

SKYNET Transition and Transformation Project (SK T&T):

Next Generation Maritime Terminal (NGMT)

Request for Information (RFI)

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# Section 1 - Introduction

1. The Ministry of Defence (MOD) is currently developing the requirement for replacing its existing maritime military satellite communication terminals (the SCOT5 terminals) through the Next Generation Maritime Terminals (NGMT) project. The MOD has been seeking industry’s views on aspects of procurement, design and build of maritime military SATCOM terminals to help inform its technical options and programme planning. An RFI[[1]](#footnote-2) was published on 11th January with a series of questions to help the MOD understand the technologies available in the Maritime Military Satellite Communications marketplace.
2. Following the responses to the previous RFI, which indicate that the Authority’s size and weight constraints may be ‘in tension’ with the system Radio Frequency (RF) performance requirements, further information has been provided below on the expected platform technical constraints for NGMT.
3. Therefore, the MOD would like to invite industry to provide feedback on the supplementary questions shown in *Section 3 – Information Requested* of this document, with specific reference to the further information that has been provided.

Industrial Engagement Approach

1. 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 7.
2. The content of individual responses (or lack of response) will not be in any way prejudicial to future procurement processes and is for MOD information only.
3. The description of the NGMT project and other aspects of the SKYNET programme provided in this document 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.
4. Please note that it is the responsibility of the respondent to ensure that appropriate rights of disitribution are in place for all information shared in response to this RFI.

RFI Security Information

1. The following security information should be read and understood before responding to this RFI:
	1. The security classification of this RFI is OFFICIAL;
	2. The security of the anticipated future procurement, delivery and maintenance of NGMT is of critical national importance. The highest level of classification of the NGMT project is SECRET UK EYES ONLY and this will impact on any future competitive activity with regard to this project. 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 NGMT Requirement

## Background

1. 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 (ADS) and expires on 31 August 2022.
2. 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.
3. As the current fleet of various terminals under the SKYNET Programme move towards the end of life, a workstream under the Transition and Transformation Project (SK T&T) is focused on ensuring that next generation replacement equipment is available to maintain or improve the MOD’s communication capability. The focus of this Early Market Engagement Activity is the replacement maritime terminals of the SCOT5 in the form of NGMTs, which are scheduled to enter service in 2026.
4. The current SCOT5 terminals provide a single-band military communications provision at X-band. An increased need for communications capacity and flexibility means that the MoD would like to explore the possibility for obtaining a multi-band capability. This means operation at both X and Mil-Ka bands, while retaining the current Size, Weight and Power envelope, performance, and ability to operate during and after military scenarios.

# Section 3 – Information Requested

Question 1) In response to the brief below, please provide information, including specifications, on existing terminals (i.e. those at a high technology readiness level) that could meet the parameters described in the brief below;

Question 2) If these RF requirements within the Size and Weight constraints cannot be simultaneously met:

a) What is the best RF performance your systems could achieve when the Size and Weight constraints are satisified?

b) What are the minimum Size and Weight specifications your systems could achieve when the RF performance requirements are achieved (or approached)?

Question 3) What other approaches do you think MOD should consider to achieve the RF performance requirements within the Size and Weight constraints?

In your responses to Questions 2 and 3 please provide rough order of magnitude cost and timescale implications of your described approaches.

