

Test Report

Product	Digital Video Conference System with WLAN and BT
Name and address of the applicant	Cisco Systems, Inc. 170 West Tasman Drive San Jose, CA 95134, USA
Name and address of the manufacturer	Cisco Systems, Inc. 170 West Tasman Drive San Jose, CA 95134, USA
Model	TTC60-24
Rating	Mains (100-240V 50/60 Hz, 1.8A – 0.8A)
Trademark	Cisco
Serial number	/
Additional information	Bluetooth, 802.11a/b/g/n/ac
Tested according to	FCC Part 15.247 Digital Transmission Systems Industry Canada RSS-247, Issue 2 Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices
Order number	312072
Tested in period	2017.04.10 to 2017.04.11 and 2017.05.09
Issue date	2017.05.29
Name and address of the testing laboratory	 FCC No: 994405 IC OATS: 2040D-1 TEL: +47 22 96 03 30 FAX: +47 22 96 05 50 Instituttveien 6 Kjeller, Norway
 Prepared by [Frode Sveinsen]  Approved by [G. Suhanthakumar]	
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1 INFORMATION

1.1 Test Item

Name :	Cisco Spark Room 70S Cisco Spark Room 70D
Model/version :	TTC60-24
FCC ID :	LDK60241556
Industry Canada ID :	2461N-60241556
Serial number :	/
Hardware identity and/or version:	Rev. D
Software identity and/or version :	S01828-1.0.0 Alpha 10 (WiFi) CE9.0.0 (Bluetooth)
Frequency Range :	2412 – 2462 MHz
Number of Channels :	11
Operating Modes :	802.11b 802.11g 802.11n (HT20) (HT40 mode is disabled)
Type of Modulation :	Digital (DSSS, OFDM)
Rated Output Power :	802.11b: 0.060 W (Conducted) 802.11g: 0.045 W (Conducted) 802.11n: 0.051 W (Conducted)
Antenna Connector :	Internal Antennas connected to PCB with U-FL connector
Antenna Diversity Supported :	Yes
Smart Antennas System :	MIMO
Power Supply :	Mains (Integral Power Supply)

Description of Test Item

The EUT is a digital video conference system with WiFi and Bluetooth transceivers. The WiFi and Bluetooth transceivers are contained in a module from NVIDIA with single modular certification (FCC ID: VOB-P2180), however the antennas used in this EUT are not certified.

Spark Room 70S has a single video monitor whereas Spark Room 70D has a double monitor (two separate monitors mounted in one chassis). The radio part is the same for both systems and is fitted in one of the monitors.

All tests were performed on a Cisco Spark Room 70S.

1.2 Normal test condition

Temperature:	22.2 – 23.6 °C
Relative humidity:	30 - 37 %
Normal test voltage:	120 V AC

The values are the limit registered during the test period.

1.3 Test Engineer(s)

Frode Sveinsen
Kristian Osvoll (Power Line Conducted Test)

1.4 Description of modification for Modification Filing

Not applicable.

1.5 Family List Rational

Not Applicable.

1.6 Antenna Requirement

Is the antenna detachable? ☒ Yes ☐ No

If detachable, is the antenna connector non-standard? ☒ Yes ☐ No

Type of antenna connector: U-FL (The antennas are internal with connector on the PCB)

Ref. FCC §15.203

1.7 Worst-Case Configuration and Mode

Radiated Emissions and Power Line Conducted Emissions were performed with the EUT set to transmit at the channel with the highest output power as worst-case scenario. HT40 mode has been disabled in this EUT.

The worst case data rates were:

802.11b mode:	1 Mbps
802.11g mode	6 Mbps
802.11n HT20 mode:	MCS0

1.8 On Time and Duty Cycle Factors

Mode	On Time Burst (ms)	Period (msec)	Duty Cycle (linear)	Duty Cycle Correction (dB)
802.11b	8.600	8.695	0.989	0.10
802.11g	1.425	1.536	0.928	0.65
802.11n HT20 CDD 2TX	0.692	0.793	0.872	1.18

The results above are from UL report no. 15U21878-E3V2

1.9 Antenna Gain

The EUT has two antennas that are connected to the main PCB with a cable and connector. The values below are the antenna gain values provided by the manufacturer:

Frequency (MHz)	Max Gain Ant #0 (dBi)	Max Gain Ant #1 (dBi)
2400	2.34	4.95
2410	2.40	5.32
2420	3.70	5.74
2440	4.25	6.02
2450	4.33	5.98
2460	4.44	5.41
2470	4.89	5.52
2480	5.61	5.69

1.10 Comments

This report covers only limited radiated tests to show compliance with the new antenna in this EUT. All other radio tests for 2.4GHz WLAN are covered by UL reports no. 15U21878-E3V2.

All ports were populated during spurious emission measurements.

2 TEST REPORT SUMMARY

2.1 General

All measurements are traceable to national standards.

The tests were performed for demonstrating compliance with FCC CFR 47 Part 15, paragraph 15.247 and Industry Canada RSS-247 Issue 2.

Tests were performed in accordance with ANSI C63.4-2014 and ANSI C63.10-2013.

Radiated tests were performed in a semi-anechoic chamber at measuring distances of 3m and 10m.

A description of the test facility is on file with the FCC and ISSED.

☒ New Submission

☒ Production Unit

☐ Class II Permissive Change

☐ Pre-production Unit

DTS Equipment Code

☐ Family Listing



THIS TEST REPORT APPLIES ONLY TO THE ITEM(S) AND CONFIGURATIONS TESTED.

Deviations from, additions to, or exclusions from the test specifications are described in "Summary of Test Data".

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2.2 Test Summary

Name of test	FCC Part 15 reference	RSS-247 Issue 2, RSS-GEN Issue 4 reference	Result
Supply Voltage Variations	15.31(e)	6.11 (RSS-GEN)	Complies ¹
Antenna Requirement	15.203	8.3 (RSS-GEN)	Complies
Power Line Conducted Emission	15.107(a) 15.207(a)	8.8 (RSS-GEN)	Complies
Occupied Bandwidth	N/A	6.6 (RSS-GEN)	Complies ¹
Minimum 6 dB Bandwidth	15.247(a)(2)	5.2 (1) (RSS-247)	Complies ¹
Peak Power Output	15.247(b)	5.4 (RSS-247)	Complies
Power Spectral Density	15.247(d)	5.2 (2) (RSS-247)	Complies ¹
Spurious Emissions (Antenna Conducted)	15.247(c)	5.5 (RSS-247)	Complies ¹
Spurious Emissions (Radiated)	15.247(c) 15.109(a) 15.209(a)	5.5 (RSS-247) 6.13 (RSS-GEN) 8.9 (RSS-GEN)	Complies

¹ Covered by UL Test Report no. 15U21878-E3V2 (FCC ID: VOB-P2180)

3 TEST RESULTS

3.1 Power Line Conducted Emissions

FCC Part 15.207 (a)

ISED RSS-GEN Issue 4, Clause 8.8

Test Performed By: Kristian Osvoll

Date of Test: 09-May-2017

Measurement procedure: ANSI C63.4-2014 using 50 μ H/50 ohms LISN.

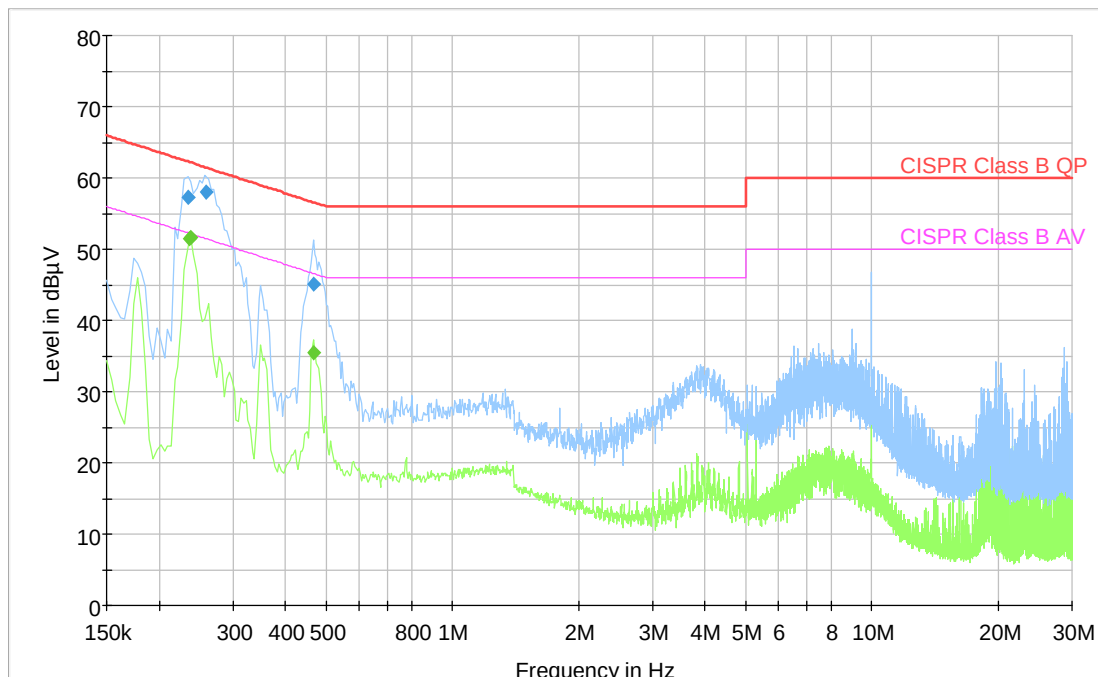
Test Results: Complies.

Measurement Data: See attached graph, (Peak detector).

Highest measured value (L1 and N):

Frequency (MHz)	QuasiPeak (dB μ V)	Average (dB μ V)	Limit (dB μ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	PE	Corr. (dB)
0.234	57.26	---	62.31	5.04	1000	9	L1	GND	10.1
0.236	---	51.38	52.24	0.86	1000	9	N	GND	10.1
0.238	---	51.56	52.17	0.60	1000	9	L1	GND	10.1
0.260	57.96	---	61.43	3.48	1000	9	N	GND	10.1
0.468	---	35.44	46.55	11.11	1000	9	N	GND	10.1
0.468	45.01	---	56.55	11.54	1000	9	L1	GND	10.1

Full Spectrum



3.2 Spurious Emissions (Radiated)

Para. No.: 15.247 (c)

ISED RSS-247 Issue 2

Test Results: Complies

Measurement Data:

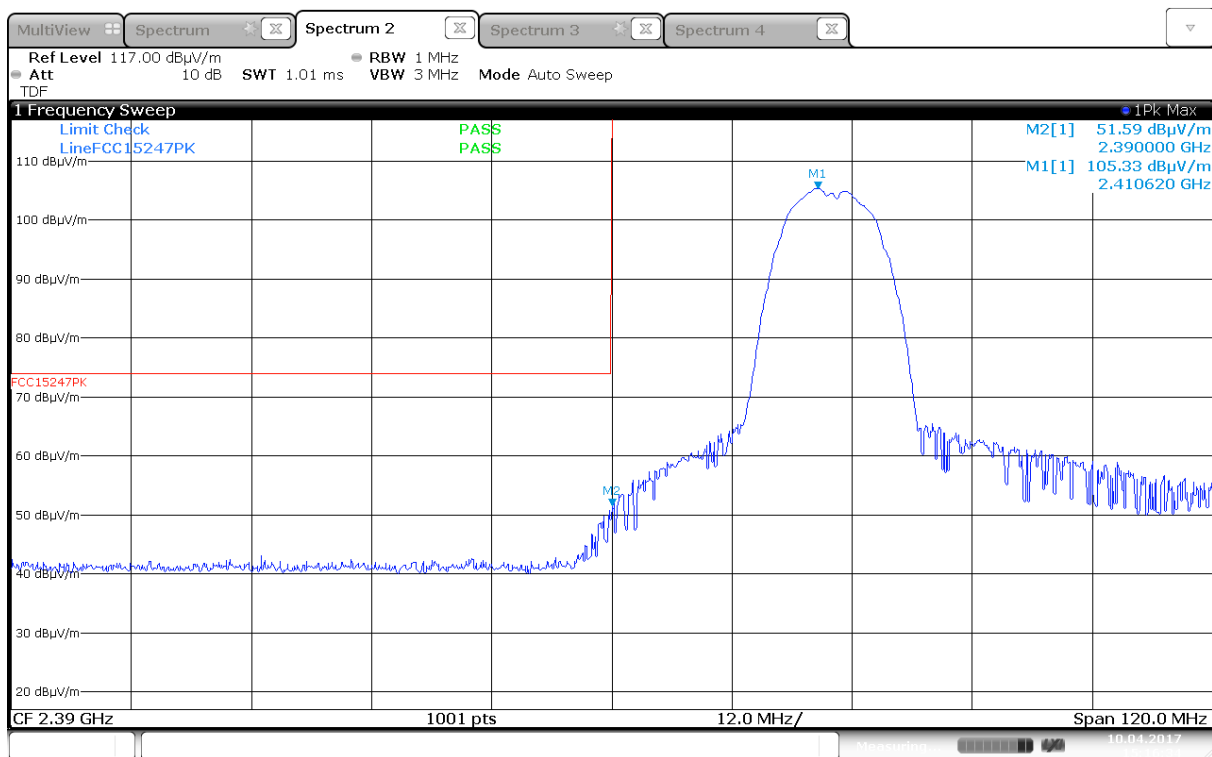
Band Edge Emissions						
Carrier Modulation	Carrier Freq MHz	Measured Freq MHz	Measured value Peak dBμV/m @3m	Measured value AV dBμV/m @3m	Limit (dBμV/m)	Verdict
802.11b, 1M, Ant 0	2412	2390	51.6	37.5	74/54	Complies
802.11a, 6M, Ant 0	2412	2390	56.6	38.2	74/54	Complies
802.11n, MSC0, MIMO	2412	2390	60.3	40.7	74/54	Complies
802.11a, 6M, Ant 0	2417	2390	55.3	37.8	74/54	Complies
802.11n, MSC0, MIMO	2417	2390	58.4	35.5	74/54	Complies
802.11a, 6M, Ant 0	2422	2390	52.2	37.1	74/54	Complies
802.11a, 6M, Ant 0	2452	2483.5	53.3	39.2	74/54	Complies
802.11n, MSC0, MIMO	2452	2483.5	61.8	37.1	74/54	Complies
802.11a, 6M, Ant 0	2457	2483.5	56.0	38.5	74/54	Complies
802.11n, MSC0, MIMO	2457	2483.5	61.0	37.1	74/54	Complies
802.11b, 1M, Ant 0	2462	2483.5	54.2	40.4	74/54	Complies
802.11a, 6M, Ant 0	2462	2483.5	54.1	37.9	74/54	Complies
802.11n, MSC0, MIMO	2462	2483.5	59.8	35.9	74/54	Complies

Values above are the maximum values for each modulation type.

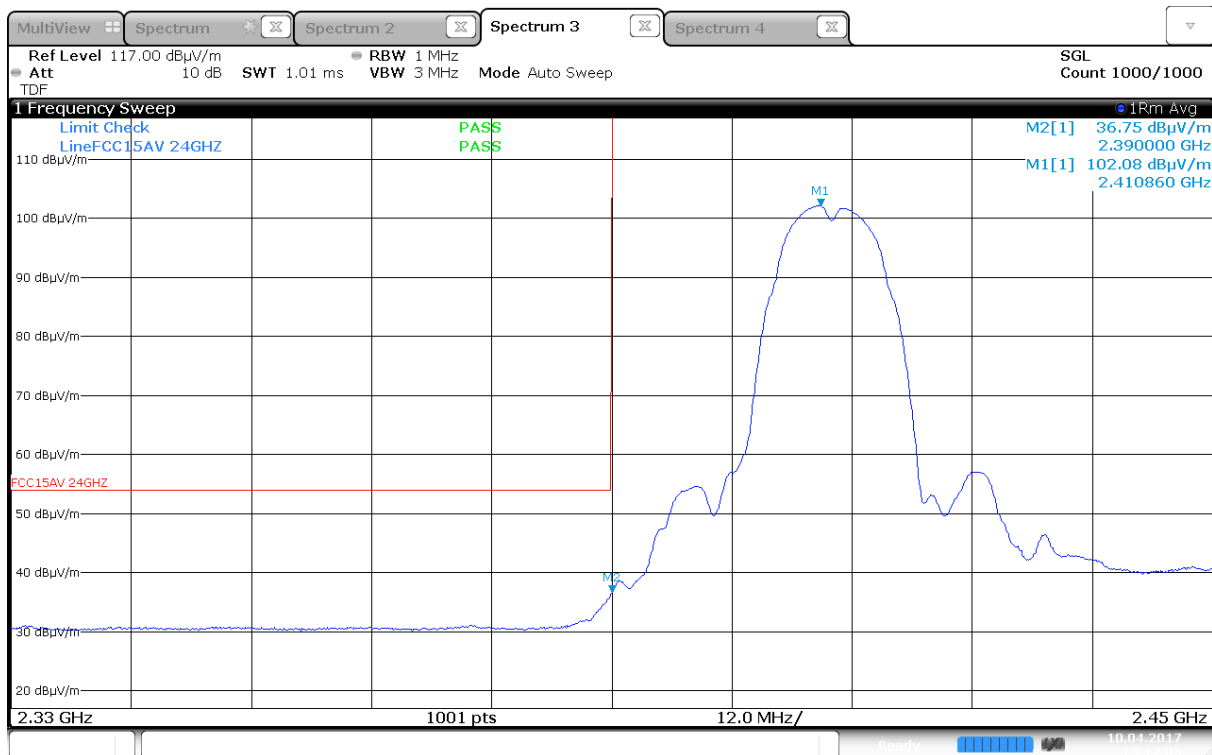
Average detector values were measured with Average detector and trace averaging over 1000 sweeps.

The measured Average detector values are corrected for duty cycle.

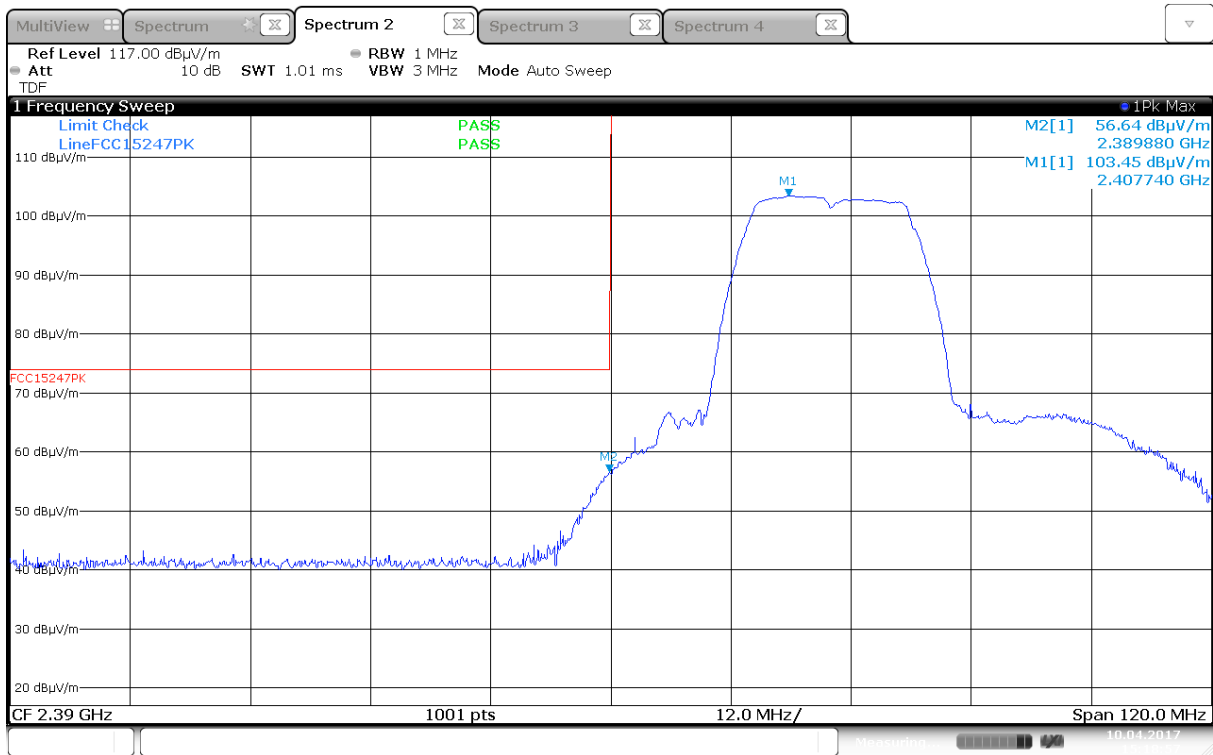
See attached plots



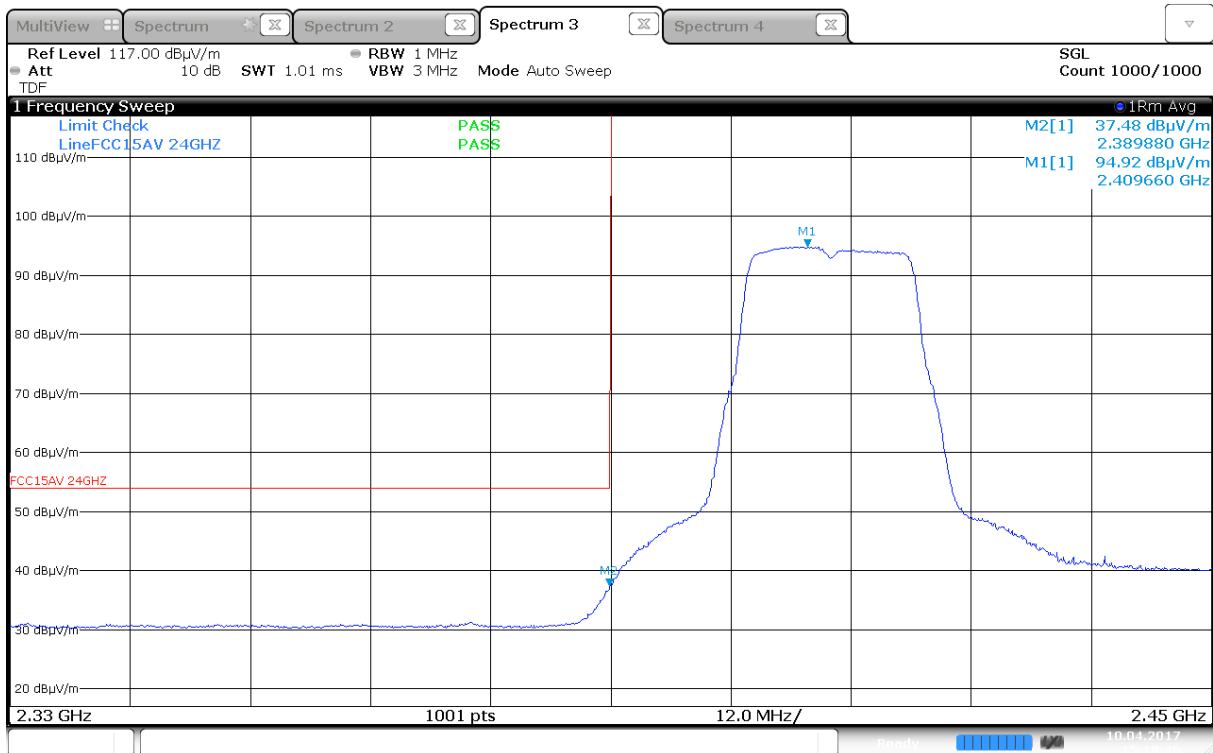
Lower Band Edge, Peak, 2412 MHz, 802.11b, 1Mbps, (Max: Ant 0, HP)



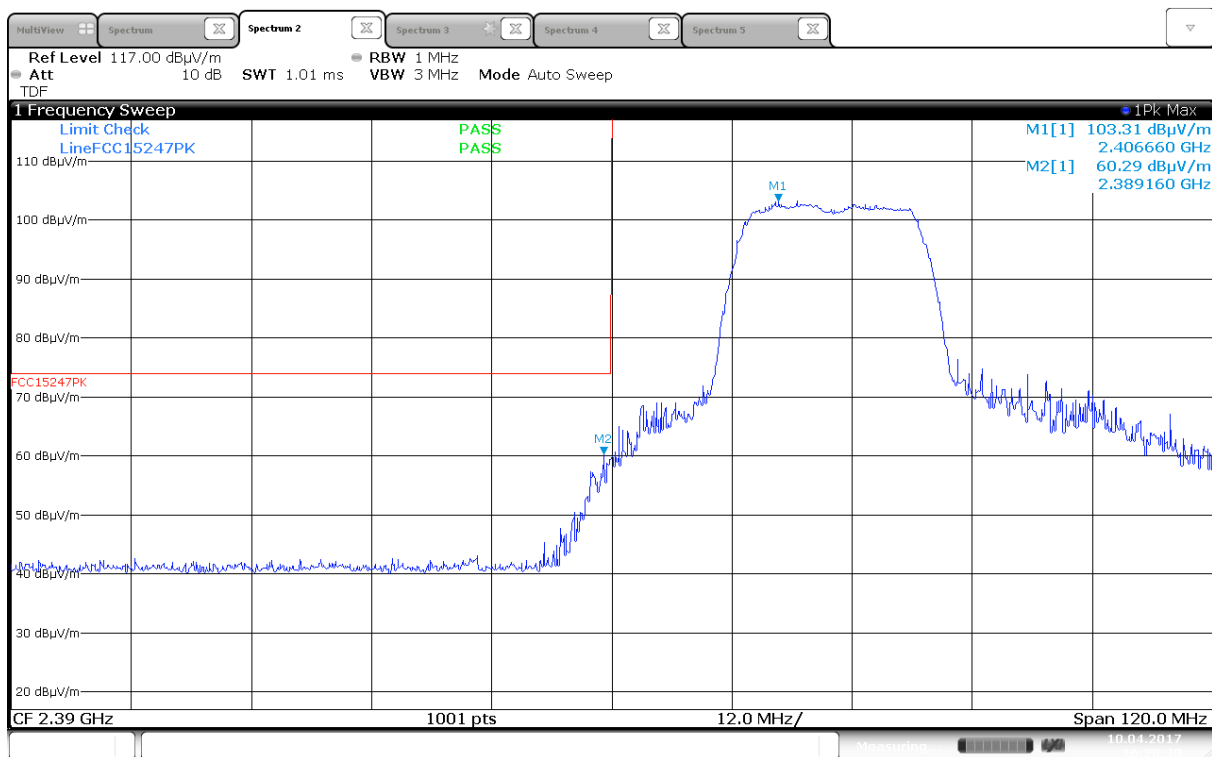
Lower Band Edge, Average, 2412 MHz, 802.11b, 1Mbps, (Max: Ant 0, HP)



