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Report On

FCC and IC Testing of the
Ericsson AB (1900 MHz) RRUS 12 B2 KRC 161 299/2 Remote Radio
Unit In accordance with FCC CFR 47 Part 24 and Industry Canada
RSS-133: Issue 6

COMMERCIAL-IN-CONFIDENCE

FCC ID: TA8AKRC161299-2

IC ID: 287AB-AS1612992

PREPARED BY

Guangdi Dong
Project Engineer

APPROVED BY

Matthew Russell
Authorised Signatory

DATED

30 June 2014

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SECTION 1

REPORT INFORMATION

1.1 REPORT DETAILS

Testing was carried out in support of a C2PC application for Grant of RRUS 12 B2 KRC 161 299/2 to include LTE 3 Carriers configuration and Hardware update.

Manufacturer	Ericsson AB
Address	Isafjordsgatan 10 SE-164 80 Stockholm 16480 Sweden
Product Name	RRUS 12 B2
Product Number	KRC 161 299/2
IC Model Name	AS1612992
Serial Number(s)	CB4S987897
Software Version	CXP 901 096/14 Rev R48ZN
Hardware Version	R1F
Test Specification/Issue/Date	FCC CFR 47 Part 24: 2013 RSS-133 Issue 6: 2013
Start of Test	19 May 2014
Finish of Test	18 June 2014
Name of Engineer(s)	Guangdi Dong
Related Document(s)	ANSI C63.4: 2009 FCC CFR 47 Part 2: 2013 Industry Canada RSS-GEN Issue 3: 2010

1.2 BRIEF SUMMARY OF RESULTS

A brief summary of results for each configuration, in accordance with FCC CFR 47 Part 2, Part 24 and RSS-133 is shown below.

Section	Spec Clause			Test Description	Result
	Part 2	Part 24	RSS 133		
2.1	2.1046	24.232(a) 24.232(d)	6.4	Maximum Peak Output Power and Peak to Average Ratio – Conducted	Pass
2.2	2.1049(h)	24.238(b)	RSS-Gen 4.6.1	Occupied Bandwidth	Pass
2.3	2.1051	24.238(b)	6.5.1	Spurious Emissions at Band Edge	Pass
2.4	2.1053	24.238(a)	6.5.1	Radiated Spurious Emissions	Pass
2.5	2.1051	24.238(a)	6.5.1	Conducted Spurious Emissions	Pass
2.6	2.1055	24.235	6.3	Frequency Stability	N/T
-	-	-	6.6	Receiver Spurious Emissions	N/A

N/T – Not tested (due to C2PC)

N/A – Not Applicable

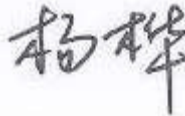
1.3 CONFIGURATION DESCRIPTION

Configuration Code	Carrier(s)	Configuration Description
G-SC	1C	GSM Single Antenna, Dual Tx, Single Carrier
G-MC 1	2C	GSM Single Antenna, Dual Tx, Multi Carrier x2
G-MC 2	3C	GSM Single Antenna, Dual Tx, Multi Carrier x3
G-MC 3	4C	GSM Single Antenna, Dual Tx, Multi Carrier x4
W-SC	1C	WCDMA Single Antenna, Single Carrier
W-MC 1	2C	WCDMA Single Antenna, Multi Carrier x2
W-MC 2	4C	WCDMA Single Antenna, Multi Carrier x4
W-MIMO-SC	1C	WCDMA MIMO, Single Carrier
W-MIMO-MC 1	2C	WCDMA MIMO, Multi Carrier x2
W-MIMO-MC 2	4C	WCDMA MIMO, Multi Carrier x4
L-MIMO-SC	1C	LTE MIMO, Single Carrier
L-MIMO-MC 1	2C	LTE MIMO, Multi Carrier x2
L-MIMO-MC 2	3C	LTE MIMO, Multi Carrier x3
G+W-MC 1	1G+1W	GSM+WCDMA Single Antenna, One Tx, 1GSM+1WCDMA
G+W-MC 2	4G+4W	GSM+WCDMA Single Antenna, One Tx, 4GSM+4WCDMA
G+W-MIMO-MC 1	1G+1W	GSM+WCDMA MIMO, 1GSM+1WCDMA
G+W-MIMO-MC 2	2G+4W	GSM+WCDMA MIMO, 2GSM+4WCDMA
G+W-MIMO-MC 3	2G+1W	GSM+WCDMA MIMO, 2GSM+1WCDMA
G+L-MC 1	1G+1L	GSM+LTE Single Antenna, One Tx, 1GSM+1LTE
G+L-MC 2	4G+2L	GSM+LTE Single Antenna, One Tx, 4GSM+2LTE
G+L-MC 3	4G + 3L	GSM+LTE Single Antenna, One Tx, 4GSM+3LTE
G+L-MIMO-MC 1	1G+1L	GSM+LTE MIMO, 1GSM+1LTE
G+L-MIMO-MC 2	3G+2L	GSM+LTE MIMO, 3GSM+2LTE
G+L-MIMO-MC 3	2G+1L	GSM+LTE MIMO, 2GSM+1LTE
W+L-MC 1	1W+1L	WCDMA+LTE Single Antenna, One Tx, 1WCDMA+1LTE
W+L-MC 2	2W+2L	WCDMA+LTE Single Antenna, One Tx, 2WCDMA+2LTE
W+L-MIMO-MC 1	1W+1L	WCDMA+LTE MIMO, 1WCDMA+1LTE
W+L-MIMO-MC 2	2W+2L	WCDMA+LTE MIMO, 2WCDMA+2LTE
W+L-MIMO-MC 3	2W+1L	WCDMA+LTE MIMO, 2WCDMA+1LTE

1.4 DECLARATION OF BUILD STATUS

MAIN EUT	
MANUFACTURING DESCRIPTION	Remote Radio Unit
MANUFACTURER	Ericsson AB
PRODUCT NAME	RRUS 12 B2
PART NUMBER	KRC 161 299/2
IC Model Name	AS1612992
TRANSMITTER OPERATING RANGE	TX: 1930MHz - 1990MHz RX: 1850MHz - 1910MHz
MODULATIONS	GSM: GMSK, 8-PSK, 16QAM, 32QAM, AQPSK WCDMA: QPSK, 16QAM, 64QAM LTE: QPSK, 16QAM, 64QAM
INTERMEDIATE FREQUENCIES	-
ITU DESIGNATION OF EMISSION	GSM: 245KGXW, 245KG7W WCDMA: 5M00F9W LTE: 1M40F9W, 3M00F9W, 5M00F9W, 10M0F9W, 15M0F9W, 20M0F9W
SUPPORTED CHANNEL BANDWIDTH CONFIGURATION	GSM: 250KHz WCDMA: 4.2 to 5MHz (configurable in steps of 100/200kHz) LTE: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz and 20MHz
OUTPUT POWER (RMS) (W or dBm)	Maximum 47.8dBm (60W) per port
INSTANTANEOUS BANDWIDTH	40MHz
FCC ID	TA8AKRC161299-2
IC ID	287AB-AS1612992
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	The equipment is the Radio Part of GSM / WCDMA / LTE / GSM & WCDMA / GSM & LTE / WCDMA & LTE MSR Base Station

Signature



Date

20 June 2014

D of B S Serial No

75926854/01

No responsibility will be accepted by TÜV SÜD Product Service UK Limited as to the accuracy of the information declared in this document by the manufacturer.

1.5 PRODUCT INFORMATION

1.5.1 Technical Description

The Equipment Under Test (EUT) RRUS 12 B2, KRC 161 299/2 is an Ericsson AB Remote Radio Unit working in the public mobile service 1900 band which provides communication connections to 1900 network in GSM / WCDMA / LTE Modes and GSM & WCDMA / GSM & LTE / WCDMA & LTE MSR modes. The RRUS 12 B2, KRC 161 299/2 operates from a -48V DC supply.

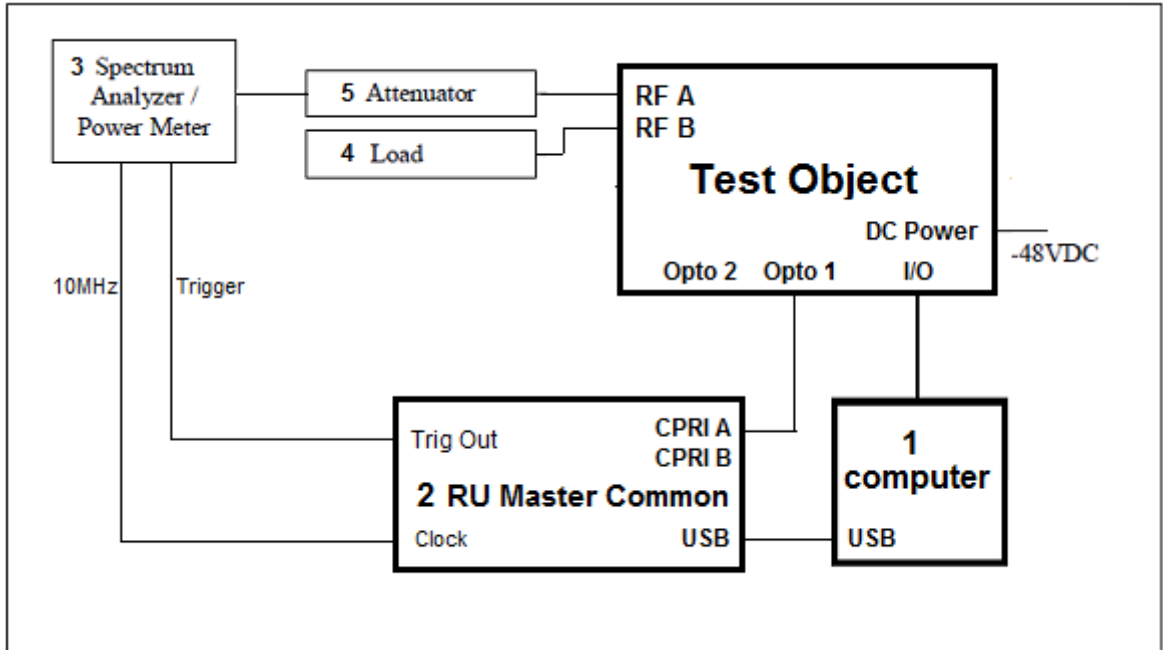
The Equipment Under Test (EUT) is shown in the photograph below. A full technical description can be found in the Manufacturer's documentation.



Equipment Under Test

1.6 TEST SETUP

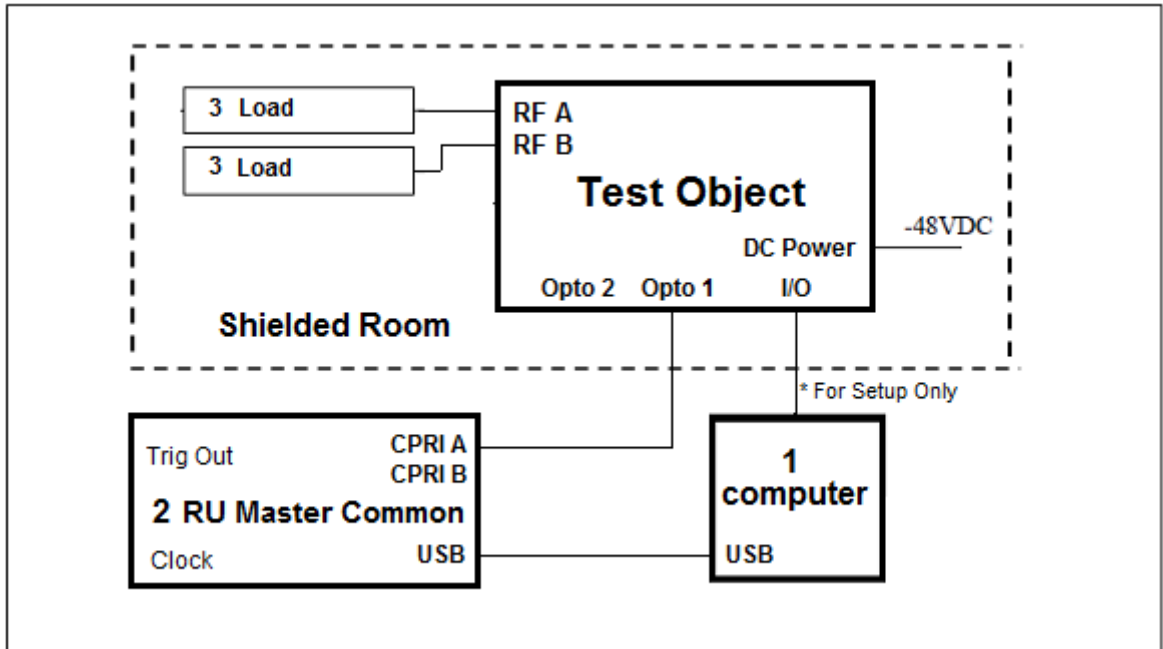
Test Setup, Conducted Measurement:



Product Name	Product Number	Version	Serial Number
RRUS 12 B2	KRC 161 299/2	R1F	CB4S987897

No.	Auxiliary Equipment	Part Number / Model Type	Version	Serial Number
1	Computer	HP EliteBook 8540w	--	CND1234642
2	RU Master Common	LPC 102 400/5	R1B	T01E368190
3	Spectrum Analyzer	FSQ26	--	100244
	MXA Signal Analyzer	N9020A	--	MY49100419
	Power Meter	NRP	--	101593
	Power Sensor	NRP-Z51	--	102309
	Power Sensor	NRP-Z51	--	102310
4	Load	TFE100	--	09121647
5	Attenuator	48-40-43-LIM	--	BR5020

Test Setup, Radiated Measurement:



Product Name	Product Number	Version	Serial Number
RRUS 12 B2	KRC 161 299/2	R1F	CB4S987897

No.	Auxiliary Equipment	Part Number / Model Type	Version	Serial Number
1	Computer	HP EliteBook 8540w	--	CND1234642
2	RU Master Common	LPC 102 400/5	R1B	T01E368190
3	Load	TFE100	--	09121647
	Load	TFZ10-3R	--	20100908079

1.7 TEST CONDITIONS

For all tests the EUT was set up in accordance with the relevant test standard and to represent typical operating conditions. Tests were applied with the EUT situated in a shielded enclosure, test laboratories or a chamber as appropriate.

The EUT was powered from a -48V DC supply.

1.8 DEVIATION FROM THE STANDARD

No deviations from the applicable test standards or test plan were made during testing.

1.9 MODIFICATION RECORD

Modification State 0 - No modifications were made to the EUT during testing.

1.10 ALTERNATIVE TEST SITE

Under our group UKAS Accreditation, TÜV SÜD Product Service conducted the following tests at Ericsson in Beijing, China:

- Maximum Peak Output Power and Peak to Average Ratio – Conducted
- Occupied Bandwidth
- Band Edge
- Conducted Spurious Emissions

Only Radiated Spurious Emissions testing has been performed under the following site registrations:

FCC Accreditation 910917:

The State Radio Monitoring Centre, No.80 Beilishi Road, Xicheng District, Beijing, China.

Industry Canada Accreditation 7308A-1:

The State Radio Monitoring Centre, No.80 Beilishi Road, Xicheng District, Beijing, China.



SECTION 2

TEST DETAILS

2.1 MAXIMUM PEAK OUTPUT POWER AND PEAK TO AVERAGE RATIO - CONDUCTED

2.1.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1046
FCC CFR 47 Part 24, Clause 24.232 (a) (d)
Industry Canada RSS-133, Clause 6.4

2.1.2 Equipment Under Test

RRUS 12 B2, KRC 161 299/2, S/N: CB4S987897

2.1.3 Date of Test and Modification State

19 to 26 May 2014 - Modification State 0

2.1.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.1.5 Environmental Conditions

Ambient Temperature	24.5 – 25.9°C
Relative Humidity	21.5 – 24.5%

2.1.6 Test Method

The path loss between the EUT and the power sensor was measured and recorded for the test band. The path loss was entered as an offset into the Power Meter and Spectrum Analyzer. The EUT was configured to transmit on Maximum Power on the configurations defined in the tables below. The Average Power and Peak to Average Ratio was measured and recorded with the results being compared with the limits. In the case of MIMO devices, the power was measured from each antenna port and the results summed in accordance with FCC KDB 662911 D01.

For SC configurations, the average power in a 1 MHz RBW was measured and a wideband correction factor was applied to obtain the final result. For MC configurations, the average power was measured using the power meter. The peak to average ratio was determined using the CCDF of the spectrum analyser.

2.1.7 Test Results

Configuration G-SC

Maximum Output Power 47.8dBm per carrier

Modulation	Peak Output Power / Peak to Average Ratio (PAR)					
	Channel Position B 1930.4MHz		Channel Position M 1960.0MHz		Channel Position T 1989.6MHz	
	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
GMSK	46.82	0.34	47.69	0.26	47.66	0.34
8-PSK	46.88	3.52	47.67	3.79	47.02	3.34
AQPSK	46.84	2.70	47.66	2.61	47.02	2.24
16QAM	46.84	4.74	47.62	4.75	46.98	4.83
32QAM	46.87	4.92	47.68	5.18	47.04	5.02

Configuration G-MC 1 (2C)

Maximum Output Power 44.8dBm per carrier

Modulation	Peak Output Power / Peak to Average Ratio (PAR)					
	Channel Position B 1930.4MHz + 1969.8MHz		Channel Position M 1940.2MHz + 1979.8MHz		Channel Position T 1950.2MHz + 1989.6MHz	
	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
GMSK	47.32	-	47.59	-	47.37	-
8-PSK	47.32	-	47.58	-	47.39	-
AQPSK	47.33	-	47.62	-	47.37	-
16QAM	46.24	-	46.27	-	46.26	-
32QAM	45.87	-	46.13	-	45.88	-

Configuration G-MC 3 (4C)

Maximum Output Power 41.8dBm per carrier

Modulation	Peak Output Power / Peak to Average Ratio (PAR)					
	Channel Position B 1930.4MHz + 1930.8MHz + 1969.4MHz + 1969.8MHz		Channel Position M 1940.2MHz + 1940.6MHz + 1979.4MHz + 1979.8MHz		Channel Position T 1950.2MHz + 1950.6MHz + 1989.2MHz + 1989.6MHz	
	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
GMSK	47.33	-	47.51	-	47.42	-
8-PSK	45.80	-	45.97	-	45.84	-
AQPSK	46.32	-	46.50	-	46.39	-
16QAM	44.35	-	44.51	-	44.41	-
32QAM	43.93	-	44.08	-	43.97	-

Configuration W-SC

Maximum Output Power 47.0dBm per carrier

Modulation	Peak Output Power / Peak to Average Ratio (PAR)								
	Channel Position B 1932.4MHz			Channel Position M 1960.0MHz			Channel Position T 1987.6MHz		
	dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)
QPSK	46.67	39.98	6.80	47.11	40.42	6.73	46.76	41.07	6.89

Note 1:

$$1 \text{ MHz Power} = \text{Output Power} - 10\lg(\text{OBW}/1) = \text{Output Power} - 10\lg(4.67) = \text{Output Power} - 6.69$$

Configuration W-MC 1 (2C)

Maximum Output Power 44.8dBm per carrier

Modulation	Peak Output Power / Peak to Average Ratio (PAR)					
	Channel Position B 1932.4MHz + 1967.6MHz		Channel Position M 1942.4MHz + 1977.6MHz		Channel Position T 1952.4MHz + 1987.6MHz	
	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
QPSK	47.38	-	47.42	-	47.31	-

Configuration W-MC 2 (4C)

Maximum Output Power 41.0dBm per carrier

Modulation	Peak Output Power / Peak to Average Ratio (PAR)					
	Channel Position B 1932.4MHz + 1937.4MHz + 1962.6MHz + 1967.6MHz		Channel Position M 1942.4MHz + 1947.4MHz + 1972.6MHz + 1977.6MHz		Channel Position T 1952.4MHz + 1957.4MHz + 1982.6MHz + 1987.6MHz	
	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
QPSK	46.97	-	46.95	-	46.97	-

Configuration W-MIMO-SC

Maximum Output Power 47.0dBm per carrier

Antenna	Modulation	Peak Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 1932.4MHz			Channel Position M 1960.0MHz			Channel Position T 1987.6MHz		
		dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)
A	16QAM	46.51	39.82	7.52	46.99	40.30	7.45	46.55	39.86	7.51
B	16QAM	46.53	39.84	7.56	46.99	40.30	7.45	46.59	39.90	7.83
Total		49.53	-	-	50.00	-	-	49.58	-	-

Note 1:

$$1 \text{ MHz Power} = \text{Output Power} - 10\lg(\text{OBW}/1) = \text{Output Power} - 10\lg(4.67) = \text{Output Power} - 6.69$$

Antenna	Modulation	Peak Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 1932.4MHz			Channel Position M 1960.0MHz			Channel Position T 1987.6MHz		
		dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)
A	64QAM	46.53	39.84	7.52	46.90	40.21	7.37	46.50	39.81	7.49
B	64QAM	46.53	50.86	7.51	46.98	40.29	7.45	46.59	39.90	7.53
Total		49.54	-	-	49.95	-	-	49.56	-	-

Note 1:

$$1 \text{ MHz Power} = \text{Output Power} - 10\lg(\text{OBW}/1) = \text{Output Power} - 10\lg(4.67) = \text{Output Power} - 6.69$$

Configuration W-MIMO-MC 1 (2C)

Maximum Output Power 44.8dBm per carrier

Antenna	Modulation	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B 1932.4MHz + 1967.6MHz		Channel Position M 1942.4MHz + 1977.6MHz		Channel Position T 1952.4MHz + 1987.6MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	16QAM	47.51	-	47.53	-	47.46	-
B	16QAM	47.37	-	47.48	-	47.25	-
Total		50.45	-	50.51	-	50.37	-

Antenna	Modulation	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B 1932.4MHz + 1967.6MHz		Channel Position M 1942.4MHz + 1977.6MHz		Channel Position T 1952.4MHz + 1987.6MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	64QAM	47.49	-	47.56	-	47.45	-
B	64QAM	47.37	-	47.55	-	47.22	-
Total		50.44	-	50.57	-	50.35	-

Configuration W-MIMO-MC 2 (4C)

Maximum Output Power 41.8dBm per carrier

Antenna	Modulation	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B 1932.4MHz + 1937.4MHz + 1962.6MHz + 1967.6MHz		Channel Position M 1942.4MHz + 1947.4MHz + 1972.6MHz + 1977.6MHz		Channel Position T 1952.4MHz + 1957.4MHz + 1982.6MHz + 1987.6MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	16QAM	47.14	-	47.14	-	46.88	-
B	16QAM	47.06	-	47.09	-	46.76	-
Total		50.11	-	50.13	-	49.83	-

Antenna	Modulation	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B 1932.4MHz + 1937.4MHz + 1962.6MHz + 1967.6MHz		Channel Position M 1942.4MHz + 1947.4MHz + 1972.6MHz + 1977.6MHz		Channel Position T 1952.4MHz + 1957.4MHz + 1982.6MHz + 1987.6MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	64QAM	47.15	-	47.15	-	46.89	-
B	64QAM	47.08	-	47.07	-	46.75	-
Total		50.13	-	50.12	-	49.83	-

Configuration L-MIMO-SC

Maximum Output Power 47.8dBm per carrier

Antenna	Modulation / Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 1930.7MHz			Channel Position M 1960.0MHz			Channel Position T 1989.3MHz		
		dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)
A	QPSK / 1.4 MHz	47.06	45.85	6.90	47.81	46.60	6.95	47.25	46.04	6.91
B		47.15	45.94	6.91	47.84	46.63	6.84	47.23	46.02	6.87
Total		50.12	-	-	50.84	-	-	50.25	-	-

Note 1:

1 MHz Power = Output Power - 10lg(OBW/1) = Output Power - 10lg(1.32) = Output Power - 1.21

Antenna	Modulation / Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 1931.5MHz			Channel Position M 1960.0MHz			Channel Position T 1988.5MHz		
		dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)
A	QPSK / 3.0 MHz	-	-	-	47.80	43.10	6.74	-	-	-
B		-	-	-	47.76	43.06	6.70	-	-	-
Total		-	-	-	50.79	-	-	-	-	-

Note 1:

1 MHz Power = Output Power - 10lg(OBW/1) = Output Power - 10lg(2.95) = Output Power - 4.70

Antenna	Modulation / Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 1932.5MHz			Channel Position M 1960.0MHz			Channel Position T 1987.5MHz		
		dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)
A	QPSK / 5.0 MHz	-	-	-	47.79	40.96	6.78	-	-	-
B		-	-	-	47.74	40.91	6.78	-	-	-
Total		-	-	-	50.77	-	-	-	-	-

Note 1:

1 MHz Power = Output Power - 10lg(OBW/1) = Output Power - 10lg(4.82) = Output Power - 6.83

Antenna	Modulation / Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 1935.0MHz			Channel Position M 1960.0MHz			Channel Position T 1985.0MHz		
		dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)
A	QPSK / 10.0 MHz	-	-	-	47.73	37.89	6.68	-	-	-
B		-	-	-	47.78	37.94	6.70	-	-	-
Total		-	-	-	50.76	-	-	-	-	-

Note 1:

1 MHz Power = Output Power - 10lg(OBW/1) = Output Power - 10lg(9.64) = Output Power - 9.84

Antenna	Modulation / Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 1937.5MHz			Channel Position M 1960.0MHz			Channel Position T 1982.5MHz		
		dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)
A	QPSK / 15.0 MHz	-	-	-	47.74	36.12	6.71	-	-	-
B		-	-	-	47.75	36.13	6.79	-	-	-
Total		-	-	-	50.76	-	-	-	-	-

Note 1:

1 MHz Power = Output Power - 10lg(OBW/1) = Output Power - 10lg(14.53) = Output Power - 11.62

Antenna	Modulation / Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 1940.0MHz			Channel Position M 1960.0MHz			Channel Position T 1980.0MHz		
		dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)
A	QPSK / 20.0 MHz	47.75	34.91	7.43	47.74	34.90	6.75	47.69	34.85	7.12
B		47.76	34.92	7.44	47.75	34.91	6.70	47.72	34.88	7.26
Total		50.77	-	-	50.76	-	-	50.72	-	-

Note 1:

1 MHz Power =Output Power - 10lg(OBW/1)=Output Power - 10lg(19.25) =Output Power – 12.84

Antenna	Modulation / Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 1930.7MHz			Channel Position M 1960.0MHz			Channel Position T 1989.3MHz		
		dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)
A	16QAM / 1.4 MHz	-	-	-	47.82	46.61	6.88	-	-	-
B		-	-	-	47.74	46.53	6.93	-	-	-
Total		-	-	-	50.79	-	-	-	-	-

Note 1:

1 MHz Power =Output Power - 10lg(OBW/1)=Output Power - 10lg(1.32) =Output Power – 1.21

Antenna	Modulation / Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 1931.5MHz			Channel Position M 1960.0MHz			Channel Position T 1988.5MHz		
		dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)
A	16QAM / 3.0 MHz	-	-	-	47.80	43.12	6.74	-	-	-
B		-	-	-	47.74	43.06	6.78	-	-	-
Total		-	-	-	50.78	-	-	-	-	-

Note 1:

1 MHz Power =Output Power - 10lg(OBW/1)=Output Power - 10lg(2.94) =Output Power – 4.68

Antenna	Modulation / Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 1932.5MHz			Channel Position M 1960.0MHz			Channel Position T 1987.5MHz		
		dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)
A	16QAM / 5.0 MHz	-	-	-	47.79	40.98	6.69	-	-	-
B		-	-	-	47.78	40.97	6.66	-	-	-
Total		-	-	-	50.80	-	-	-	-	-

Note 1:

1 MHz Power =Output Power - 10lg(OBW/1)=Output Power - 10lg(4.80) =Output Power – 6.81

Antenna	Modulation / Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 1935.0MHz			Channel Position M 1960.0MHz			Channel Position T 1985.0MHz		
		dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)
A	16QAM / 10.0 MHz	-	-	-	47.73	37.90	6.74	-	-	-
B		-	-	-	47.76	37.93	6.70	-	-	-
Total		-	-	-	50.76	-	-	-	-	-

Note 1:

1 MHz Power =Output Power - 10lg(OBW/1)=Output Power - 10lg(9.62) =Output Power – 9.83

Antenna	Modulation / Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 1937.5MHz			Channel Position M 1960.0MHz			Channel Position T 1982.5MHz		
		dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)
A	16QAM / 15.0 MHz	-	-	-	47.68	36.08	6.76	-	-	-
B	15.0 MHz	-	-	-	47.73	36.13	6.75	-	-	-
Total		-	-	-	50.72	-	-	-	-	-

Note 1:

1 MHz Power =Output Power - 10lg(OBW/1)=Output Power - 10lg(14.45) =Output Power – 11.60

Antenna	Modulation / Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 1940.0MHz			Channel Position M 1960.0MHz			Channel Position T 1980.0MHz		
		dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)
A	16QAM / 20.0 MHz	-	-	-	47.68	34.85	6.67	-	-	-
B	20.0 MHz	-	-	-	47.73	34.90	6.71	-	-	-
Total		-	-	-	50.72	-	-	-	-	-

Note 1:

1 MHz Power =Output Power - 10lg(OBW/1)=Output Power - 10lg(19.17) =Output Power – 12.83

Antenna	Modulation / Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 1930.7MHz			Channel Position M 1960.0MHz			Channel Position T 1989.3MHz		
		dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)
A	64QAM / 1.4 MHz	-	-	-	47.73	46.49	6.87	-	-	-
B	1.4 MHz	-	-	-	47.75	46.51	6.89	-	-	-
Total		-	-	-	50.75	-	-	-	-	-

Note 1:

1 MHz Power =Output Power - 10lg(OBW/1)=Output Power - 10lg(1.33) =Output Power – 1.24

Antenna	Modulation / Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 1931.5MHz			Channel Position M 1960.0MHz			Channel Position T 1988.5MHz		
		dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)
A	64QAM / 3.0 MHz	-	-	-	47.77	43.07	6.70	-	-	-
B	3.0 MHz	-	-	-	47.78	43.08	6.82	-	-	-
Total		-	-	-	50.79	-	-	-	-	-

Note 1:

1 MHz Power =Output Power - 10lg(OBW/1)=Output Power - 10lg(2.95) =Output Power – 4.70

Antenna	Modulation / Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 1932.5MHz			Channel Position M 1960.0MHz			Channel Position T 1987.5MHz		
		dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)
A	64QAM / 5.0 MHz	-	-	-	47.78	40.95	6.74	-	-	-
B	5.0 MHz	-	-	-	47.75	40.92	6.69	-	-	-
Total		-	-	-	50.78	-	-	-	-	-

Note 1:

1 MHz Power =Output Power - 10lg(OBW/1)=Output Power - 10lg(4.82) =Output Power – 6.83

Antenna	Modulation / Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 1935.0MHz			Channel Position M 1960.0MHz			Channel Position T 1985.0MHz		
		dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)
A	64QAM / 10.0 MHz	-	-	-	47.71	37.87	6.71	-	-	-
B		-	-	-	47.72	37.88	6.71	-	-	-
Total		-	-	-	50.73	-	-	-	-	-

Note 1:

1 MHz Power =Output Power - 10lg(OBW/1)=Output Power - 10lg(9.63) =Output Power – 9.84

Antenna	Modulation / Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 1937.5MHz			Channel Position M 1960.0MHz			Channel Position T 1982.5MHz		
		dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)
A	64QAM / 15.0 MHz	-	-	-	47.68	36.05	6.83	-	-	-
B		-	-	-	47.72	36.09	6.76	-	-	-
Total		-	-	-	50.71	-	-	-	-	-

Note 1:

1 MHz Power =Output Power - 10lg(OBW/1)=Output Power - 10lg(14.55) =Output Power – 11.63

Antenna	Modulation / Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 1940.0MHz			Channel Position M 1960.0MHz			Channel Position T 1980.0MHz		
		dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)	dBm	dBm/MHz ¹	PAR (dB)
A	64QAM / 20.0 MHz	-	-	-	47.66	34.82	6.68	-	-	-
B		-	-	-	47.71	34.86	6.74	-	-	-
Total		-	-	-	50.70	-	-	-	-	-

Note 1:

1 MHz Power =Output Power - 10lg(OBW/1)=Output Power - 10lg(19.25) =Output Power – 12.84

Configuration L-MIMO-MC 2 (2C)

Maximum Output Power 44.8dBm per carrier

Antenna	Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B 1930.7MHz + 1969.3MHz		Channel Position M 1940.7MHz + 1979.3MHz		Channel Position T 1950.7MHz + 1989.3MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	QPSK / 1.4 MHz	46.86	-	47.33	-	47.25	-
B		47.34	-	47.45	-	47.32	-
Total		50.12	-	50.40	-	50.30	-

Antenna	Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B 1931.5MHz + 1968.5MHz		Channel Position M 1941.5MHz + 1978.5MHz		Channel Position T 1951.5MHz + 1988.5MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	QPSK / 3.0 MHz	-	-	47.36	-	-	-
B		-	-	47.44	-	-	-
Total		-	-	50.41	-	-	-

Antenna	Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B 1932.5MHz + 1967.5MHz		Channel Position M 1942.5MHz + 1977.5MHz		Channel Position T 1952.5MHz + 1987.5MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	QPSK / 5.0 MHz	-	-	47.08	-	-	-
B		-	-	47.16	-	-	-
Total		-	-	50.13	-	-	-

Antenna	Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B 1935.0MHz + 1965.0MHz		Channel Position M 1945.0MHz + 1975.0MHz		Channel Position T 1955.0MHz + 1985.0MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	QPSK / 10.0 MHz	46.92	-	46.95	-	46.86	-
B		46.96	-	46.96	-	46.82	-
Total		49.95	-	49.97	-	49.85	-

Antenna	Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B 1930.7MHz + 1969.3MHz		Channel Position M 1940.7MHz + 1979.3MHz		Channel Position T 1950.7MHz + 1989.3MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	16QAM / 1.4 MHz	-	-	47.27	-	-	-
B		-	-	47.43	-	-	-
Total		-	-	50.36	-	-	-

Antenna	Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B 1931.5MHz + 1968.5MHz		Channel Position M 1941.5MHz + 1978.5MHz		Channel Position T 1951.5MHz + 1988.5MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	16QAM / 3.0 MHz	-	-	47.31	-	-	-
B		-	-	47.45	-	-	-
Total		-	-	50.39	-	-	-

Antenna	Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B 1932.5MHz + 1967.5MHz		Channel Position M 1942.5MHz + 1977.5MHz		Channel Position T 1952.5MHz + 1987.5MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	16QAM / 5.0 MHz	-	-	47.04	-	-	-
B		-	-	47.12	-	-	-
Total		-	-	50.09	-	-	-

Antenna	Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B 1935.0MHz + 1965.0MHz		Channel Position M 1945.0MHz + 1975.0MHz		Channel Position T 1955.0MHz + 1985.0MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	16QAM / 10.0 MHz	-	-	46.95	-	-	-
B		-	-	46.96	-	-	-
Total		-	-	49.65	-	-	-

Antenna	Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B 1930.7MHz + 1969.3MHz		Channel Position M 1940.7MHz + 1979.3MHz		Channel Position T 1950.7MHz + 1989.3MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	64QAM / 1.4 MHz	-	-	47.26	-	-	-
B		-	-	47.41	-	-	-
Total		-	-	-	-	-	-

Antenna	Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B 1931.5MHz + 1968.5MHz		Channel Position M 1941.5MHz + 1978.5MHz		Channel Position T 1951.5MHz + 1988.5MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	64QAM / 3.0 MHz	-	-	47.30	-	-	-
B		-	-	47.44	-	-	-
Total		-	-	50.35	-	-	-

Antenna	Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B 1932.5MHz + 1967.5MHz		Channel Position M 1942.5MHz + 1977.5MHz		Channel Position T 1952.5MHz + 1987.5MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	64QAM / 5.0 MHz	-	-	47.03	-	-	-
B		-	-	47.12	-	-	-
Total		-	-	50.09	-	-	-

Antenna	Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B 1935.0MHz + 1965.0MHz		Channel Position M 1945.0MHz + 1975.0MHz		Channel Position T 1955.0MHz + 1985.0MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	64QAM / 10.0 MHz	-	-	46.94	-	-	-
B		-	-	46.97	-	-	-
Total		-	-	49.97	-	-	-

Configuration L-MIMO-MC 3 (3C)

Maximum Output Power 43.0dBm per carrier

Antenna	Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B 1930.7MHz + 1932.1MHz + 1969.3MHz		Channel Position M 1940.7MHz + 1942.1MHz + 1979.3MHz		Channel Position T 1950.7MHz + 1952.1MHz + 1989.3MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	QPSK / 1.4 MHz	46.41	-	46.46	-	46.42	-
B		46.47	-	46.60	-	46.52	-
Total		49.45	-	49.54	-	49.48	-

Antenna	Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B 1931.5MHz + 1934.5MHz + 1968.5MHz		Channel Position M 1941.5MHz + 1944.5MHz + 1978.5MHz		Channel Position T 1951.5MHz + 1954.5MHz + 1988.5MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	QPSK / 3.0 MHz	-	-	46.49	-	-	-
B		-	-	46.59	-	-	-
Total		-	-	49.55	-	-	-

Antenna	Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B 1932.5MHz + 1937.5MHz + 1967.5MHz		Channel Position M 1942.5MHz + 1947.5MHz + 1977.5MHz		Channel Position T 1952.5MHz + 1957.5MHz + 1987.5MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	QPSK / 5.0 MHz	46.92	-	46.93	-	46.90	-
B		46.99	-	47.03	-	46.92	-
Total		49.97	-	49.99	-	49.92	-

Antenna	Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B 1930.7MHz + 1932.1MHz + 1969.3MHz		Channel Position M 1940.7MHz + 1942.1MHz + 1979.3MHz		Channel Position T 1950.7MHz + 1952.1MHz + 1989.3MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	16QAM / 1.4 MHz	-	-	46.47	-	-	-
B		-	-	46.61	-	-	-
Total		-	-	49.55	-	-	-

Antenna	Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B 1931.5MHz + 1934.5MHz + 1968.5MHz		Channel Position M 1941.5MHz + 1944.5MHz + 1978.5MHz		Channel Position T 1951.5MHz + 1954.5MHz + 1988.5MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	16QAM / 3.0 MHz	-	-	46.50	-	-	-
B		-	-	46.61	-	-	-
Total		-	-	49.57	-	-	-

Antenna	Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B 1932.5MHz + 1937.5MHz + 1967.5MHz		Channel Position M 1942.5MHz + 1947.5MHz + 1977.5MHz		Channel Position T 1952.5MHz + 1957.5MHz + 1987.5MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	16QAM / 5.0 MHz	-	-	46.94	-	-	-
B		-	-	47.03	-	-	-
Total		-	-	50.00	-	-	-

Antenna	Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B 1930.7MHz + 1932.1MHz + 1969.3MHz		Channel Position M 1940.7MHz + 1942.1MHz + 1979.3MHz		Channel Position T 1950.7MHz + 1952.1MHz + 1989.3MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	64QAM / 1.4 MHz	-	-	46.44	-	-	-
B		-	-	46.60	-	-	-
Total		-	-	49.53	-	-	-

Antenna	Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B 1931.5MHz + 1934.5MHz + 1968.5MHz		Channel Position M 1941.5MHz + 1944.5MHz + 1978.5MHz		Channel Position T 1951.5MHz + 1954.5MHz + 1988.5MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	64QAM / 3.0 MHz	-	-	46.52	-	-	-
B		-	-	46.62	-	-	-
Total		-	-	49.58	-	-	-

Antenna	Carrier Bandwidth (MHz)	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B 1932.5MHz + 1937.5MHz + 1967.5MHz		Channel Position M 1942.5MHz + 1947.5MHz + 1977.5MHz		Channel Position T 1952.5MHz + 1957.5MHz + 1987.5MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	64QAM / 5.0 MHz	-	-	46.96	-	-	-
B		-	-	47.05	-	-	-
Total		-	-	50.02	-	-	-

Configuration G+W-MC 1 (1G + 1W)

Maximum Output Power 44.8dBm per carrier

Modulation (GSM / WCDMA)	Peak Output Power / Peak to Average Ratio (PAR)					
	Channel Position BRFBW (G) 1930.4MHz + (W)1967.6MHz		Channel Position MRFBW (G) 1940.2MHz + (W) 1977.6MHz		Channel Position TRFBW (G) 1950.2MHz + (W) 1987.6MHz	
	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
GMSK / QPSK	46.21	-	46.38	-	46.33	-

Configuration G+W-MC 2 (4G + 4W)

Maximum Output Power 38.8dBm per carrier

Modulation (GSM / WCDMA)	Peak Output Power / Peak to Average Ratio (PAR)					
	Channel Position BRFBW (G) 1930.4MHz + 1931.0MHz + (W) 1942.4MHz + 1947.4MHz + (W) 1952.4MHz + 1957.4MHz + (G) 1969.2MHz + 1969.8MHz		Channel Position MRFBW (G) 1940.2MHz + 1940.8MHz + (W) 1952.4MHz + 1957.4MHz + (W) 1962.4MHz + 1967.4MHz + (G) 1979.2MHz + 1979.8MHz		Channel Position TRFBW (G) 1950.2MHz + 1950.8MHz + (W) 1962.6MHz + 1967.6MHz + (W) 1972.6MHz + 1977.6MHz + (G) 1989.0MHz + 1989.6MHz	
	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
GMSK / QPSK	47.29	-	47.33	-	47.30	-

Configuration G+W-MIMO-MC 1 (1G + 1W)

Maximum Output Power 44.8dBm per carrier

Antenna	GSM Modulation / WCDMA Modulation	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position BRFBW (G) 1930.4MHz + (W)1967.6MHz		Channel Position MRFBW (G) 1940.2MHz + (W) 1977.6MHz		Channel Position TRFBW (G) 1950.2MHz + (W) 1987.6MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	GMSK / 16QAM	46.13	-	46.35	-	46.33	-
B	GMSK / 16QAM	46.25	-	46.36	-	46.24	-
Total		49.20	-	49.37	-	49.30	-

Configuration G+W-MIMO-MC 2 (2G +4W)

Maximum Output Power 40.0dBm per carrier

Antenna	GSM Modulation / WCDMA Modulation	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B _{RFBW}		Channel Position M _{RFBW}		Channel Position T _{RFBW}	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	GMSK / 16QAM	47.58	-	47.58	-	47.56	-
B	GMSK / 16QAM	47.54	-	47.59	-	47.53	-
Total		50.57	-	50.60	-	50.56	-

Configuration G+L-MC 1 (1G + 1L)

Maximum Output Power 44.8dBm per carrier

GSM Modulation / LTE Modulation Bandwidth	Peak Output Power / Peak to Average Ratio (PAR)					
	Channel Position B _{RFBW}		Channel Position M _{RFBW}		Channel Position T _{RFBW}	
	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
GMSK / QPSK 10.0 MHz	47.01	-	47.2	-	47.17	-

Configuration G+L-MC 3 (4G + 3L)

Maximum Output Power 39.3dBm per carrier

GSM Modulation / LTE Modulation Bandwidth	Peak Output Power / Peak to Average Ratio (PAR)					
	Channel Position B _{RFBW}		Channel Position M _{RFBW}		Channel Position T _{RFBW}	
	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
GMSK / QPSK 5.0 MHz	47.13	-	47.20	-	47.15	-

