Project #: 23197-15

Company: The Genie Company, a Division of Overhead Door Corporation

EUT: OU4T

Maximum Permissible Exposure Evaluation Report

Prepared for:

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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
RSS-102, Issue 5	Radiofrequency radiation exposure limits

1.1 Reference

Supplements and references this test report: 23197_OU4T_FCC & IC_Test Report_Final.pdf.

1.2 Procedure

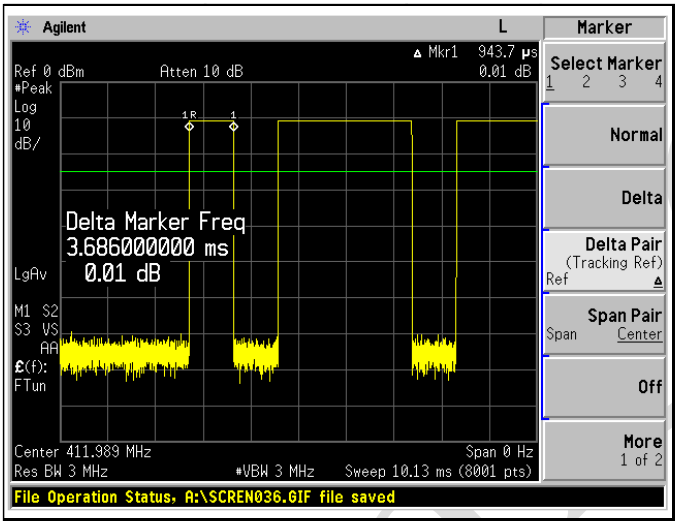
Using measurement of peak power and considering the intended application, determine the permissible exposure level, applicability of exclusion, or whether additional exposure tests (SAR) are indicated. When applicable justify conclusion for selected exposure level and separation distance.

1.3 Duty Cycle Correction Factor Measurement

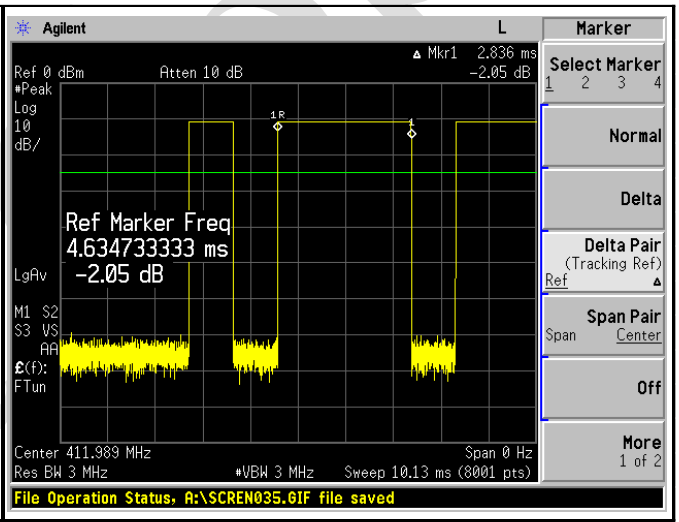
Measurement is based on intervals not to exceed 100 msec. Maximum transmitter on time is divided by the lesser of 100 msec or the actual measured minimum transmitter interval time. The result is converted to dB and applied as needed to peak measurements of transmitter artifacts to determine average power.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

Table 4.3.2 Exposure Source Duty Cycle Results			
Measured On Time (msec)	**Measured Time Interval (msec)**	**Exposure Duty Cycle Factor Calculation**	**Result (dB)**
26.4677	71.9	= 10 * Log_{10} (26.4677msec / 71.9 msec)	-4.34

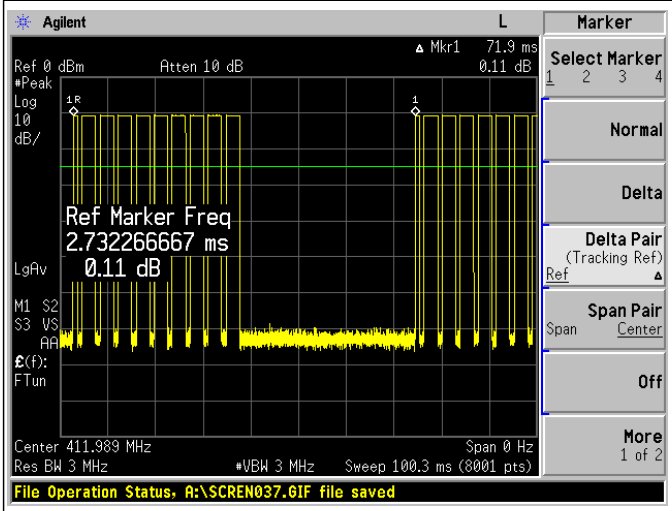
Plotted measurements appear below:



Transmit Event Time, t1 = 0.9437 ms



Transmit Event Time, t2 = 2.836 ms x 9



Time Interval (Return to channel time), T = 71.9 ms

1.4 Power to Exposure Calculation, Radiated

The EUT transmitter power is determined by radiated measurement. EIRP is determined from the peak power measured field strength at 3 meters and converted to EIRP. The effect of antenna gain is therefore included in this measurement.

Table 1.4.1: Power Calculation for Exposure

Measured Field Strength EIRP (Peak Detection) dBuV/m	Duty Cycle Factor dB	EIRP Calculation To Linear Terms mW
69.3	-8.68	0.00021

1.5 SAR Exemption Calculation – 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) = 0.00021mW

SAR exemption calculation applying 5 mm separation distance:

[(0.00021 mW)/(5 mm)] · [√0.36 (GHz)] = 0.00003

So, 0.00003 ≤ 3.0 at a separation distance of 5 mm.

1.6 SAR Exemption Calculation – IC

Applying Table 1 of clause 2.5.1 applying 0.5cm (or 5mm) spacing column and row ≤ 300 MHz. The exemption limit is 71 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, 0.00003 mW < 71 mW at a separation distance of 5 mm.

1.7 Conclusion

FCC and IC exposure limits meet the applicable SAR exemption requirements at a separation distance of 5 mm.

End of Report