

FCC 47 CFR PART 15 SUBPART C: 2009 AND ANSI C63.4: 2003

TEST REPORT

For

Wireless LAN Mobile Router

Model Number: CQW-MR200

Data Applies To : MZK-MR150

Brand: PLANEX COMMUNICATIONS INC. (PCI)

Issued for

PLANEX COMMUNICATIONS INC.

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Issued by

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1. TEST REPORT CERTIFICATION

Applicant	: PLANEX COMMUNICATIONS INC.
Address	: 2F F NISSAY Ebisu Bldg. 3-16-3 Higashi, Shibuya-ku, Tokyo 150-0011,
	Japan
Manufacture	: Amigo Technology Inc.
Address	: 1F, No. 333, Sec. 1, Ti-Ding Blvd., Neihu Technology Park 114, Taipei,
	Taiwan
Equipment Under Test	: Wireless LAN Mobile Router
Model Number	: CQW-MR200
Data Applies To	: MZK-MR150
Brand Name	: PLANEX COMMUNICATIONS INC. (PCI)
Date of Test	: December 14, 2010-January 26, 2011

APPLICABLI	E STANDARD
STANDARD	TEST RESULT
FCC Part 15 Subpart C : 2009 AND ANSI C63.4 : 2003	No non-compliance noted

Approved by:

elever

Jeter Wu Assistant Manager **Reviewed by:**

Buzt

Eric Huang Assistant Section Manager



2. EUT DESCRIPTION

2.1 DESCRIPTION OF EUT & POWER

Product Name	Wireless LAN Mobile Router
Model Number	CQW-MR200
Data Applies To	MZK-MR150
Brand	PLANEX COMMUNICATIONS INC.
Enguanay Danga	IEEE 802.11b/g, 802.11n HT20 (DTS Band):2412MHz~2462MHz
Frequency Range	IEEE 802.11n HT40 (DTS Band):2422MHz~2452MHz
	IEEE 802.11b Mode : 16.39dBm (DTS Band) (43.5512 mW)
Transmit Power	IEEE 802.11g Mode : 19.01dBm (DTS Band) (79.6159 mW)
	IEEE 802.11n HT20 Mode : 18.28dBm (DTS Band) (67.2977 mW)
	IEEE 802.11n HT40 Mode : 17.64dBm (DTS Band) (58.0764 mW)
Channel Spacing	IEEE 802.11b/g, 802.11n HT20/HT40: 5MHz
Channel Number	IEEE 802.11b/g, 802.11n HT20:11 Channels
	IEEE 802.11n HT40 :7 Channels
	IEEE 802.11b :11, 5.5, 2, 1Mbps
	IEEE 802.11g : 54, 48 ,36, 24, 18, 12, 9, 6Mbps
Transmit Data Rate	IEEE 802.11n HT20 : 130, 117 ,104, 78, 65, 58.5, 52, 39, 26, 19.5, 3,
	6.5Mbps
	IEEE 802.11n HT40 : 300, 270, 243 ,216, 162, 135, 121.5, 108, 81, 54,
	40.5, 27, 13.5Mbps
	IEEE 802.11b : DSSS (CCK, DQPSK, DBPSK)
Type of Modulation	IEEE 802.11g : OFDM (64QAM, 16QAM, QPSK, BPSK)
	IEEE 802.11n HT20/40 : OFDM (64QAM, 16QAM, QPSK, BPSK)
Frequency Selection	By software / firmware
	This is a 1TX1RX device with one antenna
	PIFA antenna *1 (1TX1RX)
	Manufacture: BRITO TECHNOLOGY
Antenna Type	Model: EM-15
	Gain: 1.27dBi
	Type: PIFA
	Connector: Printed
	Manufacture: Keen Ocean Industrial Ltd.
Power Source	Model: S01-005-0050-01000 SWP-80189-00 Input:100-240Vac, 50/60Hz, 0.15A max
	Output: 5.0Vdc, 1000mA
Temperature Range	$0 \sim +40^{\circ}\text{C}$

REMARK: 1. The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.

- 2. This submittal(s) (test report) is intended for FCC ID: <u>SJ9-CQW-MR200</u> filing to comply with Section 15.207,15.209 and 15.247 of the FCC Part 15, Subpart C Rules.
- 3. For more details, please refer to the user manual.
- 4. The showed series model as the same except for different the marketing purpose.



3. DESCRIPTION OF TEST MODES

The EUT is a Wireless LAN Mobile Router

The RF chipset is manufactured by Realtek Semiconductor Corp.

The antenna peak gain 1.27 dBi (highest gain) were chosen for full testing.

IEEE 802.11 b ,802.11g ,802.11n HT20 mode (DTS Band)

The EUT had been tested under operating condition.

There are three channels have been tested as following:

Channel	Frequency (MHz)
Low	2412
Middle	2437
High	2462

IEEE 802.11b mode: 11Mbps data rates (worst case) were chosen for full testing.

IEEE 802.11g mode: 6Mbps data rates (worst case) were chosen for full testing.

IEEE 802.11n HT20 mode: 6.5Mbps data rates (worst case) were chosen for full testing.

IEEE 802.11n HT40 mode (DTS Band)

The EUT had been tested under operating condition.

There are three channels have been tested as following:

Channel	Frequency (MHz)
Low	2422
Middle	2437
High	2452

IEEE 802.11n HT40 mode: 13.5Mbps data rates (worst case) were chosen for full testing.

The worst-case data rates are determined according to the description above, based on the investigations by measuring the PSD, peak power and average power across all the data rates, bandwidths, modulations and spatial stream modes.



4. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4 and FCC CFR 47 15.207, 15.209 and 15.247.

5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

No. 8, Jiu Cheng Ling, Jiaokeng Village, Sinhua Township, Tainan Hsien 712, Taiwan R.O.C.

The sites are constructed in conformance with the requirements of ANSI C63.7:1992, ANSI C63.4: 2003 and CISPR Publication 22.

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with preselectors 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."

5.3 LABORATORY ACCREDITATIONS LISTINGS

The test facilities used to perform radiated and conducted emissions tests are accredited by Taiwan Accreditation Foundation for the specific scope of accreditation under Lab Code: 1109 to perform Electromagnetic Interference tests according to FCC PART 15 AND CISPR 22 requirements. No part of this report may be used to claim or imply product endorsement by TAF or any agency of the Government. In addition, the test facilities are listed with Federal Communications Commission (registration no: TW-1037 and 455173).



5.4 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3/10 meter Open Area Test Sites to perform FCC Part 15/18 measurements	FCC 455173 TW-1037
Taiwan	TAF	CISPR 11, FCC METHOD-47 CFR Part 18, EN 55011, EN 60601-1-2, CISPR 22, CNS 13438, EN 55022, EN 55024, AS/NZS CISPR 22 CISPR 14, EN 55014-1, EN 55014-2, CNS 13783-1, CISPR 22, CNS 13439, EN 55013, FCC Method-47 CFR Part 15 Subpart B, IC ICES-003, VCCI V-3 & V-4 FCC Method-47 CFR Part 15 Subpart C and ANSI C63.4, LP 0002 EN / IEC 61000-4-2 / -3 / -4 / -5 / -6 / -8 / -11 EN 61000-3-2, EN 61000-3-3 EN 61000-6-3, EN 61000-6-1, AS/NZS 4251.1, EN 61000-6-4, EN 61000-6-2, AS/NZS 4251.2, EN 61204-3, EN 50130-4, EN 62040-2, EN 50371, EN 50385, AS/NZS 4268, ETSI EN 300 386 ETSI EN 300 328, ETSI EN 301 489-1/-3/-9/-17 ETSI EN 300 328, ETSI EN 300 220-2/-1 ETSI EN 301 893, ETSI EN 300 220-2/-1 ETSI EN 301 357-2/-1 RSS-310, RSS-210 Issue 7, RSS-Gen Issue 2	Testing Laboratory 1109
Taiwan	BSMI	CNS 13438, CNS 13783-1, CNS13439	(本) SL2-IN-E-0039 SL2-R1/R2-0039 SL2-A1-E-0039
Canada	Industry Canada	RSS210, Issue 8	Canada IC 2324H-1

* No part of this report may be used to claim or imply product endorsement by TAF or any agency of the US Government.



6. CALIBRATION AND UNCERTAINTY

6.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

6.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Radiated Emission, 30 to 200 MHz Test Site : OATS-6	±3.38dB
Radiated Emission, 200 to 1000 MHz Test Site : OATS-6	±3.04dB
Radiated Emission, 1 to 26.5 GHz	± 2.38 dB
Power Line Conducted Emission	±2.01dB
Band Edge MU	0.302dBuV
Band Width	136.49kHz
Channel Separation MU	361.69Hz
Duty Cycle MU	0.064ms
Peak Output Power MU	1.904dB
Frequency Stability MU	0.223kHz

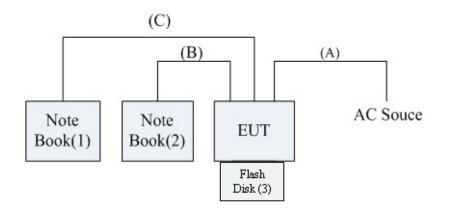
This measurement uncertainty is confidence of approximately 95%, k=2



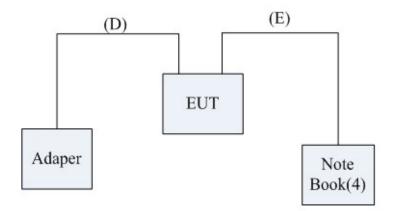
7. SETUP OF EQUIPMENT UNDER TEST

7.1 SETUP CONFIGURATION OF EUT

Below 1GHz Test Setup:



Above 1GHz Test Setup:





7.2 SUPPORT EQUIPMENT

No.	Product	Manufacturer	Model No.	FCC ID	Signal Cable
1	Note Book	IBM	R51	R33026	Power cable, unshd, 1.6m
2	Note Book	MIS	MS-1452	N/A	Power cable, unshd, 1.6m
3.	Flash Disk	Kingston	DTI/512	DoC	N/A
4	Note Book	IBM	T43	DoC	Power cable, unshd, 1.6m

No.	Signal cable description		
А	Adapter cable	Unshielded, 1.4m, 1pcs., with a core.	
В	LAN cable	Unshielded, 4m, 1pcs.	
С	LAN cable	Unshielded, 4m, 1pcs.	
D	DC power	Unshielded, 1.5m, 1pcs.	
Е	LAN cable	Unshielded, 10m, 1pcs.	

REMARK:

- 1. All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.
- 2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.



7.3 EUT OPERATING CONDITION

RF Setup

- 1. Set up all computers like the setup diagram.
- The "Realtek QA Test Program for RTL8188RE" software was used for testing The EUT driver software installed in the host support equipment during testing was Realtek QA Test Program for RTL8188RE Drive

(1) TX Mode:

- ⇒ **Tx Mode:CCK** 、 **OFDM** 、 **HT MixMode** (Bandwidth: 20 、 40)
- ⇒ Tx Data Rate: 11Mbps long (IEEE 802.11b mode ,chain 0 TX) 6Mbps (IEEE 802.11g mode ,chain 0 TX)

6.5Mbps (IEEE 802.11n HT20 mode ,chain 0 TX)

13.5Mbps (IEEE 802.11n HT40 mode, chain 0 TX)

Power control mode

Target Power: IEEE 802.11b Channel Low (2412MHz) = 34
IEEE 802.11b Channel Middle $(2437MHz) = 34$
IEEE 802.11b Channel High (2462MHz) = 34
Target Power: IEEE 802.11g Channel Low (2412MHz) = 34
IEEE 802.11g Channel Middle $(2437MHz) = 34$
IEEE 802.11g Channel High $(2462MHz) = 34$
Target Power: IEEE 802.11n HT20 Channel Low (2412MHz) = 34
IEEE 802.11 n HT20 Channel Middle $(2437MHz) = 34$
IEEE 802.11 n HT20 Channel High (2462MHz) = 34
Target Power: IEEE 802.11n HT40 Channel Low (2422MHz) = 34
IEEE 802.11 n HT40 Channel Middle $(2437MHz) = 34$
IEEE 802.11 n HT40 Channel High (2452MHz) = 34

(2) RX Mode :

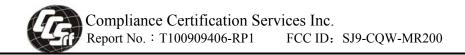
MAC Address: FFFFFFFFFFFF) Start RX

- 3. All of the function are under run.
- 4. Start test.

Normal Link Setup

- 1. Set up all computers like the setup diagram.
- 2. All of the function are under run.
- 3. Notebook PC (2) ping 192.168.0.10 -t to Notebook PC (1).
- 4. Notebook PC (1) ping 192.168.0.20 -t to Notebook PC (2).
- 5. Notebook PC (1) ping 192.168.0.50 -t to Wireless Access Point (3).

Start test.



8. APPLICABLE LIMITS AND TEST RESULTS

8.1 6DB BANDWIDTH

LIMIT

§ 15.247(a) (2) For direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz

TEST EQUIPMENTS

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	R&S	FSEK 30	835253/002	JUL. 14, 2011

TEST SETUP

FUT	SPECTRUM
LOI	ANALYZER

TEST PROCEDURE

The transmitter output was connected to a spectrum analyzer. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 KHz RBW and 100 KHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.



TEST RESULTS

No non-compliance noted.

IEEE 802.11b mode

Channel	Channel Frequency (MHz)	6dB Bandwidth (kHz)	Minimum Limit (kHz)	Pass / Fail
Low	2412	10321	500	PASS
Middle	2437	10321	500	PASS
High	2462	10321	500	PASS

NOTE : 1. At finial test to get the worst-case emission at11Mbps.
 2. The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.

IEEE 802.11g mode

Channel	Channel Frequency (MHz)	6dB Bandwidth (kHz)	Minimum Limit (kHz)	Pass / Fail
Low	2412	16733	500	PASS
Middle	2437	16733	500	PASS
High	2462	16733	500	PASS

NOTE : 1. At finial test to get the worst-case emission at 6Mbps.
2. The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.



IEEE 802.11n HT20 mode

Channel	Channel Frequency (MHz)	6dB Bandwidth (kHz)	Minimum Limit (kHz)	Pass / Fail
Low	2412	17936	500	PASS
Middle	2437	17936	500	PASS
High	2462	17936	500	PASS

At finial test to get the worst-case emission at 6.5Mbps.
 The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.

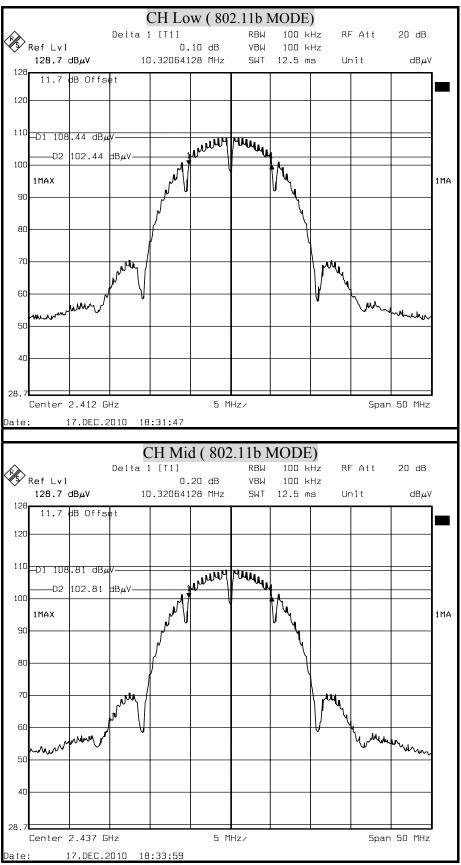
IEEE 802.11n HT40 mode

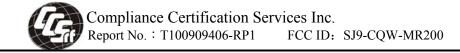
NOTE :

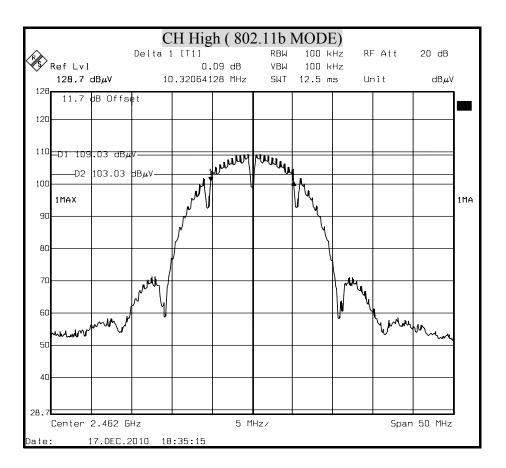
Channel	Channel Frequency (MHz)	6dB Bandwidth (kHz)	Minimum Limit (kHz)	Pass / Fail
Low	2422	36673	500	PASS
Middle	2437	36673	500	PASS
High	2452	36673	500	PASS

NOTE : 1. At finial test to get the worst-case emission at 13.5Mbps.
2. The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.

6dB BANDWIDTH (802.11b MODE)

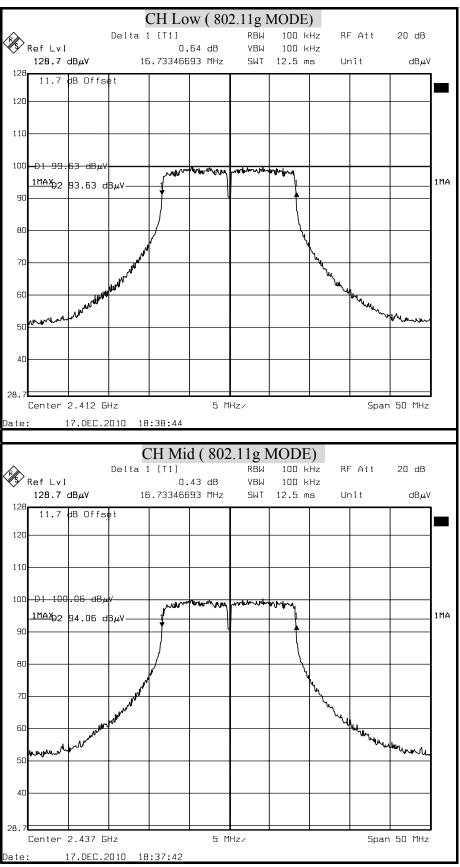


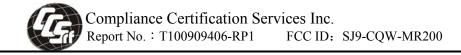


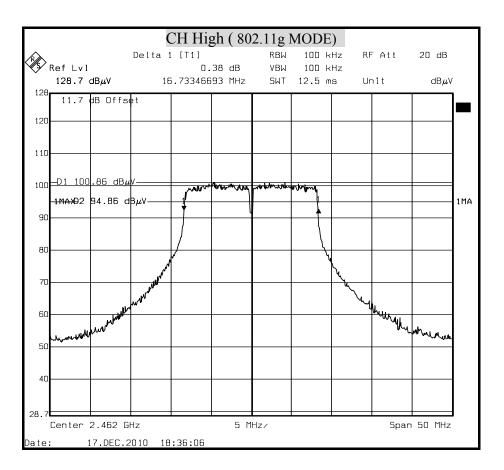




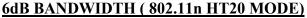
6dB BANDWIDTH (802.11g MODE)

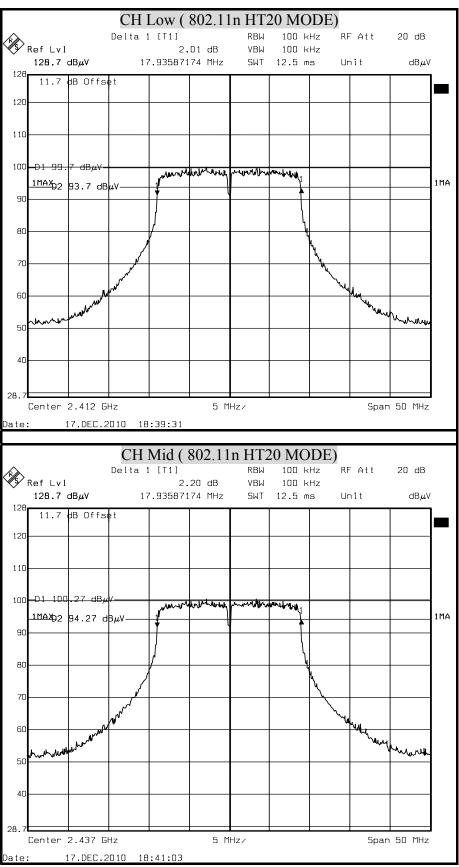


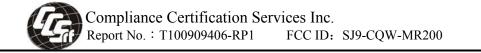


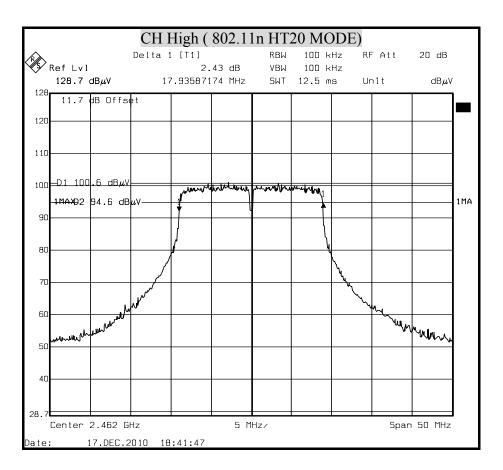




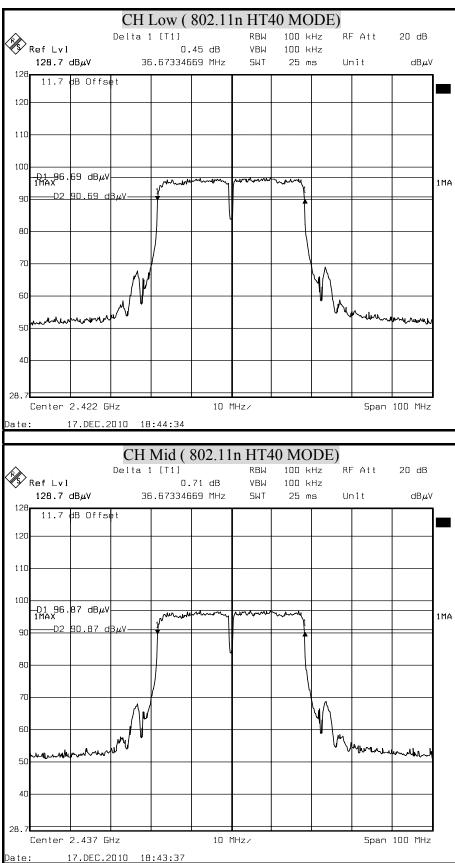




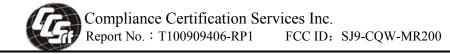


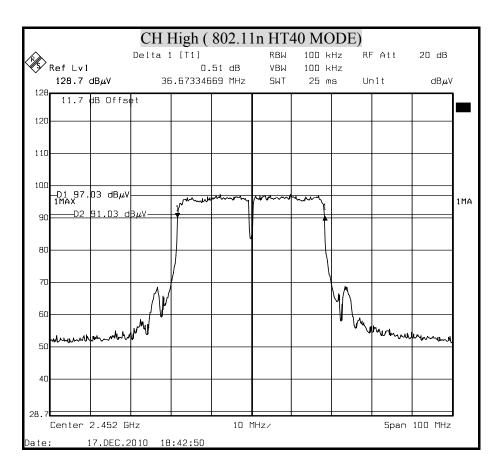






6dB BANDWIDTH (802.11n HT40 MODE)







8.2 MAXIMUM PEAK OUTPUT POWER

LIMIT

§ 15.247(b) The maximum peak output power of the intentional radiator shall not exceed the following :

§ 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.

