



DECLARATION OF COMPLIANCE: MPE ASSESSMENT

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|---|---|
| <p>Motorola Solutions Inc. EME Test Laboratory Motorola Solutions Malaysia Sdn Bhd Plot 2A, Medan Bayan Lepas, Mukim 12 SWD 11900 Bayan Lepas Penang, Malaysia.</p> | <p>Date of Report: 11/05/2024 Report Revision: B</p> |
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| <p>Responsible Engineer: Report Author: Assessment Date(s) Manufacturer: Manufacturer Location: DUT Description: Test TX mode(s): Max. Power output: Tx Frequency Bands: Signaling type: Model(s) Certified: (HVIN/PMN) Classification: Applicant Name: Applicant Address: Firmware Version (FVIN): FCC ID: FCC Test Firm Registration Number: IC ID: ISED Test Site Registration:</p> | <p>Puteri Alifah Ilyana Binti Nor Rahim (EME Engineer) Hamidi Bin Ismail (EME Technician) 9/20/2024, 11/05/2024 Motorola Solution Malaysia Plot 2A, Medan Bayan Lepas Mukim, 12 SWD, 11900 Bayan Lepas, Penang, Malaysia APX8000 ST U/V/7_800 M1.5, APX8000XE U/V/7_800 M1.5, APX8000 ST U/V/7_800 M2.5, APX8000XE U/V/7_800 M2.5, APX8000 ST U/V/7_800 M3.5, APX8000XE U/V/7_800 M3.5 Refer Table 4 Refer Table 4 Refer Table 4 Refer Table 4 Refer Section 1.0 Introduction Occupational/Controlled Environment Motorola Solutions Inc. Plot 2A, Medan Bayan Lepas Mukim, 12 SWD, 11900 Bayan Lepas, Penang, Malaysia R26.02.00 AZ489FT7061 823256 109U-89FT7061 24843</p> |
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Based on the information and the testing results provided herein, the undersigned certifies that when used as stated in the operating instructions supplied, said product complies with the national and international reference standards and guidelines listed in section 4.0 of this report. This report shall not be reproduced without written approval from an officially designated representative of the Motorola Solutions Inc. EME Laboratory. I attest to the accuracy of the data and assume full responsibility for the completeness of these measurements. The results and statements contained in this report pertain only to the device(s) evaluated.

Saw Sun Hock (Approval Signatory)
Approved Date: 11/05/2024

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Report Revision History

| Date | Revision | Comments |
|------------|----------|--|
| 10/07/2024 | A | Initial release |
| 11/05/2024 | B | Remove the unlicensed band’s MPE calculation, and standardize the distance at 90cm |

1.0 Introduction

This report contains calculated Maximum Permissible Exposure (MPE) results for product family APX 8000 and APX 8000 XE with APX vehicular adapter part number NNTN8527A. Table 1 shows the certified model for the product family.

Table 1

| Model | Hardware Version ID Number (HVIN) | Product Marketing Name (PMN) | Description |
|--------------|-----------------------------------|------------------------------|---|
| H91TGD9PW5AN | H91TGD9PW5AN | APX 8000, APX 8000XE | APX8000 ST U/V/7_800 M1.5, APX8000XE U/V/7_800 M1.5 |
| H91TGD9PW6AN | H91TGD9PW6AN | APX 8000, APX 8000XE | APX8000 ST U/V/7_800 M2.5, APX8000XE U/V/7_800 M2.5 |
| H91TGD9PW7AN | H91TGD9PW7AN | APX 8000, APX 8000XE | APX8000 ST U/V/7_800 M3.5, APX8000XE U/V/7_800 M3.5 |
| H91TGD9PW5AN | 8000XE1 | APX 8000, APX 8000XE | APX8000 ST U/V/7_800 M1.5, APX8000XE U/V/7_800 M1.5 |
| H91TGD9PW6AN | 8000XE2 | APX 8000, APX 8000XE | APX8000 ST U/V/7_800 M2.5, APX8000XE U/V/7_800 M2.5 |
| H91TGD9PW7AN | 8000XE3 | APX 8000, APX 8000XE | APX8000 ST U/V/7_800 M3.5, APX8000XE U/V/7_800 M3.5 |

2.0 FCC MPE Summary

Table 2

| Equipment Class | Frequency Band (MHz) | Power Density (mW/cm ²) | FCC Limit (mW/cm ²) |
|-----------------|----------------------|-------------------------------------|---------------------------------|
| TNF | 150.8-173.4 (VHF) | 0.106 | 53.06 |
| | 406.1-470 (UHF R1) | 0.145 | 53.60 |
| | 450-512 (UHF R2) | 0.103 | 34.28 |
| | 769-869 (7/800) | 0.058 | 10.70 |

3.0 Abbreviations / Definitions

DUT: Device Under Test
EME: Electromagnetic Energy
MPE: Maximum Permissible Exposure

4.0 Referenced Standards and Guidelines

This product is designed to comply with the following applicable national and international standards and guidelines.

