FCC Test Report

FCC ID	:	**Z8H89FT0042**
Equipment	:	**PTP450B**
Model No.	:	**PTP450B**
Brand Name	:	**Cambium Networks**
Applicant	:	**Cambium Networks Inc.**
Address	:	**3800 Golf Road, Suite 360 Rolling Meadows, IL 60008, USA**
Standard	:	**47 CFR FCC Part 90 Subpart Y**
Received Date	:	**Apr. 09, 2018**
Tested Date	:	**Apr. 09 ~ Apr. 10, 2018**
Test Location	:	**No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan District, Tao Yuan City 333, Taiwan, R.O.C.**

We, International Certification Corp., would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It may be duplicated completely for legal use with the approval of the applicant. It shall not be reproduced except in full without the written approval of our laboratory.

Reviewed by: **Approved by:**

Along Chen / Assistant Manager **Gary Chang / Manager**

Testing Laboratory 2732

Table of Contents

Release Record

Report No.	Version	Description	Issued Date
FL840904	Rev. 01	Initial issue	Apr. 11, 2018
FL840904	Rev. 02	1. Add test location 2. Remove test lab information	Apr. 12, 2018

Summary of Test Results

FCC Rules	Test Items	Measured	Result
2.1046 / 90.1215	Conducted power	Power[dBm] : 5MHz: 25.60 20MHz: 23.72	Pass
2.1046 / 90.1215	Peak power spectral density	Meet the requirement of limit	Pass
2.1051 / 90.210	Peak power spectral mask	Meet the requirement of limit	Pass
2.1053 / 90.210	Radiated Emissions	Meet the requirement of limit	Pass
2.1051 / 90.210	Conducted Emissions	Meet the requirement of limit	Pass
2.1049	Occupied Bandwidth	Meet the requirement of limit	Pass
2.1051 / 90.1215	Peak Excursion	Meet the requirement of limit	Pass
2.1055 / 90.213	Frequency Stability	Meet the requirement of limit	Pass

1 General Description

1.1 Information

1.1.1 Specification of the Equipment under Test (EUT)

Items	Description
Power Type	From PoE
Equipment Category	Fixed Point-to-Point
Product Type	High Power Device
Modulation	QPSK
Channel Bandwidth	5MHz 20MHz
Occupied Bandwidth	5MHz: 4.75MHz 20MHz: 18.32MHz
Maximum Conducted Output Power	5MHz: 25.60dBm 20MHz: 23.72dBm
Antenna	Please refer to section 1.1.2

1.1.2 Antenna Details

Ant.	Port	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	1	Cambium	PTP450B	Integral Antenna	N/A	2
	2	Cambium	PTP450B	Integral Antenna	N/A	2
2	1	Cambium	PTP450B	Dish Antenna	N/A	24
	2	Cambium	PTP450B	Dish Antenna	N/A	24

Note: The EUT has two antennas (2TX/2RX):

1. Ant. 1 and Ant. 2 are the same type antennas, and their gain lower than 26dBi.
   For Transmitter Conducted Unwanted Emissions test: “Ant. 1 and Ant. 2” are is tested and recorded in the report as result.
   For other tests: only the “Ant. 2” is tested and recorded in the report as result.
2. Port 1 and Port 2 could transmit/receive simultaneously.

1.1.3 Accessories

N/A

1.1.4 Operating Channel List

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

1.2 Local Support Equipment List

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	DoC
PoE	Phihong	PSA15M-300	DoC

1.3 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.

Test Software Version:	Telnet			
Frequency	**4942.5MHz**	**4967.5MHz**	**4987.5MHz**	**Data Rate**
5MHz	26/22	26/22	26/22	QPSK
Frequency	**4950MHz**	**4965MHz**	**4980MHz**	**Data Rate**
20MHz	29/26	2A/27	2A/27	QPSK

1.4 EUT Operation during Test

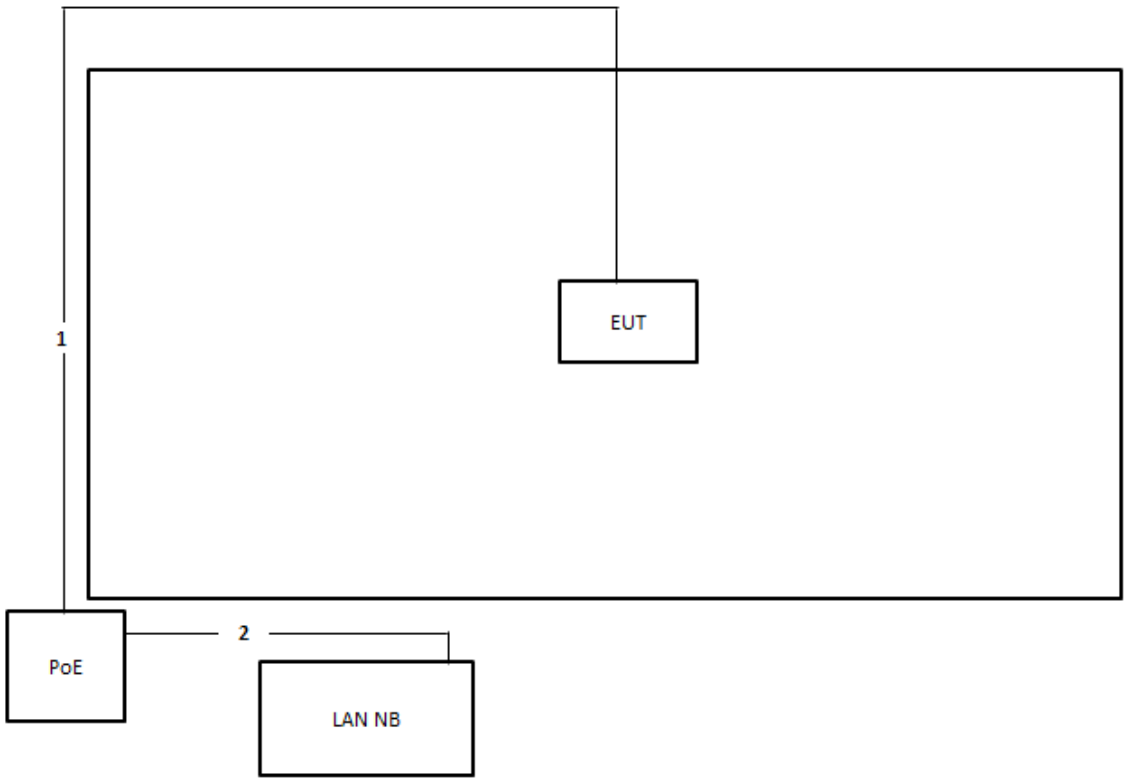
The EUT was programmed to be in continuously transmitting mode.

1.5 Duty Cycle

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)
5MHz	2.319	4.986	46.51%	3.32
20MHz	4.000	4.986	80.23%	0.96

1.6 Test Setup Chart

Test Setup Diagram



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

1.7 The Equipment List

EMI	Radiated Emission				
Test Site	966 chamber1 / (03CH01-WS)				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	Agilent	N9010A	MY53400091	Nov. 15, 2017	Nov. 14, 2018
Receiver	R&S	ESR3	101658	Nov. 20, 2017	Nov. 19, 2018
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-685	Apr. 28, 2017	Apr. 27, 2018
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1206	Jan. 18, 2018	Jan. 17, 2019
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 23, 2017	Nov. 22, 2018
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 13, 2017	Nov. 12, 2018
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Dec. 07, 2017	Dec. 06, 2018
Preamplifier	EMC	EMC02325	980187	Sep. 04, 2017	Sep. 03, 2018
Preamplifier	Agilent	83017A	MY53270014	Aug. 21, 2017	Aug. 20, 2018
Preamplifier	EMC	EMC184045B	980192	Aug. 22, 2017	Aug. 21, 2018
RF cable-3M	HUBER+SUHNER	SUCOFLEX104	MY22620/4	Nov. 27, 2017	Nov. 26, 2018
RF cable-8M	HUBER+SUHNER	SUCOFLEX104	MY32487/4	Nov. 27, 2017	Nov. 26, 2018
RF cable-1M	HUBER+SUHNER	SUCOFLEX104	MY22624/4	Nov. 27, 2017	Nov. 26, 2018
LF cable-0.8M	EMC	EMC8D-NM-NM-800	EMC8D-NM-NM-800-001	Nov. 27, 2017	Nov. 26, 2018
LF cable-3M	EMC	EMC8D-NM-NM-3000	131103	Nov. 27, 2017	Nov. 26, 2018
LF cable-13M	EMC	EMC8D-NM-NM-13000	131104	Nov. 27, 2017	Nov. 26, 2018
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

RF	RF Conducted				
Test Site	RF Conducted (TH01-WS)				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV40	101499	Jan. 03, 2018	Jan. 02, 2019
TEMP&HUMIDITY CHAMBER	GIANT FORCE	GCT-225-40-SP-SD	MAF1212-002	Nov. 27, 2017	Nov. 26, 2018
Power Meter	Anritsu	ML2495A	1241002	Oct. 16, 2017	Oct. 15, 2018
Power Sensor	Anritsu	MA2411B	1207366	Oct. 16, 2017	Oct. 15, 2018
DC POWER SOURCE	GW INSTEK	GPC-6030D	EM892433	Oct. 26, 2017	Oct. 25, 2018
AC POWER SOURCE	APC	AFC-500W	F312060012	Dec. 01, 2017	Nov. 30, 2018
Measurement Software	Sporton	Sporton_1	1.3.30	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.8 Test Standards

According to the specification of EUT, the EUT must comply with following standards.

47 CFR FCC Part 90 Subpart Y
FCC KDB 971168 D01 Power Meas License Digital Systems v03
FCC KDB 971168 D02 Misc Rev Approv License Devices v02r01
FCC KDB 412172 D01 Determining ERP and EIRP v01r01
ANSI C63.4-2014
ANSI C63.26-2015

1.9 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2).

Measurement Uncertainty	
Parameters	**Uncertainty**
Bandwidth	±34.139 Hz
Conducted power	±0.808 dB
Frequency error	±34.139 Hz
Temperature	±0.8 °C
Conducted emission	±2.680 dB
AC conducted emission	±2.9 dB
Radiated emission ≤ 1GHz	±3.72 dB
Radiated emission > 1GHz	±5.65 dB

2 Test Configuration

2.1 Testing Condition and Location Information

Test Item	Test Site	Ambient Condition	Tested By
RF conducted	TH01-WS	20℃ / 58%	Aska Huang
Radiated Emissions	03CH01-WS	22℃ / 54%	Aska Huang

- FCC Designation No.: TW2732
- FCC site registration No.: 181692
- IC site registration No.: 10807A

2.2 The Worst Test Modes and Channel Details

Test Item	Channel Bandwidth	Modulation Mode
Conducted power	5MHz / 20MHz	QPSK
Peak power spectral density	5MHz / 20MHz	QPSK
Peak power spectral mask	5MHz / 20MHz	QPSK
Radiated Emissions	5MHz / 20MHz	QPSK
Conducted Emissions	5MHz / 20MHz	QPSK
Occupied Bandwidth	5MHz / 20MHz	QPSK
Peak Excursion	5MHz / 20MHz	QPSK
Frequency Stability	5MHz / 20MHz	QPSK

Note 1: The EUT can only be used in Z axis.

Note 2: The PoE was for measurement only, would not be marked, and its information as below:

Support Unit	Brand	Model	FCC ID
PoE	Phihong	PSA15M-300	DoC

3 Test Results

3.1 Conducted Power and Power Spectral Density

3.1.1 Limit of Conducted Power and Power spectral density

The maximum conducted output power should not exceed

Conducted bandwidth (MHz)	Low power maximum conducted output power (dBm)	High power maximum conducted output power (dBm)
1	7	20
5	14	27
10	17	30
15	18.8	31.8
20	20	33

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 conducted 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. Corresponding reduction in the maximum conducted output power and peak power spectral density should be the amount in decibels that the directional gain of the antenna exceeds 26 dB

Low power devices are also limited to a peak power spectral density of 8 dBm per one MHz. Low power devices using channel bandwidths other than those listed above are permitted; however, they are limited to a peak power spectral density of 8 dBm/MHz. If transmitting antennas of directional gain greater than 9 dBi are used, both the maximum conducted 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

3.1.2 Test Procedures

For Conducted power measurement

A broadband Average RF power meter is used for output power measurement. The video bandwidth of power meter is greater than occupied bandwidth of EUT. If duty cycle of test signal is not 100 %, trigger and gating function of power meter will be enabled to capture transmission burst for measuring output power.

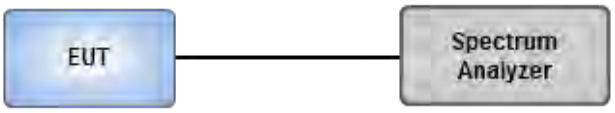
For Peak power spectral density measurement

1. Set RBW=1MHz, VBW=3MHz, Detector= RMS, Sweep time = auto couple
2. Employ trace averaging mode over a minimum of 100 traces
3. Use the peak marker function to determine the maximum amplitude level within the reference bandwidth
4. The result will be correction duty factor.

3.1.3 Test Setup

For Conducted power measurement measurement

For Peak power spectral density measurement



3.1.4 Test Result of Conducted Output Power (dBm)

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	22.35	22.40	25.39	27.00	Pass
4967.5MHz	22.62	22.55	25.60	27.00	Pass
4987.5MHz	22.19	22.80	25.52	27.00	Pass

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	20.82	20.60	23.72	33.00	Pass
4965MHz	20.74	20.52	23.64	33.00	Pass
4980MHz	20.83	20.50	23.68	33.00	Pass

3.1.5 Test Result of Peak Power Spectral Density (dBm/MHz)

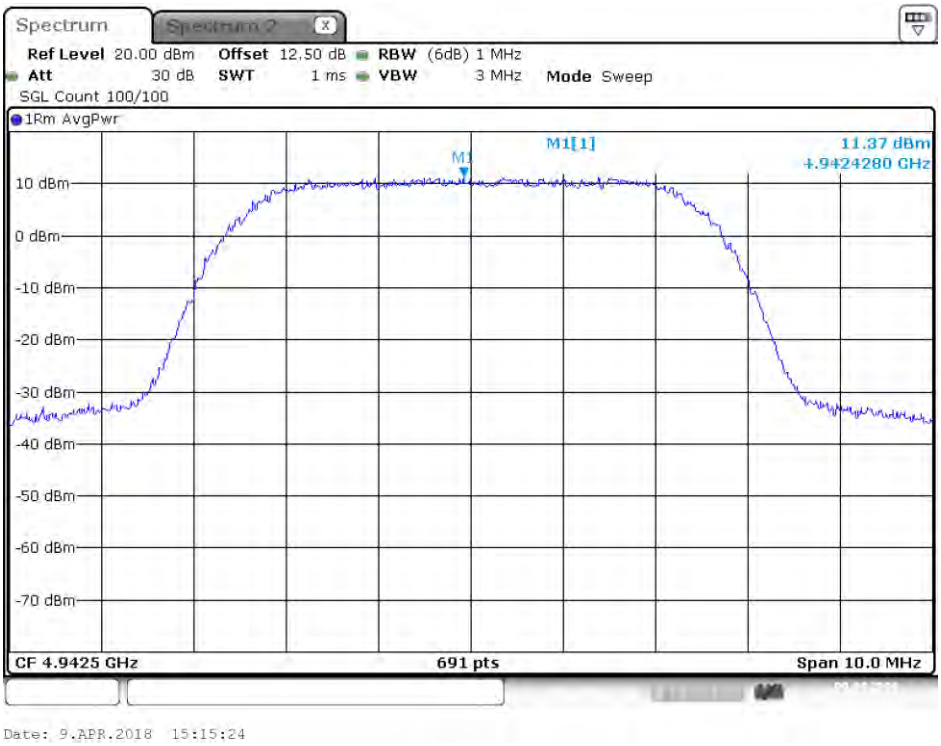
5MHz Channel Bandwidth Mode

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	11.37	11.41	17.72	21.00	Pass
4967.5MHz	11.36	11.87	17.96	21.00	Pass
4987.5MHz	11.67	12.67	18.53	21.00	Pass

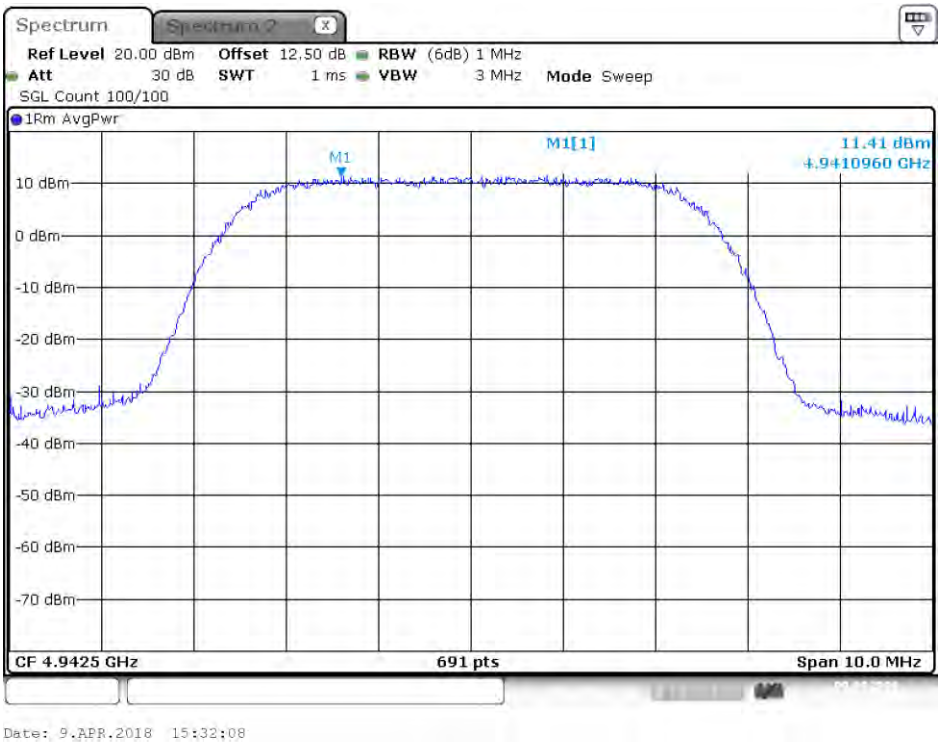
20MHz Channel Bandwidth Mode

Frequency	Power Density (dBm/MHz)	Power Density (dBm/MHz)	Total Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
	Port 1	Port 2			
4950MHz	6.45	6.98	10.69	21.00	Pass
4965MHz	6.44	6.73	10.55	21.00	Pass
4980MHz	6.46	7.30	10.87	21.00	Pass

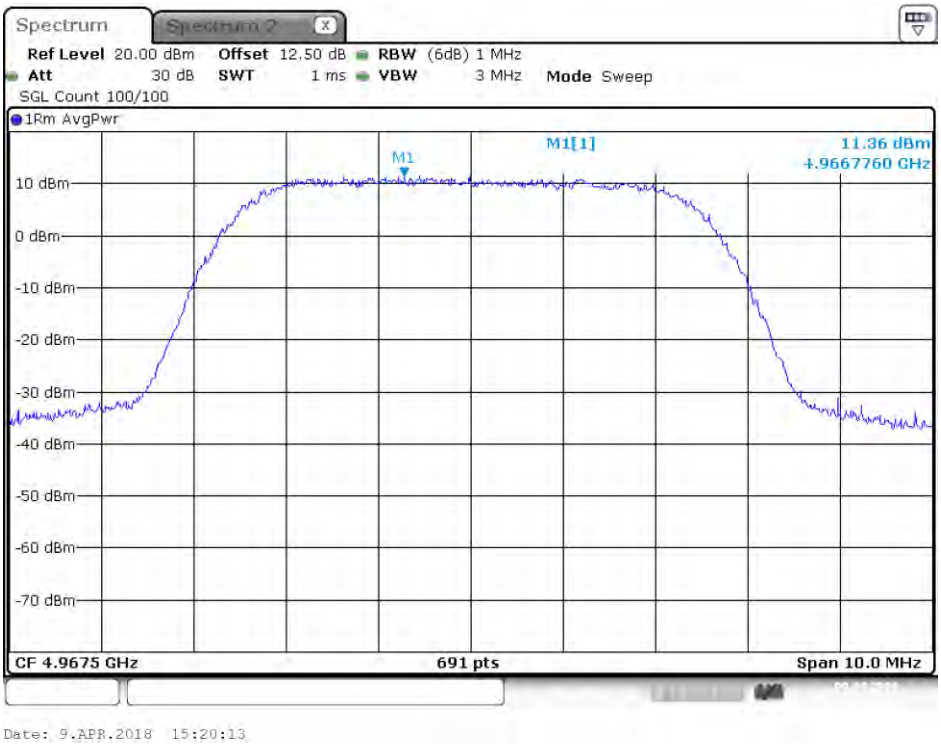
Peak Power Spectral Density (5MHz BW Mode) – 4942.5MHz / Port 1



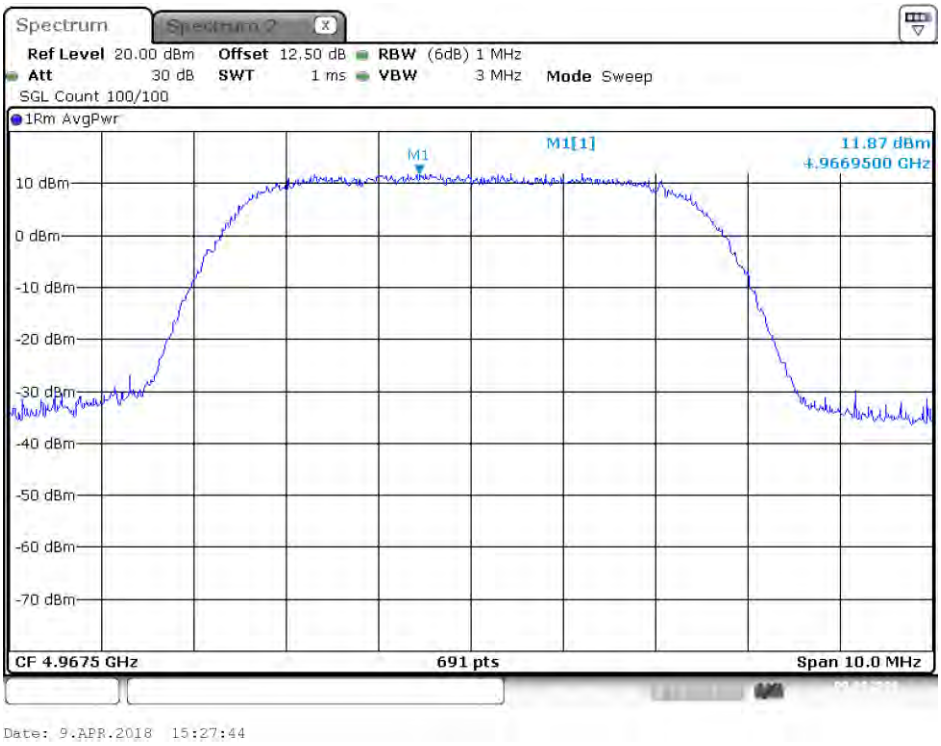
Peak Power Spectral Density (5MHz BW Mode) – 4942.5MHz / Port 2



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



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

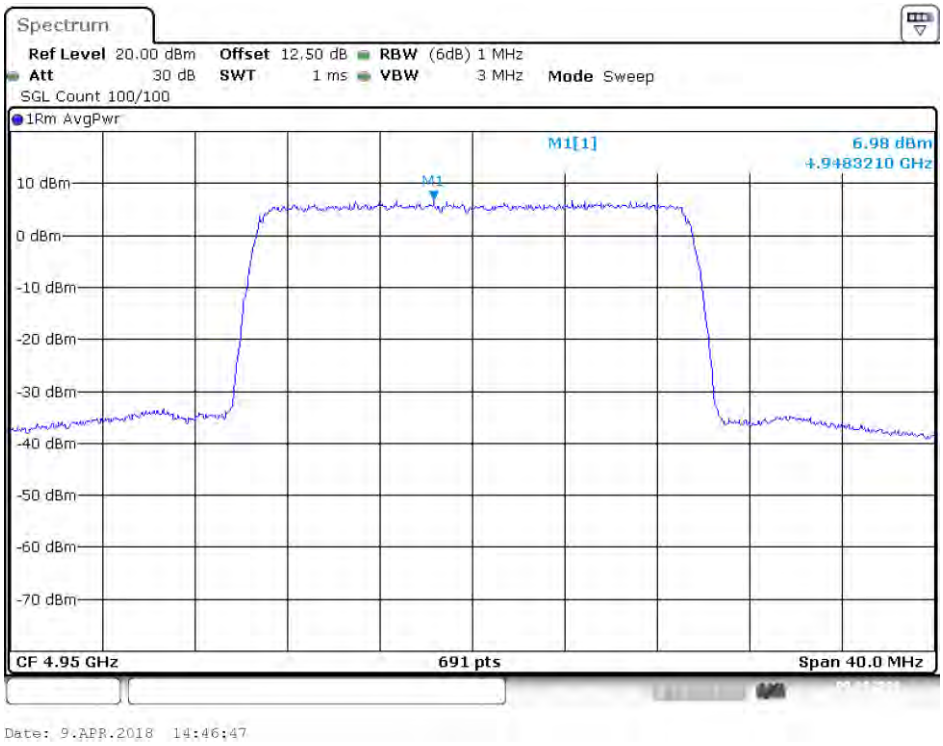


Peak Power Spectral Density (5MHz BW Mode) – 4987.5MHz / Port 1

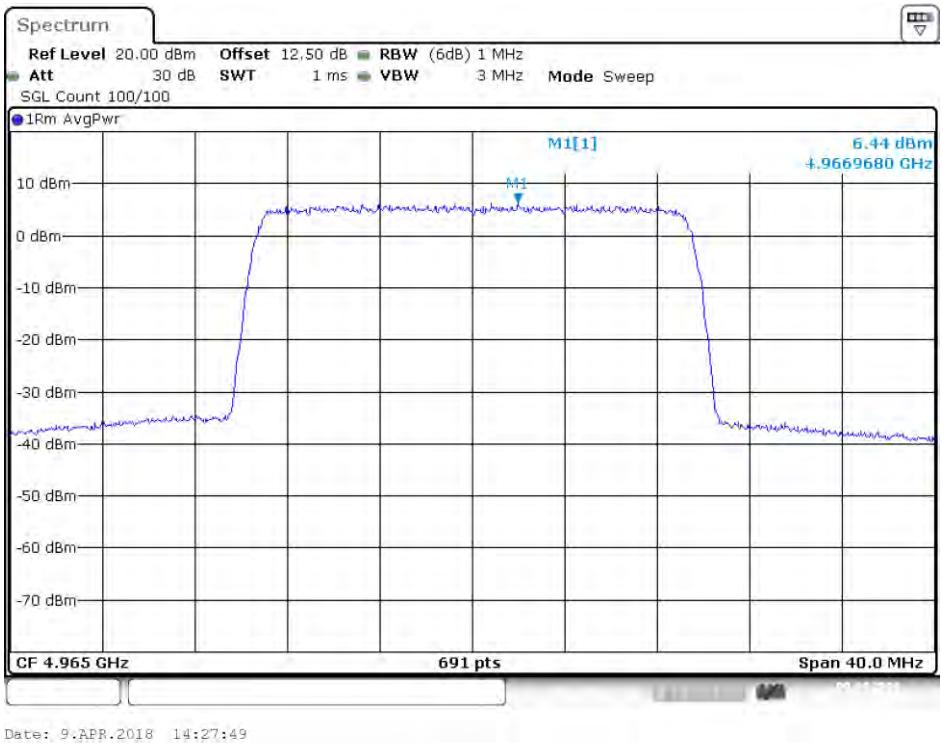
Peak Power Spectral Density (5MHz BW Mode) – 4987.5MHz / Port 2

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

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



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



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

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

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

3.2 Emission Mask

3.2.1 Limit of Emission mask

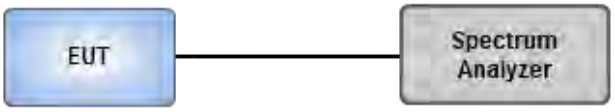
For high power transmitters (greater that 20 dBm) operating in the 4940-4990 MHz frequency band, the power spectral density of the emissions must be attenuated below the output power of the transmitter as follows:

On any frequency removed from the assigned frequency between X % of the authorized bandwidth	Emissions must be attenuated below
X=0-45	0 dB
X=45-50	568 log (% of (BW)/45) dB
X=50-55	26 + 145 log (% of BW/50) dB
X=55-100	32 + 31 log (% of (BW)/55) dB
X=100-150	40 + 57 log (% of (BW)/100) dB
X>150	50 dB or 55 + 10 log (P) dB, whichever is the lesser attenuation

3.2.2 Test Procedures

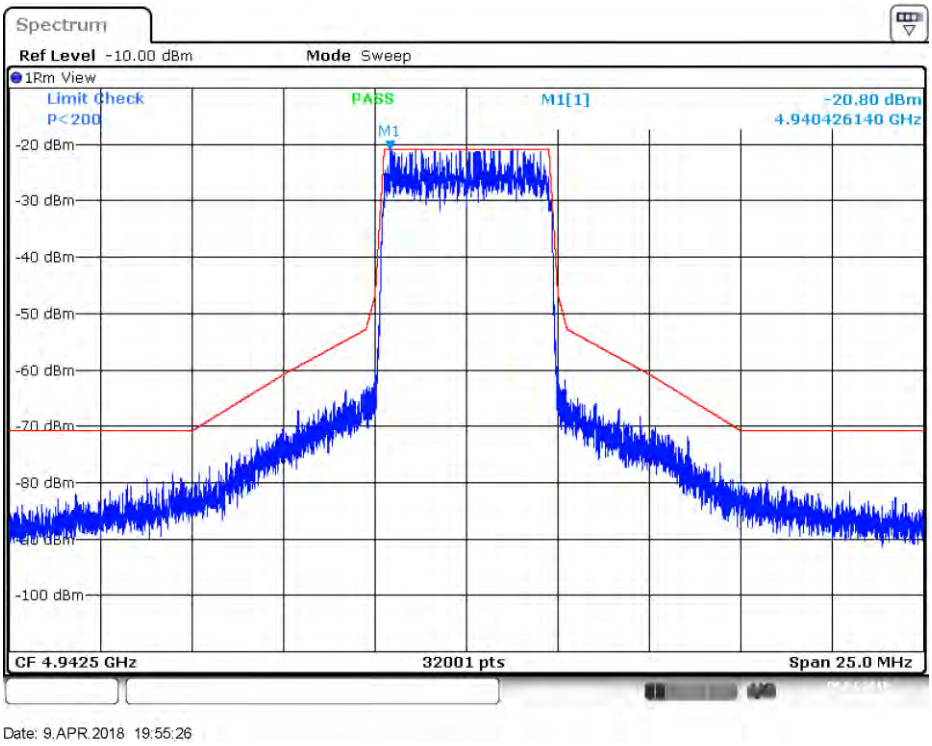
1. Set EUT to transmit un-modulation signal to spectrum analyzer for getting reference level.
2. According reference level and channel bandwidth to create emission mask limit.
3. Set RBW=at least 1% of the occupied bandwidth, VBW=30kHz, detector=RMS, Sweep time = Auto.
4. Set EUT to transmit modulation signal to spectrum analyzer and confirm that the signal complies the limit or not.

