



HCT CO., LTD.

Product Compliance Division

TEL : +82 31 639 8518 FAX : +82 31 639 8525

CERTIFICATE OF COMPLIANCE

FCC PART 15.247 Certification

Applicant Name:
TriGem Computer, Inc.

Address:
1125-1 Shingil-Dong, Danwon-Gu, Ansan-City, Kyunggi-Do,
425-839, Korea

Date of Issue:
September 29, 2009

Test Site/Location:
HCT.CO., LTD., San 136-1 Ami-ri, Bubal-eup, Icheon-si,
Kyungki-do, Korea

Test Report No.: HCTR0909FR10

HCT FRN: 0005866421

IC Recognition No.: 5944A-1

FCC ID: C8VPT1400

APPLICANT: TriGem Computer, Inc.

FCC Rule Part(s): Part 15.247

Application Type: Certification

EUT Type: NoteBook PC

Model(s): Averatec PT1400

Frequency Range IEEE 802.11b/g mode : 2412 ~ 2462 MHz

IEEE 802.11n Standard-20MHz 2412 ~ 2462 MHz

IEEE 802.11n Wide-40 MHz : 2422 ~ 2452 MHz

IEEE 802.11b mode : 16.18 dBm

IEEE 802.11g mode : 20.85 dBm

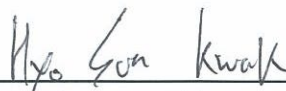
Max. RF Output Power: Draft 802.11n Standard-20 MHz Channel mode : 21.02 dBm

Draft 802.11n Wide-40 MHz Channel mode : 20.82 dBm

Engineering Statement:

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.

HCT.CO., LTD. Certifies that no party to this application has been denied FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998, 21 U.S.C. 862



Report prepared by

: Hyo Sun Kwak

Test engineer of RF Team



Approved by

: Chang Suk Choi

Manager of RF Team

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1. GENERAL INFORMATION

Applicant: TriGem Computer, Inc.
Address: 1125-1 Shingil-Dong, Danwon-Gu, Ansan-City, Kyunggi-Do, 425-839, Korea
FCC ID: C8VPT1400
EUT: NoteBook PC
Model: Averatec PT1400
Date of Test: August 14, 2009 ~ September 13, 2009
Contact person: Name: Scott Yoo
Phone #: +82-31-489-3814
Fax #: +82-31-489-3095

2. EUT DESCRIPTION

Product	NoteBook PC
Model Name	Averatec PT1400
Power Supply	Power form host PC.
Frequency Range	IEEE 802.11b/g mode : 2412 ~ 2462 MHz IEEE 802.11n Standard-20MHz : 2412 ~ 2462 MHz IEEE 802.11n Wide-40 MHz : 2422 ~ 2452 MHz
Max. RF Output Power:	IEEE 802.11b mode : 16.18 dBm IEEE 802.11g mode : 20.85 dBm Draft 802.11n Standard-20 MHz Channel mode : 21.02 dBm Draft 802.11n Wide-40 MHz Channel mode : 20.82 dBm
Modulation Technique	IEEE 802.11b mode : DSSS (1, 2, 5.5 and 11 Mbps) IEEE 802.11g mode: OFDM (6, 9, 12, 18, 24, 36, 48 and 54 Mbps) Draft 802.11n Standard-20 MHz Channel mode : OFDM (6.5, 7.2, 13, 14.4, 19.5, 21.7, 26, 28.9, 39, 43.3, 52, 57.8, 58.5, 65.0, 72.2 Mbps) Draft 802.11n Wide-40 MHz Channel mode : OFDM (13.5, 15.0, 27.0, 30.0, 40.5, 45.0 54.0 60.0, 81.0, 90.0, 18.0, 120.0, 121.5, 135.0, 150.0 Mbps)
Number of Channels	IEEE 802.11b/g mode : 11 Channels draft 802.11n Standard-20 MHz Channel mode : 11 Channels draft 802.11n Wide-40 MHz Channel mode : 7 Channels
Antenna Specification	Manufacturer: Trigem Computer Inc Antenna type: PCB Antenna Peak Gain : 1.93 dBi



3. TEST METHODOLOGY

The measurement procedure 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 9kHz to 40GHz(ANSI C63.4-2003)

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2 EUT EXERCISE

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4. (Version :2003) Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes according to the requirements in Section 13.1.4.1 of ANSI C63.4. (Version: 2003)

3.4 DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

Channel low, mid and high with lower data rate (worst case) is chosen for full testing.

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4. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipments, which is traceable to recognized national standards.

5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

The open area test site and conducted measurement facility used to collect the radiated data are located at the 254-1, Maekok-Ri, Hobup-Myun, Ichon-Si, Kyoungki-Do, 467-701, KOREA. The site is constructed in conformance with the requirements of ANSI C63.4. (Version :2003) and CISPR Publication 22. Detailed description of test facility was submitted to the Commission and accepted dated June 10, 2009 (Registration Number: 90661)

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements. Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

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6. ANTENNA REQUIREMENTS

According to FCC 47 CFR §15.203:

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.”

* The antennas of this E.U.T are permanently attached.

*The E.U.T Complies with the requirement of §15.203

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7. TEST RESULT

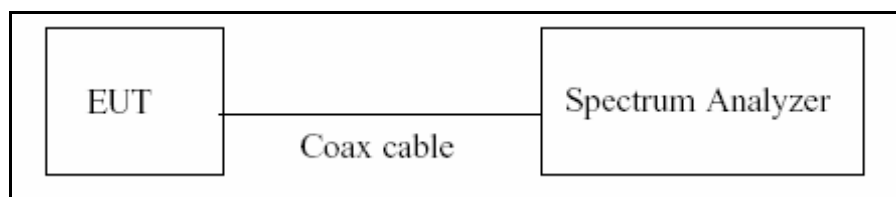
7.1 6dB Bandwidth Measurement

Test Requirements and limit, §15.247(d)

The bandwidth at 6dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the receive antenna while the EUT is operating in transmission mode at the appropriate frequencies.

The minimum permissible 6dB bandwidth is 500 kHz.

■ TEST CONFIGURATION



■ TEST PROCEDURE

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to

1. RBW: 100 kHz
2. VBW: 100 kHz
3. SPAN: 40 MHz
4. Detector Mode = Peak



■ TEST RESULTS

Conducted 6dB Bandwidth Measurements for 802.11b mode

802.11b Mode Frequency [MHz]	Channel No.	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
2412	1	12.16	0.500	Pass
2437	6	12.08	0.500	Pass
2462	11	12.08	0.500	Pass

Conducted 6dB Bandwidth Measurements for 802.11g mode

802.11g Mode Frequency [MHz]	Channel No.	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
2412	1	16.72	0.500	Pass
2437	6	16.64	0.500	Pass
2462	11	16.72	0.500	Pass

Conducted 6dB Bandwidth Measurements for 802.11n Standard-20 MHz Channel mode

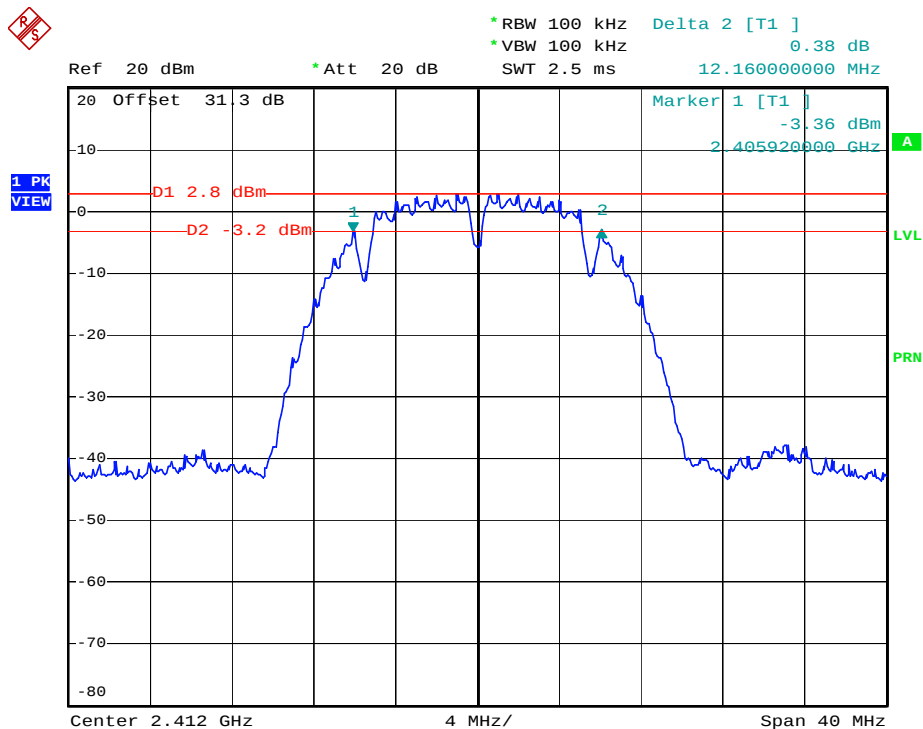
802.11g Mode Frequency [MHz]	Channel No.	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
2412	1	17.84	0.500	Pass
2437	6	17.84	0.500	Pass
2462	11	17.84	0.500	Pass

Conducted 6dB Bandwidth Measurements for 802.11n Wide-40 MHz Channel mode

802.11g Mode Frequency [MHz]	Channel No.	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
2422	3	36.48	0.500	Pass
2437	6	36.60	0.500	Pass
2452	9	36.48	0.500	Pass

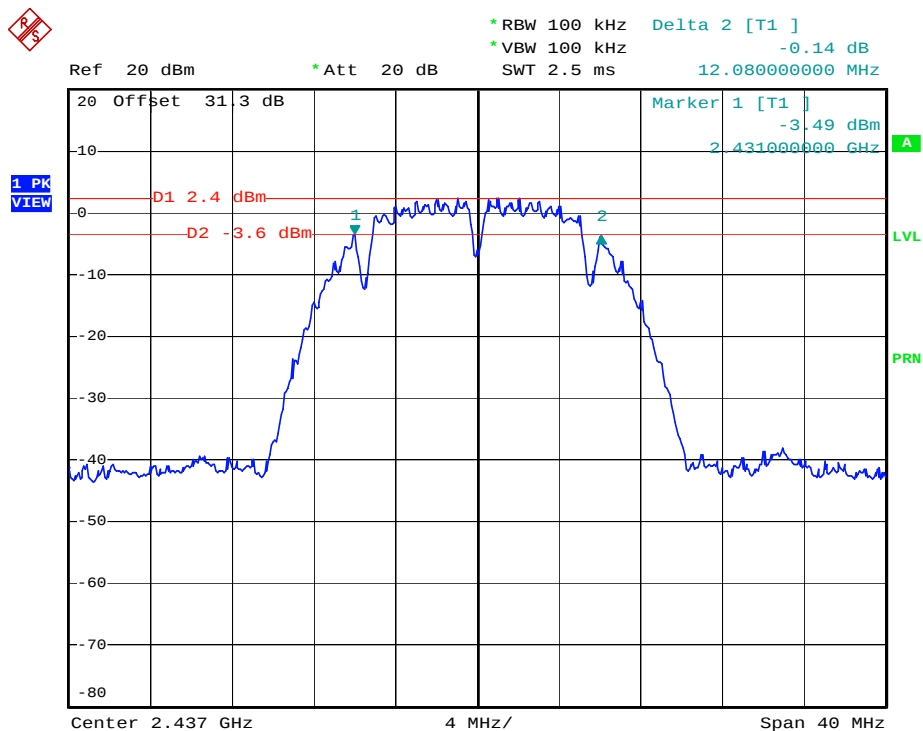
RESULT PLOTS

6dB Bandwidth plot (802.11b-CH 1)



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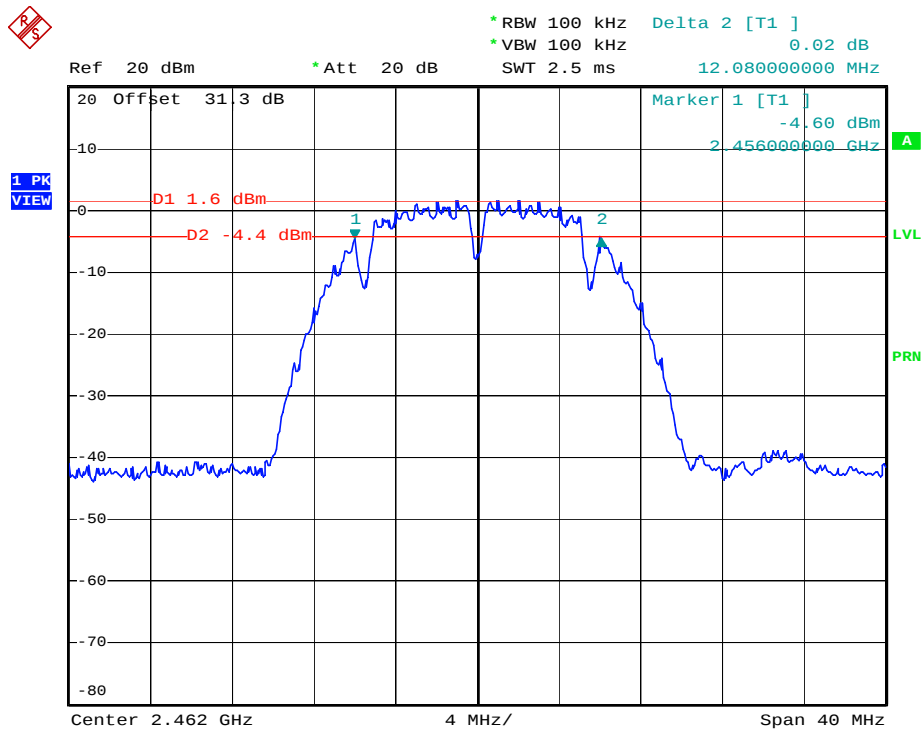
6dB Bandwidth plot (802.11b-CH 6)



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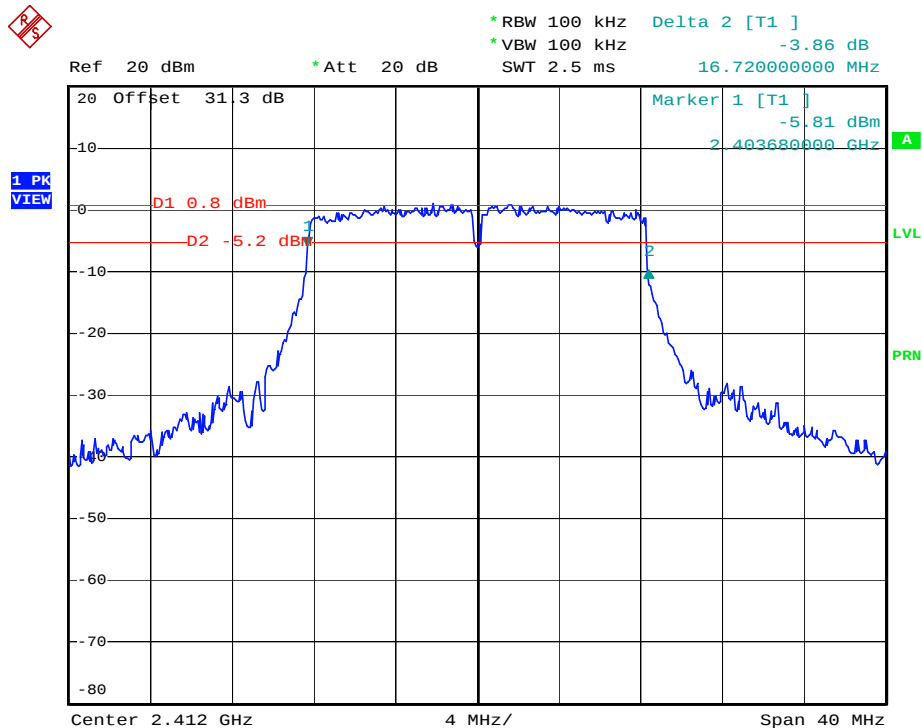


6dB Bandwidth plot (802.11b-CH 11)



Date: 13.SEP.2009 09:48:30

6dB Bandwidth plot (802.11g-CH 1)

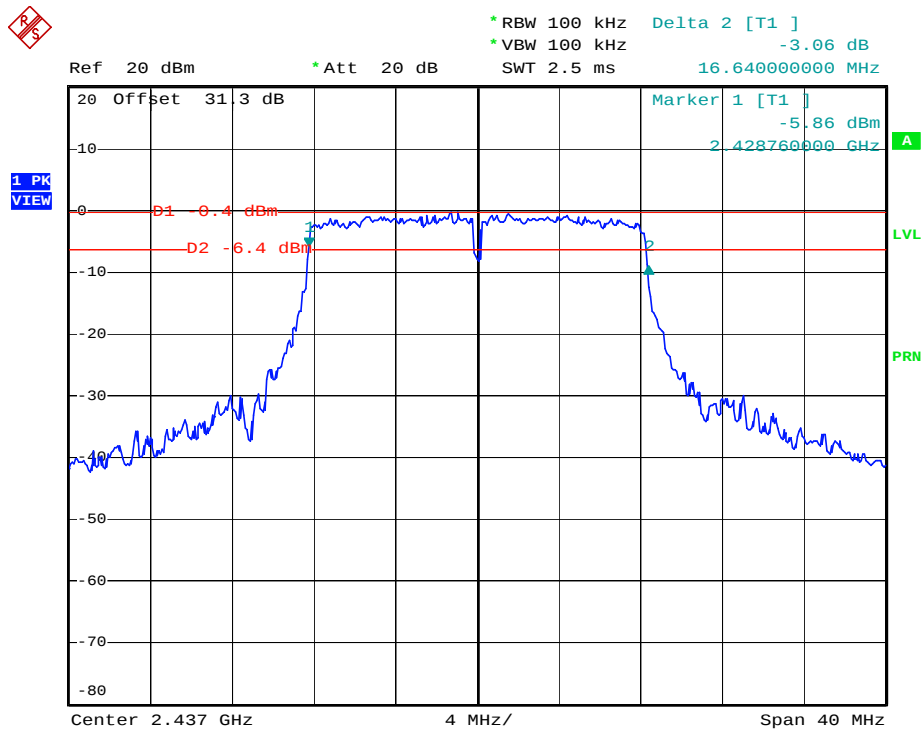


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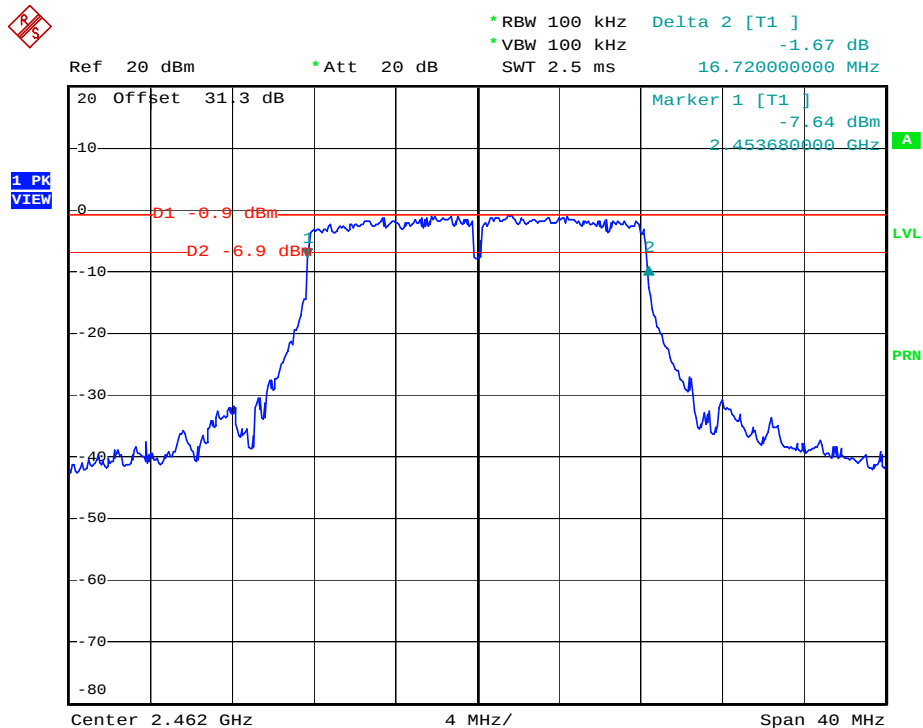


6dB Bandwidth plot (802.11g-CH 6)



Date: 10.SEP.2009 17:57:56

6dB Bandwidth plot (802.11g-CH 11)

