

TITLE: 110 GHz Vector Network Analyzer

Requesting Laboratory / Division / Group:

Communications Technology Laboratory  
Radio Frequency Technology Division  
Radio Frequency Electronics Group 672.01

General Statement of Need:

NIST is developing a millimeter-wave standard reference material. To deliver this new standard, NIST must measure the scattering (S-) parameters of cavity resonators from 1 GHz up to 110 GHz. NIST must measure 4 different types of resonators: split post dielectric resonators, split cylinder resonators, Fabry Perot open resonators, and balanced circular disk resonators. The split cylinder resonators, Fabry Perot open resonators, and balanced circular disk resonators require proprietary software by Keysight.

Items and Ancillary Services:

Item 1:	110 GHz Vector Network Analyzer
Quantity:	1
Specifications:	<div><div>1.1</div>All necessary power cables for installation</div> <div><div>1.2</div>All necessary connectors for installation</div> <div><div>1.3</div>Rackmount kit with handles for installation</div> <div><div>1.4</div>Low frequency limit of 1 kHz</div> <div><div>1.5</div>High frequency limit without extender heads 67 GHz</div> <div><div>1.6</div>High frequency limit with extender heads 110 GHz</div> <div><div>1.7</div>Maximum power output at 67 GHz must be greater than 0 dBm</div> <div><div>1.8</div>Minimum IF bandwidth 10 Hz</div> <div><div>1.9</div>Maximum IF bandwidth 1 kHz</div> <div><div>1.10</div>4 ports cable of measuring a-waves and b-waves simultaneously and independently</div> <div><div>1.11</div>Dual sources cables of delivering 0 dBm at all ports at all frequencies</div> <div><div>1.12</div>1.85 mm NMD connectors on each port</div> <div><div>1.13</div>Front end access jumpers</div> <div><div>1.14</div>Ability to drive 3<sup>rd</sup> party extender heads</div> <div><div>1.15</div>Direct IF access</div> <div><div>1.16</div>Embedded LO, frequency-offset options</div> <div><div>1.17</div>An internal combiner to route two or more sources to a single port</div> <div><div>1.18</div>Rear access loops to combiners to allow external sources and external filters</div> <div><div>1.19</div>Internal bias tees</div> <div><div>1.20</div>Demonstrated measurement capabilities with N1501AE11/67 Balanced Type Circular Disk Resonator (BCDR) and Resonant Cavity Method – Option 007 for N1501AKEAD710/20/24/28/35/40/50/60/80</div>

Service Requirements / Item Specifications:

Section	Requirements/Specifications
Planning Considerations <input checked="" type="checkbox"/> N/A	<div><div><input type="checkbox"/></div>List any visits required to allow potential vendors to see site specific constraints. [Explain Requirements.]</div> <div><div><input type="checkbox"/></div>US citizen required on-site (foreign nationals require pre-registration 30 days prior to visit.)</div> <div><div><input type="checkbox"/></div>Vendor Representative On-Site more than three (3) days.</div> <div><div><input type="checkbox"/></div>Other Considerations: [List other considerations to ensure an accurate quote.]</div>

