CE RF Exposure Report

Equipment	:	**Bluetooth Serial Module with integrated antenna (Please refer to section 1.1.1 for more details.)**
Model No.	:	**BTM431 (Please refer to section 1.1.1 for more details.)**
Brand Name	:	**Laird Technologies**
Applicant	:	**Laird Technologies**
Address	:	**11160 Thompson Ave. / Lenexa, Kansas / 66219 / USA**
Standard	:	**EN 62479:2010**
Received Date	:	**Aug. 06, 2014**
Tested Date	:	**Aug. 07 ~ Aug. 08, 2014**

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.

Approved & Reviewed by:

Gary Chang / Manager

Testing Laboratory
2732

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Release Record

Report No.	Version	Description	Issued Date
EA480602	Rev. 01	Initial issue	Aug. 19, 2014
EA480602	Rev. 02	Added test data for chip antenna.	Sep. 01, 2014

1 General Description

1.1 Information

1.1.1 Product Details

The following models are provided to this EUT.

Brand Name	Model Name	Product Name	Description
Laird Technologies	BTM411 / BTM421 / BTM431 / BTM441 / BTM443 / BTM461	Bluetooth Serial Module with integrated antenna	Surface mount module with chip antenna
Laird Technologies	BTM410 / BTM420 / BTM430	Bluetooth Serial Module with surface mount pad for external antenna	Surface mount pad with dipole antenna.

Model Name	Difference
BTM411	Class 2 Bluetooth AT Data Module using CSR Unified Stack 2.1+EDR
BTM421	Class 2 Bluetooth HCI data module using CSR HCI Stack 2.1+EDR
BTM431	Class 2 Bluetooth AT Data Module using CSR Unified Stack 2.0+EDR
BTM441	Class 2 Bluetooth with Multipoint using CCL Interface Express Subsystem 2.1+EDR
BTM443	Class 2 Bluetooth AT Data module using CCL Interface Express Subsystem 2.1+EDR
BTM461	Class 2 Bluetooth AT / Multipoint using CCL Interface Express Subsystem 2.1+EDR
✦ Hardware is the same on all of these modules. Only difference is the Bluetooth firmware installed.	

Model Name	Difference
BTM410	Class 2 Bluetooth AT Data Module using CSR Unified Stack 2.1+EDR
BTM420	Class 2 Bluetooth HCI data module using CSR HCI Stack 2.1+EDR
BTM430	Class 2 Bluetooth AT Data Module using CSR Unified Stack 2.0+EDR
✦ Hardware is the same on all of these modules. Only difference is the Bluetooth firmware installed.	

✧ The above models, model **BTM420**, **BTM421**, and **BTM461** were selected as representative ones for pretesting.

✧ Model **BTM420**, **BTM421** and **BTM461** had been covered during the pretest. Model **BTM420** and **BTM461** were selected for final test due to different antenna type, and only these data were recorded in this test

1.1.2 Specification of the Equipment under Test (EUT)

RF General Information				
Frequency Range (MHz)	**Bluetooth Mode**	**Ch. Frequency (MHz)**	**Channel Number**	**Data Rate**
2400-2483.5	BR V2.1	2402-2480	0-78 [79]	1 Mbps
2400-2483.5	EDR V2.1	2402-2480	0-78 [79]	2 Mbps
2400-2483.5	EDR V2.1	2402-2480	0-78 [79]	3 Mbps
Note 1: Bluetooth BR uses a GFSK. Note 2: Bluetooth EDR uses a combination of π/4-DQPSK and 8DPSK.				

1.1.3 Antenna Details

Ant. No.	Model	Type	Connector	Gain (dBi)	Remark
1	2450AT42B100	Surface Mount Ceramic Chip	NA	0	Populated on BTM411 / BTM421 / BTM431 / BTM441 / BTM443 / BTM461
2	S181AH-2450S	Dipole	RP-SMA	2	Used with BTM410 / BTM420 / BTM430

2 RF exposure evaluation

2.1 Scope

This International Standard provides simple conformity assessment methods for low-power electronic and electrical equipment to an exposure limit relevant to electromagnetic fields(EMF). If such equipment cannot be shown to comply with the applicable EMF exposure requirements using the methods included in this standard for EMF assessment, then other standards, including IEC 62311 or other (EMF) product standards, may be used for conformity assessment. This European Standard supersedes EN 50371:2002.