§ 15.247(b) (4) Except as shown in paragraphs (c) of this section , if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (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 EQUIPMENTS

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Power Meter	Anritsu	ML2487A	6K00003888	MAY 11, 2011

TEST SETUP



TEST PROCEDURE

Connect the EUT to spectrum analyzer, set the center frequency of the spectrum analyzer to the channel center frequency. Set the RBW to 1MHz and VBW to 3MHz.

TEST RESULTS

No non-compliance noted



IEEE 802.11b mode

Channel	Channel Frequency (MHz)	Peak Power (dBm)	Peak Power Limit (dBm)	Pass / Fail
Low	2412	15.51	30	PASS
Middle	2437	15.96	30	PASS
High	2462	16.39	30	PASS

NOTE : 1. At finial test to get the worst-case emission at 11Mbps.

2. The cable assembly insertion loss of 10.5dB (including 10 dB pad and 0.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

IEEE 802.11g mode

Channel	Channel Frequency (MHz)	Peak Power (dBm)	Peak Power Limit (dBm)	Pass / Fail
Low	2412	18.28	30	PASS
Middle	2437	18.58	30	PASS
High	2462	19.01	30	PASS

NOTE: 1.At finial test to get the worst-case emission at 6Mbps.

2. The cable assembly insertion loss of 10.5dB (including 10 dB pad and 0.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.



IEEE 802.11n HT20 mode

Channel	Channel Frequency (MHz)	Peak Power (dBm)	Peak Power Limit (dBm)	Pass / Fail
Low	2412	17.64	30	PASS
Middle	2437	18.17	30	PASS
High	2462	18.28	30	PASS

NOTE : 1.At finial test to get the worst-case emission at 6.5Mbps.

2. The cable assembly insertion loss of 10.5dB (including 10 dB pad and 0.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

IEEE 802.11n HT40 mode

Channel	Channel Frequency (MHz)	Peak Power (dBm)	Peak Power Limit (dBm)	Pass / Fail
Low	2422	17.23	30	PASS
Middle	2437	17.40	30	PASS
High	2452	17.64	30	PASS

NOTE : 1. At finial test to get the worst-case emission at 13.5Mbps.

2. The cable assembly insertion loss of 10.5dB (including 10 dB pad and 0.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

IEEE 802.11b mode

Average Power Data

Channel	Channel Frequency (MHz)	Average Power (dBm)
Low	2412	13.25
Middle	2437	13.65
High	2462	14.05

IEEE 802.11g mode

Average Power Data

Channel	Channel Frequency (MHz)	Average Power (dBm)	
Low	2412	8.59	
Middle	2437	9.03	
High	2462	9.49	

IEEE 802.11n HT20 mode

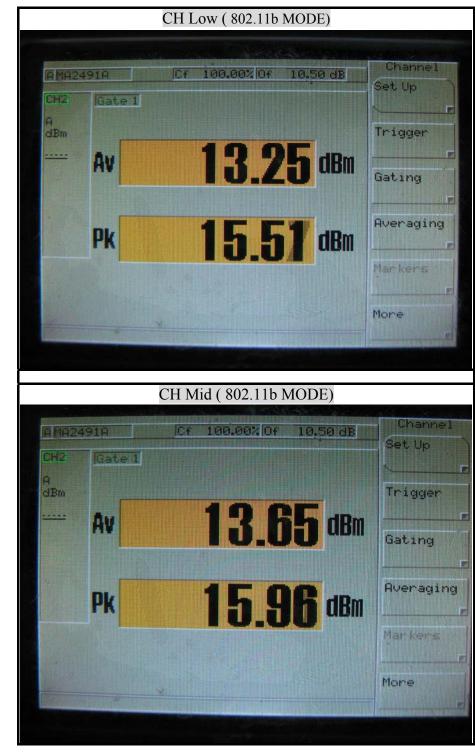
Average Power Data

Channel	Channel Frequency (MHz)	Average Power (dBm)	
Low	2412	8.50	
Middle	2437	8.94	
High	2462	9.33	

IEEE 802.11n HT40 mode Average Power Data

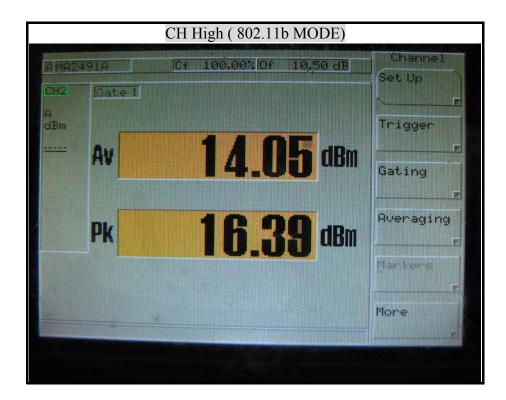
Channel	Channel Frequency (MHz)	Average Power (dBm)	
Low	2422	8.49	
Middle	2437	8.74	
High	2452	9.11	





MAXIMUM PEAK OUTPUT POWER (802.11b MODE)





Gating

Averaging

Markers

More



Channe Cf 100.00% Of 10.50 dB AMA2491A Set Up CH2 Gate 1 A dBm Trigger 8.59 dBm A۷ Gating Averaging 18.28 dBm Pk Markers Mone CH Mid (802.11g MODE) Channel Cf 100.00% Of 10.50 dB e Me2491 e Set Up Gate 1 Trigger dBm 9.03 dBm Av

MAXIMUM PEAK OUTPUT POWER (802.11g MODE)

CH Low (802.11g MODE)

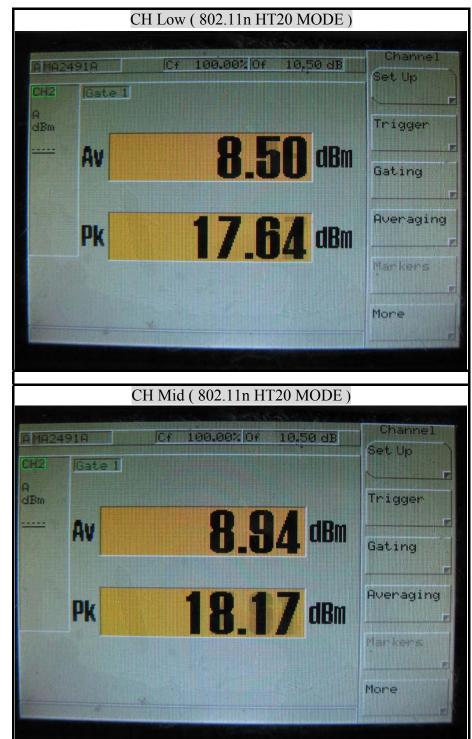
18.58 dBm

Pk



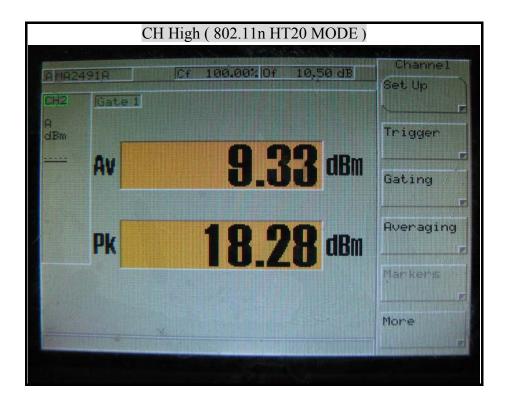




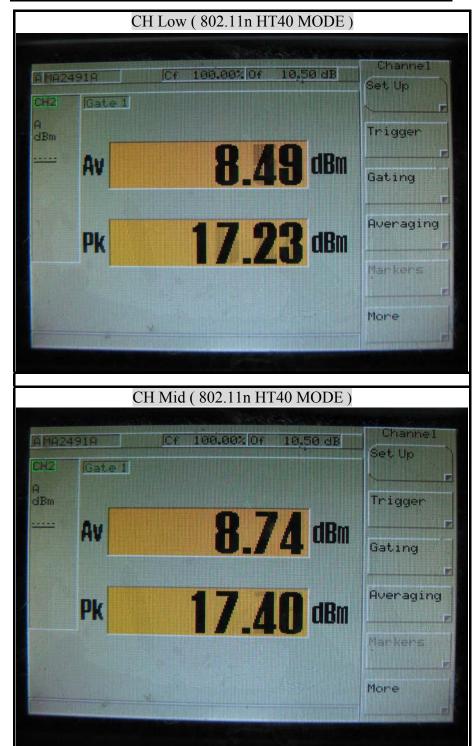


MAXIMUM PEAK OUTPUT POWER (802.11n HT20 MODE)



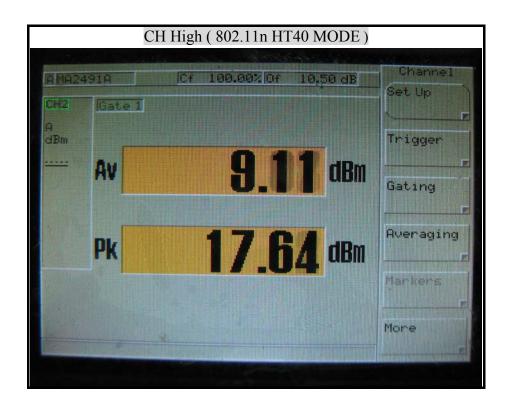






MAXIMUM PEAK OUTPUT POWER (802.11n HT40 MODE)







8.3 MAXIMUM PERMISSIBLE EXPOSURE

According to FCC 1.1310 : The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time		
(A) Limits for Occupational / Control Exposures						
300-1,500			F/300	6		
1,500-100,000			5	6		
(B) Limits for General Population / Uncontrol Exposures						
300-1,500			F/1500	6		
1,500-100,000			1	30		

CALCULATIONS

Given

$$E = \frac{\sqrt{30 \times P \times G}}{d} \quad \& \quad S = \frac{E^2}{3770}$$

Where E = Field strength in Volts / meter

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{3770d^2}$$

Changing to units of mW and cm, using:

$$P(mW) = P(W) / 1000 and$$

 $d(cm) = d(m) / 100$

Yields

$$S = \frac{30 \times (P/1000) \times G}{3770 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2}$$

Where d = Distance in cm P = Power in mW G = Numeric antenna gain S = Power density in mW/cm²



LIMIT

Power Density Limit, S=1.0mW/cm²

TEST RESULTS

No non-compliance noted. $S = \frac{30 \times (P/1000) \times G}{3770 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2}$

G=1.276dBi=1.34047895 dB

IEEE 802.11b=0.0796*40.17908*1.58489319/400=0.011618

IEEE 802.11g=0.0796*111.6863*1.58489319/400=0.021238

IEEE 802.11n HT20 =0.0796*102.8016*1.58489319/400=0.017952

IEEE 802.11n HT40 =0.0796*77.09035*1.58489319/400=0.015492

Mode	Minimum separation distance (cm)	Output Power (dBm)	Output Power (mw)	Antenna Gain (dBi)	Power Density Limit (mW/cm ²)	Power Density at 20cm (mW/cm ²)
IEEE 802.11b	20	16.39	43.55	1.27	1.00	0.011618
IEEE 802.11g	20	19.01	79.62	1.27	1.00	0.021238
IEEE 802.11n HT20	20	18.28	67.30	1.27	1.00	0.017952
IEEE 802.11n HT40	20	17.64	58.08	1.27	1.00	0.015492

REMARK: For mobile or fixed location transmitters, the maximum power density is 1.0 mW/cm² even if the calculation indicates that the power density would be larger.



8.4 POWER SPECTRAL DENSITY

LIMIT

§ 15.247(e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST EQUIPMENTS

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	R&S	FSEK 30	835253/002	JUL. 14, 2011

TEST SETUP

EUT		SPECTRUM ANALYZER
-----	--	----------------------

TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using RBW=3KHz and VBW \ge RBW, set sweep time=span / 3KHz.

The power spectral density was measured and recorded.

The sweep time is allowed to be longer than span / 3KHz for a full response of the mixer in the spectrum analyzer.

TEST RESULTS

No non-compliance noted.



IEEE 802.11b mode

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)	Maximum Limit (dBm)	Pass / Fail
Low	2412	-17.53	8	PASS
Middle	2437	-16.97	8	PASS
High	2462	-16.83	8	PASS

NOTE : 1. At finial test to get the worst-case emission at 11Mbps.

2. The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

IEEE 802.11g mode

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)	Maximum Limit (dBm)	Pass / Fail
Low	2412	-21.22	8	PASS
Middle	2437	-20.80	8	PASS
High	2462	-20.44	8	PASS

NOTE : 1. At finial test to get the worst-case emission at 6Mbps.

2. The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

IEEE 802.11n HT20 mode

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)	Maximum Limit (dBm)	Pass / Fail
Low	2412	-20.74	8	PASS
Middle	2437	-20.43	8	PASS
High	2462	-20.06	8	PASS

NOTE: 1. At finial test to get the worst-case emission at 6.5Mbps.

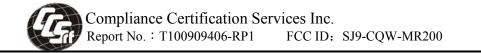
2. The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

IEEE 802.11n HT40 mode

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)	Maximum Limit (dBm)	Pass / Fail
Low	2422	-23.85	8	PASS
Middle	2437	-23.81	8	PASS
High	2452	-23.37	8	PASS

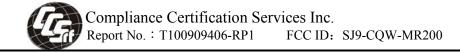
NOTE : 1. At finial test to get the worst-case emission at 13.5Mbps.

2. The cable assembly insertion loss of 11.7dB (including 10 dB pad and 1.7 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

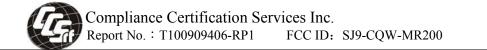


POWER SPECTRAL DENSITY (IEEE 802.11b MODE)

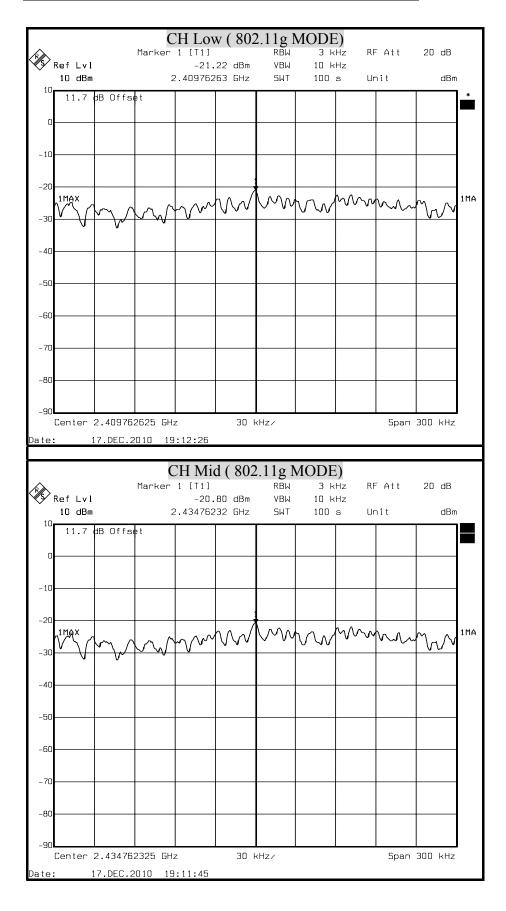
~			(Marker	CH Lov	w (802	2.11b I RBW	MODE	E) Hz RI	- ^++	20 dB	
Ś	Ref Lvl			-17. 2.412639	53 dBm						
10	10 dBm	dB Offse		2.412639	JUB GHZ	SWI	100	s Ur	nıt I	dBm I) 1 - 11 - 1
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٥	1										1
-10]										
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-20	1MAX								$ \rangle$		1MA
-30									V		
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-50	I										
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-70	ı ———										
-80											
-90		2.41263	L 8778 GH:	z	1 30 I	≺Hz∕			l Span	1 300 kHz	J
Date	:	17.DEC.2	2010 19	1:05:48							
			(TH Mi	d (802	2.11h M	MODE	6)			
(R)			(Marker			RBW	3 k	Hz RI	- Att	20 dB	
Ť	Ref Lvl 10 dBm		Marker	1 [T1]	97 dBm	RBW VBW	3 k 10 k	Hz RI			1
F 5 10	10 dBm		Marker 2	1 [⊤1] -16.	97 dBm	RBW VBW	3 k 10 k	:Hz RI :Hz			
Ť	10 dBm		Marker 2	1 [⊤1] -16.	97 dBm	RBW VBW	3 k 10 k	:Hz RI :Hz			
10	10 dBm		Marker 2	1 [⊤1] -16.	97 dBm	RBW VBW	3 k 10 k	:Hz RI :Hz			
10	10 dBm		Marker 2	1 [⊤1] -16.	97 dBm	RBW VBW	3 k 10 k	:Hz RI :Hz			
10	10 dBm		Marker 2	1 [T1] -16. 2.437704	97 dBm	RBW VBW SWT	3 k 10 k	Hz RF		dBm	
10 0 -10 -20	10 dBm 11.7		Marker 2	1 [T1] -16. 2.437704	97 dBm 71 GHz	RBW VBW SWT	3 k 10 k 100	Hz RF	nit	dBm	1MA
10 0 -10	10 dBm 11.7		Marker 2	1 [T1] -16. 2.437704	97 dBm 71 GHz	RBW VBW SWT	3 k 10 k 100	Hz RF	nit	dBm	
10 0 -10 -20	10 dBm		Marker 2	1 [T1] -16. 2.437704	97 dBm 71 GHz	RBW VBW SWT	3 k 10 k 100	Hz RF	nit	dBm	
10 -10 -20 -30 -40	10 dBm 11.7		Marker 2	1 [T1] -16. 2.437704	97 dBm 71 GHz	RBW VBW SWT	3 k 10 k 100	Hz RF	nit	dBm	
10 -10 -20 -30	10 dBm 11.7		Marker 2	1 [T1] -16. 2.437704	97 dBm 71 GHz	RBW VBW SWT	3 k 10 k 100	Hz RF	nit	dBm	
10 -10 -20 -30 -40	10 dBm		Marker 2	1 [T1] -16. 2.437704	97 dBm 71 GHz	RBW VBW SWT	3 k 10 k 100	Hz RF	nit	dBm	
10 10 -10 -20 -30 -40 -50 -60	10 dBm		Marker 2	1 [T1] -16. 2.437704	97 dBm 71 GHz	RBW VBW SWT	3 k 10 k 100	Hz RF	nit	dBm	
10 10 -10 -20 -30 -40 -50	10 dBm		Marker 2	1 [T1] -16. 2.437704	97 dBm 71 GHz	RBW VBW SWT	3 k 10 k 100	Hz RF	nit	dBm	
10 10 -10 -20 -30 -40 -50 -60	10 dBm		Marker 2	1 [T1] -16. 2.437704	97 dBm 71 GHz	RBW VBW SWT	3 k 10 k 100	Hz RF	nit	dBm	
10 10 -10 -20 -30 -40 -50 -60 -70 -80	10 dBm		Marker 2	1 [T1] -16. 2.437704	97 dBm 71 GHz	RBW VBW SWT	3 k 10 k 100	Hz RF	nit	dBm	
10 10 -10 -20 -30 -40 -50 -60 -70	10 dBm		Marker 2 2 1	1 [T1] -16. 2.437704	97 dBm 71 GHz	RBW VBW SWT	3 k 10 k 100	Hz RF		dBm	1MA

