

**West Virginia State Police**

**Bid For**

**UHF and VHF Digital Mobile Radios and Accessories**

**August 25, 2010**

**1:30 PM**

**VASU**  
**COMMUNICATIONS INC.**

**2432 Ridgeland Dr.  
Avon, OH 44011  
(440) 934-5268  
(440) 934-4679 (FAX)**

**1324 N. Main St.  
Mansfield, OH 44903  
(419) 524-7970  
(419) 524-8262 (FAX)**



August 19, 2010

State of West Virginia  
Purchasing Division  
2019 Washington St. E  
Charleston, WV 25305

Re: RFQ # DPS1102

Enclosed is our bid proposal for DPS1102 for UHF and VHF Digital Mobile two-way radios for the state police.

Terms: Net 30  
Delivery: 30 Days ARO  
Warranty: 3 Years Parts and Labor

Vasu Communications has proposed equipment that we feel will meet and exceed your requirements. We have a fully compliant bid with exceptions as noted. We have based our bid on years of experience in both types of equipment and system design. The State of West Virginia has a history of using our company and I am sure that we have proven to be a competent and worthy supplier.

After you have reviewed our bid, we will be available to further discuss our proposal.

Sincerely,

A handwritten signature in black ink, appearing to read "Donna M. Vasu", is written over a horizontal line.

Donna M. Vasu  
President

Enclosures



State of West Virginia  
 Department of Administration  
 Purchasing Division  
 2019 Washington Street East  
 Post Office Box 50130  
 Charleston, WV 25305-0130

# Request for Quotation

RFQ NUMBER  
**DPS1102**

PAGE  
**1**

ADDRESS CORRESPONDENCE TO ATTENTION OF  
**BUYER 32**  
**304-558-2544**

**\*709023510 440-934-5268**  
**VASU COMMUNICATIONS INC**  
**PO BOX 236**  
**2432 RIDGELAND DR**  
**AVON OH 44011**

**WEST VIRGINIA STATE POLICE**  
  
**4124 KANAWHA TURNPIKE**  
**SOUTH CHARLESTON, WV**  
**25309 304-746-2141**

DATE PRINTED: **08/11/2010**    TERMS OF SALE: **Net 30**    SHIP VIA:    F.O.B.:    FREIGHT TERMS:

ID OPENING DATE: **08/25/2010**    BID OPENING TIME: **01:30PM**

LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
<b>001</b>	<b>1</b>	<b>EA</b>		<b>725-74</b>	<b>See Cost Sheet</b>	
<p><b>VHF / UHF DIGITAL MOBILE RADIOS</b></p> <p><b>OPEN-END CONTRACT TO PROVIDE VHF &amp; UHF DIGITAL MOBILE RADIOS FOR THE WEST VIRGINIA STATE POLICE, PER THE ATTACHED SPECIFICATIONS.</b></p> <p><b>EXHIBIT 1</b></p> <p><b>LIFE OF CONTRACT: THIS CONTRACT BECOMES EFFECTIVE ON ..... AND EXTENDS FOR A PERIOD OF ONE (1) YEAR OR UNTIL SUCH "REASONABLE TIME" THEREAFTER AS IS NECESSARY TO OBTAIN A NEW CONTRACT OR RENEW THE ORIGINAL CONTRACT. THE "REASONABLE TIME" PERIOD SHALL NOT EXCEED TWELVE (12) MONTHS. DURING THIS "REASONABLE TIME" THE VENDOR MAY TERMINATE THIS CONTRACT FOR ANY REASON UPON GIVING THE DIRECTOR OF PURCHASING 30 DAYS WRITTEN NOTICE.</b></p> <p><b>UNLESS SPECIFIC PROVISIONS ARE STIPULATED ELSEWHERE IN THIS CONTRACT DOCUMENT, THE TERMS, CONDITIONS, AND PRICING SET HEREIN ARE FIRM FOR THE LIFE OF THE CONTRACT.</b></p> <p><b>RENEWAL: THIS CONTRACT MAY BE RENEWED UPON THE MUTUAL WRITTEN CONSENT OF THE SPENDING UNIT AND VENDOR, SUBMITTED TO THE DIRECTOR OF PURCHASING THIRTY (30) DAYS PRIOR TO THE EXPIRATION DATE. SUCH RENEWAL SHALL BE IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF THE ORIGINAL CONTRACT AND SHALL BE LIMITED TO TWO (2) SUCCESSIVE ONE (1) YEAR PERIODS.</b></p>						

**RECEIVED**  
**2010 AUG 23 A 9:51**  
**PURCHASING DIVISION**  
**STATE OF WV**

SIGNATURE: *[Signature]*    TELEPHONE: **440-934-5268**    DATE: **8-19-10**  
 TITLE: **President**    FEIN: **34-1633623**    ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'



State of West Virginia  
 Department of Administration  
 Purchasing Division  
 2019 Washington Street East  
 Post Office Box 50130  
 Charleston, WV 25305-0130

# Request for Quotation

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DATE PRINTED	TERMS OF SALE	SHIP VIA	F.O.B.	FREIGHT TERMS
08/11/2010				

BID OPENING DATE: **08/25/2010** BID OPENING TIME **01:30PM**

LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
<p><b>CANCELLATION: THE DIRECTOR OF PURCHASING RESERVES THE RIGHT TO CANCEL THIS CONTRACT IMMEDIATELY UPON WRITTEN NOTICE TO THE VENDOR IF THE COMMODITIES AND/OR SERVICES SUPPLIED ARE OF AN INFERIOR QUALITY OR DO NOT CONFORM WITH THE SPECIFICATIONS OF THE BID AND CONTRACT HEREIN</b></p> <p><b>OPEN MARKET CLAUSE: THE DIRECTOR OF PURCHASING MAY AUTHORIZE A SPENDING UNIT TO PURCHASE ON THE OPEN MARKET, WITHOUT THE FILING OF A REQUISITION OR COST ESTIMATE, ITEMS SPECIFIED ON THIS CONTRACT FOR IMMEDIATE DELIVERY IN EMERGENCIES DUE TO UNFORESEEN CAUSES (INCLUDING BUT NOT LIMITED TO DELAYS IN TRANSPORTATION OR AN UNANTICIPATED INCREASE IN THE VOLUME OF WORK).</b></p> <p><b>INSURANCE: SUCCESSFUL VENDOR SHALL FURNISH PROOF OF COVERAGE OF COMMERCIAL GENERAL LIABILITY INSURANCE PRIOR TO ISSUANCE OF THE CONTRACT. UNLESS OTHERWISE SPECIFIED IN THE BID DOCUMENTS, THE MINIMUM AMOUNT OF INSURANCE COVERAGE REQUIRED IS \$250,000.</b></p> <p><b>WORKER'S COMPENSATION: VENDOR IS REQUIRED TO PROVIDE A CERTIFICATE FROM WORKER'S COMPENSATION IF SUCCESSFUL.</b></p> <p><b>BANKRUPTCY: IN THE EVENT THE VENDOR/CONTRACTOR FILES FOR BANKRUPTCY PROTECTION, THIS CONTRACT IS AUTOMATICALLY NULL AND VOID, AND IS TERMINATED WITHOUT FURTHER ORDER.</b></p> <p><b>REV. 9/98</b></p> <p><b>EXHIBIT 4</b></p> <p><b>LOCAL GOVERNMENT BODIES: UNLESS THE VENDOR INDICATES IN THE BID HIS REFUSAL TO EXTEND THE PRICES, TERMS,</b></p>						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE	TELEPHONE	DATE
-----------	-----------	------

LE FEIN ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO REQ. INSERT NAME AND ADDRESS IN SPACE ABOVE LABELLED 'VENDOR'



## VHF and UHF DIGITAL MOBILE RADIO SPECIFICATIONS

The West Virginia State Police desires to establish an open-end contract for the purchase of digital mobile radio equipment and related accessories. The contract shall be available for use by the WV Division of Natural Resources Law Enforcement Section and all other entities of state government, as well as counties and municipalities as this will assist in the State's Interoperable Radio Project.

The agency has placed the digital P-25 mobile radio equipment into two different tiers according to their performance capabilities and features of each unit. The two tiers will be referred to as Tier-1 and Tier-2 hereinafter and are outlined below. It should be noted the award of this contract may result in a split award between Tiers.

