

RF EXPOSURE REPORT

OF

Applicant: Raytac Corporation
5F, No.3, Jiankang Rd., Zhonghe Dist., New Taipei City ,
23586, Taiwan

Product Name: BLE Module

Brand Name: Raytac

Model No.: MDBT42Q-U

Model Difference: N/A

Report Number: ER/2019/40066

FCC ID SH6MDBT42Q

FCC Rule Part Part 2.1091

Issue Date: May 17, 2019

Date of Test: Apr. 17, 2019 ~ May 10, 2019

Date of EUT Received: Apr. 17, 2019

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. The test data, data evaluation in this report is in compliance with FCC Rules Part 2.
The test results of this report relate only to the tested sample identified in this report.

Tested By: _____

Tom, Huang

Tom Huang / Engineer

Approved By: _____

John Teh

Yeh John / Asst. Manager



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
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Revision History

Report Number	Revision	Description	Effected Page	Issue Date	Revised By
ER/2019/40066	Rev.00	Initial creation of document	All	May 17, 2019	Tiffany Kao

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1 DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)

General:

Product Name:	BLE Module
Brand Name:	Raytac
Model No.:	MDBT42Q-U
Model Difference:	N/A
Hardware Version:	1
Software Version:	1
Power Supply:	3Vdc

Bluetooth Low Energy:

Bluetooth Version:	Bluetooth V4.2 & 5.0 LE mode
Channel number:	40 channels
Modulation type:	GFSK
Transmit Power:	BT V4.2 Mode: 3.28 dBm BT V5.0 Mode: 3.24 dBm
Frequency Range:	2.402GHz – 2.480GHz
Antenna Designation:	<ol style="list-style-type: none"> 1. External Antenna Part no.: ANTX100ETHAB24553, Supplier: YAGEO, Gain: 2.0dBi 2. PCB Antenna Part no.: ANTX100P111B24003, Supplier: YAGEO, Gain: 3.3dBi 3. PCB Antenna Part no.: ANTX200P001B24003, Supplier: YAGEO, Gain: 4.4dBi

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2 RF EXPOSURE

2.1 Standard Applicable:

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

This is a Portable device with its physical nature to be used nearby, the distance between radiating structure and human is less than 20cm.

As per KDB 447498 D01 4.3.1, The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

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

*f (GHz) is the RF channel transmit frequency in GHz
Power and distance are rounded to the nearest mW and mm before calculation*

2.2 Measurement Result:

Step 1:

This is a portable device and the max. output power including tune-up tolerance is 2.128 (mW), lower than the threshold given and derived as formula given above, where

$$=2.128(\text{mW})/5(\text{mm}) \cdot \sqrt{2.402 \text{ (GHz)}} = 0.66 < 3.0$$

Frequency (MHz)	Max. output power including tune-up tolerance(dBm)	Max. output power including tune-up tolerance(mW)	Distance (mm)	Result
2402	3.28	2.128	5	0.660

As the result of calculation result indicates, the RF exposure generating from given transmitter (transmitter employed digital modulation) can be excluded from SAR measurement, and is deemed compliant with RF exposure as per FCC.

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The table of quick reference in terms of power threshold

SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and ≤ 50 mm

Approximate SAR Test Exclusion Power Thresholds at Selected Frequencies and Test Separation Distances are illustrated in the following Table.

MHz	5	10	15	20	25	mm
150	39	77	116	155	194	SAR Test Exclusion Threshold (mW)
300	27	55	82	110	137	
450	22	45	67	89	112	
835	16	33	49	66	82	
900	16	32	47	63	79	
1500	12	24	37	49	61	
1900	11	22	33	44	54	
2450	10	19	29	38	48	
3600	8	16	24	32	40	
5200	7	13	20	26	33	
5400	6	13	19	26	32	
5800	6	12	19	25	31	

Note that the table present above is the table of quick reference, indexing the level of power threshold with respect to the corresponding frequency. The value of the index may be deviated, and therefore, the derivation of exemption based on KDB447498 D01 is used in this test report, relevantly.

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