FCC CFR47 PART 22H, 24E, AND 27L
CERTIFICATION TEST REPORT

FOR

GSM/GPRS/EGPRS/WCDMA/HSPA+/DC-HSDPA/LTE Radio, IEEE 802.11 a/b/g/n and Bluetooth Radio

MODEL NUMBER: A1459

FCC ID: BCGA1459

REPORT NUMBER: 12U14507-6

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Prepared for

APPLE, INC.
1 INFINITE LOOP
CUPERTINO, CA 95014, U.S.A.

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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
---	10/05/12	Initial Issue	T. Chan

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: APPLE, INC.
1 INFINITE LOOP
CUPERTINO, CA 95014, U.S.A.

EUT DESCRIPTION: Model A1459 is a tablet with GSM / GPRS/ EGPRS / WCDMA / HSPA+/ DC-HSDPA / LTE Radio, WiFi 802.11 a/b/g/n and Bluetooth Radio

MODEL: A1459

SERIAL NUMBER: DLXJ800LF8M8

DATE TESTED: AUGUST 30-SEPTEMBER 30, 2012

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 22H, 24E and 27L	Pass

UL CCS tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL CCS based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL CCS will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For UL CCS By:

THU CHAN
ENGINEERING MANAGER
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Tested By:

CHIN PANG
EMC ENGINEER
UL CCS

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA-603-C, FCC CFR 47 Part 2, FCC CFR 47 Part 22, FCC CFR Part 24 and FCC part 27.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

UL CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://www.ccsemc.com.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 1000 MHz	4.94 dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The Apple iPad Model A1459 is a tablet device with multimedia functions (music, application support, and video), cellular GSM/GPRS/EGPRS/WCDMA/HSPA+/DC-HSDPA / LTE radio, IEEE 802.11a/b/g/n and Bluetooth radio. The rechargeable battery is not user accessible.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted and ERP / EIRP output powers; average detector is used for WCDMA/CDMA mode of Cellular band, while peak detector is used for GSM mode of Cellular and all GSM/CDMA/WCDMA PCS bands as follows:

Part 22/24							
Frequency range (MHz)	Modulation	Conducted			ERP/EIRP		
		Peak	Average	mW	Peak	Average	mW
824.2 - 848.8	GPRS	33.60		2290.9	30.65		1161.4
824.2 - 848.8	EGPRS	31.90		1548.8	29.50		891.3
1850.2-1909.8	GPRS	30.70		1174.9	31.97		1574.0
1850.2-1909.8	EGPRS	30.50		1122.0	29.77		948.4
826.4 - 846.0	Rel 99		24.40	275.4		21.40	138.0
1852.4-1907.6	Rel 99	26.10		407.4	27.41		550.8
826.4 - 846.0	HSUPA		23.65	231.7		20.40	109.6
1852.4-1907.6	HSUPA	27.47		558.5	27.67		584.8

LTE BAND 2

Part 24 LTE Band 2 MODE (1.4 MHz BANDWIDTH)					
Frequency range (MHz)	Modulation	Conducted(Peak)		EIRP(Peak)	
		dBm	mW	dBm	mW
1850.7 - 1909.3	QPSK RB6-0	27.80	602.6	30.24	1056.8
1850.7 - 1909.3	16QAM, RB6-0	28.60	724.4	29.20	831.8

Part 24 LTE Band 2 MODE (3.0 MHz BANDWIDTH)					
Frequency range (MHz)	Modulation	Conducted(Peak)		EIRP(Peak)	
		dBm	mW	dBm	mW
1851.5 - 1908.5	QPSK RB15-0	27.80	602.6	30.00	1000.0
1851.5 - 1908.5	16QAM, RB15-0	28.02	633.9	29.08	809.1

Part 24 LTE Band 2 MODE (5.0 MHz BANDWIDTH)					
Frequency range (MHz)	Modulation	Conducted(Peak)		EIRP(Peak)	
		dBm	mW	dBm	mW
1852.5 - 1907.5	QPSK RB25-0	28.00	631.0	29.95	988.6
1852.5 - 1907.5	16QAM, RB25-0	27.90	616.6	29.06	805.4

Part 24 LTE Band 2 MODE (10.0 MHz BANDWIDTH)					
Frequency range (MHz)	Modulation	Conducted(Peak)		EIRP(Peak)	
		dBm	mW	dBm	mW
1855 - 1905	QPSK RB50-0	28.35	683.9	30.31	1074.0
1855 - 1905	16QAM, RB50-0	28.18	657.7	29.29	849.2

Part 24 LTE Band 2 MODE (15.0 MHz BANDWIDTH)					
Frequency range (MHz)	Modulation	Conducted(Peak)		EIRP(Peak)	
		dBm	mW	dBm	mW
1857.5 - 1902.5	QPSK RB75-0	28.49	706.3	30.15	1035.1
1857.5 - 1902.5	16QAM, RB75-0	28.50	707.9	29.21	833.7

Part 24 LTE Band 2 MODE (20.0 MHz BANDWIDTH)					
Frequency range (MHz)	Modulation	Conducted(Peak)		EIRP(Peak)	
		dBm	mW	dBm	mW
1860 - 1900	QPSK RB100-0	28.46	701.5	30.21	1049.5
1860 - 1900	16QAM, RB100-0	28.28	673.0	29.21	833.7

LTE BAND 4

Part 27 LTE Band 4 MODE (1.4 MHz BANDWIDTH)					
Frequency range (MHz)	Modulation	Conducted(Peak)		EIRP(Peak)	
		dBm	mW	dBm	mW
1710.7 - 1754.3	QPSK RB6-0	28.00	631.0	29.69	931.1
1710.7 - 1754.3	16QAM, RB6-0	28.50	707.9	28.79	756.8

Part 27 LTE Band 4 MODE (3.0 MHz BANDWIDTH)					
Frequency range (MHz)	Modulation	Conducted(Peak)		EIRP(Peak)	
		dBm	mW	dBm	mW
1711.5 - 1753.5	QPSK RB15-0	28.60	724.4	29.39	869.0
1711.5 - 1753.5	16QAM, RB15-0	28.00	631.0	28.49	706.3

Part 27 LTE Band 4 MODE (5.0 MHz BANDWIDTH)					
Frequency range (MHz)	Modulation	Conducted(Peak)		EIRP(Peak)	
		dBm	mW	dBm	mW
1712.5 - 1752.5	QPSK RB25-0	28.10	645.7	29.29	849.2
1712.5 - 1752.5	16QAM, RB25-0	28.20	660.7	28.30	676.1

Part 27 LTE Band 4 MODE (10.0 MHz BANDWIDTH)					
Frequency range (MHz)	Modulation	Conducted(Peak)		EIRP(Peak)	
		dBm	mW	dBm	mW
1715 - 1750	QPSK RB50-0	28.75	749.9	29.59	909.9
1715 - 1750	16QAM, RB50-0	28.58	721.1	28.59	722.8

Part 27 LTE Band 4 MODE (15.0 MHz BANDWIDTH)					
Frequency range (MHz)	Modulation	Conducted(Peak)		EIRP(Peak)	
		dBm	mW	dBm	mW
1717.5 - 1747.50	QPSK RB75-0	28.64	731.1	29.19	829.9
1717.5 - 1747.50	16QAM RB75-0	28.25	668.3	28.19	659.2

Part 27 LTE Band 4 MODE (20.0 MHz BANDWIDTH)					
Frequency range (MHz)	Modulation	Conducted(Peak)		EIRP(Peak)	
		dBm	mW	dBm	mW
1720 - 1745	QPSK RB100-0	28.60	724.4	29.29	849.2
1720 - 1745	16QAM, RB100-0	28.30	676.1	28.29	674.5

LTE BAND 5

Part 22 LTE Band 5 MODE (1.4 MHz BANDWIDTH)					
Frequency range (MHz)	Modulation	Conducted (Average)		ERP (Average)	
		dBm	mW	dBm	mW
824.7 - 848.3	QPSK RB1-0	23.95	248.3	21.14	130.0
824.7 - 848.3	16QAM, RB1-0	22.90	195.0	19.97	99.3

Part 22 LTE Band 5 MODE (3.0 MHz BANDWIDTH)					
Frequency range (MHz)	Modulation	Conducted(Average)		ERP(Average)	
		dBm	mW	dBm	mW
825.5 - 847.5	QPSK RB1-0	23.82	241.0	21.17	130.9
825.5 - 847.5	16QAM, RB1-0	22.87	193.6	20.54	113.2

Part 22 LTE Band 5 MODE (5.0 MHz BANDWIDTH)					
Frequency range (MHz)	Modulation	Conducted(Average)		ERP(Average)	
		dBm	mW	dBm	mW
826.5 - 846.5	QPSK RB1-0	23.96	248.9	21.14	130.0
826.5 - 846.5	16QAM, RB1-0	22.95	197.2	20.14	103.3

Part 22 LTE Band 5 MODE (10.0 MHz BANDWIDTH)					
Frequency range (MHz)	Modulation	Conducted(Average)		ERP(Average)	
		dBm	mW	dBm	mW
829 - 844	QPSK RB1-0	23.90	245.5	21.24	133.0
829 - 844	16QAM, RB1-0	23.00	199.5	20.44	110.7

LTE BAND 17

Part 27 LTE Band 17 MODE (5.0 MHz BANDWIDTH)					
Frequency range (MHz)	Modulation	Conducted(Average)		ERP(Average)	
		dBm	mW	dBm	mW
706.5 - 713.5	QPSK RB1-0	23.98	250.0	21.95	156.7
706.5 - 713.5	16QAM, RB1-0	23.18	208.0	20.87	122.2

Part 27 LTE Band 17 MODE (10.0 MHz BANDWIDTH)					
Frequency range (MHz)	Modulation	Conducted(Average)		ERP(Average)	
		dBm	mW	dBm	mW
709 - 711	QPSK RB1-0	24.00	251.2	22.06	160.7
709 - 711	16QAM, RB1-0	23.00	199.5	21.53	142.2

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PIFA type integral antenna with a maximum peak gain as follow:

Frequency Band	Antenna Gain (dBi)
LTE Band 17	-1.93
LTE Band 4	0.27
LTE Band 5/ GSM 850 / UMTS FDD5	-1.9
LTE Band 2 / GSM 1900 / UMTS FDD2	2.02

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was 2.00.01_DEBUG

The EUT software installed during testing was 10A8396.

The EUT is linked with Agilent 8960 Communication, CMU200 and CMW500 Test Set.

5.5. WORST-CASE CONFIGURATION AND MODE

The worst-case channel for RF radiated emissions below 1GHz and AC conducted emissions are determined as the channel with the AC Power Adapter Source

Based on the investigation results, the highest peak power and enhanced data rate is the worst-case scenario for all measurements.

Worst-case modes below:

- For Cellular and PCS band: GPRS and EGPRS
- For Cellular and PCS band: WCDMA, REL 99 and HSUPA.
- FOR LTE band 2, 4, 5 and 17.

Both conducted and radiated emissions measurement with all bands.

For the fundamental investigation of radiated emissions, the EUT is investigated for vertical and horizontal antenna orientations and X Y and Z orientation and the worst case was determined to be at Z position on Cell and PCS Band.

5.6. DESCRIPTION OF TEST SETUP

I/O CABLES (RF CONDUCTED TEST)

I/O Cable List						
Cable No	Port	# of identical	Connector Type	Cable Type	Cable Length (m)	Remarks
1	RF Out	1	Spectrum Analyzer	Un-shielded	1m	N/A
2	RF In/Out	1	Directional Coupler	Un-shielded	1m	N/A
3	RF In/Out	1	Communication Test Set	Un-shielded	None	N/A

I/O CABLES (RF RADIATED TEST)

I/O Cable List						
Cable No	Port	# of identical	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	2	US 115V	Un-shielded	2m	NA
2	DC	1	DC	Un-shielded	1m	NA
3	Jack	1	Earphone	Un-shielded	0.5m	NA
4	RF In/Out	1	Horn	Un-shielded	2m	NA

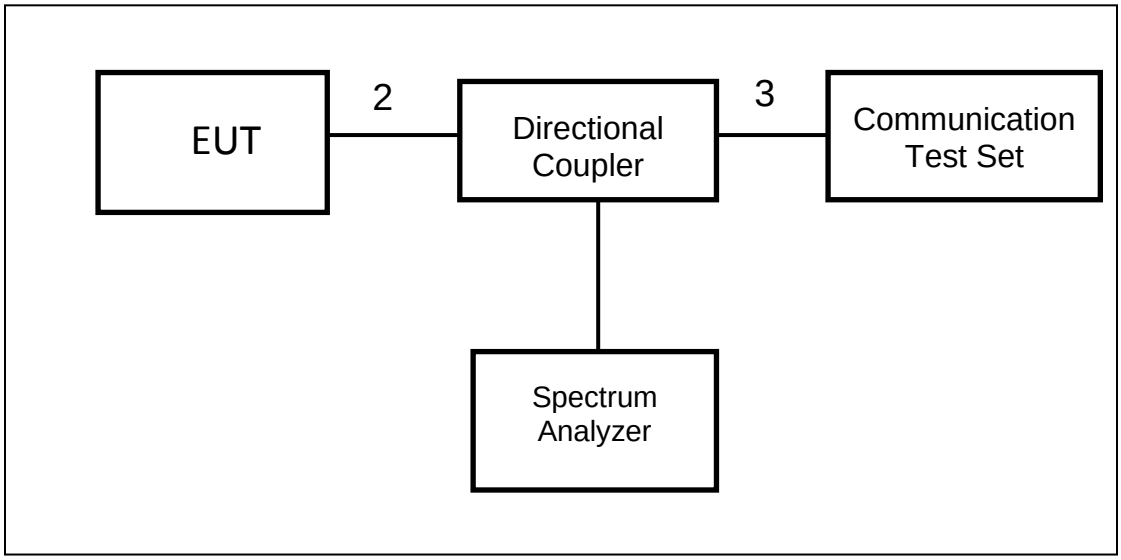
SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	Apple	A1401	C4H2346008BF4RF2Q	DoC
DC Power Supply	Xantrex	XHR-60-18	27519	NA

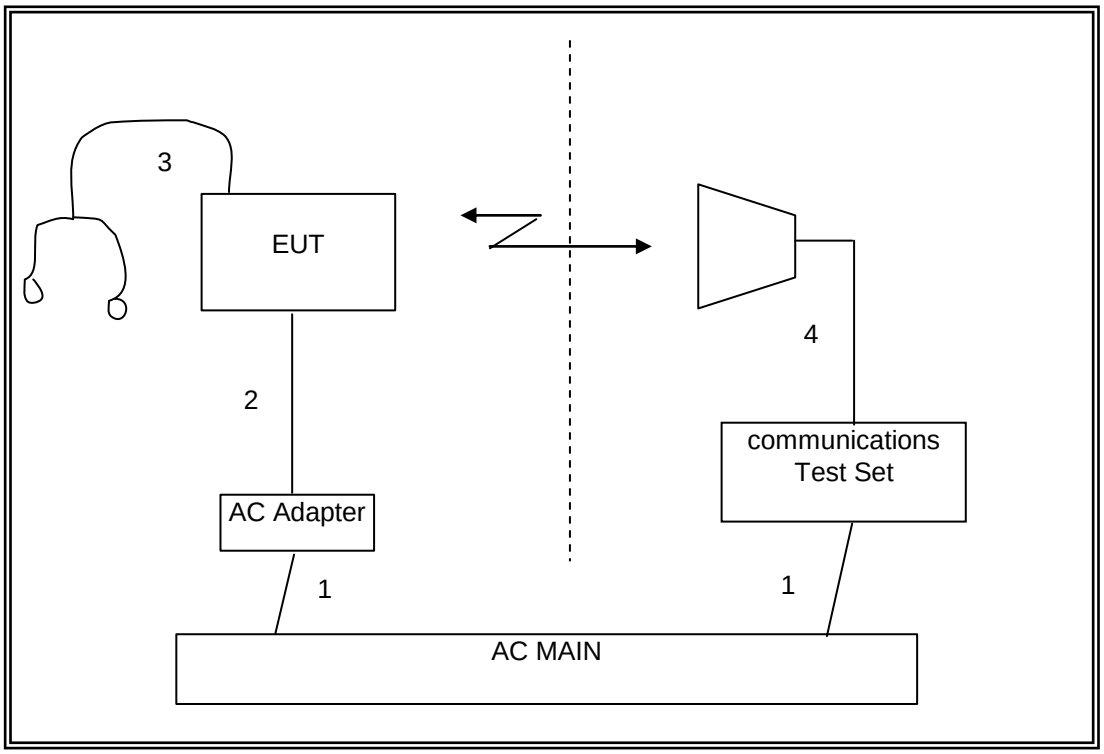
TEST SETUP

The EUT is a stand-alone device. The Communication test set exercised the EUT.

SETUP DIAGRAM FOR RF CONDUCTED TESTS



SETUP DIAGRAM FOR RF RADIATED TESTS



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Asset**	**Cal Due**
Antenna, Horn, 18 GHz	EMCO	3115	C00872	09/20/13
Antenna, Horn, 18 GHz	EMCO	3115	C01218/100061	09/20/13
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	02/07/13
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	11/11/12
Communication Test Set	R & S	CMU 200	None	06/06/13
Wideband Communication Test Set	R & S	CMW 500	None	12/16/12
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01159	04/09/13
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00885	11/11/12
Highpass Filter, 1.5 GHz	Micro-Tronics	HPM13193	N02689`	CNR
Highpass Filter, 2.7 GHz	Micro-Tronics	HPM13194	N02687	CNR
Temperature / Humidity Chamber	Thermotron	SE 600-10-10	C00930	10/20/12
Directional Coupler	Krytar	158010	None	CNR
Vector signal generator, 6 GHz	Agilent / HP	E4438C	None	07/06/13
Antenna, Tuned Dipole 400~1000 MHz	ETS	3121C DB4	C00993	07/16/13

7. RF POWER OUTPUT VERIFICATION

7.1. GSM

TEST PROCEDURE

The transmitter output was connected to the input terminal of Directional Coupler via calibrated coaxial cable. The output coupling terminal of the Directional Coupler was directly connected to a spectrum analyzer while the output through terminal connected to the communication test set via calibrated coaxial cable.

The output power was measured with the spectrum analyzer at the low, middle and high channel in each band.

- Set the spectrum analyzer span wide enough or greater than the modulated signal BW.
- Set a spectrum analyzer at peak detection mode with VBW ≥ RBW.≥ 26dB BW, typically 3MHz.
- Set a marker to point the corresponding peak value.

PROCEDURE USED TO ESTABLISH TEST SIGNAL

GPRS/EGPRS

Function: Menu select > GSM Mobile Station > GSM 850/900/1800/1900

Press Connection control to choose the different menus

Press RESET > choose all to reset all settings

Connection Press Signal Off to turn off the signal and change settings

Network Support > GSM+GPRS or GSM+EGPRS

Main Service > Packet Data

Service selection > Test Mode A – Auto Slot Config. off

MS Signal Press Slot Config bottom on the right twice to select and change the number of time slots and power setting

> Slot configuration > Uplink/Gamma

> 33 dBm for GPRS 850/900

> 27 dBm for EGPRS 850/900

> 30 dBm for GPRS1800/1900

> 26 dBm for EGPRS1800/1900

BS Signal Enter the same channel number for TCH channel (test channel) and BCCH channel

Frequency Offset > + 0 Hz

Mode > BCCH and TCH

BCCH Level > -85 dBm (May need to adjust if link is not stable)

BCCH Channel > choose desire test channel [Enter the same channel number for TCH channel (test channel) and BCCH channel]

Channel Type > Off

P0> 4 dB

Slot Config > Unchanged (if already set under MS Signal)

TCH > choose desired test channel

Hopping > Off

Main Timeslot > 3 (Default)

Network Coding Scheme > CS4 (GPRS) and MCS9 (EGPRS)

Bit Stream > 2E9-1PSR Bit Pattern

AF/RF Enter appropriate offsets for Ext. Att. Output and Ext. Att. Input

Connection Press Signal On to turn on the signal and change settings

RESULTS

GPRS/EGPRS

Mode	Ch.	f (MHz)	1 time slots		2 time slots	
			Peak	Average	Peak	Average
GPRS	128	824.2	**33.60**	33.45	32.70	32.20
	190	836.6	33.60	33.40	32.70	32.20
	251	848.8	33.30	33.20	32.65	32.15
EGPRS	128	824.2	31.85	28.90	31.75	28.80
	190	836.6	**31.90**	28.90	31.80	28.85
	251	848.8	31.80	28.85	31.70	28.80

	Ch.	f (MHz)	1 time slots		2 time slots	
			Peak	Average	Peak	Average
GPRS	512	1850.2	**30.70**	30.50	29.30	29.15
	661	1880.0	30.60	30.40	29.30	29.20
	810	1909.8	30.70	30.50	29.30	29.20
EGPRS	512	1850.2	**30.50**	27.80	30.45	27.75
	661	1880.0	30.50	27.80	30.45	27.80
	810	1909.8	30.40	27.78	30.40	27.70

7.2. UMTS MODE

TEST PROCEDURE

The transmitter output was connected to the input terminal of Directional Coupler via calibrated coaxial cable. The output coupling terminal of the Directional Coupler was directly connected to a spectrum analyzer while the output through terminal connected to the communication test set via calibrated coaxial cable.

The output power was measured with the spectrum analyzer at the low, middle and high channel in each band.

- Set the spectrum analyzer span wide enough or greater than the modulated signal BW.
- Set a spectrum analyzer at peak detection mode with VBW ≥ RBW.≥ 26dB BW, typically 5MHz.
- Set a marker to point the corresponding peak value.

7.2.1. REL99

TEST PROCEDURE

The following summary of these settings are illustrated below:

	Mode	Rel99
	Subtest	-
WCDMA General Settings	Loopback Mode	Test Mode 1
	Rel99 RMC	12.2kbps RMC
	HSDPA FRC	Not Applicable
	HSUPA Test	Not Applicable
	Power Control Algorithm	Algorithm2
	βc	Not Applicable
	βd	Not Applicable
	βec	Not Applicable
	βc/βd	8/15
	βhs	Not Applicable
	βed	Not Applicable

RESULTS

WCDMA REL99

Band	UL Ch	DL Ch	Frequency	Conducted output power (dBm)	
				Peak	Average
WCDMA 850	4132	4357	826.4	27.25	24.40
	4180	4405	836.0	27.35	**24.40**
	4230	4455	846.0	27.15	24.36

Band	UL Ch	DL Ch	Frequency	Conducted output power (dBm)	
				Peak	Average
WCDMA 1900	9262	9662	1852.4	**26.10**	22.90
	9400	9800	1880.0	26.05	22.90
	9538	9938	1907.6	25.98	22.88

7.2.2. HSDPA REL 5

The following 4 Sub-tests were completed according to Release 6 procedures in section 5.2 of 3GPP TS34.121.

Summary of settings are illustrated below:

	Mode	Rel5 HSDPA			
	Subtest	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	Power Control Algorithm	Algorithm 2			
	βc	2/15	12/15	15/15	15/15
	βd	15/15	15/15	8/15	4/15
	Bd (SF)	64			
	βc/βd	2/15	12/15	15/8	15/4
	βhs	4/15	24/15	30/15	30/15
	MPR (dB)	0	0	0.5	0.5
HSDPA Specific Settings	D_{ACK}	8			
	D_{NAK}	8			
	DCQI	8			
	Ack-Nack repetition factor	3			
	CQI Feedback (Table 5.2B.4)	4ms			
	CQI Repetition Factor (Table 5.2B.4)	2			
	Ahs =βhs/βc	30/15			

Result

Band	Subtest	UL Ch	DL Ch	Frequency	Conducted output power (dBm)	Conducted output power (dBm)
					Peak	Average
WCDMA850 (Band V)	1	4132	4357	826.4	27.00	23.50
		4180	4405	836.0	26.82	23.48
		4230	4455	846.0	27.10	23.50
	2*	4132	4357	826.4	27.60	23.50
		4180	4405	836.0	27.17	23.40
		4230	4455	846.0	27.80	**23.60**
	3	4132	4357	826.4	27.40	23.00
		4180	4405	836.0	27.28	22.90
		4230	4455	846.0	27.35	23.00
	4	4132	4357	826.4	27.40	23.00
		4180	4405	836.0	26.98	22.90
		4230	4455	846.0	27.60	23.10
WCDMA1900 (Band II)	1	9262	9662	1852.4	26.25	22.90
		9400	9800	1880.0	26.22	22.80
		9538	9938	1907.6	26.26	22.80
	2*	9262	9662	1852.4	26.90	22.80
		9400	9800	1880.0	**27.00**	22.90
		9538	9938	1907.6	26.80	22.80
	3	9262	9662	1852.4	26.93	22.50
		9400	9800	1880.0	26.70	22.45
		9538	9938	1907.6	27.00	22.50
	4	9262	9662	1852.4	26.62	22.50
		9400	9800	1880.0	26.70	22.45
		9538	9938	1907.6	26.80	22.50

Note 1: Asterisk (*) represents the worst case

Note 2: Maximum output power levels that are possible for all subtests reported.

7.2.3. HSPA REL 6 (HSDPA & HSUPA)

TEST PROCEDURE

The following summary of these settings are illustrated below:

	Mode	Rel6 HSUPA	Rel6 HSUPA	Rel6 HSUPA	Rel6 HSUPA	Rel6 HSUPA
	Subtest	1	2	3	4	5
WCDMA General Settings	Loopback Mode	Test Mode 1				
	Rel99 RMC	12.2kbps RMC				
	HSDPA FRC	H-Set1				
	HSUPA Test	HSUPA Loopback				
	Power Control Algorithm	Algorithm2				
	βc	11/15	6/15	15/15	2/15	15/15
	βd	15/15	15/15	9/15	15/15	0
	βec	209/225	12/15	30/15	2/15	5/15
	βc/βd	11/15	6/15	15/9	2/15	-
	βhs	22/15	12/15	30/15	4/15	5/15
	βed	1309/225	94/75	47/15 47/15	56/75	47/15
HSDPA Specific Settings	DACK	8				
	DNAK	8				
	DCQI	8				
	Ack-Nack repetition factor	3				
	CQI Feedback (Table 5.2B.4)	4ms				
	CQI Repetition Factor (Table 5.2B.4)	2				
	Ahs = βhs/βc	30/15				
HSUPA Specific Settings	D E-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	12
	ETFCI (from 34.121 Table C.11.1.3)	75	67	92	71	67
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E_TFCIs	E-TFCI 11 E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO 23 E-TFCI 75 E-TFCI PO 26 E-TFCI 81 E-TFCI PO 27		E-TFCI 11 E-TFCI PO 4 E-TFCI 92 E-TFCI PO 18	E-TFCI 11 E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO 23 E-TFCI 75 E-TFCI PO 26 E-TFCI 81 E-TFCI PO 27	

RESULTS

Band	Subtest	UL Ch	DL Ch	Frequency	Conducted output power (dBm)	
					Peak	Average
WCDMA850 (Band V)	1*	4132	4357	826.4	28.15	**23.65**
		4180	4405	836.0	27.00	23.45
		4230	4455	846.0	27.10	23.40
	2	4132	4357	826.4	27.70	21.75
		4180	4405	836.0	27.55	21.80
		4230	4455	846.0	27.85	22.00
	3	4132	4357	826.4	27.85	22.75
		4180	4405	836.0	27.83	22.70
		4230	4455	846.0	28.00	22.80
	4	4132	4357	826.4	27.80	21.80
		4180	4405	836.0	27.70	21.80
		4230	4455	846.0	27.68	21.75
	5	4132	4357	826.4	27.33	23.50
		4180	4405	836.0	26.89	23.30
		4230	4455	846.0	27.47	23.50
WCDMA1900 (Band II)	1*	9262	9662	1852.4	**27.47**	22.80
		9400	9800	1880.0	27.35	22.75
		9538	9938	1907.6	27.40	22.70
	2	9262	9662	1852.4	26.58	20.70
		9400	9800	1880.0	26.40	20.75
		9538	9938	1907.6	26.47	20.70
	3	9262	9662	1852.4	27.29	22.00
		9400	9800	1880.0	27.30	22.00
		9538	9938	1907.6	27.32	21.90
	4	9262	9662	1852.4	26.57	20.70
		9400	9800	1880.0	26.40	20.80
		9538	9938	1907.6	26.50	20.80
	5	9262	9662	1852.4	26.60	22.80
		9400	9800	1880.0	26.60	22.70
		9538	9938	1907.6	26.52	22.70

Note 1: Asterisk (*) represents the worst case

Note 2: Maximum output power levels that are possible for all subtests reported.

7.2.4. DUAL CARRIER HSDPA

DC-HSDPA (Rel 8, CAT 24)

The following tests were completed according to procedures in section 7.3.13 of 3GPP TS34.108 v9.5.0. A summary of these settings are illustrated below:

Downlink Physical Channels are set as per 3GPP TS34.121-1 v9.0.0 E.5.0

Table E.5.0: Levels for HSDPA connection setup

Parameter During Connection setup	Unit	Value
P-CPICH_Ec/Ior	dB	-10
P-CCPCH and SCH_Ec/Ior	dB	-12
PICH _Ec/Ior	dB	-15
HS-PDSCH	dB	off
HS-SCCH_1	dB	off
DPCH_Ec/Ior	dB	-5
OCNS_Ec/Ior	dB	-3.1

Call is set up as per 3GPP TS34.108 v9.5.0 sub clause 7.3.13

The configurations of the fixed reference channels for HSDPA RF tests are described in 3GPP TS 34.121, annex C for FDD and 3GPP TS 34.122.

Table C.8.1.12: Fixed Reference Channel H-Set 12

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Processes	6
Information Bit Payload (N_{INF})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK
Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table.		
Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.		

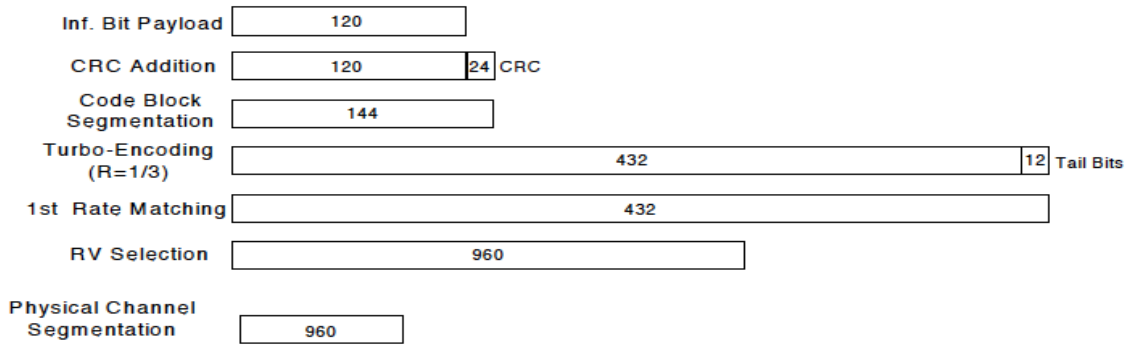


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

The following 4 Sub-tests for HSDPA were completed according to Release 6 procedures in section 5.2 of 3GPP TS34.121. A summary of subtest settings are illustrated below:

	Mode	Rel6 HSDPA	Rel6 HSDPA	Rel6 HSDPA	Rel6 HSDPA
	Subtest	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	Power Control Algorithm	Algorithm2			
	βc	2/15	12/15	15/15	15/15
	βd	15/15	15/15	8/15	4/15
	βd (SF)	64			
	βc/βd	2/15	12/15	15/8	15/4
	βhs	4/15	24/15	30/15	30/15
	MPR	0	0	0.5	0.5
HSDPA Specific Settings	DACK	8			
	DNAK	8			
	DCQI	8			
	Ack-Nack Repetition factor	3			
	CQI Feedback	4ms			
	CQI Repetition Factor	2			
	Ahs = βhs/ βc	30/15			

RESULT

Band	Subtest	UL Ch	DL Ch	Frequency	Conducted output power (dBm)	
					Peak	Average
WCDMA850 (Band V)	1*	4132	4357	826.4	26.70	23.35
		4180	4405	836.0	26.70	23.30
		4230	4455	846.0	26.55	23.25
	2	4132	4357	826.4	26.70	23.30
		4180	4405	836.0	**26.75**	23.30
		4230	4455	846.0	26.72	23.35
	3	4132	4357	826.4	26.55	22.80
		4180	4405	836.0	26.56	22.80
		4230	4455	846.0	26.50	22.80
	4	4132	4357	826.4	26.60	22.85
		4180	4405	836.0	26.70	22.85
		4230	4455	846.0	26.65	22.75
WCDMA1900 (Band II)	1*	9262	9662	1852.4	26.38	22.90
		9400	9800	1880.0	26.40	22.90
		9538	9938	1907.6	26.45	22.90
	2	9262	9662	1852.4	26.46	22.90
		9400	9800	1880.0	**26.66**	23.00
		9538	9938	1907.6	26.65	22.90
	3	9262	9662	1852.4	26.46	22.65
		9400	9800	1880.0	26.30	22.65
		9538	9938	1907.6	26.38	22.70
	4	9262	9662	1852.4	26.40	22.60
		9400	9800	1880.0	26.45	22.65
		9538	9938	1907.6	26.65	22.60

Note 1: Asterisk (*) represents the worst case

Note 2: Maximum output power levels that are possible for all subtests reported.

7.3. LTE BAND 2

Output power for LTE Band 2 (1.4MHz)

Freq. (MHz)	UL Channel	Modulation	BW (MHz)	RB Size	RB Offset	Max Peak Power (dBm)	Average
1850.7	18607	QPSK	1.4	1	0	27.75	22.70
				1	5	27.70	22.70
				3	2	27.65	22.50
				6	0	27.20	21.70
		16-QAM		1	0	27.80	21.50
				1	5	27.05	21.50
				3	2	28.30	22.10
				6	0	28.15	20.80
1880.0	18900	QPSK		1	0	27.80	23.00
				1	5	27.70	22.90
				3	2	27.75	22.80
				6	0	**27.80**	21.80
		16-QAM		1	0	28.10	21.70
				1	5	28.15	21.60
				3	2	27.90	22.15
				6	0	**28.60**	21.00
1909.3	19193	QPSK		1	0	27.52	22.97
				1	5	27.50	22.90
				3	2	27.43	22.69
				6	0	27.30	21.77
		16-QAM		1	0	27.61	21.55
				1	5	27.45	21.57
				3	2	27.43	22.00
				6	0	28.24	20.99

Output power for LTE Band 2 (3 MHz)

Freq. (MHz)	UL Channel	Modulation	BW (MHz)	RB Size	RB Offset	Max Peak Power (dBm)	Average
1851.5	18615	QPSK	3	1	0	27.05	22.60
				1	14	27.13	22.70
				8	4	27.60	21.80
				15	0	27.45	21.75
		16-QAM		1	0	27.43	21.45
				1	14	27.45	21.45
				8	4	27.80	21.05
				15	0	27.36	20.90
1880.0	18900	QPSK		1	0	27.25	22.80
				1	14	27.04	22.70
				8	4	27.70	22.00
				15	0	27.80	21.95
		16-QAM		1	0	27.50	21.50
				1	14	27.53	21.60
				8	4	27.80	21.29
				15	0	**27.80**	21.06
1908.5	19185	QPSK		1	0	27.00	22.60
				1	14	27.00	22.70
				8	4	27.57	21.80
				15	0	**28.02**	21.78
		16-QAM		1	0	27.32	21.83
				1	14	27.06	21.50
				8	4	27.58	21.15
				15	0	27.20	20.95

Output power for LTE Band 2 (5 MHz)

Freq. (MHz)	UL Channel	Modulation	BW (MHz)	RB Size	RB Offset	Max Peak Power (dBm)	Average
1852.5	18625	QPSK	5	1	0	27.35	22.70
				1	24	27.36	22.70
				12	6	27.40	21.80
				25	0	27.80	21.82
		16-QAM		1	0	27.60	22.00
				1	24	27.50	21.90
				12	6	27.80	20.70
				25	0	27.90	20.84
1880.0	18900	QPSK		1	0	27.60	22.98
				1	24	27.53	22.70
				12	6	27.54	22.00
				25	0	**28.00**	22.00
		16-QAM		1	0	27.70	22.00
				1	24	27.70	21.90
				12	6	27.90	20.90
				25	0	**27.90**	21.00
1907.5	19175	QPSK		1	0	27.40	22.88
				1	24	27.30	22.88
				12	6	27.30	21.90
				25	0	27.60	21.70
		16-QAM		1	0	27.60	22.00
				1	24	27.40	22.00
				12	6	27.50	20.69
				25	0	27.80	20.85

Output power for LTE Band 2 (10 MHz)

Freq. (MHz)	UL Channel	Modulation	BW (MHz)	RB Size	RB Offset	Max Peak Power (dBm)	Average
1855	18650	QPSK	10	1	0	27.11	22.67
				1	49	27.24	22.81
				25	12	27.81	21.95
				50	0	28.19	21.75
		16-QAM		1	0	27.53	21.80
				1	49	27.68	21.75
				25	12	27.84	20.90
				50	0	28.07	20.90
1880.0	18900	QPSK		1	0	27.78	22.85
				1	49	27.90	22.60
				25	12	27.96	22.05
				50	0	**28.35**	21.95
		16-QAM		1	0	27.67	21.77
				1	49	27.61	21.80
				25	12	28.01	21.10
				50	0	**28.18**	21.00
1905	19150	QPSK		1	0	27.40	22.95
				1	49	27.05	22.78
				25	12	27.81	22.06
				50	0	28.18	21.93
		16-QAM		1	0	27.77	21.79
				1	49	27.49	21.80
				25	12	27.85	21.00
				50	0	28.10	21.00

Output power for LTE Band 2 (15 MHz)

Freq. (MHz)	UL Channel	Modulation	BW (MHz)	RB Size	RB Offset	Max Peak Power (dBm)	Average
1857.5	18675	QPSK	15	1	0	27.79	22.68
				1	74	27.83	22.75
				36	18	28.15	22.10
				75	0	28.35	21.96
		16-QAM		1	0	27.81	21.76
				1	74	27.83	21.80
				36	18	27.92	21.06
				75	0	28.15	20.99
1880.0	18900	QPSK		1	0	27.74	22.85
				1	74	27.63	22.65
				36	18	28.20	21.96
				75	0	**28.49**	21.94
		16-QAM		1	0	27.91	21.99
				1	74	27.80	21.75
				36	18	28.05	21.00
				75	0	**28.50**	20.99
1902.5	19125	QPSK		1	0	28.10	22.90
				1	74	27.59	22.79
				36	18	28.24	22.15
				75	0	28.39	22.10
		16-QAM		1	0	28.10	22.06
				1	74	27.63	21.79
				36	18	27.92	21.10
				75	0	28.39	21.10

Output power for LTE Band 2 (20 MHz)

Freq. (MHz)	UL Channel	Modulation	BW (MHz)	RB Size	RB Offset	Max Peak Power (dBm)	Average
1860	18700	QPSK	20	1	0	27.67	22.85
				1	99	27.65	22.85
				50	24	28.28	22.00
				100	0	**28.46**	22.00
		16-QAM		1	0	28.05	21.95
				1	99	28.00	22.00
				50	24	28.05	21.00
				100	0	28.15	21.10
1880.0	18900	QPSK		1	0	28.07	22.90
				1	99	27.45	22.75
				50	24	28.30	22.10
				100	0	28.45	21.90
		16-QAM		1	0	27.96	22.06
				1	99	27.97	21.93
				50	24	28.15	20.94
				100	0	**28.28**	21.10
1900	19100	QPSK		1	0	27.75	22.80
				1	99	27.46	22.80
				50	24	28.25	22.05
				100	0	28.43	21.94
		16-QAM		1	0	27.91	21.95
				1	99	27.59	21.95
				50	24	28.24	21.15
				100	0	28.27	21.00

7.4. LTE BAND 4

Output power for LTE Band 4 (1.4MHz)

Freq. (MHz)	UL Channel	Modulation	BW (MHz)	RB Size	RB Offset	Peak (dBm)	Average (dBm)
1710.7	19957	QPSK	1.4	1	0	28.00	23.00
				1	5	28.00	23.00
				3	2	27.95	22.99
				6	0	27.95	21.80
		16-QAM		1	0	28.20	21.90
				1	5	28.01	21.85
				3	2	27.80	22.30
				6	0	**28.50**	21.25
1732.5	20175	QPSK		1	0	27.90	22.90
				1	5	27.85	22.92
				3	2	27.90	22.76
				6	0	**28.00**	21.74
		16-QAM		1	0	28.30	21.65
				1	5	28.00	21.70
				3	2	28.00	22.10
				6	0	28.50	21.00
1754.3	20393	QPSK		1	0	27.90	23.00
				1	5	28.00	23.00
				3	2	28.00	22.94
				6	0	27.80	21.96
		16-QAM		1	0	28.20	21.88
				1	5	28.10	21.90
				3	2	28.05	22.30
				6	0	28.10	21.20

Output power for LTE Band 4 (3 MHz)

Freq. (MHz)	UL Channel	Modulation	BW (MHz)	RB Size	RB Offset	Peak (dBm)	Average (dBm)
1711.5	19965	QPSK	3	1	0	27.50	23.00
				1	14	27.50	23.00
				8	4	27.80	22.20
				15	0	27.60	22.20
		16-QAM		1	0	27.80	21.95
				1	14	27.60	21.90
				8	4	27.90	21.10
				15	0	27.60	21.26
1732.5	20175	QPSK		1	0	27.65	22.90
				1	14	27.50	22.85
				8	4	28.10	22.14
				15	0	27.90	22.10
		16-QAM		1	0	27.90	21.80
				1	14	27.80	21.80
				8	4	28.00	21.10
				15	0	27.70	21.00
1753.5	20385	QPSK		1	0	27.70	23.00
				1	14	27.65	22.90
				8	4	28.10	22.15
				15	0	**28.60**	22.15
		16-QAM		1	0	27.95	21.90
				1	14	27.90	22.00
				8	4	28.00	21.10
				15	0	**28.00**	21.20

Output power for LTE Band 4 (5 MHz)

Freq. (MHz)	UL Channel	Modulation	BW (MHz)	RB Size	RB Offset	Peak (dBm)	Average (dBm)
1712.5	19975	QPSK	5	1	0	27.80	23.00
				1	24	27.85	23.00
				12	6	27.50	22.19
				25	0	**28.10**	22.00
		16-QAM		1	0	27.60	22.00
				1	24	27.67	22.00
				12	6	27.50	21.00
				25	0	27.90	21.00
1732.5	20175	QPSK		1	0	28.10	22.95
				1	24	27.97	23.00
				12	6	27.80	22.00
				25	0	28.02	21.89
		16-QAM		1	0	28.00	22.12
				1	24	27.89	22.00
				12	6	27.85	20.70
				25	0	28.10	20.85
1752.5	20375	QPSK		1	0	28.00	23.00
				1	24	27.97	23.00
				12	6	27.80	22.20
				25	0	27.85	22.20
		16-QAM		1	0	27.90	22.00
				1	24	28.00	22.10
				12	6	27.90	21.00
				25	0	**28.20**	21.10

Output power for LTE Band 4 (10 MHz)

Freq. (MHz)	UL Channel	Modulation	BW (MHz)	RB Size	RB Offset	Peak Power (dBm)	Average (dBm)
1715	20000	QPSK	10	1	0	27.41	23.00
				1	49	27.87	22.98
				25	12	28.00	22.10
				50	0	**28.75**	22.10
		16-QAM		1	0	27.60	21.90
				1	49	28.05	21.95
				25	12	28.06	21.30
				50	0	**28.58**	21.10
1732.5	20175	QPSK		1	0	27.63	22.95
				1	49	27.56	22.95
				25	12	28.26	22.20
				50	0	28.45	22.10
		16-QAM		1	0	28.19	21.70
				1	49	27.76	21.78
				25	12	27.98	21.10
				50	0	28.38	21.20
1750	20350	QPSK		1	0	27.60	22.96
				1	49	27.65	22.90
				25	12	27.82	22.28
				50	0	28.18	22.10
		16-QAM		1	0	27.67	21.80
				1	49	27.72	21.90
				25	12	27.70	21.30
				50	0	28.16	21.20

Output power for LTE Band 4 (15 MHz)

Freq. (MHz)	UL Channel	Modulation	BW (MHz)	RB Size	RB Offset	Peak Power (dBm)	Average (dBm)
1717.5	20025	QPSK	15	1	0	27.85	23.00
				1	74	28.10	22.90
				36	18	28.10	22.00
				75	0	28.30	22.10
		16-QAM		1	0	27.70	22.00
				1	74	28.30	21.96
				36	18	27.84	21.00
				75	0	28.00	21.00
1732.5	20175	QPSK		1	0	28.25	22.98
				1	74	22.83	22.95
				36	18	27.87	21.90
				75	0	**28.64**	22.07
		16-QAM		1	0	28.27	22.16
				1	74	27.80	22.10
				36	18	27.95	21.10
				75	0	**28.25**	21.20
1747.5	20325	QPSK		1	0	27.90	23.00
				1	74	28.00	22.95
				36	18	27.80	22.20
				75	0	28.30	22.25
		16-QAM		1	0	27.80	22.00
				1	74	27.72	22.00
				36	18	27.80	21.10
				75	0	28.20	21.15

Output power for LTE Band 4 (20 MHz)

Freq. (MHz)	UL Channel	Modulation	BW (MHz)	RB Size	RB Offset	Peak Power (dBm)	Average (dBm)
1720	20050	QPSK	20	1	0	27.70	23.00
				1	99	28.00	22.75
				50	24	28.40	22.00
				100	0	28.40	22.00
		16-QAM		1	0	28.10	22.10
				1	99	28.20	21.95
				50	24	28.05	20.96
				100	0	28.25	21.20
1732.5	20175	QPSK		1	0	28.30	23.00
				1	99	27.90	22.98
				50	24	28.30	22.00
				100	0	**28.60**	22.10
		16-QAM		1	0	28.60	22.00
				1	99	28.20	22.00
				50	24	28.00	21.10
				100	0	**28.30**	21.20
1745	20300	QPSK		1	0	28.00	23.00
				1	99	28.00	22.95
				50	24	28.10	22.00
				100	0	28.40	22.00
		16-QAM		1	0	28.40	22.20
				1	99	28.45	22.20
				50	24	27.95	21.10
				100	0	28.00	21.20

7.5. LTE BAND 5

Output power for LTE Band 5 (1.4MHz)

Freq. (MHz)	UL Channel	Modulation	BW (MHz)	RB Size	RB Offset	Peak Power (dBm)	Average
824.7	20407	QPSK	1.4	1	0	28.89	**23.95**
				1	5	28.90	23.95
				3	2	29.50	23.80
				6	0	28.80	22.70
		16-QAM		1	0	28.69	**22.90**
				1	5	28.76	22.65
				3	2	29.51	22.70
				6	0	29.58	22.00
836.5	20525	QPSK		1	0	28.74	23.90
				1	5	28.78	23.90
				3	2	29.22	23.75
				6	0	28.73	22.76
		16-QAM		1	0	28.45	22.60
				1	5	28.10	22.70
				3	2	29.25	22.75
				6	0	29.58	22.00
848.3	20643	QPSK		1	0	28.67	23.94
				1	5	28.87	23.90
				3	2	28.97	23.68
				6	0	28.74	22.70
		16-QAM		1	0	28.24	22.80
				1	5	28.96	22.50
				3	2	29.27	22.78
				6	0	29.39	21.96

Output power for LTE Band 5 (3 MHz)

Freq. (MHz)	UL Channel	Modulation	BW (MHz)	RB Size	RB Offset	Max Peak Power (dBm)	Average
825.5	20415	QPSK	3	1	0	28.65	23.76
				1	14	28.29	23.75
				8	4	28.86	22.86
				15	0	28.76	22.90
		16-QAM		1	0	28.58	**22.87**
				1	14	28.60	22.60
				8	4	29.30	22.28
				15	0	28.86	22.00
836.5	20525	QPSK		1	0	28.54	23.80
				1	14	28.66	23.80
				8	4	28.77	22.83
				15	0	28.94	22.80
		16-QAM		1	0	28.94	22.84
				1	14	29.00	22.60
				8	4	29.15	22.20
				15	0	28.54	22.00
847.5	20635	QPSK		1	0	28.32	**23.82**
				1	14	28.36	23.75
				8	4	28.76	22.90
				15	0	28.77	22.90
		16-QAM		1	0	28.79	22.76
				1	14	28.77	22.65
				8	4	29.15	22.24
				15	0	28.76	22.19

Output power for LTE Band 5 (5 MHz)

Freq. (MHz)	UL Channel	Modulation	BW (MHz)	RB Size	RB Offset	Peak Power (dBm)	Average
826.5	20425	QPSK	5	1	0	29.13	**23.96**
				1	24	28.95	23.91
				12	6	28.90	22.90
				25	0	29.00	22.94
		16-QAM		1	0	29.30	22.90
				1	24	28.94	22.90
				12	6	29.08	21.74
				25	0	29.20	21.90
836.5	20525	QPSK		1	0	28.91	23.95
				1	24	29.00	23.95
				12	6	28.81	22.90
				25	0	28.56	22.89
		16-QAM		1	0	28.97	**22.95**
				1	24	29.00	22.94
				12	6	29.05	21.77
				25	0	29.00	21.75
846.5	20625	QPSK		1	0	29.06	23.95
				1	24	28.55	23.90
				12	6	28.87	22.89
				25	0	29.00	22.92
		16-QAM		1	0	29.09	22.95
				1	24	28.86	22.93
				12	6	29.08	21.80
				25	0	28.91	21.80

Output power for LTE Band 5 (10 MHz)

Freq. (MHz)	UL Channel	Modulation	BW (MHz)	RB Size	RB Offset	Max Peak Power (dBm)	Average
829	20450	QPSK	10	1	0	28.70	23.73
				1	49	28.40	23.72
				25	12	29.20	23.00
				50	0	28.95	22.90
		16-QAM		1	0	29.20	22.80
				1	49	28.90	22.70
				25	12	29.00	22.00
				50	0	29.20	22.00
836.5	20525	QPSK		1	0	28.50	**23.90**
				1	49	28.60	23.70
				25	12	28.95	22.80
				50	0	29.20	22.80
		16-QAM		1	0	29.20	**23.00**
				1	49	29.00	22.70
				25	12	29.30	21.90
				50	0	29.30	22.10
844	20600	QPSK		1	0	28.67	23.90
				1	49	28.30	23.60
				25	12	29.00	22.90
				50	0	29.20	22.70
		16-QAM		1	0	28.90	23.00
				1	49	28.70	22.70
				25	12	29.30	22.00
				50	0	29.30	22.00

7.6. LTE BAND 17

5 MHz BANDWIDTH

Freq. (MHz)	UL Channel	Modulation	BW (MHz)	RB Size	RB Offset	Peak Power (dBm)	Average (dBm)
706.5	23755	QPSK	5	1	0	27.46	23.97
				1	24	27.56	23.97
				12	6	27.02	23.20
				25	0	28.19	23.00
		16-QAM		1	0	27.54	22.90
				1	24	27.69	22.85
				12	6	27.00	21.97
				25	0	28.10	22.09
710	23790	QPSK		1	0	27.56	**23.98**
				1	24	27.73	23.95
				12	6	27.54	23.22
				25	0	28.40	23.10
		16-QAM		1	0	27.54	**23.18**
				1	24	27.82	22.95
				12	6	27.83	22.00
				25	0	28.47	22.10
713.5	23825	QPSK		1	0	27.90	23.97
				1	24	27.30	23.98
				12	6	27.54	23.10
				25	0	28.29	23.10
		16-QAM		1	0	27.94	22.96
				1	24	27.39	22.96
				12	6	27.73	21.96
				25	0	28.05	22.10

10 MHz BANDWIDTH

Freq. (MHz)	UL Channel	Modulation	BW (MHz)	RB Size	RB Offset	Peak Power (dBm)	Average (dBm)
709.0	23780	QPSK	10	1	0	27.19	23.97
				1	49	27.57	23.95
				25	12	27.72	23.00
				50	0	28.55	23.00
		16-QAM		1	0	27.54	23.00
				1	49	28.00	23.00
				25	12	28.60	22.40
				50	0	28.70	22.40
710	23790	QPSK		1	0	27.13	23.95
				1	49	27.42	23.98
				25	12	27.70	23.00
				50	0	28.23	23.00
		16-QAM		1	0	27.37	22.85
				1	49	27.90	22.80
				25	12	27.78	22.40
				50	0	28.70	22.20
711.0	23800	QPSK		1	0	27.55	**24.00**
				1	49	27.19	23.75
				25	12	27.78	23.00
				50	0	28.05	23.00
		16-QAM		1	0	27.39	**23.00**
				1	49	27.36	23.00
				25	12	27.90	22.40
				50	0	28.60	22.39

8. CONDUCTED TEST RESULTS

8.1. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049
IC: RSS-132, 4.5; RSS-133, 6.5

LIMITS

For reporting purposes only

TEST PROCEDURE

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the low, middle and high channel in each band. The -26dB bandwidth was also measured and recorded.

MODES TESTED

- GPRS and EGPRS
- WCDMA, REL 99 and HSUPA
- LTE BAND 2
- LTE BAND 4
- LTE BAND 5
- LTE BAND 17

RESULTS

Band	Mode	Channel	f (MHz)	99% BW (KHz)	-26dB BW (KHz)
GSM	CELL, GPRS	128	824.20	254.7578	295.934
		190	836.60	254.7557	281.557
		251	848.80	251.5957	312.653
	PCS, GPRS	512	1852.4	246.2134	311.060
		661	1880.0	252.6678	308.772
		810	1909.8	250.1714	278.030

Band	Mode	Channel	f (MHz)	99% BW (KHz)	-26dB BW (KHz)
GSM	CELL, EGPRS	128	824.20	255.0482	290.904
		190	836.60	253.7863	310.887
		251	848.80	255.2948	303.356
	PCS, EGPRS	512	1852.4	253.5665	310.151
		661	1880.0	249.0884	300.901
		810	1909.8	257.2002	290.195

Band	Mode	Channel	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
WCDMA	CELL, REL 99	4357	826.4	4.1762	4.527
		4405	836.0	4.1634	4.591
		4455	846.0	4.1736	4.481
	CELL, HSUPA	4357	826.4	4.1833	4.589
		4405	836.0	4.1781	4.600
		4455	846.0	4.1961	4.544

Band	Mode	Channel	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
WCDMA	PCS, REL 99	9662	1852.4	4.1737	4.569
		9800	1880.0	4.1669	4.531
		9938	1907.6	4.1807	4.607
	PCS, HSUPA	9662	1852.4	4.1796	4.594
		9800	1880.0	4.1641	4.578
		9938	1907.6	4.1717	4.575

RESULTS

Band	Mode	RB/RB SIZE	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 2	1.4 MHz BAND QPSK	3/2	1850.7	0.5611119	0.753596
		6/0		1.0862	1.151
	1.4 MHz BAND 16QAM	3/2		0.5482025	0.704091
		6/0		1.0994	1.163
	1.4 MHz BAND QPSK	3/2	1880.0	0.5681984	0.889342
		6/0		1.0728	1.217
	1.4 MHz BAND 16QAM	3/2		0.5580114	0.758957
		6/0		1.0834	1.226
	1.4 MHz BAND QPSK	3/2	1909.3	0.5650818	0.764898
		6/0		1.0765	1.225
	1.4 MHz BAND 16QAM	3/2		0.5701551	0.845058
		6/0		1.0872	1.226
	3 MHz BAND QPSK	8/4	1851.5	1.4531	1.674
		15/0		2.6742	3.004
	3 MHz BAND 16QAM	8/4		1.4386	1.731
		15/0		2.6287	2.838
	3 MHz BAND QPSK	8/4	1880.0	1.4356	1.655
		15/0		2.6622	2.902
	3 MHz BAND 16QAM	8/4		1.4303	1.697
		15/0		2.6542	2.813
	3 MHz BAND QPSK	8/4	1908.5	1.4419	1.602
		15/0		2.6835	2.889
	3 MHz BAND 16QAM	8/4		1.4308	1.931
		15/0		2.6971	2.801
	5 MHz BAND QPSK	12/6	1852.5	2.1623	2.648
		25/0		4.4525	4.838
	5 MHz BAND 16QAM	12/6		2.1258	2.646
		25/0		4.4866	4.660
	5 MHz BAND QPSK	12/6	1880.0	2.1492	2.398
		25/0		4.4920	4.615
	5 MHz BAND 16QAM	12/6		2.1618	2.628
		25/0		4.4643	4.690
	5 MHz BAND QPSK	12/6	1907.5	2.1562	2.644
		25/0		4.4585	4.772
	5 MHz BAND 16QAM	12/6		2.1483	2.322
		25/0		4.4585	4.772

Band	Mode	RB/RB SIZE	f (MHz)	99% BW (kHz)	-26dB BW (kHz)
LTE BAND 2	10 MHz BAND QPSK	25/12	1855	4.4202	4.779
		50/0		8.9625	9.357
	10 MHz BAND 16QAM	25/12		4.4657	5.062
		50/0		8.9428	9.469
	10 MHz BAND QPSK	25/12	1880.0	4.4660	5.043
		50/0		8.9964	9.344
	10 MHz BAND 16QAM	25/12		4.5282	5.761
		50/0		8.9705	9.548
	10 MHz BAND QPSK	25/12	1905	4.4480	5.296
		50/0		8.9314	9.325
	10 MHz BAND 16QAM	25/12		4.4946	4.784
		50/0		8.9410	9.385
	15 MHz BAND QPSK	36/18	1857.5	6.4109	6.831
		75/0		13.3810	14.019
	15 MHz BAND 16QAM	36/18		6.4860	7.076
		75/0		13.3843	14.073
	15 MHz BAND QPSK	36/18	1880.0	6.4863	7.087
		75/0		13.3542	13.975
	15 MHz BAND 16QAM	36/18		6.4751	6.980
		75/0		13.3673	13.943
	15 MHz BAND QPSK	36/18	1902.5	6.3919	6.792
		75/0		13.2986	14.064
	15 MHz BAND 16QAM	36/18		6.4836	6.794
		75/0		13.4178	14.079
	20 MHz BAND QPSK	50/19	1860	8.9494	9.732
		100/0		17.9327	18.678
	20 MHz BAND 16QAM	50/19		8.9826	10.532
		100/0		17.8321	18.586
	20 MHz BAND QPSK	50/19	1880.0	8.9797	9.323
		100/0		17.8578	18.749
	20 MHz BAND 16QAM	50/19		8.9569	9.331
		100/0		17.8158	19.364
	20 MHz BAND QPSK	50/19	1900	8.9579	9.662
		100/0		17.8189	18.722
	20 MHz BAND 16QAM	50/19		8.9480	9.6770
		100/0		17.9141	18.868

LTE BAND 4

Band	Mode	RB/RB SIZE	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 4	1.4 MHz BAND QPSK	3/2	1710.7	0.5663737	0.715819
		6/0		1.0741	1.177
	1.4 MHz BAND 16QAM	3/2		0.5659346	0.804107
		6/0		1.0825	1.234
	1.4 MHz BAND QPSK	3/2	1732.5	0.5670903	0.858158
		6/0		1.0861	1.207
	1.4 MHz BAND 16QAM	3/2		0.5730297	0.852700
		6/0		1.0975	1.214
	1.4 MHz BAND QPSK	3/2	1754.3	0.5654523	0.857524
		6/0		1.0742	1.233
	1.4 MHz BAND 16QAM	3/2		0.5564357	0.711427
		6/0		1.0767	1.269
	3 MHz BAND QPSK	8/4	1711.5	1.4448	1.738
		15/0		2.6525	2.804
	3 MHz BAND 16QAM	8/4		1.4365	1.795
		15/0		2.6782	2.833
	3 MHz BAND QPSK	8/4	1732.5	1.4521	1.740
		15/0		2.6594	2.886
	3 MHz BAND 16QAM	8/4		1.4473	1.942
		15/0		2.6652	2.886
	3 MHz BAND QPSK	8/4	1753.5	1.4285	1.811
		15/0		2.6820	2.824
	3 MHz BAND 16QAM	8/4		1.4438	1.739
		15/0		2.6754	2.812
	5 MHz BAND QPSK	12/6	1712.5	2.1319	2.649
		25/0		4.4855	4.801
	5 MHz BAND 16QAM	12/6		2.1414	2.519
		25/0		4.4955	4.682
	5 MHz BAND QPSK	12/6	1732.5	2.1417	2.647
		25/0		4.4179	5.005
	5 MHz BAND 16QAM	12/6		2.1491	2.636
		25/0		4.4488	4.717
	5 MHz BAND QPSK	12/6	1752.5	2.1377	2.630
		25/0		4.4942	4.791
	5 MHz BAND 16QAM	12/6		2.1579	2.615
		25/0		4.5004	4.791

Band	Mode	RB/RB SIZE	f (MHz)	99% BW (kHz)	-26dB BW (kHz)
LTE BAND 4	10 MHz BAND QPSK	25/12	17150	4.4675	5.273
		50/0		8.9005	9.347
	10 MHz BAND 16QAM	25/12		4.4777	4.781
		50/0		8.8656	9.396
	10 MHz BAND QPSK	25/12	1732.50	4.4957	5.018
		50/0		8.9117	9.328
	10 MHz BAND 16QAM	25/12		4.4814	5.050
		50/0		8.9288	9.688
	10 MHz BAND QPSK	25/12	1750.00	4.4352	4.708
		50/0		8.9193	9.315
	10 MHz BAND 16QAM	25/12		4.4800	4.877
		50/0		8.8965	9.279
	15 MHz BAND QPSK	36/18	1717.50	6.4484	6.840
		75/0		13.2539	14.030
	15 MHz BAND 16QAM	36/18		6.4323	6.795
		75/0		13.3755	14.042
	15 MHz BAND QPSK	36/18	1732.50	6.4587	6.743
		75/0		13.4588	14.372
	15 MHz BAND 16QAM	36/18		6.3982	7.508
		75/0		13.4192	14.066
	15 MHz BAND QPSK	36/18	1747.50	6.3309	7.525
		75/0		13.4503	14.069
	15 MHz BAND 16QAM	36/18		6.3717	6.728
		75/0		13.3987	14.114
	20 MHz BAND QPSK	50/19	17200	8.8613	9.562
		100/0		17.7689	18.835
	20 MHz BAND 16QAM	50/19		9.0323	9.647
		100/0		17.8177	19.072
	20 MHz BAND QPSK	50/19	1732.50	8.9688	9.893
		100/0		17.8367	18.826
	20 MHz BAND 16QAM	50/19		9.0173	9.543
		100/0		17.9591	18.767
	20 MHz BAND QPSK	50/19	17450	8.9302	9.581
		100/0		17.8235	18.688
	20 MHz BAND 16QAM	50/19		8.9136	9.731
		100/0		17.7749	19.065

LTE Band 5

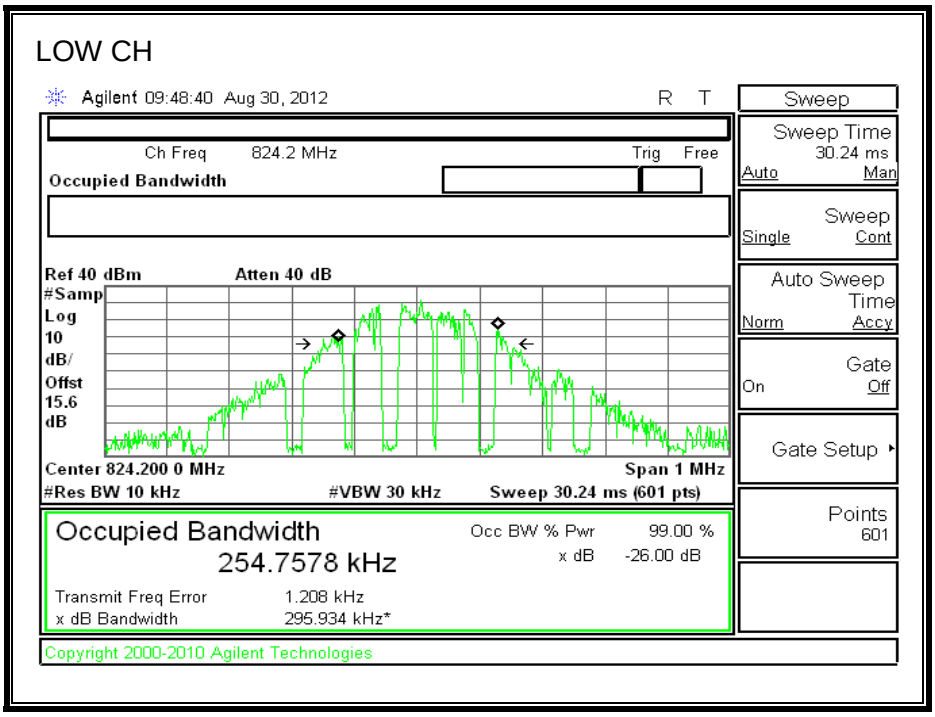
Band	Mode	RB/RB SIZE	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 5	1.4 MHz BAND QPSK	3/2	824.7	0.5730456	0.773659
		6/0		1.0881	1.224
	1.4 MHz BAND 16QAM	3/2		0.5608913	0.689262
		6/0		1.0845	1.223
	1.4 MHz BAND QPSK	3/2	836.5	0.5658735	0.826743
		6/0		1.0764	1.212
	1.4 MHz BAND 16QAM	3/2		0.5781615	0.753106
		6/0		1.0927	1.232
	1.4 MHz BAND QPSK	3/2	848.3	0.5572539	0.776485
		6/0		1.0871	1.214
	1.4 MHz BAND 16QAM	3/2		0.5593954	0.847808
		6/0		1.0956	1.290
	3 MHz BAND QPSK	8/4	825.5	1.4394	1.731
		15/0		2.6614	2.791
	3 MHz BAND 16QAM	8/4		1.4337	1.805
		15/0		2.6652	2.885
	3 MHz BAND QPSK	8/4	836.5	1.4353	1.729
		15/0		2.6808	2.877
	3 MHz BAND 16QAM	8/4		1.4397	1.708
		15/0		2.6836	2.898
	3 MHz BAND QPSK	8/4	847.5	1.4262	1.598
		15/0		2.6829	2.866
	3 MHz BAND 16QAM	8/4		1.4399	1.747
		15/0		2.6847	2.885
	5 MHz BAND QPSK	12/6	821.5	2.1708	2.863
		25/0		4.4712	4.665
	5 MHz BAND 16QAM	12/6		2.1522	2.387
		25/0		4.4749	4.687
	5 MHz BAND QPSK	12/6	836.5	2.1463	2.383
		25/0		4.4947	4.794
	5 MHz BAND 16QAM	12/6		2.1724	2.418
		25/0		4.4682	5.019
	5 MHz BAND QPSK	12/6	846.5	2.1708	2.877
		25/0		4.4570	4.663
	5 MHz BAND 16QAM	12/6		2.1274	2.628
		25/0		4.3520	4.771
	10 MHz BAND QPSK	25/12	829	4.4499	5.257
		50/0		8.8622	9.402
	10 MHz BAND 16QAM	25/12		4.4734	5.257
		50/0		8.8847	9.264
	10 MHz BAND QPSK	25/12	836.5	4.4651	5.261
		50/0		8.9257	9.372
	10 MHz BAND 16QAM	25/12		4.4810	4.899
		50/0		8.8552	9.348
	10 MHz BAND QPSK	25/12	844	4.5066	4.791
		50/0		8.9654	9.382
	10 MHz BAND 16QAM	25/12		4.5102	5.509
		50/0		9.0078	9.532

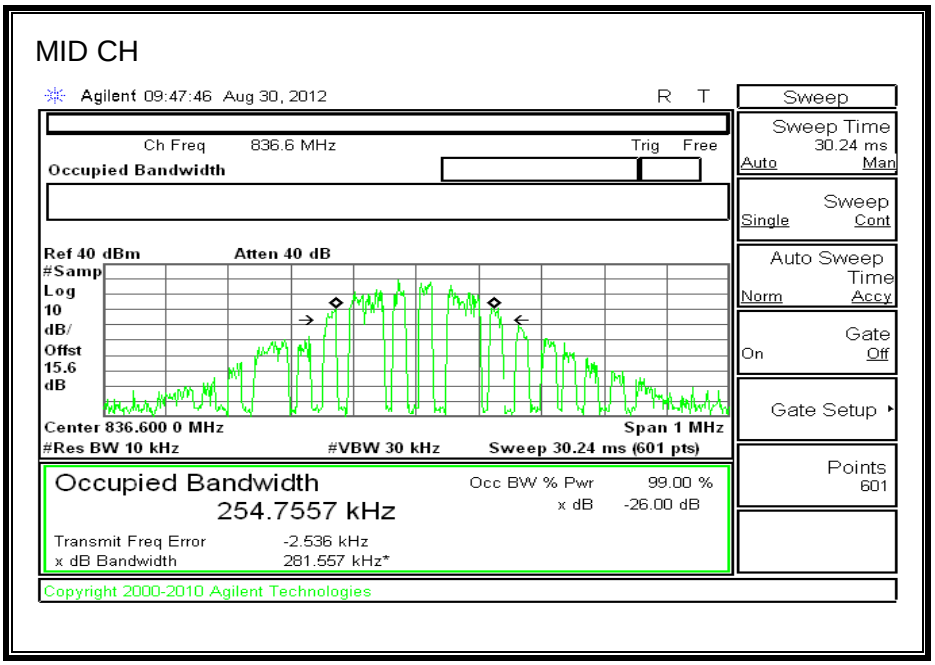
LTE Band 17

Band	Mode	RB/RB SIZE	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 17	5 MHz BAND QPSK	12/6	706.5	2.1510	2.880
		25/0		4.4934	4.982
	5 MHz BAND 16QAM	12/6		2.1593	2.877
		25/0		4.4932	5.196
	5 MHz BAND QPSK	12/6	710	2.1591	2.753
		25/0		4.4607	4.769
	5 MHz BAND 16QAM	12/6		2.1714	2.524
		25/0		4.3842	4.711
	5 MHz BAND QPSK	12/6	713.5	2.1472	2.510
		25/0		4.4770	4.779
	5 MHz BAND 16QAM	12/6		2.1722	2.503
		25/0		4.4595	4.654
	10 MHz BAND QPSK	25/12	709	4.4731	5.759
		50/0		8.8672	9.504
	10 MHz BAND 16QAM	25/12		4.4856	5.015
		50/0		8.9184	9.432
	10 MHz BAND QPSK	25/12	710	4.4865	4.805
		50/0		8.9281	9.396
	10 MHz BAND 16QAM	25/12		4.5275	5.289
		50/0		8.9314	9.355
	10 MHz BAND QPSK	25/12	711	4.4519	5.026
		50/0		8.8138	9.371
	10 MHz BAND 16QAM	25/12		4.4610	5.276
		50/0		8.9558	9.354

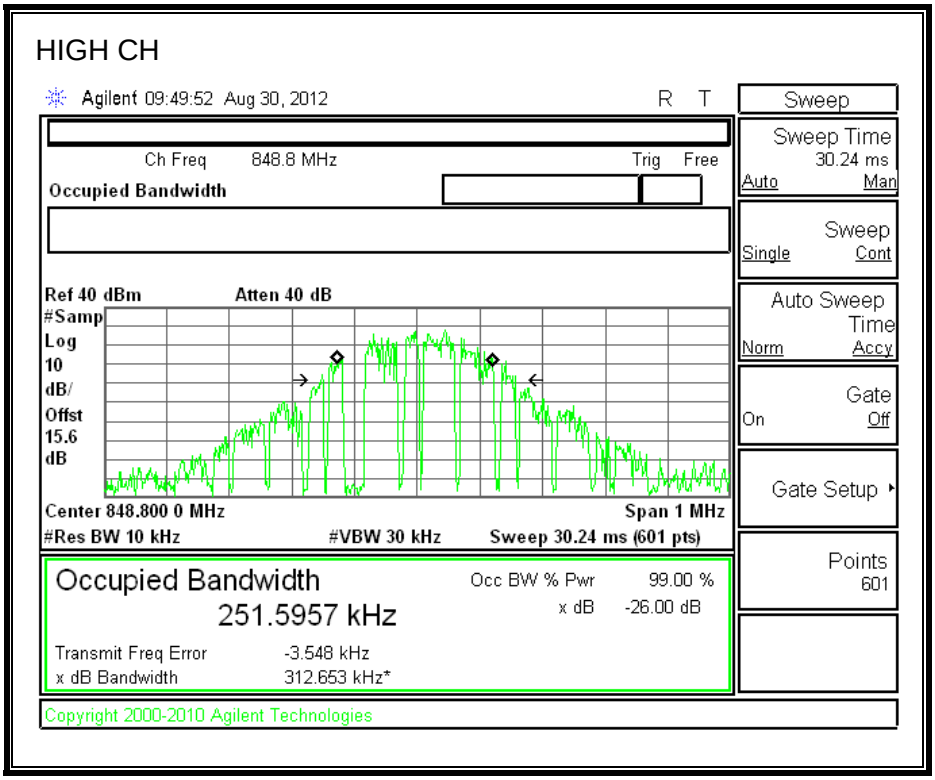
8.1.1. GSM

GPRS Mode (Cellular Band)



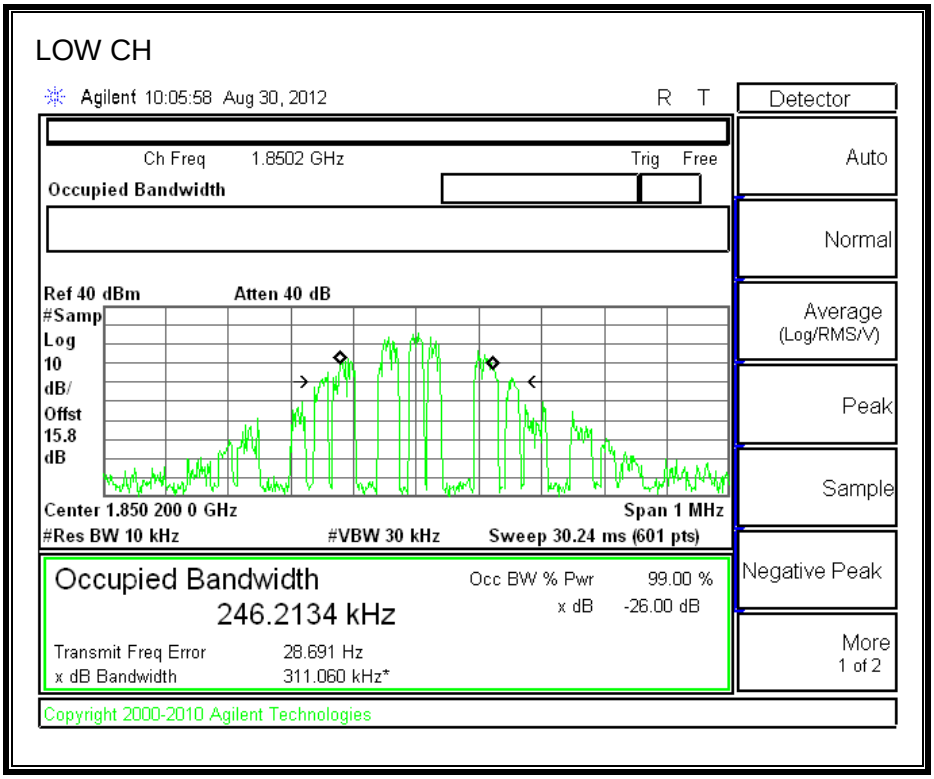


HIGH CH

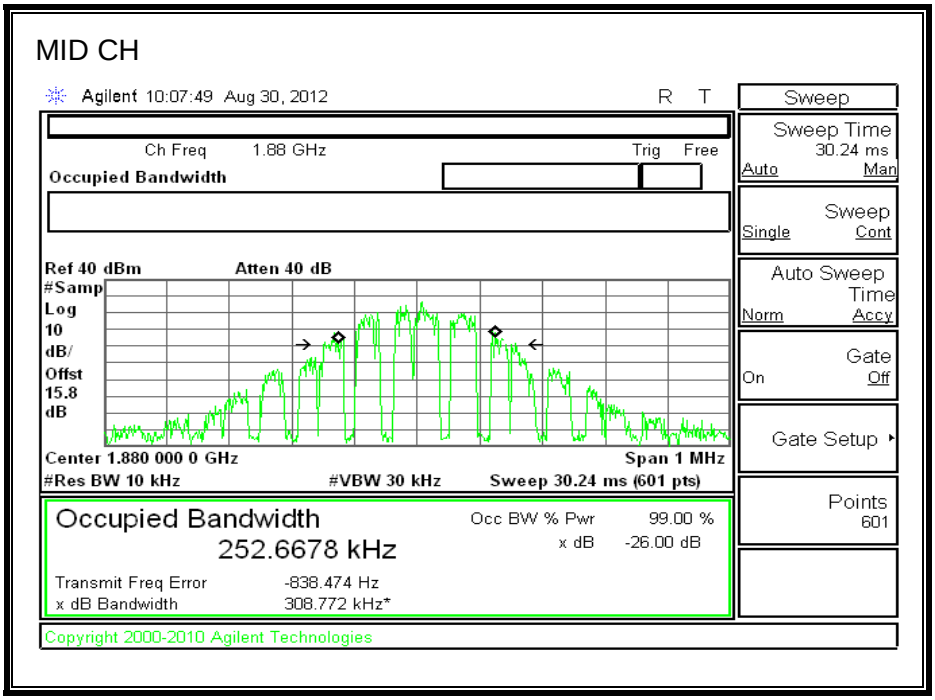


GPRS 1900 Mode (PCS Band)

