FEDERAL SIGNAL CORPORATION
Federal Warning Systems

INFORMER
TONE-ALERT RADIO
SPECIFICATIONS

TONE-ALERT RADIO SPECIFICATION

GENERAL PRODUCT DESCRIPTION

The Tone Alert Radio (TAR) offered to meet this RFQ must be capable of simultaneously decoding multiple formats (single-tone, two-tone, DTMF, and optionally EAS or FSK Digital).

The TAR must be a robust radio receiver with a loudspeaker output designed specifically for warning applications. The unit must be capable of both wall mounting or sitting on a desktop and must include a rubber duck antenna that can be removed for connection to an outside antenna. The TAR must have a battery and charger to provide reliable operation even in the event of an AC power failure.

The TAR must be programmable with up to four separate warning tones plus a channel monitor function for live PA announcements. Two programmable relay outputs and a 600-ohm audio output must also be available. These outputs must be capable of controlling other equipment such as a strobe light for warning the hearing impaired or to tie into external PA systems.

The TAR must be capable of supporting up to four separate RF channels. The channels must be easily selected from the keypad.

The TAR must be completely programmable over a built in RS232 port from an easy to use Windows 95/98® based software program. All data must stored in non-volatile FLASH and EE memory. Using this technology, both the application software and the user specific configuration data must be capable of being updated over the serial port without the need to disassemble the unit or burn IC chips.

TAR SPECIFICATIONS

1. This RFQ is for a Quantity of _____ Tone-Alert Radios

2. The Radio must support up to six activation codes include simultaneous decode capability of single-tone, two-tone, and DTMF standard with the option of also simultaneously decoding the National Weather Service Emergency Alert System (EAS/SAME) protocol or a FSK protocol.

3. The Radio must be available in VHF Low Band (33-50Mhz), VHF High Band (150-174Mhz), and UHF (450-470Mhz) frequencies. The radio receiver must be field tunable across the entire band.

4. The Radio must be field programmable via a Windows based software program which allows configuration of radio frequency, Alert Codes, Tone and Digital coded squelch, Test LED, Speaker Timing, Audible Alarms, Monitor options, Relay Output, and Relay Timing.

5. The Radio must include two independently operated and programmable SPDT relays capable of controlling external devices rated up to 5amps @ 30VDC.

6. The Radio must also include a 600-Ohm adjustable balanced audio output

capable of tying the radio into an existing PA system or other externally amplified speaker systems.

7. The Radio must be capable of producing a minimum sound pressure output of 85dB @ 10ft and should have the capability of adjusting the voice messaging volume from a high of 85dB to a low of 55dB at 10ft. The end-user should not be capable of disabling the speaker output.

8. Minimum of four standard alert tones (Steady, Beep, Hi-Lo, and Warble)

9. The Tone-Alert Radio must operate from a 120VAC UL certified wall transformer and include a sealed lead-acid battery backup equal to 1 ½ hours of full alert tone sounding. The unit must include a continuous trickle charger and a low-battery cut-off to protect the battery. During a power failure, an automatic switch-over to battery operation must occur to maintain the Tone-Alert Radio's normal operation. Original and replacement batteries must be readily available from standard industrial suppliers.

10. The Radio must comply with all applicable government regulatory specifications, and be third-party listed to UL 1270 and must also comply with FCC Title 47, Part 15B.

11. Manufacturer must be ISO 9001 Certified

12. Parts and service must be expedient and reliable.

13. The TAR must meet the following Radio Specifications:

- **Antenna Impedance**   50 Ohms, +/- 10 Ohms

- **Antenna Type**   Rubber duck with swivel BNC connector

Frequency Range (MHz)	33 – 50	150 – 174	450 - 470
Intermodulation Rejection per EIA-603, part 4.1.9	$\geq$ -67	$\geq$ -70	$\geq$ -62
Adjacent Channel Selectivity per EIA-603, part 4.1.6	$\geq$ -64	$\geq$ -80	$\geq$ -55
Spurious Response & Image Rejection (dBm) per EIA-603, part 4.1.8	$\geq$ -80	$\geq$ -80	$\geq$ -75
Frequency spread allowable without re-tuning (MHz)	+/-4.9	+/-1.5	+/-10.6

- **Sensitivity - 12dB SINAD** $\leq$ .35 μ for 12dB SINAD per EIA-603, part 4.1.4

- **Decode Sensitivity** $\leq$ 0.5 μ V

- **Operating Current**   < 100 mA. Standby
                             <400 mA. Max.

