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Report On

FCC Testing of the
Ericsson RRUS 82 B41 KRC 161 436/1 (2496 MHz - 2690 MHz)
Remote Radio Unit in accordance with FCC CFR 47 Part 27

COMMERCIAL-IN-CONFIDENCE

FCC ID: TA8AKRC161436-1

PREPARED BY	APPROVED BY	DATED
Guangdi Dong Project Engineer	Steve Scarfe Authorised Signatory	20 April 2015

Document 75930121 Report 01 Issue 1 April 2015

CONTENTS

SECTION 1

REPORT INFORMATION

1.1 REPORT DETAILS

The information contained in this report is intended to show verification of the Ericsson RRUS 82 B41 KRC 161 436/1 Remote Radio Unit to the requirements of FCC CFR 47 Part 27

Testing was carried out in support of a C2PC application for Grant of RRUS 82 B41 KRC 161 436/1 in TDD-LTE mode.

Manufacturer	Ericsson AB
Address	Isafjordsgatan 10 SE-164 80 Stockholm Sweden
Product Name	RRUS 82 B41
Product Number	KRC 161 436/1
Serial Number(s)	D820873095
PIS Version	CXP 902 5220/2 BD0408a
Hardware Version	R1D
Number of Sample Tested	1
Test Specification/Issue/Date	FCC CFR 47 Part 27: 2014
Start of Test	01 April 2015
Finish of Test	15 April 2015
Name of Engineer(s)	Guangdi Dong
Related Document(s)	ANSI C63.4: 2009 ANSI/TIA-603-C-2004 FCC CFR 47 Part 2: 2014 KDB 971168 D01 v02 r02 KDB 662911 D01 v02 r01

1.2 BRIEF SUMMARY OF RESULTS

A brief summary of results for each configuration, in accordance with FCC CFR 47 Part 2, Part 27 is shown below.

Section	Spec Clause		Test Description	Result
	Part 2	Part 27		
2.1	2.1046	27.50 (h) 27.50 (i)	Maximum Peak Output Power and Peak to Average Ratio – Conducted	Pass
	-	27.50 (h)	Equivalent Isotropically Radiated Power (EIRP)	N/A[1]
2.2	2.1049(h)	27.53 (m)	Occupied Bandwidth	Pass
2.3	2.1051	27.53 (m)	Spurious Emissions at Band Edge	Pass
2.4	2.1053	27.53 (m)	Radiated Spurious Emissions	Pass
2.5	2.1051	27.53 (m)	Conducted Spurious Emissions	Pass
-	2.1055	27.54	Frequency Stability	N/T
-	-	-	Receiver Spurious Emissions	N/A

N/A – Not Applicable
N/T – Not tested (due to C2PC)
N/A[1]– Not Applicable, due to no integrated antenna

1.3 CONFIGURATION DESCRIPTION

Configuration Code	Carrier(s)	Configuration Description
L-MIMO-SC 1	1C	LTE 8 x MIMO, Single Carrier
L-MIMO-SC 2	1C	LTE 4 x MIMO, Single Carrier
L-MIMO-MC 1	2C	LTE 8 x MIMO, Multi Carrier x2
L-MIMO-MC 2	2C	LTE 4 x MIMO, Multi Carrier x2
L-MIMO-MC 3	3C	LTE 8 x MIMO, Multi Carrier x3
L-MIMO-MC 4	3C	LTE 4 x MIMO, Multi Carrier x3

The settings below were deemed representative for all traffic scenarios when settings with different modulations, channel bandwidths, number of carriers and RF configurations has been tested to find the worst case setting. The settings below were used for all measurements if not otherwise noted:

LTE:
MIMO mode single carrier: E-TM1.1
MIMO mode multi carrier (x2): E-TM1.1
MIMO mode multi carrier (x3): E-TM1.1

The complete testing was performed with the EUT transmiting at maximum RF power unless otherwise stated.

The Maximum Output Power was tested on all TX/RX output connector RF 1 to RF 8, all other TX measurements were performed on the combined TX/RX output connector RF 4 of the EUT as the representative port unless otherwise stated.

1.4 DECLARATION OF BUILD STATUS

MAIN EUT	
MANUFACTURING DESCRIPTION	Remote Radio Unit
MANUFACTURER	Ericsson AB
PRODUCT NAME	RRUS 82 B41
PRODUCT NUMBER	KRC 161 436/1
TRANSMITTER OPERATING RANGE	TX/ RX: 2496MHz - 2690MHz
MODULATIONS	QPSK, 16QAM, 64QAM
ITU DESIGNATION OF EMISSION	10M0F9W, 15M0F9W
SUPPORTED CHANNEL BANDWIDTH CONFIGURATION	10MHz, 15MHz
OUTPUT POWER (RMS) (W or dBm)	MIMO: 8 x 41.8dBm (8 x 15W) MIMO: 4 x 43.0dBm (8 x 20W)
ANTENNA GAIN	No integrated Antenna
SUPPORTED CONFIGUATION	Single Carrier, Multi Carrier, 4 x MIMO, 8 x MIMO
NUMBER OF CARRIERS	Maximum 3 carriers
INSTANTANEOUS BANDWIDTH	60MHz
NUMBER OF ANTENNA PORTS	8 TX/RX ports
FCC ID	TA8AKRC161436-1
POWER SOURCE	-48V DC
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	The equipment is the Radio Part of the TDD- LTE Base Station.

Signature Jiang Xiaoying

Date 17 April 2015

D of B S Serial No 75930121/01

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 82 B41, KRC 161 436/1 is an Ericsson Remote Radio Unit working in the public mobile service 2496-2690MHz band which provides communication connections to TDD-LTE network network in LTE Modes. The RRUS 82 B41 Remote Radio Unit operates from a -48V DC supply.

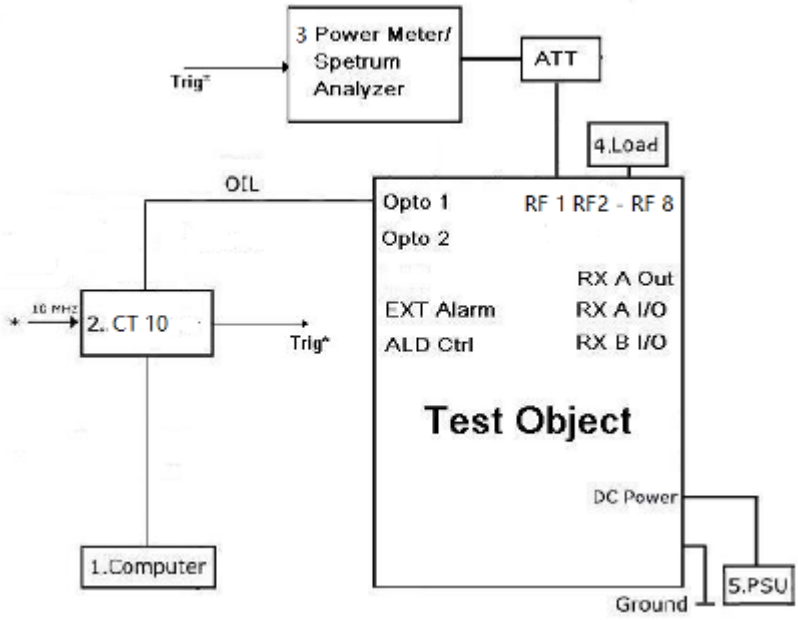
The EUT includes eight TX/RX ports and it can be configured to transmit in MIMO mode, and MIMO mode was used for measurements as the worst configuration.

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

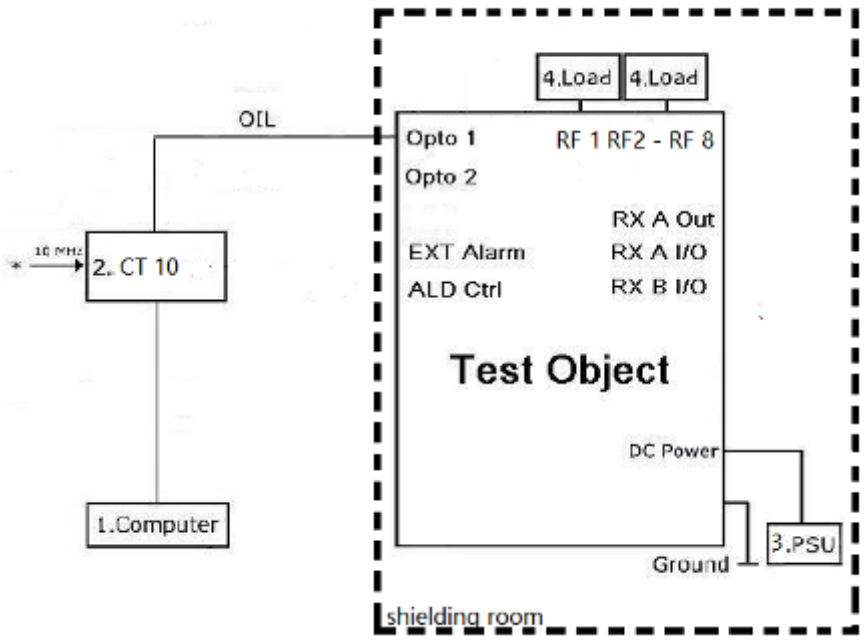
Test Setup, Conducted Measurement:



Product Name	Product Number	Version	Serial Number
RRUS 82 B41	KRC 161 436/1	R1D	D820873095

No.	Auxiliary Equipment	Part Number / Model Type	Version	Serial Number
1	Computer	Advantech-610H	--	ETD/L913
2	CT 10	LPC102487/1	R1C	T01F376487
3	Spectrum Analyzer	FSW43	--	100615
	Spectrum Analyzer	FSW26	--	102106
	Power Meter	NRP	--	101195
	Power Meter	NRP	--	102435
	Power Sensor	NRP-Z21	--	104409
	Power Sensor	NRP-Z21	--	104410
4	Load	TF-25-3-A	--	14091831
		TF-25-3-A	--	14091832
		TF-25-3-A	--	14091833
		TF-25-3-A	--	14091834
		TF-25-3-A	--	14091835
		TF-25-3-A	--	14091836
		TF-25-3-A	--	14091837
5	DC Power Supply	DH1716A-10	--	1000303181

Test Setup, Radiated Measurement:



Product Name	Product Number	Version	Serial Number
RRUS 82 B41	KRC 161 436/1	R1D	D820873095

No.	Auxiliary Equipment	Part Number / Model Type	Version	Serial Number
1	Computer	Advantech-610H	--	ETD/L913
2	CT 10	LPC102487/1	R1C	T01F376487
3	DC Power Supply	DH1716A-10	--	1000303181
4	Load	TF-25-3-A	--	14091831
		TF-25-3-A	--	14091832
		TF-25-3-A	--	14091833
		TF-25-3-A	--	14091834
		TF-25-3-A	--	14091835
		TF-25-3-A	--	14091836
		TF-25-3-A	--	14091837
		TF-25-3-A	--	14091838

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.

All test cases were tested with the EUT supplied with -48V DC by an external power 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 Output Power and Peak to Average Ratio – Conducted
- Occupied Bandwidth
- Band Edge
- Conducted Spurious Emissions

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

FCC Accreditation 910917:
The State Radio Monitoring Centre, No.80 Beilishi Road Xicheng District Beijing, China.

SECTION 2

TEST DETAILS

2.1 MAXIMUM OUTPUT POWER AND PEAK TO AVERAGE RATIO - CONDUCTED

2.1.1 Specification Reference

FCC CFR 47 Part 2.1046
FCC CFR 47 Part 27, Clause 27.50 (h)(1)(i)

2.1.2 Equipment Under Test

RRUS 82 B41, KRC 161 436/1, S/N: D820873095

2.1.3 Date of Test and Modification State

01 to 13 April 2015 - 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	20.2 - 22.5°C
Relative Humidity	51.8 – 62.5%

2.1.6 Test Method

The test was applied in accordance with the test method requirements of FCC Part 2 and KDB 971168 D01.

Using a power meter and attenuator(s), the output power of the EUT was measured at the antenna terminal. 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. Since the EUT transmits on eight antennas simultaneously in the same frequency range for MIMO devices, i.e., TX MIMO mode, using the Measure-and-Sum approach, the output power at all antennas were tested, and the total output power were then summed mathematically in linear power units according to FCC KDB 662911 D01.

A peak to average ratio measurement is performed at the conducted ports of the EUT for single carrier for Multiple RAT mode. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) was used and 0.1% probability value recorded.

The RMS Power and Peak to Average Ratio was measured and recorded with the results being compared with the limits.

2.1.7 Test Results

Configuration L-MIMO-SC 1 (1C)

Maximum Output Power 37.0dBm per port

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 2501.0			Channel Position M 2593.0			Channel Position T 2685.0		
		dBm	W	PAR (dB)	dBm	W	PAR (dB)	dBm	W	PAR (dB)
1	QPSK / 10.0 MHz	37.02	5.04	9.62	37.07	5.09	9.44	36.95	4.95	9.65
2		37.06	5.08	9.55	36.95	4.95	9.49	36.93	4.93	9.61
3		37.05	5.07	9.67	36.95	4.95	9.46	37.01	5.02	9.54
4		37.05	5.07	9.54	37.00	5.01	9.45	37.00	5.01	9.56
5		37.13	5.16	9.57	37.17	5.21	9.69	37.14	5.18	9.60
6		37.13	5.16	9.58	37.10	5.13	9.49	37.00	5.01	9.74
7		37.12	5.15	9.64	36.95	4.95	9.42	36.94	4.94	9.61
8		37.05	5.07	9.62	37.18	5.22	9.42	37.18	5.22	9.56
Total(dBW)		16.11			16.08			16.05		

Configuration L-MIMO-SC 1 (1C)

Maximum Output Power 37.0dBm per port

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 2503.5			Channel Position M 2593.0			Channel Position T 2682.5		
		dBm	W	PAR (dB)	dBm	W	PAR (dB)	dBm	W	PAR (dB)
1	QPSK / 15.0 MHz	36.89	4.89	9.75	36.99	5.00	9.45	36.98	4.99	9.73
2		37.02	5.04	9.83	36.92	4.92	9.54	36.97	4.98	9.67
3		37.05	5.07	9.83	36.94	4.94	9.51	37.09	5.12	9.79
4		36.91	4.91	9.74	36.90	4.90	9.48	37.00	5.01	9.79
5		36.92	4.92	9.64	37.00	5.01	9.54	36.96	4.97	9.80
6		37.06	5.08	9.81	37.04	5.06	9.49	37.04	5.06	9.73
7		36.86	4.85	9.85	36.80	4.79	9.53	36.90	4.90	9.74
8		36.97	4.98	9.83	37.10	5.13	9.50	36.93	4.93	9.77
Total(dBW)		15.99			15.99			16.02		

Configuration L-MIMO-SC 2 (1C)

Maximum Output Power 40.0dBm per port

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 2501.0			Channel Position M 2593.0			Channel Position T 2685.0		
		dBm	W	PAR (dB)	dBm	W	PAR (dB)	dBm	W	PAR (dB)
1	QPSK / 10.0 MHz	39.86	9.68	6.91	40.04	10.09	6.66	40.02	10.05	6.94
2		39.99	9.98	6.90	39.84	9.64	6.67	39.98	9.95	6.80
3		39.91	9.79	6.87	39.91	9.79	6.68	39.89	9.75	7.00
4		39.94	9.86	6.87	39.98	9.95	6.63	40.00	10.00	6.89
Total(dBW)		15.95			15.96			15.99		

Configuration L-MIMO-SC 2 (1C)

Maximum Output Power 40.0dBm per port

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B 2503.5			Channel Position M 2593.0			Channel Position T 2682.5		
		dBm	W	PAR (dB)	dBm	W	PAR (dB)	dBm	W	PAR (dB)
1	QPSK / 15.0 MHz	40.01	10.02	7.22	40.07	10.16	6.66	40.06	10.14	7.04
2		40.03	10.07	7.16	39.95	9.89	6.64	40.08	10.19	7.01
3		39.89	9.75	7.13	39.85	9.66	6.69	39.96	9.91	7.21
4		39.90	9.77	7.06	39.92	9.82	6.66	40.05	10.12	7.13
Total(dBW)		15.98			15.97			16.06		

Configuration L-MIMO-MC 1 (2C)

Maximum Output Power 40.0dBm per port

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} 2501.0MHz + 2511.0MHz			Channel Position M_{RFBW} 2588.0MHz+ 2598.0MHz			Channel Position T_{RFBW} 2675.0MHz+ 2685.0MHz		
		dBm	W	PAR (dB)	dBm	W	PAR (dB)	dBm	W	PAR (dB)
1	QPSK / 10.0 MHz	39.94	9.86	-	39.99	9.98	-	39.90	9.77	-
2		40.02	10.05	-	39.94	9.86	-	39.95	9.89	-
3		40.01	10.02	-	39.97	9.93	-	39.93	9.84	-
4		39.98	9.95	-	40.00	10.00	-	39.95	9.89	-
5		40.04	10.09	-	39.97	9.93	-	39.96	9.91	-
6		40.10	10.23	-	40.06	10.14	-	40.01	10.02	-
7		39.94	9.86	-	39.87	9.71	-	39.98	9.71	-
8		40.14	10.33	-	40.21	10.50	-	40.12	10.50	-
Total(dBW)		19.05			19.03			19.01		

Configuration L-MIMO-MC 1 (2C)

Maximum Output Power 40.0dBm per port

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} 2503.5MHz + 2518.5MHz			Channel Position M_{RFBW} 2585.5MHz+ 2600.5MHz			Channel Position T_{RFBW} 2667.5MHz+ 2682.5MHz		
		dBm	W	PAR (dB)	dBm	W	PAR (dB)	dBm	W	PAR (dB)
1	QPSK / 15.0 MHz	40.01	10.02	-	39.95	9.89	-	39.88	9.73	-
2		40.05	10.12	-	39.97	9.93	-	39.94	9.86	-
3		40.00	10.00	-	40.09	10.21	-	40.01	10.02	-
4		40.05	10.12	-	39.92	9.82	-	39.89	9.75	-
5		39.90	9.77	-	39.92	9.82	-	39.98	9.95	-
6		40.10	10.23	-	40.05	10.12	-	40.06	10.14	-
7		39.97	9.93	-	39.88	9.73	-	39.97	9.93	-
8		40.05	10.12	-	40.08	10.19	-	40.09	10.21	-
Total(dBW)		19.05			19.01			19.01		

Configuration L-MIMO-MC 2 (2C)

Maximum Output Power 43.0dBm per port

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} 2501.0MHz + 2511.0MHz			Channel Position M_{RFBW} 2588.0MHz+ 2598.0MHz			Channel Position T_{RFBW} 2675.0MHz+ 2685.0MHz		
		dBm	W	PAR (dB)	dBm	W	PAR (dB)	dBm	W	PAR (dB)
1	QPSK / 10.0 MHz	42.97	19.82	-	43.05	20.18	-	42.94	19.68	-
2		43.05	20.18	-	42.93	19.63	-	42.88	19.05	-
3		43.06	20.23	-	42.95	19.72	-	43.01	20.00	-
4		43.04	20.14	-	42.96	19.77	-	42.95	19.72	-
Total(dBW)		19.05			18.99			18.97		

Configuration L-MIMO-MC 2 (2C)

Maximum Output Power 43.0dBm per port

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} 2503.5MHz + 2518.5MHz			Channel Position M_{RFBW} 2585.5MHz+ 2600.5MHz			Channel Position T_{RFBW} 2667.5MHz+ 2682.5MHz		
		dBm	W	PAR (dB)	dBm	W	PAR (dB)	dBm	W	PAR (dB)
1	QPSK / 15.0 MHz	43.00	19.95	-	42.99	19.91	-	42.93	19.63	-
2		43.02	20.04	-	42.99	19.91	-	42.96	19.77	-
3		43.00	19.95	-	42.97	19.82	-	42.94	19.59	-
4		43.04	20.14	-	43.01	20.00	-	43.04	20.14	-
Total(dBW)		19.04			19.01			18.99		

Configuration L-MIMO-MC 3 (3C)

Maximum Output Power 41.8dBm per port

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} 2501.0MHz + 2511.0MHz + 2521.0MHz			Channel Position M_{RFBW} 2583.0MHz + 2593.0MHz + 2603.0MHz			Channel Position T_{RFBW} 2665.0MHz + 2675.0MHz + 2685.0MHz		
		dBm	W	PAR (dB)	dBm	W	PAR (dB)	dBm	W	PAR (dB)
1	QPSK / 10.0 MHz	41.74	14.93	-	41.75	14.69	-	41.66	14.66	-
2		41.76	15.00	-	41.73	14.89	-	41.75	14.96	-
3		41.83	15.24	-	41.83	15.24	-	41.80	15.14	-
4		41.82	15.21	-	41.70	14.79	-	41.68	14.72	-
5		41.83	15.24	-	41.85	15.31	-	41.78	15.07	-
6		41.90	15.49	-	41.86	15.35	-	41.83	15.23	-
7		41.78	15.07	-	41.69	15.45	-	41.70	14.79	-
8		41.90	15.49	-	41.89	15.45	-	41.85	15.31	-
Total(dBW)		20.85			20.82			20.79		

Configuration L-MIMO-MC 3 (3C)

Maximum Output Power 41.8dBm per port

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} 2503.5MHz + 2518.5MHz + 2533.5MHz			Channel Position M_{RFBW} 2578.0MHz + 2593.0MHz + 2608.0MHz			Channel Position T_{RFBW} 2652.5MHz + 2667.5MHz + 2682.5MHz		
		dBm	W	PAR (dB)	dBm	W	PAR (dB)	dBm	W	PAR (dB)
1	QPSK / 15.0 MHz	41.62	14.52	-	41.83	15.24	-	41.80	15.14	-
2		41.69	14.76	-	41.70	14.79	-	41.70	14.79	-
3		41.74	14.93	-	41.76	15.00	-	41.75	14.96	-
4		41.66	14.66	-	41.73	14.89	-	41.70	14.79	-
5		41.78	15.07	-	41.78	15.07	-	41.80	15.14	-
6		41.83	15.24	-	41.82	15.21	-	41.86	15.35	-
7		41.78	15.07	-	41.72	14.86	-	41.75	14.96	-
8		41.86	15.35	-	41.88	15.42	-	41.84	15.28	-
Total(dBW)		20.78			20.81			20.81		

Configuration L-MIMO-MC 4 (3C)

Maximum Output Power 43.0dBm per port

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} 2501.0MHz + 2511.0MHz + 2521.0MHz			Channel Position M_{RFBW} 2583.0MHz + 2593.0MHz + 2603.0MHz			Channel Position T_{RFBW} 2665.0MHz + 2675.0MHz + 2685.0MHz		
		dBm	W	PAR (dB)	dBm	W	PAR (dB)	dBm	W	PAR (dB)
1	QPSK / 10.0 MHz	42.72	18.71	-	42.67	18.49	-	42.70	18.62	-
2		42.82	19.14	-	42.70	18.62	-	42.79	19.01	-
3		42.84	19.23	-	42.82	19.14	-	42.78	18.97	-
4		42.83	19.19	-	42.81	19.10	-	42.89	19.45	-
Total(dBW)		18.82			18.77			18.81		

Configuration L-MIMO-MC 4 (3C)

Maximum Output Power 43.0dBm per port

Antenna	Modulation / Carrier Bandwidth (MHz)	RMS Output Power / Peak to Average Ratio (PAR)								
		Channel Position B_{RFBW} 2503.5MHz + 2518.5MHz + 2533.5MHz			Channel Position M_{RFBW} 2578.0MHz + 2593.0MHz + 2608.0MHz			Channel Position T_{RFBW} 2652.5MHz + 2667.5MHz + 2682.5MHz		
		dBm	W	PAR (dB)	dBm	W	PAR (dB)	dBm	W	PAR (dB)
1	QPSK / 15.0 MHz	42.70	18.62	-	42.75	18.84	-	42.85	19.28	-
2		42.81	19.10	-	42.84	19.23	-	42.80	19.05	-
3		42.78	18.97	-	42.78	18.97	-	42.85	19.28	-
4		42.82	19.14	-	42.82	19.14	-	42.90	19.50	-
Total(dBW)		18.80			18.82			18.87		

Limit	
33 dBW+10log(X/Y) dBW	Where X is the actual channel width and Y is 6MHz. X=9.59, Limit=35.04dBW. X=14.43, Limit=36.81dBW.
Peak to Average Ratio	13 dB

This unit is tested without antenna. ERP/EIRP compliance is addressed at the time of licensing, as required by the responsible FCC. Licensees are required to take into account maximum allowed antenna gain used in combination with above power settings to prevent the radiated output power to exceed the limits.

2.2 OCCUPIED BANDWIDTH

2.2.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1049
FCC CFR 47 Part 27, Clause 27.53 (m)

2.2.2 Equipment Under Test

RRUS 82 B41, KRC 161 436/1, S/N: D820873095

2.2.3 Date of Test and Modification State

09 April 2015 - 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	21.2°C
Relative Humidity	58.0%

2.2.6 Test Method

The test was applied in accordance with the test method requirements of FCC Part 2 and KDB 971168 D01.

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.

For FCC requirement, 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 -26dBc Bandwidth was measured in accordance with FCC KDB 971168 D01 Clause 4.2.

The results are shown in the plots below.

2.2.7 Test Results

Configuration L-MIMO-SC 2 (1C)

Maximum Output Power 40.0dBm per port

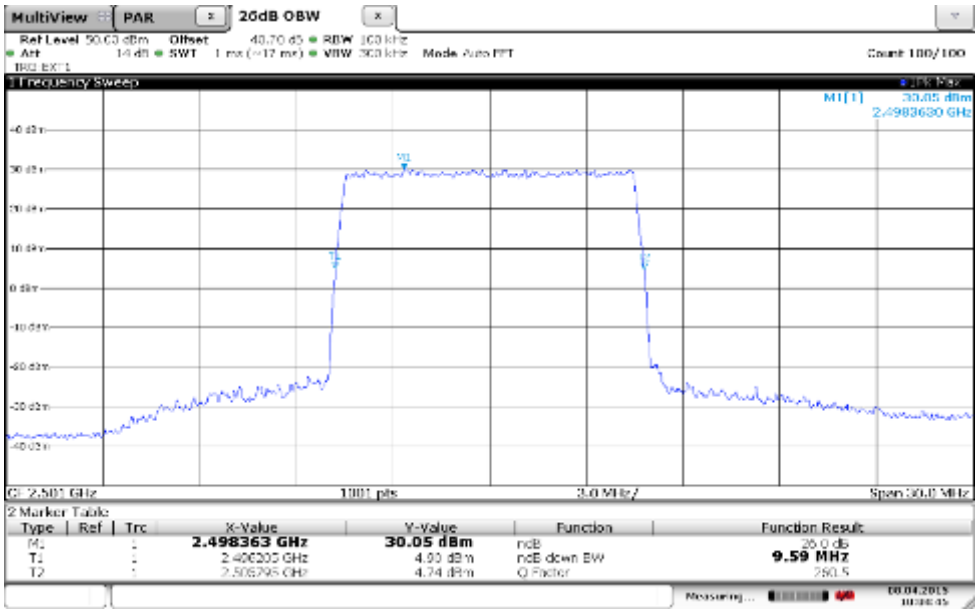
-26dBc Occupied Bandwidth

Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 2501.0MHz	Channel Position M 2593.0MHz	Channel Position T 2685.0MHz
QPSK / 10.0 MHz	9.59	9.59	9.59

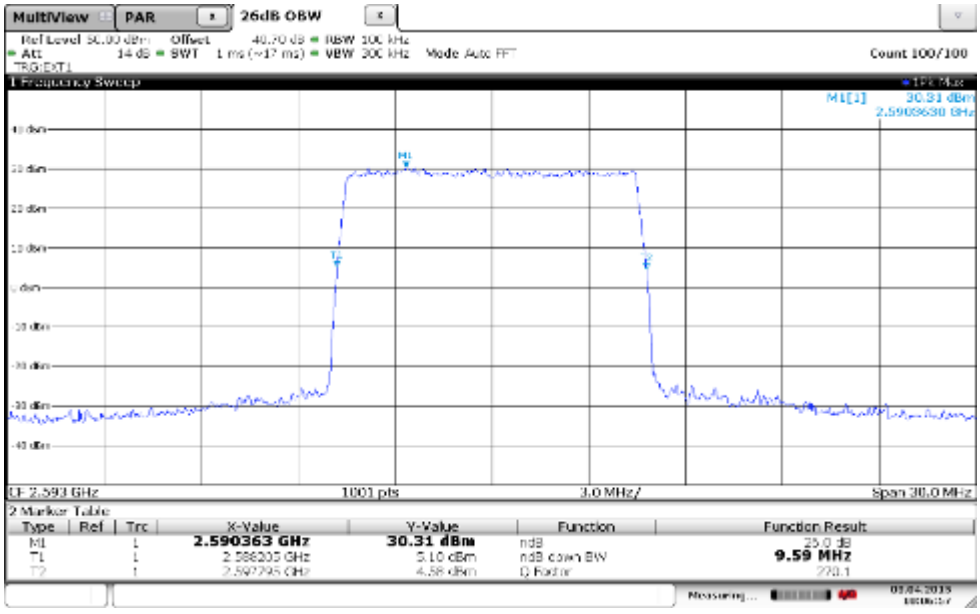
-26dBc Occupied Bandwidth

Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B 2503.5MHz	Channel Position M 2593.0MHz	Channel Position T 2682.5MHz
QPSK / 15.0 MHz	14.48	14.48	14.43

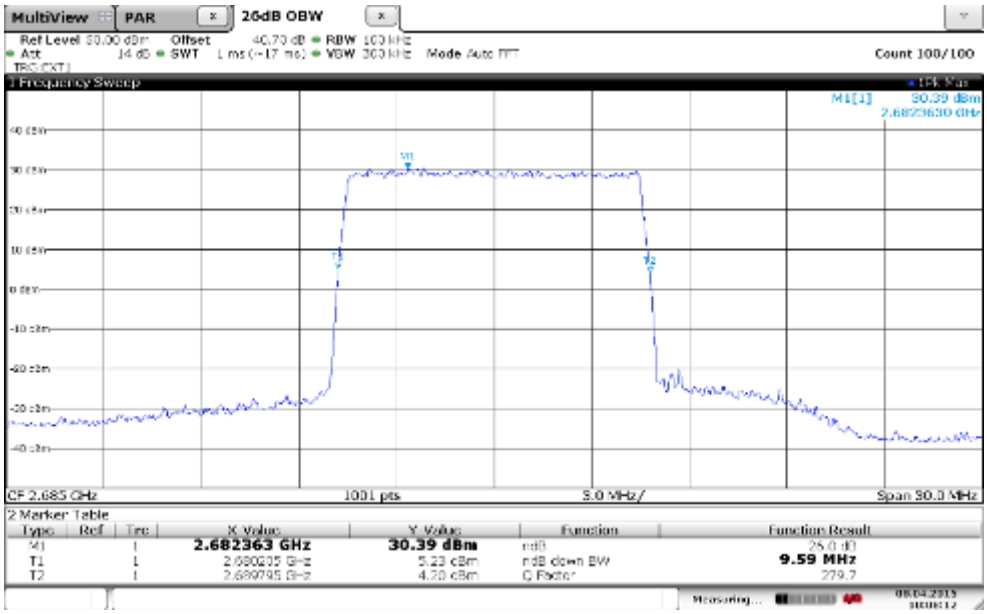
Channel Position B - QPSK / Bandwidth 10.0 MHz