- United States Federal Communications Commission, Code of Federal Regulations; Rule Part 47CFR § 1.1310, § 2.1091 (d) and § 2.1093 for RF Exposure, where applicable.
- Federal Communications Commission, “Evaluating Compliance with FCC Guidelines for Human Exposure to Radio frequency Electromagnetic Fields”, OET Bulletin 65 (Edition 97-01), FCC, Washington, D.C.: August 1997.
- American National Standards Institute (ANSI) / Institute of Electrical and Electronics Engineers (IEEE) C95. 1-1999
- American National Standards Institute (ANSI) / Institute of Electrical and Electronics Engineers (IEEE) C95. 1-1992. Specific to FCC rules and regulations.
- Institute of Electrical and Electronics Engineers (IEEE) C95.3-2002
- Ministry of Health (Canada) Safety Code 6 (2015), Limits of Human Exposure to Radio frequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz
- RSS-102 (Issue 6) – Radio Frequency (RF) Exposure Compliance of Radio communication Apparatus (All Frequency Bands)
- FCC KDB – 447498 D01 General RF Exposure Guidance v06
- FCC KDB – 865664 D02 RF Exposure Reporting v01r02

5.0 Power Density Limits

Table 3 – Occupational / Controlled Exposure Limits

| Frequency Range (MHz) | FCC OET Bulletin 65 | IEEE C95.1 | IEEE C95.1 | RSS-102 Issue 6 |
|-----------------------|---------------------|--------------------|------------------|-------------------------|
| | mW/cm ² | mW/cm ² | W/m ² | W/m ² |
| 10 – 20 | | | | 10.0 |
| 20 – 48 | | | | $44.72 / f^{0.5}$ |
| 30 – 300 | 1.0 | | | |
| 48 – 100 | | | | 6.455 |
| 10 – 400 | | | | |
| 100 – 300 | | 1.0 | 10.0 | |
| 100 – 6,000 | | | | $0.6455 f^{0.5}$ |
| 300 – 1,500 | $f/300$ | | | |
| 300 – 3,000 | | $f/300$ | $f/30$ | |
| 400 – 2,000 | | | | |
| 1,500 – 15,000 | | | | |
| 1,500 – 100,000 | 5.0 | | | |
| 2,000 – 300,000 | | | | |
| 3,000 – 300,000 | | 10.0 | 100.0 | |
| 6,000 – 15,000 | | | | 50.0 |
| 15000 – 150,000 | | | | 50.0 |
| 150000 – 300,000 | | | | $3.33 \times 10^{-4} f$ |

Table 4 – General Population / Uncontrolled Exposure Limits

| Frequency Range (MHz) | FCC OET Bulletin 65 | IEEE C95.1 | IEEE C95.1 | RSS-102 Issue 6 |
|--------------------------|------------------------|--------------------|------------------|-------------------------|
| | mW/cm ² | mW/cm ² | W/m ² | W/m ² |
| 10 – 20 | | | | 2.0 |
| 20 – 48 | | | | $8.944 / f^{0.5}$ |
| 30 – 300 | 0.2 | | | |
| 48 – 300 | | | | 1.291 |
| 10 – 400 | | | | |
| 100 – 300 | | 0.2 | | |
| 100 – 400 | | | 2.0 | |
| 300 – 1,500 | $f/1,500$ | | | |
| 300 – 6000 | | | | $0.02619 f^{0.6834}$ |
| 400 – 2,000 | | | $f/200$ | |
| 300 – 15,000 | | $f/1,500$ | | |
| 1,500 – 15,000 | | | | |
| 1,500 – 100,000 | 1.0 | | | |
| 2,000 – 100,000 | | | 10.0 | |
| 2,000 – 300,000 | | | | |
| 6,000 – 15,000 | | | | 10.0 |
| 15,000 – 150,000 | | | | 10.0 |
| 150,000 – 300,000 | | | | $6.67 \times 10^{-5} f$ |

6.0 Product and System Description

These portable devices operate in the LMR bands using frequency modulation (FM) and TDMA signals incorporating traditional simplex two-way radio transmission protocol. These devices also contain WLAN technology for data capabilities over 802.11b/g/n wireless networks and Bluetooth technology for short range wireless devices.

Time Division Multiple Access (TDMA) is used to allocate portions of the RF signal by dividing time into two slots. Time allocation enables each unit to transmit its voice information without interference from other transmitting units. Transmission from a unit or base station is accommodated during two time-slot lengths of 15 milliseconds with frame length of 60 milliseconds. The TDMA technique requires sophisticated algorithms and a digital signal processor (DSP) to perform voice compressions/decompressions and RF modulation/demodulation. The maximum duty cycle for TDMA 1:2 is 50%.

