



**TECHNICAL AND COMPLIANCE COMMITTEE**  
**Sixteenth Regular Session**  
Electronic Meeting  
23 – 29 September 2020

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**RECOMMENDATIONS RELATED TO THE WCPFC APPROVED ALC/MTU LIST**

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**WCPFC-TCC16-2020-15**

**31 August 2020**

**Paper prepared by the Secretariat**

**Purpose**

1. The purpose of this paper is to present for consideration by TCC16, recommendations from the Secretariat related to the WCPFC Approved ALC/MTU list.

**Background**

2. WCPFC15 approved an amendment to Section 2.7 of the VMS SSPs which came into effect in February 2019. Commencing in 2019, ALC/MTU units can now be included on the approved ALC/MTU list based on the Secretariat's Assessment that any newly nominated ALC/MTU meets the minimum standards and following a specified period after the circulation of the Secretariat assessment to all CCMs. The Secretariat's assessment is to be based on a review of the ALCs against minimum standards for the Commission VMS as set out in Annex 1 of CMM 2014-02 (or its successor measure) and WCPFC SSPs as relevant, by determining that the ALC make and model has the ability to successfully report to the Commission VMS.
3. Section 2.7 of the VMS SSPs also requires that the Secretariat presents recommendations for the TCC's consideration, in three circumstances:
  - a. If the Secretariat concludes in its assessment that a proposed ALC/MTU make or model does not meet these requirements, or
  - b. If a CCM objects in writing to the Secretariat's proposal to approve a new ALC/MTU make or model, or
  - c. If the Secretariat has determined an ALC/MTU make or model on the WCPFC approved ALC/MTU List no longer meets the minimum standards set out in Annex 1 of CMM 2014-02 (or successor measure), or does not have the ability to successfully report to the Commission VMS.
4. For ease of reference the text of Section 2 paragraph 7 is as follows:

*7. The Secretariat will assess proposals for inclusion of additional ALC/MTU makes and models on this list from both CCMs and equipment manufacturers. The Secretariat shall include the ALC/MTU make or model being proposed on this list, if no CCM objects in writing within 30 days of the Secretariat circulating notice of its intent to all CCMs, and, if in the Secretariat's assessment, the ALC/MTU make or model meets the minimum standards for the Commission VMS as set out in Annex 1 of CMM 2014-02 (or its successor measure), the WCPFC SSPs, as relevant, by determining that the ALC/MTU make and model has the ability to successfully report to the Commission VMS, and by*

using the methodology established by the FFA with expenses for type approval processing to be borne by the proposing entity. Where the Secretariat concludes in its assessment that a proposed ALC/MTU make or model does not meet these requirements, or if a CCM objects in writing to the Secretariat's proposal to approve a new ALC/MTU make or model, the Secretariat within the annual report shall make recommendations regarding the proposed ALC/MTU make or model for the TCC's consideration and the Commission's approval. The Secretariat will recommend, as needed, to TCC the removal of units currently on the list of approved ALC/MTU makes and models that it has determined no longer meet the minimum standards set out in Annex 1 of CMM2014-02 (or successor measure), or do not have the ability to successfully report to the Commission VMS. If an ALC/MTU make and model is removed from the list of approved ALC/MTU types, flag CCMs will ensure that their fishing vessels replace non-type approved ALC/MTUs with approved ALC/MTUs by the next replacement of the ALC/MTU, but no later than three years after the Commission's decision.

