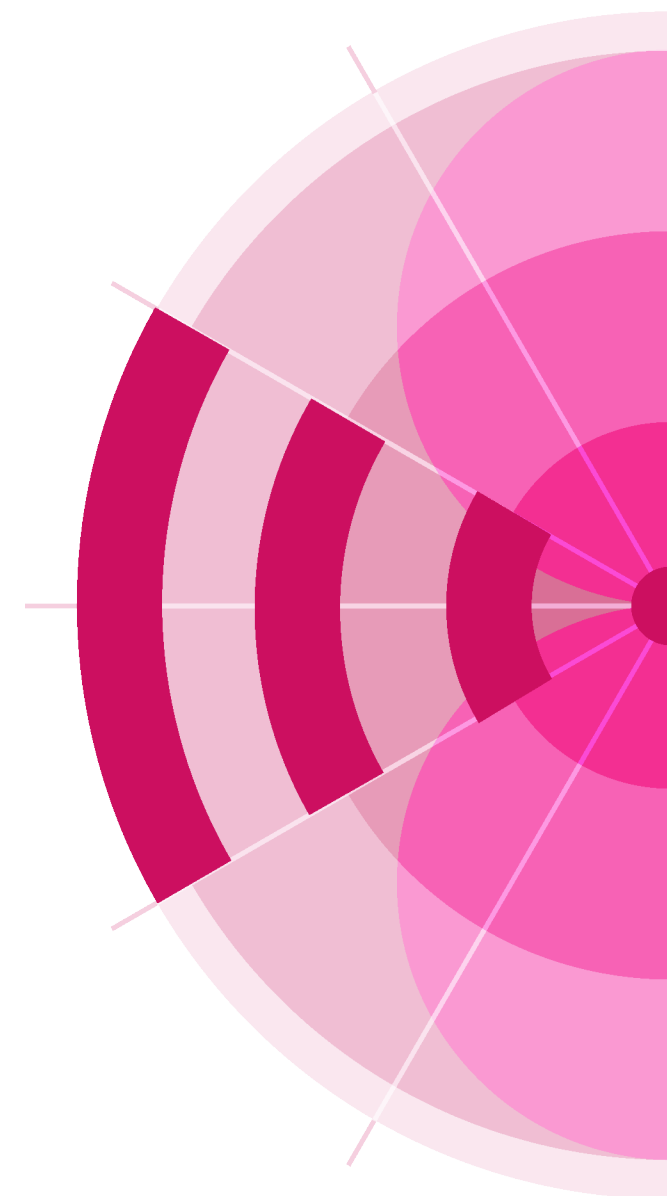


**ITUWRS**  
ONLINE2020

29<sup>TH</sup> WORLD RADIOCOMMUNICATION SEMINAR  
30 November - 11 December 2020

# HARMFUL INTERFERENCE (Terrestrial Services)



[www.itu.int/go/wrs-20](http://www.itu.int/go/wrs-20)

#ITUWRS

# OVERVIEW

- ❖ MEASURES IN CS, RR AGAINST HARMFUL INTERFERENCE
- ❖ CASES OF HARMFUL INTERFERENCE REPORTED TO THE BR
- ❖ PROCEDURES TO RESOLVE HARMFUL INTERFERENCE
- ❖ INTERNATIONAL MONITORING
- ❖ BR ASSISTANCE IN A CASE OF HARMFUL INTERFERENCE
- ❖ CONCLUSIONS

# MEASURES AGAINST INTERFERENCE (CS)



## Purposes of the Union (Art. 1)

- Allocate frequency bands and register frequency assignments in order to avoid harmful interference (CS11)
- Coordinate efforts to eliminate harmful interference and to improve the use made of the radio-frequency spectrum (CS12)

# MEASURES AGAINST INTERFERENCE (CS)

## Execution of the Instruments of the Union (Art. 6)

- Administrations apply CS, CV and RR in stations operated by them which are capable of causing harmful interference, except services exempted in CS Article 48 (CS37)
- To impose the observance of CS, CV and RR upon operating agencies authorized by them which operate stations capable of causing harmful interference (CS38)

