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RF Radiation Hazard Assessment

OET Bulletin 65 Edition 97-01,
Supplement C Edition 01-01 June 2001

Report Number: TR3125I

August 2021

Banlaw
HV Dry Break Wireless Swivel Module
Model No: BSR600B1

RF Radiation Hazard Assessment

Date: 3rd August 2021

Client Details: Rod McLoughlin
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Reference: OET Bulletin 65 Edition 97-01, Supplement C Edition 01-01 June 2001,
Evaluating Compliance with FCC Guidelines for Human Exposure to
Radiofrequency Electromagnetic Fields

Summary:

Frequency Band	EIRP (W)	R (m)	S (W/m ²)	Limit (W/m ²)
433 MHz	0.0691	0.20	0.013	0.28

Test Date: 3rd August 2021

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		9 th August 2021
Prepared By: Gabriel Mendez Test Engineer Compliance Engineering Pty Ltd	Approved By: Andrew Burden Technical Manager Compliance Engineering Pty Ltd	Date

1. INTRODUCTION

Compliance Engineering Pty Ltd was engaged to perform an assessment of a HV Dry Break Wireless Swivel Module, to determine whether this device poses a potential electromagnetic radiation hazard for the public. The information used for the assessment was taken from report TR3125F as tested by Compliance Engineering.

The radiated RF field levels emanating from the HV Dry Break Wireless Swivel Module were obtained by mathematical prediction.

The prediction was performed in accordance with the requirements of OET Bulletin 65 Edition 97-01, Supplement C Edition 01-01 June 2001, Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields.

2. EUT DETAILS

Equipment Under Test (Information supplied by client):	
Product Name	HV Dry Break Wireless Swivel Module
PCB Model No:	BSR600B1
PCB Serial No:	314487
Nominal Operating frequency:	433.92 MHz
Operating Channel Width	100 kHz
Channels:	1
Modulation:	OOK
Antenna Type:	Ceramic Loop PCB
Antenna Gain:	-10 dBi
Max RF power:	11 dBm

3. HUMAN EXPOSURE LIMITS

(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

4. RF FIELD CALCULATION

RF exposure levels were calculated based on methods detailed in OET Bulletin 65 Edition 97-01, Supplement C Edition 01-01 June 2001, Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields.

The OET Bulletin 65 Edition 97-01, Supplement C Edition 01-01 June 2001 RF exposure limits for non occupational (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.

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

where

S = Power density (W/m²)

P = Max transmitter Power (W)

G = Antenna Gain (linear)

R = distance to the centre of radiation of the antenna (m)

5. RESULTS:

Based on the measurements provided on the HV Dry Break Wireless Swivel Module the RF field levels at 20 cm distance are below the General Public limit as shown below:

Frequency Band	PG (W)	R (m)	S (mW/m ²)	Limit (mW/m ²)
433 MHz	0.0691	0.20	0.013	0.28

6. CONCLUSION:

The predicted average RF field levels at 20cm distance are below the General Public Exposure Reference Levels detailed in OET Bulletin 65 Edition 97-01, Supplement C Edition 01-01 June 2001, Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields.