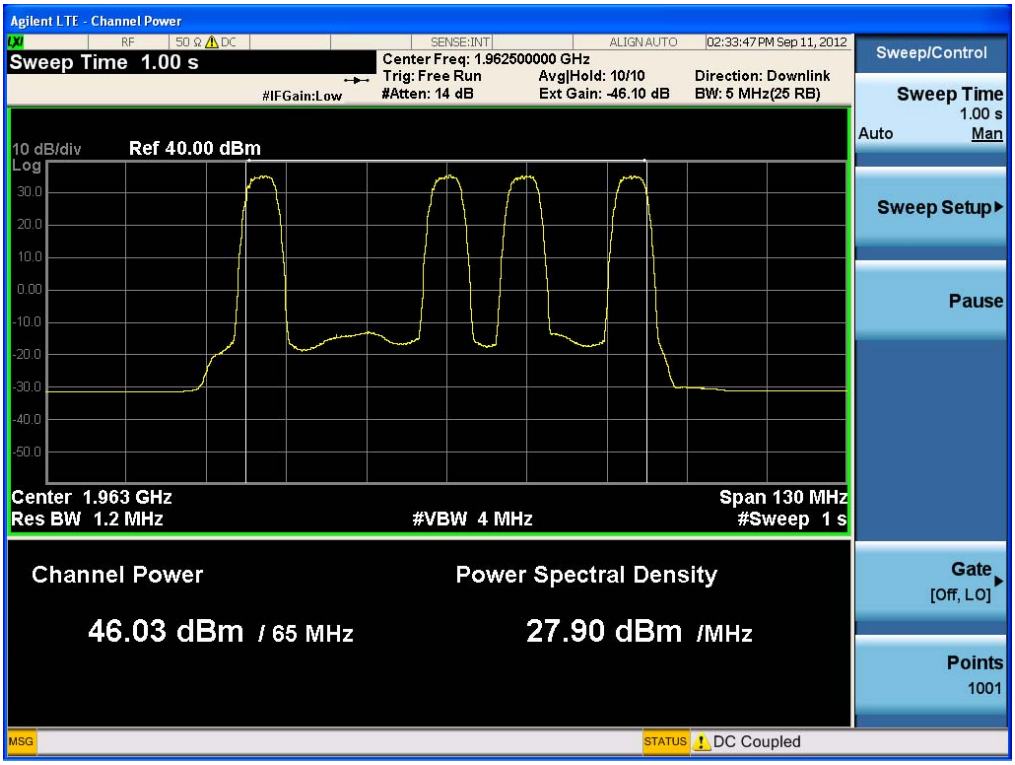
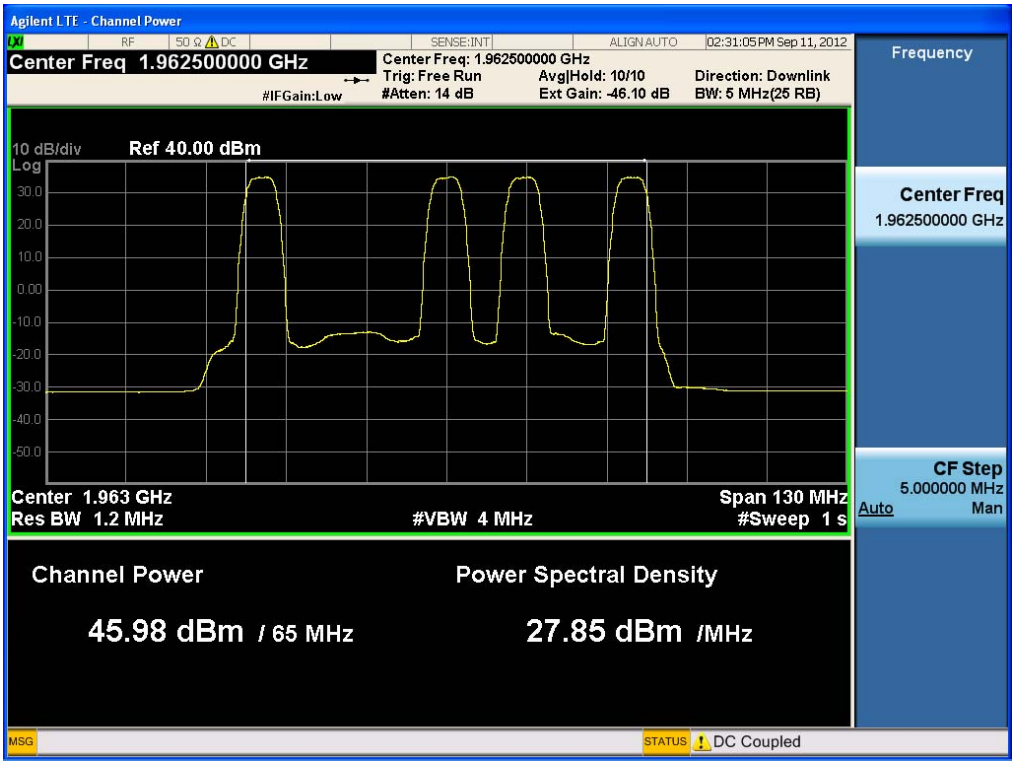
. Plot Data for LTE 5 MHz – 4 Carrier , Output Port 0

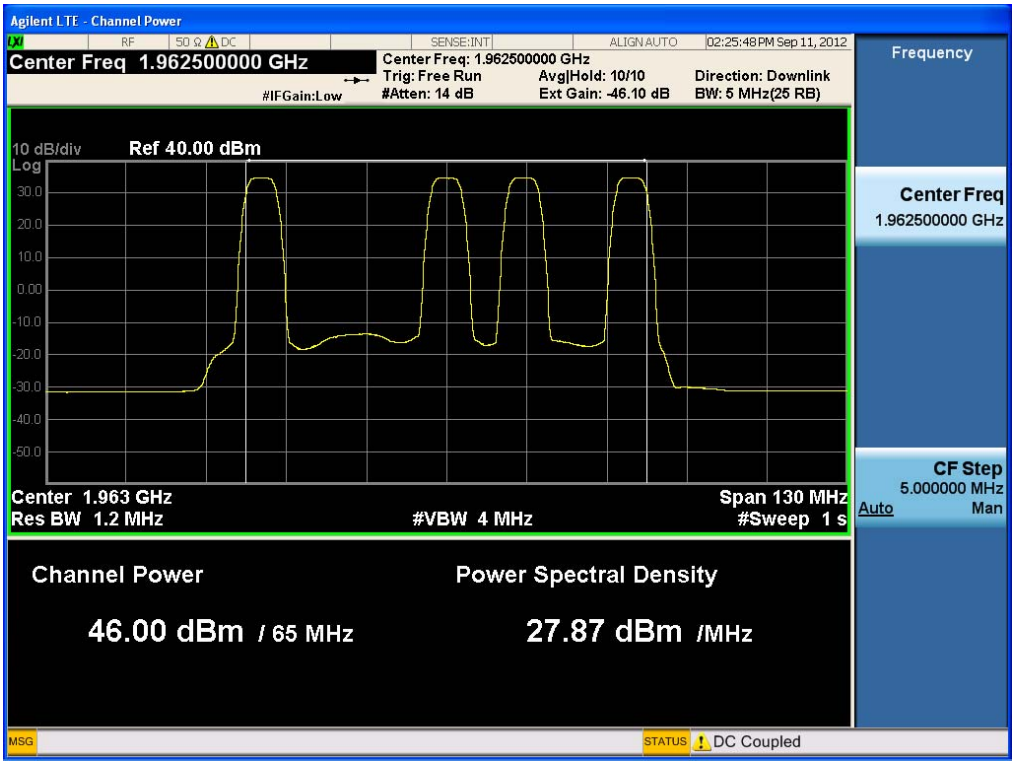
(QPSK)



(16QAM)

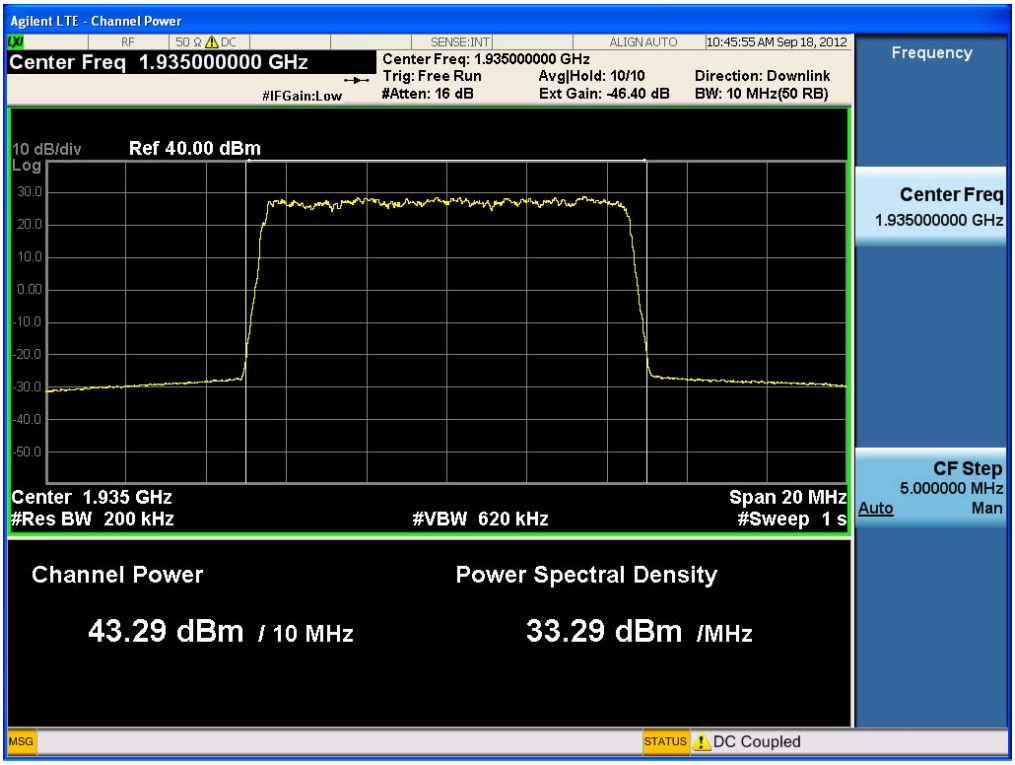


(64QAM)

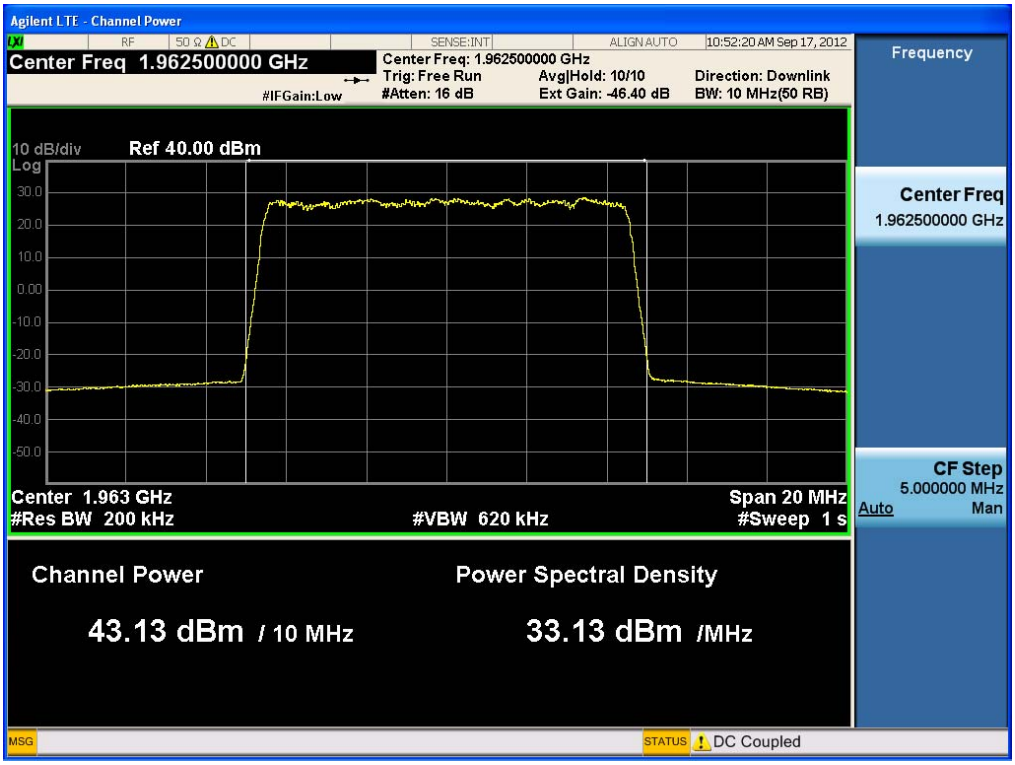

Agilent LTE - Channel Power
RF
50 Ω DC
SENSE:INT
ALIGN AUTO
02:25:48 PM Sep 11, 2012
Center Freq 1.962500000 GHz
Center Freq: 1.962500000 GHz
Trig: Free Run
Avg|Hold: 10/10
Direction: Downlink
#IFGain:Low
#Atten: 14 dB
Ext Gain: -46.10 dB
BW: 5 MHz(25 RB)
Frequency
10 dB/div
Ref 40.00 dBm
Log
30.0
20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
Center Freq
1.962500000 GHz
Center 1.963 GHz
Res BW 1.2 MHz
#VBW 4 MHz
Span 130 MHz
#Sweep 1 s
CF Step
5.000000 MHz
Auto
Man
Channel Power
46.00 dBm / 65 MHz
Power Spectral Density
27.87 dBm /MHz
MSG
STATUS
DC Coupled

. Plot Data for LTE 10 MHz – 1 Carrier , Output Port 0

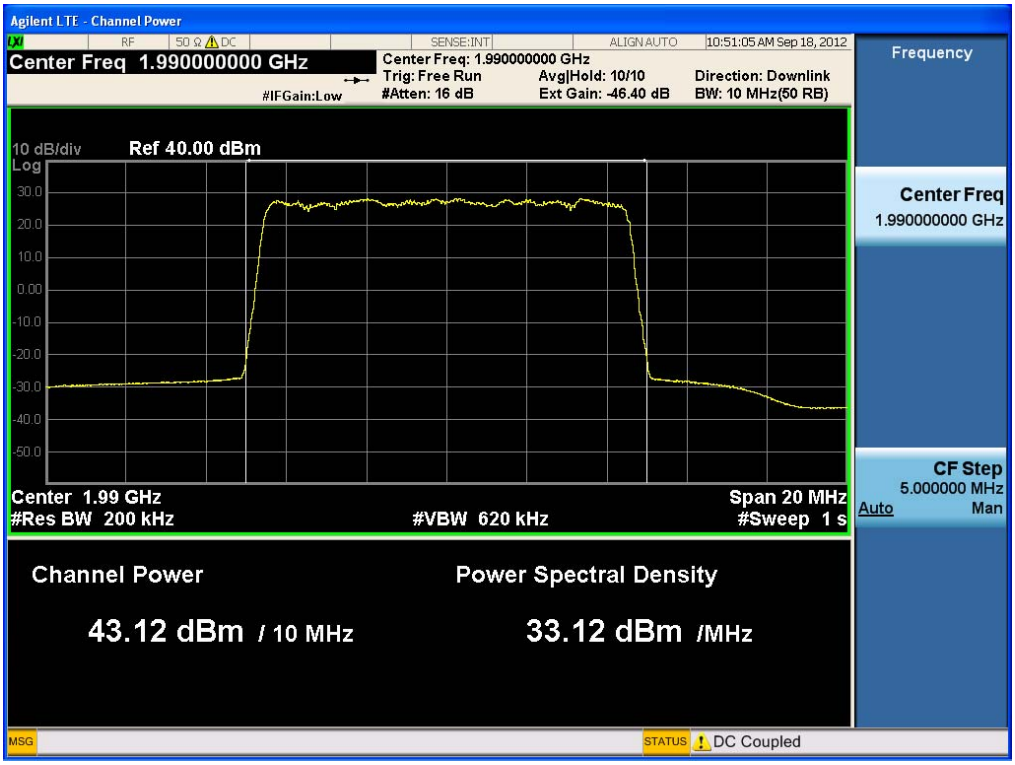
(QPSK Low Channel)



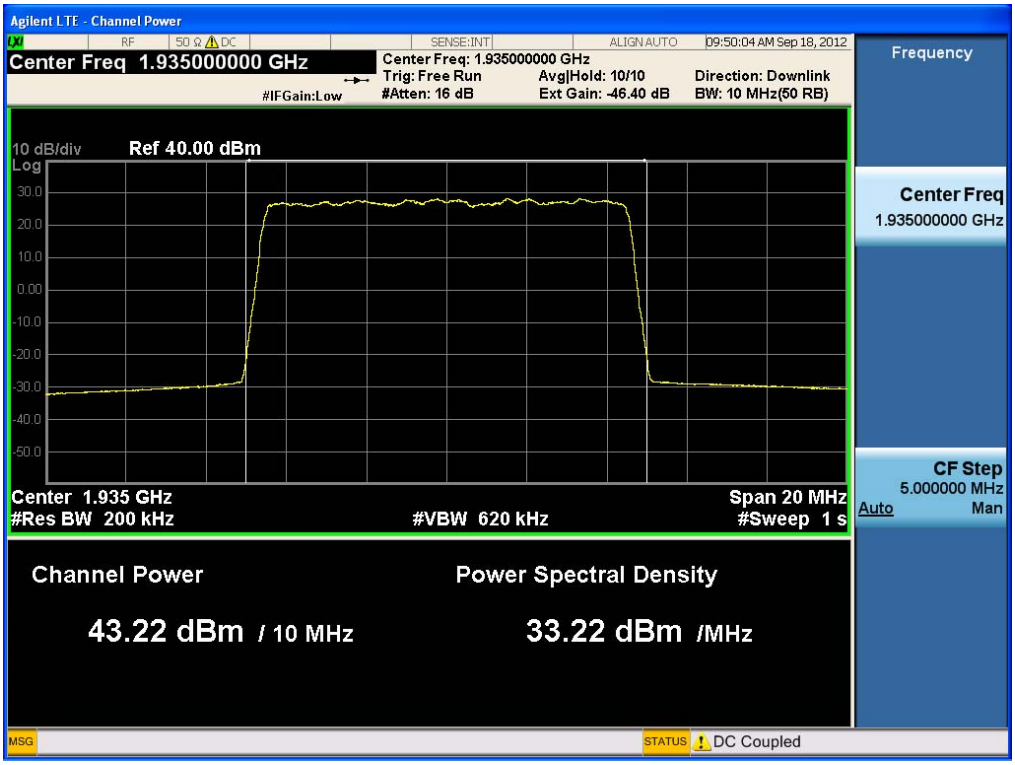
(QPSK Middle Channel)