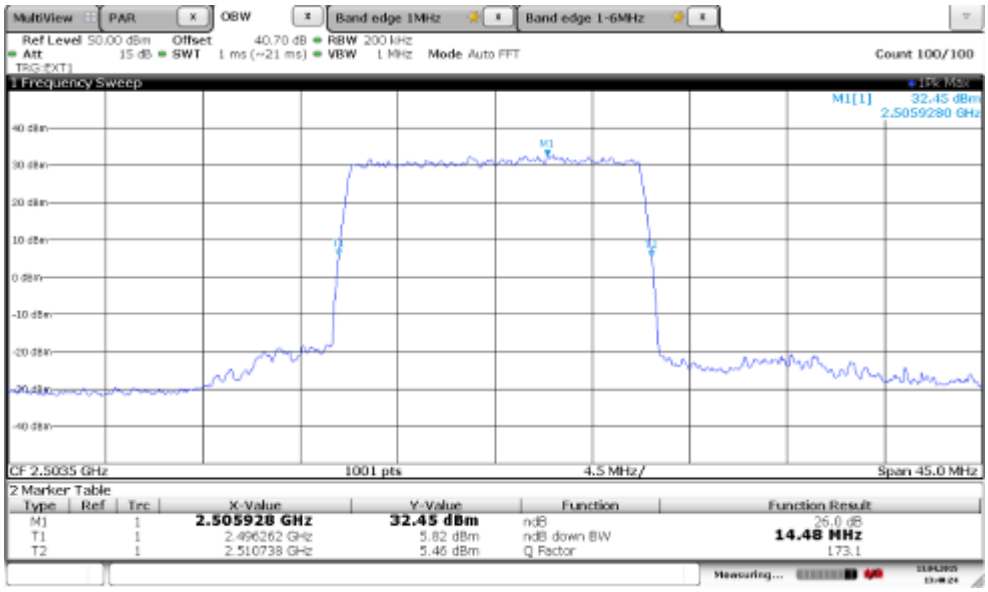
Channel Position M - QPSK / Bandwidth 10.0 MHz



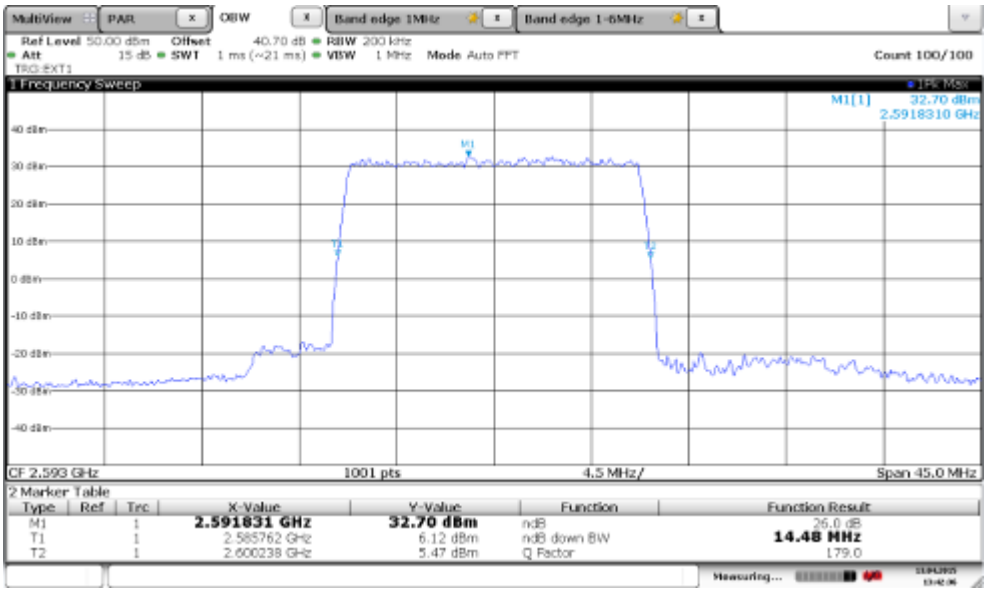
Channel Position T - QPSK / Bandwidth 10.0 MHz



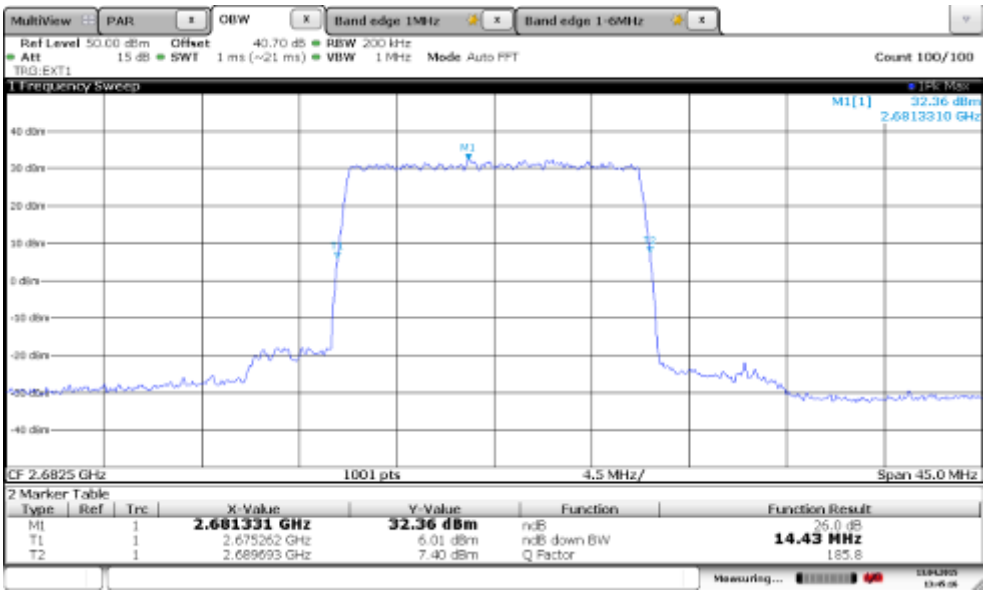
Channel Position B - QPSK / Bandwidth 15.0 MHz



Channel Position M - QPSK / Bandwidth 15.0 MHz



Channel Position T - QPSK / Bandwidth 15.0 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 27, Clause 27.53 (m)

2.3.2 Equipment Under Test

RRUS 82 B41, KRC 161 436/1, S/N: D820873095

2.3.3 Date of Test and Modification State

03, 08 and 13 April 2015 - 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	20.2-23.2°C
Relative Humidity	33.6-53.8%

2.3.6 Test Method

In accordance with FCC CFR 47 Part 27, Clause 27.53 (m) and Part 2, Clause 2.1051, 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 bandwith should be used.

For measurements of emissions > 1MHz away from the band edges, an RBW of 1MHz or greater should be used. A resolution bandwidth of 100kHz was used between 1MHz to 6MHz from the band edge. to compensate for the reduced mesurement bandwidth, the limit was adjusted with -13dB to -23dBm.

For 8 × MIMO mode configurations, the limit was adjusted with a correction of -9dB [10Log(8)] by using the Measure and Add 10Log(N) dB technique according to FCC KDB662911 D01 accounting for simultaneous transmission from antennas port RF 1 to RF 8.

For 4 × MIMO mode configurations, the limit was adjusted with a correction of -6dB [10Log(4)] by using the Measure and Add 10Log(N) dB technique according to FCC KDB662911 D01 accounting for simultaneous transmission from antennas port RF 1 to RF 4.

The path loss was 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 L-MIMO-SC 1 (1C)

Maximum Output Power 37.0dBm per port

Band Edge Frequency	Channel Bandwidth	Edge Test with modulation QPSK Channel Frequencies
Channel Position B 2496.0 MHz	10.0 MHz	2501.0 MHz
Channel Position T 2690.0 MHz	10.0 MHz	2685.0 MHz

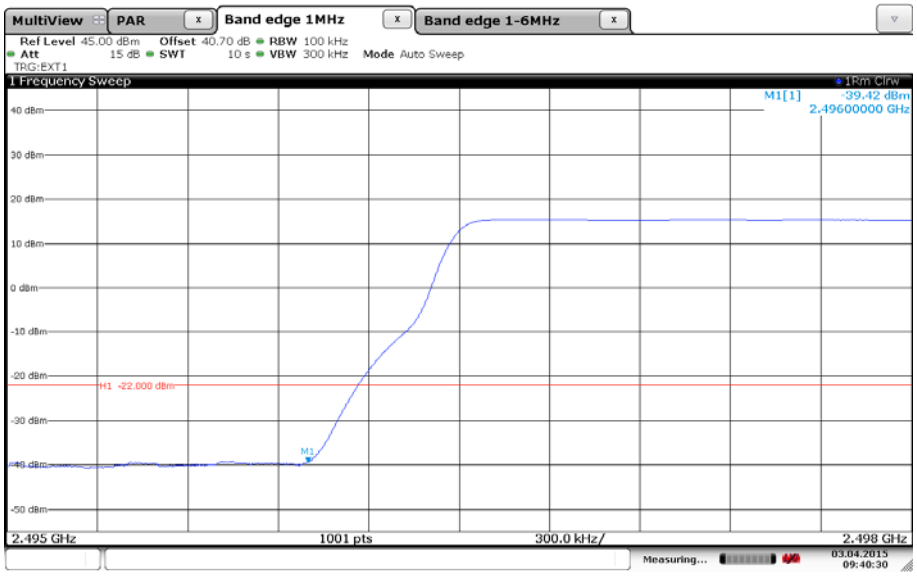
Configuration L-MIMO-SC 1 (1C)

Maximum Output Power 37.0dBm per port

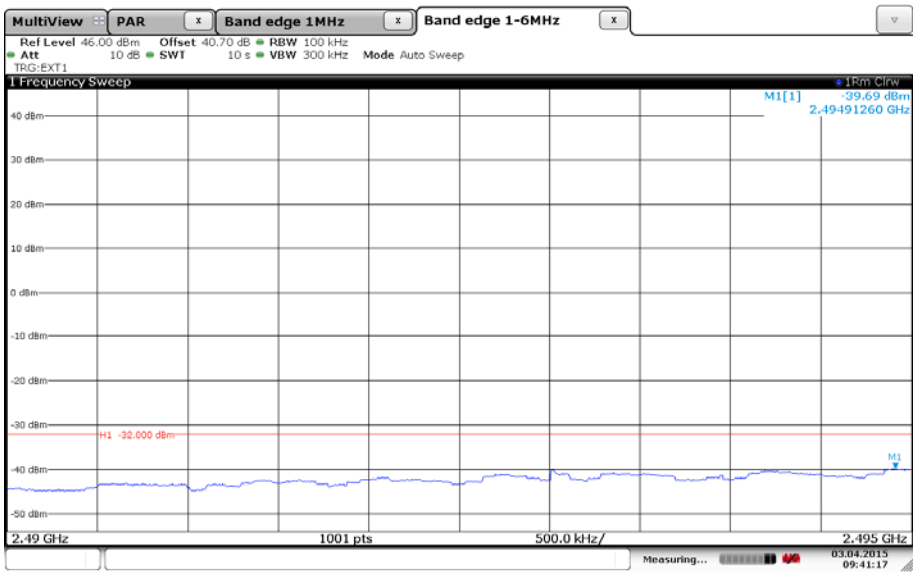
Band Edge Frequency	Channel Bandwidth	Edge Test with modulation QPSK Channel Frequencies
Channel Position B 2496.0 MHz	15.0 MHz	2503.5 MHz
Channel Position T 2690.0 MHz	15.0 MHz	2682.5 MHz

Note: 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 10.0 MHz

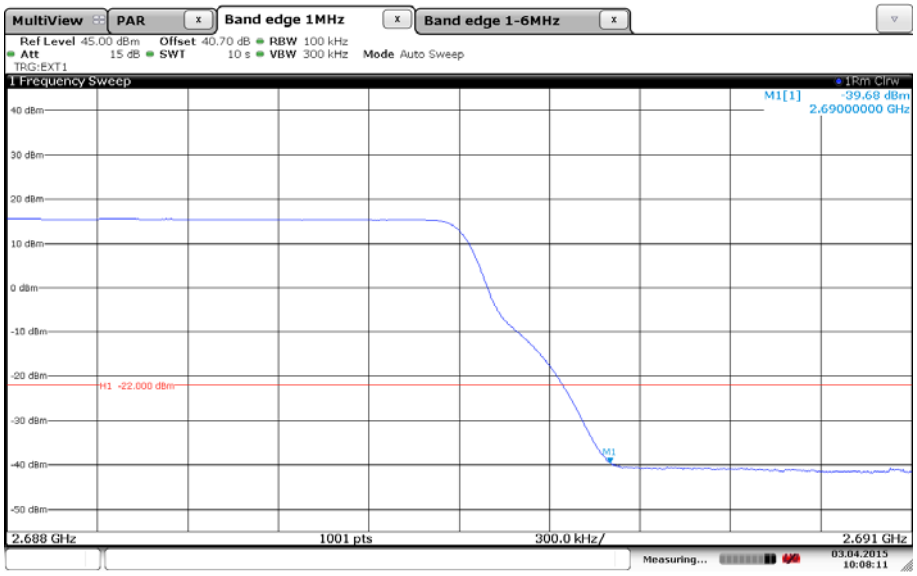


Date: 3.APR.2015 09:40:30

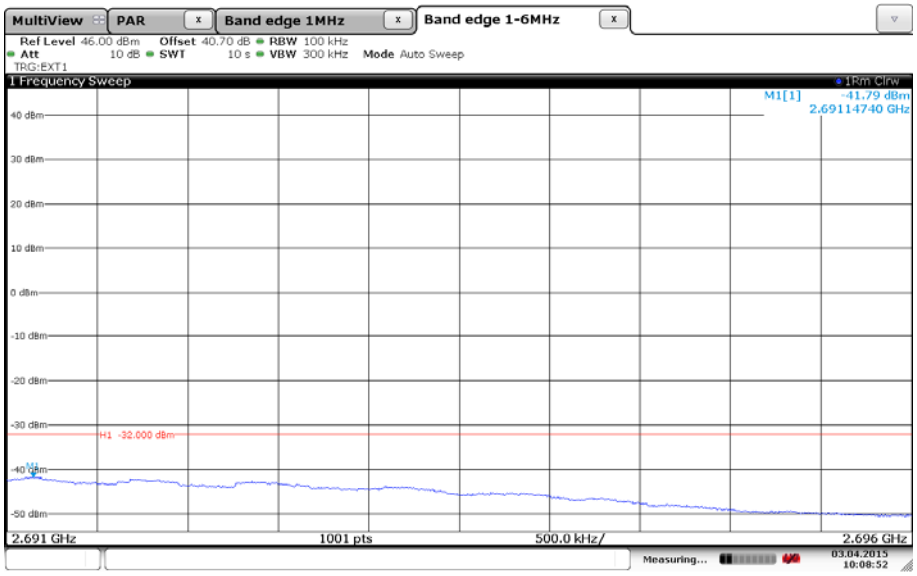


Date: 3.APR.2015 09:41:17

Channel Position T - QPSK / Bandwidth 10.0 MHz

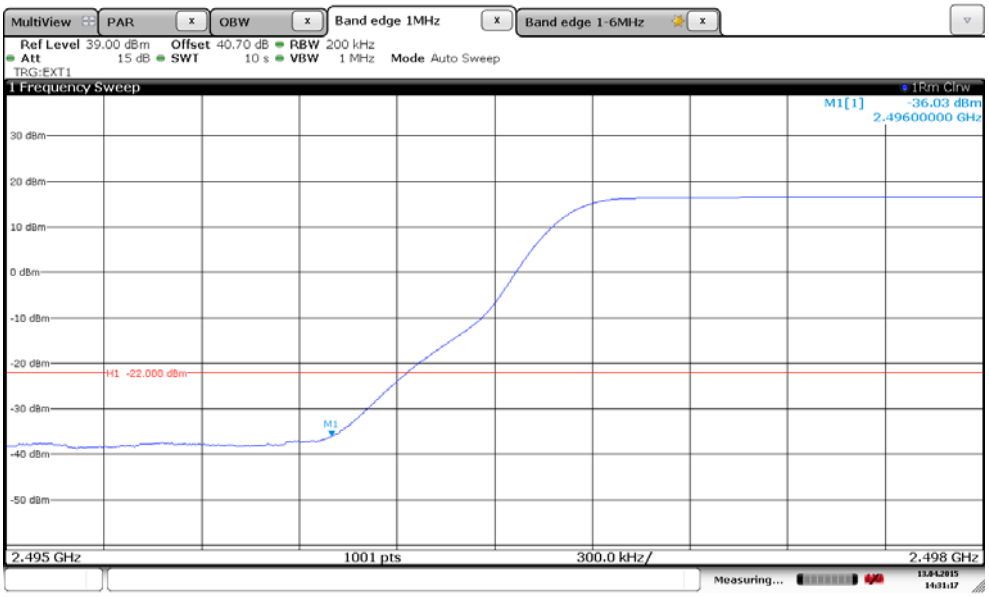


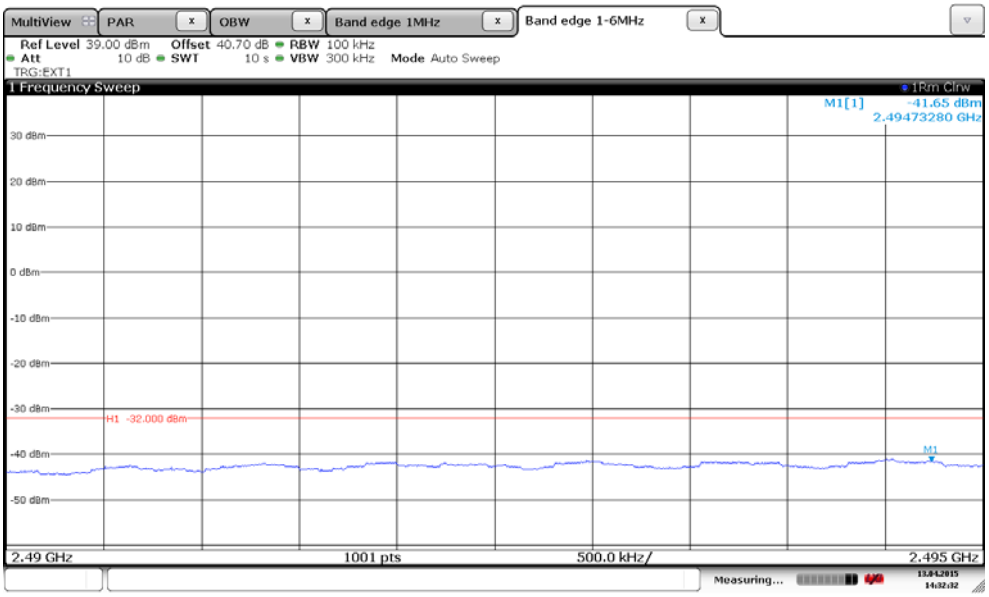
Date: 3.APR.2015 10:08:11



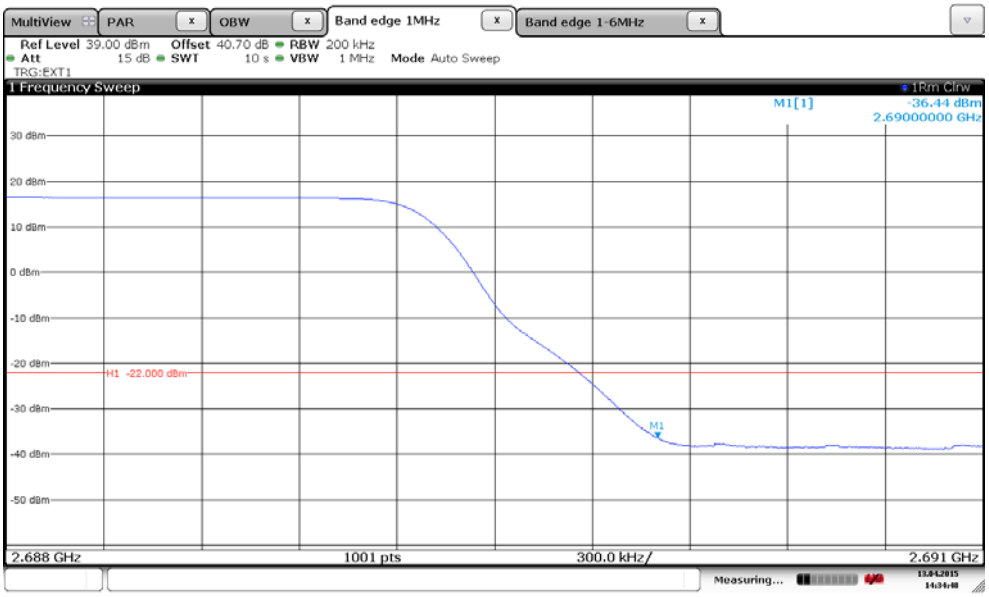
Date: 3.APR.2015 10:08:52

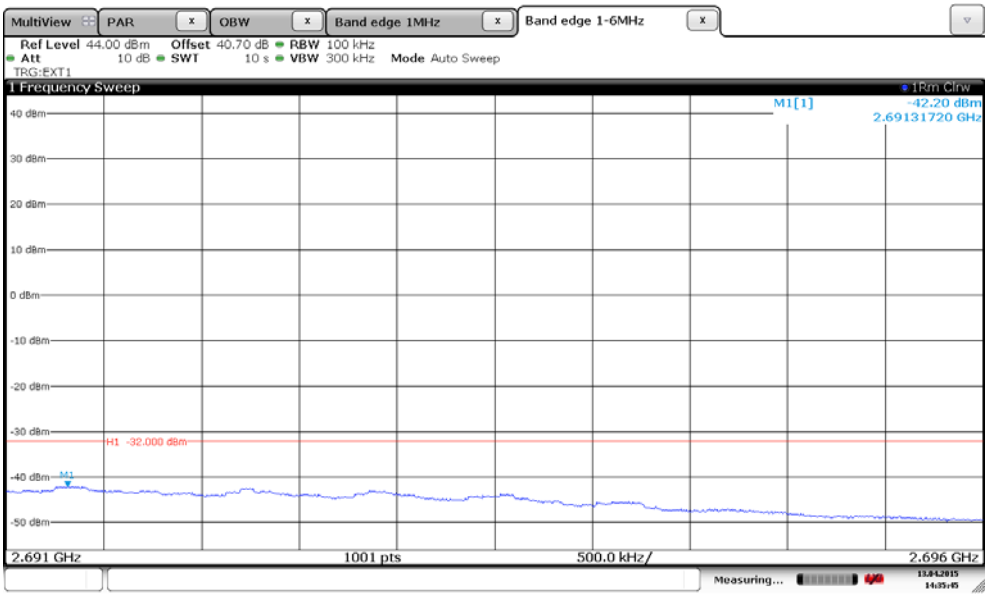
Channel Position B - QPSK / Bandwidth 15.0 MHz





Channel Position T - QPSK / Bandwidth 15.0 MHz





Configuration L-MIMO-SC 2 (1C)

Maximum Output Power 40.0dBm per port

Band Edge Frequency	Channel Bandwidth	Edge Test with modulation QPSK Channel Frequencies
Channel Position B 2496.0 MHz	10.0 MHz	2501.0 MHz
Channel Position T 2690.0 MHz	10.0 MHz	2685.0 MHz

Configuration L-MIMO-SC 2 (1C)

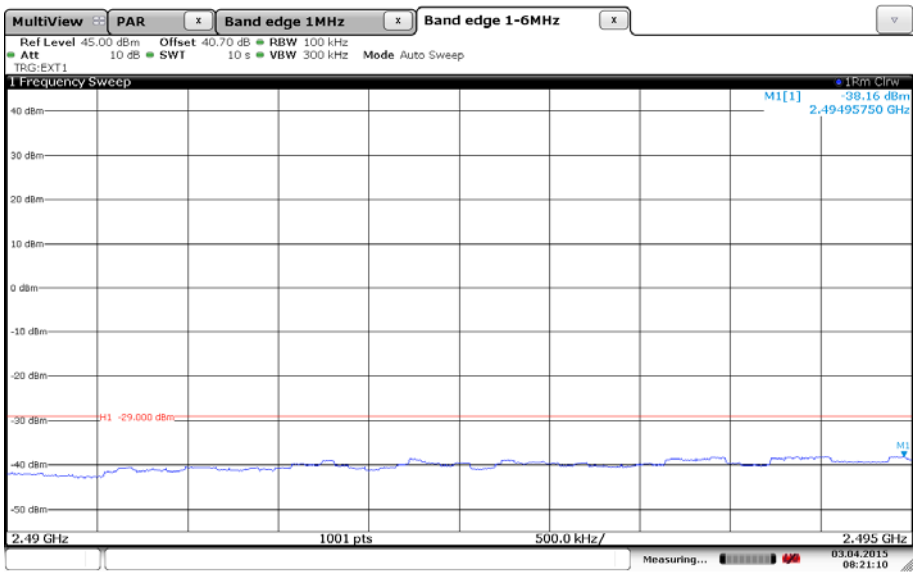
Maximum Output Power 40.0dBm per port

Band Edge Frequency	Channel Bandwidth	Edge Test with modulation QPSK Channel Frequencies
Channel Position B 2496.0 MHz	15.0 MHz	2503.5 MHz
Channel Position T 2690.0 MHz	15.0 MHz	2682.5 MHz

Note: 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 10.0 MHz

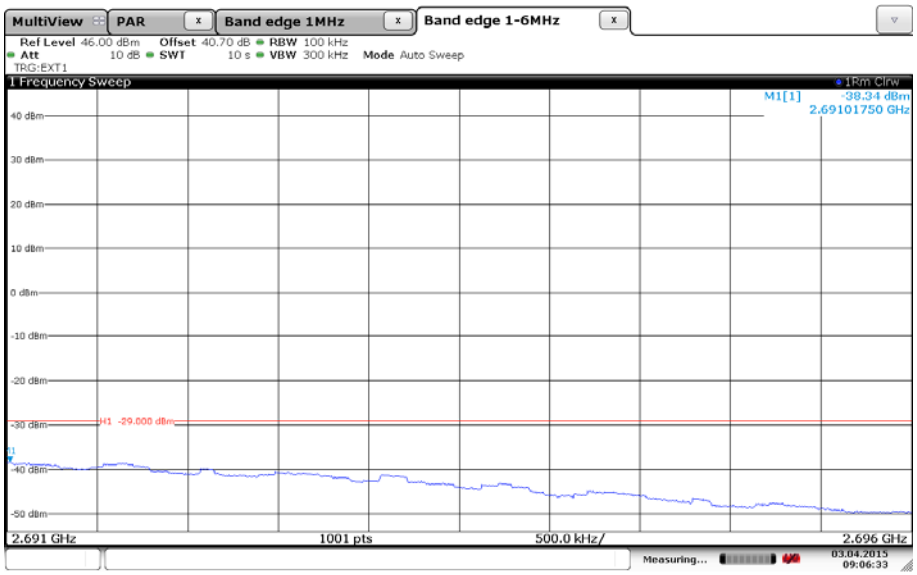
Date: 3.APR.2015 08:20:15



Date: 3.APR.2015 08:21:10

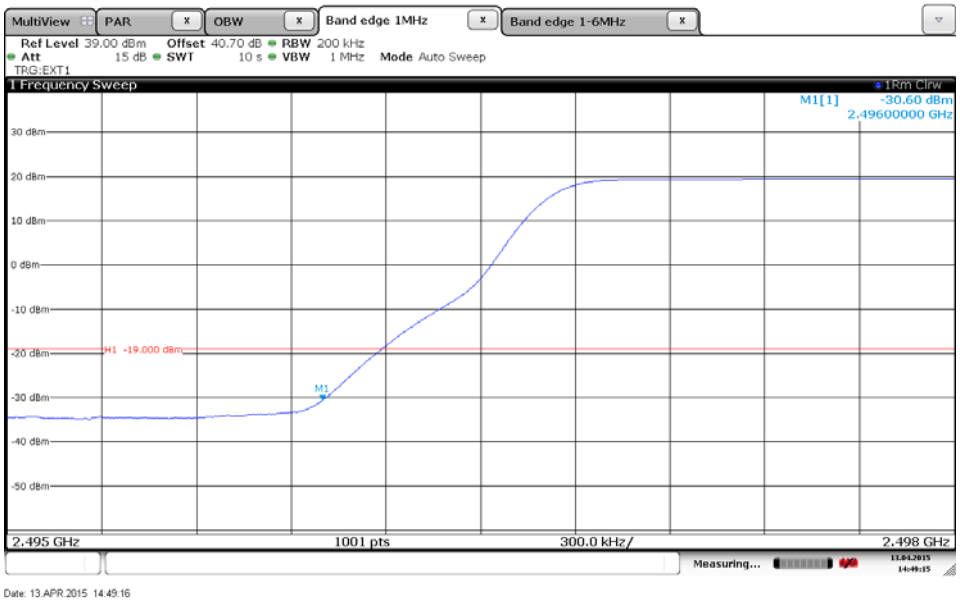
Channel Position T - QPSK / Bandwidth 10.0 MHz

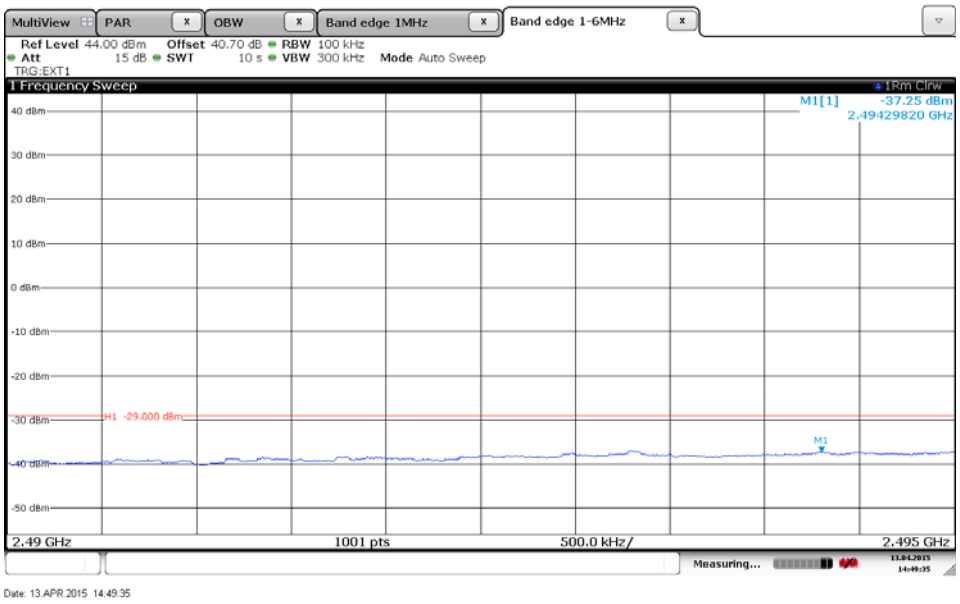
Date: 3.APR.2015 09:05:50



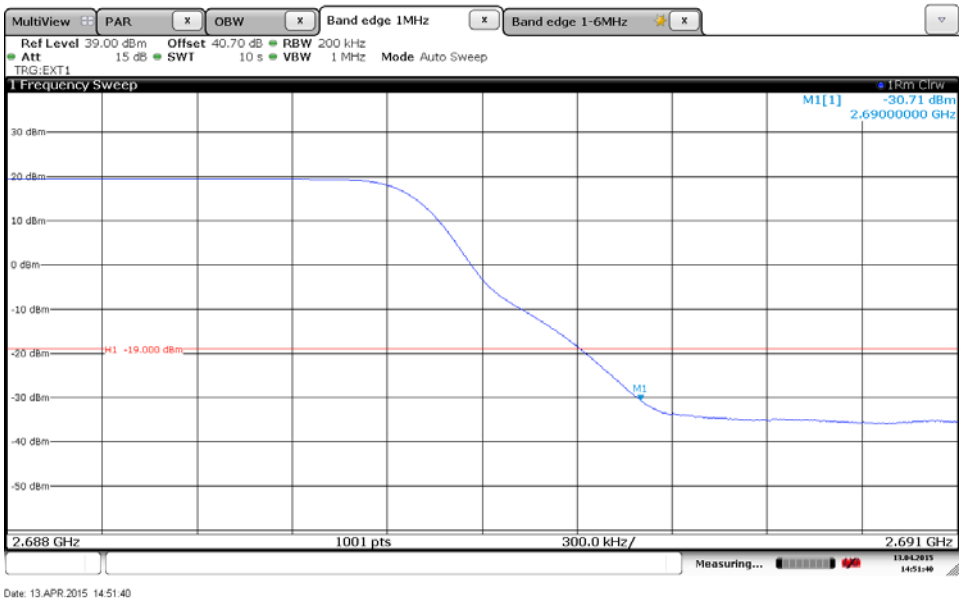
Date: 3.APR.2015 09:06:33

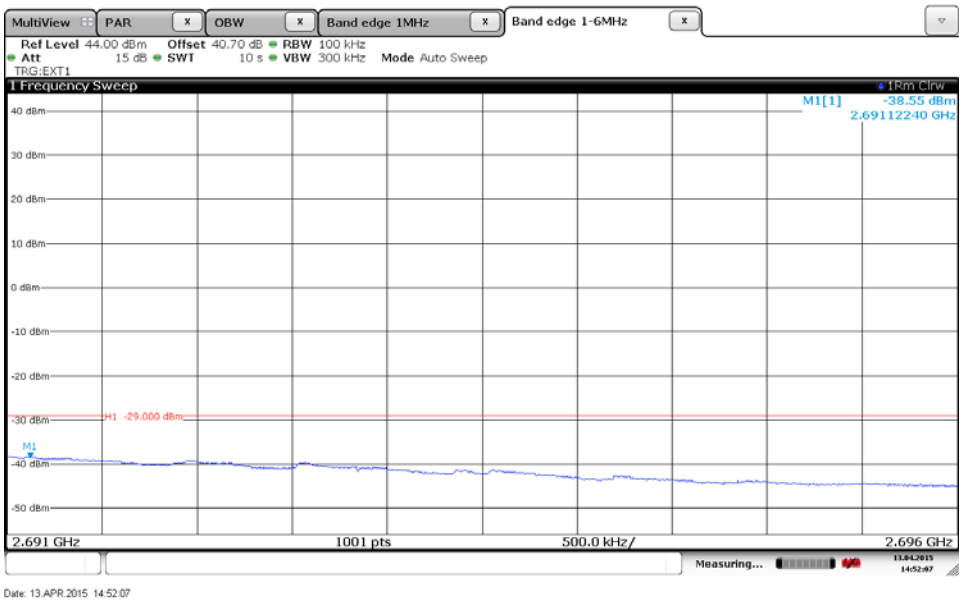
Channel Position B - QPSK / Bandwidth 15.0 MHz





Channel Position T - QPSK / Bandwidth 15.0 MHz





Configuration L-MIMO-MC 1 (2C)

Maximum Output Power 40.0dBm per port

Band Edge Frequency	Channel Bandwidth	Edge Test with modulation QPSK Channel Frequencies
Channel Position B_{RFBW} 2496.0 MHz	10.0 MHz	2501.0 MHz + 2511.0 MHz
Channel Position T_{RFBW} 2690.0 MHz	10.0 MHz	2675.0 MHz + 2685.0 MHz

Configuration L-MIMO-MC 1 (2C)

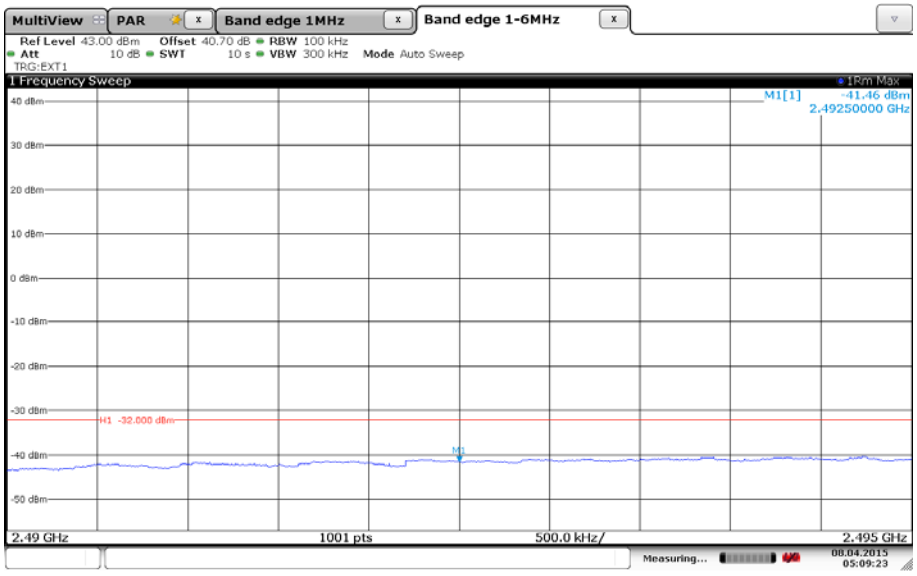
Maximum Output Power 40.0dBm per port

Band Edge Frequency	Channel Bandwidth	Edge Test with modulation QPSK Channel Frequencies
Channel Position B_{RFBW} 2496.0 MHz	15.0 MHz	2503.5 MHz + 2518.5 MHz
Channel Position T_{RFBW} 2690.0 MHz	15.0 MHz	2667.5 MHz + 2682.5 MHz

Note: 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.

