



DECLARATION OF COMPLIANCE: MPE ASSESSMENT

<p>Motorola Solutions, Inc. EME Test Laboratory Motorola Solutions Malaysia Sdn Bhd Plot 2A, Medan Bayan Lepas, Mukim 12 SWD 11900 Bayan Lepas Penang, Malaysia.</p>	<p>Date of Report: 11/10/2023 Report Revision: B</p>
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<p>Responsible Engineer: Report Author: Assessment Date(s) Manufacturer: Manufacturer Location: DUT Description: Max. Power output: Tx Frequency Bands: Signaling type: Model(s) Tested: Model(s) Certified: Classification: Firmware Version: FCC ID: FCC Test Firm Registration Number:</p>	<p>Saw Sun Hock (Senior EME Engineer) Hamidi Bin Ismail (EME Senior Technician) 11/8/2023 Barrett Communication Pty Ltd 47 Discovery Drive, Bibra Lake, Perth, WA 6163 Australia 4075 Linear Amplified – 500W 4075 HF High Power Transmitter Package 500W 1.5-30 MHz AM BC407500 BC407500 Occupational / Controlled Environment V2.85 OW4-407505 823256</p>
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Based on the information and the testing results provided herein, the undersigned certifies that when used as stated in the operating instructions supplied, said product complies with the national and international reference standards and guidelines listed in section 2.0 of this report (no deviation from standard methods). This report shall not be reproduced without written approval from an officially designated representative of the Motorola Solutions Inc. EME Laboratory.

I attest to the accuracy of the data and assume full responsibility for the completeness of these measurements.
 This reporting format is consistent with the suggested guidelines of the TIA TSB-159 April 2006
 The results and statements contained in this report pertain only to the device(s) evaluated herein.


Tey Pei Loo (Approved Signatory)
Approval Date: 11/10/2023

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Report Revision History

Date	Revision	Comments
11/8/2023	A	Initial release
11/10/2023	B	Correct Model Number in Section 1.0 and 4.0

1.0 Introduction

This report contains calculated Maximum Permissible Exposure (MPE) results for product model 4075 Linear Amplifier - 500W, with Model Number BC407500.

2.0 Referenced Standards and Guidelines

This product is designed to comply with the following applicable national and international standards and guidelines.

- United States Federal Communications Commission, Code of Federal Regulations; Rule Part 47CFR § 1.1307, § 1.1310, § 2.1091 (d) and § 2.1093 for RF Exposure, where applicable.
- Federal Communications Commission, “Evaluating Compliance with FCC Guidelines for Human Exposure to Radio frequency Electromagnetic Fields”, OET Bulletin 65 (Edition 97-01), FCC, Washington, D.C.: August 1997.
- American National Standards Institute (ANSI) / Institute of Electrical and Electronics Engineers (IEEE) C95. 1-1999
- American National Standards Institute (ANSI) / Institute of Electrical and Electronics Engineers (IEEE) C95. 1-1992. Specific to FCC rules and regulations.
- Institute of Electrical and Electronics Engineers (IEEE) C95.3-2002
- FCC KDB – 865664 D02 RF Exposure Reporting v01r02

3.0 Power Density Limits

Table 1 – Occupational / Controlled Exposure Limits

Frequency Range (MHz)	FCC OET Bulletin 65	ICNIRP	IEEE C95.1 1992/1999	IEEE C95.1 2005	RSS-102 Issue 5 2015
	mW/cm ²	W/m ²	mW/cm ²	W/m ²	W/m ²
10 – 20					10.0
20 – 48					$44.72 / f^{0.5}$
30 – 300	1.0				
48 – 100					6.455
10 – 400		10.0			
100 – 300			1.0	10.0	
100 – 6,000					$0.6455 f^{0.5}$
300 – 1,500	f/300				
300 – 3,000			f/300	f/30	
400 – 2,000		f/40			
1,500 – 15,000					
1,500 – 100,000	5.0				
2,000 – 300,000		50.0			
3,000 – 300,000			10.0	100.0	
6,000 – 15,000					50.0
15000 – 150,000					50.0
150000 – 300,000					$3.33 \times 10^{-4} f$

Table 2 – General Population / Uncontrolled Exposure Limits

Frequency Range (MHz)	FCC OET Bulletin 65	ICNIRP	IEEE C95.1 1992/1999	IEEE C95.1 2005	RSS-102 Issue 5 2015
	mW/cm ²	W/m ²	mW/cm ²	W/m ²	W/m ²
10 – 20					2.0
20 – 48					$8.944 / f^{0.5}$
30 – 300	0.2				
48 – 300					1.291
10 – 400		2.0			
100 – 300			0.2		
100 – 400				2.0	
300 – 1,500	$f/1,500$				
300 – 6000					$0.02619 f^{0.6834}$
400 – 2,000		$f/200$		$f/200$	
300 – 15,000			$f/1,500$		
1,500 – 15,000					
1,500 – 100,000	1.0				
2,000 – 100,000				10.0	
2,000 – 300,000		10.0			
6,000 – 15,000					10.0
15,000 – 150,000					10.0
150,000 – 300,000					$6.67 \times 10^{-5} f$

4.0 Product and System Description

Model BC407500 is a compact rack mounted communication solution developed for base station application in large HF network. This model can supplied until 500W. Its comes as a complete package with an exciter, power supply, power amplifier, interconnecting cables and all required rack mount hardware.

5.0 FCC MPE Assessment

This report calculates the minimum separation distance from a fixed antenna, connected to the subject mobile radio operated at a fixed location, ensuring that the power density limits listed is not exceeded.

MPE calculation was used to determine the RF exposure for transmitter due to maximum power. According to FCC’s OET Bulletin 65 Edition 97-01 Section 2, calculations can be made to predict RF field strength and power density levels around typical RF sources. Equation (1) below was used to show compliance for this device and generally accurate in far-field of an antenna.

$$S = \frac{P_t G}{4\pi d^2} F \quad \text{Equation (1)}$$

Equation (1) account for the maximum duty cycle of the signal, and the factor, F, to provide a conservative power density prediction.

Where:

S = power density

P_t = maximum output power scaled by the maximum duty cycle of the signal

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

d = distance from antenna

F = Enhancement factor [1 or 2.56 for predicting ground-level field strength]

Table 3

Antenna #	Peak Envelope Power (W)	Time-Averaged Power Factor (%)	Tx Frequency (MHz)	Antenna Gain (dBi)	Cable Loss, L (dB)	Dist, d (cm)	Enhancement Factor, F ⁽⁴⁾	Max Calc. MPE (mW/cm ²)	MPE Spec Limit (mW/cm ²)	
									FCC	% of FCC Spec Limit
BC91202	706.320	50.00%	30.0	8.00	0.61	1410	2.56	0.198	0.20	99.2
BC91203	706.320	50.00%	30.0	8.00	0.61	1410	2.56	0.198	0.20	99.2
BC91207	706.320	50.00%	30.0	8.00	0.61	1410	2.56	0.198	0.20	99.2
BC91713	706.320	50.00%	30.0	2.10	0.24	750	2.56	0.196	0.20	98.0

Note: Peak Envelope Power figures used in the calculation include +1.5dB tune-up margin from nominal power 500W.

6.0 Conclusion

The MPE assessment presented in this report concludes that model BC407500 when transmitting at a minimum separation distance of 14.1 m for BC91202, BC91203 and BC91207, and 7.5 m for BC91713 from nearby persons is compliant to FCC General Population /Uncontrolled Environment RF exposure limits.