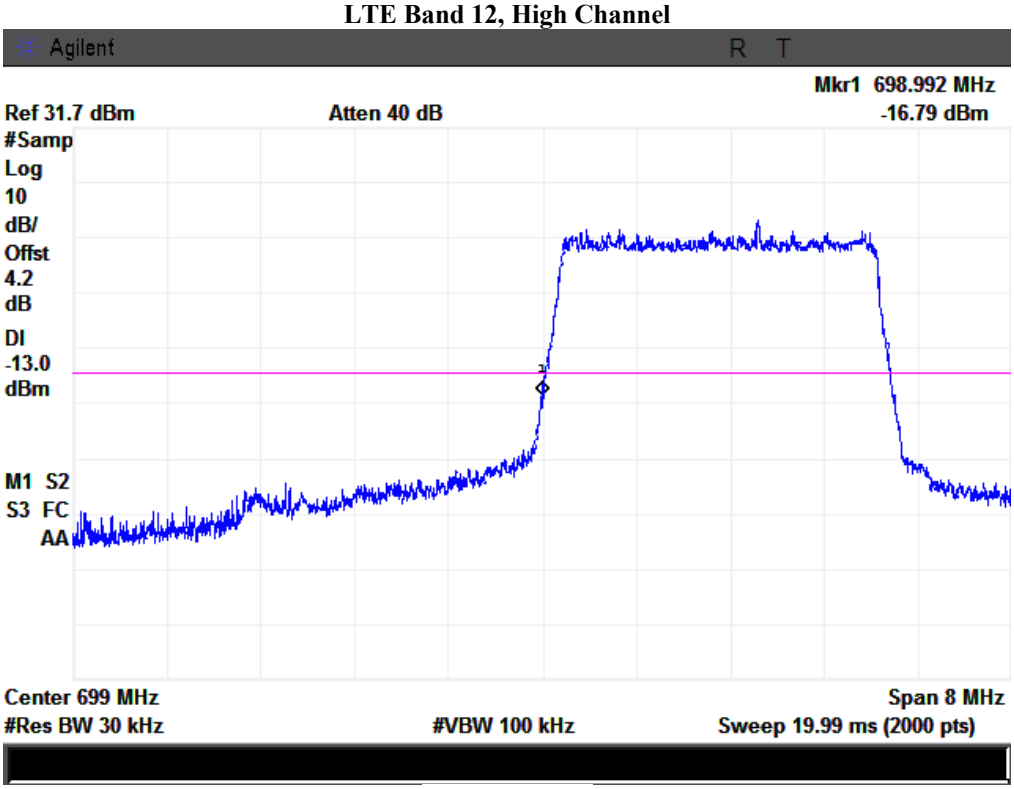
Note: Offset=Cable loss (4.0) + 10log (30.9/30)=4.0+0.1=4.1 dB



L-16QAM-3M

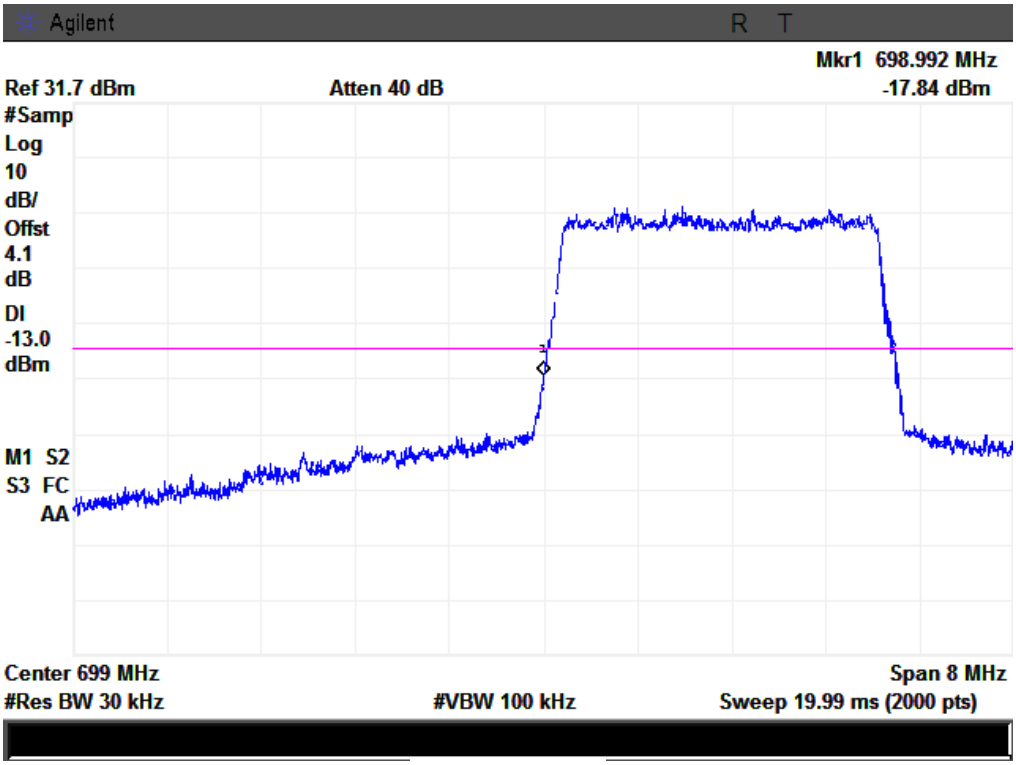
Note: Offset=Cable loss (4.0) + 10log (31.1/30)=4.0+0.2=4.2 dB

LTE Band 12, High Channel



H-QPSK-3M

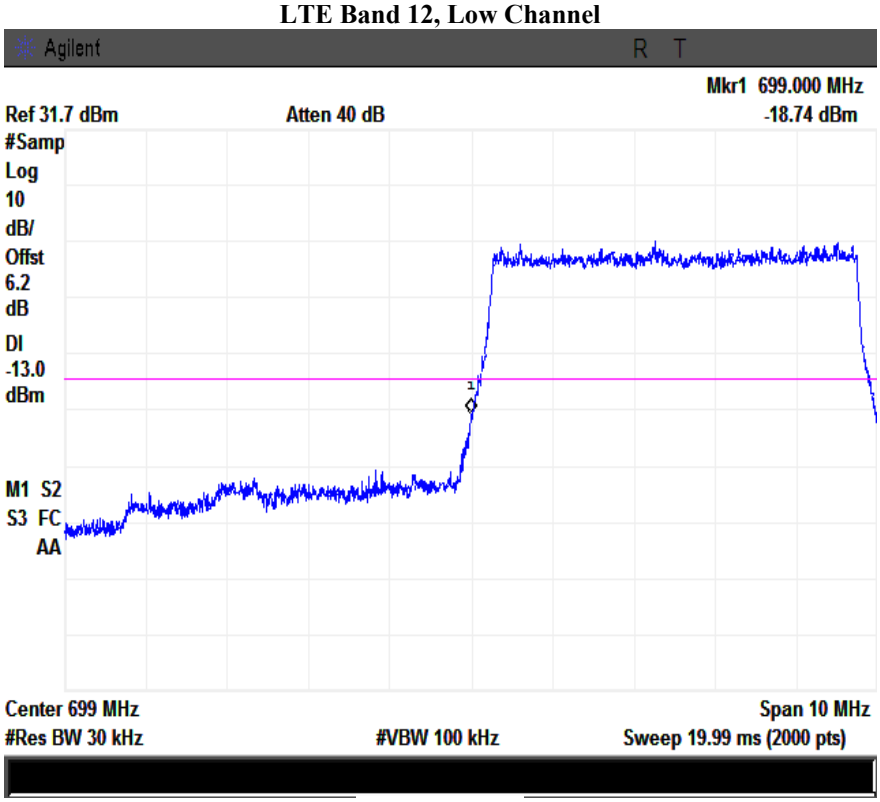
Note: Offset=Cable loss (4.0) + 10log (31.1/30)=4.0+0.2=4.2 dB



H-16QAM-3M

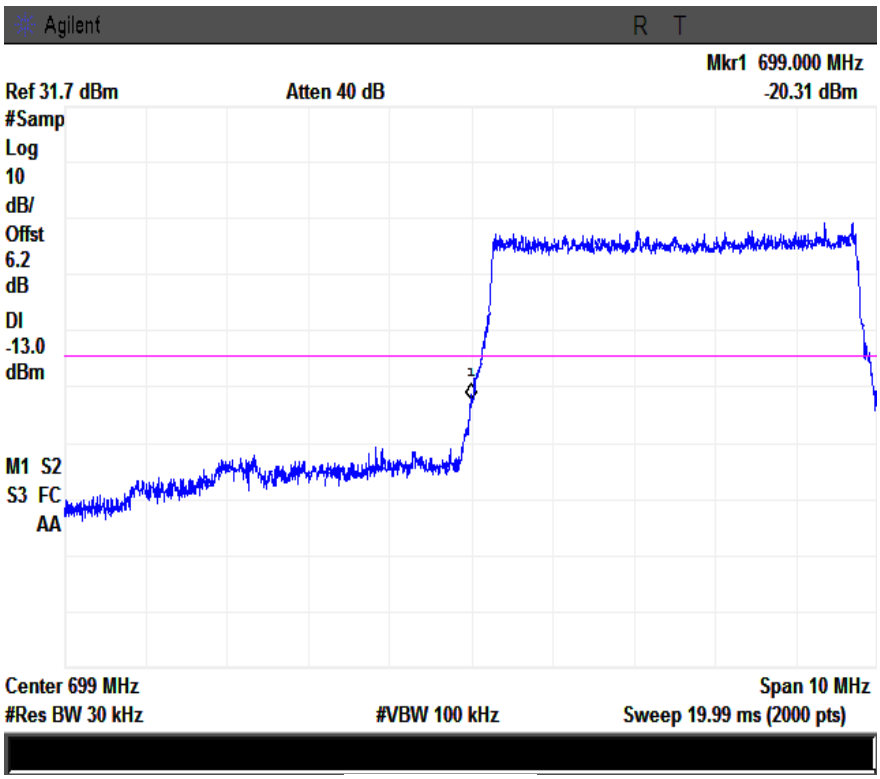
Note: Offset=Cable loss (4.0) + 10log (31.0/30)=4.0+0.1=4.1 dB