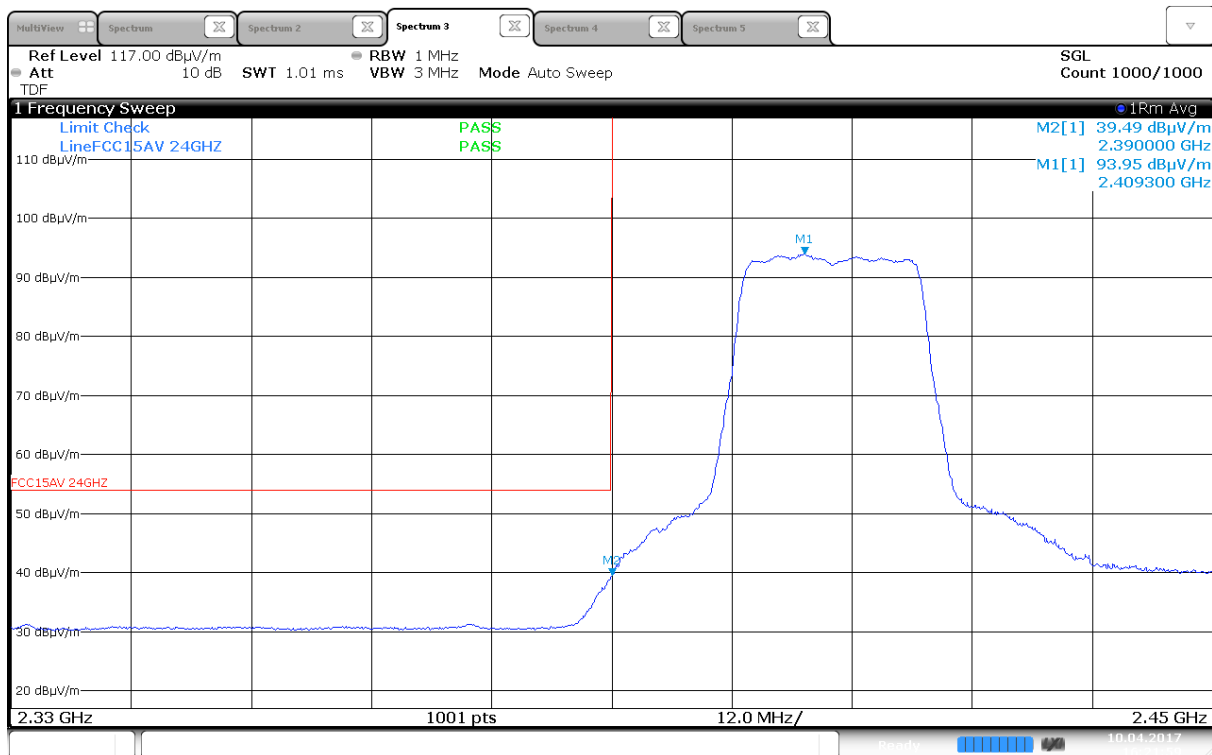
Lower Band Edge, Peak, 2412 MHz, 802.11g, 6Mbps, (Max: Ant 0, HP)



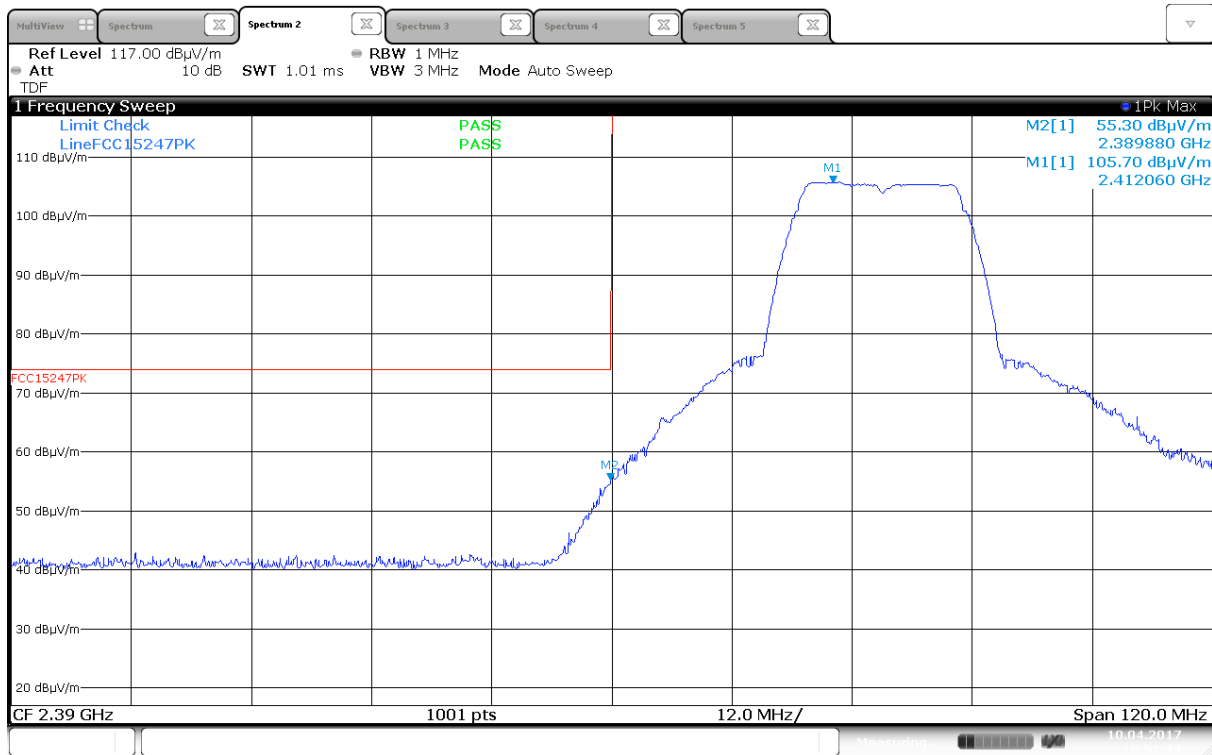
Lower Band Edge, Average, 2412 MHz, 802.11g, 6Mbps, (Max: Ant 0, HP)



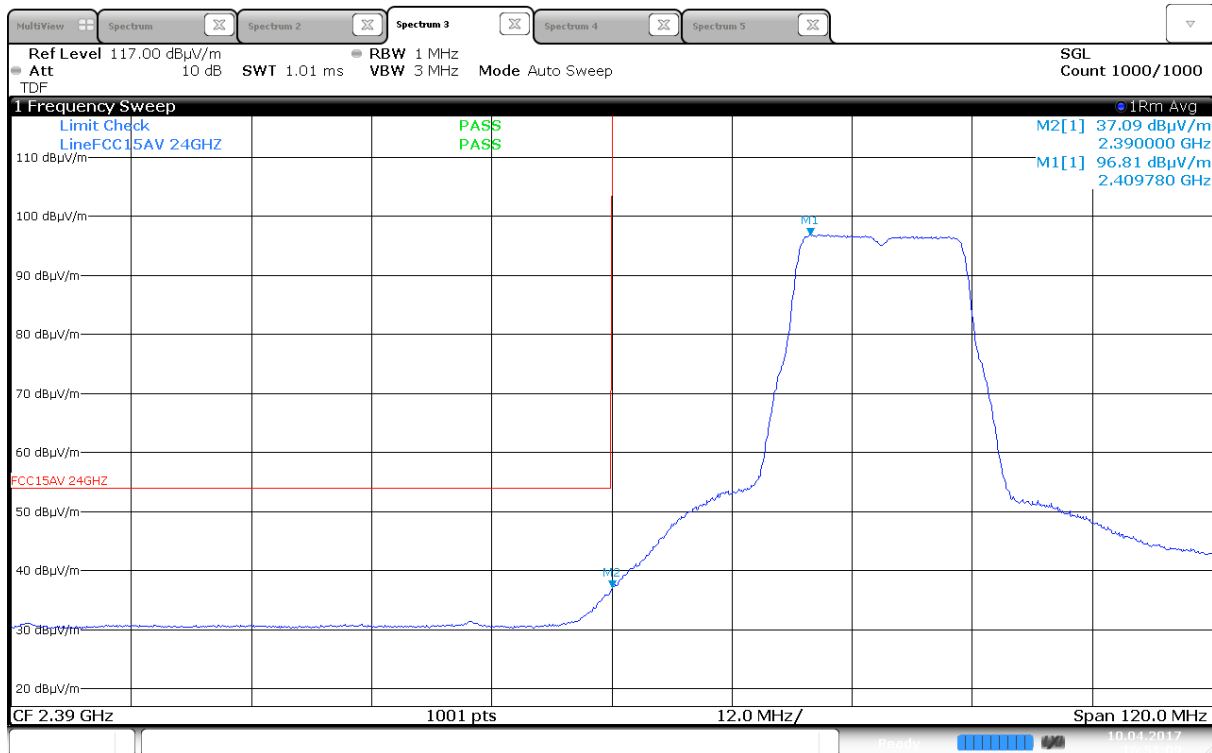
Lower Band Edge, Peak, 2412 MHz, 802.11n, MCS0, MIMO (Max: HP)



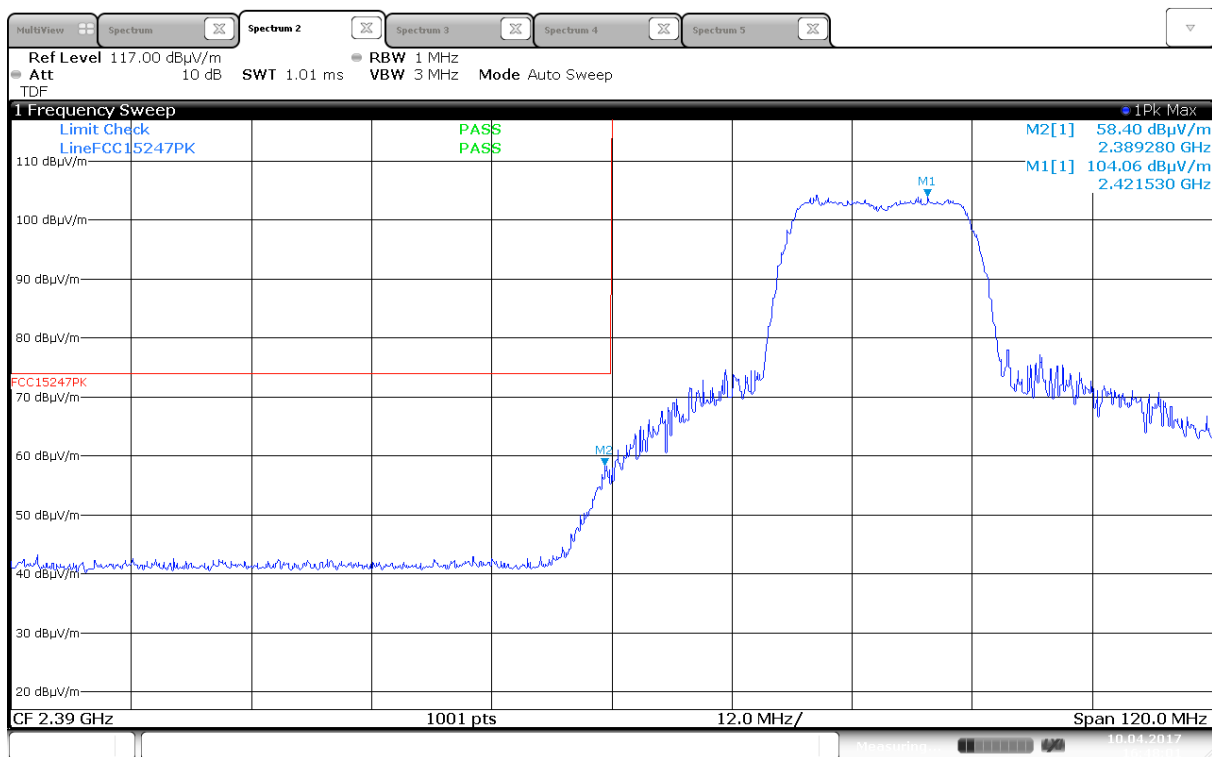
Lower Band Edge, Average, 2412 MHz, 802.11n, MCS0, MIMO (Max: HP)



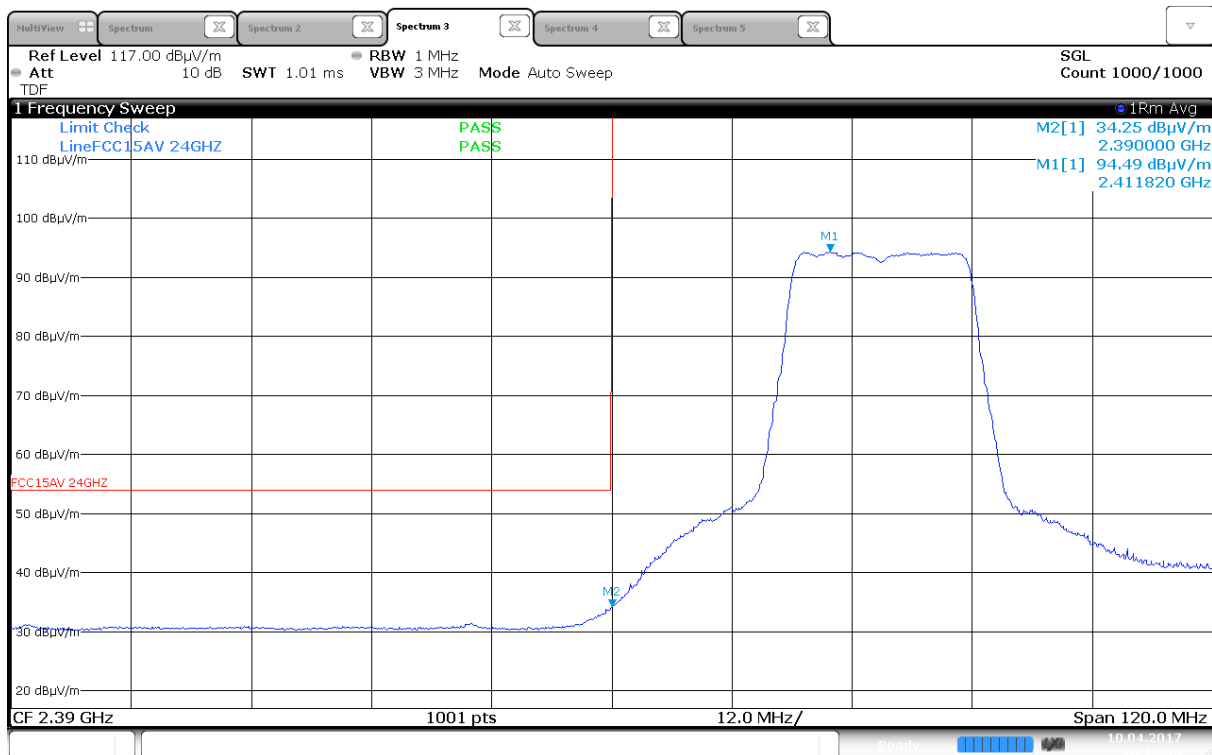
Lower Band Edge, Peak, 2417 MHz, 802.11g, 6Mbps, (Max: Ant 0, HP)



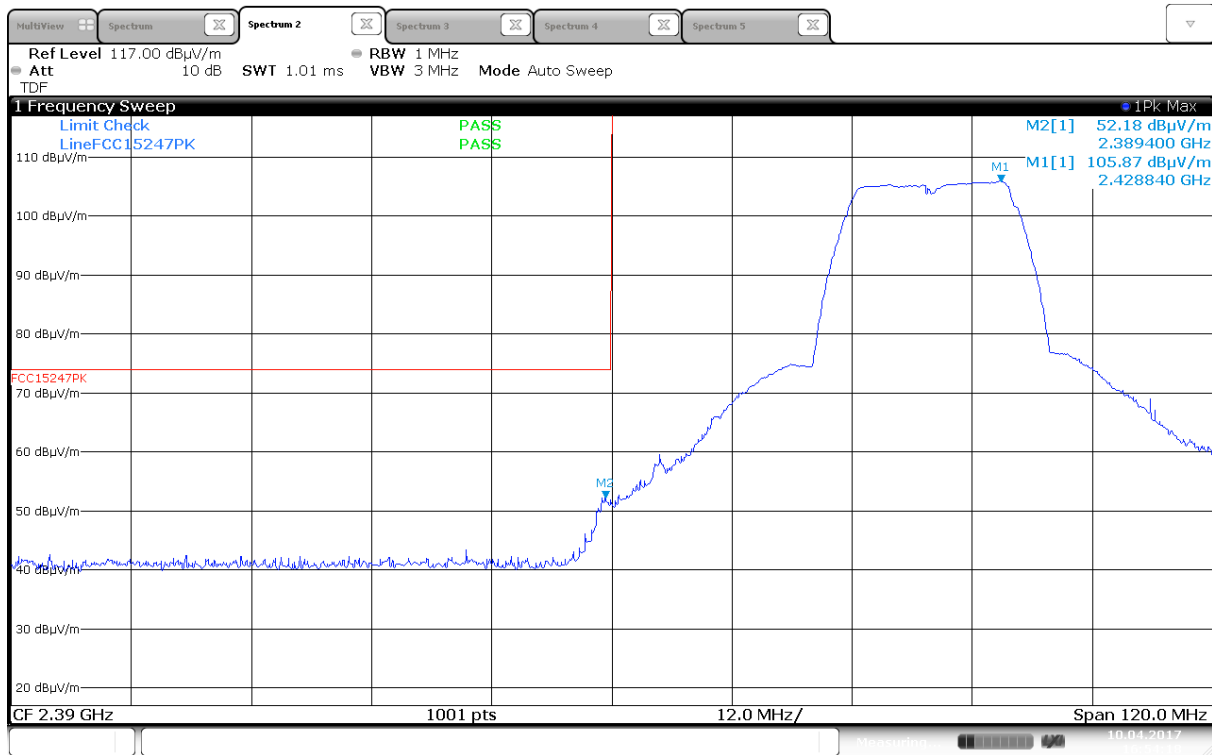
Lower Band Edge, Average, 2417 MHz, 802.11g, 6Mbps, (Max: Ant 0, HP)



Lower Band Edge, Peak, 2417 MHz, 802.11n, MCS0, MIMO (Max: HP)



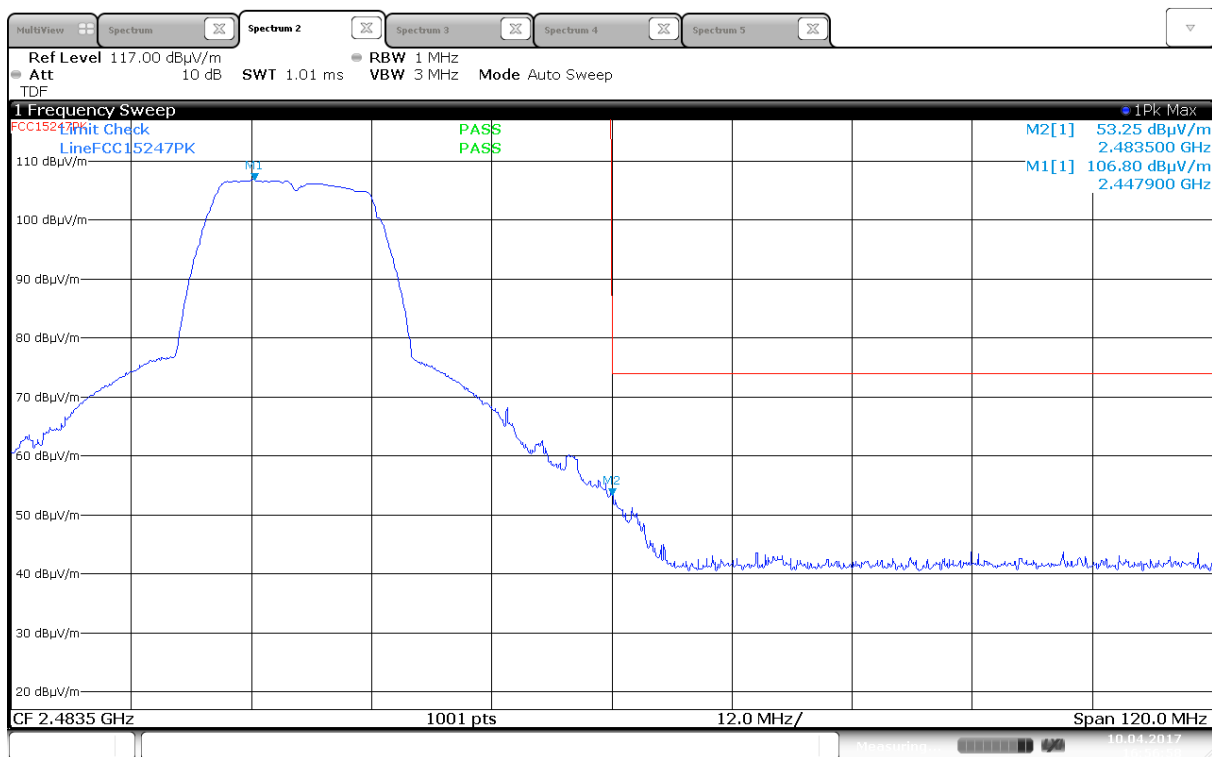
Lower Band Edge, Average, 2417 MHz, 802.11n, MCS0, MIMO (Max: HP)



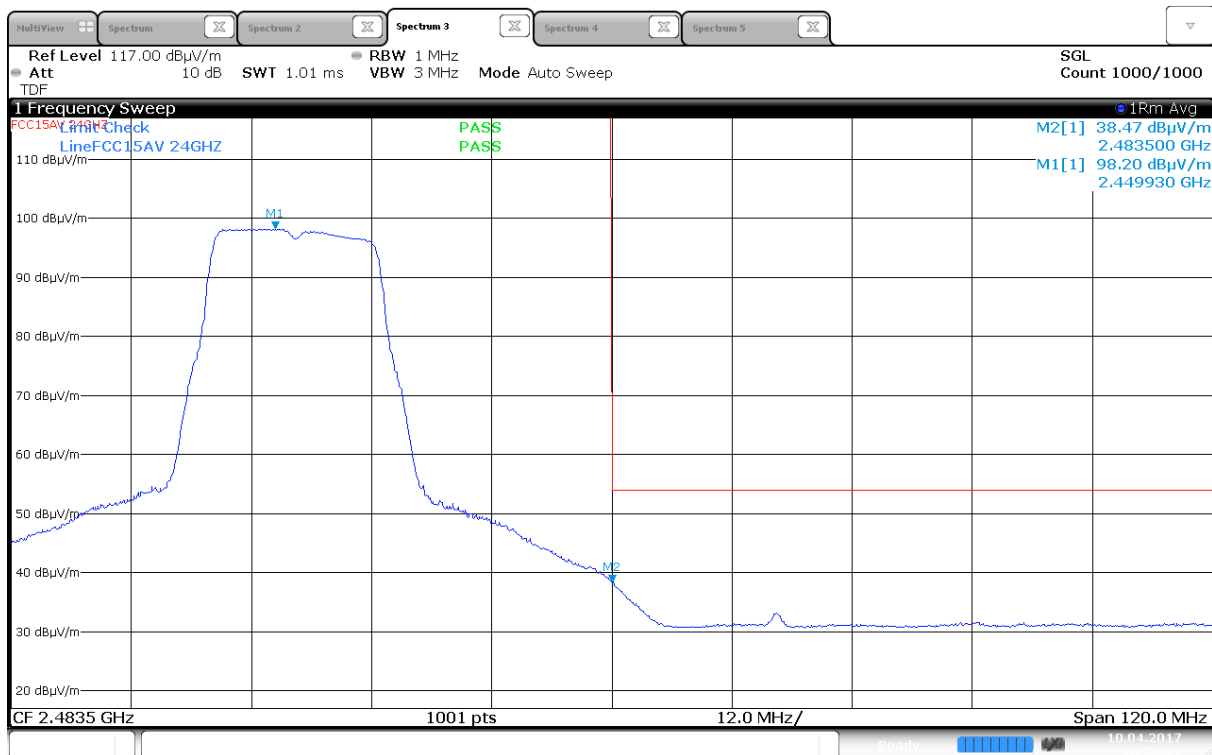
Lower Band Edge, Peak, 2422 MHz, 802.11g, 6Mbps, (Max: Ant 0, HP)



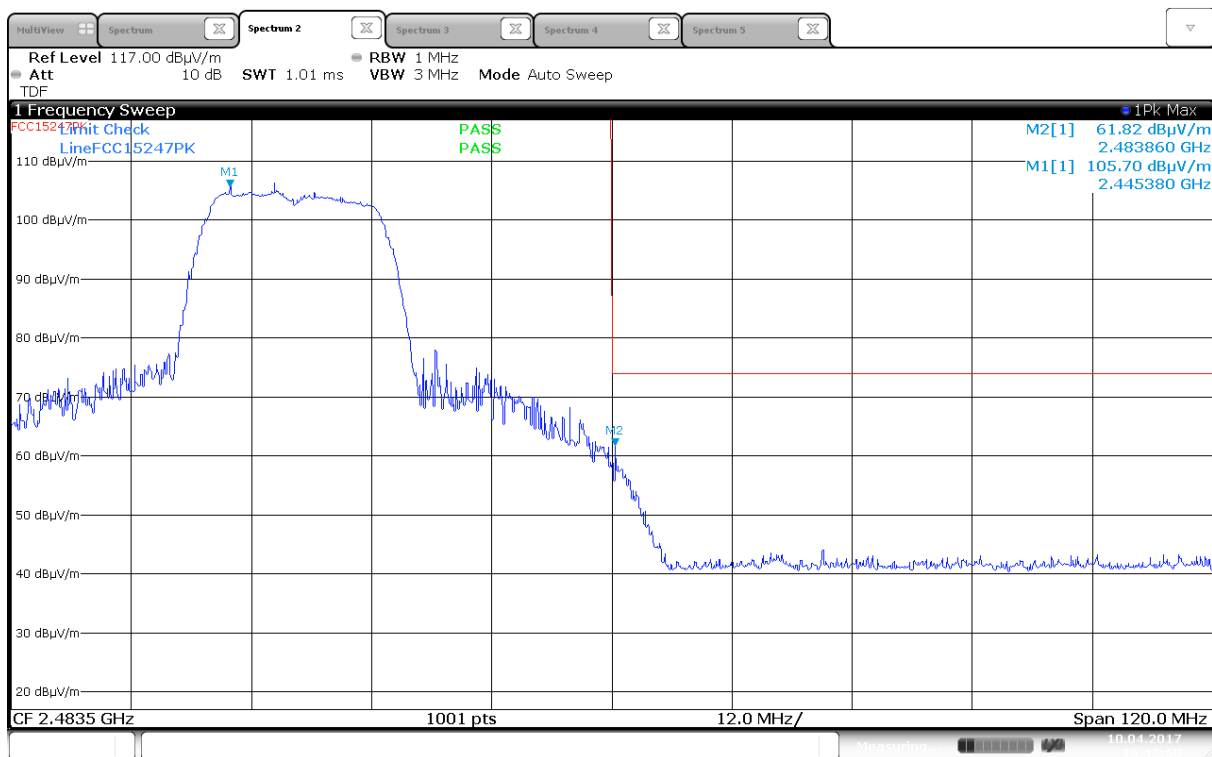
Lower Band Edge, Average, 2422 MHz, 802.11g, 6Mbps, (Max: Ant 0, HP)



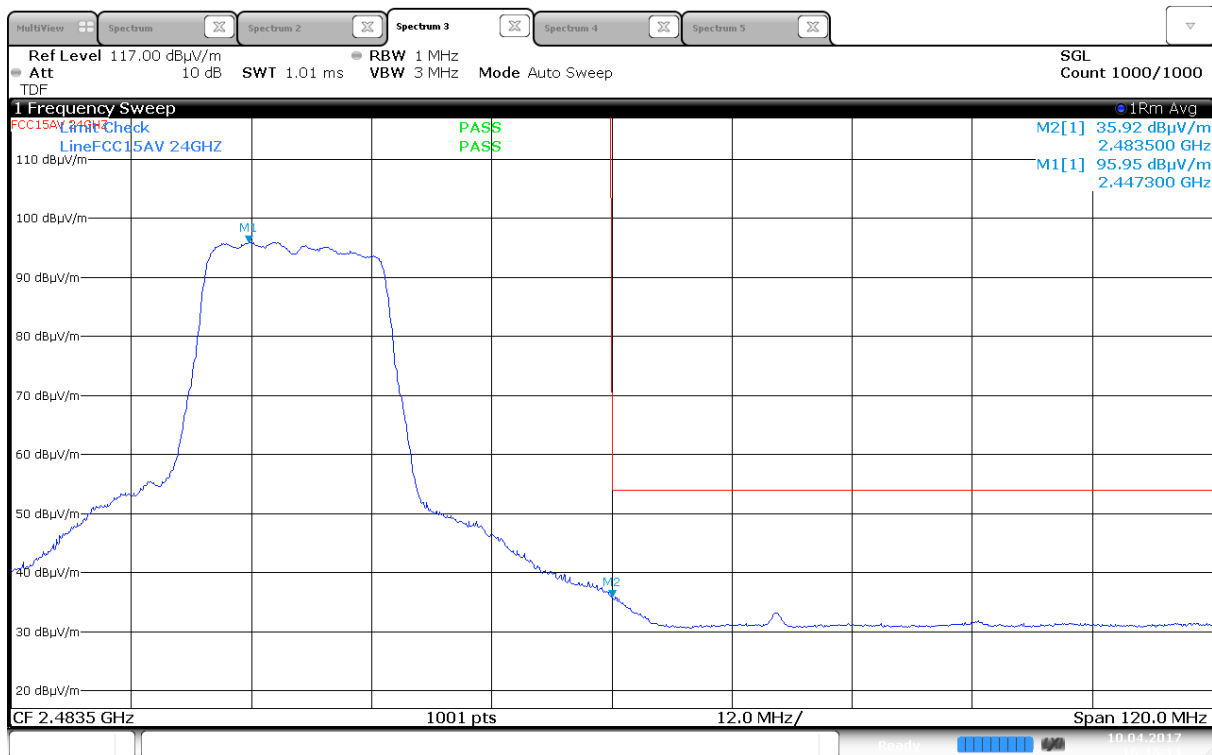
Upper Band Edge, Peak, 2452 MHz, 802.11g, 6Mbps, (Max: Ant 0, HP)



