

## RF EXPOSURE EVALUATION REPORT

Applicant..... : ICE Cobotics (Guangdong) Company Limited

Address..... : Fushan Section Road, Xiangshi Road, Liaobu Town, Dongguan City, Guangdong  
Province, P.R. China

Manufacturer..... : ICE Cobotics (Guangdong) Company Limited

Address..... : Fushan Section Road, Xiangshi Road, Liaobu Town, Dongguan City, Guangdong  
Province, P.R. China

Factory..... : ICE Cobotics (Guangdong) Company Limited

Address..... : Fushan Section Road, Xiangshi Road, Liaobu Town, Dongguan City, Guangdong  
Province, P.R. China

Product Name..... : I-Synergy 4G Cellular Router

Brand Name..... : ICE COBOTICS

Model No. .... : ICE1001-S4LC(Global)

FCC ID..... : 2AWHZ-ICE1001

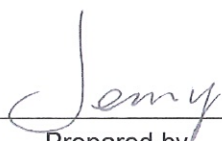
Measurement Standard..... : 47 CFR FCC Part 2.1091

Receipt Date of Samples.... : January 21, 2022

Date of Tested..... : January 23, 2022 to March 02, 2022

Date of Report..... : March 09, 2022

This report shows that above equipment is technically compliant with the requirements of the standards above. All test results in this report apply only to the tested sample(s). Without prior written approval of Dongguan Nore Testing Center Co., Ltd, this report shall not be reproduced except in full.



Prepared by

Jenny Liu / Project Engineer



Approved by

Iori Fan / Authorized Signatory

---

## Table of Contents

1. General Description of EUT .....	4
2. Maximum Permissible RF Exposure.....	6
3. Test Facility .....	7
4. Maximum RF Output Power of EUT .....	8
5. RF Exposure Evaluation Results .....	9

## Revision History

[illegible]

## 1. General Description of EUT

Product Information	
Product Name:	I-Synergy 4G Cellular Router
Main Model Name:	ICE1001-S4LC(Global)
Additional Model Name:	N/A
Model Difference:	N/A
S/N:	05170421120033
Brand Name:	ICE COBOTICS
Hardware Version:	V3.0.6
Software Version:	V2.0.0
Rating:	DC 12-48V / 200mA (Typical DC 12V)
Typical Arrangement:	Tabletop
I/O Port:	Refer to the user manual
Exposure Category:	Uncontrolled environment/general population
Device Category:	Mobile
Evaluation applied:	MPE
Accessories Information	
Adapter:	N/A
Cable:	N/A
Other:	N/A
Additional Information	
Note:	N/A
Remark:	All the information above are provided by the manufacturer. More detailed feature of the EUT please refers to the user manual.

### Technical Specification - LTE

Frequency Range:	LTE Band 2: 1850.7 ~ 1909.3 MHz LTE Band 4: 1710.7 ~ 1754.3 MHz LTE Band 5: 824.7 ~ 848.3 MHz LTE Band 7: 2502.5 ~ 2567.5 MHz LTE Band 12: 699.7 ~ 715.3 MHz LTE Band 13: 779.5 ~ 784.5 MHz LTE Band 25: 1850.7 ~ 1914.3 MHz LTE Band 26: 824.7 ~ 848.3 MHz LTE Band 41: 2498.5 ~ 2687.5 MHz
Modulation Type:	QPSK / 16QAM
Antenna Type:	External / PIFA
Antenna Gain:	LTE Band 2: 2.81 dBi LTE Band 4: 3.89 dBi LTE Band 5: 0.22 dBi LTE Band 7: 1.70 dBi LTE Band 12: -1.38 dBi LTE Band 13: -1.18 dBi LTE Band 25: 2.81 dBi LTE Band 26: 0.22 dBi LTE Band 41: 1.70 dBi
Remark:	N/A

### Technical Specification - WLAN

Frequency Range:	2412-2462MHz for IEEE 802.11b/g/n(HT20)
Modulation Technology:	DSSS, OFDM
Modulation Type:	CCK, DQPSK, DBPSK, 64-QAM, 16-QAM, QPSK, BPSK
Antenna Type:	External / PIFA
Antenna Gain:	4.37dBi (Declared by the manufacturer)
Remark:	N/A

## 2. Maximum Permissible RF Exposure

According to FCC §1.1310: The criteria listed in Table 1 shall be used to evaluate the environmental Impact of human exposure to radio-frequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of §2.1093 of this chapter.