LTE Band 12, Low Channel



L-QPSK-5M

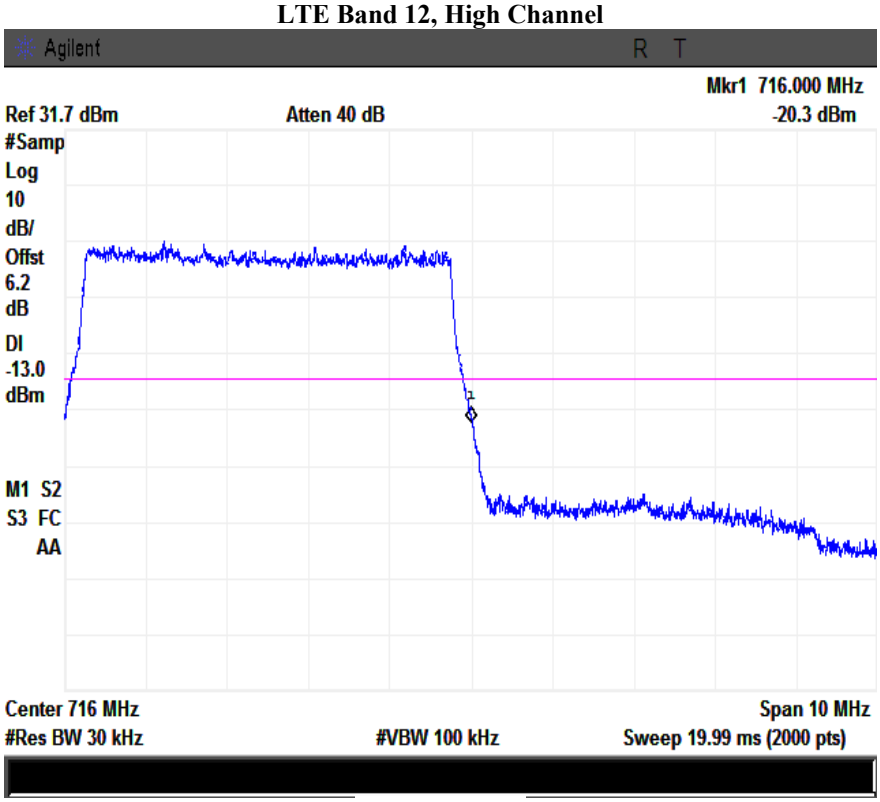
Note: Offset=Cable loss (4.0) + 10log (49.8/30)=4.0+2.2=6.2 dB



L-16QAM-5M

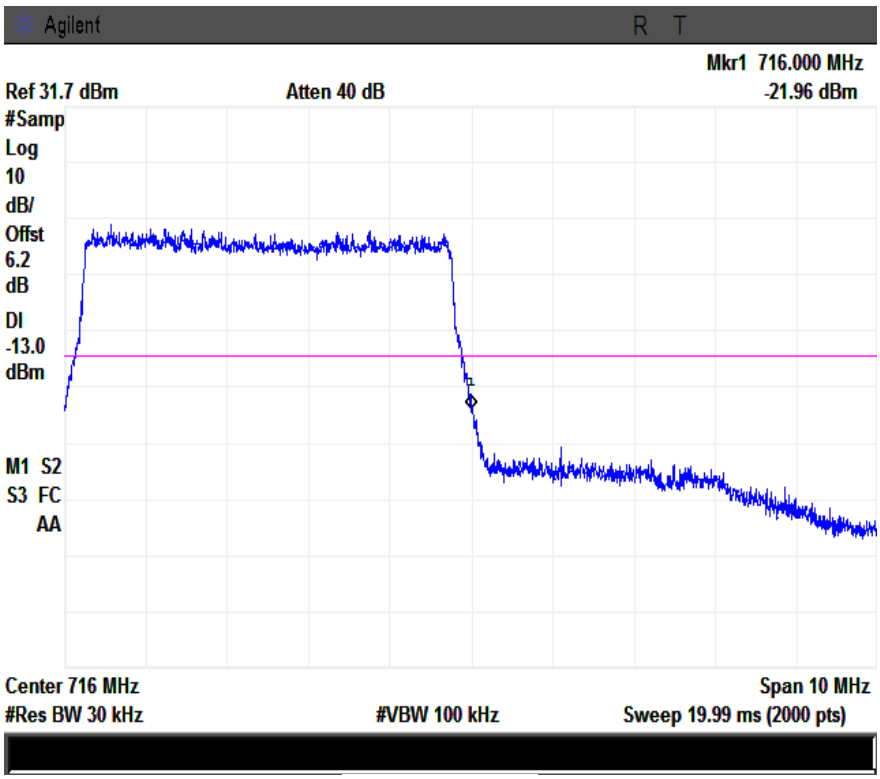
Note: Offset=Cable loss (4.0) + 10log (49.5/30)=4.0+2.2=6.2 dB

LTE Band 12, High Channel



H-QPSK-5M

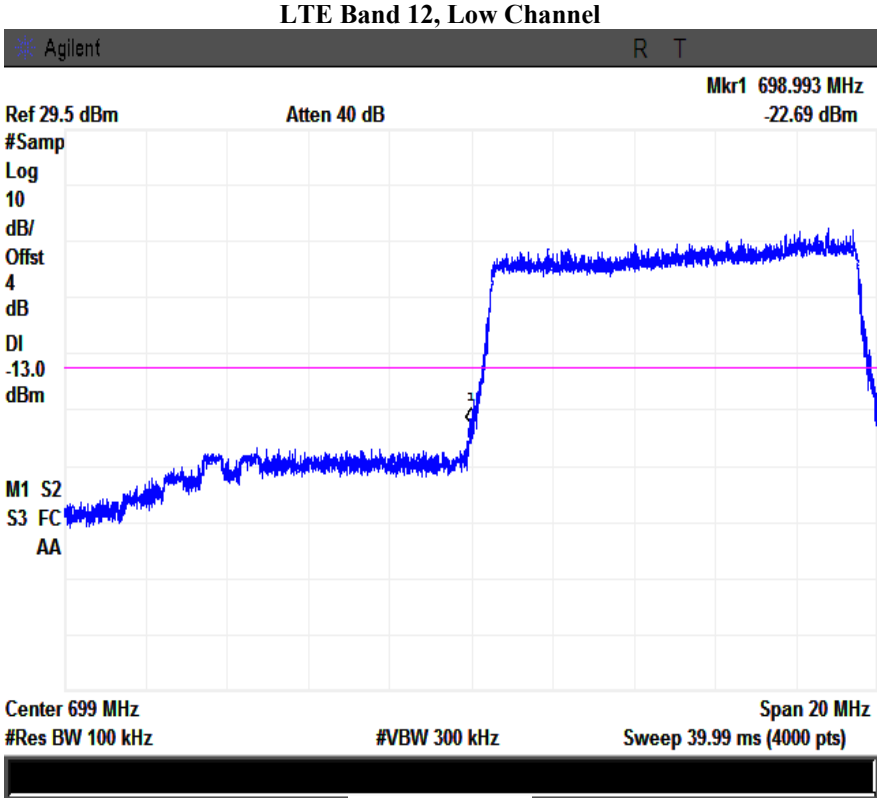
Note: Offset=Cable loss (4.0) + 10log (49.8/30)=4.0+2.2=6.2 dB



