Client:	Broy Engineering Ltd
Product Name/Model:	BR-RC1190-Mod
FCC ID:	2A8AC-BRRC1190MOD
Reference	FCC KDB 447498 D04 v01

FCC RF Exposure

Where the Device Under Test (DUT) can be shown to meet the requirements for an exemption pursuant to FCC 47 CFR §1.1307(b)(3), an evaluation is not required with respect to the limits on human exposure to RF emissions provided in FCC 47 CFR §1.1310.

1.   Determination of Exemption

As per 47 CFR §1.1307(b)(3), for single RF sources (i.e., any single fixed RF source, mobile device, or portable device), a single RF source is exempt if:

A. **1-mW Test Exemption:** The available maximum time-averaged power is no more than 1 mW, regardless of separation distance. This exemption may not be used in conjunction with other exemption criteria other than those in paragraph (b)(3)(ii)(A) of this section. Medical implant devices may only use this exemption and that in paragraph (b)(3)(ii)(A);

B. **SAR-Based Exemption:** The available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold P_{th} (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by:

$$P_{th}\ (mW) = \begin{cases} ERP(d/20\ cm)^{x} & d \le 20\ cm \\ ERP_{20cm} & 20\ cm < d \le 40\ cm \end{cases}$$

Where

$$x = -log_{10}\left(\frac{60}{ERP_{20cm}\ \sqrt{f}}\right)\ and\ f\ is\ in\ GHz$$

And

$$ERP_{20cm}\ (mW) = \begin{cases} 2040f & 0.3\ GHz \le f < 1.5\ GHz \\ 3060 & 1.5\ GHz \le f \le 6\ GHz \end{cases}$$

d = the minimum separation distance (cm) in any direction from any part of the device antenna(s) or radiating structure(s) to the body of the device user.

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C. **MPE-Based Exemption:** Using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least $\lambda/2\pi$, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of $\lambda/4$ or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

Table 1 of § 1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation

RF Source Frequency (MHz)	Threshold ERP (Watts)
0.3-1.34	$1{,}920\ R^2$
1.34-30	$3{,}450\ R^2/f^2$
30-300	$3.83\ R^2$
300-1,500	$0.0128\ R^2 f$
1,500-100,000	$19.2\ R^2$

2. RF Exposure Evaluation

The DUT is a mobile device designed to be used in other than fixed locations and generally used in such a way that the RF source's radiating structure could be within 40 centimeters of the body of the user.

The DUT could be handheld during configuration and the minimum separation distance from the radiating structure to any part of the body or extremity of a user could be 5mm as worst case as stated by the manufacturer.

2.1 DUT RF Output Power

Evaluation Frequency (MHz)	Max Average Conducted Power (dBm)	Rated Output Power (dBm)	Antenna Gain (dBi)	Max Measured ERP (dBm)	Max Measured ERP (mW)	Minimum Separation Distance (cm)
926.96	N/A	-5	-0.3	-3.6	0.44	0.5

Note:
1. EIRP (dBm) = Sum of the conducted power (dBm) + Antenna Gain (dBi)
2. ERP (dBm) = EIRP (dBm) – 2.15
3. ERP (dBm) = E (dBuV/m) + 20log(distance (m)) – 104.8 – 2.15
4. ERP (mW) = $10^{((ERP(dBm))/10)}$

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2.2   1-mW Test Exemption

Evaluation Frequency (MHz)	Highest Measured Time-Averaged Output Power (dBuV/m)	Highest Measured Time-Averaged Output Power ERP (mW)	Limit (mW)
926.96	93.8	0.44	1.00

According to 47 CFR §1.1307(b)(3)(i)(A), this device complies with the RF exposure test exemption.

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