		Comply?	
		Yes	No
<b>1. <u>TIER 1 – APCO P-25 greater than 512 channel mobile radio</u></b>			
<b>Tier 1: No Bid on Item #1</b>			
<b>1.1</b>	<b>ITEM #1 – 40 Watt UHF Digital Mobile – P-25 Trunking ready (includes P-25 CAI)</b>		
1.1.1	A mobile under dash type radio (one piece) capable of operating in the 380 - 470 MHz band shall be provided.	_____	_____
1.1.2	Radio shall be capable via programming of wide band and narrow band operation (12.5 kHz/25 kHz respectively), and capable of storing more than 512 channels.	_____	_____
1.1.2.1	Each channel shall be individually programmable with regard to wideband/narrowband operation, digital/analog operation, and/or trunked/non-trunked operation.	_____	_____
1.1.3	There shall be no limitations in the radio with regard to what channels may be programmed into the radio in a given bank and in a particular mix of channels/talkgroups.	_____	_____
1.1.3.1	All currently licensable frequencies shall be considered acceptable to the unit.	_____	_____

		Comply?	
		Yes	No
1.1.4	It shall have maximum dimensions of 7.5" W x 3.5" H x 11" D.	_____	_____
1.1.5	Channel indication shall be by way of an alphanumeric display containing a minimum of 14 digits.	_____	_____
1.1.6	If the front panel is sloped, the amount of slope shall not be greater than 20 degrees.	_____	_____
1.1.7	Radio shall have ID display capability.	_____	_____
1.1.8	Radio shall have programmable encode and decode capability for both CTCSS tones and digital coded squelch with a minimum of one pair of tones, not necessarily the same, for each programmed channel.	_____	_____
1.1.9	It shall transmit with a minimum of 40 watts RF output.	_____	_____
1.1.10	Receiver audio stage shall be capable of a minimum of 7.5 watts of audio.	_____	_____
1.1.11	The speaker shall be driven by this audio amplifier and must be capable of dissipating the entire audio capability.	_____	_____
1.1.11.1	An external speaker will be provided with the unit.	_____	_____
1.1.11.2	When the external speaker is in use, any internal speaker shall be capable of being disabled.	_____	_____
1.1.11.3	If the internal speaker is mounted on the radio front panel, then the external speaker may be deleted, but must still be capable of using same.	_____	_____
1.1.12	A standard microphone shall be provided.	_____	_____
1.1.13	A mike hangup shall be provided.	_____	_____
1.1.14	Radio shall include software for P-25 CAI and P-25 Trunked operation.	_____	_____

		Comply?	
		Yes	No
1.1.14.1	This shall include any other software necessary to enable seamless roaming operation on the WVIRP radio system presently being installed in West Virginia, and shall be capable of supporting multiple zone operation.	_____	_____
<b>1.2 ITEM #2 -- 40 Watt VHF Digital Mobile -- P-25 CAI ready</b>			
1.2.1	A mobile under dash VHF type radio (one piece) capable of operating in the 136-174 MHz band shall be provided.	<u>  X  </u>	_____
1.2.2	Radio shall be capable via programming, of wide band and narrow band (15 kHz/30 kHz respectively) operation, and capable of storing more than 512 channels.	<u>  X  </u>	_____
1.2.2.1	Each channel shall be individually programmable with regard to wideband/narrowband operation, digital/analog operation, and/or trunked/non-trunked operation.	<u>  X  </u>	_____
1.2.3	There shall be no limitations in the radio with regard to what channels may be programmed into the radio in a given bank and in a particular mix of channels/talkgroups.	<u>  X  </u>	_____
1.2.3.1	All currently licensable frequencies shall be considered acceptable to the unit.	<u>  X  </u>	_____
1.2.4	It shall have maximum dimensions of 7.5" W x 3.5" H x 11" D.	<u>  X  </u>	_____
1.2.5	Channel indication shall be by way of an alphanumeric display containing a minimum of 14 digits.	<u>  X  </u>	_____



		Comply?	
		Yes	No
1.2.6	Radio shall have ID display capability.	<u>  X  </u>	_____
1.2.7	Radio shall have programmable encode and decode capability for CTCSS tones, digital coded squelch, and NAC codes, with a minimum of one pair of tones, not necessarily the same, for each programmed channel.	<u>  X  </u>	_____
1.2.8	It shall transmit with a minimum of 40 watts RF output.	<u>  X  </u>	_____
1.2.9	Receiver audio stage shall be capable of a minimum of 7.5 watts of audio.	<u>  X  </u>	_____
1.2.10	The speaker shall be driven by this audio amplifier and must be capable of dissipating the entire audio capability.	<u>  X  </u>	_____
1.2.10.1	An external speaker will be provided with the unit.	<u>  X  </u>	_____
1.2.10.2	When the external speaker is in use, any internal speaker shall be capable of being disabled.	<u>  X  </u>	_____
1.2.10.3	If the internal speaker is mounted on the radio front panel, then the external speaker may be deleted, but must still be capable of using same.	<u>  X  </u>	_____
1.2.11	A standard Microphone shall be provided.	<u>  X  </u>	_____
1.2.12	A mike hangup shall be provided.	<u>  X  </u>	_____
<b>2. <u>TEIR 2 – APCO P-25 512 channel mobile radio</u></b>			
<b>2.1 ITEM #3 - UHF Digital Mobile – P-25 Trunking ready (includes P-25 CAI)</b>			
2.1.1	A mobile under dash type radio (one piece) capable of operating in the 400 - 470 MHz band shall be provided.	<u>  X  </u>	_____
2.1.2	Radio shall be capable via programming of wide band and narrow band operation (12.5 kHz/25 kHz respectively), and capable of storing a minimum of 512 channels.	<u>  X  </u>	_____

		Comply?	
		Yes	No
2.1.2.1	Each channel shall be individually programmable with regard to wideband/narrowband operation, and digital/analog operation, and/or trunked/non-trunked operation	<u>  X  </u>	_____
2.1.3	There shall be no limitations in the radio with regard to what channels may be programmed into the radio in a given bank and in a particular mix of channels/talkgroups.	<u>  X  </u>	_____
2.1.3.1	All currently licensable frequencies shall be considered acceptable to the unit.	<u>  X  </u>	_____
2.1.3.2	It shall be capable of storing a minimum of 512 channels.	<u>  X  </u>	_____
2.1.4	It shall have maximum dimensions of 7.5" W x 3.5" H x 11" D.	<u>  X  </u>	_____
2.1.5	Channel indication shall be by way of an alphanumeric display containing a minimum of 12 digits.	<u>  X  </u>	_____
2.1.6	Radio shall have ID display capability.	<u>  X  </u>	_____
2.1.7	If the front panel is sloped, the amount of slope shall not be greater than 20 degrees.	<u>  X  </u>	_____
2.1.8	Radio shall have programmable encode and decode capability for both CTCSS tones and digital coded squelch with a minimum of one pair of tones, not necessarily the same, for each programmed channel.	<u>  X  </u>	_____
2.1.9	It shall transmit with a minimum of 40 watts RF.	<u>  X  </u>	_____
2.1.10	Receiver audio stage shall be capable of a minimum of 7 watts of audio.	<u>  X  </u>	_____
2.1.11	An external speaker will be provided with the unit.	<u>  X  </u>	_____
2.1.12	A standard microphone shall be provided.	<u>  X  </u>	_____
2.1.13	A mike hangup shall be provided.	<u>  X  </u>	_____
2.1.14	Radio shall include software for P-25 CAI and P-25	<u>  X  </u>	_____

		Comply?	
		Yes	No
Trunked operation.			
2.1.14.1	This shall include any other software necessary to enable seamless roaming operation on the WVIRP radio system presently being installed in West Virginia, and shall be capable of supporting multiple zone operation.	<u>  X  </u>	_____
2.1.15	Radio shall have accessory connections available via DB-9, DB-15, or DB-25 connector containing at least Transmit audio input, Receive audio output, Push-to-Talk, COR (or equivalent) output. If proprietary connector is used, an adapter cable (connector) shall be provided to enable connection to DB type connector.	<u>  X  </u>	_____
<b>2.2 ITEM #4 - 40 Watt VHF Digital Mobile – P-25 CAI ready</b>			
2.2.1	A mobile under dash type radio (one piece) capable of operating in the 150-174 MHz band shall be provided.	<u>  X  </u>	_____
2.2.2	Radio shall be capable via programming of wide band and narrow band (15 kHz/30 kHz respectively) operation, and capable of storing a minimum of 512 channels.	<u>  X  </u>	_____
2.2.2.1	Each channel shall be individually programmable with regard to wideband/narrowband operation, and digital/analog operation.	<u>  X  </u>	_____
2.2.3	There shall be no limitations in the radio with regard to what channels may be programmed into the radio in a given bank and in a particular mix of channels/talkgroups.	<u>  X  </u>	_____
2.2.3.1	All currently licensable frequencies shall be considered acceptable to the unit.	<u>  X  </u>	_____
2.2.3.2	It shall be capable of storing a minimum of 512 channels.	<u>  X  </u>	_____
2.2.4	It shall have maximum dimensions of 7.5" W x 3.5" H x 11" D.	<u>  X  </u>	_____

