



Recommendation ITU-R F.1105-3
(02/2014)

**Fixed wireless systems for disaster
mitigation and relief operations**

F Series
Fixed service



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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.

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Series of ITU-R Recommendations

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Series	Title
BO	Satellite delivery
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BS	Broadcasting service (sound)
BT	Broadcasting service (television)
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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 F.1105-3*

Fixed wireless systems for disaster mitigation and relief operations

(Question ITU-R 248/5)

(1994-2002-2006-2014)

Scope

This Recommendation provides characteristics of fixed wireless systems (FWS) used for disaster mitigation and relief operations. Several types of such systems including transportable equipment are specified according to channel capacity, operating frequency bands, transmission distance and propagation path conditions.

Detailed descriptions of these systems are also given in Annex 1 as guidance.

Keywords

Fixed service, land mobile service, disaster mitigation, relief operation, backhaul link, transportable system.

The ITU Radiocommunication Assembly,

considering

- a) that rapidly deployable telecommunications are essential for disaster mitigation and relief operations in the event of natural disasters, epidemics, famines and similar emergencies;
- b) that measures to mitigate the effects of natural disasters should be made as much as possible;
- c) that high speed data and high capacity information are available due to the popularity of fibre-to-the-home, digital subscriber line, mobile phones, etc. in the form of voice, character data, image, or through a variety of Internet Protocol (IP)-based services;
- d) that transportable fixed wireless equipment may be used for relief operation of either radio or cable links and may involve multi-hop applications with digital and analogue equipment;
- e) that fixed wireless equipment for disaster mitigation and relief operations may be operated in locations with differing terrain and in differing climatic zones, uncontrolled environmental conditions and/or unstable power sources;
- f) that fixed wireless equipment for disaster mitigation and relief operations may be used in areas with an unfavourable interference environment;
- g) that interoperability and internetworking between fixed *wireless* system for disaster mitigation and relief operations and other networks would be beneficial in emergency situations as stated in *considering a*);
- h) that because of the interoperability and internetworking ability as stated in *considering g*), it is more efficient to equip both a transportable mobile backhaul link and a transportable mobile base station in a vehicle and carry it to the disaster hit area when the mobile backhaul link and the base station for normal operation are both damaged by a disaster;

* This Recommendation should be brought to the attention of Telecommunication Development Sector Study Group 2 and relevant ITU-T Study Groups.

i) that efficient use of spectrum is required,

recognizing

a) that the World Radiocommunication Conference (WRC-12) invites ITU-R to continue its technical studies and to make recommendations concerning technical and operational implementation, as necessary, for advanced solutions to meet the needs of public protection and disaster relief radiocommunication applications, taking into account the capabilities, evolution and any resulting transition requirements of the existing systems, particularly those of many developing countries, for national and international operations (see the relevant part of Resolution **646 (Rev.WRC-12)**;

b) that Resolution ITU-R 53-1 requests the concerned ITU-R Study Groups to undertake studies and develop guidelines related to the management of radiocommunications in disaster prediction, detection, mitigation and relief collaboratively and cooperatively within ITU and with organizations external to the Union;

c) that Resolution ITU-R 55-1 requests the ITU-R Study Groups to take into account the scope of ongoing studies/activities summarized in its Annex 1,

noting

that Reports ITU-R F.2061 and ITU-R F.2087 discuss the role of HF radiocommunication systems in public protection and disaster relief (PPDR) operations,

recommends

1 that for disaster mitigation and relief operations in devastated areas or restoration of a break in transmission links the following types of fixed wireless systems (FWS) as given in Table 1 should be considered;

TABLE 1

Types of fixed wireless systems for disaster mitigation and relief operations

Type	Feature	Application
A	A simple wireless link which can be established rapidly for telephone communication with a governmental or international headquarters	(1) (2)
B	One or more local networks which connect a communications centre and up to about 10 or 20 end-user stations with telephone links	(1)
C	A telephone link for between about 6 and 120 channels or a data link up to the 6.3/8 Mbit/s over a line-of-sight or near line-of-sight path	(1) (2)
D	A telephone link between 12 and 480 channels or a data link up to 34/45 Mbit/s over a line-of-sight or obstacle or trans-horizon path	(2)
E	A high-capacity telephone link (more than 480 channels) or high-speed data link up to STM-1	(2)
F	Simultaneous individual or group radiocommunications using point-to-multipoint individual radiocommunications between a central station and a number of terminals in a region	(1), (3)

Types A to E: Transportable system.

Application (1): For devastated areas.

Application (2): For breaks in transmission links.

Application (3): For mitigation of disaster effects.