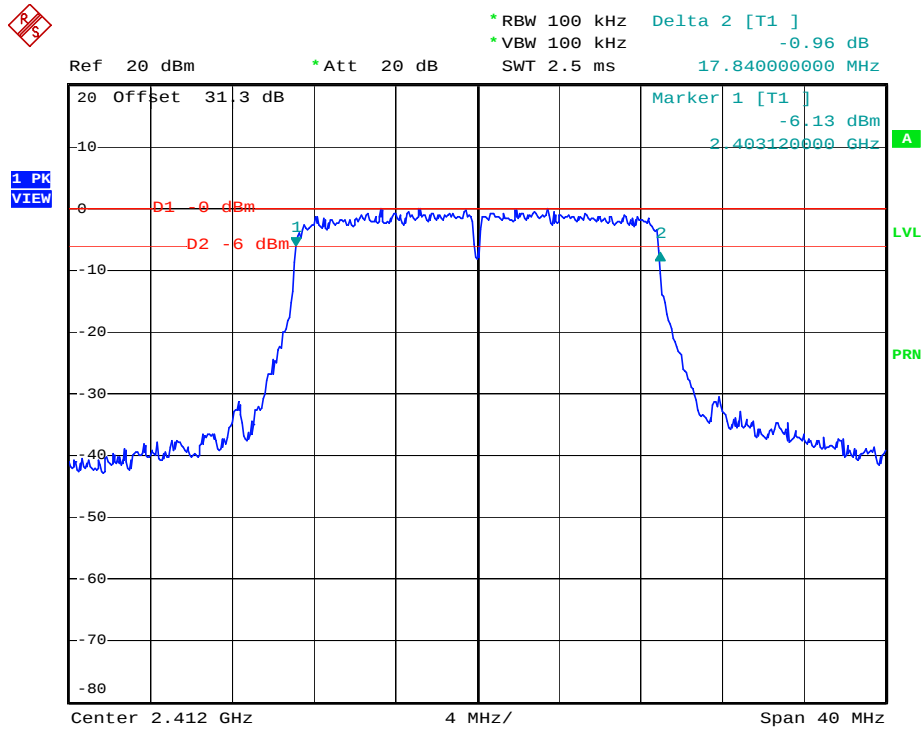


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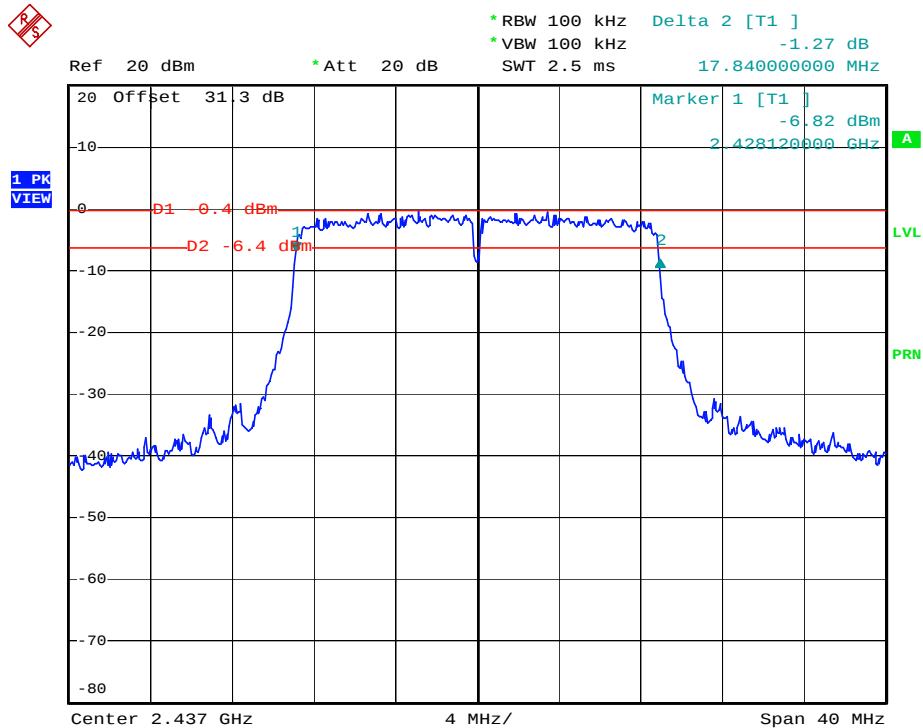


6dB Bandwidth plot (802.11n Standard-20 MHz Channel mode-CH 1)



Date: 10.SEP.2009 18:01:16

6dB Bandwidth plot (802.11n Standard-20 MHz Channel mode-CH 6)

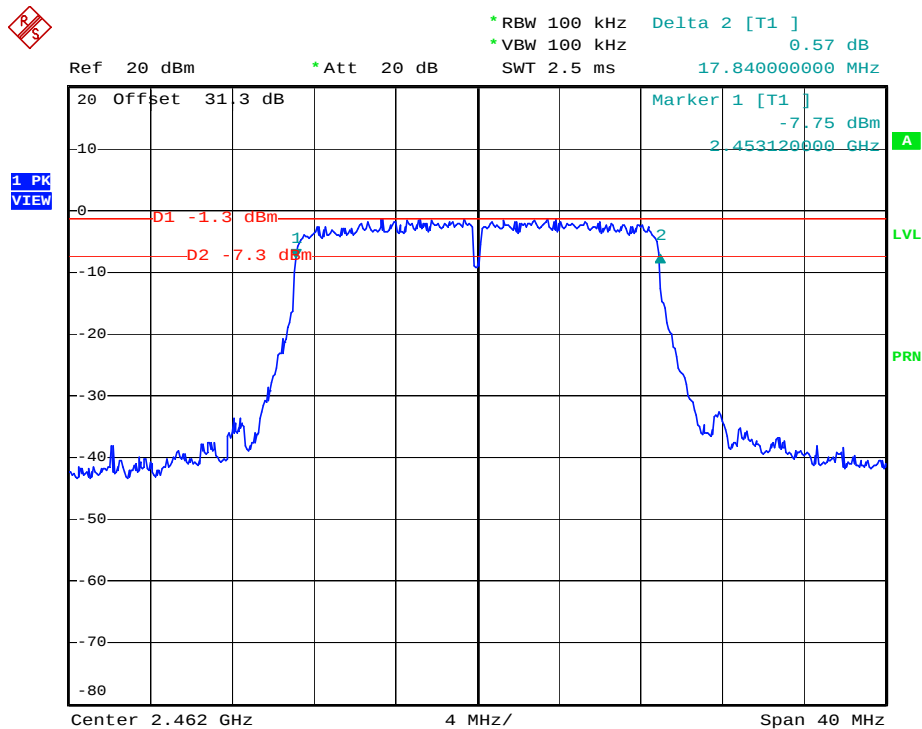


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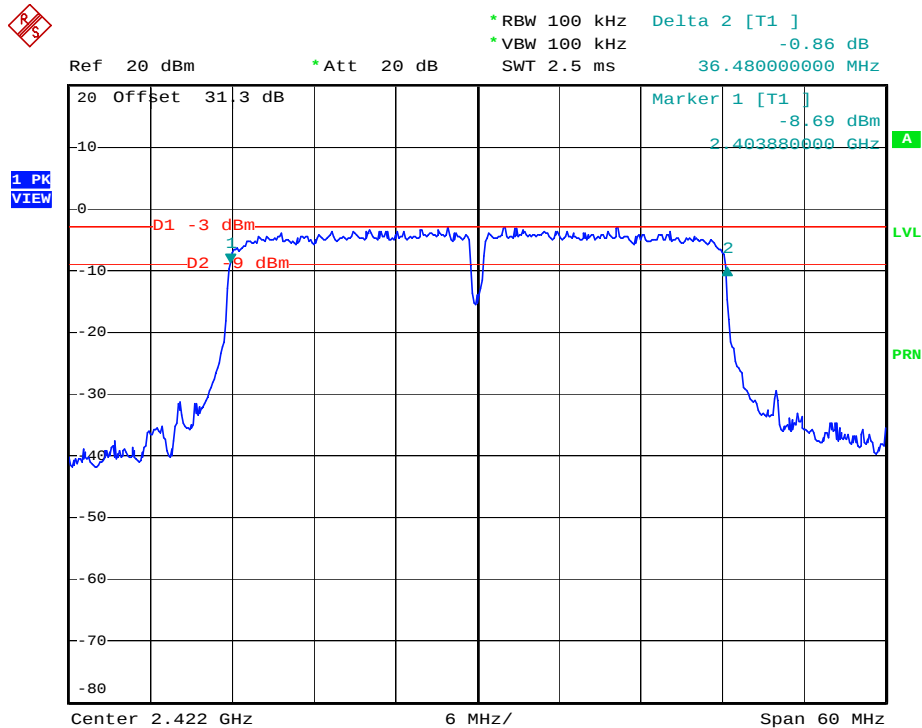


6dB Bandwidth plot (802.11n Standard-20 MHz Channel mode-CH 11)



Date: 10.SEP.2009 18:03:52

6dB Bandwidth plot (802.11n Wide-40 MHz Channel mode-CH 1)

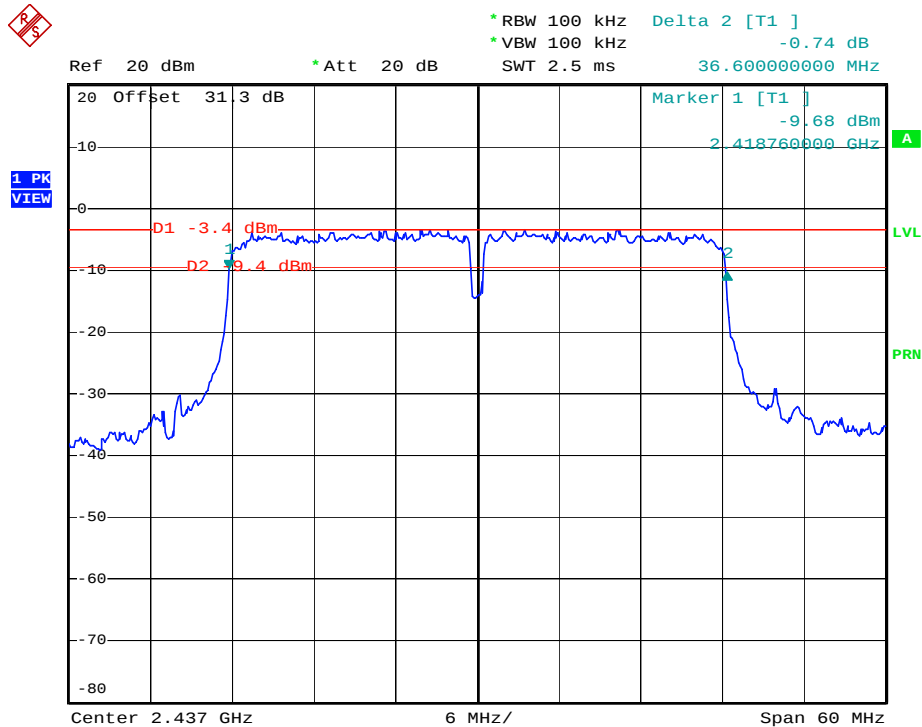


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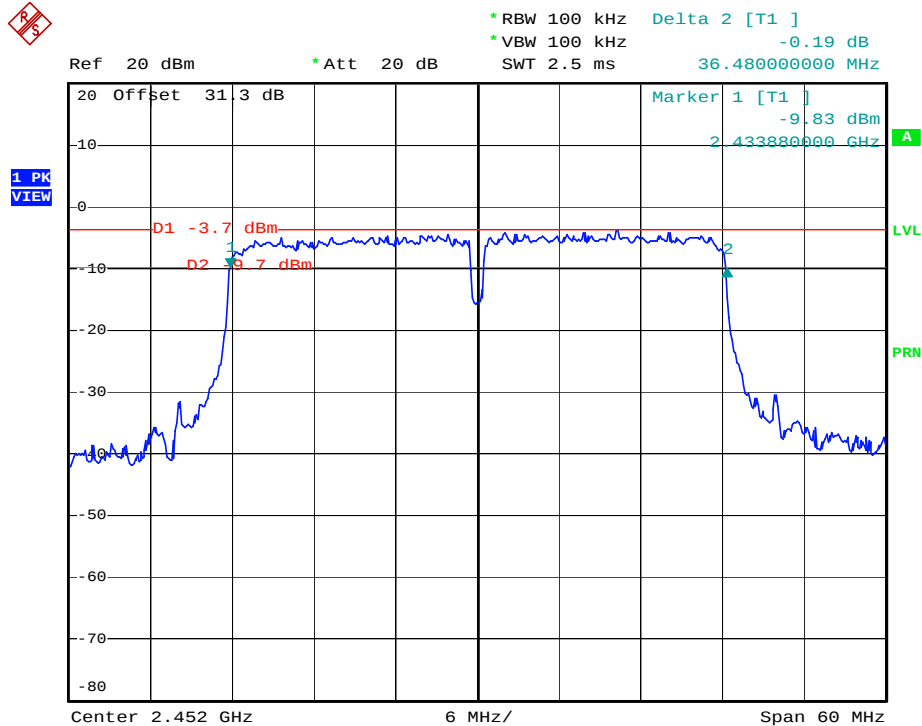


6dB Bandwidth plot (802.11n Wide-40 MHz Channel mode-CH 6)



Date: 10.SEP.2009 20:20:43

6dB Bandwidth plot (802.11n Wide-40 MHz Channel mode-CH 11)



Date: 10.SEP.2009 20:21:58

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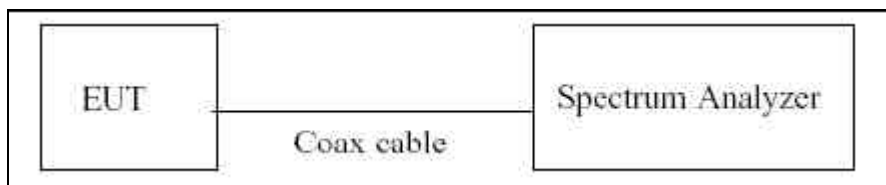
7.2 Output Power Measurement (802.11b/g)

Test Requirements and limit, §15.247(d)

A transmitter antenna terminal of EUT is connected to the input of a Spectrum Analyzer. Measurement is made while the EUT is operating in transmission mode at the appropriate frequencies.

The maximum permissible conducted output power is 1 Watt.

■ TEST CONFIGURATION



■ TEST PROCEDURE

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to

1. RBW: 1 MHz
2. VBW: 1 MHz
3. SPAN: 40 MHz
4. Detector Mode = Peak



■ TEST RESULTS

Conducted Output Power Measurements (802.11b Mode)

Frequency [MHz]	Channel No.	Data Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
2412	1	1 Mbps	16.18	Pass
2437	6	1 Mbps	15.94	Pass
2462	11	1 Mbps	15.36	Pass

Conducted Output Power Measurements (802.11g Mode)

Frequency [MHz]	Channel No.	Data Rate (Mbps)	Measured Power(dBm)	P Limit (dBm)
2412	1	6 Mbps	20.85	Pass
2437	6	6 Mbps	20.43	Pass
2462	11	6 Mbps	19.85	Pass

Conducted Output Power Measurements (802.11n Standard-20 MHz Channel mode)

Frequency [MHz]	Channel No.	Data Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
2412	1	6.5 Mbps	21.02	Pass
2437	6	6.5 Mbps	20.58	Pass
2462	11	6.5 Mbps	19.99	Pass

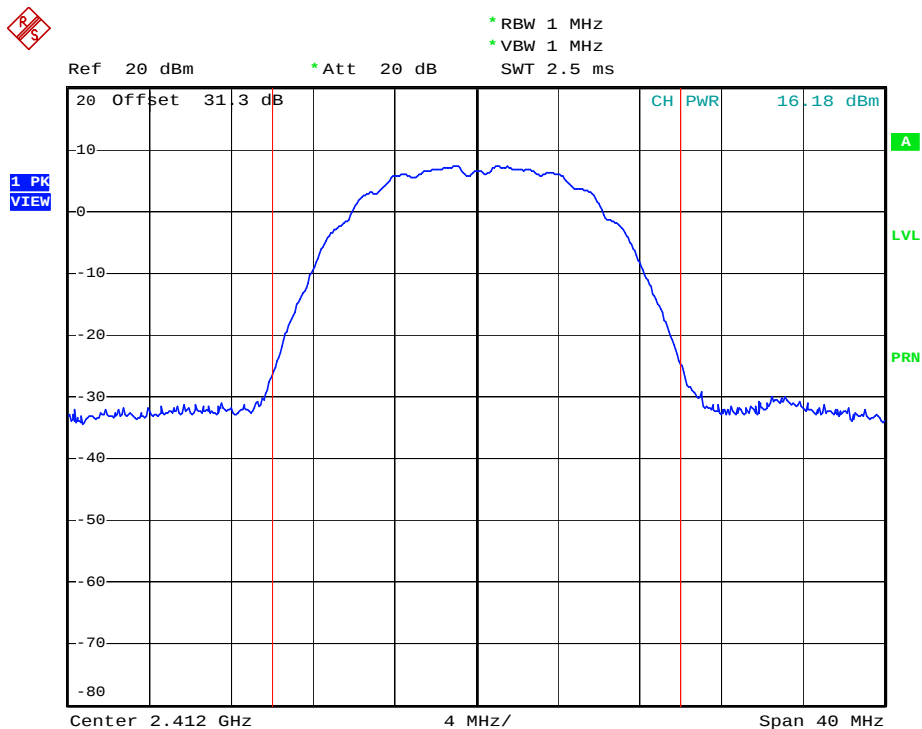
Conducted Output Power Measurements (802.11n Wide-40 MHz Channel mode)

Frequency [MHz]	Channel No.	Data Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
2422	3	13.5 Mbps	20.82	Pass
2437	6	13.5 Mbps	20.70	Pass
2452	9	13.5 Mbps	20.12	Pass



