FCC PART 15 SUBPART C TEST REPORT

for

Wireless LAN USB Adapter

Model No.: YW-40

FCC ID: BBQ-YW40

of

Applicant: CASIO COMPUTER CO., LTD.
Address: 2-1, Sakaecho 3-chome, Hamura-shi, Tokyo, Japan

Tested and Prepared

by

Worldwide Testing Services (Taiwan) Co., Ltd.

FCC Registration No.: 930600

Industry Canada filed test laboratory Reg. No. IC 5679A-1

A2LA Accredited No.: 2732.01

Report No.: W6D21312-13740-C-1

6F, NO. 58, LANE 188, RUEY-KUANG RD., NEIHU TAIPEI 114, TAIWAN, R.O.C.
TEL: 886-2-66068877 FAX: 886-2-66068879 E-mail: wts@wts-lab.com

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1 General Information

1.1 Notes

The purpose of conformity testing is to increase the probability of adherence to the essential requirements or conformity specifications, as appropriate.
The complexity of the technical specifications, however, means that full and thorough testing is impractical for both technical and economic reasons.
Furthermore, there is no guarantee that a test sample which has passed all the relevant tests conforms to a specification.
Neither is there any guarantee that such a test sample will interwork with other genuinely open systems.
The existence of the tests nevertheless provides the confidence that the test sample possesses the qualities as maintained and that is performance generally conforms to representative cases of communications equipment.

The test results of this test report relate exclusively to the item tested as specified in 1.5.
The test report may only be reproduced or published in full.
Reproduction or publication of extracts from the report requires the prior written approval of the Worldwide Testing Services(Taiwan) Co., Ltd.

Specific Conditions:
Usage of the hereunder tested device in combination with other integrated or external antennas requires at least additional output power measurements, spurious emission measurements, conducted emission measurements (AC supply lines) and radio frequency exposure evaluations for each individual configuration performed, for certification by FCC.
The test sample is able to work according IEEE 802.11 b/g/n.
This report is related to FCC Part 15 C (DSSS and OFDM device).

Tester:

December 30, 2013	Robert Ren	Robert Ren
Date WTS-Lab.	Name	Signature

Technical responsibility for area of testing:

December 30, 2013	Kevin Wang	Kevin Wang
Date WTS	Name	Signature

Registration number: W6D21312-13740-C-1
FCC ID: BBQ-YW40

1.2 Testing laboratory

1.2.1 Location

OATS
No.5-1, Lishui, Shuang Sing Village,
Wanli Dist., New Taipei City 207,
Taiwan (R.O.C.)
3 meter semi-anechoic chamber
No.35, Aly. 21, Ln. 228, Ankang Rd., Neihu Dist., Taipei City 114, Taiwan (R.O.C.)
TEL:886-2-6613-0228
FAX:886-2-2791-5046

Company
Worldwide Testing Services(Taiwan) Co., Ltd.
6F, NO. 58, LANE 188, RUEY-KUANG RD.
NEIHU, TAIPEI 114, TAIWAN R.O.C.
Tel : 886-2-66068877
Fax : 886-2-66068879

1.2.2 Details of accreditation status

Accredited testing laboratory
A2LA accredited number: 2732.01
FCC filed test laboratory Reg. No. 930600
Industry Canada filed test laboratory Reg. No. IC 5679A-1

Test location, where different from Worldwide Testing Services (Taiwan) Co., Ltd. :

Name:	./.
Accredited number:	./.
Street:	./.
Town:	./.
Country:	./.
Telephone:	./.
Fax:	./.

1.3 Details of approval holder

Name:	CASIO COMPUTER CO., LTD.
Street:	2-1, Sakaecho 3-chome, Hamura-shi,
Town:	Tokyo,
Country:	Japan
Telephone:	042-579-7475
Fax:	042-579-7731

1.4 Application details

Date of receipt of test item: December 26, 2013

Date of test: from December 26, 2013 to December 30, 2013

1.5 General information of Test item

Type of test item: Wireless LAN USB Adapter

Model Number: YW-40

Brand Name: CASIO

Multi-listing model number: ./.

Photos: see Appendix

Technical data

Frequency band: 2.4 GHz – 2.4835 GHz

802.11b, g, n 20MHz

Frequency (ch 1 or A): 2.412 GHz

Frequency (ch 6 or B): 2.437 GHz

Frequency (ch 11 or C): 2.462 GHz

802.11n 40MHz

Frequency (ch 1 or A): 2.422 GHz

Frequency (ch 4 or B): 2.437 GHz

Frequency (ch 7 or C): 2.452 GHz

Number of Channels: 802.11b, g, n 20MHz: 11

802.11n 40MHz: 7

Operation modes: duplex

Modulation Type: DSSS / OFDM

Fixed point-to-point operation: ☐ Yes / ☒ No

Type of Antenna: PIFA Antenna

Antenna gain: Port A: 4.7 dBi / Port B: 4.7 dBi

Directional gain: 7.71 dBi

According to KDB 662911, Unequal antenna gains, with equal transmit powers. For antenna gains given by G_1, G_2, …, G_N dBi. If transmit signals are correlated, then Directional gain $=10\log[(10^{G1/20}+10^{G2/20}+\ldots+10^{GN/20})^2/N]$ dBi [Note the “20”s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]

Registration number: W6D21312-13740-C-1
FCC ID: BBQ-YW40

Power supply:	5 VDC (power from PC)
Emission designator:	Mode A (802.11b): DSSS: 17M2G1D
	Mode B (802.11g): OFDM: 18M8D1D
	Mode C (802.11n 20MHz): OFDM: 19M4D1D
	Mode D (802.11n 40MHz): OFDM: 38M0D1D
Host device:	none

Classification:

Fixed Device	☐
Mobile Device (Human Body distance ＞ 20cm)	☒
Portable Device (Human Body distance ＜ 20cm)	☐
Modular Radio Device	☐

Transmitter **Unom**

Port A

Mode A (DSSS)

Power (ch 1 or A):	Conducted: 16.79 dBm
Power (ch 6 or B):	Conducted: 17.55 dBm
Power (ch 11 or C):	Conducted: 17.85 dBm

Mode B (OFDM)

Power (ch 1 or A):	Conducted: 20.35 dBm
Power (ch 6 or B):	Conducted: 19.64 dBm
Power (ch 11 or C):	Conducted: 19.10 dBm

Mode C (OFDM)

Power (ch 1 or A):	Conducted: 18.32 dBm
Power (ch 6 or B):	Conducted: 18.03 dBm
Power (ch 11 or C):	Conducted: 18.39 dBm

Mode D (OFDM)

Power (ch 1 or A):	Conducted: 17.19 dBm
Power (ch 4 or B):	Conducted: 15.86 dBm
Power (ch 7 or C):	Conducted: 15.93 dBm

Port B

Mode A (DSSS)

Power (ch 1 or A): Conducted: 17.79 dBm
Power (ch 6 or B): Conducted: 17.64 dBm
Power (ch 11 or C): Conducted: 18.00 dBm

Mode B (OFDM)

Power (ch 1 or A): Conducted: 20.90 dBm
Power (ch 6 or B): Conducted: 20.34 dBm
Power (ch 11 or C): Conducted: 20.63 dBm

Mode C (OFDM)

Power (ch 1 or A): Conducted: 18.91 dBm
Power (ch 6 or B): Conducted: 19.40 dBm
Power (ch 11 or C): Conducted: 19.47 dBm

Mode D (OFDM)

Power (ch 1 or A): Conducted: 18.50 dBm
Power (ch 4 or B): Conducted: 16.99 dBm
Power (ch 7 or C): Conducted: 17.17 dBm

Combine	mW			dBm		
	Ch Low	Ch Mid	Ch High	Ch Low	Ch Mid	Ch High
802.11n 20MHz	145.72	150.63	157.53	21.64	21.78	21.97
802.11n 40MHz	123.15	88.55	91.29	20.90	19.47	19.60

Manufacturer: (if applicable)

Name: CC&C Technologies, Inc.
Street: 8F, No.150, Jian Yi Road, Zhonghe District,
Town: New Taipei City, 235,
Country: Taiwan R. O. C

1.6 Test standards

Technical standard : FCC RULES PART 15 SUBPART C § 15.247 (2011-10)

2 Technical test

2.1 Summary of test results

No deviations from the technical specification(s) were ascertained in the course of the tests performed. ☒

or

The deviations as specified in 2.5 were ascertained in the course of the tests performed. ☐

2.2 Test environment

Temperature:	23 °C
Relative humidity content:	20 ... 75 %
Air pressure:	86 ... 103 kPa
Power supply:	USB 5VDC (power from PC)
Extreme conditions parameters:	./.

2.3 Test Equipment List

No.	Test equipment	Type	Serial No.	Manufacturer	Cal. Date	Next Cal. Date
ETSTW-CE 001	EMI TEST RECEIVER	ESHS10	842121/013	R&S	2013/9/2	2014/9/1
ETSTW-CE 003	AC POWER SOURCE	APS-9102	D161137	GW	Function Test	
ETSTW-CE 008	HF-EICHLEITUNG RF STEP ATTENUATOR 139dB DPSP	334.6010.02	844581/024	R&S	Function Test	
ETSTW-CE 009	TEMP.&HUMIDITY CHAMBER	GTH-225-40-1P-U	MAA0305-009	GIANT FORCE	2013/7/10	2014/7/9
ETSTW-CE 016	TWO-LINE V-NETWORK	ENV216	100050	R&S	2013/10/28	2014/10/27
ETSTW-RE 004	EMI TEST RECEIVER	ESI 40	832427/004	R&S	2013/9/2	2014/9/1
ETSTW-RE 005	EMI TEST RECEIVER	ESVS10	843207/020	R&S	2013/9/2	2014/9/1
ETSTW-RE 012	TUNABLE BANDREJECT FILTER	D.C 0309	146	K&L	Function Test	
ETSTW-RE 013	TUNABLE BANDREJECT FILTER	D.C 0336	397	K&L	Function Test	
ETSTW-RE 018	MICROWAVE HORN ANTENNA	AT4560	27212	AR	2013/10/15	2014/10/14
ETSTW-RE 027	Passive Loop Antenna	6512	00034563	ETS-Lindgren	2013/7/3	2014/7/2
ETSTW-RE 030	Double-Ridged Guide Horn Antenna	3117	00035224	EMCO	2013/3/4	2014/3/3
ETSTW-RE 045	ESA-E SERIES SPECTRUM ANALYZER	E4404B	MY45111242	Agilent	Pre-test Use	
ETSTW-RE 049	TRILOG Super Broadband test Antenna	VULB 9160	9160-3185	Schwarzbeck	2013/3/21	2014/3/20
ETSTW-RE 050	Attenuator 10dB	50HF-010-1	None	JFW	2013/3/4	2014/3/3
ETSTW-RE 051	Attenuator 6dB	50HF-006-1	None	JFW	2013/3/4	2014/3/3
ETSTW-RE 053	Attenuator 3dB	50HF-003-1	None	JFW	2013/3/4	2014/3/3
ETSTW-RE 055	SPECTRUM ANALYZER	FSU 26	200074	R&S	2013/5/31	2014/5/30
ETSTW-RE 060	Attenuator 30dB	5015-30	F651012z-01	ATM	2013/3/4	2014/3/3
ETSTW-RE 062	Amplifier Module	CHC 2	None	KMIC	2013/11/27	2014/11/26
ETSTW-RE 064	Bluetooth Test Set	MT8852B-042	6K00005709	Anritsu	Function Test	
ETSTW-RE 069	Double-Ridged Guide Horn Antenna	3117	00069377	EMCO	Function Test	
ETSTW-RE 072	CELL SITE TEST SET	8921A	3339A00375	HP	2013/10/7	2014/10/6
ETSTW-RE 088	SOLID STATE AMPLIFIER	KMA180265A01	99057	KMIC	2013/10/11	2014/10/10
ETSTW-RE 099	DC Block	50DB-007-1	None	JFW	2013/3/4	2014/3/3
ETSTW-RE 106	Humidity Temperature Meter	TES-1366	091011113	TES	2013/12/04	2014/12/03
ETSTW-RE 111	TRILOG Super Broadband test Antenna	VULB 9160	9160-3309	Schwarz beck	2013/12/12	2014/12/11
ETSTW-RE 112	AC POWER SOURCE	TFC-1005	None	T-Power	Function test	
ETSTW-RE 115	2.4GHz Notch Filter	N0124411	473874	MICROWAVE CIRCUITS	2013/1/11	2014/1/10
ETSTW-RE 120	RF Player	MP9200	MP9210-111022	ADIVIC	Function test	
ETSTW-RE 122	SIGNAL GENERATOR	SMF100A	102149	R&S	2013/6/28	2014/6/27
ETSTW-RE 125	5GHz Notch filter	5NSL11-5200/E221.3-O/O	1	K&L Microwave	2013/8/16	2014/8/15

ETSTW-RE 126	5GHz Notch filter	5NSL11-5800/E221.3-O/O	1	K&L Microwave	2013/8/16	2014/8/15
ETSTW-RE 127	RF Switch Box	RFS-01	None	WTS	2013/3/4	2014/3/3
ETSTW-RE 128	5.3GHz Notch filter	N0153001	SN487233	Microwave Circits	2013/8/13	2014/8/12
ETSTW-RE 129	5.5GHz Notch filter	N0555984	SN487234	Microwave Circits	2013/8/13	2014/8/12
ETSTW-RE 130	Handheld RF Spectrum Analyzer	N9340A	CN0147000204	Agilent	Pre-test Use	
ETSTW-GSM 002	Universal Radio Communication Tester	CMU 200	109439	R&S	2013/10/7	2014/10/6
ETSTW-GSM 019	Band Reject Filter	WRCTF824/849-822/851-40 /12+9SS	3	WI	2013/1/11	2014/1/10
ETSTW-GSM 020	Band Reject Filter	WRCD1747/1748-1743/1752-32/5SS	1	WI	2013/1/11	2014/1/10
ETSTW-GSM 021	Band Reject Filter	WRCD1879.5/1880.5-1875.5/1884.5-32/5SS	3	WI	2013/1/11	2014/1/10
ETSTW-GSM 022	Band Reject Filter	WRCT901.9/903.1-904.25-50/8SS	1	WI	2013/1/11	2014/1/10
ETSTW-GSM 023	Power Divider	4901.19.A	None	SUHNER	2013/9/18	2014/9/17
ETSTW-Cable 010	BNC Cable	5 M BNC Cable	None	JYE BAO CO.,LTD.	2013/3/4	2014/3/3
ETSTW-Cable 011	BNC Cable	BNC Cable 1	None	JYE BAO CO.,LTD.	Pre-test Use NCR	
ETSTW-Cable 012	N TYPE To SMA Cable	Cable 012	None	JYE BAO CO.,LTD.	2013/3/4	2014/3/3
ETSTW-Cable 016	BNC Cable	Switch Box	B Cable 1	Schwarz beck	2013/3/4	2014/3/3
ETSTW-Cable 017	BNC Cable	X Cable	B Cable 2	Schwarz beck	2013/3/4	2014/3/3
ETSTW-Cable 018	BNC Cable	Y Cable	B Cable 3	Schwarz beck	2013/3/4	2014/3/3
ETSTW-Cable 019	BNC Cable	Z Cable	B Cable 4	Schwarz beck	2013/3/4	2014/3/3
ETSTW-Cable 022	N TYPE Cable	5006	0002	JYE BAO CO.,LTD.	2013/3/26	2014/3/25
ETSTW-Cable 026	Microwave Cable	SUCOFLEX 104	279075	HUBER+SUHNER	2013/3/4	2014/3/3
ETSTW-Cable 027	Microwave Cable	SUCOFLEX 104	279083	HUBER+SUHNER	2013/3/4	2014/3/3
ETSTW-Cable 028	Microwave Cable	FA147A0015M2020	30064-2	UTIFLEX	2013/10/11	2014/10/10
ETSTW-Cable 029	Microwave Cable	FA147A0015M2020	30064-3	UTIFLEX	2013/10/11	2014/10/10
ETSTW-Cable 030	Microwave Cable	SUCOFLEX 104（S_Cable 9）	279067	HUBER+SUHNER	2013/3/4	2014/3/3
ETSTW-Cable 031	Microwave Cable	SUCOFLEX 104（S_Cable 10）	238092	HUBER+SUHNER	2013/11/27	2014/11/26
ETSTW-Cable 043	Microwave Cable	SUCOFLEX 104	317576	HUBER+SUHNER	2013/11/27	2014/11/26
ETSTW-Cable 047	Microwave Cable	SUCOFLEX 104	325518	HUBER+SUHNER	2013/11/27	2014/11/26
ETSTW-Cable 053	N TYPE To SMA Cable	RG142	None	JYE BAO CO.,LTD.	2013/3/26	2014/3/25
ETSTW-Cable 058	Microwave Cable	SUCOFLEX 104	none	HUBER+SUHNER	2013/6/20	2014/6/19
WTSTW-SW 002	EMI TEST SOFTWARE	EZ_EMC	None	Farad	Version ETS-03A1	

