



International Civil Aviation Organization

MIDANPIRG Communication, Navigation and Surveillance Sub-Group

Eighth Meeting (CNS SG/8)
(Cairo, Egypt, 26 - 28 February 2018)

Agenda Item 3: Global Developments related to CNS

FREQUENCY MANAGEMENT

(Presented by Secretariat)

SUMMARY

This paper presents the outcome of the WRC/19 Preparatory Workshop for the EUR/NAT and MID Regions, and provides update on the usage of ICAO Frequency Finder tool.

Action by the meeting is at paragraph 3.

REFERENCES

- ICAO State Letter Ref.: E 3/5-16/90
- MIDANPIRG/16 Report
- Report of the WRC-19 Preparatory Workshop for the EUR/NAT and MID Regions

1. INTRODUCTION

1.1 ICAO Assembly Resolution A38-6 (Support of the ICAO policy on radio frequency spectrum matters), urges Member States, international organizations and other civil aviation stakeholders to support aviation requirements for spectrum and instructs ICAO to make sufficient resources available to enable increased participation in spectrum management activities.

1.2 Protecting aeronautical access to appropriately protected spectrum for radio-communication and radio-navigation systems can significantly support current and future safety-of-flight applications.

2. DISCUSSION

Outcome of the WRC-19 Preparatory Workshop

2.1 The meeting may wish to recall that ICAO Position for the ITU WRC-19 was initially developed in 2016 with the assistance of the Frequency Spectrum Management Panel (FSMP). The ICAO position was submitted to States and relevant international organizations, through State Letter E 3/5-16/90 dated 1 December 2016.

2.2 As a preparatory activity at Regional level for the WRC-19; the WRC/19 Preparatory Workshop for the EUR/NAT and MID Regions was held in the ICAO EUR/NAT Regional Office, Paris, France on 11 and 12 September 2017.

2.3 The Workshop was attended by total of forty-nine (49) participants from twenty-four (24) States, and nine (9) International Organizations and industry partners. Four (4) states (Egypt, Lebanon, Saudi Arabia, and Sudan) from the MID Region participated in the Workshop.

2.4 The objective of the Workshop was to raise awareness of aviation relevant frequency spectrum issues being deliberated within the ITU and Regional frequency spectrum preparatory process and to educate participants in how they can contribute effectively to this process.

2.5 The Workshop discussed the following topics:

- a) The outcome of WRC-15 and discussion of preparations for future WRCs.
- b) WRC-19 preparations: Aviation related topics and action plans to be implemented at the national and regional levels.
- c) Spectrum issues and challenges.
- d) The reality of frequency management, current practices and new challenges.

2.6 The Report of the WRC/19 Preparatory Workshop is at **Appendix A**.

Frequency Finder Tool

2.7 ICAO has started rolling out the Frequency Finder tool. This tool provides the option to maintain ICAO Global COM list 3 database for VHF COM frequency assignments in the band 117.975 – 137 MHz.

2.8 The meeting may wish to recall that MIDANPIRG/16 urged States to use the Frequency Finder for requesting the allocation and deletion of frequencies from the COM list 3 and to implement the following Recommendations:

- verify and update existing registered frequencies in the COM list;
- add any missing frequencies with the full details and links to FIR, where applicable;
- add Extended Range identification, where applicable;
- delete unused frequencies;
- identify to the Regional Office for deletion purposes the duplicate frequencies contained in the other Region list (e.g. EUR/AFI);
- send the changes in excel format generated by the FF export function; and
- send new frequency proposals using the excel format generated by the FF.

2.9 The meeting may wish to note that new version of Frequency Finder tool has been developed. The tool and the complete documentation are available at: <https://www.icao.int/safety/FSMP/Pages/Documents.aspx>

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information in this paper and **Appendix A**;
- b) urge States to take into consideration the ICAO Position, to the maximum extent possible, in their preparatory activities for the WRC/19; and
- c) install and use the latest version of Frequency Finder Tool for frequency management.



INTERNATIONAL CIVIL AVIATION ORGANIZATION

European and North Atlantic Office

**REPORT OF THE WRC-19 PREPARATORY WORKSHOP FOR THE EUR/NAT AND MID
REGIONS**

11 – 12 SEPTEMBER 2017 - ICAO EUR/NAT OFFICE, PARIS, FRANCE,

1. Introduction

1.1 A Regional Preparatory Workshop for the EUR/NAT and MID Regions was held in the ICAO EUR/NAT Regional Office, Paris, France on 11 and 12 September 2017.

