

Lexington Fayette Urban County Government

Division of Central Purchasing



Lexington Kentucky

Horse Capital of the World

INVITATION TO BID #19-2014

Digital Radio Service Test Monitor

NOTICE TO BIDDERS

Bid Opening Date: January 18, 2014

Bid Opening Time: 2:00 PM

**Address: 200 East Main Street
3rd Floor, Room 338**

Pre Bid Meeting: N/A

Pre Bid Time: N/A

Address: N/A

INVITATION TO BID

Bid Invitation Number: #19-2014

Date of Issue: 2/4/2014

Sealed bids will be received in the office of the Division of Central Purchasing, 200 East Main Street, Lexington, Kentucky, until **2:00 PM**, prevailing local time on **2/18/2014**. Bids must be received by the above-mentioned date and time. Mailed bids should be sent to:

**Division of Central Purchasing
200 East Main Street, Rm 338
Lexington, KY 40507, (859) 258-3320**

The Lexington-Fayette Urban County Government assumes no responsibility for bids that are not addressed and delivered as indicated above. Bids that are not delivered to the Division of Central Purchasing by the stated time and date will be rejected.

All bids must have the company name and address, bid invitation number, and the commodity/service on the outside of the envelope.

Bids are to include all shipping costs to the point of delivery located at: 150 E. Main Street, Lexington KY 40507

Bid Security Required: ____Yes XNo Performance Bond Required: ____Yes XNo
Cashier Check, Certified Check, Bid Bond (Personal checks and company checks will not be acceptable).

QTY	Commodity/Service
1	Digital Radio Service Test Monitor

<u>Check One:</u> ____ Bid Specifications Met ____ Exceptions to Bid Specifications. <i>Exceptions shall be itemized and attached to bid proposal submitted.</i>	<u>Proposed Delivery:</u> ____ days after acceptance of bid.
<u>Procurement Card Usage</u> ____ Yes The Lexington-Fayette Urban County Government will be using Procurement Cards to ____ No purchase goods and services and also to make payments. Will you accept Procurement Cards?	

Submitted by:

Firm

Address

City, State & Zip

***Bid must be signed:
(original signature)***

Signature of Authorized Company Representative – Title

Representative's Name (Typed or printed)

Area Code - Phone – Extension Fax #

E-Mail Address

The Affidavit in this bid must be completed before your firm can be considered for award of this contract.

AFFIDAVIT

Comes the Affiant, _____, and after being first duly sworn under penalty of perjury as follows:

1. His/her name is _____ and he/she is the individual submitting the bid or is the authorized representative of

_____,

the entity submitting the bid (hereinafter referred to as "Bidder").

2. Bidder will pay all taxes and fees, which are owed to the Lexington-Fayette Urban County Government at the time the bid is submitted, prior to award of the contract and will maintain a "current" status in regard to those taxes and fees during the life of the contract.

3. Bidder will obtain a Lexington-Fayette Urban County Government business license, if applicable, prior to award of the contract.

4. Bidder has authorized the Division of Central Purchasing to verify the above-mentioned information with the Division of Revenue and to disclose to the Urban County Council that taxes and/or fees are delinquent or that a business license has not been obtained.

5. Bidder has not knowingly violated any provision of the campaign finance laws of the Commonwealth of Kentucky within the past five (5) years and the award of a contract to the Bidder will not violate any provision of the campaign finance laws of the Commonwealth.

6. Bidder has not knowingly violated any provision of Chapter 25 of the Lexington-Fayette Urban County Government Code of Ordinances, known as "Ethics Act."

7. Bidder acknowledges that "knowingly" for purposes of this Affidavit means, with respect to conduct or to circumstances described by a statute or ordinance defining an offense, that a person is aware or should have been aware that his conduct is of that nature or that the circumstance exists.

Further, Affiant sayeth naught.

STATE OF _____

COUNTY OF _____

The foregoing instrument was subscribed, sworn to and acknowledged before me

by _____ on this the _____ day
of _____, 2014.

My Commission expires: _____

NOTARY PUBLIC, STATE AT LARGE

Please refer to Section II. Bid Conditions, Item "U" prior to completing this form.

I. GREEN PROCUREMENT

A. ENERGY

The Lexington-Fayette Urban County Government is committed to protecting our environment and being fiscally responsible to our citizens.

The Lexington-Fayette Urban County Government mandates the use of Energy Star compliant products if they are available in the marketplace (go to www.Energystar.gov). If these products are available, but not submitted in your pricing, your bid will be rejected as non-compliant.

ENERGY STAR is a government program that offers businesses and consumers energy-efficient solutions, making it easy to save money while protecting the environment for future generations.

Key Benefits

These products use 25 to 50% less energy

Reduced energy costs without compromising quality or performance

Reduced air pollution because fewer fossil fuels are burned

Significant return on investment

Extended product life and decreased maintenance

B. GREEN SEAL CERTIFIED PRODUCTS

The Lexington-Fayette Urban County Government is also committed to using other environmentally friendly products that do not negatively impact our environment. Green Seal is a non-profit organization devoted to environmental standard setting, product certification, and public education.

Go to www.Greenseal.org to find available certified products. These products will have a reduced impact on the environment and on human health. The products to be used must be pre-approved by the LFUCG prior to commencement of any work in any LFUCG facility. If a Green Seal product is not available, the LFUCG must provide a signed waiver to use an alternate product. Please provide information on the Green Seal products being used with your bid response.

C. GREEN COMMUNITY

The Lexington-Fayette Urban County Government (LFUCG) serves as a principal, along with the University of Kentucky and Fayette County Public Schools, in the Bluegrass Partnership for a Green Community. The Purchasing Team component of the Partnership collaborates on economy of scale purchasing that promotes and enhances environmental initiatives. Specifically, when applicable, each principal is interested in obtaining best value products and/or services which promote environment initiatives via solicitations and awards from the other principals.

If your company is the successful bidder on this Invitation For Bid, do you agree to extend the same product/service pricing to the other principals of the Bluegrass Partnership for a Green Community (i.e. University of Kentucky and Fayette County Schools) if requested?