Configuration G+L-MIMO-MC 1 (1G + 1L)

Maximum Output Power 44.8dBm per carrier

Antenna	GSM Modulation / LTE Modulation Bandwidth	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B _{RFBW} (G) 1930.4MHz + (L) 1965.0MHz		Channel Position M _{RFBW} (G) 1940.2MHz + (L) 1975.0MHz		Channel Position T _{RFBW} (G) 1950.2MHz + (L) 1985.0MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	GMSK / QPSK 10.0 MHz	46.96	-	47.21	-	47.14	-
Antenna	GSM Modulation / LTE Modulation Bandwidth	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B _{RFBW} (G) 1931.0MHz + (L) 1965.0MHz		Channel Position M _{RFBW} (G) 1940.8MHz + (L) 1975.0MHz		Channel Position T _{RFBW} (G) 1950.8MHz + (L) 1985.0MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
B	GMSK / QPSK 10.0 MHz	47.03	-	47.19	-	47.06	-
Total		50.01	-	50.21	-	50.11	-

Configuration G+L-MIMO-MC 2 (3G + 2L)

Maximum Output Power 40.8dBm per carrier

Antenna	GSM Modulation / LTE Modulation Bandwidth	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B _{RFBW} (G) 1930.4MHz + (G) 1931.6MHz + (L) 1947.5MHz + (L) 1952.5MHz + (G) 1969.8MHz		Channel Position M _{RFBW} (G) 1940.2MHz + (G) 1941.4MHz + (L) 1957.5MHz + (L) 1962.5MHz + (G) 1979.8MHz		Channel Position T _{RFBW} (G) 1950.2MHz + (G) 1951.4MHz + (L) 1967.5MHz + (L) 1972.5MHz + (G) 1989.6MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	GMSK / QPSK 5.0 MHz	45.48	-	45.71	-	45.66	-
Antenna	GSM Modulation / LTE Modulation Bandwidth	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B _{RFBW} (G) 1931.0MHz + (G) 1932.2MHz + (L) 1947.5MHz + (L) 1952.5MHz + (G) 1969.2MHz		Channel Position M _{RFBW} (G) 1940.8MHz + (G) 1942.0MHz + (L) 1957.5MHz + (L) 1962.5MHz + (G) 1979.2MHz		Channel Position T _{RFBW} (G) 1950.8MHz + (G) 1952.0MHz + (L) 1967.5MHz + (L) 1972.5MHz + (G) 1989.0MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
B	GMSK / QPSK 5.0 MHz	45.44	-	45.67	-	45.62	-
Total		48.47	-	48.70	-	48.65	-

Configuration W+L-MC 1 (1W + 1L)

Maximum Output Power 44.8dBm per carrier

WCDMA Modulation / LTE Modulation Bandwidth	Peak Output Power / Peak to Average Ratio (PAR)					
	Channel Position BRFBW (W) 1932.4MHz + (L)1968.5MHz		Channel Position MRFBW (W) 1942.4MHz + (L)1978.5MHz		Channel Position TRFBW (W) 1952.4MHz + (L)1988.5MHz	
	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
QPSK / QPSK 3.0 MHz	47.31	-	47.34	-	47.27	-

Configuration W+L-MC 2 (2W + 2L)

Maximum Output Power 41.8dBm per carrier

WCDMA Modulation / LTE Modulation Bandwidth	Peak Output Power / Peak to Average Ratio (PAR)					
	Channel Position BRFBW (W) 1932.4MHz + (W) 1937.4MHz + (L)1962.5MHz + (L)1967.5MHz		Channel Position MRFBW (W) 1942.4MHz + (W) 1947.4MHz + (L)1972.5MHz + (L)1977.5MHz		Channel Position TRFBW (W) 1952.4MHz + (W) 1957.4MHz + (L)1982.5MHz + (L)1987.5MHz	
	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
QPSK / QPSK 5.0 MHz	46.89	-	46.87	-	46.82	-

Configuration W+L-MIMO-MC 1 (1W + 1L)

Maximum Output Power 44.8dBm per carrier

Antenna	WCDMA Modulation / LTE Modulation Bandwidth	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position BRFBW (W) 1932.4MHz + (L)1968.5MHz		Channel Position MRFBW (W) 1942.4MHz + (L)1978.5MHz		Channel Position TRFBW (W) 1952.4MHz + (L)1988.5MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	16QAM / QPSK 3.0 MHz	47.28	-	47.35	-	47.25	-
B	16QAM / QPSK 3.0 MHz	47.25	-	47.25	-	47.16	-
Total		50.28	-	50.31	-	50.22	-

Configuration W+L-MIMO-MC 2 (2W + 2L)

Maximum Output Power 41.8dBm per carrier

Antenna	WCDMA Modulation / LTE Modulation Bandwidth	Peak Output Power / Peak to Average Ratio (PAR)					
		Channel Position B _{RFBW} (W) 1932.4MHz + (W) 1937.4MHz + (L)1965.5MHz + (L)1968.5MHz		Channel Position M _{RFBW} (W) 1942.4MHz + (W) 1947.4MHz + (L)1975.5MHz + (L)1978.5MHz		Channel Position T _{RFBW} (W) 1952.4MHz + (W) 1957.4MHz + (L)1985.5MHz + (L)1988.5MHz	
		Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)	Power (dBm)	PAR (dB)
A	16QAM / QPSK 3.0 MHz	46.61	-	46.63	-	46.52	-
B	16QAM / QPSK 3.0 MHz	46.66	-	46.65	-	46.49	-
Total		49.65	-	49.65	-	49.52	-

Limit	
Peak Power	FCC: Emission bandwidth of 1 MHz or less are limited to 1640 watts; emission bandwidth greater than 1 MHz are limited to 1640 watts/MHz or ≤+62.15dBm/MHz ¹ IC: ≤100 W or ≤+50dBm
Peak to Average Ratio	13 dB

2.2 OCCUPIED BANDWIDTH

2.2.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1049 (h)
FCC CFR 47 Part 4, Clause 24.238 (b)
Industry Canada RSS-GEN, Clause 4.6.1

2.2.2 Equipment Under Test

RRUS 12 B2, KRC 161 299/2, S/N: CB4S987897

2.2.3 Date of Test and Modification State

04 and 24 June 2014 - Modification State 0

2.2.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.2.5 Environmental Conditions

Ambient Temperature	22.5 – 23.4°C
Relative Humidity	22.6 – 23.1%

2.2.6 Test Method

The EUT was set to transmit at maximum power and testing was carried out on Bottom, Middle and Top Channels. Using the Occupied Bandwidth measurement function in the Spectrum Analyser, the Occupied Bandwidth is defined as the width of the signal between two points, one below the carrier centre frequency and one above the carrier centre frequency, outside of which all emissions are attenuated by at least X dB below the transmitter power, where the value of X is typically specified as 26. The Occupied Bandwidth was measured from each antenna port in accordance with FCC KDB 971168 D01 v02r01.

The results are shown in the plots below.

2.2.7 Test Results

Configuration G-SC

Maximum Output Power 47.8dBm per carrier

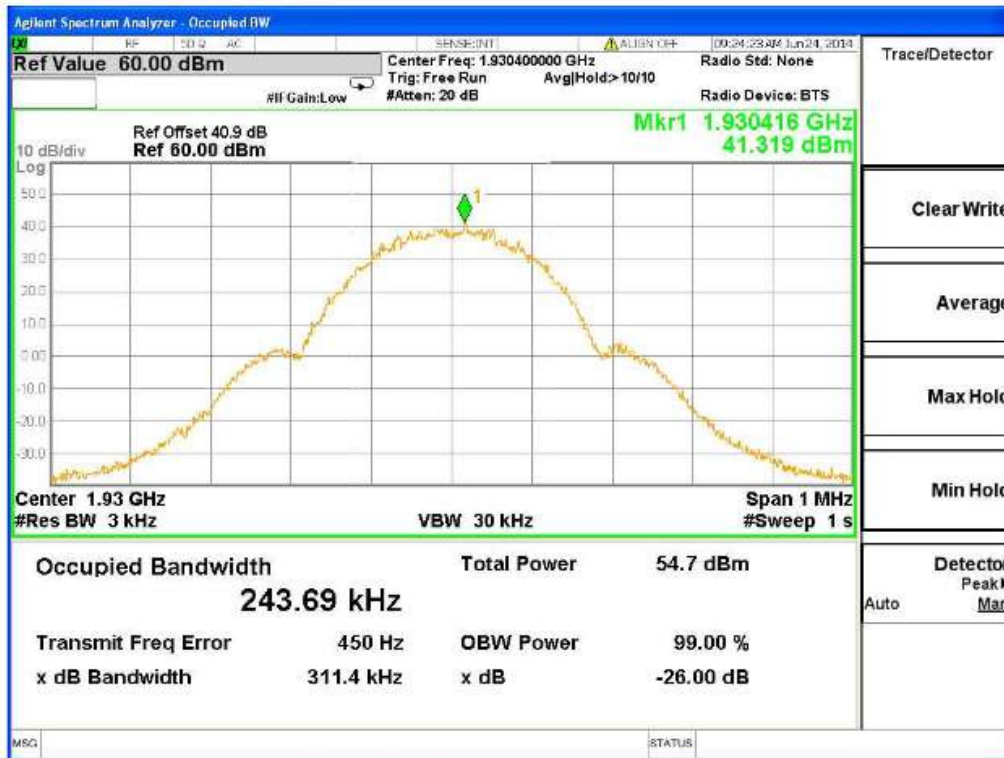
-26dBc Occupied Bandwidth for FCC requirement

Modulation	Occupied Bandwidth (kHz)		
	Channel Position B 1930.4MHz	Channel Position M 1960.0MHz	Channel Position T 1989.6MHz
GMSK	311.40	310.80	310.70
8-PSK	309.70	310.50	313.00
AQPSK	309.70	311.50	310.80
16QAM	310.20	312.10	311.00
32QAM	312.30	313.10	312.70

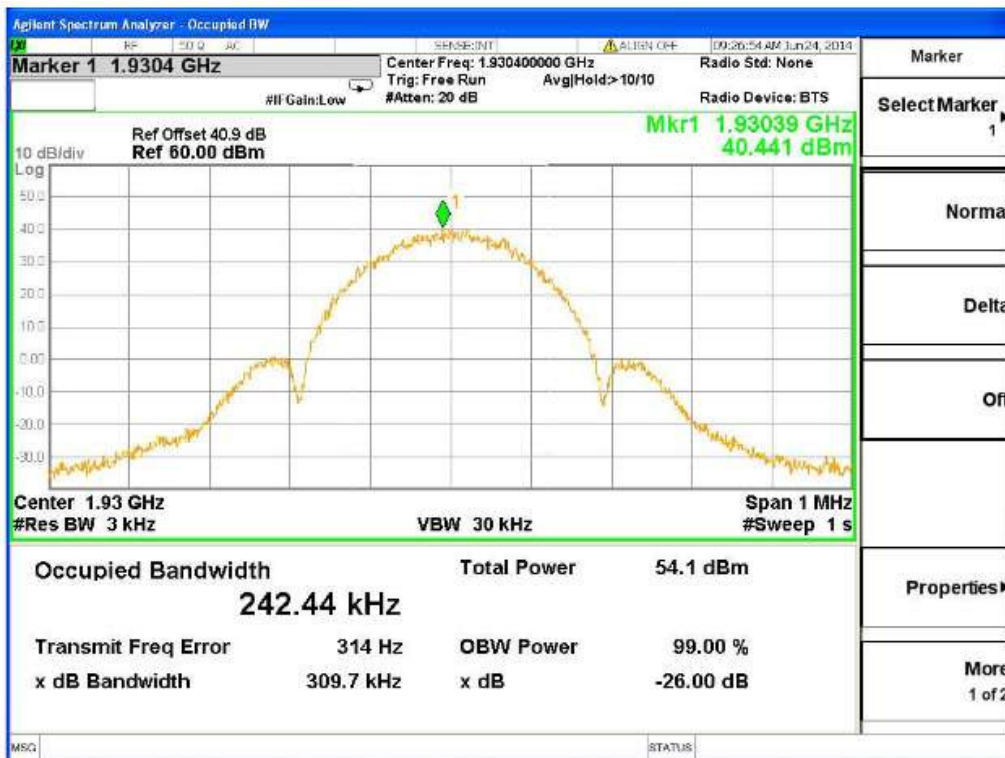
99% Occupied Bandwidth for IC requirement

Modulation	Occupied Bandwidth (kHz)		
	Channel Position B 1930.4MHz	Channel Position M 1960.0MHz	Channel Position T 1989.6MHz
GMSK	243.69	243.34	244.19
8-PSK	242.44	244.64	243.12
AQPSK	243.28	243.55	244.31
16QAM	243.01	243.46	243.51
32QAM	243.67	241.99	243.01

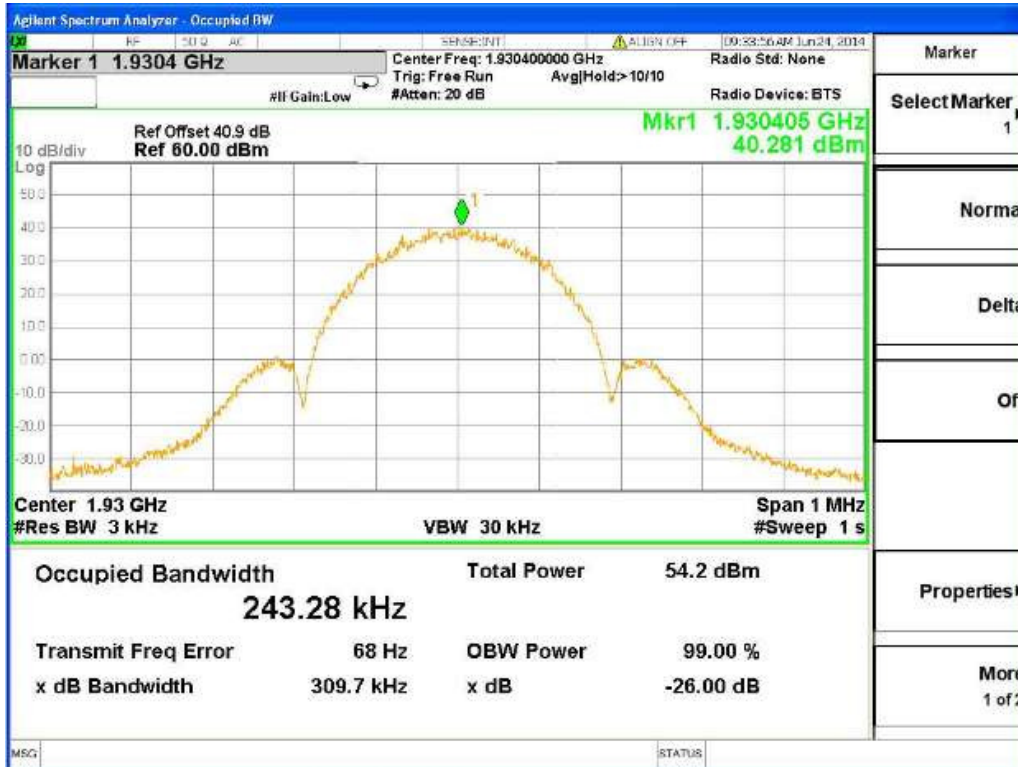
Channel Position B - GMSK



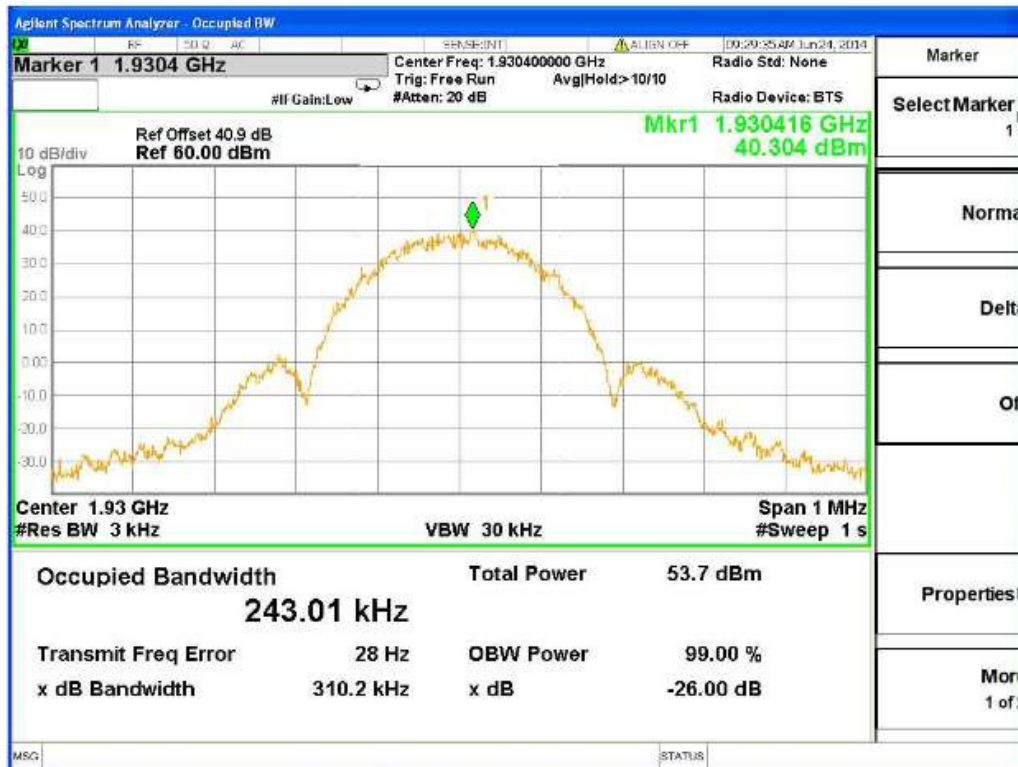
Channel Position B - 8-PSK



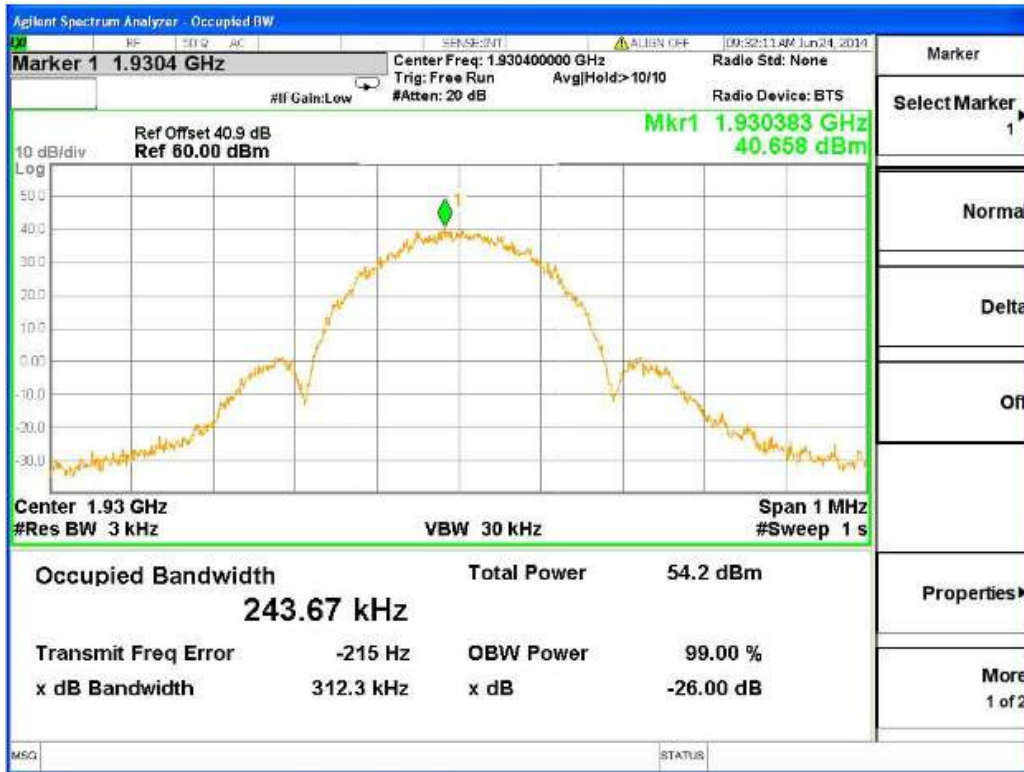
Channel Position B - AQPSK



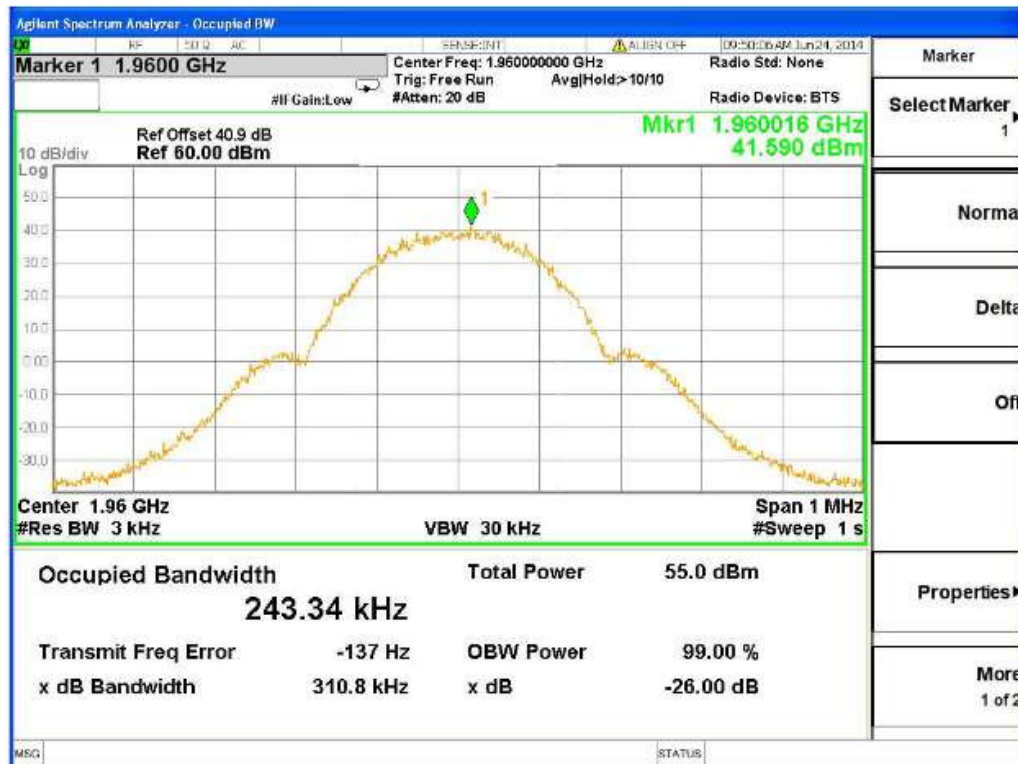
Channel Position B - 16QAM



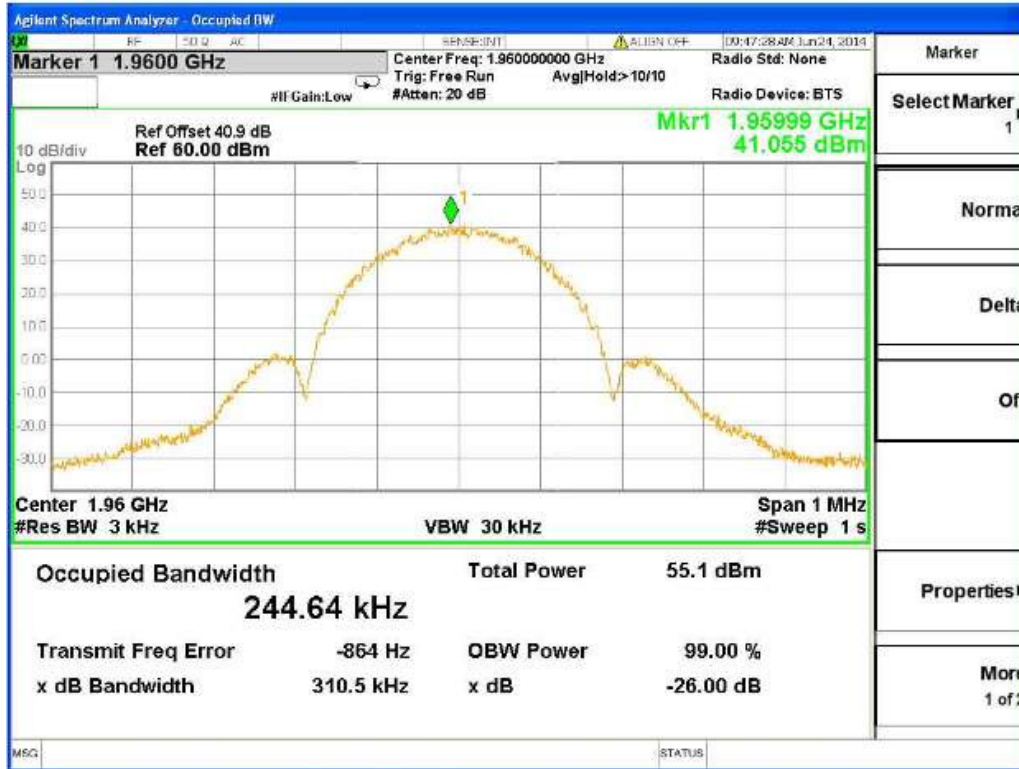
Channel Position B - 32QAM



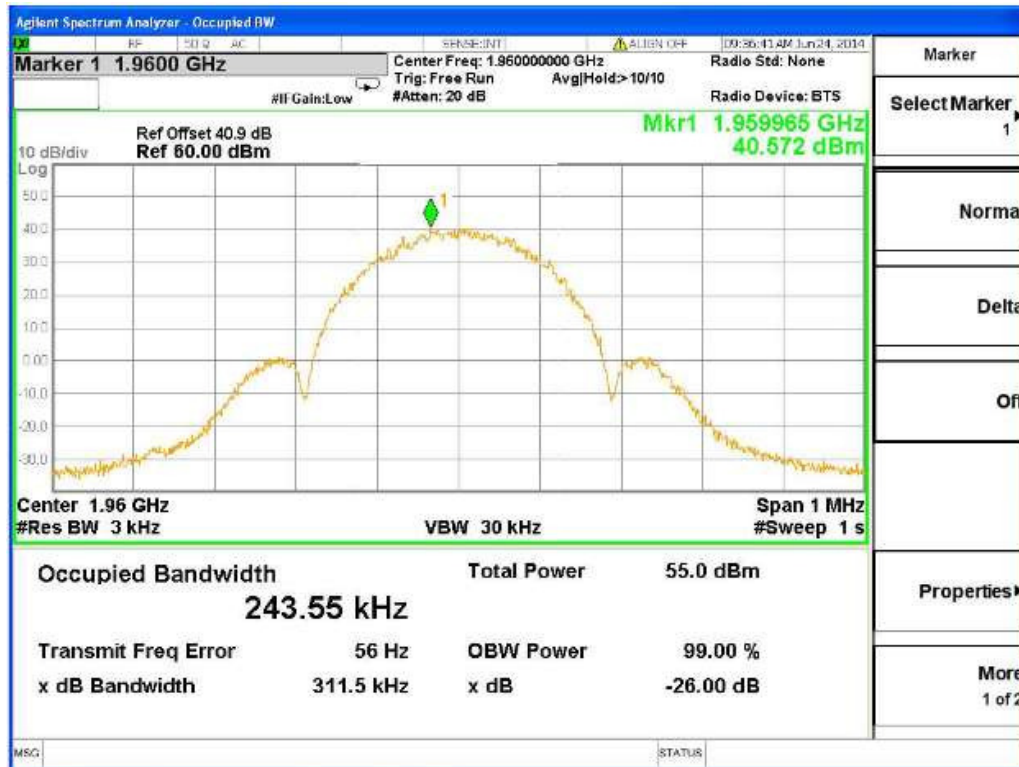
Channel Position M - GMSK



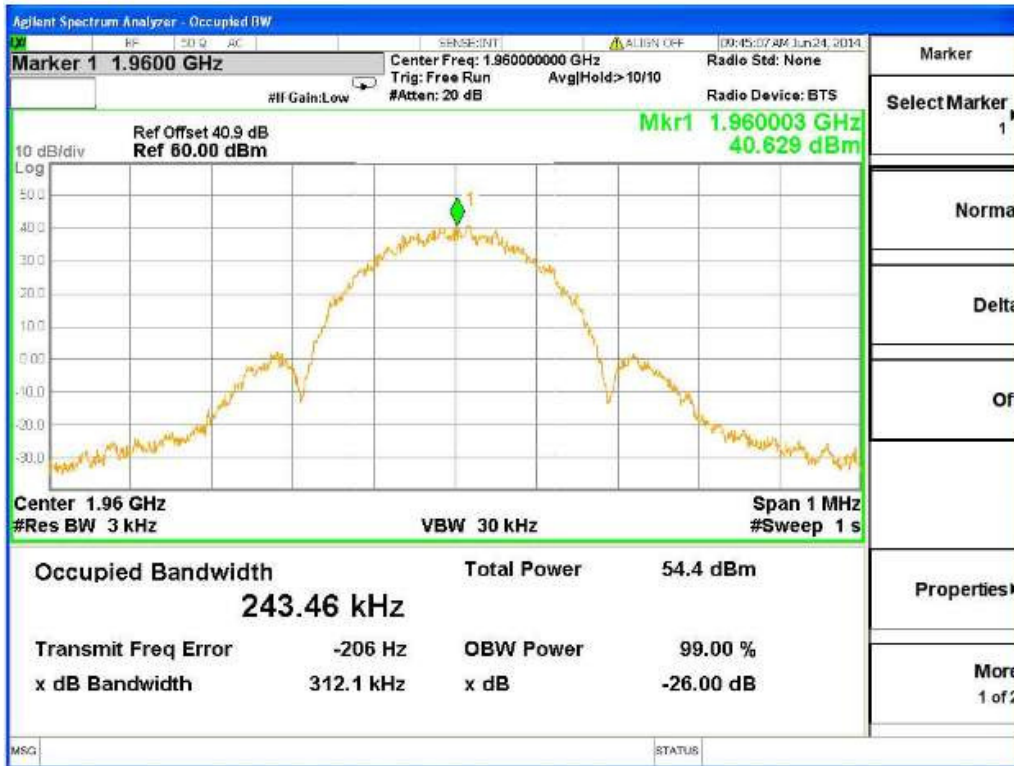
Channel Position M – 8PSK



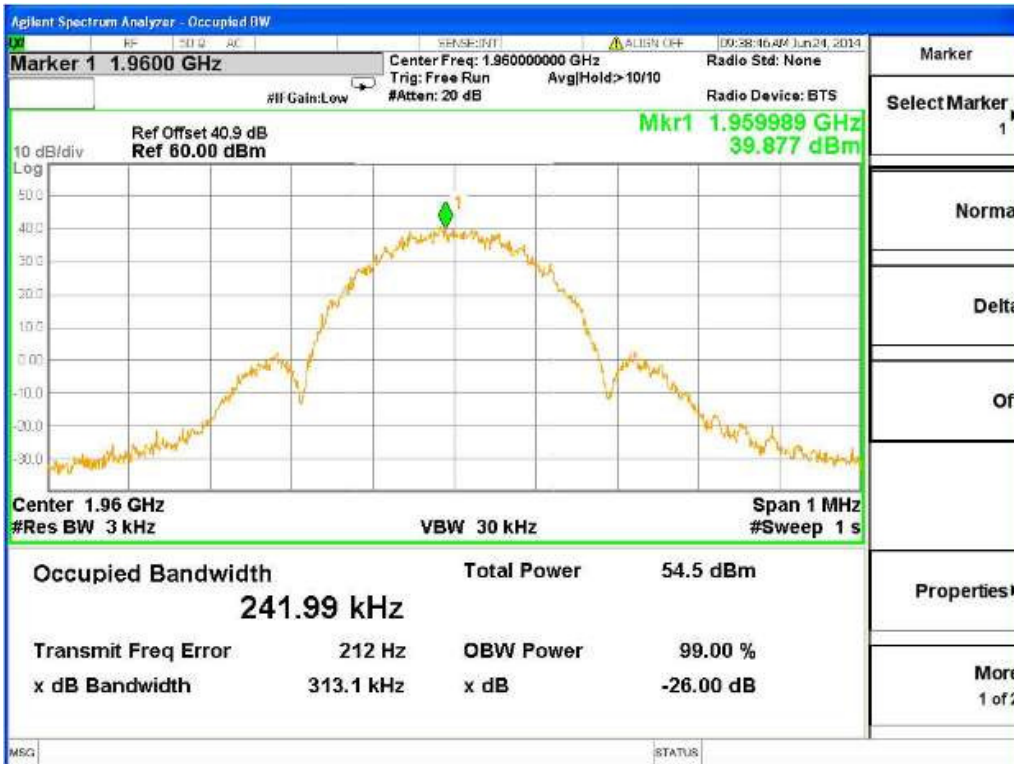
Channel Position M – AQPSK



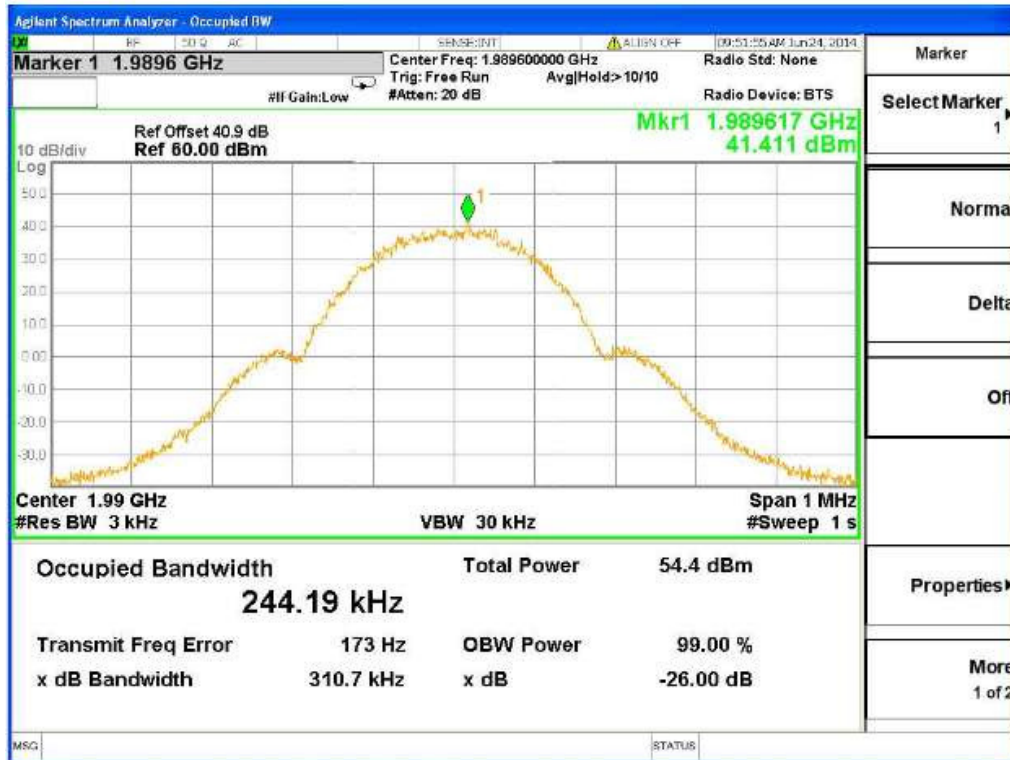
Channel Position M – 16QAM



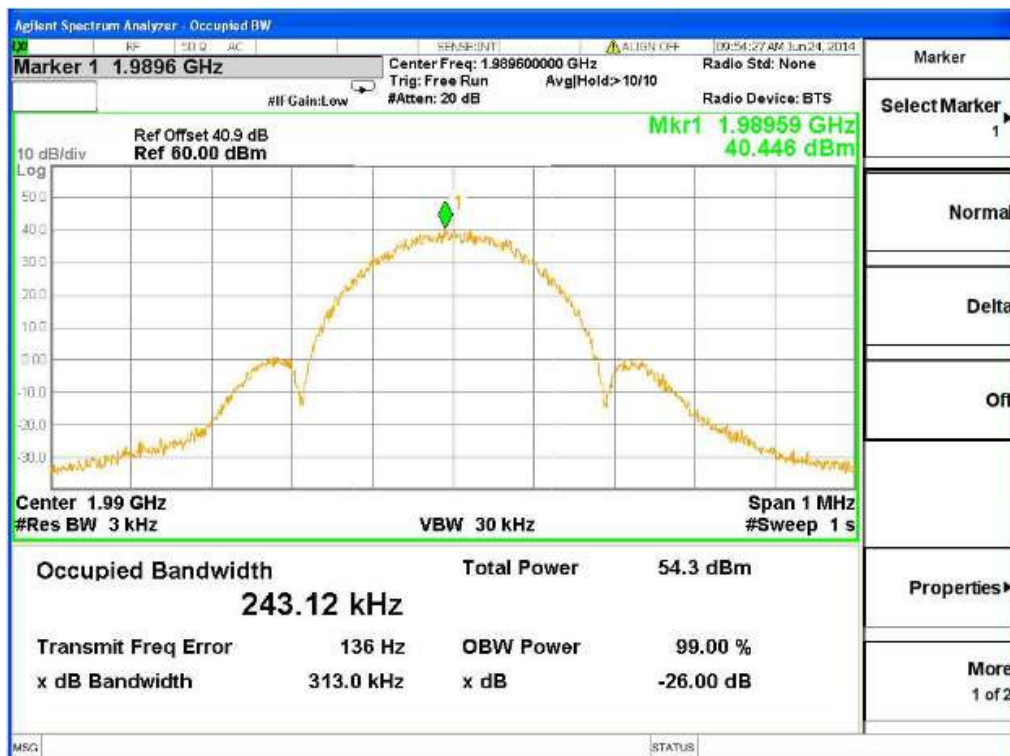
Channel Position M – 64QAM



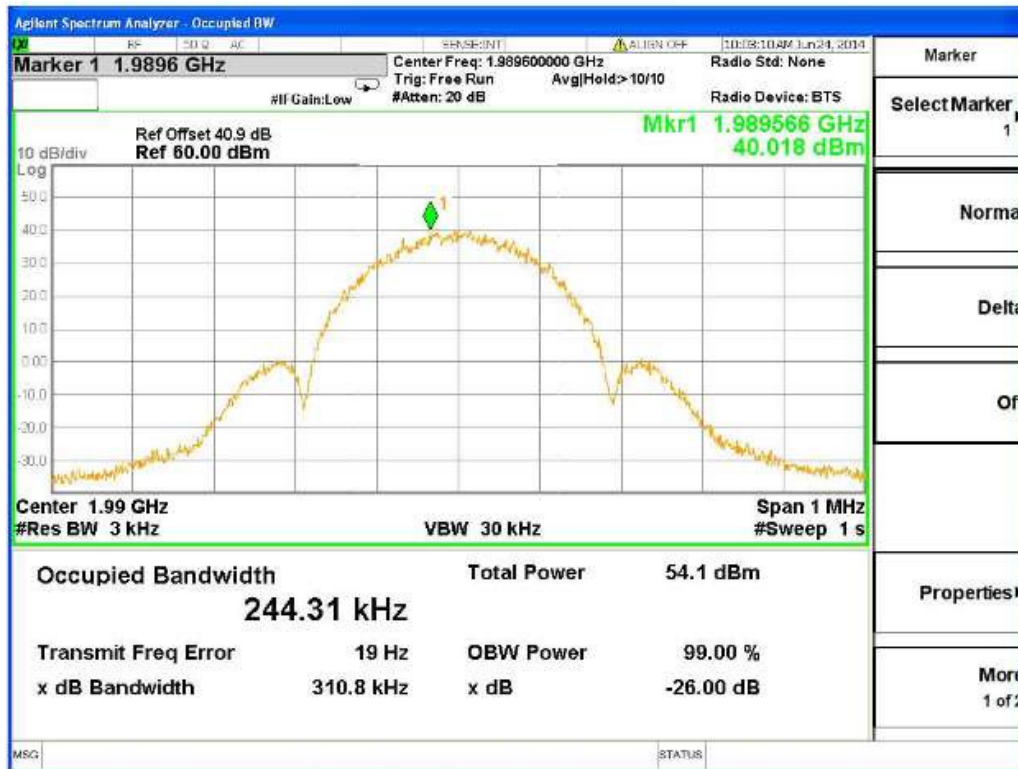
Channel Position T – GMSK



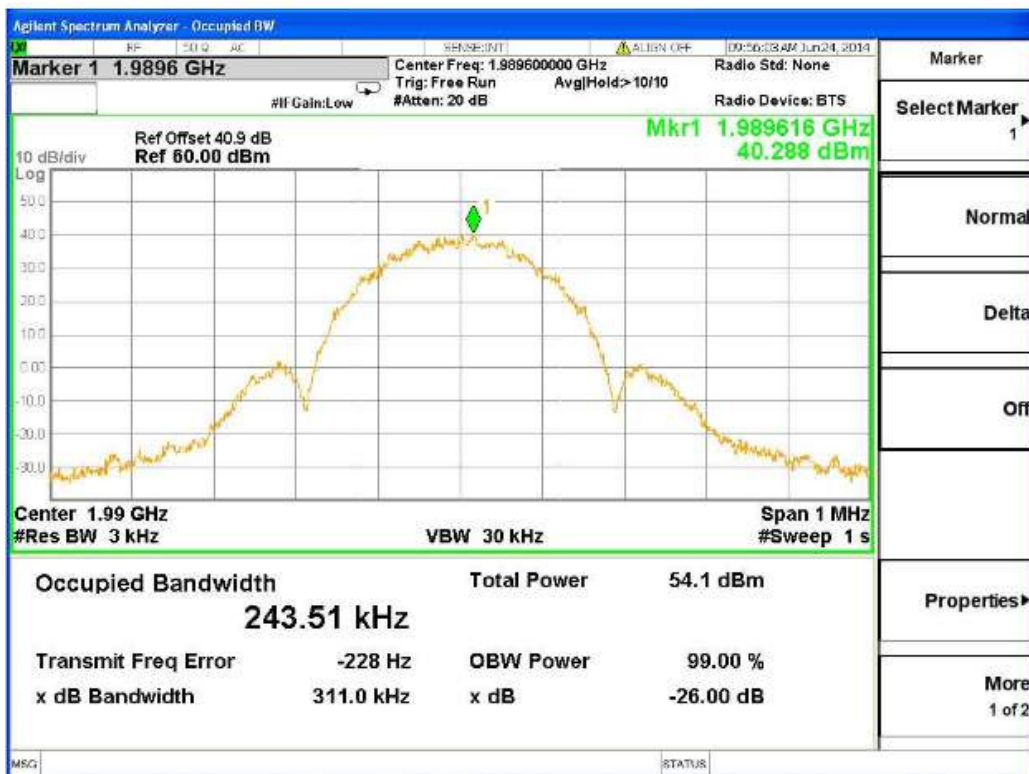
Channel Position T - 8-PSK



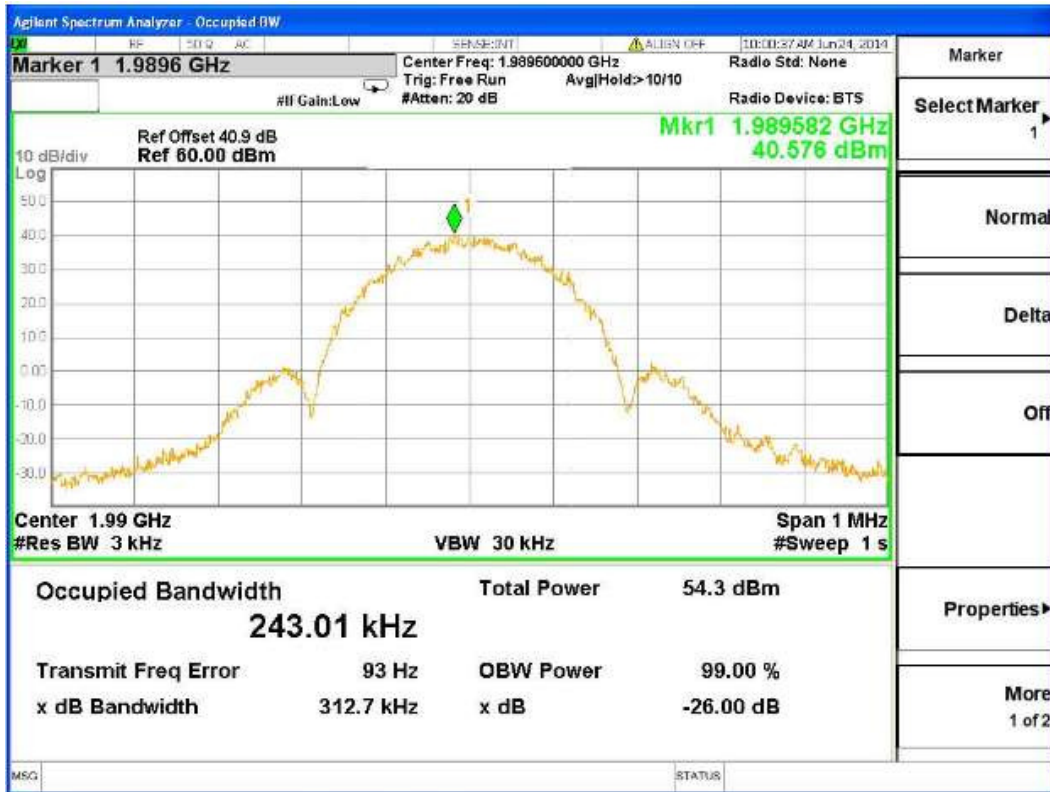
Channel Position T - AQPSK



Channel Position T - 16QAM



Channel Position T - 32QAM



Configuration W-SC

Maximum Output Power 47.0dBm per carrier

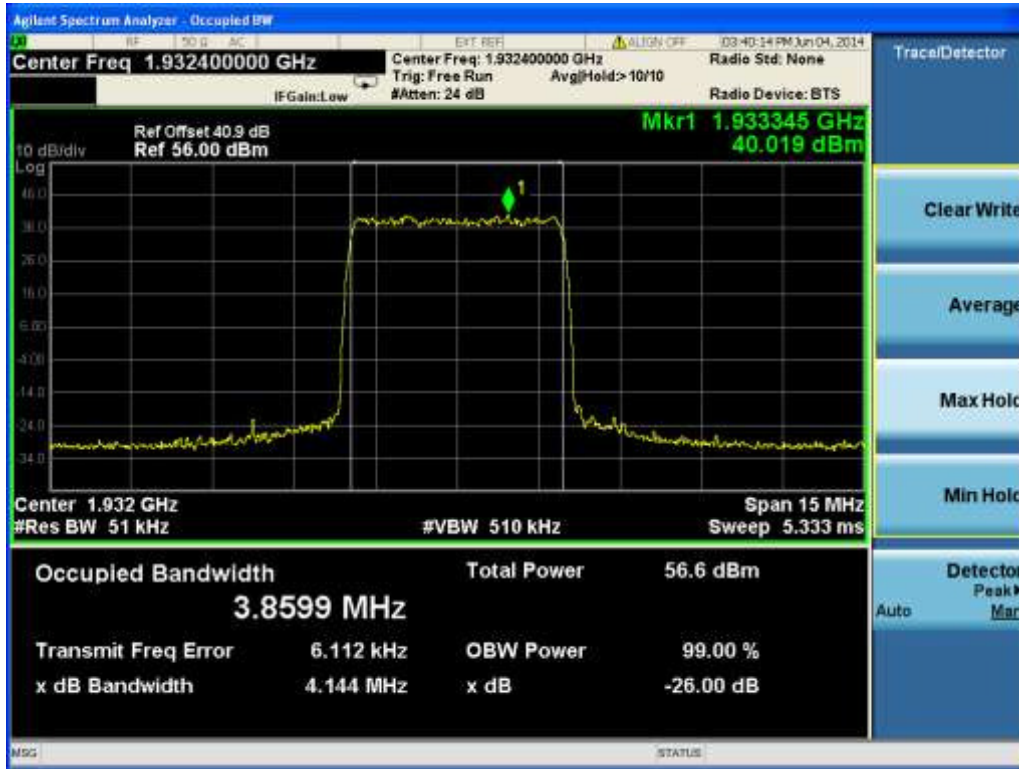
-26dBc Occupied Bandwidth for FCC requirement

Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 1932.4MHz	Channel Position M 1960.0MHz	Channel Position T 1987.6MHz
QPSK / 4.2 MHz	4.14	4.15	4.15
QPSK / 5.0 MHz	4.67	4.67	4.67

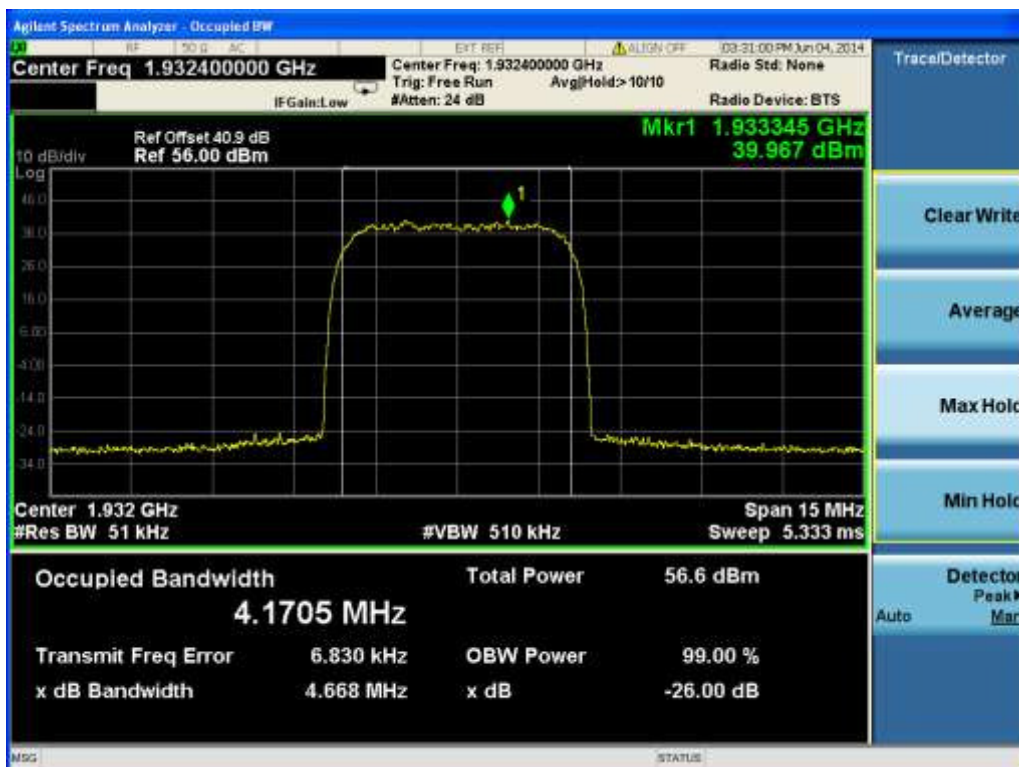
99% Occupied Bandwidth for IC requirement

Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 1932.4MHz	Channel Position M 1960.0MHz	Channel Position T 1987.6MHz
QPSK / 4.2 MHz	3.86	3.86	3.86
QPSK / 5.0 MHz	4.17	4.17	4.17

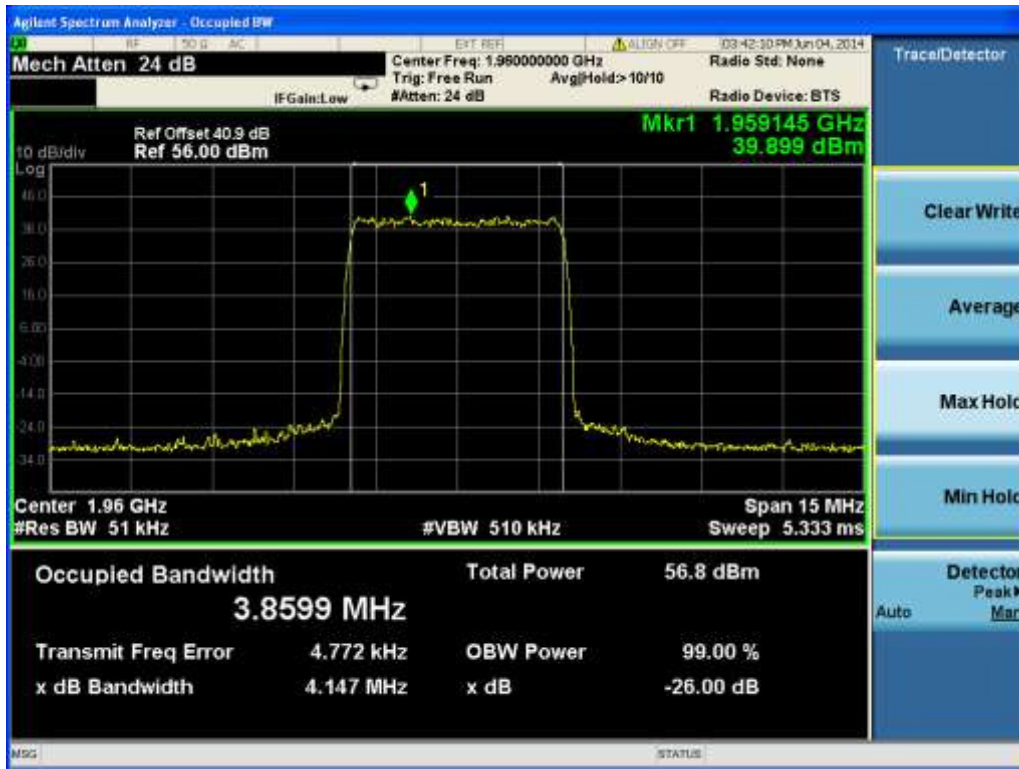
Channel Position B - QPSK / Bandwidth 4.2 MHz



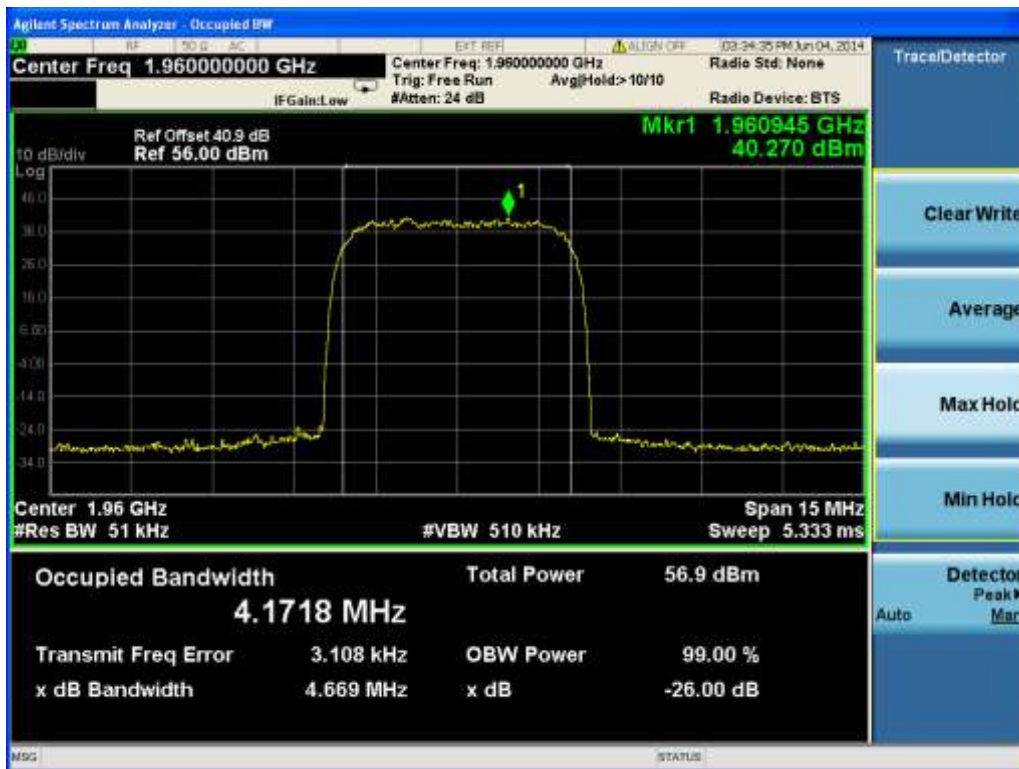
Channel Position B - QPSK / Bandwidth 5.0 MHz



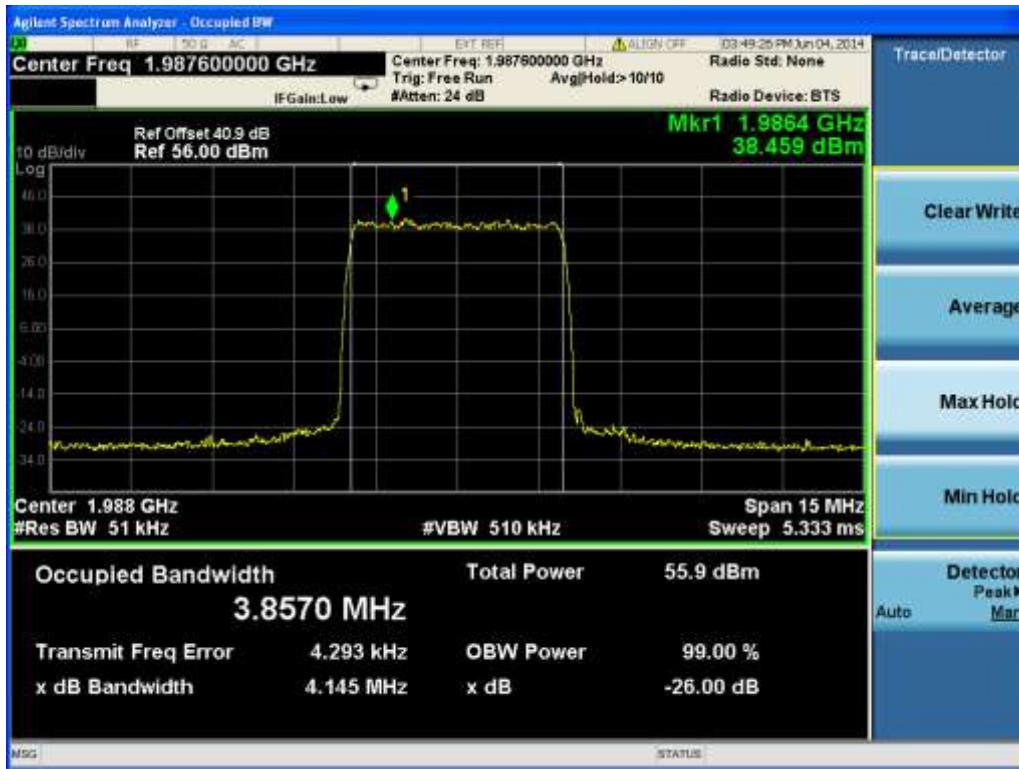
Channel Position M - QPSK / Bandwidth 4.2 MHz



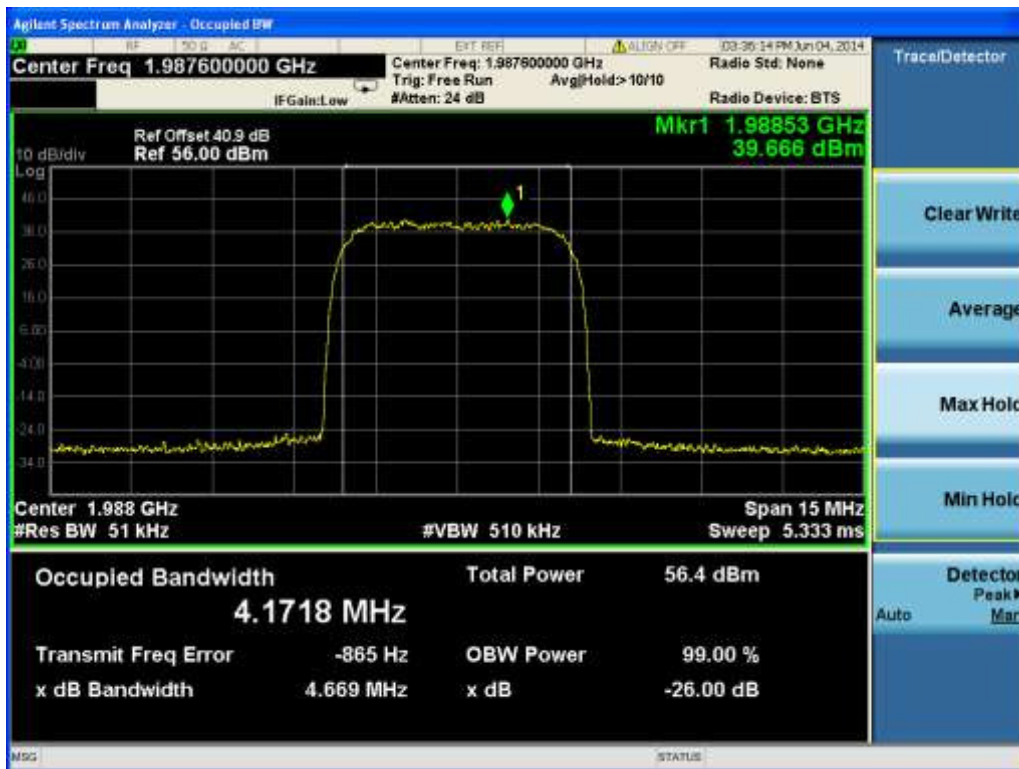
Channel Position M - QPSK / Bandwidth 5.0 MHz



Channel Position T - QPSK / Bandwidth 4.2 MHz



Channel Position T - QPSK / Bandwidth 5.0 MHz



Configuration W-MIMO-SC

Maximum Output Power 47.0dBm per carrier

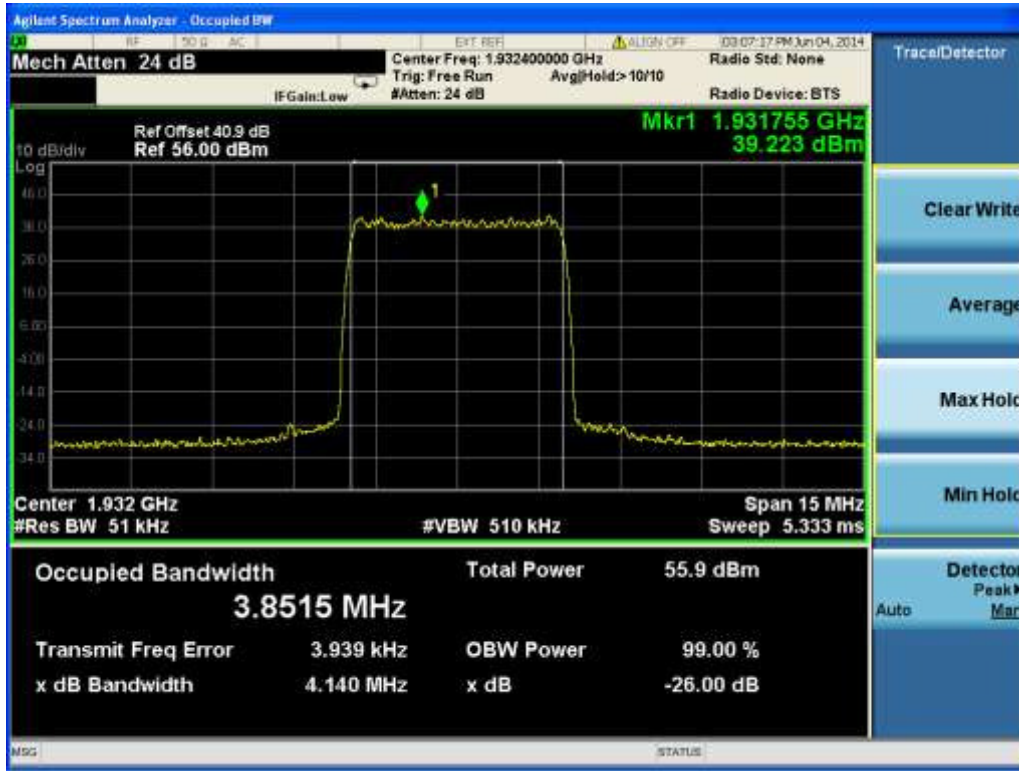
-26dBc Occupied Bandwidth for FCC requirement

Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 1932.4MHz	Channel Position M 1960.0MHz	Channel Position T 1987.6MHz
16QAM / 4.2 MHz	4.14	4.14	4.14
64QAM / 4.2 MHz	4.15	4.15	4.15
16QAM / 5.0 MHz	4.66	4.66	4.66
64QAM / 5.0 MHz	4.67	4.67	4.67

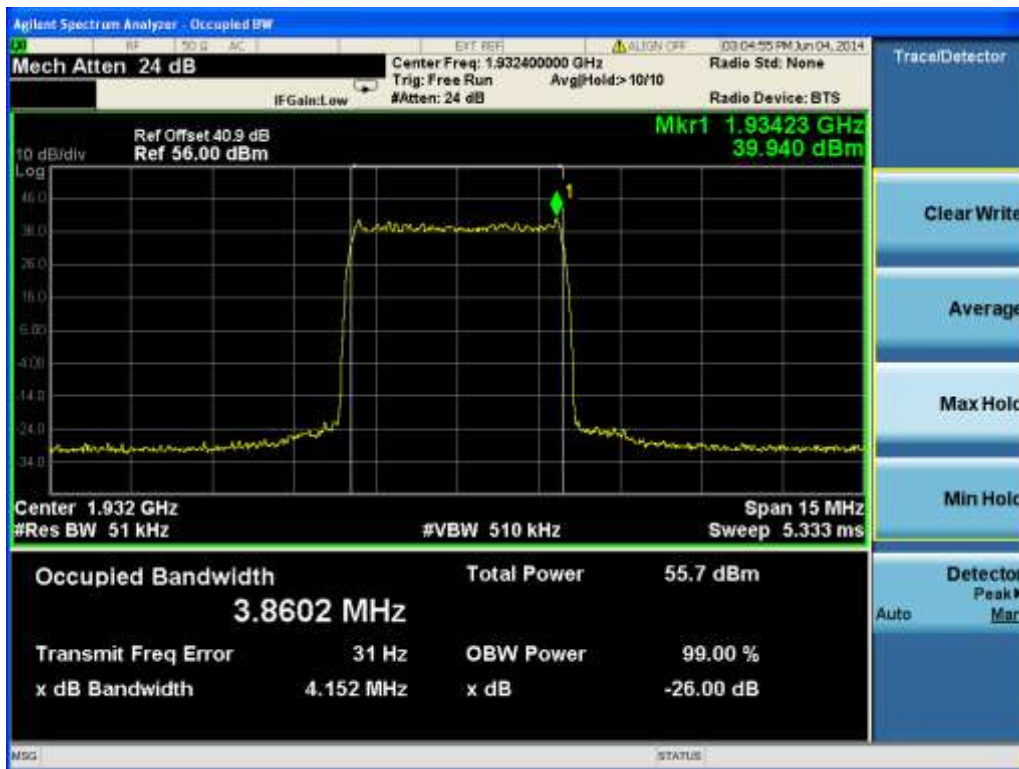
99% Occupied Bandwidth for IC requirement

Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 1932.4MHz	Channel Position M 1960.0MHz	Channel Position T 1987.6MHz
16QAM / 4.2 MHz	3.85	3.85	3.85
64QAM / 4.2 MHz	3.86	3.86	3.86
16QAM / 5.0 MHz	4.17	4.18	4.17
64QAM / 5.0 MHz	4.16	4.15	4.15

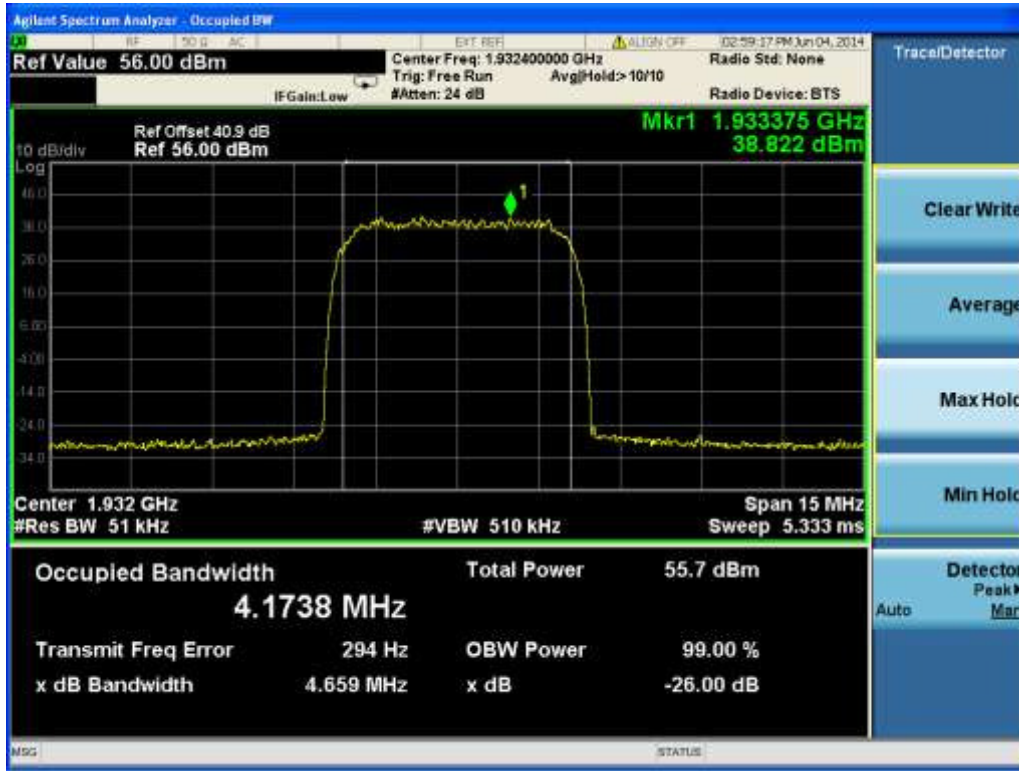
Channel Position B – 16QAM / Bandwidth 4.2 MHz



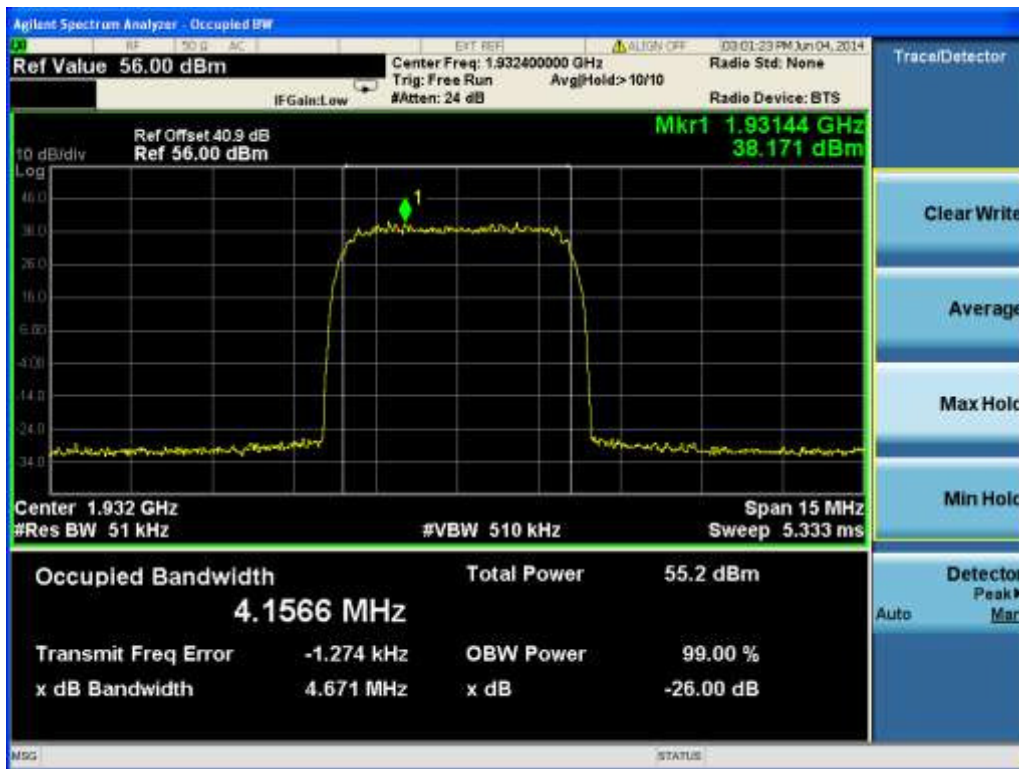
Channel Position B – 64QAM / Bandwidth 4.2 MHz



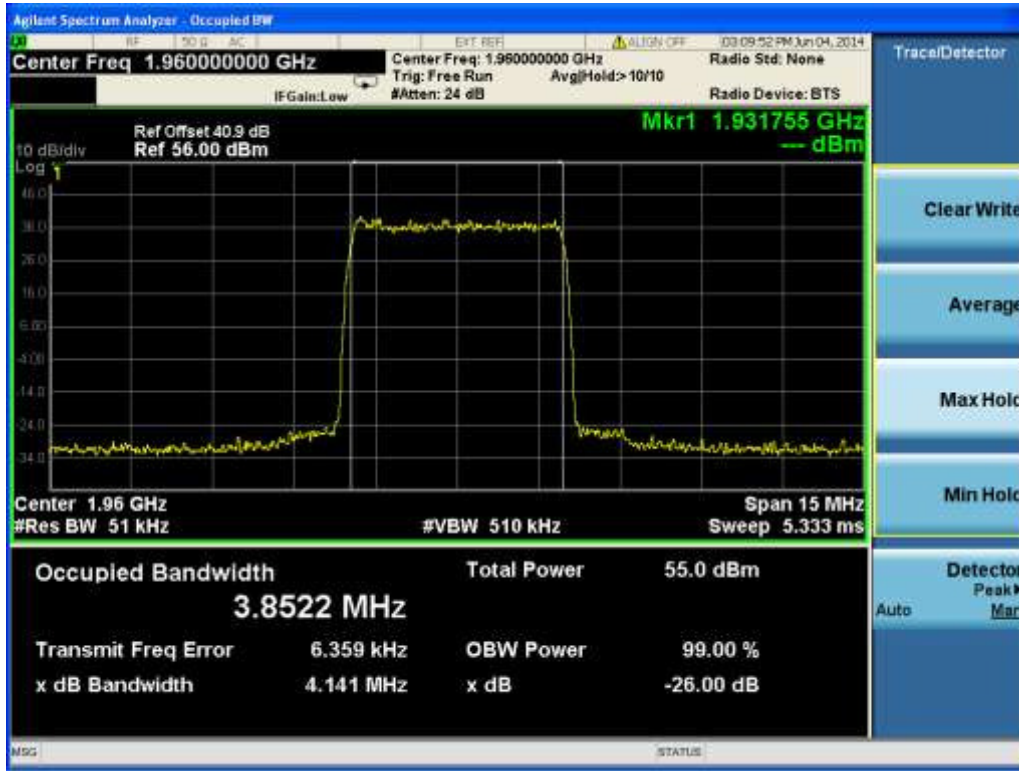
Channel Position B – 16QAM / Bandwidth 5.0 MHz



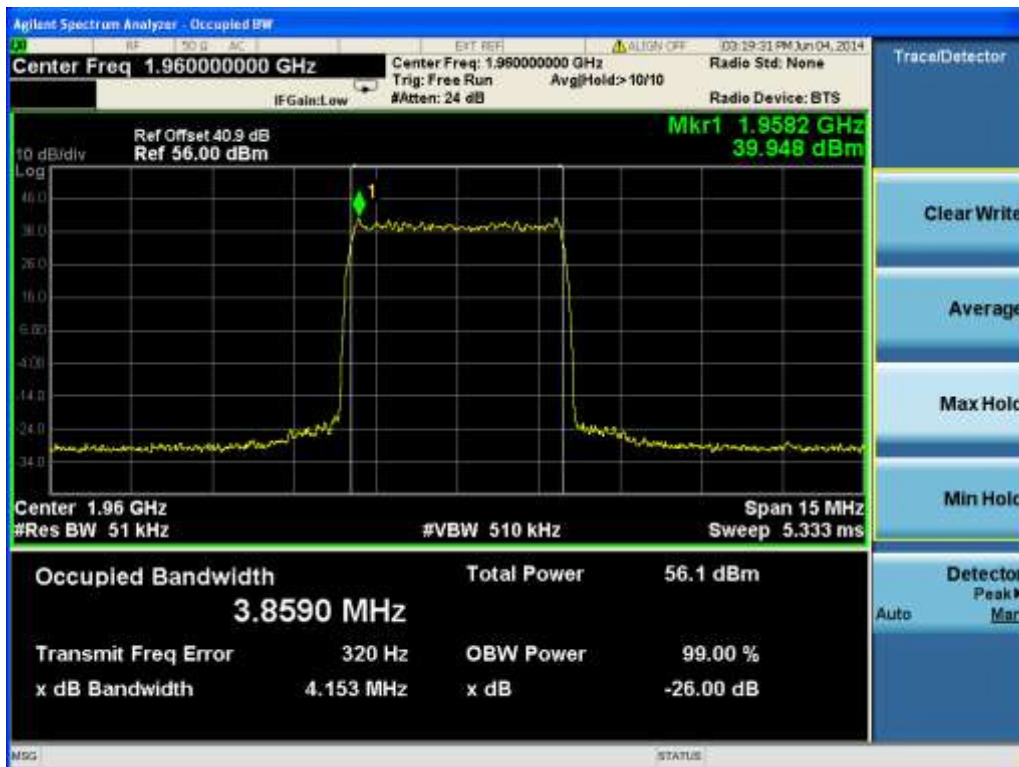
Channel Position B – 64QAM / Bandwidth 5.0 MHz



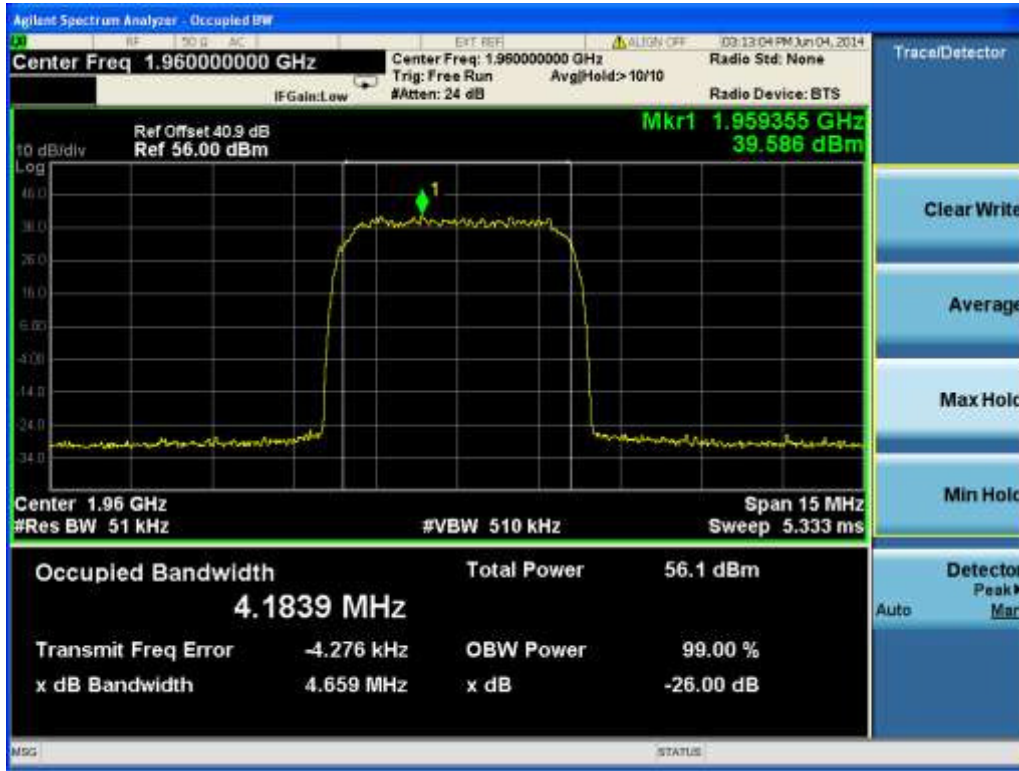
Channel Position M – 16QAM / Bandwidth 4.2 MHz



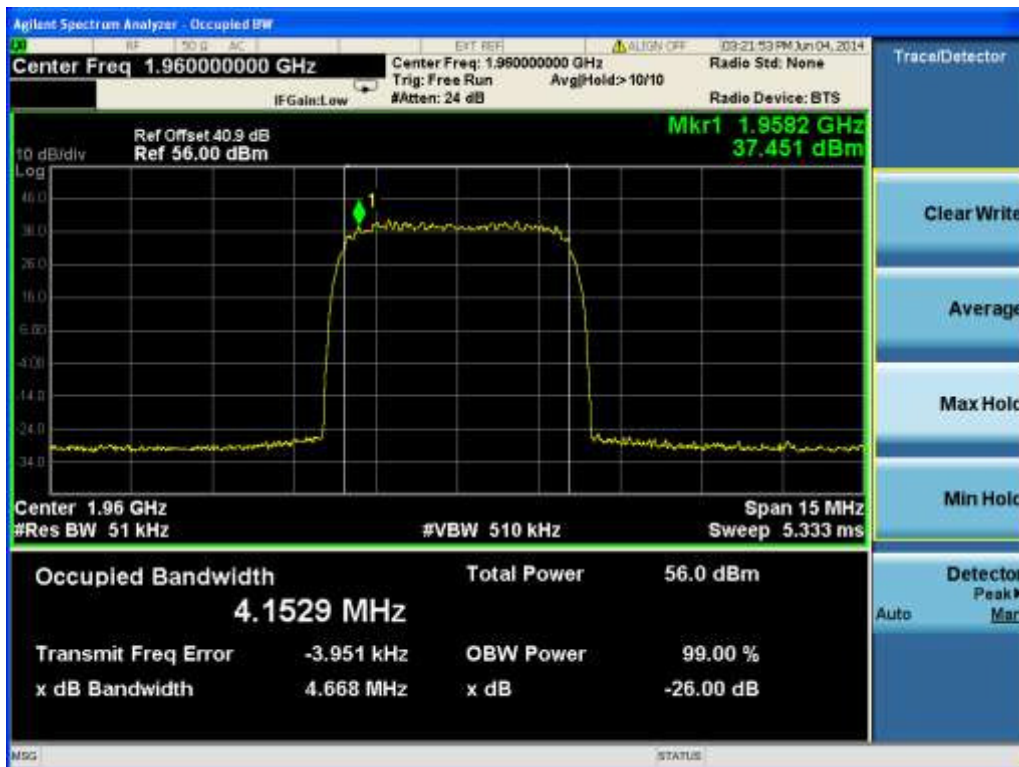
Channel Position M – 64QAM / Bandwidth 4.2 MHz



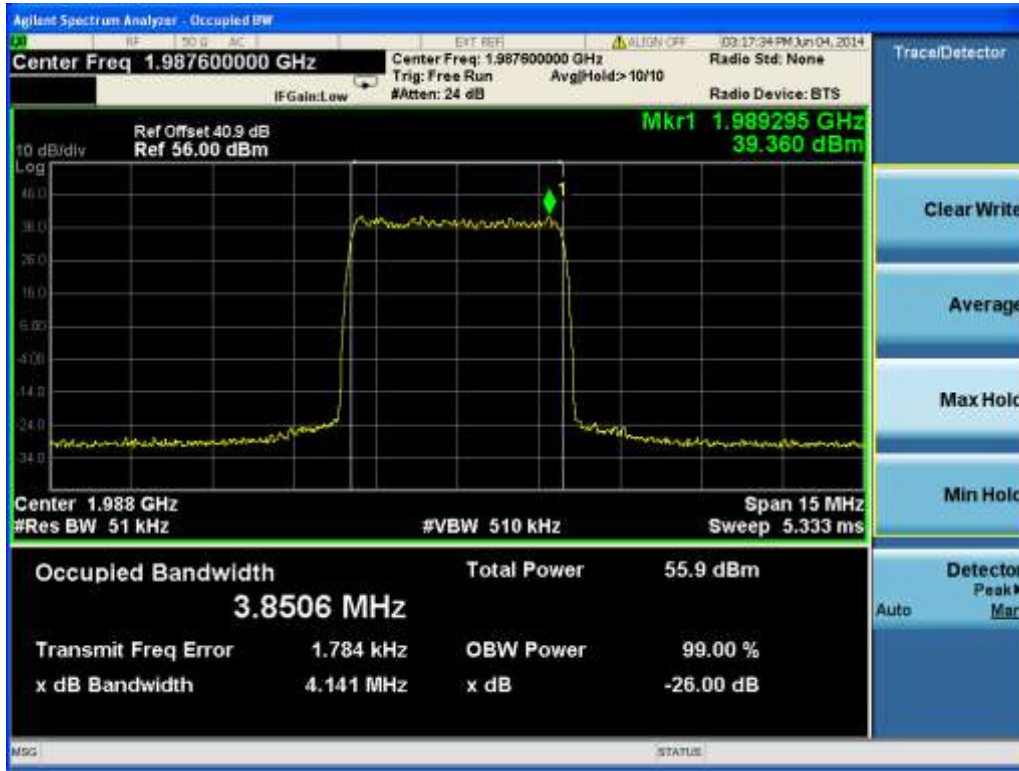
Channel Position M - 16QAM / Bandwidth 5.0 MHz