2.4 General Test Procedure

POWER LINE CONDUCTED INTERFERENCE: The procedure used was ANSI STANDARD C63.4-2009 5.2 using a 50µH LISN (if necessary). Both lines were observed. The bandwidth of the spectrum analyzer was 10 kHz with an appropriate sweep speed.

RADIATION INTERFERENCE: The test procedure used was according to ANSI STANDARD C63.4-2009 6.4 employing a spectrum analyzer. For investigated frequency is equal to or below 1GHz, the RBW and VBW of the spectrum analyzer was 100 kHz and 100kHz respectively with an appropriate sweep speed. For investigated frequency is above 1GHz, both of RBW and VBW of the spectrum analyzer were 1 MHz with an appropriate sweep speed. The analyzer was calibrated in dB above a microvolt at the output of the antenna.

FORMULA OF CONVERSION FACTORS: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBµV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB.

Example:

Freq (MHz)	METER READING + ACF + CABLE LOSS (to the receiver) = FS
33	20 dBµV + 10.36 dB + 6 dB = 36.36 dBµV/m @3m

The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m (non metallic table) and arranged according to ANSI C63.4-2009 6.3.1. The table used for radiated measurements is capable of continuous rotation. The spectrum was scanned from 30 MHz to the frequency specified as follows:

(1) If the intentional radiator operates below 10 GHz: to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
(2) If the intentional radiator operates at or above 10 GHz and below 30 GHz: to the fifth harmonic of the highest fundamental frequency or to 100 GHz, whichever is lower.
(3) If the intentional radiator operates at or above 30 GHz: to the fifth harmonic of the highest fundamental frequency or to 200 GHz, whichever is lower, unless specified otherwise elsewhere in the rules.
(4) If the intentional radiator contains a digital device, regardless of whether this digital device controls the functions of the intentional radiator or the digital device is used for additional control or function purposes other than to enable the operation of the intentional radiator, the frequency range shall be investigated up to the range specified in paragraphs (a)(1)-(a)(3) of this section or the range applicable to the digital device, as shown in paragraph (b)(1) of this Section, whichever is the higher frequency range of investigation.

For hand-held devices, a exploratory test was performed with three (3) orthogonal planes to determine the highest emissions.
Measurements were made by Worldwide Testing Services(Taiwan) Co., Ltd. at the registered open field test site located at No.5-1, Lishui, Shuang Sing Village, Wanli Dist., New Taipei City 207, Taiwan (R.O.C.). The Registration Number: 930600.
When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

When the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.

The formula is as follows:
Average = Peak + Duty Factor
Duty Factor = 20 log (dwell time/T)
T = 100ms when the pulse train period is over 100 ms or the period of the pulse train.

Modified Limits for peak according to 15.35 (b) = Max Permitted average Limits + 20dB

ANSI STANDARD C63.4-2009 10.2.7: Any measurements that utilize special test software shall be indicated and referenced in the test report. During testing, test software ’EZ EMC’ was used for setting up different operation modes.

3 Test results (enclosure)

TEST CASE	Para. Number	Required	Test passed	Test failed
Peak Output Power	15.247(b)(3)	☒	☒	☐
Equivalent isotropically radiated Power	15.247(b)(3)	☒	☒	☐
Spurious Emissions radiated – Transmitter operating	15.247(c): 15.209	☒	☒	☐
Band Edge Measurement	15.247(c)	☒	☒	☐
Minimum 6 dB Bandwidth	15.247(a)(2)	☒	☒	☐
Peak Power Spectral Density	15.247(d)	☒	☒	☐
Radiated Emission from Digital Part	15.109	☐	☐	☐
Power Line Conducted Emission	15.207	☒	☒	☐

Note:

1. This EUT incorporates a MIMO function with IEEE 802.11b, 802.11g, and 802.11n. Physically, this EUT includes two transmitters and two receivers with two incoherent streams. This device uses multiplexing and also employ cyclic delay diversity to improve range and throughput, and this device simultaneously operates on two adjacent channels.
2. This EUT is 2*2 spatial MIMO (2Tx&2Rx) without beam forming function. That operates dual chain configuration. The Pre-test was performed to determine the worst case mode from all possible combinations between all available modulations, data rates, bandwidths, and spatial stream modes.
3. The detail of chosen mode for full testing are as below:

Mode	Available channel	Chosen Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11b	1 to 11	1,6,11	DSSS	DBPSK, DQPSK, CCK	1
802.11g	1 to 11	1,6,11	OFDM	BPSK, QPSK, 16QAM, 64QAM	6
802.11n (20MHz)	1 to 11	1,6,11	OFDM	BPSK, QPSK, 16QAM, 64QAM	6.5
802.11n (40MHz)	1 to 7	1,4,7	OFDM	BPSK, QPSK, 16QAM, 64QAM	13.5

3.1 Peak Output Power (transmitter)

FCC Rule: 15.247(b)(3)

This measurement applies to equipment with an integral antenna and to equipment with an antenna connector and equipped with an antenna as declared by the applicant.

The power was measured with modulation (declared by the applicant).

Port A	mW			dBm		
	Ch Low	Ch Mid	Ch High	Ch Low	Ch Mid	Ch High
802.11n 20MHz	67.92	63.53	69.02	18.32	18.03	18.39
802.11n 40MHz	52.36	38.55	39.17	17.19	15.86	15.93
Port B	mW			dBm		
	Ch Low	Ch Mid	Ch High	Ch Low	Ch Mid	Ch High
802.11n 20MHz	77.80	87.10	88.51	18.91	19.40	19.47
802.11n 40MHz	70.79	50.00	52.12	18.50	16.99	17.17
Combine	mW			dBm		
	Ch Low	Ch Mid	Ch High	Ch Low	Ch Mid	Ch High
802.11n 20MHz	145.72	150.63	157.53	21.64	21.78	21.97
802.11n 40MHz	123.15	88.55	91.29	20.90	19.47	19.60

Registration number: W6D21312-13740-C-1
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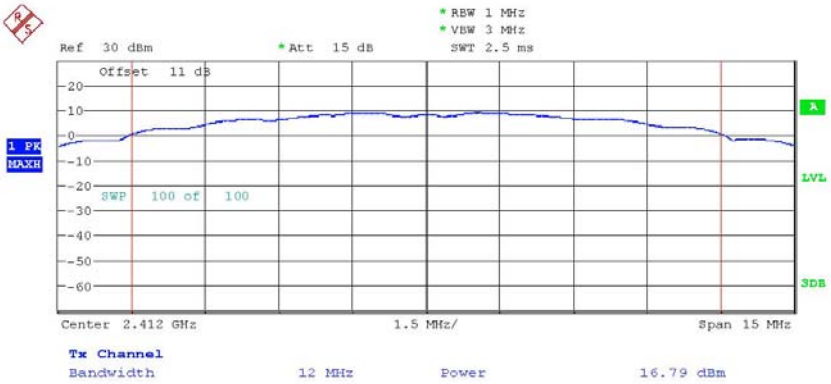
Port A



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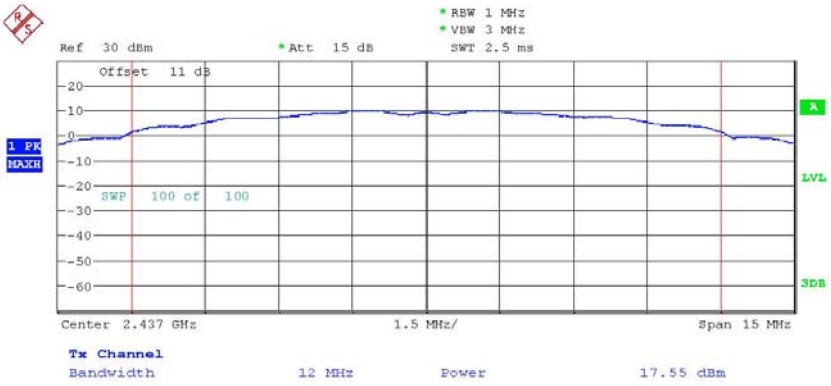

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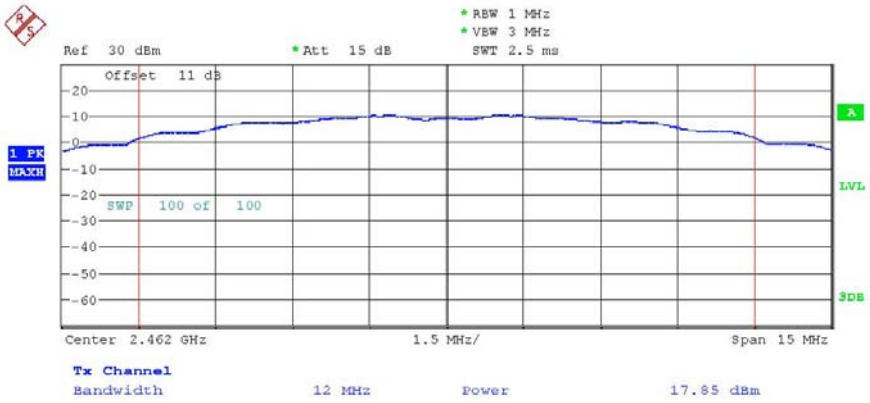

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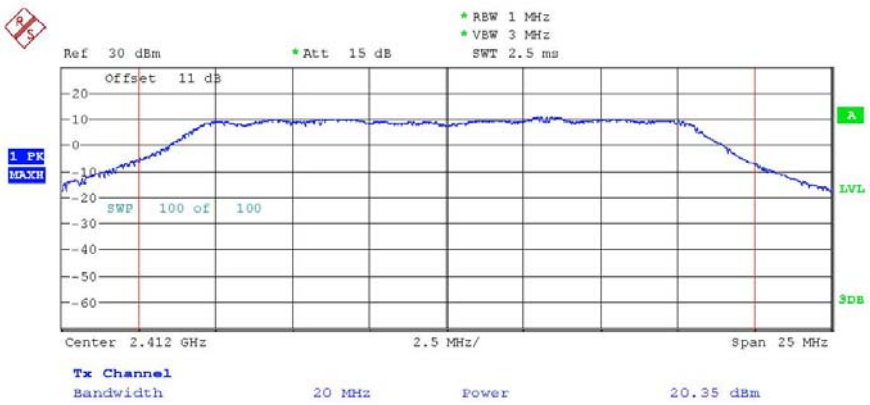

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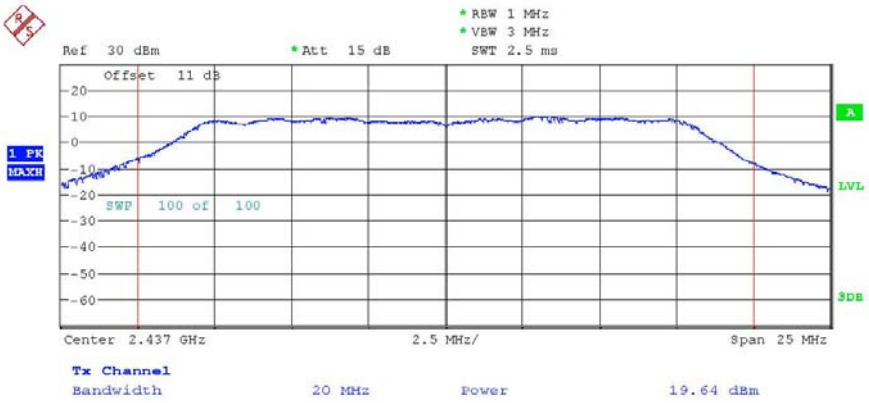
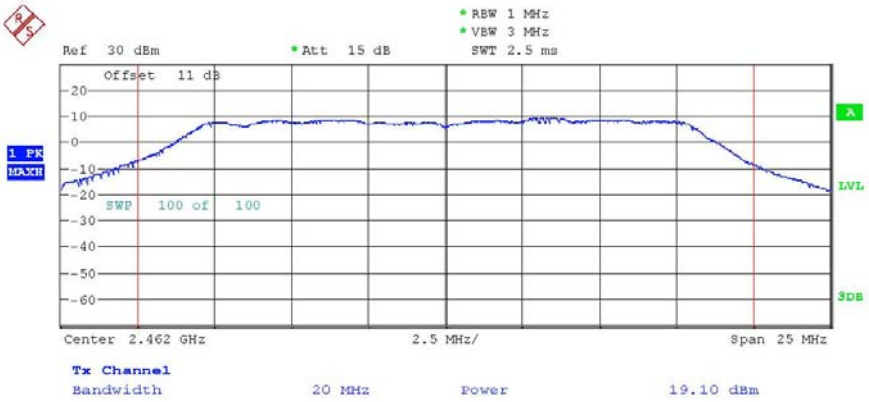


