

TEST REPORT

of

FCC Part 15 Subpart C §15.247

FCC ID: 2ADXS-WFM50-SFP2501

Equipment Under Test : Wifi module
Model Name : WFM50-SFP2501
Applicant : I&C Technology Co., Ltd.
Manufacturer : I&C Technology Co., Ltd.
Date of Test(s) : 2016.04.28 ~ 2016.06.01
Date of Issue : 2016.06.20

In the configuration tested, the EUT complied with the standards specified above.

Tested By:



Jinhyoung Cho

Date:

2016.06.20

Approved By:



Hyunchae You

Date:

2016.06.20

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1. General Information

1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)

- Wireless Div. 2FL, 10-2, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807

All SGS services are rendered in accordance with the applicable SGS conditions of service available on request and accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>.

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1.2. Details of Applicant

Applicant : I&C Technology Co., Ltd

Address : I&C Building, 24, Pangyo-ro 255beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, 13486, Korea

Contact Person : Lee, Gil-Ju

Phone No. : + 82 31 696 3452

1.3. Description of EUT

Kind of Product	Wifi module
Model Name	WFM50-SFP2501
Power Supply	DC 3.60 V
Frequency Range	2 412 MHz ~ 2 462 MHz (11b/g/n_HT20), 5 745 MHz ~ 5 825 MHz (Band 3: 11a/n_HT20), 5 180 MHz ~ 5 240 MHz (Band 1: 11a/n_HT20), 5 260 MHz ~ 5 320 MHz (Band 2 ^a : 11a/n_HT20), 5 500 MHz ~ 5 720 MHz (Band 2C: 11a/n_HT20)
Modulation Technique	DSSS, OFDM
Number of Channels	11 channels (11b/g/n_HT20), 5 channels (Band 3 : 11a/n_HT20), 4 channels (Band 1 : 11a/n_HT20), 4 channels (Band 2A : 11a/n_HT20), 9 channels (Band 2C : 11a/n_HT20)
Antenna Type	PCB antenna
Antenna Gain	2 412 MHz ~ 2 462 MHz: 1.98 dB I, 5 180 MHz ~ 5 320 MHz: 3.50 dB I, 5 500 MHz ~ 5 720 MHz: 3.34 dB I, 5 745 MHz ~ 5 825 MHz: 3.01 dB i

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1.4. Test Equipment List

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Interval	Cal. Due
Signal Generator	Agilent	E8257D	MY51501169	Jul. 13, 2015	Annual	Jul. 13, 2016
Spectrum Analyzer	Agilent	N9020A	MY53421758	Sep. 24, 2015	Annual	Sep. 24, 2016
Spectrum Analyzer	R&S	FSV30	103102	Jun. 22, 2015	Annual	Jun. 22, 2016
Attenuator	AEROFLEX / INMET	18N-20 dB	4	Mar. 25, 2016	Annual	Mar. 25, 2017
High Pass Filter	Wainwright Instrument GmbH	WHK3.0/18G-10SS	344	Jun. 08, 2015	Annual	Jun. 08, 2016
High Pass Filter	Wainwright Instrument GmbH	WHNX7.5/26.5G-6SS	15	Jun. 23, 2015	Annual	Jun. 23, 2016
Low Pass Filter	Mini-Circuits	NLP-1200+	V 8979400903-2	Feb. 29, 2016	Annual	Feb. 29, 2017
Power Sensor	R&S	NRP-Z81	100669	Feb. 29, 2016	Annual	Feb. 29, 2017
DC Power Supply	Agilent	U8002A	MY54110041	Sep. 23, 2015	Annual	Sep. 23, 2016
Preamplifier	H.P.	8447F	2944A03909	Aug. 27, 2015	Annual	Aug. 27, 2016
Preamplifier	R&S	SCU-18	10117	Apr. 07, 2016	Annual	Apr. 07, 2017
Preamplifier	TESTEK	TK-PA1840H	130016	Sep. 29, 2015	Annual	Sep. 29, 2016
Loop Antenna	R&S	HFH2-Z2	100118	Jun. 04, 2015	Biennial	Jun. 04, 2017
Trilog Broadband Antenna	Schwarzbeck Mess-Elektronik	VULB9163	396	Jun. 18, 2015	Biennial	Jun. 18, 2017
Horn Antenna	R&S	HF906	100326	Feb. 01, 2016	Biennial	Feb. 01, 2018
Horn Antenna	Schwarzbeck Mess-Elektronik	BBHA9170	BBHA9170223	Sep. 01, 2014	Biennial	Sep. 01, 2016
Antenna Master	INN-CO	MM4000	N/A	N.C.R.	N/A	N.C.R.
Turn Table	INN-CO	DS 1200 S	N/A	N.C.R.	N/A	N.C.R.
Test Receiver	R&S	ESU26	100109	Mar. 07, 2016	Annual	Mar. 07, 2017
Anechoic Chamber	SY Corporation	L x W x H (9.6 m x 6.4 m x 6.6 m)	N/A	N.C.R.	N/A	N.C.R.
Two-Line V-Network	R&S	ENV216	100190	Dec. 21, 2015	Annual	Dec. 21, 2016
Test Receiver	R&S	ESCI 7	100911	Dec. 22, 2015	Annual	Dec. 22, 2016
Shield Room	SY Corporation	L x W x H (6.5 m x 3.5 m x 3.5 m)	N/A	N.C.R.	N/A	N.C.R.

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1.5. Summary of Test Results

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part15 Subpart C		
Standard section	Test Item(s)	Result
15.205(a) 15.209 15.247(d)	Transmitter Radiated Spurious Emissions and Conducted Spurious Emission	Complied
15.247(a)(2)	6 dB Bandwidth	Complied
15.247(b)(3)	Maximum Peak Conducted Output Power	Complied
15.247(e)	Power Spectral Density	Complied
15.207	AC Power Line Conducted Emissions	Complied

1.6. Test Procedure(s)

The measurement procedures described in the American National Standard for Testing Unlicensed Wireless Devices (ANSI C63.10-2013) and the guidance provided in KDB 558074_v03r05 were used in the measurement of the DUT.

1.7. Sample calculation

Where relevant, the following sample calculation is provided:

1.7.1. Conducted test

Offset value (dB) = Attenuator (dB) + Cable loss (dB)

1.7.2. Radiation test

Field strength level (dB μ V/m) = Measured level (dB μ V) + Antenna factor (dB) + Cable loss (dB) – amplifier gain(dB)

1.8. Test report revision

Revision	Report number	Date of Issue	Description
0	F690501/RF-RTL009892	2016.06.01	Initial
1	F690501/RF-RTL009892-1	2016.06.20	Updated from ANSI C63.10-2009 to ANSI C63.10-2013 and Added test plots for Tx RSE in section 2

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RTT5041-20(2015.10.01)(3)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210mm x 297mm)

1.9. Duty Cycle of EUT

Regarding to KDB 558074_v03r05, 6.0, the maximum duty cycles of all modes were investigated and set the spectrum analyzer as below

Set RBW \geq OBW if possible; otherwise, set RBW to the largest available value, Set VBW \geq RBW. Set detector = peak or average. The zero-span measurement method shall not be used unless both RBW and VBW are $> 50/T$ and the number of sweep points across duration T exceeds 100.

Mode	Data Rate							
	1 Mbps	2 Mbps	5.5 Mbps	11 Mbps	-	-	-	-
11b								
Duty Cycle (%)	100	99	98	97	-	-	-	-
Correction factor (dB)	0.00	0.04	0.09	0.13	-	-	-	-
11g	6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
Duty Cycle (%)	99	99	99	98	98	97	96	95
Correction factor (dB)	0.04	0.04	0.04	0.09	0.09	0.13	0.18	0.22
11n_HT20	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Duty Cycle (%)	98	96	96	94	92	90	86	85
Correction factor (dB)	0.09	0.18	0.18	0.27	0.36	0.46	0.66	0.71

Remark:

1. As measured duty cycles of EUT, all of mode and data rate keep constant period and are converted to log scale (power averaging) to compensate correction factor to result of average test items.
2. Duty cycle (%) = (Tx on time / Tx on + off time) x 100
3. Correction factor (dB) = 10 log (1 / duty cycle)

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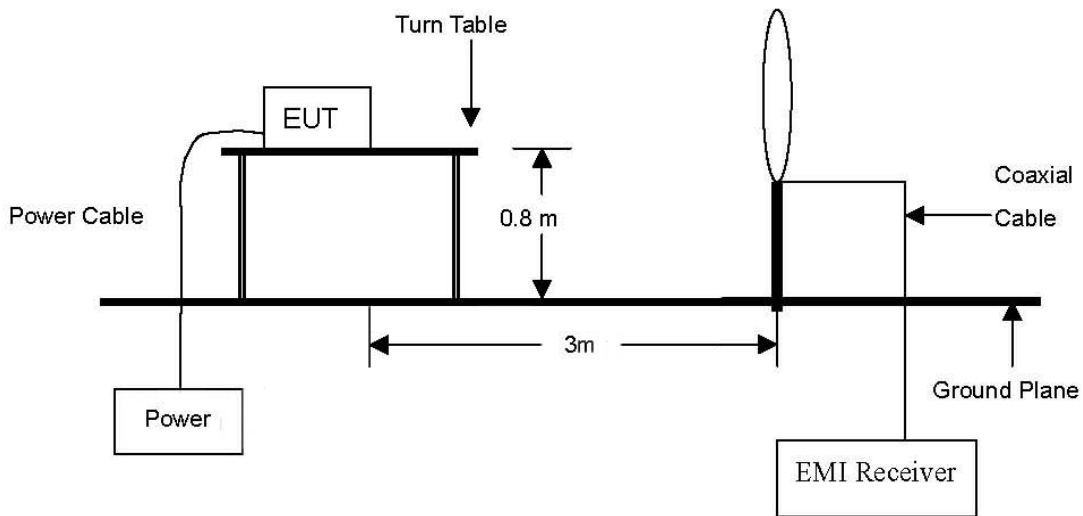
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2. Transmitter Radiated Spurious Emissions and Conducted Spurious Emission

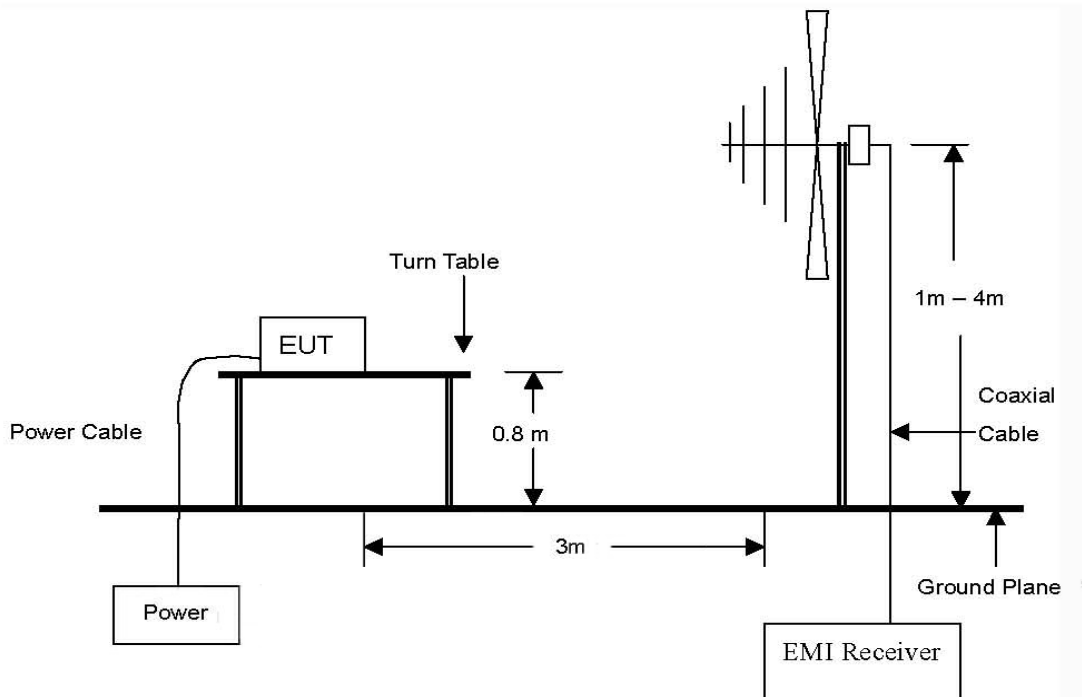
2.1. Test Setup

2.1.1. Transmitter Radiated Spurious Emissions

The diagram below shows the test setup that is utilized to make the measurements for emission from 9 kHz to 30 MHz Emissions.

