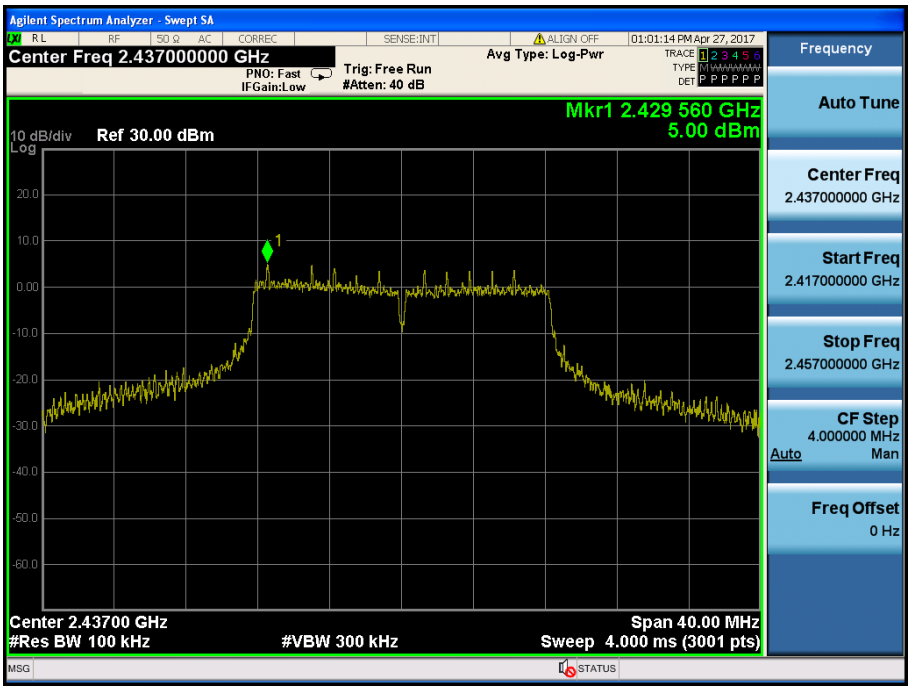
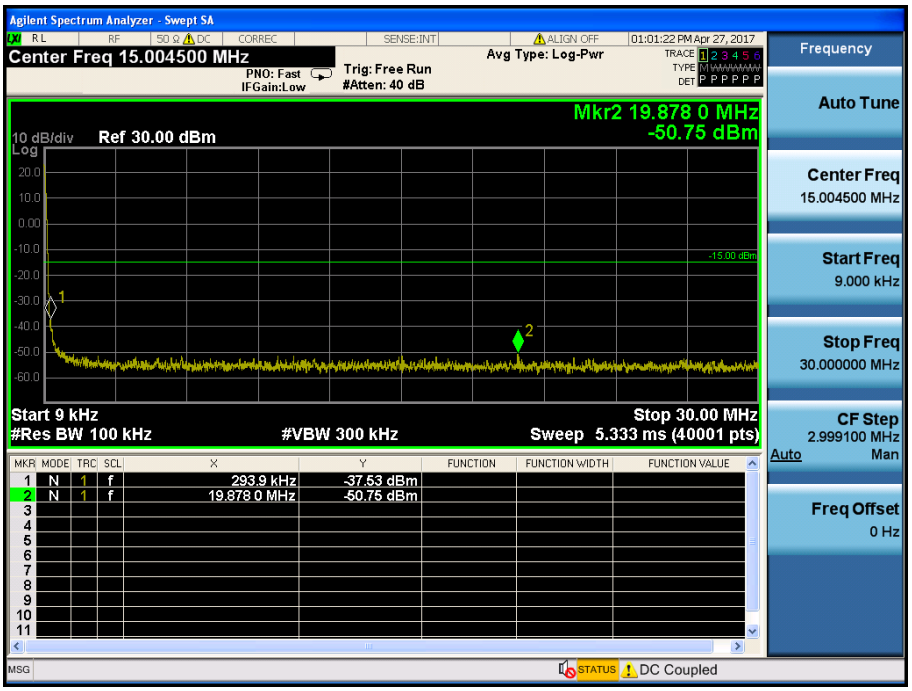
802.11g & 6 Mbps & 2437 MHz

Reference



Conducted Spurious Emissions



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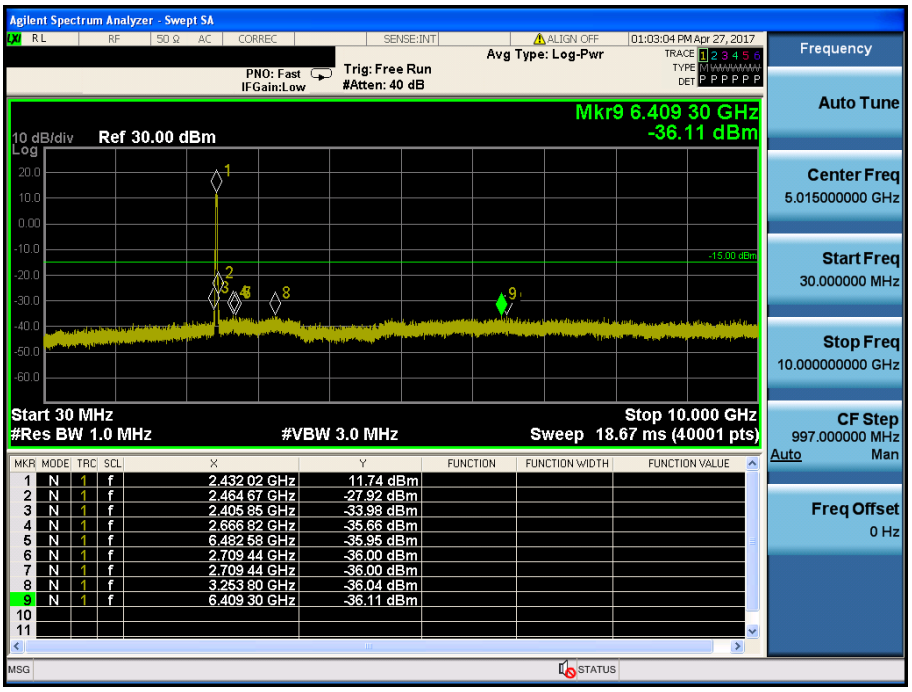
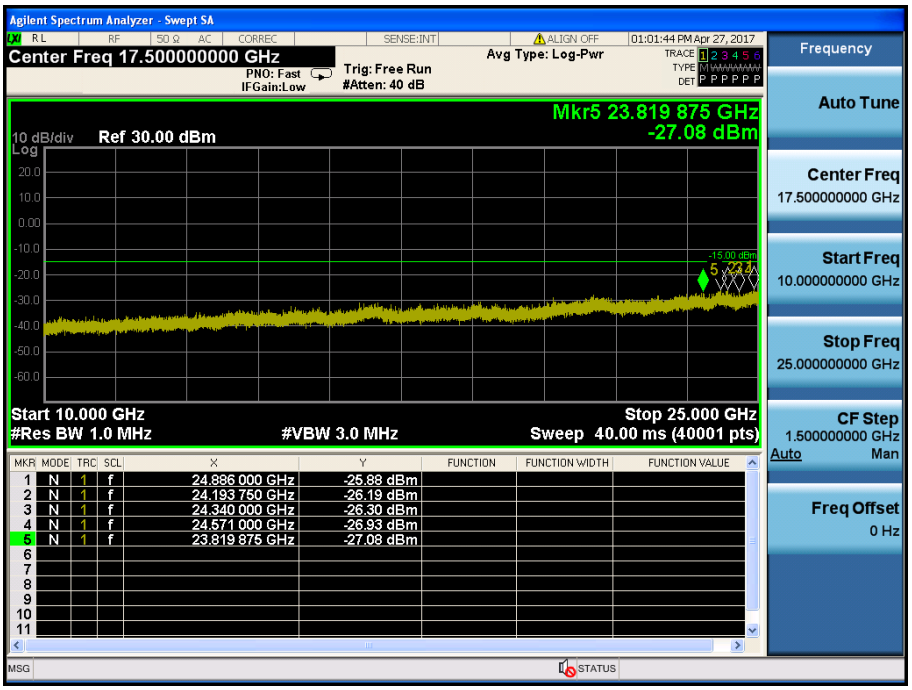
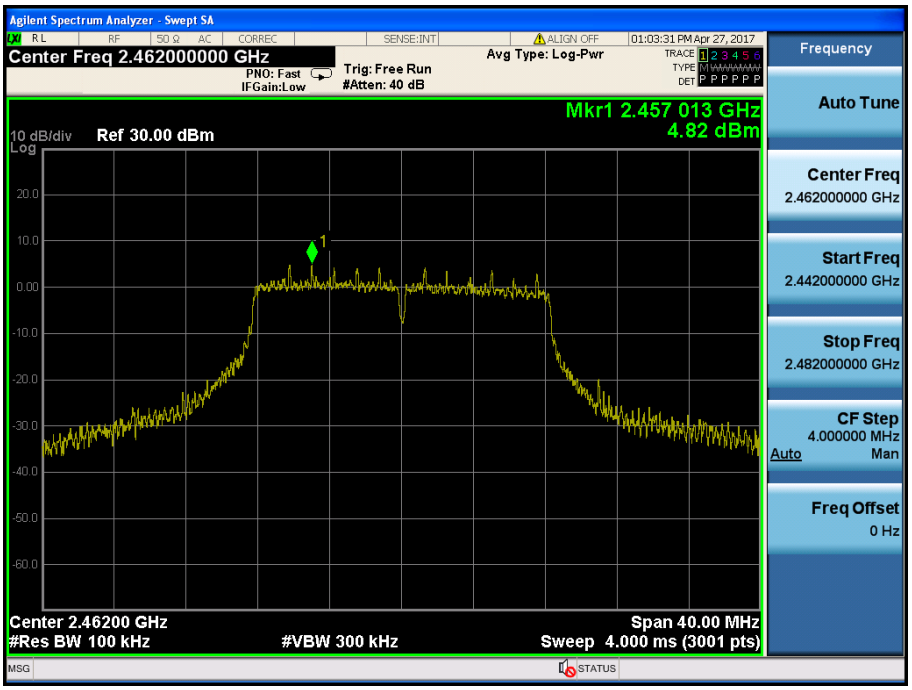


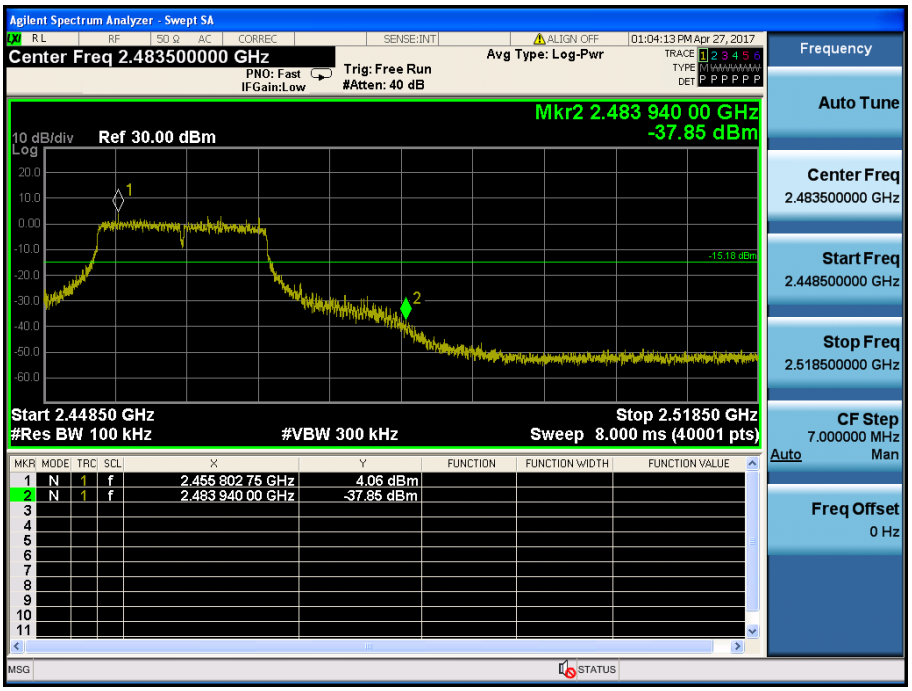


802.11g & 6 Mbps & 2462 MHz

Reference



High Band-edge



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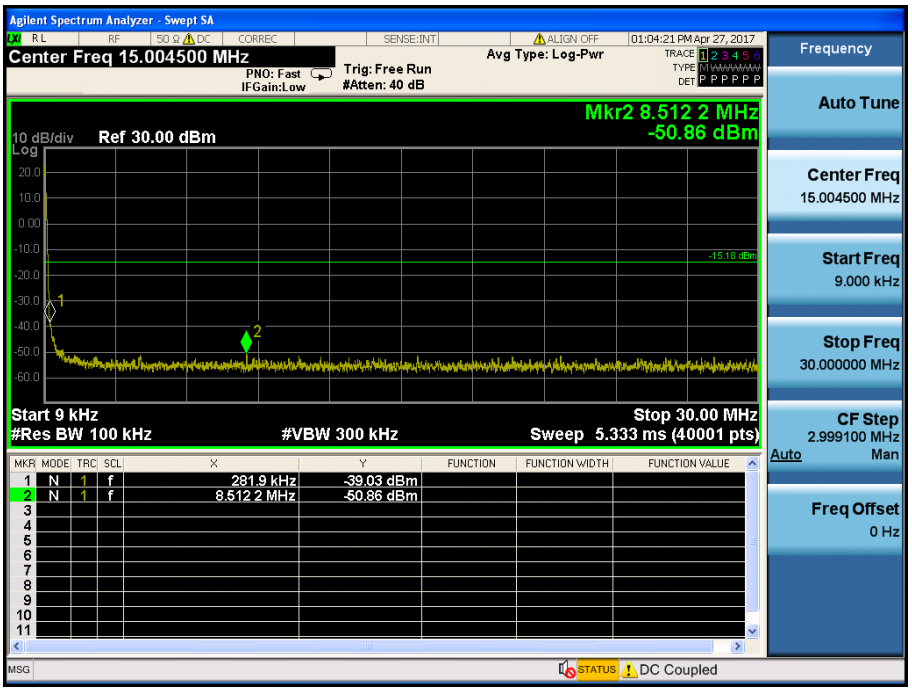

