

Note Model M20KTS9PW1AN FCC ID AZ492FT3808 maximum power is 120W however the maximum power for use with ¼ wave antennas while interfaced with DQPM DVR3000P is 57W as stated in the user manual.

Presented below is a summary of the tested frequencies and associated power outputs for each DUT.

| DVR       |        | Mobile VHF Radios |        |              |        |
|-----------|--------|-------------------|--------|--------------|--------|
|           |        | M20KSS9PW1AN      |        | M20KTS9PW1AN |        |
| Frequency | Po (W) | Frequency         | Po (W) | Frequency    | Po (W) |
| 136       | 6.01   | 147.0125          | 55.6   | 147.4000     | 55.8   |
| 155       | 6.00   | 155.0125          | 55.8   | 155.0000     | 55.6   |
| 174       | 6.08   | 173.9875          | 55.6   | 173.9875     | 55.8   |

**10.0 Test Set-Up Description**

The following are the mobile antenna test configurations used for this product. (for reference, see Illustration of antenna location and test distances in the APPENDIX A)

- a) The ¼ wave 0dBd gain antennas (HAD4007A, HAD4008A, HAD4009A) were assessed while mounted at the center of the roof of the test vehicle.
- b) The ¼ wave 0dBd gain antennas (HAD4006A, HAD4008A, HAD4009A) were assessed while mounted at the trunk.

Assessments were made internal and external to the test vehicle at the specified distances and test locations indicated in sections 6.0, 11.0, and the APPENDIX A.

**11.0 Test Results Summary**

APPENDIX F presents detailed MPE measurement information for each test configuration; person external or internal to the vehicle, TX frequency, antenna (location, model and gain), distance from antenna to probe sensor, E/H field measurements, calibration factor, MPE average over body, initial power, power density calc, power density max calc, IEEE/FCC controlled and uncontrolled limits, and maximum output power.

The Average over Body test methodology is consistent with IEEE/ANSI C95.3-2002 guidelines

MPE results are based on a DVR 100% duty cycle and VHF mobile 50% duty cycle which is in accordance with the User Manual instructions.

Below is an explanation of how the MPE results are calculated.

External to vehicle - 10 measurements are averaged over the body (*Body\_Avg*).  
 Internal to vehicle - 3 measurements are averaged over the body (*Body\_Avg*).  
 Narda Survey Meter measures in percent of the controlled limit. Therefore the averages over the body used in the calculations below reflect percentages.

Therefore;

$$Average\_over\_Body = Body\_Avg * Controlled\_Limit$$

$$Pwr\_Density\_Calc = Average\_over\_Body * Duty\_Cycle$$

$$Pwr\_Density\_Max\_Calc = Pwr\_Density\_Calc * \frac{Max\_Output\_Power}{Initial\_Output\_Power}$$

Note; For Initial Output Power > Max\_Output\_Power, Max\_Output\_Power / Initial Output Power = 1

**The tables below summarize the highest MPE results of the E and H test configurations for the VHF mobiles, DVR, and combined assessments. See APPENDICES A and F respectively for the indicated test positions and detailed MPE measurement data.**

**Table 1 - M20KSS9PW1AN VHF Mobile Assessments – Highest MPE result per test position**

| Tables   | Antenna Model | Antenna Location | Test Frequency (MHz) | E/H Field | Passenger/ By-Stander Pos. | Max Calc Pwr Density (mW/cm <sup>2</sup> ) | % of Uncontrolled limit |
|----------|---------------|------------------|----------------------|-----------|----------------------------|--|-------------------------|
| Table 2  | HAD4007A      | Roof             | 147.0125             | E         | Passenger                  | 0.16                                       | 80.0%                   |
| Table 23 | HAD4009A      | Roof             | 173.9875             | H         | By-Stander Pos. #1         | 0.04                                       | 20.0%                   |
| Table 7  | HAD4007A      | Roof             | 147.0125             | E         | By-Stander Pos. #2         | 0.07                                       | 35.0%                   |
| Table 12 | HAD4009A      | Roof             | 173.9875             | E         | By-Stander Pos. #3         | 0.06                                       | 30.0%                   |
| Table 32 | HAD4008A      | Roof             | 155.0125             | E         | By-Stander Pos. #4         | 0.04                                       | 20.0%                   |
| Table 17 | HAD4008A      | Roof             | 155.0125             | E         | By-Stander Pos. #5         | 0.04                                       | 20.0%                   |