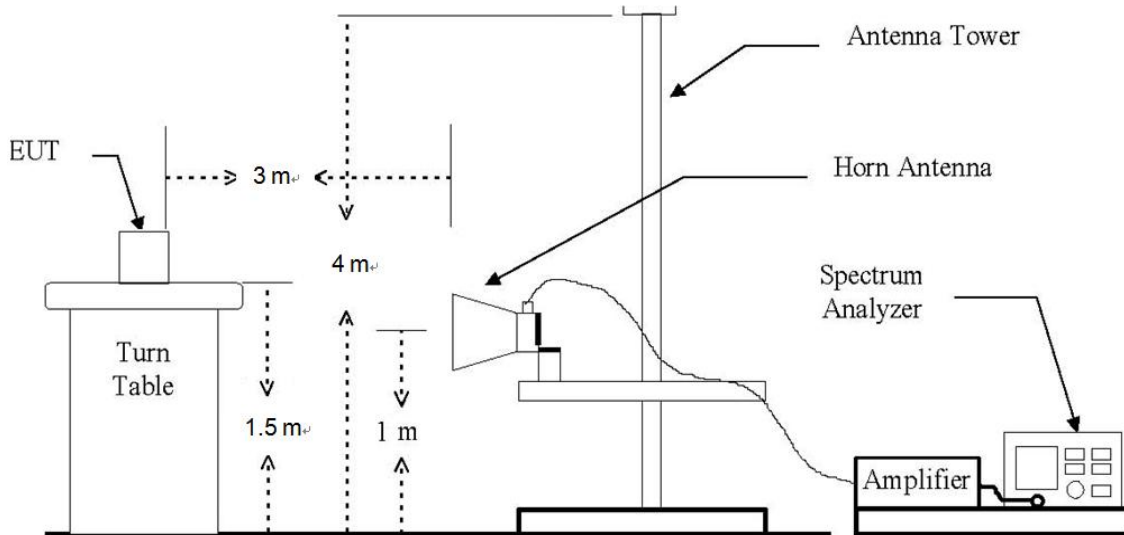


The diagram below shows the test setup that is utilized to make the measurements for emission from 30 MHz to 1 GHz Emissions.



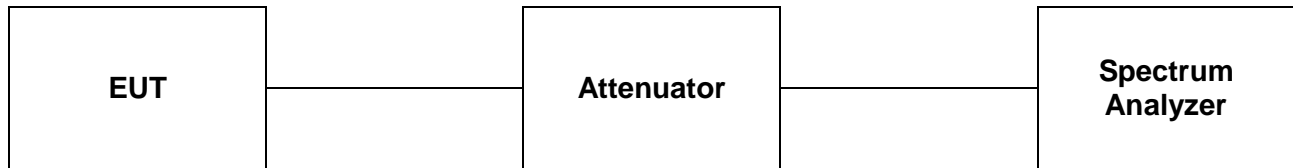
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The diagram below shows the test setup that is utilized to make the measurements for emission. The spurious emissions were investigated from 1 GHz to the 10th harmonic of the highest fundamental frequency or 40 GHz, whichever is lower.



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2.1.2. Conducted Spurious Emission



2.2. Limit

According to §15.247(d), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph(b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in section §15.209(a) is not required. In addition, radiated emission which in the restricted band, as define in section §15.205(a), must also comply the radiated emission limits specified in section §15.209(a) (see section §15.205(c))

According to § 15.209(a), Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table :

Frequency (MHz)	Distance (Meters)	Field Strength (dB μ V/m)	Field Strength (μ V/m)
0.009 – 0.490	300	20 log (2 400/F(kHz))	2 400/F(kHz)
0.490 – 1.705	30	20 log (24 000/F(kHz))	24 000/F(kHz)
1.705 – 30.0	30	29.54	30
30 - 88	3	40.0	100**
88 – 216	3	43.5	150**
216 – 960	3	46.0	200**
Above 960	3	54.0	500

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2.3. Test Procedures

Radiated emissions from the EUT were measured according to the dictates in section 11.0 & 12.0 of KDB 558074_v03r05 and ANSI C63.10-2013.

2.3.1. Test Procedures for emission below 30 MHz

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter anechoic chamber test site. The table was rotated 360 degrees to determine the position of the highest radiation.
2. Then antenna is a loop antenna is fixed at one meter above the ground to determine the maximum value of the field strength. Both parallel and perpendicular of the antenna are set to make the measurement.
3. For each suspected emission, the EUT was arranged to its worst case and then the table was turned from 0 degrees to 360 degrees to find the maximum reading.
4. The test-receiver system was set to average or quasi peak detect function and Specified Bandwidth with Maximum Hold Mode.

2.3.2. Test Procedures for emission from above 30 MHz

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter anechoic chamber test site below 1 GHz and 1.5 meters above the ground at a 3 meter anechoic chamber test site above 1 GHz. The table was rotated 360 degrees to determine the position of the highest radiation.
2. During performing radiated emission below 1 GHz, the EUT was set 3 meters away from the interference receiving antenna, which was mounted on the top of a variable-height antenna tower. During performing radiated emission above 1 GHz, the EUT was set 3 meter away from the interference-receiving antenna.
3. The antenna is a Trilog broadband antenna, a horn antenna and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

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NOTE;

All data rates and modes were investigated for radiated spurious emissions. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.

1. Unwanted Emissions into Non-Restricted Frequency Bands

- The Reference Level Measurement refer to section 11.2

Set analyzer center frequency to DTS channel center frequency, SPAN ≥ 1.5 times the DTS bandwidth, the RBW = 100 kHz and VBW $\geq 3 \times$ RBW, Detector = Peak, Sweep time = auto couple, Trace mode = max hold.

- Unwanted Emissions Level Measurement refer to section 11.3

Set the center frequency and span to encompass frequency range to be measured, the RBW = 100 kHz and VBW $\geq 3 \times$ RBW, Detector = peak, Sweep time = auto couple, Trace mode = max hold.

2. Unwanted Emissions into Restricted Frequency Bands

- Peak Power measurement procedure refer to section 12.2.4

Set RBW = as specified in Table 1, VBW $\geq 3 \times$ RBW, Detector = Peak, Sweep time = auto, Trace mode = max hold.

Table 1- RBW as a function of frequency

Frequency	RBW
9 – 150 kHz	200 – 300 Hz
0.15 – 30 MHz	9 – 10 kHz
30 – 1 000 MHz	100 – 120 kHz
>1 000 MHz	1 MHz

-Average Power measurements procedure refer to section 12.2.5.2

The EUT shall be configured to operate at the maximum achievable duty cycle.

Measure the duty cycle, x, of the transmitter output signal as described in section 6.0.

RBW = 1 MHz, VBW $\geq 3 \times$ RBW, Detector = RMS, if span / (# of points in sweep) \leq (RBW/2).

Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If this condition cannot be satisfied then the detector mode shall be set to peak.

Averaging type = power (i.e., RMS).

As an alternative the detector and averaging type may be set for linear voltage averaging.

Some instruments require linear display mode in order to use linear voltage averaging. Log or dB averaging shall not be used. Sweep time = auto, Perform a trace average of at least 100 traces.

If duty cycle < 98 percent, A correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle. The correction factor is computed as follows:

- 3) If a specific emission is demonstrated to be continuous (≥ 98 percent duty cycle) rather than turning on and off with the transmit cycle, then no duty cycle correction is required for that emission.

3. To get a maximum emission level from the EUT, the EUT is manipulated through three orthogonal planes (X, Y, Z). Worst orthogonal plan of EUT is **Y – axis** during radiation test.

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2.3.3. Test Procedures for Conducted Spurious Emissions

All data rates and modes were investigated for conducted spurious emissions. Only the conducted emissions of the configuration that produced the worst case emissions are reported in this section.

Per the guidance of KDB 558074_v03r05, section 11.1 & 11.2 & 11.3, the reference level for out of band emissions is established from the plots of this section since the band edge emissions are measured with a RBW of 100 kHz. This reference level is then used as the limit in subsequent plots for out of band spurious emissions shown in section 2.4.3. The limit for out of band spurious emission at the band edge is 20 dB or 30 dB below the fundamental emission level measured in a 100 kHz bandwidth.

1. Conducted Emissions at Band Edge

- The Measurement refer to section 11.2

Set the center frequency and span to encompass frequency range to be measured, the RBW = 100 kHz and VBW $\geq 3 \times$ RBW, Detector = peak, Sweep time = auto couple, Trace mode = max hold, The trace was allowed to fully stabilize.

2. Conducted Spurious Emissions

- The Measurement refer to section 11.3

Start frequency was set to 9 kHz and stop frequency was set to 25 GHz (separated into two plots per channel), RBW = 100 kHz, VBW $\geq 3 \times$ RBW, Detector = peak, Sweep time = auto couple, Trace mode = max hold, The trace was allowed to fully stabilize.

3. TDF function

- For plots showing conducted spurious emissions from 9 kHz to 25 GHz, all path loss of wide frequency range was investigated and compensated to spectrum analyzer as TDF function. So, the reading values shown in plots were final result.

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2.4. Test Results

Ambient temperature : (23 ± 1) °C
 Relative humidity : 47 % R.H.

2.4.1. Radiated Spurious Emission below 1 000 MHz

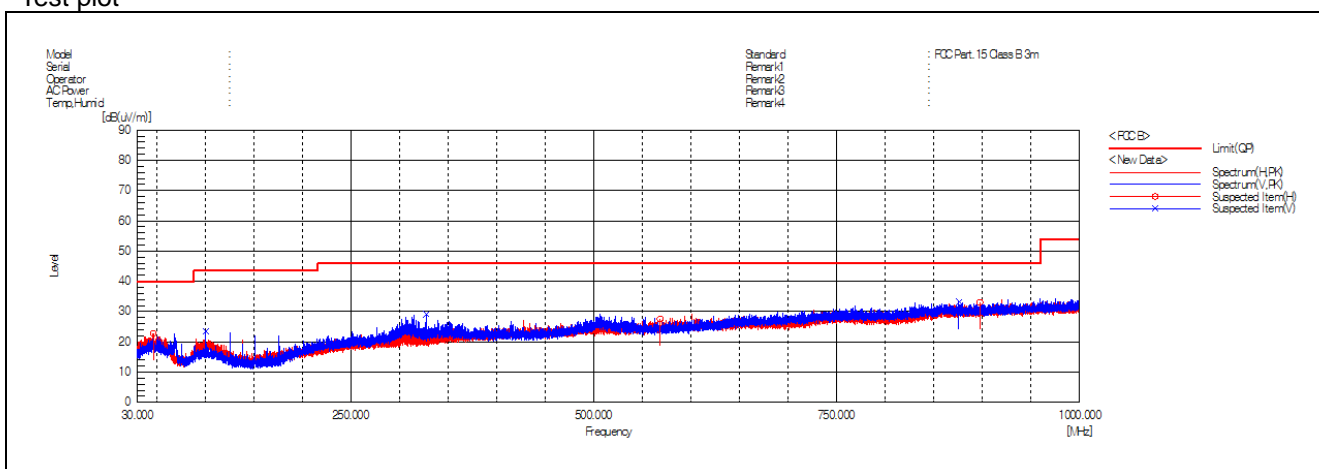
The frequency spectrum from 9 kHz to 1 000 MHz was investigated. All reading values are peak values.