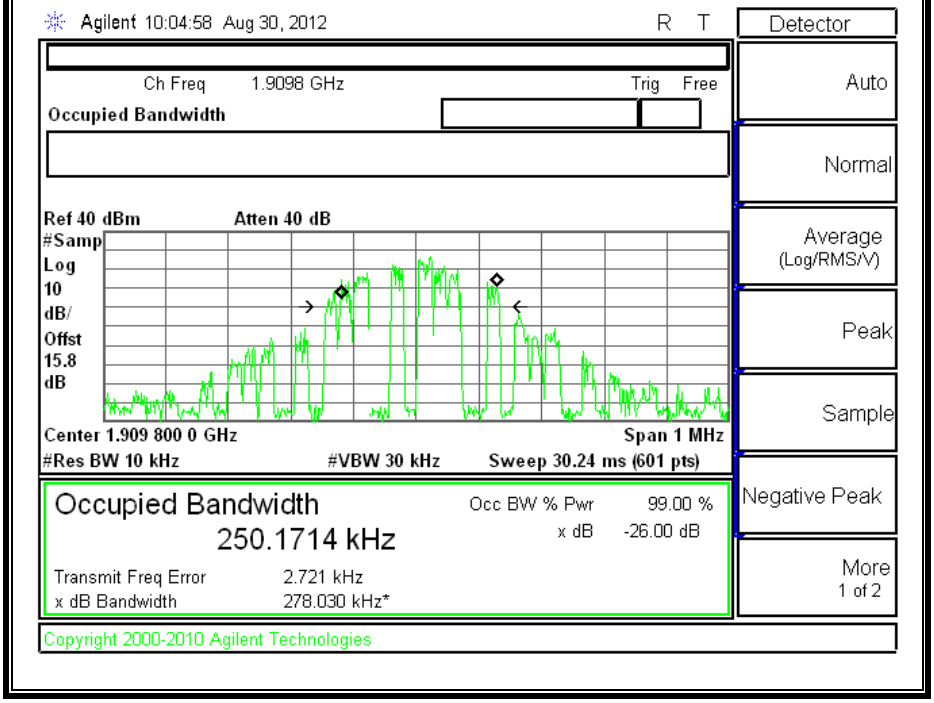
LOW CH



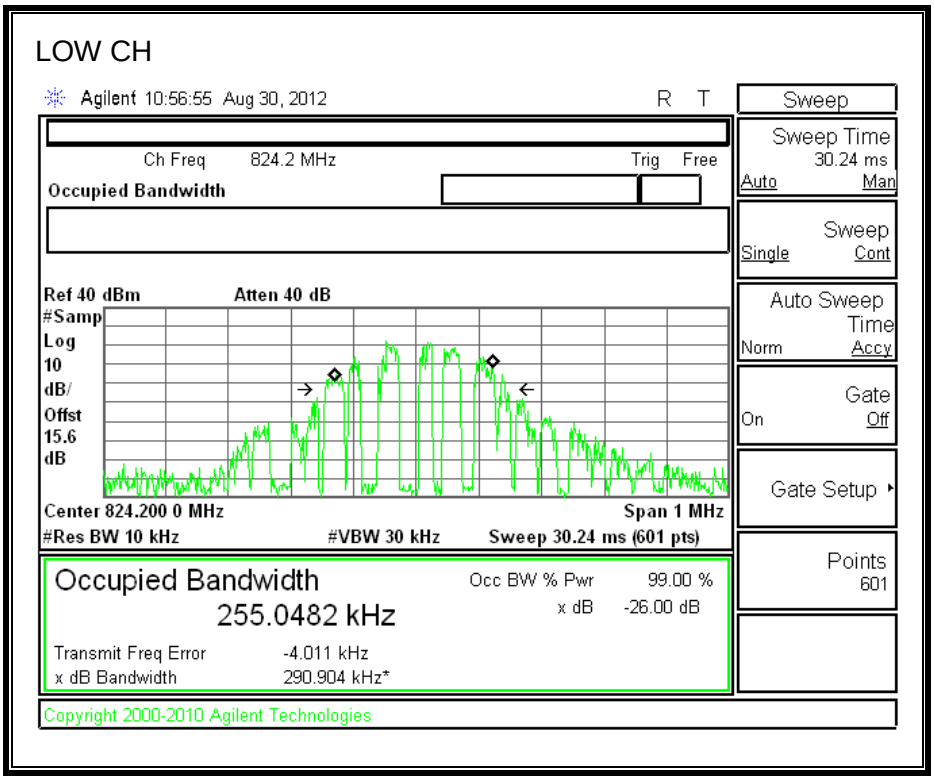
MID CH

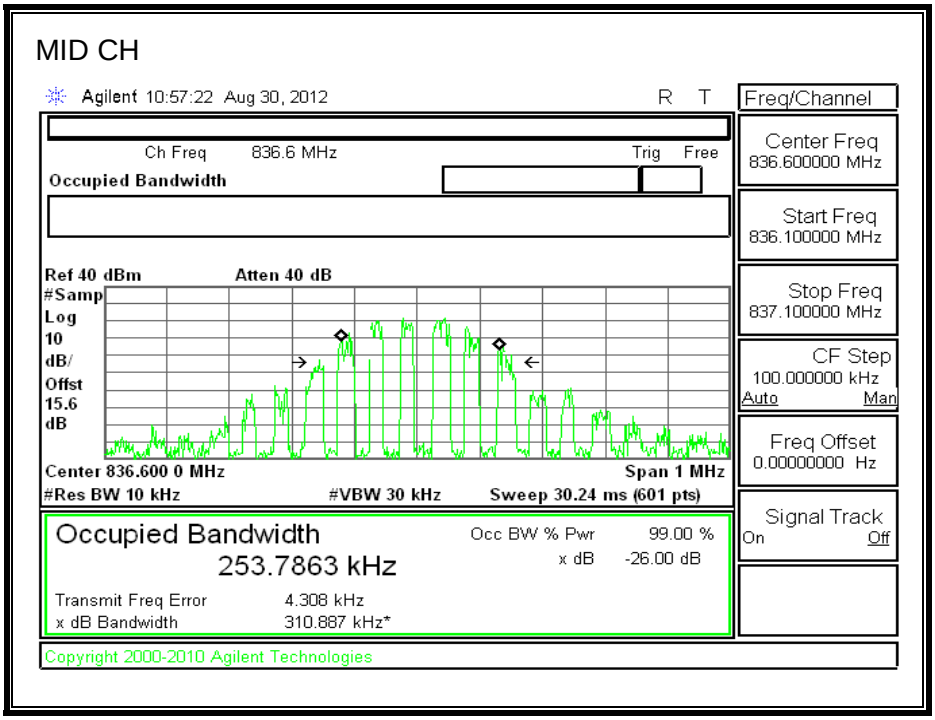


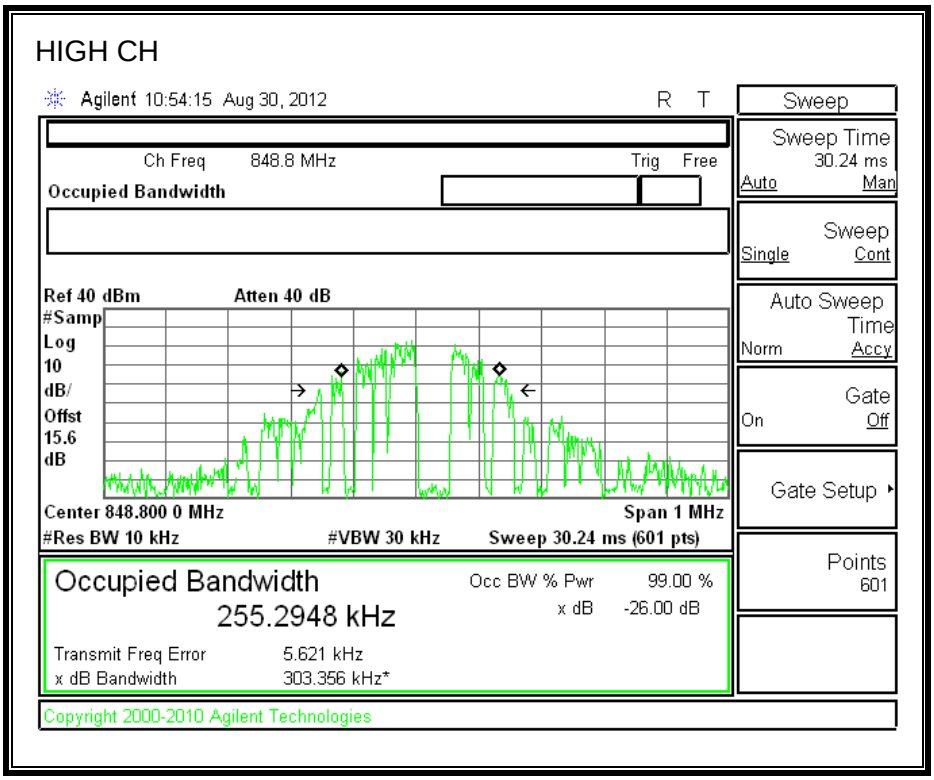
HIGH CH



EGPRS Cellular Band

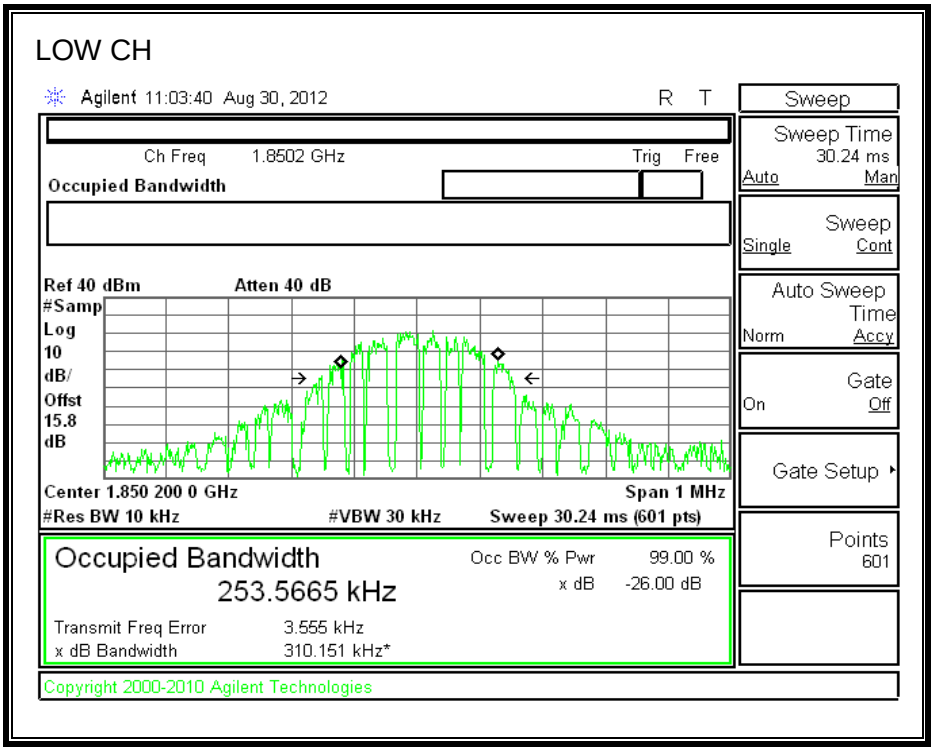




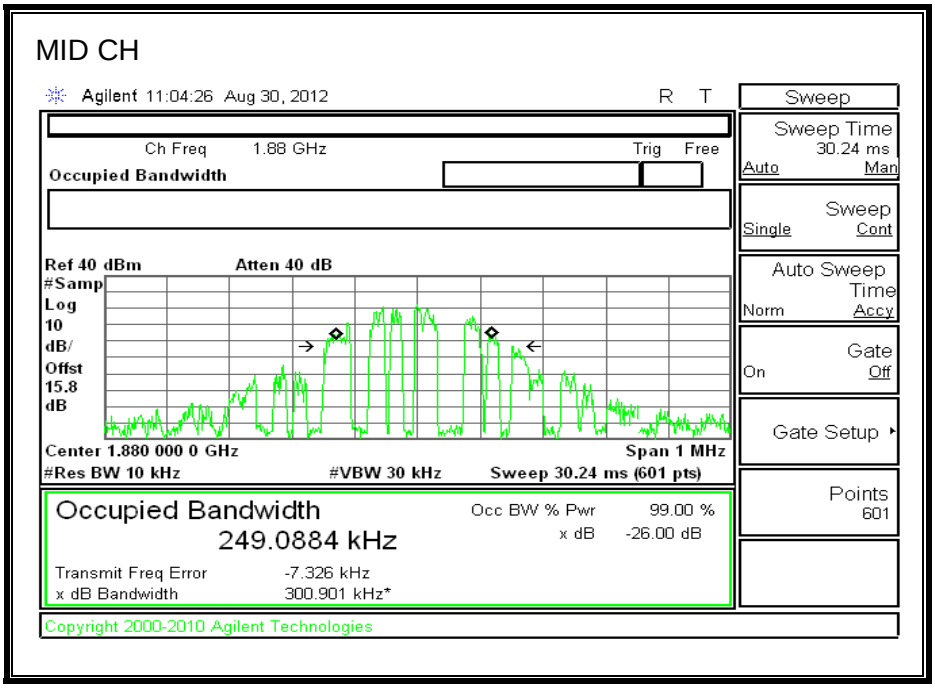


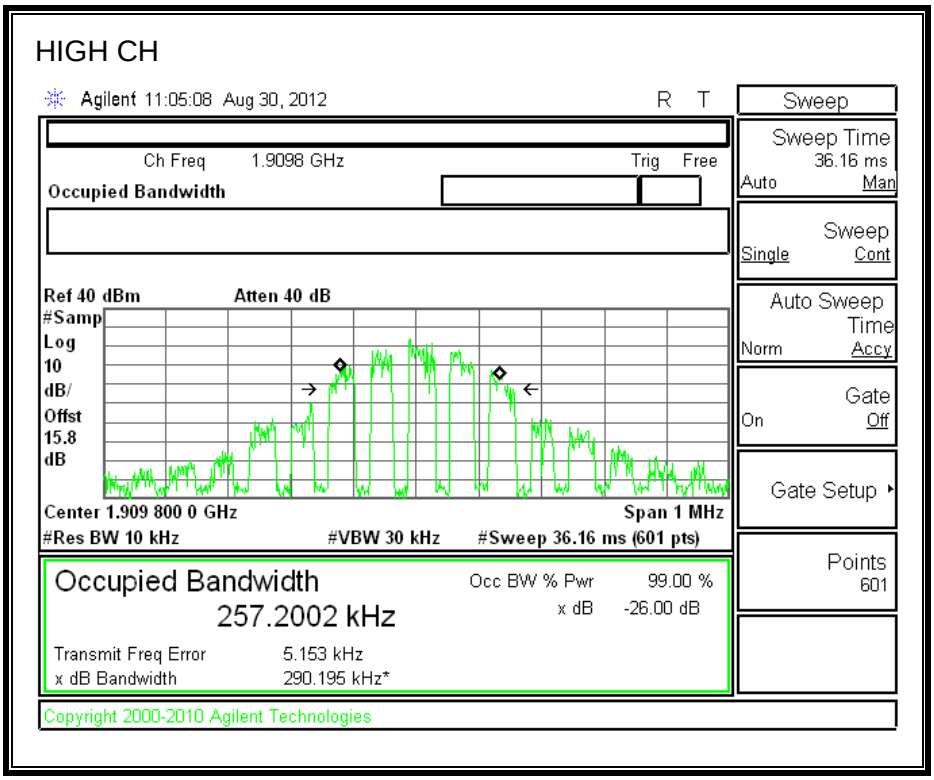
EGPRS 1900 Mode (PCS Band)

LOW CH



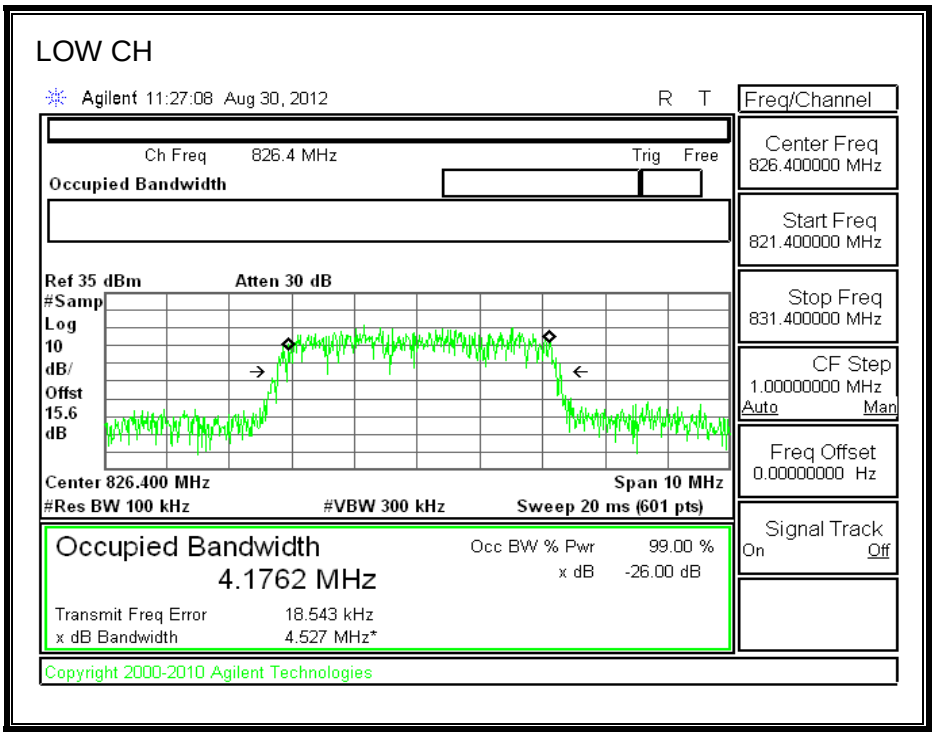
MID CH

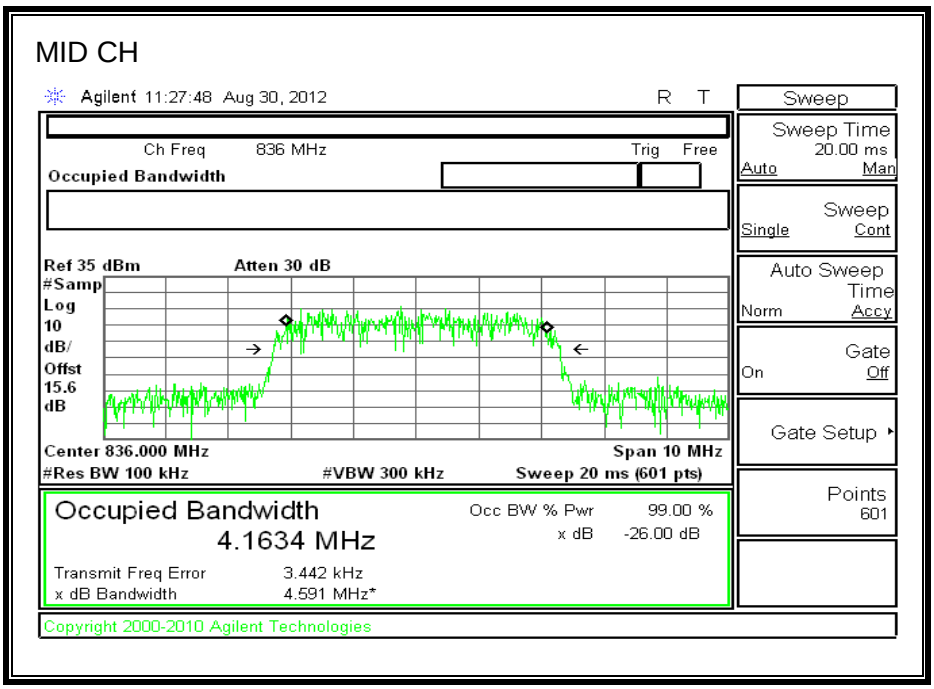




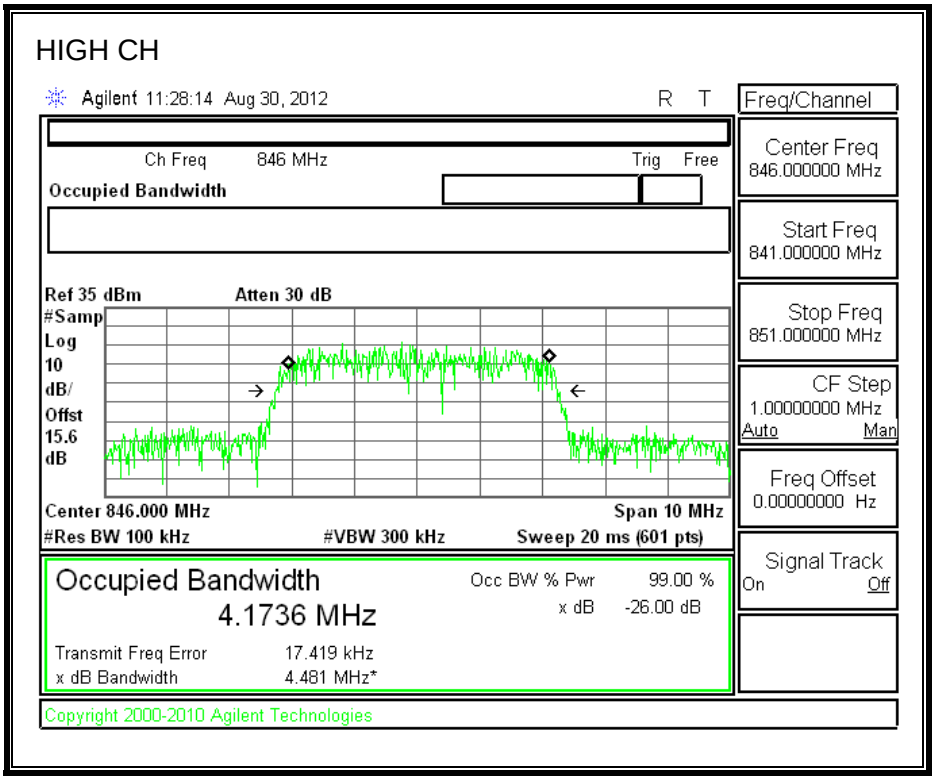
8.1.2. WCDMA

Rel 99 (Cellular Band)



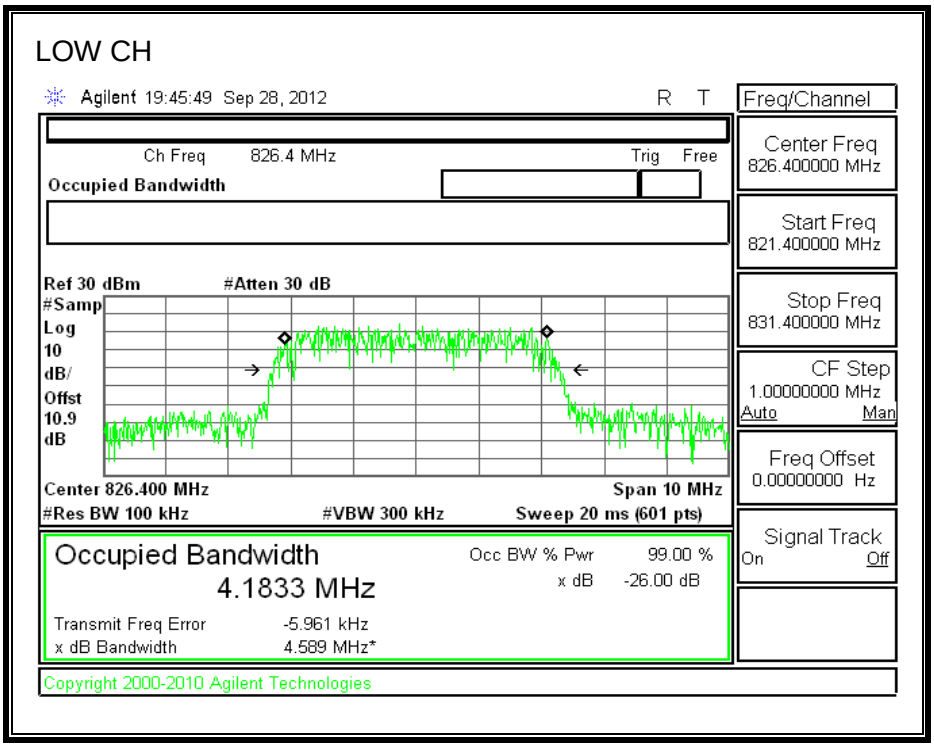


HIGH CH

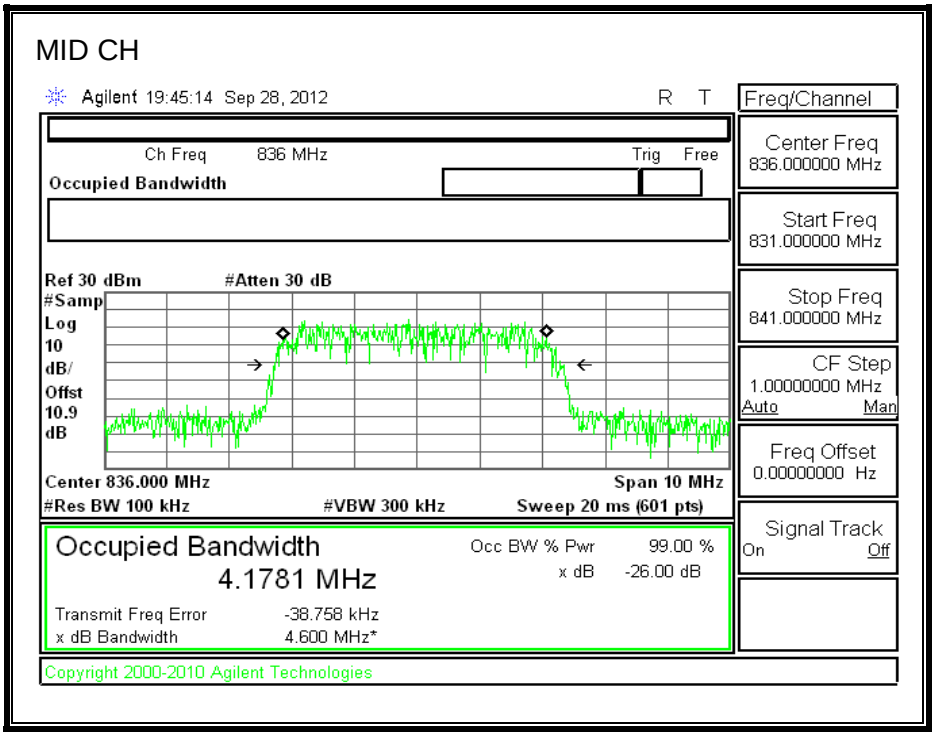


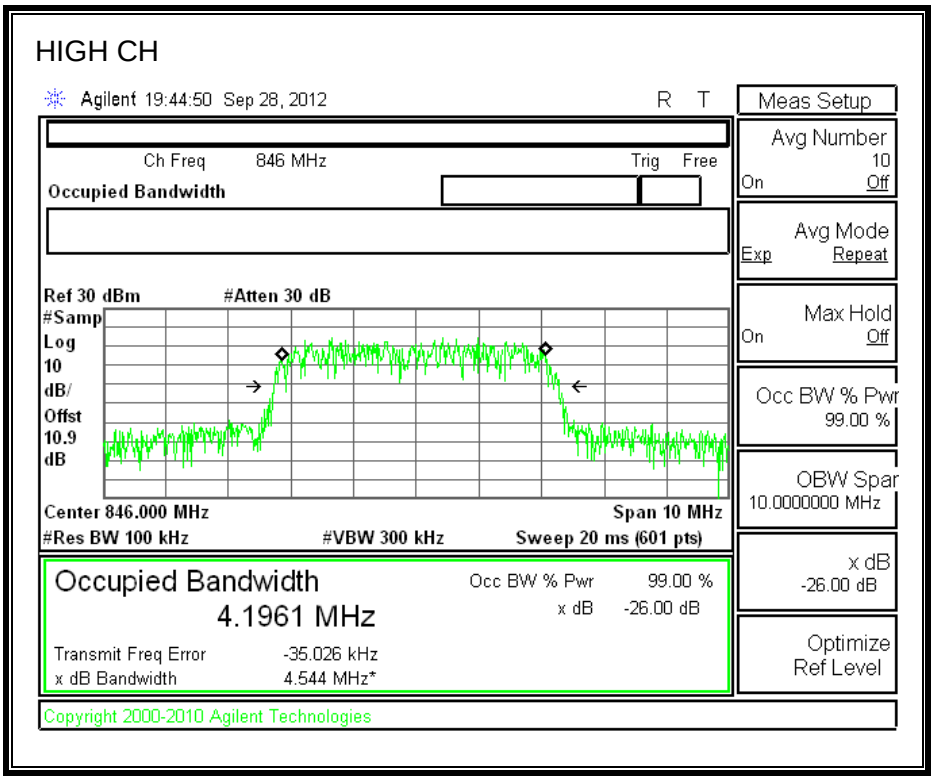
WCDMA HSUPA (Cellular Band)

LOW CH



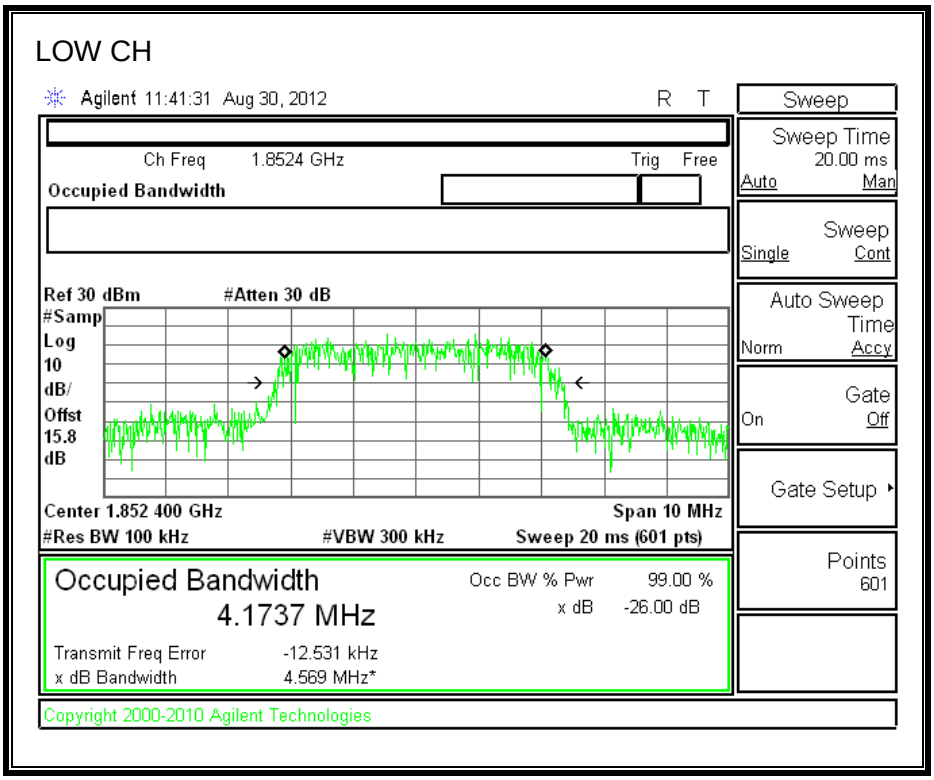
MID CH



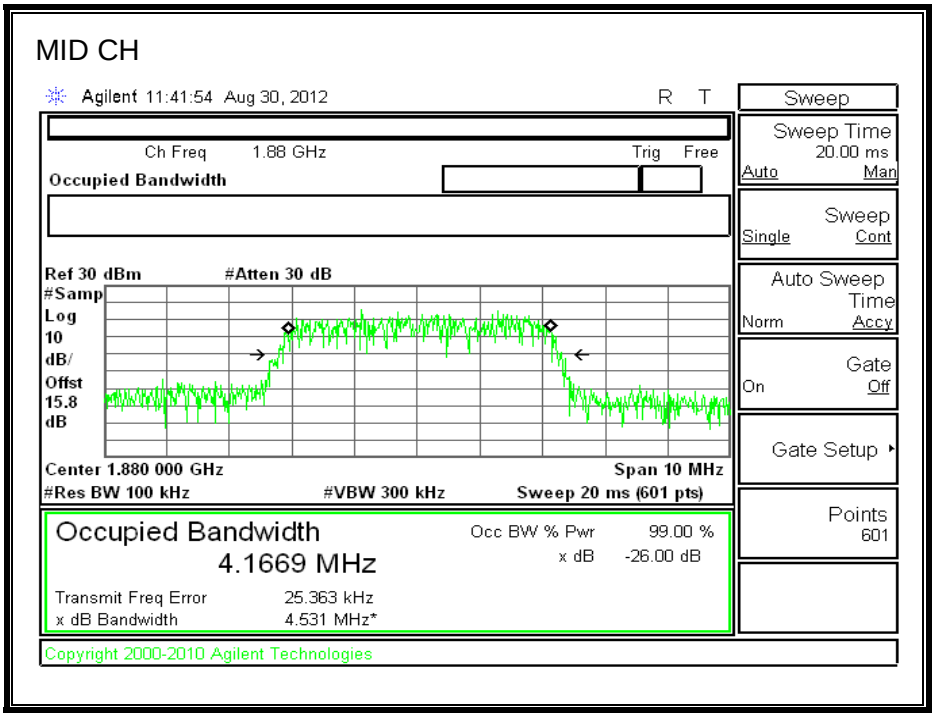


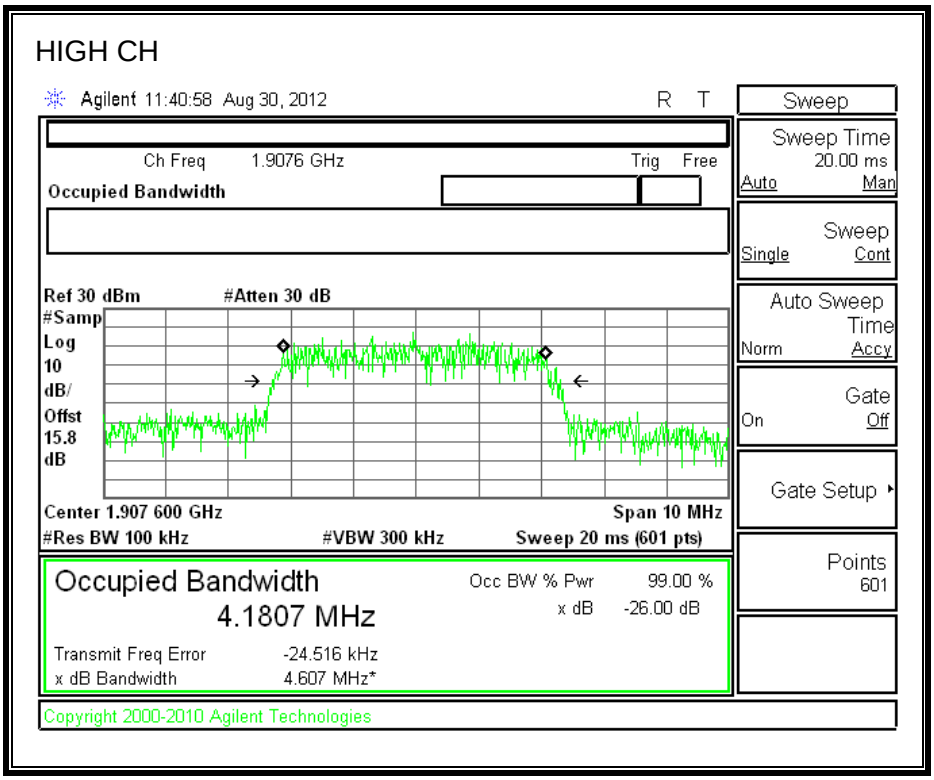
REL 99 Mode (PCS Band)

LOW CH



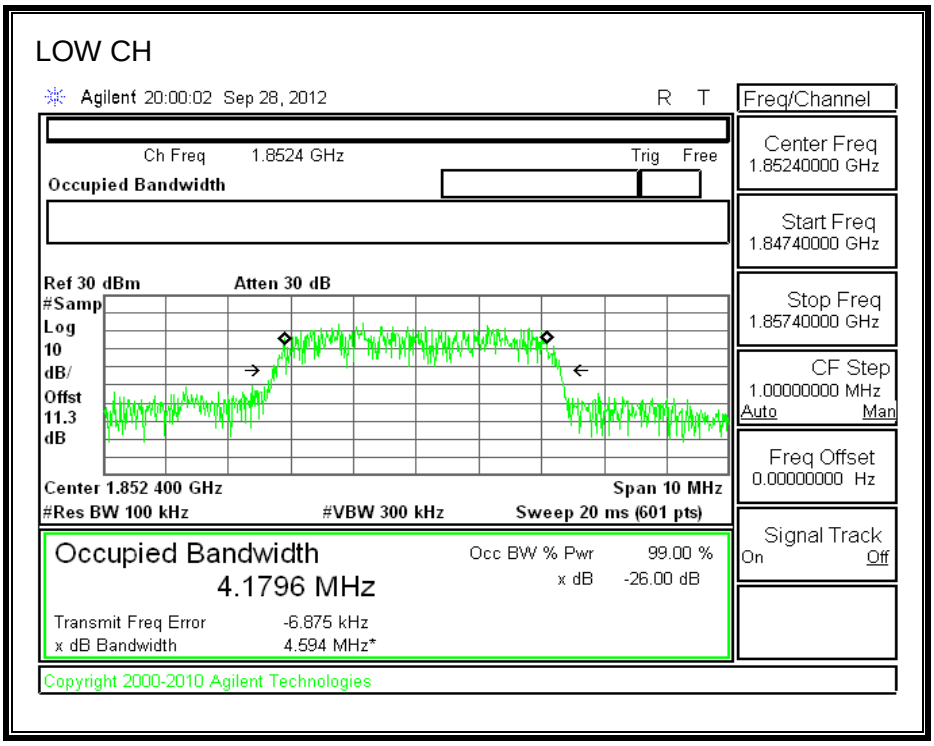
MID CH



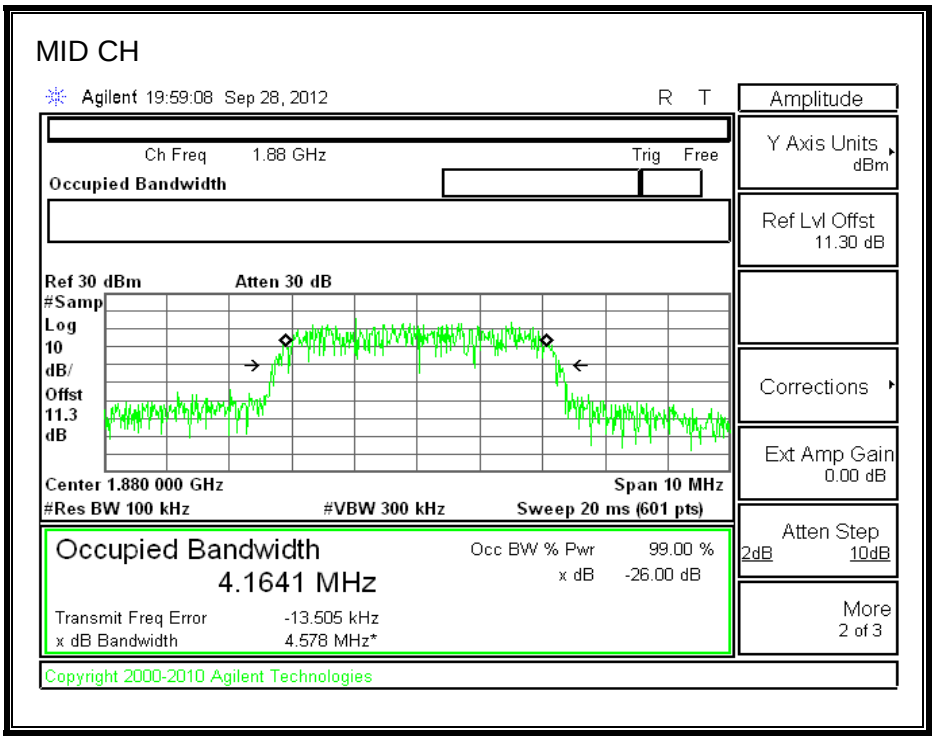


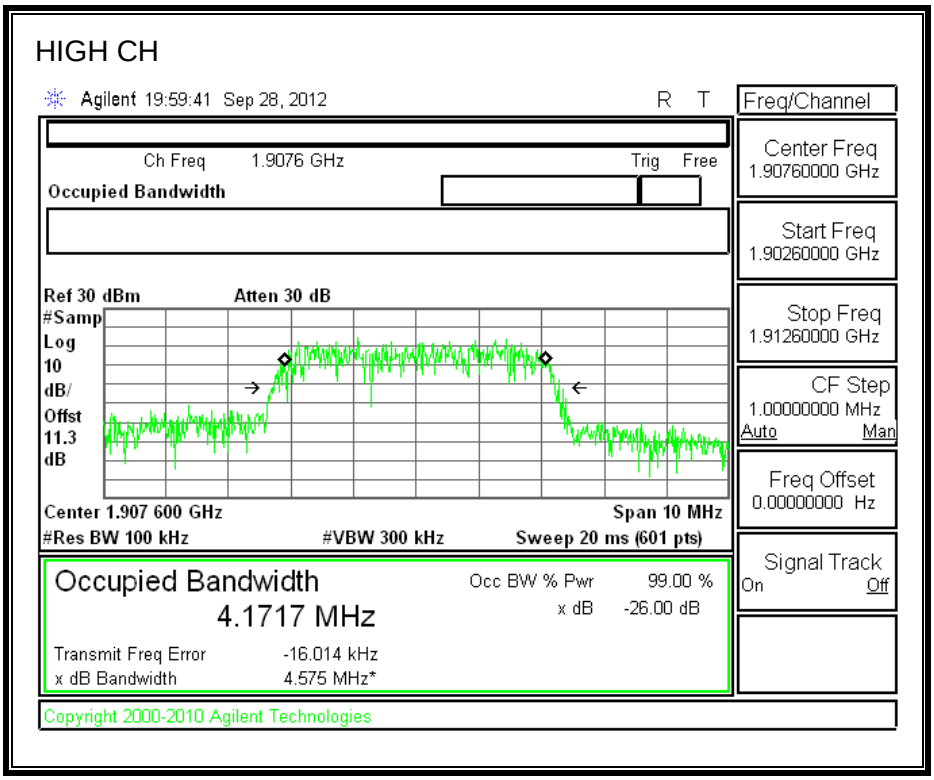
WCDMA HSDPA Mode (PCS Band)

LOW CH



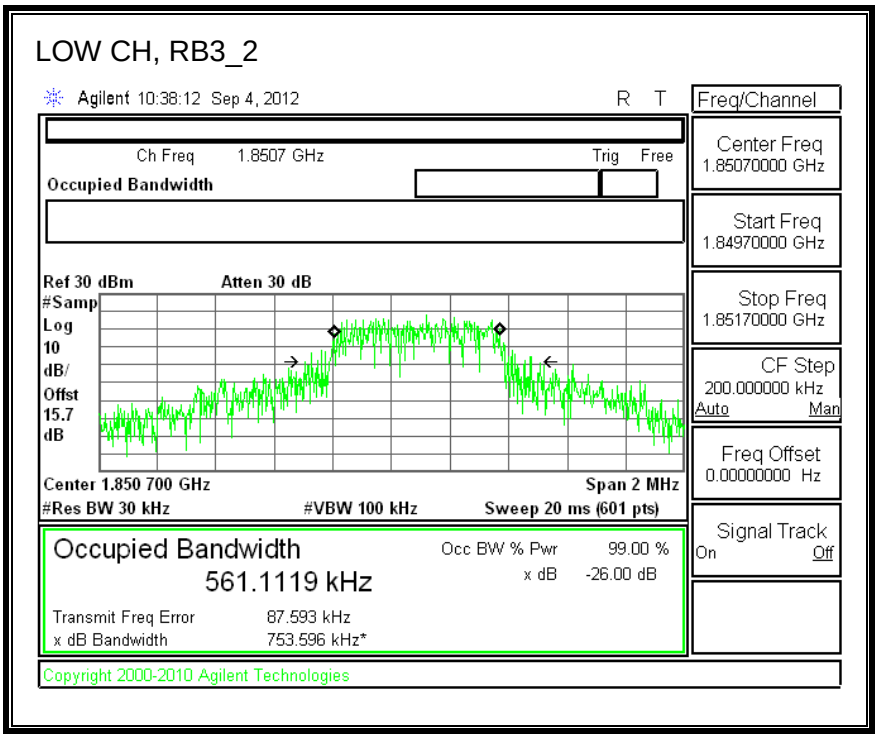
MID CH

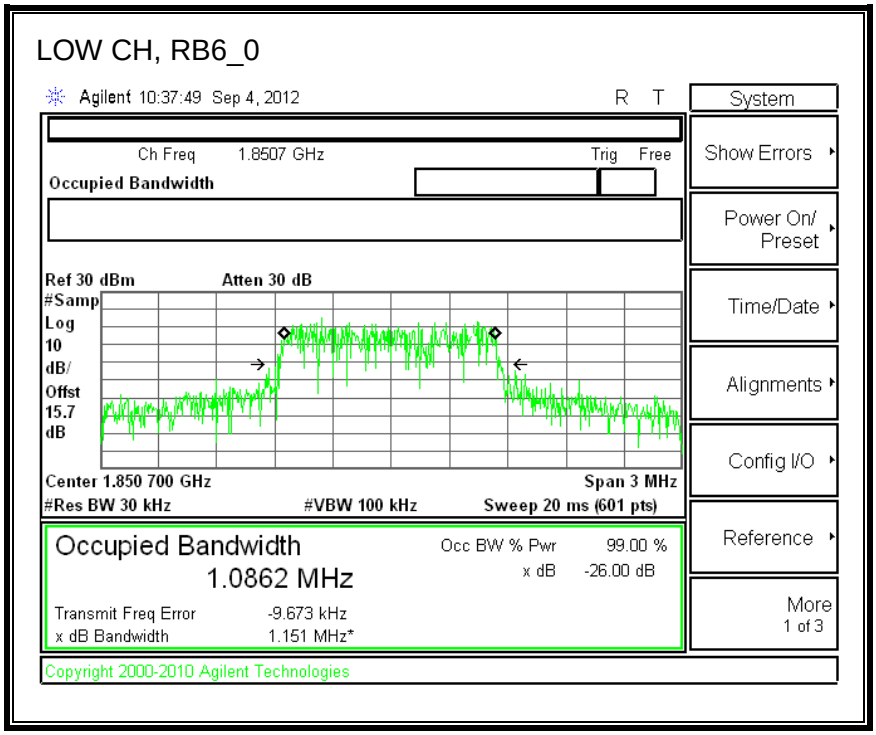




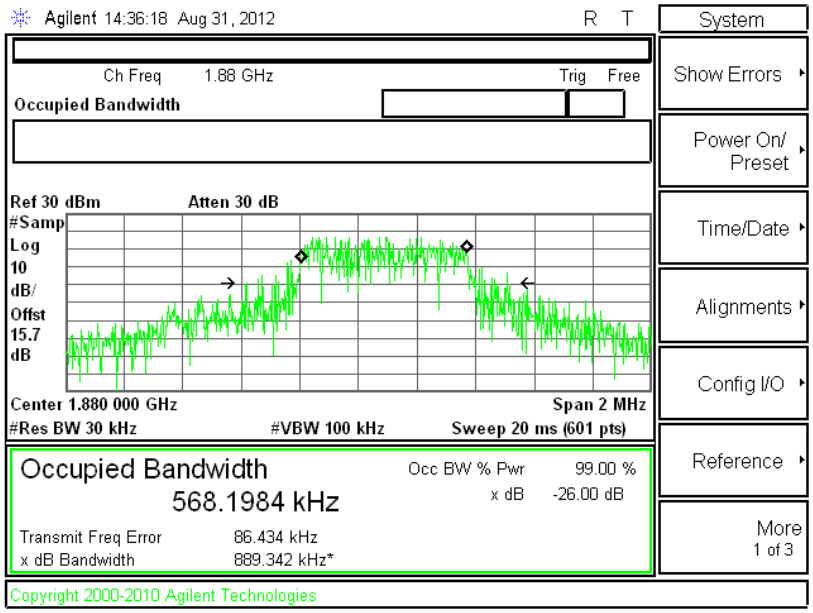
8.1.3. LTE BAND 2

QPSK (1.4 MHz BANDWIDTH)

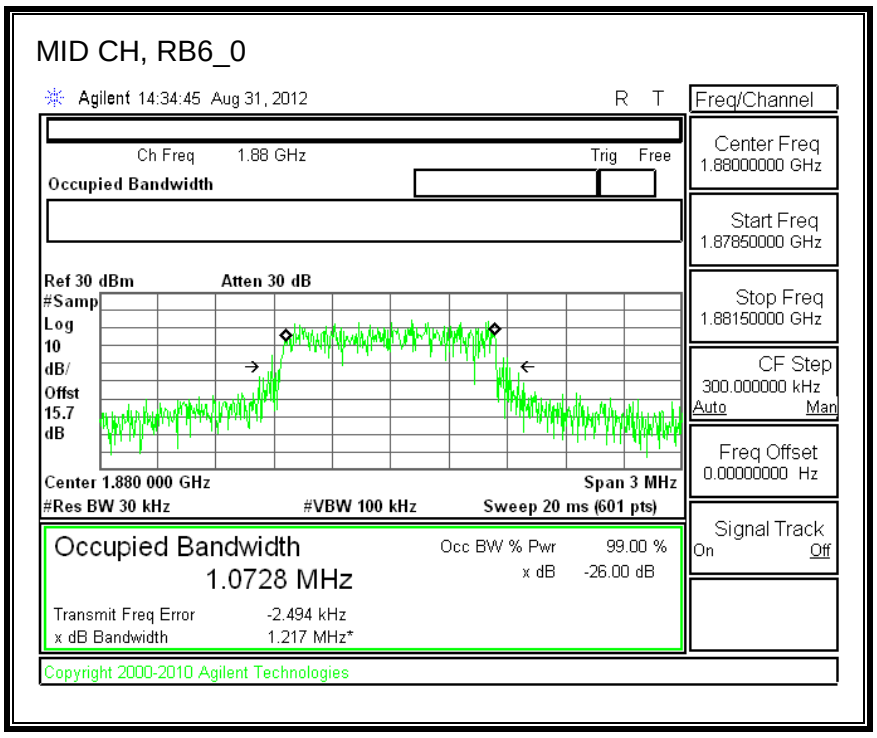




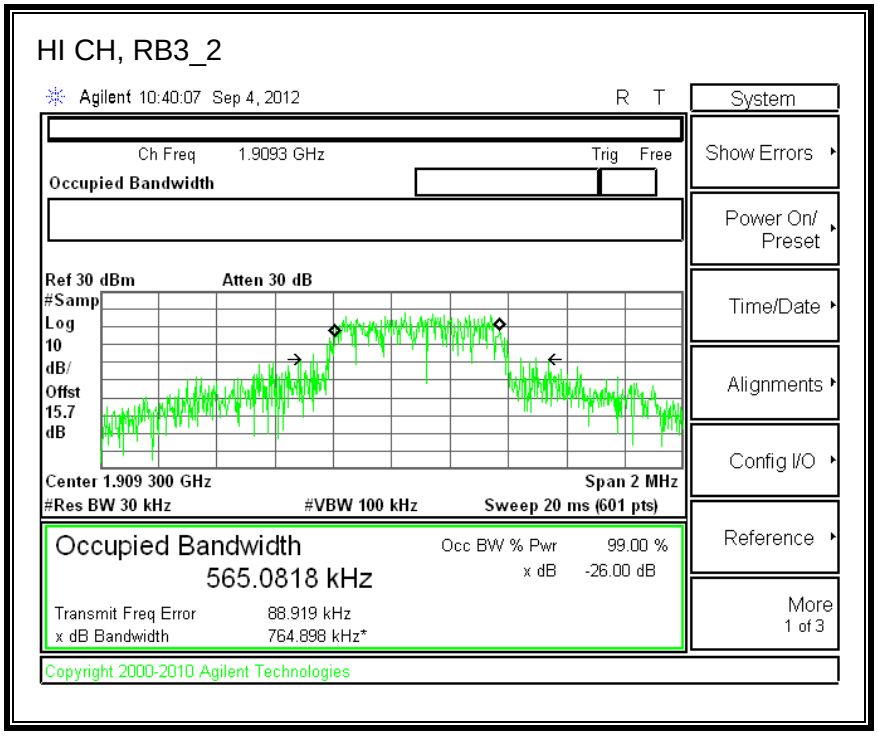
MID CH, RB3_2



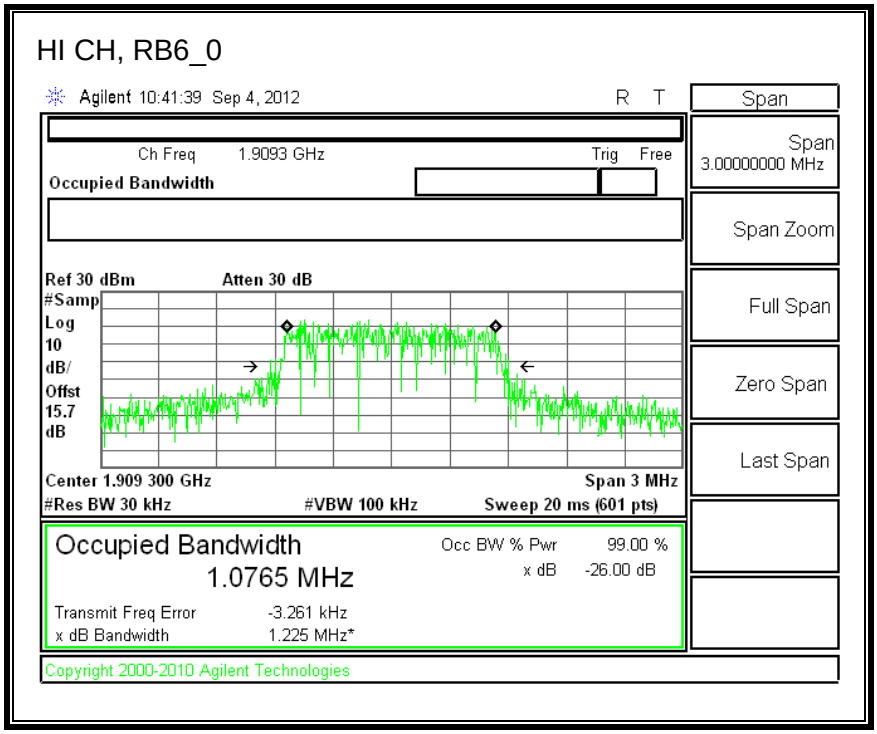
MID CH, RB6_0



HI CH, RB3_2

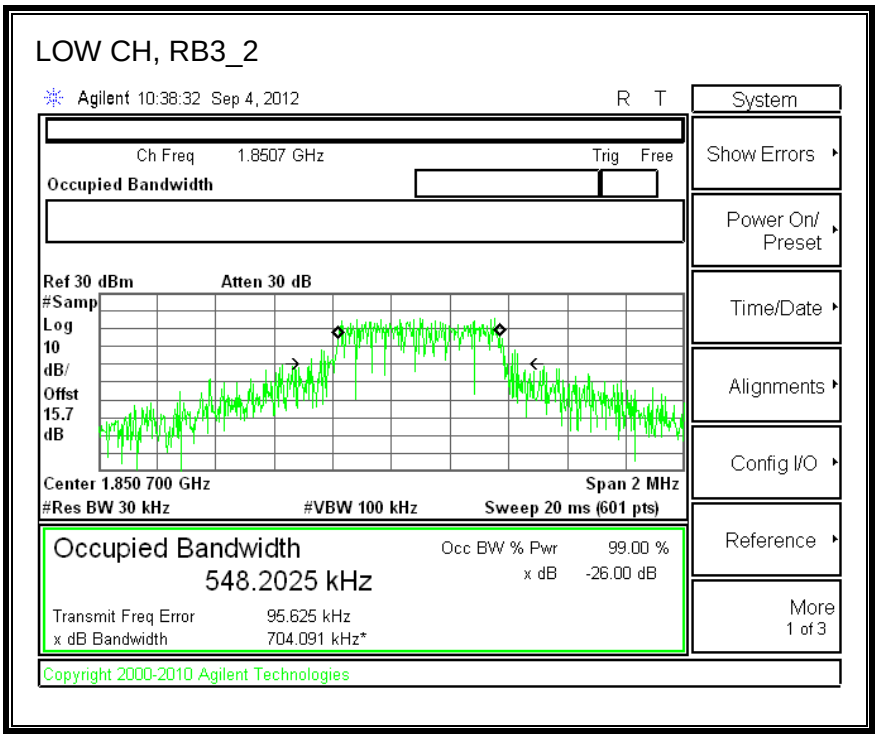


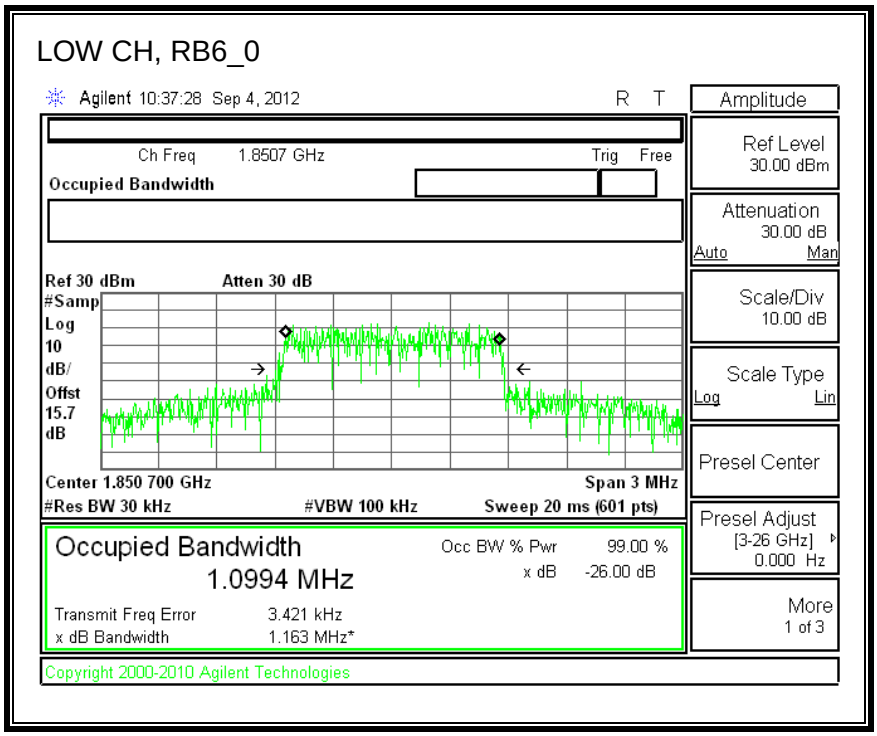
HI CH, RB6_0

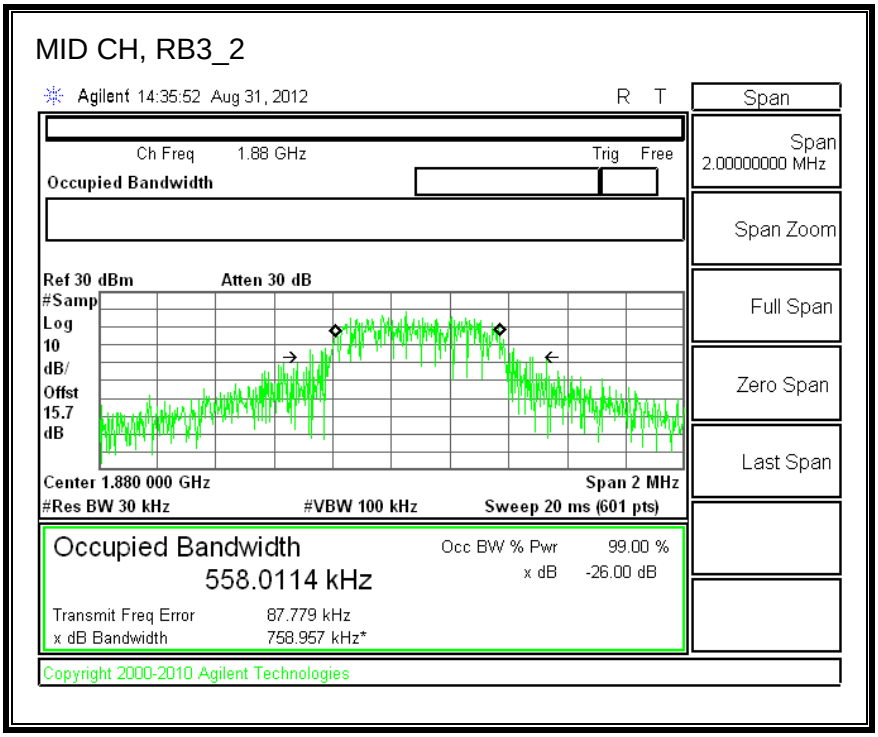


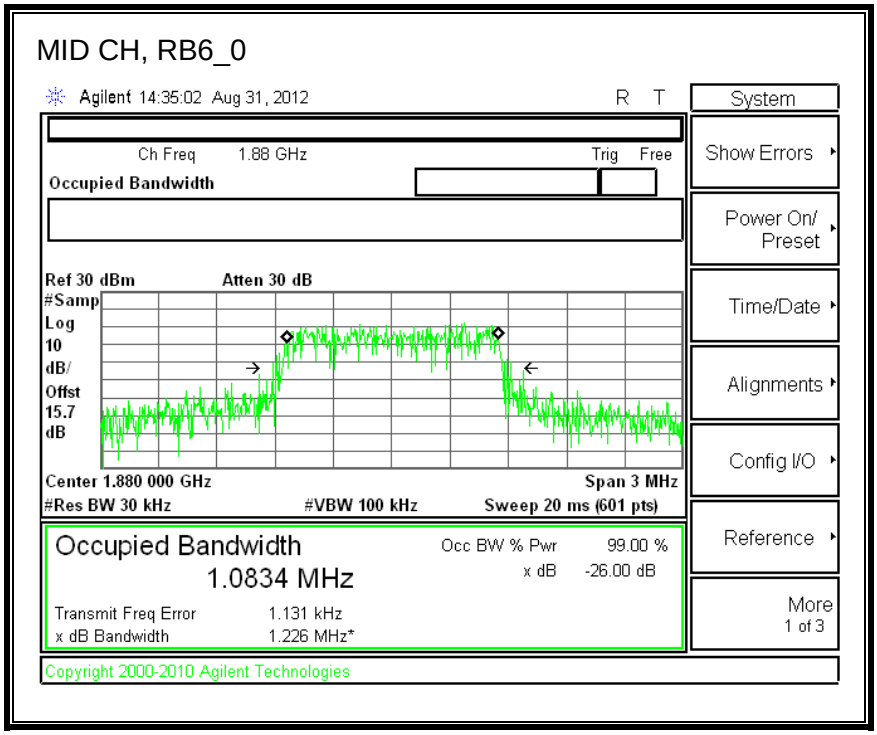
Band 2 (1.4 MHz BANDWIDTH)

LTE 16QAM

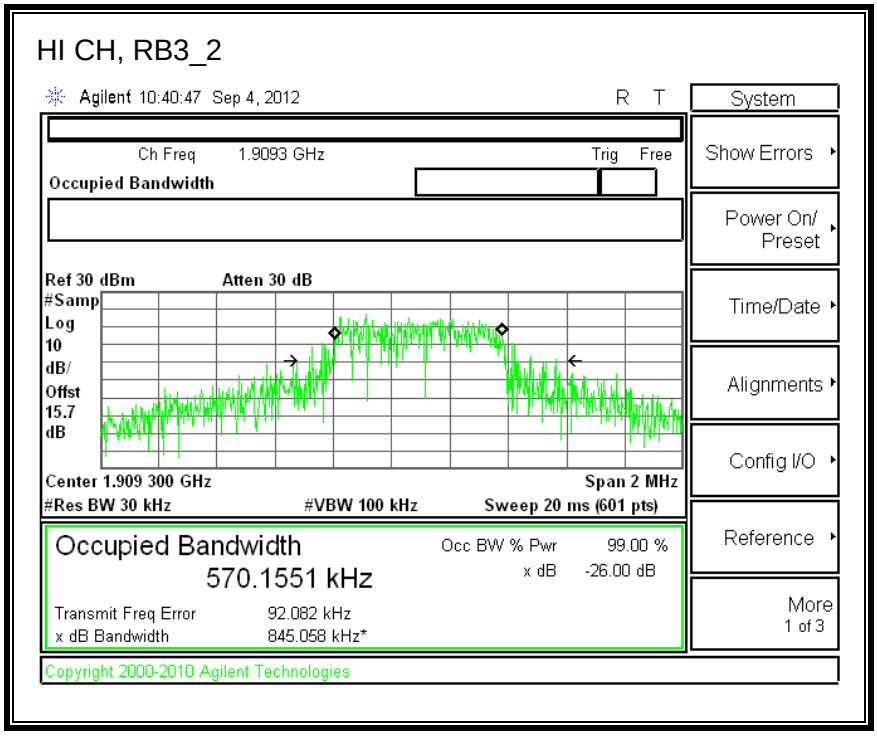




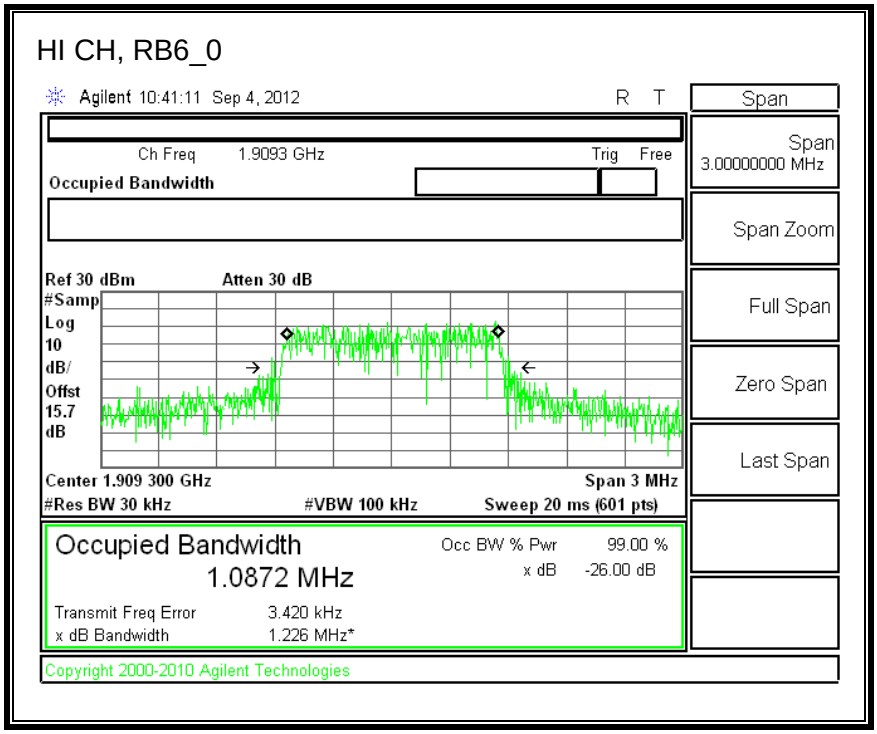




HI CH, RB3_2

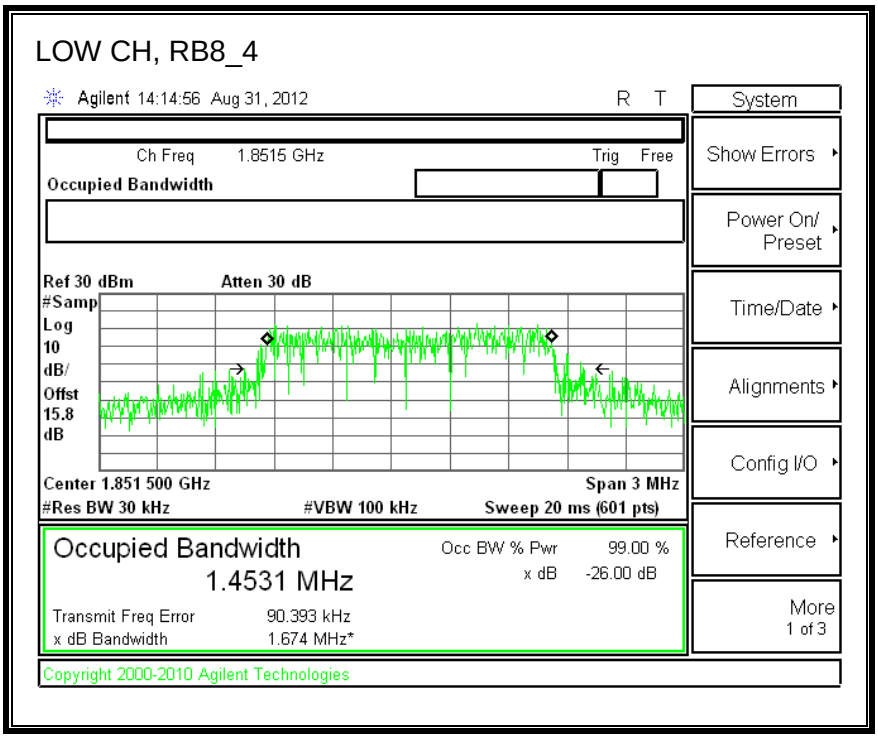


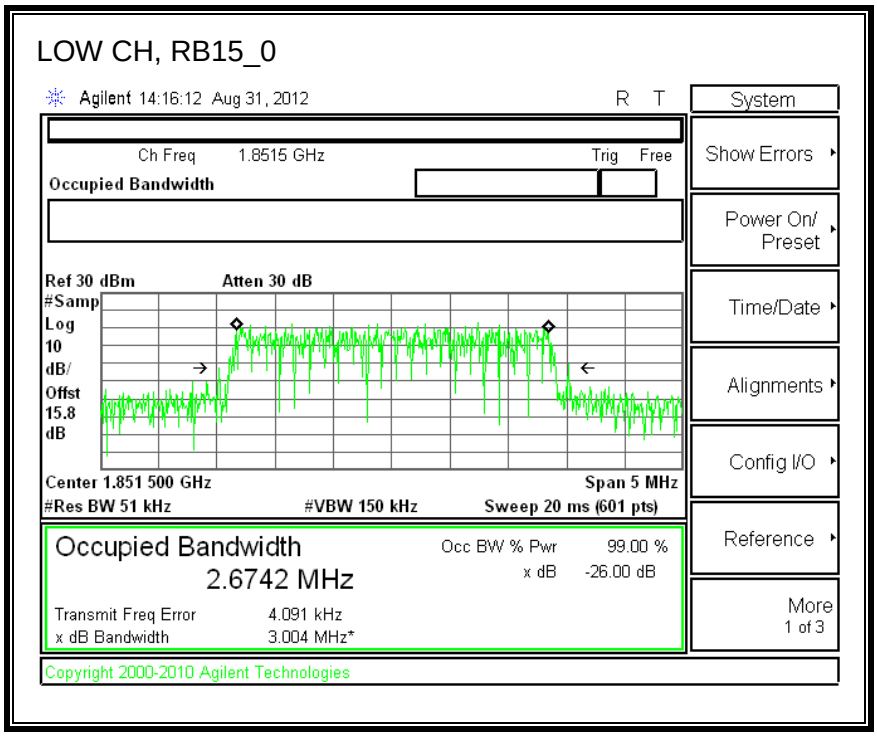
HI CH, RB6_0



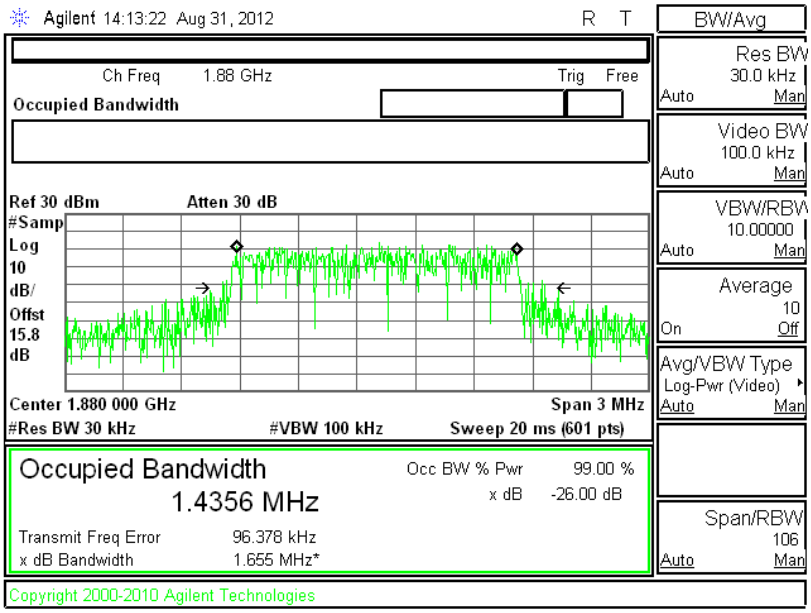
Band 2 (3 MHz BANDWIDTH)

LTE QPSK

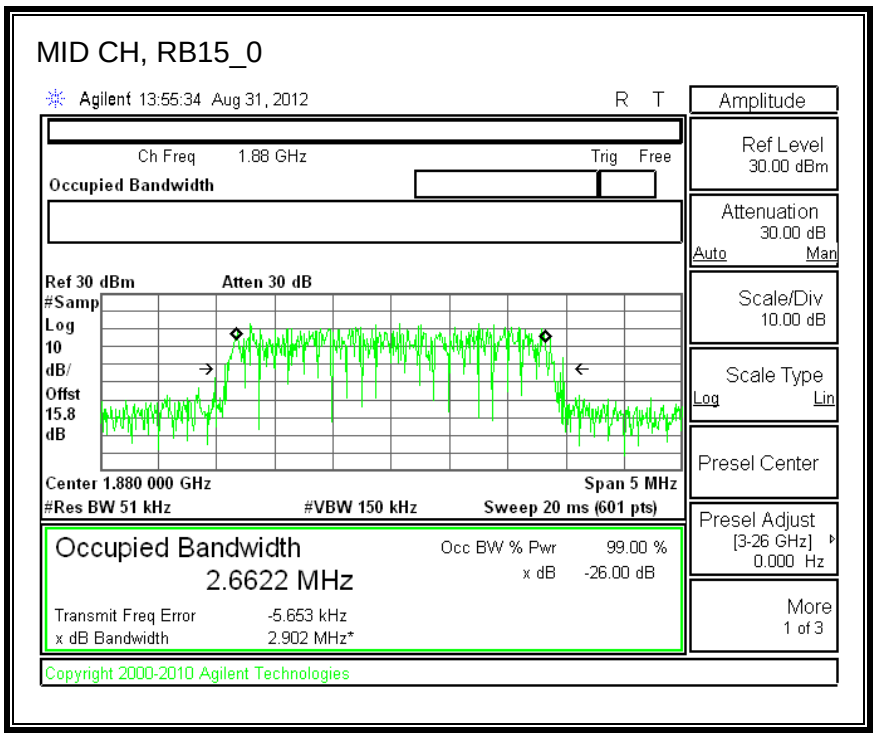




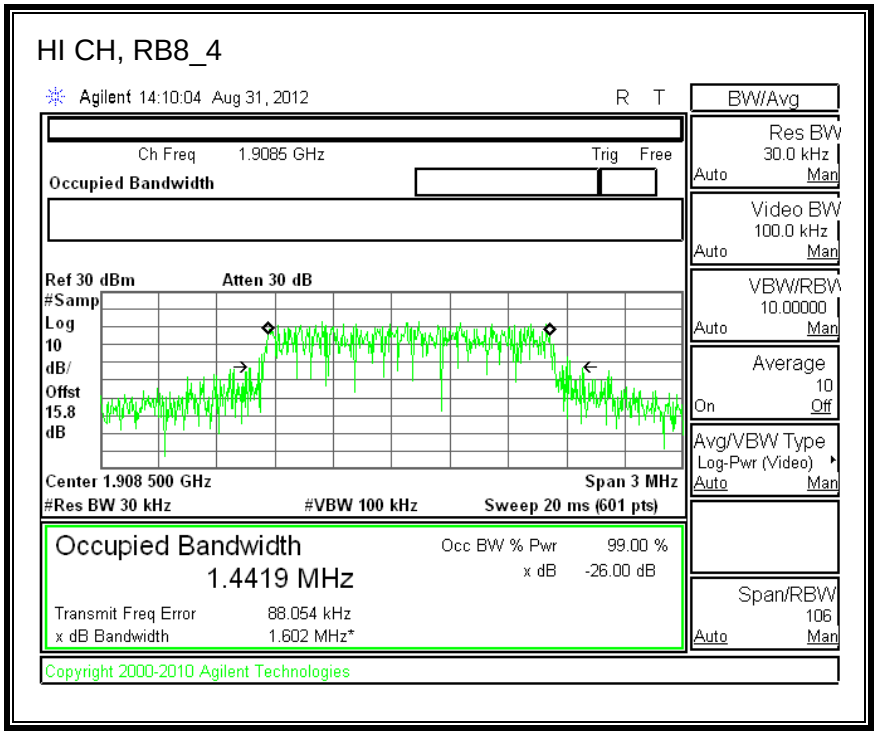
MID CH, RB8_4



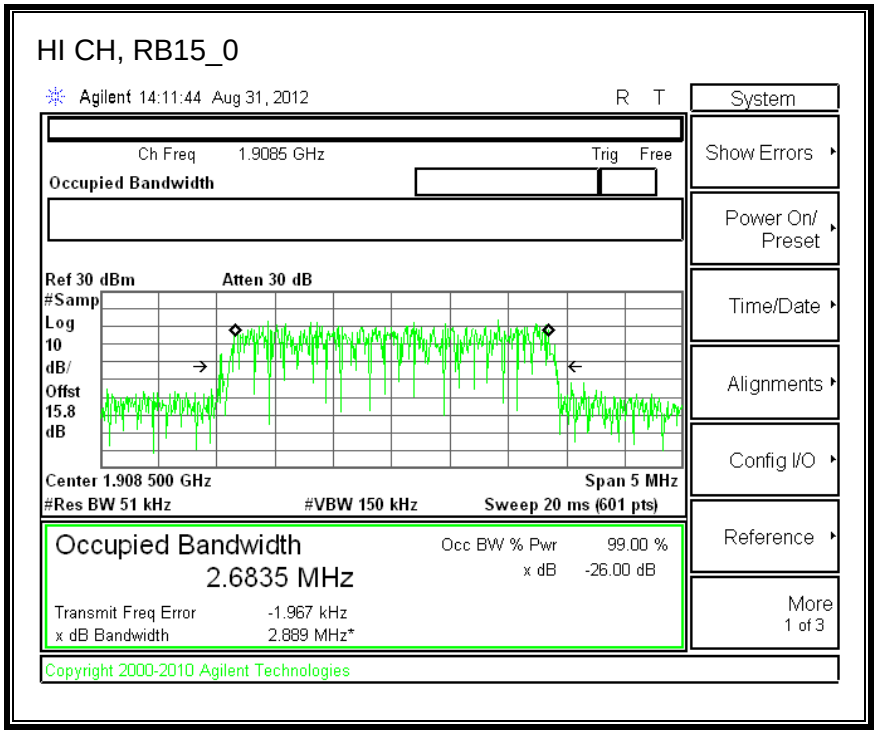
MID CH, RB15_0



HI CH, RB8_4

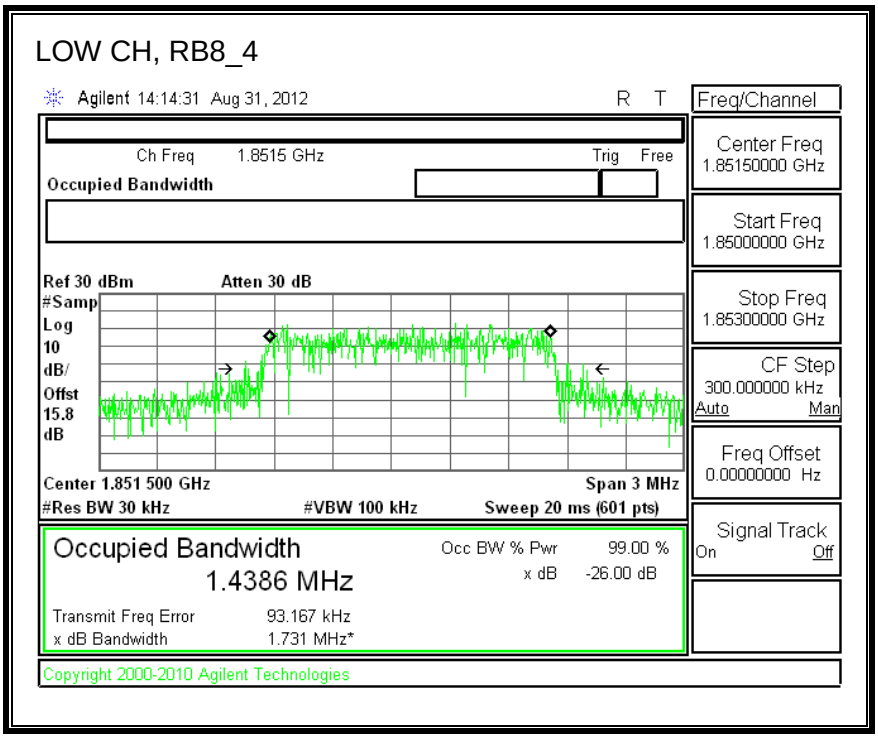


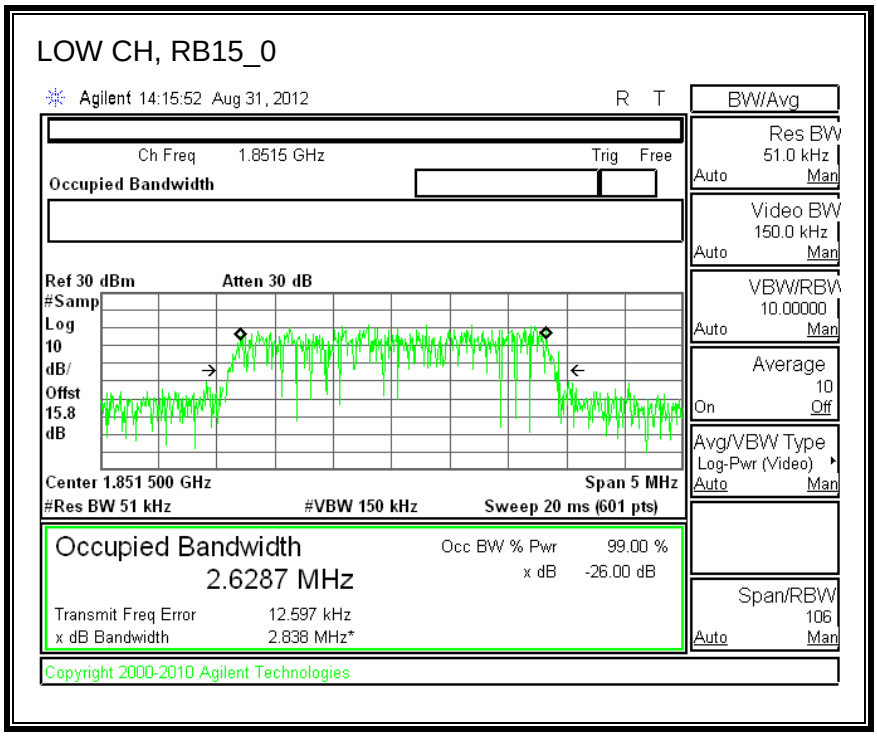
HI CH, RB15_0



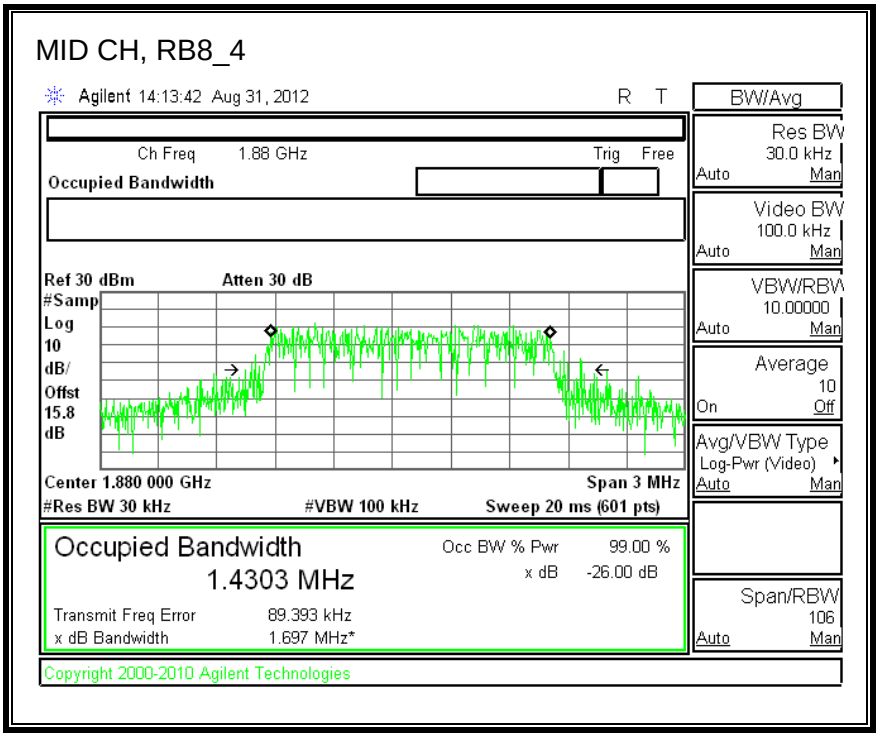
Band 2 (3 MHz BANDWIDTH)

LTE 16QAM

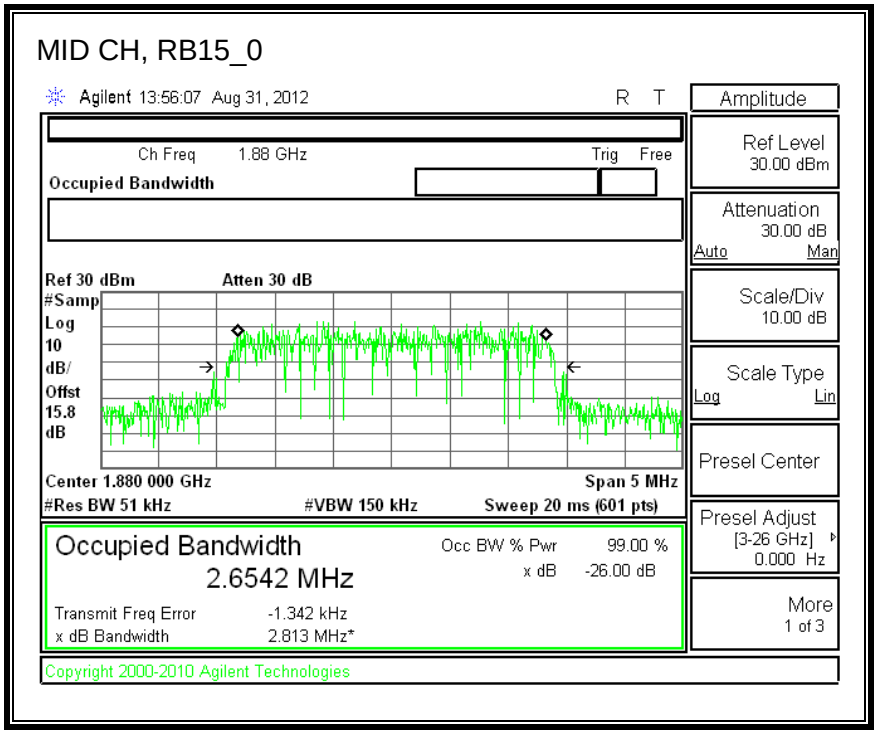




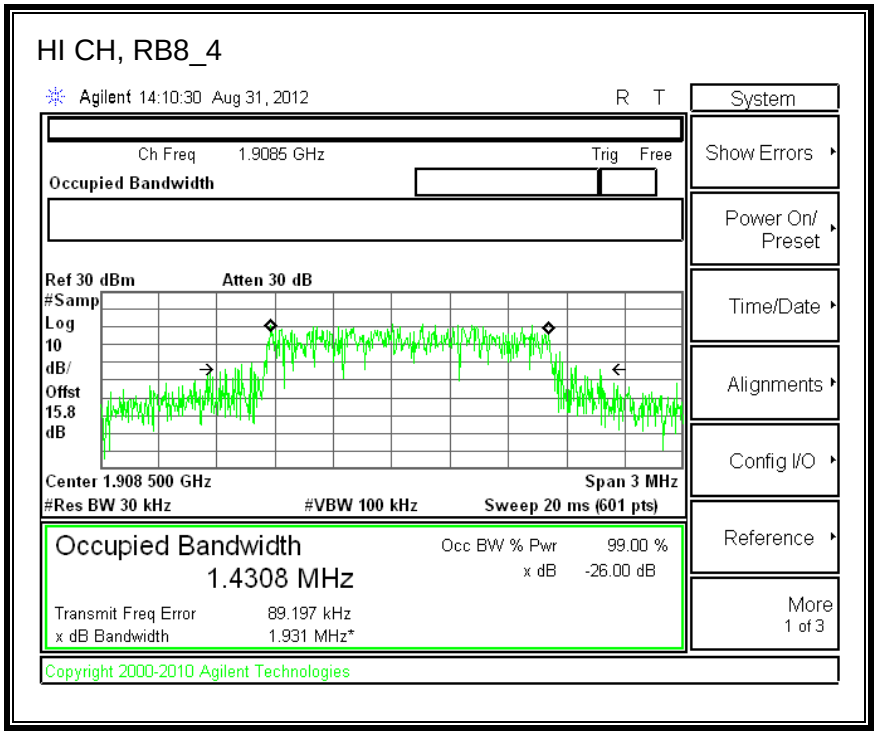
MID CH, RB8_4



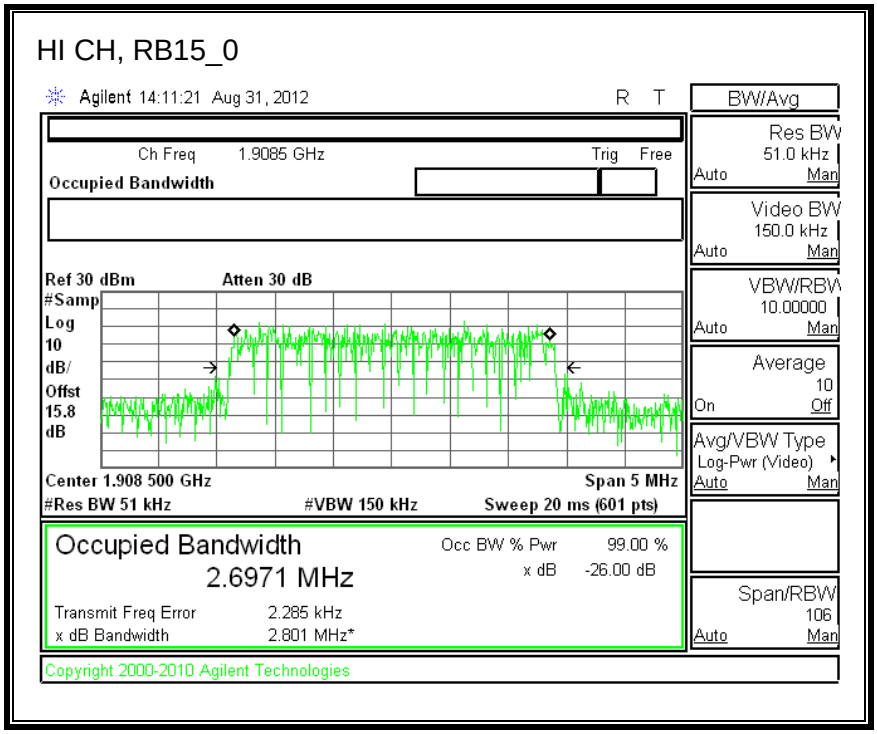
MID CH, RB15_0



HI CH, RB8_4

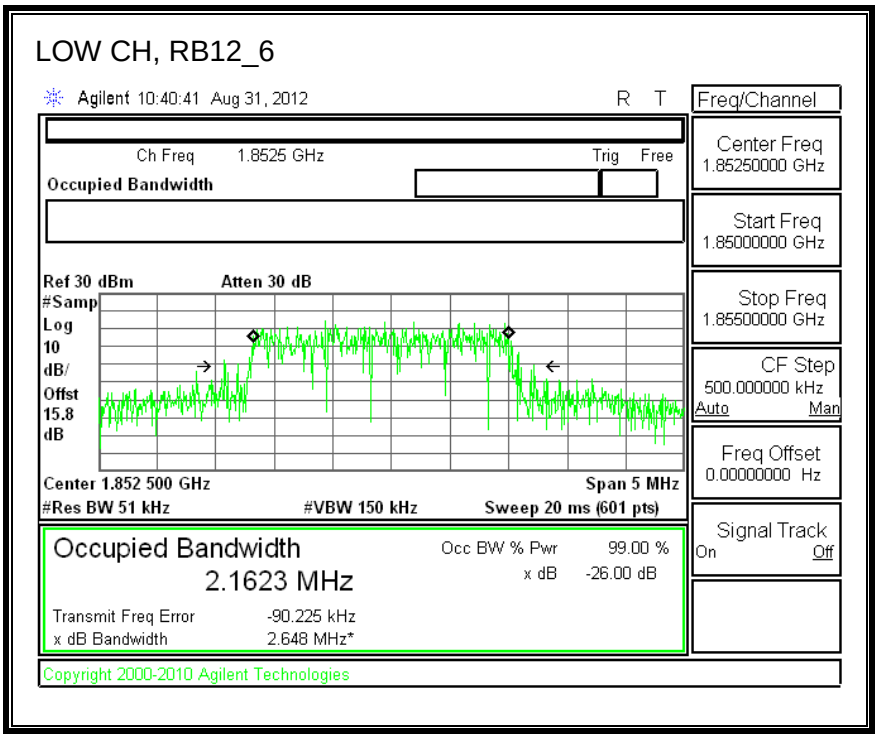


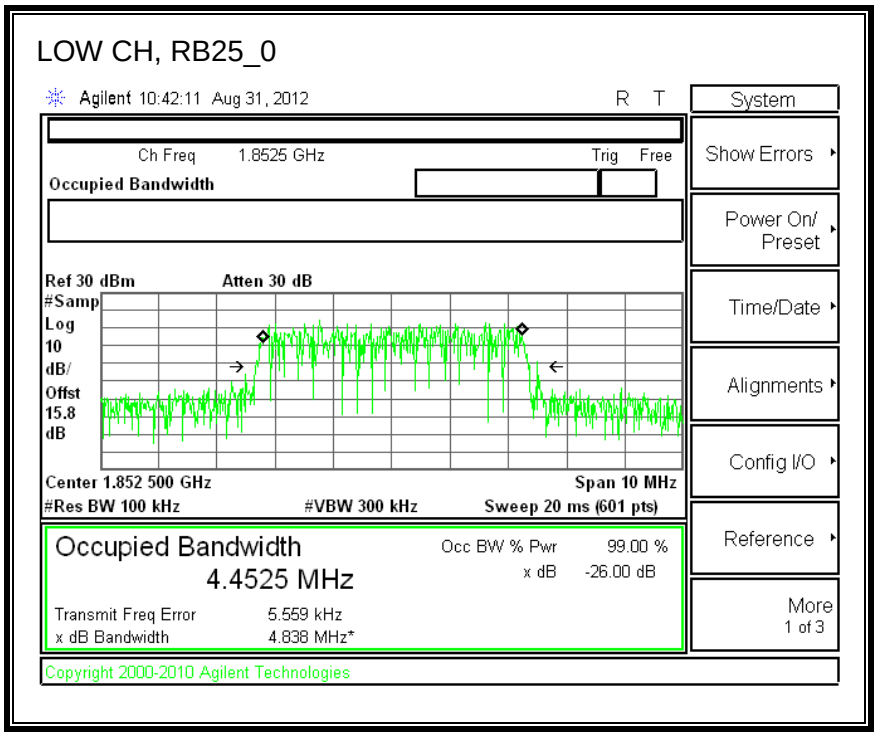
HI CH, RB15_0



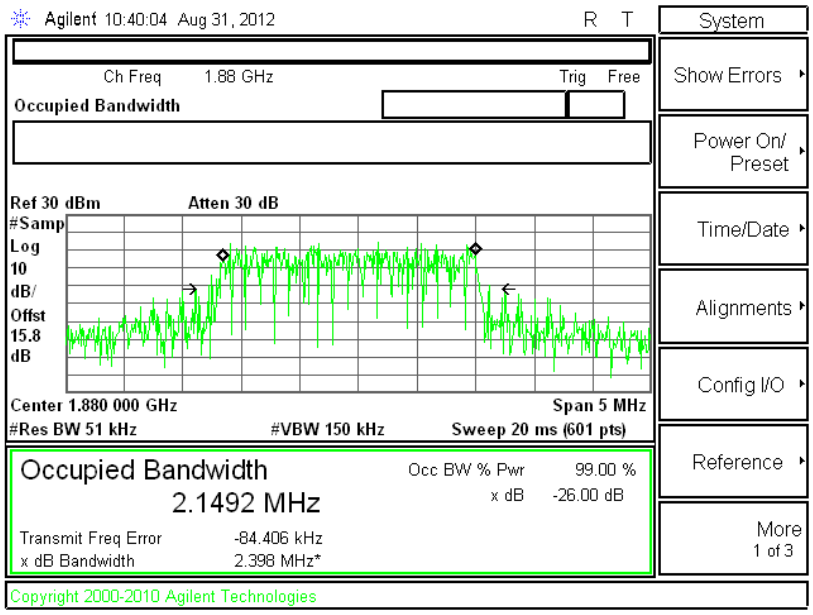
Band 2 (5 MHz BANDWIDTH)

LTE QPSK

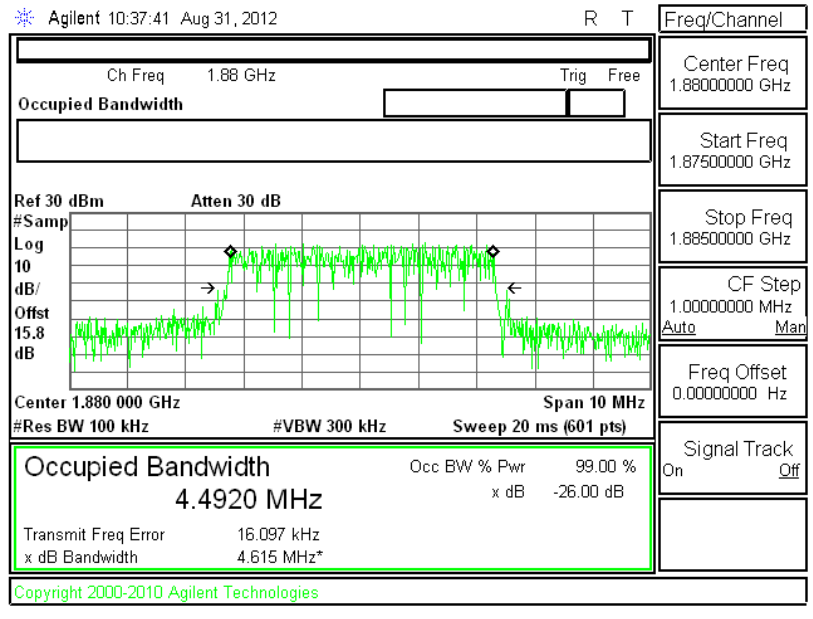




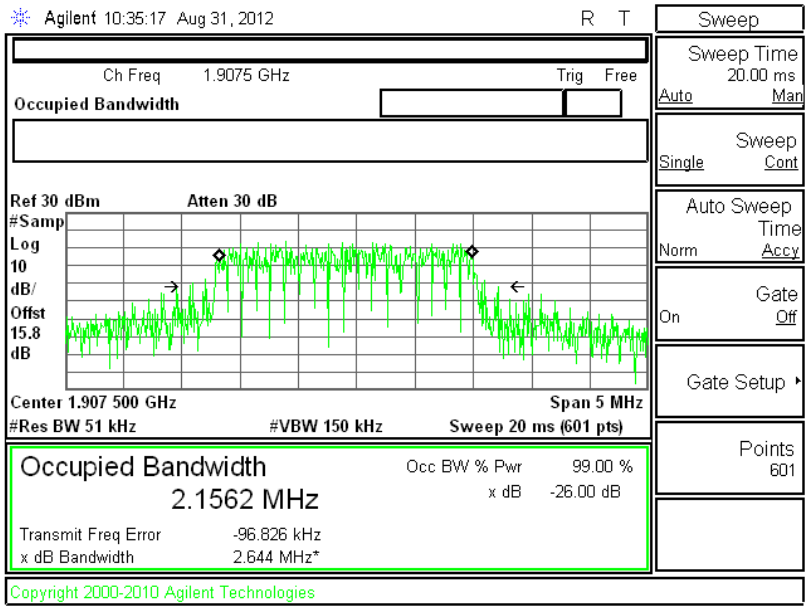
MID CH, RB12_6



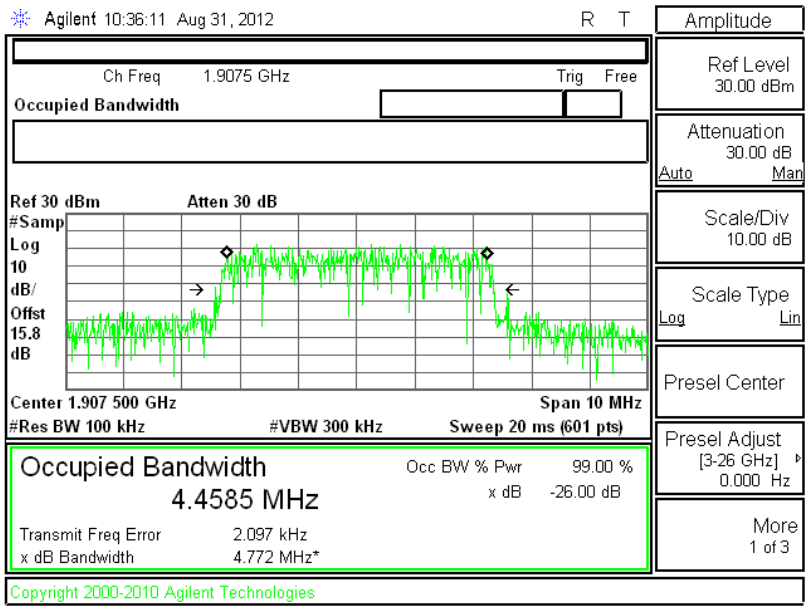
MID CH, RB25_0



HI CH, RB12_6

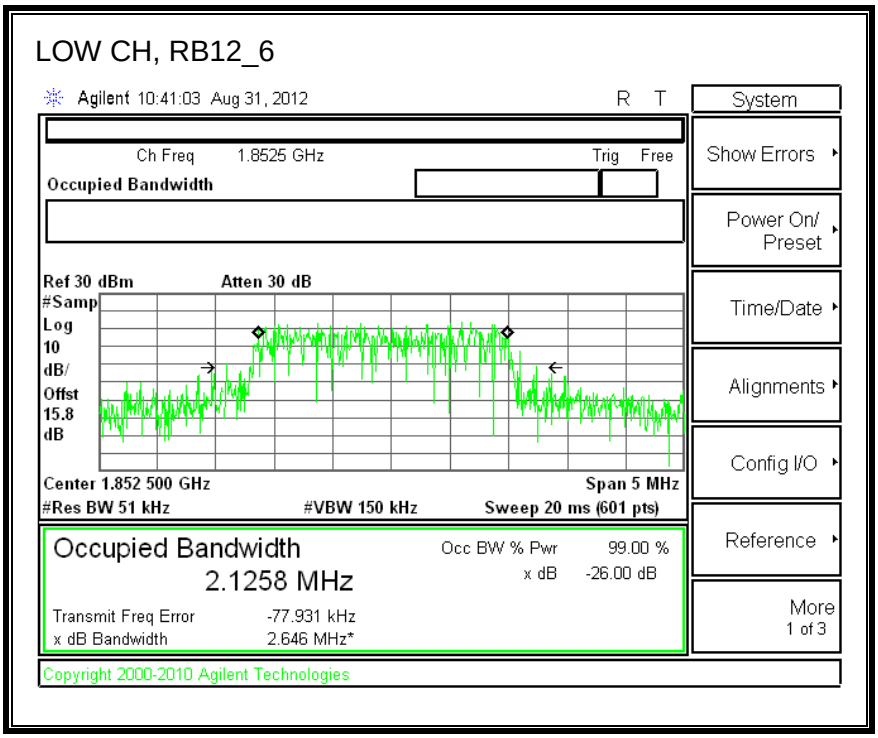


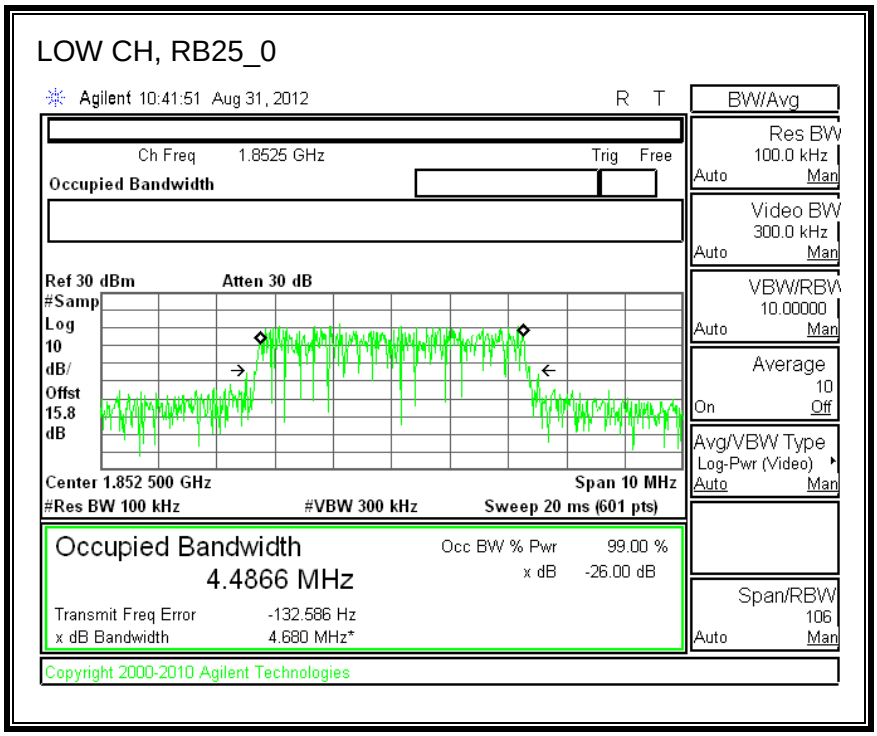
HI CH, RB25_0



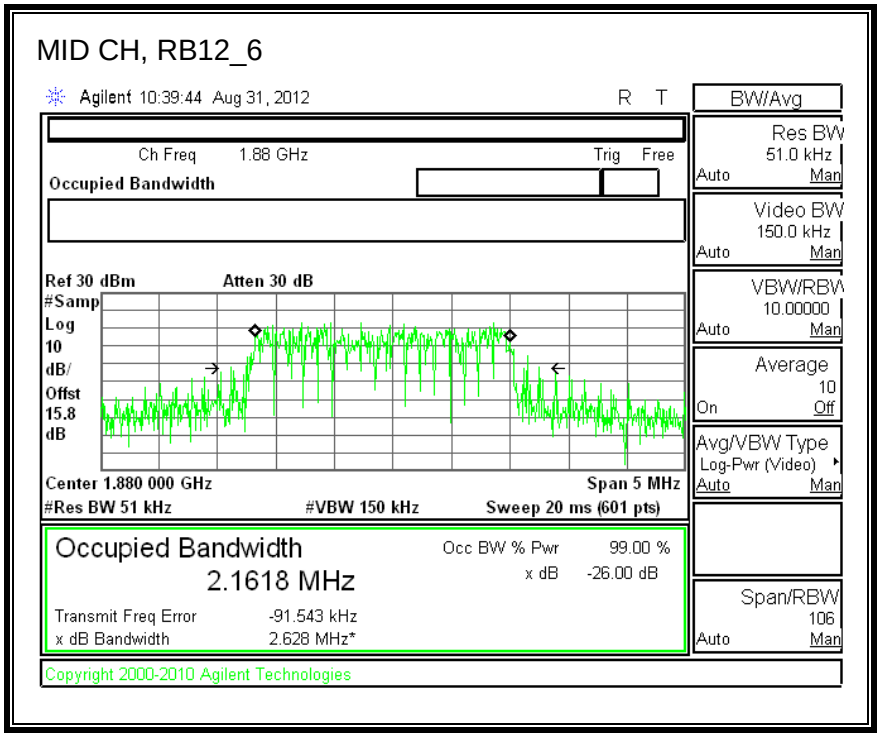
Band 2 (5 MHz BANDWIDTH)

LTE 16QAM

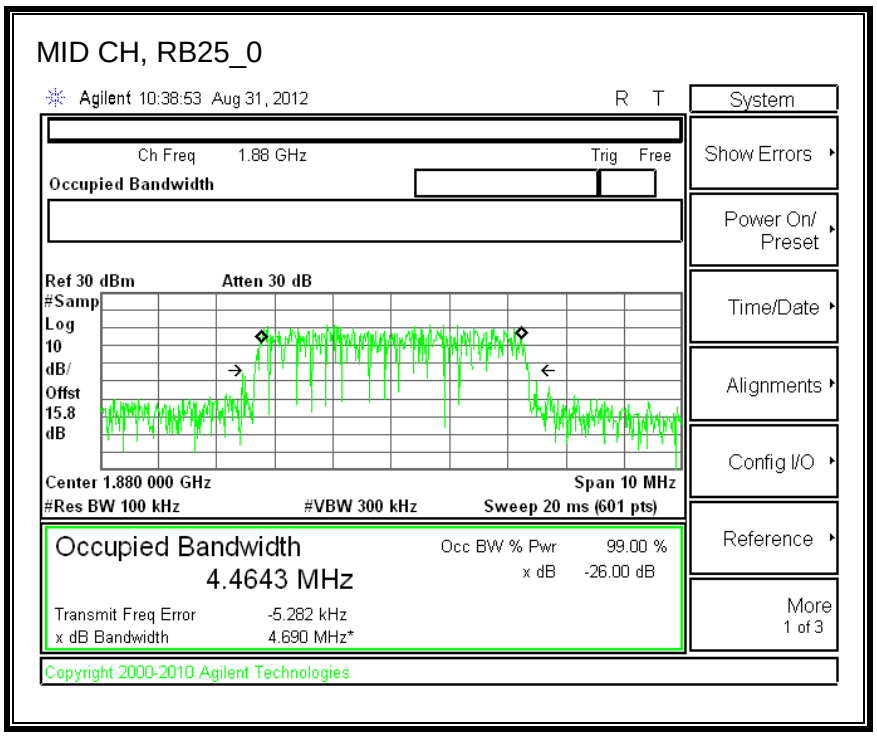




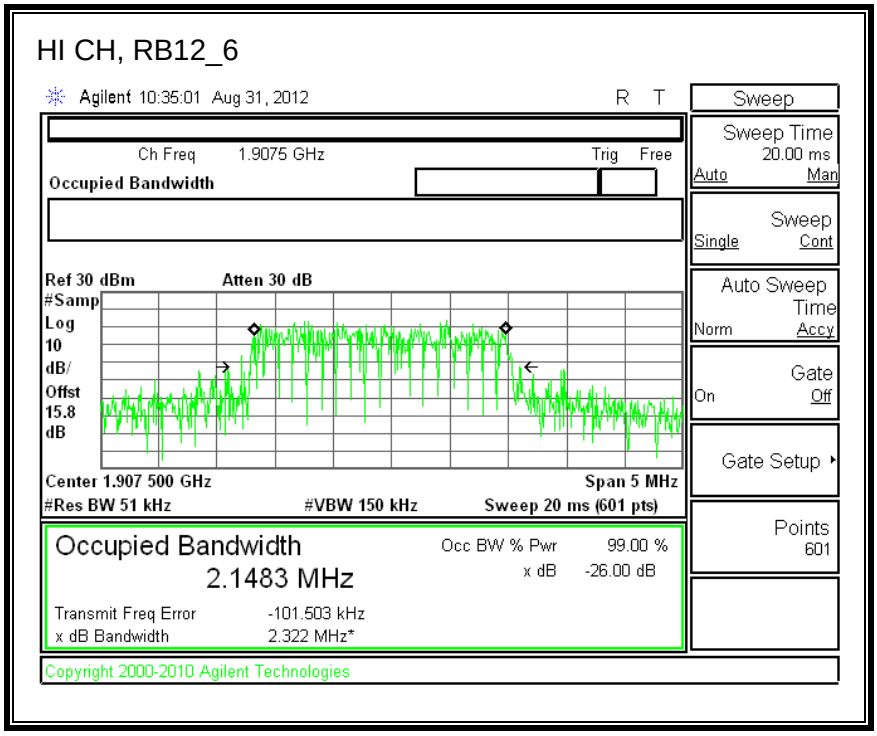
MID CH, RB12_6



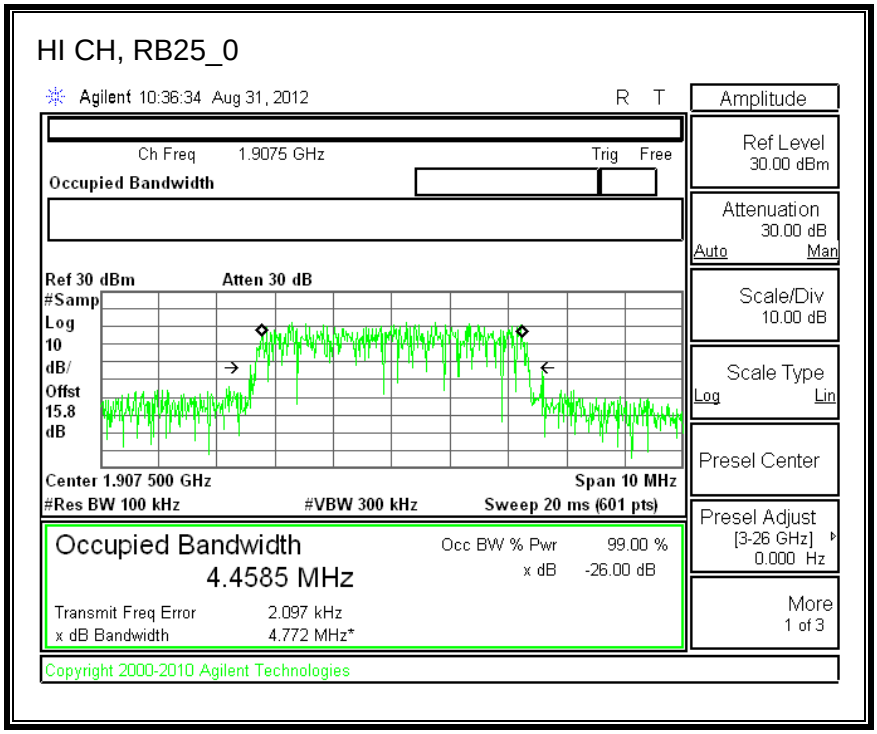
MID CH, RB25_0



HI CH, RB12_6

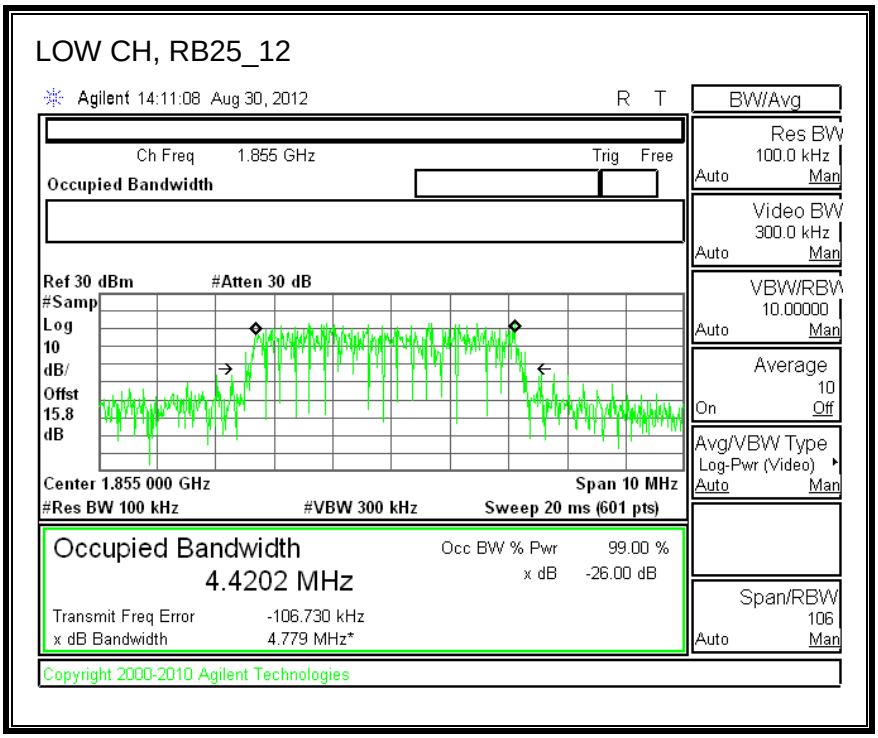


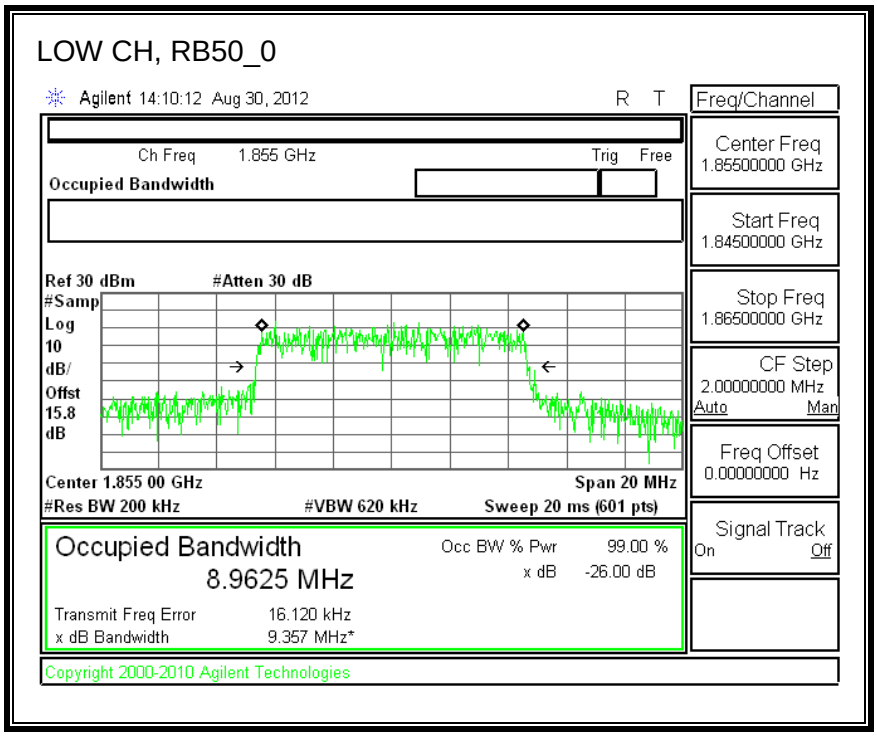
HI CH, RB25_0



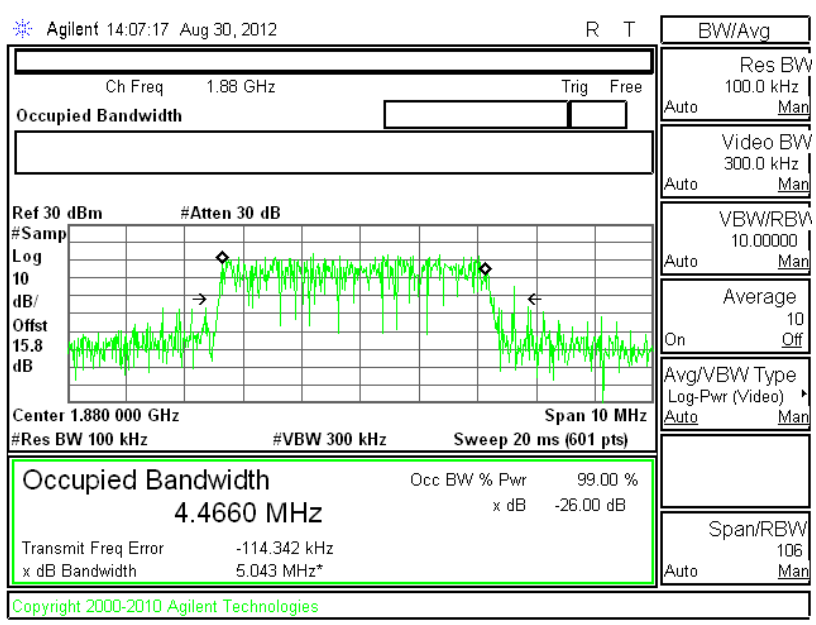
Band 2 (10 MHz BANDWIDTH)

LTE QPSK

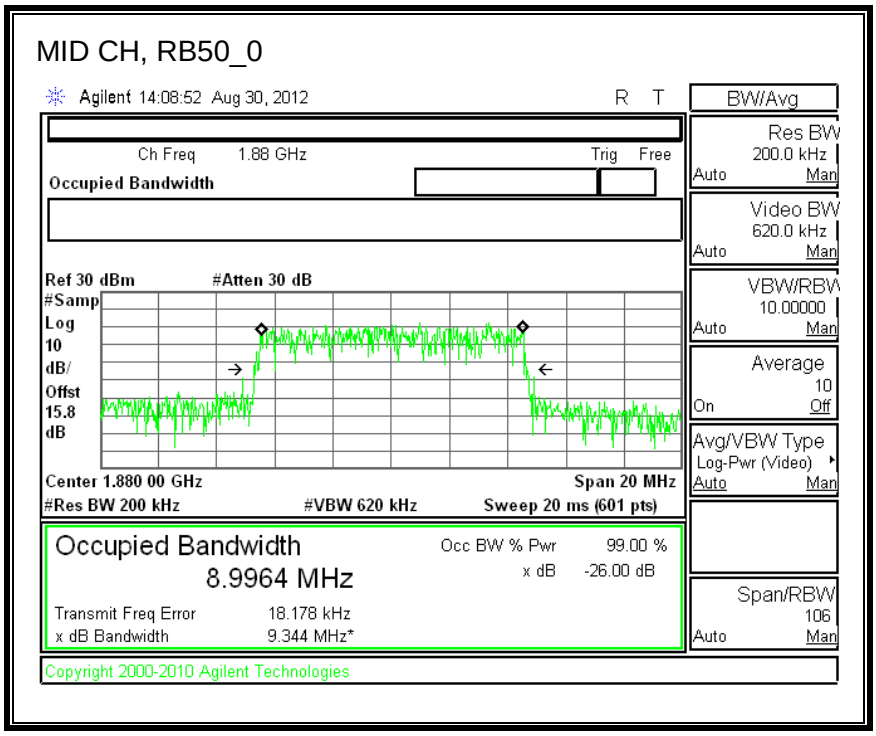




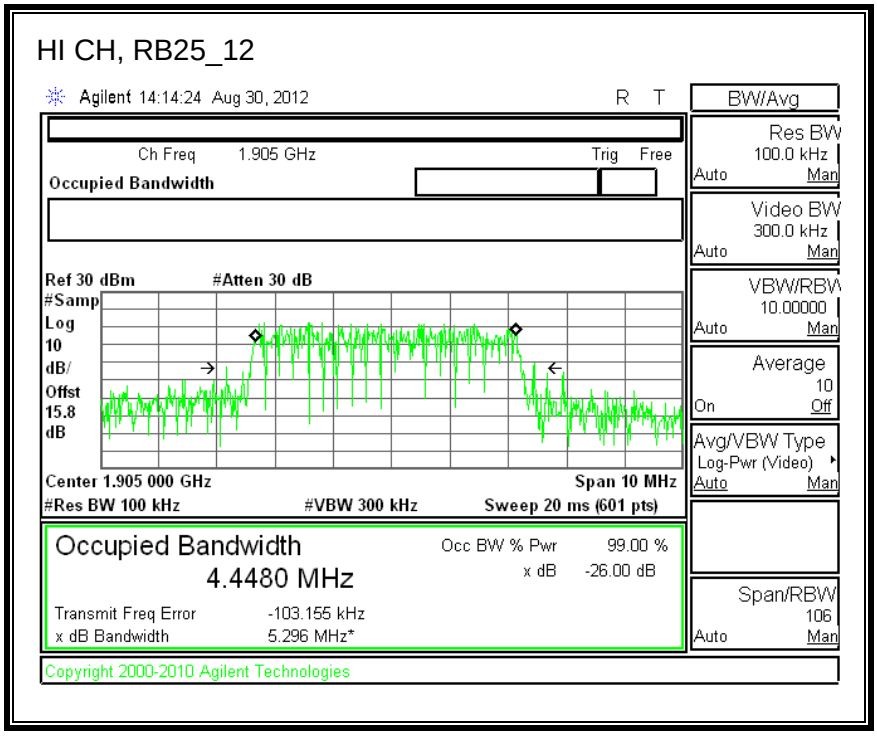
MID CH, RB25_12



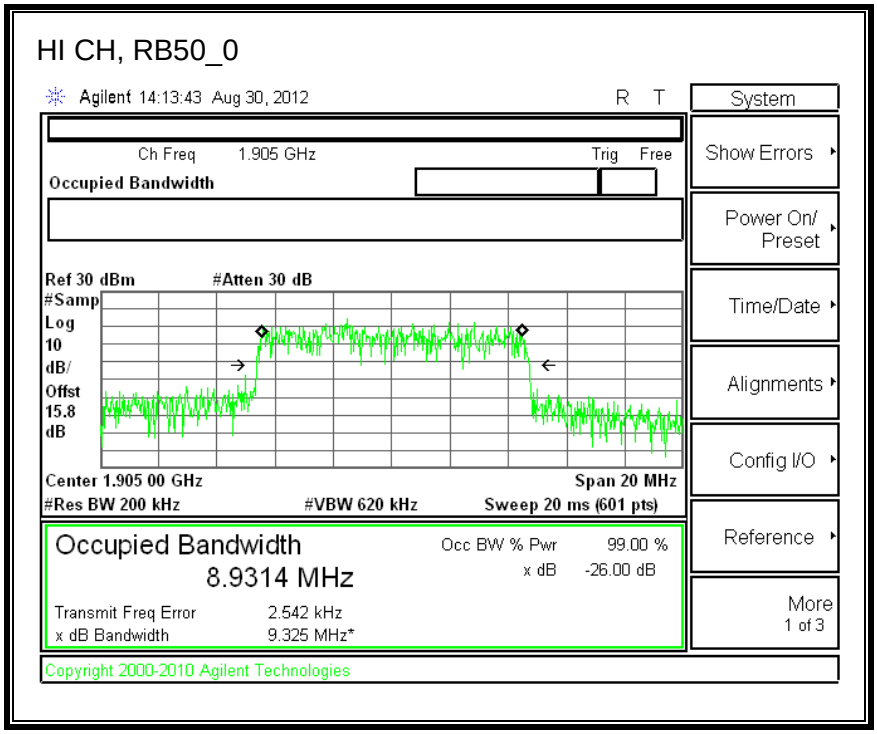
MID CH, RB50_0



HI CH, RB25_12

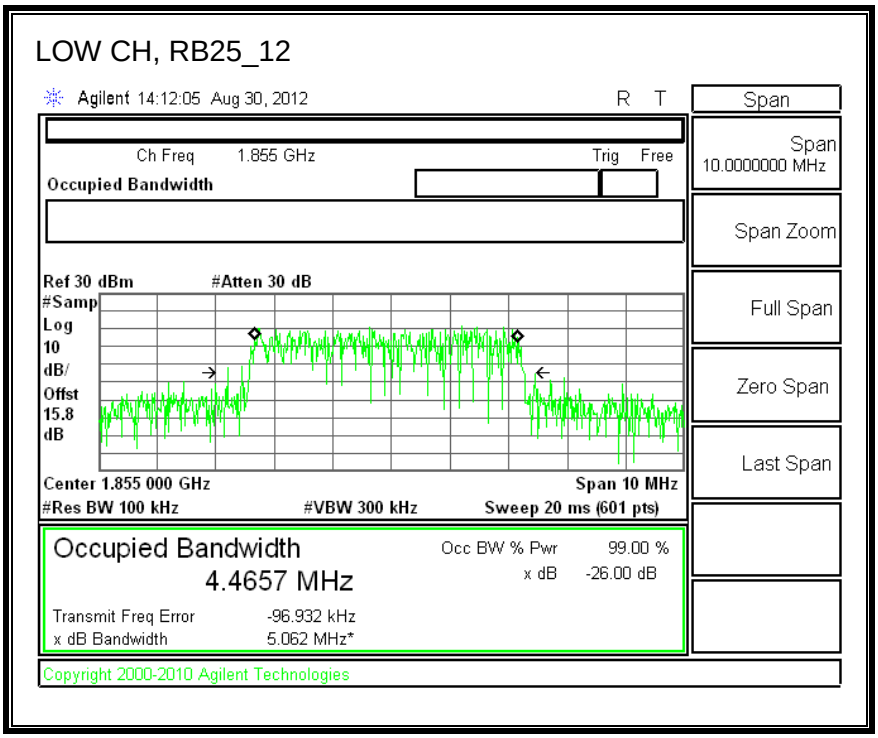


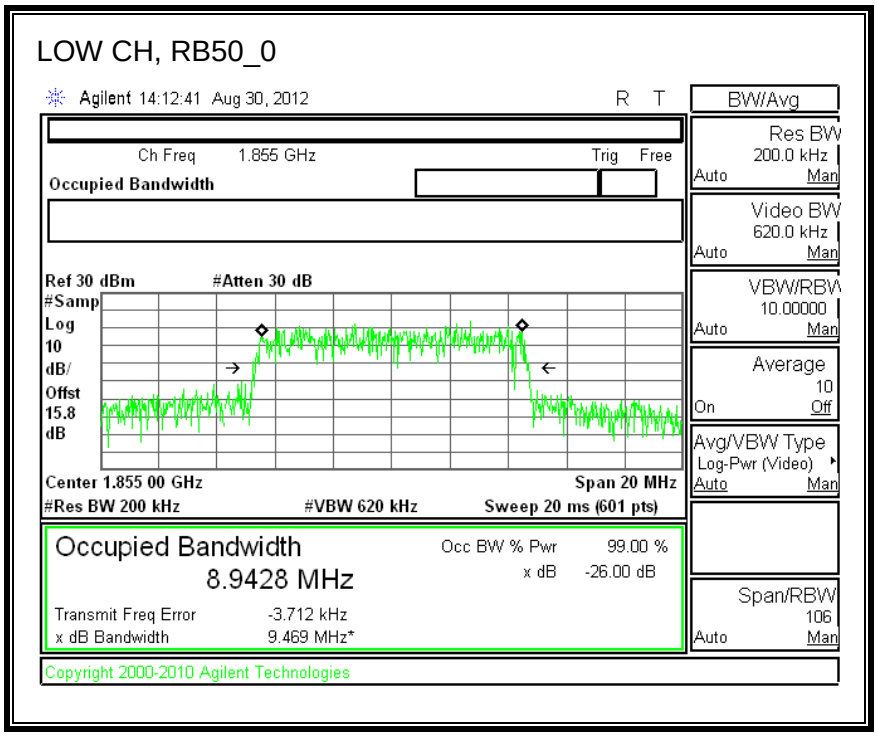
HI CH, RB50_0



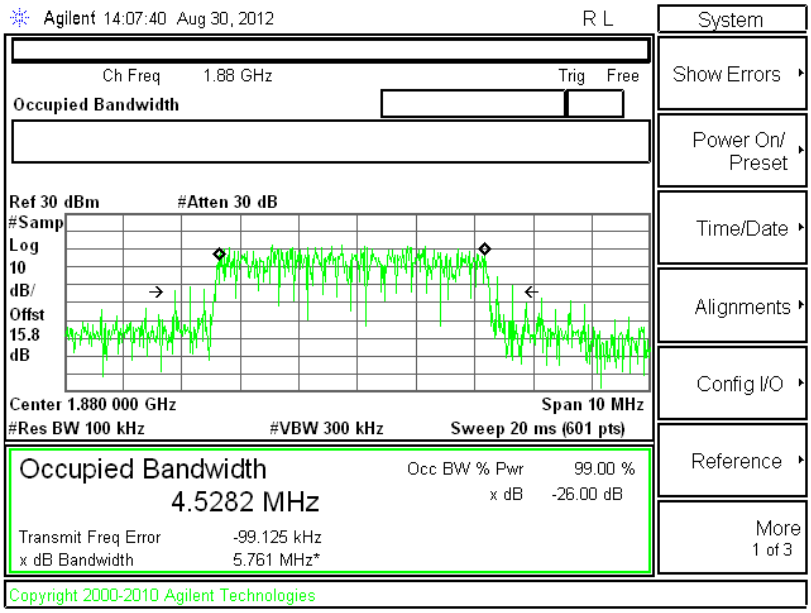
Band 2 (10 MHz BANDWIDTH)

LTE 16QAM

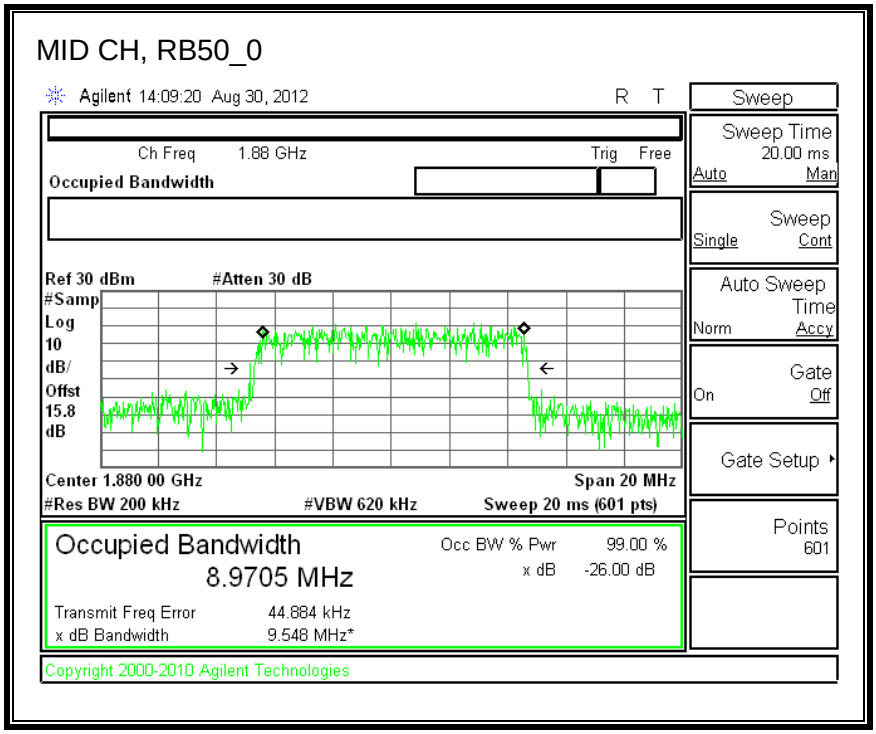




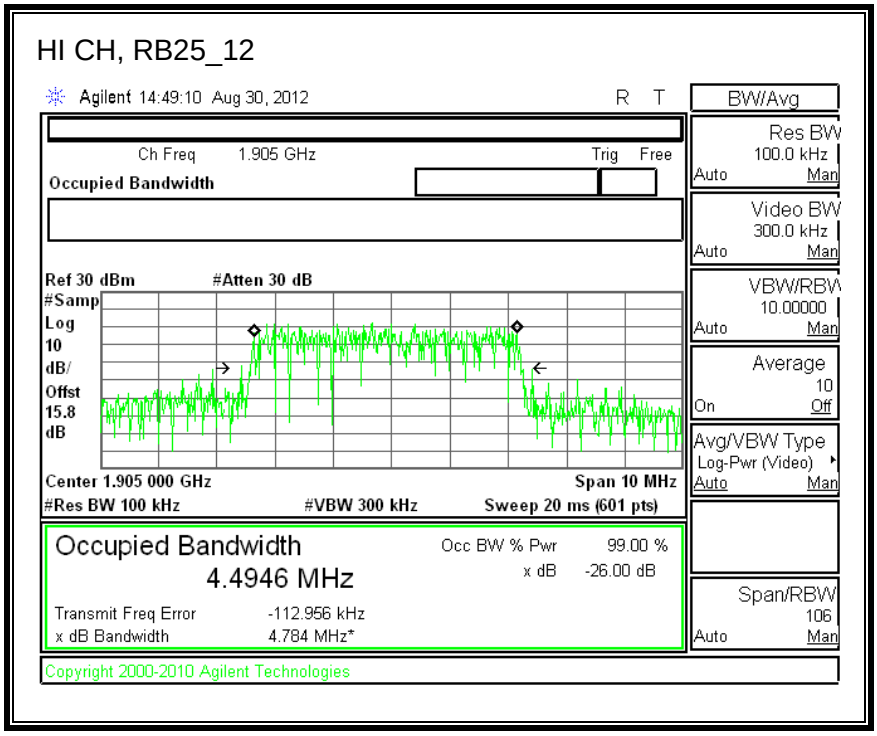
MID CH, RB25_12



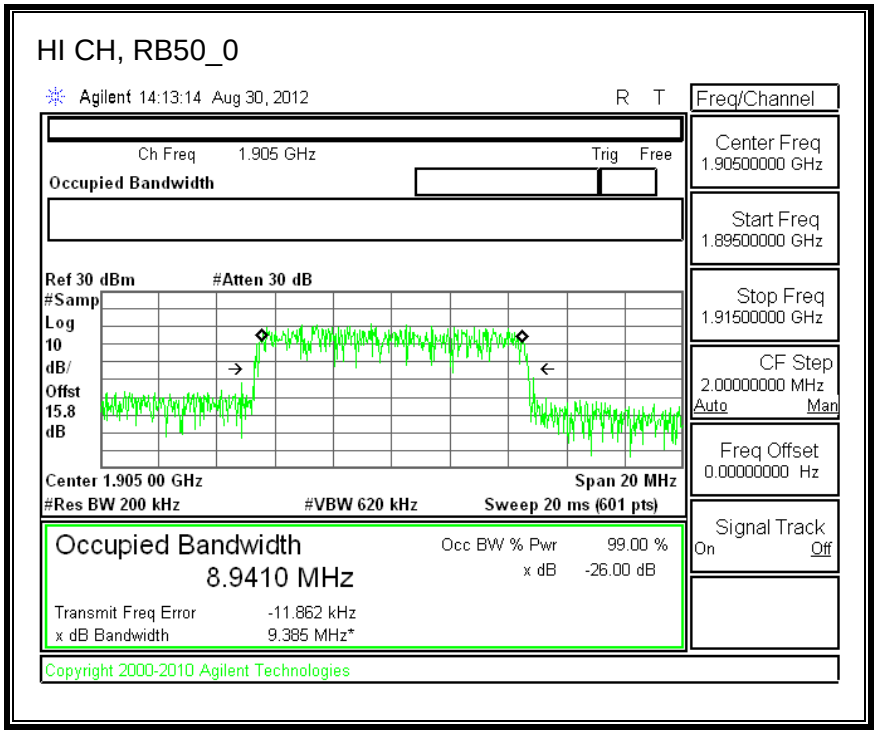
MID CH, RB50_0



HI CH, RB25_12

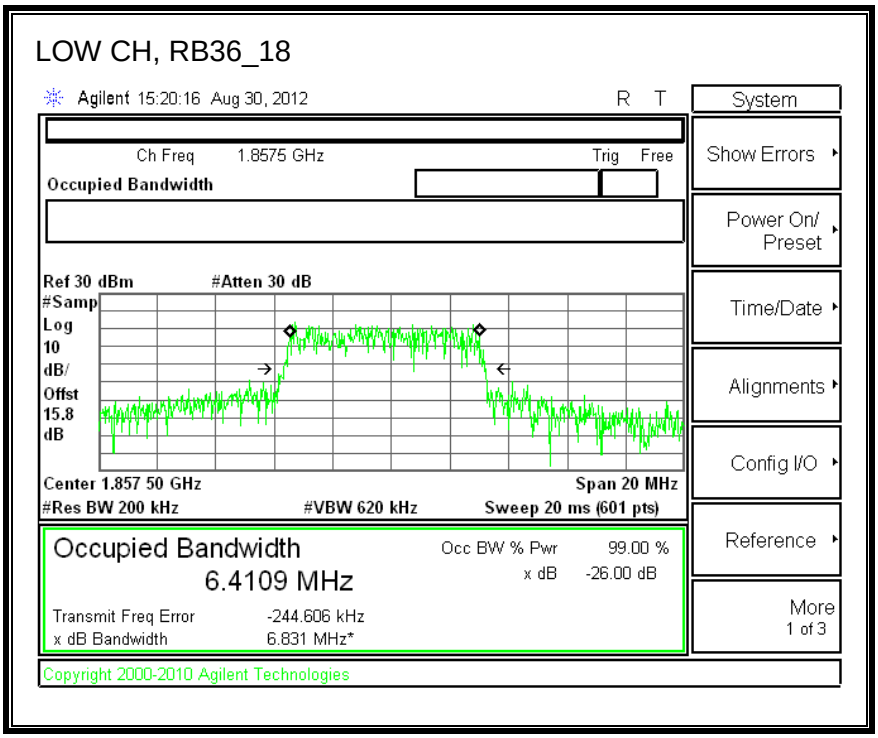


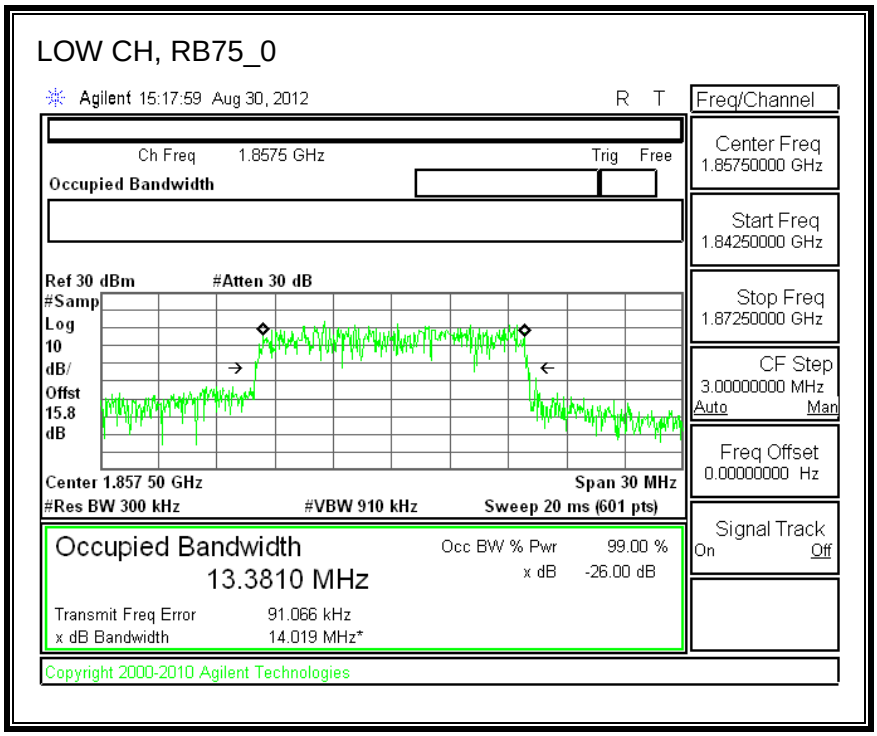
HI CH, RB50_0



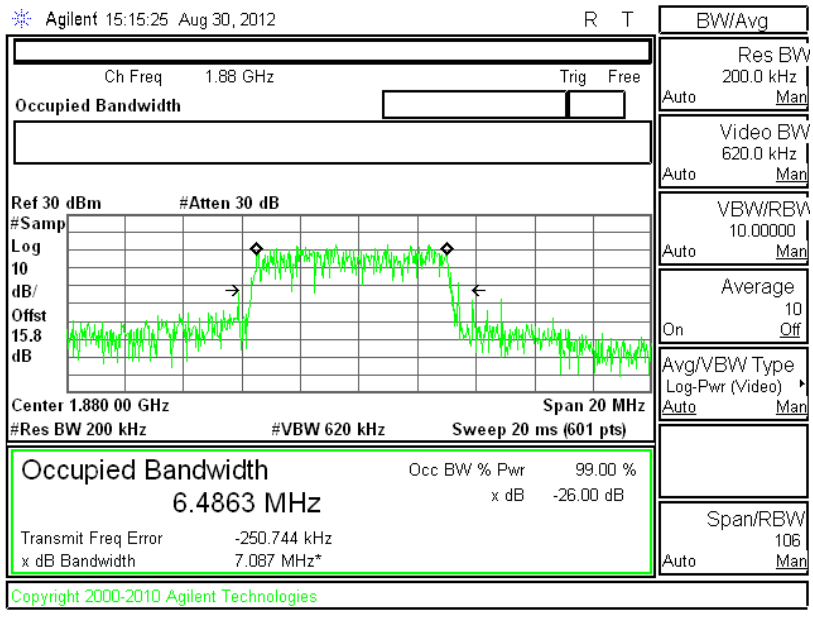
Band 2 (15 MHz BANDWIDTH)

LTE QPSK

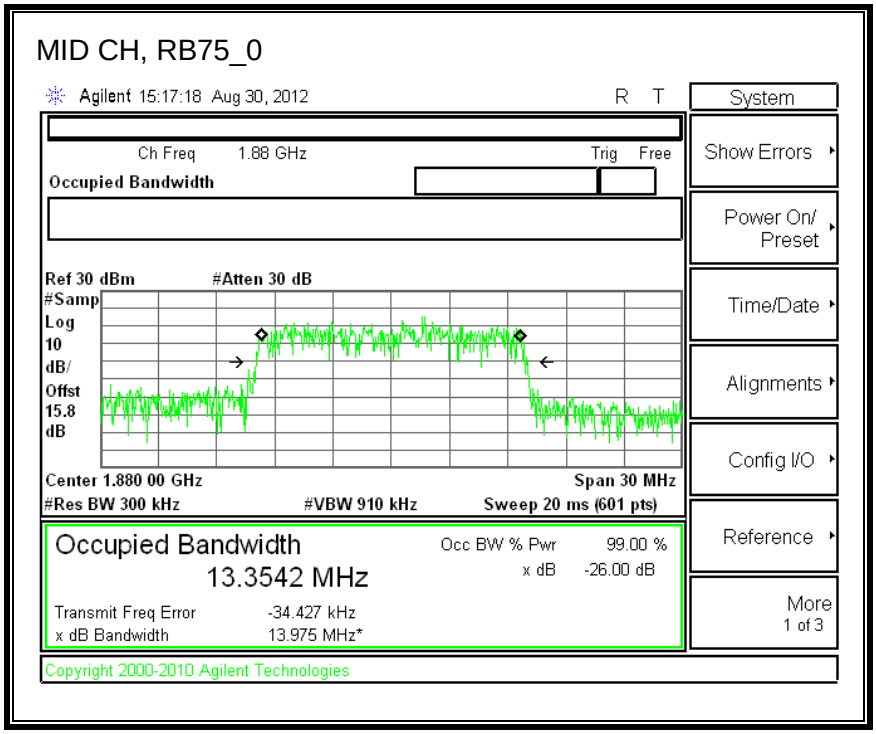




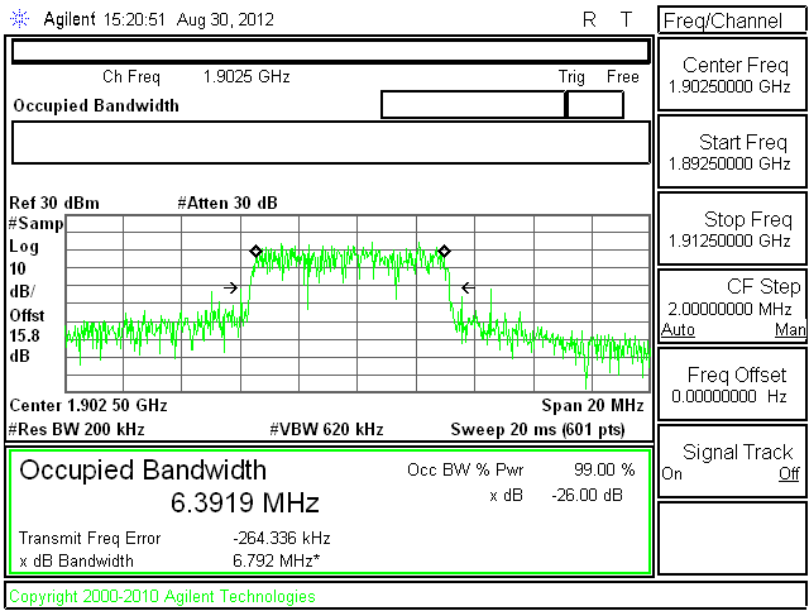
MID CH, RB36_18



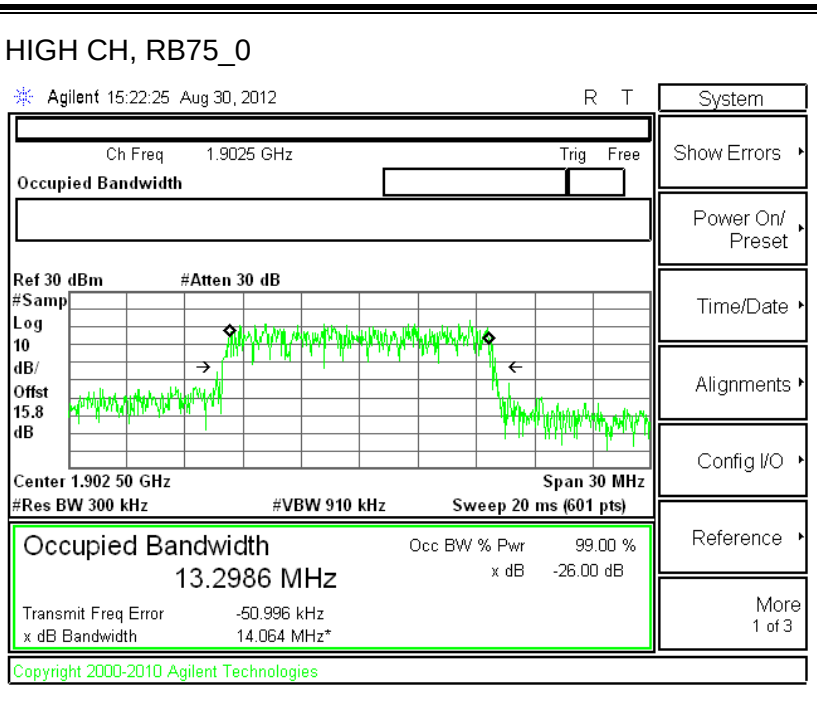
MID CH, RB75_0



HIGH CH, RB36_18

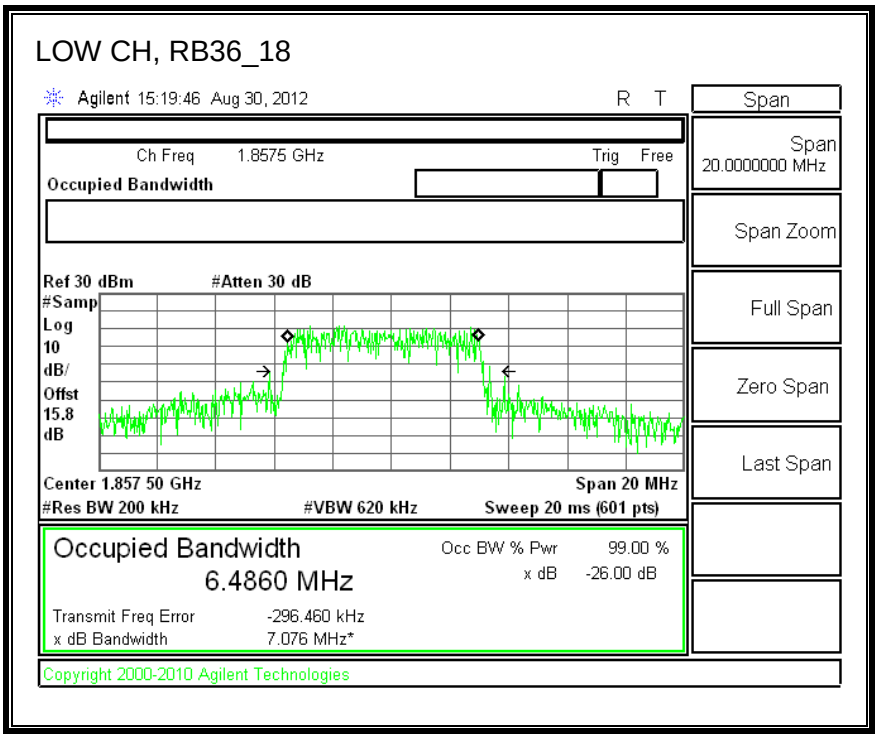


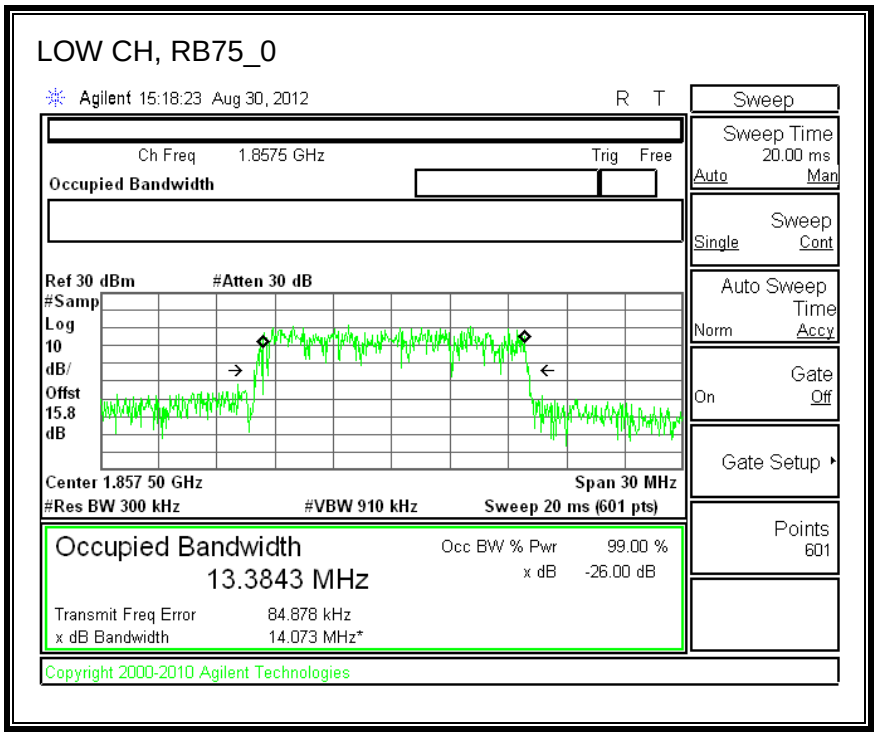
HIGH CH, RB75_0



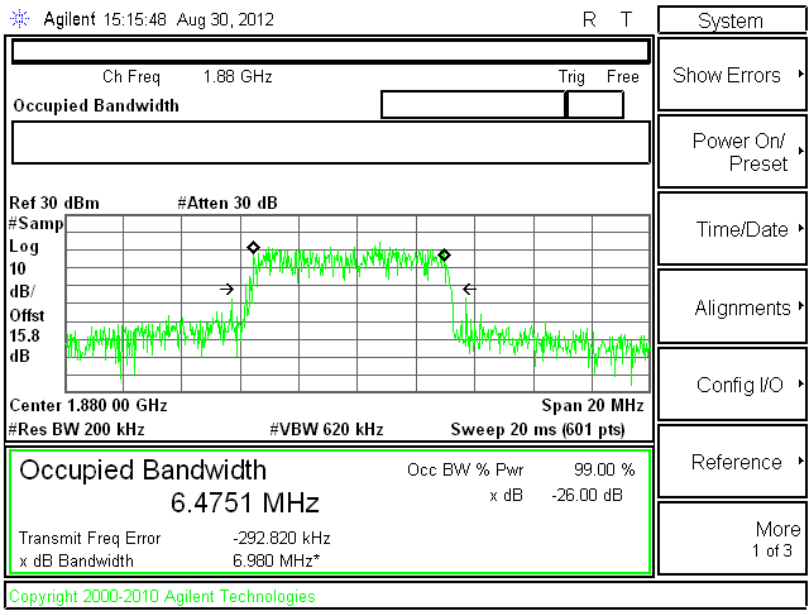
Band 2 (15 MHz BANDWIDTH)