**Table 2 - M20KTS9PW1AN VHF Mobile Assessments - Highest MPE result per test position**

| Tables   | Antenna Model | Antenna Location | Test Frequency (MHz) | E/H Field | Passenger/ By-Stander Pos. | Max Calc Pwr Density (mW/cm <sup>2</sup> ) | % of Uncontrolled limit |
|----------|---------------|------------------|----------------------|-----------|----------------------------|--|-------------------------|
| Table 2  | HAD4007A      | Roof             | 147.4000             | E         | Passenger                  | 0.16                                       | 80.0%                   |
| Table 3  | HAD4008A      | Roof             | 155.0000             | E         | By-Stander Pos. #1         | 0.04                                       | 20.0%                   |
| Table 8  | HAD4008A      | Roof             | 155.0000             | E         | By-Stander Pos. #2         | 0.07                                       | 35.0%                   |
| Table 29 | HAD4008A      | Roof             | 155.0000             | H         | By-Stander Pos. #3         | 0.06                                       | 30.0%                   |
| Table 31 | HAD4007A      | Roof             | 147.4000             | H         | By-Stander Pos. #4         | 0.06                                       | 30.0%                   |
| Table 35 | HAD4008A      | Roof             | 155.0000             | H         | By-Stander Pos. #5         | 0.06                                       | 30.0%                   |

**Table 3 – DQPM DVR3000P - DVR VHF Assessments - Highest MPE result per test position**

| Tables   | Antenna Model | Antenna Location | Test Frequency (MHz) | E/H Field | Passenger/By-Stander Pos. | Max Calc Pwr Density (mW/cm <sup>2</sup> ) | % of Uncontrolled limit |
|----------|---------------|------------------|----------------------|-----------|---------------------------|--|-------------------------|
| Table 6  | HAD4009A      | Trunk            | 174                  | E         | Passenger                 | 0.13                                       | 65.0                    |
| Table 3  | HAD4008A      | Trunk            | 155                  | E         | By-Stander Pos. #1        | 0.03                                       | 15.0                    |
| Table 7  | HAD4006A      | Trunk            | 136                  | E         | By-Stander Pos. #2        | 0.03                                       | 15.0                    |
| Table 10 | HAD4006A      | Trunk            | 136                  | E         | By-Stander Pos. #3        | 0.03                                       | 15.0                    |
| Table 31 | HAD4006A      | Trunk            | 136                  | H         | By-Stander Pos. #4        | 0.06                                       | 30.0                    |
| Table 34 | HAD4006A      | Trunk            | 136                  | H         | By-Stander Pos. #5        | 0.05                                       | 25.0                    |

**Table 4 - Combined VHF Mobile M20KSS9PW1AN and DVR DQPM DVR3000P (Calculated % of limit performance)**

| Test Position | Percentage of Limit       |                      |                      |
|---------------|---------------------------|----------------------|----------------------|
|               | M20KSS9PW1AN (147-174MHz) | DVR VHF (136-174MHz) | Combined Percentages |
| Passenger     | 80.0%                     | 65.0%                | *145.0%              |
| By-Stander #1 | 20.0%                     | 15.0%                | 35.0%                |
| By-Stander #2 | 35.0%                     | 15.0%                | 50.0%                |
| By-Stander #3 | 30.0%                     | 15.0%                | 45.0%                |
| By-Stander #4 | 20.0%                     | 30.0%                | 50.0%                |
| By-Stander #5 | 20.0%                     | 25.0%                | 45.0%                |