Yes _____ No _____

II. Bid Conditions

- A. No bid may be withdrawn for a period of sixty (60) days after the date and time set for opening.
- B. No bid may be altered after the date and time set for opening. In the case of obvious errors, the Division of Central Purchasing may permit the withdrawal of a bid. The decision as to whether a bid may be withdrawn shall be that of the Division of Central Purchasing.
- C. Acceptance of this proposal shall be enactment of an Ordinance by the Urban County Council.
- D. The bidder agrees that the Urban County Government reserves the right to reject any and all bids for either fiscal or technical reasons, and to award each part of the bid separately or all parts to one vendor.
- E. Minor exceptions may not eliminate the bidder. The decision as to whether any exception is minor shall be entirely that of the head of the requisitioning Department or Division and the Director of the Division of Central Purchasing. The Urban County Government may waive technicalities and informalities where such waiver would best serve the interests of the Urban County Government.
- F. Manufacturer's catalogue numbers, trade names, etc., where shown herein are for descriptive purposes and are to guide the bidder in interpreting the standard of quality, design, and performance desired, and shall not be construed to exclude proposals based on furnishing other types of materials and/or services. However, any substitution or departure proposed by the bidder must be clearly noted and described; otherwise, it will be assumed that the bidder intends to supply items specifically mentioned in this Invitation for Bids.
- G. The Urban County Government may require demonstrations of the materials proposed herein prior to acceptance of this proposal.
- H. Bids must be submitted on this form and must be signed by the bidder or his authorized representative. Unsigned bids will not be considered.
- I. Bids must be submitted prior to the date and time indicated for opening. Bids submitted after this time will not be considered.
- J. All bids mailed must be marked on the face of the envelope:

“Bid on #19-2014 Digital Radio Service Test Monitor”

and addressed to: Division of Central Purchasing
200 East Main Street, Room 338
Lexington, Kentucky 40507

The Lexington-Fayette Urban County Government assumes no responsibility for bids that are not addressed and delivered as indicated above. Bids that are not delivered to the Division of Central Purchasing by the stated time and date will be rejected.

- K. Bidder is requested to show both unit prices and lot prices. In the event of error, the unit price shall prevail.
- L. A certified check or Bid Bond in the amount of XX percent of the bid price must be attached hereto. This check must be made payable to the Lexington-Fayette Urban County Government, and will be returned when the material and/or services specified herein have been delivered in accordance with specifications. In the event of failure to perform within the time period set forth

in this bid, it is agreed the certified check may be cashed and the funds retained by the Lexington-Fayette Urban County Government as liquidated damages. Checks of unsuccessful bidders will be returned when the bid has been awarded.

- M. The delivery dates specified by bidder may be a factor in the determination of the successful bidder.
- N. Tabulations of bids received may be mailed to bidders. Bidders requesting tabulations must enclose a stamped, self-addressed envelope with the bid.
- O. The Lexington-Fayette Urban County Government is exempt from Kentucky Sales Tax and Federal Excise Tax on materials purchased from this bid invitation. Materials purchased by the bidder for construction projects are not tax exempt and are the sole responsibility of the bidder.
- P. All material furnished hereunder must be in full compliance with OSHA regulations.
- Q. If more than one bid is offered by one party, or by any person or persons representing a party, all such bids shall be rejected.
- R. Signature on the face of this bid by the Bidder or his authorized representative shall be construed as acceptance of and compliance with all terms and conditions contained herein.
- S. The Entity (regardless of whether construction contractor, non-construction contractor or supplier) agrees to provide equal opportunity in employment for all qualified persons, to prohibit discrimination in employment because of race, color, creed, national origin, sex or age, and to promote equal employment through a positive, continuing program from itself and each of its sub-contracting agents. This program of equal employment opportunity shall apply to every aspect of its employment policies and practices.
- T. The Kentucky Equal Employment Opportunity Act of 1978 (KRS 45.560-45.640) requires that any county, city, town, school district, water district, hospital district, or other political subdivision of the state shall include in directly or indirectly publicly funded contracts for supplies, materials, services, or equipment hereinafter entered into the following provisions:

During the performance of this contract, the contractor agrees as follows:

- (1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, age or national origin;*
- (2) The contractor will state in all solicitations or advertisements for employees placed by or on behalf of the contractors that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age or national origin;*
- (3) The contractor will post notices in conspicuous places, available to employees and applicants for employment, setting forth the provisions of the non-discrimination clauses required by this section; and*
- (4) The contractor will send a notice to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding advising the labor union or workers' representative of the contractor's commitments under the nondiscrimination clauses.*

The Act further provides:

KRS 45.610. Hiring minorities - Information required

- (1) For the length of the contract, each contractor shall hire minorities from other sources*

within the drawing area, should the union with which he has collective bargaining agreements be unwilling to supply sufficient minorities to satisfy the agreed upon goals and timetable.

- (2) Each contractor shall, for the length of the contract, furnish such information as required by KRS 45.560 to KRS 45.640 and by such rules, regulations and orders issued pursuant thereto and will permit access to all books and records pertaining to his employment practices and work sites by the contracting agency and the department for purposes of investigation to ascertain compliance with KRS 45.560 to 45.640 and such rules, regulations and orders issued pursuant thereto.*

KRS 45.620. Action against contractor - Hiring of minority contractor or subcontractor

- (1) If any contractor is found by the department to have engaged in an unlawful practice under this chapter during the course of performing under a contract or subcontract covered under KRS 45.560 to 45.640, the department shall so certify to the contracting agency and such certification shall be binding upon the contracting agency unless it is reversed in the course of judicial review.*
- (2) If the contractor is found to have committed an unlawful practice under KRS 45.560 to 45.640, the contracting agency may cancel or terminate the contract, conditioned upon a program for future compliance approved by the contracting agency and the department. The contracting agency may declare such a contractor ineligible to bid on further contracts with that agency until such time as the contractor complies in full with the requirements of KRS 45.560 to 45.640.*
- (3) The equal employment provisions of KRS 45.560 to 45.640 may be met in part by a contractor by subcontracting to a minority contractor or subcontractor. For the provisions of KRS 45.560 to 45.640, a minority contractor or subcontractor shall mean a business that is owned and controlled by one or more persons disadvantaged by racial or ethnic circumstances.*

KRS 45.630 Termination of existing employee not required, when

Any provision of KRS 45.560 to 45.640 notwithstanding, no contractor shall be required to terminate an existing employee upon proof that that employee was employed prior to the date of the contract.

KRS 45.640 Minimum skills

Nothing in KRS 45.560 to 45.640 shall require a contractor to hire anyone who fails to demonstrate the minimum skills required to perform a particular job.

It is recommended that all of the provisions above quoted to be included as special conditions in each contract. In the case of a contract exceeding \$250,000, the contractor is required to furnish evidence that his work-force in Kentucky is representative of the available work-force in the area from which he draws employees, or to supply an Affirmative Action plan which will achieve such representation during the life of the contract.