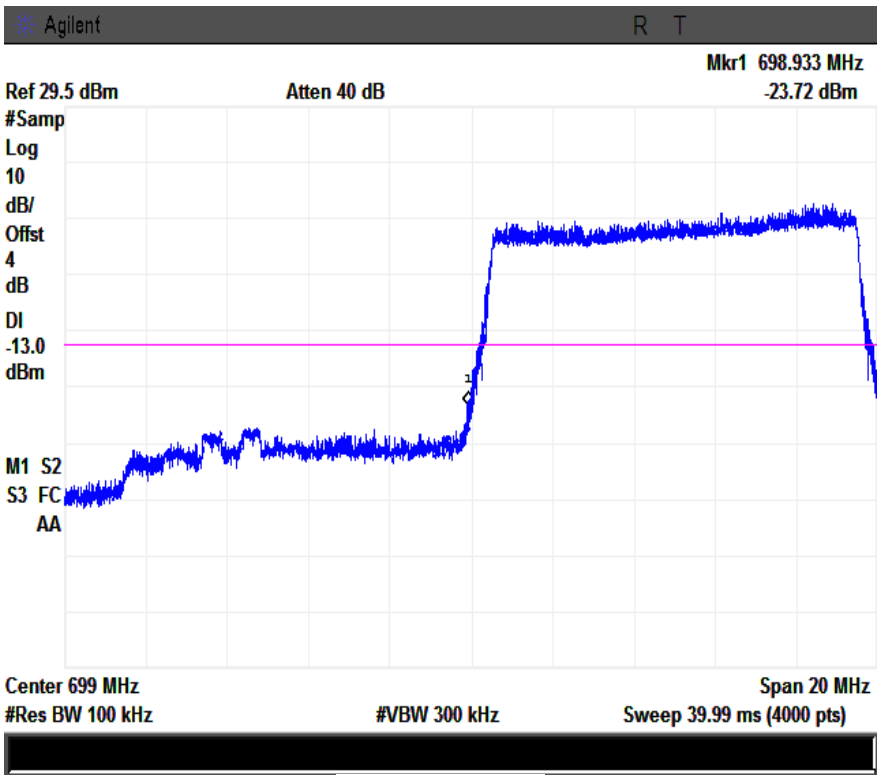
H-16QAM-5M

Note: Offset=Cable loss (4.0) + 10log (50/30)=4.0+2.2=6.2 dB

LTE Band 12, Low Channel

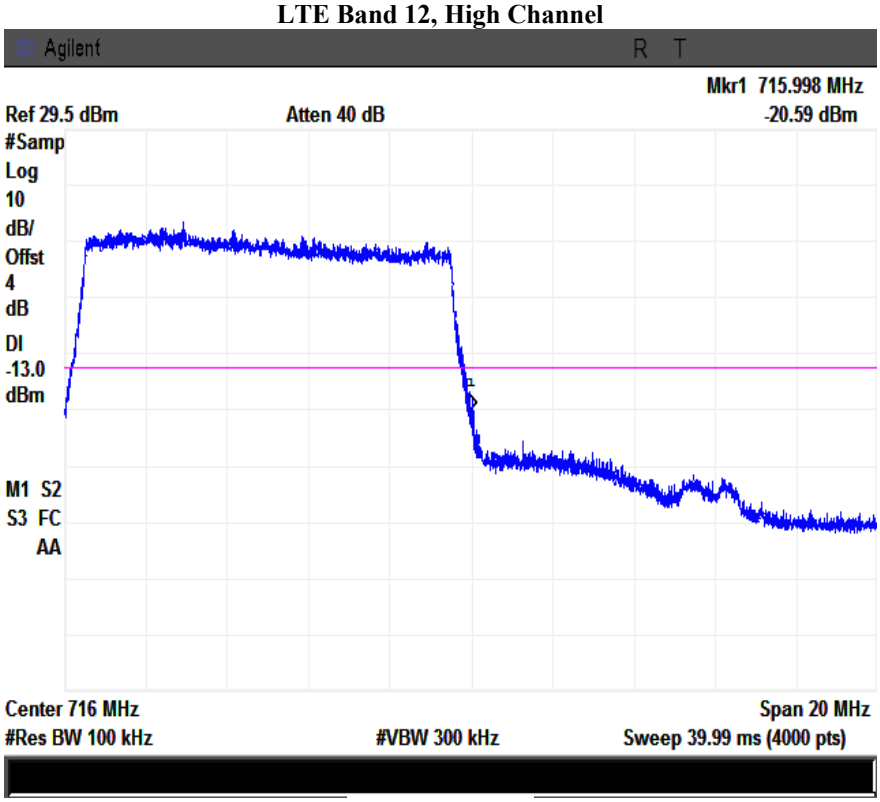


L-QPSK-10M

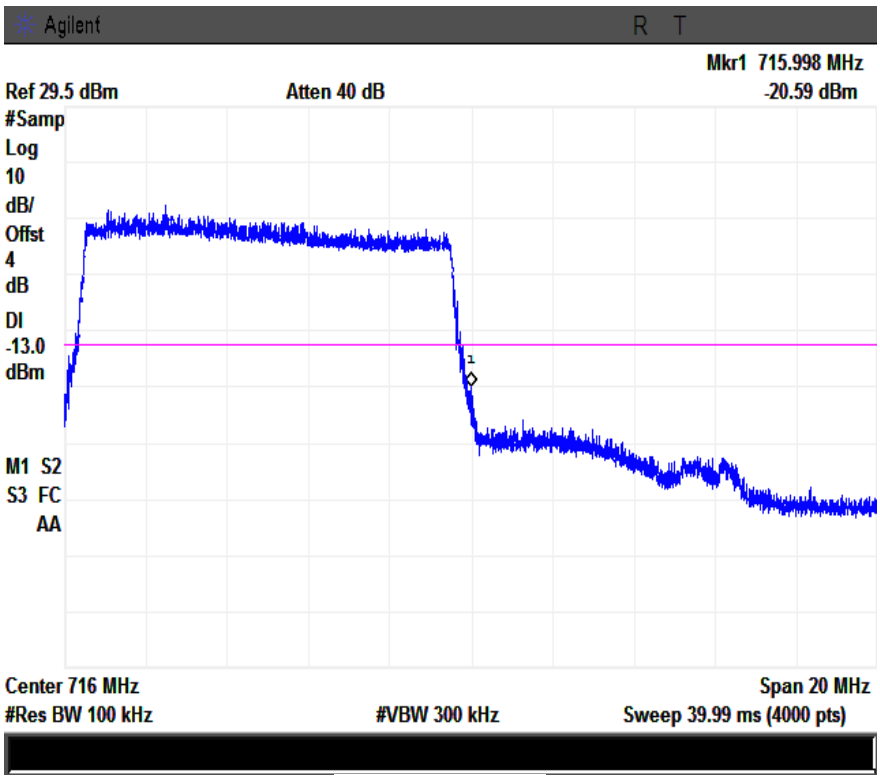


L-16QAM-10M

LTE Band 12, High Channel

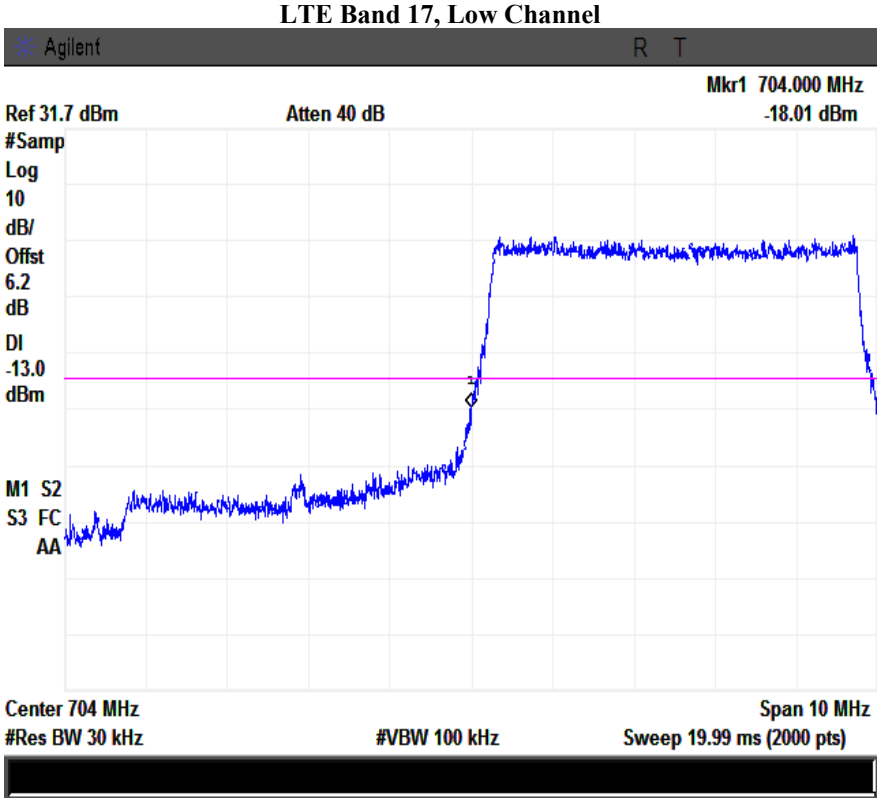


H-QPSK-10M

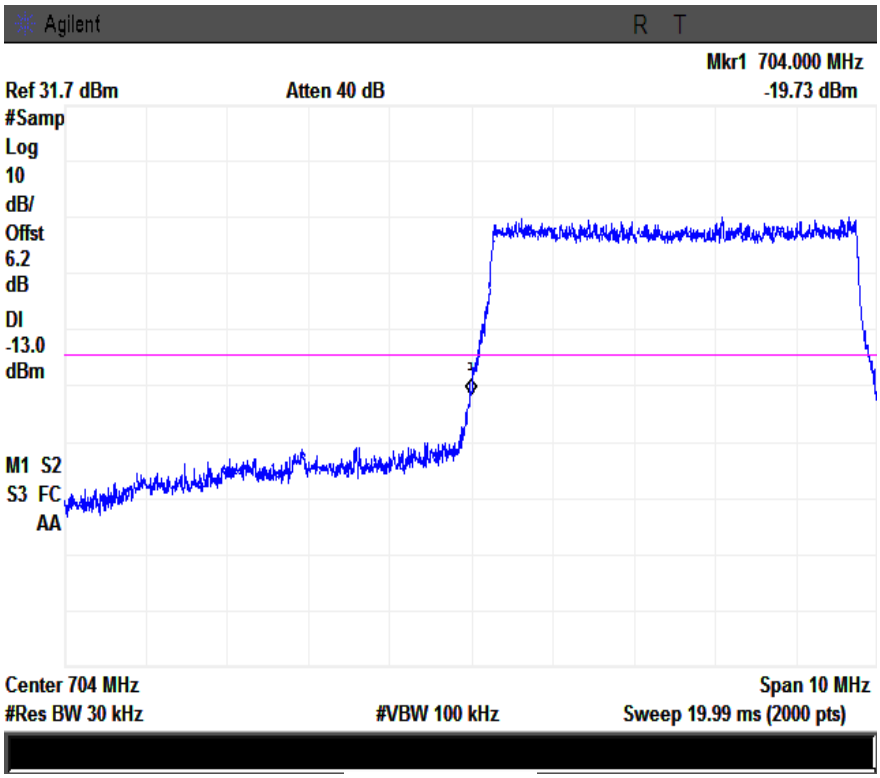


H-16QAM-10M

LTE Band 17, Low Channel



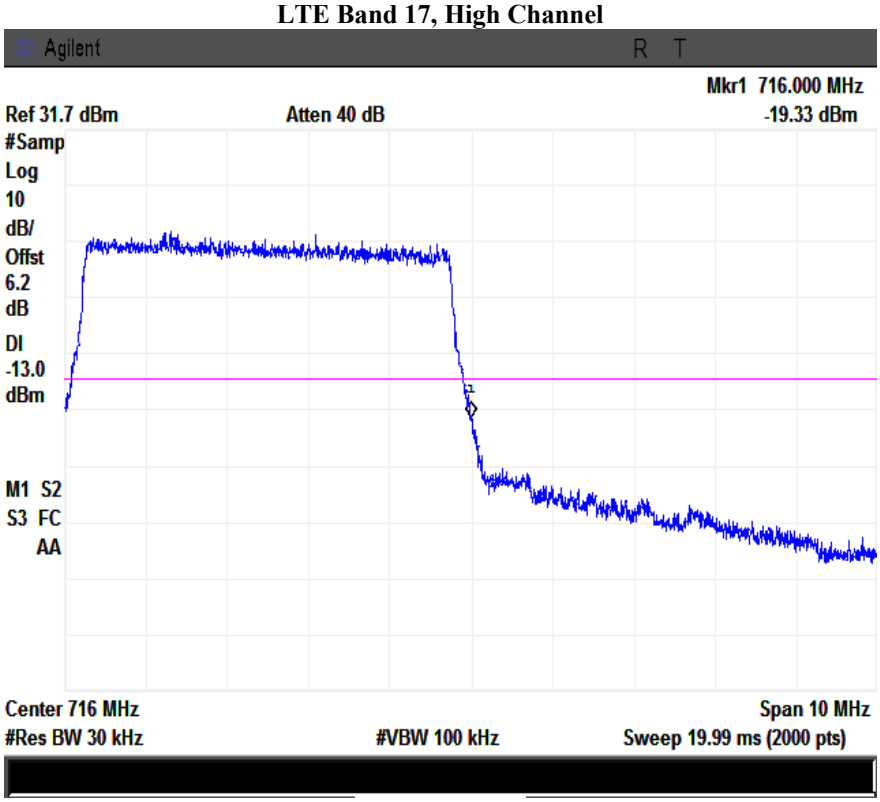
Note: Offset=Cable loss (4.0) + 10log (50.2/30)=4.0+2.2=6.2 dB



L-16QAM-5M

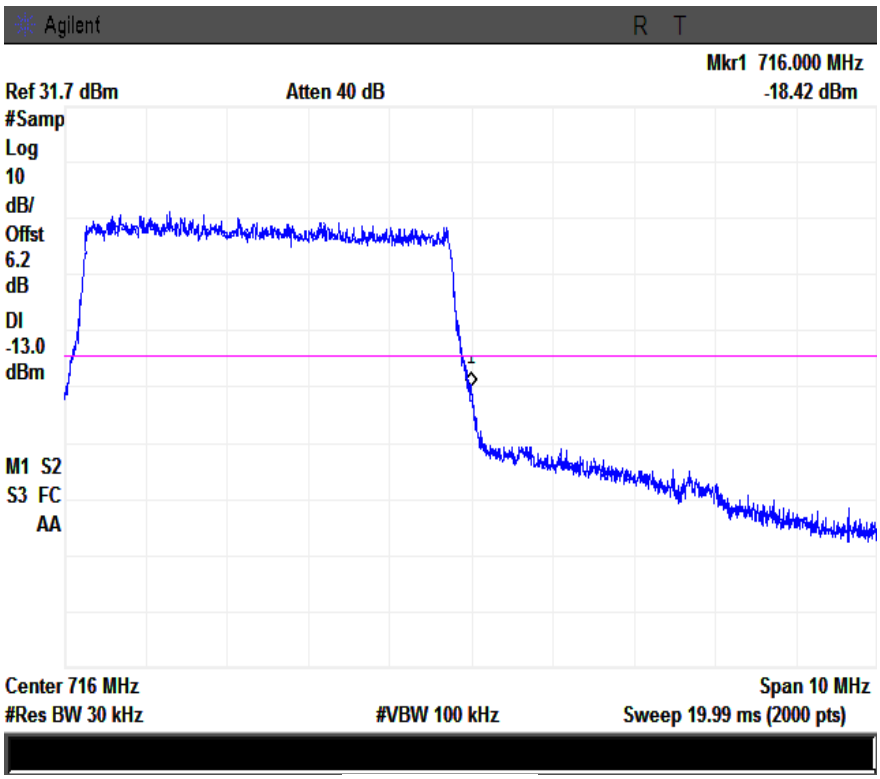
Note: Offset=Cable loss (4.0) + 10log (50.2/30)=4.0+2.2=6.2 dB