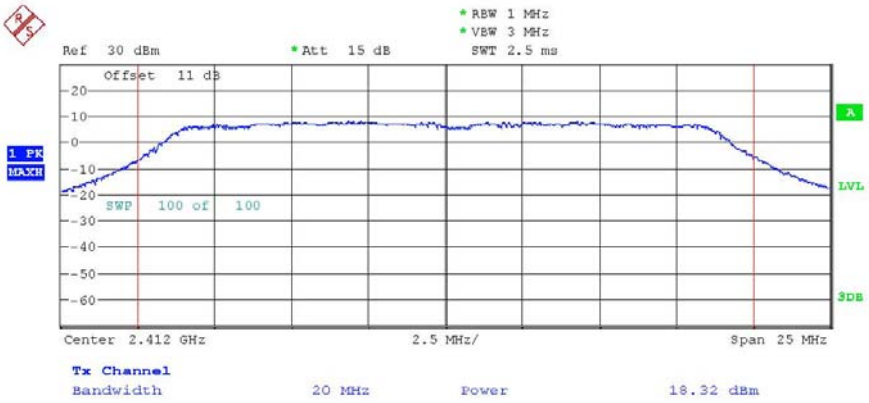
MAX OUTPUT POWER 802.11G CH06

Date: 27.DEC.2013 15:23:01



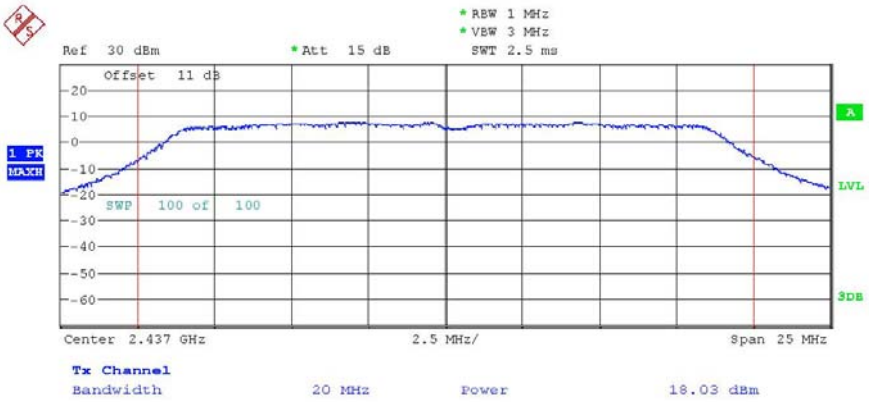
MAX OUTPUT POWER 802.11G CH11

Date: 27.DEC.2013 15:24:56



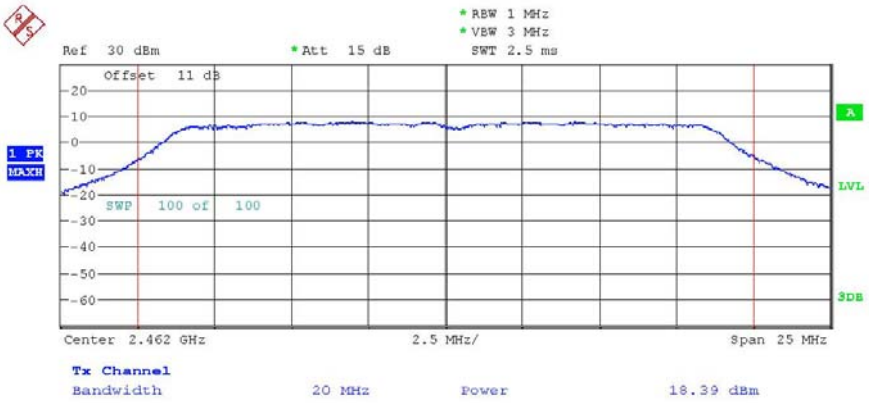
MAX OUTPUT POWER 802.11N 20MHZ CH01

Date: 27.DEC.2013 15:26:06



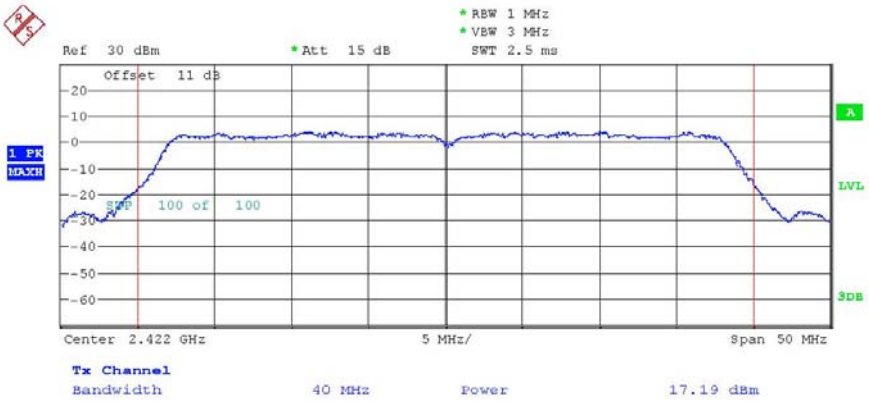
MAX OUTPUT POWER 802.11N 20MHZ CH06

Date: 27.DEC.2013 15:26:46



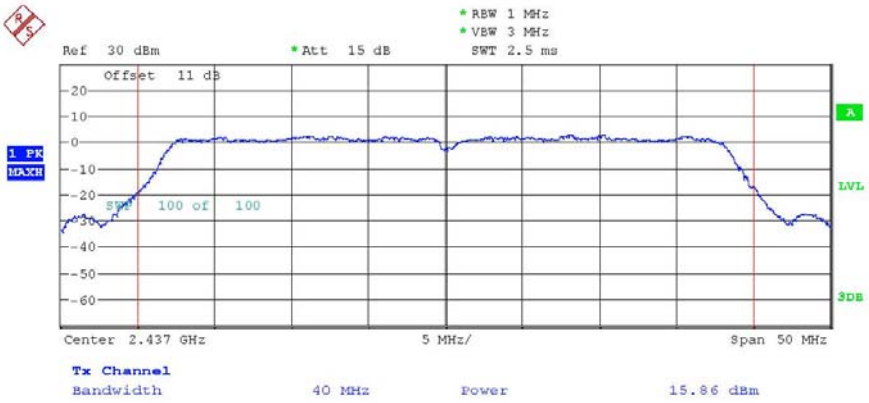
MAX OUTPUT POWER 802.11N 20MHZ CH11

Date: 27.DEC.2013 15:27:27



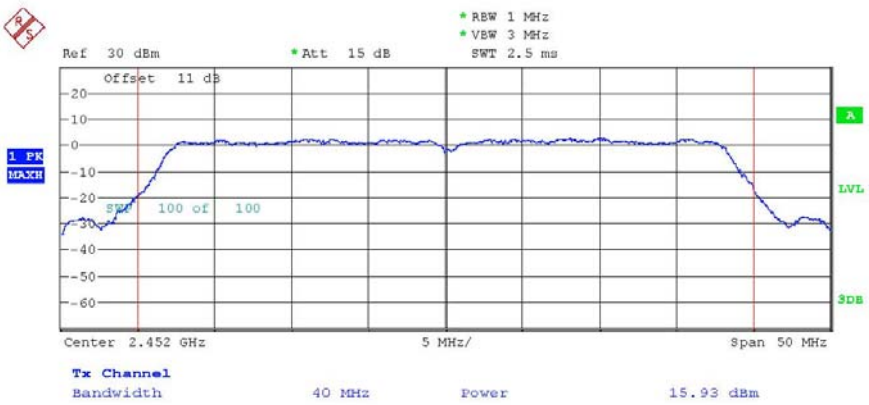
MAX OUTPUT POWER 802.11N 40MHZ CH01

Date: 27.DEC.2013 15:29:26



MAX OUTPUT POWER 802.11N 40MHZ CH04

Date: 27.DEC.2013 15:30:00

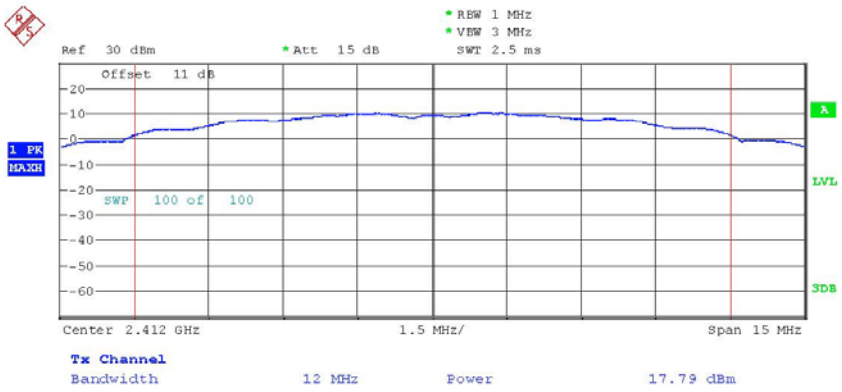


MAX OUTPUT POWER 802.11N 40MHZ CH07

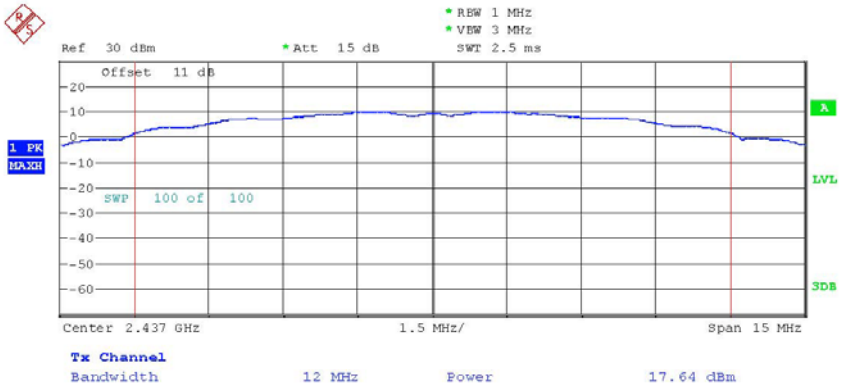
Date: 27.DEC.2013 15:30:32

Registration number: W6D21312-13740-C-1
FCC ID: BBQ-YW40

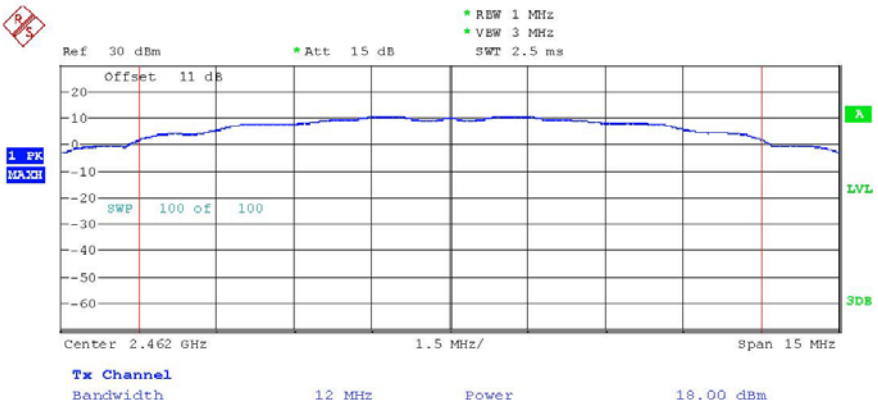
Port B



MAX OUTPUT POWER 802.11B CH01
Date: 27.DEC.2013 15:35:02

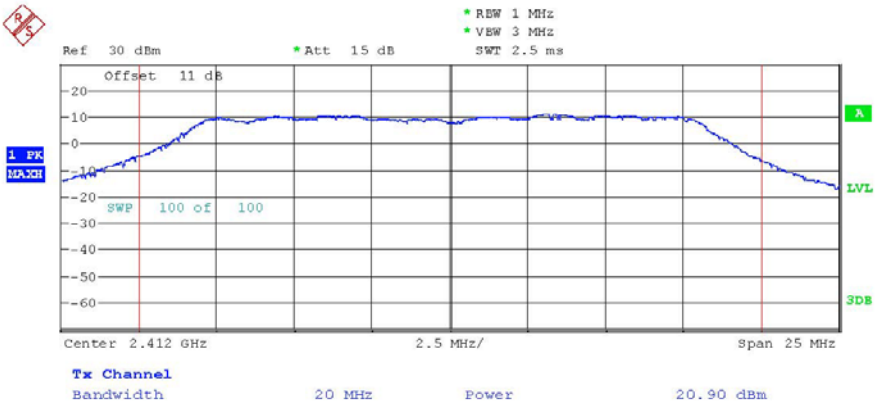


MAX OUTPUT POWER 802.11B CH06
Date: 27.DEC.2013 15:37:11



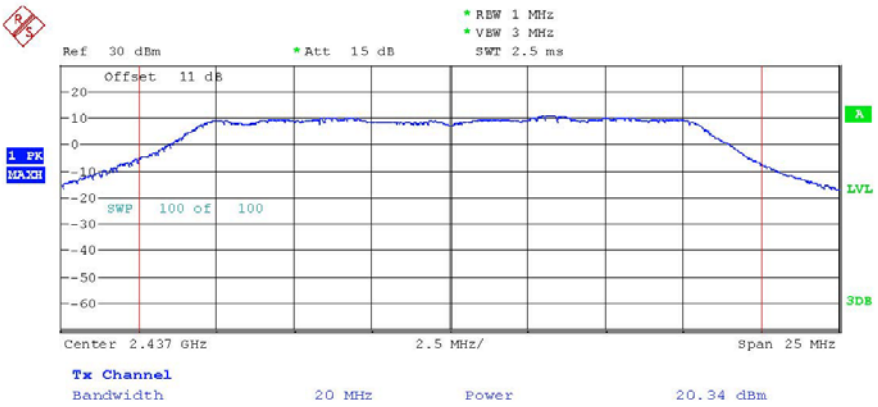
MAX OUTPUT POWER 802.11B CH11

Date: 27.DEC.2013 15:38:11



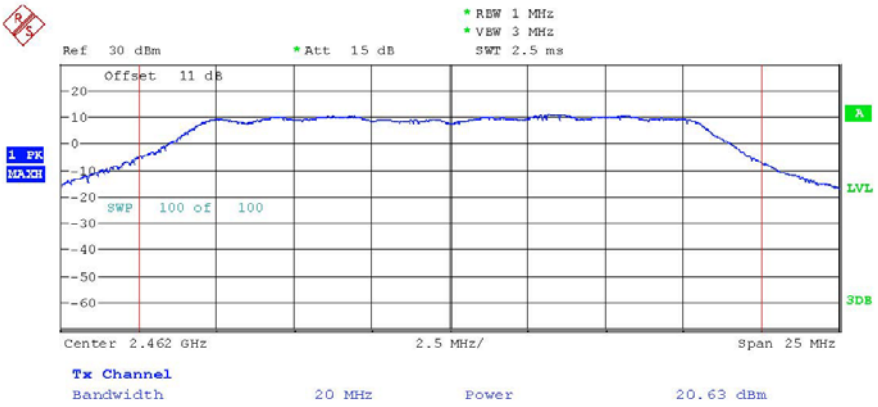
MAX OUTPUT POWER 802.11G CH01

Date: 27.DEC.2013 15:38:51



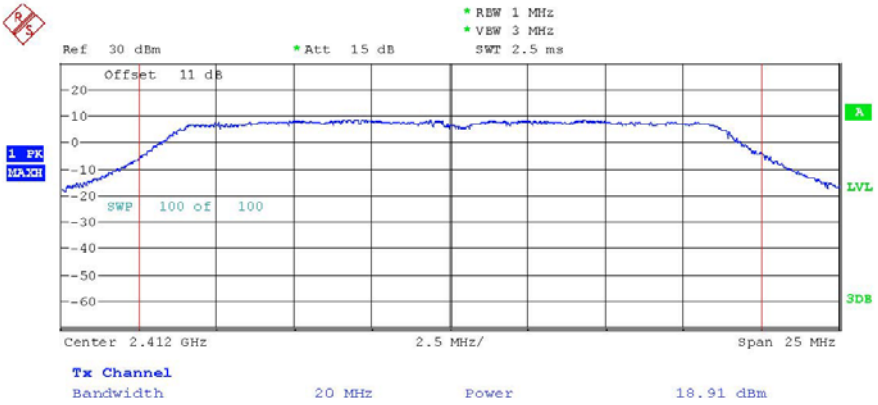
MAX OUTPUT POWER 802.11G CH06

Date: 27.DEC.2013 15:39:28



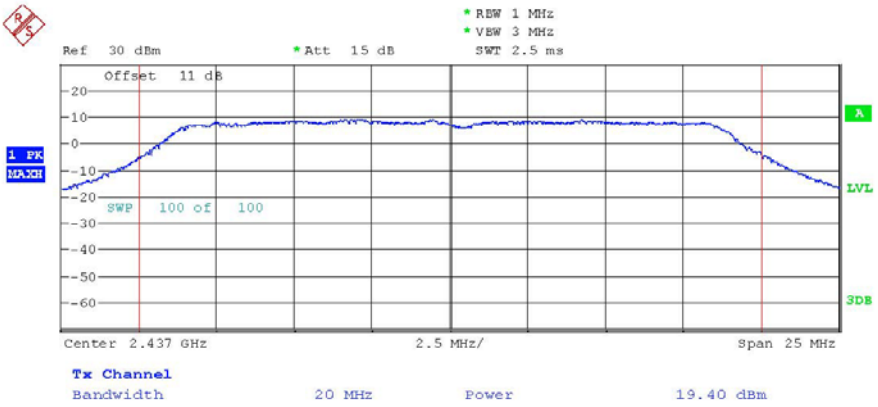
MAX OUTPUT POWER 802.11G CH11

Date: 27.DEC.2013 15:39:58



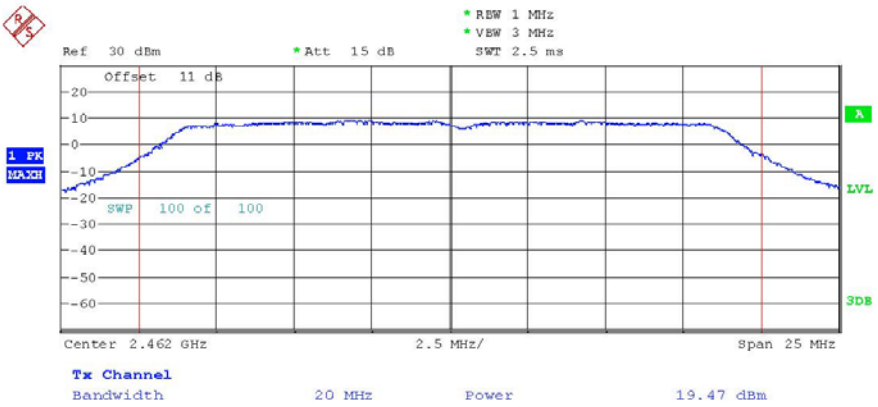
MAX OUTPUT POWER 802.11N 20MHZ CH01

Date: 27.DEC.2013 15:46:55



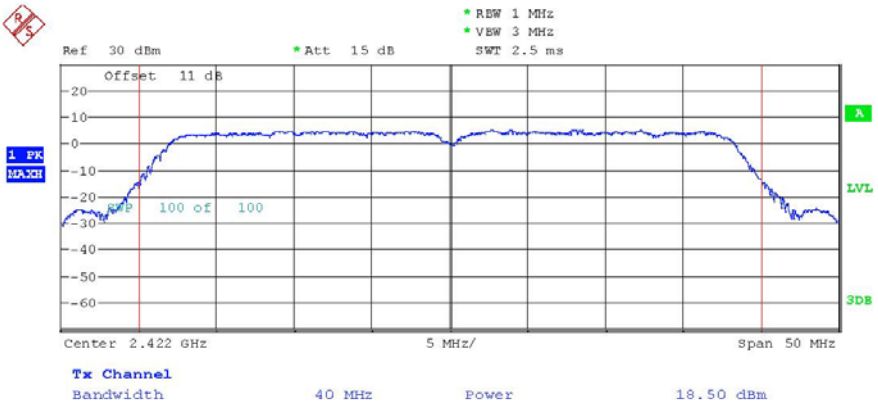
MAX OUTPUT POWER 802.11N 20MHZ CH06

Date: 27.DEC.2013 15:47:45



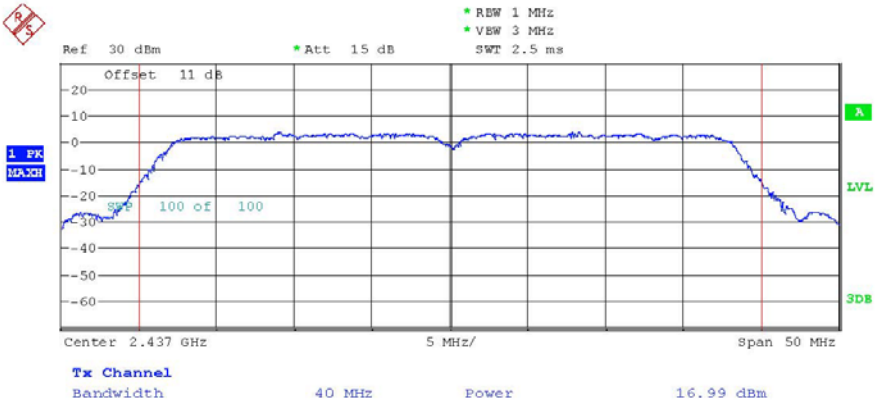
MAX OUTPUT POWER 802.11N 20MHZ CH11

Date: 27.DEC.2013 15:50:11



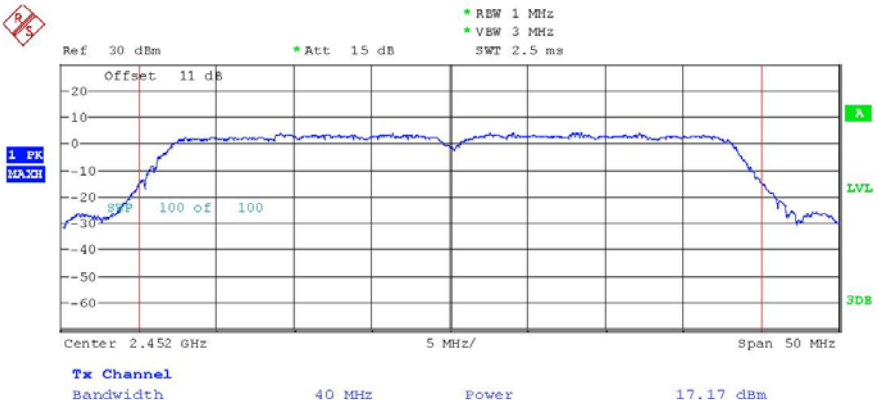
MAX OUTPUT POWER 802.11N 40MHZ CH01

Date: 27.DEC.2013 15:50:52



MAX OUTPUT POWER 802.11N 40MHZ CH04

Date: 27.DEC.2013 15:51:49



MAX OUTPUT POWER 802.11N 40MHZ CH07

Date: 27.DEC.2013 15:52:35

Registration number: W6D21312-13740-C-1
FCC ID: BBQ-YW40

Limits:

Frequency MHz	Power dBm
902 - 928	30
2400 – 2483.5	30
5725 – 5850	30

In case of employing transmitter antennas having antenna gain ＞ 6 dBi and using fixed point-to point operation consider §15.247 (b)(4)

Test equipment used: ETSTW-RE 055, ETSTW-RE 050,

3.2 Equivalent isotropic radiated power

FCC Rule: 15.247(b)(3)

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Test equipment used: ETSTW-RE 055

3.3 RF Exposure Compliance Requirements

FCC OET Bulletin 65 Edition 97.01 determines the equations for predicting RF fields and applicable limits.
The prediction for power density in the far-field but will over-predict power density in the near field, where it could be used for walking a “worst case” or conservative prediction.

$$S = \frac{PG}{4\pi R^2}$$

S – Power Density
P – Output power ERP
R – Distance
D – Cable Loss
AG – Antenna Gain

Item	Unit	Value	**Remarks**
P	mW	157.53	Peak value
D	dB		
AG	dBi	7.71	
G		5.9	Calculated Value
R	cm	20	Assumed value
S	mW/cm^2	0.185	Calculated value

Limits:

Limit for General Population / Uncontrolled Exposure	
Frequency (MHz)	Power Density (mW/cm^2)
1500 – 100.000	1.0

3.4 Transmitter Radiated Emissions in Restricted Bands

FCC Rules: 15.247 (c), 15.205, 15.209, 15.35
Radiated emission measurements were performed from 30 MHz to 26500 MHz.
For radiated emission tests, the analyzer setting was as followings:

Frequency ≦ 1 GHz, RBW:100 kHz, VBW: 100 kHz (Peak measurements)
Frequency ＞1 GHz, RBW: 1 MHz, VBW: 1 MHz (Peak measurements)
Frequency ＞1 GHz , RBW:1 MHz , VBW: 10 Hz (Average measurements)

Limits.

For frequencies below 1GHz:

Frequency of Emission (MHz)	Field strength (microvolts/meter)	Field Strength (dB microvolts/meter)
30 - 88	100	40.0
88 - 216	150	43.5
216 - 960	200	46.0
Above	500	54.0

For frequencies above 1GHz (Average measurements).

Guidance on Measurement of Digit Transmission Systems:
“If the emission is pulsed, modify the unit for continuous operation, use the setting shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation.”

The correction factor, based on the total channel dwell time in a 100 ms period, may be mathematically applied to a measurement made with an average detector, to further reduce the value.