The LMR bands in these devices operate in a half-duplex system. A half-duplex system only allows the user to transmit or receive. These devices cannot transmit and receive simultaneously. The user must stop transmitting in order to receive a signal or listen for a response, regardless of PTT button or use of voice activated audio accessories. This type of operation which instructs the user to transmit no more than 50% of the time, justifies the use of 50% duty factor for this device.

This device also incorporates a Bluetooth, which includes classic Bluetooth, Bluetooth high speed and Bluetooth Low Energy. It is Class 1 Bluetooth device with Frequency Hopping Spread Spectrum (FHSS) technology. The Bluetooth radio modem is used to wireless link audio accessories. The maximum actual transmission duty cycle is imposed by the Bluetooth standard. The maximum duty cycle for BT is derived from 5-slots packet type operation which consists of receiving on 1-slot and transmitting on 5-slots, and thus maximum duty cycle =76.1%.

WLAN 802.11b/g/n operates using Direct Sequence Spread Spectrum (DSSS). These devices work in accordance with the IEEE 802.11b/g/n standard.

Table below summarizes the bands and maximum output powers. Maximum output powers are defines as upper limit of the production line final test station.

Table 5

| Technology | Band(MHz) | Transmission | Duty Cycle (%) | Max Power (W) |
|-------------|------------------|--------------|----------------|---------------|
| LMR | 136-174 (VHF) | FM/TDMA | 50* | 6.60 |
| | 380-470 (UHF R1) | | | 5.70 |
| | 450-520 (UHF R2) | | | 5.70 |
| | 764-806 (7/800) | | | 2.99 |
| | 806-870 (7/800) | | | 3.60 |
| BT | 2402-2480 | FHSS | 76.10 | 0.00794 |
| BGT LE | 2402-2480 | FHSS | 76.10 | 0.00794 |
| WLAN 2.4GHz | 2400-2483.5 | 802.11b | 98.88 | 0.06310 |
| | | 802.11g | 96.88 | 0.02510 |
| | | 802.11n | 98.01 | 0.02510 |

Note - * includes 50% PTT operation

7.0 MPE Assessment

MPE calculation was used to determine power density for these transmitters due to lower power. According to FCC’s OET Bulletin 65 Edition 97-01 Section 2, calculations can be made to predict RF field strength and power density levels around typical RF sources. Equation (5) is generally accurate in far-field of an antenna.

Equation 5 – Power Density Calculation

$$S = \frac{P_t G}{4\pi d^2 L} F$$

Equation (5) accounts for the maximum duty cycle of the signal, and the factor, F, to provide a worst-case prediction of power density per FCC OET Bulletin 65, Edition 97-01 1997.

- Where:
- S = power density
 - P_t = maximum output power scaled by the maximum duty cycle of the signal
 - G = power gain of the antenna in the direction of interest relative to an isotropic radiator
 - d = distance from antenna
 - F = Enhancement factor

Table 6

| Antenna # | Max Power (W) | Duty Cycle (%) | Tx Frequency (MHz) | Antenna Gain (dBi) | Cable Loss, L (dB) | Dist., d (cm) | Enhancement Factor, F ⁽⁴⁾ | Max Calc. MPE (mW/cm ²) | MPE Spec Limit (mW/cm ²) | | | |
|------------|---------------|----------------|--------------------|--------------------|--------------------|---------------|--------------------------------------|-------------------------------------|--------------------------------------|---------------------|------------|----------------------|
| | | | | | | | | | FCC | % of FCC Spec Limit | ISED limit | % of ISED Spec Limit |
| VHF | | | | | | | | | | | | |
| *HAD4006A | 6.6000 | 50.00% | 138.0000 | 2.15 | 0.00 | 90 | 1.00 | 0.053 | 0.20 | NA | 0.13 | 41.20 |
| *HAD4006A | 6.6000 | 50.00% | 140.0000 | 2.15 | 0.00 | 90 | 1.00 | 0.053 | 0.20 | NA | 0.13 | 41.20 |
| *HAD4006A | 6.6000 | 50.00% | 144.0000 | 2.15 | 0.00 | 90 | 1.00 | 0.053 | 0.20 | NA | 0.13 | 41.20 |
| | | | | | | | | | | | | |
| HAD4007A | 6.6000 | 50.00% | 144.0000 | 2.15 | 0.00 | 90 | 1.00 | 0.053 | 0.20 | NA | 0.13 | 41.20 |
| HAD4007A | 6.6000 | 50.00% | 150.8000 | 2.15 | 0.00 | 90 | 1.00 | 0.053 | 0.20 | 26.59 | 0.13 | 41.20 |
| | | | | | | | | | | | | |
| HAD4008A | 6.6000 | 50.00% | 150.8000 | 2.15 | 0.00 | 90 | 1.00 | 0.053 | 0.20 | 26.59 | 0.13 | 41.20 |
| HAD4008A | 6.6000 | 50.00% | 156.4000 | 2.15 | 0.00 | 90 | 1.00 | 0.053 | 0.20 | 26.59 | 0.13 | 41.20 |
| HAD4008A | 6.6000 | 50.00% | 162.0000 | 2.15 | 0.00 | 90 | 1.00 | 0.053 | 0.20 | 26.59 | 0.13 | 41.20 |
| | | | | | | | | | | | | |
| HAD4009A | 6.6000 | 50.00% | 162.0000 | 2.15 | 0.00 | 90 | 1.00 | 0.053 | 0.20 | 26.59 | 0.13 | 41.20 |
| HAD4009A | 6.6000 | 50.00% | 165.0125 | 2.15 | 0.00 | 90 | 1.00 | 0.053 | 0.20 | 26.59 | 0.13 | 41.20 |
| HAD4009A | 6.6000 | 50.00% | 173.0125 | 2.15 | 0.00 | 90 | 1.00 | 0.053 | 0.20 | 26.59 | 0.13 | 41.20 |
| | | | | | | | | | | | | |
| HAD4021A | 6.6000 | 50.00% | 138.0000 | 2.15 | 0.00 | 90 | 1.00 | 0.053 | 0.20 | NA | 0.13 | 41.20 |
| HAD4021A | 6.6000 | 50.00% | 144.0000 | 2.15 | 0.00 | 90 | 1.00 | 0.053 | 0.20 | NA | 0.13 | 41.20 |