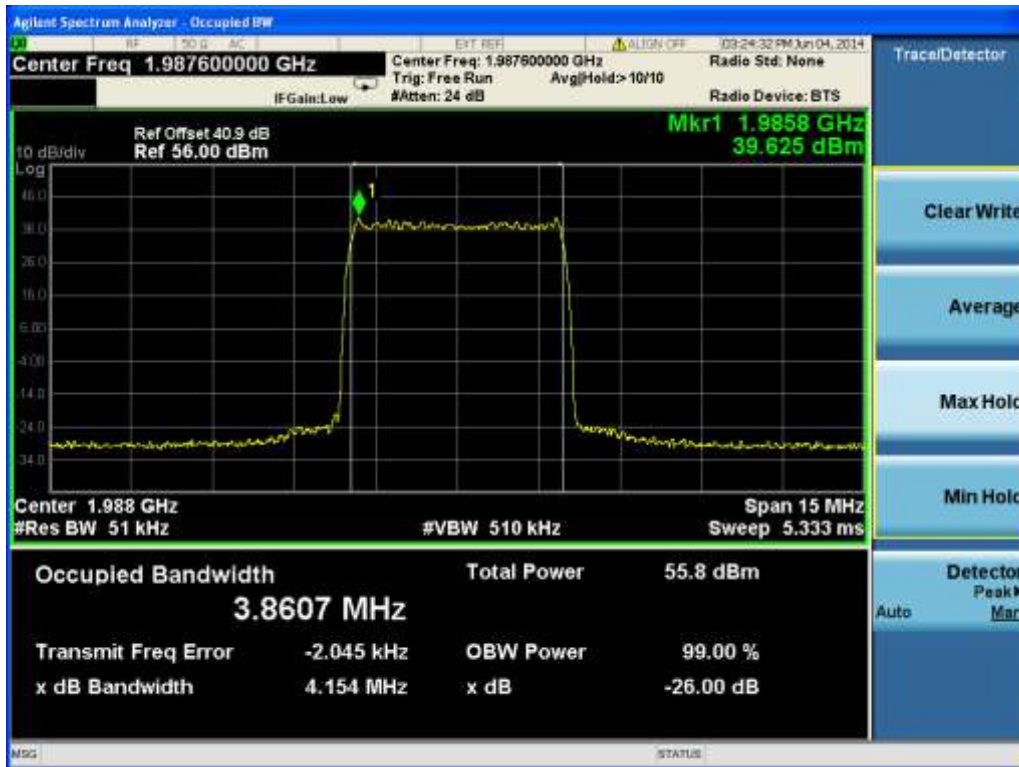
Channel Position M - 64QAM / Bandwidth 5.0 MHz



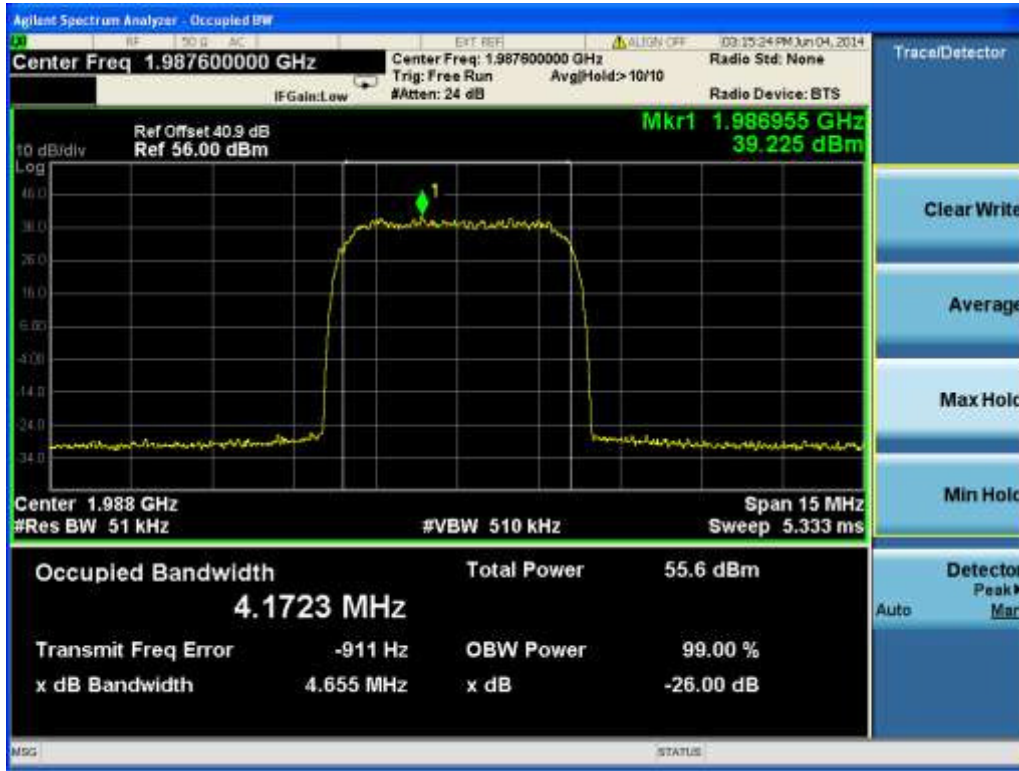
Channel Position T - 16QAM / Bandwidth 4.2 MHz



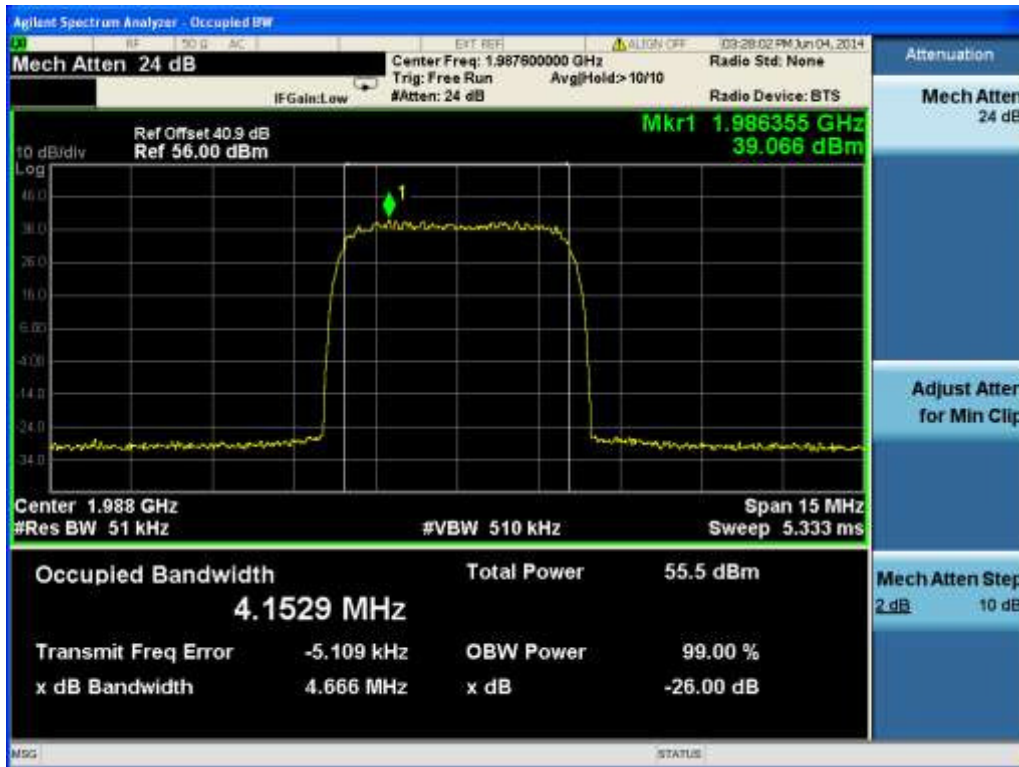
Channel Position T - 64QAM / Bandwidth 4.2 MHz



Channel Position T – 16QAM / Bandwidth 5.0 MHz



Channel Position T – 64QAM / Bandwidth 5.0 MHz



Configuration L-MIMO-SC

Maximum Output Power 47.8dBm per carrier

-26dBc Occupied Bandwidth for FCC requirement

Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 1930.7MHz	Channel Position M 1960.0MHz	Channel Position T 1989.3MHz
QPSK / 1.4 MHz	1.32	1.31	1.32
16QAM / 1.4 MHz	-	1.32	-
64QAM / 1.4 MHz	-	1.33	-

Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 1931.5MHz	Channel Position M 1960.0MHz	Channel Position T 1988.5MHz
QPSK / 3.0 MHz	-	2.95	-
16QAM / 3.0 MHz	-	2.94	-
64QAM / 3.0 MHz	-	2.95	-

Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 1932.5MHz	Channel Position M 1960.0MHz	Channel Position T 1987.5MHz
QPSK / 5.0 MHz	-	4.82	-
16QAM / 5.0 MHz	-	4.80	-
64QAM / 5.0 MHz	-	4.82	-

Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 1935.0MHz	Channel Position M 1960.0MHz	Channel Position T 1985.0MHz
QPSK / 10.0 MHz	-	9.64	-
16QAM / 10.0 MHz	-	9.62	-
64QAM / 10.0 MHz	-	9.63	-

Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 1937.5MHz	Channel Position M 1960.0MHz	Channel Position T 1982.5MHz
QPSK / 15.0 MHz	-	14.53	-
16QAM / 15.0 MHz	-	14.45	-
64QAM / 15.0 MHz	-	14.55	-

Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 1940.0MHz	Channel Position M 1960.0MHz	Channel Position T 1980.0MHz
QPSK / 20.0 MHz	19.25	19.24	19.18
16QAM / 20.0 MHz	-	19.17	-
64QAM / 20.0 MHz	-	19.25	-

99% Occupied Bandwidth for IC requirement

Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 1930.7MHz	Channel Position M 1960.0MHz	Channel Position T 1989.3MHz
QPSK / 1.4 MHz	1.11	1.10	1.11
16QAM / 1.4 MHz	-	1.11	-
64QAM / 1.4 MHz	-	1.12	-

Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 1931.5MHz	Channel Position M 1960.0MHz	Channel Position T 1988.5MHz
QPSK / 3.0 MHz	-	2.71	-
16QAM / 3.0 MHz	-	2.70	-
64QAM / 3.0 MHz	-	2.71	-

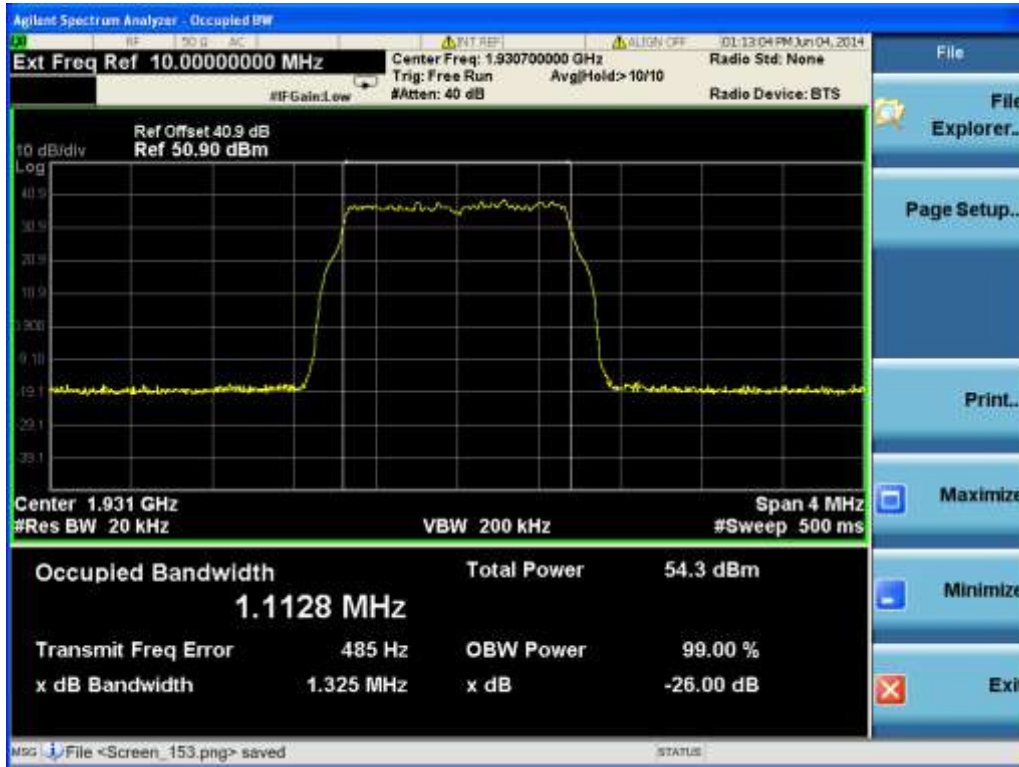
Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 1932.5MHz	Channel Position M 1960.0MHz	Channel Position T 1987.5MHz
QPSK / 5.0 MHz	-	4.49	-
16QAM / 5.0 MHz	-	4.49	-
64QAM / 5.0 MHz	-	4.49	-

Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 1935.0MHz	Channel Position M 1960.0MHz	Channel Position T 1985.0MHz
QPSK / 10.0 MHz	-	8.95	-
16QAM / 10.0 MHz	-	8.97	-
64QAM / 10.0 MHz	-	8.96	-

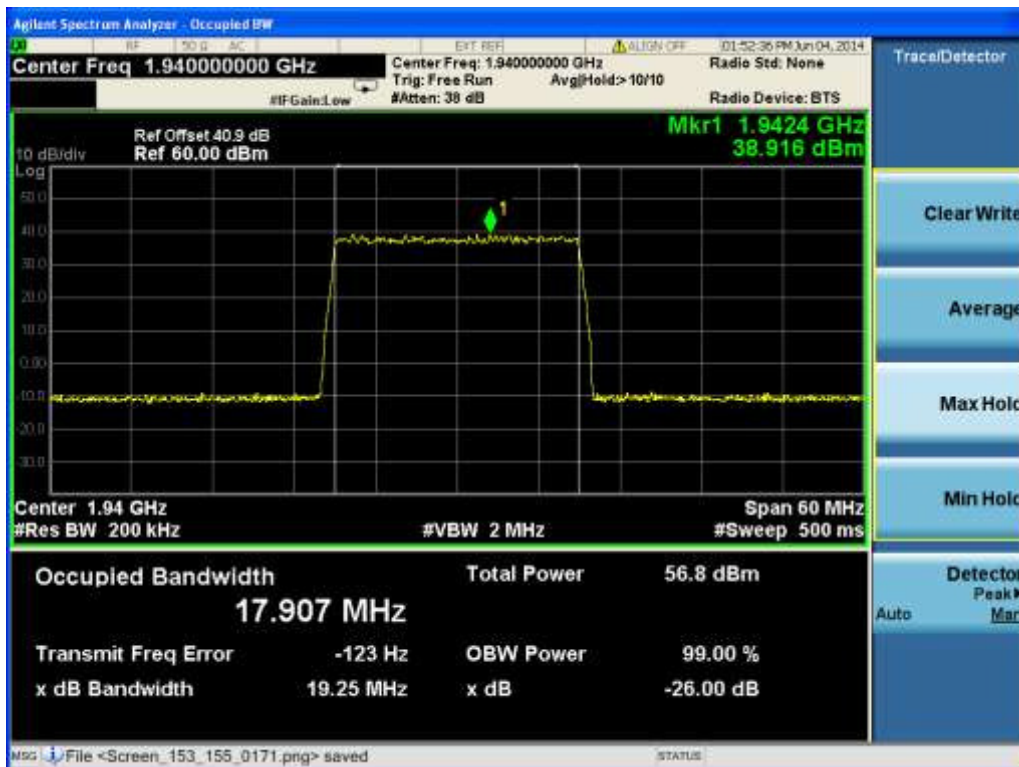
Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 1937.5MHz	Channel Position M 1960.0MHz	Channel Position T 1982.5MHz
QPSK / 15.0 MHz	-	13.45	-
16QAM / 15.0 MHz	-	13.47	-
64QAM / 15.0 MHz	-	13.48	-

Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 1940.0MHz	Channel Position M 1960.0MHz	Channel Position T 1980.0MHz
QPSK / 20.0 MHz	17.91	17.91	17.91
16QAM / 20.0 MHz	-	17.89	-
64QAM / 20.0 MHz	-	17.92	-

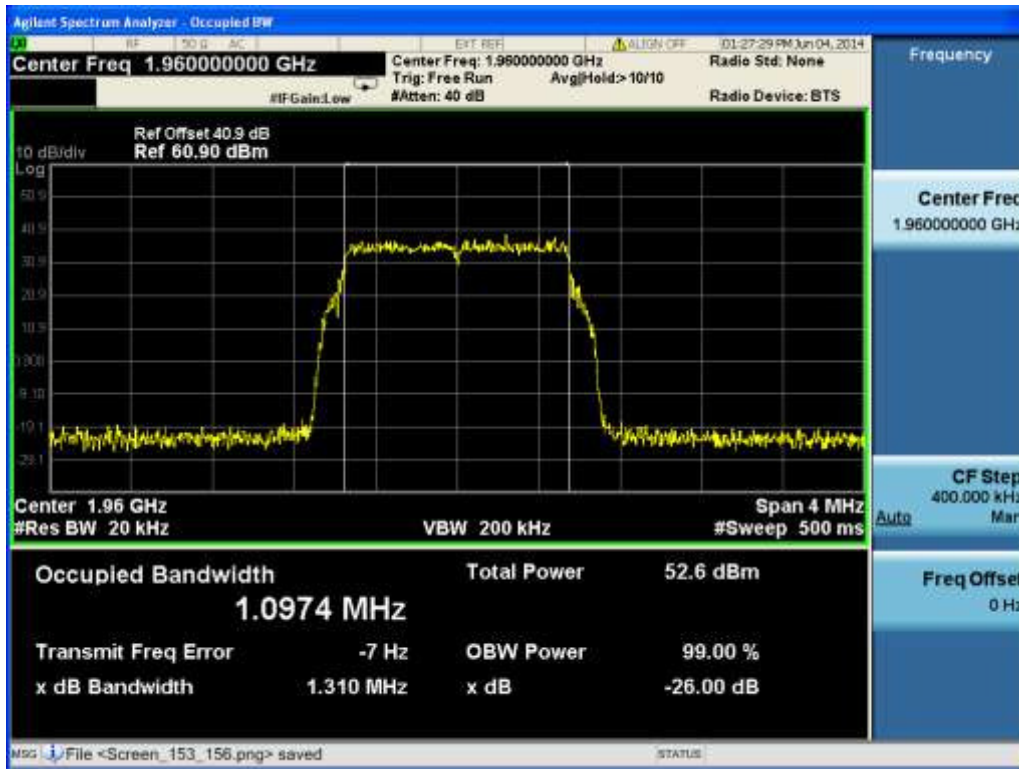
Channel Position B - QPSK / Bandwidth 1.4 MHz



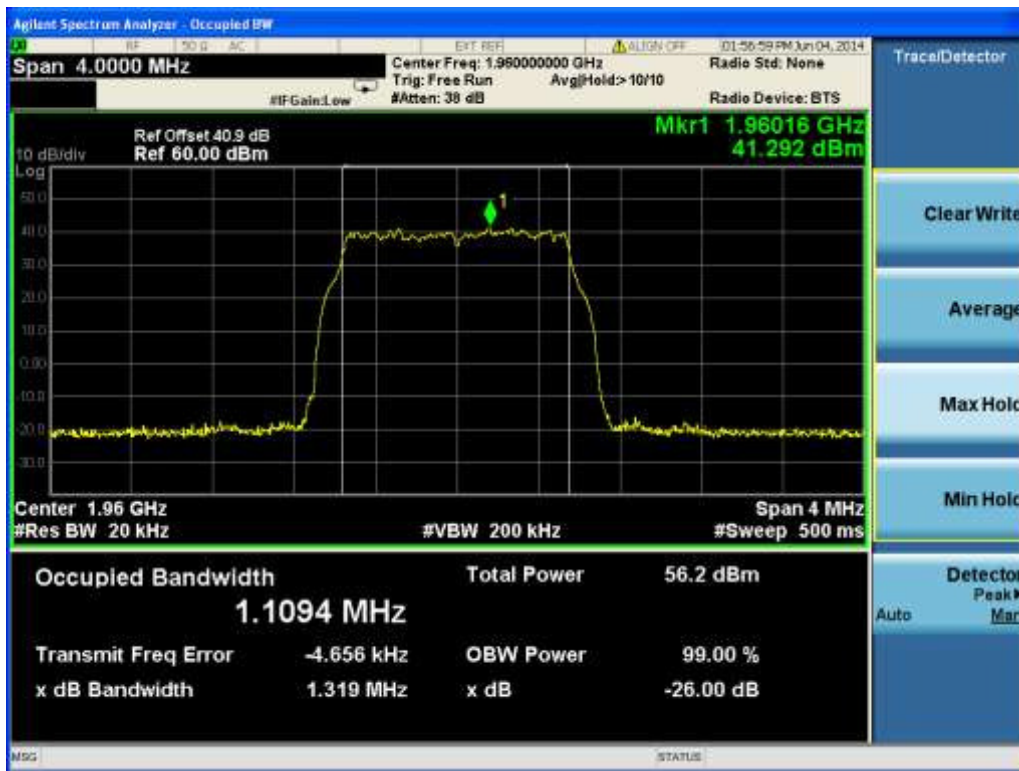
Channel Position B - QPSK / Bandwidth 20.0 MHz



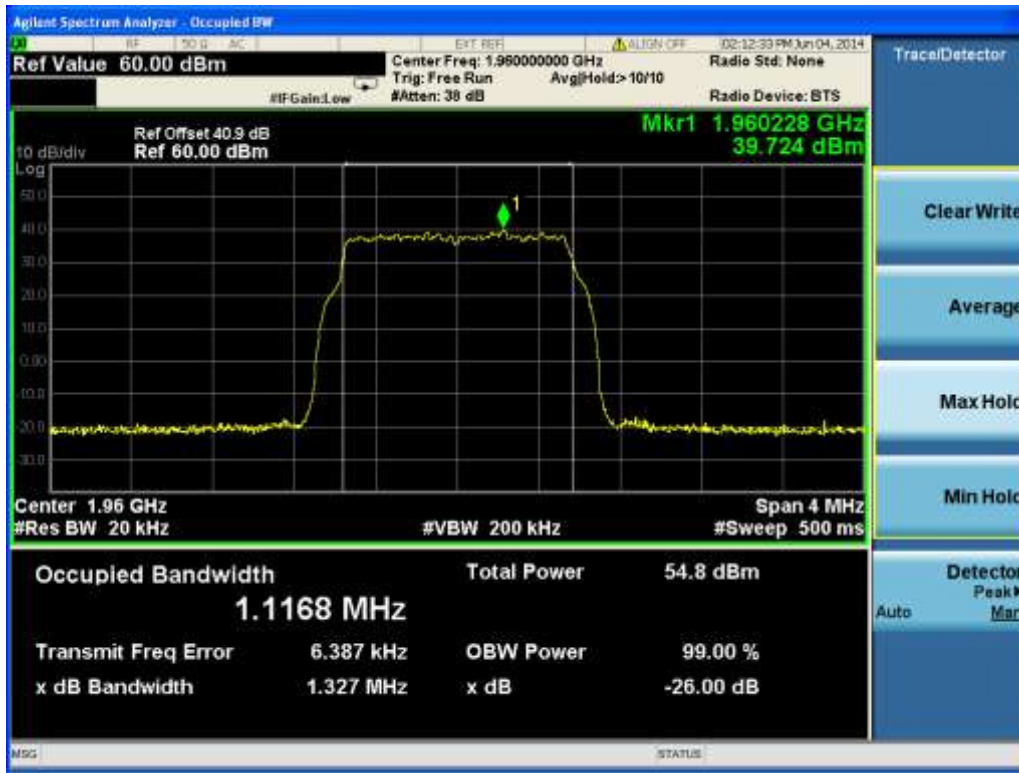
Channel Position M - QPSK / Bandwidth 1.4 MHz



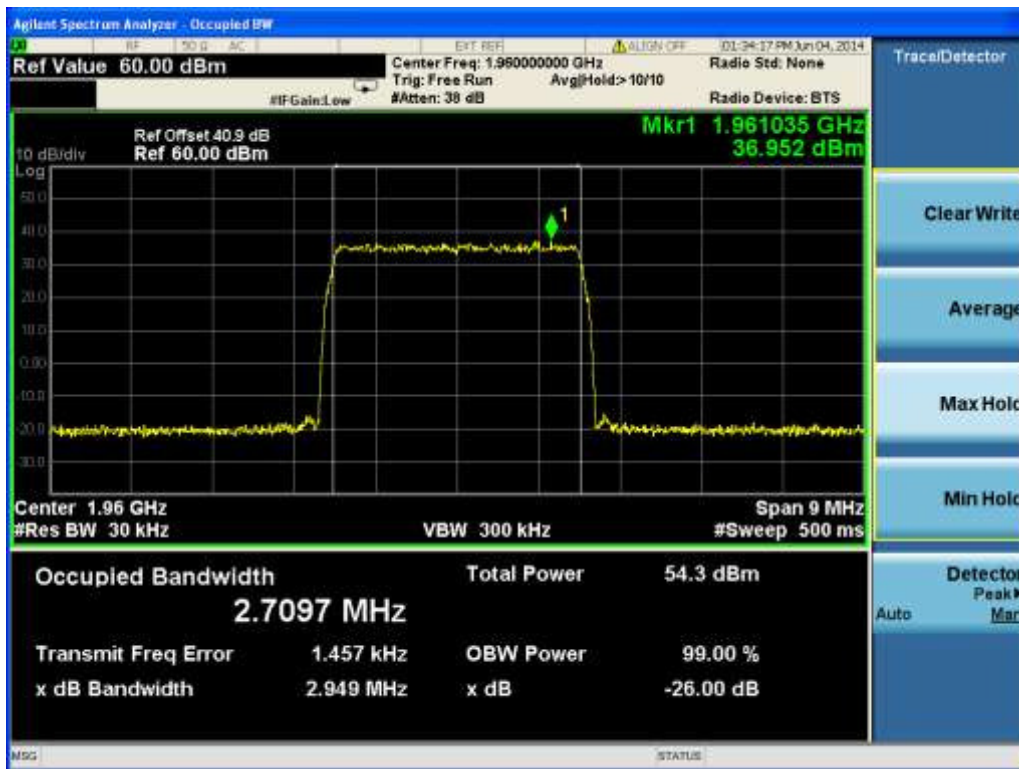
Channel Position M – 16QAM / Bandwidth 1.4 MHz



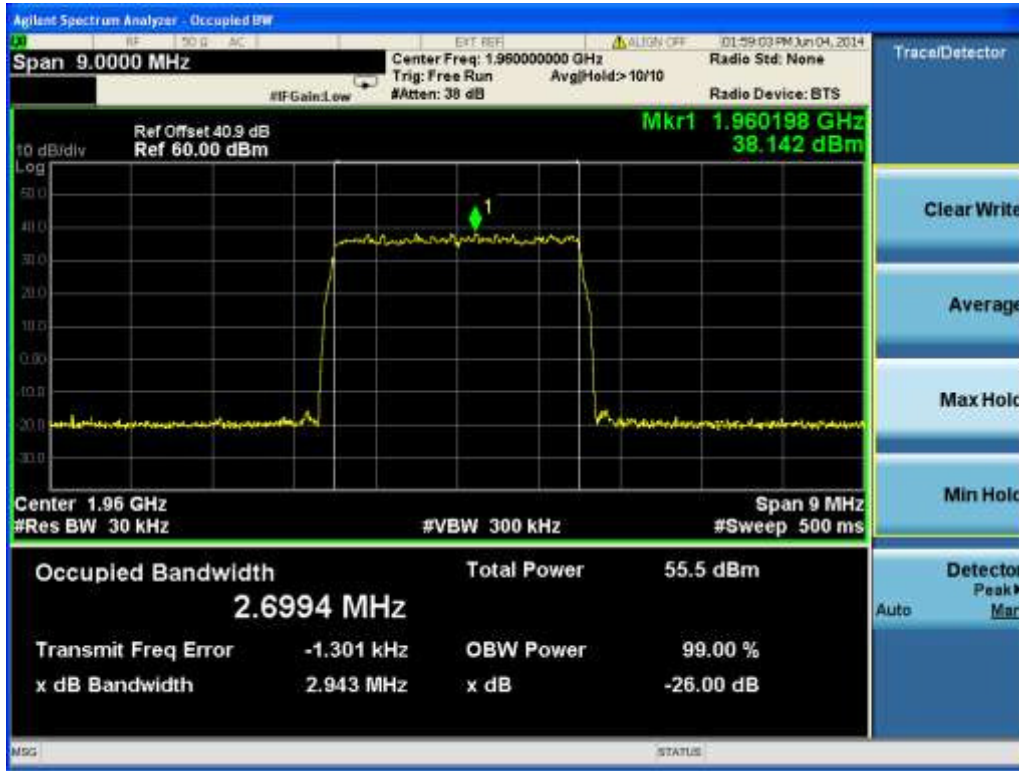
Channel Position M – 64QAM / Bandwidth 1.4 MHz



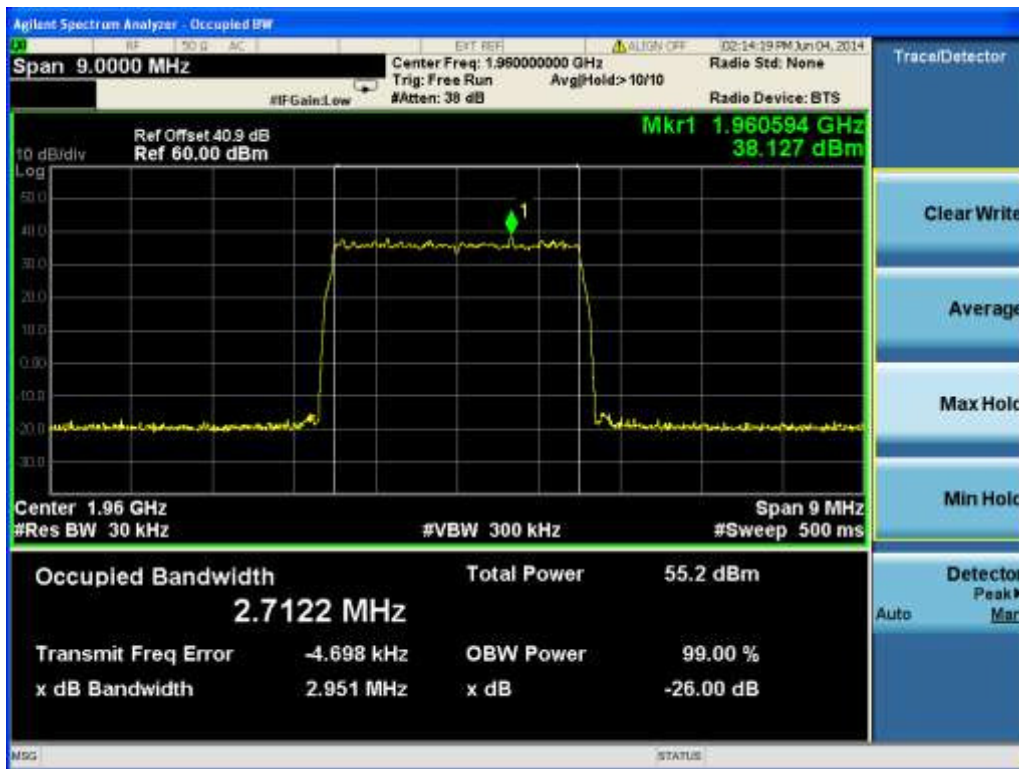
Channel Position M - QPSK / Bandwidth 3.0 MHz



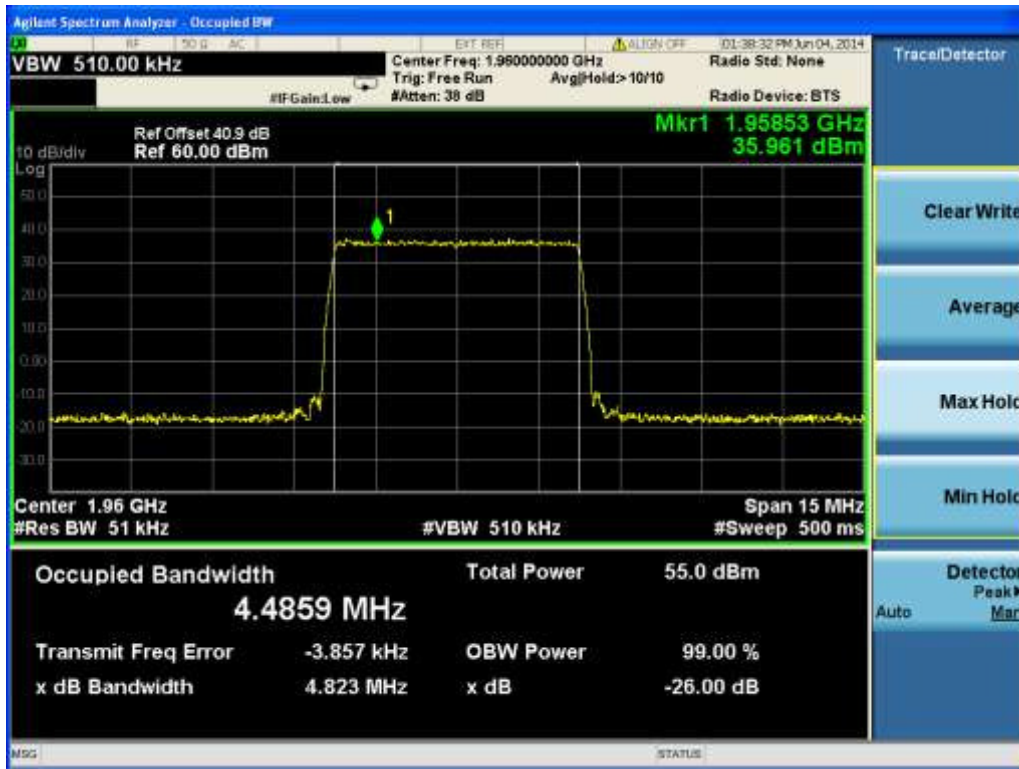
Channel Position M – 16QAM / Bandwidth 3.0 MHz



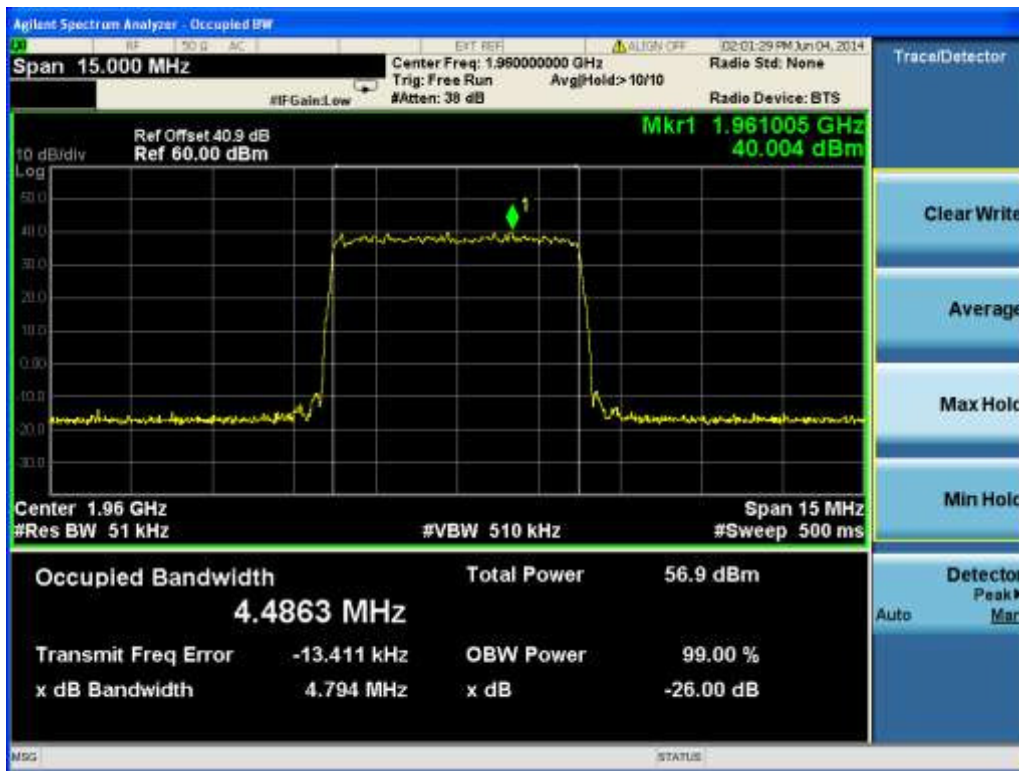
Channel Position M – 64QAM / Bandwidth 3.0 MHz



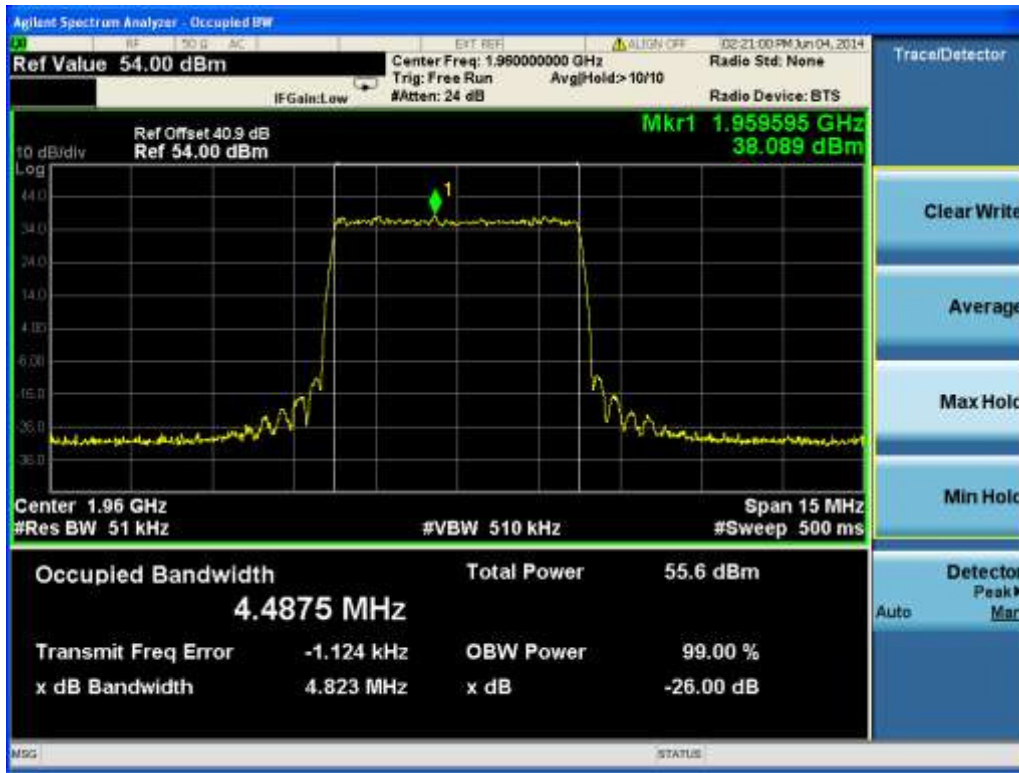
Channel Position M - QPSK / Bandwidth 5.0 MHz



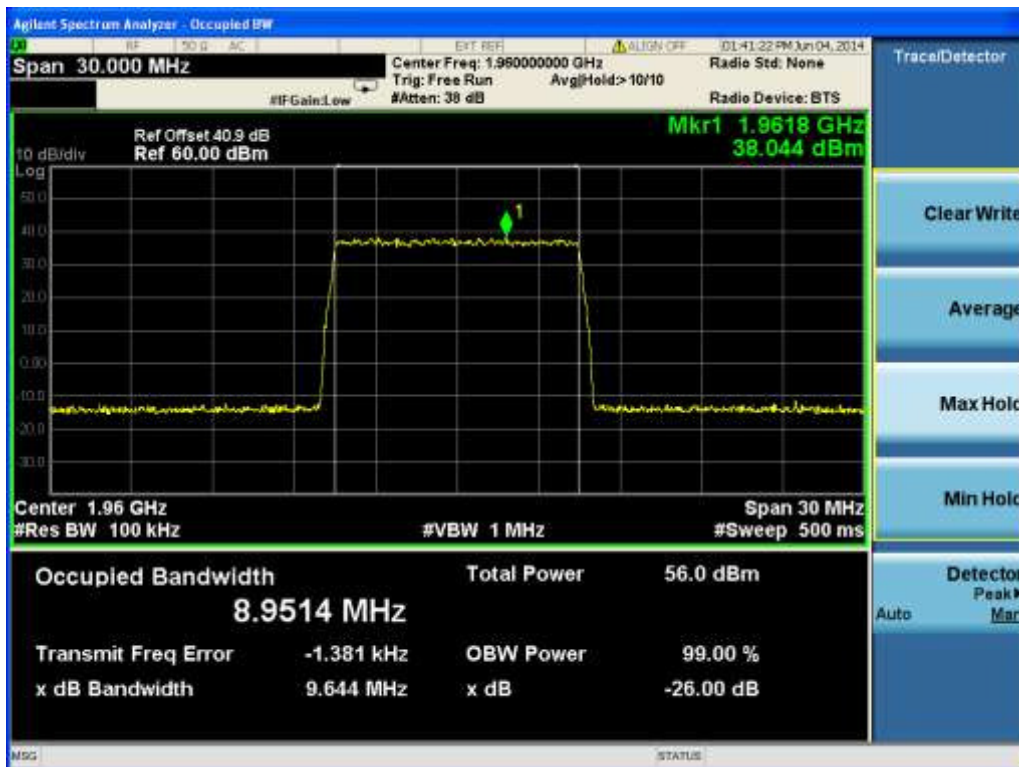
Channel Position M – 16QAM / Bandwidth 5.0 MHz



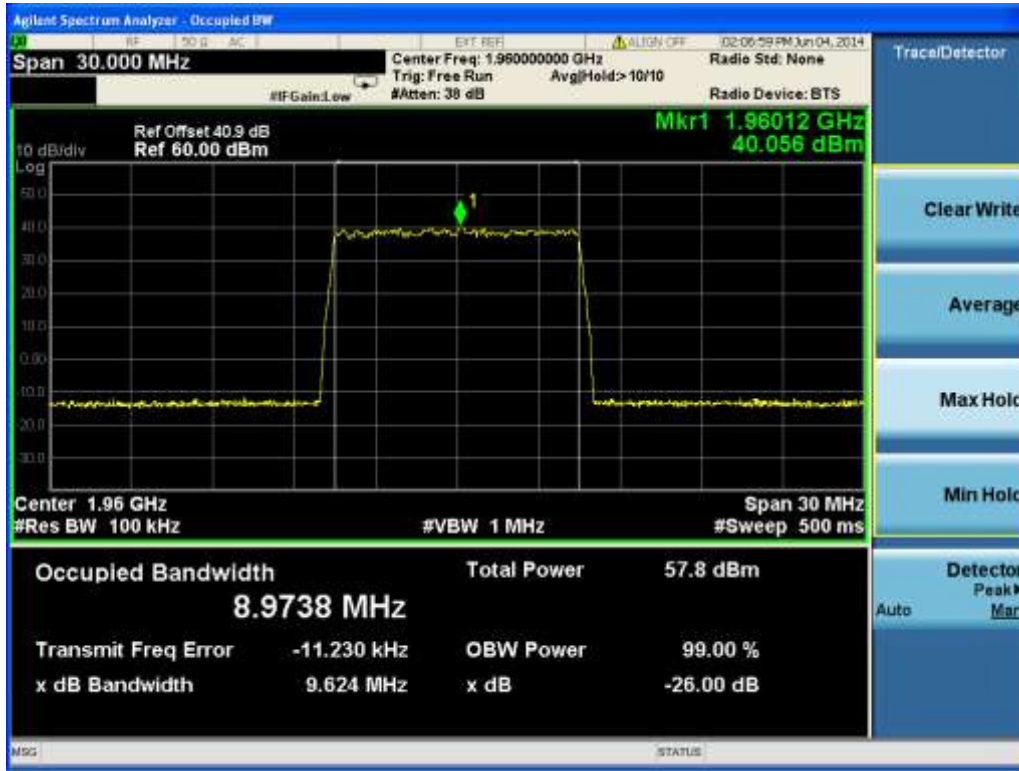
Channel Position M – 64QAM / Bandwidth 5.0 MHz



