

DECLARATION OF COMPLIANCE MPE EVALUATION REPORT

Test Lab

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Applicant Information

M/A-COM, INC.
221 Jefferson Ridge Parkway
Lynchburg, VA 24501

FCC Rule Part(s):	47 CFR §90, §2.1091; §1.1310
Device Classification:	Licensed Non-Broadcast Station Transmitter (TNB)
Device Type:	Mobile VHF PTT Radio Transceiver with Vehicle Rooftop Antenna
FCC ID:	OWDTR-0019-E
Model Name / No.:	M7100(IP)
Modulation:	FM (VHF Band)
Tx Frequency Range:	136 - 174 MHz
Max. RF Conducted Power:	51.2 dBm (100% duty cycle) / 48.2 dBm (50% duty cycle)
Power Supply:	12VDC Vehicle Battery
Antenna Type(s):	¼ Wave Vehicle-Mount Model: D2AN1R (P/N: 19B209568P6)
Antenna Gain:	2.15 dBi
Minimum Antenna Distance:	92.87 cm (Operator, Controlled Exposure, 50% Duty Cycle) 207.67 cm (Bystander, Uncontrolled Exposure, 50% Duty Cycle)

This mobile transmitter is compliant with localized Maximum Permissible Exposure (MPE) requirements for Occupational Environment / Controlled Exposure limits and General Population / Uncontrolled Exposure limits specified in FCC 47 CFR §1.1310 and in accordance with the procedures specified in FCC OET Bulletin 65, Edition 97-01, ANSI / IEEE C95.1-1992, and ANSI / IEEE C95.3-1992, based on the minimum separation distance requirements specified in this report.

I attest to the accuracy of data. All measurements and/or calculations were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

This evaluation report shall not be reproduced partially, or in full, without the prior written approval of Celltech Labs Inc. The results and statements contained in this report pertain only to the device(s) evaluated.



Russell Pipe
Senior Compliance Technologist
Celltech Labs Inc.



MPE Calculation Data

Operator Requirements (Controlled Exposure)

Choose
↓

Occupational/Controlled ☒
General Population/Uncontrolled ☐

ENTER
↓

Tx Frequency: 154.00 (MHz)
Maximum Peak Power at Antenna Input Terminal (50% Duty Cycle): 48.20 (dBm)
Antenna Gain: 2.15 (dBi)

S= 1.00 (mW/cm²)
P= 66069.3448 (mW)
G= 1.64 (numeric)

R = 92.87 (cm)

Bystander Requirements (Uncontrolled Exposure)

Choose
↓

Occupational/Controlled ☐
General Population/Uncontrolled ☒

ENTER
↓

Tx Frequency: 154.00 (MHz)
Maximum Peak Power at Antenna Input Terminal (50% Duty Cycle): 48.20 (dBm)
Antenna Gain: 2.15 (dBi)

S= 0.20 (mW/cm²)
P= 66069.3448 (mW)
G= 1.64 (numeric)

R = 207.67 (cm)

Calculation to determine MPE

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

$$R = \sqrt{\frac{PG}{4\pi S}}$$

S= power density
P= power input to the antenna
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

MPE Limits

According to 47CFR 1.1310: The criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b).

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (minutes)
(A)Limits For Occupational / Control Exposures				
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				
30-300	27.5	0.073	0.2	30
300-1500	...	...	F/1500	30
1500-100,000	...	...	1.0	30

F = Frequency in MHz

Summary

The Maximum Permissible Exposure (MPE) limit for the frequency range in the VHF band (150MHz) is 1.0 mW/cm² for Occupational / Controlled Exposure and 0.2 mW/cm² for General Population / Uncontrolled Exposure. The data in this report demonstrates that this device complies with the Maximum Permissible Exposure (MPE) requirements set forth in FCC §2.1091, §1.1310, and OET Bulletin 65, Edition 97-01 for Occupational / Controlled Exposure environment at a minimum distance of 92.87 cm from the rooftop mounted vehicle antenna (operator requirement), and for General Population / Uncontrolled Exposure environment at a minimum distance of 207.67 cm from the rooftop mounted vehicle antenna (bystander requirement).