

FCC 47 CFR MPE REPORT

Rockford Corporation

DIGITAL MEDIA RECEIVER

Model Number: PMX-HD14

FCC ID: 2AA7S-PMX-HD14

Applicant:	Rockford Corporation
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Maximum Permissible Exposure

1. Applicable Standards

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

1.1. Limits for Maximum Permissible Exposure (MPE)

(a) Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times $ E ^2$, $ H ^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-10000			5	6

(b) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times $ E ^2$, $ H ^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-10000			1.0	30

Note: f=frequency in MHz; *Plane-wave equivalent power density

1.2. MPE Calculation Method

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \quad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

E = Electric Field (V/m)

P = Peak RF output Power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained

2. Conducted Power Result

Module: CW5125

Mode	Frequency (MHz)	Peak output power (dBm)	Peak output power (mW)	Target power (dBm)	Antenna gain	
					(dBi)	(Linear)
GFSK	2402	8.71	7.430	8±1	3.08	2.032
	2441	8.27	6.714	8±1	3.08	2.032
	2480	8.24	6.668	8±1	3.08	2.032
8-DPSK	2402	11.22	13.243	11±1	3.08	2.032
	2441	11.23	13.274	11±1	3.08	2.032
	2480	11.12	12.942	11±1	3.08	2.032

Module: CW889

Mode	Frequency (MHz)	Peak output power (dBm)	Peak output power (mW)	Target power (dBm)	Antenna gain	
					(dBi)	(Linear)
GFSK	2402	5.74	3.750	5±1	-1.5	0.708
	2441	7.10	5.129	7±1	-1.5	0.708
	2480	6.46	4.426	6±1	-1.5	0.708
8-DPSK	2402	1.75	1.496	1±1	-1.5	0.708
	2441	2.27	1.687	2±1	-1.5	0.708
	2480	2.69	1.858	2±1	-1.5	0.708

3. Calculated Result and Limit

Mode	Target power (dBm)	Antenna gain		Power Density (S) (mW /cm2)	Limited of Power Density (S) (mW /cm2)	Test Result
		(dBi)	(Linear)			
Module: CW5125						
GFSK	9	3.08	2.032	0.00321	1	Complies
8-DPSK	12	3.08	2.032	0.00641	1	Complies
Module: CW889						
GFSK	8	-1.5	0.708	0.00089	1	Complies
8-DPSK	3	-1.5	0.708	0.00028	1	Complies

Power Density (S) (mW/cm ²) CW5125	Power Density (S) (mW/cm ²) CW889	Power Density (S) (mW/cm ²) Total Ratio	Limited of Power Density (S) (mW/cm ²) Ratio	Test Result
0.00641	0.00089	0.00730	1	Complies

End of Test Report