Ministry of Defence

SKYNET Transition and Transformation Project (SK T&T): Ka-Band Satellite Anchor Capability Request for Information (RFI)

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UK PROTECTIVE MARKING:	OFFICIAL

Contents

Section 1 - Introduction

1. The Ministry of Defence (MOD) is developing a requirement for the addition of Ka-Band Anchor Station facilities through the Ka-Band Anchor Capability project. For the purpose of this RFI, MOD is seeking Industry's views on aspects of procurement, design and build of a military Ka-Band Anchor Station at a Satellite Ground Station site to help inform its technical options and programme planning.
2. The MOD is seeking industry's view and feedback to the question set in Section 3 – Information Requested of this document, with specific consideration given to the further information that has been provided.

Industrial Engagement Approach

3. All responses to the question set will be treated as commercially sensitive and respondents may answer as many or as few of the questions as they wish. Only Official or Official-Sensitive responses should be sent to the email address specified on page 6.
4. The description of the Ka-Band Capability project are subject to change without notice or consultation. The MOD will not be held liable for any decisions or investments made based on the information contained in, or inferred from this document.
5. Please note that it is the responsibility of the respondent to ensure that appropriate rights of distribution are in place for all information shared in response to this RFI.

RFI Security Information

6. The following security information should be read and understood before responding to this RFI:
    a. The security classification of this RFI is OFFICIAL;
    b. The security of the anticipated future procurement, delivery and maintenance of Ka-Band Satellite Ground Station is of critical national importance. The highest level of classification of the Ka-Band Anchor Capability project is UK OFFICIAL SENSITIVE. The Official Secrets Act and other relevant legislation will also inherently apply to the SKYNET programme. Effective security will need to be designed, implemented and assured throughout the life of the programme and must cover both the system itself, the impact of connected systems and the programmatic aspect of security.

Section 2 – The Ka-Band Anchor Capability Requirement

Background

7. The full range of MOD's satellite communication systems and services are currently delivered under several contracts and Memoranda of Understanding, with the bulk of services provided under the SKYNET Contract for Implementation and Service Delivery (CISD) awarded in October 2003 under a Private Finance Initiative (PFI). That PFI is with Airbus Defence and Space and expires on 31 August 2022.

8. After this date, MOD will transform towards becoming an "Intelligent Owner" and take on responsibility for maintaining all satellite assets, services and capabilities under the SKYNET Programme. This includes the procurement of multiple suppliers to support the service wrap and replenish interim obsolete assets in order to de-risk capability and maintain service delivery whilst the SKYNET Programme transitions from the PFI.

9. It is anticipated that the Ka-band Anchor Station will be used to support both satellite In Orbit Test (IOT) and User Traffic Services. It is also desired that these activities can be undertaken for any of MOD's satellites that are visible and within their coverage area at the Anchor Station's location.

10. The satellite communications system is required to operate within a complex military operational environment where it must co-exist with the other Satellite Ground System antennas, and operate after the application of high levels of electromagnetic energy.

Section 3 – Information Requested

11. The series of questions Industry are requested to respond to are set out in Table 1.

12. In responding to these questions, Industry are requested to consider the illustrative, non-exhaustive performance parameters for Ka-Band Anchor Station set out in Table 2.

13. Industry are requested to present their technical responses to the questions using the format provided at Table 3 in Annex A. The response should provide a description of the equipment solution specified by the performance parameters in Table 3 and a Rough Order of Magnitude (ROM) assessment of the cost and timescale implications.

14. For questions 2 to 6 inclusive, Industry are requested to provide concise written responses.

15. It should be stated whether Heating Ventilation and Air Conditioning (HVAC), liquid cooling or anti-icing are required for operation in various climatic conditions. In addition, it should be stated whether these functions are incorporated into the antenna assembly or in a separate equipment located close to an antenna assembly. Details on the size, weight and power demand of the HVAC, liquid cooling or anti-icing are requested.

16. If a radome forms part of the response, please specify the impact of this to the performance parameters quoted in Table 3 and Annex A.

No.	Question
1	In response to the outline specification defined in Table 2, Industry are requested to provide information, including specifications on existing terminals that could meet the parameters described in Table 2. Please provide ROM cost and timescale implications of your described approach.
2	Describe the required, associated equipment for these terminals and their capabilities. An example of this could be an Antenna Control Unit. Please provide rough order of magnitude cost and timescale implications of your described approach.
3	Describe the engineering services that industry can offer to support the installation and commissioning of these terminals. Please provide ROM cost and timescale implications of your described approach.
4	Please provide insight into the approaches should MOD consider to support Geographic Site Diversity for high Ka-Band service availability.
5	Please provide insight into whether industry's product(s) support civilian Ka-Band? If so, is this simultaneous to military Ka-band support or does it need to be set via a configuration?
6	Does industry's product(s) support multiple input and output ports? If so, what implementation does industry recommend and what options are there – for example, a L-Band switch matrix?

Table 1 – Anchor Station RFI Questions

	Assumed Nominal Terminal Type	
	Option 1	**Option 2**
Ka Mil band saturated EIRP (dBW)	95	98
Ka Mil band linear EIRP (dBW)	90	90
Ka Mil band G/T (dB/K)	41	41
Ka Commercial band saturated EIRP (dBW) if supported	95	98
Ka Commercial band linear EIRP (dBW) if supported	90	93
Ka Commercial band G/T (dB/K) if supported	41	41
Multi carrier operation in a band	Yes	Yes
Dual Polarisation Operation (RHCP & LHCP)	Yes	Yes
I/O Ports	8	8
Intermediate Frequency	L-band	L-band
Minimum elevation pointing, earth referenced	10°	10°
Pointing accuracy (RMS)	0.005°	0.005°
Tracking loss (dB)	<0.8	<0.8

Table 2 - Illustrative Anchor Station Requirements

How to respond to this RFI

17. Please be aware that the MOD is not seeking promotional material (sales pitches) for not applicable or unproven technologies in response to this RFI.
18. **Responses to this RFI should be sent directly to mailbox**:

    UKStratComDD-CM-Skynet-6A@mod.gov.uk

19. **The closing date for RFI responses is:**

    - **Friday 18th March 2022 by 23.59.**

20. Thank you for your interest in this RFI.

ANNEX A: Ka-band Satellite Ground Station RFI - Industry Responses

Please highlight in red font under or overachievements of these illustrative specifications and clearly label these with the system name and modification status (i.e. un-modified or modified).

	Assumed Nominal Terminal Type		Industry Response	
	Option 1	**Option 2**	**Value**	**Comments**
Nominal antenna main reflector diameter (m)	9.2	13.4		
Ka Mil band saturated EIRP (dBW)	95	98		
Ka Mil band linear EIRP (dBW)	90	90		
Ka Mil band G/T (dB/K)	41	41		
Ka Commercial band saturated EIRP (dBW) if supported	95	98		
Ka Commercial band linear EIRP (dBW) if supported	90	93		
Ka Commercial band G/T (dB/K) if supported	41	41		
Multi carrier operation in a band	Yes	Yes		
Dual Polarisation Operation (RHCP & LHCP)	Yes	Yes		
Ports	8	8		
Intermediate Frequency	L-band	L-band		
Minimum elevation pointing, earth referenced	10°	10°		
Pointing accuracy (RMS)	0.005°	0.005°		
Tracking loss (dB)	<0.8	<0.8		

Table 3 Anchor Stations Performance Specification Options