2.2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

Council Recommendation 1999/519/EC of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz), Official Journal L 199 of 30 July 1999.

IEC 62311, Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz – 300 GHz).

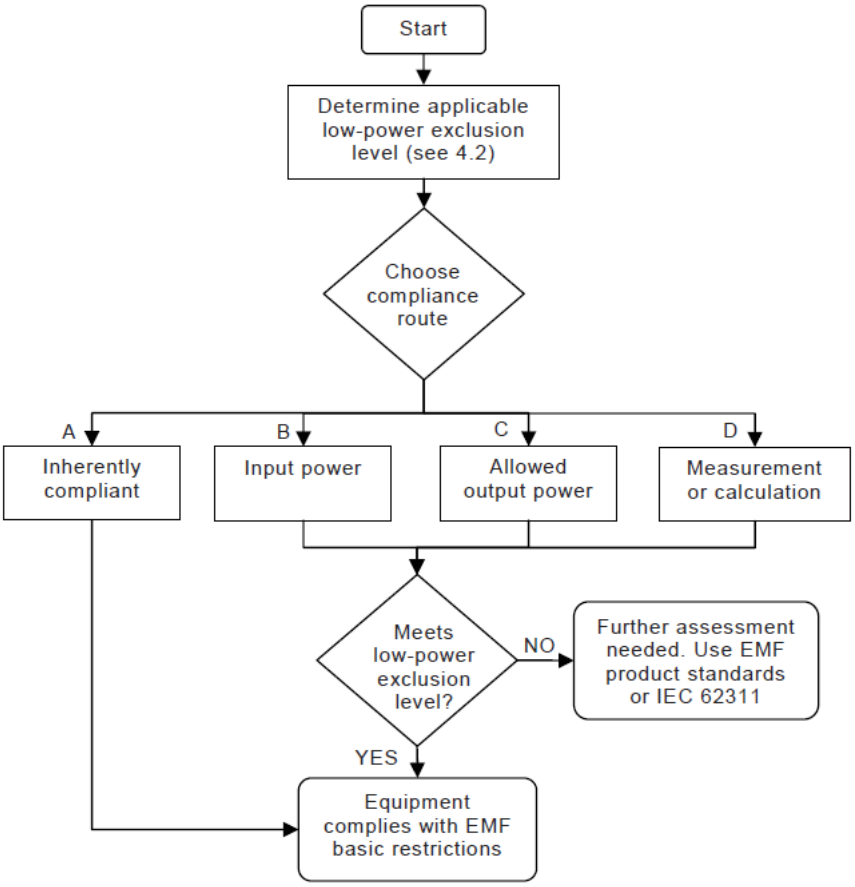
2.3 Compliance Criteria

Compliance of electromagnetic emissions from electronic and electrical equipment with the basic restrictions usually is determined by measurements and, in some cases, calculation of the exposure level. If the electrical power used by or radiated by the equipment is sufficiently low, the electromagnetic fields emitted will be incapable of producing exposures that exceed the basic restrictions. This standard provides simple EMF assessment procedures for this low power equipment.

Any relevant compliance assessment procedure which is consistent with the state of the art, reproducible and gives valid results can be used.

For transmitters intended for use with more than one antenna configuration option, the combination of transmitter and antenna(s) which generates the highest available antenna power and/or average total radiated power shall be assessed.

2.4 Routes to show compliance with low-power exclusion level



2.5 Limits

Equipment where the available antenna power and/or the average total radiated power is less than or equal to the 20mW (13dBm).

2.6 Evaluation Results

Modulation Mode	Frequency Range (MHz)	Maximum E.I.R.P.(dBm)	Gain (dBi)	Maximum Conducted Power (dBm)	Limit (dBm)	PASS / FAIL
GFSK	2402-2480	8.50	2	6.50	13	Pass
8DPSK	2402-2480	4.16	2	2.16	13	Pass

3 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, 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 Hsiang. Location map can be found on our website http://www.icertifi.com.tw.

Linkou	**Kwei Shan**	**Kwei Shan Site II**
Tel: 886-2-2601-1640	Tel: 886-3-271-8666	Tel: 886-3-271-8640
No. 30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei City, Taiwan, R.O.C.	No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C.	No. 14-1, Lane 19, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C.

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

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