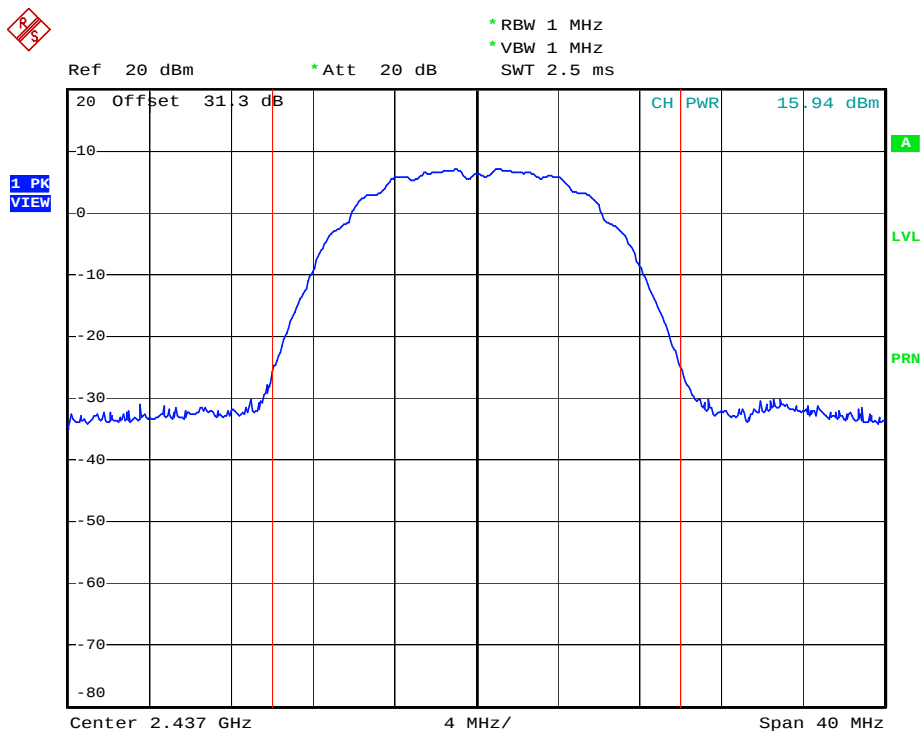
RESULT PLOTS

Conducted Output Power (802.11b-CH 1) 1Mbps



Date: 13.SEP.2009 09:52:19

Conducted Output Power (802.11b-CH 6) 1Mbps

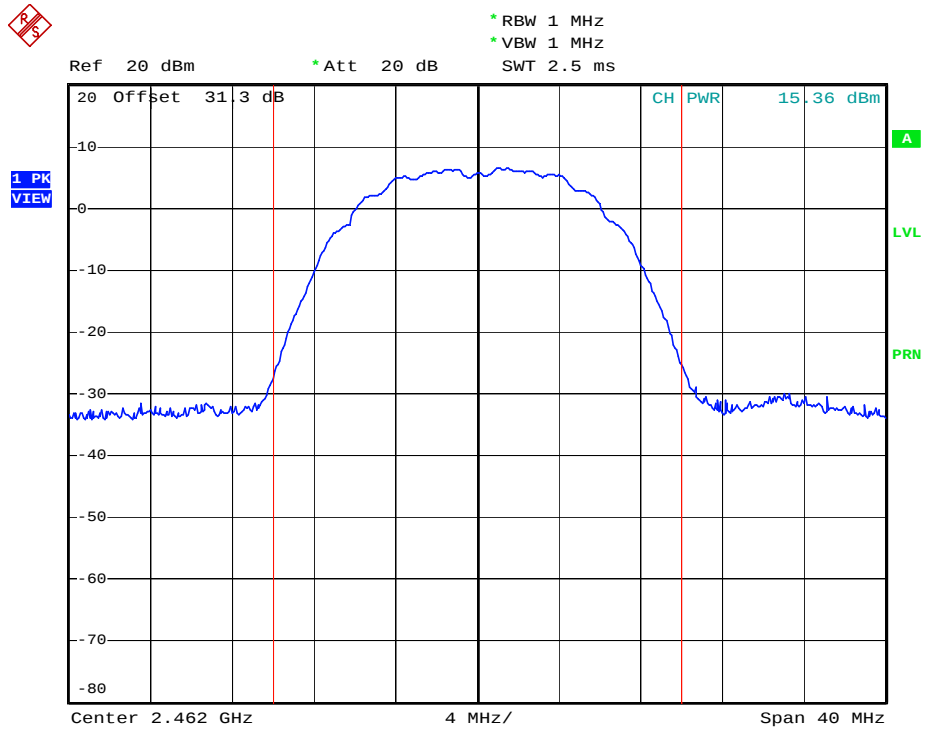


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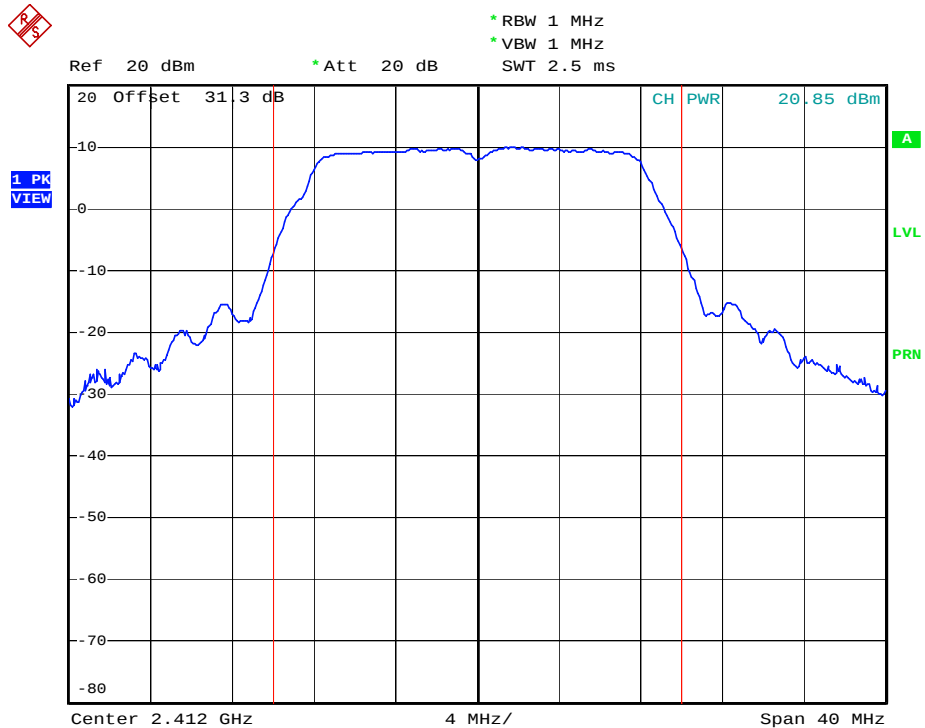


Conducted Output Power (802.11b-CH 11) 1Mbps



Date: 13.SEP.2009 09:53:48

Conducted Output Power (802.11g-CH 1) 6Mbps

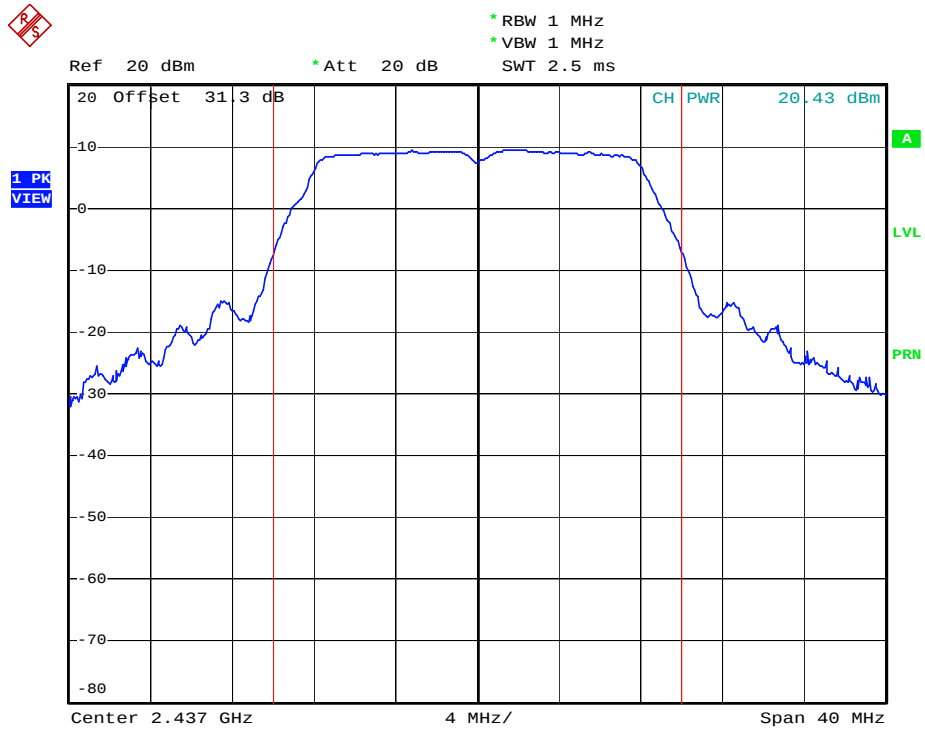


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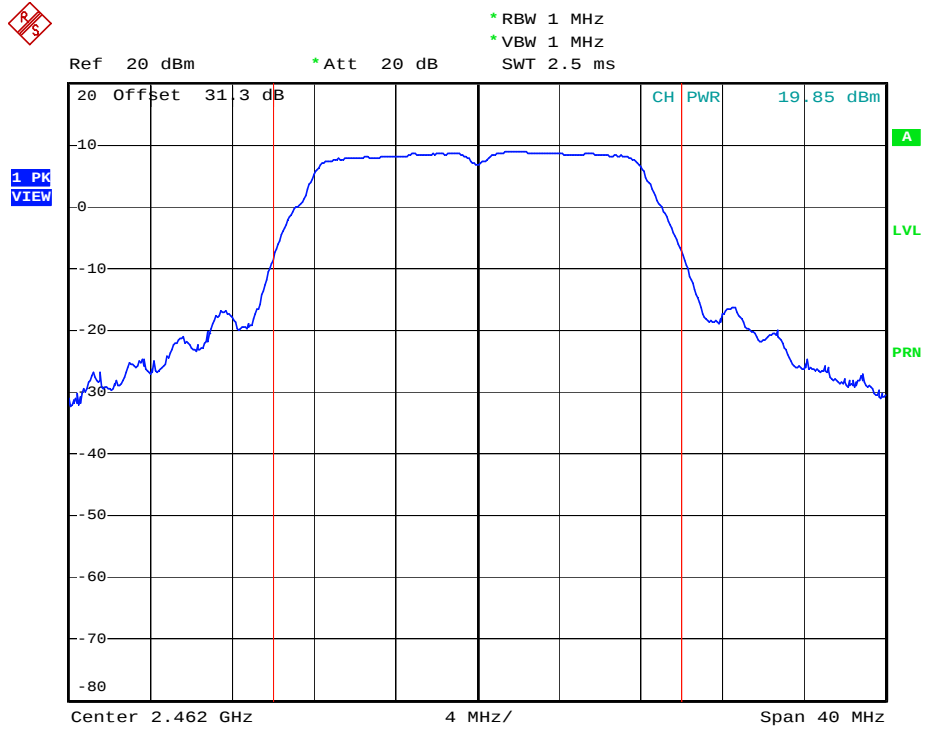


Conducted Output Power (802.11g-CH 6) 6Mbps



Date: 13.SEP.2009 09:56:05

Conducted Output Power (802.11g-CH 11) 6Mbps

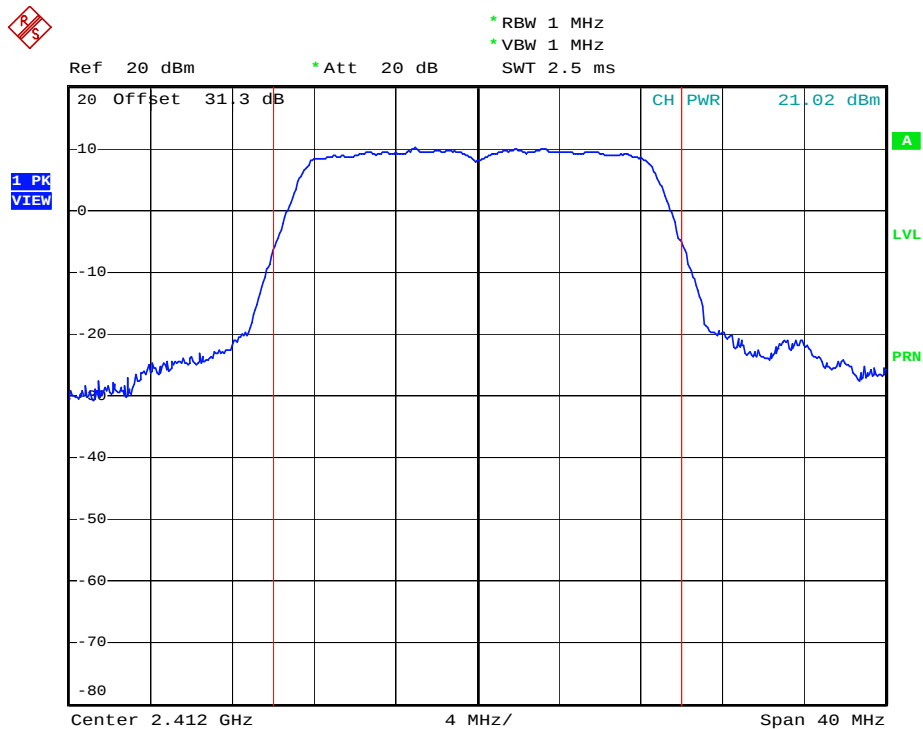


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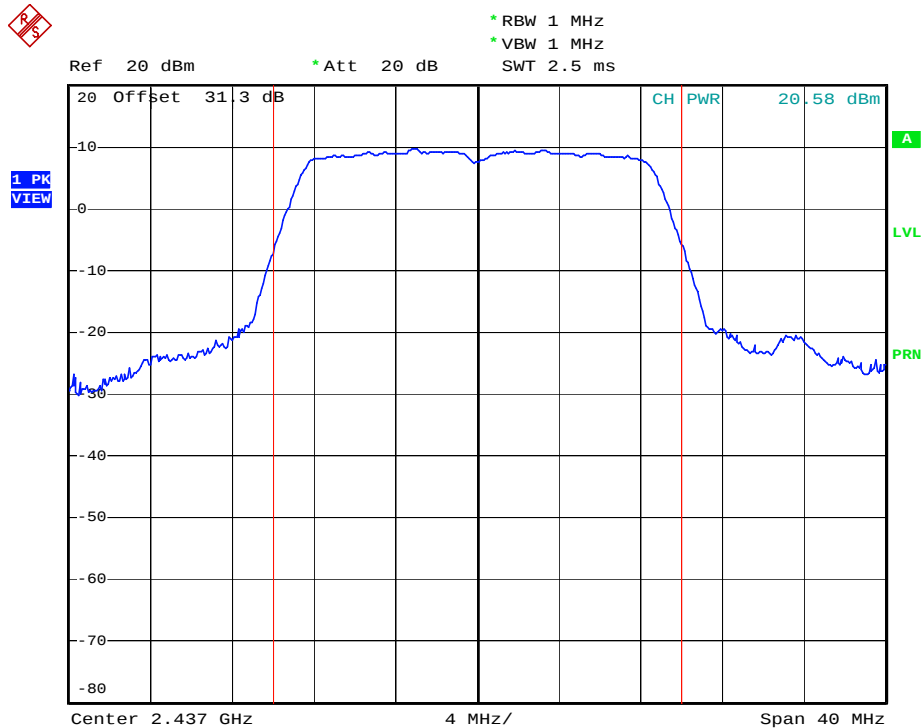


Conducted Output Power (802.11n Standard-20 MHz Channel mode-CH 1) 6.5Mbps



Date: 13.SEP.2009 10:00:01

Conducted Output Power (802.11n Standard-20 MHz Channel mode-CH 6)6.5Mbps

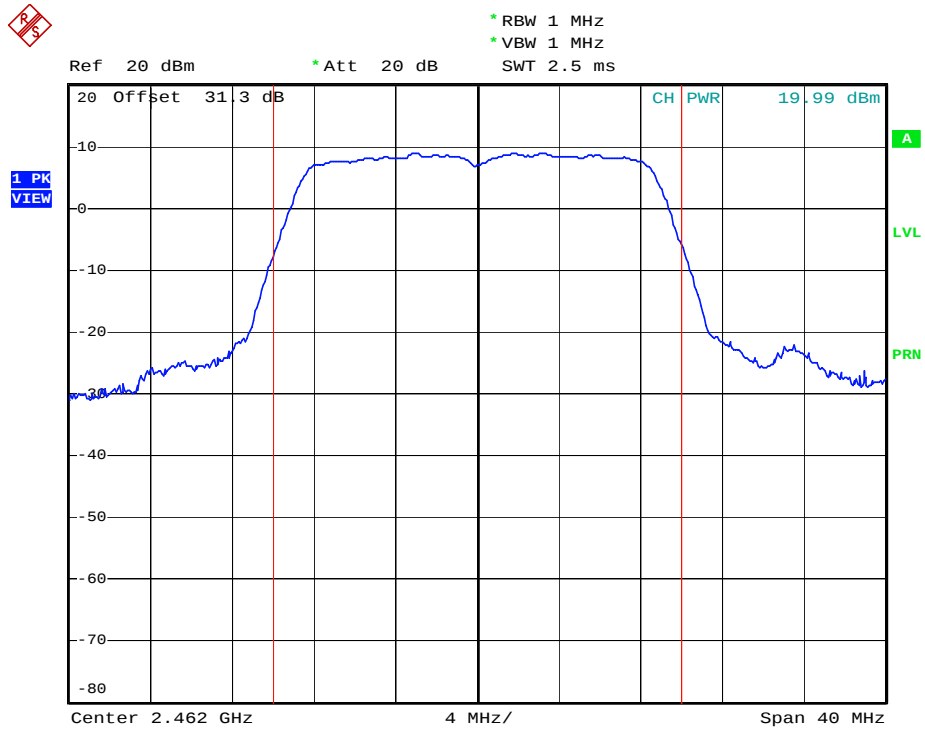


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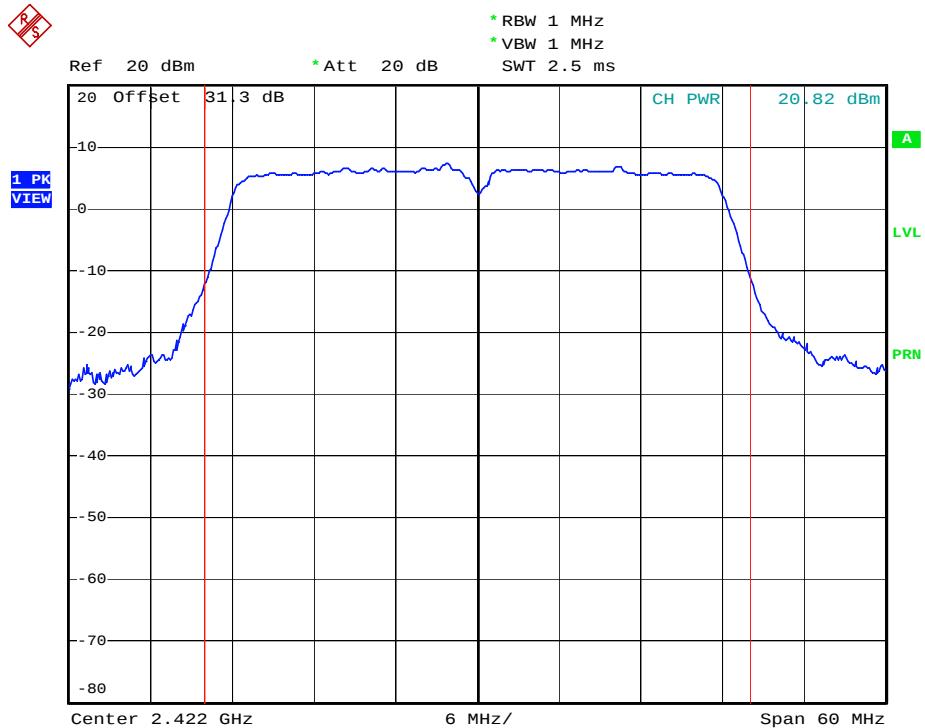


Conducted Output Power (802.11n Standard-20 MHz Channel mode-CH 11) 6.5Mbps



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Conducted Output Power (802.11n Wide-40 MHz Channel mode-CH 1) 13.5Mbps

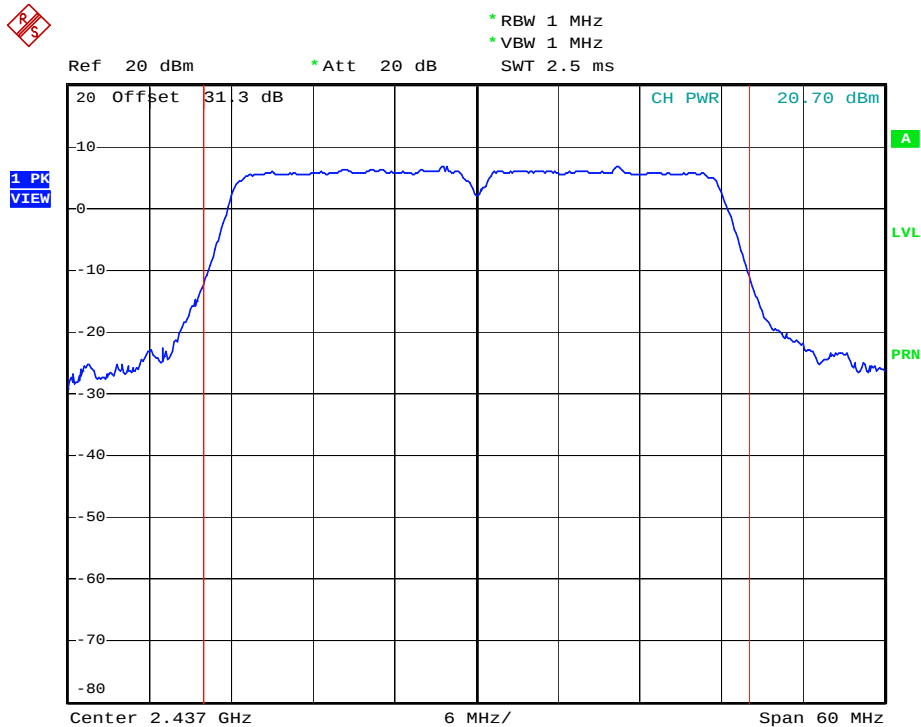


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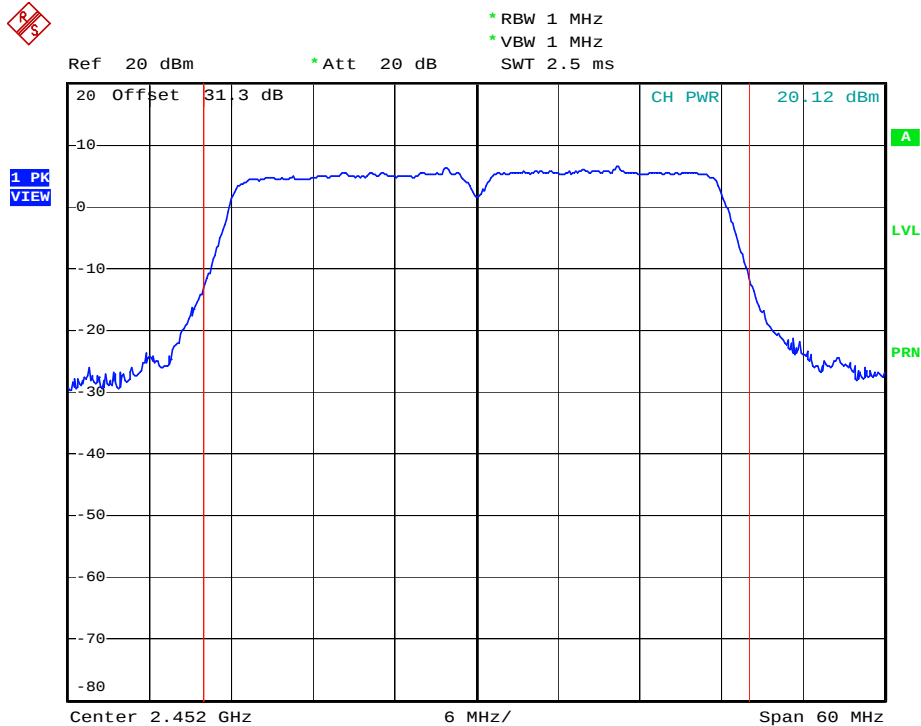


Conducted Output Power (802.11n Wide-40 MHz Channel mode-CH 6) 13.5Mbps



Date: 13.SEP.2009 10:15:49

Conducted Output Power (802.11n Wide-40 MHz Channel mode-CH 11) 13.5Mbps



Date: 13.SEP.2009 10:16:34

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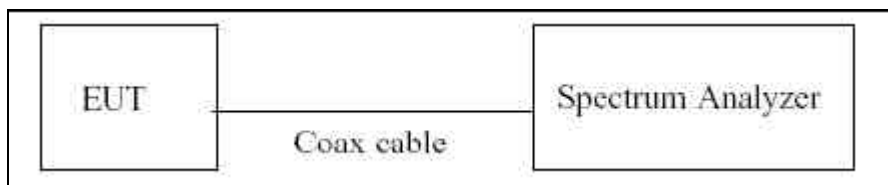
7.3 Power Spectral Density (802.11b/g)

Test Requirements and limit, §15.247(d)

The peak power density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating in transmission mode at the appropriate frequencies.