### **Deferral of Secretariat's Proposal to Approve a new ALC/MTU make or model**

5. On 30 January 2020 (*Attachment 1* - WCPFC Circular 2020/02), the Secretariat notified CCMs that the Assessment of the SRT-VMS-100 ALC/MTU was that the said unit meets the minimum standards for the Commission VMS as set out in Annex 1 of CMM 2014-02 (or its successor measure) and WCPFC SSPs, and that it has the ability to successfully report to the Commission VMS. With the positive Assessment, the Secretariat intention was to include the SRT VMS-100 on the approved List of ALC/MTUs after 30 days of the letter. The specifications for the SRT VMS-100 ALC/MTU unit are as follow:

| Model / Approved MTU Type | Manufacturer      | Comm System | Service Provider  |
|---------------------------|-------------------|-------------|-------------------|
| <b>SRT VMS-100</b>        | SRT Marine System | SAT-Trak    | SRT Marine System |

6. On 28 February 2020 (*Attachment 2* - WCPFC Circular 2020/11), the Secretariat advised CCMs that it had received in writing an objection from Japan to the Secretariats assessment and proposal. Japan stated “*we are still not confident with the proposed inclusion of SRT VMS-100 MTU onto the WCPFC Approved List of ALC/MTUs. We would like to carefully examine the SAT-Trak technology with further detailed technical information, since the proposed AIS-based MTU is quite a new type*”. As a result of that objection and in accordance with Section 2.7 of the WCPFC Vessel Monitoring System Standard, Specifications and Procedures (WCPFC VMS SSPs), the decision to include this unit on the approved List of ALC/MTU was deferred for consideration at TCC16.
7. The Secretariat's maintains its Assessment that the SRT VMS-100 unit meets the minimum standards for the Commission VMS as set out in Annex 1 of CMM 2014-02 (or its successor measure) and WCPFC SSPs, as relevant, and has the ability to successfully report to the Commission VMS through the SAT-Trak Comm System.

### **Recommendation to remove ALC/MTU make or model from the list of Approved ALC/MTUs**

8. At the request of the Philippines, in December 2018, WCPFC15 also approved the addition to the list of Approved ALC/MTUs of the following ALC units:<sup>1</sup>

| Model / Approved MTU Type | Manufacturer | Comm System | Service Provider |
|---------------------------|--------------|-------------|------------------|
|---------------------------|--------------|-------------|------------------|

<sup>1</sup> Note that these two ALC/MTUs were approved by the Commission under the previous version of Section 2.7 of the VMS SSPs. At that time the Secretariat presented for the TCC's consideration requests from CCMS for inclusion of ALC/MTUs and the Secretariats advise on whether the newly nominated ALC/MTU meets the minimum standards set out in Annex 1 of CMM 2014-02.

|                        |                 |                          |         |
|------------------------|-----------------|--------------------------|---------|
| <b>Skywave IDP-690</b> | ORBCOMM/Skywave | INMARSAT<br>ISATDATA PRO | Skywave |
| <b>ORBCOMM ST6100</b>  | ORBCOMM/Skywave | INMARSAT<br>ISATDATA PRO | Skywave |