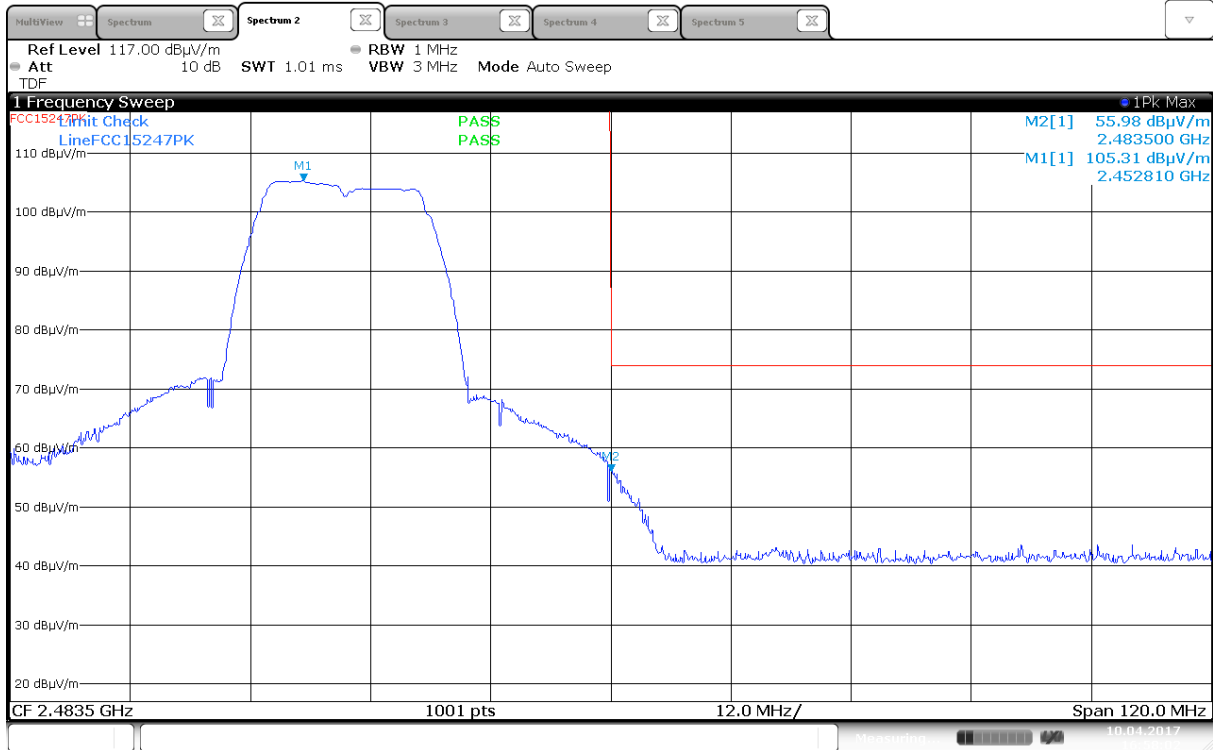
Upper Band Edge, Average, 2452 MHz, 802.11g, 6Mbps, (Max: Ant 0, HP)



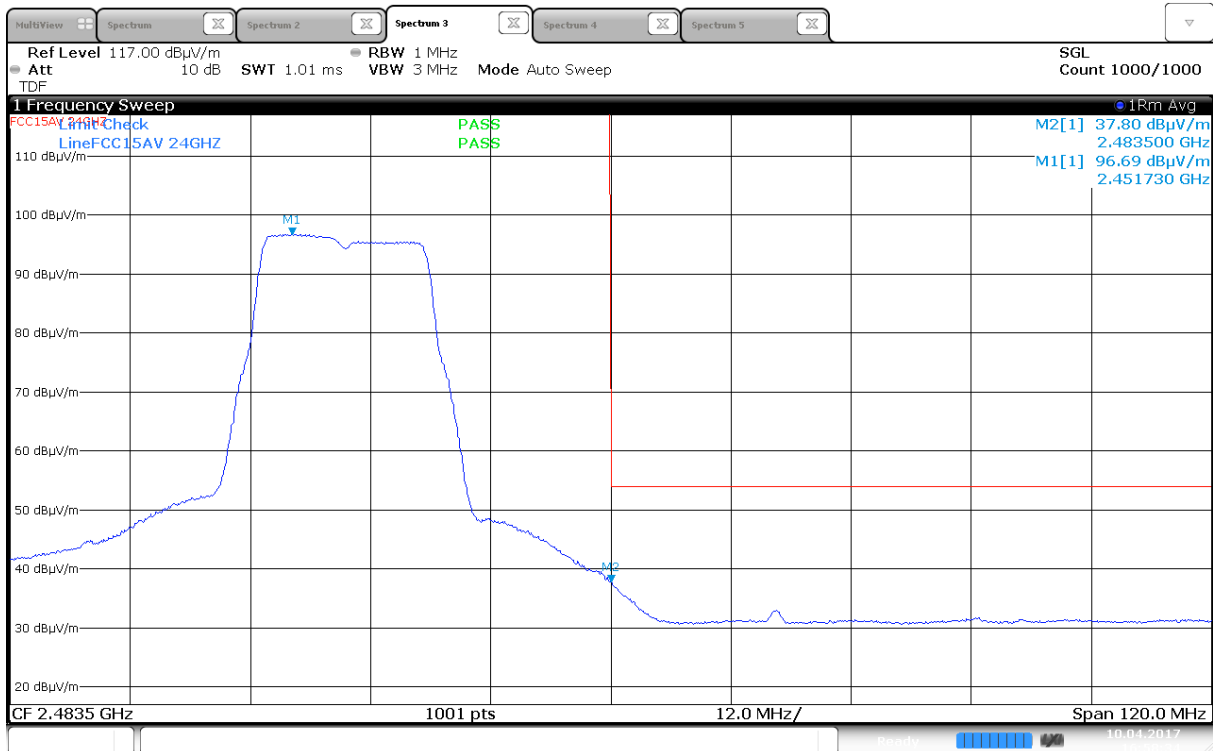
Upper Band Edge, Peak, 2452 MHz, 802.11n, MCS0, MIMO (Max: HP)



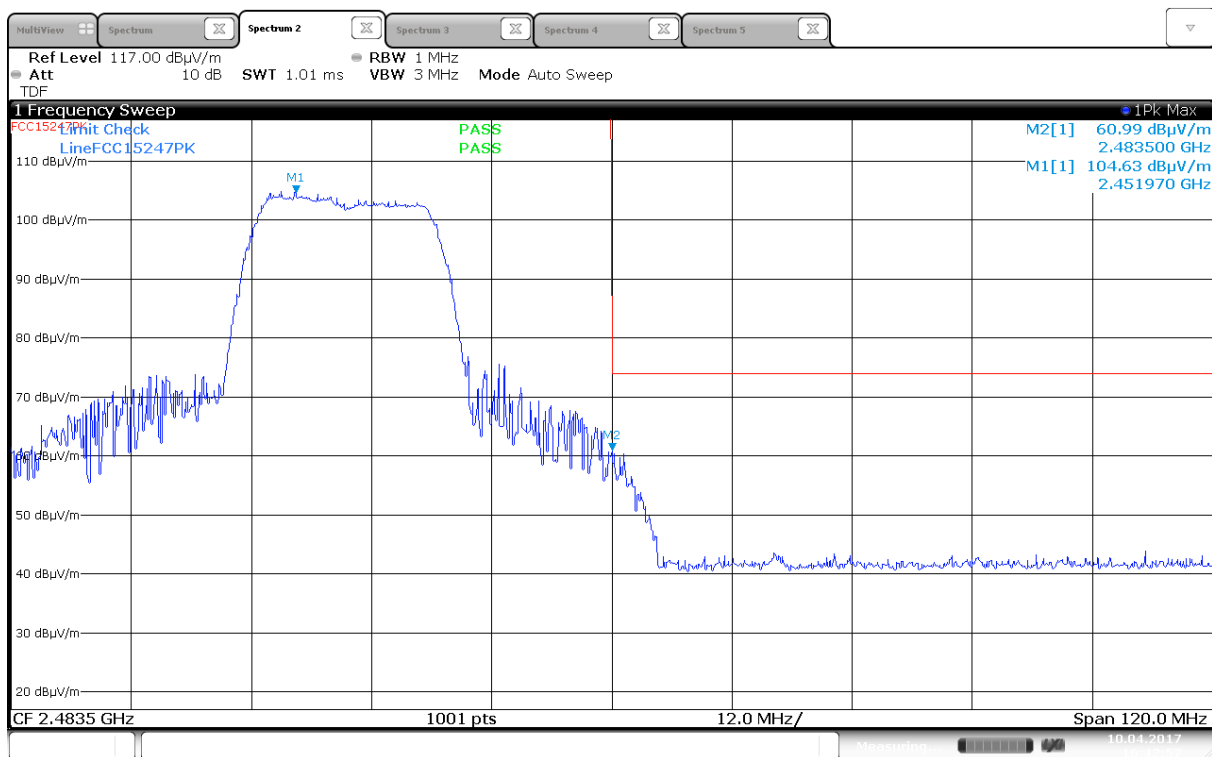
Upper Band Edge, Average, 2452 MHz, 802.11n, MCS0, MIMO (Max: HP)



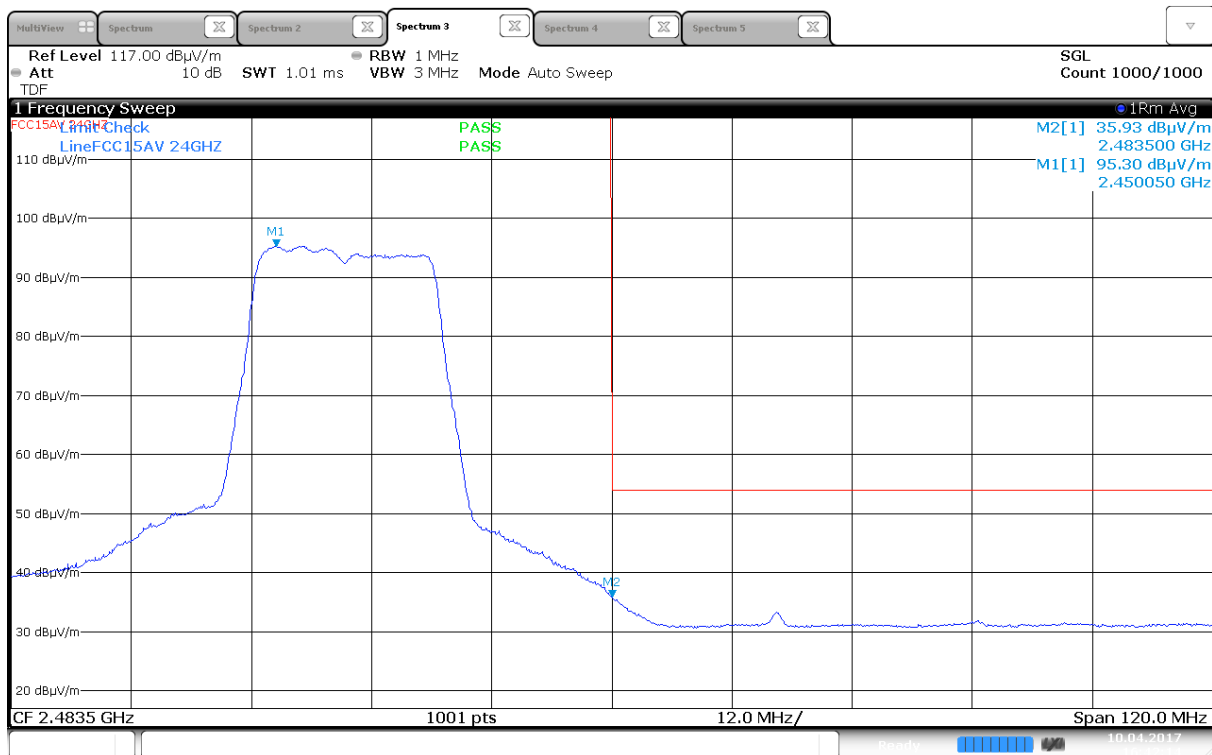
Upper Band Edge, Peak, 2457 MHz, 802.11g, 6Mbps, (Max: Ant 0, HP)



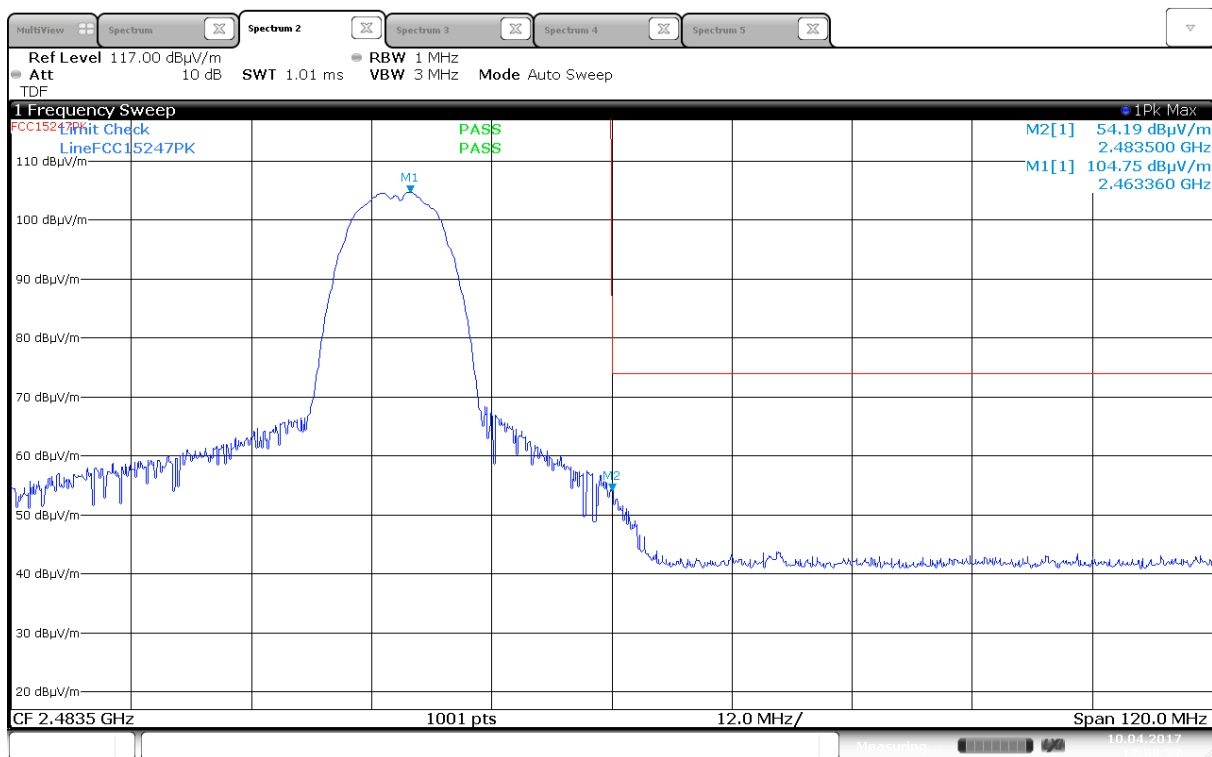
Upper Band Edge, Average, 2457 MHz, 802.11g, 6Mbps, (Max: Ant 0, HP)



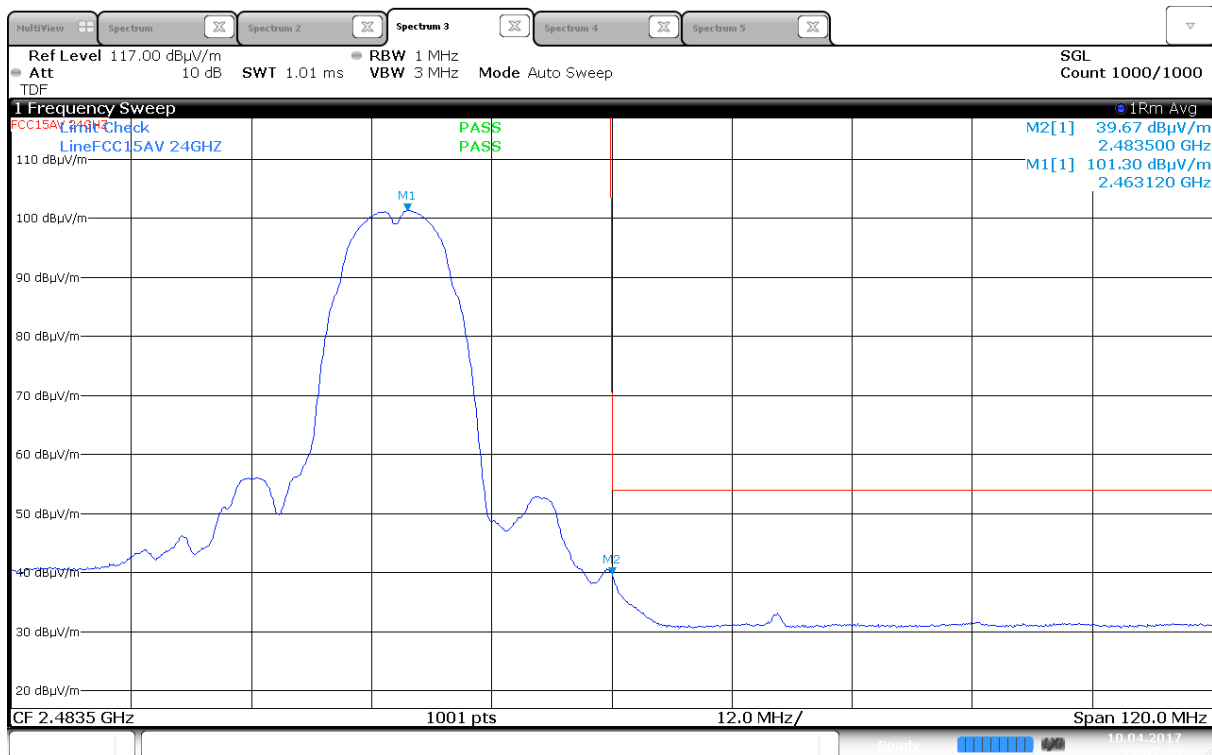
Upper Band Edge, Peak, 2457 MHz, 802.11n, MCS0, MIMO (Max: HP)



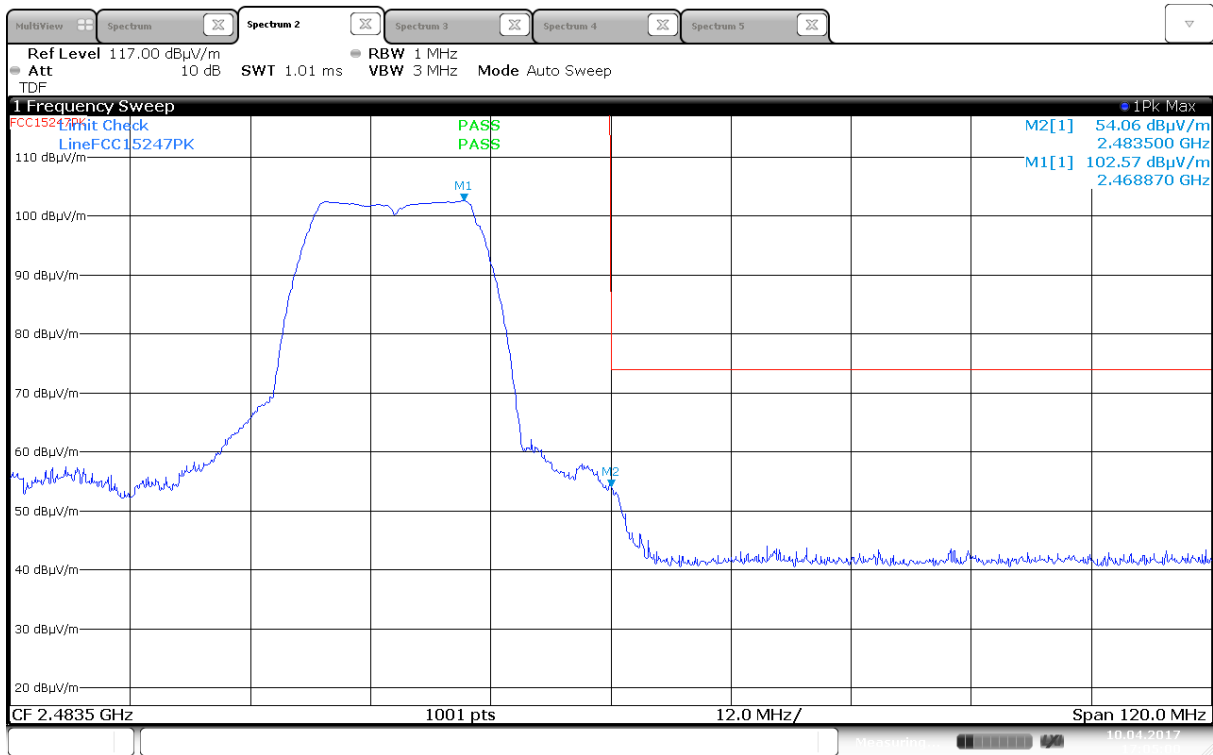
Upper Band Edge, Average, 2457 MHz, 802.11n, MCS0, MIMO (Max: HP)



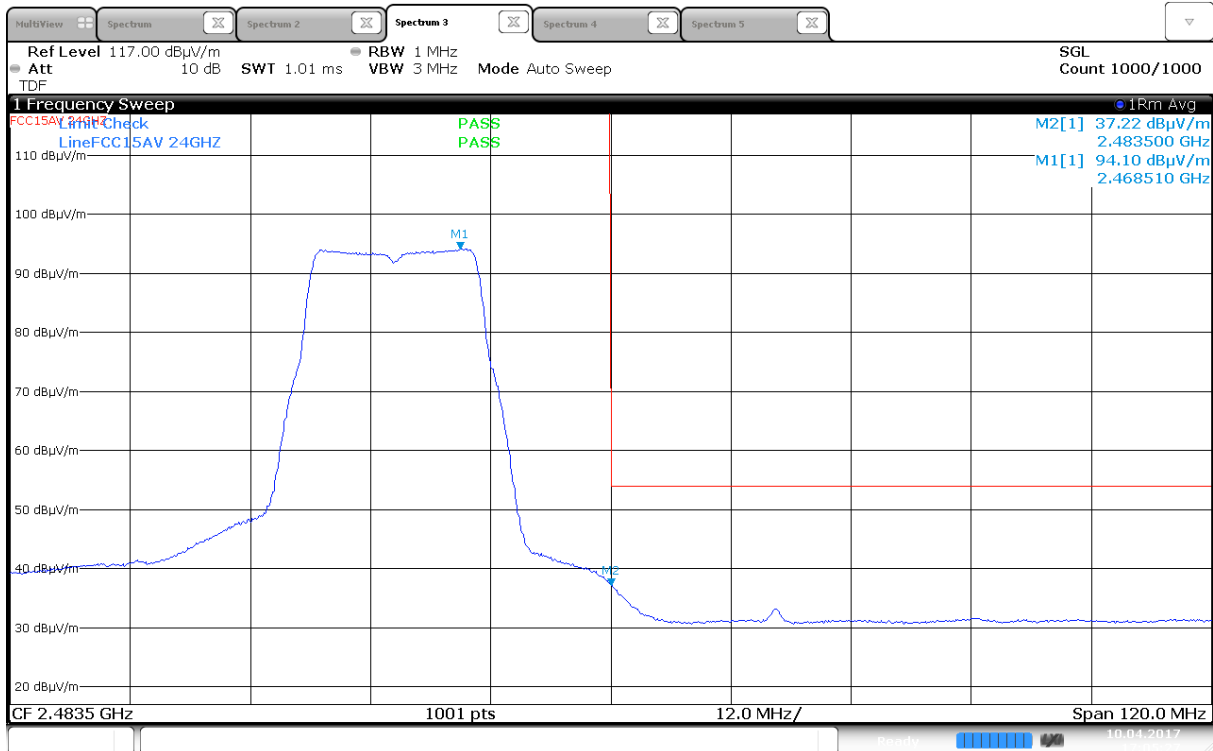
Upper Band Edge, Peak, 2462 MHz, 802.11b, 1Mbps, (Max: Ant 0, HP)



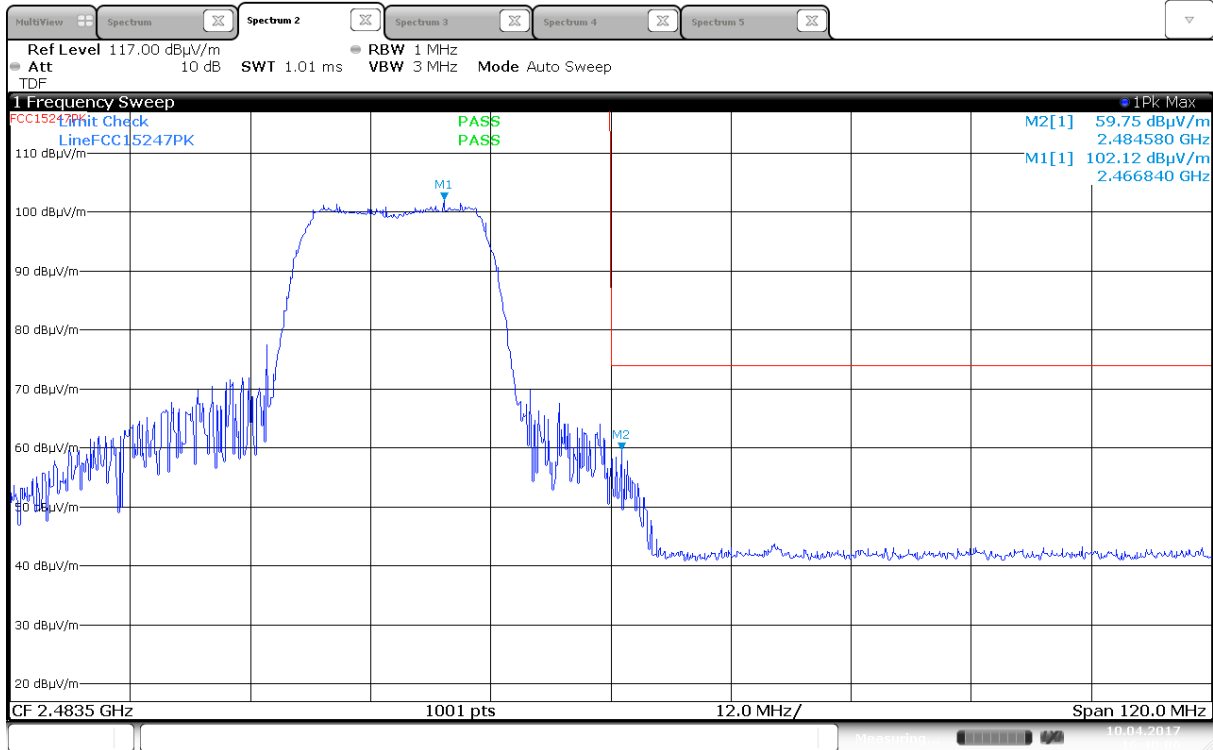
Upper Band Edge, Average, 2462 MHz, 802.11b, 1Mbps, (Max: Ant 0, HP)



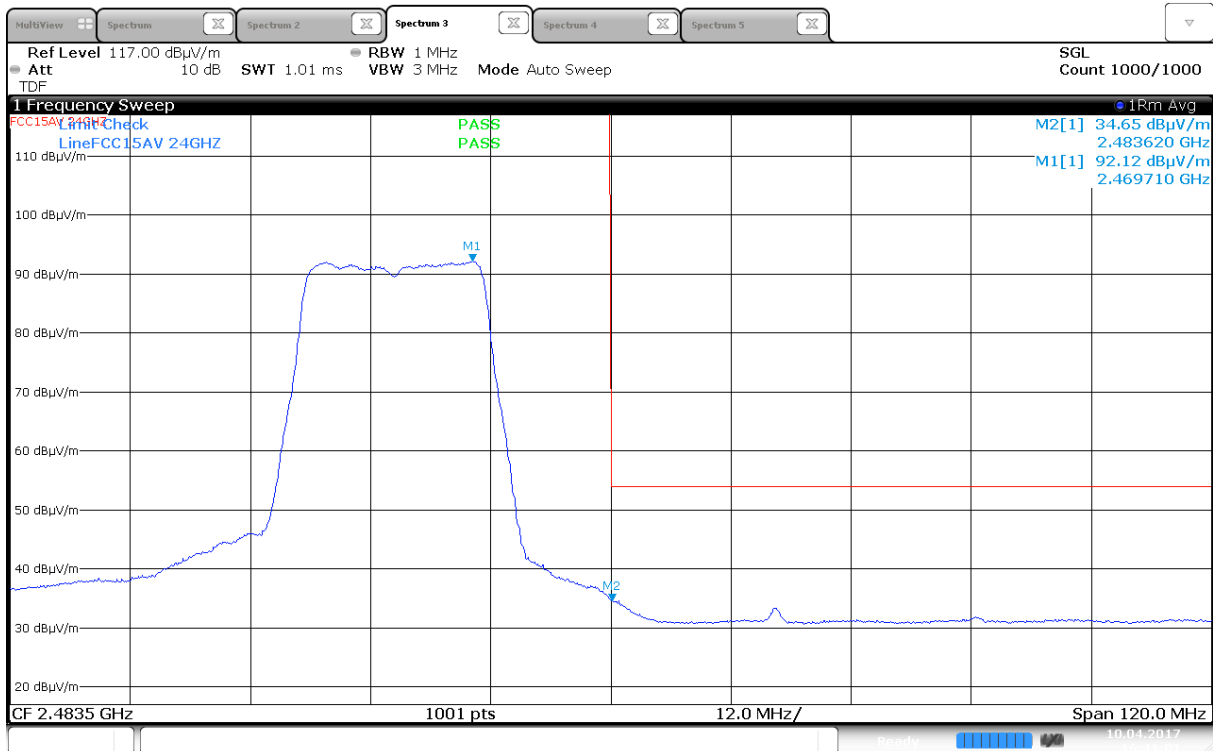
Upper Band Edge, Peak, 2462 MHz, 802.11g, 6Mbps, (Max: Ant 0, HP)



Upper Band Edge, Average, 2462 MHz, 802.11g, 6Mbps, (Max: Ant 0, HP)



Upper Band Edge, Peak, 2462 MHz, 802.11n, MCS0, MIMO (Max: HP)



Upper Band Edge, Average, 2462 MHz, 802.11n, MCS0, MIMO (Max: HP)

3.3 Radiated Emissions, 30 – 1000 MHz

FCC 15.205, 15.209

ISED RSS-GEN, Issue 4, Clause 8.9

Test Results: Complies

Measurement Data:

Radiated emission 30 – 1000 MHz.

