

International Telecommunication Union

ITU-R
Radiocommunication Sector of ITU

Recommendation ITU-R SA.1863
(01/2010)

**Radiocommunications used for
emergency in manned
space flight**

SA Series
Space applications and meteorology

Foreword

The role of the Radiocommunication Sector is to ensure the rational, equitable, efficient and economical use of the radio-frequency spectrum by all radiocommunication services, including satellite services, and carry out studies without limit of frequency range on the basis of which Recommendations are adopted.

The regulatory and policy functions of the Radiocommunication Sector are performed by World and Regional Radiocommunication Conferences and Radiocommunication Assemblies supported by Study Groups.

Policy on Intellectual Property Right (IPR)

ITU-R policy on IPR is described in the Common Patent Policy for ITU-T/ITU-R/ISO/IEC referenced in Annex 1 of Resolution ITU-R 1. Forms to be used for the submission of patent statements and licensing declarations by patent holders are available from <http://www.itu.int/ITU-R/go/patents/en> where the Guidelines for Implementation of the Common Patent Policy for ITU-T/ITU-R/ISO/IEC and the ITU-R patent information database can also be found.

Series of ITU-R Recommendations

(Also available online at <http://www.itu.int/publ/R-REC/en>)

Series	Title
BO	Satellite delivery
BR	Recording for production, archival and play-out; film for television
BS	Broadcasting service (sound)
BT	Broadcasting service (television)
F	Fixed service
M	Mobile, radiodetermination, amateur and related satellite services
P	Radiowave propagation
RA	Radio astronomy
RS	Remote sensing systems
S	Fixed-satellite service
SA	Space applications and meteorology
SF	Frequency sharing and coordination between fixed-satellite and fixed service systems
SM	Spectrum management
SNG	Satellite news gathering
TF	Time signals and frequency standards emissions
V	Vocabulary and related subjects

Note: This ITU-R Recommendation was approved in English under the procedure detailed in Resolution ITU-R 1.

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RECOMMENDATION ITU-R SA.1863

Radiocommunications used for emergency in manned space flight

(Question ITU-R 247/7)

(2010)

Scope

This Recommendation contains specific guidelines for compatible use of the frequency bands 2 290-2 300 MHz and 2 025-2 120 MHz for manned emergency radiocommunications links. This emergency link is a low-rate/low-power reliable link between a manned spacecraft and the Earth, either through a data relay satellite or directly with a capable earth station and is independent from the spacecraft's telemetry, tracking and command links.

The ITU Radiocommunication Assembly,

considering

- a) that manned space exploration spacecraft and space stations require continuous radiocommunication with earth stations;
- b) that the technical characteristics and operational requirements of manned emergency space radiocommunication channels may be different from those of routine links between earth stations and manned vehicles in space flight, including for near-Earth, lunar, and planetary missions;
- c) that there are many advantages in the use of predefined sets of frequency pairs with specific channels for manned space exploration emergency radiocommunications;
- d) that existing space research service allocations for radiocommunications could be used for emergency radiocommunication channels for manned space flight;
- e) that manned space flight requires provisions for emergency radiocommunications for the entire duration of a mission;
- f) that a number of administrations are either directly involved in manned space flights, or have space-faring interests, and may be able to operationally contribute to radiocommunications that have an emergency nature;
- g) that under emergency situations, a crippled manned spacecraft may have the requirement to communicate at low power levels using an omnidirectional antenna, and need to operate in a frequency band that has a very low amount of interference;
- h) that space research service allocations in the 2 025-2 120 MHz and 2 200-2 300 MHz bands generally have desirable characteristics for emergency radiocommunications links,

recognizing

- a) that Article V of the United Nations Treaty on principles governing the activities of States in the exploration and use of outer space, including the Moon and other celestial bodies, provides that, "States Parties to the Treaty shall regard astronauts as envoys of mankind in outer space and shall render to them all possible assistance in the event of accident, distress, or emergency landing on the territory of another State Party or on the high seas";

b) that this Article further provides that, “In carrying on activities in outer space and on celestial bodies, the astronauts of one State Party shall render all possible assistance to the astronauts of other States Parties”,

noting

- a) that it is desirable to promote and encourage multinational collaboration if emergency conditions occur during manned space flights;
- b) that an emergency radiocommunications link should be independent of the primary nominal command and telemetry links;
- c) that the use of space research service channels for emergency radiocommunication is not considered to be a safety application;
- d) that the sub-band 2 293-2 297 MHz is a key band for current and future deep-space missions and should not be considered for emergency radiocommunications,

recommends

- 1** that a manned spacecraft experiencing an emergency situation should use the 2 290-2 300 MHz band, excluding the 2 293-2 297 MHz sub-band, to transmit to the Earth, directly and/or through a data relay satellite (DRS);
 - 2** that transmissions to a manned spacecraft experiencing an emergency situation, either directly or through a DRS, should use the bands 2 025-2 110 MHz or 2 110-2 120 MHz or both bands;
 - 3** that unwanted emissions in the 2 293-2 297 MHz band from manned spacecraft emergency transmitters should meet the applicable deep space protection criteria stated in Recommendation ITU-R SA.1157.
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