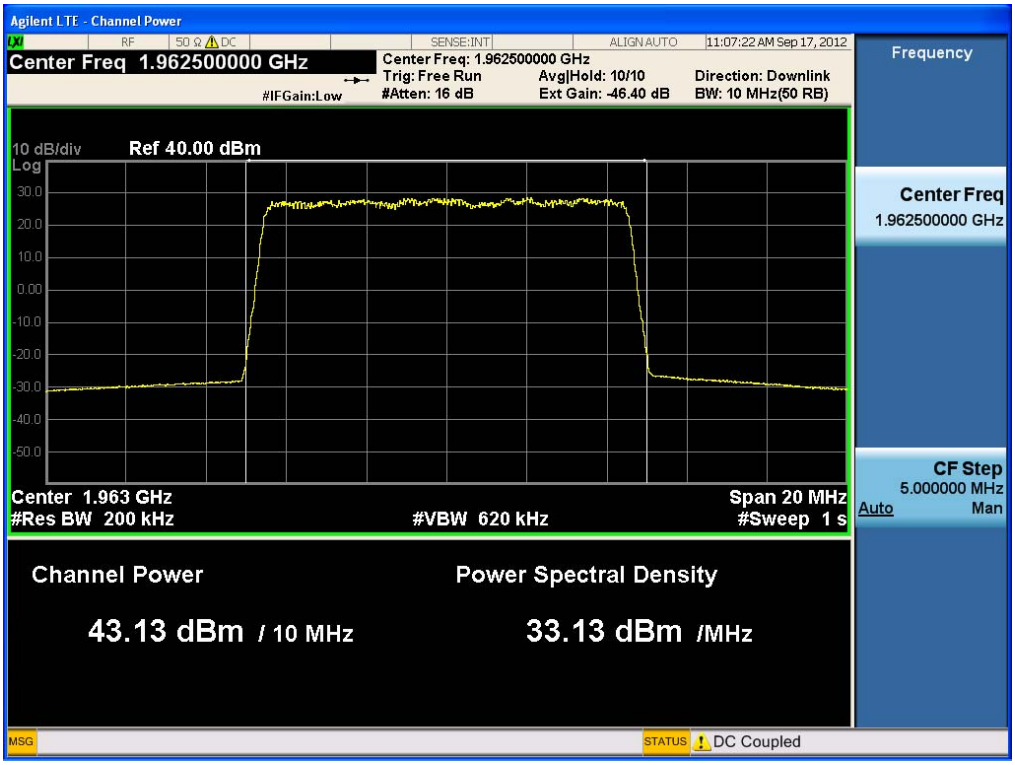
(QPSK High Channel)



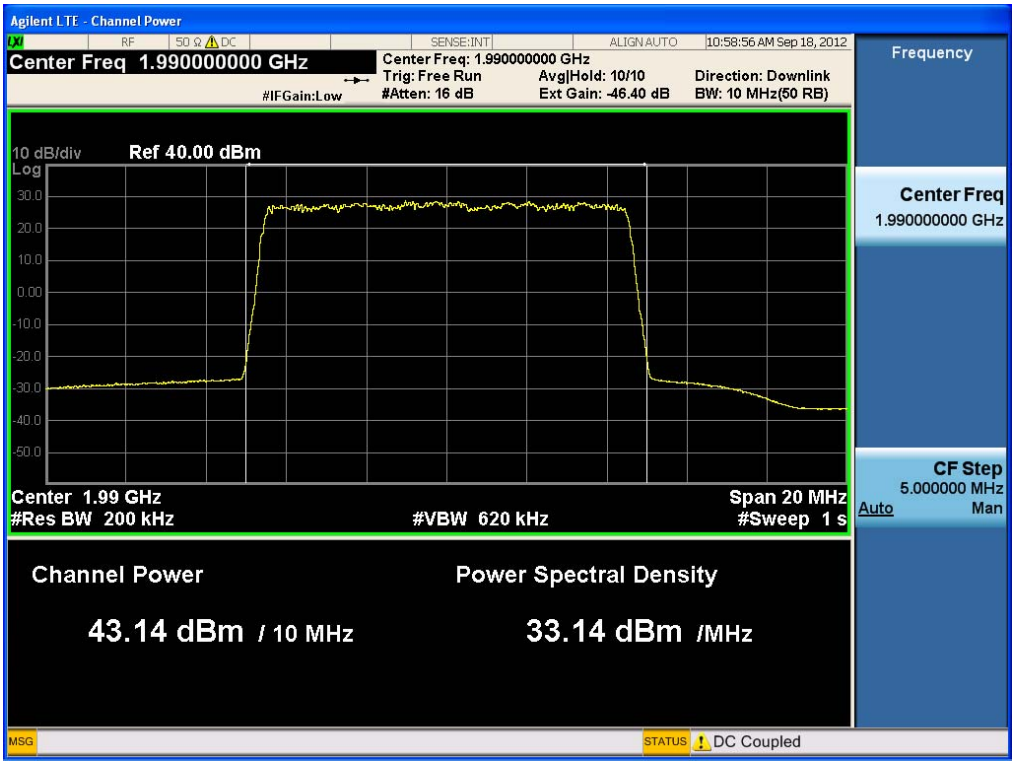
(16QAM Low Channel)



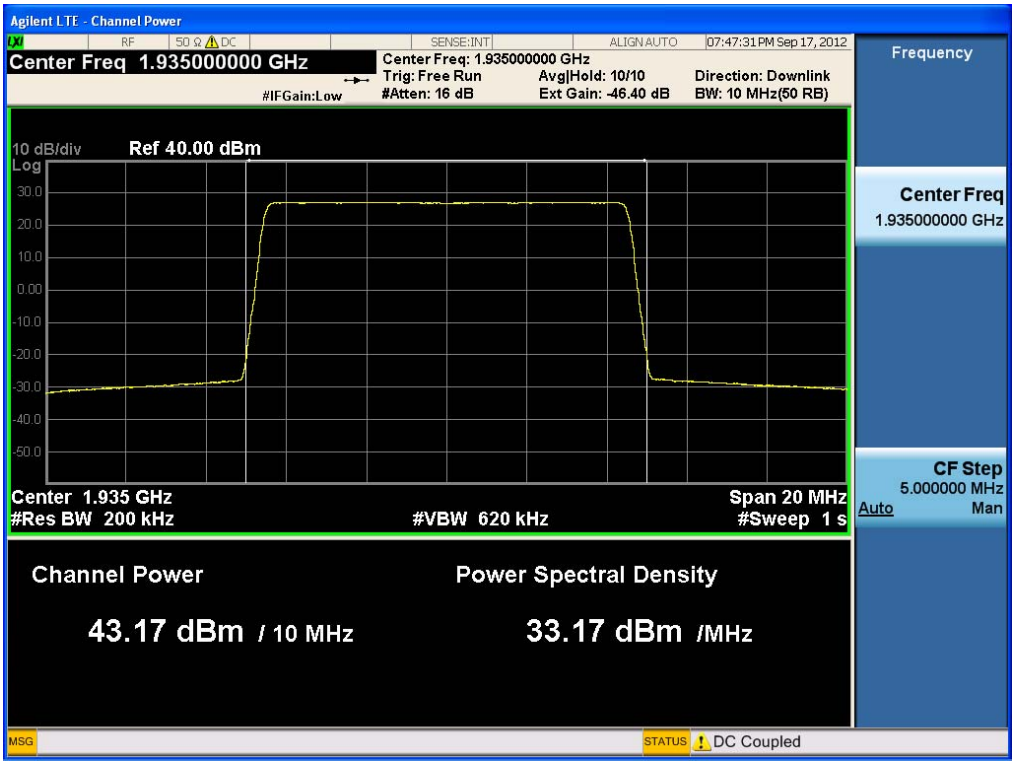
(16QAM Middle Channel)



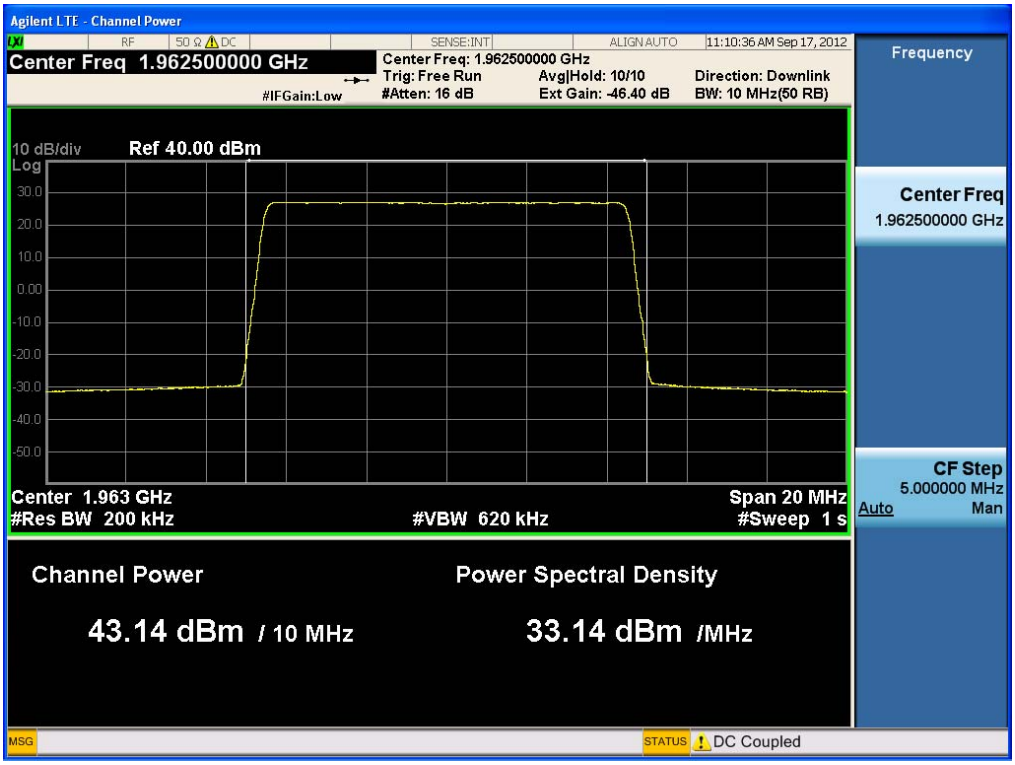
(16QAM High Channel)



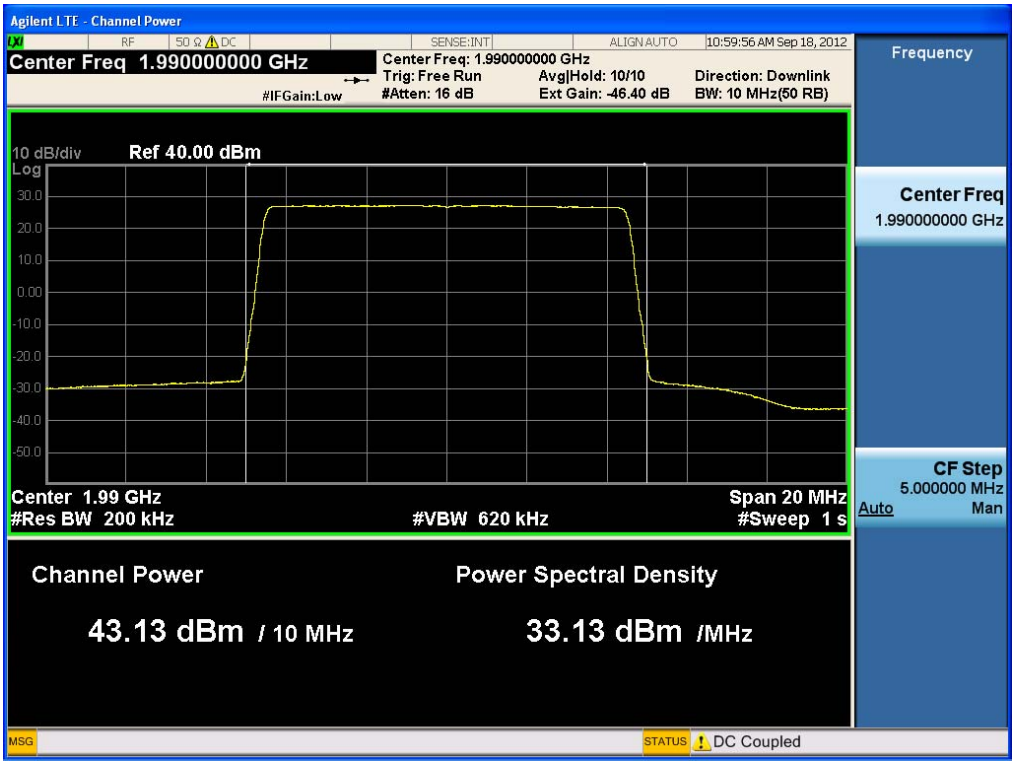
(64QAM Low Channel)



(64QAM Middle Channel)

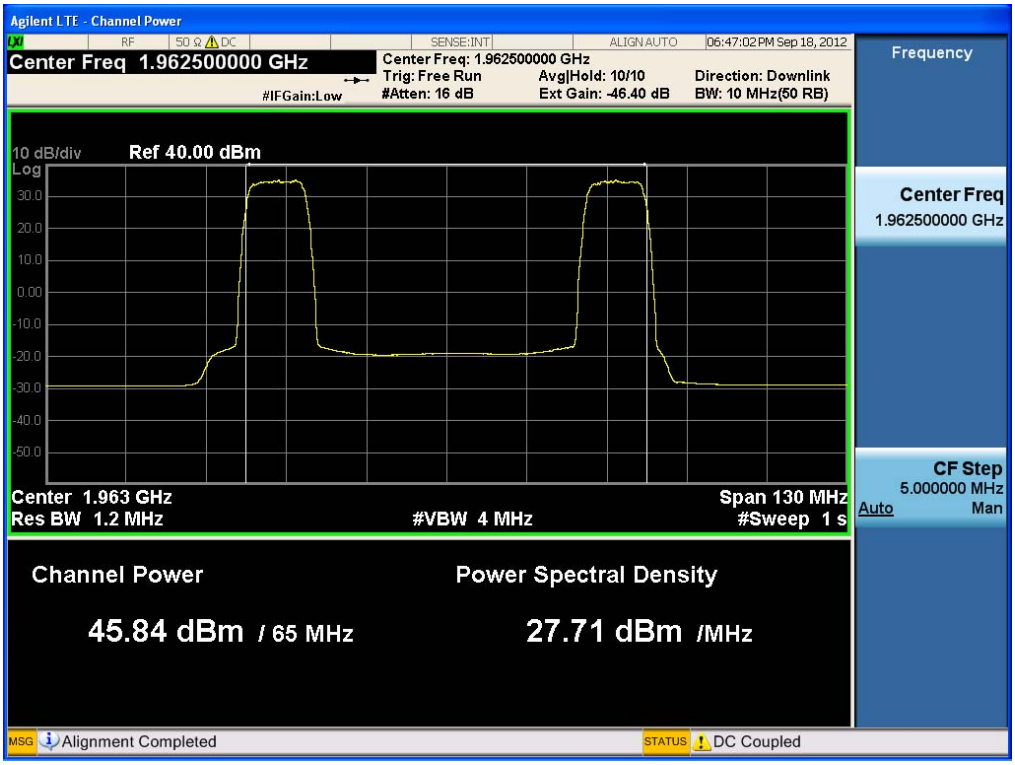


(64QAM High Channel)