LTE Band 17, High Channel



H-QPSK-5M

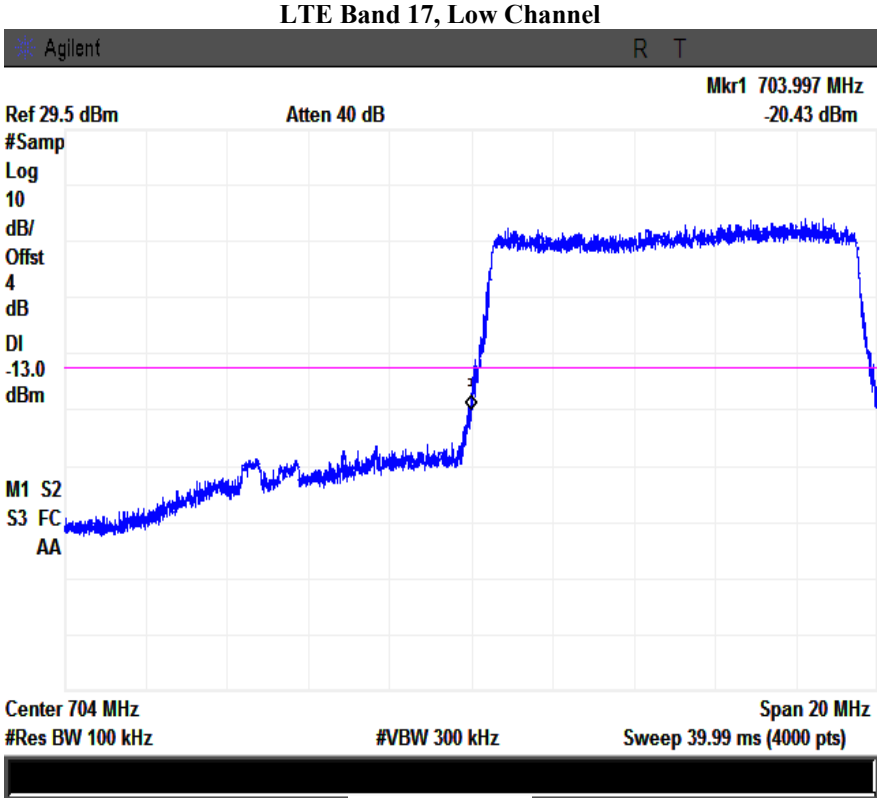
Note: Offset=Cable loss (4.0) + 10log (50.1/30)=4.0+2.2=6.2 dB



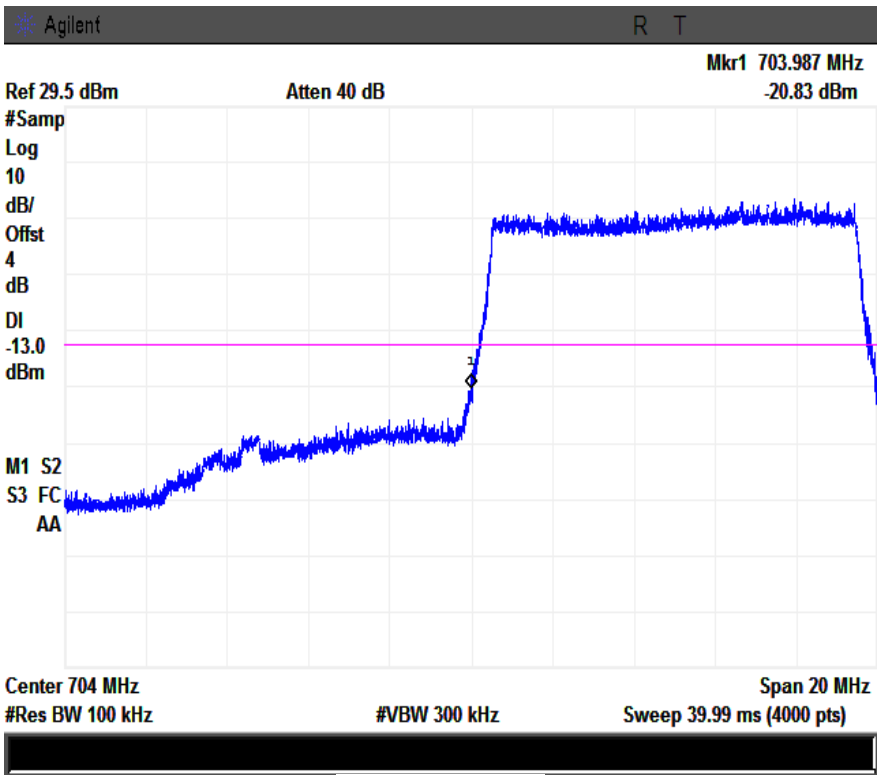
H-16QAM-5M

Note: Offset=Cable loss (4.0) + 10log (49.6/30)=4.0+2.2=6.2 dB

LTE Band 17, Low Channel

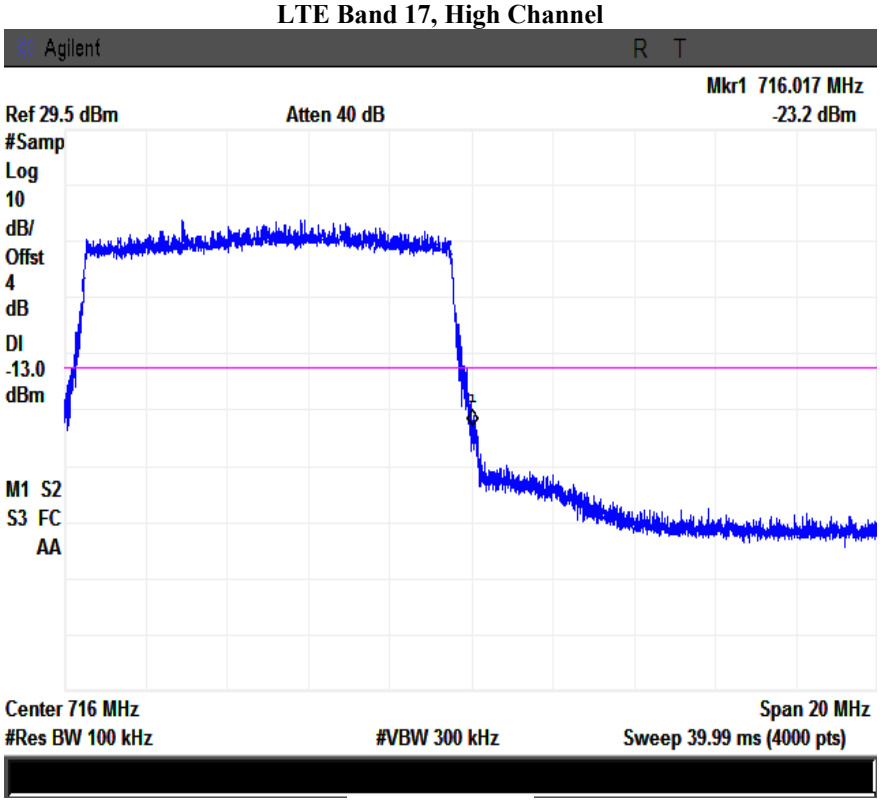


L-QPSK-10M

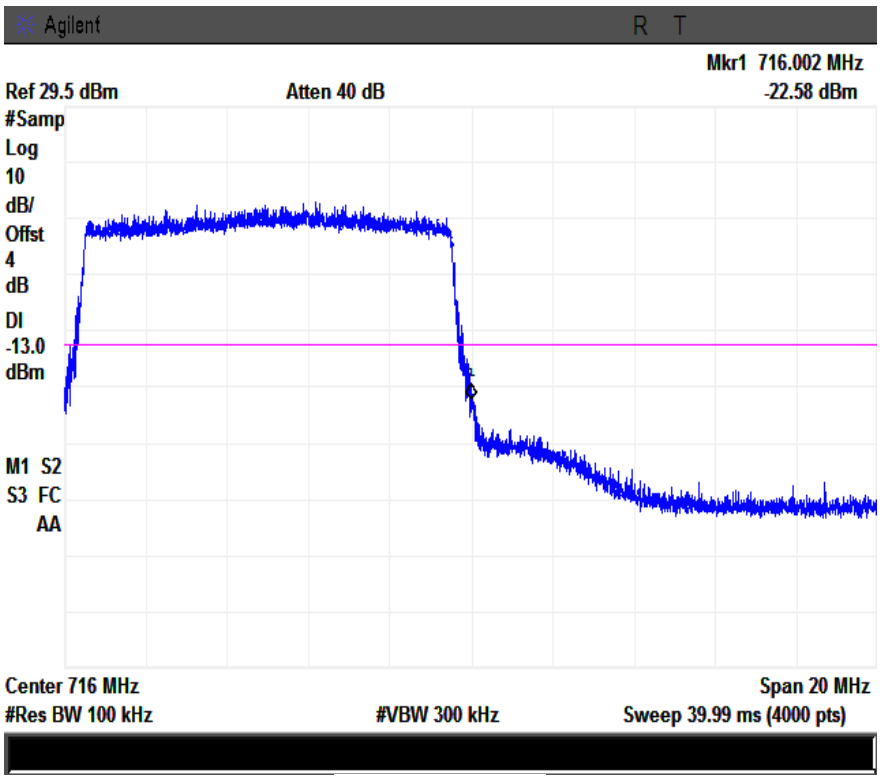


L-16QAM-10M

LTE Band 17, High Channel



H-QPSK-10M



H-16QAM-10M

5.8 §2.1055, §24.235; §27.5(h) & §27.54 - Frequency Stability

1.	Environmental Conditions	Temperature	23°C
		Relative Humidity	52%
		Atmospheric Pressure	1014mbar
2.	Test date : July 31, 2014		
	Tested By : Herith Shi		

Standard Requirement:

According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table below:

Frequency Tolerance for Transmitters in the Public Mobile Services

Frequency Range (MHz)	Base, fixed (ppm)	Mobile ≤ 3 watts (ppm)	Mobile ≤ 3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929.	5.0	N/A	N/A
929 to 960.	1.5	N/A	N/A
2110 to 2220	10.0	N/A	N/A

According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized frequency block.

According to §27.54, The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

Procedures:

A communication link was established between EUT and base station. The frequency error was monitored and measured by base station under variation of ambient temperature and variation of primary supply voltage.

Limit: The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5ppm) of the center frequency.

Test Results: Pass

Frequency Stability versus Temperature: The Frequency tolerance of the carrier signal shall be maintained within 2.5ppm of the operating frequency over a temperature variation of -10ºC to +55ºC at normal supply voltage.