3.2.3 Test Setup



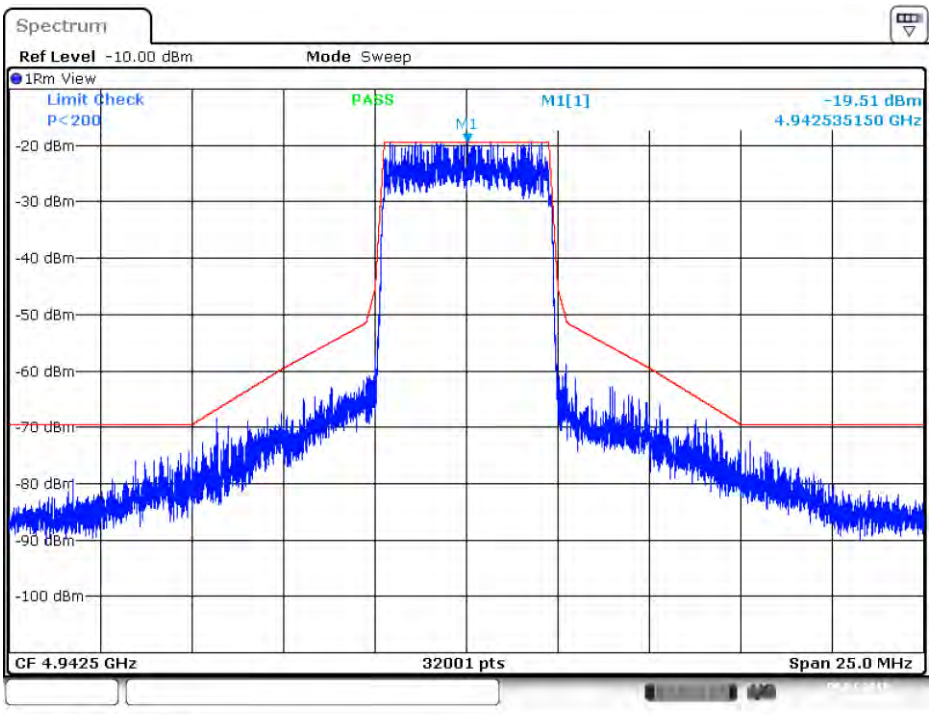
3.2.4 Test Result of Band Edge

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



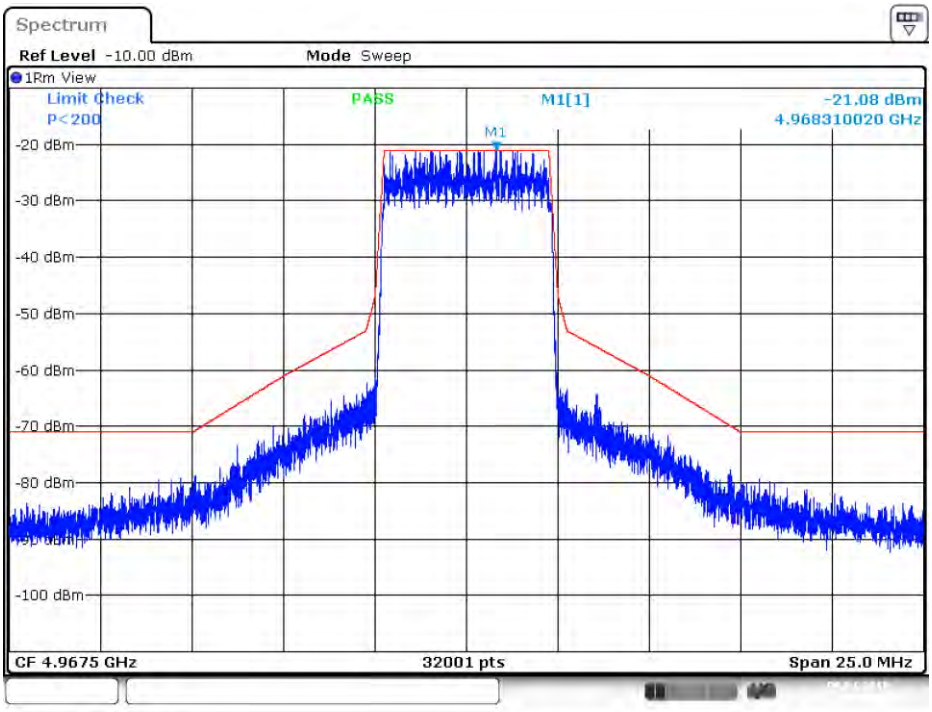
Date: 9.APR.2018 19:55:26

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



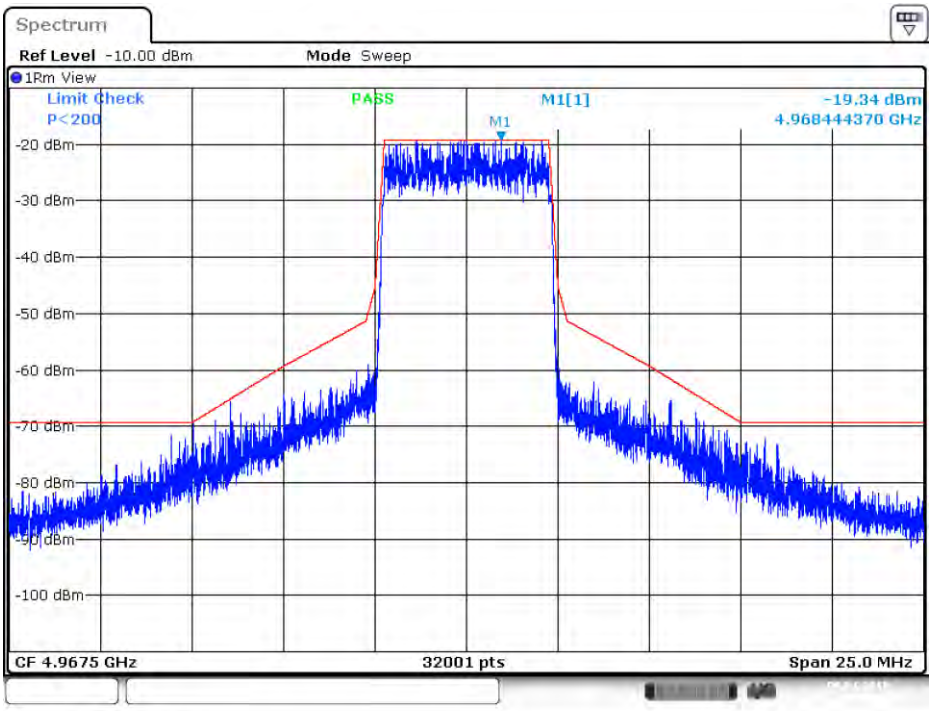
Date: 9.APR.2018 19:57:57

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



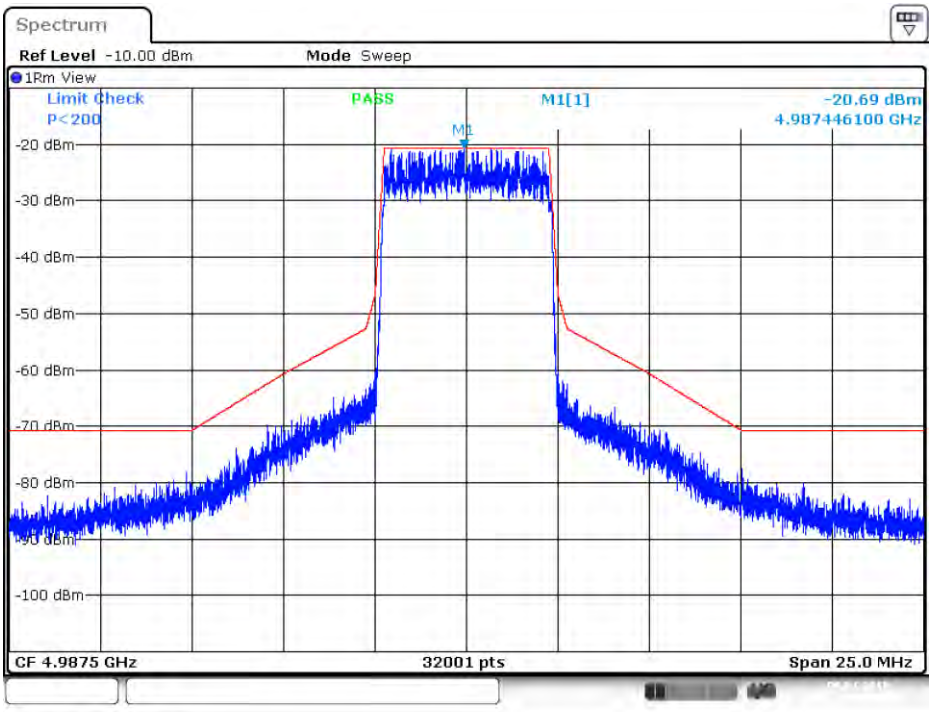
Date: 9.APR.2018 19:59:50

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



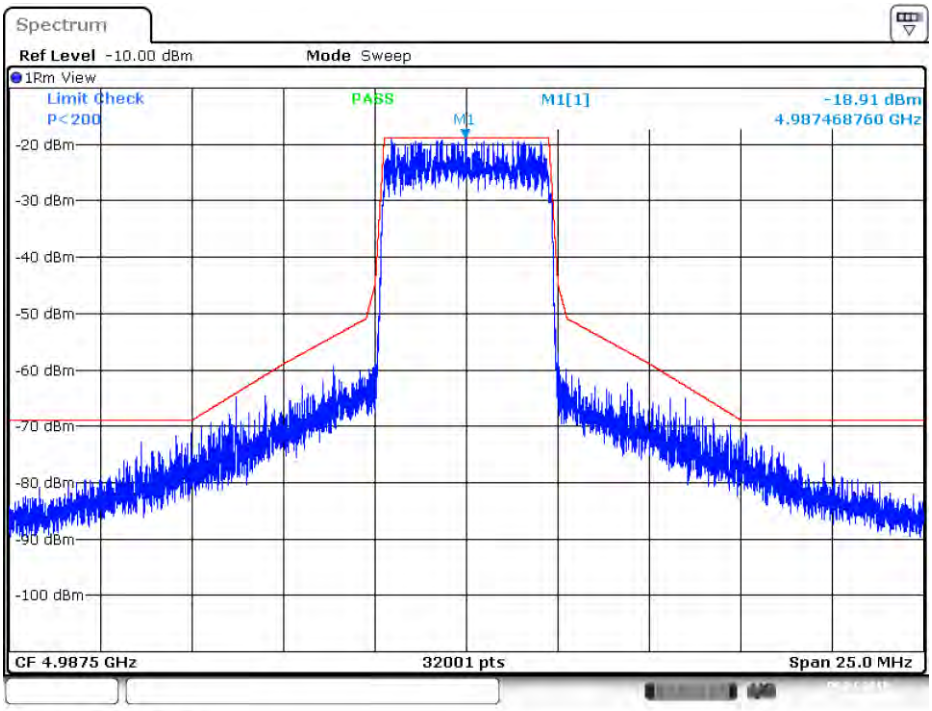
Date: 9.APR.2018 19:59:01

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



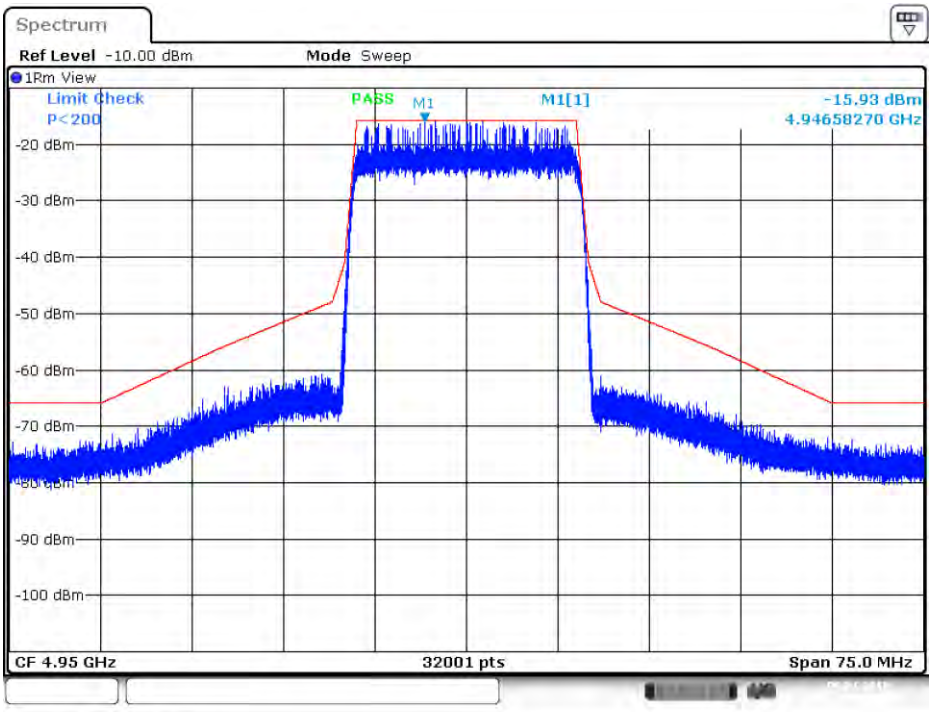
Date: 9.APR.2018 20:00:50

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



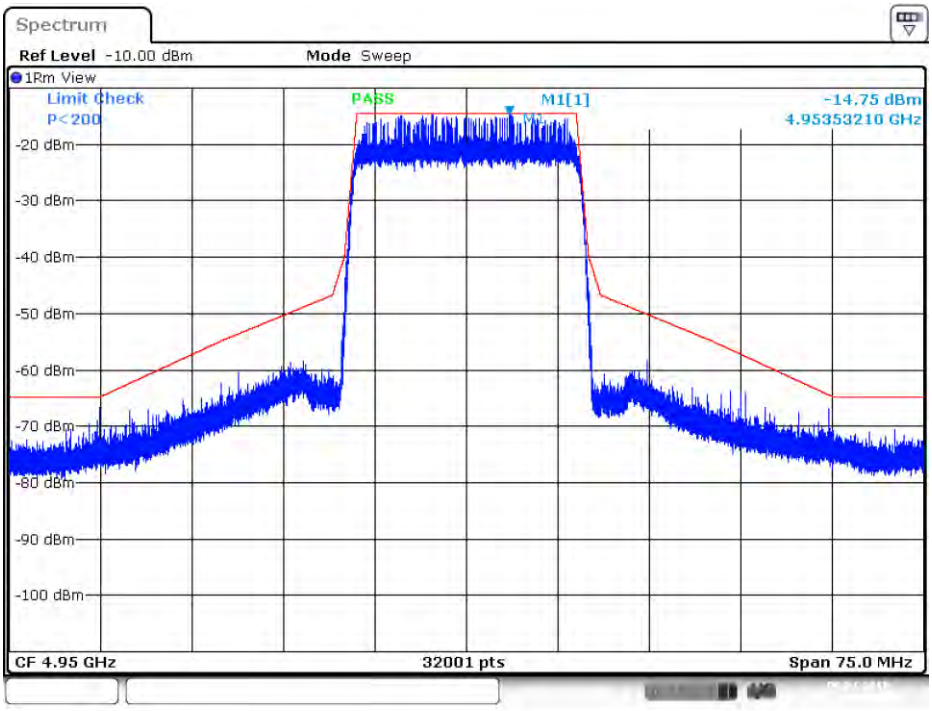
Date: 9.APR.2018 20:01:46

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



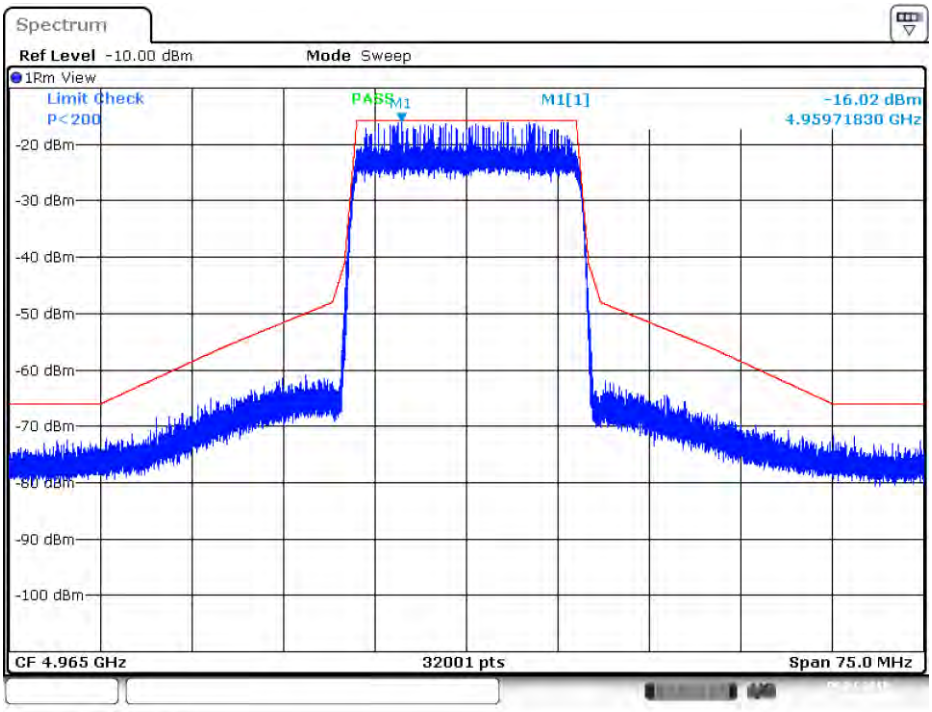
Date: 9.APR.2018 19:10:42

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



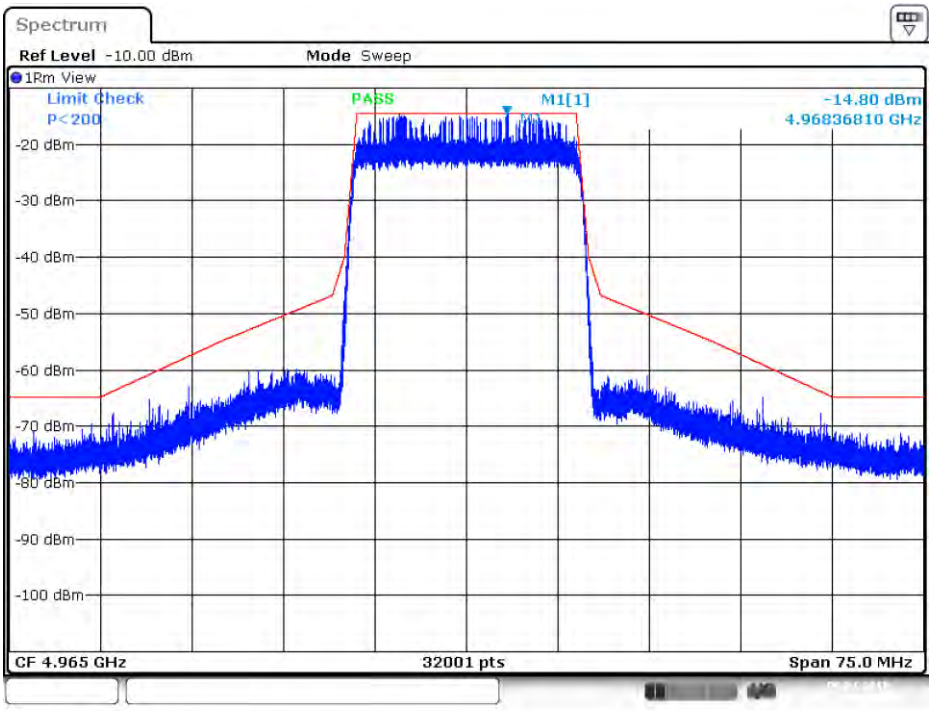
Date: 9.APR.2018 19:09:39

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



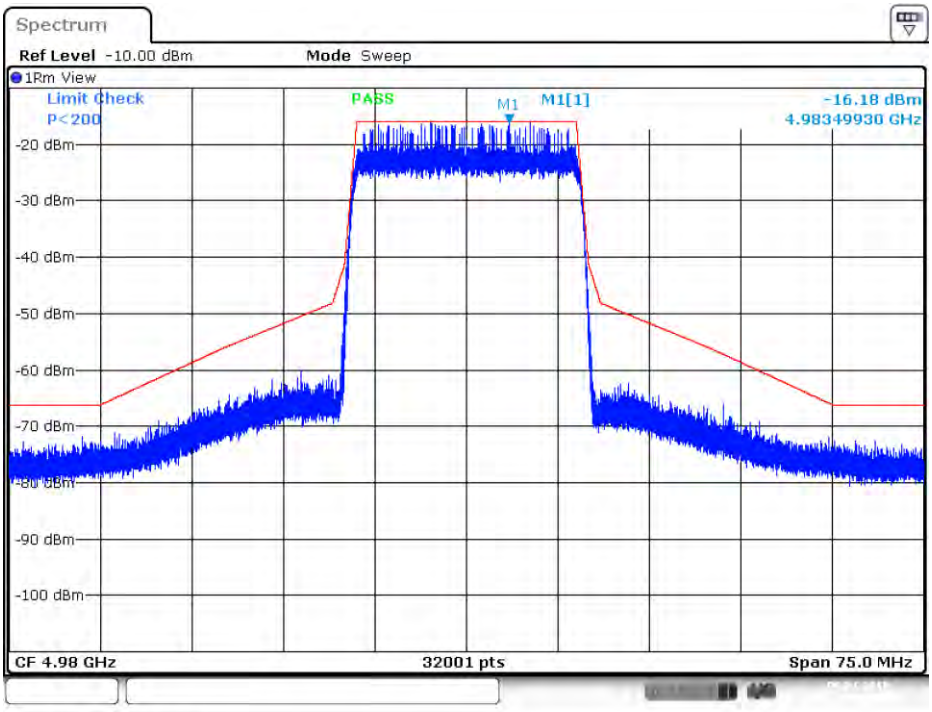
Date: 9.APR.2018 19:13:58

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



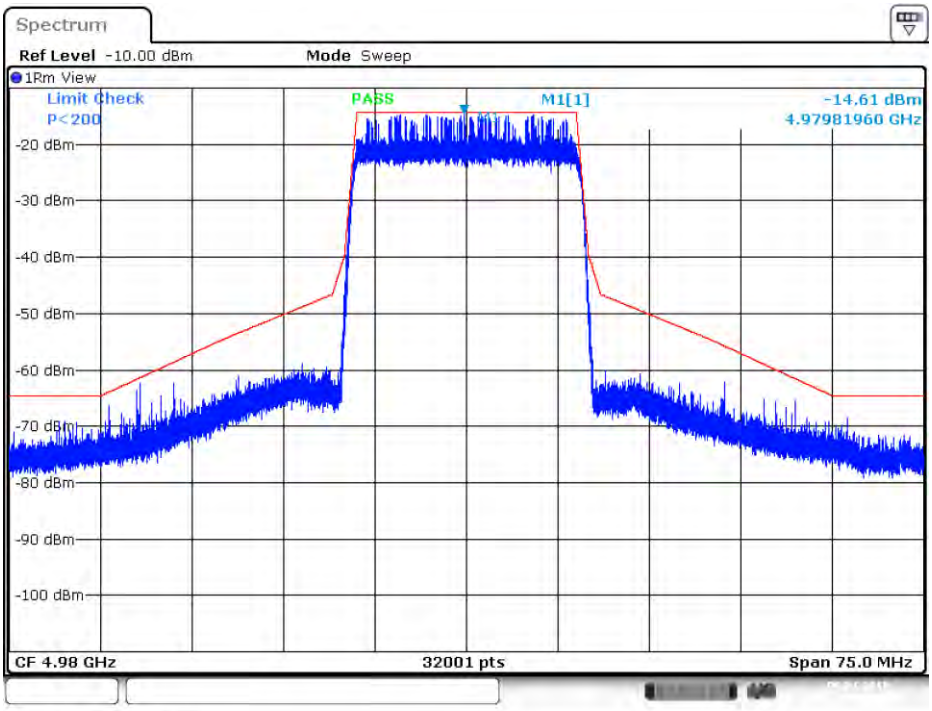
Date: 9.APR.2018 19:14:51

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



Date: 9.APR.2018 19:17:09

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



Date: 9.APR.2018 19:16:12

3.3 Radiated Emissions

3.3.1 Limit of Radiated Emissions

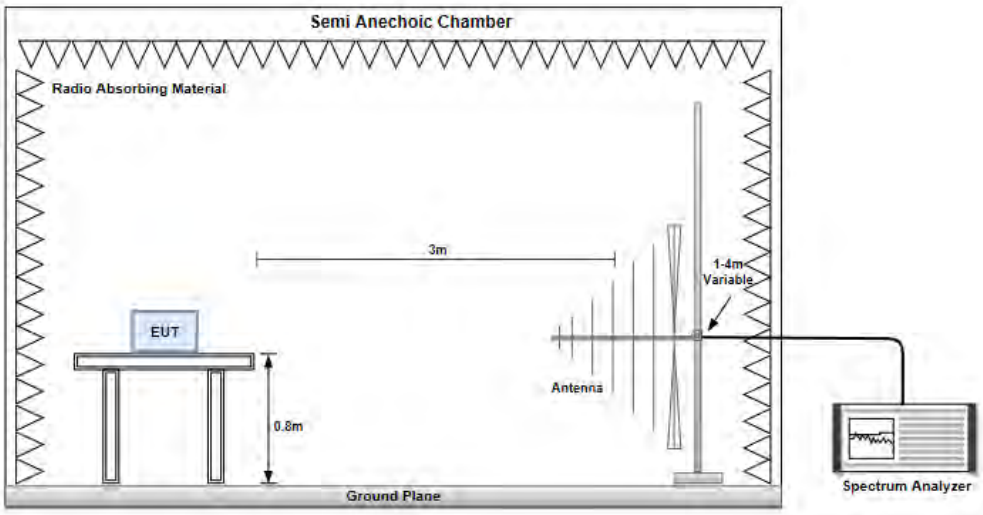
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of 50 dB or 55 + 10 log(P)dB , which is the lesser attenuation.

