TEST REPORT

of

FCC Part 15 Subpart E §15.407

FCC ID : SS4BP50

Equipment Under Test	:	Android Business Pad
Model Name	:	BP50
Serial No.	:	N/A
Applicant	:	Bluebird Soft Inc.
Manufacturer	:	Bluebird Soft Inc.
Date of Test(s)	:	2013.04.22 ~ 2013.04.28
Date of Issue	:	2013.04.30

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

Tested By: Harim Lee **Date:** 2013.04.30

Approved By: Hyunchae You **Date:** 2013.04.30

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1. General information

1.1 Testing laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)
- Wireless Div. 3FL, 18-34, Sanbon-dong, Gunpo-si, Gyeonggi-do, Korea 435-040

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 : Bluebird Soft Inc.
Address : SEI Tower 13~14F, 467-14, Dogok-dong, Kangnam-gu, Seoul, Korea
Contact Person : Lee, Sang-Gon
Phone No. : +82 70 7730 8755

1.3. Description of EUT

Kind of Product	Android Business Pad
Model Name	BP50
Serial Number	N/A
Power Supply	DC 3.7 V
Frequency Range	2 412 ㎒ ~ 2 462 ㎒ (11b/g/n_HT20), 5 745 ㎒ ~ 5 825 ㎒ (11a/n_HT20), 5 755 ㎒ ~ 5 795 ㎒ (11n_HT40), 5 180 ㎒ ~ 5 240 ㎒ (11a/n_ HT20 – Non DFS), 5 190 ㎒ ~ 5 230 ㎒ (11n_ HT40 – Non DFS), 5 260 ㎒ ~ 5 320 ㎒ (11a/n_ HT20 – DFS), 5 270 ㎒ ~ 5 310 ㎒ (11n_ HT40 – DFS), 5 500 ㎒ ~ 5 700 ㎒ (11a/n_ HT20 – DFS), 5 510 ㎒ ~ 5 670 ㎒ (11n_ HT40 – DFS)
Modulation Technique	DSSS, OFDM
Number of Channels	11 channel (11b/g/n_HT20), 5 channel (11a/n_HT20), 2 channel (11n_HT40), 4 channel (11a/n_HT20–Non DFS), 2 channel (11n_HT40 – Non DFS), 15 channel (11a/n_HT20 – DFS), 7 channel (11n_HT40 – DFS)
Antenna Type	Internal type
Antenna Gain	2 412 ㎒ ~ 2 462 ㎒: 2.70 ㏈i, 5 180 ㎒ ~ 5 320 ㎒: 1.00 ㏈i, 5 500 ㎒ ~ 5 700 ㎒: -1.50 ㏈i, 5 745 ㎒ ~ 5 825 ㎒: 0.00 ㏈i

1.4. Declaration by the manufacturer

- EUT is SLAVE without DFS and TPC.

1.5. Test equipment list

Equipment	Manufacturer	Model	S/N	Cal Date	Cal Interval	Cal Due.
Signal Generator	R&S	SMBV100A	255834	Jul, 02. 2012	Annual	Jul, 02. 2013
Signal Generator	R&S	SMR40	100272	Aug. 23, 2012	Annual	Aug. 23, 2013
Spectrum Analyzer	Agilent	N9030A	US51350132	Oct. 30, 2012	Annual	Oct. 30, 2013
Spectrum Analyzer	R&S	FSV30	100768	Mar. 28, 2013	Annual	Mar. 28, 2014
Power Meter	Anritsu	ML2495A	1223004	Jul. 20, 2012	Annual	Jul. 20, 2013
Power Sensor	Anritsu	MA2411B	1207272	Jul. 20, 2012	Annual	Jul. 20, 2013
Attenuator	AEROFLEX	89-20-12	408	Jun. 02, 2012	Annual	Jun. 02, 2013
Low Pass Filter	Mini-Circuits	NLP-1200+	V8979400903-1	Jul. 12, 2012	Annual	Jul. 12, 2013
Tunable Notch Filter	Wainwright	WRCJV5100/5850-20/50-8SSK	4	Jul. 12, 2012	Annual	Jul. 12, 2013
High Pass Filter	Wainwright	WHK7.5/26.5G-6SS	11	Jul. 12, 2012	Annual	Jul. 12, 2013
DC Power Supply	Agilent	U8002A	MY50060028	Mar. 28, 2013	Annual	Mar. 28, 2014
Preamplifier	H.P.	8447F	2944A03909	Jul. 03, 2012	Annual	Jul. 03, 2013
Preamplifier	R&S	SCU 18	10117	Jan. 14, 2013	Annual	Jan. 14, 2014
Preamplifier	MITEQ Inc.	JS44-18004000-35-8P	1546891	Jul. 12, 2012	Annual	Jul. 12, 2013
Test Receiver	R&S	ESU26	100109	Feb. 28, 2013	Annual	Feb. 28, 2014
Bilog Antenna	SCHWARZBECK MESSELEKTRONIK	VULB9163	396	May. 12, 2011	Biennial	May. 12, 2013
Horn Antenna	R&S	HF906	100326	Nov. 23, 2011	Biennial	Nov. 23, 2013
Horn Antenna	SCHWARZBECK MESSELEKTRONIK	BBHA9170	BBHA9170431	Aug. 24, 2012	Biennial	Aug. 24, 2014
Antenna Master	INNCO	MM4000	N/A	N.C.R.	N/A	N.C.R.
Turn Table	INNCO	DS 1200S	N/A	N.C.R.	N/A	N.C.R.
Anechoic Chamber	SY Corporation	L × W × H (6.5 m × 3.5 m × 3.5 m)	N/A	N.C.R.	N/A	N.C.R.
EMI Test Receiver	R&S	ESHSI0	863365/018	Jul, 03. 2012	Annual	Jul, 03. 2013
Two-Line V-Network	R&S	ENV216	100190	Jan. 04, 2013	Annual	Jan. 04, 2014
Anechoic Chamber	SY Corporation	L × W × H (9.6 m × 6.4 m × 6.4 m)	N/A	N.C.R.	N/A	N.C.R.

▶ Support equipment

Description	Manufacturer	Model	Serial Number / FCC ID
N/A	-	-	-

1.6. Summary of test result

The EUT has been tested according to the following specifications:

APPLIED STANDARD:FCC Part15 subpart E		
Section in FCC 15	**Test Item**	**Result**
15.205(a) 15.209(a) 15.407(b)(1) 15.407(b)(2) 15.407(b)(3)	Transmitter radiated spurious emissions and Conducted spurious emission	Complied
15.407(a)(1) 15.407(a)(2)	Output power	Complied
15.407(a)(1) 15.407(a)(2)	Peak power spectral density	Complied
15.407(a)(6)	Peak excursion	Complied
15.207	Transmitter AC power line Conducted emission	Complied

1.7. Test Procedure(s)

The measurement procedures described in the American National Standard for Methods of Measurement of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9 ㎑ to 40 ㎓ (ANSI C63.4-2003) and the guidance provided in KDB 789033 were used in the measurement of the DUT.

1.8. Sample calculation

Where relevant, the following sample calculation is provided:

1.8.1. Conducted test

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

1.8.2. Radiation test

Field strength level (㏈㎶/m) = Measured level (㏈㎶) + Antenna factor (㏈) + Cable loss (㏈) - amplifier (㏈)

1.9. Test report revision

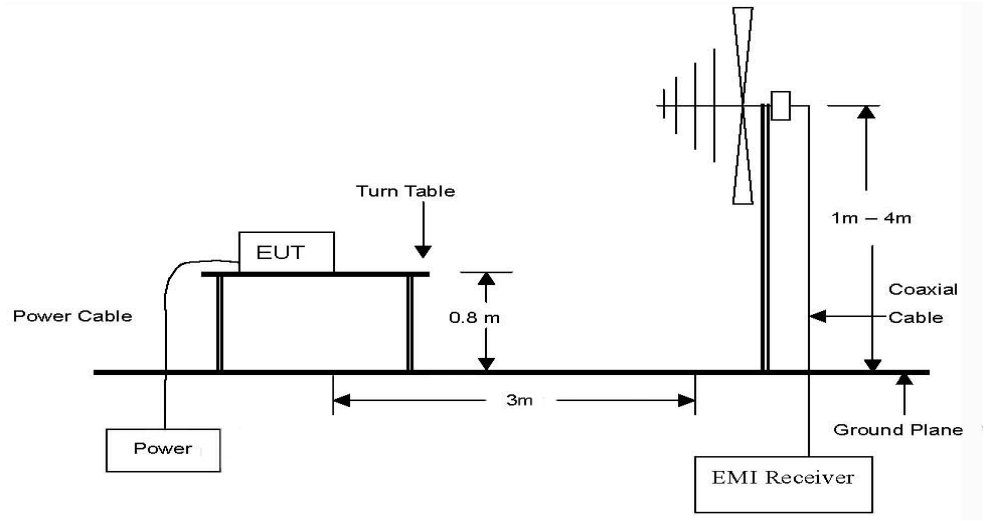
Revision	Report number	Description
0	F690501/RF-RTL006484	Initial

2. Transmitter radiated spurious emissions and conducted spurious emission

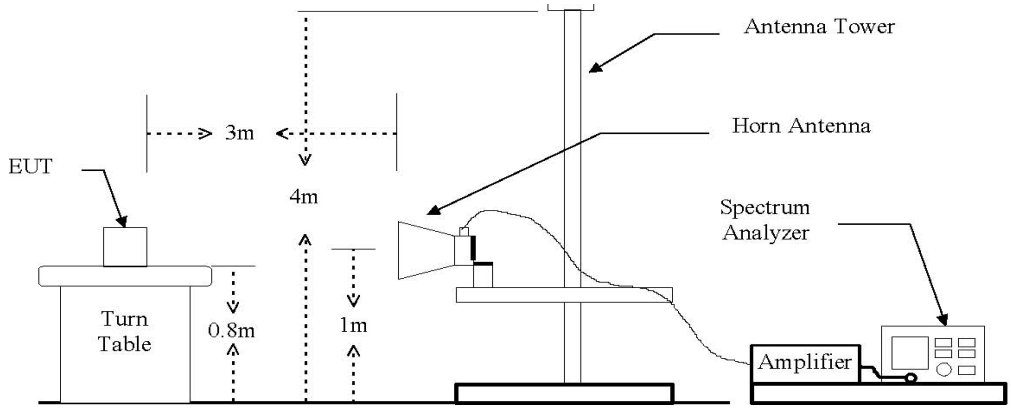
2.1. Test setup

2.1.1. Transmitter radiated spurious emissions

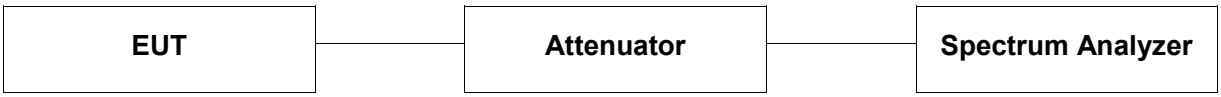
The diagram below shows the test setup that is utilized to make the measurements for emission from 30 ㎒ to 1 ㎓ Emissions.



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



2.1.2. Conducted spurious emissions



2.2. Limit

15.407(b)(1) For transmitters operating in the 5.15 ~ 5.25 ㎓ band: all emissions outside of the 5.15 ~ 5.35 ㎓ band shall not exceed an EIRP of -27 m/㎒.
15.407(b)(2) For transmitters operating in the 5.25 ~ 5.35 ㎓ band: all emissions outside of the 5.15 ~ 5.35 ㎓ band shall not exceed an EIRP of -27 ㏈ m/㎒. Devices operating in the 5.25 ~ 5.35 ㎓ band that generate emissions in the 5.15 ~ 5.25 ㎓ band must meet all applicable technical requirements for operation in the 5.15 ~ 5.25 ㎓ band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 ㏈ m/㎒ in the 5.15 ~ 5.25 ㎓ band.
15.407(b)(3) For transmitters operating in the 5.47 ~ 5.725 ㎓ band: all emissions outside of the 5.47 ~ 5.725 ㎓ band shall not exceed an EIRP of −27 ㏈ m/㎒.

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 (㎒)	Distance (Meters)	Field Strength (㏈㎶/m)	Field Strength (㎶/m)
30 - 88	3	40.0	100
88 – 216	3	43.5	150
216 – 960	3	46.0	200
Above 960	3	54.0	500

2.3. Test procedures

Conducted and Radiated emissions from the EUT were measured according to the dictates in section H of KDB 789033.
All data rates and modes were investigated for conducted spurious emissions. The emissions of the configuration that produced the worst case emissions are reported in this section.

2.3.1. Test procedures for radiated spurious emissions

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. During performing radiated emission below 1 ㎓, 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 ㎓, the EUT was set 3 meter away from the interference-receiving antenna.
3. The antenna is a broadband 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 ㏈ 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 ㏈ margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

NOTE;

- The measurements for below 1 ㎓
  Compliance shall be demonstrated using CISPR quasi-peak detection; however, peak detection is permitted as an alternative to quasi-peak detection.

- The measurements for above 1 ㎓
  Peak emission levels are measured by setting the analyzer as follows:
  Set to RBW = 1 ㎒, VBW ≥ 3 ㎒, Detector = Peak, Sweep time = auto, Trace mode= Max hold.
  Average emission levels are measured by setting the analyzer as follows:
  Set to RBW = 1 ㎒, VBW ≥ 3 ㎒, Detector = RMS, Averaging type = power(i.e., RMS), Sweep time = auto, Trace mode= trace average of at least 100 traces. If the transmission is not continuous, the number of traces shall be increased by a factor of 1/x, where x is the duty cycle.
  If duty cycle < 98 percent, a correction factor shell be added to the measurement results.
  - Power averaging(RMS) mode was used above, the correction factor is 10 log(1/x), where x is the duty cycle.

To get a maximum emission level from the EUT, the EUT is manipulated through three orthogonal planes.

2.3.2. Test procedures for conducted spurious emissions

1. The transmitter output was connected to the spectrum analyzer through an attenuator.
2. Peak emission levels are measured by setting the analyzer as follows: RBW = 1 ㎒, VBW ≥ 3 ㎒, Detector = Peak, Sweep time = auto, Trace hold = max hold.

2.4. Test result

Ambient temperature : (24 ± 2) ℃
Relative humidity : 49 % R.H.

2.4.1. Spurious radiated emission (Worst case configuration_11n_HT40 mode, MCS0)

The frequency spectrum from 30 ㎒ to 1 000 ㎒ was investigated. Emission levels are not reported much lower than the limits by over 30 ㏈. All reading values are peak values.

Radiated emissions			Ant	Correction factors		Total	Limit	
Frequency (㎒)	Reading (㏈㎶)	Detect Mode	Pol.	AF (㏈/m)	Amp gain+CL (㏈)	Actual (㏈㎶/m)	Limit (㏈㎶/m)	Margin (㏈)
519.66	38.3	Peak	V	16.3	-25.4	29.2	46.0	16.8
556.97	41.9	Peak	V	16.9	-25.3	33.5	46.0	12.5
911.39	35.1	Peak	V	22.2	-23.8	33.5	46.0	12.5
962.69	36.0	Peak	V	22.9	-23.5	35.4	54.0	18.6
Above 1 000.00	Not Detected	-	-	-	-	-	-	-

Remark:
1. All spurious emission at channels are almost the same below 1 ㎓, So that the Middle channel was chose at representative in final test.
2. Actual = Reading + AF + AMP + CL

2.4.2. Spurious radiated emission for above 1 ㎓

802.11a (Non-DFS) _6 Mbps

A. Low Channel (5 180 ㎒)

Radiated Emissions			Ant	Correction Factors			Total	Limit	
Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Duty factor (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*5 150.00	15.30	Peak	V	33.43	10.35	-	59.08	74.00	14.92
*5 150.00	4.70	Average	V	33.43	10.35	0.23	48.71	54.00	5.29

Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
10 356.98	36.70	Peak	V	37.58	-34.94	39.34	68.23	28.89
Above 10 400.00	Not Detected	-	-	-	-	-	-	-

B. Middle Channel (5 220 ㎒)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
10 442.54	35.85	Peak	V	37.66	-34.57	38.94	68.23	29.29
Above 10 500.00	Not Detected	-	-	-	-	-	-	-

C. High Channel (5 240 ㎒)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
10 438.22	35.27	Peak	V	37.67	-34.60	38.34	68.23	29.90
Above 10 500.00	Not Detected	-	-	-	-	-	-	-

802.11a (DFS) _6 Mbps

A. Low Channel (5 260 ㎒)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
10 523.40	35.53	Peak	V	37.52	-33.90	39.15	68.23	29.08
Above 10 600.00	Not Detected	-	-	-	-	-	-	-

B. Middle Channel (5 300 ㎒)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*10 601.93	35.29	Peak	V	37.64	-32.94	39.99	74.00	34.01
Above 10 700.00	Not Detected	-	-	-	-	-	-	-

C. High Channel (5 320 ㎒)

Radiated Emissions			Ant	Correction Factors			Total	Limit	
Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Duty factor (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*5 350.00	12.68	Peak	V	33.75	9.56	-	55.99	74.00	18.01
*5 350.00	3.39	Average	V	33.75	9.56	0.23	46.93	54.00	7.07

Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*10 636.84	35.27	Peak	V	37.68	-32.36	40.59	74.00	33.41
Above 10 700.00	Not Detected	-	-	-	-	-	-	-

802.11a (DFS) _6 Mbps

A. Low Channel (5 500 ㎒)

Radiated Emissions			Ant	Correction Factors			Total	Limit	
Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Duty factor (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*5 460.00	13.53	Peak	V	34.29	9.74	-	57.56	74.00	16.44
*5 460.00	3.97	Average	V	34.29	9.74	0.23	48.23	54.00	5.77
Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)		Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*11 000.21	35.23	Peak	V	38.09	-30.17		43.15	74.00	30.85
Above 11 100.00	Not Detected	-	-	-	-		-	-	-

B. Middle Channel (5 580 ㎒)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*11 164.03	35.41	Peak	V	37.94	-29.38	43.97	74.00	30.03
Above 11 200.00	Not Detected	-	-	-	-	-	-	-

C. High Channel (5 700 ㎒)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*11 395.44	35.48	Peak	V	37.94	-28.51	44.91	74.00	29.09
Above 11 400.00	Not Detected	-	-	-	-	-	-	-

802.11n-HT20 (Non-DFS)_MCS0

A. Low Channel (5 180 ㎒)

Radiated Emissions			Ant	Correction Factors			Total	Limit	
Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Duty factor (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*5 150.00	14.48	Peak	V	33.43	10.35	-	58.26	74.00	15.75
*5 150.00	4.65	Average	V	33.43	10.35	0.24	48.67	54.00	5.33
Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)		Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
10 361.86	35.16	Peak	V	37.58	-34.93		37.81	68.23	30.42
Above 10 400.00	Not Detected	-	-	-	-		-	-	-

B. Middle Channel (5 220 ㎒)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
10 437.49	35.39	Peak	V	37.67	-34.60	38.46	68.23	29.77
Above 10 500.00	Not Detected	-	-	-	-	-	-	-

C. High Channel (5 240 ㎒)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
10 478.59	35.22	Peak	V	37.61	-34.32	38.51	68.23	29.72
Above 10 500.00	Not Detected	-	-	-	-	-	-	-

802.11n_HT20 (DFS)_MCS0

A. Low Channel (5 260 ㎒)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
10 523.89	35.20	Peak	V	37.52	-33.89	38.83	68.23	29.40
Above 10 600.00	Not Detected	-	-	-	-	-	-	-

B. Middle Channel (5 300 ㎒)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*10 603.79	34.68	Peak	V	37.65	-32.91	39.42	74.00	34.58
Above 10 700.00	Not Detected	-	-	-	-	-	-	-

C. High Channel (5 320 ㎒)

Radiated Emissions			Ant	Correction Factors			Total	Limit	
Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Duty factor (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*5 350.00	12.77	Peak	V	33.75	9.56	-	56.08	74.00	17.92
*5 350.00	3.36	Average	V	33.75	9.56	0.24	46.91	54.00	7.09

Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*10 639.78	35.05	Peak	V	37.67	-32.31	40.41	74.00	33.59
Above 10 700.00	Not Detected	-	-	-	-	-	-	-

802.11n_HT20 (DFS)_MCS0

A. Low Channel (5 500 ㎒)

Radiated Emissions			Ant	Correction Factors			Total	Limit	
Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Duty factor (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*5 460.00	14.65	Peak	V	34.29	9.74	-	58.68	74.00	15.32
*5 460.00	3.60	Average	V	34.29	9.74	0.24	47.87	54.00	6.13
Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)		Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*11 000.17	35.41	Peak	V	38.09	-30.17		43.33	74.00	30.67
Above 11 100.00	Not Detected	-	-	-	-		-	-	-

B. Middle Channel (5 580 ㎒)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*11 156.62	35.66	Peak	V	37.95	-29.40	44.21	74.00	29.79
Above 11 200.00	Not Detected	-	-	-	-	-	-	-

C. High Channel (5 700 ㎒)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*11 401.60	34.76	Peak	V	37.93	-28.47	44.22	74.00	29.78
Above 11 500.00	Not Detected	-	-	-	-	-	-	-

802.11n-HT40 (Non-DFS) _MCS0

A. Low Channel (5 190 ㎒)

Radiated Emissions			Ant	Correction Factors			Total	Limit	
Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Duty factor (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*5 150.00	13.39	Peak	V	33.43	10.35	-	57.17	74.00	16.83
*5 150.00	4.73	Average	V	33.43	10.35	0.43	48.94	54.00	5.06

Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
10 379.77	35.55	Peak	V	37.54	-34.89	38.20	68.23	30.04
Above 10 400.00	Not Detected	-	-	-	-	-	-	-

B. High Channel (5 230 ㎒)

Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
10 460.57	35.09	Peak	V	37.62	-34.44	38.27	68.23	29.96
Above 10 500.00	Not Detected	-	-	-	-	-	-	-

802. 11n-HT40 (DFS)_MCS0

A. Low Channel (5 270 ㎒)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
10 543.71	35.36	Peak	V	37.54	-33.66	39.24	68.23	28.99
Above 10 600.00	Not Detected	-	-	-	-	-	-	-

B. High Channel (5 310 ㎒)

Radiated Emissions			Ant	Correction Factors			Total	Limit	
Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Duty factor (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*5 350.00	12.71	Peak	V	33.75	9.56	-	56.02	74.00	17.98
*5 350.00	3.13	Average	V	33.75	9.56	0.43	46.87	54.00	7.13

Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*10 621.88	35.20	Peak	V	37.71	-32.61	40.30	74.00	33.70
Above 10 700.00	Not Detected	-	-	-	-	-	-	-

802. 11n-HT40 (DFS)_MCS0

A. Low Channel (5 510 ㎒)

Radiated Emissions			Ant	Correction Factors			Total	Limit	
Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Duty factor (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*5 460.00	14.27	Peak	V	34.29	9.74	-	58.30	74.00	15.70
*5 460.00	2.96	Average	V	34.29	9.74	0.43	47.42	54.00	6.58

Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*11 027.38	34.68	Peak	V	38.09	-29.99	42.78	74.00	31.22
Above 11 100.00	Not Detected	-	-	-	-	-	-	-

B. Middle Channel (5 550 ㎒)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*11 095.98	36.11	Peak	V	37.99	-29.54	44.56	74.00	29.44
Above 11 100.00	Not Detected	-	-	-	-	-	-	-

C. High Channel (5 670 ㎒)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (㎒)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*11 344.91	35.26	Peak	V	38.08	-28.88	44.46	74.00	29.54
Above 11 400.00	Not Detected	-	-	-	-	-	-	-

Remark:

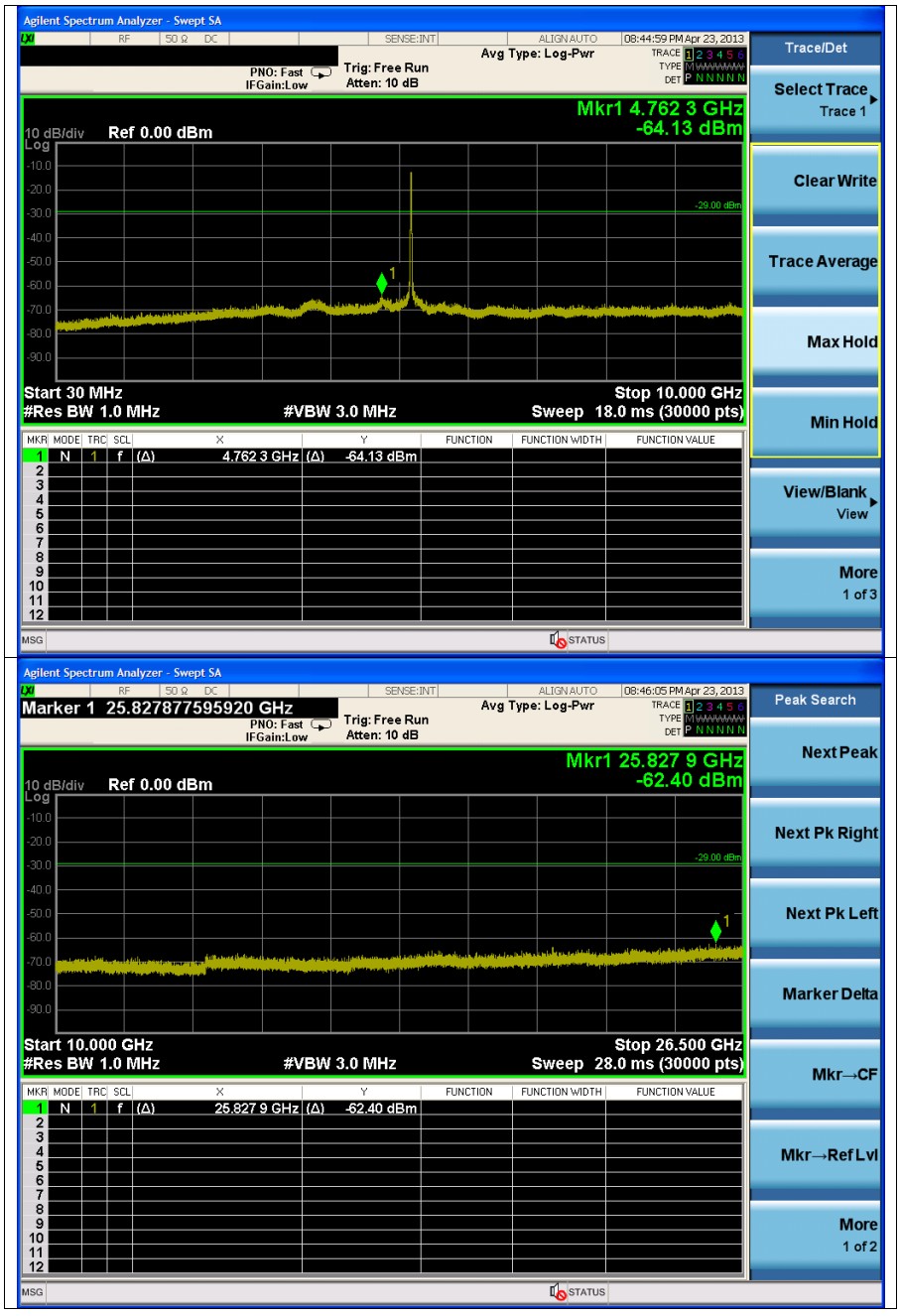
1. "*" means the restricted band.
2. Radiated emissions measured in frequency above 1 000 ㎒ were made with an instrument using Peak / average detector mode if frequency was in restricted band. Otherwise the frequency was in outside of restricted band, only peak detector should be used.
3. Average test would be performed if the peak result was greater than the average limit and frequency was in the restricted band.
4. If frequency was outside of restricted band, the calculation method for peak limit is same as below:
   68.23 dBμV/m = EIRP – 20 log(d) + 104.77 = -27 – 20 log (3) + 104.77
   *distance: 3 m, *EIRP: -27 dB m/㎒