		Comply?	
		Yes	No
2.2.5	Channel indication shall be by way of an alphanumeric display containing a minimum of 12 digits.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2.2.5.1	Radio shall have ID display capability.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2.2.6	If the front panel is sloped, the amount of slope shall not be greater than 20 degrees.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2.2.7	Radio shall have programmable encode and decode capability for both CTCSS tones and digital coded squelch with a minimum of one pair of tones, not necessarily the same, for each programmed channel.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2.2.8	It shall transmit with a minimum of 40 watts RF.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2.2.9	Receiver audio stage shall be capable of a minimum of 7 watts of audio.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2.2.9.1	An external speaker will be provided with the unit.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2.2.10	A standard microphone shall be provided.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2.2.11	A mike hangup shall be provided.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2.2.12	Radio shall include all software to operate at least to P-25 CAI standards compatible with the WV DNR Law Enforcement Section VHF radio system.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>3. <u>GENERAL SPECIFICATIONS AND WARRANTY</u></b>			
3.1	All UHF radios being offered for purchase must have previously been approved for use on the West Virginia Interoperable Radio Project system. To see an approved list go to: <a href="http://www.wvirp.com/documents/WVIRP%20Approved%20Subscriber%20Unit%20List_040808.pdf">http://www.wvirp.com/documents/WVIRP Approved Subscriber Unit List_040808.pdf</a> or follow the link to the current <a href="#">WV IRP Approved Subscriber Unit Listing</a> .	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3.2	Upon request and/or prior to bid award vendors shall provide manufacturer's certification indicating they are an authorized reseller of the product(s) they are offering/bidding.	<input checked="" type="checkbox"/>	<input type="checkbox"/>

	Comply?	
	Yes	No
3.3 All equipment shall be warranted for a period of 3 years, including parts and labor, and beginning when the equipment is first placed in service.	<u>X</u>	_____
3.4 All features that are placed in the radio by way of programming or feature encoding will remain for the life of the radio.	<u>X</u>	_____
3.4.1 Any lost feature information (ie. # of channels, type of radio, etc) will be replaced (provided) at no charge for the life of the radio.	<u>X</u>	_____
3.5 All firmware upgrades to enhance radio operation will be free of charge. (This is not intended to include radio options that would incur additional cost).	<u>X</u>	_____
3.6 All programming software updates shall be free of charge during the warranty period of the radio.	<u>X</u>	_____
3.7 All items are to be available for purchase separately and each item is to be individually priced.	<u>X</u>	_____
3.8 Each item bid should include make and model on Attachment II: Equipment List.	<u>X</u>	_____
3.9 UHF Radios must include AES encryption. This shall include any hardware, firmware, and/or software necessary.	<u>X</u>	_____
3.9.1 Radio shall be capable of holding multiple encryption keys.	<u>X</u>	_____
3.10 All encryption keyloading shall be capable via a Motorola KVL3000 Plus.	<u>X</u>	_____
3.10.1 A keyloading cable compatible with the Motorola KVL3000 Plus shall be included as an option.	<u>X</u>	_____
<b>4. <u>COMPATIBILITY</u></b>		
4.1 Any modifications necessary to make this equipment operate properly with other provided equipment are to be the responsibility of the vendor.	<u>X</u>	_____

	Comply?	
	Yes	No
4.2 All programming and jumper settings must be performed prior to delivery for operation with any other equipment in this specification.	<u>  x  </u>	<u>      </u>
4.3 All equipment shall function without unintended interaction and interference to other components.	<u>  x  </u>	<u>      </u>
4.4 Any software or hardware deemed necessary for these products to operate in the WVIRP system (UHF), or WVDNR system (VHF), yet excluded by the vendor will be provided after purchase at no charge to the purchaser. All upgrades to facilitate installation of this hardware or software will be the responsibility of the vendor and shall be undertaken at no charge to the purchaser.	<u>  x  </u>	<u>      </u>
<b>5. <u>SERVICE MANUALS</u></b>		
5.1 Schematics will be available and provided as specified.	<u>  x  </u>	<u>      </u>
5.2 A minimum of 6 complete depot level service/repair manuals will be provided.	<u>  x  </u>	<u>      </u>
5.3 If greater than 30 radios are provided, service/repair manuals shall be provided in a ratio of 1 manual per 5 radios.	<u>  x  </u>	<u>      </u>
5.4 If greater than 50 radios are provided, service/repair manuals shall be provided in a ratio of 1 manual per 10 radios after fulfilling minimum requirements.	<u>  x  </u>	<u>      </u>
5.5 If depot level service manuals are provided in digital media, requirements for paper manuals do not need to be considered. Manuals shall be complete and include schematics for all hardware. Digitally provided service manuals shall not be copy protected and may be duplicated by the purchaser for their own use.	<u>  x  </u>	<u>      </u>
5.6 Any failure to comply will be grounds for disqualification of the bid	<u>  x  </u>	<u>      </u>

	Comply?	
	Yes	No
<b>6. EQUIPMENT OPTIONS</b>		
6.1 The following items shall be available for items #1-4:	<u>  X  </u>	_____
6.1.1 Desktop Microphone to substitute for mobile microphone.	<u>  X  </u>	_____
6.1.2 Desktop Power Supply to convert mobile radio into table top base type radio.	<u>  X  </u>	_____
6.1.3 Encryption key loader cable for KVL3000 plus.	<u>  X  </u>	_____
6.2 Programming Software and Hardware	<u>  X  </u>	_____
6.2.1 All radio programming must be able to be performed on a Microsoft Windows 2000/XP/Vista/Windows 7 based computer.	<u>  X  </u>	_____
6.2.2 The vendor shall make available for purchase all programming software and cabling necessary to program all radios.	<u>  X  </u>	_____
<b>7. EVALUATION FOR BID AWARD</b>		
7.1 Evaluation will include the review of all items listed in these specifications.	<u>  X  </u>	_____
7.2 All pricing should be line itemed as indicated on Attachment I: Cost Sheet	<u>  X  </u>	_____
NOTE: Special / Promotional pricing offered by vendors for limited periods of time and any item pricing provided for items not requested in this RFQ shall not be considered for bid award and/or price comparison.	<u>  X  </u>	_____

# UHF and VHF Digital Mobile Radio Attachment II: Equipment List

Vendor must provide manufacturer, model number, and part number for the all equipment bid. Vendors should include with their bid, a copy of the manufacturer's product sheet and any other supporting documentation which demonstrates the vendor's adherence to the mandatory specifications as outlined in the specifications.

Item No.	Description	Manufacturer	Model Number	Part Number
1	UHF Digital Mobile	NO BID ON THIS ITEM		
2	VHF Digital Mobile	Tait	TM9135	TM9135H-B1A33
<i>Options for Items 1-2</i>				
A.)	Desktop Microphone (substitute for mobile)	Tait	TMAA10-08	TMAA10-08
B.)	Desktop Power Supply	Tait	TMAA13-22/21902958-00	TMAA13-22/21902958-00
C.)	Encryption Key Loader cable (for KVL3000+)	Tait	TPA-SV-020	TPA-SV-020
D.)	Programming Software	Tait	TMAA23-00	TMAA23-00
E.)	Programming Cable	Tait	Included with Software	
3	UHF Digital Mobile	Tait	TM9155	TM9155H-H5A33
4	VHF Digital Mobile	Tait	TM9135	TM9135H-B1A33
<i>Options for Items 3-4</i>				
A.)	Desktop Microphone (substitute for mobile)	Tait	TMAA-10-08	TMAA10-08
B.)	Desktop Power Supply	Tait	TMAA13-22/21902958-00	TMAA13-22/21902958-00
C.)	Encryption Key Loader cable (for KVL3000+)	Tait	TPA-SV-020	TPA-SV-020
D.)	Programming Software	Tait	TMAA23-00	TMAA-23-00
E.)	Programming Cable	Tait	Included with Software	



# UHF and VHF Digital Mobile Radio Attachment I: Cost Sheet

The vendor must provide pricing inclusive of all associated costs for the following items including the cost of delivery. The estimated quantities contained on the cost sheet are intended for bid evaluation purposes only. Actual quantities may vary based upon the needs of the agency. Vendors should complete this pricing sheet in lieu of submission of manufacturer's quotes.

