



*International Civil Aviation Organization*

## **Frequency Management WG/1 Virtual Meeting**

*(Tuesday, 28 July 2020 & Wednesday, 29 July 2020)*

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### **1. INTRODUCTION**

1.1 First meeting of the Frequency Management Working Group (FM WG/1) Virtual Meeting was held on Tuesday 28 July 2020 & Wednesday, 29 July 2020, using Zoom facility.

1.2 The meeting was attended by a total of 47 Participants from 12 States (Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, S. Arabia, Syria and UAE) and 1 Organization (GCC). The list of participants is at **Attachment A**.

### **2. AGENDA**

2.1 The meeting adopted the following Agenda:

- **Agenda Item 1:** Adoption of the Provisional Agenda
- **Agenda Item 2:** Follow-up on MIDANPIRG/17 Conclusions and Decisions relevant to the Frequency Management
- **Agenda Item 3:** Update on Frequency Finer tool
- **Agenda Item 4:** Spectrum capacity assessment for the frequency band 108 – 117.975 MHz
- **Agenda Item 5:** Future Work Programme

### **3. OPENING**

3.1 Mrs. Muna Alnadaf (RO/CNS), welcomed all participants and thanked them for accepting the invitation to join the meeting.

3.2 The RO/CNS delivered two PPTs covering the topics of the Agenda. The two PPTs are at **Appendix A & B**, respectively.

### **4. DISCUSSION**

#### ***AI 1: Adoption of the Provisional Agenda***

4.1 The meeting reviewed and adopted the Agenda as at Para. 2 of this report.

#### ***AI 2: Follow-up on MIDANPIRG/17 Conclusions and Decisions relevant to the Frequency Management***

4.2 The meeting noted the status of the MIDANPIRG/17 Conclusions and Decisions relevant to Frequency Management and the follow-up actions taken.

***AI 3: Update on Frequency Finder tool***

4.3 The meeting reviewed frequency coordination process and highlighted the need to use ICAO frequency finder tool.

4.4 The meeting was provided with the latest version of the FF Tool. The meeting was apprised of the new development of NAV module.

4.5 The meeting agreed that inaccurate frequency assignment parameters may result in either:

- Overprotection of the desired facility or,
- Erroneous incompatibility of current frequency assignments

4.6 The meeting noted that ICAO MID office issued a state letters Ref: AN7/5.7-20/117 dated 21 May requesting States to review and update the registered frequencies in the ICAO COM List2 (VHF Navigation aids). Replies received from 12 States (Bahrain, Egypt, Iraq, Iran, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syria and UAE). Accordingly, the meeting agreed to the following Draft Conclusion:

***DRAFT CONCLUSION (1/1): FREQUENCY COORDINATION PROCESS IN THE MID REGION***

*That, in order to enhance the frequency coordination process in the MID Region, States be invited to:*

- a) use the latest version of the FF tool in frequency coordination process;*
- b) provide ICAO with updated frequency list for COM VHF and NAV (with accurate information);*
- c) provide feedback on the FF tool;*
- d) nominate Frequency Management Focal Points, if not yet done so; and*
- e) participate actively in the frequency management workshop planned for 2021*

***AI 4: Spectrum capacity assessment for the frequency band 108 – 117.975 MHz***

4.7 The meeting was apprised of the study performed to assess the spectrum availability for VHF NAV systems (ILS/DME and VOR/DME) operating in the frequency band 108 – 117.975 MHz , with the view to:

- Determine the need for a full implementation of 50 kHz channel spacing
- Identify areas where future implementation of ILS or VOF systems may be difficult.

4.8 The meeting noted that from the simulation, it can be concluded that currently in the MID Region in the area around the UAE as well as in the northern part of the MID Region the frequency band is heavily congested or saturated for ILS/DME and VOR/DME frequency assignments. Furthermore, it was mentioned that further simulation is being prepared. The meeting agreed that congestion in the areas identified may raise questions with regard to additional implementation of requirements for GBAS/VDB frequency assignments in these areas.

