

BID FORM

MISSOURI DEPARTMENT OF TRANSPORTATION

GENERAL SERVICES

830 MoDOT DRIVE – P.O. BOX 270

JEFFERSON CITY, MO 65102

REQUEST NO.	1-070524		
DATE	May 2, 2007		
PAGE NO.	1	NO. OF PAGES	19

SEALED BIDS, SUBJECT TO THE ATTACHED CONDITIONS WILL BE RECEIVED AT THIS OFFICE UNTIL

2:00 PM, LOCAL TIME, MAY 24, 2007

AND THEN PUBLICLY OPENED AND READ FOR FURNISHING THE FOLLOWING SUPPLIES OR SERVICES.

QUOTATIONS TO BE BASED F.O.B. MISSOURI DEPARTMENT OF TRANSPORTATION

Submit net bid as cash discount stipulations will not be considered

Statewide

ALL BIDS MUST BE EXTENDED AND TOTALED.

BUYER: FRANKIE J. RYAN

BUYER TELEPHONE: 573-522-9481

SUPPLIES OR SERVICES				
<p>Contract for furnishing “COMMUNICATIONS SYSTEM ANALYZER” for a contract period beginning date of award through May 31, 2008</p> <p>PLEASE SEE ATTACHED PRICING PAGES</p> <p>Note to Respondent: A vendor must be in compliance with the laws regarding conducting business in the State of Missouri. The compliance to conduct business in the state shall include but may not be limited to: Registration of business name, vendors MUST submit a bid/proposal that correctly and accurately identifies the company name that is registered to do business in the State of Missouri. All vendors who are required to execute a contractual agreement MUST submit a copy of their certificate with the signed copy of the contract agreement before the purchasing department can proceed with MoDOT legal contract approval.</p> <p>VENDOR MUST SIGN AND SUBMIT THIS FORM WITH THE PRICING PAGES</p>				

(SEE ATTACHED FOR CONDITIONS AND INSTRUCTIONS)

In compliance with the above invitation for bids, and subject to all conditions thereof, the undersigned bidder agrees to furnish and deliver any or all the items on which prices were quoted within SIXTY (60) after receipt of formal purchase order.

Date: _____

Telephone No.: _____

Fax No.: _____

Federal I.D. No. _____

Firm Name: _____

Address: _____

By (Signature): _____

Type/Print Name _____

Title: _____

Is your firm MBE certified? Yes No

Is your firm WBE certified? Yes No

List all agencies your firm is currently certified with. _____

BID SUBMITTAL

Your written bid must be mailed in **a sealed** envelope or box, or else delivered by hand or courier service (UPS, Federal Express, DHL, etc.) to be *received on or before the date and time specified on the front page of this bid document*, at the office of:

Ms. Frankie Ryan
Missouri Department of Transportation
General Services - Procurement
830 MoDOT Drive; P.O. Box 270
Jefferson City, MO 65102

All documents must be sealed and the outmost wrapping should be clearly marked **"Bid for Communications System Analyzer"**.

CONTRACTUAL REQUIREMENTS

PRICES:

All prices shall be firm and fixed. The Missouri Department of Transportation (herein after referred to as Department) shall not pay nor be liable for any other additional costs including but not limited to taxes, shipping charges, insurance, interest, penalties, termination payments, attorney fees, liquidated damages, etc. The Contractor shall not invoice federal excise tax unless otherwise required under federal law or regulation.

AWARD:

For the purposes of this bid, award will be "ALL OR NONE". However, the right is reserved to reject any and all bids or award the bid based on the best interest of the Department. Award of this bid does not constitute final acceptance.

DELIVERY:

Communications System Analyzers (hereinafter referred to as a unit) shall be delivered within sixty (60) calendar days from the date on the purchase order(s) to the Department's office(s) as specified on the purchase order. A list of delivery locations is attached as Appendix A. Charges for delivery shall be included in the bid price.

Each unit shall be delivered to the location fully assembled. This assembly cost shall be included in the bid price.

COMPLIANCE WITH BID REQUIREMENTS:

Failure to comply with the requirements published in this bid may result in the bid being subject to rejection. Product that does not meet specifications will cause all of the shipments to be returned at the bidders expense.

CONTRACT PERIOD:

The original contract period shall be from date of award through May 31, 2008. The contract shall not bind, nor purport to bind, the Department for any contractual commitment in excess of the original contract period.

LIQUIDATED DAMAGES FOR DELIVERY AND/OR ACCEPTANCE:

Delivery Damages shall be set at fifty dollars (\$50) per unit per day for each day beyond the sixty (60) calendar day delivery period. Damages shall be assessed in the event that some or all of the components making up a unit are not received by the specified delivery date.

In the event that any component of a unit received does not comply with the specifications as outlined in the bid documents, the Contractor shall make all corrections necessary to bring the unit into compliance. All costs resulting from this necessary repair/replacement shall be borne by the Contractor and shall be performed within fourteen (14) calendar days of its being reported to the Contractor unless otherwise agreed to by the Department's representative. Acceptance Damages of fifty dollars (\$50) per

unit per day shall be assessed for each unit not in compliance after the fourteen (14) calendar days or the agreed upon deadline.

Damages will be limited to fifty percent (50%) of the total contract price. When this amount is reached the Department, at its discretion, reserves the right to cancel the remainder of the contract without being considered in breach of the contract and without any additional payment to the Contractor. Prior to the effective date of cancellation by the Department, the Department will purchase all units requested, received and found acceptable, less any liquidated damages per location. The Department will apply liquidated damages per location not fulfilled.

