Project #: 22752-15

Company: Hetronic

EUT: RX-MFS-ESCAN-HS1 Receiver

RF Exposure Evaluation Report

Prepared for:

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Table of Contents

1.0 Maximum Permissible Exposure Evaluation (Supplements the test report.)

The measured power is considered for the intended use of the device and resulting RF exposure to the user.

1.1 Applicable Documents

Table 1.1.1: Applicable Documents

Document	Title
RSS-102 Issue 5	Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)
KDB 447498 D01 General RF Exposure Guidance v06	RF EXPOSURE PROCEDURES AND EQUIPMENT AUTHORIZATION POLICIES FOR MOBILE AND PORTABLE DEVICES
OET Bulletin 65 Edition 97-01	Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields

1.2 Criteria

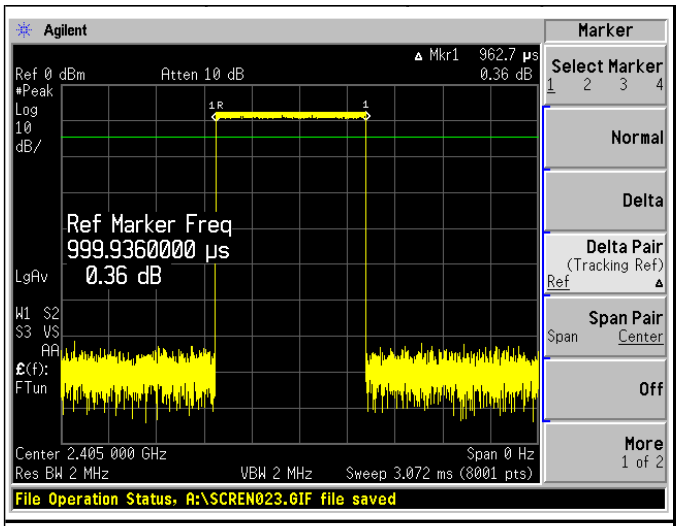
Section Reference	Test Detail
FCC 47 CFR Part 1 I, 1.1310 // RSS-102, Issue 5	Radiofrequency radiation exposure limits

1.3 Duty Cycle Correction Factor Measurement

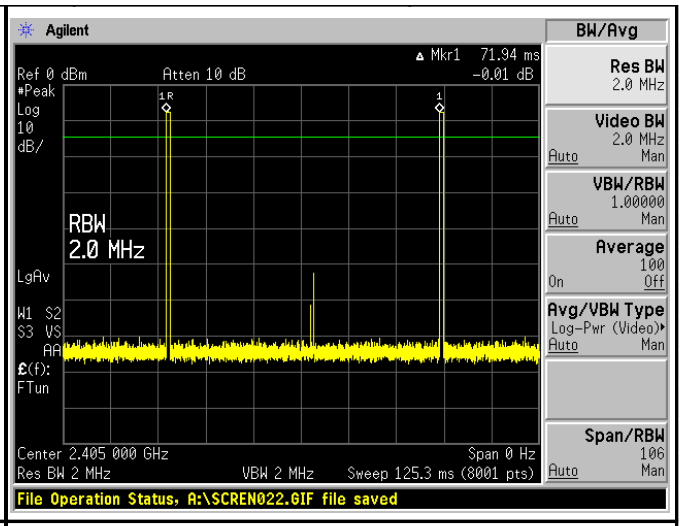
Measurement is based on intervals not to exceed 100 msec. Maximum transmitter on time is divided by the lesser of 100 msec or the actual measured minimum transmitter interval time. The result is converted to dB and applied as needed to peak measurements of transmitter artifacts to determine average power. This is not a pass/fail measurement.

Normal operating mode was used for the duty cycle measurement.

Table 4.3.2 Exposure Source Duty Cycle Results			
Measured On Time (msec)	**Measured Time Interval (msec)**	**Exposure Duty Cycle Factor Calculation**	**Result (dB)**
0.9627	71.94	= 10 * Log_{10} (0.9627 msec / 71.94 msec)	-18.73



Transmit Event Time



Time Interval (Return to channel time)

1.4 Power to Exposure Calculation, Conducted

For 2.4 GHz radio power is determined by conducted measurement. Safe exposure distance was calculated for the allowed maximum uncontrolled public exposure limit.

Table 1.4.1 Power Calculation for Exposure, 2.4 GHz Radio (Highest frequency 2.480 GHz)				
Measured Conducted Peak Power dBm	**Source Duty Cycle Factor dB**	**Antenna Gain dBi**	**Calculated EIRP dBm**	**EIRP In Linear Terms mW**
12.86	-18.73	3	-2.87	0.52

1.5 RF Exposure Evaluation – FCC

According to KDB 447498 D01 General RF Exposure Guidance v06 section 4.3.1. The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] ·[√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

Calculated power (max power including tune up tolerance) = 0.52 mW

SAR exemption calculation applying 5 mm separation distance:

[(0.52 mW)/(5 mm)] · [√2.480 (GHz)] = 0.16

So, 0.16 ≤ 3.0 at a separation distance of 5 mm.

1.6 RF Exposure Evaluation – ISED Canada

Applying Table 1 of clause 2.5.1 applying 0.5cm (or 5mm) spacing column and row 2450 MHz. The exemption limit is 4 mW.

Table 1: SAR evaluation – Exemption limits for routine evaluation based on frequency and separation distance[4,5]

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of ≤5 mm	At separation distance of 10 mm	At separation distance of 15 mm	At separation distance of 20 mm	At separation distance of 25 mm
≤300	71 mW	101 mW	132 mW	162 mW	193 mW
450	52 mW	70 mW	88 mW	106 mW	123 mW
835	17 mW	30 mW	42 mW	55 mW	67 mW
1900	7 mW	10 mW	18 mW	34 mW	60 mW
2450	4 mW	7 mW	15 mW	30 mW	52 mW
3500	2 mW	6 mW	16 mW	32 mW	55 mW
5800	1 mW	6 mW	15 mW	27 mW	41 mW

So, 0.52 mW < 4 mW at a separation distance of 5 mm.

1.7 Conclusion

Based on 5 mm separation distance between the user and the EUT, FCC and IC comply with MPE limits.

End of Report