9. In the TCC14 Paper from the Secretariat *Requests for new inclusion of ALCs to the WCPFC approved ALC/MTU list* ([WCPFC-TCC14-2018-13A](#)), dated 10 September 2018, the Secretariat had advised TCC that “At the time of writing, the Secretariat was still working with the VMS service provider to ascertain if new gateways to receive data from the above two MTUs may be required.”
10. Furthermore, since September 2018, the Secretariat and the VMS service provider TrackWell made only limited progress on the development of a gateway to receive position reports from the two MTUs due to limited responses from the Manufacturer/MTU provider. A summary of the progress to date is as follows:
- a. To date the Secretariat has received only 1 VTAF for **ORBCOMM ST6100** that has been installed on a Philippines vessel, however for ORBCOMM and SOG Philippines have not responded to the Secretariat or VMS service provider TrackWell with regards to the ORBCOMM ST6100;
  - b. Presently the Secretariat has received 29 VTAFs for **Skywave IDP-690** ALCs that have been installed on Chinese Taipei vessels. In May 2020, an interim solution, based on semi-automated email forwarding, was enabled by WCPFC TrackWell to receive position data for Skywave IDP-690 from Chinese Taipei’s VMS Service Provider. However, the Secretariat views this interim solution as akin to a VMS manual position report service from a CCM directly received by WCPFC Trackwell as VMS data. In the view of the Secretariat and TrackWell the current email solution is not seen as a suitable and reliable long-term solution for VMS position reporting;
  - c. Since submitting the VTAF, all vessels referred to in the above summary have necessarily needed to use alternative ALC/MTUs and or commence VMS manual reporting when they were in the Convention Area and expected to report to the Commission VMS;
  - d. On 21<sup>st</sup> July 2020, Chinese Taipei requested the removal of **Skywave IDP-690** from the WCPFC list of approved ALC/MTU s (*Attachment 3*); and
  - e. At the time of writing, due to delays in WCPFC Trackwell receiving necessary technical information from the ALC/MTU manufacturer, the Secretariat considers that a VMS Gateway consistent with CMM 2014-02 para 7(a) has not been established between WCPFC Trackwell and ORBCOMM/Skywave for ORBCOMM ST6100 and Skywave IDP-690 services.
11. The Secretariat’s maintains its Assessment that the **Skywave IDP-690** and **ORBCOMM ST6100** units meets minimum standards for the Commission VMS as set out in Annex 1 of CMM 2014-02 (or its successor measure) and WCPFC SSPs, as relevant. However the Secretariat advises that due to delays in WCPFC Trackwell receiving necessary technical information from the ALC/MTU manufacturer, a VMS Gateway has not been completed between WCPFC Trackwell and ORBCOMM/Skywave for ORBCOMM ST6100 and Skywave IDP-690 services, and consequently these two MTUs do not have an ability to successfully report to the Commission VMS. Given the difficulties the Secretariat and the VMS service provider faced with the lack of

response from the manufacturer/MTU provider ORBCOMM, the Secretariat recommends that the two ORBCOMM/Skywave MTUs are removed from the approved list of ALC/MTUs.

**Recommendation.**

12. TCC16 is invited to:

- a. note the Secretariats Assessment of the **SRT VMS-100** ALC/MTU provided in paragraph 7 of this paper;
- b. consider recommending to the Commission the addition of the following ALC to the WCPFC approved ALC/MTU list;

| Model / Approved MTU Type | Manufacturer      | Comm System | Service Provider  |
|---------------------------|-------------------|-------------|-------------------|
| <b>SRT VMS-100</b>        | SRT Marine System | SAT-Trak    | SRT Marine System |

- c. note the Secretariats Assessment of the **Skywave IDP-690** and **ORBCOMM ST6100** ALC/MTU units provided in paragraph 11 of this paper;
- d. consider recommending to the Commission the removal of **Skywave IDP-690** and **ORBCOMM ST6100** units from the list of Approved ALC/MTU, noting that these two MTUs do not have an ability to successfully report to the Commission VMS; and
- e. note that if TCC recommends and the Commission approves that the **Skywave IDP-690** and **ORBCOMM ST6100** units are removed from the list of Approved ALC/MTUs, that in accordance with the VMS SSPs flag CCMs are to ensure that their fishing vessels replace non-type approved ALC/MTUs with approved ALC/MTUs by the next replacement of the ALC/MTU, but no later than three years after the Commission’s decision.

Circular notification of new ALC/MTU to be included on the WCPFC Approved List of ALC/MTUs



**TO ALL COMMISSION MEMBERS, COOPERATING NON-MEMBERS  
PARTICIPATING TERRITORIES AND OBSERVERS**

**Circular No.: 2020/02  
Date: 30 January 2020  
No. pages: 06**

**Notification of new ALC/MTU to be included on the WCPFC Approved List of ALC/MTUs**

Dear All,

You will recall that in December 2018, the Commission revised Section 2.7 of the WCPFC Vessel Monitoring System Standard, Specifications and Procedures (WCPFC VMS SSPs) to allow for ALC/MTU units to be included on the approved ALC/MTU list based on the Secretariat's Assessment that any newly nominated ALC/MTU meets the minimum standards set out in Annex 1 of CMM 2014-02 and following a specified period after the circulation of the Secretariat's assessment to all CCMs.