- **Battery Capacity**   Internal sealed Lead-Acid, capable of running for 6 hours in standby mode w/ 15 minutes of each hour generating siren beep audio at rated audio output, (Based on Pulsed Tone audio). Low voltage cutoff set to 5.38 VDC +/- 0.1 VDC.

- **Operating Voltage**   8 to 15 VDC, Unit supplied with a 9 VDC, 500 mA. wall transformer with a 120 VAC, 60 Hz primary Center terminal is positive (+) on the DC connector.

- **Hum and Noise**   -37dB when unsquelched, -57dB squelched relative to full quieting signal w/ 1 kHz tone @ 3 kHz deviation @ rated audio out per EIA-603, part 4.1.11

- **Audio Output**   1 Watt into 8 ohms

- **Audio Distortion**   < 5% @ 85dB output, w/1 kHz tone.

- **Audio Sensitivity** $\leq$ 30% of nominal system deviation (1.5 kHz minimum deviation to produce 85dB audio output level w/ volume control @ full per EIA-603, part 4.1.1.7)

- **Electromagnetic Interference**   Compliant w/ FCC Title 47, Part 15B

TAR OPERATION

1. Monitoring

The TAR must be capable of being programmed to monitor the radio frequency of _____ MHz.

Pushing the **MONITOR** button will place the TAR in monitor mode and allow the end-user to begin listening to the programmed channel. If multiple RF channels have been programmed into the TAR, the TAR will beep once for each channel number when the **MONITOR** button is pressed. For example, the first time the **MONITOR** button is pressed the TAR will beep once for channel 1. The second time it is pressed, it will beep twice for channel 2, etc.

The TAR must emit a short tone to alert the user after a valid **ALERT** message is received. The speaker must open up to allow a voice announcement to be heard.

To discontinue monitoring and place the unit in standby mode, the end-user presses the **RESET** button on the TAR. While in standby, the TAR will not be heard but will continue to monitor the selected NOAA radio channel for emergency broadcasts.

2. Receiving an Alert Message

Whenever the TAR receives a valid **ALERT** Message, the Red **ALERT** LED must flash and sound the programmed alert tone. The TAR must enter Monitor mode to enable the user to hear radio traffic over the TAR. The length of the tone and automatic Monitor mode reset must be programmable.

The TAR must receive ALL properly addressed **ALERT** messages sent over the radio whether the TAR is in Monitor mode or standby mode.

The TAR must automatically reset and return to standby when the control center sends a **CANCEL** command or after a default timeout. The Red **ALERT** LED must remain lit until you press the **RESET** button to acknowledge the alert.

3. Receiving a Test Message

If the TAR has been programmed with a **TEST** function, the yellow **TEST** LED must light steady whenever a Test Message has been received. This light must remain on until the **RESET** button is pressed.

4. Volume Control

The TAR must offer the ability to control the sound volume of voice messages heard over the TAR speaker. The Alert beep volume should not be adjustable. The TAR should include **VOLUME** - and **VOLUME** ⁻ buttons for increasing or decreasing the volume. Holding down either arrow should allow the end-user to "scroll" to the highest or lowest volume levels.

Holding down the **MONITOR** button for over 5 seconds should open up the radio squelch and allow noise to be hear over the speaker if no radio traffic is present. The **RESET** button should return the TAR to standby.

5. Tone-Alert Radio Failure

In the event of unit failure, the yellow **TEST** LED light must flash once per second and the unit must emit a beep every 30 seconds to inform the user of the failure mode.

WARRANTY

The seller must warrant the Tone-Alert Radio from the date of receipt for a period of not less than one (1) years for defects in electrical components, and mechanical components when adequately maintained in accordance with instructions.

PAYMENT

Payment for equipment shall be made within 30 Days of invoice.

REFERENCES

All responding bidders shall provide a minimum of 5 users of the proposed product.

INTENTIONS

These specifications are not intended to include any proprietary items, components, circuits, or devices which would preclude any outdoor warning siren manufacturer from producing equipment to meet these specifications. All ratings, power outputs, and specific criteria are currently being met by commercially available equipment. The fact that a manufacturer chooses not to produce equipment to meet these specifications, providing the above criteria is met, will not be sufficient cause to adjudge these specifications as restrictive.

EXCEPTIONS

All bidders must meet the **TAR REQUIREMENTS.**   Bidders must note any exception to the specifications and indicate those specific exceptions to the bid in a letter accompanying the bid at the time of the bid opening.

RESERVATION OF RIGHTS

The City reserves the right to reject any or all bids and to waive any formalities or technicalities in any bid received without explanation.

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