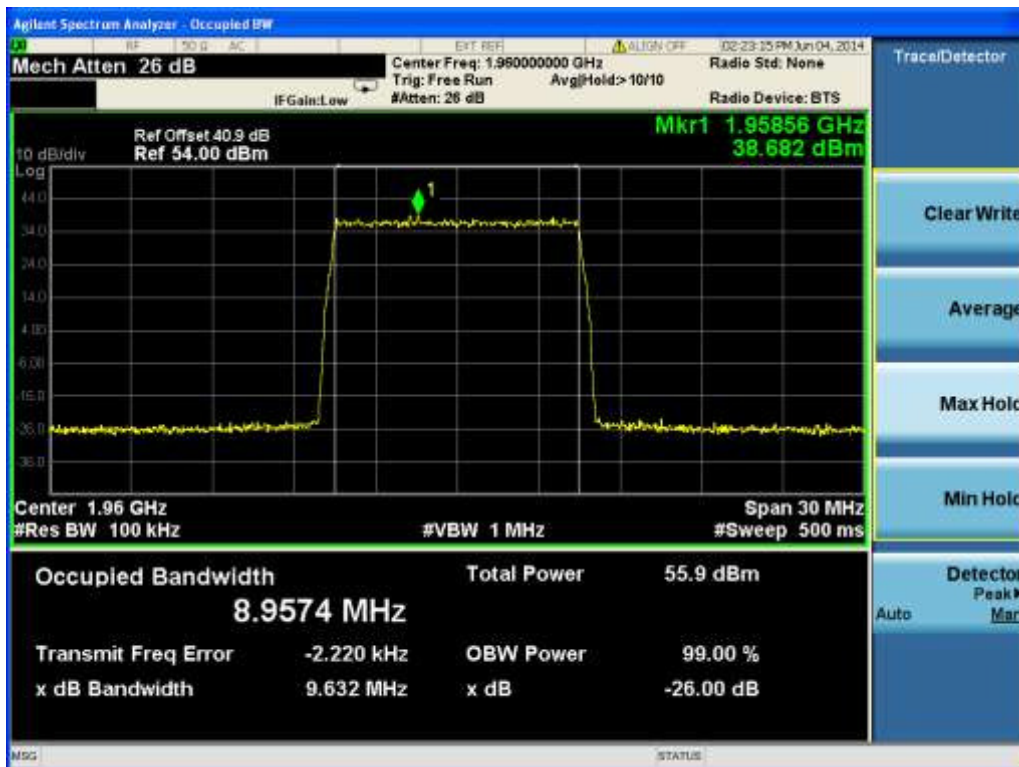
Channel Position M - QPSK / Bandwidth 10.0 MHz



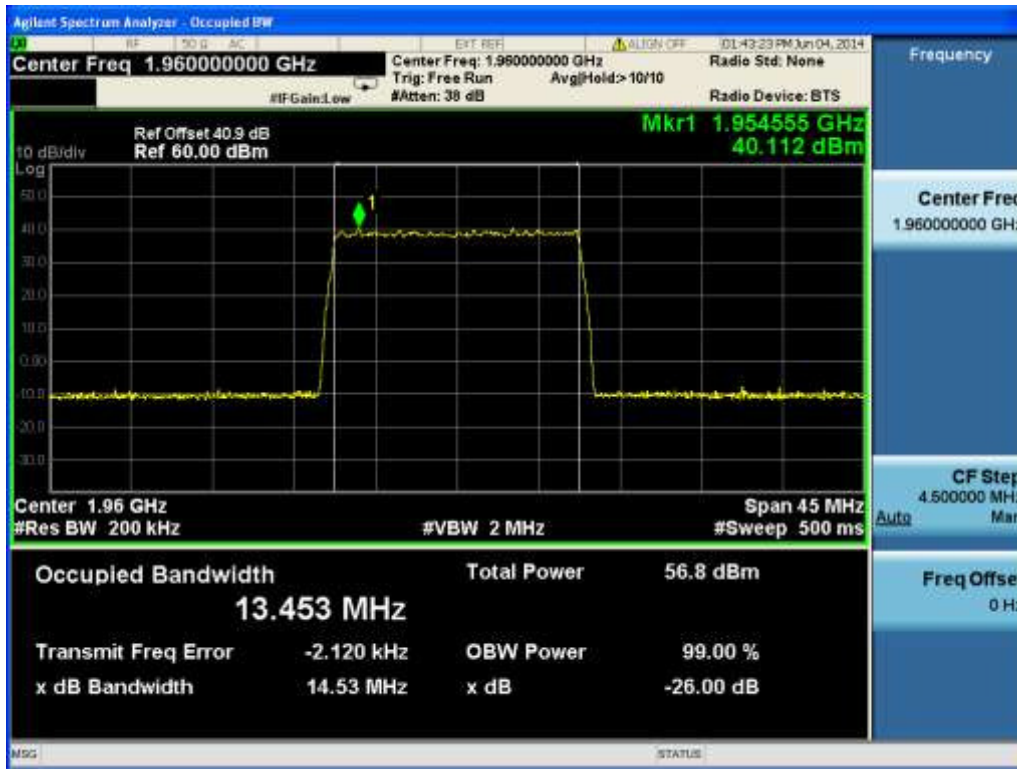
Channel Position M – 16QAM / Bandwidth 10.0 MHz



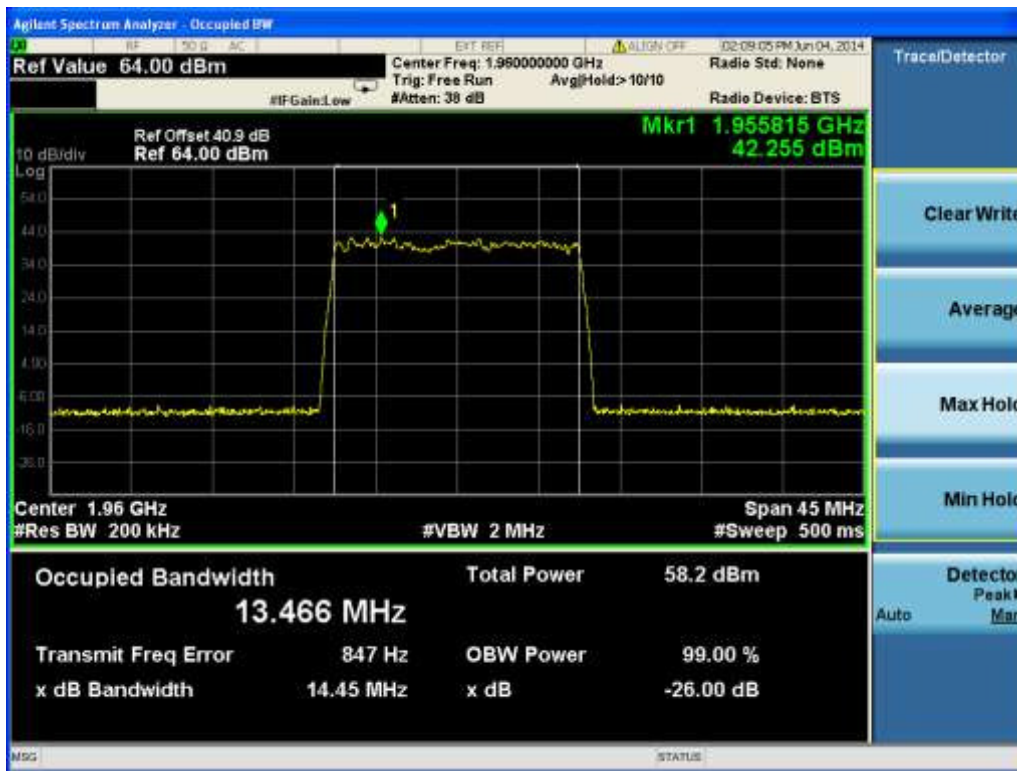
Channel Position M – 64QAM / Bandwidth 10.0 MHz



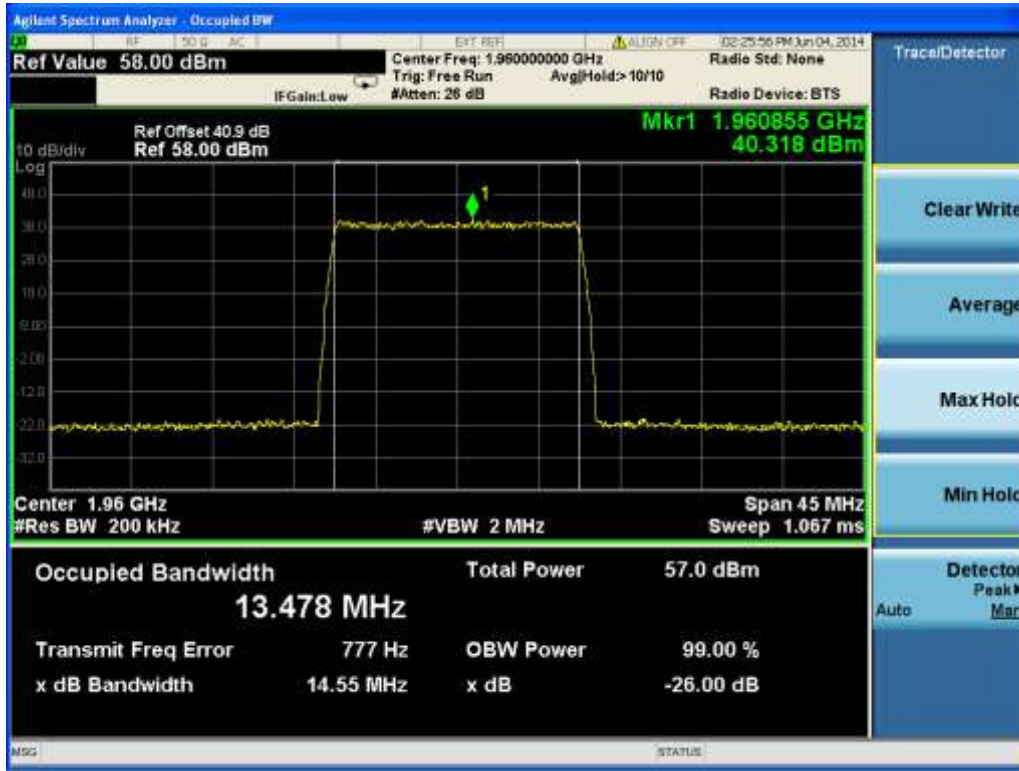
Channel Position M - QPSK / Bandwidth 15.0 MHz



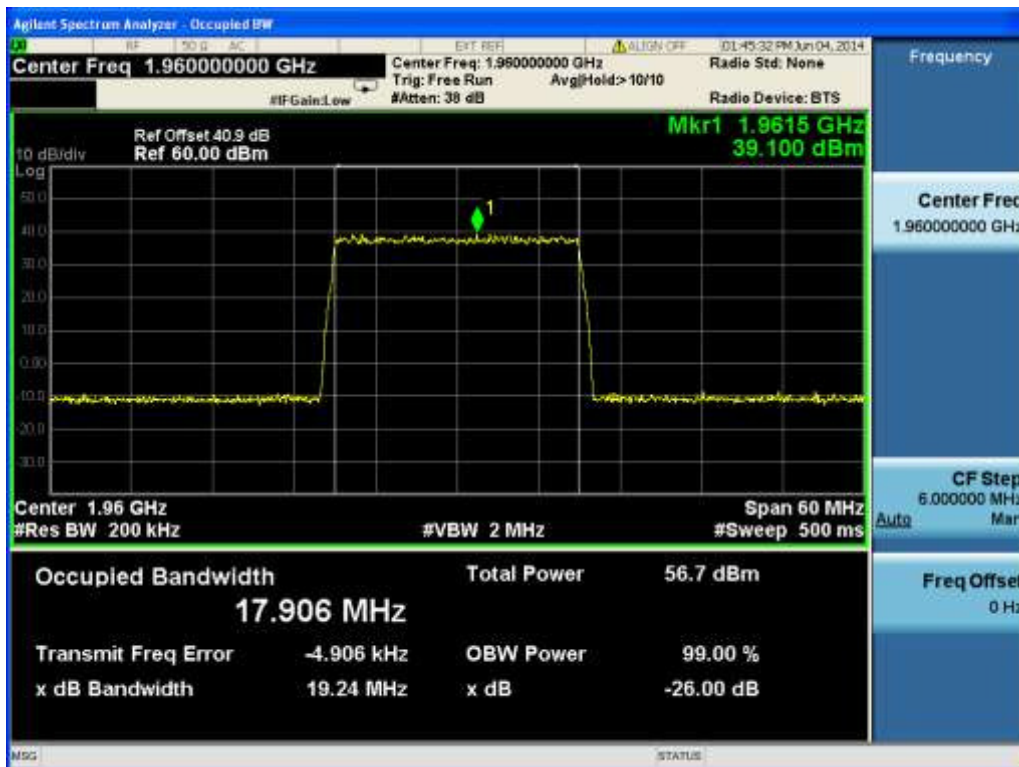
Channel Position M – 16QAM / Bandwidth 15.0 MHz



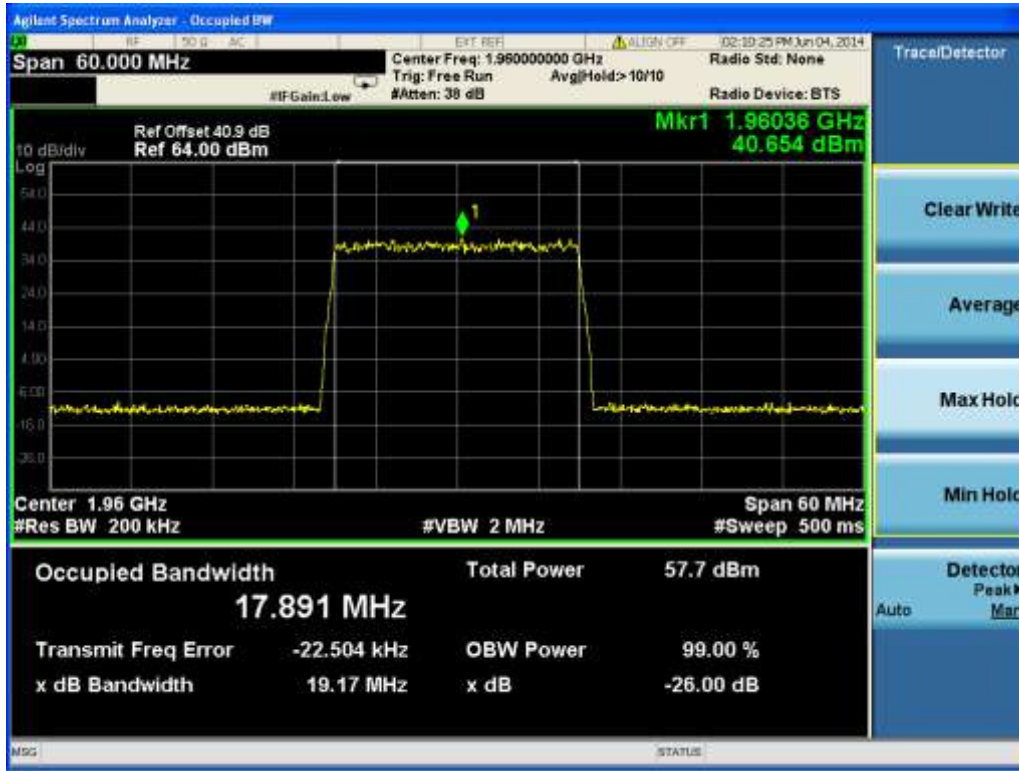
Channel Position M – 64QAM / Bandwidth 15.0 MHz



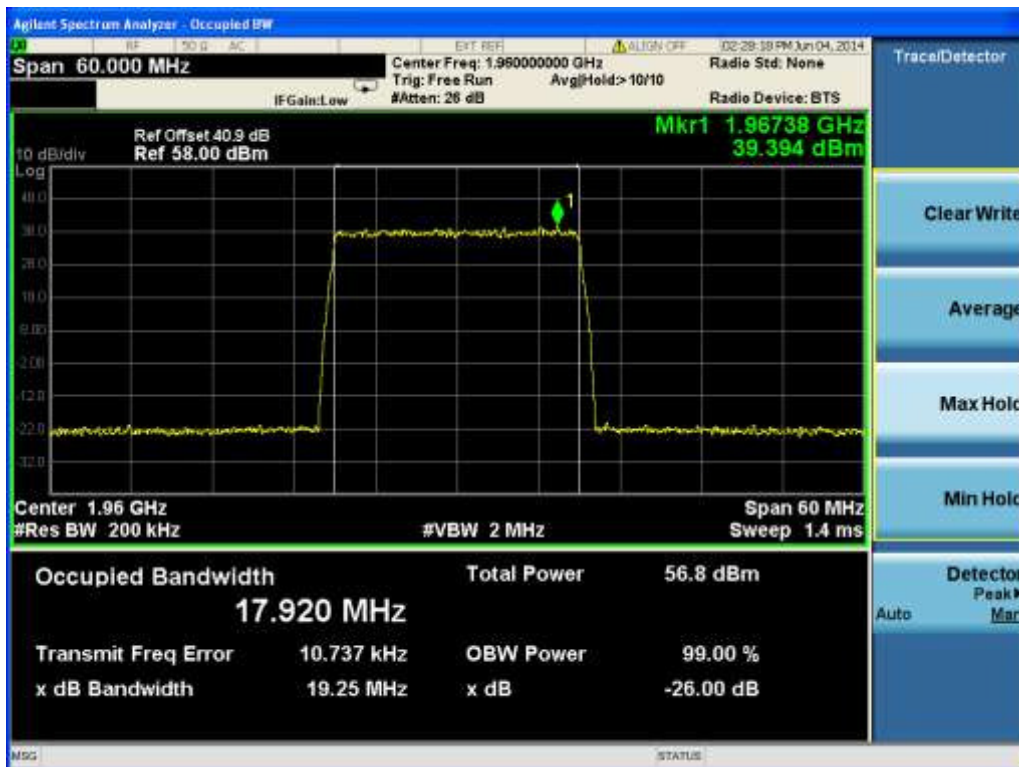
Channel Position M - QPSK / Bandwidth 20.0 MHz



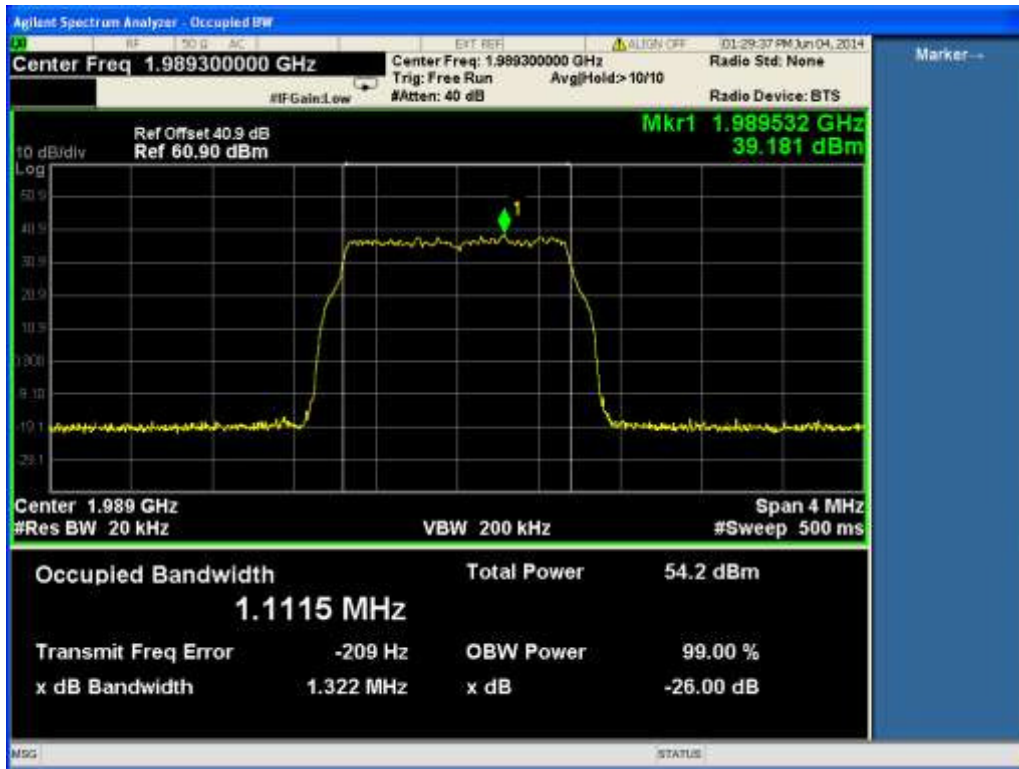
Channel Position M – 16QAM / Bandwidth 20.0 MHz



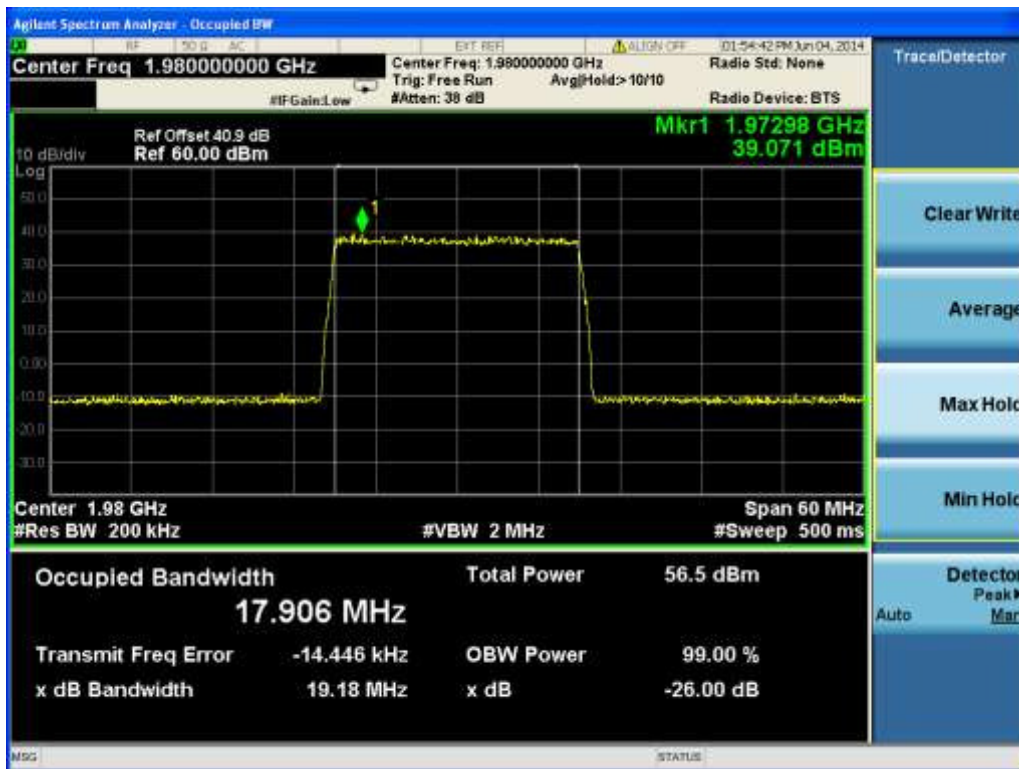
Channel Position M – 64QAM / Bandwidth 20.0 MHz



Channel Position T - QPSK / Bandwidth 1.4 MHz



Channel Position T - QPSK / Bandwidth 20.0 MHz



2.3 SPURIOUS EMISSION AT BAND EDGE

2.3.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1051
FCC CFR 47 Part 24, Clause 24.238 (b)
Industry Canada RSS-133, Clause 6.5.1

2.3.2 Equipment Under Test

RRUS 12 B2, KRC 161 299/2, S/N: CB4S987897

2.3.3 Date of Test and Modification State

06 to 09 June 2014 - Modification State 0

2.3.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.3.5 Environmental Conditions

Ambient Temperature	23.5 - 25.6°C
Relative Humidity	22.5 - 24.5%

2.3.6 Test Method

In accordance with FCC CFR 47 Part 24, Clause 24.238 and Industry Canada RSS-133, Clause 6.5.1, any emissions outside of the block edges shall be attenuated by at least $43 + 10 \log(P)$. In the 1MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1% of the emission bandwidth should be used.

For measurements of emissions > 1MHz away from the band edges, a RBW of 1MHz or greater should be used. A resolution bandwidth of 50kHz was used between 1MHz to 6MHz from the band edge. to compensate for the reduced measurement bandwidth, the limit was adjusted with -13dB to -26dBm.

For MIMO mode configurations, the limit was adjusted with a correction of -3dB $[10\log(2)]$ by using the Measure and Add $10\log(N)$ dB technique according to FCC KDB662911 D01 accounting for simultaneous transmission from antennas port RF A and RF B.

The path loss measured and entered as a reference level offset. The EUT was set to transmit at its maximum rated output power in the configurations described in the tables below. Measurements were made at the Top and Bottom of the band.

The results are shown in the plots below.

2.3.7 Test Results

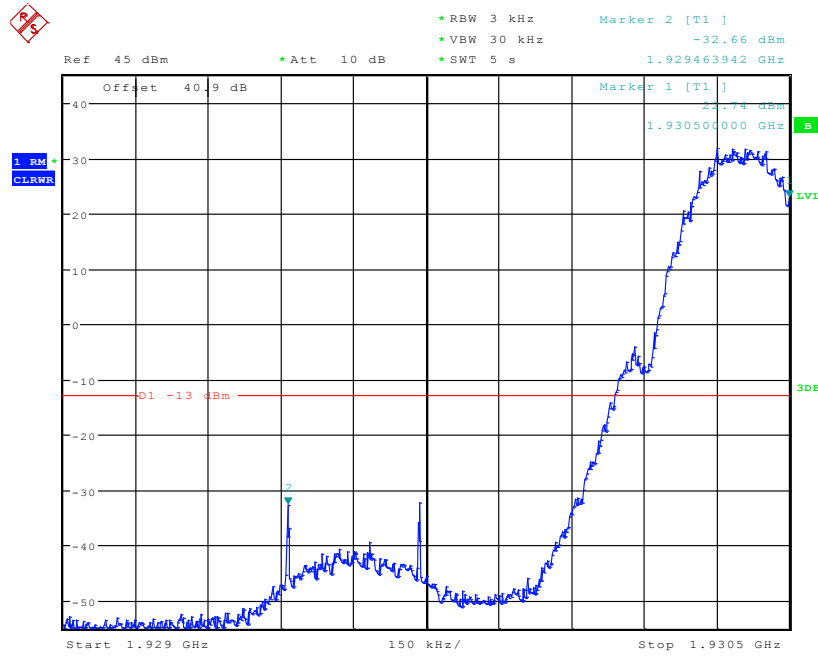
Configuration G-SC

Maximum Output Power 47.8dBm per carrier

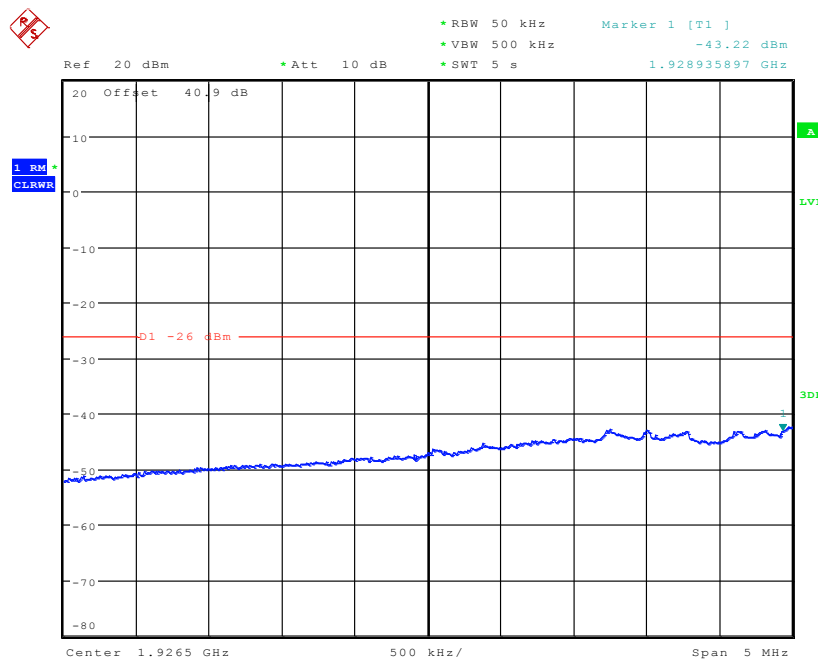
Band Edge Frequency	Edge Test with modulation GMSK Channel Frequencies
Channel Position B 1930.0 MHz	Port A: 1930.4MHz* Port B: 1932.0MHz
Channel Position T 1990.0 MHz	Port A: 1989.6MHz* Port B: 1988.0MHz

Note*: For GSM, the channels shown in the table above are the minimum and maximum channels that can be used in the authorised frequency ranges to maintain compliance. Channels outside of the ranges shown in the above tables shall not be made available to the end user.

Channel Position B - GMSK

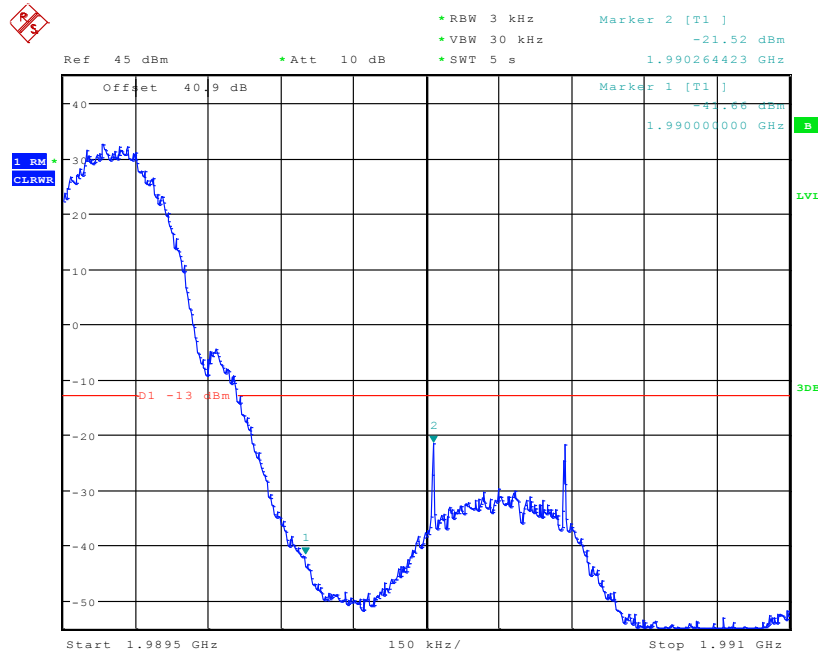


Date: 6.JUN.2014 10:18:12

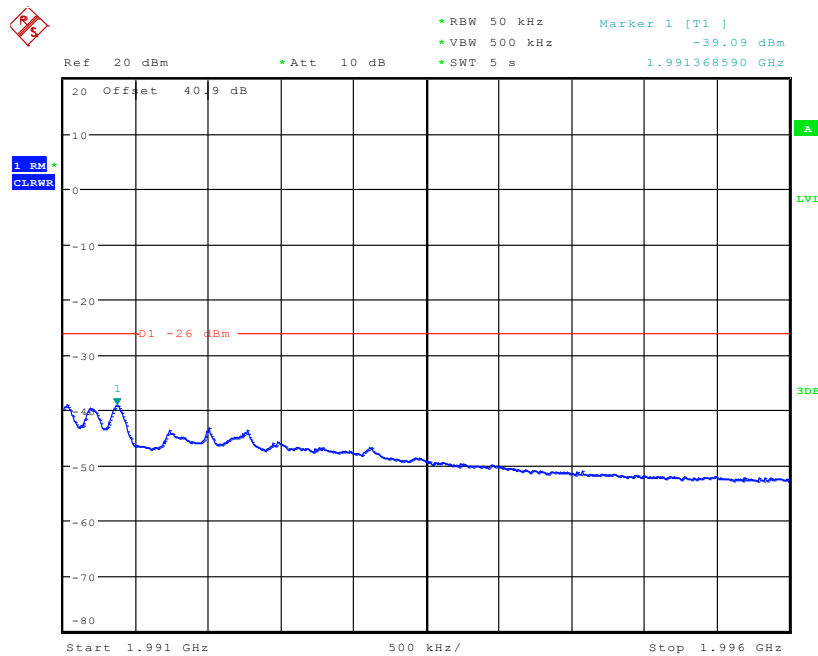


Date: 6.JUN.2014 10:19:22

Channel Position T - GMSK



Date: 6.JUN.2014 10:22:13



Date: 6.JUN.2014 10:22:51

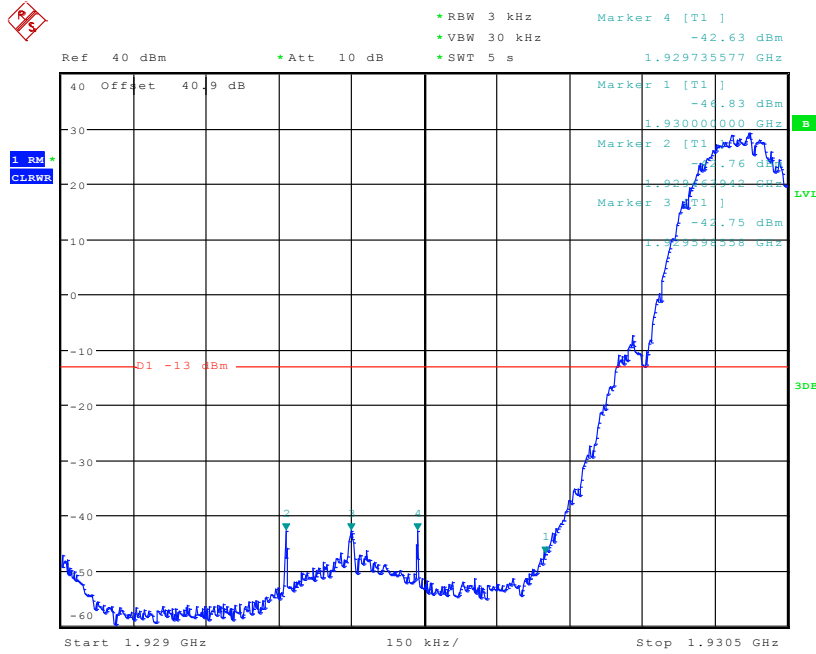
Configuration G-MC 1 (2C)

Maximum Output Power 44.8dBm per carrier

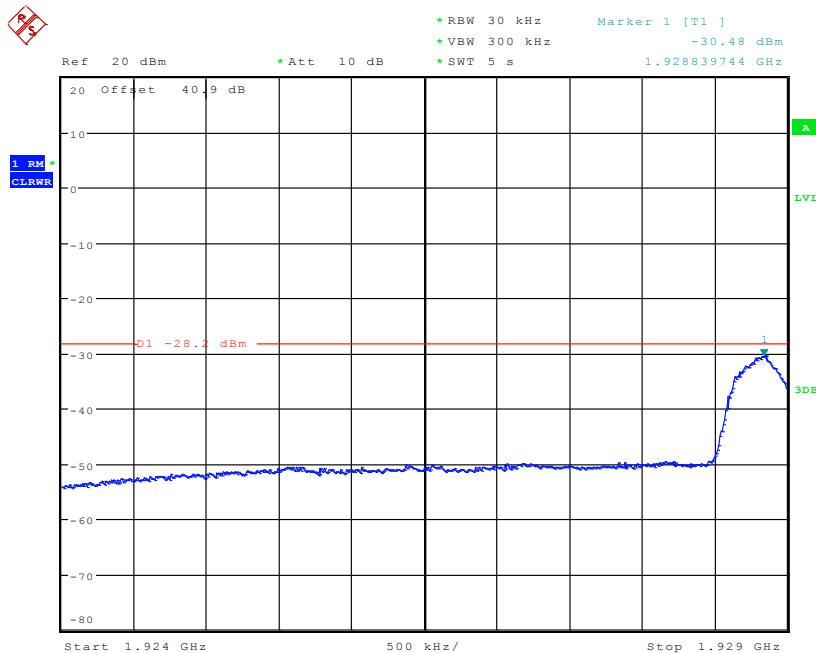
Band Edge Frequency	Edge Test with modulation GMSK Channel Frequencies
Channel Position B 1930.0 MHz	Port A: 1930.4MHz* + 1932.0MHz Port B: 1931.0MHz + 1931.4MHz
Channel Position T 1990.0 MHz	Port A: 1989.6MHz* + 1988.0MHz Port B: 1989.0MHz + 1988.6MHz

Note*: For GSM, the channels shown in the table above are the minimum and maximum channels that can be used in the authorised frequency ranges to maintain compliance. Channels outside of the ranges shown in the above tables shall not be made available to the end user.

Channel Position B - GMSK



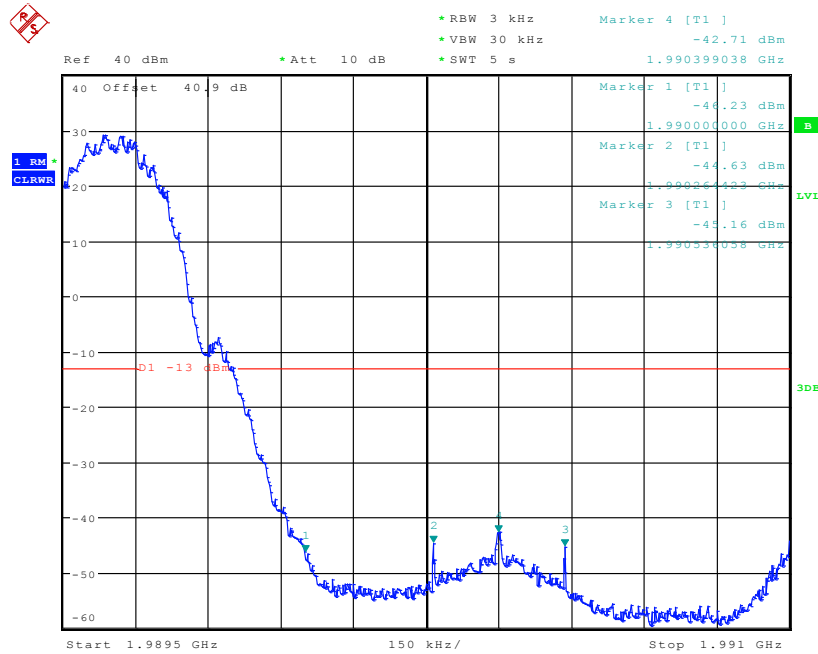
Date: 6.JUN.2014 11:03:11



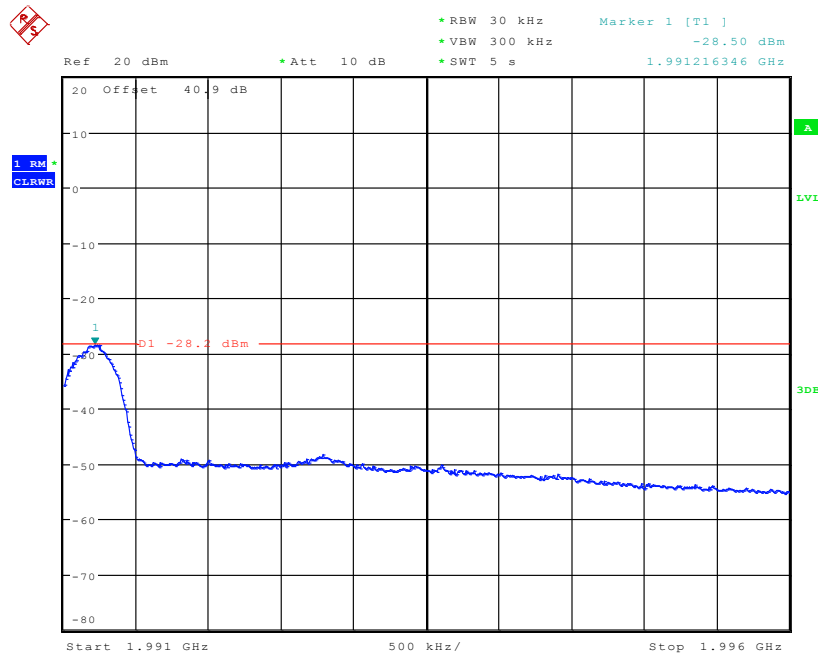
Date: 6.JUN.2014 11:05:59

Note: The resolution bandwidth was further reduced to 30kHz. To compensate for this the limit has been reduced by a further 1.2dB [10log (50/30)] to -28.2dBm.

Channel Position T - GMSK



Date: 6.JUN.2014 13:20:23



Date: 6.JUN.2014 13:18:53

Note: The resolution bandwidth was further reduced to 30kHz. To compensate for this the limit has been reduced by a further 1.2dB [10log (50/30)] to -28.2dBm.