	<div><input checked="" type="checkbox"/> License Key</div> <div><input type="checkbox"/> Other: [List Any Other Electronic Media Requirements]</div> <div><input type="checkbox"/> Email address for Software Delivery: [Enter Address]</div>
Installation <input type="checkbox"/> N/A	<div>[Enter Installation Requirements by Item]</div> <div><input checked="" type="checkbox"/> Vendor Technician on Site</div> <div><input type="checkbox"/> Rigging</div> <div><input type="checkbox"/> Uncrating / Unpackaging</div> <div><input type="checkbox"/> Removal of Packaging Material</div> <div><input checked="" type="checkbox"/> Equipment Set Up</div> <div><input type="checkbox"/> Start-Up Services</div> <div><input type="checkbox"/> Turnkey Installation</div> <div><input type="checkbox"/> Other: [Enter Details]</div> <div>NOTE: When installation is required, TPOC shall be the coordination point.</div>
Facility / Utility Considerations <input checked="" type="checkbox"/> N/A	<div>[List Site Specific Utility Considerations by Item]</div> <div><input type="checkbox"/> OFPM Work Order Numbers [List Work Order Numbers]</div> <div><input type="checkbox"/> Power Available Voltage: 120 (V) Maximum Current: 20 (A) Phase: [Choose Phase] Frequency: [Typically 60Hz] (Hz) NEMA Plug Type: [Enter Plug Type] (i.e.: NEMA L5-20P) Environment: [Choose Environment] Other Power Considerations: [List Any Other Power Considerations.]</div> <div><input type="checkbox"/> Utility Connections: Air drop</div> <div><input type="checkbox"/> Other Considerations: [List Other Considerations to Ensure an Accurate Quote.]</div>
Warranty <input type="checkbox"/> N/A	<div>Base Manufacturer Warranty is acceptable</div> <div><input checked="" type="checkbox"/> Warranty Length: 1 Year</div> <div>What is included?</div> <div><input checked="" type="checkbox"/> Labor <input checked="" type="checkbox"/> Parts <input checked="" type="checkbox"/> Travel <input checked="" type="checkbox"/> Cost and Liability for Returns</div> <div><input checked="" type="checkbox"/> Other [Enter Other Requirements]</div> <div><input checked="" type="checkbox"/> 1 Option Period</div> <div><input checked="" type="checkbox"/> 2 Option Periods</div> <div><input checked="" type="checkbox"/> 3 Option Periods</div> <div><input checked="" type="checkbox"/> 4 Option Periods (Maximum)</div>
Calibration <input type="checkbox"/> N/A	<div>[Describe Calibration Requirements Per Item]</div> <div>Calibration Plan Length: 1-Year</div> <div>What is Included?</div> <div><input checked="" type="checkbox"/> Labor <input checked="" type="checkbox"/> Spare Parts <input checked="" type="checkbox"/> Consumables</div> <div><input type="checkbox"/> Travel <input type="checkbox"/> Cost and Liability for Shipment</div> <div><input type="checkbox"/> Software Updates <input type="checkbox"/> Manuals</div> <div><input type="checkbox"/> Other [Enter Other Requirements]</div> <div><input type="checkbox"/> Requirements: [Enter Requirements] (i.e.: On-Site Within 72 hours, etc.)</div> <div><input checked="" type="checkbox"/> 1 Option Period Length: [i.e. 1 – Year / 6 - Months]</div> <div><input checked="" type="checkbox"/> 2 Option Periods</div> <div><input checked="" type="checkbox"/> 3 Option Periods</div> <div><input checked="" type="checkbox"/> 4 Option Periods (Maximum)</div>
Training <input checked="" type="checkbox"/> N/A	<div><input type="checkbox"/> On-Site Is Travel Required: NO</div> <div><input type="checkbox"/> Off-Site Location: [Enter Location(s)]</div> <div><input type="checkbox"/> Number of Trainees: 3</div> <div>Scope of Training</div> <div><input type="checkbox"/> Operations <input type="checkbox"/> Maintenance <input type="checkbox"/> Troubleshooting <input type="checkbox"/> Safety</div> <div><input type="checkbox"/> Other Alignment and calibration of stage and interferometers</div> <div><input type="checkbox"/> Training materials to be provided:</div> <div><input type="checkbox"/> Other</div> <div>NOTE: When training is required, TPOC shall be coordinator.</div>
Inspection and Acceptance	<div><input checked="" type="checkbox"/> On-Site</div>

<div><div><input type="checkbox"/> N/A</div></div>	<div>[Inspection Requirements Per Item]</div> <div><div><input type="checkbox"/> Government Acceptance Expected to Not to Exceed 7 Business Days</div><div><input checked="" type="checkbox"/> Government Acceptance Expected to Exceed 7 Business Days</div><div>30 Days</div><div><input type="checkbox"/> Inspection and Acceptance Plan:</div><div>[Explanation]</div><div><input type="checkbox"/> Other:</div><div>[Enter Other Requirements]</div></div>
<div>Maintenance</div> <div><div><input type="checkbox"/> N/A</div></div>	<div>[Describe Maintenance Requirements Per Item]</div> <div>Service Plan Length: 1-Year</div> <div>What is Included?</div> <div><div><input type="checkbox"/> Labor<input type="checkbox"/> Spare Parts<input type="checkbox"/> Consumables<input type="checkbox"/> Travel</div><div><input type="checkbox"/> Cost and Liability for Returns<input type="checkbox"/> Software Updates</div><div><input type="checkbox"/> Manuals I</div><div><input type="checkbox"/> Other</div><div>[Enter Other Requirements]</div><div><input type="checkbox"/> Requirements:</div><div>[Enter Requirements] (i.e.: On-Site Within 72 hours, etc.)</div><div><input checked="" type="checkbox"/> 1 Option Period (Base + One)</div><div><input checked="" type="checkbox"/> 2 Option Periods (Base + Two)</div><div><input checked="" type="checkbox"/> 3 Option Periods (Base + Three)</div><div><input checked="" type="checkbox"/> 4 Option Periods (Base + Four)</div></div>
<div>Government Furnished Material / Equipment</div> <div><div><input checked="" type="checkbox"/> N/A</div></div>	<div>[List Any Government Furnished Material / Equipment Per Item]</div> <div><div><input type="checkbox"/> Samples for Testing</div><div><input type="checkbox"/> Government Equipment which will leave Government Site (TPOC must coordinate with Division Property Custodian)</div><div>Description: [Enter Description]</div><div>Serial Number: [Enter Serial Number]</div><div>NIST Property Number: [Enter NIST Property Number]</div><div><input type="checkbox"/> Other:</div><div>[Enter Other Details]</div></div>
<div>Travel</div> <div><div><input checked="" type="checkbox"/> N/A</div></div>	<div>[Describe any Travel Requirements Per Item]</div> <div><div><input type="checkbox"/> Explain:</div><div>[Enter Justification / Requirement]</div><div><input type="checkbox"/> Other:</div><div>[Enter Other Requirements]</div></div> <div>NOTE TO VENDOR: To the maximum extent possible, include travel requirement estimates as part of pertinent sections above (Installation, Maintenance, Repair, etc.). Otherwise, Travel will be a separate line item, reimbursable per the Federal Travel Regulation.</div>