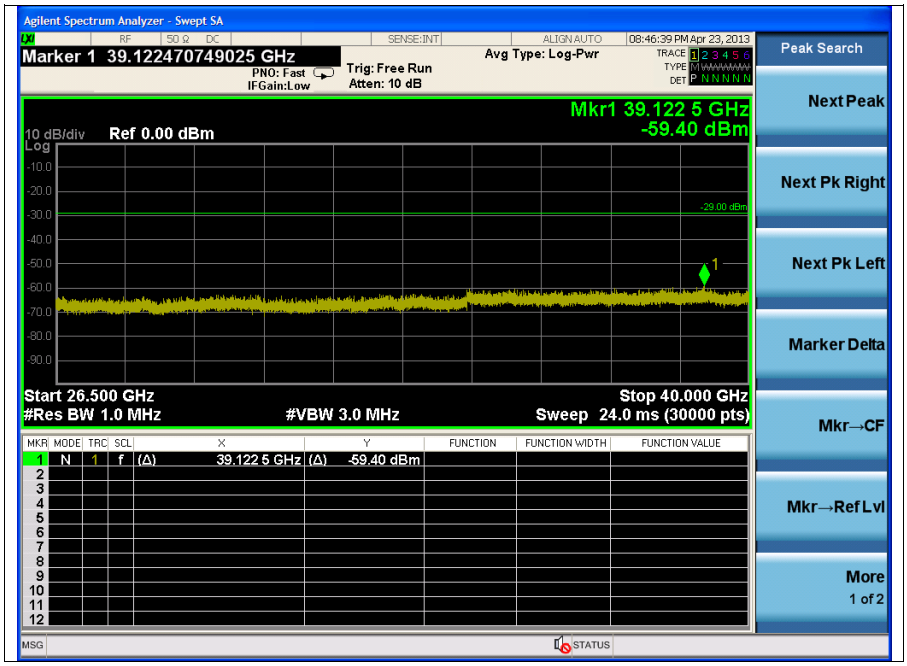
2.4.3. Spurious RF Conducted Emissions: Plot of Spurious RF Conducted Emission

For 5.15 – 5.25 ㎓, the antenna gain is 1.00 ㏈i, So the EIRP limit is -29.00 ㏈m/㎒

802.11a (Non-DFS)_6 Mbps

5 180 ㎒

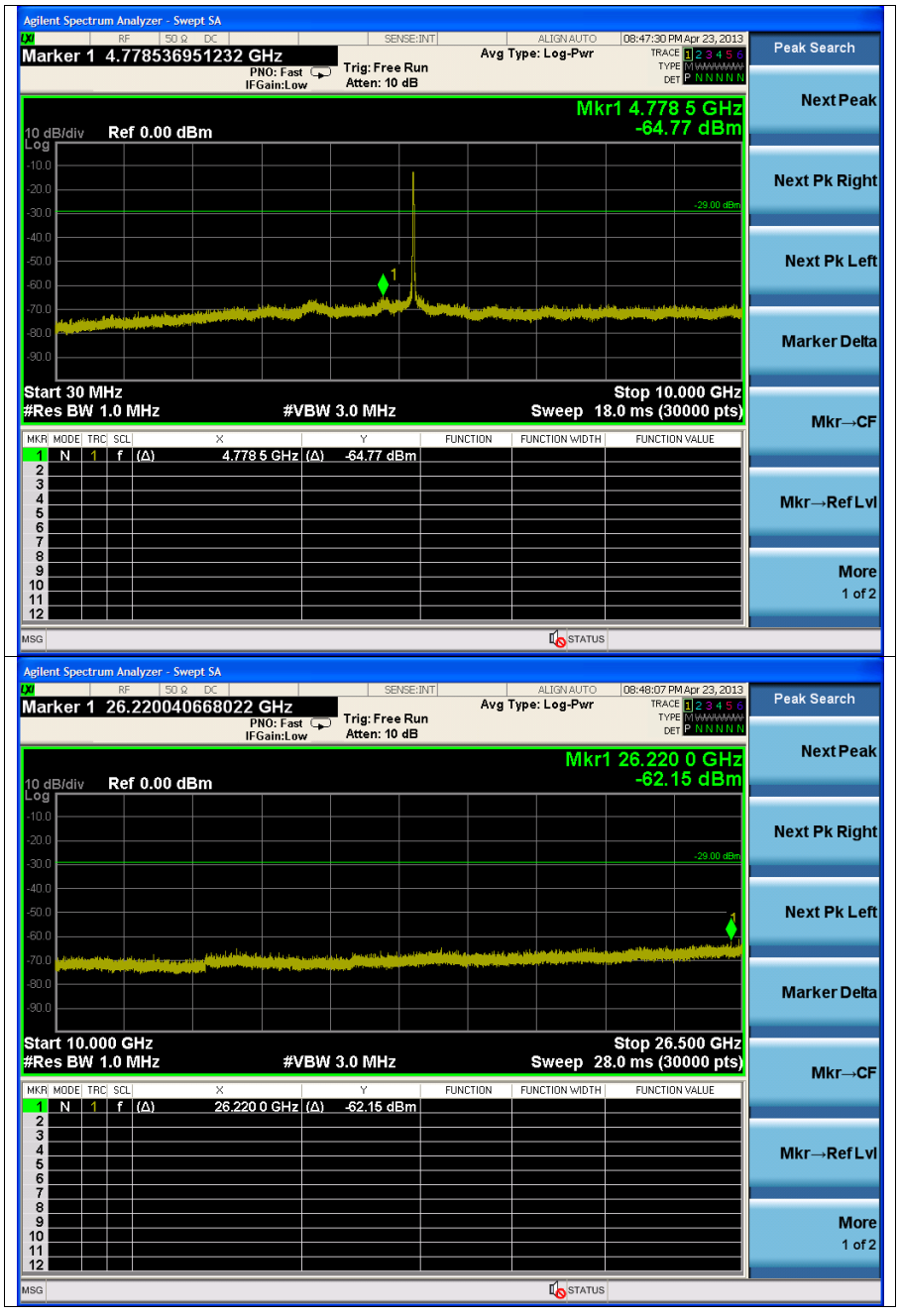


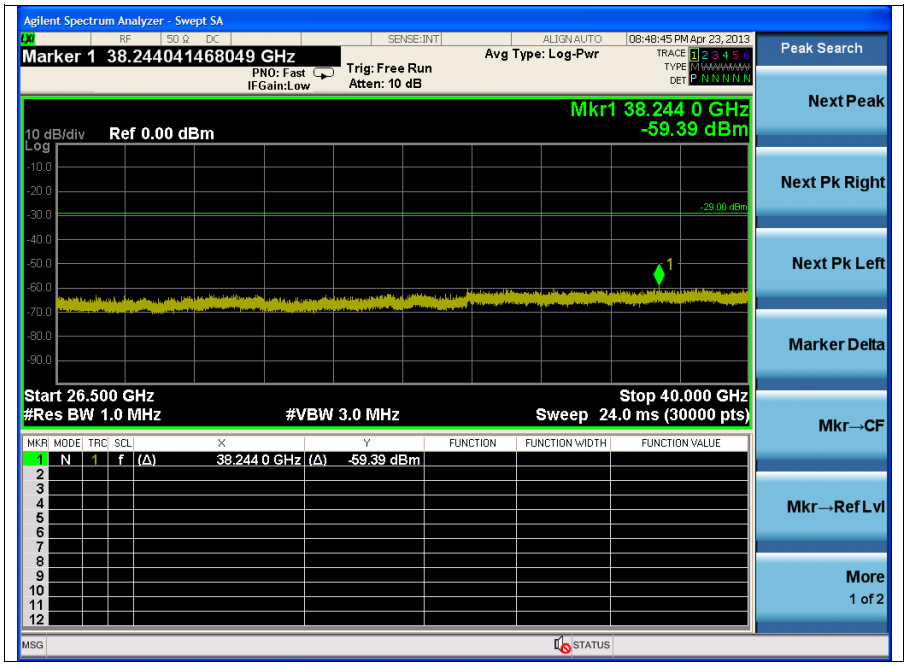


Note:
Offset (dB) = Attenuator(dB) + Cable loss (dB)
Result (dB m) = Spurious offset (dB) + Reading values (dB m)

Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
4 762.30	Noise floor	-	-
25 827.90	Noise floor	-	-
39 122.50	Noise floor	-	-

5 220 ㎒

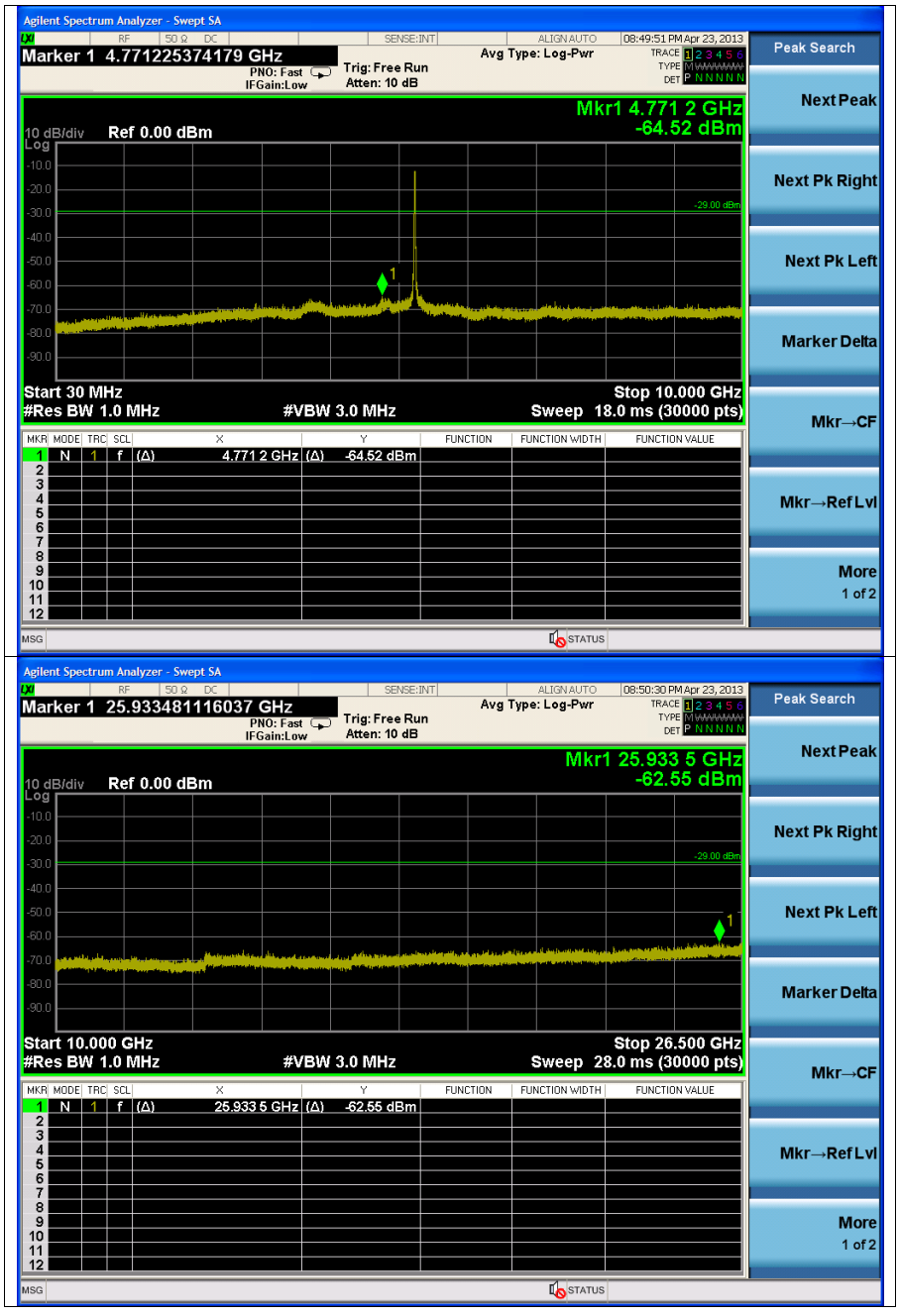


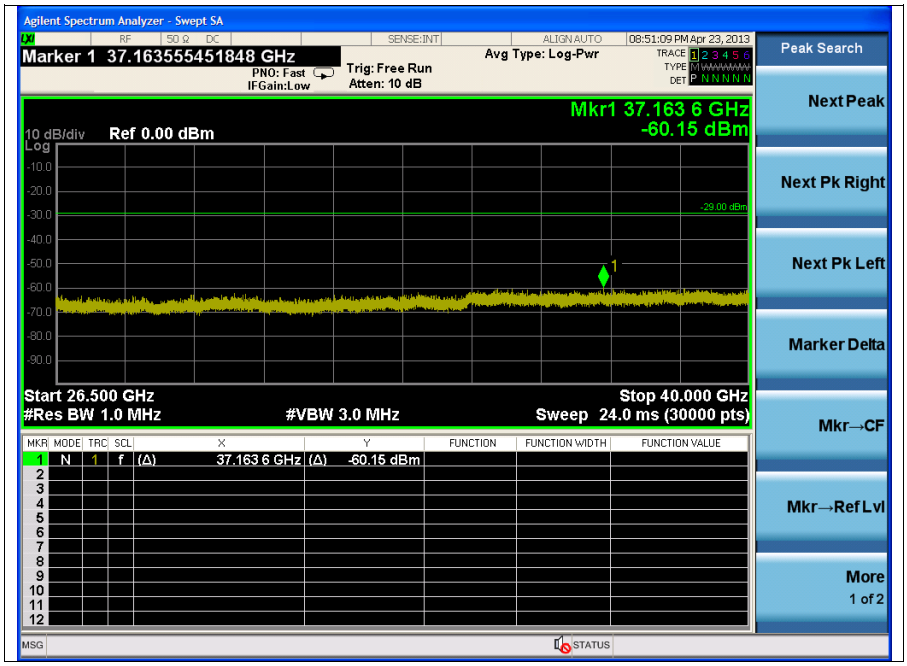


Note:
Offset (dB) = Attenuator(dB) + Cable loss (dB)
Result (dB m) = Spurious offset (dB) + Reading values (dB m)

Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
4 778.50	Noise floor	-	-
26 220.00	Noise floor	-	-
38 244.00	Noise floor	-	-

5 240 ㎒



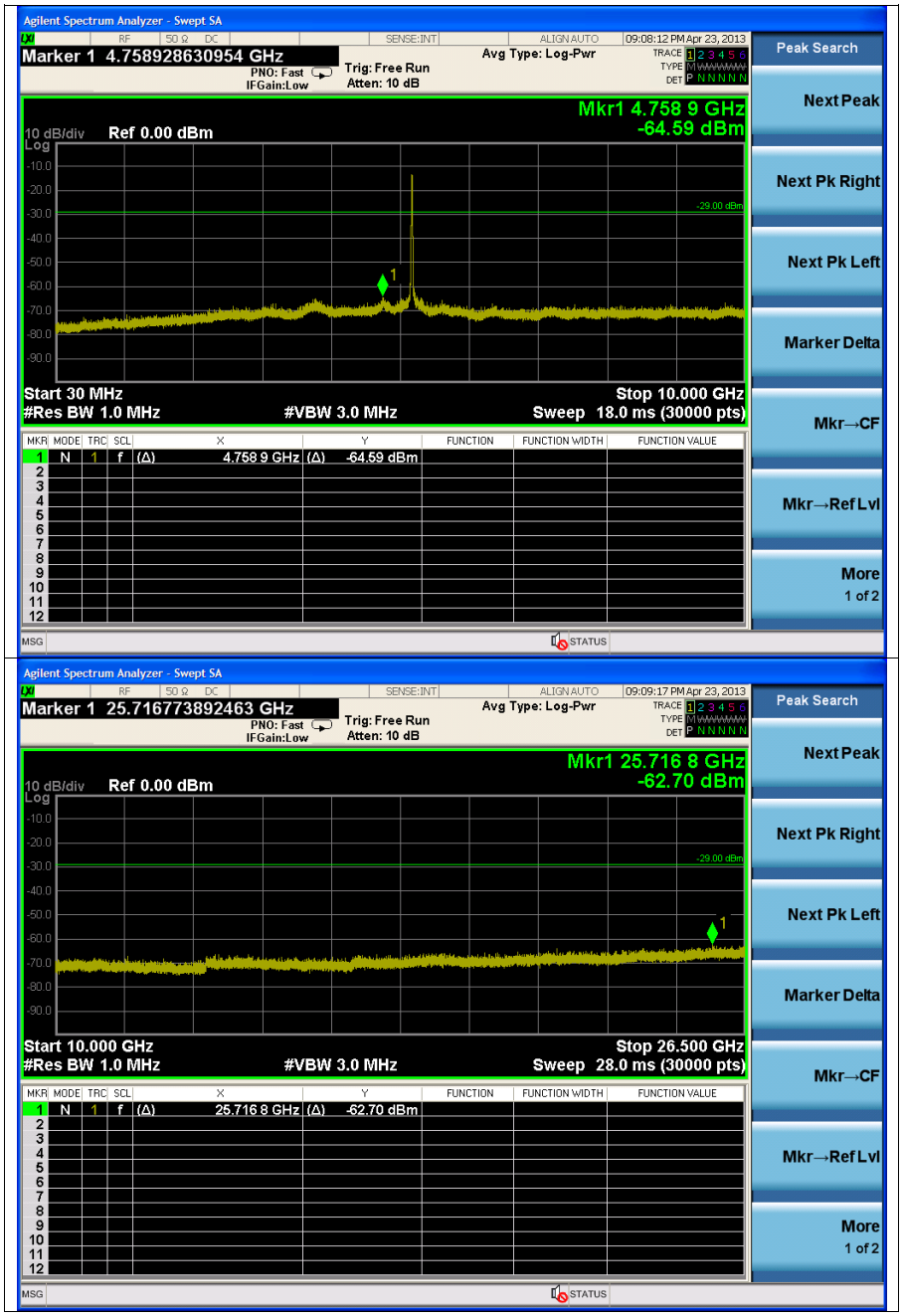


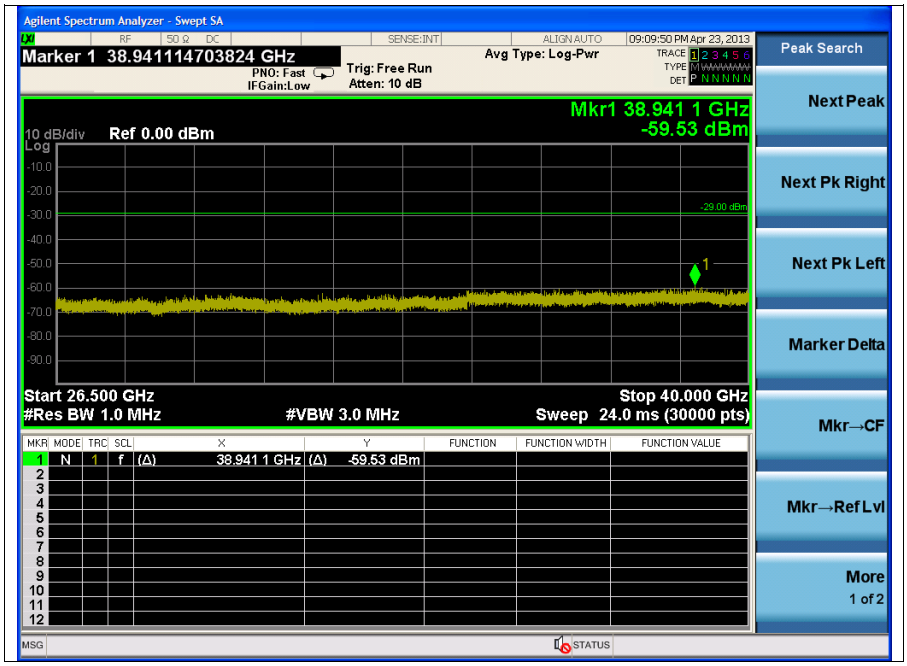
Note:
Offset (dB) = Attenuator(dB) + Cable loss (dB)
Result (dB m) = Spurious offset (dB) + Reading values (dB m)

Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
4 771.20	Noise floor	-	-
25 933.50	Noise floor	-	-
37 163.60	Noise floor	-	-

802.11n-HT20 (Non-DFS)_MCS0

5 180 ㎒

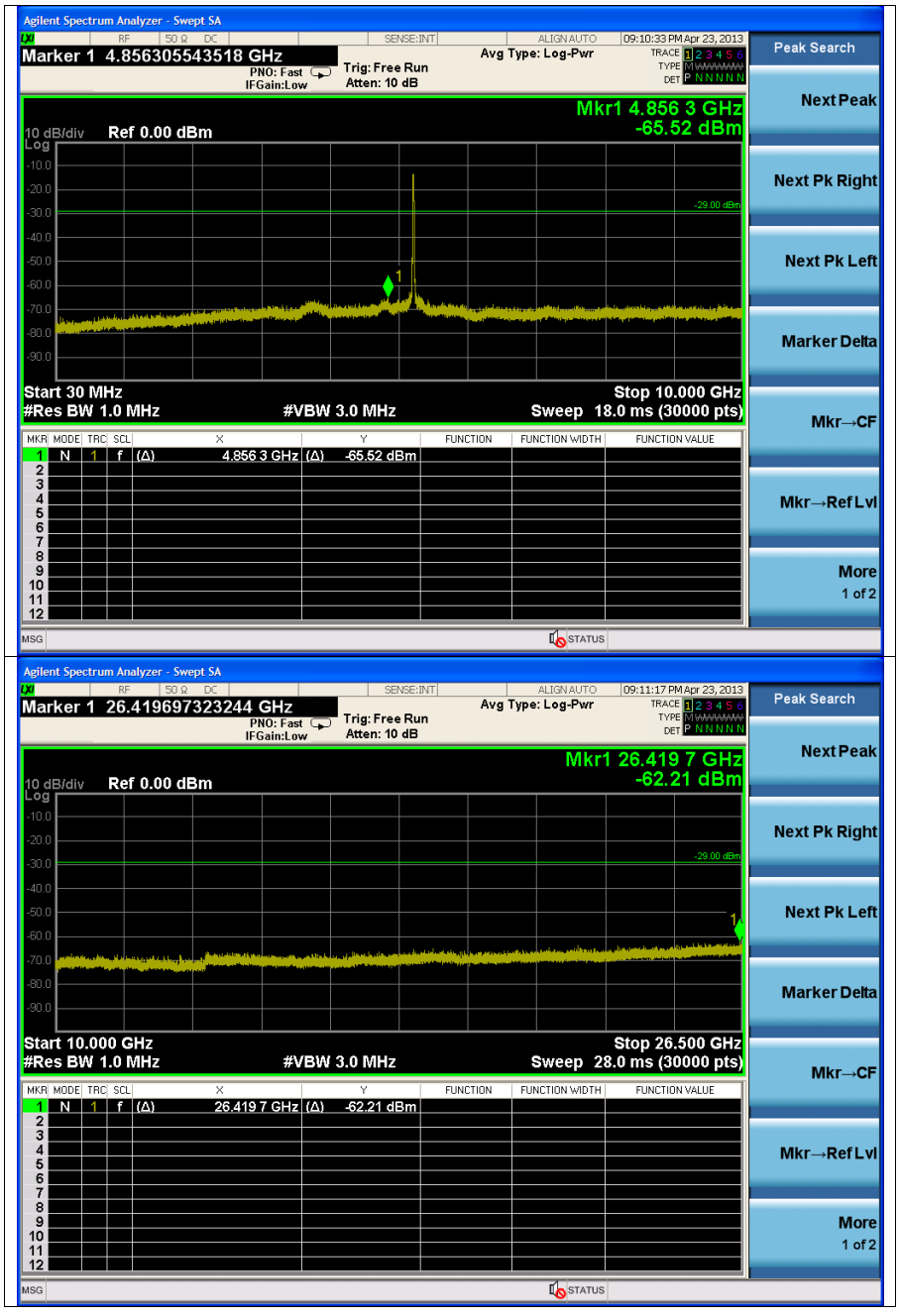


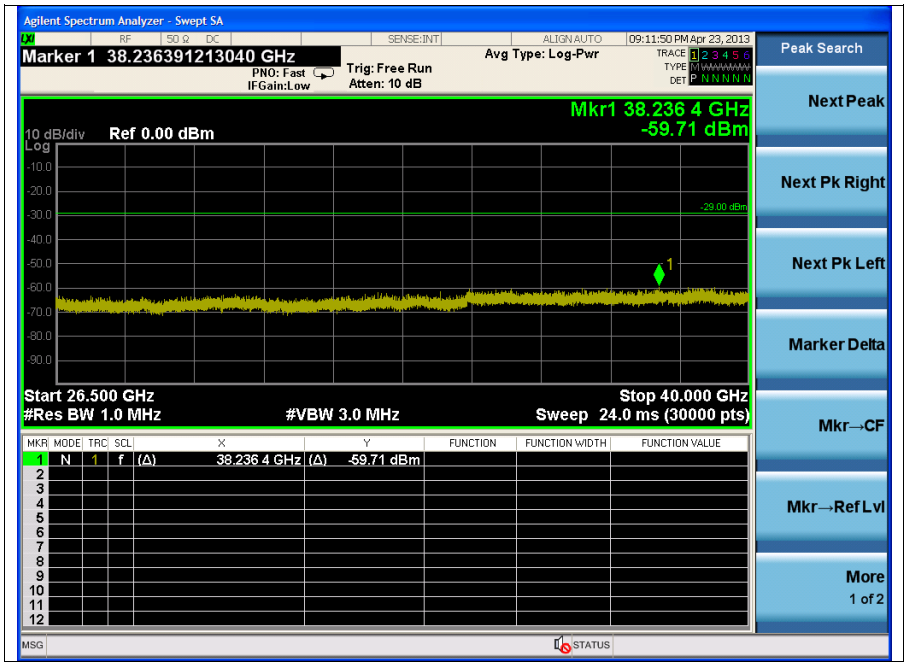


Note:
Offset (dB) = Attenuator(dB) + Cable loss (dB)
Result (dB m) = Spurious offset (dB) + Reading values (dB m)

Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
4 758.90	Noise floor	-	-
25 716.80	Noise floor	-	-
38 941.10	Noise floor	-	-