Item No.	Description	Unit Cost	Estimated Qty.	Extended Cost
1	UHF Digital Mobile	\$	150	\$ No Bid
2	VHF Digital Mobile	\$ 1303.20	30	\$ 39096.00
<i>Options for Items 1-2</i>				
A.)	Desktop Microphone (substitute for mobile)	\$ 118.80	30	\$ 3564.00
B.)	Desktop Power Supply	\$ 182.88	30	\$ 5486.40
C.)	Encryption Key Loader cable (for KVL3000+)	\$ 192.96	10	\$ 1929.60
D.)	Programming Software	\$ 216.00	10	\$ 2160.00
E.)	Programming Cable	\$ Included	10	\$ Included
<i>Options for Items 3-4</i>				
3	UHF Digital Mobile	\$ 2142.00	150	\$ 321300.00
4	VHF Digital Mobile	\$ 1303.20	30	\$ 39096.00
<i>Options for Items 3-4</i>				
A.)	Desktop Microphone (substitute for mobile)	\$ 118.80	30	\$ 3564.00
B.)	Desktop Power Supply	\$ 182.88	30	\$ 5486.40
C.)	Encryption Key Loader cable (for KVL3000+)	\$ 192.96	10	\$ 1929.60
D.)	Programming Software	\$ 216.00	10	\$ 2160.00
E.)	Programming Cable	\$	10	\$
<b>Total Bid:</b>				<b>\$ 425772.00</b>

Rev. 09/08

State of West Virginia  
**VENDOR PREFERENCE CERTIFICATE**

Certification and application\* is hereby made for Preference in accordance with *West Virginia Code*, §5A-3-37. (Does not apply to construction contracts). *West Virginia Code*, §5A-3-37, provides an opportunity for qualifying vendors to request (at the time of bid) preference for their residency status. Such preference is an evaluation method only and will be applied only to the cost bid in accordance with the *West Virginia Code*. This certificate for application is to be used to request such preference. The Purchasing Division will make the determination of the Resident Vendor Preference, if applicable.

1. **Application is made for 2.5% resident vendor preference for the reason checked:**  
 Bidder is an individual resident vendor and has resided continuously in West Virginia for four (4) years immediately preceding the date of this certification; or,  
 Bidder is a partnership, association or corporation resident vendor and has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; or 80% of the ownership interest of Bidder is held by another individual, partnership, association or corporation resident vendor who has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; or,  
 Bidder is a nonresident vendor which has an affiliate or subsidiary which employs a minimum of one hundred state residents and which has maintained its headquarters or principal place of business within West Virginia continuously for the four (4) years immediately preceding the date of this certification; or,
2. **Application is made for 2.5% resident vendor preference for the reason checked:**  
 Bidder is a resident vendor who certifies that, during the life of the contract, on average at least 75% of the employees working on the project being bid are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; or,
3. **Application is made for 2.5% resident vendor preference for the reason checked:**  
 Bidder is a nonresident vendor employing a minimum of one hundred state residents or is a nonresident vendor with an affiliate or subsidiary which maintains its headquarters or principal place of business within West Virginia employing a minimum of one hundred state residents who certifies that, during the life of the contract, on average at least 75% of the employees or Bidder's affiliate's or subsidiary's employees are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; or,
4. **Application is made for 5% resident vendor preference for the reason checked:**  
 Bidder meets either the requirement of both subdivisions (1) and (2) or subdivision (1) and (3) as stated above; or,
5. **Application is made for 3.5% resident vendor preference who is a veteran for the reason checked:**  
 Bidder is an individual resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard and has resided in West Virginia continuously for the four years immediately preceding the date on which the bid is submitted; or,
6. **Application is made for 3.5% resident vendor preference who is a veteran for the reason checked:**  
 Bidder is a resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard, if, for purposes of producing or distributing the commodities or completing the project which is the subject of the vendor's bid and continuously over the entire term of the project, on average at least seventy-five percent of the vendor's employees are residents of West Virginia who have resided in the state continuously for the two immediately preceding years.

Bidder understands if the Secretary of Revenue determines that a Bidder receiving preference has failed to continue to meet the requirements for such preference, the Secretary may order the Director of Purchasing to: (a) reject the bid; or (b) assess a penalty against such Bidder in an amount not to exceed 5% of the bid amount and that such penalty will be paid to the contracting agency or deducted from any unpaid balance on the contract or purchase order.

By submission of this certificate, Bidder agrees to disclose any reasonably requested information to the Purchasing Division and authorizes the Department of Revenue to disclose to the Director of Purchasing appropriate information verifying that Bidder has paid the required business taxes, provided that such information does not contain the amounts of taxes paid nor any other information deemed by the Tax Commissioner to be confidential.

Under penalty of law for false swearing (*West Virginia Code*, §61-5-3), Bidder hereby certifies that this certificate is true and accurate in all respects; and that if a contract is issued to Bidder and if anything contained within this certificate changes during the term of the contract, Bidder will notify the Purchasing Division in writing immediately.

Bidder: Vasu Communications, Inc.Signed: Date: 8-19-10Title: President

\*Check any combination of preference consideration(s) indicated above, which you are entitled to receive.

STATE OF WEST VIRGINIA  
Purchasing Division

**PURCHASING AFFIDAVIT**

West Virginia Code §5A-3-10a states: No contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and the debt owed is an amount greater than one thousand dollars in the aggregate.

**DEFINITIONS:**

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Debtor" means any individual, corporation, partnership, association, limited liability company or any other form or business association owing a debt to the state or any of its political subdivisions. "Political subdivision" means any county commission; municipality; county board of education; any instrumentality established by a county or municipality; any separate corporation or instrumentality established by one or more counties or municipalities, as permitted by law; or any public body charged by law with the performance of a government function or whose jurisdiction is coextensive with one or more counties or municipalities. "Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceed five percent of the total contract amount.

**EXCEPTION:** The prohibition of this section does not apply where a vendor has contested any tax administered pursuant to chapter eleven of this code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

Under penalty of law for false swearing (*West Virginia Code §61-5-3*), it is hereby certified that the vendor affirms and acknowledges the information in this affidavit and is in compliance with the requirements as stated.

**WITNESS THE FOLLOWING SIGNATURE**

Vendor's Name: Vasu Communications, Inc.

Authorized Signature: *[Signature]* Date: 8-19-10

State of Ohio

County of Lorain, to-wit:

Taken, subscribed, and sworn to before me this 19<sup>th</sup> day of August, 2010.

My Commission expires 12/8, 2010.

AFFIX SEAL HERE

NOTARY PUBLIC

*[Signature]*  
KAREN M. KRUEKE  
notary



**ACTION BY UNANIMOUS WRITTEN CONSENT OF THE DIRECTORS**  
**OF**  
**VASU COMMUNICATIONS, INC.**

Pursuant to the authority of Section 1701.54 of the Ohio Revised Code, the undersigned, being all of the members of the Board of Directors of the corporation, do hereby take and adopt the following by unanimous written consent:

**RESOLVED:**

That, Donna M. Vasu, as President, Alan L. Vasu, as Vice President and Secretary of the Corporation and Michael J. Vasu, as Vice President, are hereby authorized to execute all necessary legal documents and bid for West Virginia State Police for UHF and VHF Digital Mobile Radios and Accessories.