In reference to Section 2.7 of the WCPFC VMS SSPs, I enclose an advice from the Philippines, dated 17<sup>th</sup> June 2019, proposing the inclusion on the WCPFC Approved List of ALC/MTUs of the following ALC/MTU:

| Model/Approved MTU Type | Manufacturer      | Comm System | Service Provider  |
|-------------------------|-------------------|-------------|-------------------|
| SRT VMS-100             | SRT Marine System | SAT-Trak    | SRT Marine System |

In accordance with the revised Section 2.7 of the WCPFC VMS SSPs, the Secretariat has undertaken the Assessment of the **SRT VMS-100** ALC/MTU. The assessment confirms that the said unit meets the minimum standards for the Commission VMS as set out in Annex 1 of CMM 2014-02 (or its successor measure) and WCPFC SSPs, and that it has the ability to successfully report to the Commission VMS. With that positive assessment, I now advise all CCMs of the Secretariat intention to include the SRT VMS-100 ALC/MTU on the approved List of ALC/MTUs after 30 days of the date of this letter. Accordingly, if the Secretariat does not receive any objection to the proposal by the Secretariat the effective date for the **SRT VMS-100** ALC/MTU to be included on the Approved List of ALC/MTUs will be **Saturday 29 February 2020**.

The complete and updated Approved List of ALC/MTUs can be found on the WCPFC website under <https://www.wcpfc.int/vessel-monitoring-system>. Any query relating to this circular please contact the VMS Manager; Mr Albert Carlot at [albert.carlot@wcpfc.int](mailto:albert.carlot@wcpfc.int) with a copy to the Commission VMS helpdesk [VMSHelpdesk@wcpfc.int](mailto:VMSHelpdesk@wcpfc.int).

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Feleti Teo', with a stylized flourish at the end.

Feleti Penitala Teo, **OBE**  
**EXECUTIVE DIRECTOR**



Republic of the Philippines  
**Department of Agriculture**  
**BUREAU OF FISHERIES AND AQUATIC RESOURCES**  
PCA Compound, Elliptical Road, Diliman, Quezon City  
Tel. Nos. (02) 929-9597; TeleFax. (02) 929-8074

June 17, 2019

**MR. FELETI TEO**  
Executive Director  
Western and Central Pacific Fisheries Commission  
Kaselehlie Street, P.O. Box 2356,  
Kolona, Pohnpei State, 96941,  
Federated States of Micronesia

Dear Mr. Teo:

The Department of Agriculture – Bureau of Fisheries and Aquatic Resources (DA-BFAR) is currently implementing the Integrated Marine Environment Monitoring System (IMEMS) which primarily aims to significantly improve and extend its existing Vessel Monitoring System (VMS) capabilities and operationalize a Single Integrated National Marine Environment Monitoring System that is financially viable and scalable over the long term.

With the above-mentioned, we would like to forward the herein attached request of SRT Marine Systems, our contractor, to have its VMS-100 be listed among the WCPFC approved MTU/ALC, subject to Commission's standards, specifications, and procedures.

Attached herewith are the additional documents in relation to this request, for your consideration.

Thank you.

Very truly yours,



**EDUARDO B. GONGONA**  
Undersecretary for Fisheries  
BFAR National Director



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11 June, 2019

PMO IMEMS  
Bureau of Fisheries and Aquatic Resources  
Manila  
Philippines

CC: Directors Office

Dear PMO IMEMS

VMS-100S accreditation process – IMEMS phase 2

In November 2018, the Bureau of Fisheries and Aquatic Resources (BFAR) awarded to SRT Marine System the development and implementation for the phase 2 of the Integrated Marine Environment System (IMEMS). Part of the contract is including the accreditation of the VMS-100S by relevant Regional Fisheries Management Organisations (RFMOs).

Therefore, we kindly request BFAR to transmit, to whom it may concern at the Western Central Pacific Fisheries Commission (WCPFC), our request for accreditation.

Yours faithfully

SRT Delivery

Email: [tess.lewis@srt-marine.com](mailto:tess.lewis@srt-marine.com)





## VMS-100S Fishing Vessel Tracking & Monitoring Transceiver



VMS-100S is an internationally certified fisheries monitoring transceiver that provides reliable continuous real time tracking and monitoring of any fishing vessel.