Duty cycle correction = 20 log (dwell time/ 100ms)

Note: No duty cycle correction was added to the reading of this EUT.

Explanation: See attached diagrams in Appendix.

3.5 Spurious Emissions (tx)

Spurious emission was measured with modulation (declared by manufacturer).

In any 100 kHz bandwidth outside the frequency band in which the intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB 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. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c))

FCC Rule: 15.247(c), 15.35
For out of band emissions that are close to or that exceed the 20 dB attenuation requirement described in the specification, radiated measurements were performed at a 3 m separation distance to determine whether these emissions complied with the general radiated emission requirement.

Limits:

For frequencies above 1GHz (Peak measurements).
Modified Limit for peak according to 15.35 (b) = Max Permitted average Limits + 20dB

For frequencies above 1GHz (Average measurements).
Max. reading – 20dB

Max. reading – 20 dB
Guidance on Measurement of Digit Transmission Systems:
“If the emission is pulsed, modify the unit for continuous operation, use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation.”

The correction factor, based on the total channel dwell time in a 100 ms period, may be mathematically applied to a measurement made with an average detector, to further reduce the value.

Duty Cycle correction = 20 log (dwell time/100ms)

Note: No duty cycle correction was added to the reading of EUT.

SAMPLE CALCULATION OF LIMIT. All results will be updated by an automatic measuring system in accordance with point 2.3.

Calculation of test results:
Such factors like antenna correction, cable loss, external attenuation etc. are already included in the provided measurement results. This is done by using validated test software and calibrated test system according the accreditation requirements.

The peak and average spurious emission plots was measured with the average limits.
In the Table being listed the critical peak and average value and exhibit the compliance with the above calculated Limits.

If in the column's correction factor states a value then the max. Field strength in the same row is corrected by a value gained from the "Correction Factor".

Summary table with radiated data of the test plots

Model: YW-40 Date: 2013/12/26
Mode: TX 802.11b CH1 Temperature: 24 °C Engineer: Leon
Polarization: Horizontal Humidity: 60 %

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
171.9037	24.25	peak	14.43	38.68	43.50	-4.82	210	100
341.0220	25.09	peak	16.67	41.76	46.00	-4.24	130	100

Frequency (MHz)	Reading (dBuV)		Factor (dB)	Result (dBuV/m)		Limit (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.	Corr.	Peak	Ave.	Peak	Ave.			
4825.6510	56.92	50.16	0.50	57.42	50.66	74.00	54.00	-3.34	240	100
7236.0000	38.72	---	4.06	42.78	---	74.00	54.00	-31.22	130	100
9648.0000	34.95	---	9.16	44.11	---	74.00	54.00	-29.89	350	100
12060.0000	33.84	---	13.89	47.73	---	74.00	54.00	-26.27	110	100

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
169.9600	26.46	peak	14.63	41.09	43.50	-2.41	220	100
203.0060	24.74	peak	12.32	37.06	43.50	-6.44	135	100

Frequency (MHz)	Reading (dBuV)		Factor (dB)	Result (dBuV/m)		Limit (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.	Corr.	Peak	Ave.	Peak	Ave.			
4825.6510	57.77	51.61	0.50	58.27	52.11	74.00	54.00	-1.89	180	100
7236.0000	40.29	---	4.06	44.35	---	74.00	54.00	-29.65	160	100
9648.0000	35.86	---	9.16	45.02	---	74.00	54.00	-28.98	275	100
12060.0000	34.25	---	13.89	48.14	---	74.00	54.00	-25.86	160	100

Registration number: W6D21312-13740-C-1
FCC ID: BBQ-YW40

Mode: TX 802.11b CH6
Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
169.9600	21.84	peak	14.63	36.47	43.50	-7.03	275	100
333.2465	25.39	peak	16.46	41.85	46.00	-4.15	160	100

Frequency (MHz)	Reading (dBuV) Peak	Reading (dBuV) Ave.	Factor (dB) Corr.	Result (dBuV/m) Peak	Result (dBuV/m) Ave.	Limit (dBuV/m) Peak	Limit (dBuV/m) Ave.	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
4873.7480	59.55	51.17	0.61	60.16	51.78	74.00	54.00	-2.22	160	100
7311.0000	40.09	---	4.20	44.29	---	74.00	54.00	-29.71	220	100
9748.0000	34.53	---	9.51	44.04	---	74.00	54.00	-29.96	320	100
12185.0000	32.28	---	14.83	47.11	---	74.00	54.00	-26.89	115	100