Minimum Standard – The transmitter power density average over 1-second interval shall not be greater than 8dBm in any 3kHz BW.

■ TEST CONFIGURATION



■ TEST PROCEDURE

The spectrum analyzer is set to :

1. Span = 300 kHz
2. RBW = 3 kHz (7dB/div)
3. VBW = 3 kHz
4. Sweep = 100 sec
5. Detector Mode = Peak



■ TEST RESULTS

Conducted Power Density Measurements (802.11b Mode)

Frequency [MHz]	Channel No.	Data Rate (Mbps)	Power Density (dBm)	Pass/Fail
2412	1	1 Mbps	-19.96	Pass
2437	6	1 Mbps	-20.03	Pass
2462	11	1 Mbps	-21.18	Pass

Conducted Power Density Measurements (802.11g Mode)

Frequency [MHz]	Channel No.	Data Rate (Mbps)	Power Density (dBm)	Pass/Fail
2412	1	6 Mbps	-20.49	Pass
2437	6	6 Mbps	-20.53	Pass
2462	11	6 Mbps	-21.48	Pass

Conducted Power Density Measurements (802.11n Standard-20 MHz Channel mode)

Frequency [MHz]	Channel No.	Data Rate (Mbps)	Power Density (dBm)	Pass/Fail
2412	1	6.5 Mbps	-20.34	Pass
2437	6	6.5 Mbps	-20.46	Pass
2462	11	6.5 Mbps	-21.26	Pass

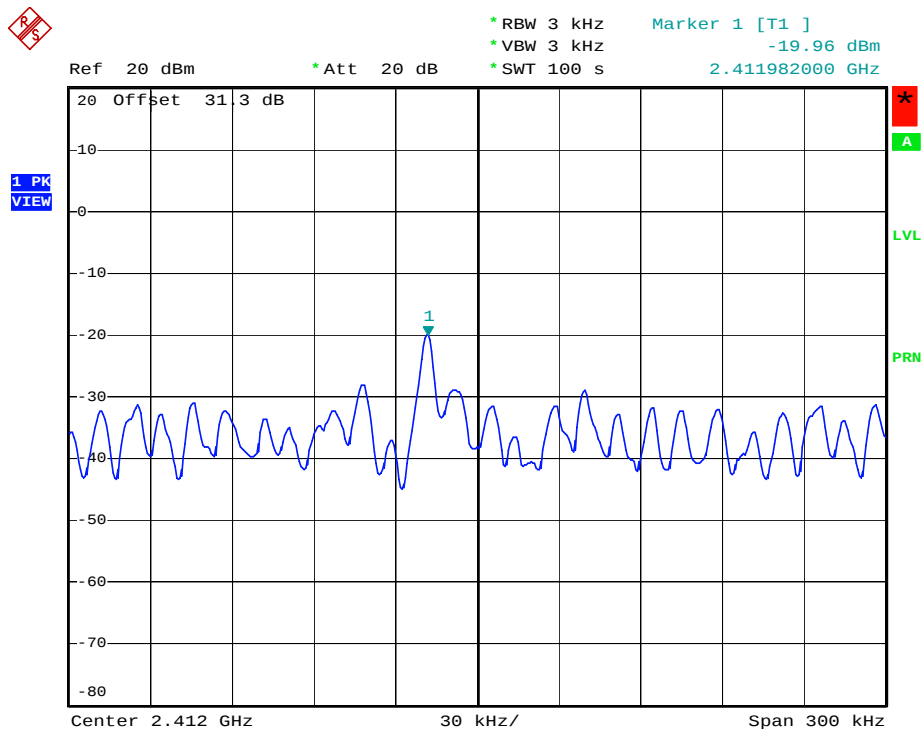
Conducted Power Density Measurements (802.11n Wide-40 MHz Channel mode)

Frequency [MHz]	Channel No.	Data Rate (Mbps)	Power Density (dBm)	Pass/Fail
2422	1	6.5 Mbps	-16.84	Pass
2437	6	6.5 Mbps	-17.00	Pass
2452	11	6.5 Mbps	-18.13	Pass



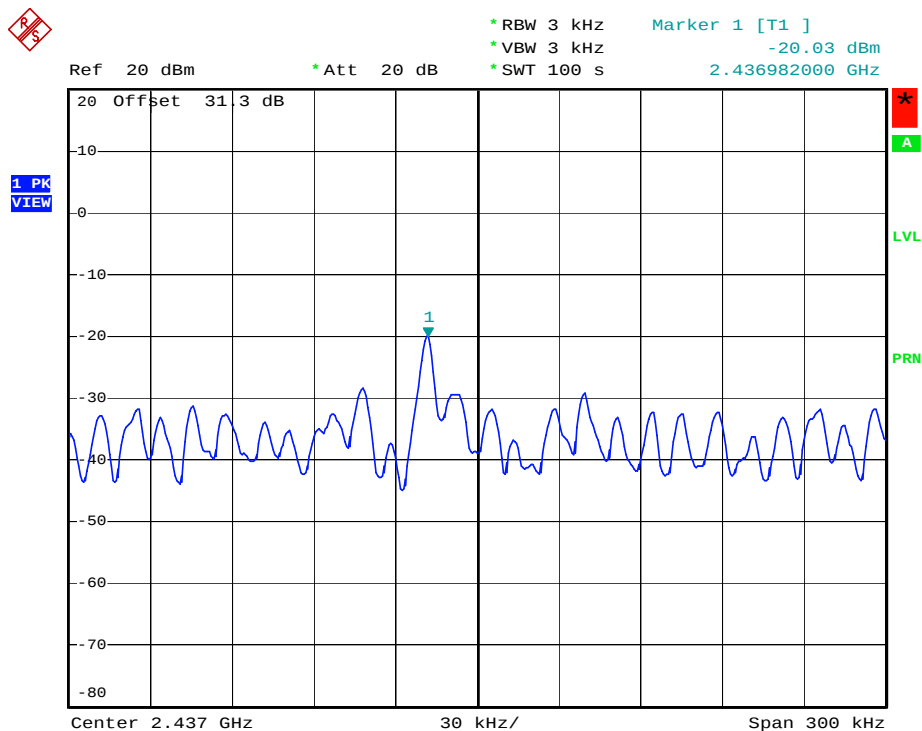
RESULT PLOTS

Power Spectral Density (802.11b mode-CH 1)



Date: 13.SEP.2009 10:21:40

Power Spectral Density (802.11b mode-CH 6)

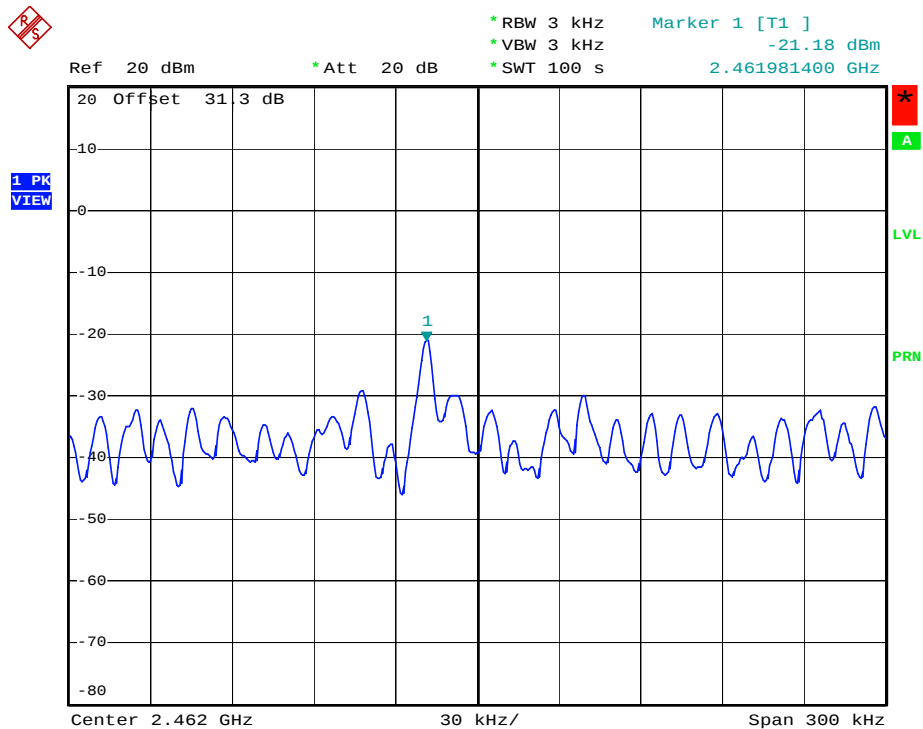


Date: 13.SEP.2009 10:23:59

HCT PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
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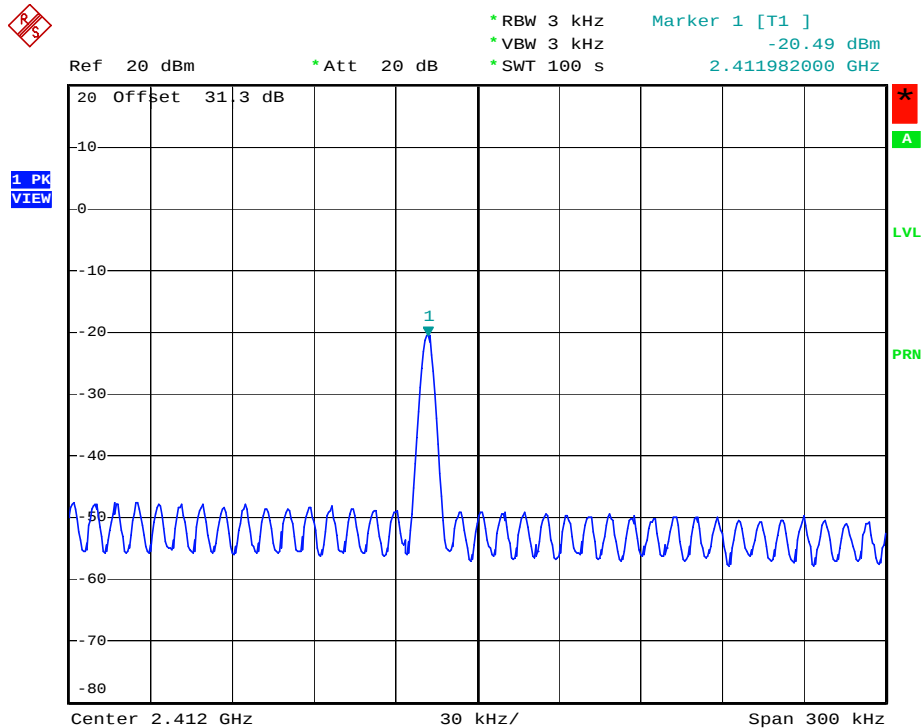


Power Spectral Density (802.11b mode-CH 11)



Date: 13.SEP.2009 10:26:12

Power Spectral Density (802.11g mode-CH 1)

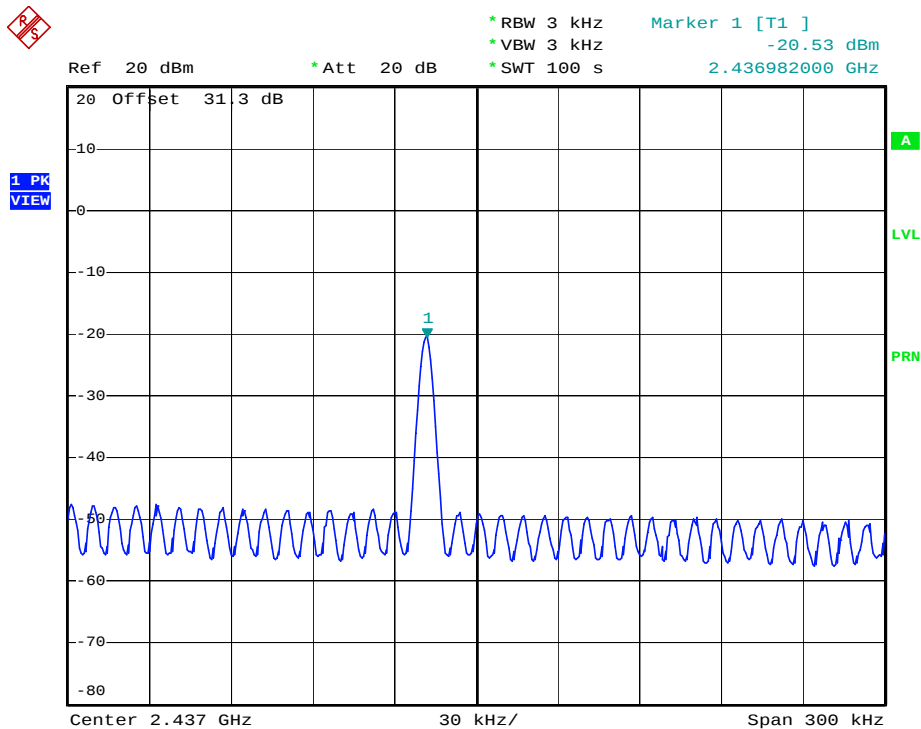


Date: 13.SEP.2009 10:29:37

HCT PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
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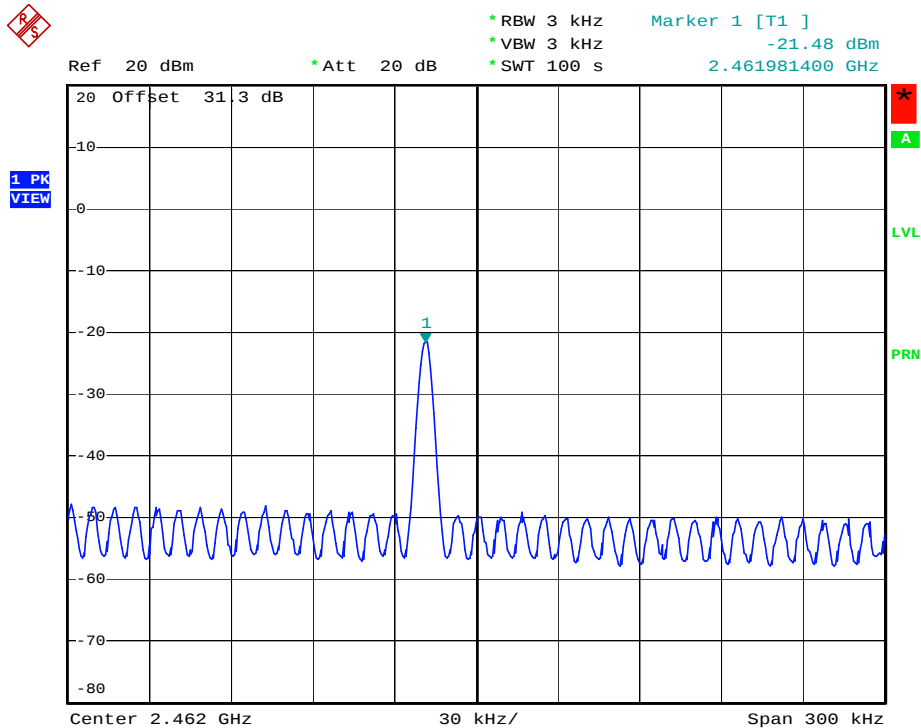


Power Spectral Density (802.11g mode-CH 6)



Date: 13.SEP.2009 10:33:42

Power Spectral Density (802.11g mode-CH11)

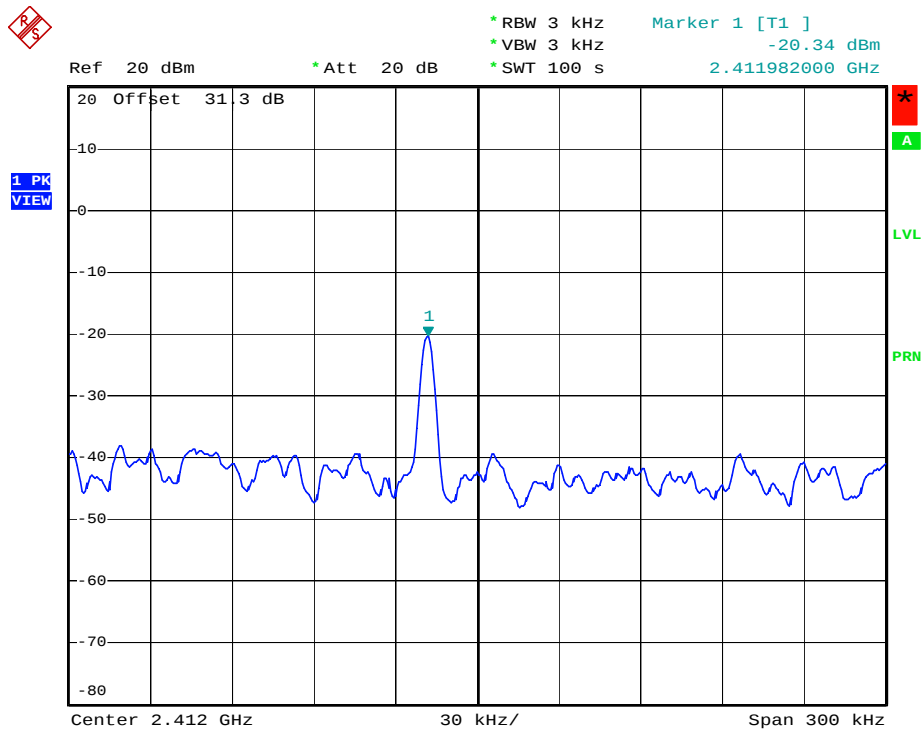


Date: 13.SEP.2009 10:35:59

HCT PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
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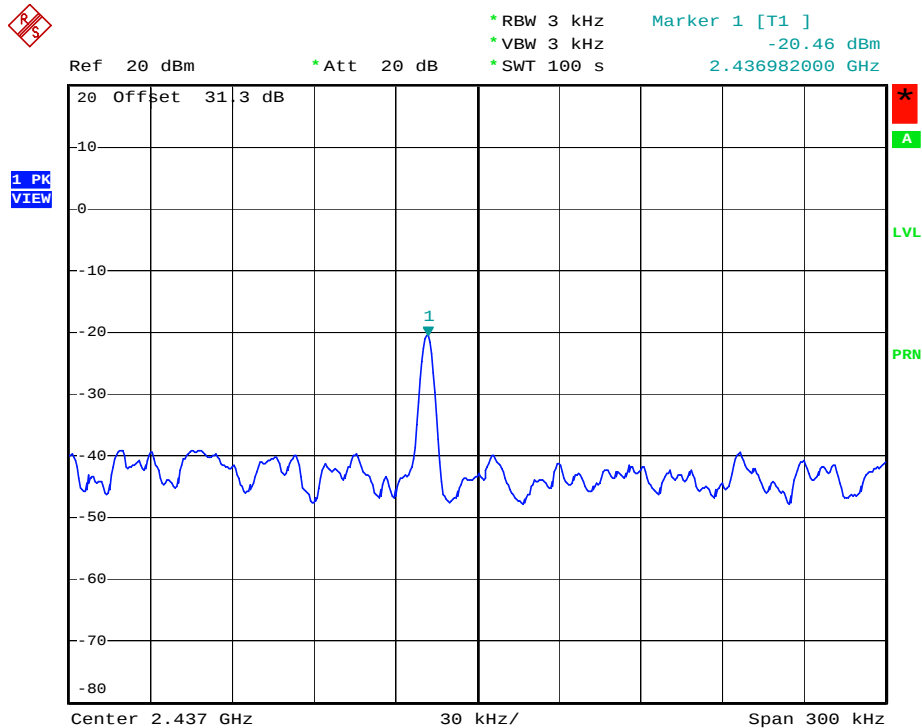


