



MALTA COMMUNICATIONS AUTHORITY


Thirty-Fifth Schedule to Decision No. No. MCA/D-22-4662

*Apparatus General Authorisation for Earth Stations on Mobile Platforms (ESOMPs)
Operating with Geostationary Satellite Systems in the Frequency Bands 17.3-20.2 GHz
and 27.5-30 GHz*

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Revision History of the Thirty-Fifth Schedule

Earth stations on mobile platforms (ESOMPs) operating with
geostationary satellite networks in the frequency bands
17.3-20.2 GHz and 27.5-30 GHz

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**This Schedule shall be read and construed as one with
Part I and Part II of Decision No. MCA/D/22-4662**

**Adopted pursuant to Article 30A of the
Electronic Communications (Regulation) Act (Cap. 399)
establishing the radiocommunications apparatus
general authorisation**

Article 1 – Applicability

This apparatus general authorisation applies to any person installing or using apparatus for Earth Stations on Mobile Platforms which operate within the frequency bands 17.3-20.2 GHz (space-Earth) and 27.5-30 GHz (Earth-space) with geostationary satellite systems or any apparatus intended to be used as a component part of that apparatus.

Article 2 – Interpretation

In this Schedule unless the context otherwise requires:

- (1) “airfields” means airports and helipads;
- (2) “earth stations on mobile platforms” or “ESOMPs” means an earth station that is used while in motion or at temporary halts;
- (3) “earth stations” shall have the same meaning as in the Radio Regulations;
- (4) “ECC Report 184” means the report developed by the Electronic Communications Committee of CEPT on the use of ESOMPs operating with geostationary satellite networks in the frequency range 17.3-20.2 GHz and 27.5-30.0 GHz;
- (5) “ECC Report 272” means the report developed by the Electronic Communications Committee of CEPT on earth stations operating in the frequency bands 4-8 GHz, 12-18 GHz and 18-40 GHz in the vicinity of aircraft;
- (6) “HIRF” means high intensity radiated field;
- (7) “mobile platform” means a ship, aircraft or land vehicle;
- (8) “network control facility” or “NCF” refers to a set of functional entities that, at system level, monitor and control the correct operation of the ESOMP and, if appropriate, all of the ESOMPs in a network;
- (9) “PFD” means power flux density; and
- (10) “Time Division Multiple Access” or “TDMA” means a transmission technique involving the multiplexing of many time slots onto the same time payload.

Article 3 – Limitations

The use of ESOMPs installed on a mobile platform registered in Malta from another country shall be subject to compliance with any terms, conditions or limitations which could be applicable in that country.

Article 4 – Minimum technical parameters

- (1) Unless otherwise specified in the National Frequency Plan, ESOMPs shall operate within the 17.3-20.2 GHz (space-Earth) and 27.5-30 GHz (Earth-space) frequency bands.
- (2) ESOMPs shall operate under the control and monitoring of a network control facility.
- (3) The minimum technical parameters of ESOMPs shall be those specified in the Annex to this Schedule.

Annex to the Thirty-Fifth Schedule
Minimum Technical Parameters for ESOMPs Operating with Geostationary
Satellite Networks within the Frequency Bands 17.3-20.2 GHz and 27.5-30 GHz

A. Technical and operational requirements for ESOMPs operating within the frequency bands 17.3-20.2 GHz and 27.5-30 GHz

ESOMPs operating within the frequency bands 17.3-20.2 GHz and 27.5-30.0 GHz shall comply with the following technical and operational requirements:

1. ESOMPs shall at least account for the following factors which could vary the aggregate off-axis e.i.r.p. levels generated by:
 - a) antenna mis-pointing;
 - b) variations in the antenna pattern; and
 - c) variations in the transmit e.i.r.p.
2. ESOMPs that use closed-loop tracking of the satellite signal shall employ an algorithm that is resistant to capturing and tracking adjacent satellite signals. ESOMPs shall immediately inhibit transmissions when they detect that unintended satellite tracking has happened or is about to happen.
3. ESOMPs shall be self-monitoring and should a fault which can cause harmful interference to fixed satellite services or to terrestrial networks be detected, the ESOMP must automatically cease its transmissions.
4. Techniques to access spectrum and mitigate interference that provide an appropriate level of performance to comply with the essential requirements of Directive 2014/53/EU of the European Parliament and of the Council shall be used. If relevant techniques are described in harmonised standards or parts thereof the references of which have been published in the *Official Journal* of the European Union in accordance with Directive 2014/53/EU, performance at least equivalent to the performance level associated with those techniques shall be ensured.
5. ESOMPs shall comply with the following requirements established to ensure compliance with aircraft HIRF protection criteria based on ECC Report 272, using a maximum HIRF field strength of 150 V/m:
 - a) the maximum e.i.r.p. of ESOMPs installed on aircraft operating within the airfield boundary including operations on the ground shall be limited to 58.4 dBW;