PAYMENT:

Invoices, per group, per delivery point, in triplicate per payment request per purchase order, should reflect the identical item(s) as listed on the purchase order. These invoices should include the purchase order number, date of shipment, *and a unique serial number for each item.*

Payment for all units will be processed after all units have been delivered and found acceptable by the Department's representative.

COOPERATIVE PROCUREMENT:

The Department is interested in assisting Missouri governmental entities in purchasing equipment, various materials and supplies that meet the Department specifications. The bidder should complete and submit Appendix B "Cooperative Procurement" with the other required bid documents.

CONTRACT PRICE ESCALATION:

In the event the Contractor requests a price increase during the contract period the Contractor must provide a written request and documentation justifying the need for a price increase, and the amount of such price increase. The Department will review the Contractor's written request and documentation for a price increase, and decide if a price increase is to be granted at that particular time. The Contractor shall understand and agree that the Department's decision shall be final and without recourse.

APPROVED MANUFACTURED AND BRANDED PRODUCTS:

The Department will be accepting bids on General Dynamics and AeroFlex manufactured and branded products as specified on the Pricing Page. *The Department will consider for award the functional equivalence of communications system analyzer products from manufacturers other than General Dynamics and AeroFlex.* The Department will make the final determination if equipment other than those items manufactured by General Dynamics or AeroFlex will be considered as functional equivalents. AeroFlex Model 2945-B and General Dynamics Model R2600 will be the equipment against which all substitutions will be measured.

NON-EXCLUSIVITY:

The Missouri Department of Transportation reserves the right to obtain like or similar products of this or other manufacturers when use of such products is deemed in the best interest of the Department.

ESTIMATED QUANTITIES: The quantities shown on the pricing page *are estimated* for the period specified. The Department reserves the right to increase or decrease the quantity as needed.

PACKAGING REQUIREMENTS: Product shall be shipped in the original OEM packaging and be clearly marked as to manufacturer, model number, quantity, brand, and all other appropriate, identifying information.

AWARD INFORMATION: For the purposes of this bid, items will be awarded on an "All or None" basis. Bidder must bid on all items listed in order to be considered for award.

VENDOR NAME REGISTRATION:

On all bid documents, the bidder must use the firm name under which he/she is registered to do business in the state of Missouri. The bidder must ensure that his/her firm name is registered with the office of the Secretary of State.

ADDITIONAL DOCUMENT SUBMITTAL REQUIREMENTS:

For the bid to be considered the two (2) attachments “Preference in Purchasing Products” and “Missouri Domestic Product Procurement Act” must be submitted to this office prior to any contract being awarded for this bid.

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SPECIFICATIONS FOR COMMUNICATIONS SYSTEM ANALYZER

GENERAL

The Missouri Department of Transportation (hereinafter referred to as the Department) desires to establish a contract for the purchase of Communications System Analyzers that are single, integrated units.

CONTRACTOR REQUIREMENTS

General Requirements

The Contractor shall provide units for the Department in accordance with the terms and conditions stated herein.

All equipment and services shall be provided to the sole satisfaction of the Department.

Unless stated differently, the Contractor shall provide all equipment and personnel needed to fulfill the terms of the contract.

General Technical Specifications and Unit Components

Each unit shall be complete with, but not necessarily limited to, all components outlined on Appendix C "Unit Technical Specifications".

Power Requirements

110-120 Volt AC

MANUALS AND DOCUMENTATION

Operating Manual

One (1) operating manual shall be delivered with each unit. At a minimum, the manual shall include information on installation, setup, configuration and programming (if applicable), operating guidelines, safety, and connections. The cost of the operating manual shall be included in the bid price for each unit.

Service Manual

One (1) service manual shall be delivered with each unit. At a minimum, the manual shall include information on servicing and troubleshooting all components of the unit. The cost of the service manual shall be included in the bid price for each unit.

Software Manual

One (1) software manual shall be delivered with each unit. At a minimum, the manual shall include information on installation, configuration and programming of the unit. The cost of the software manual shall be included in the bid price for each unit.

Service Bulletins

Service bulletins shall be provided, at no additional charge, to each delivery location and to Central Office Traffic Division, Jefferson City, MO, for a minimum of seven (7) years from the date of the purchase order. The service bulletin shall show all updates pertaining to the maintenance and operation of the units.

Optional Equipment

All available optional equipment from the Bidder must be available for purchase at the Department's discretion, with the discount offered by the Bidder as outlined on the Pricing Page, to include all available technical data sheets for each item ordered. The Department may also elect to procure all other products available in the Bidder's most recent parts/equipment catalog's Manufacture's List Price utilizing the aforementioned discount percentage

These optional items ***will not*** be considered as part of the bid award, but are required to be available for purchase by the Department. A firm percentage off the current catalog's Manufacture's List Price should be given as noted on the Pricing Page, should the Department deem it necessary to purchase such optional items, as will be identified on the purchase order. The Bidder will also make available the listed discount percentage for all other products available in the Bidder's most recent parts/equipment catalog accessories.

SERVICE AND TECHNICAL SUPPORT

Service

The Contractor shall supply location, contact and shipping information for the authorized company or associated service shop where warranty work and calibration can be accomplished.

Technical Support

The Contractor shall be required to provide contact information (name, address, telephone, e-mail, etc.) for technical support representative(s). The representative(s) shall be available to assist Department personnel, at a minimum, during weekdays beginning at 8:00 a.m. through 5:00 p.m., Central Standard Time., by telephone and email to assist with setup, programming, operation and other technical aspects of the equipment. All costs for technical support shall be included in the bid price for each unit.

Replacement and Repair Parts

The Contractor must make available unit replacement and repair parts for a minimum of seven (7) years from the date of Department's purchase order payment.