Power Spectral Density (802.11n Standard-20 MHz Channel mode-CH1)



Date: 13.SEP.2009 10:39:02

Power Spectral Density (802.11n Standard-20 MHz Channel mode -CH6)

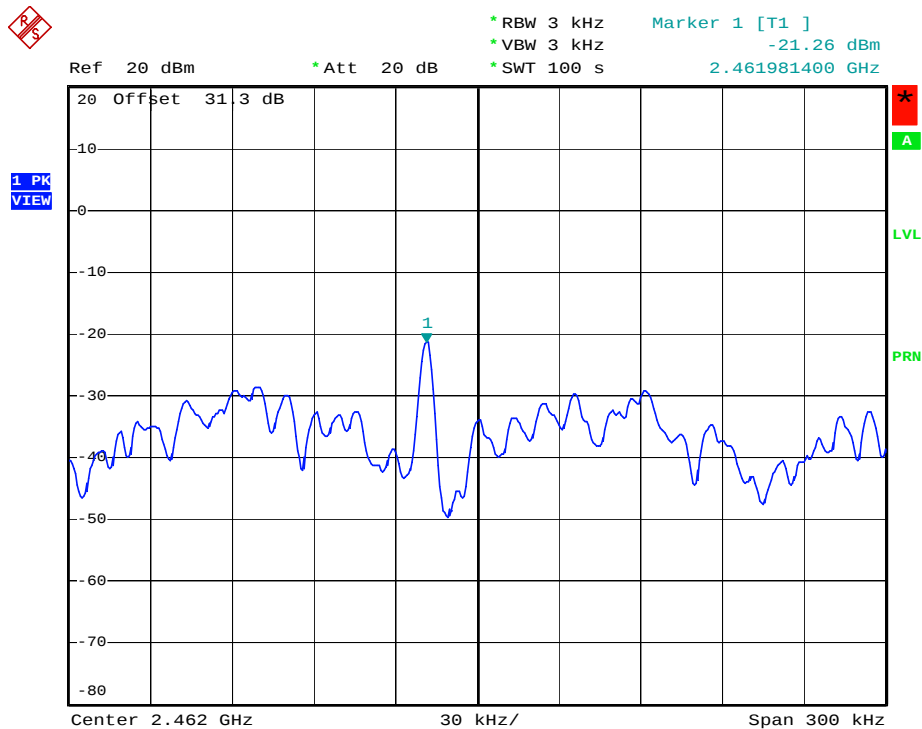


Date: 13.SEP.2009 10:40:38

HCT PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR0909FR10	Date of Issue: September 29, 2009	EUT Type: NoteBook PC	FCC ID: C8VPT1400	Page 28 of 68

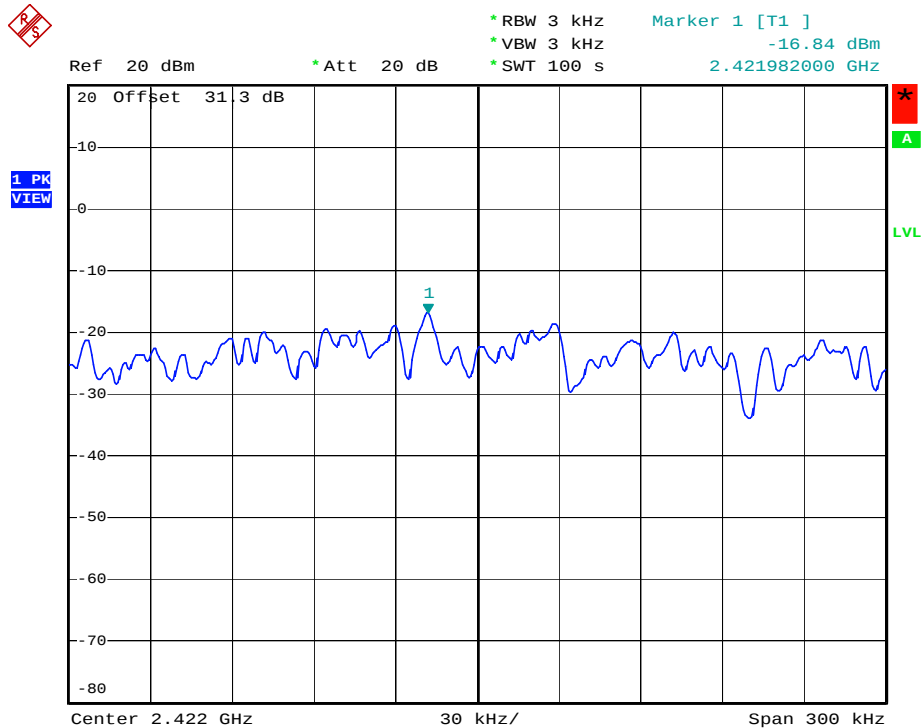


Power Spectral Density (802.11n Standard-20 MHz Channel mode -CH11)



Date: 13.SEP.2009 10:43:04

Power Spectral Density (802.11n Wide-40 MHz Channel mode -CH1)

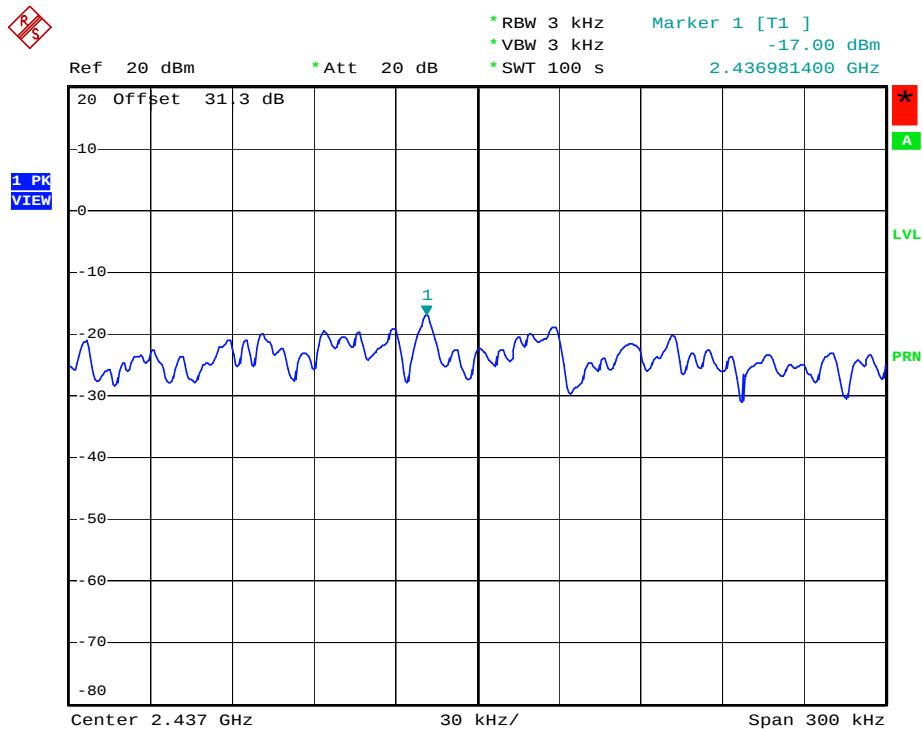


Date: 13.SEP.2009 11:29:49

HCT PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
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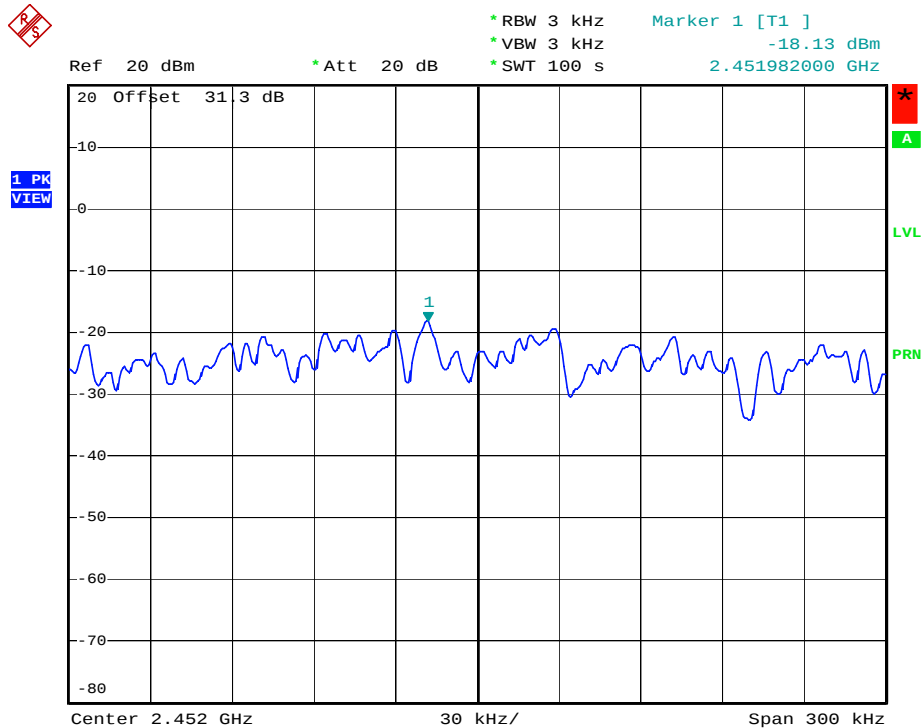


Power Spectral Density (802.11n Wide-40 MHz Channel mode -CH6)



Date: 13.SEP.2009 11:25:10

Power Spectral Density (802.11n Wide-40 MHz Channel mode -CH11)



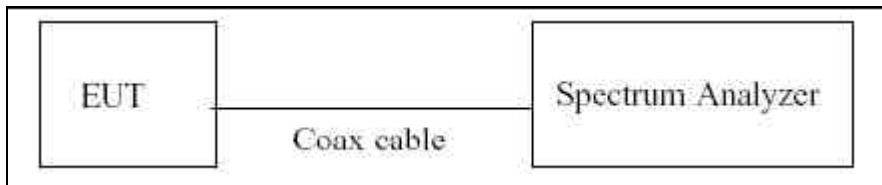
Date: 13.SEP.2009 11:27:26

HCT PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
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7.4 Out of Band Emissions at the Band Edge/ Conducted Spurious Emissions Test Requirements and limit, §15.247(d)

§15.247 (c) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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)).

■ TEST CONFIGURATION



■ TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

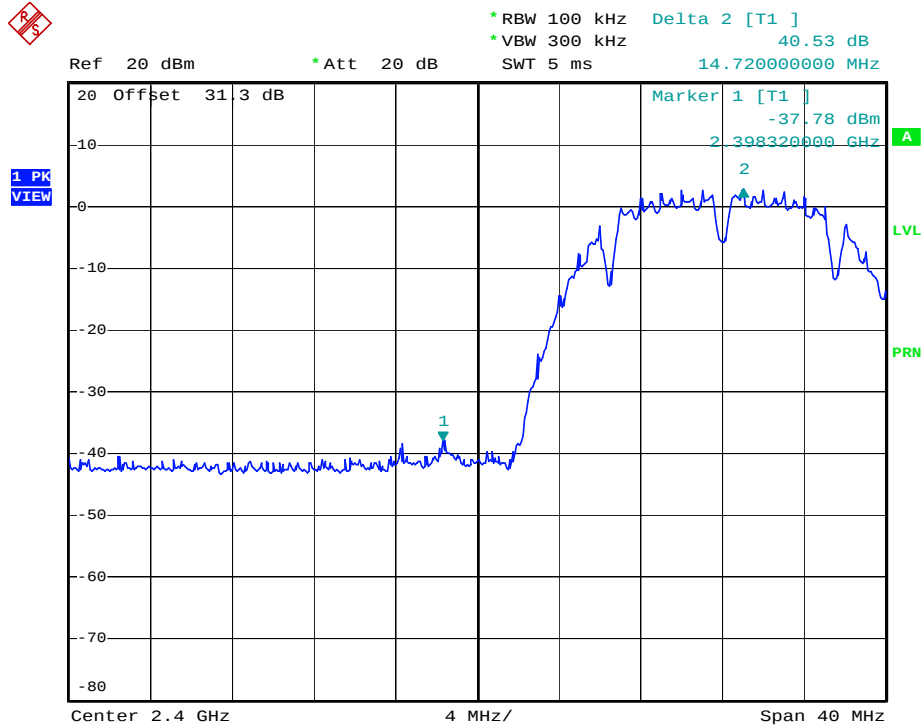
Detector Mode is set to a peak detector Mode.

Measurements are made over the 30 MHz to 26 GHz range with the transmitter set to the lowest, middle, and highest channels.



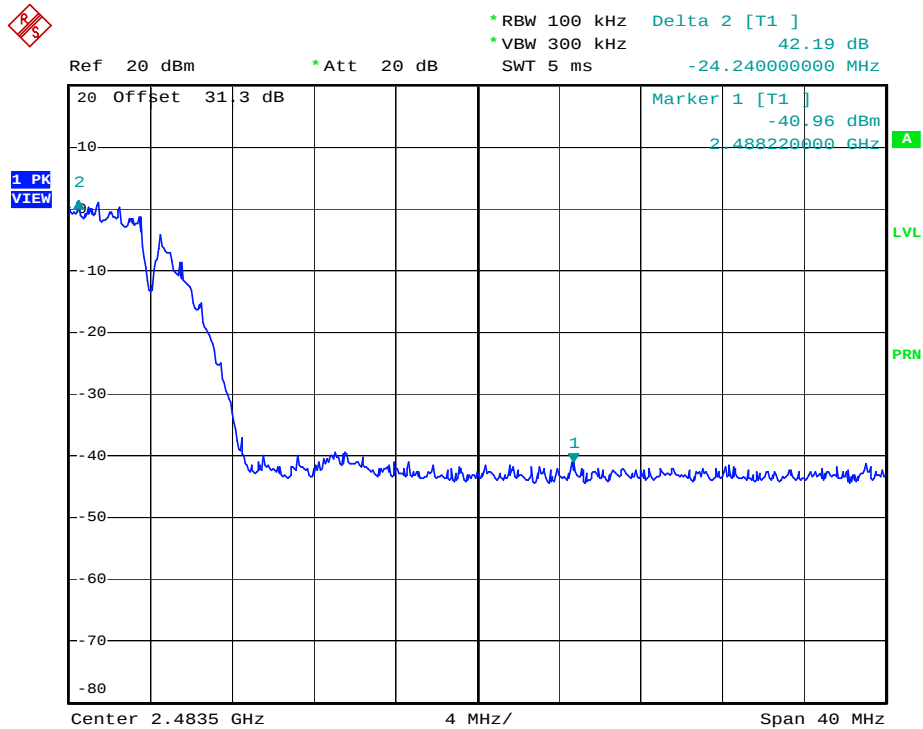
RESULT PLOTS

Band Edge (802.11b mode-CH 1)



Date: 13.SEP.2009 11:39:36

Band Edge (802.11b mode-CH 11)

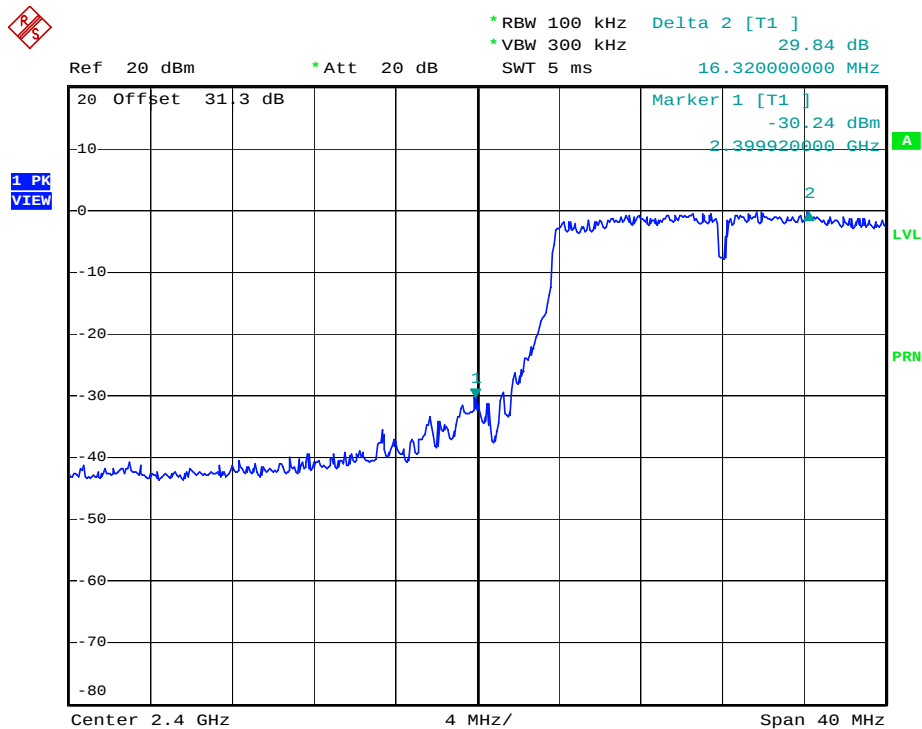


Date: 13.SEP.2009 11:40:21

HCT PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
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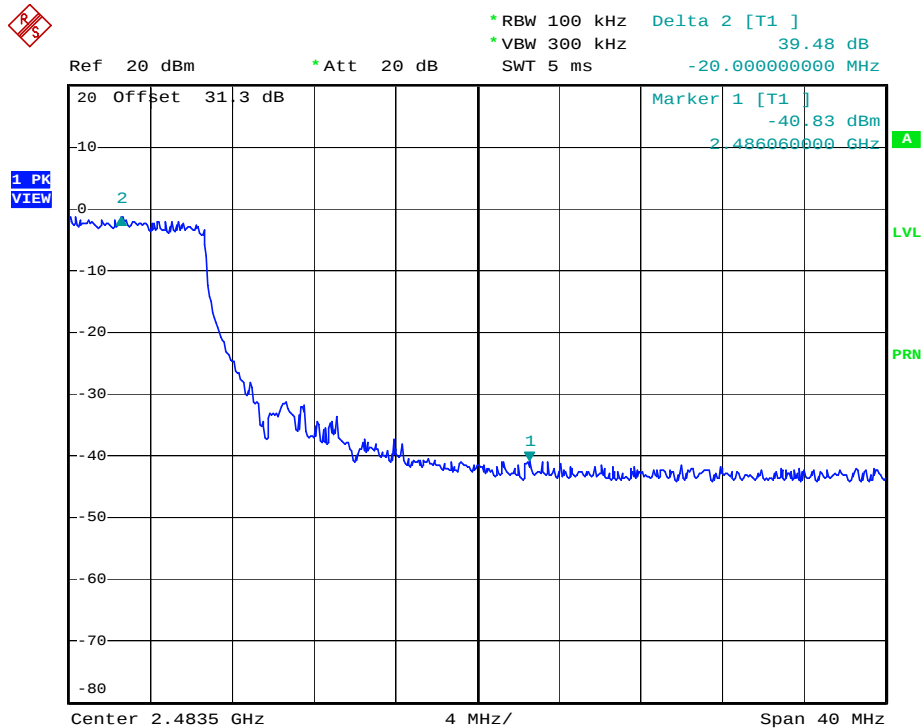


Band Edge (802.11g mode-CH 1)



Date: 13.SEP.2009 11:45:35

Band Edge (802.11g mode-CH11)