Detector: Quasi-Peak

Measuring distance 3m

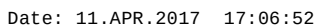
Tested with all all connections active and LCD on

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
31.433	30.83	40.00	9.17	1000.0	120.000	141.0	V	146	-24.3
42.059	34.57	40.00	5.43	1000.0	120.000	100.0	V	330	-26.7
45.783	32.05	40.00	7.95	1000.0	120.000	100.0	V	316	-27.4
47.799	32.59	40.00	7.41	1000.0	120.000	111.0	V	318	-27.8
185.274	32.43	43.50	11.07	1000.0	120.000	111.0	V	43	-22.9
198.999	26.68	43.50	16.82	1000.0	120.000	159.0	H	46	-22.3
299.135	24.76	46.00	21.24	1000.0	120.000	100.0	H	15	-22.6
307.879	18.94	46.00	27.06	1000.0	120.000	100.0	H	312	-22.3
370.748	39.63	46.00	6.37	1000.0	120.000	110.0	V	36	-20.4
398.780	28.60	46.00	17.40	1000.0	120.000	216.0	H	35	-19.1
548.276	37.54	46.00	8.46	1000.0	120.000	113.0	V	41	-16.2
730.899	39.41	46.00	6.59	1000.0	120.000	110.0	V	34	-13.1
769.881	18.61	46.00	27.39	1000.0	120.000	150.0	H	0	-13.0
927.926	39.50	46.00	6.50	1000.0	120.000	199.0	V	27	-10.9

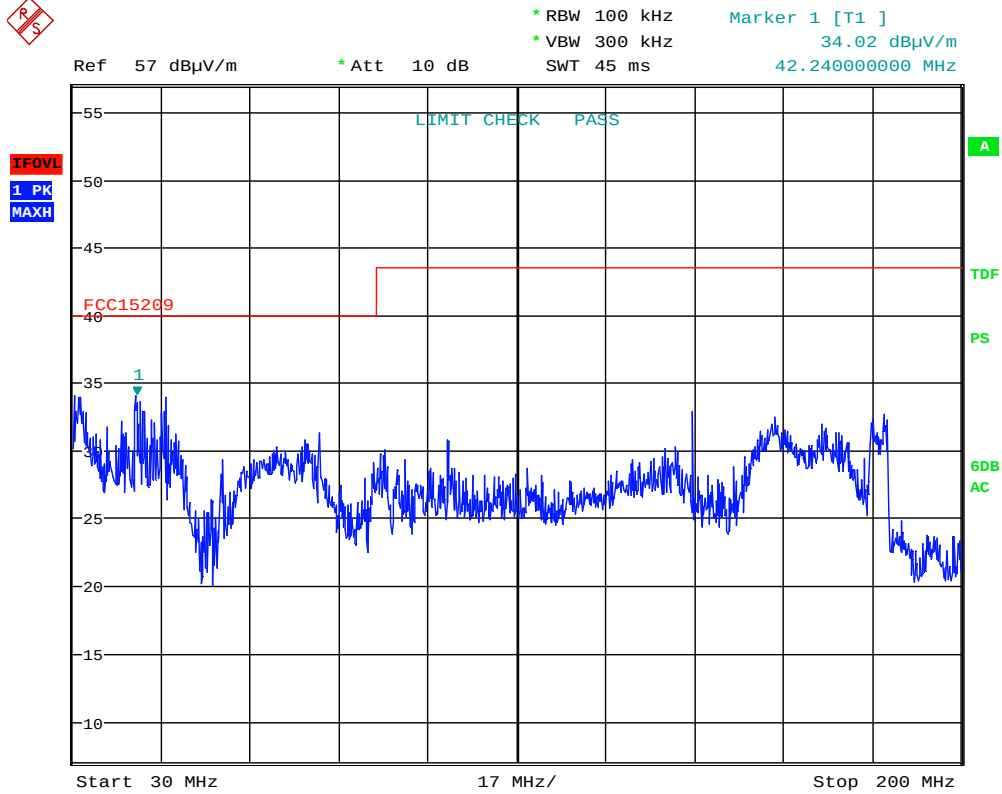
See attached plots.

Requirements/Limit

FCC	Part 15.209 @ frequencies defined in §15.205	
ISED	RSS-GEN Issue 4, clause 8.9 @ frequencies defined in clause 8.10	
	Radiated emission limit @3 meters	
Frequency (MHz)	Quasi Peak (µV/m)	Quasi Peak (dBµV/m)
30 – 88	100	40.0
88 – 216	150	43.5
216 – 960	200	46.0
Above 960	500	54.0

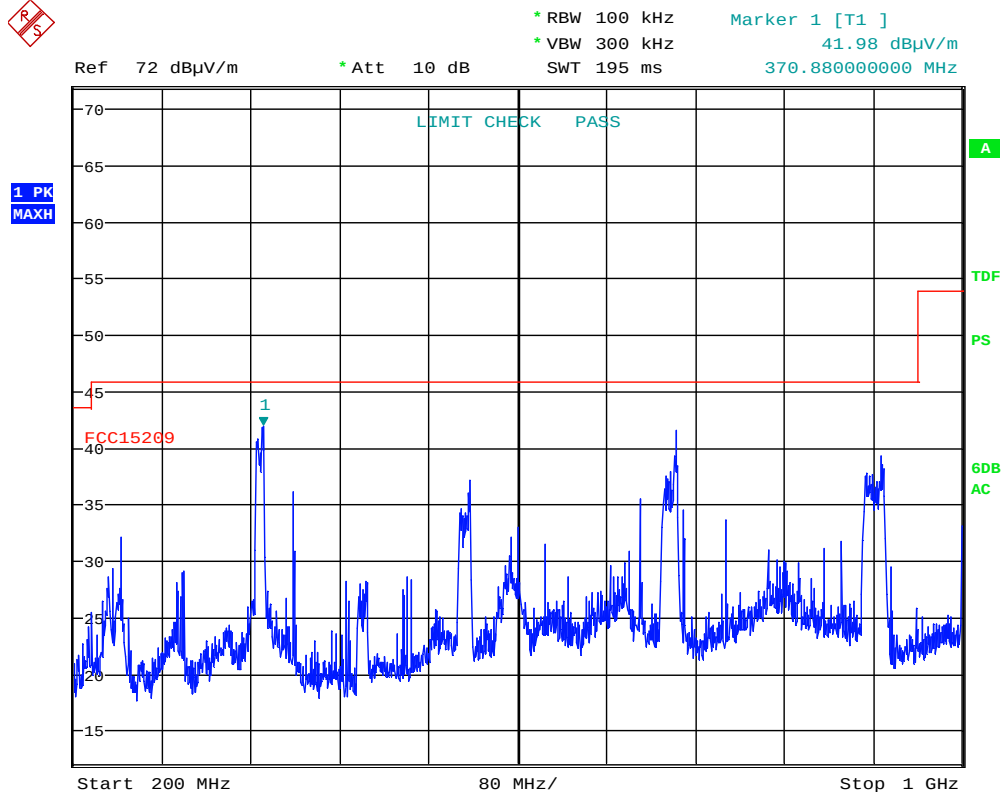


Radiated Emissions, 30 -200MHz, 2437MHz, 11n HT20, MIMO, HP



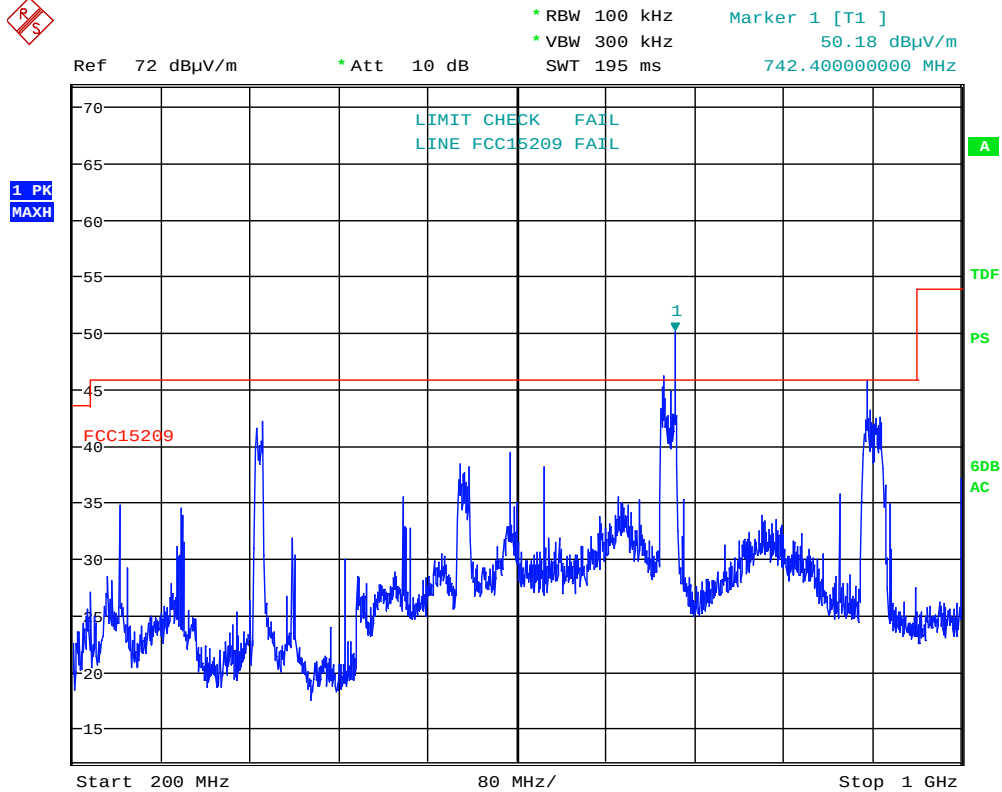
Date: 11.APR.2017 17:04:54

Radiated Emissions, 30 -200MHz, 2437MHz, 11n HT20, MIMO, VP



Date: 11.APR.2017 16:46:59

Radiated Emissions, 200 -1000MHz, 2437MHz, 11n HT20, MIMO, HP



Date: 11.APR.2017 16:45:01

Radiated Emissions, 200 -1000MHz, 2437MHz, 11n HT20, MIMO, VP

3.4 Radiated Emissions, 1-25 GHz

FCC 15.205, 15.209

ISED RSS-GEN, Issue 4, Clause 8.9

Test Results: **Complies**

Measurement Data:

Radiated Emissions, 1-25 GHz

Measuring distance: 3m (1 – 8.5 GHz)
1m (8 – 25 GHz)

A pre-scan was performed above 18 GHz and no spurious emissions were detected.

Radiated Emissions in Restricted Bands						
Carrier Modulation	Carrier Freq MHz	Measured Freq MHz	Measured value Peak dBµV/m @3m	Measured value AV dBµV/m @3m	Limit (dBµV/m)	Verdict
All*	2412	1844	38.7	/	74/54	Complies
All*	2452	2779	51.1	35.0	74/54	Complies
All*	2462	2970	55.4	50.5	74/54	Complies
All*	2437	5530	53.5	42.6	74/54	Complies

* Not an emission from the radio

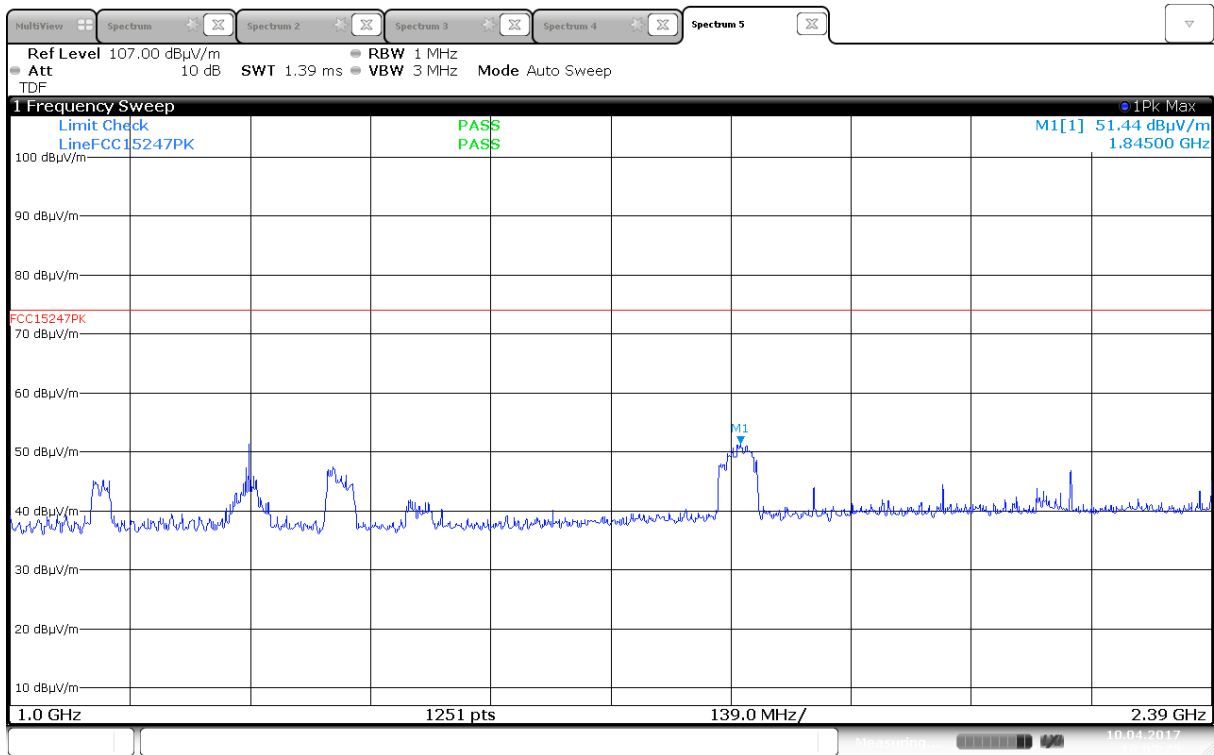
Only harmonics that fall in the restricted bands (ref. §15.205) have been checked.

Antenna factor, amplifier gain and cable loss are included in Spectrum Analyzer "Transducer factor".

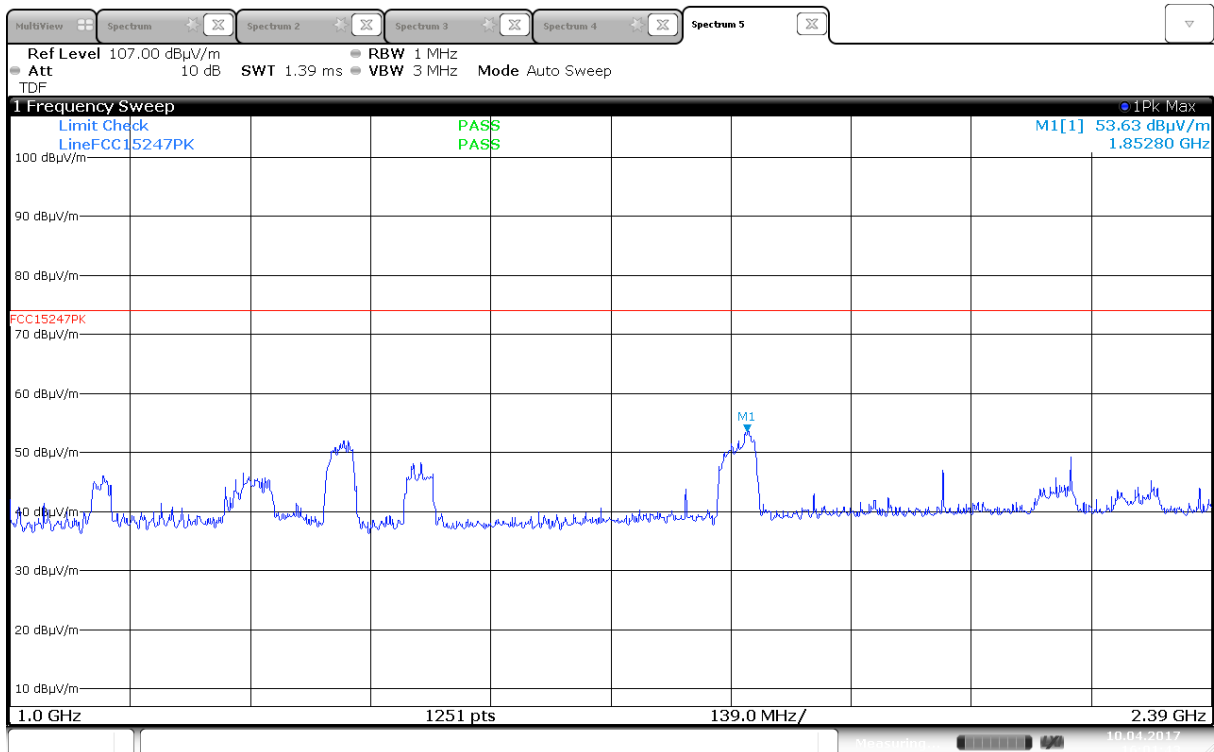
See attached plots.

Requirements/Limit

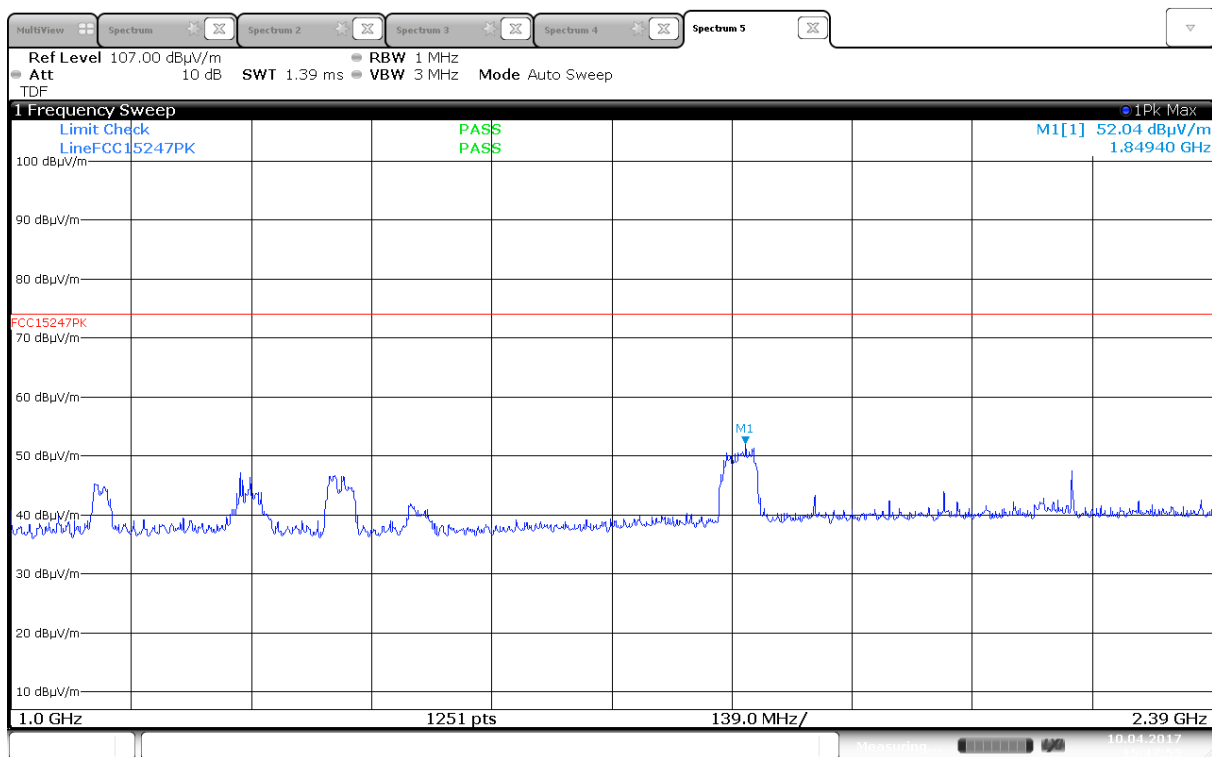
FCC	Part 15.209 @ frequencies defined in §15.205	
ISED	RSS-GEN Issue 4, clause 8.9 @ frequencies defined in clause 8.10	
	Radiated emission limit @3 meters	
Frequency (MHz)	AV (dBµV/m)	Peak (dBµV/m)
Above 1 GHz	54.0	74.0



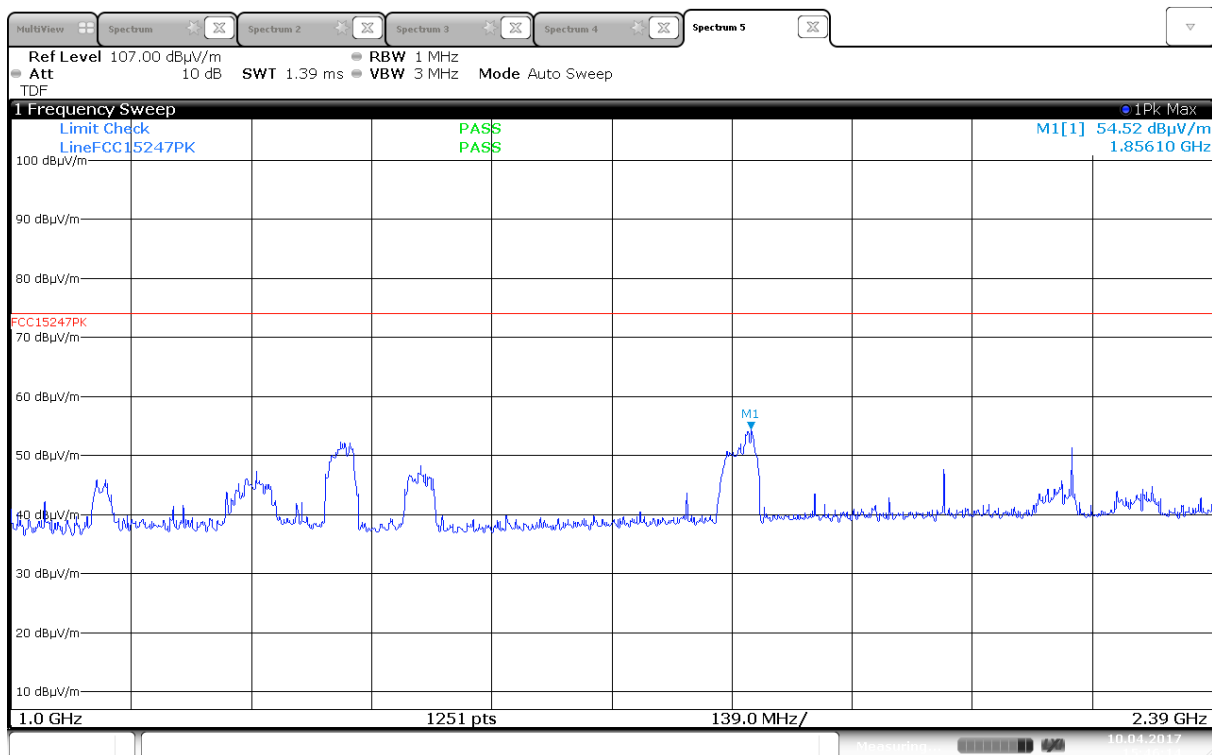
Radiated Emissions, 1000 -2390 MHz, 2412MHz, 802.11b, 1Mb, Ant0, HP



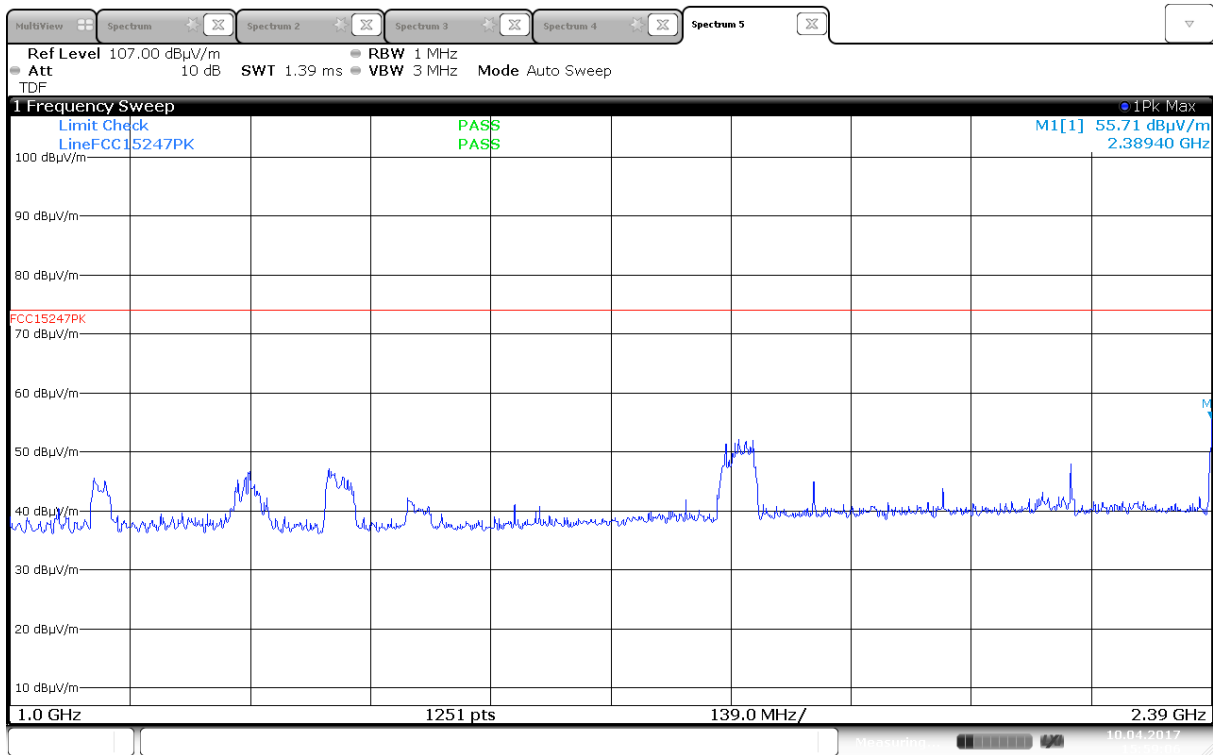
Radiated Emissions, 1000 -2390 MHz, 2412MHz, 802.11b, 1Mb, Ant0, VP