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
169.9600	26.67	peak	14.63	41.30	43.50	-2.20	115	100
203.0060	26.47	peak	12.32	38.79	43.50	-4.71	310	100

Frequency (MHz)	Reading (dBuV) Peak	Reading (dBuV) Ave.	Factor (dB) Corr.	Result (dBuV/m) Peak	Result (dBuV/m) Ave.	Limit (dBuV/m) Peak	Limit (dBuV/m) Ave.	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
4873.7480	59.38	52.11	0.61	59.99	52.72	74.00	54.00	-1.28	185	100
7311.0000	40.07	---	4.20	44.27	---	74.00	54.00	-29.73	260	100
9748.0000	36.35	---	9.51	45.86	---	74.00	54.00	-28.14	110	100
12185.0000	32.28	---	14.83	47.11	---	74.00	54.00	-26.89	165	100

Mode: TX 802.11b CH11
Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
171.9037	22.62	peak	14.43	37.05	43.50	-6.45	140	100
331.3025	26.36	peak	16.41	42.77	46.00	-3.23	230	100

Frequency (MHz)	Reading (dBuV) Peak	Reading (dBuV) Ave.	Factor (dB) Corr.	Result (dBuV/m) Peak	Result (dBuV/m) Ave.	Limit (dBuV/m) Peak	Limit (dBuV/m) Ave.	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
4921.8440	60.87	50.39	0.83	61.70	51.22	74.00	54.00	-2.78	170	100
7386.0000	39.69	---	4.43	44.12	---	74.00	54.00	-29.88	225	100
9848.0000	35.93	---	9.76	45.69	---	74.00	54.00	-28.31	275	100
12310.0000	34.33	---	14.12	48.45	---	74.00	54.00	-25.55	140	100

Registration number: W6D21312-13740-C-1
FCC ID: BBQ-YW40

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
169.9600	26.66	peak	14.63	41.29	43.50	-2.21	90	100
201.0621	25.23	peak	12.37	37.60	43.50	-5.90	150	100

Frequency (MHz)	Reading (dBuV)		Factor (dB)	Result (dBuV/m)		Limit (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.	Corr.	Peak	Ave.	Peak	Ave.			
4921.8440	62.08	51.61	0.83	62.91	52.44	74.00	54.00	-1.56	175	100
7386.0000	39.72	---	4.43	44.15	---	74.00	54.00	-29.85	160	100
9848.0000	34.66	---	9.76	44.42	---	74.00	54.00	-29.58	345	100
12310.0000	34.70	---	14.12	48.82	---	74.00	54.00	-25.18	115	100

Mode: TX 802.11g CH1
Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
171.9037	22.36	peak	14.43	36.79	43.50	-6.71	310	100
335.1904	23.74	peak	16.52	40.26	46.00	-5.74	145	100

Frequency (MHz)	Reading (dBuV)		Factor (dB)	Result (dBuV/m)		Limit (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.	Corr.	Peak	Ave.	Peak	Ave.			
4825.6510	52.44	43.65	0.50	52.94	44.15	74.00	54.00	-9.85	160	100
7236.0000	39.68	---	4.06	43.74	---	74.00	54.00	-30.26	270	100
9648.0000	35.47	---	9.16	44.63	---	74.00	54.00	-29.37	235	100
12060.0000	34.75	---	13.89	48.64	---	74.00	54.00	-25.36	170	100

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
171.9038	27.25	peak	14.43	41.68	43.50	-1.82	160	100
201.0621	26.12	peak	12.37	38.49	43.50	-5.01	130	100

Frequency (MHz)	Reading (dBuV)		Factor (dB)	Result (dBuV/m)		Limit (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.	Corr.	Peak	Ave.	Peak	Ave.			
4817.6350	55.14	46.57	0.48	55.62	47.05	74.00	54.00	-6.95	185	100
7236.0000	40.69	---	4.06	44.75	---	74.00	54.00	-29.25	315	100
9648.0000	35.18	---	9.16	44.34	---	74.00	54.00	-29.66	290	100
12060.0000	33.35	---	13.89	47.24	---	74.00	54.00	-26.76	150	100

Registration number: W6D21312-13740-C-1
FCC ID: BBQ-YW40

Mode: TX 802.11g CH6
Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
171.9037	22.99	peak	14.43	37.42	43.50	-6.08	175	100
335.1904	24.52	peak	16.52	41.04	46.00	-4.96	130	100

Frequency (MHz)	Reading (dBuV)		Factor (dB)	Result (dBuV/m)		Limit (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.	Corr.	Peak	Ave.	Peak	Ave.			
4873.7480	54.53	43.68	0.61	55.14	44.29	74.00	54.00	-9.71	160	100
7311.0000	39.83	---	4.20	44.03	---	74.00	54.00	-29.97	140	100
9748.0000	34.46	---	9.51	43.97	---	74.00	54.00	-30.03	70	100
12185.0000	32.84	---	14.83	47.67	---	74.00	54.00	-26.33	165	100

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
168.0160	26.26	peak	14.71	40.97	43.50	-2.53	270	100
199.1182	25.02	peak	12.44	37.46	43.50	-6.04	160	100

Frequency (MHz)	Reading (dBuV)		Factor (dB)	Result (dBuV/m)		Limit (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.	Corr.	Peak	Ave.	Peak	Ave.			
4873.7480	59.28	49.67	0.61	59.89	50.28	74.00	54.00	-3.72	175	100
7311.0000	39.98	---	4.20	44.18	---	74.00	54.00	-29.82	130	100
9748.0000	34.64	---	9.51	44.15	---	74.00	54.00	-29.85	310	100
12185.0000	33.48	---	14.83	48.31	---	74.00	54.00	-25.69	140	100

Mode: TX 802.11g CH11
Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
171.9037	23.62	peak	14.43	38.05	43.50	-5.45	270	100
337.1342	23.78	peak	16.57	40.35	46.00	-5.65	120	100

Frequency (MHz)	Reading (dBuV)		Factor (dB)	Result (dBuV/m)		Limit (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.	Corr.	Peak	Ave.	Peak	Ave.			
4921.8440	60.04	50.11	0.83	60.87	50.94	74.00	54.00	-3.06	155	100
7386.0000	39.64	---	4.43	44.07	---	74.00	54.00	-29.93	130	100
9848.0000	35.04	---	9.76	44.80	---	74.00	54.00	-29.20	220	100
12310.0000	34.83	---	14.12	48.95	---	74.00	54.00	-25.05	190	100

Registration number: W6D21312-13740-C-1
FCC ID: BBQ-YW40

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
171.9038	27.58	peak	14.43	42.01	43.50	-1.49	245	100
203.0060	26.89	peak	12.32	39.21	43.50	-4.29	130	100

Frequency (MHz)	Reading (dBuV) Peak	Reading (dBuV) Ave.	Factor (dB) Corr.	Result (dBuV/m) Peak	Result (dBuV/m) Ave.	Limit (dBuV/m) Peak	Limit (dBuV/m) Ave.	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
4921.8440	62.84	51.23	0.83	63.67	52.06	74.00	54.00	-1.94	170	100
7386.0000	39.40	---	4.43	43.83	---	74.00	54.00	-30.17	330	100
9848.0000	34.62	---	9.76	44.38	---	74.00	54.00	-29.62	290	100
12310.0000	33.52	---	14.12	47.64	---	74.00	54.00	-26.36	310	100

Mode: TX 802.11n 20MHz CH1
Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
171.9037	22.67	peak	14.43	37.10	43.50	-6.40	245	100
339.0781	24.26	peak	16.62	40.88	46.00	-5.12	160	100

Frequency (MHz)	Reading (dBuV) Peak	Reading (dBuV) Ave.	Factor (dB) Corr.	Result (dBuV/m) Peak	Result (dBuV/m) Ave.	Limit (dBuV/m) Peak	Limit (dBuV/m) Ave.	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
4817.6350	49.25	---	0.48	49.73	---	74.00	54.00	-24.27	175	100
7236.0000	40.59	---	4.06	44.65	---	74.00	54.00	-29.35	130	100
9648.0000	34.84	---	9.16	44.00	---	74.00	54.00	-30.00	370	100
12060.0000	34.52	---	13.89	48.41	---	74.00	54.00	-25.59	115	100

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
169.9600	25.90	peak	14.63	40.53	43.50	-2.97	300	100
201.0621	27.48	peak	12.37	39.85	43.50	-3.65	110	100

Frequency (MHz)	Reading (dBuV) Peak	Reading (dBuV) Ave.	Factor (dB) Corr.	Result (dBuV/m) Peak	Result (dBuV/m) Ave.	Limit (dBuV/m) Peak	Limit (dBuV/m) Ave.	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
4817.6350	52.73	42.97	0.48	53.21	43.45	74.00	54.00	-10.55	175	100
7236.0000	40.07	---	4.06	44.13	---	74.00	54.00	-29.87	340	100
9648.0000	35.04	---	9.16	44.20	---	74.00	54.00	-29.80	125	100
12060.0000	33.75	---	13.89	47.64	---	74.00	54.00	-26.36	170	100

Mode: TX 802.11n 20MHz CH6
Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
169.9600	22.24	peak	14.63	36.87	43.50	-6.63	145	100
335.1904	24.34	peak	16.52	40.86	46.00	-5.14	320	100

Frequency (MHz)	Reading (dBuV)		Factor (dB)	Result (dBuV/m)		Limit (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.	Corr.	Peak	Ave.	Peak	Ave.			
4873.7480	50.31	42.69	0.61	50.92	43.30	74.00	54.00	-10.70	150	100
7311.0000	40.18	---	4.20	44.38	---	74.00	54.00	-29.62	130	100
9748.0000	34.77	---	9.51	44.28	---	74.00	54.00	-29.72	325	100
12185.0000	33.19	---	14.83	48.02	---	74.00	54.00	-25.98	140	100

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
31.9440	19.55	peak	13.25	32.80	40.00	-7.20	120	100
169.9600	26.10	peak	14.63	40.73	43.50	-2.77	170	100

Frequency (MHz)	Reading (dBuV)		Factor (dB)	Result (dBuV/m)		Limit (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.	Corr.	Peak	Ave.	Peak	Ave.			
4873.7480	55.49	44.79	0.61	56.10	45.40	74.00	54.00	-8.60	145	100
7311.0000	39.81	---	4.20	44.01	---	74.00	54.00	-29.99	330	100
9748.0000	34.64	---	9.51	44.15	---	74.00	54.00	-29.85	275	100
12185.0000	31.99	---	14.83	46.82	---	74.00	54.00	-27.18	190	100

Mode: TX 802.11n 20MHz CH11
Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
169.9600	22.94	peak	14.63	37.57	43.50	-5.93	160	100
337.1342	24.05	peak	16.57	40.62	46.00	-5.38	275	100

Frequency (MHz)	Reading (dBuV)		Factor (dB)	Result (dBuV/m)		Limit (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.	Corr.	Peak	Ave.	Peak	Ave.			
4921.8440	55.31	44.91	0.83	56.14	45.74	74.00	54.00	-8.26	190	100
7386.0000	39.50	---	4.43	43.93	---	74.00	54.00	-30.07	130	100
9848.0000	35.44	---	9.76	45.20	---	74.00	54.00	-28.80	310	100
12310.0000	34.16	---	14.12	48.28	---	74.00	54.00	-25.72	120	100

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FCC ID: BBQ-YW40

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
169.9600	25.28	peak	14.63	39.91	43.50	-3.59	155	100
201.0621	25.62	peak	12.37	37.99	43.50	-5.51	125	100

Frequency (MHz)	Reading (dBuV)		Factor (dB)	Result (dBuV/m)		Limit (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.	Corr.	Peak	Ave.	Peak	Ave.			
4921.8440	58.74	49.31	0.83	59.57	50.14	74.00	54.00	-3.86	170	100
7386.0000	39.85	---	4.43	44.28	---	74.00	54.00	-29.72	240	100
9848.0000	34.49	---	9.76	44.25	---	74.00	54.00	-29.75	155	100
12310.0000	34.23	---	14.12	48.35	---	74.00	54.00	-25.65	110	100

Mode: TX 802.11n 40MHz CH1
Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
169.9600	22.10	peak	14.63	36.73	43.50	-6.77	260	100
333.2465	23.91	peak	16.46	40.37	46.00	-5.63	230	100

Frequency (MHz)	Reading (dBuV)		Factor (dB)	Result (dBuV/m)		Limit (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.	Corr.	Peak	Ave.	Peak	Ave.			
4841.6830	48.28	---	0.54	48.82	---	74.00	54.00	-25.18	200	100
7266.0000	40.16	---	4.11	44.27	---	74.00	54.00	-29.73	115	100
9688.0000	35.82	---	9.19	45.01	---	74.00	54.00	-28.99	130	100
12110.0000	33.17	---	14.34	47.51	---	74.00	54.00	-26.49	240	100

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
31.9440	19.33	peak	13.25	32.58	40.00	-7.42	175	100
169.9600	25.71	peak	14.63	40.34	43.50	-3.16	220	100

Frequency (MHz)	Reading (dBuV)		Factor (dB)	Result (dBuV/m)		Limit (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.	Corr.	Peak	Ave.	Peak	Ave.			
4841.6830	51.78	41.06	0.54	52.32	41.60	74.00	54.00	-12.40	150	100
7266.0000	40.47	---	4.11	44.58	---	74.00	54.00	-29.42	250	100
9688.0000	35.01	---	9.19	44.20	---	74.00	54.00	-29.80	145	100
12110.0000	32.88	---	14.34	47.22	---	74.00	54.00	-26.78	130	100

Mode: TX 802.11n 40MHz CH4
Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
171.9037	22.27	peak	14.43	36.70	43.50	-6.80	275	100
199.1182	22.65	peak	12.44	35.09	43.50	-8.41	160	100

Frequency (MHz)	Reading (dBuV) Peak	Ave.	Factor (dB) Corr.	Result (dBuV/m) Peak	Ave.	Limit (dBuV/m) Peak	Ave.	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
4873.7480	49.52	---	0.61	50.13	---	74.00	54.00	-23.87	170	100
7311.0000	39.98	---	4.20	44.18	---	74.00	54.00	-29.82	145	100
9748.0000	35.23	---	9.51	44.74	---	74.00	54.00	-29.26	90	100
12185.0000	32.51	---	14.83	47.34	---	74.00	54.00	-26.66	120	100

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
113.5872	20.05	peak	12.88	32.93	43.50	-10.57	120	100
169.9600	25.28	peak	14.63	39.91	43.50	-3.59	155	100

Frequency (MHz)	Reading (dBuV) Peak	Ave.	Factor (dB) Corr.	Result (dBuV/m) Peak	Ave.	Limit (dBuV/m) Peak	Ave.	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
4873.7480	55.32	45.67	0.61	55.93	46.28	74.00	54.00	-7.72	185	100
7311.0000	39.99	---	4.20	44.19	---	74.00	54.00	-29.81	110	100
9748.0000	34.34	---	9.51	43.85	---	74.00	54.00	-30.15	210	100
12185.0000	33.00	---	14.83	47.83	---	74.00	54.00	-26.17	140	100

Mode: TX 802.11n 40MHz CH7
Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
169.9600	21.89	peak	14.63	36.52	43.50	-6.98	260	100
206.8937	21.00	peak	12.20	33.20	43.50	-10.30	140	100

Frequency (MHz)	Reading (dBuV) Peak	Ave.	Factor (dB) Corr.	Result (dBuV/m) Peak	Ave.	Limit (dBuV/m) Peak	Ave.	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
4905.8110	51.95	41.62	0.71	52.66	42.33	74.00	54.00	-11.67	170	100
7356.0000	40.41	---	4.34	44.75	---	74.00	54.00	-29.25	135	100
9808.0000	34.92	---	9.83	44.75	---	74.00	54.00	-29.25	155	100
12260.0000	34.42	---	14.37	48.79	---	74.00	54.00	-25.21	130	100

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Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
113.5872	19.75	peak	12.88	32.63	43.50	-10.87	140	100
169.9600	25.57	peak	14.63	40.20	43.50	-3.30	230	100

Frequency (MHz)	Reading (dBuV)		Factor (dB)	Result (dBuV/m)		Limit (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.	Corr.	Peak	Ave.	Peak	Ave.			
4897.7960	56.42	47.15	0.66	57.08	47.81	74.00	54.00	-6.19	190	100
7356.0000	40.45	---	4.34	44.79	---	74.00	54.00	-29.21	240	100
9808.0000	35.71	---	9.83	45.54	---	74.00	54.00	-28.46	310	100
12260.0000	32.71	---	14.37	47.08	---	74.00	54.00	-26.92	155	100

Note

1. **Correction Factor = Antenna factor + Cable loss - Preamplifier**
2. **The formula of measured value as: Test Result = Reading + Correction Factor**
3. **Detector function in the form : PK = Peak, QP = Quasi Peak, AV = Average**
4. **All not in the table noted test results are more than 20 dB below the relevant limits.**
5. **Measurement uncertainty for 3m measurement: 30-1000 MHz = ± 3.72 dB, 1-18 GHz = ± 5.33 dB, 18-40 GHz= ± 3.43 dB ; Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.**
6. **See attached diagrams in appendix.**

TEST RESULT (Transmitter): The unit DOES meet the FCC requirements.

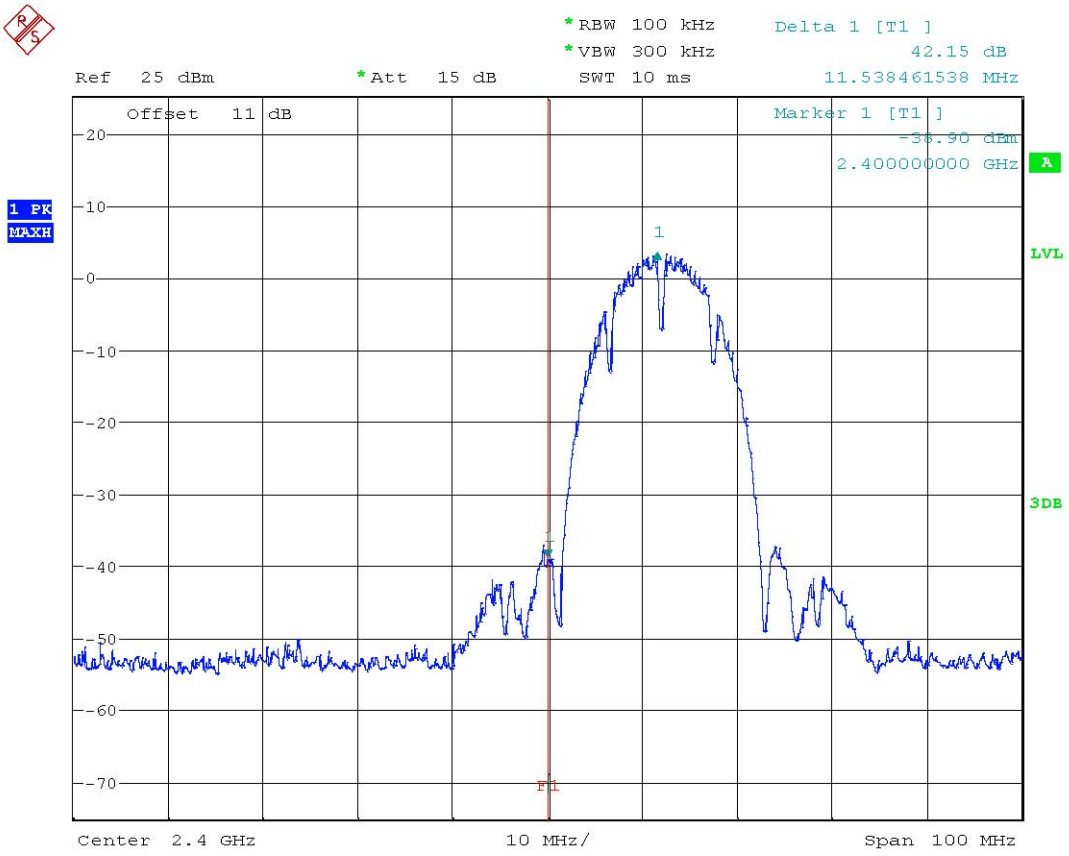
Test equipment used: ETSTW-RE 004, ETSTW-RE 030, ETSTW-RE 111, ETSTW-RE 088, ETSTW-RE 018

3.6 Radiated Emission on the band edge

According to FCC rules part 15 subpart C §15.247(c) in any 100 kHz bandwidth outside the frequency band in which the intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB 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. Attenuation below the general limits specified in § 15.209(a) is not required.

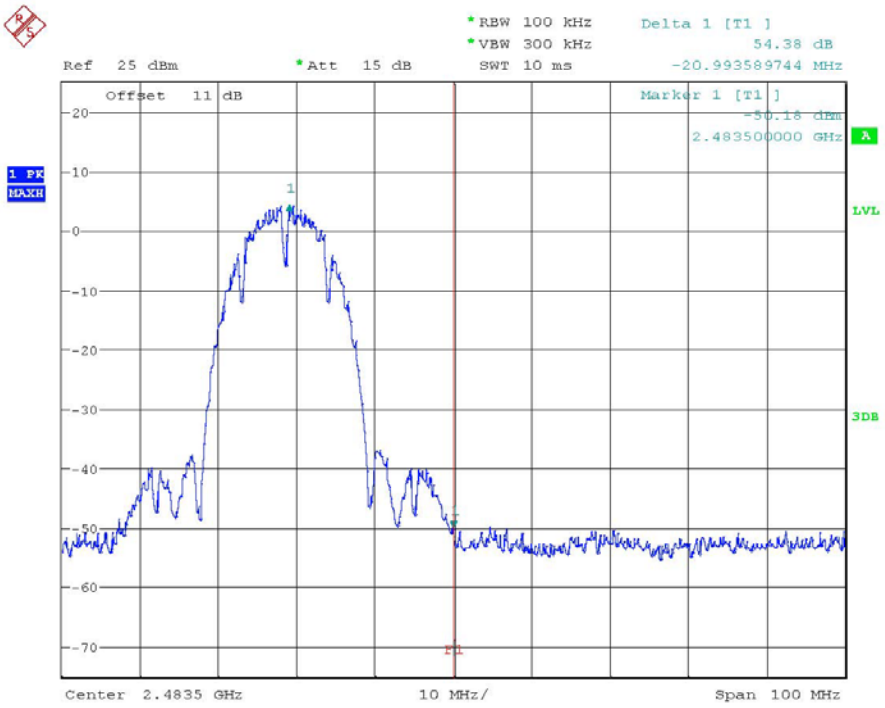
In addition radiated emission which fall in the restricted bands, as defined in section 15.205(a), must also with the radiated emission limits.

Port A



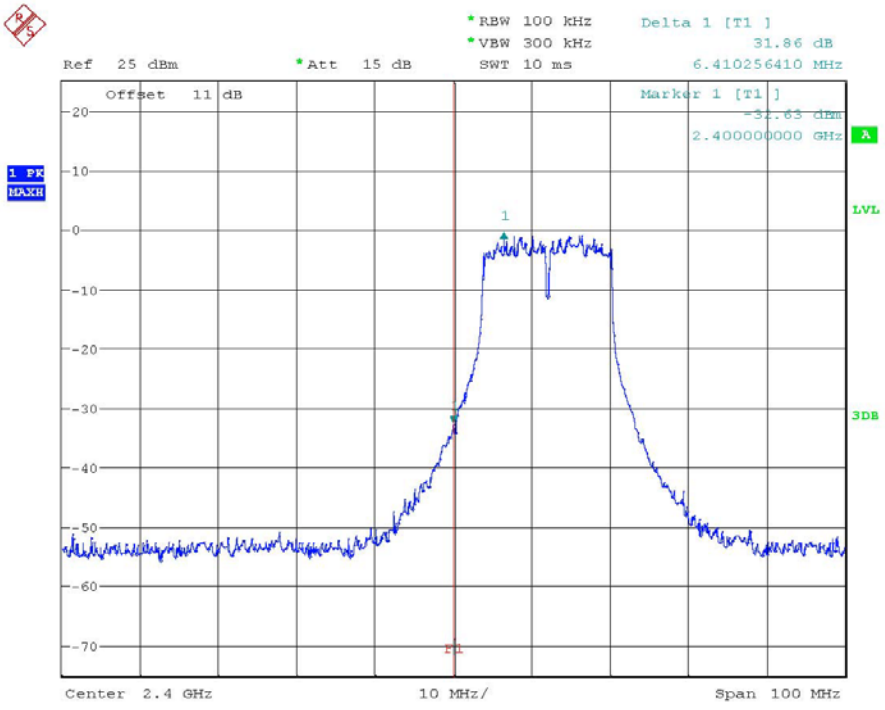
BANDEDGE 802.11B CH01

Date: 27.DEC.2013 15:16:53



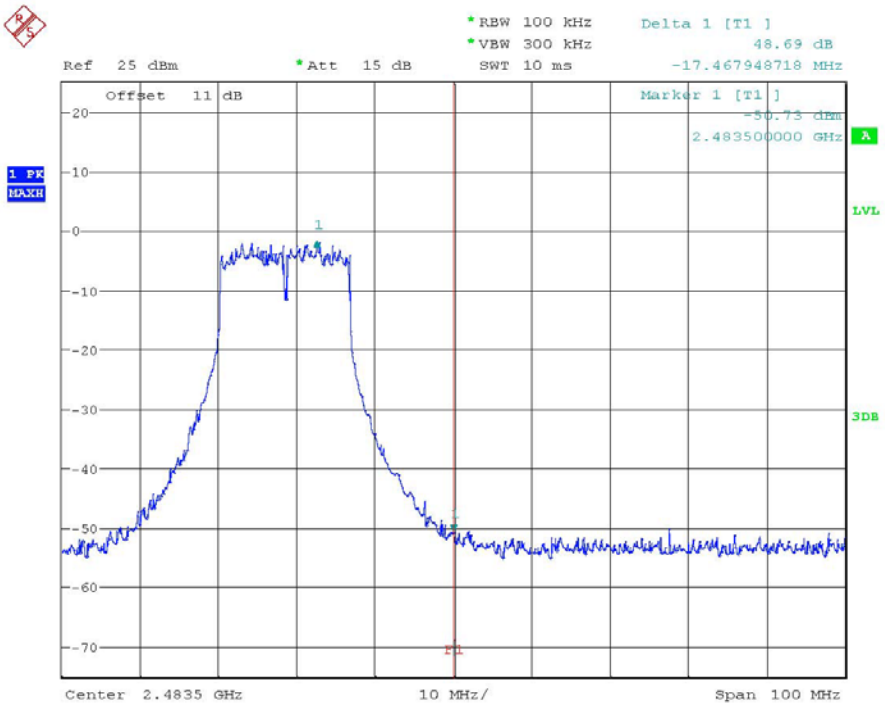
BANDEDGE 802.11B CH11

Date: 27.DEC.2013 15:19:22



BANDEDGE 802.11G CH01

Date: 27.DEC.2013 15:22:34



BANDEDGE 802.11G CH11

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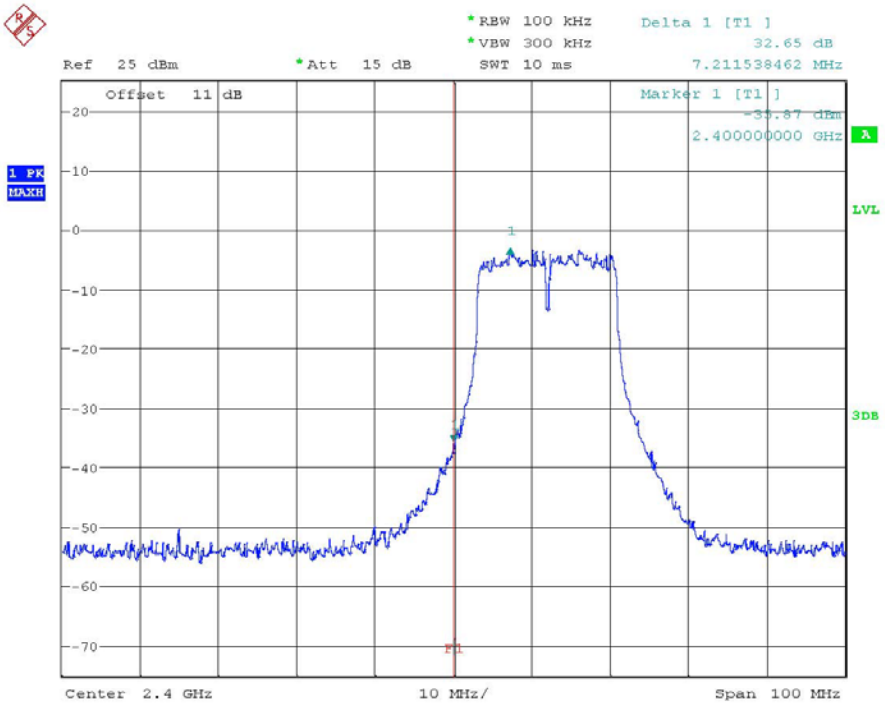
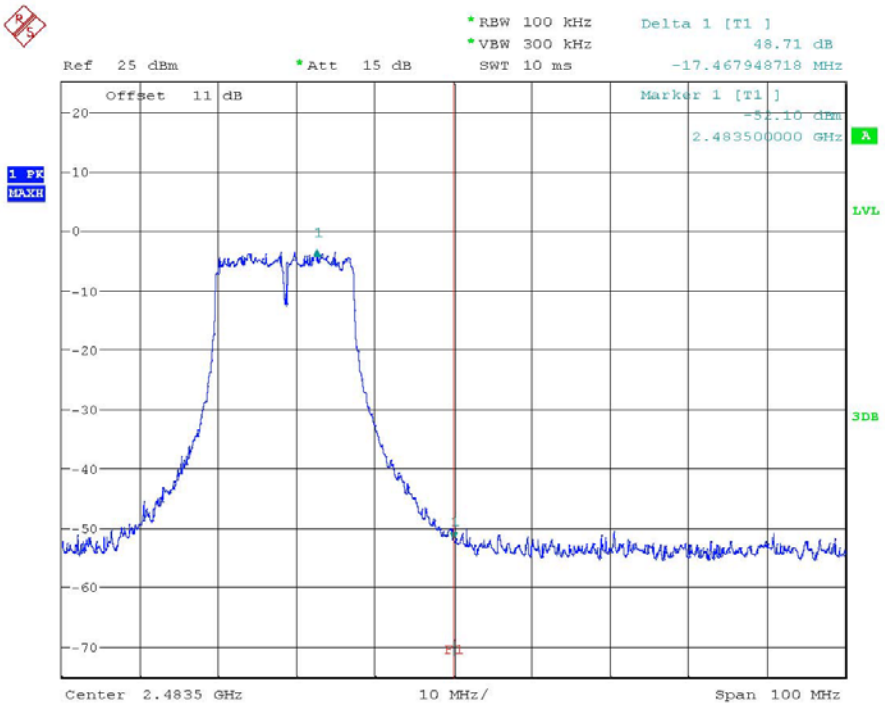