3.3.2 Test Procedures

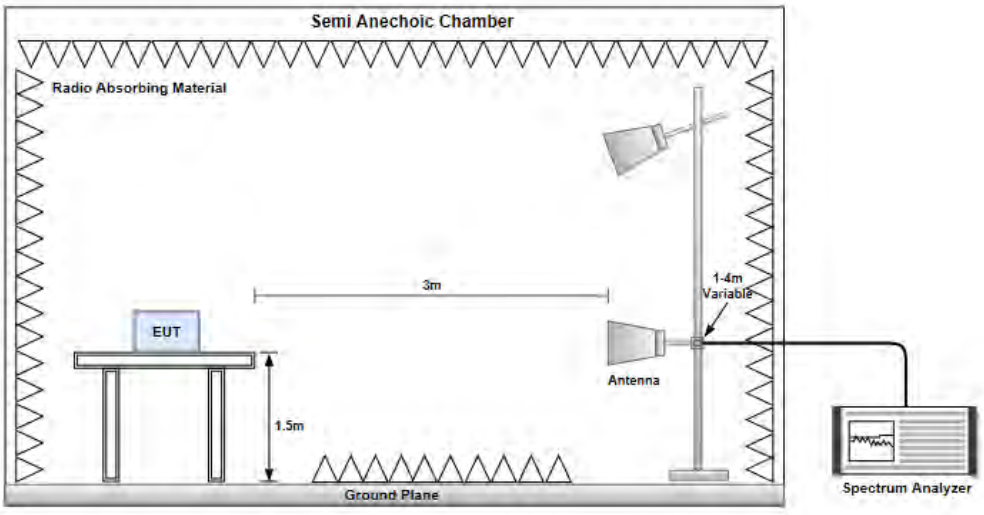
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. For test at or below 1GHz, the EUT is placed at a height of 0.8 m test table above the ground plane. For test above 1GHz , the EUT is placed at a height of 1.5 m test table above the ground plane.
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.
4. After finding the max radiated emission, substitution method will be used for getting effective radiated power. EUT will be removed and substitution antenna will be placed at same position. Signal generator will output CW signal to substitution antenna through a RF cable. Rotate turntable and move antenna to find maximum radiated emission. Adjust output power of signal generator to let the maximum radiated emission is same as step 3. Record the output power level.
5. E.I.R.P = output power of step 4 + gain of substitution antenna – cable loss of RF cable.

3.3.3 Test Setup

Radiated Emissions below 1 GHz



Radiated Emissions above 1 GHz



3.3.4 Test Result of Radiated Emissions below 1GHz

Mode	5MHz / 4942.5MHz						
Frequency (MHz)	**Antenna Polarity**	**E.I.R.P (dBm)**	**Limit (dBm)**	**Margin (dB)**	**S.A Reading (dBm)**	**S.G Power Vaule (dBm)**	**Correction Factor (dB)**
249.22	H	-36.94	-25	-11.94	-34.81	-41.07	4.13
272.5	H	-37.16	-25	-12.16	-35.85	-41.23	4.07
291.9	H	-36.03	-25	-11.03	-35.41	-40.04	4.01
375.32	H	-34.73	-25	-9.73	-37.62	-38.75	4.02
625.58	H	-38.09	-25	-13.09	-44.71	-41.59	3.5
875.84	H	-27.34	-25	-2.34	-38.25	-30.12	2.78
31.94	V	-33.42	-25	-8.42	-31.99	-19.7	-13.72
53.28	V	-35.02	-25	-10.02	-33.15	-24.75	-10.27
74.62	V	-35.77	-25	-10.77	-33.98	-31.88	-3.89
92.08	V	-32.19	-25	-7.19	-31.8	-32.48	0.29
291.9	V	-34.09	-25	-9.09	-36.92	-38.1	4.01
875.84	V	-28.16	-25	-3.16	-40.14	-30.94	2.78

Note 1: EIRP = S.G Power value + Correction factor

Note 2: Correction factor = Gain of substitution antenna – cable loss

Note 3: Margin = EIRP – Limit

Mode	5MHz / 4967.5MHz						
Frequency (MHz)	**Antenna Polarity**	**E.I.R.P (dBm)**	**Limit (dBm)**	**Margin (dB)**	**S.A Reading (dBm)**	**S.G Power Vaule (dBm)**	**Correction Factor (dB)**
249.22	H	-33.84	-25	-8.84	-31.71	-37.97	4.13
276.38	H	-35.21	-25	-10.21	-34.04	-39.27	4.06
291.9	H	-34.33	-25	-9.33	-33.71	-38.34	4.01
375.32	H	-36.1	-25	-11.1	-38.99	-40.12	4.02
625.58	H	-31.8	-25	-6.8	-38.42	-35.3	3.5
875.84	H	-27.92	-25	-2.92	-38.83	-30.7	2.78
31.92	V	-37.49	-25	-12.49	-36.06	-23.77	-13.72
55.22	V	-36.01	-25	-11.01	-33.67	-26.15	-9.86
74.62	V	-34.59	-25	-9.59	-32.8	-30.7	-3.89
291.9	V	-36.28	-25	-11.28	-39.11	-40.29	4.01
375.32	V	-34.89	-25	-9.89	-38.09	-38.91	4.02
875.84	V	-27.19	-25	-2.19	-39.17	-29.97	2.78

Note 1: EIRP = S.G Power value + Correction factor

Note 2: Correction factor = Gain of substitution antenna – cable loss

Note 3: Margin = EIRP – Limit

Mode	5MHz / 4987.5MHz						
Frequency (MHz)	**Antenna Polarity**	**E.I.R.P (dBm)**	**Limit (dBm)**	**Margin (dB)**	**S.A Reading (dBm)**	**S.G Power Vaule (dBm)**	**Correction Factor (dB)**
249.22	H	-33.03	-25	-8.03	-30.9	-37.16	4.13
276.38	H	-36.12	-25	-11.12	-34.95	-40.18	4.06
291.9	H	-36.81	-25	-11.81	-36.19	-40.82	4.01
375.32	H	-32.43	-25	-7.43	-35.32	-36.45	4.02
625.58	H	-38.06	-25	-13.06	-44.68	-41.56	3.5
875.84	H	-28.02	-25	-3.02	-38.93	-30.8	2.78
31.94	V	-33.94	-25	-8.94	-32.51	-20.22	-13.72
53.11	V	-34.37	-25	-9.37	-32.55	-24.06	-10.31
74.19	V	-34.85	-25	-9.85	-33.05	-30.81	-4.04
291.9	V	-35.03	-25	-10.03	-37.86	-39.04	4.01
375.32	V	-33.13	-25	-8.13	-36.33	-37.15	4.02
875.84	V	-28.05	-25	-3.05	-40.03	-30.83	2.78

Note 1: EIRP = S.G Power value + Correction factor

Note 2: Correction factor = Gain of substitution antenna – cable loss

Note 3: Margin = EIRP – Limit

Mode	20MHz / 4950MHz						
Frequency (MHz)	**Antenna Polarity**	**E.I.R.P (dBm)**	**Limit (dBm)**	**Margin (dB)**	**S.A Reading (dBm)**	**S.G Power Vaule (dBm)**	**Correction Factor (dB)**
74.62	H	-33.54	-26.28	-7.26	-31.33	-29.65	-3.89
249.22	H	-37.89	-26.28	-11.61	-35.76	-42.02	4.13
289	H	-36.55	-26.28	-10.27	-35.82	-40.57	4.02
375.32	H	-34.61	-26.28	-8.33	-37.5	-38.63	4.02
625.58	H	-36.89	-26.28	-10.61	-43.51	-40.39	3.5
875.84	H	-28.47	-26.28	-2.19	-39.38	-31.25	2.78
31.95	V	-37.96	-26.28	-11.68	-36.53	-24.24	-13.72
53.24	V	-35.66	-26.28	-9.38	-33.8	-25.38	-10.28
74.51	V	-36.91	-26.28	-10.63	-35.12	-32.98	-3.93
291.89	V	-35.19	-26.28	-8.91	-38.02	-39.2	4.01
375.32	V	-34.97	-26.28	-8.69	-38.17	-38.99	4.02
875.84	V	-31.02	-26.28	-4.74	-43	-33.8	2.78

Note 1: EIRP = S.G Power value + Correction factor

Note 2: Correction factor = Gain of substitution antenna – cable loss

Note 3: Margin = EIRP – Limit

Mode	20MHz / 4965MHz						
Frequency (MHz)	**Antenna Polarity**	**E.I.R.P (dBm)**	**Limit (dBm)**	**Margin (dB)**	**S.A Reading (dBm)**	**S.G Power Vaule (dBm)**	**Correction Factor (dB)**
53.28	H	-34.97	-26.36	-8.61	-38.74	-24.7	-10.27
74.62	H	-33.67	-26.36	-7.31	-31.46	-29.78	-3.89
291.9	H	-36.64	-26.36	-10.28	-36.02	-40.65	4.01
375.32	H	-38.97	-26.36	-12.61	-41.86	-42.99	4.02
625.58	H	-37.06	-26.36	-10.7	-43.68	-40.56	3.5
875.86	H	-29.66	-26.36	-3.3	-40.57	-32.44	2.78
31.93	V	-36.77	-26.36	-10.41	-35.34	-23.05	-13.72
53.28	V	-39.16	-26.36	-12.8	-37.29	-28.89	-10.27
74.62	V	-39.12	-26.36	-12.76	-37.33	-35.23	-3.89
291.9	V	-33.98	-26.36	-7.62	-36.81	-37.99	4.01
375.32	V	-35.15	-26.36	-8.79	-38.35	-39.17	4.02
875.83	V	-30.78	-26.36	-4.42	-42.76	-33.56	2.78

Note 1: EIRP = S.G Power value + Correction factor

Note 2: Correction factor = Gain of substitution antenna – cable loss

Note 3: Margin = EIRP – Limit

Mode	20MHz / 4980MHz						
Frequency (MHz)	**Antenna Polarity**	**E.I.R.P (dBm)**	**Limit (dBm)**	**Margin (dB)**	**S.A Reading (dBm)**	**S.G Power Vaule (dBm)**	**Correction Factor (dB)**
55.11	H	-32.77	-26.32	-6.45	-35.38	-22.88	-9.89
74.6	H	-33.01	-26.32	-6.69	-30.8	-29.11	-3.9
289.99	H	-39.12	-26.32	-12.8	-38.43	-43.14	4.02
375.11	H	-37.03	-26.32	-10.71	-39.92	-41.05	4.02
625.58	H	-36.79	-26.32	-10.47	-43.41	-40.29	3.5
875.49	H	-27.99	-26.32	-1.67	-38.89	-30.77	2.78
31.94	V	-35.11	-26.32	-8.79	-33.68	-21.39	-13.72
52.99	V	-39.11	-26.32	-12.79	-37.32	-28.77	-10.34
74.55	V	-35.64	-26.32	-9.32	-33.85	-31.73	-3.91
272.5	V	-37.11	-26.32	-10.79	-40.04	-41.18	4.07
292.01	V	-33.99	-26.32	-7.67	-36.82	-38	4.01
875.66	V	-30.27	-26.32	-3.95	-42.24	-33.05	2.78

Note 1: EIRP = S.G Power value + Correction factor

Note 2: Correction factor = Gain of substitution antenna – cable loss

Note 3: Margin = EIRP – Limit

3.3.5 Test Result of Radiated Emissions above 1GHz

Mode	5MHz / 4942.5MHz						
Frequency (MHz)	Antenna Polarity	E.I.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
1124	H	-44.12	-25	-19.12	-49.18	-47.21	3.09
1624	H	-42.43	-25	-17.43	-49.37	-47.04	4.61
1876	H	-39.77	-25	-14.77	-47.93	-45.19	5.42
3124.96	H	-51.11	-25	-26.11	-64.75	-57.21	6.1
5370.12	H	-29.39	-25	-4.39	-47.46	-35.42	6.03
9884.96	H	-43.51	-25	-18.51	-68.57	-45.28	1.77
1124	V	-44.81	-25	-19.81	-49.27	-47.9	3.09
1624	V	-42.66	-25	-17.66	-49.34	-47.27	4.61
1876	V	-44.45	-25	-19.45	-52.37	-49.87	5.42
3126	V	-50.51	-25	-25.51	-63.85	-56.61	6.1
5375.9	V	-25.67	-25	-0.67	-43.26	-31.7	6.03
9884.96	V	-39.01	-25	-14.01	-62.57	-40.78	1.77

Note 1: EIRP = S.G Power value + Correction factor

Note 2: Correction factor = Gain of substitution antenna – cable loss

Note 3: Margin = EIRP – Limit

Mode	5MHz / 4967.5MHz						
Frequency (MHz)	**Antenna Polarity**	**E.I.R.P (dBm)**	**Limit (dBm)**	**Margin (dB)**	**S.A Reading (dBm)**	**S.G Power Vaule (dBm)**	**Correction Factor (dB)**
1124	H	-44.09	-25	-19.09	-49.15	-47.18	3.09
1626	H	-41.99	-25	-16.99	-48.93	-46.6	4.61
1876	H	-40.41	-25	-15.41	-48.57	-45.83	5.42
3125.16	H	-50.97	-25	-25.97	-64.61	-57.07	6.1
5372.42	H	-29.11	-25	-4.11	-47.17	-35.14	6.03
9935.1	H	-43.89	-25	-18.89	-69.34	-45.62	1.73
1124	V	-42.01	-25	-17.01	-46.47	-45.1	3.09
1374	V	-44.81	-25	-19.81	-51.69	-48.63	3.82
1876	V	-44.29	-25	-19.29	-52.21	-49.71	5.42
3200	V	-49.44	-25	-24.44	-63.08	-55.64	6.2
5376.5	V	-26.33	-25	-1.33	-43.92	-32.36	6.03
9934.96	V	-38.03	-25	-13.03	-61.74	-39.76	1.73

Note 1: EIRP = S.G Power value + Correction factor

Note 2: Correction factor = Gain of substitution antenna – cable loss

Note 3: Margin = EIRP – Limit

Mode	5MHz / 4987.5MHz						
Frequency (MHz)	**Antenna Polarity**	**E.I.R.P (dBm)**	**Limit (dBm)**	**Margin (dB)**	**S.A Reading (dBm)**	**S.G Power Vaule (dBm)**	**Correction Factor (dB)**
1124	H	-43.62	-25	-18.62	-48.68	-46.71	3.09
1375	H	-45.81	-25	-20.81	-53.11	-49.63	3.82
1876	H	-41.77	-25	-16.77	-49.93	-47.19	5.42
3125.16	H	-49.43	-25	-24.43	-63.07	-55.53	6.1
5373.9	H	-29.66	-25	-4.66	-47.72	-35.69	6.03
9975.06	H	-42.21	-25	-17.21	-67.98	-43.91	1.7
1124	V	-41.98	-25	-16.98	-46.44	-45.07	3.09
1374	V	-45.11	-25	-20.11	-51.99	-48.93	3.82
1876	V	-44.63	-25	-19.63	-52.55	-50.05	5.42
3124	V	-50.98	-25	-25.98	-64.32	-57.07	6.09
5375.86	V	-26.77	-25	-1.77	-44.36	-32.8	6.03
9975.04	V	-38.14	-25	-13.14	-61.96	-39.84	1.7

Note 1: EIRP = S.G Power value + Correction factor

Note 2: Correction factor = Gain of substitution antenna – cable loss

Note 3: Margin = EIRP – Limit

Mode	20MHz / 4950MHz						
Frequency (MHz)	**Antenna Polarity**	**E.I.R.P (dBm)**	**Limit (dBm)**	**Margin (dB)**	**S.A Reading (dBm)**	**S.G Power Vaule (dBm)**	**Correction Factor (dB)**
1124	H	-42.88	-26.28	-16.6	-47.94	-45.97	3.09
1626	H	-43.21	-26.28	-16.93	-50.15	-47.82	4.61
1876	H	-41.03	-26.28	-14.75	-49.19	-46.45	5.42
3209.42	H	-51.99	-26.28	-25.71	-65.93	-58.2	6.21
5376.29	H	-29.42	-26.28	-3.14	-47.47	-35.45	6.03
9900.1	H	-44.39	-26.28	-18.11	-69.57	-46.14	1.75
1124	V	-46.02	-26.28	-19.74	-50.48	-49.11	3.09
1626	V	-41.99	-26.28	-15.71	-48.67	-46.6	4.61
1876	V	-46.27	-26.28	-19.99	-54.19	-51.69	5.42
3124.79	V	-48.24	-26.28	-21.96	-61.58	-54.33	6.09
5375.86	V	-26.77	-26.28	-0.49	-44.36	-32.8	6.03
9899.98	V	-33.01	-26.28	-6.73	-56.61	-34.77	1.76

Note 1: EIRP = S.G Power value + Correction factor

Note 2: Correction factor = Gain of substitution antenna – cable loss

Note 3: Margin = EIRP – Limit

Mode	20MHz / 4965MHz						
Frequency (MHz)	**Antenna Polarity**	**E.I.R.P (dBm)**	**Limit (dBm)**	**Margin (dB)**	**S.A Reading (dBm)**	**S.G Power Vaule (dBm)**	**Correction Factor (dB)**
1124.86	H	-43.36	-26.36	-17	-48.43	-46.46	3.1
1375.53	H	-44.45	-26.36	-18.09	-51.75	-48.27	3.82
1874.93	H	-39.88	-26.36	-13.52	-48.03	-45.3	5.42
3244.06	H	-36.14	-26.36	-9.78	-49.93	-42.4	6.26
5376.06	H	-28.77	-26.36	-2.41	-46.82	-34.8	6.03
9929.88	H	-36.88	-26.36	-10.52	-62.3	-38.61	1.73
1124.72	V	-42.16	-26.36	-15.8	-46.63	-45.26	3.1
1626.22	V	-45.11	-26.36	-18.75	-51.79	-49.72	4.61
1873.71	V	-44.23	-26.36	-17.87	-52.12	-49.64	5.41
3244	V	-36.41	-26.36	-10.05	-49.91	-42.67	6.26
5375.98	V	-26.49	-26.36	-0.13	-44.08	-32.52	6.03
9930.08	V	-33.46	-26.36	-7.1	-57.15	-35.19	1.73

Note 1: EIRP = S.G Power value + Correction factor

Note 2: Correction factor = Gain of substitution antenna – cable loss

Note 3: Margin = EIRP – Limit

Mode	20MHz / 4980MHz						
Frequency (MHz)	**Antenna Polarity**	**E.I.R.P (dBm)**	**Limit (dBm)**	**Margin (dB)**	**S.A Reading (dBm)**	**S.G Power Vaule (dBm)**	**Correction Factor (dB)**
1124	H	-44.02	-26.32	-17.7	-49.08	-47.11	3.09
1374	H	-46.27	-26.32	-19.95	-53.57	-50.09	3.82
1876	H	-43.06	-26.32	-16.74	-51.22	-48.48	5.42
3246.58	H	-44.03	-26.32	-17.71	-57.81	-50.29	6.26
5375.78	H	-29.12	-26.32	-2.8	-47.17	-35.15	6.03
9959.7	H	-35.51	-26.32	-9.19	-61.16	-37.22	1.71
1124	V	-43.51	-26.32	-17.19	-47.97	-46.6	3.09
1374	V	-43.44	-26.32	-17.12	-50.32	-47.26	3.82
1876	V	-40.75	-26.32	-14.43	-48.67	-46.17	5.42
3248	V	-39.11	-26.32	-12.79	-52.6	-45.37	6.26
5376.09	V	-26.49	-26.32	-0.17	-44.08	-32.52	6.03
9959.78	V	-34.09	-26.32	-7.77	-57.87	-35.8	1.71

Note 1: EIRP = S.G Power value + Correction factor

Note 2: Correction factor = Gain of substitution antenna – cable loss

Note 3: Margin = EIRP – Limit

3.4 Conducted Emissions

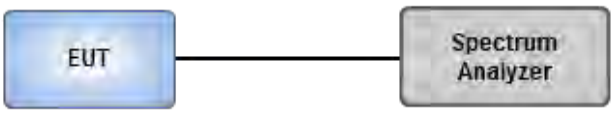
3.4.1 Limit of Conducted Emissions

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of 50 dB or 55 + 10 log(P)dB , which is the lesser attenuation.

3.4.2 Test Procedures

1. Lowest, middle and highest operating channels are tested for this item.
2. Scan frequency range is from 30MHz~40GHz.
3. Set RBW = 1MHz, VBW = 3MHz (for above 1GHz), RBW = 100kHz, VBW = 300kHz (for below 1GHz) detector = RMS, sweep time = auto.
4. Record the max trace value and capture the test plot of each sub frequency band.

3.4.3 Test Setup



3.4.4 Test Result of Conducted Emissions

For 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	-82.64	-82.85	-77.73	-25.00	Pass
4967.5MHz	-82.68	-83.93	-78.25	-25.00	Pass
4987.5MHz	-83.52	-83.25	-78.37	-25.00	Pass

1GHz ~ 4.94GHz					
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	-69.48	-69.51	-64.48	-25.00	Pass
4967.5MHz	-70.02	-69.94	-64.97	-25.00	Pass
4987.5MHz	-69.86	-70.49	-65.15	-25.00	Pass

4.99GHz ~ 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	-65.61	-64.14	-59.80	-25.00	Pass
4967.5MHz	-65.58	-65.32	-60.44	-25.00	Pass
4987.5MHz	-65.42	-65.36	-60.38	-25.00	Pass

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	-84.01	-84.51	-79.24	-26.28	Pass
4965MHz	-84.41	-84.85	-79.61	-26.36	Pass
4980MHz	-84.55	-84.59	-79.56	-26.32	Pass

1GHz ~ 4.94GHz					
Frequency	Conducted Emission (dBm/MHz)	Conducted Emission (dBm/MHz)	Total Conducted Emission (dBm/MHz)	Max. Limit (dBm/MHz)	Result
	Port 1	Port 2			
4950MHz	-69.02	-70.11	-64.52	-26.28	Pass
4965MHz	-65.75	-65.72	-60.72	-26.36	Pass
4980MHz	-70.28	-70.17	-65.21	-26.32	Pass

4.99GHz ~ 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	-65.41	-64.79	-60.08	-26.28	Pass
4965MHz	-65.52	-65.37	-60.43	-26.36	Pass
4980MHz	-65.83	-65.64	-60.72	-26.32	Pass

For 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	-82.64	-82.85	-55.73	-25.00	Pass
4967.5MHz	-82.68	-83.93	-56.25	-25.00	Pass
4987.5MHz	-83.52	-83.25	-56.37	-25.00	Pass

1GHz ~ 4.94GHz					
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	-69.48	-69.51	-42.48	-25.00	Pass
4967.5MHz	-70.02	-69.94	-42.97	-25.00	Pass
4987.5MHz	-69.86	-70.49	-43.15	-25.00	Pass

4.99GHz ~ 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	-65.61	-64.14	-37.80	-25.00	Pass
4967.5MHz	-65.58	-65.32	-38.44	-25.00	Pass
4987.5MHz	-65.42	-65.36	-38.38	-25.00	Pass

20MHz Channel Bandwidth Mode

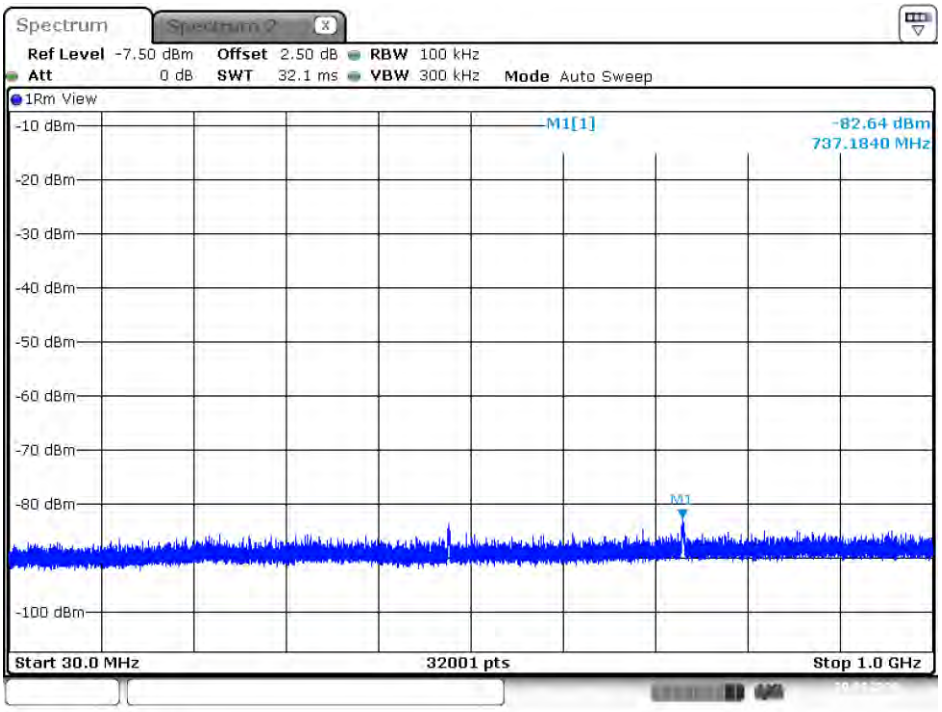
30MHz ~ 1GHz					
Frequency	Conducted Emission (dBm/MHz)	Conducted Emission (dBm/MHz)	Total Conducted Emission (dBm/MHz)	Max. Limit (dBm/MHz)	Result
	Port 1	Port 2			
4950MHz	-84.01	-84.51	-57.24	-26.28	Pass
4965MHz	-84.41	-84.85	-57.61	-26.36	Pass
4980MHz	-84.55	-84.59	-57.56	-26.32	Pass

