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

ICG

Model: ICG-100-NA-R

Trade Name: Intwine connect

Issued for

Foxconn International Inc

NO 2 ZIYOU ST TUCHENG DISTRICT NEW TAIPEI 236

Issued by

Compliance Certification Services Inc.
Hsinchu Lab.
NO. 989-1, Wenshan Rd., Shangshan Village,
Qionglin Township, Hsinchu County 30741, Taiwan (R.O.C.)
http://www.ccsrf.com
service@ccsrf.com
Issued Date: August 27, 2015

Testing Laboratory
0240

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	08/27/2015	Initial Issue	All Page	Vera Hsu

TABLE OF CONTENTS

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

Product Name	ICG
Model Number	ICG-100-NA-R
Identify Number	T150715D02
Received Date	July 15, 2015
Frequency band (Operating)	☒ Bluetooth 2.1 + EDR / 4.0: 2402 ~ 2480 MHz Zigbee: 2405MHz ~ 2480MHz 802.11b/g/n HT20: 2.412GHz ~ 2.462GHz 802.11n HT40: 2.422GHz ~ 2.452GHz LTE Band XIII: 779.5MHz ~ 784.5MHz ☐ 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	WiFi/Bluetooth Antenna Gain : 5.00 dBi (Numeric gain: 3.16) Zigbee Antenna Gain : 5.00 dBi (Numeric gain: 3.16) LTE (taoglas) Antenna Gain : 3.00 dBi (Numeric gain: 2.00) (worst) LTE (FIT) Antenna Gain : 1.59 dBi (Numeric gain: 1.44)
Maximum Average output power	Bluetooth 2.1+EDR Mode : 7.22 dBm (5.272 mW) Bluetooth 4.0 Mode : 7.19 dBm (5.236 mW) Zigbee Mode : 14.27 dBm (26.730 mW) IEEE 802.11b Mode: 14.55 dBm (28.510 mW) IEEE 802.11g Mode: 17.81 dBm (60.395 mW) IEEE 802.11n HT 20 Mode: 17.64 dBm (58.076 mW) IEEE 802.11n HT 40 Mode: 17.19 dBm (52.360 mW) LTE Mode: 23.00 dBm (199.526 mW)
Evaluation applied	☒ MPE Evaluation* ☐ SAR Evaluation ☐ N/A

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 watts / meter

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

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 / cm²

Bluetooth 2.1+EDR mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm²	Limit (mW/cm2)
2480	5.272	3.16	20	0.0033	1

Bluetooth 4.0 mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm²	Limit (mW/cm2)
2480	5.236	3.16	20	0.0033	1

Zigbee mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm²	Limit (mW/cm2)
2440	26.73	3.16	20	0.0168	1

IEEE 802.11b mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm²	Limit (mW/cm2)
2437	28.51	3.16	20	0.0179	1

IEEE 802.11g mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm²	Limit (mW/cm2)
2437	60.395	3.16	20	0.0380	1

IEEE 802.11n HT20 mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm²	Limit (mW/cm2)
2462	58.076	3.16	20	0.0365	1

IEEE 802.11n HT40 mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm²	Limit (mW/cm2)
2437	52.36	3.16	20	0.0329	1

LTE Band 13 mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm²	Limit (mW/cm²)
782	199.526	2	20	0.0794	0.521

Simultaneously MPE

Simultaneously MPE = MPE 1 / Limit 1 + MPE 2 / Limit2 + MPE 3 / Limit 3

WiFi + Zigbee + LTE

Simultaneously MPE = (0.0380 mW/cm^2 /1) + (0.0168 mW/cm^2 /1) + (0.0794 mW/cm^2/0.521) = 0.207

Bluetooth + Zigbee + LTE

Simultaneously MPE = (0.0033 mW/cm^2 /1) + (0.0168 mW/cm^2 /1) + (0.0794 mW/cm^2/0.521) = 0.172