



भारतीय विज्ञान शिक्षा एवं अनुसंधान संस्थान पुणे
INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH PUNE
IISER/PUR/0199/26
PREBID CLARIFICATION ON CPP TENDER NUMBER - IISER/PUR/0199/26

Item Description- Procurement of Resonant, free-space Electro-Optic PHASE Modulator for Single Photons in the visible and NIR range with all required accessories

Resonant, free-space Electro-Optic PHASE Modulator for Single Photons in the visible and NIR range with all required accessories की खरीद के लिए, 18/06/2026 को इंस्टीट्यूट की वेबसाइट www.iiserpune.ac.in और CPP पोर्टल पर प्रकाशित ओपन टेंडर देखें।

Refer to an open tender published on the Institute website www.iiserpune.ac.in and on the CPP Portal on 18/06/2026 for procurement of Resonant, free-space Electro-Optic PHASE Modulator for Single Photons in the visible and NIR range with all required accessories.

प्री-बिड मीटिंग 25/06/2026 को शाम 3.00 बजे आयोजित की गई और बैठक का कार्यवृत्त निम्नानुसार है:
Pre-Bid meeting was held on 25/06/2026 at 3.00 PM and minutes of meeting is as under:

यह जानकारी दी गई कि प्री-बिड मीटिंग के दौरान चर्चा किए गए सुधार/जोड़/स्पष्टीकरण IISER पुणे की वेबसाइट पर उपलब्ध कराए जाएंगे। साथ ही, सभी संभावित बोलीदाताओं के लिए यह जरूरी है कि वे अपनी बोली जमा करने से पहले प्री-बिड कॉन्फ्रेंस की कार्यवाही को ध्यान में रखें, जैसा कि बिडिंग डॉक्यूमेंट्स में बताया गया है।

It was informed that the corrections / additons / clarifications given, as discussed during the Pre-Bid Meeting would be hosted on the website of IISER Pune and all the Prospective Bidders are required to take cognizance of the proceedings of the Pre-Bid Conference before submitting their bids as stipulated in the Bidding Documents.

हमारी IISER वेबसाइट www.iiserpune.ac.in और CPP पोर्टल पर जारी नोटिस की अन्य शर्तें और नियम वैसे ही रहेंगे। इस संबंध में आगे कोई बातचीत या पत्राचार नहीं किया जाएगा।

The other terms & conditions of the notice issued on our IISER website www.iiserpune.ac.in and CPP portal will remain unchanged. No more correspondence in this regard will be entertained.

बैठक अध्यक्ष के धन्यवाद प्रस्ताव के साथ समाप्त हुई।
The meeting ended with vote of thanks to the Chair.

उप कुलसचिव (भंडारण एवं क्रय)
Deputy Registrar (S&P)

TECHNICAL AND COMMERCIAL QUERIES AND CLARIFICATION

PRE-BID CONFERENCE FOR ITEM DESCRIPTION- PROCUREMENT OF RESONANT, FREE-SPACE ELECTRO-OPTIC PHASE MODULATOR FOR SINGLE PHOTONS IN THE VISIBLE & NIR RANGE WITH ALL REQUIRED ACCESSORIES