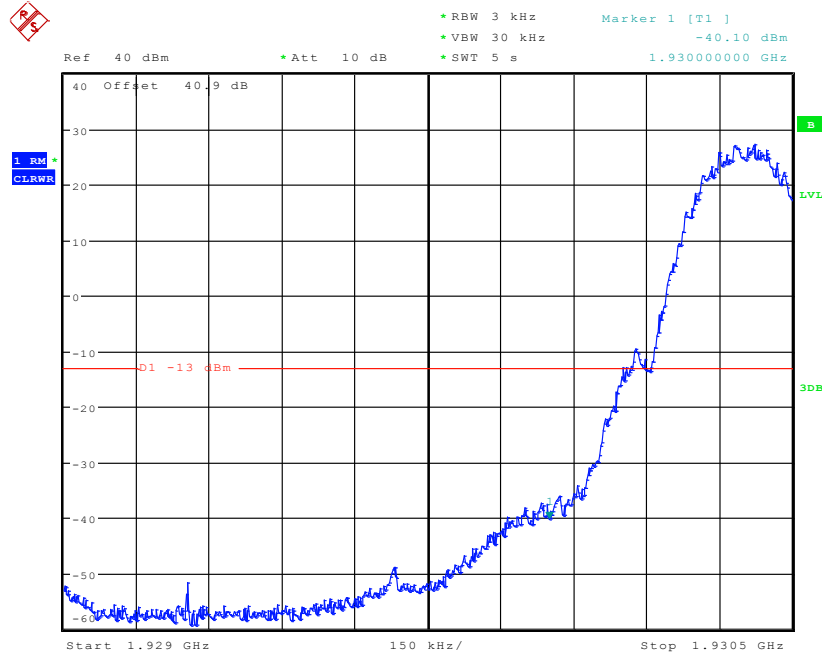
Configuration G-MC 2 (3C)

Maximum Output Power 43.0dBm per carrier

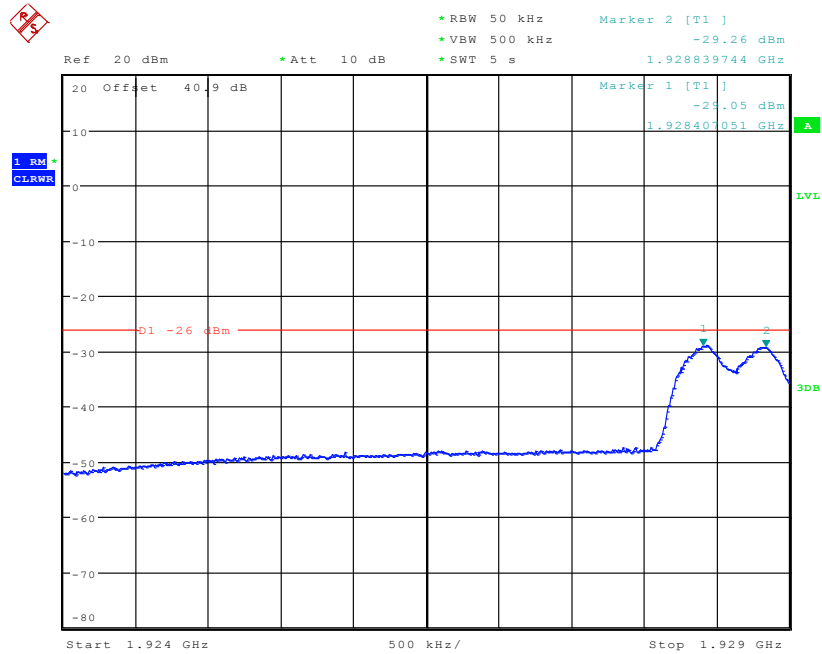
Band Edge Frequency	Edge Test with modulation GMSK Channel Frequencies
Channel Position B 1930.0 MHz	Port A: 1930.4MHz* + 1932.0MHz + 1932.4MHz Port B: 1931.0MHz + 1931.4MHz + 1933.0MHz
Channel Position T 1990.0 MHz	Port A: 1989.6MHz* + 1988.0MHz + 1987.6MHz Port B: 1989.0MHz + 1988.6MHz + 1987.0MHz

Note*: For GSM, the channels shown in the table above are the minimum and maximum channels that can be used in the authorised frequency ranges to maintain compliance. Channels outside of the ranges shown in the above tables shall not be made available to the end user.

Channel Position B - GMSK

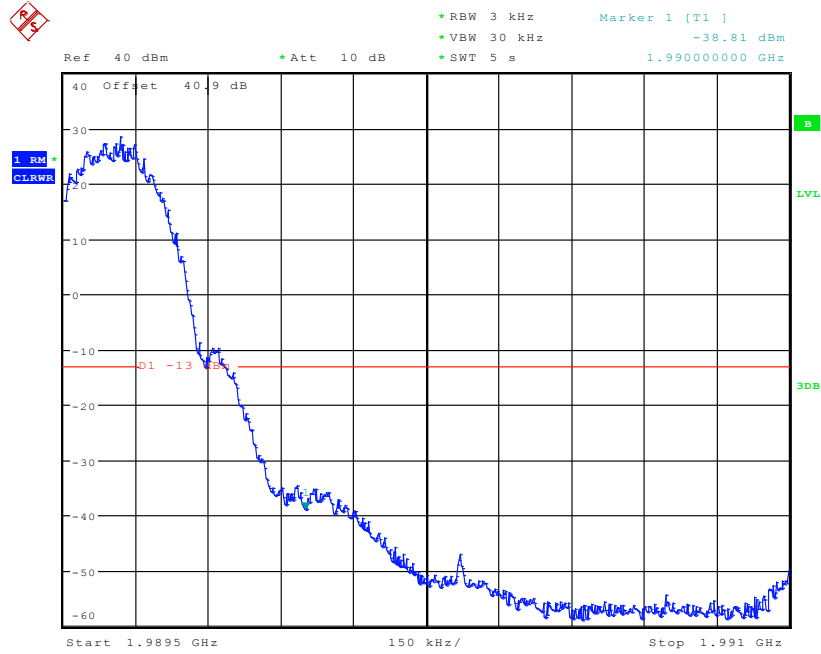


Date: 6.JUN.2014 13:30:14

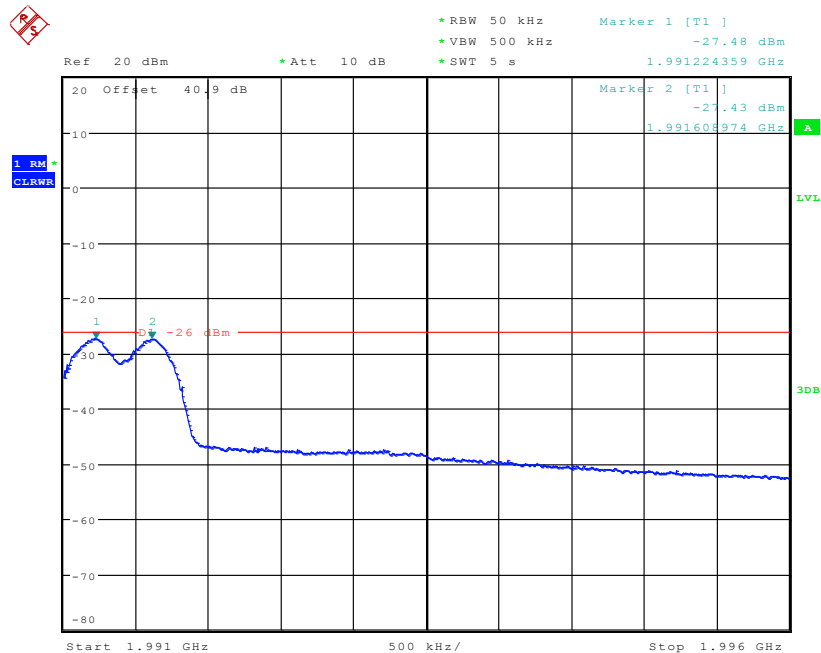


Date: 6.JUN.2014 13:31:14

Channel Position T - GMSK



Date: 6.JUN.2014 13:39:29



Date: 6.JUN.2014 13:39:57

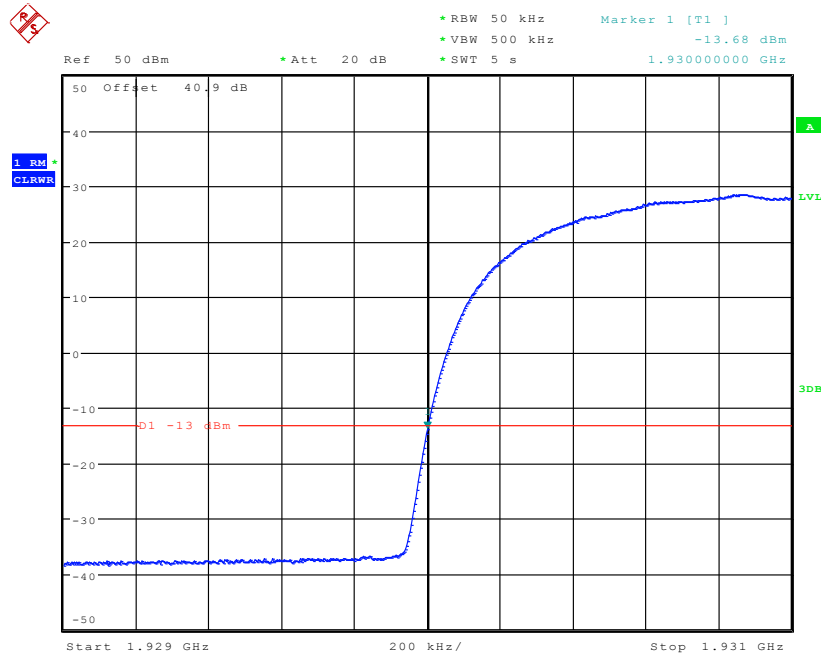
Configuration W-SC

Maximum Output Power 47.8dBm per carrier

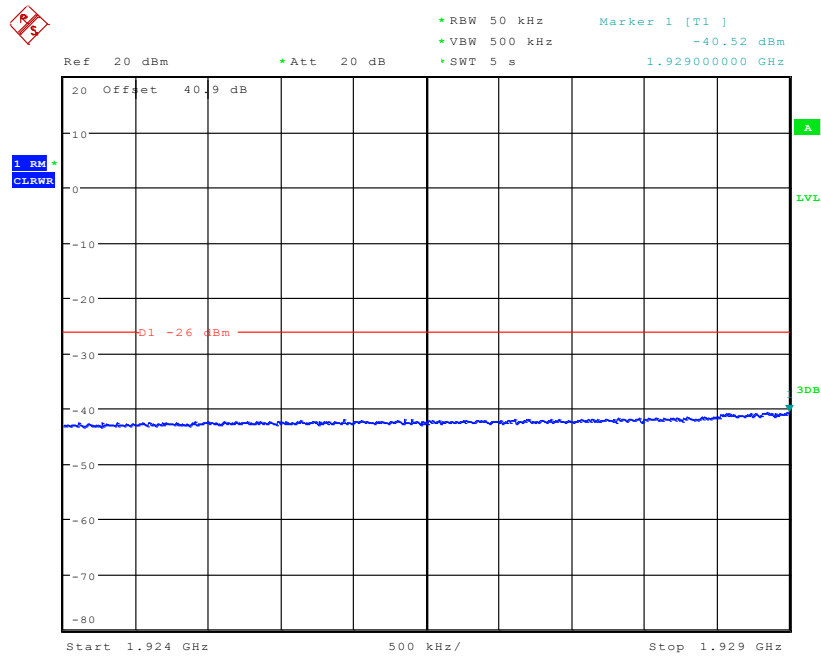
Band Edge Frequency	Edge Test with modulation QPSK Channel Frequencies
Channel Position B 1930.0 MHz	Port A: 1932.4MHz
Channel Position T 1990.0 MHz	Port A: 1987.6MHz

Note: For WCDMA, the channels shown in the table above are the minimum and maximum channels that can be used in the authorised frequency ranges to maintain compliance. Channels outside of the ranges shown in the above tables shall not be made available to the end user.

Channel Position B - QPSK

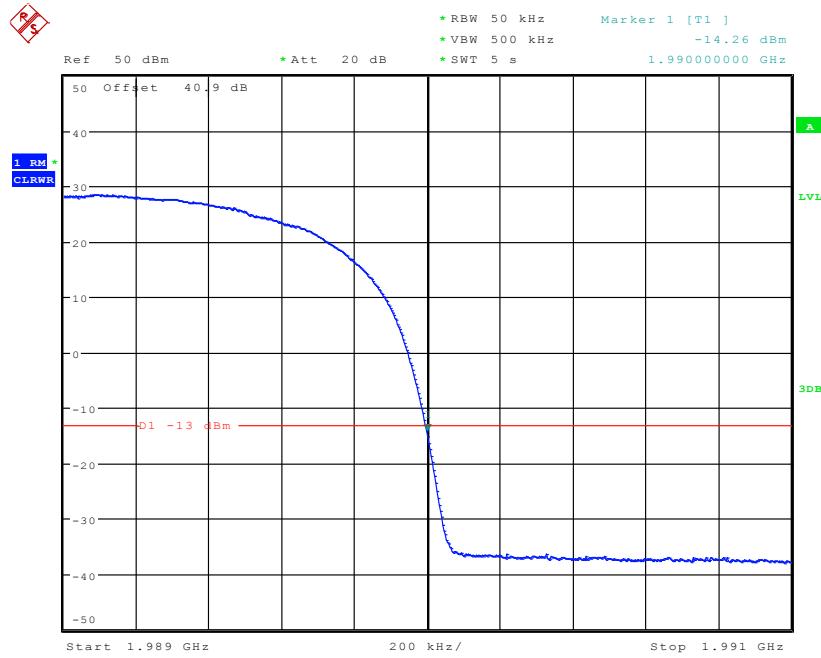


Date: 24.JUN.2014 10:46:22

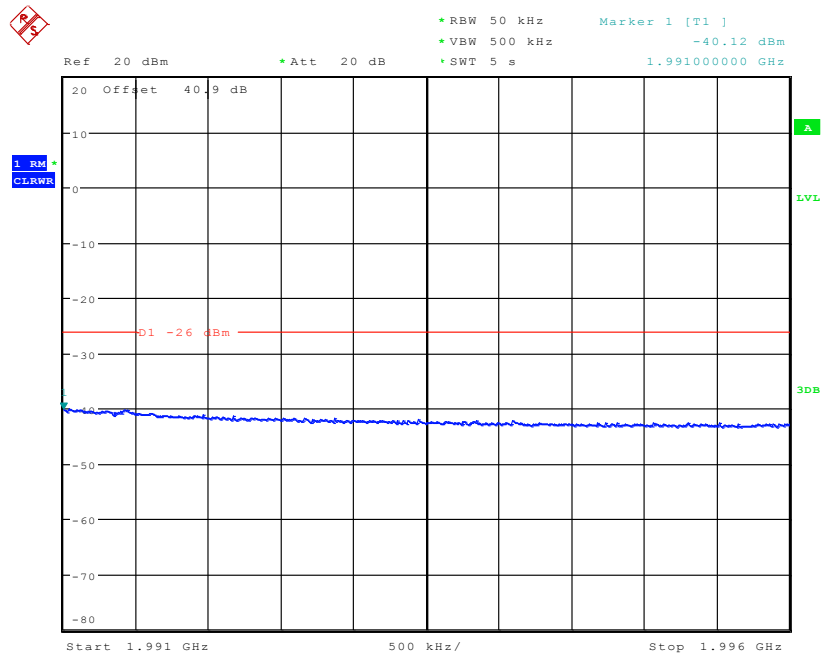


Date: 5.JUN.2014 10:36:31

Channel Position T - QPSK



Date: 24.JUN.2014 10:48:51



Date: 5.JUN.2014 10:45:30

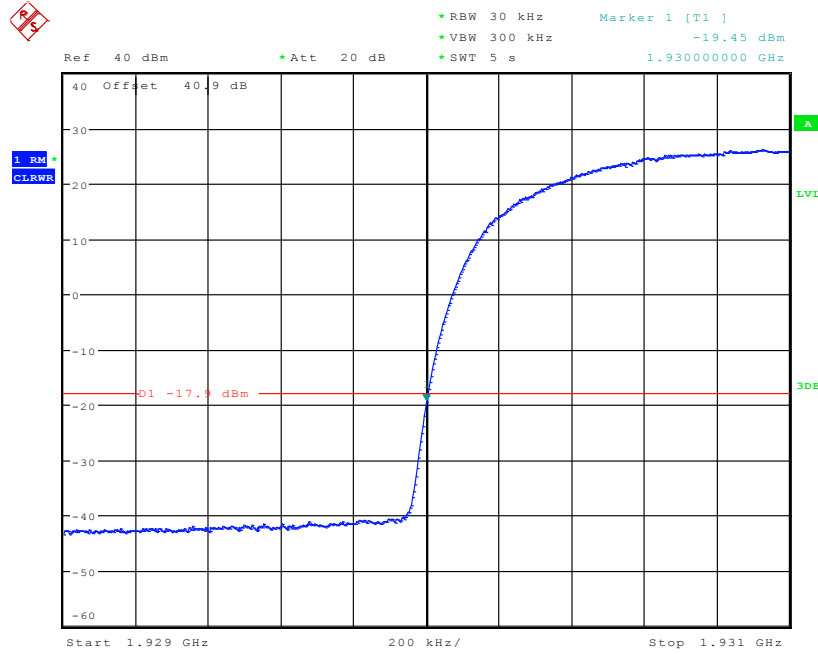
Configuration W-MIMO-SC

Maximum Output Power 47.0dBm per carrier

Band Edge Frequency	Edge Test with modulation 16QAM Channel Frequencies
Channel Position B 1930.0 MHz	1932.4MHz
Channel Position T 1990.0 MHz	1987.6MHz

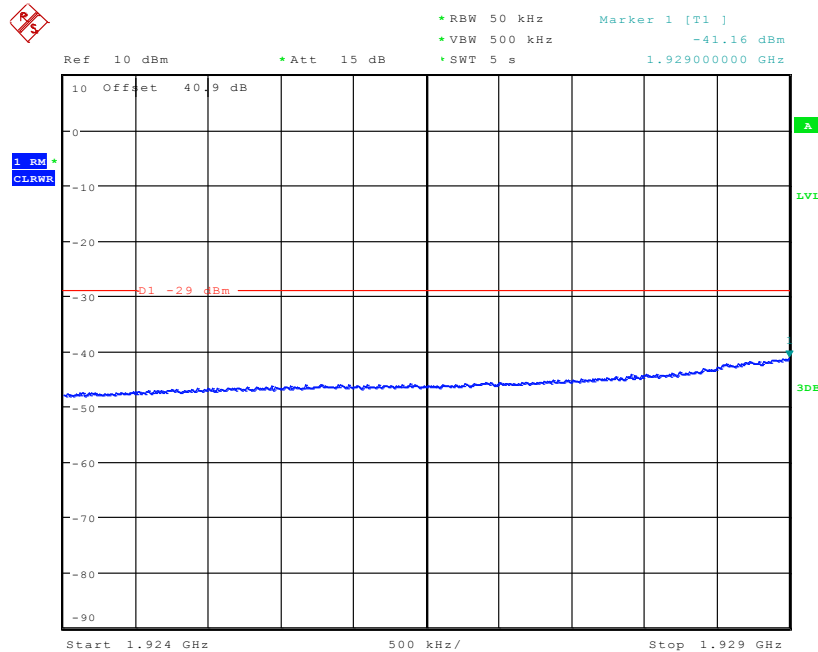
Note: For WCDMA, the channels shown in the table above are the minimum and maximum channels that can be used in the authorised frequency ranges to maintain compliance. Channels outside of the ranges shown in the above tables shall not be made available to the end user.

Channel Position B - 16QAM



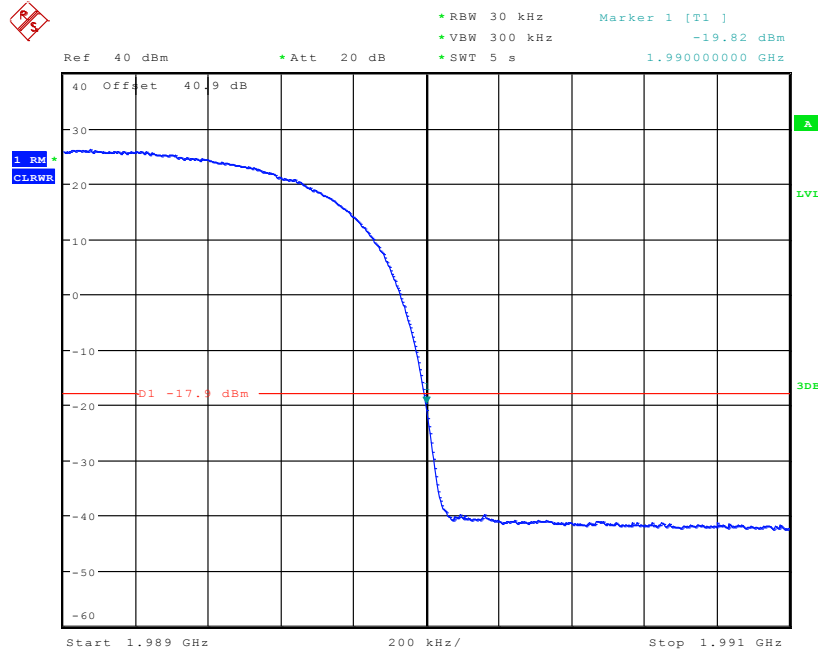
Date: 5.JUN.2014 13:38:54

Note: A resolution bandwidth of 30kHz was used. 30kHz is <1% of the Emission Bandwidth of WCDMA (4.66MHz), to compensate for the reduced measurement bandwidth, the limit was adjusted from -16dBm (-13dBm -3dB [10Log(2)]) to -17.9dBm.



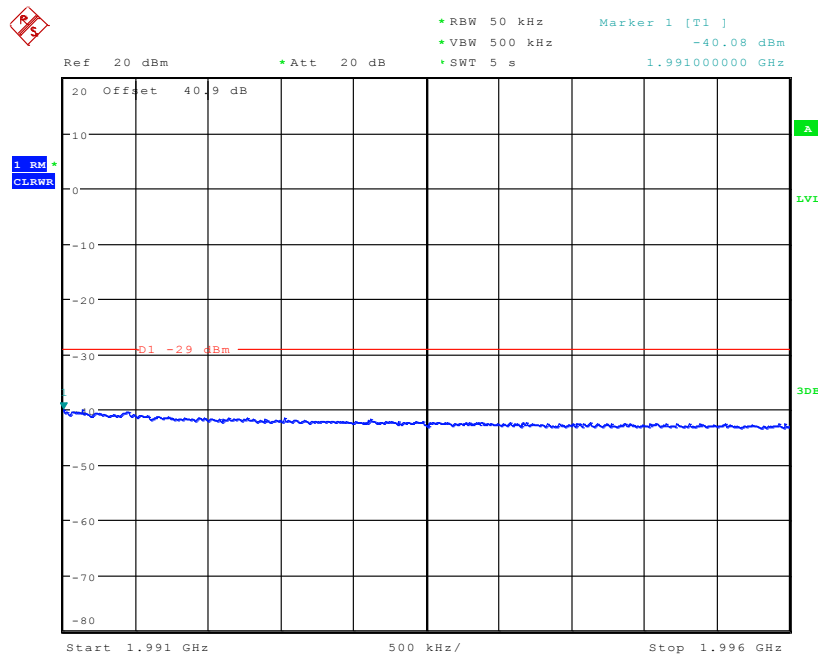
Date: 5.JUN.2014 13:19:40

Channel Position T - 16QAM



Date: 5.JUN.2014 13:40:30

Note: A resolution bandwidth of 30kHz was used. 30kHz is <1% of the Emission Bandwidth of WCDMA (4.66MHz), to compensate for the reduced measurement bandwidth, the limit was adjusted from -16dBm (-13dBm -3dB [10Log(2)]) to -17.9dBm.



Date: 5.JUN.2014 13:24:26

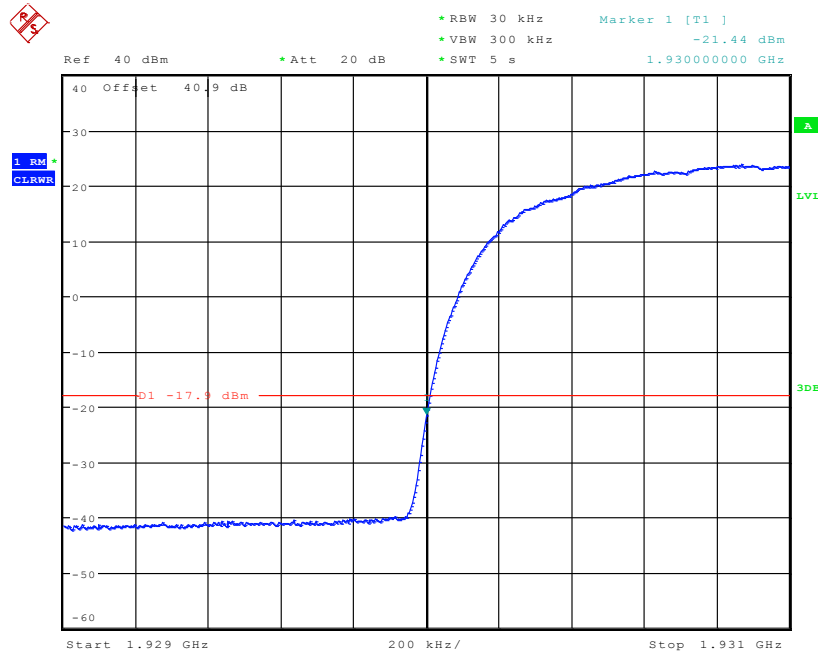
Configuration W-MIMO-MC 1 (2C)

Maximum Output Power 44.8dBm per carrier

Band Edge Frequency	Edge Test with modulation 16QAM Channel Frequencies
Channel Position B 1930.0 MHz	1932.4MHz + 1937.4MHz
Channel Position T 1990.0 MHz	1987.6MHz + 1982.6MHz

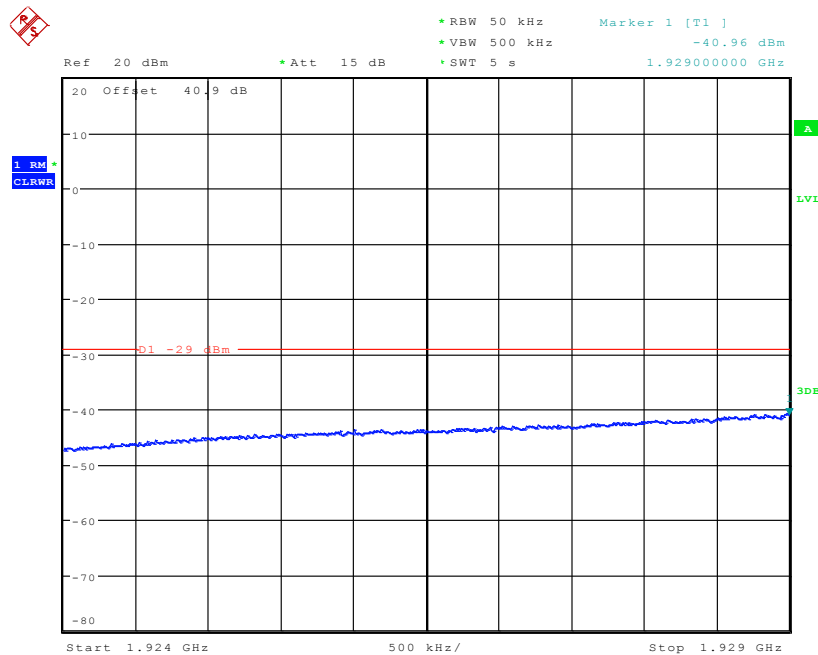
Note: For WCDMA, the channels shown in the table above are the minimum and maximum channels that can be used in the authorised frequency ranges to maintain compliance. Channels outside of the ranges shown in the above tables shall not be made available to the end user.

Channel Position B - 16QAM



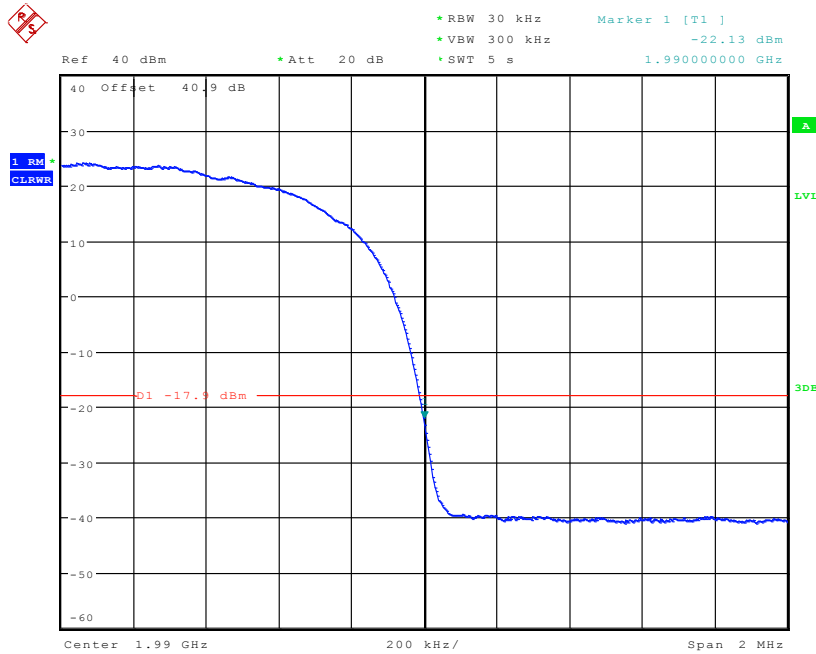
Date: 5.JUN.2014 13:33:11

Note: A resolution bandwidth of 30kHz was used. 30kHz is <1% of the Emission Bandwidth of WCDMA (4.66MHz), to compensate for the reduced measurement bandwidth, the limit was adjusted from -16dBm (-13dBm -3dB [10Log(2)]) to -17.9dBm.



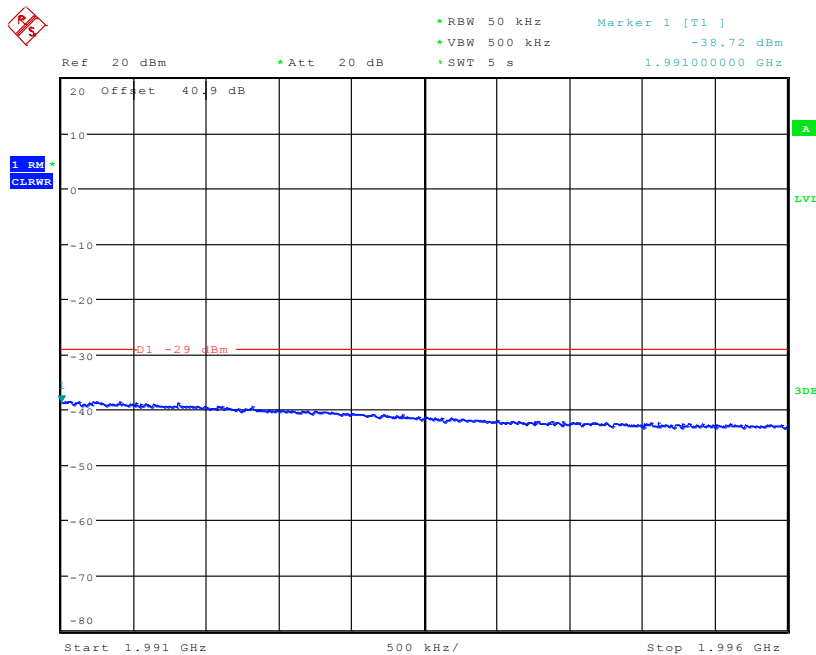
Date: 5.JUN.2014 13:34:06

Channel Position T - 16QAM



Date: 5.JUN.2014 13:35:58

Note: A resolution bandwidth of 30kHz was used. 30kHz is <1% of the Emission Bandwidth of WCDMA (4.66MHz), to compensate for the reduced measurement bandwidth, the limit was adjusted from -16dBm (-13dBm -3dB [10Log(2)]) to -17.9dBm.



Date: 5.JUN.2014 13:37:03

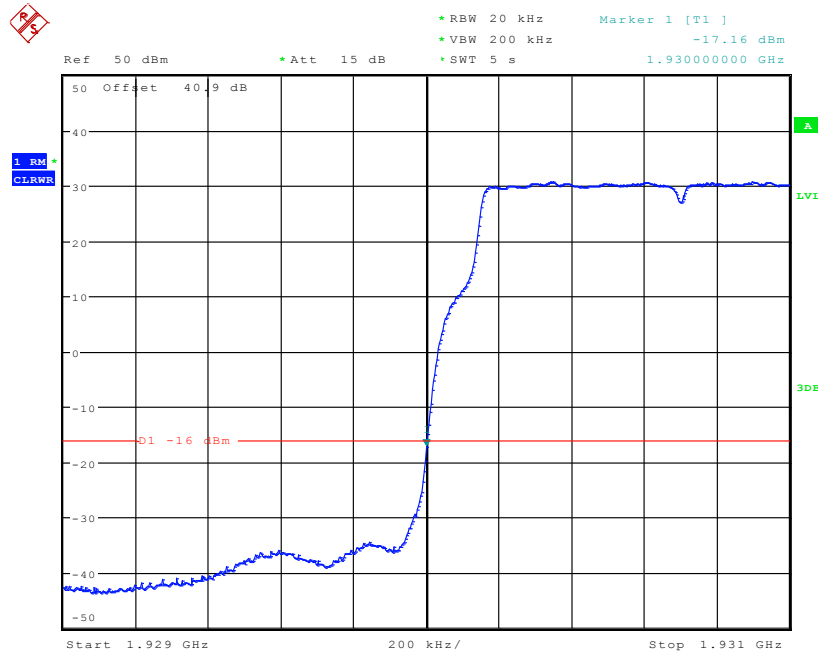
Configuration L-MIMO-SC

Maximum Output Power 47.8dBm per carrier

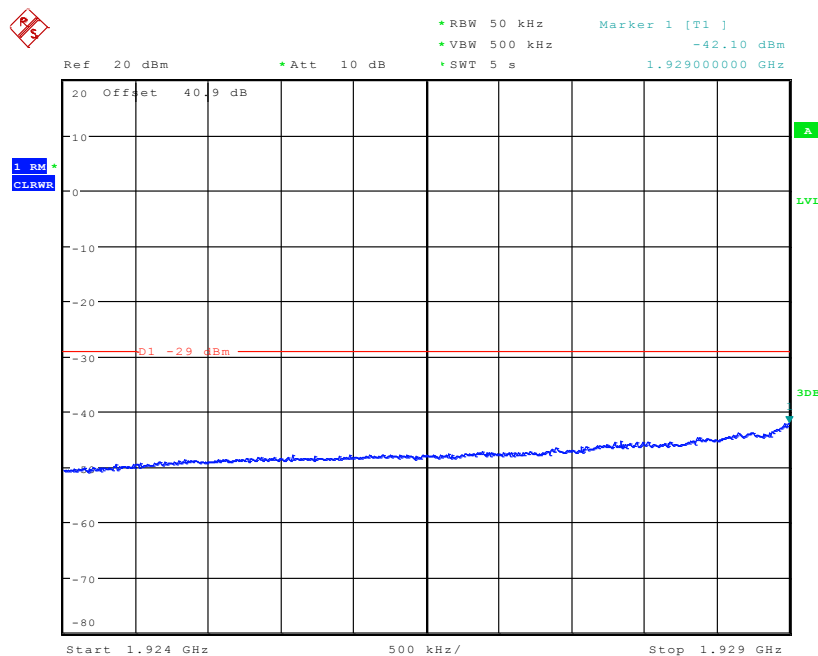
Band Edge Frequency	Channel Bandwidth	Edge Test with modulation QPSK Channel Frequencies
Channel Position B 1930.0 MHz	1.4 MHz	1930.7MHz
	3.0 MHz	1931.5MHz
	5.0 MHz	1932.5MHz
	10.0 MHz	1935.0MHz
	15.0 MHz	1937.5MHz
	20.0 MHz	1940.0MHz
Channel Position T 1990.0 MHz	1.4 MHz	1989.3MHz
	3.0 MHz	1988.5MHz
	5.0 MHz	1987.5MHz
	10.0 MHz	1985.0MHz
	15.0 MHz	1982.5MHz
	20.0 MHz	1980.0MHz

Note: For LTE, the channels shown in the table above are the minimum and maximum channels that can be used in the authorised frequency ranges to maintain compliance. Channels outside of the ranges shown in the above tables shall not be made available to the end user.

Channel Position B - QPSK / Bandwidth 1.4 MHz

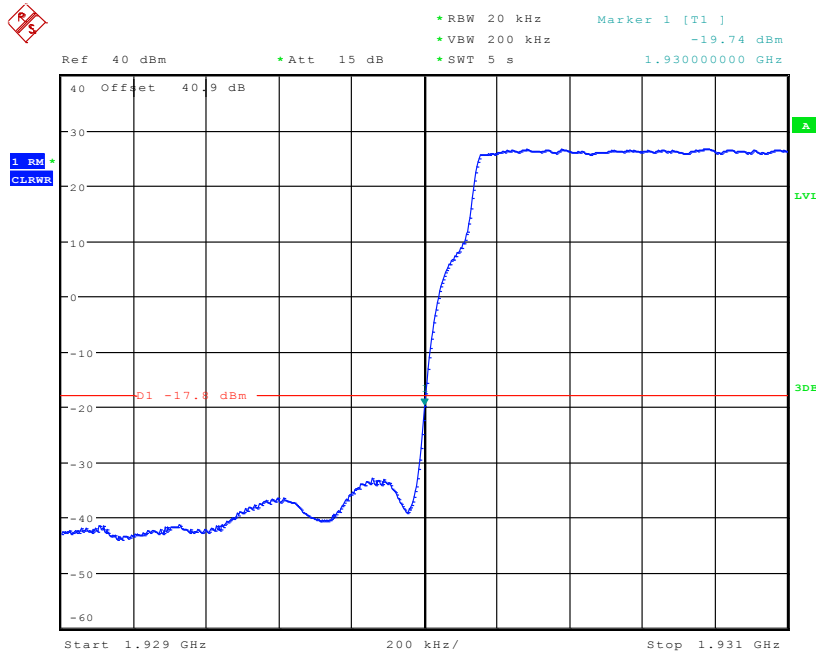


Date: 5.JUN.2014 13:48:09



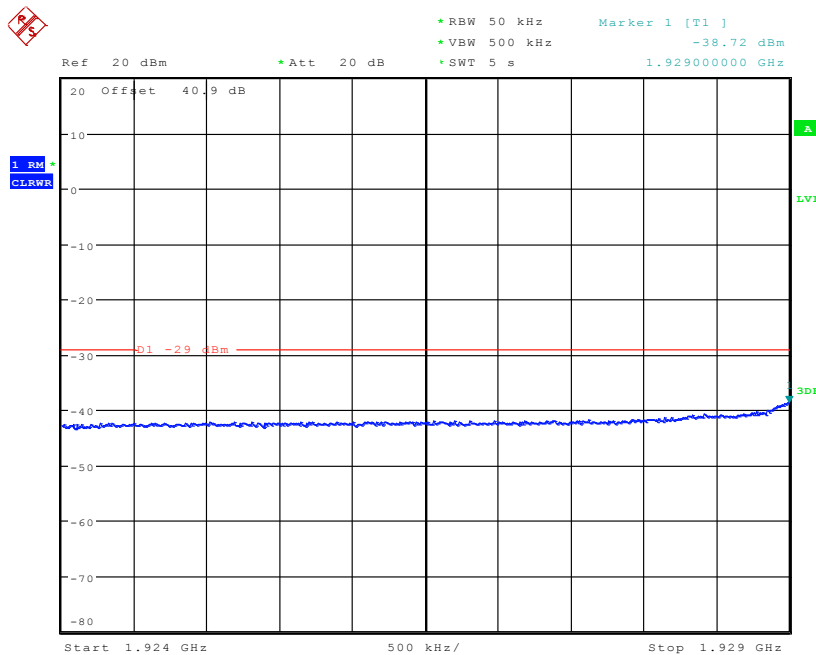
Date: 5.JUN.2014 13:50:04

Channel Position B - QPSK / Bandwidth 3.0 MHz



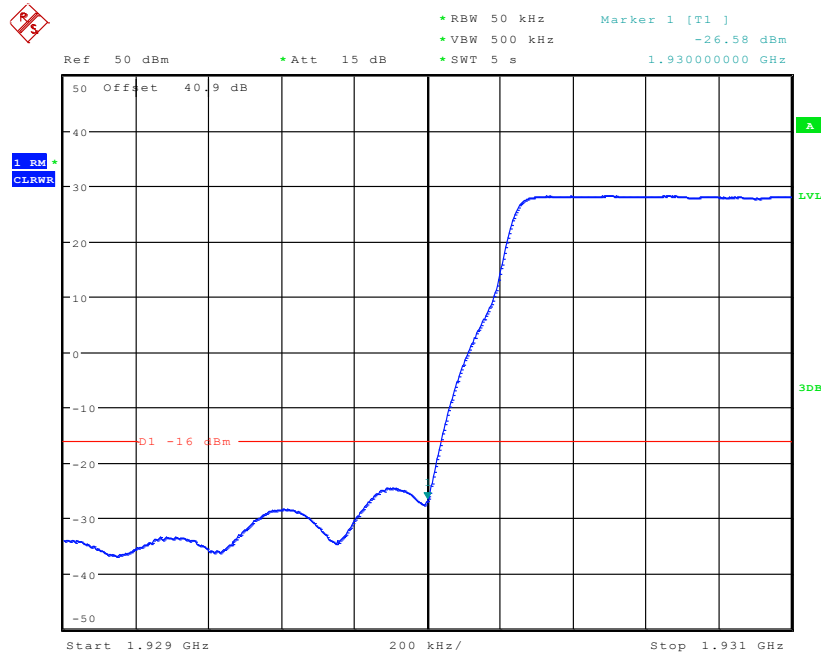
Date: 5.JUN.2014 14:09:56

Note: A resolution bandwidth of 20kHz was used. 20kHz is <1% of the Emission Bandwidth of LTE (2.95MHz), to compensate for the reduced measurement bandwidth, the limit was adjusted from -16dBm (-13dBm -3dB [10Log(2)]) to -17.8dBm.