LTE 16QAM

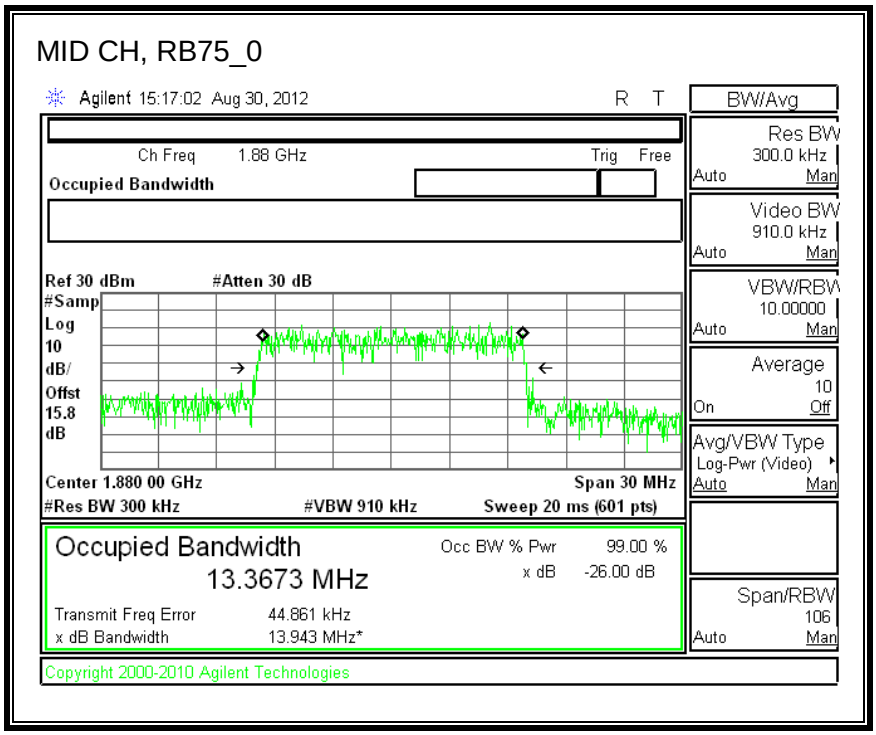




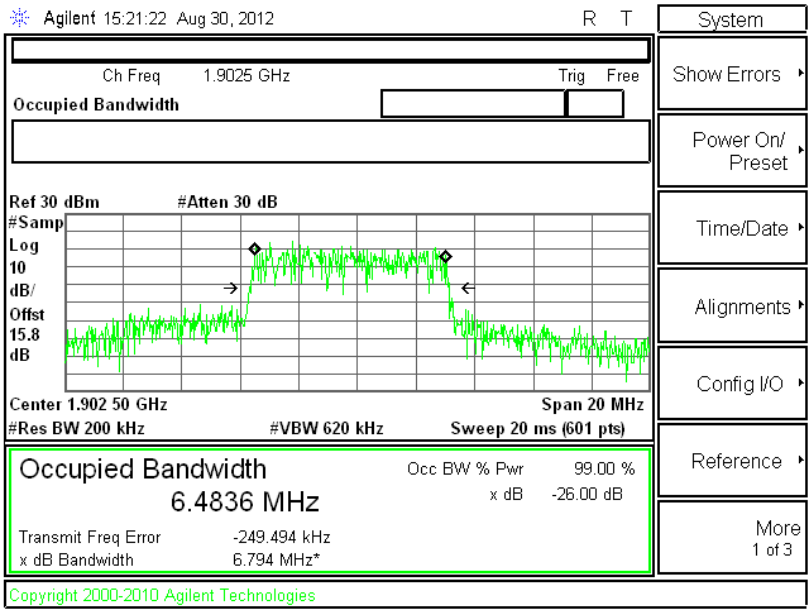
MID CH, RB36_18



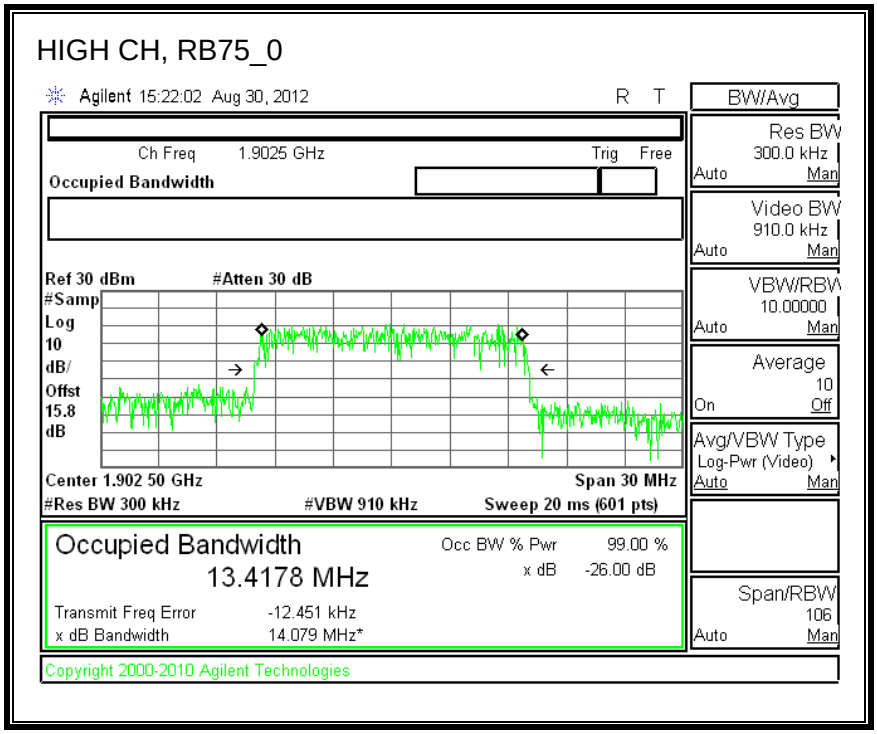
MID CH, RB75_0



HIGH CH, RB36_18

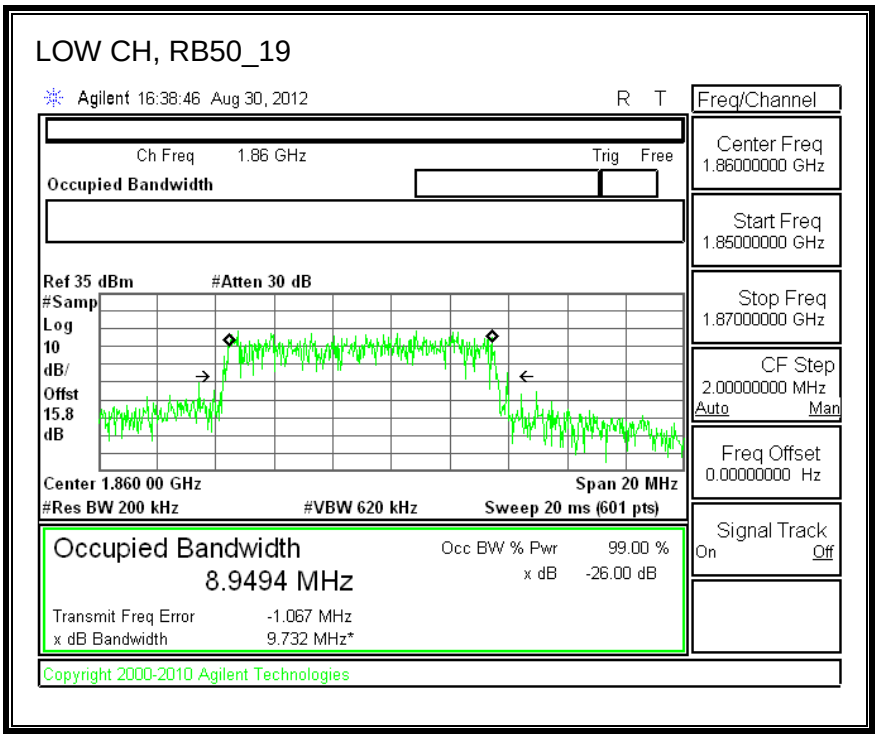


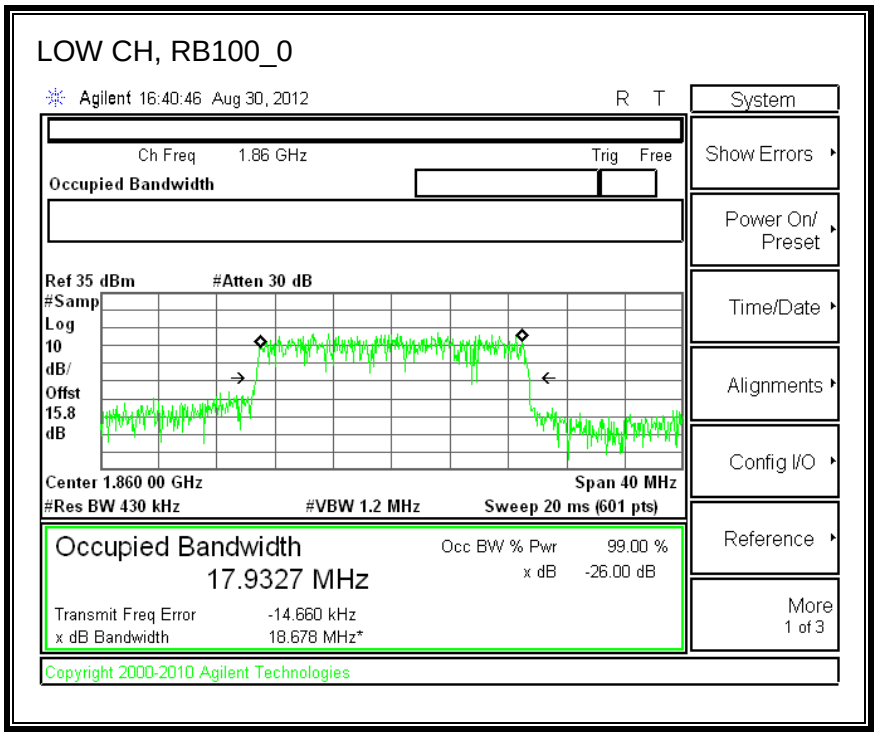
HIGH CH, RB75_0

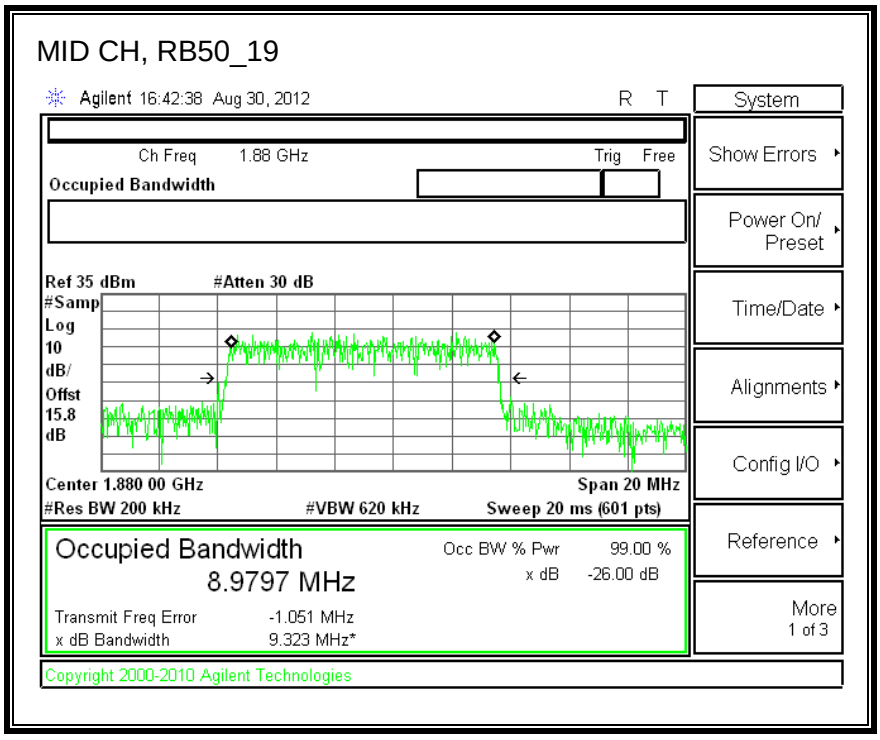


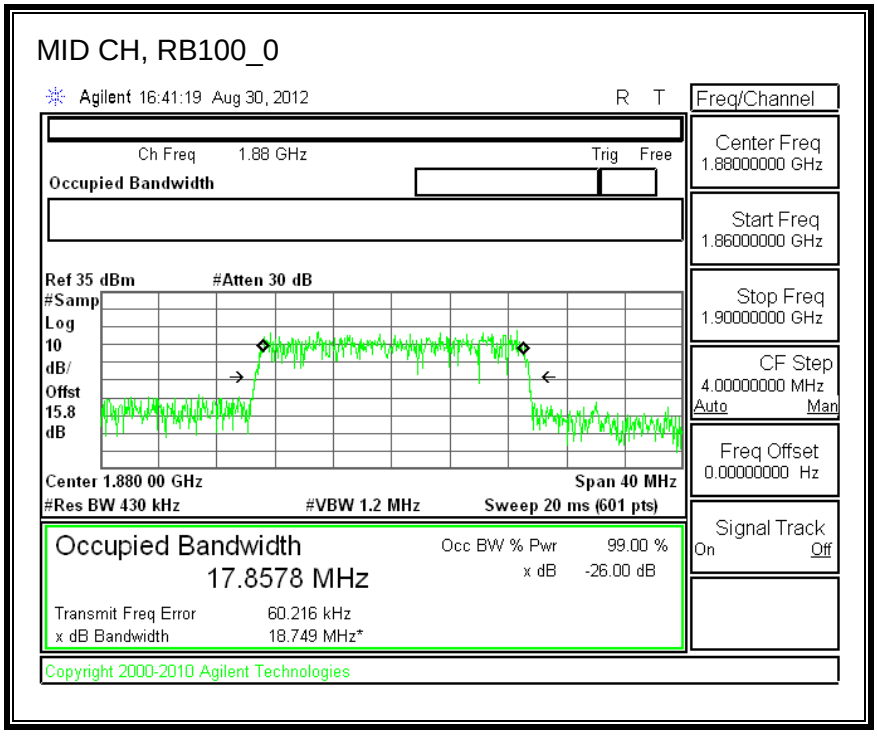
Band 2 (20 MHz BANDWIDTH)

LTE QPSK

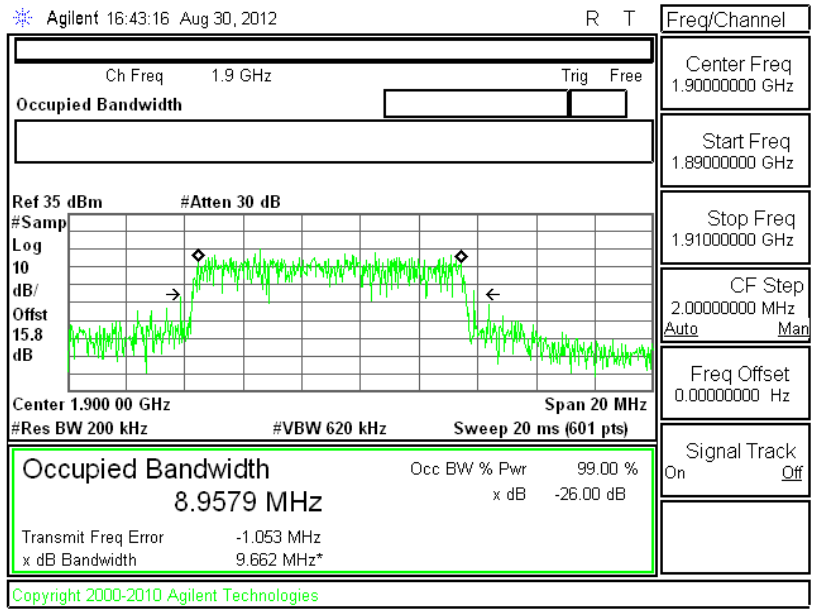




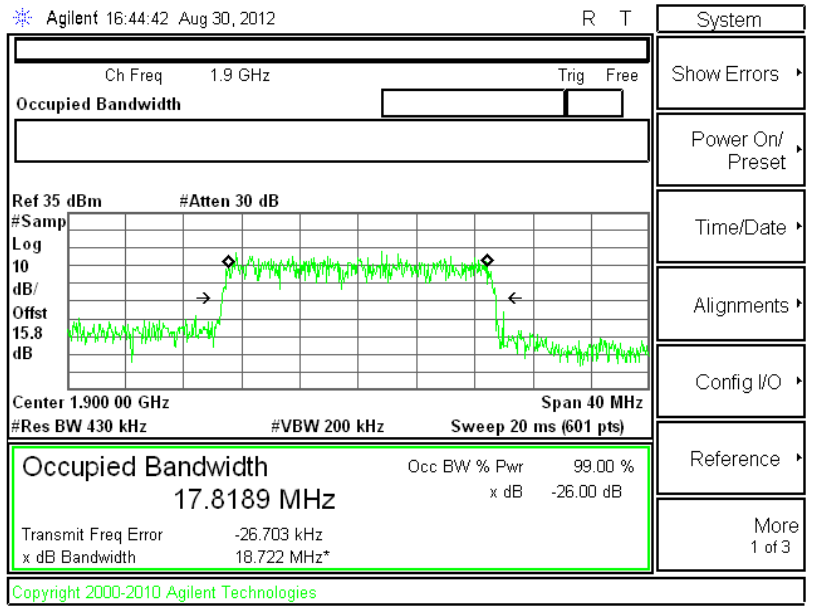




HIGH CH, RB50_19

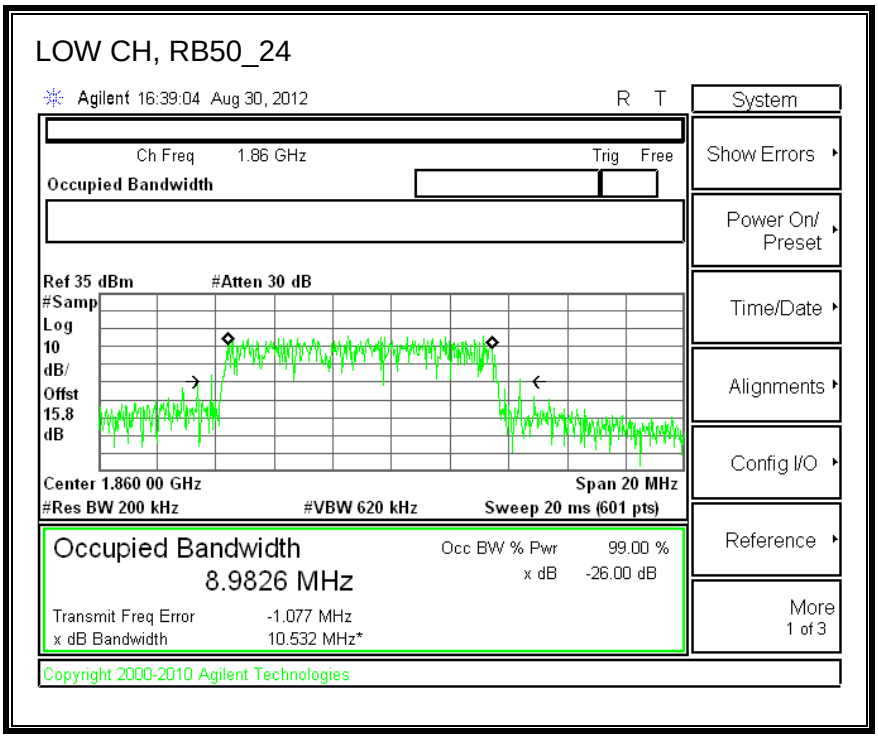


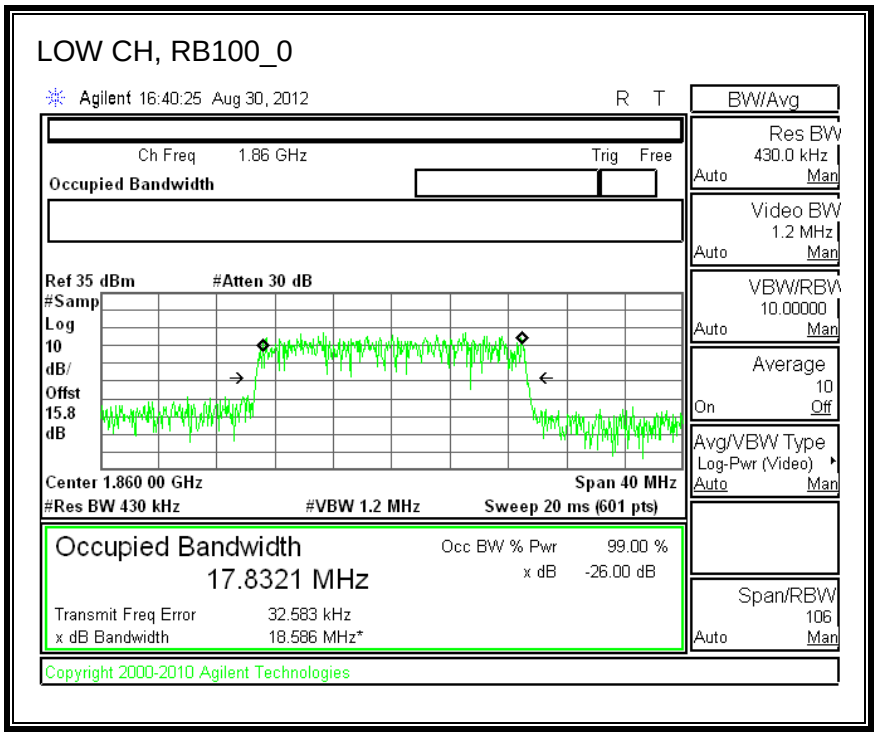
HIGH CH, RB100_0



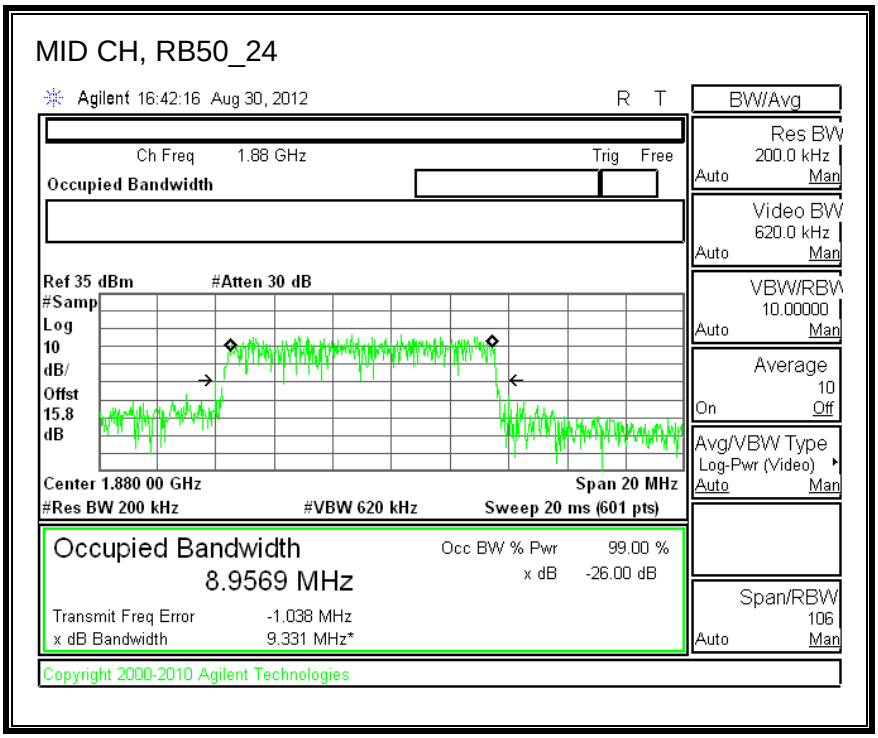
Band 2 (20 MHz BANDWIDTH)

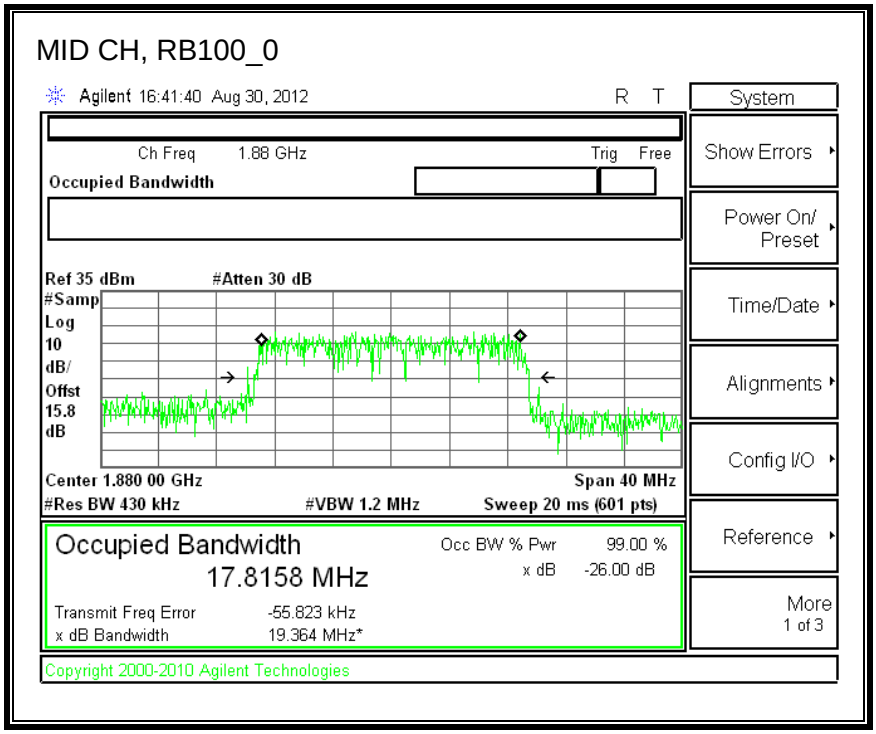
LTE 16QAM



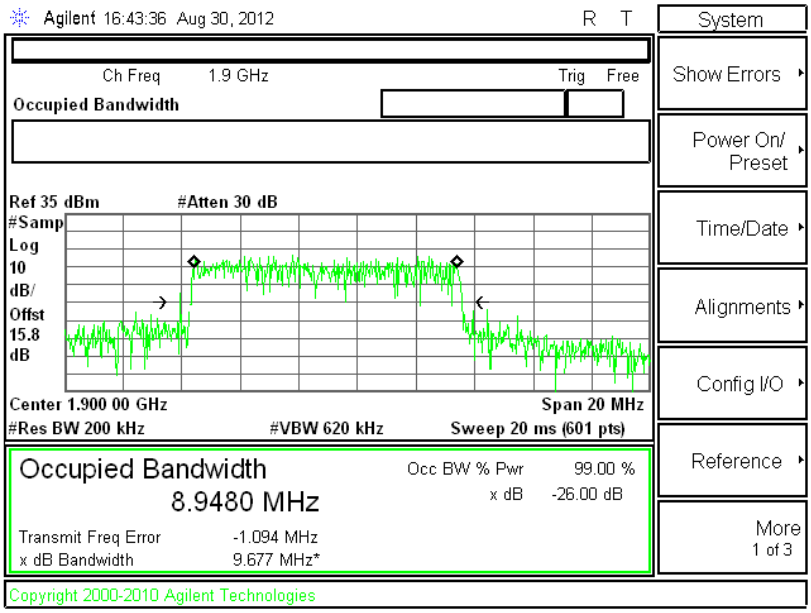


LTE 16QAM

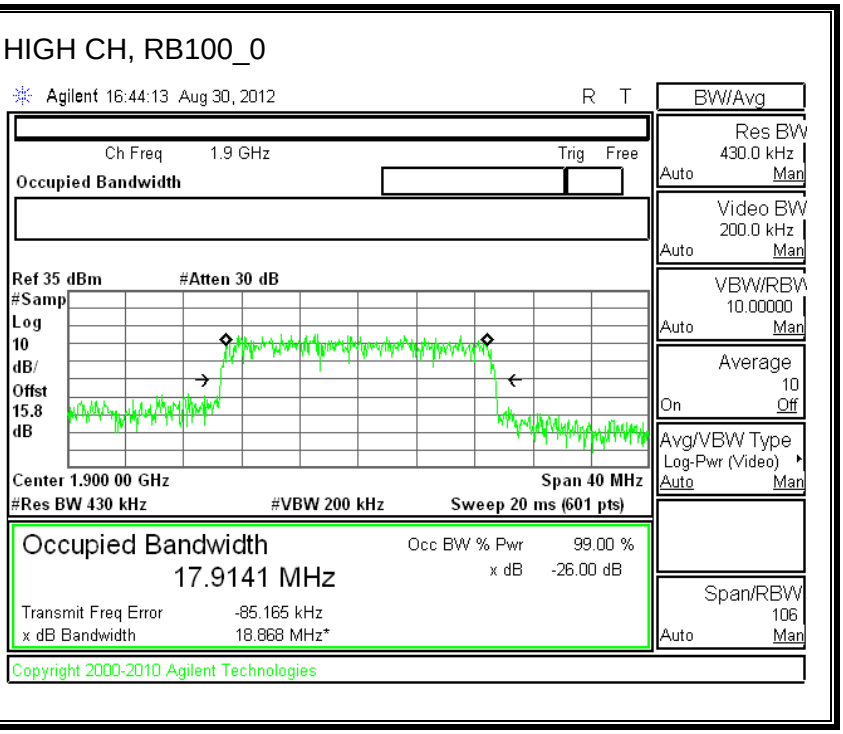




HIGH CH, RB50_24

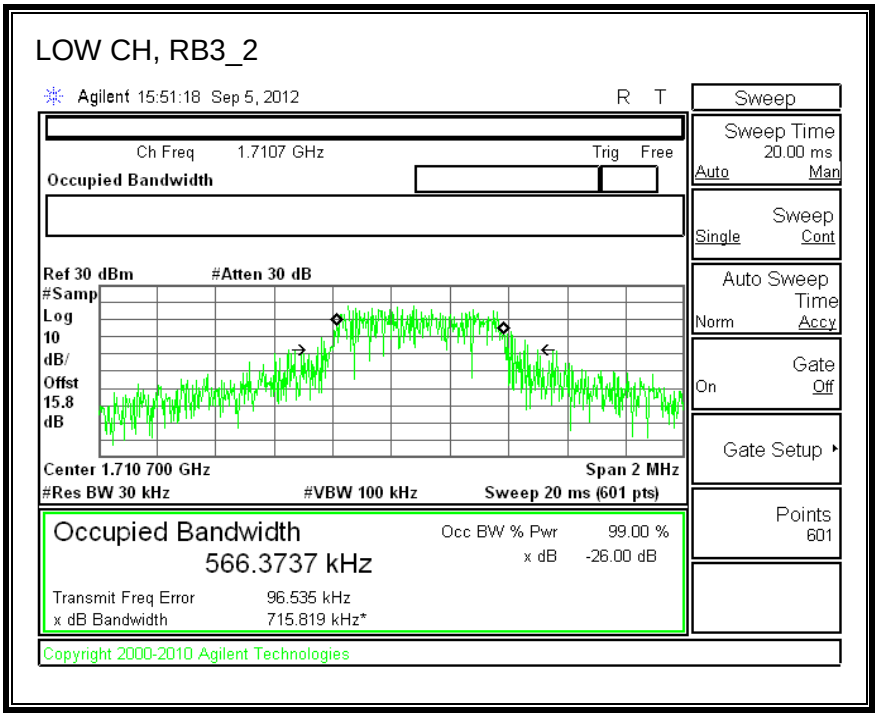


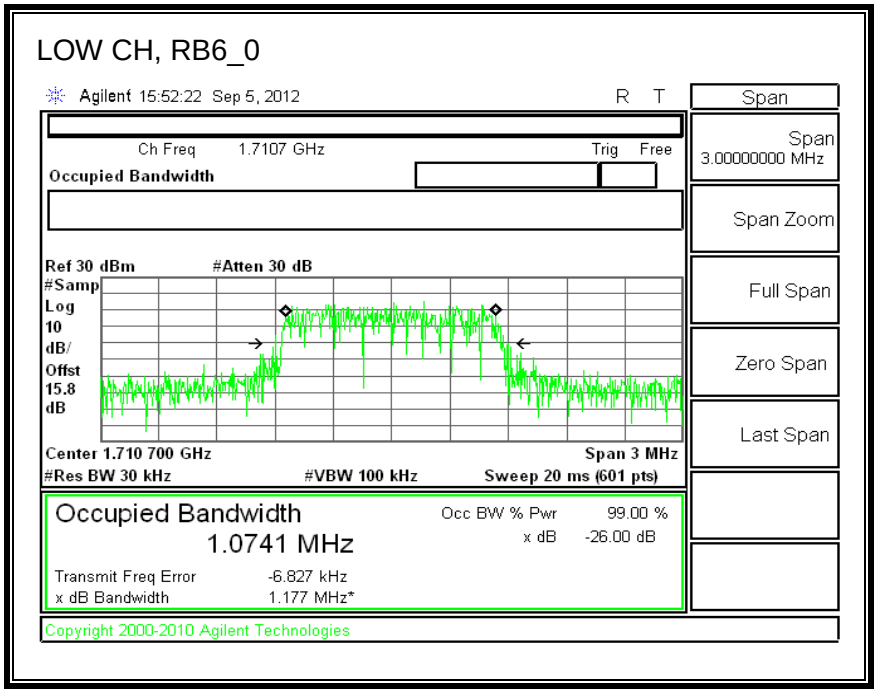
HIGH CH, RB100_0



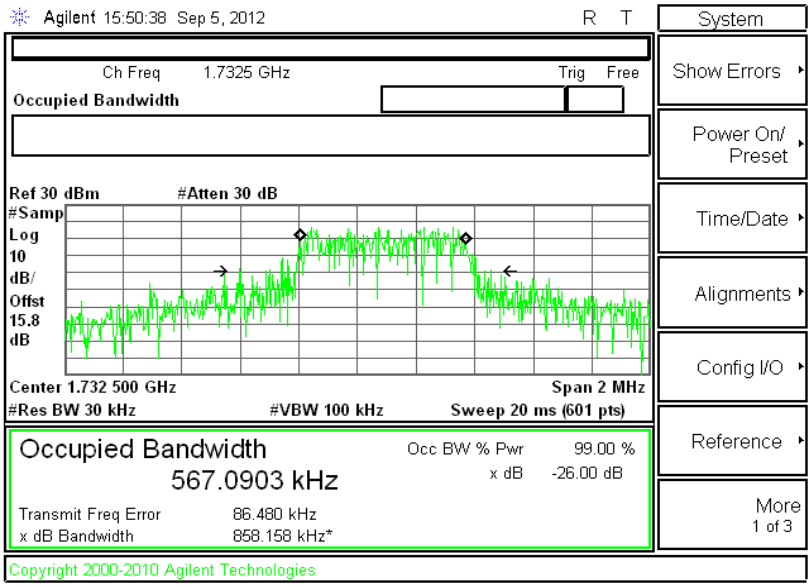
8.1.4. LTE BAND 4

QPSK 1.4 MHz BANDWIDTH)

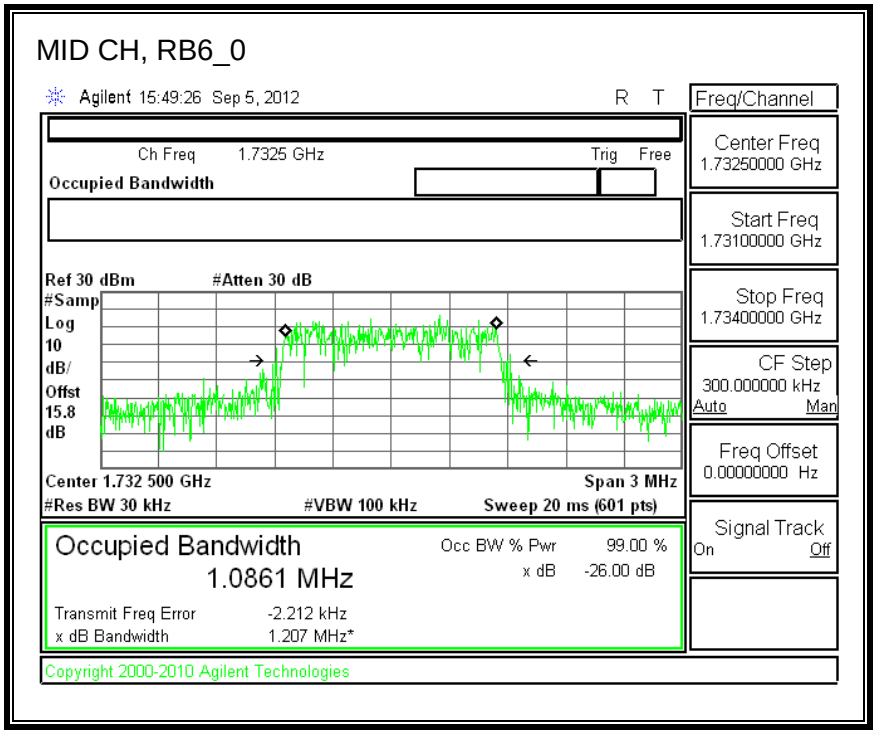




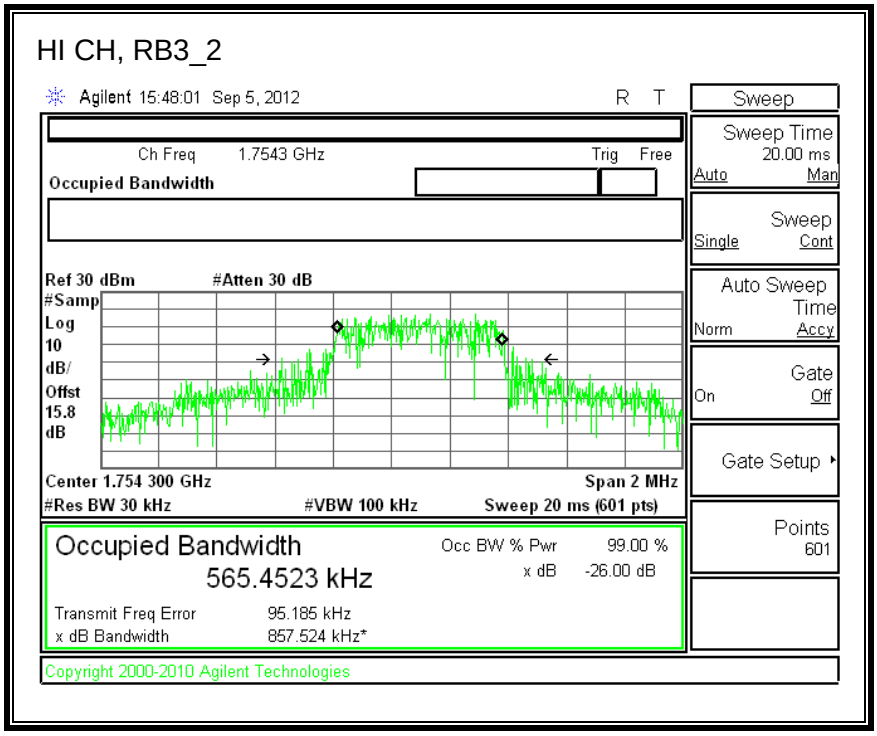
MID CH, RB3_2



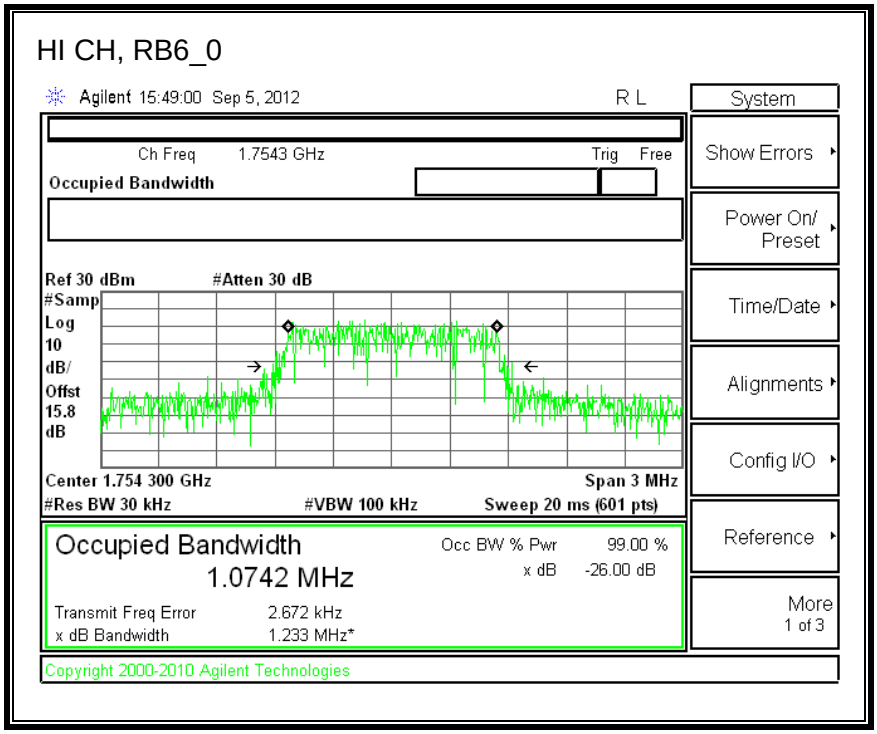
MID CH, RB6_0



HI CH, RB3_2

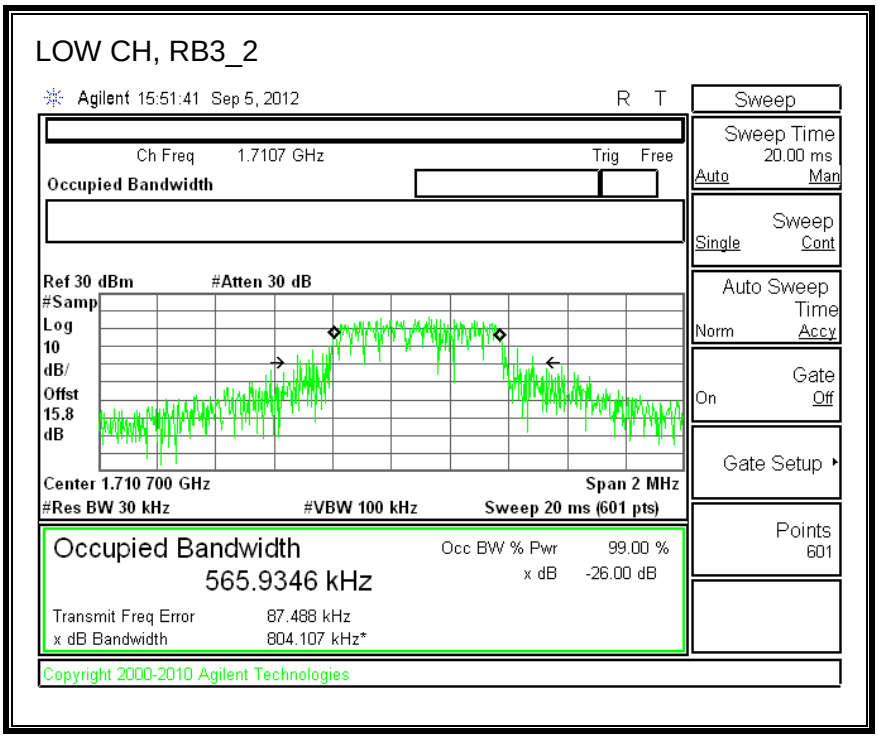


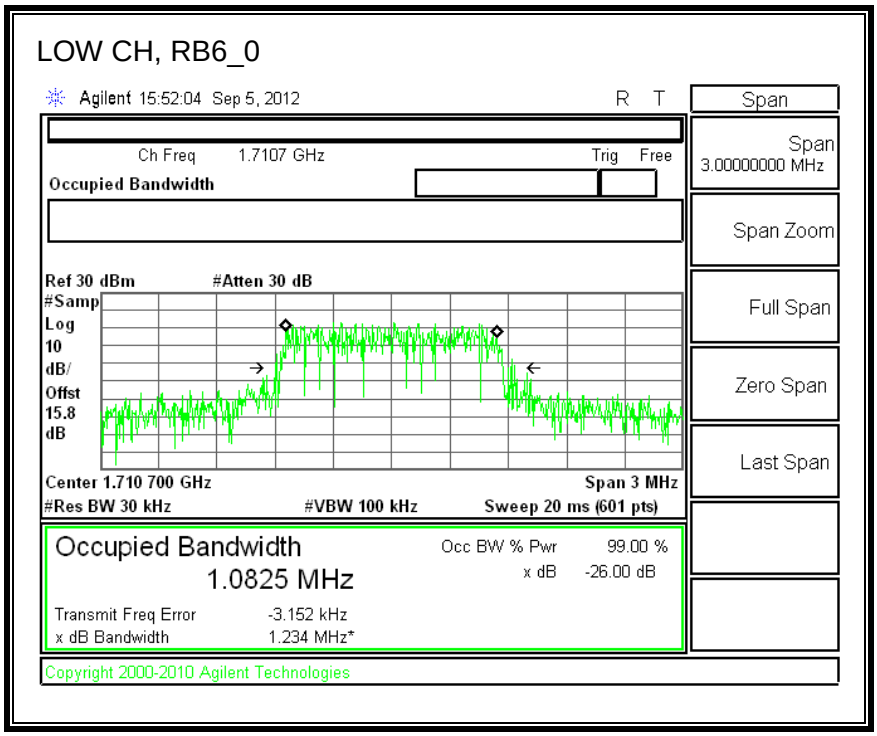
HI CH, RB6_0



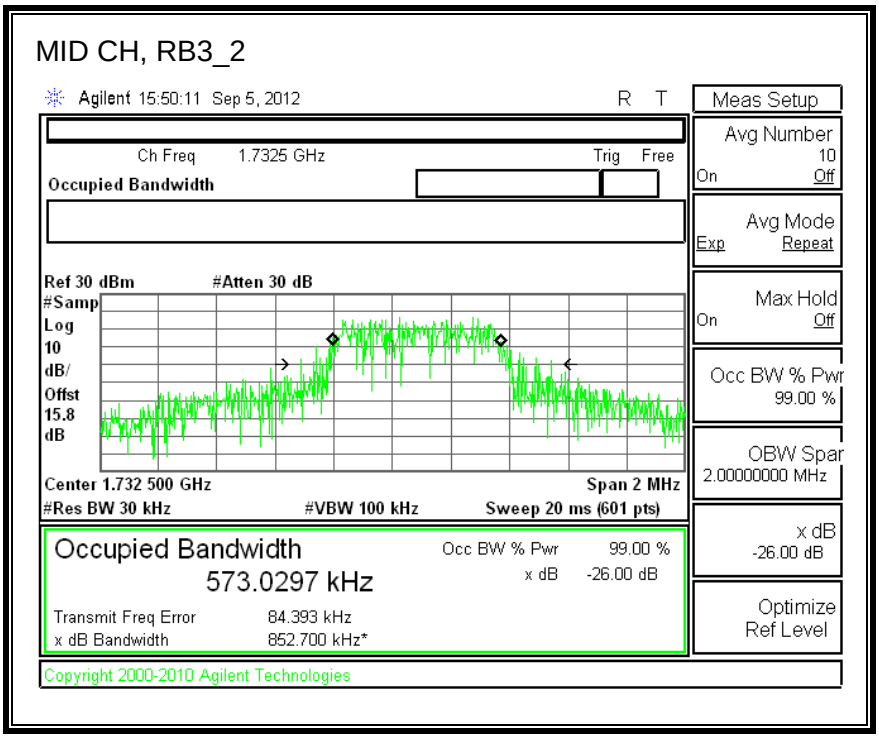
Band 4 (1.4 MHz BANDWIDTH)

LTE 16QAM

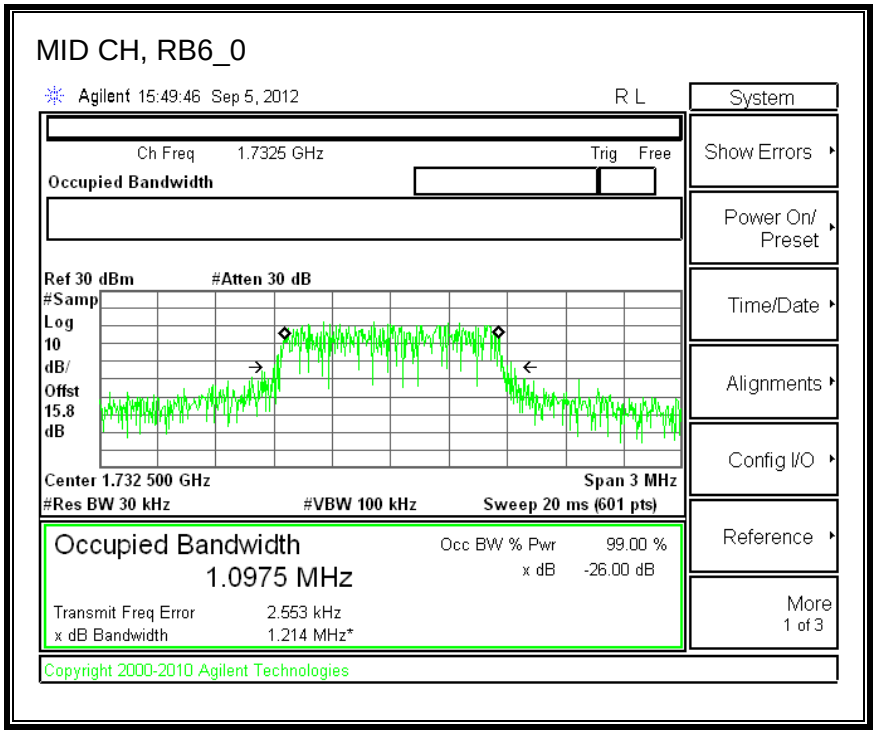




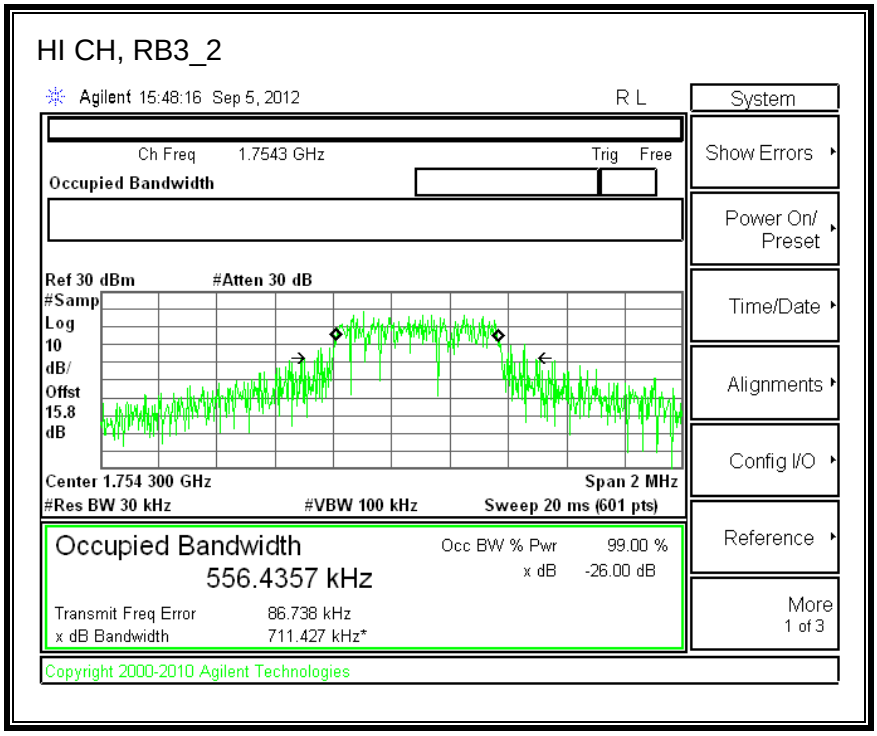
MID CH, RB3_2



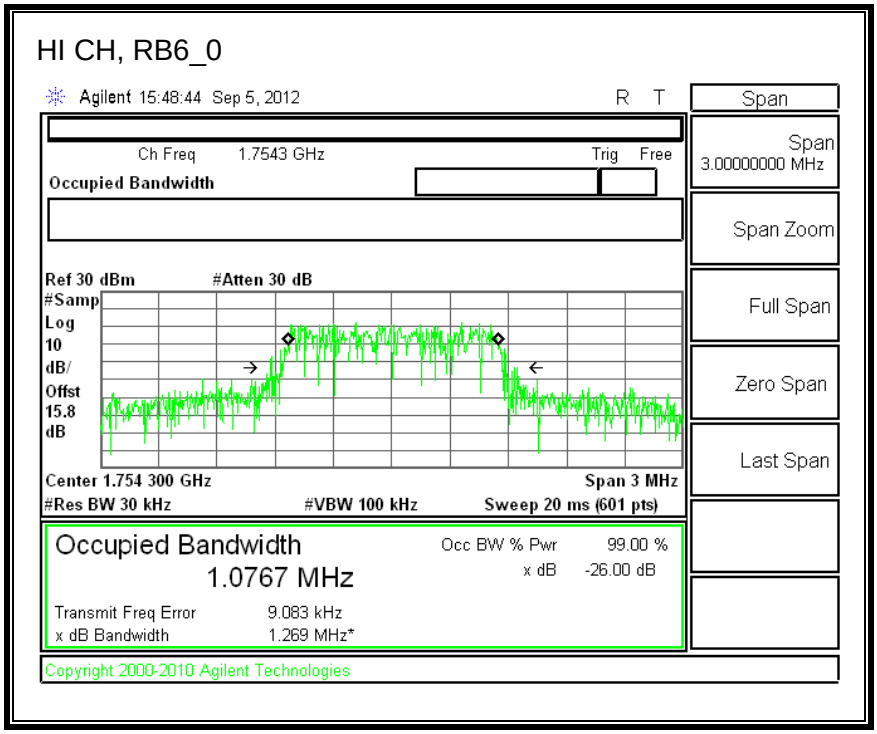
MID CH, RB6_0



HI CH, RB3_2

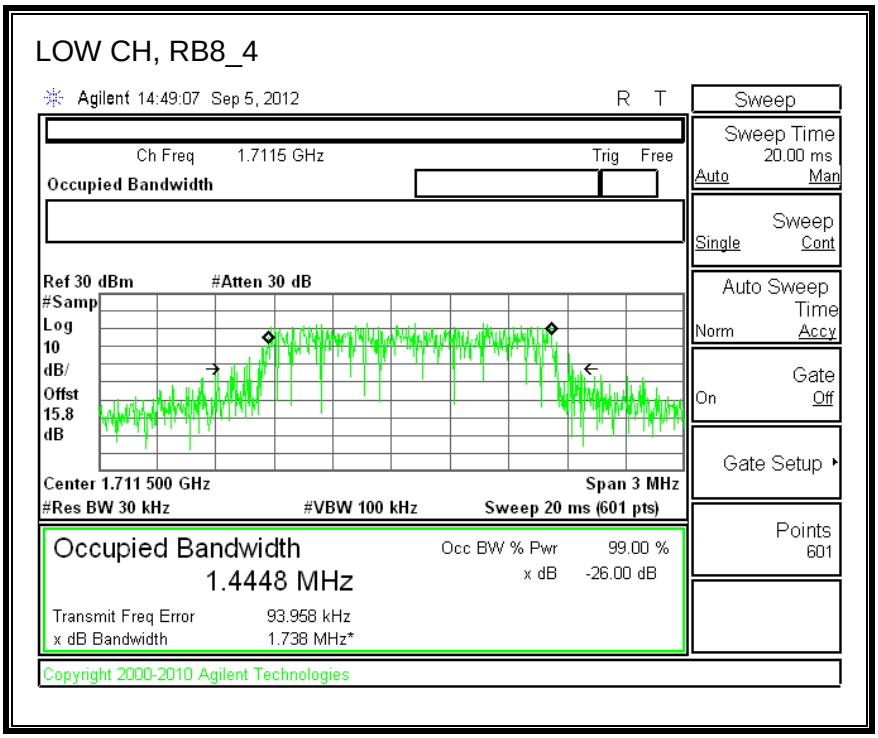


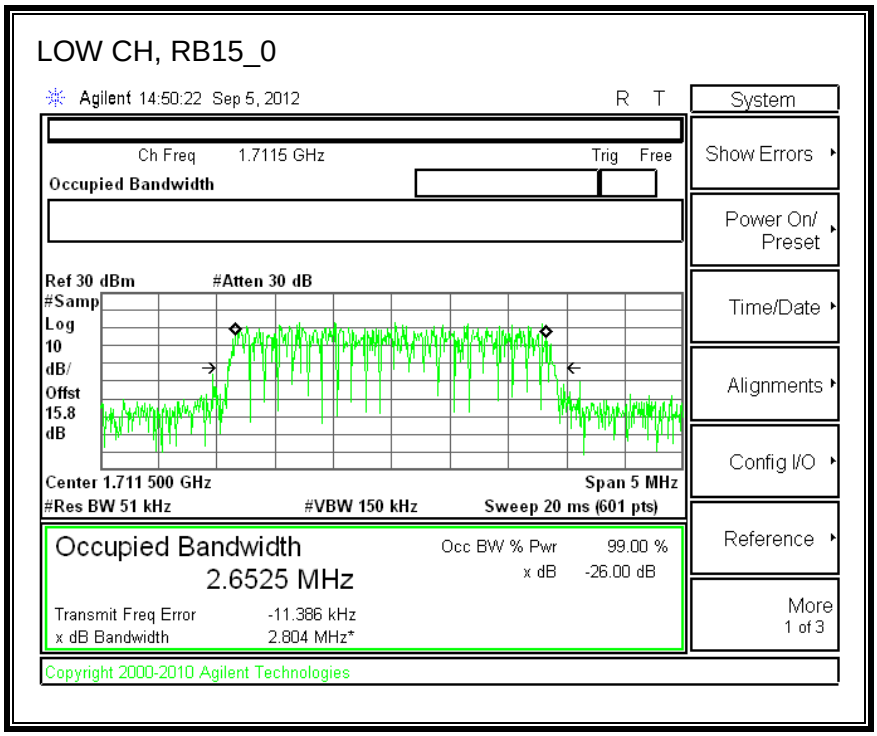
HI CH, RB6_0



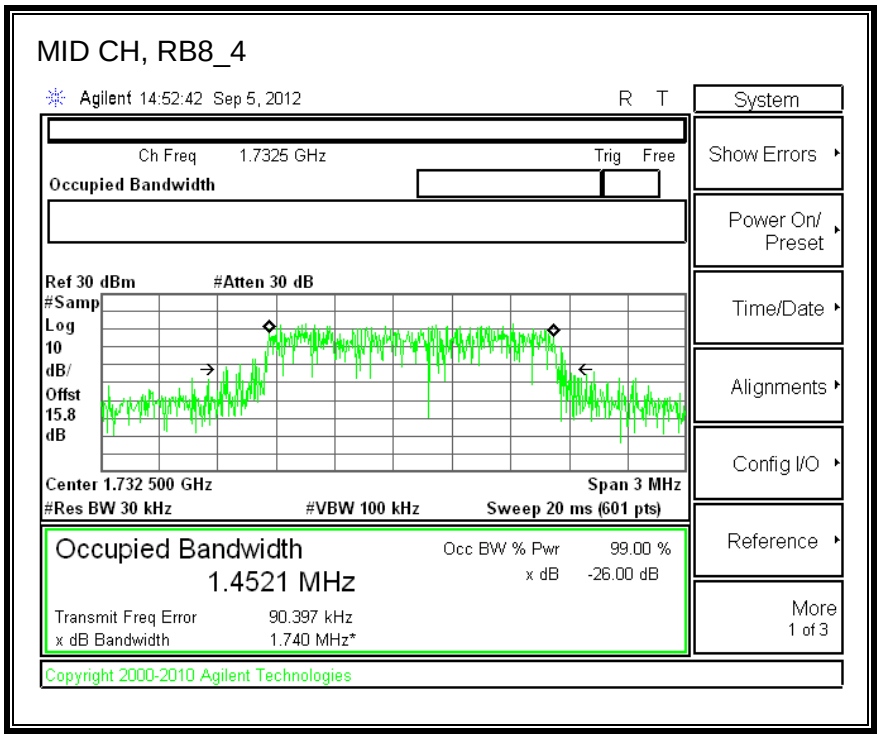
Band 4 (3 MHz BANDWIDTH)

LTE QPSK

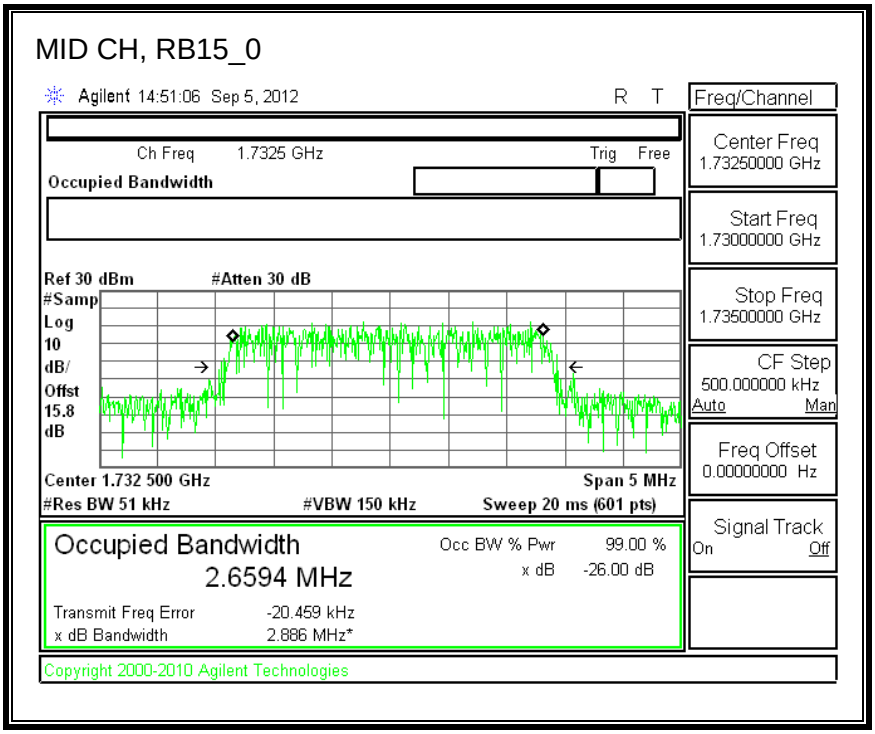




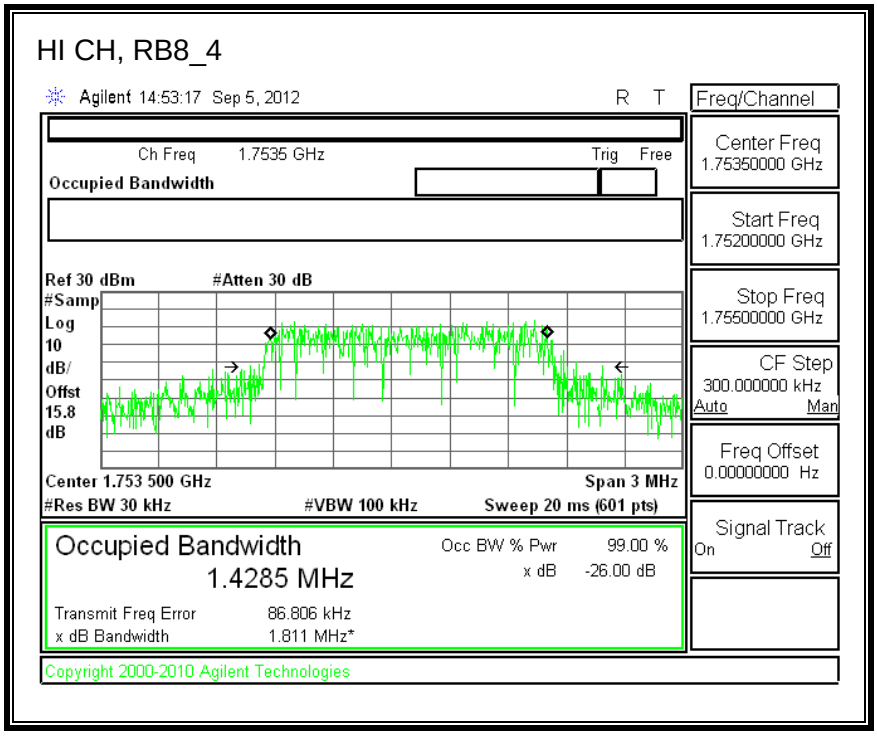
MID CH, RB8_4



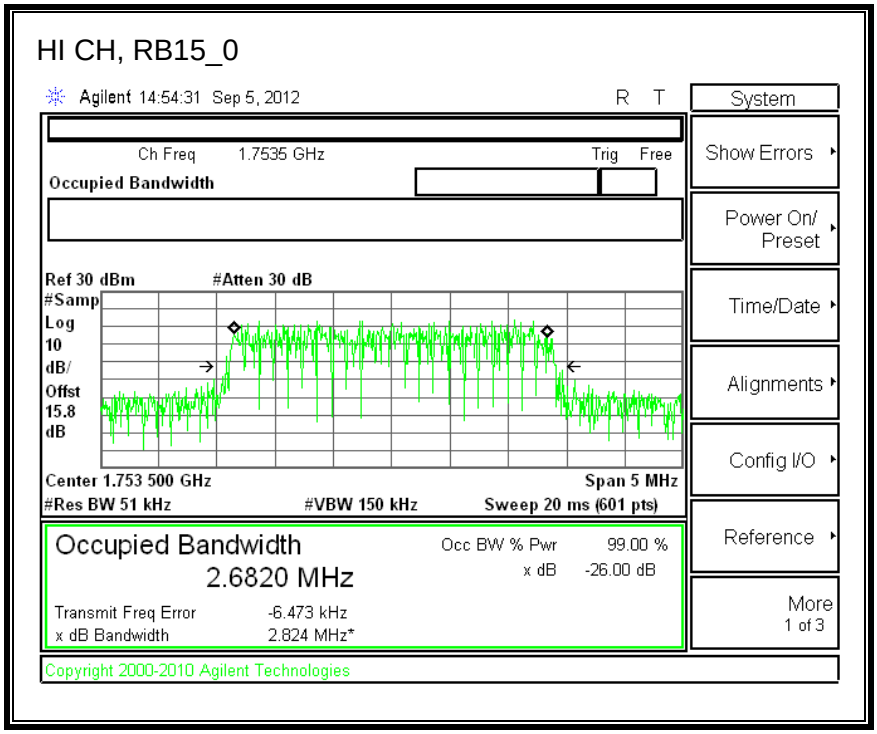
MID CH, RB15_0



HI CH, RB8_4

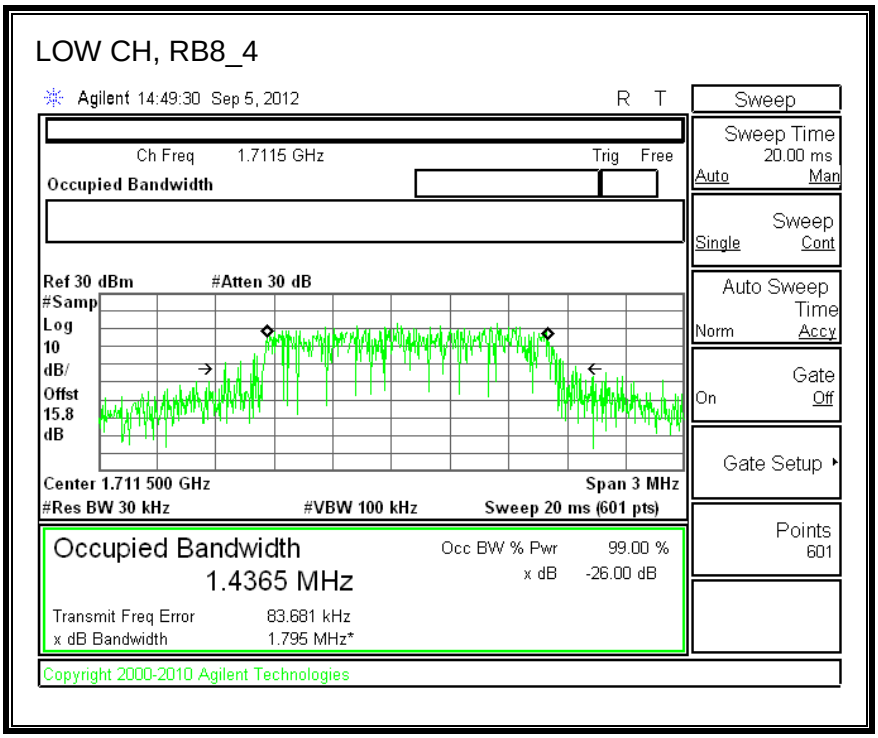


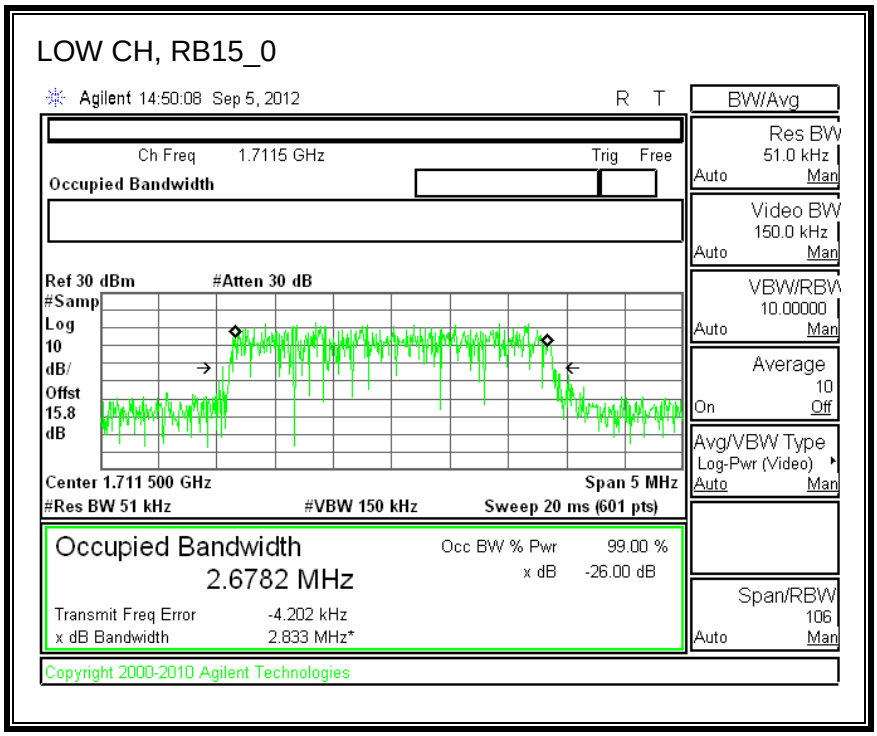
HI CH, RB15_0



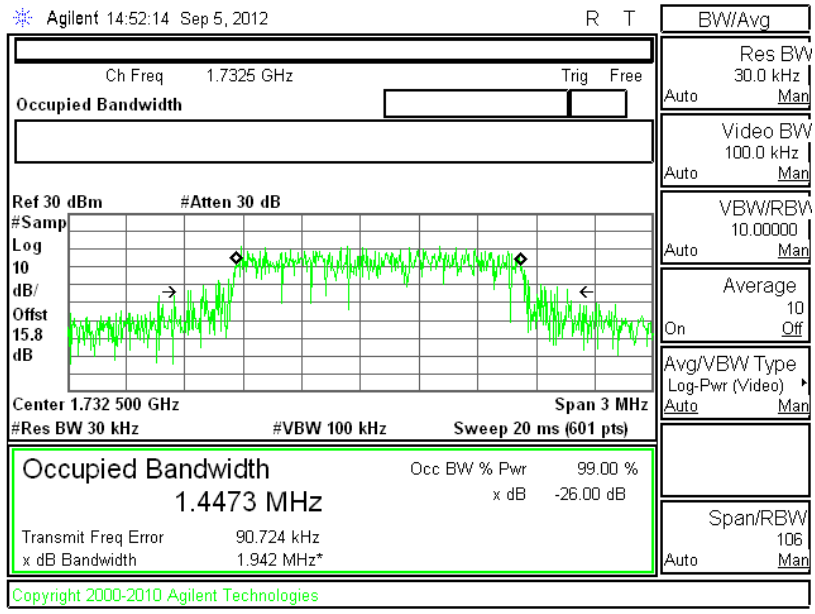
Band 4 (3 MHz BANDWIDTH)

LTE 16QAM





MID CH, RB8_4



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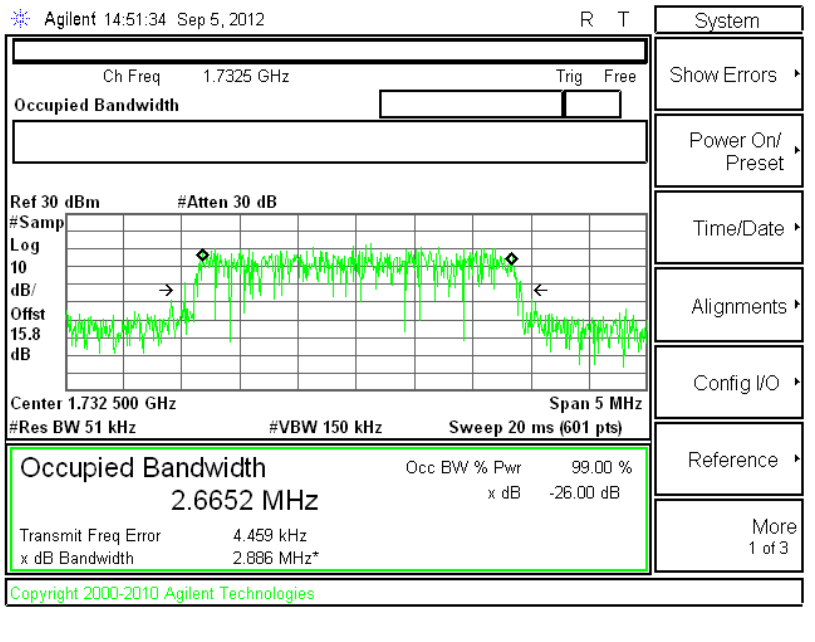
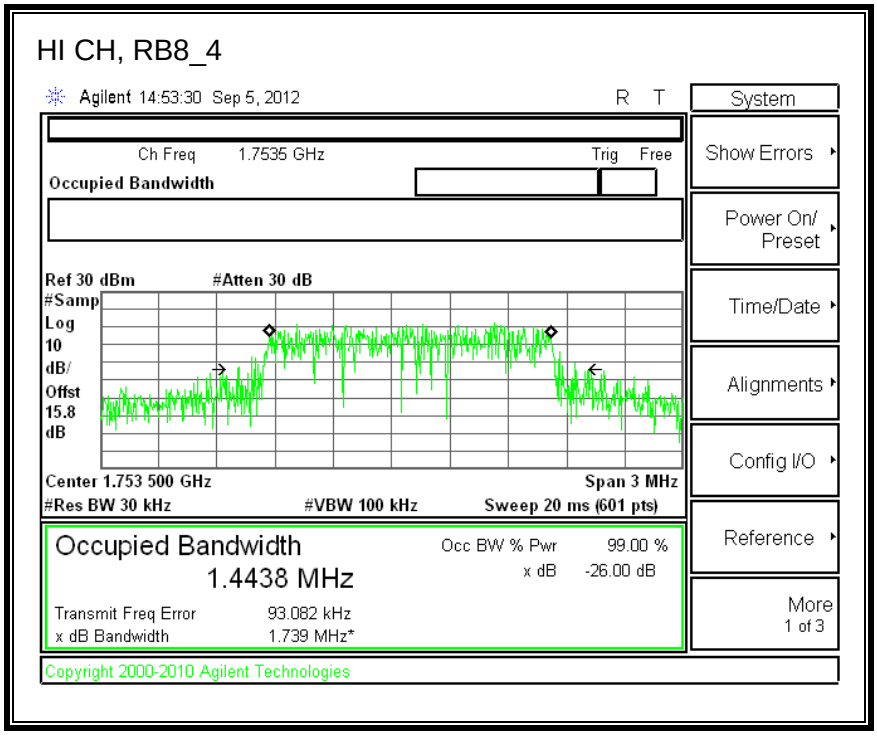
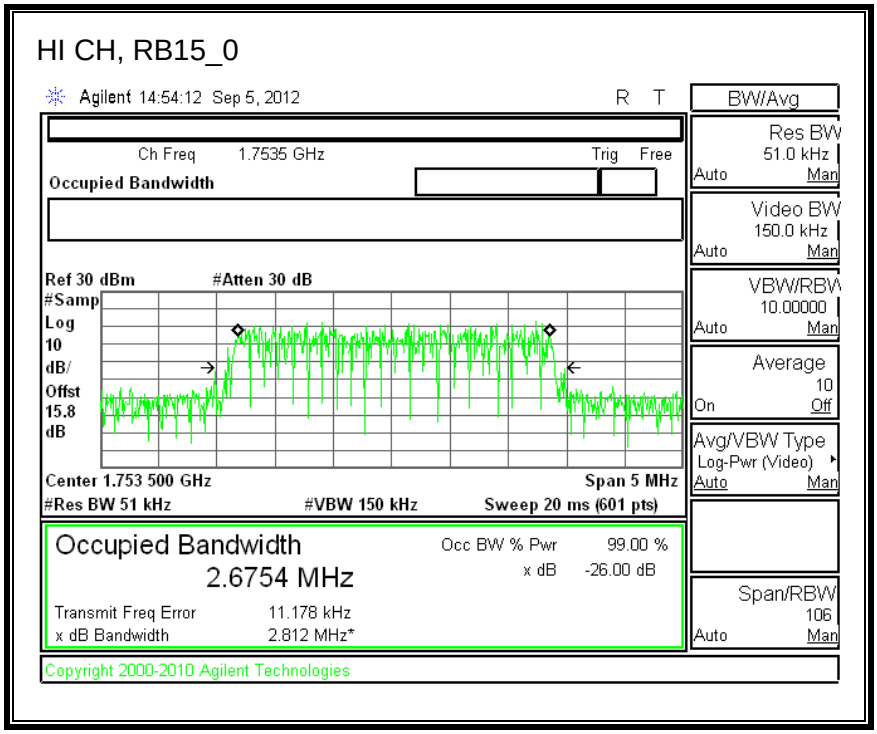


HI CH, RB8_4

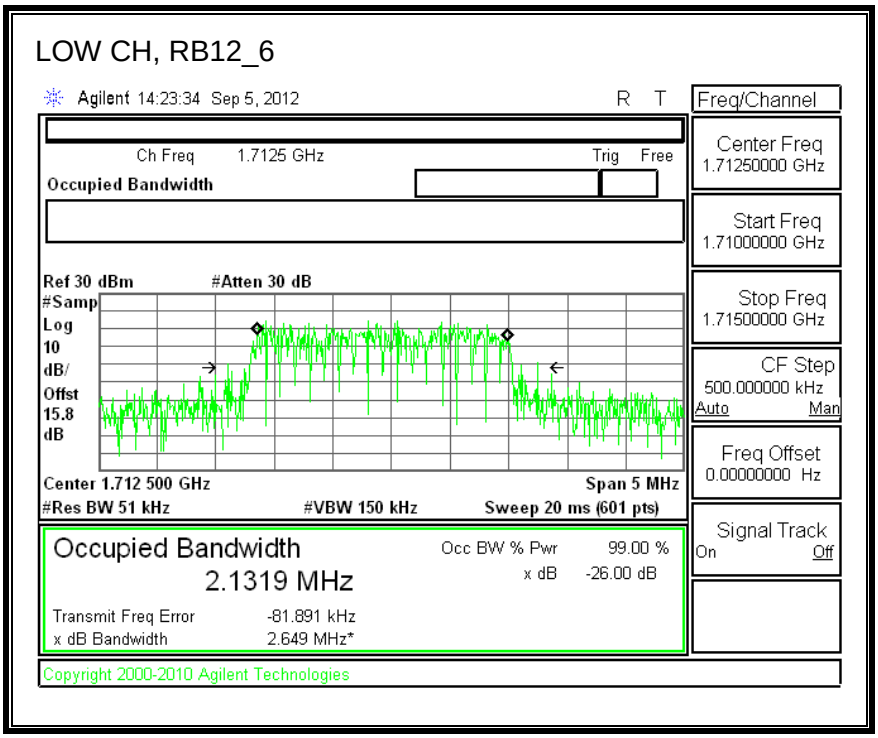


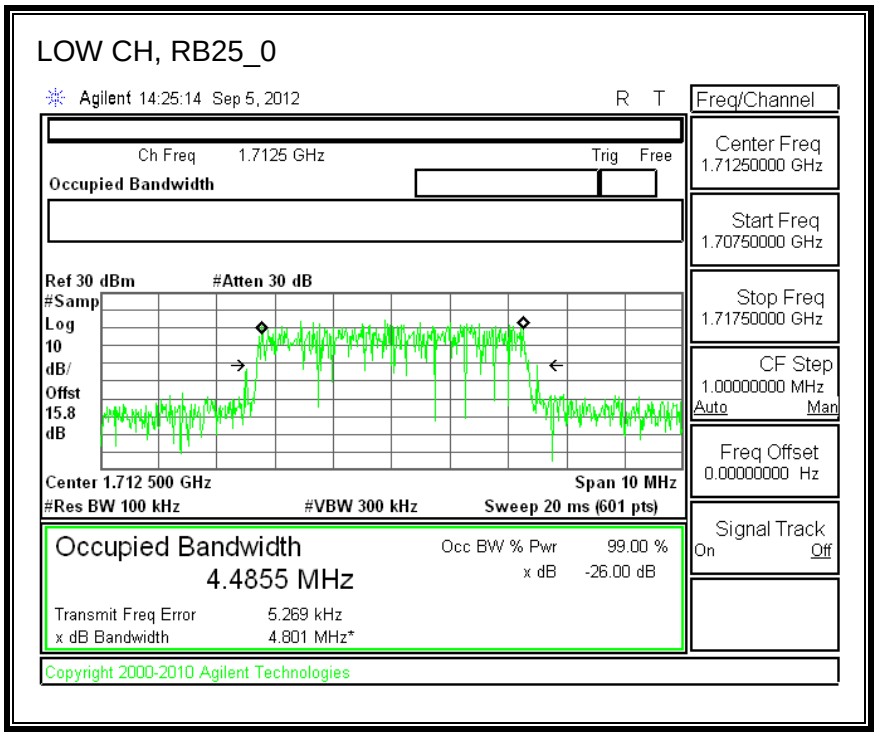
HI CH, RB15_0



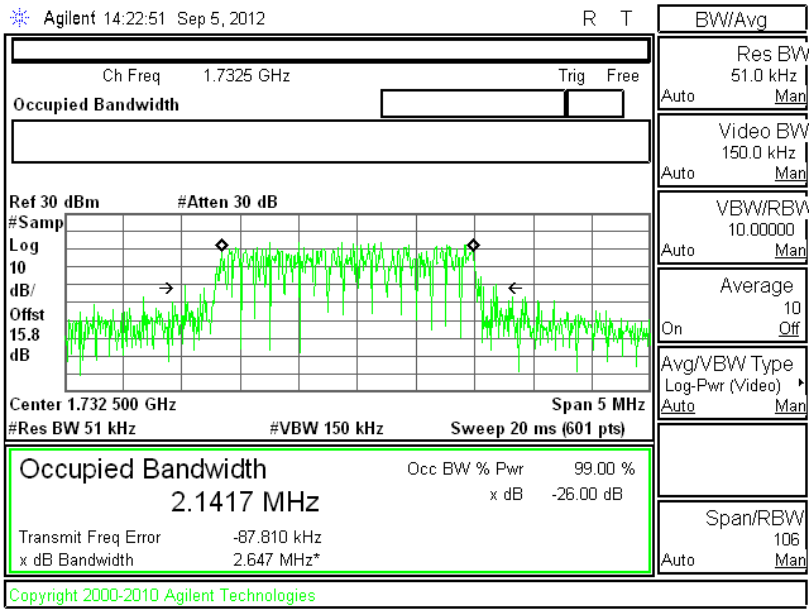
Band 4 (5 MHz BANDWIDTH)