WARRANTY

All parts and materials shall be guaranteed to be free from defects or defective workmanship for a minimum of one (1) year from the date of unit installation as recorded by Department staff. For the guarantee limits, it will be considered that all units will be placed in service within twelve (12) months after acceptance and payment for the units by the Department.

TRAINING AND TECHNICAL ORIENTATION

The Contractor shall present a complete course of training and technical instruction to the Department's maintenance personnel as part of the contract. ***COST OF TRAINING:*** The cost of the initial training course shall be priced by the Bidder on the Pricing Page and shall include, but not necessarily be limited to, all travel related costs (mileage, airfare, lodging, per diem, etc.), instructor costs, instructional materials, handouts, etc. This initial training course shall cover all aspects of training on the equipment to include, but not necessarily be limited to, programming, operation, trouble-shooting, and maintenance of the unit. This initial training course will be held in Jefferson City or other Missouri location at a time and date mutually agreeable to the Bidder and the Department.

The Contractor shall provide all equipment and instruction materials necessary for the initial training course. The Contractor will be required to provide one (1) such initial training and technical orientation course to the Department, for approximately twenty (20) students, at a time during the course of the original contract period noted in the bid documents herein.

Additional training and technical orientation courses requested by the Department during the original contract period shall be as mutually agreed to by the Contractor and the Department as to cost per student, scheduling issues and location.

MODEL NUMBER CHANGES OR CHANGES IN MANUFACTURE SPECIFICATIONS

Model Number Changes

In the event the unit manufacturer changes the original model numbers to the units purchased by the Department as part of the bid contract, and no other aspect of the unit's functionality has been changed/modified/upgraded, the Department will note such change(s) in the purchase orders issued by the Department for these units. No other action by the Department will be necessary to continue purchasing these units as part of the bid contract.

Changes in Manufacturer Specifications

In the event the unit manufacturer changes the functionality of the units purchased under the bid contract, and such changes/modifications/upgrades do not result in a reduction of the minimum technical specifications for the unit noted herein, and the prices as noted in the current contract with the Contractor remain unchanged, the Department will note such change(s) in the purchase orders issued by the Department for these units. No other action by the Department will be necessary to continue purchasing these units as part of the bid contract.

In the event the unit manufacturer makes changes/modifications/upgrades to any component of the units purchased by the Department as part of this bid, that result in any change(s) to the unit's functionality or operation/maintenance, the Contractor shall provide all equipment and instruction materials necessary to complete a course of instruction to the Department's maintenance personnel related to any changes/modifications/upgrades. This training shall be as mutually agreed to by the Contractor and the Department as to cost per student, scheduling issues and location.

~ End of Specification ~

PRICING PAGE

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Contract for furnishing “Communications System Analyzer” for a contract period beginning date of award through May 31, 2008. COMPLETE AND SUBMIT WITH YOUR SIGNED BID FORM AND OTHER REQUIRED DOCUMENTATION.

Item #	Description	Manufacturer & Model #	EST QTY	PRICE PER UNIT	Extended Total
001	<p>COMMUNICATIONS SYSTEM ANALYZER</p> <p>Bids will be accepted on General Dynamics Model R2600 or AeroFlex Model 2945-B.</p> <p><i>Substitutions: Equipment that is functionally equivalent to the aforementioned equipment will be considered for award as noted herein.</i></p>		7	\$ _____	\$ _____
				GRAND TOTAL	\$ _____

TRAINING COST: The Bidder shall offer the initial training course, as otherwise specified herein, at the below listed cost. DO NOT INCLUDE THE COST OF TRAINING IN THE UNIT PRICE. The cost for this initial training course may be subject to review and amendment by the Department based on current issues of importance to this training: \$ _____ FOR INITIAL TRAINING COURSE.

RENEWAL OPTIONS: *In the event that the Department exercises its option to renew the contract for two (2) one-year periods, or any portion thereof,* pursuant to the applicable provisions outlined in this document, the Bidder shall provide below the maximum percentage of increase. The Bidder is cautioned that the percentage shall be computed against the CURRENT contract prices during renewal period. Furthermore, the Bidder is advised that the Department does not automatically grant increases at the time of renewing the contract and that if an increase is requested, documentation of need must be provided at the time of renewal.

1st 1-year Renewal Period _____ % of maximum increase

2nd 1-year Renewal Period _____ % of maximum increase

CURRENT LIST PRICE DISCOUNT: In the event the Department exercises its option to purchase additional accessories and equipment as available in the Contractor’s product catalog, the Contractor will be required to offer all accessories and equipment to the Department with the below listed discount:

_____ % Discount off of the Manufacturer’s Current Catalog List Price.

CONTRACTOR MUST PROVIDE A PERCENTAGE OF DISCOUNT AS PART OF THIS BID.

Name of the Bidders Firm

Signature of Contractor’s Authorized Representative

Date Signed

PREFERENCE IN PURCHASING PRODUCTS

DATE: _____

The bidders attention is directed to Section 34.076 RSMo 2000 which gives preference to Missouri corporations, firms, and individuals when letting contracts or purchasing products.

Bids/Quotations received will be evaluated on the basis of this legislation.

All vendors submitting a bid/quotation must furnish ALL information requested below.

FOR CORPORATIONS:

State in which incorporated:

FOR OTHERS:

State of domicile:

FOR ALL VENDORS:

List address of Missouri offices or places of business:

THIS SECTION MUST BE COMPLETED AND SIGNED:

FIRM NAME:

ADDRESS:

CITY: _____ **STATE:** _____ **ZIP:** _____

BY (signature required):

Federal Tax I.D. #: _____ if no Federal Tax I.D. # - list Social Security #: _____

NOTE: For bid/quotation to be considered, the "Preference in Purchasing Products" form must be on file in the General Services (Procurement) Division and must be dated in the current calendar year.