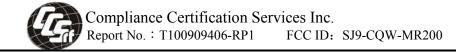


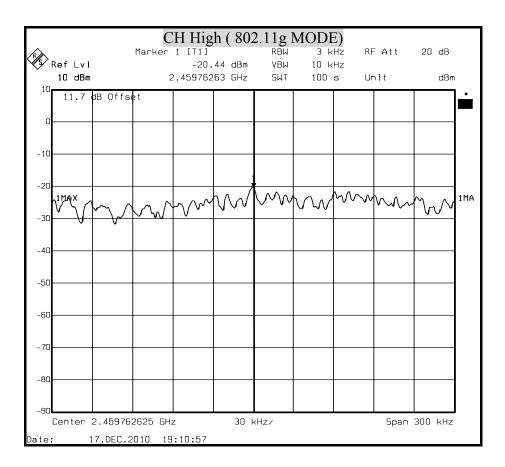
	CH Hig	gh (802.11	b MOD	E)			
>	Marker 1 [T1]	R	34 ЗТ	kHz RF	Att	20 dB	
′Ref Lvl 10 dBm	-16. 2.462703	.83 dBm V 371 GHz S			nit	dBm	
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11.7 dB Off	set						
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Center 2.4627	03707 GHz	30 kHz∕			Span	300 kHz	

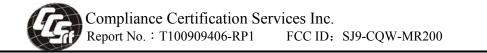


POWER SPECTRAL DENSITY (IEEE 802.11g MODE)

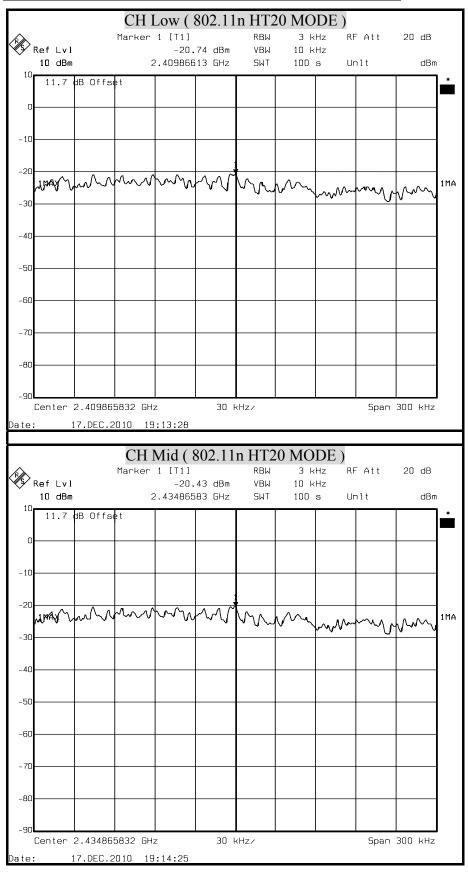


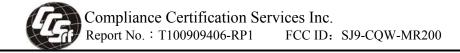






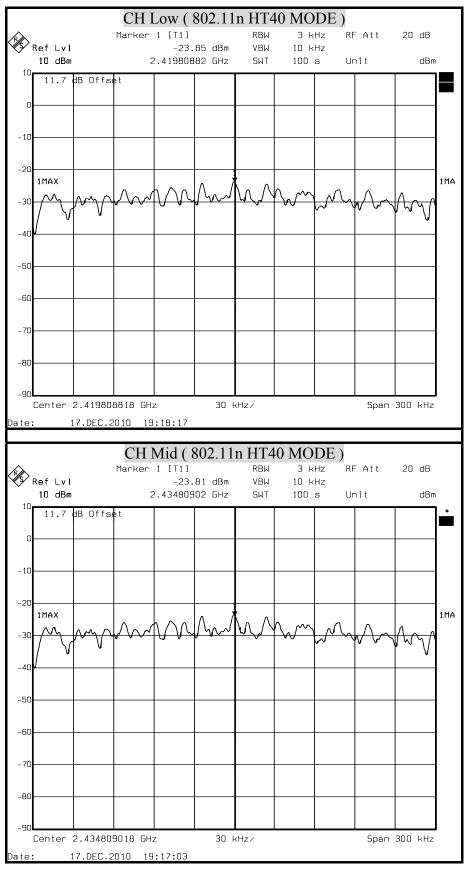
POWER SPECTRAL DENSITY (802.11n HT20 MODE)

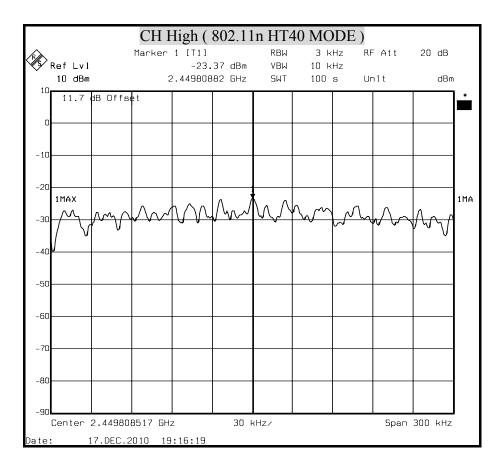




	CH High (802.11n H	Г20 MODE	Ε)		
1 Alexandre	Marker 1 [T1]	RBI		RF Att	20 dB	
₩SY Ref Lvl		.06 dBm VBI			10	
10 dBm 10	2.459868	513 GHz 5W	T 100 s	Unit	dBm	
11.7 dB Off.	set					*
0						
- 10						
-20						
w may want	handlow	$f \sim v \sim v \sim v$	m	mon	m	1MA
-30					v v	
-40						
-50						
-60						
-70						
-80						
-90 Center 2,4598	65832 GHz	30 kHz/		 Span	300 kHz	
	2010 19:15:12			opun	555 MIL	









8.5 CONDUCTED SPURIOUS EMISSION

LIMITS

§ 15.247(d) 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 20 dB below that in the 100 kHz bandwidth within the and 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 PROCEDURE

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

The spectrum from 30 MHz to 26.5 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

TEST SETUP



TEST RESULTS

No non-compliance noted.



TEST DATA

IEEE 802.11b mode

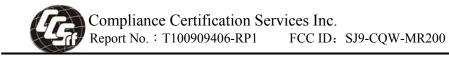
Low

Frequency	Offset	Reading	Level	Limit	Margin	
(MHz)	(dB)	(dBµV)	(dBµV)	(dBµV)	(dB)	Pass/Fail
2412	11.7	96.47	108.17	N/A	N/A	
6925.99198	11.7	44.48	56.18	88.17	-31.99	Pass
13821.98397	11.7	44.00	55.7	88.17	-32.47	Pass

Mid

Frequency	Offset	Reading	Level	Limit	Margin	
(MHz)	(dB)	(dBµV)	(dBµV)	(dBµV)	(dB)	Pass/Fail
2437	11.7	96.87	108.57	N/A	N/A	
6607.71543	11.7	44.84	56.54	88.57	-32.03	Pass
14140.26052	11.7	43.76	55.46	88.57	-33.11	Pass

Frequency	Offset	Reading	Level	Limit	Margin	
(MHz)	(dB)	(dBµV)	(dBµV)	(dBµV)	(dB)	Pass/Fail
2462	11.7	95.32	107.02	N/A	N/A	
6713.80762	11.7	43.94	55.64	87.02	-31.38	Pass
12814.10822	11.7	43.33	55.03	87.02	-31.99	Pass



IEEE 802.11g mode

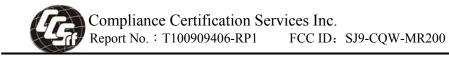
Low

Frequency	Offset	Reading	Level	Limit	Margin	
(MHz)	(dB)	(dBµV)	(dBµV)	(dBµV)	(dB)	Pass/Fail
2412	11.7	88.14	99.84	N/A	N/A	
6766.85371	11.7	44.58	56.28	79.84	-23.56	Pass
9047.83567	11.7	43.06	54.76	79.84	-25.08	Pass

Mid

Frequency	Offset	Reading	Level	Limit	Margin	
(MHz)	(dB)	(dBµV)	(dBµV)	(dBµV)	(dB)	Pass/Fail
2437	11.7	88.52	100.22	N/A	N/A	
6925.99198	11.7	44.49	56.19	80.22	-24.03	Pass
13397.61523	11.7	44.07	55.77	80.22	-24.45	Pass

Frequency	Offset	Reading	Level	Limit	Margin	
(MHz)	(dB)	(dBµV)	(dBµV)	(dBµV)	(dB)	Pass/Fail
2462	11.7	89.26	100.96	N/A	N/A	
6925.99198	11.7	46.15	57.85	80.96	-23.11	Pass
12389.73948	11.7	43.83	55.53	80.96	-25.43	Pass



IEEE 802.1120 mode

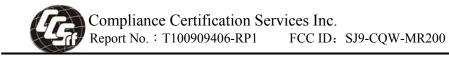
Low

Frequency	Offset	Reading	Level	Limit	Margin	
(MHz)	(dB)	(dBµV)	(dBµV)	(dBµV)	(dB)	Pass/Fail
2412	11.7	87.87	99.57	N/A	N/A	
6979.03808	11.7	45.90	57.6	79.57	-21.97	Pass
8517.37475	11.7	44.60	56.3	79.57	-23.27	Pass

Mid

Frequency	Offset	Reading	Level	Limit	Margin	
(MHz)	(dB)	(dBµV)	(dBµV)	(dBµV)	(dB)	Pass/Fail
2437	11.7	87.90	99.6	N/A	N/A	
6979.03808	11.7	44.21	55.91	79.60	-23.69	Pass
8305.19038	11.7	42.02	53.72	79.60	-25.88	Pass

Frequency	Offset	Reading	Level	Limit	Margin	
(MHz)	(dB)	(dBµV)	(dBµV)	(dBµV)	(dB)	Pass/Fail
2462	11.7	89.04	100.74	N/A	N/A	
6979.03808	11.7	44.73	56.43	80.74	-24.31	Pass
10427.03407	11.7	41.75	53.45	80.74	-27.29	Pass



IEEE 802.1140 mode

Low

Frequency	Offset	Reading	Level	Limit	Margin	
(MHz)	(dB)	(dBµV)	(dBµV)	(dBµV)	(dB)	Pass/Fail
2422	11.7	84.30	96	N/A	N/A	
6979.03808	11.7	44.46	56.16	76.00	-19.84	Pass
11275.77154	11.7	42.30	54	76.00	-22.00	Pass

Mid

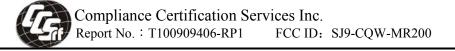
Frequency	Offset	Reading	Level	Limit	Margin	
(MHz)	(dB)	(dBµV)	(dBµV)	(dBµV)	(dB)	Pass/Fail
2437	11.7	84.93	96.63	N/A	N/A	
6979.03808	11.7	43.70	55.4	76.63	-21.23	Pass
14140.26052	11.7	43.51	55.21	76.63	-21.42	Pass

Frequency	Offset	Reading	Level	Limit	Margin	
(MHz)	(dB)	(dBµV)	(dBµV)	(dBµV)	(dB)	Pass/Fail
2452	11.7	84.68	96.38	N/A	N/A	
6979.03808	11.7	44.02	55.72	76.38	-20.66	Pass
13928.07615	11.7	44.53	56.23	76.38	-20.15	Pass



		CH I	.ow (3	0MHz	~26.50	GHz) (802.1	lb M	ODE)		
<u>k</u>		011 -	Marker	1 [T1]	20.0	RBW	100 k	Hz F	RF Att	20 dB	
XY	Ref Lvl		2	108.1	7 dBµV	VBW	100 k				
128		∃BµV	2	2.412000	UU GHz	SWT	6.8	s l	Jnit	dBµV	
	11.7	dB Offse	et				▼1	[T1]		17 dBµV	
120									2.41200		
							×2	[T1]	6.92599	18 dBµV	
110	1						2	[71]		190 GHZ 70 dBµV	
	l ĭ						Ū		13.82198		
100											
100	1MAX										1MA
90											1116
JU	—D1 88.	17 dBµV									
80											
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50	Mulun	dimension of			· •		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				
40											
28.7											
	Start 30	D MHz			2.647	GHz/			Stop 2	6.5 GHz	
Date	: 1	7.DEC.2	010 19	:55:45							
		СНМ	Aid (3)	0MHz	-26 50	3H2) (802 11	h M(JDE)		
~		CH N	Mid (30		~26.50					20 dB	
<u></u>	Ref Lvl	CH N	Mid (30 Marker	1 [T1]			100 k 100 k	Hz F Hz	RF Att	20 dB	
×)	Ref Lvl 128.7 (Marker	1 [T1]	7 dBµV	RBW	100 k 100 k	Hz F	RF Att	20 dB dBµV	,
E 128	128.7 0	dBμV	Marker 2	1 [T1] 108.5	7 dBµV	RBW VBW	100 k 100 k 6.8	Hz F Hz s l	RF Att Jnit	dBµV	, 1
128	128.7 c		Marker 2	1 [T1] 108.5	7 dBµV	RBW VBW	100 k 100 k 6.8	Hz F Hz	RF Att Jnit 108.	dΒμV 57 dΒμV	
·	128.7 c	dBμV	Marker 2	1 [T1] 108.5	7 dBµV	RBW VBW	100 k 100 k 6.8 ▼1	Hz F Hz s l	RF Att Jnit 108. 2.43700	dΒμV 57 dΒμV	
128	128.7 c	dBμV	Marker 2	1 [T1] 108.5	7 dBµV	RBW VBW	100 k 100 k 6.8 ▼1	Hz F Hz s l	RF Att Jnit 108. 2.43700	dBμV 57 dBμV 000 GHz 54 dBμV	
128	128.7 0	dBμV	Marker 2	1 [T1] 108.5	7 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz s l	RF Att Jnit 2.43700 56. 6.60771 55.	dBμV 57 dBμV 000 GHz 54 dBμV 543 GHz 46 dBμV	
128 120	128.7 0	dBμV	Marker 2	1 [T1] 108.5	7 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz l [T1]	RF Att Jnit 2.43700 56. 6.60771	dBμV 57 dBμV 000 GHz 54 dBμV 543 GHz 46 dBμV	
128 120	128.7 0	dBμV	Marker 2	1 [T1] 108.5	7 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz l [T1]	RF Att Jnit 2.43700 56. 6.60771 55.	dBμV 57 dBμV 000 GHz 54 dBμV 543 GHz 46 dBμV	
128 120 110	128.7 0	dBμV	Marker 2	1 [T1] 108.5	7 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz l [T1]	RF Att Jnit 2.43700 56. 6.60771 55.	dBμV 57 dBμV 000 GHz 54 dBμV 543 GHz 46 dBμV	1MA
128 120 110	128.7 d	∃BµV ∃B Offsα	Marker 2	1 [T1] 108.5	7 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz l [T1]	RF Att Jnit 2.43700 56. 6.60771 55.	dBμV 57 dBμV 000 GHz 54 dBμV 543 GHz 46 dBμV	
128 120 110	128.7 d	∃BµV ∃B Offsα	Marker 2	1 [T1] 108.5	7 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz l [T1]	RF Att Jnit 2.43700 56. 6.60771 55.	dBμV 57 dBμV 000 GHz 54 dBμV 543 GHz 46 dBμV	
128 120 110	128.7 d	∃BµV ∃B Offsα	Marker 2	1 [T1] 108.5	7 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz l [T1]	RF Att Jnit 2.43700 56. 6.60771 55.	dBμV 57 dBμV 000 GHz 54 dBμV 543 GHz 46 dBμV	
128 120 110 100 90	128.7 d	∃BµV ∃B Offsα	Marker 2	1 [T1] 108.5	7 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz l [T1]	RF Att Jnit 2.43700 56. 6.60771 55.	dBμV 57 dBμV 000 GHz 54 dBμV 543 GHz 46 dBμV	
128 120 110 100 90	128.7 d	∃BµV ∃B Offsα	Marker 2	1 [T1] 108.5	7 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz l [T1]	RF Att Jnit 2.43700 56. 6.60771 55.	dBμV 57 dBμV 000 GHz 54 dBμV 543 GHz 46 dBμV	
128 120 110 100 90 80	128.7 d	∃BµV ∃B Offsα	Marker 2	1 [T1] 108.5	7 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz l [T1]	RF Att Jnit 2.43700 56. 6.60771 55.	dBμV 57 dBμV 000 GHz 54 dBμV 543 GHz 46 dBμV	
128 120 110 100 90 80	128.7 d	∃BµV ∃B Offsα	Marker 2	1 [T1] 108.5	7 dBµV	RBW VBW SWT	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz l [T1]	RF Att Jnit 2.43700 56. 6.60771 55.	dBμV 57 dBμV 000 GHz 54 dBμV 543 GHz 46 dBμV	
128 120 110 100 90 80 70	128.7 d	∃BµV ∃B Offsα	Marker 2	1 [T1] 108.5	7 dBµV	RBW VBW SWT	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz l [T1]	RF Att Jnit 2.43700 56. 6.60771 55.	dBμV 57 dBμV 000 GHz 54 dBμV 543 GHz 46 dBμV	
128 120 110 100 90 80 70 60	128.7 d	∃BµV ∃B Offsα	Marker 2	1 [T1] 108.5	7 dBµV	RBW VBW SWT	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz l [T1]	RF Att Jnit 2.43700 56. 6.60771 55.	dBμV 57 dBμV 000 GHz 54 dBμV 543 GHz 46 dBμV	
128 120 110 100 90 80 70	128.7 d	∃BµV ∃B Offsα	Marker 2	1 [T1] 108.5	7 dBµV	RBW VBW SWT	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz l [T1]	RF Att Jnit 2.43700 56. 6.60771 55.	dBμV 57 dBμV 000 GHz 54 dBμV 543 GHz 46 dBμV	
128 120 110 110 90 80 70 60 50	128.7 d	∃BµV ∃B Offsα	Marker 2	1 [T1] 108.5	7 dBµV	RBW VBW SWT	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz l [T1]	RF Att Jnit 2.43700 56. 6.60771 55.	dBμV 57 dBμV 000 GHz 54 dBμV 543 GHz 46 dBμV	
128 120 110 100 90 80 70 60	128.7 d	∃BµV ∃B Offsα	Marker 2	1 [T1] 108.5	7 dBµV	RBW VBW SWT	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz l [T1]	RF Att Jnit 2.43700 56. 6.60771 55.	dBμV 57 dBμV 000 GHz 54 dBμV 543 GHz 46 dBμV	
128 120 110 110 90 80 70 60 50	128.7 d	∃BµV ∃B Offsα	Marker 2	1 [T1] 108.5	7 dBµV	RBW VBW SWT	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz l [T1]	RF Att Jnit 2.43700 56. 6.60771 55.	dBμV 57 dBμV 000 GHz 54 dBμV 543 GHz 46 dBμV	
128 120 110 110 90 80 70 60 50	128.7 c	B Offse 57 dBμV	Marker 2	1 [T1] 108.5	7 dBµV 00 GHz	КВЫ УВЫ SЫТ	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz l [T1]	RF Att 108. 2.43700 56. 6.60771 55. 14.14026	dBμV 57 dBμV 000 GHz 54 dBμV 543 GHz 052 GHz	1MA
128 120 110 100 90 80 70 60 50 50	128.7 d	B Offse 57 dBμV	Marker 2	1 [T1] 108.5 2.437000	7 dBµV	КВЫ УВЫ SЫТ	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz l [T1]	RF Att 108. 2.43700 56. 6.60771 55. 14.14026	dBμV 57 dBμV 000 GHz 54 dBμV 543 GHz 46 dBμV	1MA

