



THE PACIFIC FORUM FISHERIES AGENCY (FFA) VESSEL MONITORING SYSTEM (VMS) TYPE APPROVAL

This is an unpublished work the copyright in which vests in The Pacific Forum Fisheries Agency (FFA). All rights reserved.

The information contained therein is the property of FFA. No part may be reproduced disclosed or used except as authorised by contract or other written permission. The copyright and the foregoing restriction on reproduction and use is extended to all media in which the information may be embodied.



DOCUMENT CONTROL

DOCUMENT APPROVALS:

Approved by:

Name:

Position:.....

File Reference:

AMENDMENT HISTORY

Issue	Date	Change Description	Author
01	25 April 2008	First approved version	Absolute Software



Index	Page No.
Section 1 General	4
Section 2 Applying for Type Approval	7
<i>MTU Type Approval - Mandatory Requirements:</i>	
Section 3 Mandatory Non-functional Requirements	9
Section 4 Mandatory Functional Requirements for MTUs	12
<i>E-MTU Type Approval - Mandatory Requirements</i> <i>(additional to Sections 3 and 4)</i>	
Section 5 Mandatory Non-functional Requirements	14
Section 6 Mandatory Functional Requirements for E-MTUs	15
<i>MTU/E-MTU Type Approval – Mandatory Physical, Security and Installation Requirements</i>	
Section 7 Mandatory Physical and Security Requirements	17
Section 8 Mandatory Installation Requirements	19
<i>MCSP Type Approvals</i>	
Section 9 Mandatory Requirements	22
<i>Type Approval Procedures</i>	
Section 10 Testing Process	29
Appendix 1 Application Forms (to be completed by applicants)	
Appendix 2 Type Approval Test Plan (to be completed by applicants)	
Appendix 3 Type Approval Checklist (to be completed by applicants)	



Section 1 - Introduction

Section 1.1 General

The Forum Fisheries Agency (FFA) is responsible for assisting its members with the management of fisheries and enforcement of fisheries law in the western and central Pacific Ocean. Access to timely and accurate vessel position information is vital to meeting these responsibilities.

The FFA Members' Vessel Monitoring System (FFA VMS) is a group of systems based and managed at Honiara, Solomon Islands that distributes vessel position data to FFA members where it is used for monitoring, surveillance and compliance purposes.

The FFA VMS is an important tool which FFA uses to monitor the positions of vessels.

The FFA VMS is based on the use of FFA approved MTUs installed on board fishing vessels and approved MCSPs to track the vessel through the FFA base station software.

FFA type approval is used by the FFA and by other authorities such as the Australian fisheries agencies to regulate the types of MTUs available to vessel operators. By applying for type approval the manufacturer/supplier agrees to the documentation being released to other fisheries authorities using the FFA type approval process. However manufacturers should note that FFA type approval does not automatically mean that other authorities shall accept the unit as type approved. Since authorities other than FFA may have other requirements, the manufacturer should check with the relevant authority.

The terminology in this document is substantially changed from previous FFA type approval specifications. The terminology has changed in light of the increased use of VMS around the world and need to provide a degree of consistency and harmonisation between the various national type approval specifications. It is considered that this will considerably ease the type approval burden for suppliers. This document is aligned with that of other major advanced VMS users, particularly the National Marine Fisheries Service of the United States.

Section 1.2 Purpose

This document specifies the requirements for the type approval of Vessel Monitoring Systems as a whole utilised by the FFA. These certification requirements will change and evolve over time, prior to applying for approval applicants should check that they are using the most up to date version.

FFA seeks to deploy an "open system," whereby the fishing industry may select from a variety of approved VMS types.

Fishers must comply with FFA regulations regarding VMS and therefore may be found to be in breach of VMS regulations not attributable to faults in the MCSP or MTU. Therefore, type approval is essential to establish and maintain the integrity of the VMS.



Section 1.3 Guide to rest of document

Section	Purpose
Two	Provides guidance on applying for type approval
Three and Four	Specifications for MTU type approval, includes non-functional and functional requirements
Five and Six	Specifications for E-MTU type approval, includes non-functional and functional requirements
Seven	Specifications for the E-MTU/MTU Type Approval mandatory physical and security requirements
Eight	Specifications for the E-MTU/MTU Type Approval mandatory installation requirements
Nine	Specifications for MCSP type approval
Ten	Testing Process

Note: the requirements within this document are **mandatory** for type approval. It is **strongly recommended** that applicants approach FFA to discuss the requirements before applying type approval.

FFA type approval DOES NOT constitute endorsement or preference for a particular product or service. Advertising by applicants may only refer to 'FFA type approval' or 'FFA type approved'.

Section 1.4 Abbreviations

Abbreviation	Description
FFA	Forum Fisheries Agency
VMS	Vessel Monitoring System (or Systems)
MTU	Mobile Transmitting Unit
E-MTU	Enhanced Mobile Transmitting Unit, with two way e-mail and forms capabilities
MCSP	Mobile Communications Service Provider
ALC	Automatic Location Communicator (old terminology not used in this document, analogous to MTU)
OEM	Original Equipment Manufacturer/Manufacturing
E-forms	Electronic forms, such as catch reporting or declaration forms
UTC	Universal Coordinated Time (same as Greenwich Mean Time)



Section 1.5 Historical approvals

Currently approved units as **25 April 2008** will remain as type approved MTUs only. Should manufacturer's of these units wish to type approve these units as E-MTUs then they will be required to submit the units to type approval for E-MTUs.

Likewise currently used MCSPs will be approved by default on **25 April 2008**. However, if major problems are encountered with these MCSPs, FFA may, at their discretion, determine that these MCSPs must submit to type approval. New MCSPs will be required to be approved in accordance with this document.

Section 1.6 Acceptance of Overseas Type Approvals

Where a type approval of any sort has been issued by another fisheries agency, the FFA, at its discretion, may or may not accept part or all of that approval towards the FFA type approval. Regardless of other type approvals the MTU, E-MTU or MCSP must meet in full the requirements detailed in this document. The procedures for applying for type approval detailed in Section 2 must be complied with.

Section 1.7 Contacts

Manager, Vessel Monitoring System

Telephone: +677 21124
Fax: +677 23995
Email: vms@ffa.int
Website: www.ffa.int
Address: Pacific Islands Forum Fisheries Agency
1 FFA Road
P.O. Box 629
Honiara, The Solomon Islands



Section 2 – Applying for Type Approval

Section 2.1 – Applying for Type Approval for Mobile Terminal Units (MTUs) and Electronic-MTUs

2.1.1 Application Form

An FFA type approval application form shall accompany any application for type approval. Application forms are available on the FFA website or by contacting the FFA VMS Manager. Application forms can be found at Appendix 1, as well as on the FFA website.