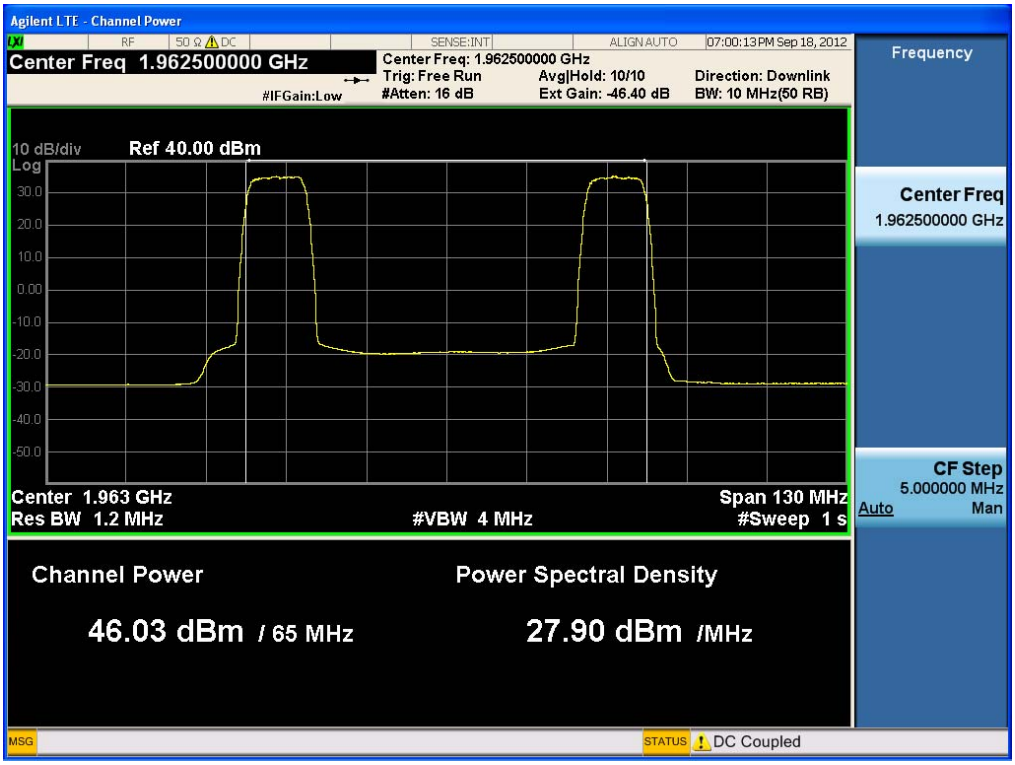


. Plot Data for LTE 10 MHz – 2 Carrier , Output Port 0

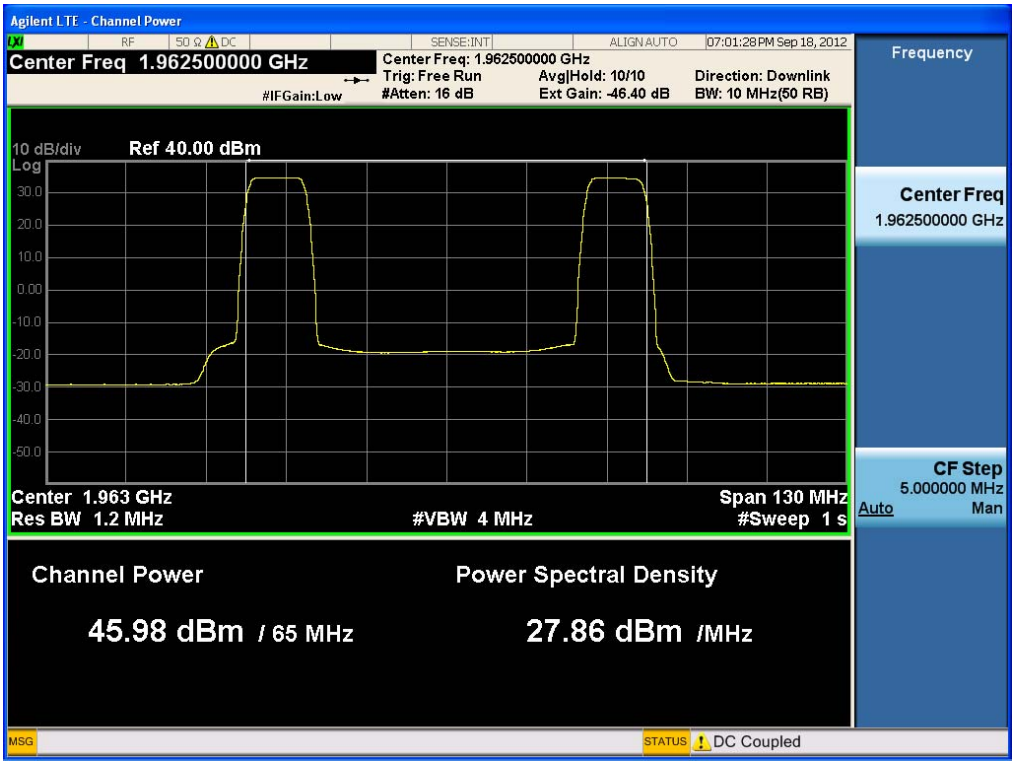
(QPSK)



(16QAM)



(64QAM)


Agilent LTE - Channel Power
RF
50 Ω DC
SENSE:INT
ALIGN AUTO
07:01:28 PM Sep 18, 2012
Center Freq 1.962500000 GHz
Center Freq: 1.962500000 GHz
Trig: Free Run
Avg|Hold: 10/10
Direction: Downlink
#IFGain:Low
#Atten: 16 dB
Ext Gain: -46.40 dB
BW: 10 MHz(50 RB)
Frequency
10 dB/div
Ref 40.00 dBm
Log
30.0
20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
Center Freq
1.962500000 GHz
Center 1.963 GHz
Res BW 1.2 MHz
#VBW 4 MHz
Span 130 MHz
#Sweep 1 s
CF Step
5.000000 MHz
Auto
Man
Channel Power
45.98 dBm / 65 MHz
Power Spectral Density
27.86 dBm /MHz
MSG
STATUS
DC Coupled

6. OCCUPIED BANDWIDTH

6.1. Applicable Standard

According to FCC §2.1049

The OBW, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0. 5 percent of the total mean power radiated by a given emission shall be measured under the following conditions as applicable:

(g) Transmitter in which the modulating baseband comprises not more than three independent channels - when modulated by the full complement of signals for which the transmitter is rated. The level of modulation for each channel should be set to that prescribed in rule parts applicable to the services for which the transmitter is intended. If specific modulation levels are not set forth in the rules, the tests should provide the manufacturer ’s maximum rated condition

(h) Transmitters employing digital modulation techniques - when modulated by an input signal such that its amplitude and symbol rate represent the maximum rated conditions under which the equipment will be operated. The signal shall be applied through any filter networks, pseudo-random generators or other devices required in normal service.

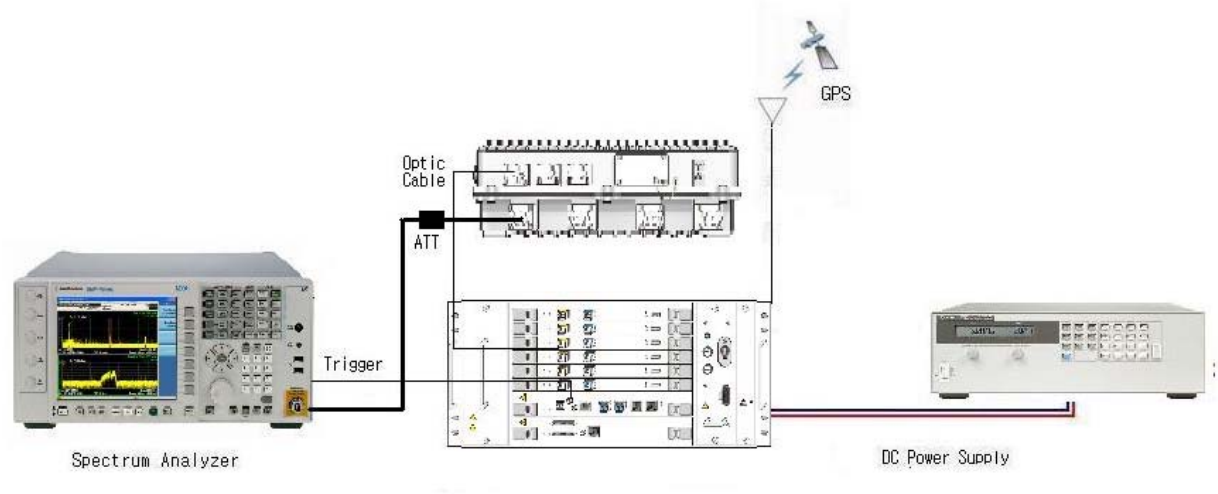
Additionally, the occupied bandwidth shall be shown for operation with any devices used for modifying the spectrum when such devices are optional at discretion of the user.

6.2.Test Equipment List and Details

Manufacturer	Model / Equipment	Serial No.	Calibration Due
Agilent	N9020A /Signal Analyzer	US46220219	05/02/2013
Agilent	6674A / DC Power Supply	3501A00901	05/02/2013
WEINSCHEL	67-30-33 / Attenuator	BU5347	11/07/2012
WEINSCHEL	67-30-33 / Attenuator	BR0530	11/07/2012
WEINSCHEL	AF9003-69-31 / Attenuator	11787	11/07/2012
WEINSCHEL	AF9003-69-31 / Attenuator	5701	11/07/2012

6.3. Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation. The EUT was connected to a spectrum analyzer enabled with an occupied bandwidth function via its antenna port. Measurements were performed to determine the occupied bandwidth in accordance with FCC Part 2.1049. The occupied bandwidth was measured from the fundamental emission at the bottom, middle and top channels. The occupied bandwidth was measured using the built in occupied bandwidth function of the spectrum analyzer. It was set to measure the bandwidth where 99% of the signal power was contained. The analyzer automatically configures the measurement bandwidths to make an accurate measurement based on the channel bandwidth and channel spacing of the EUT.



6.4. Test Result

: PASS

[CDMA : 1T mode]

. Test Data at Output Port 0

Modulation	Channel	Frequency (MHz)	Measured Bandwidth (MHz)
BPSK	Low	1931.25	1.2489
	Middle	1962.50	1.2467
	High	1993.75	1.2469
QPSK	Low	1931.25	1.2445
	Middle	1962.5	1.2469
	High	1993.75	1.2456
16QAM	Low	1931.25	1.2428
	Middle	1962.5	1.2457
	High	1993.75	1.2468

. Test Data at Output Port 1

Modulation	Channel	Frequency (MHz)	Measured Bandwidth (MHz)
BPSK	Low	1931.25	1.2467
	Middle	1962.5	1.2452
	High	1993.75	1.2520
QPSK	Low	1931.25	1.2461
	Middle	1962.5	1.2479
	High	1993.75	1.2450
16QAM	Low	1931.25	1.2416
	Middle	1962.5	1.2442
	High	1993.75	1.2399

. Test Data at Output Port 2

Modulation	Channel	Frequency (MHz)	Measured Bandwidth (MHz)
BPSK	Low	1931.25	1.2424
	Middle	1962.5	1.2405
	High	1993.75	1.2443
QPSK	Low	1931.25	1.2457
	Middle	1962.5	1.2464
	High	1993.75	1.2499
16QAM	Low	1931.25	1.2462
	Middle	1962.5	1.2434
	High	1993.75	1.2446

. Test Data at Output Port 3

Modulation	Channel	Frequency (MHz)	Measured Bandwidth (MHz)
BPSK	Low	1931.25	1.2440
	Middle	1962.5	1.2432
	High	1993.75	1.2424
QPSK	Low	1931.25	1.2448
	Middle	1962.5	1.2485
	High	1993.75	1.2497
16QAM	Low	1931.25	1.2478
	Middle	1962.5	1.2449
	High	1993.75	1.2442

[CDMA : 2T mode]

. Test Data at Output Port 0

Modulation	Channel	Frequency (MHz)	Measured Bandwidth (MHz)
BPSK	Low	1931.25	1.2503
	Middle	1962.50	1.2489
	High	1993.75	1.2432
QPSK	Low	1931.25	1.2435
	Middle	1962.5	1.2434
	High	1993.75	1.2500
16QAM	Low	1931.25	1.2424
	Middle	1962.5	1.2425
	High	1993.75	1.2451

. Test Data at Output Port 1

Modulation	Channel	Frequency (MHz)	Measured Bandwidth (MHz)
BPSK	Low	1931.25	1.2473
	Middle	1962.5	1.2411
	High	1993.75	1.2510
QPSK	Low	1931.25	1.2406
	Middle	1962.5	1.2506
	High	1993.75	1.2450
16QAM	Low	1931.25	1.2480
	Middle	1962.5	1.2434
	High	1993.75	1.2456

. Test Data at Output Port 2

Modulation	Channel	Frequency (MHz)	Measured Bandwidth (MHz)
BPSK	Low	1931.25	1.2485
	Middle	1962.5	1.2423
	High	1993.75	1.2452
QPSK	Low	1931.25	1.2495
	Middle	1962.5	1.2463
	High	1993.75	1.2454
16QAM	Low	1931.25	1.2493
	Middle	1962.5	1.2437
	High	1993.75	1.2508

. Test Data at Output Port 3

Modulation	Channel	Frequency (MHz)	Measured Bandwidth (MHz)
BPSK	Low	1931.25	1.2483
	Middle	1962.5	1.2467
	High	1993.75	1.2444
QPSK	Low	1931.25	1.2472
	Middle	1962.5	1.2415
	High	1993.75	1.2473
16QAM	Low	1931.25	1.2466
	Middle	1962.5	1.2434
	High	1993.75	1.2426

[LTE - 5MHz]

. Test Data at Output Port 0

Modulation	Channel	Frequency (MHz)	Measured Bandwidth (MHz)
QPSK	Low	1932.5	4.4710
	Middle	1962.5	4.4703
	High	1992.5	4.4728
16QAM	Low	1932.5	4.4735
	Middle	1962.5	4.4803
	High	1992.5	4.4767
64QAM	Low	1932.5	4.4986
	Middle	1962.5	4.4983
	High	1992.5	4.4989

. Test Data at Output Port 1

Modulation	Channel	Frequency (MHz)	Measured Bandwidth (MHz)
QPSK	Low	1932.5	4.4642
	Middle	1962.5	4.4679
	High	1992.5	4.4659
16QAM	Low	1932.5	4.4755
	Middle	1962.5	4.4806
	High	1992.5	4.4740
64QAM	Low	1932.5	4.45982
	Middle	1962.5	4.4973
	High	1992.5	4.4976

. Test Data at Output Port 2

Modulation	Channel	Frequency (MHz)	Measured Bandwidth (MHz)
QPSK	Low	1932.5	4.4617
	Middle	1962.5	4.4700
	High	1992.5	4.4717
16QAM	Low	1932.5	4.4770
	Middle	1962.5	4.4788
	High	1992.5	4.4792
64QAM	Low	1932.5	4.4996
	Middle	1962.5	4.4970
	High	1992.5	4.4990

. Test Data at Output Port 3

Modulation	Channel	Frequency (MHz)	Measured Bandwidth (MHz)
QPSK	Low	1932.5	4.4593
	Middle	1962.5	4.4716
	High	1992.5	4.4686
16QAM	Low	1932.5	4.4752
	Middle	1962.5	4.4776
	High	1992.5	4.4721
64QAM	Low	1932.5	4.4976
	Middle	1962.5	4.4991
	High	1992.5	4.4986

[LTE - 10MHz]

. Test Data at Output Port 0

Modulation	Channel	Frequency (MHz)	Measured Bandwidth (MHz)
QPSK	Low	1935	8.9502
	Middle	1962.5	8.9483
	High	1990	8.9439
16QAM	Low	1935	8.9690
	Middle	1962.5	8.9721
	High	1990	8.9599
64QAM	Low	1935	8.9766
	Middle	1962.5	8.9766
	High	1990	8.9716

. Test Data at Output Port 1

Modulation	Channel	Frequency (MHz)	Measured Bandwidth (MHz)
QPSK	Low	1935	8.9535
	Middle	1962.5	8.9610
	High	1990	8.9373
16QAM	Low	1935	8.9683
	Middle	1962.5	8.9689
	High	1990	8.9667
64QAM	Low	1935	8.9772
	Middle	1962.5	8.9787
	High	1990	8.9697

. Test Data at Output Port 2

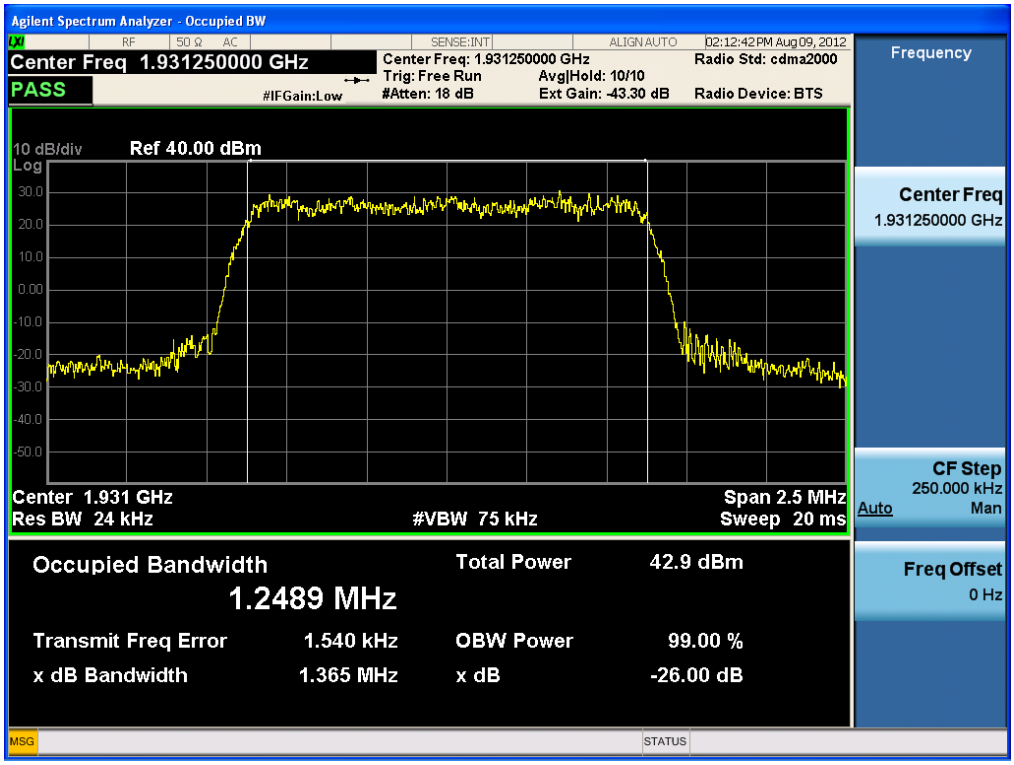
Modulation	Channel	Frequency (MHz)	Measured Bandwidth (MHz)
QPSK	Low	1935	8.9592
	Middle	1962.5	8.9538
	High	1990	8.9529
16QAM	Low	1935	8.9655
	Middle	1962.5	8.9674
	High	1990	8.9581
64QAM	Low	1935	8.9756
	Middle	1962.5	8.9782
	High	1990	8.9698