(IEEE 802.11b MODE)

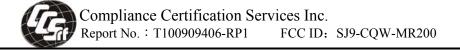


(R)	Ref Lvl		High (Marker	1 [T1]	Iz~3G	Hz) (8 ^{RBW} VBW	100 k 100 k	Hz	DDE) RF Att	20 dB	
Ť	128.7	dBµV	2	2.462000		SML	6.8		Unīt	dBµV	
128 120	11.7	dB Offse	e t				▼1 ▽2	[T1]	2.46200	02 dBµV 000 GHz	
110	1	,						[T1] [T1]	6.71380 55.	64 dBµV 1762 GHz 03 dBµ∀	
100									12.81410	822 GHz	
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80											
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5U 40	Mar										
28.7											
Date	Start 3	0 MHz 17.DEC.2	010 19	:57:56	2.647	GHz/			Stop 2	26.5 GHz	



		_									
		CH L	.ow (3	0MHz	~26.50	GHz) (802.1	lg M	IODE)		
(R)			Marker	1 [T1]		RBW	100 k	Hz	RF Att	20 dB	
×¥	Ref Lvl		2		4 dBµV	VBW	100 k		11	-10	
128	128.7			.412000	UU GHZ	SWT	0.0	s	Unit	dBµV	
	11.7	dB Offs€	et				▼1	[T1]		84 dBµV	
120									2.41200		_
							⊽2	[T1]		28 dBµV	
110							Va	[T1]		371 GHz 76 dBµV	
110								[]]]		567 GHz	
	1								5.04105	001 0112	
100											
	1MAX										1MA
90											
80	D1 79	84 dBµ/V									
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20.7	Start 3	0 MHz			2.647	GHz/			Stop 2	6.5 GHz	
Date		17.DEC.2	010 20	.02.02							
Date	•	IT.ULU.2	010 20	. UZ . UZ							
		_									
		CH N	Aid (30	0MHz [,]	~26.50	GHz) (802.11	lg M	ODE)		
<u>k</u>			Mid (30 Marker	1 [T1]		RBW	100 k	Hz	ODE) RF Att	20 dB	
¢}	Ref Lvl		Marker	1 [T1] 100.2	2 dBµV	RBW VBW	100 k 100 k	Hz Hz	RF Att		
•	128.7		Marker	1 [T1]	2 dBµV	RBW	100 k	Hz Hz		20 dB dBµV	
F 128	128.7		Marker 2	1 [T1] 100.2	2 dBµV	RBW VBW	100 k 100 k 6.8	Hz Hz	RF Att Unit	dBμV	
128	128.7 11.7	dBµV	Marker 2	1 [T1] 100.2	2 dBµV	RBW VBW	100 k 100 k 6.8	Hz Hz s	RF Att Unit		
•	128.7 11.7	dBµV	Marker 2	1 [T1] 100.2	2 dBµV	RBW VBW	100 k 100 k 6.8 ▼1	Hz Hz s	RF Att Unit 2.43700 56.	dBμV 22 dBμV 000 GHz 19 dBμV	
128 120	128.7	dBµV	Marker 2	1 [T1] 100.2	2 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF Att Unit 2.43700 56. 6.92599	dBμV 22 dBμV 000 GHz 19 dBμV 198 GHz	
128	128.7	dBµV	Marker 2	1 [T1] 100.2	2 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1]	RF Att Unit 2.43700 56. 6.92599 55.	dBμV 22 dBμV 000 GHz 19 dBμV 198 GHz 77 dBμV	
128 120	128.7	dBµV	Marker 2	1 [T1] 100.2	2 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF Att Unit 2.43700 56. 6.92599	dBμV 22 dBμV 000 GHz 19 dBμV 198 GHz 77 dBμV	
128 120	128.7 11.7 <u>1</u>	dBµV	Marker 2	1 [T1] 100.2	2 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF Att Unit 2.43700 56. 6.92599 55.	dBμV 22 dBμV 000 GHz 19 dBμV 198 GHz 77 dBμV	
128 120 110	128.7 11.7 <u>1</u>	dBµV	Marker 2	1 [T1] 100.2	2 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF Att Unit 2.43700 56. 6.92599 55.	dBμV 22 dBμV 000 GHz 19 dBμV 198 GHz 77 dBμV	1MA
128 120 110	128.7 11.7	dBµV	Marker 2	1 [T1] 100.2	2 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF Att Unit 2.43700 56. 6.92599 55.	dBμV 22 dBμV 000 GHz 19 dBμV 198 GHz 77 dBμV	1MA
128 120 110 100	128.7 11.7	dBµV	Marker 2	1 [T1] 100.2	2 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF Att Unit 2.43700 56. 6.92599 55.	dBμV 22 dBμV 000 GHz 19 dBμV 198 GHz 77 dBμV	1MA
128 120 110 100	128.7 11.7 1 1MAX	dBµV	Marker 2	1 [T1] 100.2	2 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF Att Unit 2.43700 56. 6.92599 55.	dBμV 22 dBμV 000 GHz 19 dBμV 198 GHz 77 dBμV	1MA
128 120 110 100 90	128.7 11.7 1 1MAX	dBµV dB Offs⊲	Marker 2	1 [T1] 100.2	2 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF Att Unit 2.43700 56. 6.92599 55.	dBμV 22 dBμV 000 GHz 19 dBμV 198 GHz 77 dBμV	1MA
128 120 110 100 90 80	128.7 11.7 1 1MAX	dBµV dB Offs⊲	Marker 2	1 [T1] 100.2	2 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF Att Unit 2.43700 56. 6.92599 55.	dBμV 22 dBμV 000 GHz 19 dBμV 198 GHz 77 dBμV	1MA
128 120 110 100 90	128.7 11.7 1 1MAX	dBµV dB Offs⊲	Marker 2	1 [T1] 100.2	2 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF Att Unit 2.43700 56. 6.92599 55.	dBμV 22 dBμV 000 GHz 19 dBμV 198 GHz 77 dBμV	1MA
128 120 110 100 90 80 70	128.7 11.7 1 1MAX	dBµV dB Offs⊲	Marker 2	1 [T1] 100.2	2 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF Att Unit 2.43700 56. 6.92599 55.	dBμV 22 dBμV 000 GHz 19 dBμV 198 GHz 77 dBμV	1MA
128 120 110 100 90 80	128.7 11.7 1 1MAX	dBµV dB Offs⊲	Marker 2	1 [T1] 100.2	2 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF Att Unit 2.43700 56. 6.92599 13.39761	dBμV 22 dBμV 000 GHz 19 dBμV 198 GHz 77 dBμV 523 GHz	1MA
128 120 110 100 90 80 70	128.7 11.7 1 1MAX	dBµV dB Offs⊲	Marker 2	1 [T1] 100.2	2 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF Att Unit 2.43700 56. 6.92599 13.39761	dBμV 22 dBμV 000 GHz 19 dBμV 198 GHz 77 dBμV 523 GHz	1MA
128 120 110 100 90 80 70	128.7 11.7 1 1MAX 	dBµV dB Offs⊲	Marker 2	1 [T1] 100.2	2 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF Att Unit 2.43700 56. 6.92599 55.	dBμV 22 dBμV 000 GHz 19 dBμV 198 GHz 77 dBμV 523 GHz	1MA
128 120 110 100 90 80 70 60	128.7 11.7 1 1MAX 	dBµV dB Offs⊲	Marker 2	1 [T1] 100.2	2 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF Att Unit 2.43700 56. 6.92599 13.39761	dBμV 22 dBμV 000 GHz 19 dBμV 198 GHz 77 dBμV 523 GHz	1MA
128 120 110 100 90 80 70 60	128.7 11.7 1 1MAX 	dBµV dB Offs⊲	Marker 2	1 [T1] 100.2	2 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF Att Unit 2.43700 56. 6.92599 13.39761	dBμV 22 dBμV 000 GHz 19 dBμV 198 GHz 77 dBμV 523 GHz	1MA
128 120 110 100 90 80 70 60 50	128.7 11.7 1 1MAX 	dBµV dB Offs⊲	Marker 2	1 [T1] 100.2	2 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF Att Unit 2.43700 56. 6.92599 13.39761	dBμV 22 dBμV 000 GHz 19 dBμV 198 GHz 77 dBμV 523 GHz	1MA
128 120 110 100 90 80 70 60 50 40	128.7 11.7 1 1 1 1 1 1 1 1 1 1 1 1 1	dBµV dB Offs⊲	Marker 2	1 [T1] 100.2	2 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF Att Unit 2.43700 56. 6.92599 13.39761	dBμV 22 dBμV 000 GHz 19 dBμV 198 GHz 77 dBμV 523 GHz	1MA
128 120 110 100 90 80 70 60 50	128.7 11.7 1 1MAX -D1 80 -D1 80	dBµV dB Offse 22-dBµV	Marker 2	1 [T1] 100.2	2 dB,µV 00 GHz		100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF Att Unit 100. 2.43700 56. 6.92599 13.39761 13.39761	dBμV 22 dBμV 19 dBμV 198 GHz 523 GHz	1MA
128 120 110 100 90 80 70 60 50 40	128.7 11.7 1 1 1 1 1 1 1 1 1 1 1 1 1	dBµV dB Offse 22-dBµV	Marker 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 [T1] 100.2 437000	2 dBµV		100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF Att Unit 100. 2.43700 56. 6.92599 13.39761 13.39761	dBμV 22 dBμV 000 GHz 19 dBμV 198 GHz 77 dBμV 523 GHz	1MA

(802.11g MODE)



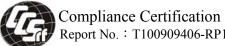
(R)			(<mark>igh (3</mark> ^{Marker}	1 [T1]		RBW	100 k	Hz F	ODE) RF Att	20 dB	
Ť	Ref Lvl 128.7 d	dBμV	2	100.9 462000	6 dBμV ΟΟ GHz	VBW SWT	100 k 6.8		Jnit	dBµV	
128	11.7	dB Offs€	et				▼1	[T1]		96 dBµV 000 GHz	
							⊽2	[T1]	6.92599	85 dBµV 198 GHz	
110	1						<u>v</u> 3	[T1]	12.38973	53 dBµ∀ 948 GHz	
100	1MAX										1MA
90	D1 90	96 dB <i>µ</i> V									
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28.7	Start 30) MHz			2.647	GHz/			Stop 2	26.5 GHz	
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	CI	IIow	(20M	U_7, γ_6	S S G U	<u>_) (80′</u>) 11n I		MODI	2)	
	CI	I LOW	Marker	$112\sim 20$ 1 [T1]).3011	2) (00∡ RBW	100 k	Hz F	MODE	∠) 20 dB	
×	Reflvl				7 dBµV	VBW	100 k				
·	128.7 c	IBμV	2	.412000	00 GHz	SWT	6.8	s l	Unit	dBµV	,
128		B Offse					- .				1
	11.1	000156	51				•1	[T1]		57 dBμV	
120							V∩	[T1]	2.41200	иии вн <u>г</u> 60 dBµV	
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110								[T1]		000 0∩2 38 dBµ ∀	
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28.7	Start 30	1 MU-7			2.647	CH-7 /			Stop 2	6.5 GHz	,
					2.047	01127			στομ Ζ	0.0 012	
Date	: 1	7.DEC.2	010 20	:07:33							
	CI	TMI	(20)	11- <u>2</u> 4	FOIL	-) (907) 11 I		MODI	2.)	
	CI				5.5GHz				MODE		
() In the second			(30M Marker	1 [T1]		RBW	100 k	Hz I	MODE		
	Ref Lvl		Marker	1 [T1] 99.6	0 dBµV	RBW VBW	100 k 100 k	Hz F Hz	RF Att	20 dB	,
Ŷ	Ref Lvl 128.7 c	IBµV	Marker 2	1 [T1]	0 dBµV	RBW	100 k 100 k	Hz I	RF Att		, ,
128	Ref Lvl 128.7 c		Marker 2	1 [T1] 99.6	0 dBµV	RBW VBW	100 k 100 k 6.8	Hz I Hz s I	RF Att Unit	20 dB dBµV	,]
128	Ref Lvl 128.7 c	IBµV	Marker 2	1 [T1] 99.6	0 dBµV	RBW VBW	100 k 100 k 6.8	Hz F Hz	RF Att Unit	20 dB dBμV 60 dBμV	
Ŷ	Ref Lvl 128.7 c	IBµV	Marker 2	1 [T1] 99.6	0 dBµV	RBW VBW	100 k 100 k 6.8 ▼1	Hz I Hz s I	RF Att Unit 99. 2.43700	20 dB dBμV 60 dBμV	
128	Ref Lvl 128.7 c	IBµV	Marker 2	1 [T1] 99.6	0 dBµV	RBW VBW	100 k 100 k 6.8 ▼1	Hz f Hz s l	RF Att Unit 99. 2.43700	20 dB dBµV 60 dBµV 000 GHz 91 dBµV	
128	Ref Lvl 128.7 c	IBµV	Marker 2	1 [T1] 99.6	0 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz f Hz s l	RF Att Unit 2.43700 55. 6.97903	20 dB dBµV 60 dBµV 000 GHz 91 dBµV	
128 120	Ref Lvl 128.7 c	IBµV	Marker 2	1 [T1] 99.6	0 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz s ([T1]	RF Att Unit 2.43700 55. 6.97903	20 dB dBµV 60 dBµV 000 GHz 91 dBµV 808 GHz 72 dBµV	
128 120 110	Ref Lvl 128.7 c	IBµV	Marker 2	1 [T1] 99.6	0 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz s ([T1]	RF Att Unit 2.43700 55. 6.97903 53.	20 dB dBµV 60 dBµV 000 GHz 91 dBµV 808 GHz 72 dBµV	
128 120	Ref Lvl 128.7 c 11.7 c	IBµV	Marker 2	1 [T1] 99.6	0 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz s ([T1]	RF Att Unit 2.43700 55. 6.97903 53.	20 dB dBµV 60 dBµV 000 GHz 91 dBµV 808 GHz 72 dBµV	
128 120 110	Ref Lvl 128.7 c	IBµV	Marker 2	1 [T1] 99.6	0 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz s ([T1]	RF Att Unit 2.43700 55. 6.97903 53.	20 dB dBµV 60 dBµV 000 GHz 91 dBµV 808 GHz 72 dBµV	
128 120 110	Ref Lvl 128.7 c 11.7 c 11.7 c	IBµV	Marker 2	1 [T1] 99.6	0 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz s ([T1]	RF Att Unit 2.43700 55. 6.97903 53.	20 dB dBµV 60 dBµV 000 GHz 91 dBµV 808 GHz 72 dBµV	
128 120 110 100	Ref Lvl 128.7 c 11.7 c 11.7 c	IBµV	Marker 2	1 [T1] 99.6	0 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz s ([T1]	RF Att Unit 2.43700 55. 6.97903 53.	20 dB dBµV 60 dBµV 000 GHz 91 dBµV 808 GHz 72 dBµV	
128 120 110 100	Ref Lvl 128.7 c 11.7 c	BμV B Offse	Marker 2	1 [T1] 99.6	0 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz s ([T1]	RF Att Unit 2.43700 55. 6.97903 53.	20 dB dBµV 60 dBµV 000 GHz 91 dBµV 808 GHz 72 dBµV	
128 120 110 100 90	Ref Lvl 128.7 c 11.7 c	IBµV	Marker 2	1 [T1] 99.6	0 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz s ([T1]	RF Att Unit 2.43700 55. 6.97903 53.	20 dB dBµV 60 dBµV 000 GHz 91 dBµV 808 GHz 72 dBµV	
128 120 110 100 90 80	Ref Lvl 128.7 c 11.7 c 11.7 c 11.7 c 11.7 c 11.7 c	BμV B Offse	Marker 2	1 [T1] 99.6	0 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz s ([T1]	RF Att Unit 2.43700 55. 6.97903 53.	20 dB dBµV 60 dBµV 000 GHz 91 dBµV 808 GHz 72 dBµV	
128 120 110 100 90	Ref Lvl 128.7 c 11.7 c 11.7 c 11.7 c 11.7 c 11.7 c	BμV B Offse	Marker 2	1 [T1] 99.6	0 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz s ([T1]	RF Att Unit 2.43700 55. 6.97903 53.	20 dB dBµV 60 dBµV 000 GHz 91 dBµV 808 GHz 72 dBµV	
128 120 110 100 90 80	Ref Lvl 128.7 c 11.7 c 11.7 c 11.7 c 11.7 c 11.7 c	BμV B Offse	Marker 2	1 [T1] 99.6	0 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz s ([T1]	RF Att Unit 2.43700 55. 6.97903 53.	20 dB dBµV 60 dBµV 000 GHz 91 dBµV 808 GHz 72 dBµV	
128 120 110 100 90 80	Ref Lvl 128.7 c 11.7 c 11.7 c 11.7 c 11.7 c 11.7 c	BμV B Offse	Marker 2	1 [T1] 99.6	0 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz s ([T1]	RF Att Unit 2.43700 55. 6.97903 53.	20 dB dBµV 60 dBµV 000 GHz 91 dBµV 808 GHz 72 dBµV	
128 120 110 100 90 80 70	Ref Lvl 128.7 c 11.7 c 11.7 c 11.7 c 11.7 c 11.7 c	BμV B Offse	Marker 2	1 [T1] 99.6	0 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz s ([T1]	RF Att Unit 2.43700 55. 6.97903 53.	20 dB dB _µ V 60 dB _µ V 91 dB _µ V 808 GHz 72 dB_µV 038 GHz	
128 120 110 110 90 80 70 60	Ref Lvl 128.7 c 11.7 c 11.7 c 11.7 c 11.7 c 11.7 c	BμV B Offse	Marker 2	1 [T1] 99.6	0 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz s ([T1]	RF Att Unit 2.43700 55. 6.97903 53.	20 dB dBµV 60 dBµV 000 GHz 91 dBµV 808 GHz 72 dBµV	
128 120 110 100 90 80 70	Ref Lvl 128.7 c 11.7 c 11.7 c 11.7 c 11.7 c 11.7 c	BμV B Offse	Marker 2	1 [T1] 99.6	0 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz s ([T1]	RF Att Unit 2.43700 55. 6.97903 53.	20 dB dB _µ V 60 dB _µ V 91 dB _µ V 808 GHz 72 dB_µV 038 GHz	
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128 120 110 110 90 80 70 60	Ref Lvl 128.7 c 11.7 c 11.7 c 11.7 c 11.7 c 11.7 c	BμV B Offse	Marker 2	1 [T1] 99.6	0 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz s ([T1]	RF Att Unit 2.43700 55. 6.97903 53.	20 dB dB _µ V 60 dB _µ V 91 dB _µ V 808 GHz 72 dB_µV 038 GHz	
128 120 110 100 90 80 70 60 50	Ref Lvl 128.7 c 11.7 c 11.7 c 11.7 c 11.7 c 11.7 c	BμV B Offse	Marker 2	1 [T1] 99.6	0 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz s ([T1]	RF Att Unit 2.43700 55. 6.97903 53.	20 dB dB _µ V 60 dB _µ V 91 dB _µ V 808 GHz 72 dB_µV 038 GHz	
128 120 110 100 90 80 70 60 50 50	Ref Lvl 128.7 c 11.7 c 11.7 c 11.7 c 11.7 c 11.7 c	BμV B Offse	Marker 2	1 [T1] 99.6	0 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz s ([T1]	RF Att Unit 2.43700 55. 6.97903 53.	20 dB dB _µ V 60 dB _µ V 91 dB _µ V 808 GHz 72 dB_µV 038 GHz	
128 120 110 100 90 80 70 60 50	Ref Lvl 128.7 c 11.7 c 11.7 c 1 1MAX <u>D1 79 c</u>	BµV B Offse G dBµV−	Marker 2	1 [T1] 99.6	0 dB,µV 00 GHz	RBW VBW SWT	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz s ([T1]	RF Att Jnit 2.43700 55. 6.97903 8.30519 8.30519	20 dB dB _µ V 60 dB _µ V 91 dB _µ V 808 GHz 72 dB _µ V 038 GHz 	1MA
128 120 110 100 90 80 70 60 50 50	Ref Lv1 128.7 c 11.7 c 11.7 c 1 1MAX D1 79 c D1 79 c Start 30	BµV B Offse G dBµV−	Marker 2 2 1 1	1 [T1] 99.6	0 dBµV	RBW VBW SWT	100 k 100 k 6.8 ▼1 ▽2	Hz F Hz s ([T1]	RF Att Jnit 2.43700 55. 6.97903 8.30519 8.30519	20 dB dB _µ V 60 dB _µ V 91 dB _µ V 808 GHz 72 dB_µV 038 GHz	1MA

