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| SRDMG | | SRDMG(23)037 |
| SRDMG #88 | | |
| ECO Copenhagen / Web-meeting | | |
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| Date issued: | 25 April 2023 | |
| Source: | LoRa Alliance | |
| Subject: | Proposed modifications to ERC Rec 70-03 to include satellite connections | |
| Group membership required to read? (Y/N)  N | | |
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| Summary: | | |
| It is proposed to make SRD-to-satellite transmissions more explicit in the ERC Recommendation 70-03 as already explained in ECC Report 305.  Changes to be made are in the introduction and in *considering c)* of the Recommendation as shown in the attached file. | | |
| Proposal: | | |
| SRDMG is invited to consider:   * attached proposed changes to ERC Recommendation 70-03 to include wording that expresses the possibility to transmit messages to gateways deployed on satellites and; * the need to liaise with ECC working groups (such as FM44) regarding an harmonised regulatory framework to make the use of the LPWAN IoT satellite more explicit throughout Europe. | | |
| Background: | | |
| The regulatory parameters for non-specific short-range devices as defined in annex 1 of ERC Rec 70-03 allow the reception of transmissions even over hundreds of kilometres. This is due to the very high sensitivity of state-of-the-art receivers. ECC acknowledged in Report 305 that emissions can “obviously equally be received by a terrestrial receiver [...] or by a space station in low earth orbit without the need for additional regulatory measures.”  Various proof-of-concepts have shown that even satellites can receive SRD transmissions while not exceeding the power limits described in the REC 70-03. Multiple satellites have since been launched by several European satellite operators (such as Eutelsat[[1]](#footnote-2) or Lacuna Space[[2]](#footnote-3)) and are receiving messages from IoT business applications.  This contribution aims to reflect this finding in ERC Recommendation 70-03, which is considered a main source for administrations who seek regulatory guidance in the correct treatment of SRD-to-satellite transmissions. | | |

# Details on proposed changes

## Proposed change 1

**INTRODUCTION**

[…]

The conditions provided in the Annexes also apply for the use of SRD on-board aircraft and for SRD transmissions intended for reception by satellites, if such use is not explicitly excluded or restricted by sector-specific regulations in Recommendation 70-03 or other regulations. CEPT does not address aviation safety aspects. Aircraft operators, manufacturers and aircraft owners should consult the relevant national or regional aviation regulatory bodies before installing and using SRD devices on board aircraft. See also the explanatory document FM(19)075 - Annex 39 on 5 GHz RLAN in vehicles (cars, busses, on-board trains, on-board aircraft) ([link](https://efis.cept.org/documents/44659)) and also see the explanatory document FM(18)059 Annex 37 related to non-professional Unmanned Aircraft System (UAS) use under general authorisations ([link](https://efis.cept.org/documents/79124)).

Similarly, under the same technical conditions described in the Annexes, transmissions to satellites are also possible. Manufacturers and operators are already using generic SRD devices to send data from sensors to gateways deployed on satellites.

The highlighted text is added to explicitly mention the possibility to transmit to satellites. Given that air-borne SRDs are already included, the addition of satellite receivers should be straight-forward. The technical conditions that allow reception of SRD transmissions is briefly described below for the example of the 862-870 MHz frequency band: typical power limits defined in Annex 1 for the range 862-870 MHz are 25mW e.r.p. (or more), which converts to 16.15 dBm e.i.r.p. The path loss for 862-870 MHz and a Low Earth Orbit (LEO) is around 145-155 dB, depending on the actual elevation above the horizon at which the SRD transmits. State-of-the-art IoT receivers can have a sensitivity of -135 to -140 dBm. Even with low-gain receive antennas on the satellite, the link to the satellite can be closed. Various parameters can improve the operational performance (polarisation, implementation gain (loss), receive antenna gain & pattern, modulation, …).

## Proposed change 2

**ERC RECOMMENDATION RELATING TO THE USE OF SHORT RANGE DEVICES (SRD)**

"The European Conference of Postal and Telecommunications Administrations,

**considering**

1. that SRDs in general operate in shared bands and are not permitted to cause harmful interference to radio services;
2. that in general SRD cannot claim protection from interference caused by radiocommunication services as defined by ITU;
3. that due to the increasing use of SRD for a growing number of applications (including different type of terrestrial and satellite deployments) it is necessary to harmonise frequencies and regulations for these devices to allow an economy of scale and improve efficiency for users;

[…]

This proposed change serves to add background info on the fact that there are several use cases for SRDs, including terrestrial and satellite deployments.



1. See at <https://www.eutelsat.com/en/satellites/elo-fleet.html> [↑](#footnote-ref-2)
2. See at <https://lacuna.space/celebrating-24-months-of-successful-operations-of-the-ls2-satellite-from-open-cosmos/> [↑](#footnote-ref-3)