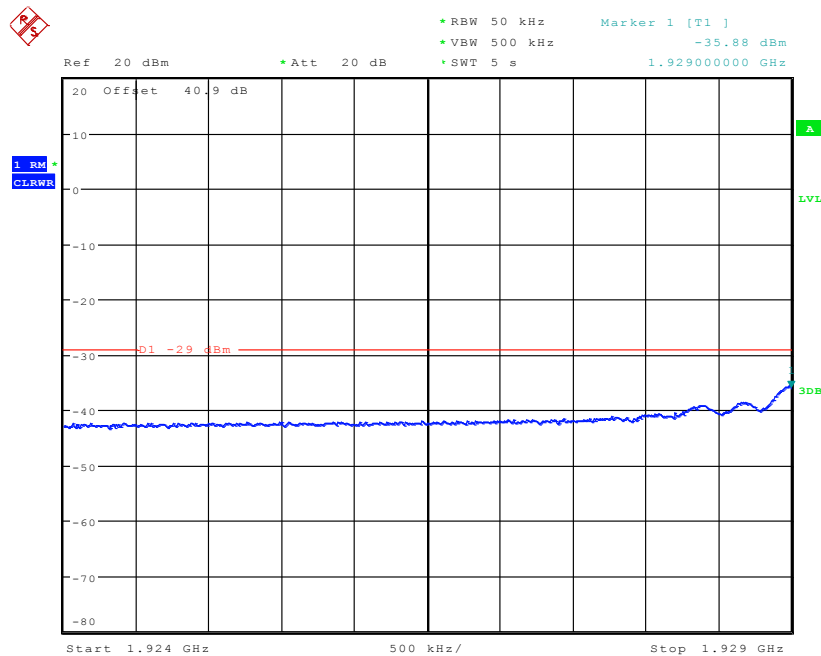


Date: 5.JUN.2014 14:11:05

Channel Position B - QPSK / Bandwidth 5.0 MHz

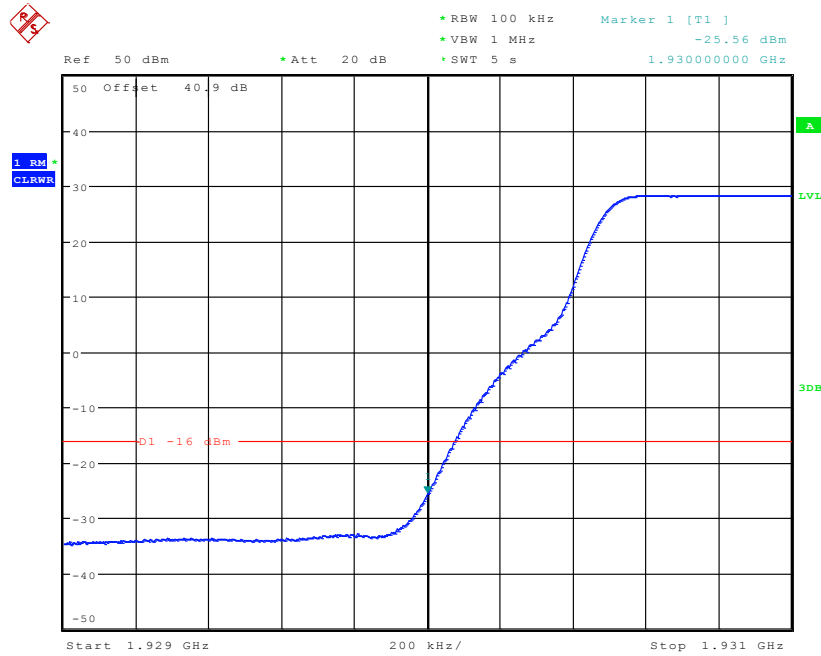


Date: 5.JUN.2014 14:18:10

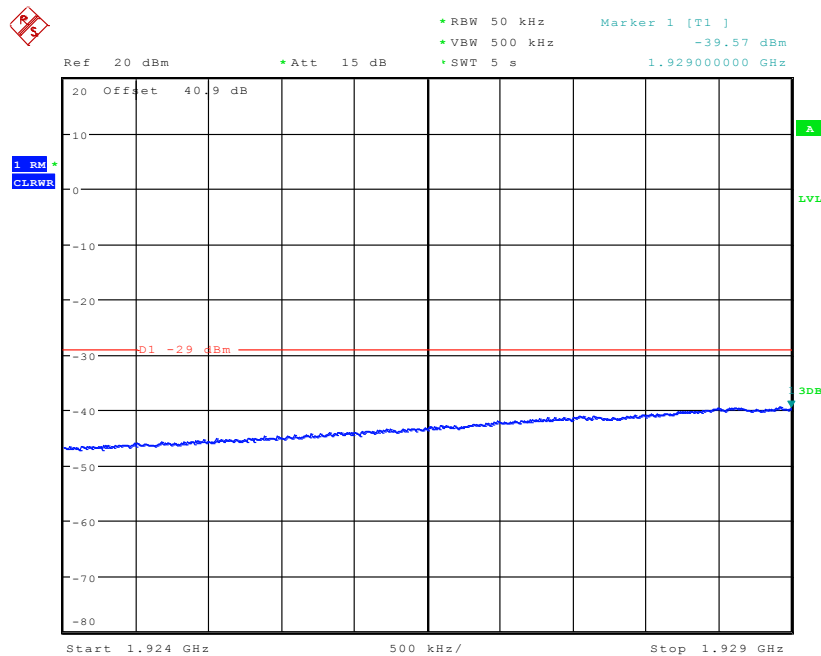


Date: 5.JUN.2014 14:19:18

Channel Position B - QPSK / Bandwidth 10.0 MHz

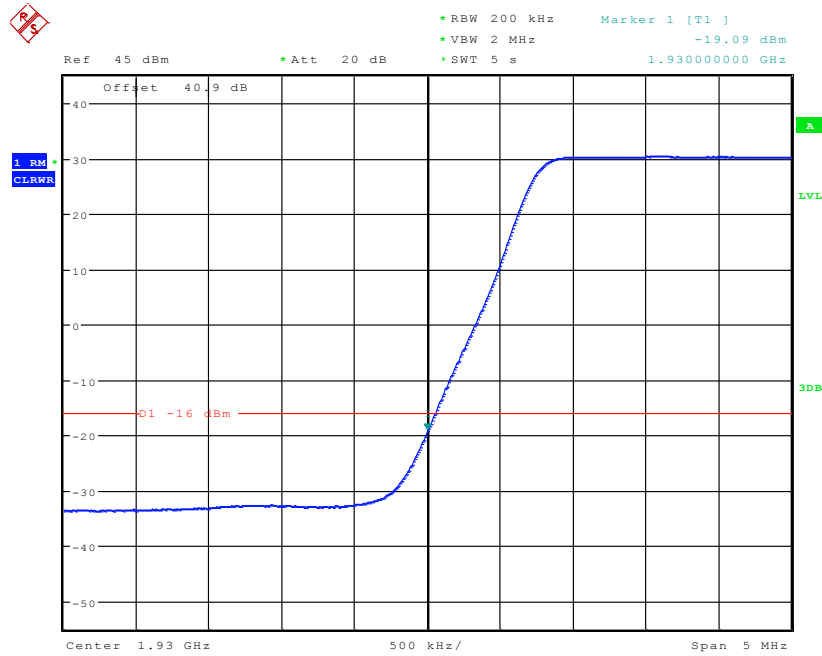


Date: 5.JUN.2014 14:28:49

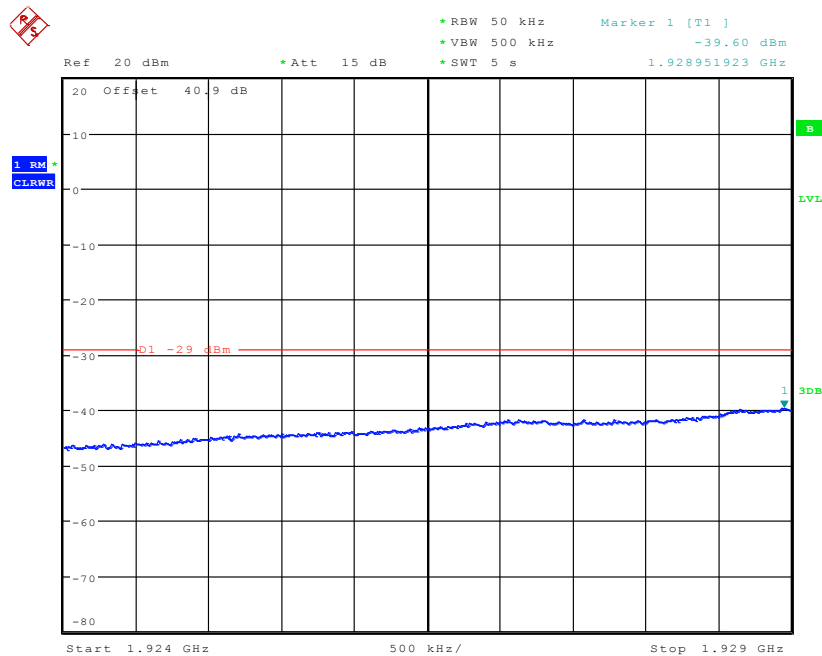


Date: 5.JUN.2014 14:29:47

Channel Position B - QPSK / Bandwidth 15.0 MHz

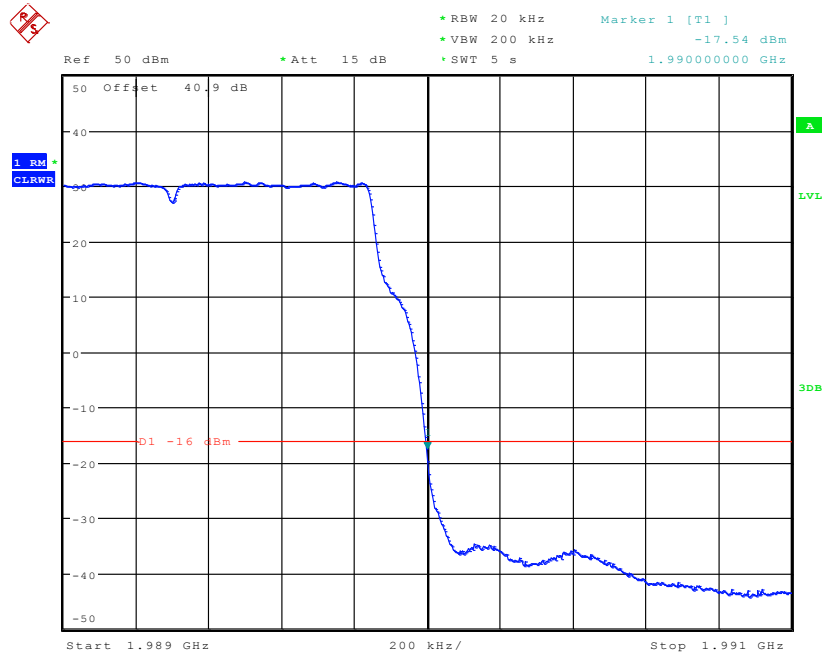


Date: 5.JUN.2014 14:46:18

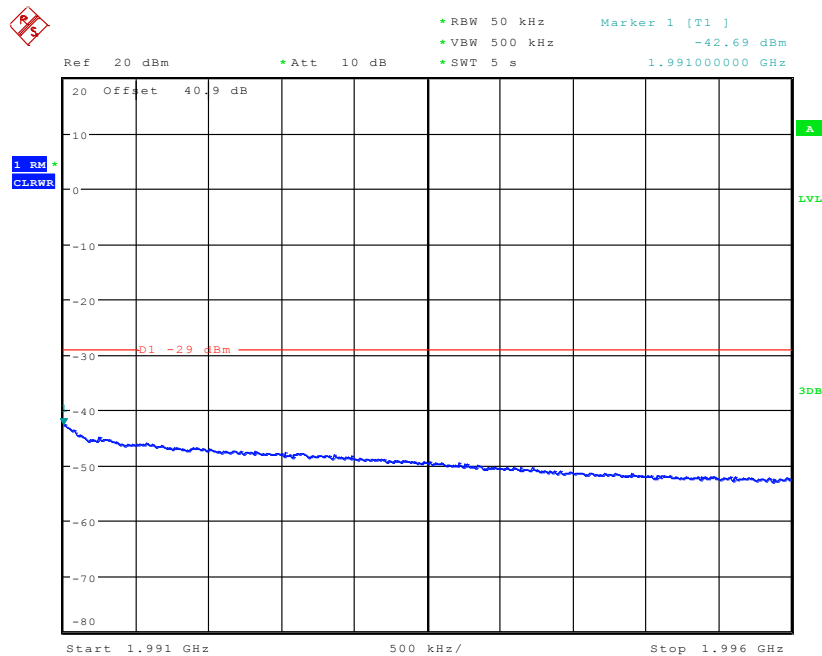


Date: 5.JUN.2014 14:48:15

Channel Position T - QPSK / Bandwidth 1.4 MHz

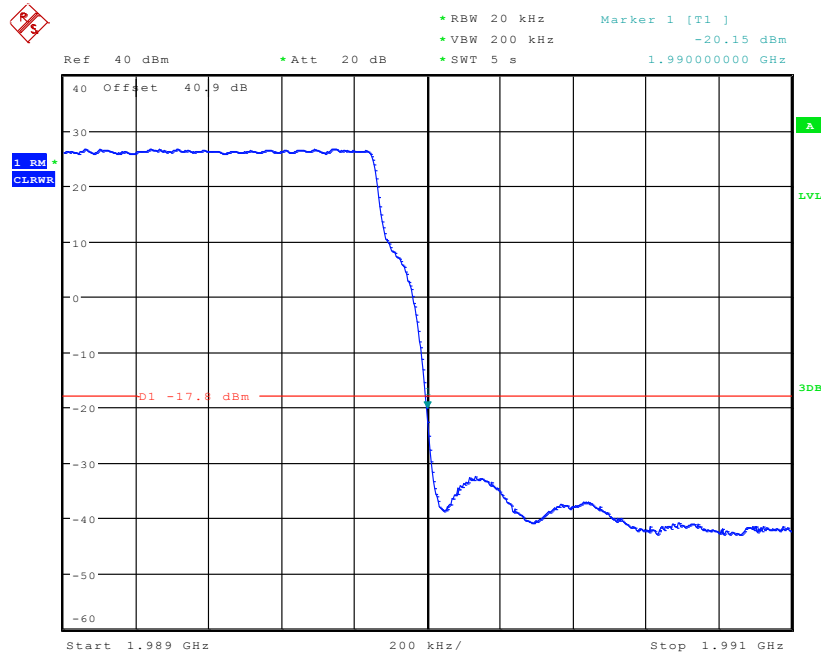


Date: 5.JUN.2014 13:55:15



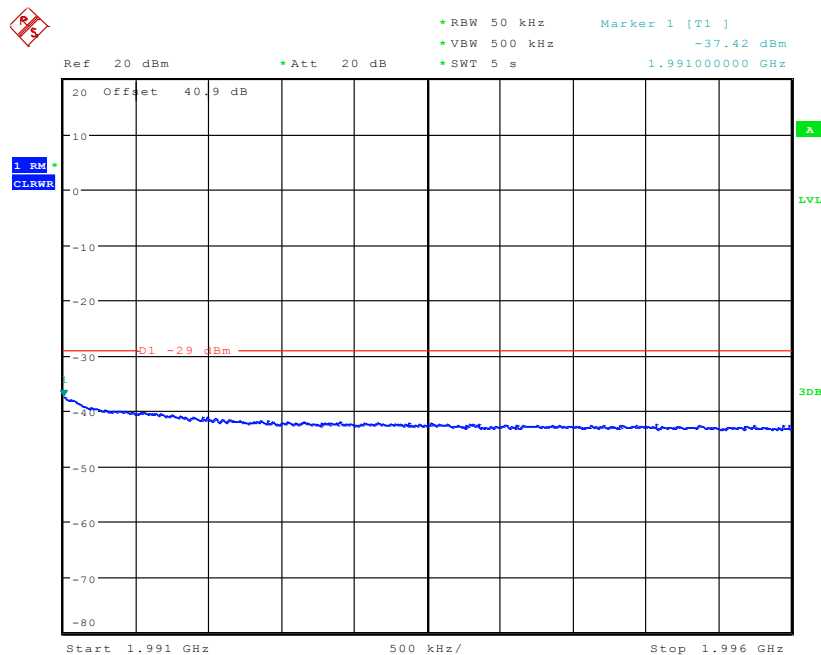
Date: 5.JUN.2014 13:54:04

Channel Position T - QPSK / Bandwidth 3.0 MHz



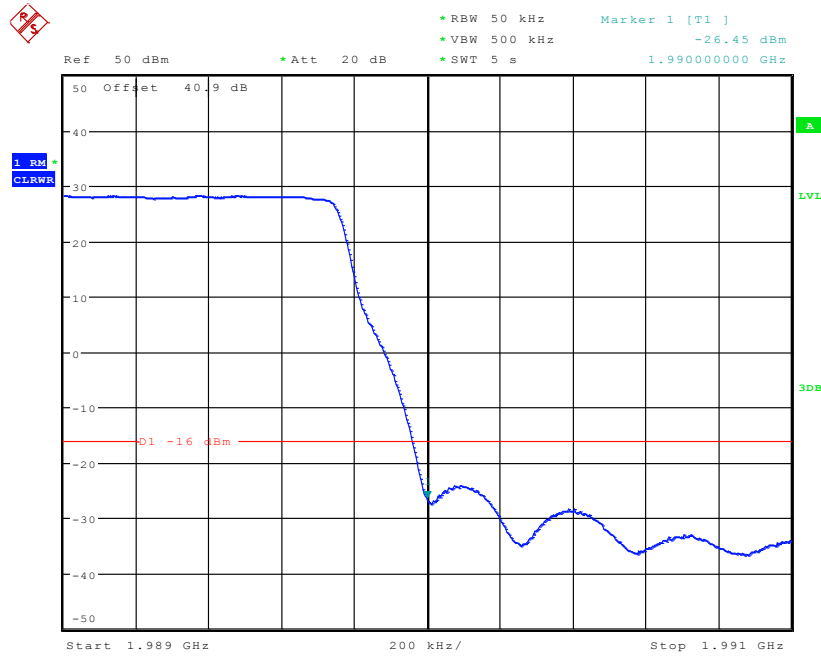
Date: 5.JUN.2014 14:14:24

Note: A resolution bandwidth of 20kHz was used. 20kHz is <1% of the Emission Bandwidth of LTE (2.96MHz), to compensate for the reduced measurement bandwidth, the limit was adjusted from -16dBm (-13dBm -3dB [10Log(2)]) to -17.8dBm.

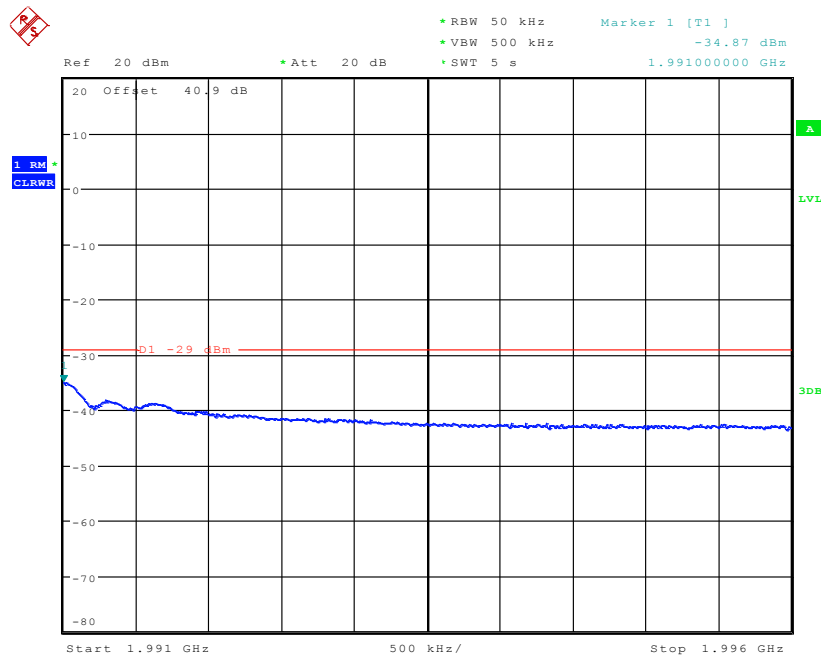


Date: 5.JUN.2014 14:12:45

Channel Position T - QPSK / Bandwidth 5.0 MHz

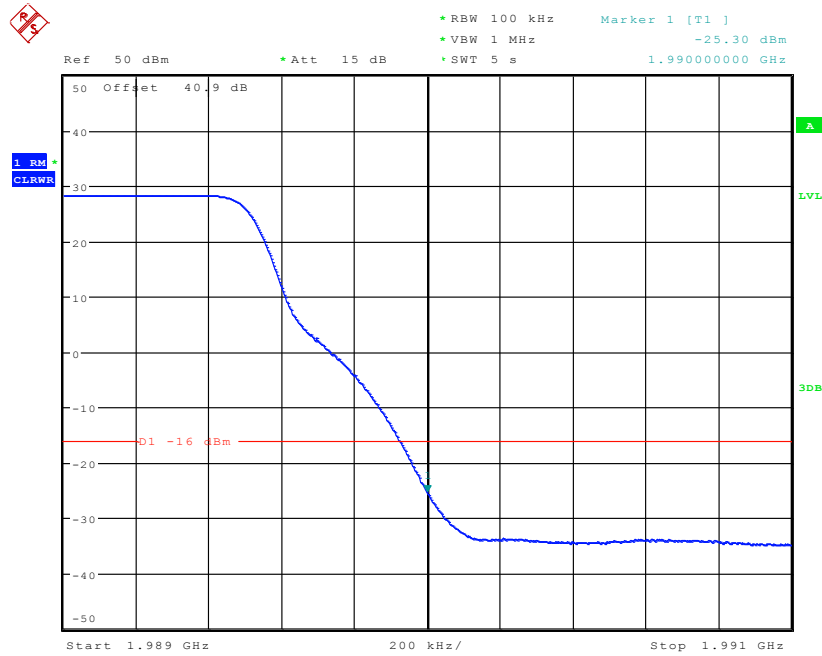


Date: 5.JUN.2014 14:21:32

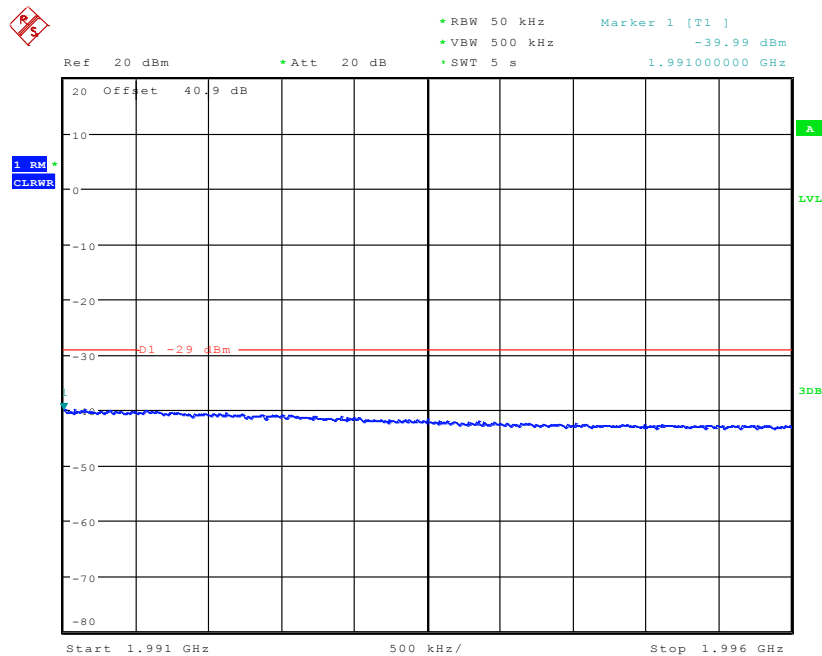


Date: 5.JUN.2014 14:23:02

Channel Position T - QPSK / Bandwidth 10.0 MHz

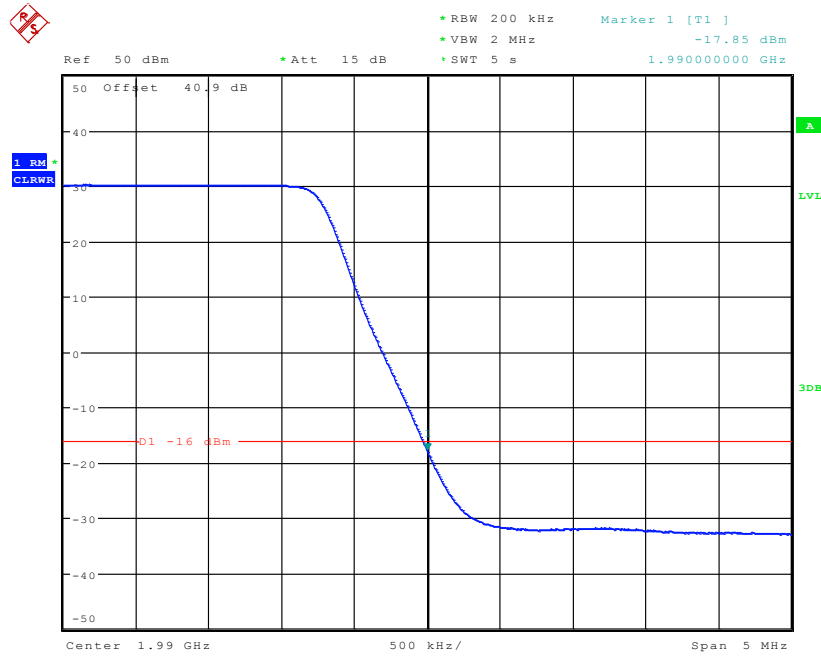


Date: 5.JUN.2014 14:33:35

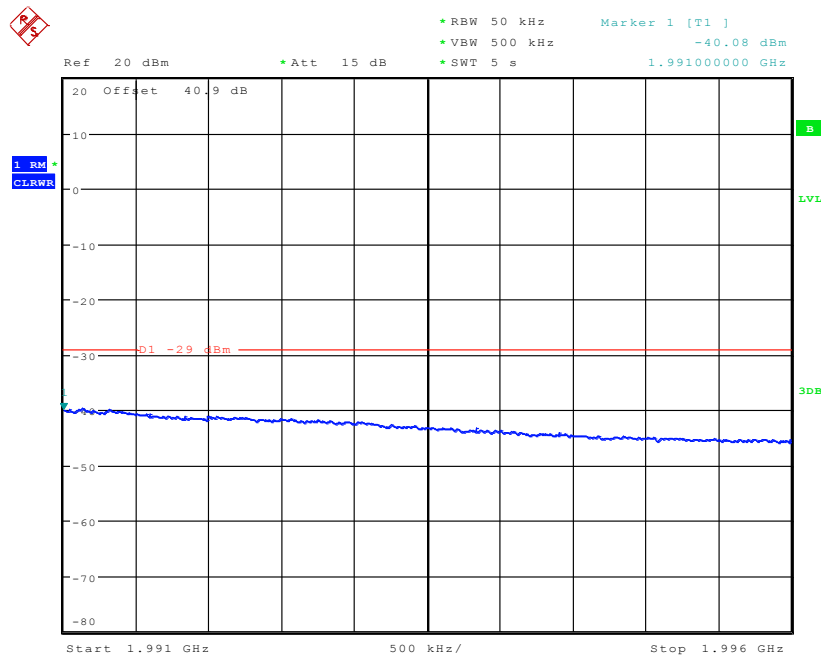


Date: 5.JUN.2014 14:32:13

Channel Position T - QPSK / Bandwidth 15.0 MHz

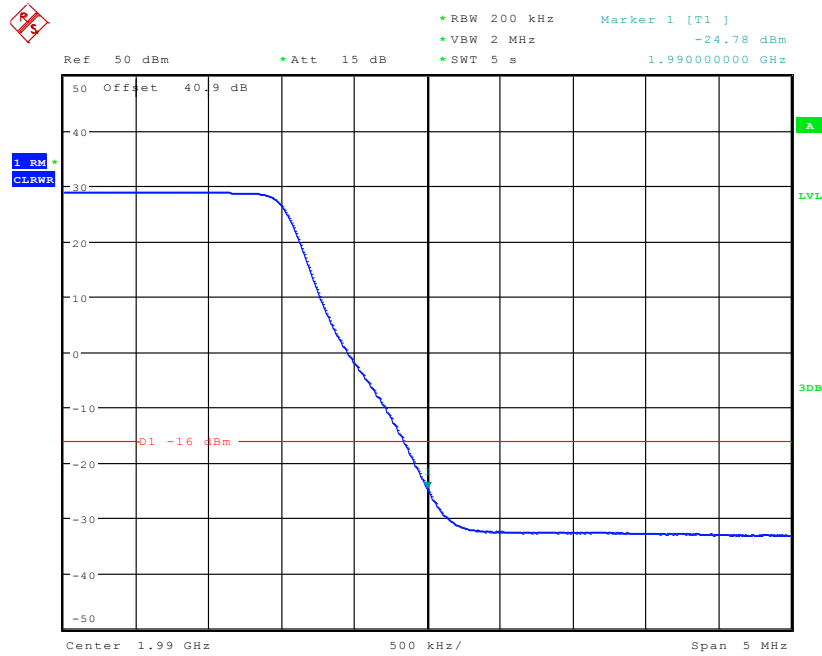


Date: 5.JUN.2014 14:50:16

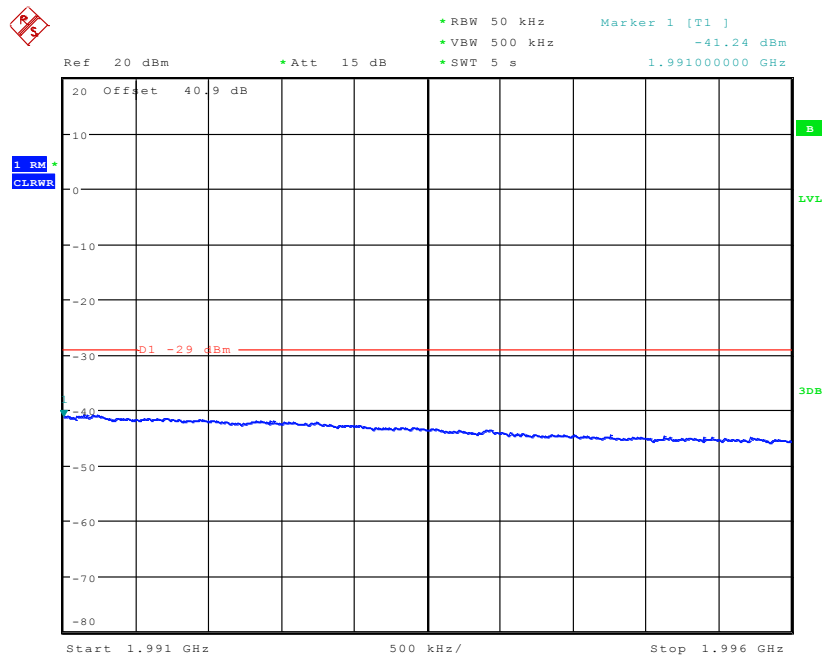


Date: 5.JUN.2014 14:50:53

Channel Position T - QPSK / Bandwidth 20.0 MHz



Date: 5.JUN.2014 14:57:08



Date: 5.JUN.2014 14:57:43

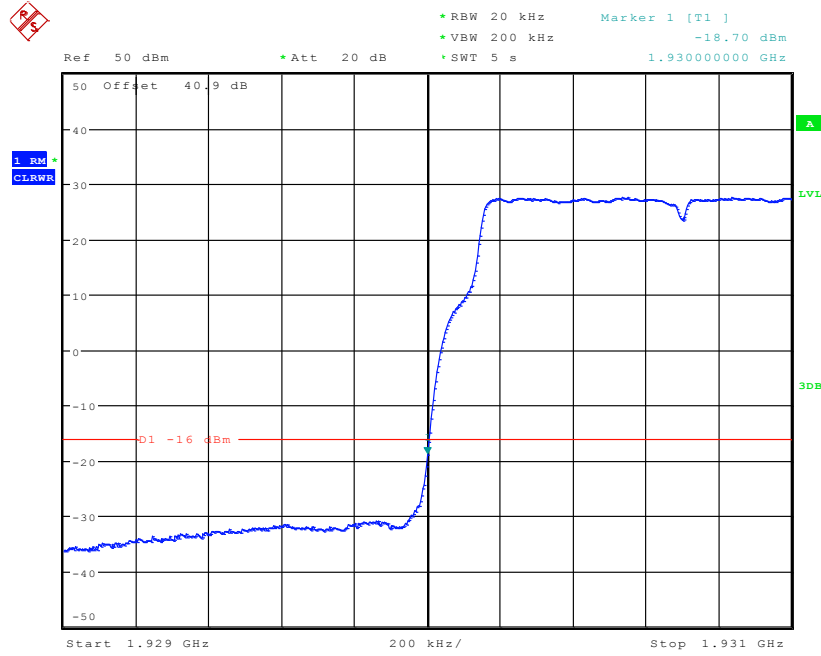
Configuration L-MIMO-MC 2 (2C)

Maximum Output Power 44.8dBm per carrier

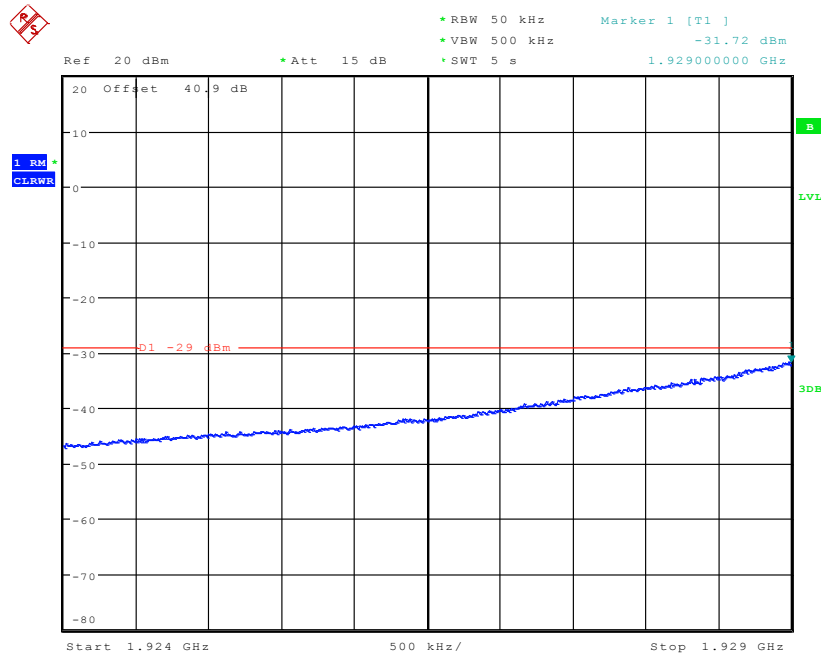
Band Edge Frequency	Channel Bandwidth	Edge Test with modulation QPSK Channel Frequencies
Channel Position B 1930.0 MHz	1.4 MHz	1930.7MHz + 1932.1MHz
	3.0 MHz	1931.5MHz + 1934.5MHz
	5.0 MHz	1932.5MHz + 1937.5MHz
	10.0 MHz	1935.0MHz + 1945.0MHz
	15.0 MHz	-
	20.0 MHz	-
Channel Position T 1990.0 MHz	1.4 MHz	1989.3MHz + 1987.9MHz
	3.0 MHz	1988.5MHz + 1985.5MHz
	5.0 MHz	1987.5MHz + 1982.5MHz
	10.0 MHz	1985.0MHz + 1975.0MHz
	15.0 MHz	-
	20.0 MHz	-

Note: For LTE, the channels shown in the table above are the minimum and maximum channels that can be used in the authorised frequency ranges to maintain compliance. Channels outside of the ranges shown in the above tables shall not be made available to the end user.

Channel Position B - QPSK / Bandwidth 1.4 MHz

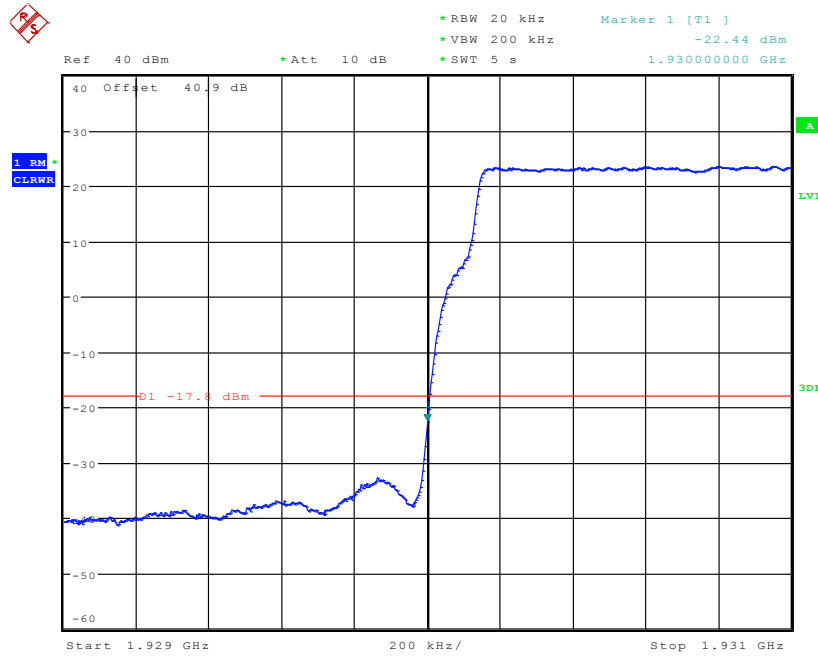


Date: 5.JUN.2014 15:05:26



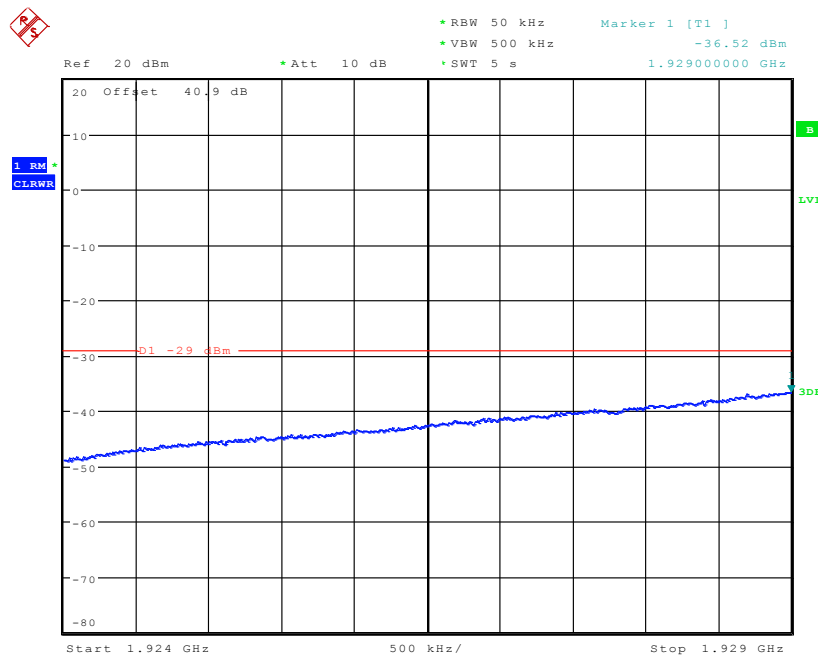
Date: 5.JUN.2014 15:06:47

Channel Position B – Modulation QPSK / Bandwidth 3.0 MHz



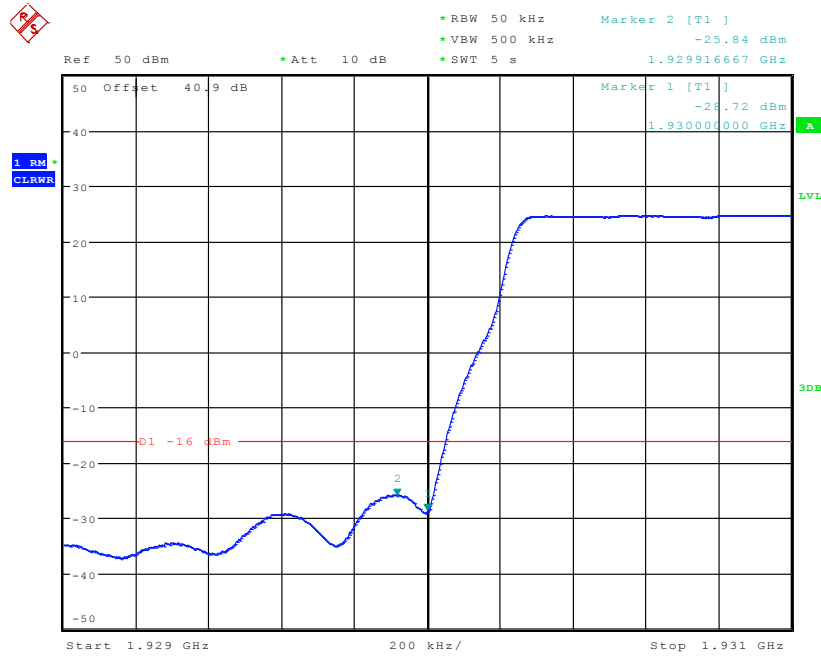
Date: 5.JUN.2014 15:18:17

Note: A resolution bandwidth of 20kHz was used. 20kHz is <1% of the Emission Bandwidth of LTE (2.96MHz), to compensate for the reduced measurement bandwidth, the limit was adjusted from -16dBm (-13dBm -3dB [10Log(2)]) to -17.8dBm.

