DEPARTMENT OF PUBLIC SAFETY

SPECIFICATIONS FOR KA-BAND RADARS

Scope: These specifications are intended to describe the technical specifications for the purchasing of KA-Band Radars.

1. The vendor must be certified as an ISO 9001 manufacturer and fully comply with the 2014 Made In America Act. Manufactures whose products manufactured outside the United States will not be considered.

2. The unit shall be designed for convenient use by law enforcement agencies to accurately measure the speed of motor vehicles while operating from a stationary or moving patrol vehicle. The traffic radar unit shall be tested and listed on the International Association of Chiefs of Police's Conforming Products List (CPL). The unit shall have an accuracy of ±1 mph when in stationary mode and ±2 mph when in moving mode opposite and same direction modes.

3. The radar shall be comprised of: a computer/counting unit, readout unit, two (2) antennas and a handheld remote control unit capable of being used as either a wireless or wired unit. It must be capable of being operated in either mph or kph. Each counting/display unit shall have a Digital Signal Processor (DSP) to control the unit, count the input speeds from the antenna and control all other functions. Units using a microprocessor and calling it a Digital Speed Processor will not be considered.

4. The counting/display unit shall be capable of being separated and small enough to be mounted on the dash of the patrol vehicle or mounted in the center console radio rack.

5. The antenna shall be no larger than 2.5" in diameter, 4.6" in length. The front antenna cable shall be 8' in length and the rear antenna cable shall be 16' in length.

6. The remote control shall have the ability to operate as a wireless (using IR technology) or a wired remote. The remote control must be capable of easily being changed in the field from wireless to wired. When operated as a wireless remote control it must operate on alkaline (AAA) or (AA) batteries.

7. The readout unit shall have the capability to automatically dim the display windows and perform functional tests of the display segments and internal circuits. The readout unit will also have three display windows, one for patrol, one for target and one for locked speed. The Target window must be Amber in color, the Fast/Lock window red in color and the Patrol window green in color. Units that provide only one color of displays will not be considered. There also will be an LED or alpha indication

designated in one of the display windows for low voltage and radio interference (rfi). During low voltage or rfi conditions the radar shall not display any active speed indication. Digital Signal Processing (DSP) technology will be utilized in the unit. The radar must be capable of field upgrades to software to allow new or additional features.

8. The counting/display unit shall have the ability to monitor target vehicles either approaching or going away from the radar unit while in stationary mode. In the moving mode, the unit must be capable of monitoring and displaying the speed of on-coming vehicles and have a mode that allows the operator to track vehicles traveling in the same direction as the patrol vehicle.

9. In the stationary mode, the unit must be capable of displaying the strongest and the highest speed target in range of the radar unit. Radar units displaying only the strongest and next stronger, faster targets will not be considered. The unit shall have a minimum target speed of 12 mph to at least 200 mph.

10. In the moving mode, opposite direction, the unit must be capable of displaying the patrol speed from 5 mph to over 130 mph and tracking both the strongest and highest speed target vehicles to a maximum combined speed of 200 mph. Radar units displaying only the strongest and next stronger, faster targets will not be considered.

11. In the moving mode, same direction, the unit must be capable of displaying a same direction target traveling either faster or slower than the patrol vehicle without any input from the operator. The unit must be capable of monitoring same direction vehicles that are at least 3 mph different in speed to a maximum of 70% of patrol speed difference in speed.

12. The radar unit shall have the ability to communicate with a computer, in-car video system or other electronic devices within the patrol vehicle through a communications port.

13. The radar unit shall have a power switch on the front panel. All other function switches for the unit shall be contained on the remote control to reduce the overall size of the display while allowing for the largest display size available.

14. The radar unit shall have a Doppler audio function. The speaker shall be mounted in either the counting unit or display. The pitch of the audio shall correlate directly with the speed of the target vehicle. The pitch/tone shall increase as the speed of the target vehicle increases.

15. Each antenna shall operate in the Ka-Band frequency range of 33.4 GHz to 36.0 GHz, with a tolerance over the operating range of -22°F to +140°F of ±0.1 GHz. The antenna shall have a connector on the rear of the

housing but also be capable of being ordered with the connector on the side of the unit to provide a 90° outlet connector.

16. The antenna shall provide a digital communications with the counting/display unit to prevent ambient EMI and RFI noise from creating false speeds in the radar unit. Units that provide an analog output going to the counting/display unit will not be considered.

17. Each antenna shall contain a double balanced mixer diode to better eliminate noise and increase targeting range. The beam width shall be no greater than 13° when measured at the half-power point and have any side lobe and rear lobe radiation reduced by -24 dB from the main lobe. Each antenna must meet the FCC Part 90 requirements.

18. The counting/display unit must be capable of operating from 9 VDC to 16 VDC and be reverse voltage protected. The unit must have a replaceable fuse or internal, resettable fuse protection for over current conditions. The unit must also have a means of protection from over voltage conditions that may exist in a police vehicle.

19. The manufacturer must provide two (2) certified tuning forks to be used for testing of the radar unit. Each fork must have an individualized serial number and be stamped with the frequency band of operation.

20. The radar unit shall have the ability to connect to the OBD II diagnostic port in every patrol vehicle to obtain +12 volts DC, ground and VSS (Vehicle Speed Sensor) information to direct the unit where to look for proper patrol speed. VSS cable must be provided. This eliminates combining, shadowing, splitting speeds and other anomalies of moving mode radar. Units that use the VSS information as patrol speed will not be considered. The successful vendor must also have available, as an option, a hardwired VSS solution as well. Units that do not provide or have a VSS port will not be considered.

21. The successful bidder shall provide a technical service factory class room environment training program at no additional cost to the MS Department of Public Safety. The program shall be technical in nature but must include sufficient hands-on instruction on the operational aspects for the radar unit that is being bid. These must be experienced instructor(s) and familiar with the operating characteristics and repair/maintenance of the radar unit.

22. The successful bidder shall provide a product training program to the MS Department of Public Safety. This includes proper setup, testing and operation of the radar unit bid.

23. The successful bidder will be required to provide a list of any and all test equipment recommended for servicing the radar unit by the MS Department of Public Safety maintenance group.

24. The successful bidder shall provide one (1) Operator's Manual with each unit and three (3) technical service manuals per order to the MS Department of Public Safety. These manuals must contain a complete parts list of all replacement parts in the radar unit. The successful bidder shall provide schematics for the radar unit being purchased.

25. **WARRANTY:** The manufacturer shall be responsible for: all parts, and repair costs, at the factory, incurred as a result of warranty requirements for a warranty period of at least 36 months from the date the radar is put into service. All repairs under warranty shall be performed at the factory. All shipping charges to and from the factory will be the responsibility of the Manufacturer.

26. All Antenna Mounting Brackets will be metal (not plastic). The front antenna bracket shall be designed for windshield mounting, and the rear bracket shall be designed for mounting to the rear deck of the car.

27. All cables shall be shielded and in the lengths specified above.

28. The lowest bidder must provide a sample Ka-Band Radar to be approved and tested by the MS Department of Public Safety within (5) working days after the bid opening. If the sample Ka-Band Radar does not meet the specifications, then MDPS will contact the next lower bidder to obtain a sample Ka-Band Radar system.

29. Bidder must supply at least three (3) references and locations of purchasers of at least fifty (50) units of this type within the last three (3) years if requested by the Department of Public Safety / Highway Patrol.