(802.11n HT20 MODE)

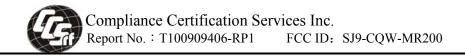
[\mathbf{C}	H High	(30M)	H_{7}	5 5 GH	z) (80′) 11n]		0 MODI	E)	
1 Alian		l i i i i i i i i i i i i i i i i i i i	Marker	$1 [T12] \sim 20$ 1 [T1]	5.5011	Z) (802 RBW	100 k	Hz	RF Att	20 dB	
Ŵ	Ref Lvl				4 dBµV		100 k				
128		dBµV	2	.462000	OO GHz	SWT	6.8	S	Unīt	dBµV	_
120	11.7	dB Offse	et					[T1]	2.46200		
							_	[T1]	6.97903		
110	1						⊽3-	[T1]	53. 10.42703	45 dBµ∀ 407 GHz	
100	1MAX										1MA
90											
80	_D1 80	74 dBµV									
70											
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50	meter	haran	whenthen	mant	www.	him	hunnt	hun	Lauren and March	mm	
40											
28.7	Start 3	0 MHz	1		2.647	GHz∕			Stop 2	6.5 GHz	1
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			/									
•	\mathbf{C}	H Low	(30M	$Hz\sim 26$	5.5GH	z) (802	2.11n l	HT4	0 M	DDF	E)	
×	Ref Lvl		Marker		IO dBµV	RBW VBW	100 K 100 k		RF A	tt	20 dB	
\sim	128.7	dBµV	2	2.422000	,	SWT			Unit		dBµ\	/
128		dB Offse					T 4	[T1]		00		,
			- 1				•1	[]]]			00 dBµV 000 GHz	
120							⊽2	[T1]			16 dBµV	-
									6.9		808 GHz	
110								[T1]			88 dB µ∀	
									11.2	7577	154 GHz	
100	1											
	1MAX											1MA
90												
80												
	—D1 76	dBµV——										
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	no.											
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28.7	L Start 3				2.647	GHz /			5+	on 2	6.5 GHz	
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	C	H Mid	(30M	Hz~26	6.5GHz	z) (802						
(Real of the second sec			(30M Marker	1 [T1]		RBW	100 k	Hz			E) 20 dB	
Ś	Ref Lvl		Marker	1 [T1] 96.6	i3 dBµV	RBW VBW	100 k 100 k	Hz Hz	RF A	t t	20 dB	/
128	Ref Lvl 128.7	dBµV	Marker 2	1 [T1] 96.6	i3 dBµV	RBW	100 k 100 k 6.8	Hz Hz s		tt	20 dB dBµ\	
Ŷ	Ref Lvl 128.7		Marker 2	1 [T1] 96.6	i3 dBµV	RBW VBW	100 k 100 k 6.8	Hz Hz	RF A	tt 96.	20 dB dBµ\ 63 dBµV	
Ŷ	Ref Lvl 128.7	dBµV	Marker 2	1 [T1] 96.6	i3 dBµV	RBW VBW	100 k 100 k 6.8 ▼1	Hz Hz s [T1]	RF A	96. 3700	20 dB dB#V 63 dB#V 000 GHz	
128	Ref Lvl 128.7	dBµV	Marker 2	1 [T1] 96.6	i3 dBµV	RBW VBW	100 k 100 k 6.8 ▼1	Hz Hz s	RF A	96. 3700 55.	20 dB dBμ\ 63 dBμV 000 GHz 40 dBμV	
128	Ref Lvl 128.7	dBµV	Marker 2	1 [T1] 96.6	i3 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1]	RF A	96. 3700 55.	20 dB dB#V 63 dB#V 000 GHz	
128 120	Ref Lvl 128.7	dBµV	Marker 2	1 [T1] 96.6	i3 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF A	96. 3700 55. 7903 55.	20 dB dBμ\ 63 dBμV 000 GHz 40 dBμV 808 GHz	
128 120	Ref Lvl 128.7	dBµV	Marker 2	1 [T1] 96.6	i3 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF A	96. 3700 55. 7903 55.	20 dB dBµ\ 63 dBµV 000 GHz 40 dBµV 808 GHz 21 dBµV	
* 128 120 110	Ref Lvl 128.7	dBµV	Marker 2	1 [T1] 96.6	i3 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF A	96. 3700 55. 7903 55.	20 dB dBµ\ 63 dBµV 000 GHz 40 dBµV 808 GHz 21 dBµV	
* 128 120 110	Ref Lv1 128.7	dBµV	Marker 2	1 [T1] 96.6	i3 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF A	96. 3700 55. 7903 55.	20 dB dBµ\ 63 dBµV 000 GHz 40 dBµV 808 GHz 21 dBµV	
128 120 110	Ref Lv1 128.7	dBµV	Marker 2	1 [T1] 96.6	i3 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF A	96. 3700 55. 7903 55.	20 dB dBµ\ 63 dBµV 000 GHz 40 dBµV 808 GHz 21 dBµV	
128 120 110 100 90	Ref Lv1 128.7	dBµV	Marker 2	1 [T1] 96.6	i3 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF A	96. 3700 55. 7903 55.	20 dB dBµ\ 63 dBµV 000 GHz 40 dBµV 808 GHz 21 dBµV	
128 120 110	Ref Lv1 128.7 11.7 11.7	dBµV	Marker 2	1 [T1] 96.6	i3 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF A	96. 3700 55. 7903 55.	20 dB dBµ\ 63 dBµV 000 GHz 40 dBµV 808 GHz 21 dBµV	
128 120 110 100 90 80	Ref Lv1 128.7 11.7 11.7	dBµV dB Offs∉	Marker 2	1 [T1] 96.6	i3 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF A	96. 3700 55. 7903 55.	20 dB dBµ\ 63 dBµV 000 GHz 40 dBµV 808 GHz 21 dBµV	
128 120 110 100 90	Ref Lv1 128.7 11.7 11.7	dBµV dB Offs∉	Marker 2	1 [T1] 96.6	i3 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF A	96. 3700 55. 7903 55.	20 dB dBµ\ 63 dBµV 000 GHz 40 dBµV 808 GHz 21 dBµV	
128 120 110 100 90 80 70	Ref Lv1 128.7 11.7 11.7	dBµV dB Offs∉	Marker 2	1 [T1] 96.6	i3 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF A	96. 3700 55. 7903 55.	20 dB dBµ\ 63 dBµV 000 GHz 40 dBµV 808 GHz 21 dBµV	
128 120 110 100 90 80	Ref Lv1 128.7 11.7 11.7	dBµV dB Offs∉	Marker 2	1 [T1] 96.6	i3 dBµV	RBW VBW	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF A	96. 3700 55. 7903 55.	20 dB dBµ\ 63 dBµV 000 GHz 40 dBµV 808 GHz 21 dBµV	
128 120 110 100 90 80 70 60	Ref Lv1 128.7 11.7 11.7	dBµV dB Offs∉	Marker 2 2 1	1 [T1] 96.6	i3 dBµV	RBW VBW SWT	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF A	96. 3700 55. 7903 55.	20 dB dBµ\ 63 dBµV 000 GHz 40 dBµV 808 GHz 21 dBµV	1MA
128 120 110 100 90 80 70	Ref Lv1 128.7 11.7 11.7	dBµV dB Offs∉	Marker 2 2 1	1 [T1] 96.6	i3 dBµV	RBW VBW SWT	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF A	96. 3700 55. 7903 55.	20 dB dBµV 63 dBµV 000 GHz 40 dBµV 808 GHz 21 dBµV 052 GHz	1MA
128 120 110 100 90 80 70 60 50	Ref Lv1 128.7 11.7 11.7	dBµV dB Offs∉	Marker 2 2 1	1 [T1] 96.6	i3 dBµV	RBW VBW SWT	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF A	96. 3700 55. 7903 55.	20 dB dBµV 63 dBµV 000 GHz 40 dBµV 808 GHz 21 dBµV 052 GHz	1MA
128 120 110 100 90 80 70 60	Ref Lv1 128.7 11.7 11.7	dBµV dB Offs∉	Marker 2 2 1	1 [T1] 96.6	i3 dBµV	RBW VBW SWT	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF A	96. 3700 55. 7903 55.	20 dB dBµV 63 dBµV 000 GHz 40 dBµV 808 GHz 21 dBµV 052 GHz	1MA
128 120 110 100 90 80 70 60 50	Ref Lv1 128.7 11.7 11.7	dBµV dB Offs∉	Marker 2 2 1	1 [T1] 96.6	i3 dBµV	RBW VBW SWT	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF A	96. 3700 55. 7903 55.	20 dB dBµV 63 dBµV 000 GHz 40 dBµV 808 GHz 21 dBµV 052 GHz	1MA
128 120 110 100 90 80 70 60 50	Ref Lv1 128.7 11.7 1MAX	dBµV dB Offse 63 dBµV	Marker 2 2 1	1 [T1] 96.6	3 dB,µV 00 GHz	RВ₩ УВ₩ S₩T	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF A	96. 3700 55. 7903 55. 4026	20 dB dBµV 63 dBµV 000 GHz 40 dBµV 808 GHz 21 dBµV 052 GHz 	
128 120 110 100 90 80 70 60 50 40	Ref Lv1 128.7 11.7 11.7 1MAX	dBµV dB Offse 63 dBµV	Marker 2 2 1	1 [T1] 96.6	i3 dBµV	RВ₩ УВ₩ S₩T	100 k 100 k 6.8 ▼1 ▽2	Hz Hz s [T1] [T1]	RF A	96. 3700 55. 7903 55. 4026	20 dB dBµV 63 dBµV 000 GHz 40 dBµV 808 GHz 21 dBµV 052 GHz	

(802.11n HT40 MODE)

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~	C.	H Higr	1 (<i>3</i> 01VI Marker	$HZ \sim 20$	5.3GH	Z) (80. RBW	2.11n 100 k	HI49	0 MODI RF Att	Ľ) 20 dB	
	Ref Lvl		nai kei		8 dBµV		100 k		NI HII	20 00	
~	128.7		2	.452000		SWT	6.8	s	Unīt	dBµV	
128	11 7	dB Offse	۱.				v ₁	[T1]	00	38 dBµV	
								1111	2.45200		
120							⊽2	[T1]		72 dBµV	
									6.97903	808 GHz	
110								[T1]		23 dBµ ∀	
									13.92807	615 GHz	
100	1										
	1MAX										1MA
90											
80											
	—D1 76	38 dBµV									
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50	a Mart	moun	her the	million	min	Mun	moun	mon	ren	man	
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	Start 3	30 MHz			2.647	GHz/			Stop 2	6.5 GHz	
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8.6 RADIATED EMISSIONS

8.6.1 TRANSMITTER RADIATED SUPURIOUS EMSSIONS

LIMITS

§ 15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 -1710	10.6 -12.7
6.26775 - 6.26825	108 -121.94	1718.8 - 1722.2	13.25 -13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 – 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 -16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3338	36.43 - 36.5
12.57675 - 12.57725	322 -335.4	3600 - 4400	(²)
13.36 - 13.41			

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

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



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

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

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

§ 15.209 (b) In the emission table above, the tighter limit applies at the band edges.

TEST EQUIPMENTS

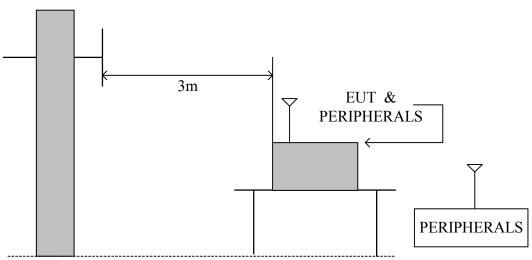
The following test equipments are utilized in making the measurements contained in this report.

Open Area Test Site # 6											
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due							
TYPE N COAXIAL CABLE	SUHNER	CHA9513	6	NOV. 17, 2011							
BI-LOG Antenna	Sunol	JB1	A070506-2	OCT. 4, 2011							
LOOP ANTENNA	EMCO	6502	8905-2356	JUN. 10, 2011							
Pre-Amplifier	HP	8447F	2944A03817	NOV. 23, 2011							
EMI Receiver	R&S	ESVS10	833206/012	MAY 10, 2011							
RF Cable	SUHNER	SUCOFLEX104PEA	20520/4PEA	NOV. 10, 2011							
Horn Antenna	Com-Power	AH-118	071032	DEC. 27, 2011							
Spectrum Analyzer	R&S	FSEK 30	835253/002	JUL. 14, 2011							
Pre-Amplifier	MITEQ	AFS44-00108650-42-10P-44	1205908	NOV. 23, 2011							
Turn Table	Yo Chen	001		N.C.R.							
Antenna Tower	AR	TP1000A	309874	N.C.R.							
Controller	СТ	SC101		N.C.R.							
Test S/W		e-3 (5.04303	e)	1							



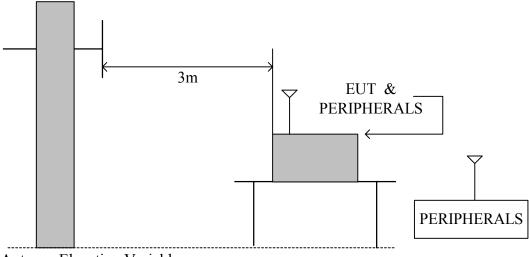
TEST SETUP

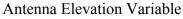
The diagram below shows the test setup that is utilized to make the measurements for emission from 30 to 1GHz.



Antenna Elevation Variable

The diagram below shows the test setup that is utilized to make the measurements for emission above 1GHz.







TEST PROCEDURE

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

NOTE:

- 1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 KHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
- 2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection and frequency above 1GHz.
- 3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.
- 4. No emission is found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz)

TEST RESULTS

No non-compliance noted.

8.6.2 WORST-CASE RADIATED EMISSION BELOW 1 GHz

Product Name	Wireless LAN Mobile Router	Test Date	2010/12/27
Model	CQW-MR200	Test By	John Chen
Test Mode	Normal operating / worst case	TEMP& Humidity	17.2°C, 47%

Horizontal

Frequency	Meter Reading	Antenna Factor	Cable Loss	Emission Level	Limits	Margin	Detector Mode
(MHz)	(dBµV)	(dB/M)	(dB)	(dBµV/M)	(dB µ V/M)	(dB)	PK/QP
70.52	13.62	8.71	1.29	23.61	40.00	-16.39	QP
156.25	19.42	13.41	2.15	34.98	43.50	-8.53	QP
312.50	14.85	14.44	3.42	32.71	46.00	-13.29	QP
468.75	11.62	17.58	4.53	33.73	46.00	-12.27	QP
781.25	10.93	21.73	5.94	38.60	46.00	-7.40	QP
811.94	11.59	22.07	6.04	39.70	46.00	-6.30	QP
N/A							

Vertical

Frequency	Meter Reading	Antenna Factor	Cable Loss	Emission Level	Limits	Margin	Detector Mode
(MHz)	(dBµV)	(dB/M)	(dB)	(dBµV/M)	(dB µ V/M)	(dB)	PK/QP
68.42	26.37	9.09	1.27	36.73	40.00	-3.27	QP
113.51	19.54	8.85	1.70	30.10	43.50	-13.40	QP
156.25	20.31	13.41	2.15	35.87	43.50	-7.64	QP
312.50	18.54	14.44	3.42	36.40	46.00	-9.60	QP
468.75	9.77	17.58	4.53	31.88	46.00	-14.12	QP
781.25	10.65	21.73	5.94	38.32	46.00	-7.68	QP
N/A							

REMARK: Emission level $(dB\mu V/m)$ =Antenna Factor (dB/m) + Cable loss (dB) + Meter Reading $(dB\mu V)$.

8.6.3 TRANSMITTER RADIATED EMISSION ABOVE 1 GHz

Product Name	Wireless LAN Mobile Router	Test Date	2010/12/17
Model	CQW-MR200	Test By	John Chen
Test Mode	IEEE 802.11b TX (CH Low)	TEMP& Humidity	19.3°C, 48%

Horizontal

	TX / I	EEE 802.11	b mode /	CH Low	Μ	Measurement Distance at 3m Horizontal polarity					
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark	
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)	
*	1250.00	52.78	25.55	2.10	41.76	0.74	39.42	74.00	-34.59	Р	
*	1250.00	42.65	25.55	2.10	41.76	0.74	29.29	54.00	-24.72	А	
*	4824.06	53.05	33.17	3.73	42.38	0.69	48.26	74.00	-25.74	Р	
*	4824.06	43.84	33.17	3.73	42.38	0.69	39.05	54.00	-14.95	А	
	N/A									Р	
	N/A									А	

REMARK:

- 1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)
- 2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz
- 3. The result basic equation calculation is as follow:
 - Level = Reading + AF + Cable Preamp + Filter Dist, Margin = Level-Limit
- 4. The other emission levels were 20dB below the limit
- 5. The test limit distance is 3M limit.



Product Name	Wireless LAN Mobile Router	Test Date	2010/12/17
Model	CQW-MR200	Test By	John Chen
Test Mode	IEEE 802.11b TX (CH Low)	TEMP& Humidity	19.3°C, 48%

Vertical

	TX / I	EEE 802.11	b mode /	CH Low	Μ	Measurement Distance at 3m Vertical polarity					
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark	
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)	
*	1249.98	54.36	25.55	2.10	41.76	0.74	40.99	74.00	-33.01	Р	
*	1249.98	44.67	25.55	2.10	41.76	0.74	31.30	54.00	-22.70	А	
*	4824.03	52.17	33.17	3.73	42.38	0.69	47.38	74.00	-26.62	Р	
*	4824.03	43.09	33.17	3.73	42.38	0.69	38.30	54.00	-15.70	А	
	N/A									Р	
	N/A									А	

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)

2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz

3. The result basic equation calculation is as follow:

Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit

4. The other emission levels were 20dB below the limit



Product Name	Wireless LAN Mobile Router	Test Date	2010/12/17
Model	CQW-MR200	Test By	John Chen
Test Mode	IEEE 802.11b TX (CH Middle)	TEMP& Humidity	19.3°C, 48%

Horizontal

	TX / IE	EE 802.11	o mode / C	H Middle	Μ	easurem	ent Distance	e at 3m 🛛 H	Iorizontal polar	ity
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)
*	1250.03	52.41	25.55	2.10	41.75	0.74	39.05	74.00	-34.95	Р
*	1250.03	42.63	25.55	2.10	41.75	0.74	29.27	54.00	-24.73	А
*	4873.98	52.47	33.32	3.74	42.43	0.71	47.81	74.00	-26.19	Р
*	4873.98	43.08	33.32	3.74	42.43	0.71	38.42	54.00	-15.58	А
	N/A									Р
	N/A									А

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)

2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz

3. The result basic equation calculation is as follow:

Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit

4. The other emission levels were 20dB below the limit



Product Name	Wireless LAN Mobile Router	Test Date	2010/12/17
Model	CQW-MR200	Test By	John Chen
Test Mode	IEEE 802.11b TX (CH Middle)	TEMP& Humidity	19.3°C, 48%

Vertical

	TX / IEI	EE 802.11b	mode / Cl	H Middle	N	Ieasuren	ment Distance at 3m Vertical polarity				
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark	
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)	
*	1250.02	54.78	25.55	2.10	41.75	0.74	41.42	74.00	-32.58	Р	
*	1250.02	44.23	25.55	2.10	41.75	0.74	30.87	54.00	-23.13	А	
*	4874.02	52.98	33.32	3.74	42.43	0.71	48.32	74.00	-25.68	Р	
*	4874.02	43.29	33.32	3.74	42.43	0.71	38.63	54.00	-15.37	А	
	N/A									Р	
	N/A									А	

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)

2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz

3. The result basic equation calculation is as follow:

Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit

4. The other emission levels were 20dB below the limit



Product Name	Wireless LAN Mobile Router	Test Date	2010/12/17
Model	CQW-MR200	Test By	John Chen
Test Mode	IEEE 802.11b TX (CH High)	TEMP& Humidity	19.3°C, 48%