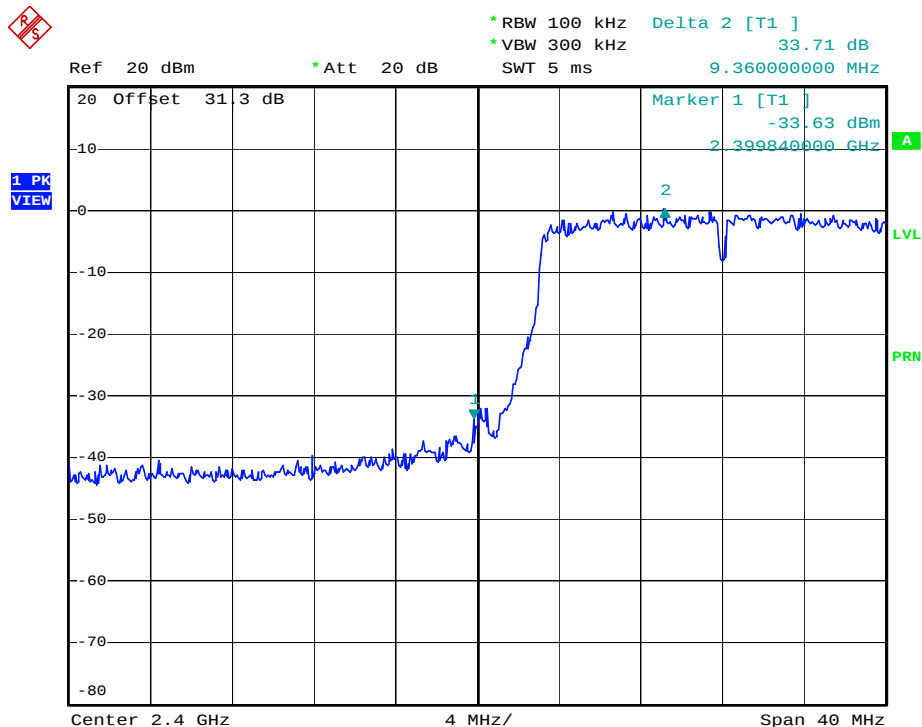


Date: 13.SEP.2009 11:46:31

HCT PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
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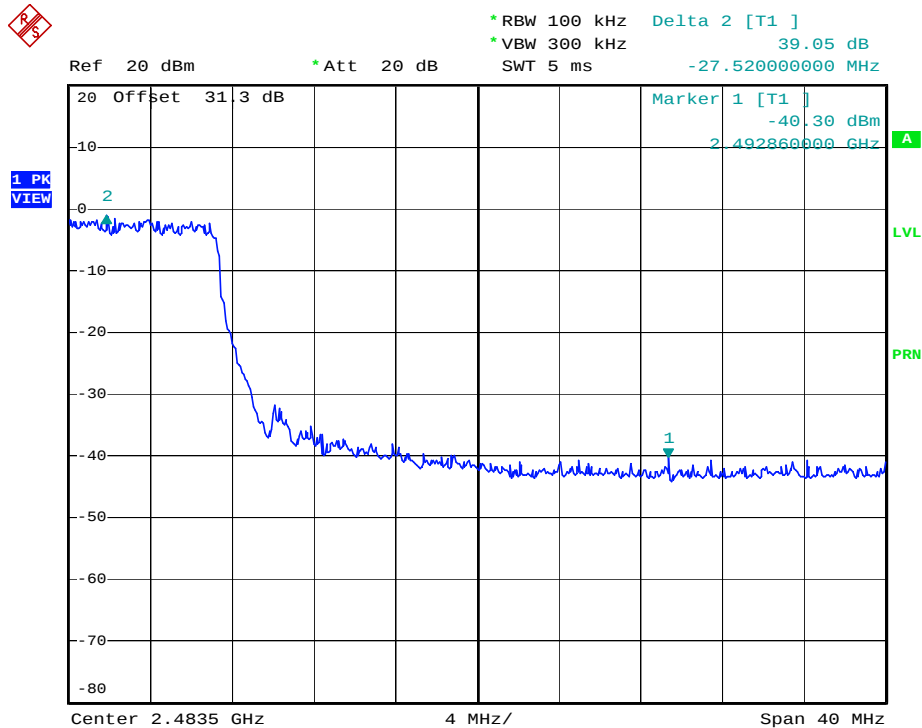


Band Edge (802.11n Standard-20 MHz Channel mode-CH1)



Date: 13.SEP.2009 11:48:05

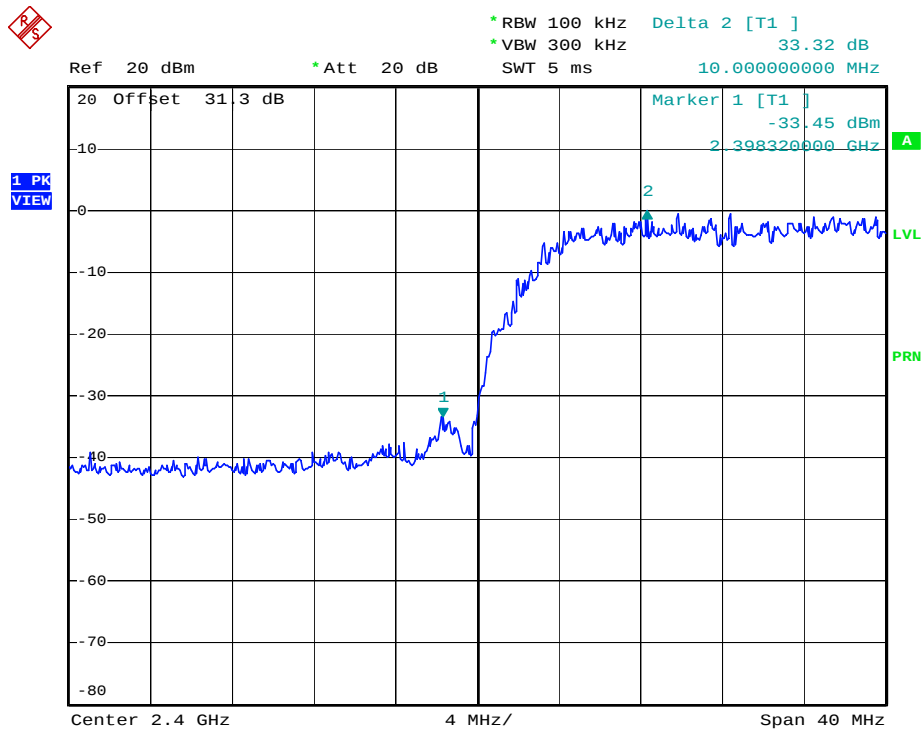
Band Edge (802.11n Standard-20 MHz Channel mode -CH11)



Date: 13.SEP.2009 11:49:06

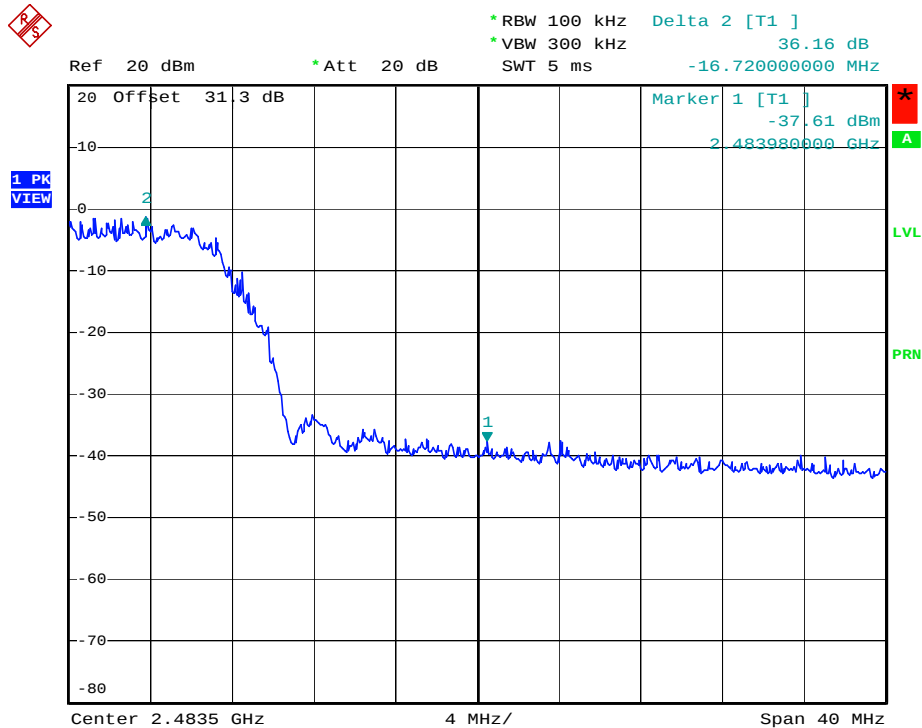
HCT PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR0909FR10	Date of Issue: September 29, 2009	EUT Type: NoteBook PC	FCC ID: C8VPT1400	Page 34 of 68

Band Edge (802.11n Wide-40 MHz Channel mode -CH1)



Date: 13.SEP.2009 11:50:44

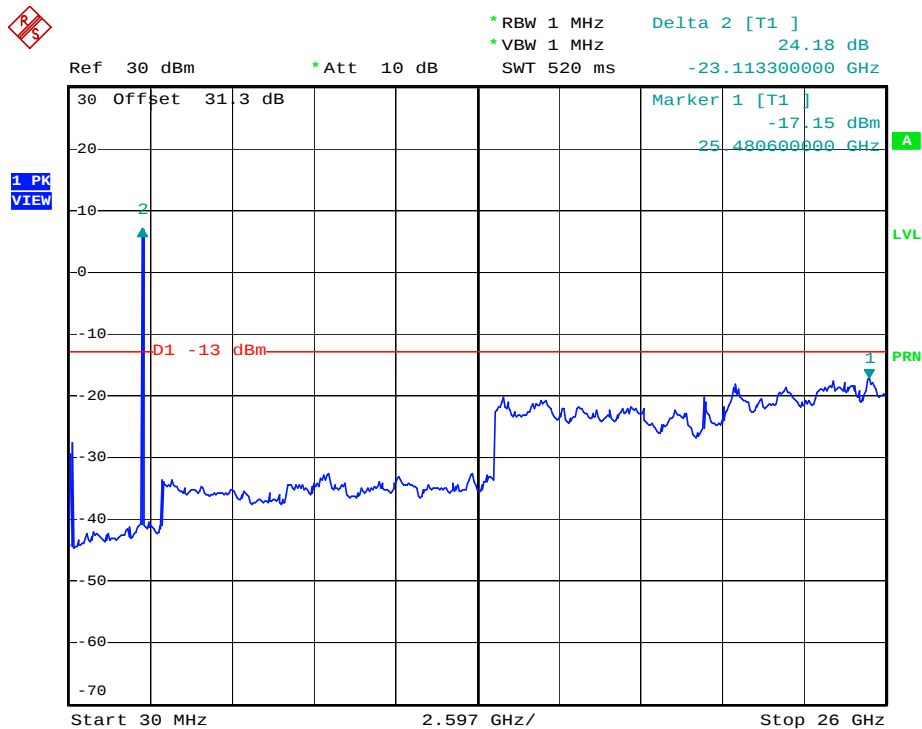
P Band Edge (802.11n Wide-40 MHz Channel mode -CH11)



Date: 13.SEP.2009 11:51:56

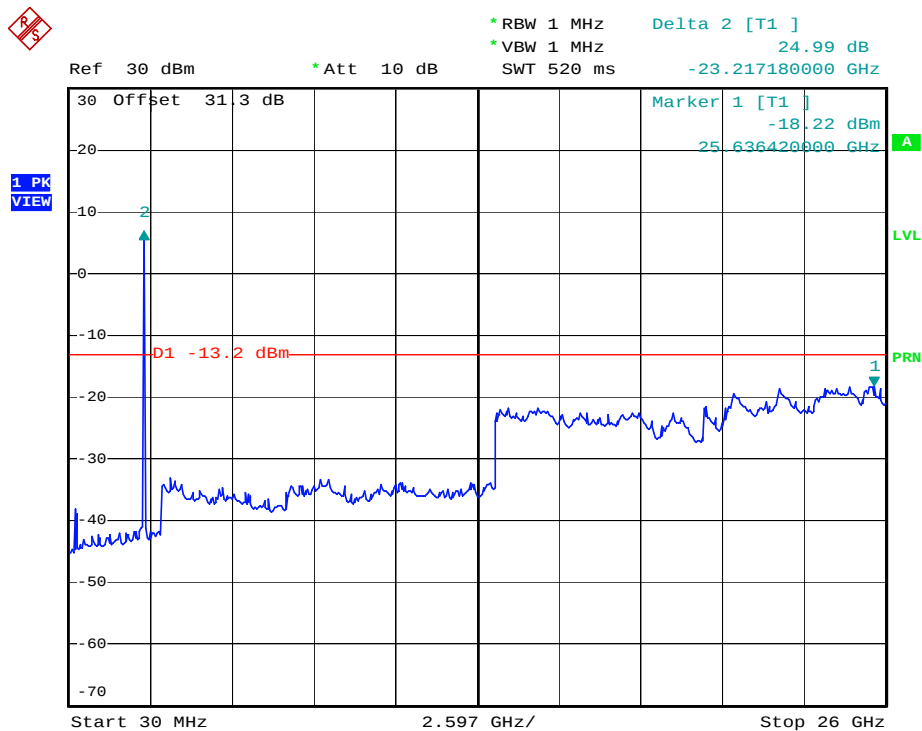


Conducted Spurious Emission (802.11b-CH1) -30 MHz ~ 26 GHz



Date: 13.SEP.2009 11:56:03

Conducted Spurious Emission (802.11b-CH6)

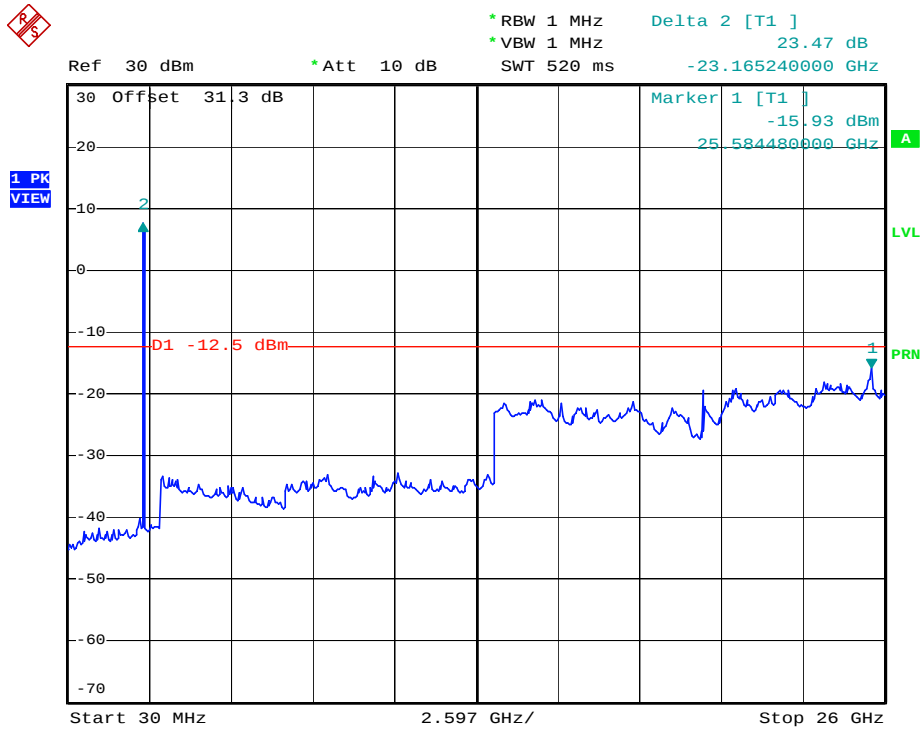


Date: 13.SEP.2009 11:57:09

HCT PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
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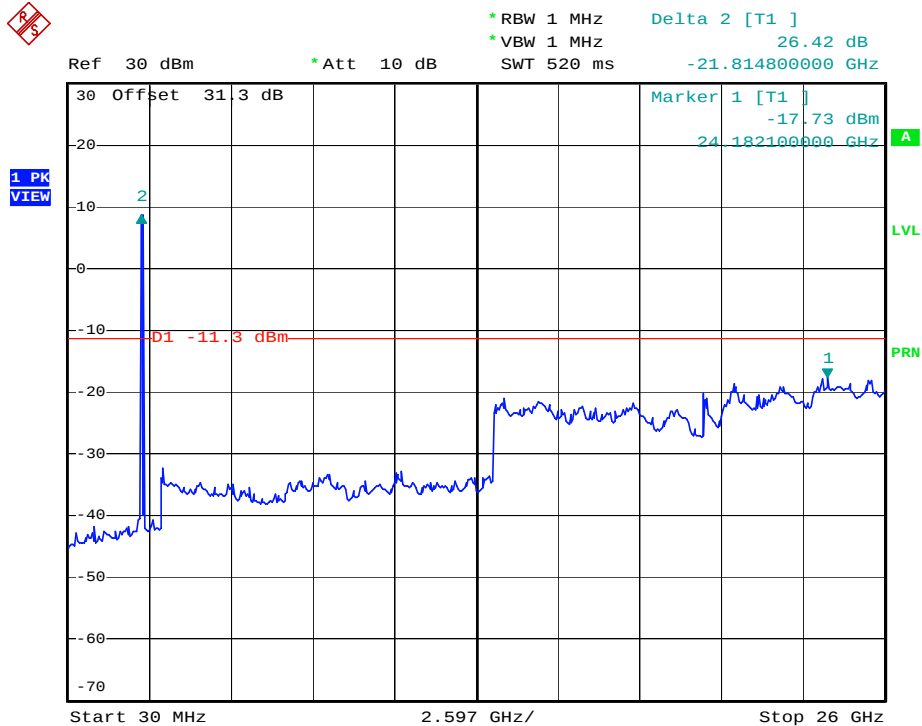


Conducted Spurious Emission (802.11b-CH11)



Date: 13.SEP.2009 13:26:01

Conducted Spurious Emission (802.11g-CH1) -30 MHz ~ 26 GHz

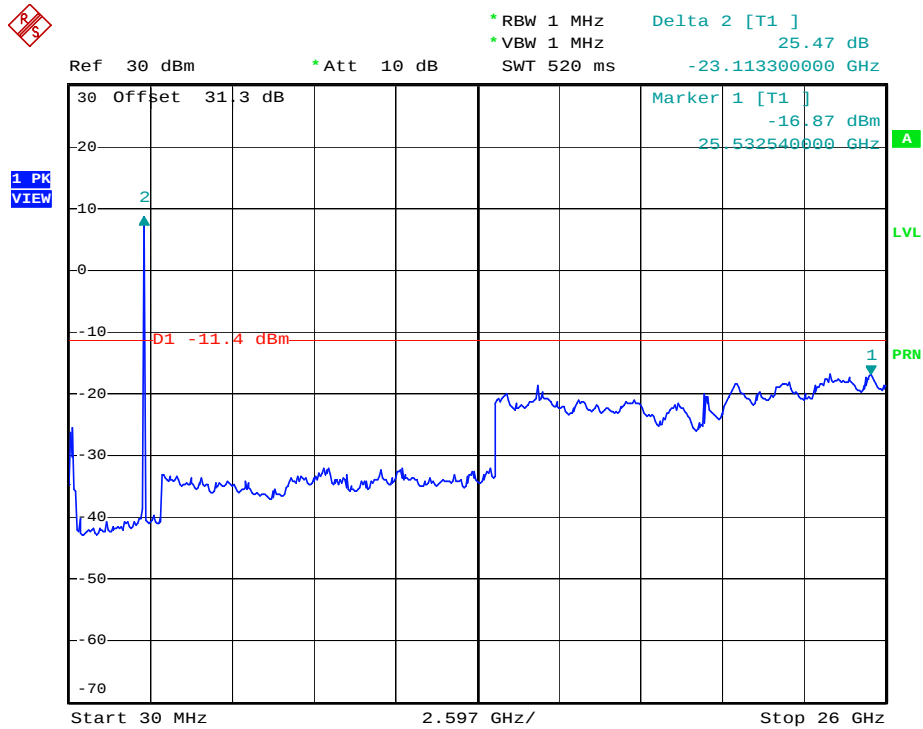


Date: 13.SEP.2009 13:27:35

HCT PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
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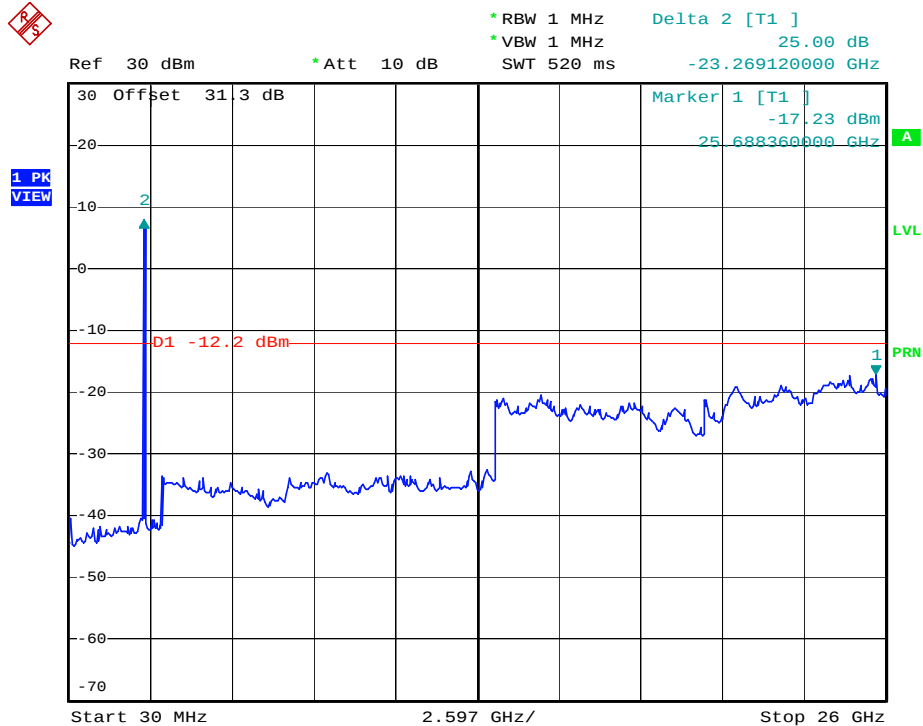