**Dated: August 19, 2010**

  
Alan L. Vasu, Director

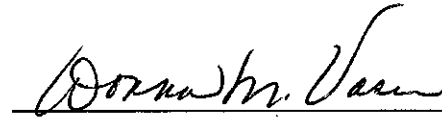
  
Donna M. Vasu, Director



**WAIVER OF NOTICE**  
**OF**  
**SPECIAL MEETING OF BOARD OF DIRECTORS**

**We, the undersigned, being all of the directors of Vasu Communications, Inc., hereby waive notice and consent to the holding of a special meeting of the Board of Directors at the office of Vasu Communications, Inc. on August 19, 2010.**

  
Alan L. Vasu, Director

  
Donna M. Vasu, Director

COMPANY INFORMATION SHEET



2432 Ridgeland Dr.  
P. O. Box 236  
Avon, OH 44011  
(440) 934-5268  
(440) 934-4679 (FAX)

Primary Contact: Alan L. Vasu

Secondary Contact: Richard Gerrone

Second Location Address:  
1324 N. Main St.  
Mansfield, OH 44903  
(419) 524-7970  
(419) 524-8262 (FAX)

Contact: Gregory Catlett

Business Type is a Corporation in the State of Ohio

In business since September 1971

Incorporated December 1989

Federal EIN: 34-1633623

Ohio Vendor's #: 47-067067 (Lorain County)

Ohio Vendor's #: 70-047610 (Richland County)

Full-time Employees: Sales 4 Technical 10 Installers 11 Office/Admin 6

Total Full-time & Part-time Employees : 37

Number of Vehicles in Service Dept.: 14

Number of Service Monitors in Service Dept.: 14

## **Value Added Service**

- 1) **Licensing** – Full time employee devoted to FCC Licensing and coordination ( 25+ years experience )
- 2) **FCC Data Base** – Maintain a current Per Con Data Base of all FCC Licensed radio users
- 3) **Propagation Study** – Software based system with color printer capability
- 4) **Full Time Staff** – 30 full time employees
- 5) **Extended Service Hours** – Monday-Friday 8am until 9pm in Avon
- 6) **In House Support** – Fax, Internet ( e-mail ), color/oversized copying and full computer network system
- 7) **Test/Service Capability** – Maintain 9-Hewlett Packard, 4-IFR 1200 and 1-IFR 2975 Service Monitors
- 8) **Turn Key Experience** – Total experience doing complete projects from initial consulting to final acceptance
- 9) **Insured** – \$2,000,000+ Insurance Liability
- 10) **Bonding** - Fully Bondable



COMMUNICATIONS INC.

2432 Ridgeland Drive

Avon, OH 44011-0236

Phone: (440) 934-5268 Fax: (440) 934-4679

Email: sales@vasucom.com Web Site: www.vasucom.com

# Quotation

Quotation # 16881

Date: 08/13/10

Customer ID: 5036

Terms: NET 30

Quotation Prepared For: Krista Ferrell  
 West Virginia State Police  
 4124 Kanawha Turnpike  
 South Charleston, WV 25309  
 Phone: 304-746-2141 Fax:

Quotation Valid Until: 11/13/10  
 Prepared By: ALAN VASU,

## ITEM #2 40W VHF DIGITAL MOBILE-P25 CAI READY

QTY.	MAKE	PART NUMBER	DESCRIPTION	UNIT PRICE	AMOUNT
30	Tait	TM9135H-B1A33	136-174 Mhz 50w Mobile With P25 Cai Standard Mike <b>Original List Price \$ 1750.00</b>	\$1,260.00	\$37,800.00
30	Tait	TMAA10-06	10w External Speaker For 30-50w Radio <b>Original List Price \$ 60.00</b>	\$43.20	\$1,296.00
OPTION	Tait	MMA-00017-03	Tm9100 Service Manual <b>Original List Price \$ 150.00</b>	\$108.00	\$0.00

Equipment Total	\$39,096.00
Labor	\$0.00
Shipping	\$0.00
Discount	\$0.00
Sales Tax	\$0.00
Other	\$0.00
Total Cost	\$39,096.00
Less Trade In	\$0.00
Less Down Payment	\$0.00
Balance Due	\$39,096.00

### NOTES

Service Manuals Will Be Supplied On Disk (cd) With The User Guide And Installation Guide Included At No Cost.





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 Avon, OH 44011-0236  
 Phone: (440) 934-5268 Fax: (440) 934-4679  
 Email: sales@vasucom.com Web Site: www.vasucom.com

# Quotation

Quotation # 16882  
 Date: 08/13/10  
 Customer ID: 5036  
 Terms: NET 30

Quotation Prepared For: Krista Ferrell  
 West Virginia State Police  
 4124 Kanawha Turnpike  
 South Charleston, WV 25309  
 Phone: 304-746-2141 Fax:

Quotation Valid Until: 11/13/10  
 Prepared By: ALAN VASU,

### ITEM #3 40W UHF DIGITAL MOBILE-P25 TRUNKING INCLUDES P25 CAI

QTY.	MAKE	PART NUMBER	DESCRIPTION	UNIT PRICE	AMOUNT
150	Tait	TM9155H-H5A33	400-470 Mhz 40w Mobile With P25 Cai Local Head Standard Mic <b>Original List Price \$ 2325.00</b>	\$1,674.00	251,100.00
150	Tait	TMAS055	Tm9100 Sfe Key - P25 Trunking Service <b>Original List Price \$ 350.00</b>	\$252.00	\$37,800.00
150	Tait	TMAA10-06	10w External Speaker For 30-50w Radio <b>Original List Price \$ 60.00</b>	\$43.20	\$6,480.00
150	Tait	TMAS058	Tm9100 Sfe Key - P25 Aes Encryption <b>Original List Price \$ 240.00</b>	\$172.80	\$25,920.00
OPTION	Tait	MMA-00017-03	Tm9100 Service Manual <b>Original List Price \$ 150.00</b>	\$108.00	\$0.00

Equipment Total	\$321,300.00
Labor	\$0.00
Shipping	\$0.00
Discount	\$0.00
Sales Tax	\$0.00
Other	\$0.00
Total Cost	\$321,300.00
Less Trade In	\$0.00
Less Down Payment	\$0.00
Balance Due	\$321,300.00

#### NOTES

Service Manuals Will Be Supplied On Disk (cd) With The User Guide And Installation Guide Included At No Cost.



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Phone: (440) 934-5268 Fax: (440) 934-4679

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# Quotation

Quotation # 16883  
Date: 08/13/10  
Customer ID: 5036  
Terms: NET 30

Quotation Prepared For: Krista Ferrell  
West Virginia State Police  
4124 Kanawha Turnpike  
South Charleston, WV 25309  
Phone: 304-746-2141 Fax:

Quotation Valid Until: 11/13/10  
Prepared By: ALAN VASU,

### ITEM #4 40W VHF DIGITAL MOBILE-P25 CAI READY

QTY.	MAKE	PART NUMBER	DESCRIPTION	UNIT PRICE	AMOUNT
30	Tait	TM9135H-B1A33	136-174 Mhz 50w Mobile With P25 Cai Standard Mike <b>Original List Price \$ 1750.00</b>	\$1,260.00	\$37,800.00
30	Tait	TMAA10-06	10w External Speaker For 30-50w Radio <b>Original List Price \$ 60.00</b>	\$43.20	\$1,296.00
OPTION	Tait	MMA-00017-03	Tm9100 Service Manual <b>Original List Price \$ 150.00</b>	\$108.00	\$0.00

Equipment Total	\$39,096.00
Labor	\$0.00
Shipping	\$0.00
Discount	\$0.00
Sales Tax	\$0.00
Other	\$0.00
Total Cost	\$39,096.00
Less Trade In	\$0.00
Less Down Payment	\$0.00
Balance Due	\$39,096.00

#### NOTES

Service Manuals Will Be Supplied On Disk (cd) With The User Guide And Installation Guide Included At No Cost.



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# Quotation

Quotation # 16884

Date: 08/13/10

Customer ID: 5036

Terms: NET 30

Quotation Prepared For: Krista Ferrell  
 West Virginia State Police  
 4124 Kanawha Turnpike  
 South Charleston, WV 25309  
 Phone: 304-746-2141 Fax:

Quotation Valid Until: 11/13/10  
 Prepared By:

## OPTIONS FOR ITEMS 1-2

QTY.	MAKE	PART NUMBER	DESCRIPTION	UNIT PRICE	AMOUNT
30	Tait	TMAA10-08	Tm Desktop Mic <b>Original List Price \$ 165.00</b>	\$118.80	\$3,564.00
30	Tait	TMAA13-22	Desktop Power Supply 23a Dc (120v Ac Us/can) <b>Original List Price \$ 225.00</b>	\$162.00	\$4,860.00
30	Tait	21902958-00	Power Cable For Tm9100 Mobile <b>Original List Price \$ 29.00</b>	\$20.88	\$626.40
10	Tait	TPA-SV-020	Tp9100/tm9100/tb9100 Encryption Key-fill Adaptor <b>Original List Price \$ 268.00</b>	\$192.96	\$1,929.60
10	Tait	TMAA23-00	Programming Kit With Software, Cables And Usb <b>Original List Price \$ 300.00</b>	\$216.00	\$2,160.00
OPTION	Tait	TMAA24-00	Service Kit Including Calibration And Programming S/w. Cables, interface Unit <b>Original List Price \$ 850.00</b>	\$612.00	\$0.00
OPTION	Tait	TMAS051	Admin Services - Enable Terminal Control Of Some Dispatch Type Features On Conventional P25 Systems, I.e. Transmit Radio Inhibits & Uninhibits, Status Requests, Call Alert Requests, Radio Check Requests, Radio Unit Monitoring, Messages <b>Original List Price \$ 500.00</b>	\$360.00	\$0.00