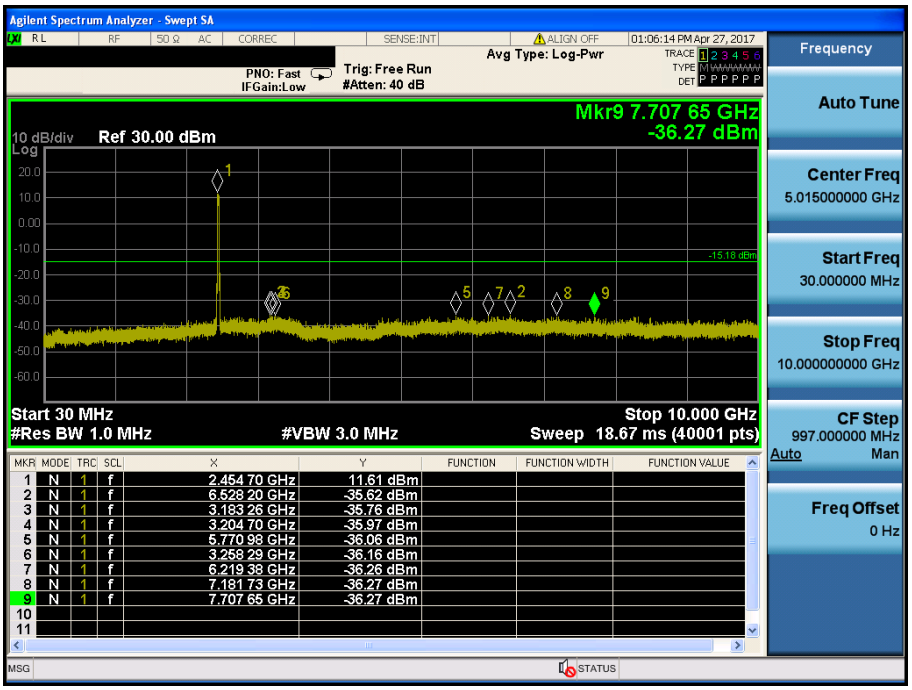

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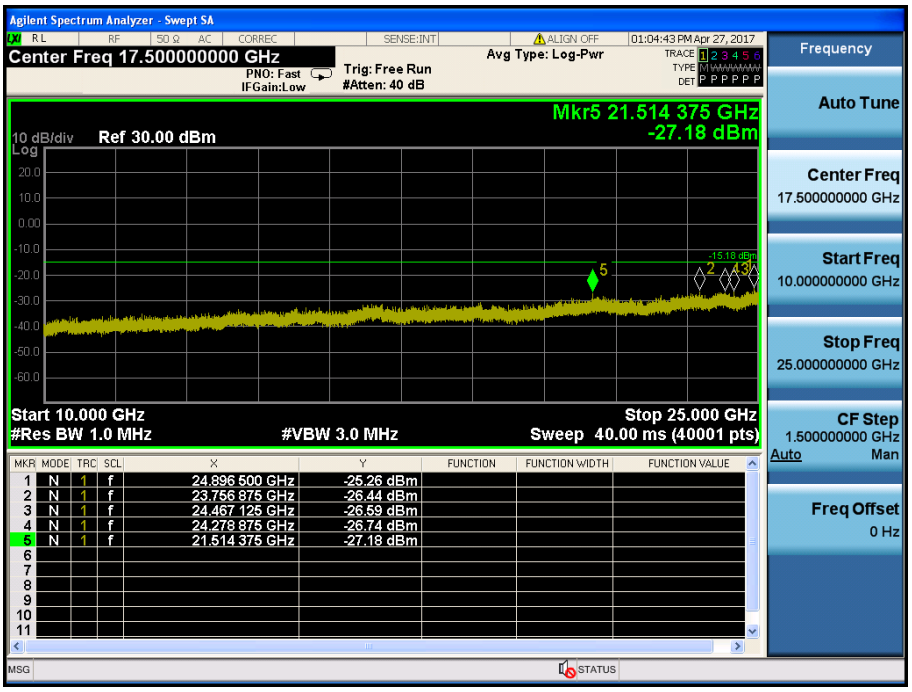
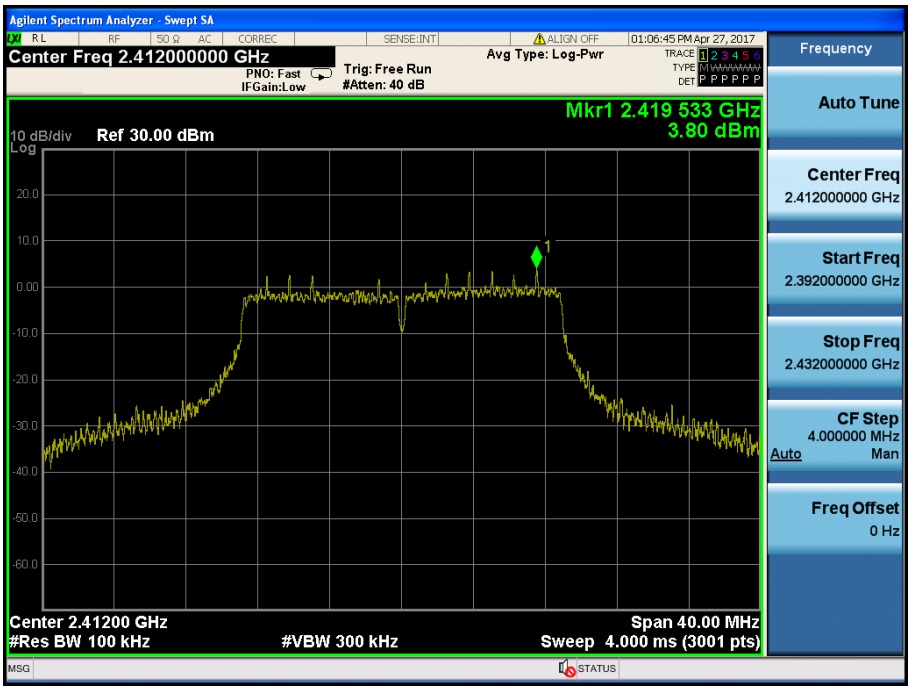
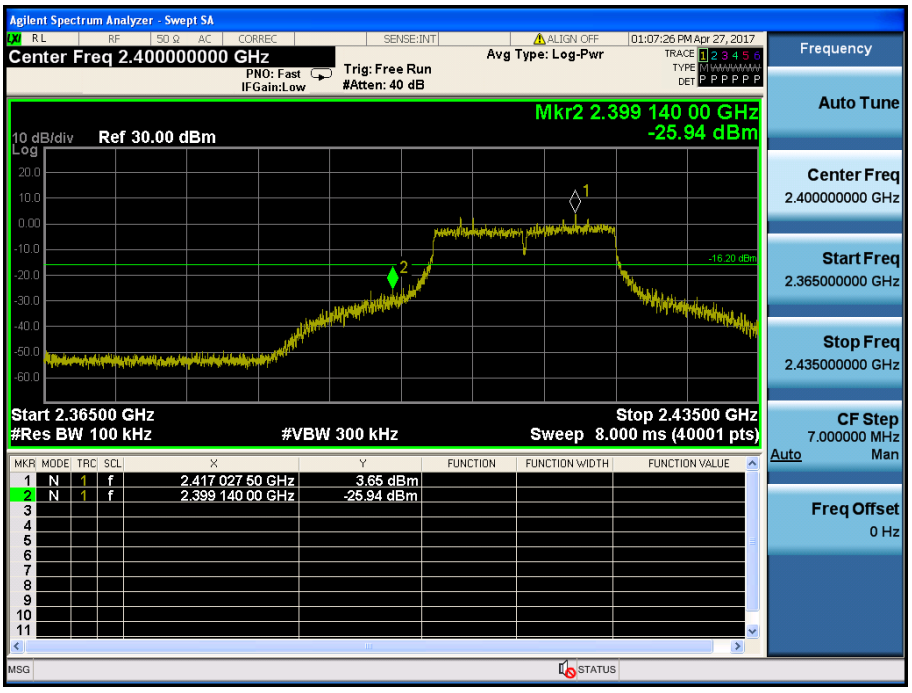


802.11n(HT20) & MCS 0 & 2412 MHz

Reference



Low Band-edge



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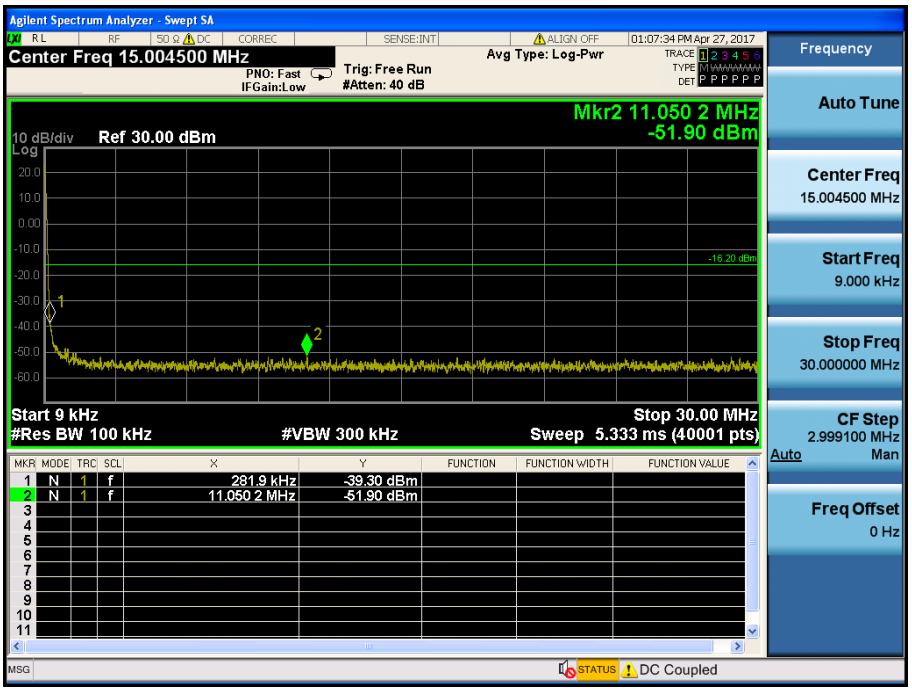

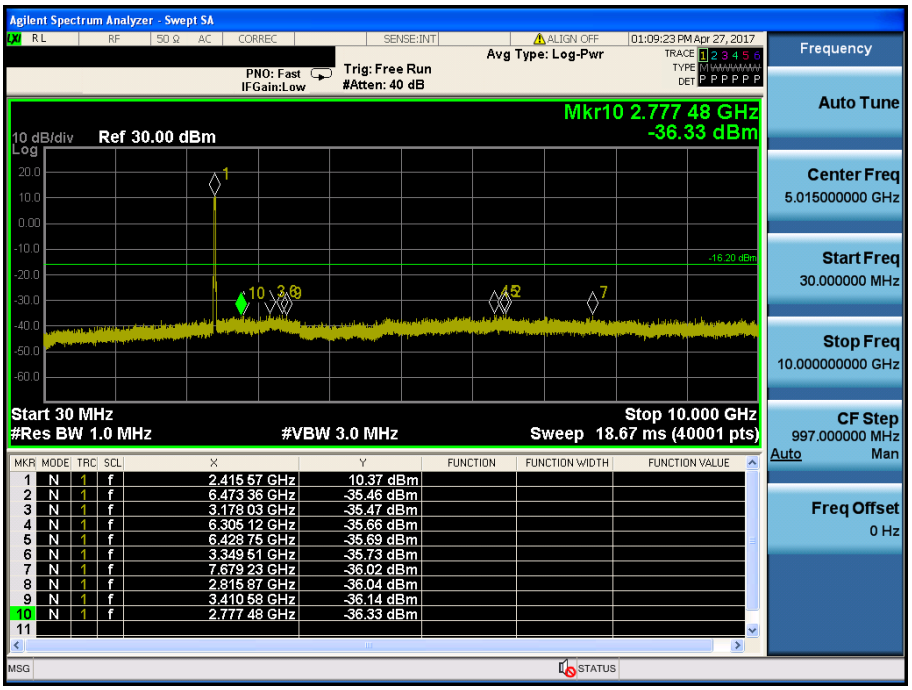

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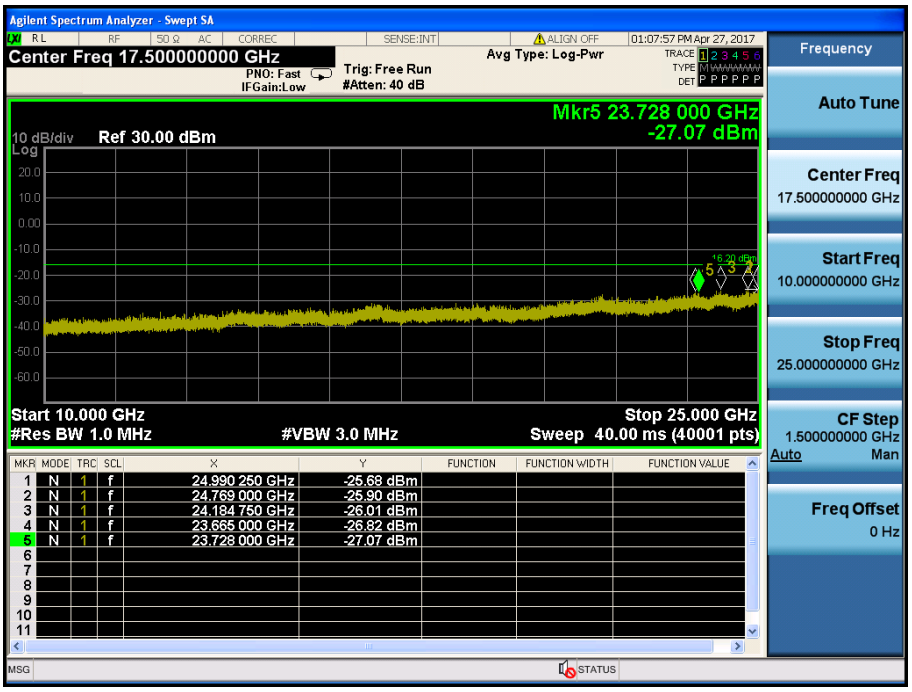
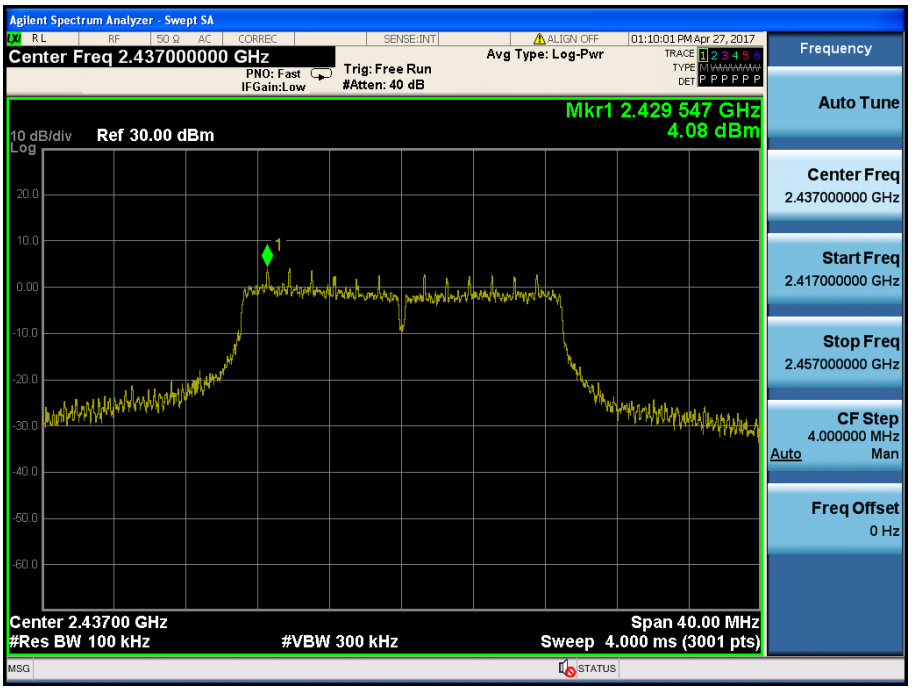