1GHz ~ 4.94GHz					
Frequency	Conducted Emission (dBm/MHz)	Conducted Emission (dBm/MHz)	Total Conducted Emission (dBm/MHz)	Max. Limit (dBm/MHz)	Result
	Port 1	Port 2			
4950MHz	-69.02	-70.11	-42.52	-26.28	Pass
4965MHz	-65.75	-65.72	-38.72	-26.36	Pass
4980MHz	-70.28	-70.17	-43.21	-26.32	Pass

4.99GHz ~ 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	-65.41	-64.79	-38.08	-26.28	Pass
4965MHz	-65.52	-65.37	-38.43	-26.36	Pass
4980MHz	-65.83	-65.64	-38.72	-26.32	Pass

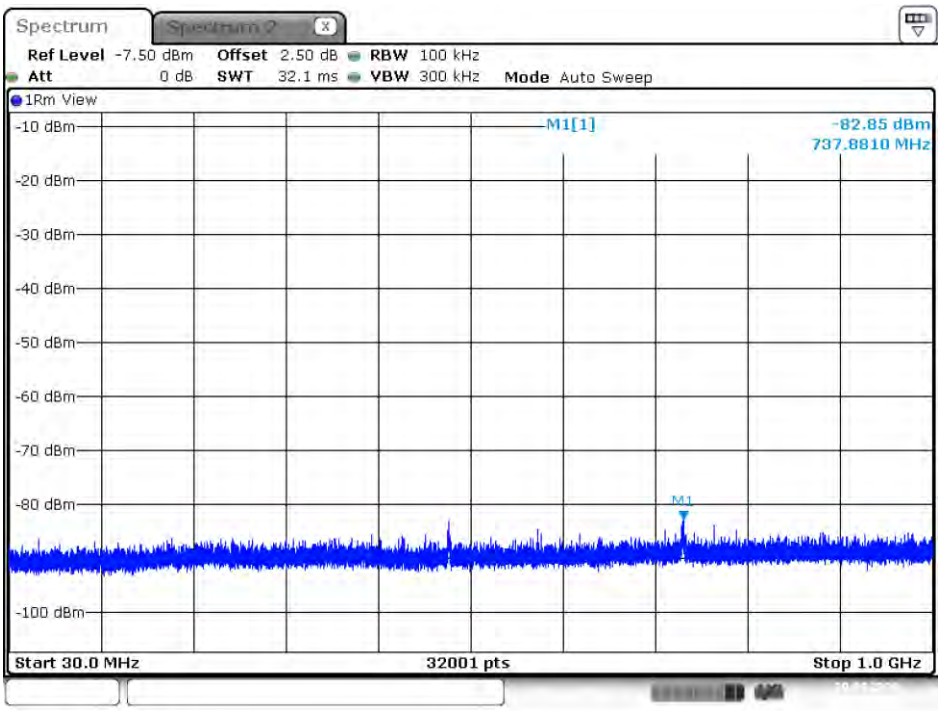
For Ant. 1 and Ant. 2:

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



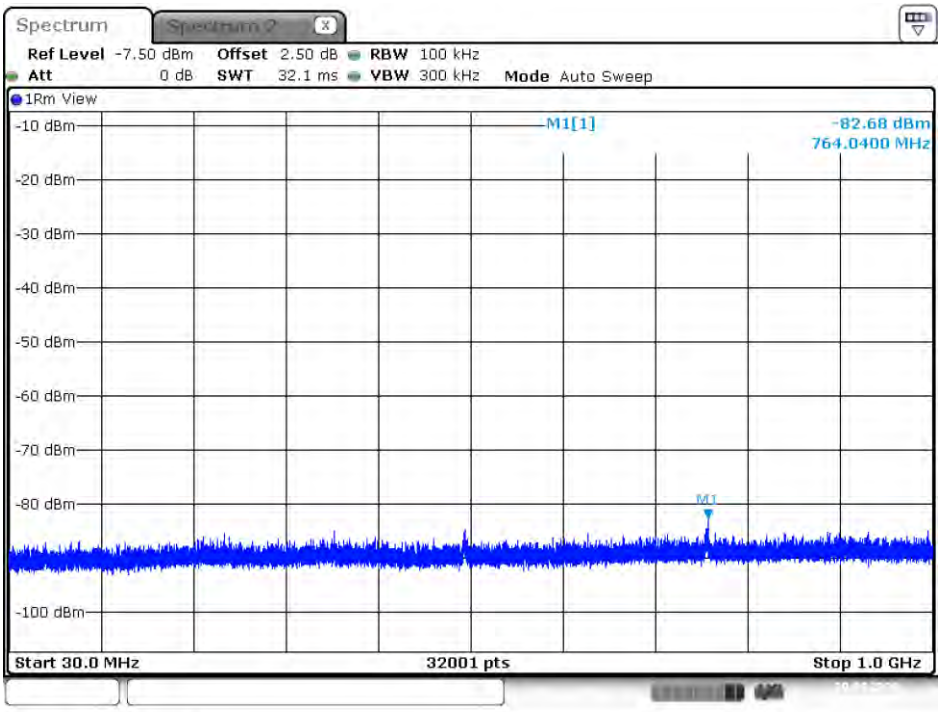
Date: 10.APR.2018 00:24:50

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



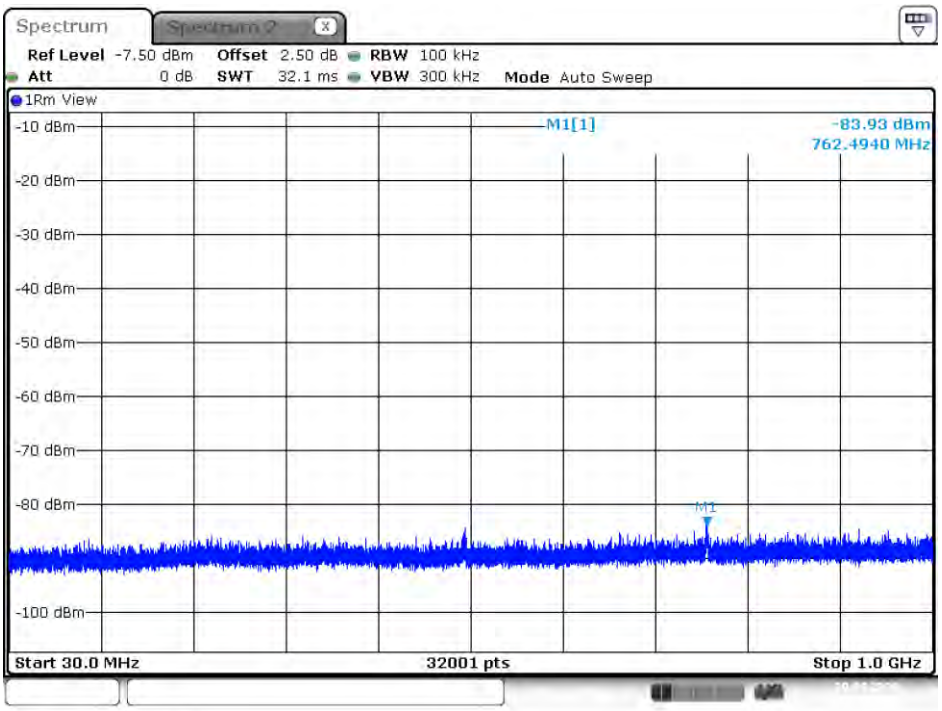
Date: 10.APR.2018 00:28:12

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



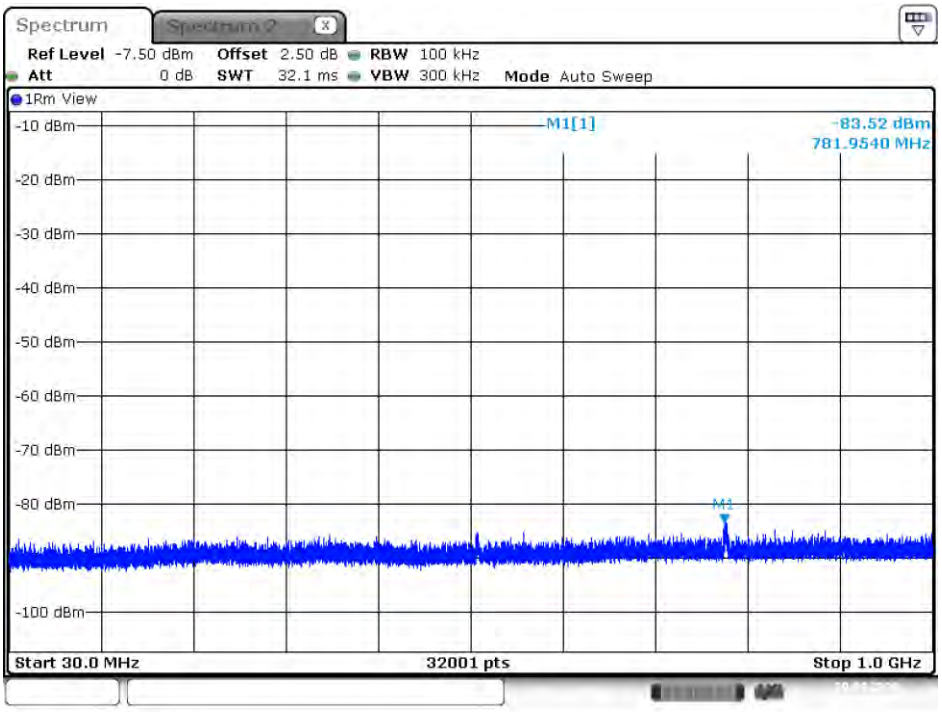
Date: 10.APR.2018 00:31:48

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



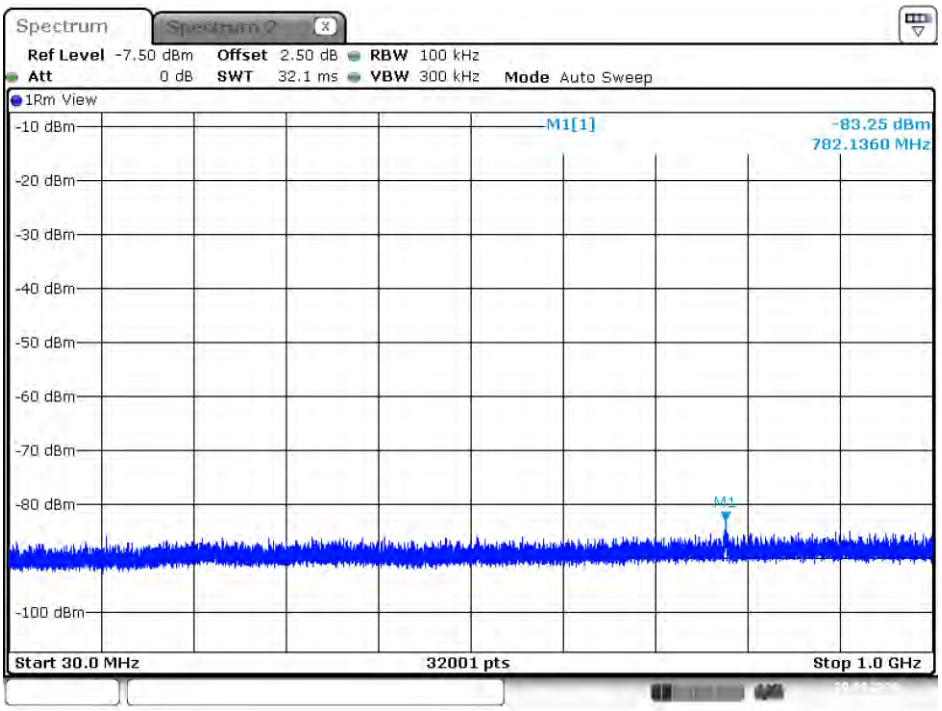
Date: 10.APR.2018 00:37:45

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



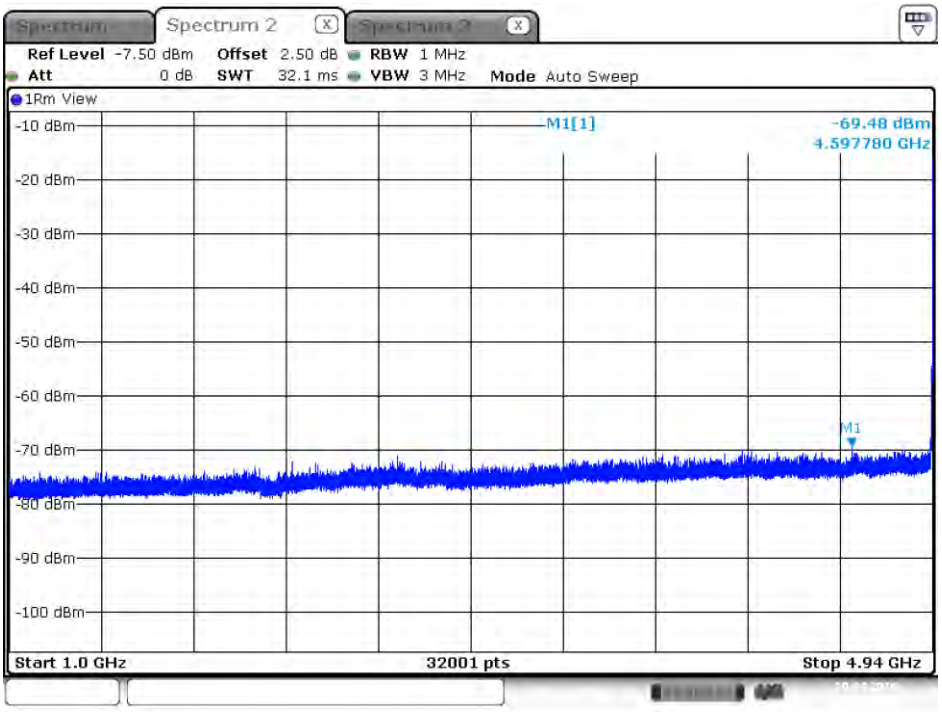
Date: 10.APR.2018 00:40:59

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



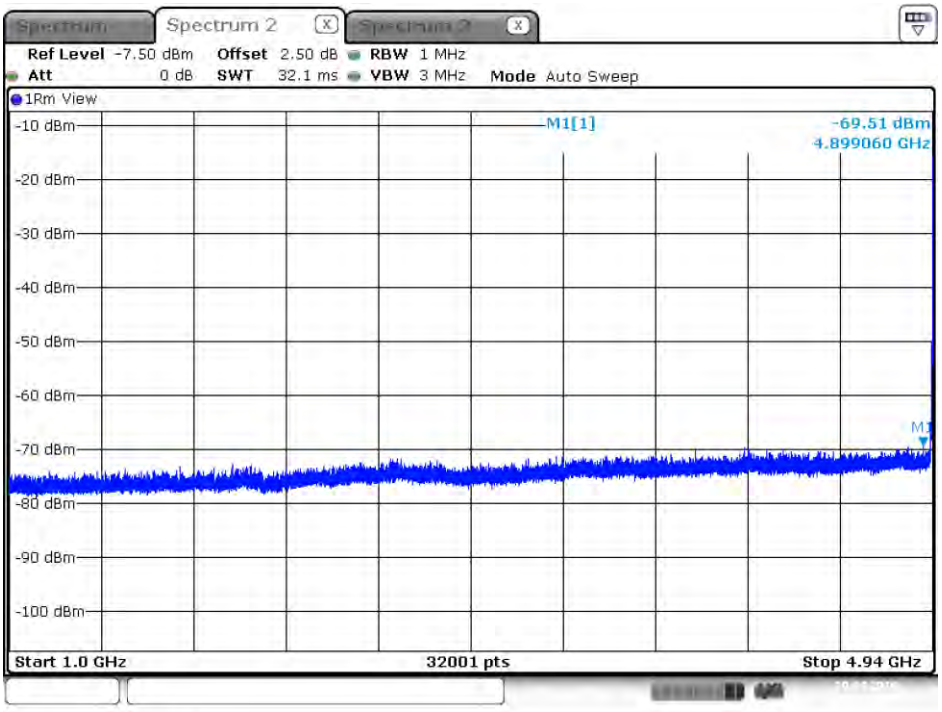
Date: 10.APR.2018 00:46:45

Conducted Emissions (5MHz BW Mode) – 4942.5MHz (1GHz ~ 4.94GHz) / Port 1



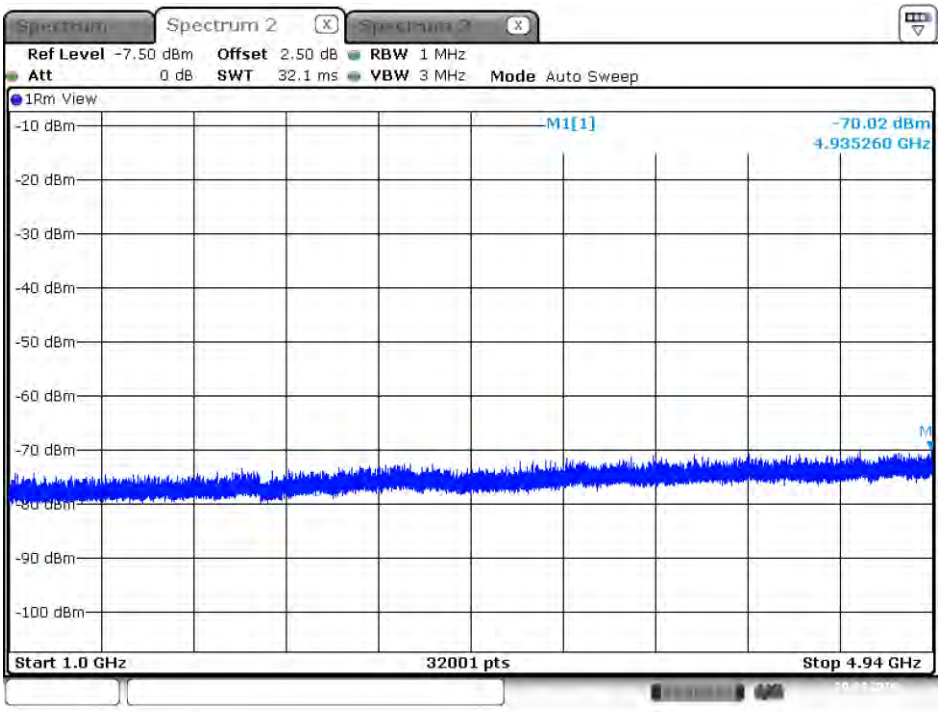
Date: 10.APR.2018 09:59:16

Conducted Emissions (5MHz BW Mode) – 4942.5MHz (1GHz ~ 4.94GHz) / Port 2



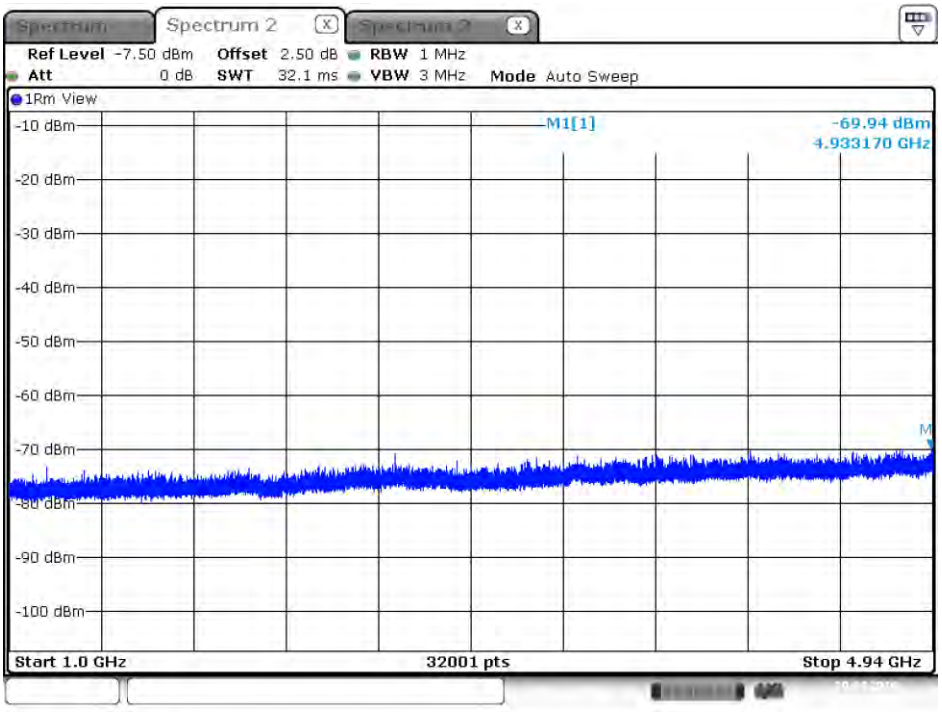
Date: 10.APR.2018 11:22:10

Conducted Emissions (5MHz BW Mode) – 4967.5MHz (1GHz ~ 4.94GHz) / Port 1



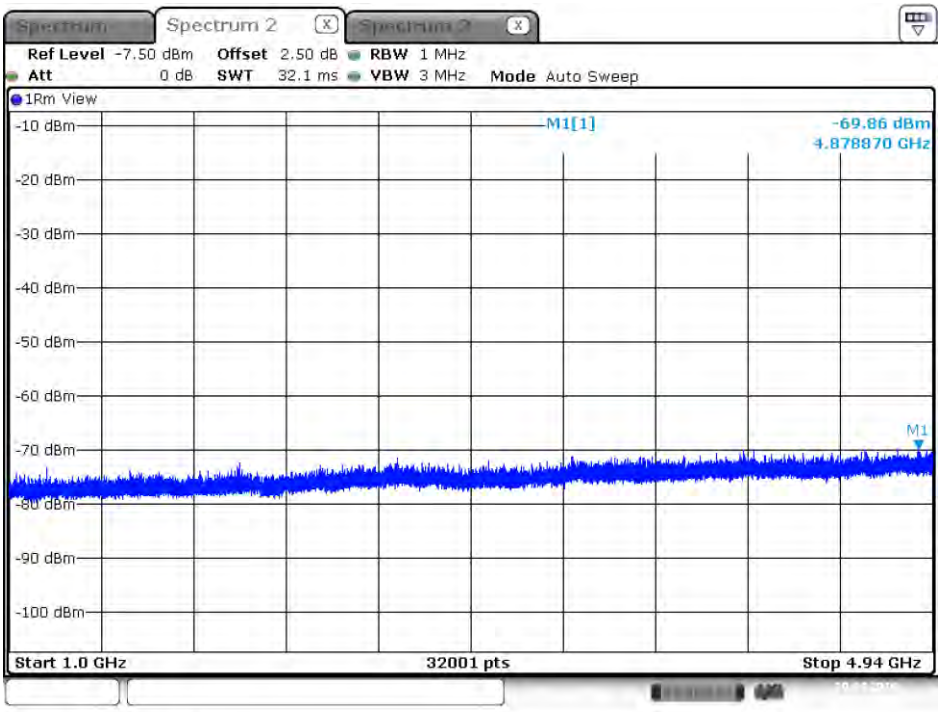
Date: 10.APR.2018 10:21:13

Conducted Emissions (5MHz BW Mode) – 4967.5MHz (1GHz ~ 4.94GHz) / Port 2



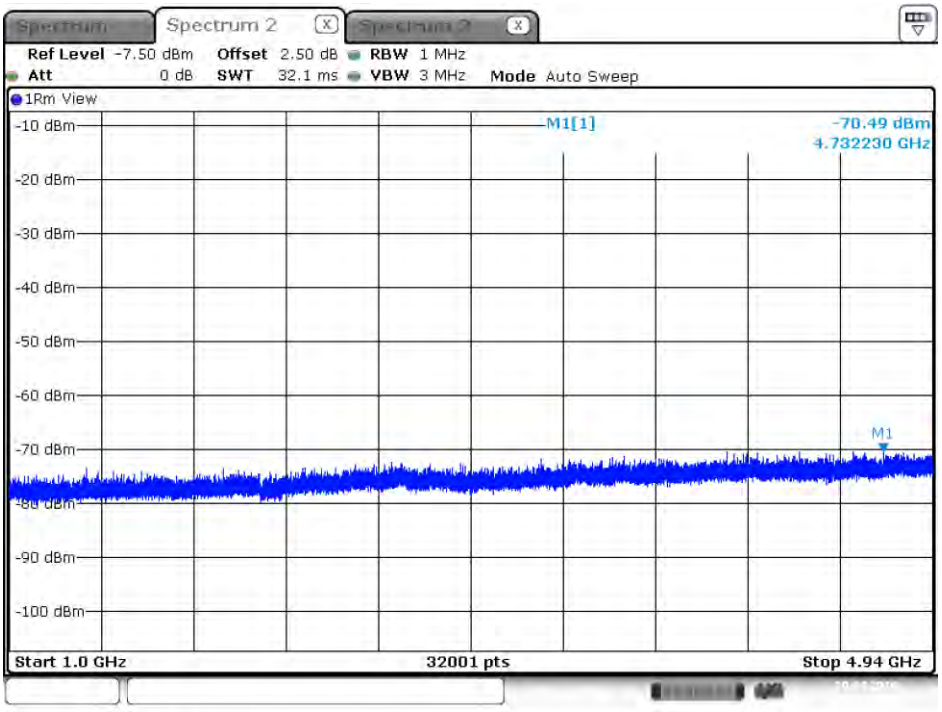
Date: 10.APR.2018 10:22:16

Conducted Emissions (5MHz BW Mode) – 4987.5MHz (1GHz ~ 4.94GHz) / Port 1



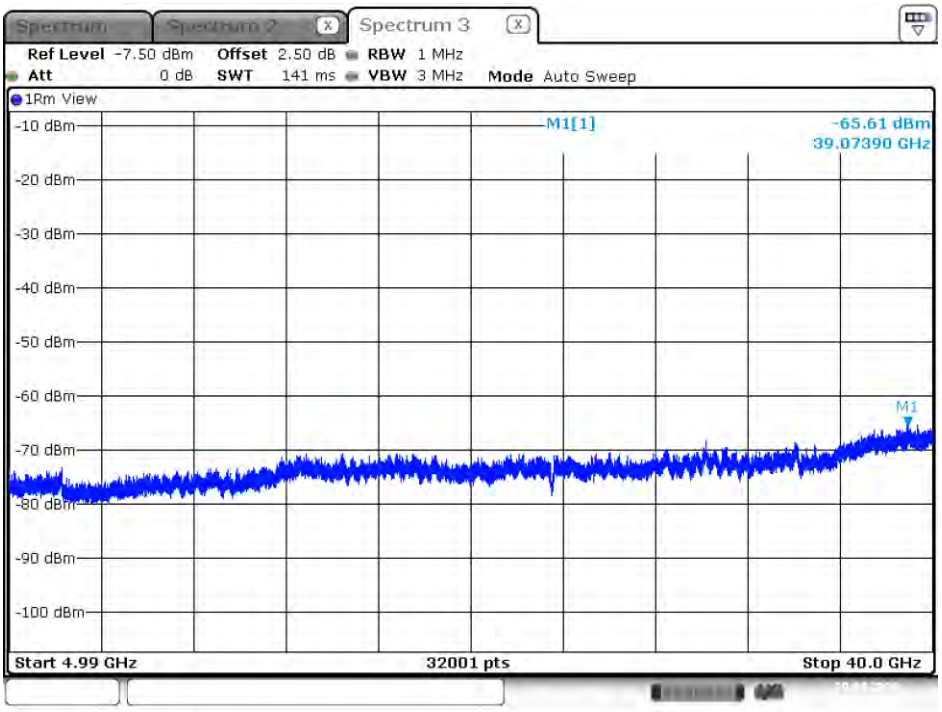
Date: 10.APR.2018 10:33:19

Conducted Emissions (5MHz BW Mode) – 4987.5MHz (1GHz ~ 4.94GHz) / Port 2



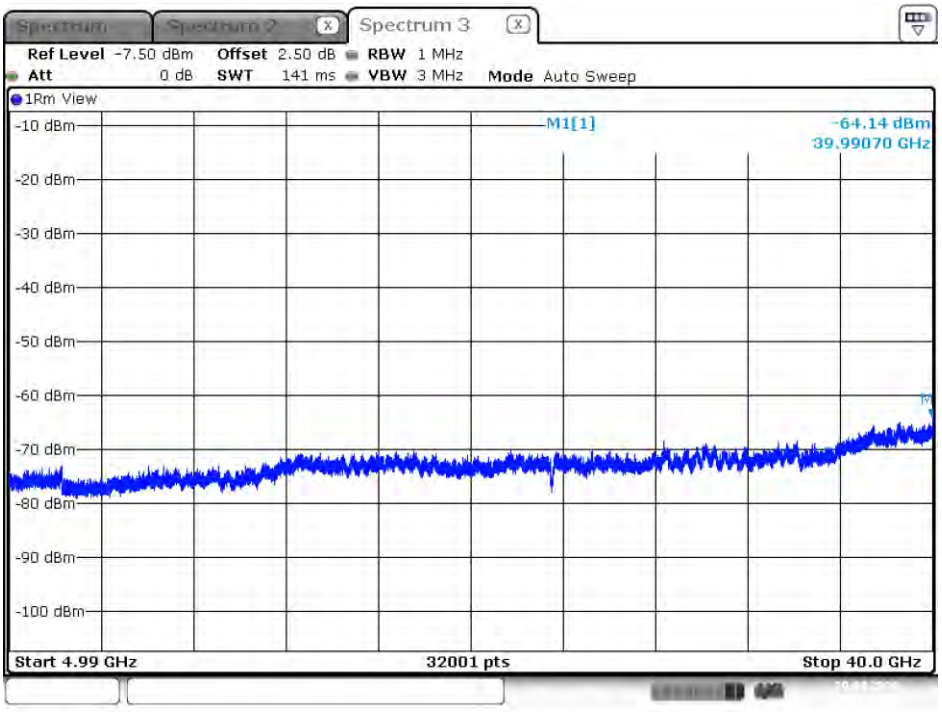
Date: 10.APR.2018 10:32:03

Conducted Emissions (5MHz BW Mode) – 4942.5MHz (4.99GHz ~ 40 GHz) / Port 1



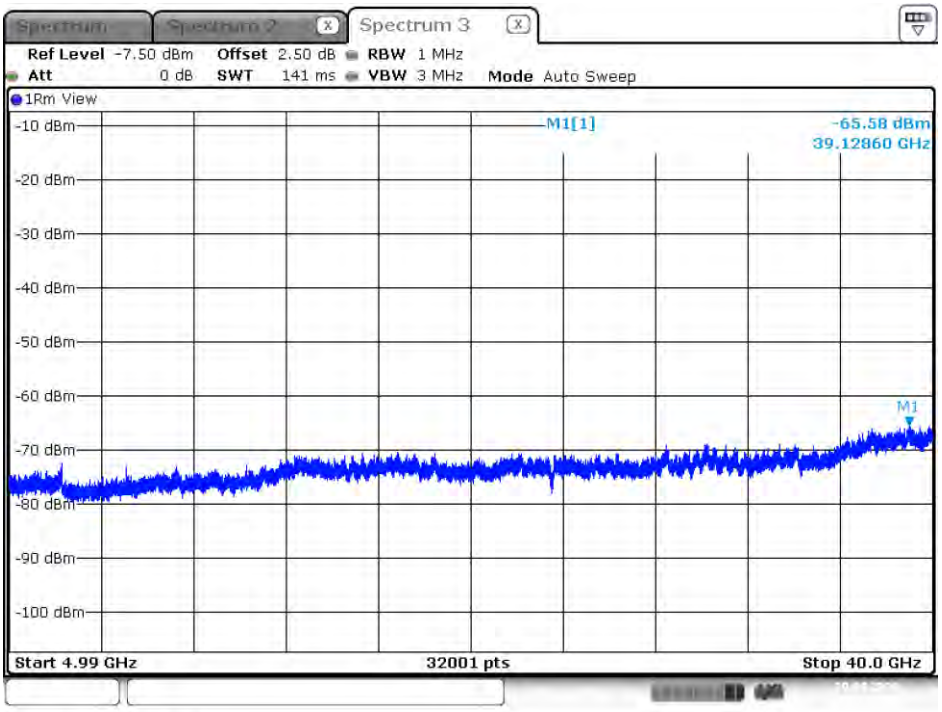
Date: 10.APR.2018 10:08:42

Conducted Emissions (5MHz BW Mode) – 4942.5MHz (4.99GHz ~ 40 GHz) / Port 2



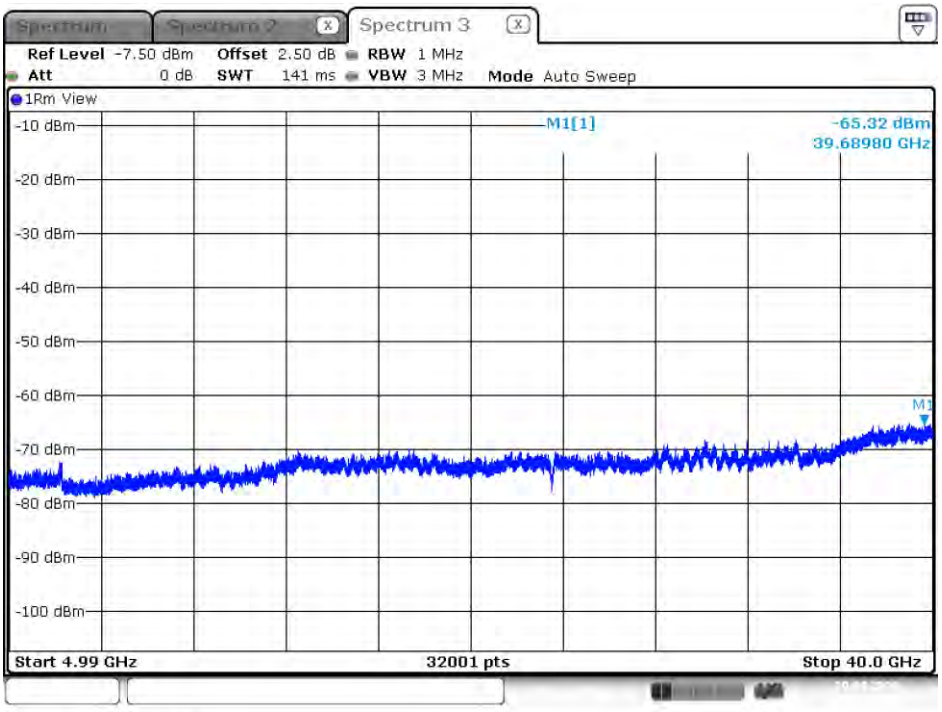
Date: 10.APR.2018 11:17:12

Conducted Emissions (5MHz BW Mode) – 4967.5MHz (4.99GHz ~ 40 GHz) / Port 1



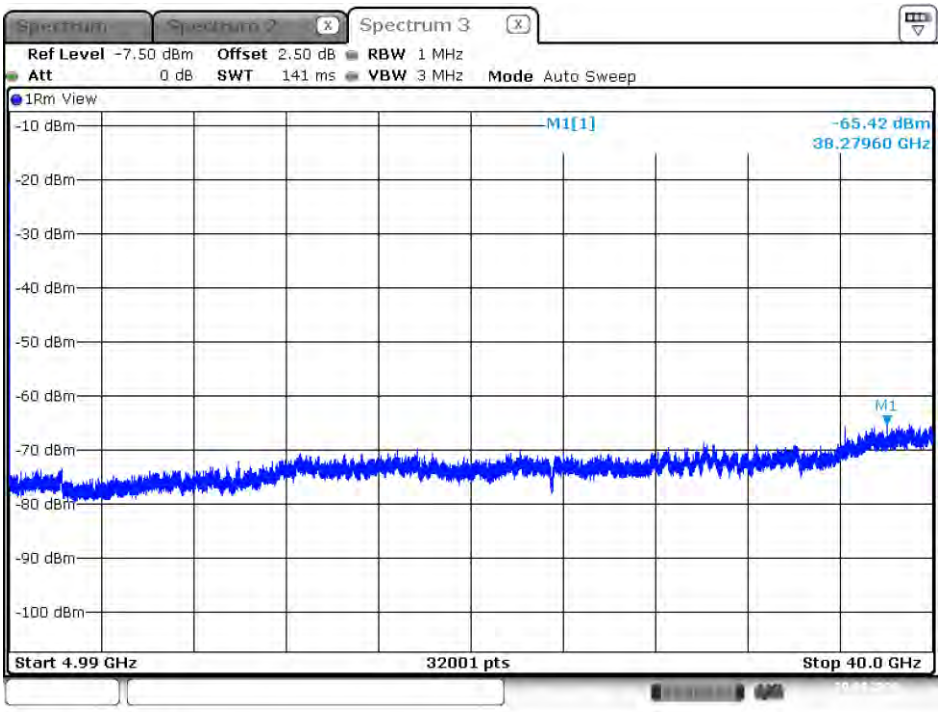
Date: 10.APR.2018 10:17:46

Conducted Emissions (5MHz BW Mode) – 4967.5MHz (4.99GHz ~ 40 GHz) / Port 2



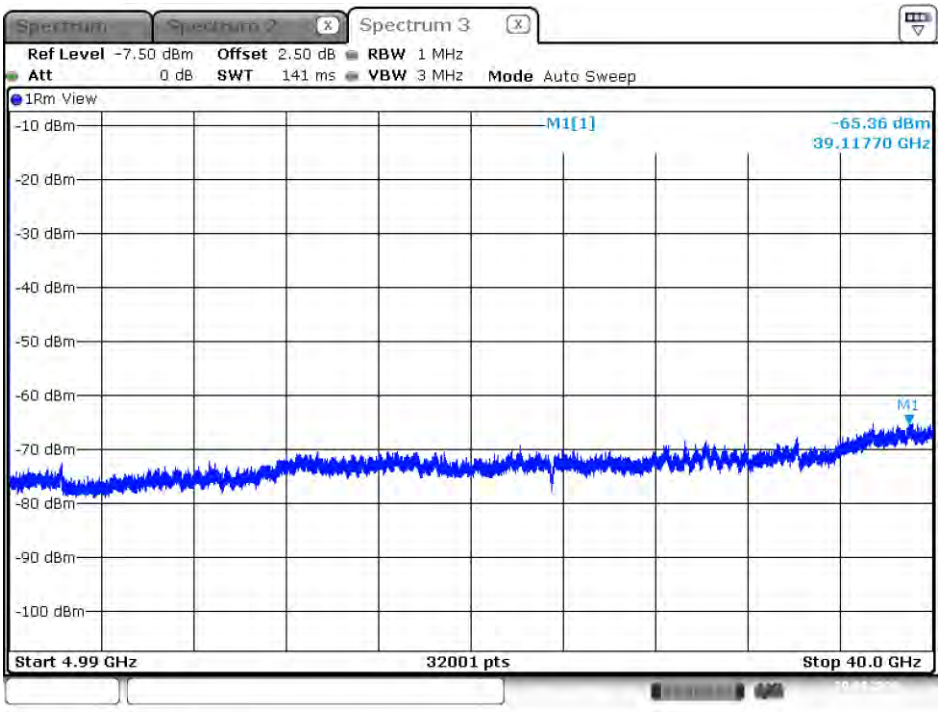
Date: 10.APR.2018 10:24:42

Conducted Emissions (5MHz BW Mode) – 4987.5MHz (4.99GHz ~ 40 GHz) / Port 1



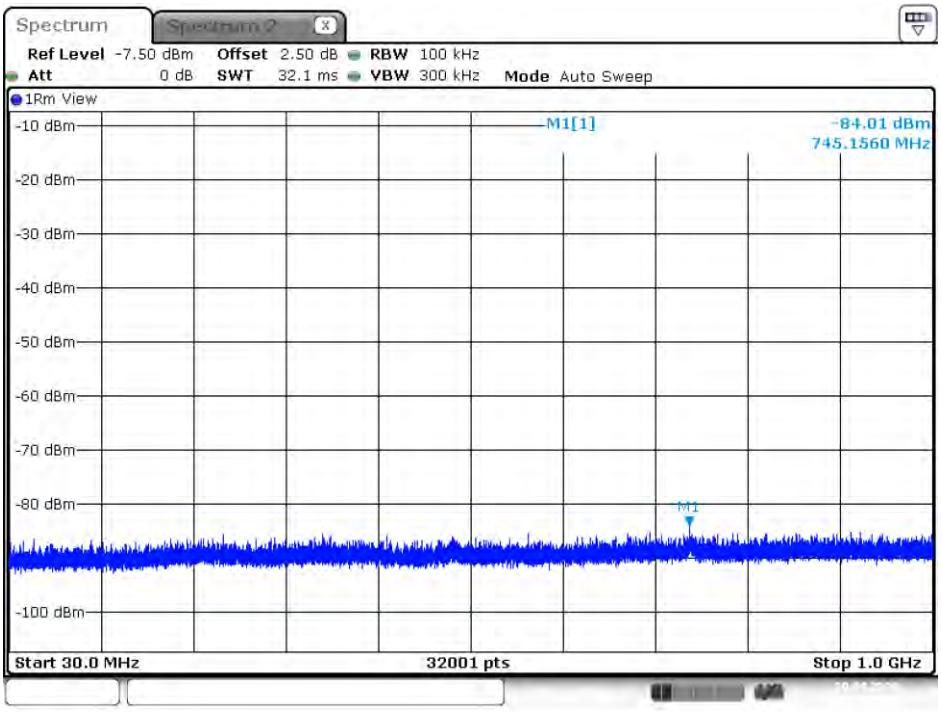
Date: 10.APR.2018 10:33:58

Conducted Emissions (5MHz BW Mode) – 4987.5MHz (4.99GHz ~ 40 GHz) / Port 2



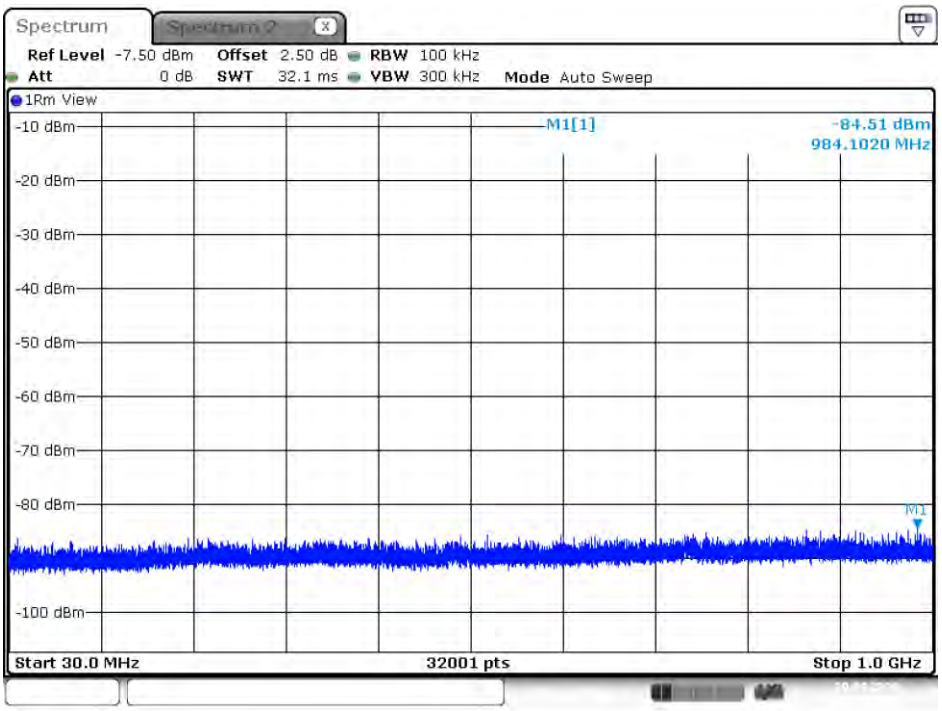
Date: 10.APR.2018 10:31:27

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



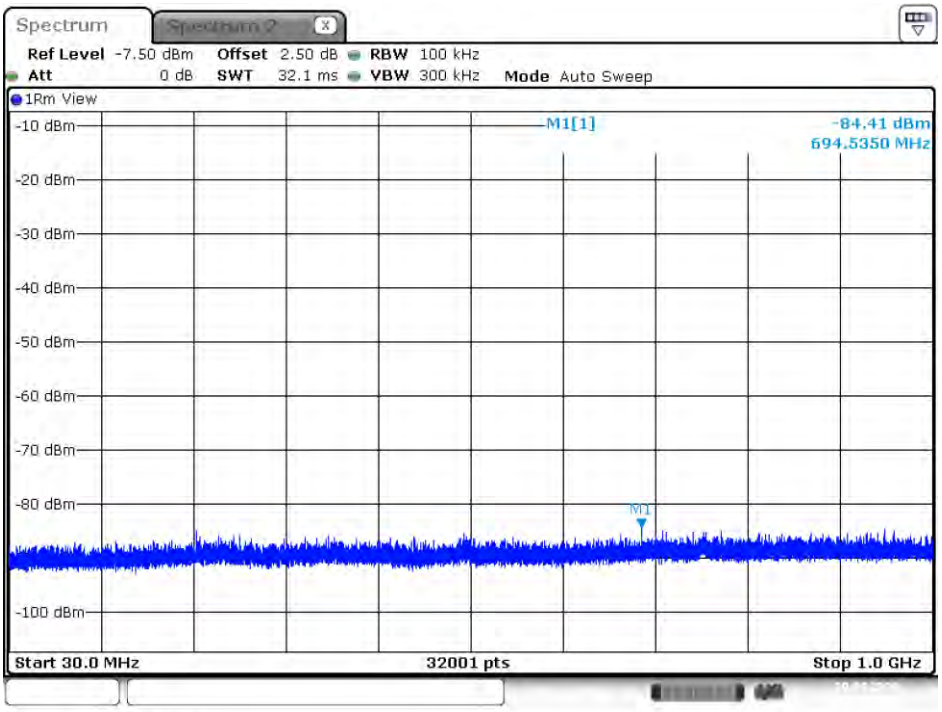
Date: 10.APR.2018 00:51:44

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



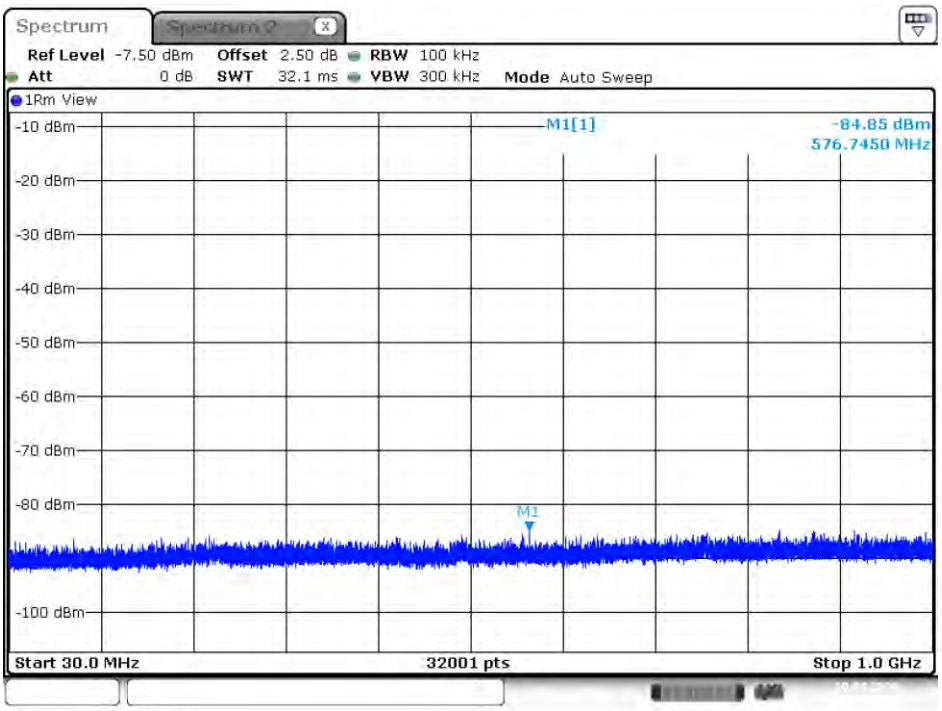