. Test Data at Output Port 3

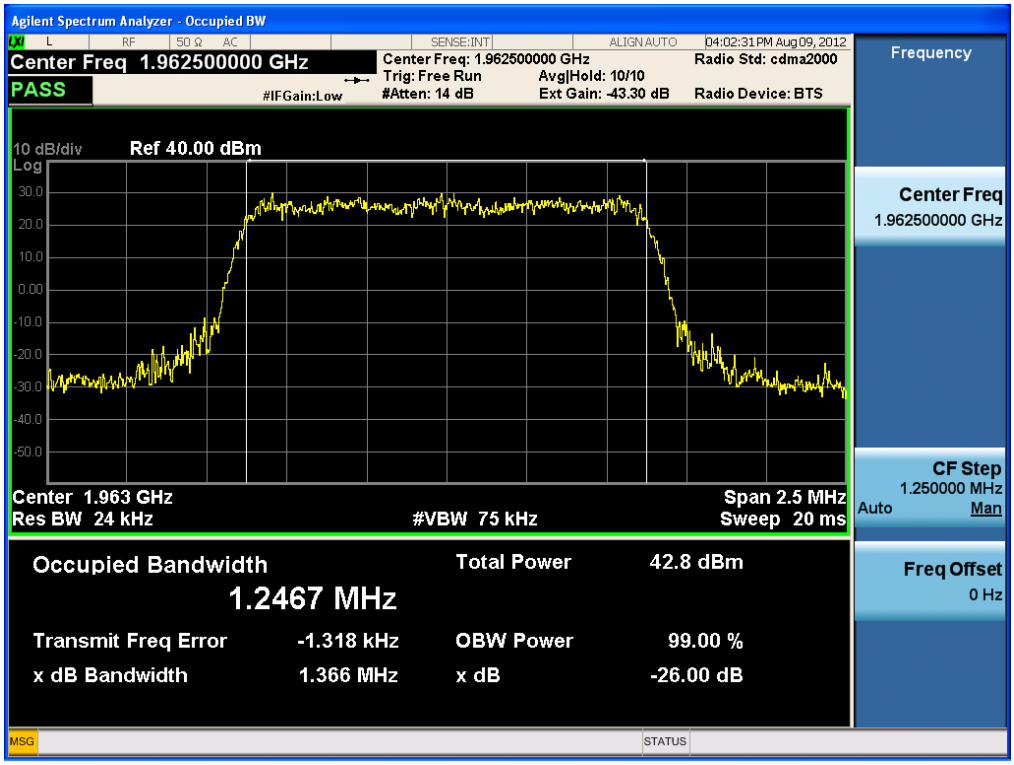
Modulation	Channel	Frequency (MHz)	Measured Bandwidth (MHz)
QPSK	Low	1935	8.9550
	Middle	1962.5	8.9595
	High	1990	8.9502
16QAM	Low	1935	8.9688
	Middle	1962.5	8.9677
	High	1990	8.9622
64QAM	Low	1935	8.9807
	Middle	1962.5	8.9795
	High	1990	8.9720

. Plot Data for CDMA 1T mode – 1 Carrier , Output Port 0

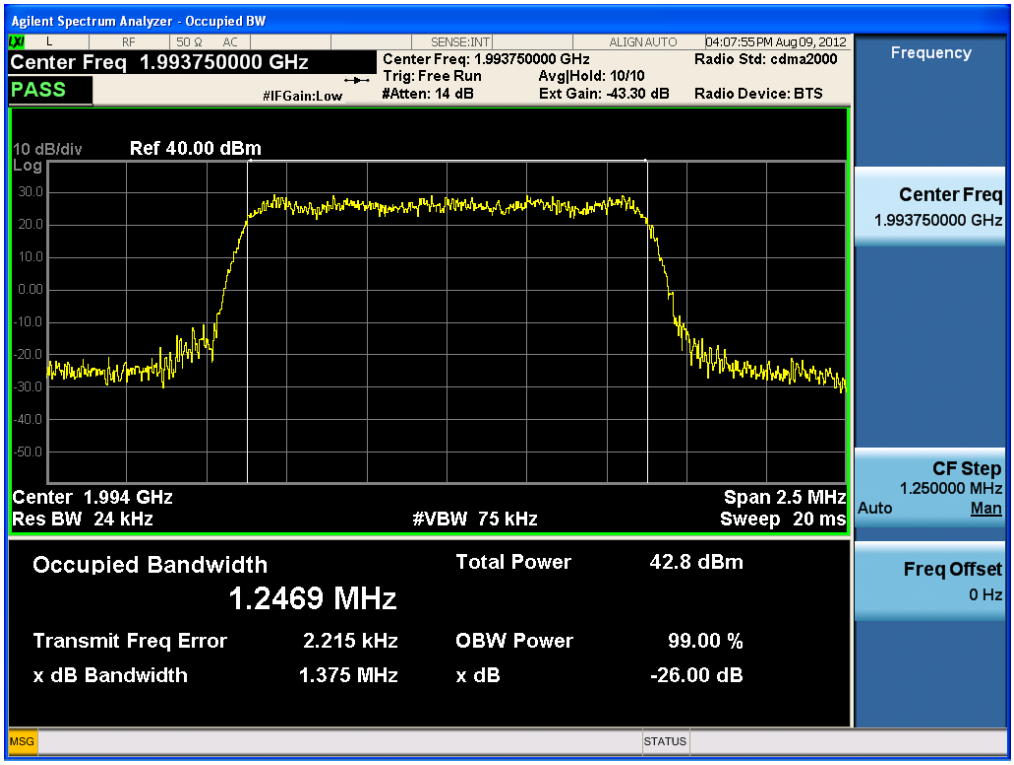
(BPSK Low Channel)



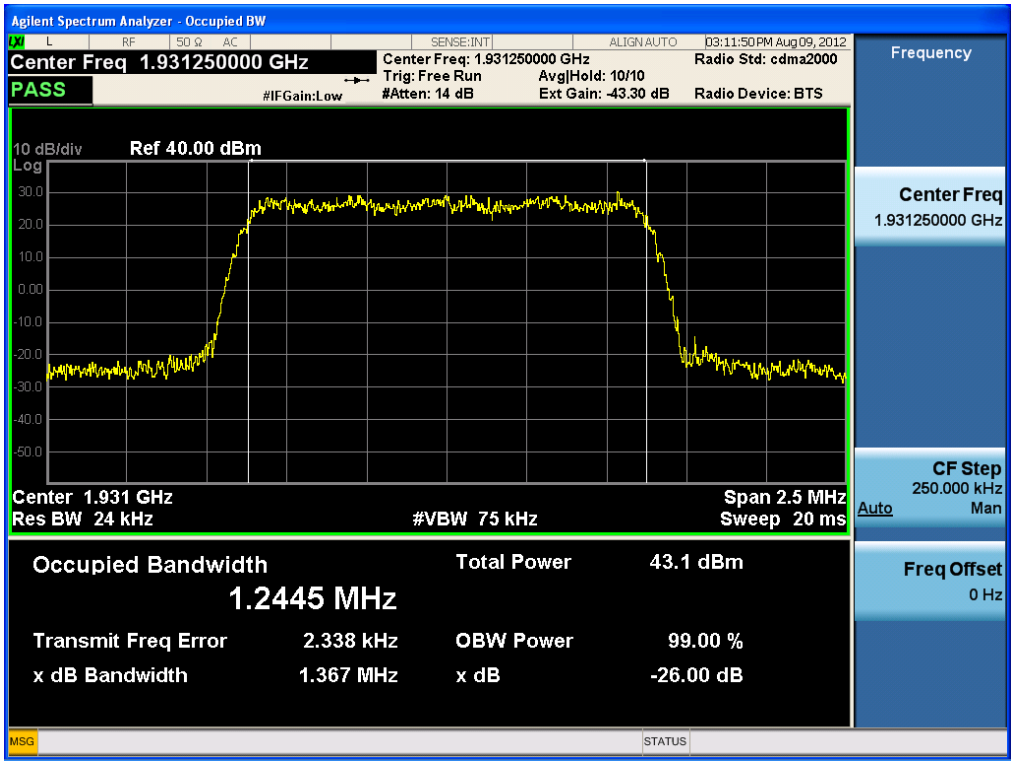
(BPSK Middle Channel)



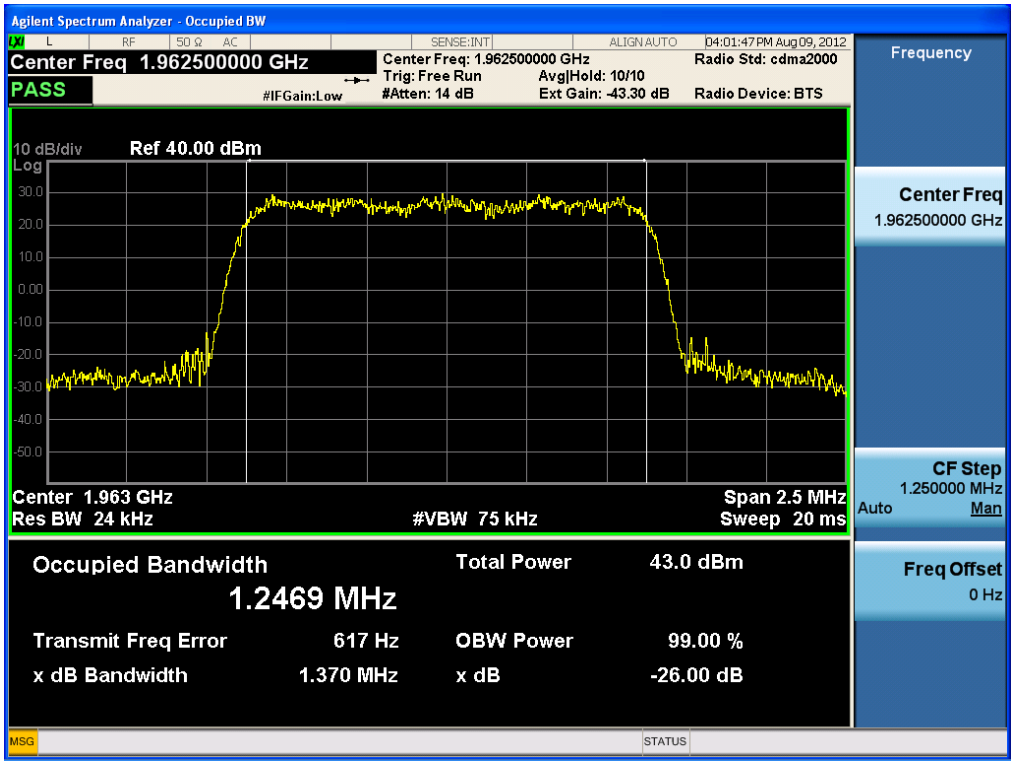
(BPSK High Channel)



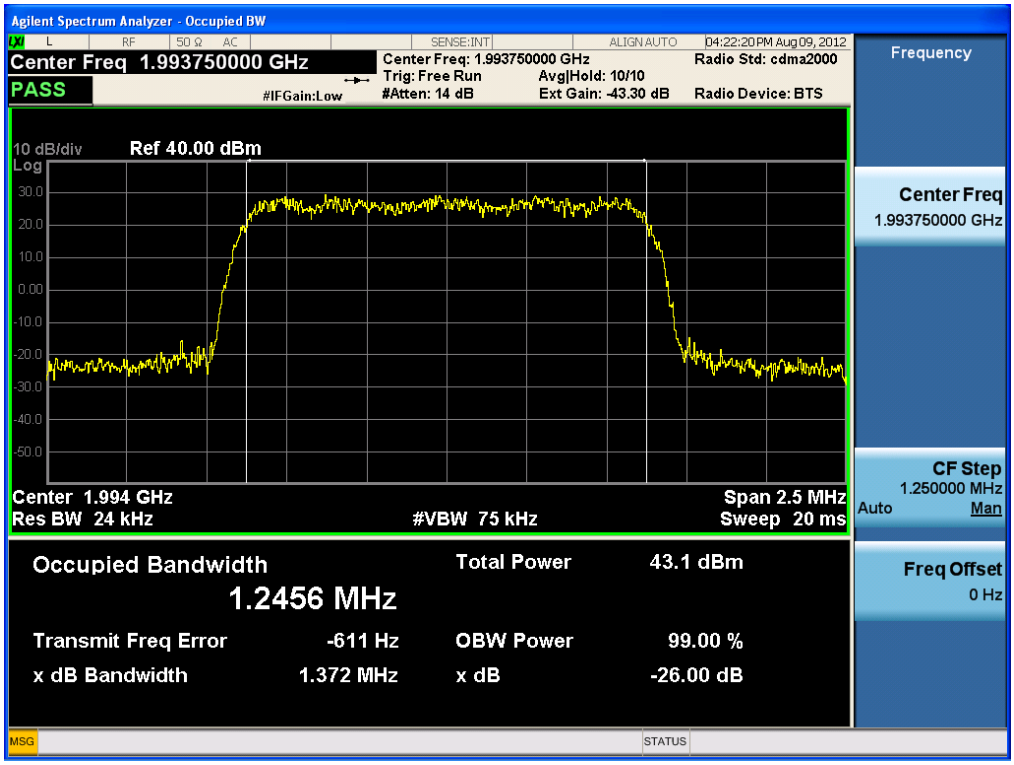
(QPSK Low Channel)



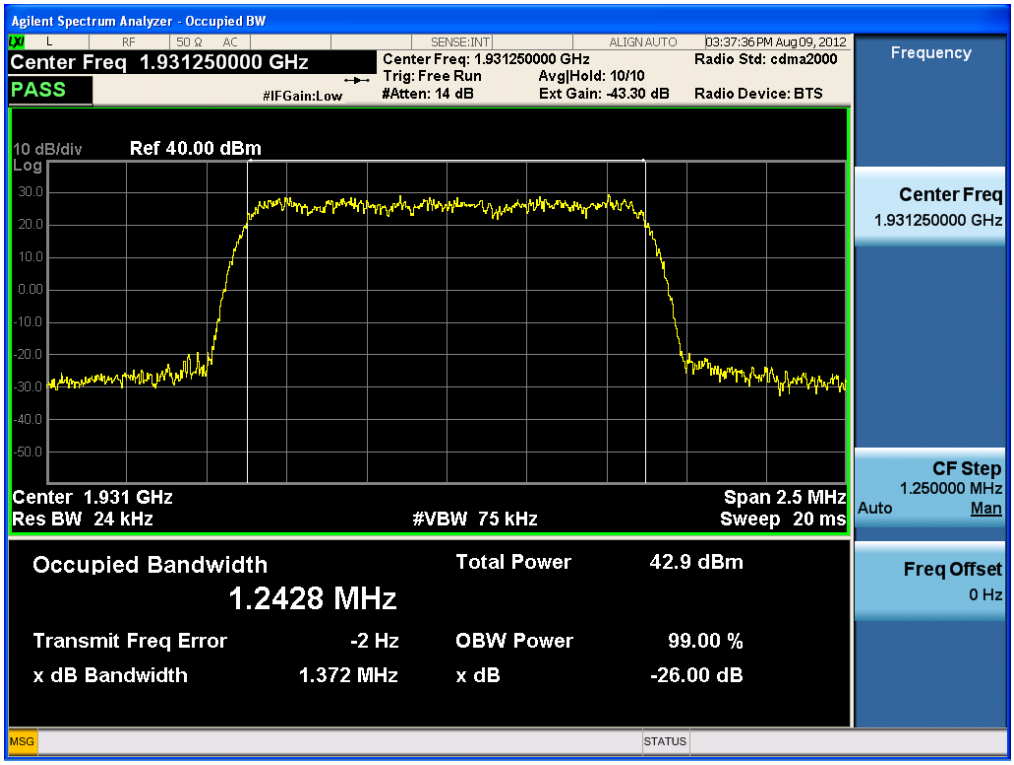
(QPSK Middle Channel)



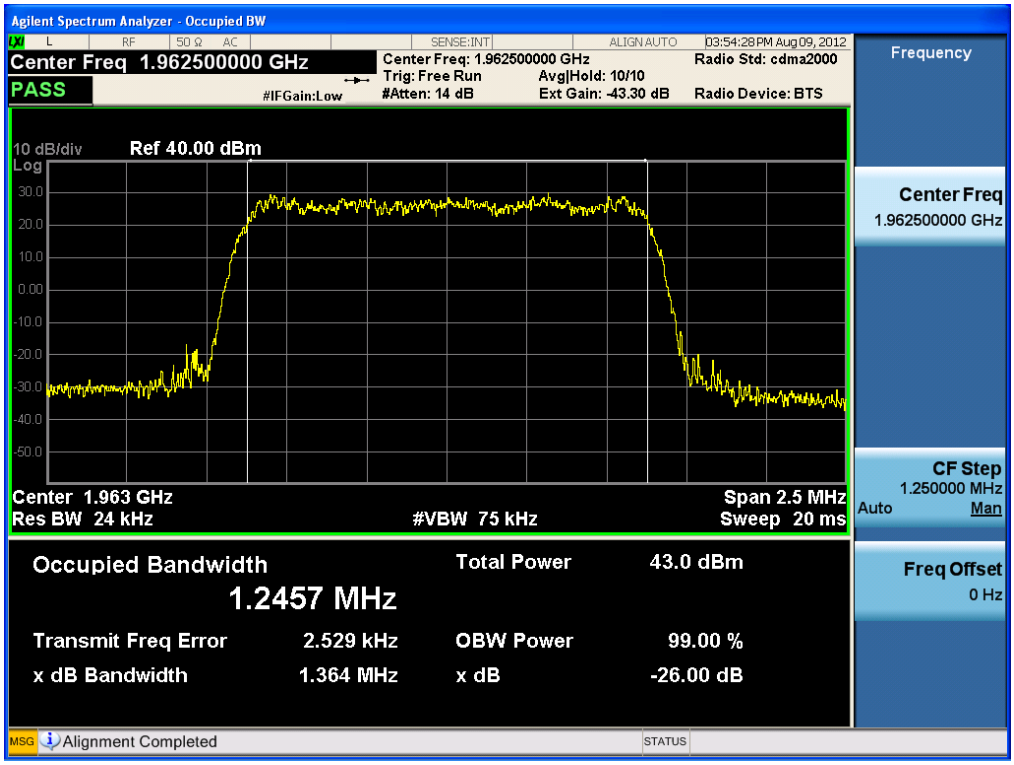
(QPSK High Channel)



