

TEST REPORT

of

FCC RF Exposure

Product : Bluetooth 5.1 Module
Brand: Fanstel
Model: BM833F, BM833E, BM833
Model Difference: Please see page 5 model summaries table
FCC ID: X8WBM833
FCC Rule Part: §15.247, Cat: DTS
Applicant: Fanstel Corporation, Taipei
Address: 10F-10, No. 79, Sec. 1, Hsin Tai Wu Rd.,
Hsi-Chih, New Taipei City 221 Taiwan

Test Performed by:

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Report No.: **ISL-19LR247FMPE-R3**
Issue Date :**2022/08/05**



Test results given in this report apply only to the specific sample(s) tested and are traceable to national or international standard through calibration of the equipment and evaluating measurement uncertainty herein.

The uncertainty of the measurement does not include in consideration of the test result unless the customer required the determination of uncertainty via the agreement, regulation or standard document specification.

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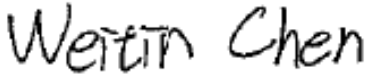
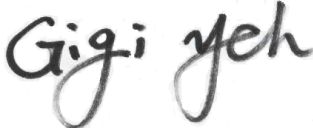
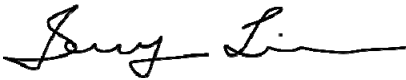
VERIFICATION OF COMPLIANCE

Applicant: Fanstel Corporation, Taipei
Product Description: Bluetooth 5.1 Module
Brand Name: Fanstel
Model No.: BM833F, BM833E, BM833
Model Difference: Please see page 5 model summaries table
FCC ID: X8WBM833
Date of test: 2019/08/19 ~ 2019/10/18
Date of EUT Received: 2019/08/19

We hereby certify that:

All the tests in this report have been performed and recorded in accordance with the standards described above and performed by an independent electromagnetic compatibility consultant, International Standards Laboratory Corp.

The test results contained in this report accurately represent the measurements of the characteristics and the energy generated by sample equipment under test at the time of the test. The sample equipment tested as described in this report is in compliance with the limits of above standards.

<i>Test By:</i>		<i>Date:</i>	2022/08/05
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	<i>Weitin Chen / Senior Engineer</i>		
<i>Prepared By:</i>		<i>Date:</i>	2022/08/05
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	<i>Gigi Yeh / Senior Engineer</i>		
<i>Approved By:</i>		<i>Date:</i>	2022/08/05
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	<i>Jerry Liu / Assistant Manager</i>		

Version

Version No.	Date	Description
00	2019/10/21	Initial creation of document
01	2022/08/05	Update the MPE report for portable host use.

Table of Contents

1	General Information	5
2	Radio Frequency Exposure Evaluation	6
2.1	Standard Applicable	6
2.2	SAR Exclusion Calculation Table.....	7

1 General Information

General:

Product Name:	Bluetooth 5.1 Module
Brand Name:	Fanstel
Model Name:	BM833F, BM833E, BM833
Model Difference:	Please see table below for detail.
Power Supply:	5Vdc from USB (JIG)
USB port	one (JIG)

Bluetooth:

Frequency Range	2402 – 2480MHz
Bluetooth Version	V5.1
Channel number	40 channels, 2MHz step
Modulation type	Digital Modulation
Modulation type	GFSK
Tune-up power	8.16 dBm
Power Tolerance	+/- 1.0 dBm
Dwell Time	N/A
Antenna Designation:	PCB Antenna, BM833 : -0.56 dBi PCB Antenna, BM833F : 0.51 dBi

Model Summaries

module	BM833	BM833F
SoC	nRF52833 QIAA	nRF52833 QIAA
Flash/RAM	512KB/128KB	512KB/128KB
Size	10.2x15x1.9mm	15x20.6x1.9mm
GPIO	42	42
Antenna	PCB trace	PCB trace
Antenna Gain	-0.56dBi	0.51dBi

2 Radio Frequency Exposure Evaluation

2.1 Standard Applicable

According to KDB 447498 Section: 4.3.1. Standalone SAR test exclusion considerations

a) For 100 MHz to 6 GHz and test separation distances ≤ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

$$\left[\frac{\text{(max. power of channel, including tune-up tolerance, mW)}}{\text{(min. test separation distance, mm)}} \right] \cdot \left[\sqrt{f(\text{GHz})} \right]$$

≤ 3.0 for 1-g SAR, and ≤ 7.5 for 10-g extremity SAR, where

- $f(\text{GHz})$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- The values 3.0 and 7.5 are referred to as numeric thresholds in step b) below

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm, and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 4.1 f) is applied to determine SAR test exclusion.

2.2 SAR Exclusion Calculation Table

Model: BM833

Frequency (MHz)	Max power (dBm)	Antenna Gain (dBi)	EIRP Power (dBm)	tune-up tolerance (dB)	Max power (mW)	Min Distance (mm)	Result	Limit (3.0 @ 1g SAR)
2480	8.16	-0.56	7.60	1	7.244360	5.00	2.282	3.0

Model: BM833F

Frequency (MHz)	Max power (dBm)	Antenna Gain (dBi)	EIRP Power (dBm)	tune-up tolerance (dB)	Max power (mW)	Min Distance (mm)	Result	Limit (3.0 @ 1g SAR)
2480	8.16	0.51	8.67	1	9.268298	5.00	2.919	3.0

~ End of Report ~