Note: * Antenna HAD4006A not applicable for FCC frequency range

Table 6 (Continued)

| Antenna # | Max Power (W) | Duty Cycle (%) | Tx Frequency (MHz) | Antenna Gain (dBi) | Cable Loss, L (dB) | Dist., d (cm) | Enhancement Factor, F ⁽⁴⁾ | Max Calc. MPE (mW/cm ²) | MPE Spec Limit (mW/cm ²) | | | |
|--------------|---------------|----------------|--------------------|--------------------|--------------------|---------------|--------------------------------------|-------------------------------------|--------------------------------------|---------------------|------------|----------------------|
| | | | | | | | | | FCC | % of FCC Spec Limit | ISED limit | % of ISED Spec Limit |
| HAD4021A | 6.6000 | 50.00% | 150.8000 | 2.15 | 0.00 | 90 | 1.00 | 0.053 | 0.20 | 26.59 | 0.13 | 41.20 |
| HAD4021A | 6.6000 | 50.00% | 158.0125 | 2.15 | 0.00 | 90 | 1.00 | 0.053 | 0.20 | 26.59 | 0.13 | 41.20 |
| HAD4021A | 6.6000 | 50.00% | 165.0125 | 2.15 | 0.00 | 90 | 1.00 | 0.053 | 0.20 | 26.59 | 0.13 | 41.20 |
| HAD4021A | 6.6000 | 50.00% | 173.0125 | 2.15 | 0.00 | 90 | 1.00 | 0.053 | 0.20 | 26.59 | 0.13 | 41.20 |
| | | | | | | | | | | | | |
| HAD4022A | 6.6000 | 50.00% | 138.0000 | 5.15 | 0.00 | 90 | 1.00 | 0.106 | 0.20 | NA | 0.13 | 82.20 |
| HAD4022A | 6.6000 | 50.00% | 144.0000 | 5.15 | 0.00 | 90 | 1.00 | 0.106 | 0.20 | NA | 0.13 | 82.20 |
| HAD4022A | 6.6000 | 50.00% | 150.8000 | 5.15 | 0.00 | 90 | 1.00 | 0.106 | 0.20 | 53.06 | 0.13 | 82.20 |
| HAD4022A | 6.6000 | 50.00% | 158.0125 | 5.15 | 0.00 | 90 | 1.00 | 0.106 | 0.20 | 53.06 | 0.13 | 82.20 |
| HAD4022A | 6.6000 | 50.00% | 165.0125 | 5.15 | 0.00 | 90 | 1.00 | 0.106 | 0.20 | 53.06 | 0.13 | 82.20 |
| HAD4022A | 6.6000 | 50.00% | 173.0125 | 5.15 | 0.00 | 90 | 1.00 | 0.106 | 0.20 | 53.06 | 0.13 | 82.20 |
| | | | | | | | | | | | | |
| UHF 1 | | | | | | | | | | | | |
| HAE6010A | 5.7000 | 50.00% | 380.0125 | 5.65 | 0.00 | 90 | 1.00 | 0.103 | 0.25 | NA | 0.15 | NA |
| HAE6010A | 5.7000 | 50.00% | 393.0125 | 5.65 | 0.00 | 90 | 1.00 | 0.103 | 0.26 | NA | 0.16 | NA |
| HAE6010A | 5.7000 | 50.00% | 406.5000 | 5.65 | 0.00 | 90 | 1.00 | 0.103 | 0.27 | 37.95 | 0.16 | 64.71 |
| HAE6010A | 5.7000 | 50.00% | 419.5000 | 5.65 | 0.00 | 90 | 1.00 | 0.103 | 0.28 | 36.77 | 0.16 | 63.33 |
| HAE6010A | 5.7000 | 50.00% | 432.9875 | 5.65 | 0.00 | 90 | 1.00 | 0.103 | 0.29 | 35.63 | 0.17 | NA |
| | | | | | | | | | | | | |
| HAE6011A | 5.7000 | 50.00% | 380.0125 | 7.15 | 0.00 | 90 | 1.00 | 0.145 | 0.25 | NA | 0.15 | NA |
| HAE6011A | 5.7000 | 50.00% | 393.0125 | 7.15 | 0.00 | 90 | 1.00 | 0.145 | 0.26 | NA | 0.16 | NA |
| HAE6011A | 5.7000 | 50.00% | 406.5000 | 7.15 | 0.00 | 90 | 1.00 | 0.145 | 0.27 | 53.60 | 0.16 | 91.41 |
| HAE6011A | 5.7000 | 50.00% | 419.5000 | 7.15 | 0.00 | 90 | 1.00 | 0.145 | 0.28 | 51.94 | 0.16 | 89.46 |
| HAE6011A | 5.7000 | 50.00% | 432.9875 | 7.15 | 0.00 | 90 | 1.00 | 0.145 | 0.29 | 50.32 | 0.17 | NA |
| | | | | | | | | | | | | |
| HAE6012A | 5.7000 | 50.00% | 380.0125 | 2.15 | 0.00 | 90 | 1.00 | 0.046 | 0.25 | NA | 0.15 | NA |
| HAE6012A | 5.7000 | 50.00% | 393.0125 | 2.15 | 0.00 | 90 | 1.00 | 0.046 | 0.26 | NA | 0.16 | NA |
| HAE6012A | 5.7000 | 50.00% | 406.5000 | 2.15 | 0.00 | 90 | 1.00 | 0.046 | 0.27 | 16.95 | 0.16 | 28.91 |
| HAE6012A | 5.7000 | 50.00% | 419.5000 | 2.15 | 0.00 | 90 | 1.00 | 0.046 | 0.28 | 16.43 | 0.16 | 28.29 |
| HAE6012A | 5.7000 | 50.00% | 432.9875 | 2.15 | 0.00 | 90 | 1.00 | 0.046 | 0.29 | 15.91 | 0.17 | NA |
| | | | | | | | | | | | | |
| HAE6013A | 5.7000 | 50.00% | 380.0125 | 4.15 | 0.00 | 90 | 1.00 | 0.046 | 0.25 | NA | 0.15 | NA |
| HAE6013A | 5.7000 | 50.00% | 393.0125 | 4.15 | 0.00 | 90 | 1.00 | 0.046 | 0.26 | NA | 0.16 | NA |
| HAE6013A | 5.7000 | 50.00% | 406.5000 | 4.15 | 0.00 | 90 | 1.00 | 0.046 | 0.27 | 26.86 | 0.16 | 45.81 |
| HAE6013A | 5.7000 | 50.00% | 422.0125 | 4.15 | 0.00 | 90 | 1.00 | 0.046 | 0.28 | 25.88 | 0.16 | 44.65 |
| HAE6013A | 5.7000 | 50.00% | 438.0125 | 4.15 | 0.00 | 90 | 1.00 | 0.046 | 0.29 | 24.93 | 0.17 | NA |
| HAE6013A | 5.7000 | 50.00% | 450.0125 | 4.15 | 0.00 | 90 | 1.00 | 0.046 | 0.30 | 24.27 | 0.17 | 42.74 |
| HAE6013A | 5.7000 | 50.00% | 469.9875 | 4.15 | 0.00 | 90 | 1.00 | 0.046 | 0.31 | 23.24 | 0.18 | 41.49 |

Table 6 (Continued)