2.1.2 Application Fee

The application fee for type approval shall accompany any application for type approval. No testing will be conducted until the application fee has been received. The current application fee schedule is available from the FFA VMS Manager.

2.1.3 What to submit for Type Approval

A supplier of an MTU or E-MTU requesting type approval shall begin by certifying that the unit meets the minimum VMS standards as required by this document. Suppliers must describe in detail the extent to which its unit complies with each of the requirements stated within this document.

The supplier must provide FFA with two units for testing. The supplier must also provide complete documentation, including fact sheets, installation guides, operator manuals, user handbooks, the applicable interfacing software, and technical support.

FFA shall:

- review the applications against the specification of this document.
- perform field test and sea trials.

These tests involve testing every aspect of unit operation, including installation, location tracking, messaging, and maintenance procedures. Submit requests for type approval, along with hard and soft copies of support material to the FFA VMS Manager.

Consideration will be given to MTUs or E-MTUs that have passed a comparable type approval process in a foreign fisheries management. If applicable, the applicant should provide the MTUs or E-MTUs specifications, the details of foreign VMS requirement specifications, the MTUs or E-MTUs level of compliance, and appropriate contact details of the qualifying authorities. FFA also will consider qualifying different model MTUs or E-MTUs which are resold or packaged as different models where that same model under a different name has already received FFA type approval. In either case applicants must supply all the required documents, etc for type approval. Applicants must complete and provide the Type Approval Checklist and Test Plan and submit the completed copies with their application.

Section 2.2 – Applying for Type Approval of Mobile Communication Service providers (MCSPs)

2.2.1 Application Form



An FFA type approval application form shall accompany any application for type approval. Application forms are available on the FFA website or by contacting the FFA VMS Manager. Application forms can be found at Appendix 1, as well as on the FFA website.

2.2.2 Application Fee

The application fee for type approval shall accompany any application for type approval. No testing will be conducted until the application fee has been received. The current application fee schedule is available from the FFA VMS Manager.

2.2.3 What to Submit for Type Approval

Applicants for MCSP type approval may be the company, systems integrator, distributor, and/or value-added reseller, or other acting within their agreement with the underlying communications company.

Consideration will be given to an MCSP that has already passed a comparable carrier qualification process in a foreign fisheries management. If applicable, the applicant should provide the MCSP's identifying characteristics, the details of foreign VMS requirement specifications, the MCSP's level of compliance, and appropriate contact details of the qualifying authorities. FFA also will consider qualifying an MCSP which resells, packages, or integrates communication services from an MCSP that already received FFA type approval. In either case applicants must supply all the required documents, etc for type approval.

An MCSP seeking type approval within a particular communications class for VMS must demonstrate that it meets the standards when using at least one type approved model of MTU or E-MTU within that same class.

The requirements in this document are to ensure that type approval for a particular MCSP will permit interoperability with all approved MTUs within its same class. Concurrent with a type approval process for an MCSP, the type approval for a same-class MTU or E-MTU must be either in place or pending. Data received at FFA from the MCSP must be in a secure and encrypted format compatible with FFA tracking software.

An applicant requesting MCSP type approval shall describe in detail the extent to which the MCSP complies with each of the requirements set forth within this document. The applicant for type approval must provide FFA with one MTU or E-MTU of the same communications class and the required communications service for testing.

The supplier must also provide complete MTU or E-MTU documentation, including fact sheets, installation guides, operator manuals, user handbooks, the applicable interfacing software, and technical support.

FFA shall:

- review the applications against the criteria of this directive
- perform field test and sea trials. For this, FFA will coordinate test conditions with volunteer and/or contract fishing vessels.

These tests involve demonstrating every aspect of unit operation, including installation, location tracking, messaging, and maintenance procedures. Submit requests for type approval, along with hard and soft copies of support material to the FFA VMS Manager. Applicants must complete and provide the Type Approval Checklist and Test Plan and submit the completed copies with their application.



MTU TYPE APPROVAL – MANDATORY REQUIREMENTS

Sections three and four describe the type approval requirements for MTUs. Applicants must respond to each of the items in sections 3 and 4 this document. The response should indicate how the applicant complies with the requirement of the section. Sections that the applicant does not currently comply with must be responded to by explaining how the applicant will comply with the requirement prior to approval.

Section 3 - MTU Type Approval - Mandatory Non-Functional Requirements

Section 3.1 Prosecution Support

Due to the use of VMS for monitoring and law enforcement, all technical aspects of a supplier's submission are subject to being admitted as evidence in a court of law, if needed. The reliability of all technologies utilised in the MTU may be analysed in court for, *inter alia*, testing procedures, error rates, peer review, and general industry acceptance. Further, the supplier may be required to provide technical and expert support for a litigation to support the MTU capabilities to establish FFA's (or an FFA members') case against violators.

If the technologies have previously been subject to such scrutiny in a court of law, the supplier should describe the evidence and any court finding on the reliability of the technology. Additionally, to maintain the integrity of VMS for fisheries management, the supplier will be required to sign a non-disclosure agreement limiting the release of certain information that might compromise the effectiveness of the VMS operations, such as details of anti-tampering safeguards. The supplier shall include a statement confirming its agreement with these conditions.

Section 3.2 MTU Identifiers

Specify the identifying characteristics of the MTU:

- 3.2.1 The communications class
- 3.2.2 The manufacturer
- 3.2.3 The brand name (where a brand name may vary around the world include all brand names likely to be used in the geographical area)
- 3.2.4 The model name (where a model name may vary around the world include all brand names likely to be used in the geographical area)
- 3.2.5 The model number
- 3.2.6 The software version number and date
- 3.2.7 The firmware version number and date
- 3.2.8 The hardware version number and date
- 3.2.9 The antenna type
- 3.2.10 The antenna model number and date
- 3.2.11 The MCSP(s) providing communications services

Section 3.3 MTU Responsibilities

For the following responsibilities, name the business entities who act on behalf of the manufacturer and supplier applying for type approval. Include the address, phone, contacts, email, and designated geographic territory where applicable.