\* Exceeds MPE General Population/Uncontrolled exposure limit

**Table 5 - Combined VHF Mobile M20KTS9PW1AN and DVR DQPM DVR3000P (Calculated % of limit performance)**

| Test Position | Percentage of Limit       |                      |                      |
|---------------|---------------------------|----------------------|----------------------|
|               | M20KTS9PW1AN (147-174MHz) | DVR VHF (136-174MHz) | Combined Percentages |
| Passenger     | 80.0%                     | 65.0%                | *145.0%              |
| By-Stander #1 | 20.0%                     | 15.0%                | 35.0%                |
| By-Stander #2 | 35.0%                     | 15.0%                | 50.0%                |
| By-Stander #3 | 30.0%                     | 15.0%                | 45.0%                |
| By-Stander #4 | 30.0%                     | 30.0%                | 60.0%                |
| By-Stander #5 | 30.0%                     | 25.0%                | 55.0%                |

\* Exceeds MPE General Population/Uncontrolled exposure limit

**Table 6 – Highest combined passenger (backseat) MPE percent of limit  
(Reference Appendix E S.A.R. Simulation Results for non-compliant MPE data below)**

|   |                    | XTL5000 VHF 57W Roof Mount |                         |                         |       |
|---|--------------------|----------------------------|-------------------------|-------------------------|-------|
|   |                    | HAD4007A<br>147.0125MHz    | HAD4008A<br>155.0125MHz | HAD4009A<br>173.9875MHz |       |
|   |                    | Measured Results (%)       | 80%                     | 60%                     | 55%   |
| <b>DVR<br/>VHF<br/>6W<br/>Trunk<br/>Mount</b> | HAD4006A<br>136MHz | 40%                        | *120%                   | *100%                   | 95%   |
|   | HAD4008A<br>155MHz | 40%                        | *120%                   | *100%                   | 95%   |
|   | HAD4009A<br>174MHz | 65%                        | *145%                   | *125%                   | *120% |

\* Exceeds MPE General Population/Uncontrolled exposure limit

**12.0 Conclusion**

Because the signals emitted by each individual transmitter are statistically uncorrelated, the collective compliance of the transmitters is determined by summing the individual ratios between actual (S) and maximum allowed (MPE or SAR) exposure. Compliance is achieved if the total exposure level (T) is less than one:

Formula:

$$T = \frac{S_1}{SAR_1} + \frac{S_2}{SAR_2} + \dots < 1 \quad \text{Or} \quad T = \frac{S_1}{MPE_1} + \frac{S_2}{MPE_2} + \dots < 1$$

Depending on the test frequency, both VHF mobile assessments were performed with an output power range of 55.6W – 55.8W. The DVR output power across the TX band is 6.00W – 6.08W. The highest power density results for the XTL5000 VHF mobile devices scaled to the maximum allowable power output is 0.16mW/cm<sup>2</sup> internal to the vehicle and 0.07mW/cm<sup>2</sup> external to the vehicle. The highest power density results for the DVR device scaled to the maximum allowable power output is 0.13mW/cm<sup>2</sup> internal to the vehicle and 0.06mW/cm<sup>2</sup> external to the vehicle. The highest combined power density performance is 145.0% of the FCC/IEEE MPE limits using the methodology and formula below.

Therefore:

Passenger  $T = \frac{0.16}{0.2} + \frac{0.13}{0.2} = 1.45 > 1$  (non-compliant)

By-stander  $T = \frac{0.07}{0.2} + \frac{0.06}{0.2} = 0.65 < 1$  (compliant)

These MPE results demonstrate compliance to the FCC/IEEE Occupational/Controlled Exposure limit.

FCC rules require compliance for passengers and bystanders to the FCC General Population/Uncontrolled limits. Although MPE is a convenient method of demonstrating compliance, SAR is recognized as the "basic restriction". For those configurations exceeding the MPE limit noted in table 6 section 11.0, compliance to the FCC/IEEE SAR General Population/Uncontrolled limit of 1.6mW/g is demonstrated in **Appendix E via SAR computational analysis.**

The computation results show that this device, when used with the specified antennas, exhibit a maximum combined peak 1-g average S.A.R. of 0.27mW/g.

Therefore:

$$\text{Passenger} \quad T = \frac{0.12}{1.6} + \frac{0.15}{1.6} = 0.17 < 1 \quad (\text{compliant})$$