LTE QPSK

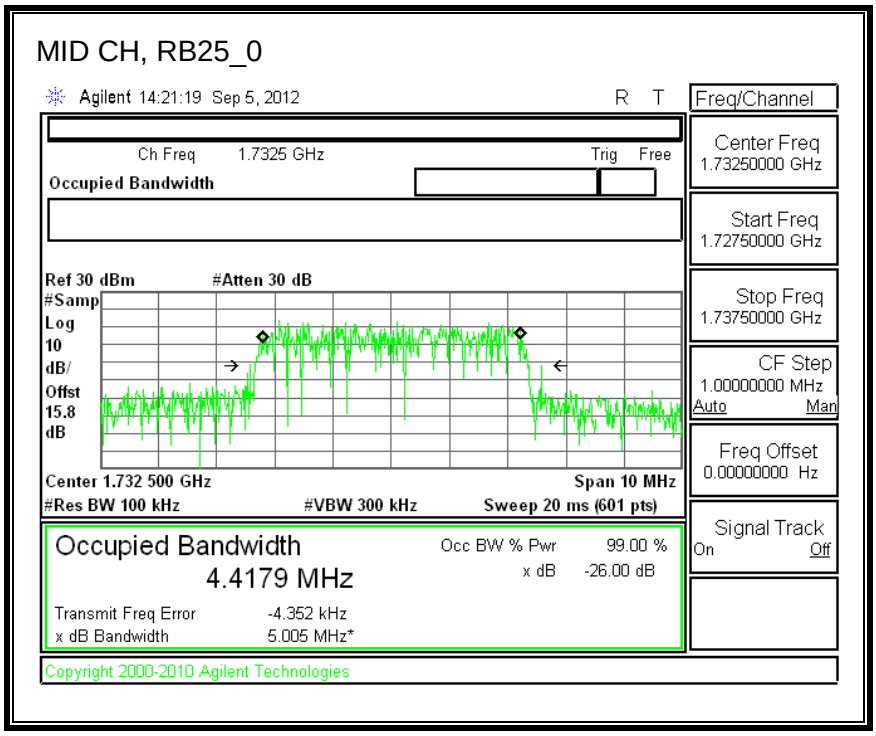




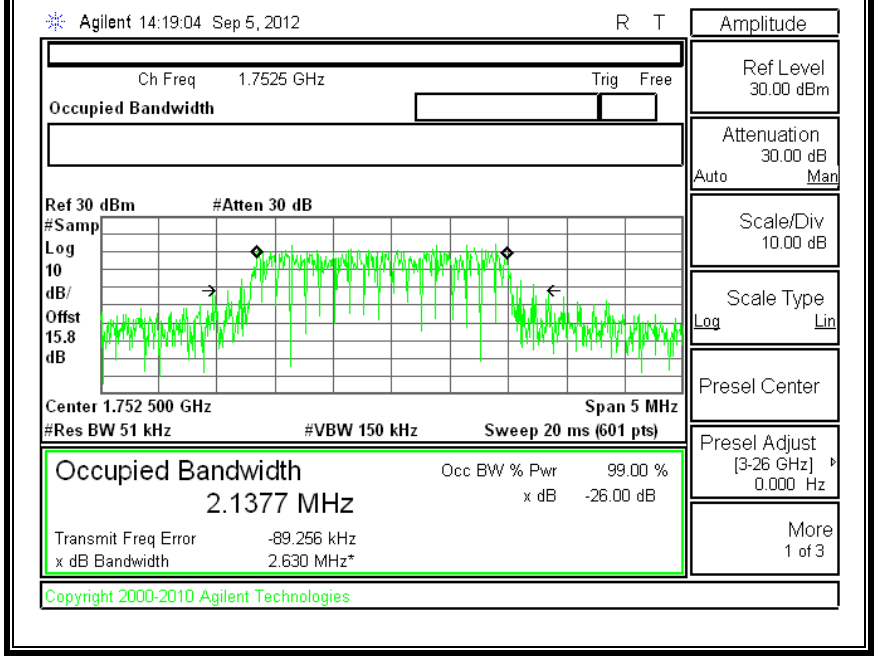
MID CH, RB12_6



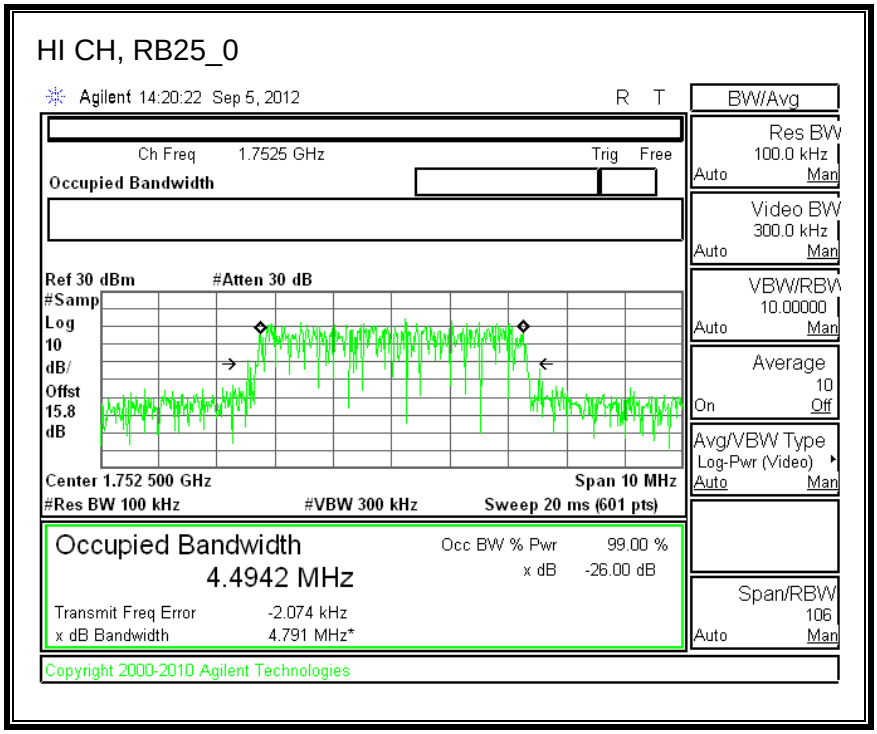
MID CH, RB25_0



HI CH, RB12_6

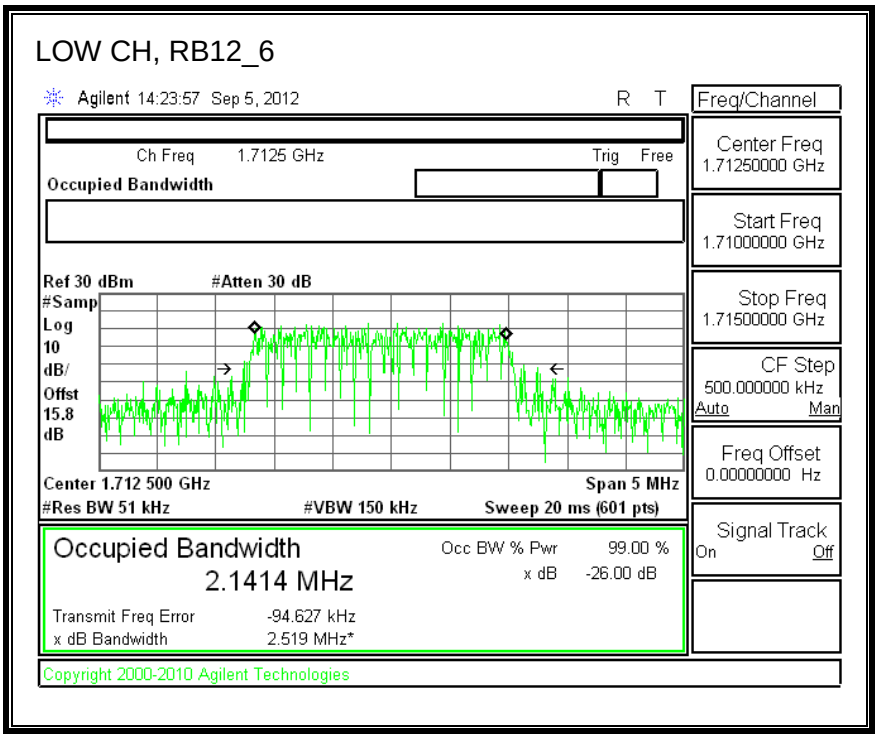


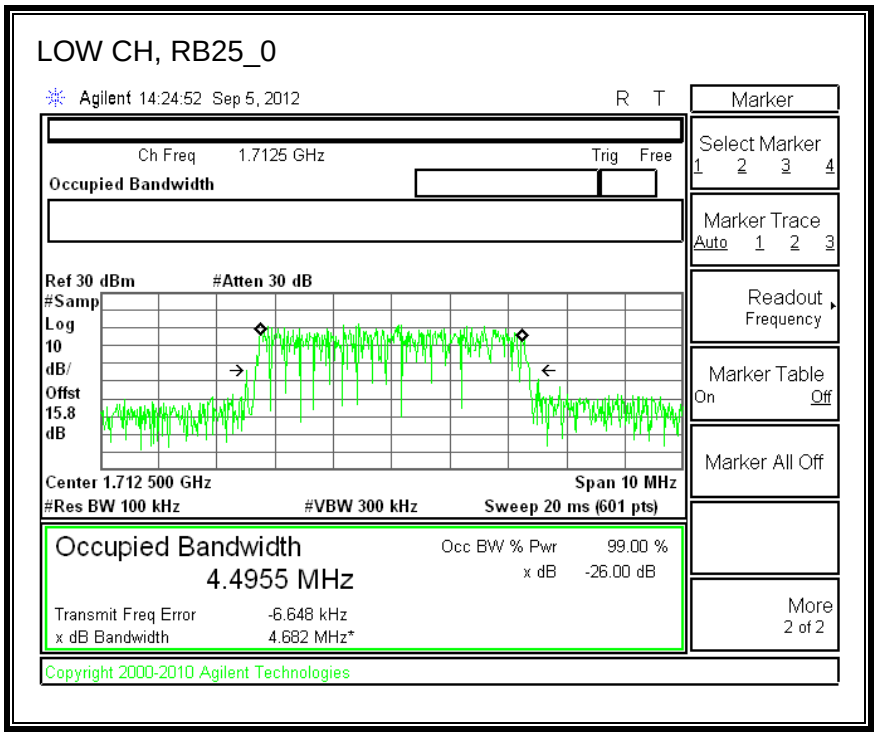
HI CH, RB25_0



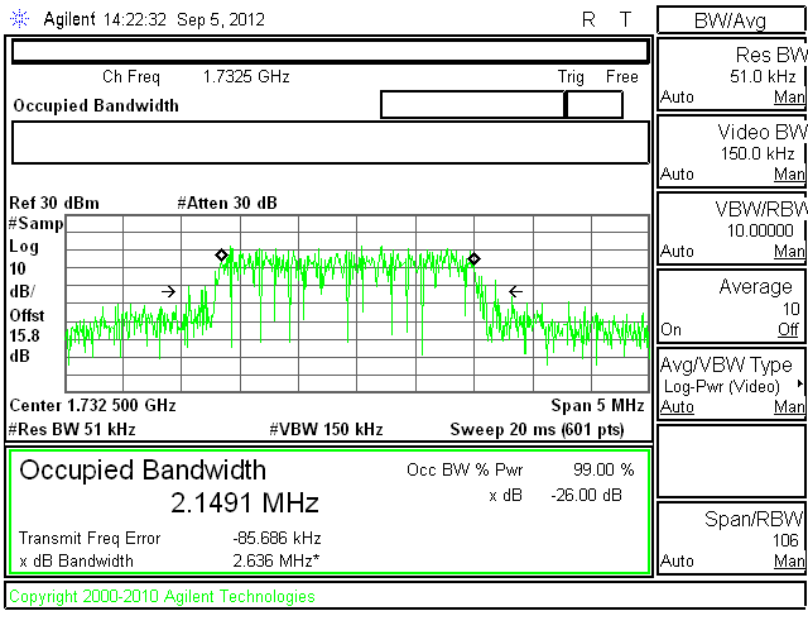
Band 4 (5 MHz BANDWIDTH)

LTE 16QAM

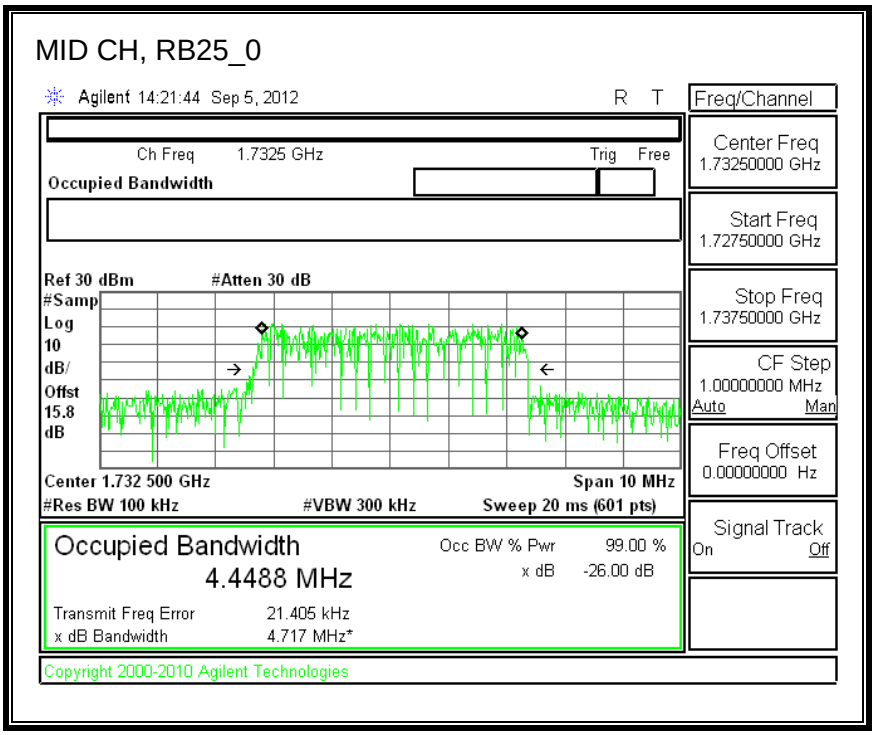




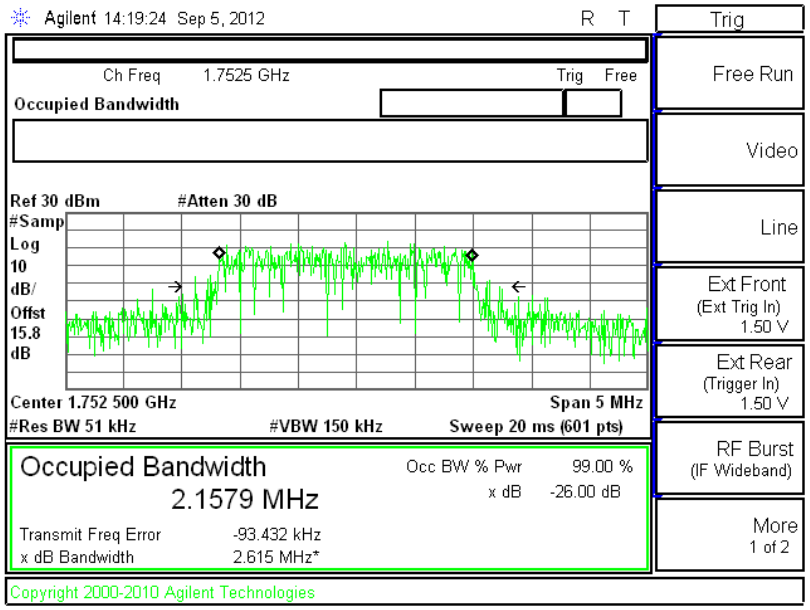
MID CH, RB12_6



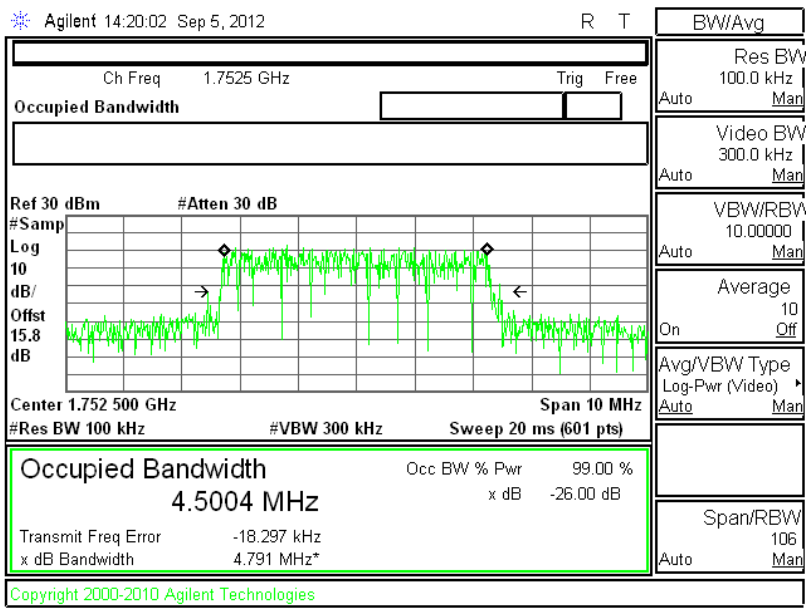
MID CH, RB25_0



HI CH, RB12_6

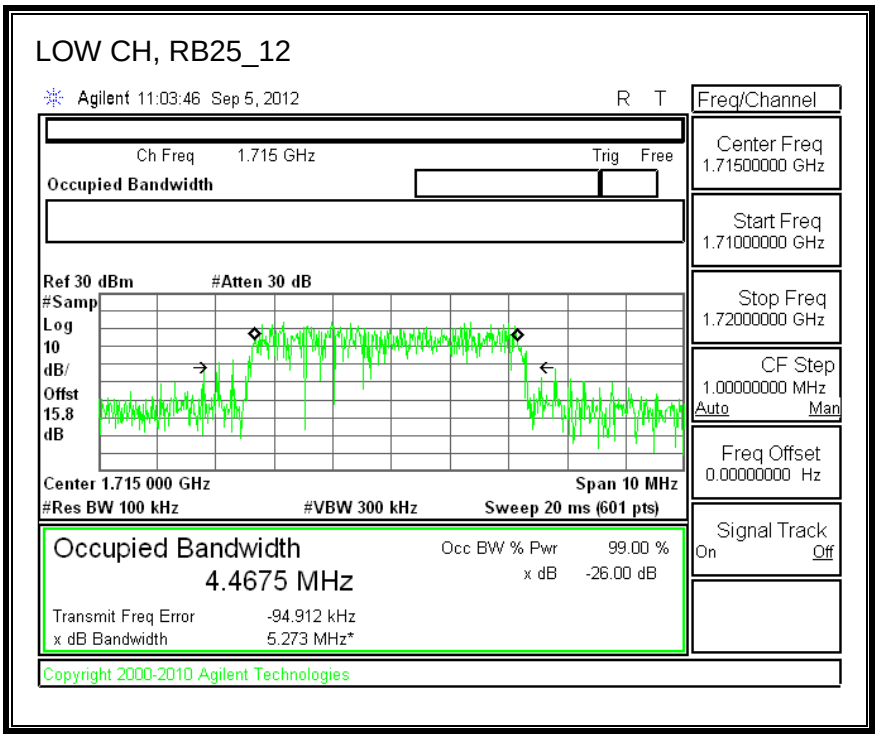


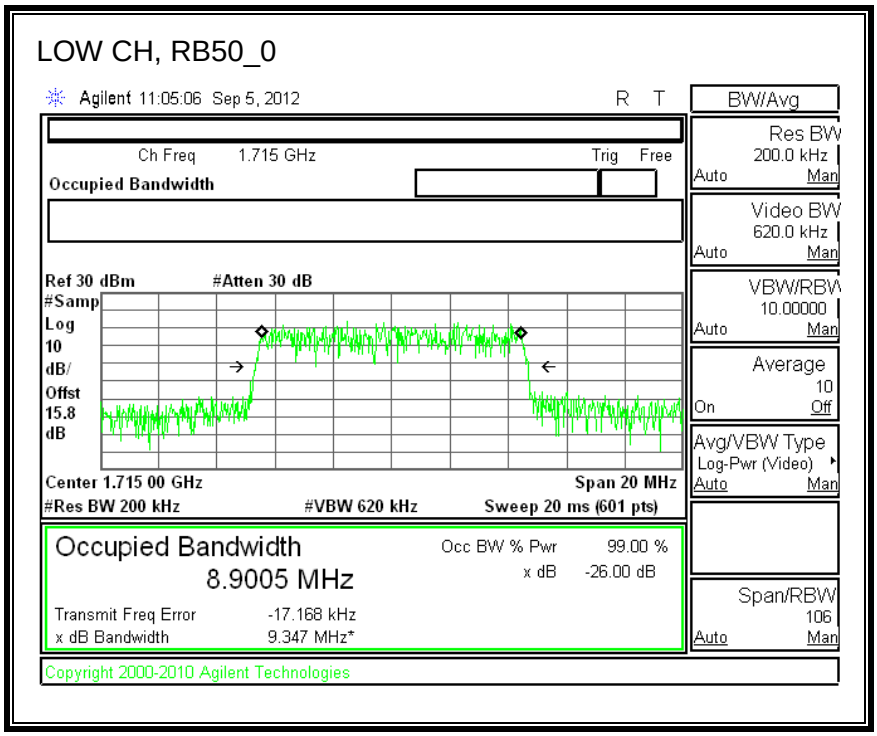
HI CH, RB25_0



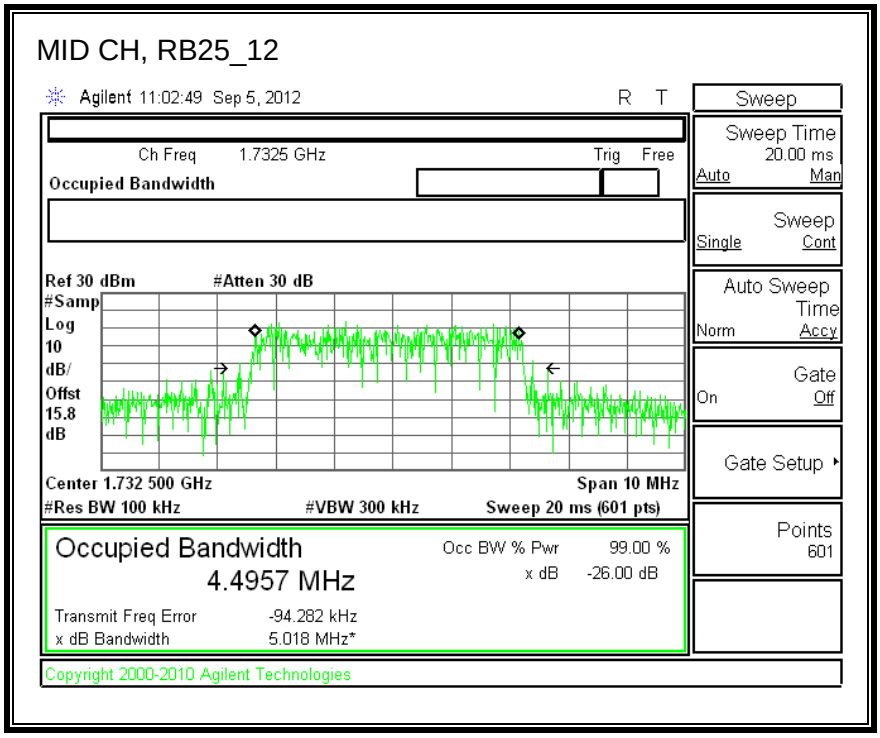
Band 4 (10 MHz BANDWIDTH)

LTE QPSK

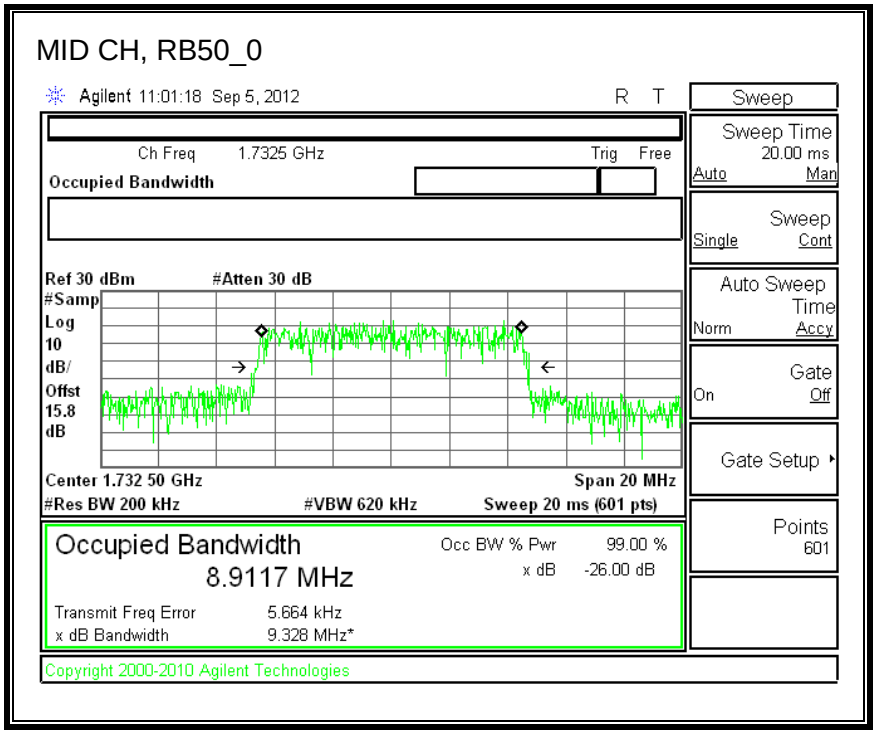




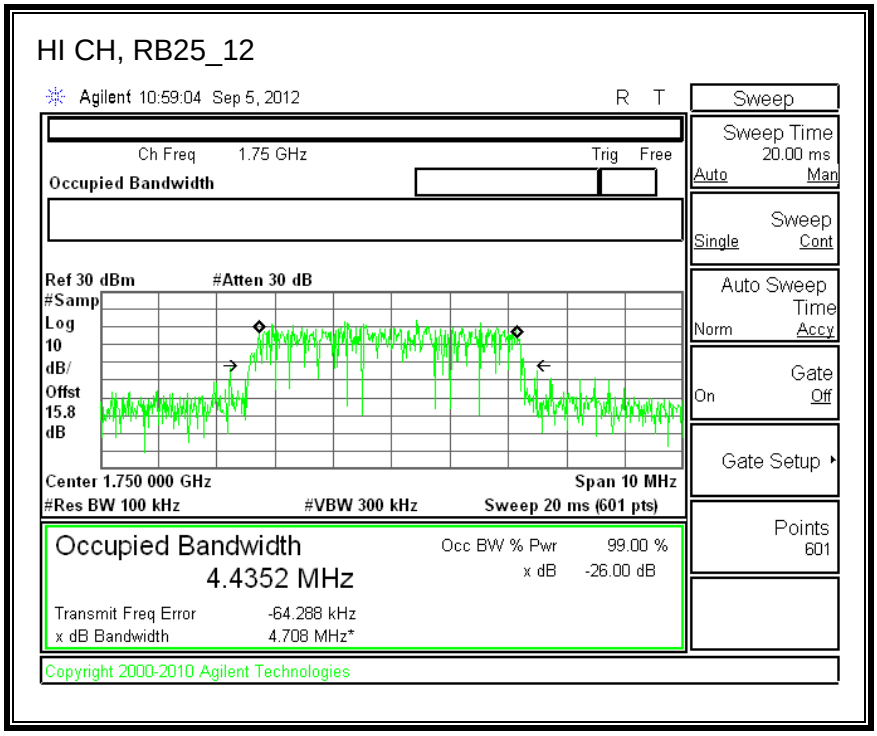
MID CH, RB25_12



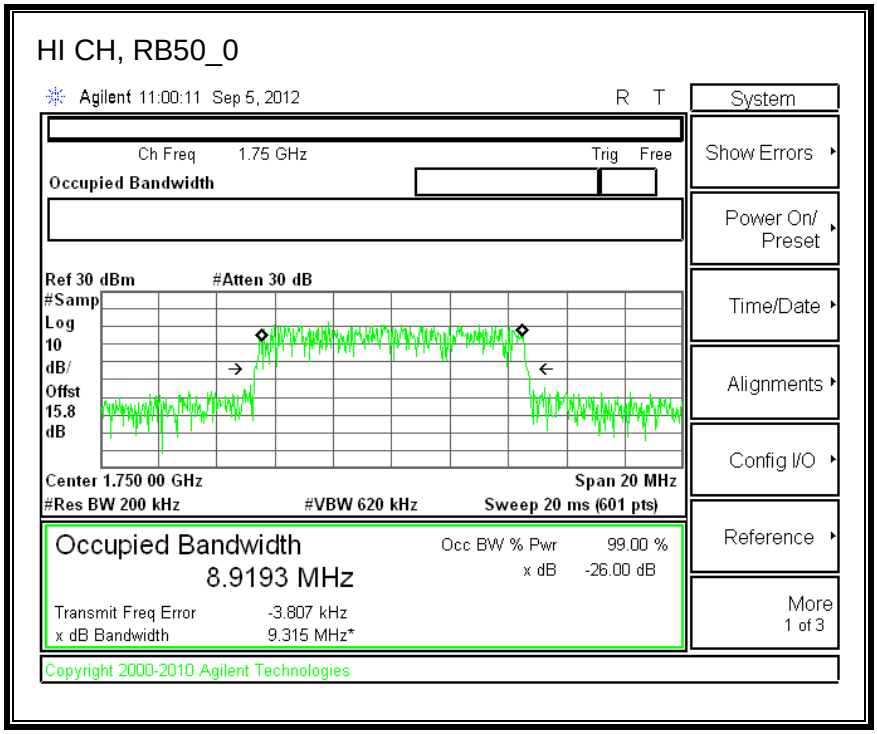
MID CH, RB50_0



HI CH, RB25_12

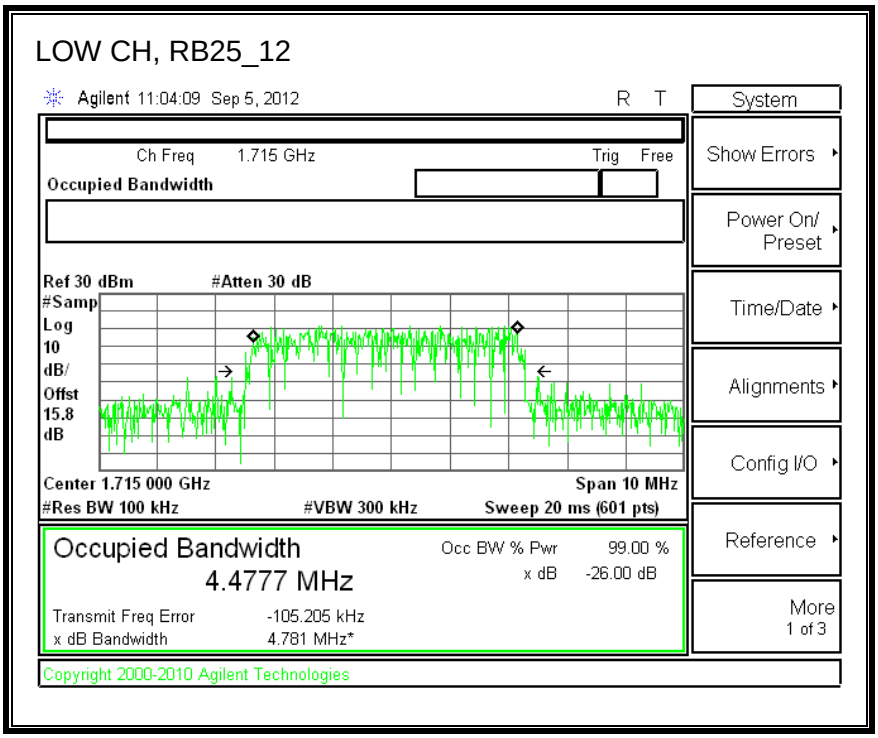


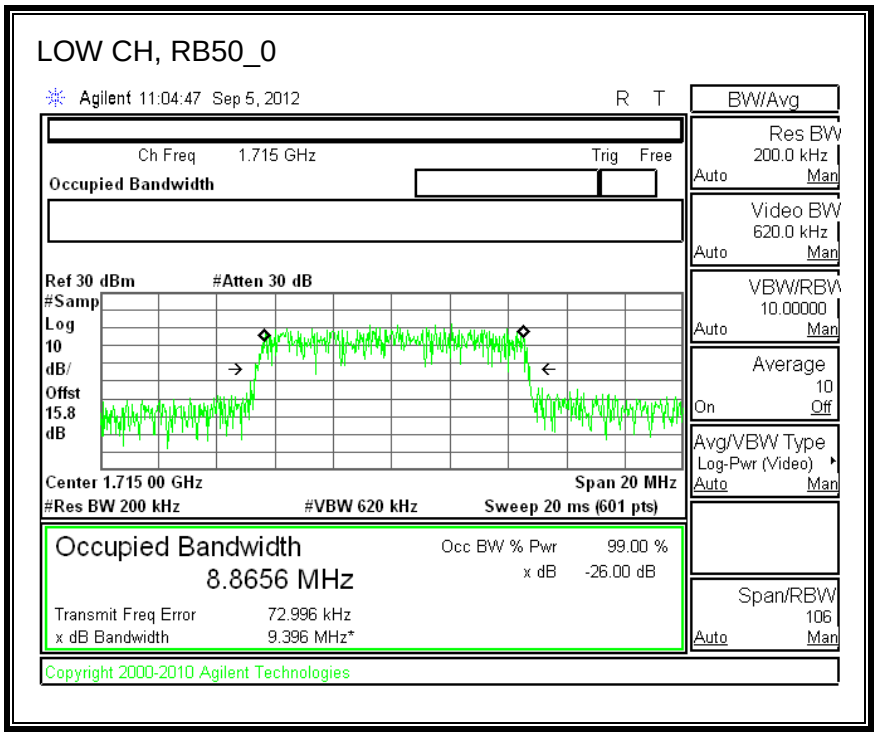
HI CH, RB50_0



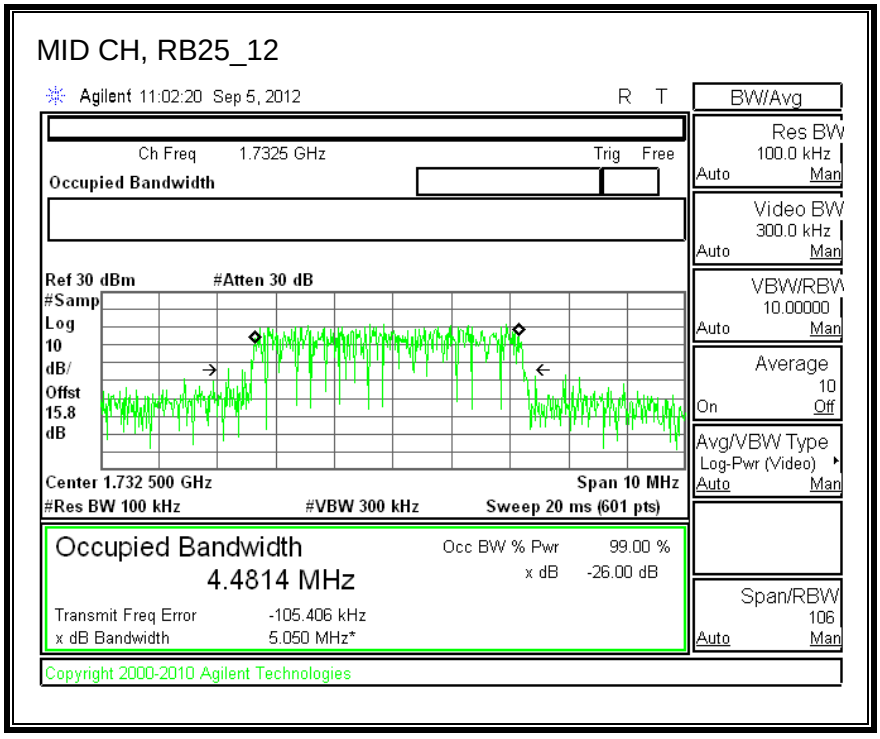
Band 4 (10 MHz BANDWIDTH)

LTE 16QAM

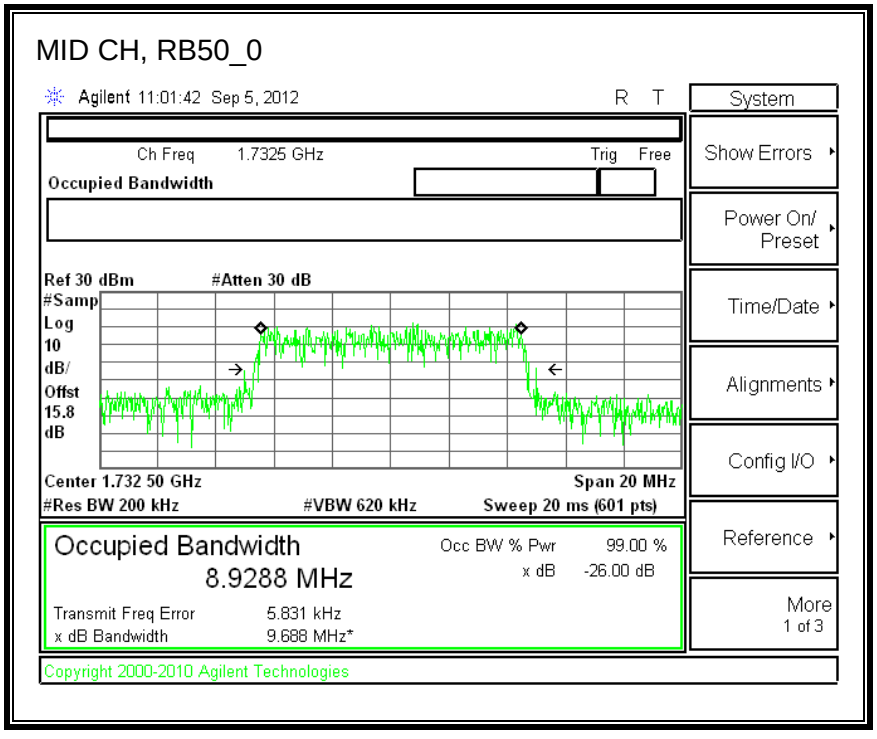




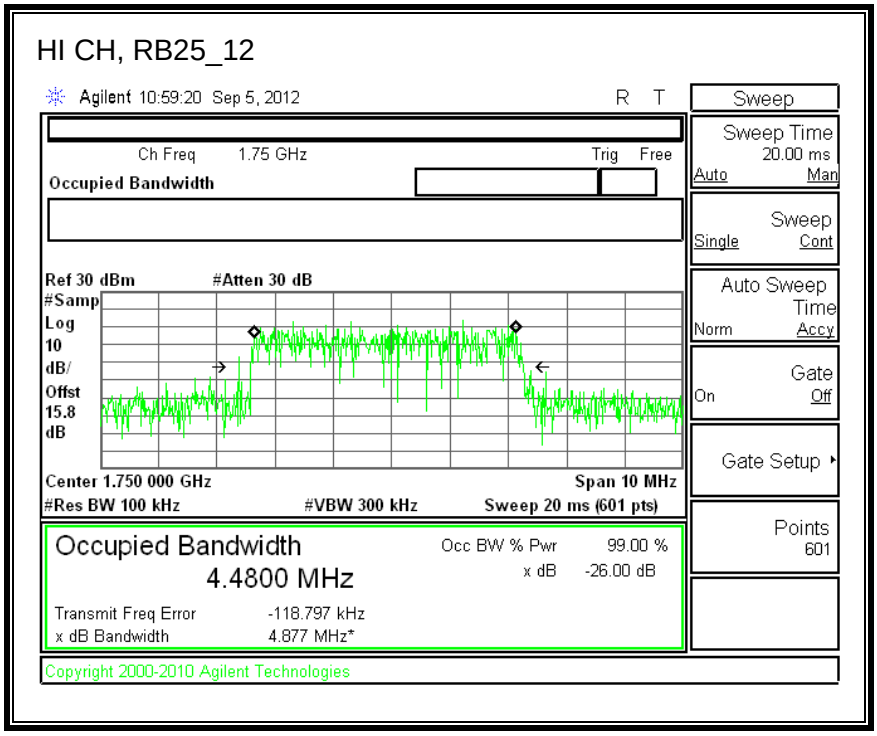
MID CH, RB25_12



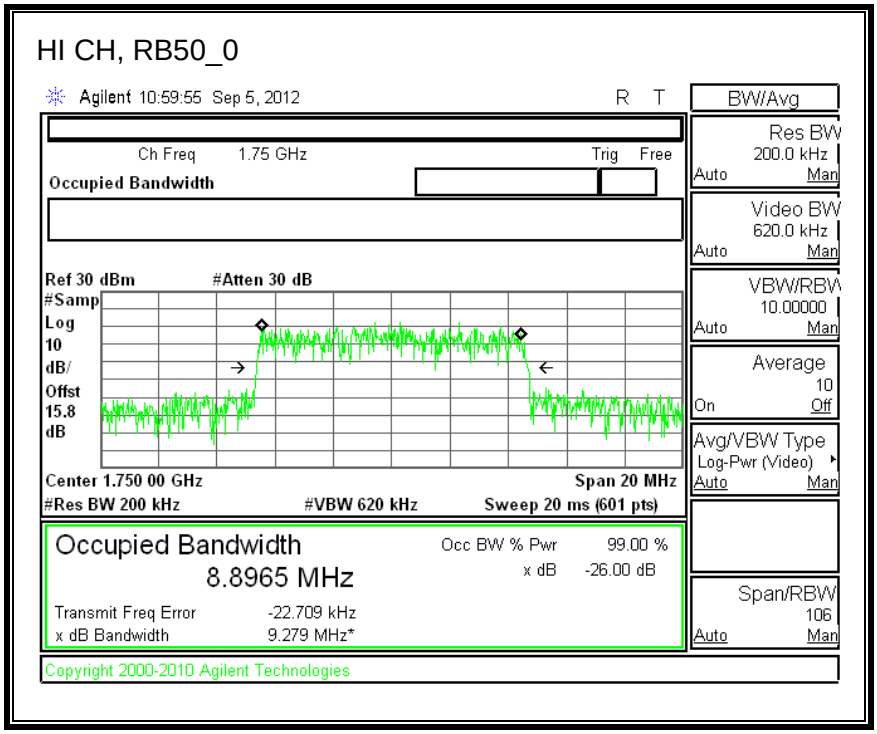
MID CH, RB50_0



HI CH, RB25_12

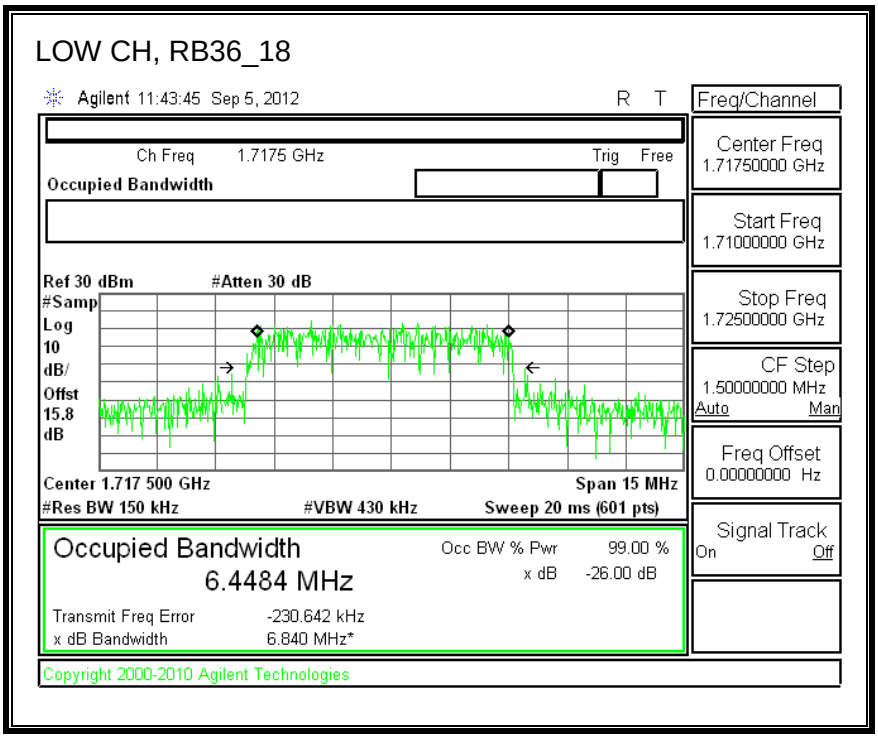


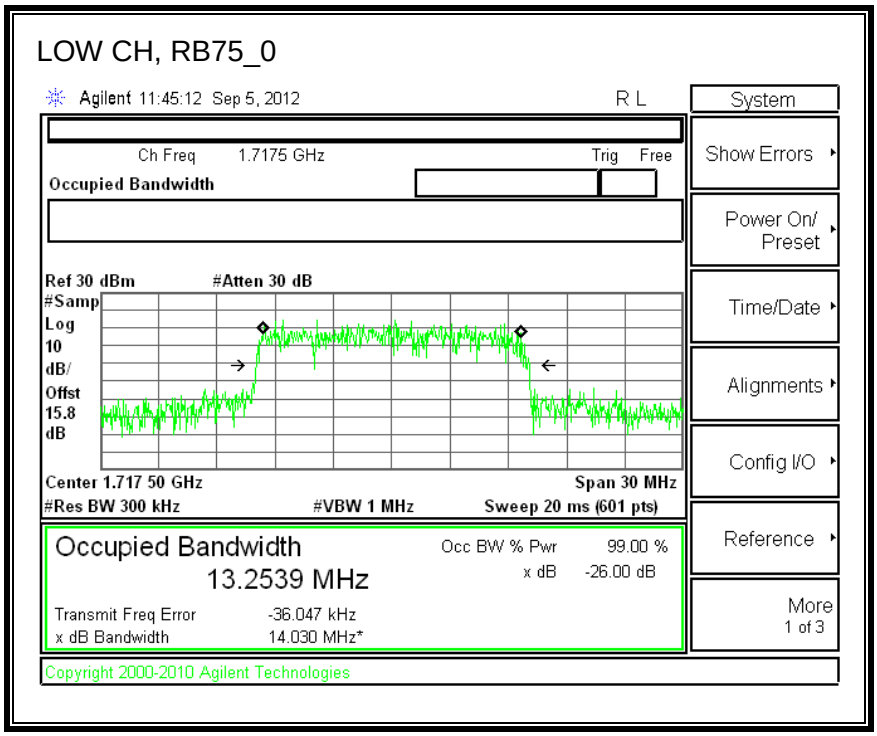
HI CH, RB50_0



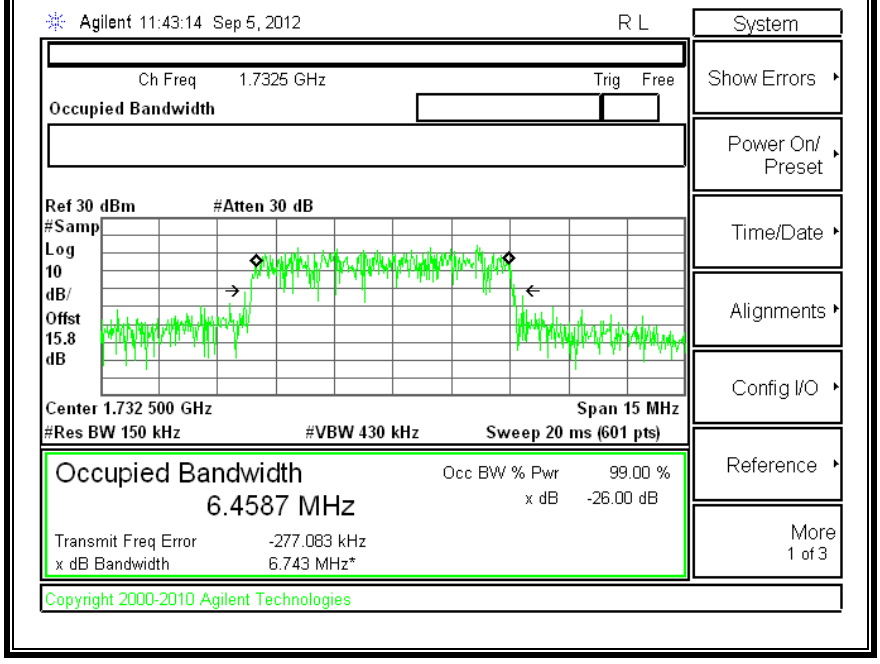
Band 4 (15 MHz BANDWIDTH)

LTE QPSK

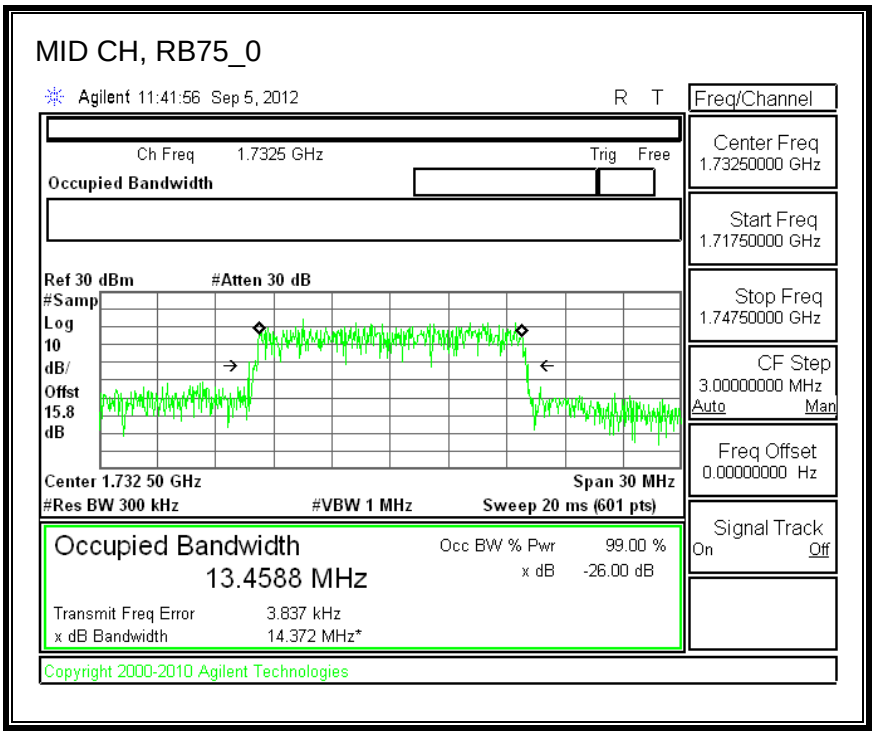




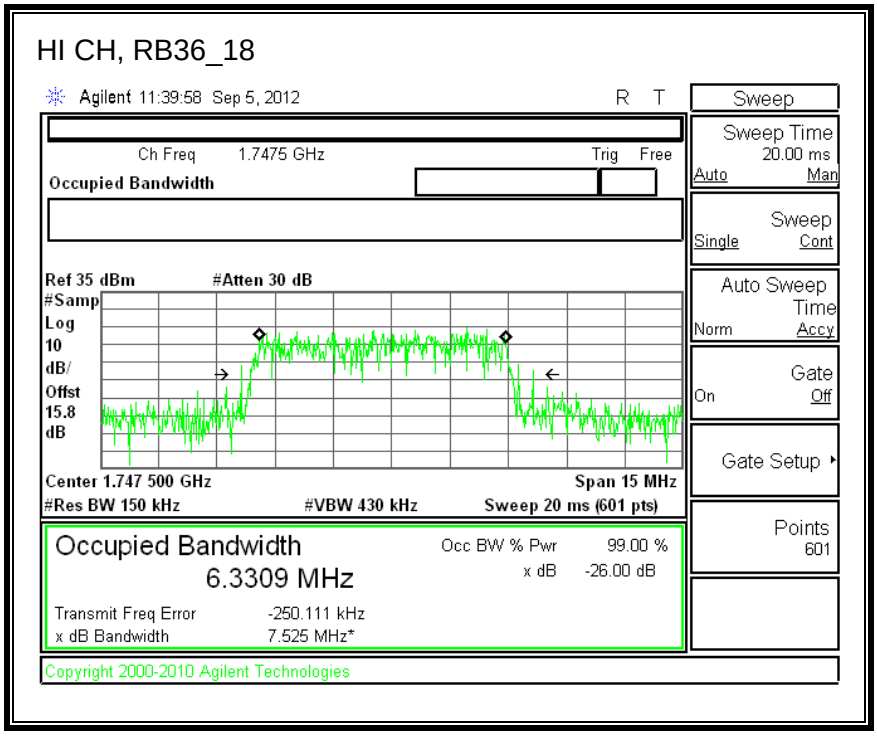
MID CH, RB36_18



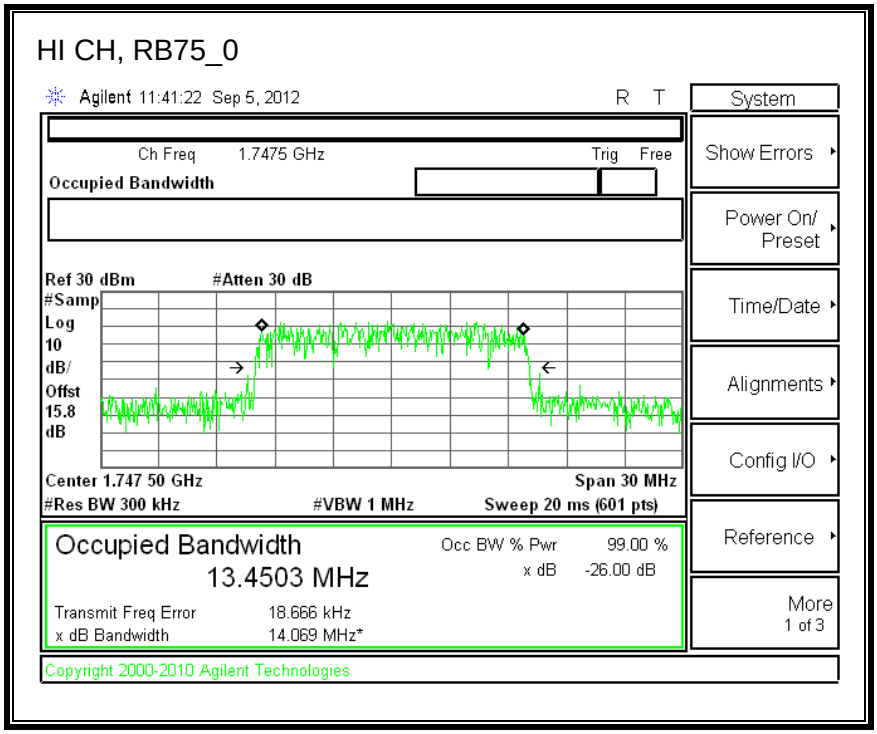
MID CH, RB75_0



HI CH, RB36_18

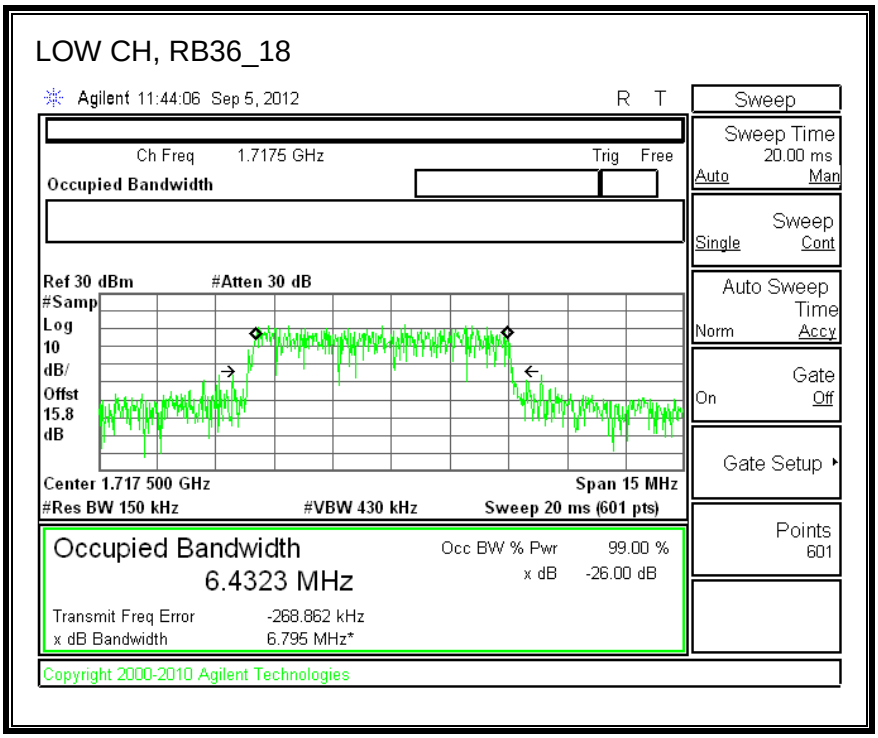


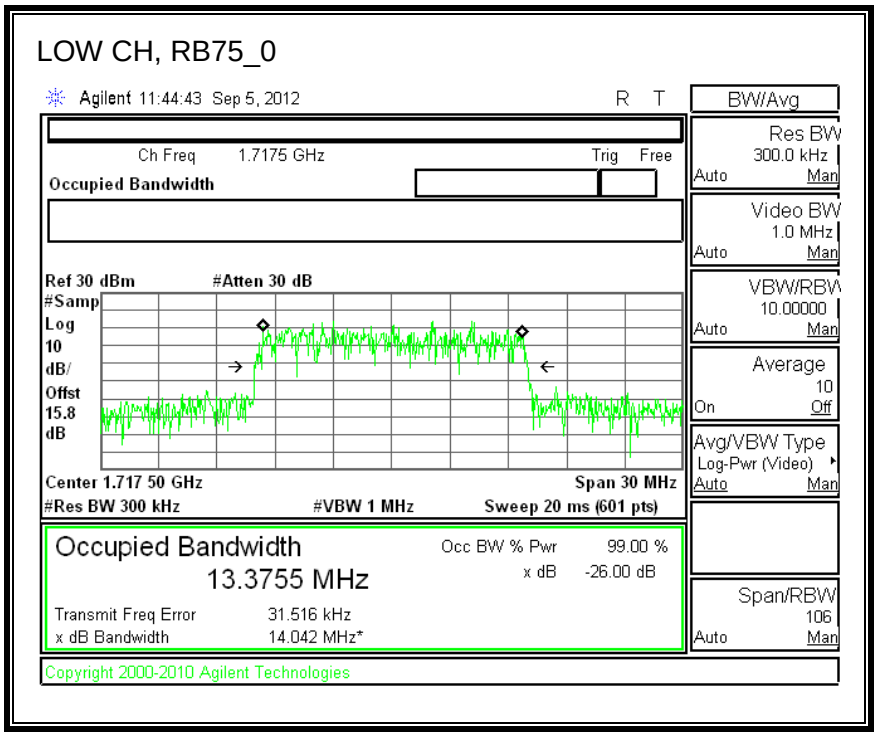
HI CH, RB75_0



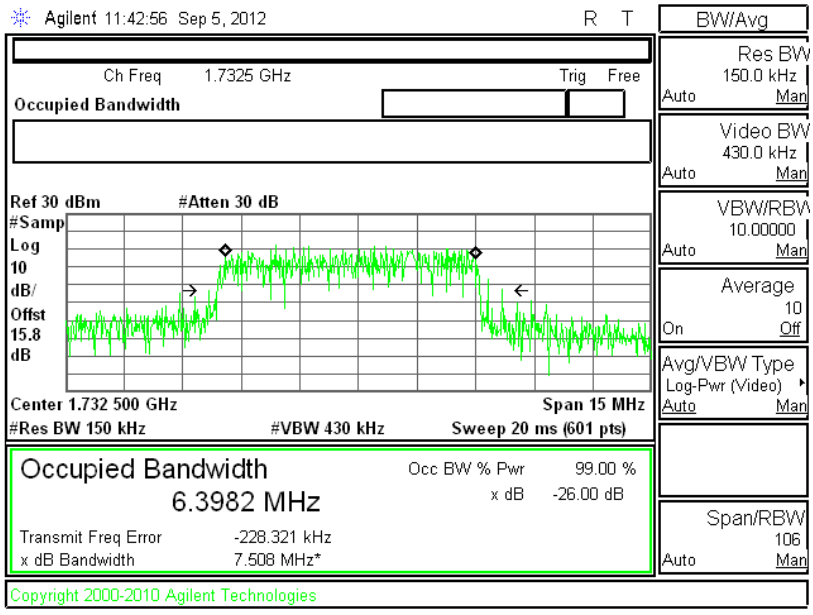
Band 4 (15 MHz BANDWIDTH)

LTE 16QAM

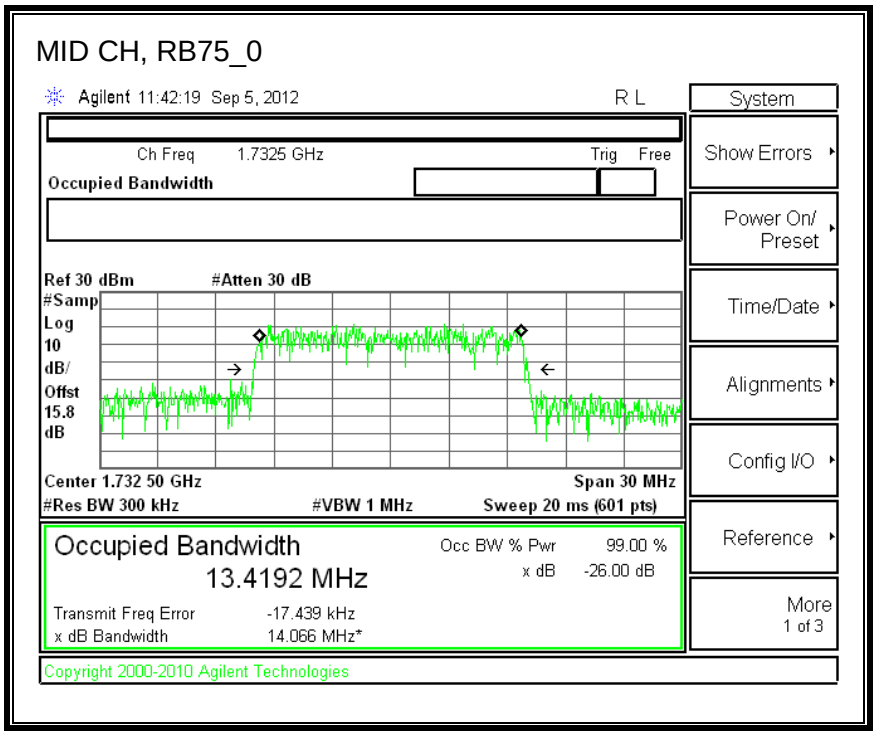




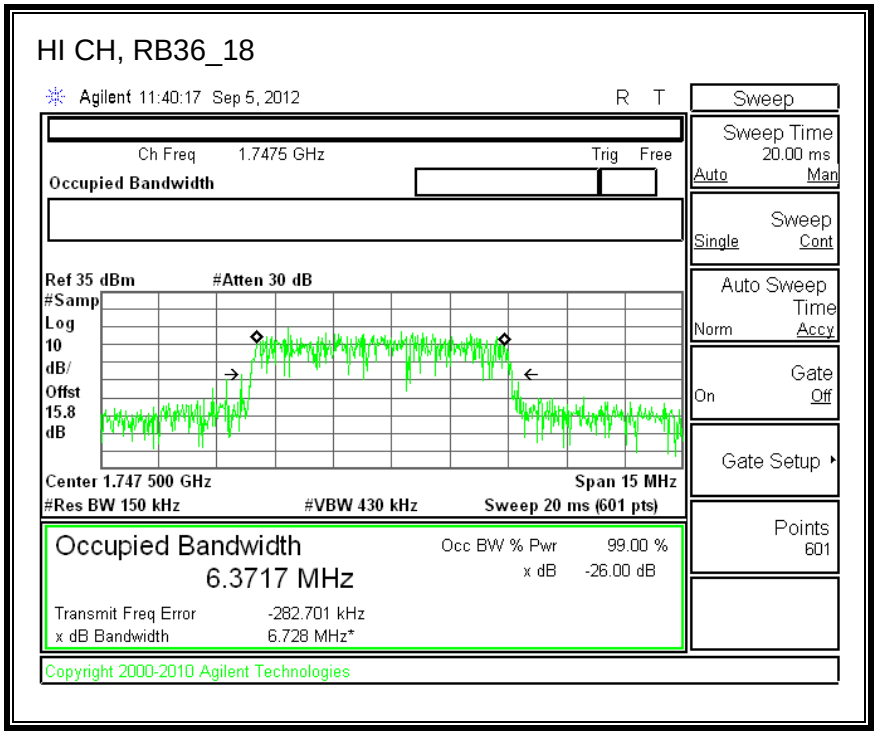
MID CH, RB36_18



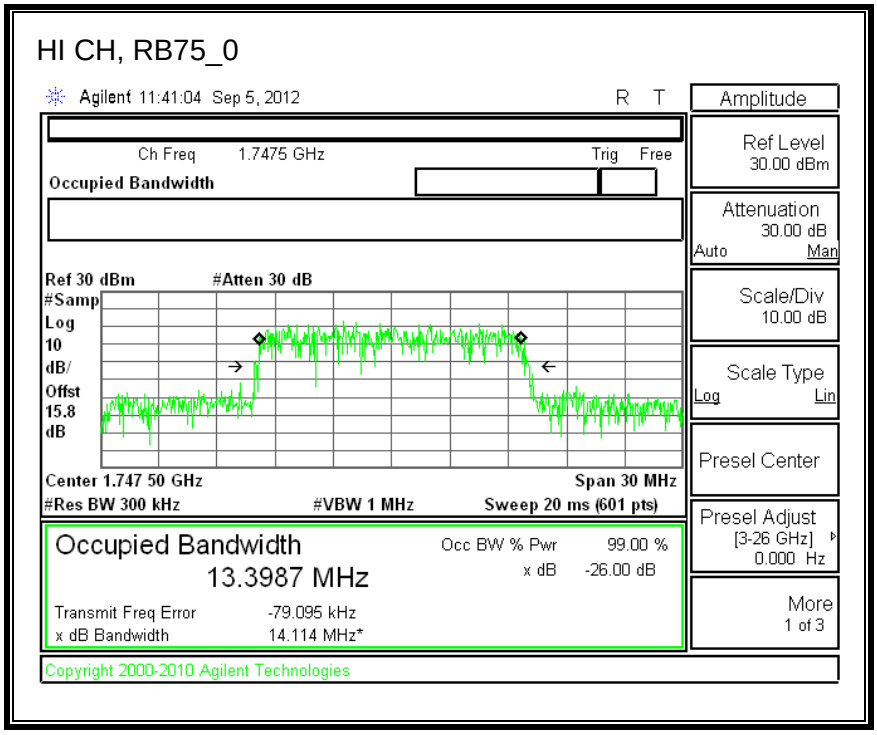
MID CH, RB75_0



HI CH, RB36_18

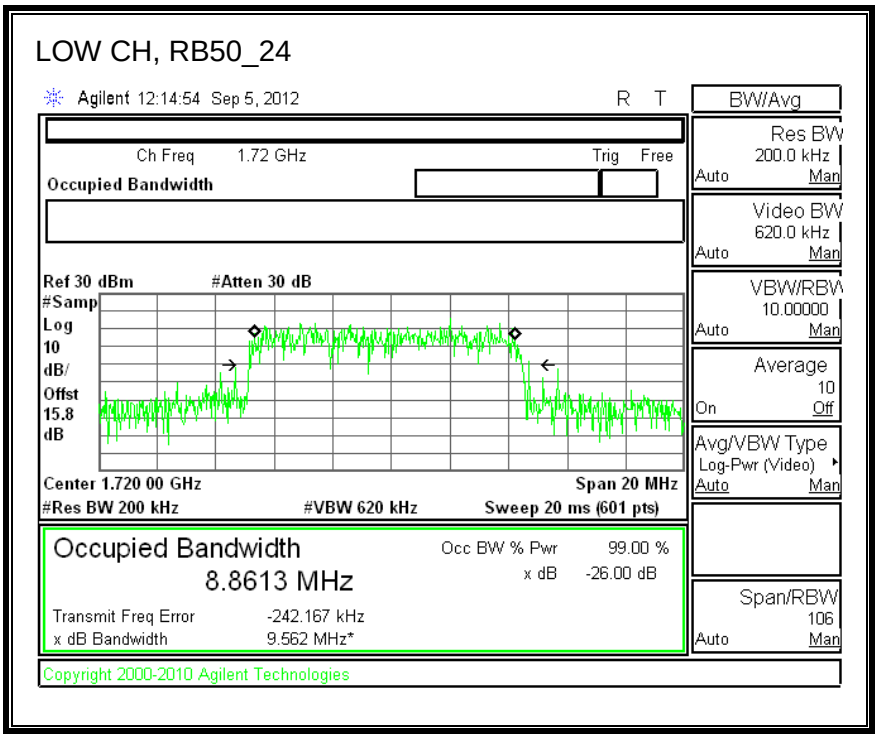


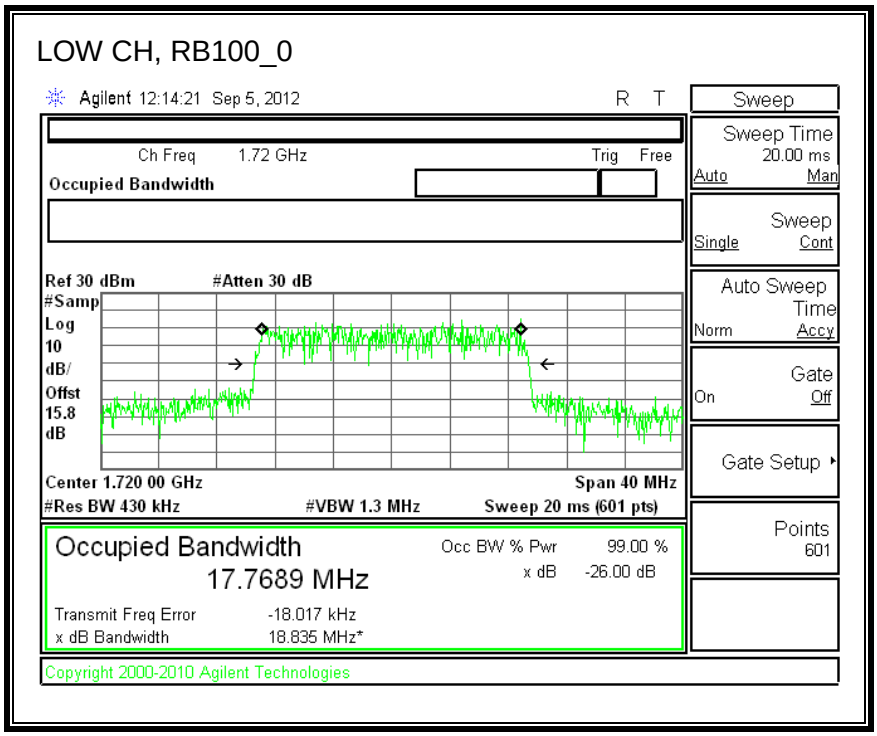
HI CH, RB75_0



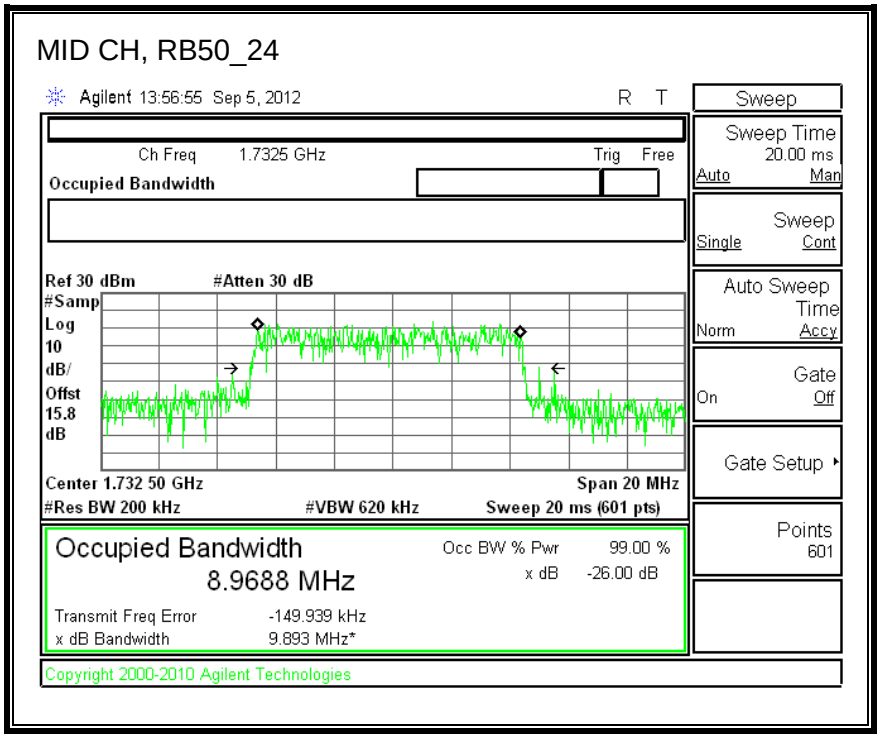
Band 4 (20 MHz BANDWIDTH)

LTE QPSK

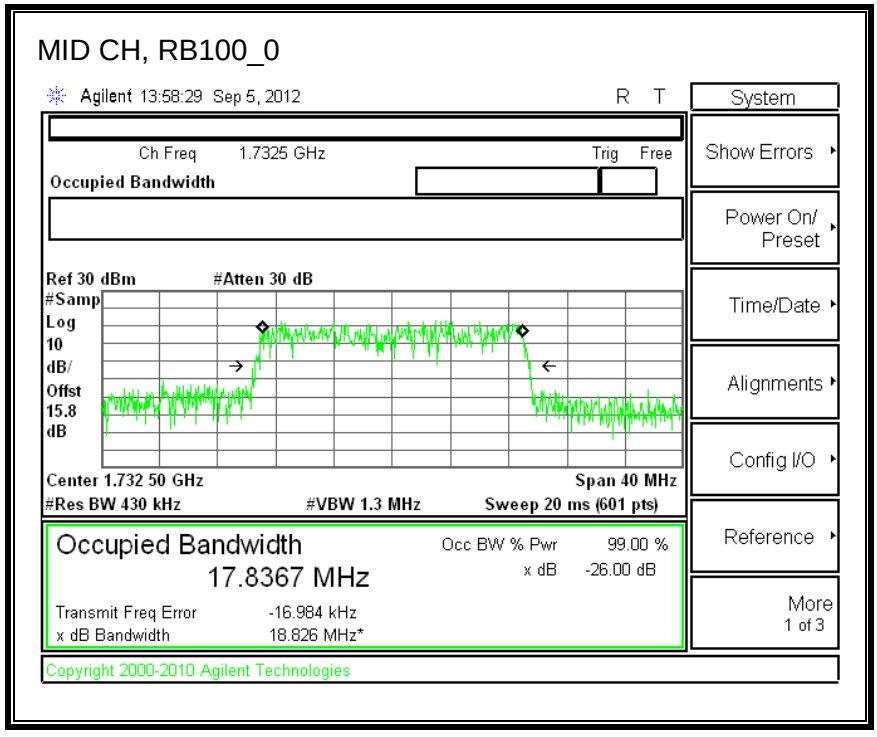




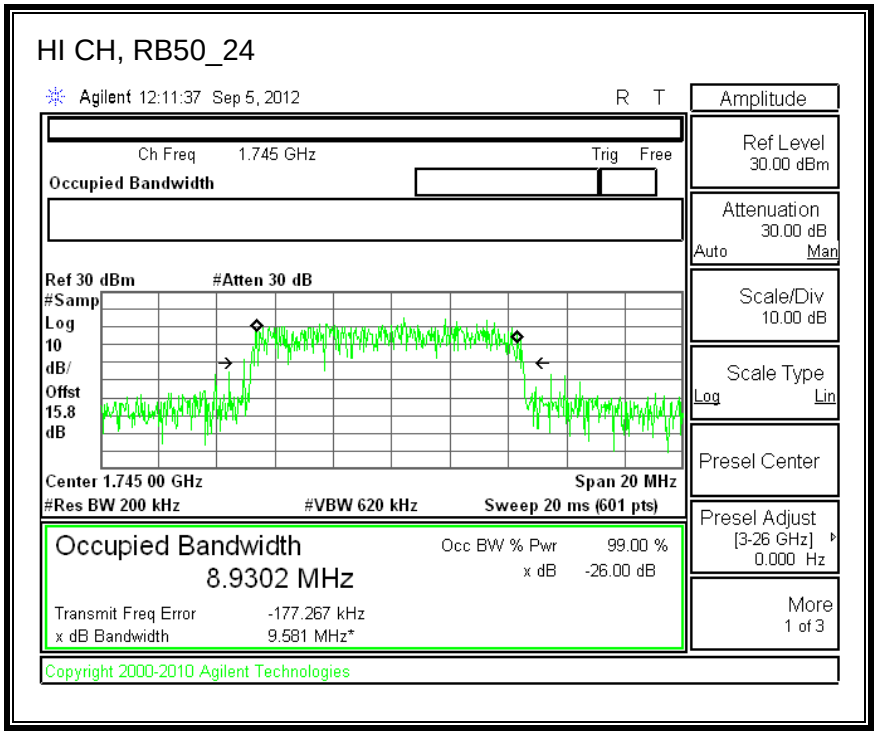
MID CH, RB50_24



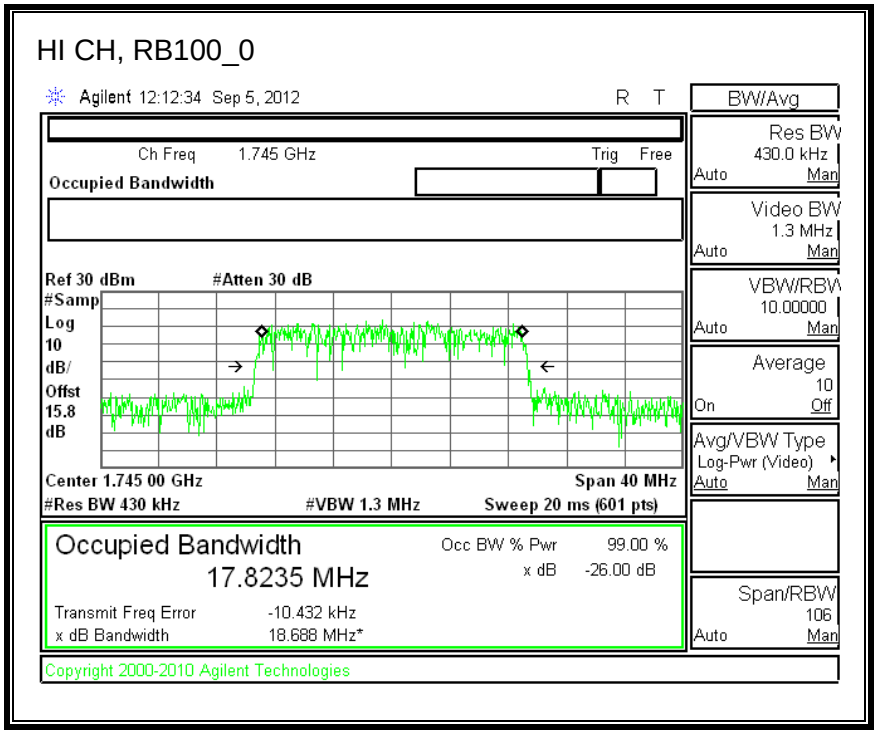
MID CH, RB100_0



HI CH, RB50_24

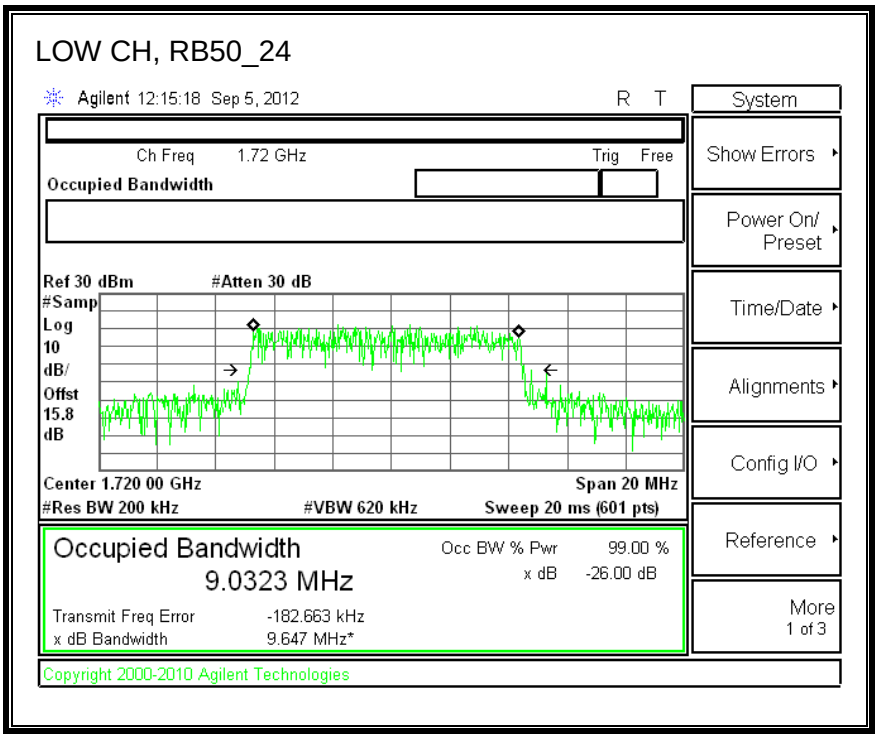


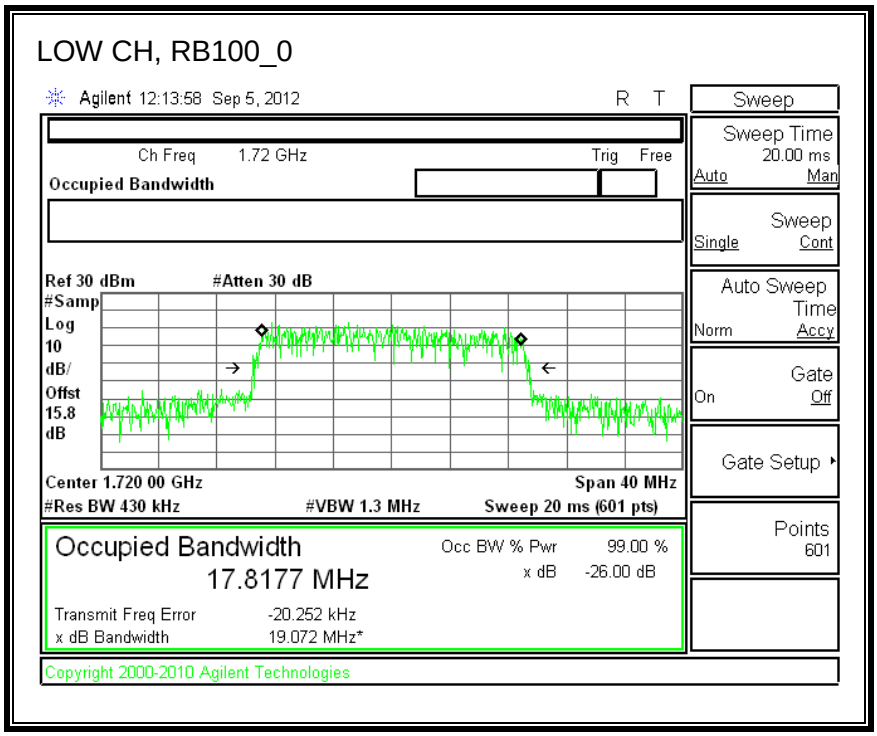
HI CH, RB100_0



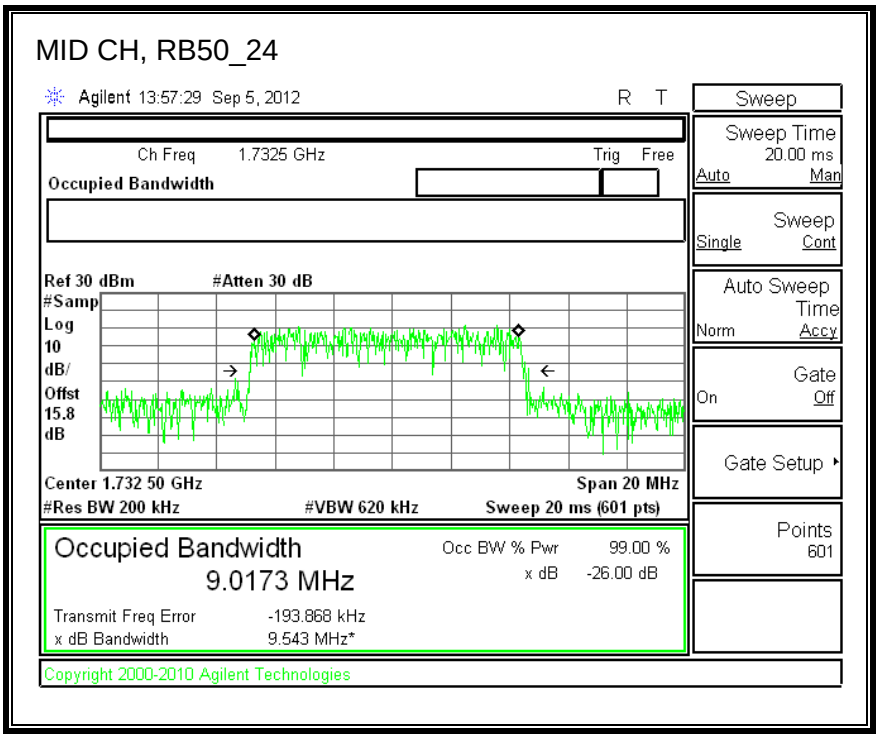
Band 4 (20 MHz BANDWIDTH)