5 220 ㎒

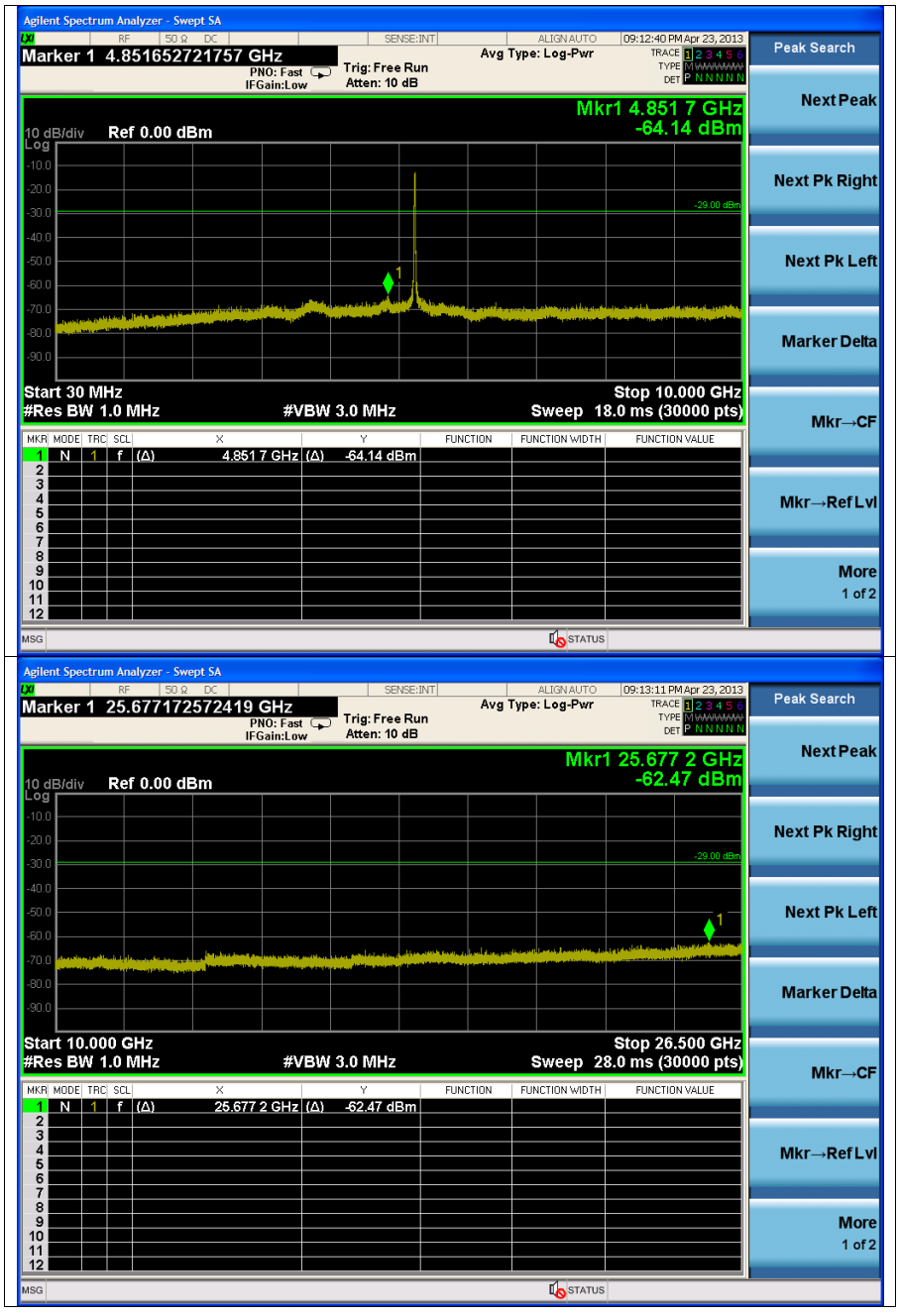


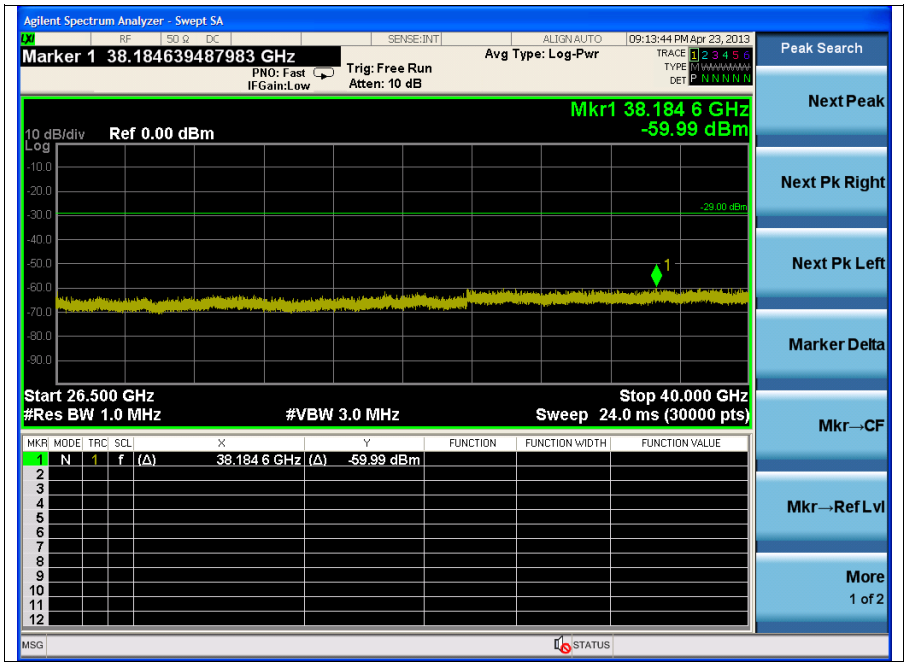


Note:
Offset (dB) = Attenuator(dB) + Cable loss (dB)
Result (dB m) = Spurious offset (dB) + Reading values (dB m)

Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
4 856.30	Noise floor	-	-
26 419.70	Noise floor	-	-
38 236.40	Noise floor	-	-

5 240 ㎒



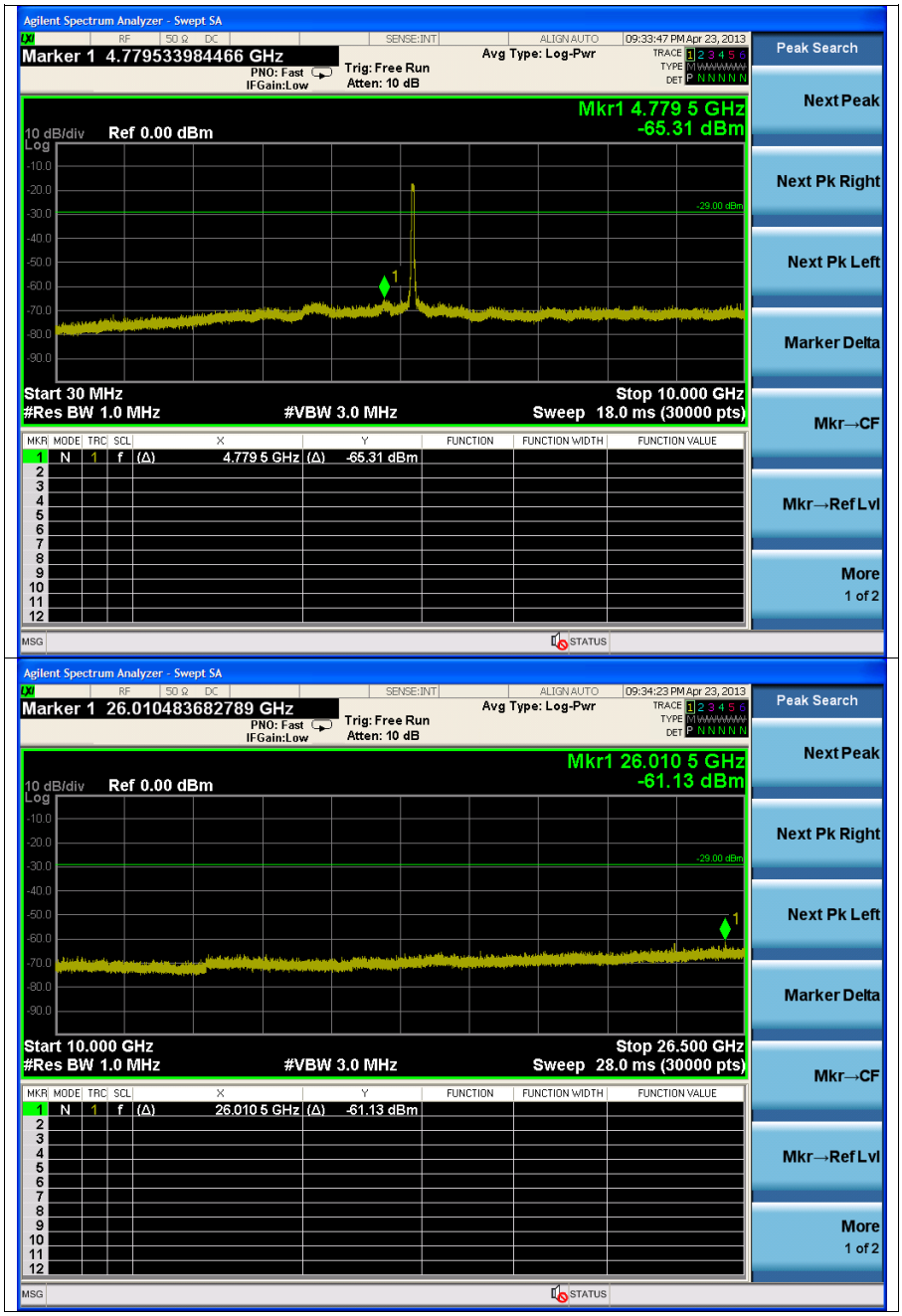


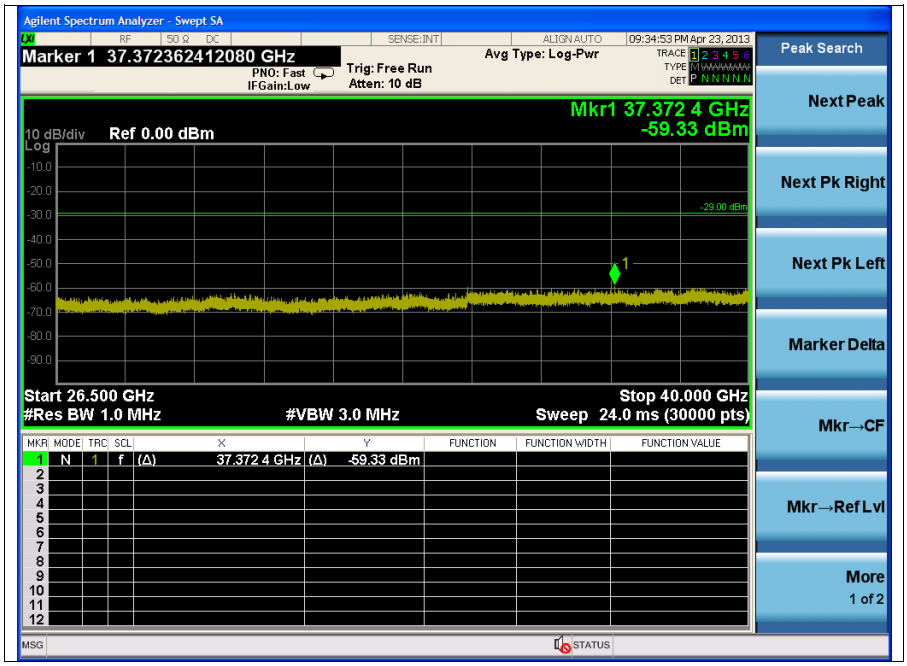
Note:
Offset (dB) = Attenuator(dB) + Cable loss (dB)
Result (dB m) = Spurious offset (dB) + Reading values (dB m)

Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
4 851.70	Noise floor	-	-
25 677.20	Noise floor	-	-
38 184.60	Noise floor	-	-

802.11n-HT40 (Non-DFS)_MCS0

5 190 ㎒

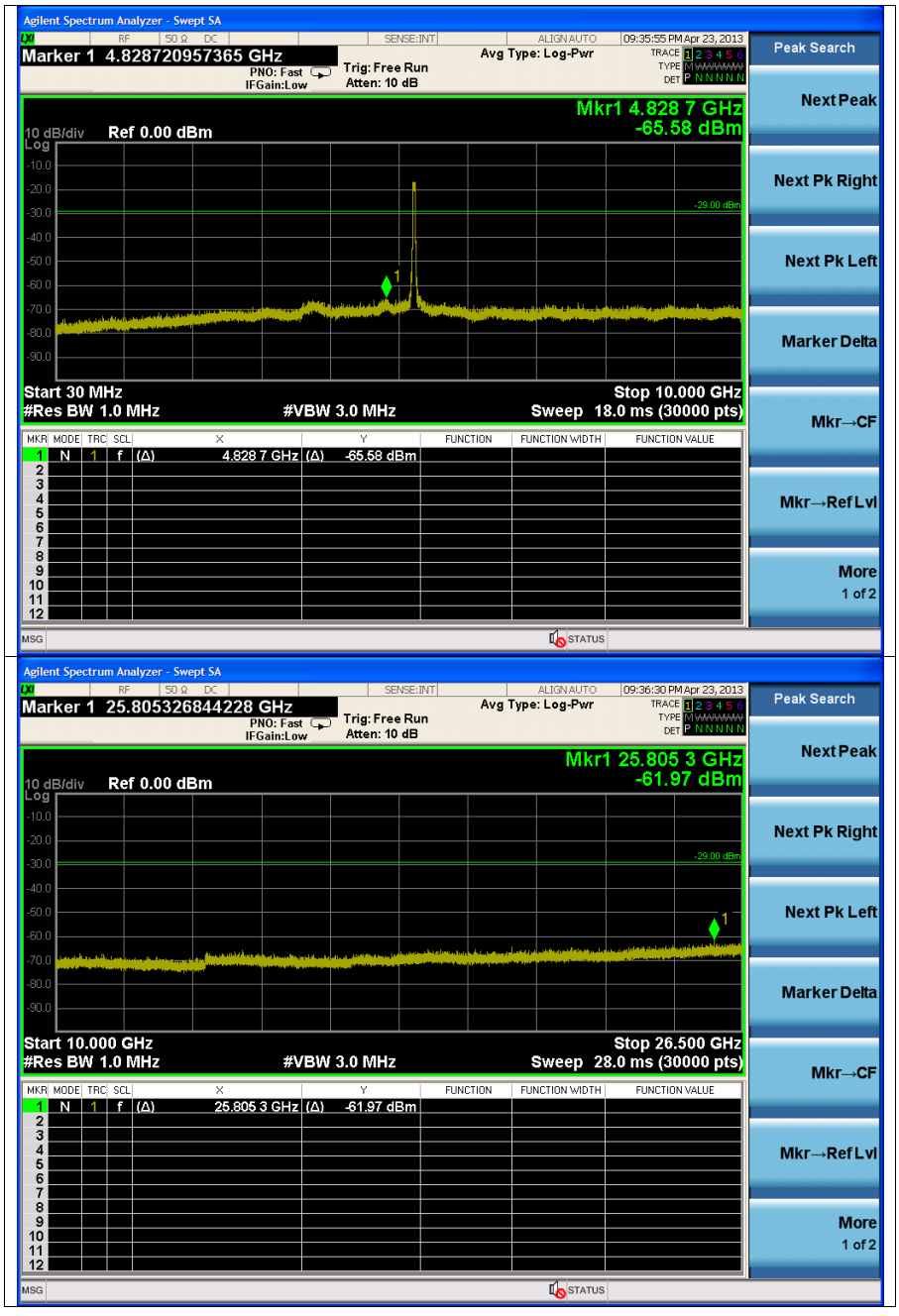


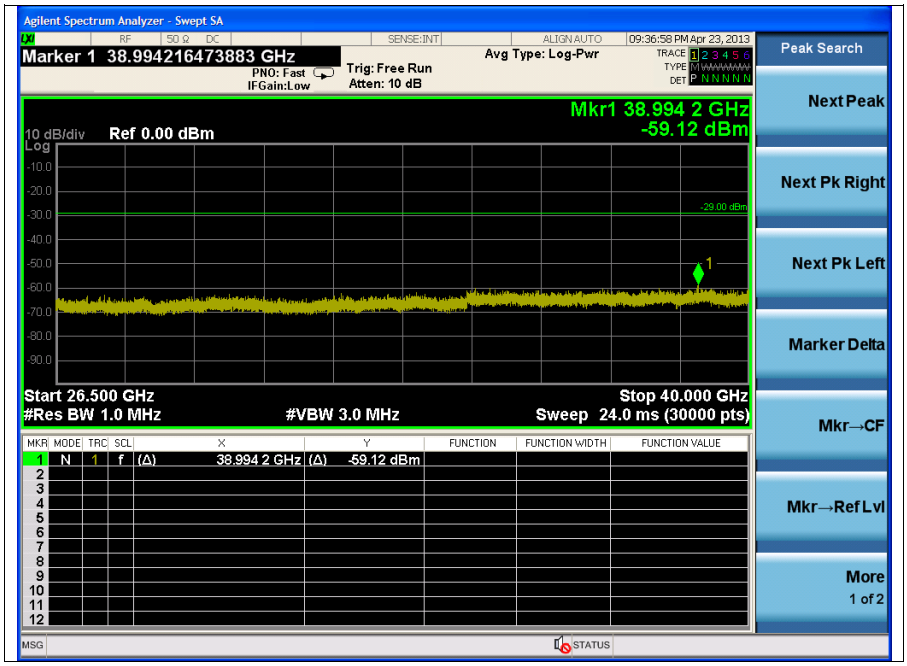


Note:
Offset (dB) = Attenuator(dB) + Cable loss (dB)
Result (dB m) = Spurious offset (dB) + Reading values (dB m)

Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
4 779.50	Noise floor	-	-
26 010.50	Noise floor	-	-
37 372.40	Noise floor	-	-

5 230 ㎒

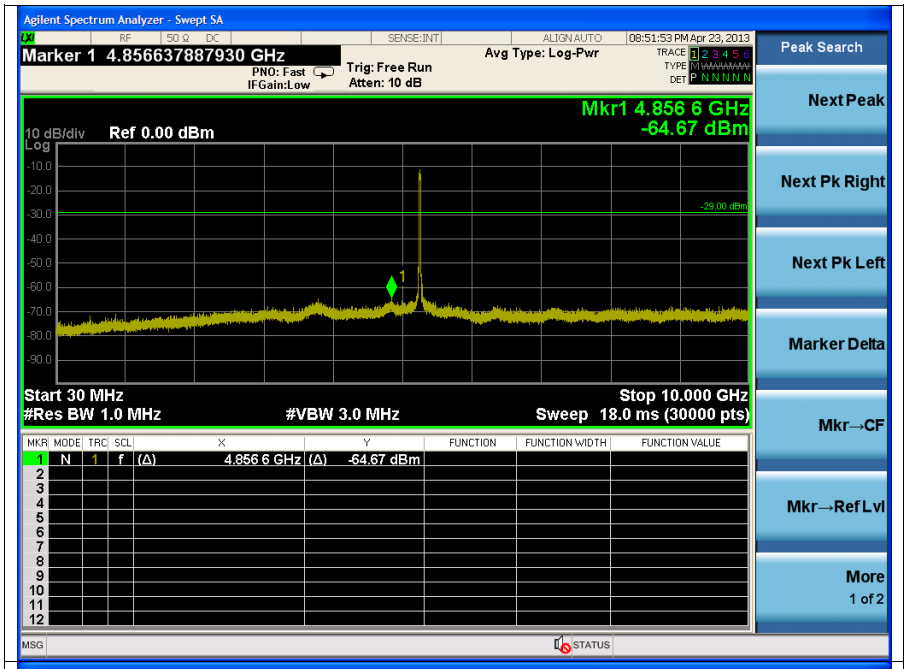


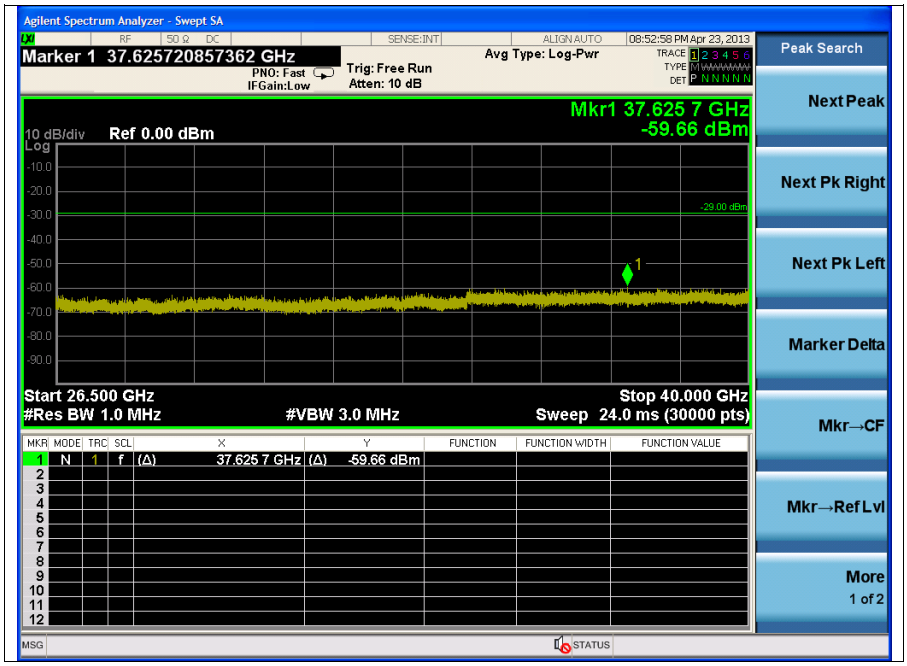


Note:
Offset (dB) = Attenuator(dB) + Cable loss (dB)
Result (dB m) = Spurious offset (dB) + Reading values (dB m)

Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
4 828.70	Noise floor	-	-
25 805.30	Noise floor	-	-
38 994.20	Noise floor	-	-

For 5.25 – 5.35 ㎓, the antenna gain is 1.00 ㏈i, So the EIRP limit is -29.00 ㏈m/㎒
802.11a (DFS)_6 Mbps
5 260 ㎒

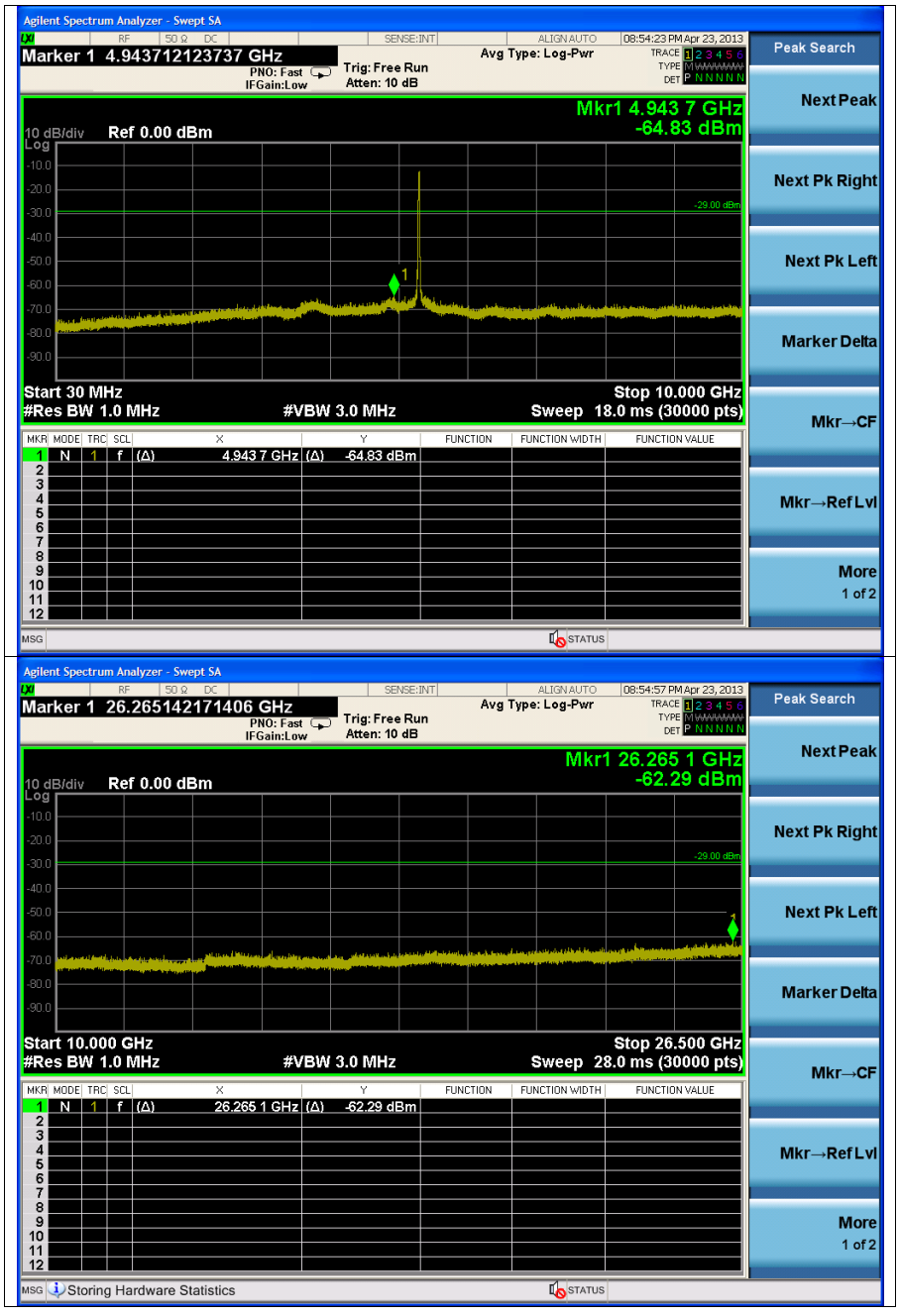


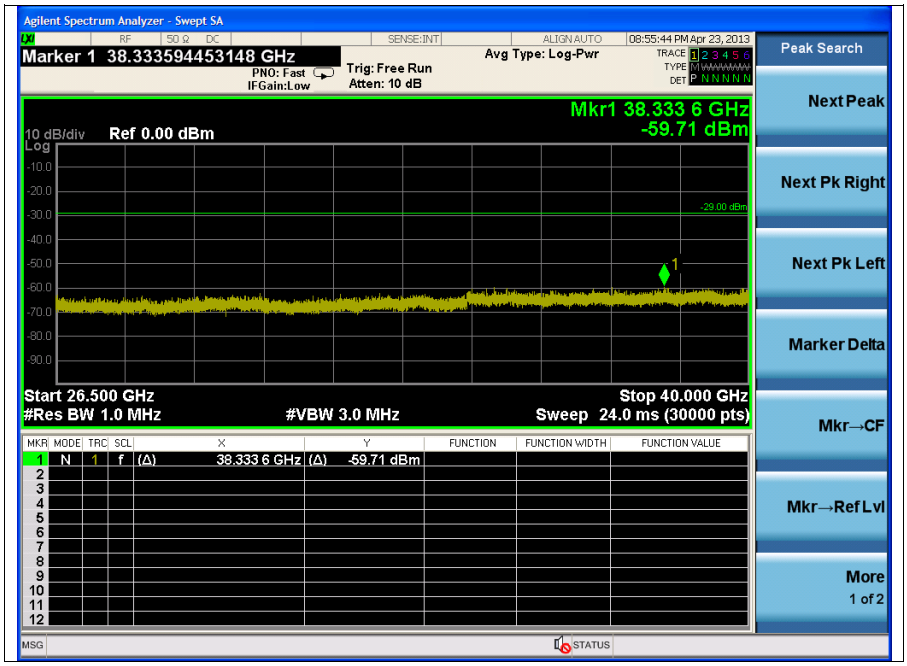


Note:
Offset (dB) = Attenuator(dB) + Cable loss (dB)
Result (dB m) = Spurious offset (dB) + Reading values (dB m)

Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
4 856.60	Noise floor	-	-
25 635.90	Noise floor	-	-
37 625.70	Noise floor	-	-