802.11n(HT20) & MCS 0 & 2437 MHz

Reference



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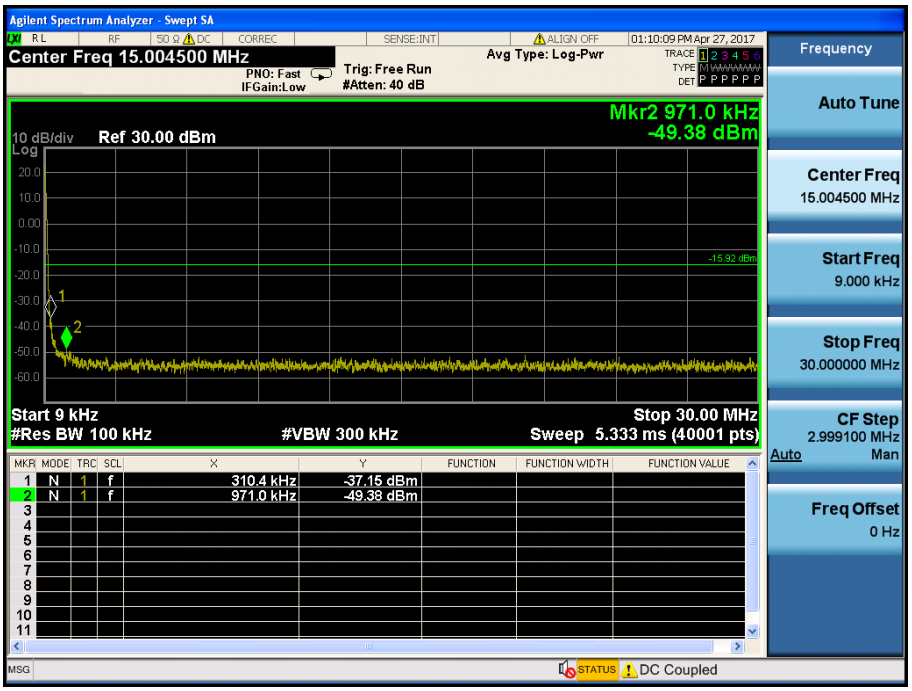

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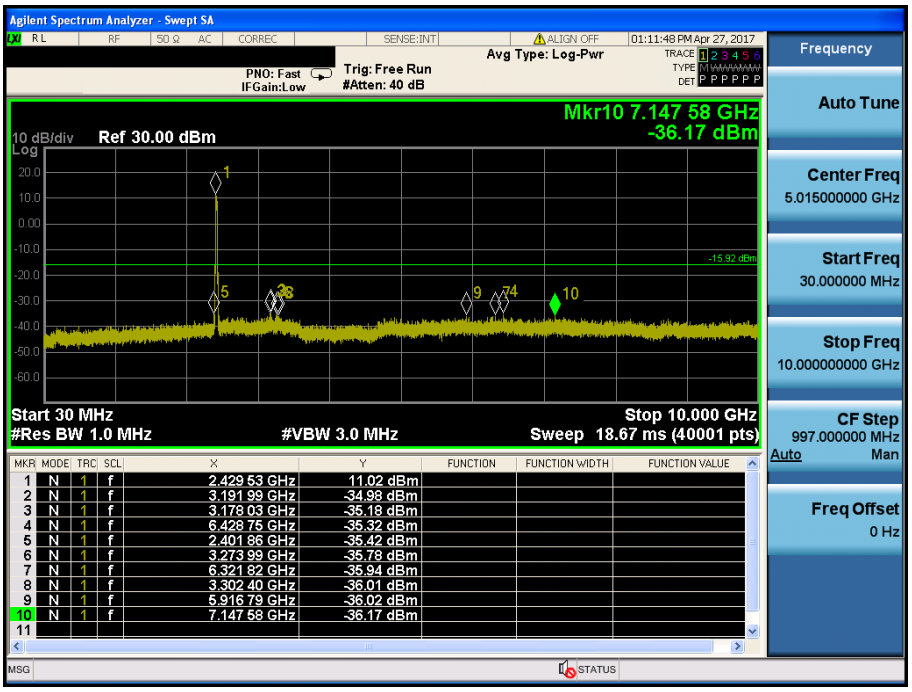
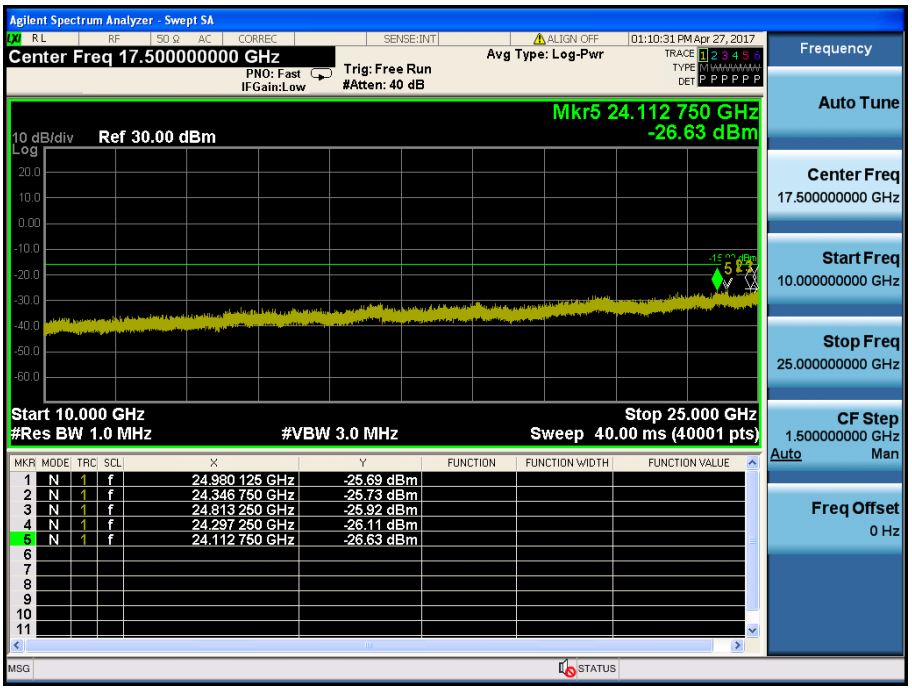
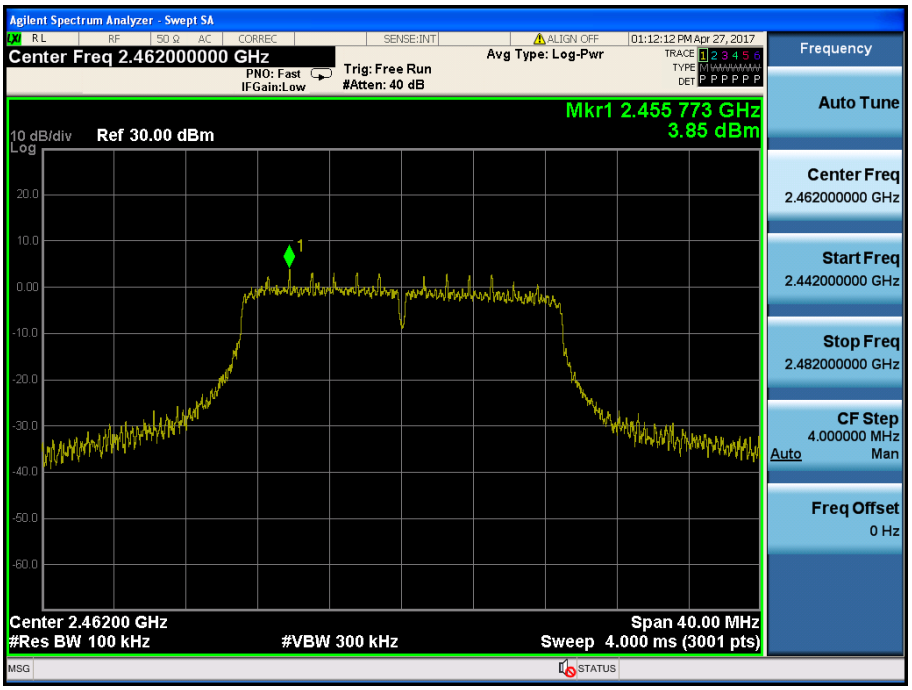


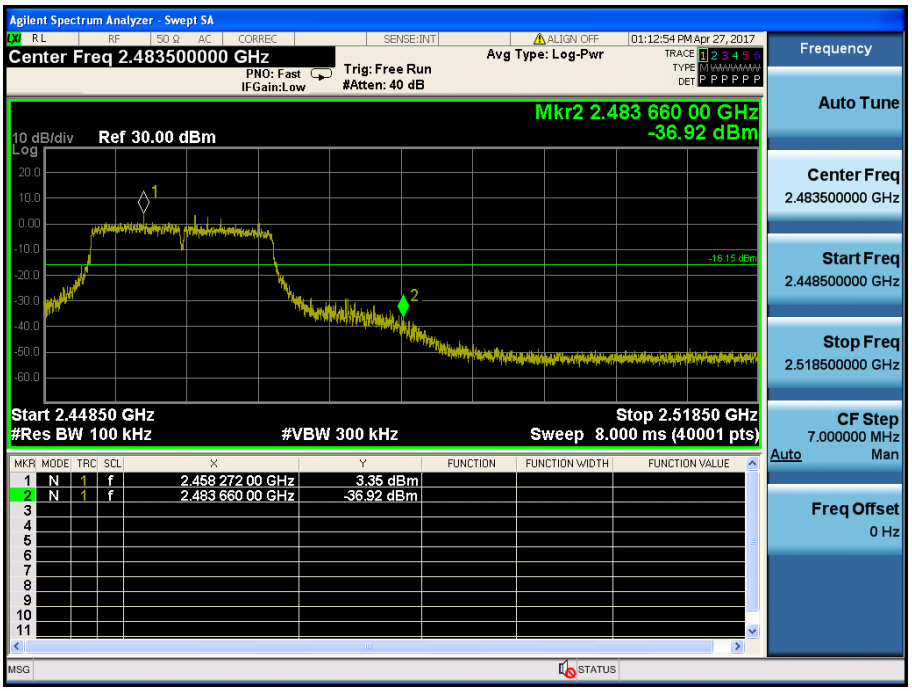


802.11n(HT20) & MCS 0 & 2462 MHz

Reference



High Band-edge



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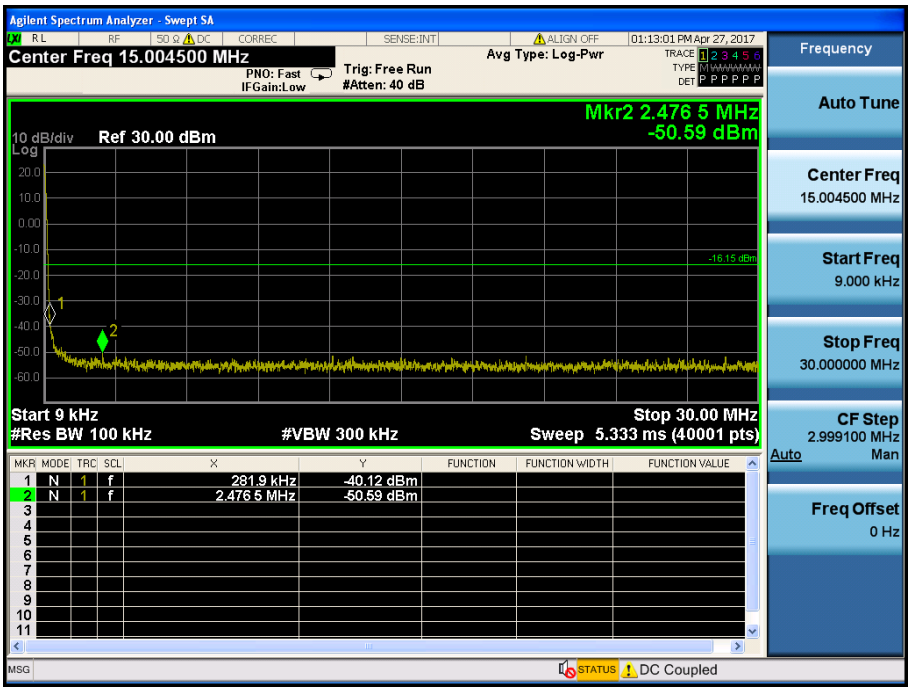