Equipment Total	\$13,140.00
Labor	\$0.00
Shipping	\$0.00
Discount	\$0.00
Sales Tax	\$0.00
Other	\$0.00
Total Cost	\$13,140.00
Less Trade In	\$0.00
Less Down Payment	\$0.00
Balance Due	\$13,140.00

### NOTES

We Recommend That The State Considers At At Least One Tmaa24-00 Service Kit



**COMMUNICATIONS INC.**

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 Avon, OH 44011-0236  
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# Quotation

Quotation # 16885  
 Date: 08/13/10  
 Customer ID: 5036  
 Terms: NET 30

**Quotation Prepared For:** Krista Ferrell  
 West Virginia State Police  
 4124 Kanawha Turnpike  
 South Charleston, WV 25309  
 Phone: 304-746-2141 Fax:

**Quotation Valid Until:** 11/13/10  
**Prepared By:**

### OPTIONS FOR ITEMS 3-4

QTY.	MAKE	PART NUMBER	DESCRIPTION	UNIT PRICE	AMOUNT
30	Tait	TMAA10-08	Tm Desktop Mic <b>Original List Price \$ 165.00</b>	\$118.80	\$3,564.00
30	Tait	TMAA13-22	Desktop Power Supply 23a Dc (120v Ac Us/can) <b>Original List Price \$ 225.00</b>	\$162.00	\$4,860.00
30	Tait	21902958-00	Power Cable For Tm9100 Mobile <b>Original List Price \$ 29.00</b>	\$20.88	\$626.40
10	Tait	TPA-SV-020	Tp9100/tm9100/tb9100 Encryption Key-fill Adaptor <b>Original List Price \$ 268.00</b>	\$192.96	\$1,929.60
10	Tait	TMAA23-00	Programming Kit With Software, Cables And Usb <b>Original List Price \$ 300.00</b>	\$216.00	\$2,160.00
OPTION	Tait	TMAA24-00	Service Kit Including Calibration And Programming S/w. Cables, interface Unit <b>Original List Price \$ 850.00</b>	\$612.00	\$0.00
OPTION	Tait	TMAS051	Admin Services - Enable Terminal Control Of Some Dispatch Type Features On Conventional P25 Systems, I.e. Transmit Radio Inhibits & Uninhibits, Status Requests, Call Alert Requests, Radio Check Requests, Radio Unit Monitoring, Messages <b>Original List Price \$ 500.00</b>	\$360.00	\$0.00

Equipment Total	\$13,140.00
Labor	\$0.00
Shipping	\$0.00
Discount	\$0.00
Sales Tax	\$0.00
Other	\$0.00
Total Cost	\$13,140.00
Less Trade In	\$0.00
Less Down Payment	\$0.00
Balance Due	\$13,140.00

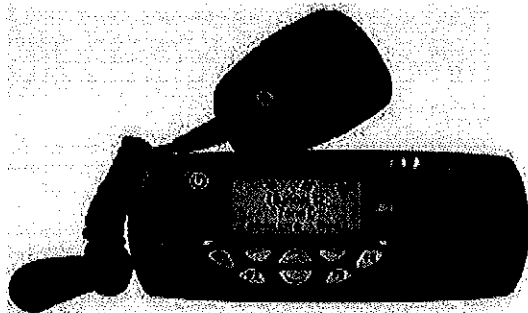
**NOTES**

We Recommend That The State Considers At At Least One Tmaa24-00 Service Kit

**TAIT** radio  
communications

# TM9135

SPECIFICATIONS



TM9135 P25 Mobile radio shown with standard microphone

## P25 TRUNKED AND CONVENTIONAL MOBILE RADIOS FOR NON-FRONTLINE USERS

TM9135 mobile radios provide affordable and reliable digital communications for non-frontline users who need exceptional audio clarity without provision for all possible features or configurations.

### Tough, reliable and interoperable

- Radios can be used on analog, P25 conventional, trunked and simulcast networks
- Out of the box and onto the shift - the TM9135 is a radio designed for fast integration onto a digital network (the P25 CAI is included)
- Hand-held control head option
- Ease of operation: all user controls and menu functions are identical across all the Tait P25 portables, mobiles and hand-held control heads
- Tested beyond MIL-STD 810C, D, E and F
- Context-sensitive and programmable menu/function keys
- Supports individual, group, broadcast and emergency calls
- Lat/long coordinates displayed on screen (requires GPS receiver and SFE)\*
- Advanced voting optimizes channel reception
- User programmable scan
- Program 1,000 channels, 300 scan groups and 30 operational zones
- Comprehensive scanning features including P25 talk-group, priority, dual priority and editable scanning

\*Software Feature Enabler option available separately

### Tait Tough radio

Reliable and durable TM9135 mobile radios have been built to withstand the extremes of nature. A high temperature display option on Tait mobiles optimizes screen visibility in hot environments.

### Interoperability assured

Genuine open standards ensure choice, value and responsiveness during routine operations or crises.

### Digital audio clarity

Crystal clear digital audio allows precise communication even in noisy situations.

### For immediate digital needs

The TM9135 mobile comes with the P25 CAI installed enabling immediate access to digital communications.

### Analog operation for phased transition

Protect your current analog investment and migrate to P25 at your own pace. Analog mode allows communication between various partner agencies via signaling options MDC1200 encode/decode and Two Tone decode.\*

### Future proofing

Radio users who require the provision for advanced features or configurations should consider investing in the TM9135 for long term flexibility.

\*separately enabled option



# TM9135 Specifications

## General

Frequency Ranges	Frequency Band*	Transmit Power	Transmit Current
VHF	136-174MHz	25W	<5.5A
	136-174MHz**	50W	<10.5A
	136-174MHz	110W	<30A
UHF	350-400MHz**	40W	<8.5A
	380-420MHz**	40W	<8.5A
	400-470MHz	25W	<6.5A
	400-470MHz	40W	<8.5A
	450-530MHz	25W	<6.5A
	450-520MHz	40W	<8.5A
700/800MHz	Transmit	Receive	
	762-776MHz	762-776MHz	
	792-825MHz	850-870MHz	30W (<806MHz) 35W (>806MHz)
850-870MHz			
Frequency Stability	±1.5ppm (-22°F to 140°F/-30°C to 60°C)		
Channel /Talk-groups/Zones	1000 channels/26 talk-group lists x 50 members/30 zones		
Power Supply	10.8-16VDC		
Channel Spacing	12.5/15/20/25/30kHz		
Frequency Increment/Channel Steps	2.5/5/6.25		
Dimensions (DxWxH) Control Head	138 x 724 x 2.8in (35 x 184 x 71mm)		
Dimensions (DxWxH) Radio Body	25W	6.9 x 6.3 x 2.1in (175 x 160 x 52mm)	
	30/35/40/50W	7.7 x 6.3 x 2.1in (195 x 160 x 52mm)	
	110W	14.0 x 8.8 x 5in (370 x 250 x 121mm)	
Weight Control Head	11.6oz (330g)		
Weight Radio Body	25W	42.3oz (1200g)	
	30/35/40/50W	49.4oz (1400g)	
	110W	296oz (8400g)	
Operational Temperature	-22°F to 140°F (-30°C to 60°C)		
Sealing	IP54 dust and rain		
RF Connector	50 ohm BNC or Mini UHF		
Interface Connectors	3 Interface Connectors with Serial Ports		

## Military Standards 810F\*

Applicable MIL-STD	Method	Procedure	Procedure
25/30/35/50/110W	25/30/35/50/110W	25/30/35/50W	110W
Low Pressure	500.4	2	2
High Temperature	501.4	1, 2	2
Low Temperature	502.4	1, 2	2
Temperature Shock	503.7	1	1
Solar Radiation	505.4	1	-
Rain	506.4	1, 3	3
Humidity	507.4	1	-
Salt Fog	509.4	1	1
Dust	510.4	1	1
Vibration	514.5	1	1
Shock	516.5	1, 6	6

\* Also meets equivalent superseded MIL-STD 810C, D and E.