Horizontal

	TX / IE	EE 802.111	o mode / C	TH High	Μ	easurem	ent Distanc	e at 3m 🛛 I	Horizontal polar	ity
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)
*	1249.96	53.62	25.55	2.10	41.76	0.74	40.25	74.00	-33.75	Р
*	1249.96	42.18	25.55	2.10	41.76	0.74	28.81	54.00	-25.19	А
*	4924.07	53.84	33.47	3.76	42.48	0.73	49.32	74.00	-24.68	Р
*	4924.07	43.58	33.47	3.76	42.48	0.73	39.06	54.00	-14.94	А
	N/A									Р
	N/A									А

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)

2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz

3. The result basic equation calculation is as follow:

Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit

4. The other emission levels were 20dB below the limit



Product Name	Wireless LAN Mobile Router	Test Date	2010/12/17
Model	CQW-MR200	Test By	John Chen
Test Mode	IEEE 802.11b TX (CH High)	TEMP& Humidity	19.3℃, 48%

Vertical

	TX / IE	EE 802.111	o mode / C	H High	Μ	Measurement Distance at 3m Vertical polarity					
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark	
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)	
*	1249.98	54.74	25.55	2.10	41.76	0.74	41.37	74.00	-32.63	Р	
*	1249.98	44.68	25.55	2.10	41.76	0.74	31.31	54.00	-22.69	А	
*	4924.04	52.79	33.47	3.76	42.48	0.73	48.27	74.00	-25.73	Р	
*	4924.04	44.36	33.47	3.76	42.48	0.73	39.84	54.00	-14.16	А	
	N/A									Р	
	N/A									А	

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)

2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz

3. The result basic equation calculation is as follow:

Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit

4. The other emission levels were 20dB below the limit



Product Name	Wireless LAN Mobile Router	Test Date	2010/12/17	
Model	CQW-MR200	Test By	John Chen	
Test Mode	IEEE 802.11g TX (CH Low)	TEMP& Humidity	19.3°C, 48%	

Horizontal

	TX / IEEE 802.11g mode / CH Low				Measurement Distance at 3m Horizontal polarity					
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)
*	1249.97	53.74	25.55	2.10	41.76	0.74	40.37	74.00	-33.63	Р
*	1249.97	42.65	25.55	2.10	41.76	0.74	29.28	54.00	-24.72	А
*	4824.05	52.49	33.17	3.73	42.38	0.69	47.70	74.00	-26.30	Р
*	4824.05	42.58	33.17	3.73	42.38	0.69	37.79	54.00	-16.21	А
	N/A									Р
	N/A									А

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)

2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz

3. The result basic equation calculation is as follow:

Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit

4. The other emission levels were 20dB below the limit



Product Name	Wireless LAN Mobile Router	Test Date	2010/12/17
Model	CQW-MR200	Test By	John Chen
Test Mode	IEEE 802.11g TX (CH Low)	TEMP& Humidity	19.3°C, 48%

	TX / IE	EE 802.11	g mode / C	H Low	Μ	Measurement Distance at 3m Vertical polarity					
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark	
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)	
*	1249.99	54.68	25.55	2.10	41.76	0.74	41.31	74.00	-32.69	Р	
*	1249.99	43.22	25.55	2.10	41.76	0.74	29.85	54.00	-24.15	А	
*	4824.03	52.76	33.17	3.73	42.38	0.69	47.97	74.00	-26.03	Р	
*	4824.03	42.33	33.17	3.73	42.38	0.69	37.54	54.00	-16.46	А	
	N/A									Р	
	N/A									А	

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)

2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz

3. The result basic equation calculation is as follow:

Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit

4. The other emission levels were 20dB below the limit



Product Name	Wireless LAN Mobile Router	Test Date	2010/12/17
Model	CQW-MR200	Test By	John Chen
Test Mode	IEEE 802.11g TX (CH Middle)	TEMP& Humidity	19.3°C, 48%

	TX / IEE	E 802.11g	mode / C	H Middle	Μ	easurem	ent Distanc	e at 3m 🛛 I	Iorizontal pola	ity
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)
*	1250.02	51.63	25.55	2.10	41.75	0.74	38.27	74.00	-35.73	Р
*	1250.02	42.38	25.55	2.10	41.75	0.74	29.02	54.00	-24.98	А
*	4874.05	53.69	33.32	3.74	42.43	0.71	49.03	74.00	-24.97	Р
*	4874.05	43.54	33.32	3.74	42.43	0.71	38.88	54.00	-15.12	А
	N/A									Р
	N/A									А

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)

2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz

3. The result basic equation calculation is as follow:

Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit

4. The other emission levels were 20dB below the limit



Product Name	Wireless LAN Mobile Router	Test Date	2010/12/17
Model	CQW-MR200	Test By	John Chen
Test Mode	IEEE 802.11g TX (CH Middle)	TEMP& Humidity	19.3°C, 48%

	TX / IEI	E E 802.11 g	mode / Cl	I Middle	N	Ieasuren	nent Distan	ce at 3m V	ertical polari	ty
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)
*	1249.99	53.00	25.55	2.10	41.76	0.74	39.63	74.00	-34.37	Р
*	1249.99	43.28	25.55	2.10	41.76	0.74	29.91	54.00	-24.09	А
*	4874.04	53.23	33.32	3.74	42.43	0.71	48.57	74.00	-25.43	Р
*	4874.04	42.58	33.32	3.74	42.43	0.71	37.92	54.00	-16.08	А
	N/A									Р
	N/A									А

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)

2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz

3. The result basic equation calculation is as follow:

Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit

4. The other emission levels were 20dB below the limit



Product Name	Wireless LAN Mobile Router	Test Date	2010/12/17
Model	CQW-MR200	Test By	John Chen
Test Mode	IEEE 802.11g TX (CH High)	TEMP& Humidity	19.3°C, 48%

	TX / IE	CEE 802.11	g mode / C	'H High	Μ	easurem	ent Distanc	e at 3m 🛛 I	Horizontal polar	ity
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)
*	1250.07	52.16	25.55	2.10	41.75	0.74	38.80	74.00	-35.20	Р
*	1250.07	42.63	25.55	2.10	41.75	0.74	29.27	54.00	-24.73	А
*	4924.04	53.57	33.47	3.76	42.48	0.73	49.05	74.00	-24.95	Р
*	4924.04	42.65	33.47	3.76	42.48	0.73	38.13	54.00	-15.87	А
	N/A									Р
	N/A									А

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)

2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz

3. The result basic equation calculation is as follow:

Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit

4. The other emission levels were 20dB below the limit



Product Name	Wireless LAN Mobile Router	Test Date	2010/12/17
Model	CQW-MR200	Test By	John Chen
Test Mode	IEEE 802.11g TX (CH High)	TEMP& Humidity	19.3°C, 48%

	TX / IE	CEE 802.11g	g mode / C	H High	Μ	leasurem	ent Distanc	nt Distance at 3m Vertical polarity				
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark		
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)		
*	1249.99	53.73	25.55	2.10	41.76	0.74	40.36	74.00	-33.64	Р		
*	1249.99	43.99	25.55	2.10	41.76	0.74	30.62	54.00	-23.38	А		
*	4924.06	52.85	33.47	3.76	42.48	0.73	48.33	74.00	-25.67	Р		
*	4924.06	42.46	33.47	3.76	42.48	0.73	37.94	54.00	-16.06	А		
	N/A									Р		
	N/A									А		

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)

2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz

3. The result basic equation calculation is as follow:

Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit

4. The other emission levels were 20dB below the limit



Product Name	Wireless LAN Mobile Router	Test Date	2010/12/17
Model	CQW-MR200	Test By	John Chen
Test Mode	IEEE 802.11n HT20 TX (CH Low)	TEMP& Humidity	19.3°C, 48%

	TX / IEE	E 802.11n I	HT20 mode	e / CH Low	Μ	easurem	ent Distance	ance at 3m Horizontal polarity				
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark		
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)		
*	1250.00	53.32	25.55	2.10	41.76	0.74	39.96	74.00	-34.05	Р		
*	1250.00	42.66	25.55	2.10	41.76	0.74	29.30	54.00	-24.71	А		
*	4824.03	52.15	33.17	3.73	42.38	0.69	47.36	74.00	-26.64	Р		
*	4824.03	42.85	33.17	3.73	42.38	0.69	38.06	54.00	-15.94	А		
	N/A									Р		
	N/A									А		

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)

2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz

3. The result basic equation calculation is as follow:

Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit

4. The other emission levels were 20dB below the limit



Product Name	Wireless LAN Mobile Router	Test Date	2010/12/17
Model	CQW-MR200	Test By	John Chen
Test Mode	IEEE 802.11n HT20 TX (CH Low)	TEMP& Humidity	19.3°C, 48%

	TX / IEE	E 802.11n I	HT20 mode	e / CH Low	Μ	Measurement Distance at 3m Vertical polarity					
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark	
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)	
*	1250.02	53.63	25.55	2.10	41.75	0.74	40.27	74.00	-33.73	Р	
*	1250.02	43.81	25.55	2.10	41.75	0.74	30.45	54.00	-23.55	А	
*	4824.04	53.63	33.17	3.73	42.38	0.69	48.84	74.00	-25.16	Р	
*	4824.04	42.46	33.17	3.73	42.38	0.69	37.67	54.00	-16.33	А	
	N/A									Р	
	N/A									А	

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)

2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz

3. The result basic equation calculation is as follow:

Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit

4. The other emission levels were 20dB below the limit



Product Name	Wireless LAN Mobile Router	Test Date	2010/12/17
Model	CQW-MR200	Test By	John Chen
Test Mode	IEEE 802.11n HT20 TX (CH Middle)	TEMP& Humidity	19.3°C, 48%

	TX / IEEF	E 802.11 n H	T20 mode	/ CH Middle	Μ	easurem	ent Distance	e at 3m 🛛 H	Iorizontal polar	polarity			
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark			
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)			
*	1249.98	53.63	25.55	2.10	41.76	0.74	40.26	74.00	-33.74	Р			
*	1249.98	43.96	25.55	2.10	41.76	0.74	30.59	54.00	-23.41	А			
*	4874.04	54.12	33.32	3.74	42.43	0.71	49.46	74.00	-24.54	Р			
*	4874.04	43.08	33.32	3.74	42.43	0.71	38.42	54.00	-15.58	А			
	N/A									Р			
	N/A									А			

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)

2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz

3. The result basic equation calculation is as follow:

Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit

4. The other emission levels were 20dB below the limit



Product Name	Wireless LAN Mobile Router	Test Date	2010/12/17
Model	CQW-MR200	Test By	John Chen
Test Mode	IEEE 802.11n HT20 TX (CH Middle)	TEMP& Humidity	19.3°C, 48%

	TX / IEEE	802.11n HT	20 mode / G	CH Middle	М	easuren	nent Distan	ce at 3m	Vertical polar	al polarity				
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark				
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)				
*	1250.06	53.14	25.55	2.10	41.75	0.74	39.78	74.00	-34.22	Р				
*	1250.06	42.85	25.55	2.10	41.75	0.74	29.49	54.00	-24.51	А				
*	4874.05	53.33	33.32	3.74	42.43	0.71	48.67	74.00	-25.33	Р				
*	4874.05	42.74	33.32	3.74	42.43	0.71	38.08	54.00	-15.92	А				
	N/A									Р				
	N/A									А				

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)

2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz

3. The result basic equation calculation is as follow:

Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit

4. The other emission levels were 20dB below the limit



Product Name	Wireless LAN Mobile Router	Test Date	2010/12/17
Model	CQW-MR200	Test By	John Chen
Test Mode	IEEE 802.11n HT20 TX (CH High)	TEMP& Humidity	19.3°C, 48%

	TX / IEEF	E 802.11 n H	T20 mode	/ CH High	Μ	Measurement Distance at 3m Horizontal polarity				
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)
*	1250.08	52.60	25.55	2.10	41.75	0.74	39.24	74.00	-34.76	Р
*	1250.08	42.48	25.55	2.10	41.75	0.74	29.12	54.00	-24.88	А
*	4924.08	52.69	33.47	3.76	42.48	0.73	48.17	74.00	-25.83	Р
*	4924.08	42.79	33.47	3.76	42.48	0.73	38.27	54.00	-15.73	А
	N/A									Р
	N/A									А

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)

2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz

3. The result basic equation calculation is as follow:

Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit

4. The other emission levels were 20dB below the limit



Product Name	Wireless LAN Mobile Router	Test Date	2010/12/17
Model	CQW-MR200	Test By	John Chen
Test Mode	IEEE 802.11n HT20 TX (CH High)	TEMP& Humidity	19.3°C, 48%

	TX / IEEF	E 802.11 n H	T20 mode	/ CH High	Μ	Measurement Distance at 3m Vertical polarity				
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)
*	1250.04	53.98	25.55	2.10	41.75	0.74	40.62	74.00	-33.38	Р
*	1250.04	43.54	25.55	2.10	41.75	0.74	30.18	54.00	-23.82	А
*	4924.06	52.73	33.47	3.76	42.48	0.73	48.21	74.00	-25.79	Р
*	4924.06	42.85	33.47	3.76	42.48	0.73	38.33	54.00	-15.67	А
	N/A									Р
	N/A									А

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)

2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz

3. The result basic equation calculation is as follow:

Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit

4. The other emission levels were 20dB below the limit



Product Name	Wireless LAN Mobile Router	Test Date	2010/12/17
Model	CQW-MR200	Test By	John Chen
Test Mode	IEEE 802.11n HT40 TX (CH Low)	TEMP& Humidity	19.3℃, 48%

	TX / IEE	E 802.11n H	TT40 mode	e / CH Low	Μ	easurem	ent Distance	e at 3m 🛛 I	Iorizontal polar	polarity				
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark				
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)				
*	1249.97	53.12	25.55	2.10	41.76	0.74	39.75	74.00	-34.25	Р				
*	1249.97	42.49	25.55	2.10	41.76	0.74	29.12	54.00	-24.88	А				
*	4844.02	52.21	33.23	3.74	42.40	0.70	47.48	74.00	-26.52	Р				
*	4844.02	42.08	33.23	3.74	42.40	0.70	37.35	54.00	-16.65	А				
	N/A									Р				
	N/A									А				

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)

2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz

3. The result basic equation calculation is as follow:

Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit

4. The other emission levels were 20dB below the limit



Product Name	Wireless LAN Mobile Router	Test Date	2010/12/17
Model	CQW-MR200	Test By	John Chen
Test Mode	IEEE 802.11n HT40 TX (CH Low)	TEMP& Humidity	19.3°C, 48%

	TX / IEE	E 802.11n H	TT40 mode	e / CH Low	Measurement Distance at 3m Vertical polarity					
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)
*	1250.00	53.49	25.55	2.10	41.76	0.74	40.13	74.00	-33.88	Р
*	1250.00	43.52	25.55	2.10	41.76	0.74	30.16	54.00	-23.85	А
*	4844.06	51.63	33.23	3.74	42.40	0.70	46.90	74.00	-27.10	Р
*	4844.06	42.25	33.23	3.74	42.40	0.70	37.52	54.00	-16.48	А
	N/A									Р
	N/A									А

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)

2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz

3. The result basic equation calculation is as follow:

Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit

4. The other emission levels were 20dB below the limit



Product Name	Wireless LAN Mobile Router	Test Date	2010/12/17
Model	CQW-MR200	Test By	John Chen
Test Mode	IEEE 802.11n HT40 TX (CH Middle)	TEMP& Humidity	19.3°C, 48%

	TX / IEEF	E 802.11 n H	T40 mode	/ CH Middle	Μ	easurem	surement Distance at 3m Horizontal polarity				
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark	
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)	
*	1249.97	52.93	25.55	2.10	41.76	0.74	39.56	74.00	-34.44	Р	
*	1249.97	43.20	25.55	2.10	41.76	0.74	29.83	54.00	-24.17	А	
*	4874.08	53.09	33.32	3.74	42.43	0.71	48.44	74.00	-25.56	Р	
*	4874.08	42.71	33.32	3.74	42.43	0.71	38.06	54.00	-15.94	А	
	N/A									Р	
	N/A									А	

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)

2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz

3. The result basic equation calculation is as follow:

Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit

4. The other emission levels were 20dB below the limit



Product Name	Wireless LAN Mobile Router	Test Date	2010/12/17
Model	CQW-MR200	Test By	John Chen
Test Mode	IEEE 802.11n HT40 TX (CH Middle)	TEMP& Humidity	19.3°C, 48%

	TX / IEEE	802.11n HT	40 mode / (CH Middle	М	Measurement Distance at 3m Vertical polarity					
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark	
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)	
*	1250.06	53.16	25.55	2.10	41.75	0.74	39.80	74.00	-34.20	Р	
*	1250.06	43.22	25.55	2.10	41.75	0.74	29.86	54.00	-24.14	А	
*	4874.06	52.96	33.32	3.74	42.43	0.71	48.30	74.00	-25.70	Р	
*	4874.06	42.18	33.32	3.74	42.43	0.71	37.52	54.00	-16.48	А	
	N/A									Р	
	N/A									А	

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)

2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz

3. The result basic equation calculation is as follow:

Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit

4. The other emission levels were 20dB below the limit



Product Name	Wireless LAN Mobile Router	Test Date	2010/12/17
Model	CQW-MR200	Test By	John Chen
Test Mode	IEEE 802.11n HT40 TX (CH High)	TEMP& Humidity	19.3°C, 48%

	TX / IEEF	E 802.11 n H	T40 mode	/ CH High	Μ	easurem	ent Distanc	e at 3m	Horizontal polarity			
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark		
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)		
*	1250.05	52.74	25.55	2.10	41.75	0.74	39.38	74.00	-34.62	Р		
*	1250.05	41.52	25.55	2.10	41.75	0.74	28.16	54.00	-25.84	А		
*	4904.09	52.03	33.41	3.75	42.46	0.72	47.45	74.00	-26.55	Р		
*	4904.09	41.28	33.41	3.75	42.46	0.72	36.70	54.00	-17.30	А		
	N/A									Р		
	N/A									А		

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)

2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz

3. The result basic equation calculation is as follow:

Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit

4. The other emission levels were 20dB below the limit



Product Name	Wireless LAN Mobile Router	Test Date	2010/12/17
Model	CQW-MR200	Test By	John Chen
Test Mode	IEEE 802.11n HT40 TX (CH High)	TEMP& Humidity	19.3°C, 48%

	TX / IEEF	E 802.11 n H	T40 mode	/ CH High	М	easuren	nent Distand	nce at 3m Vertical polarity			
	Freq.	Reading	AF	Cable Loss	Pre-amp	Filter	Level	Limit	Margin	Mark	
	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(P/Q/A)	
*	1250.06	53.63	25.55	2.10	41.75	0.74	40.27	74.00	-33.73	Р	
*	1250.06	43.70	25.55	2.10	41.75	0.74	30.34	54.00	-23.66	А	
*	4904.11	52.66	33.41	3.75	42.46	0.72	48.08	74.00	-25.92	Р	
*	4904.11	42.41	33.41	3.75	42.46	0.72	37.83	54.00	-16.17	А	
	N/A									Р	
	N/A									А	

REMARK:

1. AF: Antenna Factor, Cable: Cable Loss, Pre-Amp: Preamplifier gain, Filter: High Pass Filter Insertion Loss (3.5GHz)

2. Spectrum analyzer setting P(Peak): RBW=1MHz, VBW=1MHz, A(Average): RBW=1MHz, VBW=10Hz

3. The result basic equation calculation is as follow:

Level = Reading + AF + Cable – Preamp + Filter – Dist, Margin = Level-Limit

4. The other emission levels were 20dB below the limit

8.6.4 RESTRICTED BAND EDGES

IEEE 802.11b mode

Channel	Polarity	Freq.(MHz)	Level(dBuV)	Limit(dBuV)	Margin(dB)	Detector
	Н	2390.00	59.36	74	-14.64	Peak
LOW	Н	2390.00	46.16	54	-7.84	Average
LOW	V	2390.00	59.10	74	-14.90	Peak
	V	2390.00	45.22	54	-8.78	Average
	Н	2483.50	58.29	74	-15.71	Peak
HIGH	Н	2483.50	45.98	54	-8.02	Average
пібп	V	2483.50	56	74	-18.00	Peak
	V	2483.50	44.79	54	-9.21	Average

IEEE 802.11g mode

Channel	Polarity	Freq.(MHz)	Level(dBuV)	Limit(dBuV)	Margin(dB)	Detector
	Н	2390.00	57.9	74	-16.10	Peak
LOW	Н	2390.00	45.8	54	-8.20	Average
LOW	V	2390.00	57.92	74	-16.08	Peak
	V	2390.00	45.1	54	-8.90	Average
	Н	2483.50	59.54	74	-14.46	Peak
HIGH	Н	2483.50	46.23	54	-7.77	Average
nign	V	2483.50	57.78	74	-16.22	Peak
	V	2483.50	44.75	54	-9.25	Average