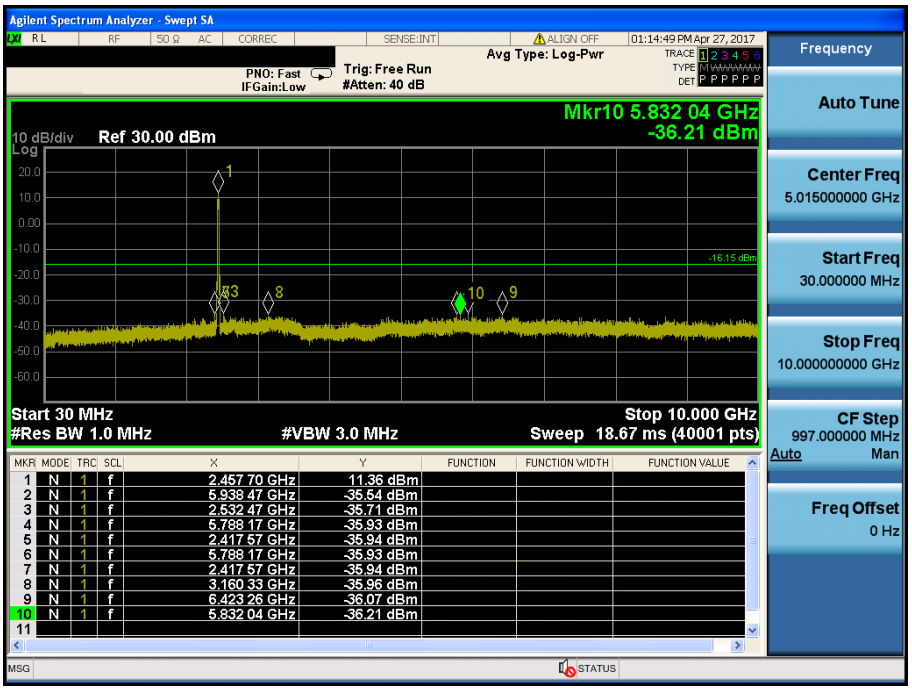

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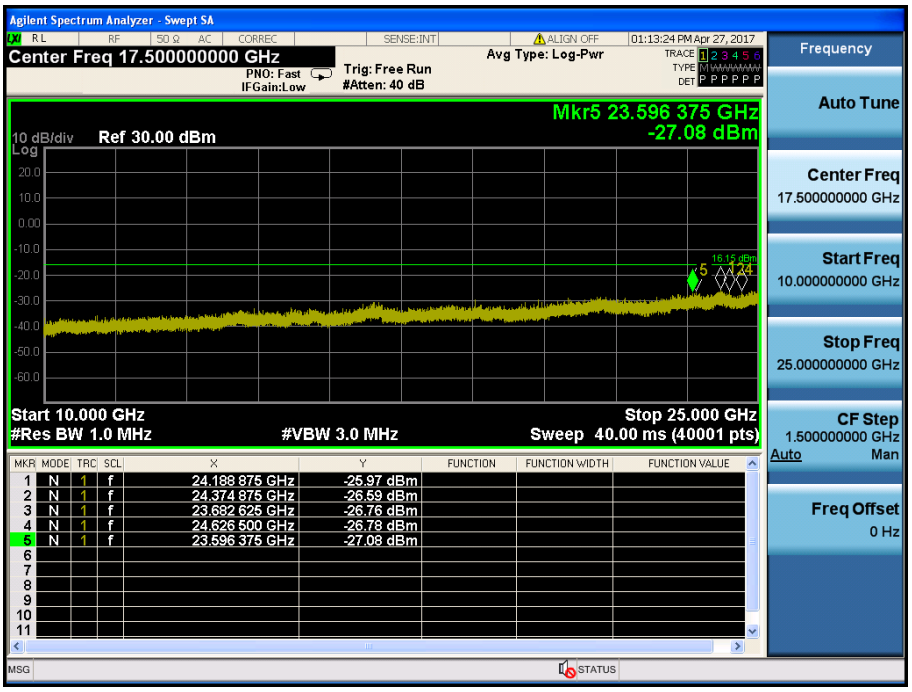


6.5 Radiated Spurious Emissions

▣ **Test Requirements and limit, §15.247(d), §15.205, §15.209**

In any 100 kHz bandwidth outside the operating frequency band, 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. In case the emission fall within the restricted band specified on 15.205(a) and (b), then the 15.209(a) limit in the table below has to be followed.

▪ **FCC Part 15.209(a) and (b)**

Frequency (MHz)	Limit (uV/m)	Measurement Distance (meter)
0.009 – 0.490	2400/F (kHz)	300
0.490 – 1.705	24000/F (kHz)	30
1.705 – 30.0	30	30
30 ~ 88	100 **	3
88 ~ 216	150 **	3
216 ~ 960	200 **	3
Above 960	500	3

** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

▪ **FCC Part 15.205 (a):** Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	MHz	GHz	GHz
0.009 ~ 0.110	8.41425 ~ 8.41475	108 ~ 121.94	1300 ~ 1427	4.5 ~ 5.15	14.47 ~ 14.5
0.495 ~ 0.505	12.29 ~ 12.293	123 ~ 138	1435 ~ 1626.5	5.35 ~ 5.46	15.35 ~ 16.2
2.1735 ~ 2.1905	12.51975 ~ 12.52025	149.9 ~ 150.05	1645.5 ~ 1646.5	7.25 ~ 7.75	17.7 ~ 21.4
4.125 ~ 4.128	12.57675 ~ 12.57725	156.52475 ~	1660 ~ 1710	8.025 ~ 8.5	22.01 ~ 23.12
4.17725 ~ 4.17775	13.36 ~ 13.41	156.52525	1718.8 ~ 1722.2	9.0 ~ 9.2	23.6 ~ 24.0
4.20725 ~ 4.20775	16.42 ~ 16.423	156.7 ~ 156.9	2200 ~ 2300	9.3 ~ 9.5	31.2 ~ 31.8
6.215 ~ 6.218	16.69475 ~ 16.69525	162.0125 ~ 167.17	2310 ~ 2390	10.6 ~ 12.7	36.43 ~ 36.5
6.26775 ~ 6.26825	16.80425 ~ 16.80475	167.72 ~ 173.2	2483.5 ~ 2500	13.25 ~ 13.4	Above 38.6
6.31175 ~ 6.31225	25.5 ~ 25.67	240 ~ 285	2655 ~ 2900		
8.291 ~ 8.294	37.5 ~ 38.25	322 ~ 335.4	3260 ~ 3267		
8.362 ~ 8.366	73 ~ 74.6	399.90 ~ 410	3332 ~ 3339		
8.37625 ~ 8.38675	74.8 ~ 75.2	608 ~ 614	3345.8 ~ 3358		
		960 ~ 1240	3600 ~ 4400		

▪ **FCC Part 15.205(b):** The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector.
Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

▣ Test Configuration

Refer to the APPENDIX I.

▣ Test Procedure

1. The EUT is placed on a non-conductive table, emission measurements at below 1 GHz, the table height is 80 cm and above 1 GHz, the table height is 1.5 m.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 1 or 3 m away from the receiving antenna, which is varied from 1 m to 4 m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.

- **KDB558074 D01v05 - Section 8.6**
- **ANSI C63.10-2013 – Section 11.12**

Peak Measurement

RBW = As specified in below table, VBW ≥ 3 x RBW, Sweep = Auto, Detector = Peak, Trace mode = Max Hold until the trace stabilizes.

Frequency	RBW
9-150 kHz	200-300 Hz
0.15-30 MHz	9-10 kHz
30-1000 MHz	100-120 kHz
> 1000 MHz	1 MHz

Average Measurement:

1. RBW = 1 MHz (unless otherwise specified).
2. VBW ≥ 3 x RBW.
3. Detector = RMS (Number of points ≥ 2 x Span / RBW)
4. Averaging type = power. (i.e., RMS)
5. Sweep time = auto.
6. Perform a trace average of at least 100 traces.
7. 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:

1) If power averaging (RMS) mode was used in step 4, then the applicable correction factor is 10 log(1/x), where x is the duty cycle.
2) If linear voltage averaging mode was used in step 4, then the applicable correction factor is 20 log(1/x), where x is the duty cycle.
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.

Duty Cycle Corrections (Refer to appendix II for duty cycle measurement procedure and plots)

Band	Duty Cycle (%)	T_{on} (ms)	T_{on}+ T_{off} (ms)	DCF = 10log(1 / Duty) (dB)
802.11b	97.62	8.190	8.390	0.10
802.11g	87.16	1.358	1.558	0.60
802.11n(HT20)	86.39	1.269	1.469	0.64
-	-	-	-	-

9 kHz~ 25 GHz Data (***802.11b & 1 Mbps***)

▪ 2412 MHz

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2389.73	H	X	PK	50.61	0.78	N/A	N/A	51.39	74.00	22.61
2389.80	H	X	AV	39.39	0.78	0.10	N/A	40.27	54.00	13.73
4823.97	H	Z	PK	48.56	7.60	N/A	N/A	56.16	74.00	17.84
4824.04	H	Z	AV	42.95	7.60	0.10	N/A	50.65	54.00	3.35

▪ 2437 MHz

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4874.10	V	X	PK	47.16	7.54	N/A	N/A	54.70	74.00	19.30
4874.03	V	X	AV	40.26	7.54	0.10	N/A	47.90	54.00	6.10

▪ 2462 MHz

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2483.57	H	X	PK	49.73	1.10	N/A	N/A	50.83	74.00	23.17
2483.56	H	X	AV	40.16	1.10	0.10	N/A	41.36	54.00	12.64
4923.96	H	X	PK	46.39	7.40	N/A	N/A	53.79	74.00	20.21
4923.96	H	X	AV	40.11	7.40	0.10	N/A	47.61	54.00	6.39

Note.

1. The radiated emissions were investigated 9 kHz to 25GHz. And no other spurious and harmonic emissions were found above listed frequencies.
2. Sample Calculation.
   Margin = Limit – Result / Result = Reading + T.F+ DCCF + DCF / T.F = AF + CL – AG
   Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,
   DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor
3. Measurement Distance = 3 m for below 10 GHz, Measurement Distance = 1 m for above 10 GHz.
   Therefore Distance Correction Factor(DCF) : - 9.54 dB = 20*log(1m/3m)

9 kHz~ 25 GHz Data (*802.11g & 6 Mbps*)

▪ 2412 MHz

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2389.96	H	X	PK	54.60	0.78	N/A	N/A	55.38	74.00	18.62
2389.97	H	X	AV	42.41	0.78	0.60	N/A	43.79	54.00	10.21
4823.77	V	Y	PK	44.42	7.60	N/A	N/A	52.02	74.00	21.98
4823.90	V	Y	AV	33.41	7.60	0.60	N/A	41.61	54.00	12.39

▪ 2437 MHz

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4874.10	V	Y	PK	44.51	7.54	N/A	N/A	52.05	74.00	21.95
4873.66	V	Y	AV	33.58	7.54	0.60	N/A	41.72	54.00	12.28

▪ 2462 MHz

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2483.72	H	X	PK	63.23	1.10	N/A	N/A	64.33	74.00	9.67
2483.51	H	X	AV	48.95	1.10	0.60	N/A	50.65	54.00	3.35
4924.05	V	Y	PK	44.90	7.40	N/A	N/A	52.30	74.00	21.70
4924.00	V	Y	AV	33.89	7.40	0.60	N/A	41.89	54.00	12.11

Note.

1. The radiated emissions were investigated 9 kHz to 25GHz. And no other spurious and harmonic emissions were found above listed frequencies.
2. Sample Calculation.
   Margin = Limit – Result / Result = Reading + T.F+ DCCF + DCF / T.F = AF + CL – AG
   Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,
   DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor
3. Measurement Distance = 3 m for below 10 GHz, Measurement Distance = 1 m for above 10 GHz.
   Therefore Distance Correction Factor(DCF) : - 9.54 dB = 20*log(1m/3m)

9 kHz~ 25 GHz Data (*802.11n HT20 & MCS 0*)

▪ 2412 MHz

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2389.88	H	X	PK	54.88	0.78	N/A	N/A	55.66	74.00	18.34
2389.97	H	X	AV	42.85	0.78	0.64	N/A	44.27	54.00	9.73
4824.21	V	Y	PK	44.10	7.60	N/A	N/A	51.70	74.00	22.30
4823.99	V	Y	AV	33.55	7.60	0.64	N/A	41.79	54.00	12.21

▪ 2437 MHz

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4874.81	H	Z	PK	44.45	7.54	N/A	N/A	51.99	74.00	22.01
4874.70	H	Z	AV	33.54	7.54	0.64	N/A	41.72	54.00	12.28

▪ 2462 MHz

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2483.52	H	X	PK	62.45	1.10	N/A	N/A	63.55	74.00	10.45
2483.53	H	X	AV	46.30	1.10	0.64	N/A	48.04	54.00	5.96
4923.80	V	Y	PK	43.92	7.40	N/A	N/A	51.32	74.00	22.68
4924.01	V	Y	AV	33.67	7.40	0.64	N/A	41.71	54.00	12.29

Note.

1. The radiated emissions were investigated 9 kHz to 25GHz. And no other spurious and harmonic emissions were found above listed frequencies.
2. Sample Calculation.
   Margin = Limit – Result / Result = Reading + T.F+ DCCF + DCF / T.F = AF + CL – AG
   Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,
   DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor
3. Measurement Distance = 3 m for below 10 GHz, Measurement Distance = 1 m for above 10 GHz.
   Therefore Distance Correction Factor(DCF) : - 9.54 dB = 20*log(1m/3m)

6.6 Power-line conducted emissions

Test Requirements and limit, §15.207

▣ Test Requirements and limit, §15.207

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 uH/50 ohm line impedance stabilization network(LISN).

Compliance with the provision of this paragraph shall on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequency ranges.

Frequency Range (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 ~ 0.5	66 to 56 *	56 to 46 *
0.5 ~ 5	56	46
5 ~ 30	60	50

* Decreases with the logarithm of the frequency

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

▣ Test Procedure

1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to the test power supply.
3. The measurement results are obtained as described below:
4. Detectors – Quasi Peak and Average Detector.