# MEASURES AGAINST INTERFERENCE (CS)



## Harmful Interference (Art. 45)

- All stations must be established and operated in such a manner as not to cause harmful interference to stations which operate in accordance with the RR (CS197)
- Each Member State undertakes to require the operating agencies to observe the provisions of CS197 (CS198)

# MEASURES AGAINST INTERFERENCE (RR)



## Objectives RR (Preamble)

- All stations must be established and operated in such a manner as not to cause harmful interference ... (CS197)
- Ensure the availability and protection from interference of the frequencies for distress and safety
- Assist in the prevention and resolution of harmful interference

# DEFINITIONS (RR)



- **Permissible interference:** Observed or predicted interference which complies with quantitative interference and sharing criteria... (RR1.167)
- **Accepted interference:** Interference at a higher level than permissible interference and which has been agreed... (RR1.168)
- **Harmful interference:** Interference which endangers the functioning of a radionavigation service or safety services or seriously degrades, obstructs, or repeatedly interrupts a radiocommunication service operating in accordance with Radio Regulations (RR1.169)

# MEASURES AGAINST INTERFERENCE (RR)



## Technical characteristics of stations (Art. 3)

- The choice and performance of equipment shall conform the RR
- Transmitting stations must conform Appendices 2 and 3

## General rules for assignments (Art. 4)

Assignments shall be made:

- in accordance with the RR
- to avoid causing interference to conform assignments
- no derogation, except no interference and no protection
- separated from the limits of the band
- special measures for safety services



# MEASURES AGAINST INTERFERENCE (RR)



## Frequency allocations (Art. 5)

- Frequency block allocations supplemented by plans
- Primary and secondary services
- Regulatory/technical conditions

## Status of frequency assignments recorded in the Master Register (Art. 8)

- Right to international recognition
- Non-conforming assignment

## Coordination of frequency assignments (Art. 9)

- Coordination agreement with administrations before operating

# MEASURES AGAINST INTERFERENCE (RR)



## Notification of frequency assignments (Art. 11)

- if capable of causing harmful interference, if used for international radiocommunication, if subject to the coordination procedure, to obtain international recognition, for information

## Seasonal planning of HF bands allocated to the broadcasting service (Art. 12)

- Coordination of the projected seasonal broadcasting schedules prior to submission to BR

# MEASURES AGAINST INTERFERENCE (RR)



## Interference (Art. 15)

- Avoid unnecessary transmissions, limit the power of transmitting stations to necessary level, reduce radiation in unnecessary directions to minimum, avoid interference on distress and safety frequencies

## Licences (Art. 18)

- No transmitting station may be established or operated without a licence issued in conformity with the RR

# MEASURES AGAINST INTERFERENCE (RR)



## Broadcasting services (Art. 23)

- Broadcasting stations using frequencies below 5 060 kHz (except 3 900-4 000 kHz) or above 41 MHz shall not employ power exceeding that necessary to maintain national service of good quality within the frontiers of the country

## Frequencies for GMDSS (Art. 31)

- Any emission causing harmful interference to frequencies to be used for the transmission of distress and safety information under the GMDSS is prohibited

# CASES OF HARMFUL INTERFERENCE REPORTED TO THE BR

- **No coordination**, operation of non-coordinated frequency assignments
- **Technical**, spurious emissions, excessive transmitting power, etc.
- **Regulatory**, operations in bands not allocated, operations with different technical parameters, etc.
- **Unauthorised emissions**
- **Unnecessary transmission**, as described in RR15.1