- 3.3.1 Manufacturer



- 3.3.2** Label or use MTU for an OEM. This includes re-labeling OEM MTUs or reselling. Reselling includes value added reselling. The MTU that is type approved is the final, value-added product and not the original manufacturer's MTU, if enhancements or modifications have been made. For example, if a transceiver is contained within an enclosure, it is the new enclosure including the transceiver that is being type approved
- 3.3.3** Distribute
- 3.3.4** Sell
- 3.3.5** Bench configures the MTU at the warehouse or point of supply
- 3.3.6** Install MTU onboard the vessel
- 3.3.7** Offer limited warranty
- 3.3.8** Offer maintenance and service agreement
- 3.3.9** Repair
- 3.3.10** Training
- 3.3.11** Advertisement

Section 3.4 Customer Service

The MTU supplier or its designated entities shall provide customer service that is professional, courteous, and responsive. It should provide MTU diagnostic and troubleshooting support to FFA and the fishing industry. No services shall be billed the FFA without being specifically contracted for in writing by an authorised entity. Services shall include:

- 3.4.1** Service level, warranty, and maintenance agreements. Clarify constraints, if any, on the geographic territory, personnel availability, and escalation procedures for problem resolution covered by such services.
- 3.4.2** Facilities and procedures in place to assist the fisherman in maintaining and repairing their MTU, including response and general system turn around time.
- 3.4.3** Help in the determination and isolation of the cause of communications anomalies.
- 3.4.4** Assist in the resolution of communications anomalies that are traced to the MTU and/or interference from shipboard equipment.
- 3.4.5** All services will be considered to be free of charge unless specifically listed in service or purchase agreements.

Section 3.5 Other Information

- 3.5.1** The MTU must have the durability and reliability necessary to provide acceptable service in a marine environment where the unit may be subjected to saltwater (spray) in smaller vessels, and in larger vessels where the unit may be maintained in a wheelhouse. The unit, cabling and antenna must be resistant to moisture and shock associated with the marine environments. The units must also be able to deal with fluctuating power supplies found on board vessels. Refer to Section 8 for further details.
- 3.5.2** The MTU must comply with any additional requirements specified by FFA for specific fisheries or applications. The applicant must review the applicable FFA rules requiring the use of VMS and respond here to any specific requirements listed therein.
- 3.5.3** All personally identifying information provided by vessels owners or other authorised personnel for the purchase or activation of MTU or EMTU, or for the participation in any FFA VMS-approved fishery must be protected from



unauthorised disclosure. Personally identifying information includes, but is not limited to, names, addresses, telephone numbers, passport numbers, credit card numbers, vessel names, federal, state, and local documentation numbers, email addresses, and crew lists.

Any information sent electronically to the FFA must be transmitted by a secure means that prevents interception, spoofing, or viewing by unauthorised individuals. Any release of such information must be requested and approved in writing by the vessel owner or authorised personnel, or the FFA. Inadvertent or intentional unauthorised release of personally identifying information will be grounds for reconsideration and possible revocation of the type approval for any MTU or EMTU supplied by the offending provider. Any inadvertent or intentional unauthorised release of personally identifying information must be advised to the FFA as soon as it is discovered.

- 3.5.4** Many MTUs will have the capability to have a computer or terminal attached. If the applicant is not intending to apply for E-MTU approval then it is acceptable that a computer or terminal may be attached for the fisher to utilise the communications capability of the terminal. In the event of this capability being available the applicant must demonstrate that the attachment of the computer or terminal will not impact in any way on the mandatory functional requirements for MTUs and that it is not reasonably possible to alter the functional requirements by using the terminal unless the alterations are conducted by an authorised representative of the applicant to alter the functional requirements within the specifications detailed in this document.



Section 4 - MTU Type Approval Mandatory Functional Requirements

Section 4.1 Messaging

The MTU must provide the following messaging functionality:

- 4.1.1 Transmit mandatory, automatically generated position reports.
- 4.1.2 Onboard visible and/or audible alarms for malfunctioning of the MTU.
- 4.1.3 Ability to disable non-essential alarms in non-Global Maritime Distress and Safety System (GMDSS) installations.
- 4.1.4 Ability to provide comprehensive and transparent communications, which function uniformly within the entire geographic coverage area for that communications class.
- 4.1.5 Two-way communications between MCSP and MTU, such as manual polling.
- 4.1.6 The ability to send and receive free-form Internet email text messages.

Section 4.2 Position Data Formats and Transmission

- 4.2.1 The MTU must provide the following position information (other information may be required under FFA fishery rules):
 - 4.2.1.1 Position fixes latitude and longitude, including the hemisphere of each.
 - 4.2.1.2 The position fix precision must be to the decimal minute hundredths.
 - 4.2.1.3 Accuracy of the reported position must be within 100 meters, unless otherwise indicated by an existing regulation or VMS requirement.
- 4.2.2 Communications between MTU and MCSP must be secure from tampering or interception, including the reading of passwords and data. Therefore, the MTU must have mechanisms to prevent to the extent possible:
 - 4.2.2.1 Interception and “sniffing” during transmission from the MTU to MCSP via either wireless or terrestrial facilities.
 - 4.2.2.2 Spoofing, whereby one MTU is fraudulently identifying itself as another MTU.
 - 4.2.2.3 Modification of MTU identification.
 - 4.2.2.4 Interference with GMDSS or other safety/distress functions.
 - 4.2.2.5 Introduction of viruses that may corrupt the messages, transmission, or the VMS system.
- 4.2.3 MTU shall provide the ability to meet minimum reporting requirements and intervals as required for specific FFA rules requiring the use of VMS.
- 4.2.4 Provide automatically generated position reporting, for vessels managed individually or grouped by fleet, such that FFA automatically receives position reports at defined intervals transparent to the geographic region.
- 4.2.5 Have the ability to store 100 position fixes in local, non-volatile memory when the MTU is either unable to transmit or FFA configured the MTU to a “store and retrieve” mode. These positions must be either transferred to local storage media or transmitted via MCSP. (This requirement is waived for any MTU that was approved and purchased under previously published directives.)
- 4.2.6 Allow for variable reporting intervals between 5 minutes and 24 hours.



- 4.2.7 The MTU must be capable of having its poll reporting intervals changed remotely, and only by authorised users.

- 4.2.8 An MTU must be able to transmit automatically generated position reports, which contain the following:
 - 4.2.8.1 Unique identification of an MTU within the communications class.
 - 4.2.8.2 Date (year/month/day with century in the year) and time (UTC) stamp of the position fix.

- 4.2.9 In addition to automatically generated position reports, specially identified position reports shall be generated upon:
 - 4.2.9.1 Antenna disconnection
 - 4.2.9.2 Loss of the positioning reference signals.
 - 4.2.9.3 Loss of the mobile communications signals.
 - 4.2.9.4 Security events, power-up, power-down, and other status data.
 - 4.2.9.5 The vessel crossing a predefined geographic boundary.
 - 4.2.9.6 MTU status information such as configuration of programming and reporting intervals.
 - 4.2.9.7 When an MTU is powered up, it must automatically re-establish its position reporting function without manual intervention.