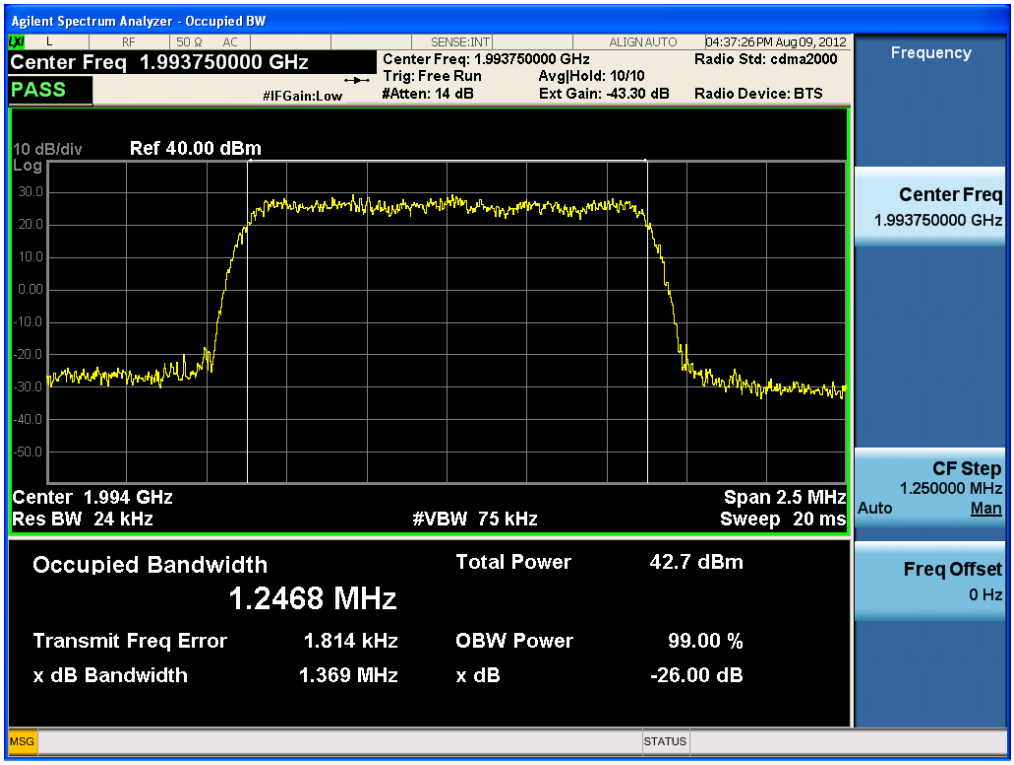
(16QAM Low Channel)



(16QAM Middle Channel)

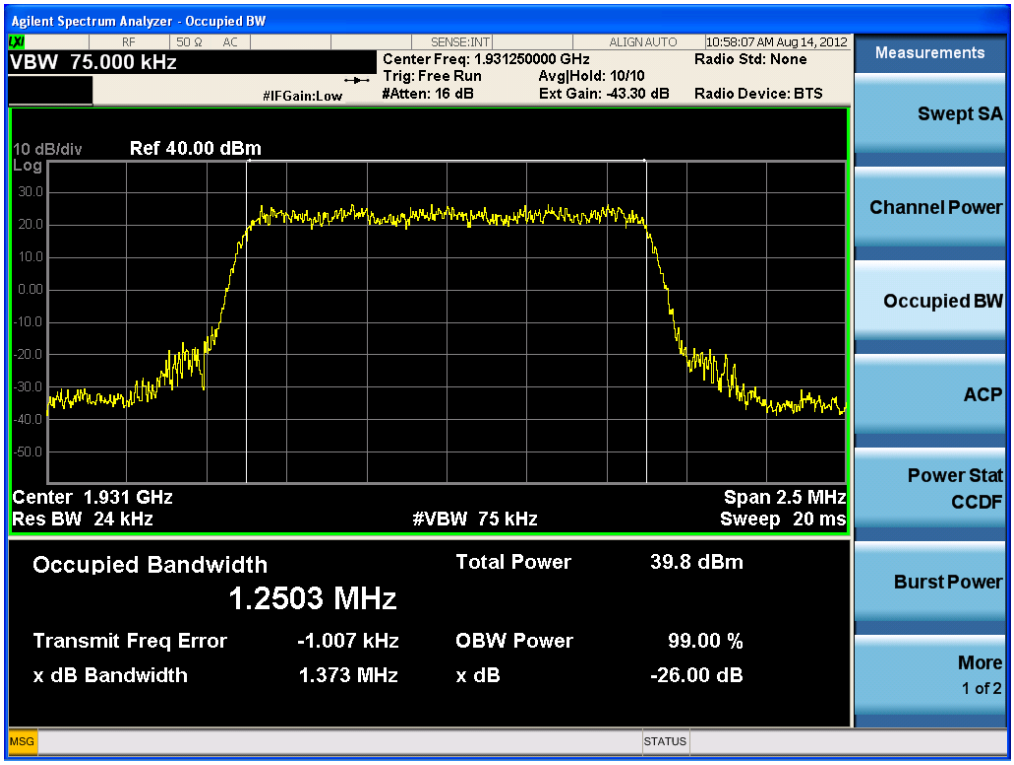


(16QAM High Channel)

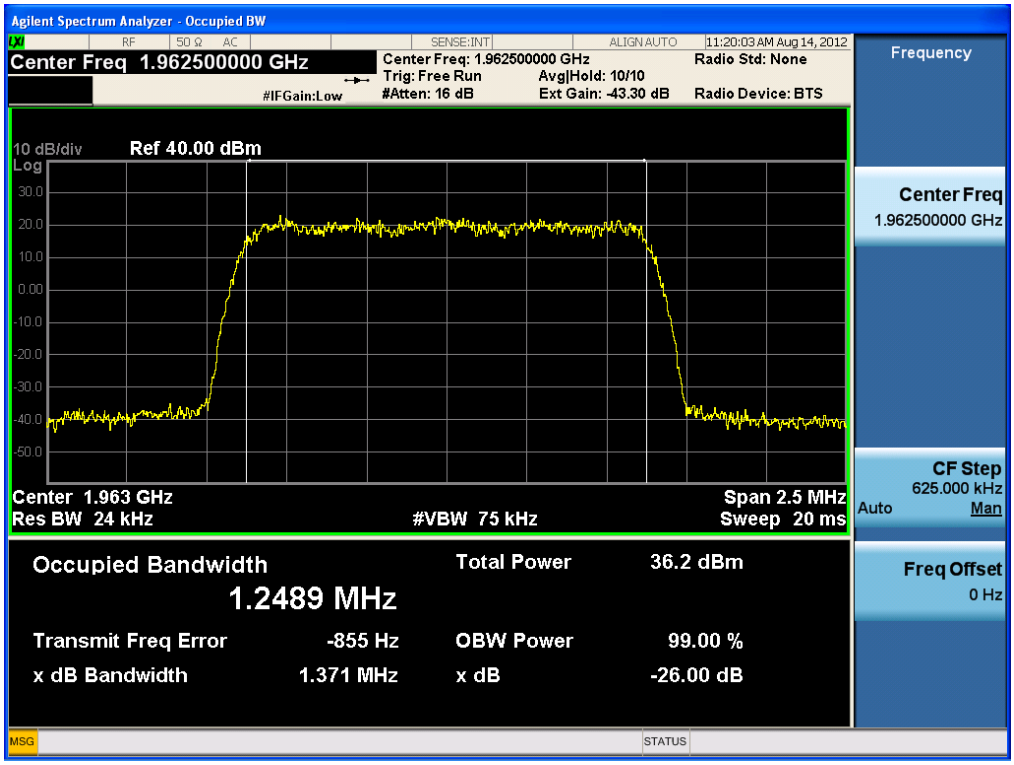


. Plot Data for CDMA 2T mode – 1 Carrier , Output Port 0

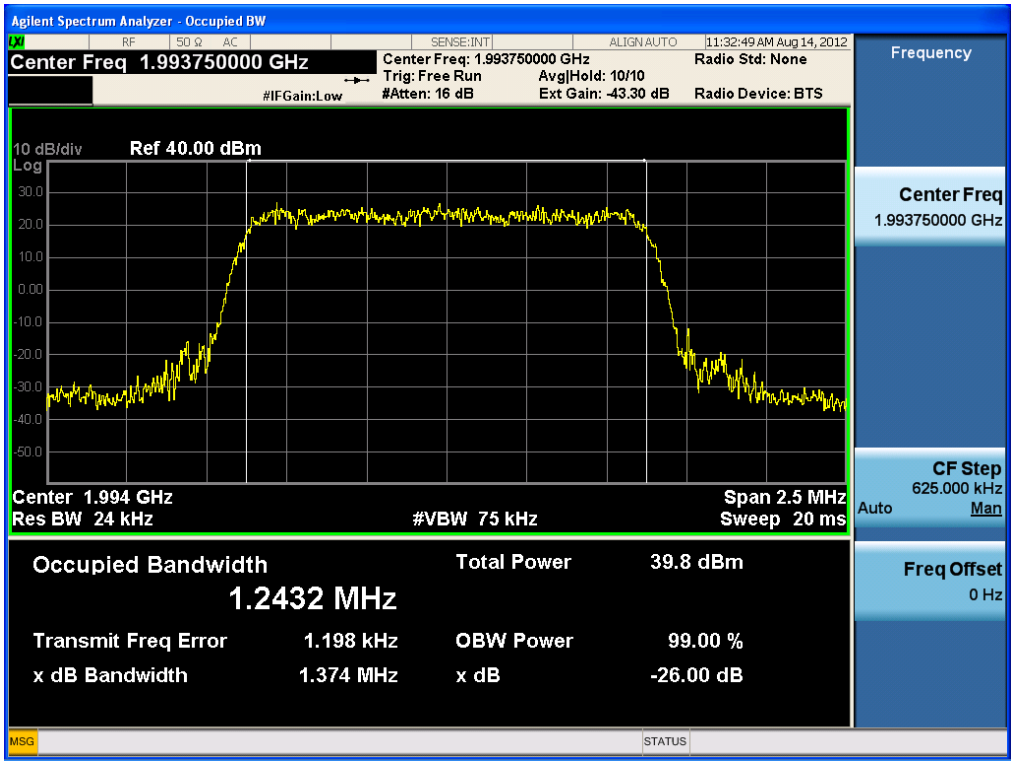
(BPSK Low Channel)



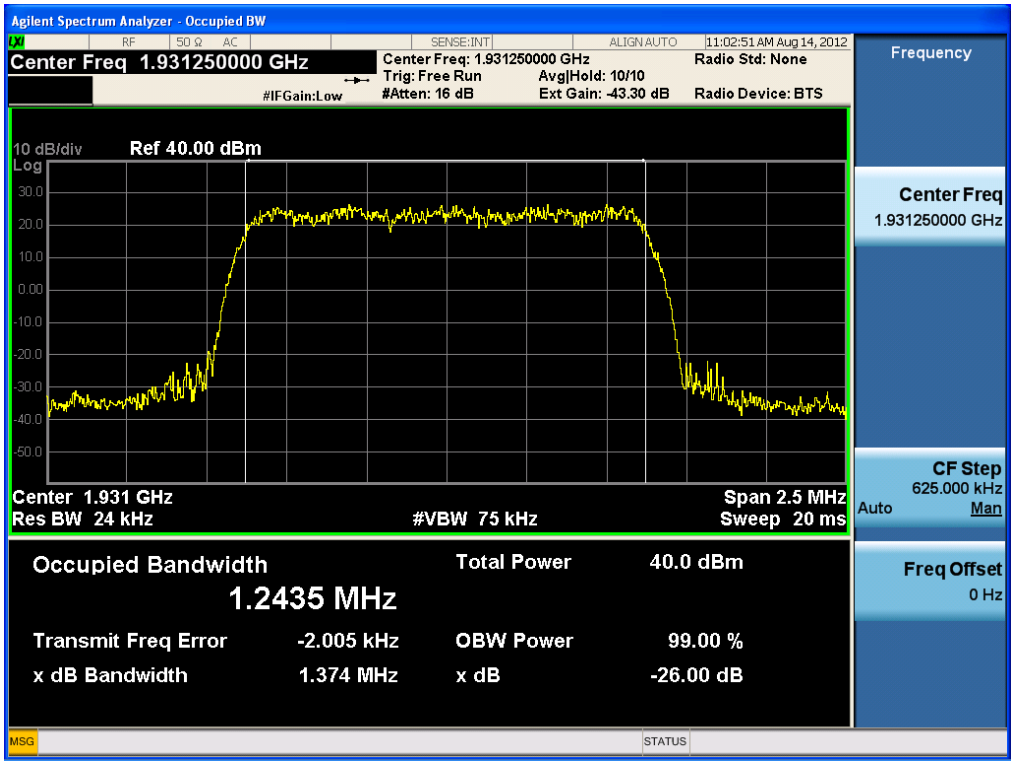
(BPSK Middle Channel)



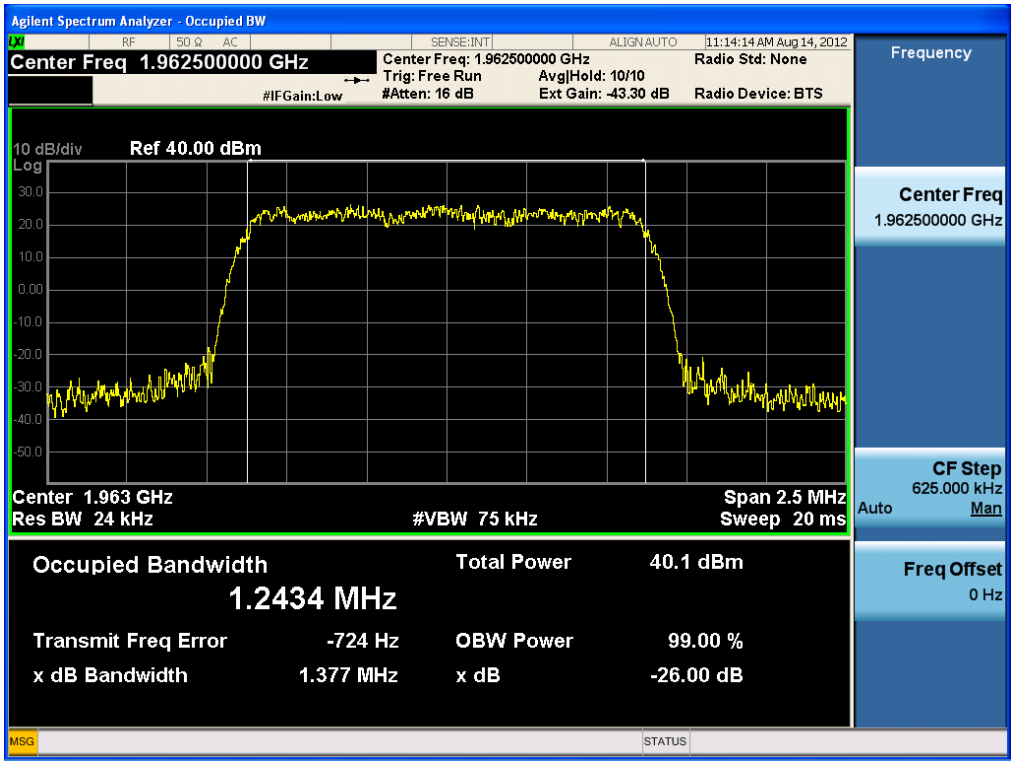
(BPSK High Channel)



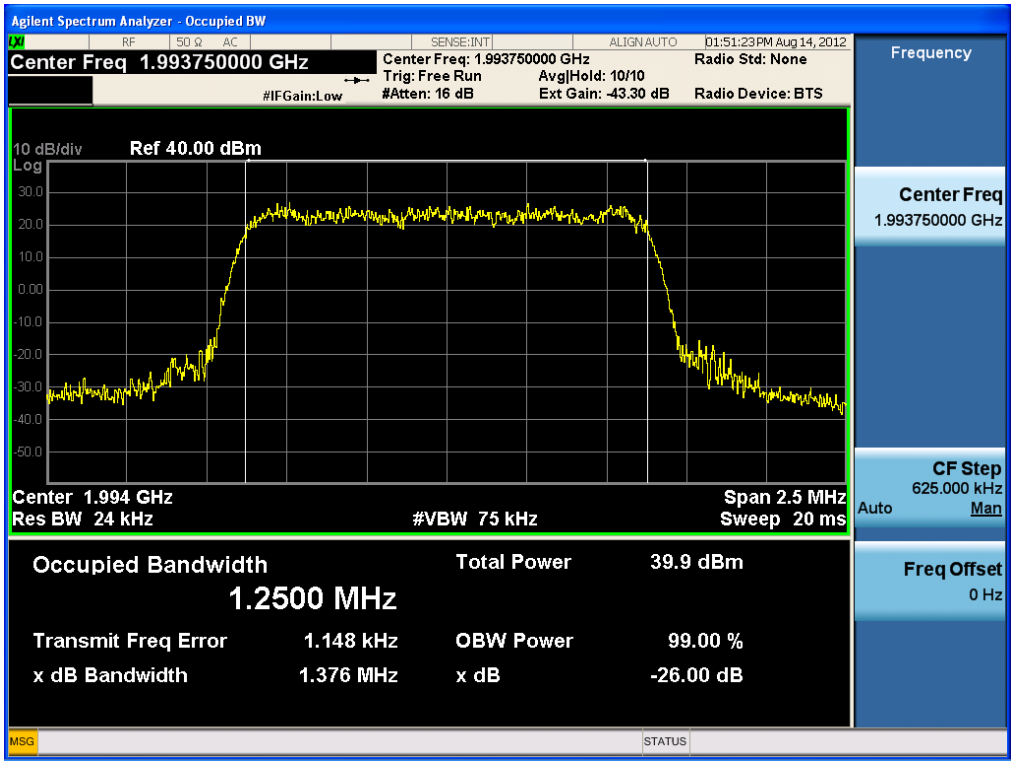
(QPSK Low Channel)