LTE Band 2 (Part 24E)

Middle Channel, f_o = 1880 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-10	3.7	-10	0.0053	2.5
0		-11	0.0059	2.5
10		-5	0.0027	2.5
20		-9	0.0048	2.5
30		-15	0.0080	2.5
40		-6	0.0032	2.5
50		-9	0.0048	2.5
55		-8	0.0043	2.5
25	4.2	-10	0.0053	2.5
	3.5	-13	0.0069	2.5

LTE Band 4 (Part 27)

Middle Channel, f_o = 1732.5 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-10	3.7	-21	0.0121	2.5
0		-15	0.0087	2.5
10		-17	0.0098	2.5
20		-12	0.0069	2.5
30		-15	0.0087	2.5
40		-14	0.0081	2.5
50		-16	0.0092	2.5
55		-15	0.0087	2.5
25	4.2	-19	0.0110	2.5
	3.5	-20	0.0115	2.5

LTE Band 12 (Part 27)

Middle Channel, f_o = 707.5 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-10	3.7	5	0.0071	2.5
0		4	0.0057	2.5
10		6	0.0085	2.5
20		8	0.0113	2.5
30		10	0.0141	2.5
40		11	0.0155	2.5
50		12	0.0170	2.5
55		8	0.0113	2.5
25	4.2	4	0.0057	2.5
	3.5	7	0.0099	2.5

LTE Band 17 (Part 27)

Middle Channel, f_o = 710 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-10	3.7	5	0.0070	2.5
0		8	0.0113	2.5
10		10	0.0141	2.5
20		4	0.0056	2.5
30		2	0.0028	2.5
40		11	0.0155	2.5
50		14	0.0197	2.5
55		2	0.0028	2.5
25	4.2	9	0.0127	2.5
	3.5	13	0.0183	2.5

Annex A. TEST INSTRUMENT & METHOD

Annex A.i. TEST INSTRUMENTATION & GENERAL PROCEDURES

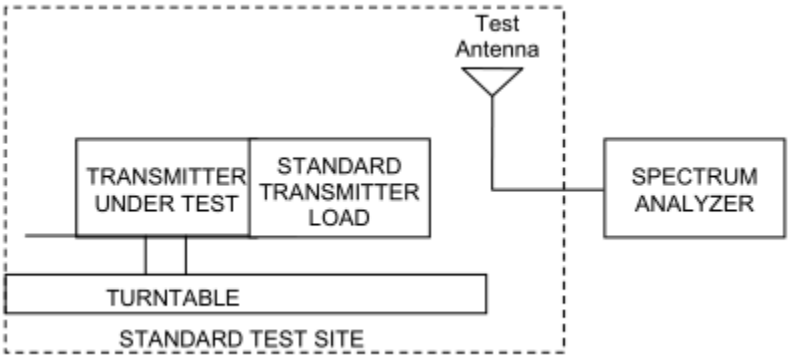
Instrument	Model	Serial #	Calibration Date	Calibration Due Date
RF conducted test				
Agilent ESA-E SERIES SPECTRUM ANALYZER	E4407B	MY45108319	09/17/2013	09/16/2014
Power Splitter	1#	1#	09/02/2013	09/01/2014
Wideband Radio Communication Tester	CMW500	120906	03/29/2014	03/28/2015
Temperature/Humidity Chamber	UHL-270	001	10/22/2013	10/21/2014
DC Power Supply	E3640A	MY40004013	09/17/2013	09/16/2014
Radiated Emissions				
EMI test receiver	ESL6	100262	11/23/2013	11/22/2014
OPT 010 AMPLIFIER (0.1-1300MHz)	8447E	2727A02430	09/02/2013	09/01/2014
Microwave Preamplifier (0.5～18GHz)	PAM-118	443008	09/02/2013	09/01/2014
Bilog Antenna (30MHz~6GHz)	JB6	A110712	09/23/2013	09/22/2014
Bilog Antenna (30MHz~2GHz)	JB1	A112017	09/23/2013	09/22/2014
Double Ridge Horn Antenna	AH-118	71259	11/20/2013	11/19/2014
(1 ~18GHz)				
Double Ridge Horn Antenna	AH-118	71283	11/20/2013	11/19/2014
(1 ~18GHz)				
SYNTHESIZED SIGNAL GENERATOR	8665B	3744A01293	09/17/2013	09/16/2014
Tunable Notch Filter	3NF-800/1000-S	AA4	09/02/2013	09/01/2014
Tunable Notch Filter	3NF-1000/2000-S	AM 4	09/02/2013	09/01/2014

Annex A. ii. RADIATED EMISSIONS TEST DESCRIPTION

Definition

Radiated spurious emissions are emissions from the equipment when transmitting into a nonradiating load on a frequency or frequencies that are outside an occupied band sufficient to ensure transmission of information of required quality for the class of communications desired.

Test Set-up



a) Connect the equipment as illustrated.

b) Adjust the spectrum analyzer for the following settings:
1) Resolution Bandwidth = 10 kHz for spurious emissions below 1 GHz, and 1 MHz for spurious emissions above 1GHz.
2) Video Bandwidth = 300 kHz for spurious emissions below 1 GHz, and 3 MHz for spurious emissions above 1 GHz.
3) Sweep Speed slow enough to maintain measurement calibration.
4) Detector Mode = Positive Peak.

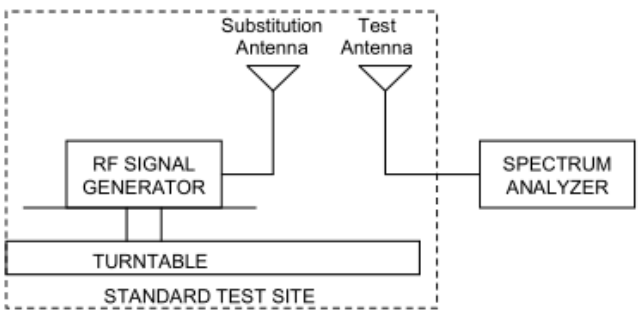
c) Place the transmitter to be tested on the turntable in the standard test site, or an FCC listed site compliant with ANSI C63.4-2001 clause 5.4. The transmitter is transmitting into a nonradiating load that is placed on the turntable. The RF cable to this load should be of minimum length. Fortransmitters with integral antennas, the tests are to be run with the unit operating into the integral antenna.

d) For each spurious measurement the test antenna should be adjusted to the correct length for the frequency involved. This length may be determined from a calibration ruler supplied with the equipment. Measurements shall be made from the lowest radio frequency generated in the equipment to the tenth harmonic of the carrier, except for the region close to the carrier equal to ± the test bandwidth (see 1.3.4.4).

e) Key the transmitter.

f) For each spurious frequency, raise and lower the test antenna from 1 m to 4 m to obtain a maximum reading on the spectrum analyzer with the test antenna at horizontal polarity. Then the turntable should be rotated 360° to determine the maximum reading. Repeat this procedure to obtain the highest possible reading. Record this maximum reading.

g) Repeat step f) for each spurious frequency with the test antenna polarized vertically.



h) Reconnect the equipment as illustrated.

i) Keep the spectrum analyzer adjusted as in step b).

j) Remove the transmitter and replace it with a substitution antenna (the antenna should be half-wavelength for each frequency involved). The center of the substitution antenna should be approximately at the same location as the center of the transmitter. At the lower frequencies, where the substitution antenna is very long, this will be impossible to achieve when the antenna is polarized vertically. In such case the lower end of the antenna should be 0.3 m above the ground.

k) Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a nonradiating cable. With the antennas at both ends horizontally polarized, and with the signal generator tuned to a particular spurious frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained. This should be done carefully repeating the adjustment of the test antenna and generator output.

l) Repeat step k) with both antennas vertically polarized for each spurious frequency. m) Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the readings obtained in steps k) and l) by the power loss in the cable between the generator and the antenna, and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole antenna by the following formula:
P d (dBm) = P g (dBm) – cable loss (dB) + antenna gain (dB)
where:
P d is the dipole equivalent power and
P g is the generator output power into the substitution antenna.

n) The P d levels record in step m) are the absolute levels of radiated spurious emissions in dBm. The radiated spurious emissions in dB can be calculated by the following:

$$\text{Radiated spurious emissions (dB)} = 10\ \log_{10}\left(\frac{TX\ power\ in\ watts}{0.001}\right) - the\ levels\ in\ step\ m)$$

NOTE: It is permissible to use other antennas provided they can be referenced to a dipole.

Annex B. EUT AND TEST SETUP PHOTOGRAPHS

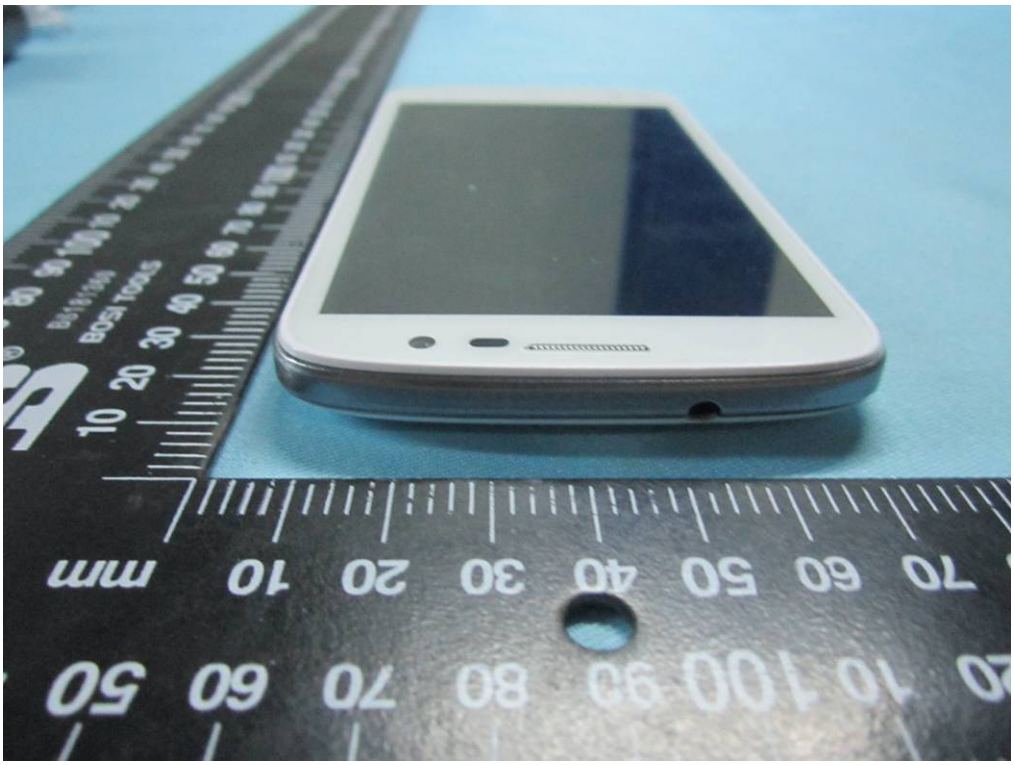
Annex B.i. Photograph 1: EUT External Photo