## Transmitter

Output Power	VHF/UHF (TIA/EIA 102 and 603a)	700/800MHz (TIA/EIA 102 and 603a)
25W	25W, 12W, 5W, 1W	
30W		30W, 15W, 5W, 2W
35W		35W, 15W, 5W, 2W
40W	40W, 20W, 15W, 10W	
50W	50W, 25W, 15W, 10W	
110W	110W	
Modulation Limiting	±5kHz	±5kHz
25/30kHz channel	±2.5kHz	±2.5kHz
12.5kHz channel		
FM Hum & Noise	-43dB	-40dB
25/30kHz channel	-39dB	-33dB
12.5kHz channel		
Conducted Emissions	-85dBc	-75dBc
Audio Response (Analog)	300-3000Hz +/-3dB	
Audio Distortion	< 3% at 1kHz 60% deviation	
Transmit Attack Time (TIA/EIA 102)	50ms	

## Receiver

Analog Sensitivity	VHF/UHF	VHF 50W	VHF 110W	700/800MHz
12dB SINAD	0.28µV (-119dBm)	0.315µV (-117dBm)	0.25µV (-119dBm)	0.28µV (-118dBm)
Digital Sensitivity (TIA/EIA-102)				
5%BER	0.20µV (-121dBm)	0.233µV (-120dBm)	0.18µV (-122dBm)	0.18µV (-122dBm)
Intermodulation Rejection (TIA/EIA 102)	-75dB	-75dB	-70dB	-75dB
Adjacent Channel Selectivity				
25/30kHz channel (TIA/EIA 603a)	-75dB	-80dB	-75dB	-75dB
12.5kHz channel (TIA/EIA 102)	-65dB	-70dB	-65dB	-65dB
Spurious Response Rejection	-75dB	-90dB	-70dB	-75dB
FM Hum & Noise				
25/30kHz channel	-43dB	-43dB	-43dB	-43dB
12.5kHz channel	-40dB	-40dB	-40dB	-40dB
Residual Audio Noise Ratio	45dB	45dB	45dB	45dB
Audio Distortion @ Rated Audio	3% @ 1kHz 60% modulation (typical)			

Specifications are subject to change without notice and shall not form part of any contract. They are issued for guidance purposes only.

\*Please note that not all frequency bands are available in all markets. For further information please check with your nearest Tait office or authorized dealer.

\*\*Tait confirms that this product model conforms with NTIA requirements. The word "Tait" and the Tait logo are trademarks of Tait Electronics Ltd.

Tait is an ISO 9001:2008 and ISO 14001:2004 certified supplier.

It is important to note that this product does not offer encryption capability and there is no upgrade path for this. If encryption may be required Tait recommends the TM9165 mobile radio.

## Regulatory Data

USA	VHF	CFR 47 Parts 22, 90, 210, 74, 90, 95		
	UHF	CFR 47 Parts 22, 90, 210, 74, 85A, 90		
	800MHz	CFR 47 Parts 22, 90		
Canada		RSS-119		
Europe		EN300 086, EN300 113		
		EN301 489		
		EN60950		
Australia/New Zealand		AS/NZS4285		
Type Approval	FCC	Industria Canada	NTIA	
	25W VHF	CASTMAB1E	737A-TMAB1E	
	UHF	CASTMAH5E	737A-TMAH5E	
30/35W UHF	CASTMAH6E	737A-TMAH6E		
40W UHF	CASTMAK5F	737A-TMAK5F		
50W VHF			350-400MHz**	
			380-420MHz**	
	CASTMAH5F	n/a		
110W (ERFPA) VHF	CASTMAH7F	n/a		
	CASTMAB1F	n/a	136-174MHz**	
Emission Designators				



ISO 9001  
ISO 14001

AUTHORIZED DEALER

SM9135-141209-90

www.taitradio.com

**TAT** radio  
communications

# TM9155

SPECIFICATIONS



TM9155 P25 mobile radio shown with optional keypad microphone.

## P25 TRUNKED AND CONVENTIONAL MOBILE RADIOS

With industry-leading digital audio clarity, superb build quality and DES/AES encryption, the TM9155 is a tough, dependable and sophisticated piece of radio engineering. Fully interoperable, the TM9155 gives the flexibility of working in digital, analog and auto-sensing dual mode.

### Interoperable, flexible, configurable

- Superb build quality and user friendly centered design
- Tested beyond MIL-STD 810 C, D, E and F
- Secondary concealed microphone in control head
- Four-line graphic backlit display for intuitive useability
- Context-sensitive and programmable menu/function keys
- Complete range of P25 subscriber features: from messaging to call alerts, and from individual/group calls to status updates
- Unique quick reference card creation for each configured radio makes it easy for users to learn
- Remote or local installation and hand-held control head option
- Advanced voting secures the best channel efficiently
- Scanning/Priority scan/Dual priority scan
- User programmable scan
- Program 1,000 channels, 300 scan groups and 30 tactical zones
- Application Programming Interface places the power to customize a Tait P25 system into the hands of those with ideas, expertise and applications in mind

### Interoperability assured

Genuine open P25 standards ensure choice, value and responsiveness during routine operations or crises.

### Digital audio clarity

Crystal clear digital audio allows precise communication even in noisy environments.

### Analog operation for phased transition and improved interoperability

Protect your current analog investment and migrate to P25 at your own pace.

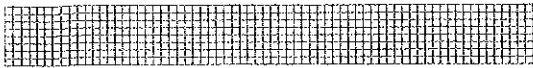
### Configure to suit with SFEs

Software feature enablers (SFEs) allow a solution that is readily extended as needs change, removing the risk of hardware upgrades and factory returns. Trunking, P25 CAI, encryption, APIs and conventional QTAR are just some of the SFEs available.

### Comprehensive accessory suite

Complement your radio with high performance accessories:

- Remote trunk mount or dash mount
- U-bracket or security cradle mount
- Alphanumeric keypad microphone
- Hand-held control head
- External speaker
- Desktop power supply
- Desktop microphone
- IP54 rated keypad microphone
- Handsfree kit



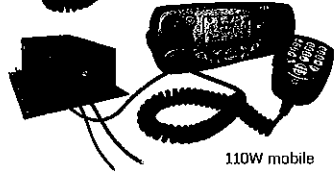
Remote mounted standard control head



Local standard control head



Local hand-held control head



110W mobile



Being a manufacturer of digital and analog terminals, base stations and network equipment means Tait has the solution focus to serve you better. P25 portables, mobiles and the hand-held control head all share the same intuitive interface.

# TM9155 Specifications

## General

Frequency Ranges	Band	Operational Frequency <sup>+</sup>	Transmit Power
VHF	B1	136-174MHz	25W
	B1	136-174MHz	50W
	B1	136-174MHz	110W
UHF	G2*	360-400MHz	40W
	H5	400-470MHz	25W
	H5	400-470MHz	40W
	H6	450-530MHz	25W
	H7	450-520MHz	40W
700/800MHz	K5	Transmit 782-776MHz 792-825MHz 850-870MHz	Receive 762-776MHz 850-870MHz
		30W (<806MHz) 35W (>806MHz)	
Frequency Stability	±1.5ppm (-22°F to 140°F/-30°C to 60°C)		
Channel /Talkgroups	1000 channels/30 zones		
Power Supply	10.8-16VDC		
Channel Spacing	12.5/15/20/25/30kHz		
Frequency Increment/Channel Steps	2.5/5/6.25		
Dimensions (DxWxH) Control Head	1.38 x 7.24 x 2.8in [35 x 184 x 71mm]		
Dimensions (DxWxH) Radio Body	25W		
	30/35/40/50W		
	110W		
Weight Control Head	11.6oz (330g)		
Weight Radio Body	25W		
	30/35/40/50W		
	110W		
Operational Temperature	-22°F to 140°F [-30°C to 60°C]		
Sealing	IP54 dust and rain		
RF Connector	50 ohm BNC or Mini UHF		
Interface Connectors	3 Interface Connectors with Serial Ports		

## Military Standards 810 F\*

Applicable MIL-STD	Method 25/30/35/50/110W	Procedure 25/30/35/50W	Procedure 110W
Low Pressure	500.4	2	2
High Temperature	501.4	1, 2	2
Low Temperature	502.4	1, 2	2
Temperature Shock	503.7	1	1
Solar Radiation	505.4	1	-
Rain	506.4	1, 3	3
Humidity	507.4	1	-
Salt Fog	509.4	1	1
Dust	510.4	1	1
Vibration	514.5	1	1
Shock	516.5	1, 6	6

\* Also meets equivalent superseded MIL-STD 810 C, D & E.