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dBµV)	Detect Mode	Pol.	AF (dB/m)	AMP + CL (dB)	Actual (dBµV/m)	Limit (dBµV/m)	Margin (dB)
46.45	33.80	Peak	H	16.03	-27.01	22.82	40.00	17.18
100.69	38.00	Peak	V	12.06	-26.52	23.54	43.50	19.96
327.31	38.30	Peak	V	15.85	-25.07	29.08	46.00	16.92
568.47	34.00	Peak	H	19.17	-25.63	27.54	46.00	18.46
876.08	34.20	Peak	V	23.32	-24.33	33.19	46.00	12.81
897.54	34.10	Peak	H	23.16	-24.16	33.10	46.00	12.90
Above 900.00	Not detected	-	-	-	-	-	-	-

Remark:

- Spurious emissions for all channels were investigated and almost the same below 1 GHz.
- Reported spurious emissions are in **11g / 6 Mbps / Middle channel** as worst case among other modes.
- Radiated spurious emission measurement as below.
 (Actual = Reading + Antenna Factor + Amp + CL)
- According to §15.31(o), emission levels are not report much lower than the limits by over 20 dB.

Test plot



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2.4.2. Radiated Spurious Emission above 1 000 MHz

The frequency spectrum above 1 000 MHz was investigated. All reading values are peak and average values

DSSS: 802.11b (1 Mbps)

Low Channel (2 412 MHz)

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Duty (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*2 310.00	20.28	Peak	H	28.07	5.69	-	54.04	74.00	19.96
*2 310.00	9.72	Average	H	28.07	5.69	-	43.48	54.00	10.52
*2 362.56	22.71	Peak	H	28.12	5.75	-	56.58	74.00	17.42
*2 386.94	11.09	Average	H	28.14	5.80	-	45.03	54.00	8.97
*2 390.00	20.70	Peak	H	28.15	5.79	-	54.64	74.00	19.36
*2 390.00	11.00	Average	H	28.15	5.79	-	44.94	54.00	9.06

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*4 824.19	50.10	Peak	H	32.71	-29.38	-	53.43	74.00	20.57
*4 824.04	47.19	Average	H	32.71	-29.38	-	50.52	54.00	3.48
Above 4 900.00	Not detected	-	-	-	-	-	-	-	-

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Middle Channel (2 437 MHz)

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*4 873.90	50.09	Peak	H	32.84	-29.15	-	53.78	74.00	20.22
*4 873.98	47.17	Average	H	32.84	-29.15	-	50.86	54.00	3.14
Above 4 900.00	Not detected	-	-	-	-	-	-	-	-

High Channel (2 462 MHz)

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Duty (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*2 483.50	20.97	Peak	H	28.24	5.82	-	55.03	74.00	18.97
*2 483.50	11.16	Average	H	28.24	5.82	-	45.22	54.00	8.78
*2 485.15	22.75	Peak	H	28.24	5.82	-	56.81	74.00	17.19
*2 484.10	11.70	Average	H	28.24	5.82	-	45.76	54.00	8.24
*2 500.00	20.24	Peak	H	28.26	5.85	-	54.35	74.00	19.65
*2 500.00	10.59	Average	H	28.26	5.85	-	44.70	54.00	9.30

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*4 924.02	49.51	Peak	H	32.98	-29.16	-	53.33	74.00	20.67
*4 923.99	46.44	Average	H	32.98	-29.16	-	50.26	54.00	3.74
Above 5 000.00	Not detected	-	-	-	-	-	-	-	-

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OFDM: 802.11g (6 Mbps)

Low Channel (2 412 MHz)

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Duty (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*2 310.00	19.44	Peak	H	28.07	5.69	-	53.20	74.00	20.80
*2 310.00	10.24	Average	H	28.07	5.69	-	44.00	54.00	10.00
*2 386.25	34.64	Peak	H	28.14	5.80	-	68.58	74.00	5.42
*2 389.13	15.37	Average	H	28.15	5.79	-	49.31	54.00	4.69
*2 390.00	25.26	Peak	H	28.15	5.79	-	59.20	74.00	14.80
*2 390.00	14.92	Average	H	28.15	5.79	-	48.86	54.00	5.14

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Duty (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*4 823.35	47.50	Peak	H	32.71	-29.39	-	50.82	74.00	23.18
*4 824.20	35.70	Average	H	32.71	-29.38	-	39.03	54.00	14.97
Above 4 900.00	Not detected	-	-	-	-	-	-	-	-

Middle Channel (2 437 MHz)

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Duty (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*4 874.05	44.70	Peak	H	32.84	-29.15	-	48.39	74.00	25.61
*4 874.00	34.34	Average	H	32.84	-29.15	-	38.03	54.00	15.97
Above 4 900.00	Not detected	-	-	-	-	-	-	-	-

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High Channel (2 462 MHz)

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Duty (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*2 483.50	27.12	Peak	H	28.24	5.82	-	61.18	74.00	12.82
*2 483.50	16.28	Average	H	28.24	5.82	-	50.34	54.00	3.66
*2 485.35	37.64	Peak	H	28.25	5.82	-	71.71	74.00	2.29
*2 484.85	16.80	Average	H	28.24	5.82	-	50.86	54.00	3.14
*2 500.00	21.95	Peak	H	28.26	5.85	-	56.06	74.00	17.94
*2 500.00	10.96	Average	H	28.26	5.85	-	45.07	54.00	8.93

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*4 922.65	42.74	Peak	H	32.97	-29.15	-	46.56	74.00	27.44
*4 923.95	32.02	Average	H	32.98	-29.16	-	35.84	54.00	18.16
Above 5 000.00	Not detected	-	-	-	-	-	-	-	-

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OFDM: 802.11n_HT20 (MCS0)

Low Channel (2 412 MHz)

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Duty (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*2 310.00	19.45	Peak	H	28.07	5.69	-	53.21	74.00	20.79
*2 310.00	9.85	Average	H	28.07	5.69	-	43.61	54.00	10.39
*2 386.60	34.06	Peak	H	28.14	5.80	-	68.00	74.00	6.00
*2 389.59	13.67	Average	H	28.15	5.79	-	47.61	54.00	6.39
*2 390.00	22.66	Peak	H	28.15	5.79	-	56.60	74.00	17.40
*2 390.00	13.04	Average	H	28.15	5.79	-	46.98	54.00	7.02

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*4 828.25	51.56	Peak	H	32.72	-29.39	-	54.89	74.00	19.11
*4 824.45	40.97	Average	H	32.71	-29.38	-	44.30	54.00	9.70
Above 4 900.00	Not detected	-	-	-	-	-	-	-	-

Middle Channel (2 437 MHz)

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*4 867.85	52.06	Peak	H	32.83	-29.24	-	55.65	74.00	18.35
*4 874.20	41.85	Average	H	32.84	-29.15	-	45.54	54.00	8.46
Above 4 900.00	Not detected	-	-	-	-	-	-	-	-

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High Channel (2 462 MHz)

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Duty (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*2 483.50	21.03	Peak	H	28.24	5.82	-	55.09	74.00	18.91
*2 483.50	11.19	Average	H	28.24	5.82	-	45.25	54.00	8.75
*2 484.65	29.75	Peak	H	28.24	5.82	-	63.81	74.00	10.19
*2 484.55	11.68	Average	H	28.24	5.82	-	45.74	54.00	8.26
*2 500.00	20.59	Peak	H	28.26	5.85	-	54.70	74.00	19.30
*2 500.00	10.45	Average	H	28.26	5.85	-	44.56	54.00	9.44

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*4 922.55	52.19	Peak	H	32.97	-29.15	-	56.01	74.00	17.99
*4 924.25	41.36	Average	H	32.98	-29.16	-	45.18	54.00	8.82
Above 5 000.00	Not detected	-	-	-	-	-	-	-	-

Remarks:

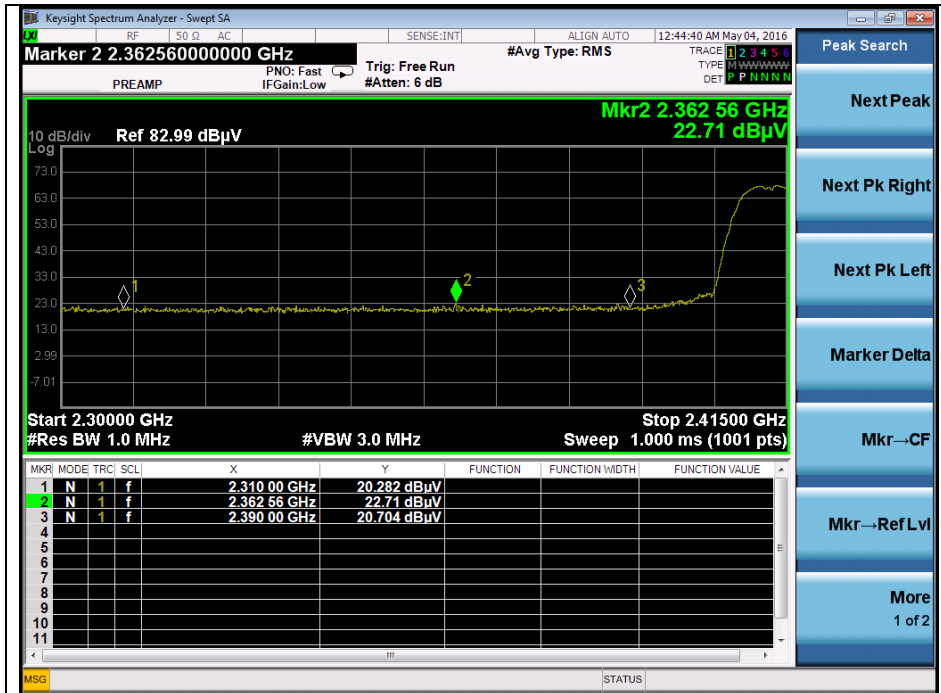
1. "*" means the restricted band.
2. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
3. Radiated emissions measured in frequency above 1 000 MHz were made with an instrument using peak/average detector mode.
4. Actual = Reading + AF + AMP + CL or Reading + AF + CL
5. According to § 15.31(o), Emission levels are not reported much lower than the limits by over 20 dB.

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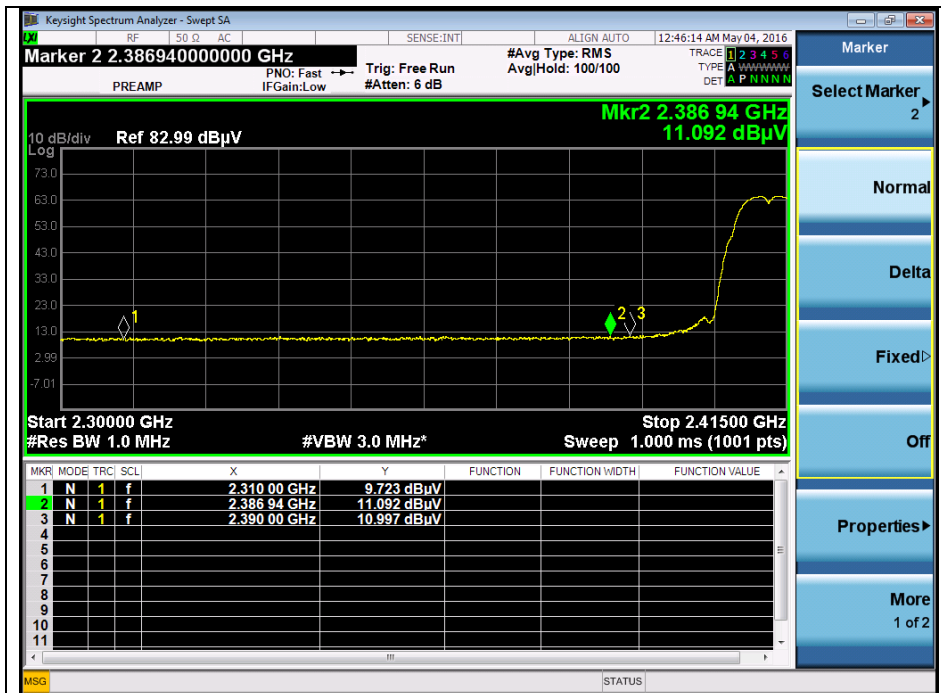
Plots of Spurious Emission

DSSS: 802.11b (1 Mbps)

Low channel Band edge (Peak)