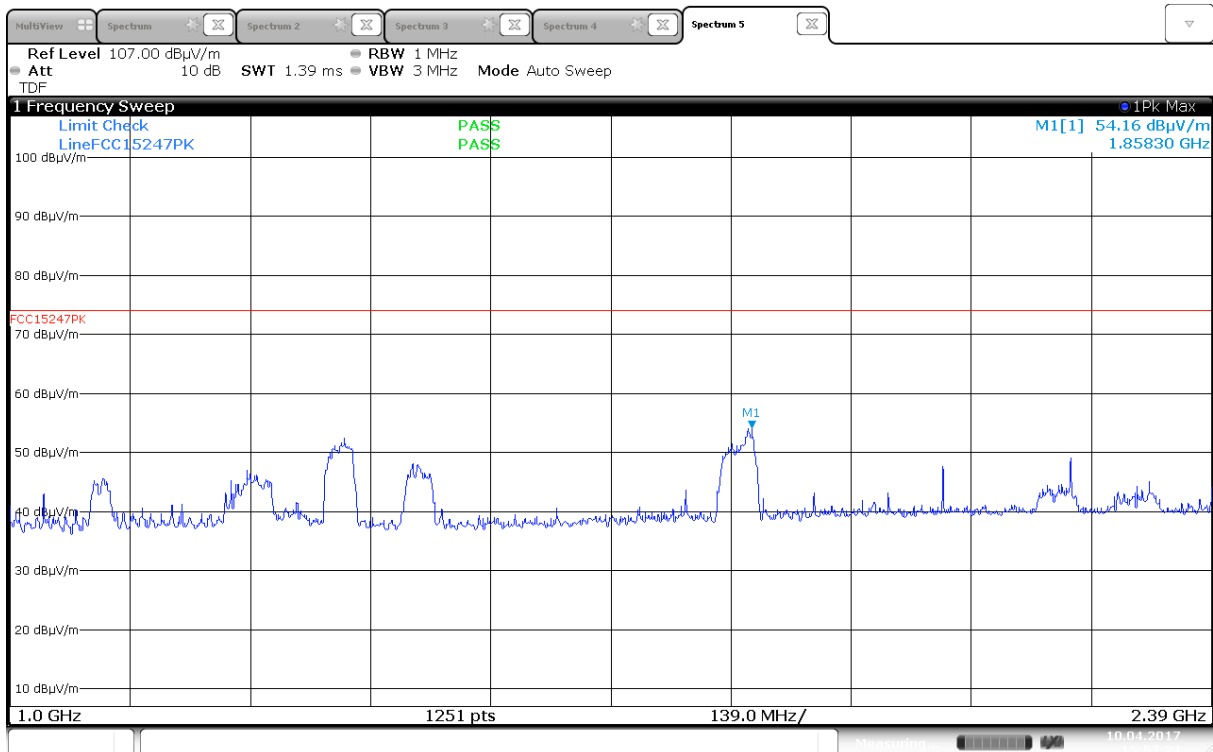
Radiated Emissions, 1000 -2390 MHz, 2412MHz, 802.11b, 1Mb, Ant1, HP



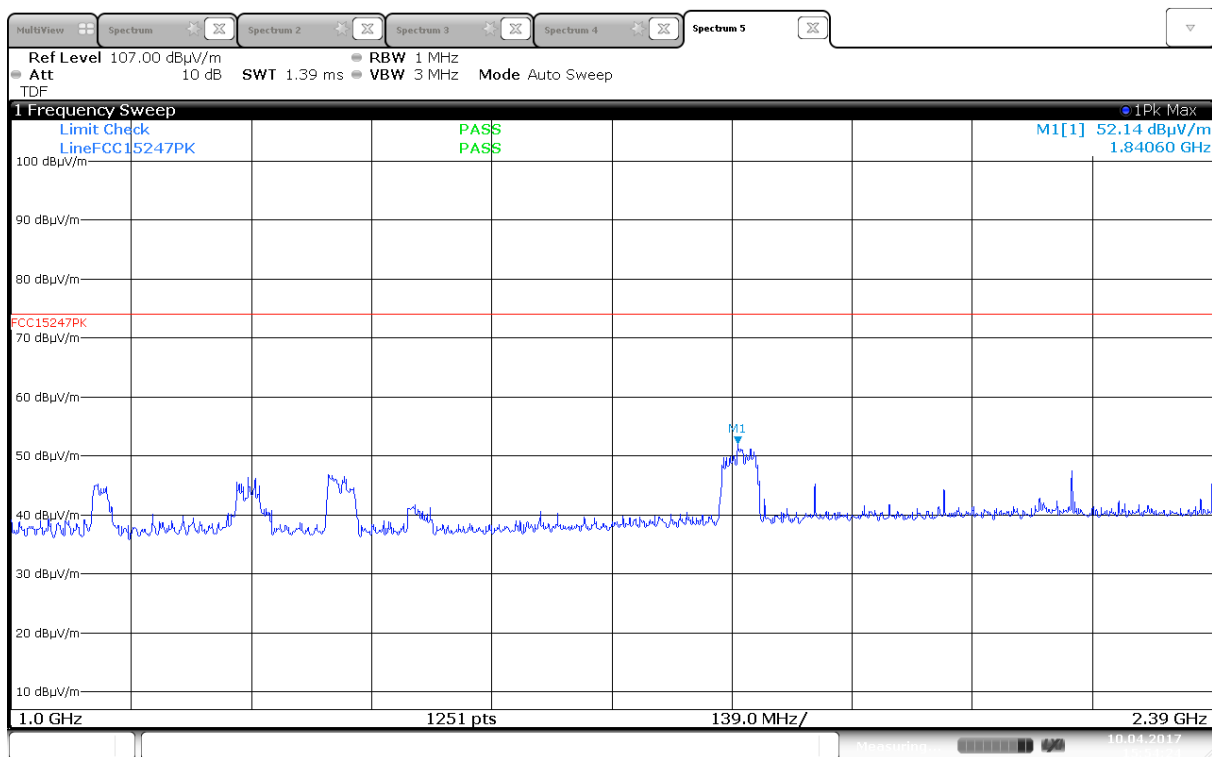
Radiated Emissions, 1000 -2390 MHz, 2412MHz, 802.11b, 1Mb, Ant1, VP



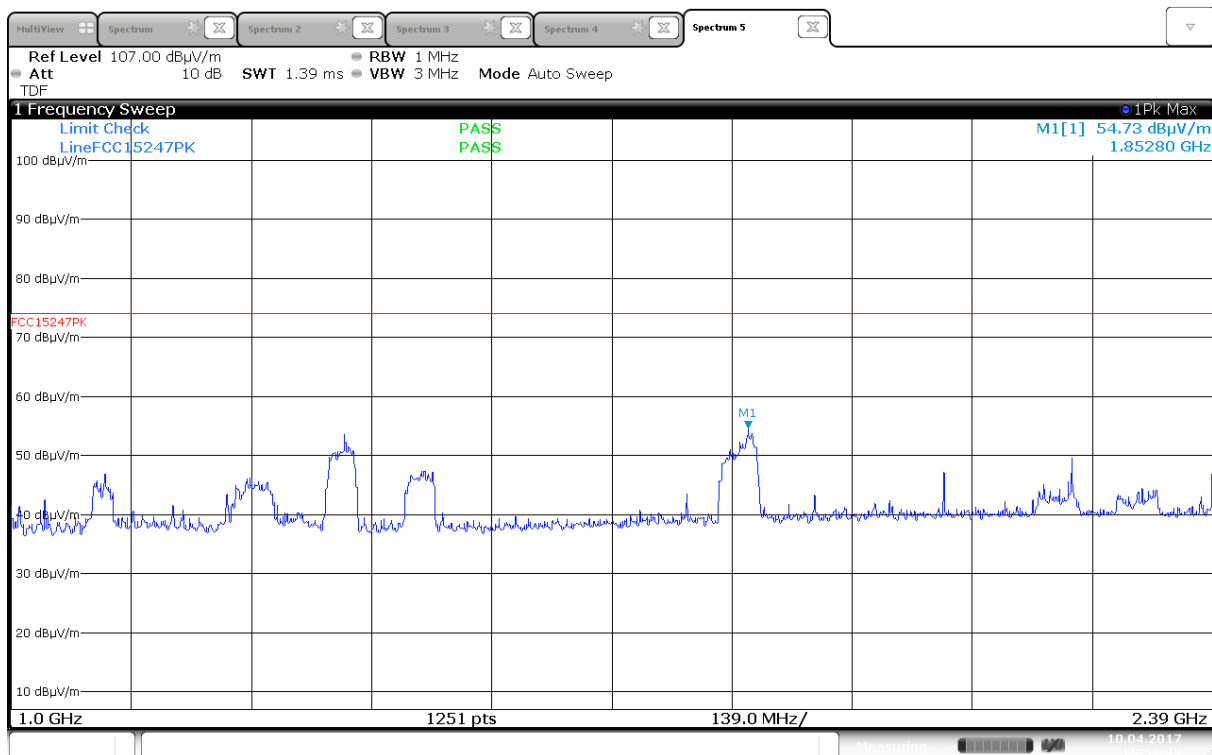
Radiated Emissions, 1000 -2390 MHz, 2412MHz, 802.11g, 6Mb, Ant0, HP



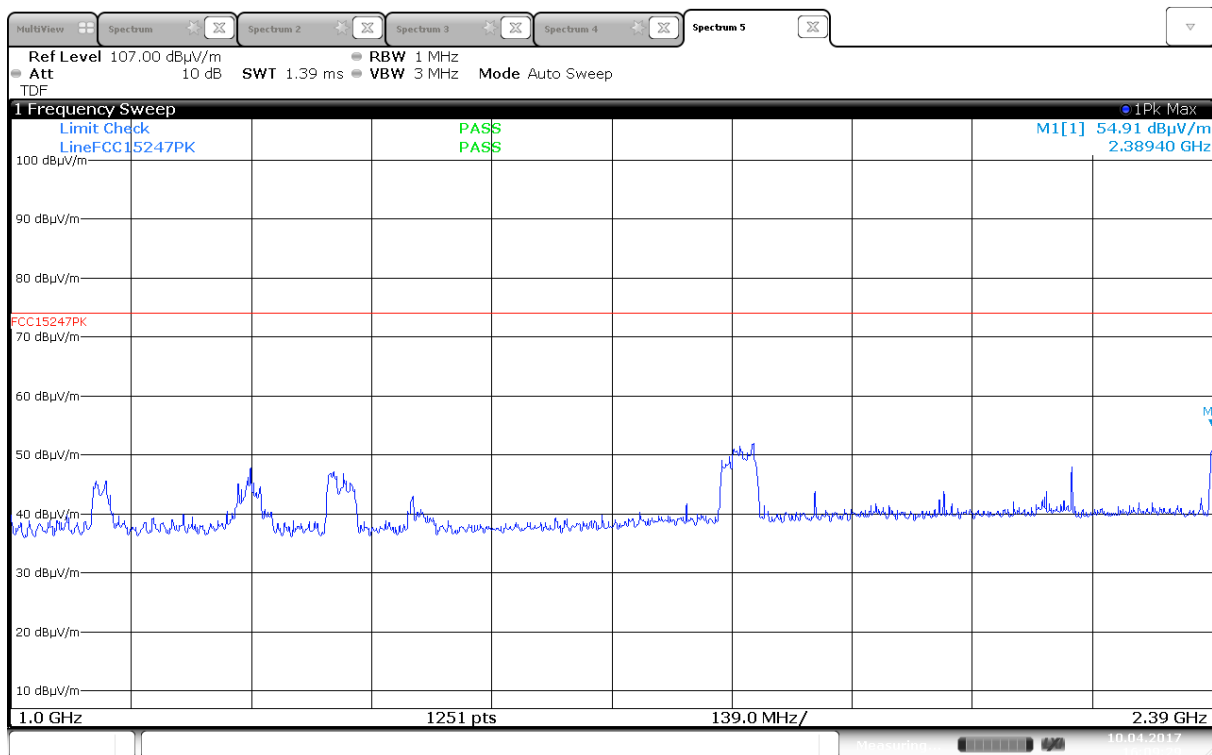
Radiated Emissions, 1000 -2390 MHz, 2412MHz, 802.11g, 6Mb, Ant0, VP



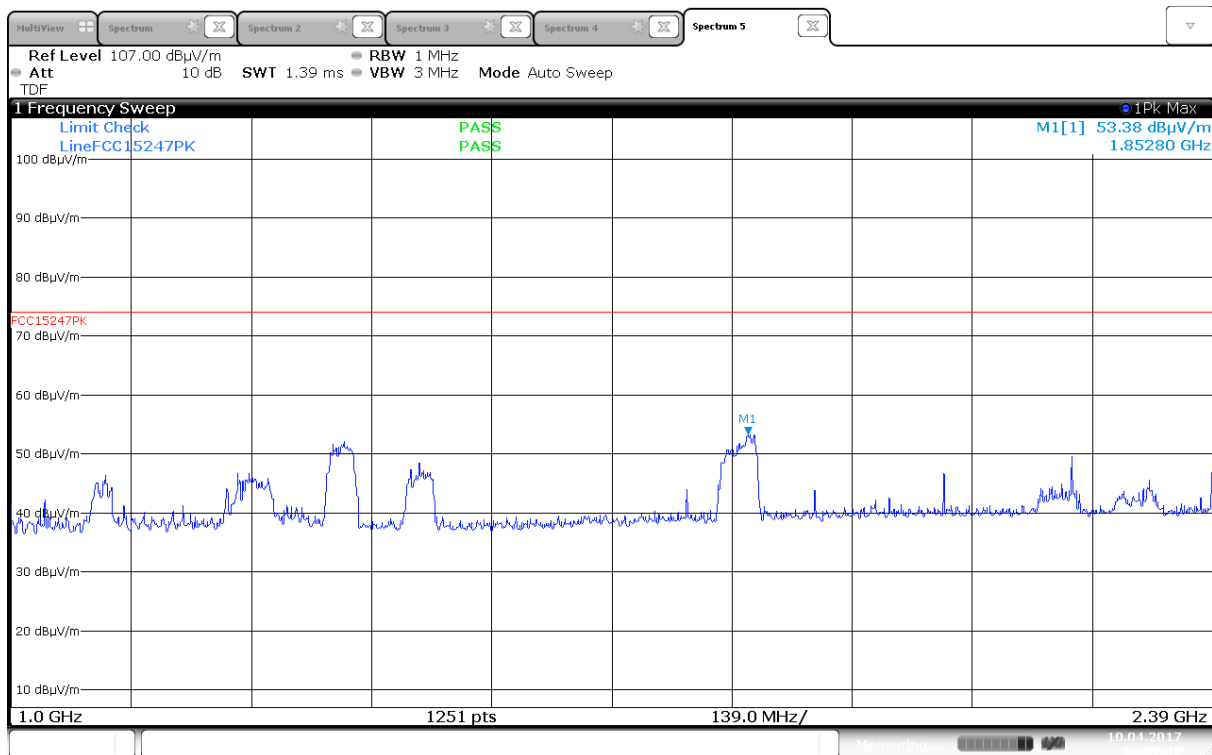
Radiated Emissions, 1000 -2390 MHz, 2412MHz, 802.11g, 6Mb, Ant1, HP



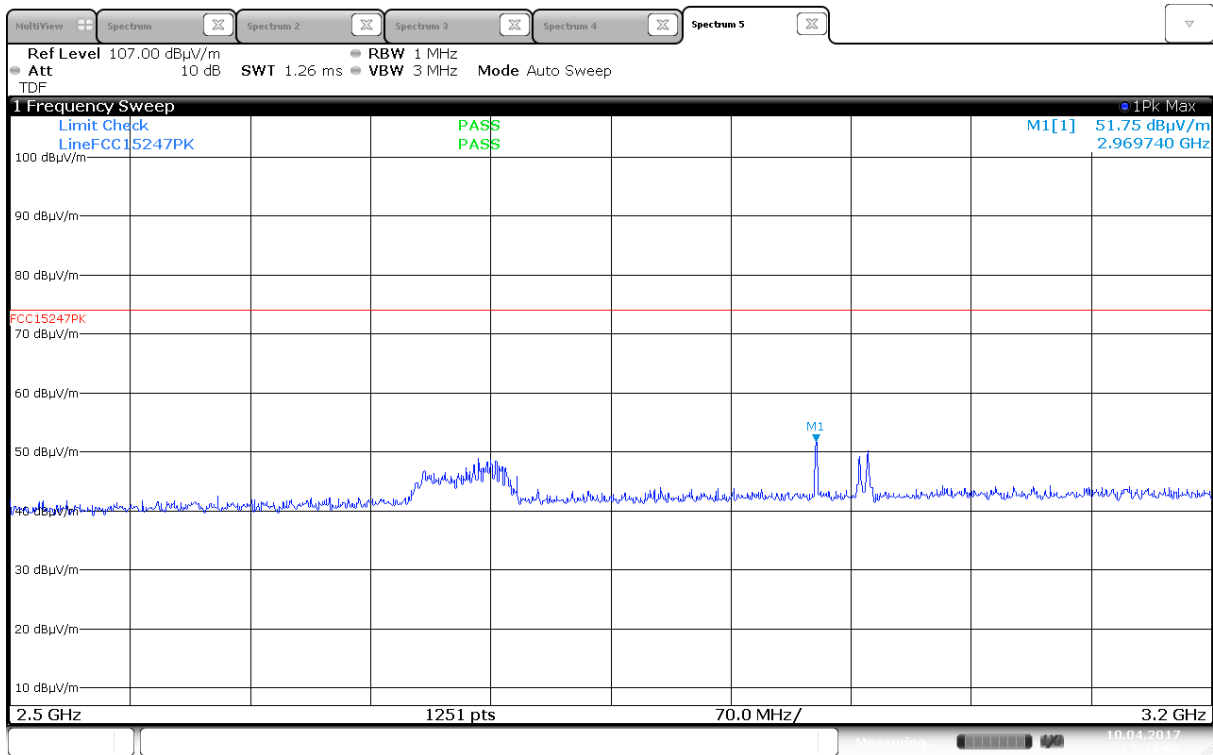
Radiated Emissions, 1000 -2390 MHz, 2412MHz, 802.11g, 6Mb, Ant1, VP



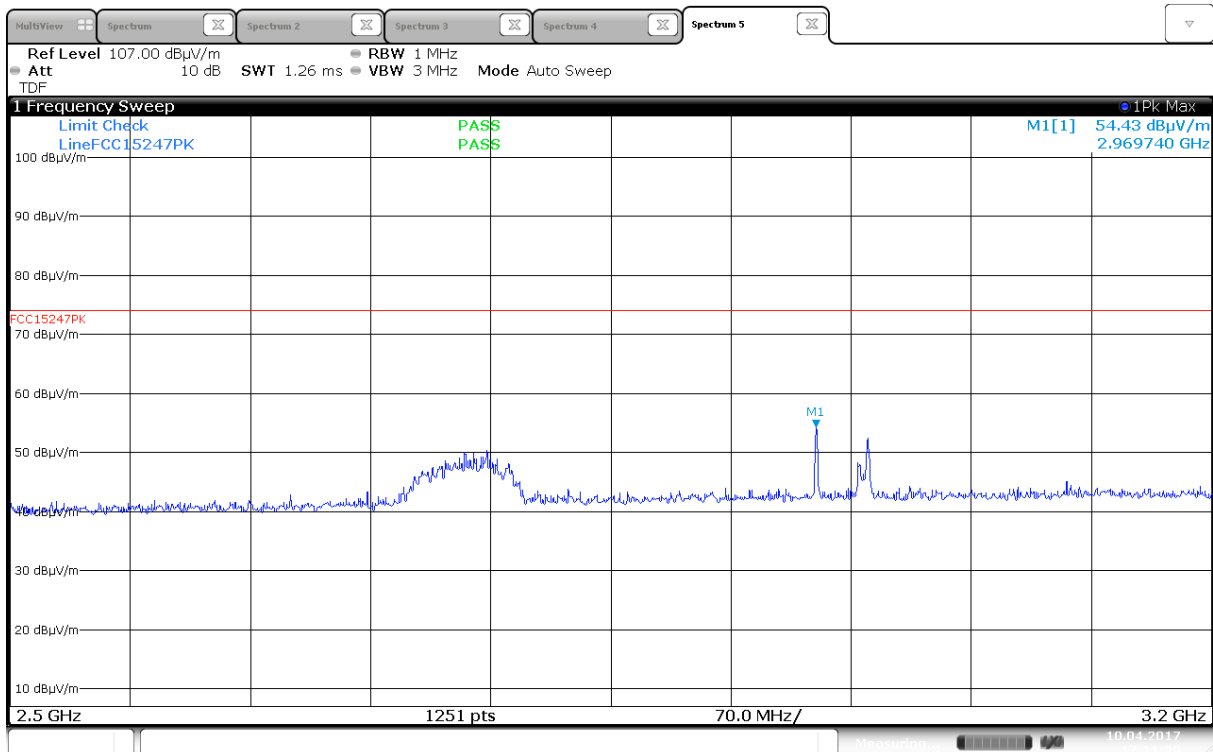
Radiated Emissions, 1000 -2390 MHz, 2412MHz, 802.11n, MCS0, MIMO, HP



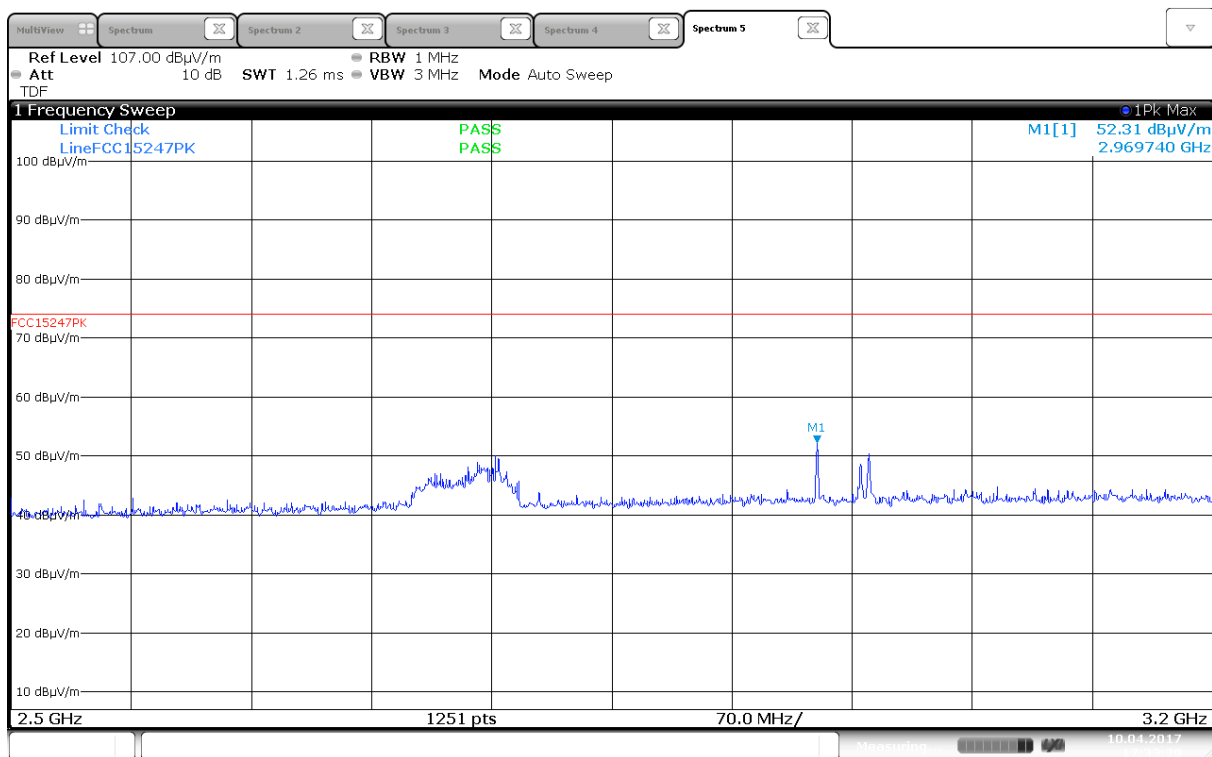
Radiated Emissions, 1000 -2390 MHz, 2412MHz, 802.11n, MCS0, MIMO, VP



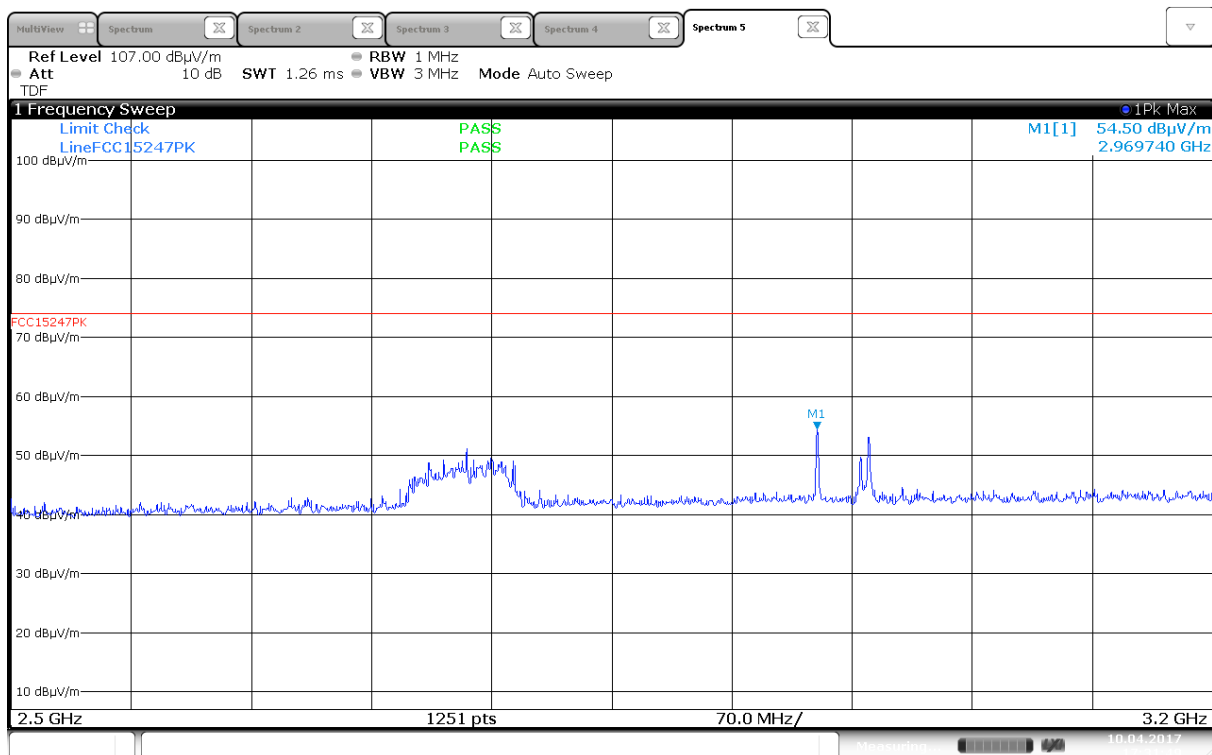
Radiated Emissions, 2500 -3200 MHz, 2462MHz, 802.11b, 1Mbps, Ant0, HP