MISSOURI DOMESTIC PRODUCTS PROCUREMENT ACT

The bidder's attention is directed to the Missouri Domestic Products Procurement Act, Sections 34.350 to 34/359, RsMO, which requires all manufactured goods or commodities used or supplied in the performance of this contract or any subcontract to be manufactured or produced in the United States.

Section 34.355, RsMO, requires the vendor or contractor to certify his compliance with Section 34.353 and, if applicable, Section 34.359, RsMO, at the time of bidding **and** prior to payment. Failure to comply with Section 34.353, RsMO, during the performance of the contract **and** to provide certification of compliance prior to payment will result in nonpayment for those goods or commodities.

Section 34.353.2, RsMO, specifies that it does not apply where the total contract is less than Twenty-Five Thousand Dollars (\$25,000.00). If your total bid is Twenty-Five Thousand Dollars (\$25,000.00) or more, you **must** complete this form as directed below.

Failure to complete and return this document with this bid will cause the State to presume the manufactured goods or products listed in the bid are not manufactured or produced in the United States, and the bid will be evaluated on that basis. Please read the certification appearing below on this form.

If all the goods or products specified in the attached bid which the bidder proposes to supply to the State shall be manufactured or produced in the "United States" as defined in Section 34.350, RsMO, check the box at left.

If only one item of any particular goods or products specified in the attached bid is manufactured or produced in the "United States" as defined in Section 34.350, RsMO, check the box at left and list the items (or item number) here:

If any or all of the goods or products specified in the attached bid which the bidder proposes to supply to the State are **not** manufactured or produced in the "United States" as defined in Section 34.350, RsMO, then: (a) check the box at left; (b) list below, by item (or item number), the country other than the United States where each good or product is manufactured or produced; and (c) check the boxes to the left of the paragraphs below if applicable and list the corresponding items (or item numbers) in the spaces provided.

n (or item number)	Location Where Item Manufactured or Produced

(attach an additional sheet if necessary)

The following specified goods or products cannot be manufactured or produced in the United States in sufficient quantities or in time to meet the contract specifications. Items (or item numbers): _____

The following specified goods or products must be treated as manufactured or produced in the United States, in accordance with an existing treaty, law, agreement, or regulation of the United States, including a treaty between the United States and any foreign country regarding export-import restrictions or international trade. Items (or item numbers): _____

CERTIFICATION

By submitting this document, completed as directed above, with a bid, the bidder certifies under penalty of making false declaration (Section 575.060, RsMO) that the information contained in this document is true, correct and complete, and may be relied upon by the State in determining the bidders qualifications under and in compliance with the Missouri Domestic Products Procurement Act.

The bidder's failure to complete and return this document with the bid as directed above will cause the State to presume the manufactured goods or products listed in the bid are not manufactured or produced in the United States, and the bid will be evaluated on that basis pursuant to Section 34.353.3(2), RsMO.

Vendor Name: _____

Vendor Address: _____

APPENDIX A

Potential Delivery Locations Missouri Department of Transportation

District 1
St. Joseph, MO

District 2
Macon, MO

District 3
Hannibal, MO

District 4
Lee's Summit, MO

District 5
Jefferson City, MO

District 6
Chesterfield, MO

District 7
Joplin, MO

District 8
Springfield, MO

District 9
Willow Springs, MO

District 10
Sikeston, MO

Central Office
Jefferson City, MO

APPENDIX B
COOPERATIVE PROCUREMENT

The Department is interested in assisting Missouri governmental entities in purchasing equipment, various materials and supplies that meet the Highway and Transportation Department specifications.

Each bidder is asked to indicate below whether they would be willing to offer the Communications System Analyzer listed herein the attached bid documents for sale to these local political entities at the same bid price offered to this Department.

It is understood the Department will not issue purchase orders, accept delivery nor make payment for these items ordered by any of these political entities/agencies. It is further understood the price is based on the units meeting the Department specifications. Any added options, deletions, or extra freight costs would be negotiated between the local agency and the Contractor.

INDICATE BELOW WHETHER YOUR COMPANY IS WILLING TO OFFER SUCH COOPERATIVE PURCHASING FOR MISSOURI COUNTIES, CITIES OR OTHER POLITICAL ENTITIES.

YES _____ NO _____

Indicate the last deadline date that orders will be accepted: _____

COMPANY NAME _____

ADDRESS _____

PHONE NUMBER _____

PRINTED NAME _____

SIGNATURE _____

TITLE _____

DATE _____

APPENDIX C
UNIT TECHNICAL SPECIFICATIONS
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Calibration

Each unit will have a one-time calibration service performed for that unit within a twelve (12) month period of time after the unit has been placed in service by the Department. It is anticipated that the units will be placed in service within sixty (60) days of the receipt and approval of the unit by the Department's representative. All costs associated with this calibration service shall be included in the price per unit.

Operating Display Modes

AM/FM Monitor, Cable Fault Locator
AM/FM Generate, Frequency Counter
Audio Synthesizer, Digital Voltmeter
Spectrum Analyzer, Wattmeter
Duplex Generator, Oscilloscope
Sweep Generator, Signal Strength Meter
Tracking Generator, SINAD/Distortion Meter

General Information

Certain characteristics are shown as being typical. These provide additional information for applying the instrument, but are not necessarily all inclusive.

RF SIGNAL GENERATOR

Frequency Range:

400 kHz to 1 GHz

Resolution:

50 Hz

Accuracy:

Refer to Accuracy of Master Oscillator

Stabilization Time:

.1 Second

Output

Range FM:

-130 dBm to 0 dBm

Range AM:

-130 dBm to -3 dBm

Accuracy:

±2 dB, -80 dBm to -130 dBm, RF I/O Port
±4 dB, >3 MHz, all other levels and ports.

