



# EMC Test Data

Client:	FreeWave Technologies, Inc.	PR Number:	PR117299
Model:	MM3-T, MM3-T-U	T-Log Number:	TL117299-RA
		Project Manager:	Deepa Shetty
Contact:	Riaz Momand	Project Engineer:	David Bare
Standard:	FCC Part 15. 247, RSS-247	Class:	N/A

## Maximum Permissible Exposure / SAR Exclusion

### Specific Details

Objective: Evaluate the RF Exposure requirements per FCC 1.1310, 2.1091, 2.1093 and RSS-102.

Date of Test: 5/14/2020  
Test Engineer: M. Birgani

### General Test Configuration

Calculation uses the free space transmission formula:

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

Where: S is power density (W/m<sup>2</sup>), P is output power (W), G is antenna gain relative to isotropic, d is separation distance from the transmitting antenna (m).

### Summary of Results

Device complies with Power Density requirements at 20cm separation:	No
If not, required separation distance (in cm):	33.2

### Deviations From The Standard

No deviations were made from the requirements of the standard.



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		Class:	N/A

FCC MPE Calculation  
 Use: General  
 Antenna: Omni 5.0dBi

Freq. MHz	EUT Power		Cable Loss Loss dB	Ant Gain dBi	Power at Ant dBm	EIRP mW	Power Density (S) at 20 cm mW/cm <sup>2</sup>	MPE Limit at 20 cm mW/cm <sup>2</sup>
	dBm	mW*						
902.2464	30.0	1000.0	0	5.00	30.0	3162.28	0.629	0.601
914.9184	30.0	1000.0	0	5.00	30.0	3162.28	0.629	0.610
927.8208	30.0	1000.0	0	5.00	30.0	3162.28	0.629	0.619

For the cases where S > the MPE Limit

Freq. MHz	Power Density (S) at 20 cm mW/cm <sup>2</sup>	MPE Limit at 20 cm mW/cm <sup>2</sup>	Distance where S <= MPE Limit cm
902.2464	0.629	0.601	20.5
914.9184	0.629	0.610	20.3
927.8208	0.629	0.619	20.2

Industry Canada MPE Calculation  
 Use: General  
 Antenna: Omni 5.0dBi

Freq. MHz	EUT Power		Cable Loss Loss dB	Ant Gain dBi	Power at Ant dBm	EIRP mW	Power Density (S) at 20 cm mW/cm <sup>2</sup>	MPE Limit at 20 cm mW/cm <sup>2</sup>
	dBm	mW*						
902.2464	30.0	1000.0	0	5.00	30.0	3162.28	0.629	0.274
914.9184	30.0	1000.0	0	5.00	30.0	3162.28	0.629	0.277
927.8208	30.0	1000.0	0	5.00	30.0	3162.28	0.629	0.279

For the cases where S > the MPE Limit

Freq. MHz	Power Density (S) at 20 cm mW/cm <sup>2</sup>	MPE Limit at 20 cm mW/cm <sup>2</sup>	Distance where S <= MPE Limit cm
902.2464	0.629	0.274	30.3
914.9184	0.629	0.277	30.2
927.8208	0.629	0.279	30.0



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Standard:	FCC Part 15. 247, RSS-247	Project Engineer:	David Bare
		Class:	N/A

## FCC MPE Calculation

Use: General  
Antenna: Omni 8.15dBi

Freq. MHz	EUT Power		Cable Loss Loss dB	Ant Gain dBi	Power at Ant dBm	EIRP mW	Power Density (S) at 20 cm mW/cm <sup>2</sup>	MPE Limit at 20 cm mW/cm <sup>2</sup>
	dBm	mW*						
902.2464	26.3	426.6	0	8.15	26.3	2786.12	0.554	0.601
914.9184	26.2	416.9	0	8.15	26.2	2722.70	0.542	0.610
927.8208	27.4	549.5	0	8.15	27.4	3589.22	0.714	0.619

For the cases where S > the MPE Limit

Freq. MHz	Power Density (S) at 20 cm mW/cm <sup>2</sup>	MPE Limit at 20 cm mW/cm <sup>2</sup>	Distance where S <= MPE Limit cm
902.2464	0.554	0.601	19.2
914.9184	0.542	0.610	18.8
927.8208	0.714	0.619	21.5

## Industry Canada MPE Calculation

Use: General  
Antenna: Omni 8.15dBi

Freq. MHz	EUT Power		Cable Loss Loss dB	Ant Gain dBi	Power at Ant dBm	EIRP mW	Power Density (S) at 20 cm mW/cm <sup>2</sup>	MPE Limit at 20 cm mW/cm <sup>2</sup>
	dBm	mW*						
902.2464	26.3	426.6	0	8.15	26.3	2786.12	0.554	0.274
914.9184	26.2	416.9	0	8.15	26.2	2722.70	0.542	0.277
927.8208	27.4	549.5	0	8.15	27.4	3589.22	0.714	0.279

For the cases where S > the MPE Limit

Freq. MHz	Power Density (S) at 20 cm mW/cm <sup>2</sup>	MPE Limit at 20 cm mW/cm <sup>2</sup>	Distance where S <= MPE Limit cm
902.2464	0.554	0.274	28.4
914.9184	0.542	0.277	28.0
927.8208	0.714	0.279	32.0



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Standard:	FCC Part 15. 247, RSS-247	Project Engineer:	David Bare
		Class:	N/A

## FCC MPE Calculation

Use: General  
Antenna: Yagi 12.0dBi

Freq. MHz	EUT Power		Cable Loss Loss dB	Ant Gain dBi	Power at Ant dBm	EIRP mW	Power Density (S) at 20 cm mW/cm <sup>2</sup>	MPE Limit at 20 cm mW/cm <sup>2</sup>
	dBm	mW*						
902.2464	23.8	239.9	0	12.00	23.8	3801.89	0.756	0.601
914.9184	23.6	229.1	0	12.00	23.6	3630.78	0.722	0.610
927.8208	23.7	234.4	0	12.00	23.7	3715.35	0.739	0.619

For the cases where S > the MPE Limit

Freq. MHz	Power Density (S) at 20 cm mW/cm <sup>2</sup>	MPE Limit at 20 cm mW/cm <sup>2</sup>	Distance where S <= MPE Limit cm
902.2464	0.756	0.601	22.4
914.9184	0.722	0.610	21.8
927.8208	0.739	0.619	21.9

## Industry Canada MPE Calculation

Use: General  
Antenna: Yagi 12.0dBi

Freq. MHz	EUT Power		Cable Loss Loss dB	Ant Gain dBi	Power at Ant dBm	EIRP mW	Power Density (S) at 20 cm mW/cm <sup>2</sup>	MPE Limit at 20 cm mW/cm <sup>2</sup>
	dBm	mW*						
902.2464	23.8	239.9	0	12.00	23.8	3801.89	0.756	0.274
914.9184	23.6	229.1	0	12.00	23.6	3630.78	0.722	0.277
927.8208	23.7	234.4	0	12.00	23.7	3715.35	0.739	0.279

For the cases where S > the MPE Limit

Freq. MHz	Power Density (S) at 20 cm mW/cm <sup>2</sup>	MPE Limit at 20 cm mW/cm <sup>2</sup>	Distance where S <= MPE Limit cm
902.2464	0.756	0.274	33.2
914.9184	0.722	0.277	32.3
927.8208	0.739	0.279	32.5