SPORTON International Inc.
No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
Ph: 886-3-327-3456 / FAX: 886-3-327-0973 / www.sporton.com.tw

FCC RADIO TEST REPORT

Applicant's company	**Cambium Networks Inc.**
Applicant Address	3800 Golf Road, Suite 360 Rolling Meadows, IL 60008, USA
FCC ID	**Z8H89FT0032**
Manufacturer's company	**Cambium Networks Inc.**
Manufacturer Address	3800 Golf Road, Suite 360 Rolling Meadows, IL 60008, USA

Product Name	PMP450b
Brand Name	Cambium Networks
Model Name	PMP450b
Test Rule Part(s)	47 CFR FCC Part 90 Subpart Y
Test Freq. Range	4940 ~ 4990MHz
Received Date	May 05, 2017
Final Test Date	Sep. 14, 2017
Submission Type	Original Equipment

Statement

The test result in this report refers exclusively to the presented test model / sample.

Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.

The measurements and test results shown in this test report were made in accordance with the procedures and found in compliance with the limit given in **ANSI/TIA-603-C-2004** and **47 CFR FCC Part 90 Subpart Y, ANSI C63.26-2015 and KDB971168 D01 Power Meas License Digital Systems v02r02**.

The test equipment used to perform the test is calibrated and traceable to NML/ROC.

Table of Contents

History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FL751045-02	Rev. 01	Initial issue of report	Aug. 30, 2017
FL751045-02	Rev. 02	Modifying the report of Maximum Conducted Output Power, Peak Power Spectral Density, Peak Excursion, Occupied Bandwidth, Emission Mask and Transmitter Conducted Unwanted Emissions for Ant.1 test result.	Sep. 04, 2017
FL751045-02	Rev. 03	Modifying the report of Maximum Conducted Output Power, Peak Power Spectral Density, Peak Excursion, Occupied Bandwidth, Emission Mask and Transmitter Radiated Unwanted Emissions, Frequency Stability for Ant.1 and Ant. 2 test result.	Sep. 08, 2017
FL751045-02	Rev. 04	1. Modifying Appendix A. Test Photos 2. Modifying the report of Transmitter Radiated Unwanted Emissions (1GHz~40GHz) for Ant. 1 and Ant. 2	Sep. 14, 2017
FL751045-02	Rev. 05	Adding standard: ANSI C63.26-2015 and KDB971168 D01 Power Meas License Digital Systems v02r02.	Sep. 15, 2017

1. VERIFICATION OF COMPLIANCE

Product Name	:	PMP450b
Brand Name	:	Cambium Networks
Model Name	:	PMP450b
Applicant	:	Cambium Networks Inc.
Test Rule Part(s)	:	47 CFR FCC Part 90 Subpart Y

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on May 05, 2017 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMC nature.

Cliff Chang

SPORTON INTERNATIONAL INC.

2. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 90 Subpart Y			
Part	**Rule Section**	**Description of Test**	**Result**
4.1	2.1046/90.1215(a)	Maximum Conducted Output Power / Peak Power Spectral Density	Complies
4.2	90.1215	Peak Excursion	Complies
4.3	2.1049/90.210(m)	Occupied Bandwidth / Emission Mask	Complies
4.4	2.1051/90.210(m)	Transmitter Conducted Unwanted Emissions	Complies
4.5	2.1053/90.210(m)	Transmitter Radiated Unwanted Emissions	Complies
4.6	2.1055/90.213(a)	Frequency Stability	Complies

3. GENERAL INFORMATION

3.1. Product Details

Items	Description
Power Type	From PoE
Equipment Category	Fixed Point-to-Point
Modulation	OFDM (BPSK / QPSK / 16QAM / 64QAM)
Channel Bandwidth	5MHz / 20MHz
Occupied Bandwidth	For Ant. 1 and Ant. 2 5MHz: 4.72 MHz 20MHz: 18.32 MHz
Maximum Conducted Output Power	For Ant. 1 and Ant. 2 5MHz: 25.44 dBm 20MHz: 23.95 dBm
Antenna	Ant. 1: 17dBi / Ant. 2: 2dBi

3.2. Antenna Information

Ant.	Port	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	1	-	-	Panel antenna	N/A	17
	2	-	-	Panel antenna	N/A	17
2	1	-	-	Panel antenna	N/A	2
	2	-	-	Panel antenna	N/A	2

Port 1 and Port 2 can be used as transmitting/receiving antenna.

Port 1 and Port 2 could transmit/receive simultaneously.

3.3. Table for Carrier Frequencies

Channel Bandwidth	Carrier Frequency (MHz)
5 MHz	4942.5
	4947.5
	4952.5
	4957.5
	4962.5
	4967.5
	4972.5
	4977.5
	4982.5
	4987.5
20 MHz	4950
	4955
	4960
	4965
	4970
	4975
	4980

3.4. Table for Test Modes

Investigation has been done on all the possible configurations for searching the worst cases (All modulation modes and different data rates would be evaluated). The following table is a list of the test modes shown in this test report.

Test Items	Channel Bandwidth	Modulation Mode	Antenna
Maximum Conducted Output Power	5MHz / 20MHz	QPSK-6Mbps / QPSK-6Mbps	1 / 2
Peak Power Spectral Density	5MHz / 20MHz	QPSK-6Mbps / QPSK-6Mbps	1 / 2
Peak Excursion	5MHz / 20MHz	QPSK-6Mbps / QPSK-6Mbps	1 / 2
Occupied Bandwidth	5MHz / 20MHz	QPSK-6Mbps / QPSK-6Mbps	1 / 2
Emission Mask	5MHz / 20MHz	QPSK-6Mbps / QPSK-6Mbps	1 / 2
Transmitter Conducted Unwanted Emissions	5MHz / 20MHz	QPSK-6Mbps / QPSK-6Mbps	1 / 2
Transmitter Radiated Unwanted Emissions	5MHz / 20MHz	QPSK-6Mbps / QPSK-6Mbps	1 / 2
Frequency Stability	5MHz / 20MHz	QPSK-6Mbps / QPSK-6Mbps	1 / 2

Note: 1. PoE information as below:

The EUT was powered by PoE, and the PoE was for measurement only, would not be marked.

Support Unit	Brand Name	Model Name
PoE	Cambium Networks	G1021-300-0265

The following test modes were performed for all tests:

For Radiated Emission test:

1. The EUT with ant. 1 can only be use in Y axis
2. The EUT was performed at X axis, Y axis and Z axis position for Radiated emission test, and the worst case was found at Z axis for EUT with ant. 2. So the measurement will follow this same test configuration.

Mode 1. EUT in Y axis with ant. 1

Mode 2. EUT in Z axis with ant. 2

3.5. Table for Testing Locations

Test Site Location				
Address:	No.8, Lane 724, Bo-ai St., Jhubei City, Hsinchu County 302, Taiwan, R.O.C.			
TEL:	886-3-656-9065			
FAX:	886-3-656-9085			
Test Site No.	**Site Category**	**Location**	**FCC Designation No.**	**IC File No.**
03CH01-CB	SAC	Hsin Chu	TW0006	IC 4086D
TH01-CB	OVEN Room	Hsin Chu	-	-

Open Area Test Site (OATS); Semi Anechoic Chamber (SAC).

3.6. Table for Supporting Units

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	DoC
PoE	Cambium Networks	G1021-300-0265	N/A

3.7. Table for Parameters of Test Software Setting

During testing, Channel and Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

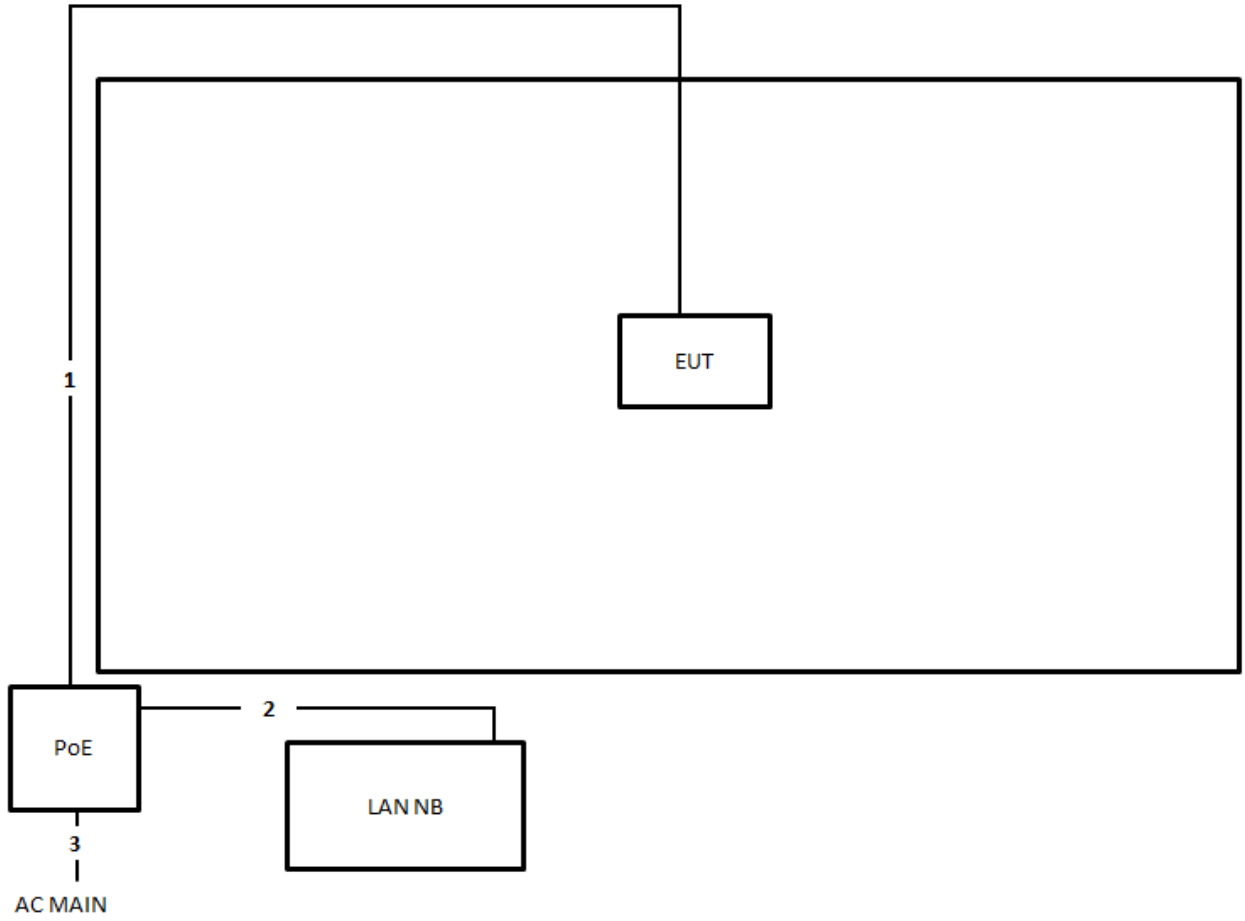
For Ant. 1 and Ant. 2

Test Software Version:	Telnet			
Frequency	4942.5MHz	4967.5MHz	4987.5MHz	Data Rate
5MHz	21/20	21/20	21/20	6Mbps
Frequency	4950MHz	4965MHz	4980MHz	Data Rate
20MHz	25/24	25/24	25/24	6Mbps

3.8. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

3.9. Test Configurations



Item	Connection	Shielded	Length
1	RJ-45 cable	No	10m
2	RJ-45 cable	No	1.5m
3	Power cable	No	0.7m

4. TEST RESULT

4.1. Maximum Conducted Output Power and Peak Power Spectral Density Measurement

4.1.1. Limit

Maximum Conducted Output Power*:*

The transmitting power of stations operating in the 4940-4990 MHz band must not exceed the maximum limits in this table.

Channel Bandwidth (MHz)	Low Power Device Peak Transmitter Power (dBm)	High Power Device Peak Transmitter Power (dBm)
1	7.0	20.0
5	14.0	27.0
10	17.0	30.0
15	18.8	31.8
20	20.0	33.0

Peak Power Spectral Density:

(2) High power devices are also limited to a peak power spectral density of 21 dBm per one MHz. High power devices using channel bandwidths other than those listed above are permitted; however, they are limited to peak power spectral density of 21 dBm/MHz. If transmitting antennas of directional gain greater than 9 dBi are used, both the maximum onducted output power and the peak power spectral density should be reduced by the amount in decibels that the directional gain of the antenna exceeds 9 dBi. However, high power point-to-point and point-to-multipoint operations (both fixed and temporary-fixed rapid deployment) may employ transmitting antennas with directional gain up to 26 dBi without any corresponding reduction in the maximum conducted output power or spectral density.

Maximum Conducted Output Power Definition:

The maximum conducted output power is measured as a conducted emission over any interval of continuous transmission using instrumentation calibrated in terms of an RMS-equivalent voltage. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, etc., so as to obtain a true maximum conducted output power measurement conforming to the definitions in this paragraph for the emission in question.

4.1.2. Measuring Instruments and Setting

Power Meter Parameter	Setting
Bandwidth	50MHz bandwidth is greater than the EUT emission bandwidth
Detector	Average

Spectrum Parameters	Setting
Detector	Peak
Center Frequency	Low / middle / high channels
RBW / VBW	1MHz / 3MHz

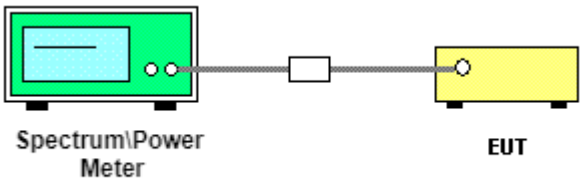
4.1.3. Test Procedures for Maximum Conducted Output Power

Using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since this measurement is made only during the ON time of the transmitter, no duty cycle correction is required.

4.1.4. Test Procedures for Peak Power Density

1. The EUT transmitter output was connected through an appropriate 50 ohm attenuator to a spectrum analyzer. Resolution bandwidth was set to 1MHz and video bandwidth was set to a value greater than the resolution bandwidth. Instrument limited resolution bandwidth less than channel emission bandwidth; so as to obtain a true peak measurement shall be calculated by total channel power within channel bandwidth.
2. Peak search was used to find peak power spectral density within channel bandwidth and the spectrum analyzer integrated measurement plot was taken.

4.1.5. Test Setup Layout



4.1.6. Test Deviation

There is no deviation with the original standard.

4.1.7. Test Result of Maximum Conducted Output Power

Temperature	22°C	Humidity	54%
Test Engineer	Gino Huang	Test Date	Aug. 29, 2017~Sep. 07, 2017

For Test Mode 1 and Mode 2:

5MHz Channel Bandwidth Mode

Frequency	Conducted Output Power (dBm)	Conducted Output Power (dBm)	Total Output Power (dBm)	Max. Limit (dBm)	Result
	Port 1	Port 2			
4942.5MHz	22.05	21.93	25.03	27.00	Complies
4967.5MHz	22.36	22.11	25.27	27.00	Complies
4987.5MHz	22.53	22.27	25.44	27.00	Complies

20MHz Channel Bandwidth Mode

Frequency	Conducted Output Power (dBm)	Conducted Output Power (dBm)	Total Conducted Peak Power (dBm)	Max. Limit (dBm)	Result
	Port 1	Port 2			
4950MHz	20.77	20.62	23.74	33.00	Complies
4965MHz	20.93	20.78	23.90	33.00	Complies
4980MHz	20.92	20.88	23.95	33.00	Complies

4.1.8. Test Result of Peak Power Spectral Density (PSD)

Temperature	22°C	Humidity	54%
Test Engineer	Gino Huang		

For Test Mode 1 and Mode 2:

5MHz Channel Bandwidth Mode

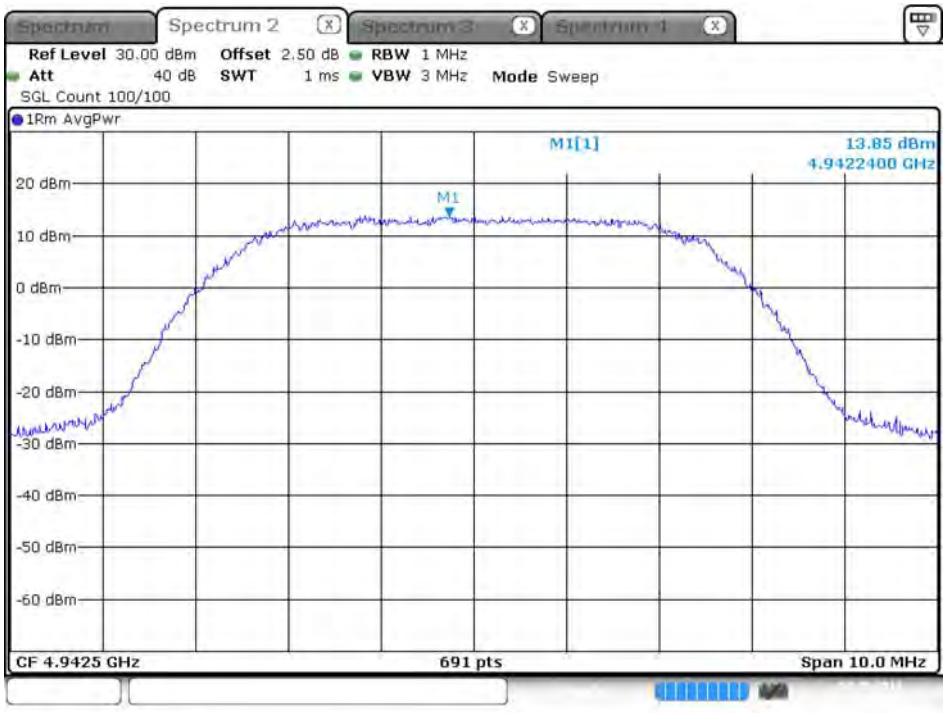
Frequency	Power Density (dBm/MHz)	Power Density (dBm/MHz)	Total Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
	Port 1	Port 2			
4942.5MHz	13.85	13.58	20.26	21.00	Complies
4967.5MHz	14.40	14.28	20.86	21.00	Complies
4987.5MHz	14.35	14.39	20.89	21.00	Complies

20MHz Channel Bandwidth Mode

Frequency	Power Density (dBm/MHz)	Power Density (dBm/MHz)	Total Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
	Port 1	Port 2			
4950MHz	8.56	8.64	13.16	21.00	Complies
4965MHz	8.71	8.64	13.23	21.00	Complies
4980MHz	8.85	8.73	13.33	21.00	Complies

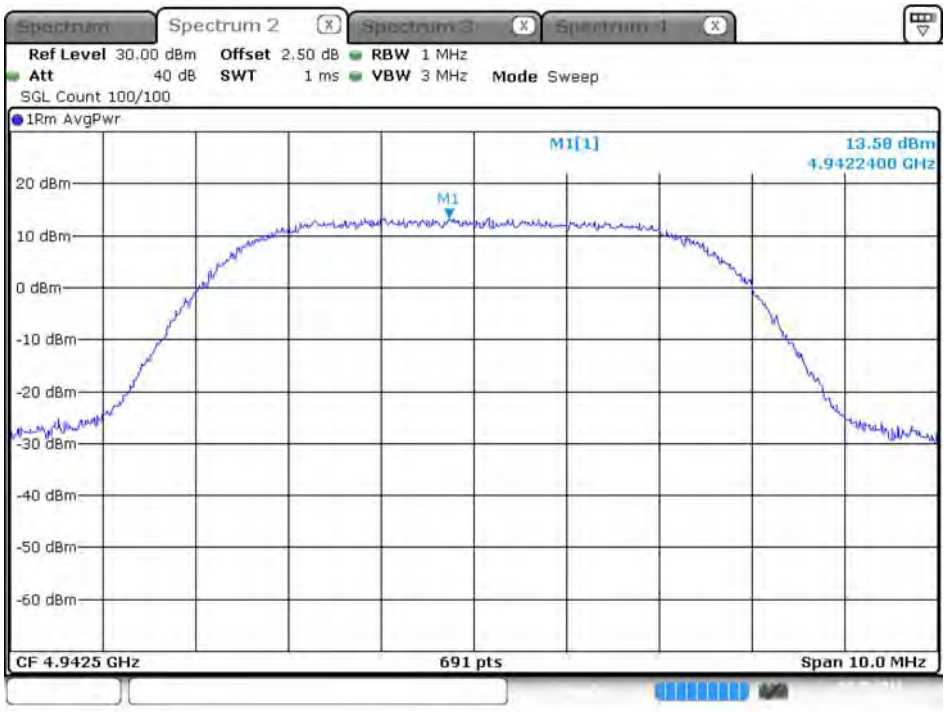
For Test Mode 1 and Mode 2:

