

# RF Exposure / SAR / Health Hazard Statement

## Requirement:

According to USA CFR 15 §1.1307 (b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to radio frequency energy level in excess of the Commission's guideline. For Canada, RSS-102 Tests out the requirements and measurement techniques used to evaluate radio frequency (RF) exposure compliance of radiocommunication apparatus designed to be used within the vicinity of the human body.

## SAR Testing Exclusion:

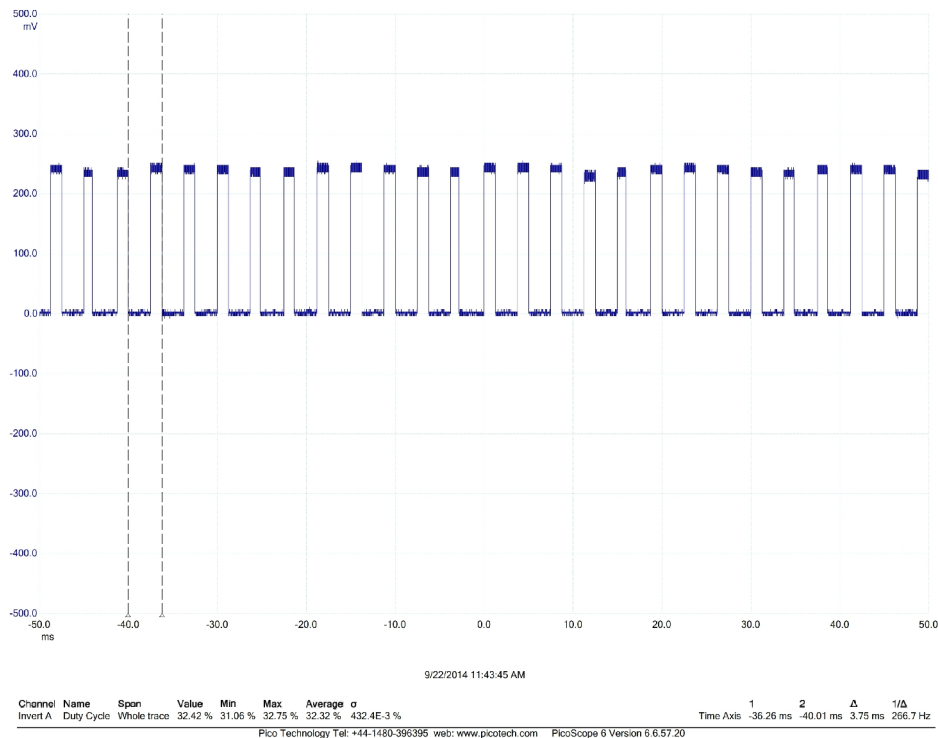
Per FCC 447498 D01 General RF Exposure Guidance v05r02, Section 4.3.1, the 1-g (body) and 10-g (extremity) SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances  $\leq 50$  mm are determined by the following formula

$$SAR = \frac{P_c}{d} \sqrt{f_{GHz}}$$

where d = minimum test distance and Pc is the source-based time-averaged maximum conducted output power, or EIRP for a device without a removable antenna. For IC RSS-102, the SAR threshold is based on conducted output power of the radio device.

## Low transmission duty factor devices:

Per FCC 447498 D01 General RF Exposure Guidance v05r02, Section 6.3 and IC RSS-102, the power duty cycle of a device under normal operating conditions can be considered when determining the source-based time-averaged maximum output power or EIRP. To determine the time-average duty cycle for this EUT, a broadband crystal detector was used to detect the transmit power over all channels as a function of time when the EUT was transmitting audio in its normal, worst-case, paired state. The following plot shows the transmitter duty as a function of time to be 32.3%,  $10 \cdot \log_{10}(0.323) = -4.9$  dB.



Furthermore, the standoffs employed by the EUT when installed into an acoustic instrument ensure that the EUT will be separated from the user by no less than 15mm. Thus, the SAR threshold at a minimum test distance of 15 mm is computed to be:

**SAR Threshold**

Freq. (GHz)	EIPR / Po Cont. Mod (dBm)	Duty (dB)	EIRP/Po Avg (mW)	IC Po Threshold (mW)	dmin (mm)	Computed FCC SAR Threshold (Avg)	1-g SAR Body Threshold (Avg)	10-g SAR Extremity Threshold (Avg)
2.406	16.8	4.9	15.5	20	15	1.6	3	7.5
2.437	15.5	4.9	11.5	20	15	1.2	3	7.5
2.466	14.7	4.9	9.5	20	15	1.0	3	7.5

Thus the EUT meets the test exclusion thresholds for Industry Canada and the FCC 1-g and 10-g Extremity SAR evaluation threshold. SAR testing is not required.