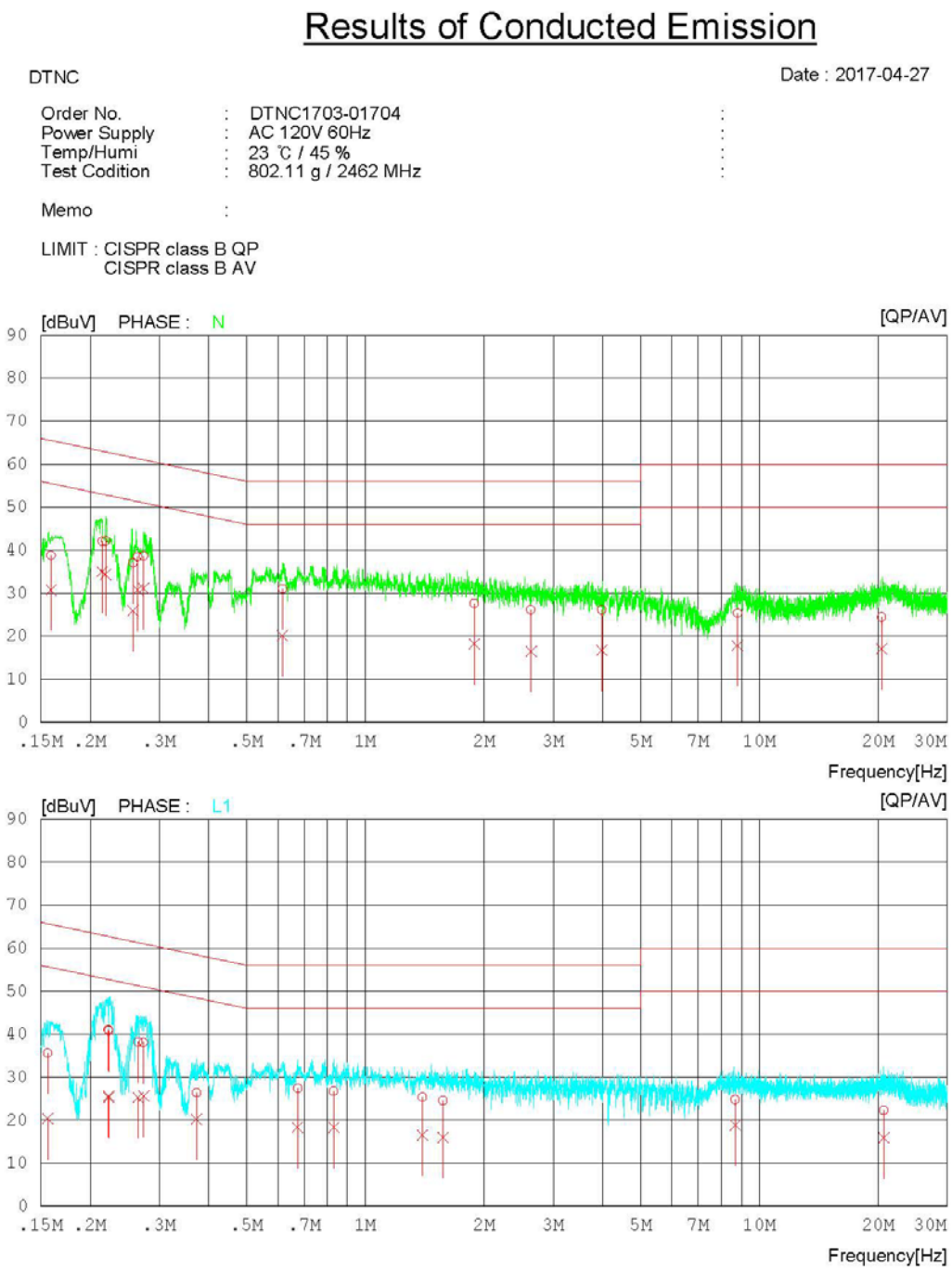
▣ Test Results: Comply(Refer to next page.)

The worst data was reported.

▣ RESULT PLOTS

AC Line Conducted Emissions (Graph)

Test Mode: 802.11g & 6Mbps & 2462 MHz



AC Line Conducted Emissions (List)

Test Mode: 802.11g & 6Mbps & 2462 MHz

Results of Conducted Emission

DTNC

Date : 2017-04-27

Order No.	:	DTNC1703-01704	:
Power Supply	:	AC 120V 60Hz	:
Temp/Humi	:	23 ℃ / 45 %	:
Test Codition	:	802.11 g / 2462 MHz	:

Memo :

LIMIT : CISPR class B QP
CISPR class B AV

NO	FREQ	READING QP	READING AV	C.FACTOR	RESULT QP	RESULT AV	LIMIT QP	LIMIT AV	MARGIN QP	MARGIN AV	PHASE
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	
1	0.15933	28.6	20.6	10.2	38.8	30.8	65.5	55.5	26.7	24.7	N
2	0.21486	31.9	24.8	10.2	42.1	35.0	63.0	53.0	20.9	18.0	N
3	0.21917	32.0	24.2	10.2	42.2	34.4	62.9	52.9	20.7	18.5	N
4	0.25698	26.9	15.7	10.2	37.1	25.9	61.5	51.5	24.4	25.6	N
5	0.26433	28.3	20.6	10.2	38.5	30.8	61.3	51.3	22.8	20.5	N
6	0.27347	28.4	20.9	10.2	38.6	31.1	61.0	51.0	22.4	19.9	N
7	0.61614	20.8	10.0	10.2	31.0	20.2	56.0	46.0	25.0	25.8	N
8	1.88960	17.4	8.0	10.3	27.7	18.3	56.0	46.0	28.3	27.7	N
9	2.63400	15.8	6.1	10.4	26.2	16.5	56.0	46.0	29.8	29.5	N
10	3.98680	15.7	6.4	10.4	26.1	16.8	56.0	46.0	29.9	29.2	N
11	8.80760	14.6	7.1	10.7	25.3	17.8	60.0	50.0	34.7	32.2	N
12	20.44480	12.8	5.4	11.7	24.5	17.1	60.0	50.0	35.5	32.9	N
13	0.15617	25.5	10.2	10.1	35.6	20.3	65.7	55.7	30.1	35.4	L1
14	0.22300	30.7	15.2	10.1	40.8	25.3	62.7	52.7	21.9	27.4	L1
15	0.22261	30.9	15.5	10.1	41.0	25.6	62.7	52.7	21.7	27.1	L1
16	0.26480	28.1	15.1	10.1	38.2	25.2	61.3	51.3	23.1	26.1	L1
17	0.27343	28.0	15.5	10.1	38.1	25.6	61.0	51.0	22.9	25.4	L1
18	0.37265	16.1	10.0	10.2	26.3	20.2	58.4	48.4	32.1	28.2	L1
19	0.67348	17.2	8.1	10.2	27.4	18.3	56.0	46.0	28.6	27.7	L1
20	0.83065	16.4	8.1	10.2	26.6	18.3	56.0	46.0	29.4	27.7	L1
21	1.39580	15.1	6.3	10.2	25.3	16.5	56.0	46.0	30.7	29.5	L1
22	1.57420	14.2	5.7	10.3	24.5	16.0	56.0	46.0	31.5	30.0	L1
23	8.69800	13.9	8.1	10.8	24.7	18.9	60.0	50.0	35.3	31.1	L1
24	20.70800	10.4	4.1	11.8	22.2	15.9	60.0	50.0	37.8	34.1	L1

6.7 Occupied Bandwidth

Test Requirements, RSS-Gen [6.7]

When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99 % emission bandwidth, as calculated or measured.

▣ TEST CONFIGURATION

Refer to the APPENDIX I.

▣ TEST PROCEDURE

- The transmitter shall be operated at its maximum carrier power measured under normal test conditions.
- The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.
- The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3x RBW.

▣ TEST RESULTS: Comply

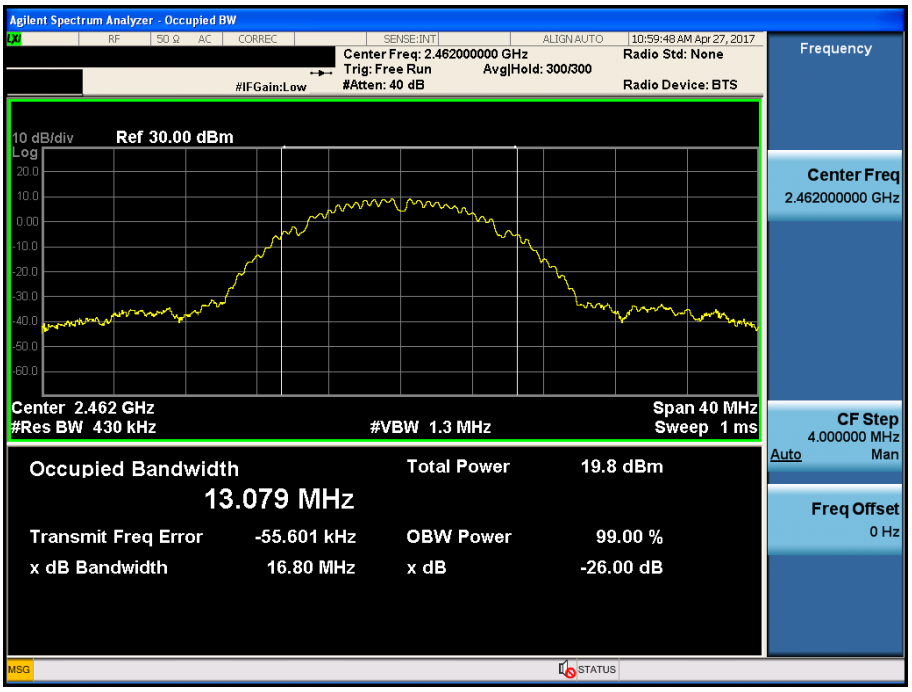
Test Mode	Data Rate	Frequency [MHz]	Test Results [MHz]
802.11b	1 Mbps	2412	13.458
		2437	13.580
		2462	13.079
802.11g	6 Mbps	2412	17.704
		2437	19.118
		2462	17.324
802.11n (HT20)	MCS 0	2412	18.509
		2437	18.914
		2462	18.163

▣ RESULT PLOTS

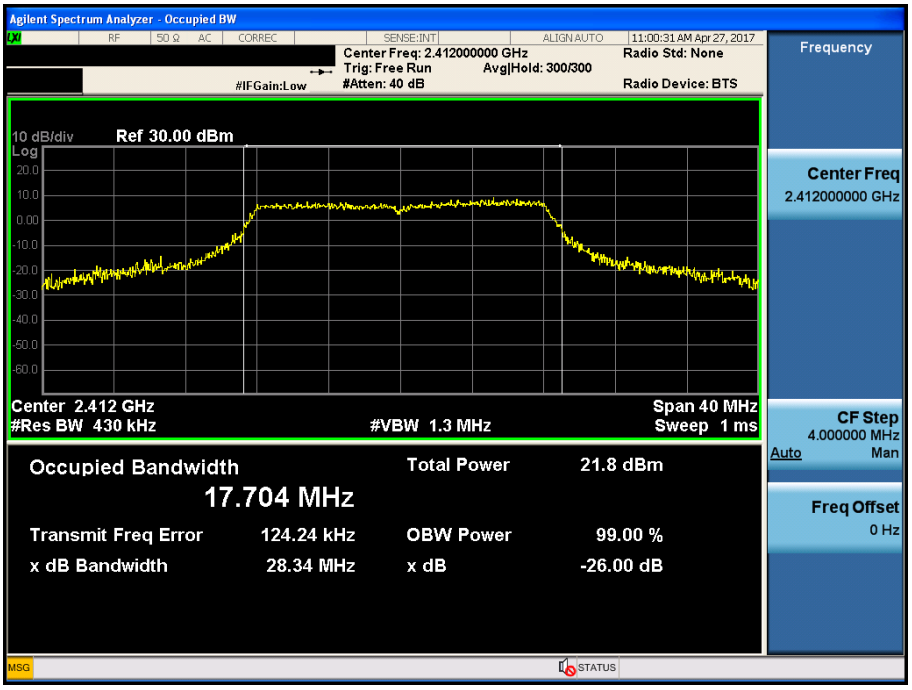
Occupied Bandwidth Test Mode: 802.11b & 1 Mbps & 2412 MHz

Occupied Bandwidth Test Mode: 802.11b & 1 Mbps & 2437 MHz

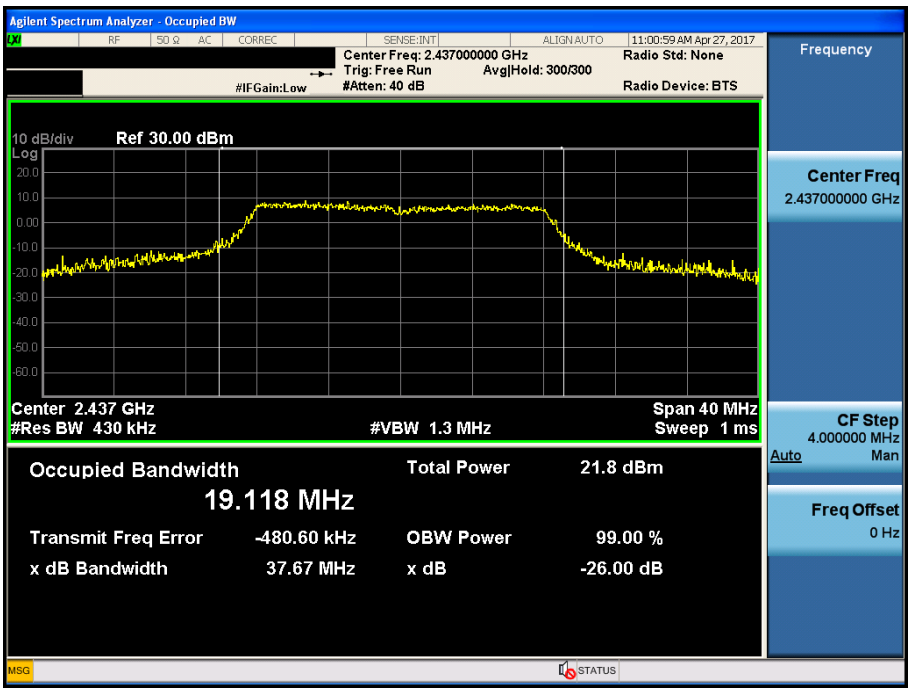
Occupied Bandwidth Test Mode: 802.11b & 1 Mbps & 2462 MHz



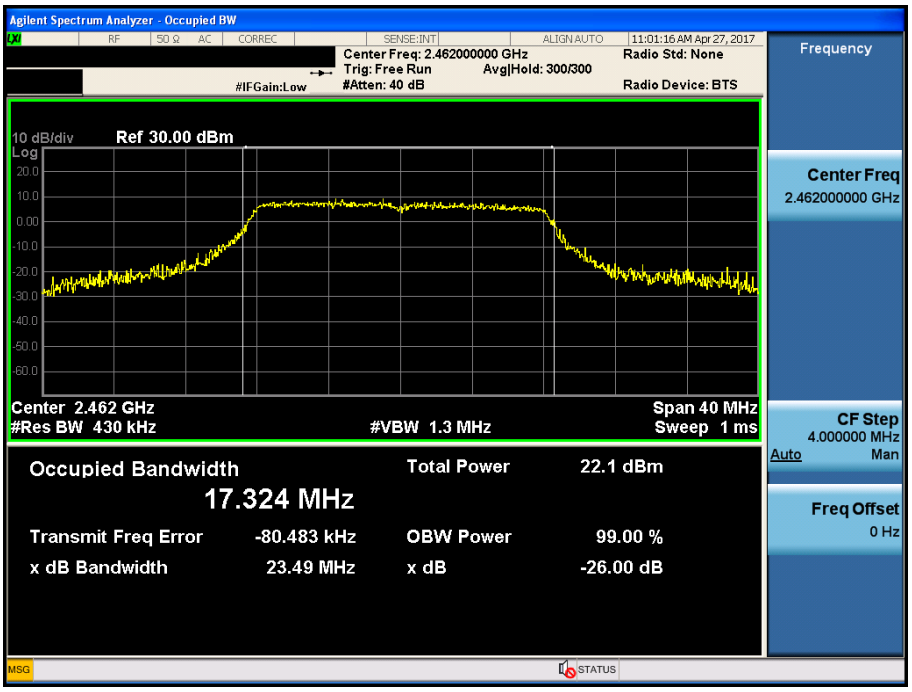
Occupied Bandwidth Test Mode: 802.11g & 6 Mbps & 2412 MHz



