A Test Lab Techno Corp.

Changan Lab：No. 140 -1, Changan Street, Bade City, Taoyuan County, Taiwan R.O.C.
Tel：886-3-271-0188 / Fax：886-3-271-0190

MPE Report

Test Report No.	：	1410FS13
Applicant	：	First Chair Acoustics Co., Ltd.
Manufacturer	：	First Chair Acoustics Co., Ltd.
Product Type	：	Bluetooth Module
Trade Name	：	First Chair Acoustics
Model Number	：	FCABTC30
Date of Received	：	Sep. 29, 2014
Test Period	：	Oct. 03, 2014
Date of Issued	：	Oct. 14, 2014
Test Specification	：	47 CFR § 2.1091
		47 CFR §1.1310
		ANSI / IEEE Std.C95.1-1992
Location of Test Lab.	：	Chang-an Lab.

1. The test operations have to be performed with cautious behavior, the test results are as attached.
2. The test results are under chamber environment of A Test Lab Techno Corp. A Test Lab Techno Corp. does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples.
3. The measurement report has to be written approval of A Test Lab Techno Corp. It may only be reproduced or published in full. This report shall not be reproduced except in full, without the written approval of A Test Lab Techno Corp.
4. This document may be altered or revised by A Test Lab Techno. Corp. personnel only, and shall be noted in the revision section of the document.

Approved By ： Bill Hu (Bill Hu)　　Tested By ： Sky Chou (Sky Chou)

Contents

1. Description of Equipment under Test (EUT)

Applicant	First Chair Acoustics Co., Ltd.
Applicant Address	No. 53, Lane 17, Yuhe St., Taoyuan City, Taoyuan County, Taiwan, R.O.C.
Manufacturer	First Chair Acoustics Co., Ltd.
Manufacturer Address	No. 53, Lane 17, Yuhe St., Taoyuan City, Taoyuan County, Taiwan, R.O.C.
Product Type	Bluetooth Module
Trade Name	First Chair Acoustics
Model Number	FCABTC30
FCC ID	2ADA3FCABT30
Frequency Range	2402-2480 MHz Bluetooth v3.0, Bluetooth v4.0 LE
Transmit Power (conducted power)	Bluetooth v3.0: 0.00029 W / -5.33 dBm Bluetooth v4.0 LE: 0.00014 W / -8.39 dBm
Antenna Specification	Bluetooth v3.0, Bluetooth v4.0 LE: 4.75 dBi
Antenna Designation	Print PCB Antenna
Temperature Range	0 ~ +60°C
RF Evaluation	0.001 W/m^2

The above equipment was tested by A Test Lab Techno Corp. For compliance with the requirements set forth in 47 CFR § 2.1091 & 47 CFR § 1.1310. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties

2. Human Exposure Assessment

Due to the design and installation of this product, it is not possible to conduct SAR evaluation. This is because client either manufactures or supplies the antenna(s) that will be used in the installation of this product. Therefore, this product will be evaluated as a mobile device per 47 CFR §1.1310 titled “Radiofrequency radiation exposure limits”, generally referred to as MPE limits.

In 47 CFR § 2.1091, paragraph (b) defines a mobile device as “a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 cm is normally maintained between the transmitter’s radiating structure(s) and the body of the user or nearby persons. ” This product is intended to be installed into a vehicle such that the unit is physically secured at one location. In the installation guide supplied with the product,

Client has made the following statement: “IMPORTANT: To meet the FCC’s RF Exposure Guidelines, the antenna should be installed so there is at least 20 cm of separation between the body of the user and nearby persons and the antenna”. Based on the installation of the transceiver and the antenna, the transmitters radiating structure is more than 20 cm from the user. Thus, this product is a “mobile device” as defined in section § 2.1091 paragraph (b).

Exposure evaluation
$$S = \frac{PG}{4\pi R^2}$$ Where S: power density P: power input to the antenna G: power gain of the antenna in the direction of interest relative to an isotropic radiator. R: distance to the center of radiation of the antenna.

3. RF Output Power

Band	CH	Frequency (MHz)	Packet Type	Average Conducted power (dBm)
Bluetooth GFSK	0	2402	DH1	-6.98
			DH3	-6.95
			DH5	-6.91
	39	2441	DH1	-8.33
			DH3	-8.28
			DH5	-8.26
	78	2480	DH1	-5.42
			DH3	-5.38
			DH5	-5.33
Bluetooth π /4-DQPSK	0	2402	DH1	-8.17
			DH3	-8.14
			DH5	-8.10
	39	2441	DH1	-8.90
			DH3	-8.86
			DH5	-8.81
	78	2480	DH1	-6.18
			DH3	-6.14
			DH5	-6.09
Bluetooth 8DPSK	0	2402	DH1	-8.15
			DH3	-8.12
			DH5	-8.07
	39	2441	DH1	-8.88
			DH3	-8.84
			DH5	-8.80
	78	2480	DH1	-6.15
			DH3	-6.12
			DH5	-6.07
Bluetooth v4.0 LE	0	2402	---	-8.49
	19	2440	---	-8.39
	39	2480	---	-8.68

4. Test Result

Band	Data Rate	Frequency (MHz)	Limit (mw)	Distance [R] (cm)	Max tune-up Power (upper limit) [P] (dBm)	ANT Gain (dBi)	Numeric Gain [G] (dBi)	Duty Cycle	[P] x [G] with Duty cycle [TP] (mW)	Power Density [S] (mw)/cm^2
Bluetooth v3.0	1M	2402.0	1.000	20	-6	4.75	2.99	1	0.75	0.0001
		2441.0	1.000	20	-7	4.75	2.99	1	0.60	0.0001
		2480.0	1.000	20	-5	4.75	2.99	1	0.95	0.0002
Bluetooth v4.0 LE	---	2402.0	1.000	20	-7	4.75	2.99	1	0.60	0.0001
		2440.0	1.000	20	-7	4.75	2.99	1	0.60	0.0001
		2480.0	1.000	20	-7	4.75	2.99	1	0.60	0.0001