

FCC
Federal Communications Commission

Torsten Lohoff
09. July 2002
Phone +49 (0) 2102 749 306
Fax +49 (0) 2102 749 350

request for a modular approval - FCC ID: POOWML-C11XX

Dear Application Examiner,

the Mitsumi Bluetooth module WML-C11 is seeking FCC authorization as a modular transmitter. The requirement of the FCC Public notice DA00-1407 are met.

The following requirements are fulfilled:

1. The modular transmitter must have its own RF shielding

The radio portion of the module is contained in its own RF shielding. See photos in exhibit H.

2. The modular transmitter must have buffered modulation/data inputs

The module has a memory management unit inside of the IC. It buffers the data inputs from UART and USB terminal.

3. The modular transmitter must have its own power supply regulation

The IC contains an own voltage regulation. In case of changes in the supply voltage VCC (for example caused by temperature changes or other effects), the internal voltage will be stabilized.

4. The modular transmitter must comply with the antenna requirements of Section 15.203 and 15.204c

The transmitter shall only be used with the tested integral antenna or with an antenna that has less antenna gain. Requirements for the use of external antennas are specified in Exhibit M

5. The modular transmitter must be tested in a stand-alone configuration

The EUT was tested in a stand-alone configuration. The module was fixed in the Casira Development Kit of CSR (Cambridge Silicon Radio) during the test. See also test report (Exhibit B) and Test setup photos (Exhibit O). For radiated measurements, the required distance of 10 cm was ensured by a special connector.

6. The modular transmitter must be labelled with its own FCC ID number

The EUT will be labelled with its own FCC ID number. The label is specified in Exhibit D. If the module is installed inside of an end-product, the label will not be visible. In this case the OEM customer will be instructed to how to apply the exterior label.

7. The modular transmitter must comply with any specific rule or operating requirements applicable to the transmitter and the manufacturer must provide adequate instructions along with the module to explain any such requirements.

The EUT is compliant with all applicable FCC rules. Detail instructions are given in the Users Guide (see Exhibit U)

8. The modular transmitter must comply with any applicable RF exposure requirements.

The maximum measured power output is 52,48 mW (17,20 dBm), the maximum antenna gain is 2,14 dBi = numeric gain 1,637 (see also FCC test report - Exhibit B)

The maximum permissible exposure is defined in 47 CFR 1.1310 with 1 mW/cm². The distance from the EUT's transmitting antenna where the exposure level reaches the maximum permitted level is calculated using the general equation:

$$S = P \cdot G / 4\pi R^2$$

$S_{\max} = 1\text{mW/cm}^2$, $P = 52,48\text{ mW}$, linear power gain relative to the isotropic radiator = 2,14 dBi = 1,637 (numeric gain), $R =$ distance in cm

Solving for R , the 1mW/cm² limit is reached in a distance of 2,61 cm to the transmitting antenna.

The module has to be integrated in a way that the minimum distance of 2,61 cm is ensured so a statement in the users manual is not necessary. In case that the distance of 2,61 cm cannot be ensured, the users manual of the end product in which the module will be integrated has to inform the user about a minimum distance of 20 cm between the equipment and the body if the equipment is considered as mobile equipment. If the equipment is considered as portable equipment, an evaluation against the applicable SAR limits is required.

Please contact us if you have any additional questions.

Best Regards

7layers AG