

RF exposure information

Product information from applicant

Applicant	:	YAESU MUSEN CO., LTD
Applicant address	:	Omori Bell port D building 3F, 6-26-3 Minamioi, Shinagawa-ku, Tokyo 140-0013 Japan
FCC ID	:	K6620815X40
ISED ID	:	511B - 20815X40
HVIN	:	FTM-500DR
Product description	:	Scanning receiver with Bluetooth
Operating frequency range	:	2402 - 2480 MHz
Peak output power (Measured)	:	11.41dBm @2402MHz, 11.21dBm @2441MHz, 10.12dBm @2480MHz (1Mbps) 10.7dBm @2402MHz, 10.45dBm @2441MHz, 9.32dBm @2.480MHz (2Mbps) 10.79dBm @2402MHz, 10.56dBm @2441MHz, 9.49dBm @2480MHz (3Mbps)
Time-averaged maximum e.i.r.p. (Measured)	:	22.10mW @2402MHz, 21.30mW @2441MHz, 16.42mW @2480MHz (1Mbps) 11.16mW @2402MHz, 10.61mW @2441MHz, 7.99mW @2.480MHz (2Mbps) 10.82mW @2402MHz, 10.58mW @2441MHz, 7.90mW @2480MHz (3Mbps)
Maximum antenna gain	:	+2.14 dBi
Separation distance	:	more than 20 cm

Analysis for mobile use

[For FCC]

The MPE limits for “General Population/ Uncontrolled Exposure” listed in the below table shall be used to evaluate the environmental impact of human exposure to RF radiation as specified in 47 CFR § 1.1307(b).

Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

f = frequency in MHz

*Plane-wave equivalent power density

NOTE: General population/uncontrolled exposure limits apply in situations in which the general public may be exposed, or in which persons who are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure. For example, RF sources intended for consumer use shall be subject to the limits for general population/uncontrolled exposure.

In the case of a single radiating antenna, a prediction for power density around the RF source can be made by the following equation, in accordance with PREDICTION METHODS in FCC OET Bulletin 65.

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

where:

S = power density (in mW/cm²)

P = power input to the antenna (in mW)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = evaluation distance, i.e. separation distance to the center of radiation of the antenna (in cm)

Using output power of 13.84 mW (11.41 dBm), antenna gain of 1.64 (2.14 dBi) and separation distance of 20 cm, the power density is calculated to be 0.0045 mW/cm², which is less than the power density limit (1.0 mW/cm² for 2402 MHz).

Thus the product is compliant with the exposure limits with 20 cm separation and Environmental Assessments is not needed.

[For ISED]

RF exposure evaluation is required if the separation distance between the user and/or bystander and the radiating element of the product is greater than 20 cm, except when the source-based, time-averaged maximum e.i.r.p. of the product is equal to or less than $1.31 \times 10^{-2} f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz.

The maximum e.i.r.p. of the product is 0.0221 W, which is less than the above exemption limit (2.68 W for 2402 MHz).

Thus the product meets the exemption from the routine evaluation limits in Section 2.5 of RSS-102, and RF exposure evaluation is not required.