S. No.	Query/Clarification Sought	Clarification / Amendment
1	<u>Tender Title</u> Resonant, free-space Electro-Optic PHASE Modulator for Single Photons in the visible range with all required accessories.	<u>Tender Title</u> Tender title is amended as below: Resonant, free-space Electro-Optic PHASE Modulator for Single Photons in the visible <u>and NIR range</u> with all required accessories.
2	<u>CHAPTER 4, SCHEDULE OF REQUIREMENTS, SPECIFICATIONS & ALLIED TECHNICAL DETAILS</u> <u>PART - 01</u> <u>1.1 Resonant, free-space electro-optic PHASE modulator, Visible Range</u> b) RF Bandwidth (-3 dB) for VIS and NIR EOM	<u>CHAPTER 4, SCHEDULE OF REQUIREMENTS, SPECIFICATIONS & ALLIED TECHNICAL DETAILS</u> <u>PART – 01</u> <u>1.1 Resonant, free-space electro-optic PHASE modulator, Visible Range</u> b) RF bandwidth (-3dB): typ.< 1% of is amended to Typically ≤ 2% of f₀ as compared to <1%
3	<u>CHAPTER 4, SCHEDULE OF REQUIREMENTS, SPECIFICATIONS & ALLIED TECHNICAL DETAILS</u> <u>PART - 01</u> <u>Resonant, free-space electro-optic PHASE modulator, Visible Range</u> e) Return Loss (S11) for VIS and NIR EOM < -20 dB	<u>CHAPTER 4, SCHEDULE OF REQUIREMENTS, SPECIFICATIONS & ALLIED TECHNICAL DETAILS</u> <u>PART – 01</u> <u>Resonant, free-space electro-optic PHASE modulator, Visible Range</u> e) Return Loss (S11) for VIS and NIR EOM < -20 dB is amended to ≤ -10 dB
4	<u>CHAPTER 4, SCHEDULE OF REQUIREMENTS, SPECIFICATIONS & ALLIED TECHNICAL DETAILS</u> <u>PART - 01</u>	<u>CHAPTER 4, SCHEDULE OF REQUIREMENTS, SPECIFICATIONS & ALLIED TECHNICAL DETAILS</u> <u>PART - 01</u>

	<u>Resonant, free-space electro-optic PHASE modulator, Visible Range</u> h) Wavefront distortion (WFD): $<\lambda/6$ (@633nm)	<u>Resonant, free-space electro-optic PHASE modulator, Visible Range</u> h) Wavefront distortion (WFD): $<\lambda/6$ (@532nm) is amended to Wavefront distortion (WFD): $<\lambda/6$ (@633nm) for both VIS and NIR options
5	<u>CHAPTER 4, SCHEDULE OF REQUIREMENTS, SPECIFICATIONS & ALLIED TECHNICAL DETAILS</u> <u>PART - 01</u> Frequency Tuning Option for the Electro-Optic Phase Modulators. b) Tuning Range	<u>CHAPTER 4, SCHEDULE OF REQUIREMENTS, SPECIFICATIONS & ALLIED TECHNICAL DETAILS</u> <u>PART - 01</u> Frequency Tuning Option for the Electro-Optic Phase Modulators b) Tuning range: $(f_0) \pm 10$ MHz is amended to Tuning range: $f_0 \pm 10\%$
6	<u>CHAPTER 4, SCHEDULE OF REQUIREMENTS, SPECIFICATIONS & ALLIED TECHNICAL DETAILS</u> <u>PART - 01</u> External Reference Clock option for the Electro-Optic Phase Modulators Center External Clock Frequency 20 MHz.	<u>CHAPTER 4, SCHEDULE OF REQUIREMENTS, SPECIFICATIONS & ALLIED TECHNICAL DETAILS</u> <u>PART - 01</u> External Reference Clock option for the Electro-Optic Phase Modulators Tender specification prevails.
7	‘Operational with AC power supply ~220 V, 50Hz’ for all items were mentioned separately	**The full configuration of Resonant, free-space Electro-Optic PHASE Modulator set up of must be operational with AC power supply ~220 V, 50Hz
8	Item # 1-7	Items # 1-7 are relabeled as 1.1,1.2,1.3 & 2.1,2.2,2.3,2.4 & 3 with a new addition as #2.4 as the specifications of required SMA cables.
9	<u>CHAPTER 4</u> SCHEDULE OF REQUIREMENTS, SPECIFICATIONS & ALLIED TECHNICAL DETAILS	<u>CHAPTER 4</u> Revised SCHEDULE OF REQUIREMENTS, SPECIFICATIONS & ALLIED TECHNICAL DETAILS is appended as Annexure-III

ITEM: **Resonant, free-space Electro-Optic PHASE Modulator for Single Photons in the visible and NIR range** with all required accessories as mentioned below.