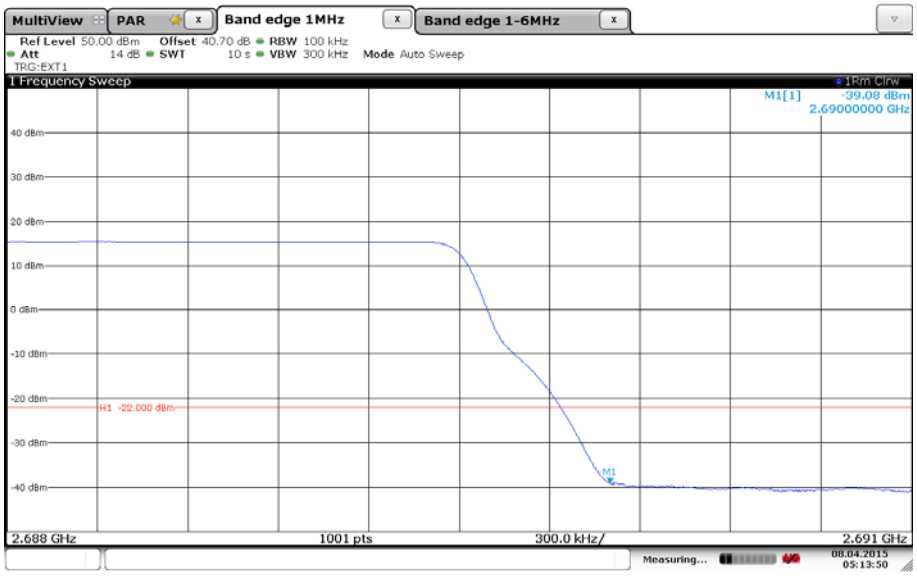
Channel Position B_{RFBW} - QPSK / Bandwidth 10.0 MHz

Date: 8.APR.2015 05:09:10

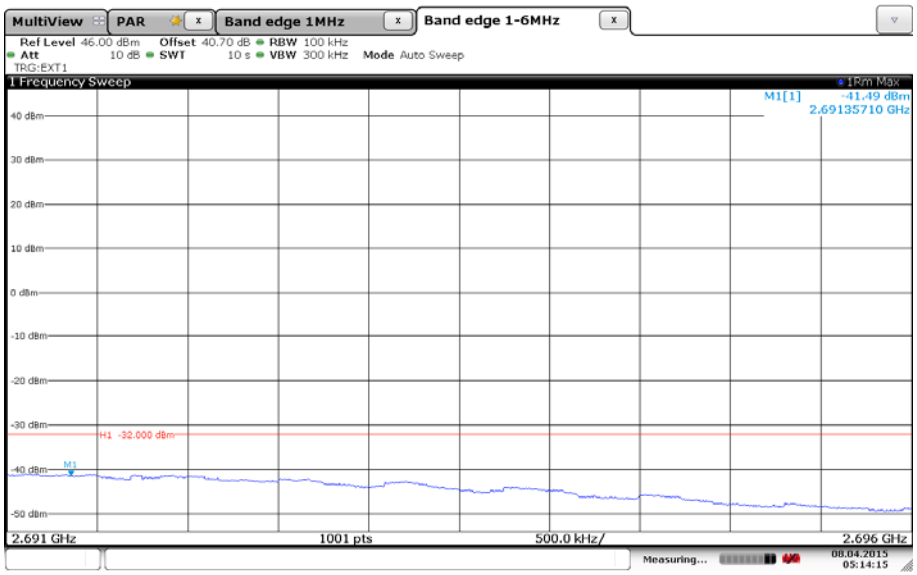


Date: 8.APR.2015 05:09:23

Channel Position T_{RFBW} - QPSK / Bandwidth 10.0 MHz

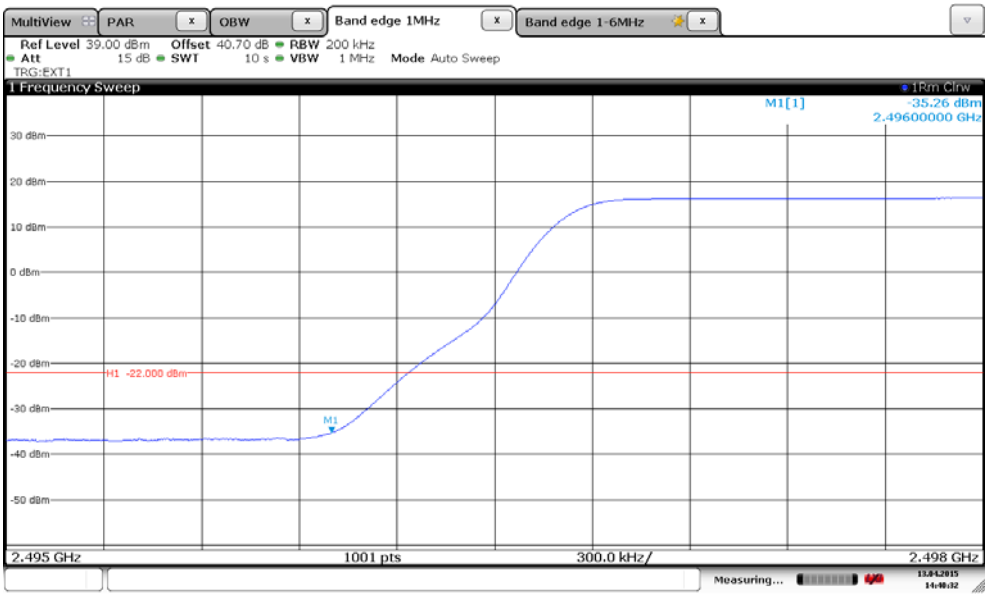


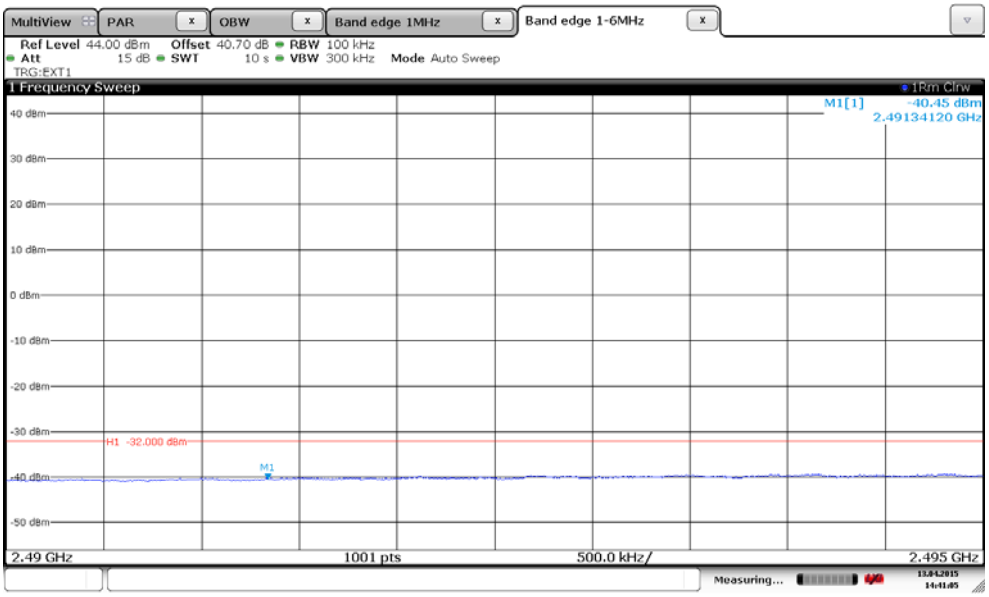
Date: 8.APR.2015 05:13:51



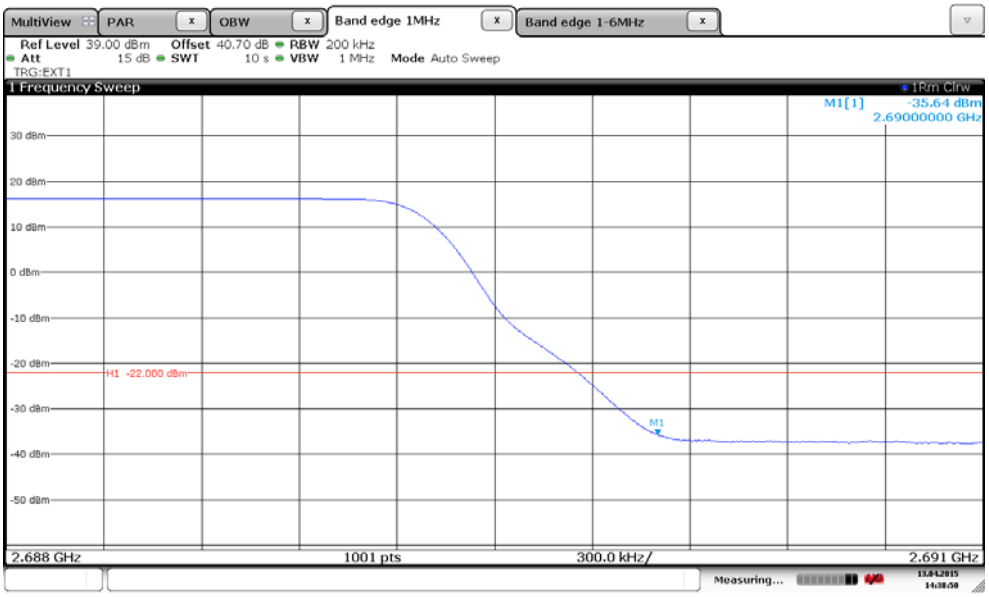
Date: 8.APR.2015 05:14:16

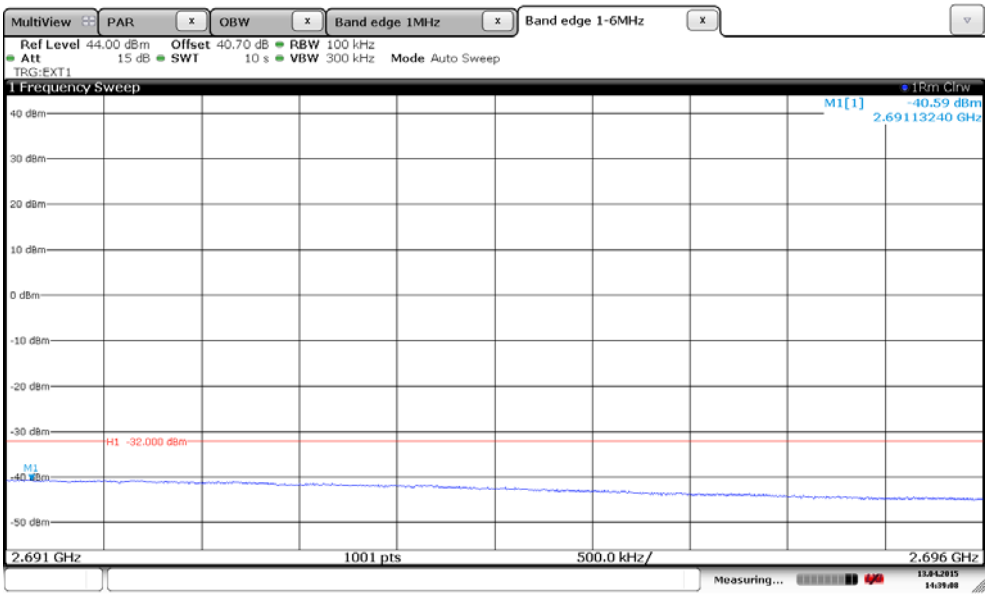
Channel Position B_{RFBW} - QPSK / Bandwidth 15.0 MHz





Channel Position T_{RFBW} - QPSK / Bandwidth 15.0 MHz





Configuration L-MIMO-MC 2 (2C)

Maximum Output Power 43.0dBm per port

Band Edge Frequency	Channel Bandwidth	Edge Test with modulation QPSK Channel Frequencies
Channel Position B_{RFBW} 2496.0 MHz	10.0 MHz	2501.0 MHz + 2511.0 MHz
Channel Position T_{RFBW} 2690.0 MHz	10.0 MHz	2675.0 MHz + 2685.0 MHz

Configuration L-MIMO-MC 2 (2C)

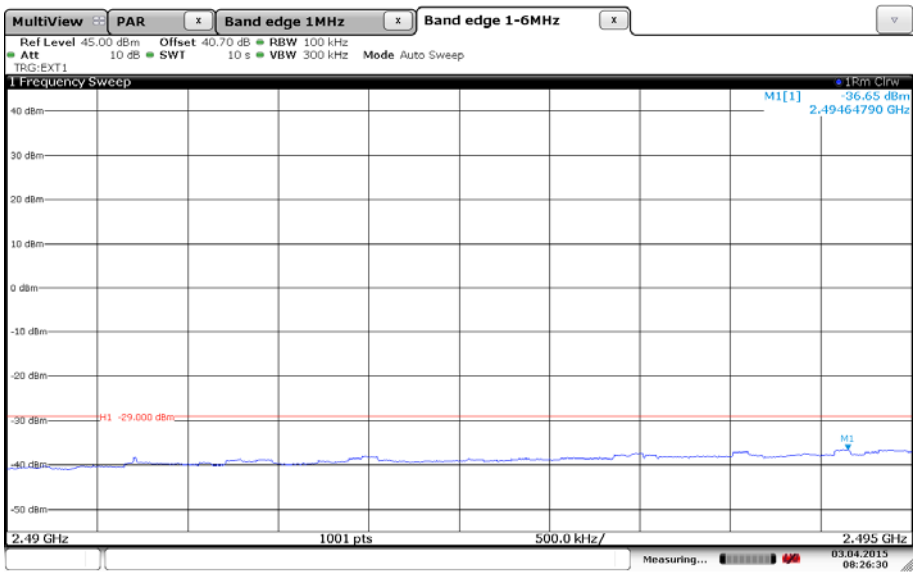
Maximum Output Power 43.0dBm per port

Band Edge Frequency	Channel Bandwidth	Edge Test with modulation QPSK Channel Frequencies
Channel Position B_{RFBW} 2496.0 MHz	15.0 MHz	2503.5 MHz + 2518.5 MHz
Channel Position T_{RFBW} 2690.0 MHz	15.0 MHz	2667.5 MHz + 2682.5 MHz

Note: 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.

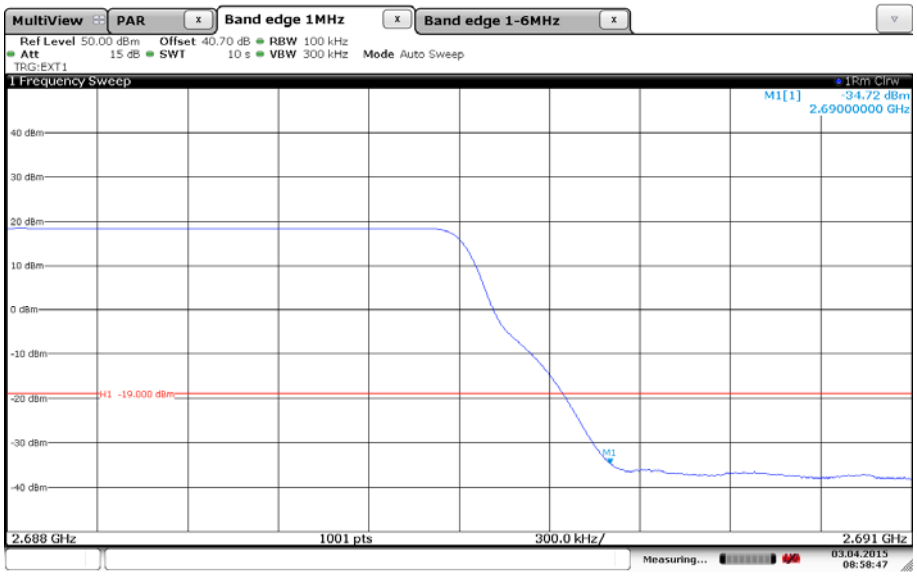
Channel Position B_{RFBW} - QPSK / Bandwidth 10.0 MHz

Date: 3.APR.2015 08:25:32

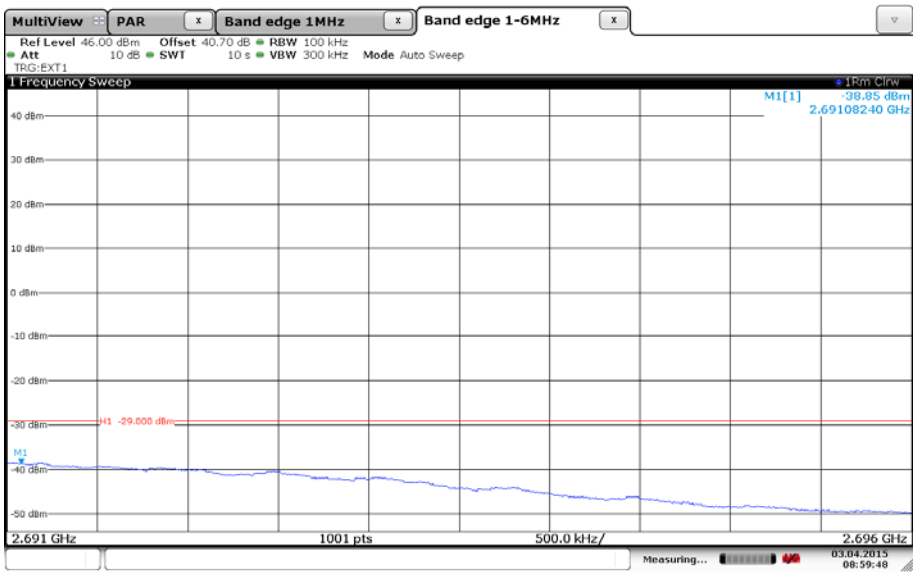


Date: 3.APR.2015 08:26:30

Channel Position T_{RFBW} - QPSK / Bandwidth 10.0 MHz

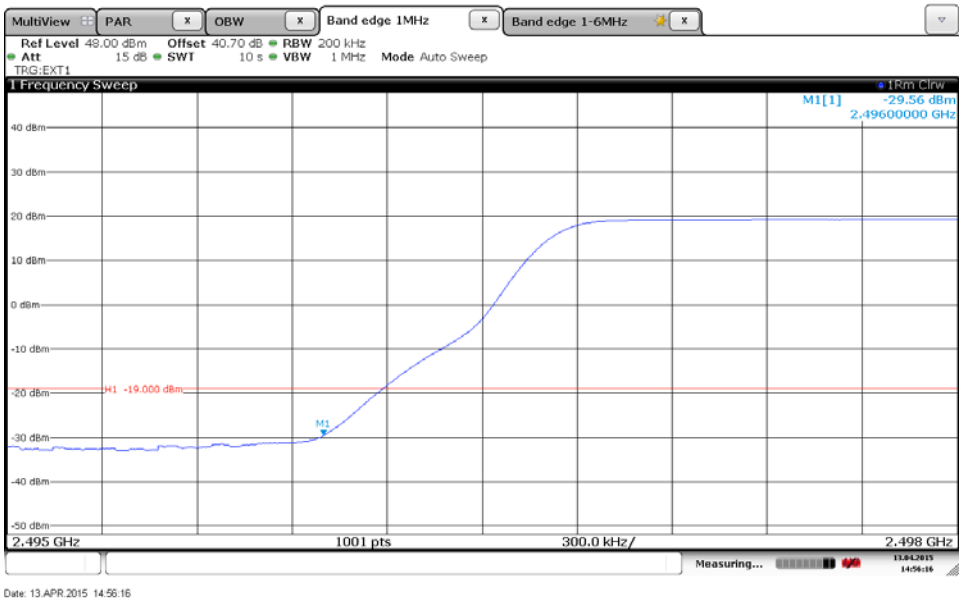


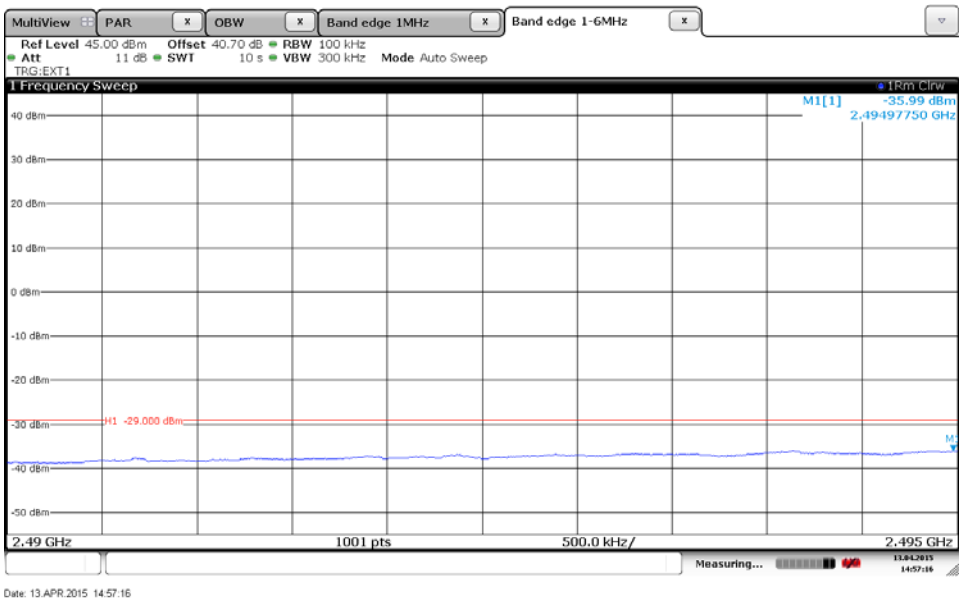
Date: 3.APR.2015 08:58:46



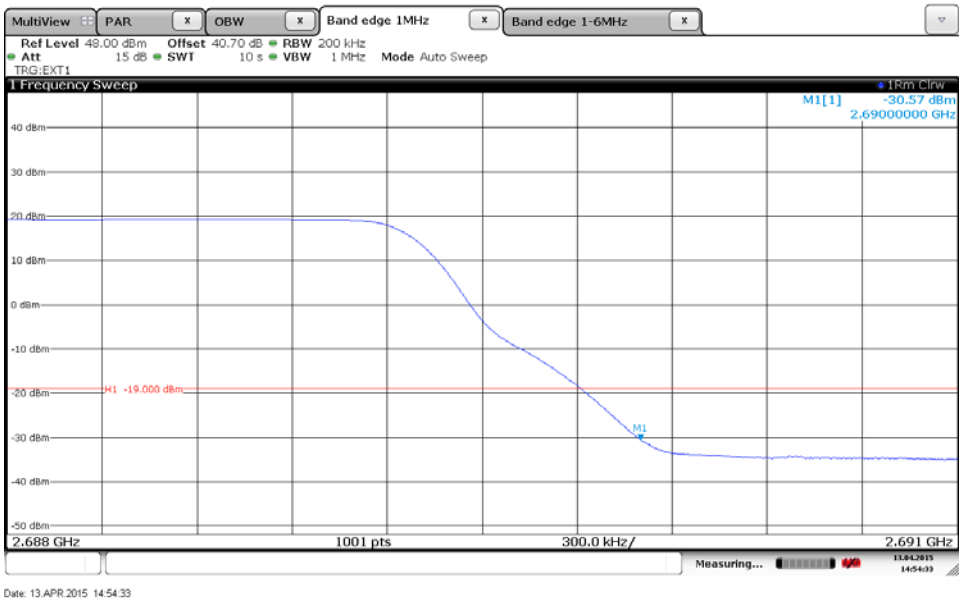
Date: 3.APR.2015 08:59:48

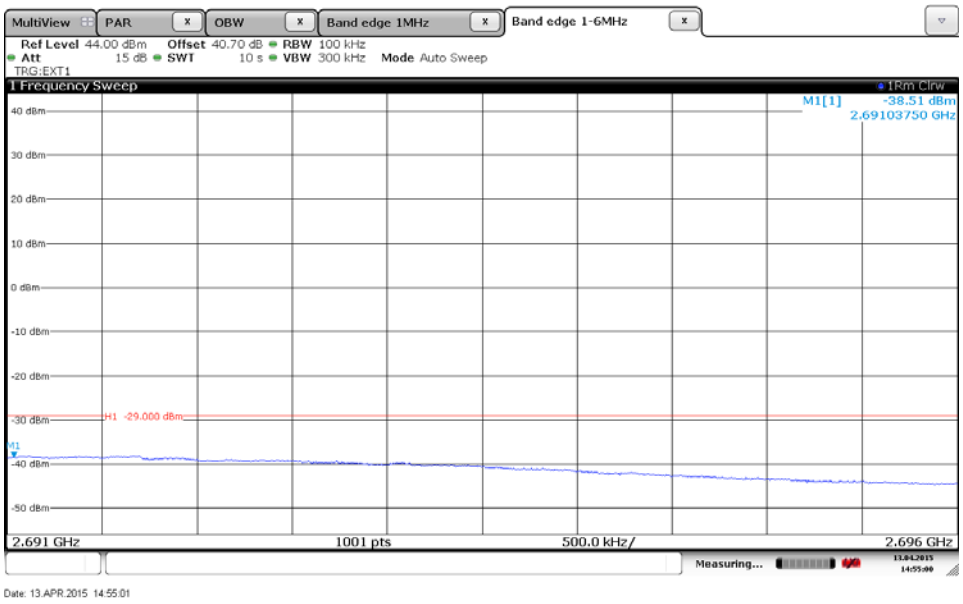
Channel Position B_{RFBW} - QPSK / Bandwidth 15.0 MHz





Channel Position T_{RFBW} - QPSK / Bandwidth 15.0 MHz





Configuration L-MIMO-MC 3 (2C)

Maximum Output Power 41.8dBm per port

Band Edge Frequency	Channel Bandwidth	Edge Test with modulation QPSK Channel Frequencies
Channel Position B_{RFBW} 2496.0 MHz	10.0 MHz	2501.0 MHz + 2511.0 MHz + 2521.0 MHz
Channel Position T_{RFBW} 2690.0 MHz	10.0 MHz	2665.0 MHz + 2675.0 MHz + 2685.0 MHz

Configuration L-MIMO-MC 3 (2C)

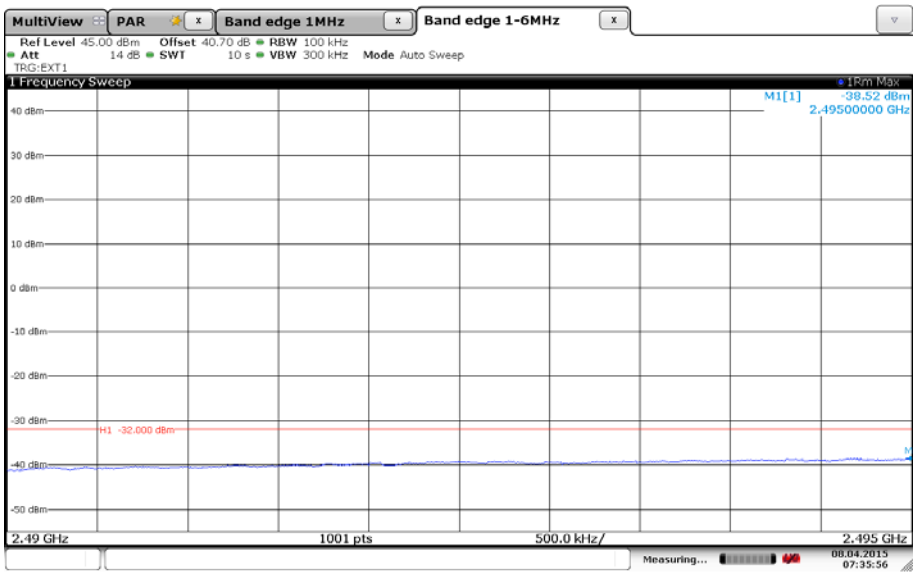
Maximum Output Power 41.8dBm per port

Band Edge Frequency	Channel Bandwidth	Edge Test with modulation QPSK Channel Frequencies
Channel Position B_{RFBW} 2496.0 MHz	15.0 MHz	2503.5 MHz + 2518.5 MHz + 2533.5 MHz
Channel Position T_{RFBW} 2690.0 MHz	15.0 MHz	2652.5 MHz + 2667.5 MHz + 2682.5 MHz

Note: 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.

