

FCC RF Exposure Report

FCC ID : SQG-IGUPCAT1
Equipment : Sentrius IG60 Category-1 LTE Module
Model No. : IGUP-CAT1
Brand Name : Laird
Applicant : Laird Connectivity, Inc.
Address : W66N220 Commerce Court, Cedarburg,
Wisconsin 53012, USA
Standard : 47 CFR FCC Part 2.1091
Received Date : Aug. 19, 2019
Tested Date : Sep. 24 ~ Sep. 26, 2019

We, International Certification Corp., would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It may be duplicated completely for legal use with the approval of the applicant. It shall not be reproduced except in full without the written approval of our laboratory.

Reviewed by:


Along Chen / Assistant Manager

Approved by:


Gary Chang / Manager



Table of Contents

1	MPE EVALUATION OF MOBILE DEVICES	4
1.1	LIMITS FOR GENERAL POPULATION/UNCONTROLLED EXPOSURE.....	4
1.2	MPE EVALUATION FORMULA	4
1.3	DEVIATION FROM TEST STANDARD AND MEASUREMENT PROCEDURE	4
1.4	MEASUREMENT UNCERTAINTY	4
1.5	MPE EVALUATION RESULTS	5
1.6	MAXIMUM ANTENNA GAIN EVALUATION	6
2	TEST LABORATORY INFORMATION	7

Release Record

Report No.	Version	Description	Issued Date
FA981901	Rev. 01	Initial issue	Nov. 01, 2019

1 MPE EVALUATION OF MOBILE DEVICES

Human exposure to RF emissions from mobile devices (47 CFR §2.1091) may be evaluated based on the MPE limits adopted by the FCC for electric and magnetic field strength and/or power density, as appropriate, since exposures are assumed to occur at distances of 20 cm or more from persons.

1.1 LIMITS FOR GENERAL POPULATION/UNCONTROLLED EXPOSURE

Frequency Range (MHz)	Power Density (mW /cm ²)	Averaging Time (minutes)
300~1500	F/1500	30
1500~100000	1.0	30

1.2 MPE EVALUATION FORMULA

$$Pd = \frac{Pt}{4 * Pi * R^2}$$

Where

Pd= Power density in mW/cm²

Pt= EIRP in mW

Pi= 3.1416

R= Measurement distance

1.3 DEVIATION FROM TEST STANDARD AND MEASUREMENT PROCEDURE

None

1.4 MEASUREMENT UNCERTAINTY

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))

Parameters	Uncertainty
Conducted power	±0.808 dB

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

1.5 MPE EVALUATION RESULTS

Frequency Band (MHz)	Rated Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)	Pass / Fail
GSM 850	25.97	0.5	20	0.088	0.549	Pass
GSM 1900	22.97	2.2	20	0.065	1.000	Pass
WCDMA 850	25	0.5	20	0.071	0.549	Pass
WCDMA1700	25	2.2	20	0.104	1.000	Pass
WCDMA 1900	25	2.2	20	0.104	1.000	Pass
LTE Band 2	25	2.2	20	0.104	1.000	Pass
LTE Band 4	25	2.2	20	0.104	1.000	Pass
LTE Band 5	25	0.5	20	0.071	0.549	Pass
LTE Band 12	25	0.5	20	0.071	0.466	Pass

Rated power refers to test report of FCC ID: QIPPLS62-W. Test report no.: I17D00184-MPE01

1.6 MAXIMUM ANTENNA GAIN EVALUATION

Frequency Range (MHz)	Rated Power (dBm)	Max Gain to comply with MPE			Max Gain to comply with ERP	
		Antenna Gain (dBi)	Distance (cm)	Limit (mW/cm ²)	Antenna Gain (dBi)	Limit (ERP,W)
GSM 850	25.97	8.44	20	0.549	14.63	7
WCDMA 850	25	9.41	20	0.549	15.6	7
LTE Band 5	25	9.41	20	0.549	15.6	7
LTE Band 12	25	8.7	20	0.466	11.92	3

Note: In order to comply with both Maximum Permissible Exposure and ERP limit, the maximum antenna gain shall not be greater than boldface values in each mode.

Frequency Range (MHz)	Rated Power (dBm)	Max Gain to comply with MPE			Max Gain to comply with EIRP	
		Antenna Gain (dBi)	Distance (cm)	Limit (mW/cm ²)	Antenna Gain (dBi)	Limit (EIRP,W)
GSM 1900	22.97	14.04	20	1	10.04	2
WCDMA1700	25	12.01	20	1	5	1
WCDMA 1900	25	12.01	20	1	8.01	2
LTE Band 2	25	12.01	20	1	8.01	2
LTE Band 4	25	12.01	20	1	5	1

Note: In order to comply with both Maximum Permissible Exposure and EIRP limit, the maximum antenna gain shall not be greater than boldface values in each mode.

2 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corp (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website <http://www.icertifi.com.tw>.

Linkou

Tel: 886-2-2601-1640

No. 30-2, Ding Fwu Tsuen, Lin
Kou District, New Taipei City,
Taiwan, R.O.C.

Kwei Shan

Tel: 886-3-271-8666

No. 3-1, Lane 6, Wen San 3rd St.,
Kwei Shan District, Tao Yuan City
333, Taiwan, R.O.C.

Kwei Shan Site II

Tel: 886-3-271-8640

No. 14-1, Lane 19, Wen San 3rd
St., Kwei Shan District, Tao Yuan
City 333, Taiwan, R.O.C..

If you have any suggestion, please feel free to contact us as below information

Tel: 886-3-271-8666

Fax: 886-3-318-0155

Email: ICC_Service@icertifi.com.tw

==END==