Sweep Generator

Range:

400 kHz to 1 GHz

Resolution:

50 Hz

APPENDIX C
UNIT TECHNICAL SPECIFICATIONS
Page 2 of 7

Output:

-130 dBm to 0 dBm

Sweep Width:

Selectable up to ± 5 MHz of center freq.

Scope Coupling: Synchronized scope trace to the sweep signal

Accuracy: Same as Signal Generator

Duplex Generator

Range: 400 kHz to 1 GHz

Receiver Resolution: 50 Hz

Output: -130 dBm to 0 dBm

Frequency Offset: 0 MHz to ± 999.995 MHz in 2.5 kHz steps

Accuracy: Same as Signal Generator

Spectral Purity

Spurious: -35 dBc within ± 20 MHz of selected

carrier frequency. Additional fixed spurs at an absolute level of < -90 dBm at harmonic frequencies of 5 MHz.

Harmonics:

-20 dBc

FM Modulation

Deviation:

99.5 kHz

Accuracy:

5% of setting ± 25 Hz @ 1 kHz (NB)

5% of setting ± 250 Hz @ 1 kHz (WB)

Residual FM:

20 Hz max @ 300 Hz to 3 kHz

Frequency Range:

5 Hz to 20 kHz

AM Modulation

Range:

0 to 90%

Resolution:

1% of modulation

Residual AM:

1.0% max @ 300 to 3 kHz

Frequency Range:

100 Hz to 10 kHz

APPENDIX C
UNIT TECHNICAL SPECIFICATIONS
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AUDIO MODULATIONS SYNTHESIZER

Modulation Types:

1 kHz tone, PRIVATE LINE, DIGITAL PRIVATE LINE, Single Tone, DTMF, Two-Tone Paging, 5/6 Tone Paging, International Select V, 20 Tone General Sequence, Tone Remote Control, External inputs from both a supplied microphone and BNC input.

Mod Output Amplitude Flatness:

5 Hz to 20 kHz \pm 1 dB

Mod Output Level:

Programmable to \pm 7.95 v peak

Mod Output Impedance:

100 ohms nominal

1 kHz Tone Distortion:

Not to exceed 1% THD

External Modulation Inputs:

Front panel microphone and a BNC jack are summed.

BNC Input Impedance: 600 ohms nominal

Microphone Supplied: HMN-1056D

Microphone Input Conditioning:

Internal audio limiting providing IDC and pre-emphasis.

RF RECEIVER

Frequency Range:

400 kHz to 1 GHz

Resolution:

50 Hz

Accuracy:

Refer to Accuracy of Master Oscillator

Spurious Response:

40 dB typical

Sensitivity (Above 10 MHz)

Narrowband FM:

2.0 uV for 10 dB EIA SINAD

Wideband FM:

10 uV for 10 dB EIA SINAD

Wideband AM:

10 uV for 10 dB EIA SINAD

Frequency Error Meter

Type of Display:

Autoranging

APPENDIX C
UNIT TECHNICAL SPECIFICATIONS

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Resolution:

1 Hz

FM Deviation Measurement

Demod Range:

Up to ± 5 kHz in Narrowband Up to ± 75 kHz in Wideband

Accuracy:

$\pm 5\%$ plus peak residual FM

Frequency Response:

Selectable per the following:

Low Pass Filters

300 Hz, 3 kHz, 20 kHz

High Pass Filters

5 Hz, 300 Hz, 3 kHz

Demodulated Output Level:

0.8 V peak per 1 kHz peak Deviation in Narrowband and per 10 kHz
Deviation in Wideband

Demodulation Output Impedance:

100 ohms nominal

Deviation Alarm:

Audible, set via keypad in 100 Hz increments

AM Modulation Measurements

Demodulation Range:

0 to 100%

Accuracy:

$\pm 5\%$ for levels below 80%

Frequency Response:

Selectable per the following:

Low Pass Filters

300 Hz, 3 kHz, 20 kHz

High Pass Filters

5 Hz, 300 Hz, 3 kHz

Demodulated Output Level:

0.8 V peak per 10% AM modulation

Output Impedance:

100 ohms nominal

SPECTRUM ANALYZER

Frequency Range:

400 kHz to 1 GHz

APPENDIX C
UNIT TECHNICAL SPECIFICATIONS

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Dispersion:

Selectable from keypad, as follows:

200 kHz window - (20 kHz per division)

500 kHz window - (50 kHz per division)

1 MHz window - (100 kHz per division)

2 MHz window - (200 kHz per division)

5 MHz window - (500 kHz per division)

10 MHz window - (1 MHz per division)

20 MHz window - (2 MHz per division)

50 MHz window - (5 MHz per division)

100 MHz window - (10 MHz per division)

Dynamic Range:

60 dB

Bandwidth:

Automatically selected:

6 kHz - (100 kHz per division & below)

30 kHz - (200 kHz per division & above)

Display Range:

+50 to -95 dBm

Modes:

Freeze, Max Hold, Peak Hold, Average

Markers:

Delta or Absolute Level and Frequency

SIGNAL STRENGTH INDICATOR

Range: 400 KHz to 1 GHz

Accuracy: ± 4 dB, > 3 MHz

Sensitivity: -100 dBm (antenna port rating)

WATT METER(RF I/O PORT)

Frequency Range: 400 KHz to 1 GHz

Measurement Range: .1 watt to 125 watts

Input Impedance: 50 ohms with maximum VSWR of 1.5:1

Accuracy: $\pm 10\%$, > 3 MHz

Protection: Over temperature alarms

TRACKING GENERATOR

Frequency Range: 400 kHz to 1 GHz

Tracking Display

APPENDIX C
UNIT TECHNICAL SPECIFICATIONS
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Sweep Range: 200 kHz window - (20 kHz per division)
500 kHz window - (50 kHz per division)
1 MHz window - (100 kHz per division)
2 MHz window - (200 kHz per division)
5 MHz window - (500 kHz per division)
10 MHz window - (1 MHz per division)
20 MHz window - (2 MHz per division)
50 MHz window - (5 MHz per division)
Display Range: 0 to -80 dBm

CABLE FAULT

Method: Standing Wave Analysis
Measure: Fault distance, cable length
Reading: Feet and meters
Accuracy: $\pm 10\%$
Metering & Measurement (Cont.)