ENHANCED-MTU TYPE APPROVAL – MANDATORY REQUIREMENTS

Sections five and six describe the type approval requirements for Enhanced – MTUs that are in addition to the VMS requirements defined in sections 3 and 4 of this document. An E-MTU is one which supports two way e-mail and forms capabilities onboard the vessel.

Before submission of equipment for testing as an E-MTU, the equipment must pass all type approval tests as a standard MTU configuration. The functions and features defined in Section 5 and 6 are tested.

Equipment that passes these additional tests will be type approved as both an MTU (position reporting only) and an E-MTU (position, text and forms based reporting). The terminal may use protocols other than SMTP but translation to SMTP, and support for the SMTP (Internet) addressing scheme is required.

Section 5 – E-MTU Type Approval - Mandatory Non-Functional Requirements

Section 5.1 Prosecution Support

Due to the use of VMS for monitoring and law enforcement, all technical aspects of a supplier's submission are subject to being admitted as evidence in a court of law, if needed. The reliability of all technologies utilised in the MTU may be analysed in court for, *inter alia*, testing procedures, error rates, peer review, and general industry acceptance. Further, the supplier may be required to provide technical and expert support for a litigation to support the MTU capabilities to establish FFA's (or an FFA members') case against violators.

If the technologies have previously been subject to such scrutiny in a court of law, the supplier should describe the evidence and any court finding on the reliability of the technology. Additionally, to maintain the integrity of VMS for fisheries management, the supplier will be required to sign a non-disclosure agreement limiting the release of certain information that might compromise the effectiveness of the VMS operations, such as details of anti-tampering safeguards. The supplier shall include a statement confirming its agreement with these conditions.

Section 5.2 Identifiers

The following identifiers must be provided:

- 5.2.1 Monitor or terminal model number and date
- 5.2.2 Monitor or terminal manufacturer
- 5.2.3 Monitor or terminal software type, version and manufacturer.



Section 6 – E-MTU Type Approval Mandatory Functional Requirements

Section 6.1 Text messaging

- 6.1.1 Text messaging from vessel to shore with a minimum supported message length of 1kb.
- 6.1.2 User interface must support an 'address book' capability and a function permitting a "reply" to a received message without re-entry of the senders e-mail address.
- 6.1.3 A confirmation of delivery function is required such that a user can ascertain whether a specific message was successfully transmitted via the satellite system to the MCSP e-mail server(s).
- 6.1.4 Onward delivery to FFA must be reliable and make use of features such as SMTP retries and delivery confirmation to ensure a reliable transport path exists for text messages sent from the vessel to FFA.
- 6.1.5 The user interface must provide the ability to review by date order, or by recipient, messages that were previously sent. The terminal must support a minimum message history of 20 messages - commonly referred to as an 'Outbox' or 'Sent' messages display.
- 6.1.6 Text messaging from shore to vessel with a minimum supported message length of 1kb. Attachment support is not required.
- 6.1.7 The user interface must provide the ability to review by date order, or by sender, all messages received. The terminal must support a minimum message history of 20 messages - commonly referred to as an 'Inbox'.
- 6.1.8 Negative delivery notifications must be sent to the originator where delivery to the terminal could not be completed for any reason. Such Non Delivery Notification must include sufficient information to uniquely identify the message that failed and the cause of failure (i.e., mobile number invalid, mobile switched off etc.).

Section 6.2 Electronic Forms

Pre-formatted messages are required for the collection of validated data for specific fisheries programs (i.e., declaration systems, catch effort reporting). This capability is referred to as Electronic Forms (E-forms). The E-MTU must support a minimum of 20 Forms, selectable by the user from a menu. Forms must be updatable over the air. Copies of forms currently used by FFA and the FFA Functional Specification for Electronic Forms are available upon request.

From time to time FFA will provide all EMTU approved suppliers with updates defining new forms or modifying existing e-forms. Such notice will be at least 60 (sixty) days prior to the introduction date for the new or changed form. Applicants will be responsible for translating the requirements into E-MTU specific forms definitions and transmitting the same to all VMS terminals supplied to fishing vessels. All forms software provided with the E-MTU must be capable of supporting the requirements described in this specification.

Additional capabilities beyond those stated here are acceptable, provided that the minimum requirements are satisfied:

- 6.2.1 A form is defined as: (a) 1–40 characters describing the form, (b) Delivery address (i.e., e-mail or other network identifier), (c) Form number as defined by FFA to uniquely identify the form, (d) Form version number (numeric with one decimal place; i.e., 1.2), and (e) a collection of 1–30 fields and associated logic rules.



- 6.2.2** Each field (within a form) is defined by the following elements. Except where noted, all elements of the field definition are mandatory: (a) Label (0 to 40 characters, alpha numeric), (b) Context Help Text (0 to 200 characters, alpha numeric), (c) Type (Either; enumeration, numeric, alpha, alphanumeric or Boolean), (d) Default Value, (e) Optional/Mandatory/Hidden/ Logic indicator, (f) Min/Max values (for numeric fields only) in range 0.000 to 999,999, (g) Decimal places (for numeric fields only) 0–3, and (h) Min/Max characters (for alpha/alphanumeric fields only).
- 6.2.3** Up to 100 code/value/help text pairs (enumerations only) must be provided, where codes are defined as 1– 20 alphanumeric characters, values are 1–80 alphanumeric characters and help text is 0–200 characters. Such fields are typically used to permit a user to select from a range of options (i.e., geographic areas, gear types, fish species). Codes are used to compress the form data for efficient transmission. Help text would typically be displayed only when the user selects a specific value from the enumeration.
- 6.2.4** Form Validation: Each field must be defined as; Optional, Mandatory or Logic Driven. Mandatory fields must be entered by the user before the form is complete, optional fields that do not require data entry, and logic driven fields have their attributes determined by earlier form selections. Specifically; it must be possible for selection of an enumeration to change the optional/mandatory setting, min/ max values, or the permitted enumeration values on a later field within the same form.
- 6.2.5** State Information: The capability to populate a form based on the last values used must be available. This provides the user with an easy mechanism to 'modify' or 'update' a prior submission - without unnecessary re-entry of data. The user must be able to review a minimum of 20 past form submissions and ascertain for each form when the form was transmitted and whether delivery was successfully completed to the vendor's processing center. In the case of a transmission failure, the user must be provided with details of the cause and have the opportunity to retry the form submission.
- 6.2.6** Inclusion of VMS Position Report: In addition to the manually entered fields, the forms package must permit the inclusion of VMS position report fields such as latitude, longitude, date and time. Such fields must be obtained from the GPS function of the MTU and transmitted along with the manually entered form data within the same transaction.
- 6.2.7** Delivery Format for Form Data: It is preferred that form data be transferred from the terminal to FFA using the same transport as for either text messages or VMS position reports (the selected option to be at the election of the E-MTU vendor). Currently supported protocols for transfer are; FTP, SMTP, XML and HTTP Post. The field coding within the data must follow either CSV or XML formatting rules. For CSV format the form must contain an identifier and the version number, and then the fields in the order defined on the form. In the CSV format strings that may contain "," (comma) characters must be quoted. XML representations must use the field label to define the XML element that contains each field value.