Conducted Spurious Emission (802.11g-CH6)



Date: 13.SEP.2009 13:51:02

Conducted Spurious Emission (802.11g-CH11)

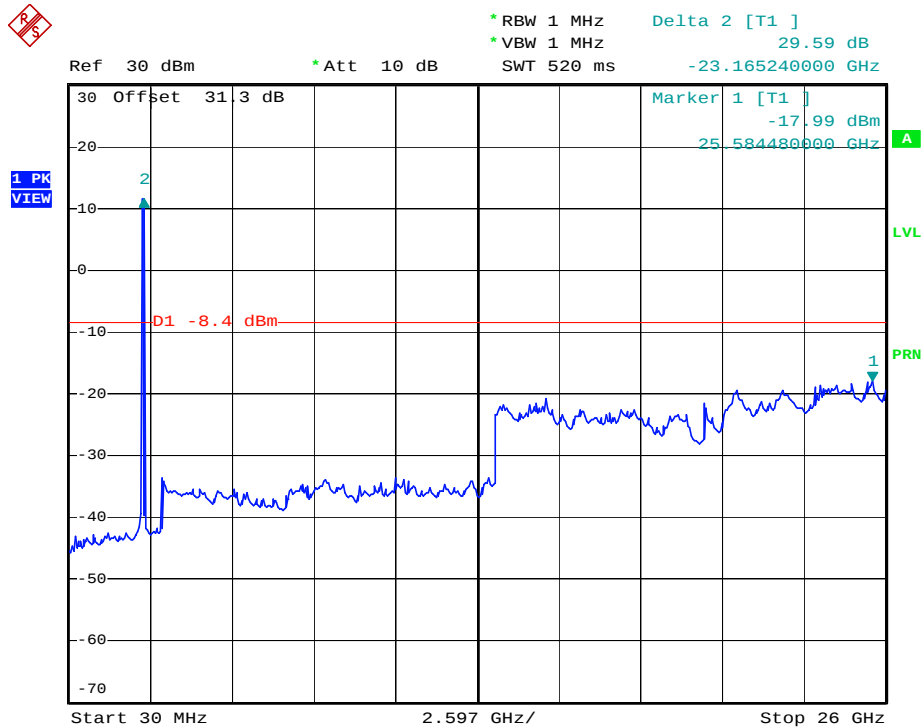


Date: 13.SEP.2009 13:53:52

HCT PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
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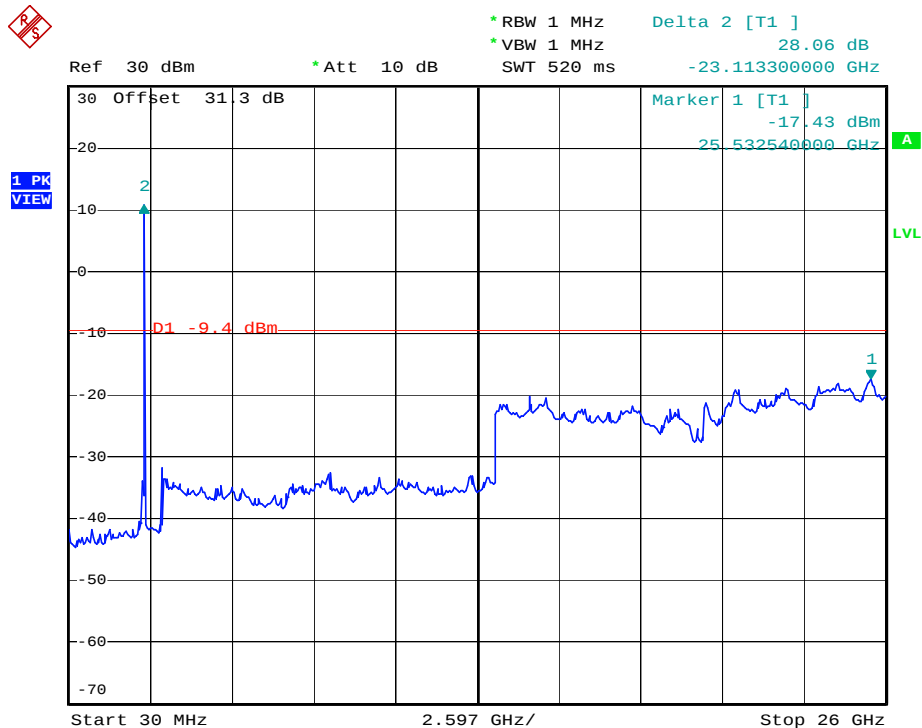


Conducted Spurious Emission (802.11n Standard-20 MHz Channel mode -CH1) -30 MHz ~ 26 GHz



Date: 13.SEP.2009 14:00:50

Conducted Spurious Emission (802.11n Standard-20 MHz Channel mode -CH6)

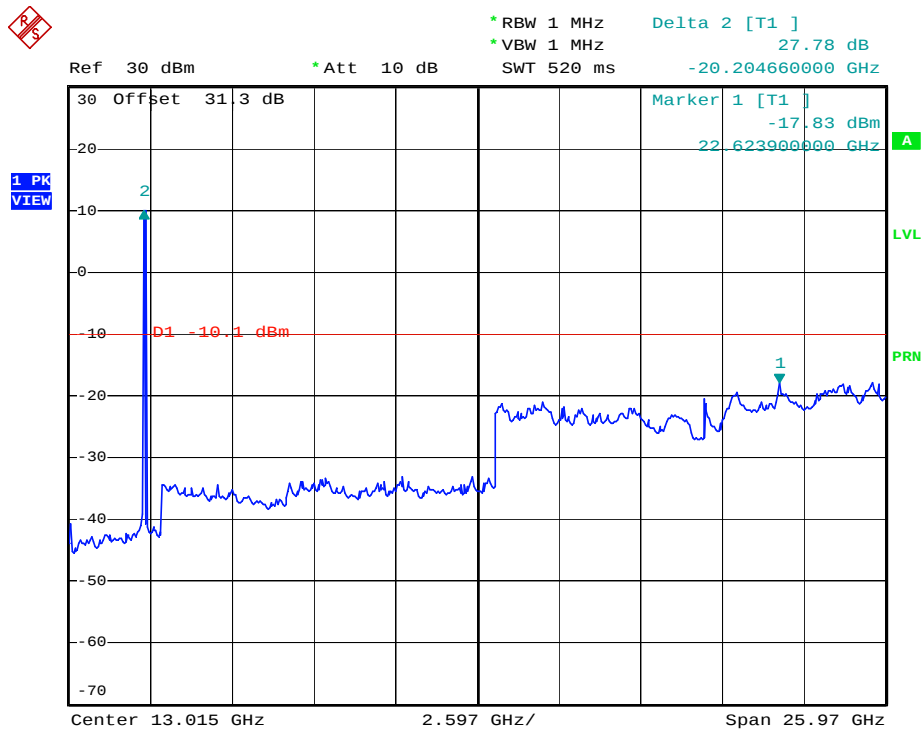


Date: 13.SEP.2009 14:02:32

HCT PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
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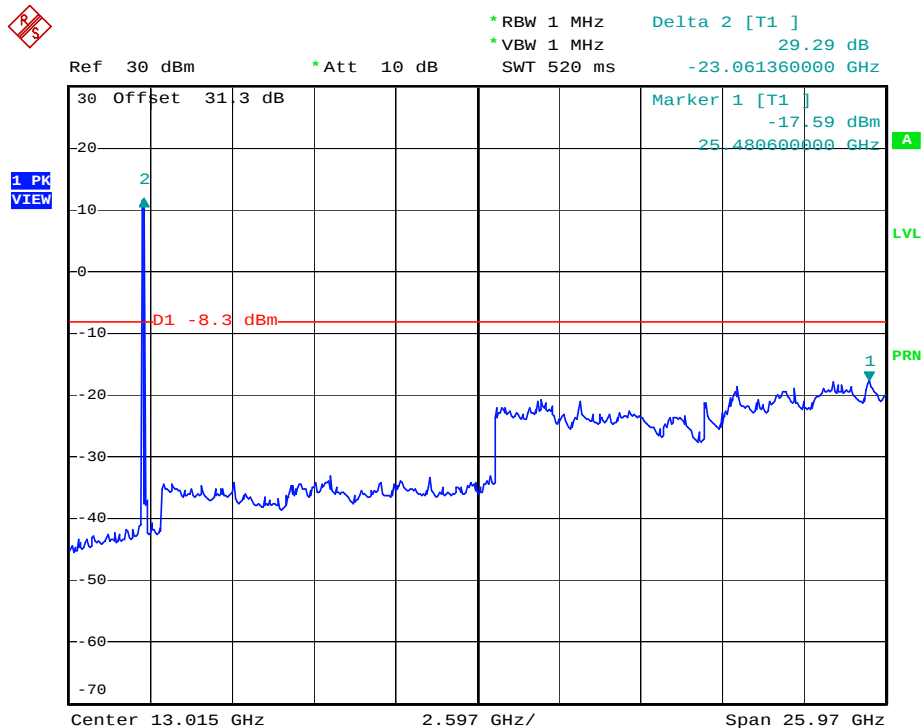


Conducted Spurious Emission (802.11n Standard-20 MHz Channel mode -CH11)



Date: 13.SEP.2009 14:09:12

Conducted Spurious Emission (802.11n Wide-40 MHz Channel mode -CH1) -30 MHz ~ 26 GHz

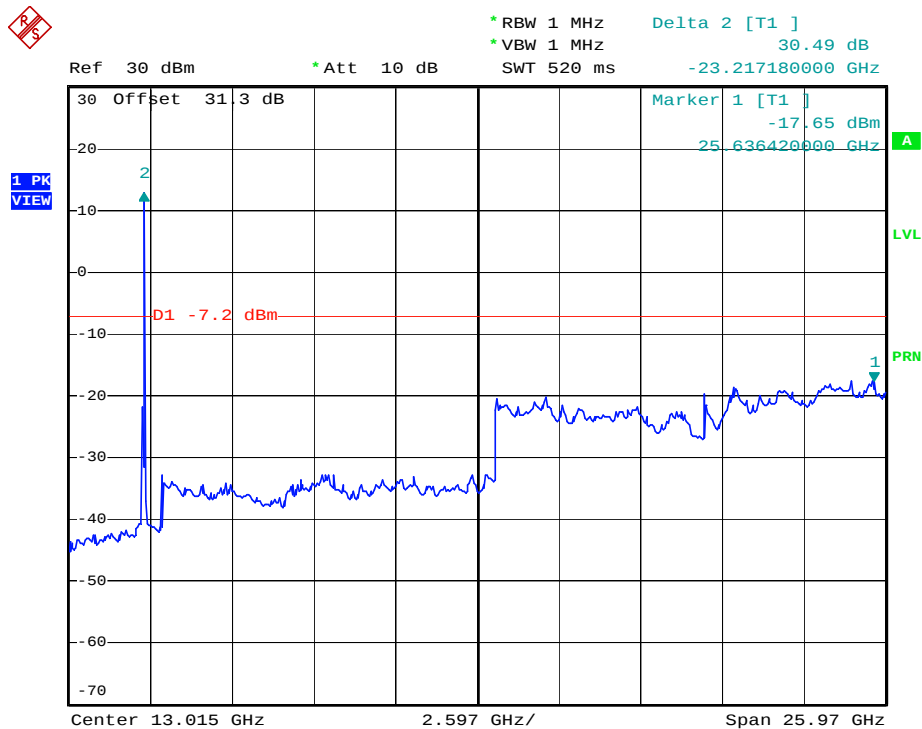


Date: 13.SEP.2009 14:10:22

HCT PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
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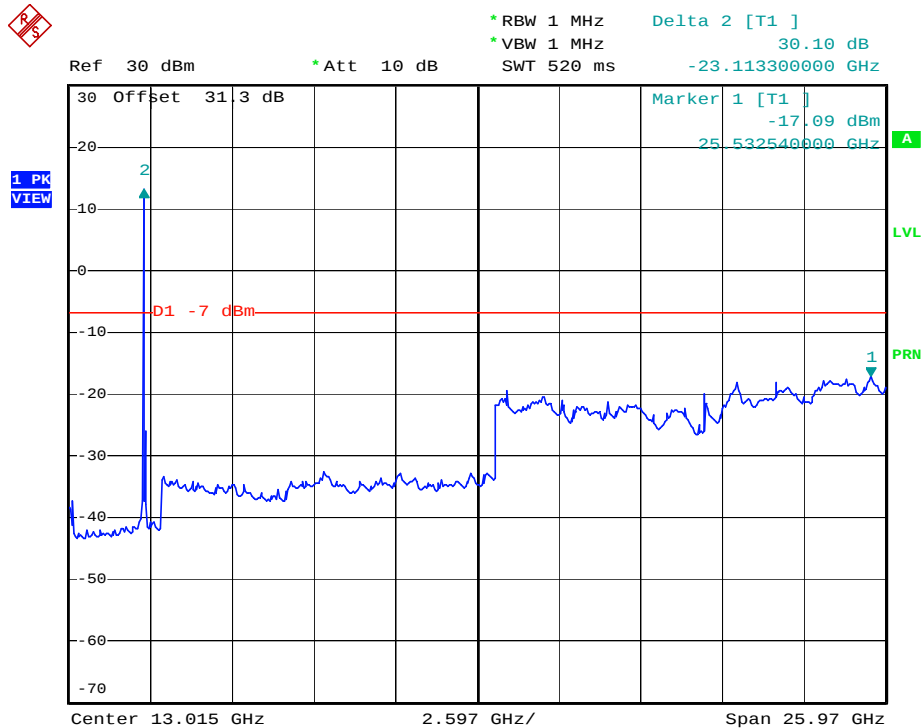


Conducted Spurious Emission (802.11n Wide-40 MHz Channel mode -CH6)



Date: 13.SEP.2009 14:12:21

Conducted Spurious Emission (802.11n Wide-40 MHz Channel mode -CH11)



Date: 13.SEP.2009 14:16:43

HCT PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
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7.5 Radiated Measurement.

7.5.1 Radiated Spurious Emissions.

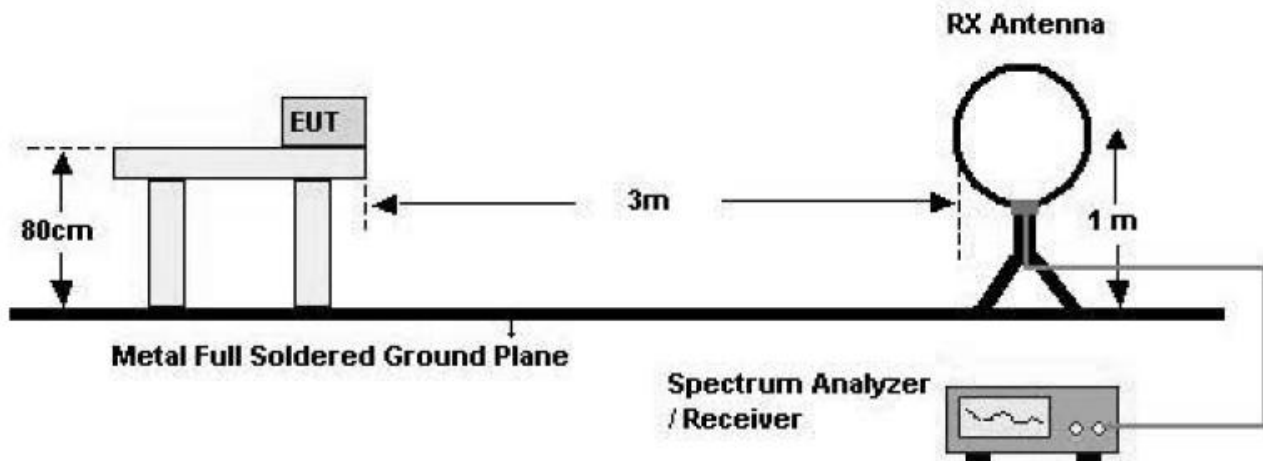
Test Requirements and limit, §15.247(d)

1. 20dBc in any 100kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed

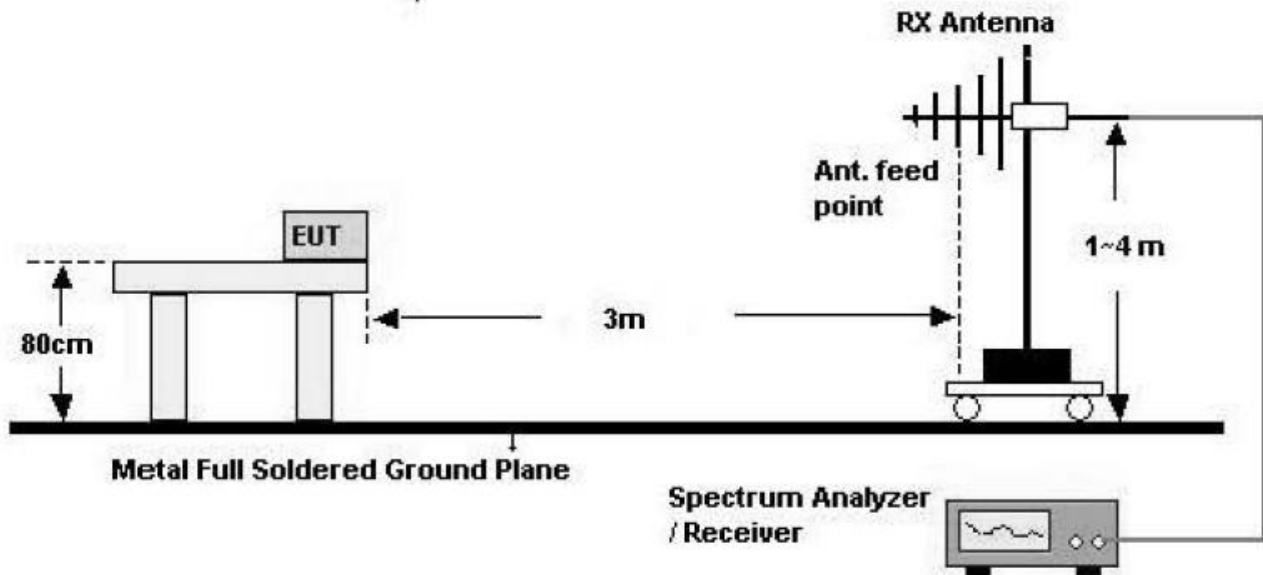
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Configuration

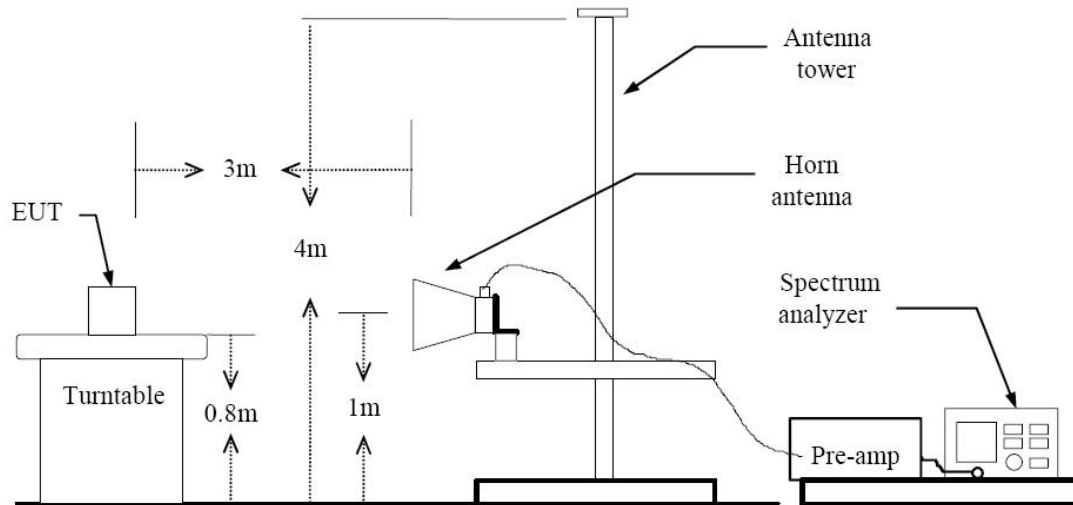
Below 30 MHz



30 MHz - 1 GHz



Above 1 GHz



TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8 m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.



TEST RESULTS

9 kHz – 30MHz

Operation Mode: Normal Link

The reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.