Whole Package - Top View

Adapter – Front View

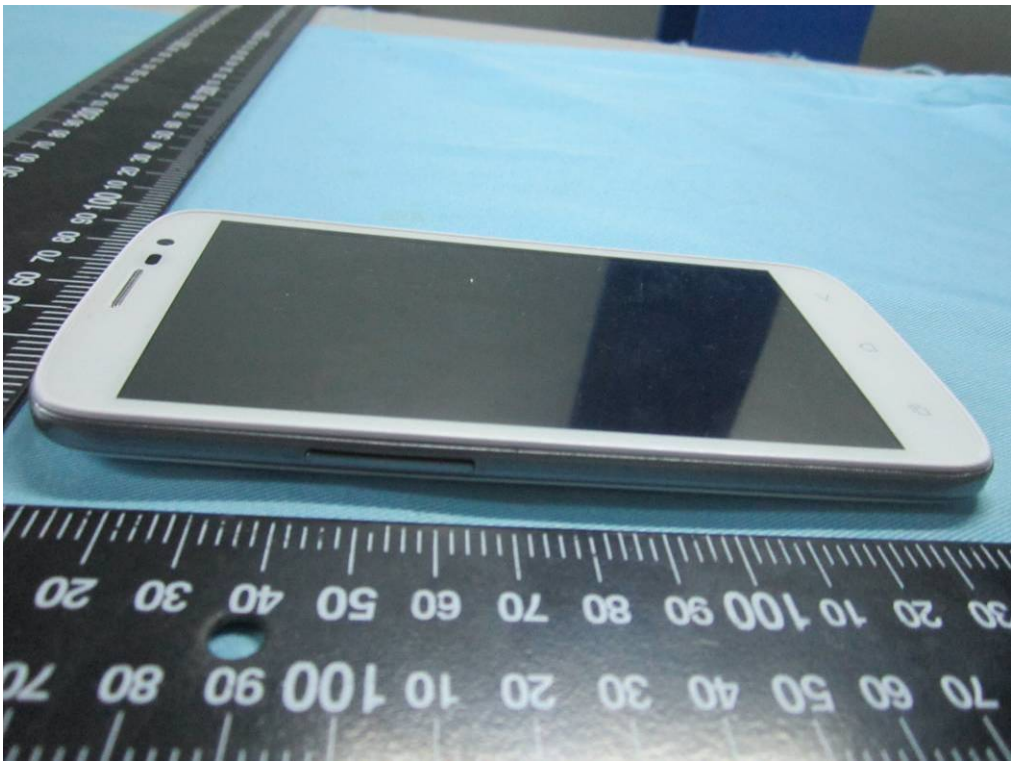
EUT - Front View

EUT - Rear View

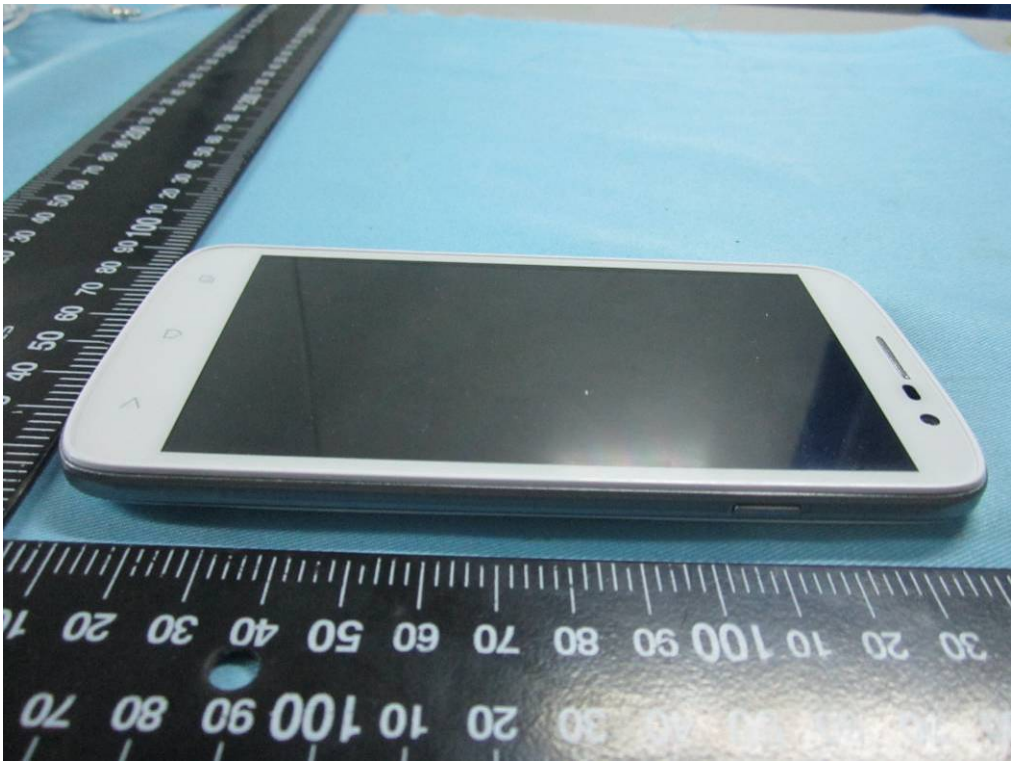


EUT - Top View

EUT - Bottom View



EUT - Left View



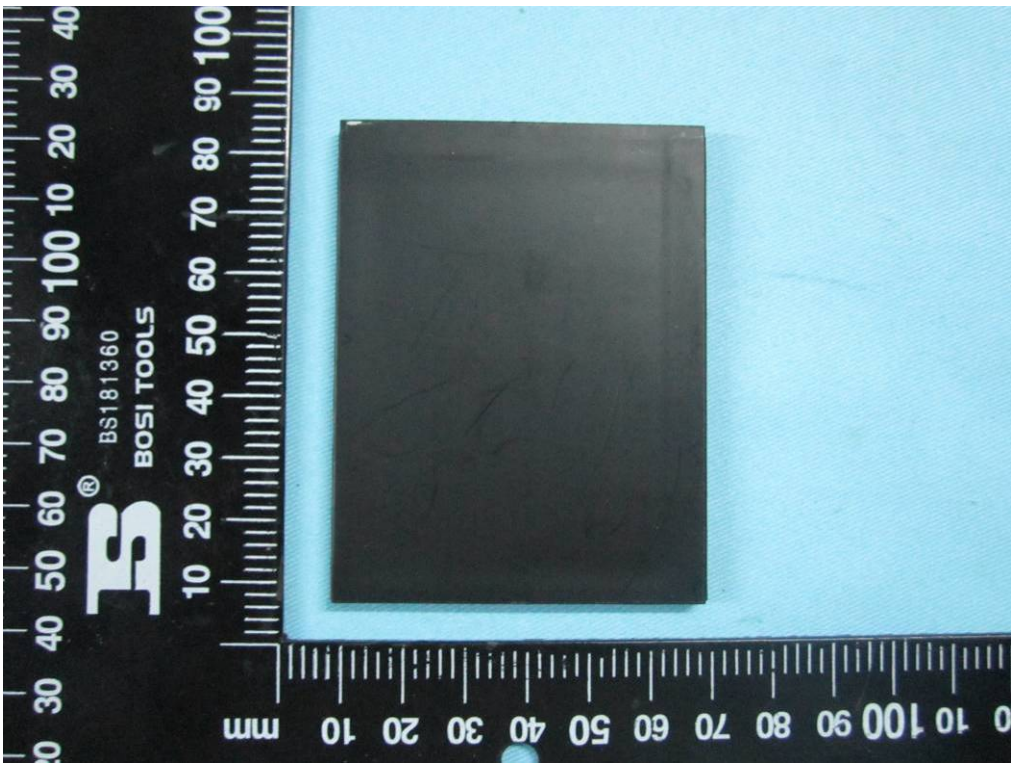
EUT - Right View

Annex B.ii. Photograph 2: EUT Internal Photo

Cover Off - Top View 1

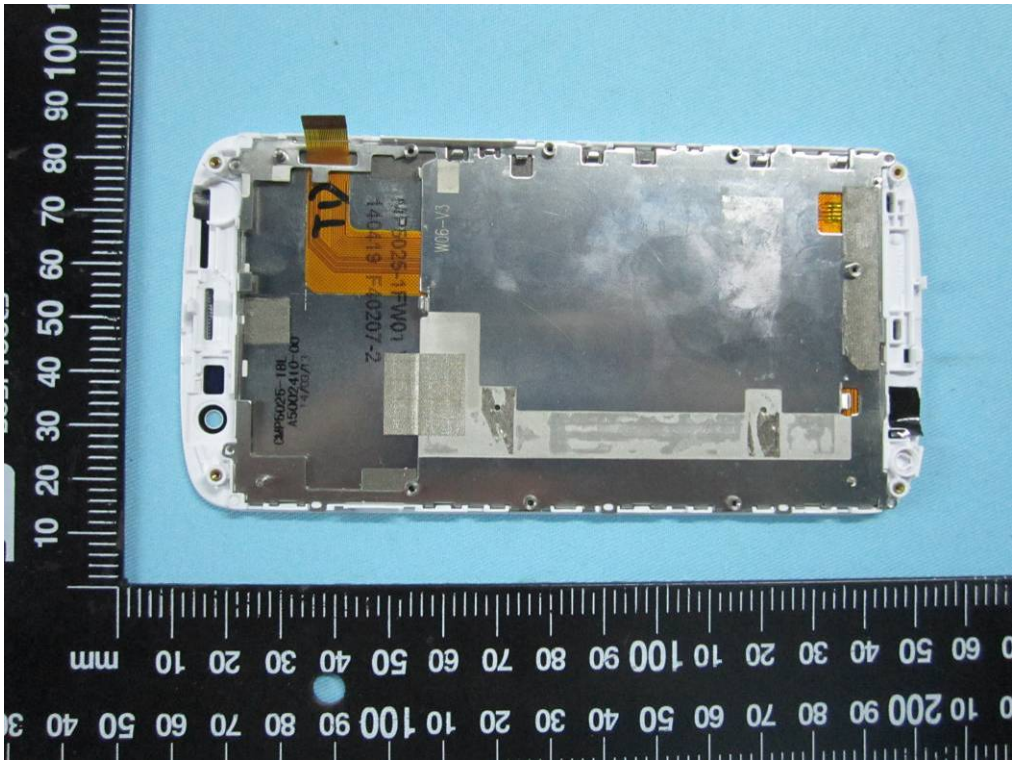