MTU AND E-MTU TYPE APPROVAL – MANDATORY PHYSICAL AND SECURITY REQUIREMENTS

Sections seven and eight describe the type approval requirements for the physical specification and installation of both MTUs and E-MTUs

Section 7 - E-MTU/MTU Type Approval - Mandatory Physical and Security Requirements

Section 7.1 General

The MTU must have the durability and reliability necessary to provide acceptable service in a marine environment where the unit may be subjected to saltwater (spray) in smaller vessels, and in larger vessels where the unit may be maintained in a wheelhouse. The unit, cabling and antenna must be resistant to moisture and shock associated with the marine environments.

Section 7.2 Marine Use

All units of the system shall be designed for marine use - that is, components that are exposed to the elements in the normal course of operation shall be suitably rated (IP66 or equivalent) to ensure reliable continuous operation. Components that are housed below decks in the normal course of operation shall be suitably rated to ensure suitable reliable continuous operation.

Section 7.3 Operating Temperatures

The MTU, excluding the user terminal, shall be able to function at specified accuracy between -20 degrees Celsius and +50 degrees Celsius.

Section 7.4 Physical Mounting Requirements

All units in the system shall be provided with suitable mounting instructions and fittings for marine use. Such fixings shall be capable of securing the device to prevent movement when exposed to the vibration, shaking and marine environment typically experienced aboard a deep sea going vessel, so as to ensure continued reliable operation as required by the VMS.

Section 7.5 E-MTU Terminal

The E-MTU terminal must be suitable to use in the marine environment. As the exposure to the marine environment can vary depending on application, applicants must specify the level of exposure to the marine environment recommended for their equipment.

Section 7.6 Security

- 7.6.1** The MTU or E-MTU must provide robust protection against wilful attempts to compromise the physical security of the housing and must be tamper-evident, ie evidence of attempts to compromise the physical housing should be detectable on inspection. Applicants must demonstrate how this will be achieved.
- 7.6.2** It must not be reasonably possible for the VMS functions of the unit to be altered via the terminal of the E-MTU or by attaching a computer or terminal to an MTU. Software must be 'locked down' to reasonably prevent interference with the



operation of the unit via the software. Applicants must demonstrate how this specification will be met.



SECTION 8 – MTU/E-MTU TYPE APPROVAL – INSTALLATION REQUIREMENTS

Section 8.1 General

This section of the document defines minimum standards for the installation of all components of the MTU or E-MTU. Applicants must demonstrate how they meet or exceed these requirements.

The type approval applicant is responsible for managing the sales and installation of units such that the integrity of the system is maintained. Installation shall be carried out by either the MTU or E-MTU type approval applicant or the vendors certified installer.

The vessel operator is responsible for ensuring that all components of the MTU or E-MTU are operated in a manner that provides continuous reliable operation of the MTU as a part of the VMS. The following subsections provide more detailed instructions for the installation of the main components of the MTU or E-MTU.

Section 8.2 Installation guide is part of type approval

Applicants are to provide the installation manual or guide that is applicable to the MTU or E-MTU. Recognising the international nature of the operations of FFA, the manual must be available in sufficient languages that any installer authorised by the applicant can install the MTU or E-MTU without minimum difficulty.

Section 8.3 Mounting the MTU box

In cases where the MTU box is separate from the antennae, the box shall be installed, commissioned and maintained in accordance with the manufacturer's instructions in such a way as to ensure correct operation. Fixings used shall be capable of securing the device to prevent movement when exposed to the vibration, shaking and marine environment typically experienced aboard a deep sea going vessel so as to ensure continuous reliable operation of the MTU box as a part of the VMS.

The vessel operator is responsible for ensuring that the MTU box is at all times operating in a manner that provides continuous reliable operation of the MTU as a part of the VMS.

Section 8.4 The E-MTU Terminal

The E-MTU terminal shall be installed, commissioned and maintained in accordance with the manufacturer's instructions in such a way as to ensure correct operation. Fixings used shall be capable of securing the device to prevent movement when exposed to the vibration, shaking and marine environment typically experienced aboard a deep sea going vessel so as to ensure continuous reliable operation of the E-MTU terminal as a part of the VMS.

The vessel operator is responsible for ensuring that the E-MTU terminal is at all times operating in a manner that provides continuous reliable operation of the E-MTU terminal as a part of the VMS.



Section 8.5 The Antenna(s)

8.5.1 Mounting. The antenna(s) shall be installed, commissioned and maintained in accordance with the manufacturer's instructions and in such a manner as to ensure correct operation. Fixings used shall be capable of securing the device to prevent movement when exposed to the vibration, shaking and marine environment typically experienced aboard a sea going vessel so as to ensure continuous reliable operation of the MTU or E-MTU as a part of the VMS.

The antenna(s) shall not have any other structures obstructing the view of either the GPS or communication satellites in such a manner as to degrade performance. The antenna shall be mounted in a position which shall meet manufacturer's recommendations of minimum distances from any HF, VHF, GPS or other antenna or magnetic compass.

In addition the antenna shall be mounted, in accordance with the manufacturer's instructions, in a position where no humans will come within such a distance from it whereby they are exposed to dangerous levels of electromagnetic radiation while performing normal ship activities. The vessel operator is responsible for ensuring that the antenna is at all times installed in a manner that provides continuous reliable operation of the MTU or E-MTU as a part of the VMS.

8.5.2 The Antenna(s) Cable(s). The antenna(s) cable(s) refers to the cable(s) used to connect the antenna (s) to the MTU or E-MTU box.

The antenna cable(s) used shall be supplied and/or specified by the manufacturer. The maximum cable length, as specified by the manufacturer, shall not be exceeded. The antenna cable shall be installed in position where it will not be damaged by normal ship activity. This may involve enclosing the cable in a protective conduit. All grounding requirements of the antenna, as specified by the manufacturer, shall be followed.

All connections between the cable, the antenna and the MTU or E-MTU shall be suitable for marine use where the connection is to be exposed to the external environment. Connectors used shall be designed for use in a marine environment. The vessel operator is responsible for ensuring that the antenna cable is at all times installed in a manner that provides continuous reliable operation of the VMS.

Section 8.6 The Power Supply

The power supply shall be capable of delivering the required power during transmission without degradation of performance of the MTU or E-MTU. The power supply shall be sufficiently stable and noise free to allow continuous error free MTU or E-MTU operation.