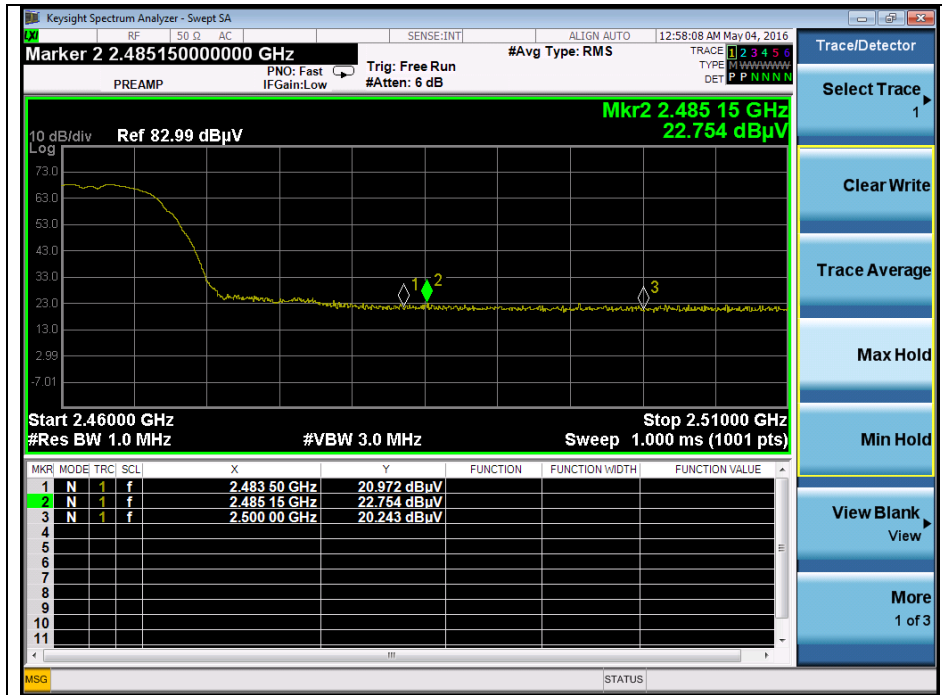
Low channel Band edge (Average)



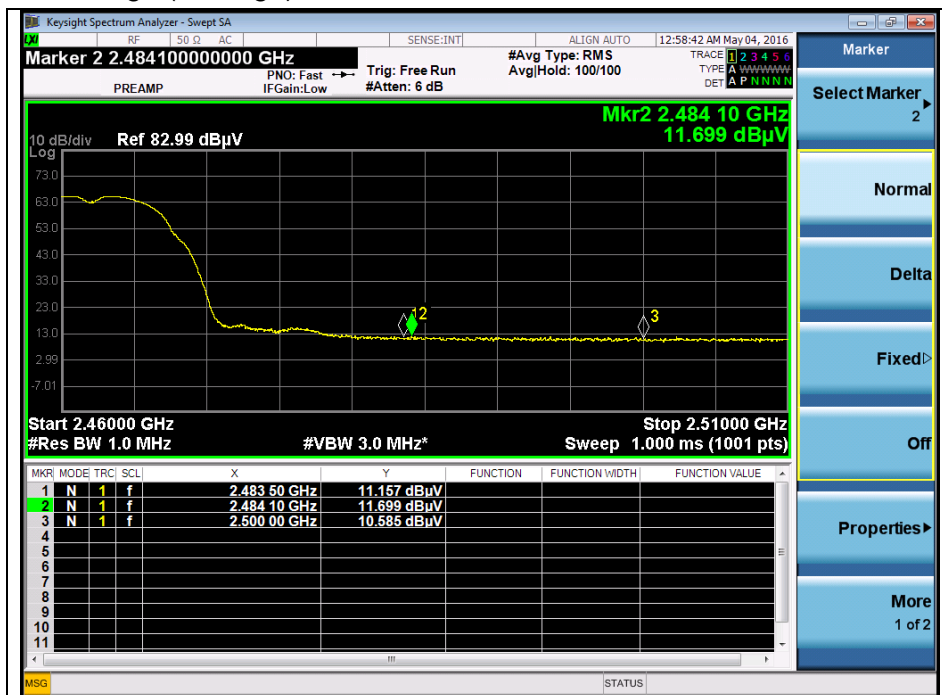
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High channel Band edge (Peak)



High channel Band edge (Average)



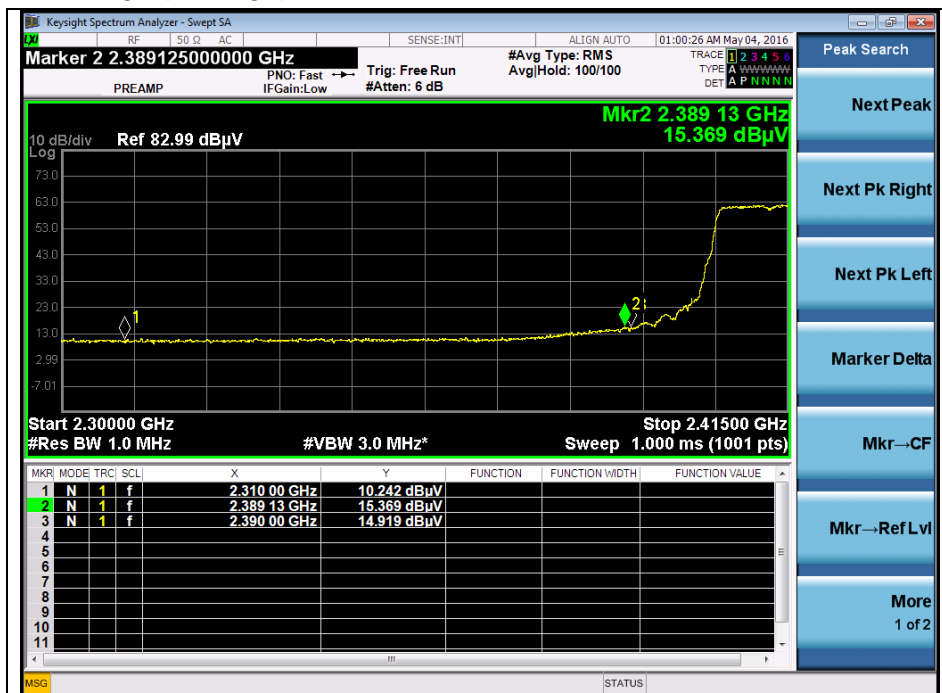
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OFDM: 802.11g (6 Mbps)

Low channel Band edge (Peak)

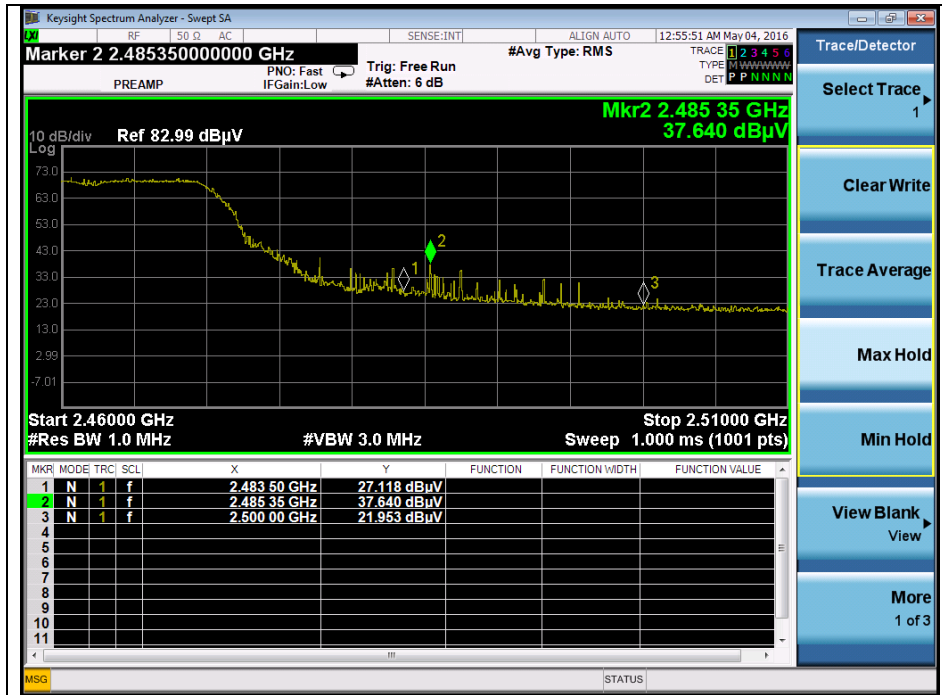


Low channel Band edge (Average)



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High channel Band edge (Peak)



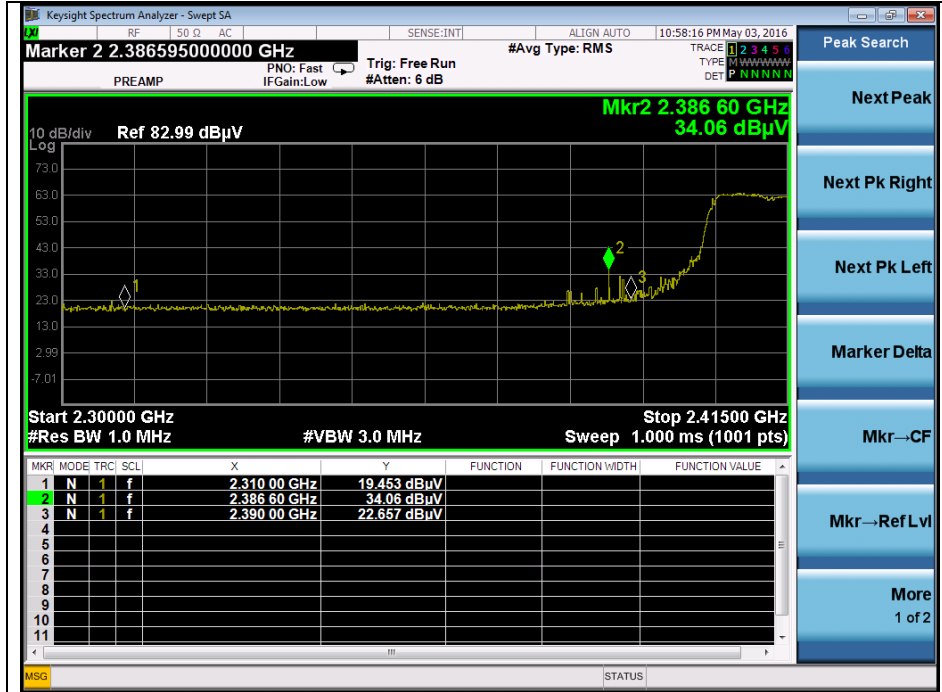
High channel Band edge (Average)



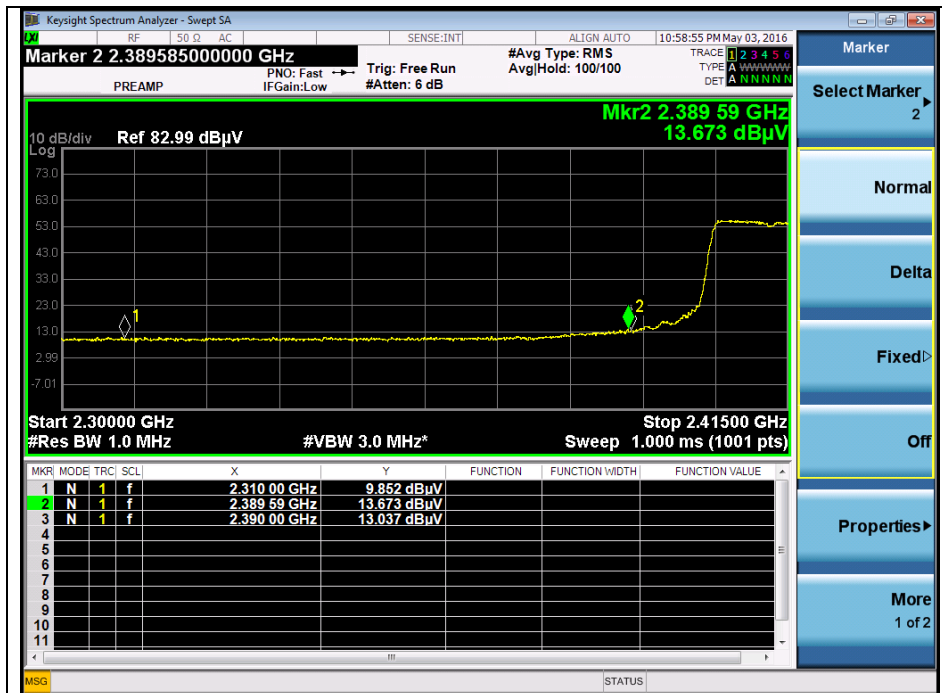
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OFDM: 802.11n_HT20 (MCS0)