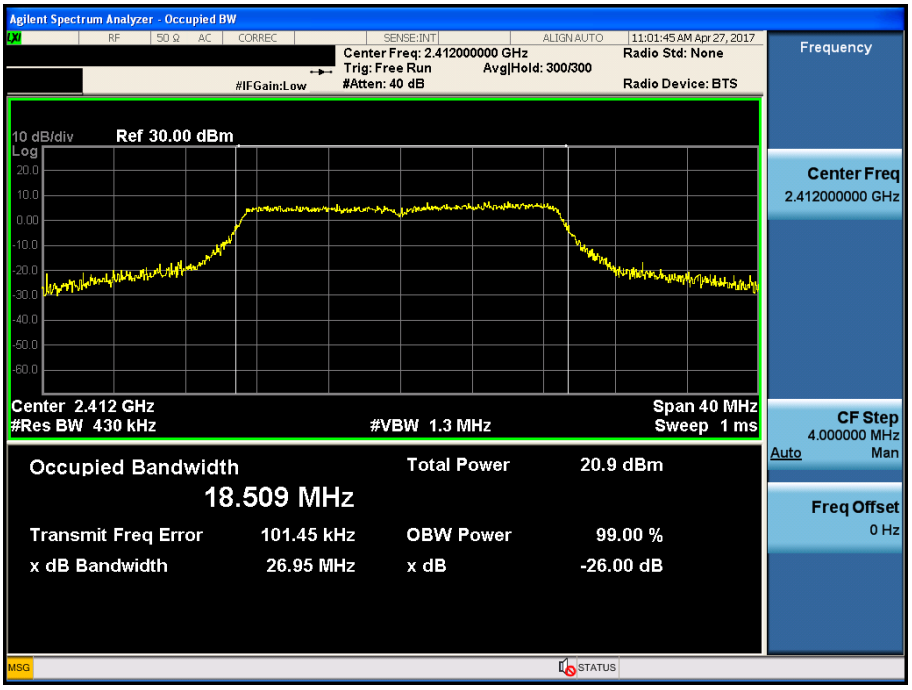
Occupied Bandwidth Test Mode: 802.11g & 6 Mbps & 2437 MHz



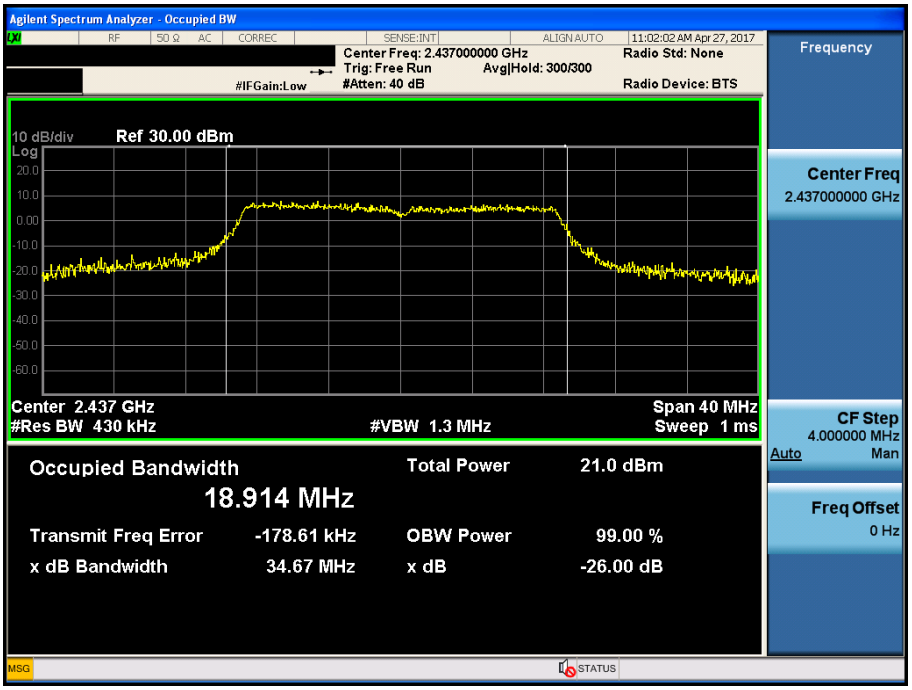
Occupied Bandwidth Test Mode: 802.11g & 6 Mbps & 2462 MHz



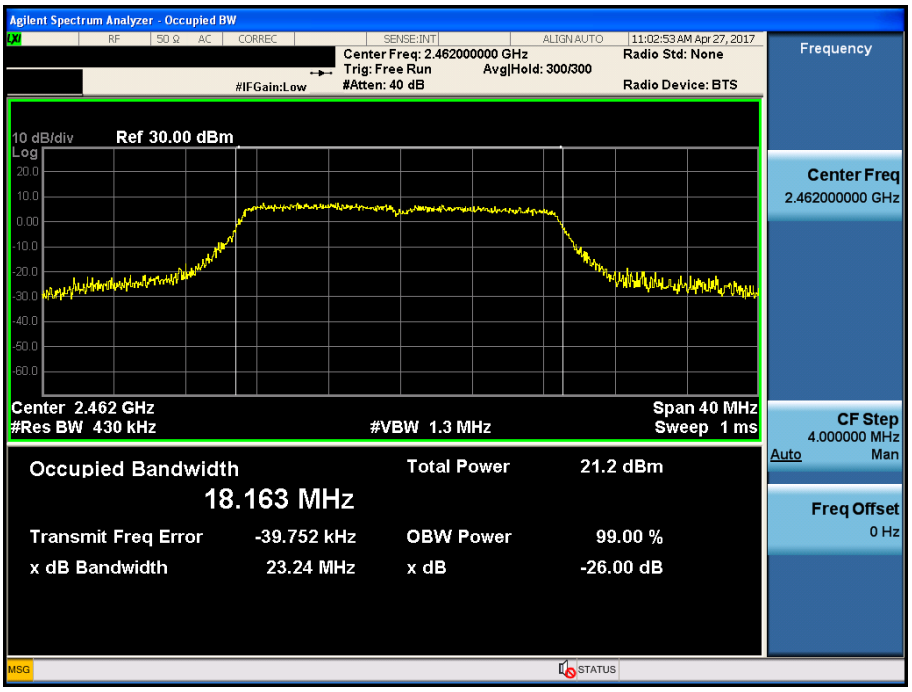
Occupied Bandwidth Test Mode: 802.11n(HT20) & MCS 0 & 2412 MHz



Occupied Bandwidth Test Mode: 802.11n(HT20) & MCS 0 & 2437 MHz



Occupied Bandwidth Test Mode: 802.11n(HT20) & MCS 0 & 2462 MHz



7. LIST OF TEST EQUIPMENT

Original test(Date of Test : 2017.03.20 ~ 2017.07.03)

Type	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal.Date (yy/mm/dd)	S/N
Spectrum Analyzer	Agilent Technologies	N9020A	16/08/18 17/07/12	17/08/18 18/07/12	MY46471601
Spectrum Analyzer	Agilent Technologies	N9020A	16/10/11	17/10/11	MY46471251
Multimeter	FLUKE	17B	17/04/12	18/04/12	26030065WS
DC Power Supply	Agilent	66332A	17/01/11	18/01/11	US37473831
Signal Generator	Rohde Schwarz	SMBV100A	17/01/04	18/01/04	255571
Signal Generator	Rohde Schwarz	SMF100A	16/06/23	17/06/23	102341
Thermohygrometer	HCT	HCT-1	16/09/09	17/09/09	NONE
50W 10dB ATT	SMAJK	SMAJK-50-10	16/10/18	17/10/18	2-50-10
Loop Antenna	Schwarzbeck	FMZB1513	16/04/22	18/04/22	1513-128
BILOG ANTENNA	Schwarzbeck	VULB 9160	16/05/13	18/05/13	3358
Horn Antenna	ETS-LINDGREN	3117	16/05/03	18/05/03	00140394
Horn Antenna	A.H.Systems Inc.	SAS-574	15/09/03	17/09/03	155
PreAmplifier	Agilent	8449B	17/01/11	18/01/11	3008A00370
PreAmplifier	TSJ	MLA-010K01-B01-27	17/03/06	18/03/06	1844539
EMI Test Receiver	Rohde Schwarz	ESR7	17/02/16	18/02/16	101061
High-pass filter	Wainwright	WHKX12-2580-3000-18000-80SS	16/09/09	17/09/09	3
High-pass filter	Wainwright	WHNX6-6320-8000-26500-40CC	16/09/13	17/09/13	1
Power Meter & Wide Bandwidth Sensor	Anritsu	ML2495A MA2490A	16/10/19	17/10/19	1308003 1249304
EMI TEST RECEIVER	R&S	ESCI	17/02/26	18/02/16	100364
PULSE LIMITER	Rohde Schwarz	ESH3-Z2	17/01/03	18/01/03	101334
SINGLE-PHASE MASTER	NF	4420	16/09/08	17/09/08	3049354420023
Artificial Mains Network	Narda S.T.S. / PMM	PMM L2-16B	17/06/07	18/06/07	000WX20305

Spot check test(Date of Test: 2019.02.07 ~ 2019.02.10)

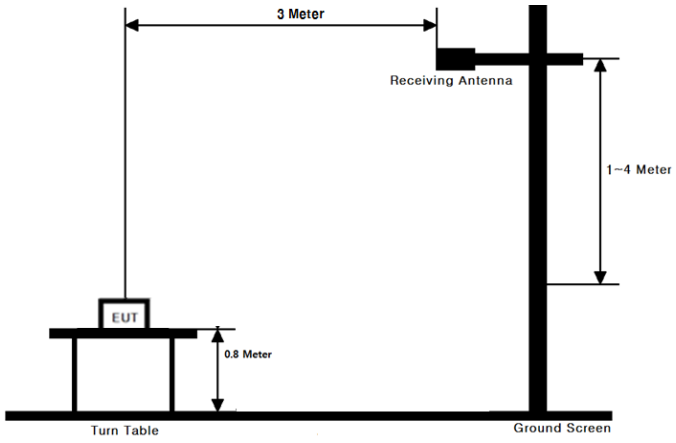
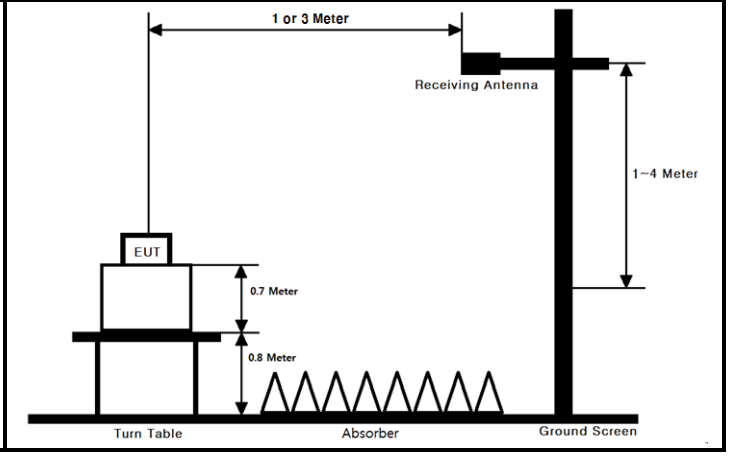
Type	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal.Date (yy/mm/dd)	S/N
Spectrum Analyzer	Agilent Technologies	N9020A	18/07/09	19/07/09	MY46471251
Thermohygrometer	BODYCOM	BJ5478	18/12/27	19/12/27	120612-2
Signal Generator	Rohde Schwarz	SMBV100A	18/12/19	19/12/19	255571
Signal Generator	ANRITSU	SMF100A	18/06/07	19/06/07	102341
Loop Antenna	Schwarzbeck	FMZB1513	18/01/30	20/01/30	1513-128
Bilog Antenna	Schwarzbeck	VULB 9160	18/07/13	20/07/13	3359
HORN ANT	ETS	3117	18/05/10	20/05/10	00140394
HORN ANT	A.H.Systems	SAS-574	17/07/31	19/07/31	155
PreAmplifier	H.P	8447D	18/12/18	19/12/18	2944A07774
PreAmplifier	Agilent	8449B	18/07/05	19/07/05	3008A02108
High-pass filter	Wainwright	WHKX12-2580-3000-18000-80SS	18/07/05	19/07/05	3
Cable	DTNC	Cable	18/07/06	19/07/06	M-01
Cable	DTNC	Cable	18/07/06	19/07/06	M-02
Cable	Junkosha	MWX315	18/11/19	19/11/19	M-05
Cable	Junkosha	MWX221	18/11/19	19/11/19	M-06
Cable	Junkosha	MWX241	18/06/25	19/06/25	G-04
Cable	Junkosha	MWX241	18/06/25	19/06/25	G-07

Note1: The measurement antennas were calibrated in accordance to the requirements of ANSI C63.5-2017.
Note2: The cable is not a regular calibration item, so it has been calibrated by DT & C itself.