If the power supply is supplied by the supplier of the MTU or E-MTU, it shall be mounted following instructions provided by the supplier. Fixings used shall be capable of securing the device to prevent movement when exposed to the vibration, shaking and marine environment typically experienced aboard a deep sea going vessel.

Grounding requirements, as specified by the manufacturer of the power supply, must be followed. The vessel operator is responsible for ensuring that the power supply meets the above requirements in a manner that provides continuous reliable operation of the MTU or E-MTU as a



part of the VMS and that the power supply is sufficient to meet the needs to other onboard equipment.



MCSP TYPE APPROVAL

NOTE: in Section 9 a reference to an MTU should be taken into include both MTUs and E-MTUs.

Section 9 – Mandatory Functional Requirements for MCSPs

Section 9.1 Process

Based on a request for carrier qualification from an applicant MCSP, FFA will conduct a thorough evaluation and then issue a statement to accept or deny the carrier qualification of an MCSP. The MCSP must meet the minimal FFA VMS standards, as required by this document, and any other requirements for specific applications for which approval is sought.

MCSP applicants are encouraged to check with the FFA for other specific application requirements before applying for type approval. After successful demonstration of compliance to the standards in this document, FFA will issue a MCSP type approval for a particular communications class. A class refers to the medium, protocol, and frequency of the mobile communications technology. FFA approval will not necessarily result in FFA procurement of MCSP services.

Section 9.2 Initiation

FFA will initiate the MCSP carrier qualification process upon written request from the applicant, subject to the demonstration of compliance with this document and the availability of test units. The applicant for carrier qualification may be the company, systems integrator, distributor, and/or value-added reseller, etc., acting within the constraints of its agreement with the underlying communications company.

Consideration will be given to an MCSP that has already passed a comparable carrier qualification process in a foreign fisheries management context. If applicable, the applicant should provide the MCSP's identifying characteristics, the details of foreign VMS requirement specifications, the MCSP's level of compliance, and appropriate contact details of the qualifying authorities. FFA also will consider qualifying an MCSP which resells, packages, or integrates communication services from an MCSP that already received FFA type approval.

Section 9.3 Interoperability

An MCSP seeking type approval within a particular communications class for VMS must demonstrate that it meets the standards when using at least one type approved MTU within that same class. Establishment of the standards in this document are intended to ensure that type approval for a particular MCSP will permit its interoperability with all approved MTU within the same class.

Concurrent with an approval process for an MCSP, the approval of a same-class MTU must be either in place or pending. Data received at FFA from the MCSP must be in a secure and encrypted format compatible with FFA vessel tracking software.



Section 9.4 Submission

An applicant requesting MCSP type approval shall begin by describing in detail the extent to which the MCSP complies with each of the requirements set forth within this document. The applicant must provide FFA with one same class MTU and the required communications service for a minimum 90 day test and approval period.

The applicant must also provide complete MTU documentation, including fact sheets, installation guides, operator manuals, user handbooks, the applicable interfacing software, and technical support. FFA shall review the submissions against the criteria in this document then perform field test and sea trials.

These tests will involve demonstrating every aspect of MCSP operation, including programming a registered MTU, location tracking, messaging, and troubleshooting procedures.

Section 9.5 Litigation Support

Due to the use of VMS for monitoring and law enforcement, all technical aspects of a supplier's submission are subject to being admitted as evidence in a court of law, if needed. The reliability of all technologies utilised in the MTU may be analysed in court for, *inter alia*, testing procedures, error rates, peer review, and general industry acceptance. Further, the supplier may be required to provide technical and expert support for a litigation to support the MTU capabilities to establish FFA's (or an FFA members') case against violators.

If the technologies have previously been subject to such scrutiny in a court of law, the supplier should describe the evidence and any court finding on the reliability of the technology. Additionally, to maintain the integrity of VMS for fisheries management, the supplier will be required to sign a non-disclosure agreement limiting the release of certain information that might compromise the effectiveness of the VMS operations, such as details of anti-tampering safeguards. The supplier shall include a statement confirming its agreement with these conditions.

Section 9.6 Change Control

Once qualified, it is the responsibility of the MCSP to notify FFA of any change in its submission. Such changes include:

- a change affecting interconnect facilities
- geographic coverage
- performance characteristics
- or customer support contacts.

FFA reserves the right to reconsider and revoke the MCSP approval if, as a result of the change, the MCSP no longer satisfies the requirements.

Section 9.7 Requests for Approval

Requestors must respond to each of the items listed in sections 1 through 10 of this document and any applicable attachments. The response should indicate how the MCSP complies with the requirement in each section. If there are items that the MCSP does not currently comply with the applicant must respond by explaining how the MCSP will comply before any decision on the type approval is made.



Section 9.8 Identifiers

- 9.8.1** The MCSP must provide the following specifications and identifying characteristics:
- 9.8.1.1 Communications class, including medium, protocol, and frequency of the mobile communications technology.
 - 9.8.1.2 Trade name of the service.
 - 9.8.1.3 Company name.
 - 9.8.1.4 Corporate headquarters.
 - 9.8.1.5 Principal business.
 - 9.8.1.5 Parent and subsidiary companies, if applicable
 - 9.8.1.6 Name and locations of principal terrestrial facilities, e.g., downlinks, gateways, switches, and operation centers.
- 9.8.2** The MCSP must support at least one MTU type approved by FFA unless the request is made bundled with a new MTU application. If the request is made bundled with an MTU application, approval of the MCSP will be contingent upon the approval of the MTU. MCSP wireless facilities must have the following characteristics as applicable:
- 9.8.2.1 **Satellite:** MCSP must provide adequate orbit types, constellation size, and coverage footprint to provide comprehensive coverage of the VMS fishery for which application is made
 - 9.8.2.2 **Cellular:** MCSP must provide adequate coverage footprints, tower distribution density, tower locations, and protocols required to provide comprehensive coverage of the VMS fishery for which application is made.
 - 9.8.2.3 **Radio:** MCSP must provide adequate coast stations, locations, antennas, and antenna size to provide comprehensive coverage of the VMS fishery for which application is made.
 - 9.8.2.4 Approved or pending approval MTU(s) supported.
- 9.8.3** For the following technical responsibilities, name the business entities, including the MCSP and other parties, who perform the following functions. Include the business mailing address, contact name(s), telephone number, fax number, email addresses.
- 9.8.3.1 Operate principal terrestrial facilities
 - 9.8.3.2 Operate principal wireless facilities
- 9.8.4** For the following commercial responsibilities, name the business entities, including the MCSP and other parties, who perform the following functions for FFA customers. Include the business mailing address, contact name(s), telephone number, fax number, email addresses. Designate the FFA geographic territory or market sector where applicable.
- 9.8.4.1 Direct sales
 - 9.8.4.2 Indirect/distributor/channel sales
 - 9.8.4.3 Billing
 - 9.8.4.4 Account management
 - 9.8.4.5 Customer service
 - 9.8.4.6 Technical support
 - 9.8.4.7 Public affairs
 - 9.8.4.8 Advertising