Low channel Band edge (Peak)

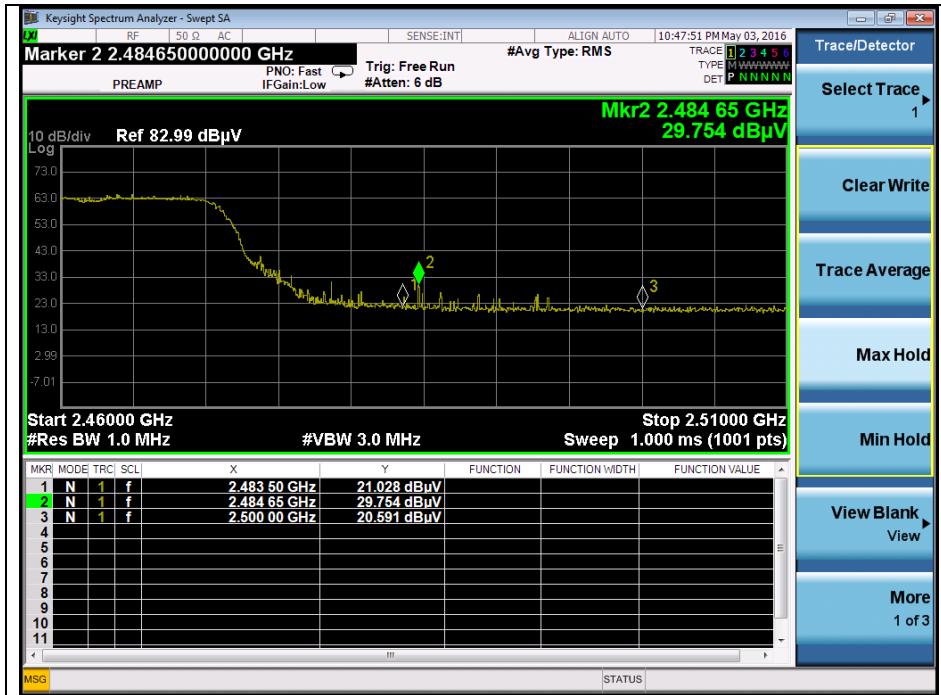


Low channel Band edge (Average)

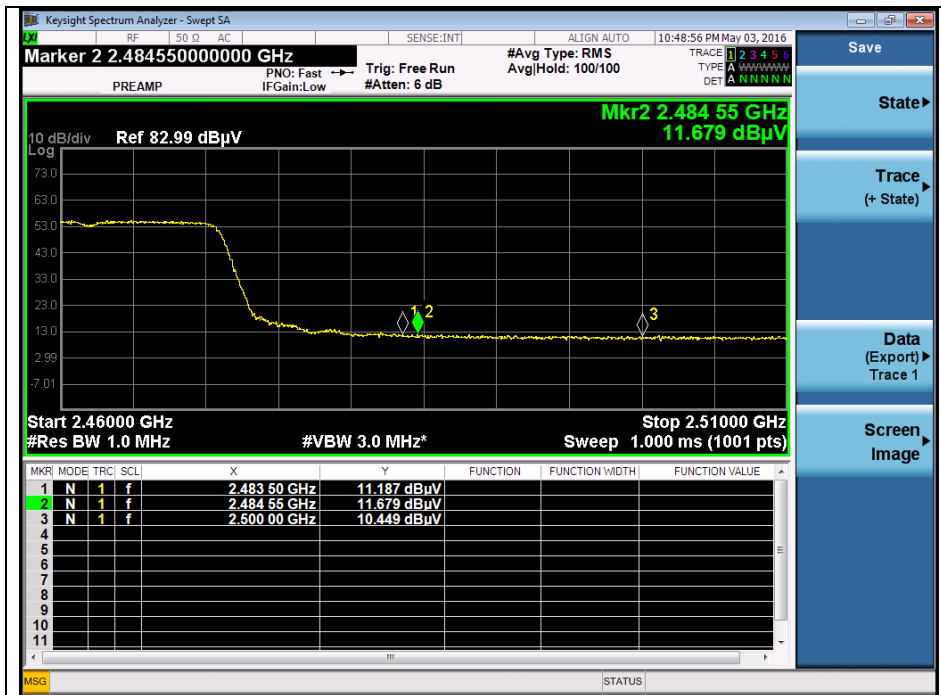


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High channel Band edge (Peak)



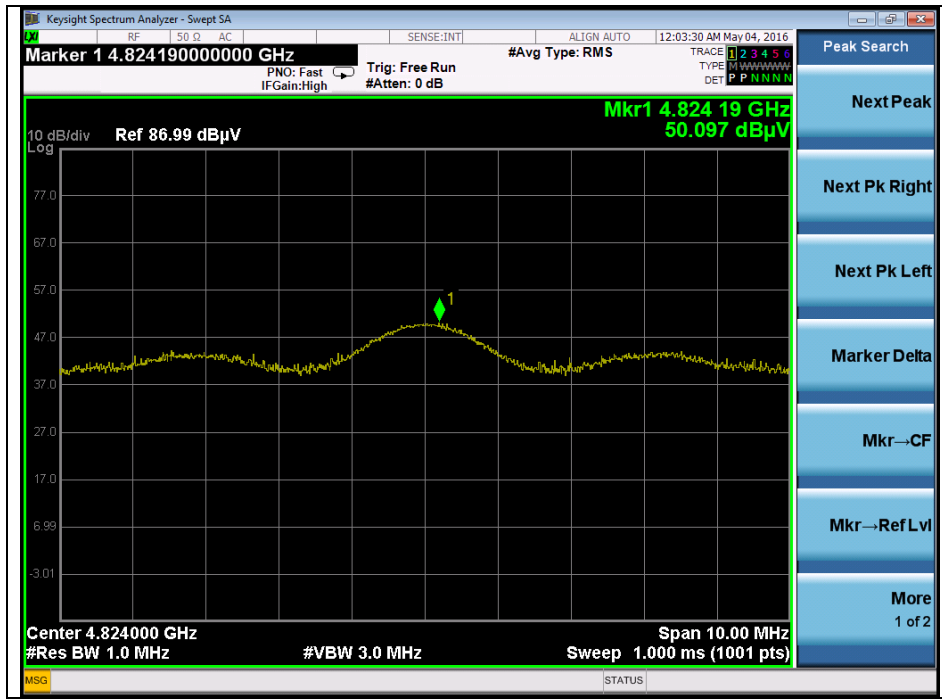
High channel Band edge (Average)



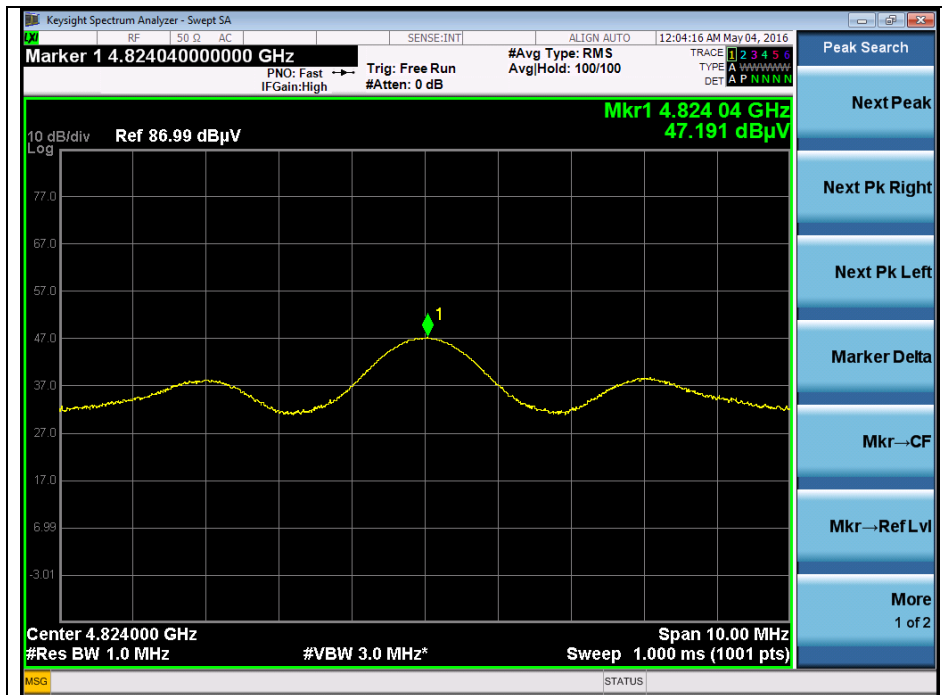
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DSSS: 802.11b (1 Mbps)

Low channel 2nd harmonic (Peak)



Low channel 2nd harmonic (Average)



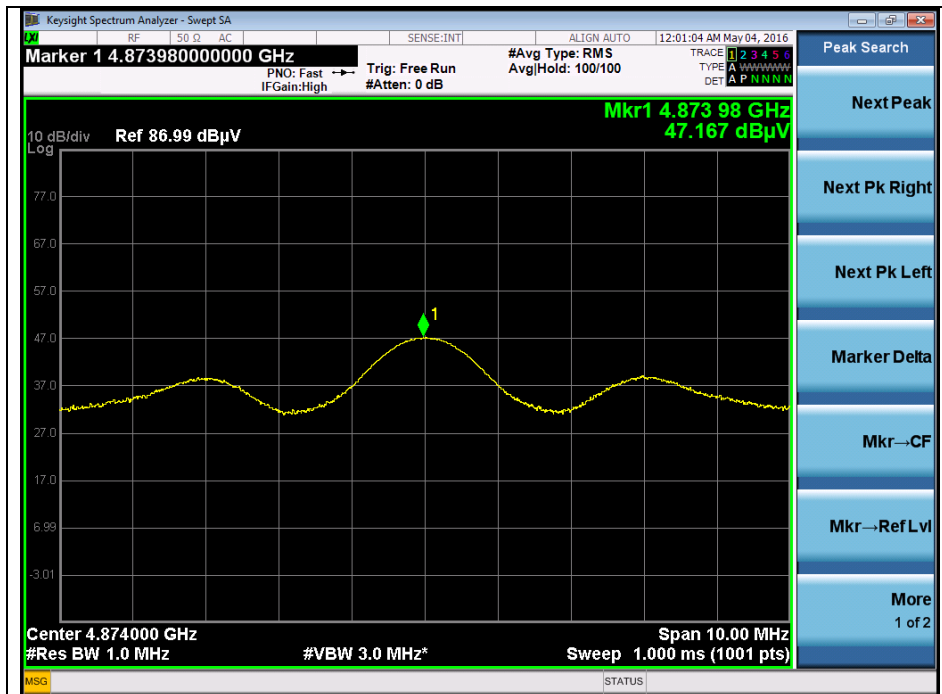
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Middle channel 2nd harmonic (Peak)

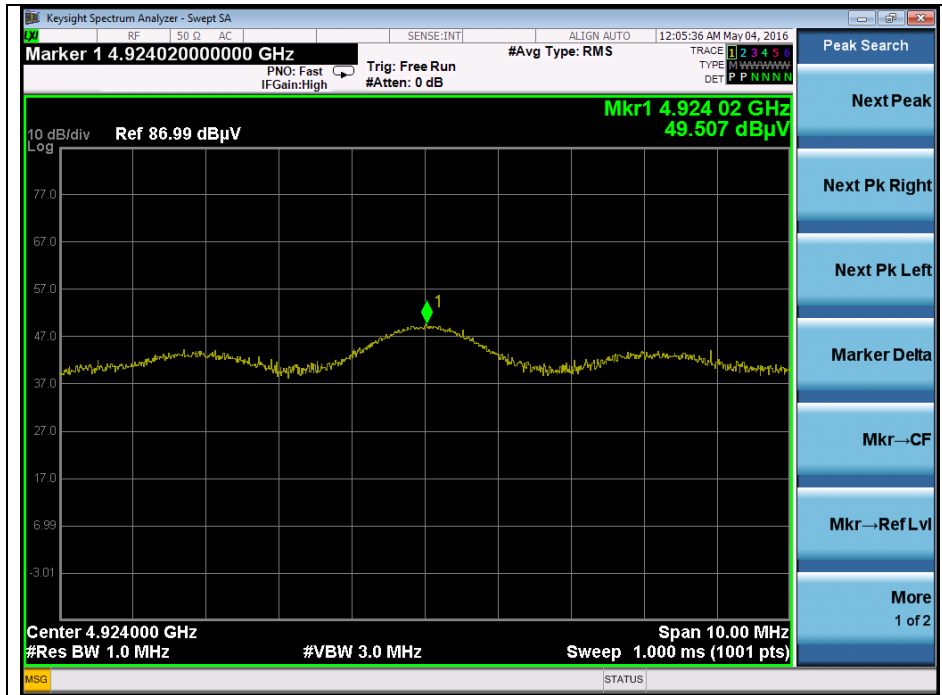


Middle channel 2nd harmonic (Average)