The VMS-100S uses multiple dynamic least-cost routing two way communication terrestrial and satellite technology options to continuously transmit vessel position, identity, status and other information directly to your monitoring centre as well as to authorised patrol vessels and aircraft in real time. Update rates are configurable between once every 5 minutes and once every three hours as required, with optional 128AES air-interface encryption for complete security.

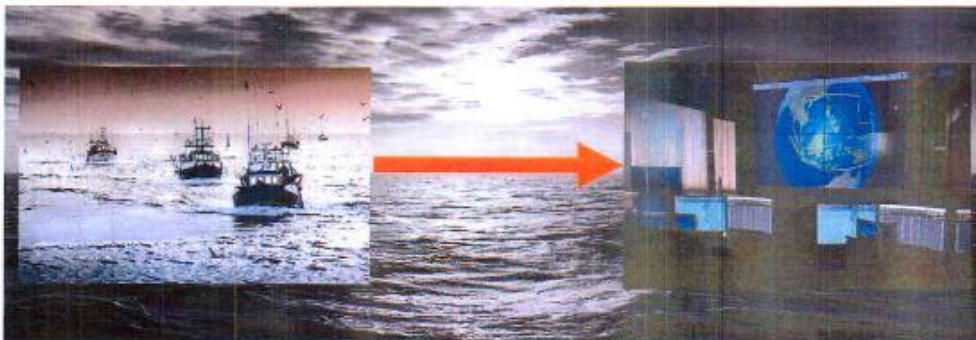
A range of sophisticated integrated functionality such as active and passive anti-tamper, anti-spoofing, SOS alerts, and electronic reporting system (ERS) connectivity provide complete functionality flexibility.

Ruggedized and completely water and weather proof, the VMS-100S is easily installed on any vessel from the smallest artisan to the largest oceanic fishing vessel.



- Dual satellite and terrestrial two way communication modes with least cost routing options
- Configurable 128 AES transmit encryption with dynamic synchronized encryption key updates
- Active geofence alert system with audible and visual notifications
- Configurable transmit rates
- SOS Search & Rescue Alert
- Dual passive and active anti-tamper and anti-spoofing
- Integrated high performance GNSS (GPS/GLONASS/GALILEO) positioning

- IP66 & 67 water and weather proof. Shock and vibration proof
- Electronic report system (ERS) VMS-Connect connectivity for enhanced onboard reporting and auditing
- Integrated quick status and activity alert reporting
- Internal secure voyage data recorder for last 3 months vessel data for activity auditing
- Dual direct-connect external vessel power and internal re-chargeable battery system (up to 5 days continuous operation)



## Multi-mode two-way communication

VMS-100S can be configured for multiple terrestrial and satellite communication systems to ensure least cost reliable global tracking and monitoring of vessels within required budget limits.

## Security

Dual active and passive anti-tamper systems are embedded within VMS-100S which prevent, detect and alert in the event of unauthorized removal and/or disconnection. Configurable transmission encryption with dynamic key updates and intelligent anti-spoofing ensures data integrity.

## ERS - VMS-Connect

Authorised devices enabled with the GeoVMS VMS-Connect application can connect (wirelessly or wired) to VMS-100S to enable detailed reporting of fishing catches, crew and vessel status and much more as required.

## Activity Audit System - Voyage Data Recorder (VDR)

The integrated, internal secure AAS continuously loop-records the last 90 days vessel activity and status securely in the transceiver. The data can only be accessed by authorised personnel and can be used to instantly audit and validate the last 90 days activity of any vessel.

## Ruggedized

VMS-100S is certified vibration, weather and water proof (IP66 and IP67). It is engineered and constructed from the best materials to continuously operate maintenance free for years in even the harshest marine environment.

## Multi-power Source

VMS-100S can be powered from multiple sources including rechargeable batteries, vessel engine and solar to ensure continuous operation in all situations. Internal back up battery provides up to 72 hours' operation in the event of power loss. The transceiver is permanently on when power is available and as there is no on/off switch, it is tamper-proof.