1.2 The Workshop was organized in conjunction with the Fifth Meeting of the Working Group of the Frequency Spectrum Management Panel (FSMP-WG/5), 4 – 8 September and the 23rd meeting of the EANPG Frequency Management Group (FMG/23), 13 – 15 September 2017. The objective of the Workshop was to raise awareness of aviation relevant frequency spectrum issues being deliberated within the ITU and Regional frequency spectrum preparatory process and to educate participants in how they can contribute effectively to this process.

2. Attendance

2.1 The Workshop was attended by 49 participants from 24 States, and 9 International Organizations and industry partners. The list of participants is at **Attachment 1**.

3. Opening of the Workshop

3.1 On behalf of ICAO, Mr. Loftur Jonasson, the Secretary of the Frequency Spectrum Management Panel, welcomed all participants. He highlighted the importance of continued access to interference free spectrum as a critical enabler for the aviation safety critical communications, navigation and surveillance (CNS) functions and that this continued access could only be ensured through active coordination with national radio regulators and the participation of aviation CNS professionals, from States and Industry, in the ITU World Radiocommunication Conference process.

3.2 After initial introductions of all participants, Mr. Mike Biggs, Chairman of the Frequency Spectrum Management Panel, was elected as the chair for the Workshop. Mr. Biggs emphasized the purpose of the Workshop and further emphasized that participants need to create relationships with their radio regulators and give them regular updates on the items of interest to aviation.

4. Workshop Agenda

- 4.1 The Workshop Agenda, as attached to the letter of invitation was adopted without change.
1. Introduction, including the outcome of WRC-15 and discussion of preparations for future WRCs
 2. WRC-19 preparations: Aviation related topics and action plans to be implemented at the national and regional levels
 3. Spectrum issues and challenges, not on the specific agenda for WRC-19
 4. The reality of frequency management, current practices and new challenges
 5. Any other business

5. Organization, Working arrangement, Language and Documentation

5.1 The Workshop was conducted as a single body. The working language was English inclusive of all documentation and this report. **Attachment 2** contains a hyperlinked list of presentations.

Agenda Item 1: Introduction to Aviation Spectrum and ITU/WRC Process

1.1 Under this agenda item, the Workshop reviewed the requirement of aeronautical spectrum management and the role of aviation within the ITU WRC process ([WRC19Wrkshp11](#)). States/Administrations were invited to take note of [Assembly Resolution A38-6](#), which provides detailed

guidance on how to support and promote the [ICAO Position for WRC-19](#), as required to ensure continued sufficient and interference free access to frequency spectrum required for aeronautical communications, navigation and surveillance safety services. The importance of close cooperation with the State Spectrum Regulators to ensure that aeronautical concerns are sufficiently addressed in any action taken by WRC-19 was highlighted.

Agenda Item 2 – WRC-19 preparations; Aviation related topics and action plans to be implemented at the national and regional levels. Review of relevant agenda items

2.1 The Chair of the Workshop, Mr. Michael Biggs, FAA USA, presented an overview of all aviation relevant agenda items of significance for civil aviation to be addressed by the next WRC (WRC-19) ([WRC19Wrkshp12](#)).

2.2 A detailed overview of the ITU preparatory process towards WRC-19 was presented by Mr. Nikolai Vassiliev, ITU ([WRC19Wrkshp13](#)).

2.3 The Workshop also reviewed a number of presentations on the WRC-19 agenda items relevant to aviation:

- WRC-19 Agenda Item 1.10 – GADSS (Mr. Claude Pichavant, Airbus, [WRC19Wrkshp23](#), and Mr. John Mettrop, UK CAA, [WRC19Wrkshp24](#));
- WRC-19 Agenda Item 9.1.4 – Stations on –board sub-orbital vehicles (Mr. John Mettrop, UK CAA, [WRC19Wrkshp21](#))
- WRC-19 agenda items which may negatively affect spectrum access for aeronautical systems (1.7, 1.8, 1.9, 1.11, 1.12, 1.13, 1.14, 1.16, 9.1.3, 9.1.6) (Mr. Andrew Roy, ASRI, [WRC19Wrkshp22](#))

2.4 The Workshop also reviewed the current status of WRC-19 preparations within the ICAO EUR/NAT, MID and APAC Regions and how those match up with the ICAO Position:

- Status of CEPT preparations for WRC-19 (Mr. Stephen Parry, UK NATS, [WRC19Wrkshp41](#));
- Arab Spectrum Management Group (ASMG) and Agenda Items of WRC-19 (Mr. Alaa Mohammad Alturki, SANS, Saudi Arabia, [WRC19Wrkshp42](#))
- APT preliminary views for WRC-19 (Mr. Eddy D’Amico, Airservices Australia, [WRC19Wrkshp43](#))

Agenda Item 3: Spectrum issues and challenges, not on the specific agenda for WRC-19

3.1 A number of spectrum relevant issues not on the specific agenda for WRC-19 were reviewed under this agenda item. While some of these items will be reflected on the agenda of future WRCs, such as WRC-23 (2023), there are other items which are currently being pursued on a Regional basis, outside of the WRC process, this includes for instance the potential issue of the 960 - 1 164 MHz frequency band (DME, SSR, ADS-B...) being shared by wireless audio equipment (microphones, in-ear monitors) used for Programme Making and Special Events (PMSE).