Date: 10.APR.2018 00:57:14

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



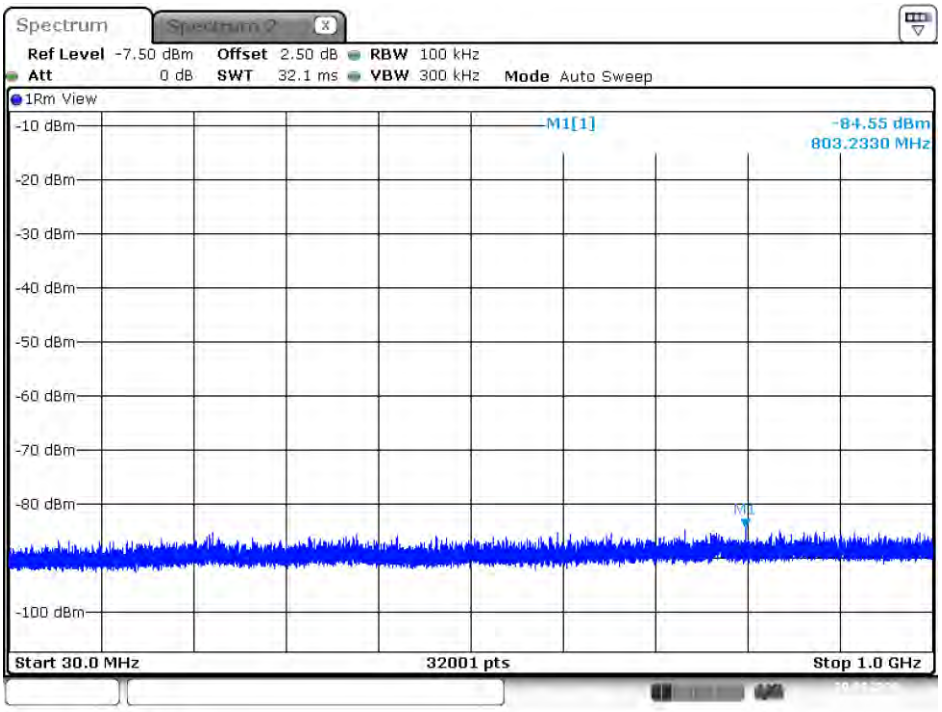
Date: 10.APR.2018 01:02:43

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



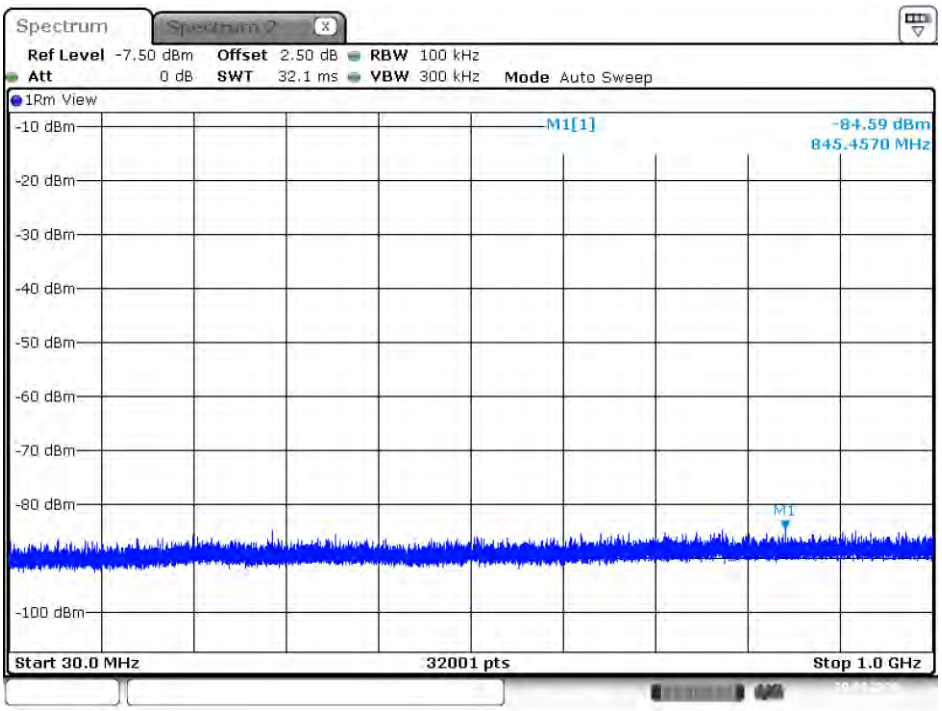
Date: 10.APR.2018 01:08:10

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



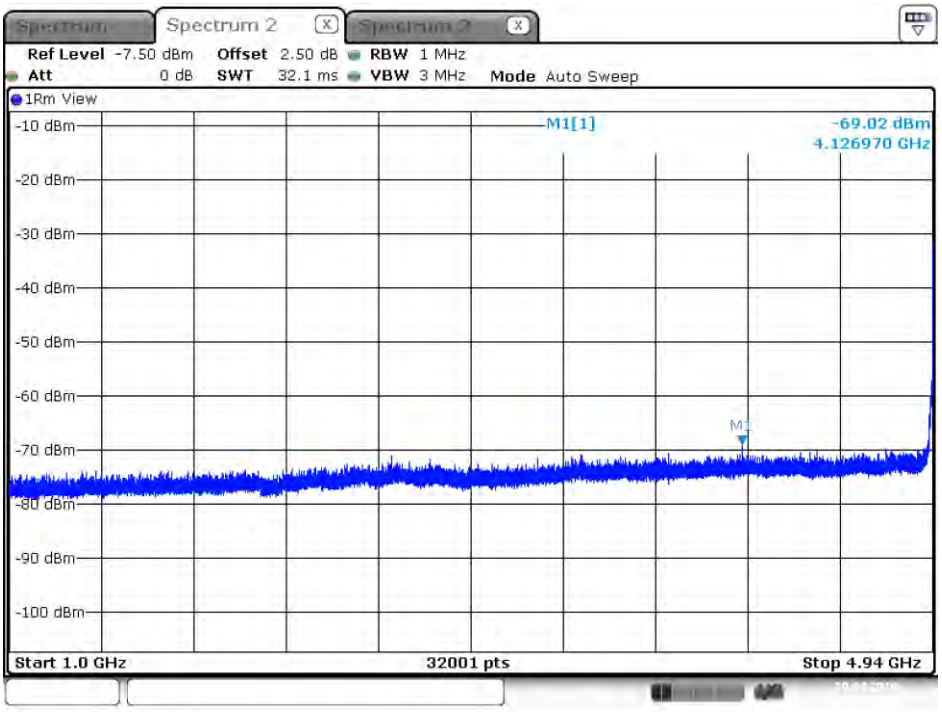
Date: 10.APR.2018 01:11:01

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



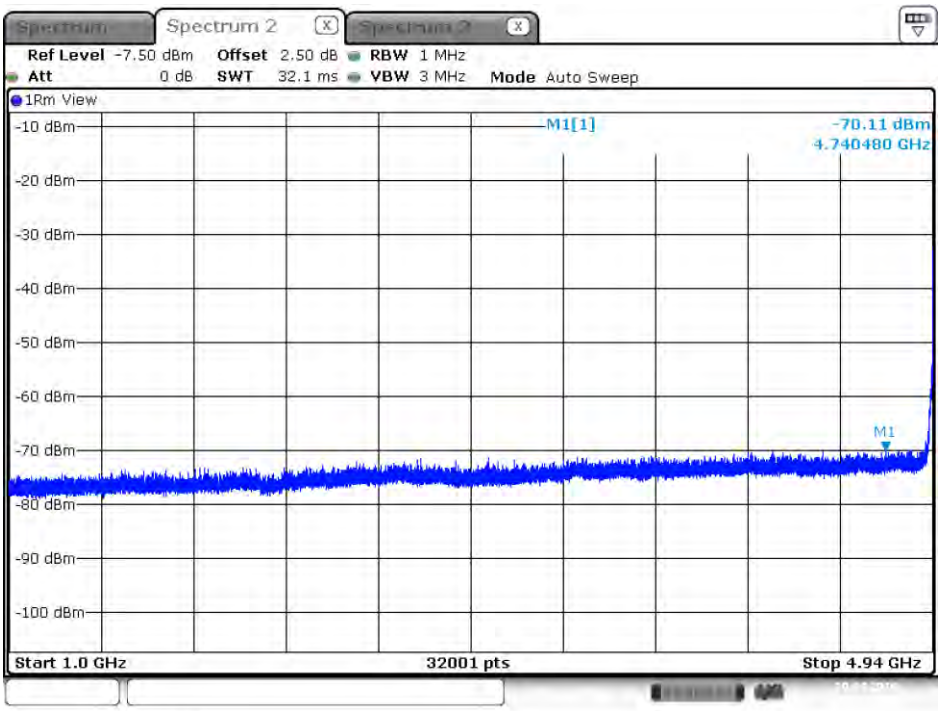
Date: 10.APR.2018 01:17:40

Conducted Emissions (20MHz BW Mode) – 4950MHz (1GHz ~ 4.94GHz) / Port 1



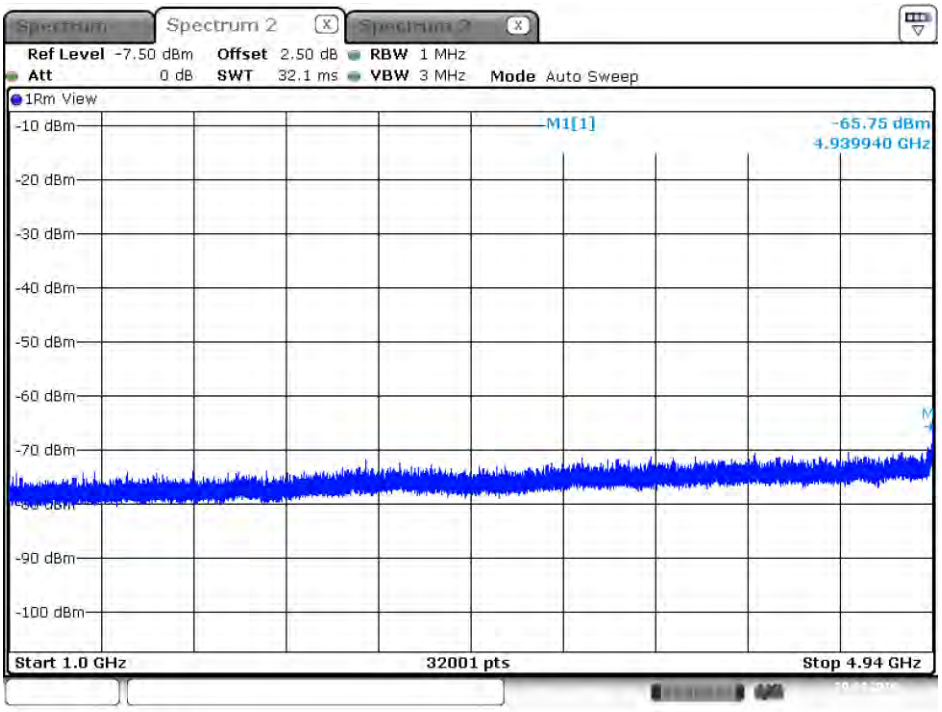
Date: 10.APR.2018 11:34:19

Conducted Emissions (20MHz BW Mode) – 4950MHz (1GHz ~ 4.94GHz) / Port 2



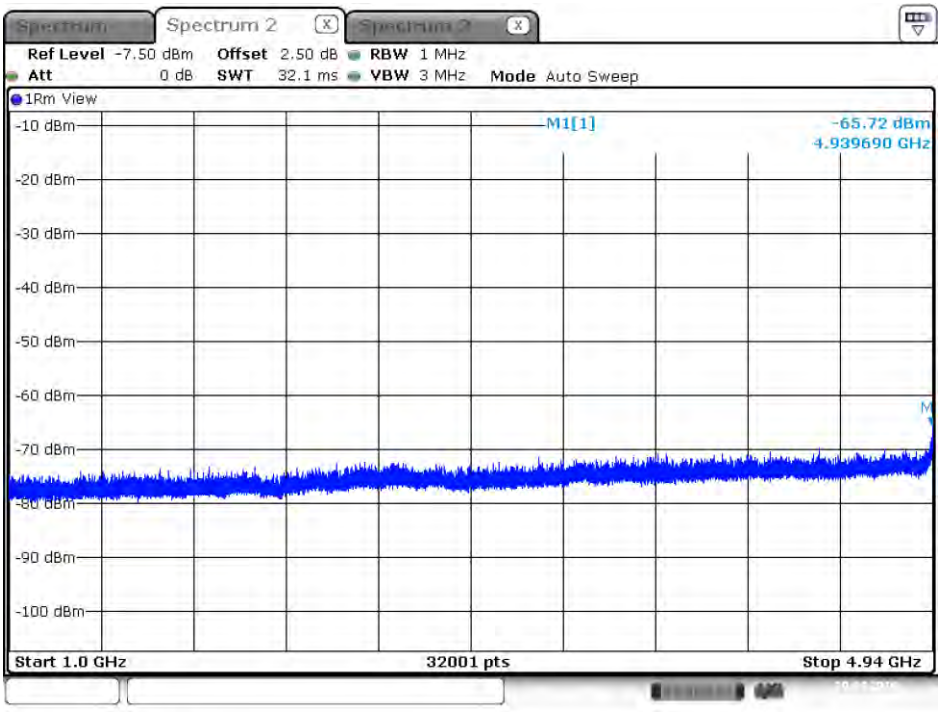
Date: 10.APR.2018 11:31:35

Conducted Emissions (20MHz BW Mode) – 4965MHz (1GHz ~ 4.94GHz) / Port 1



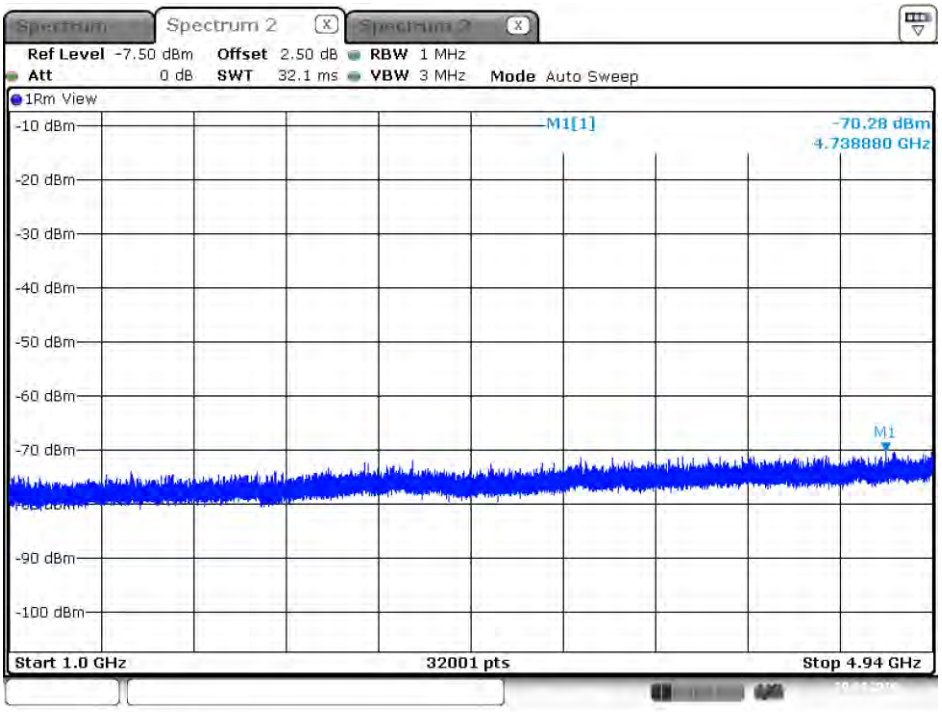
Date: 10.APR.2018 11:35:16

Conducted Emissions (20MHz BW Mode) – 4965MHz (1GHz ~ 4.94GHz) / Port 2



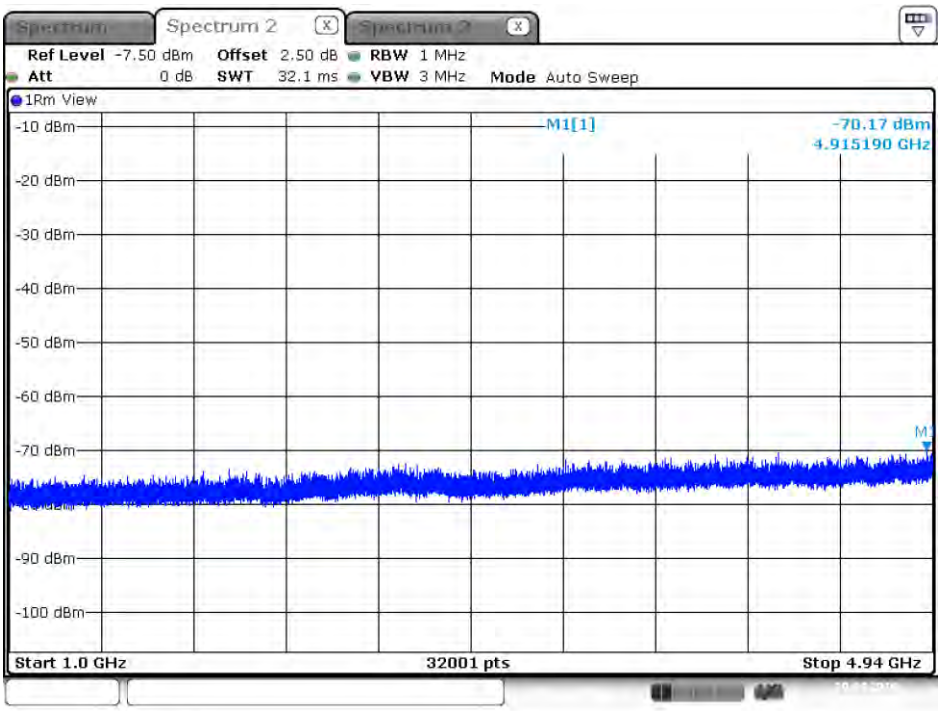
Date: 10.APR.2018 11:37:00

Conducted Emissions (20MHz BW Mode) – 4980MHz (1GHz ~ 4.94GHz) / Port 1



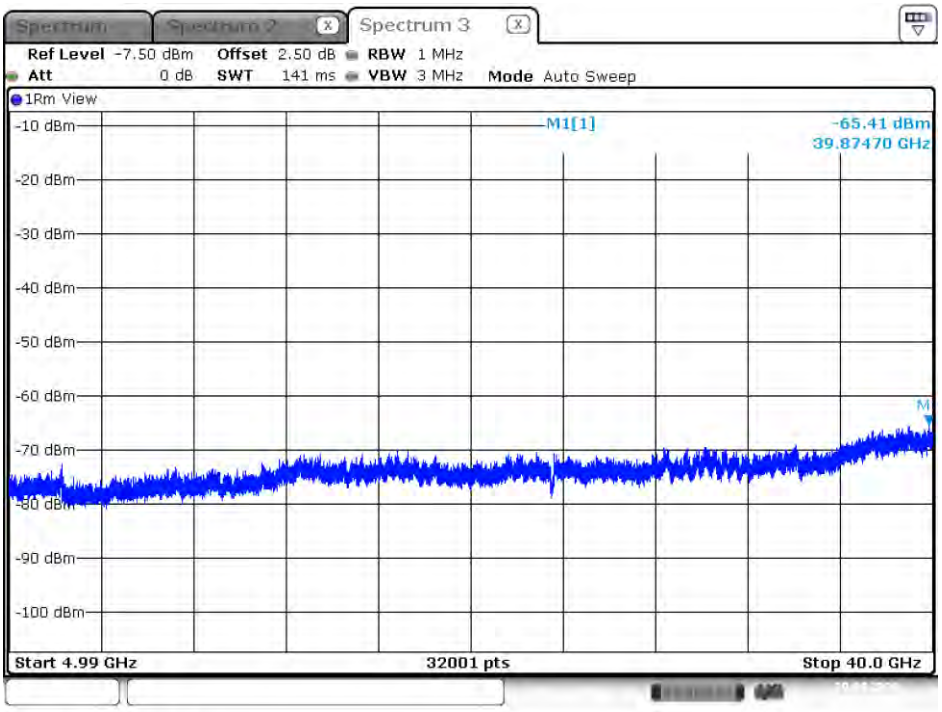
Date: 10.APR.2018 11:39:37

Conducted Emissions (20MHz BW Mode) – 4980MHz (1GHz ~ 4.94GHz) / Port 2



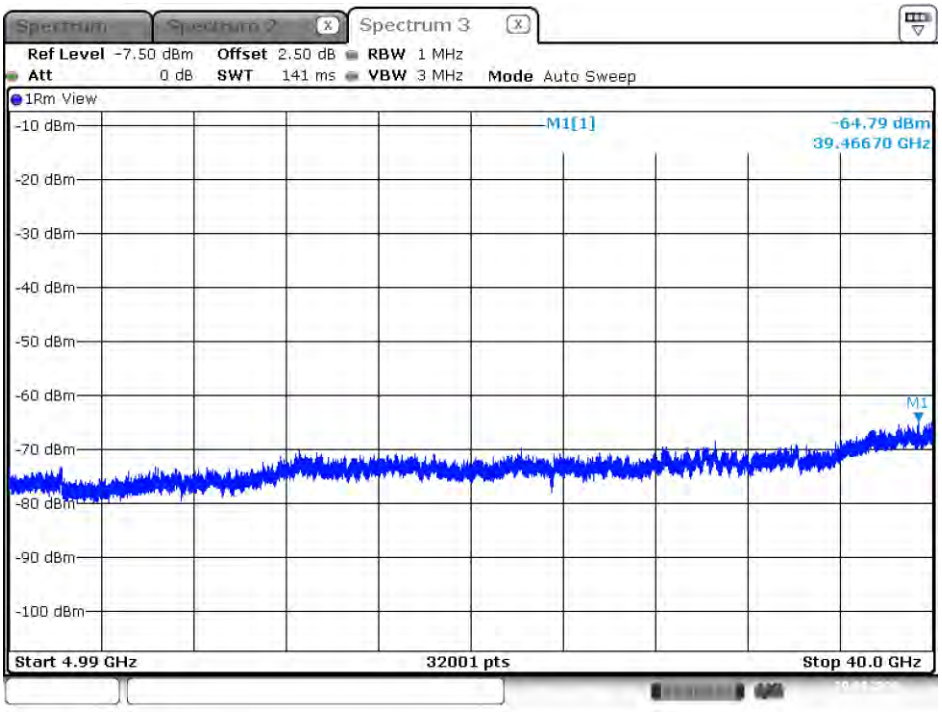
Date: 10.APR.2018 11:37:43

Conducted Emissions (20MHz BW Mode) – 4950MHz (4.99GHz ~ 40 GHz) / Port 1



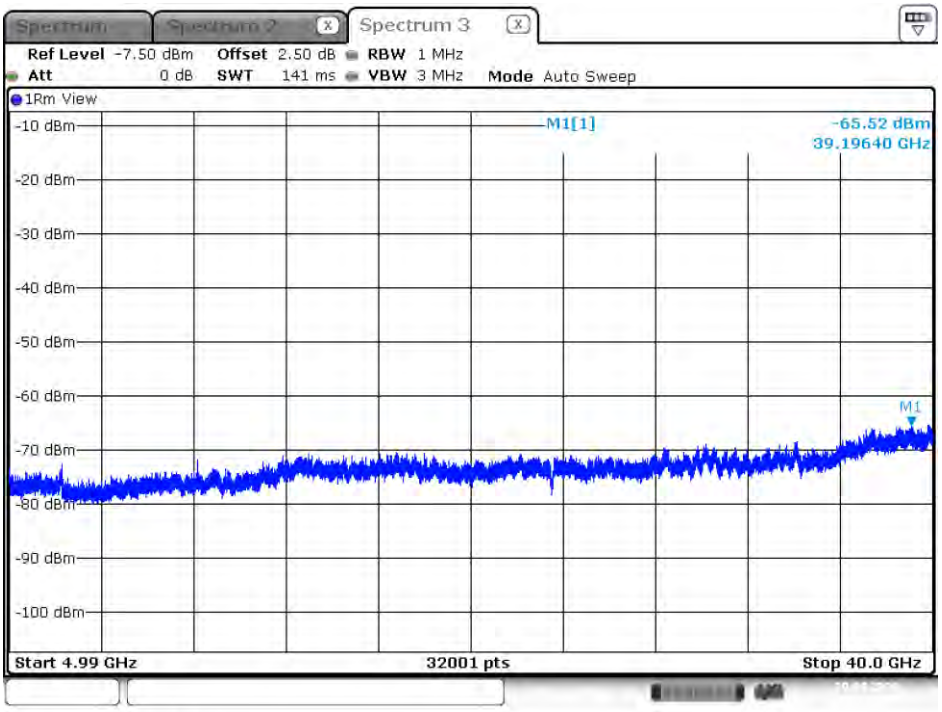
Date: 10.APR.2018 11:33:17

Conducted Emissions (20MHz BW Mode) – 4950MHz (4.99GHz ~ 40 GHz) / Port 2



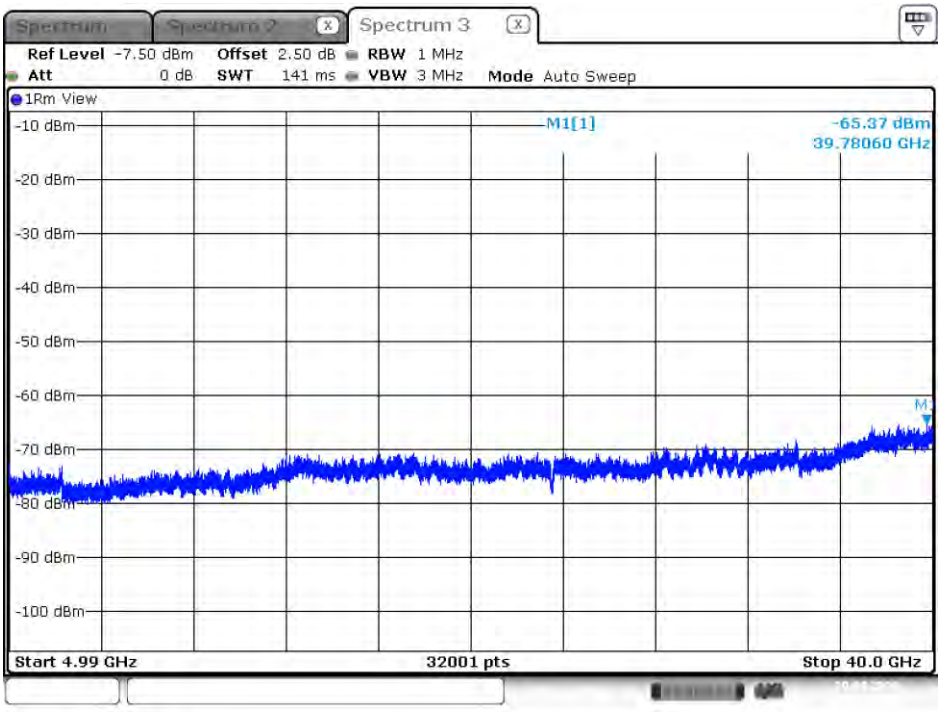
Date: 10.APR.2018 11:32:14

Conducted Emissions (20MHz BW Mode) – 4965MHz (4.99GHz ~ 40 GHz) / Port 1



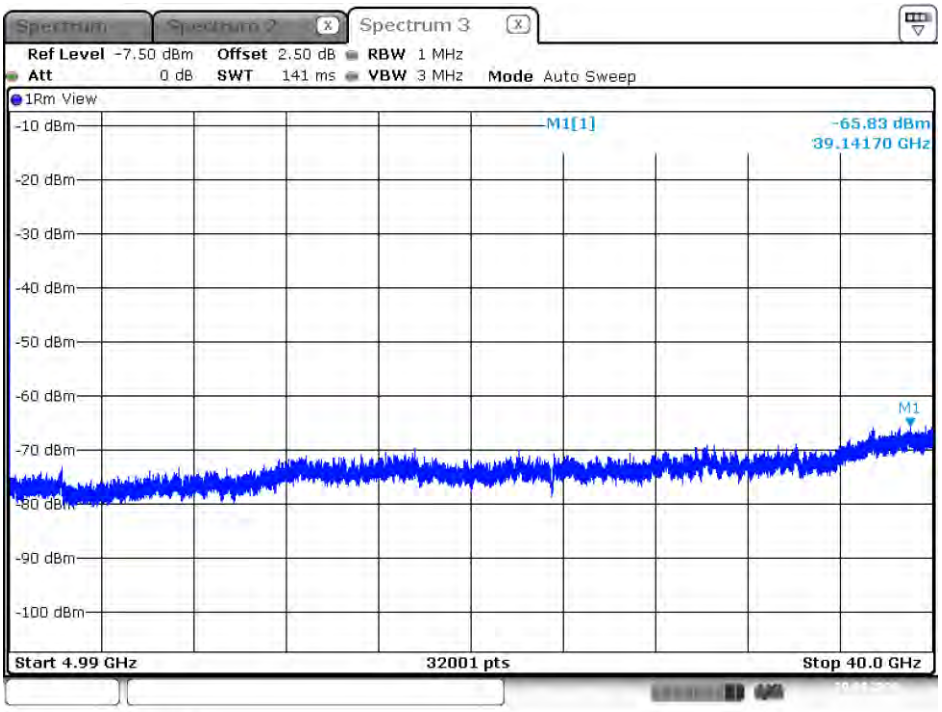
Date: 10.APR.2018 11:35:37

Conducted Emissions (20MHz BW Mode) – 4965MHz (4.99GHz ~ 40 GHz) / Port 2



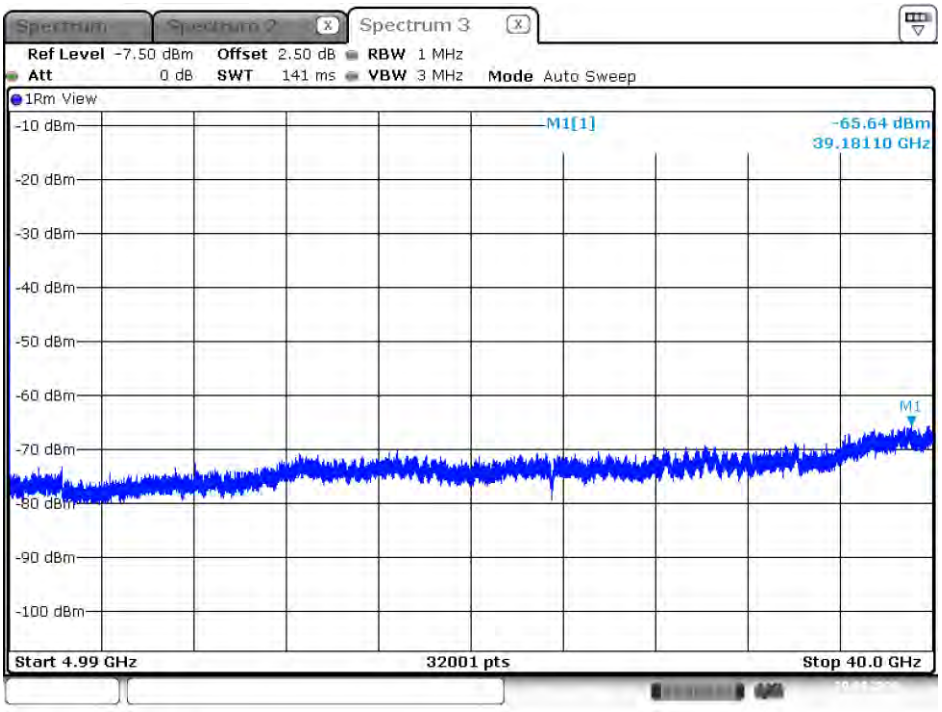
Date: 10.APR.2018 11:36:29

Conducted Emissions (20MHz BW Mode) – 4980MHz (4.99GHz ~ 40 GHz) / Port 1



Date: 10.APR.2018 11:39:15

Conducted Emissions (20MHz BW Mode) – 4980MHz (4.99GHz ~ 40 GHz) / Port 2



Date: 10.APR.2018 11:38:16

3.5 Peak Excursion

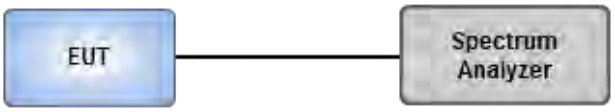
3.5.1 Limit of Peak Excursion

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less

3.5.2 Test Procedures

1. Set RBW = 1 MHz, VBW = 3 MHz, Detector = peak.
2. Trace mode = max-hold. Allow the sweeps to continue until the trace stabilizes.
3. Use the peak search function to find the peak of the spectrum.
4. Use the procedure of section 3.1.2 to measure the PPSD.
5. Compute the ratio of the maximum of the peak-max-hold spectrum to the PPSD