LTE 16QAM

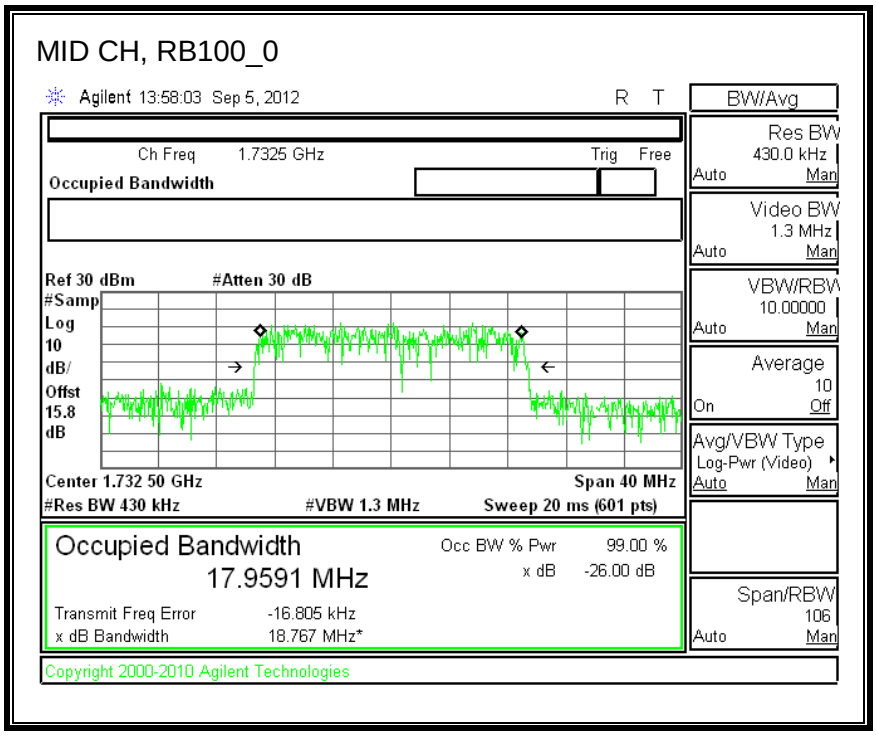




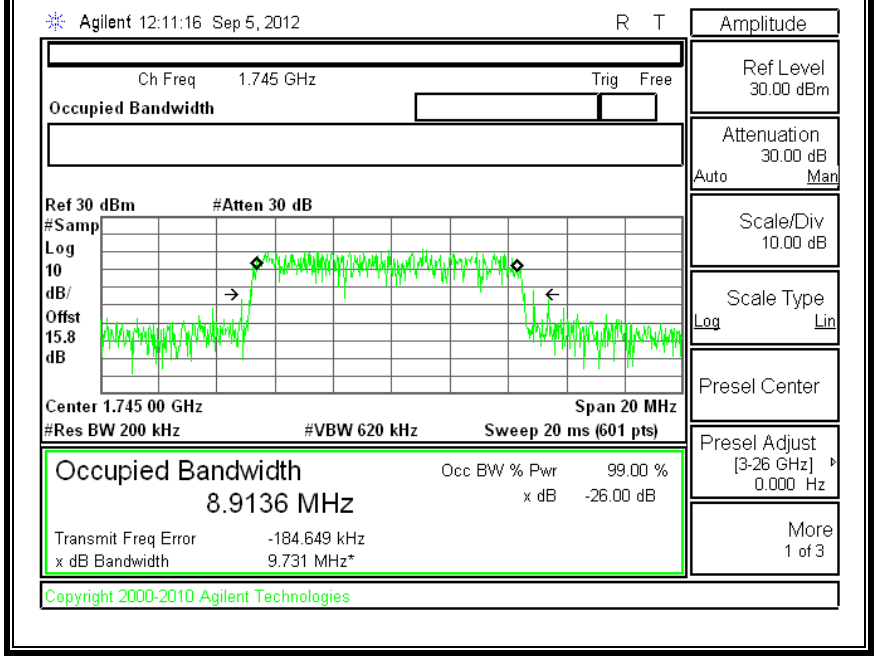
MID CH, RB50_24



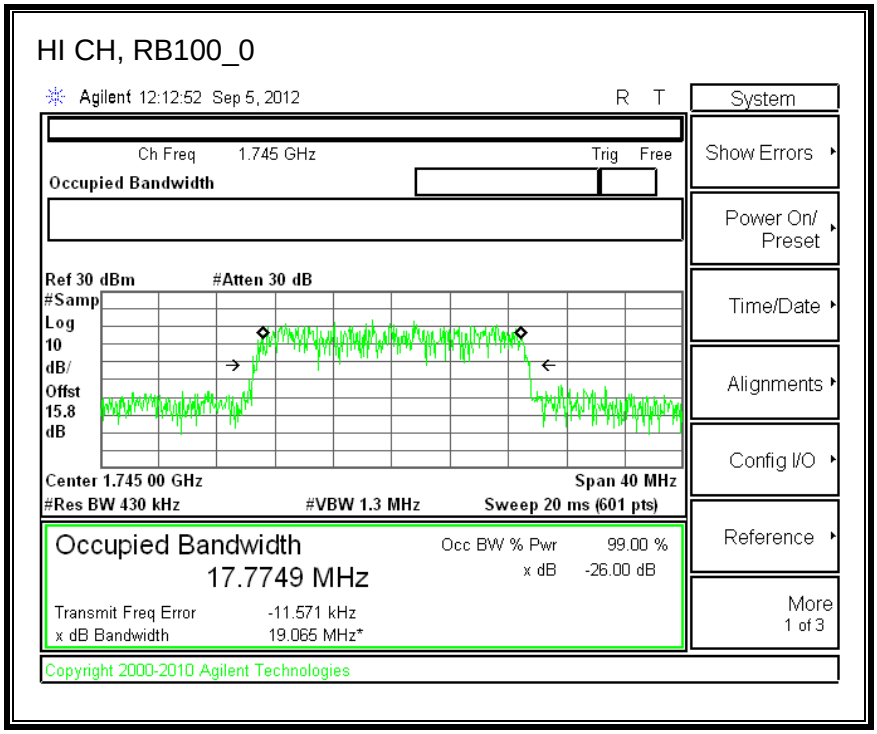
MID CH, RB100_0



HI CH, RB50_24

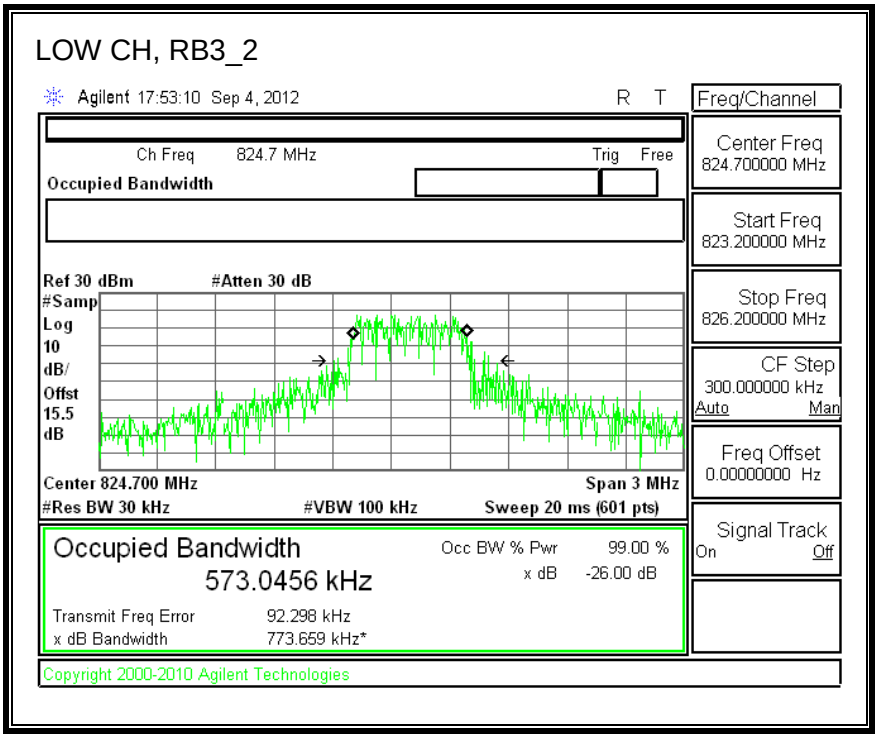


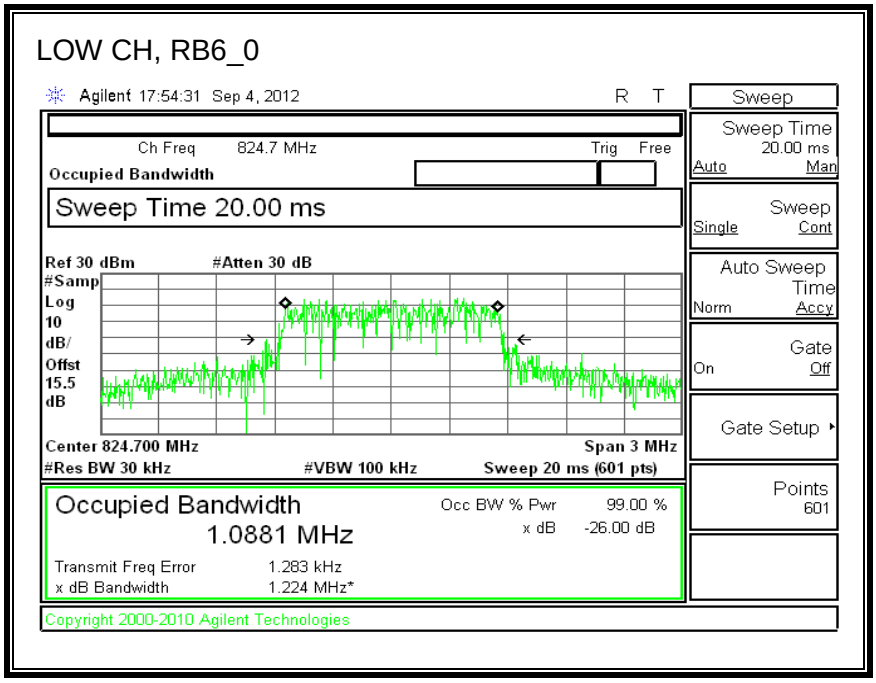
HI CH, RB100_0



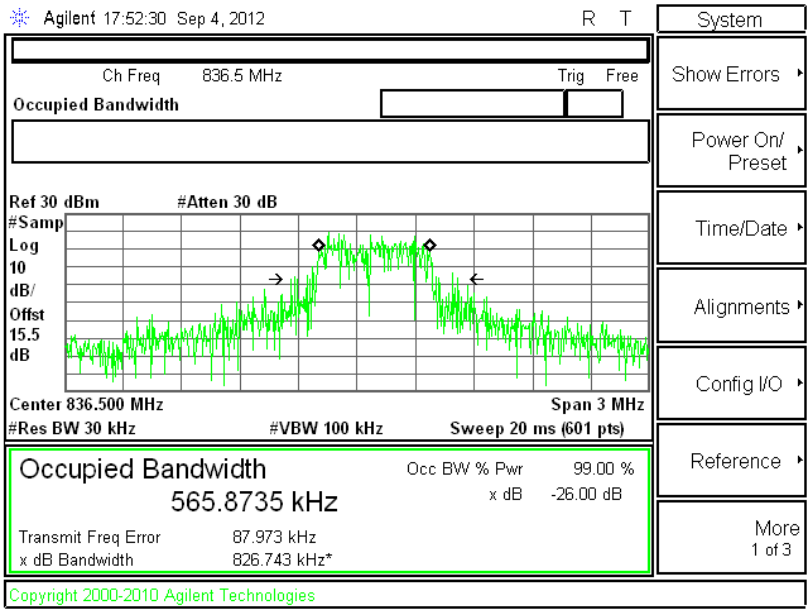
8.1.5. LTE BAND 5

(1.4 MHz BANDWIDTH)

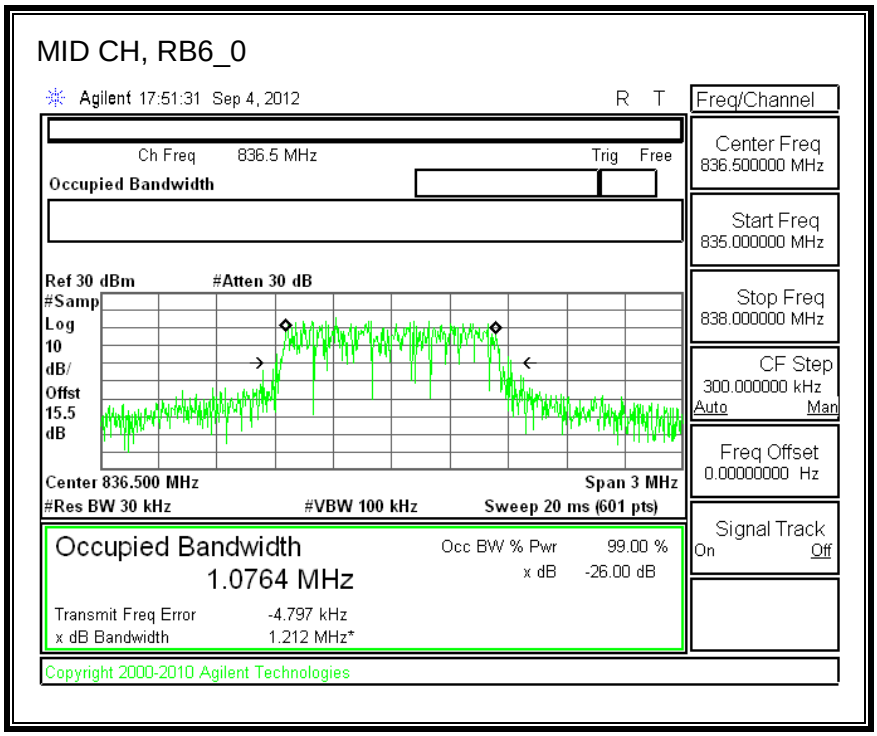




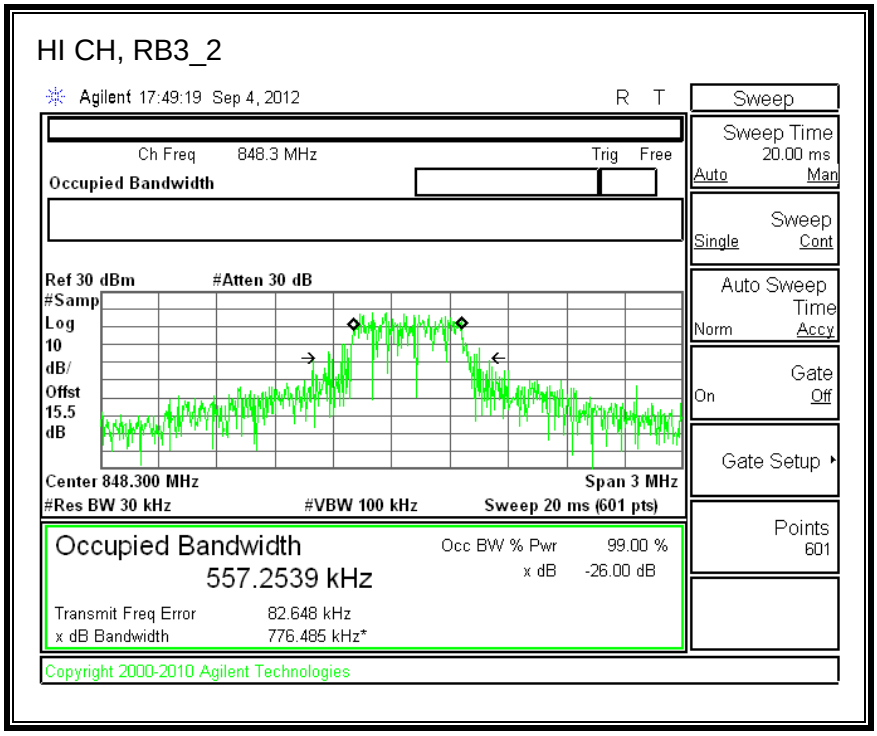
MID CH, RB3_2



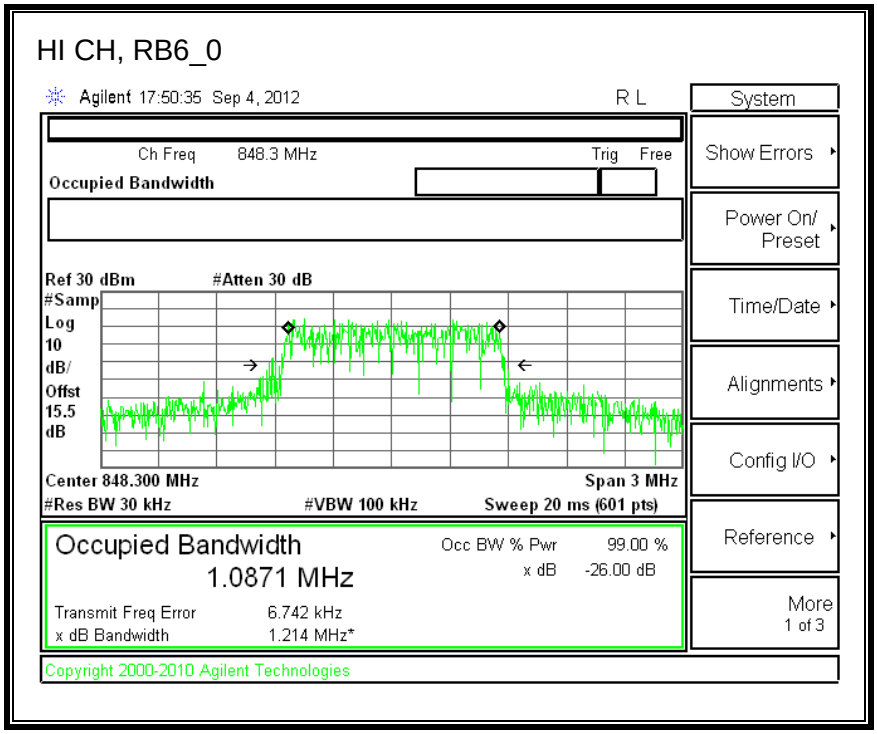
MID CH, RB6_0



HI CH, RB3_2

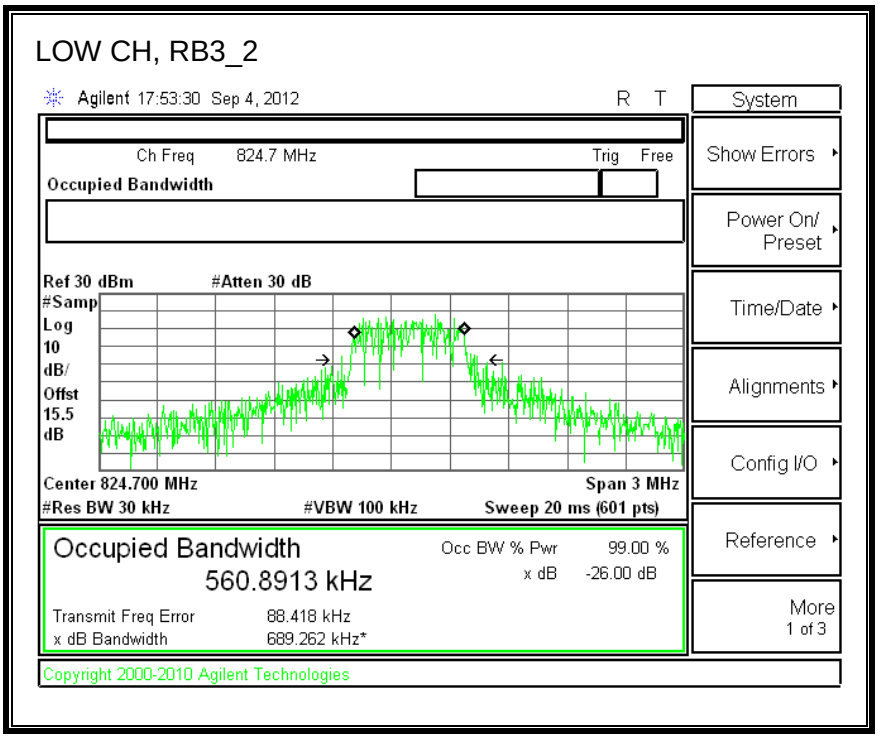


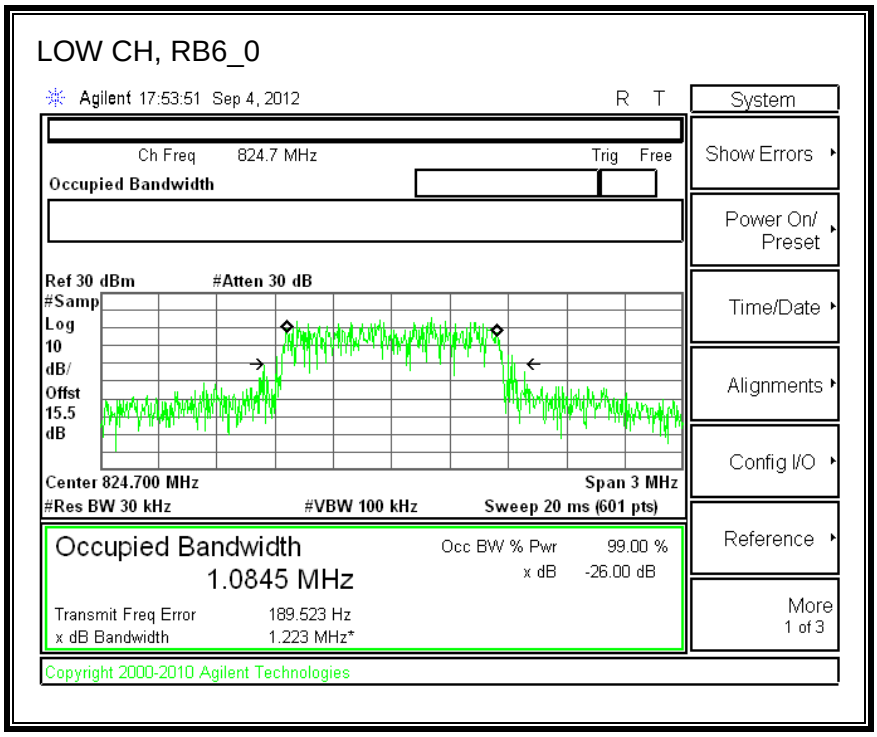
HI CH, RB6_0



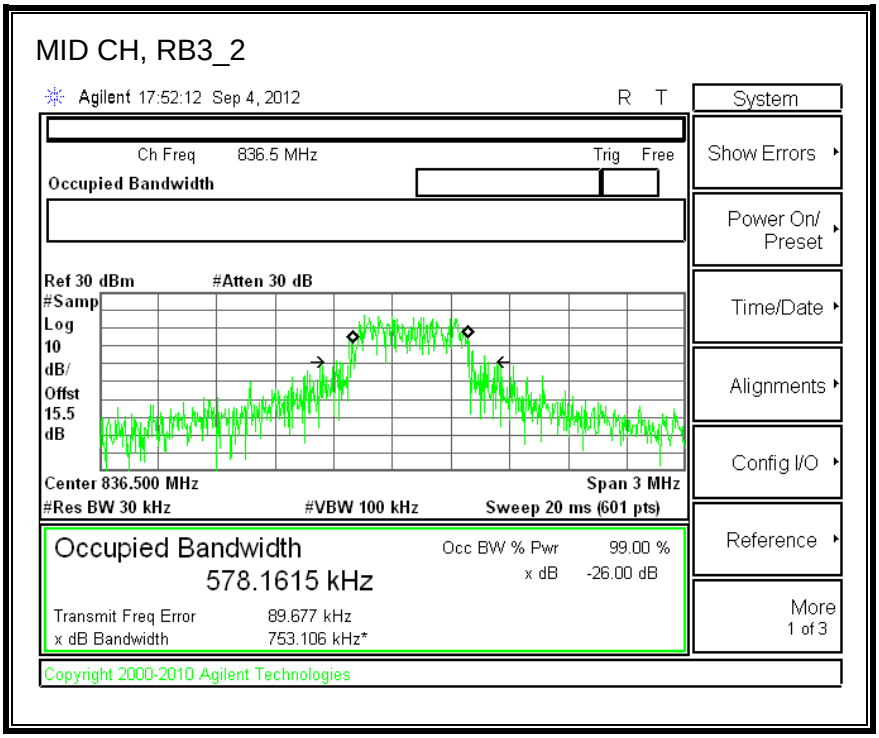
Band 5 (1.4 MHz BANDWIDTH)

LTE 16QAM

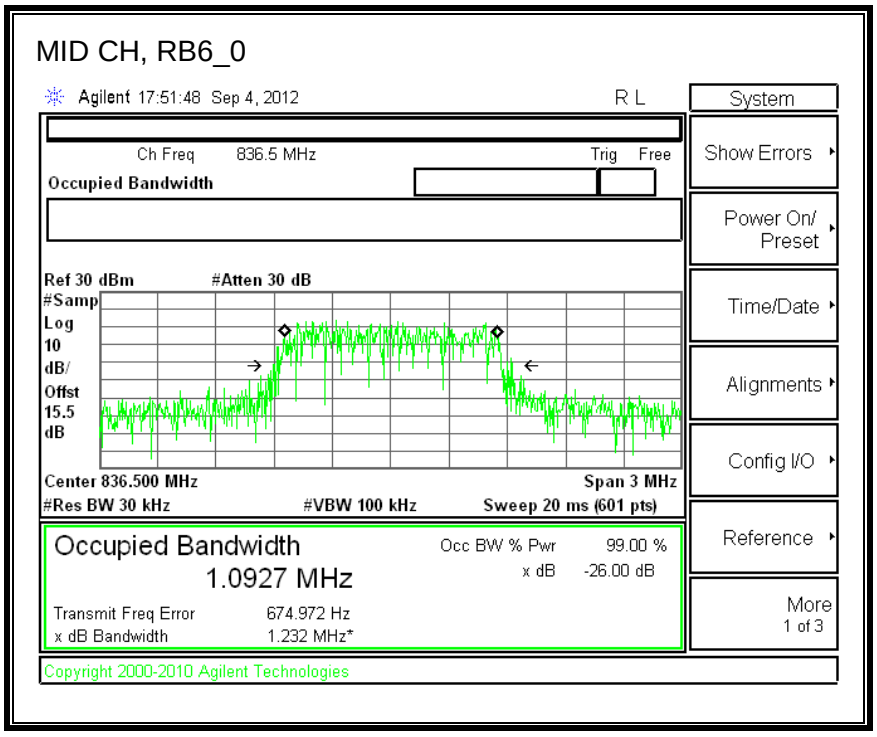




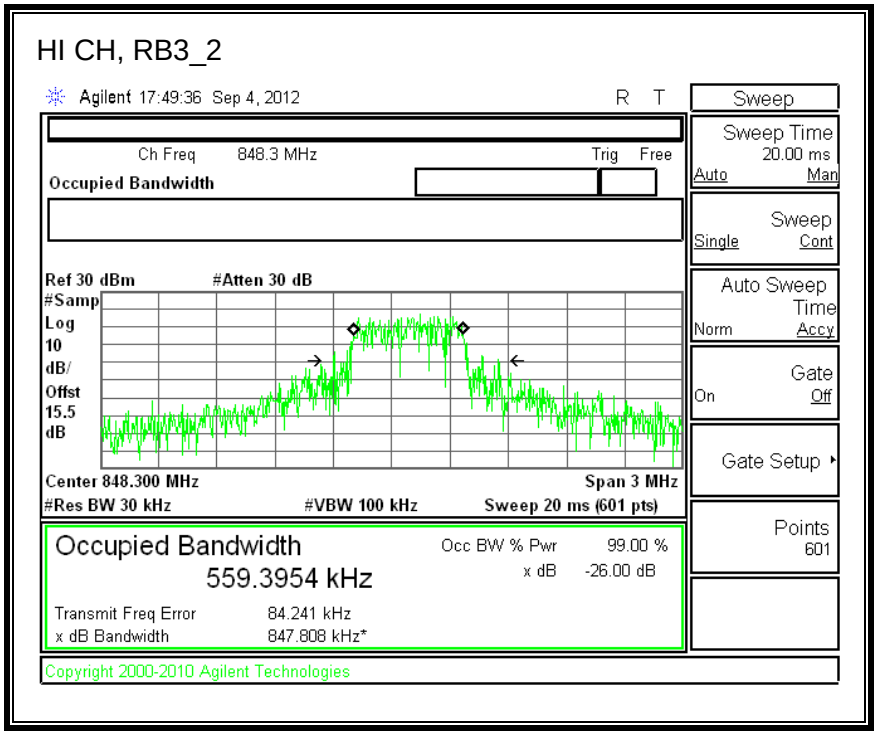
MID CH, RB3_2



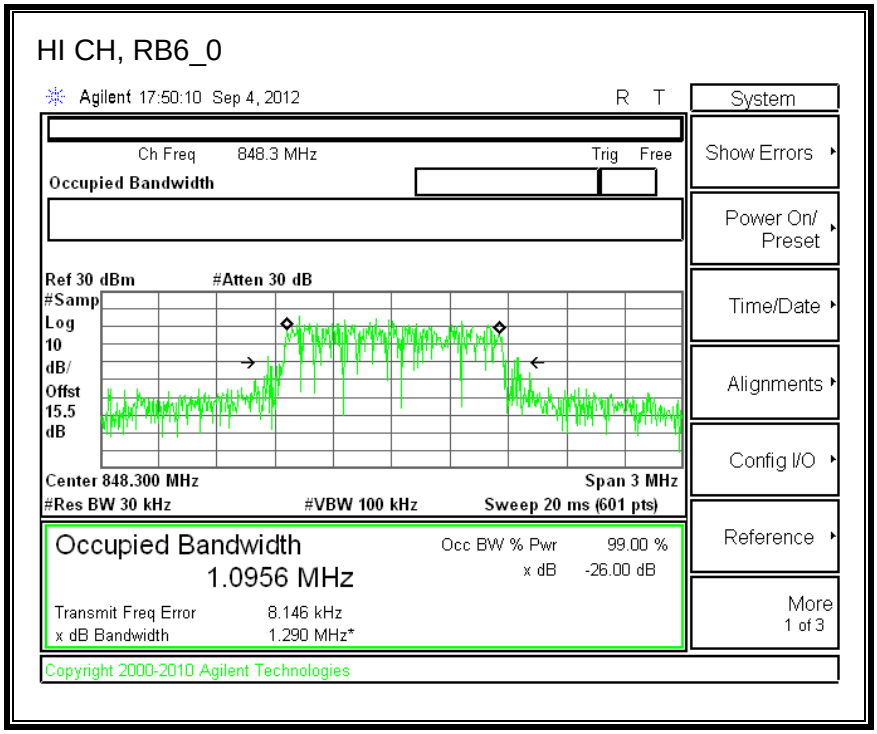
MID CH, RB6_0



HI CH, RB3_2

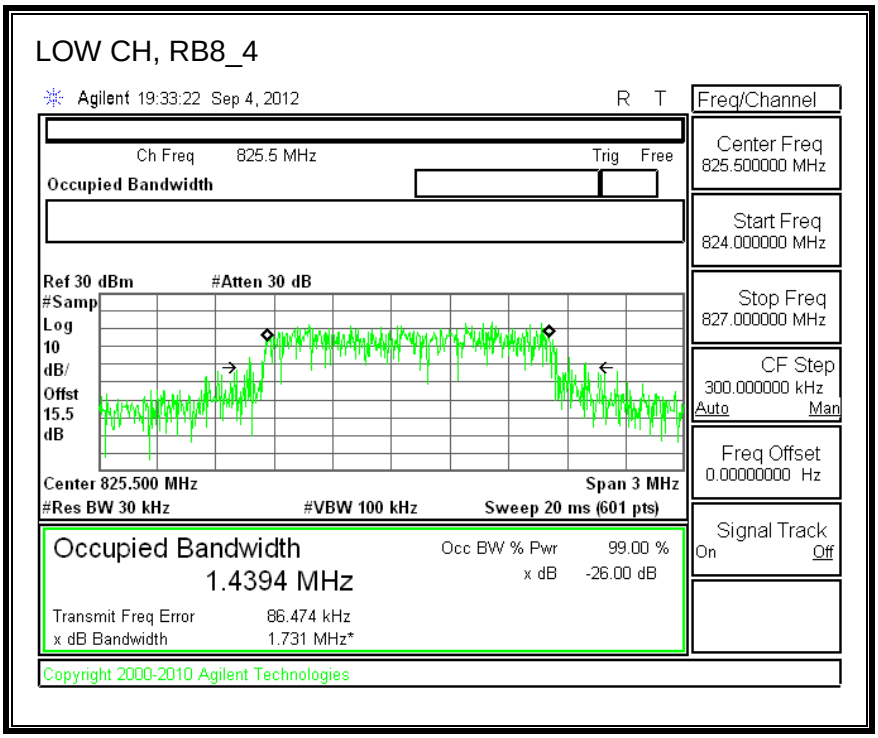


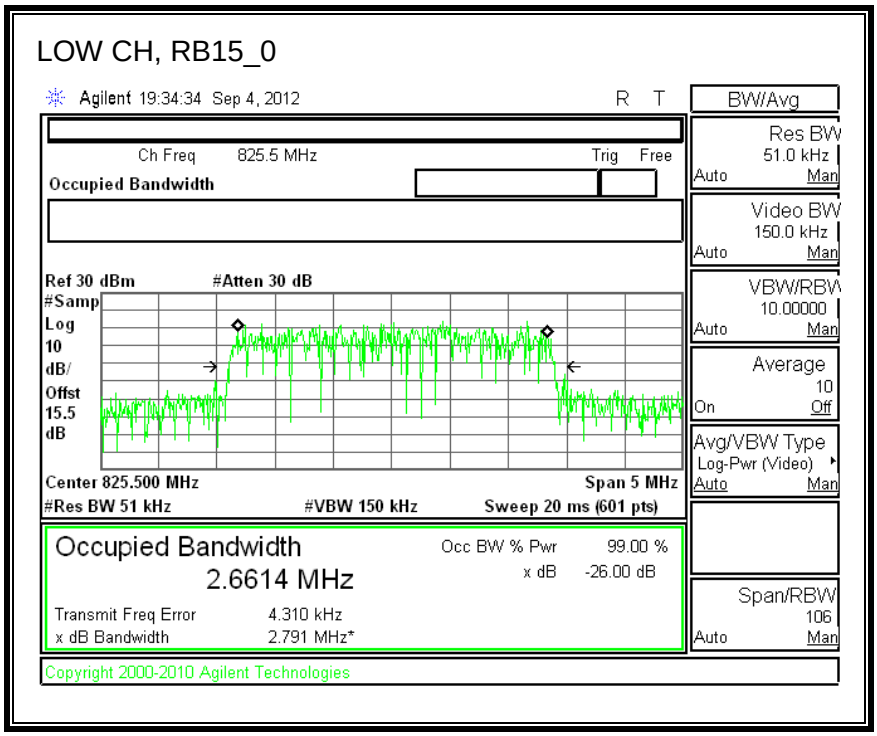
HI CH, RB6_0



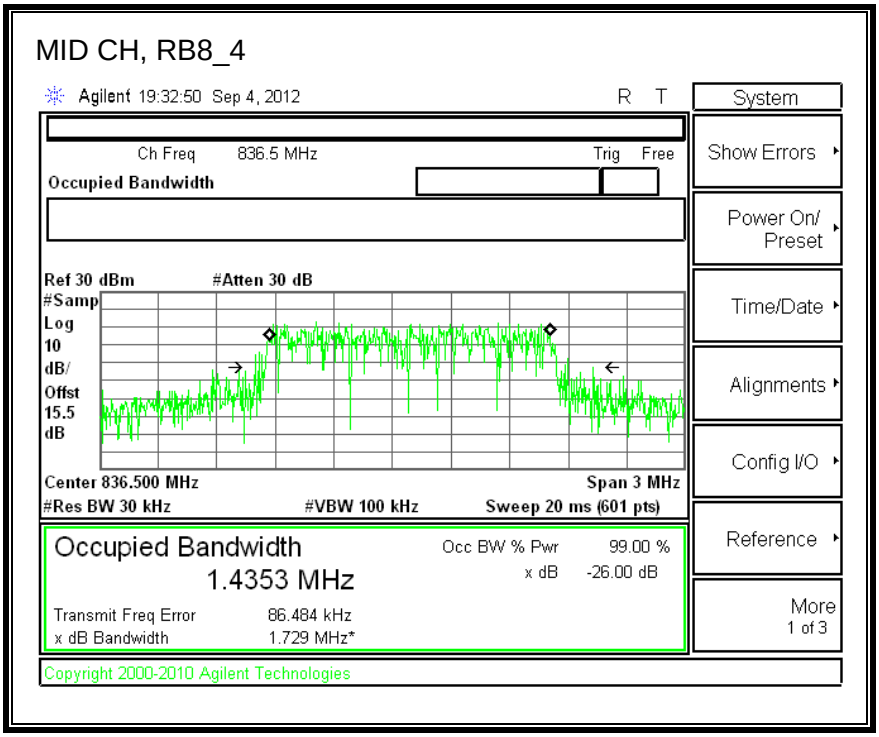
Band 5 (3 MHz BANDWIDTH)

LTE QPSK

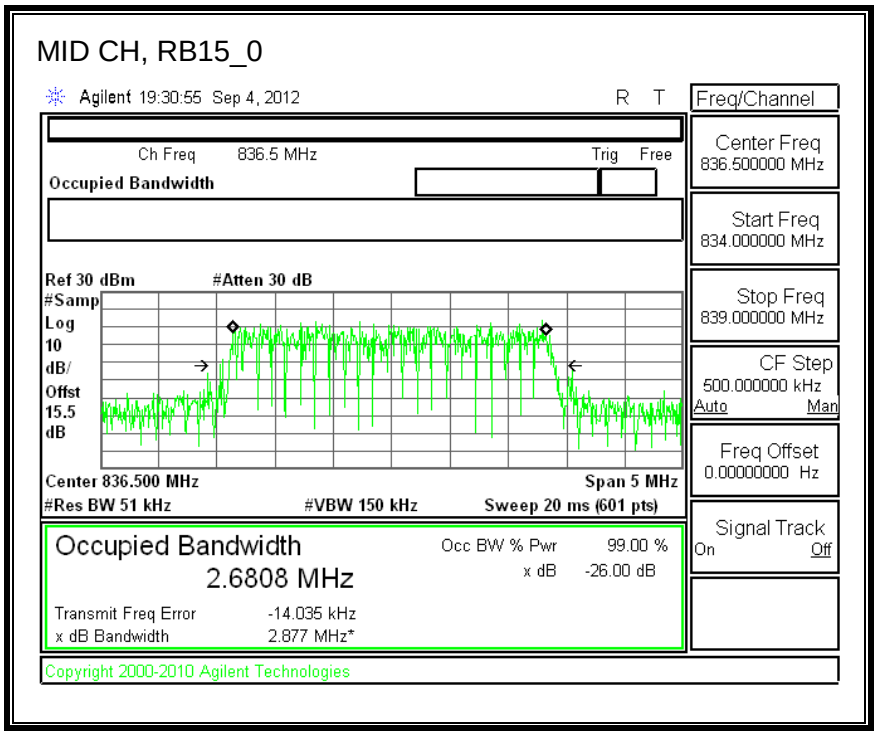




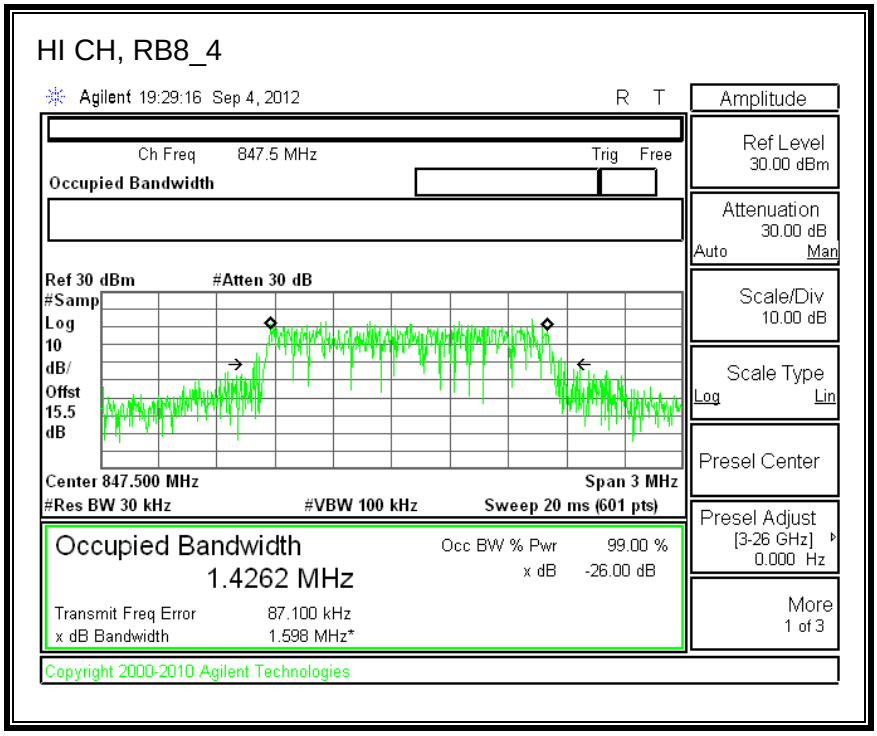
MID CH, RB8_4



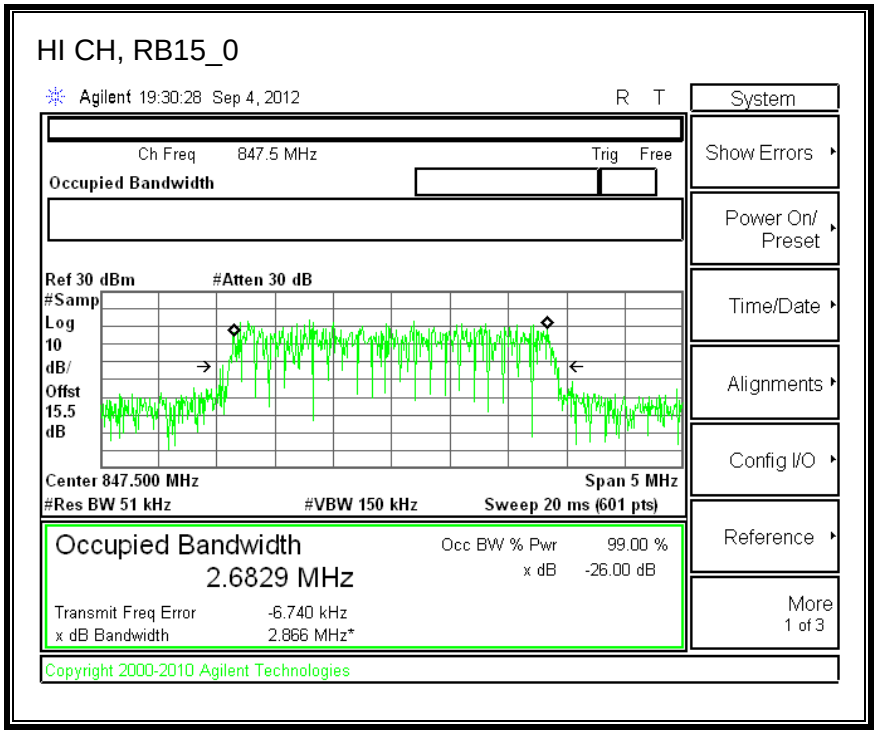
MID CH, RB15_0



HI CH, RB8_4

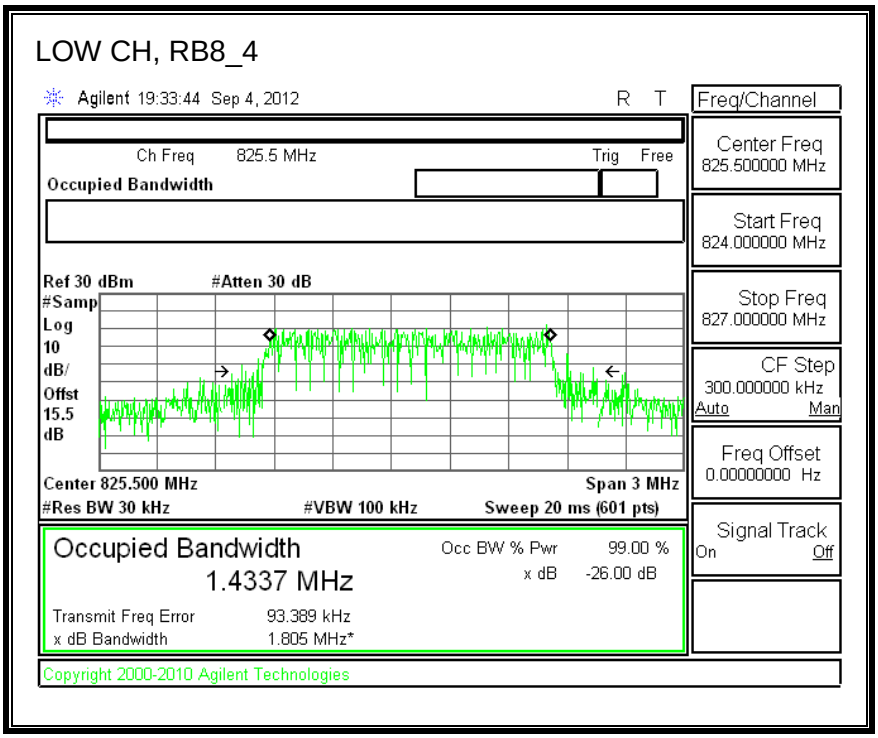


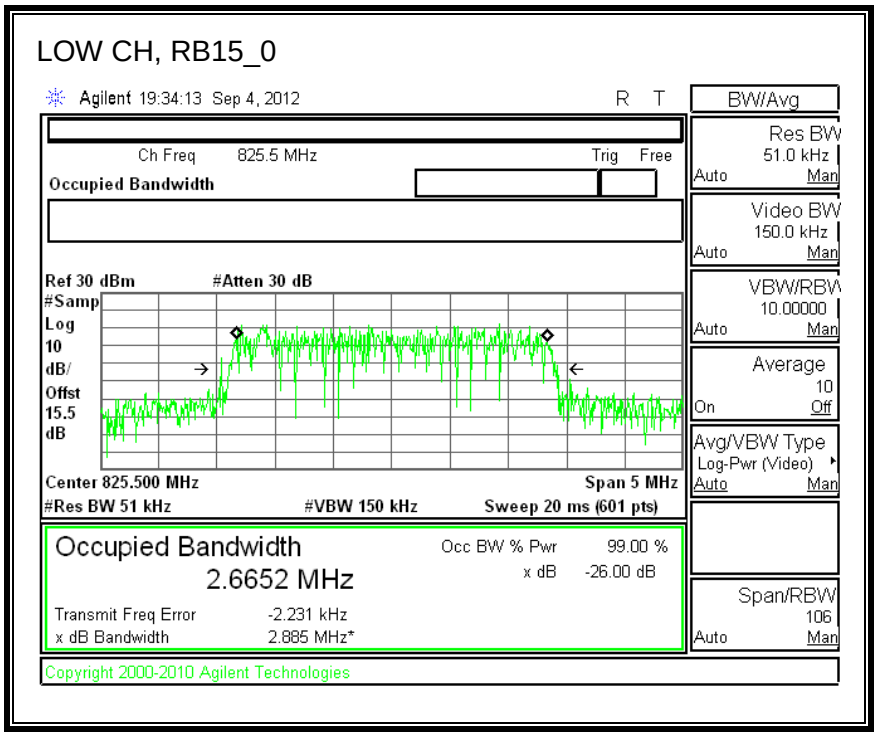
HI CH, RB15_0



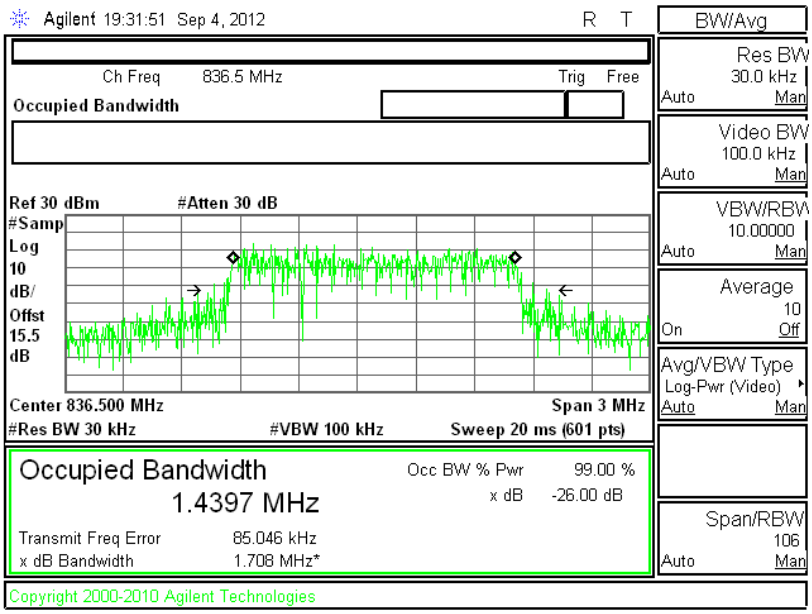
Band 5 (3 MHz BANDWIDTH)

LTE 16QAM

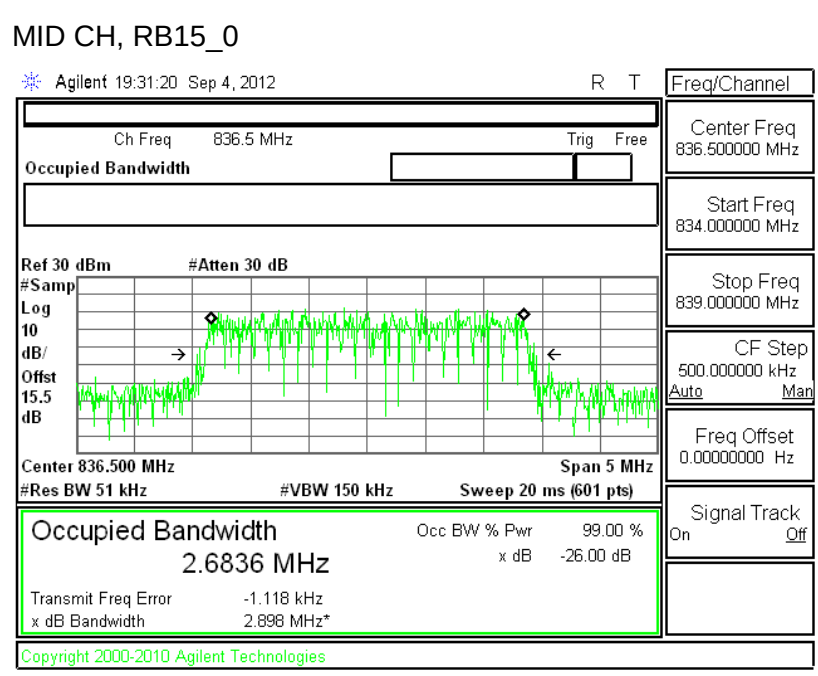




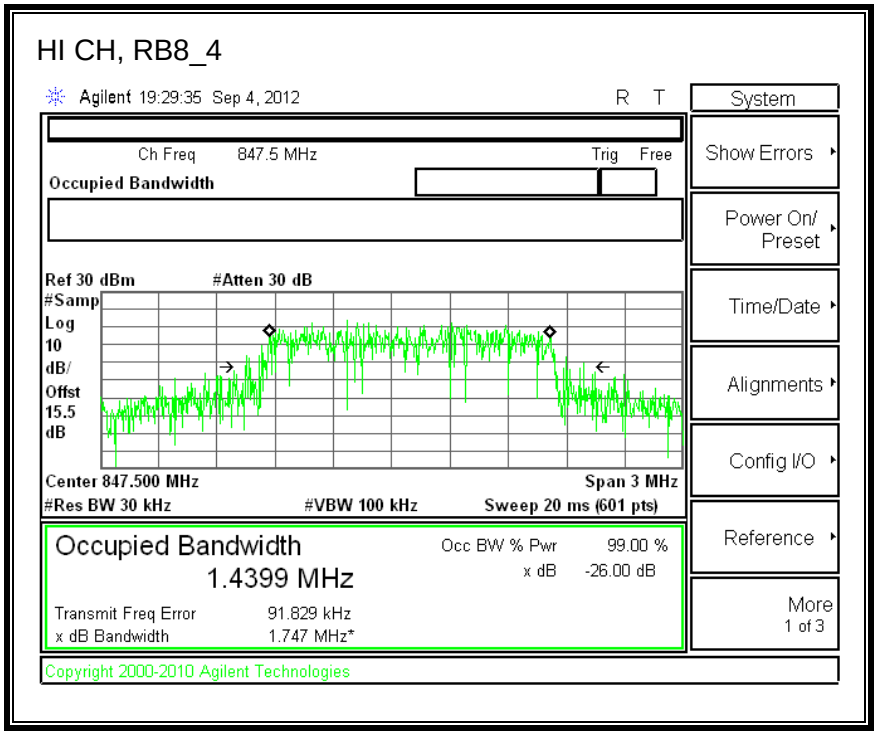
MID CH, RB8_4



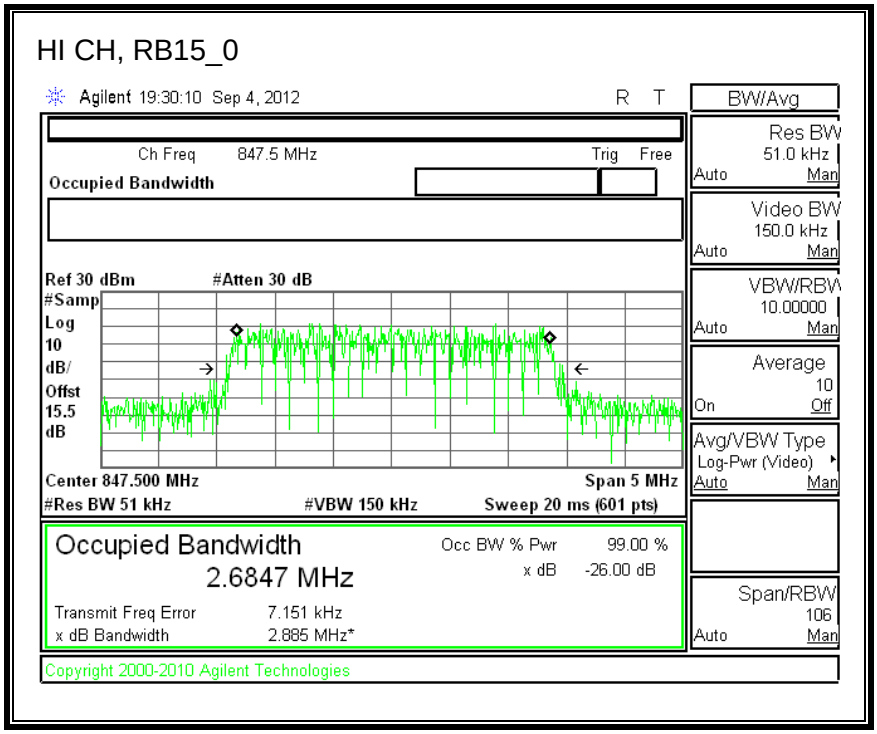
MID CH, RB15_0



HI CH, RB8_4

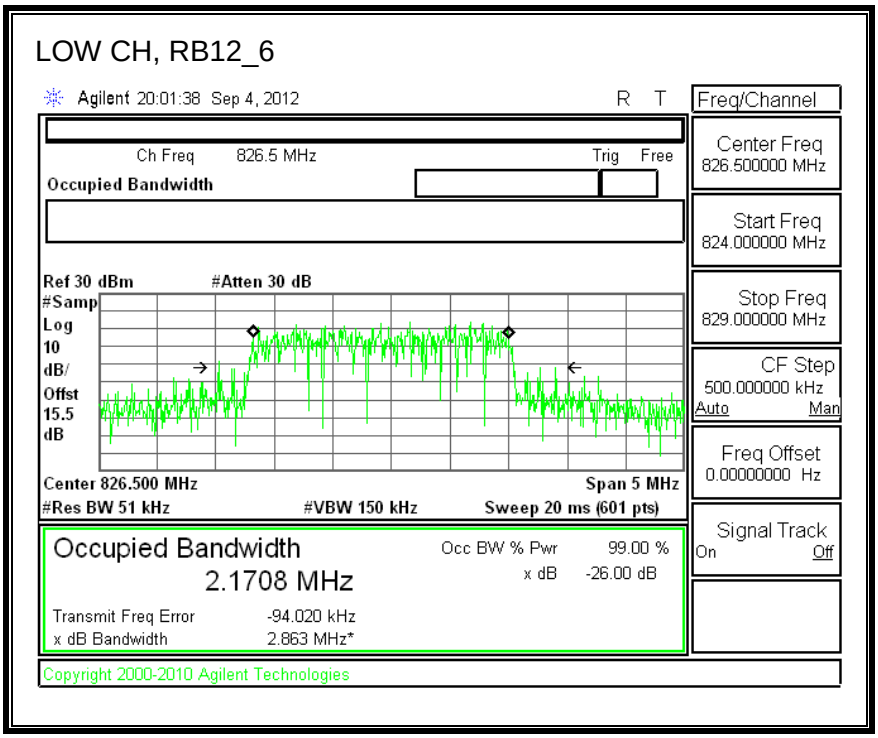


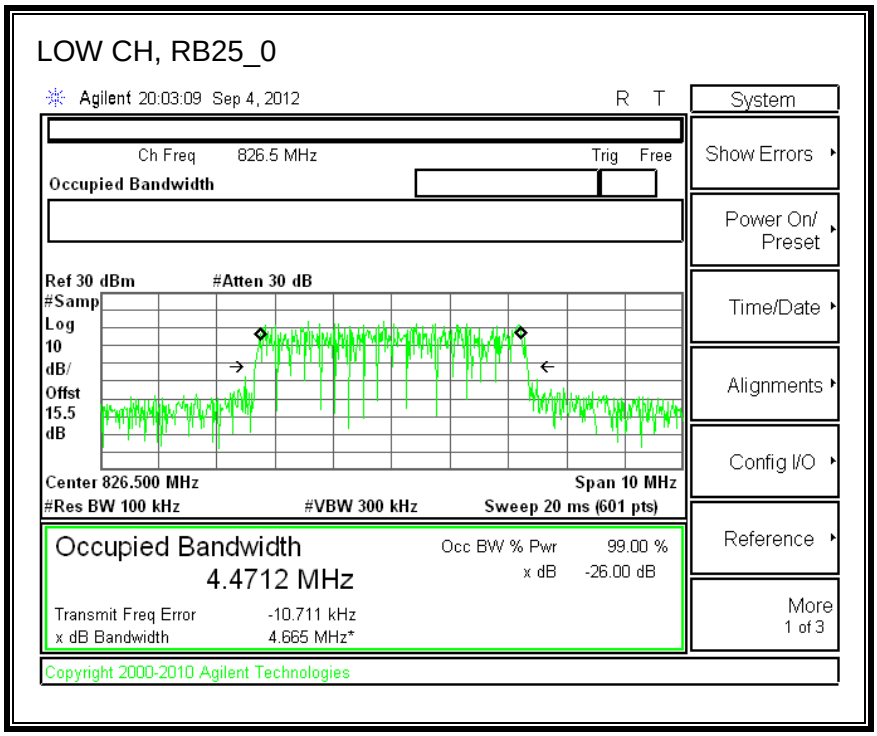
HI CH, RB15_0



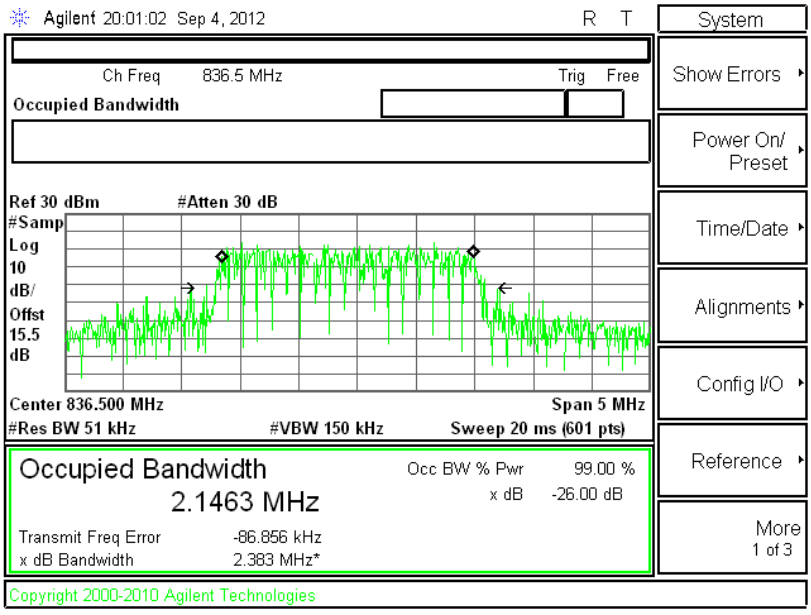
Band 5 (5 MHz BANDWIDTH)

LTE QPSK

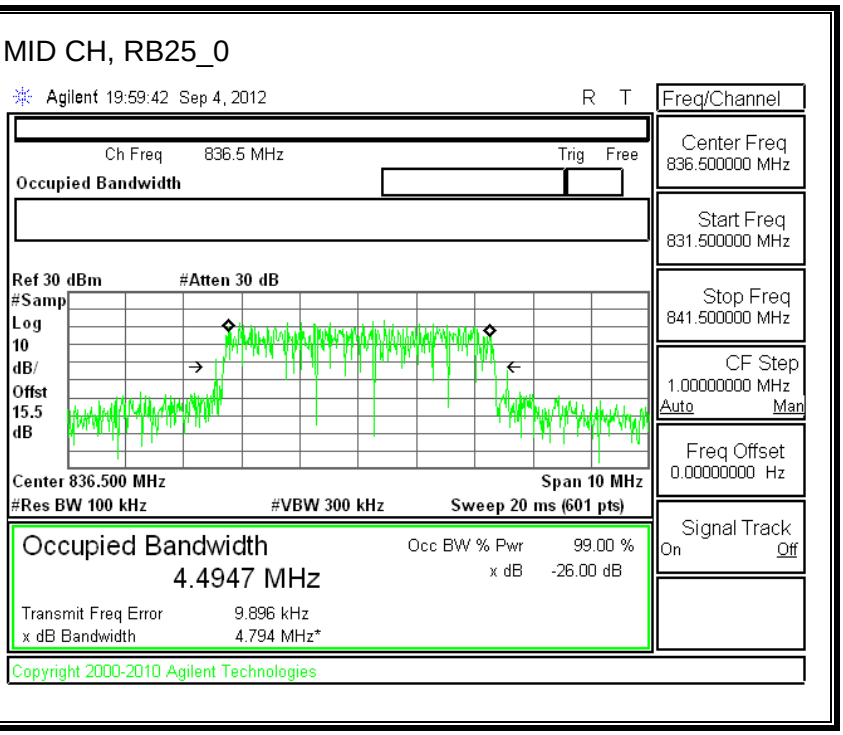




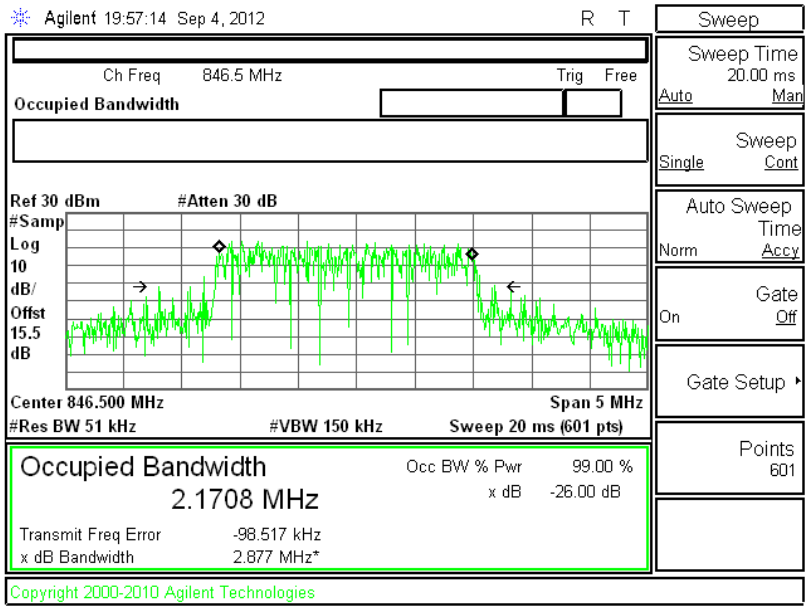
MID CH, RB12_6



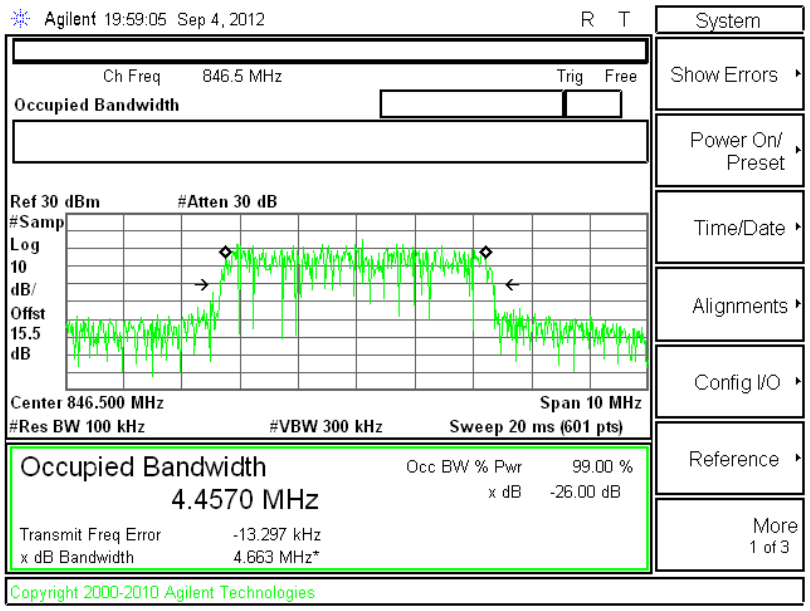
MID CH, RB25_0



HI CH, RB12_6

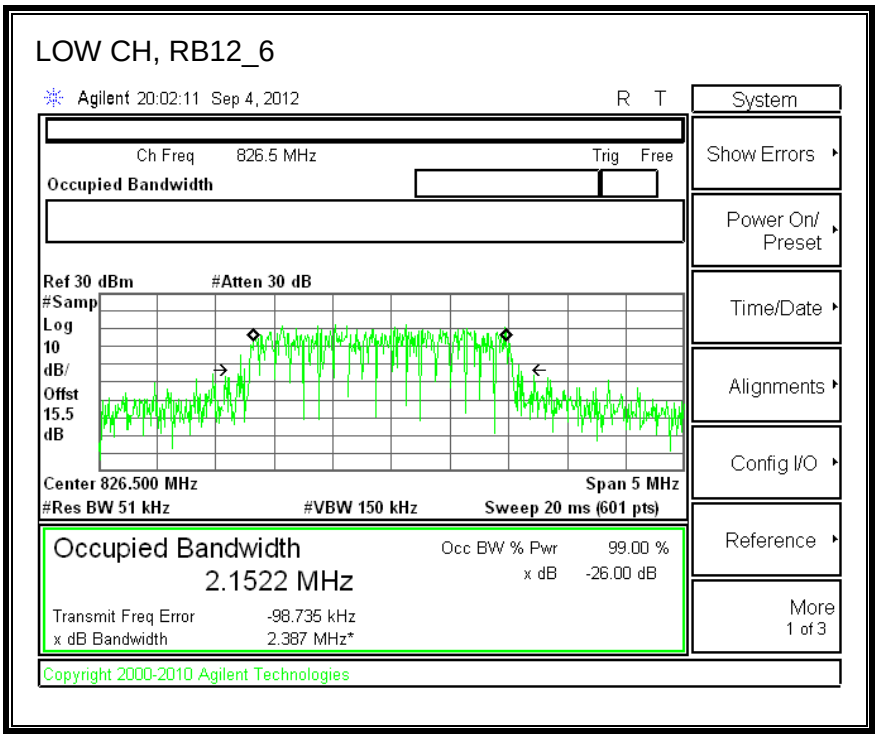


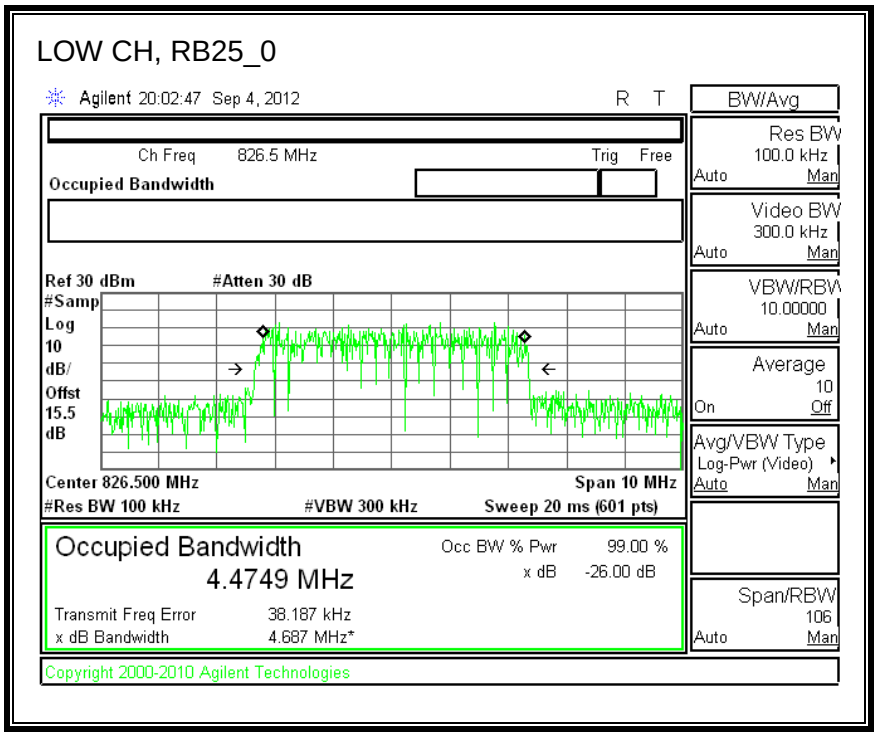
HI CH, RB25_0



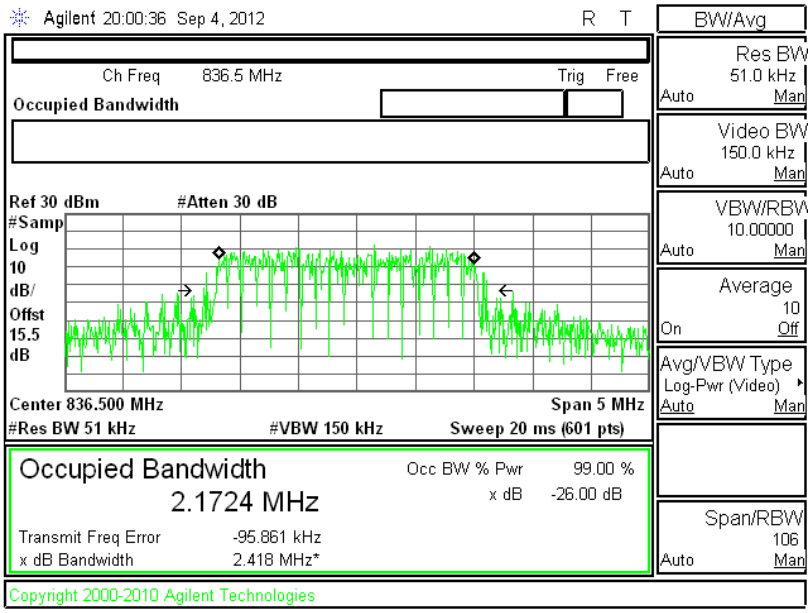
Band 5 (5 MHz BANDWIDTH)