# SOME STATISTICS

In 2020, **57** cases concerning terrestrial services

- Request for assistance: 34
- For BR information: 23
- Safety services: 26

> **1100** Appendix 10

- AM(R)S: 32
- BS: 1069
- LMS: 32

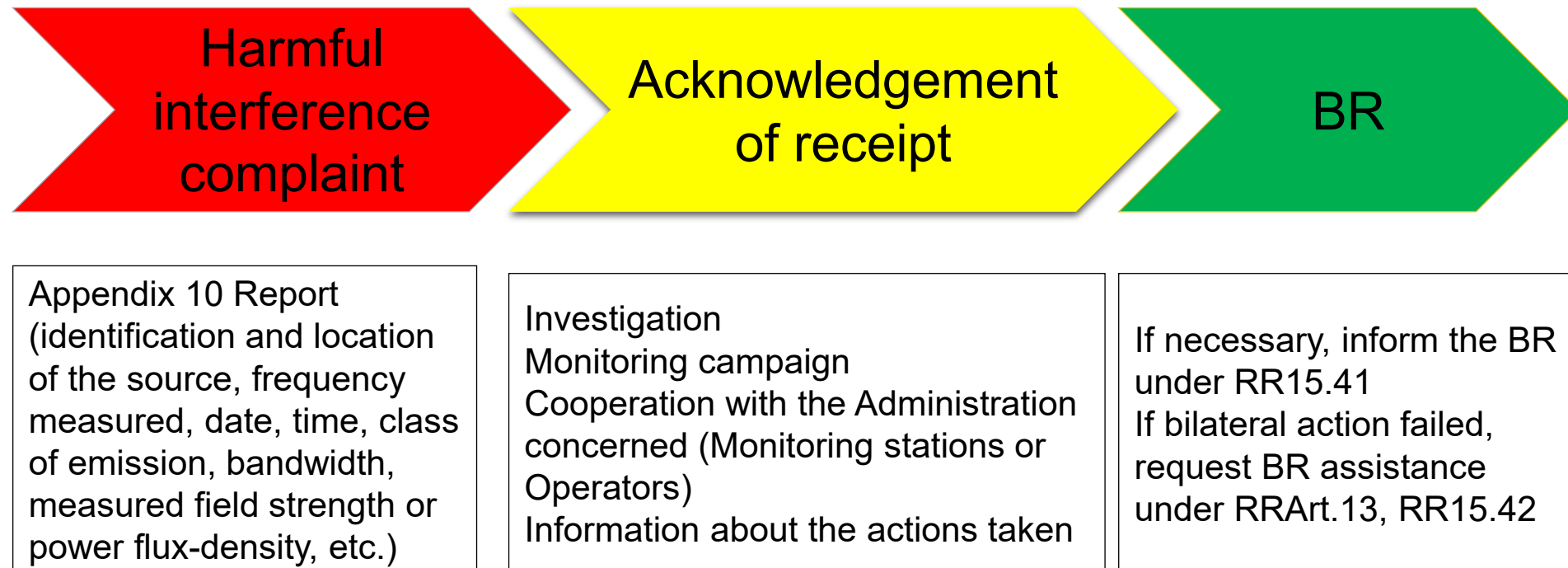
# INFRINGEMENTS

- Not always producing harmful interference
- Infringements shall be reported using forms in Appendix 9 to the administration of the country having jurisdiction over the station
- If an administration has information of an infringement (CS Art. 45, RR15.1) committed by a station under its jurisdiction, the administration shall ascertain the facts and take the necessary actions

# PROCEDURE TO RESOLVE HARMFUL INTERFERENCE (Section VI of RR Art. 15)



*It is essential that Member States exercise the utmost goodwill and mutual assistance! (RR15.22)*





# INTERNATIONAL MONITORING

- Administrations shall cooperate in the detection and elimination of harmful interference, using if necessary the international monitoring system
- In the case where an administration has difficulty in identifying a source of harmful interference in the HF bands and asks the assistance of BR
- BR shall request the cooperation of administrations or stations of the international monitoring system that may be able to help in identifying the source of harmful interference
- List of International Monitoring Stations – List VIII (last edition, Dec. 2019)



# Monitoring Programme band 406-406.1 MHz (Resolution 205, COSPAS-SARSAT)

YOU ARE HERE [HOME](#) > [ITU-R](#) > [TERRESTRIAL SERVICES](#) > [MONITORING](#) > MONITORING PROGRAMME BAND 406-406.1 MHZ (RESOLUTION 205, COSPAS-SARSAT)