5 300 ㎒

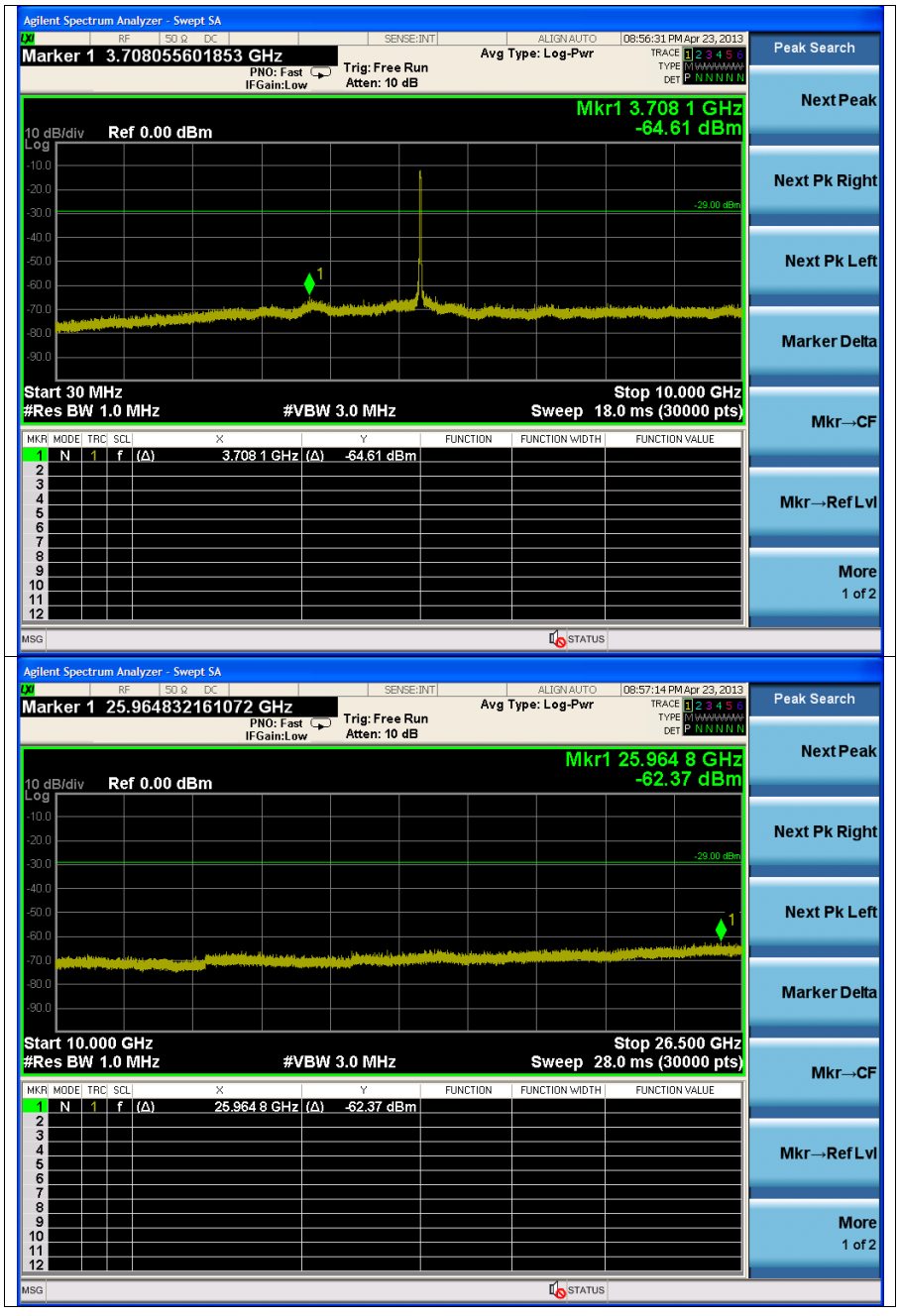


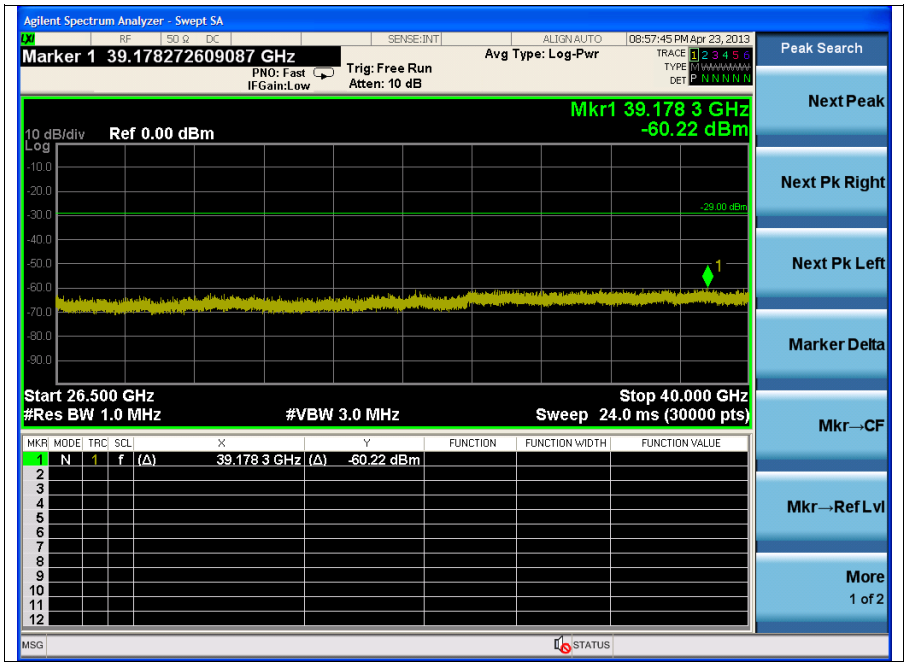


Note:
Offset (dB) = Attenuator(dB) + Cable loss (dB)
Result (dB m) = Spurious offset (dB) + Reading values (dB m)

Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
4 943.70	Noise floor	-	-
26 265.10	Noise floor	-	-
38 333.60	Noise floor	-	-

5 320 ㎒



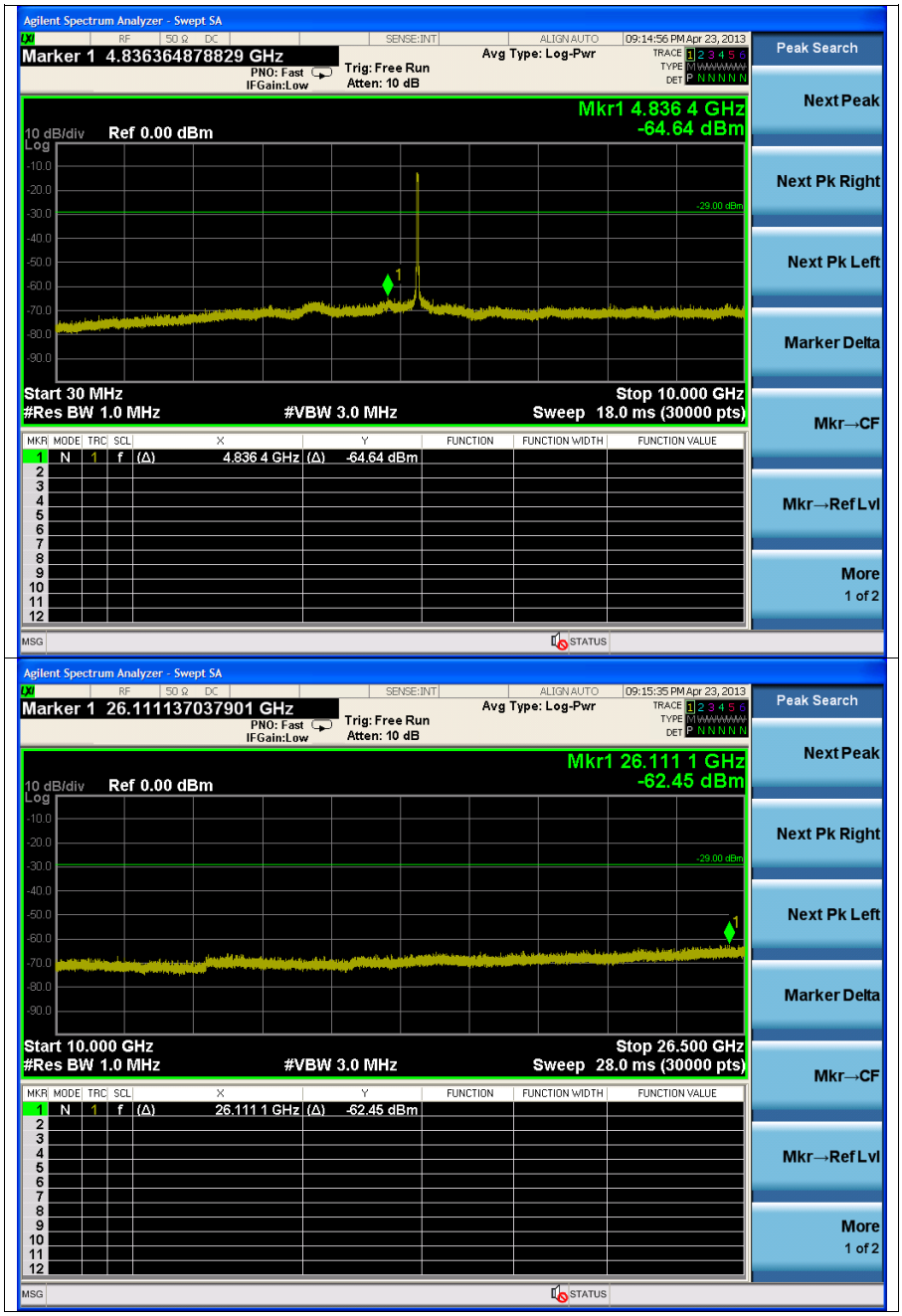


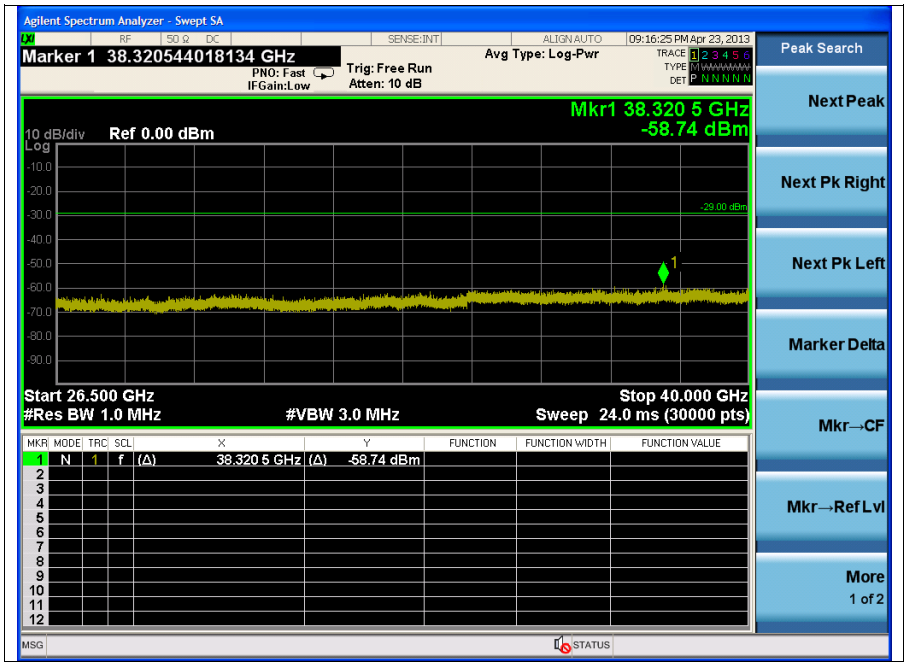
Note:
Offset (dB) = Attenuator(dB) + Cable loss (dB)
Result (dB m) = Spurious offset (dB) + Reading values (dB m)

Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
3 708.10	Noise floor	-	-
25 964.80	Noise floor	-	-
39 178.30	Noise floor	-	-

802.11n-HT20 (DFS)_MCS0

5 260 ㎒

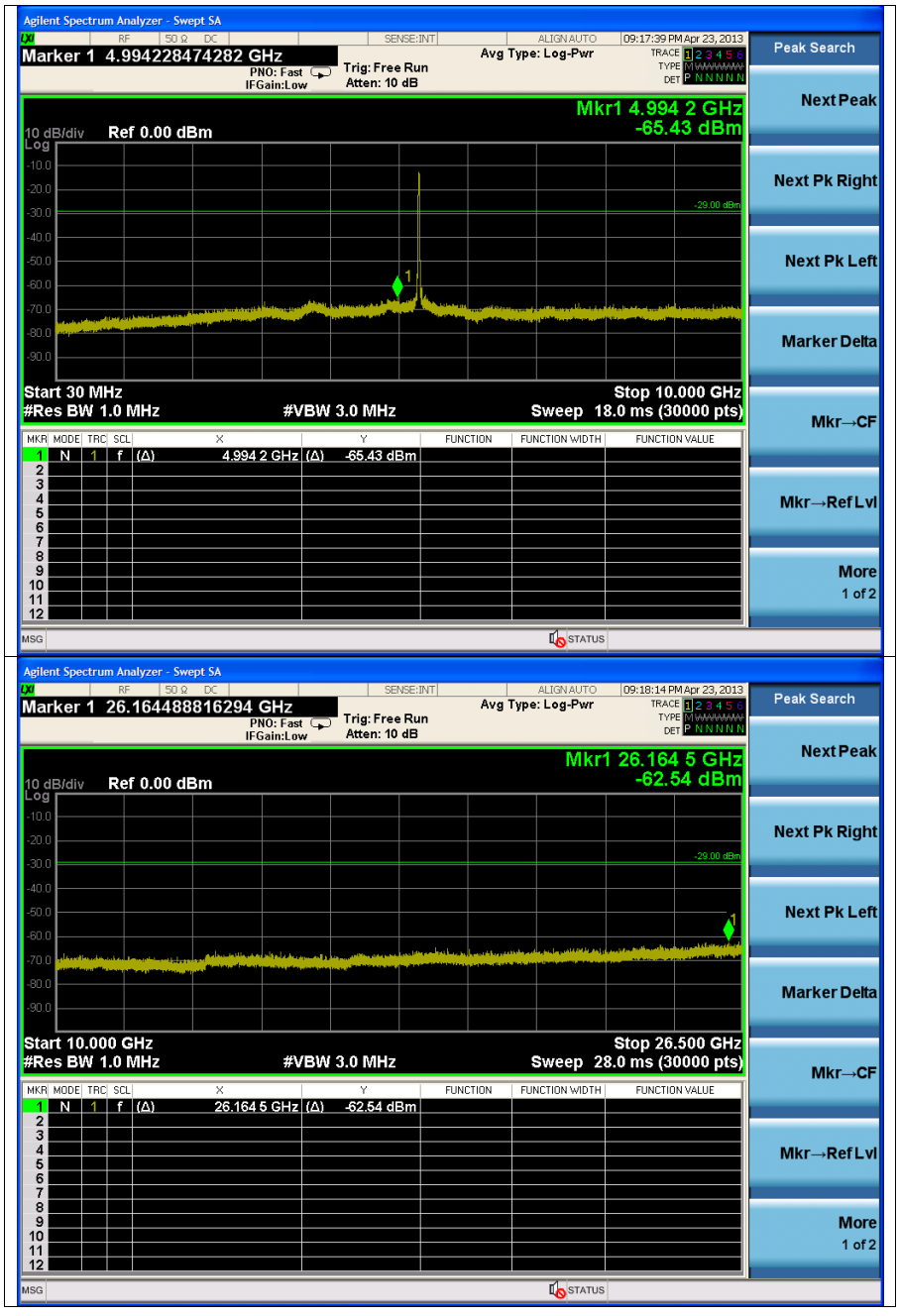


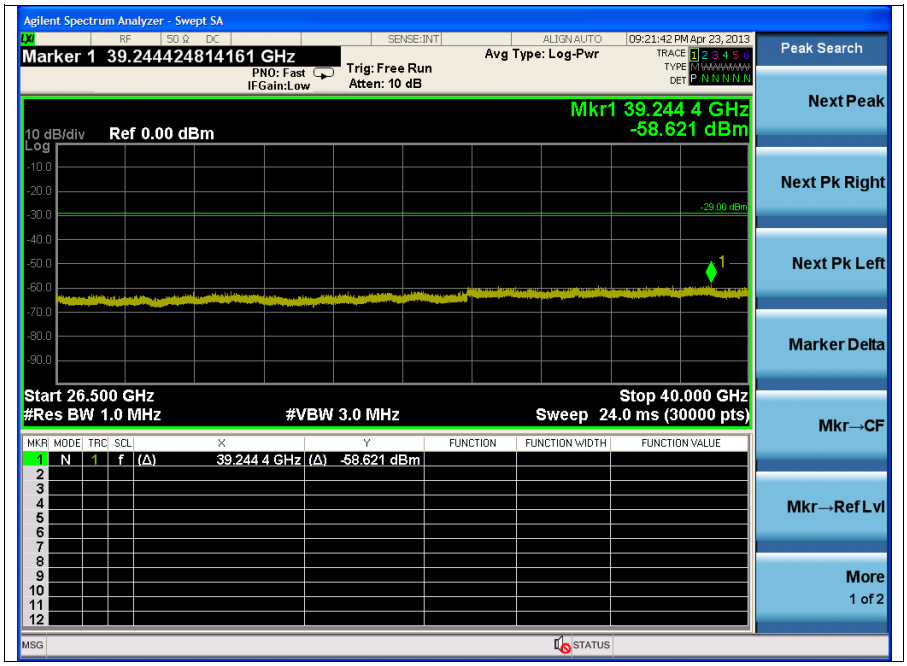


Note:
Offset (dB) = Attenuator(dB) + Cable loss (dB)
Result (dB m) = Spurious offset (dB) + Reading values (dB m)

Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
4 836.40	Noise floor	-	-
26 111.10	Noise floor	-	-
38 320.50	Noise floor	-	-

5 300 ㎒

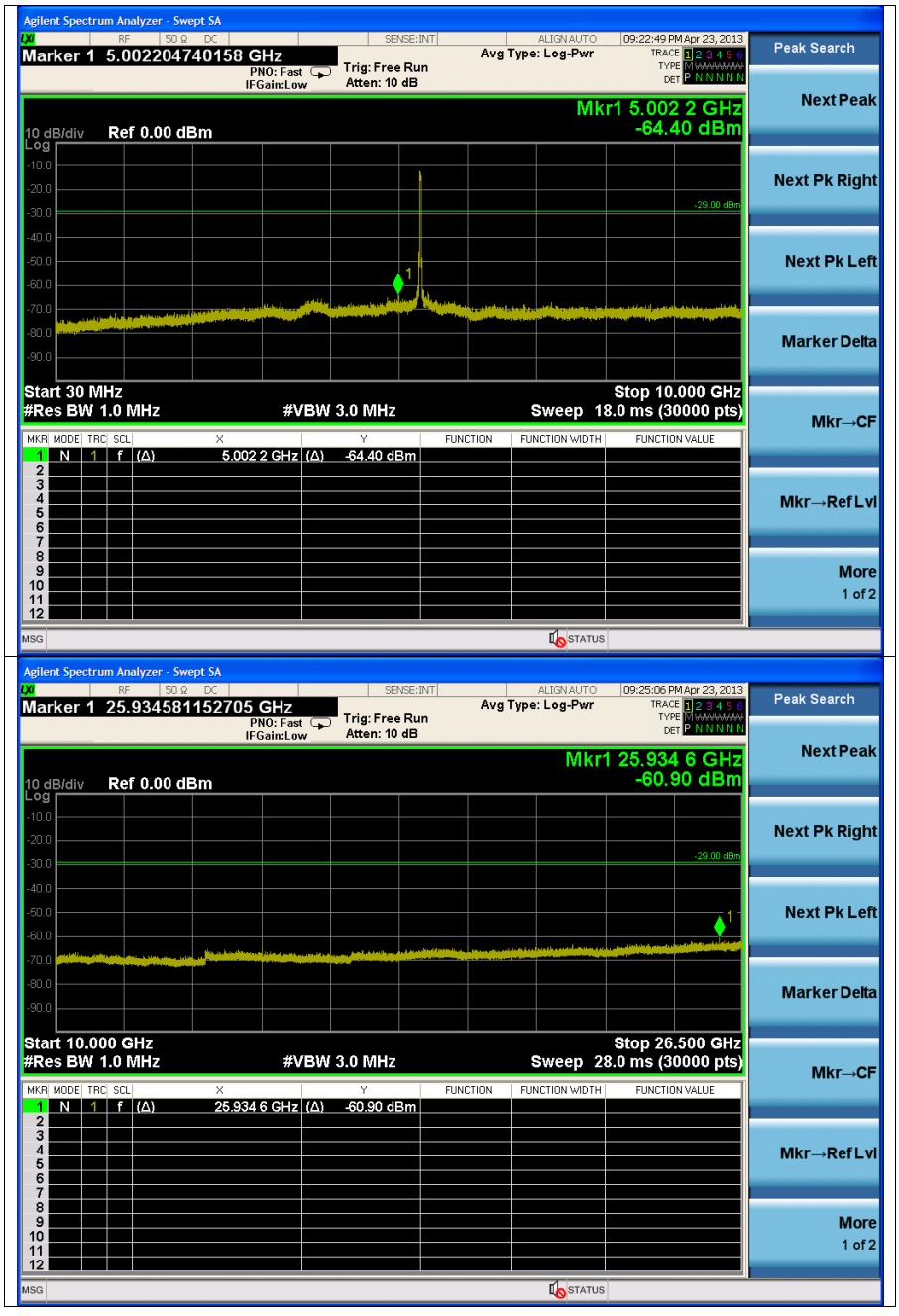


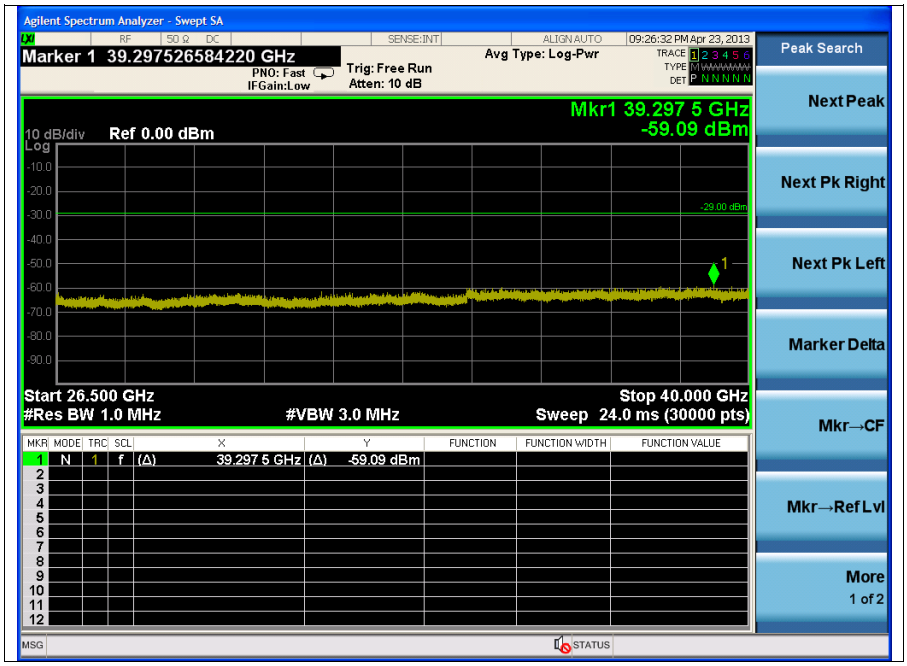


Note:
Offset (dB) = Attenuator(dB) + Cable loss (dB)
Result (dB m) = Spurious offset (dB) + Reading values (dB m)

Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
4 994.20	Noise floor	-	-
26 164.50	Noise floor	-	-
39 244.40	Noise floor	-	-

5 320 ㎒



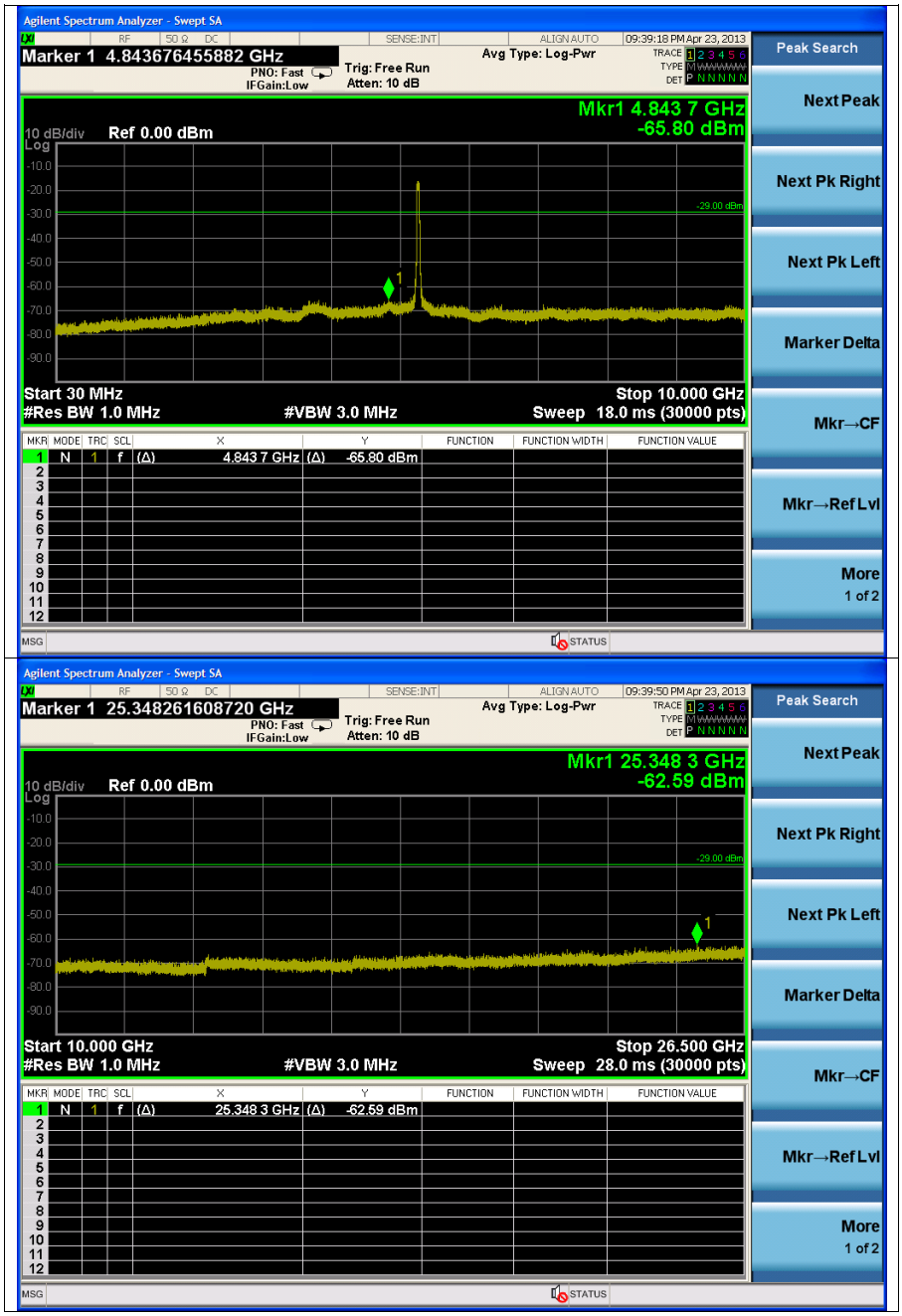


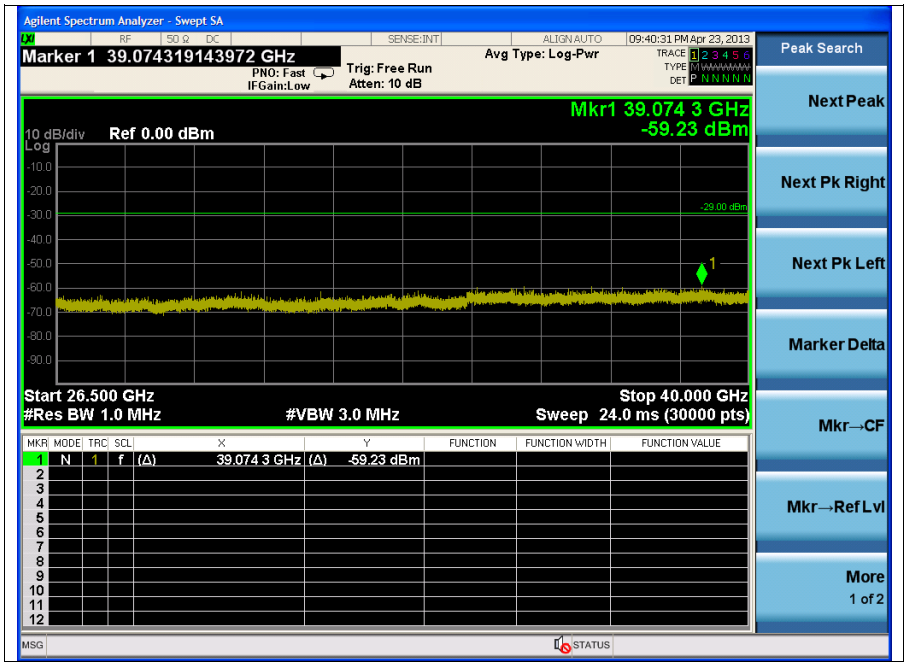
Note:
Offset (dB) = Attenuator(dB) + Cable loss (dB)
Result (dB m) = Spurious offset (dB) + Reading values (dB m)

Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
5 002.20	Noise floor	-	-
25 934.60	Noise floor	-	-
39 297.50	Noise floor	-	-

802.11n-HT40 (DFS)_MCS0

5 270 ㎒

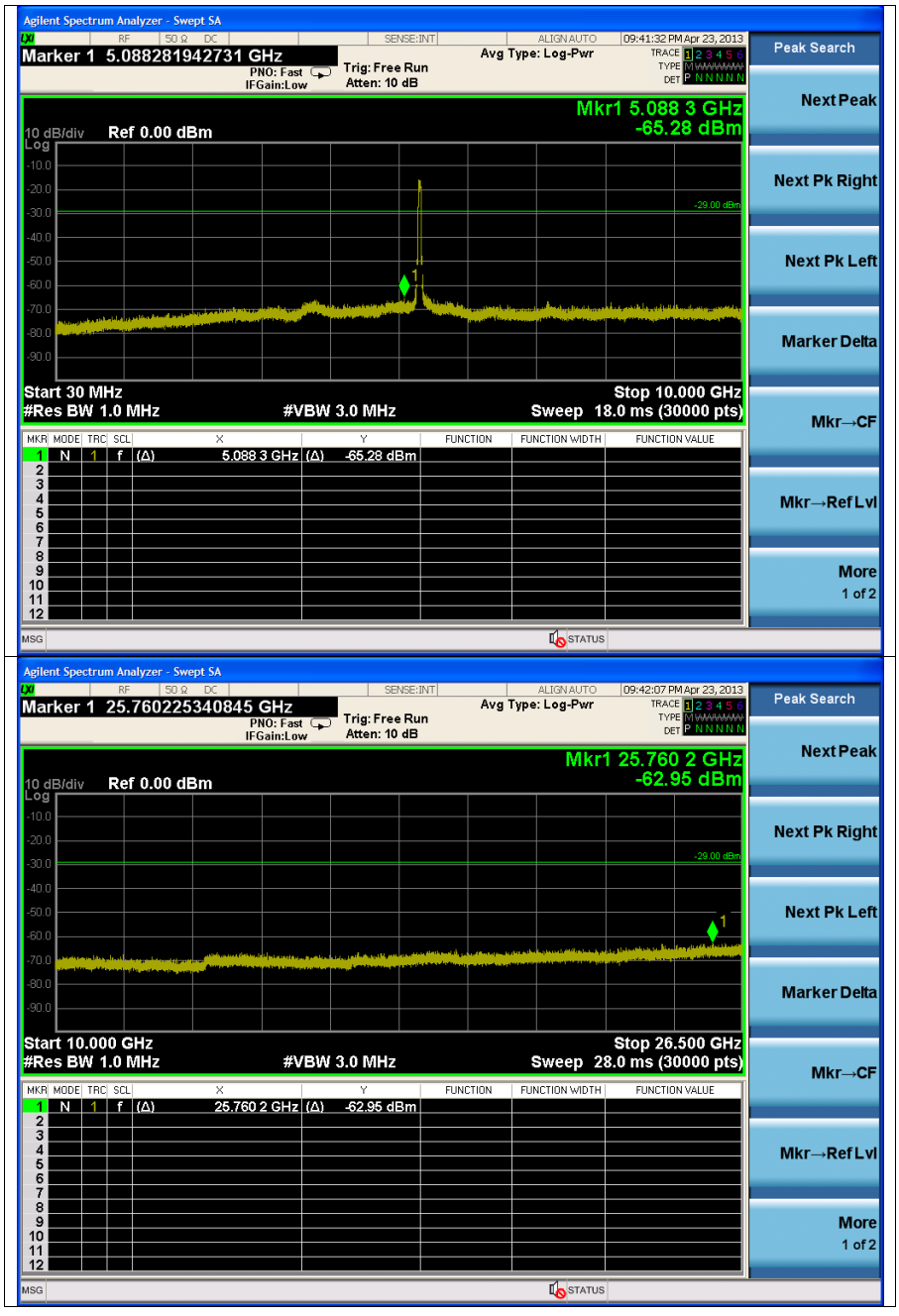


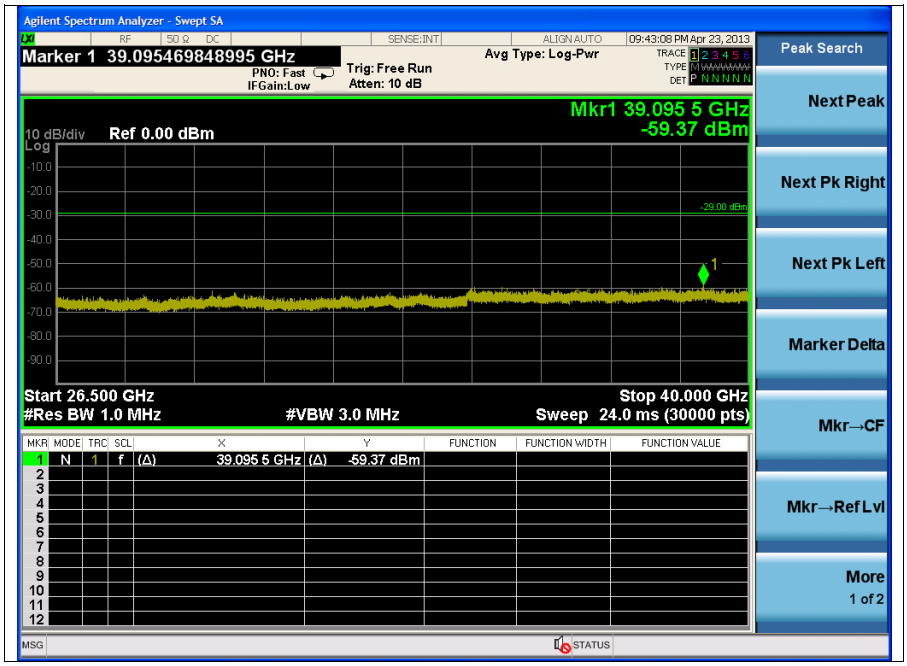


Note:
Offset (dB) = Attenuator(dB) + Cable loss (dB)
Result (dB m) = Spurious offset (dB) + Reading values (dB m)

Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
4 843.70	Noise floor	-	-
25 348.30	Noise floor	-	-
39 074.30	Noise floor	-	-

5 310 ㎒

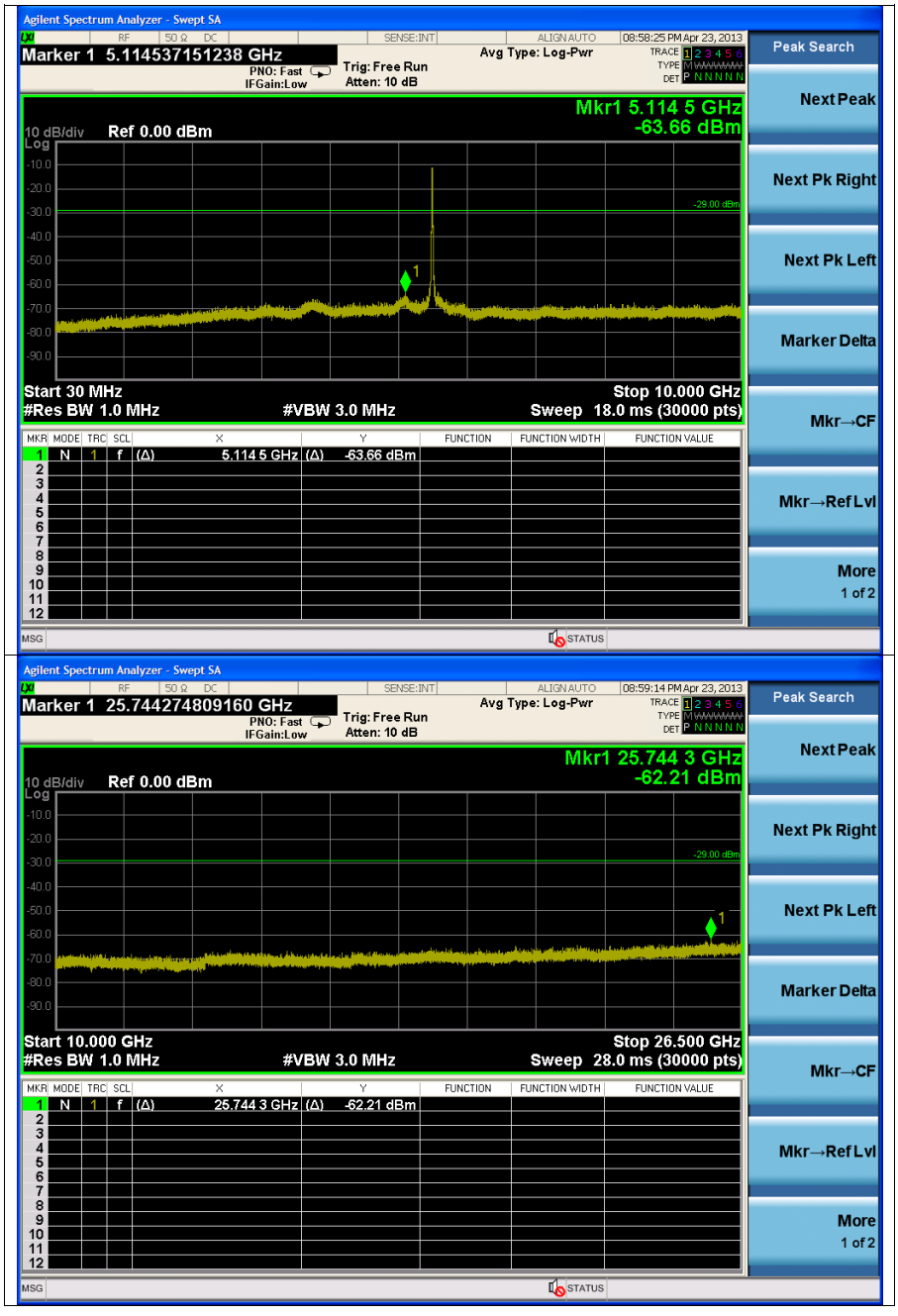


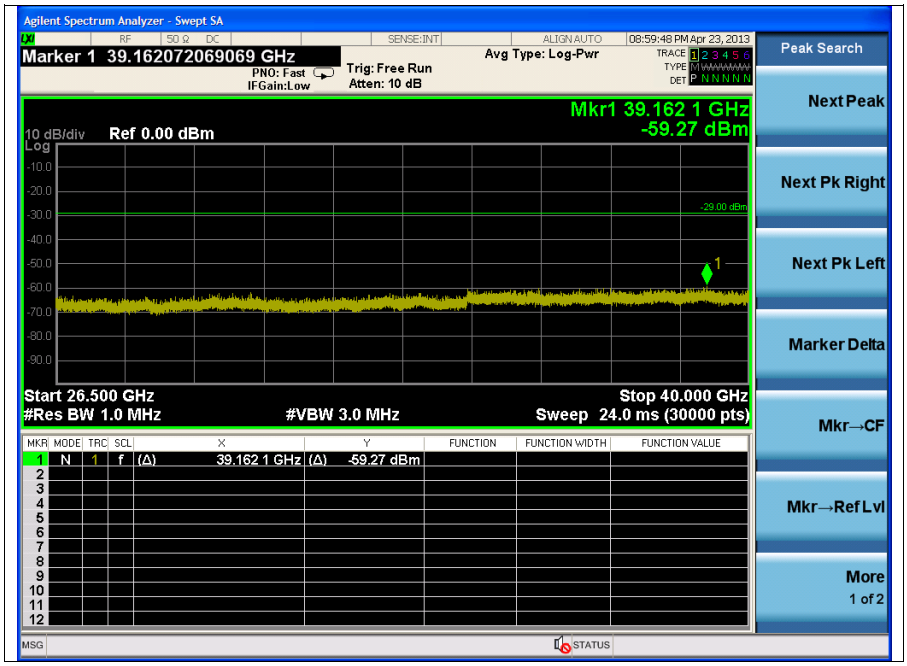


Note:
Offset (dB) = Attenuator(dB) + Cable loss (dB)
Result (dB m) = Spurious offset (dB) + Reading values (dB m)

Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
5 088.30	Noise floor	-	-
25 760.20	Noise floor	-	-
39 095.50	Noise floor	-	-

For 5.50 – 5.70 ㎓, the antenna gain is -1.50 ㏈i, So the EIRP limit is -29.00 ㏈m/㎒
802.11a (DFS)_6 Mbps
5 500 ㎒

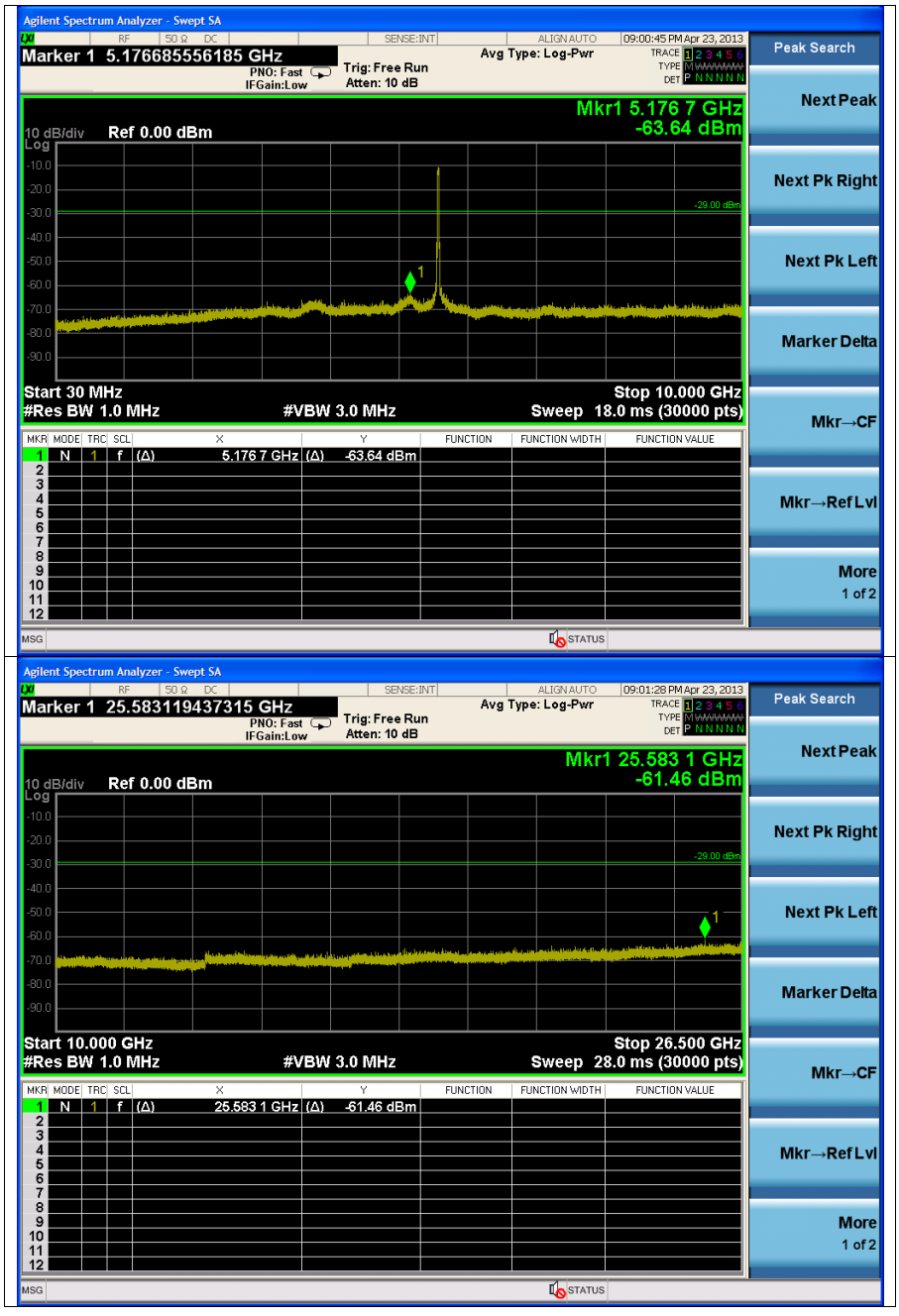


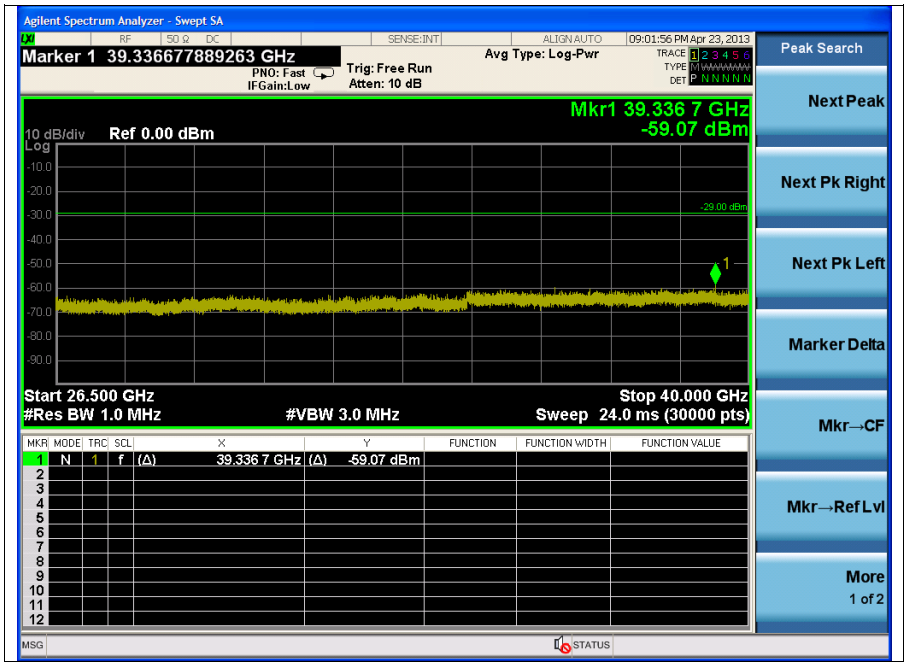


Note:
Offset (dB) = Attenuator(dB) + Cable loss (dB)
Result (dB m) = Spurious offset (dB) + Reading values (dB m)

Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
5 114.50	Noise floor	-	-
25 744.30	Noise floor	-	-
39 162.10	Noise floor	-	-

5 580 ㎒

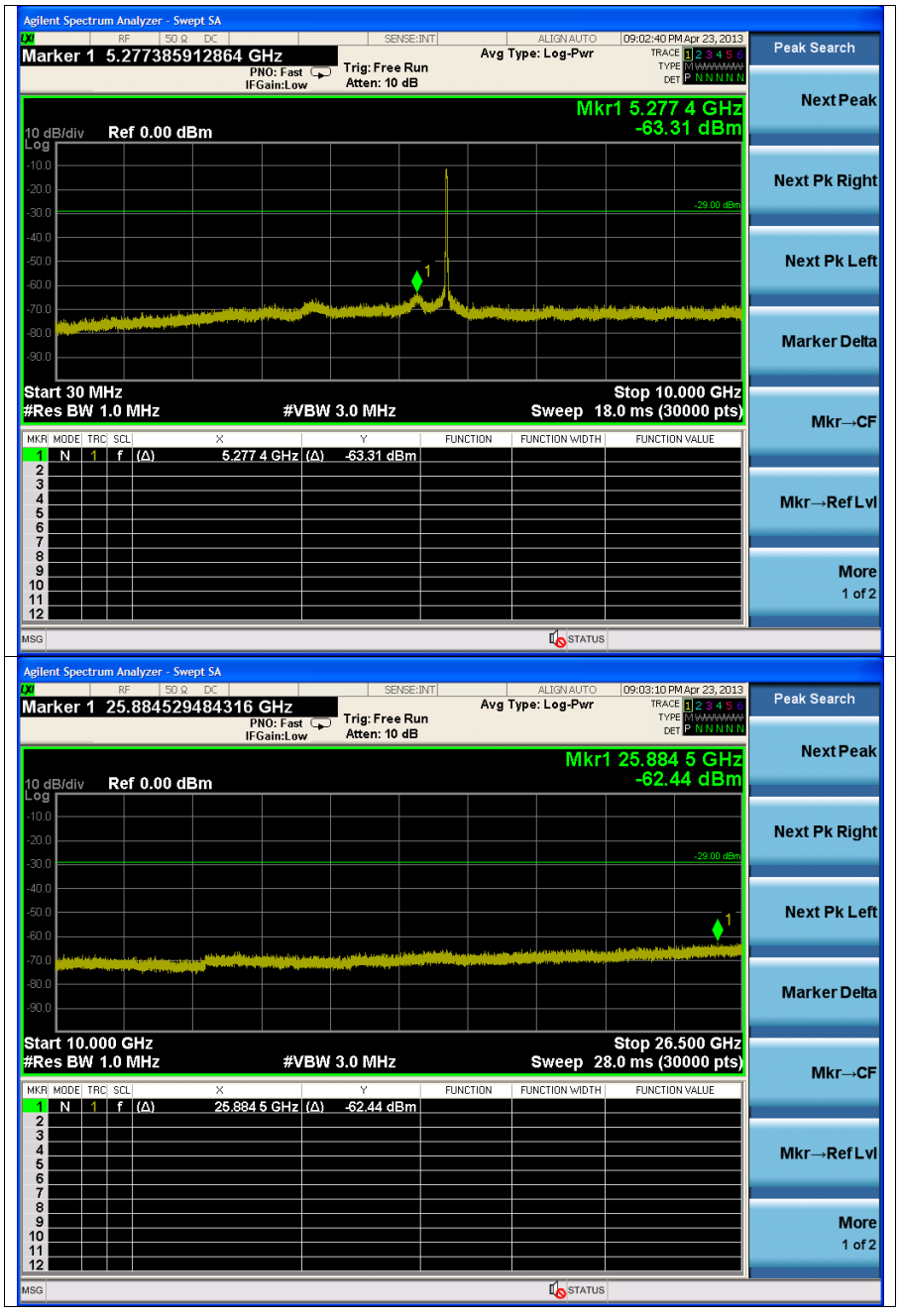


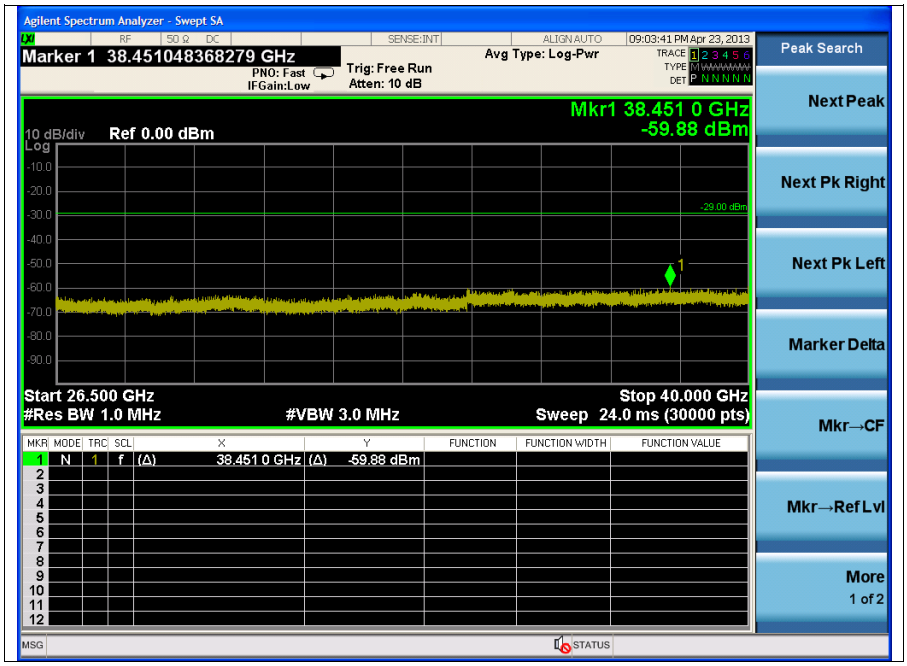


Note:
Offset (dB) = Attenuator(dB) + Cable loss (dB)
Result (dB m) = Spurious offset (dB) + Reading values (dB m)

Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
5 176.70	Noise floor	-	-
25 583.10	Noise floor	-	-
39 336.70	Noise floor	-	-