- b) the maximum e.i.r.p. of land-based ESOMPs operating within the airfield boundary shall be limited to 52.4 dBW;
- c) the maximum e.i.r.p. of ESOMPs not covered in a) and b) above, outside the airfield boundary or on vessels, shall be limited to 60 dBW; and
- d) the maximum e.i.r.p. of ESOMPs, as defined above, operating within TDMA networks shall be respected after taking into consideration the duty cycle.¹

B. Additional technical and operational requirements for ESOMPs operating within the frequency bands 17.3-19.7 GHz and 27.5-29.5 GHz

In additional to the requirements established under (A) above, ESOMPs operating within the frequency bands 17.3-19.7 GHz and 27.5-29.5 GHz shall also comply with the following technical and operational requirements:

1. In the territory of any country, the off-axis² e.i.r.p. spectral density radiated by any ESOMP into the frequency bands allocated to the fixed service shall be limited to -35 dBW/MHz. This limit shall, in any case, be met by ESOMPs on land, on territorial sea or on internal waters, at a direction of 3 degrees or less above the local horizontal plane at the ESOMP terminal.
2. In the territory of any country, ESOMPs, except ESOMPs installed on ships or aircraft subject to paragraphs 4-5, shall not have their transmit occupied band edges closer than 10 MHz from the edges of the bands identified by that country for operation by fixed services.
3. The antenna elevation angle shall be higher than 3 degrees.
4. ESOMPs installed on aircraft transmitting in the bands 27.8285-28.4445 GHz, 28.8365-28.9485 GHz and 28.9485-29.4525 GHz shall comply with the following PFD values (dB(W/m²) in a reference bandwidth of 14 MHz) on the ground:

¹ Refer to sections 3.3 and 3.4 of ECC Report 272.

² Off-axis refers to angles greater than 7° from the axis of the main beam or to angles greater than the declared minimum elevation angle of the ESOMP, whichever is lower.

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|-----------------------------------|------------|---------------------------------------|
| -124.7 | <i>for</i> | $0^\circ \leq \delta \leq 0.01^\circ$ |
| $-120.9 + 1.9 \log_{10}(\delta)$ | <i>for</i> | $0.01^\circ < \delta \leq 0.3^\circ$ |
| $-116.2 + 11.0 \log_{10}(\delta)$ | <i>for</i> | $0.3^\circ < \delta \leq 1.0^\circ$ |
| $-116.2 + 18.0 \log_{10}(\delta)$ | <i>for</i> | $1.0^\circ < \delta \leq 2.0^\circ$ |
| $-117.9 + 23.7 \log_{10}(\delta)$ | <i>for</i> | $2.0^\circ < \delta \leq 8.0^\circ$ |
| -96.5 | <i>for</i> | $8.0^\circ < \delta \leq 90.0^\circ$ |

where δ is the angle of arrival at the Earth's surface (degrees).

Higher PFD levels produced on the territory of a country by ESOMPs installed on aircraft shall be subject to the prior agreement of the concerned country.

The PFD values above are not defined as under "free-space" conditions. Hence, when assessing ESOMP compliance with this PFD mask, atmospheric absorption and any attenuation due to the aircraft fuselage shall be taken into account.³

Outside those frequency bands no PFD constraint is required.

5. ESOMPs installed on vessels transmitting in the bands 27.8285-28.4445 GHz, 28.8365-28.9485 GHz and 28.9485-29.4525 GHz shall comply with the maximum PFD value of $-109 \text{ dB(W/m}^2\text{)}$ in a reference bandwidth of 14 MHz at a height of 20 metres above mean sea level at the low-water mark as officially recognised by the coastal state.⁴

Outside those frequency bands no PFD constraint is required.

Higher PFD levels produced at the low water mark of the territory of a country by ESOMPs installed on vessels shall be subject to the prior agreement of the concerned country.

6. For ensuring compliance with the above provisions, ESOMPs shall have self-monitoring functions and automatic mechanisms (locally, or under the control of the NCF) to reduce their e.i.r.p. or cease transmissions.

³ The baseline assumptions of these losses are given in ECC Report 184.

⁴ The PFD values above are not defined as under "free-space" conditions. The percentage of time that should be used in the propagation model when assessing compliance with this PFD threshold should be 0.007%.