### Limits For Maximum Permissible Exposure (MPE)

Frequency Range(MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density(mW/cm <sup>2</sup> )	Average Time (minutes)
<b>(A) Limits for Occupational/Control Exposures</b>				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f <sup>2</sup>	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100000	--	--	5	6
<b>(B) Limits for General Population/Uncontrol Exposures</b>				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f <sup>2</sup>	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100000			1.0	30
f = frequency in MHz				
* = Plane-wave equivalent power density				

The MPE was calculated at **20cm** to show compliance with the power density limit.

The following formula was used to calculated the Power Density:

$$S = \frac{PG}{4\pi R^2}$$

Where:

S = Power Density in mW/cm<sup>2</sup>

P = Output Power to antenna in mW

G = Gain of antenna in linear scale.

R = Distance to centre of the antenna in cm.

π = 3.14159

### 3. Test Facility

Test Site	:	Dongguan Nore Testing Center Co., Ltd. (Dongguan NTC Co., Ltd.)
Accreditations and Authorizations	:	<p>The Laboratory has been assessed and proved to be in compliance with CNAS/CL01</p> <p>Listed by CNAS, August 13, 2018</p> <p>The Certificate Registration Number is L5795.</p> <p>The Laboratory has been assessed and proved to be in compliance with ISO17025</p> <p>Listed by A2LA, November 01, 2017</p> <p>The Certificate Registration Number is 4429.01</p> <p>Listed by FCC, November 06, 2017</p> <p>Test Firm Registration Number: 907417</p> <p>Listed by Industry Canada, June 08, 2017</p> <p>The Certificate Registration Number. Is 46405-9743A</p>
Test Site Location	:	Building D, Gaosheng Science and Technology Park, Hongtu Road, Nancheng District, Dongguan City, Guangdong Province, China

#### 4. Maximum RF Output Power of EUT

Mode	Band	RF Output Power (dBm)	Maximum RF Output Power with Tune-up tolerance (dBm)
<b>LTE</b>	Band 2	23.12	25.0
	Band 4	23.67	25.0
	Band 5	23.80	25.0
	Band 7	23.11	25.0
	Band 12	23.68	25.0
	Band 13	23.94	25.0
	Band 25	23.80	25.0
	Band 26	23.82	25.0
	Band 41	23.08	25.0
<b>WLAN</b>	2.4G	20.47	23.0



## 5. RF Exposure Evaluation Results

Band	Frequency (MHz)	Max. RF Power (dBm)	Ant. Gain (dBi)	Max. EIRP (dBm)	Max. EIRP (mW)	Power Density at 20cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Power Density Ratio
LTE Band 2	1850.7	25.0	2.81	27.81	603.95	0.1202	1.0000	0.1202
LTE Band 4	1710.7	25.0	3.89	28.89	774.46	0.1541	1.0000	0.1541
LTE Band 5	824.7	25.0	0.22	25.22	332.66	0.0662	0.5498	0.1204
LTE Band 7	2502.5	25.0	1.70	26.70	467.74	0.0931	1.0000	0.0931
LTE Band 12	699.7	25.0	-1.38	23.62	230.14	0.0458	0.4665	0.0982
LTE Band 13	779.5	25.0	-1.18	23.82	240.99	0.0479	0.5197	0.0922
LTE Band 25	1850.7	25.0	2.81	27.81	603.95	0.1202	1.0000	0.1202
LTE Band 26	814.7	25.0	0.22	25.22	332.66	0.0662	0.5498	0.1204
LTE Band 41	2498.5	25.0	1.70	26.70	467.74	0.0931	1.0000	0.0931
WIFI 2.4G	2412	23.0	4.37	27.37	545.76	0.1086	1.0000	0.1086

Remark: For conservativeness, the lowest frequency of each band is used to determine the MPE limit of that band.

### RF exposure evaluation for simultaneity transmitting condition:

Maximum LTE Power Density Ratio	Maximum WLAN Density Ratio	Total Power Density Ratio	Power Density Ratio Limit
0.1541	0.1086	0.2627	1

---End---