| Antenna # | Max Power (W) | Duty Cycle (%) | Tx Frequency (MHz) | Antenna Gain (dBi) | Cable Loss, L (dB) | Dist., d (cm) | Enhancement Factor, F ⁽⁴⁾ | Max Calc. MPE (mW/cm ²) | MPE Spec Limit (mW/cm ²) | | | |
|--------------|---------------|----------------|--------------------|--------------------|--------------------|---------------|--------------------------------------|-------------------------------------|--------------------------------------|---------------------|------------|----------------------|
| | | | | | | | | | FCC | % of FCC Spec Limit | ISED limit | % of ISED Spec Limit |
| UHF 2 | | | | | | | | | | | | |
| HAE4003A | 5.7000 | 50.00% | 450.0125 | 2.15 | 0.00 | 90 | 1.00 | 0.046 | 0.30 | 15.31 | 0.17 | 26.97 |
| HAE4003A | 5.7000 | 50.00% | 460.0000 | 2.15 | 0.00 | 90 | 1.00 | 0.046 | 0.31 | 14.98 | 0.17 | 26.56 |
| HAE4003A | 5.7000 | 50.00% | 469.9875 | 2.15 | 0.00 | 90 | 1.00 | 0.046 | 0.31 | 14.66 | 0.18 | 26.18 |
| | | | | | | | | | | | | |
| HAE4004A | 5.7000 | 50.00% | 470.0125 | 2.15 | 0.00 | 90 | 1.00 | 0.046 | 0.31 | 14.66 | 0.18 | 26.18 |
| HAE4004A | 5.7000 | 50.00% | 482.5000 | 2.15 | 0.00 | 90 | 1.00 | 0.046 | 0.32 | 14.28 | 0.18 | NA |
| HAE4004A | 5.7000 | 50.00% | 496.5000 | 2.15 | 0.00 | 90 | 1.00 | 0.046 | 0.33 | 13.88 | 0.18 | NA |
| HAE4004A | 5.7000 | 50.00% | 511.9875 | 2.15 | 0.00 | 90 | 1.00 | 0.046 | 0.34 | 13.46 | 0.19 | NA |
| HAE4004A | 5.7000 | 50.00% | 519.9875 | 2.15 | 0.00 | 90 | 1.00 | 0.046 | 0.35 | NA | 0.19 | NA |
| | | | | | | | | | | | | |
| HAE4011A | 5.7000 | 50.00% | 450.0125 | 5.65 | 0.00 | 90 | 1.00 | 0.103 | 0.30 | 34.28 | 0.17 | 60.37 |
| HAE4011A | 5.7000 | 50.00% | 460.0000 | 5.65 | 0.00 | 90 | 1.00 | 0.103 | 0.31 | 33.53 | 0.17 | 59.47 |
| HAE4011A | 5.7000 | 50.00% | 469.9875 | 5.65 | 0.00 | 90 | 1.00 | 0.103 | 0.31 | 32.82 | 0.18 | 58.60 |
| | | | | | | | | | | | | |
| HAE4012A | 5.7000 | 50.00% | 470.0125 | 5.65 | 0.00 | 90 | 1.00 | 0.103 | 0.31 | 32.82 | 0.18 | NA |
| HAE4012A | 5.7000 | 50.00% | 482.5000 | 5.65 | 0.00 | 90 | 1.00 | 0.103 | 0.32 | 31.97 | 0.18 | NA |
| HAE4012A | 5.7000 | 50.00% | 494.9875 | 5.65 | 0.00 | 90 | 1.00 | 0.103 | 0.33 | 31.16 | 0.18 | NA |
| | | | | | | | | | | | | |
| HAE4013A | 5.7000 | 50.00% | 494.9875 | 5.65 | 0.00 | 90 | 1.00 | 0.103 | 0.33 | 31.16 | 0.18 | NA |
| HAE4013A | 5.7000 | 50.00% | 503.0000 | 5.65 | 0.00 | 90 | 1.00 | 0.103 | 0.34 | 30.67 | 0.18 | NA |
| HAE4013A | 5.7000 | 50.00% | 511.9875 | 5.65 | 0.00 | 90 | 1.00 | 0.103 | 0.34 | 30.13 | 0.19 | NA |
| | | | | | | | | | | | | |
| HAE6013A | 5.7000 | 50.00% | 450.0125 | 4.15 | 0.00 | 90 | 1.00 | 0.073 | 0.30 | 24.27 | 0.17 | 42.74 |
| HAE6013A | 5.7000 | 50.00% | 460.0000 | 4.15 | 0.00 | 90 | 1.00 | 0.073 | 0.31 | 23.74 | 0.17 | 42.10 |
| HAE6013A | 5.7000 | 50.00% | 469.9875 | 4.15 | 0.00 | 90 | 1.00 | 0.073 | 0.31 | 23.24 | 0.18 | 41.49 |
| | | | | | | | | | | | | |
| 7/800 | | | | | | | | | | | | |
| HAF4013A | 2.9900 | 50.00% | 762.0125 | 5.15 | 0.00 | 90 | 1.00 | 0.048 | 0.51 | NA | 0.24 | NA |
| HAF4013A | 2.9900 | 50.00% | 769.0125 | 5.15 | 0.00 | 90 | 1.00 | 0.048 | 0.51 | 9.38 | 0.25 | 19.57 |
| HAF4013A | 2.9900 | 50.00% | 772.0000 | 5.15 | 0.00 | 90 | 1.00 | 0.048 | 0.51 | 9.34 | 0.25 | 19.52 |
| HAF4013A | 2.9900 | 50.00% | 774.9875 | 5.15 | 0.00 | 90 | 1.00 | 0.048 | 0.52 | 9.31 | 0.25 | 19.47 |
| HAF4013A | 2.9900 | 50.00% | 794.0125 | 5.15 | 0.00 | 90 | 1.00 | 0.048 | 0.53 | NA | 0.25 | NA |
| HAF4013A | 2.9900 | 50.00% | 799.0125 | 5.15 | 0.00 | 90 | 1.00 | 0.048 | 0.53 | 9.03 | 0.25 | 19.06 |
| HAF4013A | 3.6000 | 50.00% | 811.5000 | 5.15 | 0.00 | 90 | 1.00 | 0.058 | 0.54 | 10.70 | 0.25 | 22.71 |
| HAF4013A | 3.6000 | 50.00% | 823.9875 | 5.15 | 0.00 | 90 | 1.00 | 0.058 | 0.55 | 10.54 | 0.26 | 22.48 |
| HAF4013A | 3.6000 | 50.00% | 851.0125 | 5.15 | 0.00 | 90 | 1.00 | 0.058 | 0.57 | 10.20 | 0.26 | 21.98 |
| HAF4013A | 3.6000 | 50.00% | 860.5000 | 5.15 | 0.00 | 90 | 1.00 | 0.058 | 0.57 | 10.09 | 0.27 | 21.82 |
| HAF4013A | 3.6000 | 50.00% | 868.9875 | 5.15 | 0.00 | 90 | 1.00 | 0.058 | 0.58 | 9.99 | 0.27 | 21.67 |

