

# RF Exposure Evaluation

## FCC ID: 2AJ5B-C77

### 1. Client Information

|              |   |                                                                                                                       |
|--------------|---|-----------------------------------------------------------------------------------------------------------------------|
| Applicant    | : | SAGE HUMAN ELECTRONICS INTERNATIONAL CO.,LTD.                                                                         |
| Address      | : | 4F.,A Building,Rongli Industrial Park,No.2 Guiyuan Rd.Guihua Community,Guanlan Town,Longhua New Dist. Shenzhen, China |
| Manufacturer | : | SAGE HUMAN ELECTRONICS INTERNATIONAL CO.,LTD.                                                                         |
| Address      | : | 4F.,A Building,Rongli Industrial Park,No.2 Guiyuan Rd.Guihua Community,Guanlan Town,Longhua New Dist. Shenzhen, China |

### 2. General Description of EUT

|                     |   |                                                                                                                                                  |                               |
|---------------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| EUT Name            | : | Bluetooth FM Transmitter for Car                                                                                                                 |                               |
| Models No.          | : | C77, C77Q, C77D, BH478A, BH478B, BH478C                                                                                                          |                               |
| Model Difference    | : | All these models are identical in the same PCB, layout and electrical circuit, the only difference is appearance color.                          |                               |
| Sample ID           | : | 20201118-14-3#& 20201118-14-4#                                                                                                                   |                               |
| Product Description | : | Operation Frequency:                                                                                                                             | Bluetooth V5.0: 2402~2480 MHz |
|                     | : | Antenna Gain:                                                                                                                                    | -0.68dBi Chip Antenna         |
| Power Rating        | : | Input: DC 12-24V<br>USB Output: QC3.0(DC 5V 3A, 9V2A, 12V1.5A)<br>Type-C Output: PD3.0(DC 5V 3A, 9V2A, 12V1.5A)<br>Shared Output: DC 5V4.8A(MAX) |                               |
| Software Version    | : | N/A                                                                                                                                              |                               |
| Hardware Version    | : | N/A                                                                                                                                              |                               |
| Remark              | : | The antenna gain provided by the applicant, the verified for the RF conduction test provided by TOBY test lab.                                   |                               |

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

## SAR Test Exclusion Calculations

1. FCC: According to KDB 447498 D01 Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies v06.

- (1) Clause 4.3: General SAR test reduction and exclusion guidance

- Sub clause 4.31: Standalone SAR test exclusion considerations

- 1) The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6GHz at test separation distance  $\leq 5$  mm are determined by:

- $$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation, mm})] * [\sqrt{f_{\text{(GHz)}}}] \leq 3.0 \text{ for 1-g SAR}$$

- $$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation, mm})] * [\sqrt{f_{\text{(GHz)}}}] \leq 7.5.0 \text{ for 10-g SAR}$$

## 2. Calculation:

| Test separation: 5mm  |                       |                              |                                      |                                     |                   |                 |
|-----------------------|-----------------------|------------------------------|--------------------------------------|-------------------------------------|-------------------|-----------------|
| Bluetooth Mode (GFSK) |                       |                              |                                      |                                     |                   |                 |
| Frequency (GHz)       | Conducted Power (dBm) | Turn-up Power Tolerance (dB) | Max power of tune up tolerance (dbm) | Max power of tune up tolerance (mw) | Calculation Value | Threshold Value |
| 2.402                 | 1.046                 | 1±1                          | 2                                    | 1.585                               | 0.491             | 3.0             |
| 2.441                 | 1.149                 | 1±1                          | 2                                    | 1.585                               | 0.495             | 3.0             |
| 2.480                 | 0.594                 | 1±1                          | 2                                    | 1.585                               | 0.499             | 3.0             |

| Test separation: 5mm        |                       |                              |                                      |                                     |                   |                 |
|-----------------------------|-----------------------|------------------------------|--------------------------------------|-------------------------------------|-------------------|-----------------|
| Bluetooth Mode (π /4-DQPSK) |                       |                              |                                      |                                     |                   |                 |
| Frequency (GHz)             | Conducted Power (dBm) | Turn-up Power Tolerance (dB) | Max power of tune up tolerance (dbm) | Max power of tune up tolerance (mw) | Calculation Value | Threshold Value |
| 2.402                       | 0.159                 | 0±1                          | 1.0                                  | 1.259                               | 0.390             | 3.0             |
| 2.441                       | 0.432                 | 0±1                          | 1.0                                  | 1.259                               | 0.393             | 3.0             |
| 2.480                       | -0.258                | 0±1                          | 1.0                                  | 1.259                               | 0.315             | 3.0             |

| Test separation: 5mm    |                       |                              |                                      |                                     |                   |                 |
|-------------------------|-----------------------|------------------------------|--------------------------------------|-------------------------------------|-------------------|-----------------|
| Bluetooth Mode (8-DPSK) |                       |                              |                                      |                                     |                   |                 |
| Frequency (GHz)         | Conducted Power (dBm) | Turn-up Power Tolerance (dB) | Max power of tune up tolerance (dbm) | Max power of tune up tolerance (mw) | Calculation Value | Threshold Value |
| 2.402                   | 0.407                 | 0±1                          | 1.0                                  | 1.259                               | 0.390             | 3.0             |
| 2.441                   | 0.551                 | 0±1                          | 1.0                                  | 1.259                               | 0.393             | 3.0             |
| 2.480                   | -0.062                | 0±1                          | 1.0                                  | 1.259                               | 0.315             | 3.0             |

So the worst RF Exposure Evaluation is calculated as **0.499 < limit 3.0**.

The measurement results comply with the FCC Limit per 47 CFR 2.1093 for the uncontrolled RF Exposure and SAR Exclusion Threshold per KDB 447498 v06.

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