5 700 ㎒



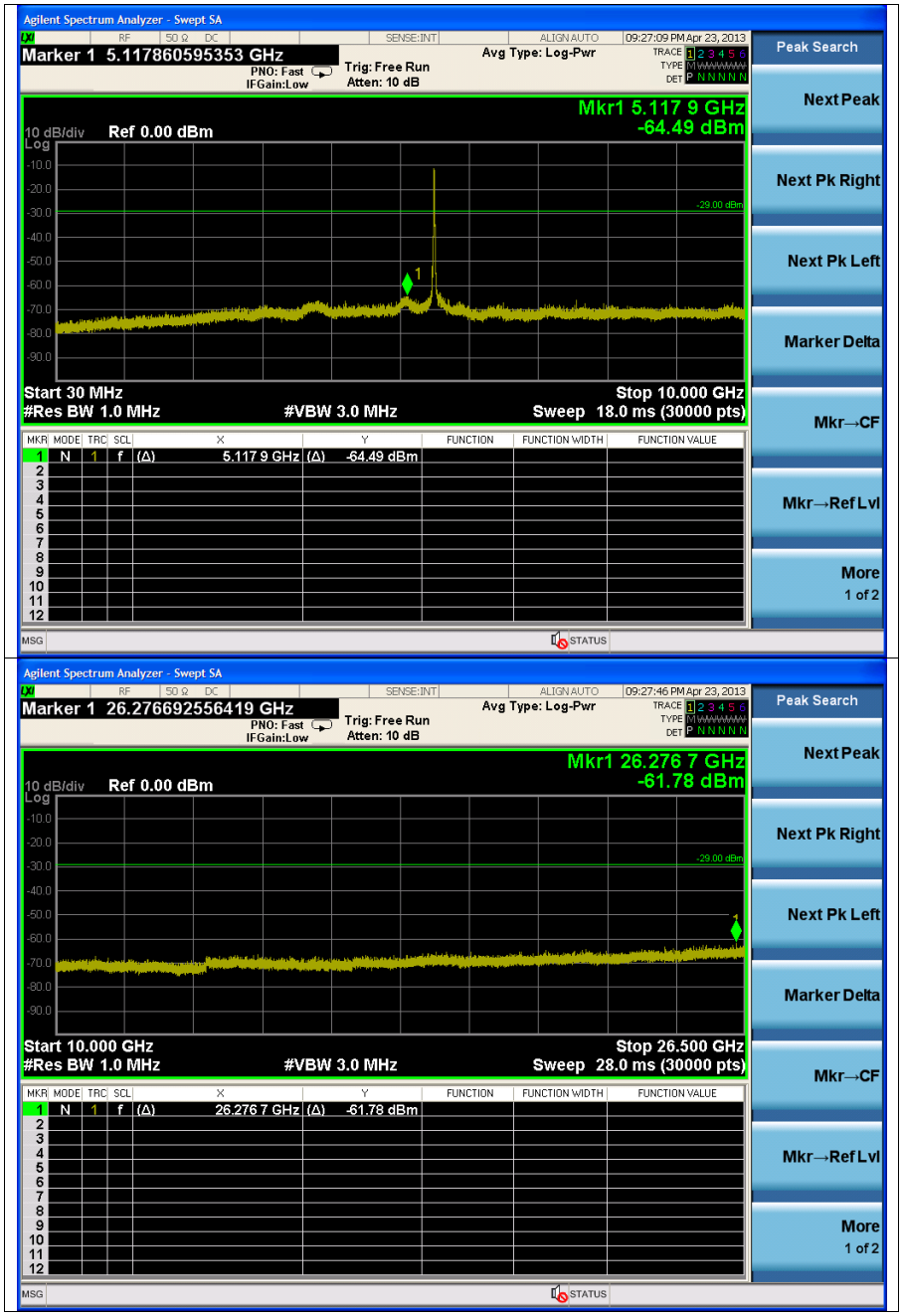


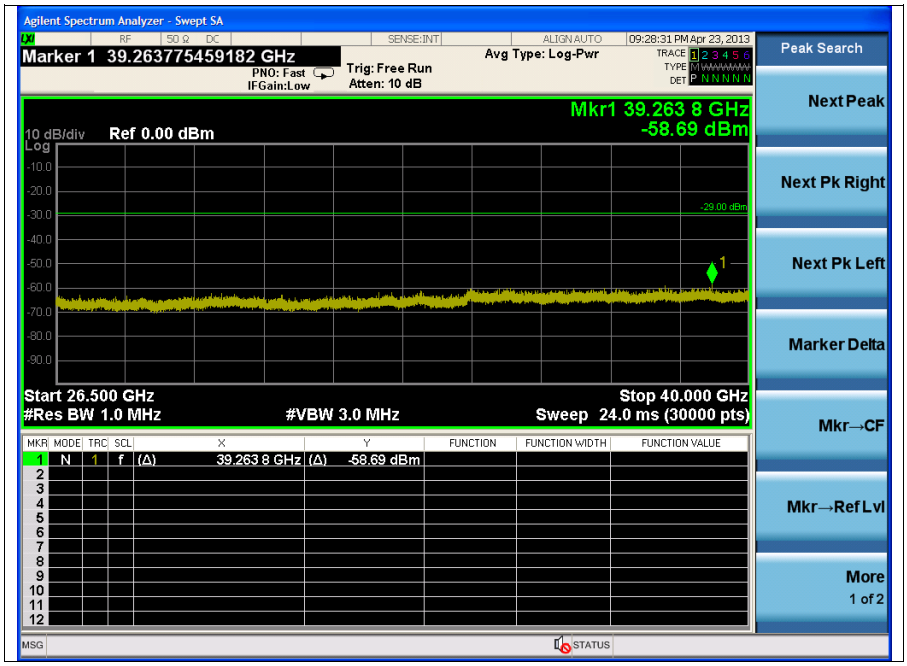
Note:
Offset (dB) = Attenuator(dB) + Cable loss (dB)
Result (dB m) = Spurious offset (dB) + Reading values (dB m)

Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
5 277.40	Noise floor	-	-
25 884.50	Noise floor	-	-
38 451.00	Noise floor	-	-

802.11n-HT20 (DFS)_MCS0

5 500 ㎒

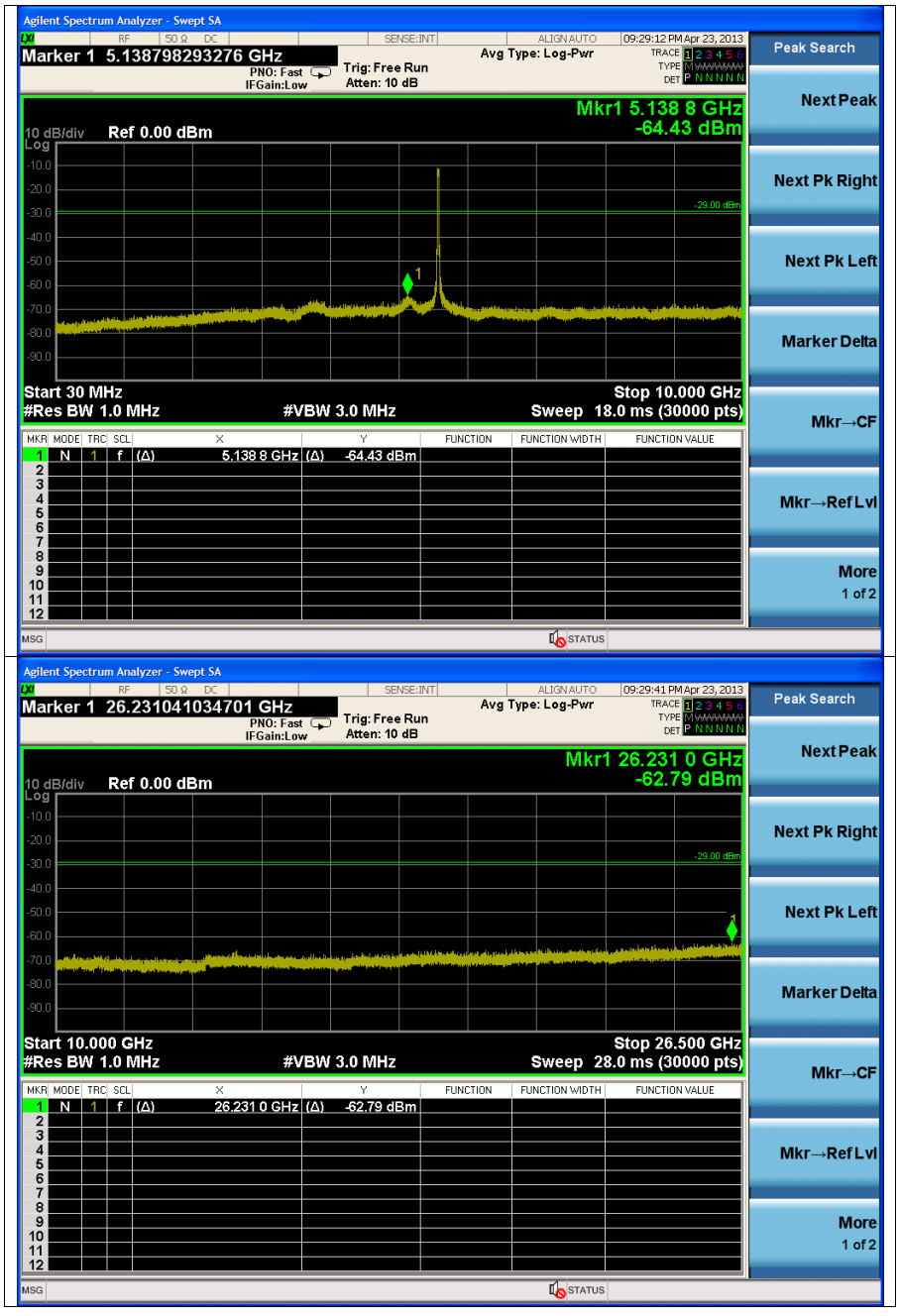


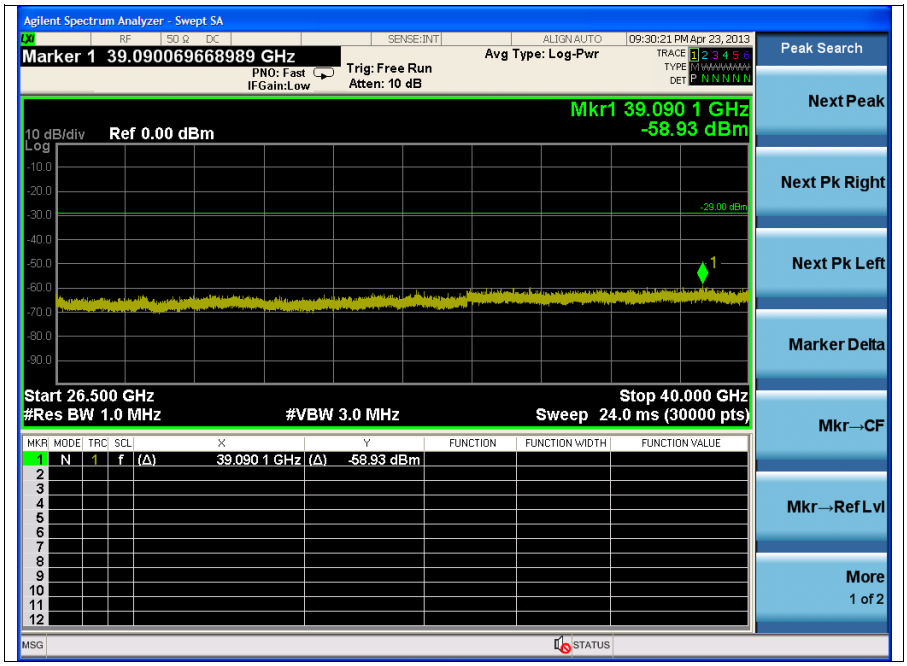


Note:
Offset (dB) = Attenuator(dB) + Cable loss (dB)
Result (dB m) = Spurious offset (dB) + Reading values (dB m)

Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
5 117.90	Noise floor	-	-
26 276.70	Noise floor	-	-
39 263.80	Noise floor	-	-

5 580 ㎒

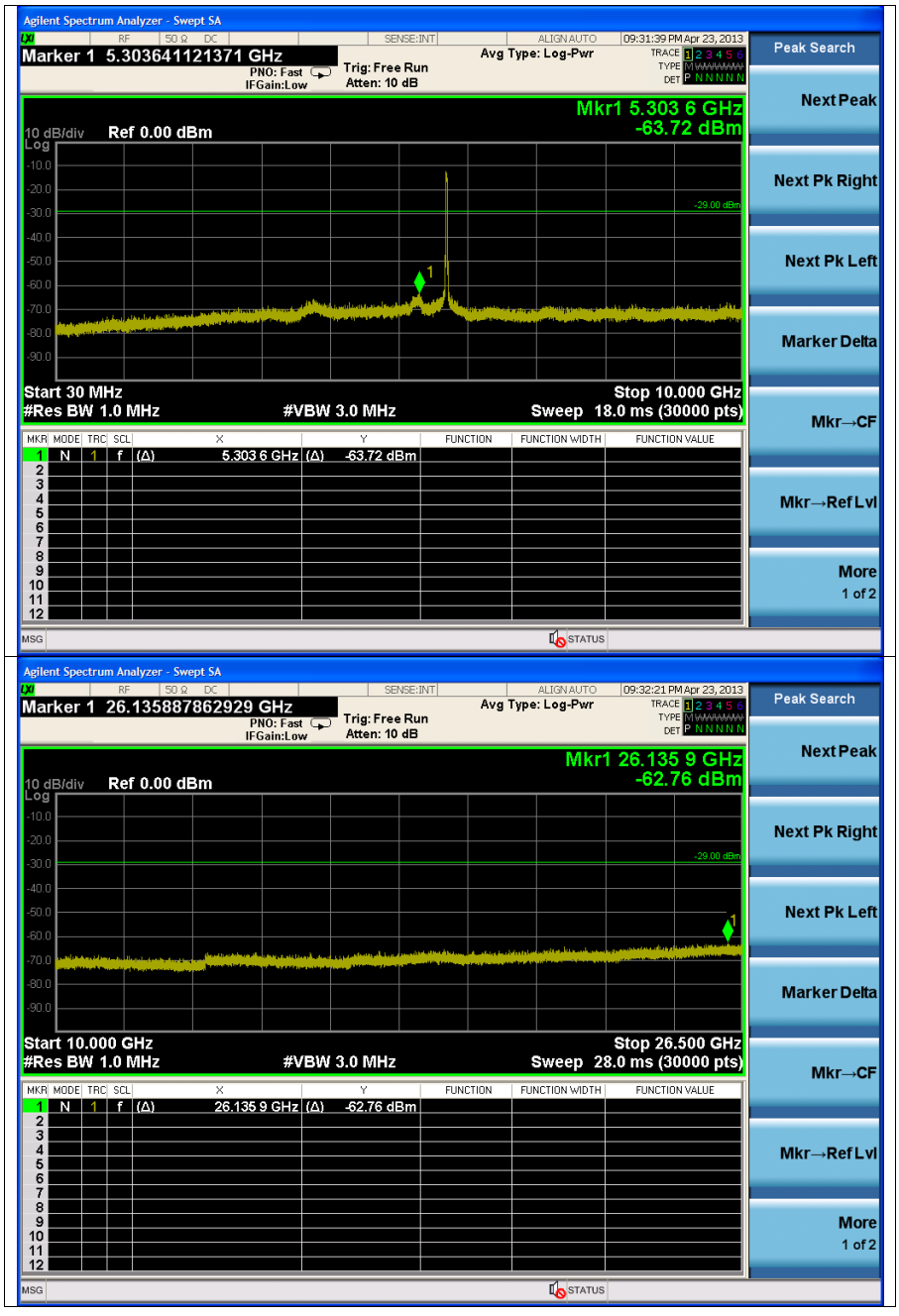


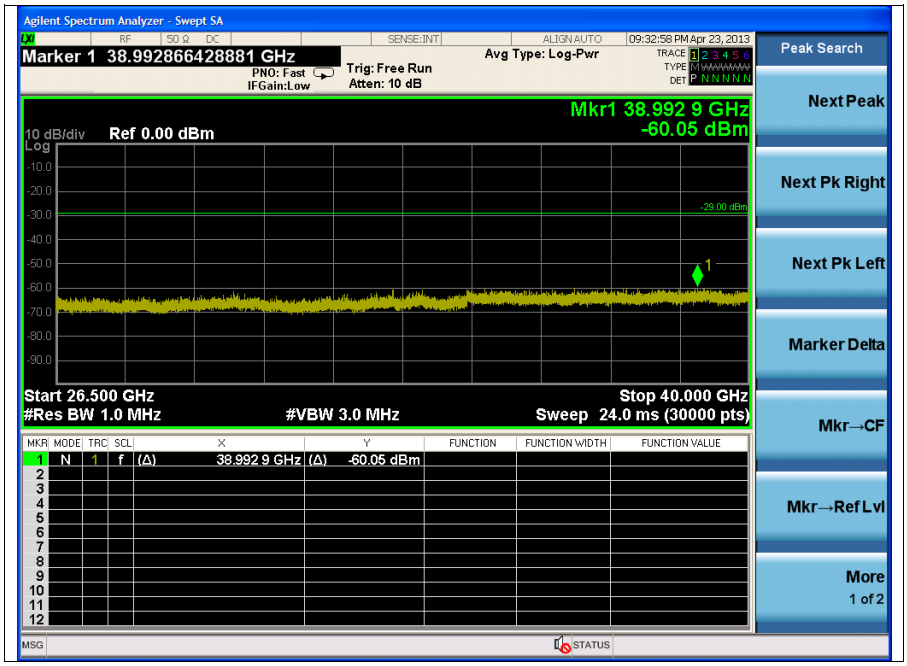


Note:
Offset (dB) = Attenuator(dB) + Cable loss (dB)
Result (dB m) = Spurious offset (dB) + Reading values (dB m)

Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
5 138.80	Noise floor	-	-
26 231.00	Noise floor	-	-
39 090.10	Noise floor	-	-

5 700 ㎒



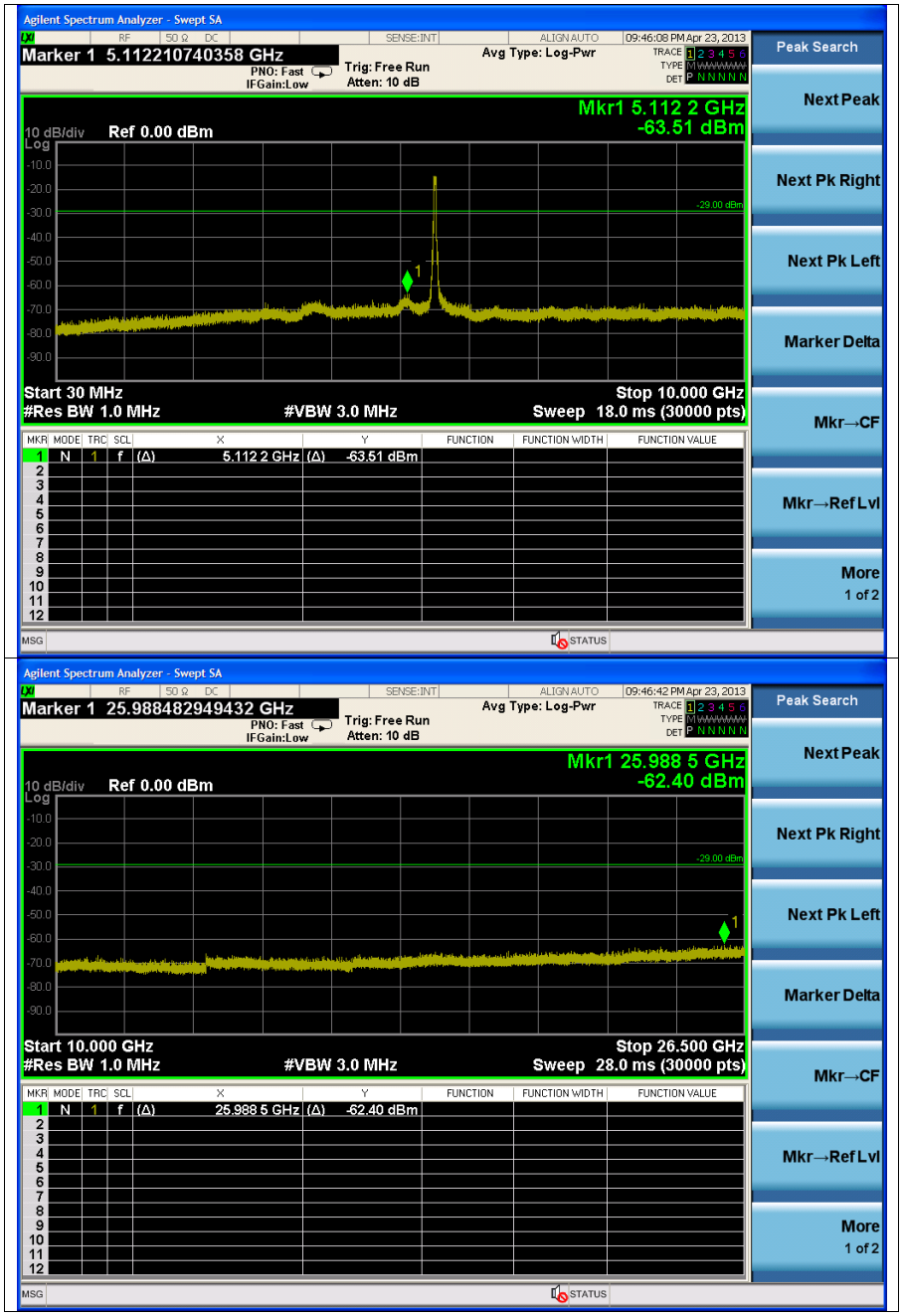


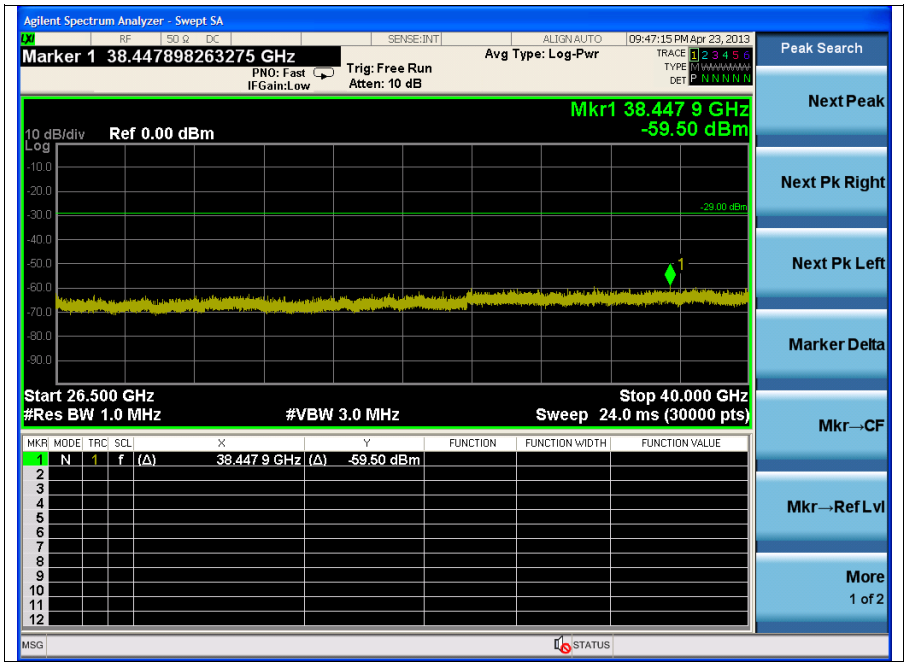
Note:
Offset (dB) = Attenuator(dB) + Cable loss (dB)
Result (dB m) = Spurious offset (dB) + Reading values (dB m)

Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
5 303.60	Noise floor	-	-
26 135.90	Noise floor	-	-
38 992.90	Noise floor	-	-

802.11n-HT40 (DFS)_MCS0

5 510 ㎒

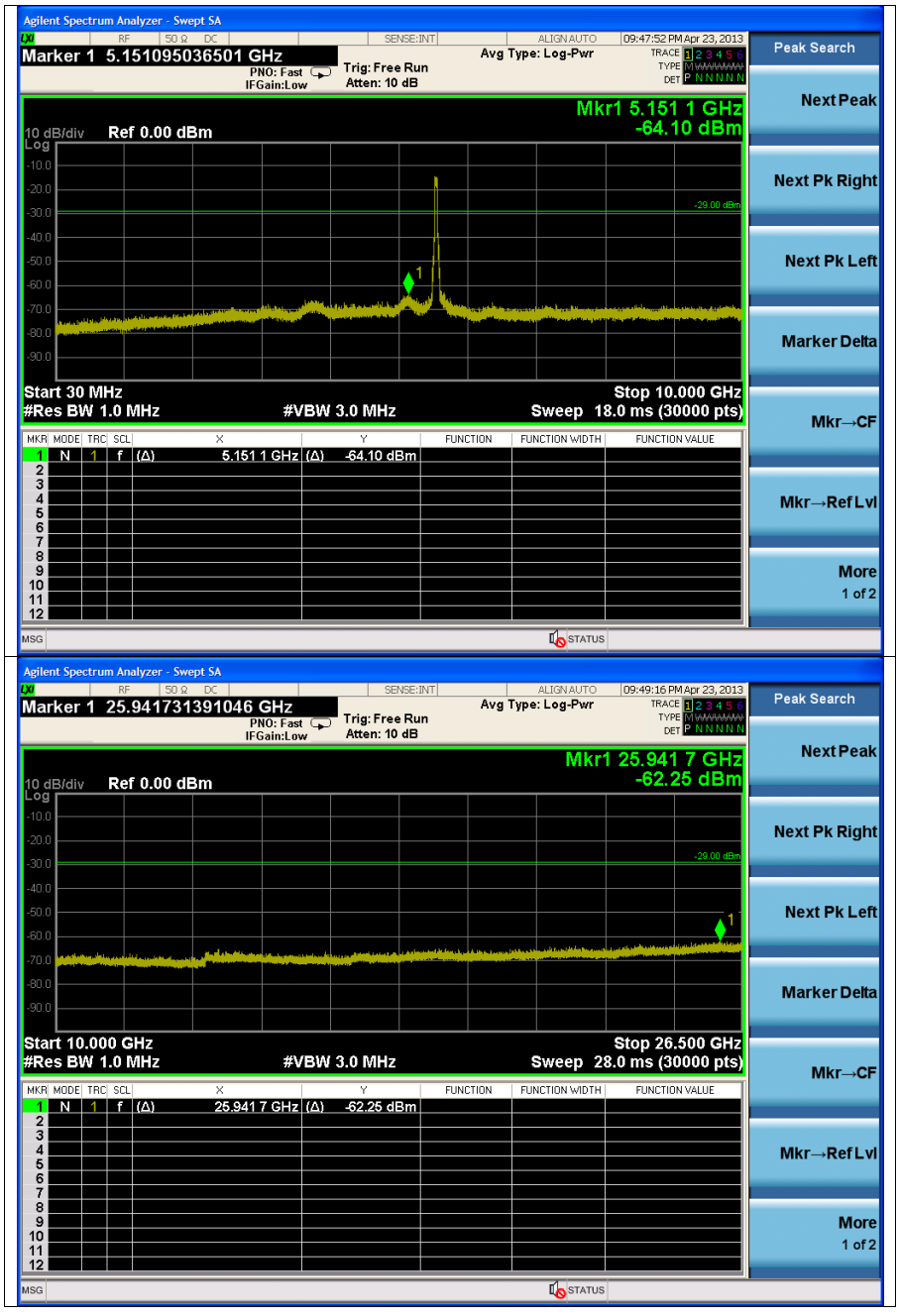


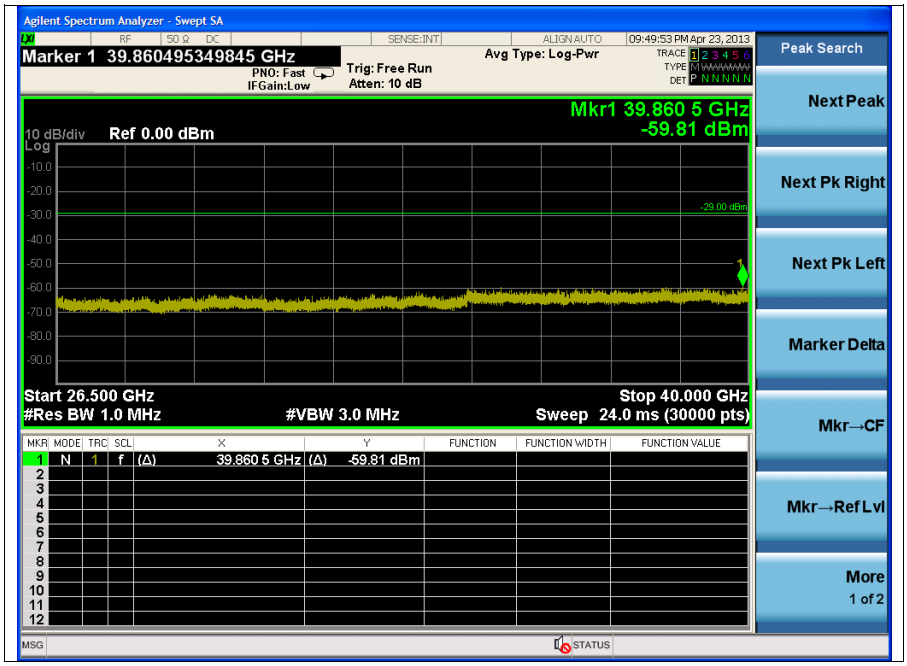


Note:
Offset (dB) = Attenuator(dB) + Cable loss (dB)
Result (dB m) = Spurious offset (dB) + Reading values (dB m)

Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
5 112.20	Noise floor	-	-
25 988.50	Noise floor	-	-
38 447.90	Noise floor	-	-