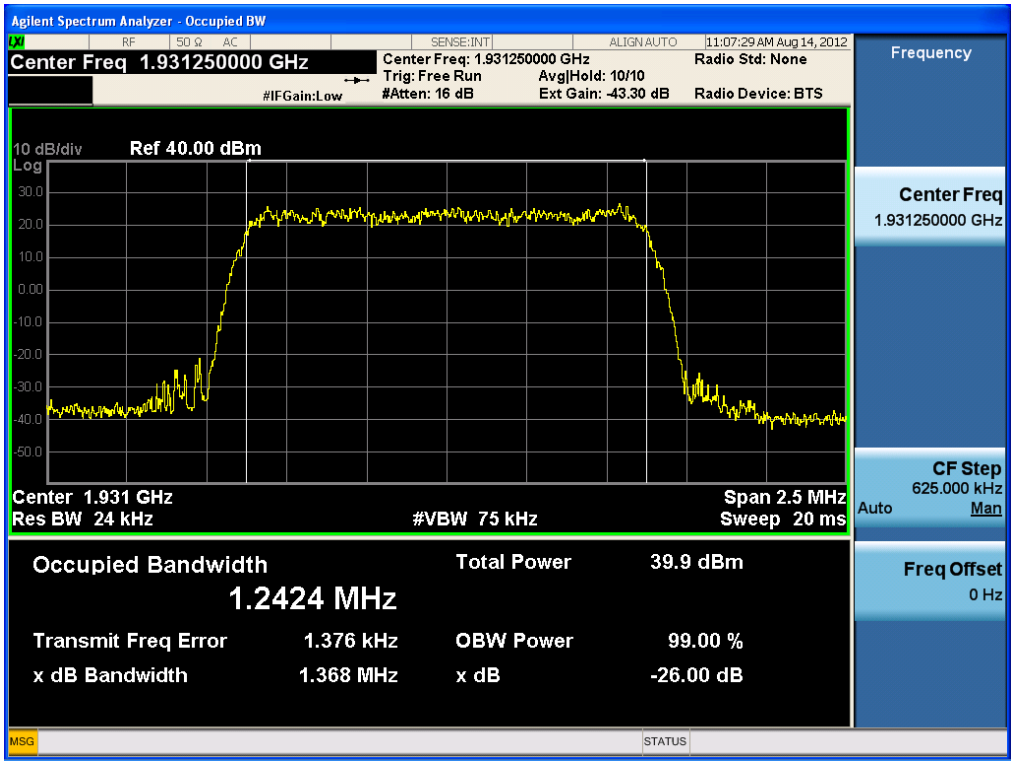
(QPSK Middle Channel)



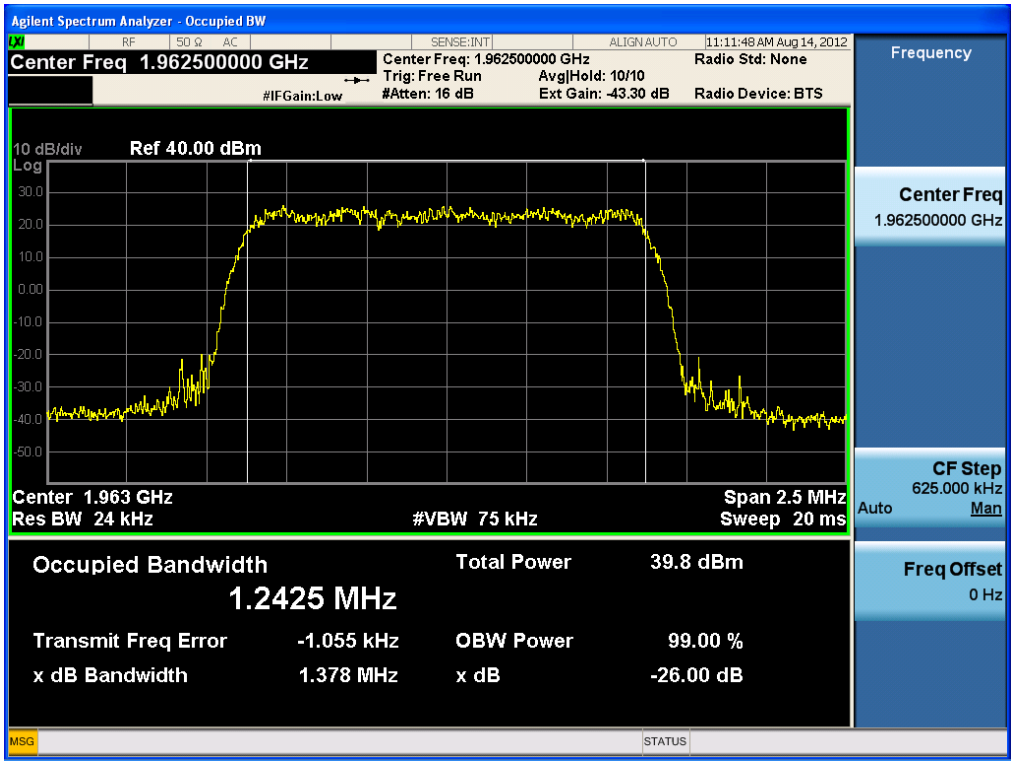
(QPSK High Channel)



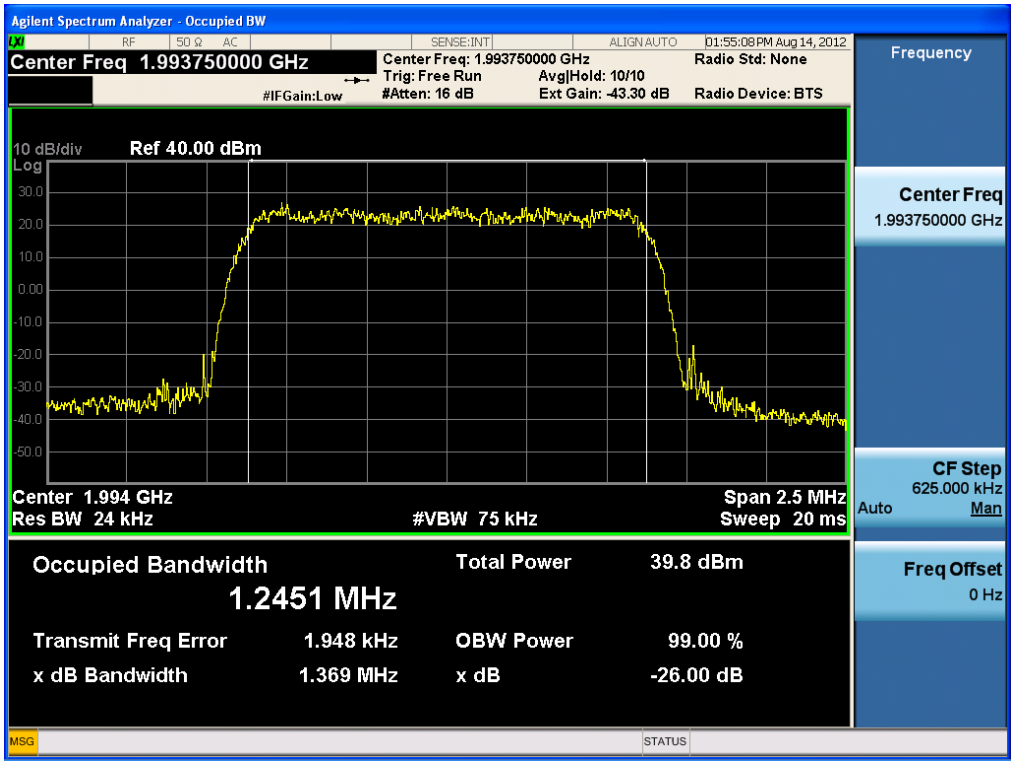
(16QAM Low Channel)



(16QAM Middle Channel)

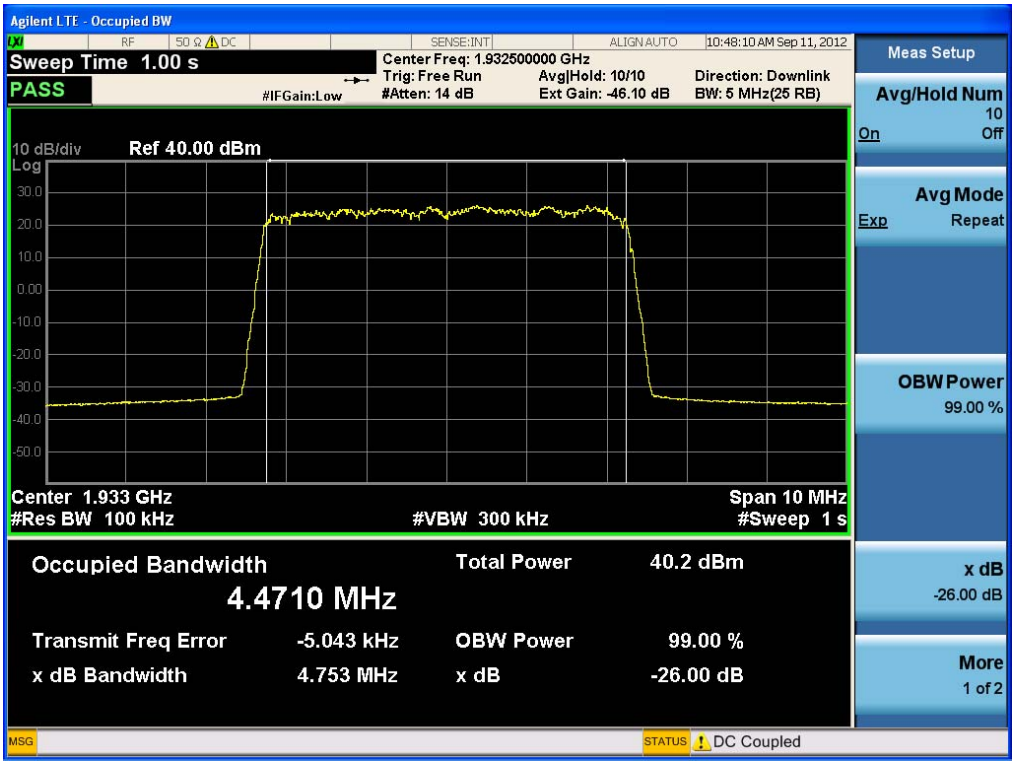


(16QAM High Channel)

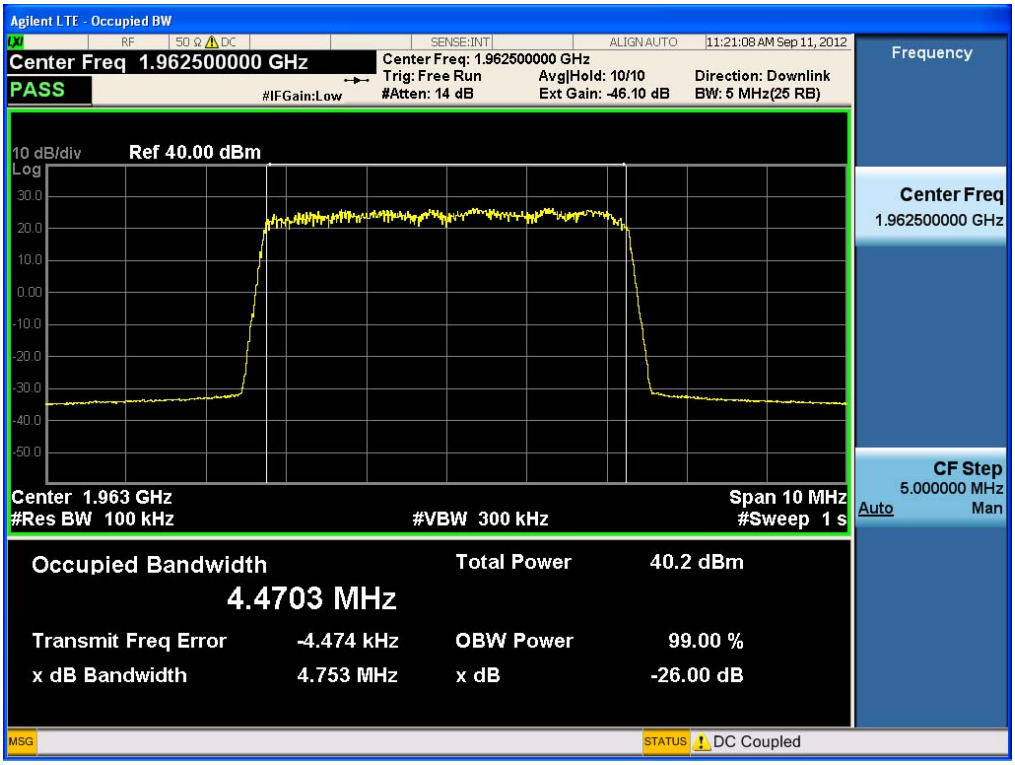


. Plot Data for LTE 5 MHz, Output Port 0

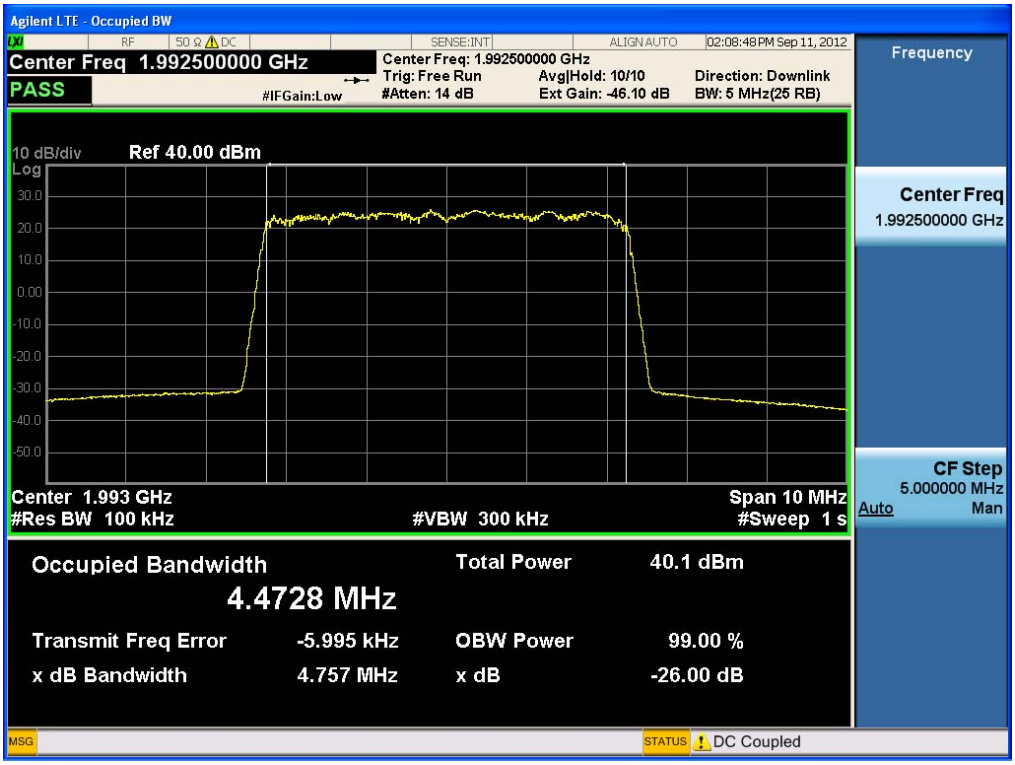
(QPSK Low Channel)



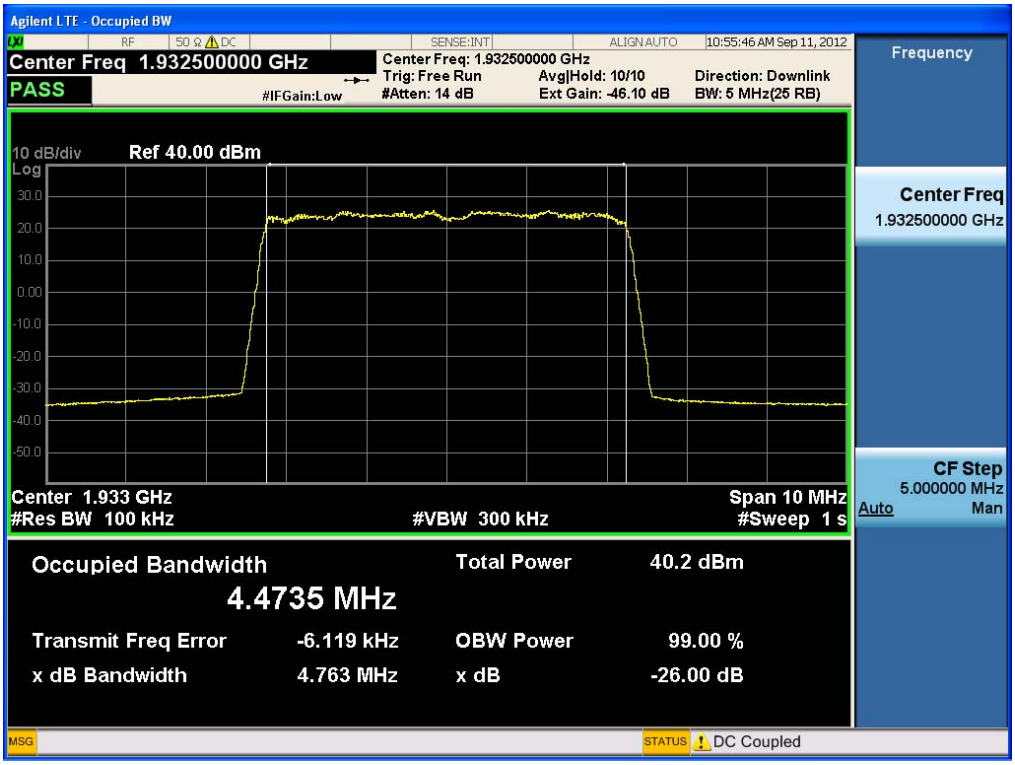
(QPSK Middle Channel)



