



# EMC Test Data

Client:	FreeWave Technologies, Inc.	PR Number:	PR109246
Model:	LRS455A	T-Log Number:	TL109246-RANA
Contact:	Riaz Momand	Project Manager:	Deepa Shetty
Standard:	FCC Parts 15 & 90, RSS-119	Project Engineer:	David Bare
		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: 6/12/2020  
Test Engineer: David Bare

### General Test Configuration

Calculation uses the free space transmission formula:

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

Where: S is power density ( $W/m^2$ ), 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):	95

### Deviations From The Standard

No deviations were made from the requirements of the standard.



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## FCC MPE Calculation

Use: General  
 Antenna: Maximum 9.25 dBi

Freq. MHz	EUT Power (in. Tolerance)		Cable Loss Loss dB	Ant Gain dBi	Power at Ant dBm	EIRP mW	Power Density (S) at 95 cm mW/cm <sup>2</sup>	MPE Limit at 95 cm mW/cm <sup>2</sup>
	dBm	mW*						
435	33.5	2238.7	0	9.25	33.5	18836.49	0.166	0.290
450	33.5	2238.7	0	9.25	33.5	18836.49	0.166	0.300
470	33.5	2238.7	0	9.25	33.5	18836.49	0.166	0.313

For the cases where S > the MPE Limit

Freq. MHz	Power Density (S) at 95 cm mW/cm <sup>2</sup>	MPE Limit at 95 cm mW/cm <sup>2</sup>	Distance where S <= MPE Limit cm
435	0.166	0.290	71.9
450	0.166	0.300	70.7
470	0.166	0.313	69.2

## Industry Canada MPE Calculation

Use: General  
 Antenna: Maximum 9.25 dBi

Freq. MHz	EUT Power (in. Tolerance)		Cable Loss Loss dB	Ant Gain dBi	Power at Ant dBm	EIRP mW	Power Density (S) at 95 cm mW/cm <sup>2</sup>	MPE Limit at 95 cm mW/cm <sup>2</sup>
	dBm	mW*						
450	33.5	2238.7	0	9.25	33.5	18836.49	0.166	0.170
460	33.5	2238.7	0	9.25	33.5	18836.49	0.166	0.173
470	33.5	2238.7	0	9.25	33.5	18836.49	0.166	0.175

For the cases where S > the MPE Limit

Freq. MHz	Power Density (S) at 95 cm mW/cm <sup>2</sup>	MPE Limit at 95 cm mW/cm <sup>2</sup>	Distance where S <= MPE Limit cm
450	0.166	0.170	93.8
460	0.166	0.173	93.1
470	0.166	0.175	92.4