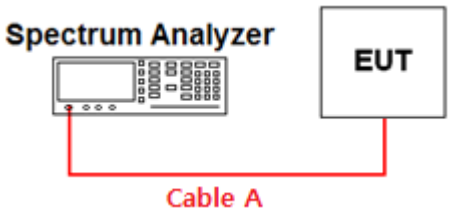
APPENDIX I

Test set up diagrams

- **Radiated Measurement**

Below 1GHz	Above 1GHz
	

- **Conducted Measurement**



Path loss information

Frequency (GHz)	Path Loss (dB)	Frequency (GHz)	Path Loss (dB)
0.03	0.07	15	3.18
1	0.75	20	4.15
2.402 & 2.440 & 2.480	1.20	25	4.55
5	1.80	-	-
10	2.33	-	-

Note 1: The path loss from EUT to Spectrum analyzer was measured and used for test.
Path loss (S/A's correction factor) = Cable A
(Attenuator, Applied only when it was used externally)

APPENDIX II

Duty cycle plots

- **Test Procedure**

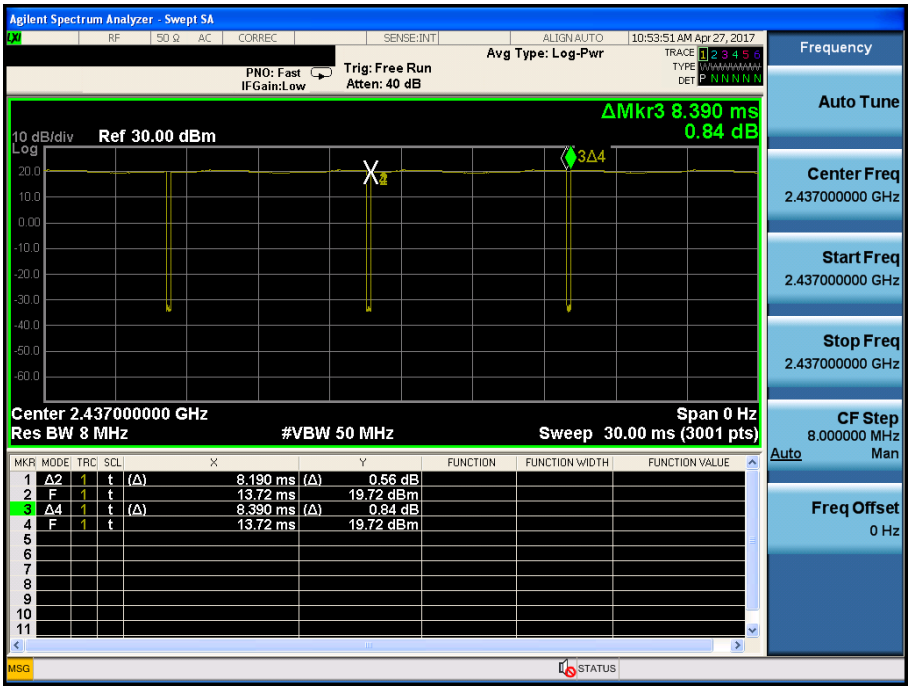
Duty Cycle was measured using **section 6.0 b) of KDB558074 D01v05 :**

The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal. Set the center frequency of the instrument to the center frequency of the transmission. Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value. Set VBW ≥ RBW. Set detector = peak or average.

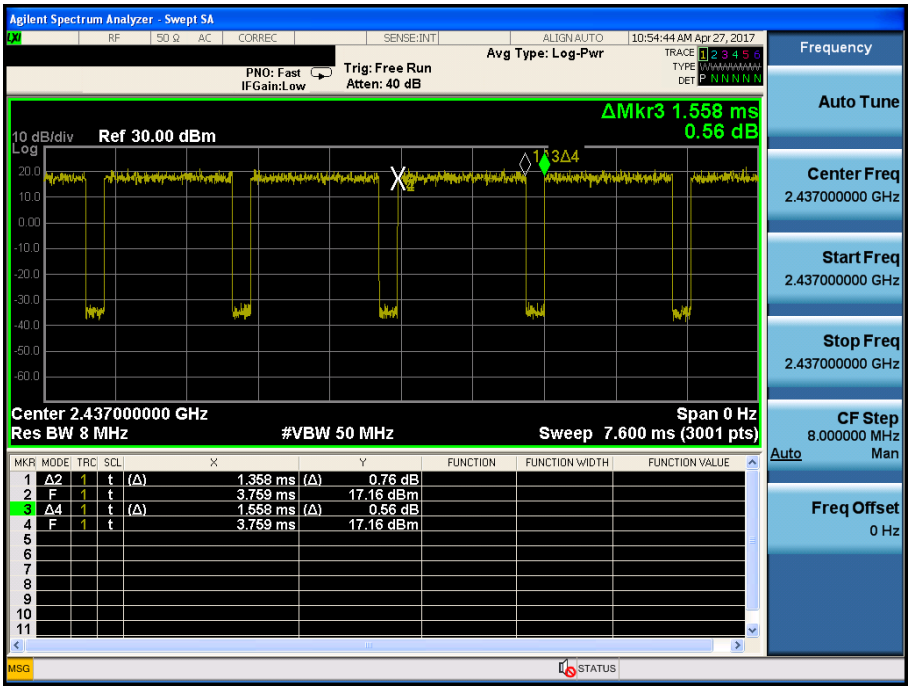
The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if T ≤ 16.7 microseconds.)

Test Plots :

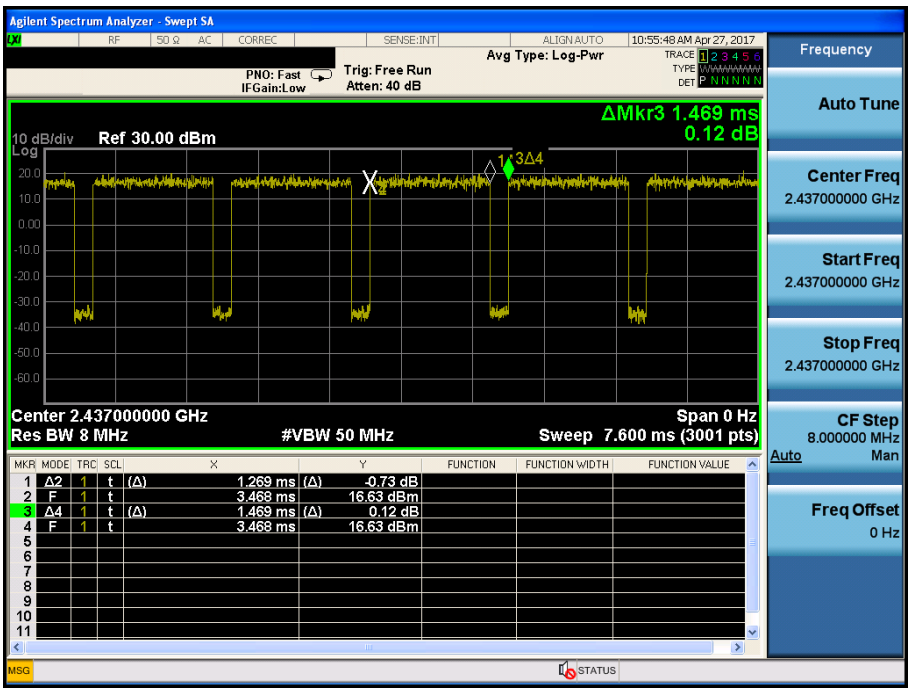
Duty Cycle Test Mode: 802.11b & 1Mbps & 2437 MHz



Duty Cycle Test Mode: 802.11g & 6Mbps & 2437 MHz



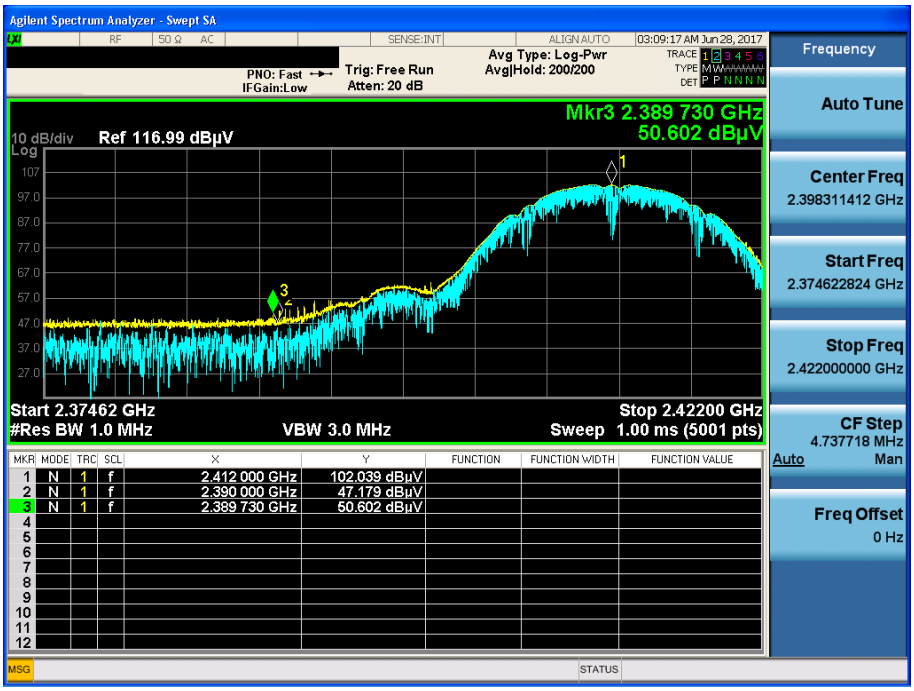
Duty Cycle Test Mode: 802.11n(HT20) & MCS 0 & 2437 MHz



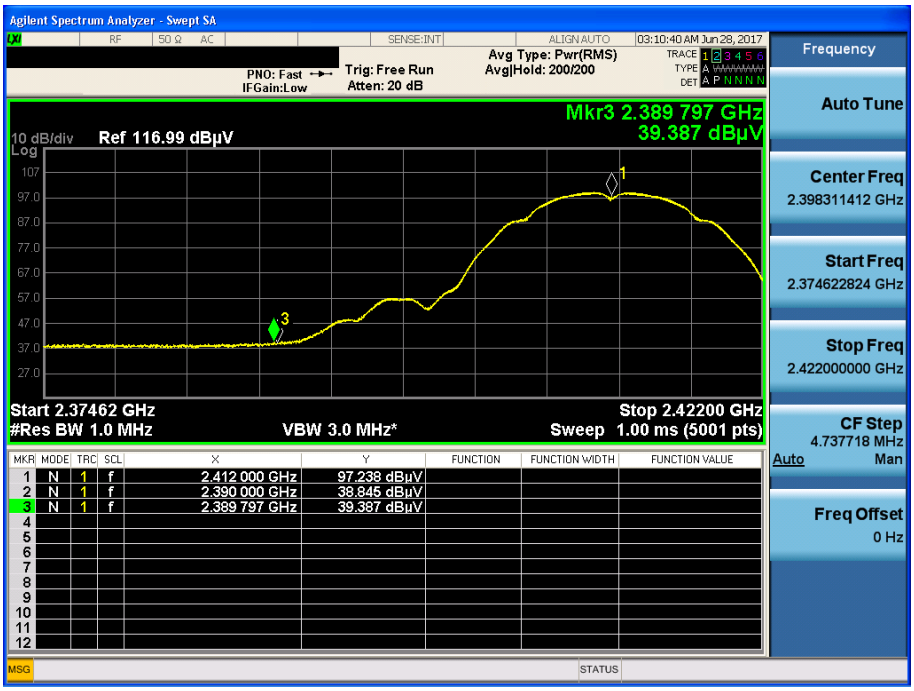
APPENDIX III

Unwanted Emissions (Radiated) Test Plot

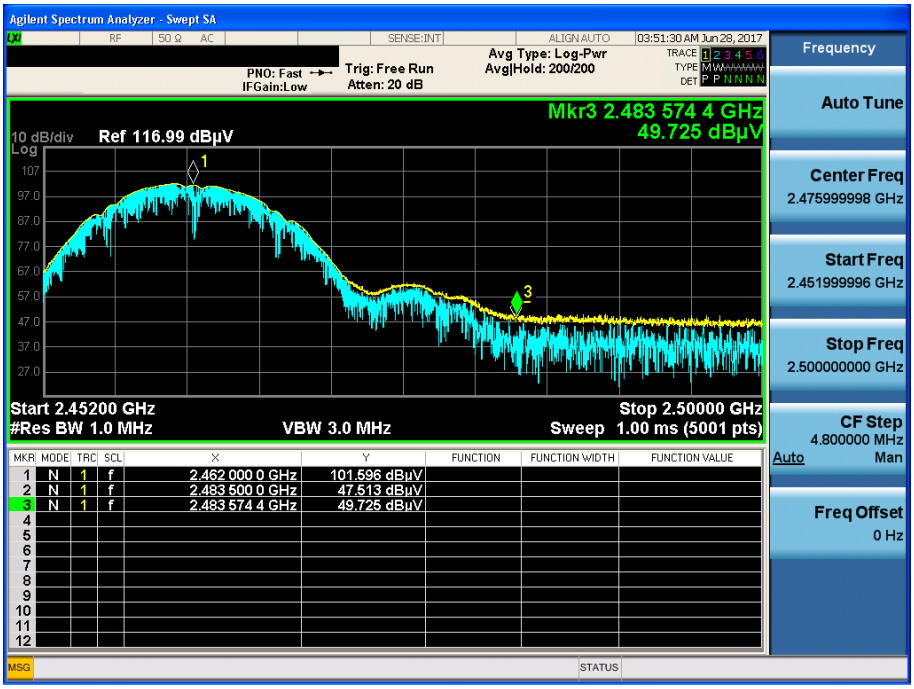
802.11b & Lowest & X & Hor — Detector Mode : PK