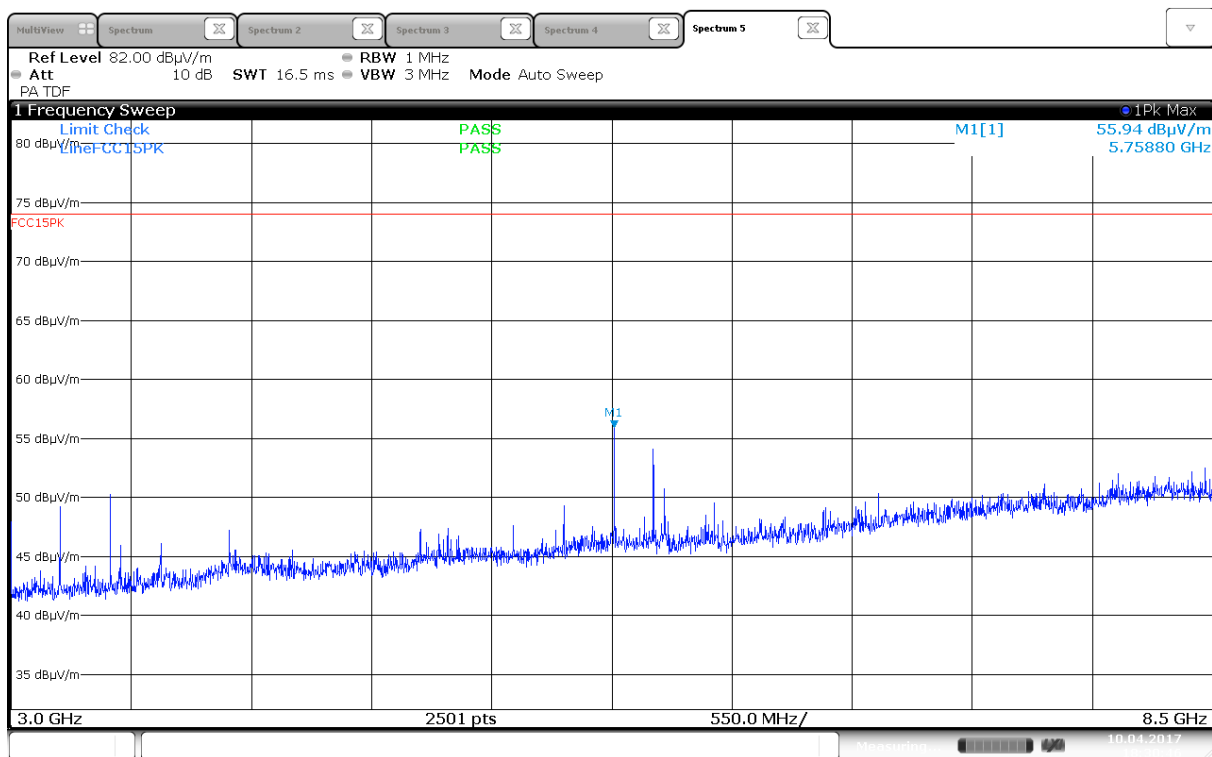
Radiated Emissions, 2500 -3200 MHz, 2462MHz, 802.11b, 1Mbps, Ant0, VP



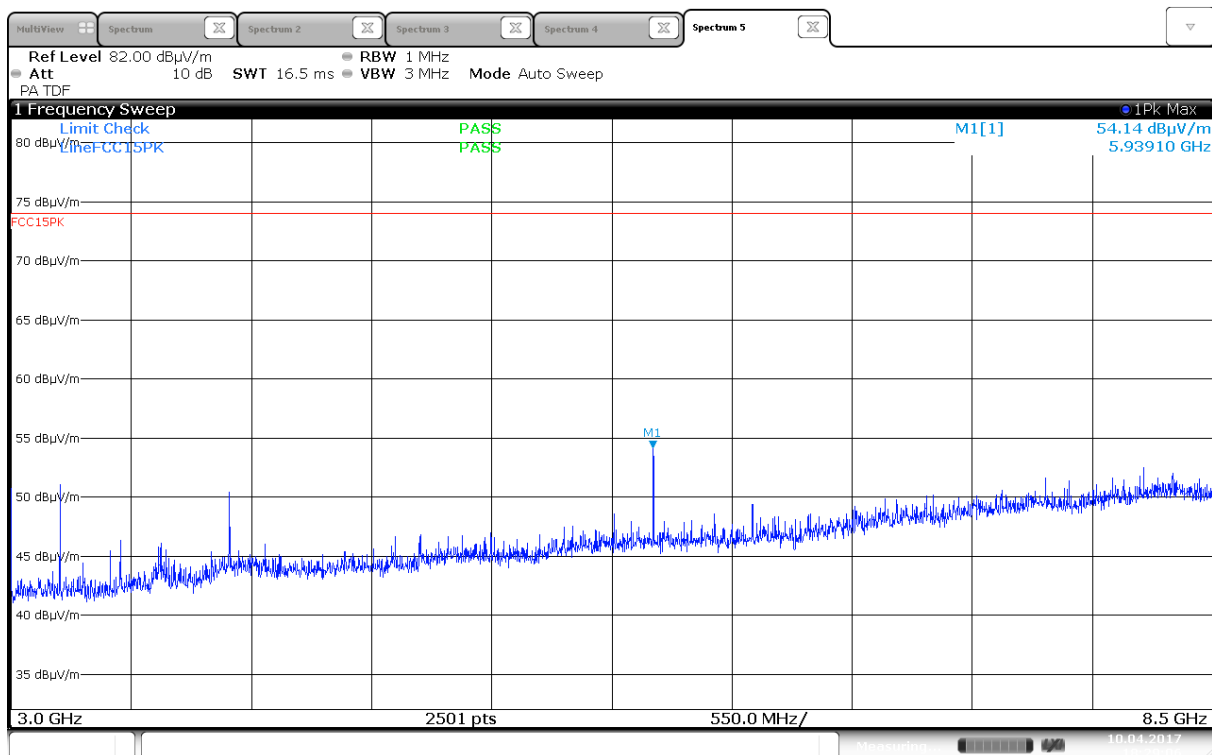
Radiated Emissions, 2500 -3200 MHz, 2462MHz, 802.11n, MCS0, MIMO, HP



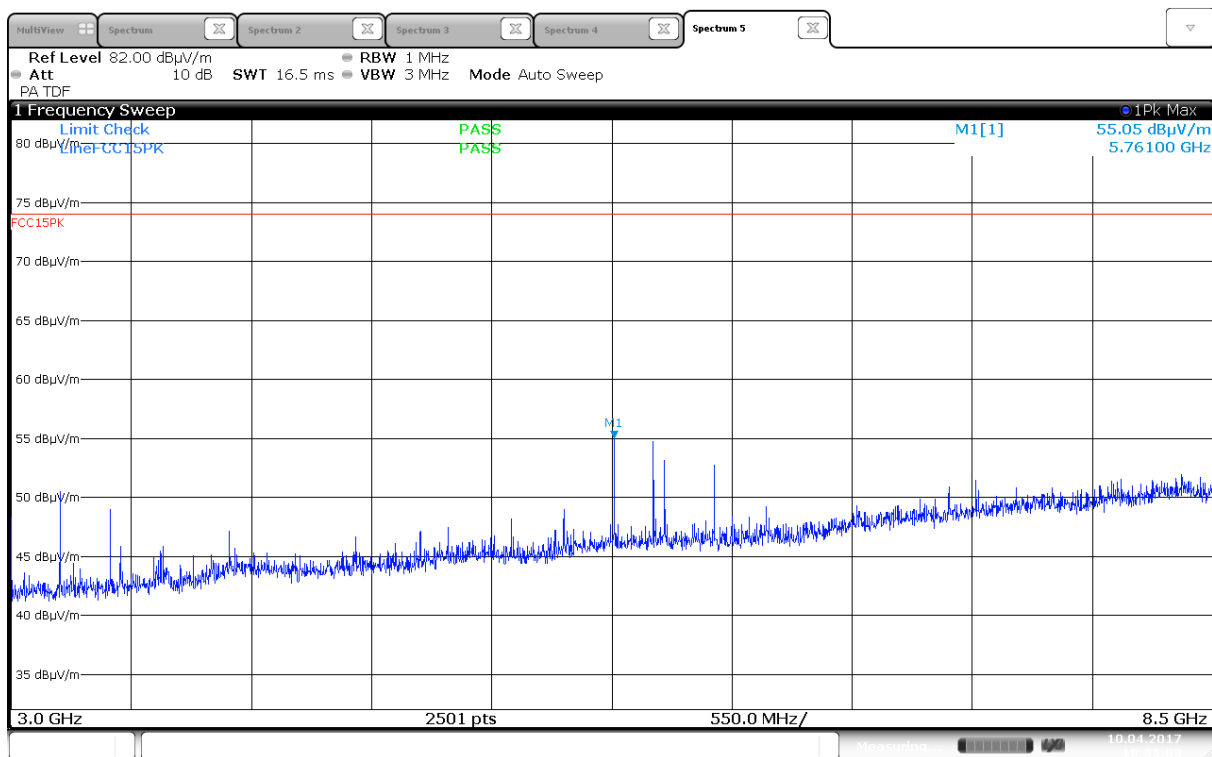
Radiated Emissions, 2500 -3200 MHz, 2462MHz, 802.11n, MCS0, MIMO, VP



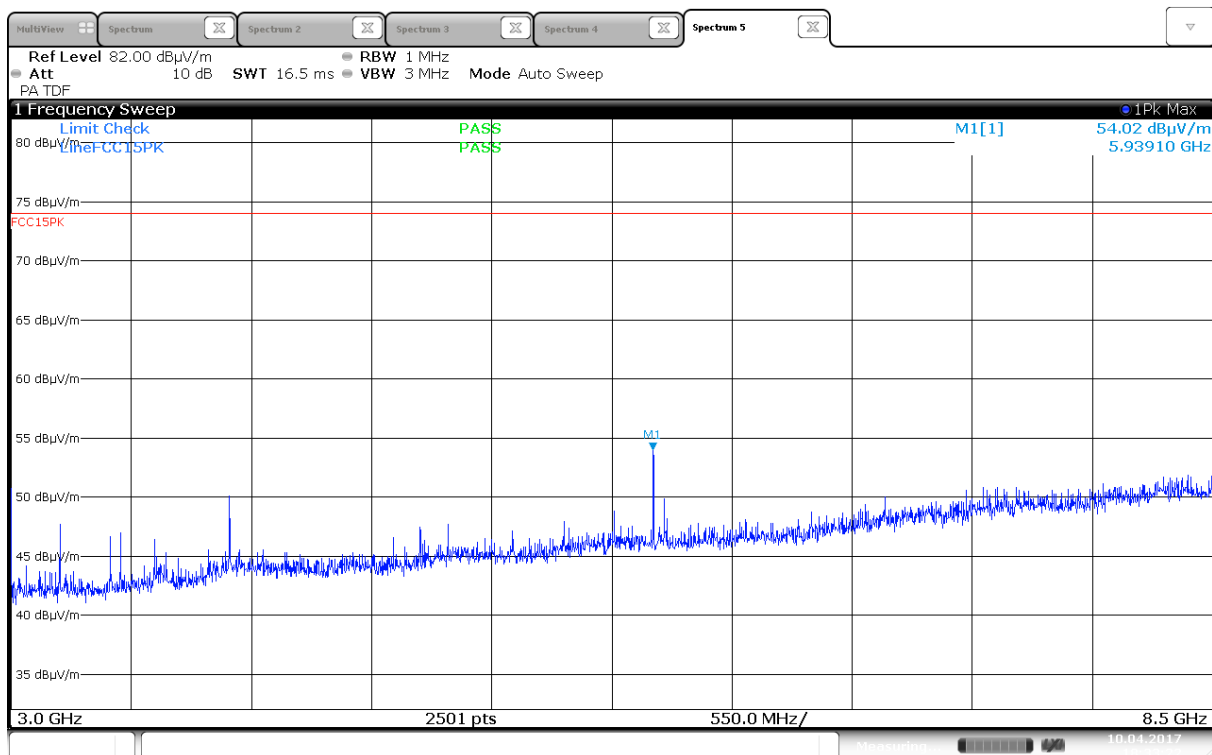
Radiated Emissions, 3000 -8500 MHz, 2437MHz, 802.11b, 1Mbps, Ant0, HP



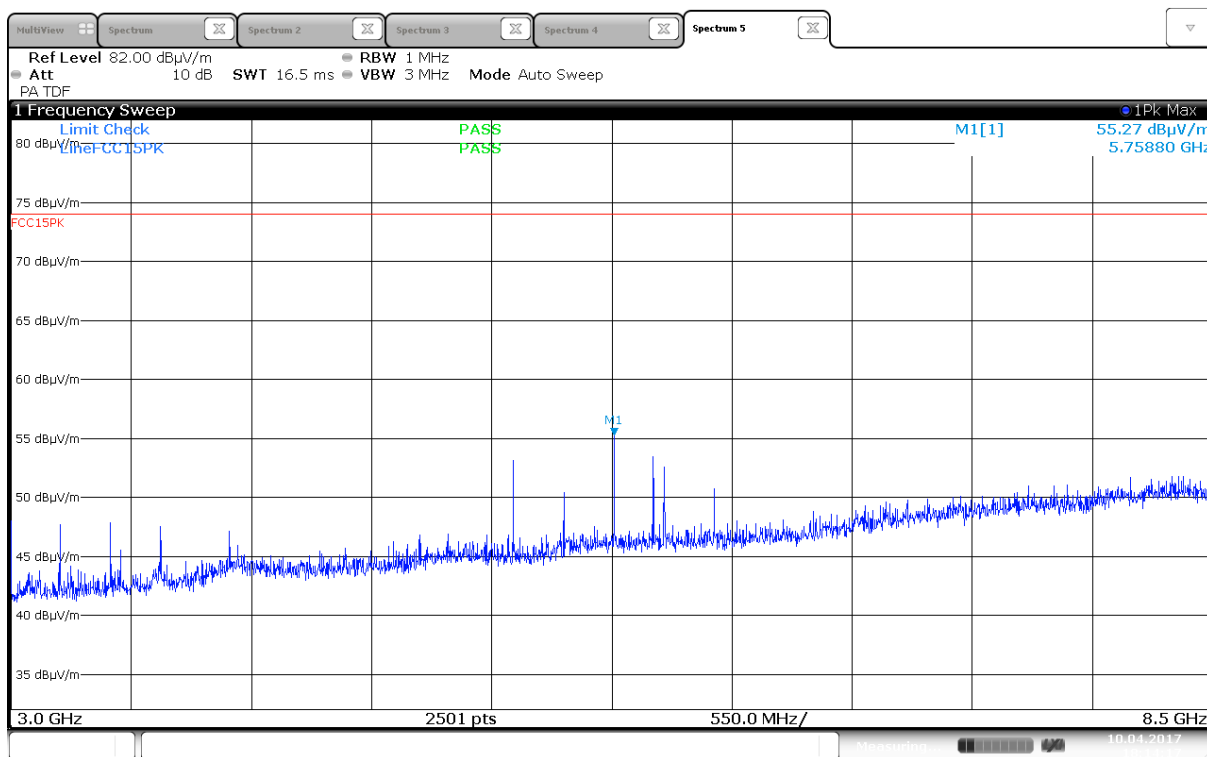
Radiated Emissions, 3000 -8500 MHz, 2437MHz, 802.11b, 1Mbps, Ant0, VP



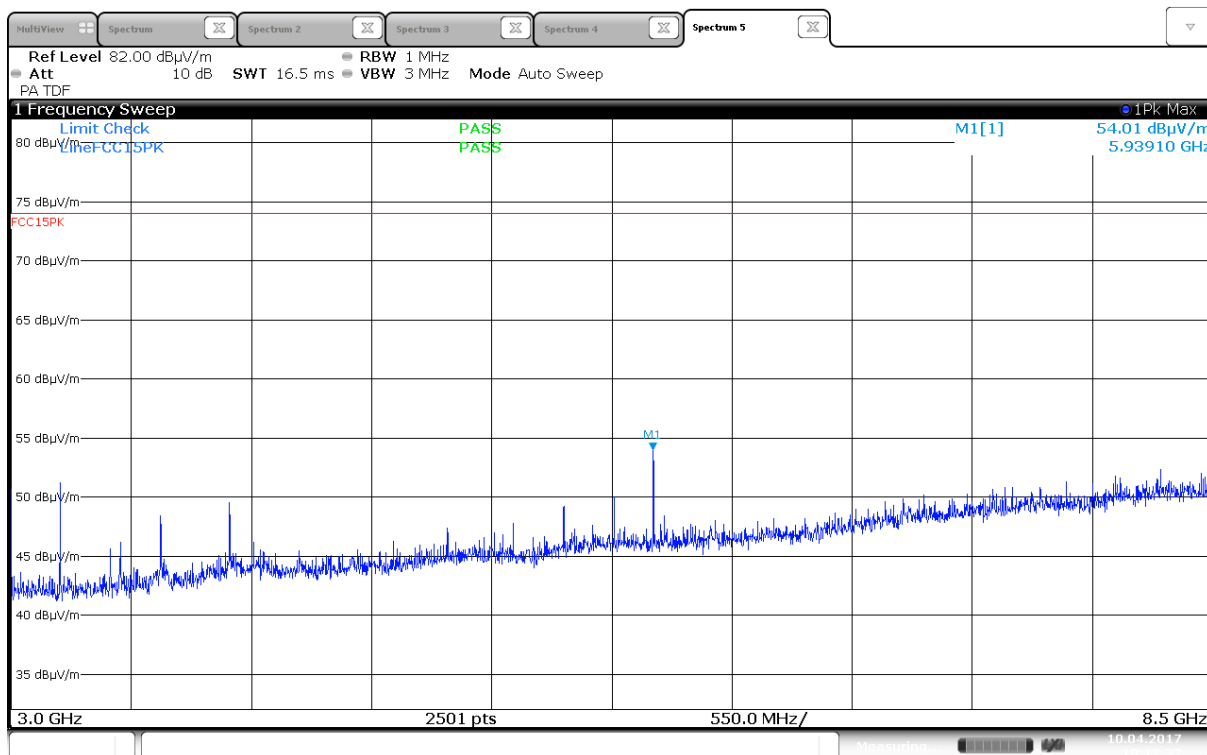
Radiated Emissions, 3000 -8500 MHz, 2437MHz, 802.11b, 1Mbps, Ant1, HP



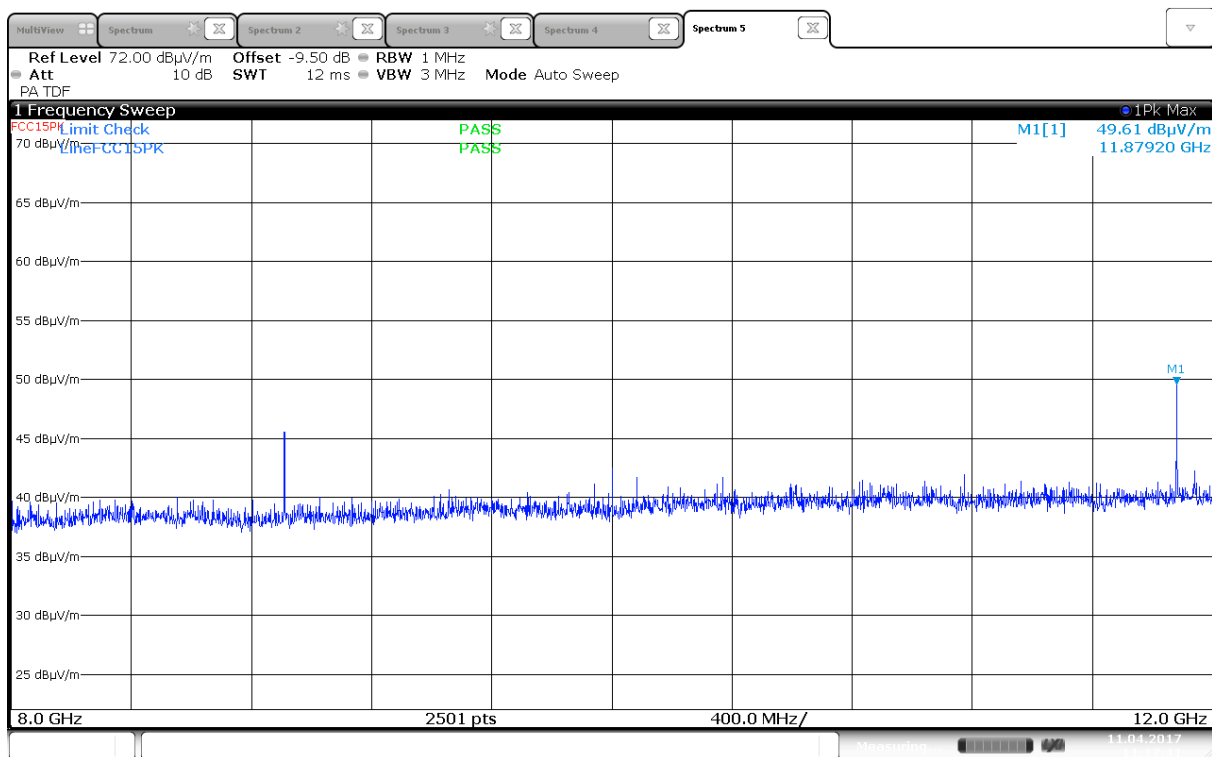
Radiated Emissions, 3000 -8500 MHz, 2437MHz, 802.11b, 1Mbps, Ant1, VP



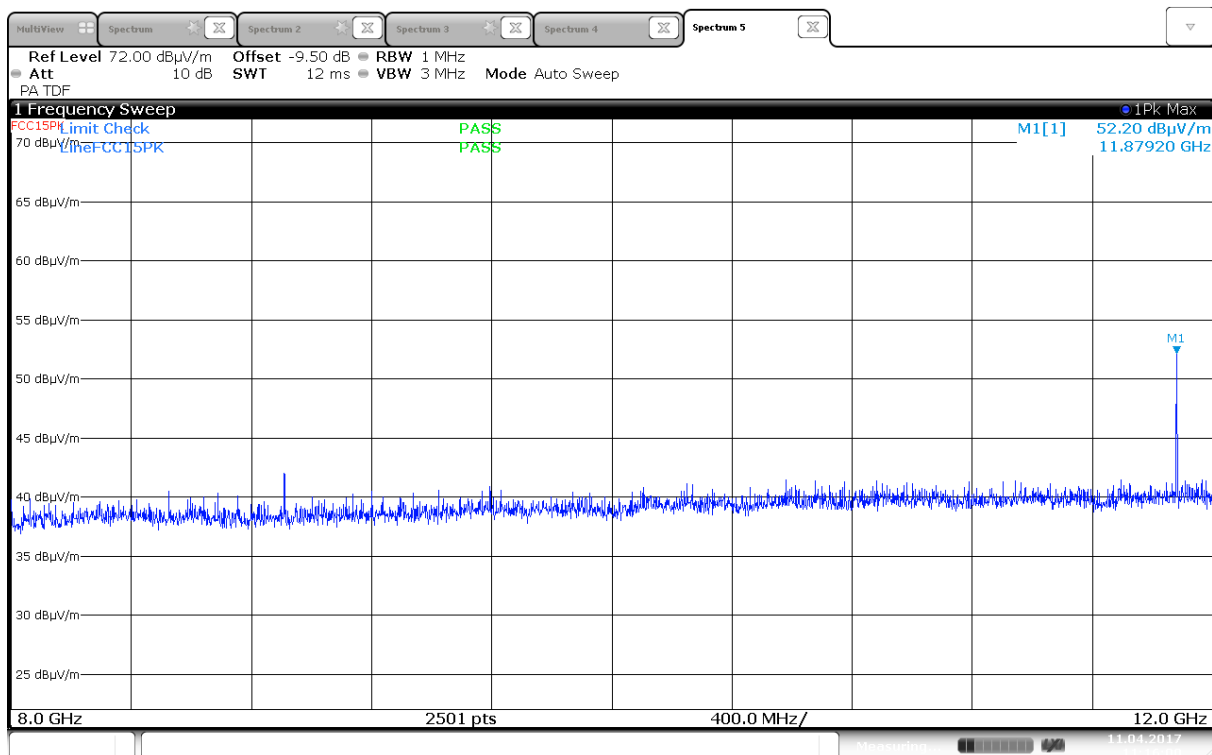
Radiated Emissions, 3000 -8500 MHz, 2437MHz, 802.11n, HT20, MIMO, HP



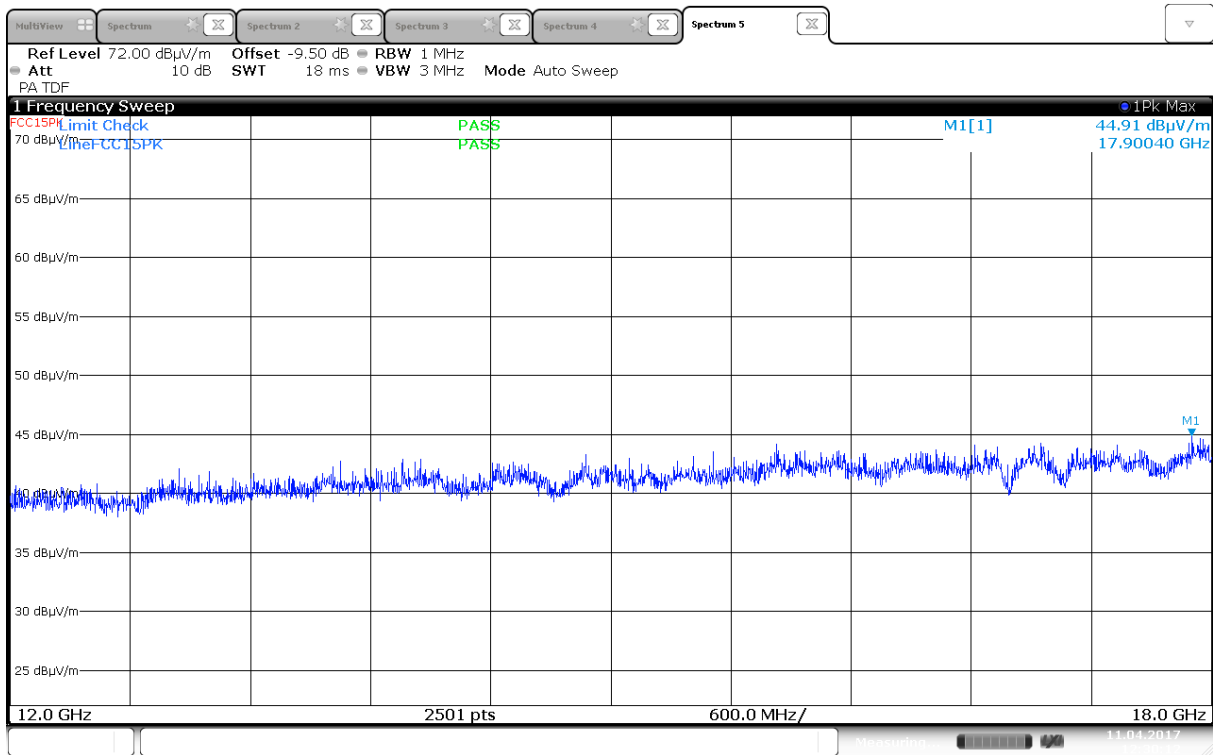
Radiated Emissions, 3000 -8500 MHz, 2437MHz, 802.11n, HT20, MIMO, VP