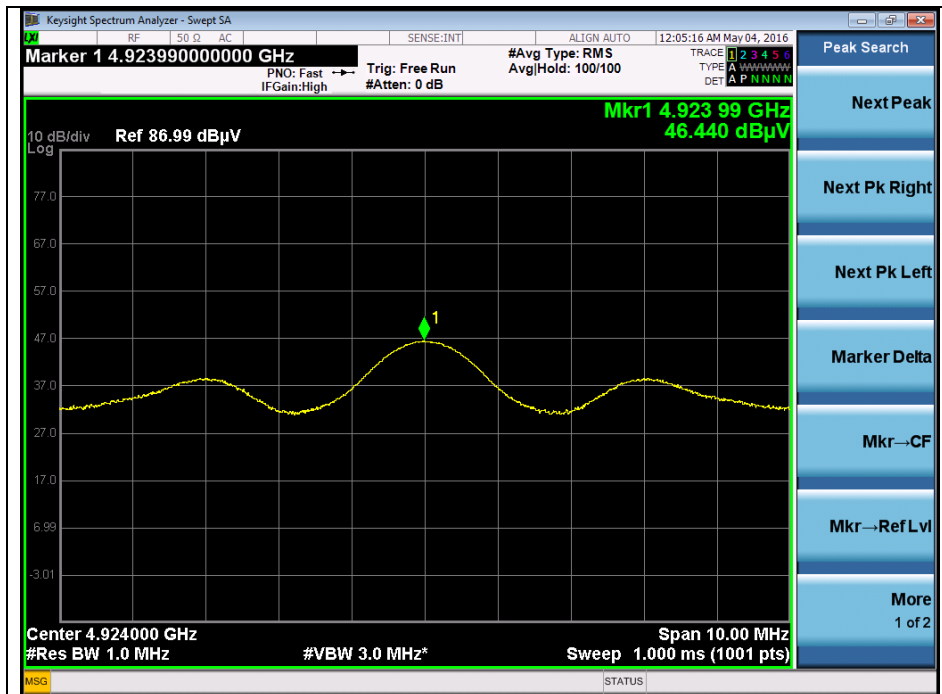


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High channel 2nd harmonic (Peak)



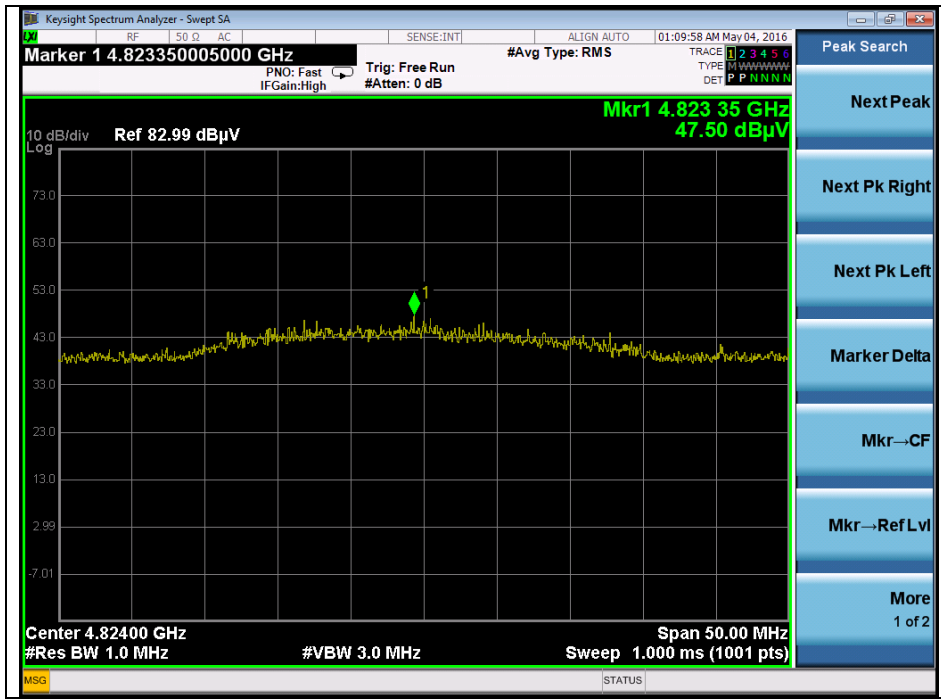
High channel 2nd harmonic (Average)



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OFDM: 802.11g (6 Mbps)

Low channel 2nd harmonic (Peak)



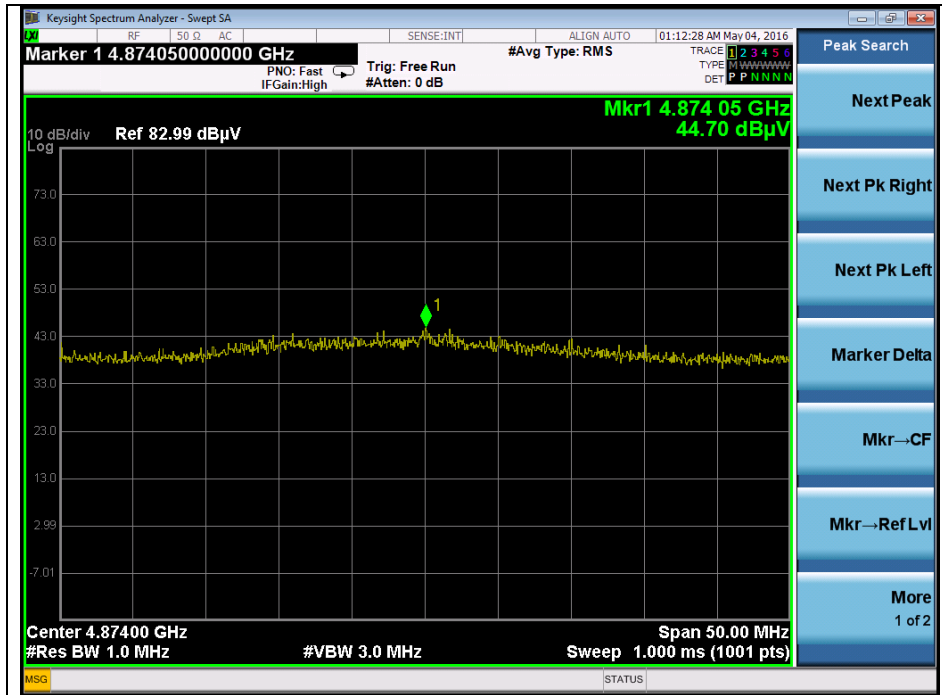
Low channel 2nd harmonic (Average)



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Middle channel 2nd harmonic (Peak)

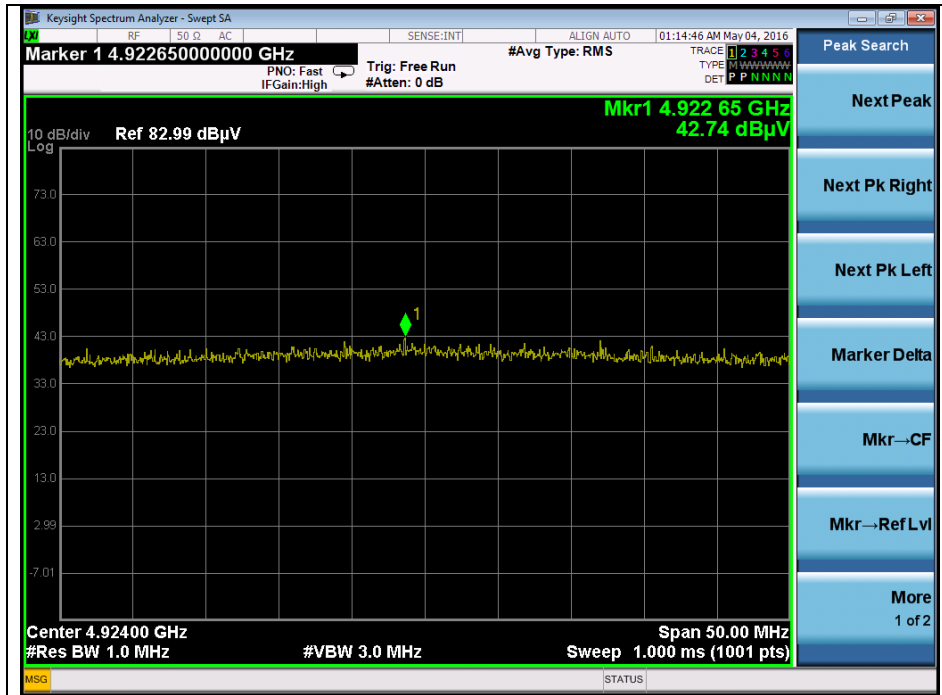


Middle channel 2nd harmonic (Average)

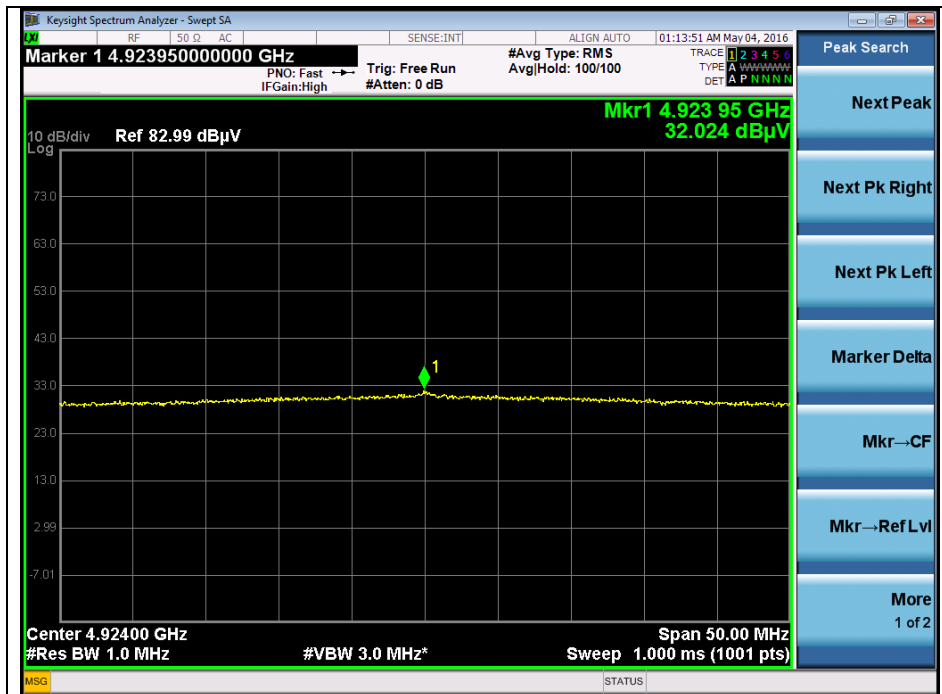


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High channel 2nd harmonic (Peak)