802.11b & Lowest & X & Hor — Detector Mode : AV

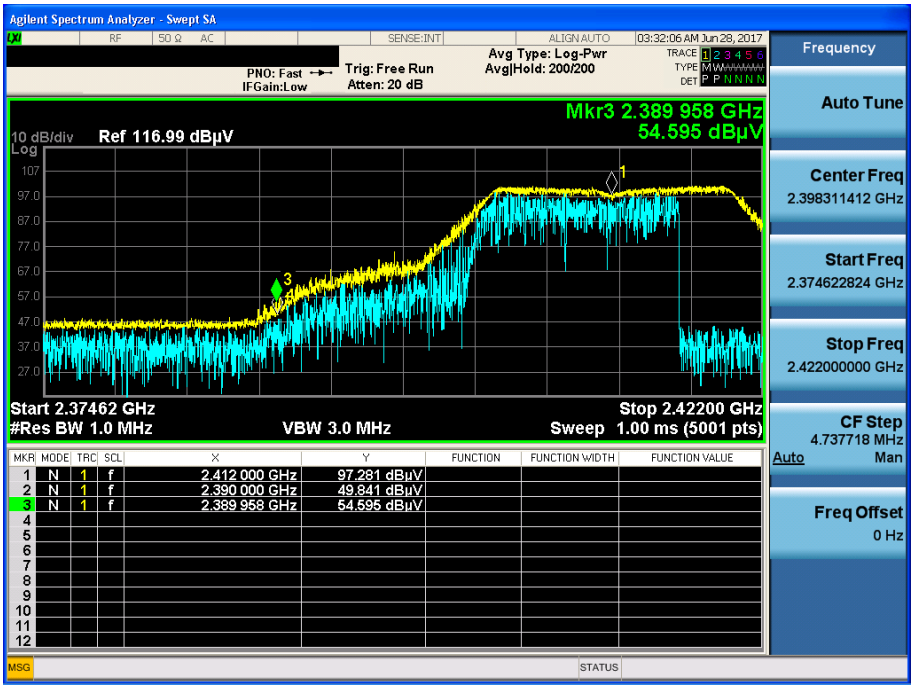


802.11b & Highest & X & Hor **Detector Mode : PK**

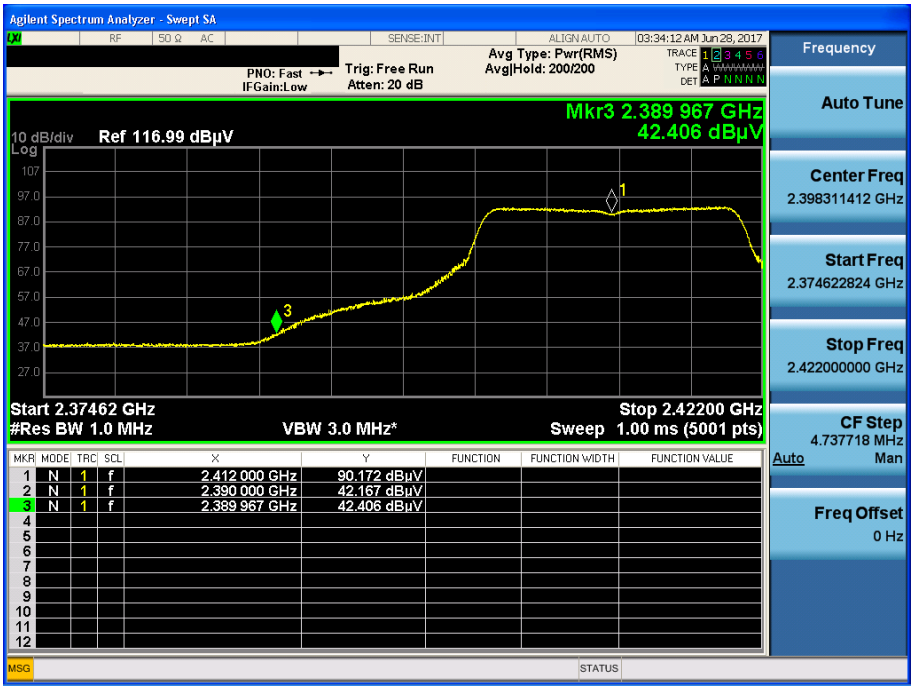


802.11b & Highest & X & Hor **Detector Mode : AV**

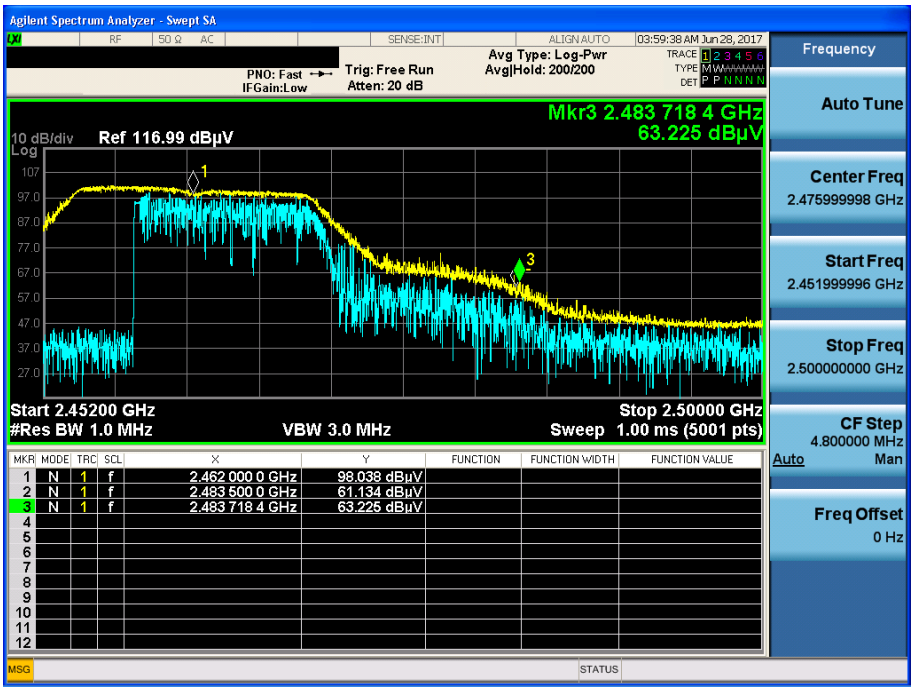
802.11g & Lowest & X & Hor **Detector Mode : PK**



802.11g & Lowest & X & Hor **Detector Mode : AV**

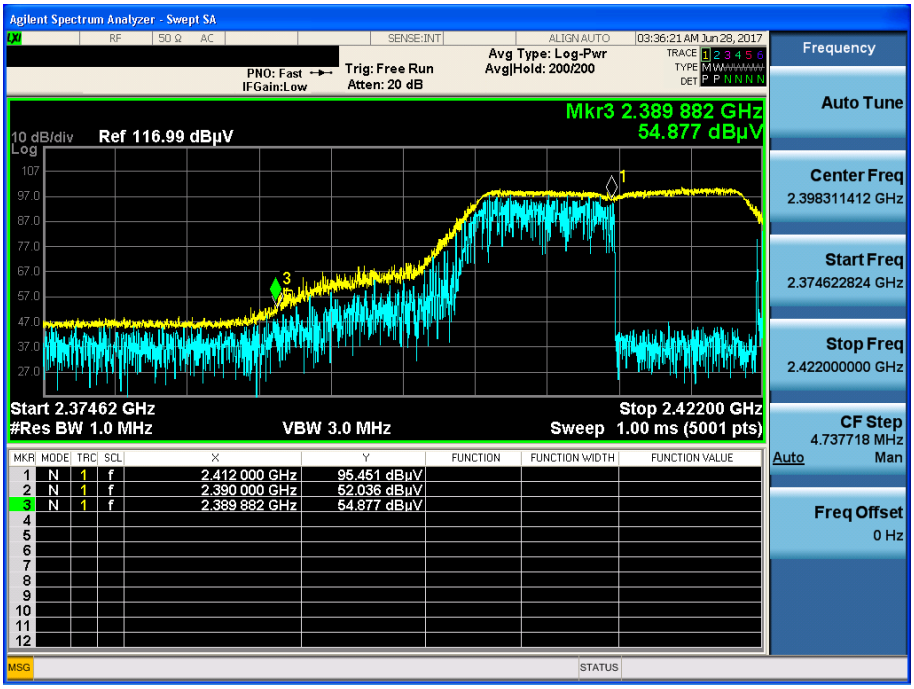


802.11g & Highest & X & Hor **Detector Mode : PK**

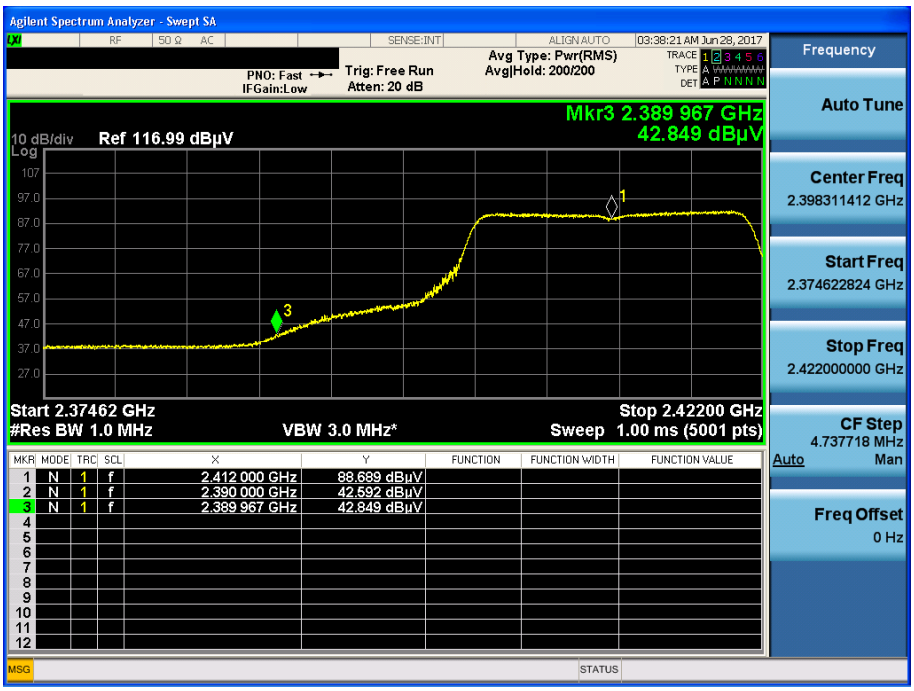


802.11g & Highest & X & Hor **Detector Mode : AV**

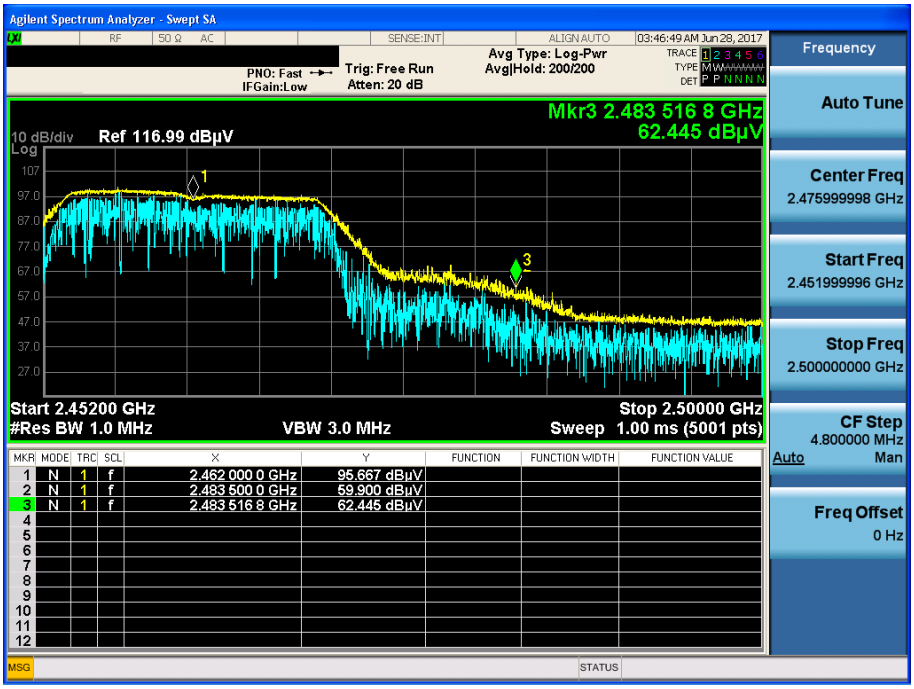
802.11n(HT20) & Lowest & X & Hor **Detector Mode : PK**



802.11n(HT20) & Lowest & X & Hor **Detector Mode : AV**

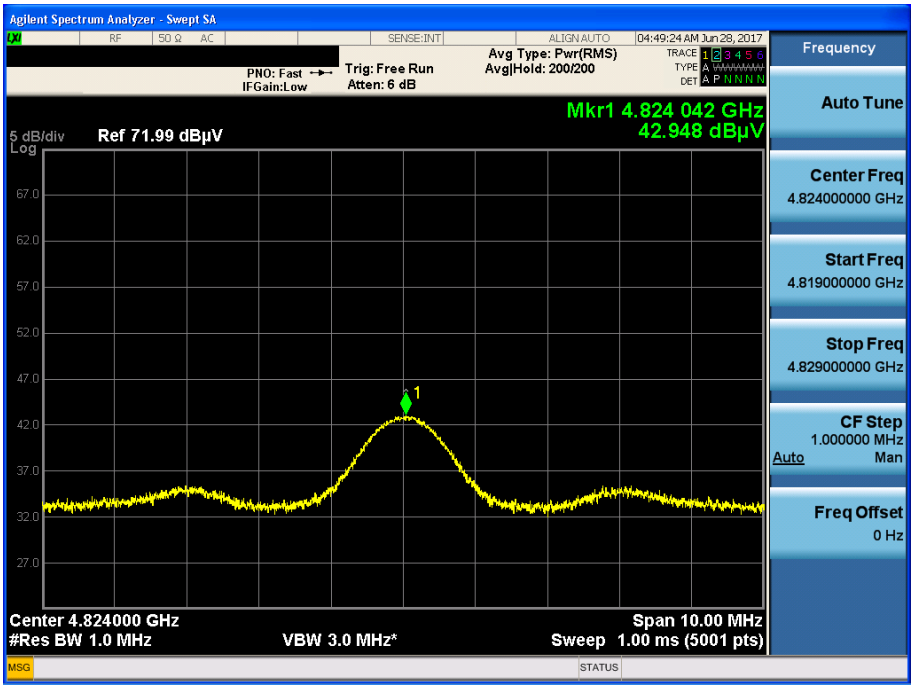


802.11n(HT20) & Highest & X & Hor — Detector Mode : PK

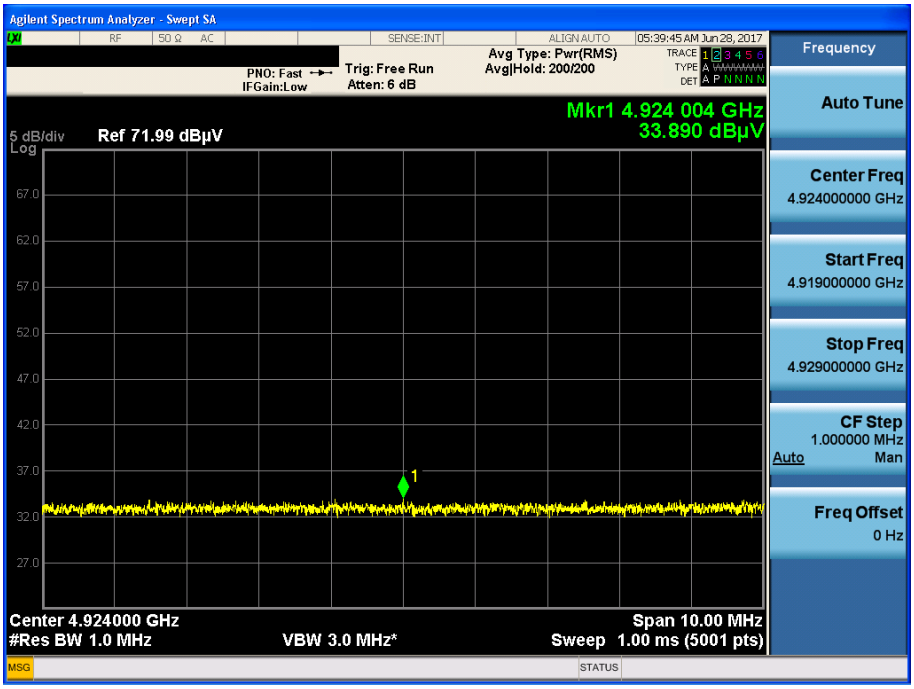


802.11n(HT20) & Highest & X & Hor — Detector Mode : AV

802.11b & Lowest & Z & Hor **Detector Mode : AV**



802.11g & Highest & Y & Ver **Detector Mode : AV**



802.11n(HT20) & Lowest & Y & Ver **Detector Mode : AV**