- U. Any party, firm or individual submitting a proposal pursuant to this invitation must be in compliance with the requirements of the Lexington-Fayette Urban County Government regarding taxes and fees before they can be considered for award of this invitation and must maintain a "current" status with regard to those taxes and fees throughout the term of the contract. The contractor must be in compliance with Chapter 13 from the Code of Ordinances

of the Lexington-Fayette Urban County Government. The contractor must be in compliance with Ordinance 35-2000 pursuant to contractor registration with the Division of Building Inspection. If applicable, said business must have a Fayette County business license.

Pursuant to KRS 45A.343 and KRS 45A.345, the contractor shall

- (1) *Reveal any final determination of a violation by the contractor within the previous five year period pursuant to KRS Chapters 136 (corporation and utility taxes), 139 (sales and use taxes), 141 (income taxes), 337 (wages and hours), 338 (occupational safety and health of employees), 341 (unemployment and compensation) and 342 (labor and human rights) that apply to the contractor; and*
- (2) *Be in continuous compliance with the above-mentioned KRS provisions that apply to the contractor for the duration of the contract.*

A contractor's failure to reveal the above or to comply with such provisions for the duration of the contract shall be grounds for cancellation of the contract and disqualification of the contractor from eligibility for future contracts for a period of two (2) years.

- V. Vendors who respond to this invitation have the right to file a notice of contention associated with the bid process or to file a notice of appeal of the recommendation made by the Director of Central Purchasing resulting from this invitation.

Notice of contention with the bid process must be filed within 3 business days of the bid/proposal opening by (1) sending a written notice, including sufficient documentation to support contention, to the Director of the Division of Central Purchasing or (2) submitting a written request for a meeting with the Director of Central Purchasing to explain his/her contention with the bid process. After consulting with the Commissioner of Finance the Chief Administrative Officer and reviewing the documentation and/or hearing the vendor, the Director of Central Purchasing shall promptly respond in writing findings as to the compliance with bid processes. If, based on this review, a bid process irregularity is deemed to have occurred the Director of Central Purchasing will consult with the Commissioner of Finance, the Chief Administrative Officer and the Department of Law as to the appropriate remedy.

Notice of appeal of a bid recommendation must be filed within 3 business days of the bid recommendation by (1) sending a written notice, including sufficient documentation to support appeal, to the Director, Division of Central Purchasing or (2) submitting a written request for a meeting with the Director of Central Purchasing to explain his appeal. After reviewing the documentation and/or hearing the vendor and consulting with the Commissioner of Finance and the Chief Administrative Officer, the Director of Central Purchasing shall in writing, affirm or withdraw the recommendation.

EQUAL OPPORTUNITY AGREEMENT

The Law

- Title VII of the Civil Rights Act of 1964 (amended 1972) states that it is unlawful for an employer to discriminate in employment because of race, color, religion, sex, age (40-70 years) or national origin.
- Executive Order No. 11246 on Nondiscrimination under Federal contract prohibits employment discrimination by contractor and sub-contractor doing business with the Federal Government or recipients of Federal funds. This order was later amended by Executive Order No. 11375 to prohibit discrimination on the basis of sex.
- Section 503 of the Rehabilitation Act of 1973 states:

The Contractor will not discriminate against any employee or applicant for employment because of physical or mental handicap.

- Section 2012 of the Vietnam Era Veterans Readjustment Act of 1973 requires Affirmative Action on behalf of disabled veterans and veterans of the Vietnam Era by contractors having Federal contracts.
- Section 206(A) of Executive Order 12086, Consolidation of Contract Compliance Functions for Equal Employment Opportunity, states:

The Secretary of Labor may investigate the employment practices of any Government contractor or sub-contractor to determine whether or not the contractual provisions specified in Section 202 of this order have been violated.

The Lexington-Fayette Urban County Government practices Equal Opportunity in recruiting, hiring and promoting. It is the Government's intent to affirmatively provide employment opportunities for those individuals who have previously not been allowed to enter into the mainstream of society. Because of its importance to the local Government, this policy carries the full endorsement of the Mayor, Commissioners, Directors and all supervisory personnel. In following this commitment to Equal Employment Opportunity and because the Government is the benefactor of the Federal funds, it is both against the Urban County Government policy and illegal for the Government to let contracts to companies which knowingly or unknowingly practice discrimination in their employment practices. Violation of the above mentioned ordinances may cause a contract to be canceled and the contractors may be declared ineligible for future consideration.

Please sign this statement in the appropriate space acknowledging that you have read and understand the provisions contained herein. Return this document as part of your application packet.

Bidders

I/We agree to comply with the Civil Rights Laws listed above that govern employment rights of minorities, women, Vietnam veterans, handicapped and aged persons.

Signature

Name of Business

GENERAL PROVISIONS OF BID CONTRACT

By signing the below, bidder acknowledges that it understands and agrees with the following provisions related to its bid response and the provision of any goods or services to LFUCG upon selection by LFUCG pursuant to the bid request:

1. Bidder shall comply with all Federal, State & Local regulations concerning this type of service or good.
2. Failure to submit ALL forms and information required by LFUCG may be grounds for disqualification.
3. Addenda: All addenda, if any, must be considered by the bidder in making its response, and such addenda shall be made a part of the requirements of the bid contract. Before submitting a bid response, it is incumbent upon bidder to be informed as to whether any addenda have been issued, and the failure of the bidder to cover any such addenda may result in disqualification of that response.
4. Bid Reservations: LFUCG reserves the right to reject any or all bid responses, to award in whole or part, and to waive minor immaterial defects in proposals. LFUCG may consider any alternative proposal that meets its basic needs.
5. Liability: LFUCG is not responsible for any cost incurred by bidder in the preparation of its response.
6. Changes/Alterations: Bidder may change or withdraw a proposal at any time prior to the opening; however, no oral modifications will be allowed. Only letters, or other formal written requests for modifications or corrections of a previously submitted proposal which is addressed in the same manner as the bid response, and received by LFUCG prior to the scheduled closing time for receipt of bids, will be accepted. The bid response when opened, will then be corrected in accordance with such written request(s), provided that the written request is contained in a sealed envelope which is plainly marked "modifications of bid response".
7. Clarification of Submittal: LFUCG reserves the right to obtain clarification of any point in a bid or to obtain additional information from any bidder.
8. Bribery Clause: By his/her signature on its response, bidder certifies that no employee of his/hers, any affiliate or subcontractor, has bribed or attempted to bribe an officer or employee of the LFUCG.
9. Additional Information: While not necessary, the bidder may include any product brochures, software documentation, sample reports, or other documentation that may assist LFUCG in better understanding and evaluating the bid response. Additional documentation shall not serve as a substitute for other documentation which is required by the LFUCG to be submitted with the bid response.
10. Ambiguity, Conflict or other Errors: If a bidder discovers any ambiguity, conflict, discrepancy, omission or other error in the bid request of LFUCG, it shall immediately notify LFUCG of such error in writing and request modification or clarification of the document if allowable by the LFUCG.