## Physical Specification

|            |                      |
|------------|----------------------|
| Dimensions | 171mm x 128mm x 60mm |
| Weight     | 350g                 |

## Certification

|                              |  |
|------------------------------|--|
| Com Standards - Configurable | AIS: ITU-R M.1371 & IEC62287-2 / Multi-mode SAT-Trak |
| Environmental                | IEC60945-2002 IP66 & IP67                            |
| GPS Performance              | IEC61108-1:2003                                      |
| Safety                       | EN60950-1:2006 +A2:2013                              |
| Wifi & Bluetooth             | FCC U30-C2 M5477                                     |
| GNSS performance standards   | IEC61108-1 Ed 2.0 GPS<br>IEC61108-2 Ed 1.0 GLONASS   |

## Data Interface

|                                       |   |
|---------------------------------------|---|
| NMEA2000                              | ✓ |
| Wifi                                  | ✓ |
| Bluetooth                             | ✓ |
| USB                                   | ✓ |
| IEC61162-1 (NMEA0183) bidirectional   | ✓ |
| IEC61162-1 (NMEA0183) input, 4800baud | ✓ |
| Silent mode switch input              | ✓ |



Least cost routing multi-mode satellite communication for global coverage.



VMS-100S supports integration with VMS-Connect enabled ERS devices. This enables extensive and configurable detailed fish catch and activity reporting.

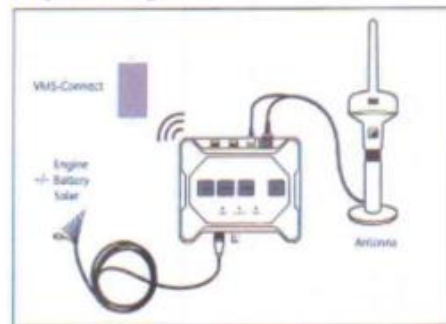
## Power

|                   |                                     |
|-------------------|-------------------------------------|
| Power Supply      | 6 to 36V Maximum battery capacity   |
| Power Consumption | <12W                                |
| Power Source      | Multiple - Vessel / Battery / Solar |

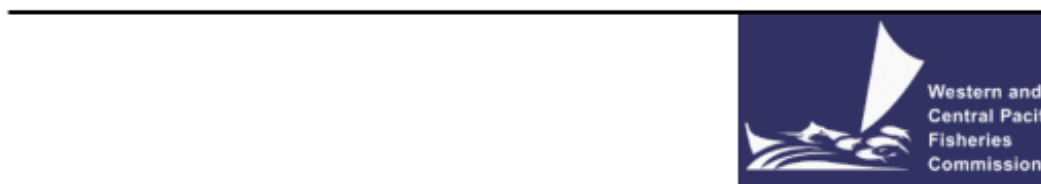
## Temperature

|             |                |
|-------------|----------------|
| Operational | -25°C to +55°C |
| Storage     | -25°C to +70°C |

## System Diagram



Circular advising CCMs the deferral to include SRT VMS-100 on the Approved List of ALC/MTUs



**TO ALL COMMISSION MEMBERS, COOPERATING NON-MEMBERS  
PARTICIPATING TERRITORIES AND OBSERVERS**

**Circular No.: 2020/11  
Date: 28 February 2020  
No. pages: 01**

**Deferral of Decision to Include SRT VMS-100 ALC/MTU on the WCPFC Approved List of ALC/MTUs**

Dear All,

Further to WCPFC Circular 2020/02 dated 30<sup>th</sup> January 2020 which advised CCMs of the Secretariat's positive assessment of the **SRT VMS-100** ALC/MTU meeting the minimum standards for the Commission VMS as set out in Annex 1 of CMM 2014-02 (or its successor measure) and WCPFC SSPs, and that the unit has the ability to successfully report to the Commission VMS. The Secretariat's intention was to include the SRT VMS-100 ALC/MTU on the approved List of ALC/MTUs after 30 days of the date of WCPFC Circular 2020/02 (Saturday 29 February 2020).

