IEEE C95.1
KDB 447498 D03
47 C.F.R. Part 1, Subpart I, Section 1.1310
47 C.F.R. Part 2, Subpart J, Section 2.1091

RF EXPOSURE REPORT

For

802.11ac/b/g/n USB module

Model: WUBM-273ACN

Trade Name: N/A

Issued to

Teradek, LLC
34B Mauchly Irvine, CA 92618 United States

Issued by

Compliance Certification Services Inc.
No.11, Wugong 6th Rd., Wugu Dist.,
New Taipei City 24891, Taiwan. (R.O.C.)
http://www.ccsrf.com
service@ccsrf.com
Issued Date: January 12, 2016

Testing Laboratory
1309

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	2016/1/12	Initial Issue	ALL	Kelly Cheng

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

TABLE OF CONTENTS

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

1. 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.

2. EUT SPECIFICATION

EUT	802.11ac/b/g/n USB module
Model	WUBM-273ACN
Frequency band (Operating)	☒ 802.11b/g/n HT20: 2.412GHz ~ 2.462GHz 802.11n HT40: 2.422GHz ~ 2.452GHz 802.11a/n HT20: 5.270GHz ~ 5.310GHz / 5.500 ~ 5.700GHz 802.11n HT40: 5.190GHz ~ 5.230GHz / 5.510~ 5.670GHz 802.11ac VHT80: 5.530GHz ☐ Others
Device category	☐ Portable (<20cm separation) ☒ Mobile (>20cm separation) ☐ Others
Exposure classification	☐ Occupational/Controlled exposure (S = 5mW/cm^2) ☒ General Population/Uncontrolled exposure (S=1mW/cm^2)
Antenna Specification	printed Antenna：SparkLAN / WUBM-234ACN Ant #1 Antenna Gain : 3.05 dBi (Numeric gain: 2.02) Ant #2 Antenna Gain : 1.68 dBi (Numeric gain: 1.47) Dipole Antenna：LCT / DFE_ACBSMA-BGP Antenna Gain : 5.00 dBi (Numeric gain: 3.16) Directional gain = 5.00 dBi +10log (2) = 8.01 dBi (Numeric gain 6.32)
Maximum Average output power	IEEE 802.11a Mode: 19.13 dBm (81.846 mW) IEEE 802.11n HT 20 Mode: 17.94 dBm (62.230 mW) IEEE 802.11n HT 40 Mode: 17.49 dBm (56.105 mW) IEEE 802.11ac VHT80 Mode: 10.23 dBm (10.544 mW)
Maximum Tune up Power	IEEE 802.11a Mode: 21.00 dBm (125.893 mW) IEEE 802.11n HT 20 Mode: 19.50 dBm (89.125 mW) IEEE 802.11n HT 40 Mode: 19.00 dBm (79.433 mW) IEEE 802.11ac VHT80 Mode: 12.00 dBm (15.849 mW)
Evaluation applied	☒ MPE Evaluation* ☐ SAR Evaluation ☐ N/A

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

3. 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

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.

4. 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)
116	5580	125.893	6.32	20	0.1583	1

IEEE 802.11a HT20 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
56	5280	89.125	6.32	20	0.1121	1

IEEE 802.11a HT40 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
54	5270	79.433	6.32	20	0.0999	1

IEEE 802.11ac VHT80 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
58	5290	15.849	6.32	20	0.0199	1

This report shall not be reproduced except in full, without the written approval of Compliance Certification Services.