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>AP Router</td></tr>
<tr><td>Model / Trade Number</td><td>WCB1215H5ADX / LanReardy
DAP-3410 / D-Link
TEW-754APB, TEW-758APBO, TEW-759APBO / Trendnet
AMS-P50, AMS-D50, AMS-D50-N / ALCON
CAP-5015DP, CAP-5015D, CAP-5015DX / WiBorne
WLO-35815NP, WLO-35815N, WLO-35800N / Pheenet
PS-200N-X, OW-215N2-X, OW-200N2-X / Cerio
AOP9000 / Phoebe Micro
AC-GTT-11N5-D, AC-GTT-11N5-O / Grand-Tek</td></tr>
<tr><td>Frequency band (Operating)</td><td>☒802.11a / 802.11 HT20: 5745 ~ 5825MHz
802.11 HT40: 5755 ~ 5795MHz
☐ Others</td></tr>
<tr><td>Device category</td><td>☐ Portable (<20cm separation)
☒ Mobile (>20cm separation)
☐ Others</td></tr>
<tr><td>Exposure classification</td><td>☐ Occupational/Controlled exposure (S = 5mW/cm^2)
☒ General Population/Uncontrolled exposure (S=1mW/cm^2)</td></tr>
<tr><td>Antenna Specification</td><td>Omni-directional Antenna Gain 5.0 dBi (Numeric gain: 3.16)
Omni-directional Antenna Gain 6.0 dBi (Numeric gain: 3.98)
Patch Antenna Gain 14.5 dBi (Numeric gain: 28.38)</td></tr>
<tr><td>Tune up limit Max. output power</td><td>
<table>
<tr><th>Mode</th><th>Avg. Power</th><th>Tolerance</th><th>Milliwatt</th></tr>
<tr><td>IEEE 802.11a</td><td>15.00 dBm</td><td>± 2.0 dB</td><td>(50.119 mW)</td></tr>
<tr><td>IEEE 802.11n HT20</td><td>15.00 dBm</td><td>± 2.0 dB</td><td>(50.119 mW)</td></tr>
<tr><td>IEEE 802.11n HT40</td><td>15.00 dBm</td><td>± 2.0 dB</td><td>(50.119 mW)</td></tr>
</table>
</td></tr>
<tr><td>Evaluation applied</td><td>☒ MPE Evaluation*
☐ SAR Evaluation
☐ N/A</td></tr>
</table>

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	2013/12/19	Initial Issue	ALL	Scott.Hsu

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 802.11a mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
149	5745	50.19	3.98	20	0.0398	1

Omni-directional Antenna

IEEE 802.11n HT20 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
149	5745	50.19	3.98	20	0.0398	1

Omni-directional Antenna

IEEE 802.11a HT40 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
159	5795	50.19	3.98	20	0.0398	1

Omni-directional Antenna

IEEE 802.11a mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
149	5745	50.19	28.38	20	0.2835	1

Patch Antenna

IEEE 802.11n HT20 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
149	5745	50.19	28.38	20	0.2835	1

Patch Antenna

IEEE 802.11a HT40 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
159	5795	50.19	28.38	20	0.2835	1

Patch Antenna