In response to the said circular, the Secretariat has received in writing an objection from Japan to the Secretariat's assessment and proposal in WCPFC Circular 2020/02. Japan stated that *we are still not confident with the proposed inclusion of SRT VMS-100 MTU onto the WCPFC Approved List of ALC/MTUs. We would like to carefully examine the SAT-Trak technology with further detailed technical information, since the proposed AIS-based MTU is quite a new type*".

As a result of that objection and in accordance with Section 2.7 of the WCPFC Vessel Monitoring System Standard, Specifications and Procedures (WCPFC VMS SSPs), the decision to include this unit on the approved List of ALC/MTU is deferred for consideration at TCC16.

The complete Approved List of ALC/MTUs can be found on the WCPFC website under <https://www.wcpfc.int/vessel-monitoring-system>. Any query relating to this circular please contact the VMS Manager; Mr Albert Carlot at [albert.carlot@wcpfc.int](mailto:albert.carlot@wcpfc.int) with a copy to the Commission VMS helpdesk [VMSHelpdesk@wcpfc.int](mailto:VMSHelpdesk@wcpfc.int)

Yours sincerely,

A handwritten signature in black ink, appearing to be "F. Teo", is located below the text "Yours sincerely,".

**Feleti Penitala Teo, OBE  
EXECUTIVE DIRECTOR**

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**P. O. Box 2356, Kolonia, Pohnpei 96941, Federated States of Micronesia. Phone: +691 320 1992/1993 Facsimile: +691 320 1108 Email: [wcpfc@wcpfc.int](mailto:wcpfc@wcpfc.int)**

Letter from Chinese Taipei to remove Skywave IDP-690 from List of Approved ALC/MTUs



行政院農業委員會漁業署

FISHERIES AGENCY

Council of Agriculture, Executive Yuan

6F., No.100, Sec. 2, Heping W. Rd., Taipei City, Taiwan

TEL: 886-2-2383-5678 FAX: 886-2-2332-7397 <http://www.fa.gov.tw>

July 21, 2020

Ref: WP109-13

Mr. Feleti P. Teo, OBE  
Executive Director  
Western and Central Pacific Fisheries Commission  
P. O. Box 2356, Kolonia,  
Pohnpei 96941, Federated States of Micronesia

Dear Mr. Teo,

Taking the opportunity of submitting additional data for our 2019 VMS Compliance Report, I would also like to reflect an issue that may result in VMS data gaps. I am herewith seeking an appropriate way to address it.

SKYWAVE IDP-690 ALC is listed on the WCPFC list of approved ALCs, which means this type of ALC had been assessed and was confirmed meeting the minimum standards for the Commission VMS as set out in Annex 1 of CMM 2014-02 and VMS SSPs by the Secretariat. Based on this, this VMS unit has also been approved by our government to be used in our flagged fishing vessels last year. There are over 20 our flagged fishing vessels using SKYWAVE IDP-690 as the ALC unit to report their position data to our national VMS and the Commission VMS. According to the monitoring records, our flagged fishing vessels using this unit have normally reported position data to our national VMS.

However, in this February, the Secretariat contacted with us and stated that the Commission VMS has kept failing to receive position data from our flagged fishing vessels using SKYWAVE IDP-690 units. Since then, we have constantly communicated with the Secretariat and the VMS service provider (Trackwell) to deal with this problem. We have explored potential solutions and provided a way trying resolving the data disparity between both sides even though we do not regard such devotion as our obligation.

Frankly, SKYWAVE IDP-690 does have certain unsettled technical problems



行政院農業委員會漁業署

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and the appropriateness for such unit to be included on the WCPFC approved list shall be further assessed. We would like to suggest the Commission to re-consider the inclusion of SKYWAVE IDP-690 on the WCPFC list of approved ALC units.

Kind regards,

Ding-Rong Lin

Director

Deep Sea Fisheries Division