Peak Power Spectral Density (5MHz BW Mode) – 4942.5MHz / Port 1



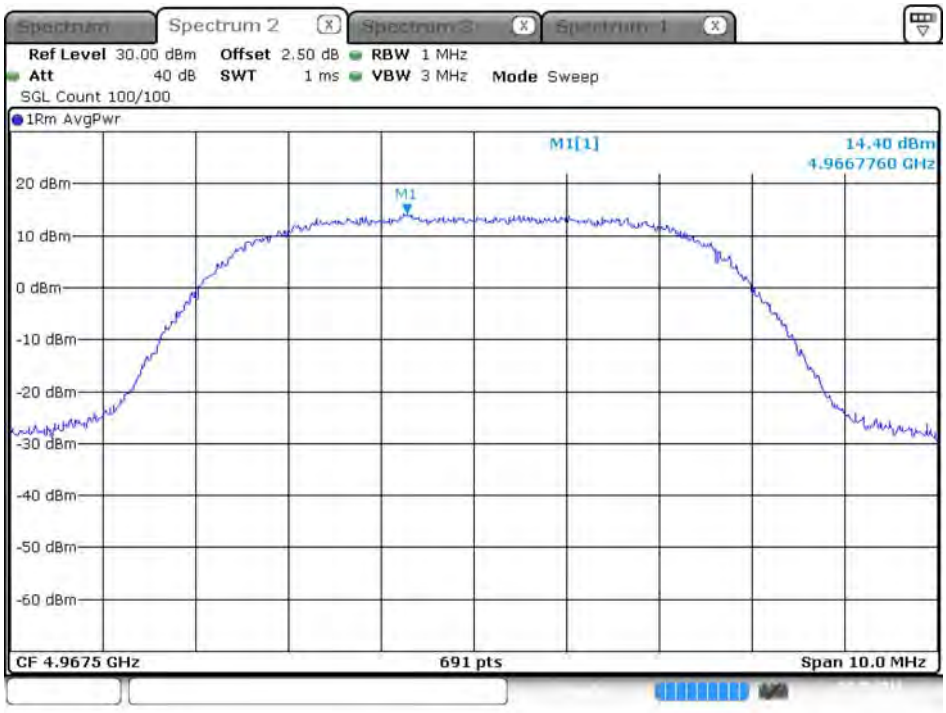
Date: 7.SEP.2017 14:28:33

Peak Power Spectral Density (5MHz BW Mode) – 4942.5MHz / Port 2



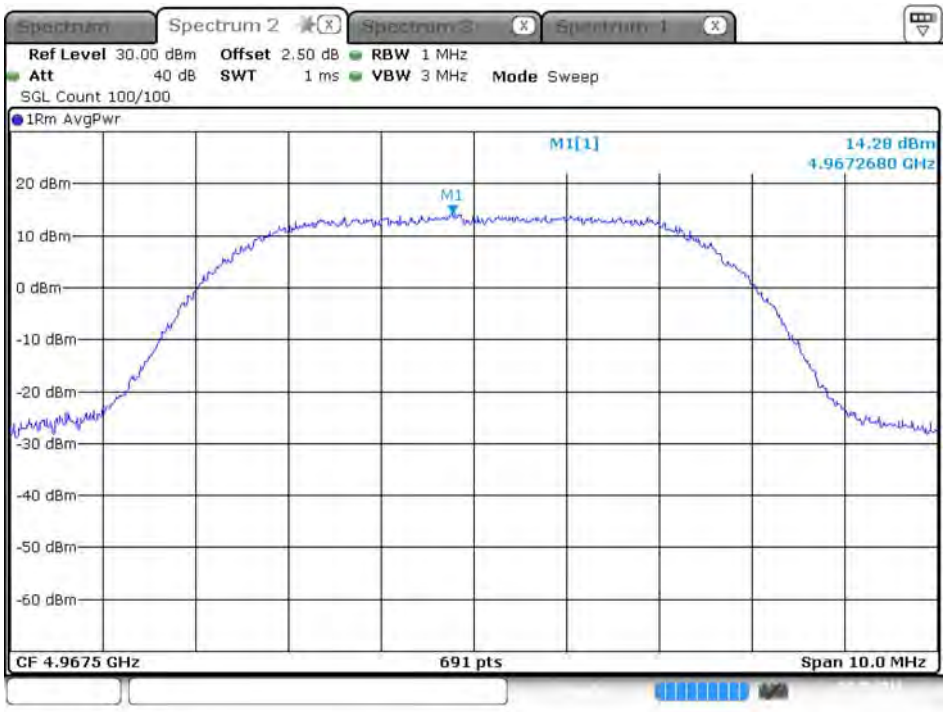
Date: 7.SEP.2017 14:31:17

Peak Power Spectral Density (5MHz BW Mode) – 4967.5MHz / Port 1



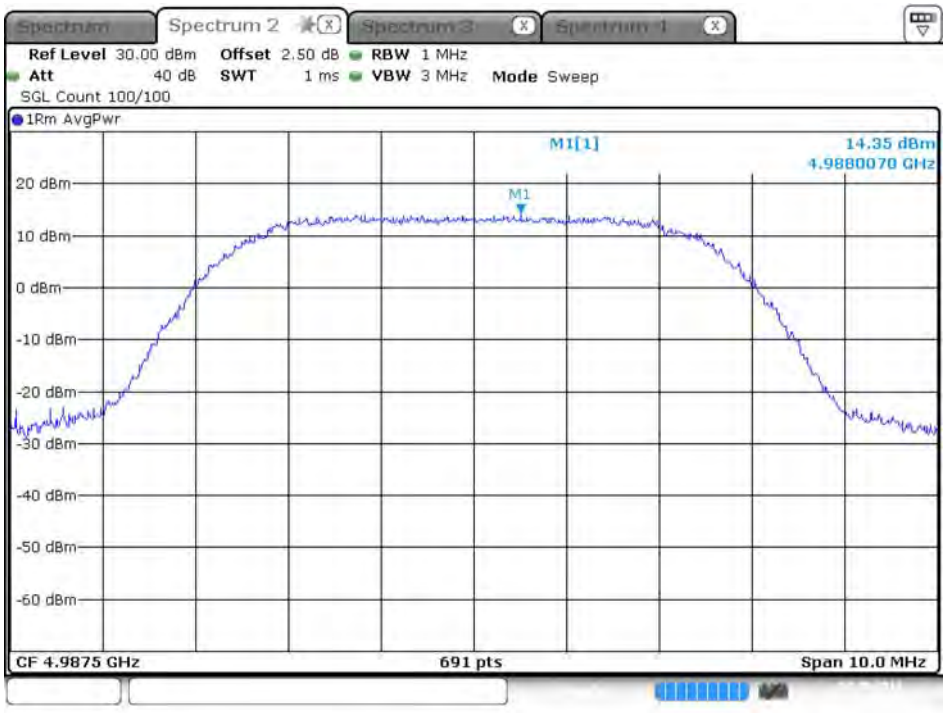
Date: 7.SEP.2017 14:35:00

Peak Power Spectral Density (5MHz BW Mode) – 4967.5MHz / Port 2



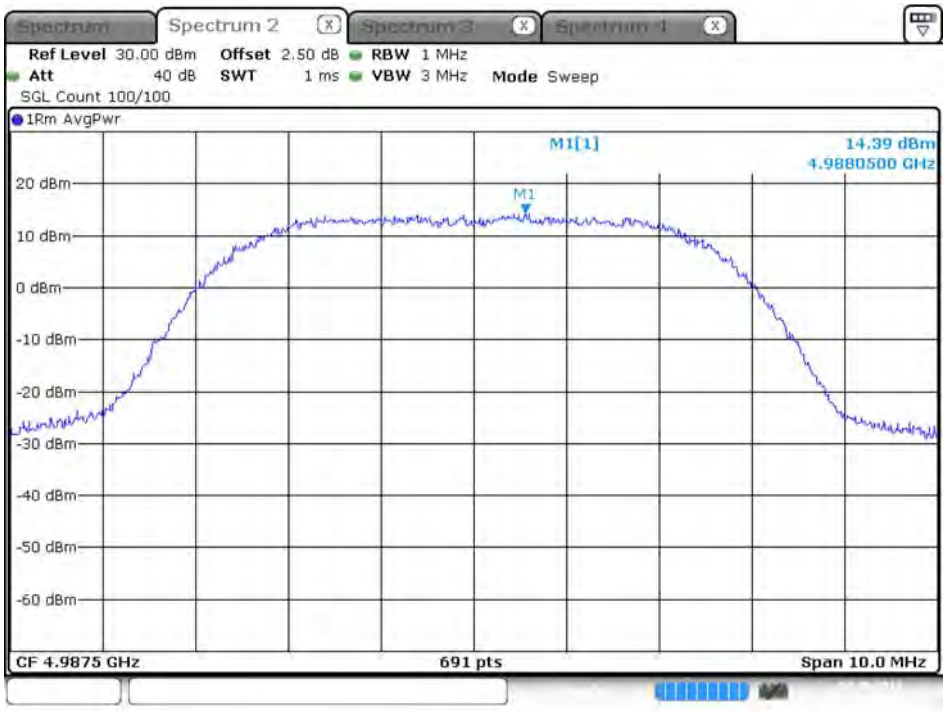
Date: 7.SEP.2017 14:34:29

Peak Power Spectral Density (5MHz BW Mode) – 4987.5MHz / Port 1



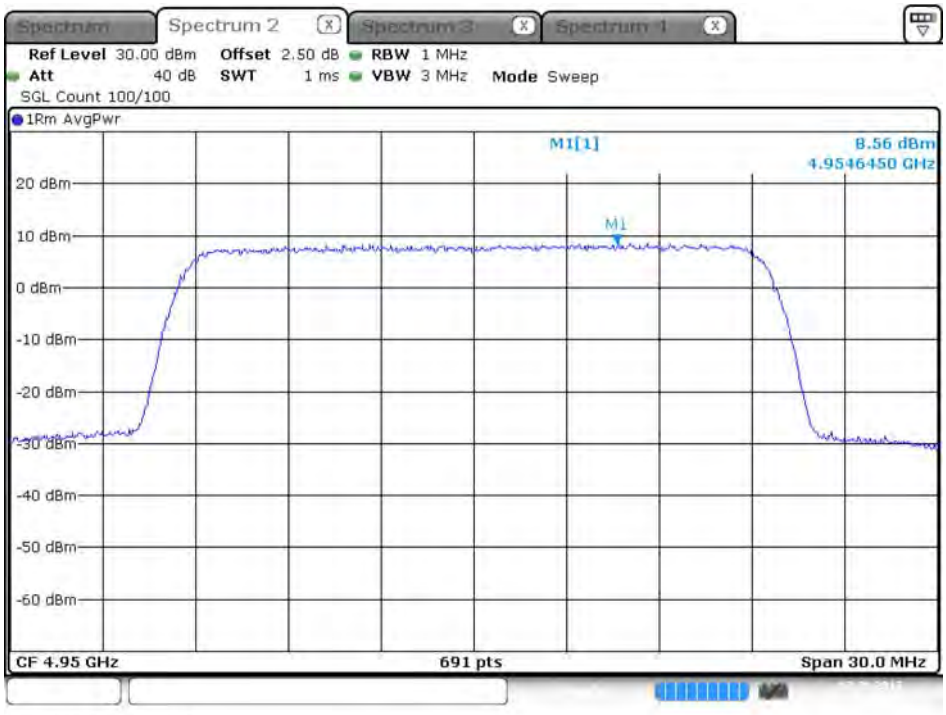
Date: 7.SEP.2017 14:44:28

Peak Power Spectral Density (5MHz BW Mode) – 4987.5MHz / Port 2



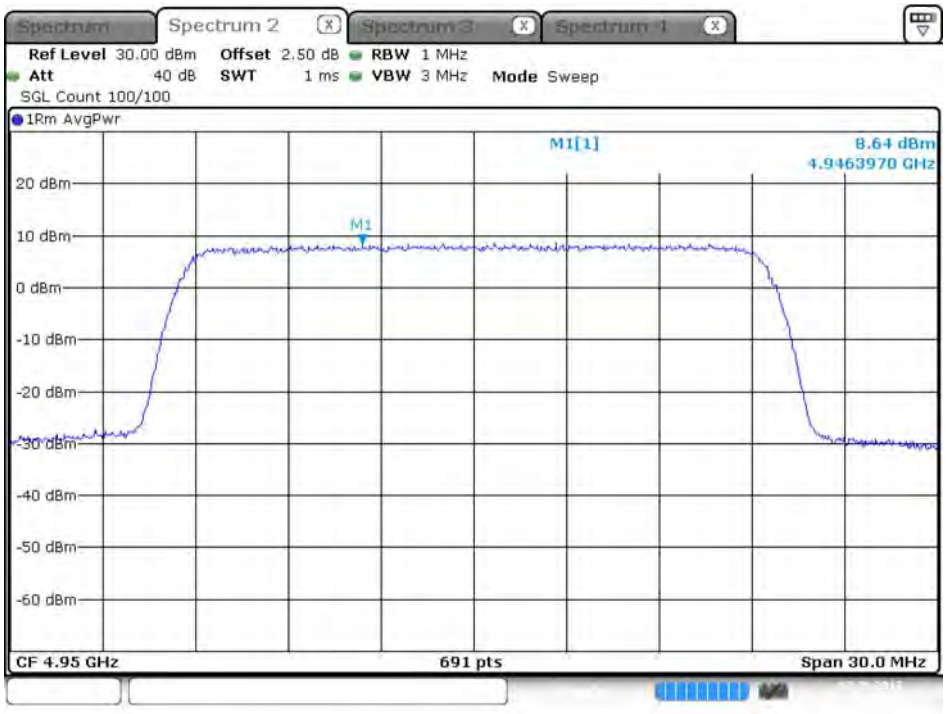
Date: 7.SEP.2017 14:45:04

Peak Power Spectral Density (20MHz BW Mode) – 4950MHz / Port 1



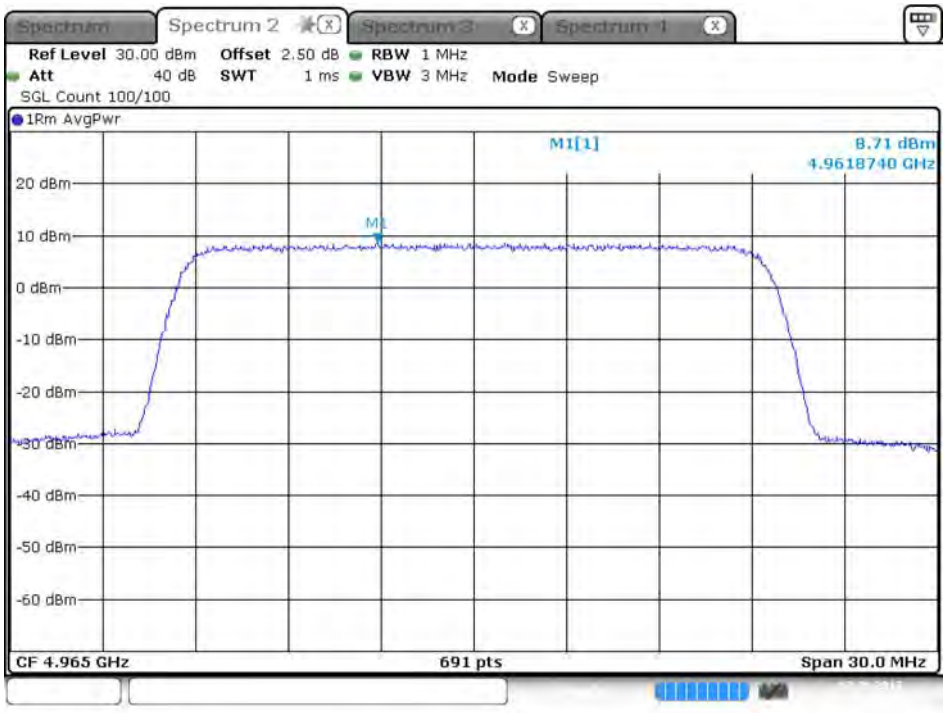
Date: 7.SEP.2017 15:23:33

Peak Power Spectral Density (20MHz BW Mode) – 4950MHz / Port 2



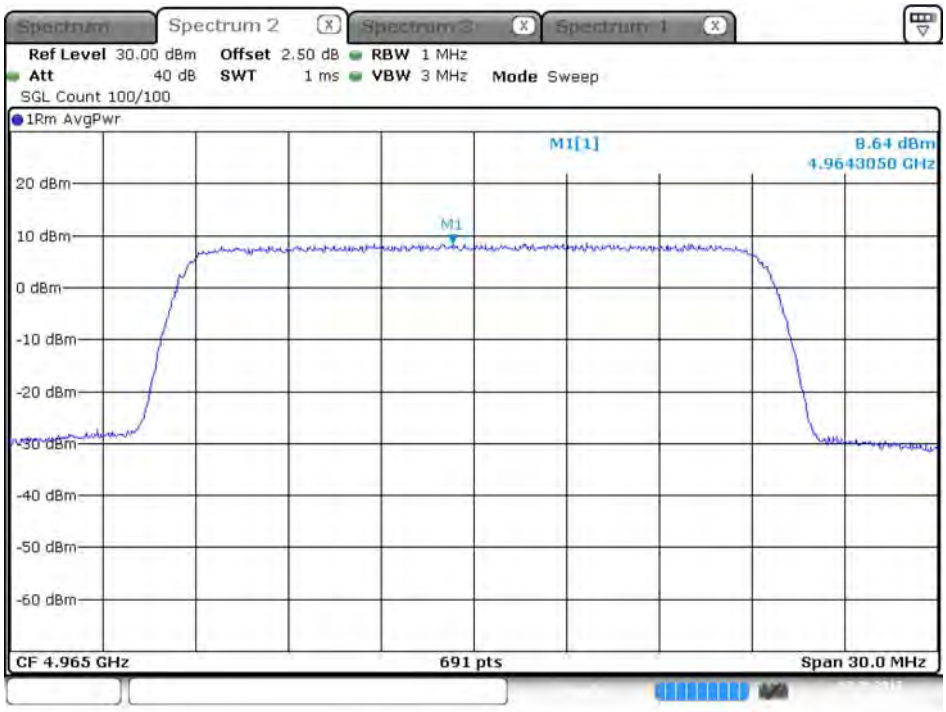
Date: 7.SEP.2017 15:23:14

Peak Power Spectral Density (20MHz BW Mode) – 4965MHz / Port 1



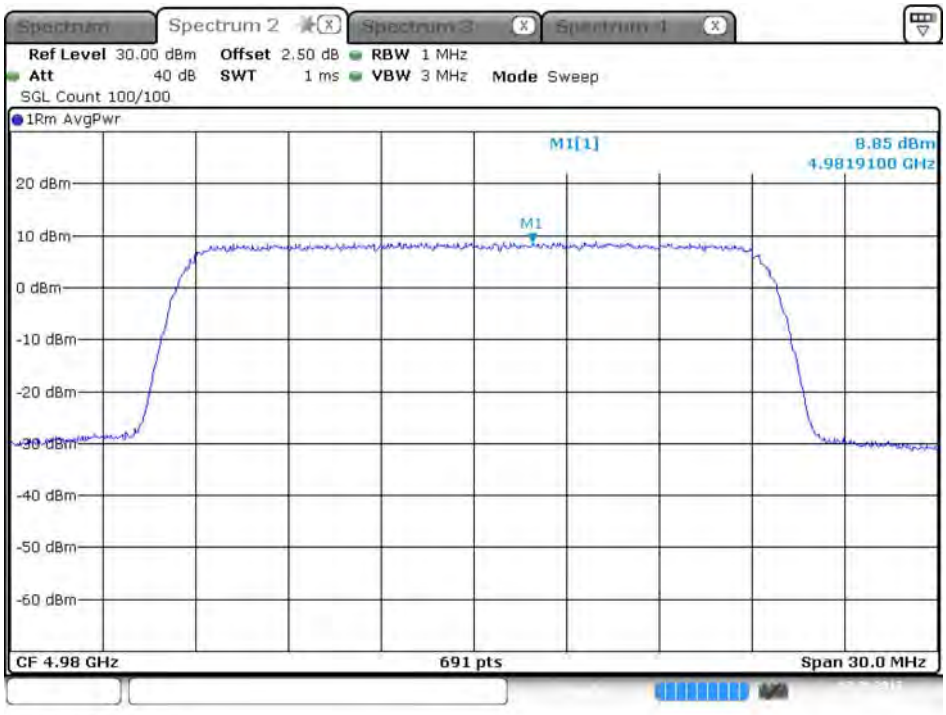
Date: 7.SEP.2017 15:25:51

Peak Power Spectral Density (20MHz BW Mode) – 4965MHz / Port 2



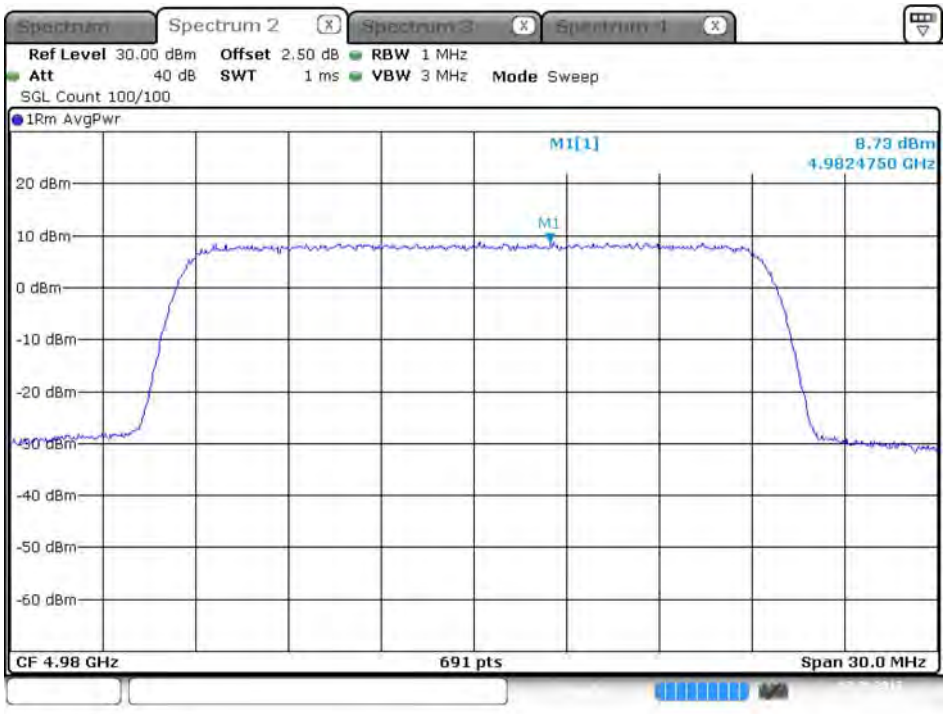
Date: 7.SEP.2017 15:26:10

Peak Power Spectral Density (20MHz BW Mode) – 4980MHz / Port 1



Date: 7.SEP.2017 15:28:09

Peak Power Spectral Density (20MHz BW Mode) – 4980MHz / Port 2



Date: 7.SEP.2017 15:28:27

4.2. Peak Excursion Measurement

4.2.1. Limit

The ratio of the peak excursion of the modulation envelope to the maximum conducted output power shall not exceed 13 dB.

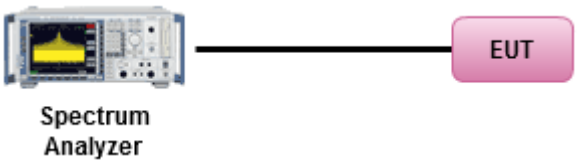
4.2.2. Measuring Instruments

Refer a test equipment and calibration data table in this test report.

4.2.3. Test Procedures

Testing a single output port is sufficient to demonstrate compliance with the peak excursion.

4.2.4. Test Setup Layout



4.2.5. Test Deviation

There is no deviation with the original standard.

4.2.6. Test Result of Peak Excursion

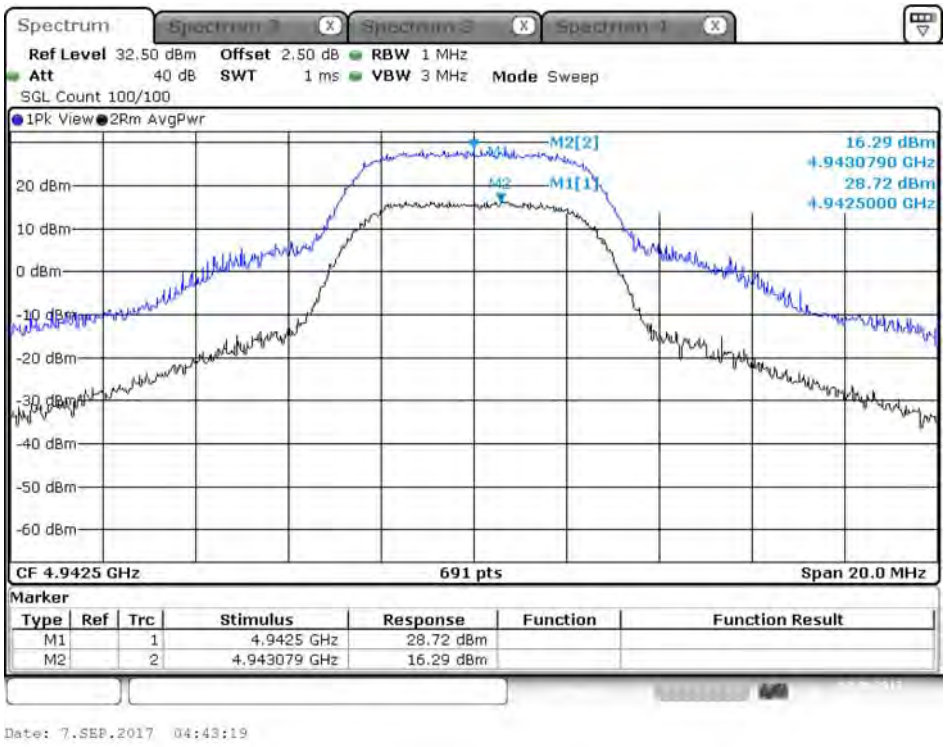
Temperature	22℃	Humidity	54%
Test Engineer	Gino Huang		

For Test Mode 1 and Mode 2:

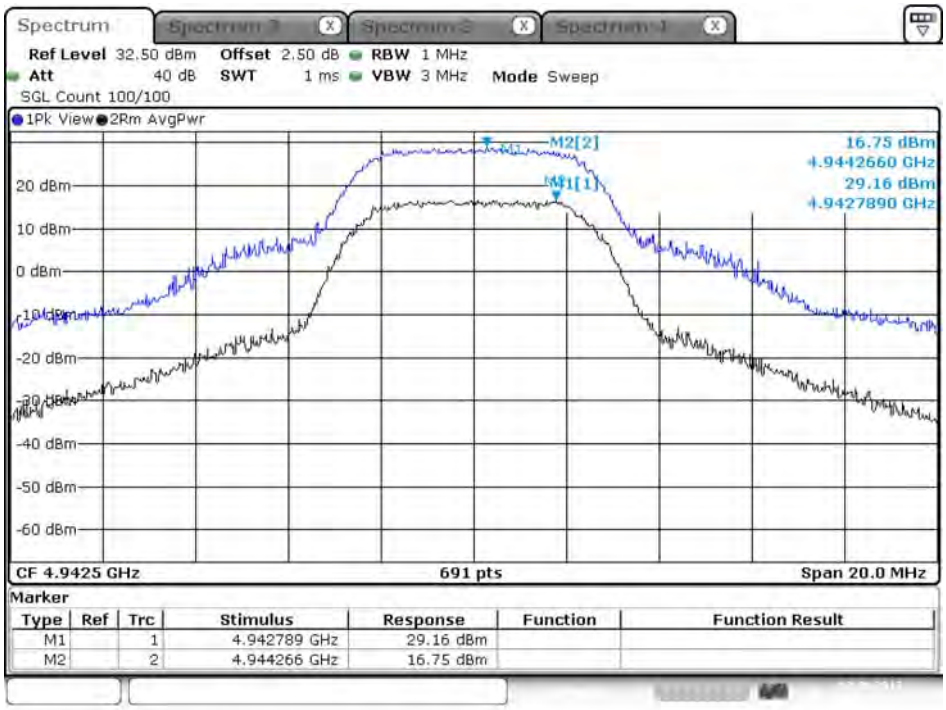
Mode	Frequency	Port 1	Port 2	Max. Limit	Result
	(MHz)	(dB)	(dB)	(dB)	
5MHz	4942.5MHz	12.43	12.41	13	Complies
	4967.5MHz	12.27	12.44	13	Complies
	4987.5MHz	12.69	12.96	13	Complies
20MHz	4950MHz	12.41	12.48	13	Complies
	4965MHz	12.75	12.59	13	Complies
	4980MHz	12.50	12.85	13	Complies

For Test Mode 1 and Mode 2:

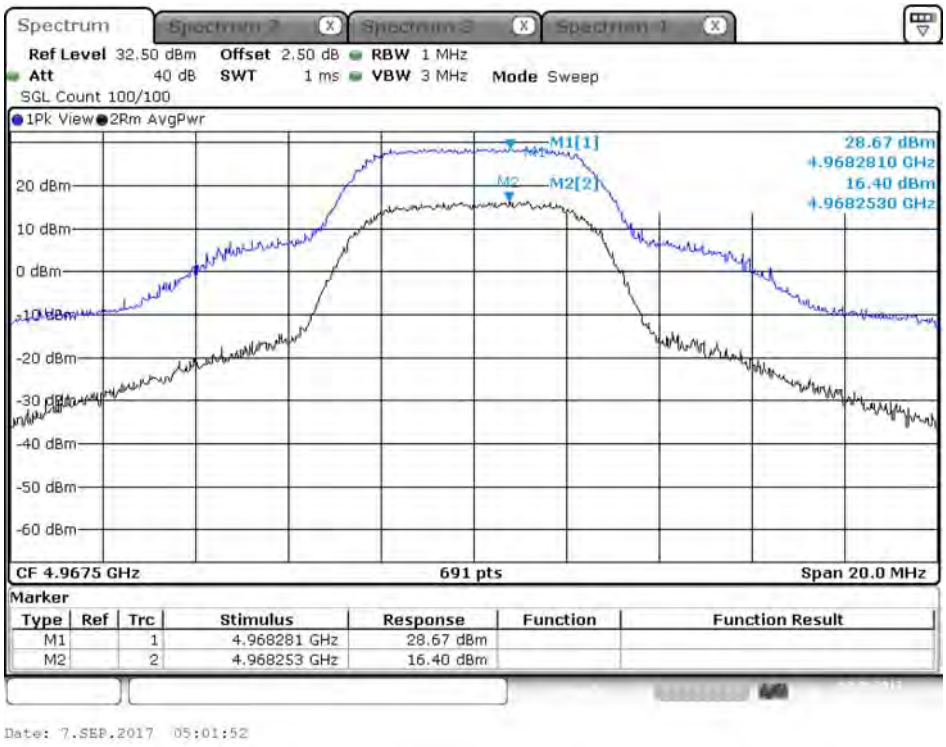
Peak Excursion (5MHz BW Mode) – 4942.5MHz / Port 1



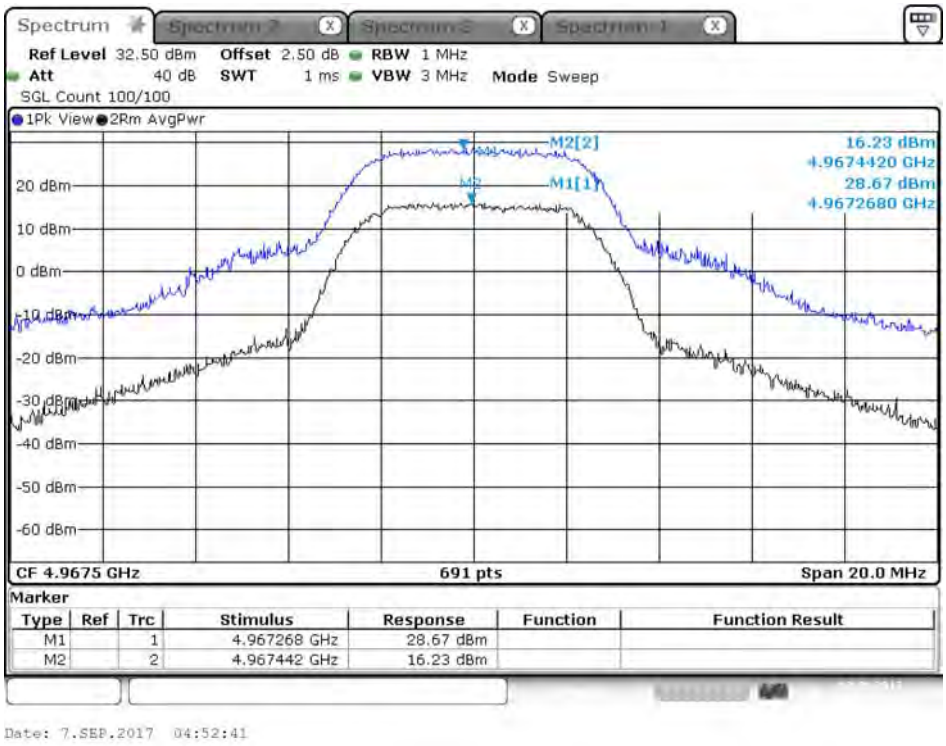
Peak Excursion (5MHz BW Mode) – 4942.5MHz / Port 2



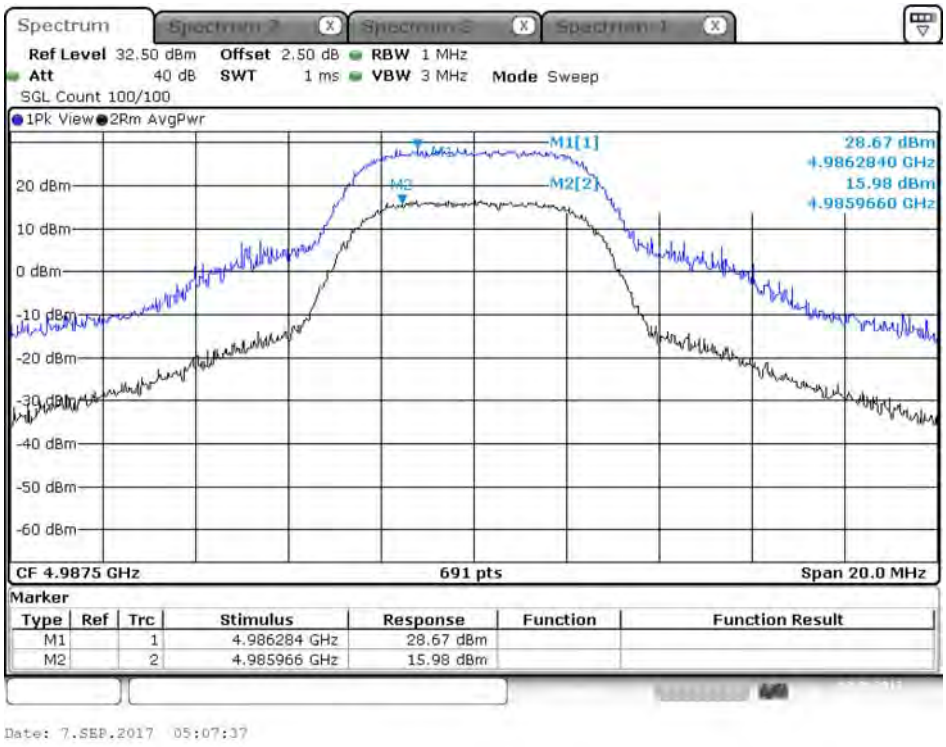
Peak Excursion (5MHz BW Mode) – 4967.5MHz / Port 1



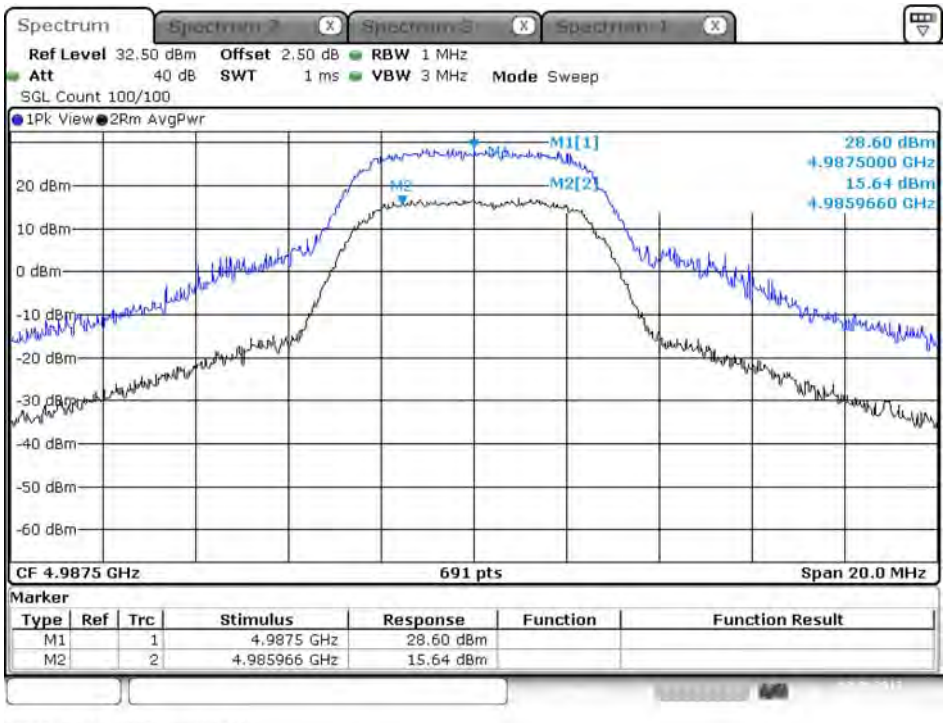
Peak Excursion (5MHz BW Mode) – 4967.5MHz / Port 2



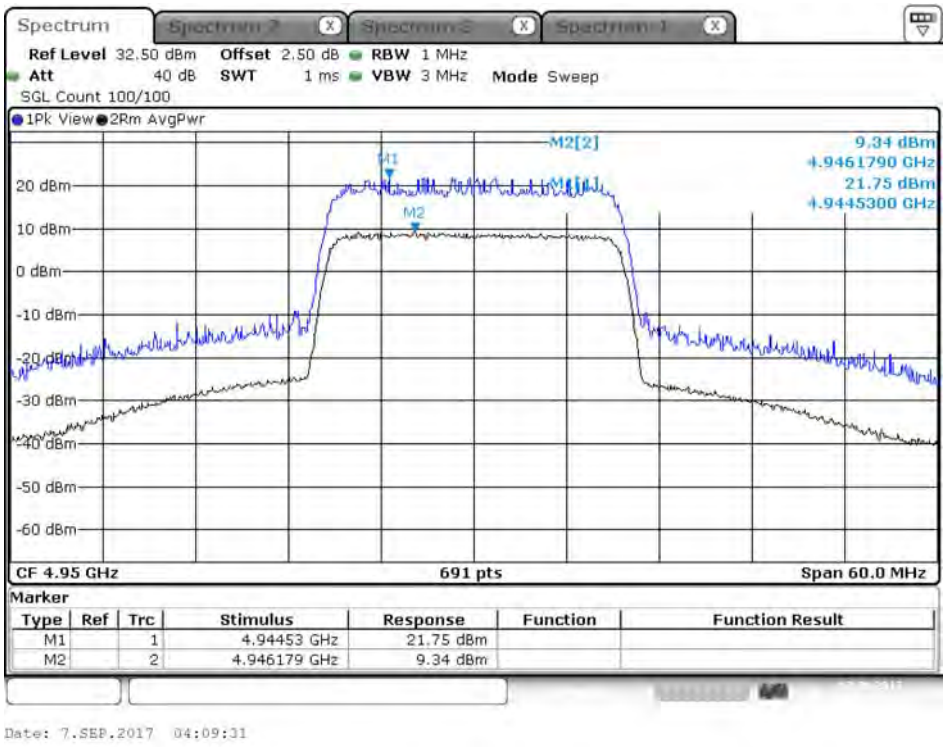
Peak Excursion (5MHz BW Mode) – 4987.5MHz / Port 1