LTE 16QAM

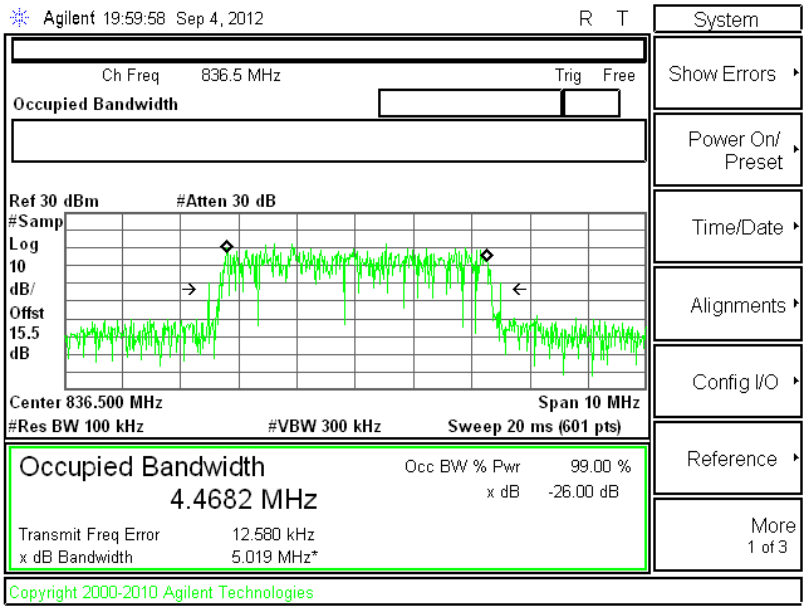




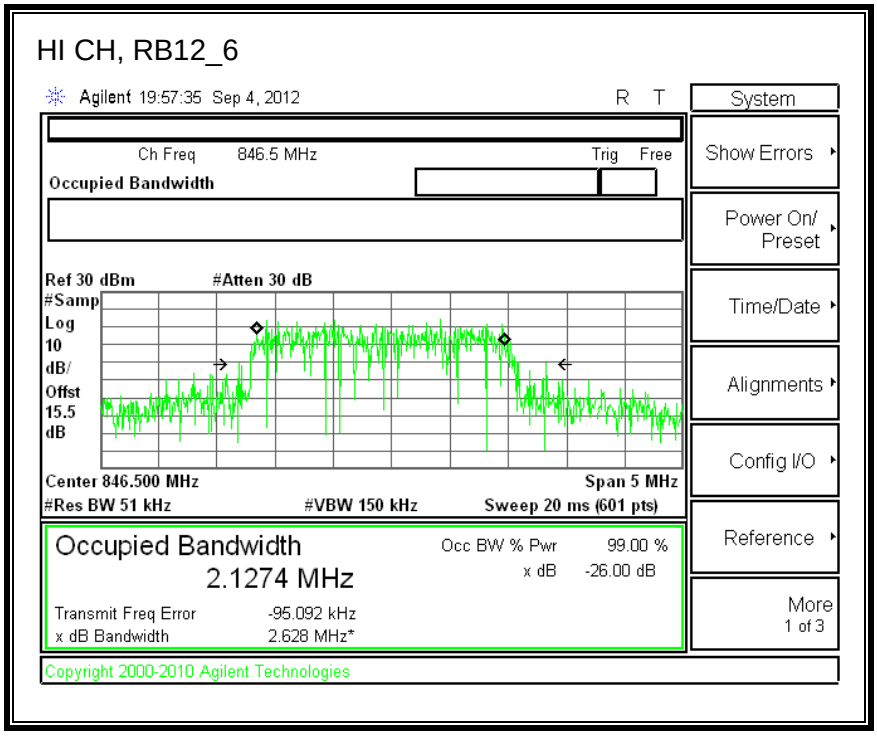
MID CH, RB12_6



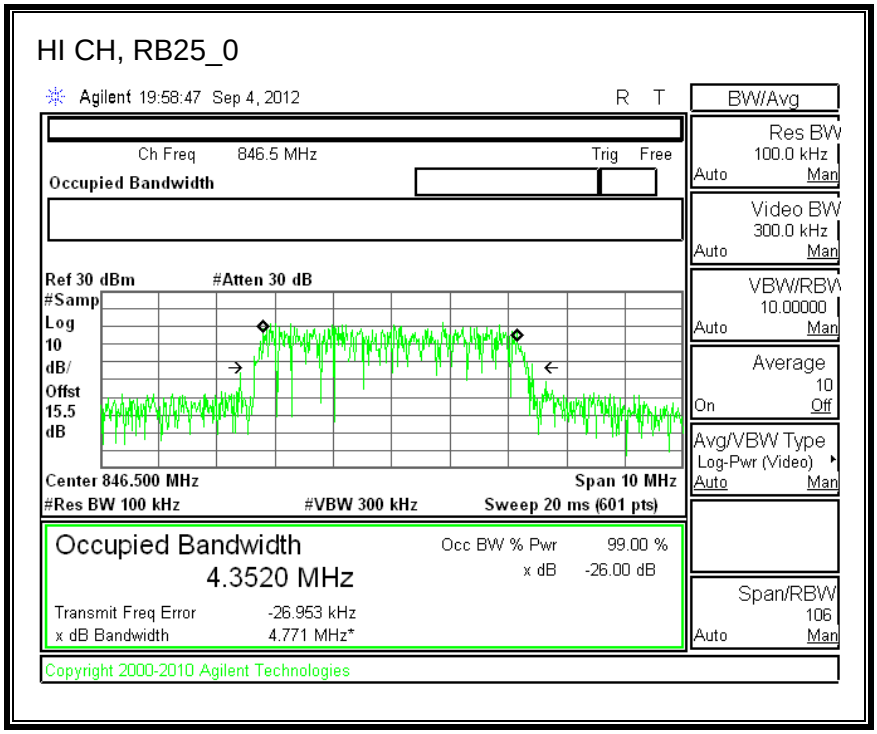
MID CH, RB25_0



HI CH, RB12_6

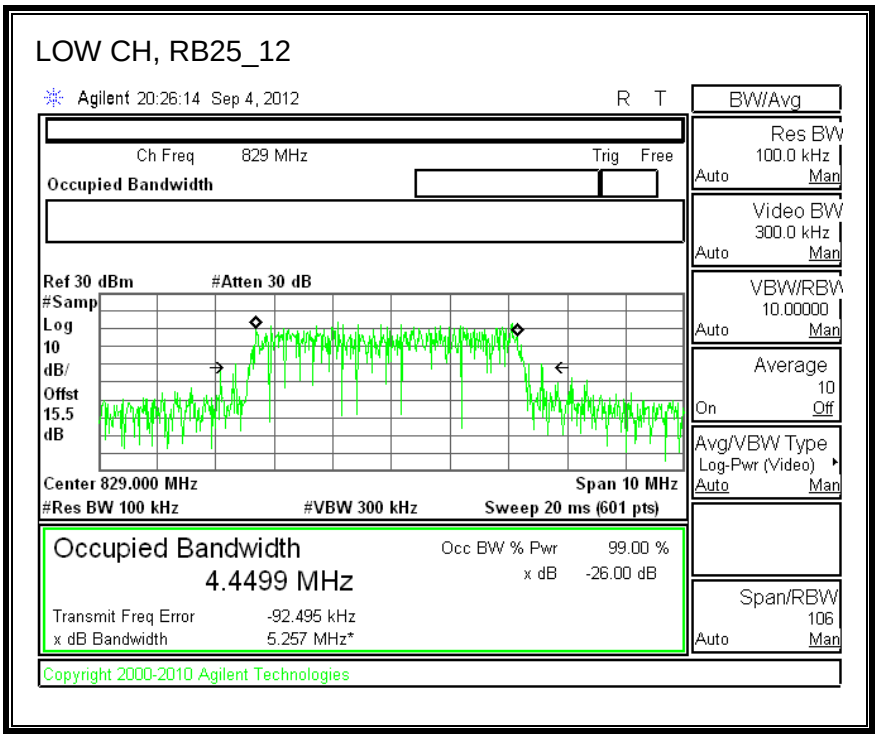


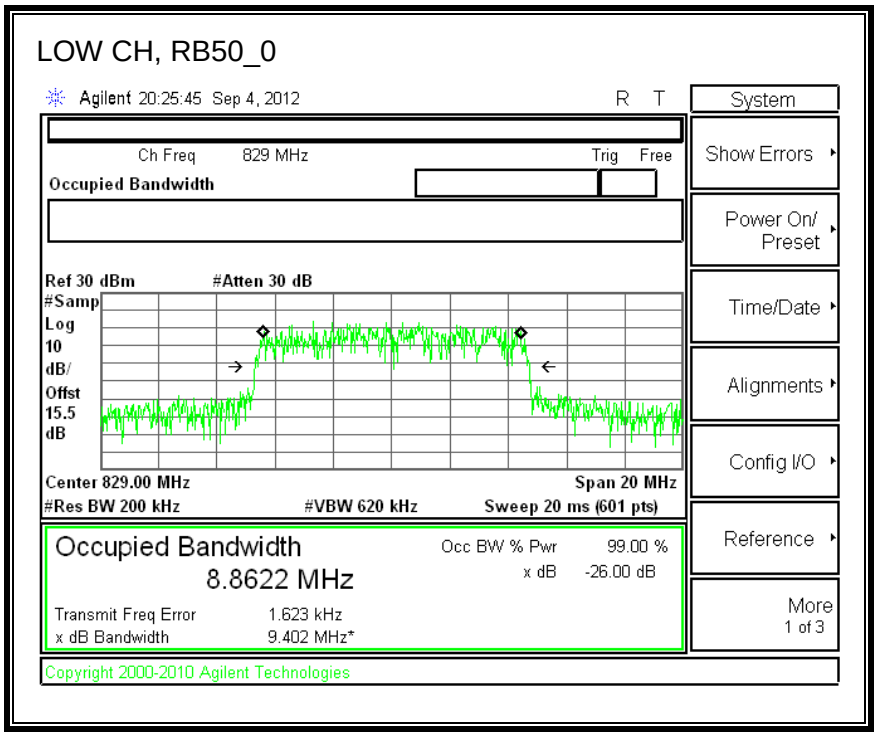
HI CH, RB25_0



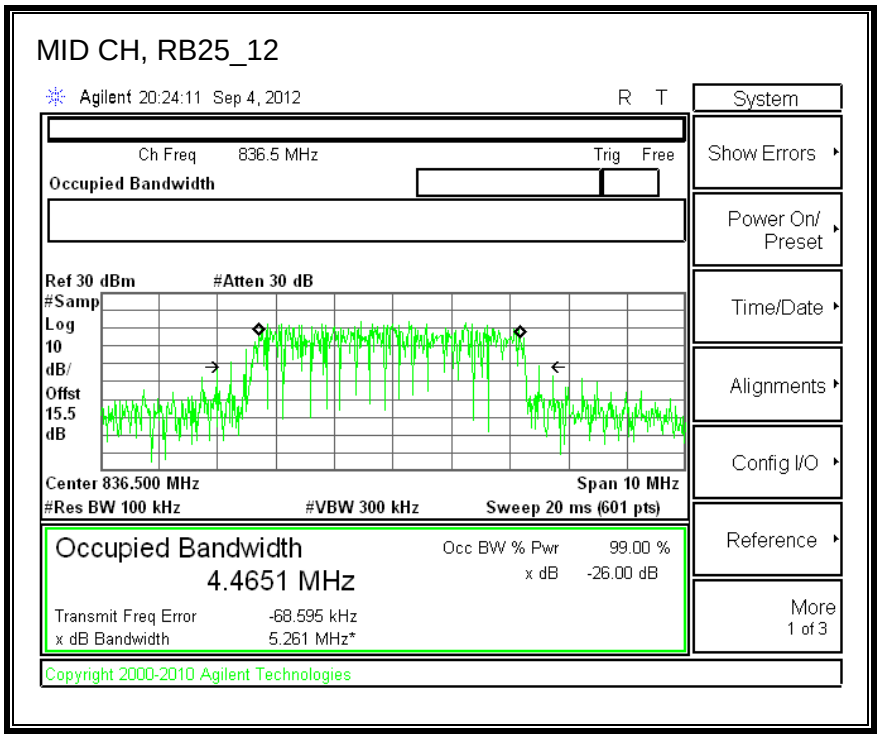
Band 5 (10 MHz BANDWIDTH)

LTE QPSK

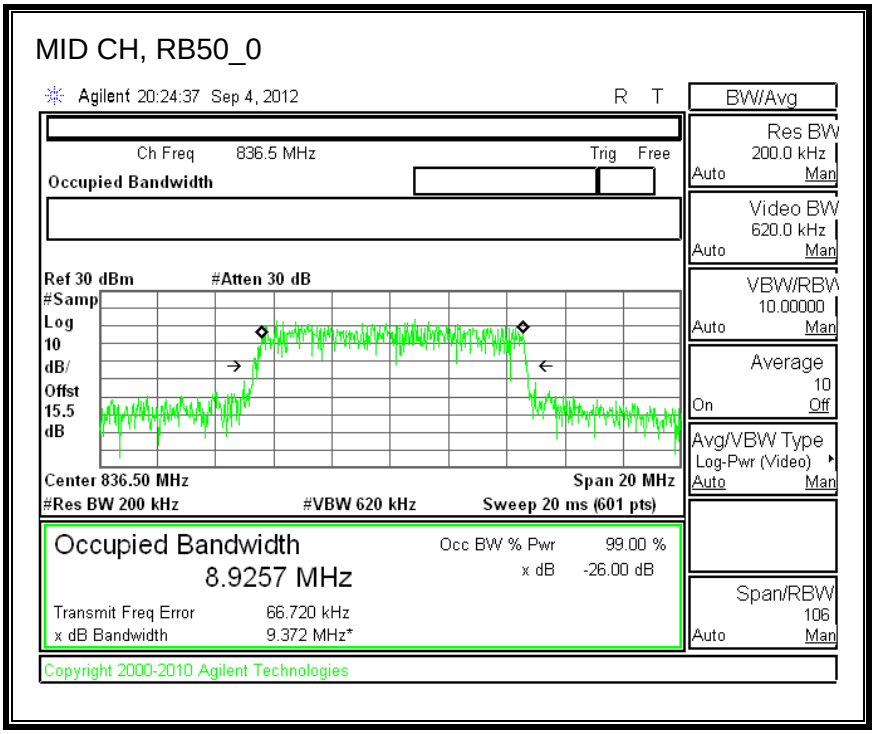




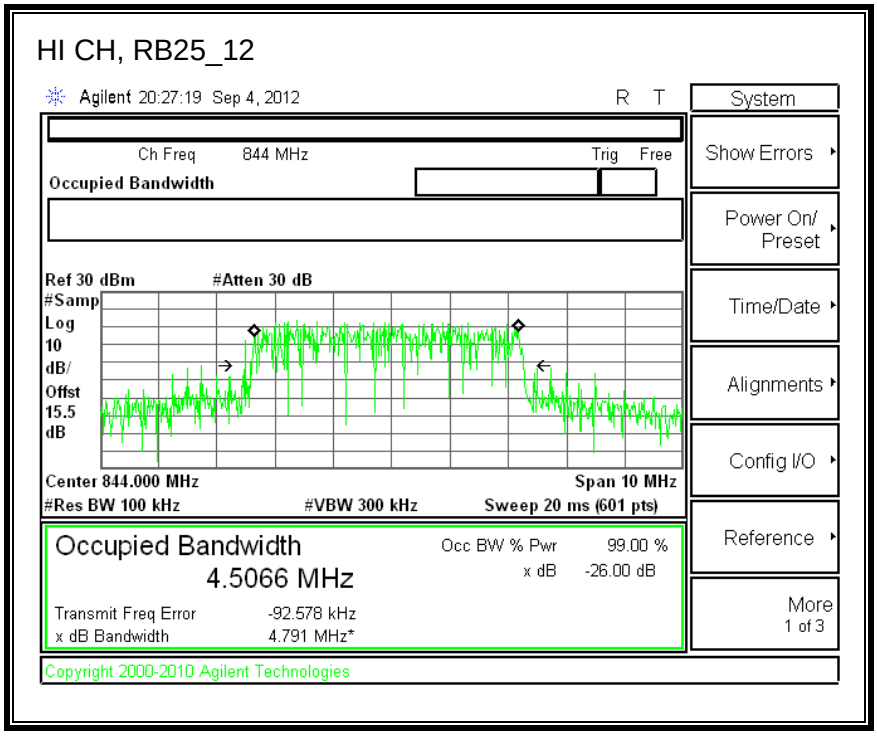
MID CH, RB25_12



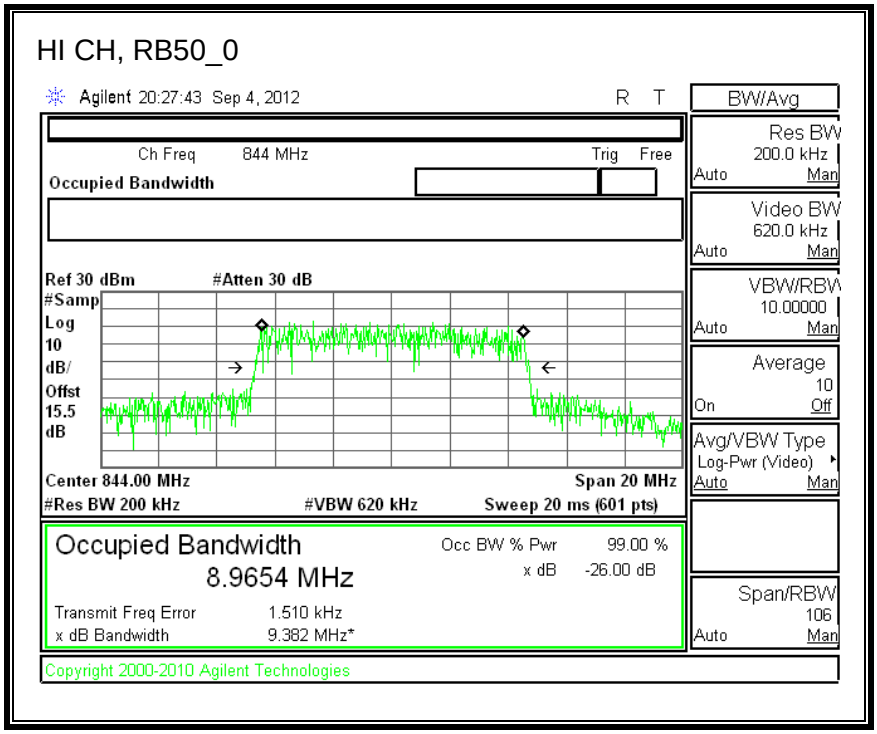
MID CH, RB50_0



HI CH, RB25_12

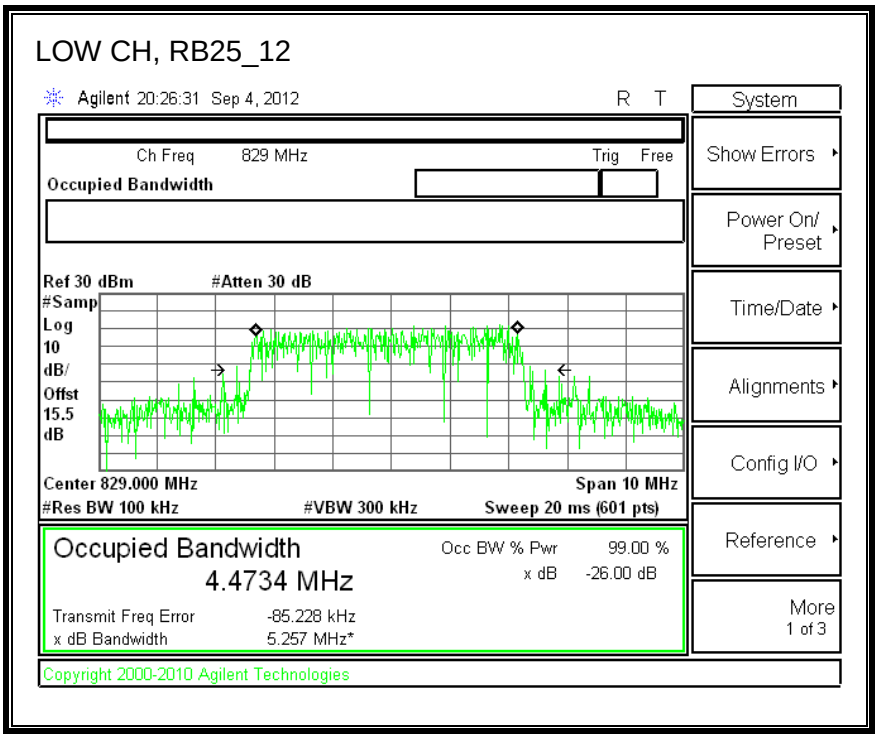


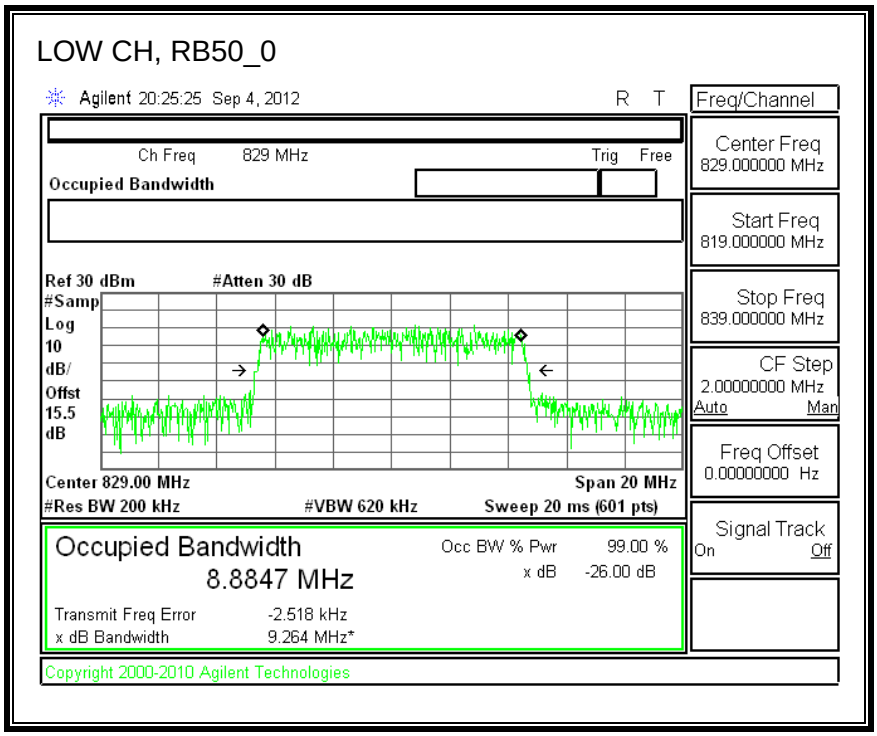
HI CH, RB50_0



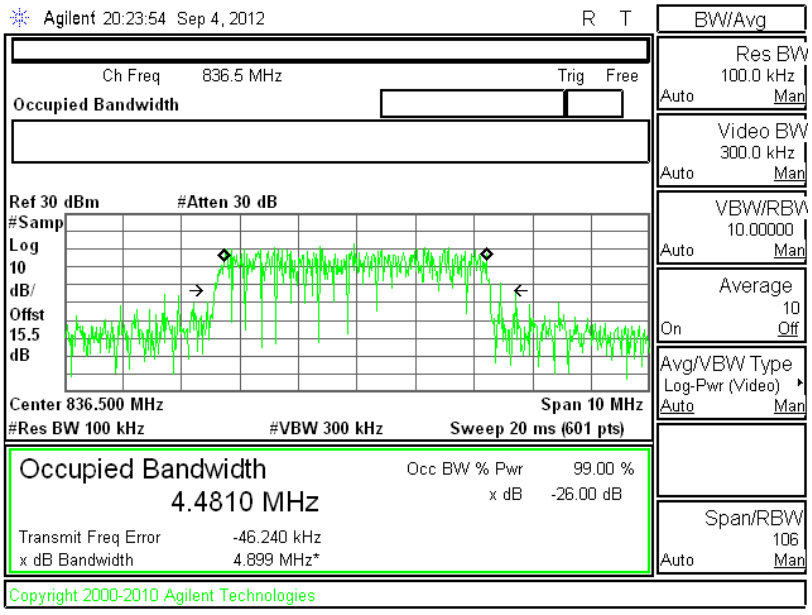
Band 5 (10 MHz BANDWIDTH)

LTE 16QAM

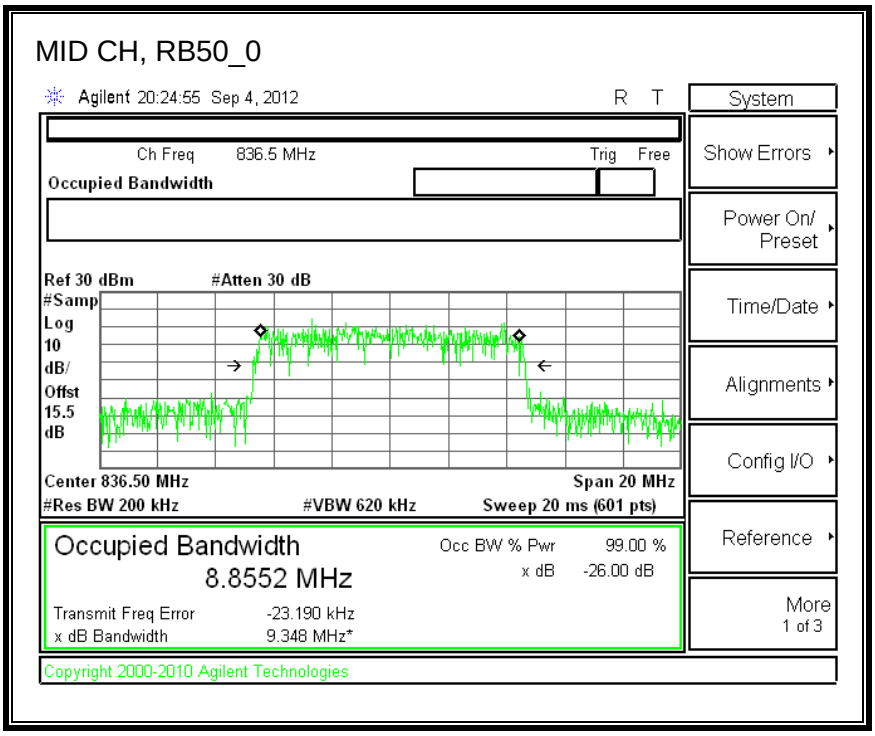




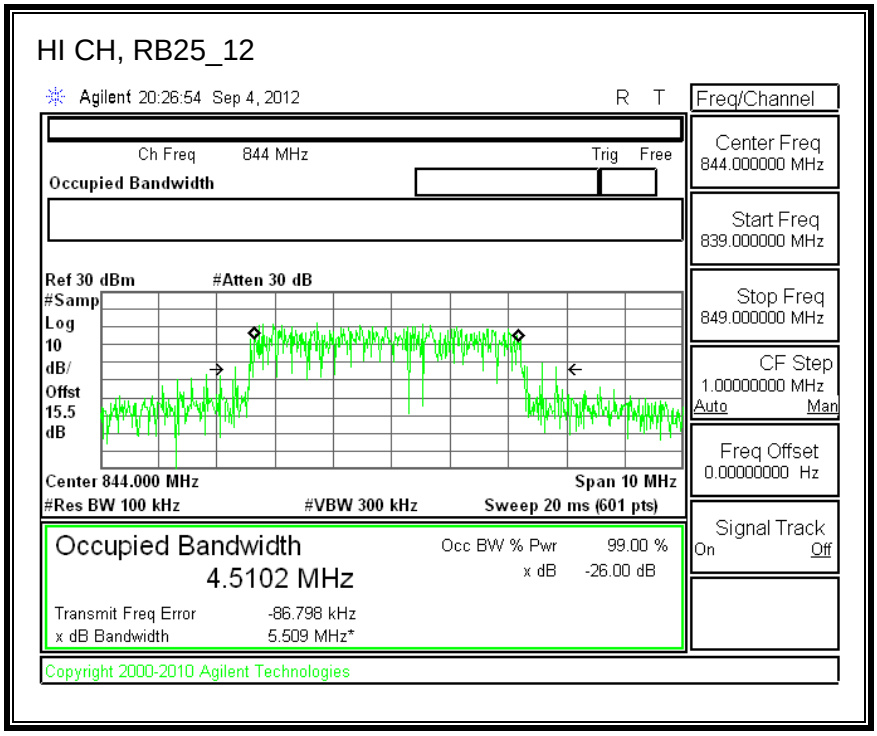
MID CH, RB25_12



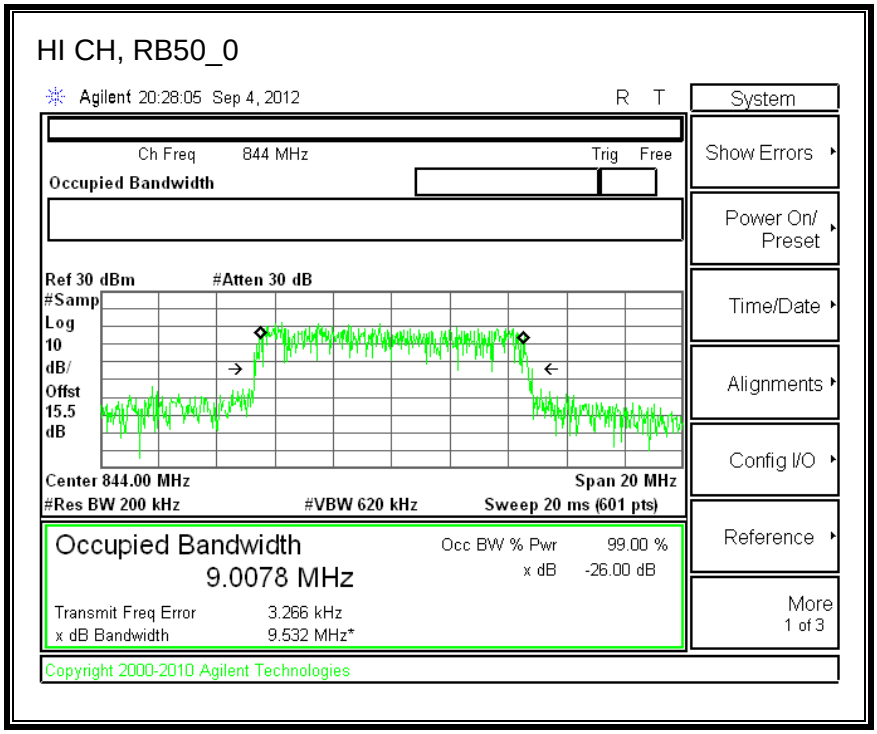
MID CH, RB50_0



HI CH, RB25_12

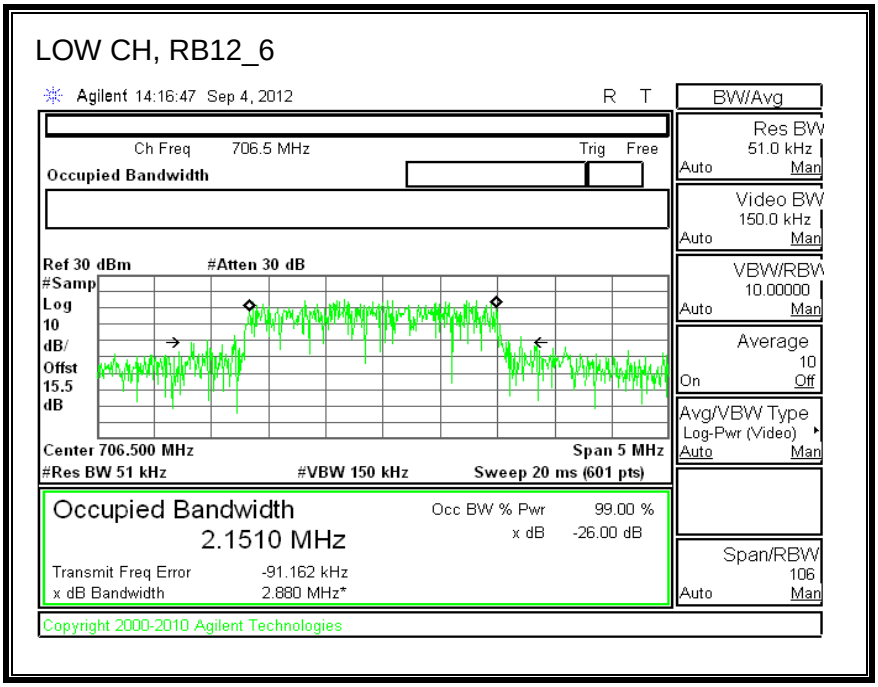


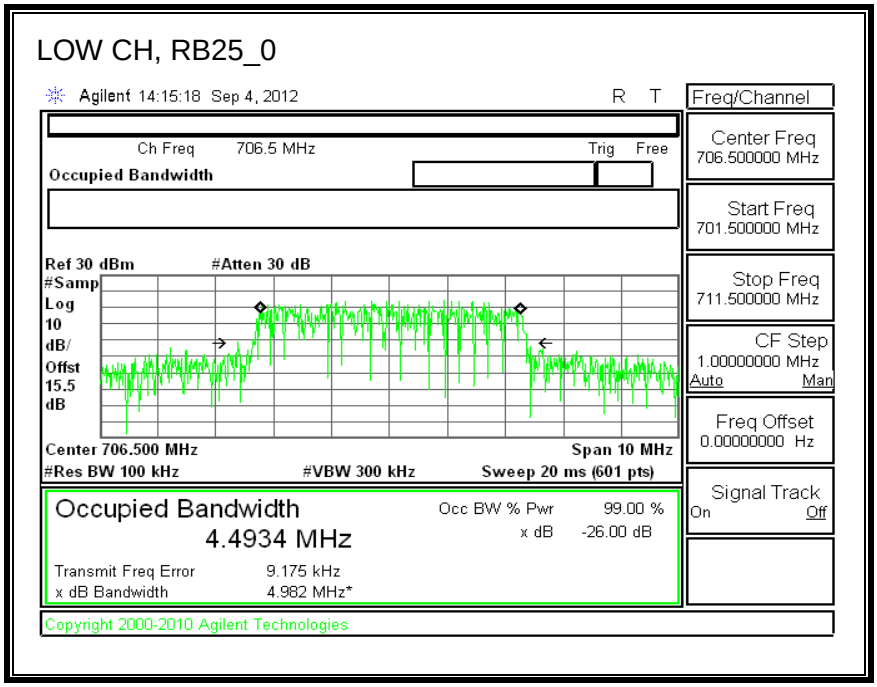
HI CH, RB50_0



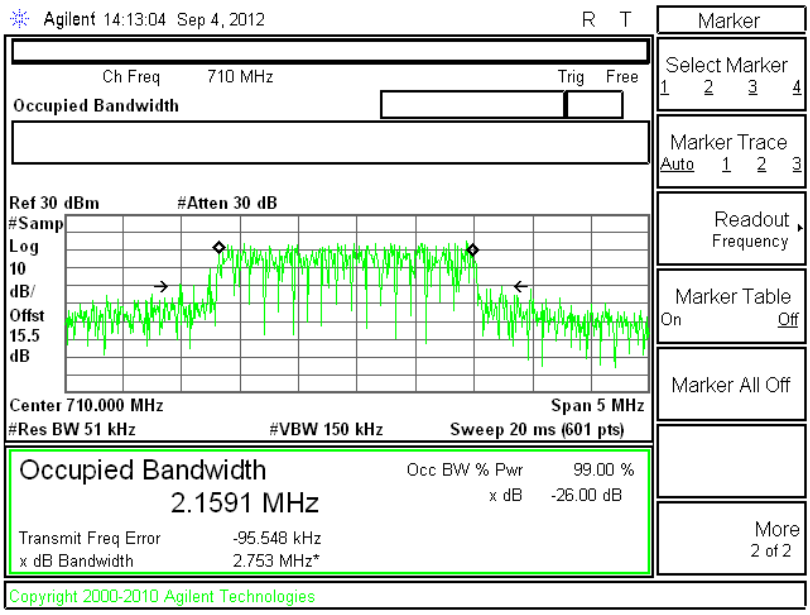
8.1.6. LTE BAND 17

QPSK (5 MHz BANDWIDTH)

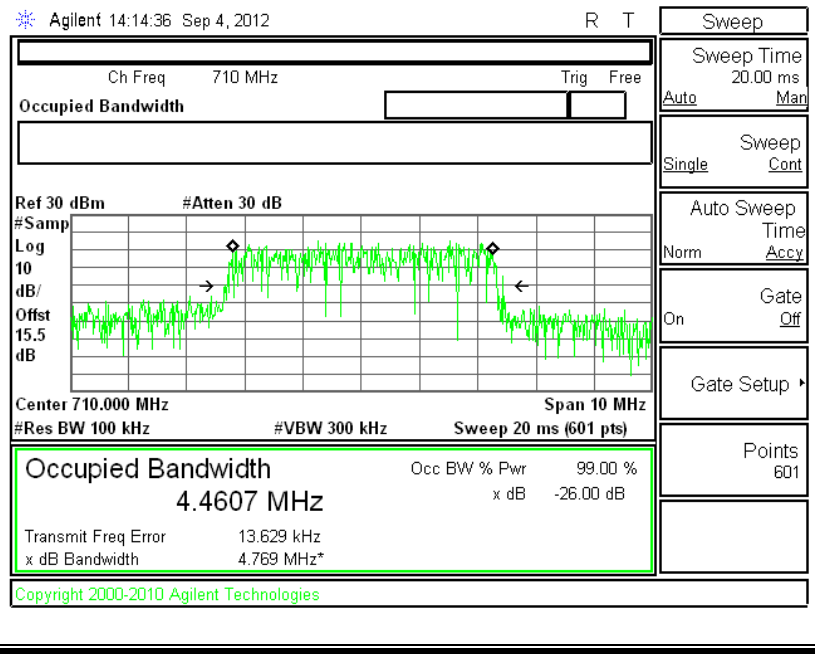




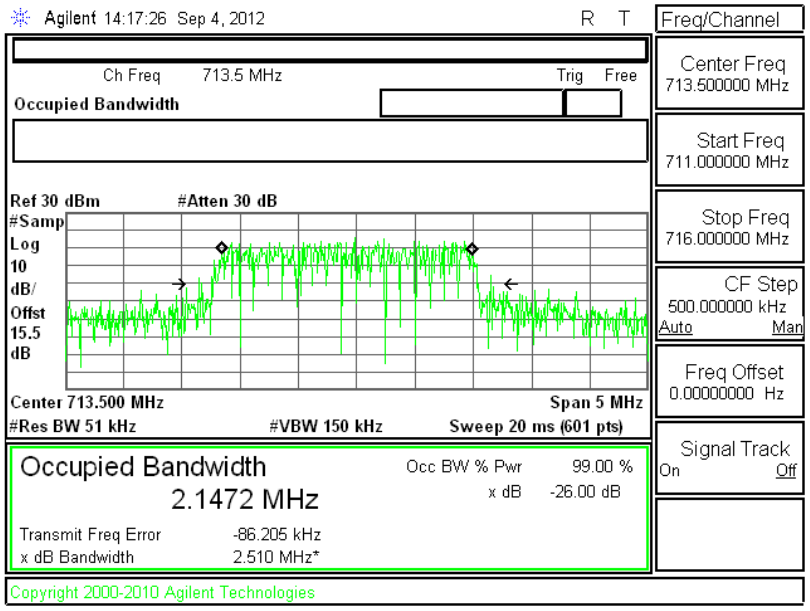
MID CH, RB12_6



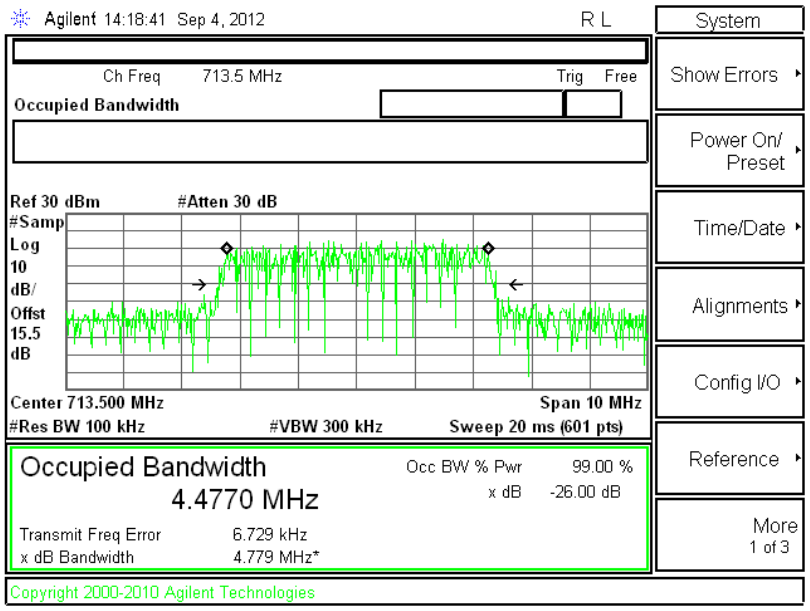
MID CH, RB25_0



HI CH, RB12_6

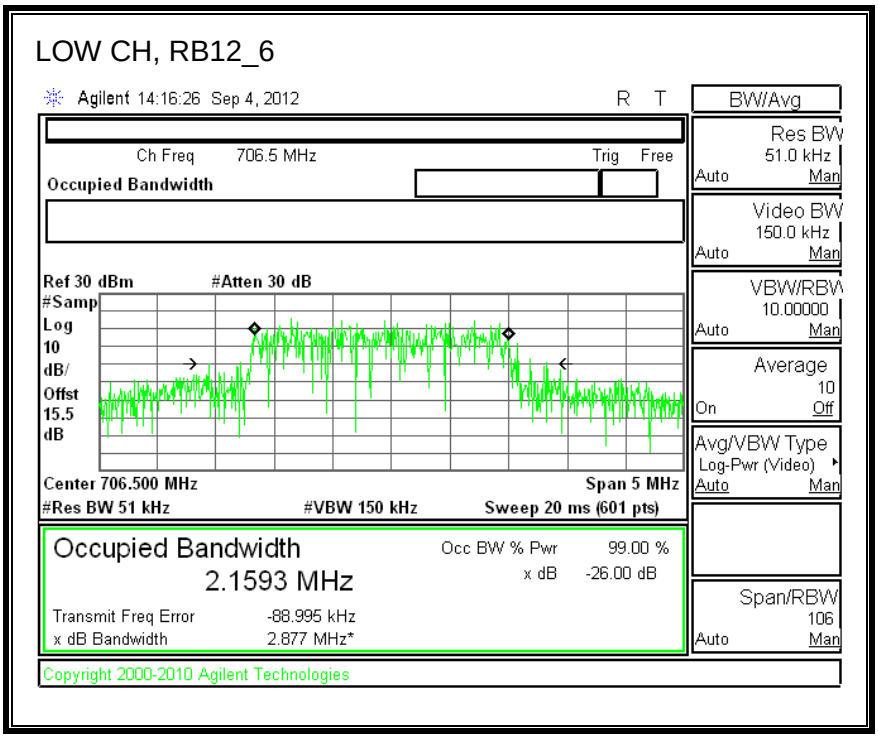


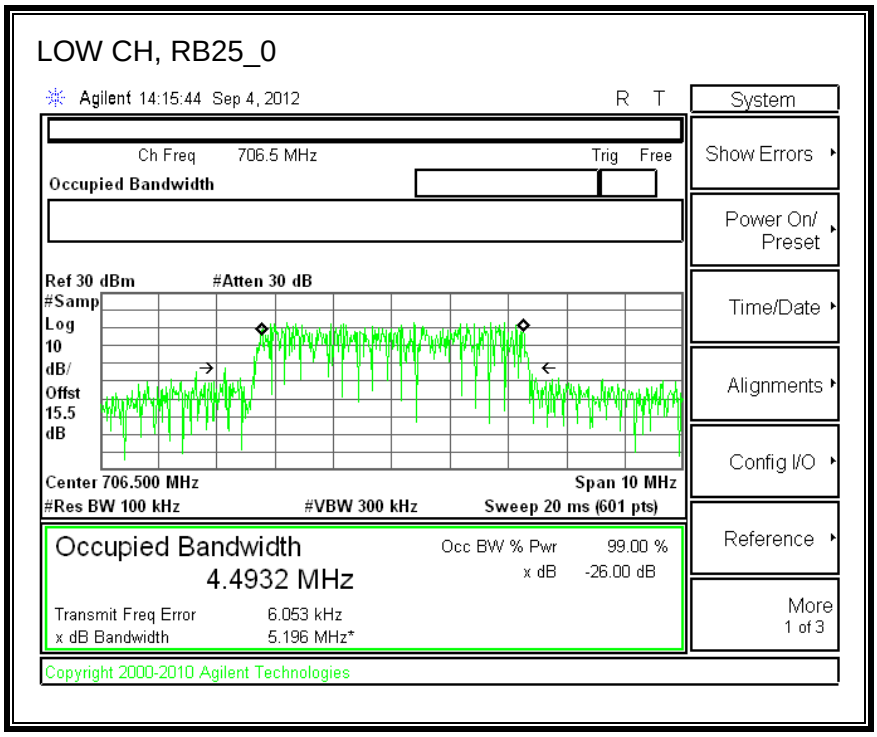
HI CH, RB25_0



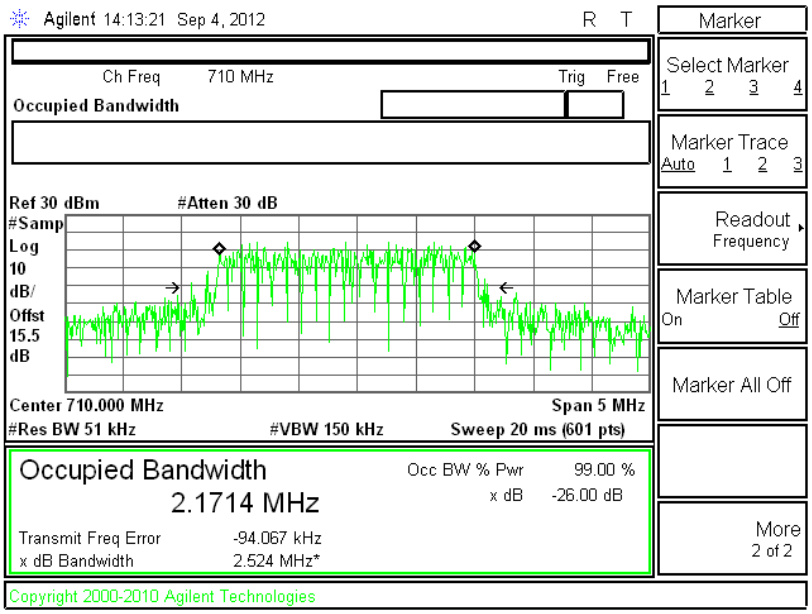
Band 17 (5 MHz BANDWIDTH)

LTE 16QAM

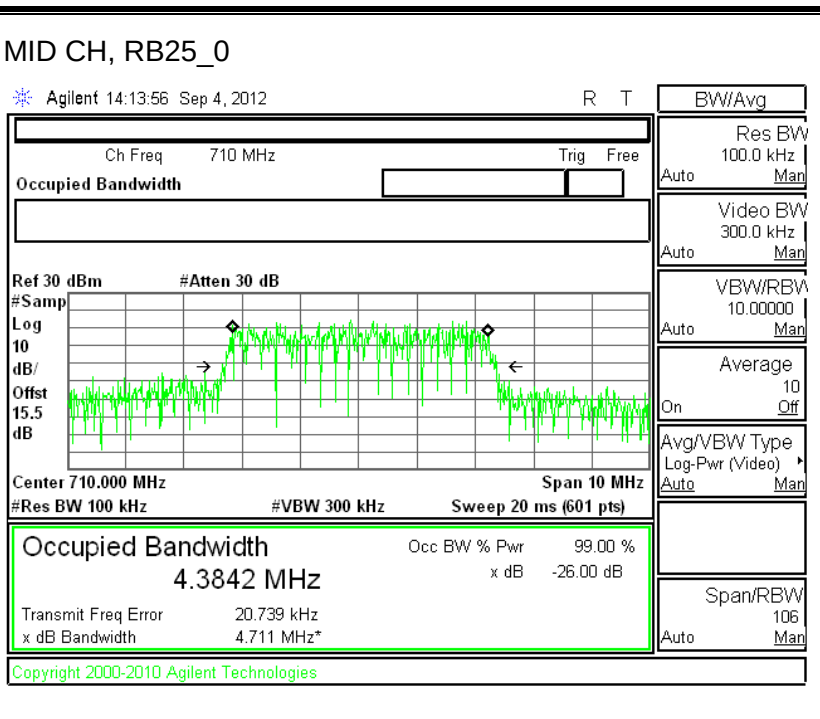




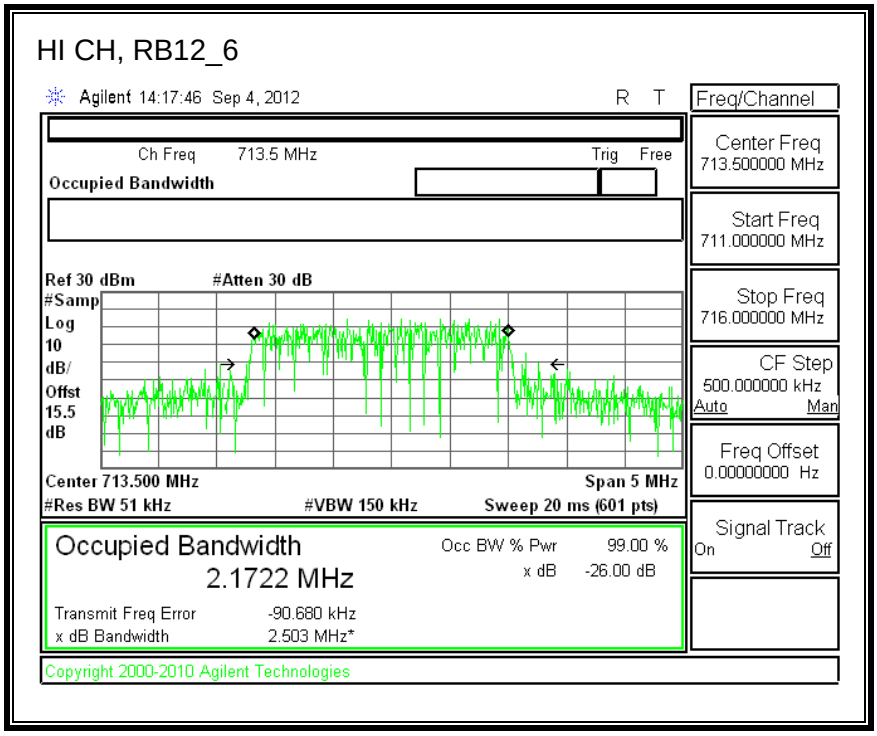
MID CH, RB12_6



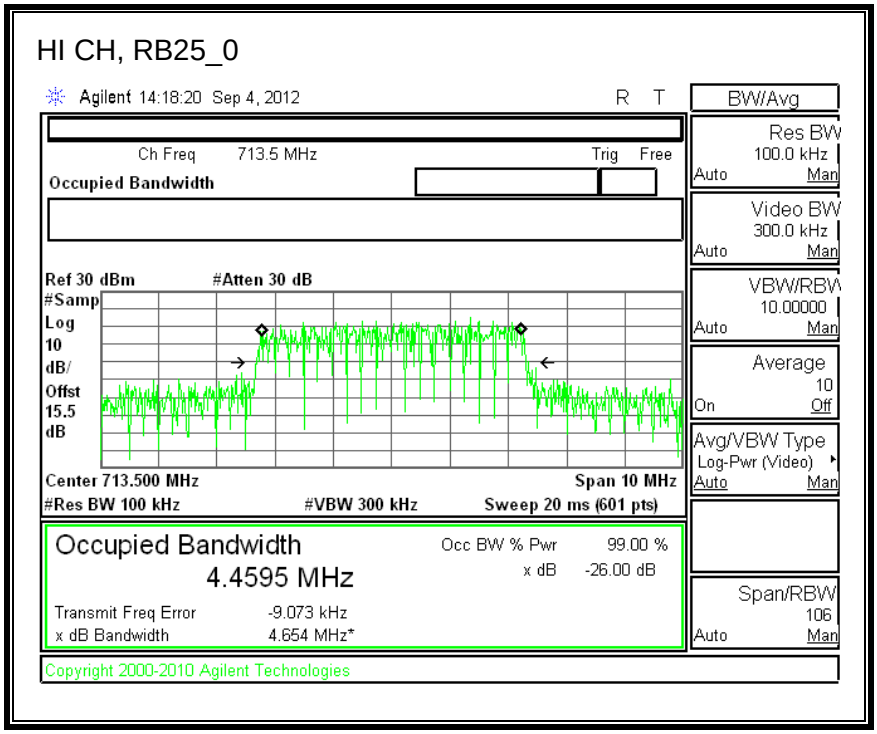
MID CH, RB25_0



HI CH, RB12_6

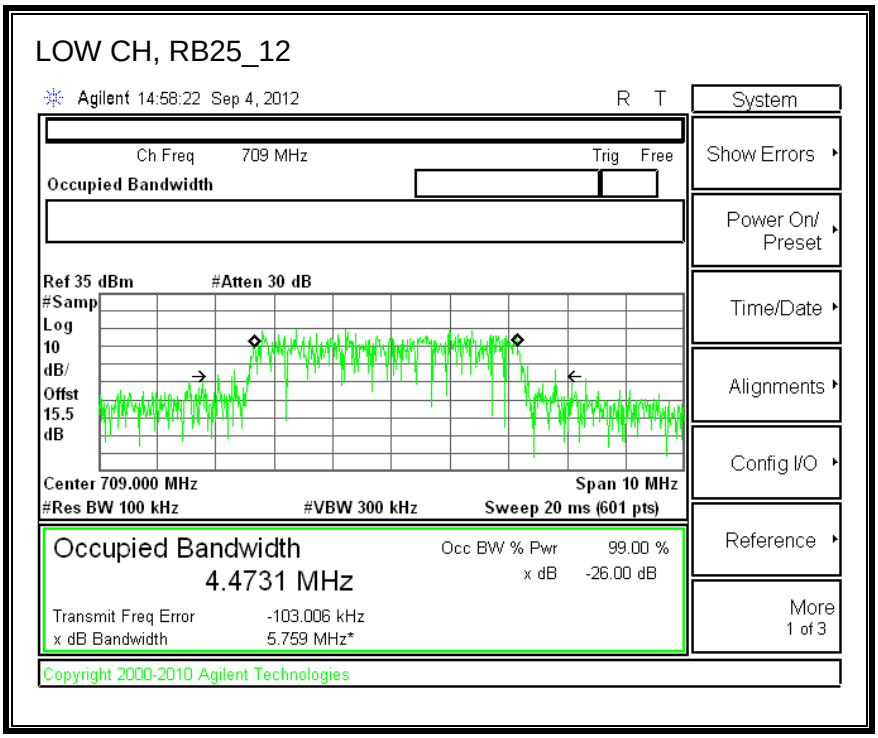


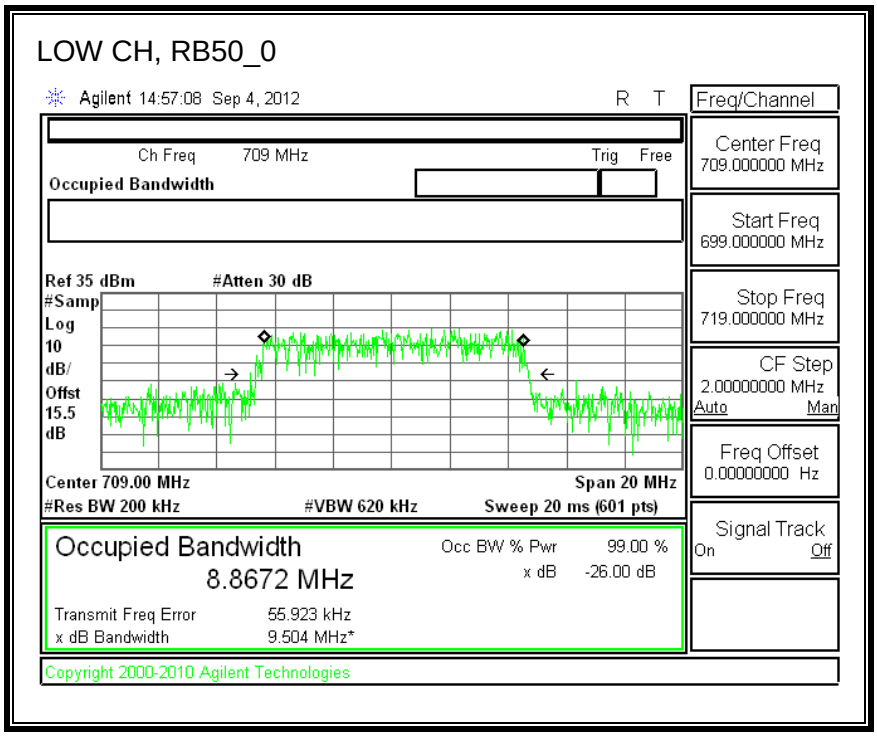
HI CH, RB25_0



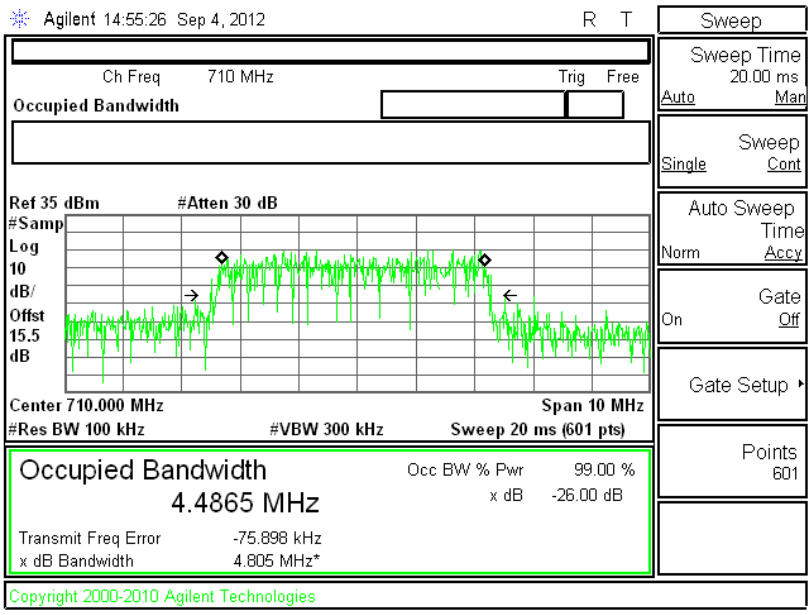
Band 17 (10 MHz BANDWIDTH)

LTE QPSK

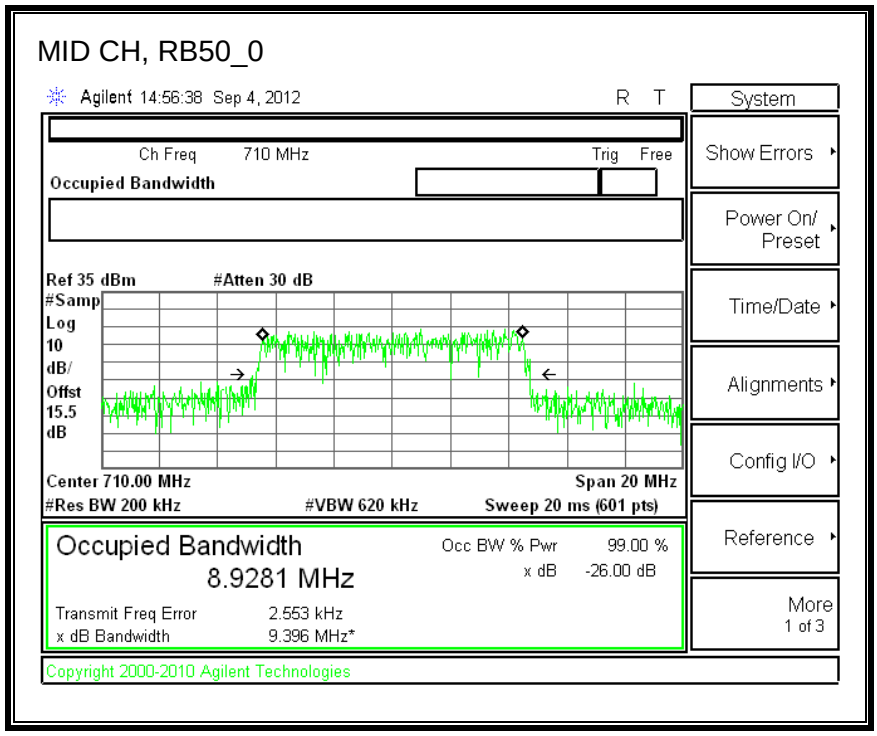




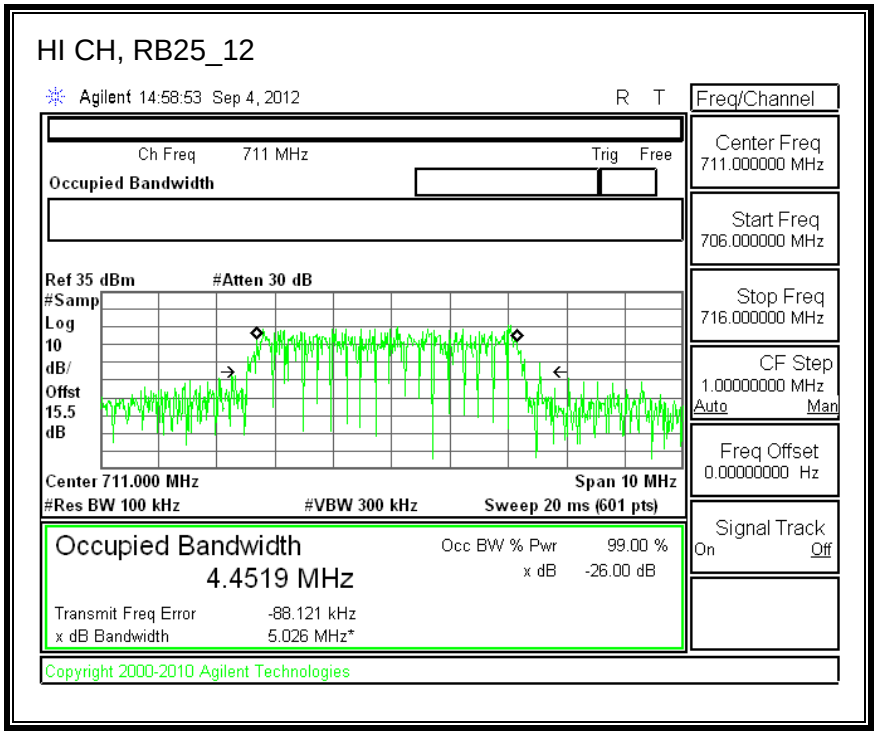
MID CH, RB25_12



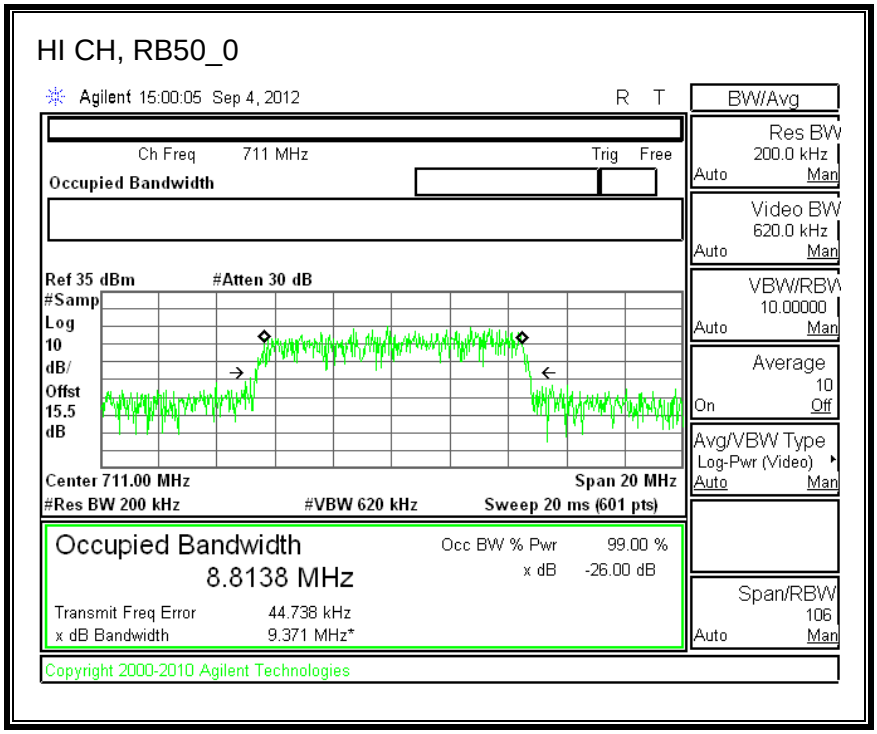
MID CH, RB50_0



HI CH, RB25_12

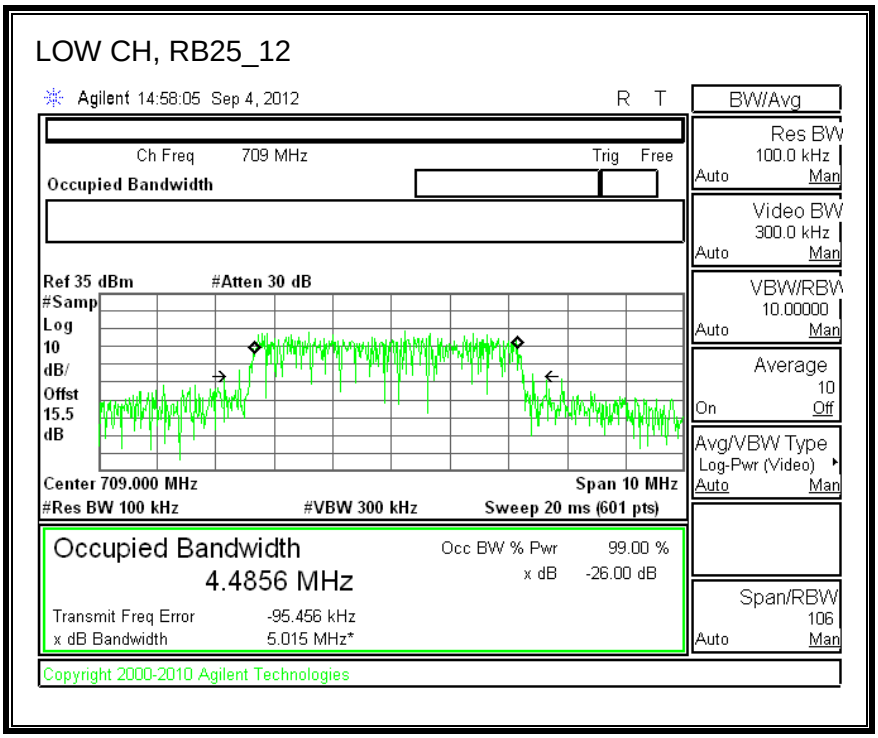


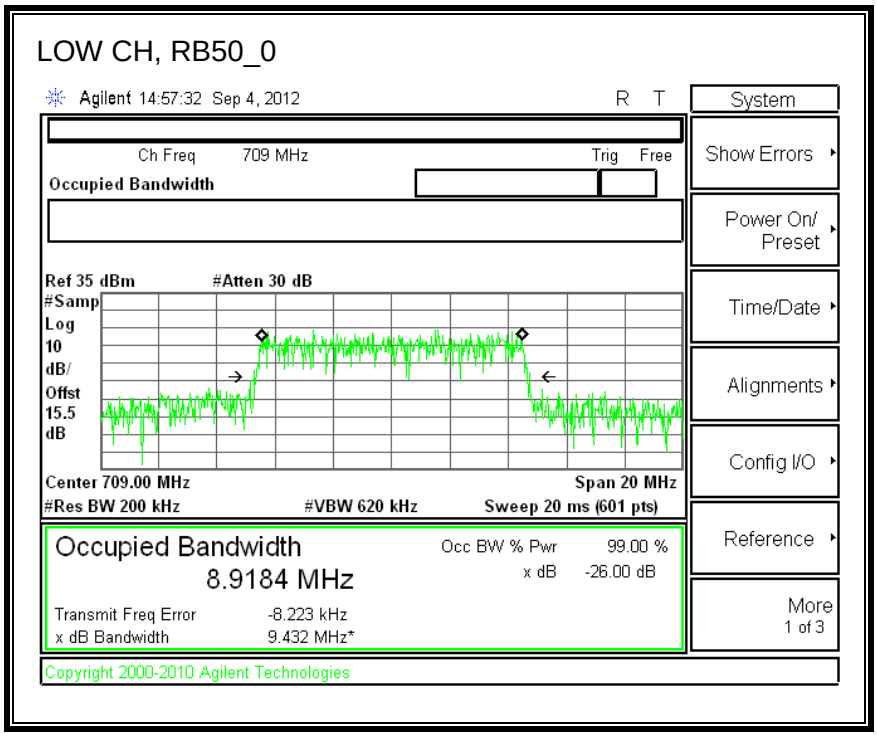
HI CH, RB50_0



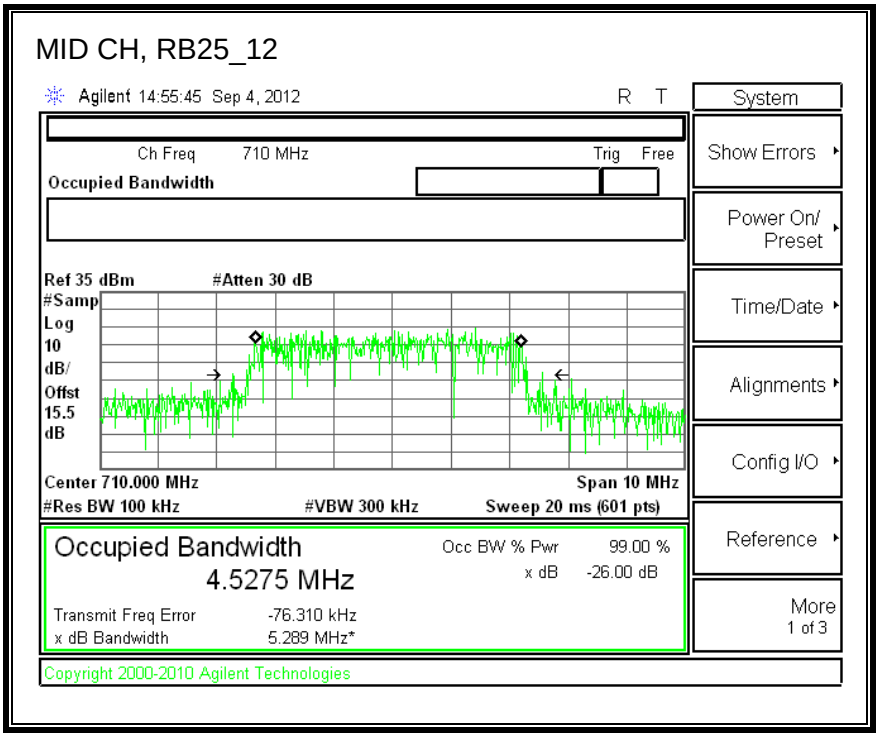
Band 17 (10 MHz BANDWIDTH)

LTE 16QAM

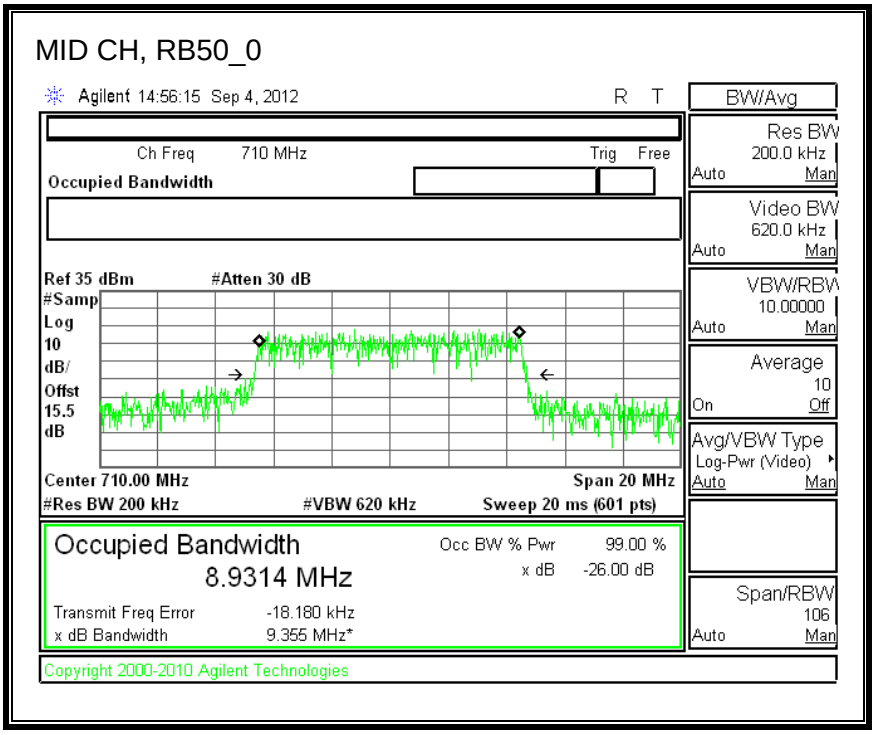




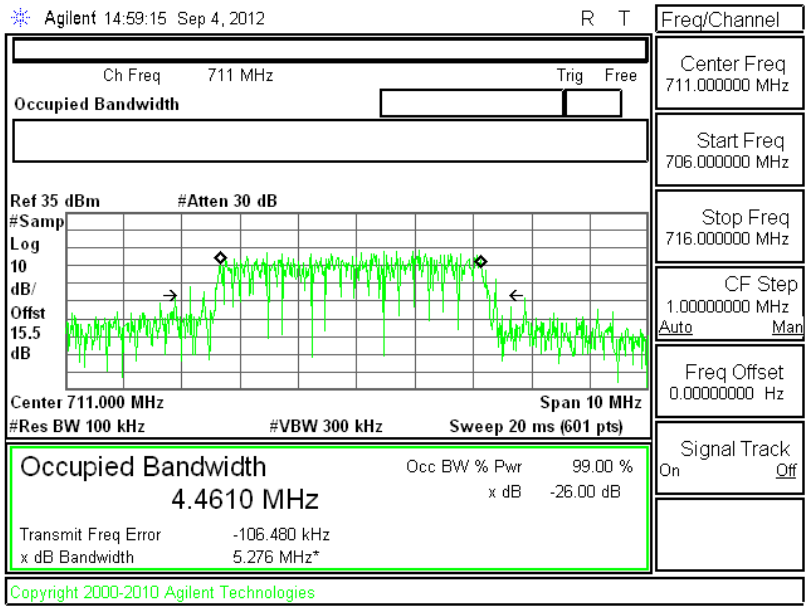
MID CH, RB25_12



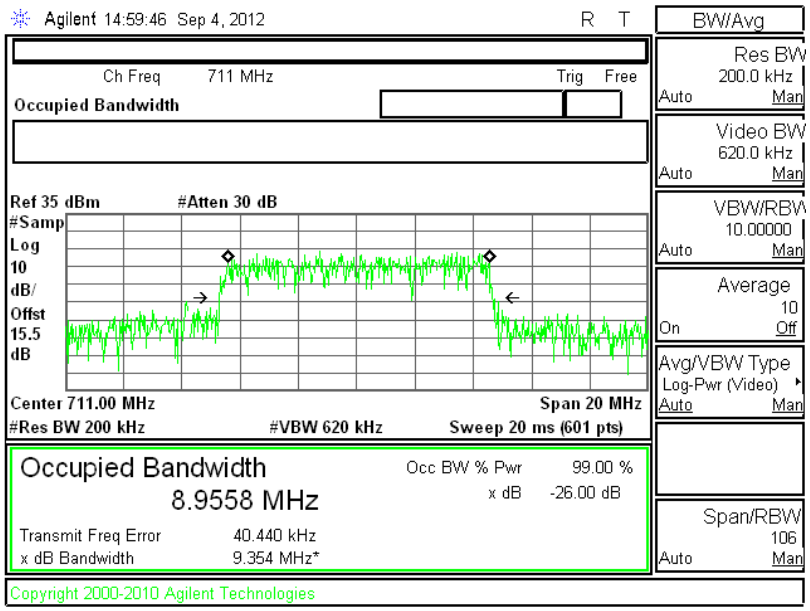
MID CH, RB50_0



HI CH, RB25_12



HI CH, RB50_0



8.2. BAND EDGE

RULE PART(S)

FCC: §22.359, 24.238 and §27.53

LIMITS

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

TEST PROCEDURE

The transmitter output was connected to an Agilent 8960 and CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.
For each band edge measurement:

- Set the spectrum analyzer span to include the block edge frequency (704, 716, 824, 849, 1710, 1755, 1850, 1910MHz)
- Set a marker to point the corresponding band edge frequency in each test case.
- Set display line at -13 dBm
- Set resolution bandwidth to at least 1% of emission bandwidth.