5 550 ㎒

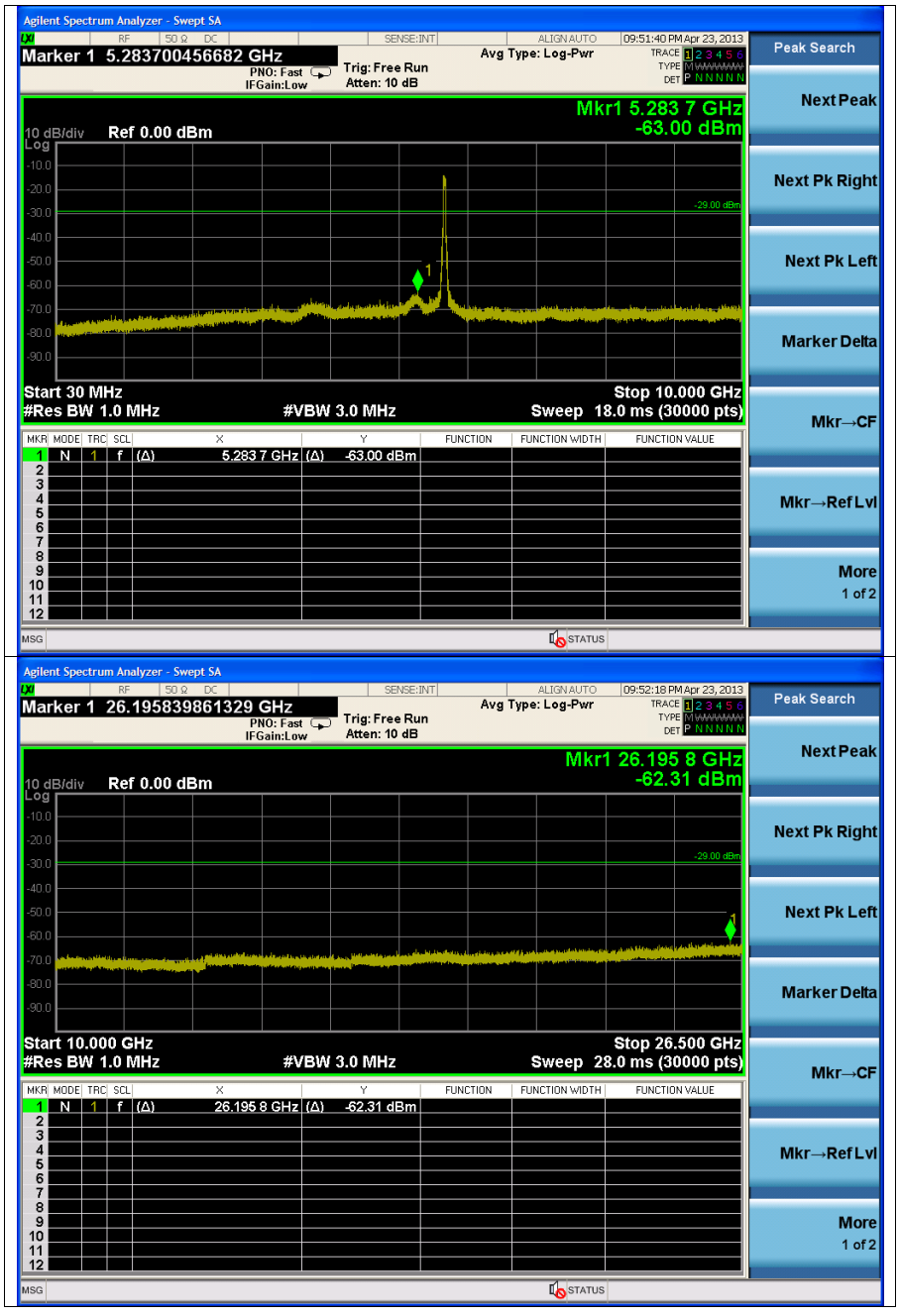


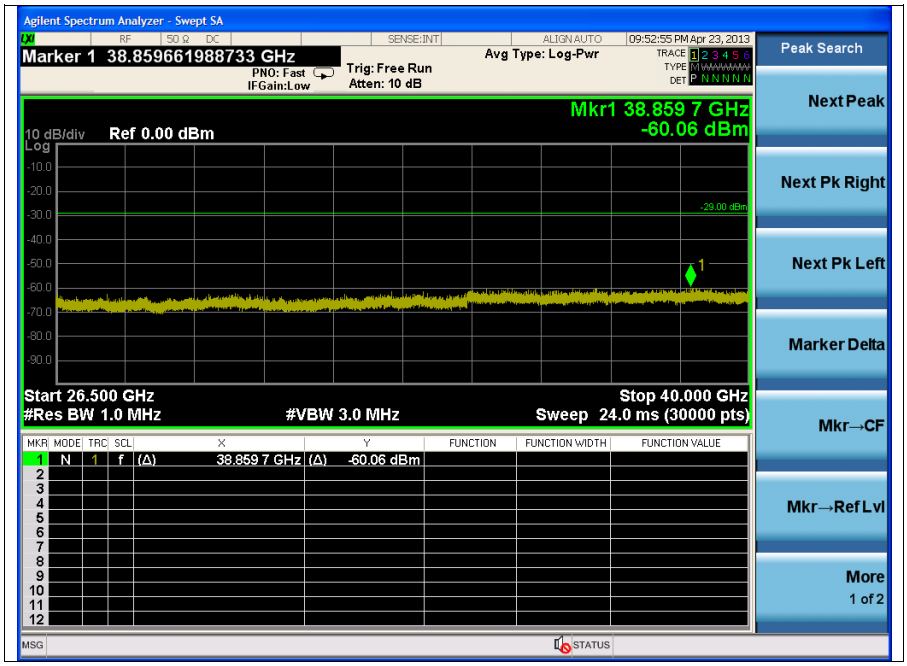


Note:
Offset (dB) = Attenuator(dB) + Cable loss (dB)
Result (dB m) = Spurious offset (dB) + Reading values (dB m)

Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
5 151.10	Noise floor	-	-
25 941.70	Noise floor	-	-
39 860.50	Noise floor	-	-

5 670 ㎒



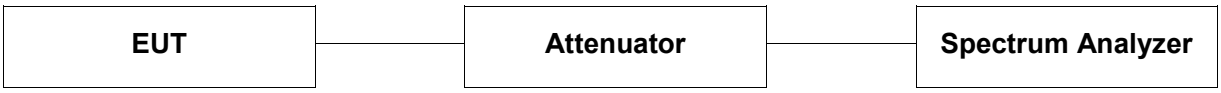


Note:
Offset (dB) = Attenuator(dB) + Cable loss (dB)
Result (dB m) = Spurious offset (dB) + Reading values (dB m)

Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
5 283.70	Noise floor	-	-
26 195.80	Noise floor	-	-
38 859.70	Noise floor	-	-

3. 26 dB bandwidth

3.1. Test setup



3.2. Limit

None; for reporting purpose only

3.3. Test procedure

All data rates and modes were investigated for this test. The full data for the worst case data rate are reported in this section.

1. This measurement settings are specified in section C of KDB 789033.
2. Set RBW = approximately 1% of the emission bandwidth.
3. Set the VBW > RBW.
4. Detector = Peak
5. Trace mode = max hold.
6. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1 %

Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described above.

3.4. Test result

Ambient temperature : (24 ± 2) ℃
Relative humidity : 49 % R.H.

Mode: 11a

Operating mode	Data Rate (Mbps)	Frequency (㎒)	26 ㏈ bandwidth (㎒)
Non - DFS	6	5 180	22.42
	6	5 220	22.28
	6	5 240	22.15
DFS	6	5 260	22.52
	6	5 300	22.02
	6	5 320	22.77
DFS	6	5 500	22.88
	6	5 580	22.73
	6	5 700	22.64

Mode: 11n_HT20

Operating mode	Data Rate (Mbps)	Frequency (㎒)	26 ㏈ bandwidth (㎒)
Non - DFS	MCS0	5 180	23.40
	MCS0	5 220	23.02
	MCS0	5 240	23.30
DFS	MCS0	5 260	23.41
	MCS0	5 300	23.29
	MCS0	5 320	23.17
DFS	MCS0	5 500	24.01
	MCS0	5 580	24.42
	MCS0	5 700	23.45

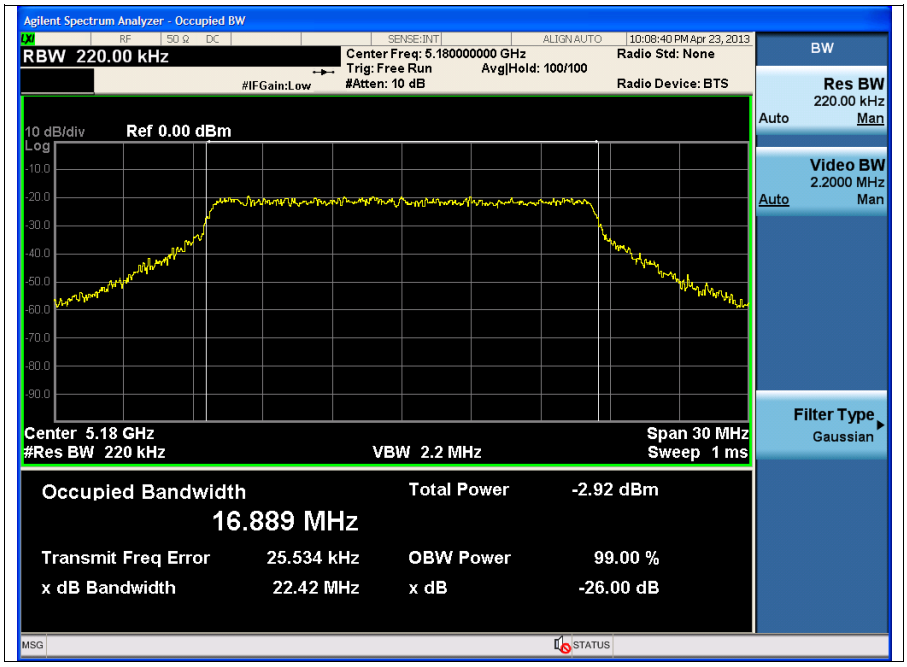
Mode: 11n_HT40

Operating mode	Data Rate (Mbps)	Frequency (㎒)	26 ㏈ bandwidth (㎒)
Non - DFS	MCS0	5 190	49.31
	MCS0	5 230	48.82
DFS	MCS0	5 270	49.14
	MCS0	5 310	48.46
	MCS0	5 510	49.31
DFS	MCS0	5 550	49.79
	MCS0	5 670	49.94

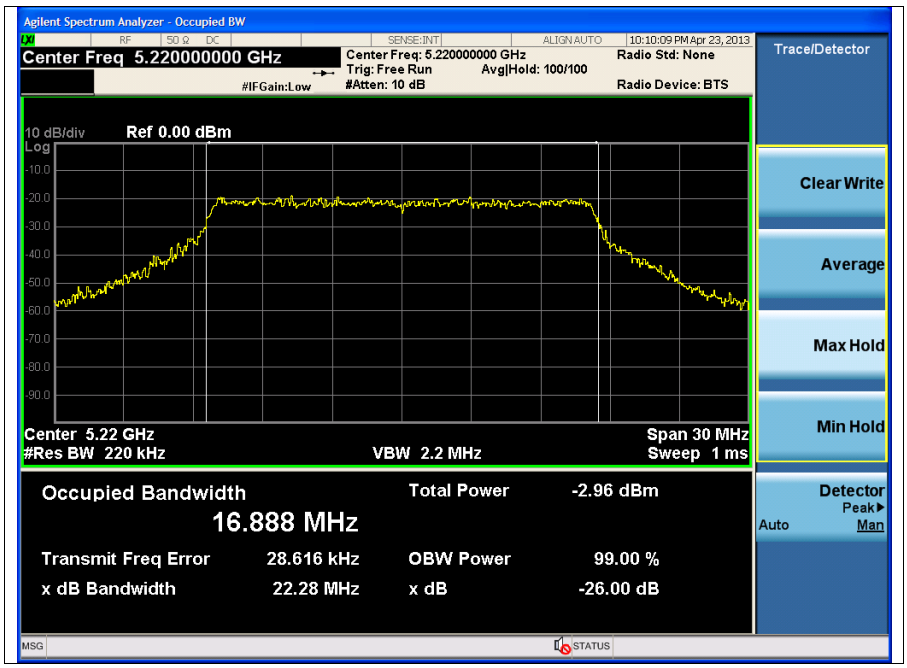
26 dB Bandwidth

802.11a (Non-DFS)

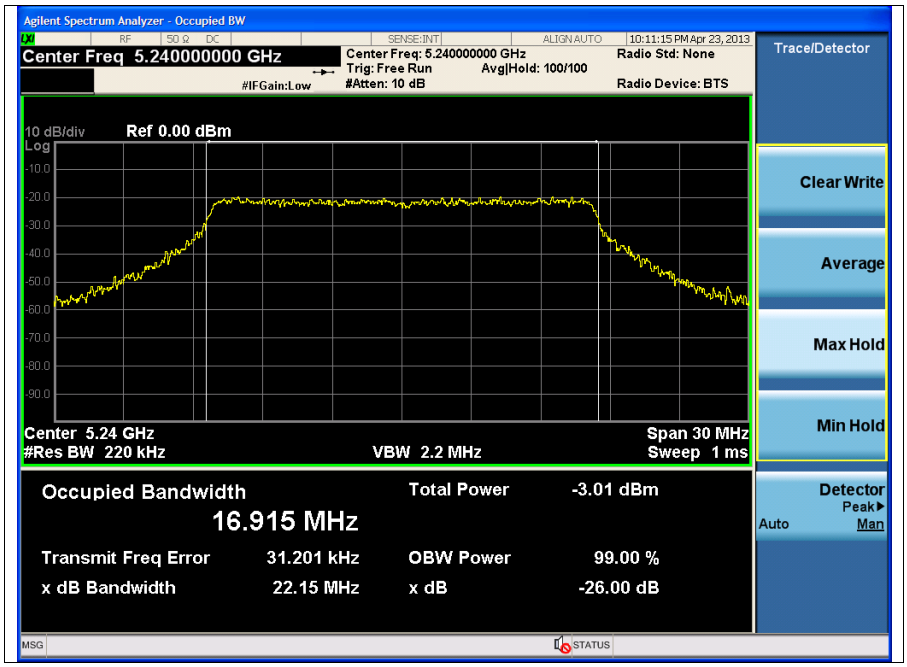
Low Channel (5 180 ㎒)



Middle Channel (5 220 ㎒)

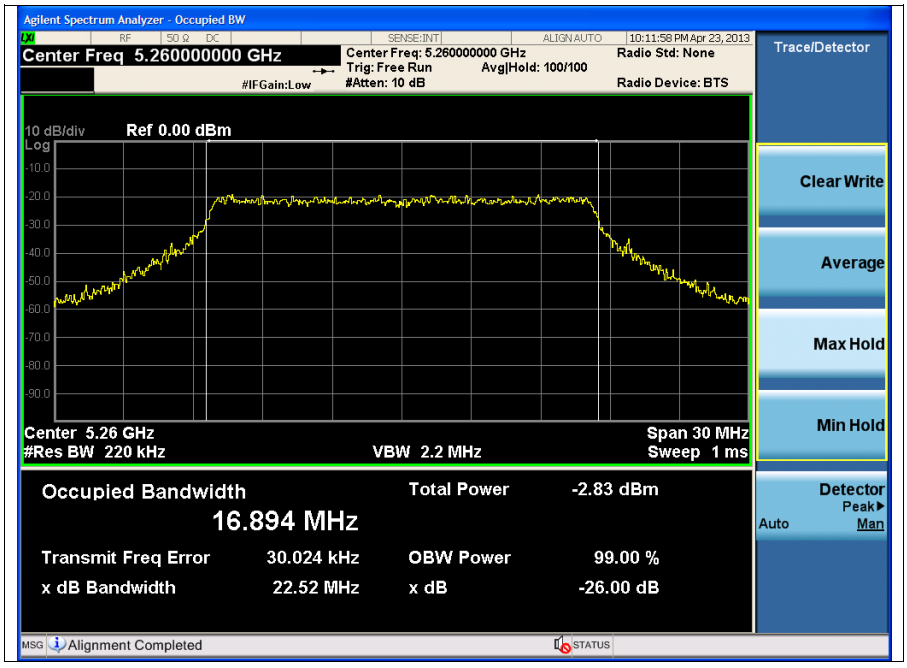


High Channel (5 240 ㎒)

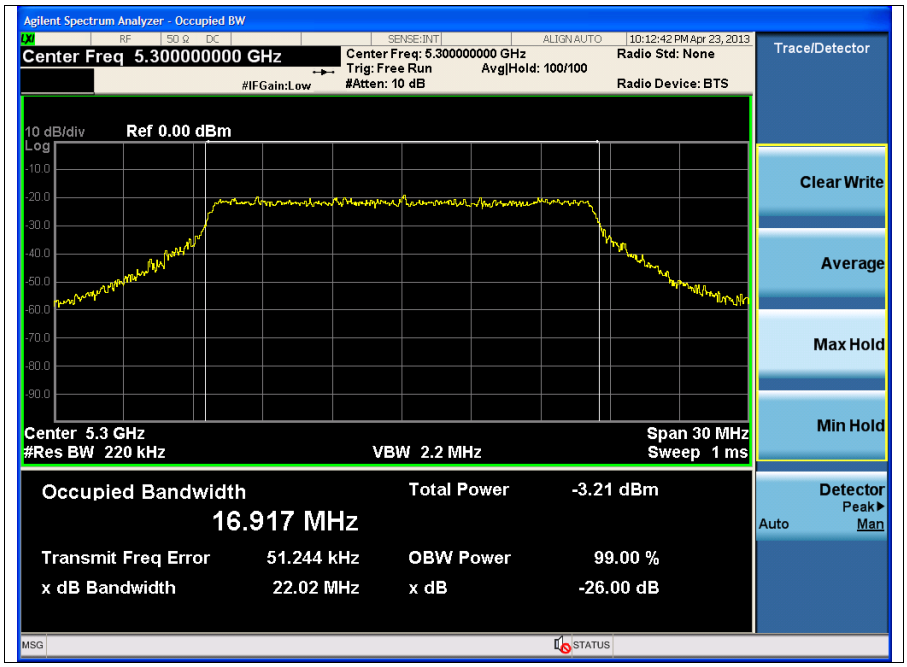


802.11a (DFS)

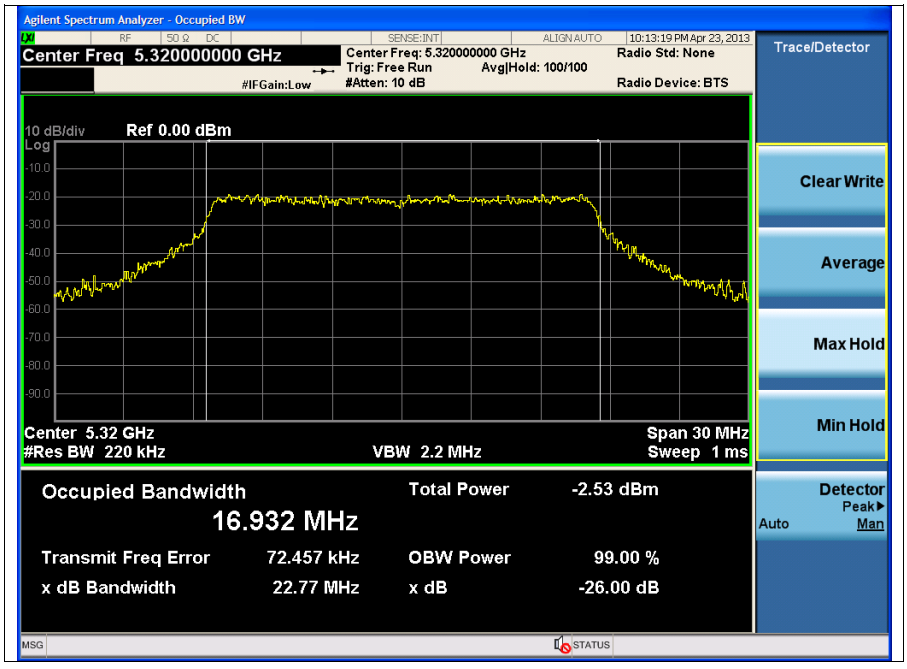
Low Channel (5 260 ㎒)



Middle Channel (5 300 ㎒)

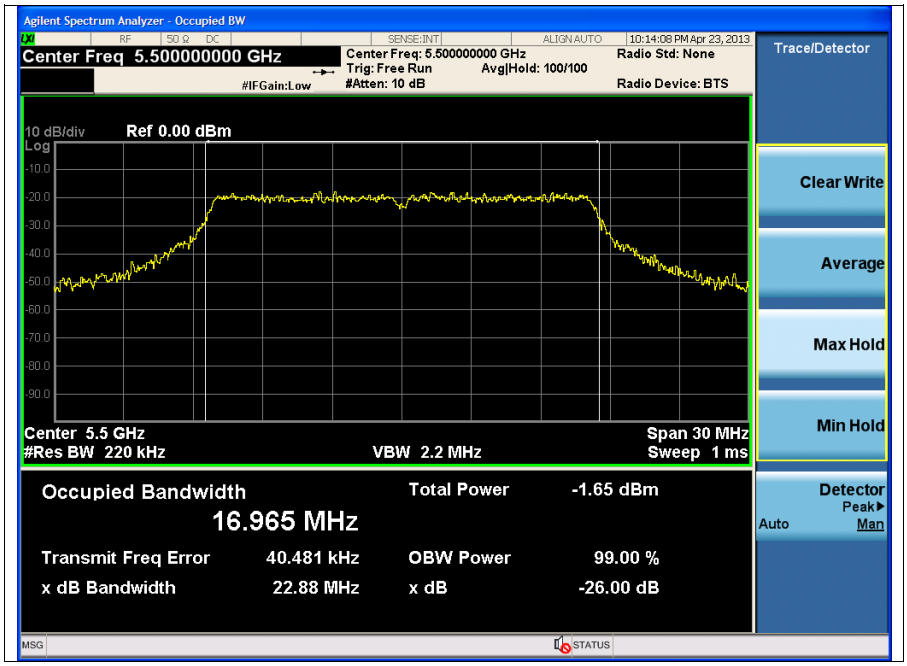


High Channel (5 320 ㎒)

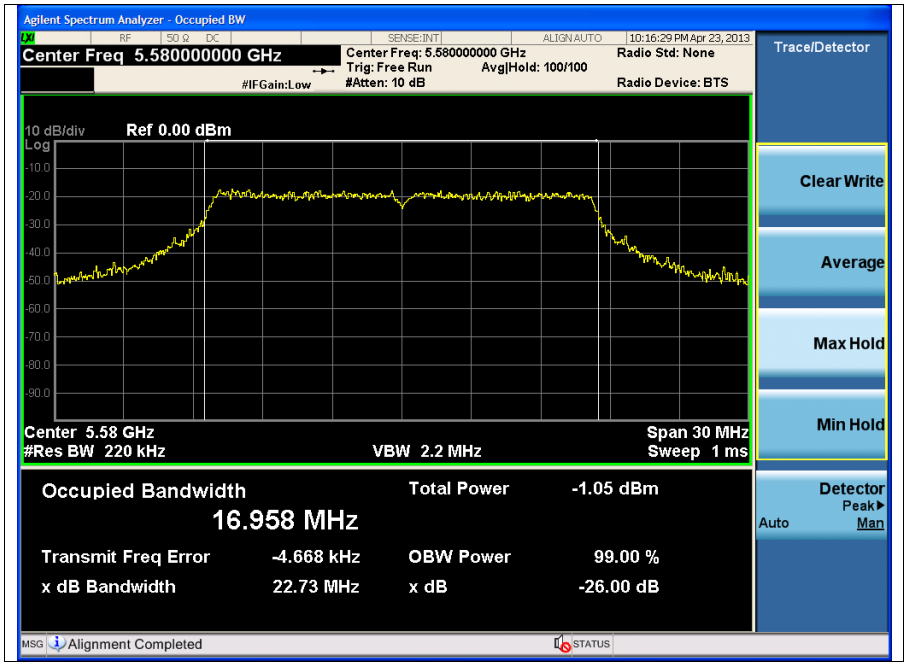


802.11a (DFS)

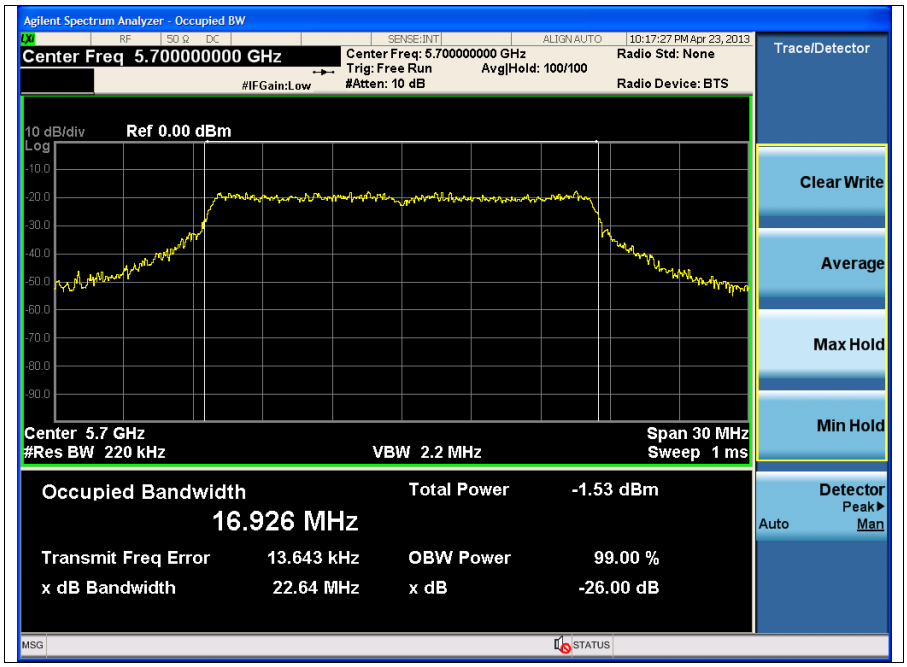
Low Channel (5 500 ㎒)



Middle Channel (5 580 ㎒)

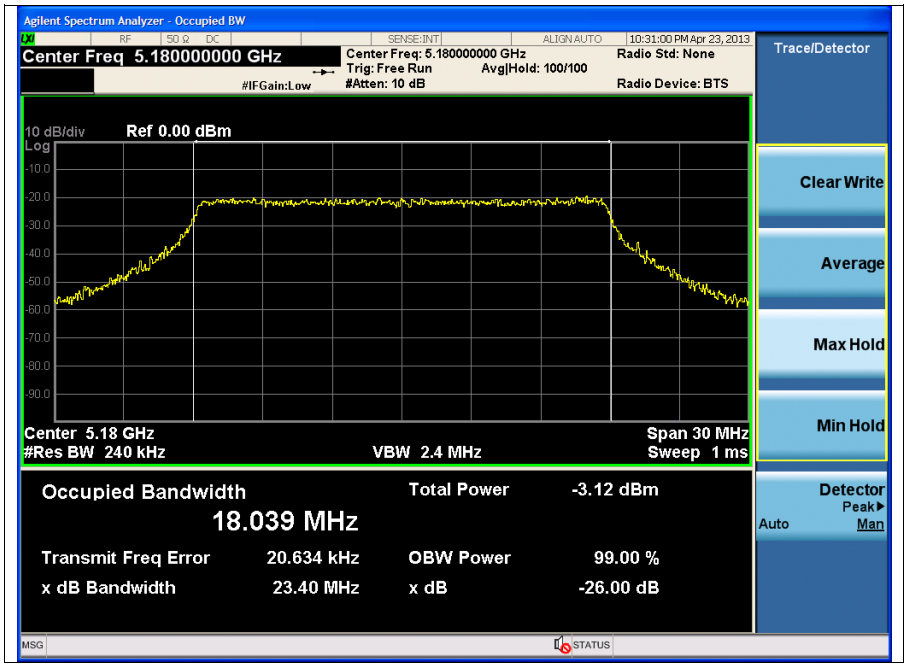


High Channel (5 700 ㎒)

