



EMC Test Data

Client: Arris	PR Number: PR101106
Product: NVG5X8AX	T-Log Number: TL-101106-RANA
	Project Manager: Deepa Shetty
Contact: Mark Rieger	Project Engineer: David Bare
Standard: FCC Part 15, 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 Evaluation: 4/21/2020

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).

SAR exclusion calculation formula is from FCC KDB 447498 D01 section 4.3:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f_{\text{GHz}}}]$$

Where: f_{GHz} is the RF transmit channel frequency

Summary of Results

Device complies with Power Density requirements at 20cm separation:	No
If not, required separation distance (in cm):	30

Deviations From The Standard

No deviations were made from the requirements of the standard.



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FCC MPE Calculation

Use: General

Antenna: Custom

2.4 GHz Wi-Fi

Freq. MHz	EUT Power		Cable Loss Loss dB	Ant Gain dBi	Power at Ant dBm	EIRP mW	Power Density (S) at 30 cm mW/cm ²	MPE Limit at 30 cm mW/cm ²
	dBm	mW*						
2412	28.3	676.3	0	7.6	28.3	3891.80	0.344	1.000
2437	27.9	616.8	0	7.4	27.9	3389.61	0.300	1.000
2462	27.2	525.9	0	7.3	27.2	2824.23	0.250	1.000

For the cases where S > the MPE Limit

Freq. MHz	Power Density (S) at 30 cm mW/cm ²	MPE Limit at 30 cm mW/cm ²	Distance where S <= MPE Limit cm
2412	0.344	1.000	17.6
2437	0.300	1.000	16.4
2462	0.250	1.000	15.0

5 GHz Wi-Fi

Freq. MHz	EUT Power		Cable Loss Loss dB	Ant Gain dBi	Power at Ant dBm	EIRP mW	Power Density (S) at 30 cm mW/cm ²	MPE Limit at 30 cm mW/cm ²
	dBm	mW*						
5260	19.7	93.3	0	8.3	19.7	631.0	0.056	1.000
5300	19.9	97.3	0	8.3	19.9	657.8	0.058	1.000
5320	19.9	97.3	0	8.3	19.9	657.8	0.058	1.000
5510	20.8	120.2	0	8.6	20.8	871.0	0.077	1.000
5550	20.6	114.8	0	8.6	20.6	831.8	0.074	1.000
5670	21.4	137.4	0	8.6	21.4	995.4	0.088	1.000

For the cases where S > the MPE Limit

Freq. MHz	Power Density (S) at 30 cm mW/cm ²	MPE Limit at 30 cm mW/cm ²	Distance where S <= MPE Limit cm
5260	0.056	1.000	7.1 cm
5300	0.058	1.000	7.2 cm
5320	0.058	1.000	7.2 cm
5510	0.077	1.000	8.3 cm
5550	0.074	1.000	8.1 cm
5670	0.088	1.000	8.9 cm



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ISED MPE Calculation

Use: General
Antenna: Custom

2.4 GHz Wi-Fi

Freq. MHz	EUT Power		Cable Loss Loss dB	Ant Gain dBi	Power at Ant dBm	EIRP mW	Power Density (S) at 30 cm mW/cm ²	MPE Limit at 30 cm mW/cm ²
	dBm	mW*						
2412	28.3	676.3	0	7.6	28.3	3891.8	0.344	0.537
2437	27.9	616.8	0	7.4	27.9	3389.6	0.300	0.540
2462	27.2	525.9	0	7.3	27.2	2824.2	0.250	0.544

For the cases where S > the MPE Limit

Freq. MHz	Power Density (S) at 30 cm mW/cm ²	MPE Limit at 30 cm mW/cm ²	Distance where S <= MPE Limit cm
2412	0.344	0.537	24.0
2437	0.300	0.540	22.3
2462	0.250	0.544	20.3

5 GHz Wi-Fi

Freq. MHz	EUT Power		Cable Loss Loss dB	Ant Gain dBi	Power at Ant dBm	EIRP mW	Power Density (S) at 30 cm mW/cm ²	MPE Limit at 30 cm mW/cm ²
	dBm	mW*						
5260	19.7	93.3	0	8.3	19.7	631.0	0.056	0.914
5300	19.9	97.3	0	8.3	19.9	657.8	0.058	0.919
5320	19.9	97.3	0	8.3	19.9	657.8	0.058	0.921
5510	20.8	120.2	0	8.6	20.8	871.0	0.077	0.944
5550	20.6	114.8	0	8.6	20.6	831.8	0.074	0.948
5670	21.4	137.4	0	8.6	21.4	995.4	0.088	0.962

For the cases where S > the MPE Limit

Freq. MHz	Power Density (S) at 30 cm mW/cm ²	MPE Limit at 30 cm mW/cm ²	Distance where S <= MPE Limit cm
5260	0.056	0.914	7.4
5300	0.058	0.919	7.5
5320	0.058	0.921	7.5
5510	0.077	0.944	8.6
5550	0.074	0.948	8.4
5670	0.088	0.962	9.1



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Combined exposure from both radios (highest contribution from each radio) as a percentage of the corresponding limit

FCC			
5 GHz	8.8%		
2.4 GHz	34.4%		
Total	43.2%	Complies	

ISED			
5 GHz	9.1%		Total RF Value
2.4 GHz	64.1%		4.32 W/m ²
Total	73.3%	Complies	