



# Maximum Permissible Exposure Evaluation

**FCC ID: 2A4RO-M19BT**

## 1. Client Information

<b>Applicant</b>	:	Shenzhen Amesra Technology Co., Ltd.
<b>Address</b>	:	401, Aohua Business Building, No.148 Huarong Road, Gaofeng Community, Dalang Street, Longhua District, Shenzhen, China
<b>Manufacturer</b>	:	Shenzhen Amesra Technology Co., Ltd.
<b>Address</b>	:	401, Aohua Business Building, No.148 Huarong Road, Gaofeng Community, Dalang Street, Longhua District, Shenzhen, China

## 2. General Description of EUT

<b>EUT Name</b>	:	Mini Bluetooth digital power amplifier
<b>Models No.</b>	:	M19 BT, M19, G10D, G10D Pro, G12D, G12D Pro, G15D, G15D Pro, G16D, G16D Pro, G18D, G18D Pro, G20D, G20D Pro, G25D, G25D Pro, G28D, G28D Pro
<b>Model Different</b>	:	All these models are identical in the same PCB, layout and electrical circuit, The only difference is model name, brand name and product name.
<b>Brand Name</b>	:	N/A
<b>Sample ID</b>	:	HC-C-202407-0104-02-01
<b>Product Description</b>	:	Operation Frequency: Bluetooth(BR+EDR): 2402MHz~2480MHz
<b>Power Rating</b>	:	Adapter:(MX120Z-24005000) Input: 100-240V~, 50/60Hz 2.5A Output: 24.0V=5.0A 120.0W
<b>Software Version</b>	:	V1.0
<b>Hardware Version</b>	:	M19 BT-V3.0
<b>Remark</b>	:	The antenna gain provided by the manufacturer, the verified for the RF conduction test provided by TOBY test lab.



## Method of Measurement for FCC

### 1. Max. Antenna Gain:

Mode	Antenna Type	Antenna Gain(dBi)
Bluetooth	Copper Tube Antenna	2.0

### 2. EUT Operation Condition:

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

### 3. Exposure Evaluation:

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S=(PG)/4\pi R^2$$

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

### Simultaneous transmission MPE Considerations

According to KDB447498: All transmitters and antennas in the host must be either evaluated for MPE compliance, by measurement or computational modeling, or qualify for the standalone MPE test exclusion in section 7.1. 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  $\leq 1.0$ .

This means that:

$$\sum \text{ of MPE ratios } \leq 1.0$$





#### 4. Test Result:

Worst MPE Result							
Test Mode	Frequency (MHz)	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	Max. ANT Gain (dBi) [G]	Distance (cm) [R]	Power Density (mW/ cm <sup>2</sup> ) [S]
BT 1M	2402	4.12	4±1	5	2.0	20	0.00100
	2441	0.352	0±1	1	2.0	20	0.00040
	2480	-1.165	-1±1	0	2.0	20	0.00032
BT 2M	2402	4.268	4±1	5	2.0	20	0.00100
	2441	2.506	2±1	3	2.0	20	0.00063
	2480	-0.925	0±1	1	2.0	20	0.00040
BT 3M	2402	4.961	4±1	5	2.0	20	0.00100
	2441	3.118	3±1	4	2.0	20	0.00079
	2480	-0.47	0±1	0	2.0	20	0.00032

Note: The antenna gain used max. antenna gain

#### 5. Conclusion:

As specified in Table 1B of 47 CFR 1.1310- Limits for Maximum Permissible Exposure (MPE),

##### Limits for General Population/ Uncontrolled Exposure

Frequency Range (MHz)	Power density (mW/ cm <sup>2</sup> )
300-1,500	F/1500
1,500-100,000	1.0

For: 2402~2480MHz

MPE limit S: 1mW/ cm<sup>2</sup>

The MPE is calculated as **0.001mW/ cm<sup>2</sup> < limit 1mW/ cm<sup>2</sup>**.

So, RF exposure limit warning or SAR test are not required.

The EUT will only be used with a separation of 20cm or greater between the antenna and nearby persons and can therefore be considered a mobile transmitter per 47 CFR2.1091

(b). The RF Exposure Information page from the manual is included here for reference.

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

