Requirements / Specification Document

NIST
National Institute of Standards and Technology
U.S. Department of Commerce

TITLE: 360 Degree Camera Module

Requesting Laboratory / Division / Group:

Communications Technology Laboratory
Radio Frequency Technology Division
Electromagnetic Fields Group (672.02)

General Statement of Need:

The Channel Measurement and Modeling (CMM) project performs over-the-air radio frequency (RF) propagation measurements to support standards development (e.g., 3GPP, ITU, IEEE) and industry stakeholders. These measurements are supported by multimodal sensors (cameras, lidar, etc.) to facilitate the production of digital replicas of measurement environments and targets for modeling and machine learning/AI applications. A typical measurement uses spatially separated RF transmitter and receiver systems. The CMM project has a mission-critical need to procure a high-precision 360° camera for the transmitter side of the measurement link to generate a digital twin at this location. Because we will integrate this camera into an existing measurement and data processing workflow to generate digital twins of the measurement environment, we require that it be a monolithic module with 360° field-of-view, high pixel resolution, on-board memory, GNSS localization capabilities, and user access to raw on-board inertial sensor data.

Item Specifications and Quantities:

Item 1:	360° Camera Module	
Quantity:	1 EACH	
Specifications:	1.1	360° field-of-view camera module
	1.2	Maximum frame rate of 7 frames per second (fps) or faster
	1.3	Better than 60-megapixel resolution at maximum frame rate
	1.4	Integrated geospatial navigational satellite system (GNSS) sensor integration
	1.5	Internal inertial motion unit (IMU) sensor with user access to raw data
	1.6	1 TB on-board memory
	1.7	NDAA-compliance
	1.8	Hard storage case

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Vendor Requirements

1. Possess at time of award/contracting an Export Control Classification Number (ECCN).

2. Possess at time of award/contracting a Unique Entity Identification Number (UEI) which registration is listed as “Active” on the GSA System for Award Management (SAM.gov).

Procurement Support Information and Ancillary Services:

[Provide input for each section Below or Mark Not Applicable (N/A)]

Section	Requirements/Specifications
Planning Considerations ☒ N/A	☐ List any visits required to allow potential vendors to see site specific constraints. [Explain Requirements.] ☐ US citizen required on-site (foreign nationals require pre-registration 30 days prior to visit.) ☐ Vendor Representative On-Site more than three (3) days. ☐ Other Considerations: [List other considerations to ensure an accurate quote.]
Shipping & Delivery ☐ N/A	Shipping Address: ☒ NIST-Boulder ATTN: Samuel Berweger Mail Stop: 325 Broadway Boulder, CO 80305 ☐ NIST-Gaithersburg ATTN: Mail Stop: 100 Bureau Dr Gaithersburg MD 20899 ☐ [Alternate Shipping Address] Shipping Criteria: ☐ Partial Delivery Acceptable ☐ [Enter Shipping and Delivery information by item.] ☐ Direct Delivery to OU Building Required [Explain Need for Requirement]

Building /Room Number: [Enter Building/Room Number]

☐ Building has Loading Dock

Containerization Preference: [Enter Container Type]

Other Requirements:

[List Any Other Requirement]

Delivery Date Criteria:

☐ Delivery Shall Be Competed No Later Than:
Click or tap to enter a date.

☐ Delivery Shall Be Made No Earlier Than:
Click or tap to enter a date.

☐ Scheduled Deliveries:

Item Number	Due Date

☐ Other:

[List Other Shipping, Delivery or Special Requirements.]

Electronic Media

☒ N/A

[Enter Electronic Media Requirements by Item.]

☐ Software

☐ Electronic Manuals

☐ License Key

☐ Other:

[List Any Other Electronic Media Requirements]

☐ US Government Email Address for Software Delivery:

[Enter Address]

Installation

☒ N/A

[Enter Installation Requirements by Item]

☐ Vendor Technician on Site

☐ Rigging

☐ Uncrating / Unpackaging

☐ Removal of Packaging Material

☐ Equipment Set Up
☐ Start-Up Services
☐ Turnkey Installation
☐ Other:
[Enter Details]

NOTE: TPOC shall be the coordination POC.