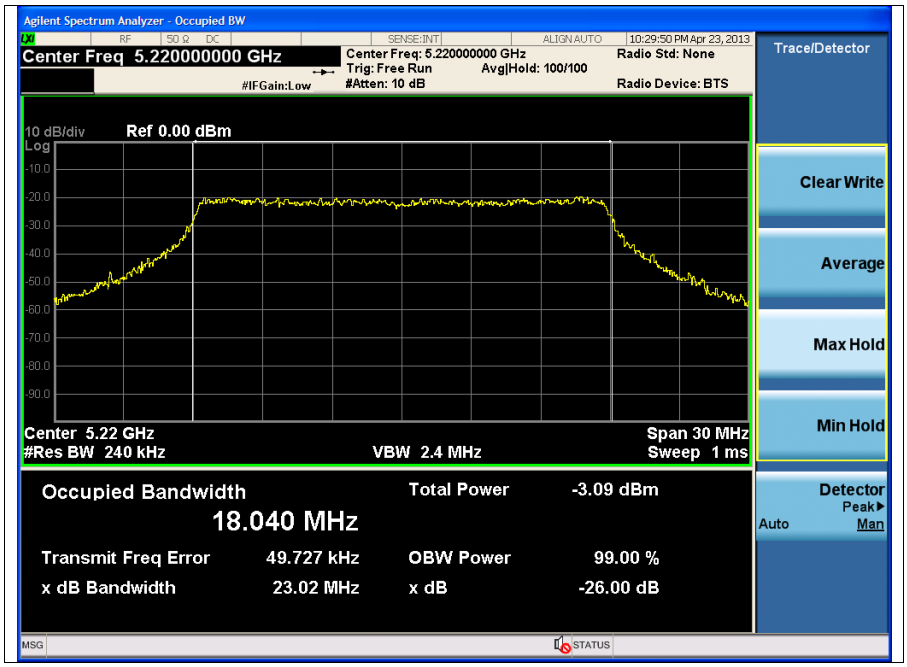


802.11n-HT20 (Non-DFS)

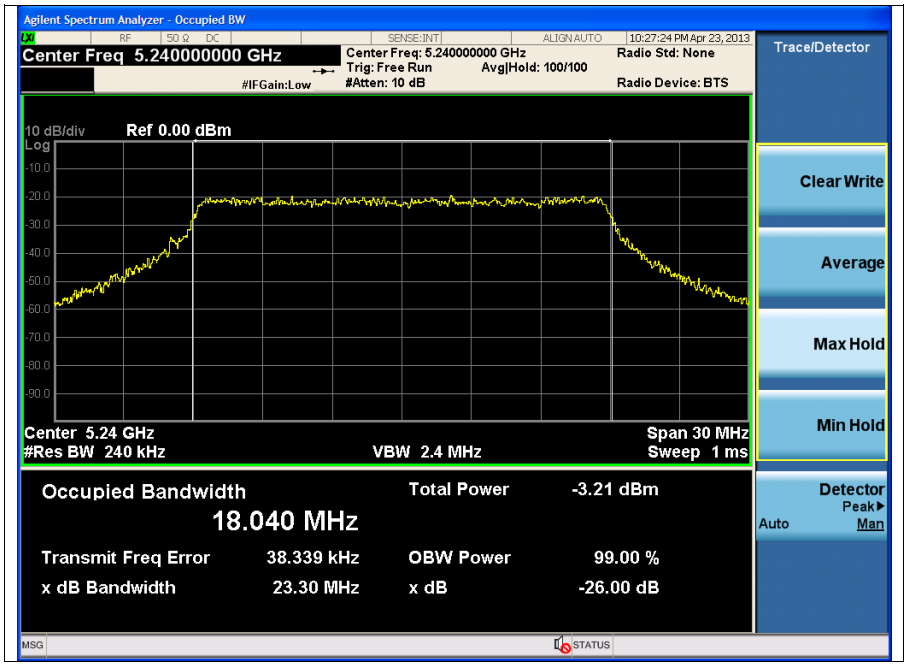
Low Channel (5 180 ㎒)



Middle Channel (5 220 ㎒)

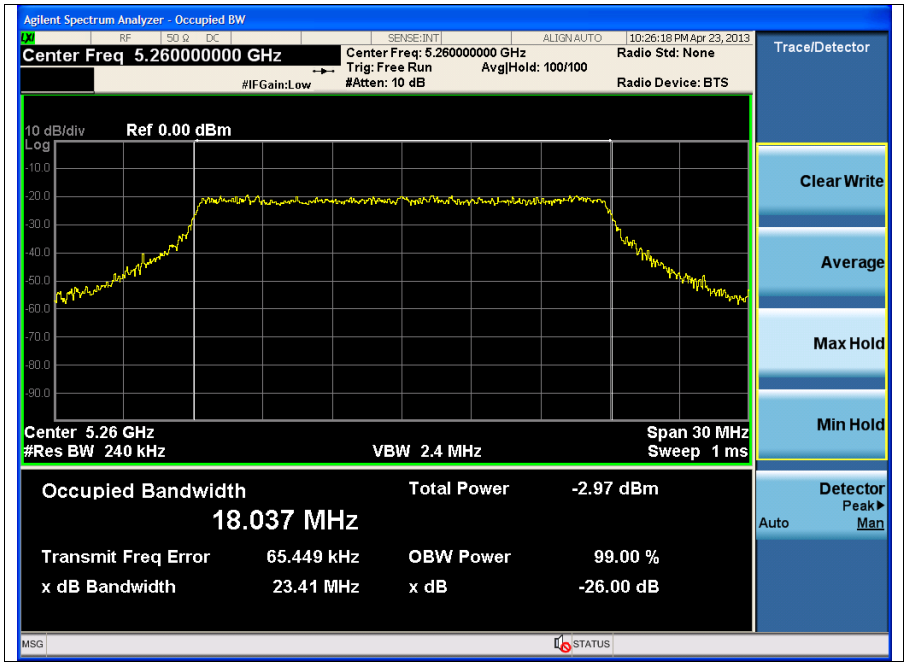


High Channel (5 240 ㎒)

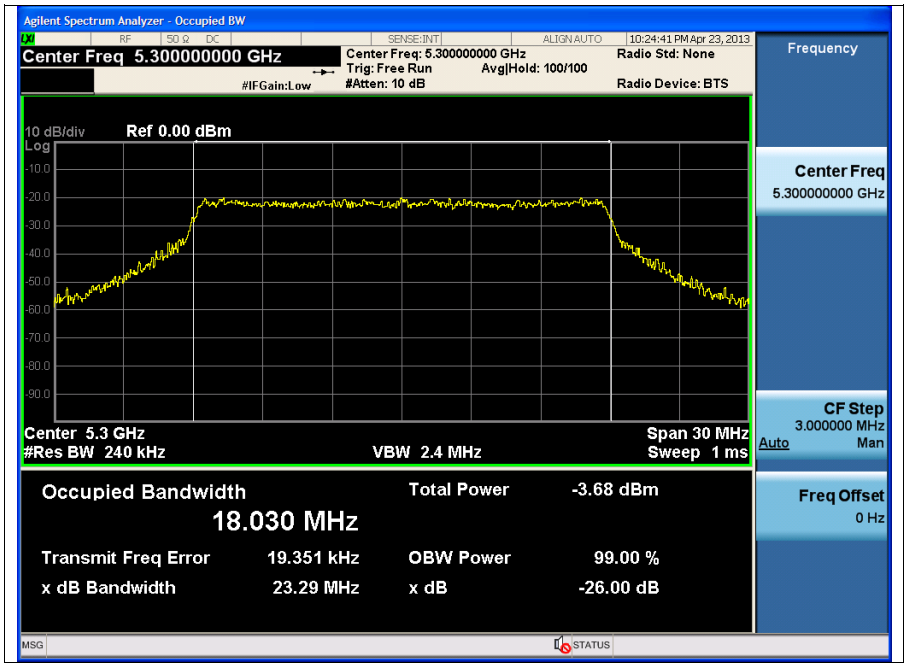


802.11n-HT20 (DFS)

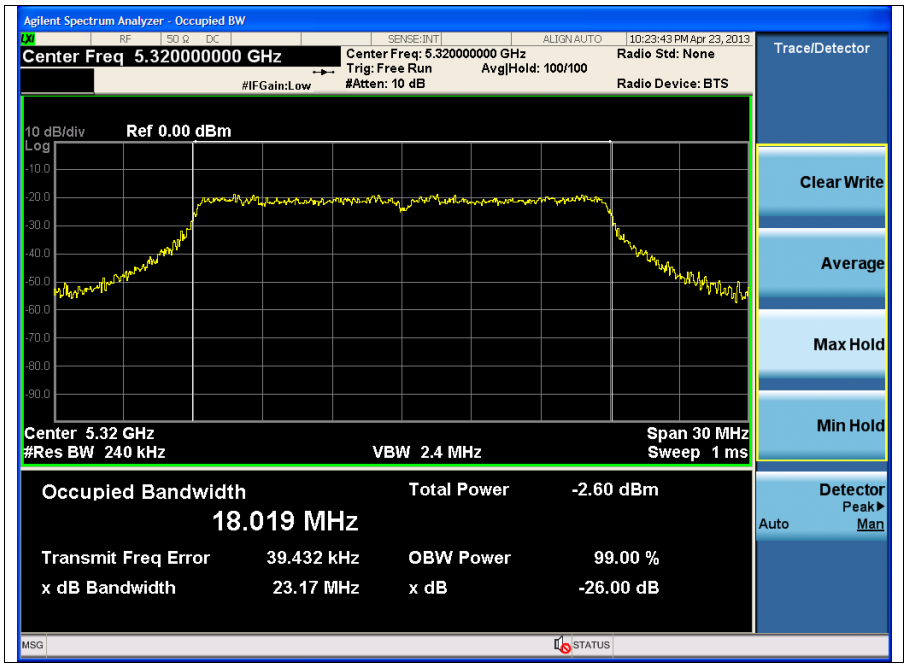
Low Channel (5 260 ㎒)



Middle Channel (5 300 ㎒)

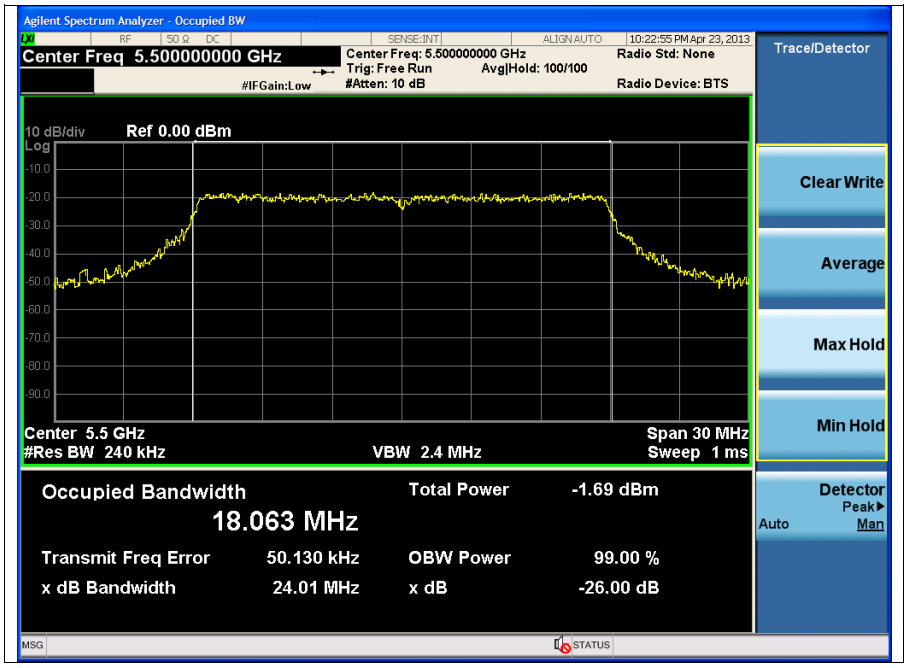


High Channel (5 320 ㎒)

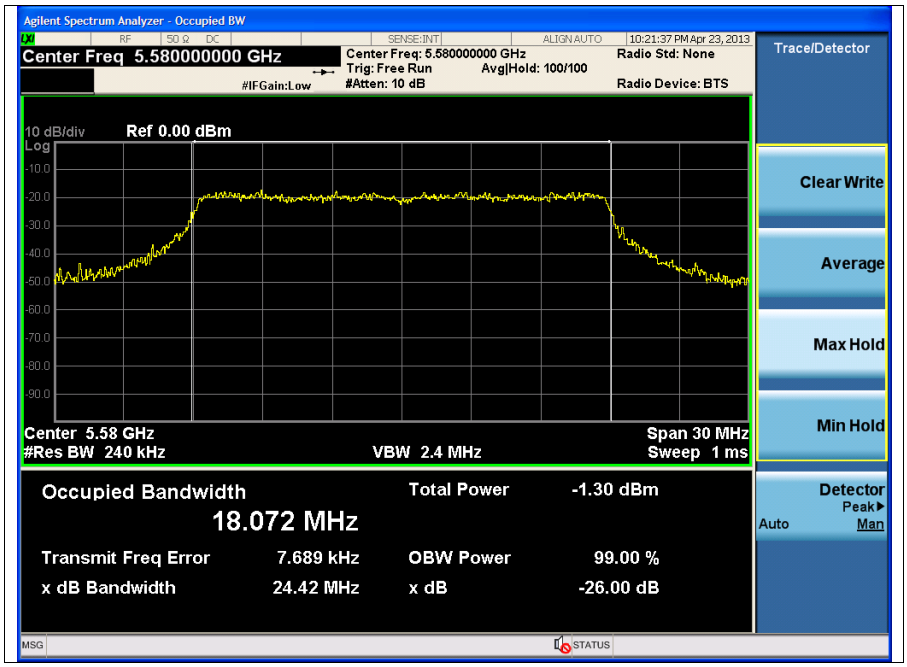


802.11n-HT20 (DFS)

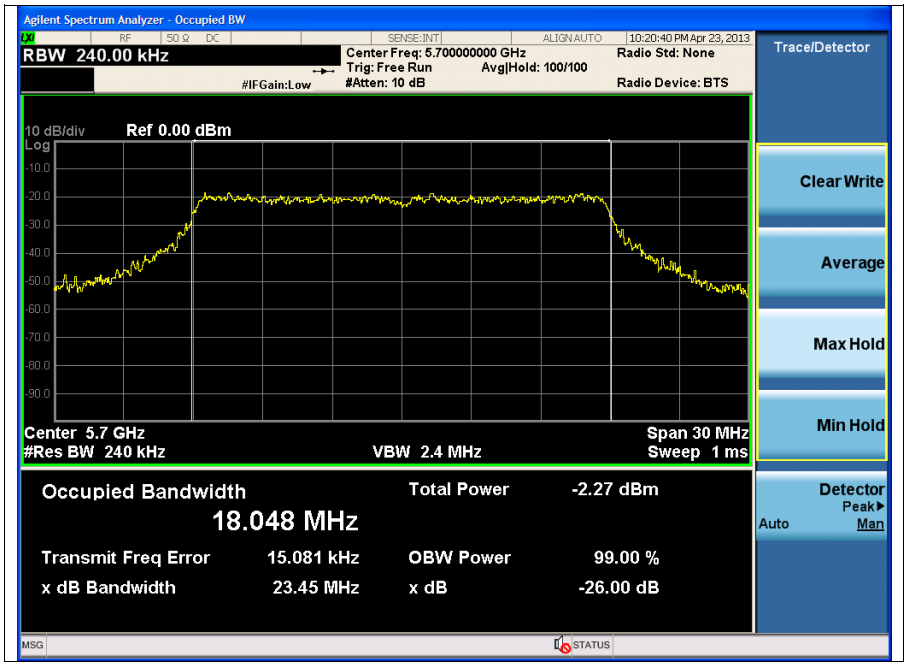
Low Channel (5 500 ㎒)



Middle Channel (5 580 ㎒)

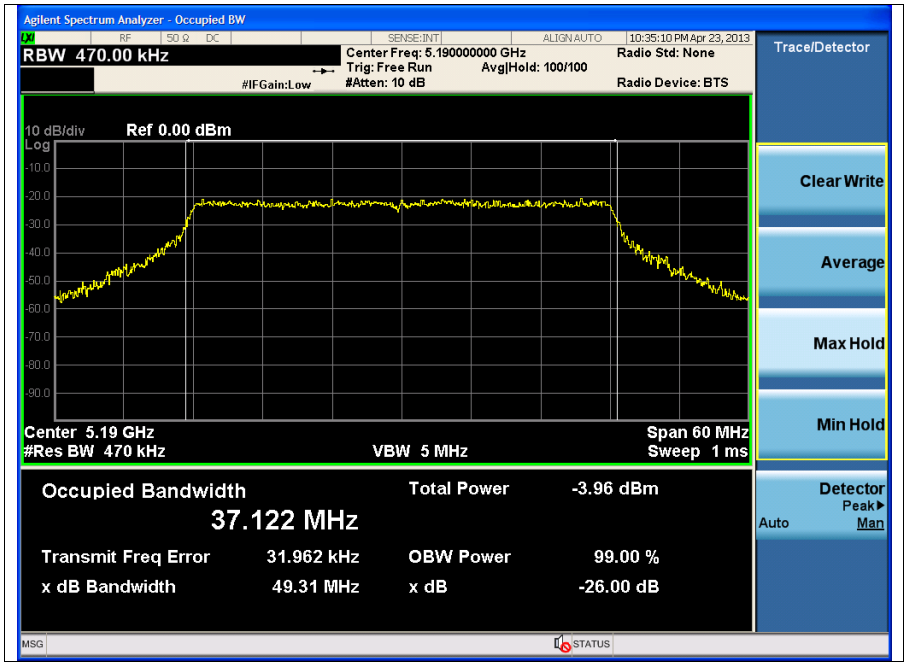


High Channel (5 700 ㎒)

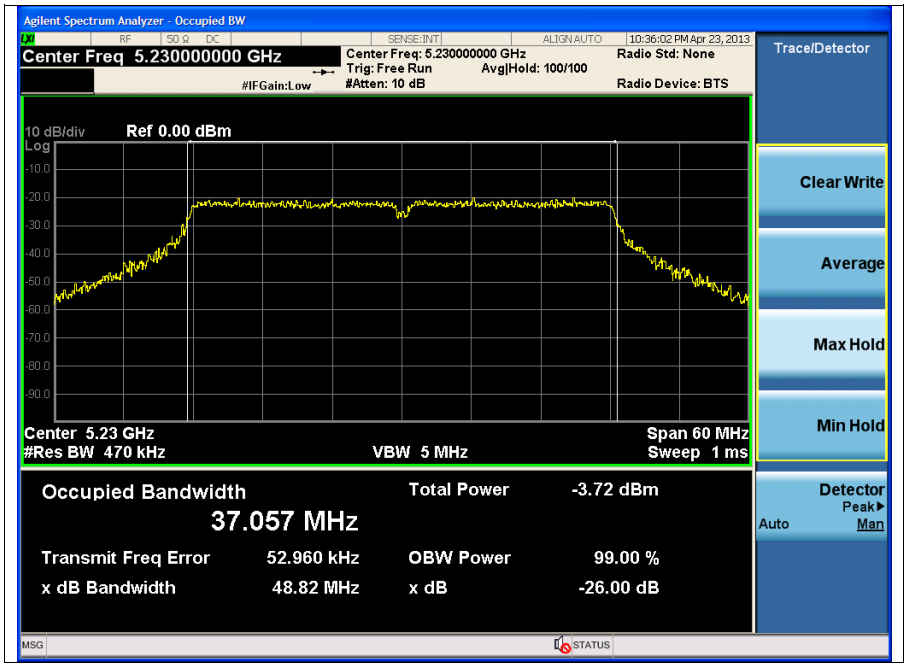


802.11n-HT40 (Non-DFS)

Low Channel (5 190 ㎒)

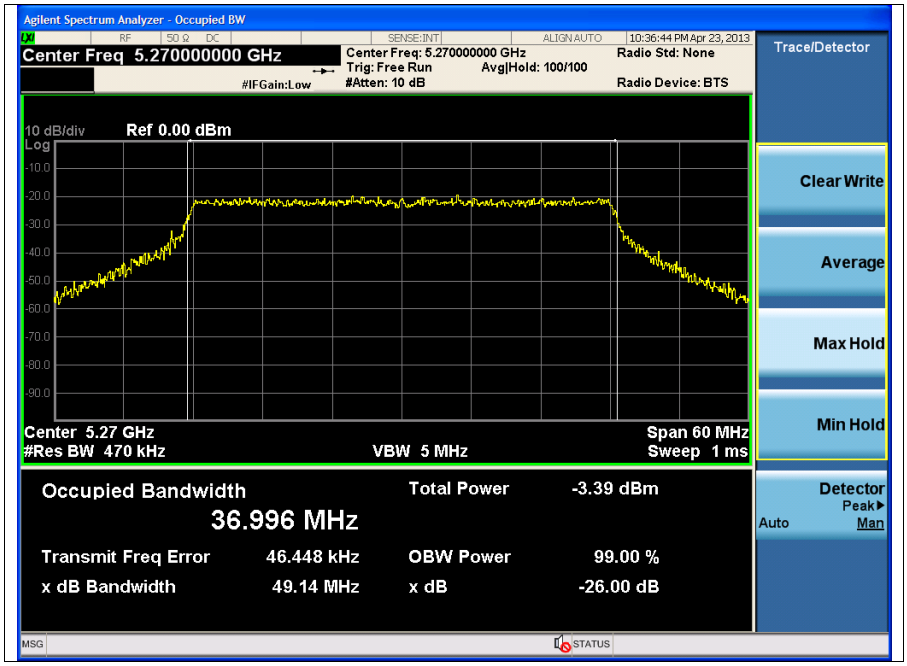


High Channel (5 230 ㎒)

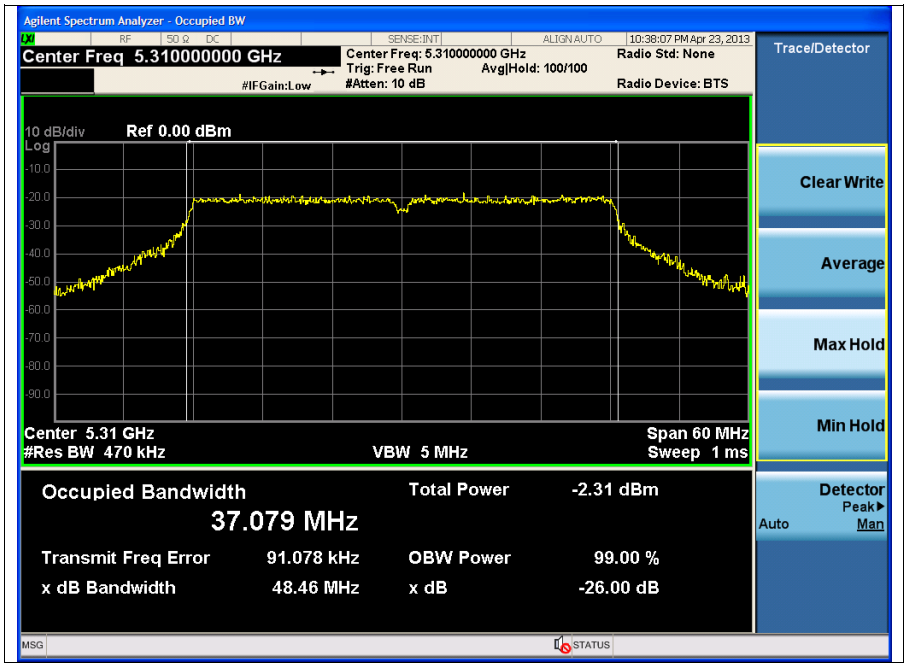


802.11n-HT40 (DFS)

Low Channel (5 270 ㎒)

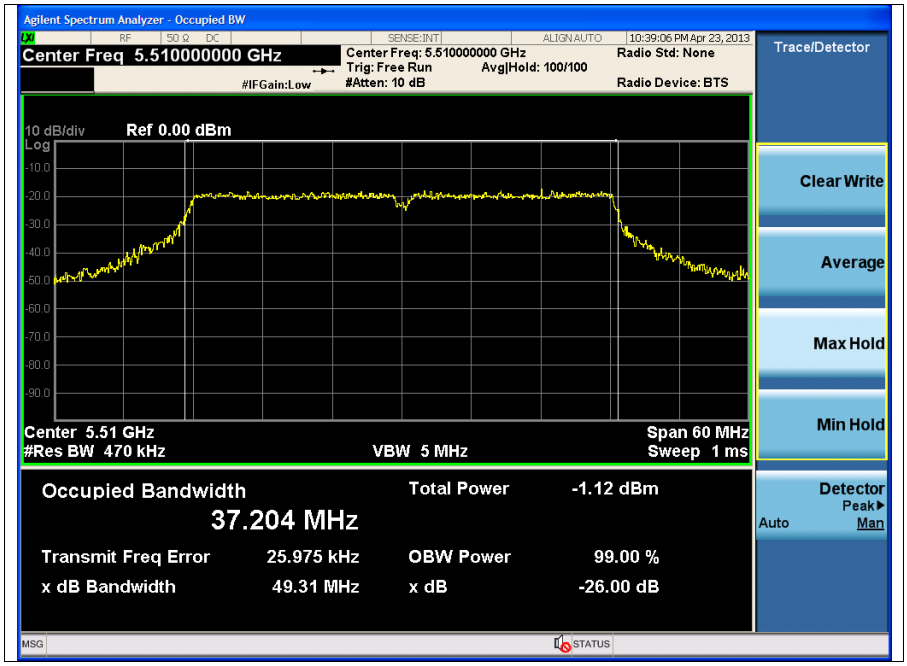


High Channel (5 310 ㎒)

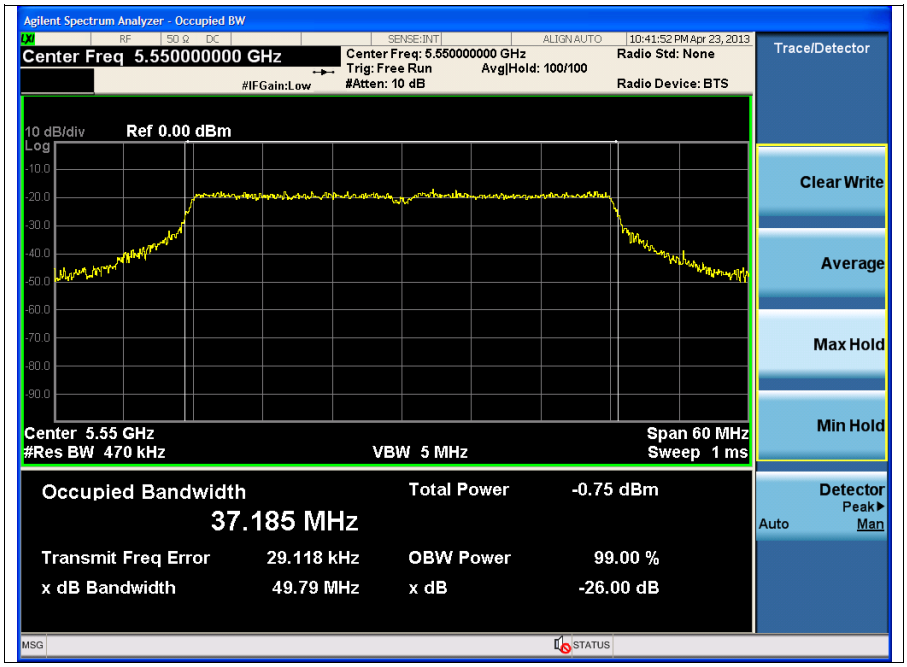


802.11n-HT40 (DFS)

Low Channel (5 510 ㎒)



Low Channel (5 550 ㎒)



High Channel (5 670 ㎒)