A Test Lab Techno Corp.

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MPE Report

Test Report No.	：	1503FS14
Applicant	：	Teco Image Systems Co., Ltd.
Manufacturer	：	Teco Image Systems (DongGuan) Co., Ltd.
Product Type	：	Mobile Printing Hub
Trade Name	：	TiS
Model Number	：	MPH101A
Date of Received	：	Mar. 03, 2015
Test Period	：	Mar. 10 ~ Mar. 13, 2015
Date of Issued	：	Mar. 18, 2015
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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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	Teco Image Systems Co., Ltd.
Applicant Address	2F., No.1568-1, Sec. 1, Zhongshan Rd., Guanyin Dist. Taoyuan 328 Taiwan
Manufacturer	Teco Image Systems (DongGuan) Co., Ltd.
Manufacturer Address	1F,No.1,Yuyuan 3 Road, Yuyuan Industrial Estate, Huangjiang Town, Dongguan City, Guangdong Province, P.R. China
Product Type	Mobile Printing Hub
Trade Name	TiS
Model Number	MPH101A
FCC ID	2AEDE-MPH101A
Frequency Range	2412 - 2462 MHz IEEE 802.11b / IEEE 802.11g 2412 - 2462 MHz IEEE 802.11n (2.4GHz) 20MHz 2422 - 2452 MHz IEEE 802.11n (2.4GHz) 40MHz
Transmit Power (conducted power)	IEEE 802.11b: 0.035 W / 15.43 dBm IEEE 802.11g: 0.010 W / 9.88 dBm IEEE 802.11n (2.4GHz) 20MHz: 0.009 W / 9.76 dBm IEEE 802.11n (2.4GHz) 40MHz: 0.008W / 8.93 dBm
Antenna Specification	IEEE 802.11b, IEEE 802.11g: 1.8 dBi IEEE 802.11n (2.4GHz) 20MHz / 40MHz: 1.8 dBi
Antenna Designation	PIFA Antenna
RF Evaluation	0.11 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	Date Rate	CH	Frequency (MHz)	Average Conducted power (dBm)
IEEE 802.11b	1M	1	2412.0	13.76
		6	2437.0	14.50
		11	2462.0	15.43
	2M	6	2437.0	14.14
	5.5M	6	2437.0	14.12
	11M	6	2437.0	14.19
IEEE 802.11g	6M	1	2412.0	8.73
		6	2437.0	9.38
		11	2462.0	9.88
	9M	6	2437.0	9.19
	12M	6	2437.0	9.21
	18M	6	2437.0	9.22
	24M	6	2437.0	9.17
	36M	6	2437.0	9.20
	48M	6	2437.0	9.27
	54M	6	2437.0	9.14
IEEE 802.11n (2.4GHz) 20MHz	6.5M	1	2412.0	8.60
		6	2437.0	9.36
		11	2462.0	9.76
	13M	6	2437.0	9.12
	19.5M	6	2437.0	9.08
	26M	6	2437.0	9.17
	39M	6	2437.0	9.03
	52M	6	2437.0	9.20
	58.5M	6	2437.0	9.11
	65M	6	2437.0	9.09
IEEE 802.11n (2.4GHz) 40MHz	13.5M	3	2422.0	8.40
		6	2437.0	8.79
		9	2452.0	8.93
	27M	6	2437.0	8.53
	40.5M	6	2437.0	8.61
	54M	6	2437.0	8.58
	81M	6	2437.0	8.63
	108M	6	2437.0	8.51
	121.5M	6	2437.0	8.48
	135M	6	2437.0	8.50

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	15.5	1.8	1.51	1	53.58	0.011
		2437.0	1.000	20	15.5	1.8	1.51	1	53.58	0.011
		2462.0	1.000	20	15.5	1.8	1.51	1	53.58	0.011
IEEE 802.11g	6M	2412.0	1.000	20	10.0	1.8	1.51	1	15.10	0.003
		2437.0	1.000	20	10.0	1.8	1.51	1	15.10	0.003
		2462.0	1.000	20	10.0	1.8	1.51	1	15.10	0.003
IEEE 802.11n (2.4GHz) 20MHz	6.5M	2412.0	1.000	20	10.0	1.8	1.51	1	15.10	0.003
		2437.0	1.000	20	10.0	1.8	1.51	1	15.10	0.003
		2462.0	1.000	20	10.0	1.8	1.51	1	15.10	0.003
IEEE 802.11n (2.4GHz) 40MHz	13.5M	2422.0	1.000	20	9.0	1.8	1.51	1	11.99	0.002
		2437.0	1.000	20	9.0	1.8	1.51	1	11.99	0.002
		2452.0	1.000	20	9.0	1.8	1.51	1	11.99	0.002

Note: The Numeric Gain calculated by 10^(ant. Gain(dBi) /10).