



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.	: 1605FS11
Applicant	: Roadeyes SAS
Manufacturer	: Roadeyes SAS
Product Type	: recSMART
Trade Name	: RoadEyes
Model Number	: recSMART
Date of Received	: Mar. 08, 2016
Test Period	: Mar. 09, 2016 ~ May. 04, 2016
Date of Issued	: May. 06, 2016
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.	<i>Description of Equipment under Test (EUT)</i>	3
2.	<i>Human Exposure Assessment</i>	4
3.	<i>Limits for General Population/Uncontrolled Exposure</i>	5
4.	<i>RF Output Power</i>	5
5.	<i>Manufacturing tolerance</i>	5
6.	<i>Test Result</i>	6
7.	<i>Conclusion</i>	6



1. Description of Equipment under Test (EUT)

Applicant	Roadeyes SAS
Applicant Address	168 avenue Charles de Gaulle, 92200 Neuilly, Seine, France
Manufacturer	Roadeyes SAS
Manufacturer Address	168 avenue Charles de Gaulle, 92200 Neuilly, Seine, France
Product Type	recSMART
Trade Name	RoadEyes
Model Number	rec SMART
FCC ID	2ADYT-RECST1
Frequency Range	IEEE 802.11b / 802.11g / 802.11n 2.4GHz (20MHz): 2412 ~ 2462 MHz
Transmit Power (conducted power)	IEEE 802.11b: 0.086 W / 19.32 dBm IEEE 802.11g: 0.141 W / 21.48 dBm IEEE 802.11n 2.4GHz (20MHz): 0.093 W / 19.67 dBm
Antenna Delivery	1TX + 1RX
Antenna Type	FPC Antenna
Antenna Gain	2.9 dBi
Hardware Version	M6-Plus Rev:E
Software Version	V3.3.0.21
Temperature Range	-10 ~ +50°C
RF Evaluation	0.0774 mW/cm ²
Exposure category	General population/uncontrolled environment
Device Type	Mobile Device

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).

In accordance with KDB447498D01 for Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on the calculated/estimated, numerically modeled or measured field strengths or power density, is ≤ 1.0 . The MPE ratio of each antenna is determined at the minimum test separation distance required by the operating configurations and exposure conditions of the host device, according to the ratio of field strengths or power density to MPE limit, at the test frequency. Either the maximum peak or spatially averaged results from measurements or numerical simulations may be used to determine the MPE ratios. Spatial averaging does not apply when MPE is estimated using simple calculations based on far-field plane-wave equivalent conditions. The antenna installation and operating requirements for the host device must meet the minimum test separation distances required by all antennas, in both standalone and simultaneous transmission operations, to satisfy compliance.

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. Limits for General Population/Uncontrolled Exposure

(B) Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Average Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100000			1.0	30

Note: f= frequency in MHz; *Plane-wave equivalent power density

4. RF Output Power

Band	Date Rate	CH	Frequency (MHz)	Peak Conducted power (dBm)
IEEE 802.11b	1M	1	2412.0	22.21
		6	2437.0	22.13
		11	2462.0	22.00
IEEE 802.11g	6M	1	2412.0	22.34
		6	2437.0	22.54
		11	2462.0	22.35
IEEE 802.11n 2.4GHz (20MHz)	19.5M	1	2412.0	21.62
		6	2437.0	21.72
		11	2462.0	21.57

5. Manufacturing tolerance

2.4GHzWLAN

IEEE 802.11b (Peak)			
Frequency (MHz)	2412	2437	2462
Target (dBm)	22.0	22.0	22.0
Tolerance ±(dB)	1.0	1.0	1.0
IEEE 802.11g (Peak)			
Frequency (MHz)	2412	2437	2462
Target (dBm)	22.0	22.0	22.0
Tolerance ±(dB)	1.0	1.0	1.0
IEEE 802.11n HT20 (Peak)			
Frequency (MHz)	2412	2437	2462
Target (dBm)	22.0	22.0	22.0
Tolerance ±(dB)	1.0	1.0	1.0

6. Test Result

6.1 Standalone MPE

Mode	Peak Output Power Including power tolerance		Antenna Gain (dBi)	Antenna gain (numeric)	Duty Cycle	Power Density (mW/cm ²)	Limit of Power Density (mW/cm ²)	Pass /Fail
	(dBm)	(mW)						
IEEE 802.11b	23.00	199.5262	2.90	1.9498	100%	0.0774	1.0000	Pass
IEEE 802.11g	23.00	199.5262	2.90	1.9498	100%	0.0774	1.0000	Pass
IEEE 802.11n HT20	23.00	199.5262	2.90	1.9498	100%	0.0774	1.0000	Pass

Note: 1. The Numeric Gain calculated by $10^{(\text{ant. Gain(dBi)} / 10)}$.

6.2 Simultaneous Transmission

The sample ingrate 2.4GWLAN and 2.4GHz wireless modular, the two modular share difference antenna, while 2.4GHz wireless modular only receiver function, without need consider simultaneous transmission.

7. Conclusion

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.

-----THE END OF REPORT-----