BANDEDGE 802.11N 20MHZ CH01

Date: 27.DEC.2013 15:26:25



BANDEDGE 802.11N 20MHZ CH11

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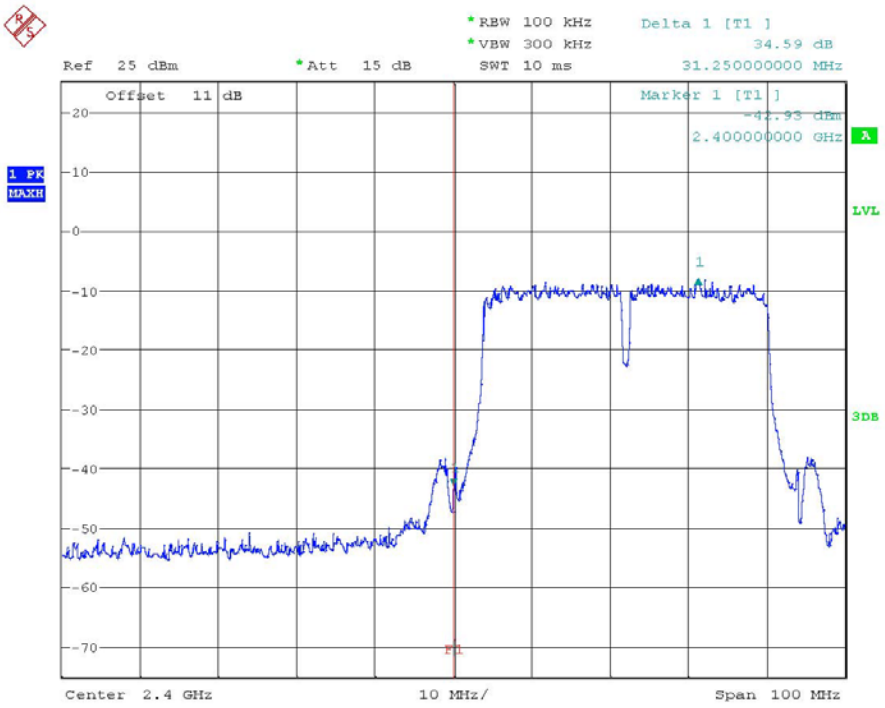

BANDEDGE 802.11N 40MHZ CH01

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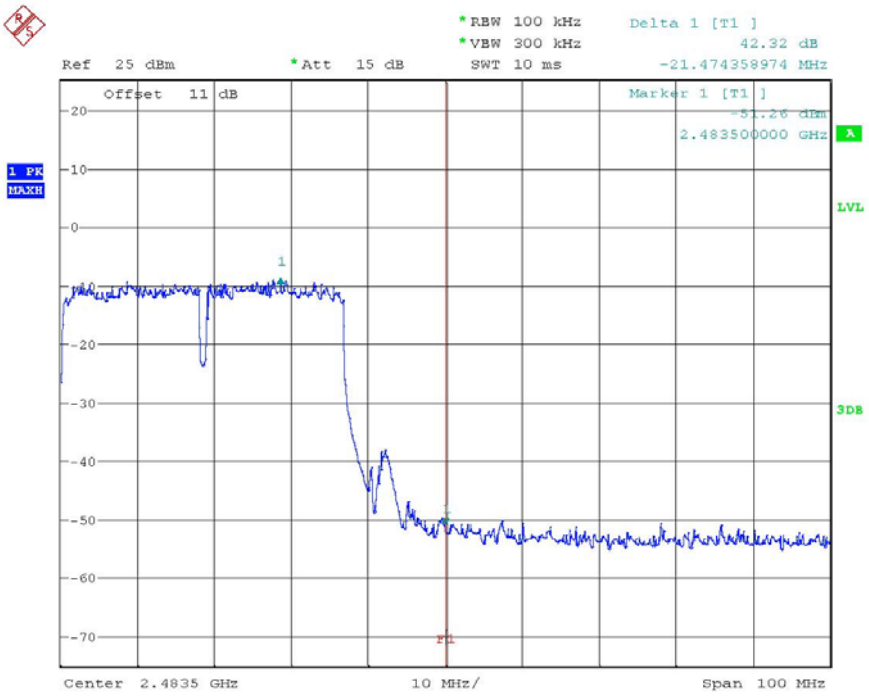
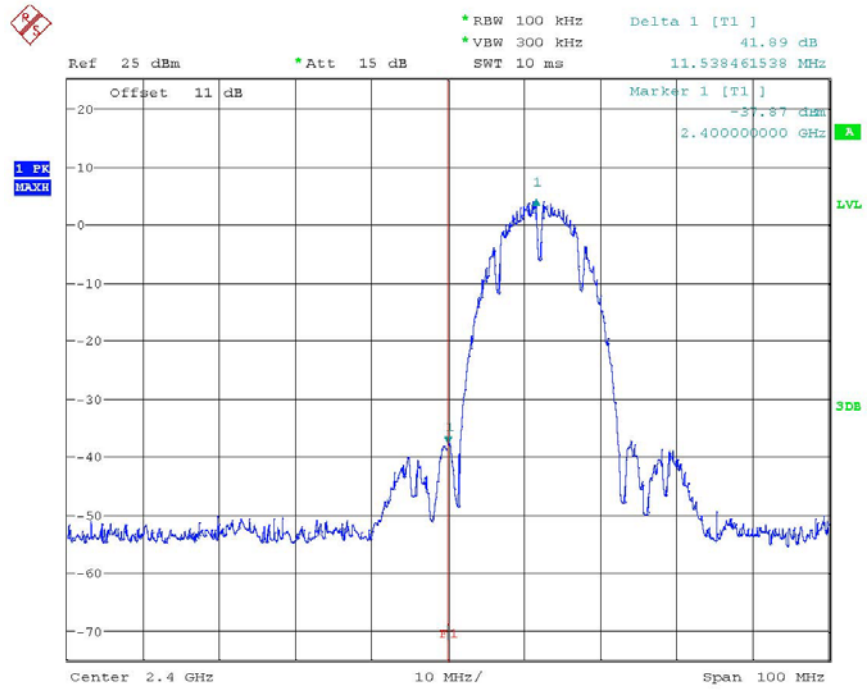
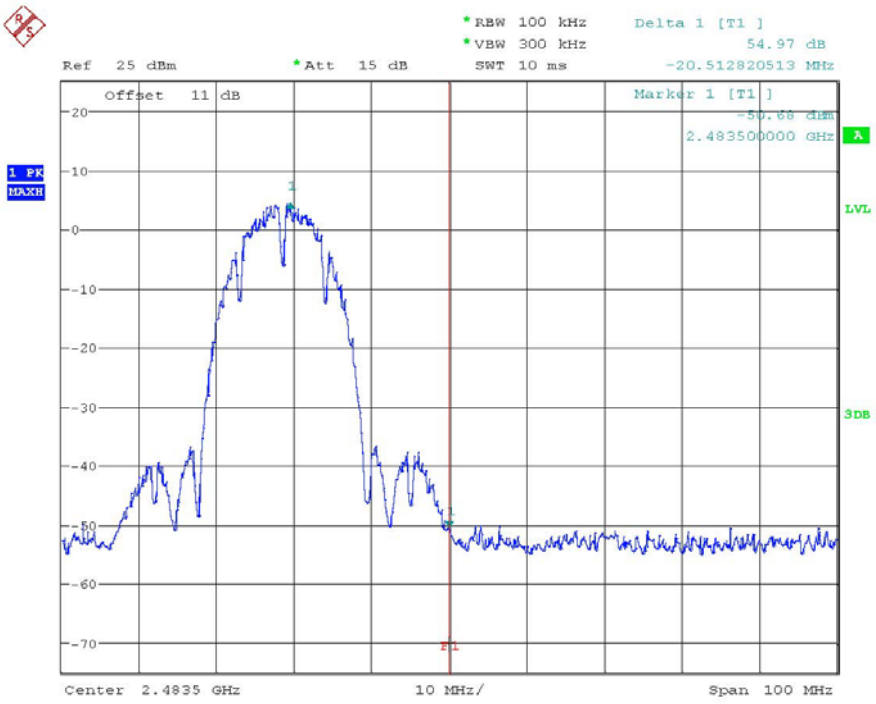


BANDEDGE 802.11N 40MHZ CH07
Date: 27.DEC.2013 15:30:52

Port B

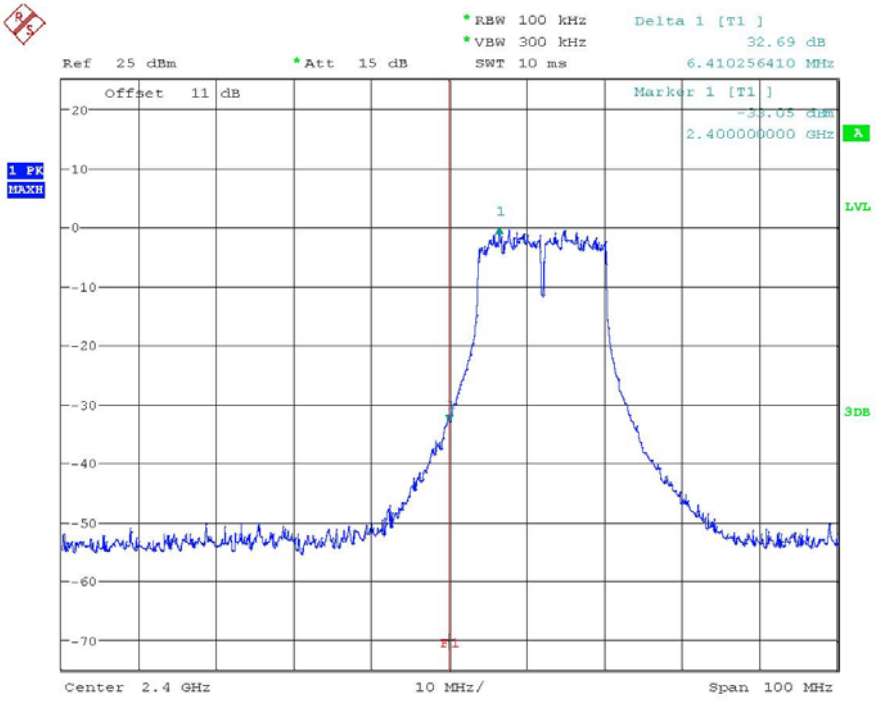


BANDEDGE 802.11B CH01
Date: 27.DEC.2013 15:35:21



BANDEDGE 802.11B CH11

Date: 27.DEC.2013 15:38:30



BANDEDGE 802.11G CH01

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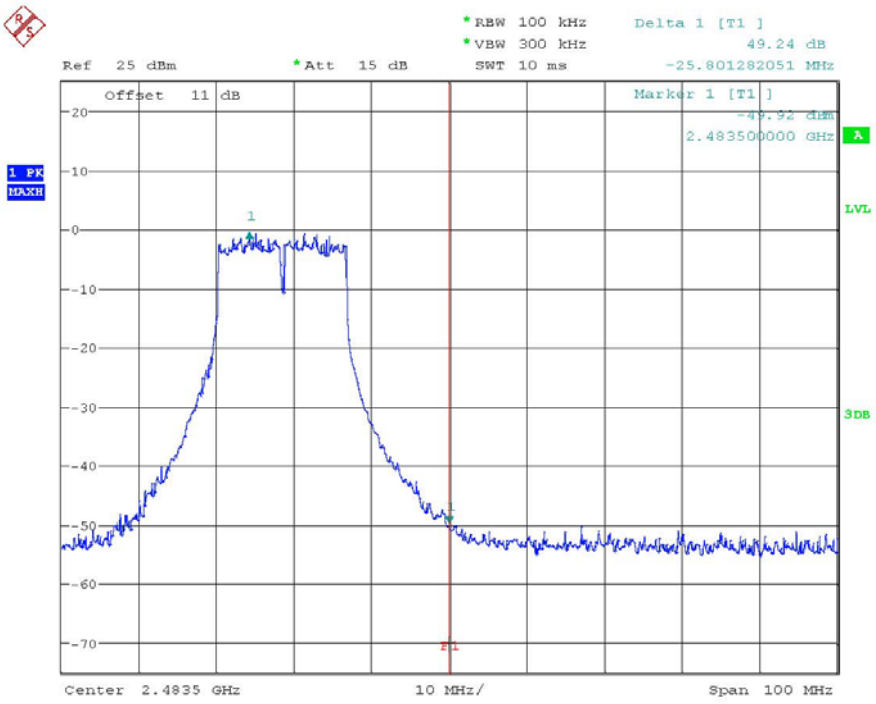