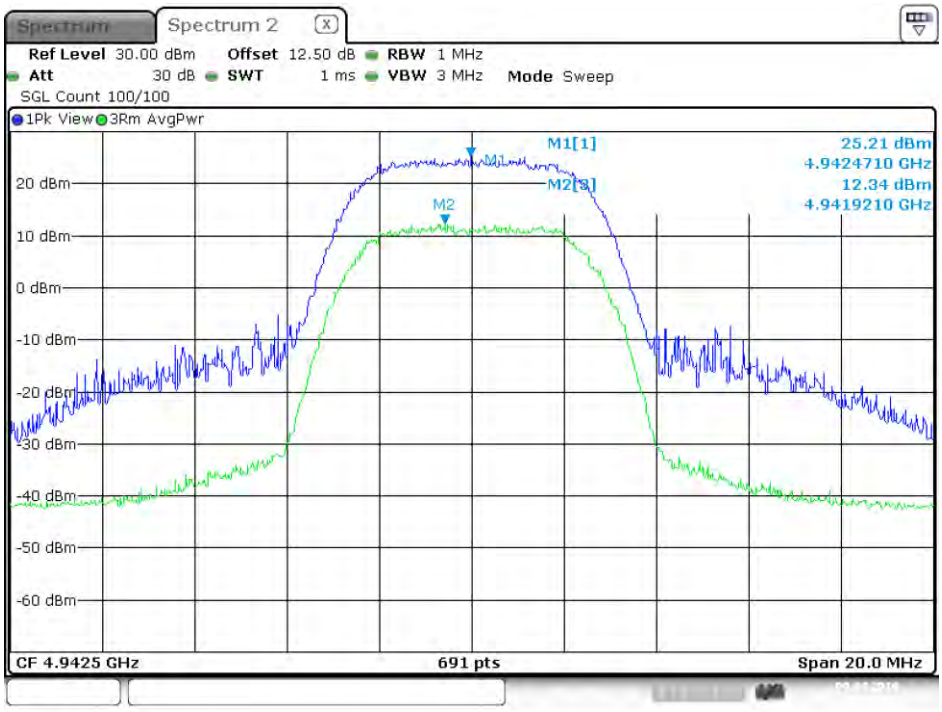
3.5.3 Test Setup



3.5.4 Test Result of Peak Excursion

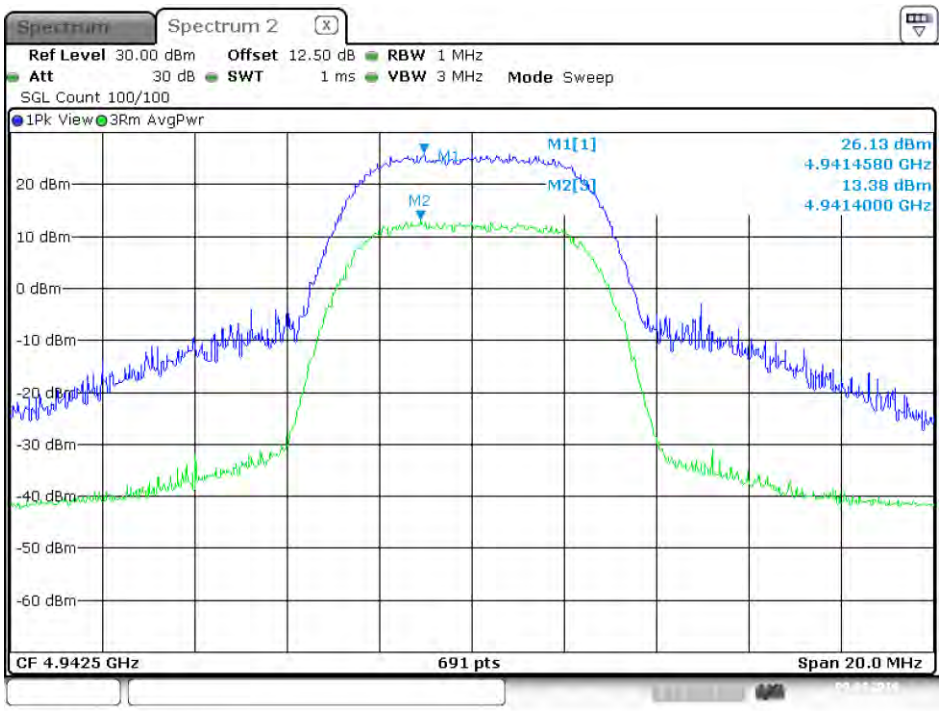
Mode	Frequency	Port 1	Port 2	Max. Limit	Result
	(MHz)	(dB)	(dB)	(dB)	
5MHz	4942.5MHz	12.87	12.75	13.00	Pass
	4967.5MHz	12.99	12.78	13.00	Pass
	4987.5MHz	12.79	12.92	13.00	Pass
20MHz	4950MHz	12.58	12.58	13.00	Pass
	4965MHz	12.52	12.33	13.00	Pass
	4980MHz	12.52	12.66	13.00	Pass

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



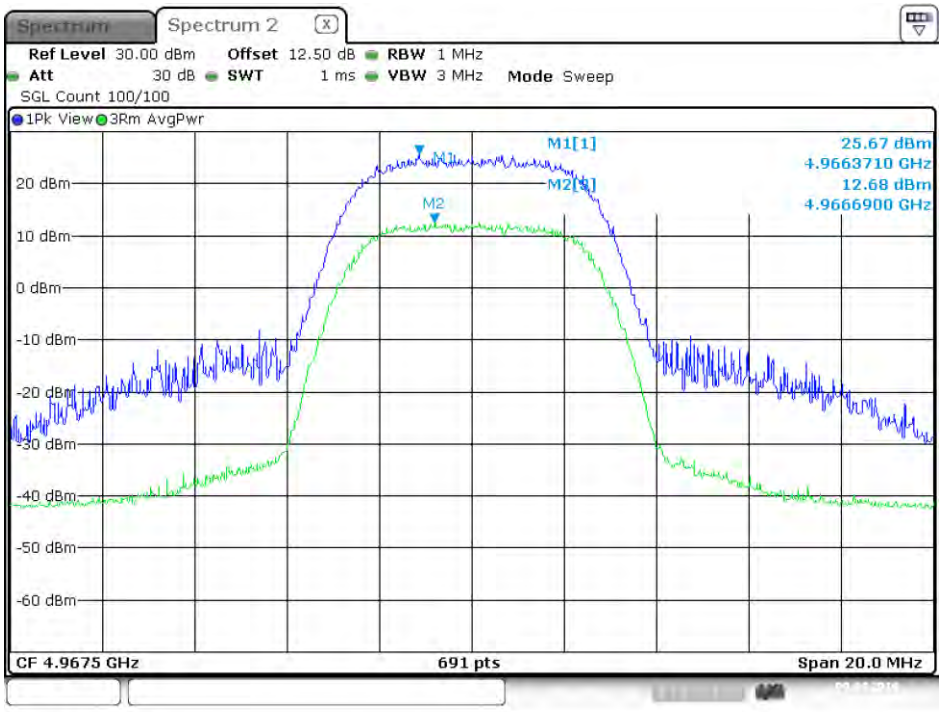
Date: 9.APR.2018 15:17:14

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



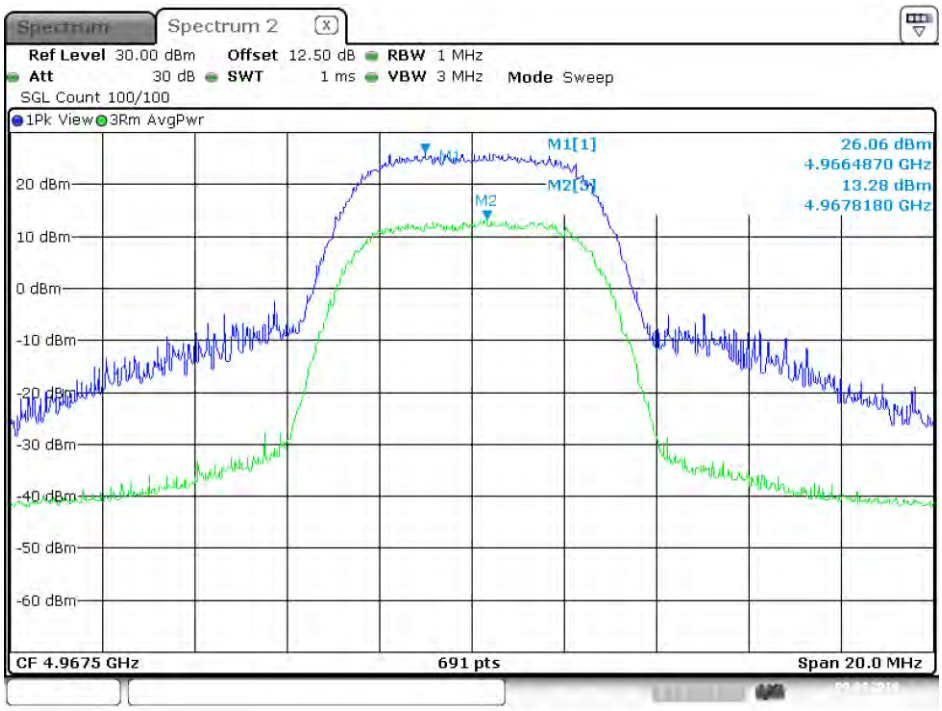
Date: 9.APR.2018 15:31:20

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



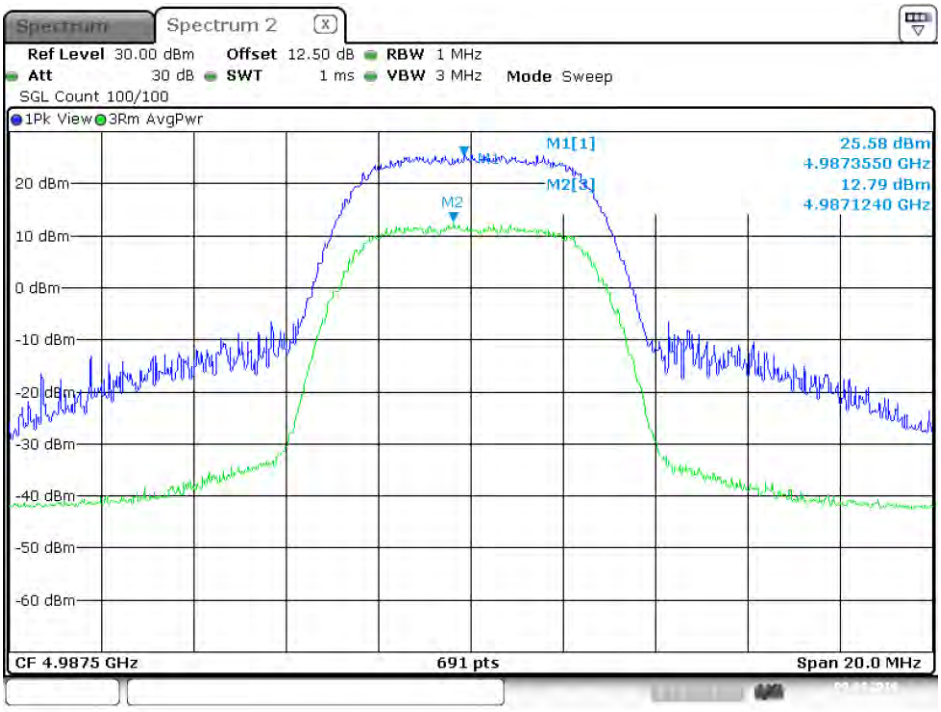
Date: 9.APR.2018 15:18:50

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



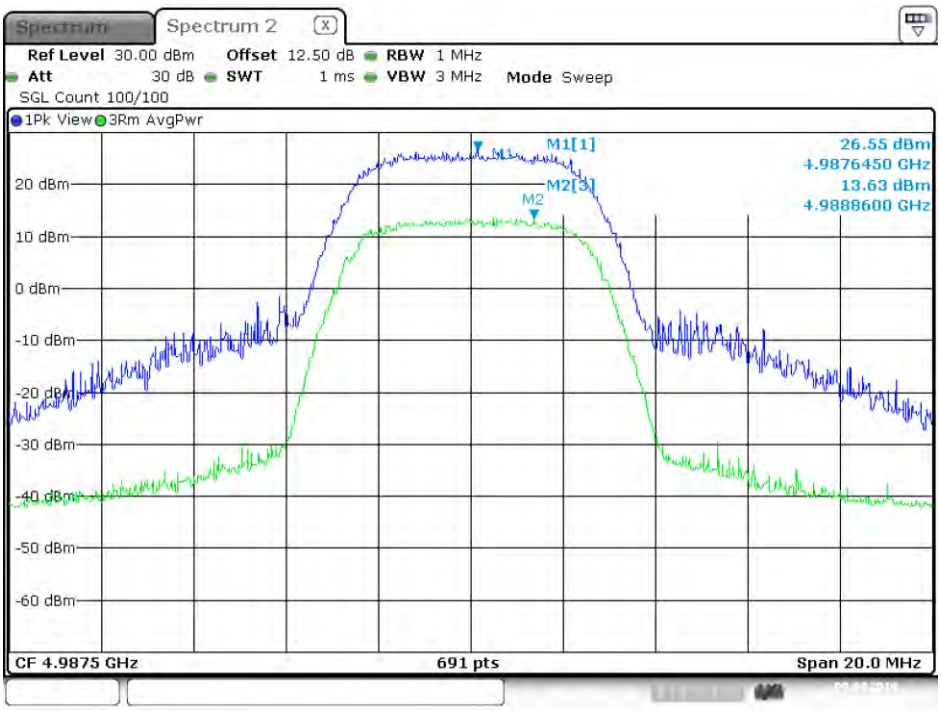
Date: 9.APR.2018 15:29:37

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



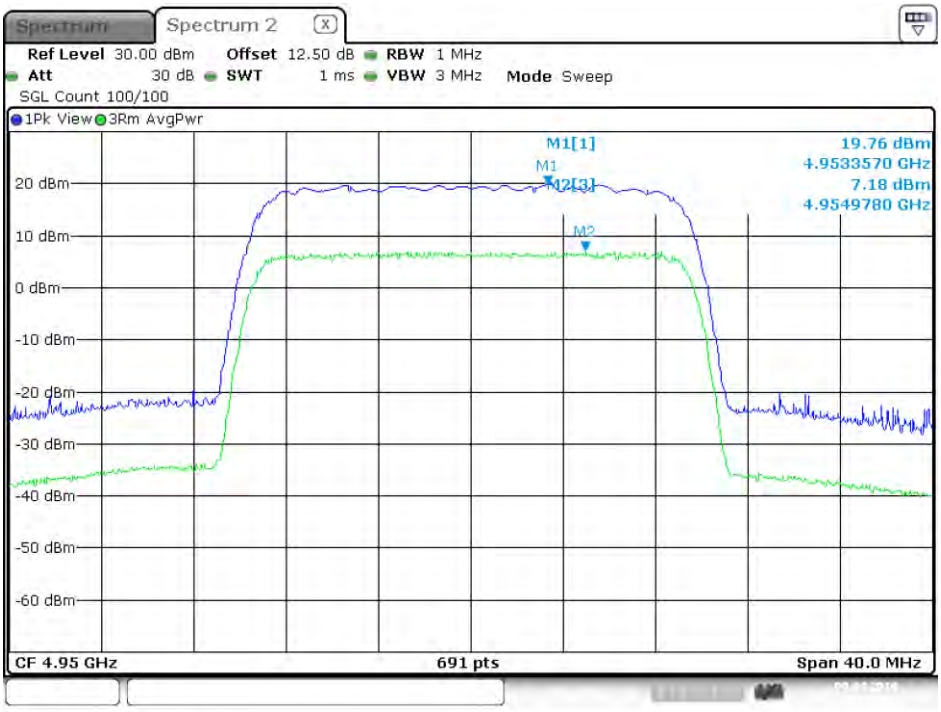
Date: 9.APR.2018 15:23:02

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



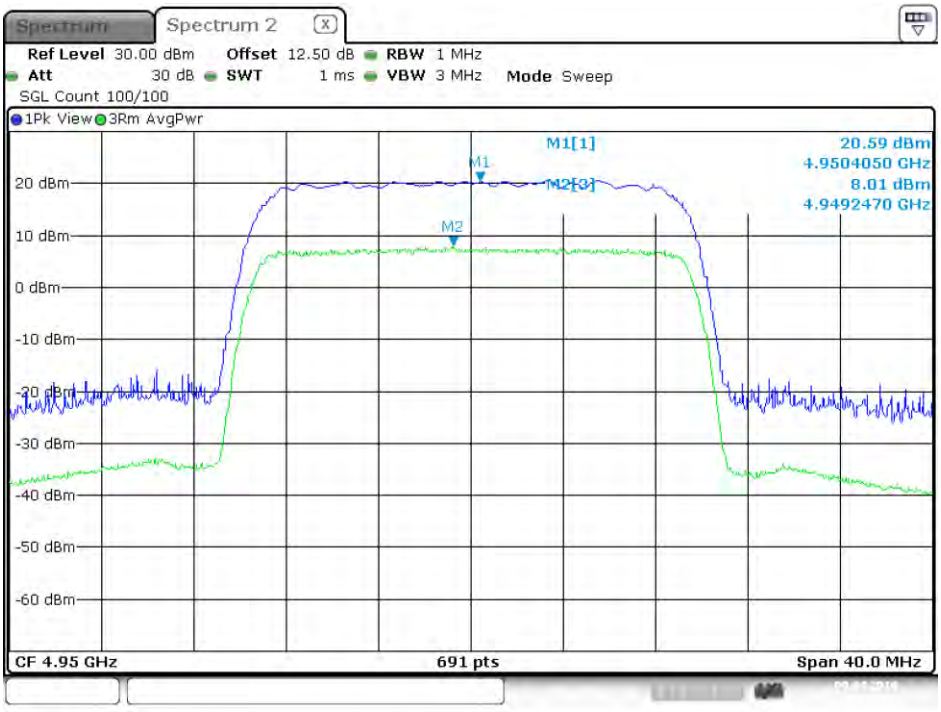
Date: 9.APR.2018 15:24:27

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



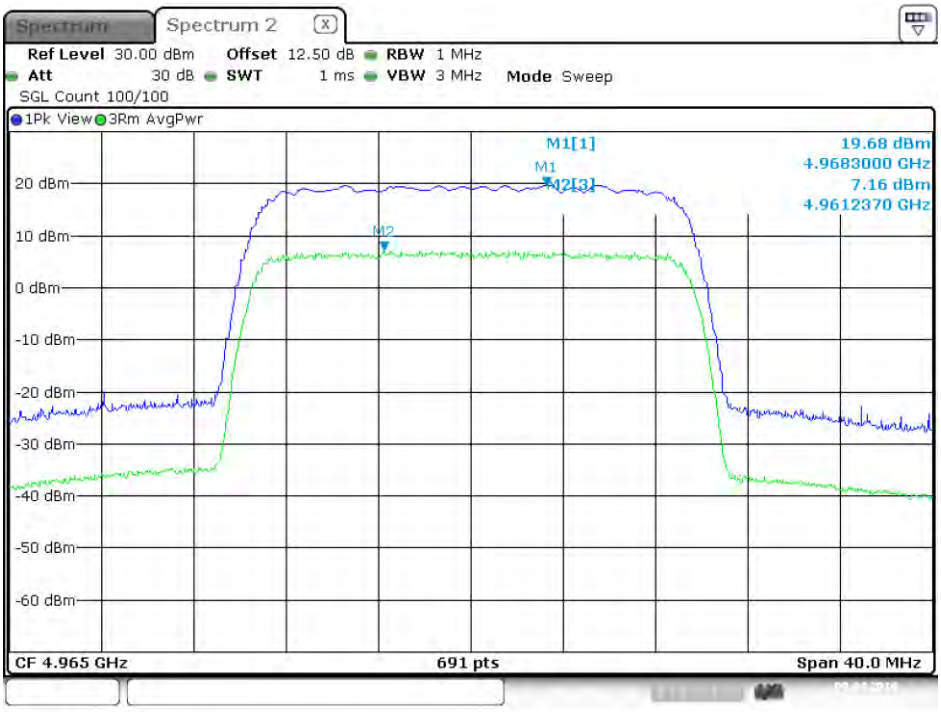
Date: 9.APR.2018 14:50:13

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



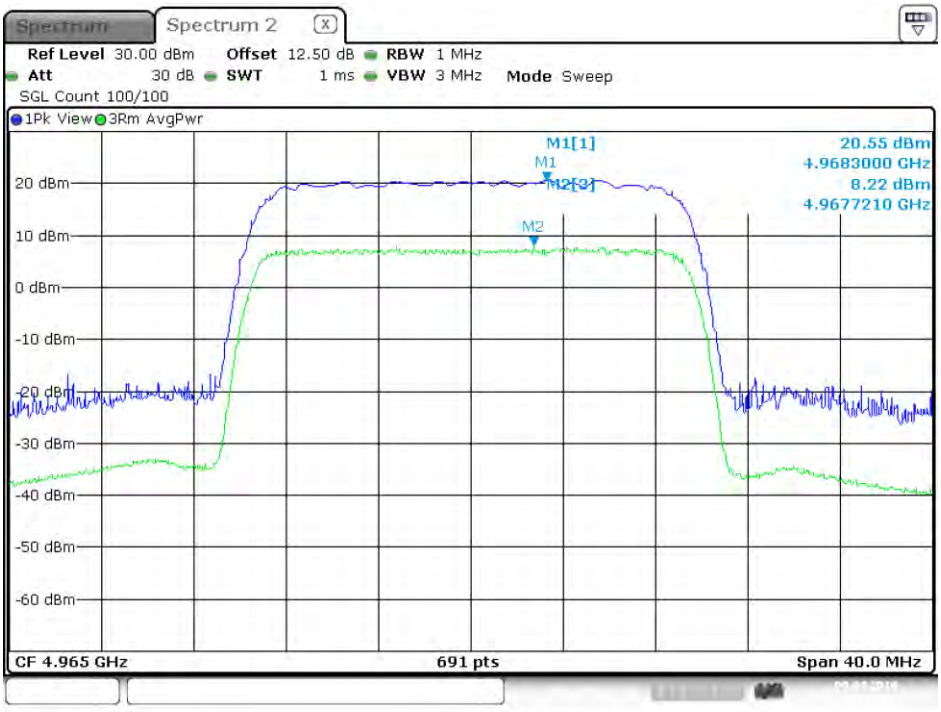
Date: 9.APR.2018 14:48:15

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



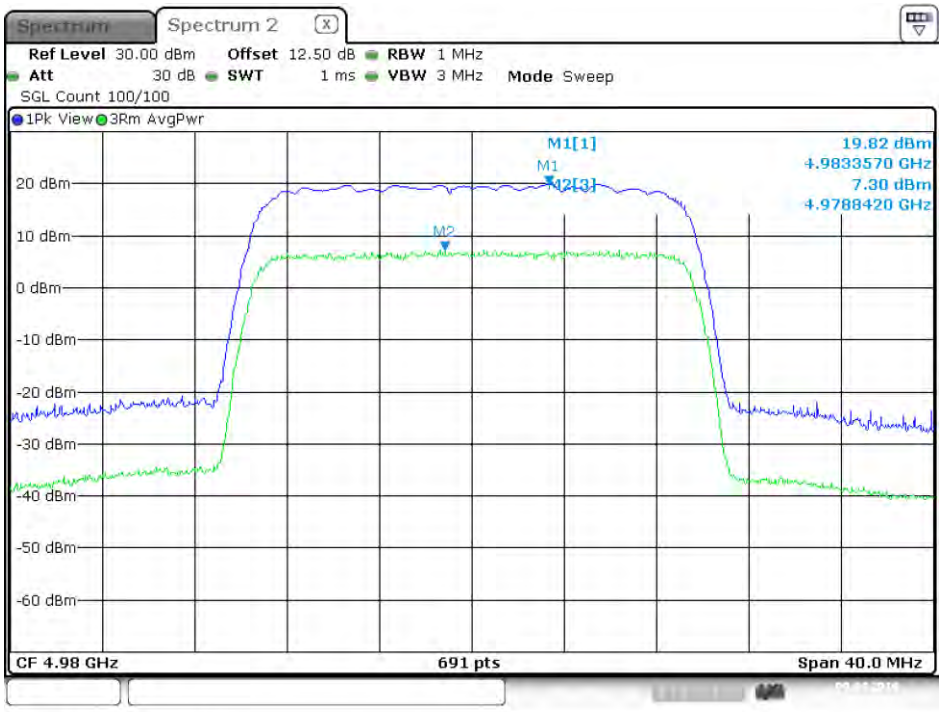
Date: 9.APR.2018 14:52:13

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



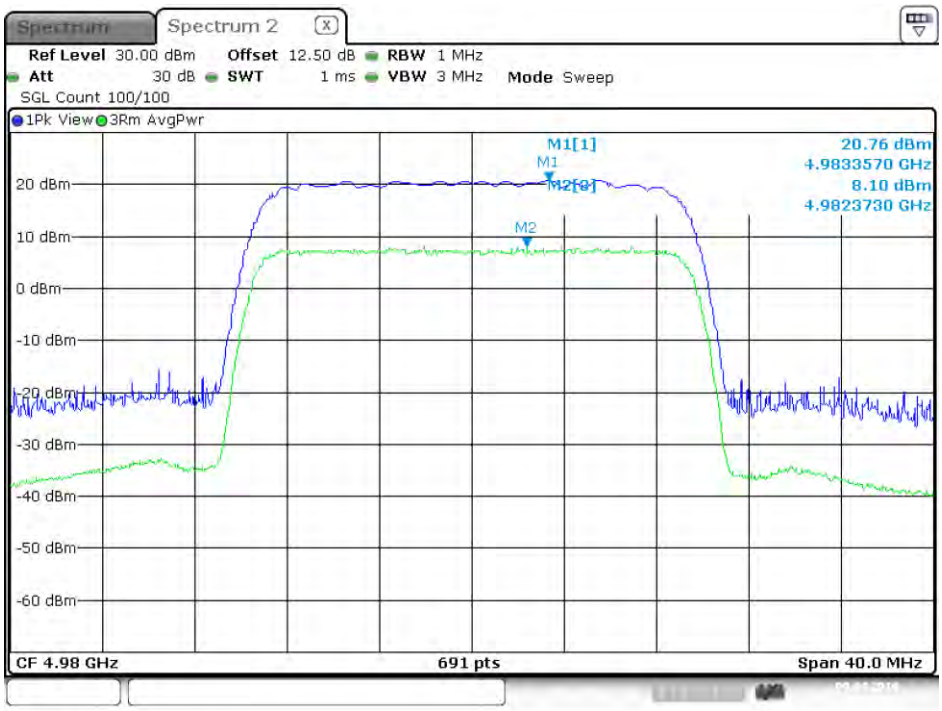
Date: 9.APR.2018 14:43:34

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



Date: 9.APR.2018 14:54:32

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



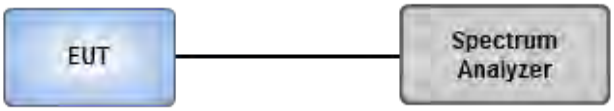
Date: 9.APR.2018 14:39:51

3.6 Occupied Bandwidth

3.6.1 Test Procedures

1. Set resolution bandwidth (RBW) = 300 kHz, Video bandwidth = 1 MHz
2. Detector = Peak, Trace mode = max hold.
3. Sweep = auto couple, Allow the trace to stabilize.
4. Using occupied bandwidth measurement function of spectrum analyzer to measure occupied bandwidth

3.6.2 Test Setup



3.6.3 Test Result of Occupied Bandwidth

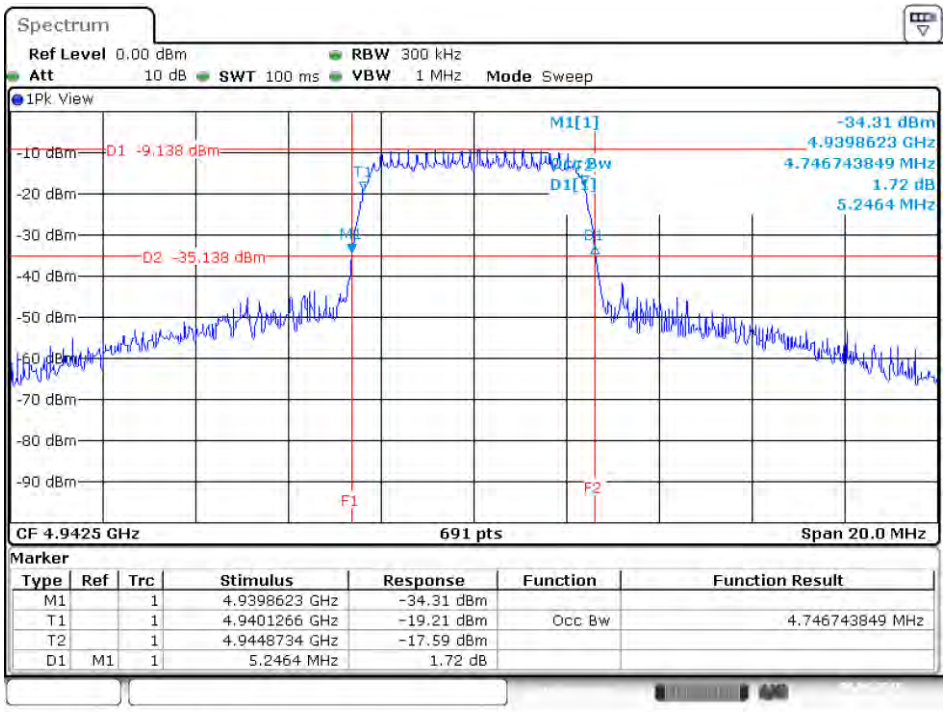
5MHz Channel Bandwidth Mode

Frequency	Antenna	26dB Bandwidth (MHz)	99% Occupied BW (MHz)	Result
4942.5MHz	Port 1	5.25	4.75	Pass
	Port 2	5.25	4.72	Pass
4967.5MHz	Port 1	5.28	4.69	Pass
	Port 2	5.25	4.72	Pass
4987.5MHz	Port 1	5.28	4.72	Pass
	Port 2	5.25	4.72	Pass