OSCILLOSCOPE

Display Size: 6.4 in (17 cm) diagonal
Frequency Response: 0 to 50 kHz
Vertical Input Ranges: Selectable per the following:
10 mV, 20 mV, 50 mV, 100 mV, 200 mV,
500 mV, 1v, 2v, 5v, 10v per division
Accuracy: 5% of full scale all ranges
Sweep Ranges: Selectable per the following:
20 usec, 50 usec, 100 usec, 200 usec,
500 usec, 1 msec, 2 msec, 5 msec,
10 msec, 20 msec, 50 msec, 100 msec,
200 msec, 500 msec, 1 sec per division
Trigger: Automatic, normal, and single sweep
Markers: Delta Voltage, Delta Frequency, Delta Period

DIGITAL VOLTMETER

Meter Type: RMS
Frequency Range: DC plus AC of 50 Hz to 20 kHz
DC Voltage Ranges: 1.0 V, 10.0 V, 100.0 V full scale
Accuracy: 1% full scale ± 1 least significant digit
AC Voltage Ranges: 1.0 V, 10.0 V, 70.0 V full scale
Accuracy: 5% full scale ± 1 least significant digit
Freq. Response: 3 dB end points @ 50 Hz and 20 kHz

FREQUENCY COUNTER

Frequency Range: 5 Hz to 500 kHz plus Auto Tune
Period Counter Range: 5 Hz to 20 kHz

APPENDIX C
UNIT TECHNICAL SPECIFICATIONS
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Input Level: 0.1 v RMS minimum input level
Resolution: 0.1 Hz, 1 Hz and 10 Hz varying by frequency range
Auto Tune: Monitor mode, 20 MHz to 1 GHz, unit will scan and find signals greater than -30 dBm
Accuracy: See **TIME BASE**

SINAD/DISTORTION METER

Input Level: 0.1 V to 10 V RMS
SINAD Accuracy: ± 1 dB at 12 dB SINAD
Distortion Range: 1% to 20%
Distortion Accuracy: $\pm 0.5\%$ of distortion or $\pm 10\%$ of reading whichever is greater
Optional: C-Message Filter; CCITT Filter w/ 600 ohm switchable load

TONE SEQUENCE DECODE

Modulation types: PRIVATE LINE, DIGITAL PRIVATE LINE, Single Tone, DTMF, Two-Tone Paging, 5/6 Tone Paging, International Select V, 20 Tone General Sequence.
Frequency Accuracy: $\pm 3\%$ from 300 Hz to 3 kHz
Duration Accuracy: ± 12 msec for tones greater than 30 msec and 300 Hz

RS232 PORT

Bi-directional port provided with capability to respond to serial input command vocabulary to activate standard functions and return measured results. Baud rates to 115.2 Kbps with selectable start, stop and parity bits.

TIME BASE: Aging .5 ppm/yr,
Temperature .05 ppm

BER Capability: Free running, unframed V.52 pseudo random non-encrypted sequence.
Measurement range from 0 to 20% bit errors.

Printer/Remote

Control: RS-232 DB25 (female)
Color Monitor: Standard 15 pin VGA

Power

AC: 100 to 130Vrms or 200-260Vrms @ 50 Hz to 400 Hz
DC: +11 to +16 VDC

Battery Option: 13.6 V, 50 minutes typical

Approximate Standard Dimensions: 8.5" high x 16" wide x 17" deep (21.6 cm x 40.7 cm wide x 43.2 cm) excluding accessories, battery pack and cover

Typical Weight: Approximately 28.5 lbs., base unit without cover, options or accessories.

Temperature: 0° C to +50° C and up to 95% relative humidity (operating).

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STANDARD SOLICITATION PROVISIONS

- a. The Missouri Department of Transportation (MoDOT) reserves the right to reject any or all bids/quotes/proposals, and to accept or reject any items thereon, and to waive technicalities. In case of error in the extension of prices in the bid/quote/proposal, unit prices will govern.
- b. All bids/quotes/proposals must be signed with the firm name and by a responsible officer or employee. Obligations assumed by such signature must be fulfilled.
- c. By virtue of statutory authority, a preference will be given to materials, products, supplies, provisions and all other articles produced, manufactured, made or grown, within the State of Missouri.
- d. Time of delivery is a part of the consideration and, if not otherwise stated in the solicitation documents, must be stated in definite terms by the Bidder/Offeror and must be adhered to. If time varies on different items, the Bidder/Offeror shall so state.
- e. If providing bids/quotes/proposals for commodities, the Bidder/Offeror will state brand or make on each item. If bidding or proposing other than the make, model or brand specified, the manufacturer's name, model number or catalog number must be given.
- f. **For bids/proposals of \$25,000** or more, no bids/proposals by telephone, telegram or telefax will be accepted. If provided, these bids/proposals should be returned in the MoDOT solicitation return envelope.
- g. If a solicitation return envelope is provided by MoDOT, the bid/quote/proposal should be returned in the envelope provided with the Bid/RFQ/RFP Request Number plainly indicated thereon.
- h. The date specified for the returning of bids/quotes/proposals is a firm deadline and all bids/quotes/proposals must be received at the designated office by that time. The Department does not recognize the U.S. Mail, Railway Express Agency, Air Express, or any other organization, as its agent for purposes of accepting proposals. All proposals arriving at the designated office after the deadline specified will be rejected.