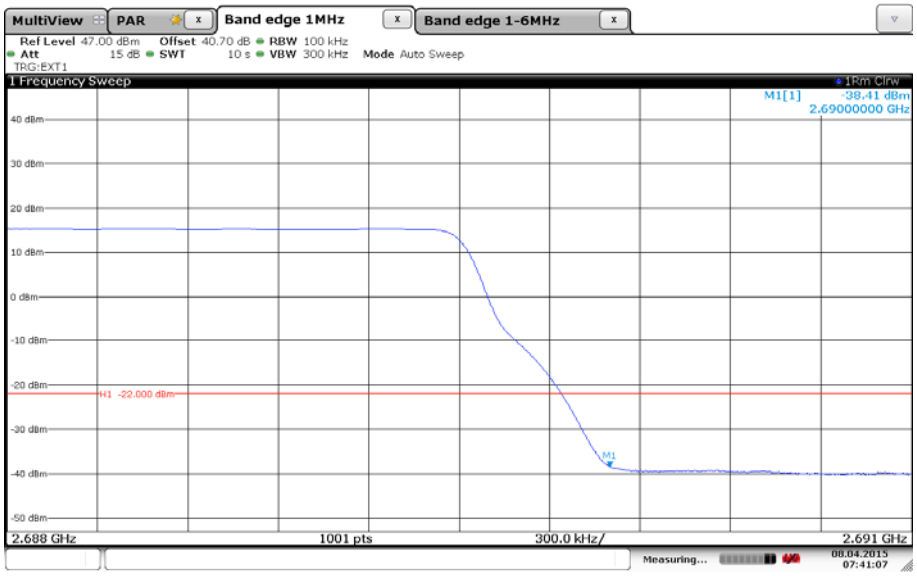
Channel Position B_{RFBW} - QPSK / Bandwidth 10.0 MHz

Date: 8.APR.2015 07:35:21

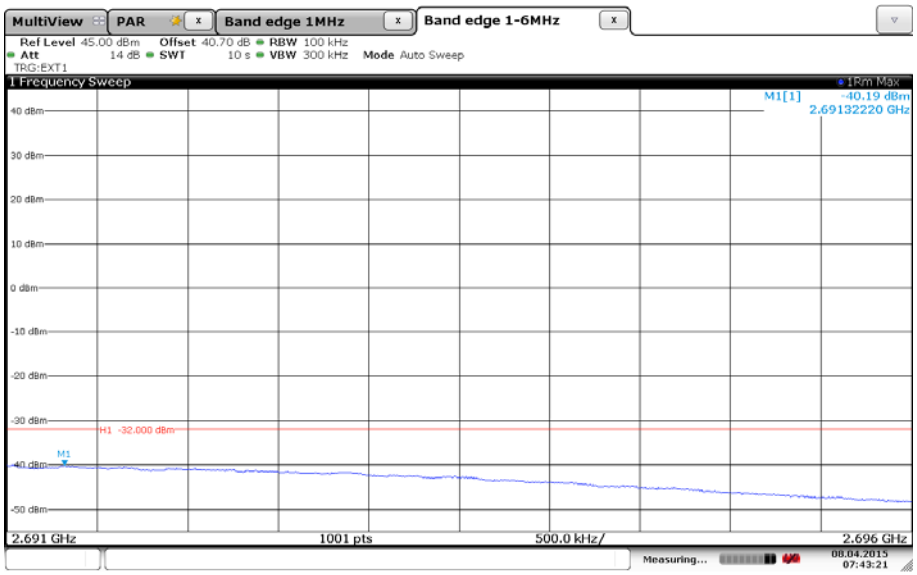


Date: 8.APR.2015 07:35:56

Channel Position T_{RFBW} - QPSK / Bandwidth 10.0 MHz

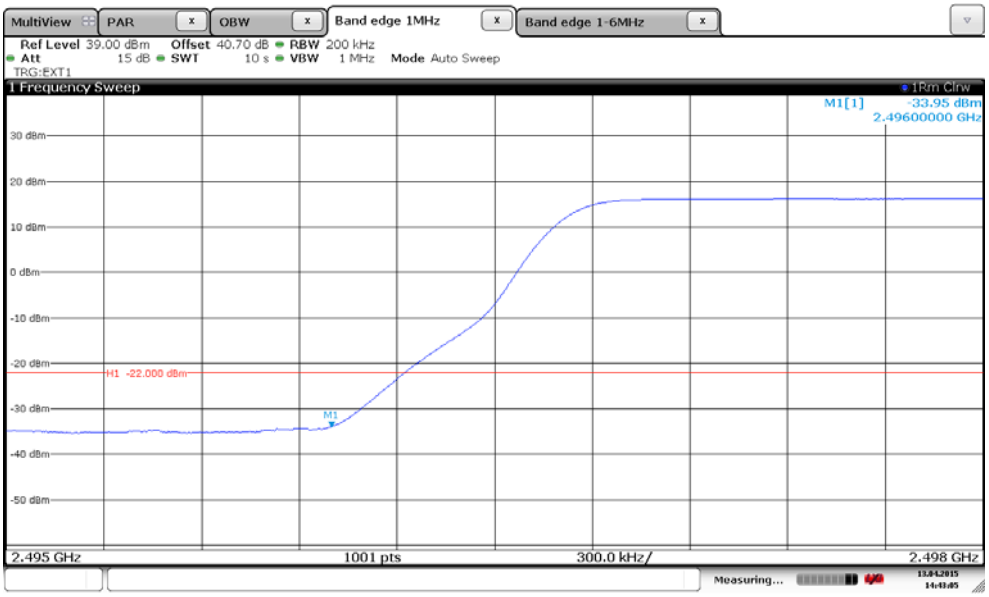


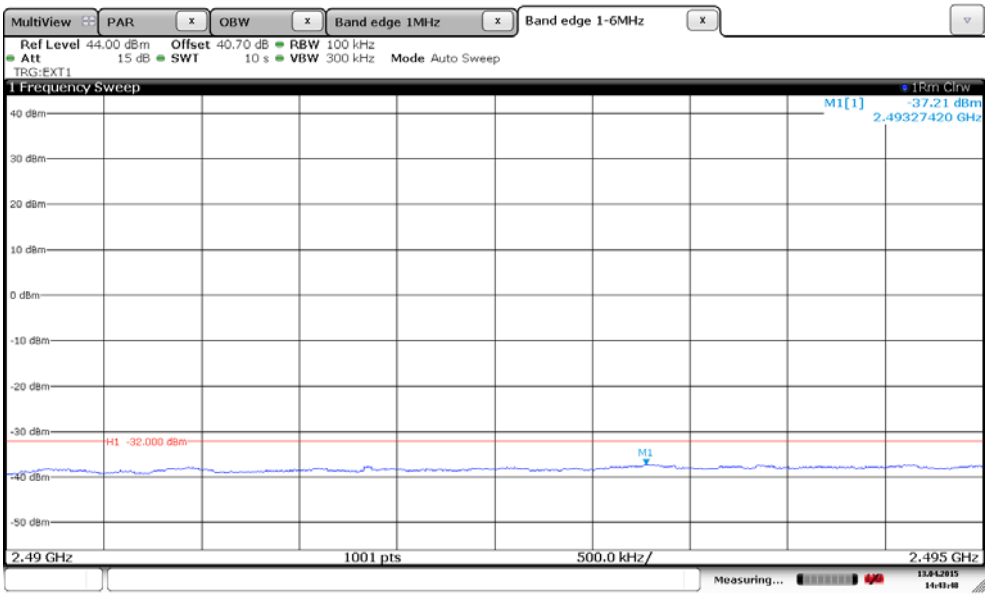
Date: 8.APR.2015 07:41:07



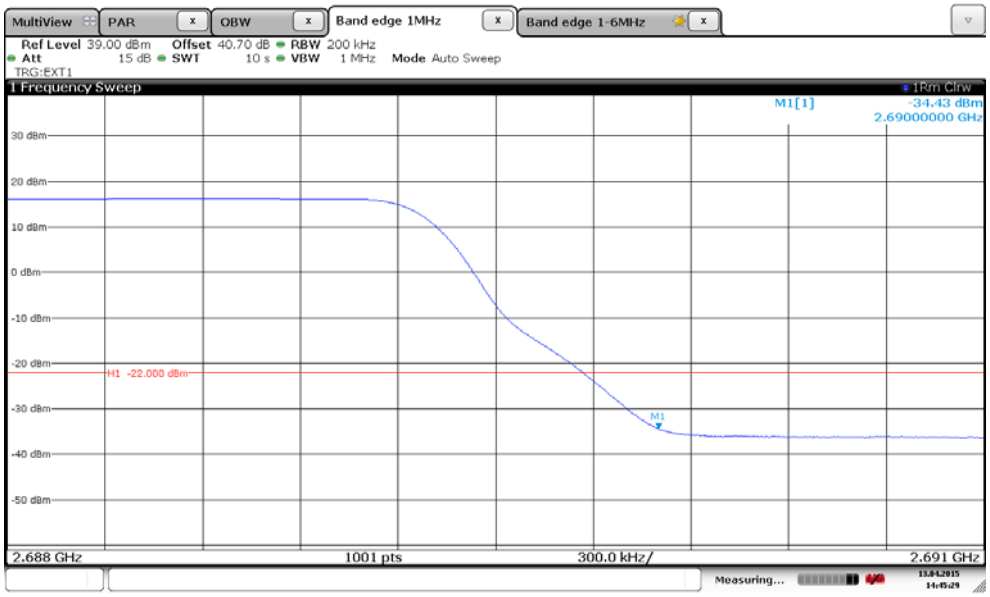
Date: 8.APR.2015 07:43:21

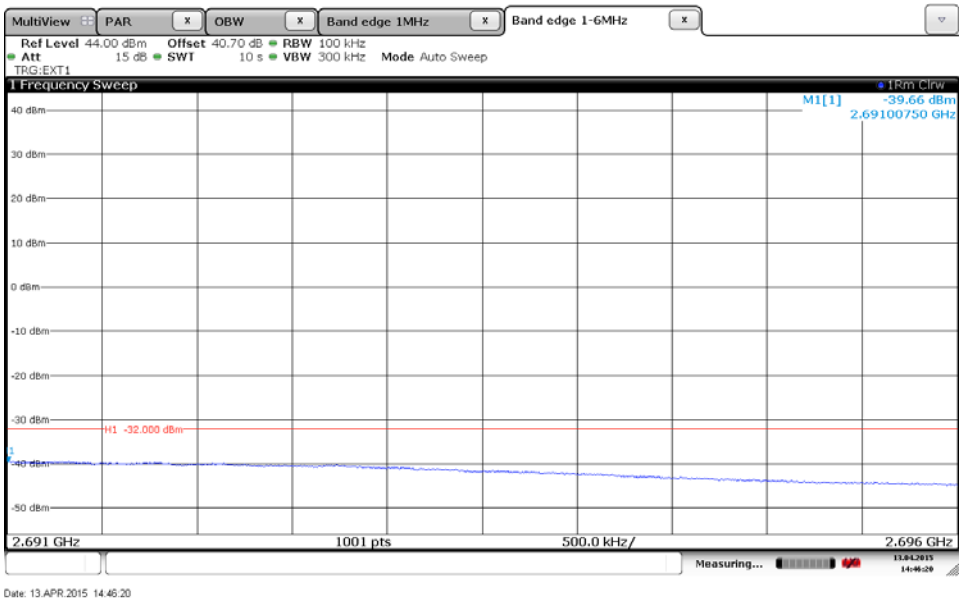
Channel Position B_{RFBW} - QPSK / Bandwidth 15.0 MHz





Channel Position T_{RFBW} - QPSK / Bandwidth 15.0 MHz





Limit

The power of any emission outside the frequency band shall be attenuated below the transmitter power (P) by at least 43 + 10logP dB.

2.4 RADIATED SPURIOUS EMISSIONS

2.4.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1053
FCC CFR 47 Part 27, Clause 27.53 (m)

2.4.2 Equipment Under Test

RRUS 82 B41, KRC 161 436/1, S/N: D820873095

2.4.3 Date of Test and Modification State

14 and 15 April 2015 - Modification State 0

2.4.4 Test Equipment Used

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

2.4.5 Environmental Conditions

Ambient Temperature	21.5 - 22.0°C
Relative Humidity	30.0 - 34.2%

2.4.6 Test Method

The test was applied in accordance with test method requirements of ANSI/TIA-603-C-2004.

A preliminary profile of the Spurious Radiated Emissions was obtained by operating the EUT on a remotely controlled turntable within the chamber. Measurements of emissions from the EUT were obtained with the Measurement Antenna in both Horizontal and Vertical Polarisations.

Emissions identified within the range 30MHz – 27GHz were then formally measured using a Peak detector as the worst case.

In the frequency Range 30MHz – 27GHz, the measurement was performed with a resolution bandwidth of 1MHz.

The measurements were performed at a 3m distance unless otherwise stated.

The limits for Spurious Emissions have been calculated, as shown below using the following formula:

Field Strength of Carrier - (43 + 10Log (P)) dB

Where:
Field Strength is measured in dBµV/m
P is measured Transmitter Power in Watts

Determination of Spurious Emission Limit

As the EUT does not have an integral antenna, the field strength of the carrier has been calculated assuming that the power is to be fed to a half-wave tuned dipole as per 2.1053 (a).

$E_{(v/m)}=(30 \times G_i \times P_o)^{0.5} / d$

Where G_i is the antenna gain of an ideal half-wave dipole,
P_o is the power out of the transceiver in W,
d is the measurement distance in meter.

Therefore at 3m measurement distance the field strength using the lowest transceiver output power would be:

$E_{(v/m)}=(30 \times 1.64 \times 4.79)^{0.5} / 3 = 5.12V/m = 134.18dB\mu V/m$

As per 24.238(a) the spurious emission must be attenuated by 43 + 10log (P_o) dB this gives:

43 + 10log(4.79) = 49.80dB

Therefore the limit at 3m measurement distance is:

134.18 – 49.80 = 84.4 dBµV/m

This limit has been used to determine Pass or Fail for the harmonics measured and detailed in the following results.

The results are shown in the plots below.

2.4.7 Test Results

Note: Only the worst case results plots have been included as all of the emissions are greater than 20dB below the limit. A set of plots have been included to show the measurement system noise floor.

Configuration L-MIMO-MC2 (2C)

Maximum Output Power 43.0dBm per port

Channel Position	Bandwidth	Channel Frequency
Channel Position M_{RFBW}	10.0MHz	2568.0MHz + 2618.0MHz

Channel Position M_{RFBW} – QPSK

No emissions were detected within 20dB of the limit.

Configuration L-MIMO-MC2 (2C)

Maximum Output Power 43.0dBm per port

Channel Position	Bandwidth	Channel Frequency
Channel Position M_{RFBW}	15.0MHz	2570.5MHz + 2615.5MHz

Channel Position M_{RFBW} – QPSK

No emissions were detected within 20dB of the limit.

Configuration L-MIMO-MC3 (3C)

Maximum Output Power 43.0dBm per port

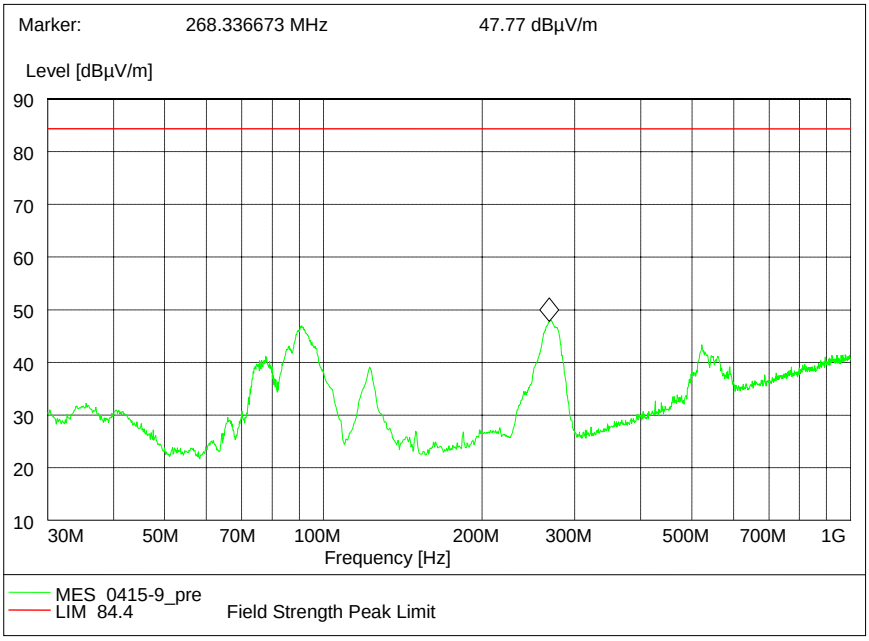
Channel Position	Bandwidth	Channel Frequency
Channel Position B_{RFBW}	15.0MHz	2503.5MHz + 2533.5MHz + 2548.5MHz
Channel Position M_{RFBW}	15.0MHz	2570.5MHz + 2600.5MHz + 2615.5MHz
Channel Position T_{RFBW}	15.0MHz	2637.5MHz + 2667.5MHz + 2682.5MHz

Channel Position B_{RFBW} – QPSK

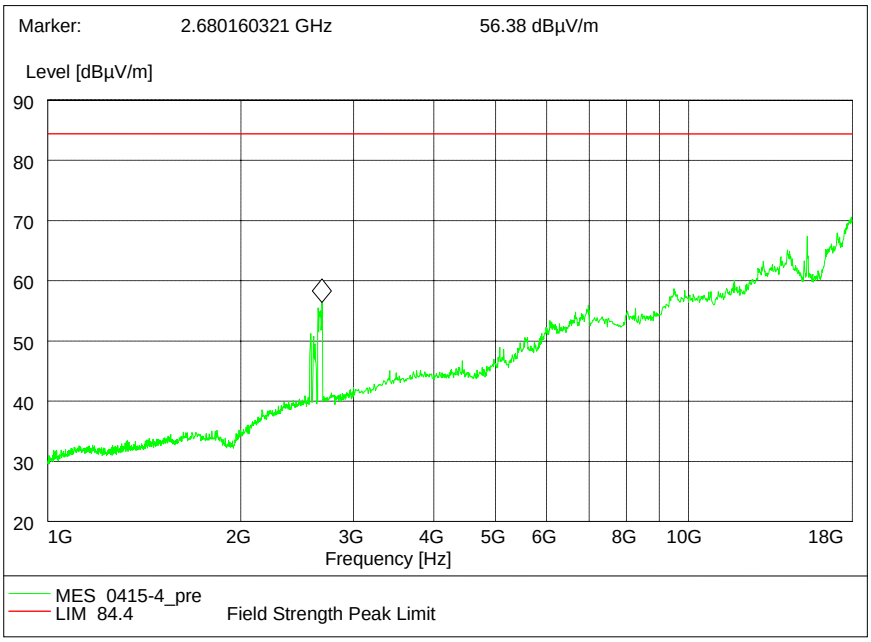
No emissions were detected within 20dB of the limit.

Channel Position M_{RFBW} – QPSK

Channel Position M_{RFBW} – QPSK / Bandwidth 15.0MHz – 30MHz – 1GHz

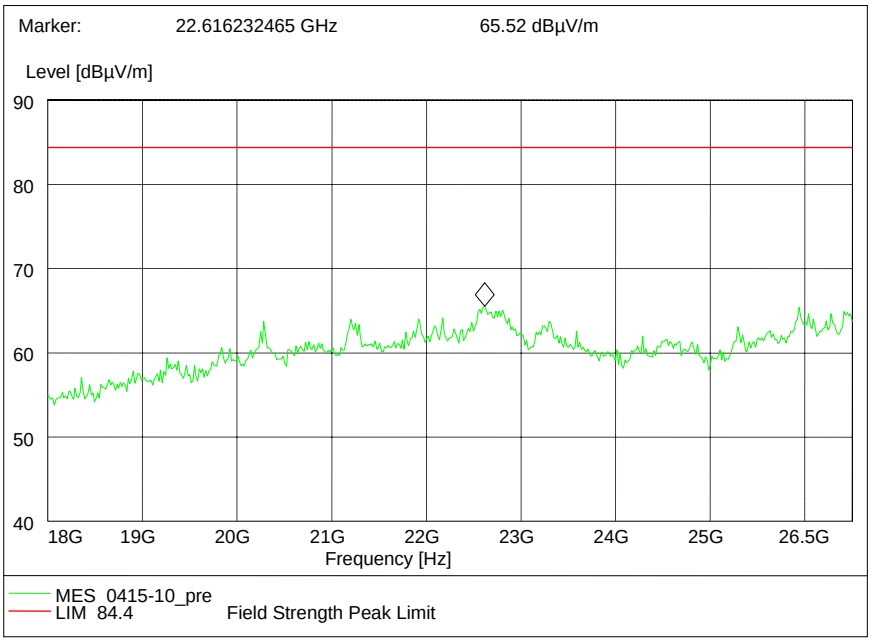


Channel Position M_{RFBW} – QPSK / Bandwidth 15.0MHz – 1GHz – 18GHz

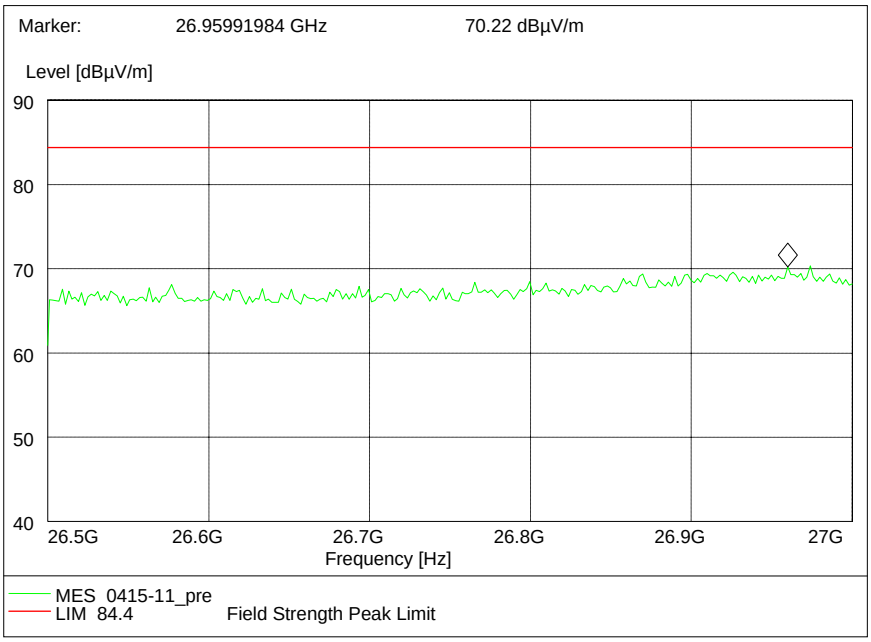


Note: The emission marked is the operating frequency

Channel Position M_{RFBW} – QPSK / Bandwidth 15.0MHz – 18MHz – 26.5GHz



Channel Position M_{RFBW} – QPSK / Bandwidth 15.0MHz – 26.5MHz – 27GHz



Channel Position T_{RFBW} – QPSK

No emissions were detected within 20dB of the limit.

Remarks

Limit	-13dBm / 84.4dBµV/m

The EUT does not exceed -13dBm / 84.4dBµV/m at the measured frequencies.

2.5 CONDUCTED SPURIOUS EMISSIONS

2.5.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1051
FCC CFR 47 Part 27, Clause 27.53 (m)

2.5.2 Equipment Under Test

RRUS 82 B41, KRC 161 436/1, S/N: D820873095

2.5.3 Date of Test and Modification State

10 and 13 April 2015 - Modification State 0

2.5.4 Test Equipment Used

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

2.5.5 Environmental Conditions

Ambient Temperature	20.2 - 22.5 °C
Relative Humidity	51.8 - 60.5 %

2.5.6 Test Method

The test was applied in accordance with test method requirements of FCC Part 2 and KDB 971168 D01.

In accordance with FCC CFR 47 Part 2, Clause 2.1051, the spurious emissions from the antenna terminal were measured. In accordance with FCC CFR 47 Part 27, Clause 27.53 (m) , any emissions outside of the block edges shall be attenuated by at least 43 + 10 log (P).

The EUT was set to transmit at its maximum rated output power. The path loss between the Spectrum Analyser and the EUT was measured with the worst case level being entered as a Reference Level Offset. In accordance with 27.53 (m), the RBW was set to 1MHz and a Peak detector with the trace set to Max Hold was used. The frequency spectrum was then investigated between 9 kHz and 27GHz. Testing was carried out on the Bottom, Middle and Top channels.

For 8 × MIMO mode configurations, the limit was adjusted with a correction of -9dB [10Log(8)] by using the Measure and Add 10Log(N) dB technique according to FCC KDB662911 D01 accounting for simultaneous transmission from antennas port RF 1 to RF 8.

For 4 × MIMO mode configurations, the limit was adjusted with a correction of -6dB [10Log(4)] by using the Measure and Add 10Log(N) dB technique according to FCC KDB662911 D01 accounting for simultaneous transmission from antennas port RF 1 to RF 4.

The measurements were performed on the output connector RF 4. Limited complementary measurement were done at other output conectors to verify identical performance for all transmitter chains in MIMO mode.

The results are shown in the plots below.

2.5.7 Test Results

Configuration L-MIMO-SC 1 (1C)

Maximum Output Power 37.0dBm per port

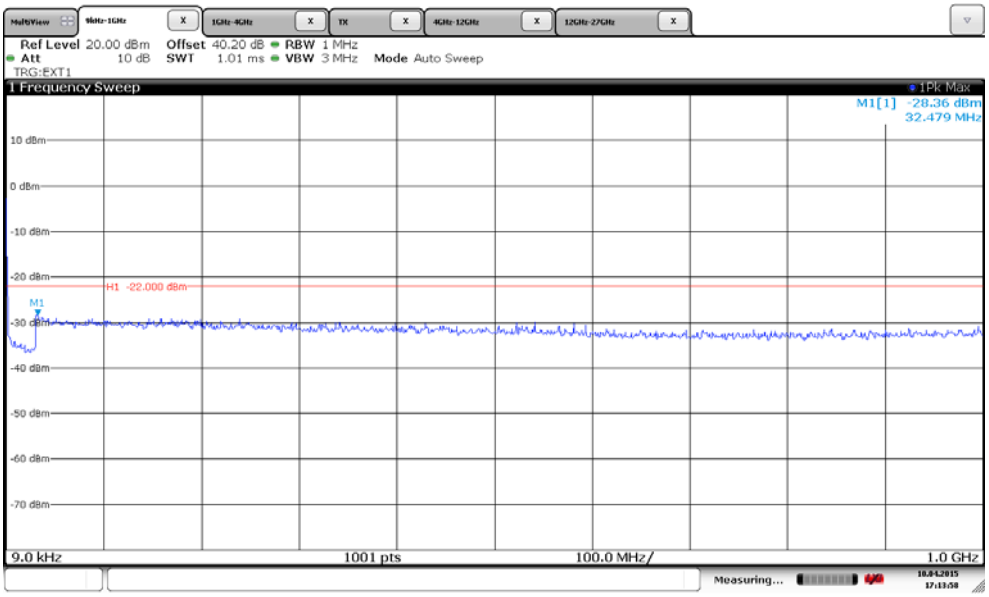
Channel Position	Bandwidth	Channel Frequency
Channel Position B	10.0MHz	2501.0MHz
Channel Position M	10.0MHz	2593.0MHz
Channel Position T	10.0MHz	2685.0MHz

Configuration L-MIMO-SC 1 (1C)

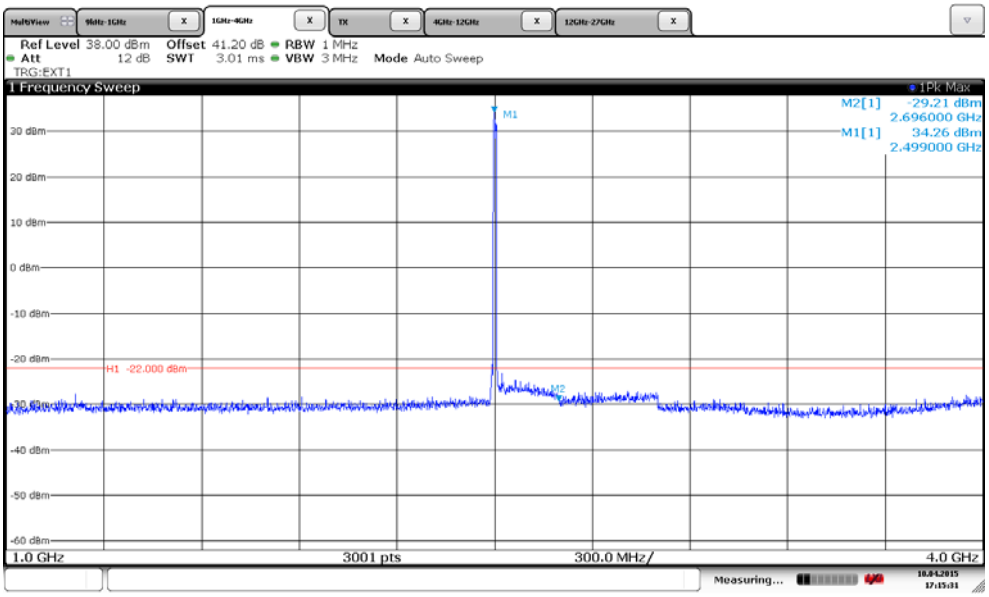
Maximum Output Power 37.0dBm per port

Channel Position	Bandwidth	Channel Frequency
Channel Position B	15.0MHz	2503.5MHz
Channel Position M	15.0MHz	2593.0MHz
Channel Position T	15.0MHz	2682.5MHz