4.9 The meeting agreed on the need to develop long-term Frequency Assignment Plan in the MID Region to secure adequate spectrum for VHF NAV facilities for the near future. Accordingly, the meeting agreed to the following Draft Conclusion:

***DRAFT CONCLUSION I/2: LONG-TERM FREQUENCY ASSIGNMENT PLAN IN THE MID REGION***

*That, in order to secure adequate spectrum for VHF-COM, ILS, VOR, DME and GBAS/VDB facilities and meet the operational requirements up to 2030, the Frequency Management Ad-hoc Working Group (FM WG) is tasked with the development of a rolling frequency assignment plan in coordination with concerned parties*

***AI 5: Future Work Programme***

4.10 Taking into consideration, the planned ICAO MID Regional events, which are of relevance to the activity of the Frequency Management Working Group, in particular the MIDANPIRG/18 meeting and the Frequency Management Workshop, it was agreed that the FM WG/2 meeting be held tentatively during the third quarter of 2021 back to back with Frequency Management Workshop in Morocco.

4.11 The meeting noted that GCC States had requested ICAO to conduct frequency management workshop for GCC States in UAE. The workshop has been rescheduled to 2021. The meeting agreed to conduct a webinar on frequency finder tool to provide an overview about frequency management principles and the functions of the ICAO frequency finder tool with the support of experts from MID States and ICAO HQ. Accordingly, the meeting agreed to the following Draft Conclusion:

***DRAFT CONCLUSION I/3: FREQUENCY MANAGEMENT WEBINAR***

*That, in order to raise awareness on ICAO frequency management principles and the functions of Frequency Finder (FF) tool, a Frequency Management Webinar be conducted in Q4-2020 with the support of experts from the MID Region and ICAO HQ.*

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# First meeting of the Frequency Management Working group (FM WG/1)

