

SAR Exclusion Evaluation Report

Applicant : Compacta International, Ltd
Product Type : ZigBee USB Dongle
Trade Name : Smartenit
Model Number : 2011D
Date of Received : Sep. 23, 2016
Test Period : Sep. 23, 2016
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Issue by

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Revision History

Rev.	Issue Date	Revisions	Revised By
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1. Description of Equipment under Test (EUT)

Applicant	Compacta International, Ltd 31342 Via Las Palmas, San Juan Capistrano, California , United States, 92675 Office: 29222 Rancho Viejo Rd., Suite 105 San Juan Capistrano, CA 92675 USA		
Manufacturer	Meshreen Technology Ltd. No.11-3, Ln. 162, Mingde Rd., Guishan Township, Taoyuan County 33347, Taiwan		
Product Type	ZigBee USB Dongle		
Trade Name	Smartenit		
Model Number	2011D		
FCC ID	AFZ-2011D		
Operate Freq. Band	Frequency Range (MHz)	Modulation Type	Number of Channels
ZigBee	2405 ~ 2480	O-QPSK	16
Antenna information	Type	Max. Gain (dBi)	
	PCB Antenna	1.2	

The above equipment was tested by A Test Lab Techno Corp. For compliance with the requirements set forth in 47 CFR § 2.1093. 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. Reference Testing Standards

Standard	Description	Version
ANSI/IEEE C95.1	American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 300 KHz to 100 GHz, New York.	1992
IEEE 1528	IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head From Wireless Communications Devices: Measurement Techniques.	2013
FCC 47 CFR Part 2.1093	Radiofrequency radiation exposure evaluation: portable devices.	---
FCC KDB 865664 D01	SAR measurement 100 MHz to 6 GHz - describes SAR measurement procedures for devices operating between 100 MHz to 6 GHz	v01r04
FCC KDB 865664 D02	RF Exposure Reporting - provides general reporting requirements as well as certain specific information required to support MPE and SAR compliance.	v01r02
FCC KDB 447498 D01	General RF Exposure Guidance - provides guidance pertaining to RF exposure requirements for mobile and portable device equipment authorizations.	v06
FCC KDB 447498 D02	SAR Procedures for Dongle Xmtr	v02r01

3. SAR Test Exclusion

As RF exposure evaluation of portable device, SAR test is not required when the evaluation results. According to KDB 447498 4.3.1, unless excluded by specific FCC test procedures, portable devices shall include SAR data for equipment approval. SAR test necessity will be based on the exclusion result.

The test exclusion refers KDB 447498 as below:

≤50mm:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR

>50mm and <200mm:

- a) [Power allowed at numeric threshold for 50 mm in step 1) + (test separation distance - 50 mm)·(f(MHz)/150)] mW, at 100 MHz to 1500 MHz
- b) [Power allowed at numeric threshold for 50 mm in step 1) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz

3.1 Conducted Power

The conducted power turn-up tolerance, please reference manufacturer specification.

Operate Band	Modulation Type	Frequency (MHz)	Average Power (dBm)
ZigBee	O-QPSK	2405	8.57
		2440	7.23
		2480	4.73

3.2 Antenna Location

Ant. Used	Antenna to user distance (mm)				
	Horizontal UP	Horizontal Down	Vertical Front	Vertical Back	Tip
ZigBee Antenna	5	5	5	5	5

3.3 Evaluation Results

The evaluation of SAR test reduction according to KDB447498

SAR test is not required when the results showed "EXEMPT".

Ant. Used	Operate Band	Frequency (GHz)	Power		Calculated threshold value				
			(dBm)	(mW)	Horizontal UP	Horizontal Down	Vertical Front	Vertical Back	Tip
ZigBee Antenna	ZigBee	2.405	9	8	2.5	2.5	2.5	2.5	2.5
					EXEMPT	EXEMPT	EXEMPT	EXEMPT	EXEMPT

Exclusion Considerations: SAR is not required

Note:

1. Calculated Value include string "mW", that is mean through compare output power with threshold, if the output power more than threshold value the SAR test should be perform. Otherwise, the SAR test could be exempt. (> 50mm)
2. Calculated Value only include number format, that is mean through compare output power with threshold, if the Calculated value more than 3 the SAR test should be perform. Otherwise, the SAR test could be exempt. (<50mm)
3. When an antenna qualifies for the standalone SAR test exclusion of KDB 447498 section 4.3.1 and also transmits simultaneously with other antennas, the standalone SAR value must be estimated according to KDB 447498 section "4.3.2. Simultaneous transmission SAR test exclusion considerations b)".
4. The channel and frequency used highest frequency, that result should be evaluated the worst case.
5. Power and distance are rounded to the nearest mW and mm before calculation.
6. The result is rounded to one decimal place for comparison.