GENERAL TERMS AND CONDITIONS

General Performance

- a. This work is to be performed under the general supervision and direction of the Missouri Department of Transportation (MoDOT) and, if awarded any portion of the work, the Contractor agrees to furnish at his own expense all labor and equipment required to complete the work, it being expressly understood that this solicitation is for completed work based upon the price(s) specified and is not a solicitation for rental of equipment or employment of labor by MoDOT, and MoDOT is to have no direction or control over the employees used by the Contractor in performance of the work.

Deliveries

- a. Unless otherwise specified on the solicitation documents or purchase order, suppliers shall give at least 24 hours advance notice of each delivery. Delivery will only be received between the hours of 8:00 a.m. to 3:00 p.m., Monday through Friday. Material arriving after 3:00 p.m. will not be unloaded until the following workday. No material will be received on Saturday, Sunday or state holidays.
- b. If the prices bid herein include the delivery cost of the material, the Contractor agrees to pay all transportation charges on the material as FOB - Destination. Freight costs must be included in the unit price bid and not listed as a separate line item.
- c. Any demurrage is to be paid by the Contractor direct to the railroad or carrier.

Nondiscrimination

- a. The Contractor shall comply with the Regulations relative to nondiscrimination in federally-assisted programs of the Department of Transportation, Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.
- b. All solicitations either by competitive bidding or negotiation made by the Contractor for work to be performed under a subcontract, including procurements of materials or leases of the Contractor's obligations under this contract and the Regulations, will be relative to nondiscrimination on the grounds of race, color, or national origin.
 - 1) **Sanctions for Noncompliance:** In the event of the Contractor's noncompliance with the nondiscrimination provisions of this contract, MoDOT shall impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to:
 - i. withholding of payments to the Contractor under the contract until the Contractor complies, and/or,
 - ii. cancellation, termination or suspension of the contract, in whole or in part.

Contract/Purchase Order

- a. By submitting a bid/quote/proposal, the Bidder/Offeror agrees to furnish any and all equipment, supplies and/or services specified in the solicitation documents, at the prices quoted, pursuant to all requirements and specifications contained therein.
- b. A binding contract shall consist of: (1) the solicitation documents, amendments thereto, and/or Best and Final Offer (BAFO) request(s) with any changes/additions, (2) the Contractor's proposal and/or submitted pricing, and (3) the MHTC's acceptance of the proposal and/or bid by purchase order or post-award contract.
- c. A notice of award does not constitute an authorization for shipment of equipment or supplies or a directive to proceed with services. Before providing equipment, supplies and/or services, the Contractor must receive a properly authorized purchase order and/or notice to proceed.
- d. The contract expresses the complete agreement of the parties and performance shall be governed solely by the specifications and requirements contained therein. Any change, whether by modification and/or supplementation, must be accomplished by a formal contract amendment signed and approved by and between the duly authorized representative of the Contractor and the duly authorized representative of the MHTC, by a modified purchase order prior to the effective date of such modification. The Contractor expressly and explicitly understands and agrees that no other method and/or no other document, including correspondence, acts, and oral communications by or from any person, shall be used or construed as an amendment or modification.

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Subcontracting

- a. It is specifically understood that no portion of the material or any interest in the contract, shall be subcontracted, transferred, assigned or otherwise disposed of, except with the written consent of MoDOT. Request for permission to subcontract or otherwise dispose of any part of the work shall be in writing to MoDOT and accompanied by documentation showing that the organization which will perform the work is particularly experienced and equipped for such work.
- b. Consent to subcontract or otherwise dispose of any portion of the work shall not be construed to relieve the Contractor of any responsibility for the production and delivery of the contracted work and the completion of the work within the specified time.
- c. All payments for work performed by a subcontractor shall be made to the Contractor to whom the contract was awarded and the purchase order issued.

Invoicing and Payment

- a. MoDOT is exempt from paying Missouri Sales Tax, Missouri Use Tax and Federal Excise Tax. However, the Contractor may themselves be responsible for the payment of taxes on materials they purchase to fulfill the contract. A Federal Excise Tax Exemption Certificate will be furnished to the successful Bidder/Offeror upon request.
- b. Each invoice should be itemized in accordance with items listed on the purchase order and/or contract. The statewide financial management system has been designed to capture certain receipt and payment information. Therefore, each invoice submitted must reference the purchase order number and must be itemized in accordance with items listed on the purchase order. Failure to comply with this requirement may delay processing of invoices for payment.
- c. Unless otherwise provided for in the solicitation documents, payment for all equipment, supplies, and/or services required herein shall be made in arrears. The Missouri Highways and Transportation Commission (MHTC) shall not make any advance deposits.
- d. The MHTC assumes no obligation for equipment, supplies, and/or services shipped or provided in excess of the quantity ordered. Any authorized quantity is subject to the MHTC's rejection and shall be returned at the Contractor's expense.
- e. The MHTC reserves the right to purchase goods and services using the state-purchasing card.