11. Agreement to Bid Terms: In submitting its bid response, the bidder agrees that it has carefully examined the specifications and all provisions relating to LFUCG's bid request, including but not limited to the bid contract. By submission of its bid response, bidder states that it understands the meaning, intent and requirements of LFUCG's bid request and agrees to the same. The successful bidder shall warrant that it is familiar with and understands all provisions herein and shall warrant that it can comply with them. No additional compensation to bidder shall be authorized for services, expenses, or goods reasonably covered under these provisions that the bidder omits from its bid response.
12. Cancellation: LFUCG may unilaterally terminate the bid contract with the selected bidder(s) at any time, with or without cause, by providing at least thirty (30) days advance written notice unless a different advance written notice period is negotiated prior to contract approval. Payment for services or goods received prior to termination shall be made by the LFUCG provided these goods or services were provided in a manner acceptable to the LFUCG. Payment for those goods and services shall not be unreasonably withheld.
13. Assignment of Contract: The selected bidder(s) shall not assign or subcontract any portion of the bid contract with LFUCG without the express written consent of LFUCG. Any purported assignment or subcontract in violation hereof shall be void. It is expressly acknowledged that LFUCG shall never be required or obligated to consent to any request for assignment or subcontract; and further that such refusal to consent can be for any or no reason, fully within the sole discretion of LFUCG.
14. No Waiver: No failure or delay by LFUCG in exercising any right, remedy, power or privilege hereunder, nor any single or partial exercise thereof, nor the exercise of any other right, remedy, power or privilege shall operate as a waiver hereof or thereof. No failure or delay by LFUCG in exercising any right, remedy, power or privilege under or in respect of this bid proposal or bid contract shall affect the rights, remedies, powers or privileges of LFUCG hereunder or shall operate as a waiver thereof.
15. Authority to do Business: Each bidder must be authorized to do business under the laws of the Commonwealth of Kentucky and must be in good standing and have full legal capacity to provide the goods or services specified in the bid proposal. Each bidder must have all necessary right and lawful authority to submit the bid response and enter into the bid contract for the full term hereof including any necessary corporate or other action authorizing the bidder to submit the bid response and enter into this bid contract. If requested, the bidder will provide LFUCG with a copy of a corporate resolution authorizing this action and/or a letter from an attorney confirming that the proposer is authorized to do business in the Commonwealth of Kentucky. All bid responses must be signed by a duly authorized officer, agent or employee of the bidder.
16. Governing Law: This bid request and bid contract shall be governed by and construed in accordance with the laws of the Commonwealth of Kentucky. In the event of any proceedings regarding this matter, the bidder agrees that the venue shall be the Fayette County Circuit Court or the U.S. District Court for the Eastern District of Kentucky, Lexington Division and that the bidder expressly consents to personal jurisdiction and venue in such Court for the limited and sole purpose of proceedings relating to these matters or any rights or obligations arising thereunder.
17. Ability to Meet Obligations: Bidder affirmatively states that there are no actions, suits or proceedings of any kind pending against bidder or, to the knowledge of the bidder, threatened

against the bidder before or by any court, governmental body or agency or other tribunal or authority which would, if adversely determined, have a materially adverse effect on the authority or ability of bidder to perform its obligations under this bid response or bid contract, or which question the legality, validity or enforceability hereof or thereof.

18. Bidder understands and agrees that its employees, agents, or subcontractors are not employees of LFUCG for any purpose whatsoever. Bidder is an independent contractor at all times related to the bid response or bid contract.
19. If any term or provision of this bid contract shall be found to be illegal or unenforceable, the remainder of the contract shall remain in full force and such term or provision shall be deemed stricken.

Signature

Date

SPECIFICATIONS FOR AEROFLEX 3920 DIGITAL RADIO TEST SET or equal

GENERAL REQUIREMENTS

3920 Digital Radio Test Set Designed for Flexibility, Speed, Ease of Use and Accuracy

The advanced digital architecture of the 3920 not only delivers faster, more accurate measurements, thereby lowering the cost of test when compared to any of its contemporaries and predecessors, but also ensures that future market needs can be met in a timely fashion. The future of professional mobile radio is changing rapidly as technology advances and market needs expand and the 3920 is a platform that will stand the test of time.

General Specifications:

- Frequency Range: 10MHz – 1.05GHz (Standard);
 - Useable from: 100kHz – 1.05GHz
- Analog Duplex Testing – Perform Transmitter and Receiver Testing Simultaneously (Standard)
 - User-Definable Offset Frequencies up to 1.05GHz
- Digital Duplex Testing – Perform Digital Transmitter and Receiver Testing Simultaneously (Standard)
 - User-Definable Offset Frequencies up to 1.05GHz
- Meters with Configurable Color-coded Pass & Fail parameters for fast go/no go testing (Standard)
- Digital Multi-Meter: Voltage (AC / DC), Current (AC / DC), and Ohm measurements (Standard)
- Frequency Auto-tune (Standard)
- User Interface Controls include Front Panel Keypad, USB Mouse, and USB Keyboard (Standard)
- Remote Front Panel Control using a PC (Standard)
- High Stability Time Base: 0.01 PPM OCXO (Standard)
- USB, GPIB, Ethernet, and RS-232 Remote Control Interfaces (Standard)
- Software Upgradeable in Field (Standard)
- 30GB Hard Drive for Storage of Test Setups and Test Results (Standard)
- Weight: 37 lbs (16.5 kg)
- Dimensions: 7.75" x 14" x 20.5" (H x W x D)
- Power: AC Power only (Use DC to AC Power Inverter with a DC Power Source)
- Rugged: MIL-PRF-28800F Class 3 (30G Shock / Vibration Rating)

RF Specifications:

- RF Signal Generator
 - SSB Phase Noise: -110 dBc/Hz @ 10kHz offset (< 500MHz); -106 dBc/Hz at 10kHz (≤ 1 GHz)
 - RF Level Accuracy: 0.6 dB typical (> -110dBm); 1.0dB typical (≤ -110 dBm)
 - RF Level Resolution: 0.1 dB
 - Harmonics: -30 dBc typical; Level at +10dBm
 - Non-Harmonics: -55 dBc
- RF Receiver
 - Sensitivity: -113 dBm typical with Pre-Amp Enabled
 - Selectable IF Filters: 6.25, 8.33, 10, 12.5, 25, 30, 100, 300 kHz (Standard)

RF and Audio Port Specifications:

- RF Output Level:
 - T/R Port: -30 dBm to -130dBm
 - Gen Port: +10 dBm to -130 dBm
- RF Input Level:
 - T/R Port: 50W Continuous; 125W Cyclical
 - Input Protection: 200W (Alarm Sounds above 135W)
 - ANT Port: +10 dBm Maximum
 - Input Protection: 10W (Alarm Sounds above +17 dBm)
- Audio Ports 1 and 2
 - Selectable for Balanced or Unbalanced
 - Selectable Impedance: 600Ω and Hi-Z (>10kΩ)

Analog Modulation and Meters:

- Selectable AM, FM, FM75μS, FM750μS and SSB (AM USB / AM LSB) modulations (Standard)
- Internal Modulation Sources: QTY 3 (Standard)
- Internal Audio Sources: QTY 3 (Standard)
- Internal FM Modulation:
 - Modulation Rate: 20Hz – 20kHz
 - Deviation Range: 1Hz – 150kHz; 1Hz resolution
 - Accuracy: 3%
- RF Power Meter (Standard)
- RSSI Meter (Standard)
- RF Frequency Counter (Standard)
- RF Error Meter (Standard)
- Demodulation Frequency Counter (Standard)
- FM Deviation Meter (Standard)
 - Accuracy: 3%; 0dB Flatness
- AM Deviation meter (Standard)
- Audio Frequency Counter (Standard)
 - Selectable Audio Filters: *None, 300 Hz LP, 5 kHz LP, 15 kHz LP, 20 kHz LP,*
0.3-3.4 kHz, 0.3-5 kHz, 0.3-15 kHz, 0.3-20 kHz,
C-MSG,
CCITT, 300 Hz HP
- Audio Level Meter (Standard)
- Audio SINAD Meter (Standard)
 - User-Definable Notch Filter (Standard)
- Audio Distortion Meter (Standard)
- Audio Hum and Noise Meter (Standard)
- Signal-to-Noise Ratio Meter (Standard)

RF Spectrum Analyzer (Standard):

- RF Frequency Range: 10MHz to 1.05GHz
 - Usable from 100kHz – 1.05GHz
- Resolution: 1Hz
- Displayed Average Noise Level: -140 dBm (with Pre-Amp Enabled)
- Dynamic Range: 70 dB
- Markers: Up to 8 Color Markers, Selectable
 - Functions: MKR to Peak, MKR to Min, Next Left / Right, MKR to Reference, MKR sets Span
- Span Modes: Start/Stop, Center/Span, Full Span, and Zero Span
 - Duplex Operation: Simultaneous Analog and Digital Duplex Testing is Possible at all Spans
- Frequency Sweep Time: 100mS to 100S in 1ms increments
- Zero Span Sweep Time: 50mS to 100S in 1ms increments
- Level Scale Selections: 1, 2, 5, 10 dB/division
- Resolution Bandwidth Filter Selections: 300 Hz, 3 kHz, 30 kHz, 60 kHz, 300 kHz, 6 MHz
- Video Bandwidth Filter Selection: 10 Hz to 1 MHz in a 1, 3, 10 seq. + NONE
- Spectrum Analyzer Controls: Vertical (Up / Down), Horizontal (Left / Right, Expand, or Narrow)
- RF Spectrum Analyzer Display Modes: Live, Average, and Max Hold
- Tracking Generator: +10 dBm output for Tuning Duplexers and Antenna / Cable Sweeps (Option)

Oscilloscope (Standard):

- Frequency Range: DC to 4MHz (40 MS/s sampling rate)
- Dual Trace
- 2 Color Markers
- Trace Types: Live, Captured, and Accumulated

APCO 25 / P25 Test Capabilities

- Full TIA/EIA-102 Test Patterns:
 - STD 1011, STD CAL, STD Silence, STD Busy, STD Idle, STD 511 (0.153)
 - Stored Speech, Voice (Microphone), 1011, Silence
- Vocoder for Live Audio Testing and Viewing Demodulated Audio on Oscilloscope
- Meters:
 - C4FM Modulation Fidelity Meter
 - Symbol Deviation Meter
 - Symbol Clock Error Meter
 - P25 Signal Power
 - Frequency Error Meters
 - Tx and Rx BER Meters
 - Carrier Feedthrough
- Modulation Accuracy Plots:
 - Digital Constellation Plot
 - C4FM Symbol Distribution Plot
 - Eye Diagram showing transitional diagram and points to the C4FM frequency states
- Protocol: Displays both Header and Voice Frame information (MFID, ALG, TGID, NAC, etc.)
- Encode: NAC, TGID, ALG ID, KEY ID
- Encryption: DES

APCO 25 / P25 Trunking

- **System Plans**
 - Basic 800, Basic UHF, Basic VHF, Basic 700, User Defined
 - 16 Channel IDs allow for up to 16 Unique Channel Plans
 - User Definable Fields: Sys ID, WACN ID, RFSS ID, Site ID, SVC Class, etc.
 - Base Station – Selectable Registration Responses: Accept, Fail, Deny, or Refused
 - Base Station – Selectable Group Affiliation Responses: Accept, Fail, Deny, or Refused
- **Hand-Off Tests:** With multiple, selectable Channel IDs, the 3920B can simulate a Trunked Mobile Radio Under Test handing off from one channel plan to another channel plan
 - Simulation of hand-off from an analog control channel to a digital traffic channel can be tested
- **Virtual Mobiles:** The Mobile Under Test can Place Calls to and Receive Calls from up to FOUR Virtual Mobiles simulated by 3920B
- **Simulation Status Tile:** Logs History of the Mobile Under Test as it Registers, Affiliates, and De-Registers from P25 Trunked Network (simulated by the 3920B)
- **Call Types:** Group and Unit-to-Unit

SPECIFICATIONS FOR AEROFLEX 3550 DIGITAL RADIO TEST SET or equal

GENERAL REQUIREMENTS

The 3550 is the first truly portable touch-screen radio communication test system. The 3550 takes radio and repeater site testing to the next level with a quantum leap in an easy to use, integrated test system for complete radio receiver and transmitter performance testing, cable fault and antenna system analysis. With its ultra-responsive capacitive touch screen, the 3550 brings a whole new experience to RF testing.

