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ACR SOS-300 Standalone SAR test Exclusion Assessment

SUMMARY: This document provides calculations confirming that the SOS-300 complies with FCC's RF EXPOSURE PROCEDURES AND EQUIPMENT AUTHORIZATION POLICIES FOR MOBILE AND PORTABLE DEVICES, Section 4.3.1. Standalone SAR test exclusion considerations.

Table 1: Summary of Results

Frequency	Limit for 10-g extremity SAR	SOS-300 Calculation	Distance	Conclusion
406.040 MHz	≤ 7.5	6.16	20mm	Within SAR Test exclusion limit
1616 – 1626.5 MHz	≤ 7.5	0.013	20mm	Within SAR Test exclusion limit

Per FCC's RF EXPOSURE PROCEDURES AND EQUIPMENT AUTHORIZATION POLICIES FOR MOBILE AND PORTABLE DEVICES, Section 4.3.1, SAR Test exclusion limit is:

- ≤ 7.5 for 10-g extremity SAR
- Distance used in calculations is 2 cm (20 mm)

406.04 MHZ PLB CALCULATION:

From the TUV test report 75934030 Report 01 Issue 3, the Peak Effective Radiated Power (PERP) is 42.7 dBm = 18.62 W = 18620 mW.

The 406 MHz transmission is 0.52 seconds long every 50 seconds. This equates to a 1.04% duty cycle. Thus, the average power is 193.65 mW.

The 10-g SAR test exclusion threshold is:

$$\text{(max. power of channel, including tune-up tolerance, mW)} / \text{(min. test separation distance, mm)} * \sqrt{f(\text{GHz})}$$

$$(193.65 \text{ mW} / 20\text{mm}) * (\sqrt{.406040 \text{ GHz}}) = 6.16$$

Conclusion: the calculated SAR Test exclusion limits is 6.16 is well within the SAR Test exclusion limit of 7.5.

1616 MHZ – 1626.5 MHZ IRIDIUM CALCULATION:

From the TUV Test report 75926443 Report 10 Issue 2, the Peak Effective Radiated Power (PERP) is 1.479 W = 1479 mW.

From Iridium 9603 SBD Transceiver Product Developers Guide, the transmission is .0083 seconds long. SOS-300 worst transmission schedule is once every 60 seconds (per RTCM 12800.0 SEND standard) This equates to 0.01383% duty cycle. Thus, the average power is 0.205 mW.

The 10-g SAR test exclusion threshold is:

$$\text{(max. power of channel, including tune-up tolerance, mW)} / \text{(min. test separation distance, mm)} * \sqrt{f(\text{GHz})}$$

$$(0.205 \text{ mW} / 20\text{mm}) * (\sqrt{1.616 \text{ GHz}}) = 0.013$$

$$(0.205 \text{ mW} / 20\text{mm}) * (\sqrt{1.6265 \text{ GHz}}) = 0.013$$

Conclusion: the calculated SAR Test exclusion limits is 0.013 is well within the SAR Test exclusion limit of 7.5.