3.1.1 Challenges in protecting the aeronautical radio altimeter band (4 200 – 4 400 MHz) were discussed, highlighting the importance of the radio altimeter as an essential enabler for precision approach, landing and ground proximity and collision avoidance. Sharing of the radio altimeter band with systems providing Wireless-Avionics Intra-Communications, a wireless point-to-point intra-aircraft system providing safety

critical functions, was also explored. Potential harmful interference to the radio altimeters due to future WRC decisions was highlighted (Joseph Cramer, Boeing USA, [WRC19Wrkshp25](#)).

3.1.2 The development of wireless link applications for Small Unmanned Aircraft Systems for disaster relief and related functions was explored (Dr. Fumie Ono, NICT Japan, [WRC19Wrkshp51](#)).

3.1.3 Current SARPs and radioregulatory issues around using the fixed satellite service (FSS) for the RPAS C2 link were discussed (Mr. Michael Neale, Aces Inc, USA, [WRC19Wrkshp31](#)), and a potential solution co-using the existing AMS(R)S allocation in the 5 GHz band (5 030 – 5 091 MHz) for both line-of-sight (terrestrial) and beyond-line-of-sight (satellite) was introduced (Mr. Christian Peyrotte, Thales Alenia Space, France, [WRC19Wrkshp53](#))

3.1.4 CEPT deliberations on the potential accommodation of wireless microphones and in-ear monitors, Programme Making and Special Events (PMSE), targeting to share the 960 – 1164 MHz band were discussed (Mr. Raffi Khatcherian, EUROCONTROL, [WRC19Wrkshp52](#)). Workshop participants agreed that this is of great concern to aviation due to the potential safety risks if this band is shared without sufficient technical testing and regulatory regime to ensure the protection of the Secondary Surveillance Radar, Traffic Collision Avoidance System, Distance Measuring Equipment and other safety critical aeronautical systems operating in this frequency band. Participants were encouraged to engage with their radio regulatory authorities to ensure that the issue is understood and addressed appropriately.

3.1.5 GNSS Radio Frequency Source Localization was discussed (Gerhard Berz, EUROCONTROL, [WRC19Wrkshp54](#)) and the new ICAO GNSS RFI mitigation plan contained in the latest version of ICAO Doc 9849 was introduced. In addition to being reactive, GNSS interference threat monitoring needs also to be proactive through risk assessment and the deployment of mitigation measures.

Agenda Item 4: The reality of frequency management, current practices and new challenges

4.1 Under this agenda item the work programme of the European Air Navigation Planning Group (EANPG) Frequency Management Group (FMG) was introduced (Torsten Jacob, DFS Germany, [WRC19Wrkshp62](#)). Implementation issues experienced with VHF Digital Link Mode 2 in Europe were discussed and the European frequency planning database (SAFIRE) was introduced as well as the future modernization of the European Regional planning and guidance material (EUR Doc 011). Other current and relevant issues in the Region, including DME and GNSS compatibility in the 1164 – 1215 MHz band (Gerhard Berz, EUROCONTROL, [WRC19Wrkshp61](#)) were discussed and an update was provided on the status of 8.33 kHz channel DSB-AM implementation in Europe (Jacky Pouzet, EUROCONTROL, [WRC19Wrkshp63](#)).

Agenda Item: 5: Any other business

5.1 The Workshop took note of the planned alignment of the ICAO and ITU databases for VHF com frequencies (117.975 – 137 MHz), leveraging the data contained in the ICAO global frequency database (Com List 3), which is an integral component of the new ICAO frequency assignment planning software “Frequency Finder” (Nikolai Vassiliev, ITU, [WRC19Wrkshp64](#)).

