



**COMPLIANCE
ENGINEERING**

EMC Product Safety Environmental Shielding

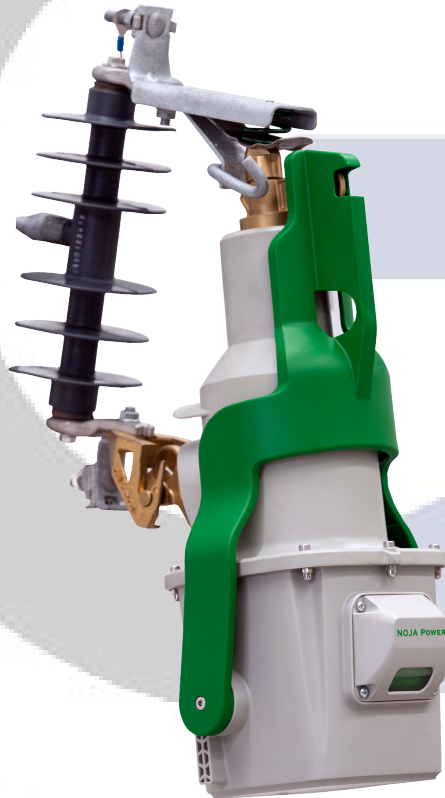
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RF Radiation Hazard Assessment

FCC Subpart I 1.1310 & 2.1091- Maximum Permissible Exposure

Report Number: CE4196GRev1

October 2025



NOJA Power Switchgear Pty. Ltd
NOJA Power® EcoLink®
Model: ECL15-4-100

The results detailed in this test report relate only to the specific sample/s tested. It is the Manufacturer's responsibility to ensure that all production units are manufactured with equivalent characteristics. This report is not to be reproduced except in full, without written approval from Compliance Engineering.



RF Radiation Hazard Assessment

Client Details: **Customer:** NOJA Power Switchgear Pty. Ltd
 Address: 16 Archimedes Pl, Murarrie QLD 4172
 Contact: Sam Griffiths
 Phone: 0438 691 691
 Email: SamG@nojapower.com.au

Product Details: **Device:** EcoLink®
 Model: ECL15-4-100

Reference: **FCC Subpart I - 1.1310 radiofrequency radiation exposure limits**
 Procedures Implementing the national Environmental Policy Act of 1969

Summary: Based on the assessment of the documentation provided the Bluetooth
 Module is below the FCC Subpart 1.1310 radiofrequency radiation exposure
 limits

Test Date: 2nd October 2024

Operator: Gabriel Mendez
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		2 nd October 2024
Prepared By: Gabriel Mendez Test Engineer Compliance Engineering	Approved By: Matthew Grimwood EMC Laboratory Manager Compliance Engineering	Date

1. INTRODUCTION

Compliance Engineering was engaged to perform an assessment of a Bluetooth Module, to determine whether this device poses a potential electromagnetic radiation hazard for the public. The information used for the assessment was taken from Test Report Reference: CE4723Rev1 as tested by Compliance Engineering.

The assessment was performed in accordance with the requirements of FCC Subpart I Procedures Implementing the national Environmental Policy Act of 1969

2. EUT DETAILS

The highest recorded EIRP from the EUT was -2.82 dBm (0.522mW) as detailed in report CE4723Rev1.

Equipment Under Test (<i>Information supplied by client</i>):		
Product Name:	NOJA Power® EcoLink®	
Model Number:	ECL15-4-100	
Brand Name(s):	NOJA Power®	
Serial Number:	1790124050014	
Product Description:	Single phase cutout mounted recloser optimized for low current environments.	
Equipment type:	A solid-dielectric cutout-mounted vacuum automatic circuit recloser.	
Test modes:	Refer report CE4723Rev1	
Highest Frequency:	2.4 GHz Bluetooth Low Energy	
Hardware Version:	1.2	
Software/Firmware Version:	NCS_2.3_DTM	
Dimensions (mm):	260 x 700 x 500	
Weight:	7.4 kg	
Power Ratings:	0.15 – 100 A continuous & 4000A for 3 seconds	
Operating Temperature:	-40 to 55°C	
Radio Type:	Bluetooth Low Energy	
Radio Technology:	Bluetooth Low Energy	
Operating frequency range:	2400 – 2480 MHz	
Assigned frequency band:	2400 – 2483.5 MHz	
Maximum EIRP:	-2.82 dBm (2.479GHz)	
Occupied Bandwidth:	1.05 MHz	
Main test frequencies:	F _{LOW}	2402 MHz
	F _{MID}	2440 MHz
	F _{HIGH}	2480 MHz
Spreading:	None	
Adaptive / non-adaptive equipment	Non-adaptive	
Modulation:	Non-FHSS: GFSK	
Number of channels:	40	
Channel spacing:	2 MHz	

Number of antennas:	1	
Radio module	Type:	nRF5340
	Model:	nRF5340
	Manufacturer:	NORDIC SEMICONDUCTOR ASA
	HW Version:	NRF5340_xxAA_REV1
	SW Version:	nRF Connect SDK v2.3.0
	FCC-ID:	Not provided by the client
Antenna	Type:	Inverted IFA
	Model:	ANT
	Manufacturer:	Integrated on-board
Power Supply	V _{NOM} :	3.3 VDC
	V _{MIN} :	3.0 VDC
	V _{MAX} :	3.6 VDC

3. HUMAN EXPOSURE LIMITS

Table 1: RF field strength and power density limits for devices used by the general public (uncontrolled environment)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (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
300-1,500			f/1500	<30
1,500-100,000			1.0	<30

4. RF FIELD CALCULATION

RF exposure levels were calculated based on methods detailed in IEEE Std C95.3: 2021–IEEE Recommended Practice for Measurements and Computations of Electric, Magnetic, and Electromagnetic Fields with Respect to Human Exposure to Such Fields, (0Hz – 300 GHz).

FCC Subpart I - 1.1310 RF exposure limits for uncontrolled environment (general public) are assessed. The following calculations make no allowance for near field correction and will provide worst case (highest) RF field level predictions, providing a safety margin buffer.

$$S = EIRP / (4\pi R^2)$$

Where: **S** = Power density (W/m²)
EIRP = Measured Max transmit power in (W)
R = Distance to the centre of radiation of the antenna (m)

The measured RBW was less than the measured 99% OBW therefore a correction factor was calculated and added to the EIRP.

$$EIRP (1 \text{ MHz}) + 10 \cdot \text{LOG} (X/1) = EIRP (X \text{ MHz})$$

$$X = \text{measured 99\% OBW. OBW} = 1.05 \text{ MHz}$$

$$\text{Correction factor is } 10 \cdot \text{LOG} (1.05/1) = 0.21 \text{ dB}$$

$$EIRP = -3.03 \text{ dBm} + 0.21 \text{ dB} = -2.82 \text{ dBm}$$

5. RESULTS:

Based on the measurements provided on the Bluetooth Module radio module the RF field levels at 20 cm distance are below the General Public limit as shown below:

Transmitter	Frequency (GHz)	Power Max (dbm)	Power Max (mW)	Evaluation Distance (m)	Calculated Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
Bluetooth Module	2.479	-2.82	0.522	0.2	0.000103	1

6. CONCLUSION:

The predicted average RF field levels at 20 cm distance are below the General Public Exposure Reference Levels detailed FCC Subpart I - 1.1310 radiofrequency radiation exposure limits.