Maximum Permissible Exposure Evaluation

FCC ID: 2AQ7C-M100-V

1. Client Information

Applicant	:	SHENZHEN TOVISION TECHNOLOGY CO.,LTD
Address	:	5B1, Building 4, Fuhong industrial park, Fuhai street, Bao'an District, SHENZHEN City, CHINA
Manufacturer	:	SHENZHEN TOVISION TECHNOLOGY CO.,LTD
Address	:	5B1, Building 4, Fuhong industrial park, Fuhai street, Bao'an District, SHENZHEN City, CHINA

2. General Description of EUT

EUT Name	:	Wireless base unit	
Models No.	:	M100-V	
Sample ID	:	TBBJ-20200509-02-3#	
Model Difference	:	N/A	
Product Description	:	Frequency Bands: 2.4G: 2478MHz LTE Band 4 :1.4MHz/3MHz/5MHz/10MHz/15MHz/20MHz LTE Band 13 : 5MHz/10MHz	
		Antenna Type:	Dipole Antenna
		Antenna Gain:	2dBi
Power Rating	:	DC 12*1.5V AA Battery. DC 6V from DC Port.	
Software Version	:	M100_LB_V005	
Hardware Version	:	M100_M_V03	

Note: More test information about the EUT please refer the RF Test Report.

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MPE Calculations for GSM

1. **Antenna Gain:**
   2 dBi Dipole Antenna

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

4. **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 ≤ 1.0.
   This means that:
   ∑ of MPE ratios ≤ 1.0

5. Standalone MPE Evaluation:

Mode	Max. Peak Conducted Output Power (dBm)	Tolerance ± (dB)	Turn-up Power Tolerance (dB)
2.4G	22.361	1.0	22±1

Mode	Max. Peak Conducted Output Power (dBm)	Tolerance ± (dB)	Turn-up Power Tolerance (dB)
LTE BAND 4	23.65	1.0	23±1
LTE BAND 13	24.76	1.0	24±1

Modulation Type	Output power (Turn-up Procedure)		Antenna Gain (dBi)	Antenna Gain (Numeric)	Distance (cm) [R]	MPE (mW/cm^2)	MPE Limits (mW/cm^2)
	dBm	mW					
2.4G	23.00	199.53	2	1.585	20	0.0629	1.0000

Modulation Type	Output power (Turn-up Procedure)		Antenna Gain (dBi)	Antenna Gain (Numeric)	Distance (cm) [R]	MPE (mW/cm^2)	MPE Limits (mW/cm^2)
	dBm	mW					
LTE BAND 4	24.00	251.19	2	1.585	20	0.0792	0.518
LTE BAND 13	25.00	316.23	2	1.585	20	0.0997	1.0000
Note: 300-1500MHz(LTE BAND 13): The worst MPE is calculated as ***0.1580 mW / cm^2 < limit 777/1500=0.518 mW/cm^2***. So, RF exposure limit warning or SAR test are not required.							

Remark:
1. Output power (Average) including turn-up tolerance;
2. Output power was adjust to duty cycle at 100% if measured duty cycle less than 98%;
3. MPE evaluate distance is 20cm from user manual provide by manufacturer.

6. Summary simultaneous transmission results

Maximum Simultaneous transmission MPE Ratios for 2.4G and LTE

Maximum MPE ratio 2.4G	Maximum MPE ratio LTE	∑MPE ratios	Limit	Results
0.0629	0.0997	0.1626	1.0	PASS

7. Conclusion:

Limits for General Population/ Uncontrolled Exposure

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

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.

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