

Safety Human Exposure

1.1 Radio Frequency Exposure Compliance

1.1.1 Electromagnetic Fields

RESULT:

Pass

Report No. : CN22JQ53 002
Test Specification
Test item : BACnet IP/MSTP VAV Controller
Identification / Type No. : WEB-VA75MB24NM, CPO-VA75MB24NM, CLMEVA75MB24NM, WEB-VA00MB24NM, CPO-VA00MB24NM, CLMEVA00MB24NM, WEB-VA00IB24NM, CPO-VA00IB24NM, CLMEVA00IB24NM, WEB-VA75IB24NM, CPO-VA75IB24NM, CLMEVA75IB24NM, VAVi-7u5-IP-BLE (They are identical in electrical design, only different in decorative enclosure and interface ports)
FCC ID : 2ARTN-00005
IC : 24552-00005
HVIN : 301002
PMN : BACnet IP/MSTP VAV Controller
Test standard : CFR47 FCC Part 2: Section 2.1091
CFR47 FCC Part 1: Section 1.1310
FCC KDB Publication 447498 v06
RSS-102 Issue 5

➤ **Product Classification**

This device defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at 20 cm is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons.

➤ **Product Antenna Gain**

2.80 dBi Max

➤ **FCC Part 1.1310, Part 2.1091**

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
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

Radio Frequency Exposure Calculation Formula

$$S = \frac{PG}{4\pi R^2}$$

where: S = power density (in appropriate units, e.g. mW/cm²)
P = power input to the antenna (in appropriate units, e.g., mW)
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 (appropriate units, e.g., cm)

or:

$$S = \frac{EIRP}{4\pi R^2}$$

where: EIRP = equivalent (or effective) isotropically radiated power

EUT RF Exposure Evaluation

Mode	* Max. EIRP incl. tune-up (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	FCC Limit (mW/cm ²)
BLE	7.00	2.80	20	0.002	1.0

Note:

1. Refer to Original report SRTC2021-9004(F)-21030305(I).

Conclusion

Therefore the maximum calculations result of above are meet the requirement of Radio Frequency Exposure (MPE) limit.

➤ **RSS-102 Exemption Limits for Routine Evaluation – RF Exposure Evaluation**

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device’s radiating element is greater than 20 cm, except when the device operates as follows:

- below 20 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $4.49/f^{0.5}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device 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;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the e.i.r.p. was derived.

RF Exposure Calculations for ISED

Operating Mode	*Max. Power incl. tune-up (dBm)	Antenna Gain (dBi)	Distance (cm)	Maximum EIRP (W)	Threshold power (W)	Verdict
BLE	7.00	2.8	20	0.0095	2.68	Pass
Note: Refer to Original report SRTC2021-9004(I)-21030305(I)						