Channel Position B - QPSK / Bandwidth 10.0MHz - 9kHz – 1GHz

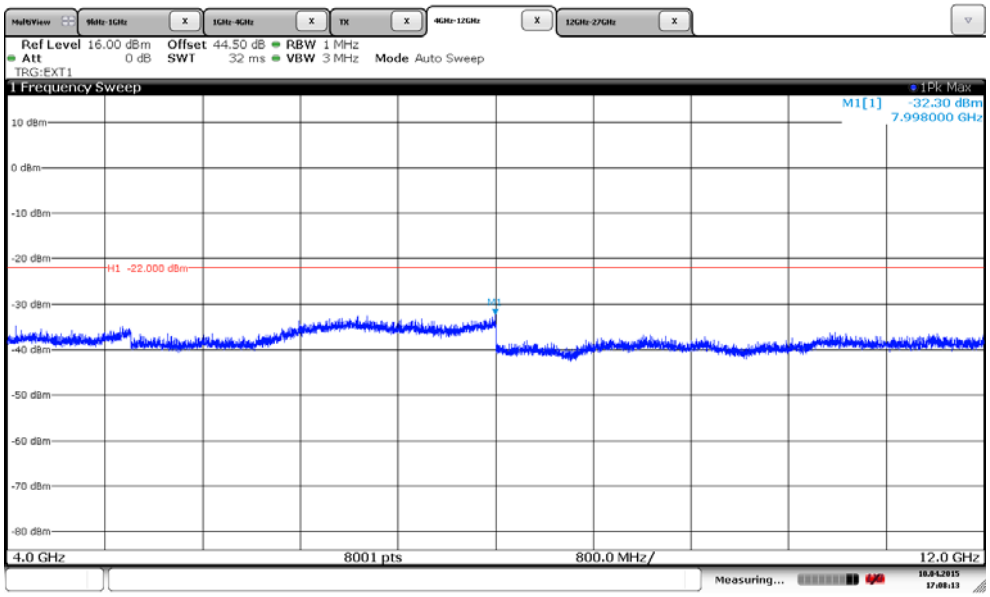


Channel Position B - QPSK / Bandwidth 10.0MHz - 1GHz – 4GHz

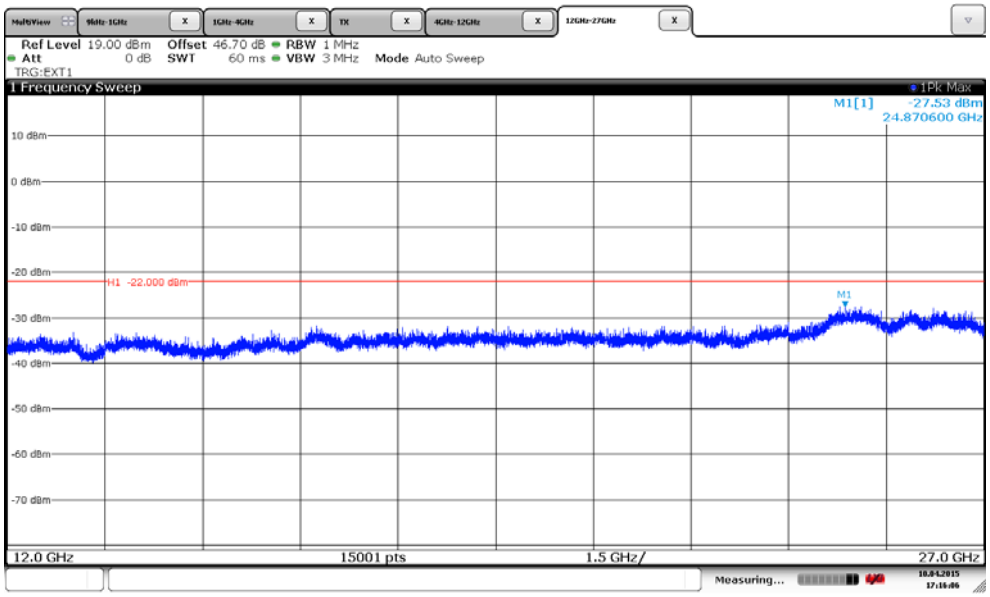


Note: The emission beyond the limit is within the operating frequency

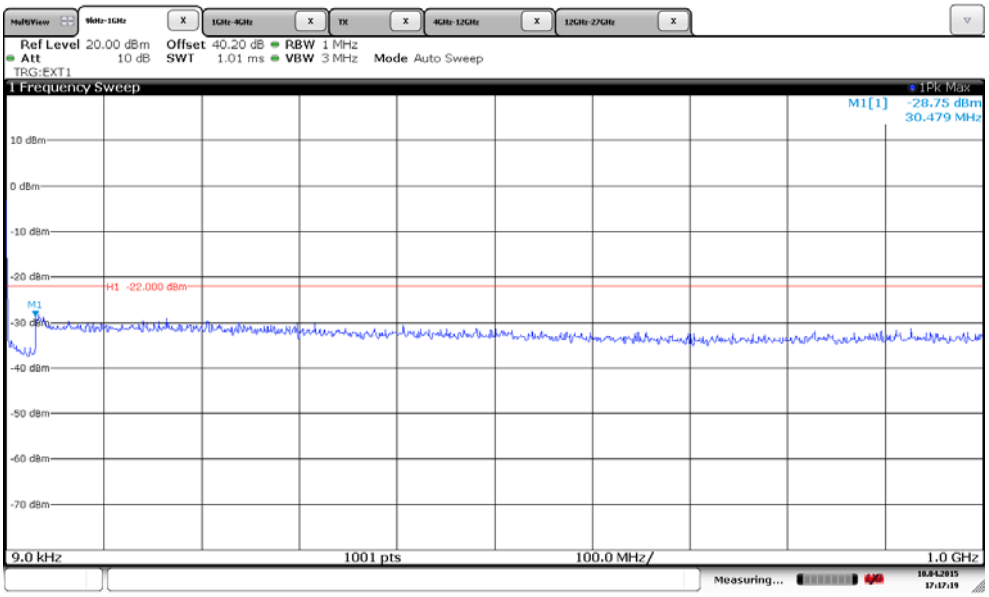
Channel Position B - QPSK / Bandwidth 10.0MHz - 4GHz – 12GHz



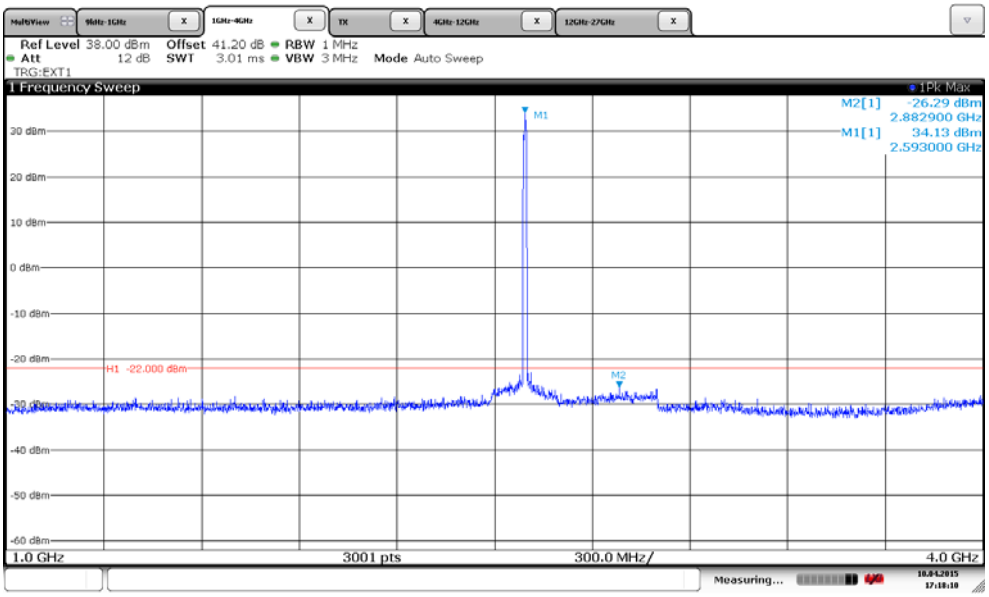
Channel Position B - QPSK / Bandwidth 10.0MHz - 12GHz – 27GHz



Channel Position M - QPSK / Bandwidth 10.0MHz - 9kHz – 1GHz

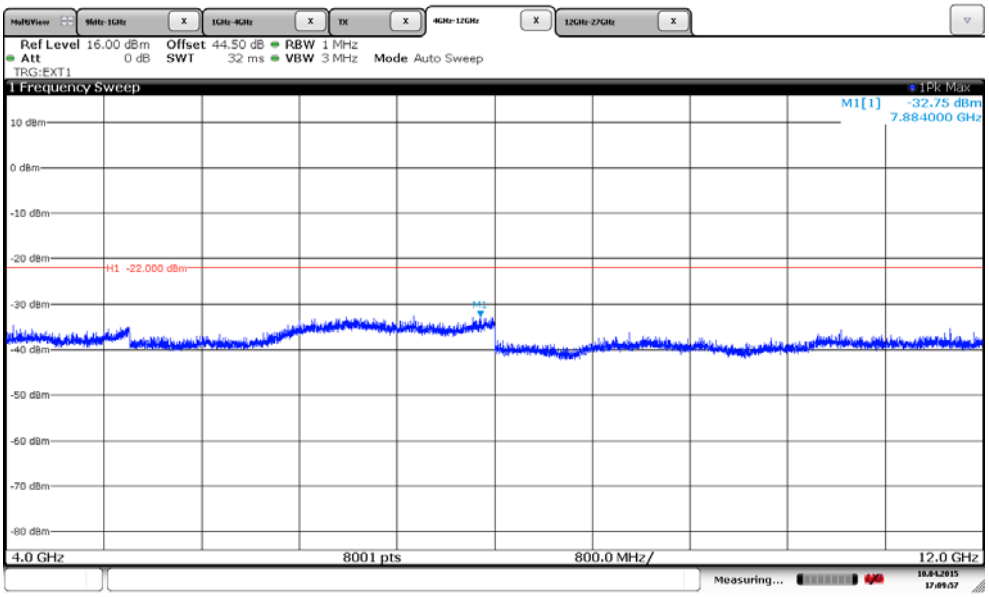


Channel Position M - QPSK / Bandwidth 10.0MHz - 1GHz – 4GHz

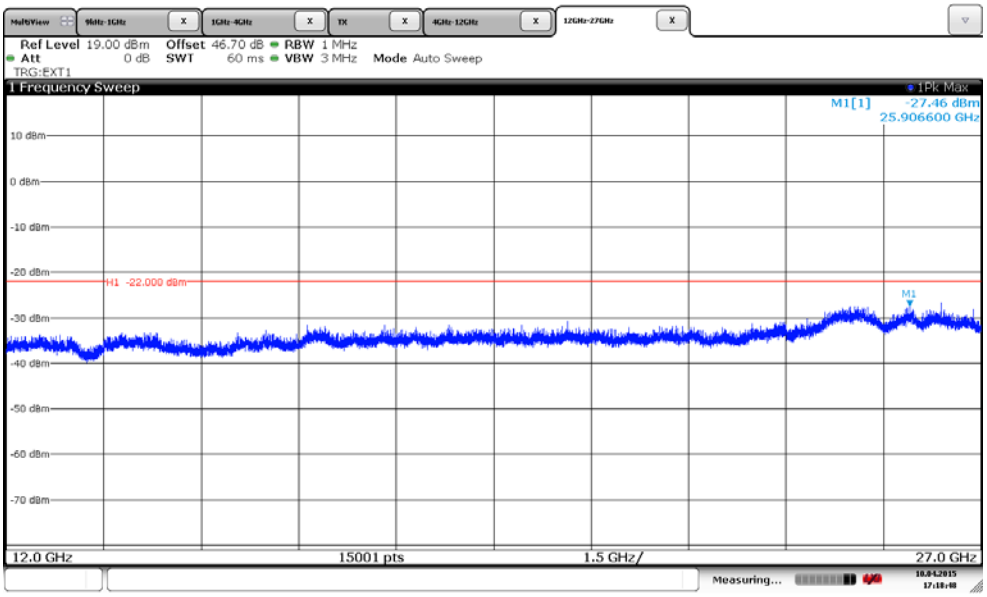


Note: The emission beyond the limit is within the operating frequency

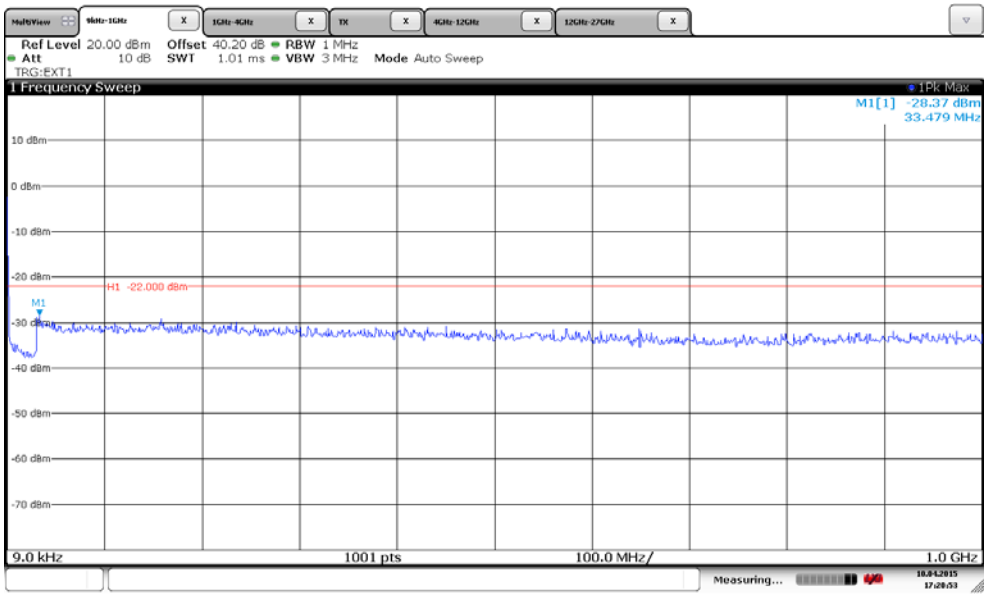
Channel Position M - QPSK / Bandwidth 10.0MHz - 4GHz – 12GHz



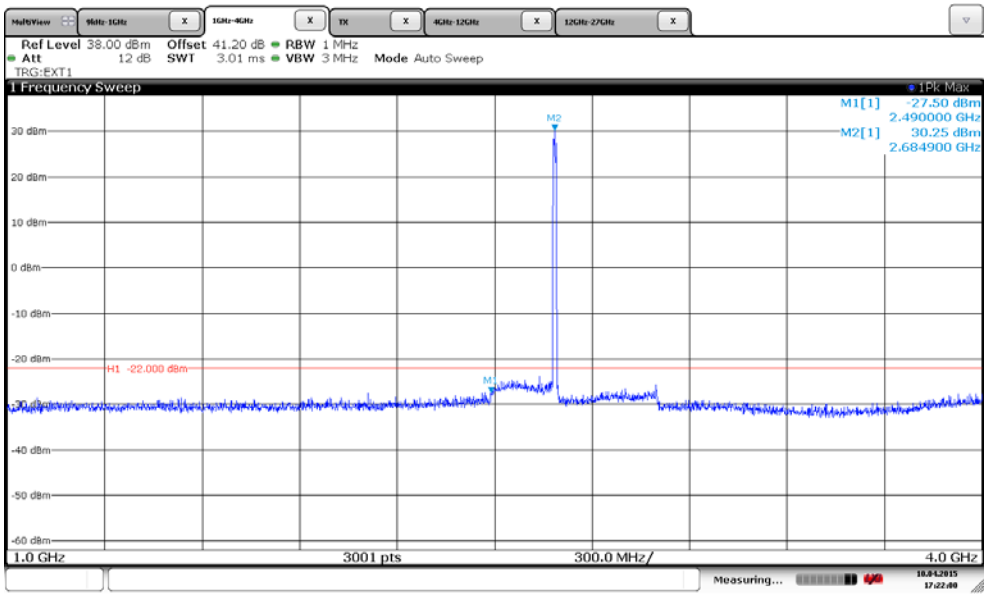
Channel Position M - QPSK / Bandwidth 10.0MHz - 12GHz – 27GHz



Channel Position T - QPSK / Bandwidth 10.0MHz - 9kHz – 1GHz

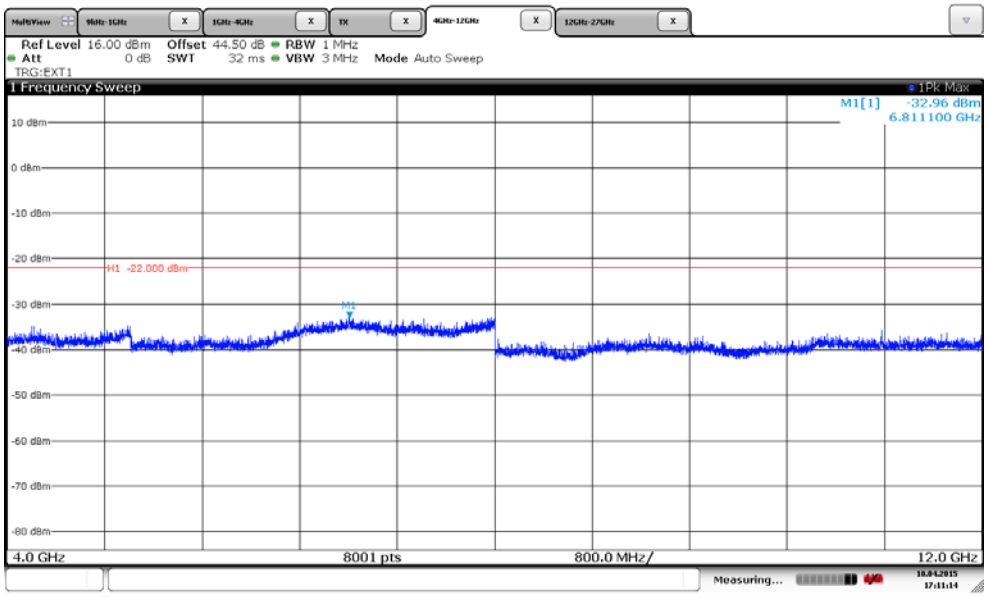


Channel Position T - QPSK / Bandwidth 10.0MHz - 1GHz – 4GHz

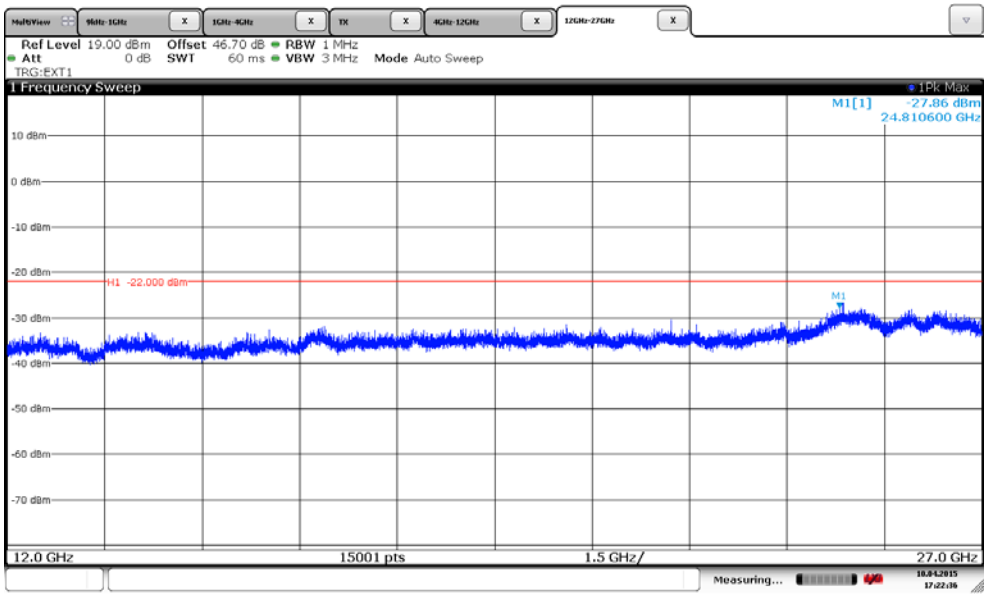


Note: The emission beyond the limit is within the operating frequency

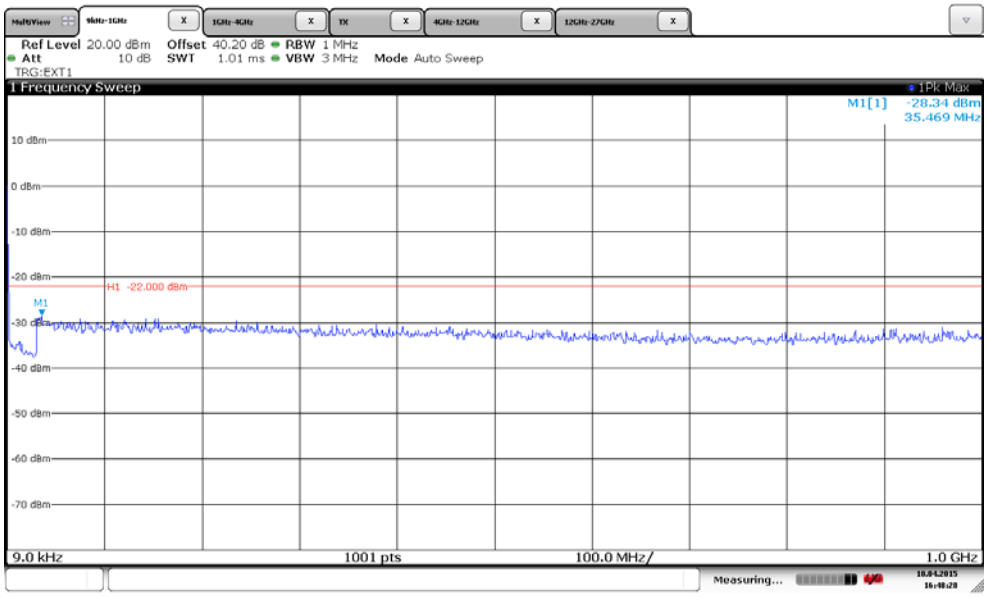
Channel Position T - QPSK / Bandwidth 10.0MHz - 4GHz – 12GHz



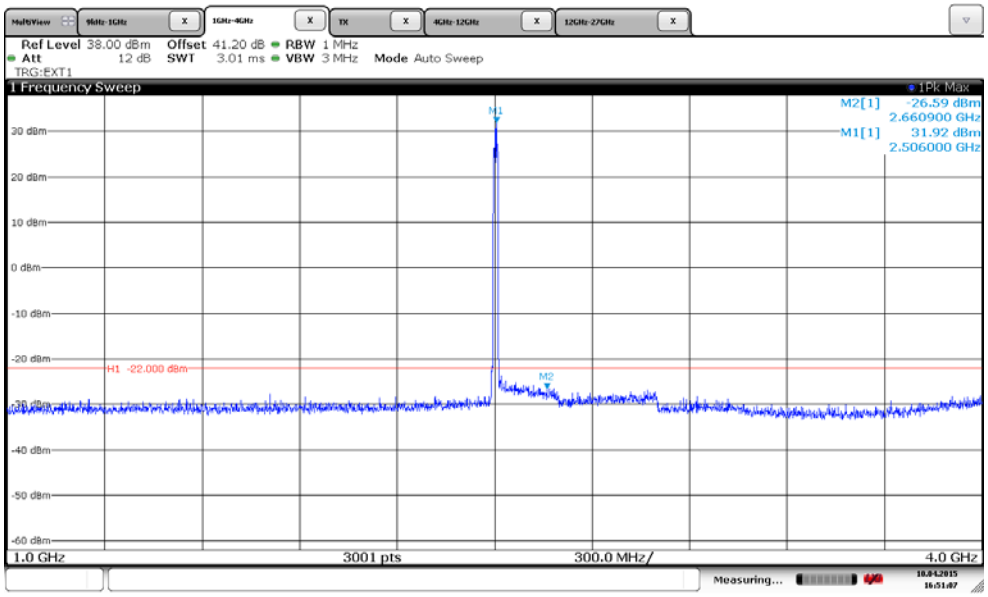
Channel Position T - QPSK / Bandwidth 10.0MHz - 12GHz – 27GHz



Channel Position B - QPSK / Bandwidth 15.0MHz - 9kHz – 1GHz

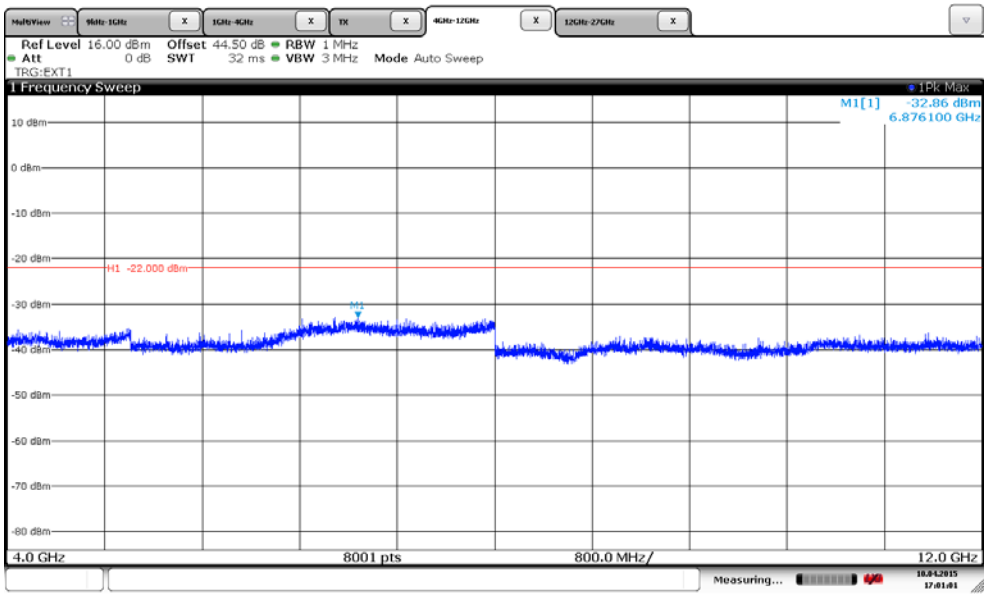


Channel Position B - QPSK / Bandwidth 15.0MHz - 1GHz – 4GHz

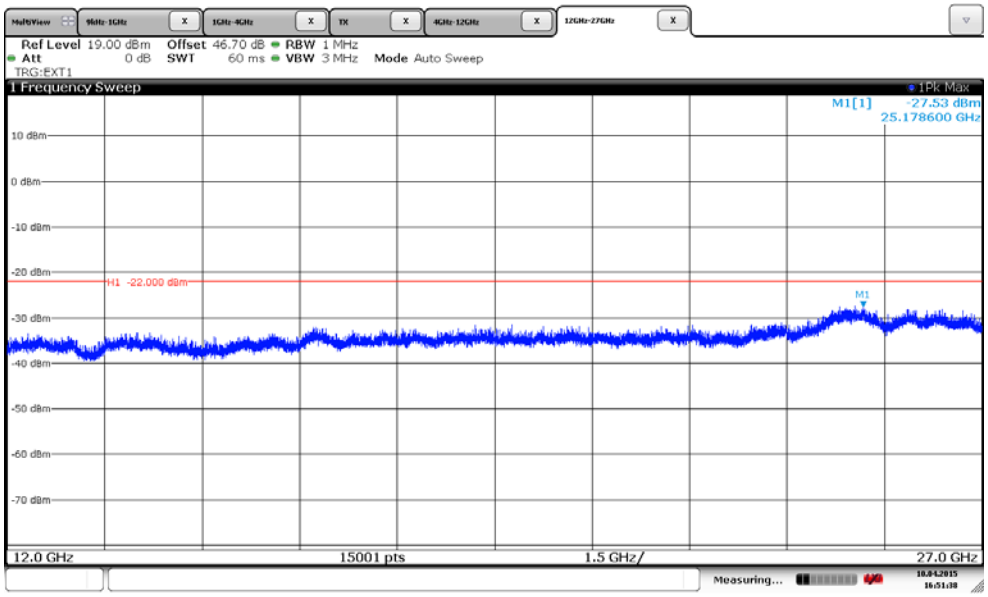


Note: The emission beyond the limit is within the operating frequency

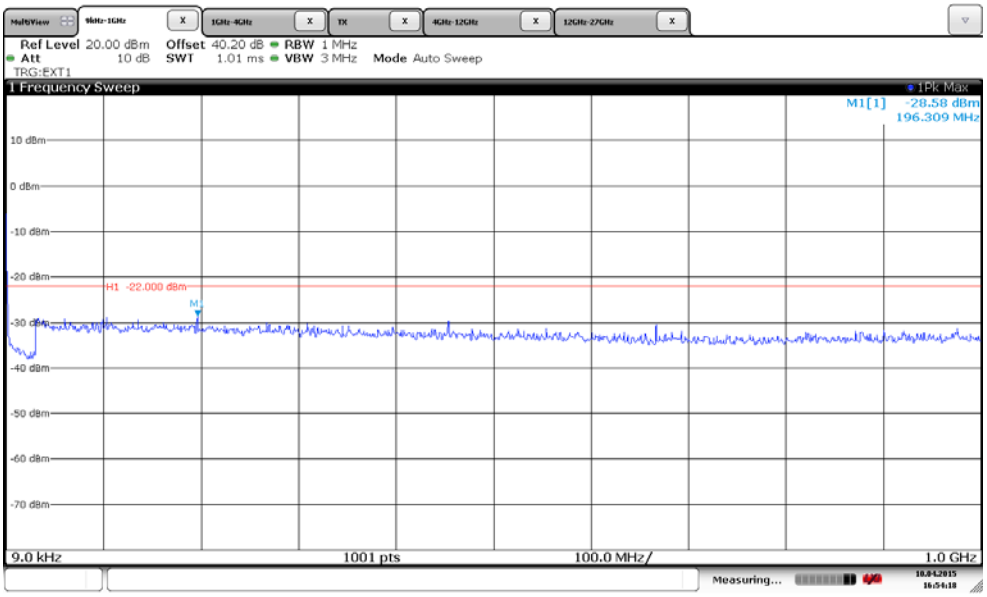
Channel Position B - QPSK / Bandwidth 15.0MHz - 4GHz – 12GHz



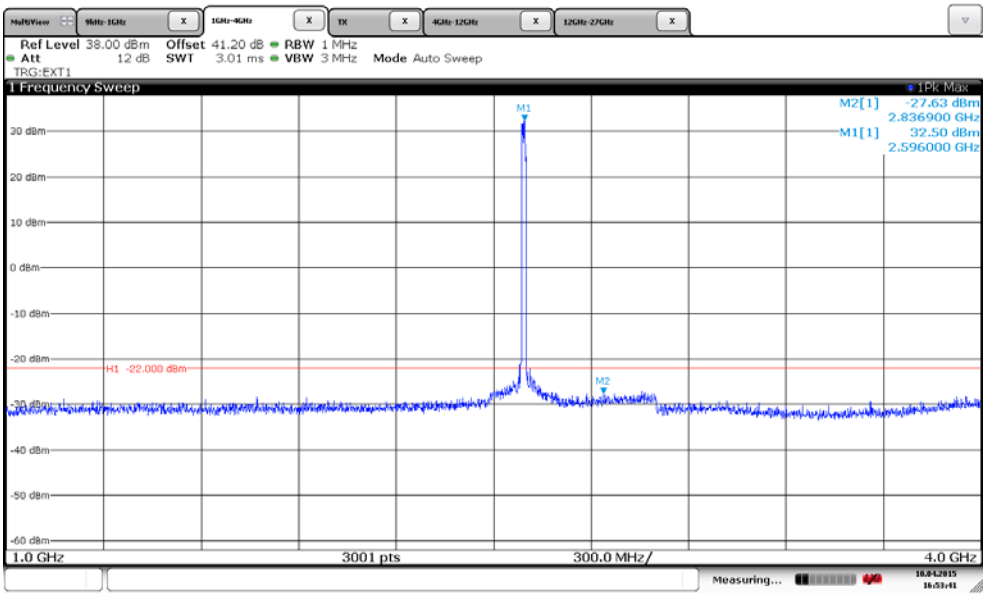
Channel Position B - QPSK / Bandwidth 15.0MHz - 12GHz – 27GHz