General Specifications:

Frequency Range: 2 MHz to 1 GHz (Useable from 500 kHz)

Display: 9" Color Touch Screen (Standard)

Time Base: 0.15 PPM OCXO with "Freq-Flex" External Flexible Frequency Reference (Standard)

Upgrades: Software Upgradeable in Field (Standard)

Remote Control Interface: Ethernet (VNC) Remote Control Interfaces (Standard)

Tracking Generator: 0 dB to -60 dB output for Tuning of Filters and Duplexers (Optional)

Meters & Signaling:

Meters (all Standard): RF power, RSSI, frequency error, multifunction RF generator, SINAD,

Distortion, BER, and modulation meters

Two Internal Generators (Standard)

CTCSS/DCS encode/decode (Standard)

DTMF encode/decode (Standard)

Two Tone, Tone Remote, and Two Tone Sequential encode / decode (Standard)

RF Generator:

SSB Phase Noise: -95dBc/Hz typical

Harmonics: -30dBc; -42dBc typical

Spurious: -40dBc; -50dBc typical

RSSI Receiver Sensitivity: -110dBm (0.7 uV) with internal pre-amp enabled

Spectrum Analyzer:

DANL: -140dBm

Markers: 2 Color markers

LMR Systems Supported:

AM, FM, P25, DMR, NXDN, dPMR

Standard Antenna Cable Testing Feature:

Dedicated SWR port for measuring VSWR, Return Loss, Cable Loss, and Distance to Fault
Measurements are displayed graphically and numerically

Field Portability and Durability:

Weight: 8.3 lbs (includes internal battery)

Internal Battery: 4.5 Hours of operation

Functional Shock: 30 G shock rating (MIL-PRF-28800F Class 2)

User Interface:

Color, Touch-Screen operation

User definable test screens allowing multiple combinations of meters and analyzers to be displayed

Internal Memory allows for user-defined test screens to be saved for quick recall and ease of test

Meters display colors (red for high, blue for low, and green for good) for quick go, no-go testing

Screenshots can be captured, stored, and exported for documentation and analysis

SPECIFICATIONS FOR ANRITSU S412E DIGITAL RADIO TEST SET or equal

GENERAL REQUIREMENTS

S412E - Land Mobile Radio Modulation Analyzer and Signal Generator, Vector Network Analyzer, Spectrum Analyzer

- Handheld, battery-operated design
- Weighs less than 7.6 lbs. (including battery)
- Rugged, field-proven design using Anritsu's 9th generation hardware platform
- TFT color daylight viewable color display
- Superior Immunity to RF interference
- Excellent Noise floor of -152 dBm

General Specifications:

The LMR Master S412E is Anritsu's second generation solution for installing and maintaining public safety systems. Built on Anritsu's ninth generation handheld platform, the LMR Master combines a high performance receiver / **spectrum analyzer** with the world's most advanced handheld vector network analyzer plus a CW / P25 (Phase 1 & Phase 2) / NXDN™ / ETSI DMR / MotoTRBO™ signal generator with internally adjustable power from 0 dBm to -130 dBm.

The LMR Master S412E is the ideal instrument for Land Mobile Radio (LMR) and Public Safety System technicians and engineers engaged in field testing the RF performance of P25, P25 Phase 2 (TDMA), NXDN™, ETSI DMR, MotoTRBO™, and 700 MHz LTE public safety radio systems in the Part 90 spectrum allocations. In addition the LMR Master offers support for emerging Positive Train Control systems.

The base model LMR Master comes equipped with a Vector Network Analyzer and **Spectrum Analyzer**, support for analysis and testing of narrowband FM radio systems, and coverage mapping of RSSI, transmitter SINAD, and transmitter THD. Optional support for digital land mobile radio standards including P25 (TIA-102.CAAA-C), P25 Phase 2 (TIA-102.CCAA), NXDN™, ETSI DMR Tier 2, MotoTRBO™, and ITC-R PTC is available. When equipped with the optional GPS receiver support for Coverage Mapping (both touchscreen-tagged indoor and GPS-tagged outdoor) of analog and digital LMR systems, analysis of FDD-LTE for FCC-mandated broadband public safety systems, and analysis of WiMAX (Fixed IEEE 802.16d and Mobile IEEE 802.16e) for intersite backhaul systems is also available. The LMR Master may also be equipped with a Spectrogram Recorder, Interference Analyzer, Programmable Channel Scanner, external High-Accuracy RF Power Meter (including inline sensors), Distance Domain for cable analysis, and a Vector Voltmeter.

The high performance 500 kHz to 1600 MHz vector network analyzer can be used to sweep cables and antenna systems. To power tower-mounted amplifiers an internal Bias Tee is optionally available. Frequency Domain Reflectometry (FDR) distance-to-fault measurements are used to characterize antenna systems. The distance-to-fault measurements can easily spot poor connections, contamination, damaged cables, and water penetration. Both the Vector Network Analyzer and **Spectrum Analyzer** can be optionally extended to cover up to 6 GHz. Patented RF interference rejection enables accurate, repeatable measurements in the presence of high-level RF activity.

The LMR Master S412E is built on the same field-proven and time-tested 9th generation hardware platform used by the Site Master(tm) S362E, the industry's go-to standard for reliability, portability, and accuracy in line sweeping and interference analysis.

The S412E's vector network analyzer offers excellent transmission dynamic range performance (> 100 dB) that can be used to view and adjust the RF performance of critical RF devices including filters, duplexers, transmitter combiners, receiver multi-couplers and tower-mounted amplifiers. The vector network analyzer measurements (in either frequency or time domain) are quickly displayed and updated with the S412E's fast 850 μ s/point sweep speed, and the VNA display is variable from 2 to 4001 data points allowing maximum flexibility for custom setups. For users who prefer a more streamlined interface, the LMR Master's VNA display can be set to emulate a Site Master.