Table 6 (Continued)

| Antenna # | Max Power (W) | Duty Cycle (%) | Tx Frequency (MHz) | Antenna Gain (dBi) | Cable Loss, L (dB) | Dist., d (cm) | Enhancement Factor, F ⁽⁴⁾ | Max Calc. MPE (mW/cm ²) | MPE Spec Limit (mW/cm ²) | | | |
|-----------|---------------|----------------|--------------------|--------------------|--------------------|---------------|--------------------------------------|-------------------------------------|--------------------------------------|---------------------|------------|----------------------|
| | | | | | | | | | FCC | % of FCC Spec Limit | ISED limit | % of ISED Spec Limit |
| HAF4014A | 2.9900 | 50.00% | 762.0125 | 5.15 | 0.00 | 90 | 1.00 | 0.048 | 0.51 | NA | 0.24 | NA |
| HAF4014A | 2.9900 | 50.00% | 769.0125 | 5.15 | 0.00 | 90 | 1.00 | 0.048 | 0.51 | 9.38 | 0.25 | 19.57 |
| HAF4014A | 2.9900 | 50.00% | 772.0000 | 5.15 | 0.00 | 90 | 1.00 | 0.048 | 0.51 | 9.34 | 0.25 | 19.52 |
| HAF4014A | 2.9900 | 50.00% | 774.9875 | 5.15 | 0.00 | 90 | 1.00 | 0.048 | 0.52 | 9.31 | 0.25 | 19.47 |
| HAF4014A | 2.9900 | 50.00% | 794.0125 | 5.15 | 0.00 | 90 | 1.00 | 0.048 | 0.53 | NA | 0.25 | NA |
| HAF4014A | 2.9900 | 50.00% | 799.0125 | 5.15 | 0.00 | 90 | 1.00 | 0.048 | 0.53 | 9.03 | 0.25 | 19.06 |
| HAF4014A | 3.6000 | 50.00% | 811.5000 | 5.15 | 0.00 | 90 | 1.00 | 0.058 | 0.54 | 10.70 | 0.25 | 22.71 |
| HAF4014A | 3.6000 | 50.00% | 823.9875 | 5.15 | 0.00 | 90 | 1.00 | 0.058 | 0.55 | 10.54 | 0.26 | 22.48 |
| HAF4014A | 3.6000 | 50.00% | 851.0125 | 5.15 | 0.00 | 90 | 1.00 | 0.058 | 0.57 | 10.20 | 0.26 | 21.98 |
| HAF4014A | 3.6000 | 50.00% | 860.5000 | 5.15 | 0.00 | 90 | 1.00 | 0.058 | 0.57 | 10.09 | 0.27 | 21.82 |
| HAF4014A | 3.6000 | 50.00% | 868.9875 | 5.15 | 0.00 | 90 | 1.00 | 0.058 | 0.58 | 9.99 | 0.27 | 21.67 |
| | | | | | | | | | | | | |
| HAF4016A | 2.9900 | 50.00% | 762.0125 | 2.15 | 0.00 | 90 | 1.00 | 0.024 | 0.51 | NA | 0.24 | NA |
| HAF4016A | 2.9900 | 50.00% | 769.0125 | 2.15 | 0.00 | 90 | 1.00 | 0.024 | 0.51 | 4.70 | 0.25 | 9.81 |
| HAF4016A | 2.9900 | 50.00% | 772.0000 | 2.15 | 0.00 | 90 | 1.00 | 0.024 | 0.51 | 4.68 | 0.25 | 9.78 |