Channel Position M - QPSK / Bandwidth 15.0MHz - 9kHz – 1GHz

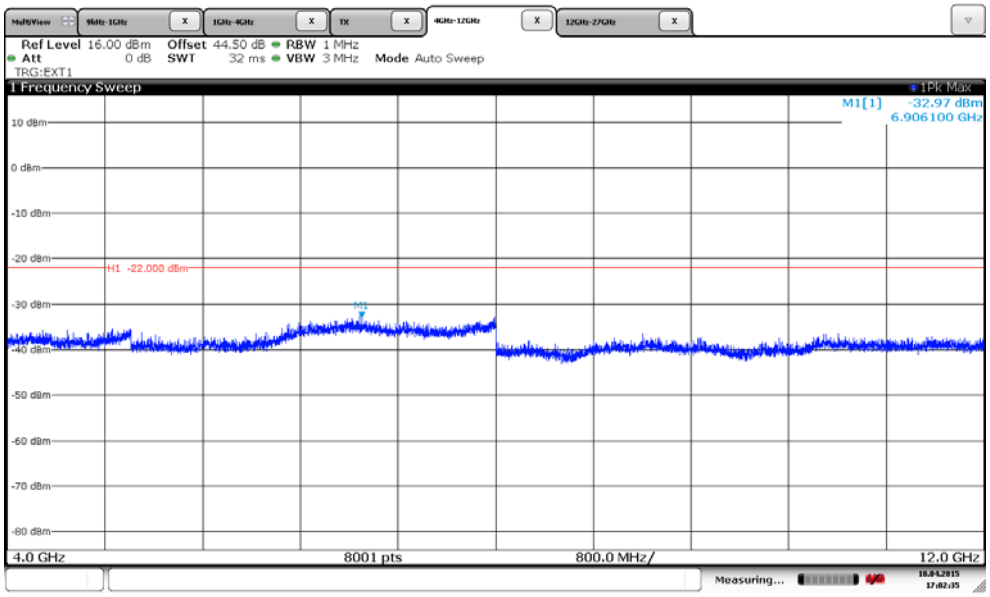


Channel Position M - QPSK / Bandwidth 15.0MHz - 1GHz – 4GHz

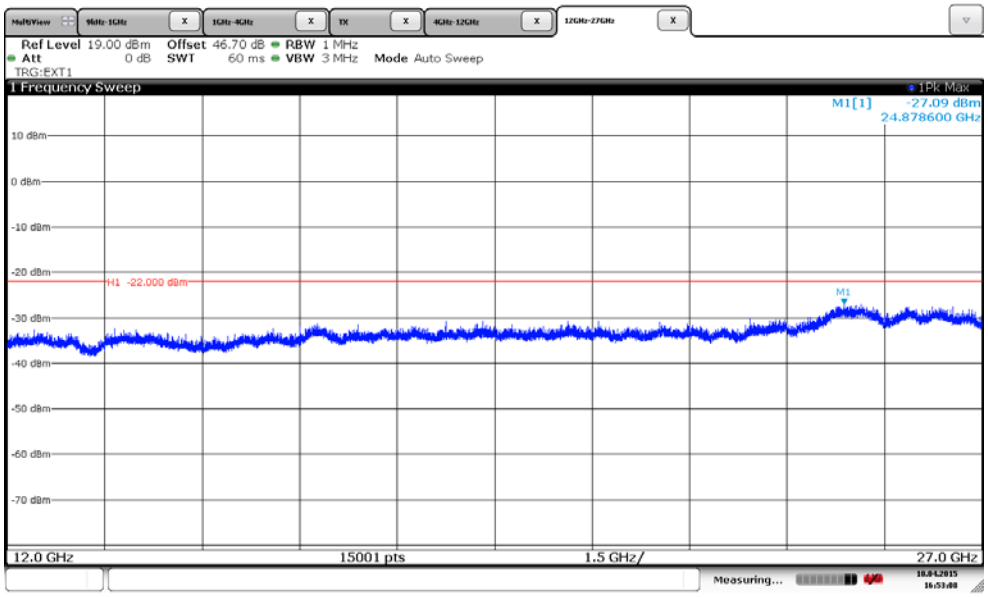


Note: The emission beyond the limit is within the operating frequency

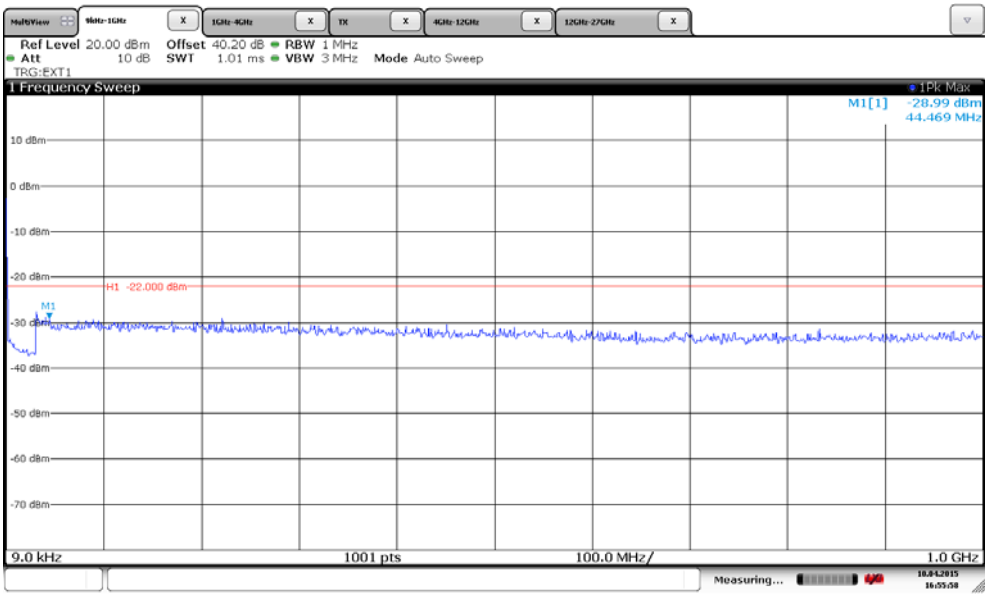
Channel Position M - QPSK / Bandwidth 15.0MHz - 4GHz – 12GHz



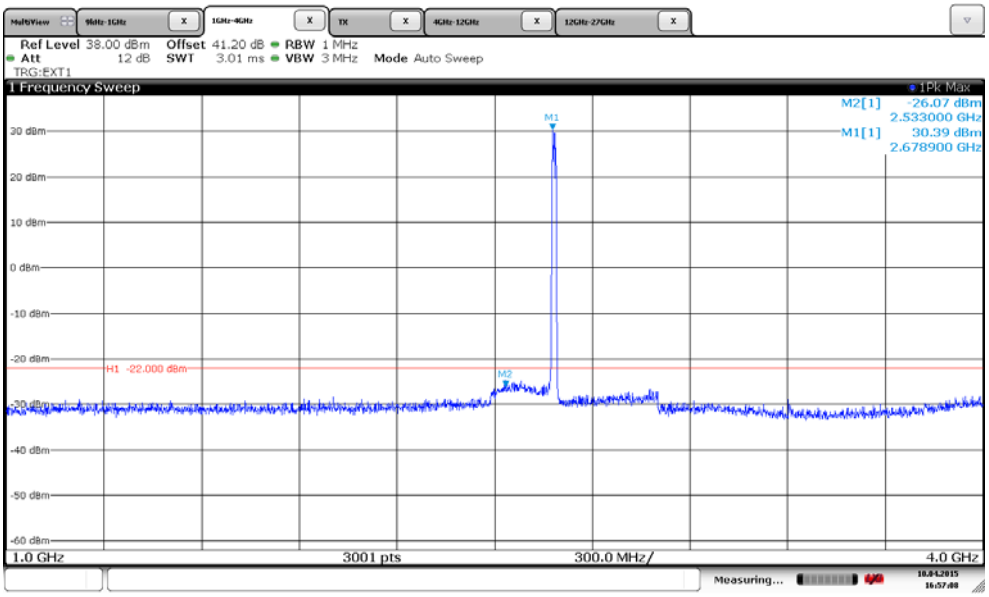
Channel Position M - QPSK / Bandwidth 15.0MHz - 12GHz – 27GHz



Channel Position T - QPSK / Bandwidth 15.0MHz - 9kHz – 1GHz

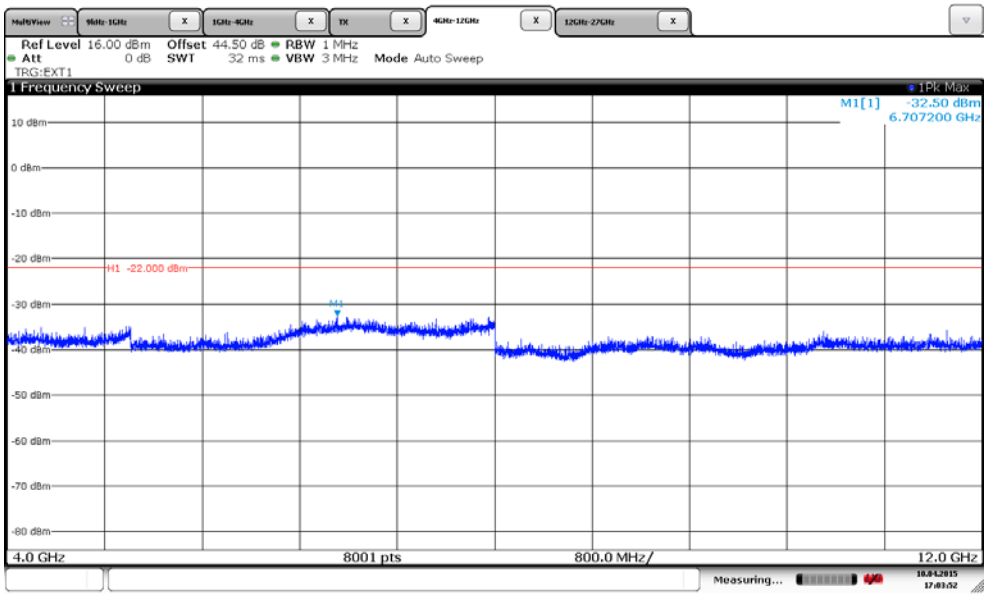


Channel Position T - QPSK / Bandwidth 15.0MHz - 1GHz – 4GHz

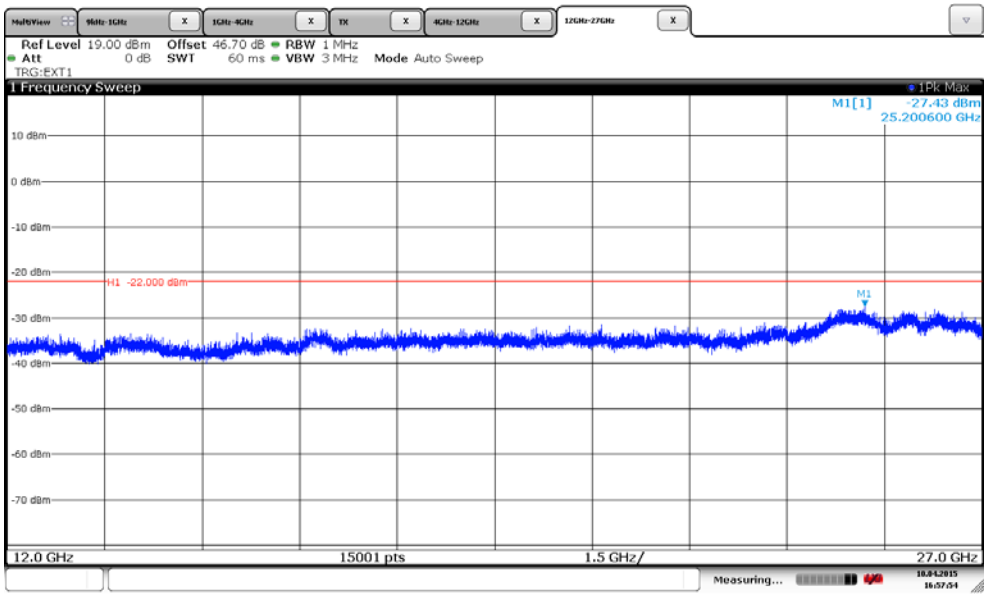


Note: The emission beyond the limit is within the operating frequency

Channel Position T - QPSK / Bandwidth 15.0MHz - 4GHz – 12GHz



Channel Position T - QPSK / Bandwidth 15.0MHz - 12GHz – 27GHz



Configuration L-MIMO-SC 2 (1C)

Maximum Output Power 40.0dBm per port

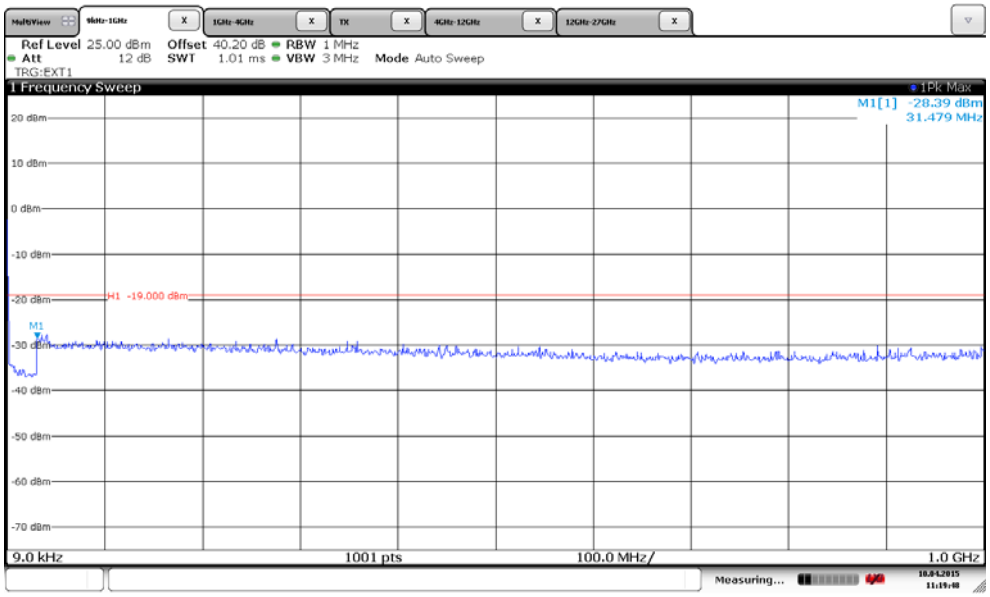
Channel Position	Bandwidth	Channel Frequency
Channel Position B	10.0MHz	2501.0MHz
Channel Position M	10.0MHz	2593.0MHz
Channel Position T	10.0MHz	2685.0MHz

Configuration L-MIMO-SC 2 (1C)

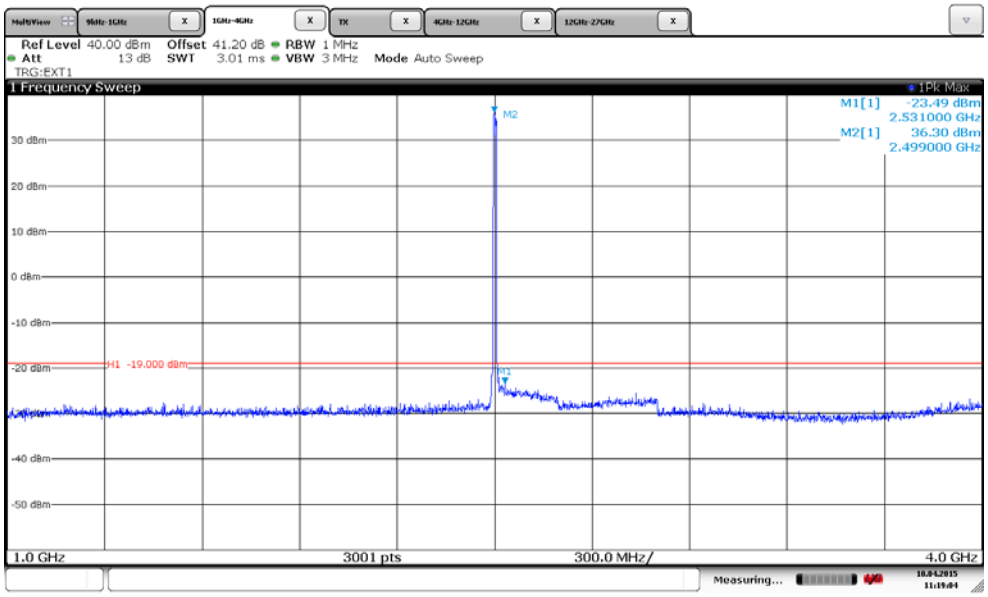
Maximum Output Power 40.0dBm per port

Channel Position	Bandwidth	Channel Frequency
Channel Position B	15.0MHz	2503.5MHz
Channel Position M	15.0MHz	2593.0MHz
Channel Position T	15.0MHz	2682.5MHz

Channel Position B - QPSK / Bandwidth 10.0MHz - 9kHz – 1GHz

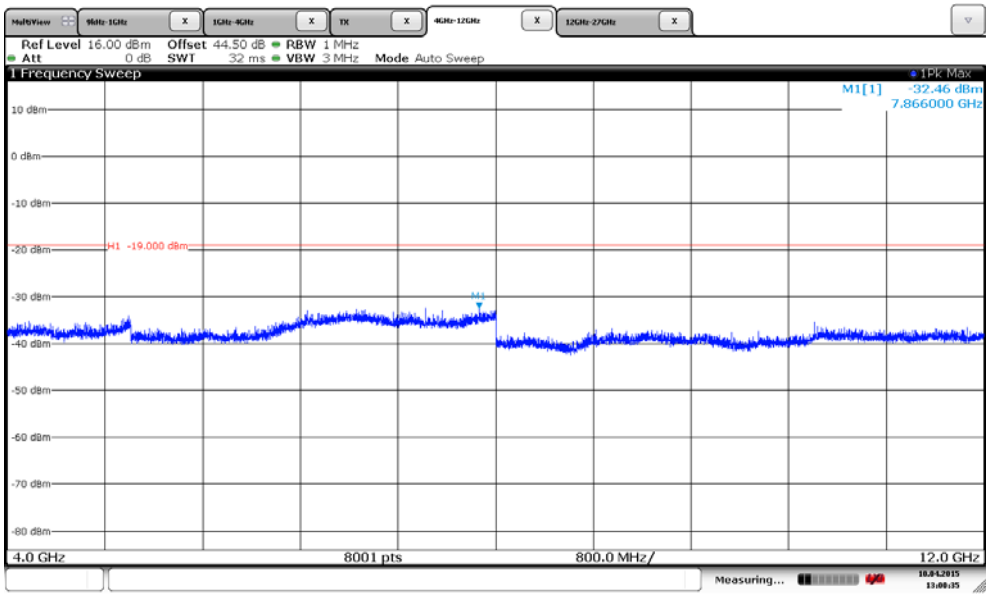


Channel Position B - QPSK / Bandwidth 10.0MHz - 1GHz – 4GHz

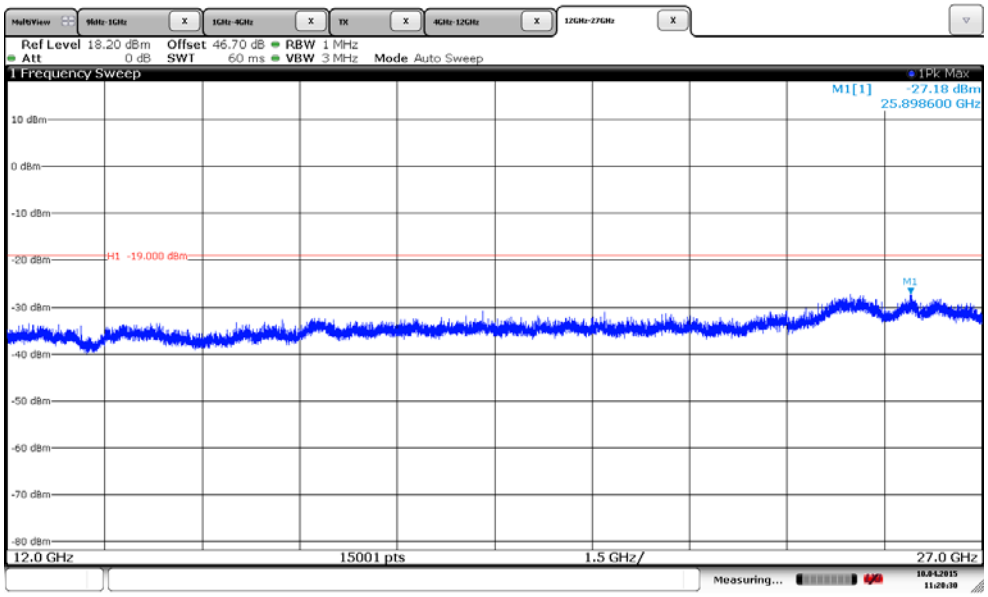


Note: The emission beyond the limit is within the operating frequency

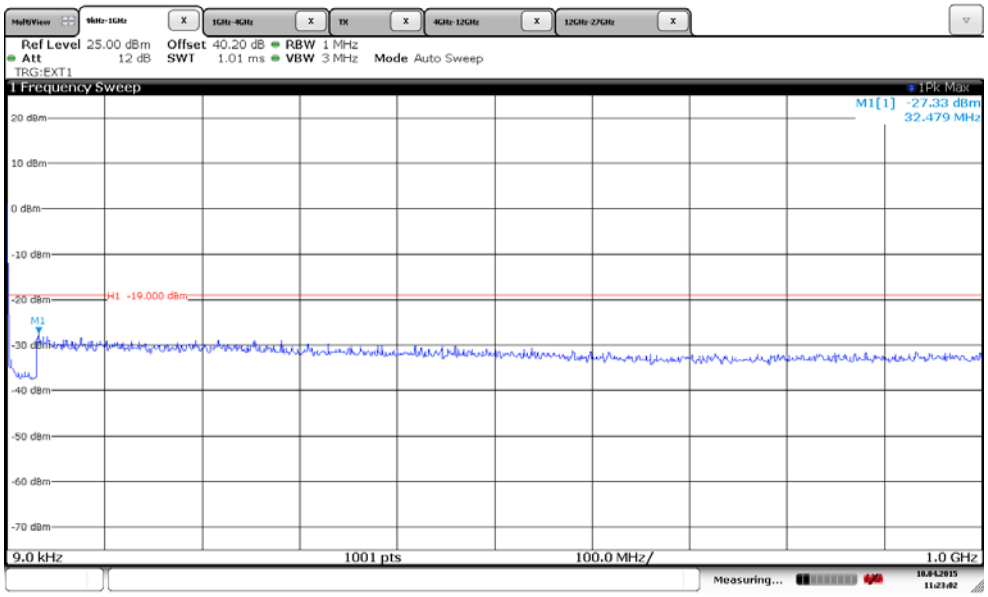
Channel Position B - QPSK / Bandwidth 10.0MHz - 4GHz – 12GHz



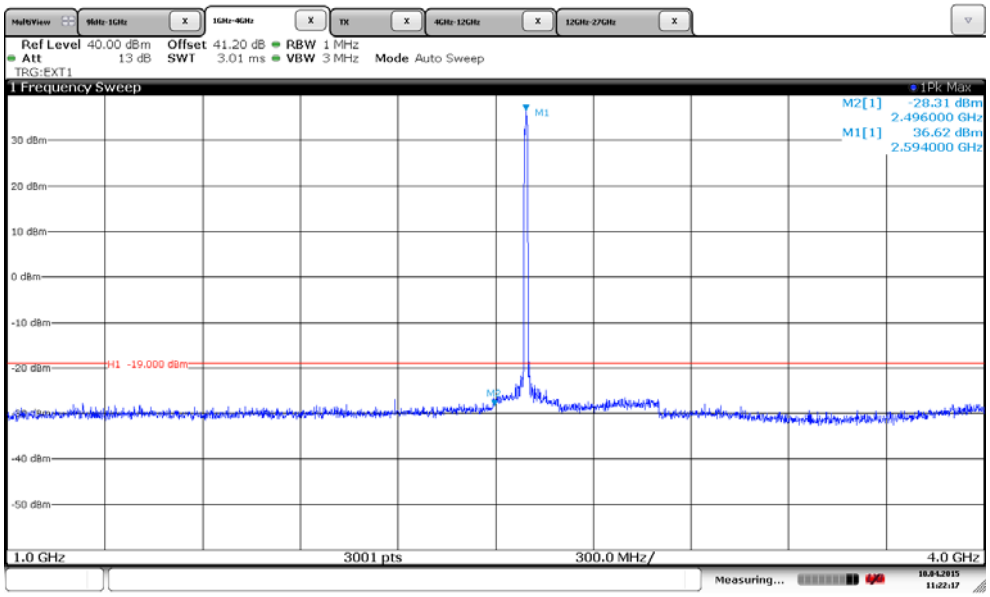
Channel Position B - QPSK / Bandwidth 10.0MHz - 12GHz – 27GHz



Channel Position M - QPSK / Bandwidth 10.0MHz - 9kHz – 1GHz

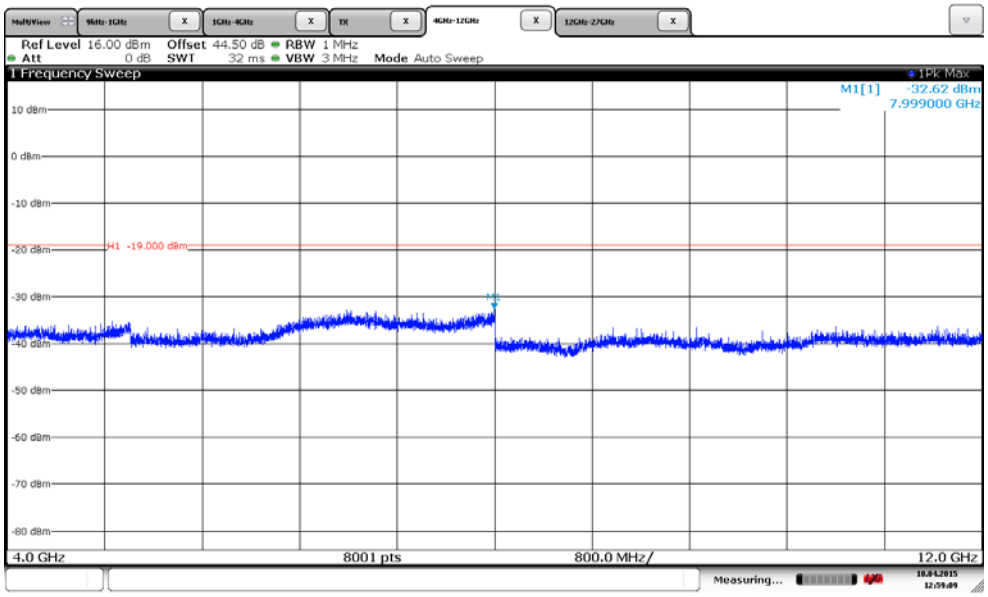


Channel Position M - QPSK / Bandwidth 10.0MHz - 1GHz – 4GHz

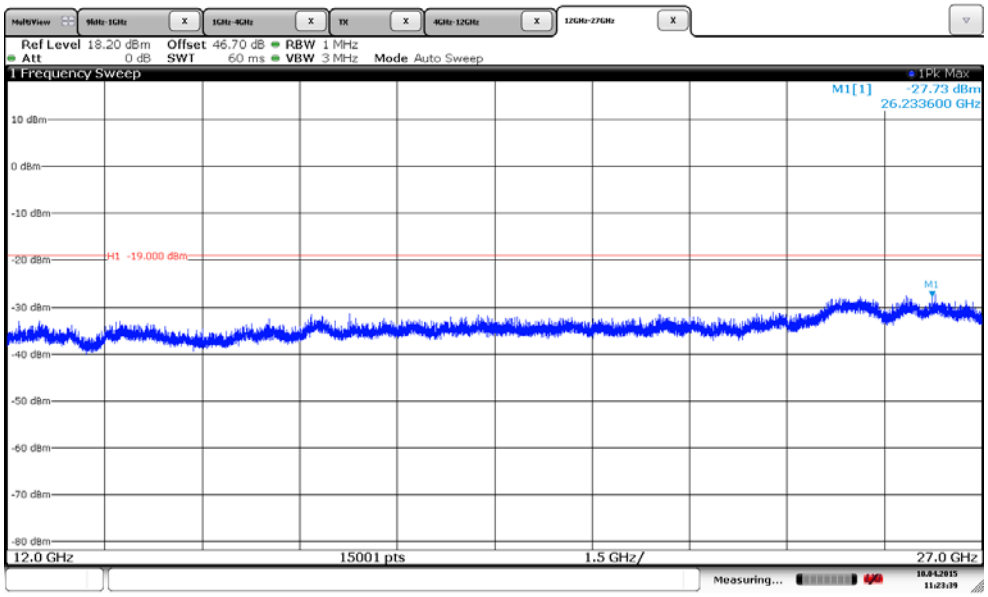


Note: The emission beyond the limit is within the operating frequency

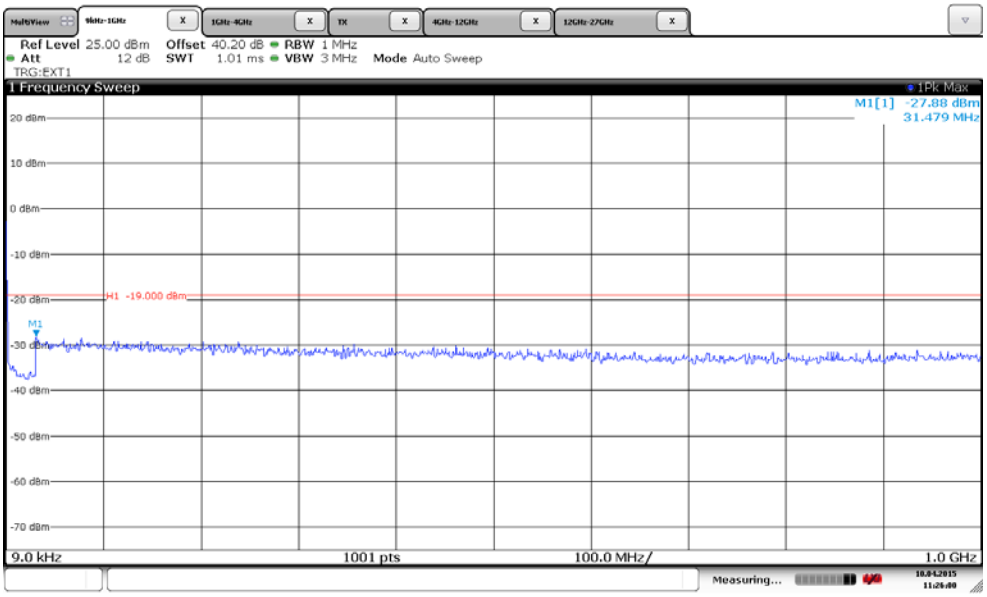
Channel Position M - QPSK / Bandwidth 10.0MHz - 4GHz – 12GHz



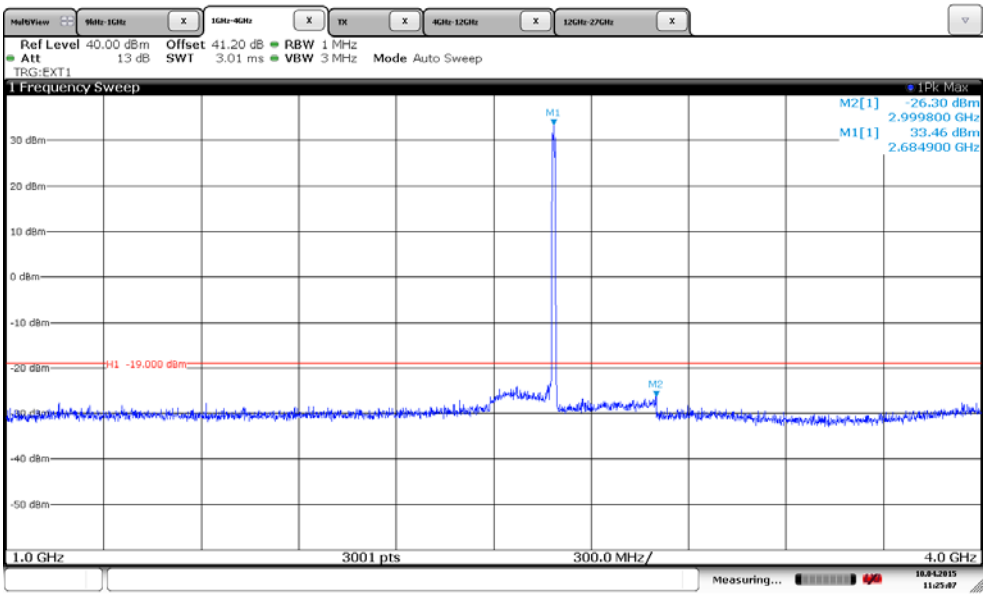
Channel Position M - QPSK / Bandwidth 10.0MHz - 12GHz – 27GHz