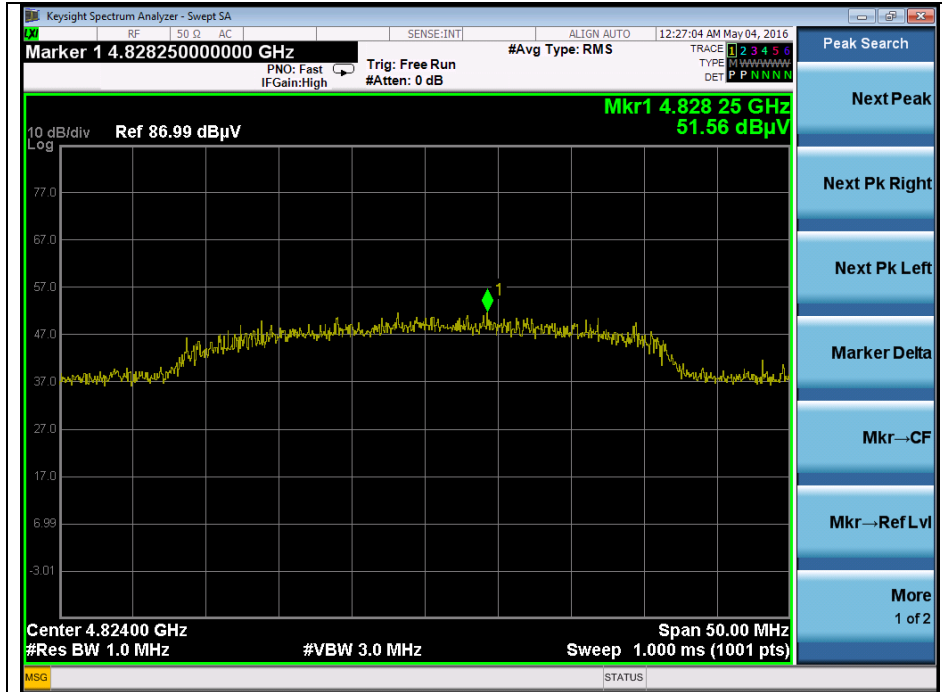
High channel 2nd harmonic (Average)



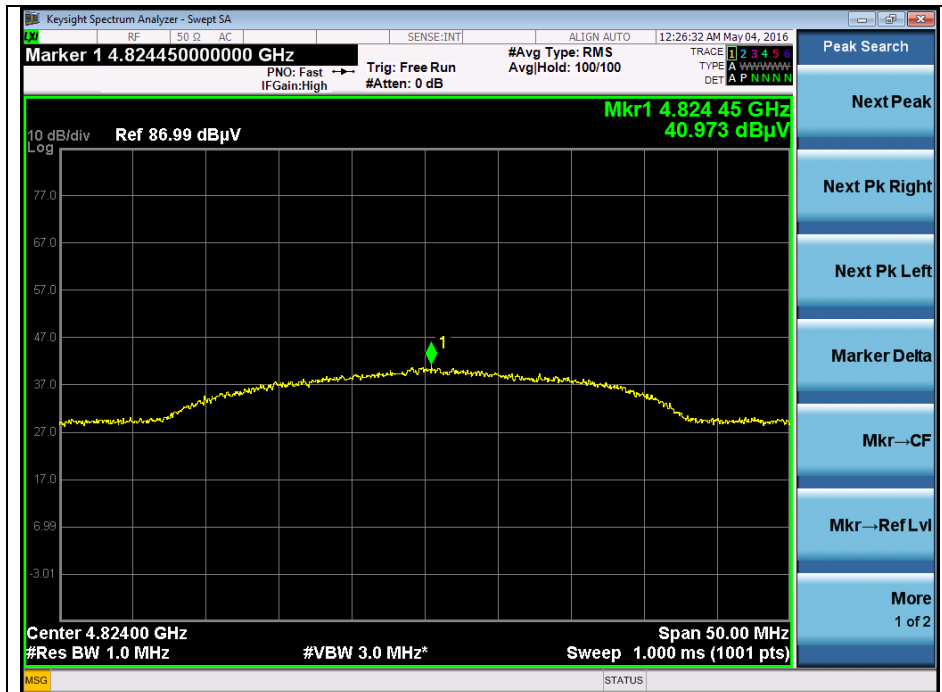
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OFDM: 802.11n_HT20 (MCS0)

Low channel 2nd harmonic (Peak)



Low channel 2nd harmonic (Average)



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Middle channel 2nd harmonic (Peak)

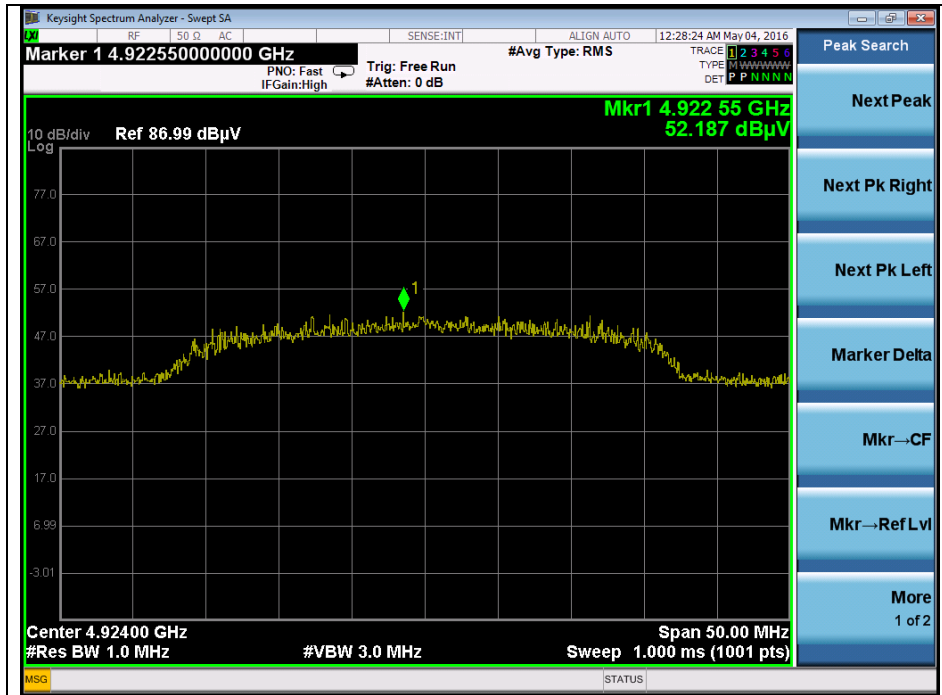


Middle channel 2nd harmonic (Average)



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High channel 2nd harmonic (Peak)



High channel 2nd harmonic (Average)

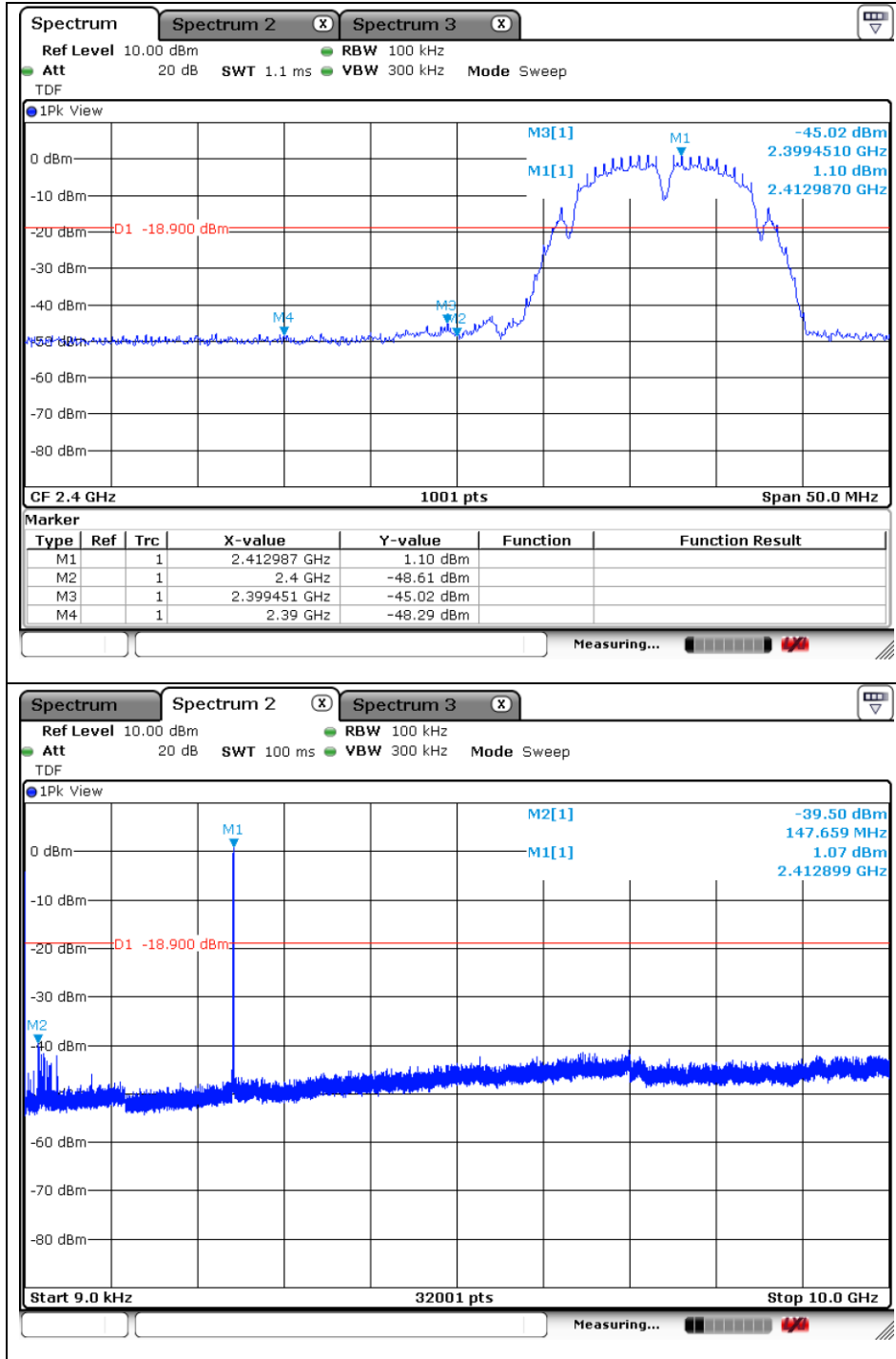


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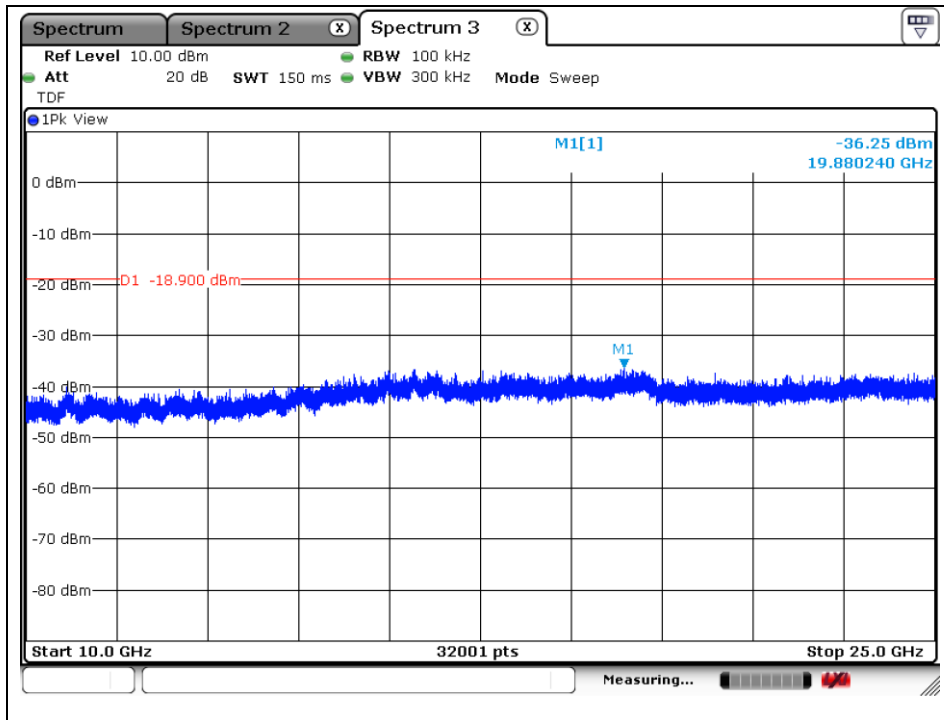
2.4.3. Spurious RF Conducted Emissions: Plot of Spurious RF Conducted Emission