1. The Royal Navy uses satellite communications in order to obtain Operational Advantage in its day-to-day business. In order to ensure that this Advantage is always available, the ability to access and contribute information is required. Reliable satellite communications is needed in a very wide number of scenarios. These scenarios range from high sea-state operation; operation in high vibration situations and operation following subjection to a high-shock impulse; the need to realise high-capacity, differentiated communication through the use of multiple simultaneous transmissions within a frequency band; and access to communications when accidental or deliberate denial of these communication is being attempted.
2. The ship’s infrastructure, e.g. antenna assembly supports, have been designed for the existing terminal installations mass and size, consequently any need to modify the large number of vessels across the different classes to accept the new terminal is undesirable.
3. Simultaneously, there is a desire to increase the degree and quality of communications. This may result in, for example, the secure, resilient X-band frequency being supplemented by military Ka-band. Hence, X-band is required, and mil-Ka band is desired. Simultaneous X and Ka capability is desired.
4. The satellite communications system is also required to operate within a complex operational environment. where it must co-exist with the other ship’s systems, not endanger personnel, other systems or aircraft through, for example, the safe transmission of high levels of electromagnetic energy.
5. If antenna assembly HVAC is required for operation in various climatic needs, it should be communicated whether the HVAC is incorporated into the antenna assembly or if this could be a separate equipment located close to an antenna assembly. Details on the size, weight and power demand of the HVAC are requested. It should be assumed that an antenna assembly HVAC will not be a ship supplied service.
6. In order to illustrate the types of performances that may be of interest to the Royal Navy, an illustrative, non-exhaustive set of potential requirements is set out in Table 2 for the project’s scope. The relevant Size, Weight and Power constraints are defined in Table 1.
7. An additional terminal type, Small, may be required and thus is currently an option and is specified in Table 3.

|  |  | **Nominal Terminal Type** |
| --- | --- | --- |
|  |  | **Medium** | **Large** |
| Size & weight limits | Nominal antenna main reflector diameter (m) | 1.5 | 2.2 |
| Antenna assembly dimensions: Diameter x Height (m) | 2.3 x 2.4 | 3.1 x 2.9 |
| Antenna assembly weight (includes radome and cooling if required) (kg) | 325 | 525 |

Table 1 Terminal Contraints – Normal System Scope

|  |  | **Nominal Terminal Type** |
| --- | --- | --- |
|  |  | **Medium** | **Large** |
| Size & weight limits | Nominal antenna main reflector diameter (m) | 1.5 | 2.2 |
| Antenna assembly dimensions: Diameter x Height (m) | 2.3 x 2.4 | 3.1 x 2.9 |
| Antenna assembly weight (includes radome and cooling if required) (kg) | 325 | 525 |
| RF performance | X-band linear EIRP (dBW) | 64.0 | 67.0 |
| Ka Mil band linear EIRP (dBW) | 65.0 | 68.0 |
| X-band G/T (dB/K) | 15.5 | 19.0 |
| Ka Mil band G/T (dB/K) if supported | 21.0 | 24.5 |
| Ka Commercial band G/T (dB/K) if supported | 21.0 | 24.5 |
| Multi carrier operation in a band | Yes | Yes |
| Circular polarisation | Yes | Yes |
| Pointing and Tracking | Operation in sea state (X/Ka) | 8 / 6 | 8 / 6 |
| Dual antenna operation to overcome blockage and enable hemispherical coverage | Yes | Yes |
| Minimum elevation pointing, earth referenced | -10° | -10° |
| Tracking loss (dB) | <0.8 | <0.8 |
| Operation Features | Fail safe remote radio silence activation | Yes | Yes |
| Remote antenna pointing angle display to facilitae safe aircraft operation and replenishment at sea | Yes | Yes |
| Ability to counter blockage of antenna by ship’s structure | Yes | Yes |
| Ability to declare areas of ship fuselage non-transmit zones for safe operation | Yes | Yes |
| Features permitting co-existance with other ship emitters and receivers | Yes | Yes |
| M&C | Management and Control application interfaces to Ship and Satcom management systems | Yes | Yes |
| Military Environmental | Area of operations | Global | Global |
| Climatic | Yes | Yes |
| Vibration | Yes | Yes |
| Shock | Yes | Yes |
| EMC | Yes | Yes |

Table 2 Terminal Requirements – Normal System Scope

|  |  |  |
| --- | --- | --- |
| **Terminal type and nominal antenna diameter (m)** | **G/T** | **EIRP** |
| **(dB/K)** | **(dBW)** |
|  |  | **Ka-band** | **X-band** | **Ka-band** | **X-band** |
| **Small** | 0.8 | 15 | 10 | 60 | 47 |