Channel Position T - QPSK / Bandwidth 10.0MHz - 9kHz – 1GHz

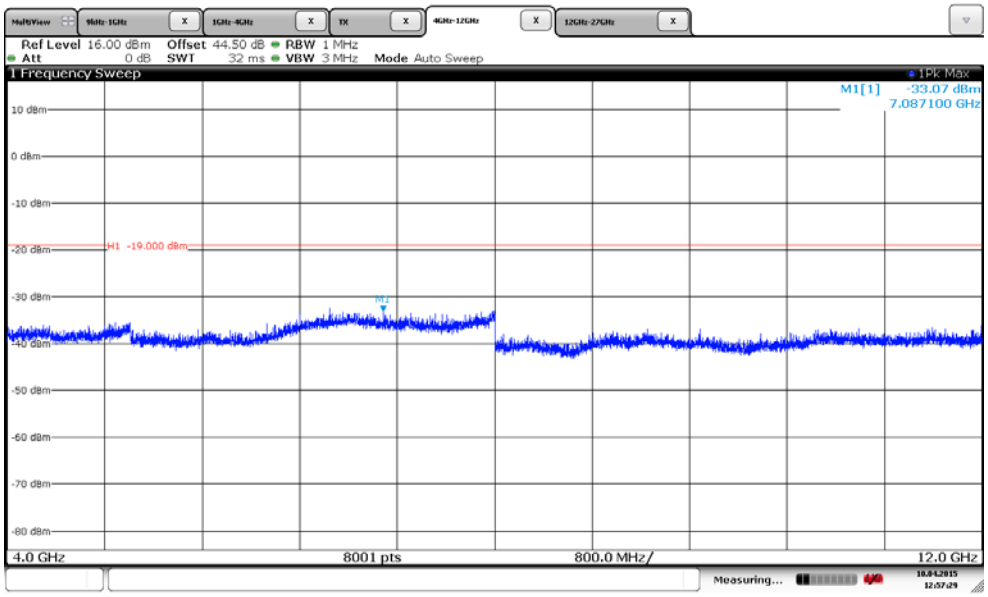


Channel Position T - QPSK / Bandwidth 10.0MHz - 1GHz – 4GHz

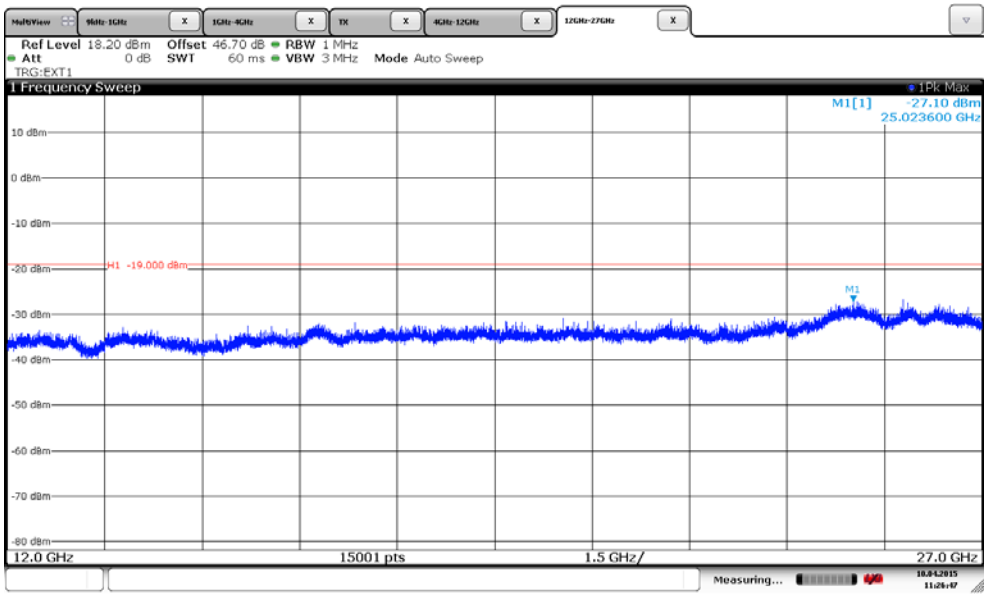


Note: The emission beyond the limit is within the operating frequency

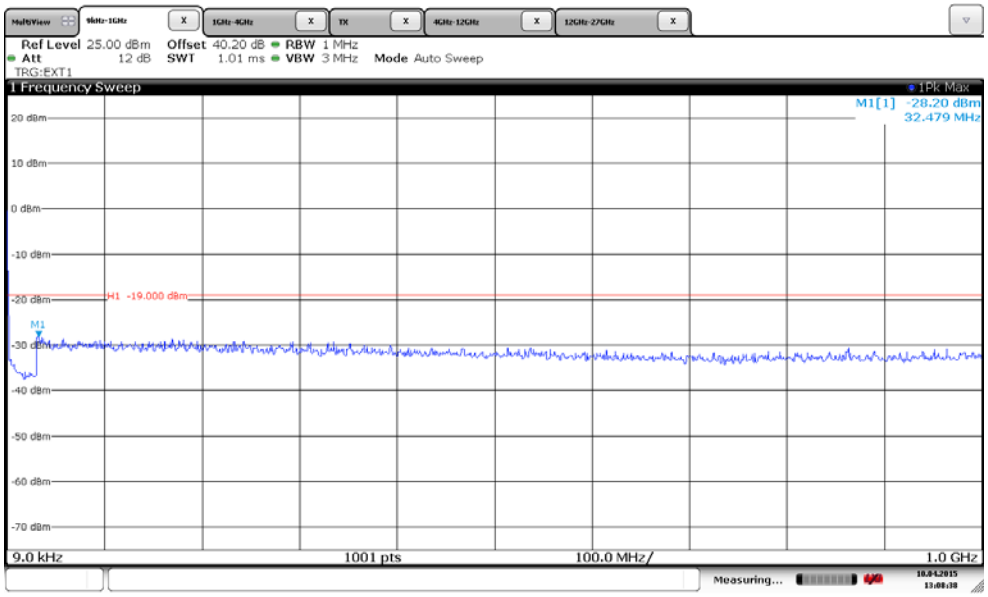
Channel Position T - QPSK / Bandwidth 10.0MHz - 4GHz – 12GHz



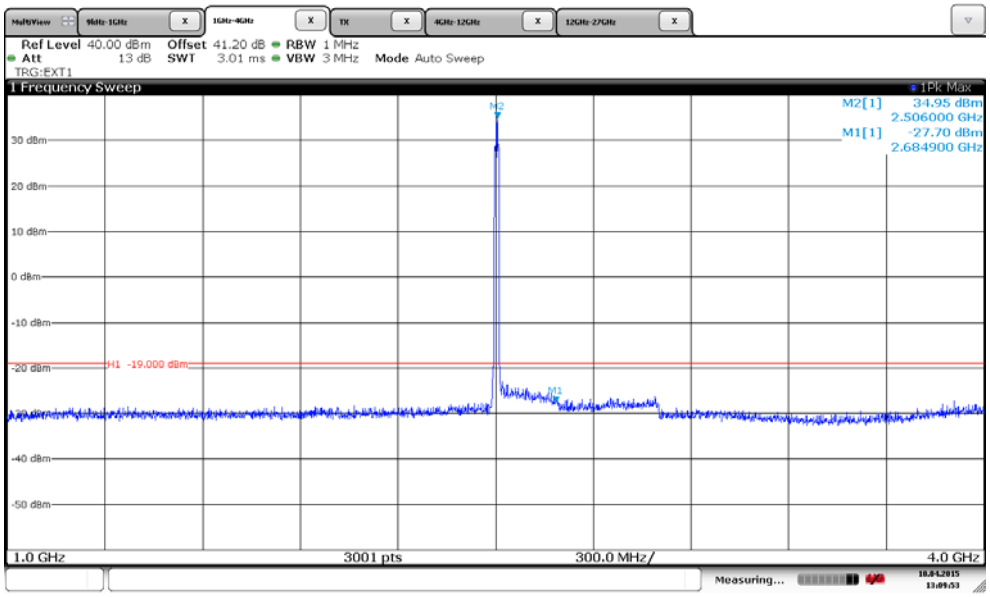
Channel Position T - QPSK / Bandwidth 10.0MHz - 12GHz – 27GHz



Channel Position B - QPSK / Bandwidth 15.0MHz - 9kHz – 1GHz

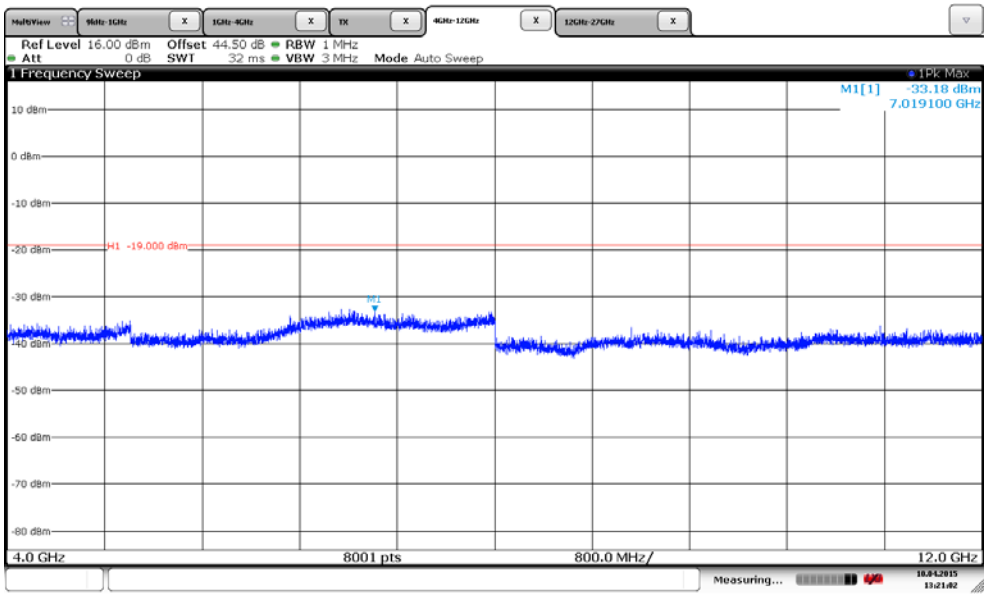


Channel Position B - QPSK / Bandwidth 15.0MHz - 1GHz – 4GHz

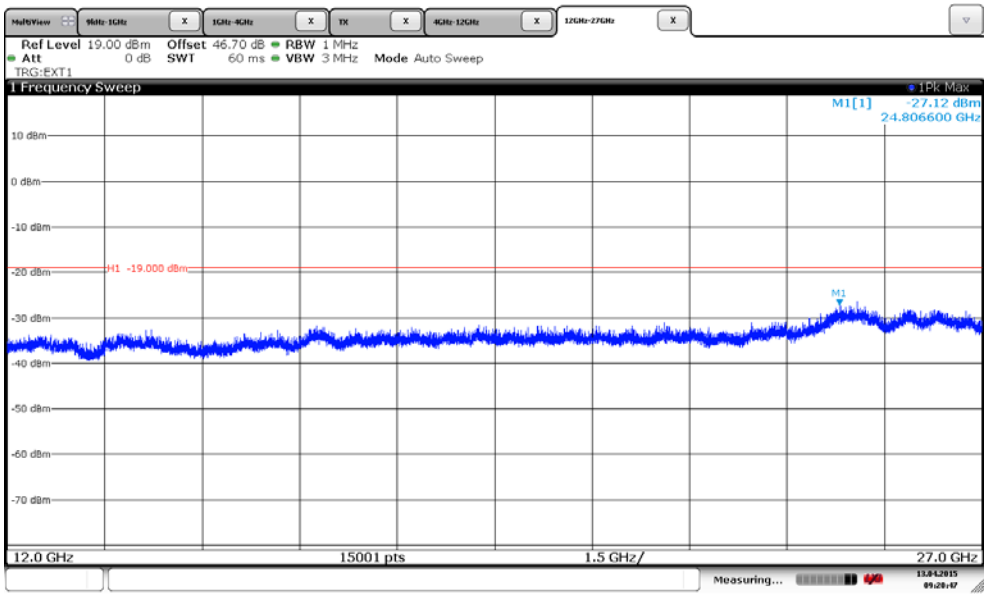


Note: The emission beyond the limit is within the operating frequency

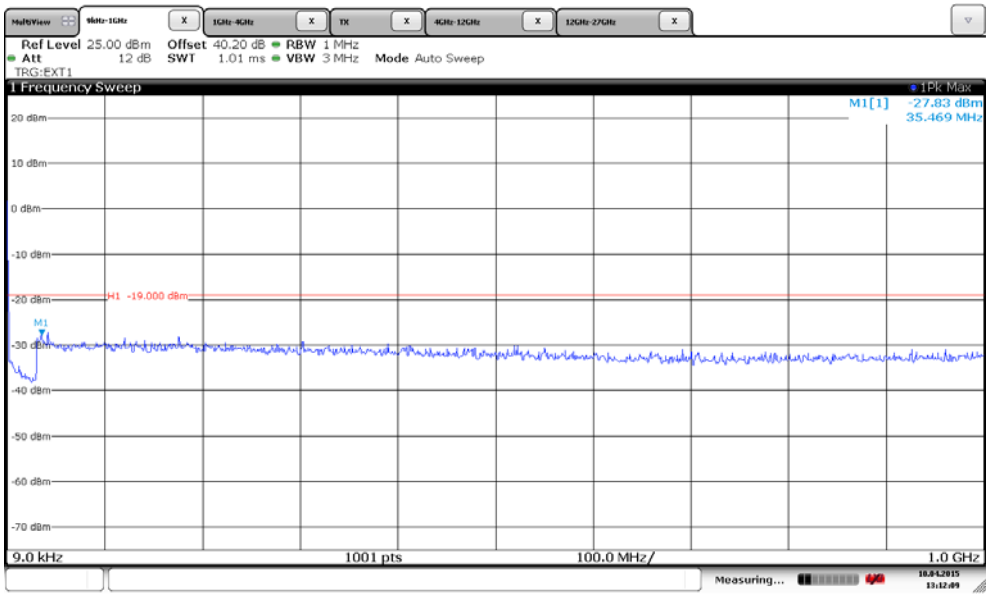
Channel Position B - QPSK / Bandwidth 15.0MHz - 4GHz – 12GHz



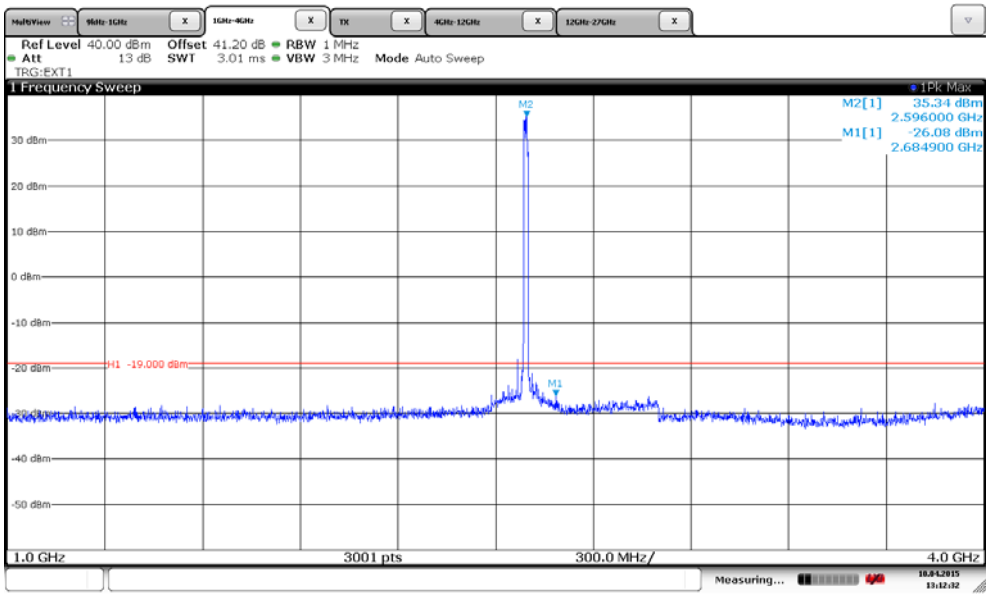
Channel Position B - QPSK / Bandwidth 15.0MHz - 12GHz – 27GHz



Channel Position M - QPSK / Bandwidth 15.0MHz - 9kHz – 1GHz

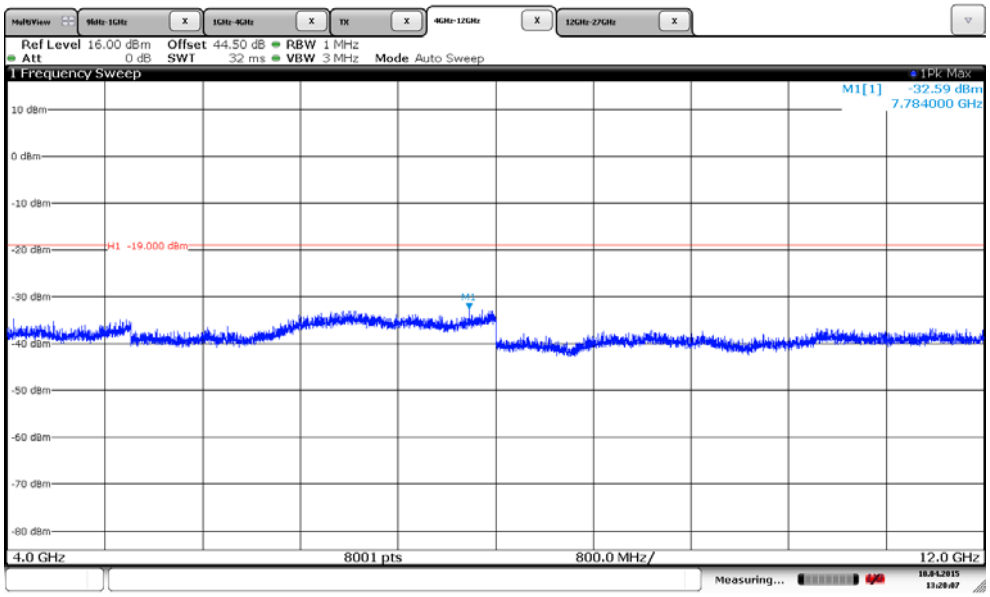


Channel Position M - QPSK / Bandwidth 15.0MHz - 1GHz – 4GHz

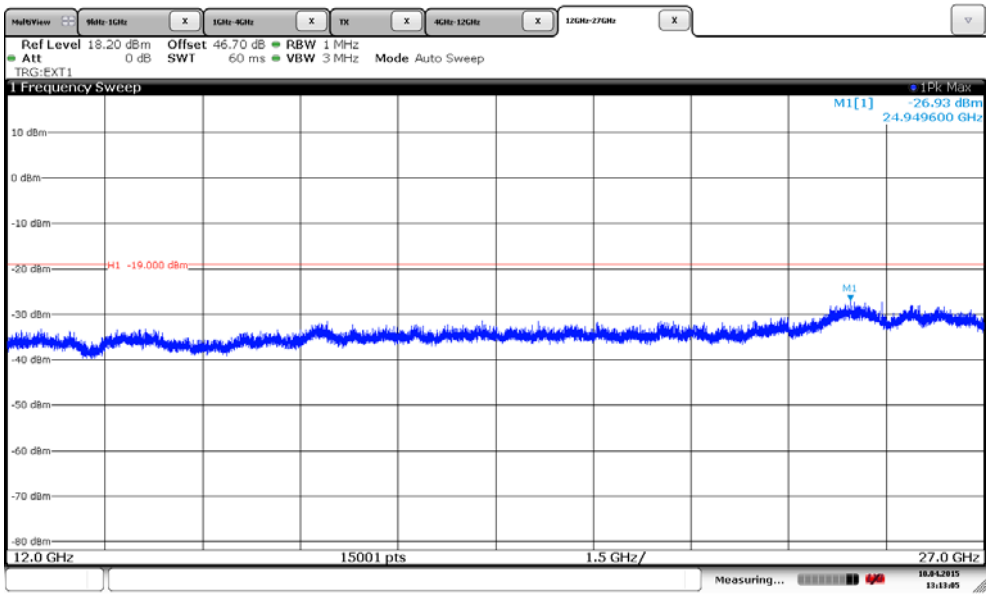


Note: The emission beyond the limit is within the operating frequency

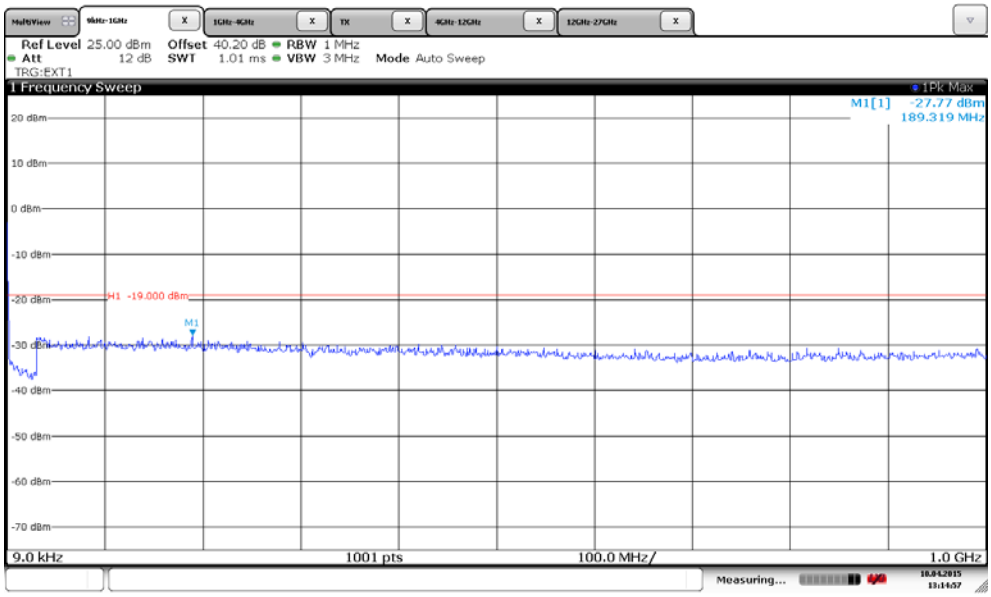
Channel Position M - QPSK / Bandwidth 15.0MHz - 4GHz – 12GHz



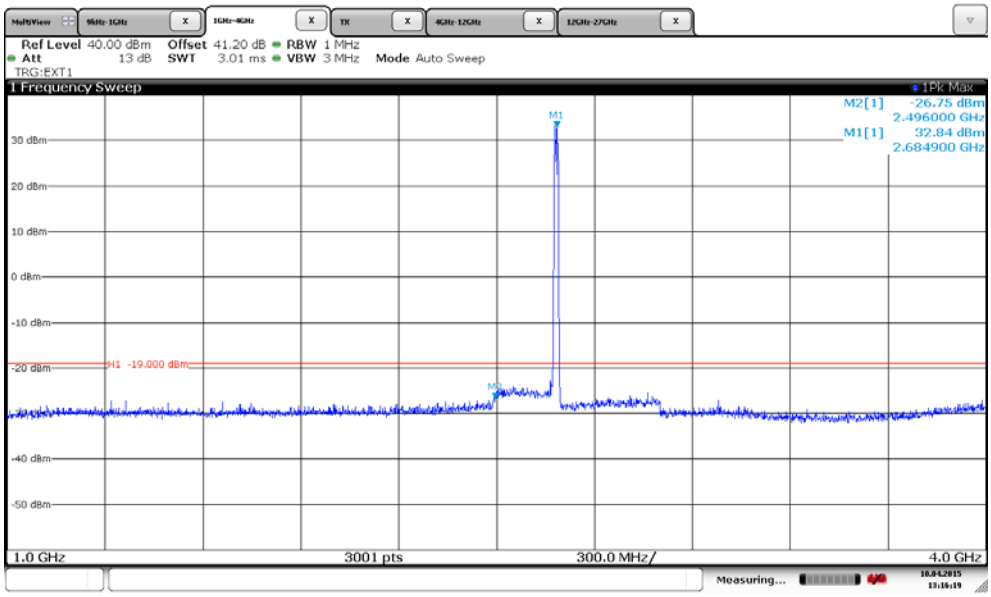
Channel Position M - QPSK / Bandwidth 15.0MHz - 12GHz – 27GHz



Channel Position T - QPSK / Bandwidth 15.0MHz - 9kHz – 1GHz

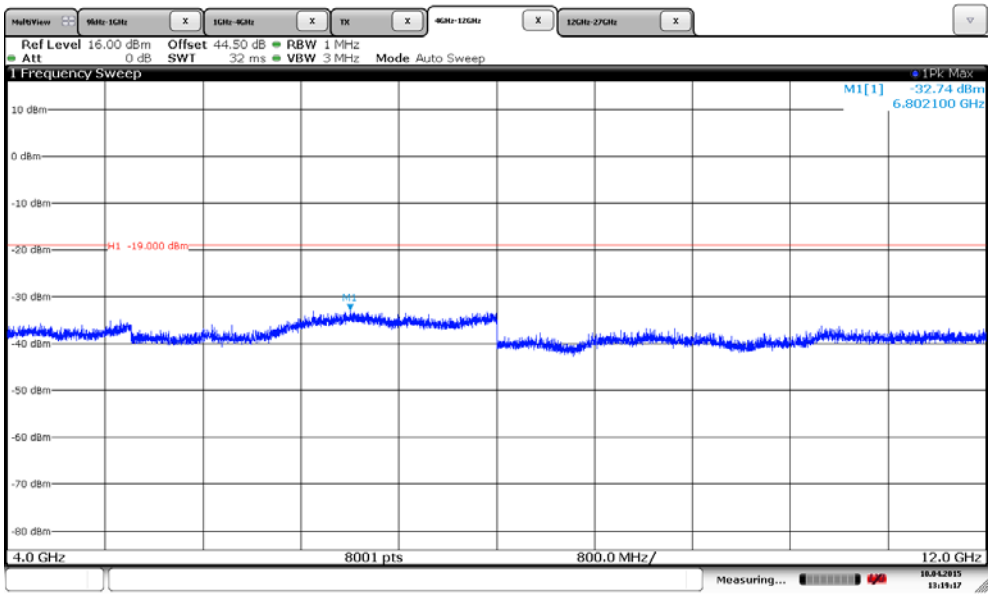


Channel Position T - QPSK / Bandwidth 15.0MHz - 1GHz – 4GHz

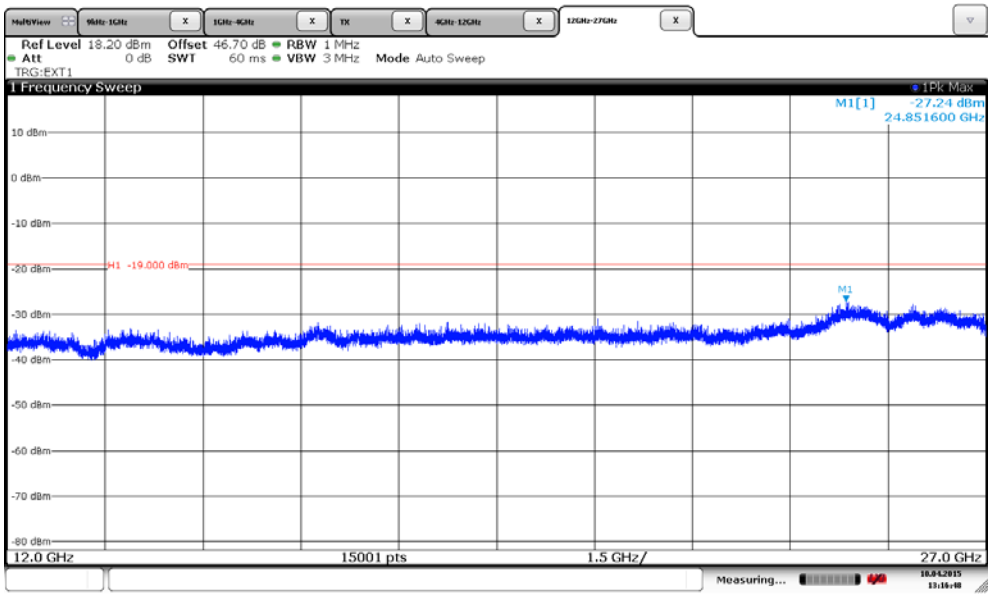


Note: The emission beyond the limit is within the operating frequency

Channel Position T - QPSK / Bandwidth 15.0MHz - 4GHz – 12GHz



Channel Position T - QPSK / Bandwidth 15.0MHz - 12GHz – 27GHz



Configuration L-MIMO-MC 1 (2C)

Maximum Output Power 40.0dBm per port

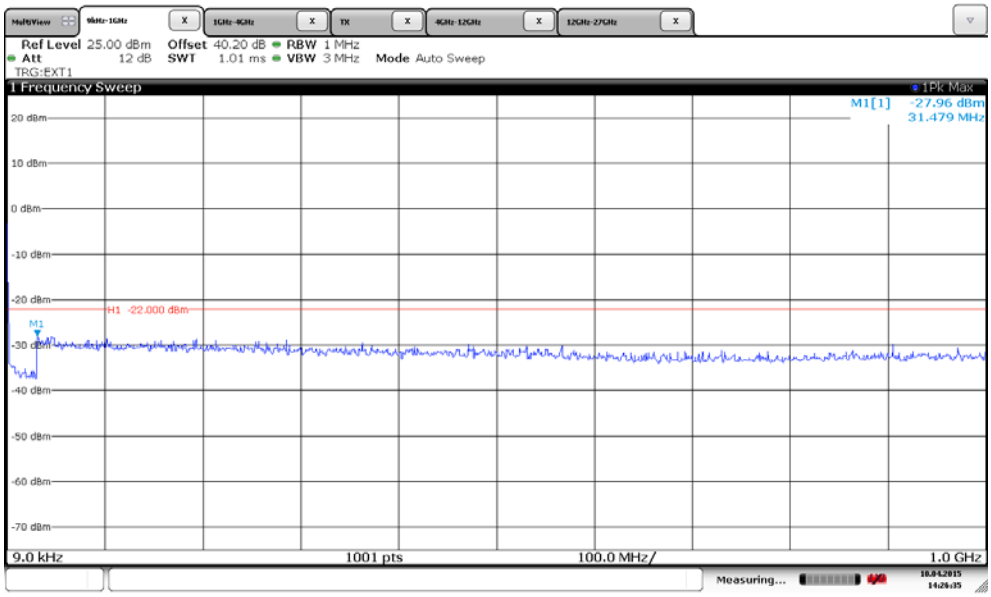
Channel Position	Bandwidth	Channel Frequency
Channel Position B_{RFBW}	10.0MHz	2501.0MHz + 2551.0MHz
Channel Position M_{RFBW}	10.0MHz	2568.0MHz + 2618.0MHz
Channel Position T_{RFBW}	10.0MHz	2635.0MHz + 2685.0MHz

Configuration L-MIMO-MC 1 (2C)

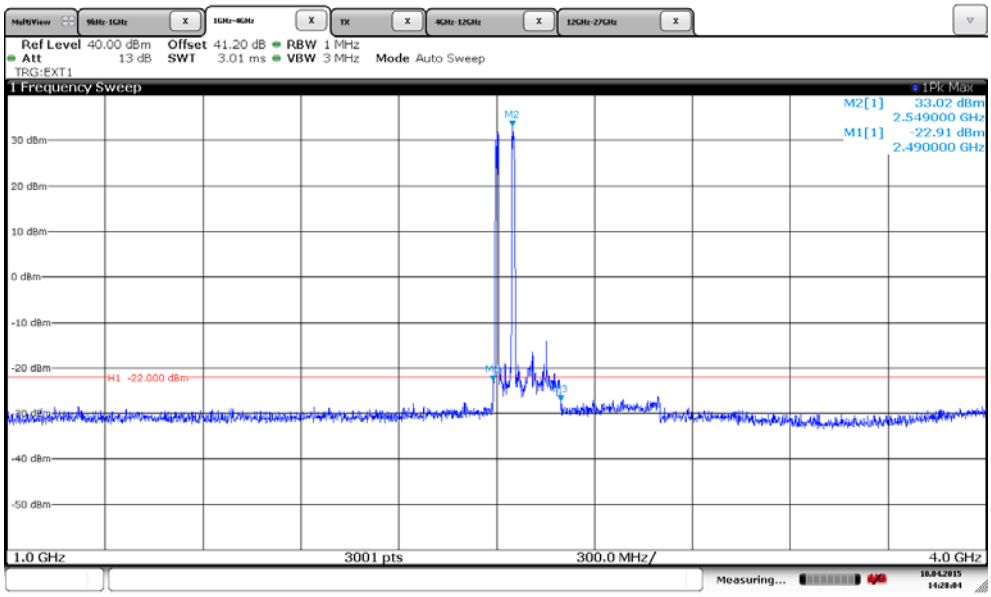
Maximum Output Power 40.0dBm per port

Channel Position	Bandwidth	Channel Frequency
Channel Position B_{RFBW}	15.0MHz	2503.5MHz + 2548.5MHz
Channel Position M_{RFBW}	15.0MHz	2570.5MHz + 2615.5MHz
Channel Position T_{RFBW}	15.0MHz	2637.5MHz + 2682.5MHz

