APPENDIX I
RADIO FREQUENCY EXPOSURE

LIMIT

According to §15.247(i), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this chapter.

EUT Specification

<table>
<tr><td>EUT</td><td colspan="3">WISCON</td></tr>
<tr><td>Model</td><td colspan="3">WISC-106</td></tr>
<tr><td>Data Applies To</td><td colspan="3">WISC-104; WISC-102</td></tr>
<tr><td>Model Discrepancy</td><td colspan="3">The listed models(WISC-104; WISC-102)are all the same of the original model(WISC-106), except for different model name and AC output power port quantity are just for the marketing purpose.
<table>
<tr><th>Model Name</th><th>AC output power port quantity</th></tr>
<tr><td>WISC-106</td><td>6</td></tr>
<tr><td>WISC-104</td><td>4</td></tr>
<tr><td>WISC-102</td><td>2</td></tr>
</table></td></tr>
<tr><td>RF Module</td><td>Broadcom</td><td>Model:</td><td>WM-N-BM-02</td></tr>
<tr><td>Frequency band (Operating)</td><td colspan="3">☒ 802.11b/g/n HT20: 2.412GHz ~ 2.462GHz
☐ Others</td></tr>
<tr><td>Device category</td><td colspan="3">☐ Portable (<20cm separation)
☒ Mobile (>20cm separation)
☐ Others</td></tr>
<tr><td>Exposure classification</td><td colspan="3">☐ Occupational/Controlled exposure (S = 5mW/cm^2)
☒ General Population/Uncontrolled exposure (S=1mW/cm^2)</td></tr>
<tr><td>Antenna Specification</td><td colspan="3">
<table>
<tr><td>Antenna Gain (2.4GHz)</td><td>1.4 dBi</td><td>(Numeric gain:</td><td>1.39)</td></tr>
</table></td></tr>
<tr><td>Maximum Average output power</td><td colspan="3">
<table>
<tr><td>IEEE 802.11b Mode :</td><td>9.48 dBm</td><td>(8.872 mW)</td></tr>
<tr><td>IEEE 802.11g Mode :</td><td>8.84 dBm</td><td>(7.656 mW)</td></tr>
<tr><td>IEEE 802.11n HT20 Mode :</td><td>8.51 dBm</td><td>(7.096 mW)</td></tr>
</table></td></tr>
<tr><td>Maximum Tune up Power</td><td colspan="3">
<table>
<tr><td>IEEE 802.11b Mode :</td><td>19.00 dBm</td><td>(79.433 mW)</td></tr>
<tr><td>IEEE 802.11g Mode :</td><td>19.00 dBm</td><td>(79.433 mW)</td></tr>
<tr><td>IEEE 802.11n HT20 Mode :</td><td>18.00 dBm</td><td>(63.096 mW)</td></tr>
</table></td></tr>
<tr><td>Evaluation applied</td><td colspan="3">☒ MPE Evaluation*
☐ SAR Evaluation
☐ N/A</td></tr>
</table>

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	April 22, 2014	Initial Issue	ALL	Eva Lin

TEST RESULTS

No non-compliance noted.

Calculation

Given $E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{377}$

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:

$$S = \frac{30 \times P \times G}{377 d^2}$$

Changing to units of mW and cm, using:

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

d (cm) = d(m) / 100

Yields

$$S = \frac{30 \times (P/1000) \times G}{377 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2}$$ ***Equation 1***

Where d = Distance in cm
P = Power in mW
G = Numeric antenna gain
S = Power density in mW / cm^2

Maximum Permissible Exposure

Substituting the MPE safe distance using d = 20 cm into Equation 1:

$$S = 0.000199 \times P \times G$$

Where P = Power in mW
G = Numeric antenna gain
S = Power density in mW / cm^2

IEEE 802.11b mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)	Result
1	2412	79.433	1.39	20	0.0220	1	Pass

IEEE 802.11g mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)	Result
1	2412	79.433	1.39	20	0.0220	1	Pass

IEEE 802.11n HT20 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)	Result
1	2412	63.096	1.39	20	0.0175	1	Pass