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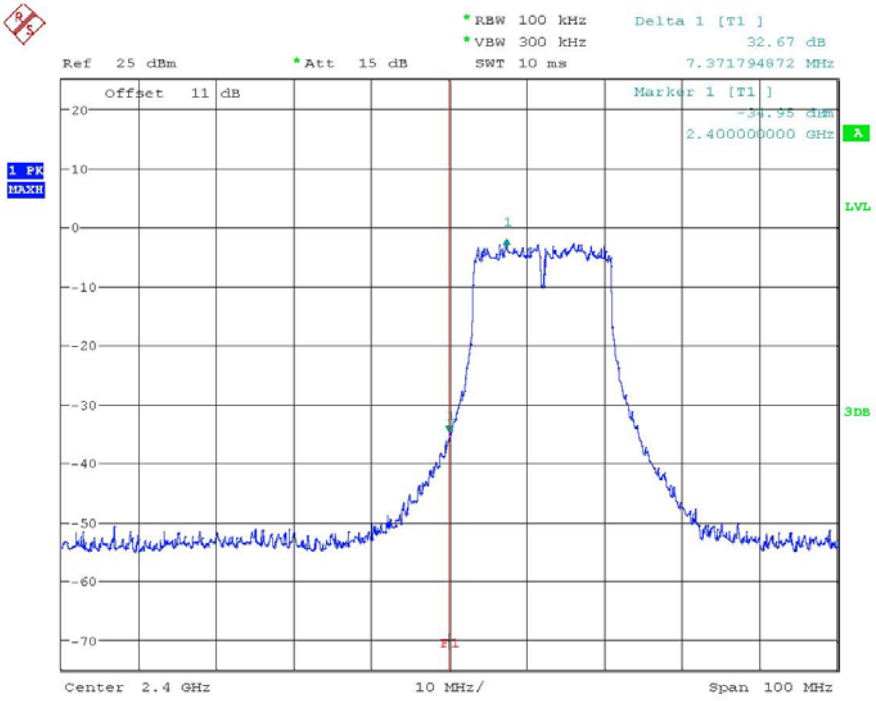
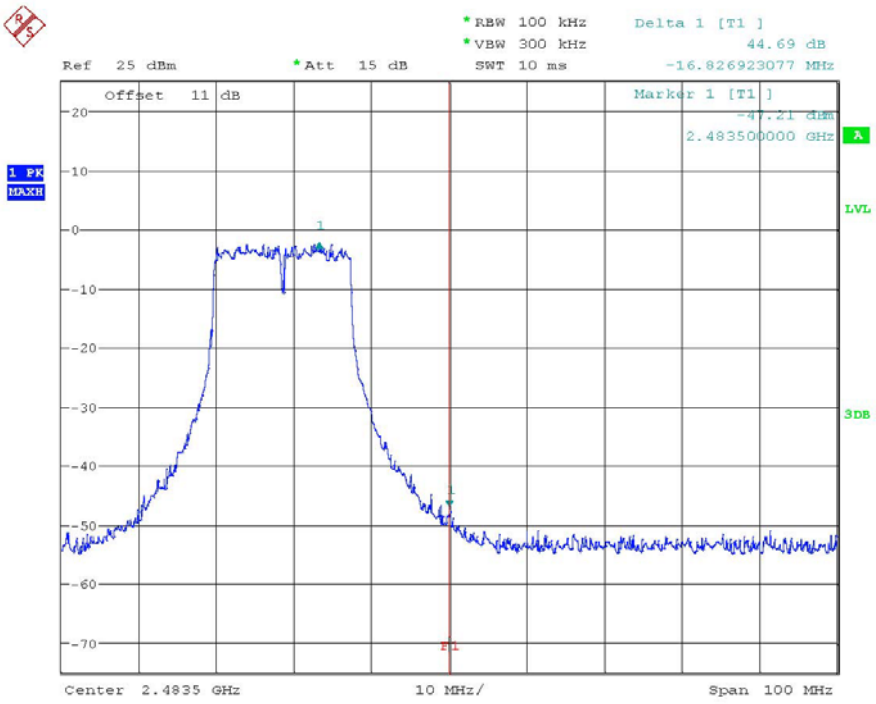


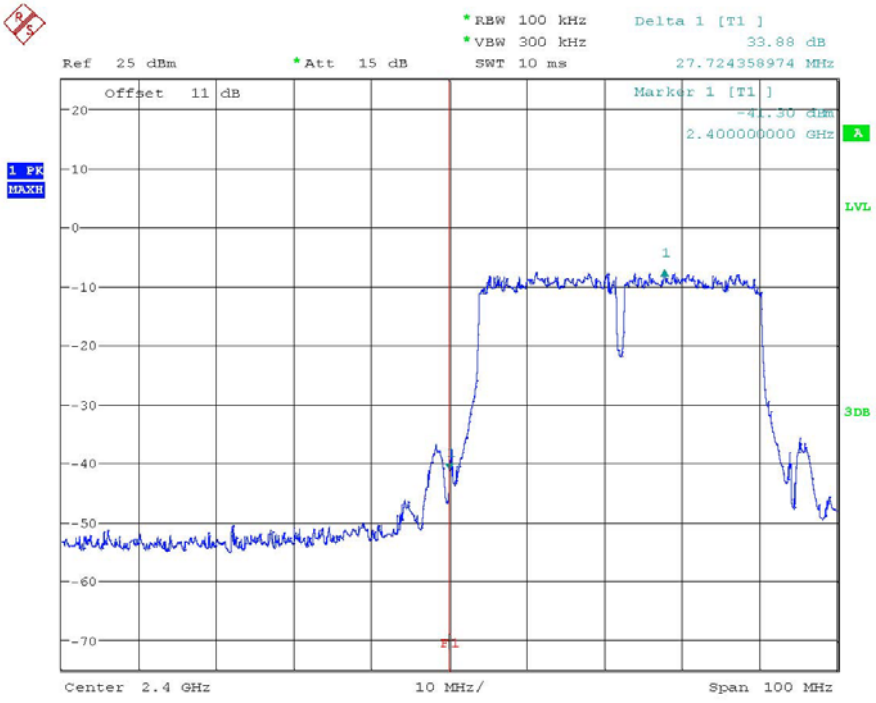
BANDEDGE 802.11N 20MHZ CH01

Date: 27.DEC.2013 15:47:15



BANDEDGE 802.11N 20MH2 CH11

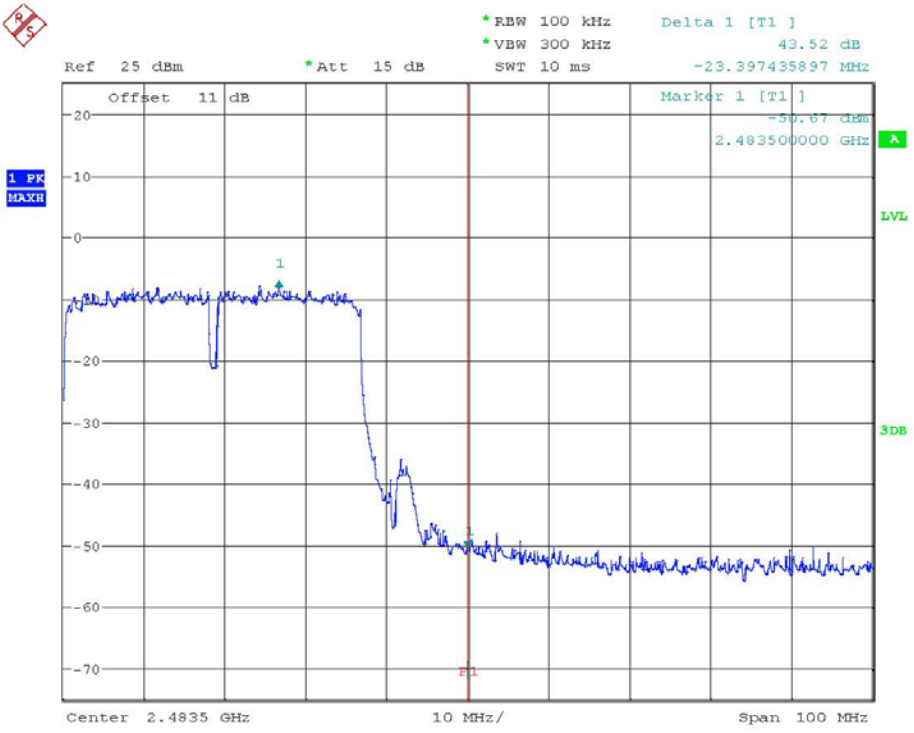
Date: 27.DEC.2013 15:50:31



BANDEDGE 802.11N 40MH2 CH01

Date: 27.DEC.2013 15:51:12

Registration number: W6D21312-13740-C-1
FCC ID: BBQ-YW40



BANDEDGE 802.11N 40MHZ CH07
Date: 27.DEC.2013 15:52:56

Limit:

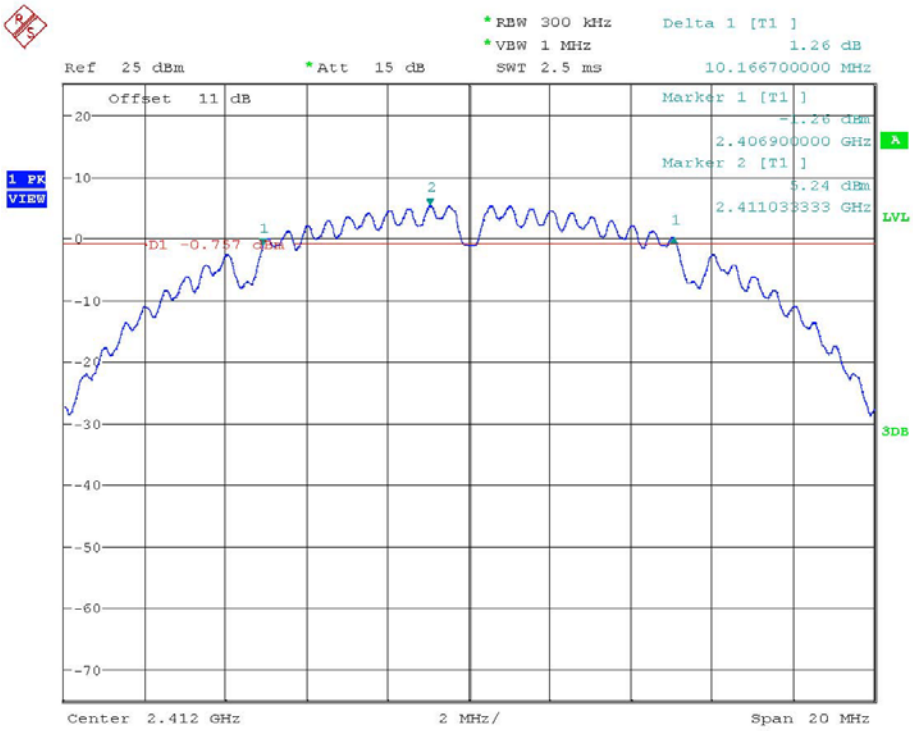
Frequency Range / MHz	Limit
902 –928 2400 – 2483.5 5725 - 5850	- 20 dB

Test equipment used: ETSTW-RE 055, ETSTW-RE 050

3.7 Minimum 6 dB Bandwidth

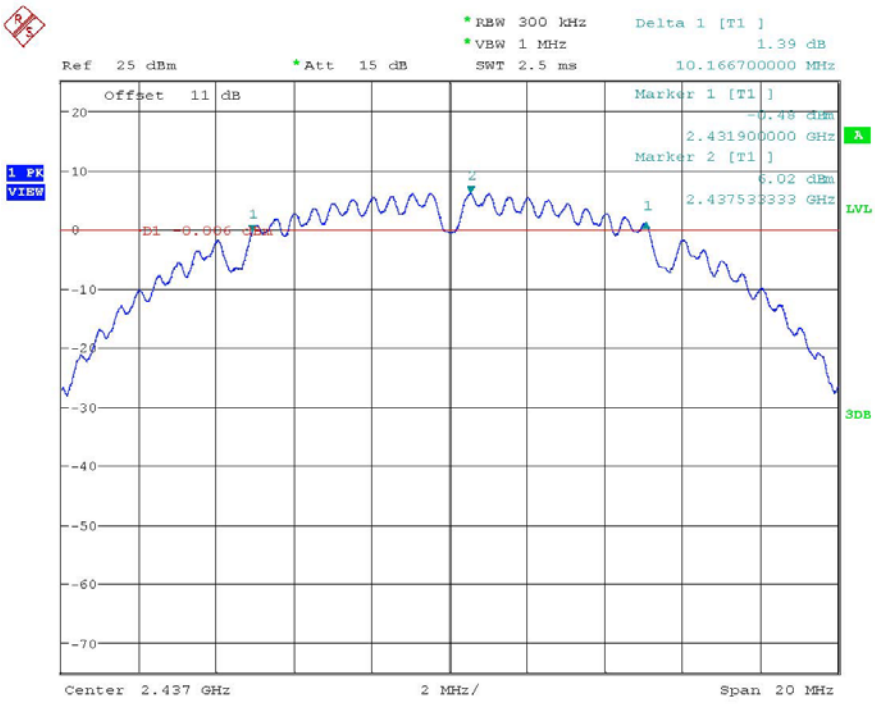
The analyzer ResBW was set to 100 kHz. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A PEAK reading was taken, two markers were set 6 dB below the maximum level on the right and the left side of the emission.
The 6 dB bandwidth is the frequency difference between the two markers.

Port A

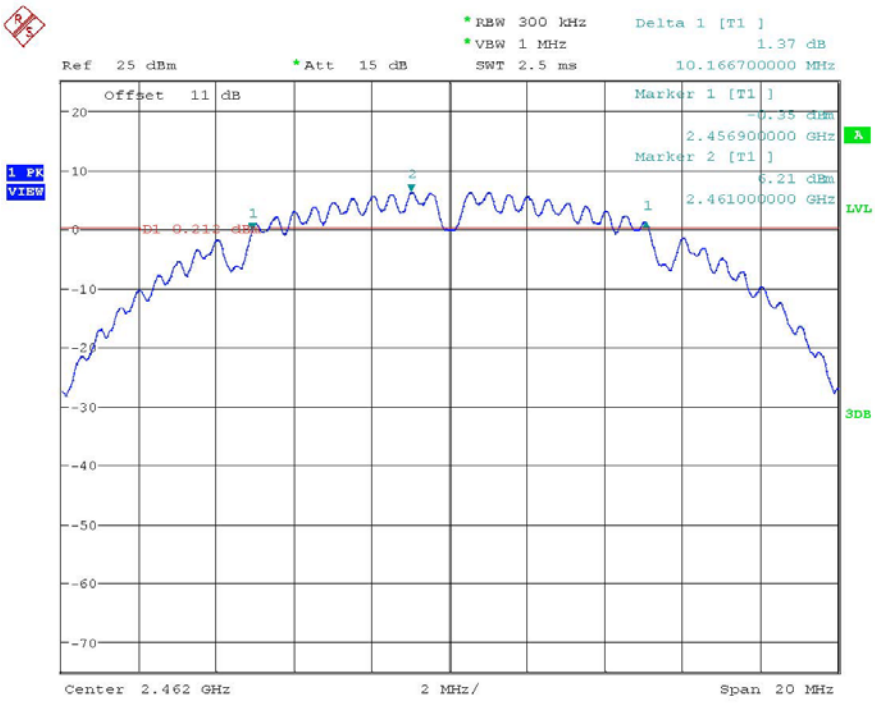


6DB BANDWIDTH 802.11B CH01
Date: 27.DEC.2013 15:16:41

Registration number: W6D21312-13740-C-1
FCC ID: BBQ-YW40



6DB BANDWIDTH 802.11B CH06
Date: 27.DEC.2013 15:17:57



6DB BANDWIDTH 802.11B CH11
Date: 27.DEC.2013 15:19:11