Attachment 1, List of Participants

ALGERIA

Adel BENAZZOUZ
Benseddik YAHIA

AUSTRALIA

Eddy D'AMICO

BELARUS

Vadzim SIHAI

CANADA

John TAYLOR

CZECH REPUBLIC

Martin LEHKY

EGYPT

Mohammed Ahmed Mahmoud FARID
Ahmed Mahmoud ISMAIL

FRANCE

Christian FLEURY
Alexandre GUIGNOT
Moustaph SOUMARE

GERMANY

Torsten JACOB
Dominik MEYER

HUNGARY

Janos BUKI

ISRAEL

Ron HOVAV

JAPAN

Fumie ONO
Takeshi TOMODA

LATVIA

Edgars DREIJERS

LEBANON

Wissam EID
Mohamad SAAD

MOROCCO

Sara TOUIL

PHILIPPINES

Charlemagne GILO

POLAND

Karol KAZMIERCZAK

SAUDI ARABIA

Alaa ALTURKI

SUDAN

Ahmed Abdelgabier Mohamed KARRAR

SLOVAKIA

Miron MISANIC

SWEDEN

Morgan SUNDELL

SWITZERLAND

Jésus MARTIN

TURKEY

Firat GULERSES
Göhkan HUZMELI
Haluk OZER

UNITED KINGDOM

Alistair GIBSON
John METTROP
Stephen PARRY

USA

Louis BELL
Michael BIGGS

AIRBUS

Claude PICHAVANT

ASECNA

Eric Armand DAMIBA
Bissa SOUGUE

ASRI

Andrew ROY

BOEING

Joseph CRAMER

EMBRAER

Luis Fernando DE SOUZA

EUROCONTROL

Gerhard BERZ
Raffi KHATCHERIAN
Jacky POUZET

ITU

Nikolai VASSILIEV

THALES

Christian PEYROTTE

ICAO

Robert WITZEN
Loftur JONASSON

Attachment 2, List of Presentations

- [WRC19Wrkshp11](#) – Aviation Frequency Spectrum and the ITU World Radiocommunication Conferences (WRC), Loftur JONASSON, ICAO
- [WRC19Wrkshp12](#) – ICAO Position for ITU WRC-19 Mike BIGGS, FAA USA
- [WRC19Wrkshp13](#) – ITU Preparatory Process towards WRC-19 Nikolai Vassiliev, ITU
- [WRC19Wrkshp21](#) – Stations on-board sub-orbital vehicles (space planes) John METTROP, UK CAA
- [WRC19Wrkshp22](#) – WRC-19 Agenda Items for other issues Andrew ROY, ASRI USA
- [WRC19Wrkshp23](#) – GADSS in depth – Airbus views on the Global Aeronautical Distress and Safety System Claude PICHAVANT, Airbus France
- [WRC19Wrkshp24](#) – Global Aeronautical Distress & Safety System (GADSS) Radio Regulatory provisions John METTROP, CAA UK
- [WRC19Wrkshp25](#) – Protection of Radio Altimeter and Wireless Avionics Intra-Communications systems Joseph Cramer, Boeing USA
- [WRC19Wrkshp31](#) – Use of the Fixed Satellite Service for RPAS C2 link (ITU Resolution 155 (WRC-15)) Michael Neale, Aces Inc USA
- [WRC19Wrkshp41](#) – Regional preparations for WRC-19, CEPT Stephen Parry, NATS UK
- [WRC19Wrkshp42](#) – Regional preparations for WRC-19, ASMG Alaa Mohammad Alturki, SANS Saudi Arabia
- [WRC19Wrkshp43](#) – Regional preparations for WRC-19, APT Eddy D'Amico, Airservices Australia
- [WRC19Wrkshp51](#) – Development of Wireless Applications for small UAS in Japan Fumie Ono, NICT Japan
- [WRC19Wrkshp52](#) – CEPT deliberations on the Potential accommodation of wireless Microphones and In-Ear Monitors (Programme Making and Special Events (PMSE)), in the 960 – 1164 MHz band Raffi Khatcherian, EUROCONTROL
- [WRC19Wrkshp53](#) – A potential new aeronautical mobile satellite route service system in the 5 GHz band for the RPAS C2 link Christian Peyrotte, Thales Alenia Space, France
- [WRC19Wrkshp54](#) – GNSS RFI Source Localization Gerhard Berz, EUROCONTROL

- [WRC19Wrkshp55](#) – RF Interference Detection and Mitigation
Mike BIGGS, FAA USA
- [WRC19Wrkshp62](#) – EANPG Frequency Management Group (FMG)
and VHF Datalink implementation issues
Torsten Jacob, DFS Germany
- [WRC19Wrkshp61](#) – DME and GNSS compatibility in the 1164 – 1215 MHz
band
Gerhard Berz, EUROCONTROL
- [WRC19Wrkshp63](#) – 8.33 kHz Implementation Progress Report
Jacky Pouzet, EUROCONTROL
- [WRC19Wrkshp64](#) – Alignment of ITU and ICAO Databases
Nikolai Vassiliev, ITU

-END-