***All AC/DC adapters, power cables, all required RF cables, interlock cables and other connecting cables and required accessories/components for complete stand-alone operation of all the following items must be provided.**

****The full configuration of Resonant, free-space Electro-Optic PHASE Modulator set up as in Part-01 & -2, must be operational with AC power supply ~220 V, 50Hz. Qualifying marks for both Part-01 and Part-02 together is > 90**

PART - 01

1.1) Resonant, free-space electro-optic PHASE modulator, Visible Range; QTY 2; Marks: 25

- a) Optimised Resonance frequency (f_0): 20 ± 1 MHz.
- b) RF bandwidth (-3dB): typ. < 2% of f_0
- c) Central Optical frequency (λ_0): 532 nm
- d) Impedance @ f_0 : 50 Ohms
- e) Return Loss at f_0 : (S11): < -10dB
- f) Crystal aperture: Size 3x3 mm², Effective area $\geq 90\%$
- g) Laser insertion loss (LIL) @ λ_0 : < 2%
- h) Wavefront distortion (WFD): $< \lambda/6$ (@633nm)
- i) Broadband Anti-Reflection (BBAR) coatings: **360-650 nm** ($R_{avg} < 1\%$, $T_{avg} > 95\%$)
- j) Modulation efficiency @ (1rad, f_0 , λ_0): (12 ± 1) dBm
- k) RF connector(s): SMA female.

1.2) Frequency Tuning Option for the Electro-Optic Phase Modulators; QTY 2; Marks: 10

- (a) Tuning Function: Manual adjustment of the EOM's resonance frequency (f_0).
- (b) Tuning range: $f_0 \pm 10\%$
- (c) Tuning tool must be included.
- (d) All necessary SMA and other cables for interfacing

1.3) Temperature Stabilization and Mounting Stage option for Electro-Optic Phase Modulators; QTY 2; Marks: 10

- (a) Function: Temperature stabilisation of EOMs for high RF power applications.
- (b) Temperature stability with suitable temperature sensor: < 0.1K
- (c) Temperature settings via display or remote (USB)
- (d) Suitable connection cables compatible with the Electro-Optic Phase Modulators.

2.1) RF Driver for the Resonant, high-Q, free-space Electro-Optic Phase Modulators; QTY 2; Marks: 10

- a) Frequency range: 1 -180MHz
- b) Resolution: < 1 kHz, Stability: 2.5ppm
- c) RF level resolution: 0.1dB

- d) Output connector(s): SMA-female, bulkhead, 50 Ohms
- e) Full front-panel control via display
- f) Interlock features (T, RL), PC controllable (USB)
- g) EMC shielded.
- h) All necessary SMA and other interlock etc. cables for interfacing
- i) Operational with AC power supply ~220 V, 50Hz

2.2) External Reference Clock option for the Electro-Optic Phase Modulators; QTY 2; Marks: 10

- (a) Function: provision of External, high-stability reference for frequency synthesis
- (b) Central Frequency: 20 MHz
- (c) Front-panel interface: SMA, 50 Ohm
- (d) All necessary SMA and other connector & power cables for interfacing including those mentioned in #2.4.

2.3) RF power amplifier module for the Electro-Optic Phase Modulators; QTY 2; Marks: 10

- (a) Amplification @ 20 MHz
- (b) Noise figure: 5dB (typ.)
- (c) Unconditional stable
- (d) Thermal overload protection
- (e) Fault monitoring
- (f) All necessary SMA and other connector & power cables for interfacing, including those mentioned in #2.4.

2.4) RF Cables: 2m, QTY: 4

- (a) SMA Male to SMA Male
- (b) Frequency: DC to 3 GHz
- (c) Attenuation: < 1.5 dB/m @ 3 GHz

PART - 02

3.0) Resonant, free-space electro-optic PHASE modulator, NIR Range; QTY 2; Marks: 25

- (a) Optimised Resonance frequency (f_0): 20 ± 0.5 MHz.
- (b) RF bandwidth typ. <2% of f_0
- (c) Central Optical frequency (λ_0): 780 nm
- (d) Impedance @ f_0 : 50 Ohms
- (e) Return Loss at f_0 : (S11): < -10dB
- (f) Crystal aperture: Size 3x3 mm², Effective area $\geq 90\%$
- (g) Laser insertion loss (LIL) @ λ_0 : < 2%
- (h) Wavefront distortion (WFD): $< \lambda/6$ (@633 nm)
- (i) Broadband Anti-Reflection (BBAR) coatings: **630-1100 nm** ($R_{avg} < 1\%$, $T_{avg} > 95\%$)
- (j) Modulation efficiency @ (1rad, f_0 , λ_0): (15 ± 1) dBm
- (k) RF connector(s): SMA female.