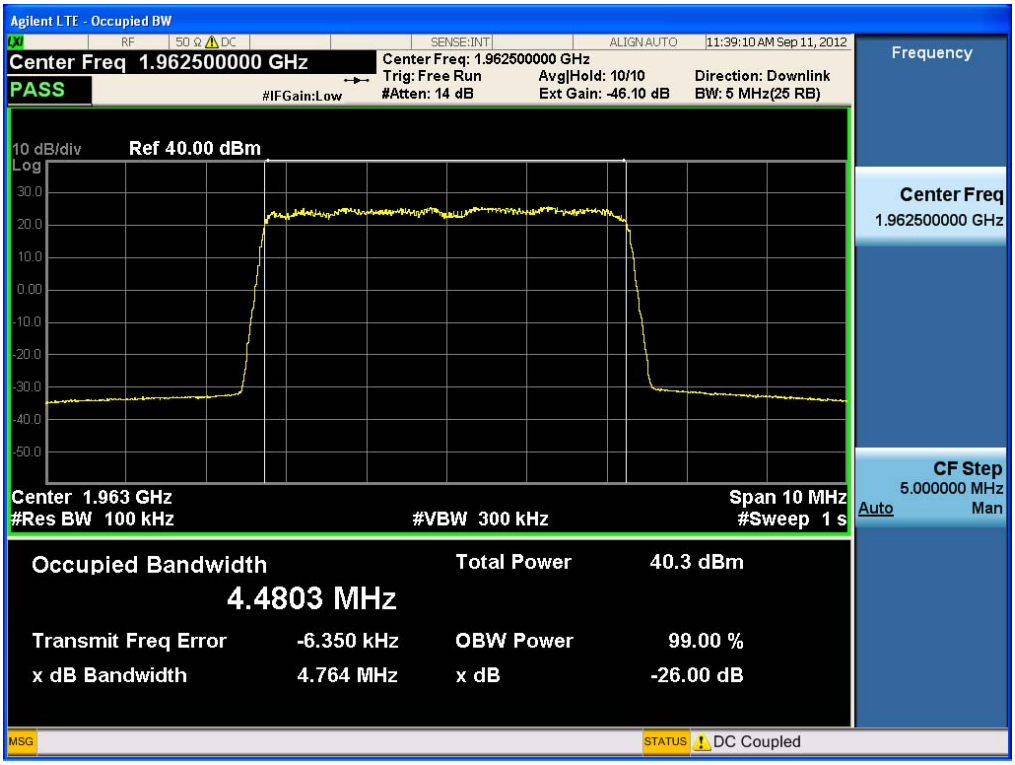
(QPSK High Channel)



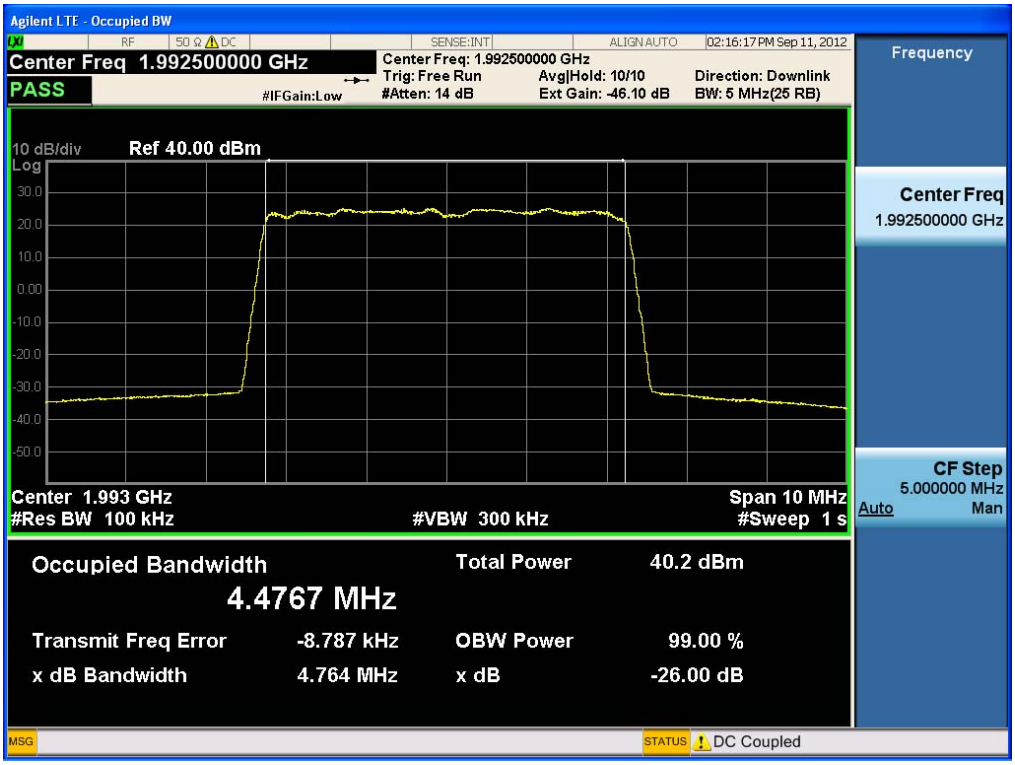
(16QAM Low Channel)



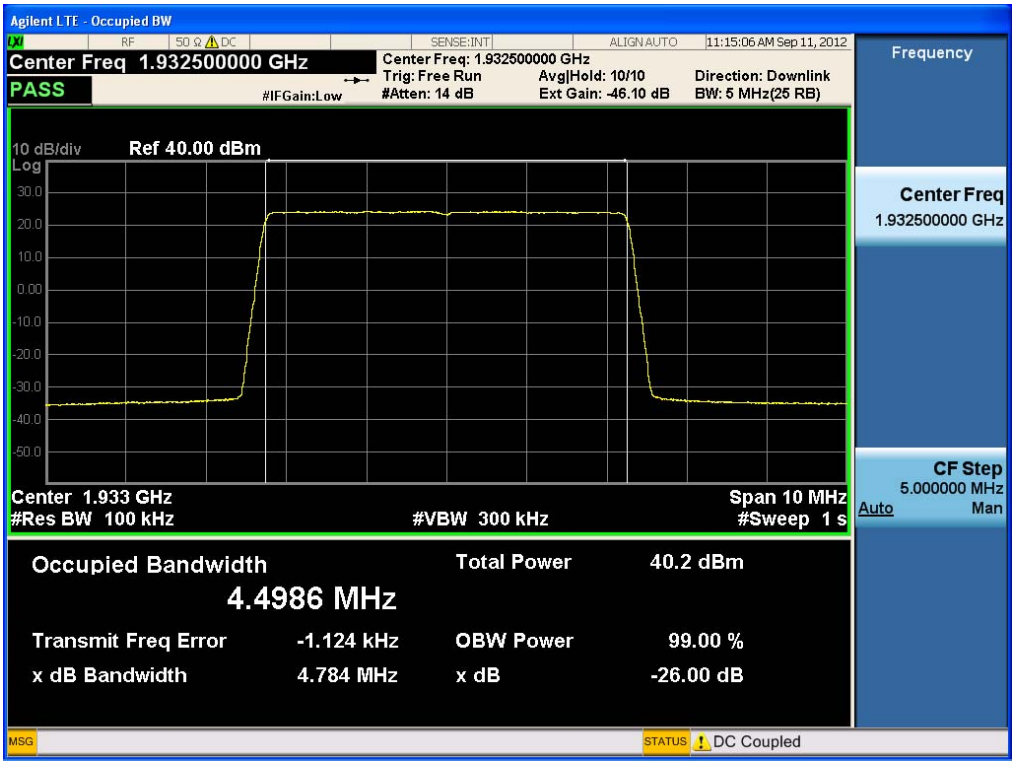
(16QAM Middle Channel)



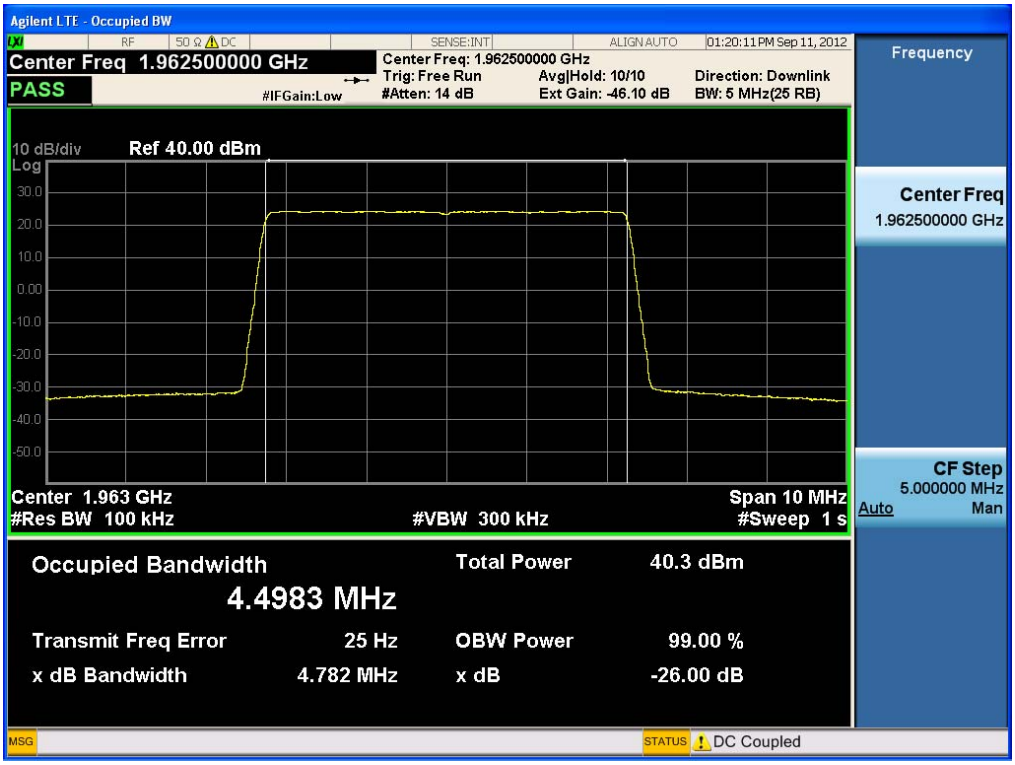
(16QAM High Channel)



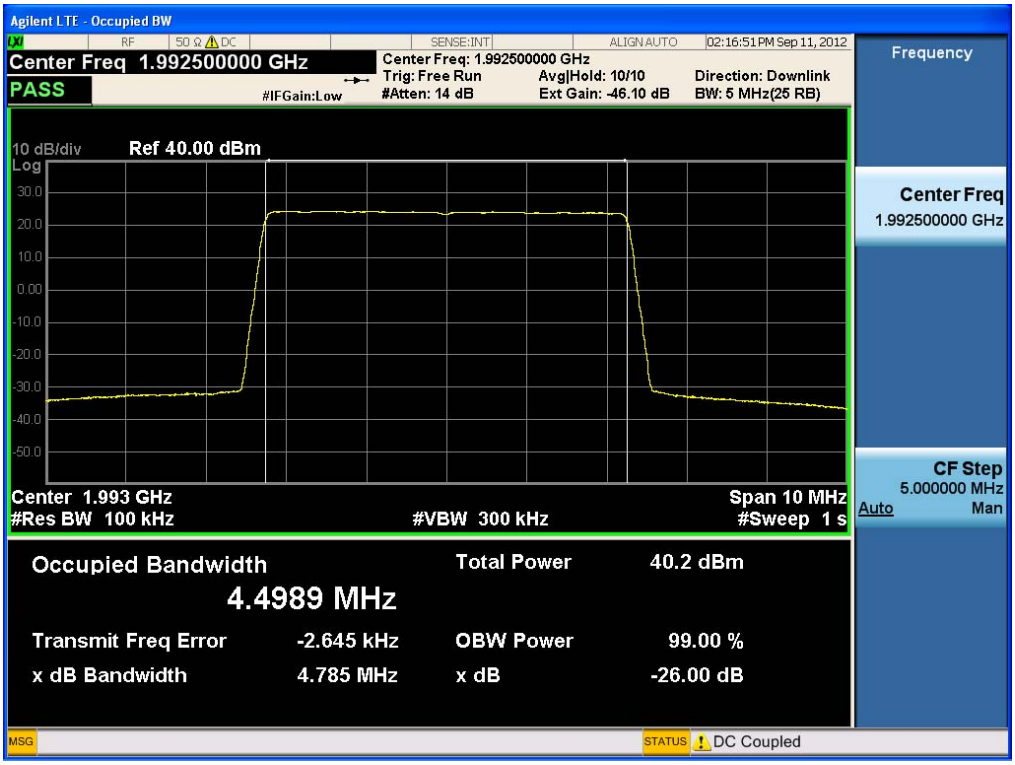
(64QAM Low Channel)



(64QAM Middle Channel)

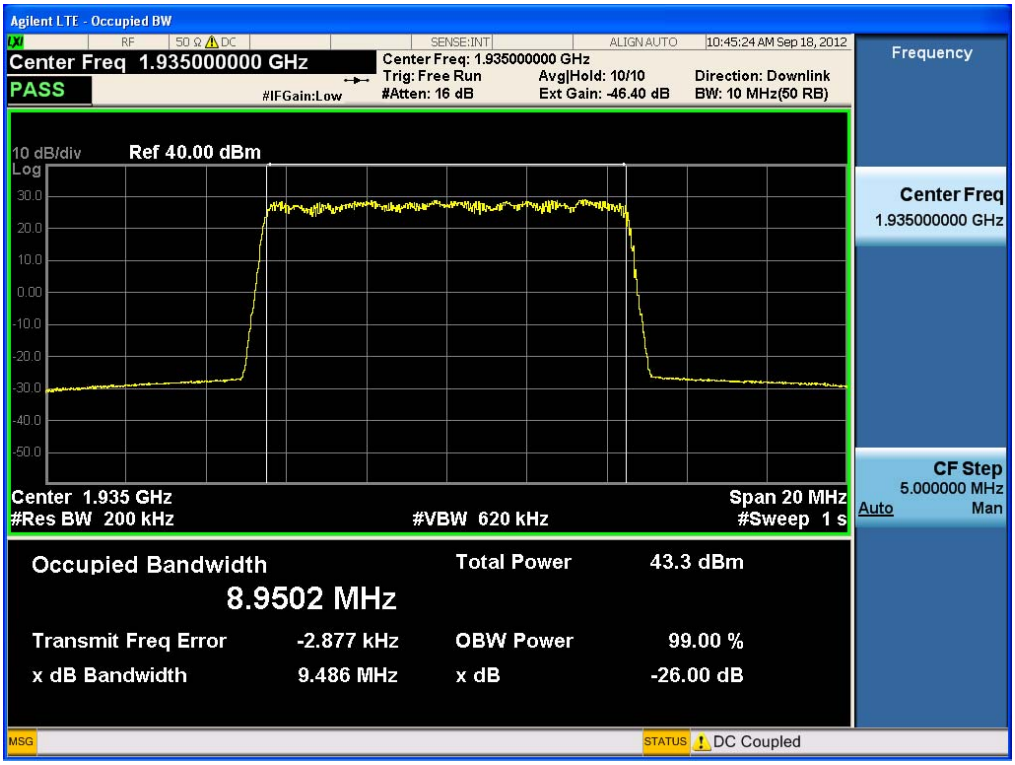


(64QAM High Channel)

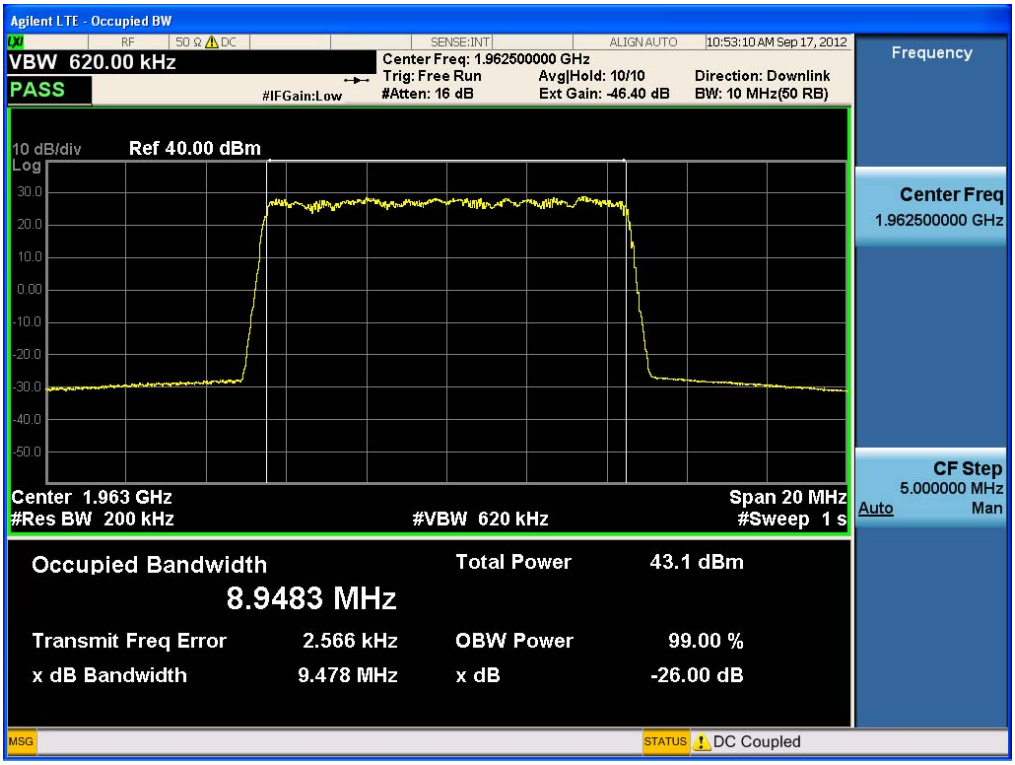


. Plot Data for LTE 10MHz, Output Port 0

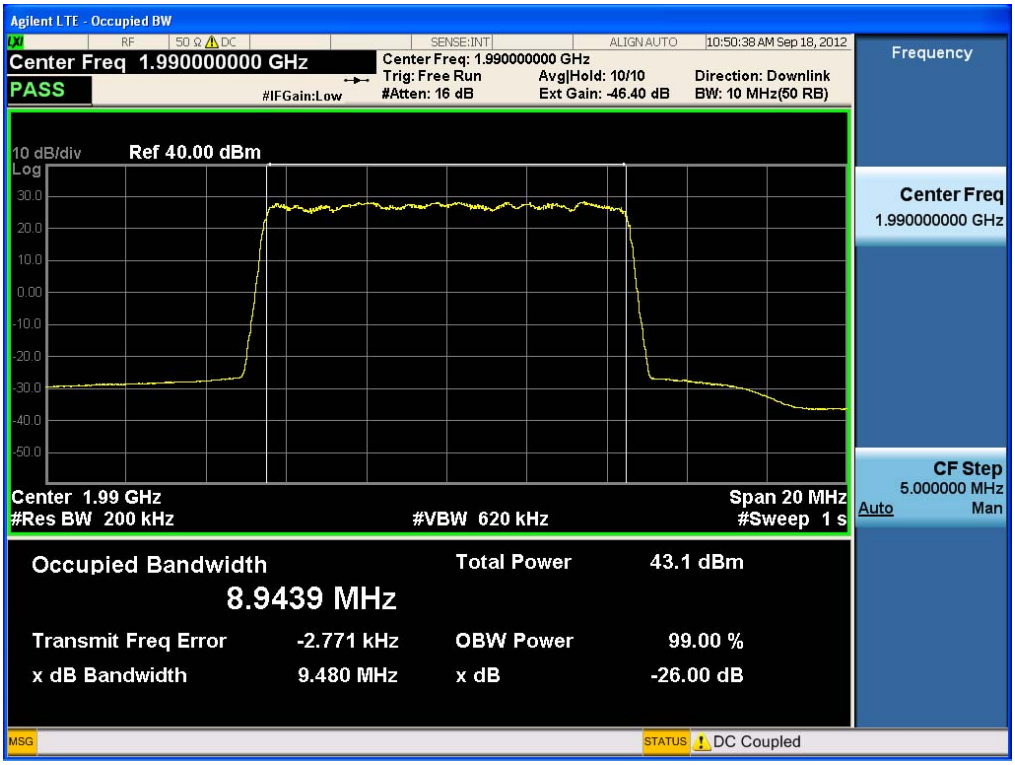
(QPSK Low Channel)