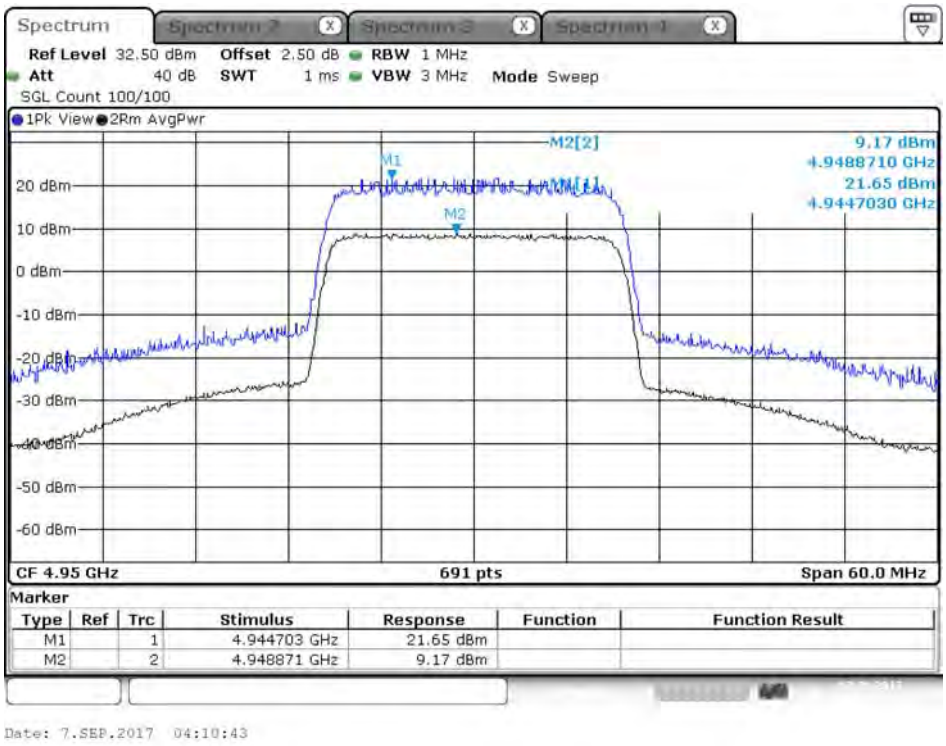
Peak Excursion (5MHz BW Mode) – 4987.5MHz / Port 2



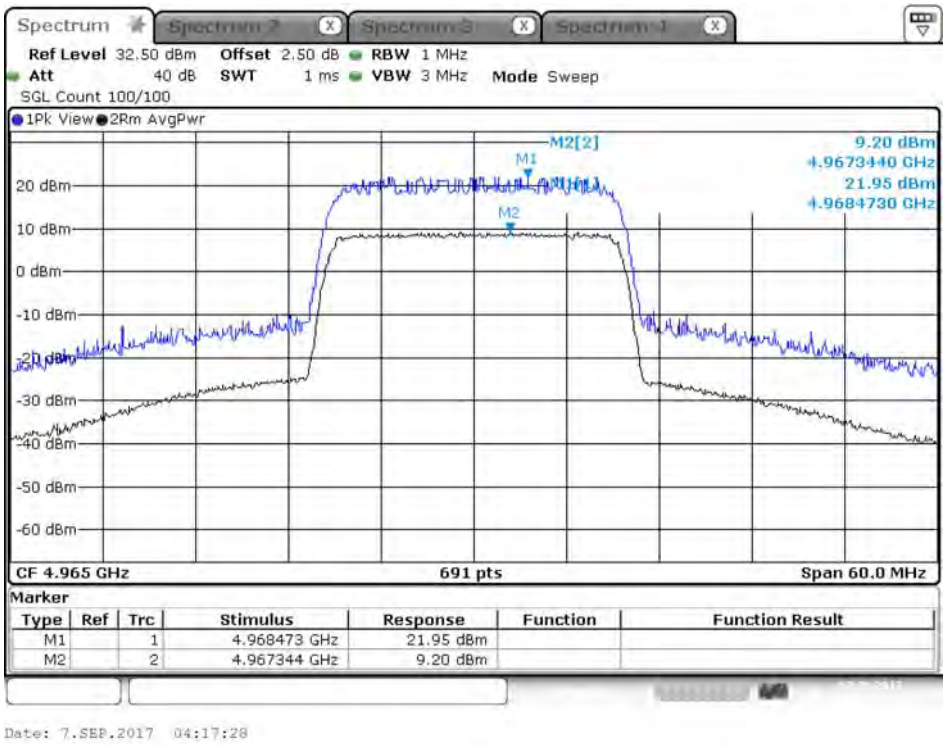
Peak Excursion (20MHz BW Mode) – 4950MHz / Port 1



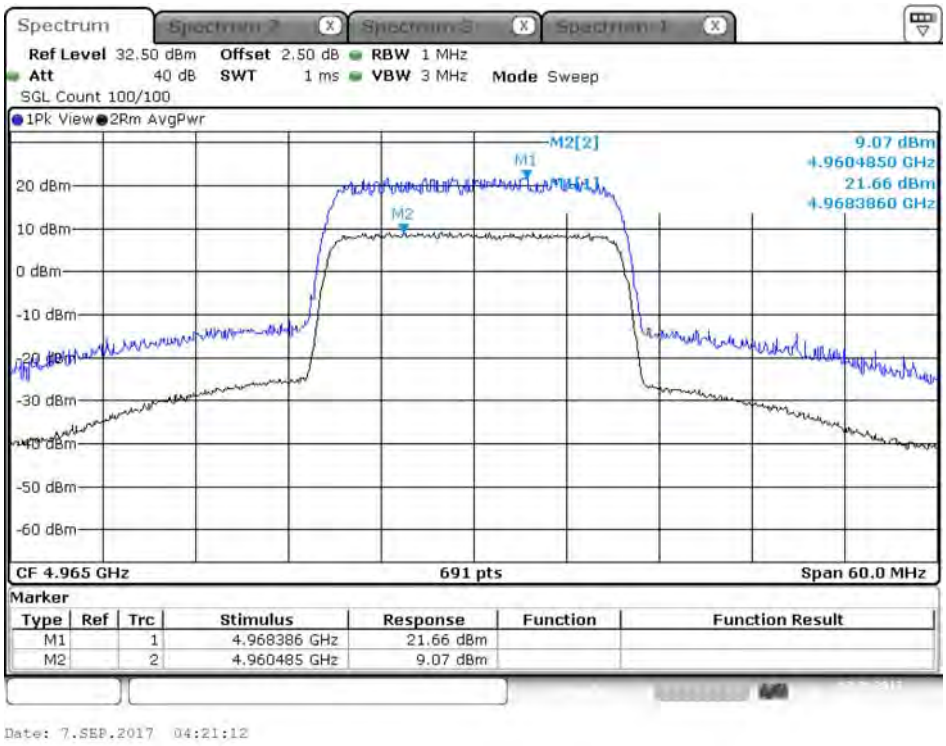
Peak Excursion (20MHz BW Mode) – 4950MHz / Port 2



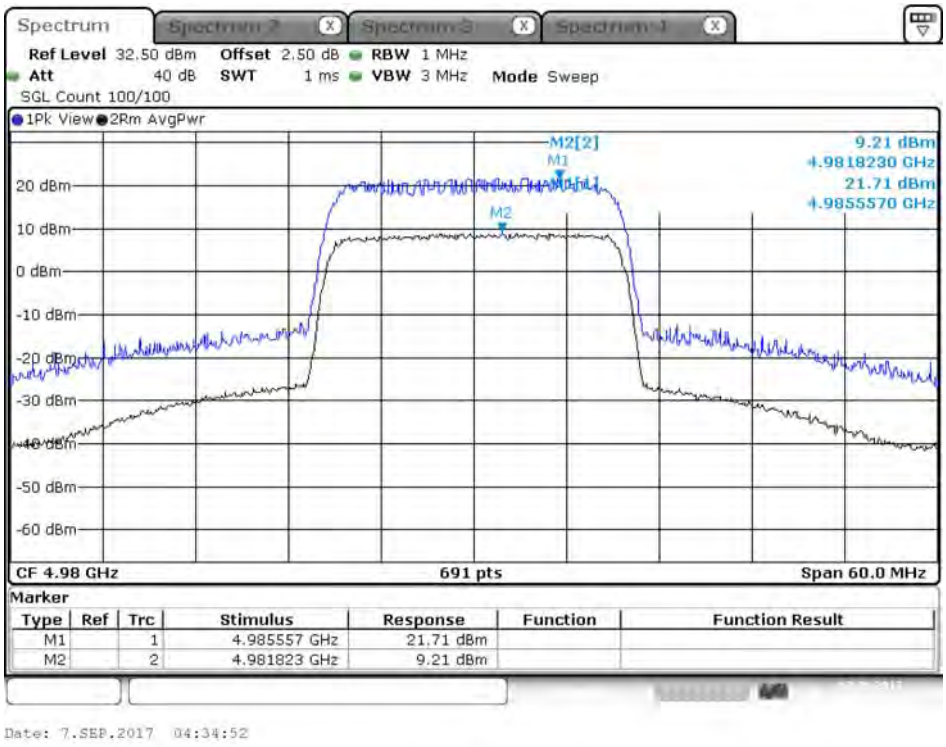
Peak Excursion (20MHz BW Mode) – 4965MHz / Port 1



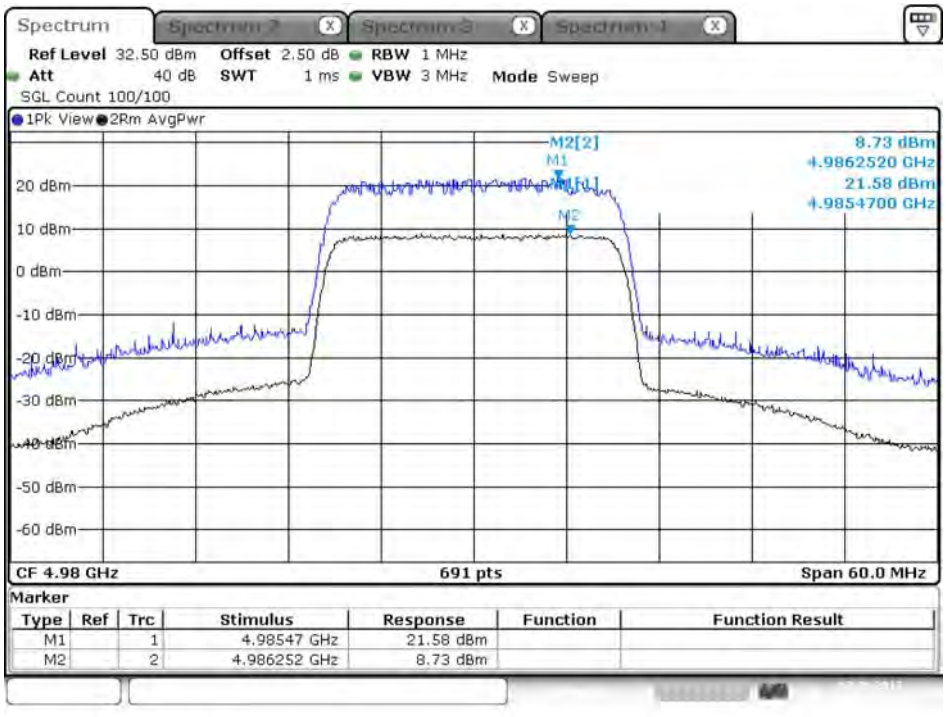
Peak Excursion (20MHz BW Mode) – 4965MHz / Port 2



Peak Excursion (20MHz BW Mode) – 4980MHz / Port 1



Peak Excursion (20MHz BW Mode) – 4980MHz / Port 2



4.3. Occupied Bandwidth and Emission Mask Measurement

4.3.1. Limit

Emission Mask M: For high power transmitters (greater than 20 dBm) operating in the 4940-4990 MHz frequency band, the power spectral density of the emissions must be attenuated below the output power of the transmitter as follows:

(1) On any frequency removed from the assigned frequency between 0–45% of the authorized bandwidth (BW): 0 dB

(2) On any frequency removed from the assigned frequency between 45–50% of the authorized bandwidth: 568 log (% of (BW)/45) dB.

(3) On any frequency removed from the assigned frequency between 50–55% of the authorized bandwidth: 26 + 145 log (% of (BW)/50) dB.

(4) On any frequency removed from the assigned frequency between 55–100% of the authorized bandwidth: 32 + 31 log (% of (BW)/55) dB attenuation.

(5) On any frequency removed from the assigned frequency between 100–150% of the authorized bandwidth: 40 + 57 log (% of (BW)/100) dB attenuation.

(6) On any frequency removed from the assigned frequency above 150% of the authorized bandwidth: 50 or 55+ 10 log (P) dB, whichever is the lesser attenuation. (P in watts)

The zero dB reference is measured relative to the highest average power of the fundamental emission measured across the designated channel bandwidth using a resolution bandwidth of at least 1% of the occupied bandwidth of the fundamental emission and a video bandwidth of 30 kHz. The power spectral density is the power measured within the resolution bandwidth of the measurement device divided by the resolution bandwidth of the measurement device. Emission levels are also based on the use of measurement instrumentation employing a resolution bandwidth of at least one percent of the occupied bandwidth.

4.3.2. Measuring Instruments and Setting

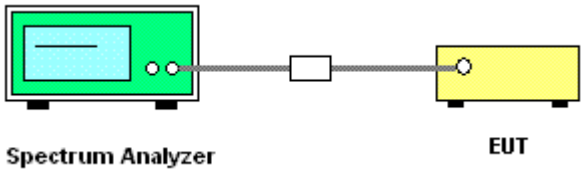
Please refer to section 5 in this report. The following table is the setting of the spectrum.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth of the signal
RBW	at least 1% of the occupied bandwidth
VBW	BW=3 x RBW, Mask=30kHz
Detector	Peak
Trace	Max Hold

4.3.3. Test Procedures

1. The EUT transmitter was connected to a spectrum analyzer through an appropriate 50 ohm attenuator. Used measurement function of spectrum to measure the 99% occupied bandwidth.
2. The reference level for the mask was set using the highest average power of the fundamental emission measured across the channel bandwidth using a RBW of at least 1% of the occupied bandwidth of the fundamental emission and a VBW of 30 kHz.

4.3.4. Test Setup Layout



4.3.5. Test Deviation

There is no deviation with the original standard.

4.3.6. Test Result of 99% Occupied Bandwidth (OBW)

Temperature	22°C	Humidity	54%
Test Engineer	Gino Huang		

For Test Mode 1 and Mode 2:

5MHz Channel Bandwidth Mode

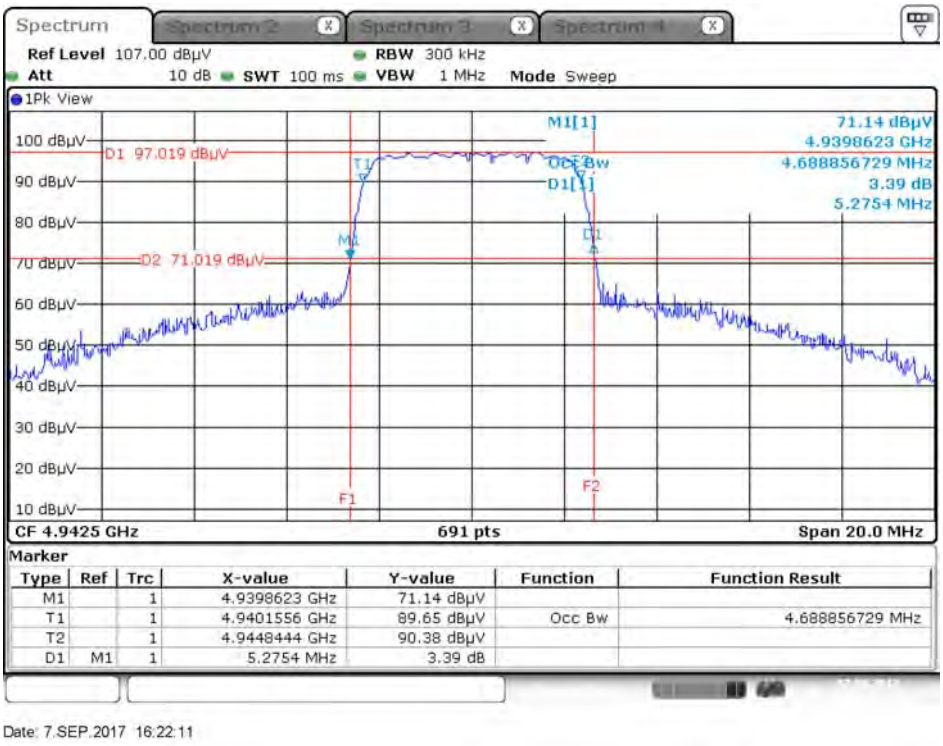
Frequency	Antenna	26dB Bandwidth (MHz)	99% Occupied BW (MHz)	Result
4942.5MHz	Port 1	5.28	4.69	Complies
	Port 2	5.30	4.69	Complies
4967.5MHz	Port 1	5.28	4.69	Complies
	Port 2	5.28	4.72	Complies
4987.5MHz	Port 1	5.30	4.72	Complies
	Port 2	5.30	4.69	Complies

20MHz Channel Bandwidth Mode

Frequency	Antenna	26dB Bandwidth (MHz)	99% Occupied BW (MHz)	Result
4950MHz	Port 1	19.65	18.32	Complies
	Port 2	19.65	18.32	Complies
4965MHz	Port 1	19.57	18.32	Complies
	Port 2	19.65	18.32	Complies
4980MHz	Port 1	19.57	18.32	Complies
	Port 2	19.65	18.32	Complies

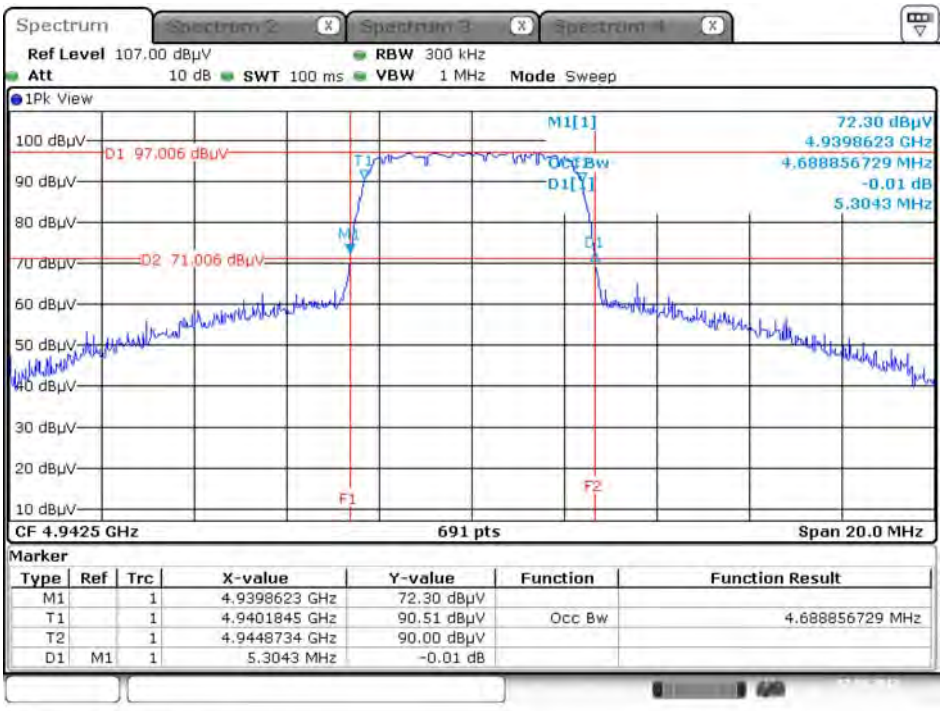
For Test Mode 1 and Mode 2:

99% Occupied Bandwidth (5MHz BW Mode) – 4942.5MHz / Port 1



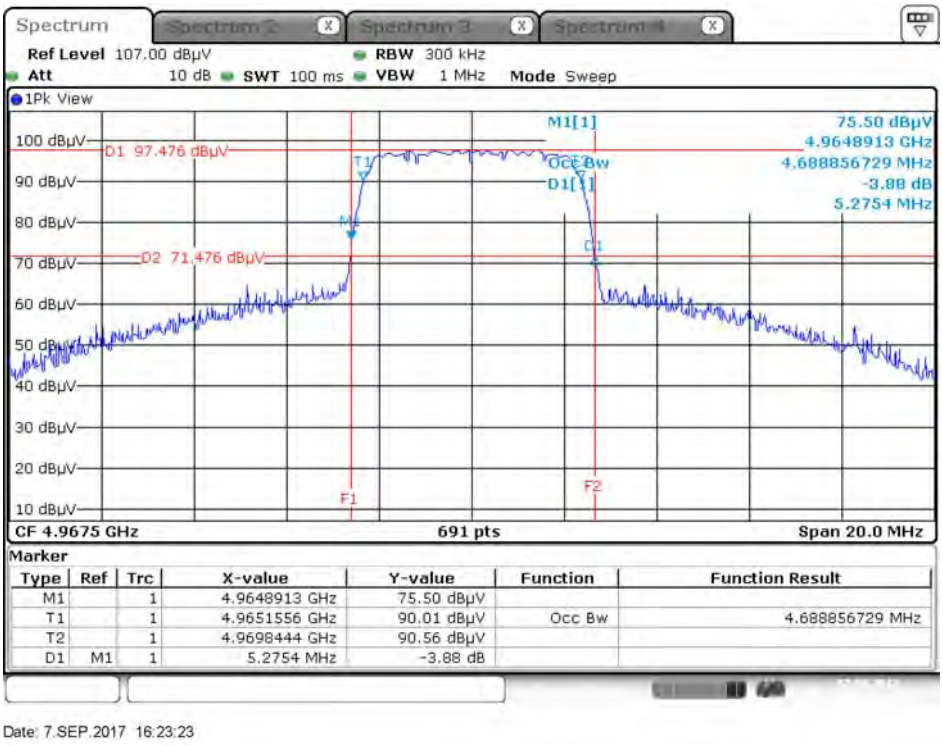
Date: 7.SEP.2017 16:22:11

99% Occupied Bandwidth (5MHz BW Mode) – 4942.5MHz / Port 2



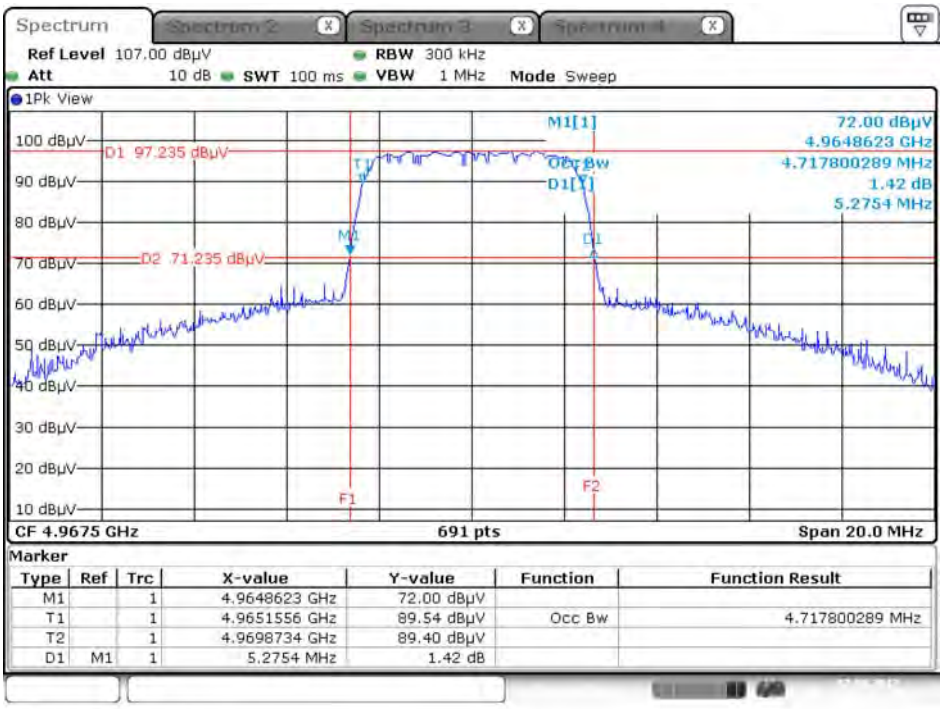
Date: 7.SEP.2017 16:19:47

99% Occupied Bandwidth (5MHz BW Mode) – 4967.5MHz / Port 1



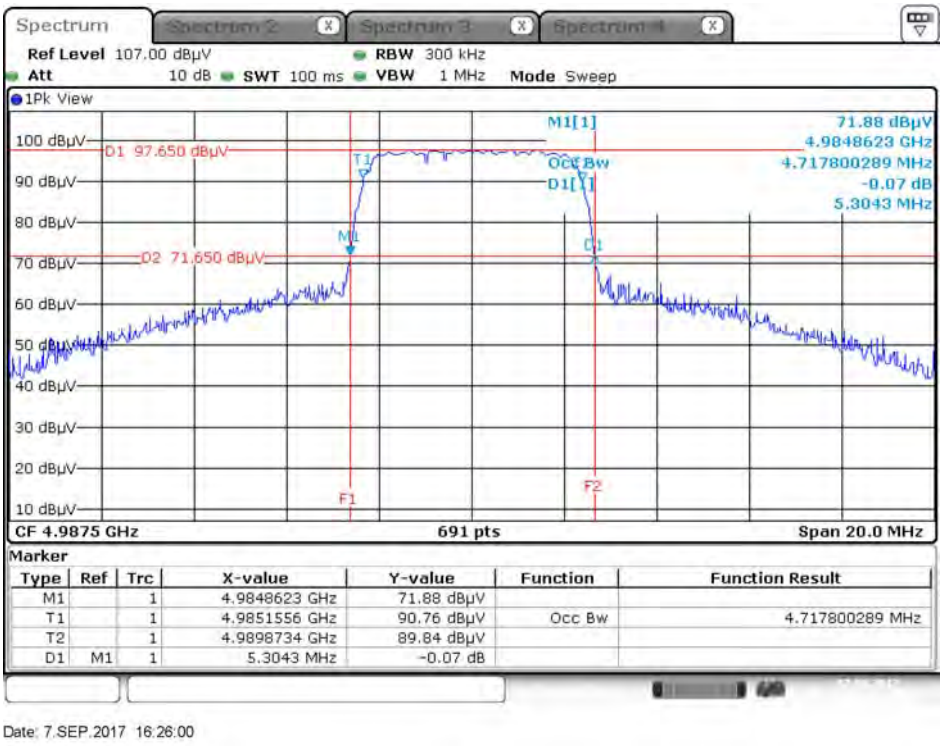
Date: 7.SEP.2017 16:23:23

99% Occupied Bandwidth (5MHz BW Mode) – 4967.5MHz / Port 2



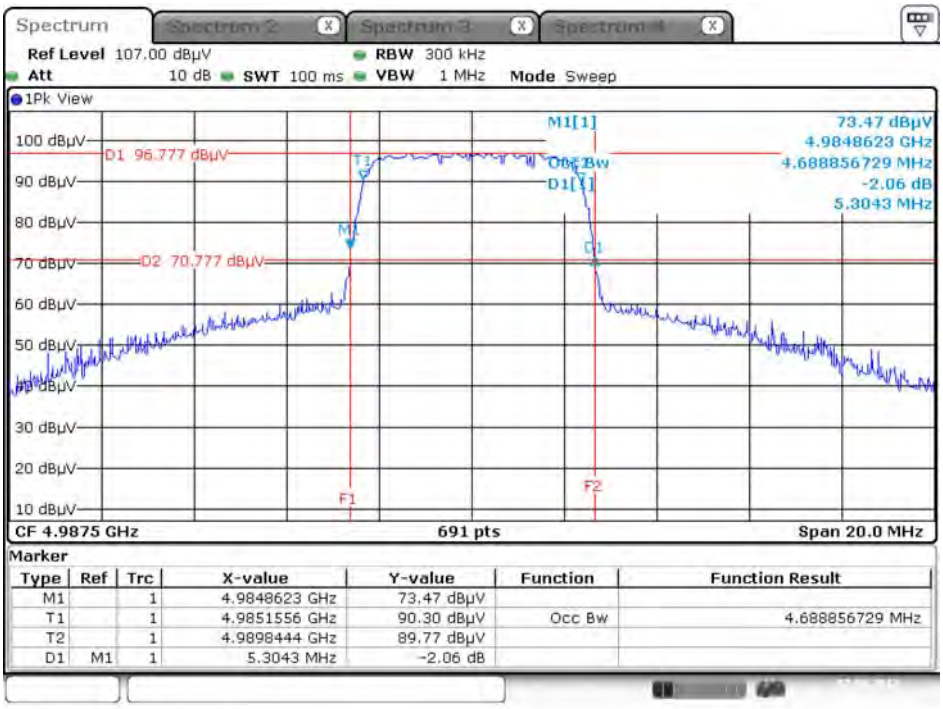
Date: 7.SEP.2017 16:24:10

99% Occupied Bandwidth (5MHz BW Mode) – 4987.5MHz / Port 1



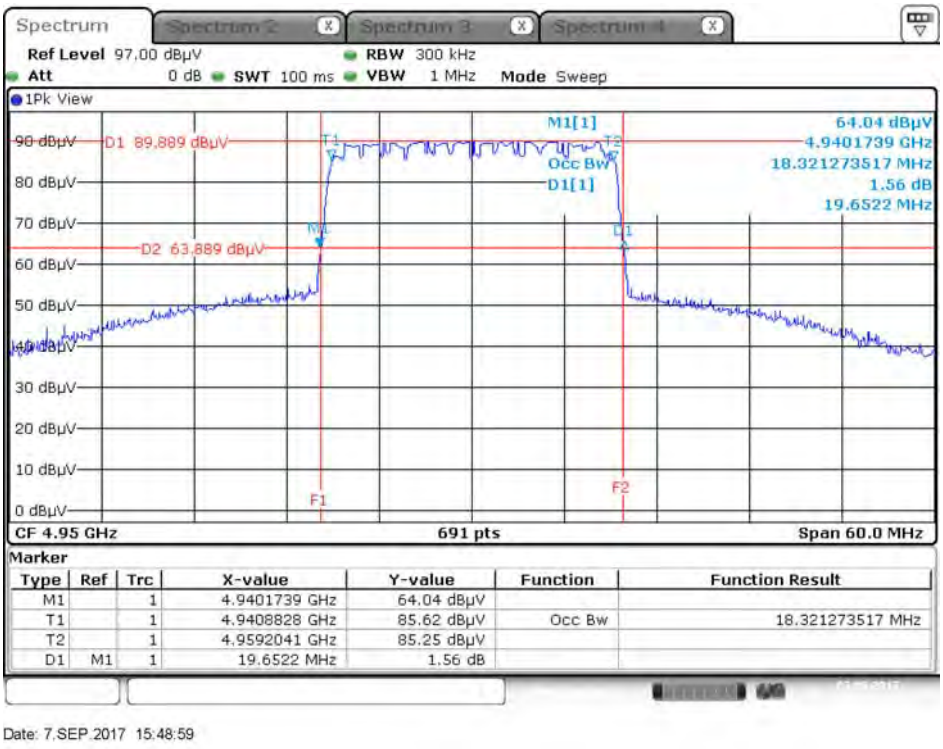
Date: 7.SEP.2017 16:26:00

99% Occupied Bandwidth (5MHz BW Mode) – 4987.5MHz / Port 2



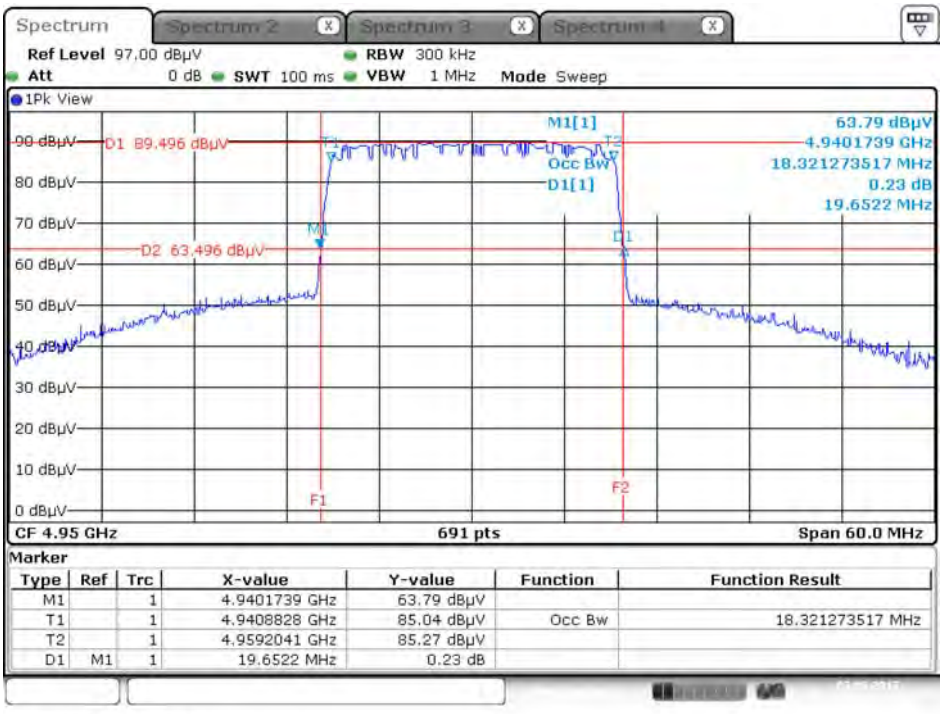
Date: 7.SEP.2017 16:25:18

99% Occupied Bandwidth (20MHz BW Mode) – 4950MHz / Port 1



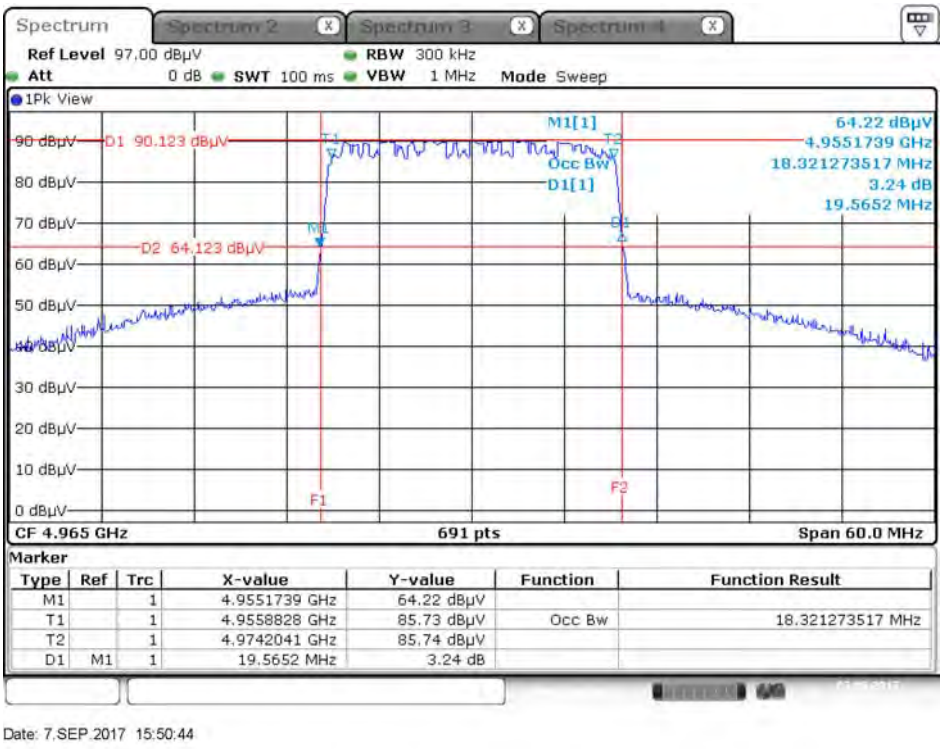
Date: 7.SEP.2017 15:48:59

99% Occupied Bandwidth (20MHz BW Mode) – 4950MHz / Port 2



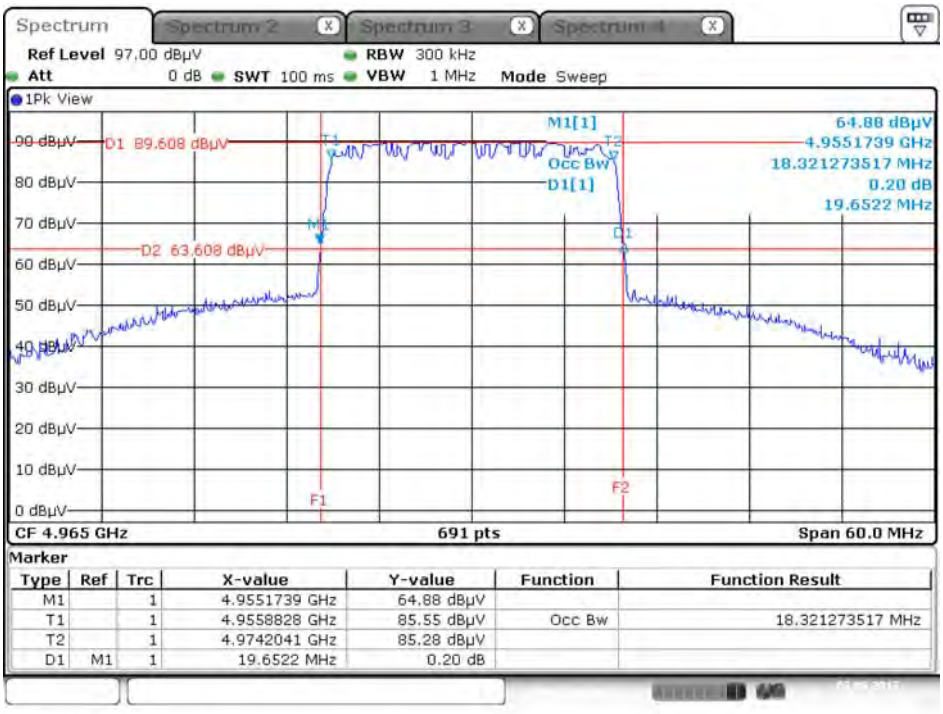
Date: 7.SEP.2017 15:47:12

99% Occupied Bandwidth (20MHz BW Mode) – 4965MHz / Port 1



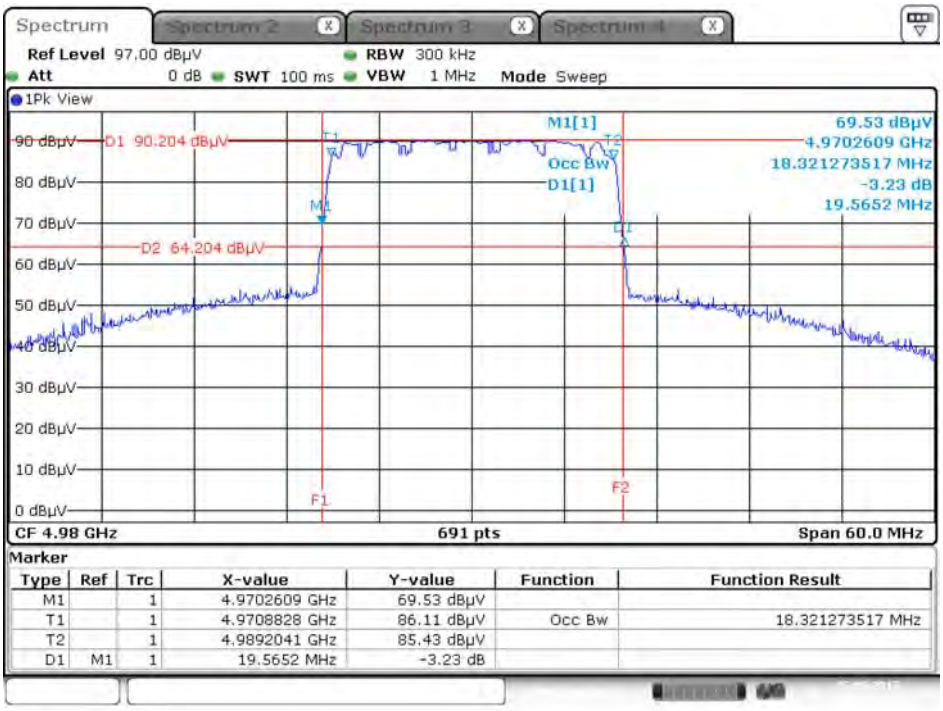
Date: 7.SEP.2017 15:50:44

99% Occupied Bandwidth (20MHz BW Mode) – 4965MHz / Port 2



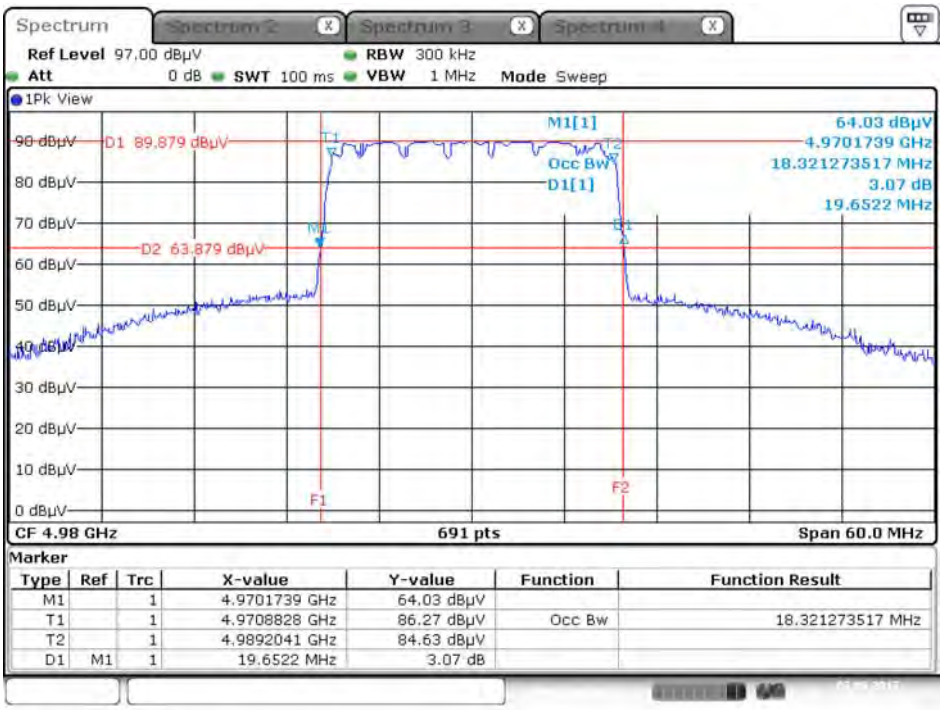
Date: 7.SEP.2017 15:51:36

99% Occupied Bandwidth (20MHz BW Mode) – 4980MHz / Port 1



Date: 7.SEP.2017 15:54:01

99% Occupied Bandwidth (20MHz BW Mode) – 4980MHz / Port 2

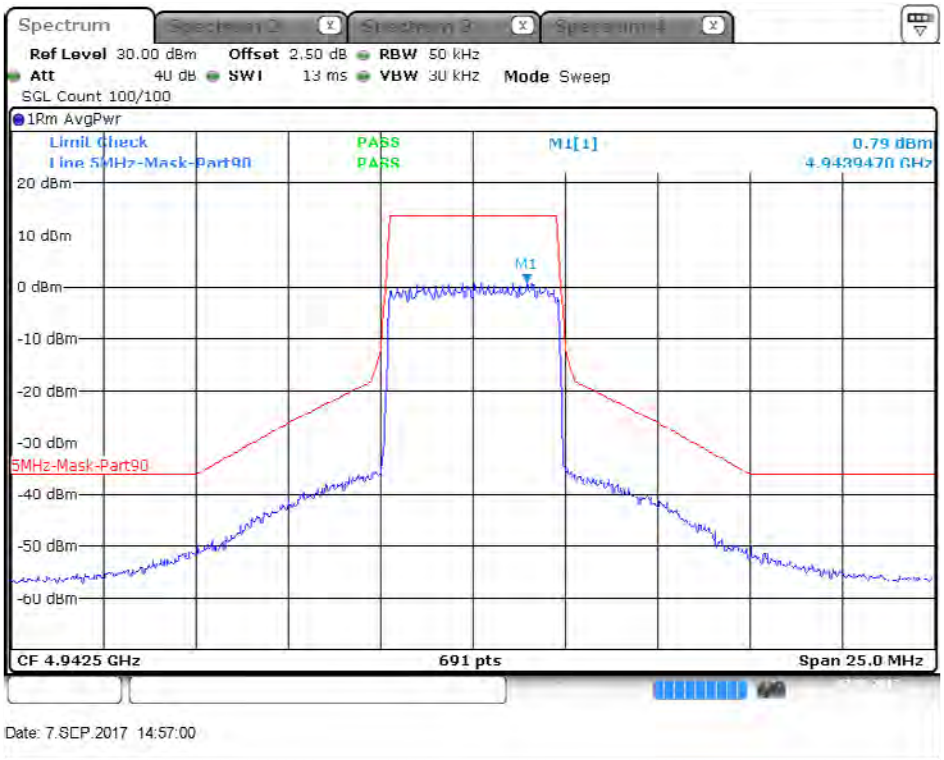


Date: 7.SEP.2017 15:52:53

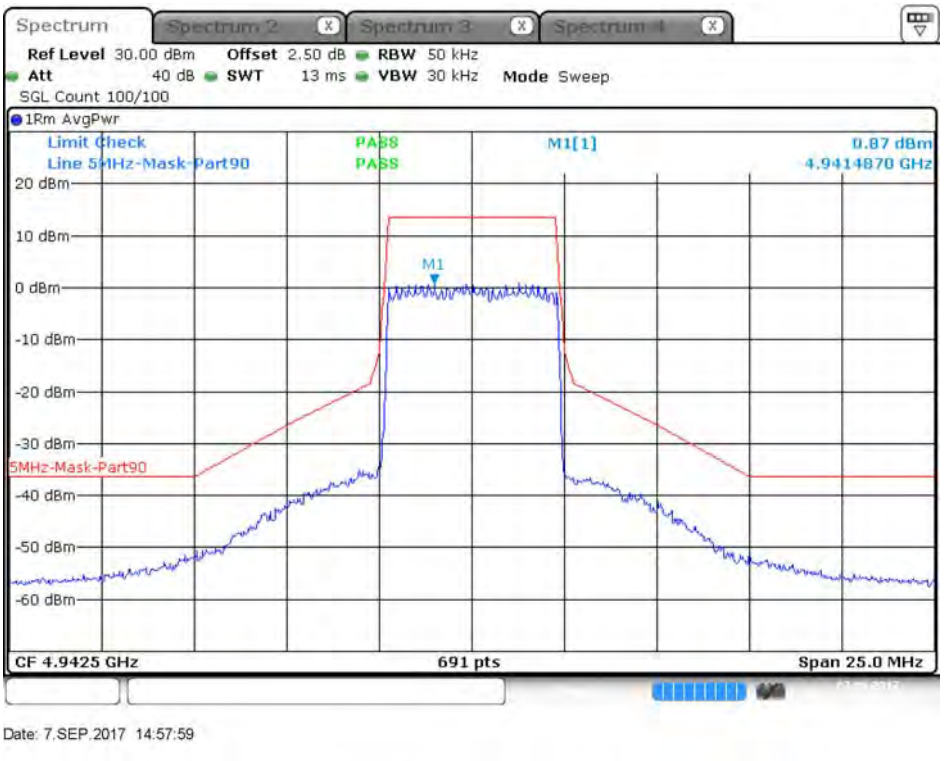
4.3.7. Emission Mask Measurements

For Test Mode 1 and Mode 2:

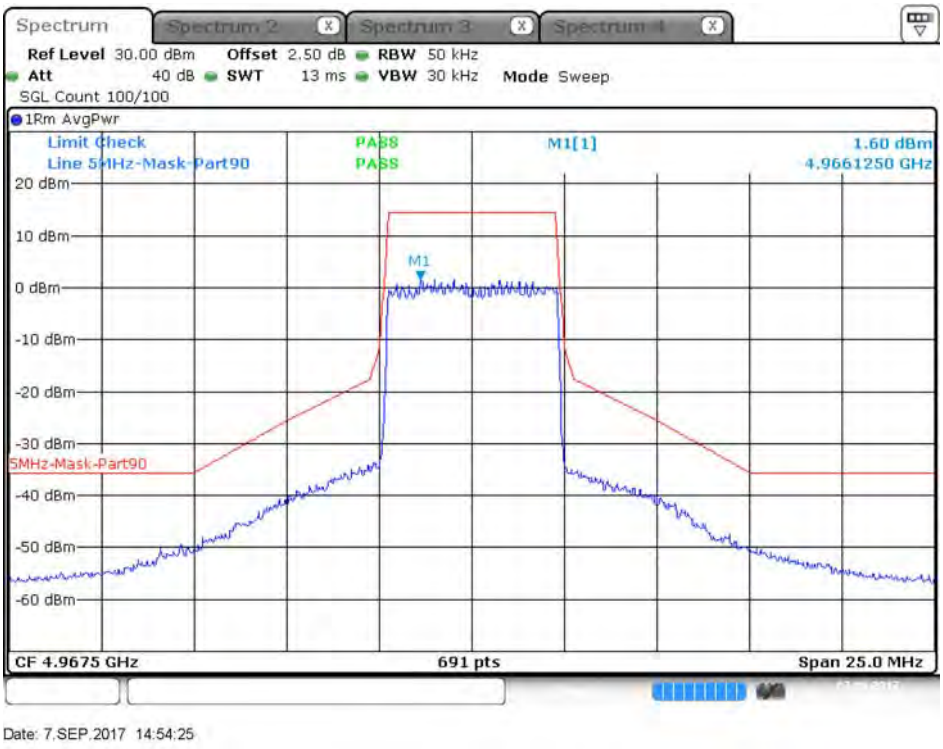
Emission Mask (5MHz BW Mode) – 4942.5MHz / Port 1



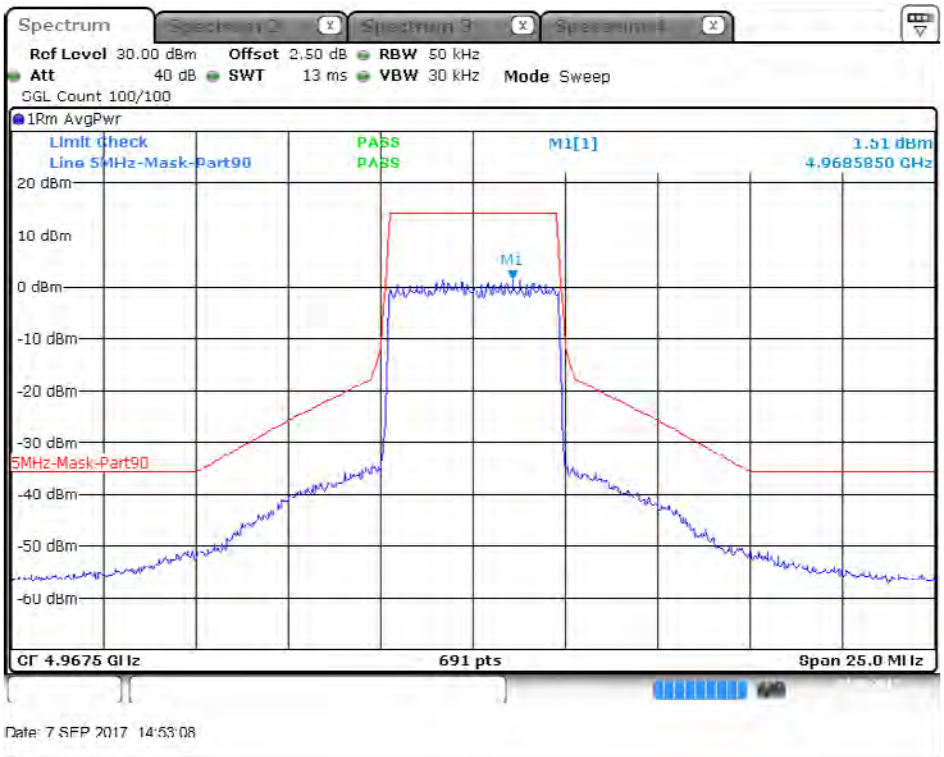
Emission Mask (5MHz BW Mode) – 4942.5MHz / Port 2



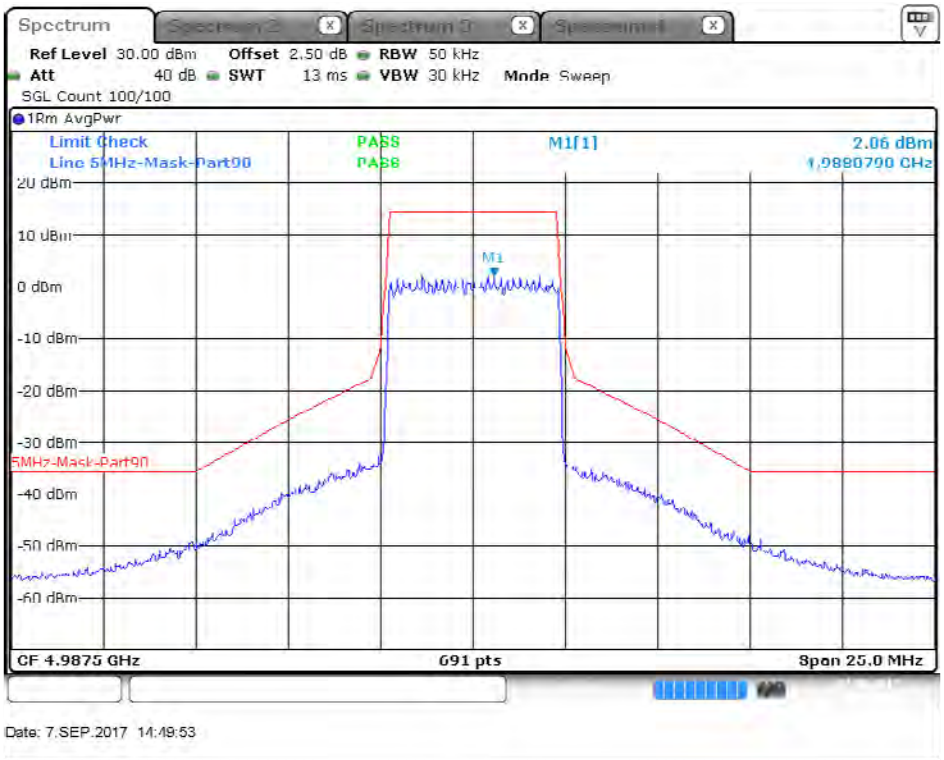
Emission Mask (5MHz BW Mode) – 4967.5MHz / Port 1



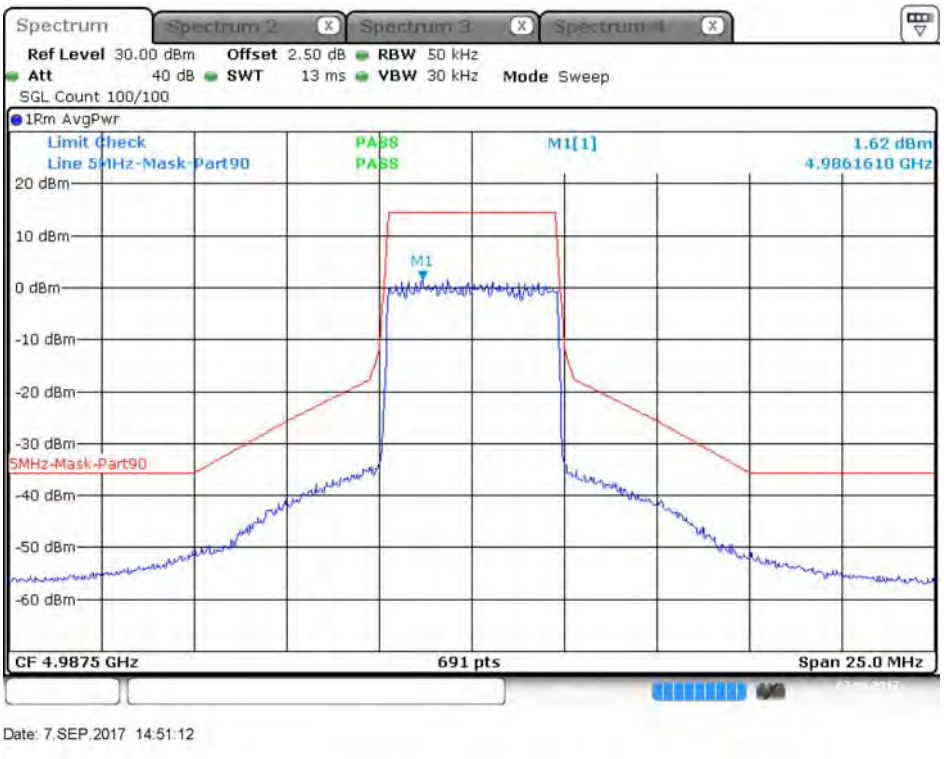
Emission Mask (5MHz BW Mode) – 4967.5MHz / Port 2



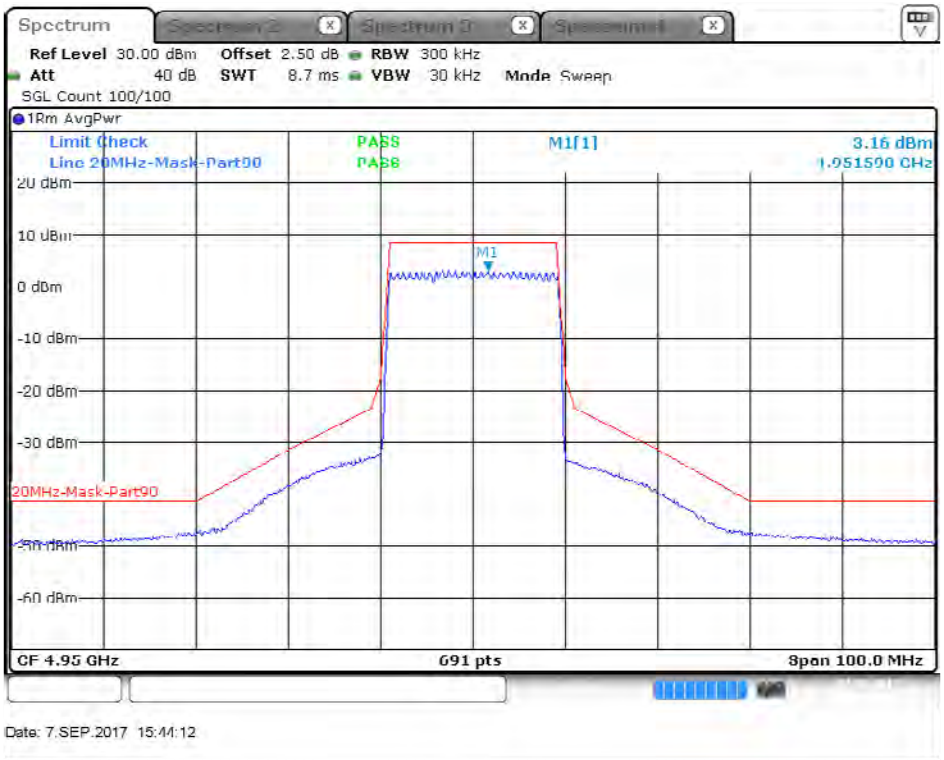
Emission Mask (5MHz BW Mode) – 4987.5MHz / Port 1