Notes:

1. Measuring frequencies from 9 kHz to the 30MHz.
2. Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB)
3. Limit line = specific Limits (dBuV) + Distance extrapolation factor

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TEST RESULTS

Below 1 GHz

Operation Mode: Normal Link

Frequency MHz	Reading dB μ V	Ant. Factor dB/m	Cable Loss dB	ANT POL (H/V)	Total dB (μ V/m)	Limit dB (μ V/m)	Margin dB
47.1	9.1	12.5	0.7	V	22.3	40.0	17.7
90.1	11.2	8.2	1.0	V	20.4	43.5	23.1
98.3	14.2	9.0	1.1	H	24.3	43.5	19.2
120.0	14.3	10.7	1.2	V	26.2	43.5	17.3
144.0	5.6	12.5	1.3	H	19.4	43.5	24.1
196.6	8.7	10.2	1.5	H	20.4	43.5	23.1
265.5	14.0	11.9	1.8	V	27.7	46.0	18.3
299.8	13.5	13.0	1.9	V	28.4	46.0	17.6
500.0	13.4	17.3	2.5	V	33.2	46.0	12.8
633.2	7.4	20.0	2.7	H	30.1	46.0	15.9
799.8	8.4	22.2	3.1	V	33.7	46.0	12.3
960.0	7.4	23.9	3.7	V	35.0	46.0	11.0

Notes:

1. Measuring frequencies from 30 MHz to the 1 GHz.
2. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Quasi peak detector mode.



Above 1 GHz

Operation Mode:	802.11 b
Transfer Rate:	1 Mbps
Operating Frequency	2412
Channel No.	01 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4824	60.68	-4.75	H	55.93	74	18.07	PK
4824	48.54	-4.75	H	43.79	54	10.21	AV
4824	60.07	-4.75	V	55.32	74	18.68	PK
4824	48.53	-4.75	V	43.78	54	10.22	AV
7236	61.08	1.31	H	62.39	74	11.61	PK
7236	48.85	1.31	H	50.16	54	3.84	AV
7236	61.05	1.31	V	62.36	74	11.64	PK
7236	48.85	1.31	V	50.16	54	3.84	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 MHz.
 - b. AV Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 10 Hz.



Operation Mode:	802.11 b
Transfer Rate:	1 Mbps
Operating Frequency	2437
Channel No.	06 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4874	61.26	-4.62	H	56.64	74	17.36	PK
4874	48.96	-4.62	H	44.34	54	9.66	AV
4874	61.81	-4.62	V	57.19	74	16.81	PK
4874	48.94	-4.62	V	44.32	54	9.68	AV
7311	60.93	1.58	H	62.51	74	11.49	PK
7311	49.19	1.58	H	50.77	54	3.23	AV
7311	62.08	1.58	V	63.66	74	10.34	PK
7311	49.22	1.58	V	50.80	54	3.20	AV

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 MHz.
 - b. AV Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 10 Hz.



Operation Mode:	802.11 b
Transfer Rate:	1 Mbps
Operating Frequency	2462
Channel No.	11 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4924	60.77	-4.50	H	56.27	74	17.73	PK
4924	48.89	-4.50	H	44.39	54	9.61	AV
4924	61.63	-4.50	V	57.13	74	16.87	PK
4924	48.79	-4.50	V	44.29	54	9.71	AV
7386	62.58	1.85	H	64.43	74	9.57	PK
7386	49.85	1.85	H	51.70	54	2.30	AV
7386	62.28	1.85	V	64.13	74	9.87	PK
7386	49.88	1.85	V	51.73	54	2.27	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 MH.
 - b. AV Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 10 Hz.



Operation Mode:	802.11 g
Transfer Rate:	6 Mbps
Operating Frequency	2412
Channel No.	01 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4824	60.64	-4.75	H	55.89	74	18.11	PK
4824	48.58	-4.75	H	43.83	54	10.17	AV
4824	60.40	-4.75	V	55.65	74	18.35	PK
4824	48.57	-4.75	V	43.82	54	10.18	AV
7236	60.64	1.31	H	61.95	74	12.05	PK
7236	48.84	1.31	H	50.15	54	3.85	AV
7236	62.19	1.31	V	63.50	74	10.50	PK
7236	48.84	1.31	V	50.15	54	3.85	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 MHz.
 - b. AV Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 10 Hz.

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Operation Mode:	802.11 g
Transfer Rate:	6 Mbps
Operating Frequency	2412
Channel No.	06 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4874	61.12	-4.62	H	56.50	74	17.50	PK
4874	48.95	-4.62	H	44.33	54	9.67	AV
4874	61.20	-4.62	V	56.58	74	17.42	PK
4874	48.95	-4.62	V	44.33	54	9.67	AV
7311	60.86	1.58	H	62.44	74	11.56	PK
7311	49.20	1.58	H	50.78	54	3.22	AV
7311	61.57	1.58	V	63.15	74	10.85	PK
7311	49.21	1.58	V	50.79	54	3.21	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 MHz.
 - b. AV Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 10 Hz.

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Operation Mode:	802.11 g
Transfer Rate:	6 Mbps
Operating Frequency	2412
Channel No.	11 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4924	60.58	-4.50	H	56.08	74	17.92	PK
4924	48.89	-4.50	H	44.39	54	9.61	AV
4924	61.62	-4.50	V	57.12	74	16.88	PK
4924	48.86	-4.50	V	44.36	54	9.64	AV
7386	61.77	1.85	H	63.62	74	10.38	PK
7386	49.88	1.85	H	51.73	54	2.27	AV
7386	61.45	1.85	V	63.30	74	10.70	PK
7386	49.89	1.85	V	51.74	54	2.26	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 MHz.
 - b. AV Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 10 Hz.



Operation Mode:	802.11n Standard-20MHz
Transfer Rate:	6.5 Mbps
Operating Frequency	2412
Channel No.	01 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4824	60.75	-4.75	H	56.00	74	18.00	PK
4824	48.54	-4.75	H	43.79	54	10.21	AV
4824	60.24	-4.75	V	55.49	74	18.51	PK
4824	48.57	-4.75	V	43.82	54	10.18	AV
7236	61.59	1.31	H	62.90	74	11.10	PK
7236	48.83	1.31	H	50.14	54	3.86	AV
7236	61.22	1.31	V	62.53	74	11.47	PK
7236	48.85	1.31	V	50.16	54	3.84	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 MHz.
 - b. AV Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 10 Hz.



Operation Mode:	802.11n Standard-20MHz
Transfer Rate:	6.5 Mbps
Operating Frequency	2437
Channel No.	06 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4874	61.40	-4.62	H	56.78	74	17.22	PK
4874	48.93	-4.62	H	44.31	54	9.69	AV
4874	61.65	-4.62	V	57.03	74	16.97	PK
4874	48.96	-4.62	V	44.34	54	9.66	AV
7311	60.98	1.58	H	62.56	74	11.44	PK
7311	49.24	1.58	H	50.82	54	3.18	AV
7311	60.76	1.58	V	62.34	74	11.66	PK
7311	49.21	1.58	V	50.79	54	3.21	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 MHz.
 - b. AV Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 10 Hz.

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Operation Mode:	802.11n Standard-20MHz
Transfer Rate:	6.5 Mbps
Operating Frequency	2462
Channel No.	11 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4924	60.73	-4.50	H	56.23	74	17.77	PK
4924	48.91	-4.50	H	44.41	54	9.59	AV
4924	60.37	-4.50	V	55.87	74	18.13	PK
4924	48.80	-4.50	V	44.30	54	9.70	AV
7386	61.66	1.85	H	63.51	74	10.49	PK
7386	49.87	1.85	H	51.72	54	2.28	AV
7386	61.76	1.85	V	63.61	74	10.39	PK
7386	49.89	1.85	V	51.74	54	2.26	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 MHz.
 - b. AV Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 10 Hz.

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Operation Mode:	802.11n Wide-40 MHz
Transfer Rate:	13.5 Mbps
Operating Frequency	2422
Channel No.	01 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4844	60.33	-4.70	H	55.63	74	18.37	PK
4844	48.73	-4.70	H	44.03	54	9.97	AV
4844	61.68	-4.70	V	56.98	74	17.02	PK
4844	48.66	-4.70	V	43.96	54	10.04	AV
7266	61.77	1.42	H	63.19	74	10.81	PK
7266	48.98	1.42	H	50.40	54	3.60	AV
7266	61.30	1.42	V	62.72	74	11.28	PK
7266	49.02	1.42	V	50.44	54	3.56	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 MHz.
 - b. AV Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 10 Hz.



Operation Mode:	802.11n Wide-40 MHz
Transfer Rate:	13.5 Mbps
Operating Frequency	2437
Channel No.	06 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4874	60.61	-4.62	H	55.99	74	18.01	PK
4874	48.92	-4.62	H	44.30	54	9.70	AV
4874	60.96	-4.62	V	56.34	74	17.66	PK
4874	48.91	-4.62	V	44.29	54	9.71	AV
7311	61.14	1.58	H	62.72	74	11.28	PK
7311	49.22	1.58	H	50.80	54	3.20	AV
7311	61.48	1.58	V	63.06	74	10.94	PK
7311	49.16	1.58	V	50.74	54	3.26	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 MHz.
 - b. AV Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 10 Hz.

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Operation Mode:	802.11n Wide-40 MHz
Transfer Rate:	13.5 Mbps
Operating Frequency	2452
Channel No.	11 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4904	60.97	-4.55	H	56.42	74	17.58	PK
4904	48.98	-4.55	H	44.43	54	9.57	AV
4904	60.73	-4.55	V	56.18	74	17.82	4904
4904	48.94	-4.55	V	44.39	54	9.61	4904
7356	61.36	1.74	H	63.10	74	10.90	PK
7356	49.51	1.74	H	51.25	54	2.75	AV
7356	62.20	1.74	V	63.94	74	10.06	7356
7356	49.55	1.74	V	51.29	54	2.71	7356

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 MHz.
 - b. AV Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 10 Hz.



7.5.2 Radiated Restricted Band Edge Measurements

Test Requirements and limit, §15.247(d)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in section 15.209(a) (See section 15.205(c)).

Operation Mode:	802.11 b
Transfer Rate:	1 Mbps
Operating Frequency	2412 MHz, 2462 MHz
Channel No.	1 Ch, 11 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
2349.68	55.61	-10.33	H	45.28	74	28.72	PK
2349.68	43.39	-10.33	H	33.06	54	20.94	AV
2328.72	56.37	-10.42	V	45.95	74	28.05	PK
2328.72	43.30	-10.42	V	32.88	54	21.12	AV
2497.82	53.83	-9.70	H	44.13	74	29.87	PK
2497.82	42.89	-9.70	H	33.19	54	20.81	AV
2491.39	54.74	-9.73	V	45.01	74	28.99	PK
2491.39	42.49	-9.73	V	32.76	54	21.24	AV

Notes:

1. Spectrum setting:
 - a. Peak Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 MHz.
 - b. AV Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 10 Hz.



Operation Mode:	802.11 g
Transfer Rate:	6 Mbps
Operating Frequency	2412 MHz, 2462 MHz
Channel No.	1 Ch, 11 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
2359.60	54.61	-10.29	H	44.32	74	29.68	PK
2359.60	43.20	-10.29	H	32.91	54	21.09	AV
2330.00	54.62	-10.41	V	44.21	74	29.79	PK
2330.00	43.39	-10.41	V	32.98	54	21.02	AV
2483.53	53.89	-9.76	H	44.13	74	29.87	PK
2483.53	42.94	-9.76	H	33.18	54	20.82	AV
2497.72	54.37	-9.70	V	44.67	74	29.33	PK
2497.72	42.82	-9.70	V	33.12	54	20.88	AV

Notes:

1. Spectrum setting:

- Peak Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 MHz.
- AV Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 10 Hz.



Operation Mode:	802.11 n Standard-20 MHz
Transfer Rate:	6.5 Mbps
Operating Frequency	2412 MHz, 2462 MHz
Channel No.	1 Ch, 11 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
2341.04	54.78	-10.37	H	44.41	74	29.59	PK
2341.04	43.58	-10.37	H	33.21	54	20.79	AV
2335.44	55.28	-10.39	V	44.89	74	29.11	PK
2335.44	43.28	-10.39	V	32.89	54	21.11	AV
2497.03	54.09	-9.71	H	44.38	74	29.62	PK
2497.03	42.67	-9.71	H	32.96	54	21.04	AV
2498.58	55.34	-9.70	V	45.64	74	28.36	PK
2498.58	43.00	-9.70	V	33.30	54	20.70	AV

Notes:

1. Spectrum setting:

- Peak Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 MHz.
- AV Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 10 Hz.



Operation Mode:	802.11 n Wide-40 MHz
Transfer Rate:	13.5 Mbps
Operating Frequency	2412 MHz, 2462 MHz
Channel No.	1 Ch, 11 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
2370.32	62.42	-10.24	H	52.18	74	21.82	PK
2370.32	51.29	-10.24	H	41.05	54	12.95	AV
2370.25	59.70	-10.24	V	49.46	74	24.54	PK
2370.25	44.05	-10.24	V	33.81	54	20.19	AV
2488.95	53.62	-9.74	H	43.88	74	30.12	PK
2488.95	42.58	-9.74	H	32.84	54	21.16	AV
2491.22	54.96	-9.73	V	45.23	74	28.77	PK
2491.22	42.51	-9.73	V	32.78	54	21.22	AV

Notes:

1. Spectrum setting:
 - a. Peak Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 1 MHz.
 - b. AV Setting 1 GHz – 26 GHz, RBW = 1 MHz, VBW = 10 Hz.



7.6 POWERLINE CONDUCTED EMISSIONS

Test Requirements and limit, §15.247(d)

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

Frequency Range (MHz)	Limits (dB μ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

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

Test Configuration

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

TEST PROCEDURE

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



■ RESULT PLOTS

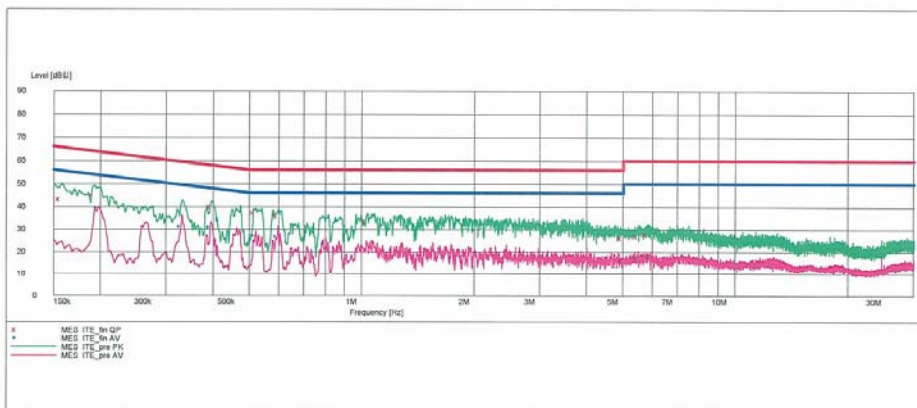
HCT

EMC TEST LAB.

EUT: Averatec PT1400
Manufacturer: TriGem Computer, Inc.
Operating Condition: NORMAL
Test Site: SHIELD ROOM
Operator: GS-KIM
Test Specification: CISPR 22 CLASS B
Comment: H (CWT)

SCAN TABLE: "CISPR 22 Voltage"

Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
Average						
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
Average						
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None



MEASUREMENT RESULT: "ITE_fin QP"

8/14/2009 2:24PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.157600	43.20	10.1	66	22.4	---	---
0.192600	45.10	10.1	64	18.8	---	---
0.397600	40.00	10.1	58	17.9	---	---
0.520000	37.20	10.2	56	18.8	---	---
0.596000	36.20	10.2	56	19.8	---	---
1.036000	33.60	10.2	56	22.4	---	---
5.000000	26.00	10.7	56	30.0	---	---
5.480000	27.00	10.7	60	33.0	---	---
5.844000	27.60	10.8	60	32.4	---	---

MEASUREMENT RESULT: "ITE_fin AV"

8/14/2009 2:24PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.197600	39.30	10.1	54	14.4	---	---
0.330100	31.00	10.1	49	18.4	---	---

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MEASUREMENT RESULT: "ITE_fin AV"

(continued)

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.395100	30.80	10.1	48	17.1	---	---
0.520000	27.10	10.2	46	18.9	---	---
0.596000	26.60	10.2	46	19.4	---	---
0.800000	23.50	10.2	46	22.5	---	---
5.000000	16.00	10.7	46	30.0	---	---
5.480000	17.30	10.7	50	32.7	---	---
5.912000	17.30	10.8	50	32.7	---	---

8/14/2009 2:27PM HCT EMC LAB

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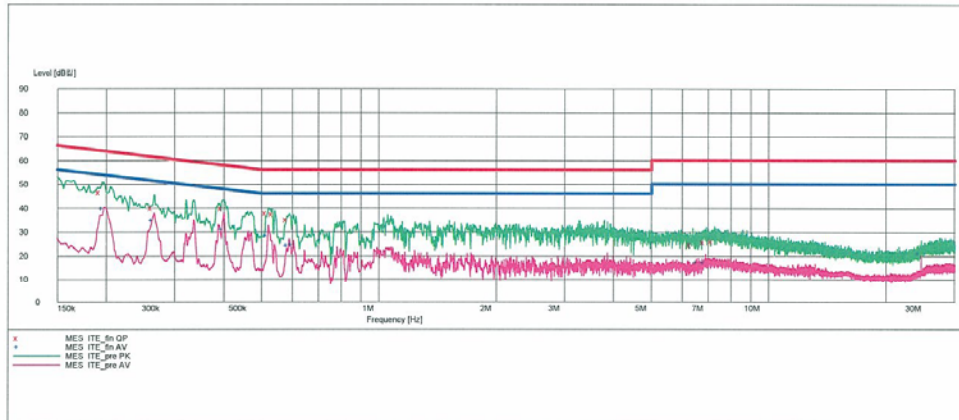
EMC TEST LAB.

EUT: Averatec PT1400
 Manufacturer: TriGem Computer, Inc.
 Operating Condition: NORMAL
 Test Site: SHIELD ROOM
 Operator: GS-KIM
 Test Specification: CISPR 22 CLASS B
 Comment: N (CWT)

SCAN TABLE: "CISPR 22 Voltage"

Short Description: CISPR 22 Voltage

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
Average						
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
Average						
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None



MEASUREMENT RESULT: "ITE_fm QP"

8/14/2009 2:17PM

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Line	PE
0.195100	46.40	10.1	64	17.4	---	---
0.265100	39.90	10.1	61	21.4	---	---
0.400100	39.80	10.1	58	18.1	---	---
0.520000	37.90	10.2	56	18.1	---	---
0.540000	37.40	10.2	56	18.6	---	---
0.588000	35.10	10.2	56	20.9	---	---
6.372000	24.60	10.8	60	35.4	---	---
6.896000	25.70	10.9	60	34.3	---	---
7.244000	26.00	10.9	60	34.0	---	---

MEASUREMENT RESULT: "ITE_fm AV"

8/14/2009 2:17PM

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Line	PE
0.197600	39.60	10.1	54	14.1	---	---
0.265100	34.70	10.1	51	16.6	---	---

8/14/2009 2:18PM HCT EMC LAB



MEASUREMENT RESULT: "ITE_fin AV"

(continued)

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.400100	31.10	10.1	48	16.8	---	---
0.520000	28.30	10.2	46	17.7	---	---
0.588000	24.30	10.2	46	21.7	---	---
0.604000	24.50	10.2	46	21.5	---	---
6.604000	17.10	10.9	50	32.9	---	---
6.880000	17.00	10.9	50	33.0	---	---
24.576000	20.90	12.8	50	29.1	---	---

8/14/2009 2:18PM HCT EMC LAB

HCT PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR0909FR10	Date of Issue: September 29, 2009	EUT Type: NoteBook PC	FCC ID: C8VPT1400	Page 67 of 68



8. LIST OF TEST EQUIPMENT

Manufacturer	Model / Equipment	Cal Interval	Calibration Due	Serial No.
Rohde & Schwarz	ESH2-Z5/ LISN	Annual	04/10/2010	861741/013
Rohde & Schwarz	ESH3-Z6/ LISN	Annual	06/13/2010	100329
Schwarzbeck	VULB 9160/ TRILOG Antenna	Biennial	12/18/2010	9160-3150
HD	MA240/ Antenna Position Tower	N/A	N/A	556
EMCO	1050/ Turn Table	N/A	N/A	114
HD GmbH	HD 100/ Controller	N/A	N/A	13
HD GmbH	KMS 560/ SlideBar	N/A	N/A	12
Rohde & Schwarz	ESH3-Z2/ PULSE LIMITER	Annual	10/30/2009	375.8810.352
MITEQ	AMF-60-0010 1800-35-20P/AMP	Annual	05/20/2010	1200937
Schwarzbeck	BBHA 9120D/ Horn Antenna	Biennial	03/26/2010	147
Rohde & Schwarz	6502/Loop Antenna	Biennial	12/26/2009	9009-2536
Rohde & Schwarz	FSP30/Spectrum Analyzer	Annual	07/31/2010	839117/011
Agilent	E4416A /Power Meter	Annual	01/21/2010	GB41291412
Wainwright Instrument	WHF3.3/18G-10EF / High Pass Filter	Annual	06/29/2010	1
Hewlett Packard	11636B/Power Divider	Annual	12/24/2009	11377
DIGITAL	EP-3010 /DC POWER SUPPLY	Annual	01/07/2010	3110117