Section 9.9 Messaging

The MCSP shall be capable of communications that support the following messaging functions:

- 9.9.1** Ability to transmit multiple message types:
 - 9.9.1.1 Automatically generated position reports
 - 9.9.1.2 Event-driven position reports
 - 9.9.1.3 Safety and distress alerts and messages
 - 9.9.1.4 Email text messages
 - 9.9.1.5 Ability to remotely create new message-types
 - 9.9.1.6 Email forms

- 9.9.2** Ability to provide comprehensive and transparent communications, which function uniformly within the entire area of the geographic coverage area for the particular communications class.

- 9.9.3** Ability to perform two-way messaging.

- 9.9.4** Ability for FFA to initiate communications to vessels, either individually or by originator-defined groups of vessels.

Section 9.10 Position Data Formats and Transmission

An MCSP should support an MTU's ability to transmit automatically generated position reports that contain the following:

- 9.10.1** Position fix latitude and longitude, including the hemisphere of each.
- 9.10.2** The precision of the position fix shall be to the decimal minute hundredths.
- 9.10.3** Accuracy of the position fix must be within 100 meters, unless otherwise indicated by an FFA requirement.
- 9.10.4** Unique identification of an MTU within the communications class.
- 9.10.5** Date (year/month/day with century in the year) and time (UTC) stamp of the position fix.
- 9.10.6** Date (year/month/day with century in the year) and time (UTC) when the position report is received at the MCSP.
- 9.10.7** Date (year/month/day with century in the year) and time (UTC) stamp when the position report is sent to FFA.
- 9.10.8** MTU status information, such as configuration of programming and reporting intervals, power save modes, antenna disconnection, and power-up/ power down, and loss of positioning signal.

Section 9.11 Special Identified Position Reports

In addition to automatically generated position reports, the MCSP must support the MTU's ability to transmit specially identified position reports. If the MTU is unable to transmit status upon the occurrence of these events below, then the specially identified position reports are transmitted when its ability to transmit is reestablished.

- 9.11.1** Loss of the positioning reference signals
- 9.11.2** Loss of the mobile communications signals
- 9.11.3** Security events and other status data
- 9.11.4** The vessel crossing a predefined geographic boundary
- 9.11.5** Automatically generated position reports sent to FFA from the MCSP must be in a format compatible with FFA vessel monitoring software.



Section 9.12 Queries

9.12 The MCSP shall allow the initiation of queries to extract information from single and multiple vessels to satisfy the following criteria:

9.12.1 A query addressed to an individual vessel or a group of vessels. The group of vessels may be comprised of:

9.12.1.1 Vessels presently located within a geographic area (for example, defined by a circle or a rectangle, used by fisheries patrol vessels for operations)

9.12.1.2 Vessels that are members of an FFA defined logical grouping (For example, grouped by fish type, gear type, or region of home port)

9.12.4 Queries are for the following:

9.12.4.1 Reprogramming or reconfiguring position reporting features.

9.12.4.2 Determining current position.

9.12.4.3 Extracting feature states, such as sensor status.

Section 9.13 Position Intervals

The MCSP must support the ability to determine the position of an MTU at fixed, remotely programmable reporting intervals between 5 minutes and 24 hours.

Section 9.14 Latency

The MCSP must meet latency requirements from 5 minutes or less (near real time) to 3 hours (store and forward) between the time a position is fixed and the time it is received in FFA.

Section 9.15 Terrestrial Connectivity

9.15.1 The FFA VMS program supports multiple VMS rules with incoming data from many vessels that may be using different MTUs within a communications class, or multiple classes. The VMS receives data in a class native format from the MCSP at the appropriate VMS monitoring centre in an FFA-standard format. For approval a MCSP must be capable of delivering information from all its within-class subscribers to FFA in a format and protocol compatible with FFA equipment and software facilities. The MCSP must provide:

9.15.1.1 Evidence of the continuous availability of service, information on the redundancy of terrestrial facilities and network connectivity between MCSP and FFA, should be provided.

9.15.1.2 Two-way communications for delivery and acceptance of data from MCSP to FFA and back, supporting messages, position reports, queries and administrative functions.

9.15.1.3 Auto-forwarding or auto-delivery of messages without the need for retrieval by FFA (note that retrieval of data by FFA is also supported).

9.15.1.4 Geographically transparent communications from FFA to the MTU, such that FFA seamlessly performs communication functions without a need to take additional steps to accommodate the geographic region where the vessel is fishing.



- 9.15.2** Latency at 5 minutes or less (near real time) for 95 percent of transmissions for two-way messaging under normal conditions between the MCSP and FFA VMS Servers.
- 9.15.3** Communications between the MCSP and FFA must be provided along secure encrypted channels. The MCSP must provide reasonable mechanisms to prevent:
- 9.15.3.1 Tampering or interception, including the reading of passwords and data.
 - 9.15.3.2 Interception and “sniffing” during transmission from the MCSP to FFA via either wireless or terrestrial facilities.
 - 9.15.3.3 Spoofing, whereby one MTU is fraudulently identifying itself as another MTU.
 - 9.15.3.4 Modification of MTU identification.
 - 9.15.3.5 Interference with Global Maritime Distress and Safety System (GMDSS) or other safety/distress functionalities.
 - 9.15.3.6 Introduction of viruses that may corrupt the messages, transmission, or the VMS system.
- 9.15.4** MCSP must provide advance advisory notices of any planned service outages and their estimated time for service restoration. MCSP must provide immediate notification on any unplanned outages and their estimated time for service restoration.

Section 9.16 Wireless Connectivity

- 9.16.1** The MCSP shall have the following wireless connectivity features:
- 9.16.1.1 Redundancy of wireless facilities and network connectivity between MTU and FFA, such that backup circuits or alternate network types automatically replace the primary in the event of failure without any manual intervention.
 - 9.16.1.2 Geographically transparent communications to and from FFA and the MTU, such that FFA seamlessly performs communication functions without a need to take additional steps to accommodate the geographic region where the vessel is fishing.
 - 9.16.1.3 Durability and reliability in a marine environment, without signal degradation or other loss of integrity from adverse meteorological conditions.
- 9.16.2** Communications between MCSP and MTU must be secure from tampering or interception, including the reading of passwords and data. The MCSP must provide reasonable mechanisms to prevent:
- 9.16.2.1 Interception and “sniffing” during transmission to and from the MCSP and MTU via either wireless or terrestrial facilities.
 - 9.16.2.2 Spoofing, whereby one MTU is fraudulently identifying itself as another MTU.
 - 9.16.2.3 Modification of MTU identification.
 - 9.16.2.4 Interference with GMDSS or other safety/distress functionalities.
 - 9.16.2.5 Introduction of viruses that may corrupt the messages, transmission, or the VMS system.

