Supply, Installation and commissioning of S/X-band with Ka-band ready Full motion antenna for LEO satellites

NSIL Tender Reference No: NSIL/GS/FMA/2025-04 –
Extension of RFP NSIL/GS/FMA/2025-01 dated 11th March, 2025

NSIL has floated one public tender (two part) towards realization of total 09 nos. of S/X dual band ground stations and associated civil structure at specified locations across India. Under this tender the overall ground station antenna is required to have Rx. and Tx. Capabilities in S-band and Rx. Capabilities in X-band. As per additional requirement, the same antenna system is now planned to be made ready for future Ka-band (25.5 – 27.0 GHz) reception also.

So, all bidders are requested to participate in this new tender and provide the compliance for following specifications related to Ka-band reception capabilities for the antenna systems in addition to the specifications in the RFP NSIL/GS/FMA/2025-01. This will be the additional specifications / capabilities in the already offered dual band antenna system.

For making dual-band antenna system capable of Ka-band data reception following additional specifications are to be considered as a part of the tender document (NSIL/GS/FMA/2025-01) and bidder shall provide the compliance for following specifications along with supporting documents / data sheets. This will be in addition to compliance for all the specifications related to dual band antenna system specifications.

Table-A: Antenna RF performance Specifications:

No	Parameter	Specification	Compliance (Yes / No)	Bidder's Remarks
1.	Antenna & Feed Operating Frequency Band This is addition to the S-band and X-band specifications as per original tender document. (NSIL/GS/FMA/2025-01)	**Receive:** Ka-band: 25.5 – 27.0 GHz **Tracking:** Ka-band: 25.5 – 27.0 GHz		
2.	Receive chain Polarization	Ka band Data: RHCP and LHCP simultaneously Ka-band Tracking capability: RHCP / LHCP selectable		
3.	Ka-band Receive G/T (5 deg. EL)	Min. 36.5 dB/K (including filter loss)		

4.	Antenna gain (at 26 GHz)	Ka-band: 62.0 dB or better		
5.	Ka-band First side lobe level	-13.0 dB from main lobe peak or better		
6.	Tx./Rx. Side lobes envelope	As per ITU-R Rec. S.580-6		

Table-C1: Antenna Servo and Tracking performance Specifications:

No	Parameter	Specification	Compliance (Yes / No)	Bidder's Remarks
1.	Position Transducer	Min. 23 bit (or better) absolute encoder		
2.	Antenna Tracking Accuracy (RMS)	Maximum RMS Tracking error: Ka-band: 20 mdeg.		
3.	Position loop bandwidth	1.5 Hz or better – to match the antenna dynamics and LRF.		

Ka-band LNA Specifications:

No	Parameter	Specification	Compliance (Yes / No)	Bidder's Remarks
1.	Frequency range (pass band)	25.5 – 27.0 GHz		
2.	Gain	45 - 50 dB typical.		
3.	Noise temp. (at 25 deg. C)	150 K or lower (125 K desirable)		
4.	Gain Flatness	± 1.5 dB in full Bandwidth ± 0.5 dB in any 500 MHz		
5.	Output Power	+12 dBm at 1 dB compression Point		
6.	Input / Output VSWR	1.6:1 or better		
7.	Out of band rejection	Min. 35 dB at freq. < 25.0 GHz and freq. > 27.5 GHz (filter can be integral / or external)		
8.	Group Delay / any 500 MHz	Linear: 0.05 ns/MHz Parabolic: 0.01 ns/MHz^2 Ripple: 1.0 ns p-p		

9.	LNA Input Interface	WR-34 - Suitable for feed Interface		
10.	LNA O/P Interface	2.92 mm / SMA		
11.	Power Supply	As per system configuration. Typically, +12 / +24 VDC		
12.	Housing	Weather sealed (IP 65)		
13.	MTBF	Min. 70,000 hours		

Additional deliverable for each antenna system due Ka-band Rx. Capability upgradation:

1. Tri-band (S/X/Ka) feed system with Ka-band receive capability (addition to existing S and X band capability).
2. Ka-band LNAs for data (RHCP & LHCP) and tracking chain
3. 23-bit position encoder (or better) instead of 21-bit encoder.
4. Reflector RMS accuracy optimization to meet Ka-band performance.
5. Servo System optimization to meet Ka-band tracking requirement.