| HAF4016A | 2.9900 | 50.00% | 774.9875 | 2.15 | 0.00 | 90 | 1.00 | 0.024 | 0.52 | 4.66 | 0.25 | 9.76 |
| HAF4016A | 2.9900 | 50.00% | 794.0125 | 2.15 | 0.00 | 90 | 1.00 | 0.024 | 0.53 | NA | 0.25 | NA |
| HAF4016A | 2.9900 | 50.00% | 799.0125 | 2.15 | 0.00 | 90 | 1.00 | 0.024 | 0.53 | 4.52 | 0.25 | 9.55 |
| HAF4016A | 3.6000 | 50.00% | 811.5000 | 2.15 | 0.00 | 90 | 1.00 | 0.029 | 0.54 | 5.36 | 0.25 | 11.38 |
| HAF4016A | 3.6000 | 50.00% | 823.9875 | 2.15 | 0.00 | 90 | 1.00 | 0.029 | 0.55 | 5.28 | 0.26 | 11.26 |
| HAF4016A | 3.6000 | 50.00% | 851.0125 | 2.15 | 0.00 | 90 | 1.00 | 0.029 | 0.57 | 5.11 | 0.26 | 11.02 |
| HAF4016A | 3.6000 | 50.00% | 860.5000 | 2.15 | 0.00 | 90 | 1.00 | 0.029 | 0.57 | 5.06 | 0.27 | 10.94 |
| HAF4016A | 3.6000 | 50.00% | 868.9875 | 2.15 | 0.00 | 90 | 1.00 | 0.029 | 0.58 | 5.01 | 0.27 | 10.86 |
| | | | | | | | | | | | | |
| HAF4017A | 2.9900 | 50.00% | 762.0125 | 5.15 | 0.00 | 90 | 1.00 | 0.048 | 0.51 | NA | 0.24 | NA |
| HAF4017A | 2.9900 | 50.00% | 769.0125 | 5.15 | 0.00 | 90 | 1.00 | 0.048 | 0.51 | 9.38 | 0.25 | 19.57 |
| HAF4017A | 2.9900 | 50.00% | 772.0000 | 5.15 | 0.00 | 90 | 1.00 | 0.048 | 0.51 | 9.34 | 0.25 | 19.52 |
| HAF4017A | 2.9900 | 50.00% | 774.9875 | 5.15 | 0.00 | 90 | 1.00 | 0.048 | 0.52 | 9.31 | 0.25 | 19.47 |
| HAF4017A | 2.9900 | 50.00% | 794.0125 | 5.15 | 0.00 | 90 | 1.00 | 0.048 | 0.53 | NA | 0.25 | 19.15 |
| HAF4017A | 2.9900 | 50.00% | 799.0125 | 5.15 | 0.00 | 90 | 1.00 | 0.048 | 0.53 | 9.03 | 0.25 | NA |
| HAF4017A | 3.6000 | 50.00% | 811.5000 | 5.15 | 0.00 | 90 | 1.00 | 0.058 | 0.54 | 10.70 | 0.25 | 22.71 |
| HAF4017A | 3.6000 | 50.00% | 823.9875 | 5.15 | 0.00 | 90 | 1.00 | 0.058 | 0.55 | 10.54 | 0.26 | 22.48 |
| HAF4017A | 3.6000 | 50.00% | 851.0125 | 5.15 | 0.00 | 90 | 1.00 | 0.058 | 0.57 | 10.20 | 0.26 | 21.98 |
| HAF4017A | 3.6000 | 50.00% | 860.5000 | 5.15 | 0.00 | 90 | 1.00 | 0.058 | 0.57 | 10.09 | 0.27 | 21.82 |
| HAF4017A | 3.6000 | 50.00% | 868.9875 | 5.15 | 0.00 | 90 | 1.00 | 0.058 | 0.58 | 9.99 | 0.27 | 21.67 |