Facility / Utility Considerations
☒ N/A

[List Site Specific Utility Considerations by Item]

☐ OFPM Work Order Numbers
[List Work Order Numbers]

☐ Power Available

Voltage: [Enter voltage] (V)
Maximum Current: [Enter max current draw] (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.]

☐ Utility Connections:
[List Relevant Available Utilities, Pressure(s) and Flowrate(s).]

☐ Other Considerations:
[List Other Considerations to Ensure an Accurate Quote.]

Inspection and Acceptance
☐ N/A

[Inspection Requirements Per Item (Who, When, What, Where)]

☒ On-Site
☒ Acceptance Not Expected to Exceed 7 Business Days
☐ Acceptance Expected to Exceed 7 Business Days:
[Duration]
☐ Inspection and Acceptance Plan:
[Explanation]
☐ Other:
[Enter Other Requirements]

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Training

☒ N/A

Training Requirements (Who, When, What, Where)

☐ Number of Trainees: [Enter Number of Trainees]

☐ On-Site

☐ Off-Site Location: [Enter Location(s)]

Is Trainee Travel Required: [Choose Answer]

Scope of Training

☐ Operation ☐ Maintenance ☐ Troubleshooting

☐ Safety ☐ Other

[Enter Other Scope of Training Requirements]

☐ Training Materials to be Provided by Government:

[Describe Materials]

☐ Training Materials to be Provided by Vendor:

[Describe Materials]

☐ Other

[Enter Other Training Requirements]

NOTE: SME shall be coordination POC.

Warranty

☐ N/A

Base Manufacturer Warranty is acceptable

Warranty Length:

What is included?

☐ Labor ☐ Parts ☐ Travel

☐ Cost and Liability for Returns

☐ Other

[Enter Other Requirements]

☐ 1 Option Period

☐ 2 Option Periods

☐ 3 Option Periods

☐ 4 Option Periods (Maximum)

Calibration

[Describe Calibration Requirements Per Item]

Calibration Plan Length: [i.e. 3 - Years]

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☒ N/A

What is Included?

☐ Labor ☐ Spare Parts ☐ Consumables
☐ Travel ☐ Cost and Liability for Shipment
☐ Software Updates ☐ Manuals
☐ Other
[Enter Other Requirements]
☐ Requirements:
[Enter Requirements] (i.e.: On-Site Within 72 hours, etc.)
☐ 1 Option Period
Length: [i.e. 1 – Year / 6 - Months]
☐ 2 Option Periods
☐ 3 Option Periods
☐ 4 Option Periods (Maximum)

Maintenance
☒ N/A

[Describe Maintenance Requirements Per Item]
Maintenance Plan Length: [i.e. 3 - Years]
What is Included?

☐ Labor ☐ Spare Parts ☐ Consumables
☐ Travel ☐ Cost and Liability for Shipment
☐ Software Updates ☐ Manuals
☐ Other
[Enter Other Requirements]
☐ Requirements:
[Enter Requirements] (i.e.: On-Site Within 72 hours, etc.)
☐ 1 Option Period
Length: [i.e. 1 – Year / 6 - Months]
☐ 2 Option Periods
☐ 3 Option Periods
☐ 4 Option Periods (Maximum)

Government Furnished Material / Equipment
☒ N/A

List Any Government Furnished Material / Equipment Per Item]
☐ Samples for Testing
☐ Equipment which will leave Government Site
Description: [Enter Description]
Serial Number: [Enter Serial Number]

NIST Property Number: [Enter NIST Property Number]

☐ Other: [Enter Other Details]

Travel

☒ N/A

[Describe any Travel Requirements Per Item]

☐ Explain:

[Enter Justification / Requirement]

☐ Other:

[Enter Other Requirements]

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.