Delivery schedule:

No	Activity	Projected Timeline
1	Delivery and installation of 1st TWO set of antenna systems	Contract (T0) + 12 months
2	Delivery and installation of 2nd set of TWO antenna systems	T0 + 14 months
3	Total Project Completion – with all antenna systems installation	T0 + 17 months

Bidder Eligibility Criteria:

1. The bidder shall be an ISO-9001:2015 certified company with established Quality Management Plan.
2. The bidder shall be System Integrator (SI) / OEM / any Authorized Agent/Vendor for OEM/SI or an organization/ a limited company, private company, or any agency capable of taking up works of such nature and magnitude. The bidder – if not OEM, shall produce an undertaking from OEM that the bidder is an authorized entity to quote for this tender and will provide support and spares to purchaser, for the offered system and also that the offered system will be supported by the OEM for the period of minimum 10 years after station commissioning.
3. The Bidder/OEM shall have at-least 5 years of experience in installation and commissioning of ground station (of similar nature) for Low Earth Orbit satellites. Also, the bidder must have necessary expertise for configuration of RF baseband System, Antenna foundation work, station integration work, Civil and Electrical infrastructure.

4. The bidder/OEM shall have successfully performed supply, installation commissioning of at-least two nos. of ground stations based on full motion mono-pulse dual band tracking antennas operating in S/C/X/Ku/Ka band of min. 5.0-meter and above antenna size on Turnkey basis during last five years. Bidder shall provide brief details of the project and its completion certificates with relevant references / contact details of the user agency towards this.
5. Bidder and OEM shall provide details of financial profile of the company, product range, manpower profile, turn-over status and experience in the field of satellite communication and its ground segment solution along with its techno-commercial bid. The Bidder/ OEM must have successfully executed / completed at least one single order of 80.0 Cr. or two orders each of 40.0 Cr. for similar projects delivering Satcom / Terracon related products last five years for any Central / State Govt. Organization / PSU / Public Listed Company / Non-Government Entity. Bidder shall provide documentary evidence towards successful completion of above projects along with execution / completion certificate from the customer.

General Terms & Conditions for Tender:

1. This is a **two-part public tender**. Bidder shall submit its offer in two parts viz., Techno-commercial bid and financial bid in two separate sealed covers super-scribing the enquiry reference number, name of the respective bid. If price information is revealed (either in part or full) in the techno-commercial bid, total bid is liable for rejection.
2. All information supplied by the Bidders as part of their bids in response to this RFP, may be treated as contractually binding on the Bidders, on successful award of the assignment by NSIL based on this RFP.
3. Bidder shall submit Non-Disclosure Agreement duly signed by Authorized Signatory as per the format provided by NSIL.
4. Bidder is required to provide EMD of INR 20,00,000.0 (Twenty Lakh rupees only) shall be made through Bank Guarantee in favor of “NewSpace India Limited”, towards bidder participation for the tender.
5. The cost of the RFP document is Rs. 10,000/- (Ten Thousand only) + GST (18%). **After making payment for the tender document and signing NDA ONLY the detailed RFP document will be provided to bidder.**
6. The bidder who has participated in NSIL earlier tender for dual band antenna (NSIL/GS/FMA/2025-01) and paid the tender document fee and EMD, are exempted from paying tender and EMD fee for current tender.
7. Bidder shall submit an undertaking, duly signed by authorized signatory, while submitting the bid, stating that there has been or is no outstanding bankruptcy/ insolvency, judgment or pending legal action that could impair operations of the bidder.

NSIL Purchase Department Contact No:

Tel: (080) 2828 2003 E-mail: purchase@nsilindia.co.in