20MHz Channel Bandwidth Mode

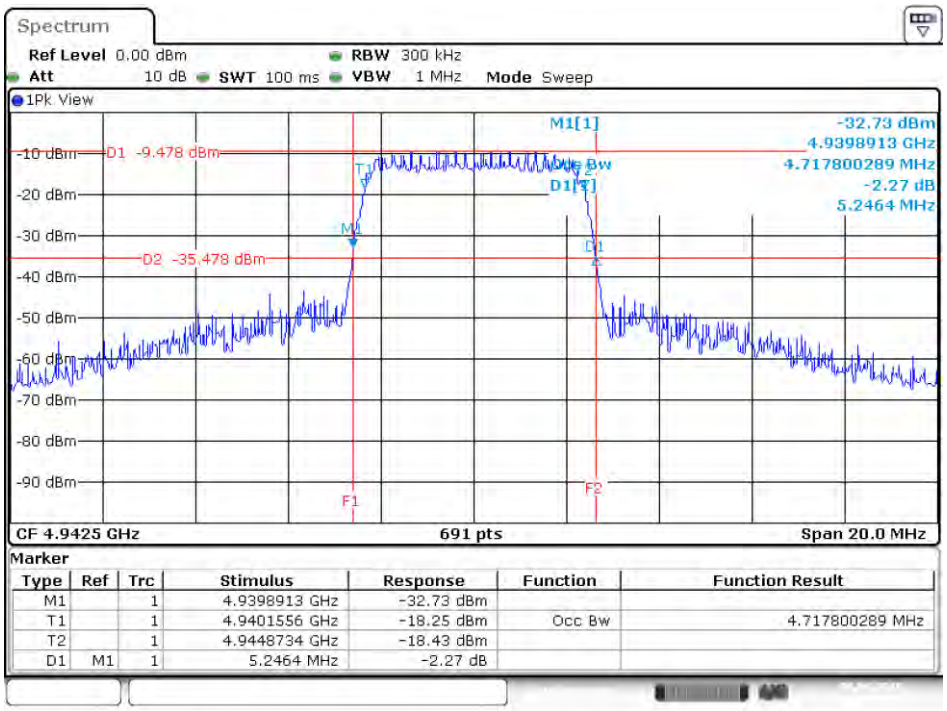
Frequency	Antenna	26dB Bandwidth (MHz)	99% Occupied BW (MHz)	Result
4950MHz	Port 1	19.48	18.32	Pass
	Port 2	19.48	18.32	Pass
4965MHz	Port 1	19.48	18.32	Pass
	Port 2	19.57	18.32	Pass
4980MHz	Port 1	19.48	18.32	Pass
	Port 2	19.57	18.32	Pass

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



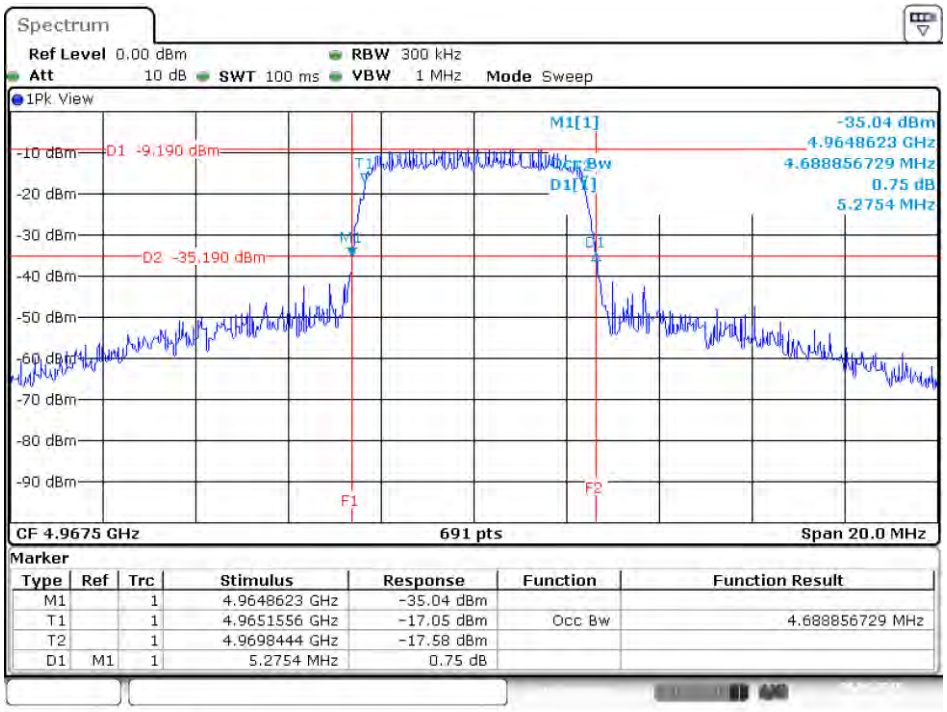
Date: 9.APR.2018 13:51:40

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



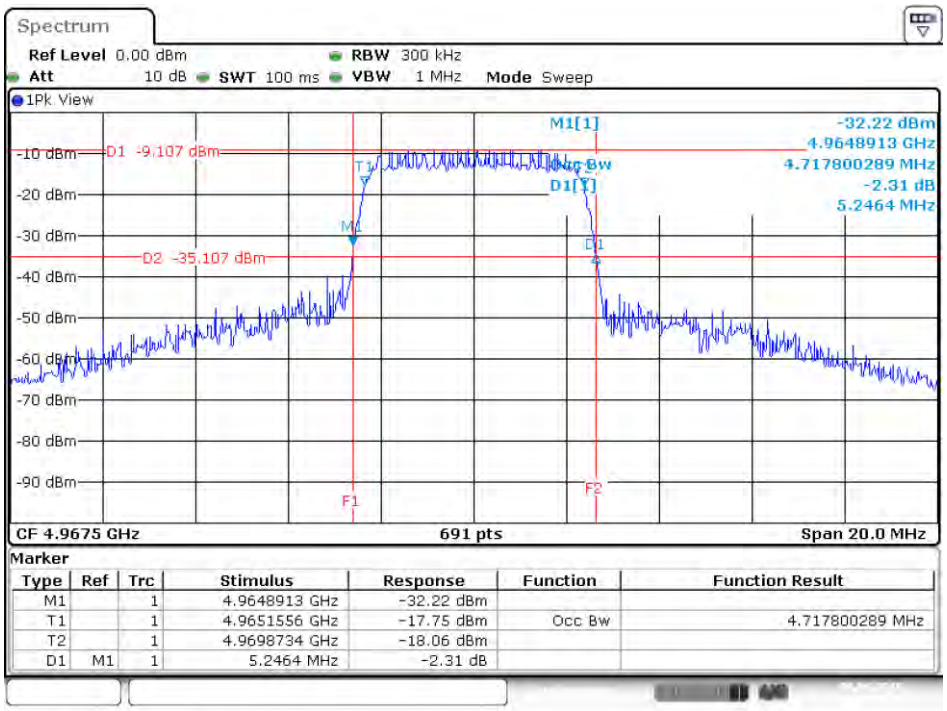
Date: 9.APR.2018 13:59:04

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



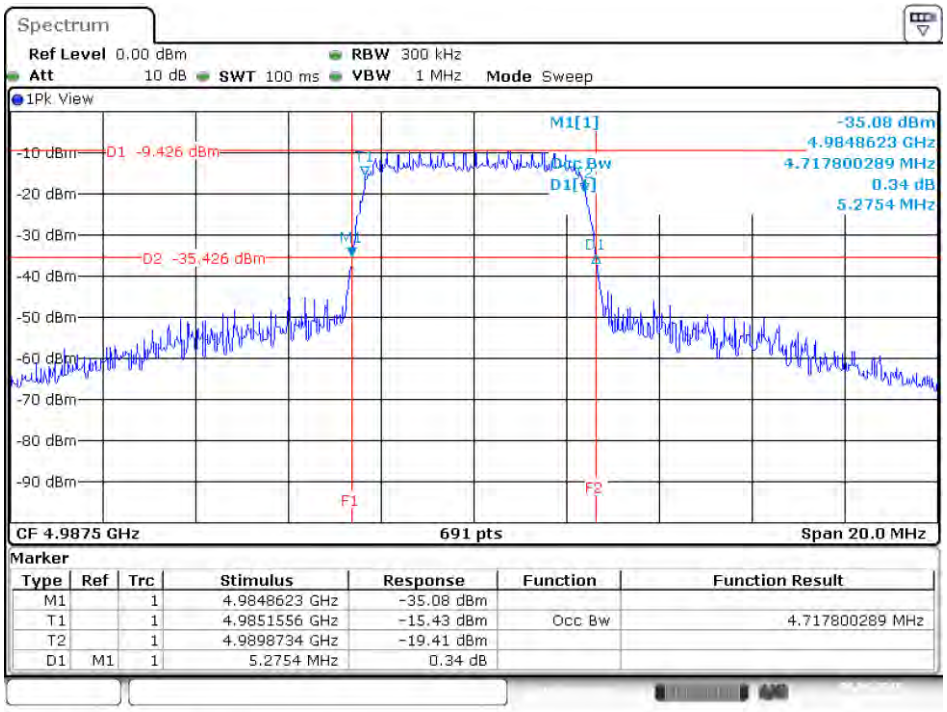
Date: 9.APR.2018 13:52:48

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



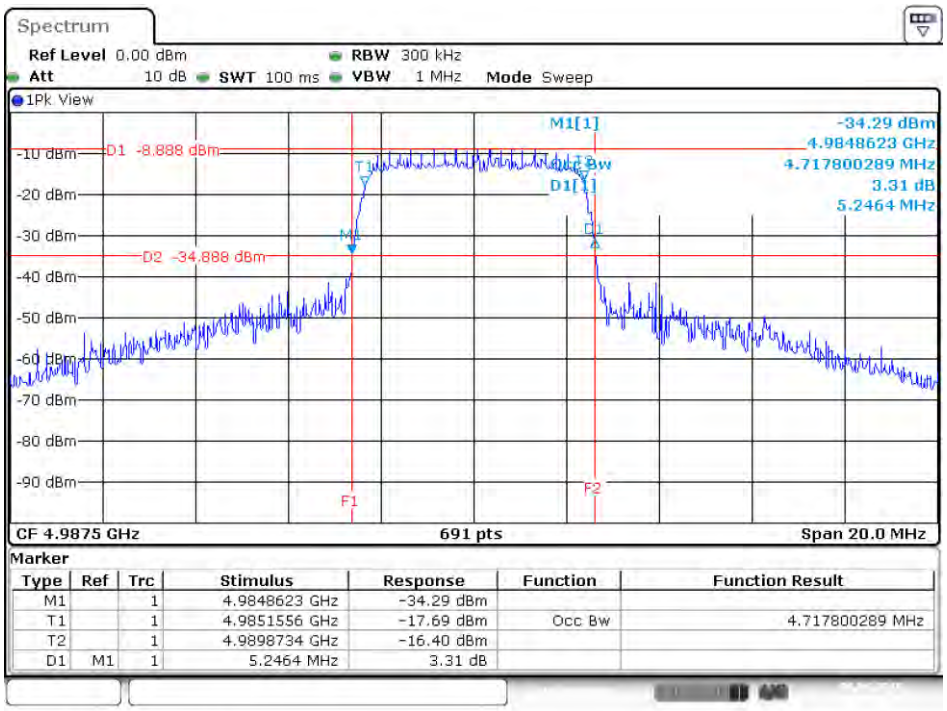
Date: 9.APR.2018 13:57:43

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



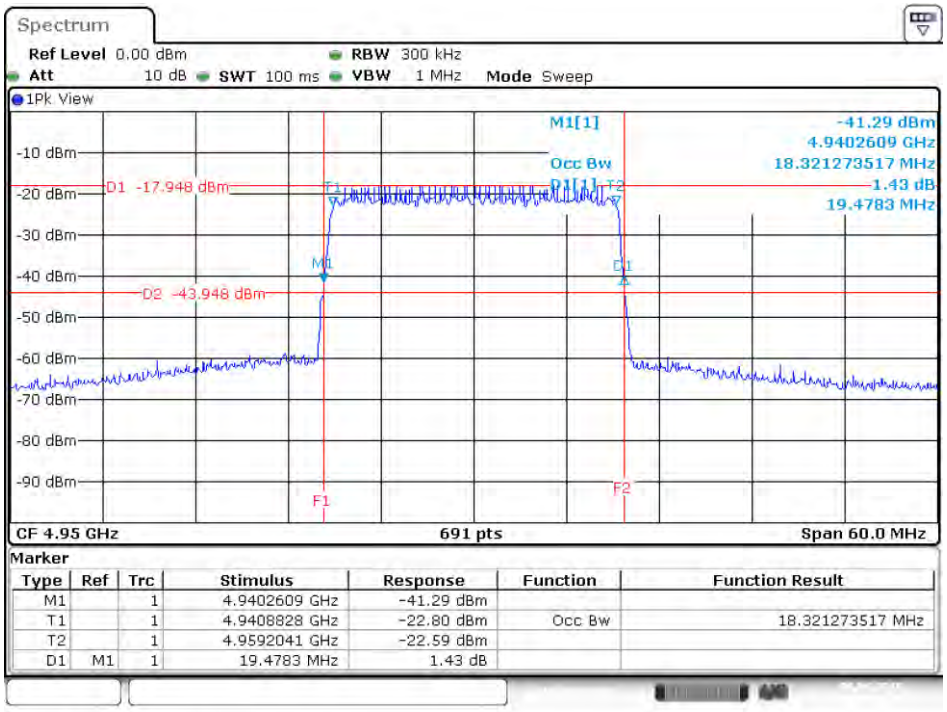
Date: 9.APR.2018 13:53:53

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



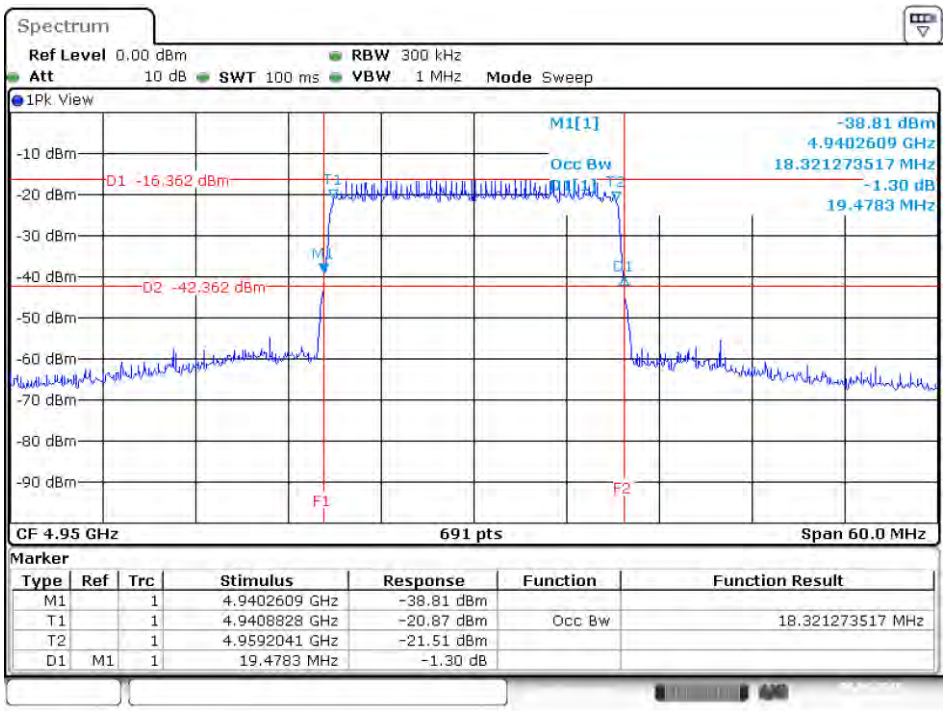
Date: 9.APR.2018 13:56:41

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



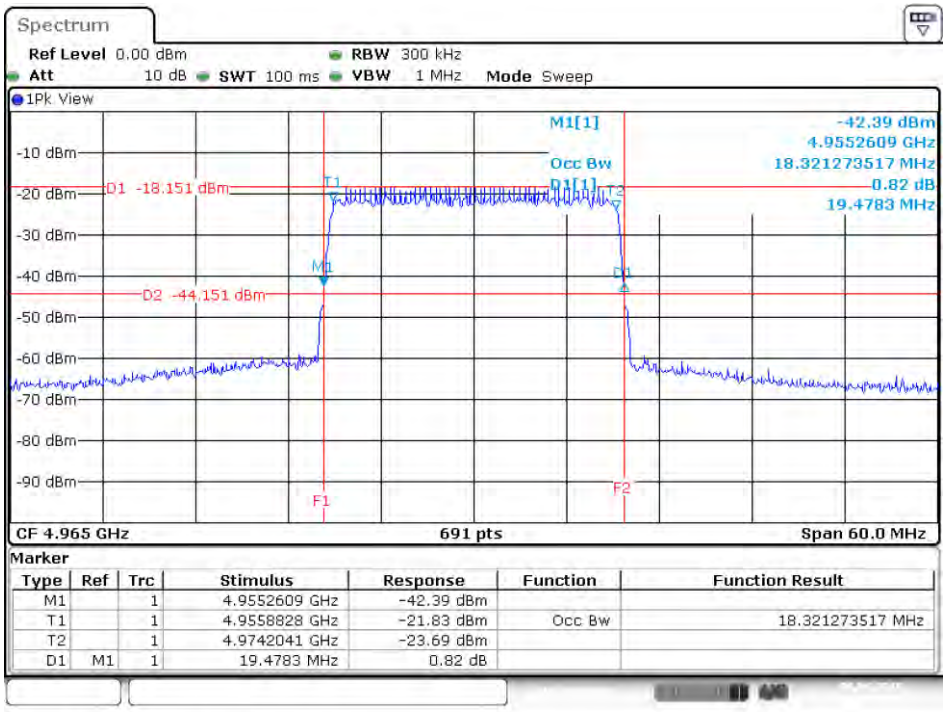
Date: 9.APR.2018 14:12:15

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



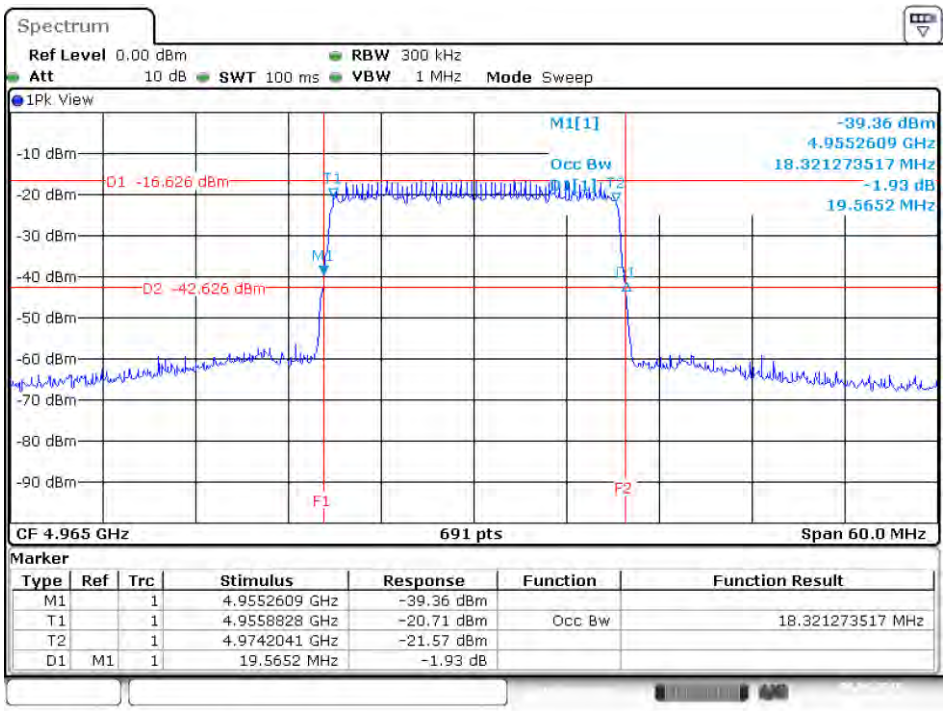
Date: 9.APR.2018 14:04:58

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



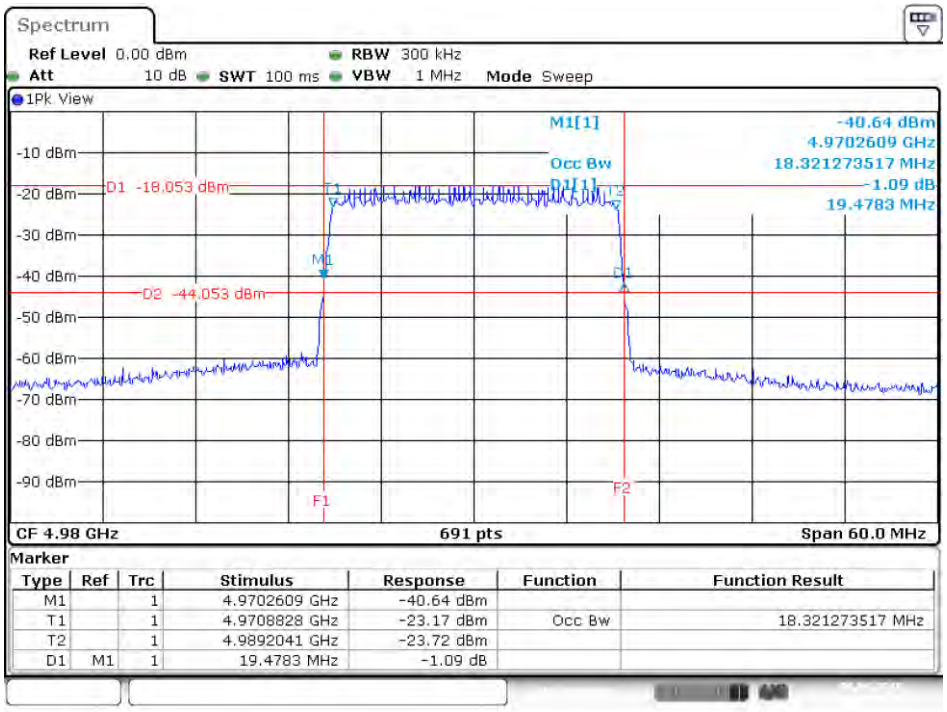
Date: 9.APR.2018 14:10:59

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



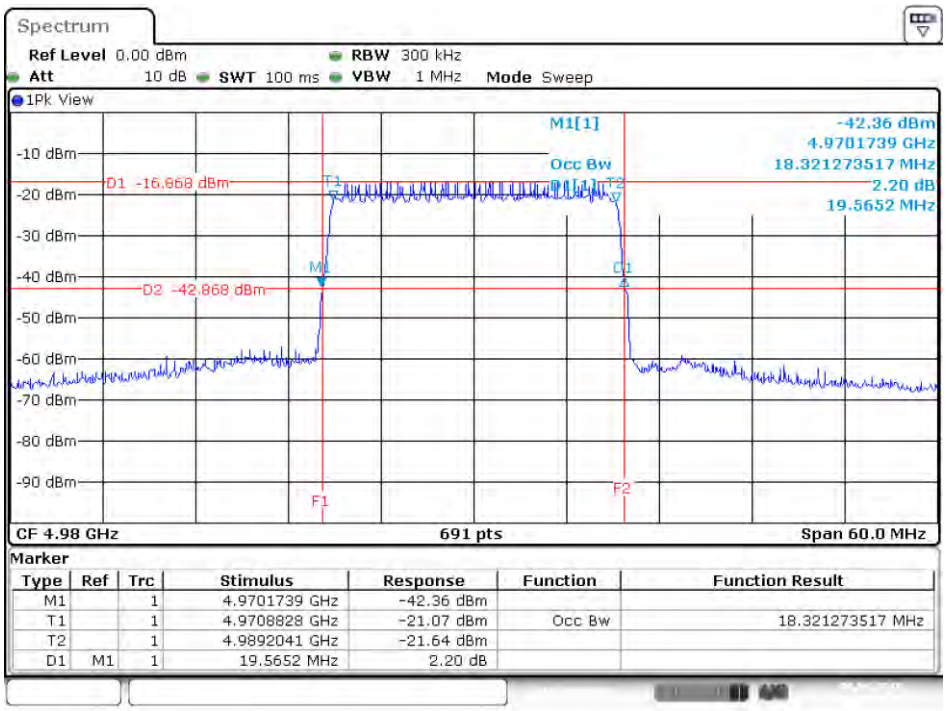
Date: 9.APR.2018 14:06:42

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



Date: 9.APR.2018 14:09:37

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



Date: 9.APR.2018 14:08:18

3.7 Frequency Stability

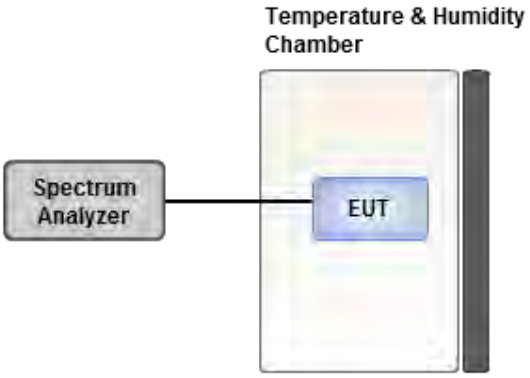
3.7.1 Limit of Frequency Stability

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

3.7.2 Test Procedures

1. EUT was placed at temperature chamber and connected to an external power supply.
2. Temperature and voltage condition shall be tested to confirm frequency stability.
3. Temperature range is from -40~70°C and voltage range is from lowest to highest working voltage.
4. Link up EUT and simulator. Confirm frequency drift value of simulator and record it.

3.7.3 Test Setup



3.7.4 Test Result of Frequency Stability

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)	
(V)	4967.5	4965
126.5	4967.5030	4965.0024
110	4967.5021	4965.0015
93.5	4967.5020	4965.0014
Max. Deviation (MHz)	0.0030	0.0024
Max. Deviation (ppm)	0.60	0.48

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)	
(℃)	4967.5	4965
-40	4967.5042	4965.0009
-30	4967.5030	4965.0002
-20	4967.5017	4964.9998
-10	4967.5023	4964.9978
0	4967.5000	4964.9961
10	4967.4991	4964.9964
20	4967.4983	4964.9963
30	4967.4971	4964.9943
40	4967.5023	4964.9943
50	4967.4981	4965.0007
60	4967.4962	4964.9959
70	4967.5030	4964.9953
Max. Deviation (MHz)	0.0042	0.0057
Max. Deviation (ppm)	0.85	1.15

END