A Test Lab Techno Corp.

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MPE Report

Test Report No.	:	1606FS11
Applicant	:	Meshreen Technology Ltd.
Product Type	:	ZigBee Module
Trade Name	:	Meshreen
Model Number	:	MS5169-M03
Date of Received	:	May 23, 2016
Test Period	:	May 26, 2016
Date of Issued	:	Jun. 02, 2016
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 : Bill Hu (Bill Hu)

Tested By : Mark Duan (Mark Duan)

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Contents

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1. Description of Equipment under Test (EUT)

Applicant	Meshreen Technology Ltd. No.11-3, Xiashe, Guishan Township, Taoyuan County 333, Taiwan
Manufacturer	Meshreen Technology Ltd. No.11-3, Xiashe, Guishan Township, Taoyuan County 333, Taiwan
Product Type	ZigBee Module
Trade Name	Meshreen
Model Number	MS5169-M03
FCC ID	2AC2E-69M03
Frequency Range	2405 - 2480 MHz
Channel list	16 CH
Transmit Power (conducted power)	0.012 W / 10.83 dBm
Antenna Type	External Antenna
Antenna Gain	2.43 dBi
RF Evaluation	0.004 mW/cm^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

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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.

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3. RF Output Power

Band	Frequency (MHz)	Average Conducted power (dBm)
Zigbee	2405	10.06
	2440	10.20
	2480	**10.83**

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]	Duty Cycle	[P] x [G] with Duty cycle [TP] (mW)	Power Density [S] (mw)/cm^2
Zigbee	---	2405	1.000	20	11	2.43	1.75	1	22.03	0.004
		2440	1.000	20	11	2.43	1.75	1	22.03	0.004
		2480	1.000	20	11	2.43	1.75	1	22.03	0.004

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