

Tekniam, LLC

RF Exposure Exhibit

SCOPE OF WORK

EMC TESTING – RUCS Distribution Module, Model: RDM21

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**RF Exposure Exhibit
(mobile devices)**

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Project Number: G104856862

Report Issue Date: February 24, 2022

Product Designation: RUCS Distribution Module

Model Tested: RDM21

FCC ID: 2A2SC-RDM21

to

47CFR 2.1091

for

Tekniam, LLC

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Report No. 104856862MPK-006	
Equipment Under Test:	RUCS Distribution Module
Trade Name:	Tekniam, LLC
Model(s) Tested:	RDM21
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Applicable Regulation:	47CFR 2.1091

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1.0 RF Exposure Summary

Test	Reference FCC	Result
Radio frequency Radiation Exposure Evaluation	47 CFR§2.1091	Complies

2.0 RF Exposure Limits

In this document, we evaluate the RF Exposure to human body due the intentional transmission from the transmitter (EUT). The limits for Maximum Permissible Exposure (MPE) specified in FCC 1.1310 is followed.

2.1 FCC Limits

According to FCC 1.1310 table 1: 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				
0.3 – 3.0	614	1.63	*100	6
3.0 – 30	1842/f	4.89/f	*900/f ²	6
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				
0.3 – 1.34	614	1.63	*100	30
1.34 – 30	824/f	2.19/f	*180/f ²	30
30 – 300	27.5	0.073	0.2	30
300 - 1500	...	...	F/1500	30
1500 - 100,000	...	...	1.0	30

F = Frequency in MHz

* = plane wave equivalent density

3.0 Test Results (Mobile Configuration)

3.1 Classification

Radio is installed inside a mobile host device. The antenna of the product, under normal use condition, is installed at least 5m away from the body of the user and accessible to the end user. Warning statement to the user for keeping at least 5m or more separation distance with the antenna should be included in user's manual.

3.2 EIRP calculations

The RUCS Distribution Module, Model: RDM21 consists of three radio modules:

- 2.4GHz Wifi.
- 5GHz U-NII 1.
- 5GHz U-NII 3.

3.3 Maximum RF Power

Frequency Range (MHz)	RF Output (dBm)	Antenna Gain ¹ (dBi)	Note
2400-2483.5	27.41	7.0	Conducted power measurements were taken from Report # 104856862MPK-001.
5150 – 5250	15.85	12.0	Conducted power measurements were taken from Report # 104856862MPK-004.
5725 – 5850	21.51	12.0	Conducted power measurements were taken from Report # 104856862MPK-004.

¹As declared by the manufacturer.

3.4 RF Exposure Calculation

3.4.1 RF Exposure calculation.

Calculations for this report are based on highest power measured for each band.

Frequency Range (MHz)	EIRP ¹ (dBm)	EIRP ¹ (mW)	Power Density (mW/cm ²) @5m	FCC Limit (mW/cm ²)	MPE Ratio	Sum of MPE Ratios
2400-2483.5	34.41	2760.5	0.000879	1	0.000879	0.001788
5150 – 5250	27.85	609.5	0.000194	1	0.000194	
5725 – 5850	33.51	2243.8	0.000715	1	0.000715	

¹Note: Antenna gains below 0 are considered as 0dBi.

The summation of the MPE ratio is less than 1, therefore, the EUT complies for the MPE requirement of simultaneous transmission.

Appendix A: Power Density Calculation

The Power Density can be calculated using the formula

$$S = \text{EIRP} / 4\pi D^2$$

Where: S is Power Density in mW/cm²

D is the distance from the antenna in cm.

4.0 Document History

Revision/ Job Number	Writer Initials	Reviewers Initials	Date	Change
1.0/ G104856862	ML	KV	February 24, 2022	Original document