DSSS: 802.11b (1 Mbps)

Low Channel

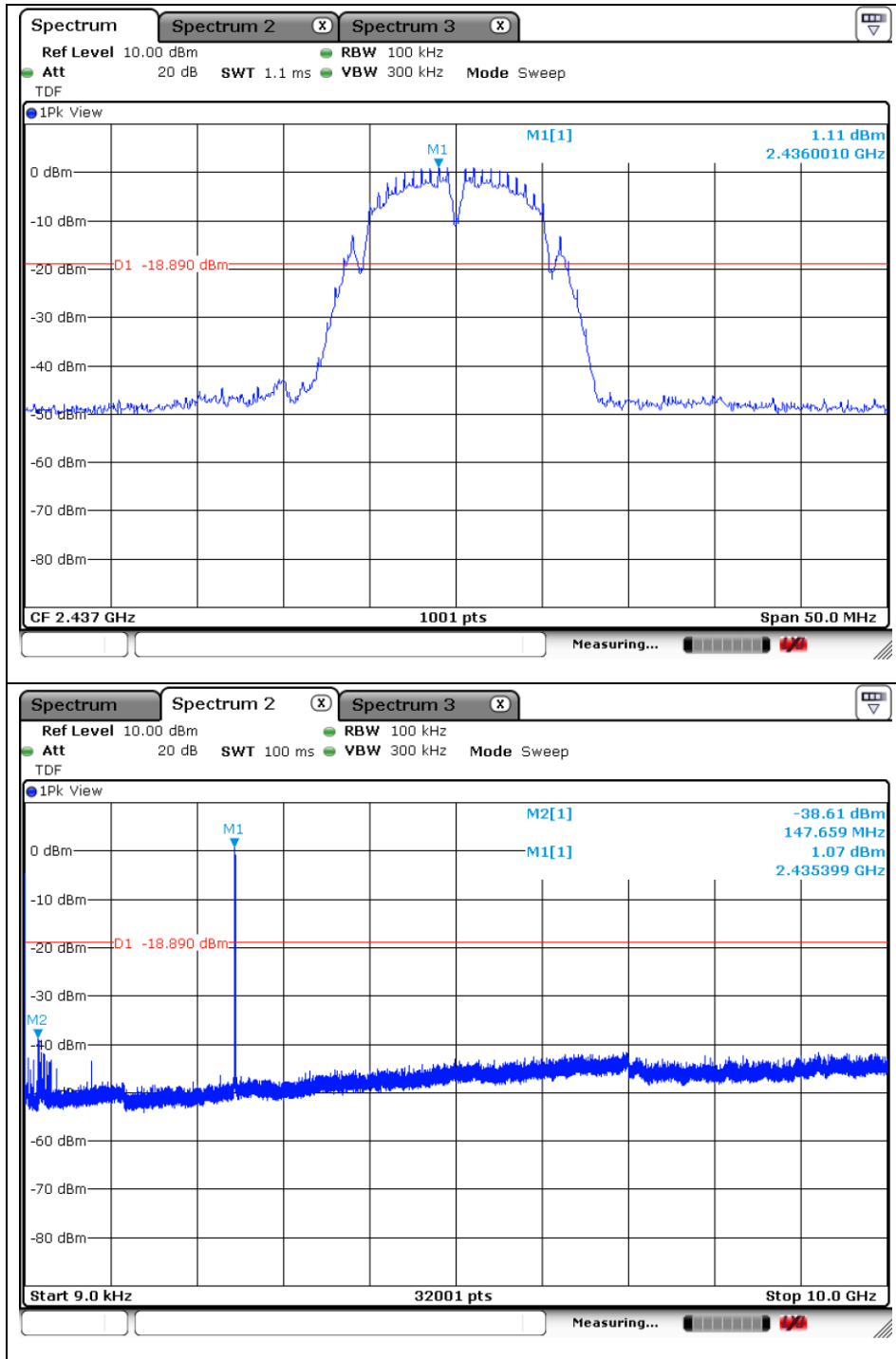


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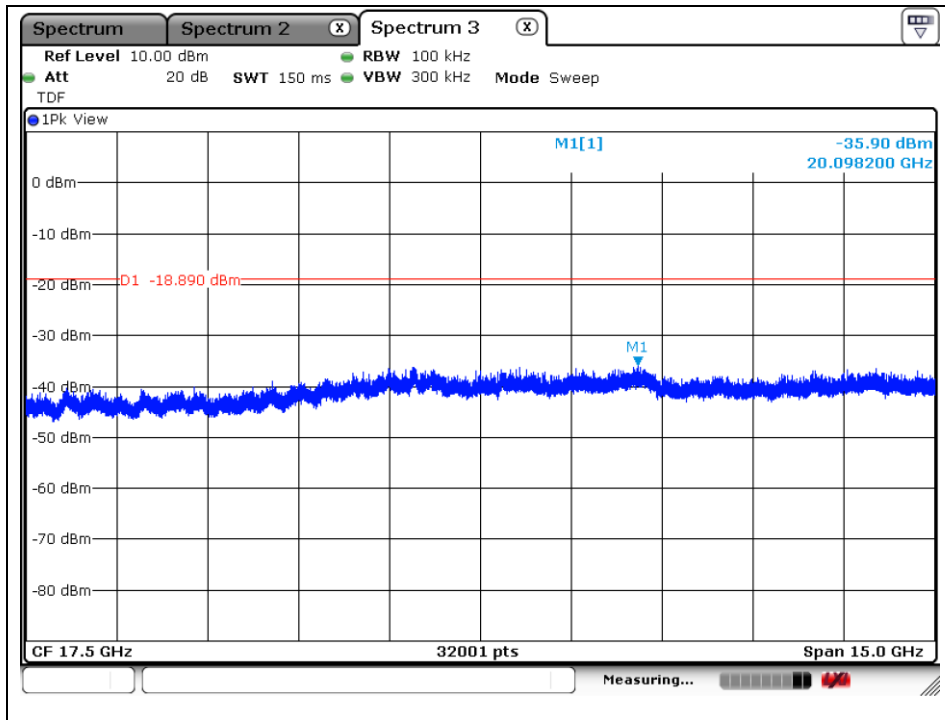


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Middle Channel



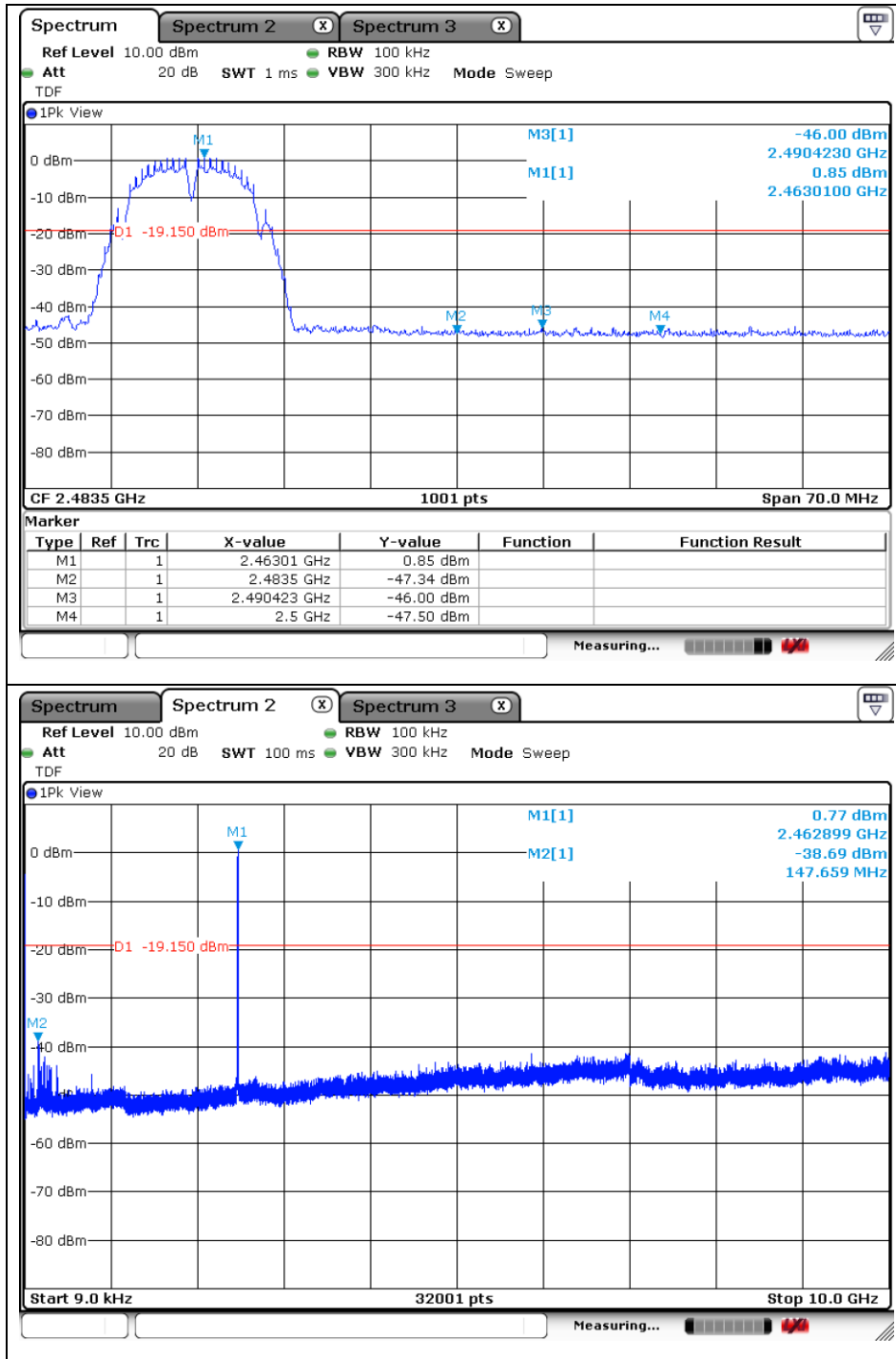
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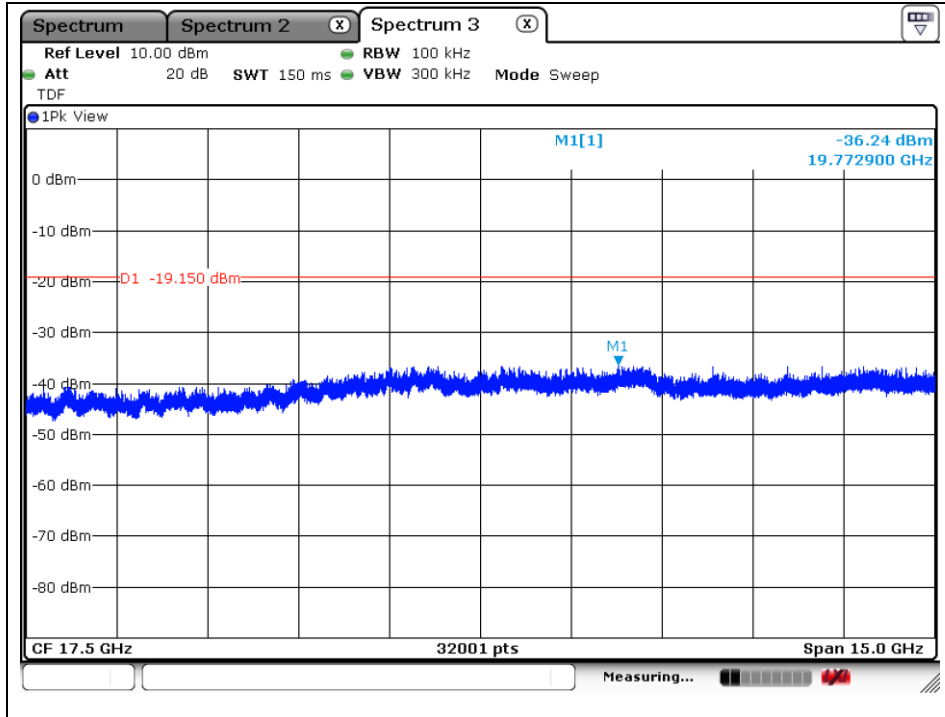
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High Channel



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