A Test Lab Techno Corp.

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MPE Report

Test Report No.	：	1803FS14-01
Applicant	：	Edimax Technology Co., Ltd.
Product Type	：	Indoor Air Quality Detector
Trade Name	：	EDIMAX
Model Number	：	AI-2002W
Date of Received	：	Feb. 12, 2018
Test Period	：	Mar. 09, 2018
Date of Issued	：	Mar. 27, 2018
Test Specification	：	ANSI / IEEE Std.C95.1-1992 / IEEE Std. 1528-2013
		47 CFR § 2.1091
		47 CFR § 1.1310
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 ： Yung-Tan Tsai (Yung Tan Tsai)　　Tested By ： Eric Chao (Eric Chao)

Contents

1. Description of Equipment under Test (EUT)

Applicant	Edimax Technology Co., Ltd. No.278, Xinhu 1st Rd., Neihu Dist., Taipei City, Taiwan	
Manufacturer	Edimax Technology Co., Ltd. No.278, Xinhu 1st Rd., Neihu Dist., Taipei City, Taiwan	
Product Type	Indoor Air Quality Detector	
Trade Name	EDIMAX	
Model Number	AI-2002W	
FCC ID	NDD9520021801	
Frequency Range	Operate Band	Frequency Range (MHz)
	IEEE 802.11b / 802.11g IEEE 802.11n 2.4GHz 20MHz	2412 - 2462
	IEEE 802.11n 2.4GHz 40 MHz	2422 - 2452
Antenna information	Type	Max. Gain (dBi)
	embedded antenna	4.2
ntenna Delivery	1TX (SISO)	
RF Evaluation	0.049 mW/cm^2	
Temperature Range	0 ~ +40°C	

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

The conducted power turn-up tolerance reference manufacturer specification.

Band	Date Rate (Mbps)	Frequency (MHz)	Average Conducted power (dBm)
IEEE 802.11b	1	2412.0	**19.63**
		2437.0	19.57
		2462.0	19.17
	2	2437.0	19.52
	5.5	2437.0	19.47
	11	2437.0	19.44
IEEE 802.11g	6	2412.0	15.71
		2437.0	15.83
		2462.0	15.95
	9	2437.0	15.80
	12	2437.0	15.75
	18	2437.0	15.71
	24	2437.0	15.67
	36	2437.0	15.63
	48	2437.0	15.60
	54	2437.0	15.55
IEEE 802.11n 2.4GHz 20MHz	6.5	2412.0	15.53
		2437.0	15.79
		2462.0	15.94
	14.4	2437.0	15.75
	21.7	2437.0	15.72
	28.9	2437.0	15.67
	43.3	2437.0	15.62
	57.8	2437.0	15.59
	65	2437.0	15.55
	72.2	2437.0	15.50
IEEE 802.11n 2.4GHz 40MHz	13.5	2422.0	15.71
		2437.0	15.32
		2452.0	15.27
	30	2437.0	15.28
	45	2437.0	15.24
	60	2437.0	15.21
	90	2437.0	15.17
	120	2437.0	15.12
	135	2437.0	15.09
	150	2437.0	15.04

Note: The relevant measured result has the offset with cable loss already.

4. Test Results

Band	Test mode/ RB/Data rate	Frequency (MHz)	Limit (mw)/cm^2	Distance (cm) [R]	max tune-up power (upper limit) (dBm) [P]	Ant Gain (dBi)	Numeric Gain [G]	Duty Cycle	Power with Duty cycle (mW) [TP]	Power Density (mw)/cm^2 [S]
IEEE 802.11b	1	2412.0	1	20	19.70	4.20	2.63	1	245.45	0.049
		2437.0	1	20	19.70	4.20	2.63	1	245.45	0.049
		2462.0	1	20	19.70	4.20	2.63	1	245.45	0.049
IEEE 802.11g	6	2412.0	1	20	16.00	4.20	2.63	1	104.7	0.021
		2437.0	1	20	16.00	4.20	2.63	1	104.7	0.021
		2462.0	1	20	16.00	4.20	2.63	1	104.7	0.021
IEEE 802.11n 2.4GHz 20MHz	6.5	2412.0	1	20	16.00	4.20	2.63	1	104.7	0.021
		2437.0	1	20	16.00	4.20	2.63	1	104.7	0.021
		2462.0	1	20	16.00	4.20	2.63	1	104.7	0.021
IEEE 802.11n 2.4GHz 40MHz	13.5	2422.0	1	20	15.80	4.20	2.63	1	99.99	0.020
		2437.0	1	20	15.80	4.20	2.63	1	99.99	0.020
		2452.0	1	20	15.80	4.20	2.63	1	99.99	0.020

Note:

1. Mobile or fixed location transmitters, minimum separation distance is 20cm, even if calculations indicate MPE distance is less.
2. The Numeric Gain calculated by 10^(ant. Gain(dBi) /10).
3. Each band max power which perform MPE of any configurations.
4. The MPE results are evaluated by lowest data rate for WLAN.
5. The device operating IEEE 802.11 b/g/n mode is 1TX (SISO).
6. The device not support simultaneous transmission.