MODES TESTED

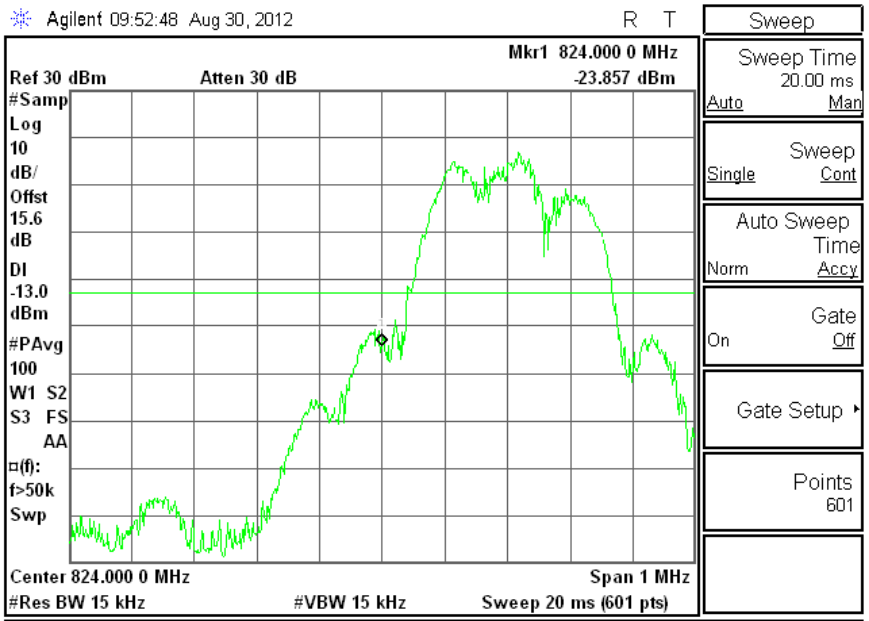
- GPRS and EGPRS
- WCDMA, REL 99 and HSDPA
- LTE BAND 2
- LTE BAND 4
- LTE BAND 5
- LTE BAND 17

RESULTS

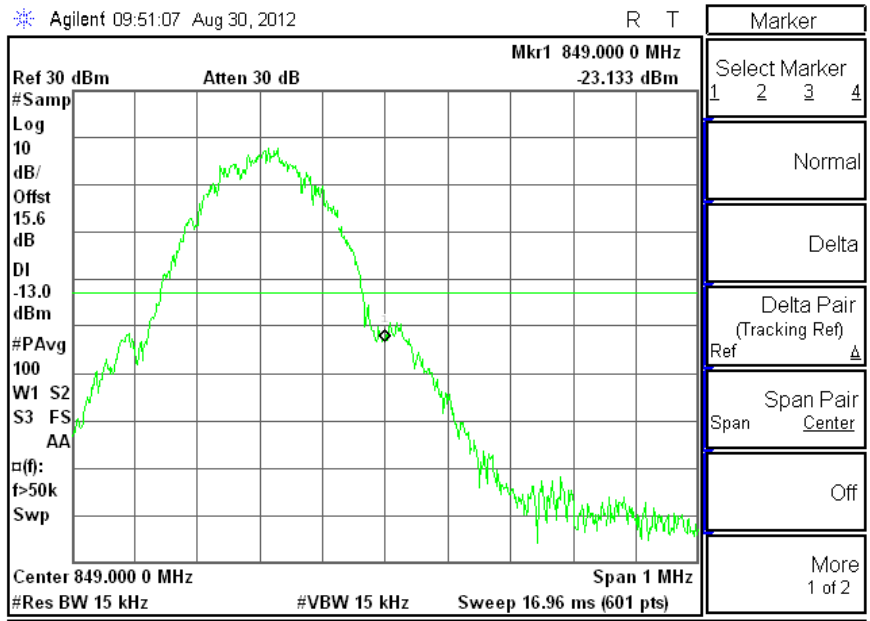
8.2.1. GSM

GPRS mode (Cellular Band)

LOW CH

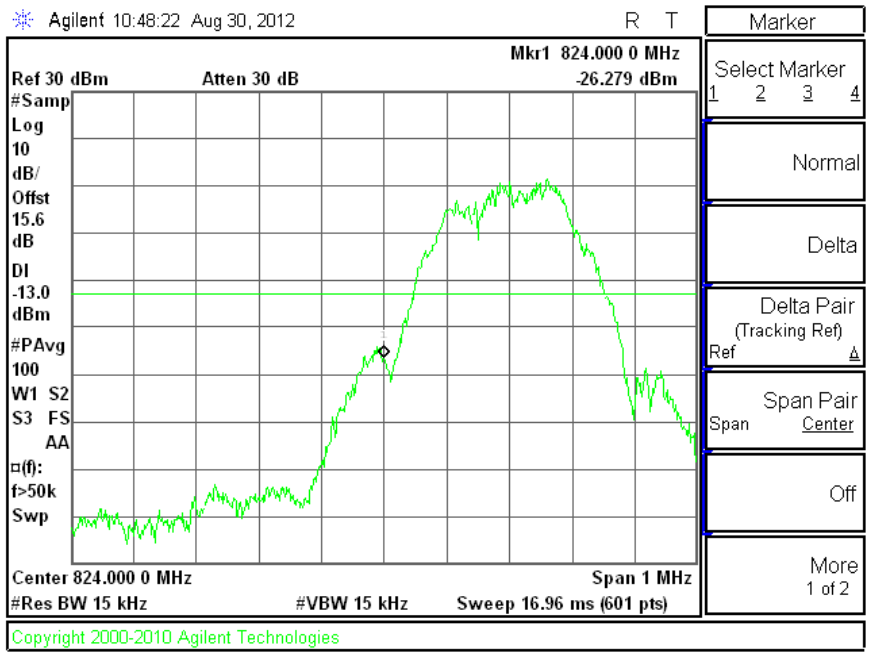


HIGH CH

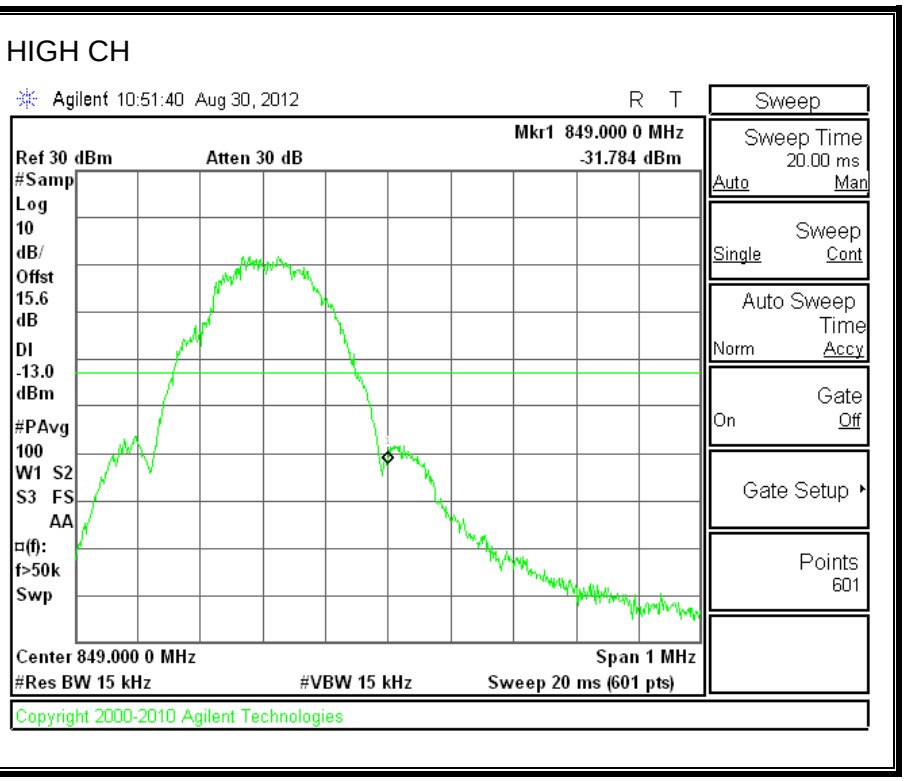


EGPRS850

LOW CH



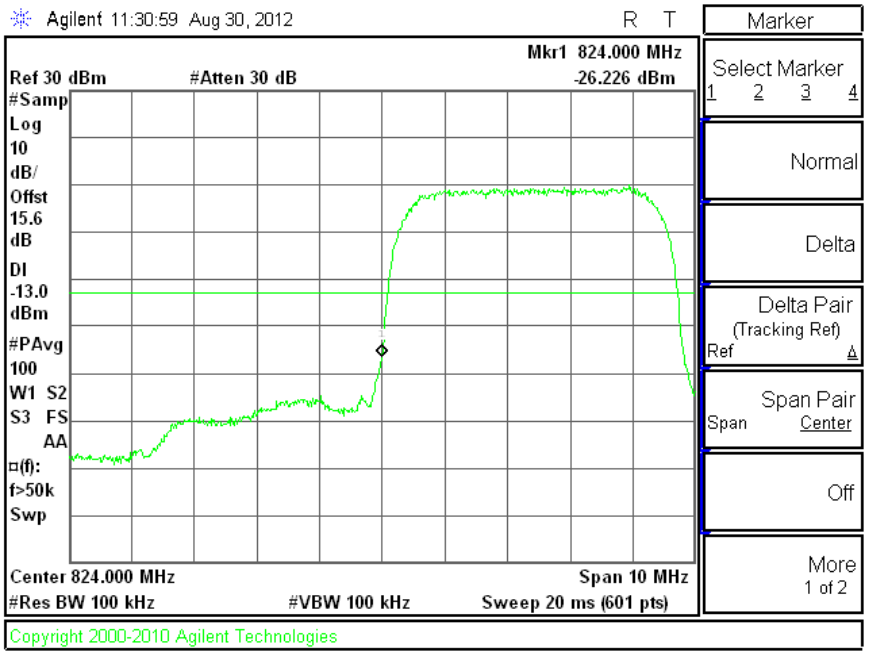
HIGH CH



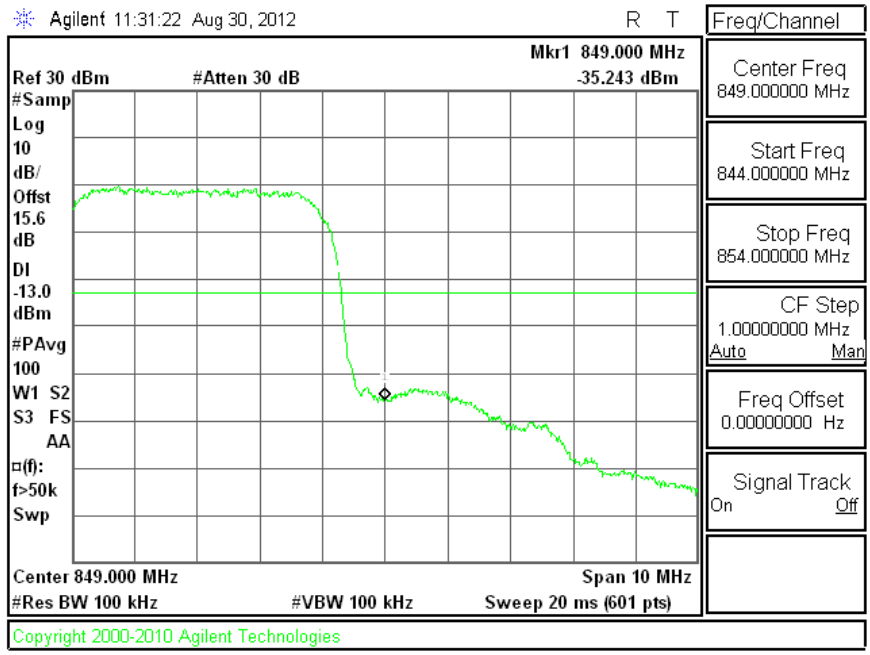
8.2.2. WCDMA

WCDMA850, REL99

LOW CH

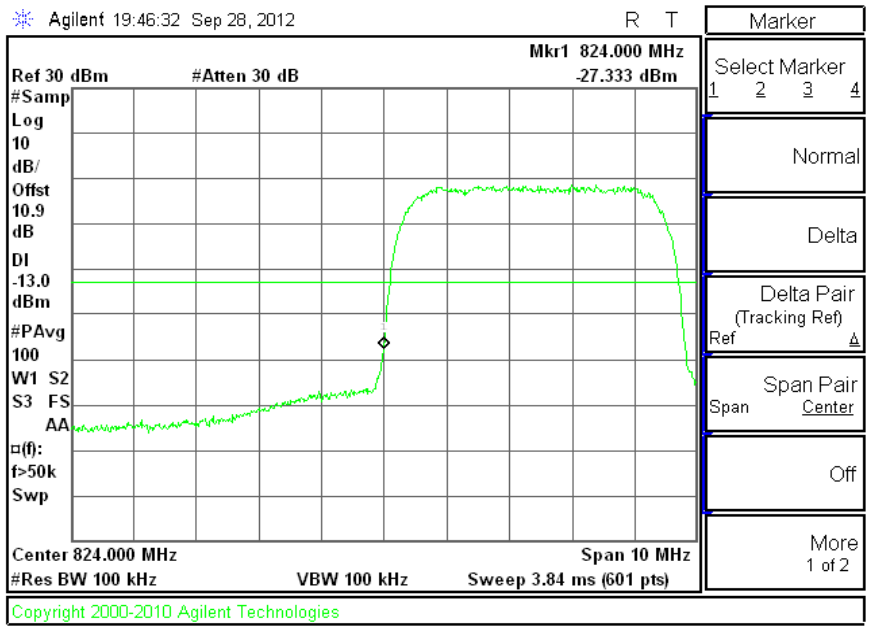


HIGH CH

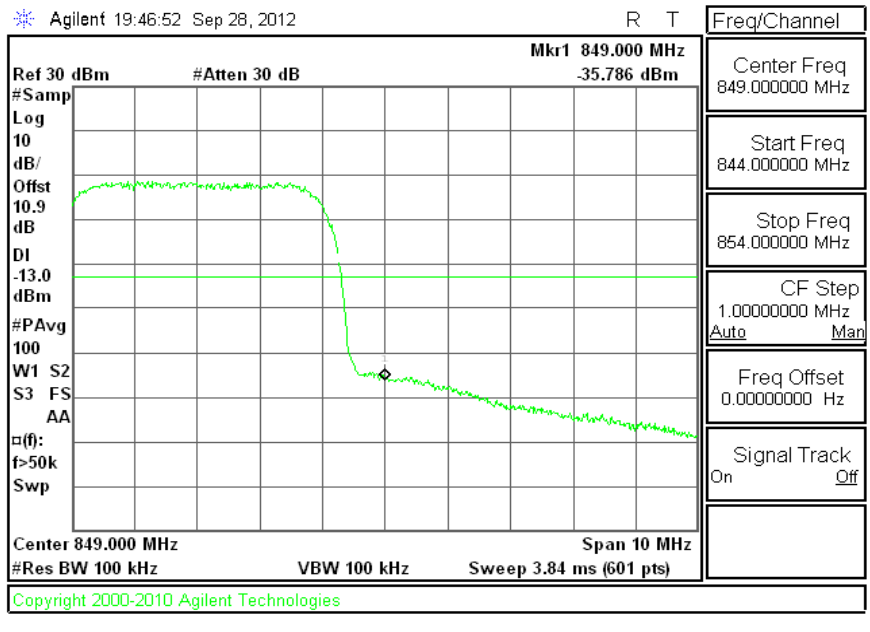


WCDMA850, HSUPA

LOW CH

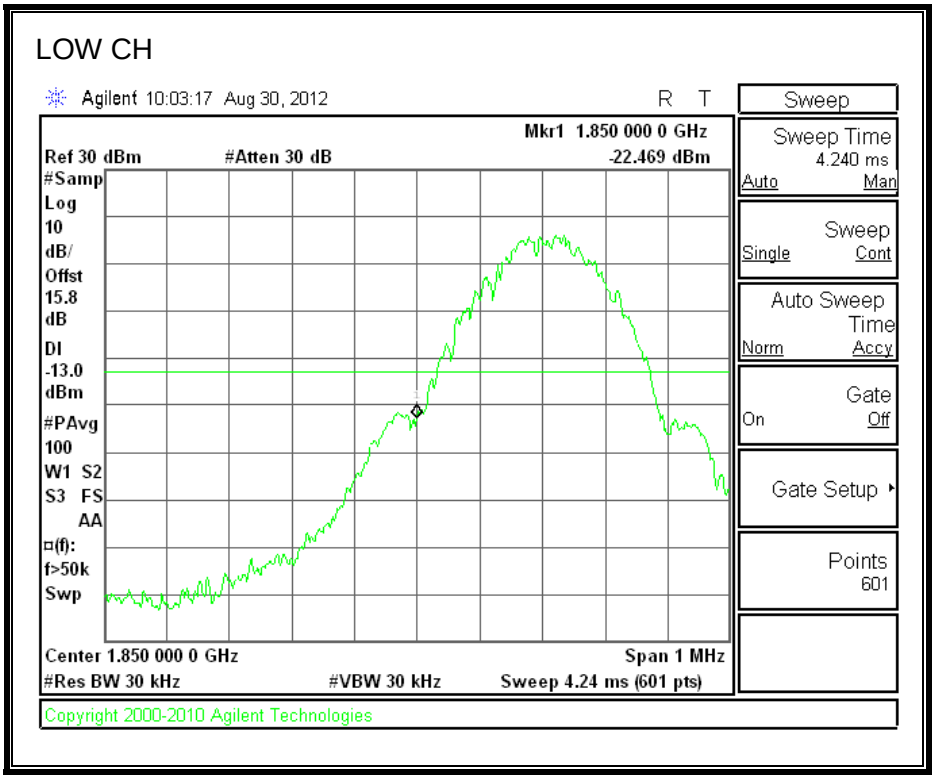


HIGH CH

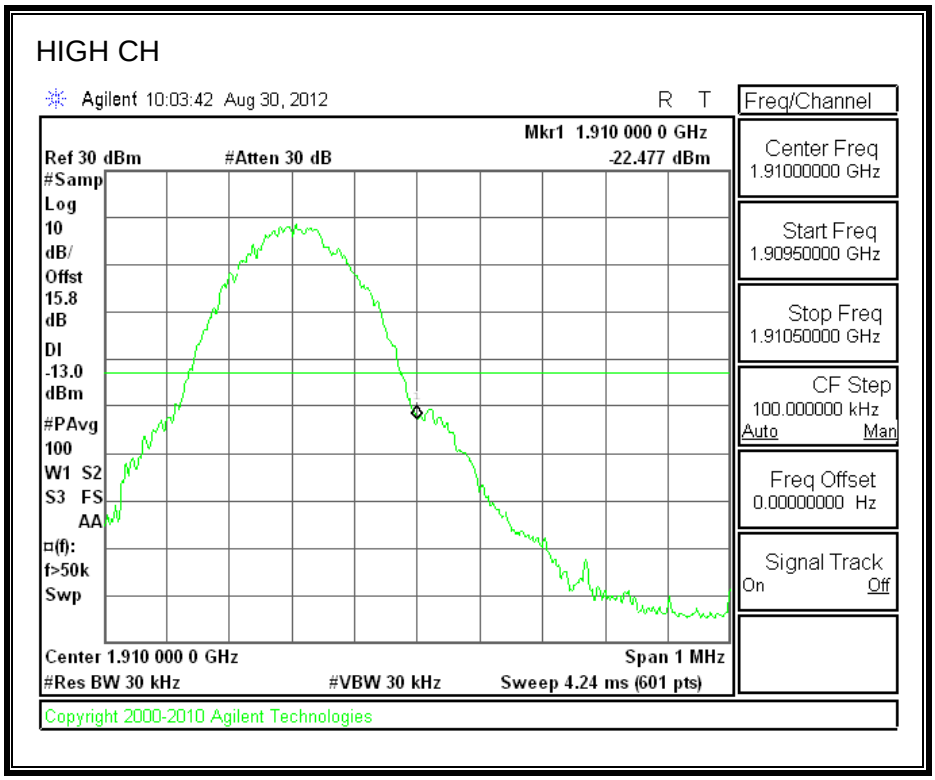


GPRS1900

LOW CH

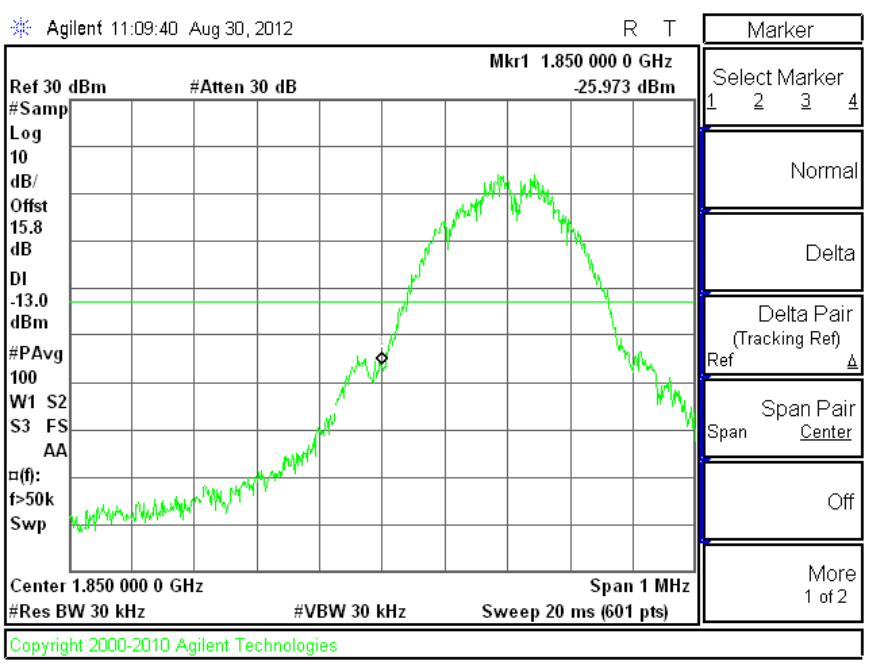


HIGH CH

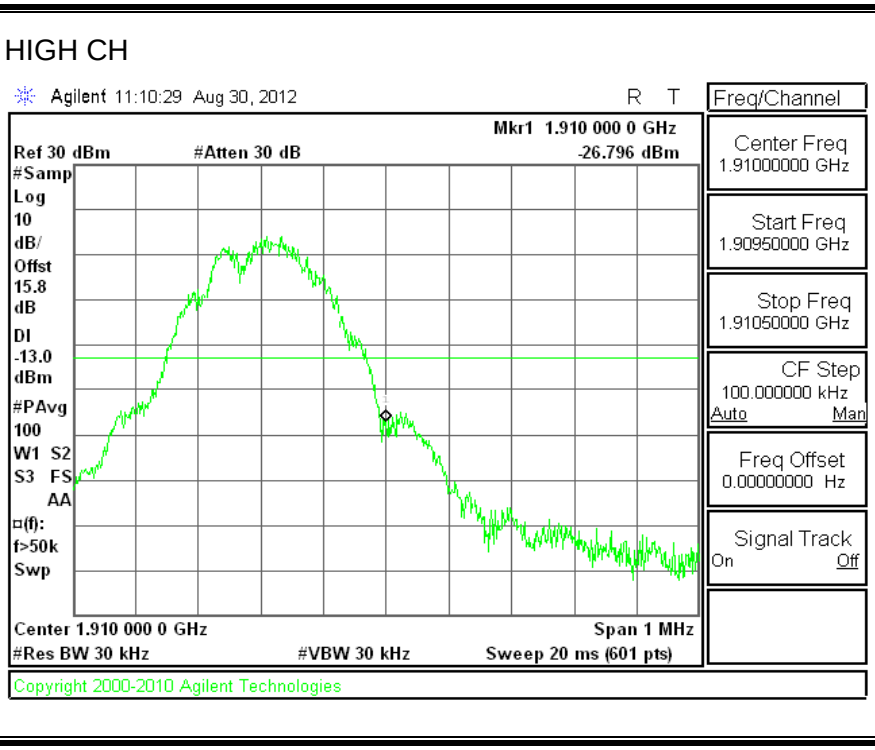


EGPRS1900 BAND

LOW CH

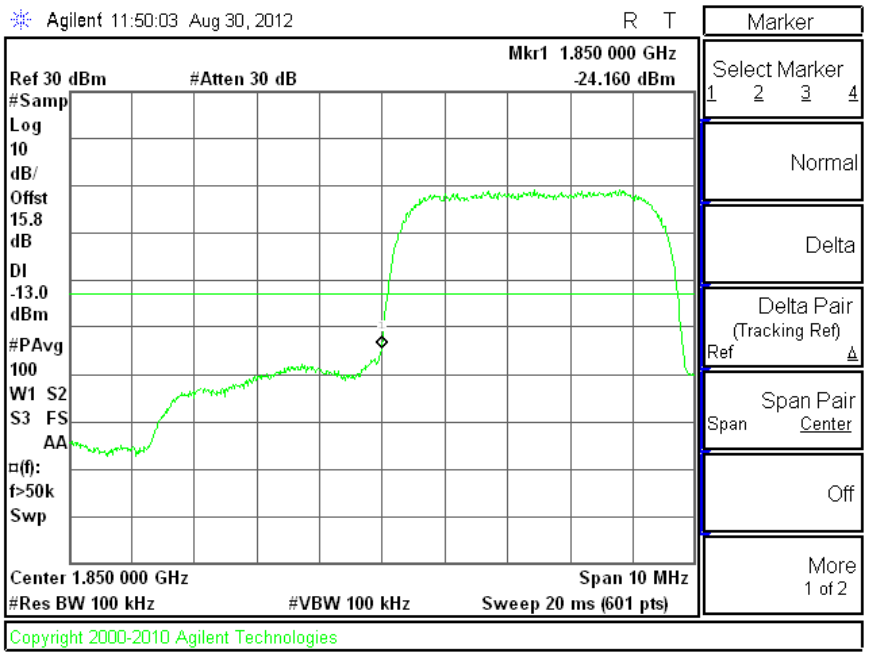


HIGH CH

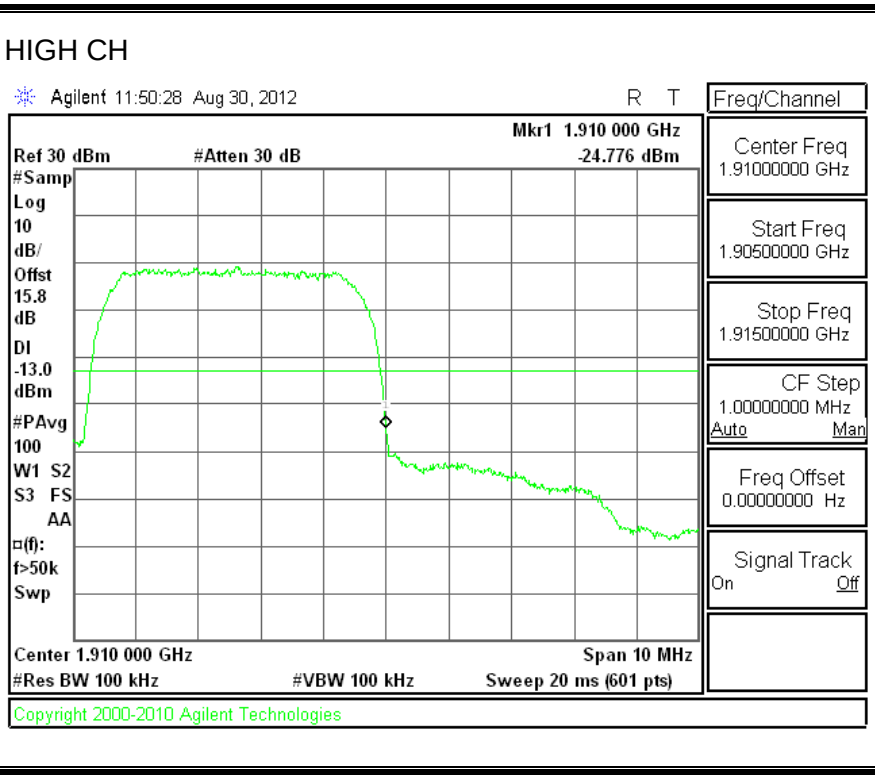


WCDMA1900, REL99

LOW CH

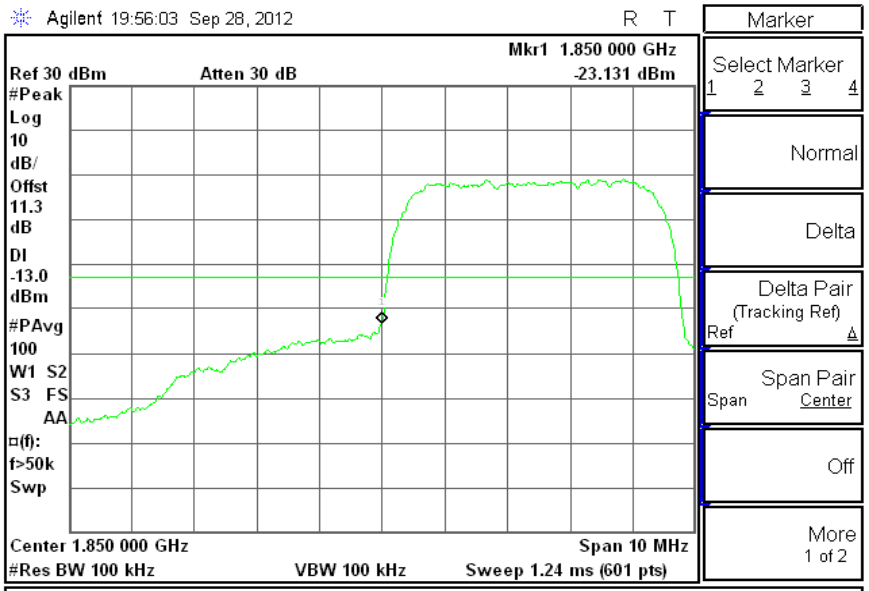


HIGH CH

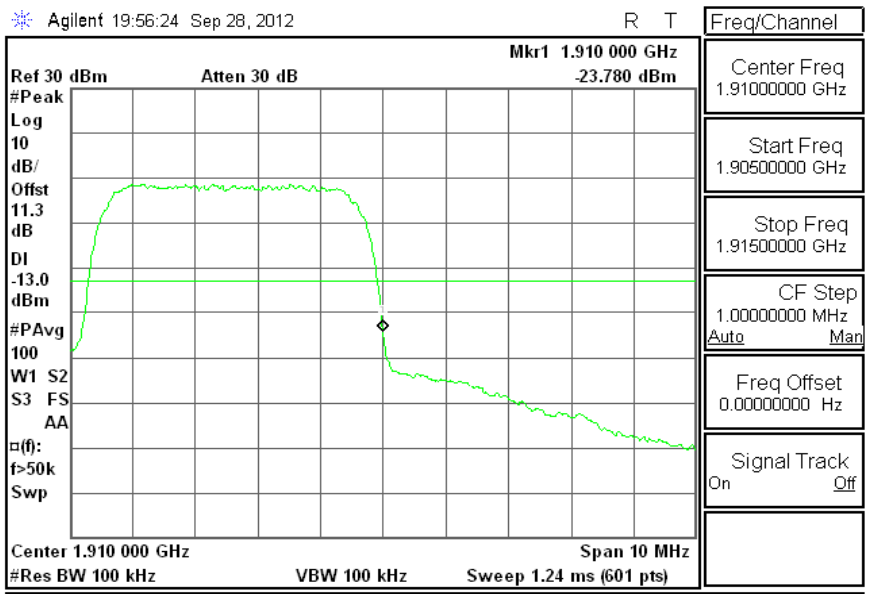


WCDMA1900, HSDPA

LOW CH

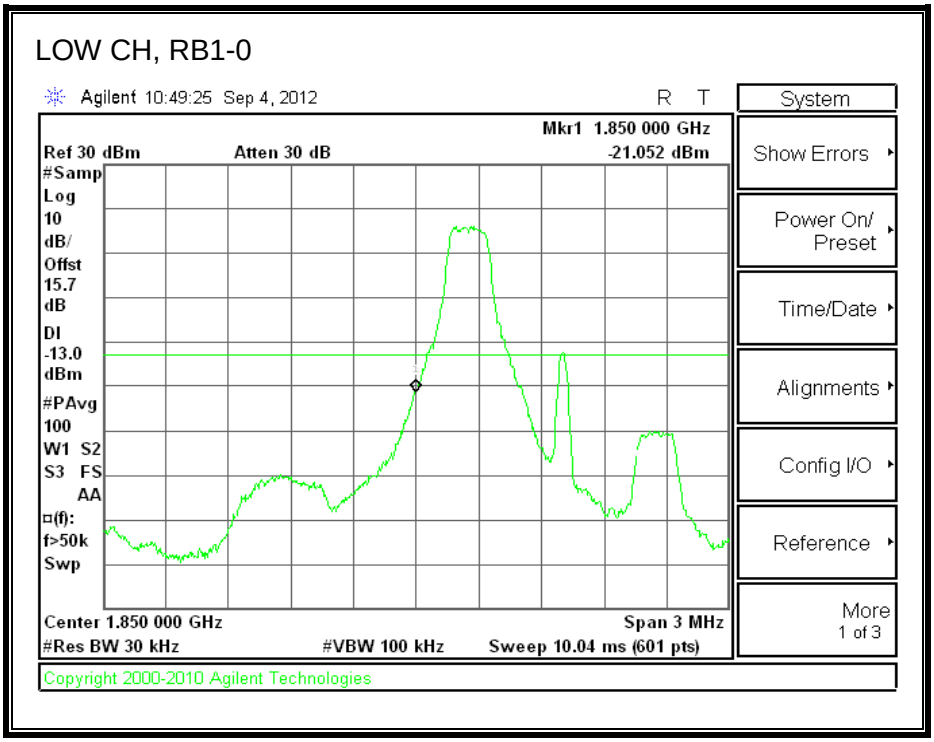


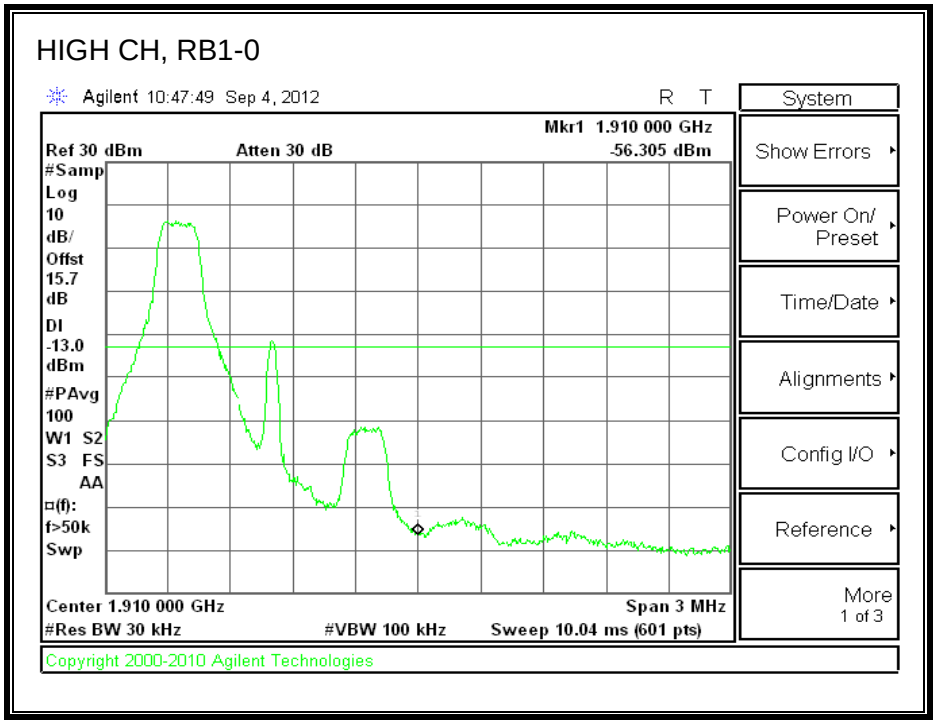
HIGH CH



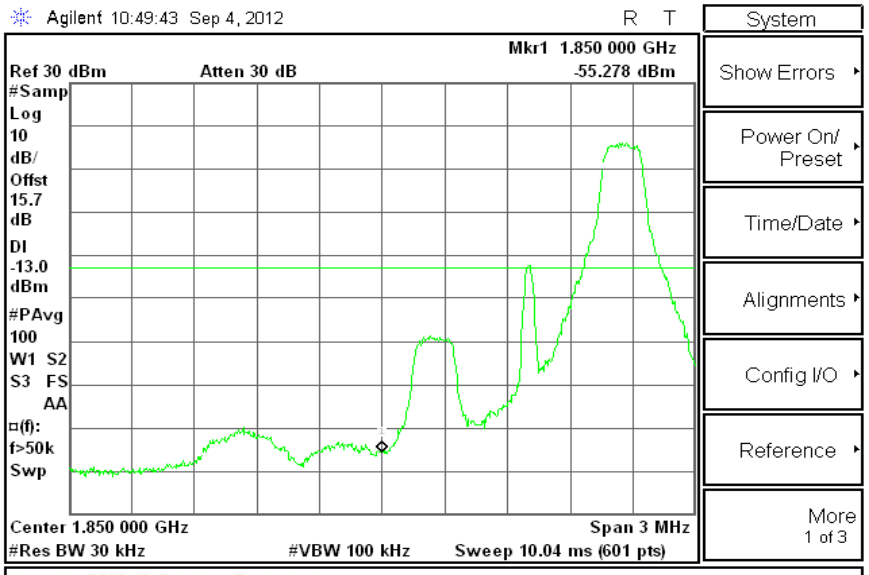
8.2.3. LTE BAND 2

LTE QPSK Band 2 (1.4 MHz BAND WIDTH)

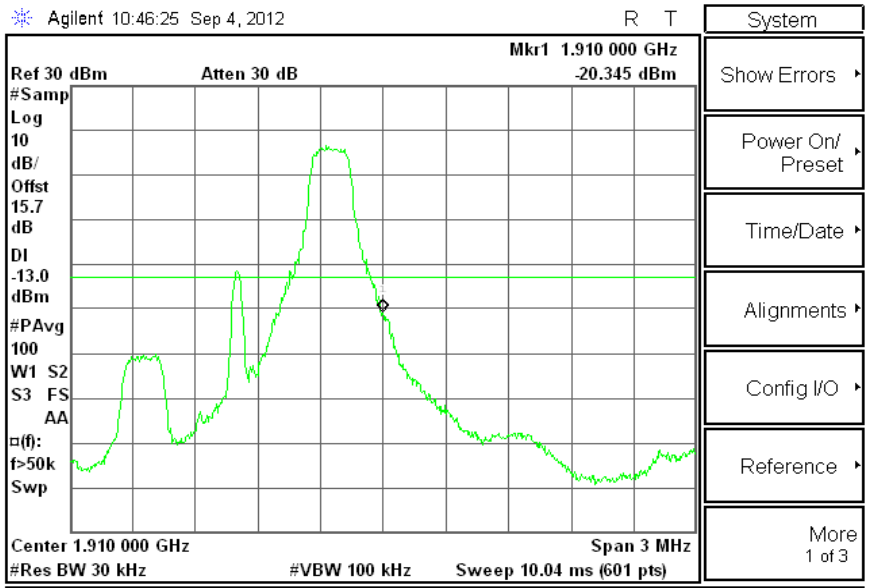




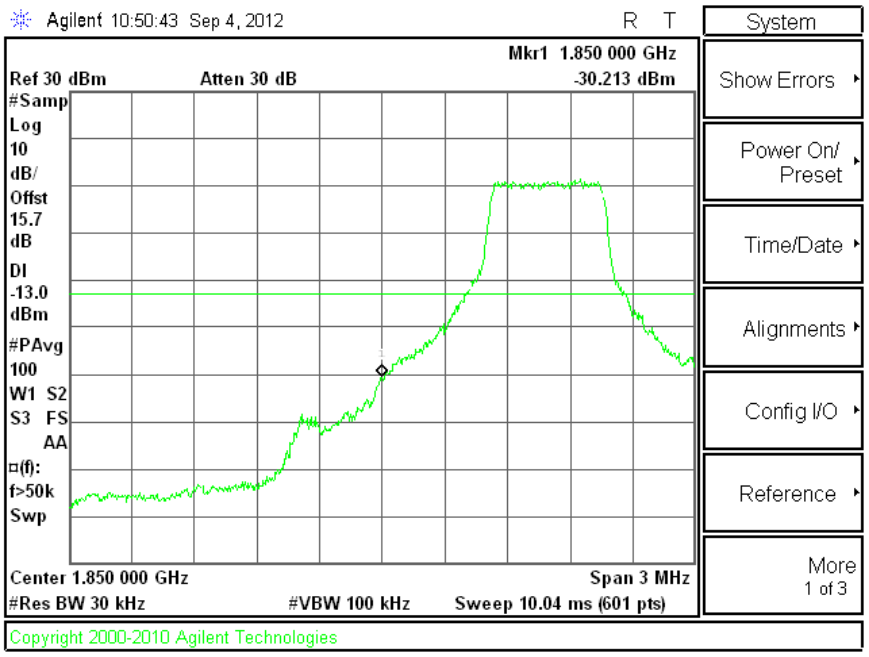
LOW CH, RB1-5



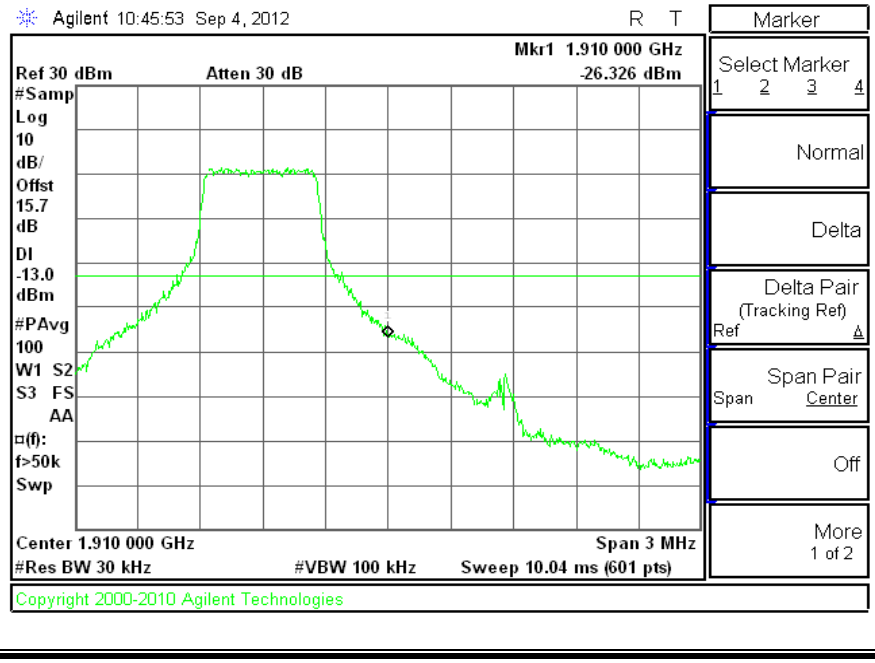
HIGH CH, RB1-5



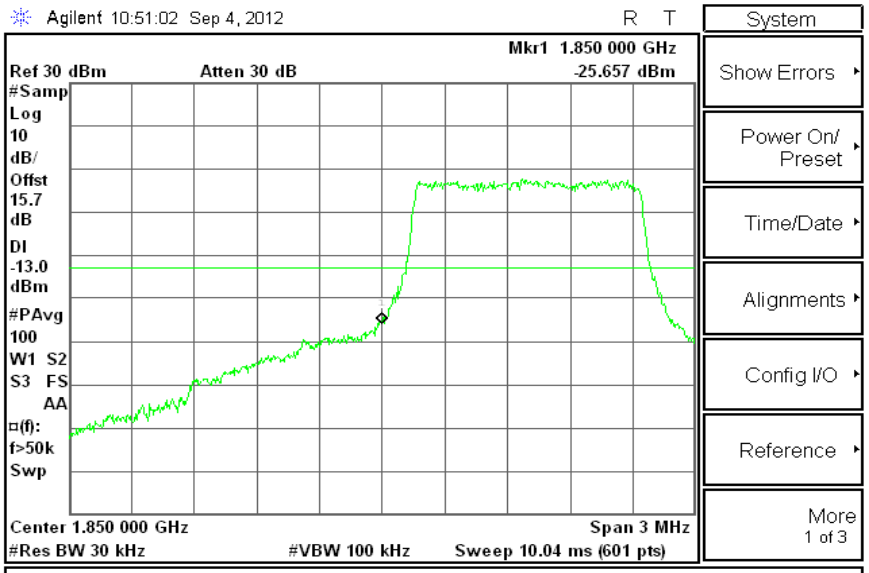
LOW CH, RB3-2



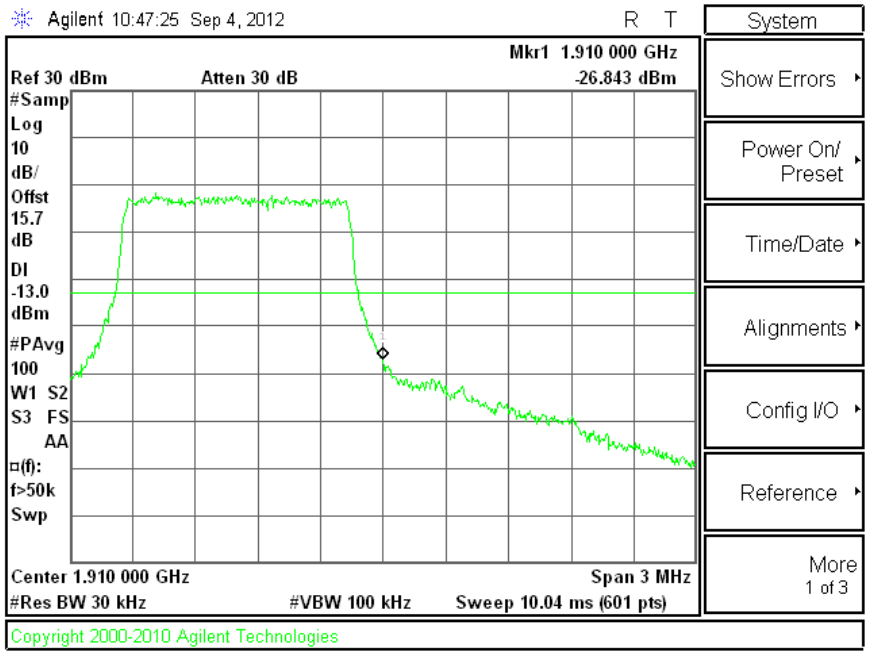
HIGH CH, RB3-2



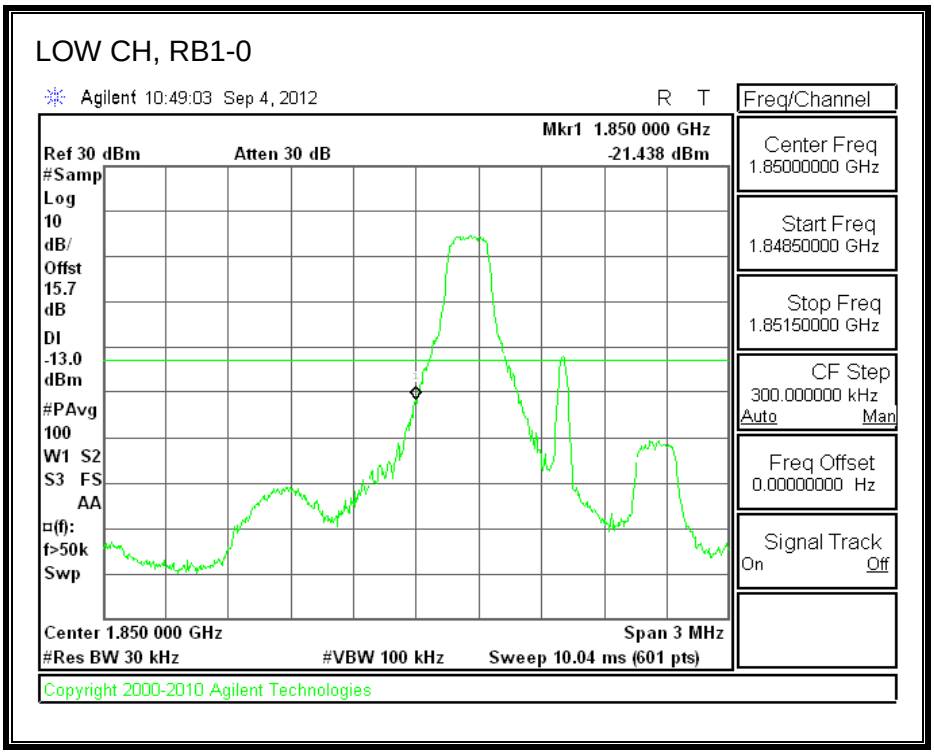
LOW CH, RB6-0

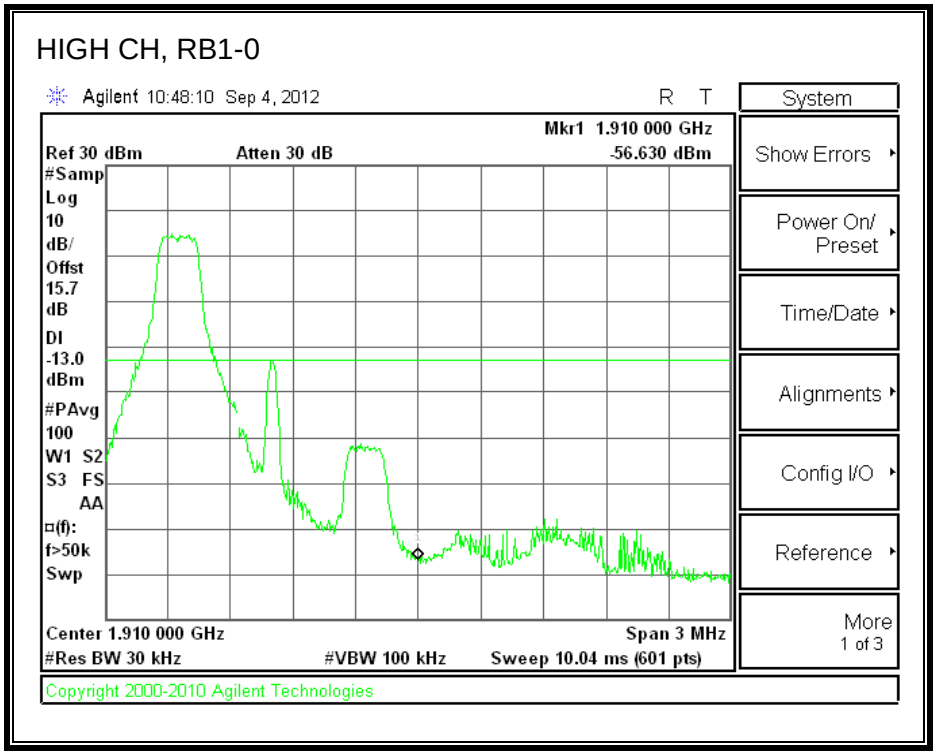


HIGH CH, RB6-0

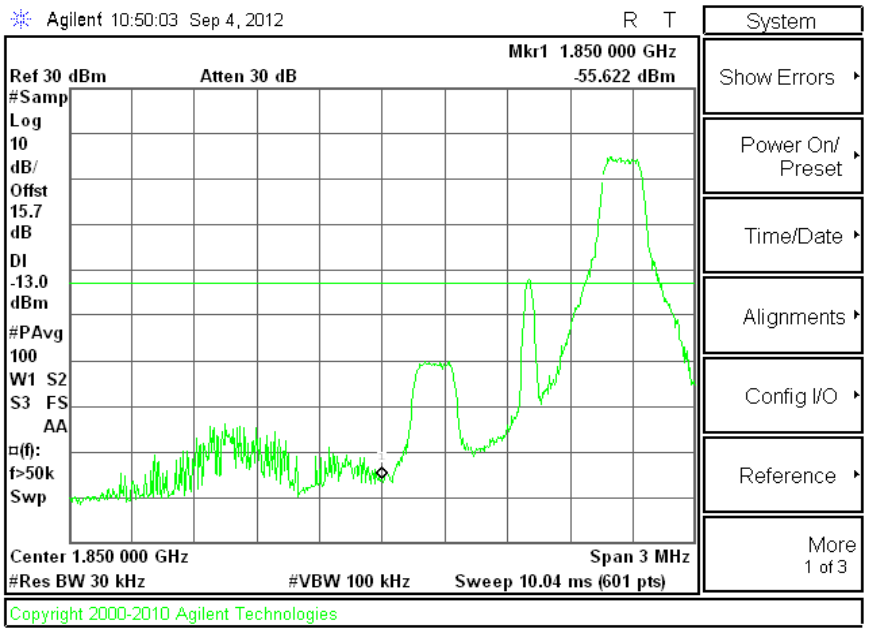


LTE 16QAM Band 2 (1.4 MHz BANDWIDTH)

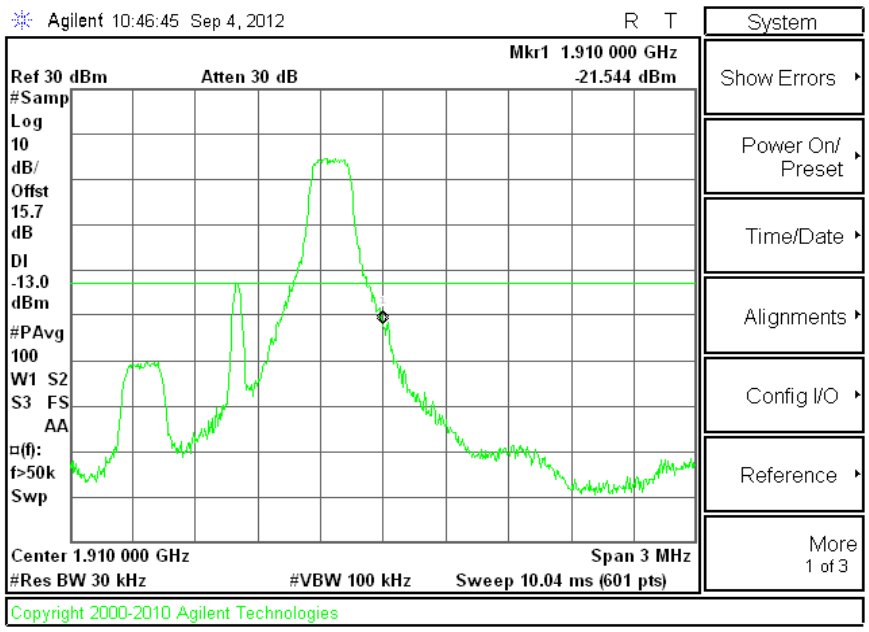




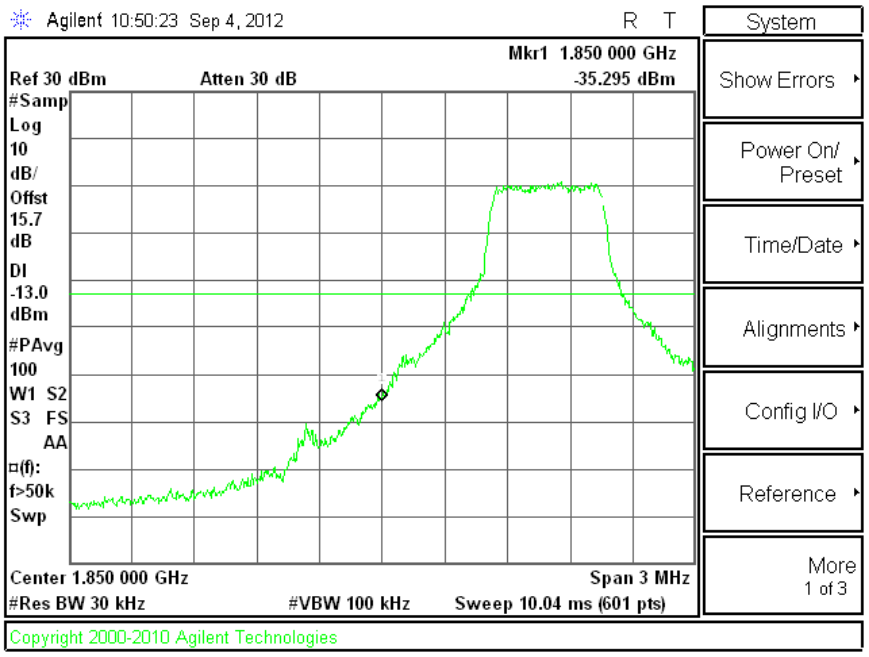
LOW CH, RB1-5



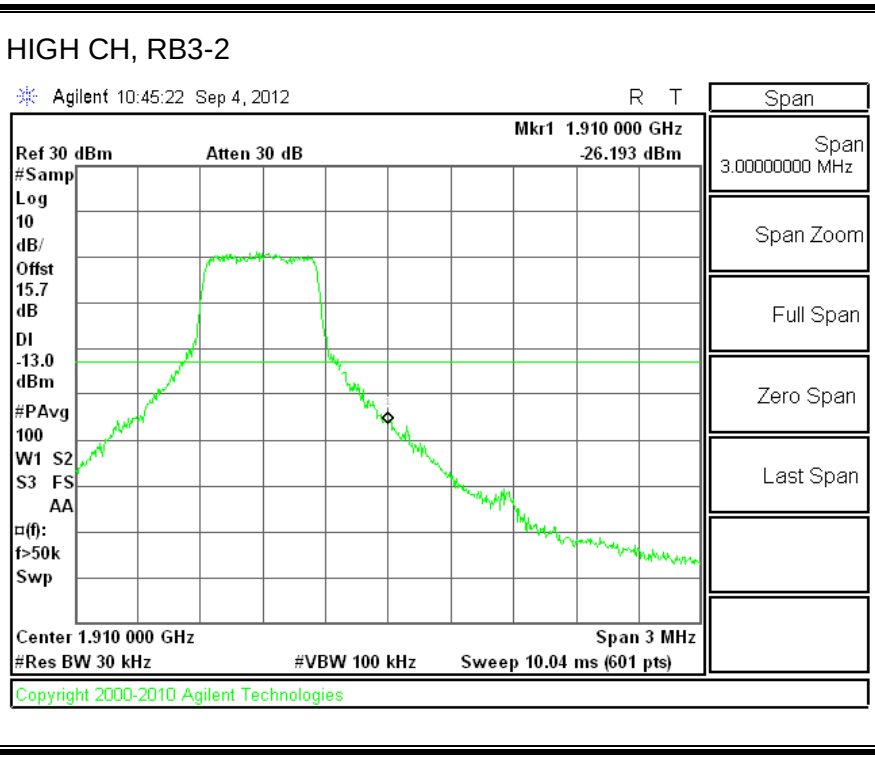
HIGH CH, RB1-5



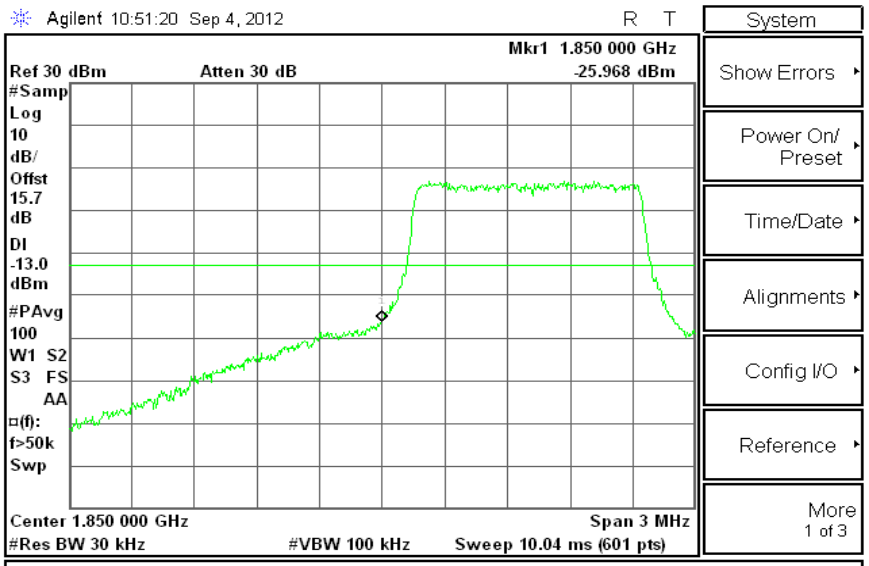
LOW CH, RB3-2



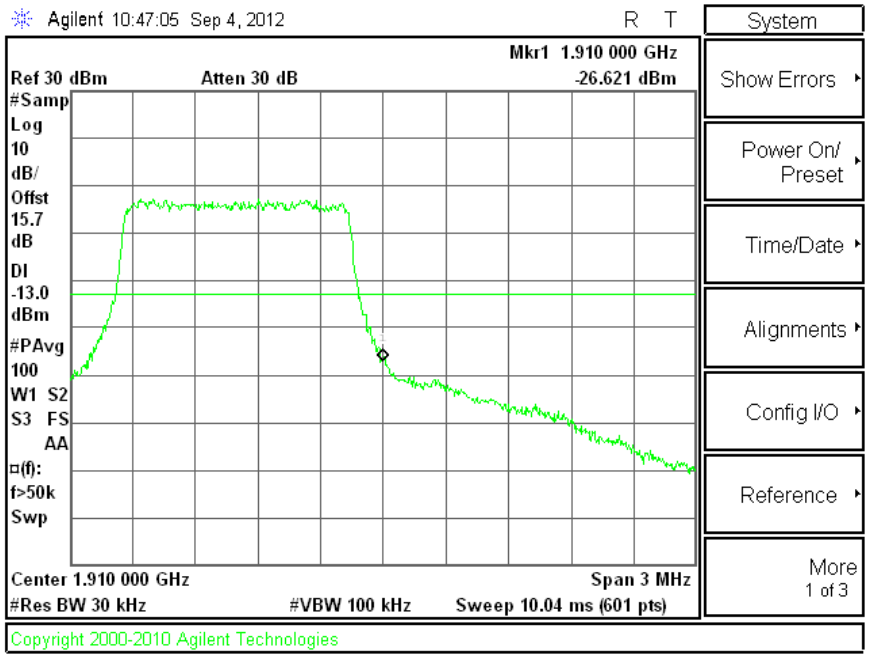
HIGH CH, RB3-2



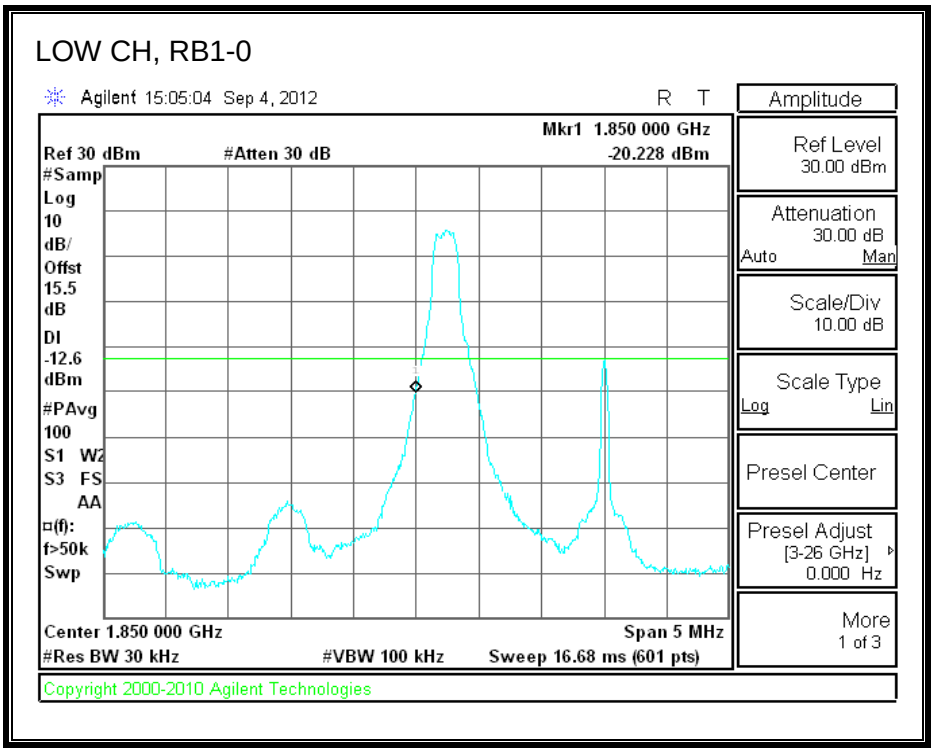
LOW CH, RB6-0

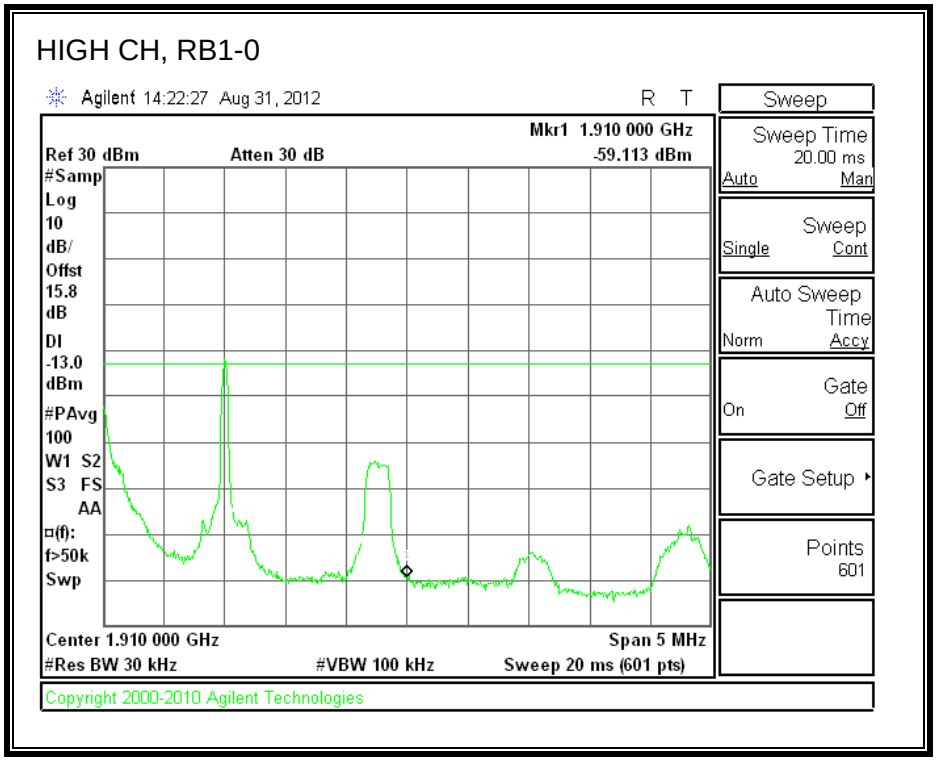


HIGH CH, RB6-0

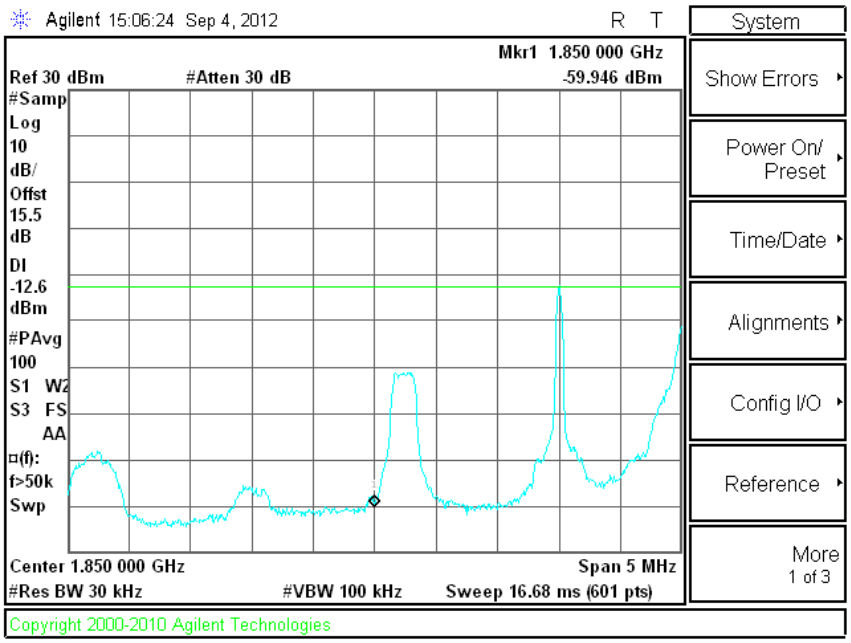


LTE QPSK Band 2 (3.0 MHz BAND WIDTH)

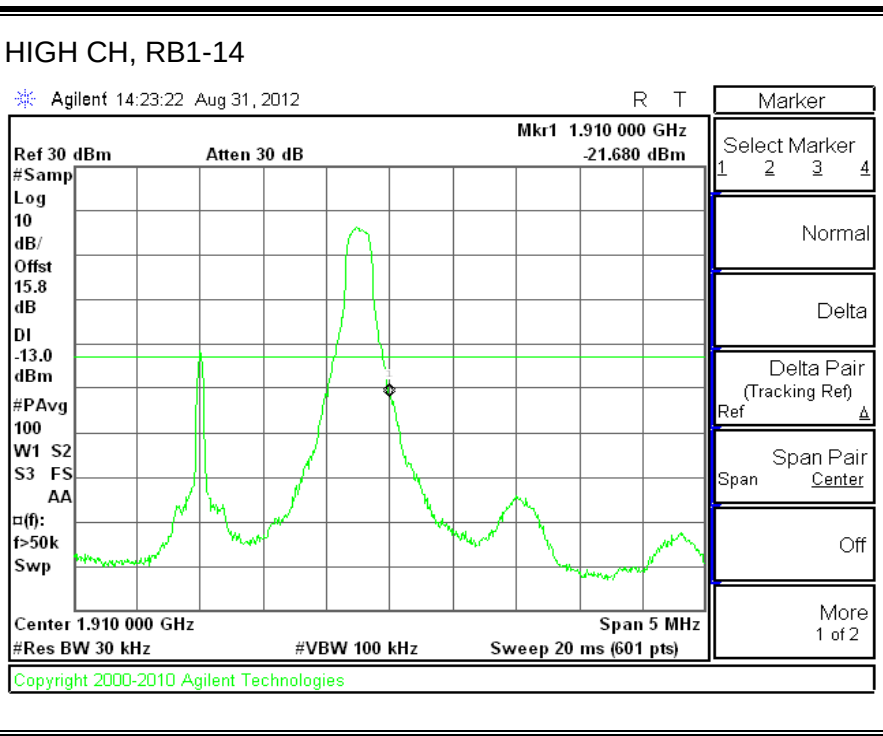




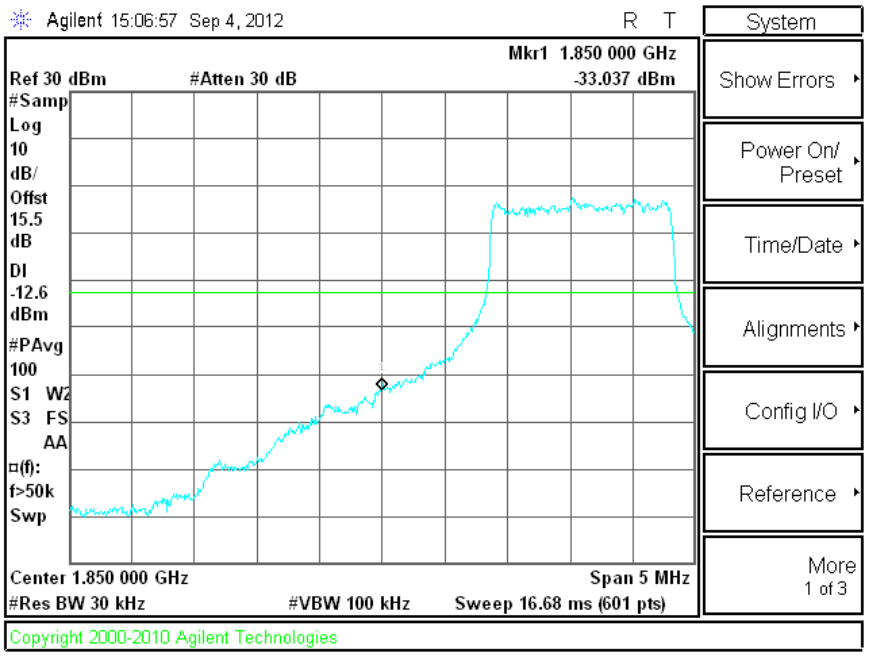
LOW CH, RB1-14



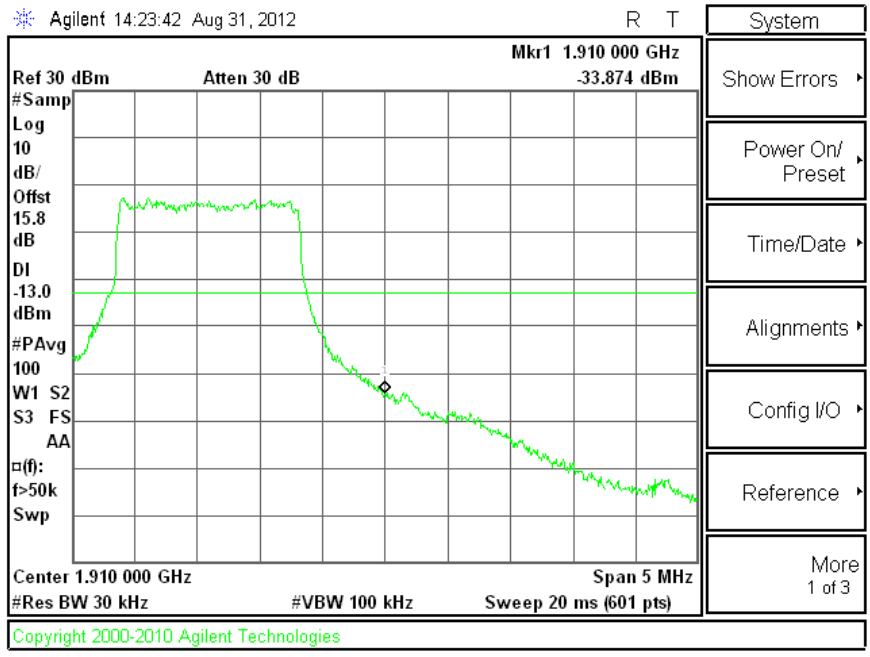
HIGH CH, RB1-14



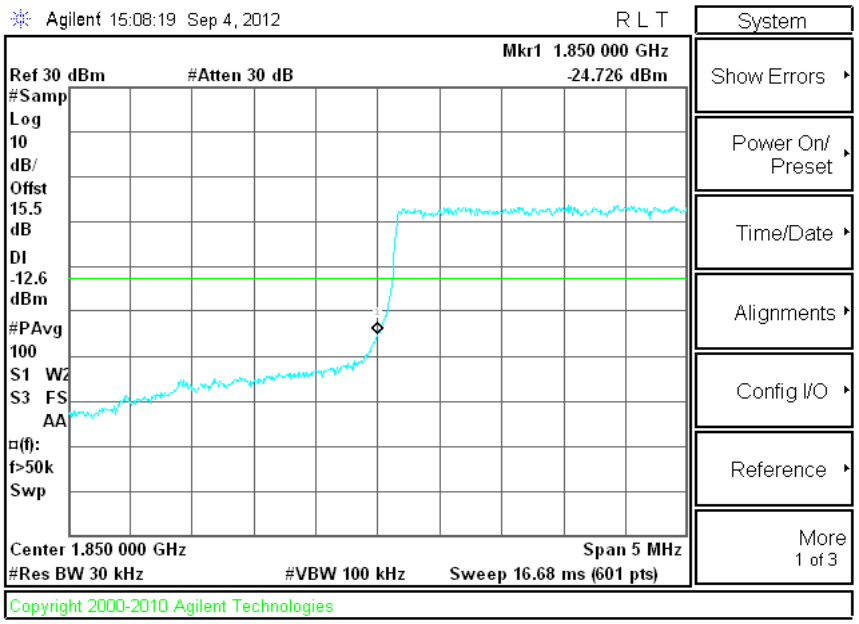
LOW CH, RB8-4



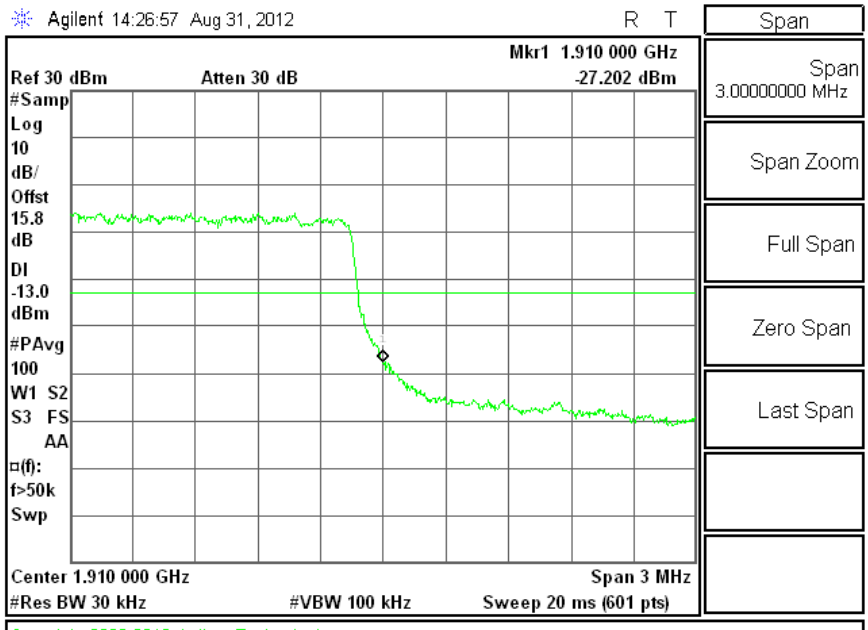
HIGH CH, RB8-4



LOW CH, RB15-0

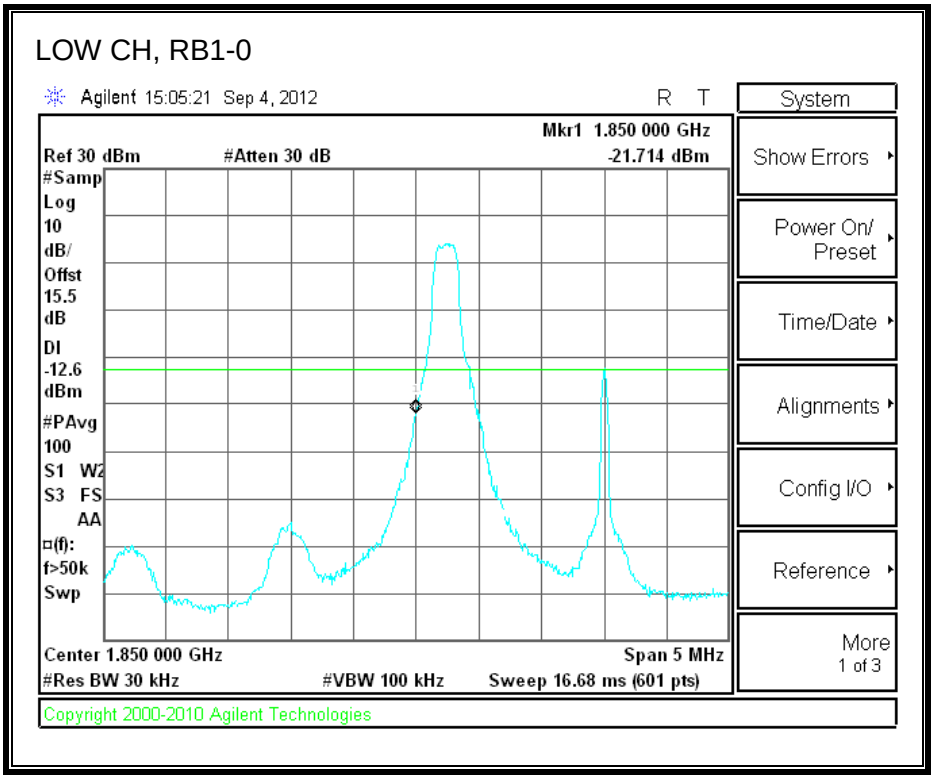


HIGH CH, RB15-0

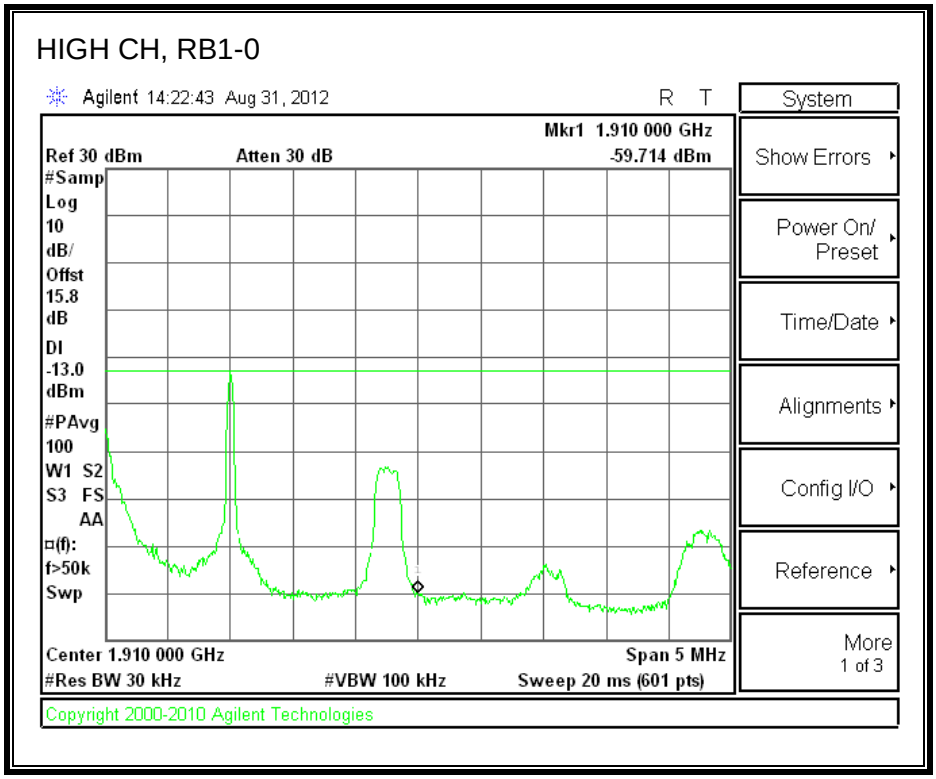


LTE 16QAM Band 2 (3.0 MHz BAND WIDTH)

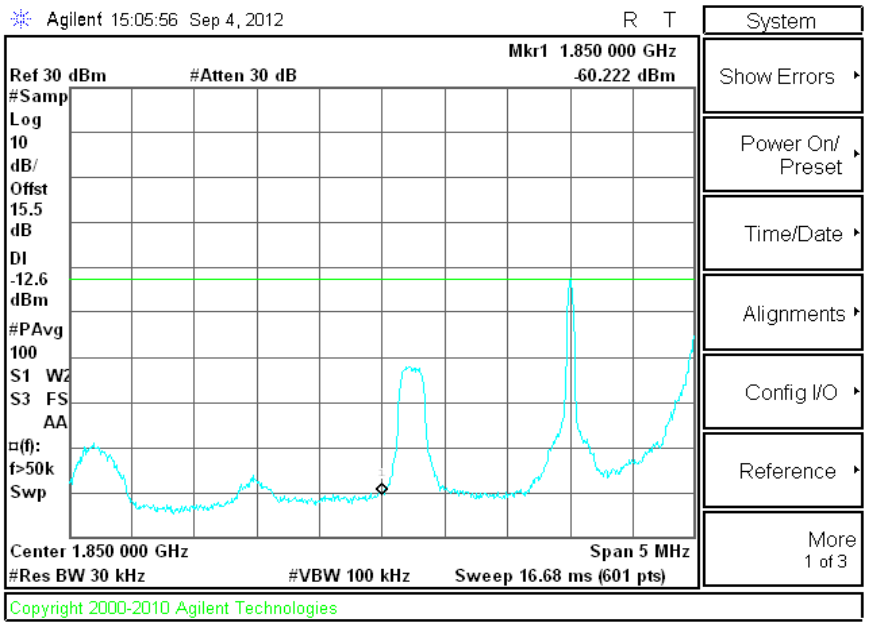
LOW CH, RB1-0



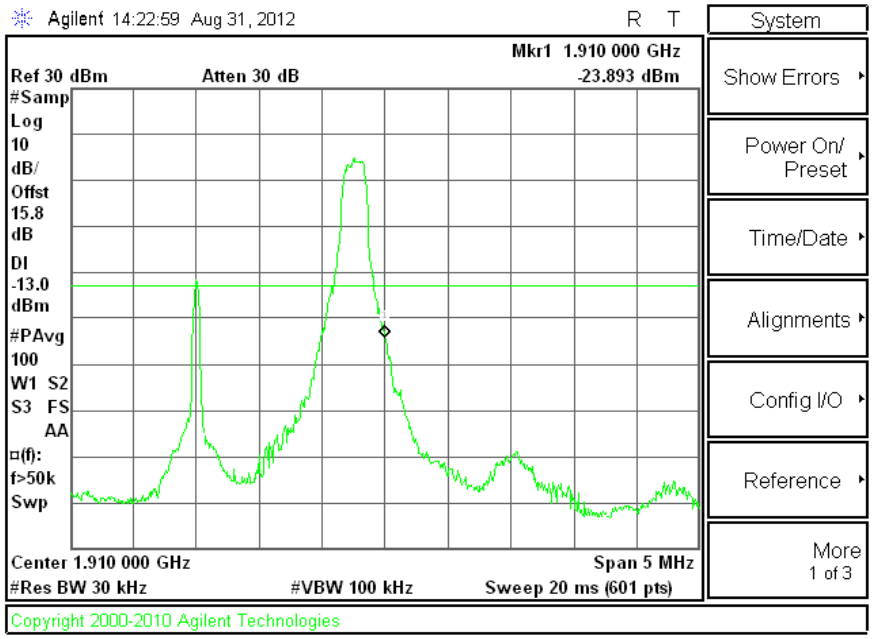
HIGH CH, RB1-0



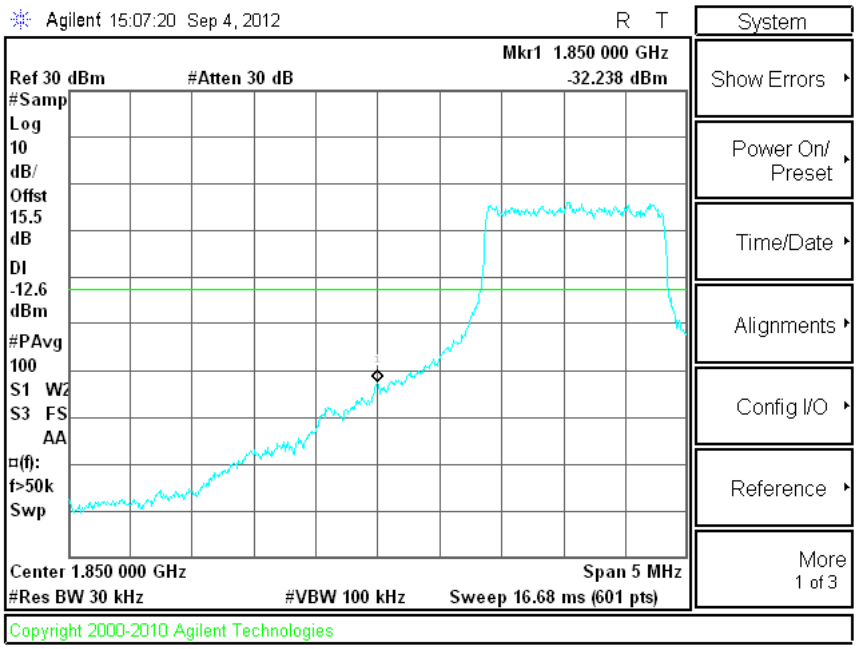
LOW CH, RB1-14



HIGH CH, RB1-14



LOW CH, RB8-4



HIGH CH, RB8-4