The LMR Master combines a high performance vector network analyzer with a fully functional spectrum analyzer. An excellent DANL of -152 dBm (RBW = 10 Hz, Atten = 0 dB, $f < 2.4$ GHz) combined with a third-order intercept of over +16 dBm makes this instrument ideal for identification and location of low level signals which can interfere with LMR systems, even in the presence of strong nearby transmitters.. The spectrum analyzer coverage can be extended to 6 GHz with option 6. The LMR Master S412E comes standard with an industry-leading low phase noise (< -110 dBc/Hz typical @ 10 kHz offset) allows precise measurement of NBFM, P25, NXDN™, and DMR emission masks.

The High Accuracy Power Meter option provides true RMS measurements using external sensors, including inline sensors. It is the ideal solution for making accurate measurements of both CW and modulated signals. Channelized power measurements can be made with the Internal Power meter and the Channel Scanner option provides users with a convenient way to scan up to 20 channels.

The LMR Master S412E includes data analysis software, soft carrying case, rechargeable/field-replaceable battery, AC/DC power supply, 12V automobile cigarette lighter adapter and a comprehensive user's guide.

- Vector Network Analysis and Distance Domain testing for cables, antennas, and connectors in Land Mobile Radio systems for Public Safety, Government, Business, Positive Train Control, Microwave Backhaul, and Homeland Security
- Spectrum Analysis and Interference Analysis testing for HF, VHF/UHF, broadcast, paging, and cellular applications
- P25 Phase 1, P25 Phase 2 (TDMA), NXDN™, ETSI DMR, MotoTRBO™, and ITC-R PTC receiver sensitivity measurements using a built-in signal generator with 130 dB power control range and multiple BER test patterns
- Vector Network Analyzer allows measurement of reflected and transmitted signals in Log Mag, VSWR, Phase, Group Delay, Smith Chart, Real and Imaginary Impedance
- Distance-To-Fault measurement using Frequency Domain Reflectometry
- Insertion Loss measurement with >100 dB dynamic range and fast 850 μ sec/point sweep speed
- Low level interference measurements, even in the presence of strong nearby sources
- Occupied BW and Emission mask compliance testing
- Narrowband FM analysis w/ Auto Scan function to identify frequency of unknown transmitters
- Indoor and Outdoor Coverage Mapping of RSSI and Transmitter SINAD
- RF Power Measurements of both CW and modulated signals
- Channel Scanner

Included NBFM Analyzer quickly and accurately measures Carrier Power, Carrier Frequency, Frequency Error, FM Deviation, Modulation Rate, SINAD, THD, Occupied Bandwidth, and decoded CTCSS/DCS/DTMF. NBFM Coverage Mapping measures RSSI and Transmitter SINAD and tags the recorded value with both GPS coordinates and altitude.

P25 / P25 Phase 2 / NXDN™ / ETSI DMR / MotoTRBO™ / ITC-R PTC Signal Analyzer Measurements: Received Power, Frequency Error, Modulation Fidelity, Error Vector Magnitude, Symbol Deviation, NAC and BER for 1011 Hz (P25) or 1031 Hz P25 Phase 2 / NXDN / ETSI DMR, and O.153/V.52 pseudorandom test patterns. BER estimation from voice traffic, and BER/MER (message error rate) measurement from control channel traffic. Linear or Traditional Constellation, Histogram and control channel hex decodes, TDMA power ramp profile in P25 Phase 2 mode.

P25 / P25 Phase 2 / NXDN™ / ETSI DMR / MotoTRBO™ / ITC-R PTC Talk-Out Coverage Measurements: The LMR Master S412E supports digital radio Coverage Mapping with annotation of received power and BER for 1011/1031 Hz, and O.153/V.52 test patterns, BER estimation from voice traffic, and BER/MER (message error rate) measurement from control channel traffic along with GPS tagging of data (location and time) enables system performance and coverage analysis without requiring transmitters to be taken offline. With the industry's lowest receiver noise floor, the LMR Master can accurately measure BER and Modulation Fidelity down to realistic -110 dBm signal levels. BER and Modulation Fidelity coverage maps provide confidence that communications will be possible even with local interference or multipath effects. Mapping may be done both indoors (using touchscreen tagging) and outdoors (using GPS tagging). Coverage mapping generates files in both tab-delimited CSV and industry-standard KML format which are directly written to USB memory for record-keeping, offline analysis and mapping.

For digital LMR standards the LMR Master's Signal Analyzers provide both RF and Demodulation measurements. RF measurements include Main Channel Power, individual Sub Channel Power, Peak-to-Average ratio, Frequency Error, Occupied Bandwidth, Current Active slot power, ON/OFF ratio and average duty cycle. Demodulation measurements include Demod-SQE, EVM of Channel, individual Sub Channel EVMs and Phase Noise. In addition, the LMR Master displays the spectrum of the signal, Adjacent Channel Power Ratio, Power vs. Time, and the constellation of the demodulated signal.

PRICING:

Notes to Bidders:

- It is the intention of LFUCG to initially purchase the quantities above, but LFUCG in no way guarantees these quantities. They should be merely used as a guideline for bidding, and in no way obligates LFUCG to purchase these quantities.
- For bidding questions, please contact Theresa Maynard, Buyer Senior, Division of Central Purchasing at 859-258-3320 or at theresam@lexingtonky.gov.

<u>Item #</u>	<u>Description</u>	<u>Quantity</u>	<u>Unit Price:</u>
1	AEROFLEX 3920 DIGITAL RADIO TEST SET or equal	1	\$
2	AEROFLEX 3550 DIGITAL RADIO TEST SET or equal	1	\$
3	ANRITSU S412E DIGITAL RADIO TEST SET or equal	1	\$

<u>Item #</u>	<u>Option # for Anritsu</u>	<u>Description</u>	<u>Option Ordering Number</u>	<u>Option Price:</u>
4	Option 10	12 to 24V Variable Bias Tee--The optional bias tee is integrated into the LMR Master and is designed for applications where both DC and RF signals must be applied to a device under test, such as a tower mounted amplifier (TMA).	S412E-0010	\$
5	Option 6	6 GHz Coverage on Spectrum Analyzer	S412E-0006	\$
6	Option 16	6 GHz Coverage on Vector Network Analyzer	S412E-0016	\$
7	Option 15	Vector Voltmeter	S412E-0015	\$
8	Option 19	High Accuracy Power Meter (requires PSN50 sensor)--The PSN50 sensor makes high accuracy power measurements from 50 MHz to 6 GHz	S412E-0019	\$
9	Option 25	Interference Analysis-- <ul style="list-style-type: none"> • Spectrogram provides a three-dimensional display of frequency, power, and time - useful for locating an interfering signal • RSSI measurement is useful to observe the signal strength of a single frequency over time 	S412E-0025	\$

