



RF Exposure Evaluation Declaration

FCC ID: H8N-8822CS

Applicant: Askey Computer Corp.

Application Type: Certification

Product: WIFI+BT Combo Module

Model No.: 8822CS

Brand Name: ASKEY

FCC Classification: FCC Part 15 Spread Spectrum Transmitter (DSS)
Digital Transmission System (DTS)
Unlicensed National Information Infrastructure (NII)

Test Procedure(s): KDB 447498 D01v06

Test Date: March 04, 2021

Reviewed By:

Kevin Guo

Kevin Guo

Approved By:

Robin Wu

Robin Wu



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standards through the calibration of the equipment and evaluated measurement uncertainty herein.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

Revision History

| Report No. | Version | Description | Issue Date | Note |
|---------------|---------|----------------|------------|-------|
| 2101RSU052-U6 | Rev. 01 | Initial Report | 03-06-2021 | Valid |
| | | | | |

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1. General Information

1.1. Applicant

Askey Computer Corp.

10F, No.119, JIANKANG RD., ZHONGHE DIST., NEW TAIPEI CITY, TAIWAN

1.2. Manufacturer

Askey Computer Corp.

10F, No.119, JIANKANG RD., ZHONGHE DIST., NEW TAIPEI CITY, TAIWAN

1.3. Testing Facility

| | |
|-------------------------------------|---|
| <input checked="" type="checkbox"/> | <p>Test Site – MRT Suzhou Laboratory</p> <hr/> <p>Laboratory Location (Suzhou - Wuzhong) D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China</p> <p>Laboratory Location (Suzhou - SIP) 4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China</p> <hr/> <p>Laboratory Accreditations</p> <p>A2LA: 3628.01 FCC: CN1166 VCCI: R-20025, G-20034, C-20020, T-20020</p> <p style="text-align: right;">CNAS: L10551 ISED: CN0001</p> |
| <input type="checkbox"/> | <p>Test Site – MRT Shenzhen Laboratory</p> <hr/> <p>Laboratory Location (Shenzhen) 1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China</p> <hr/> <p>Laboratory Accreditations</p> <p>A2LA: 3628.02 FCC: CN1284</p> <p style="text-align: right;">CNAS: L10551 ISED: CN0105</p> |
| <input type="checkbox"/> | <p>Test Site – MRT Taiwan Laboratory</p> <hr/> <p>Laboratory Location (Taiwan) No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)</p> <hr/> <p>Laboratory Accreditations</p> <p>TAF: L3261-190725 FCC: 291082, TW3261</p> <p style="text-align: right;">ISED: TW3261</p> |

2. PRODUCT INFORMATION

2.1. Equipment Description

| | |
|--------------------------|----------------------|
| Product Name: | WIFI+BT Combo Module |
| Model No.: | 8822CS |
| Brand Name: | ASKEY |
| Wi-Fi Specification: | 802.11a/b/g/n/ac |
| Bluetooth Specification: | V5.0 dual mode |

2.2. Description of Available Antennas

| Antenna Type | Frequency Band (GHz) | Tx Paths | Per Chain Max Antenna Gain (dBi) | | Directional Gain (dBi) | |
|----------------------------|----------------------|----------|----------------------------------|-------|------------------------|---------|
| | | | Ant 0 | Ant 1 | For Power | For PSD |
| Wi-Fi Internal Antenna | | | | | | |
| PIFA | 2412 ~ 2462 | 2 | 2.1 | 1.9 | 2.1 | 5.11 |
| | 5180 ~ 5240 | 2 | 4.2 | 1.9 | 4.2 | 7.21 |
| | 5260 ~ 5320 | 2 | 3.8 | 3.0 | 3.8 | 6.81 |
| | 5500 ~ 5720 | 2 | 3.8 | 2.9 | 3.8 | 6.81 |
| | 5745 ~ 5825 | 2 | 3.4 | 2.3 | 3.4 | 6.41 |
| Bluetooth Internal Antenna | | | | | | |
| PIFA | 2402 ~ 2480 | 1 | 1.9 | | -- | |

Note 1:

The EUT supports Cyclic Delay Diversity (CDD) technology and CDD signals are correlated.

For CDD transmissions, directional gain is calculated as follows, $N_{ANT} = 2$, $N_{SS} = 1$.


If all antennas have the same gain, G_{ANT} , Directional gain = $G_{ANT} + \text{Array Gain}$, where Array Gain is as follows.

- For power spectral density (PSD) measurements on all devices,
Array Gain = $10 \log (N_{ANT} / N_{SS})$ dB = 3.01;
- For power measurements on IEEE 802.11 devices,
Array Gain = 0 dB for $N_{ANT} \leq 4$;

If antenna gains are not equal, Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain.

Note 2: All information was provided by manufacturer.

2.3. Description of Antenna RF Port

| Wi-Fi & Bluetooth Antenna | | |
|---|---------------|---------------------------|
| Software Control Port | Ant 0 (Wi-Fi) | Ant 1 (Wi-Fi & Bluetooth) |
|  | | |
| Note: A temporary RF connector to test conveniently in Ant 1 was provided by manufacturer | | |

3. RF Exposure Evaluation

3.1. Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

| Frequency Range (MHz) | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm ²) | Average Time (Minutes) |
|---|-------------------------------|-------------------------------|-------------------------------------|------------------------|
| (A) Limits for Occupational/ Control Exposures | | | | |
| 300-1500 | -- | -- | f/300 | 6 |
| 1500-100,000 | -- | -- | 5 | 6 |
| (B) Limits for General Population/ Uncontrolled Exposures | | | | |
| 300-1500 | -- | -- | f/1500 | 6 |
| 1500-100,000 | -- | -- | 1 | 30 |

f= Frequency in MHz

Calculation Formula: $P_d = (P_{out} * G) / (4 * \pi * r^2)$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

r = distance between observation point and center of the radiator in cm

P_d is the limit of MPE, 1mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

3.2. Test Result of RF Exposure Evaluation

| | |
|-----------|------------------------|
| Product | WIFI+BT Combo Module |
| Test Item | RF Exposure Evaluation |

| Test Mode | Frequency Band (MHz) | Maximum conducted power (dBm) | Antenna Gain (dBi) | Maximum EIRP (dBm) | Power Density at R = 20 cm (mW/cm ²) | Limit (mW/cm ²) |
|-----------|----------------------|-------------------------------|--------------------|--------------------|--|-----------------------------|
| Bluetooth | 2402 ~ 2480 | 6.48 | 1.9 | 8.38 | 0.0014 | 1 |
| Wi-Fi | 2412 ~ 2462 | 20.01 | 2.1 | 22.11 | 0.0323 | 1 |
| | 5180 ~ 5825 | 19.11 | 3.8 | 22.91 | 0.0389 | 1 |

CONCLUSION:

The max Power Density at R (20 cm) = $0.0014 \text{ mW/cm}^2 + 0.0323 \text{ mW/cm}^2 + 0.0389 \text{ mW/cm}^2 = 0.0726 \text{ mW/cm}^2 < 1 \text{ mW/cm}^2$.

Therefore, the Min Safety Distance is 20cm.

_____ The End _____

Appendix A - EUT Photograph

Refer to "2101RSU052-UE" file.