Cover Off - Top View 2

Battery - Top View

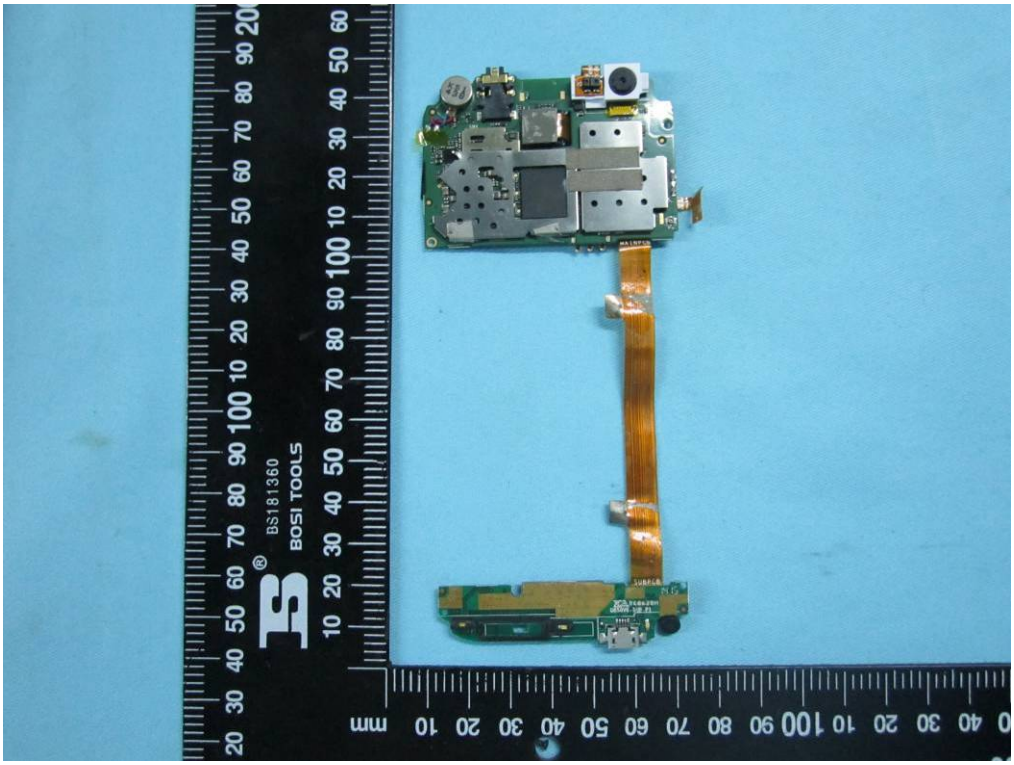


Battery - Bottom View

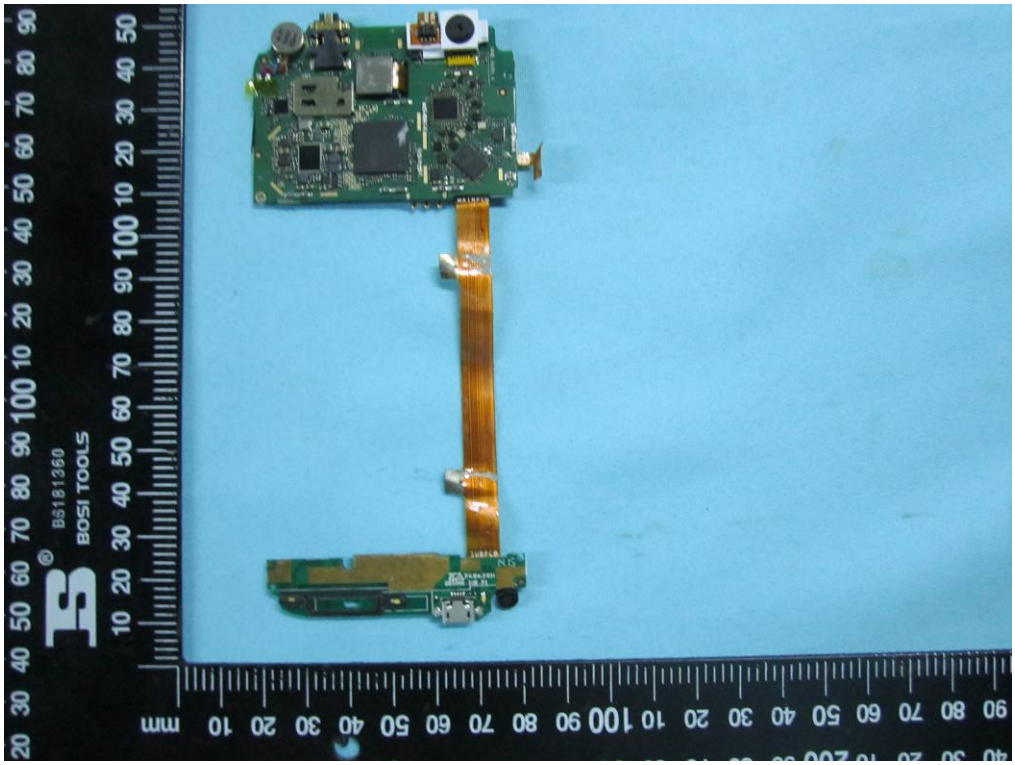
LCD – Front View



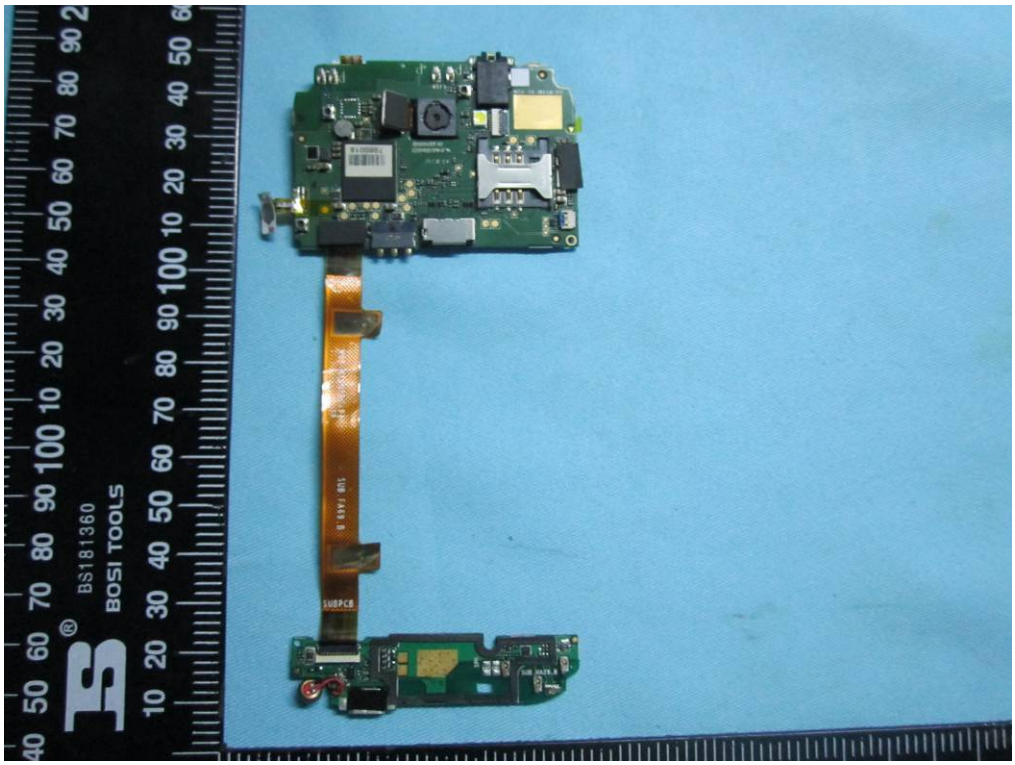
LCD – Rear View



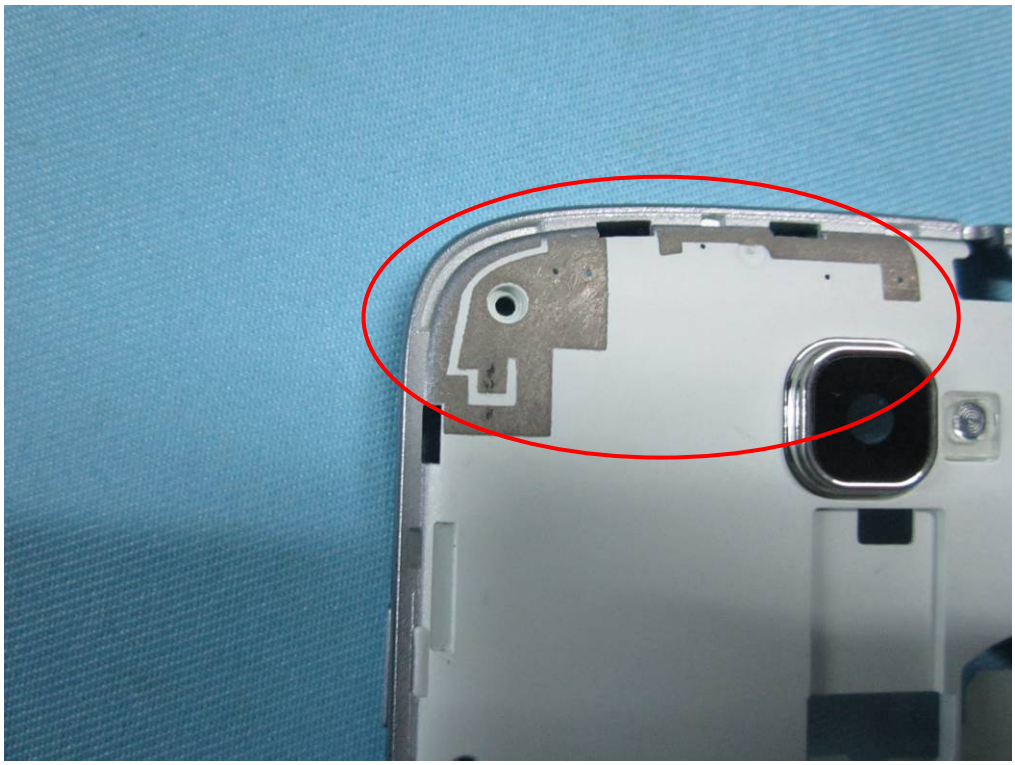
Mainborad With Shielding - Front View



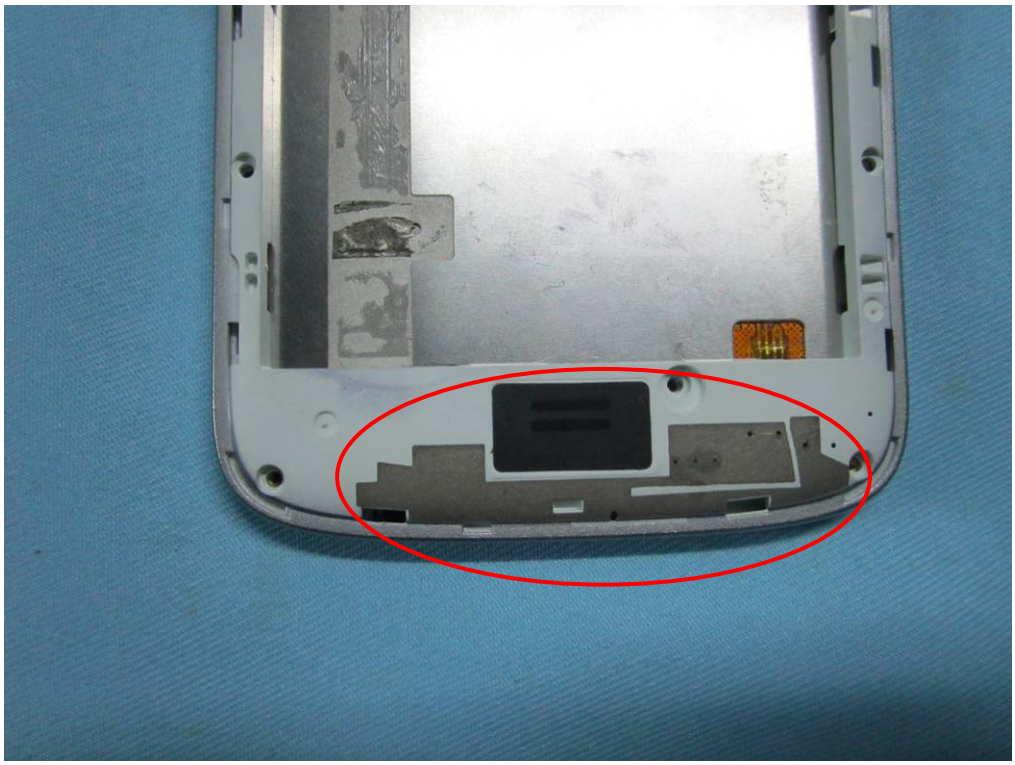
Mainborad Without Shielding - Front View