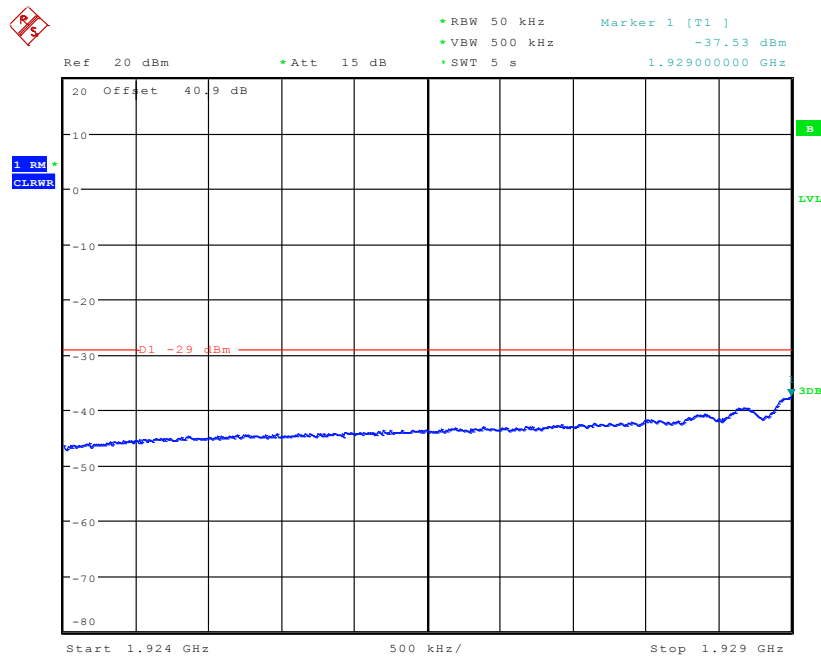


Date: 5.JUN.2014 15:15:58

Channel Position B - QPSK / Bandwidth 5.0 MHz

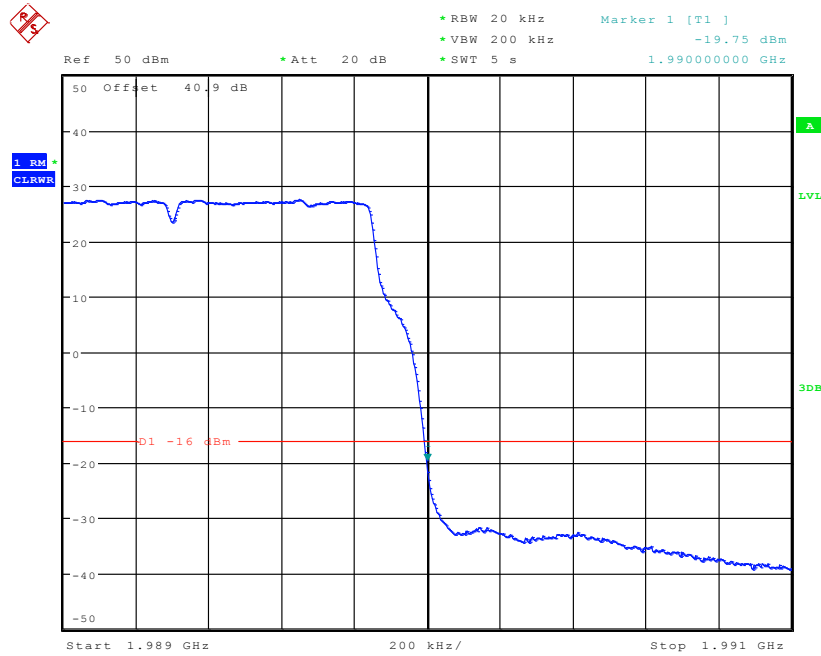


Date: 5.JUN.2014 15:24:21

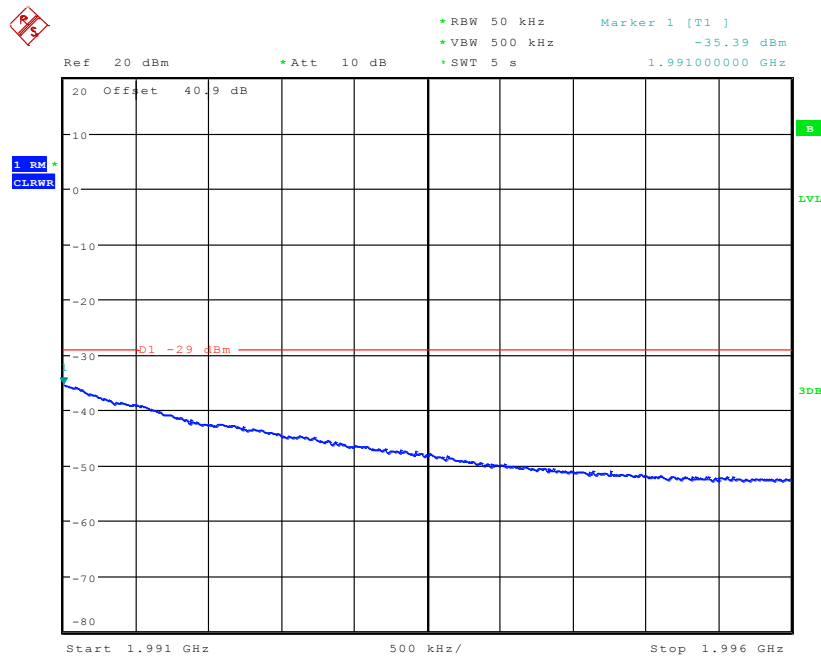


Date: 5.JUN.2014 15:26:45

Channel Position T - QPSK / Bandwidth 1.4 MHz

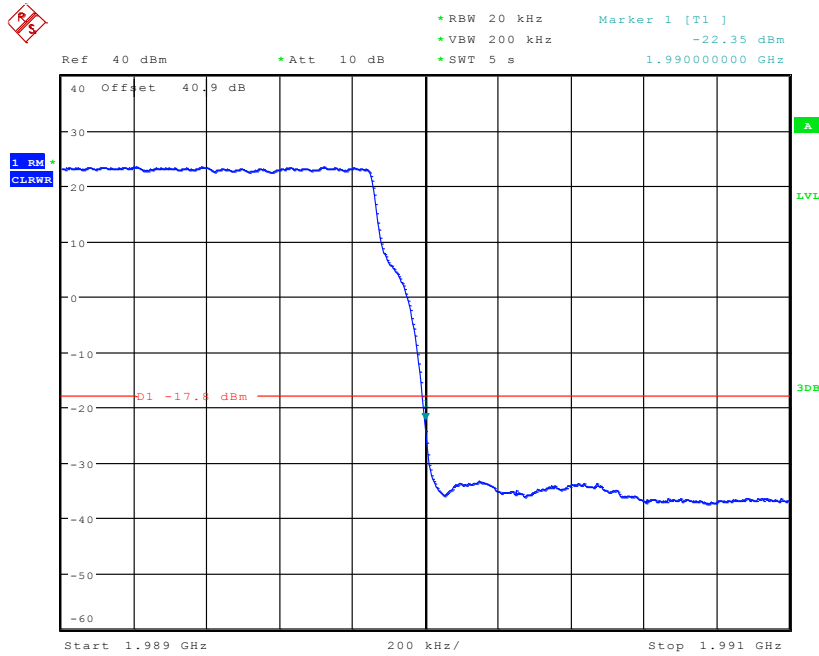


Date: 5.JUN.2014 15:08:45



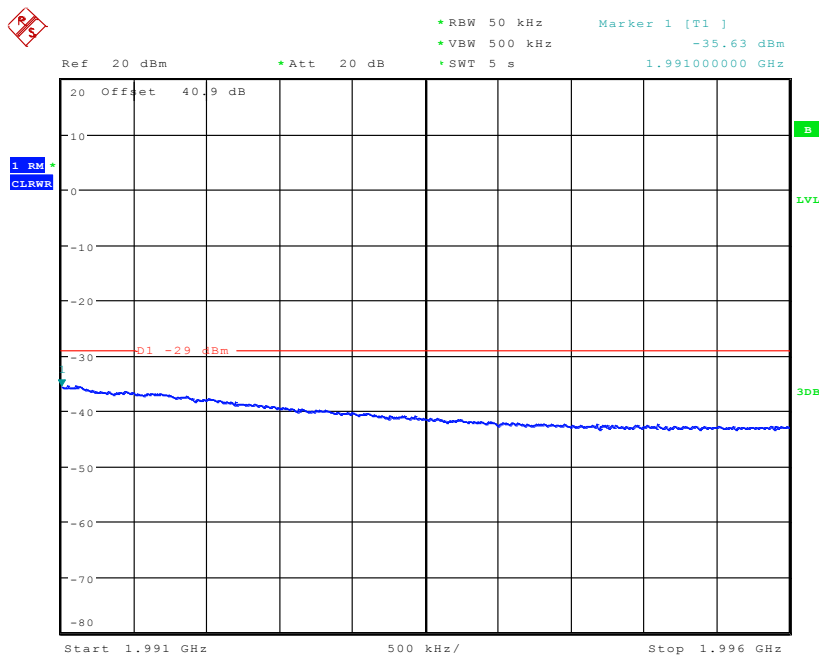
Date: 5.JUN.2014 15:11:58

Channel Position T - QPSK / Bandwidth 3.0 MHz



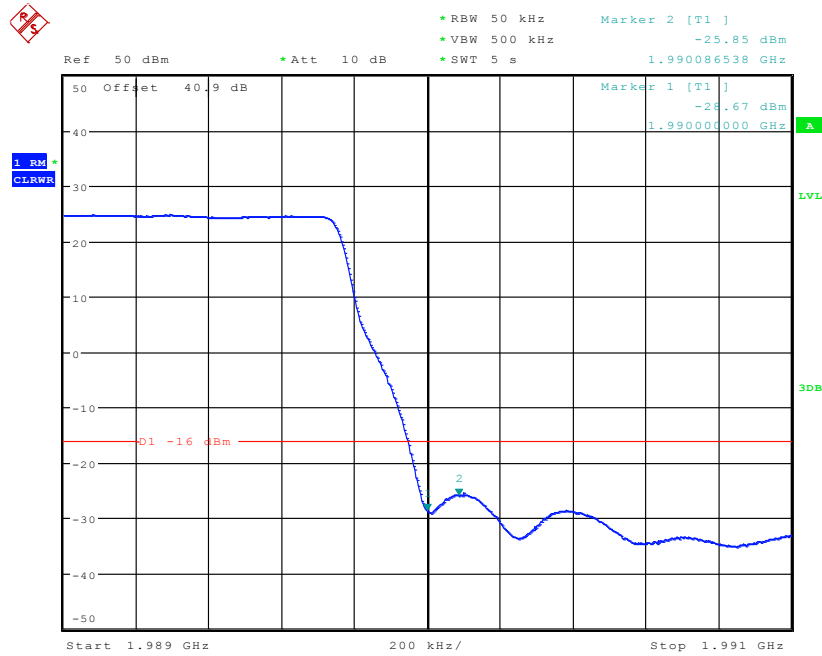
Date: 5.JUN.2014 15:20:20

Note: A resolution bandwidth of 20kHz was used. 20kHz is <1% of the Emission Bandwidth of LTE (2.96MHz), to compensate for the reduced measurement bandwidth, the limit was adjusted from -16dBm (-13dBm -3dB [10Log(2)]) to -17.8dBm.

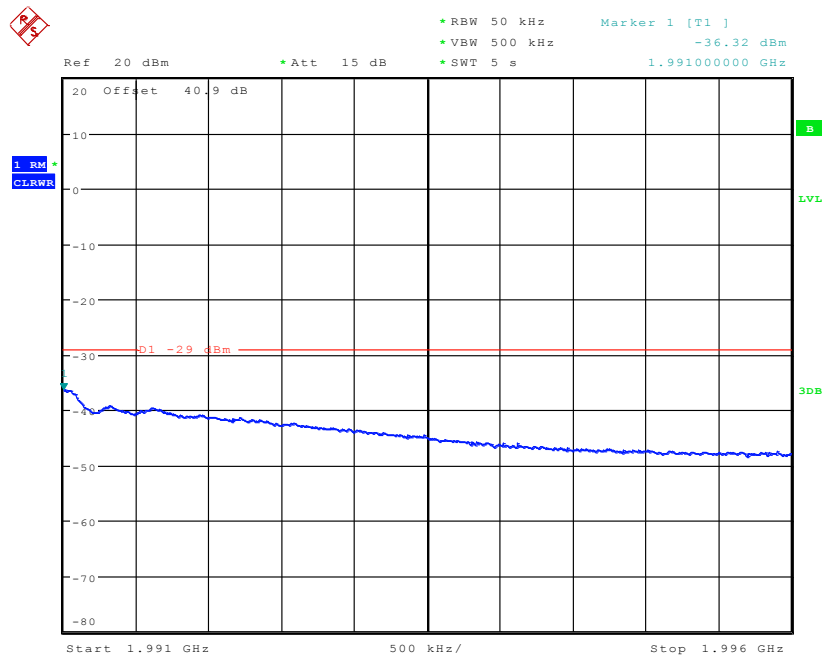


Date: 5.JUN.2014 15:21:22

Channel Position T - QPSK / Bandwidth 5.0 MHz

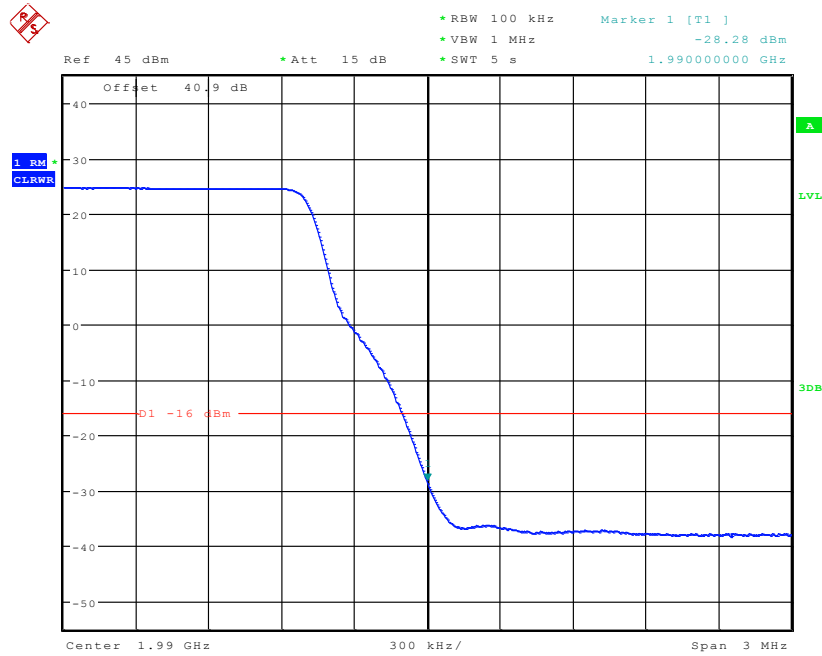


Date: 5.JUN.2014 15:28:31

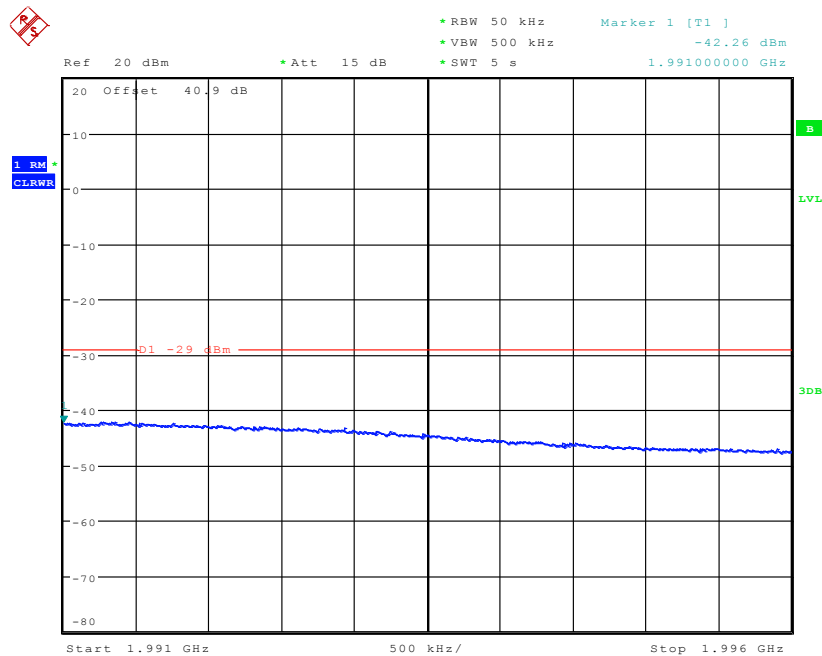


Date: 5.JUN.2014 15:28:59

Channel Position T - QPSK / Bandwidth 10.0 MHz



Date: 5.JUN.2014 15:38:30



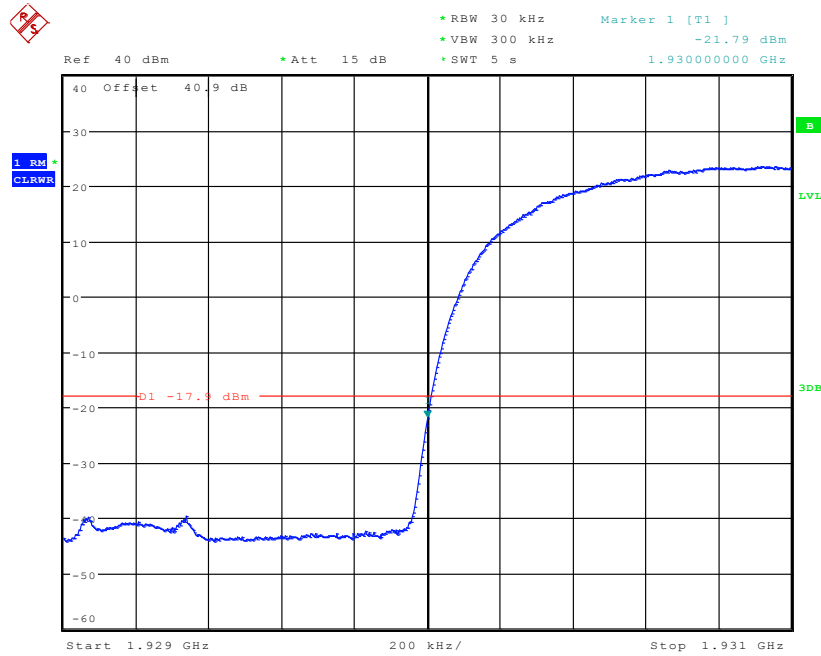
Date: 5.JUN.2014 15:37:33

Configuration G+W-MIMO-MC 1 (1W + 1G)

Maximum Output Power 44.8dBm per carrier

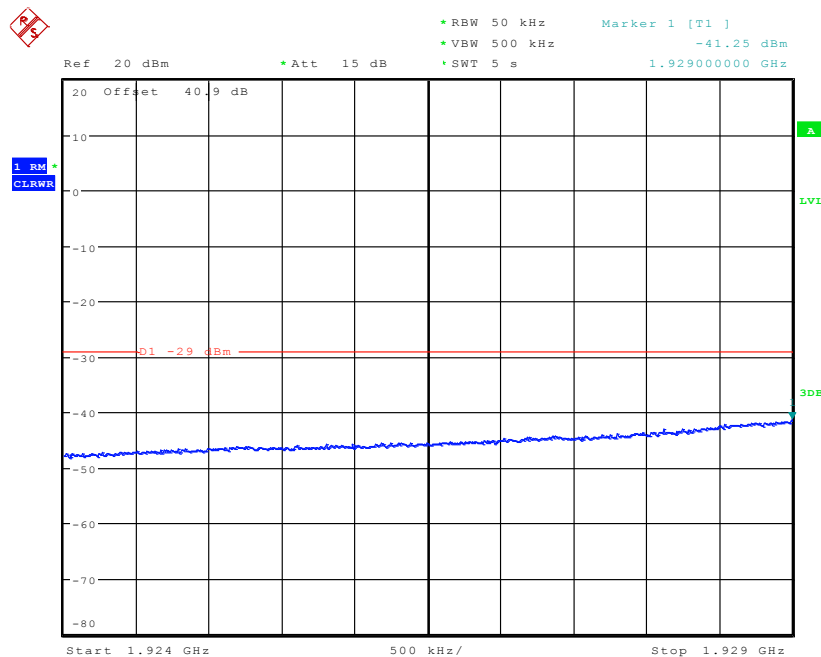
Band Edge Frequency	Edge Test with modulation (W) 16QAM + (G) GMSK Channel Frequencies
Channel Position B_{RFBW} 1930.0 MHz	Port A: (W) 1932.4MHz + (G) 1935.2MHz Port B: (W) 1932.4MHz + (G) 1935.8MHz
Channel Position T_{RFBW} 1990.0 MHz	Port A: (W) 1987.6MHz + (G) 1984.8MHz Port B: (W) 1987.6MHz + (G) 1984.2MHz

Channel Position B_{RFBW} - WCDMA 16QAM / GSM GMSK



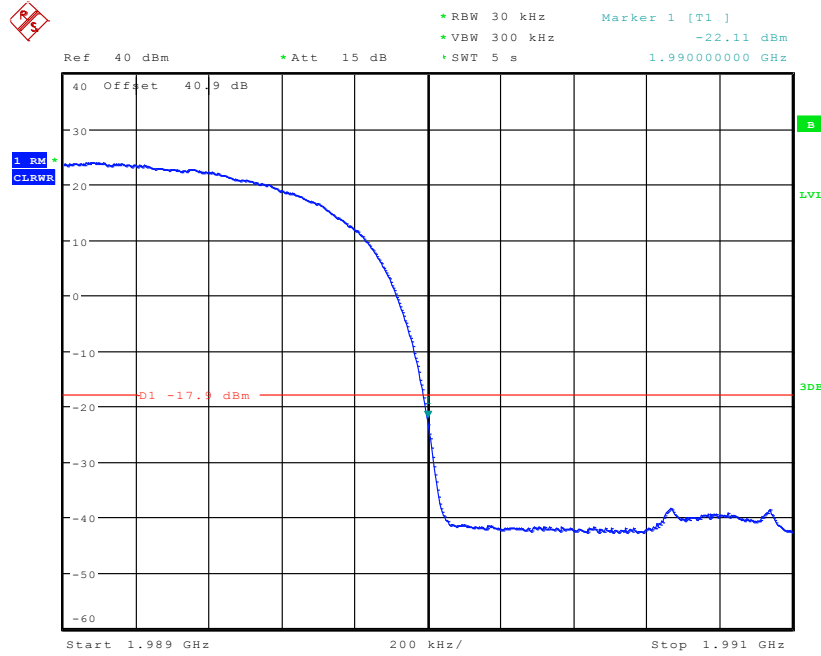
Date: 6.JUN.2014 14:22:04

Note: A resolution bandwidth of 30kHz was used. 30kHz is <1% of the Emission Bandwidth of WCDMA (4.66MHz), to compensate for the reduced measurement bandwidth, the limit was adjusted from -16dBm (-13dBm -3dB [10Log(2)]) to -17.9dBm.



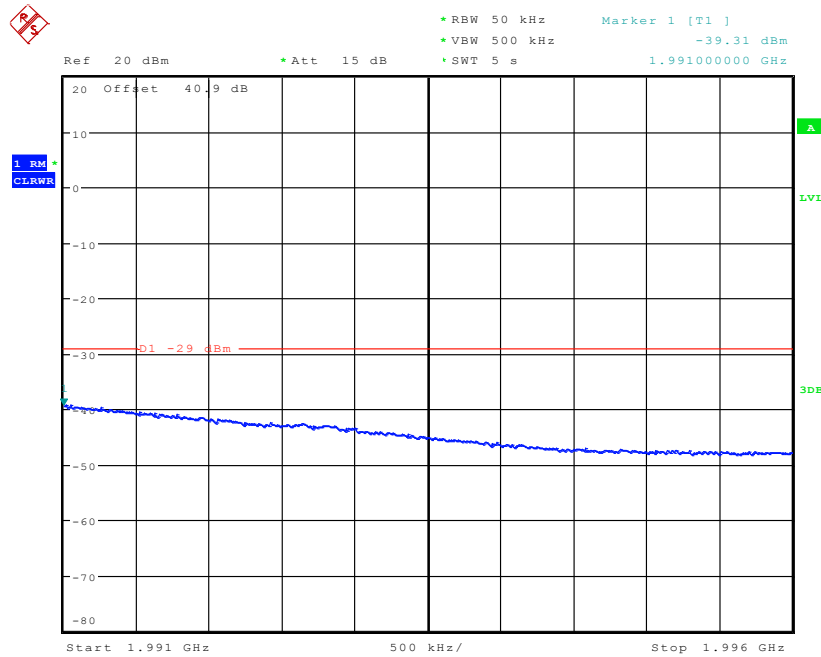
Date: 6.JUN.2014 14:23:11

Channel Position T_{RFBW} - WCDMA 16QAM / GSM GMSK



Date: 6.JUN.2014 14:27:10

Note: A resolution bandwidth of 30kHz was used. 30kHz is <1% of the Emission Bandwidth of WCDMA (4.66MHz), to compensate for the reduced measurement bandwidth, the limit was adjusted from -16dBm (-13dBm -3dB [10Log(2)]) to -17.9dBm.



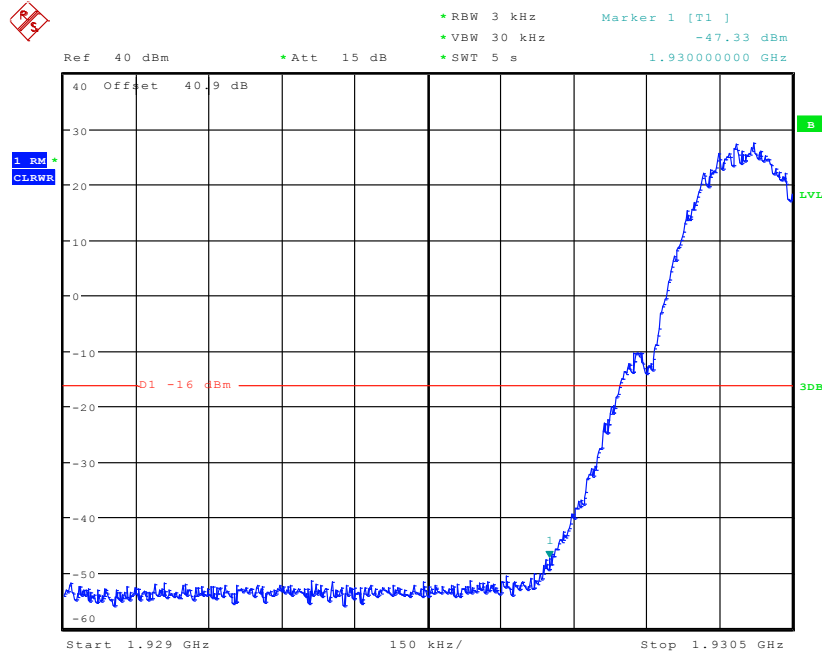
Date: 6.JUN.2014 14:28:11

Configuration G+W-MIMO-MC 3 (2G + 1W)

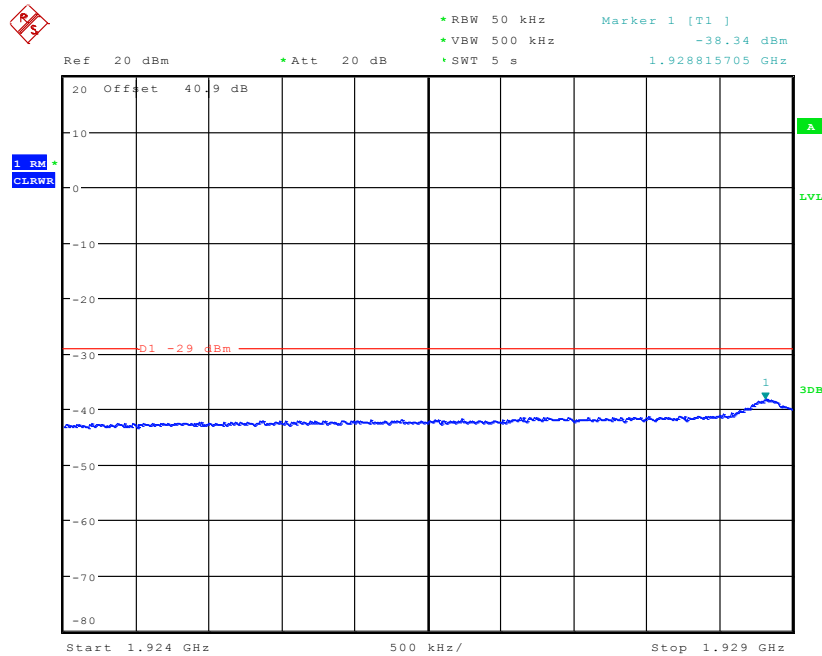
Maximum Output Power 43.0dBm per carrier

Band Edge Frequency	Edge Test with modulation (G) GMSK + (W) 16QAM Channel Frequencies
Channel Position B_{RFBW} 1930.0 MHz	Port A: (G) 1930.4MHz + (G) 1932.0MHz + (W) 1934.8MHz Port B: (G) 1931.0MHz + (G) 1931.4MHz + (W) 1934.8MHz
Channel Position T_{RFBW} 1990.0 MHz	Port A: (G) 1989.6MHz + (G) 1988.0MHz + (W) 1985.2MHz Port B: (G) 1989.0MHz + (G) 1988.6MHz + (W) 1985.2MHz

Channel Position B_{RFBW} - GSM GMSK / WCDMA 16QAM

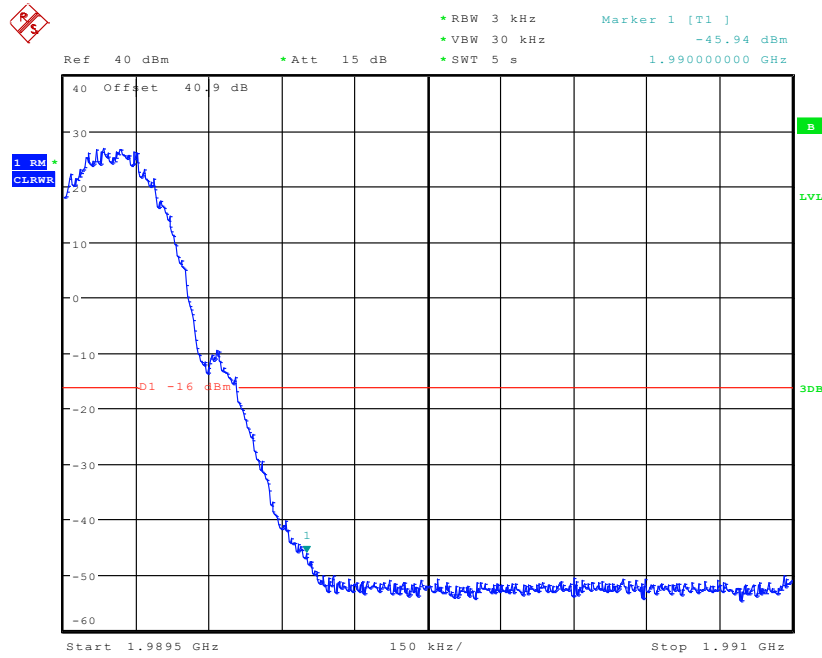


Date: 6.JUN.2014 14:42:01

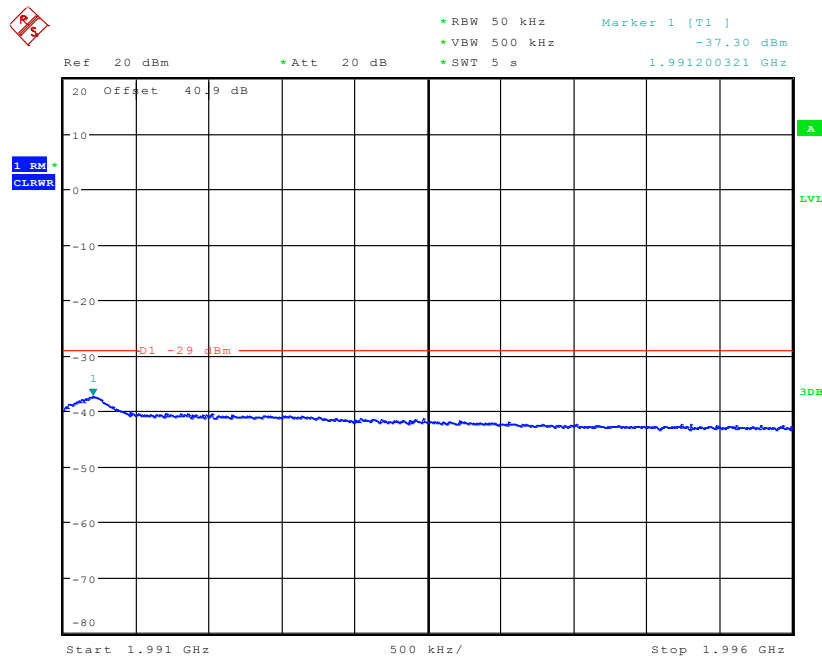


Date: 6.JUN.2014 14:42:56

Channel Position T_{RFBW} - GSM GMSK / WCDMA 16QAM



Date: 6.JUN.2014 14:45:30



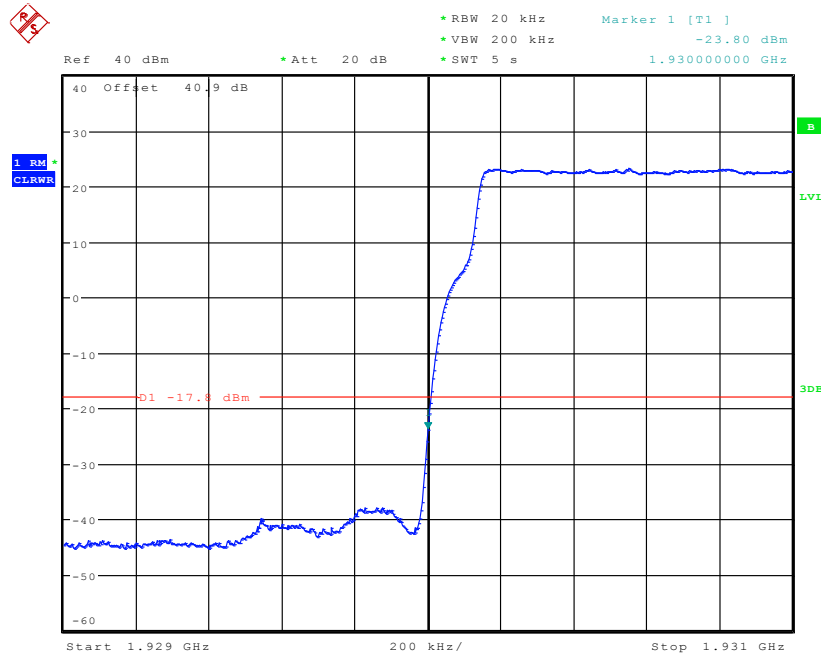
Date: 6.JUN.2014 14:44:19

Configuration G+L-MIMO-MC 1 (1L + 1G)

Maximum Output Power 44.8dBm per carrier

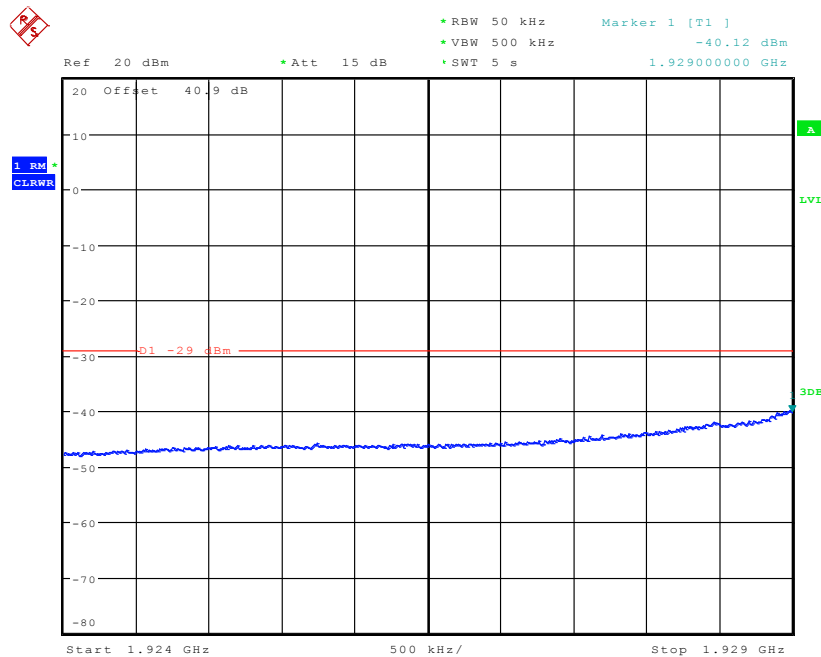
Band Edge Frequency	Edge Test with modulation (L) QPSK / 3.0MHz Bandwidth + (G) GMSK Channel Frequencies
Channel Position B_{RFBW} 1930.0 MHz	Port A: (L) 1931.5MHz + (G) 1933.4MHz Port B: (L) 1931.5MHz + (G) 1934.0MHz
Channel Position T_{RFBW} 1990.0 MHz	Port A: (L) 1988.5MHz + (G) 1986.6MHz Port B: (L) 1988.5MHz + (G) 1986.0MHz

Channel Position B_{RFBW} - LTE QPSK: Bandwidth 3.0MHz / GSM GMSK



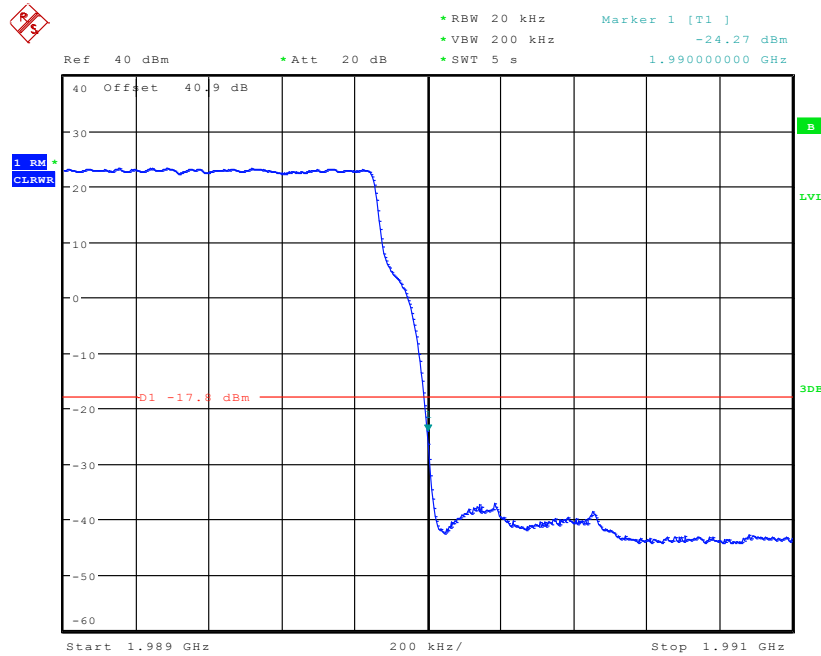
Date: 6.JUN.2014 15:14:38

Note: A resolution bandwidth of 20kHz was used. 20kHz is <1% of the Emission Bandwidth of LTE (2.96MHz), to compensate for the reduced measurement bandwidth, the limit was adjusted from -16dBm (-13dBm -3dB [10Log(2)]) to -17.8dBm.



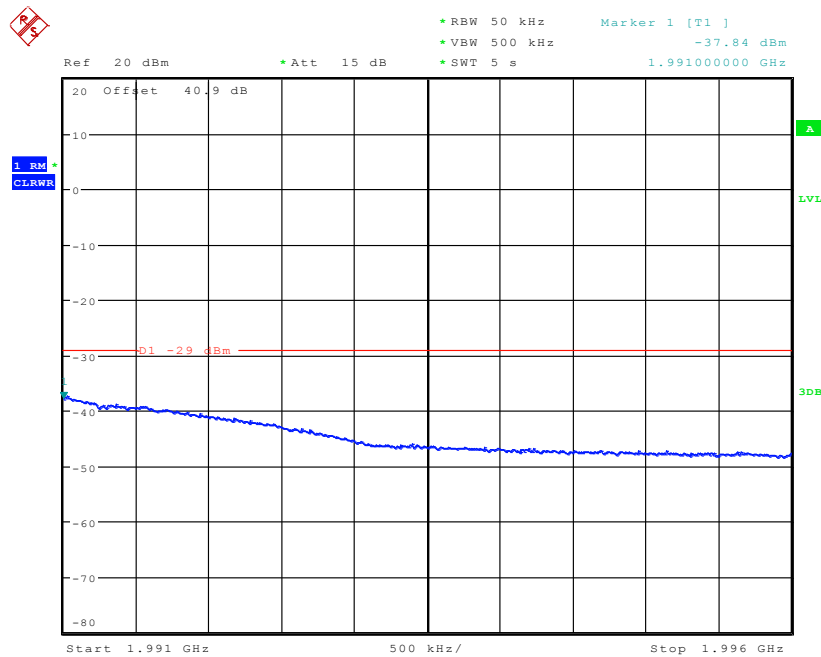
Date: 6.JUN.2014 15:15:29

Channel Position T_{RFBW} - LTE QPSK: Bandwidth 3.0MHz / GSM GMSK



Date: 6.JUN.2014 15:20:57

Note: A resolution bandwidth of 20kHz was used. 20kHz is <1% of the Emission Bandwidth of LTE (2.74MHz), to compensate for the reduced measurement bandwidth, the limit was adjusted from -16dBm (-13dBm -3dB [10Log(2)]) to -17.8dBm.



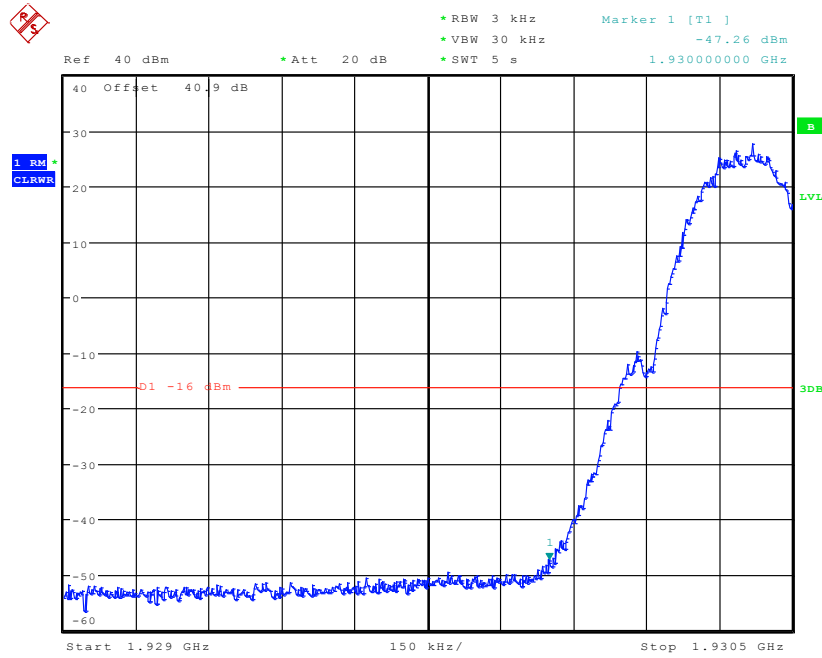
Date: 6.JUN.2014 15:21:29

Configuration G+L-MIMO-MC 3 (2G + 1L)

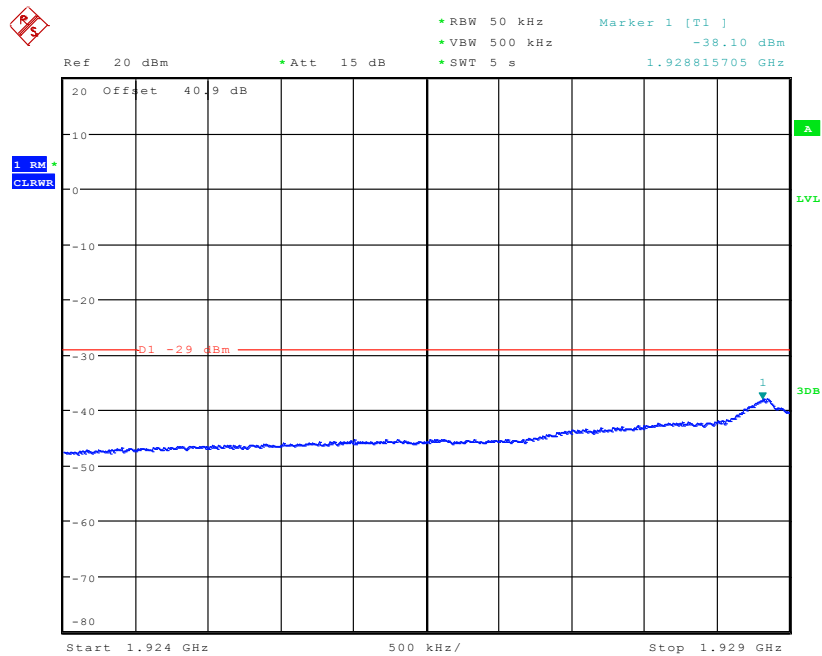
Maximum Output Power 43.0dBm per carrier

Band Edge Frequency	Edge Test with modulation (G) GMSK + (L) QPSK / 3.0MHz Bandwidth Channel Frequencies
Channel Position B_{RFBW} 1930.0 MHz	Port A: (G) 1930.4MHz + (G) 1932.0MHz + (L) 1933.7MHz Port B: (G) 1931.0MHz + (G) 1931.4MHz + (L) 1933.7MHz
Channel Position T_{RFBW} 1990.0 MHz	Port A: (G) 1989.6MHz + (G) 1988.0MHz + (L) 1986.3MHz Port B: (G) 1989.0MHz + (G) 1988.6MHz + (L) 1986.3MHz

Channel Position B_{RFBW} - GSM GMSK / LTE QPSK: Bandwidth 3.0MHz



Date: 6.JUN.2014 15:28:19



Date: 6.JUN.2014 15:28:52