Channel Position B_{RFBW} - QPSK / Bandwidth 10.0MHz - 9kHz – 1GHz

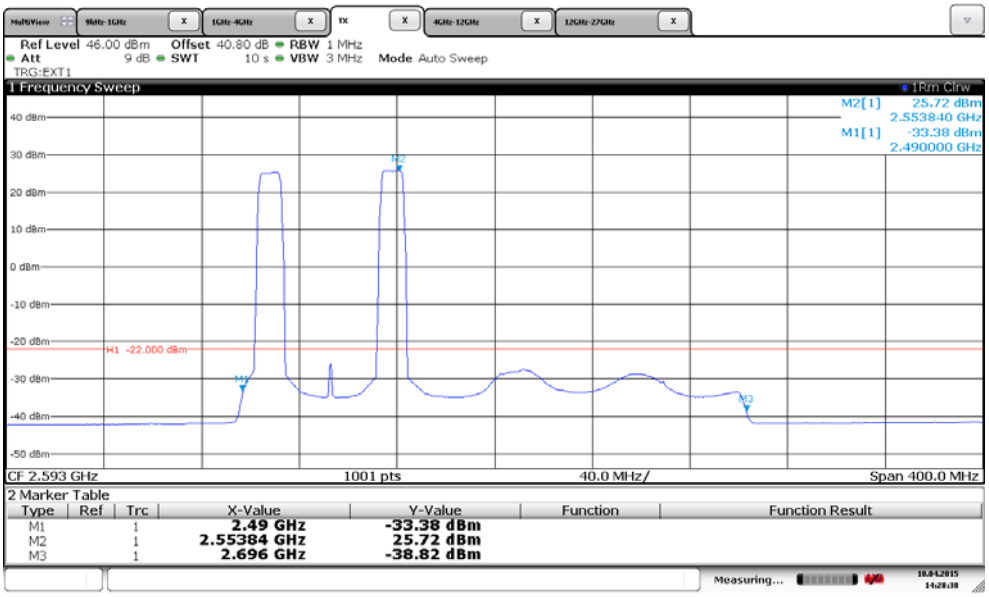


Channel Position B_{RFBW} - QPSK / Bandwidth 10.0MHz - 1GHz – 4GHz

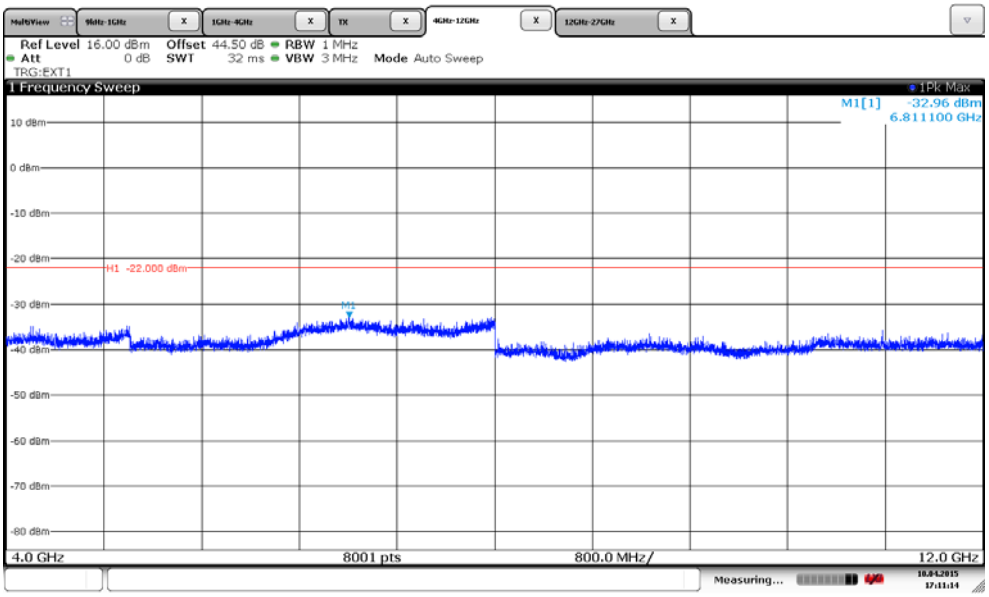


Note: The emission beyond the limit is within the operating frequency

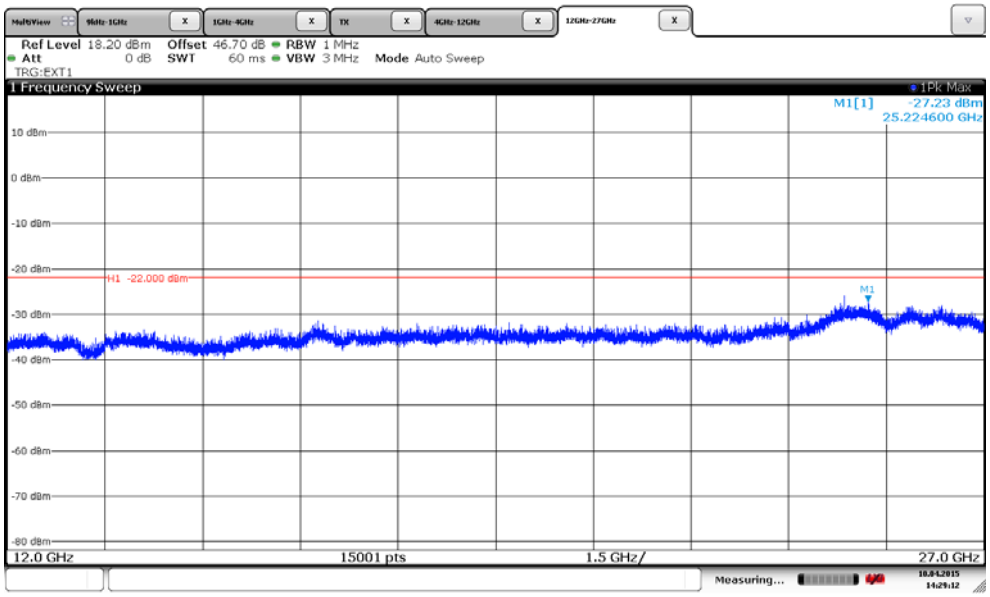
Channel Position B_{RFBW} - QPSK / Bandwidth 10.0MHz – carrier



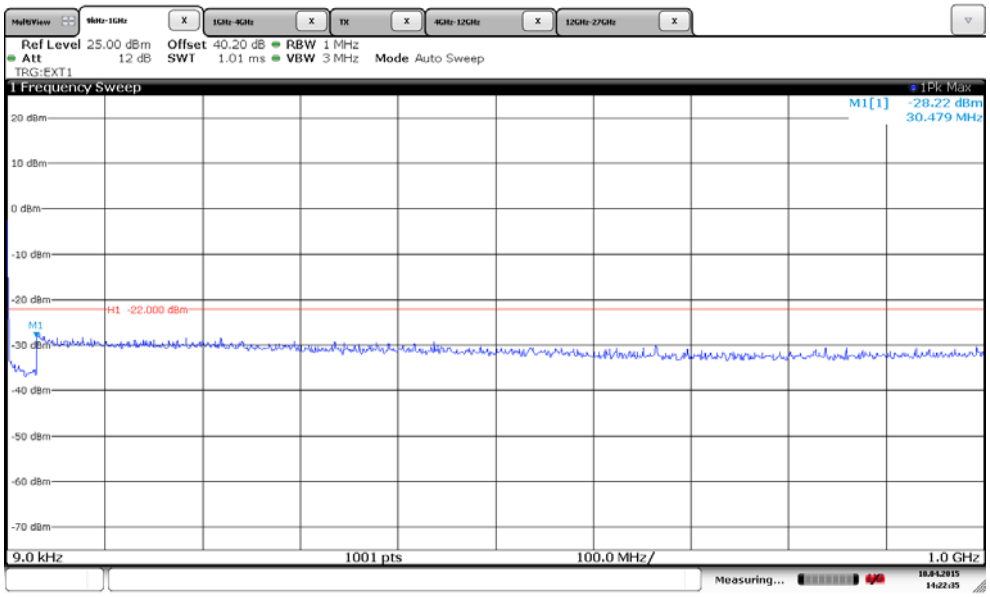
Channel Position B_{RFBW} - QPSK / Bandwidth 10.0MHz - 4GHz – 12GHz



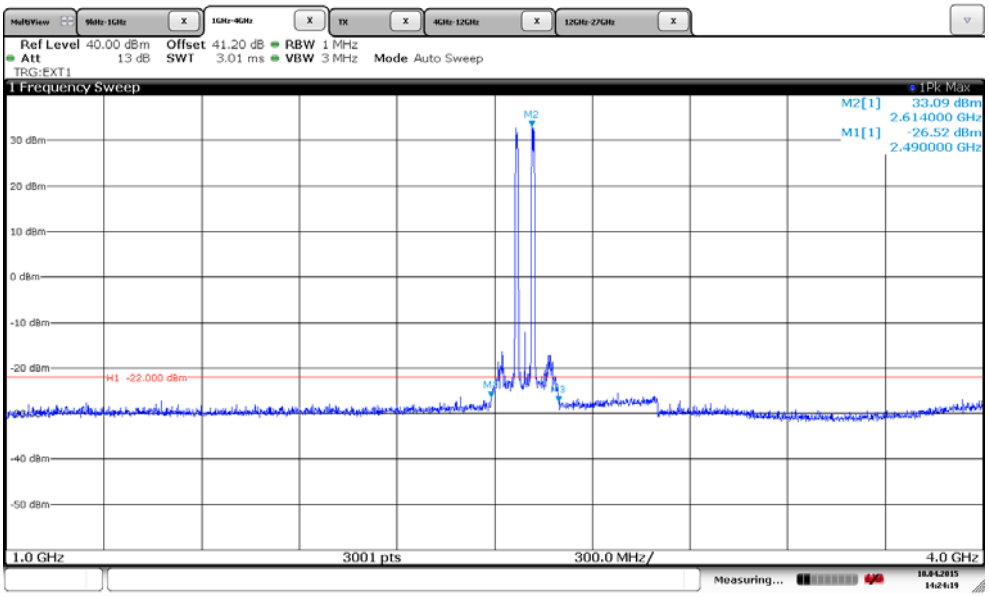
Channel Position B_{RFBW} - QPSK / Bandwidth 10.0MHz - 12GHz – 27GHz



Channel Position M_{RFBW} - QPSK / Bandwidth 10.0MHz - 9kHz – 1GHz

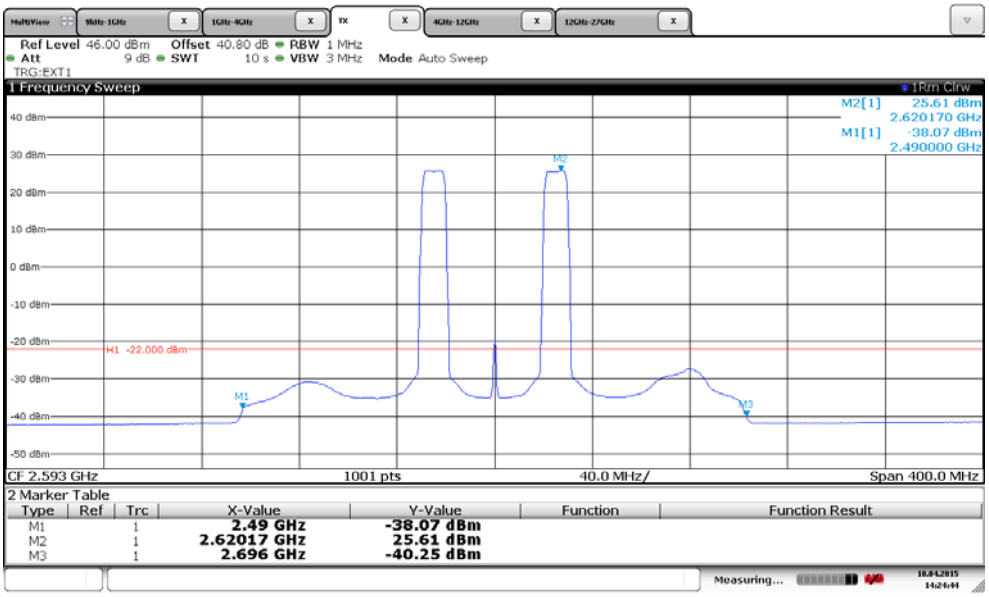


Channel Position M_{RFBW} - QPSK / Bandwidth 10.0MHz - 1GHz – 4GHz

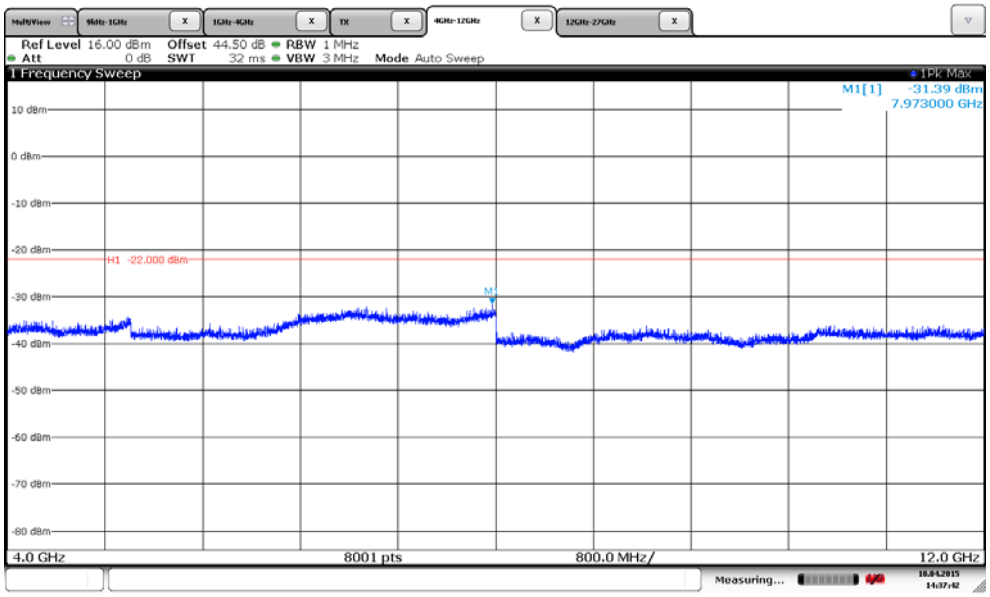


Note: The emission beyond the limit is within the operating frequency

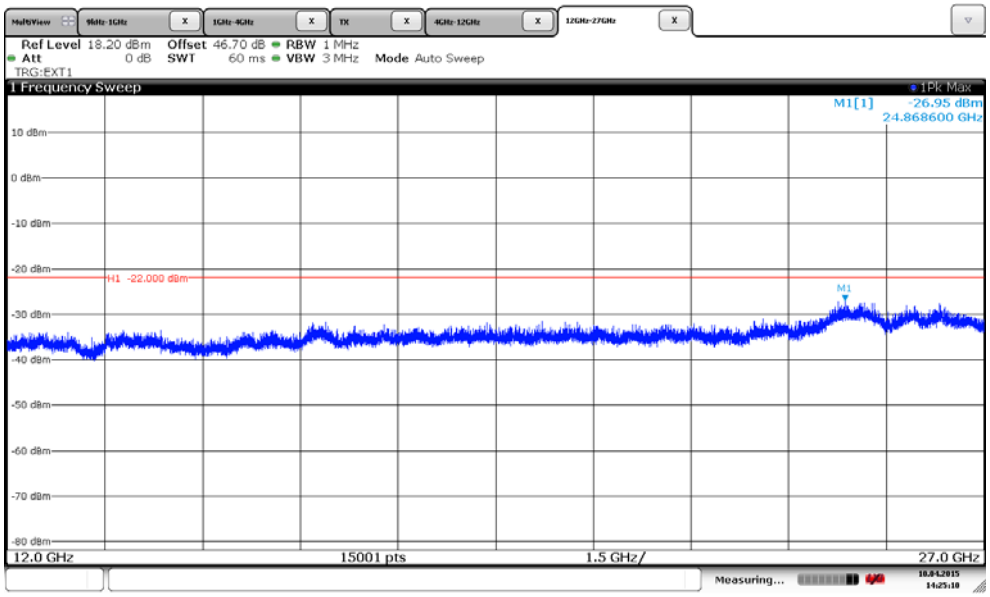
Channel Position M_{RFBW} - QPSK / Bandwidth 10.0MHz - carrier



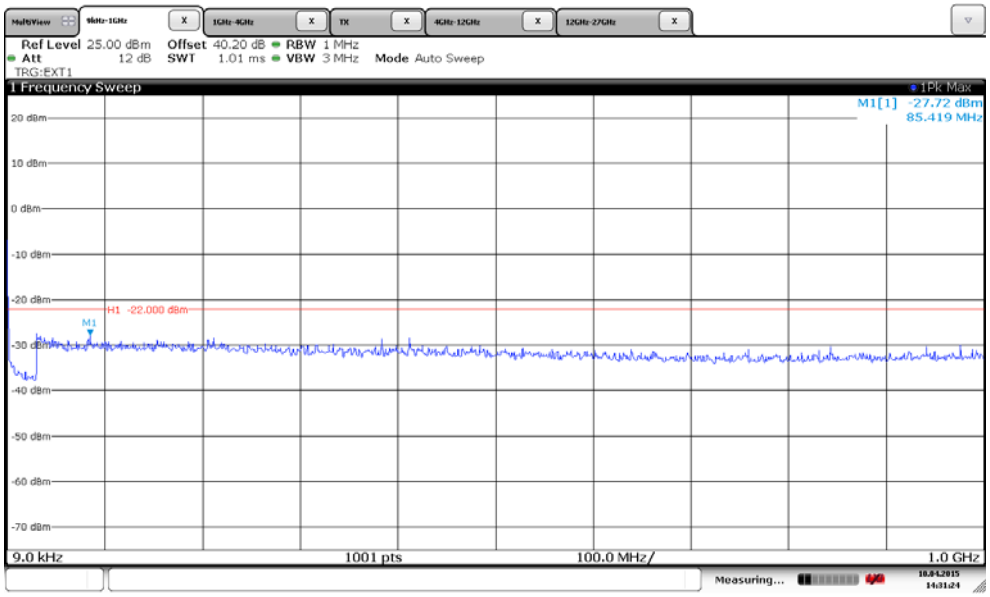
Channel Position M_{RFBW} - QPSK / Bandwidth 10.0MHz - 4GHz – 12GHz



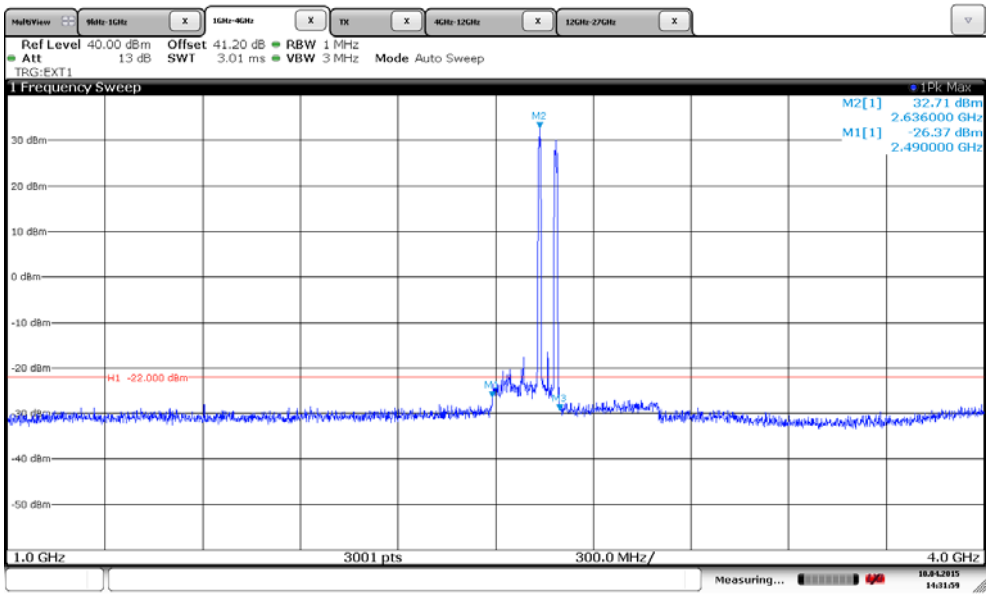
Channel Position M_{RFBW} - QPSK / Bandwidth 10.0MHz - 12GHz – 27GHz



Channel Position T_{RFBW} - QPSK / Bandwidth 10.0MHz - 9kHz – 1GHz

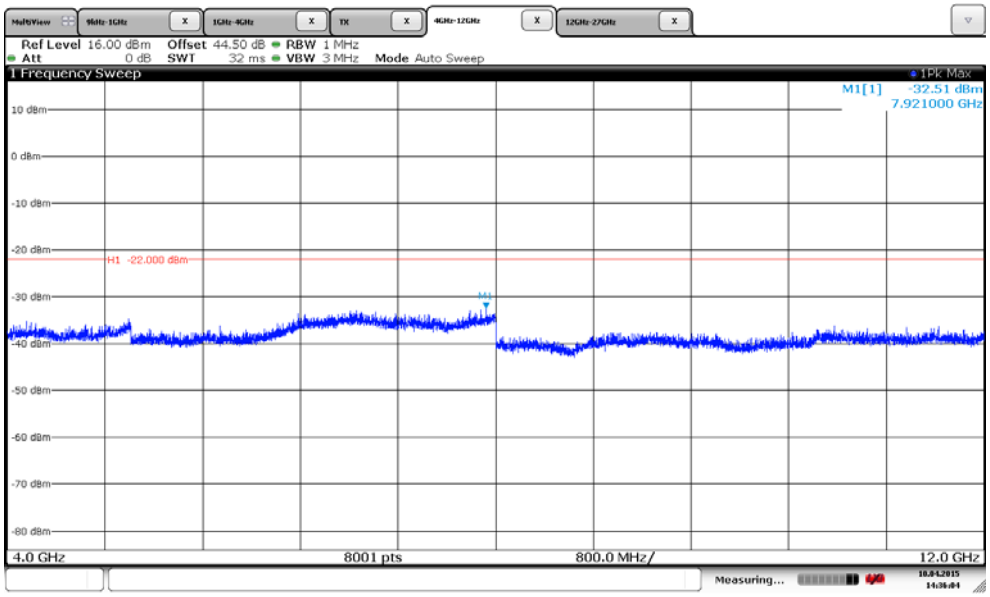


Channel Position T_{RFBW} - QPSK / Bandwidth 10.0MHz - 1GHz – 4GHz

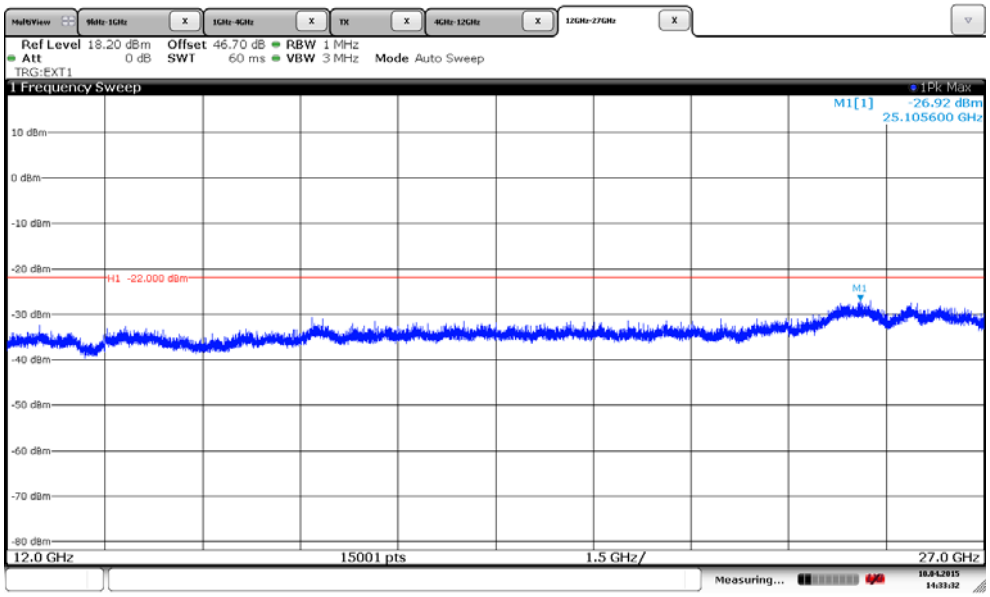


Note: The emission beyond the limit is within the operating frequency

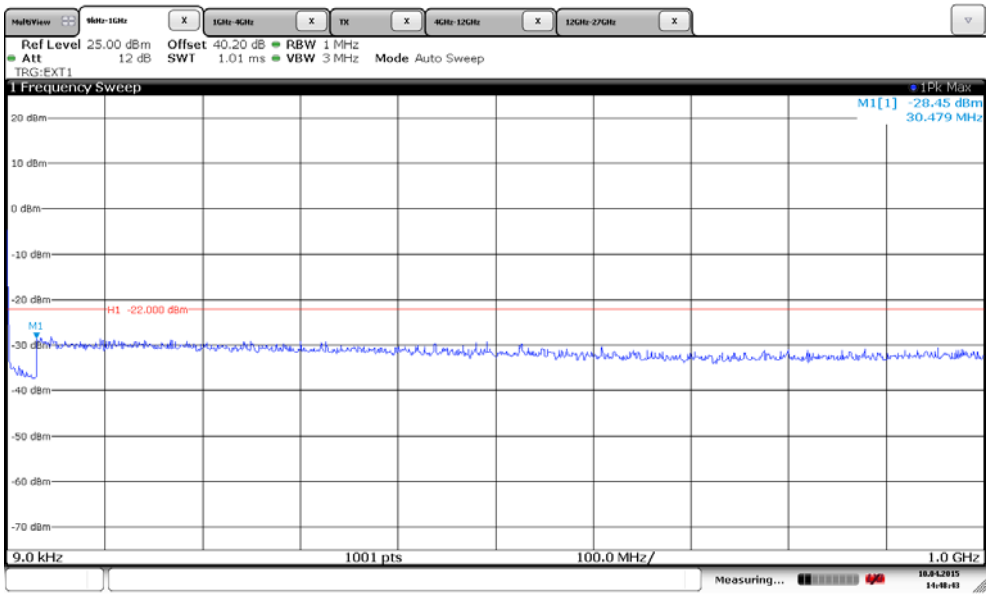
Channel Position T_{RFBW} - QPSK / Bandwidth 10.0MHz - 4GHz – 12GHz



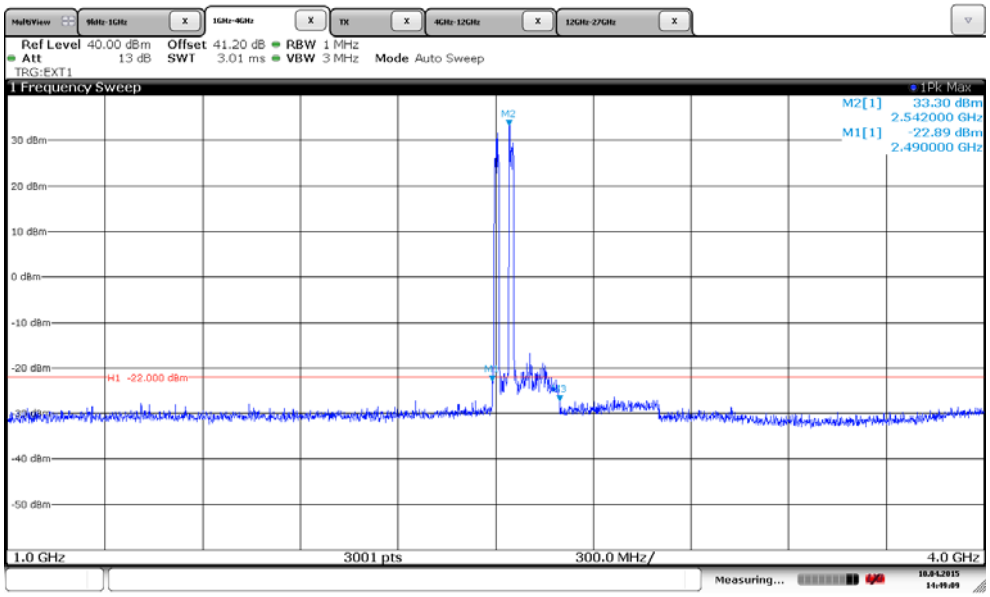
Channel Position T_{RFBW} - QPSK / Bandwidth 10.0MHz - 12GHz – 27GHz



Channel Position B_{RFBW} - QPSK / Bandwidth 15.0MHz - 9kHz – 1GHz

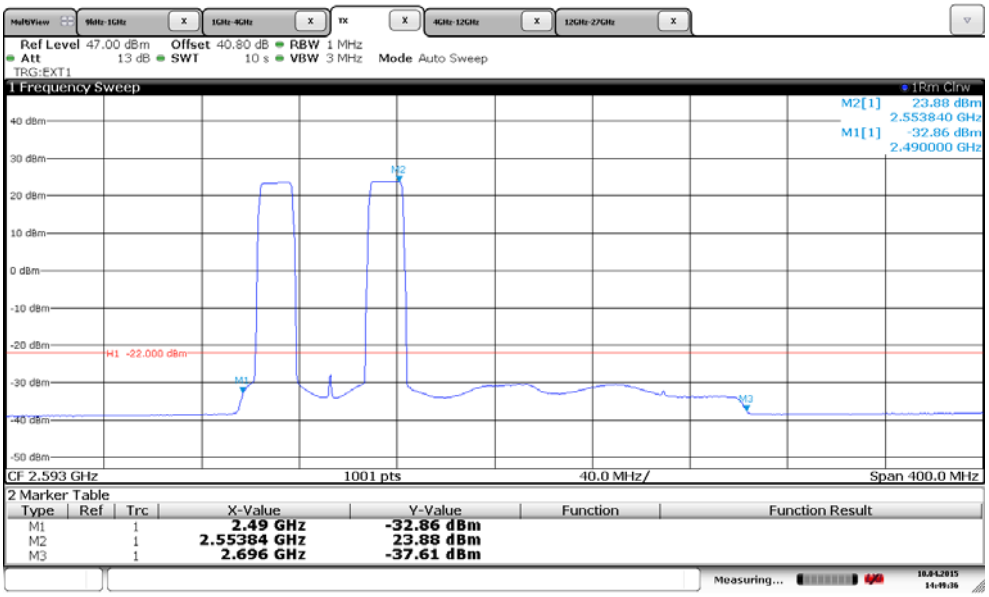


Channel Position B_{RFBW} - QPSK / Bandwidth 15.0MHz - 1GHz – 4GHz



Note: The emission beyond the limit is within the operating frequency

Channel Position B_{RFBW} - QPSK / Bandwidth 15.0MHz – carrier



Channel Position B_{RFBW} - QPSK / Bandwidth 15.0MHz - 4GHz – 12GHz