



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.	: 1408FS11
Applicant	: ELITEGROUP COMPUTER SYSTEMS CO., LTD
Manufacturer	: Golden Elite Technology (SHENZHEN) Co., Ltd.
Product Type	: Wireless Motherboard
Trade Name	: ECS ELITEGROUP
Model Number	: MCT02A
Date of Received	: Jul. 18, 2014
Test Period	: Aug. 04, 2014
Date of Issued	: Aug. 05, 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.
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Approved By

: Bill Hu
(Bill Hu)

Tested By

: Sky Chou
(Sky Chou)



Contents

1.	Description of Equipment under Test (EUT).....	3
2.	Human Exposure Assessment	4
3.	RF Output Power.....	5
4.	Test Result.....	7



1. Description of Equipment under Test (EUT)

Applicant	ELITEGROUP COMPUTER SYSTEMS CO., LTD
Applicant Address	No.239, Sec. 2, Ti Ding Blvd., Taipei, Taiwan
Manufacturer	Golden Elite Technology (SHENZHEN) Co., Ltd.
Manufacturer Address	No.1 , Nan-Huan Rd., ShaJing, BaoAn, Shen zhen, China
Product Type	Wireless Motherboard
Trade Name	ECS ELITEGROUP
Model Number	MCT02A
Frequency Range	2412 - 2462 MHz IEEE 802.11b / 802.11g 2412 - 2462 MHz IEEE 802.11n 2.4GHz Standard-20MHz 2402 - 2480 MHz Bluetooth v3.0
Transmit Power (conducted power)	IEEE 802.11b: 0.067 W / 18.26 dBm IEEE 802.11g: 0.046 W / 16.64 dBm IEEE 802.11n 2.4GHz Standard-20MHz: 0.035 W / 15.39 dBm Bluetooth v3.0: 0.003 W / 5.31 dBm
Antenna Specification	2.85 dBi
Antenna Designation	PIFA Antenna
RF Evaluation	0.27 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

Equation from page 18 of OET Bulletin 65, Edition 97-01

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

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	Date Rate	CH	Frequency (MHz)	Average Conducted power (dBm)
IEEE 802.11b	1M	1	2412.0	18.26
		6	2437.0	18.22
		11	2462.0	17.90
	2M	6	2437.0	18.17
	5.5M	6	2437.0	18.11
	11M	6	2437.0	18.04
IEEE 802.11g	6M	1	2412.0	16.64
		6	2437.0	16.40
		11	2462.0	16.25
	9M	6	2437.0	16.35
	12M	6	2437.0	16.31
	18M	6	2437.0	16.23
	24M	6	2437.0	16.15
	36M	6	2437.0	16.11
	48M	6	2437.0	16.04
	54M	6	2437.0	15.98
IEEE 802.11n 20MHz	6.5M	1	2412.0	15.39
		6	2437.0	15.32
		11	2462.0	15.13
	13M	6	2437.0	15.26
	19.5M	6	2437.0	15.21
	26M	6	2437.0	15.16
	39M	6	2437.0	15.09
	52M	6	2437.0	15.01
	58.5M	6	2437.0	14.96
	65M	6	2437.0	14.89

Band	CH	Frequency (MHz)	Packet Type	Average Conducted power (dBm)
Bluetooth GFSK	0	2402	DH1	5.26
			DH3	5.29
			DH5	5.31
	39	2441	DH1	5.02
			DH3	5.06
			DH5	5.08
	78	2480	DH1	4.30
			DH3	4.33
			DH5	4.36
Bluetooth $\pi/4$ -DQPSK	0	2402	DH1	2.86
			DH3	2.89
			DH5	2.91
	39	2441	DH1	2.71
			DH3	2.73
			DH5	2.75
	78	2480	DH1	1.84
			DH3	1.86
			DH5	1.88
Bluetooth 8DPSK	0	2402	DH1	2.92
			DH3	2.94
			DH5	2.97
	39	2441	DH1	2.76
			DH3	2.79
			DH5	2.81
	78	2480	DH1	1.89
			DH3	1.92
			DH5	1.95

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
IEEE 802.11b	1M	2412.0	1.000	20	18.5	2.85	1.93	1	136.63	0.027
		2437.0	1.000	20	18.5	2.85	1.93	1	136.63	0.027
		2462.0	1.000	20	18.5	2.85	1.93	1	136.63	0.027
IEEE 802.11g	6M	2412.0	1.000	20	17.0	2.85	1.93	1	96.73	0.019
		2437.0	1.000	20	17.0	2.85	1.93	1	96.73	0.019
		2462.0	1.000	20	17.0	2.85	1.93	1	96.73	0.019
IEEE 802.11n (2.4GHz) 20MHz	6.5M	2412.0	1.000	20	15.5	2.85	1.93	1	68.48	0.014
		2437.0	1.000	20	15.5	2.85	1.93	1	68.48	0.014
		2462.0	1.000	20	15.5	2.85	1.93	1	68.48	0.014

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	DH1	2402.0	1.000	20	5.5	2.85	1.93	1	6.85	0.001
		2441.0	1.000	20	5.5	2.85	1.93	1	6.85	0.001
		2480.0	1.000	20	5.5	2.85	1.93	1	6.85	0.001

Note: The Numeric Gain calculated by $10^{(\text{ant. Gain(dBi)} / 10)}$.