10	Option 27	Channel Scanner--The Channel Scanner option measures the power of multiple transmitted signals.	S412E-0027	\$
11	Option 31	GPS Receiver (requires suitable GPS antenna)--GPS provides location (latitude, longitude, altitude) and UTC time information. The LMR Master can stamp each trace with location information to check if the measurements were taken at the right time and place.	S412E-0031	\$
12	Option 37	Mobile WiMAX OTA Measurements (requires Option 0031)	S412E-0037	\$
13	Option 46	Fixed WiMAX RF Measurements (requires Option 0031)	S412E-0046	\$
14	Option 47	Fixed WiMAX Demodulation (requires Option 0031)	S412E-0047	\$
15	Option 66	Mobile WiMAX RF Measurements (requires Option 0031)	S412E-0066	\$
16	Option 67	Mobile WiMAX Demodulation (requires Option 0031)	S412E-0067	\$
17	Option 431	Coverage Mapping (requires Option 0031)	S412E-0431	\$
18	Option 501	Distance Domain on Cable Test	S412E-0501	\$
19	Option 509	AM/FM/PM Analyzer with Coverage Mapping (Options 0031 and 0431 are required for utilization of coverage mapping feature)	S412E-0509	\$
20	Option 521	P25 & P25 Phase 2 Analyzer	S412E-0521	\$
21	Option 522	P25 & P25 Phase 2 Coverage (Requires Options 0031 and 0521)	S412E-0522	\$
22	Option 531	NXDN™ Analyzer	S412E-0531	\$
23	Option 532	NXDN™ Coverage (requires Options 0031 and 0531)	S412E-0532	\$
24	Option 541	LTE RF Measurements (requires Option 0031)	S412E-0541	\$
25	Option 542	LTE Modulation Quality (requires Option 0031)	S412E-0542	\$
26	Option 546	LTE Over-the-Air Measurements (requires Option 0031)	S412E-0546	\$
27	Option 591	DMR2 Analyzer	S412E-0591	\$
28	Option 592	DMR2 Coverage (requires Options 0031 and 0591)	S412E-0592	\$
29	Option 721	PTC Analyzer	S412E-0721	\$
30	Option 722	PTC Coverage (requires Options 0031 and 0721)	S412E-0722	\$

31	Option 98	Standard Calibration (ANSI Z540-1-1994)	S412E-0098	\$
32	Option 99	Premium Calibration (ANSI Z540-1-1994 plus test data)	S412E-0099	\$

Item #		<u>Aeroflex 3920 Available Options at Additional Cost:</u>		<u>Option Price:</u>
33		051 = Remote Site Monitoring application		\$
34		053 = Digital Multimeter 054 = IQ Generator		\$
35		055 = Audio Analyzer 058 = 2.7 GHz Frequency Range		\$
36		059 = Auto-Test II Analog		\$
37		060 = Harmonics and Spurious		\$
38		061 = Tracking Generator		\$
39		110 = TETRA MS (Mobile Station)		\$
40		111 = TETRA BS (Base Station)		\$
41		112 = TETRA DM (Direct Mode)		\$
42		114 = TETRA Energy Economy Mode		\$
43		200 = P25 Conventional Operation Mode		\$
44		201 = P25 Trunking Simulator		\$
45		202 = DES OFB Type III Encryption		\$
46		204 = LSM Generate and receive analysis		\$
47		206 = P25 Control Channel Logger		\$
48		207 = SmartZone and SMARTNET		\$
49		209 = KVL Keyloader		\$
50		210 = Analog Simulcast		\$
51		212 = VHF/UHF Explicit Mode Trunking		\$
52		213 = Unit to Unit Call		\$

53		214 = Adjacent Channel Broadcast Message		\$
54		215 = Secondary Control Channel Broadcast Message		\$
55		218 = Autotest II P25 (Replaces Option 217) 219 = X2-TDMA Test Suite		\$
56		220 = Phase II Two-Slot Time Division Multiple Access Physical Layer		\$
57		230 = Off Air Monitor Software for P25 Message Logging - Protocol Analysis Tool		\$
58		240 = AES Encryption		\$
59		245 = TDMA Mobile Emulator		\$
60		250 = Occupied Bandwidth for P25		\$
61		260 = P25 Performance Test Triggers		\$
62		261 = TDMA Advanced Test Suite - Combines option		\$
63		219 and 245 300 = HPD Testing Option		\$
64		301 = HPD Advanced Analysis Package		\$
65		302 = Motorola HPD Testing Suite Combines option 300 and 301		\$
66		303 = Auto-Test II for HPD Radio Systems		\$
67		400 = DMR (MOTOTRBO) ETSI 102-361		\$
68		401 = Auto-Test II for DMR Radio Systems		\$
69		402 = DMR XML Channel Logger		\$
70		420 = dPMR - ETSI 102-490		\$
71		421 = Auto-Test II for dPMR Radio Systems		\$
72		422 = dPMR Control Channel Logger 440 = NXDN		\$
73		441 = Auto-Test II for NXDN Radio Systems		\$
74		460 = ARIB T98		\$
75		461 = Auto-Test II for ARIB T98 Radio Systems		\$
76		600 = Motorola ASTRO 25 Series Auto-Test/Alignment Software		\$

77		601 = Motorola ASTRO Series Auto-Test/Alignment Software		\$
78		602 = Motorola ASTRO 25 Series XTL Power Auto-Test/Alignment Software		\$
79		603 = TIA/EIA-603 Land Mobile Test Software		\$
80		604 = Motorola APX Series Auto-Test/Alignment Software		\$
81		606 = EF Johnson ES Series Auto-Test/Alignment Software		\$
82		607 = BK DPHX5102X Series Radio Alignment Software		\$
83		608 = Kenwood P25 TK-5X10G Series Radio Auto-Test/Alignment Software		\$
84		610 = MOTOTRBO Radio Auto-Test/Alignment Software		\$
85		614 = Technisonics Type 1 Radio Auto-Test/Alignment Software		\$
86		615 = Technisonics Type 2 Radio Auto-Test/Alignment Software		\$

Item #		<u>Aeroflex 3550 Options at additional cost:</u>		<u>Option Price:</u>
87		01 Spectrum Analyzer Option		\$
88		02 Oscilloscope Option 07 P25 Test Option		\$
89		08 Tracking Gen Function		\$
90		33 NXDN Test Option		\$
91		34 DMR Test Option		\$
92		91895 Antenna, Cable DTF Test Option		\$