IEEE 802.11n HT20 mode

Channel	Polarity	Freq.(MHz)	Level(dBuV)	Limit(dBuV)	Margin(dB)	Detector
	Н	2390.00	58.24	74	-15.76	Peak
LOW	Н	2390.00	45.71	54	-8.29	Average
LOW	V	2390.00	57.18	74	-16.82	Peak
	V	2390.00	45.09	54	-8.91	Average
	Н	2483.50	60.85	74	-13.15	Peak
HIGH	Н	2483.50	46.09	54	-7.91	Average
	V	2483.50	56.78	74	-17.22	Peak
	V	2483.50	44.82	54	-9.18	Average

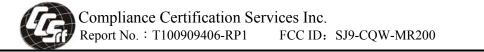
IEEE 802.11n HT40 mode

Channel	Polarity	Freq.(MHz)	Level(dBuV)	Limit(dBuV)	Margin(dB)	Detector
	Н	2390.00	57.7	74	-16.30	Peak
LOW	Н	2390.00	45.73	54	-8.27	Average
LOW	V	2390.00	57.25	74	-16.75	Peak
	V	2390.00	45.07	54	-8.93	Average
	Н	2483.50	59.72	74	-14.28	Peak
HIGH	Н	2483.50	46.17	54	-7.83	Average
	V	2483.50	57.27	74	-16.73	Peak
	V	2483.50	44.77	54	-9.23	Average

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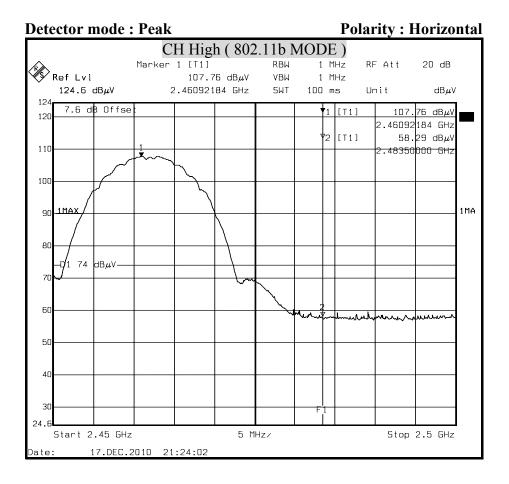
Marker 1 [T1] RBW 1 MHz RF Att 20 dB Ref Lvl 102.10 dB _µ V VBW 10 Hz 10 Hz 124.6 dB _µ V 2.41316633 GHz SWT 28 s Unit dB _µ V 124 7.6 dB Offse 11 [T11] 102.10 dB _µ V VBW 10 Hz 120 7.6 dB Offse 11 [T11] 102.10 dB _µ V 2.41316633 GHz 2.41316633 GHz 110 2.41316633 GHz 72 [T11] 62.95 dB _µ V 2.4000000 GHz 2.4000000 GHz 110 73 [T11] 46.16 16 dB _µ V 2.3900000 GHz 2.3900000 GHz 300 110 110 111 2.3900000 GHz 2.3900000 GHz 300 110 110 111 2.3900000 GHz 111 300 90 110AX 110 111 111 111 90 110AX 111 111 111 111 90 110AX 111 111 111 111 111 90 110AX 111 111 111 111 111 1111 111 <td< th=""><th colspan="12">Marker 1 [T1] RBW 1 MHz RF Att 20 dB</th></td<>	Marker 1 [T1] RBW 1 MHz RF Att 20 dB												
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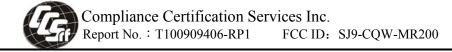
Polarity : Vertical

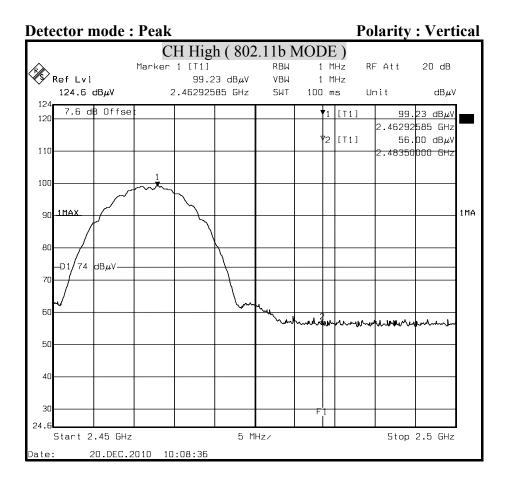
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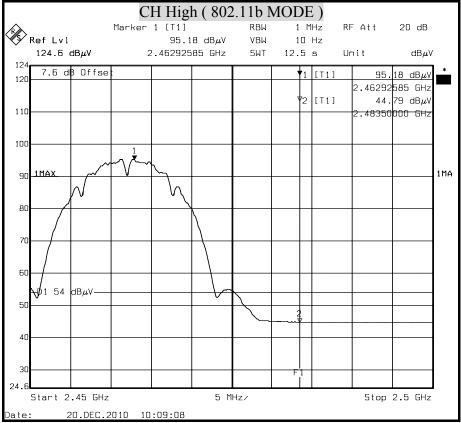
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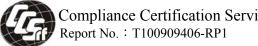
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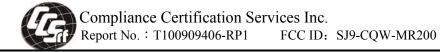




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30				F1			
24.6							I
Start 2.31	GHz	11 MHz/			Stop 2	.42 GHz	
Date: 17.0	DEC.2010 21:38:04						

Polarity : Horizontal Detector mode : Average

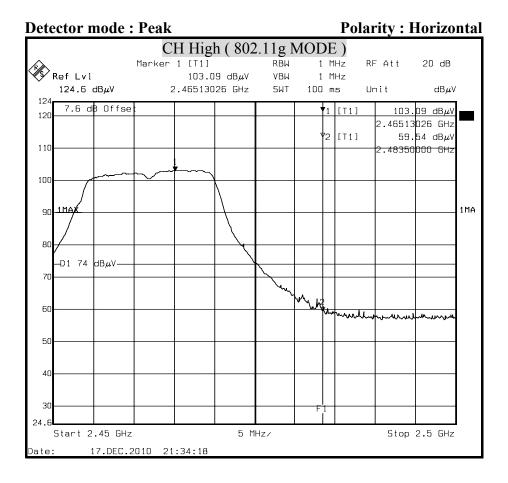
	CH Low (802.11g MODE)												
			Marker		(002	RBW	1 M			RF Att	:	20 dB	
K	Ref Lvl			93.4	0 dBµV	VBW	10						
		dBµV	2	.408977	96 GHz	SWT	28	s	L	Jnit		dBµV	r
124	7.6 d	8 Offse	t				▼1	Гл	11		93	40 dBµV	
120									* 1			796 GHz	
							⊽2	ΓŢ	1]			16 dBµV	
110							_					000 GHz	
							∆3		1]			80 dBµV 000 GHz	
100										2.33	000		
											فسر	~~~	
90	1MAX									+	(1MA
80										+			
70										+ $+$			
60										+			
	—D1 54	dBuV								2			
50	51 01									\mathbb{Z}			
	·····			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			·	5	in the second				
40													
30									<u> </u>				
24.6								F	1				
	Start 2	.31 GHz			11 1	1Hz/				Sto	р 2	.42 GHz	
Date:		17.DEC.2	010 21	:38:42									



Detector mode	: Peak			Polarity	: Vertical
	CH Low (8	02.11g N	AODE)		
<u>ka</u>	Marker 1 [T1]	RBW	1 MHz	RF Att	20 dB
🖋 Ref Lvl		μV VBW	1 MHz		
124.6 dBµV	2.41515030 G	Hz SWT	100 ms	Unit	dBµV
124 7.6 dB Offse			▼1 [⊺1] 96.	98 dBµV
120				2.41515	030 GHz
			72 [11] 73.	36 dBµV
110					000 GHz
			73 [11	-	92 dBµV
100		_		2.39000	000 ₍ GHz
				~	
90 1MAX					1MA
55					
80					
D1 74 dBμV					
70				/	
				Λ	
60			3		
manuluphanne	mounderman	understand	monument	v	
50					
40					
30					
			F1		
24.6	<u> </u>	1 MHz/		Stop 3	2.42 GHz
				uroh s	
Date: 20.DEC.:	2010 09:54:54				

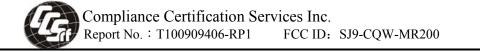
Polarity : Vertical

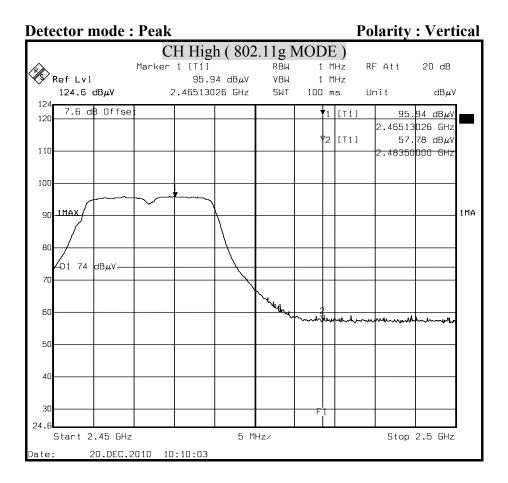
CH Low (802.11g MODE)											
/k		Marker 1			RBW			F	RF Att	20 dB	
۲¥)	Ref Lvl		87.28 c			10					
	124.6 dBµV	2.4	1515030	GHz	SWT	28	s	L	lmit	dBµV	
124 120	7.6 dB Offs	et				▼1	[]	1]	87	.28 dBµV	
120										6030 GHz	
						⊽2	[7	1]		.78 dBµV	
110						_				1000 GHz	
						∆3	[]	1]		.10 dBμV	
100									2.39000	000 GHz	
90	1MAX								+	1	1MA
80									\perp		
70											
ru											
60											
	—D1 54 dBµV—								2		
50							-	}	1		
	<u>_</u>						-7	مري	1		
40											
30							F	1			
24.6							Ľ	1			
	Start 2.31 GH	z		11 MHz	/				Stop 2	2.42 GHz	
Date:	20.DEC.	2010 09:5	5:41								



Polarity : Horizontal

			Cl		h (802	2.11g N	MOD)E		urrey			
			Marker	1 [T1]		RBW	1	Μ	Hz	RF Att		20 dB	
Ť	Ref Lvl 124.6 dBµ	٧٧	2	93.4 .465130	7 dBµV 26 GHz	VBW SWT	1 12.	0 5	Hz S	Unit		dBµV	,
124 120	7.6 dB C)ffse						1	[T1]		93.	47 dBµV	*
120												D26 GHz	
110								2	[T1]			23 dBµV 000 GHz	
100													
				·									
90			~		\backslash								1MA
80													
70													
60													
		μV											
50							~_ 4	2					
							~~	~		<u> </u>			
40													
30							F	1					
24.6	Start 2.45	5 64-7			5 M	H7 /						2.5 GHz	J
Date:			010 21	:34:48	5 11	1127				50	ομ .	2.5 012	