Section 9.17 Customer Service



- 9.17.1** The MCSP and its designated entities shall provide customer service that is professional, courteous, and responsive to both FFA and industry.
- 9.17.2** The MCSP must have security measures, user authentication, request validation and non-disclosure policies to prevent unauthorised access to the content of reports or other manual interference. The following requirements must be included:
- 9.17.2.1** Prevent unauthorised access to data and configuration information by MCSP employees and third parties.
 - 9.17.2.2** Authorise fishermen access to account info and to enhance the MTU configuration for personal messages, if they pay for the costs of personal messages and configuration changes do not affect the integrity of VMS operations.
 - 9.17.2.3** Send the MTU email, poll or remotely reconfigure the MTU for position reporting changes upon FFA request.
 - 9.17.2.4** Keep an audit trail of actions taken by Customer Service.
- 9.17.3** MCSP security procedures must support above services whether the access or configuration change is applied to a single MTU or a group of MTUs.
- 9.17.4** Service level agreements must clarify constraints (if any) on the geographic territory, personnel availability, and escalation procedures for problem resolution covered by such services.
- 9.17.5** Assist in the resolution of communications anomalies, such as data loss, message corruption, and reporting gaps including helping to determine the cause of the problem.
- 9.17.6** Provide documented MTU commissioning procedures for FFA vessels.
- 9.17.7** Provide documented account and service activation procedures.
- 9.17.8** Provide documented and secure MTU configuration strategy or procedures for vessels monitored singly or grouped by fleet.
- 9.17.9** All personally identifying information provided by vessels owners or other authorised personnel for the purpose of purchase or activation of MCSP services, or for the participation in any FFA VMS approved fishery must be protected from unauthorised disclosure. Personally identifying information includes, but is not limited to, names, addresses, telephone numbers, passport numbers, credit card numbers, vessel names, federal, state, and local documentation numbers, e-mail addresses and crew lists.

Any information sent electronically to the FFA must be transmitted by a secure means that prevents interception, spoofing, or viewing by unauthorised individuals. Any release of such information must be requested and approved in writing by the vessel owner or authorised personnel, or the FFA. Inadvertent or intentional unauthorised release of personally identifying information will be grounds for reconsideration and possible revocation of the type approval for any offending MCSP. Any inadvertent or intentional unauthorised release of personally identifying information must be advised to the FFA as soon as it is discovered.



Section 10 - Type Approval Procedure

10.1 Introduction

Section 11 covers only functional testing of the MTU/E-MTU. Other aspects of certification, such as mechanical tests, electrical tests, and requirements for support/warranty are checked 'on paper' and details must be provided in accordance with the requirements in other sections of this document.

Applicants for type approval are expected to comply with all other non-functional type approval requirements prior to submitting the MTU/MCSP or E-MTU/MCSP combination for functional testing.

Functional testing includes:

1. Testing the over-the-air formats sent and received by the MTU/E-MTU.
2. Testing the interfacing protocol between MCSP and the FFA.
3. Testing reliability of transmission and reception on an end-to-end basis (including both MTU/E-MTU and MCSP) with a statistically valid sample set of transactions.
4. Tests of common operating scenarios, to test that the MTU/E-MTU and MCSP in combination support all mandatory functions.

10.2 Mandatory and Optional Items

Two types of test are presented.

- Mandatory functions must be provided by the MTU, E-MTU or MCSP (as appropriate). A response referencing appropriate formats or protocols must be provided.
- Optional tests are not required by the specification, but involve functions that the VMS software can use to enhance the performance of the vessel monitoring system – if corresponding features are available in the MTU/E-MTU hardware. A response referencing appropriate formats or protocols may be provided at the option of the applicant. Such features may include functionality to aid the fishing industry rather than the FFA.

10.3 Test Environment

All tests are conducted on the MTU or E-MTU, connected via the specified MCSP, to a VMS simulator.

Test accounts and demonstration equipment must be provided by the applicant to FFA. No payment will be made for airtime or other network access charges reasonably incurred during, or in preparation for, the MTU, E-MTU and/or MCSP testing.

Unless otherwise agreed, tests will be run at the chosen testing agent of FFA. The MTU/E-MTU and or MCSP applicant may witness the testing (when practical). Any test failures will be referred first to the submitting vendor for comment/resolution.

A completed test schedule is intended to provide the following outcomes to FFA:

1. VMS software that operates correctly with the approved MTU or E-MTU and MCSP.



2. MCSP: A defined account configuration that is suitable for use with the VMS. For example; account settings, DNS entries or IP addresses and similar parameters that would be necessary to establish the connection to an MCSP.
3. MTU/E-MTU: Configuration settings, scripts or applications which enable the MTU/E-MTU to perform in a manner compliant with the type approval requirements.

Any changes to items (2) and (3) – for example the introduction of new Satellite Ground Station software or new versions of an MTU/E-MTU must be backwards compatible with the tested configuration. If this is not possible then re-certification is necessary.

The procedure is representative of the functions defined within the type approval requirements; however it cannot cover all possible uses of the equipment or system. Consequently, applicants should be prepared to demonstrate any additional test scenarios that are consistent with the type approval requirements.

10.4 End-to-End Testing Methodology

Many functions require support by both the MTU/E-MTU and the MCSP, therefore it is understood by FFA that different communication classes may perform a specific function with differing demarcation points between the MTU/E-MTU and MCSP.

To address this, all tests are conducted in an end-to-end environment with the combination of MTU/E-MTU and MCSP tested simultaneously. A test is successful if the MTU/E-MTU and MCSP, in combination, are capable of performing the function defined within the type approval requirements.

10.5 Test Schedule

Testing is expected to a cooperative process between the FFA, their chosen testing agent and the applicant. Failure to provide adequate cooperation may result in FFA ceasing the test process.

The template at **Appendix 2** should be completed by the submitting MTU/E-MTU/MCSP applicant. It must include references to documentation or formats. This document should be completed and returned to FFA. Any referenced documentation (e.g. API documents or similar) should be attached, preferably in electronic form, to the response. The checklist provided at **Appendix 3** should be completed and returned with the application for type approval.