Table 3 Terminal Constraints and Performance Requirement - Optional Project Scope

## How to respond to this RFI

1. Please be aware that the MOD is not seeking promotional material (sales pitches) for not applicable or unproven technologies in response to this RFI. Please put your technical responses to the questions in copies of the Tables provided at Annex A below highlighting in red font under or overachievements of these illustrative specifications and clearly labelling these with the system name and modification status (i.e. un-modified or modified).
2. **Responses to this RFI should be sent directly to mailbox**:

**ISSDel-Net-SatcomSK-TTGroupMbx@mod.gov.uk**

1. **The closing date for RFI responses is:**
* **Friday 14 May 2021, however earlier responses are welcomed.**
1. Thank you for your interest in this RFI.

**ANNEX A: NGMT RFI - Industry Responses**

Please highlighting 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).

|  |  | **Nominal Terminal Type** |
| --- | --- | --- |
|  |  | **Medium** | **Industry Response** | **Large** | **Industry Response** |
| Size & weight limits | Nominal antenna main reflector diameter (m) | 1.5 |  | 2.2 |  |
| Antenna assembly dimensions: Diameter x Height (m) | 2.3 x 2.4 |  | 3.1 x 2.9 |  |
| Antenna assembly weight (includes radome and cooling if required) (kg) | 325 |  | 525 |  |
| RF performance | X-band linear EIRP (dBW) | 64.0 |  | 67.0 |  |
| Ka Mil band linear EIRP (dBW) | 65.0 |  | 68.0 |  |
| X-band G/T (dB/K) | 15.5 |  | 19.0 |  |
| Ka Mil band G/T (dB/K) if supported | 21.0 |  | 24.5 |  |
| Ka Commercial band G/T (dB/K) if supported | 21.0 |  | 24.5 |  |
| Multi carrier operation in a band | Yes |  | Yes |  |
| Circular polarisation | Yes |  | Yes |  |
| Pointing and Tracking | Operation in sea state (X/Ka) | 8 / 6 |  | 8 / 6 |  |
| Dual antenna operation to overcome blockage and enable hemispherical coverage | Yes |  | Yes |  |
| Minimum elevation pointing, earth referenced | -10° |  | -10° |  |
| Tracking loss (dB) | <0.8 |  | <0.8 |  |
| Operation Features | Fail safe remote radio silence activation | Yes |  | Yes |  |
| Remote antenna pointing angle display to facilitae safe aircraft operation and replenishment at sea | Yes |  | Yes |  |
| Ability to counter blockage of antenna by ship’s structure | Yes |  | Yes |  |
| Ability to declare areas of ship fuselage non-transmit zones for safe operation | Yes |  | Yes |  |
| Features permitting co-existance with other ship emitters and receivers | Yes |  | Yes |  |
| M&C | Management and Control application interfaces to Ship and Satcom management systems | Yes |  | Yes |  |
| Military Environmental | Area of operations | Global |  | Global |  |
| Climatic | Yes |  | Yes |  |
| Vibration | Yes |  | Yes |  |
| Shock | Yes |  | Yes |  |
| EMC | Yes |  | Yes |  |

Table 2 Terminal Requirements – Normal System Scope

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Terminal type and nominal antenna diameter (m)** | **G/T** | **Industry Response** | **EIRP** | **Industry Response** |
| **(dB/K)** | **(dBW)** |
|  |  | **Ka-band** | **X-band** |  | **Ka-band** | **X-band** |  |
| **Small** | 0.8 | 15 | 10 |  | 60 | 47 |  |

Table 3 Terminal Constraints and Performance Requirement - Optional Project Scope

1. SKYNET Transition and Transformation Project (SK T&T): Next Generation Maritime Terminal (NGMT) Request for Information (RFI) – 11th January 2021. [↑](#footnote-ref-2)