SHARE    

## Measurement Reports Received from Administrations

Date of receipt	Administration	Report	Emissions observed	Location of transmitters
21/10/2020	USA	<a href="#">RES205-USA-2020-09</a>	4	CHN,INS,MEX,PNG
09/10/2020	F	<a href="#">RES205-F-2020-09</a>	8	ALG,RUS,SYR,UKR
01/10/2020	CHN	<a href="#">RES205-CHN-2020-09</a>	5	CHN,INS
22/09/2020	USA	<a href="#">RES205-USA-2020-08</a>	6	CHL,CHN,INS,MEX,PNG
20/09/2020	TUR	<a href="#">RES205-TUR-2020-08</a>	7	CYP,RUS
15/09/2020	F	<a href="#">RES205-F-2020-07-08</a>	20	ALG,RUS,SYR
01/09/2020	CHN	<a href="#">RES205-CHN-2020-08</a>	5	CHN,INS
19/08/2020	TUR	<a href="#">RES205-TUR-2020-07</a>	6	RUS,SYR
02/08/2020	CHN	<a href="#">RES205-CHN-2020-07</a>	3	CHN
21/07/2020	USA	<a href="#">RES205-USA-2020-06</a>	5	CHN,INS,MEX,PNG

Site ID Number (2)	Location				Search Area Radius (km) (6)	Mean Lat. d.dd°	Mean Lon. d.dd°	Mean Freq. (MHz) (9)	Mod. Charact. (3)	Impact on System (4)	Month. detect. ratio (5,6) (min reported: xx%)	Dates of Observations (yyymmdd)		Times and Days of Week of Occurrences				Number of Observations			
	Country	Nearest City	Dir from Nearest City	Dist (km)								First Date	Last Date	Date	Day of Week	Start Time	End Time		Current Period	Total	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
366249816 (366247071)	Indonesia	Jayapura City	E	30	13	-2,574	141,001	406,065			0,64	191110	201005							151	1553
366249816 (366247071)	Papua New Guinea	Wutung	N	4	13	-2,574	141,001	406,065			0,64	200302	201005							151	1051

## Monitoring Programme band 406-406.1 MHz (Resolution 205, COSPAS-SARSAT)

This page provides consolidated information extracted from the reports received from Administrations participating in the monitoring programme in the band 406-406.1 MHz in application of Resolution 205(Rev. WRC-19). The objective of this programme is to identify and locate unauthorized emissions in the band 406-406.1 MHz that cause harmful interference to the reception of satellite EPIRB signals of the COSPAS-SARSAT system.

Upon receipt of the reports, the Radiocommunication Bureau immediately contacts the Administrations responsible for the area where the unauthorized transmitters are located, requesting them to take immediate action with a view to stopping the emissions.

For further information on the use of this system, click [here](#).

### DATABASE CONTAINING ALL REPORTS RECEIVED BY THE BR (SINCE 2008/01/01)

Please define the criteria for data retrieval:

Observer Administration:  Geographical area of unauthorized emissions:   
 Frequency range: from  MHz to  MHz Site ID:

Geographical location: Latitude(DD.DDD):  Longitude(DD.DDD):  Radius(km):

Date of observation: From:   To:    Paged Results

Total Number of observations retrieved: 3039

# BR ASSISTANCE IN A CASE OF HARMFUL INTERFERENCE

BR studies :

- Appendix 10 Report
- Content of the Master Register (status of the assignments, results of the examination carried out at that time with respect to the assignments, etc.)
- Content of the Plan if the concerned band is subject to a plan
- Causes of the interference, considering all the facts communicated and any information received concerning the operational parameters of the stations

# BR ASSISTANCE IN A CASE OF HARMFUL INTERFERENCE

- If necessary, BR may also request the cooperation of stations on the International Monitoring List
- BR will forward to the administrations concerned its findings and recommendations
- If requested by the affected administration, BR prepares a report to RRB for unresolved interference
- If not resolved despite the RRB's action, the case may be reported to WRC

# CONCLUSIONS

- The main objective of the RR is to prevent harmful interference
- Notify assignments that can cause harmful interference
- Monitoring is an essential part of a Spectrum Management System
- Radio waves do not stop at borders, coordinate before operating
- Goodwill and mutual assistance to resolve harmful interference

# Thank you!

Ben BA, Head Terrestrial Publication and Registration Division

ITU – Radiocommunication Bureau

Questions to [WRS\\_terrestrial@itu.int](mailto:WRS_terrestrial@itu.int)



## APPENDIX 9

## Report of an irregularity or infringement

(See Article 15, Section V)

*Particulars concerning the station infringing the Radio Regulations:*

- 1 Name<sup>1</sup> if known (in BLOCK letters) .....
- 2 Call sign or other identification (in BLOCK letters) .....
- 3 Nationality, if known .....
- 4 Frequency used (kHz, MHz, GHz or THz) .....
- 5 Class of emission<sup>2</sup> .....
- 6 Class of station and nature of service, if known .....
- 7 Location<sup>3, 4, 5</sup> .....

