Use this document to detail specifications/requirements for an item and/or ancillary services. ⓘ

TITLE: Two-channel microwave signal generator ⓘ

Requesting Lab/Division/Group: PML/Time and Frequency/Precision Photonic Synthesis Group

General Statement of Need ⓘ

To support our research activities developing ultrastable lasers and low noise microwave signals, we require a two-channel microwave signal generator with output frequencies up to 12 GHz for signal characterization and analysis.

Items and/or Ancillary Services ⓘ

Item 1: Two-channel microwave signal generator
Quantity: 1
Specifications:
1.1 Number of output channels: 2
1.2 Channel to channel isolation: > 75 dB at 0 dBm output
1.3 Ouput frequency range on each channel: at least 1 MHz to 12 GHz
1.4 Output waveforms: continuous-wave; modulated continuous-wave
1.5 Capable of both internal and external modulation of amplitude, frequency or phase over full carrier frequency range
1.6 External referencing: can accept external 10 MHz timebase
1.7 Phase noise, 10 kHz offset: < - 125 dBc/Hz on a 1 GHz carrier; < -105 dBc/Hz on a 10 GHz carrier.
1.8 Output impedance: 50 ohm
1.9 Output connector: N-type or sma or 3.5 mm
1.10 Minimum frequency step size: 0.05 Hz or less
1.11 Output power range: at least -30 dBm to + 10 dBm for an output frequency ranging from 10 MHz to 12 GHz
1.12 Output power setting resolution: at least 0.05 dB
1.13 Channel-to-channel phase stability: better than 2 deg. on a 10 GHz carrier
1.14 Phase setting range: +/- 180 deg.
1.15 Phase setting resolution: at least 0.1 deg.
1.16 Communication interface: USB or GPIB
1.17 Device operation: may be self-contained within the unit, externally computer controlled, or both
1.18 Setting display: current settings may be displayed on the unit, on an external monitor or computer, or all of these

Separately Priced Options and Services:
Item 2: [List minimum specifications.
Quantity: [Enter quantity here.]
Specifications: [Enter quantity here.]

[List any other item(s) or service requirements here using the same format above.]

Service Requirements / Item Specifications

Section ⓘ	Requirements/Specifications ⓘ
Planning Considerations ☒ N/A	☐ List any visits required to allow potential vendors to see site specific constraints. [Explain requirement here] ☐ US citizen required on-site (foreign nationals require preregistration 30 days prior) ☐ Vendor rep on-site more than three days ☐ Other considerations: [List other considerations to ensure an accurate quote]
Shipping & Delivery ☐ N/A	[Enter shipping and delivery information by item here.] **Shipping criteria:** ☐ Partial delivery acceptable ☐ Direct delivery to building required [Explain need for requirement here] Building has: ☐ Loading dock ☐ Containerization preference: [Choose container] Other requirements: [List any other requirements here] **Delivery date criteria:** ☒ Delivery of goods, installation, and training shall be completed no later than: 12 weeks ARO ☐ Deliver no earlier than: [Insert date here] ☐ Other: [List other shipping, delivery, or specil requirements]
Electronic Media ☒ N/A	[Enter electronic media requirements by item here.] ☐ Software ☐ Electronic manuals ☐ License Key ☐ Other: [List any other Electronic Media requirements here] [Enter email address for software delivery here]
Installation ☒ N/A	[Enter installation requirements by item here.] ☐ Vendor technician on site ☐ Rigging ☐ Uncrating / Unpackaging ☐ Removal of packaging material ☐ Equipment set up ☐ Start-up services ☐ Turn key installation ☐ Other [Enter details here.] Note: When installation is required, TPOC or COR shall be the coordination point.
Facility / Utility Considerations ☒ N/A	[List site specific utility considerations by item here.] ☐ OFPM Work Order Number(s) [List any Work Order Number(s) here] ☐ Power available Voltage: [Enter voltage here] (V) Max Current: [Enter max current draw here] (A)

Phase: [Choose phase]
Frequency: [Typically 60Hz] (Hz)
NEMA Plug Type: [Enter plug type here] (i.e.: NEMA L5-20P)
Environment: [Choose environment]
Other power consideration: [List any other power considerations here]
☐ Utility connections: [List relevant available utilities, pressure(s), and flowrate(s)]
☐ Other considerations: [List other considerations to ensure an accurate quote]

Warranty ⓘ ☐ N/A	Base Manufacturer Warranty is acceptable [If you require an Extended Manufacturer Warranty, describe the warranty requirements per item here.] What is included? ☐ Labor ☐ Parts ☐ Travel ☐ Cost and liability for returns ☐ Other: [Enter other requirements here] ☐ Warranty length: [Enter warranty length here] Period Length:[Ex. month, 6 month, year etc.]
Training ☒ N/A	[Training requirements (who, when, what, where) here. If on-site, is travel necessary?] ☐ On-site ☐ Off-site location: [Enter location(s) here] ☐ Number of trainees: [Enter number of trainees here] Scope of training: ☐ Operations ☐ Maintenance ☐ Troubleshooting ☐ Safety ☐ Other: [Enter other scope requirements here] ☐ Training materials to be provided: [Describe requirement here] ☐ Other: [Enter other training requirements here] Note: When training is required, TPOC or COR shall be the coordination point.
Inspection and Acceptance ☐ N/A	[Enter inspection requirements per item here] ☒ Planned government acceptance testing (7 business days) ☐ Gov't acceptance expected to take longer than 7 business days: [Duration] ☐ Inspection and acceptance plan: [Explain here] ☐ Other: [Enter other requirements here]
Maintenance ⓘ ☒ N/A	[Describe your maintenance requirements per item here] Period Length: [Ex. month, 6 month, year etc.] What is included? ☐ Labor ☐ Spare parts ☐ Consumables ☐ Travel ☐ Cost and liability for returns ☐ Software updates ☐ Manuals ☐ Service plan length: [Enter service plan length here]

	☐ Other: [Enter other requirements here] ☐ Requirements: [Enter requirements here] (i.e.: onsite within 72 hours, etc.) ☐ Option Period 1 ☐ Option Period 2 ☐ Option Period 3 ☐ Option Period 4
Government Furnished Material / Equipment ☒ N/A	[List any government furnished material/equipment per item here] ☐ Samples for testing ☐ Government equipment which will leave gov't site (TPOC must coordinate with division property custodian) Serial Number: [Enter Serial Number here] Description: [Enter description here] NIST property number: [Enter NIST property number here] ☐ Other: [Enter other details here]
Travel ☒ N/A	[Describe any travel requirements per item here] ☐ Explain: [Explain here] ☐ Other: [Enter other requirements here] *Vendor: To the maximum extent possible, include as part of appropriate sections above (maintenance, repair, etc.). Otherwise, it will be a separate line item, reimbursable per the Federal Travel Regulation.*

Provide suggestions to improve this form by clicking here.

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