Applicable Laws and Regulations

- a. The contract shall be construed according to the laws of the State of Missouri. The Contractor shall comply with all local, state, and federal laws and regulations related to the performance of the contract.
- b. The Contractor must be registered and maintain good standing with the Secretary of State of the State of Missouri and other regulatory agencies, as may be required by law or regulations. Prior to the issuance of a purchase order and/or notice to proceed, the Contractor may be required to submit to MoDOT a copy of their current Authority Certificate from the Secretary of State of the State of Missouri.
 - 1) Prior to the issuance of a purchase order and/or notice to proceed, all **out-of-state** Contractors **providing services** within the state of Missouri must submit to MoDOT a copy of their current Transient Employer Certificate from the Department of Revenue, in addition to a copy of their current Authority Certificate from the Secretary of State of the State of Missouri.
- c. The exclusive venue for any legal proceeding relating to or arising, out of the contract shall be in the Circuit Court of Cole County, Missouri.

Preferences

- a. In the evaluation of bids/quotes/proposals, preferences shall be applied in accordance with Chapter 34 RSMo. Contractors should apply the same preferences in selecting subcontractors.
- b. By virtue of statutory authority, RSMo. 34.076 and 34.350 to 34.359, a preference will be given to materials, products, supplies, provisions and all other articles produced, manufactured, made or grown within the State of Missouri. Such preference shall be given when quality is equal or better and delivered price is the same or less.
 - 1) If attached, the document entitled "**PREFERENCE IN PURCHASING PRODUCTS**" should be completed and returned with the solicitation documents.
 - 2) If attached, the document entitled "**MISSOURI DOMESTIC PRODUCTS PROCUREMENT ACT**" should be completed and returned with the solicitation documents. **Applies if bid is Twenty-Five Thousand Dollars (\$25,000.00) or more.**
- c. In the event of a tie of low bids, the MHTC reserves the right to establish the method to be used in determining the award

Remedies and Rights

- a. No provision in the contract shall be construed, expressly or implied, as a waiver by the MHTC of any existing or future right and/or remedy available by law in the event of any claim by the MHTC of the Contractor's default or breach of contract.
- b. The Contractor agrees and understands that the contract shall constitute an assignment by the Contractor to the MHTC of all rights, title and interest in and to all causes of action that the Contractor may have under the antitrust laws of the United States or State of Missouri for which causes of action have accrued or will accrue as the result of or in relation to the particular equipment, supplies, and/or services purchased or produced by the Contractor in the fulfillment of the contract with the MHTC.
- c. In the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the Contractor may request MoDOT to enter into such litigation to protect the interests of the MHTC, and, in addition, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

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Cancellation of Contract

- a. The MHTC may cancel the contract at any time for a material breach of contractual obligations or for convenience by providing the Contractor with written notice of cancellation. Should the MHTC exercise its right to cancel the contract for such reasons, cancellation will become effective upon the date specified in the notice of cancellation sent to the Contractor.
- b. If the MHTC cancels the contract for breach, the MHTC reserves the right to obtain the equipment, supplies, and/or services to be provided pursuant to the contract from other sources and upon such terms and in such manner as the MHTC deems appropriate and charge the Contractor for any additional costs incurred thereby.

Bankruptcy or Insolvency

- a. Upon filing for any bankruptcy or insolvency proceeding by or against the Contractor, whether voluntary or involuntary, or upon the appointment of a receiver, trustee, or assigned the benefit or creditors, the Contractor must notify MoDOT immediately. Upon learning of any such actions, the MHTC reserves the right, at its sole discretion, to either cancel the contract or affirm the contract and hold the Contractor responsible for damages.

Inventions, Patents, and Copyrights

- a. The Contractor shall defend, protect, and hold harmless the MHTC, its officers, agents, and employees against all suits of law or in equity resulting from patent and copyright infringement concerning the Contractor's performance or products produced under the terms of the contract.

Inspection and Acceptance

- a. No equipment, supplies, and/or services received by MoDOT pursuant to a contract shall be deemed accepted until MoDOT has had reasonable opportunity to inspect said equipment, supplies, and/or services.
- b. All equipment, supplies, and/or services which do not comply with the specifications and/or requirements or which are otherwise unacceptable or defective may be rejected. In addition, all equipment, supplies, and/or services which are discovered to be defective or which do not conform to any warranty of the Contractor upon inspection (or at any later time if the defects contained were not reasonably ascertainable upon the initial inspection) may be rejected.
- c. The MHTC reserves the right to return any such rejected shipment at the Contractor's expense for full credit or replacement and to specify a reasonable date by which replacements must be received.
- d. The MHTC's right to reject any unacceptable equipment, supplies, and/or services shall not exclude any other legal, equitable or contractual remedies the MHTC may have.

Warranty

- a. The Contractor expressly warrants that all equipment, supplies, and/or services provided shall: (1) conform to each and every specification, drawing, sample or other description which was furnished to or adopted by MoDOT, (2) be fit and sufficient for the purpose expressed in the solicitation documents, (3) be merchantable, (4) be of good materials and workmanship, and (5) be free from defect.
- b. Such warranty shall survive delivery and shall not be deemed waived either by reason of the MHTC's acceptance of or payment for said equipment, supplies, and/or services.

Status of Independent Contractor

- a. The Contractor represents itself to be an independent Contractor offering such services to the general public and shall not represent itself or its employees to be an employee of the MHTC. Therefore, the Contractor shall assume all legal and financial responsibility for taxes, FICA, employee fringe benefits, workers' compensation, employee insurance, minimum wage requirements, overtime, etc., and agrees to indemnify, save and hold the MHTC, its officers, agents and employees harmless from and against any and all losses (including attorney fees) and damage of any kind related to such matters.

Indemnification

- a. The Offeror shall defend, indemnify and hold harmless the Commission, including its members and department employees, from any claim or liability whether based on a claim for damages to real or personal property or to a person for any matter relating to or arising out of the Offeror's performance of its obligations under this Agreement.