## Transmitter

	VHF/UHF (TIA/EIA 102 and 803a)	700/800MHz (TIA/EIA 102 and 603a)
Output Power		
25W	25W, 12W, 5W, 1W	
30W		30W, 15W, 5W, 2W
35W		35W, 15W, 5W, 2W
40W	40W, 20W, 15W, 10W	
50W	50W, 25W, 15W, 10W	
110W	110W	
Modulation Limiting		
25/30kHz channel	±5kHz	±5kHz
12.5kHz channel	±2.5kHz	±2.5kHz
FM Hum & Noise		
25/30kHz channel	-43dB	-40dB
12.5kHz channel	-38dB	-33dB
Audio Response (Analog)	300-3000Hz +1/-3dB	
Audio Distortion	< 3% at 1kHz 60% deviation	
Transmit Attack Time (TIA/EIA 102)	50ms	

## Receiver

	VHF/UHF	VHF 50W	VHF 110W	700/800MHz
Analog Sensitivity				
12dB SINAD	0.28µV (-118dBm)	0.315µV (-117dBm)	0.25µV (-119dBm)	0.28µV (-118dBm)
Digital Sensitivity (TIA/EIA-102)				
5%BER	0.20µV (-121dBm)	0.233µV (-120dBm)	0.18µV (-122dBm)	0.18µV (-122dBm)
Intermodulation Rejection (TIA/EIA 102)	-75dB	-75dB	-70dB	-75dB
Adjacent Channel Selectivity				
25/30kHz channel (TIA/EIA 603a)	-75dB	-80dB	-75dB	-75dB
12.5kHz channel (TIA/EIA 102)	-65dB	-70dB	-65dB	-65dB
Spurious Response Rejection	-75dB	-90dB	-70dB	-75dB
FM Hum & Noise				
25/30kHz channel	-43dB	-43dB	-43dB	-43dB
12.5kHz channel	-40dB	-40dB	-40dB	-40dB
Residual Audio Noise Ratio	45dB	45dB	45dB	45dB
Audio Distortion @ Rated Audio	3% @ 1kHz 60% modulation (typical)			

## Regulatory Data

USA	VHF UHF 800MHz	CFR 47 Parts 22, 90.210, 74, 90, 95 CFR 47 Parts 22, 90.210, 74, 95A, 90 CFR47 Parts 22, 80
Canada		RSS-119
Europe		EN300 086, EN300 113 EN301 489 EN60950
Australia/New Zealand		AS/NZ54295
Type Approval	FCC	Industrie Canada
25W	VHF	CASTMAB1E 737A-TMAB1E
	UHF	CASTMAH5E 737A-TMAH5E
30/35W	UHF	CASTMAH6E 737A-TMAH6E
	UHF	CASTMAK9F 737A-TMAK9F
50W	VHF	CASTMAB1F n/a
40W	UHF	CASTMAH6F n/a
	UHF	CASTMAH7F n/a
110W (ERFPA)	VHF	CASTMAB1Z n/a
Emission Designators		10K0F1D, 10K0F1E, 10K0F7D, 10K0F7E, 11K0F3E, 12K7F1D 18K0F3E, 8K60F2D, 7K70F1D 8K10F1D, 8K10F1E, 8K10F7D 8K10F7E, 9K60F2D



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\*Not type accepted, Federal sales only.



NAME	PROJECT	COMPLETION DATE	CONTRACT TELEPHONE	BONDED	CONTRACT AMOUNT
City of Brecksville	Police Communication Consoles	Jul-10	Becki Burlingham, Dir of Purchasing 440-526-2622	Yes	\$102,517
City of Canfield	Upgrading the Communication System for the Canfield Dispatch Center	Jul-10	Joseph Warino, City Manager 330-533-1101 Dave Reichelt, Consultant (216)263-8716	Yes	\$38,529
City of Willoughby Hills	Public Safety Communications Center	Feb-10	Robin Jones, 911 Director 440-329-5444	No	\$214,526
Lorain County Commissioners	Lorain County 911 Upgraded Communications System	Feb-10	Capt. William Engle 440-204-1134	Yes	\$274,714
City of Lorain	Lorain Police Dept. First Floor Renovation	Nov-09		Yes	\$380,910
City of Mansfield	Public Safety Communications Center Upgraded Communication System	Nov-09	Ronald S. Kreuter, Service-Safety Director 419-755-9736	Yes	\$102,603
Wayne County Commissioners	Radio Communications Tower Replacement at the Wayne County Care Center Site	Jun-09	John Wise, EMA Director 330-262-9817	Yes	\$326,001
City of Bowling Green	Purchase of Security Cameras, and the Purchase of a Dispatch Center/Console/Equipment for the	Mar-09	Lt. Ken Fortney 419-352-8775	Yes	\$218,521
City of Avon	New Police Station	Oct-08	Chief Paul Romond 440-934-1234	Yes	\$648,576
City of Lorain	Purchase & Installation of Radio, Lighting, Computer and Other Safety Equipment in 14 New Police Vehicles	Oct-08	Capt. William Engle 440-204-1134	Yes	\$53,327
Ashland County	Hayesville Emergency Warning Siren	May-08	Mark Rafeld, EMA Director 419-282-4272	Yes	\$18,236
City of Mansfield	Purchase & Installation of VHF Narrow Band Radio Equipment for the Mansfield Fire Dept.	Apr-08	Ronald S. Kreuter, Service-Safety Director 419-755-9736	Yes	\$106,755
First Energy	VoIP Dispatch Console System at Fairlawn	Apr-08	Richard Boss 330-603-7452	No	\$391,287
First Energy	VoIP Dispatch Console System at Wadsworth	Feb-08	Richard Boss 330-603-7452	No	\$218,323

NAME	PROJECT	COMPLETION DATE	CONTACT TELEPHONE	BONDED	CONTRACT AMOUNT
Brook Park Fire Dept.	Purchase & Installation of Outdoor Warning Sirens	Dec-07	Lt. Pat Johnson 216-433-7206	No	\$130,012
First Energy	VoIP Dispatch Console System at Fairlawn	Dec-07	Richard Boss 330-603-7452	No	\$111,170
West Virginia State Police	Open End Contract for Low Band 100 Watt Solid State Base Station DPS0060B	Sep-07	Dave Saifel 304-637-0200	No	\$15,499
Cuyahoga County	NPSPAC Communications System Upgrade	Jul-07	Murray Withrow 216-443-5700	No	\$901,475
West Virginia State Police	Open End Contract for VHF & UHF Control & Repeater Stations DPS0617A	Jun-07	Dave Saifel 304-637-0200	No	\$64,098
Erie County	Erie County Sheriff's Communications System	May-07	Anne Summers 419-627-7618	Yes	\$370,315
City of Bay Village	Dispatch Center and Radio System Enhancements	Jun-06	Lt. Mark Spaetzel 440-871-1234	Yes	\$134,680
Ravenna Township Fire Dept.	Fire/EMS Communications System	Jun-06	Chief Steven Bosso 330-297-2192	No	\$381,734
City of Mansfield	VOC-Alarm Replacement for Fire Dept.	Mar-06	Chief Michael Hartson 419-755-9814	No	\$52,341
City of North Olmsted	Radio Interoperability System for the North Olmsted Fire Dept	Mar-06	James Dunwoodie 440-777-1220	Yes	\$76,333
Richland County	EMA Console Upgrades	Jan-06	Keith Markley 419-774-5686	No	\$106,160
City of Bay Village	Antenna Support Structure	Nov-05	Lt. Mark Spaetzel 440-871-1234	Yes	\$33,837
Huron Fire Dept.	Communications System Upgrade	Oct-05	Chief Paul Berlin 419-433-3544	No	\$278,883
City of Brecksville	Communications System Upgrade	Sep-05	Donna Shirer 440-526-4351	Yes	\$107,275
City of Avon	Construction of Maintenance Garage and Salt Storage Building - Communications	Jun-05	Bob Allen, Safety Dir 440-937-7800	Yes	\$19,056
City of Brunswick	Warning Sirens	Mar-05	Pat Beyer, Safety Dir 216-225-9111	Yes	\$83,832
Ashland County	Village of Savannah Emergency Warning Siren	Jan-05	Mike Wolfson, Project Eng 419-282-4262	Yes	\$13,677