Mainborad– Rear View

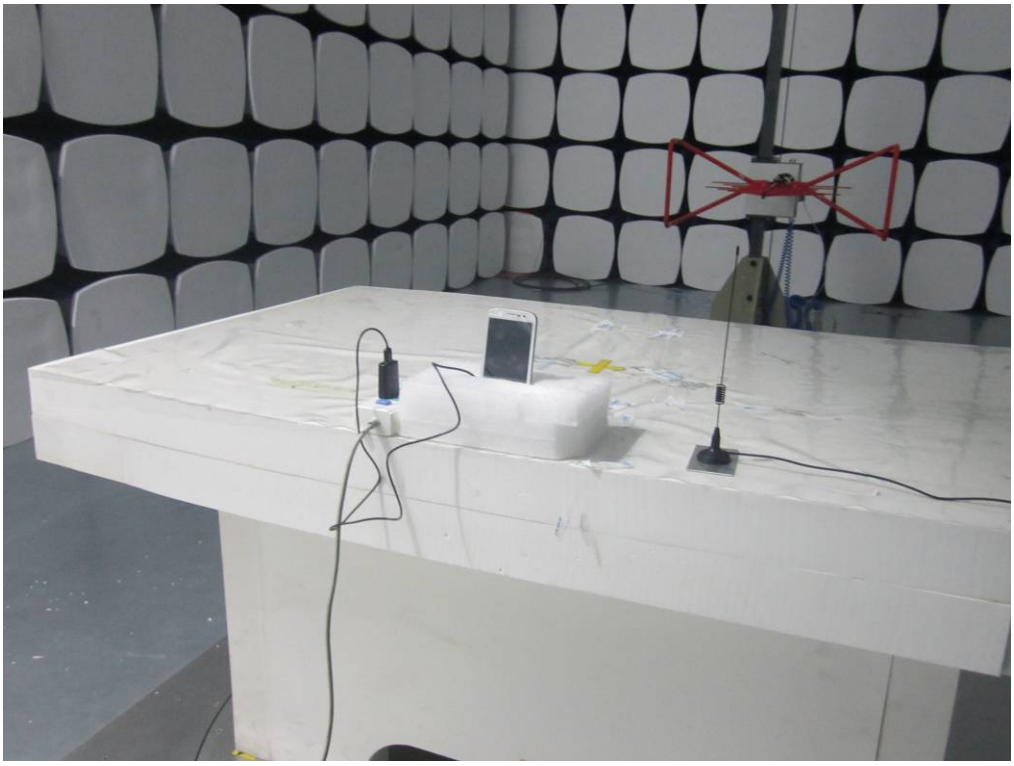


BT/BLE/WIFI Antenna View

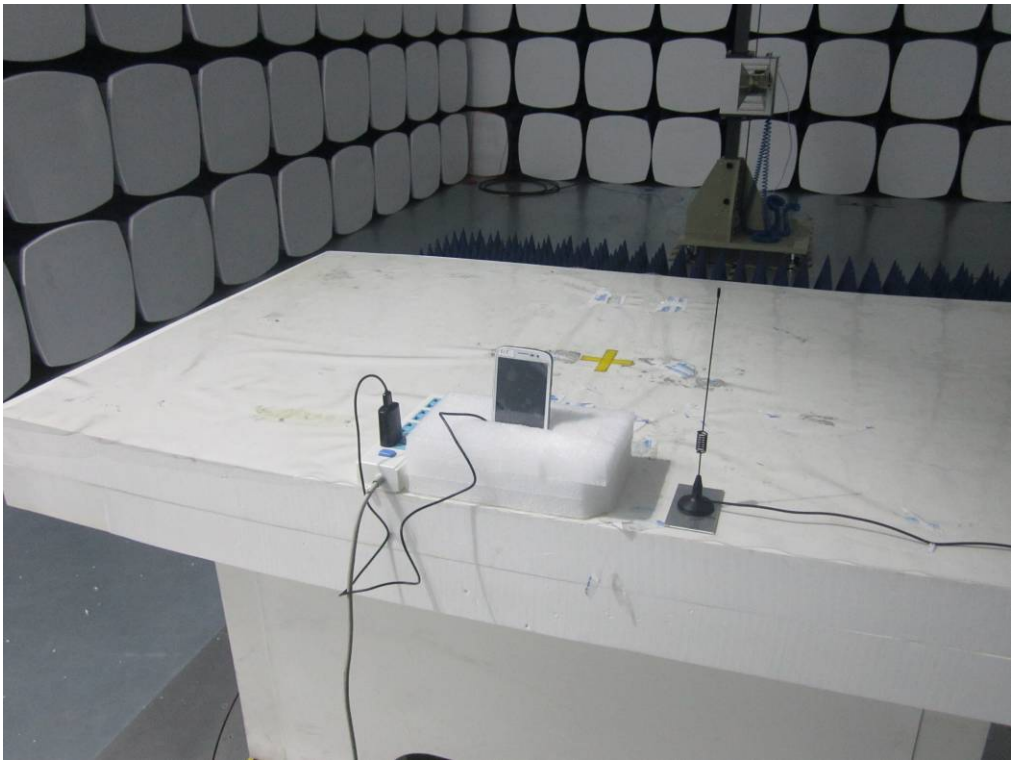


GSM/PCS/UMTS-FDD/LTE Antenna View

Annex B.iii. Photograph 3: Test Setup Photo



Radiated Spurious Emissions Test Setup Below 1GHz - Front View



Radiated Spurious Emissions Test Setup Above 1GHz –Front View

Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

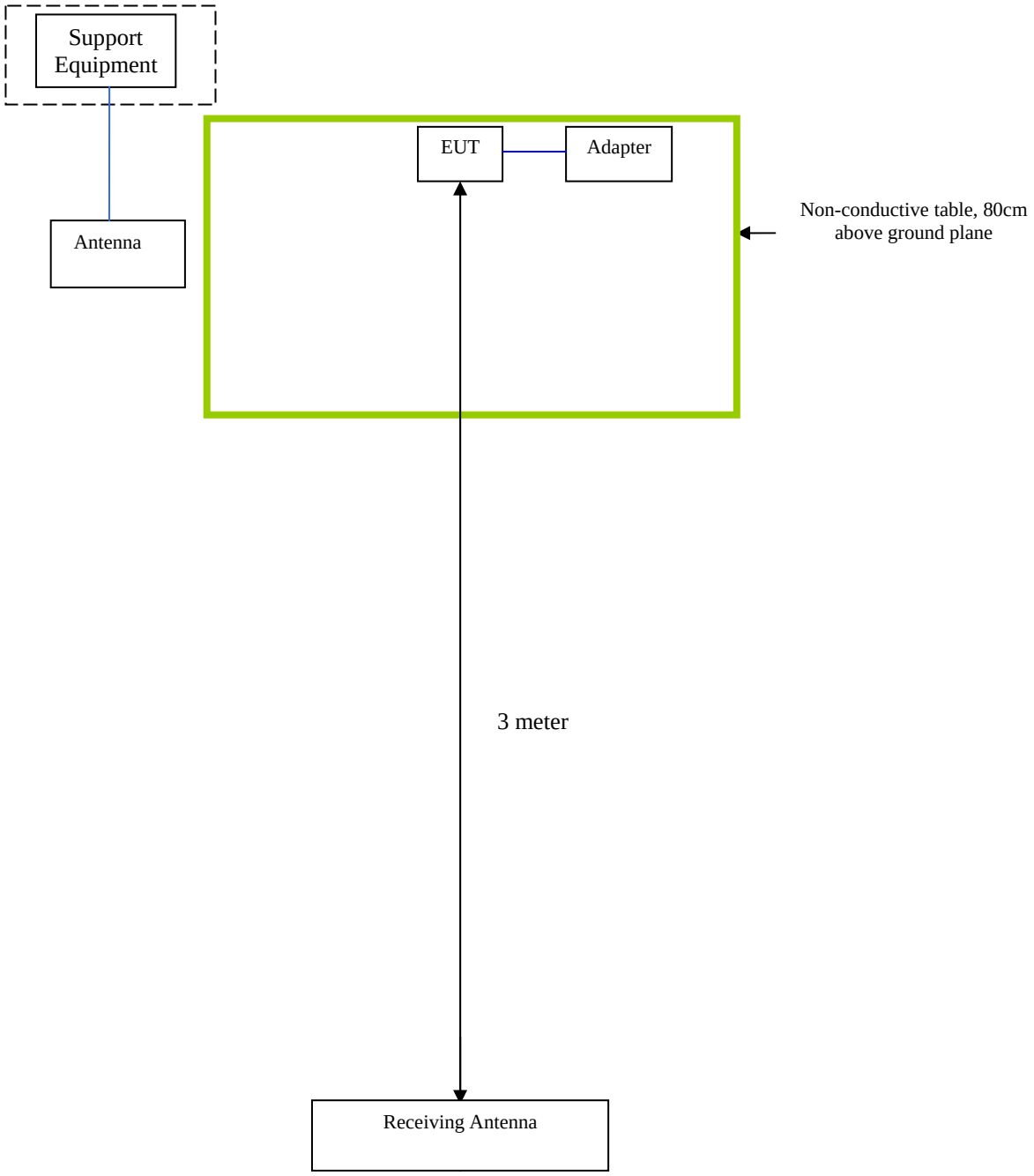
EUT TEST CONDITIONS

Annex C. i. SUPPORTING EQUIPMENT DESCRIPTION

The following is a description of supporting equipment and details of cables used with the EUT.

Manufacturer	Equipment Description (Including Brand Name)	Model	Calibration Date	Calibration Due Date
N/A	N/A	N/A	N/A	N/A

Block Configuration Diagram for Radiated Emissions



Annex C.ii. EUT OPERATING CONDITIONS

The following is the description of how the EUT is exercised during testing.

Test	Description Of Operation
Emissions Testing	The EUT was communicating with base station and set to work at maximum output power.
Others Testing	The EUT was communicating with base station and set to work at maximum output power.

Annex D.USER MANUAL / BLOCK DIAGRAM / SCHEMATICS / PART LIST

Please see attachment

Annex E. DECLARATION OF SIMILARITY

N/A