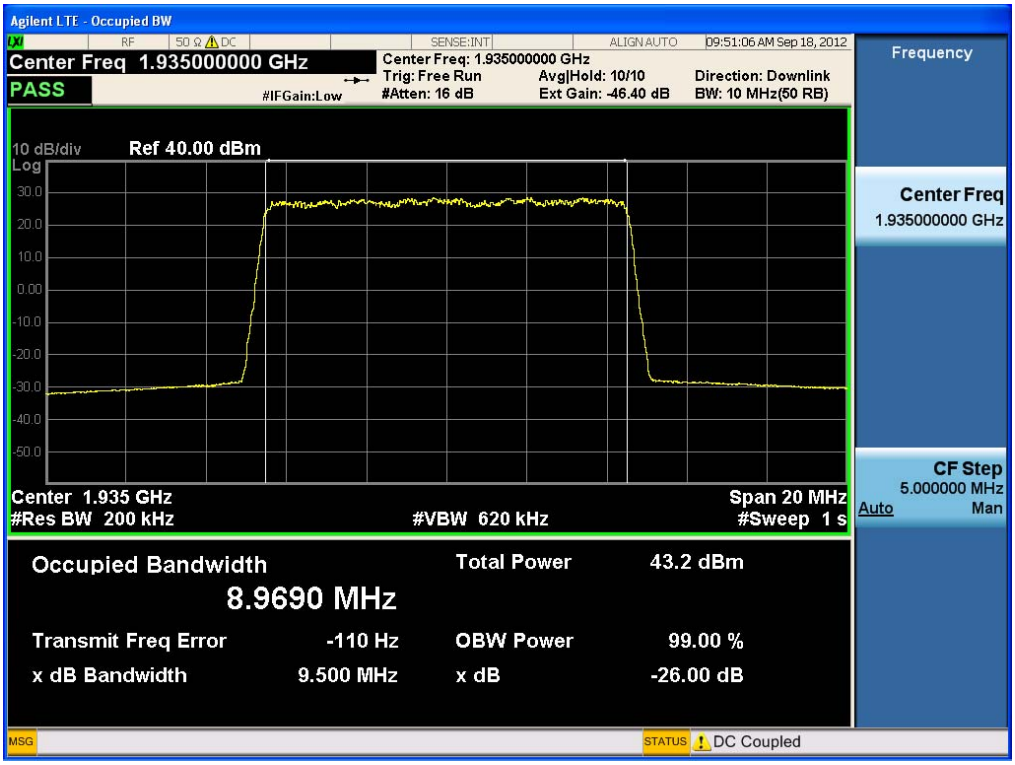
(QPSK Middle Channel)



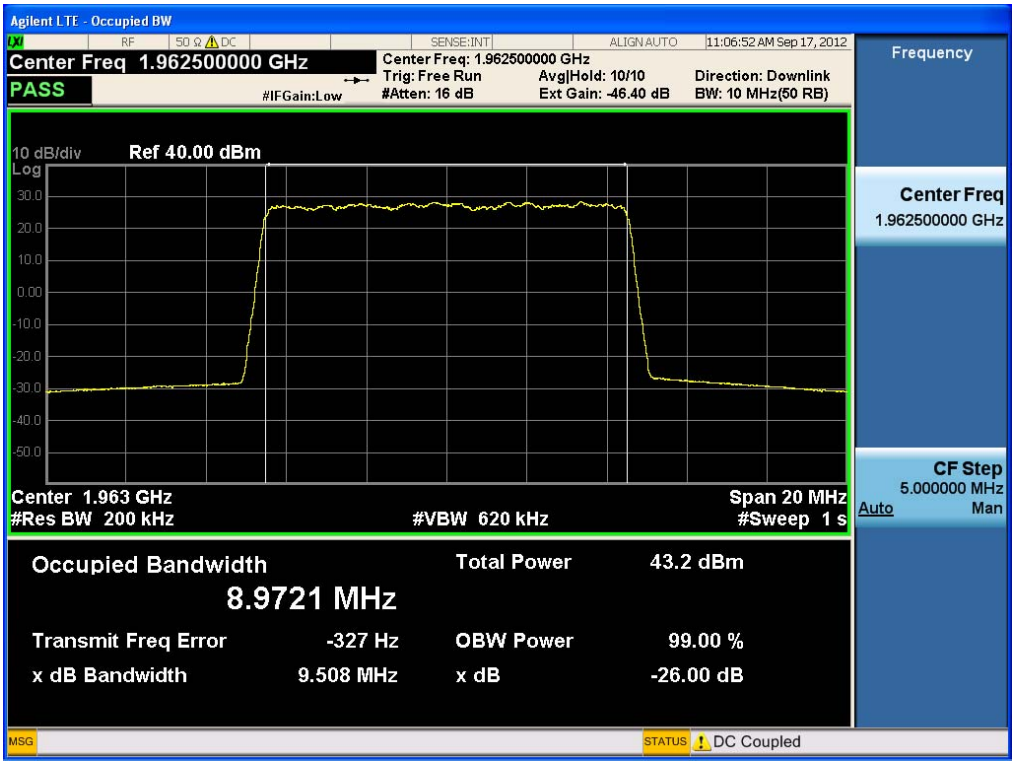
(QPSK High Channel)



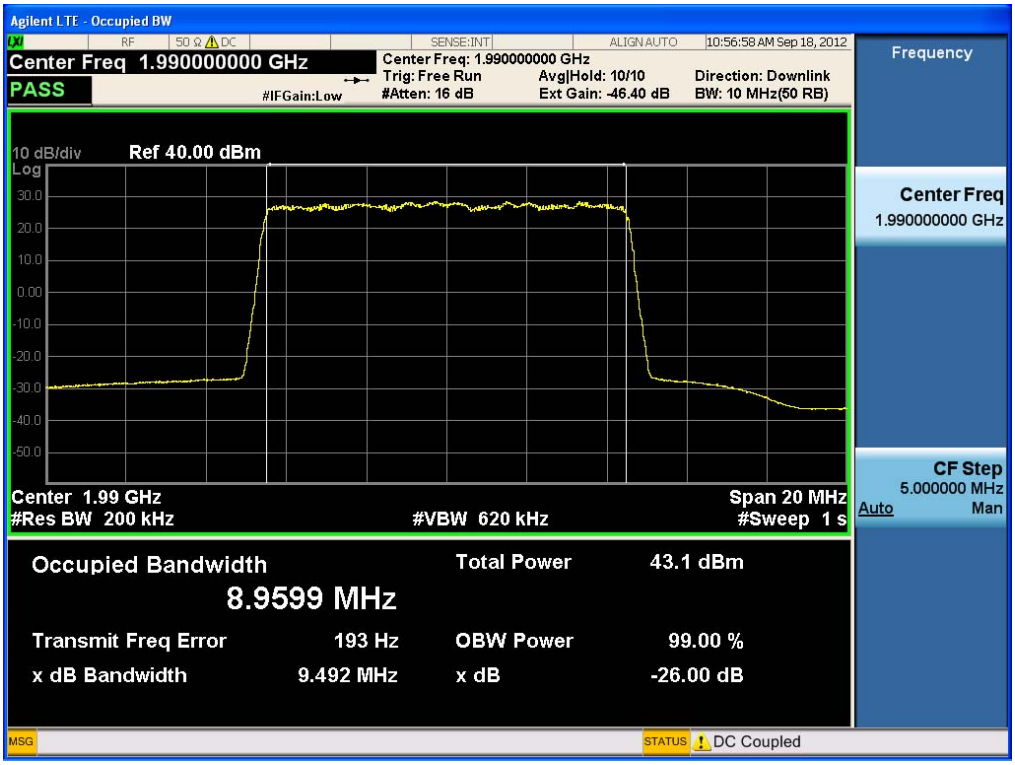
(16QAM Low Channel)



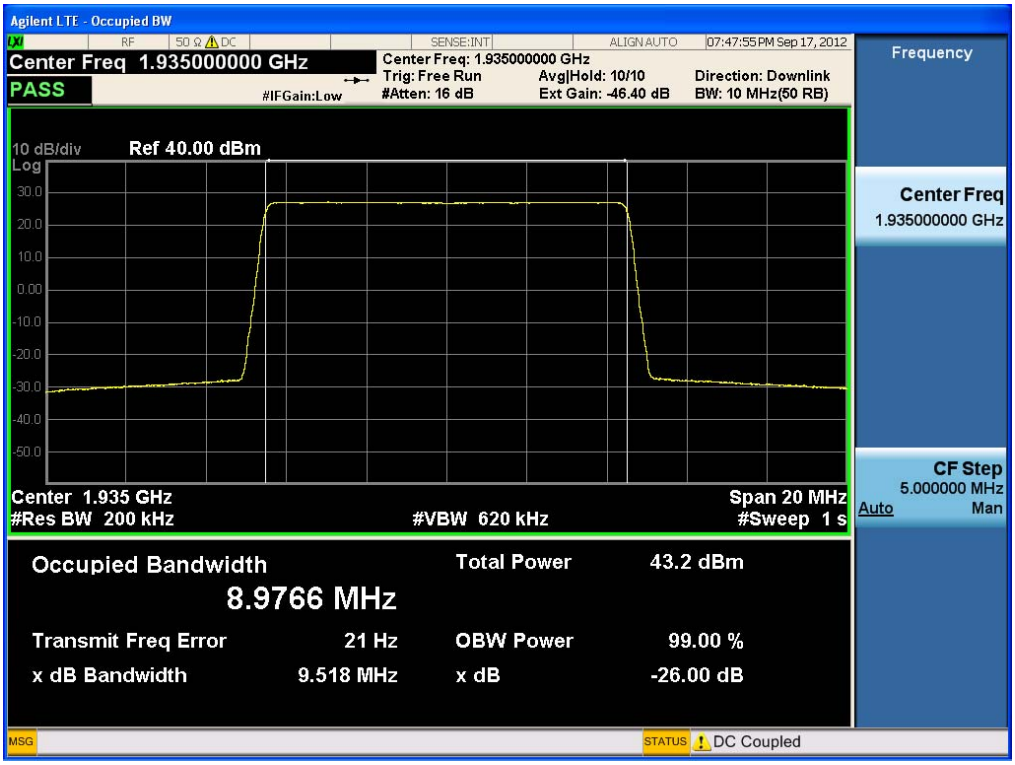
(16QAM Middle Channel)



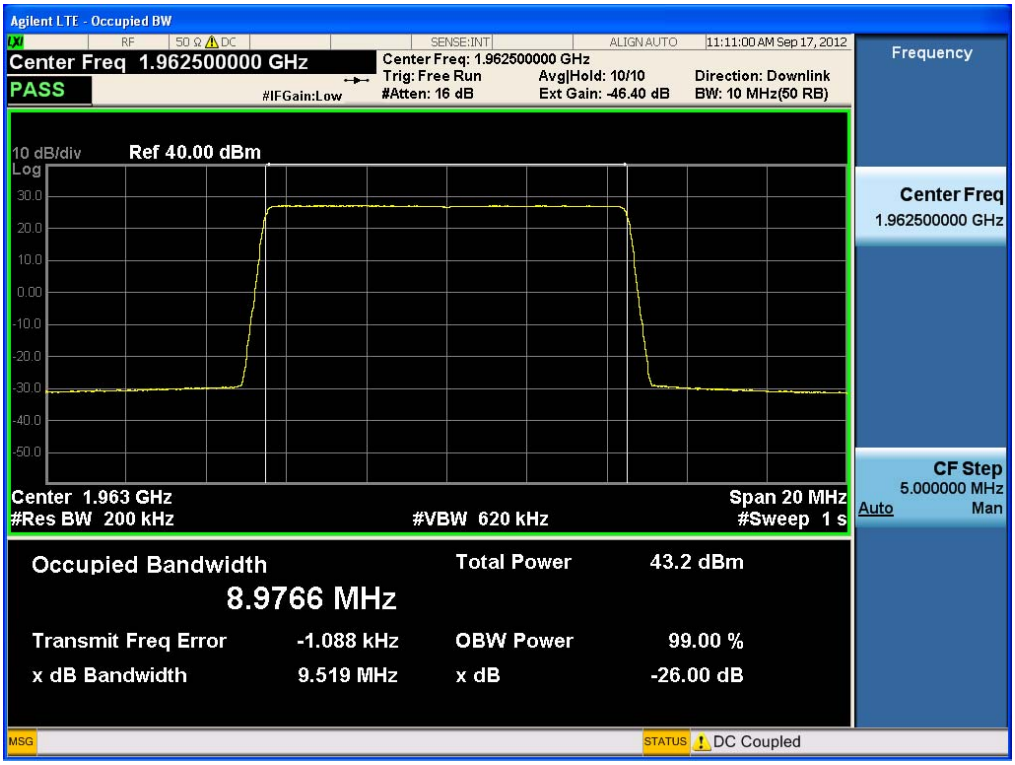
(16QAM High Channel)



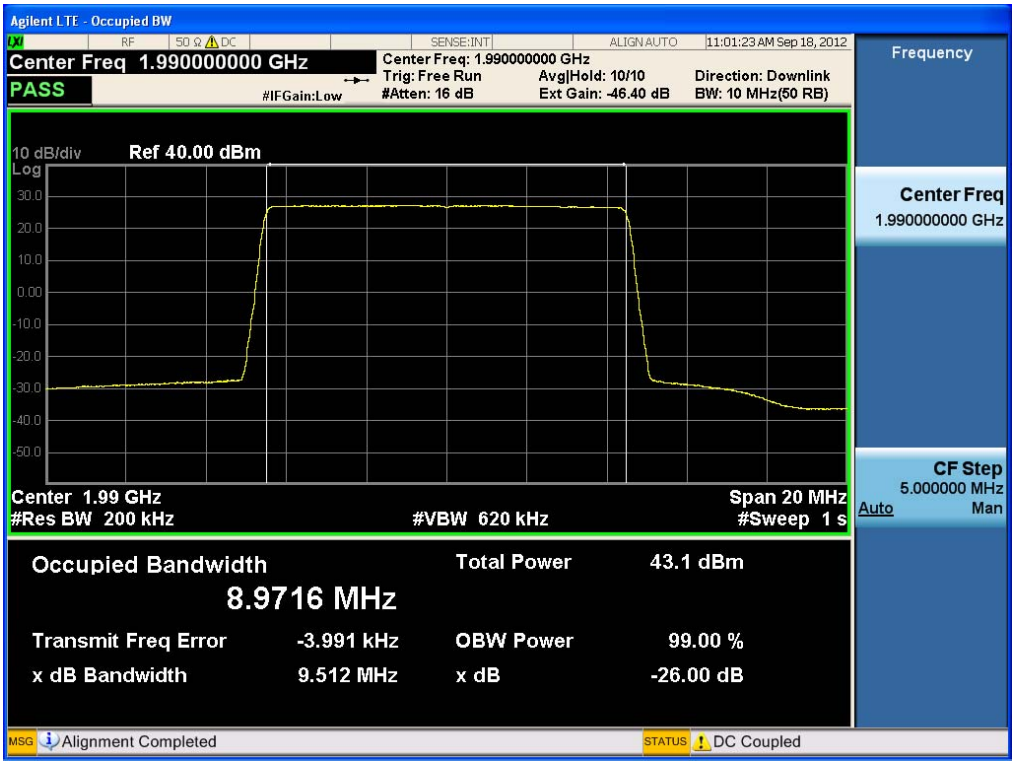
(64QAM Low Channel)



(64QAM Middle Channel)



(64QAM High Channel)



7. SPURIOUS EMISSION AT ANTENNA TERMINAL

7.1. Applicable Standard

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in §2.1051

According to FCC § 24.238, (a) On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmit power (P) by a factor of at least 43+10* logP dB.

7.2. Test Equipment List and Details

Manufacturer	Model / Equipment	Serial No.	Calibration Due
Agilent	N9020A /Signal Analyzer	US46220219	05/02/2013
Agilent	6674A / DC Power Supply	3501A00901	05/02/2013
WEINSCHEL	67-30-33 / Attenuator	BU5347	11/07/2012
WEINSCHEL	67-30-33 / Attenuator	BR0530	11/07/2012
WEINSCHEL	AF9003-69-31 / Attenuator	11787	11/07/2012
WEINSCHEL	AF9003-69-31 / Attenuator	5701	11/07/2012

7.3. Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation.

The resolution bandwidth of the spectrum analyzer was set at 1MHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.

The conducted emission level is meaured at each antenna port and then summed mathmatically to determine the total emission level from the device.

7.4. Test Result

: Pass