8.0 Overall highest MPE Value for FCC and ISED

Table 7

| Transmitter | Frequency Band (MHz) | Highest Percentage of Limit% | |
|---------------|----------------------|-------------------------------------|---------------------------------|
| | | Power Density (mW/cm ²) | FCC Limit (mW/cm ²) |
| FCC US | | | |
| LMR VHF | 150.8-173.4 | 0.106 | 53.06 |
| LMR UHF R1 | 406.1-470 | 0.145 | 53.60 |
| LMR UHF R2 | 450-512 | 0.103 | 34.28 |
| LMR 7/800 | 769-869 | 0.058 | 10.70 |

Table 8

| Transmitter | Frequency Band (MHz) | Highest Percentage of Limit% | |
|--------------------|----------------------|-------------------------------------|----------------------------------|
| | | Power Density (mW/cm ²) | ISED Limit (mW/cm ²) |
| ISED Canada | | | |
| LMR VHF | 138-174 | 0.106 | 82.20 |
| LMR UHF | 406.1-430 | 0.145 | 91.41 |
| | 450-470 | 0.103 | 60.37 |
| LMR 7/800 | 768-869 | 0.058 | 22.71 |

9.0 Conclusion

The MPE assessment presented in this report concludes that product family APX 8000 and APX 8000 XE when transmitting at a minimum separation distance of 90 cm from nearby persons is compliant to FCC/ISED General Population / Uncontrolled Environment RF exposure limits.