Emission Mask (5MHz BW Mode) – 4987.5MHz / Port 2

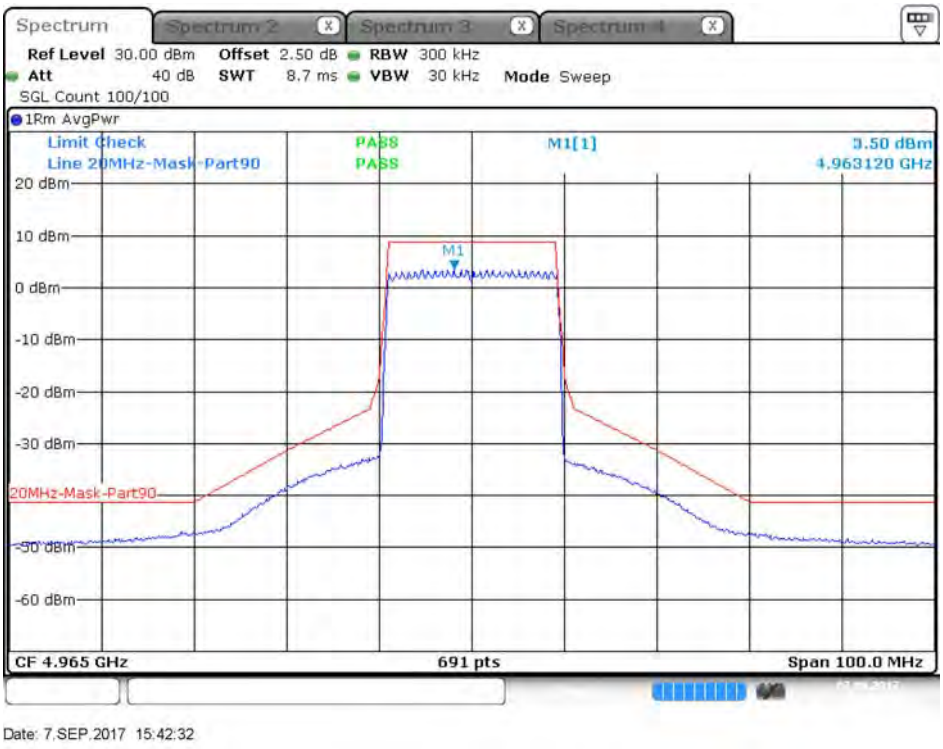


Emission Mask (20MHz BW Mode) – 4950MHz / Port 1

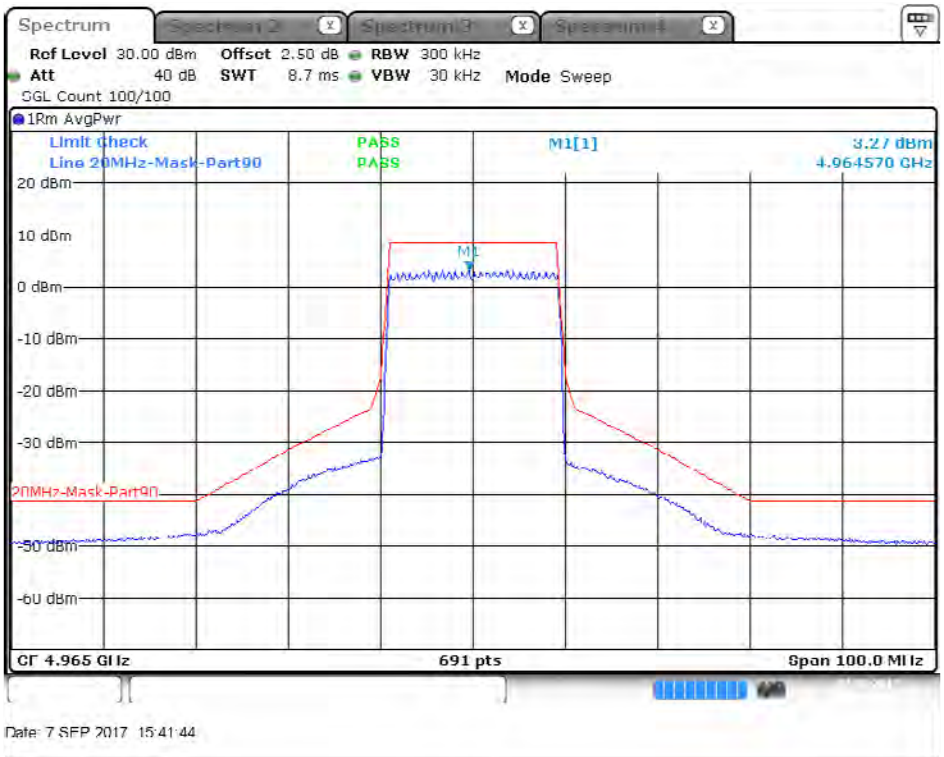


Emission Mask (20MHz BW Mode) – 4950MHz / Port 2

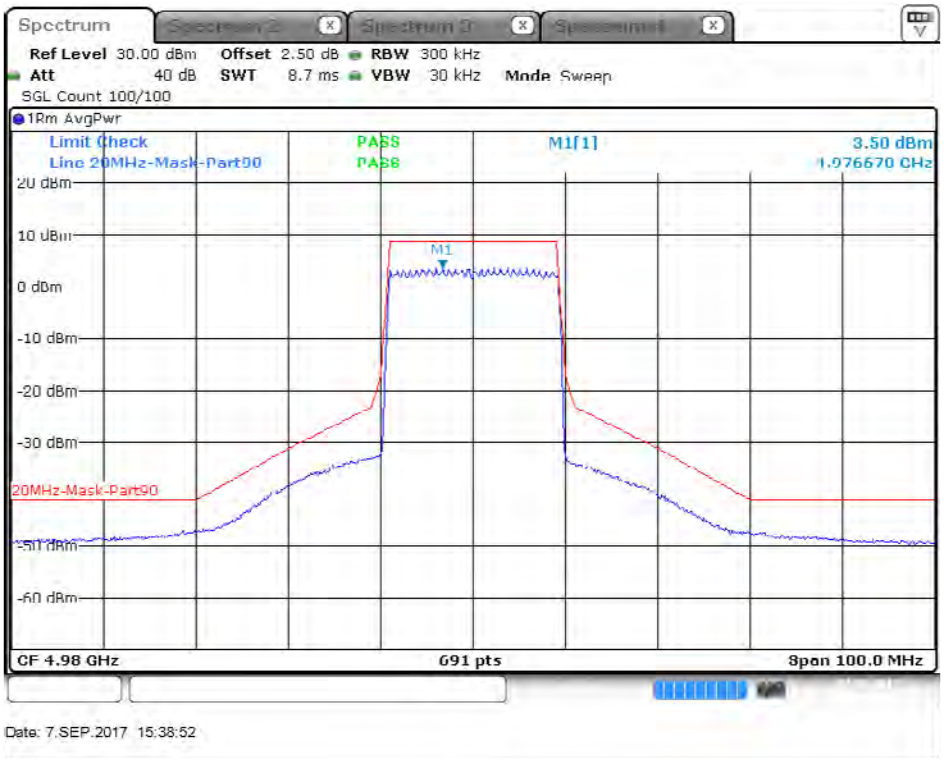
Emission Mask (20MHz BW Mode) – 4965MHz / Port 1



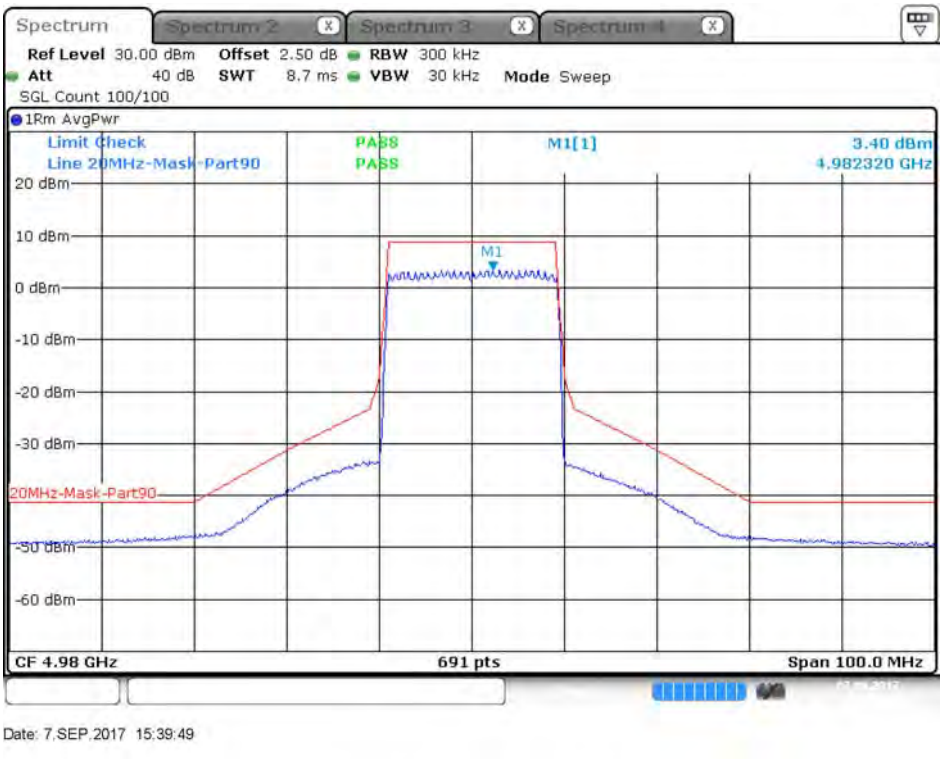
Emission Mask (20MHz BW Mode) – 4965MHz / Port 2



Emission Mask (20MHz BW Mode) – 4980MHz / Port 1



Emission Mask (20MHz BW Mode) – 4980MHz / Port 2



4.4. Transmitter Conducted Unwanted Emissions Measurement

4.4.1. Limit

On any frequency removed from the assigned frequency above 150% of the authorized bandwidth: 50 or 55+ 10 log (P) dB, whichever is the lesser attenuation. (P=Average transmit power in watt)

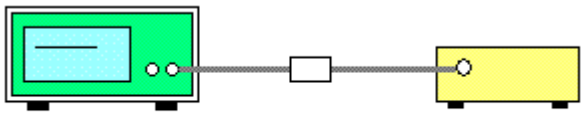
4.4.2. Measuring Instruments and Setting

Spectrum Parameter	Setting
Detector	RMS (Average)
Frequency Range	9kHz – 40GHz

4.4.3. Test Procedures

1. The EUT transmitter was connected to a spectrum analyzer through an appropriate 50 ohm attenuator. The spectrum analyzer resolution bandwidth was set to 1 MHz, and the video bandwidth was set to 1 MHz.
2. Find spurious emissions under 50 or 55+ 10 log (P) dB limit, whichever is the lesser attenuation and the spectrum analyzer integrated measurement plot was taken.

4.4.4. Test Setup Layout



4.4.5. Test Deviation

There is no deviation with the original standard.

4.4.6. Test Result of Transmitter Conducted Unwanted Emissions

Temperature	22℃	Humidity	54%
Test Engineer	Lucke Hsieh & Gino Huang		

For Test Mode 1 / Ant. 1

5MHz Channel Bandwidth Mode

30MHz ~ 1GHz					
Frequency	Conducted Emission (dBm/MHz)	Conducted Emission (dBm/MHz)	Total Conducted Emission (dBm/MHz)	Max. Limit (dBm/MHz)	Result
	Port 1	Port 2			
4942.5MHz	-57.29	-56.73	-36.99	-25.00	Complies
4967.5MHz	-54.04	-58.08	-35.60	-25.00	Complies
4987.5MHz	-56.17	-57.50	-36.77	-25.00	Complies

1GHz ~ 40GHz					
Frequency	Conducted Emission (dBm/MHz)	Conducted Emission (dBm/MHz)	Total Conducted Emission (dBm/MHz)	Max. Limit (dBm/MHz)	Result
	Port 1	Port 2			
4942.5MHz	-51.41	-51.29	-31.34	-25.00	Complies
4967.5MHz	-51.45	-51.83	-31.63	-25.00	Complies
4987.5MHz	-51.27	-52.22	-31.71	-25.00	Complies

20MHz Channel Bandwidth Mode

30MHz ~ 1GHz					
Frequency	Conducted Emission (dBm/MHz)	Conducted Emission (dBm/MHz)	Total Conducted Emission (dBm/MHz)	Max. Limit (dBm/MHz)	Result
	Port 1	Port 2			
4950MHz	-56.21	-57.73	-36.89	-26.26	Complies
4965MHz	-56.51	-57.21	-36.84	-26.10	Complies
4980MHz	-56.30	-57.10	-36.67	-26.05	Complies

1GHz ~ 40GHz					
Frequency	Conducted Emission (dBm/MHz)	Conducted Emission (dBm/MHz)	Total Conducted Emission (dBm/MHz)	Max. Limit (dBm/MHz)	Result
	Port 1	Port 2			
4950MHz	-51.43	-51.54	-31.47	-26.26	Complies
4965MHz	-50.65	-52.18	-31.34	-26.10	Complies
4980MHz	-51.00	-51.00	-30.99	-26.05	Complies

For Test Mode 2 / Ant. 2

5MHz Channel Bandwidth Mode

30MHz ~ 1GHz					
Frequency	Conducted Emission (dBm/MHz)	Conducted Emission (dBm/MHz)	Total Conducted Emission (dBm/MHz)	Max. Limit (dBm/MHz)	Result
	Port 1	Port 2			
4942.5MHz	-57.29	-56.73	-51.99	-25.00	Complies
4967.5MHz	-54.04	-58.08	-50.60	-25.00	Complies
4987.5MHz	-56.17	-57.50	-51.77	-25.00	Complies

1GHz ~ 40GHz					
Frequency	Conducted Emission (dBm/MHz)	Conducted Emission (dBm/MHz)	Total Conducted Emission (dBm/MHz)	Max. Limit (dBm/MHz)	Result
	Port 1	Port 2			
4942.5MHz	-51.41	-51.29	-46.34	-25.00	Complies
4967.5MHz	-51.45	-51.83	-46.63	-25.00	Complies
4987.5MHz	-51.27	-52.22	-46.71	-25.00	Complies

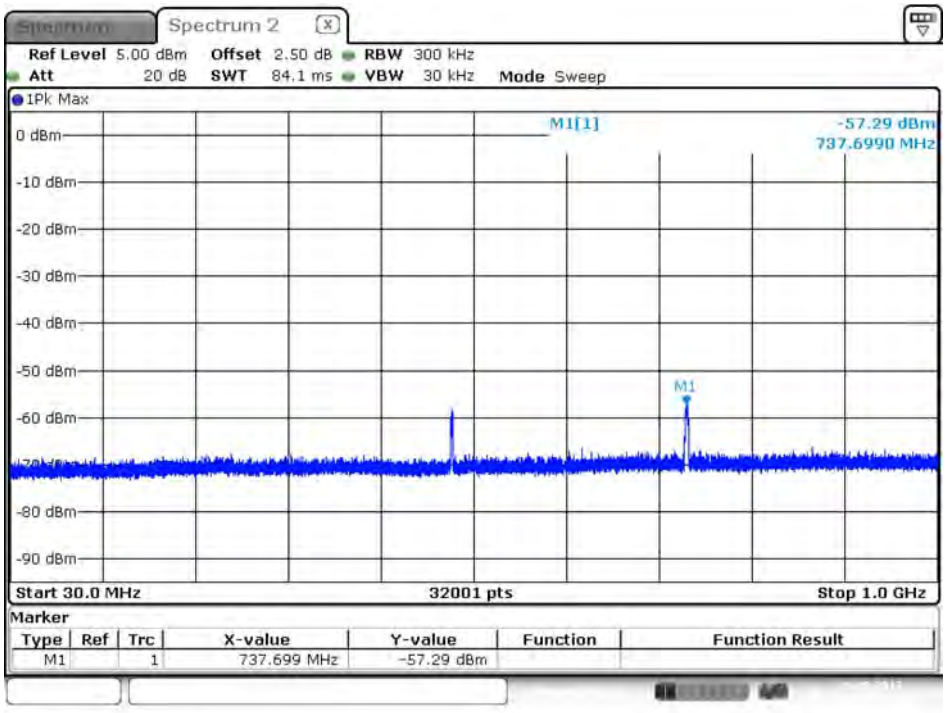
20MHz Channel Bandwidth Mode

30MHz ~ 1GHz					
Frequency	Conducted Emission (dBm/MHz)	Conducted Emission (dBm/MHz)	Total Conducted Emission (dBm/MHz)	Max. Limit (dBm/MHz)	Result
	Port 1	Port 2			
4950MHz	-56.21	-57.73	-51.89	-26.26	Complies
4965MHz	-56.51	-57.21	-51.84	-26.10	Complies
4980MHz	-56.30	-57.10	-51.67	-26.05	Complies

1GHz ~ 40GHz					
Frequency	Conducted Emission (dBm/MHz)	Conducted Emission (dBm/MHz)	Total Conducted Emission (dBm/MHz)	Max. Limit (dBm/MHz)	Result
	Port 1	Port 2			
4950MHz	-51.43	-51.54	-46.47	-26.26	Complies
4965MHz	-50.65	-52.18	-46.34	-26.10	Complies
4980MHz	-51.00	-51.00	-45.99	-26.05	Complies

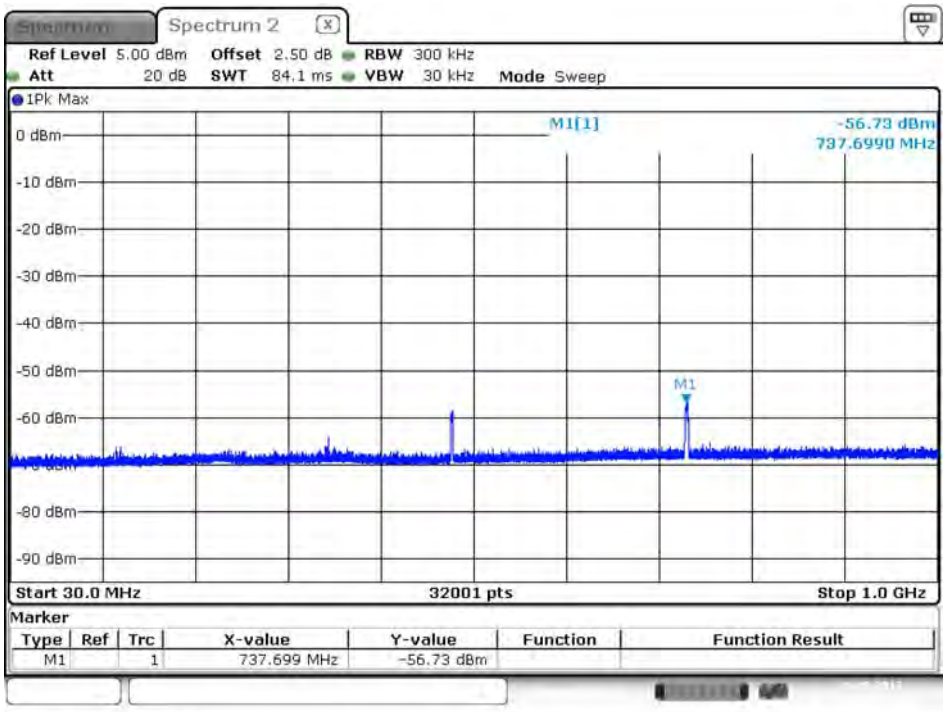
For Test Mode 1 and Mode 2:

Conducted Unwanted Emissions (5MHz BW Mode) – 4942.5MHz (30MHz ~ 1GHz) / Port 1



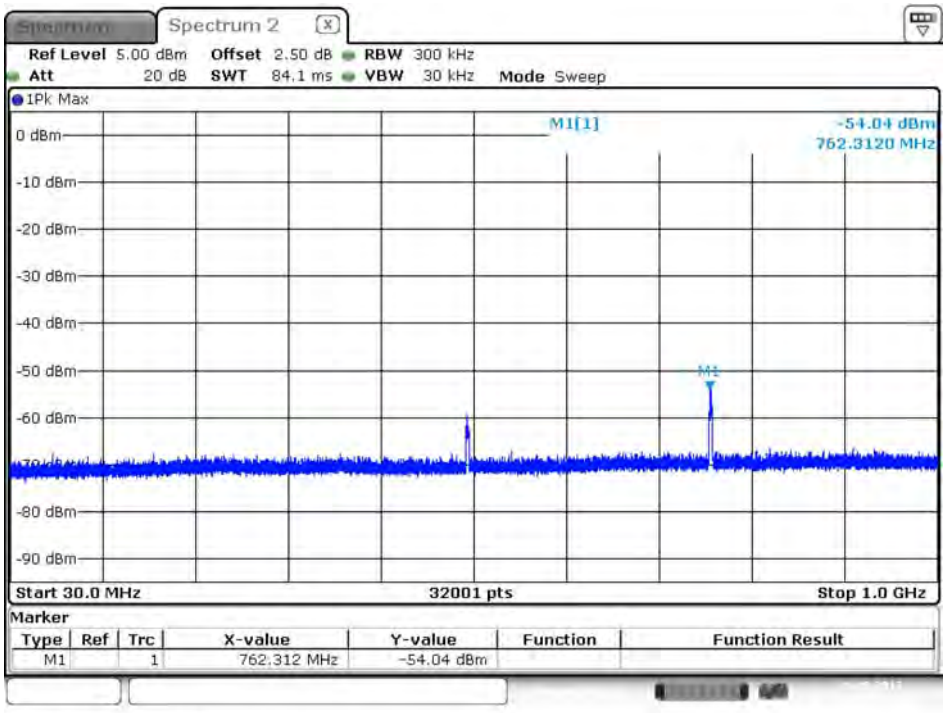
Date: 29.AUG.2017 16:53:10

Conducted Unwanted Emissions (5MHz BW Mode) – 4942.5MHz (30MHz ~ 1GHz) / Port 2



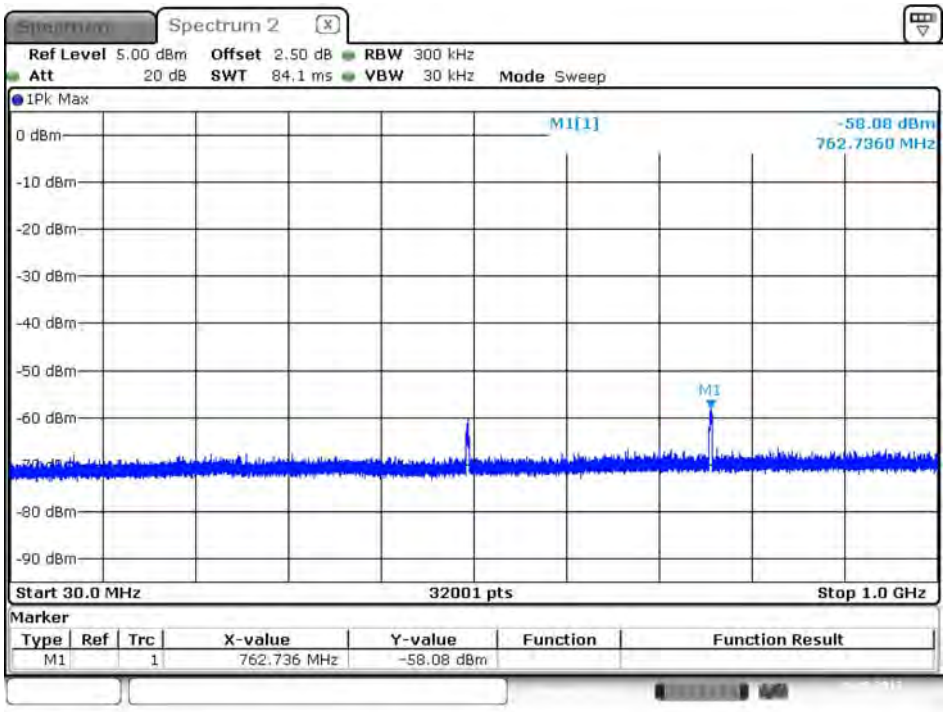
Date: 29.AUG.2017 16:49:49

Conducted Unwanted Emissions (5MHz BW Mode) – 4967.5MHz (30MHz ~ 1GHz) / Port 1



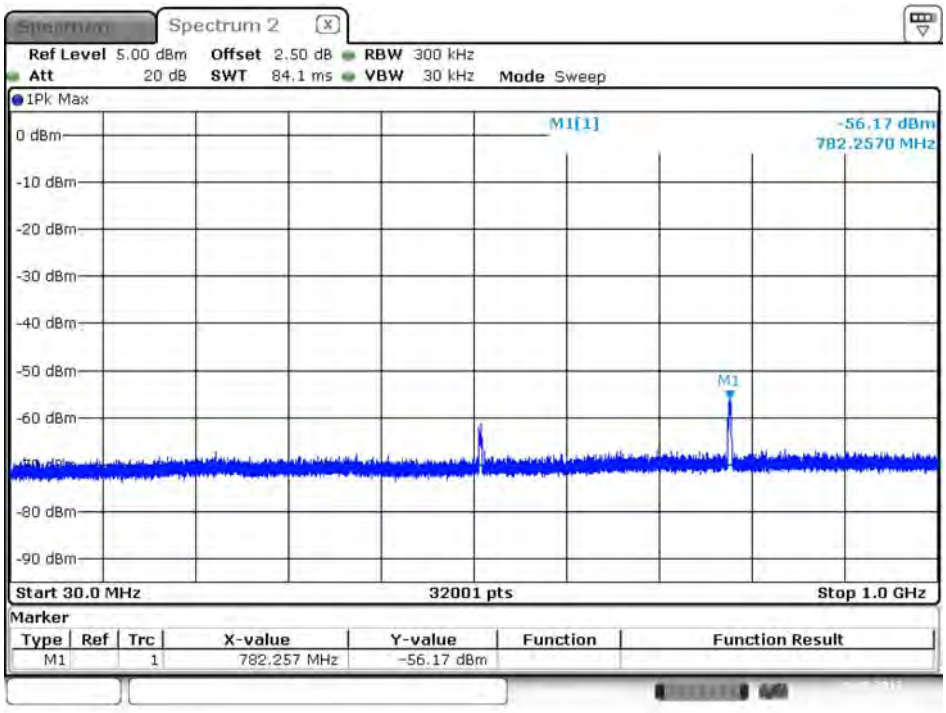
Date: 29.AUG.2017 16:54:40

Conducted Unwanted Emissions (5MHz BW Mode) – 4967.5MHz (30MHz ~ 1GHz) / Port 2



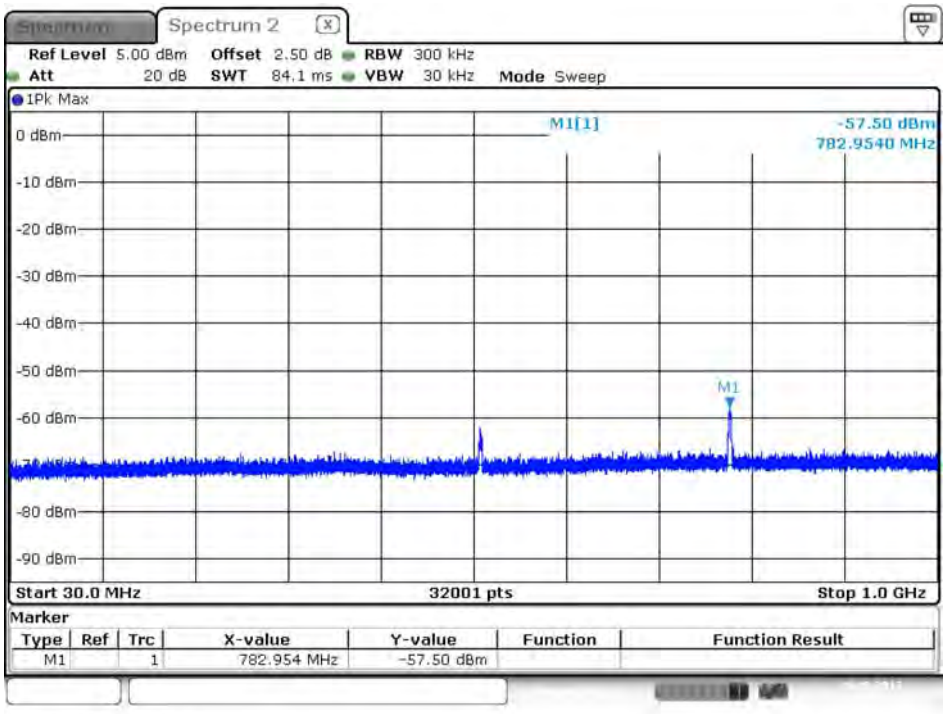
Date: 29.AUG.2017 16:56:28

Conducted Unwanted Emissions (5MHz BW Mode) – 4987.5MHz (30MHz ~ 1GHz) / Port 1



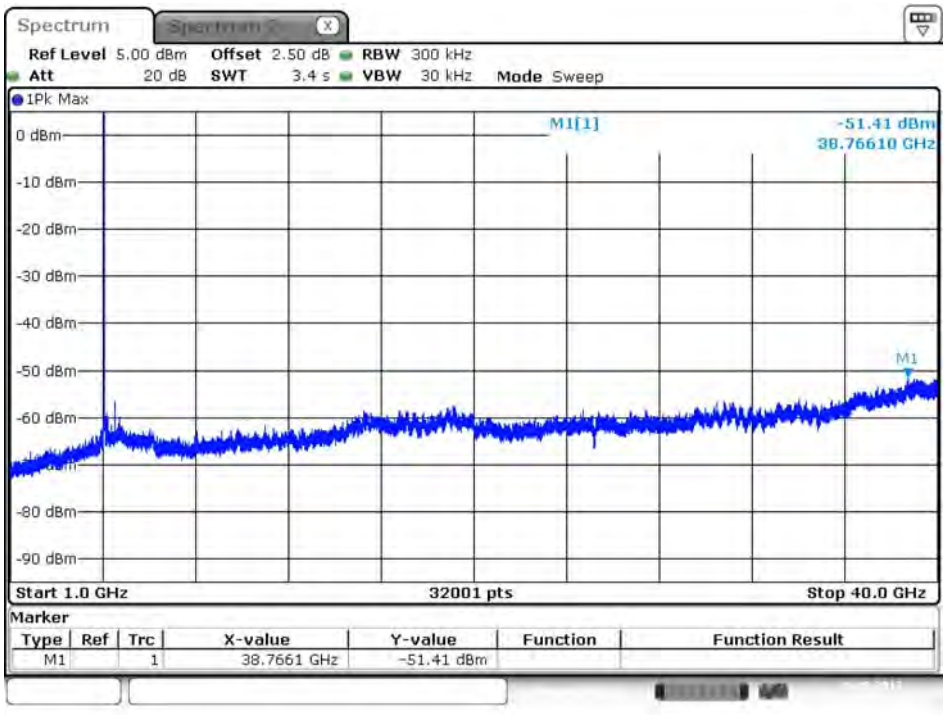
Date: 29.AUG.2017 16:59:15

Conducted Unwanted Emissions (5MHz BW Mode) – 4987.5MHz (30MHz ~ 1GHz) / Port 2



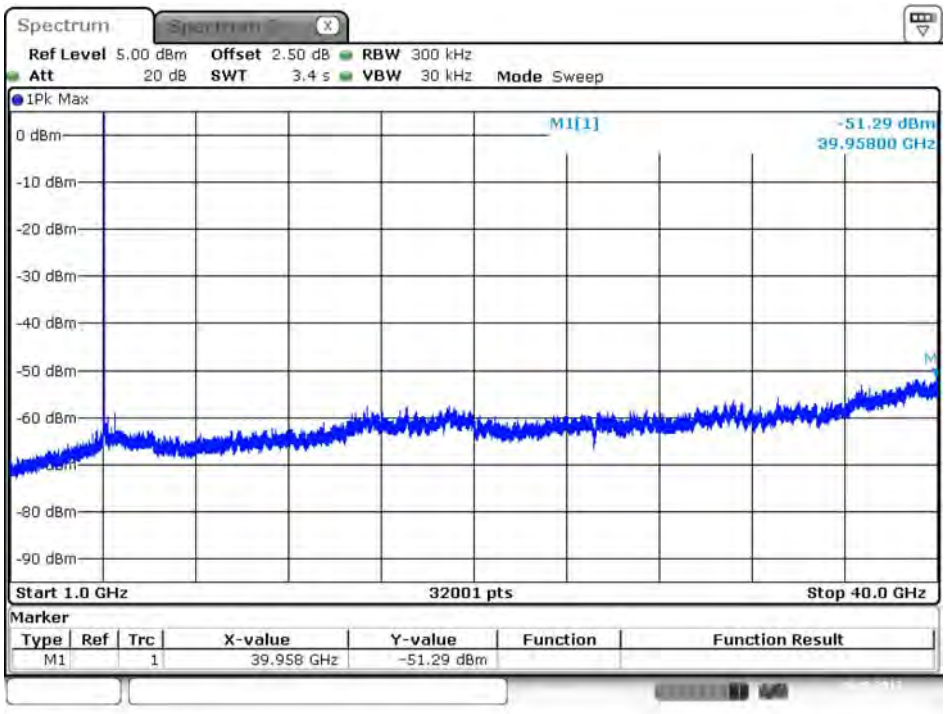
Date: 29.AUG.2017 16:57:09

Conducted Unwanted Emissions (5MHz BW Mode) – 4942.5MHz (1GHz ~ 40GHz) / Port 1



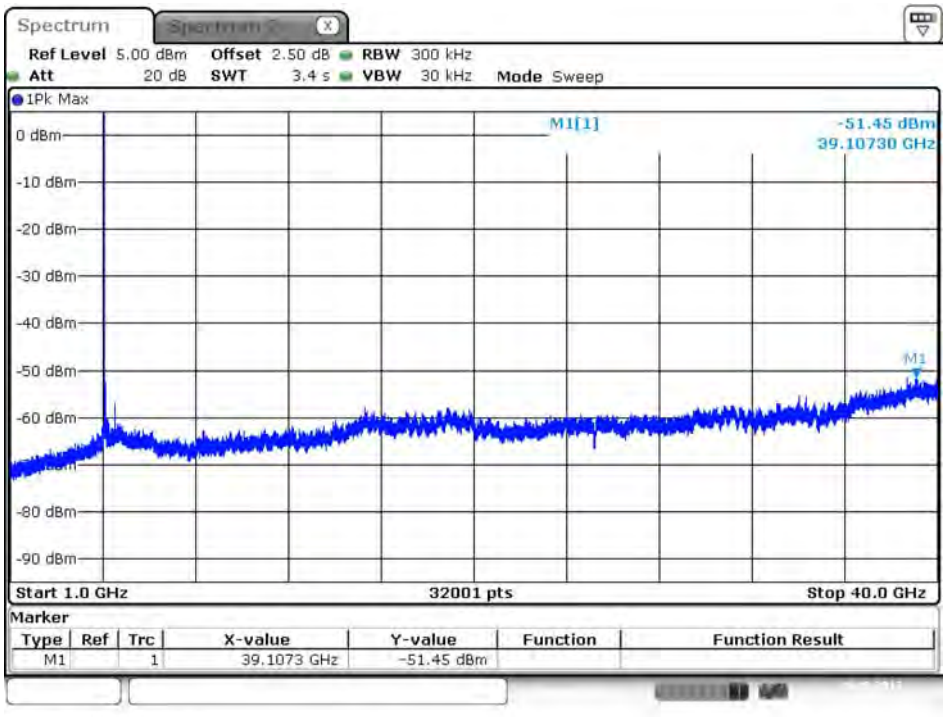
Date: 29.AUG.2017 16:51:44

Conducted Unwanted Emissions (5MHz BW Mode) – 4942.5MHz (1GHz ~ 40GHz) / Port 2



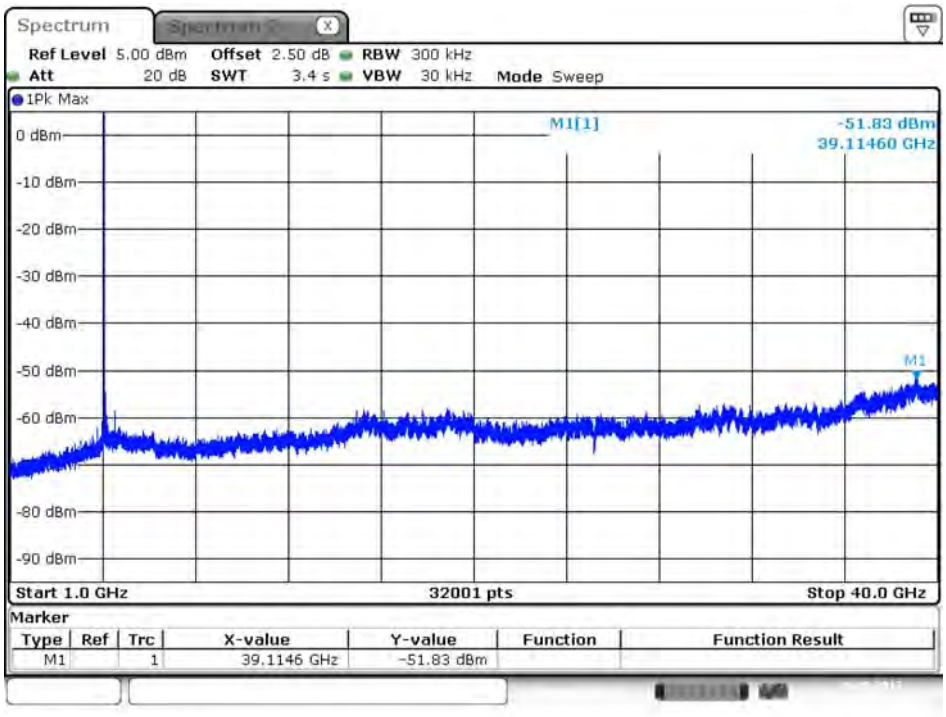
Date: 29.AUG.2017 16:50:29

Conducted Unwanted Emissions (5MHz BW Mode) – 4967.5MHz (1GHz ~ 40GHz) / Port 1



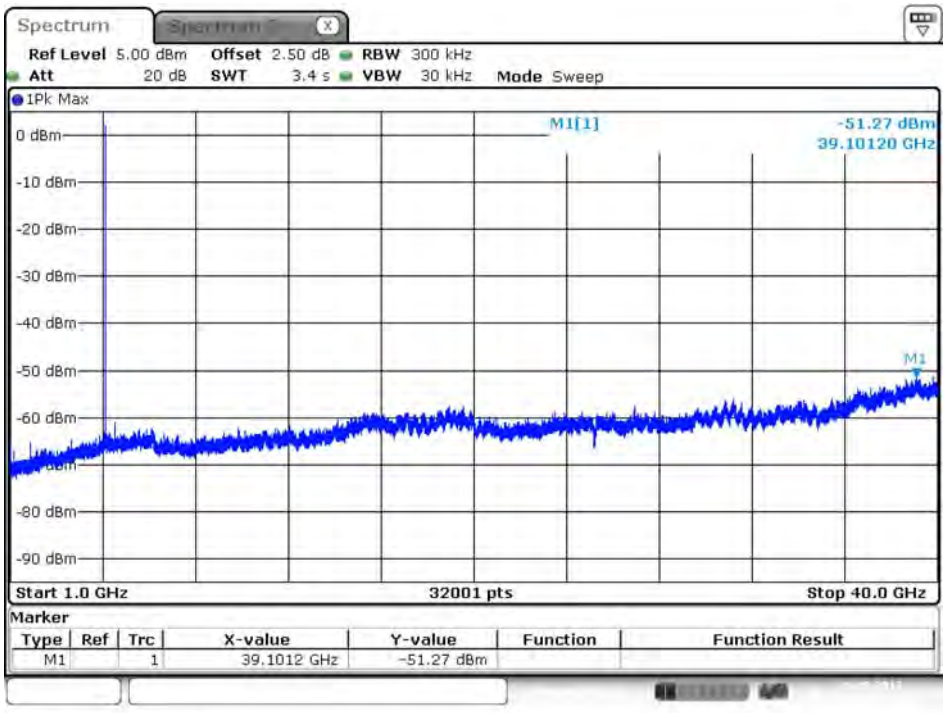
Date: 29.AUG.2017 16:55:11

Conducted Unwanted Emissions (5MHz BW Mode) – 4967.5MHz (1GHz ~ 40GHz) / Port 2



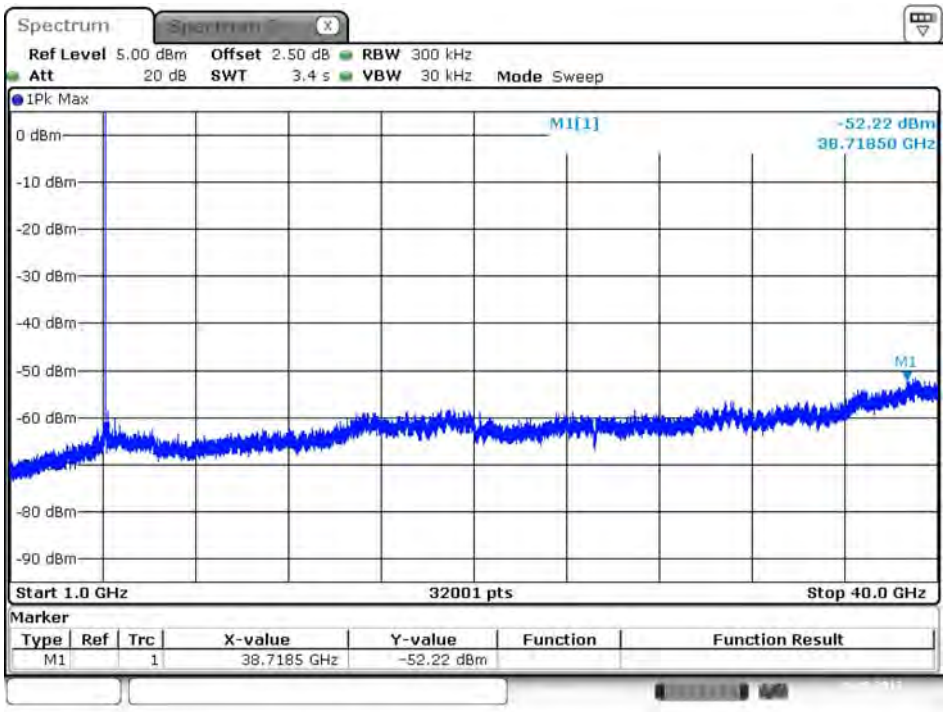
Date: 29.AUG.2017 16:56:12

Conducted Unwanted Emissions (5MHz BW Mode) – 4987.5MHz (1GHz ~ 40GHz) / Port 1



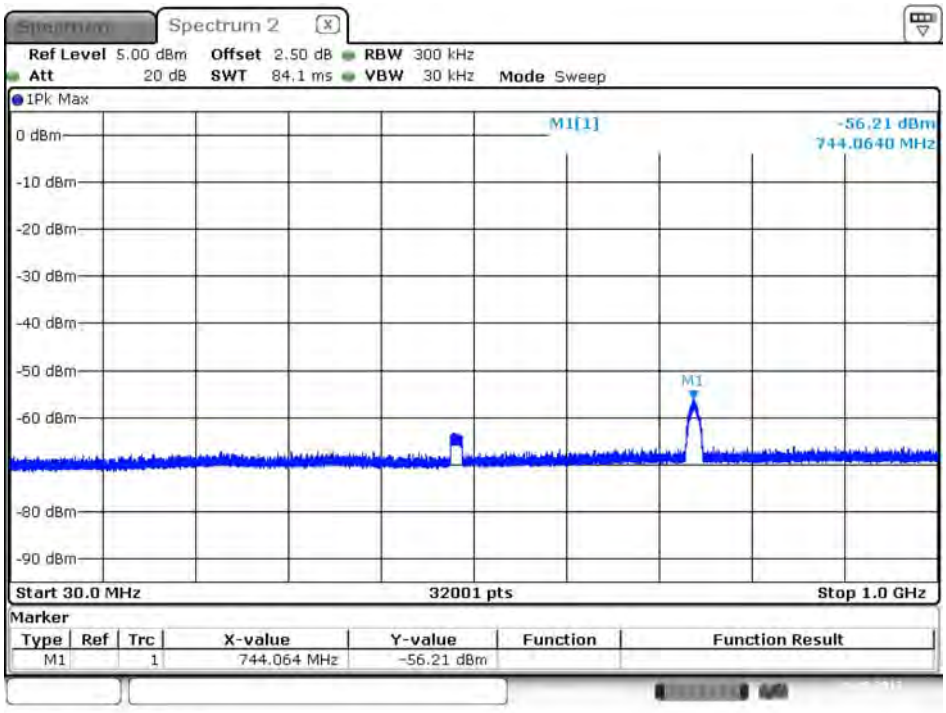
Date: 29.AUG.2017 16:58:32

Conducted Unwanted Emissions (5MHz BW Mode) – 4987.5MHz (1GHz ~ 40GHz) / Port 2



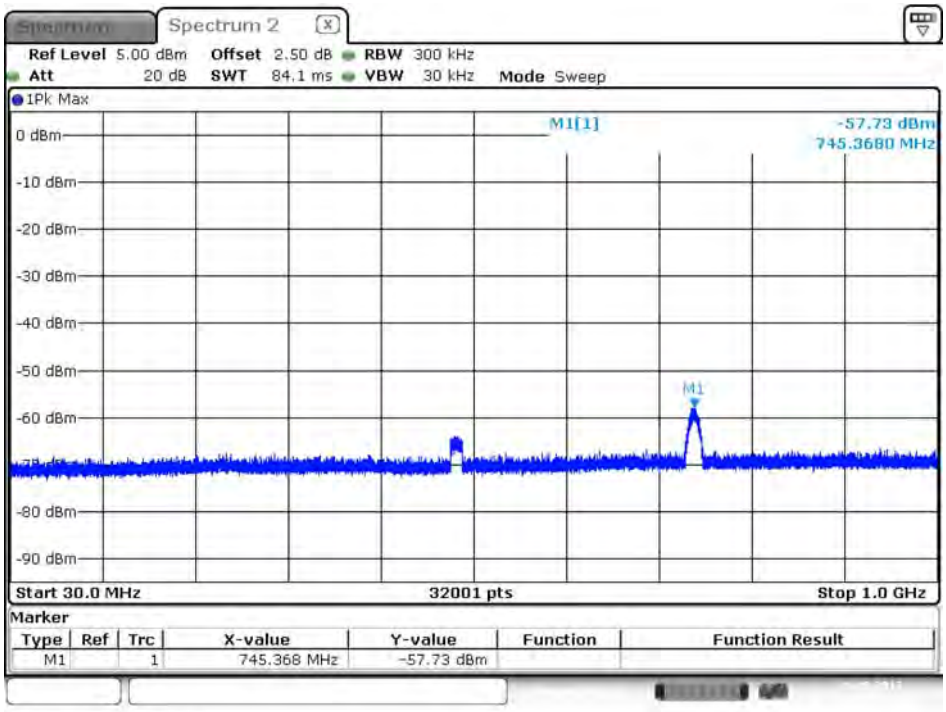
Date: 29.AUG.2017 16:57:34

Conducted Unwanted Emissions (20MHz BW Mode) – 4950MHz (30MHz ~ 1GHz) / Port 1



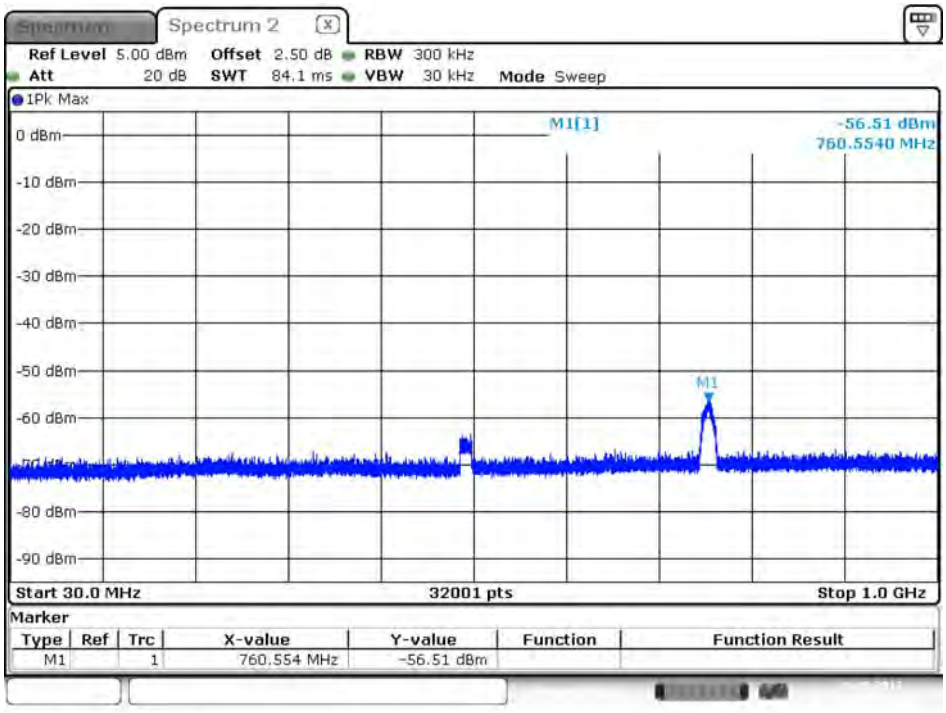
Date: 29.AUG.2017 17:16:17

Conducted Unwanted Emissions (20MHz BW Mode) – 4950MHz (30MHz ~ 1GHz) / Port 2



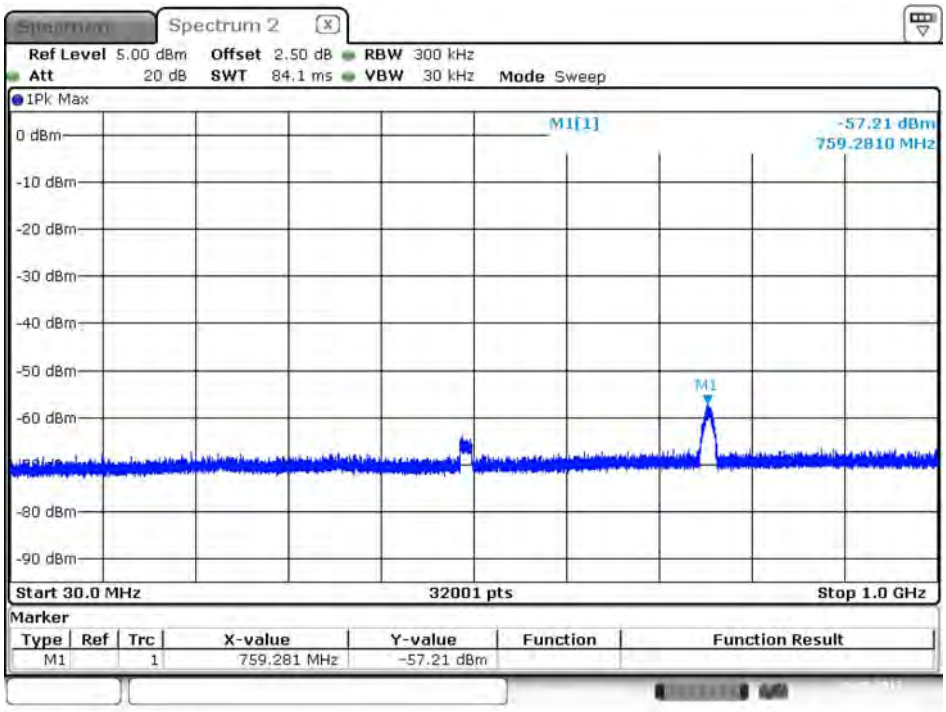
Date: 29.AUG.2017 17:18:52

Conducted Unwanted Emissions (20MHz BW Mode) – 4965MHz (30MHz ~ 1GHz) / Port 1



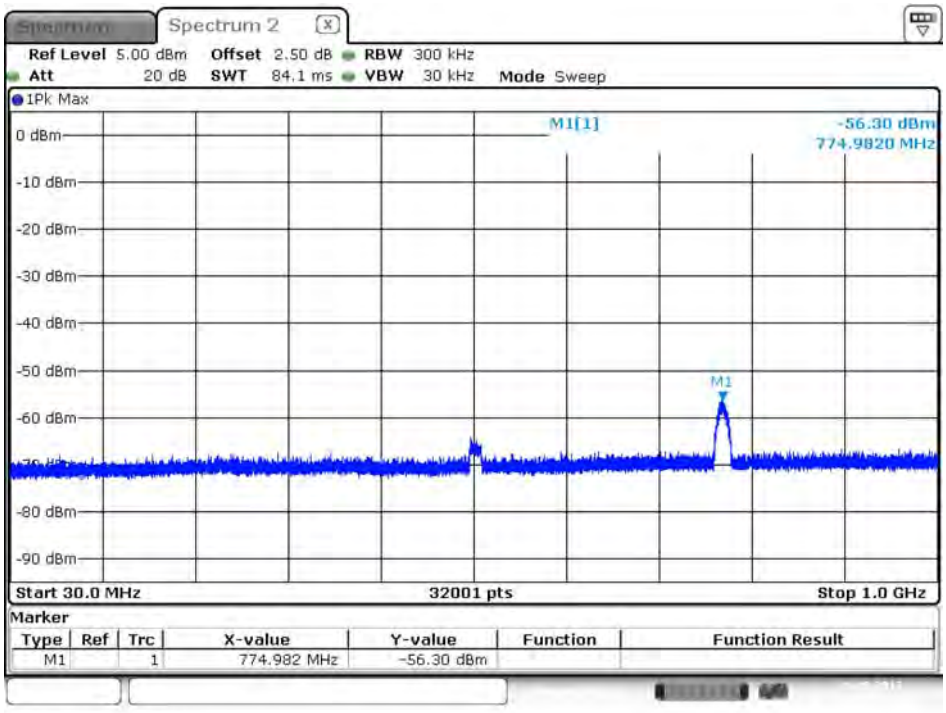
Date: 29.AUG.2017 17:21:59

Conducted Unwanted Emissions (20MHz BW Mode) – 4965MHz (30MHz ~ 1GHz) / Port 2



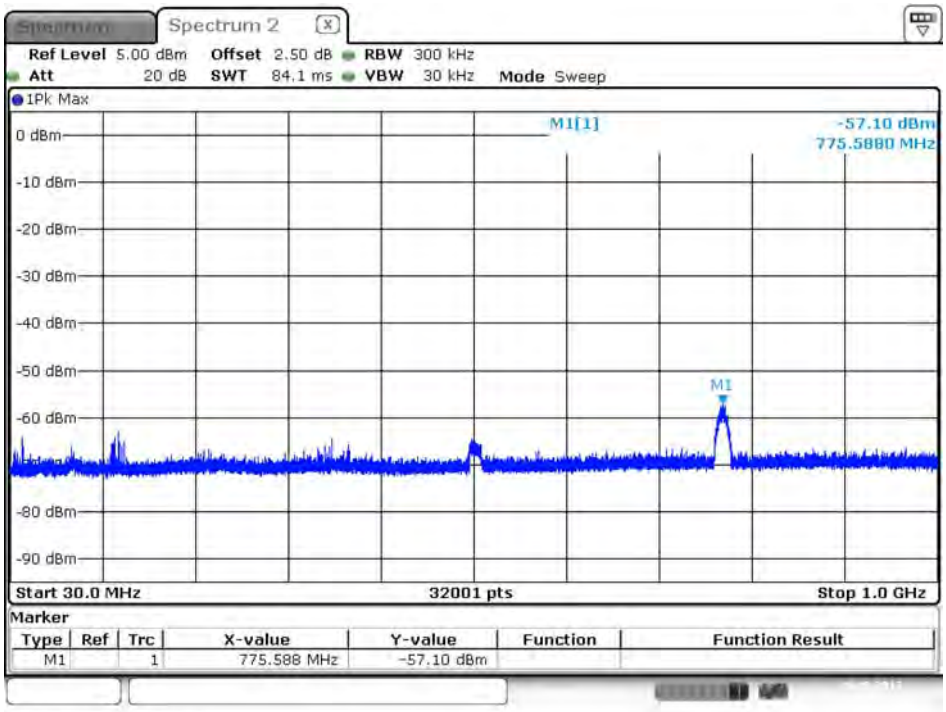
Date: 29.AUG.2017 17:19:49

Conducted Unwanted Emissions (20MHz BW Mode) – 4980MHz (30MHz ~ 1GHz) / Port 1



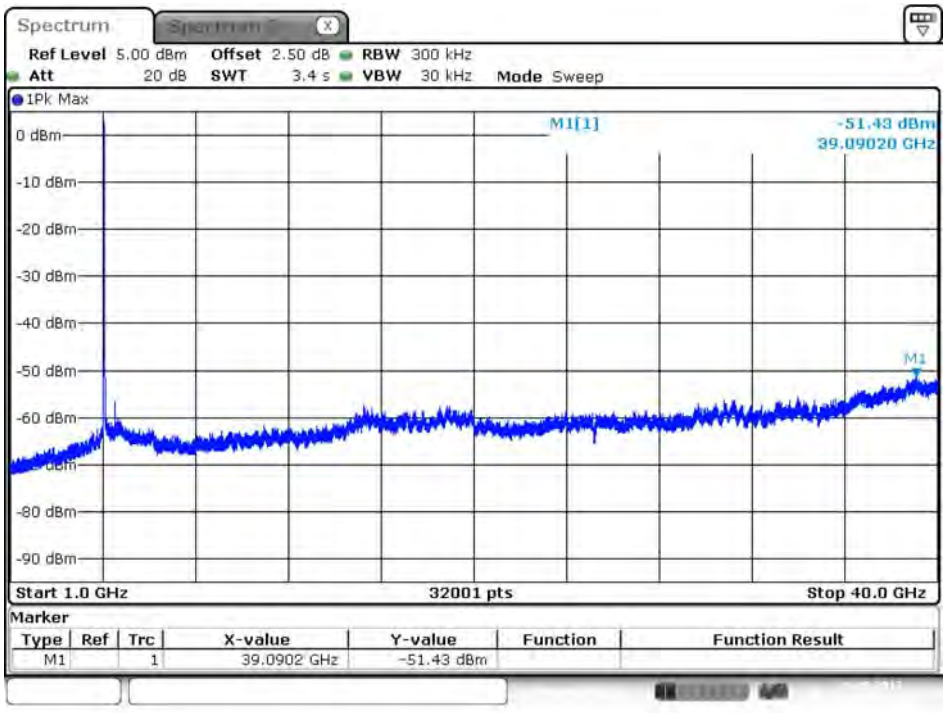
Date: 29.AUG.2017 17:23:31

Conducted Unwanted Emissions (20MHz BW Mode) – 4980MHz (30MHz ~ 1GHz) / Port 2



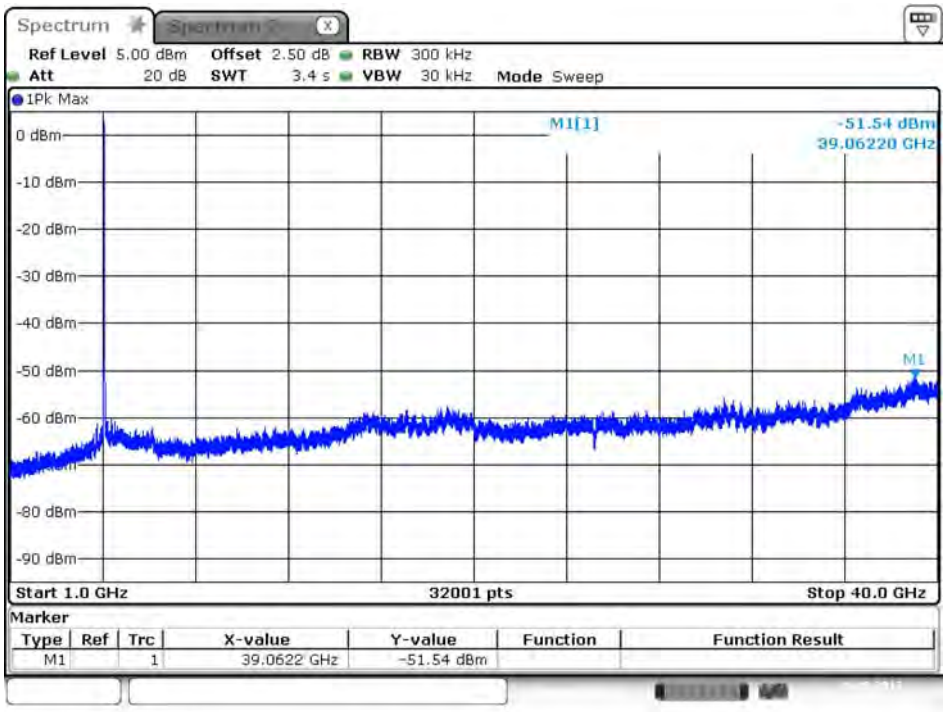
Date: 29.AUG.2017 17:25:15

Conducted Unwanted Emissions (20MHz BW Mode) – 4950MHz (1GHz ~ 40GHz) / Port 1



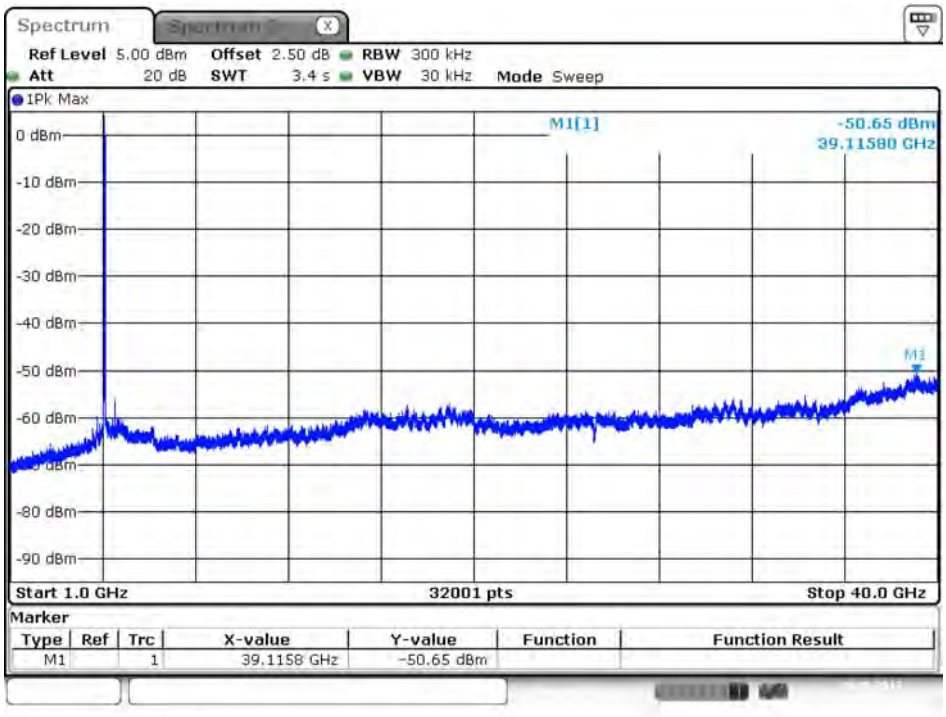
Date: 29.AUG.2017 17:17:18

Conducted Unwanted Emissions (20MHz BW Mode) – 4950MHz (1GHz ~ 40GHz) / Port 2



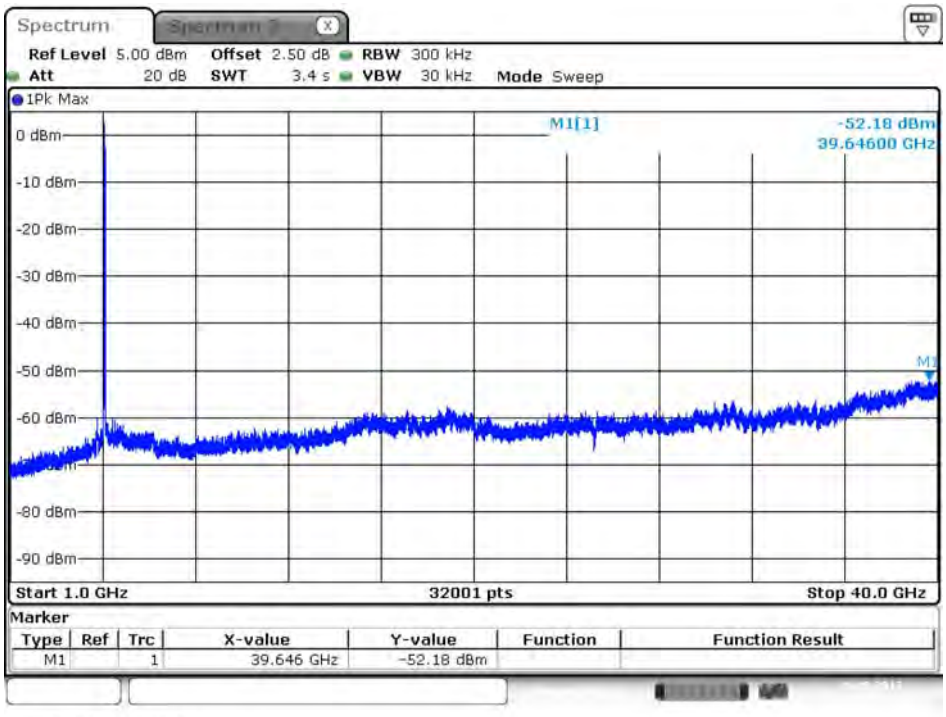
Date: 29.AUG.2017 17:18:29

Conducted Unwanted Emissions (20MHz BW Mode) – 4965MHz (1GHz ~ 40GHz) / Port 1



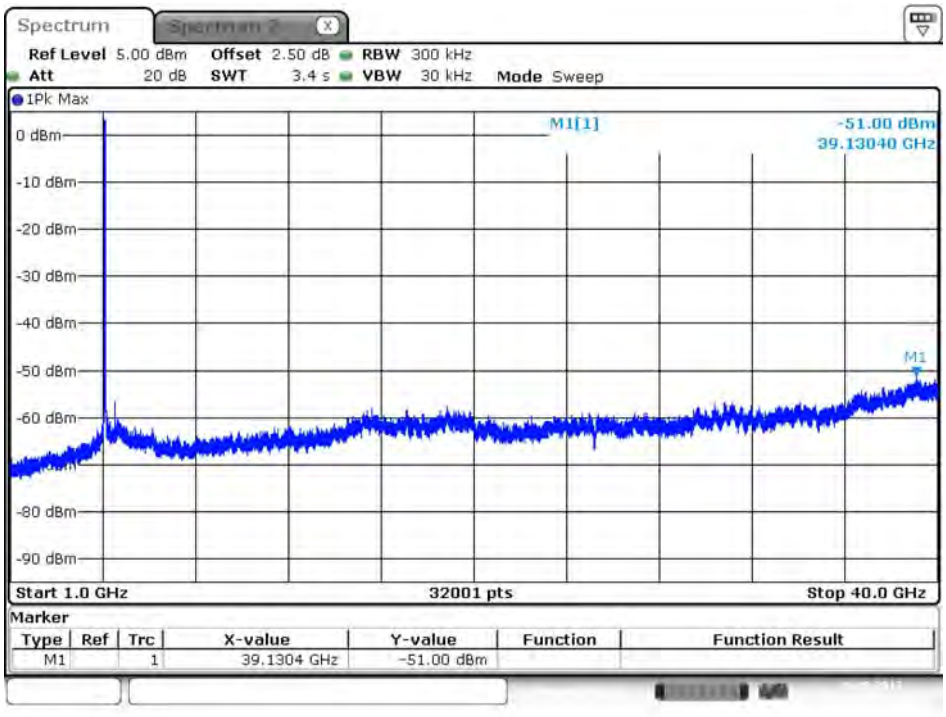
Date: 29.AUG.2017 17:21:40

Conducted Unwanted Emissions (20MHz BW Mode) – 4965MHz (1GHz ~ 40GHz) / Port 2



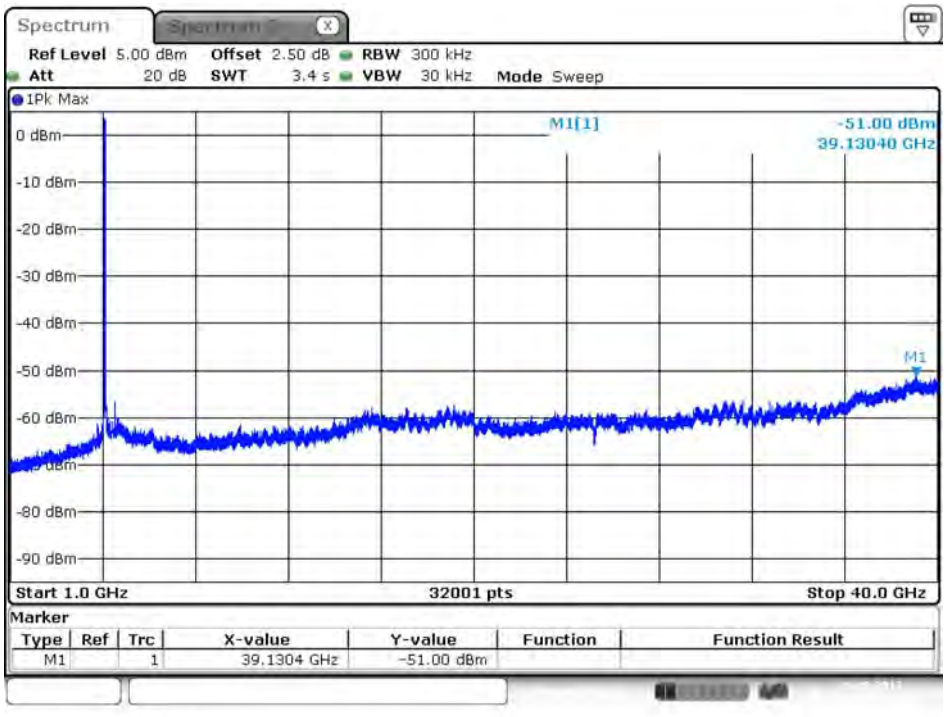
Date: 29.AUG.2017 17:20:19

Conducted Unwanted Emissions (20MHz BW Mode) – 4980MHz (1GHz ~ 40GHz) / Port 1



Date: 29.AUG.2017 17:24:04

Conducted Unwanted Emissions (20MHz BW Mode) – 4980MHz (1GHz ~ 40GHz) / Port 2



Date: 29.AUG.2017 17:24:49

4.5. Transmitter Radiated Unwanted Emissions Measurement

4.5.1. Limit

On any frequency removed from the assigned frequency above 150% of the authorized bandwidth: 50 or 55+ 10 log (P) dB, whichever is the lesser attenuation. (P=Average transmit power in watt)

4.5.2. Measuring Instruments and Setting

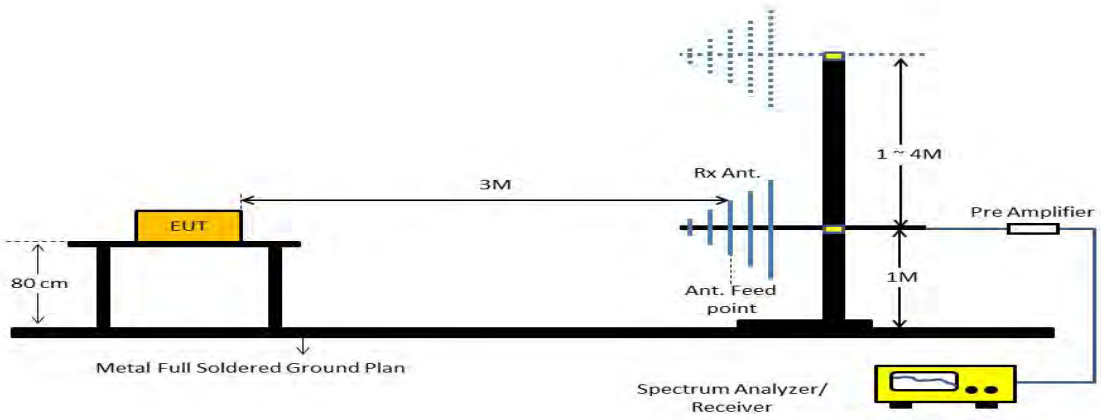
Please refer to section 5 in this report. The following table is the setting of the Spectrum Analyzer.

Spectrum Parameter	Setting
Detector	RMS (Average)
Frequency Range	30MHz – 40GHz
RBW / VBW	1 MHz / 3MHz

4.5.3. Test Procedures

1. The EUT was placed on the top of the turntable in anechoic chamber.
2. A spectrum analyzer was used RBW of 1 MHz and VBW of 3 MHz for the final measurements utilizing an RMS detector at the frequencies with spurious emissions amplitudes.
3. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find *spurious emissions reading*.
4. *Spurious emissions field strength level* equal to *spurious emissions reading on spectrum analyzer*+ *Corrected Reading* (Antenna Factor + Cable Loss - Preamp Factor).
5. Final *radiated spurious emissions* may be converted from *spurious emissions field strength level* - 95.2 dB

4.5.4. Test Setup Layout



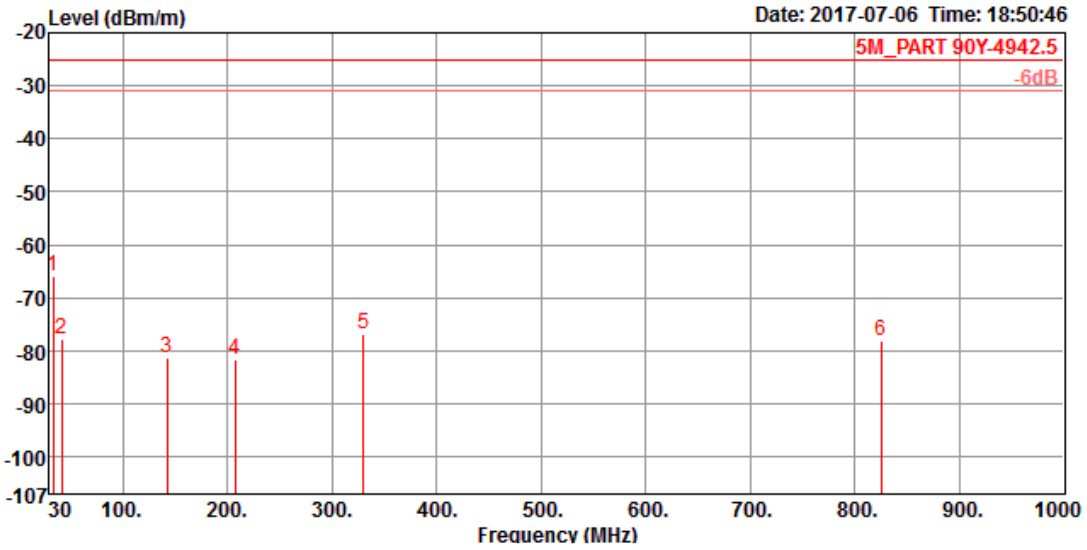
4.5.5. Test Deviation

There is no deviation with the original standard.

4.5.6. Results of Transmitter Radiated Unwanted Emissions (30MHz~1GHz)

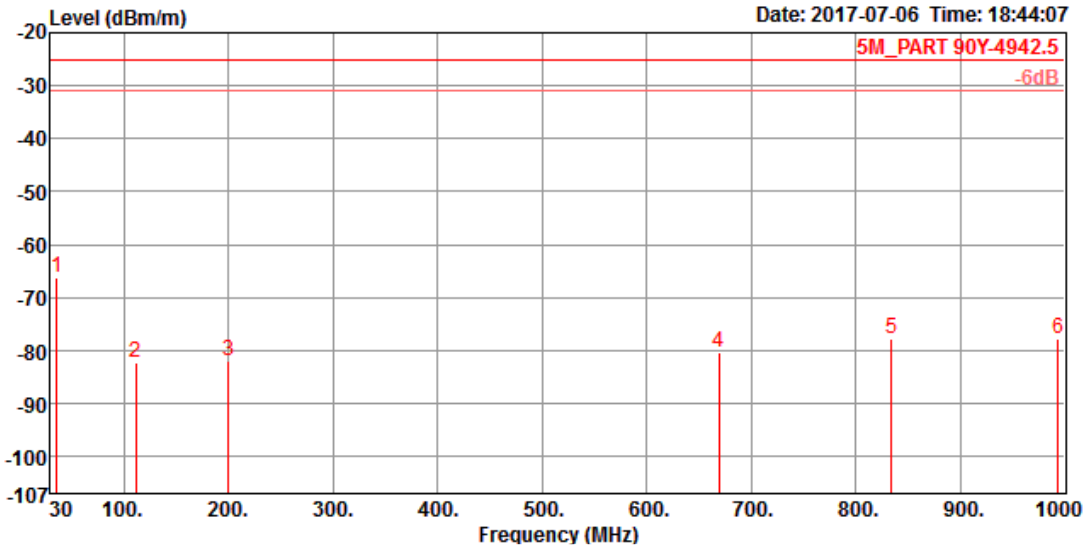
Temperature	22°C	Humidity	54%
Test Engineer	Mars Lin	Mode	5MHz / 4942.5MHz
Test Mode	Mode 1 / Ant. 1		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	33.88	-65.88	-25.00	-40.88	-56.85	0.53	21.99	31.55	300	0	Peak	HORIZONTAL
2	41.64	-77.93	-25.00	-52.93	-64.47	0.56	17.64	31.66	300	0	Peak	HORIZONTAL
3	142.52	-81.31	-25.00	-56.31	-67.36	0.94	17.00	31.89	300	0	Peak	HORIZONTAL
4	207.51	-81.69	-25.00	-56.69	-66.15	1.15	15.23	31.92	300	0	Peak	HORIZONTAL
5	329.73	-76.91	-25.00	-51.91	-65.94	1.43	19.66	32.06	300	0	Peak	HORIZONTAL
6	825.40	-77.98	-25.00	-52.98	-73.97	2.32	26.14	32.47	300	0	Peak	HORIZONTAL

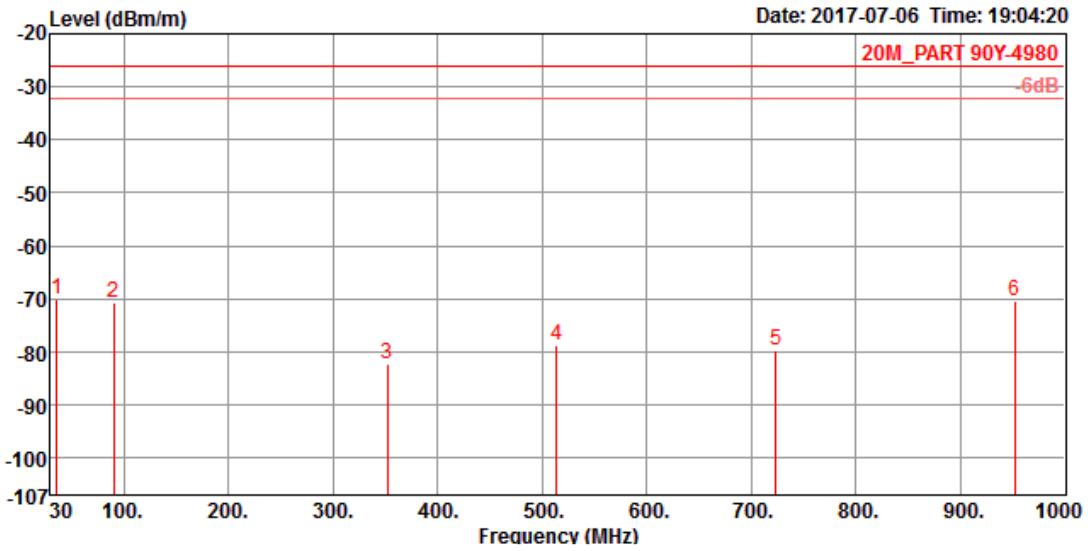
Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	35.82	-66.29	-25.00	-41.29	-56.08	0.53	20.84	31.58	300	0	Peak	VERTICAL
2	111.48	-82.32	-25.00	-57.32	-69.26	0.87	17.94	31.87	300	0	Peak	VERTICAL
3	199.75	-81.81	-25.00	-56.81	-66.26	1.13	15.25	31.93	300	0	Peak	VERTICAL
4	669.23	-80.45	-25.00	-55.45	-75.43	2.04	25.42	32.48	300	0	Peak	VERTICAL
5	834.13	-77.63	-25.00	-52.63	-73.73	2.33	26.23	32.46	300	0	Peak	VERTICAL
6	993.21	-77.91	-25.00	-52.91	-75.25	2.48	27.33	32.47	300	0	Peak	VERTICAL

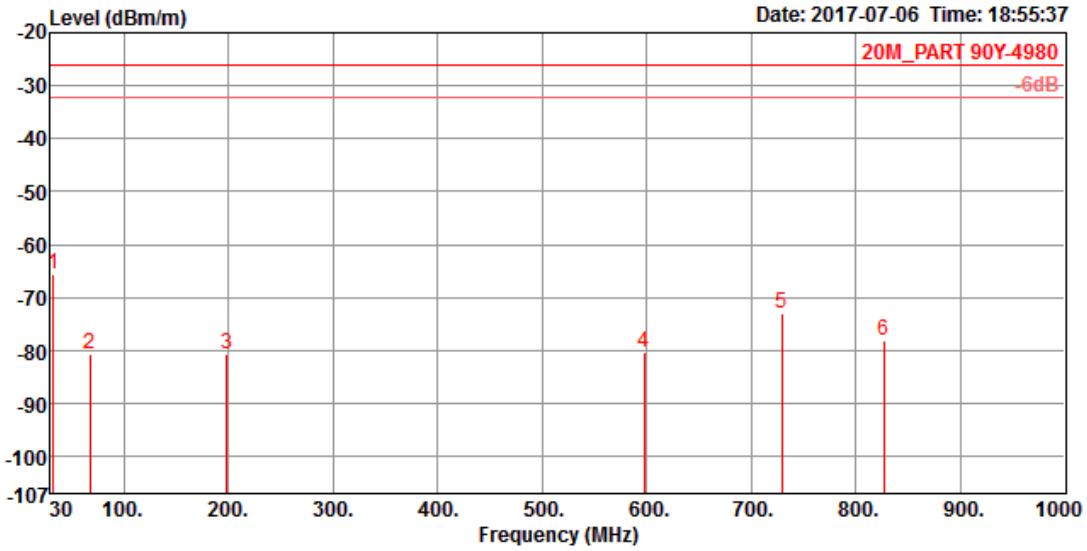
Temperature	22°C	Humidity	54%
Test Engineer	Mars Lin	Mode	20MHz / 4980MHz
Test Mode	Mode 1 / Ant. 1		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	35.82	-70.04	-26.05	-43.99	-59.83	0.53	20.84	31.58	100	360	Peak	HORIZONTAL
2	90.14	-70.71	-26.05	-44.66	-54.46	0.76	14.84	31.85	100	360	Peak	HORIZONTAL
3	352.04	-82.25	-26.05	-56.20	-71.92	1.46	20.28	32.07	100	360	Peak	HORIZONTAL
4	514.03	-78.88	-26.05	-52.83	-71.80	1.79	23.44	32.31	100	360	Peak	HORIZONTAL
5	723.55	-79.62	-26.05	-53.57	-74.67	2.14	25.42	32.51	100	360	Peak	HORIZONTAL
6	951.50	-70.26	-26.05	-44.21	-67.08	2.43	26.82	32.43	100	360	Peak	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	32.91	-65.56	-26.05	-39.51	-57.19	0.53	22.62	31.52	300	0	Peak	VERTICAL
2	67.83	-80.52	-26.05	-54.47	-61.71	0.69	12.32	31.82	300	0	Peak	VERTICAL
3	198.78	-80.67	-26.05	-54.62	-65.11	1.13	15.24	31.93	300	0	Peak	VERTICAL
4	597.45	-80.40	-26.05	-54.35	-74.70	1.93	24.75	32.38	300	0	Peak	VERTICAL
5	729.37	-72.92	-26.05	-46.87	-68.05	2.15	25.50	32.52	300	0	Peak	VERTICAL
6	826.37	-78.09	-26.05	-52.04	-74.12	2.32	26.17	32.46	300	0	Peak	VERTICAL

Note1:

The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

Note2:

EIRP = Pr - Gr + 20 log (4 * Pi * D / λ) - Cr - PAr – Pr

Where

Pr = Receiver Power

Gr = Gain of receiving antenna

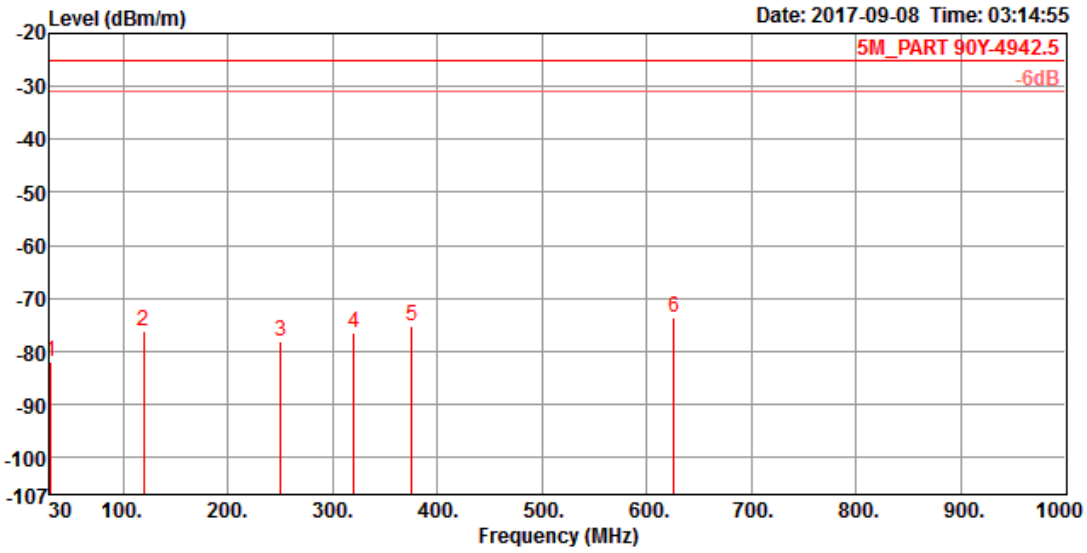
D = Distance in km

Cr = Loss of receiving path

PAr = Gain of receiving amplifier

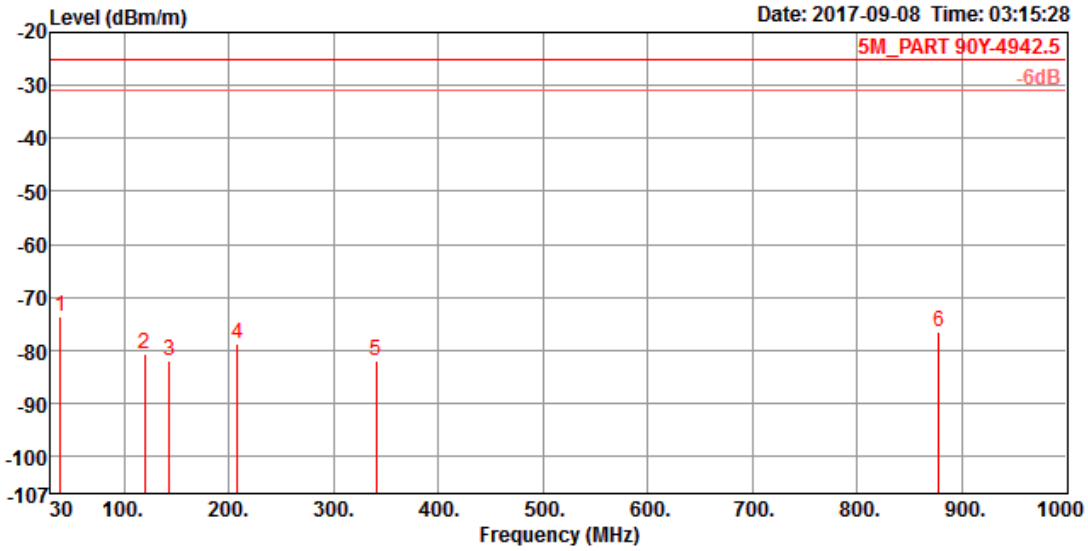
Temperature	22℃	Humidity	54%
Test Engineer	Eason Chen	Mode	5MHz / 4942.5MHz
Test Mode	Mode 2 / Ant. 2		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	30.95	-81.99	-25.00	-56.99	-75.21	0.64	25.01	32.43	300	0	Peak	HORIZONTAL
2	119.67	-76.05	-25.00	-51.05	-63.65	1.26	18.70	32.36	300	0	Peak	HORIZONTAL
3	250.26	-78.08	-25.00	-53.08	-66.42	1.83	18.80	32.29	300	0	Peak	HORIZONTAL
4	320.66	-76.43	-25.00	-51.43	-66.53	2.08	20.30	32.28	300	0	Peak	HORIZONTAL
5	375.44	-75.08	-25.00	-50.08	-66.82	2.25	21.78	32.29	300	0	Peak	HORIZONTAL
6	625.68	-73.68	-25.00	-48.68	-69.36	2.90	25.16	32.38	300	0	Peak	HORIZONTAL

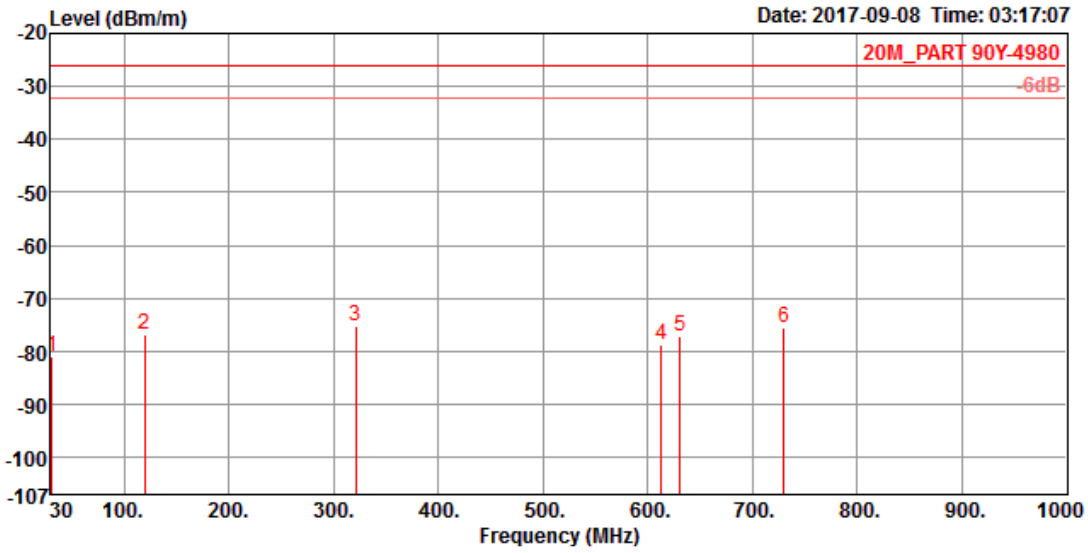
Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	39.20	-73.71	-25.00	-48.71	-62.26	0.72	20.26	32.43	100	360	Peak	VERTICAL
2	119.65	-80.67	-25.00	-55.67	-68.27	1.26	18.70	32.36	100	360	Peak	VERTICAL
3	143.53	-81.88	-25.00	-56.88	-68.34	1.38	17.42	32.34	100	360	Peak	VERTICAL
4	208.62	-78.82	-25.00	-53.82	-64.57	1.67	16.39	32.31	100	360	Peak	VERTICAL
5	340.60	-81.95	-25.00	-56.95	-72.66	2.14	20.85	32.28	100	360	Peak	VERTICAL
6	877.63	-76.50	-25.00	-51.50	-75.63	3.46	27.37	31.70	100	360	Peak	VERTICAL