Polarity : Vertical

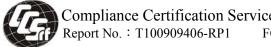
	CH High (802.11g MODE)												
			CI	H Higi	h (802	2.11g N	AOL)F	Ś)				
6			Marker			RBW				RF	Att	20 dB	
Ŵ	Ref Lvl			86.2	9 dBµV	VBW	1	0	Hz				
Ť	Ref Lvl 124.6 dB	μV	2	.465130	26 GHz	SWT	12.	5	s	Un	it	dBµV	r
124								_					
120	7.6 dB	Offse	t					1	[T1]		86.	29 dBµV	
120										2	2.46513	026 GHz	
							,	† 2	[T1]		44.	75 dBµV	
110								+		-2	.48350	000 GHz	
100													
100													
90	1MAX							-		_			1MA
			~~~	Lanna (									
				Ì									
80	/ /				<b>1</b>								
					$\mathbf{N}$								
70													
60								⊢					
	-D/ 54 dE	3.uV											
50		5μ01											
50	r I				/	/	1	2					
						~~		╀─					
40								-					
30	30												
24.6													
	Start 2.4	5 GHz			5 M	Hz/					Stop	2.5 GHz	
Date	: 20	.DFC.2	010 10	:10:23									
50.0	. 20		5 10										



Detector mode : PeakPolarity : HorizontaCH Low ( 802.11n HT20 MODE )													
	CH Lo	w (802.1	1n HT2	20 MO	DF	Ξ)							
Ŕ	Marker 1		RBW	1 MI			tt	20 dB					
🕅 Ref Lvl		103.57 $dB\mu V$	VBW	1 MI	Ηz								
124.6 dBµV	2.4	0897796 GHz	SWT	100 ms	5	Unit		dBµV	'				
124 7.6 dB Offse	t			<b>v</b> ₁	[1]	]	103.	57 dBµV					
120						2.	40897	796 GHz					
				⊽2	[ ] 1			31 dBµV					
110				_				300 GHz					
				∆3	[]1		T T	24 dBμV					
100					_		398000	INØ GAZ					
90 1MAX									1MA				
							/						
						2							
80						17							
—D1 74 dBμV——													
70					-	-A							
						1							
60					3	$\vdash$							
munnun	humanya	www.	Mullinan	menne	vyr								
50													
30													
40					+								
30					F1								
24.6					Ĺ								
Start 2.31 GHz		1 1	MHz/			S	top 2	.42 GHz					
ate: 17.DEC.2	2010 21:4	0:15											

#### **Polarity : Horizontal**

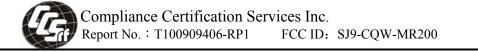
	CH Low (802.11n HT20 MODE) Marker 1 [T1] RBW 1 MHz RF Att 20 dB													
<u>k</u>				1 [T1]		RBW					t	20 dB		
Ŵ	Ref Lvl			92.8	0 dBµV	VBW	10							
101		dBµV	2	.408977	96 GHz	SWT	28	S		Unit		dBµV	r i i i i i i i i i i i i i i i i i i i	
124 120	7.6 d	ß Offse	t				▼1	[]	1]		92.	80 dBµV		
120												796 GHz		
							⊽2	[ ]	1]			96 dBµV		
110							72		4.1			000 GHz		
							∆3	LI	1]			71 dBµV 000 GHz		
100										2.55	000			
											,			
90	1MAX									+ f	~	-	1MA	
80										++				
70										++				
60										++				
	-D1 54	dBuV								2				
50		,												
								تہ						
40										_				
30														
24.6								F						
	Start 2	.31 GHz			11 1	••••••••••••••••••••••••••••••••••••••				Sto	р 2	.42 GHz	•	
			2010 21	·40·54										
Duit.			.010 21	. 40.04										

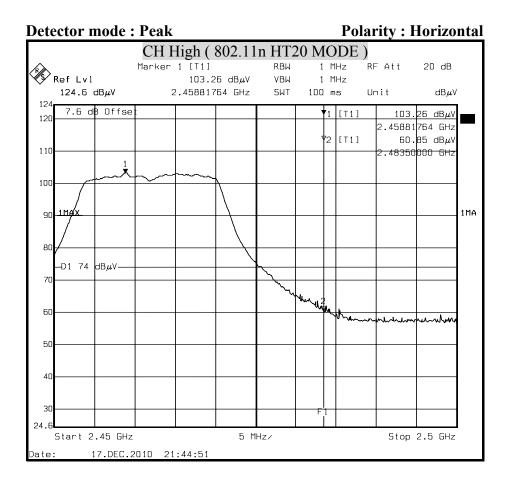


Detector mode	: Peak		Po	larity : Vertical
	CH Low ( 802.11	n HT2	0 MODE )	
R A	Marker 1 [T1]	RBW		FAtt 20 dB
🐨 Ref Lvl	97.58 dBµV	VBW	1 MHz	
124.6 dBµV	2.40897796 GHz	SWT	100 ms L	lnit dBµV
124 7.6 dB Offse	, <b>t</b>		▼1 [〒1]	97.58 dBµV
120				2.40897796 GHz
			∇2 [11]	73.19 dBµV
110			_	2.40000000 GHz
			73 [11]	57.18 dBµV
100				2.39000000 GHz
				m
90 1MAX				1MA
80				
				2
—D1 74 dBµV——				+7
70				$\forall$
				1
60	4 1 A., I., M. 10 104 040, I K 14			
www.www.www.www.	an and a second		man man and and and and and and and and and a	
50				
40				
40				
30			+F'1	
24.6				
Start 2.31 GHz	11	MHz/		Stop 2.42 GHz
Date: 20.DEC.:	2010 09:56:11			

# **Polarity : Vertical**

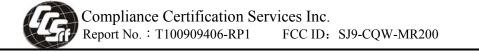
Marker 1 [T1]       RBW       1 MHz       RF Att       20 dB         Ref Lv1       86.73 dBµV       VBW       10 Hz       28 s       Unit       dBµV         124.5 dBµV       2.40897796 GHz       SWT       28 s       Unit       dBµV         120       7.5 d8 Offse       111       86.73 dBµV       VBW       10 Hz       2.40897796 GHz         110       972       [T11]       86.73 dBµV       2.40897796 GHz       SWT       28 s       Unit       dBµV         100       7.5 d8 Offse       7.6 d8 µV       2.40897796 GHz       50 J       2.40897796 GHz       2.4089796 GHz         100       73 [T11]       45.09 dBµV       2.39000000 GHz       73 [T11]       45.09 dBµV         100       73 [T11]       45.09 dBµV       2.39000000 GHz       11MA         90       11AX       2.39000000 GHz       73 [T11]       45.09 dBµV         110       91 [T11]       92 [T11]       92 [T11]       91 [T11]         110       92 [T11]       92 [T11]       92 [T11]       92 [T11]         110       92 [T11]       92 [T11]       92 [T11]       92 [T11]         110       92 [T11]       92 [T11]       92 [T11]       92 [T11]       92 [T11]	CH Low ( 802.11n HT20 MODE )												
Ref Lv1       86.73 dBµV       VBW       10 Hz         124.5 dBµV       2.40897796 GHz       SWT       28 s       Unit       dBµV         124       7.6 dB Offse       10 Hz       2.40897796 GHz       SWT       28 s       Unit       dBµV         10       7.6 dB Offse       10 Hz       2.40897796 GHz       2.40897796 GHz       2.40897796 GHz       2.40897796 GHz         10       72 [T11]       48.76 dBµV       2.39000000 GHz       45.09 dBµV       2.39000000 GHz       45.09 dBµV         100       90       1MAX       90 dBµV       2.39000000 GHz       2.39000000 GHz       11MA         100       90       1MAX       90 dBµV       2.39000000 GHz       2.39000000 GHz       11MA         100       90 dBµV       90 dBµV						502.11							
124.6 dBµV       2.40897796 GHz       SHT       28 s       Unit       dBµV         124       7.6 dB Offse       •       •       •       •       111       86.73 dBµV         100       ·       ·       ·       ·       111       86.73 dBµV       2.40897796 GHz         100       ·       ·       ·       ·       ·       ·       111       86.73 dBµV         100       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       ·       · <td>Ŕ</td> <td></td> <td></td> <td>Marker</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>F Att</td> <td>20 dB</td> <td></td>	Ŕ			Marker							F Att	20 dB	
124       7.6 dB Offse       • 1 [11]       86.73 dBμV         10       2.40097796 GHz         10       73 [11]       48.76 dBμV         2.39000000 GHz       • 3 [11]         45.09 dBμV       2.39000000 GHz         2.39000000 GHz       • 3 [11]         45.09 dBμV       2.39000000 GHz         90       • • • • • • • • • • • • • • • • • • •	X.	Ref Lvl			86.7			10	Hz				
120       7.6 dB 0ffse:       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •		124.6	dBµV	2	.408977	'96 GHz	SWT	28	s	L	lmit	dBµ∖	<i>'</i>
120       2.40897795 GHz         110       72 [T11]         48.76 dBµV         2.3900000 GHz         90       1MAX         91       1         92       1         93       1         94       1         95       1         96       1         97       1         98       1         99       1         90       1         91       1         92       1         93       1         94       1         95       1         96       1         97       1         98       1         99       1         90       1         90       1         91       1         92       1         93       1         94       1      <	124	764		1							1	L	
110       V2       [T11]       48.76 dBµV         2.40000000 GHz       45.09 dBµV         100       V3       [T11]       45.09 dBµV         100       V3       [T11]       45.09 dBµV         100       V3       [T11]       45.09 dBµV         101       V3       [T11]       45.09 dBµV         101       V3       [T11]       45.09 dBµV         102       V3       [T11]       45.09 dBµV         103       V3       [T11]       45.09 dBµV         104       V3       [T11]       45.09 dBµV         105       I1MAX       V3       IMA	120	7.0 U	p unse					•1	11	1]			
110       -       -       2.4000000 GHz         100       -       -       45.09 dB _μ V         2.3900000 GHz       -       -         90       1MAX       -       -         100       -       -       -         90       -       -       -         90       -       -       -         100       -       -       -         100       -       -       -         100       -       -       -         100       -       -       -         100       -       -       -         100       -       -       -         100       - </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>_</td> <td></td> <td></td> <td></td> <td></td> <td></td>								_					
100       V3       [T1]       45.09 dBµV         90       1MAX       V3       [T1]       2.39000000 GHz         90       1MAX       V3       [T1]       1MA         80       V3       V3       [T1]       2.39000000 GHz         90       1MAX       V3       V3       [T1]       1MA         80       V3       V3       V3       V3       V3       V3         90       1MAX       V3       V3       V3       V3       V3       V3         90       1MAX       V3								∀2	[[1	1]			
100       2.3900000 GHz         90       1MAX         80       1         70       1         60       1         01       54 dBμV         50       2         40       2         50       1         40       1         50       1         50       1         50       1         50       1         50       1         50       5         50       5         5       1         5       1         5       1         5       1         5       5         5       5         5       5         5       5         5       5         5       5         5       5         5       5         5       5         5       5         5       5         5       5         5       5         5       5         5       5         5       5         5       <	110												
1MAx       1MAx         90       1MAx         60       1         70       1         60       1         70       1         60       1         70       1         60       1         70       1         60       1         70       1         60       1         70       1         60       1         60       1         60       1         70       1         60       1         60       1         60       1         60       1         60       1         60       1         60       1         60       1         60       1         60       1         60       1         60       1         60       1         60       1         60       1         60       1         60       1         60       1         60       1         60								∆3	[1	1]			
B0 70 70 60 60 60 60 60 60 60 60 60 6	100										2.39000	000 GHz	
B0 70 70 60 60 60 60 60 60 60 60 60 6													
B0 70 70 60 60 60 60 60 60 60 60 60 6													
70 60 -D1 54 dBμV 50 40 30 24.6 Start 2.31 GHz 11 MHz/ 50 11 MHz/ 50 50 50 50 50 50 50 50 50 50	90	IMAX	<u> </u>								+	1	104
70 60 -D1 54 dBμV 50 40 30 24.6 Start 2.31 GHz 11 MHz/ 50 11 MHz/ 50 50 50 50 50 50 50 50 50 50											<u>م ا</u>	-	
70 60 -D1 54 dBμV 50 40 30 24.6 Start 2.31 GHz 11 MHz/ 50 11 MHz/ 50 50 50 50 50 50 50 50 50 50	an												
60 -D1 54 dBμV 50 40 30 24.5 Start 2.31 GHz 11 MHz/ Stop 2.42 GHz	00												
60 -D1 54 dBμV 50 40 30 24.5 Start 2.31 GHz 11 MHz/ Stop 2.42 GHz													
-D1 54 dBμV     2       40     3       40     5       30     5       24.5     5       5tart 2.31 GHz     11 MHz/	70										+ $-$		
-D1 54 dBμV     2       40     3       40     5       30     5       24.5     5       5tart 2.31 GHz     11 MHz/													
-D1 54 dBμV     2       40     3       40     5       30     5       24.5     5       5tart 2.31 GHz     11 MHz/													
50 40 30 24.6 Start 2.31 GHz 11 MHz/ Stop 2.42 GHz	60												
40 40 30 24.6 Start 2.31 GHz 11 MHz/ Stop 2.42 GHz		—D1 54	dBµV—								+		
30 24.6 Start 2.31 GHz 11 MHz/ Stop 2.42 GHz	50		<u> </u>								2		
30 24.6 Start 2.31 GHz 11 MHz/ Stop 2.42 GHz									3		$\downarrow$		
30 24.6 Start 2.31 GHz 11 MHz/ Stop 2.42 GHz													
24.6 Start 2.31 GHz 11 MHz/ Stop 2.42 GHz	40												
24.6 Start 2.31 GHz 11 MHz/ Stop 2.42 GHz													
24.6 Start 2.31 GHz 11 MHz/ Stop 2.42 GHz	20												
Start 2.31 GHz 11 MHz/ Stop 2.42 GHz									F	1			
Dato: 20.0EC 2010 09:57:07		Start 2	.31 GHz			11 1	1Hz/				Stop 2	2.42 GHz	
	Date	: 2	20.DEC.2	<u>2010 09</u>	:57:07								

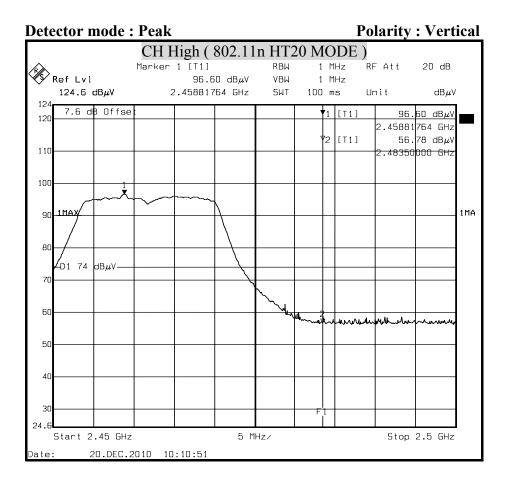




#### **Polarity : Horizontal**

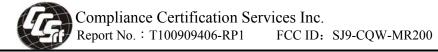
		CH High	(802.11	n HT2	20 MC		)		
<u>k</u>		Marker 1 [T1		RBW	1 1		RF Att	20 dB	
Ŵ\$	Ref Lvl	92	.49 dBμV	VBW	10	Hz			
124		2.4588	1764 GHz	SWT	12.5	s	Unit	dBµ∖	
120	7.6 dB Offse	t			<b>1</b>	[T1]		.49 dBµV	
					R.C.			1764 GHz	
110					¥2	[T1]		.09 dBµV 0000 GHz	
							2.4033		
100									
100	1								
90			-						1MA
50									
80									
00									
70									
10									
60									
50	−D1 54 dBµV—			/					
JU				/	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				
40									
40									
20									
30					F1				1
24.6	Start 2,45 GHz	<u> </u>	5 M	Hz/	1		Ston	2.5 GHz	1
	: 17.DEC.:						Utop	212 0/12	
vule.	. IT.DLC.	2010 21.40.1	<u>_</u>						





#### **Polarity : Vertical**

		CH Hioł	n (802.11	n HT2	0 MC	DF	)		
		Marker 1 []		RBM	۲ <b>۱۱۵</b> ۱۳		/ RF Att	20 dB	
K R	Ref Lvl								
	Ref Lvl 124.6 dBµV	2.458	381764 GHz	SWT	12.5	S	Unit	dBµV	/
124	7.6 dβ Offse	ŧ			<b>†</b> 1	[T1]	85	75 dBµV	1
120								1764 GHz	
					₹2	[T1]		.82 dBμV	
110-							2.48350	1000 GHz	1
100									
90	1MAX1								1MA
			~~						
80			-+						
70			$\rightarrow$						
60			-++-						
50	<u></u>		$- \downarrow $						
					<del>2</del>				
40									
30									
24.6					F1				
	Start 2.45 GHz		5 M	Hz/		•	Stop	2.5 GHz	•
Date:	20.DEC.2	2010 10:11:	51						



Detector mode : Peak Polarity : Horizonta CH Low ( 802.11n HT40 MODE )													
	CH Low (802.1	1n HT4	0 MODE	)									
R.	Marker 1 [T1]	RBW	1 MHz	RFAtt 20 dB									
📎 Ref Lvl	99.55 dBµV	VBW	1 MHz										
124.6 dBµV	2.41238477 GHz	: SWT	100 ms	Unit dBµV									
124 7.6 dB Offse			▼1 [⊤1]	99.55 dBµV									
125				2.41238477 GHz									
110			72 [⊺1]	67.95 dBµV									
110			∇3 [T1]	2.40000000 GHz 57.70 dBμV									
			,2[[1]]	<u>1</u> 2.39000000 GHz									
100													
				V									
90 1MAX			+	1MA									
			/										
80													
D1 74 dBμV													
70													
60													
alment the mother ward	water and an all and and	www.www	in The second se										
50													
40													
30		F	l										
24.6			Ĺ										
Start 2.31 GHz	13	MHz/		Stop 2.44 GHz									
Date: 17.DEC.2	2010 21:50:32												

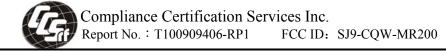
# **Polarity : Horizontal**

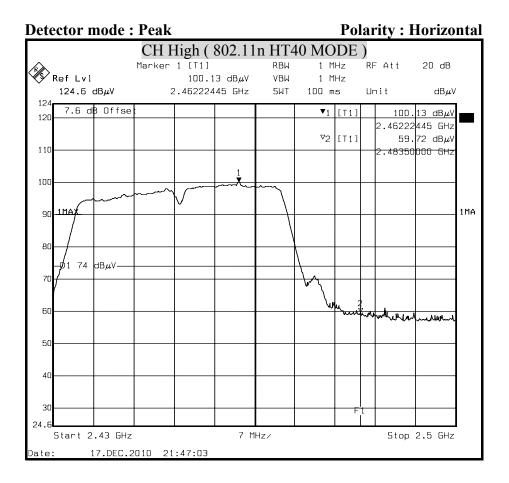
			CH I	Low ( 8	302.11	n HT4	0 MO	DE	)			
<u>k</u>			Marker			RBW	1 ٢			Att	20 dB	
×>	Ref Lvl				7 dBµV		10					
124		dBµV		.412384	77 GHz	SWT	33	S	Uni	t	dBµV	
124	7.6 d	B Offse	t				•1	[T1]		89.	37 dBµV	*
120									2		477 GHz	
110							⊽2	[T1]			76 dBµV	
110							\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\	[T1]	2		<del>000 GHz</del> 73 dBµV	
100									2		000 GHz	
100												
	1MAX								1			1MA
90									≁	~~~~		1116
										v		
80												
70												
60							172					
	-D1 54	dBµV—										
50							3	「				
		<b>.</b>					+					
40												
30							= 1		$\rightarrow$			
24.6												l
	Start 2	.31 GHz			13 1	1Hz/			:	Stop 2	.44 GHz	
Date:		17.DEC.2	010 21	:51:15								

Dete	ector n	node :	Peak						Po	larity	: Vert	ical
			CH I	Low ( 8	802.11	n HT4	-0 M	ODE	)			
/s de			Marker			RBW		MHz		Att	20 dB	
Ŵ	Ref Lvl			93.8	5 dBµV	VBW	1	MHz				
		dBµV	2	2.412384	77 GHz	SWT	100	ms	Ur	nit	dBµV	/
124 120	7.6 d	8 Offse	t					1 [T1]		93.	85 dBµV	]
120										2.41238	477 GHz	
							\. \.	2 [T1]		62.	63 dBµV	
110							_			1	000 GHz	
							\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\	3 [T1]			25 dBµV	
100										2.39000	000 GHz	
									.7			
90	1MAX							+	~	$ \sim $	m	1MA
											'	
80												
	D1 74											
70	-D1 74	авμν ——						/				
10								4				
							1 1	∛				
60	nhhh	manna	mmun	moun	mun	man	Manut					
50												
40												
30							 F 1					
24.6							Ĩ					
	Start 2	.31 GHz			13 1	1Hz/				Stop 2	.44 GHz	
Date	: 2	20.DEC.2	2010 10	:01:13								

# Detector mode : Average Polarity : Vertical

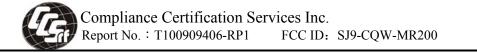
			CH I	Low ( 8	802.11	n HT4	10 N	MO	DE	)			
			Marker			RBW		1 M			Att	20 dB	
×	Ref Lvl			83.7	1 dBµV	VBW		10	Hz				
		dBµV	2	.412384	77 GHz	SWT		33	s	Ur	nit	dBµV	
124 120	7.6 di	8 Offse	t					<b>v</b> ₁	[T1]		83.	71 dBµV	
120											2.41238		
440								72	[T1]			37 dBµV	
110								⊽3	[T1]		2.40000	000 GHz 07 dBµV	
									[]]]		40. 2.39000		
100													
	1MAX_												1MA
90	11187									1			1114
									$\sim$	غر		~	
80											V		
70													
60													
	-D1 54	dBµV——						2	-				
50							3	/~	,				
							- Yan	~					
40													
30							F1						
24.6	Start 2	21 CU-7			13 1	1117					Etop 2	.44 GHz	l
				88.47	131	11127					στομ 2	.44 UHZ	
Date:	: 2	2U.DEC.2	010 10	:U2:47									

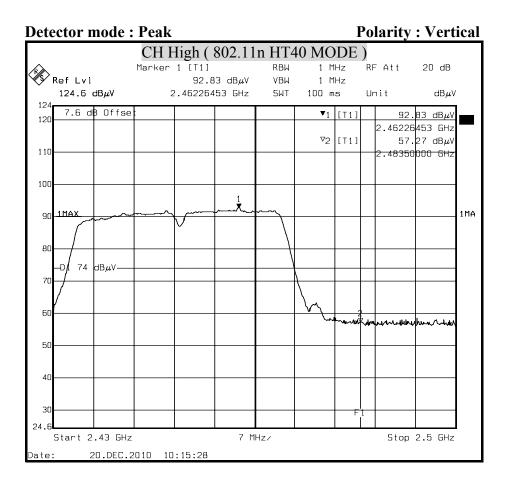




**Polarity : Horizontal** 

			CH H	ligh (	802.11	n HT4	40 MO	DE	)			
			Marker			RBW	1 M			Att	20 dB	
ا ¥∛	Ref Lvl			89.6	i2 dBµV	VBW	10	Hz				
	124.6 0	∃BµV	2	.462224	45 GHz	SWT	17.5	S	Ur	nit	dBµV	
124 120	7.6 d	8 Offse	İ				▼1	[T1]		89.	62 dBµV	
120										2.46222	445 GHz	
							⊽2	[T1]			17 dBµV	
110										2.48350	000 GHz	
100												
00	1MAX				1							1MA
90												1
	$\bigcap$			v								
80												
70						\						
ru												
60												
00							$\left  \right\rangle$					
50	$\sqrt{\frac{1}{1}}$	dBµV——					$\vee$					
JU							L.					
40												
40												
30												
								F	1			
24.6	Start 2	.43 GHz			7 M	Hz/				Stop	2.5 GHz	
		7.DEC.2	N1N 21	:47:30						r.		





#### **Polarity : Vertical**

CH High (802.11n HT40 MODE)											
(K)			Marker	1 [T1]		RBW	1 M	Hz	RF Att	20 dB	
Ť		lBμV	2		6 dBµV 53 GHz		10 17.5		Un i t	dBµ∨	
124 120	7.6 d	3 Offse	t				▼1	[T1]	82.	46 dBµV	
120										453 GHz	
							⊽2	[T1]		77 dBµV	
110									2.48350	000 GHz	
100											
IUL											
00	1MAX										1MA
90					1						
80					<u>1</u>						
01				V							
70											
r.											
60											
00											
50	D1 54	∃BµV——									
	$\sim$						V V		7		
40											
40											
30											
24.6								F	1		
24.0	Start 2	.43 GHz			7 M	Hz/			 Stop	2.5 GHz	
Date: 20.DEC.2010 10:16:03											

# **8.7 POWERLINE CONDUCTED EMISSIONS**

# **LIMITS**

§ 15.207 (a) Except as shown in paragraph (b) and (c) this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50  $\mu$ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

The lower limit applies at the boundary between the frequency ranges.

Frequency of Emission (MHz)	Conducted limit (dBµv)		
	Quasi-peak	Average	
0.15 - 0.5	66 to 56	56 to 46	
0.5 - 5	56	46	
5 - 30	60	50	

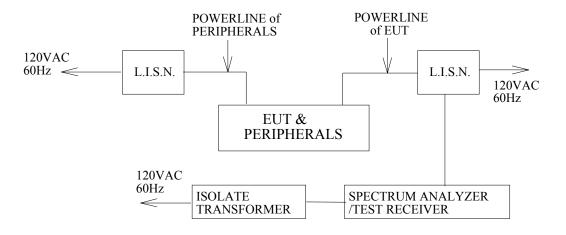
### TEST EQUIPMENTS

The following test equipments are used during the conducted power line tests:

Conducted Emission room #1						
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due		
L.I.S.N.	SCHWARZBECK	NNLK 8121	8121-446	MAR. 09, 2011For Insertion loss		
TEST RECEIVER	Rohde & Schwarz	ESCS 30	100348	JUL. 13, 2011		
TYPE N COAXIAL CABLE	CCS	BNC50	11	OCT. 04, 2011		
Test S/W	e-3 (5.04211c) R&S (2.27)					



# **TEST SETUP**



#### TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80cm above the horizontal ground plane. The EUT IS CONFIGURED IN ACCORDANCE WITH ANSI C63.4.

The resolution bandwidth is set to 9 kHz for both quasi-peak detection and average detection measurements.

Line conducted data is recorded for both NEUTRAL and LINE.

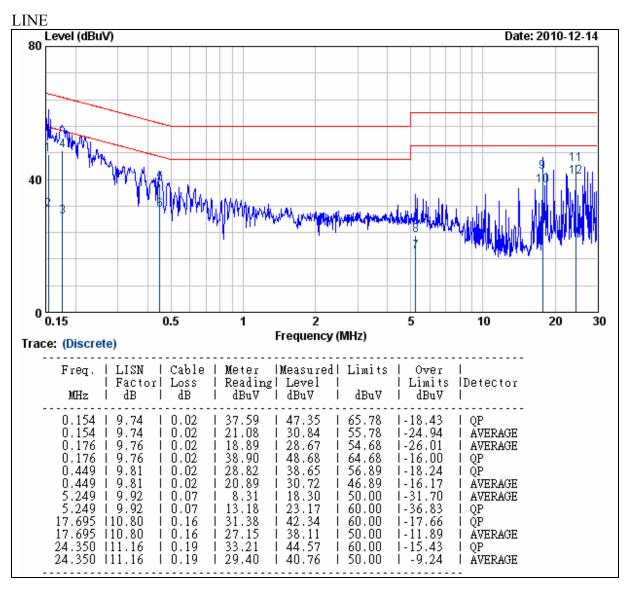
#### TEST RESULTS

No non-compliance noted.



#### CONDUCTED RF VOLTAGE MEASUREMENT

<b>Product Name</b>	Wireless LAN Mobile Router	Test Date	2010/12/24
Model	CQW-MR200	Test By	Shiang Su
Test Mode	Normal operating / worst case	TEMP& Humidity	24.4°C, 59%



#### **REMARK:**

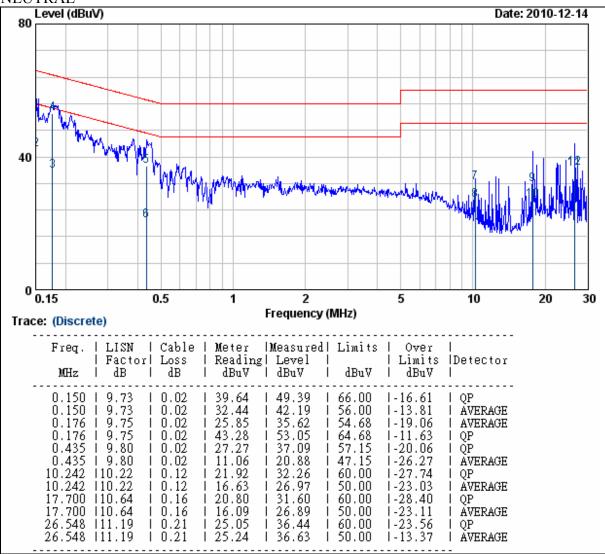
1. Correction Factor = Insertion loss + cable loss

2. Margin value = Emission level – Limit value



<b>Product Name</b>	Wireless LAN Mobile Router	Test Date	2010/12/24
Model	CQW-MR200	Test By	Shiang Su
Test Mode	Normal operating / worst case	TEMP& Humidity	24.4°C, 59%

NEUTRAL



#### **REMARK:**

1. Correction Factor = Insertion loss + cable loss

2. Margin value = Emission level – Limit value



# 9. ANTENNA REQUIREMENT

# 9.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

# 9.2 ANTENNA CONNECTED CONSTRUCTION

This is a **1TX1RX** device with one antenna PIFA **antenna *1 (1TX1RX)** Manufacture: BRITO TECHNOLOGY Model: EM-15 Gain: 1.27dBi Type: PIFA Connector: Printed