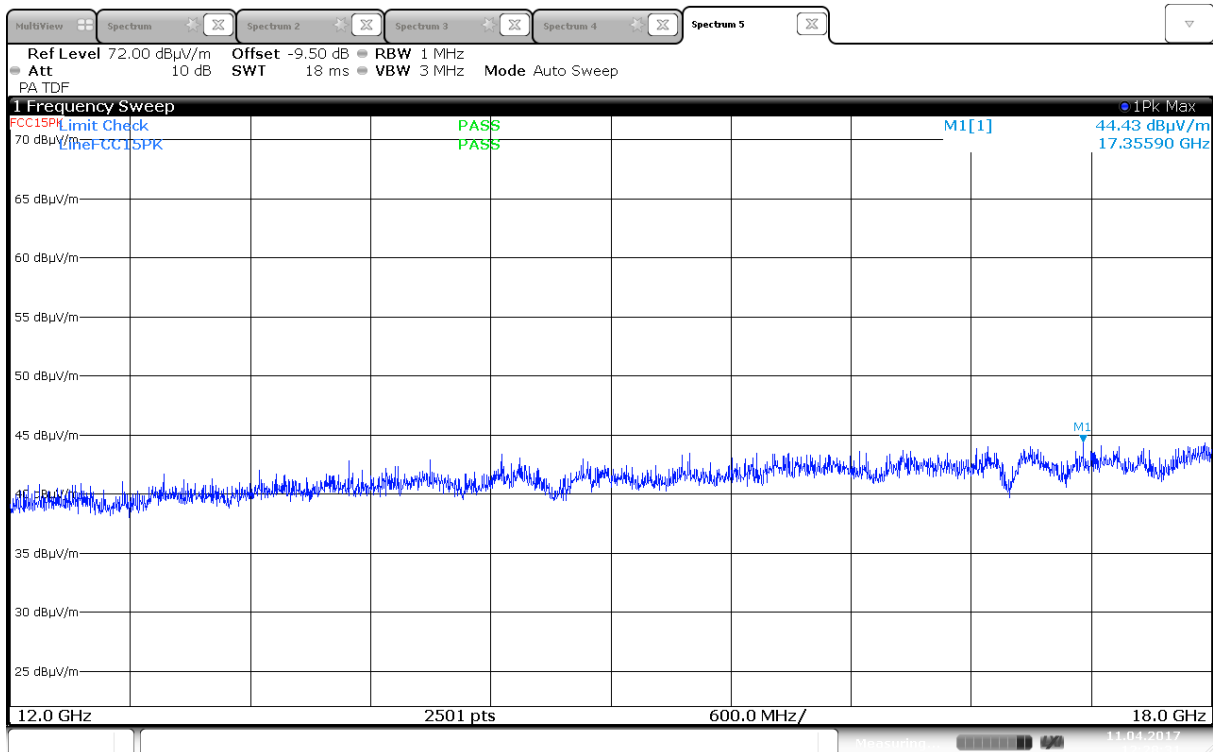
Radiated Emissions, 8000 -12000 MHz, 2437MHz, 802.11n, HT20, MIMO, HP, @1m



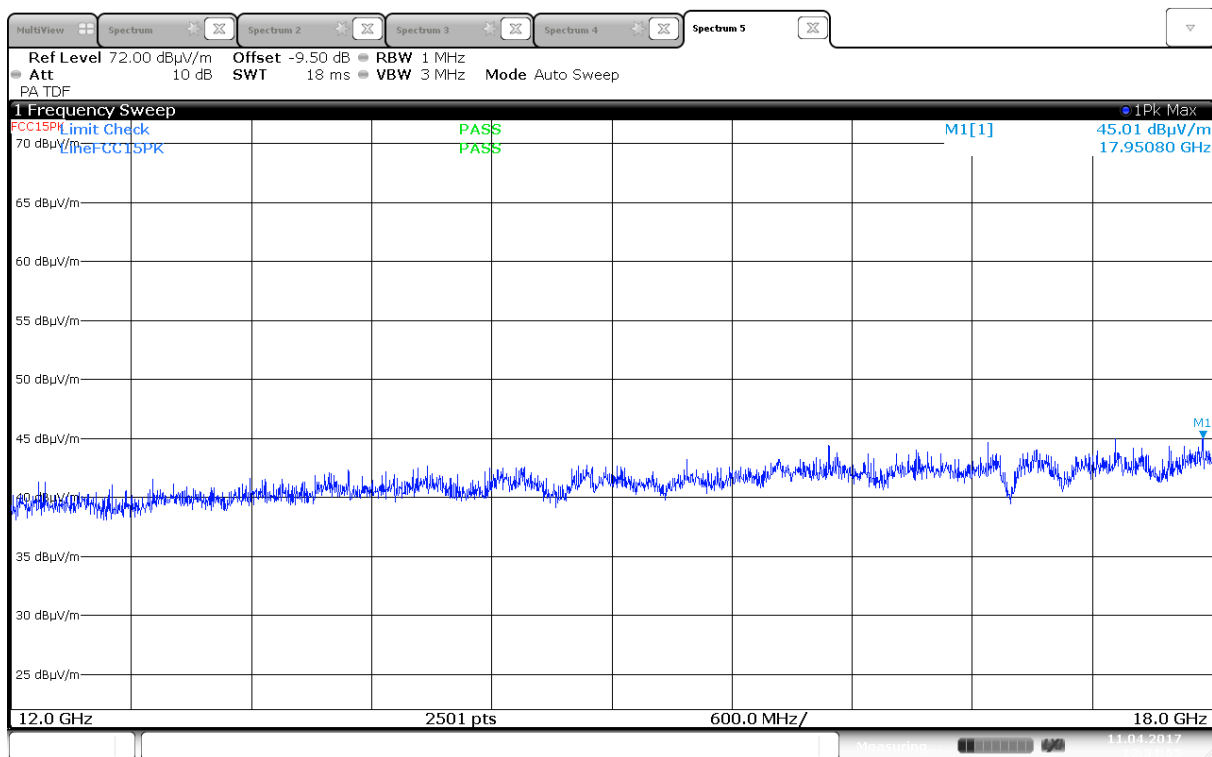
Radiated Emissions, 8000 -12000 MHz, 2437MHz, 802.11n, HT20, MIMO, VP, @1m



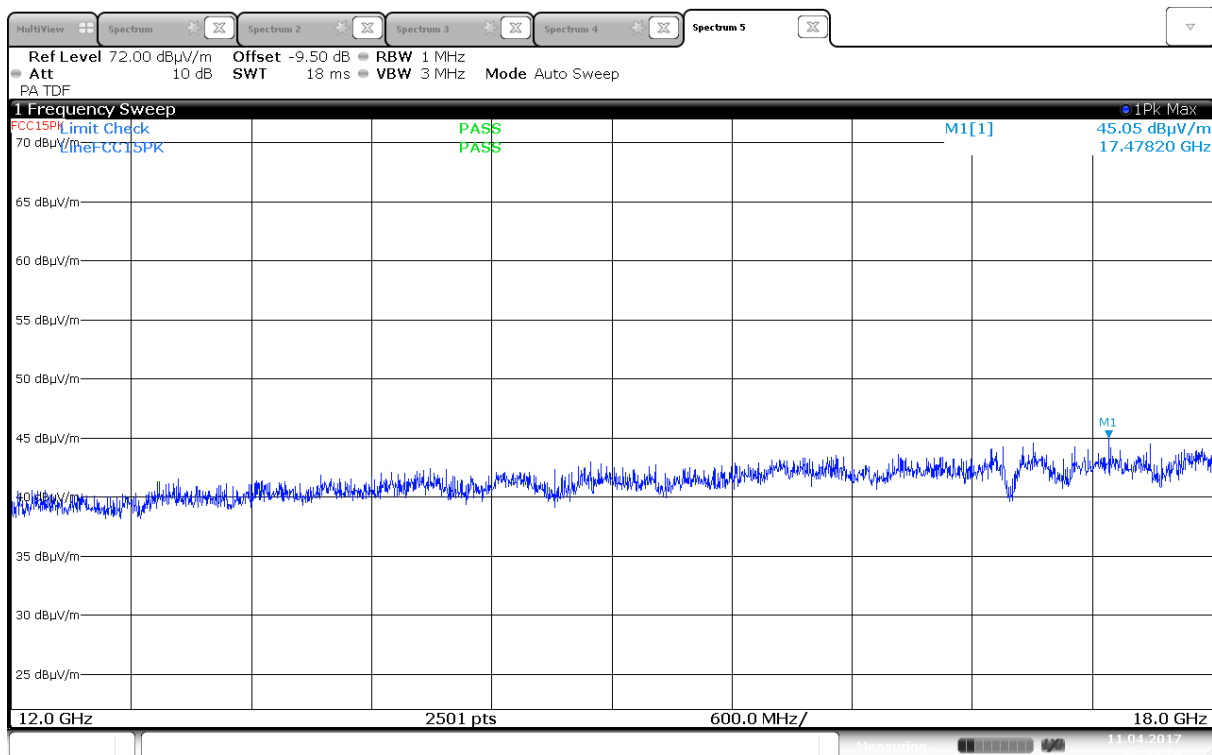
Radiated Emissions, 12000 -18000 MHz, 2437MHz, 802.11b, 1Mbps, Ant0, HP, @1m



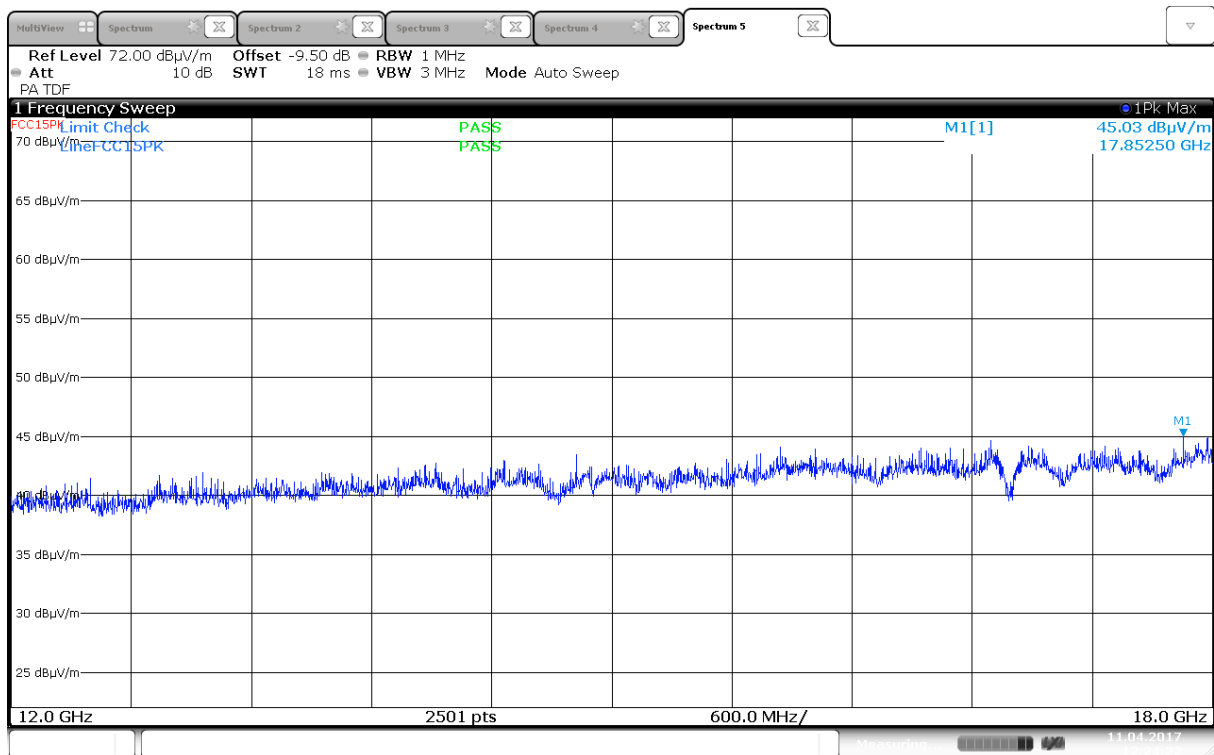
Radiated Emissions, 12000 -18000 MHz, 2437MHz, 802.11b, 1Mbps, Ant0, VP, @1m



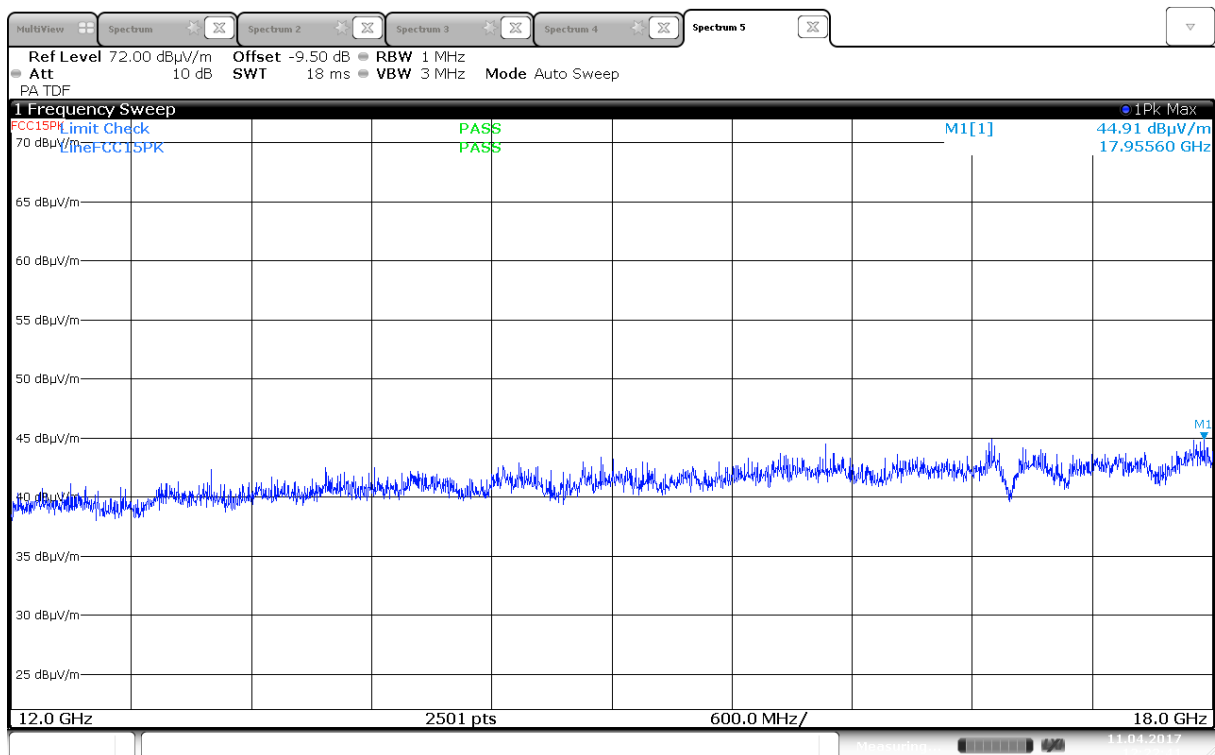
Radiated Emissions, 12000 -18000 MHz, 2437MHz, 802.11b, 1Mbps, Ant1, HP, @1m



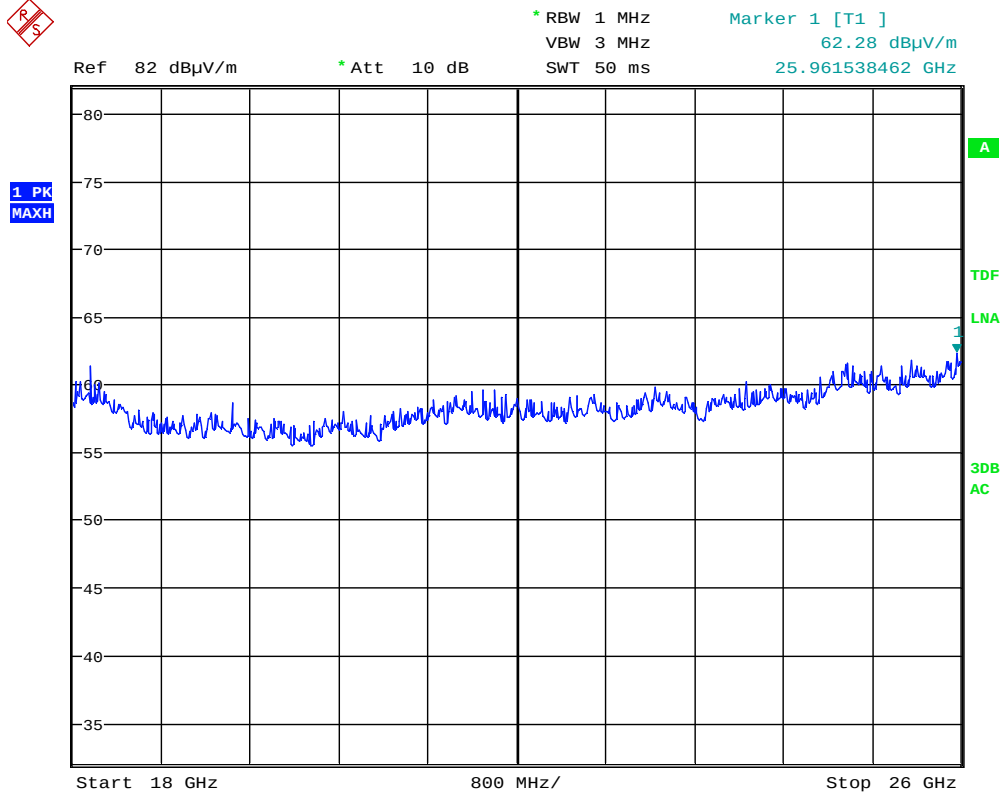
Radiated Emissions, 12000 -18000 MHz, 2437MHz, 802.11b, 1Mbps, Ant1, VP, @1m



Radiated Emissions, 12000 -18000 MHz, 2437MHz, 802.11n, MCS0, MIMO, HP, @1m

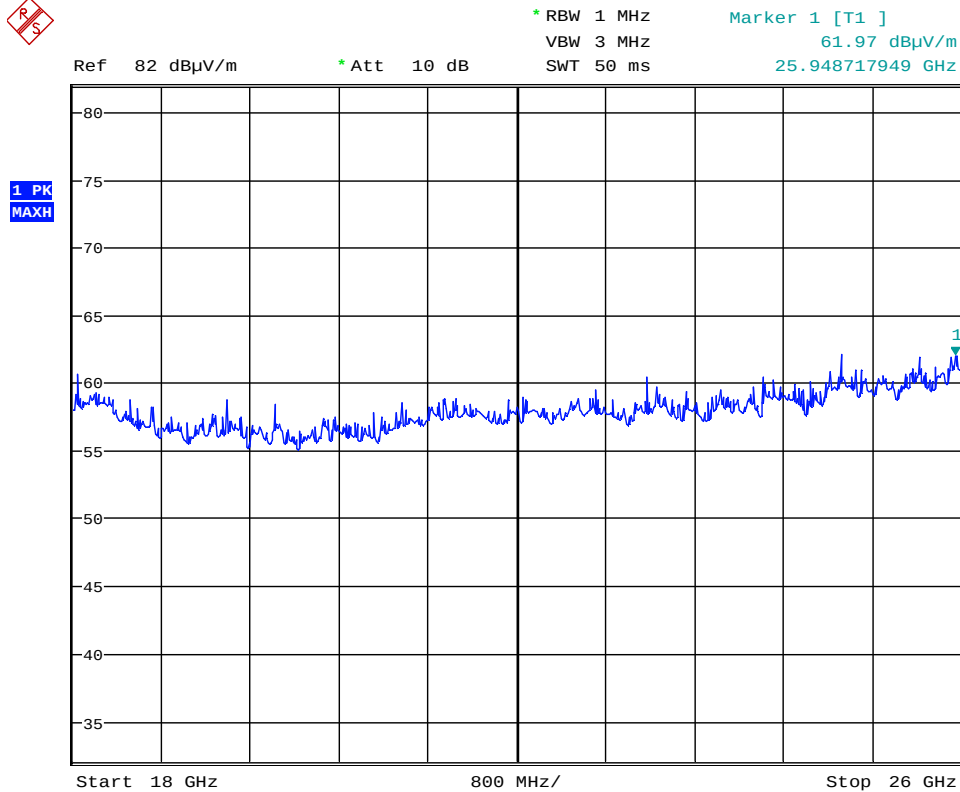


Radiated Emissions, 12000 -18000 MHz, 2437MHz, 802.11n, MCS0, MIMO, VP, @1m



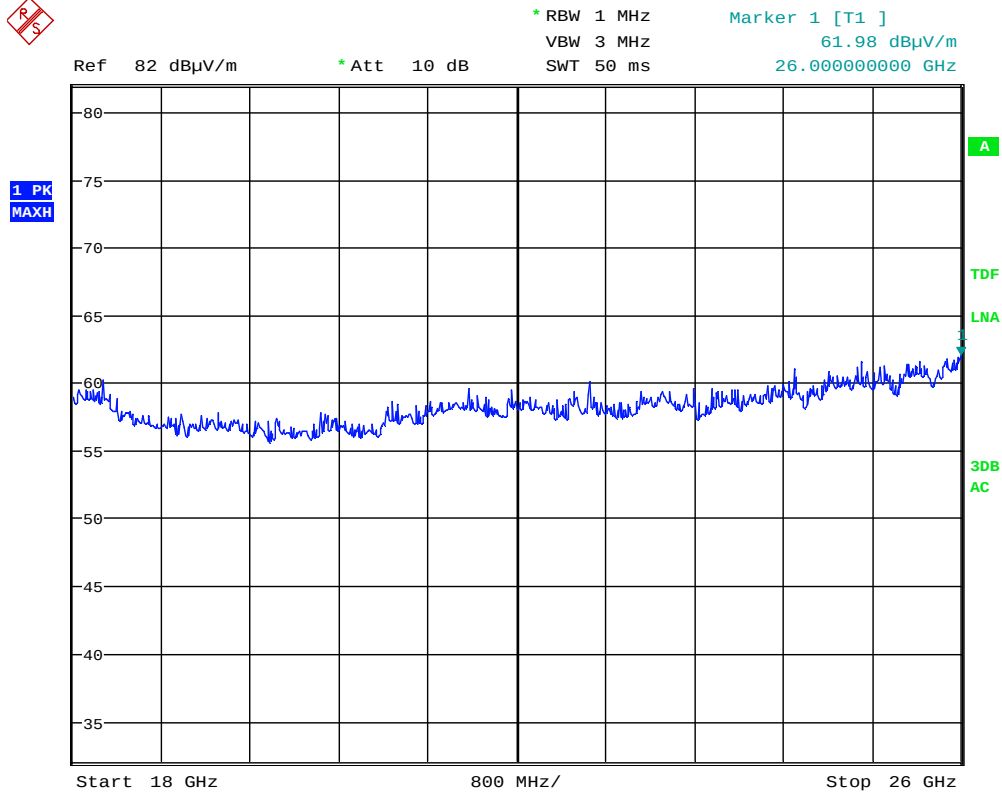
Date: 11.APR.2017 14:39:04

Pre-scan, 18000 -25000 MHz, 2437MHz, 802.11b, 6Mbps, Ant0 (@ ≈10cm)



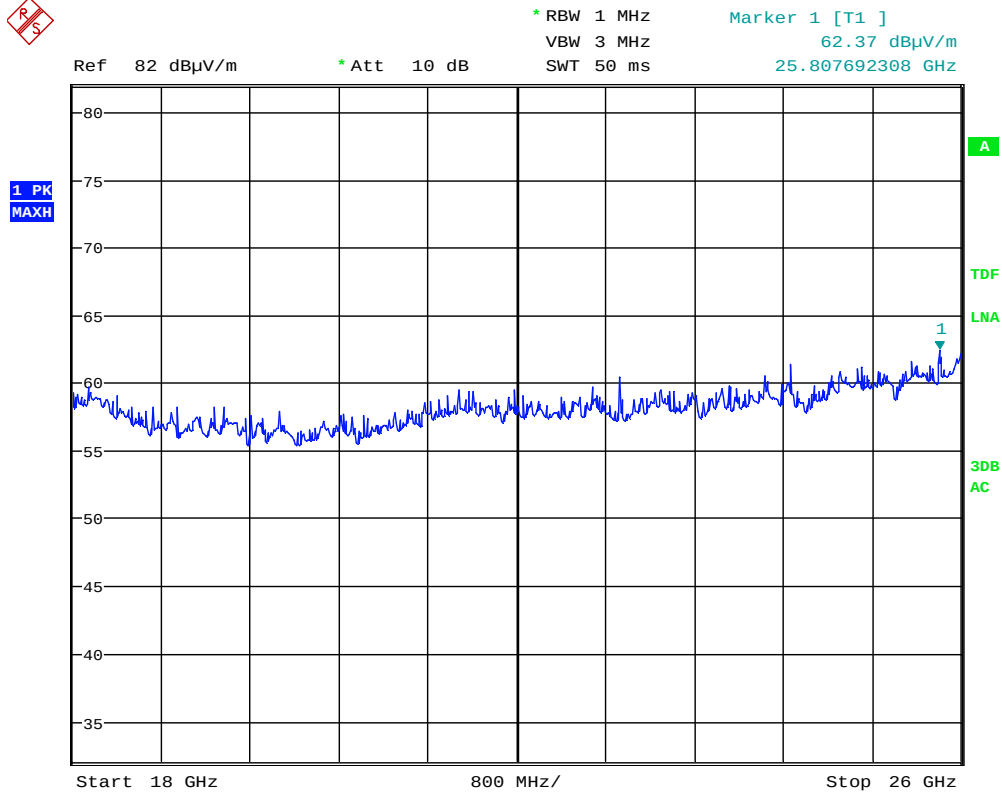
Date: 11.APR.2017 14:40:12

Pre-scan, 18000 -25000 MHz, 2437MHz, 802.11b, 6Mbps, Ant1 (@ ≈10cm)



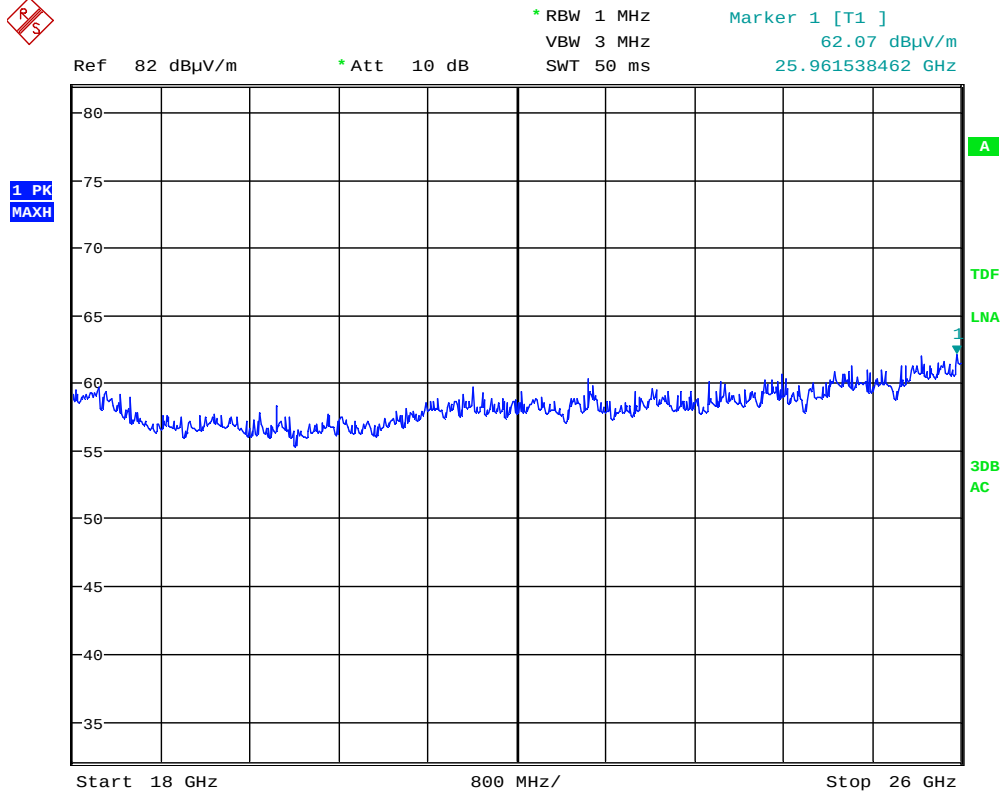
Date: 11.APR.2017 14:34:41

Pre-scan, 18000 -25000 MHz, 2437MHz, 802.11g, 6Mbps, Ant0 (@ ≈10cm)



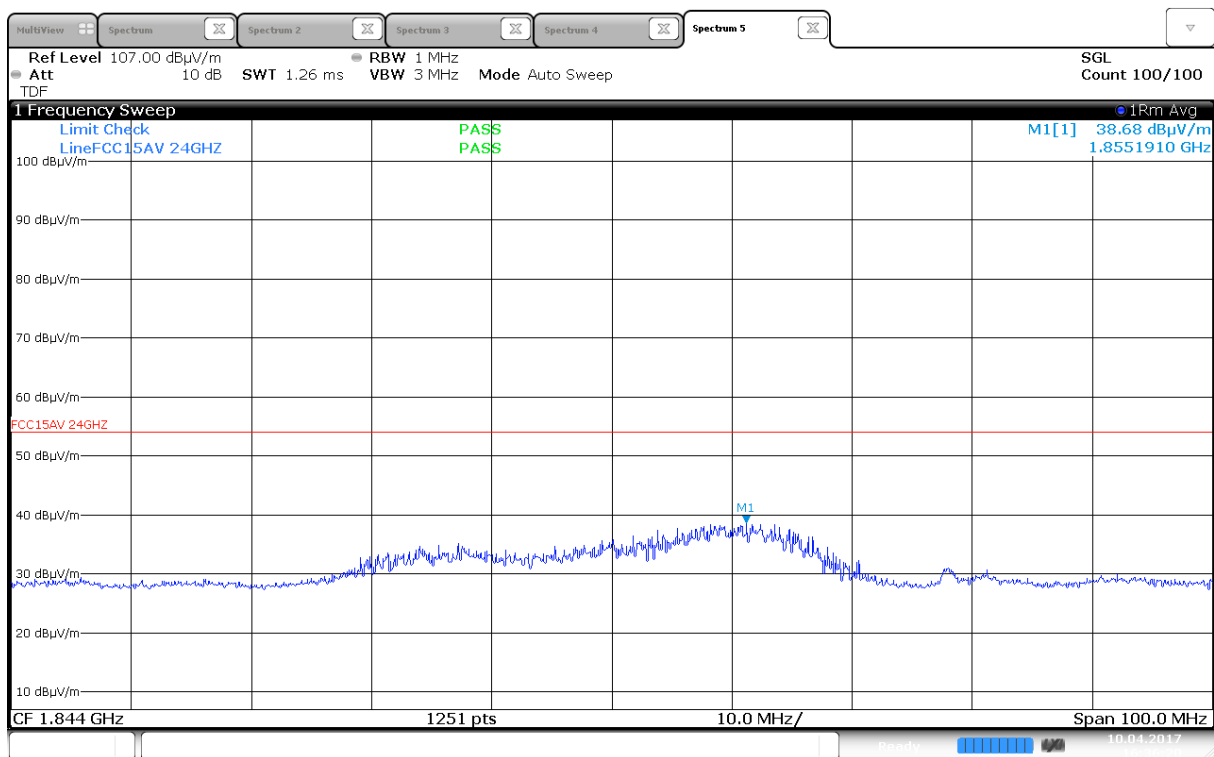
Date: 11.APR.2017 14:36:11

Pre-scan, 18000 -25000 MHz, 2437MHz, 802.11g, 6Mbps, Ant1 (@ ≈10cm)

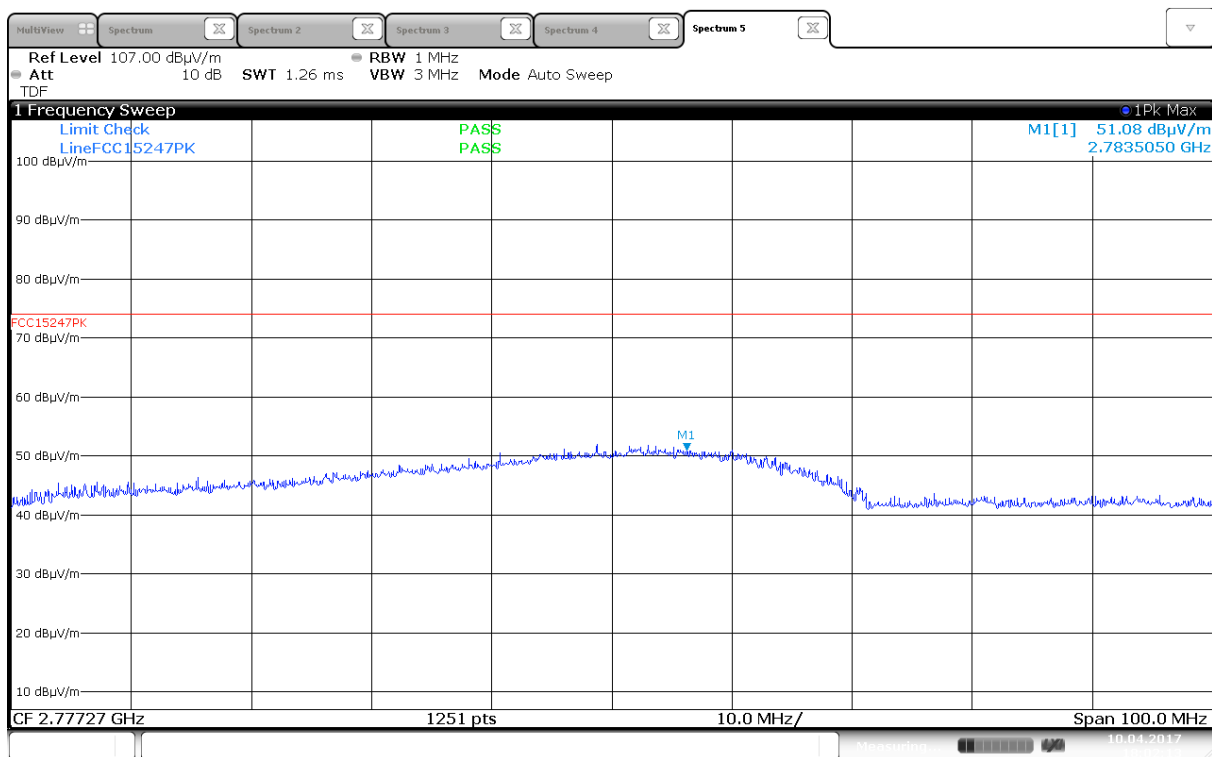


Date: 11.APR.2017 14:31:20

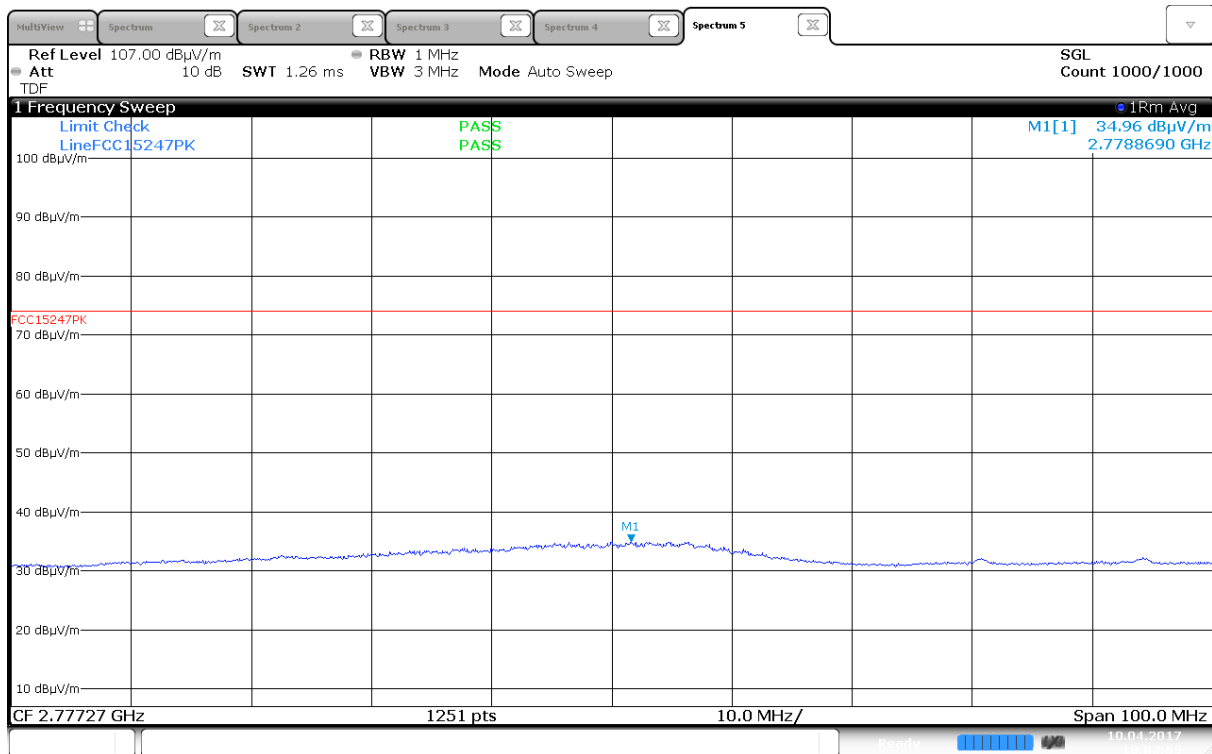
Pre-scan, 18000 -25000 MHz, 2437MHz, 802.11n, MCS0, MIMO (@ ≈10cm)



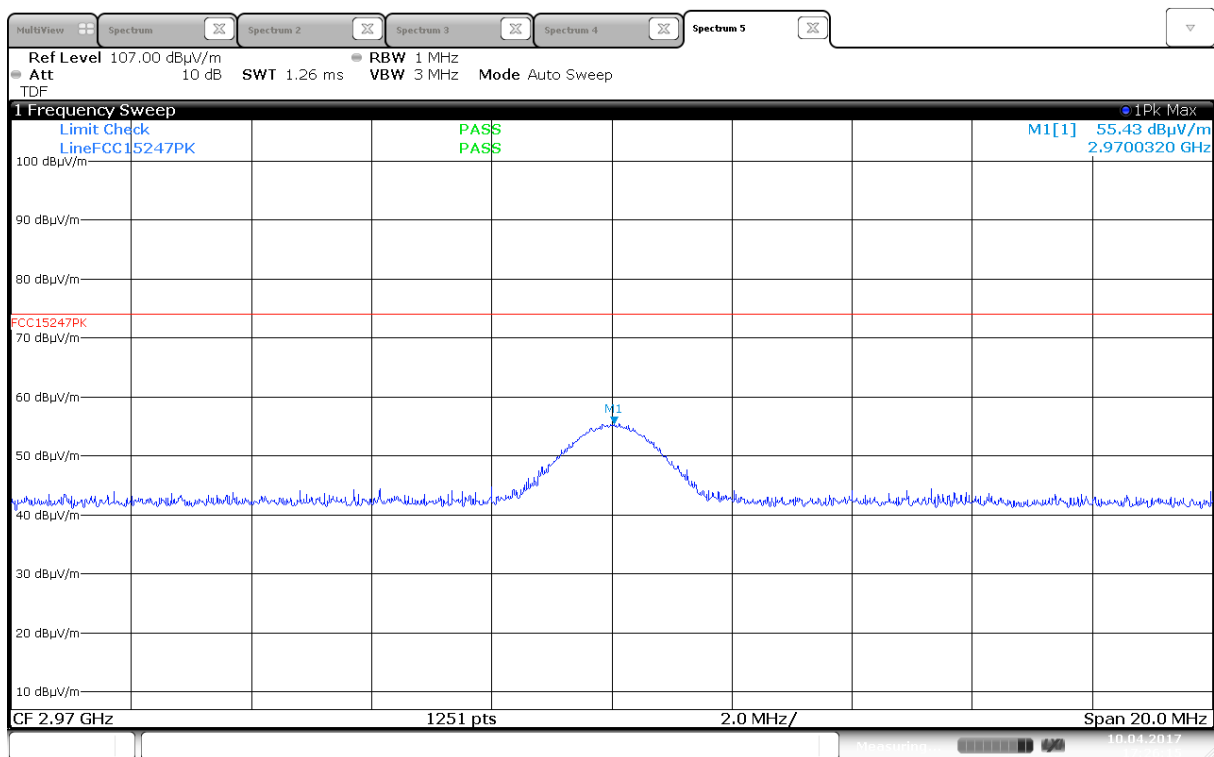
Radiated Emissions Av, 1844MHz, 2412MHz (Max: VP)
(Same for all RF-modulations and frequencies)



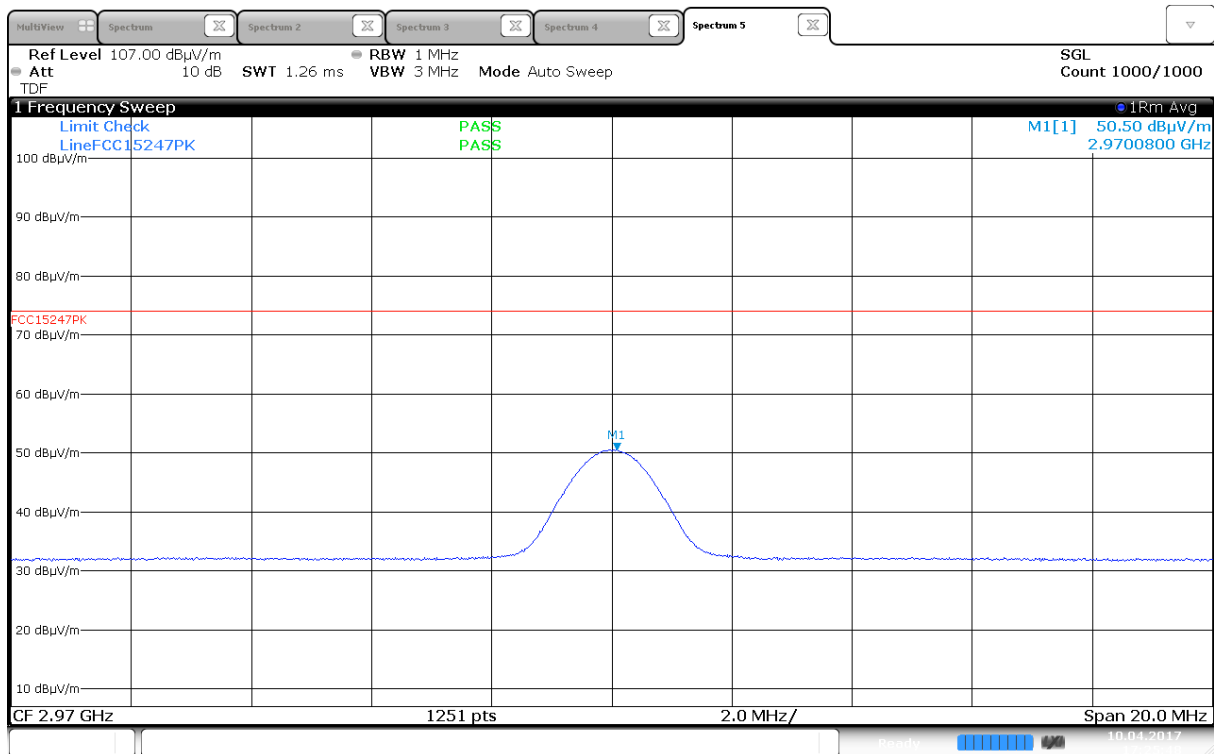
Radiated Emissions Pk, 2779MHz, 2452MHz (Max: HP)
(Same for all RF-modulations and frequencies)



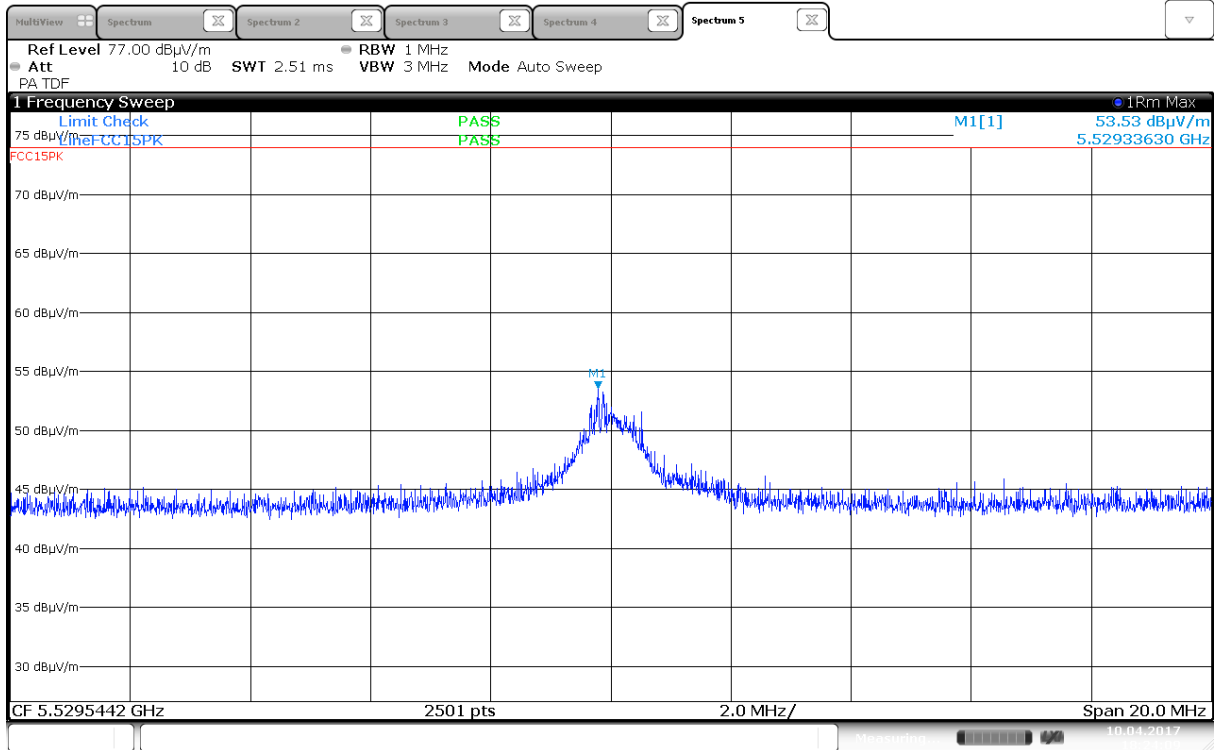
Radiated Emissions Av, 2779MHz, 2452MHz (Max: HP)
(Same for all RF-modulations and frequencies)



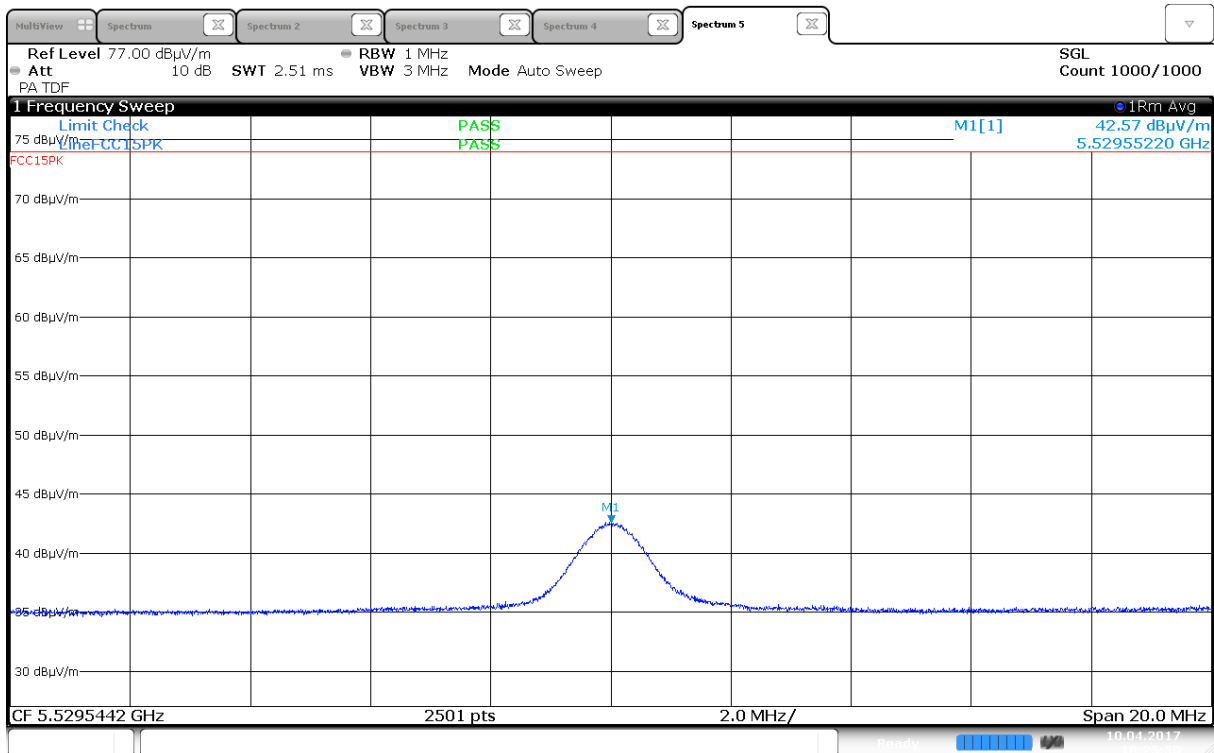
Radiated Emissions Pk, 2970MHz, 2462MHz (Max: HP)
(Same for all RF-modulations and frequencies)



Radiated Emissions Av, 2970MHz, 2462MHz (Max: HP)
(Same for all RF-modulations and frequencies)



Radiated Emissions Pk, 5530MHz, 2437MHz (Max: HP)
(Same for all RF-modulations and frequencies)



Radiated Emissions Av, 5530MHz, 2437MHz (Max: HP)
(Same for all RF-modulations and frequencies)

4 Measurement Uncertainty

Measurement Uncertainty Values		
Test Item		Uncertainty
Output Power		±0.5 dB
Power Spectral Density		±0.5 dB
Out of Band Emissions, Conducted	< 3.6 GHz	±0.6 dB
	> 3.6 GHz	±0.9 dB
Spurious Emissions, Radiated	< 1 GHz	±2.5 dB
	> 1 GHz	±2.2 dB
Emission Bandwidth		±4 %
Power Line Conducted Emissions		+2.9 / -4.1 dB
Spectrum Mask Measurements	Frequency	±5 %
	Amplitude	±1.0 dB
Frequency Error		±0.6 ppm
Temperature Uncertainty		±1 °C

All uncertainty values are expanded standard uncertainty to give a confidence level of 95%, based on coverage factor k=2

5 LIST OF TEST EQUIPMENT

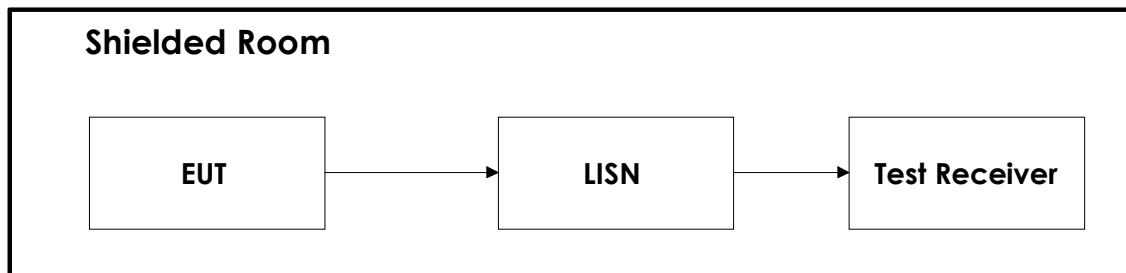
To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment and ancillaries are identified (numbered) by the Test Laboratory.

No.	Model	Description	Manufacturer	Asset no.	Cal. date	Cal. Due
1	FSW26	Spectrum Analyzer	Rohde & Schwarz	LR 1640	2017.01	2018.01
2	ESU40	Measuring Receiver	Rohde & Schwarz	LR 1639	2016.12	2017.12
3	6HC3000/18000	Highpass Filter	Trilithic	LR 1614	Cal b4 use	
4	317	Preamplifier	Sonoma Instrument	LR 1687	2016.05	2017.05
5	8449A	Pre-amplifier	Hewlett Packard	LR 1322	2016.10	2017.10
6	6812B	AC Power Source	Agilent	LR 1515	Cal b4 use	
7	3115	Horn Antenna	EMCO	LR 1330	2016.10	2021.10
8	PM7320X	Antenna Horn	Sivers Lab	LR 102	2009.01	2019.01
9	DBF-520-20	Antenna Horn	Systron Donner	LR 100	2009.01	2019.01
10	638	Antenna Horn	Narda	LR 098	2010.06	2020.06
11	HK116	Biconical Antenna	Rohde & Schwarz	LR 1260	2013.12	2018.12
12	HL223	LogPeriod Antenna	Rohde & Schwarz	LR 1261	2013.12	2018.12
13	Model 87 V	Multimeter	Fluke	LR 1597	2016.10	2017.10
14	ESCI3	Measuring receiver	Rohde & Schwarz	N-4259	2015.08	2017.08
15	ESH3-Z2	Pulse Limiter	Rohde & Schwarz	LR 1074	2016.05	2017.05
16	ESH3-Z5	Two-Line V-Network	Rohde & Schwarz	N-3403	2015.07	2017.07

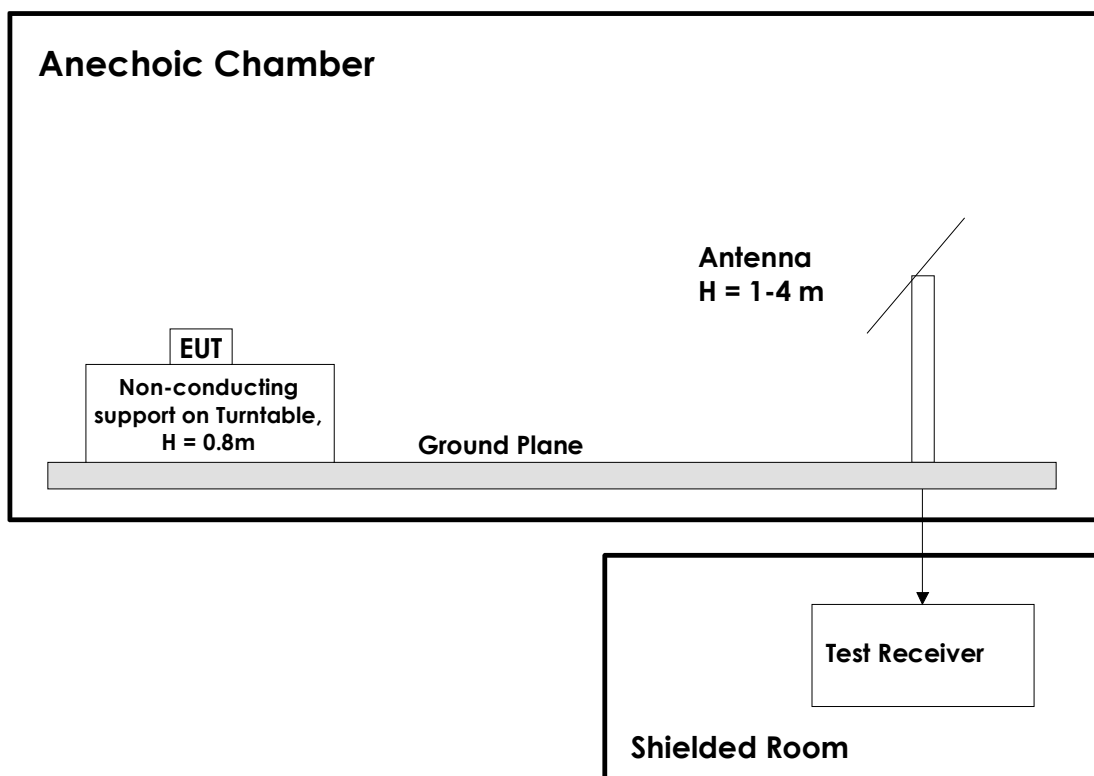
Test Software List			
Description	Manufacturer	Model	Version
EMC Software for Conducted tests	Rohde & Schwarz	EMC32	9.26.00

6 BLOCK DIAGRAM

6.1 Power Line Conducted Emission



6.2 Test Site Radiated Emission



The EUT is supplied with a stand for floor standing use, all tests were performed with the EUT mounted on this stand. No turntable was used for any of the tests.

For frequencies above 1 GHz the ground plane between the EUT and the measuring antenna was covered by absorbers.

Revision history

Version	Date	Comment	Sign
1.0	2017.05.29	First edition	FS