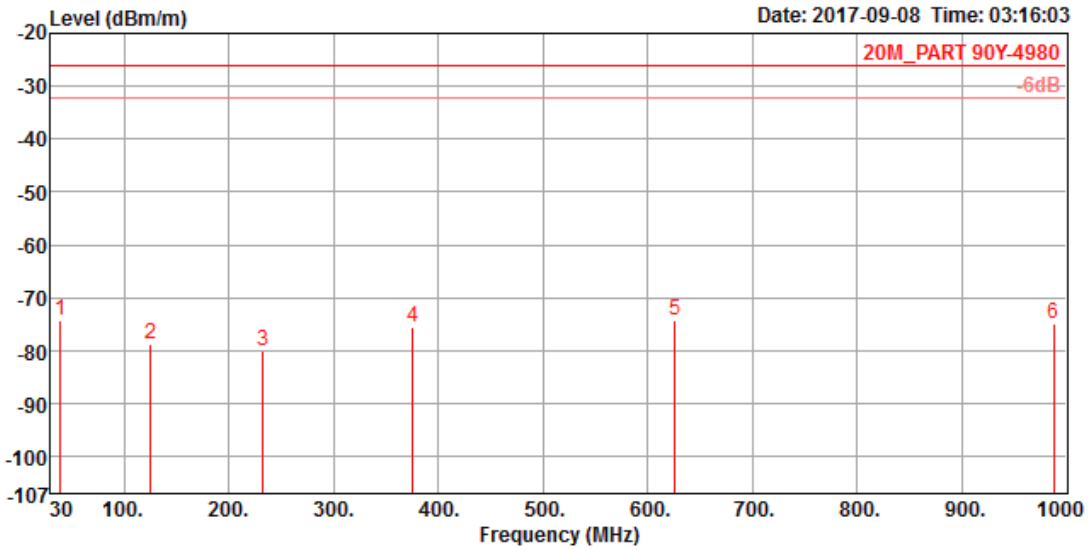
Temperature	22℃	Humidity	54%
Test Engineer	Eason Chen	Mode	20MHz / 4980MHz
Test Mode	Mode 2 / Ant. 2		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	30.66	-80.96	-26.05	-54.91	-74.36	0.63	25.20	32.43	100	360	Peak	HORIZONTAL
2	119.69	-76.76	-26.05	-50.71	-64.36	1.26	18.70	32.36	100	360	Peak	HORIZONTAL
3	321.53	-75.16	-26.05	-49.11	-65.26	2.08	20.30	32.28	100	360	Peak	HORIZONTAL
4	612.54	-78.87	-26.05	-52.82	-74.40	2.88	25.03	32.38	100	360	Peak	HORIZONTAL
5	630.66	-77.17	-26.05	-51.12	-72.94	2.92	25.23	32.38	100	360	Peak	HORIZONTAL
6	729.69	-75.40	-26.05	-49.35	-72.13	3.14	25.86	32.27	100	360	Peak	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	39.31	-74.14	-26.05	-48.09	-62.61	0.72	20.18	32.43	300	360	Peak	VERTICAL
2	125.16	-78.81	-26.05	-52.76	-66.34	1.29	18.60	32.36	300	360	Peak	VERTICAL
3	232.25	-80.07	-26.05	-54.02	-66.87	1.77	17.33	32.30	300	360	Peak	VERTICAL
4	375.65	-75.62	-26.05	-49.57	-67.36	2.25	21.78	32.29	300	360	Peak	VERTICAL
5	625.55	-74.17	-26.05	-48.12	-69.85	2.90	25.16	32.38	300	360	Peak	VERTICAL
6	987.65	-74.85	-26.05	-48.80	-75.88	3.68	28.12	30.77	300	360	Peak	VERTICAL

Note1:

The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

Note2:

EIRP = Pr - Gr + 20 log (4 * Pi * D / λ) - Cr - PAr – Pr

Where

Pr = Receiver Power

Gr = Gain of receiving antenna

D = Distance in km

Cr = Loss of receiving path

PAr = Gain of receiving amplifier

4.5.7. Results of Transmitter Radiated Unwanted Emissions (1GHz~40GHz)

Temperature	22°C	Humidity	54%
Test Engineer	Mars Lin	Mode	5MHz / 4942.5MHz
Test Date	Sep. 14, 2017	Test Mode	Mode 1 / Ant. 1

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	1252.23	-61.73	-25.00	-36.73	-53.80	2.66	24.70	35.29	100	159	Peak	HORIZONTAL
2	1380.10	-68.61	-25.00	-43.61	-61.47	2.78	25.13	35.05	100	144	Peak	HORIZONTAL
3	1790.96	-67.46	-25.00	-42.46	-63.54	3.19	27.55	34.66	100	135	Peak	HORIZONTAL
4	2844.48	-65.08	-25.00	-40.08	-63.31	4.03	28.87	34.67	100	231	Peak	HORIZONTAL
5	9882.36	-50.96	-25.00	-25.96	-61.55	7.81	38.16	35.38	184	52	Peak	HORIZONTAL
6	14830.00	-42.53	-25.00	-17.53	-57.53	9.24	39.57	33.81	100	124	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	1248.16	-62.26	-25.00	-37.26	-54.30	2.65	24.69	35.30	100	321	Peak	VERTICAL
2	1390.00	-60.24	-25.00	-35.24	-53.16	2.79	25.17	35.04	100	311	Peak	VERTICAL
3	1789.96	-62.74	-25.00	-37.74	-58.77	3.18	27.51	34.66	100	315	Peak	VERTICAL
4	2850.00	-66.92	-25.00	-41.92	-65.15	4.03	28.87	34.67	100	253	Peak	VERTICAL
5	9865.32	-51.72	-25.00	-26.72	-62.28	7.80	38.14	35.38	214	93	Peak	VERTICAL
6	14831.59	-42.35	-25.00	-17.35	-57.35	9.24	39.57	33.81	100	58	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Mars Lin	Mode	5MHz / 4967.5MHz
Test Date	Sep. 14, 2017	Test Mode	Mode 1 / Ant. 1

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	1248.32	-65.33	-25.00	-40.33	-57.37	2.65	24.69	35.30	171	143	Peak	HORIZONTAL
2	1390.11	-64.58	-25.00	-39.58	-57.51	2.79	25.17	35.03	171	143	Peak	HORIZONTAL
3	1789.95	-63.58	-25.00	-38.58	-59.61	3.18	27.51	34.66	171	143	Peak	HORIZONTAL
4	2850.11	-66.58	-25.00	-41.58	-64.81	4.03	28.87	34.67	171	143	Peak	HORIZONTAL
5	9938.42	-51.40	-25.00	-26.40	-62.03	7.83	38.18	35.38	171	39	Peak	HORIZONTAL
6	14902.15	-40.28	-25.00	-15.28	-55.03	9.27	39.33	33.85	171	143	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	1248.35	-65.28	-25.00	-40.28	-57.32	2.65	24.69	35.30	100	56	Peak	VERTICAL
2	1390.50	-65.40	-25.00	-40.40	-58.33	2.79	25.17	35.03	100	98	Peak	VERTICAL
3	1789.95	-63.55	-25.00	-38.55	-59.58	3.18	27.51	34.66	100	112	Peak	VERTICAL
4	2850.44	-64.35	-25.00	-39.35	-62.58	4.03	28.87	34.67	100	189	Peak	VERTICAL
5	9961.55	-53.30	-25.00	-28.30	-63.93	7.83	38.18	35.38	193	85	Peak	VERTICAL
6	14902.33	-42.58	-25.00	-17.58	-57.33	9.27	39.33	33.85	193	38	Peak	VERTICAL

Temperature	22℃	Humidity	54%
Test Engineer	Mars Lin	Mode	5MHz / 4987.5MHz
Test Date	Sep. 14, 2017	Test Mode	Mode 1 / Ant. 1

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	1248.33	-62.73	-25.00	-37.73	-54.77	2.65	24.69	35.30	147	156	Peak	HORIZONTAL
2	1390.45	-61.85	-25.00	-36.85	-54.78	2.79	25.17	35.03	147	187	Peak	HORIZONTAL
3	1789.96	-62.85	-25.00	-37.85	-58.88	3.18	27.51	34.66	147	105	Peak	HORIZONTAL
4	2850.33	-65.17	-25.00	-40.17	-63.40	4.03	28.87	34.67	147	117	Peak	HORIZONTAL
5	9981.25	-51.03	-25.00	-26.03	-61.68	7.84	38.19	35.38	177	59	Peak	HORIZONTAL
6	14962.45	-46.03	-25.00	-21.03	-60.61	9.28	39.22	33.92	177	125	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	1248.25	-63.41	-25.00	-38.41	-55.45	2.65	24.69	35.30	169	125	Peak	VERTICAL
2	1390.52	-62.41	-25.00	-37.41	-55.34	2.79	25.17	35.03	125	188	Peak	VERTICAL
3	1789.99	-62.88	-25.00	-37.88	-58.91	3.18	27.51	34.66	125	157	Peak	VERTICAL
4	2850.45	-65.14	-25.00	-40.14	-63.37	4.03	28.87	34.67	125	124	Peak	VERTICAL
5	9963.34	-53.41	-25.00	-28.41	-64.04	7.83	38.18	35.38	169	97	Peak	VERTICAL
6	14962.50	-45.41	-25.00	-20.41	-59.99	9.28	39.22	33.92	169	125	Peak	VERTICAL

Temperature	22℃	Humidity	54%
Test Engineer	Mars Lin	Mode	20MHz / 4950MHz
Test Date	Sep. 14, 2017	Test Mode	Mode 1 / Ant. 1

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	1248.95	-62.17	-26.26	-35.91	-54.21	2.65	24.69	35.30	127	126	Peak	HORIZONTAL
2	1390.55	-60.41	-26.26	-34.15	-53.34	2.79	25.17	35.03	127	153	Peak	HORIZONTAL
3	1789.91	-62.41	-26.26	-36.15	-58.44	3.18	27.51	34.66	127	125	Peak	HORIZONTAL
4	2850.49	-66.41	-26.26	-40.15	-64.64	4.03	28.87	34.67	127	105	Peak	HORIZONTAL
5	9900.14	-51.17	-26.26	-24.91	-61.76	7.81	38.16	35.38	179	49	Peak	HORIZONTAL
6	14850.19	-44.17	-26.26	-17.91	-59.17	9.24	39.57	33.81	159	47	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	1248.16	-63.39	-26.26	-37.13	-55.43	2.65	24.69	35.30	129	90	Peak	VERTICAL
2	1390.55	-60.39	-26.26	-34.13	-53.32	2.79	25.17	35.03	129	117	Peak	VERTICAL
3	1789.16	-62.39	-26.26	-36.13	-58.42	3.18	27.51	34.66	129	117	Peak	VERTICAL
4	2856.13	-65.99	-26.26	-39.73	-64.26	4.04	28.90	34.67	129	138	Peak	VERTICAL
5	9897.39	-52.39	-26.26	-26.13	-62.98	7.81	38.16	35.38	208	81	Peak	VERTICAL
6	14850.00	-43.39	-26.26	-17.13	-58.39	9.24	39.57	33.81	147	55	Peak	VERTICAL

Temperature	22℃	Humidity	54%
Test Engineer	Mars Lin	Mode	20MHz / 4965MHz
Test Date	Sep. 14, 2017	Test Mode	Mode 1 / Ant. 1

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	1248.33	-61.94	-26.10	-35.84	-53.98	2.65	24.69	35.30	133	89	Peak	HORIZONTAL
2	1390.85	-63.94	-26.10	-37.84	-56.87	2.79	25.17	35.03	133	112	Peak	HORIZONTAL
3	1789.58	-61.94	-26.10	-35.84	-57.97	3.18	27.51	34.66	133	108	Peak	HORIZONTAL
4	2850.11	-65.79	-26.10	-39.69	-64.02	4.03	28.87	34.67	133	189	Peak	HORIZONTAL
5	9938.25	-50.94	-26.10	-24.84	-61.55	7.82	38.17	35.38	181	36	Peak	HORIZONTAL
6	14895.00	-41.94	-26.10	-15.84	-56.79	9.25	39.45	33.85	133	125	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	1248.33	-61.38	-26.10	-35.28	-53.42	2.65	24.69	35.30	156	149	Peak	VERTICAL
2	1390.11	-63.38	-26.10	-37.28	-56.31	2.79	25.17	35.03	156	133	Peak	VERTICAL
3	1789.96	-60.38	-26.10	-34.28	-56.41	3.18	27.51	34.66	156	105	Peak	VERTICAL
4	2850.66	-66.38	-26.10	-40.28	-64.61	4.03	28.87	34.67	156	105	Peak	VERTICAL
5	9941.41	-51.38	-26.10	-25.28	-62.01	7.83	38.18	35.38	205	39	Peak	VERTICAL
6	14895.16	-48.38	-26.10	-22.28	-63.23	9.25	39.45	33.85	156	122	Peak	VERTICAL

Temperature	22℃	Humidity	54%
Test Engineer	Mars Lin	Mode	20MHz / 4980MHz
Test Date	Sep. 14, 2017	Test Mode	Mode 1 / Ant. 1

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	1248.66	-59.57	-26.05	-33.52	-51.61	2.65	24.69	35.30	175	109	Peak	HORIZONTAL
2	1390.16	-61.57	-26.05	-35.52	-54.50	2.79	25.17	35.03	125	33	Peak	HORIZONTAL
3	1789.56	-63.57	-26.05	-37.52	-59.60	3.18	27.51	34.66	135	188	Peak	HORIZONTAL
4	2850.36	-65.85	-26.05	-39.80	-64.08	4.03	28.87	34.67	135	147	Peak	HORIZONTAL
5	9969.45	-50.57	-26.05	-24.52	-61.22	7.84	38.19	35.38	181	45	Peak	HORIZONTAL
6	14940.38	-46.57	-26.05	-20.52	-61.19	9.28	39.22	33.88	175	122	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	1248.69	-60.81	-26.05	-34.76	-52.85	2.65	24.69	35.30	178	113	Peak	VERTICAL
2	1390.14	-61.81	-26.05	-35.76	-54.74	2.79	25.17	35.03	128	139	Peak	VERTICAL
3	1789.91	-62.38	-26.05	-36.33	-58.41	3.18	27.51	34.66	135	198	Peak	VERTICAL
4	2850.14	-64.88	-26.05	-38.83	-63.11	4.03	28.87	34.67	144	192	Peak	VERTICAL
5	9963.59	-51.86	-26.05	-25.81	-62.49	7.83	38.18	35.38	225	98	Peak	VERTICAL
6	14940.86	-44.86	-26.05	-18.81	-59.48	9.28	39.22	33.88	205	137	Peak	VERTICAL

Note1:

The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

Note2:

EIRP = Pr - Gr + 20 log (4 * Pi * D / λ) - Cr - PAr – Pr

Where

Pr = Receiver Power

Gr = Gain of receiving antenna

D = Distance in km

Cr = Loss of receiving path

PAr = Gain of receiving amplifier

Temperature	22℃	Humidity	54%
Test Engineer	Eason Chen	Mode	5MHz / 4942.5MHz
Test Date	Sep. 14, 2017	Test Mode	Mode 2 / Ant. 2

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	2275.11	-54.42	-25.00	-29.42	-52.83	5.97	26.74	34.30	122	20	Peak	HORIZONTAL
2	3211.77	-50.42	-25.00	-25.42	-52.07	7.02	28.48	33.85	197	235	Peak	HORIZONTAL
3	6422.88	-49.42	-25.00	-24.42	-59.93	9.73	33.81	33.03	199	221	Peak	HORIZONTAL
4	9885.97	-46.42	-25.00	-21.42	-63.89	12.07	38.89	33.49	260	311	Peak	HORIZONTAL
5	14836.25	-42.42	-25.00	-17.42	-63.40	14.71	40.93	34.66	179	150	Peak	HORIZONTAL
6	16423.10	-49.42	-25.00	-24.42	-68.56	15.62	38.59	35.07	147	44	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	2275.00	-54.53	-25.00	-29.53	-52.94	5.97	26.74	34.30	126	260	Peak	VERTICAL
2	3211.12	-49.53	-25.00	-24.53	-51.18	7.02	28.48	33.85	156	99	Peak	VERTICAL
3	6423.78	-50.53	-25.00	-25.53	-61.11	9.74	33.87	33.03	201	54	Peak	VERTICAL
4	9885.09	-44.53	-25.00	-19.53	-62.00	12.07	38.89	33.49	174	30	Peak	VERTICAL
5	14839.22	-40.98	-25.00	-15.98	-61.96	14.71	40.93	34.66	192	348	Peak	VERTICAL
6	16423.98	-50.53	-25.00	-25.53	-69.67	15.62	38.59	35.07	102	333	Peak	VERTICAL

Temperature	22℃	Humidity	54%
Test Engineer	Eason Chen	Mode	5MHz / 4967.5MHz
Test Date	Sep. 14, 2017	Test Mode	Mode 2 / Ant. 2

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	1179.33	-58.38	-25.00	-33.38	-50.87	4.15	24.65	36.31	106	222	Peak	HORIZONTAL
2	3144.11	-56.38	-25.00	-31.38	-57.86	6.95	28.42	33.89	254	33	Peak	HORIZONTAL
3	4922.98	-61.38	-25.00	-36.38	-68.22	8.58	31.27	33.01	145	0	Peak	HORIZONTAL
4	5219.97	-59.38	-25.00	-34.38	-66.85	8.85	31.54	32.92	123	43	Peak	HORIZONTAL
5	9963.55	-48.38	-25.00	-23.38	-65.93	12.09	38.94	33.48	186	159	Peak	HORIZONTAL
6	14902.40	-51.38	-25.00	-26.38	-72.25	14.77	40.77	34.67	216	77	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	1177.22	-64.26	-25.00	-39.26	-56.74	4.15	24.64	36.31	101	33	Peak	VERTICAL
2	3145.78	-67.26	-25.00	-42.26	-68.76	6.96	28.43	33.89	139	76	Peak	VERTICAL
3	4920.21	-64.26	-25.00	-39.26	-71.10	8.58	31.27	33.01	155	79	Peak	VERTICAL
4	5219.22	-64.26	-25.00	-39.26	-71.73	8.85	31.54	32.92	190	217	Peak	VERTICAL
5	9942.86	-59.26	-25.00	-34.26	-76.81	12.09	38.94	33.48	135	260	Peak	VERTICAL
6	14903.11	-62.26	-25.00	-37.26	-83.13	14.77	40.77	34.67	166	199	Peak	VERTICAL

Temperature	22℃	Humidity	54%
Test Engineer	Eason Chen	Mode	5MHz / 4987.5MHz
Test Date	Sep. 14, 2017	Test Mode	Mode 2 / Ant. 2

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	1123.55	-53.09	-25.00	-28.09	-45.10	4.05	24.51	36.55	121	341	Peak	HORIZONTAL
2	2334.84	-59.09	-25.00	-34.09	-57.76	6.05	26.89	34.27	184	267	Peak	HORIZONTAL
3	7845.11	-55.09	-25.00	-30.09	-69.09	10.72	37.14	33.86	184	96	Peak	HORIZONTAL
4	8865.02	-55.09	-25.00	-30.09	-69.95	11.41	37.35	33.90	200	74	Peak	HORIZONTAL
5	9983.25	-46.09	-25.00	-21.09	-63.67	12.09	38.97	33.48	118	336	Peak	HORIZONTAL
6	14962.11	-49.09	-25.00	-24.09	-69.90	14.80	40.68	34.67	122	13	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	1123.40	-54.19	-25.00	-29.19	-46.20	4.05	24.51	36.55	104	79	Peak	VERTICAL
2	2334.29	-56.19	-25.00	-31.19	-54.86	6.05	26.89	34.27	169	22	Peak	VERTICAL
3	7845.47	-56.19	-25.00	-31.19	-70.19	10.72	37.14	33.86	194	3	Peak	VERTICAL
4	8864.70	-60.19	-25.00	-35.19	-75.05	11.41	37.35	33.90	216	341	Peak	VERTICAL
5	9986.55	-46.19	-25.00	-21.19	-63.77	12.09	38.97	33.48	144	275	Peak	VERTICAL
6	14962.50	-49.19	-25.00	-24.19	-70.00	14.80	40.68	34.67	214	307	Peak	VERTICAL

Temperature	22℃	Humidity	54%
Test Engineer	Eason Chen	Mode	20MHz / 4950MHz
Test Date	Sep. 14, 2017	Test Mode	Mode 2 / Ant. 2

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	2079.33	-55.02	-26.26	-28.76	-52.51	5.69	26.22	34.42	103	74	Peak	HORIZONTAL
2	4633.10	-57.02	-26.26	-30.76	-63.02	8.31	30.82	33.13	189	224	Peak	HORIZONTAL
3	9411.00	-60.02	-26.26	-33.76	-76.54	11.75	38.34	33.57	208	292	Peak	HORIZONTAL
4	9912.28	-47.02	-26.26	-20.76	-64.53	12.08	38.92	33.49	180	308	Peak	HORIZONTAL
5	11642.71	-58.02	-26.26	-31.76	-76.03	12.97	39.73	34.69	284	60	Peak	HORIZONTAL
6	14849.28	-51.02	-26.26	-24.76	-72.00	14.71	40.93	34.66	247	118	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	2077.79	-54.49	-26.26	-28.23	-51.98	5.69	26.22	34.42	206	71	Peak	VERTICAL
2	4635.11	-57.49	-26.26	-31.23	-63.52	8.32	30.84	33.13	204	74	Peak	VERTICAL
3	9416.12	-58.49	-26.26	-32.23	-75.01	11.75	38.34	33.57	274	64	Peak	VERTICAL
4	9913.88	-47.49	-26.26	-21.23	-65.00	12.08	38.92	33.49	196	53	Peak	VERTICAL
5	11642.80	-54.49	-26.26	-28.23	-72.50	12.97	39.73	34.69	204	49	Peak	VERTICAL
6	14852.74	-51.49	-26.26	-25.23	-72.42	14.74	40.85	34.66	109	7	Peak	VERTICAL

Temperature	22℃	Humidity	54%
Test Engineer	Eason Chen	Mode	20MHz / 4965MHz
Test Date	Sep. 14, 2017	Test Mode	Mode 2 / Ant. 2

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	2091.22	-58.46	-26.10	-32.36	-56.01	5.71	26.25	34.41	188	170	Peak	HORIZONTAL
2	3150.22	-60.46	-26.10	-34.36	-61.96	6.96	28.43	33.89	221	50	Peak	HORIZONTAL
3	8507.90	-55.46	-26.10	-29.36	-69.50	11.18	36.93	34.07	218	4	Peak	HORIZONTAL
4	9934.11	-46.46	-26.10	-20.36	-63.98	12.08	38.92	33.48	188	170	Peak	HORIZONTAL
5	13169.45	-61.46	-26.10	-35.36	-80.04	13.78	39.42	34.62	177	321	Peak	HORIZONTAL
6	14895.71	-54.46	-26.10	-28.36	-75.33	14.77	40.77	34.67	260	110	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	2089.33	-55.07	-26.10	-28.97	-52.62	5.71	26.25	34.41	197	89	Peak	VERTICAL
2	3147.54	-60.07	-26.10	-33.97	-61.57	6.96	28.43	33.89	174	96	Peak	VERTICAL
3	8506.60	-58.07	-26.10	-31.97	-72.11	11.18	36.93	34.07	186	32	Peak	VERTICAL
4	9947.45	-47.07	-26.10	-20.97	-64.62	12.09	38.94	33.48	168	230	Peak	VERTICAL
5	13168.20	-57.07	-26.10	-30.97	-75.65	13.78	39.42	34.62	197	222	Peak	VERTICAL
6	14895.11	-52.07	-26.10	-25.97	-72.99	14.74	40.85	34.67	179	96	Peak	VERTICAL

Temperature	22℃	Humidity	54%
Test Engineer	Eason Chen	Mode	20MHz / 4980MHz
Test Date	Sep. 14, 2017	Test Mode	Mode 2 / Ant. 2

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	3217.97	-55.53	-26.05	-29.48	-57.18	7.02	28.48	33.85	132	241	Peak	HORIZONTAL
2	6647.45	-61.53	-26.05	-35.48	-72.74	9.87	34.46	33.12	195	41	Peak	HORIZONTAL
3	8923.47	-55.53	-26.05	-29.48	-70.50	11.44	37.41	33.88	197	330	Peak	HORIZONTAL
4	9967.90	-46.53	-26.05	-20.48	-64.11	12.09	38.97	33.48	170	240	Peak	HORIZONTAL
5	10741.24	-51.53	-26.05	-25.48	-69.94	12.50	40.02	34.11	208	214	Peak	HORIZONTAL
6	14980.11	-49.53	-26.05	-23.48	-70.34	14.80	40.68	34.67	150	29	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBm	dBm	dB	dBm	dB	dB	dB	cm	deg		
1	3218.33	-55.33	-26.05	-29.28	-56.98	7.02	28.48	33.85	189	36	Peak	VERTICAL
2	6648.80	-55.33	-26.05	-29.28	-66.54	9.87	34.46	33.12	207	97	Peak	VERTICAL
3	8920.85	-53.33	-26.05	-27.28	-68.30	11.44	37.41	33.88	270	97	Peak	VERTICAL
4	9952.28	-46.33	-26.05	-20.28	-63.88	12.09	38.94	33.48	174	133	Peak	VERTICAL
5	10473.11	-55.33	-26.05	-29.28	-73.58	12.37	39.75	33.87	200	31	Peak	VERTICAL
6	14944.64	-50.33	-26.05	-24.28	-71.14	14.80	40.68	34.67	104	98	Peak	VERTICAL

Note1:

The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

Note2:

EIRP = Pr - Gr + 20 log (4 * Pi * D / λ) - Cr - PAr – Pr

Where

Pr = Receiver Power

Gr = Gain of receiving antenna

D = Distance in km

Cr = Loss of receiving path

PAr = Gain of receiving amplifier

4.6. Frequency Stability Measurement

4.6.1. Limit

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized frequency band. For equipment authorization purposes, this is a reporting requirement only.

4.6.2. Measuring Instruments and Setting

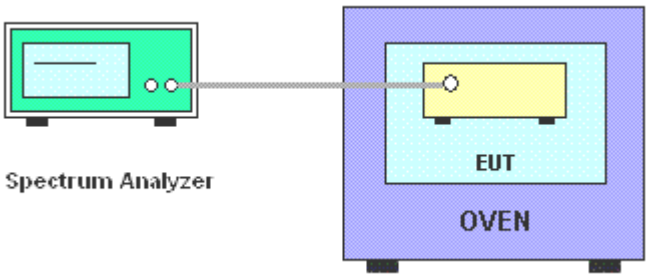
Please refer to section 5 in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Detector	Peak
RBW / VBW	10 kHz / 30kHz

4.6.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. EUT have transmitted absence of modulation signal and fixed channel.
3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.
4. Set RBW = 10 kHz, VBW = 10 kHz with frequency counter function.
5. fc is declaring of carrier channel frequency. Then the frequency error formula is (fc-f)/fc × 10^6 ppm.
6. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value and extreme temperature rule is -40°C~70°C.

4.6.4. Test Setup Layout



4.6.5. Test Deviation

There is no deviation with the original standard.

4.6.6. Test Result of Frequency Stability

Temperature	22℃	Humidity	54%
Test Engineer	Lucke Hsieh & Gino Huang	Mode	20MHz / 4980MHz
Test Date	Jul. 11, 2017~Sep. 07, 2017		

For Test Mode 1 and Mode 2:

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)
(V)	4965
126.5	4964.9981
110	4964.9979
93.5	4964.9972
Max. Deviation (MHz)	0.002800
Max. Deviation (ppm)	0.56

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)
(℃)	4965
-40	4965.0004
-30	4965.0012
-20	4964.9998
-10	4964.9985
0	4964.9979
10	4964.9968
20	4964.9962
30	4964.9936
40	4964.9944
50	4964.9957
60	4964.9918
70	4964.9925
Max. Deviation (MHz)	0.008200
Max. Deviation (ppm)	1.65
Temperature	Measurement Frequency (MHz)

5. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
BILOG ANTENNA with 6dB Attenuator	TESEQ & EMCI	CBL6112D & N-6-06	37880 & AT-N0609	20MHz ~ 2GHz	Aug. 30, 2016	Radiation (03CH01-CB)
BILOG ANTENNA with 6dB Attenuator	TESEQ & EMCI	CBL6112D & N-6-06	37880 & AT-N0609	20MHz ~ 2GHz	Aug. 30, 2017	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Nov. 10, 2016	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 25, 2016	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 05, 2017	Radiation (03CH01-CB)
Pre-Amplifier	EMCI	EMC330N	980332	20MHz ~ 3GHz	May 02, 2017	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 16, 2017	Radiation (03CH01-CB)
Pre-Amplifier	MITEQ	TTA1840-35-HG	1864479	18GHz ~ 40GHz	Jun. 28, 2016	Radiation (03CH01-CB)
Pre-Amplifier	MITEQ	TTA1840-35-HG	1864479	18GHz ~ 40GHz	Jul. 10, 2017	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Nov. 22, 2016	Radiation (03CH01-CB)
EMI Test	R&S	ESCS	100355	9kHz ~ 2.75GHz	May 16, 2016	Radiation (03CH01-CB)
EMI Test	R&S	ESCS	100355	9kHz ~ 2.75GHz	May 06, 2017	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-16+17	N/A	30 MHz ~ 1 GHz	Oct. 24, 2016	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Oct. 24, 2016	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16+17	N/A	1 GHz ~ 18 GHz	Oct. 24, 2016	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G#1	N/A	18GHz ~ 40 GHz	Oct. 24, 2016	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G#2	N/A	18GHz ~ 40 GHz	Oct. 24, 2016	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec. 26, 2016	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 02, 2017	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-6	1 GHz – 26.5 GHz	Oct. 24, 2016	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-7	1 GHz –26.5 GHz	Oct. 24, 2016	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-8	1 GHz –26.5 GHz	Oct. 24, 2016	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-9	1 GHz –26.5 GHz	Oct. 24, 2016	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz –26.5 GHz	Oct. 24, 2016	Conducted (TH01-CB)
Cable	Marvelous Microwave	n/a	Cable-REF-1	9k-1GHz	Oct. 21, 2016	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 22, 2016	Conducted (TH01-CB)

Note: Calibration Interval of instruments listed above is one year.

6. MEASUREMENT UNCERTAINTY

Test Items	Uncertainty	Remark
Radiated Emission (30MHz ~ 1,000MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.7 dB	Confidence levels of 95%