*Particulars concerning the station, the centralizing office or inspection service reporting the irregularity or infringement:*

- 8 Name (in BLOCK letters) .....
- 9 Call sign or other identification (in BLOCK letters) .....
- 10 Nationality .....
- 11 Location<sup>3, 4</sup> .....

*Particulars of the irregularity or infringement:*

- 12 Name<sup>6</sup> of the station (in BLOCK letters) in communication with the station committing the irregularity or infringement .....
- 13 Call sign or other identification (in BLOCK letters) of the station in communication with the station committing the irregularity or infringement .....

- 14 Date and time<sup>7</sup> .....
- 15 Nature of the irregularity or infringement<sup>8</sup> .....
- 16 Extracts from ship log or other information supporting the report .....

*Particulars concerning the transmitting station interfered with<sup>9</sup>:*

- 17 Name of the station (in BLOCK letters) .....
- 18 Call sign or other identification (in BLOCK letters) .....
- 19 Frequency assigned (kHz, MHz, GHz or THz) .....
- 20 Frequency measured at the time of the interference .....
- 21 Class of emission<sup>2</sup> and bandwidth (indicate whether measured or estimated, or indicate the necessary bandwidth notified to the Radiocommunication Bureau) .....
- 22 Receiving location<sup>3, 4</sup> (in BLOCK letters) where the interference was experienced .....
- 23 Certificate:

I certify that the foregoing report represents, to the best of my knowledge, a complete and accurate account of what took place.

Signatures<sup>10</sup> ..... Date: .....

.....





AP10-1

APPENDIX 10 (REV. WRC-07)

Report of harmful interference

(See Article 15, Section VI)

Particulars concerning the station causing the interference:

*a* Name, call sign or other means of identification .....

*b* Frequency measured .....

Date: .....

Time (UTC): .....

*c* Class of emission<sup>1</sup> .....

*d* Bandwidth (indicate whether measured or estimated) .....

*e* Measured field strength or power flux-density<sup>2</sup> .....

Date: .....

Time (UTC): .....

*f* Observed polarization .....

*g* Class of station and nature of service .....

*h* Location/position/area/bearing (QTE<sup>3</sup>) —WRC-07 .....

*i* Location of the facility which made the above measurements .....

Particulars concerning the transmitting station interfered with:

*j* Name, call sign or other means of identification .....

*k* Frequency assigned .....

<sup>1</sup> The class of emission shall contain the basic characteristics listed in Appendix 1. If any characteristic cannot be

AP10-2

*l* Frequency measured .....

Date: .....

Time (UTC): .....

*m* Class of emission<sup>1</sup> .....

*n* Bandwidth (indicate whether measured or estimated, or indicate the necessary bandwidth notified to the Radiocommunication Bureau) .....

*o* Location/position/area .....

*p* Location of the facility which made the above measurements .....

Particulars furnished by the receiving station experiencing the interference:

*q* Name of station .....

*r* Location/position/area .....

*s* Dates and times (UTC) of occurrence of harmful interference .....

*t* Bearings (QTE<sup>5</sup>) or other particulars —WRC-07 .....

*u* Nature of interference .....

*v* Field strength or power flux-density of the wanted emission at the receiving station experiencing the interference<sup>6</sup> .....

Date: .....

Time (UTC): .....

*w* Polarization of the receiving antenna or observed polarization .....

*x* Action requested .....

NOTE – For convenience and brevity, telegraphic reports shall be in the format above, using the letters in the order listed in lieu of the explanatory titles, but only those letters for which information is provided should be used. However, sufficient information shall be provided to the administration receiving the report, so that an appropriate investigation can be conducted.