Virtual meeting



28-29/7/2020

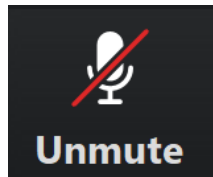
Day 1 presentation



# Welcome & Introduction



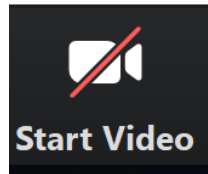
# Meeting Notes



**Unmute**

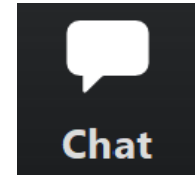
Keep Mic muted

Unmute your mic only when invited to speak



**Start Video**

Switch off camera if the quality of Internet is not good

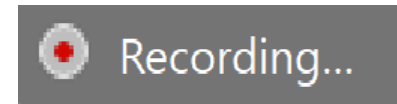


**Chat**

use "Raise hand" or chat box if you wish address question or comment



Raise Hand



Meeting is recorded



# Group Photo



A screenshot of a Zoom meeting grid showing 63 participants. The grid is organized into rows and columns. Each tile contains a video feed of a participant, their name, and a small red icon indicating their status (e.g., muted, video off). The participants' names include: Sharron Caunt, Stefano Baronci, Robert Roxbrou, speed ahmed b., Amer, emasa, Youns, Mohammed Ar..., Rashad Karaky, Walid Elhoss, Mubarak Al-Ghelani, Souhail DALLEL, Gary Leung ACI, Ali Ahmed, Mohermad Hu..., Hussain Alyami, galhamadi, Ahmed Al-Jalaf..., SL Wong ACI, Mohamed Thami, Fateh Bekhti, Shayne Campbe..., Jack Netskar, A.M.R. Arjoub11..., Ahmad Amireh, nasser al-sowaidi, Mohamed Ghakib, Walid Rahmani, Ahmad Amireh, CANSO Nico Vo..., Haitham Misto, manal fares, Hamed Al-Abri, Ahmad Kaveh, Khaled Antar, Bander Almgbel, Mohammed Na..., faqirj, Mr MANAR, Abdul Wahab T..., Manal DIAB, Abdullah Alomair, Dr. Bader Al Sagri, radhouan aissa..., Amany Habashy, Sue Kodsi, Mashhor Alblowi, Mohammed Na..., A.M.R. Arjoub11..., Hamed Al-Abri, Ahmad Amireh, Kamal Riyadh A..., room:MD@icao.int, Sonia ElSakka, Sharron Caunt..., Stefano Baronci..., Robert Roxbrou..., Ahmed Al-Jalaf..., Dr. Bader Al Sagri, Abdullah Alomair, Youns, Bander Almgbel, Rashad Karaky, Walid Elhoss, Mubarak Al-Ghelani, Souhail DALLEL, Gary Leung ACI, Haitham Misto, Ali Ahmed, Hussain Alyami, Mohammed Alr..., SL Wong ACI, Mohamed Thami, Fateh Bekhti, Shayne Campbe..., Jack Netskar, nasser al-sowaidi, radhouan aissa..., Scott F, CANSO Nico Vo..., Haitham Misto, Hamed Al-Abri, Mashhor Alblowi, Ahmad Kaveh, Walid Rahmani, Muna ALNADAF, Khaled Antar, faqirj, Mr. MANAR, Abdul Wahab T..., Manal DIAB, Abdullah Alomair.

At the bottom of the grid, there is a control bar with the following icons and labels: Unmute, Stop Video, Participants (63), Chat, Share Screen, Record, Reactions, and Leave Meeting.

## Meeting Agenda



- 1** Adoption of provisional agenda
- 2** Follow-up on MIDANPIRG/17 & MSG/6 conclusions relevant to FM
- 3** Update on frequency finder tool
- 4** Spectrum capacity assessment for the band 108-117.975 MHz
- 5** Future work programme
- 6** any other business





No.	Conclusions & Decisions	Concerns/ Challenges/ Rationale	Deliverables/ To be initiated by		Target Date	Status/ Remarks
C. 6/26	<p><b>Registered Frequency Update</b></p> <p>That, for an optimized frequency assignment process and in order to ensure that assigned frequencies to MID States are not interfering, States that have not yet done so, be urged to:</p> <ul style="list-style-type: none"> <li>a) verify and update existing registered frequencies in the COM list</li> <li>b) add any missing frequencies with the full details, where applicable;</li> <li>c) delete unused frequencies;</li> <li>d) send the changes in excel format generated by the FF export function; and</li> <li>e) provide the ICAO MID Office with feedback before 15 February 2019.</li> </ul>	To optimize frequency assignment process and reduce interferences	State Letter	ICAO	Dec. 2018	Actioned/Completed
			Registered frequency database is up to date	States	15 Feb. 2019	Replies received from <b>Bahrain, Egypt, Iraq, Kuwait, Qatar, Saudi Arabia, Sudan, and UAE</b>



No.	Conclusions & Decisions	Concerns/ Challenges/ Rationale	Deliverables/ To be initiated by		Target Date	Status/ Remarks
C. 6/25	<b>Frequency Management Workshop</b>  That, ICAO consider the organization of a Workshop on the Frequency Finder Tool jointly with ACAO in 2020.	To protect Aeronautical Spectrum, reduce interferences and optimize frequency assignment process	Frequency Management workshop	ICAO MID	2020	Ongoing

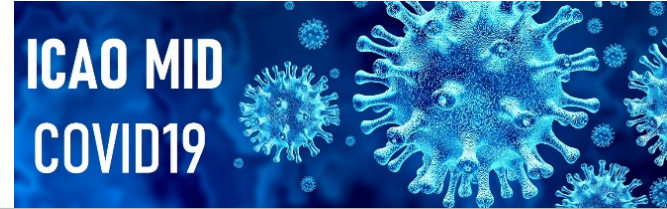
The ACAO/ICAO Frequency Management workshop is postponed to 1-5 November 2020 (Casablanca, Morocco)  
Back to back with the FM WG/2 meeting



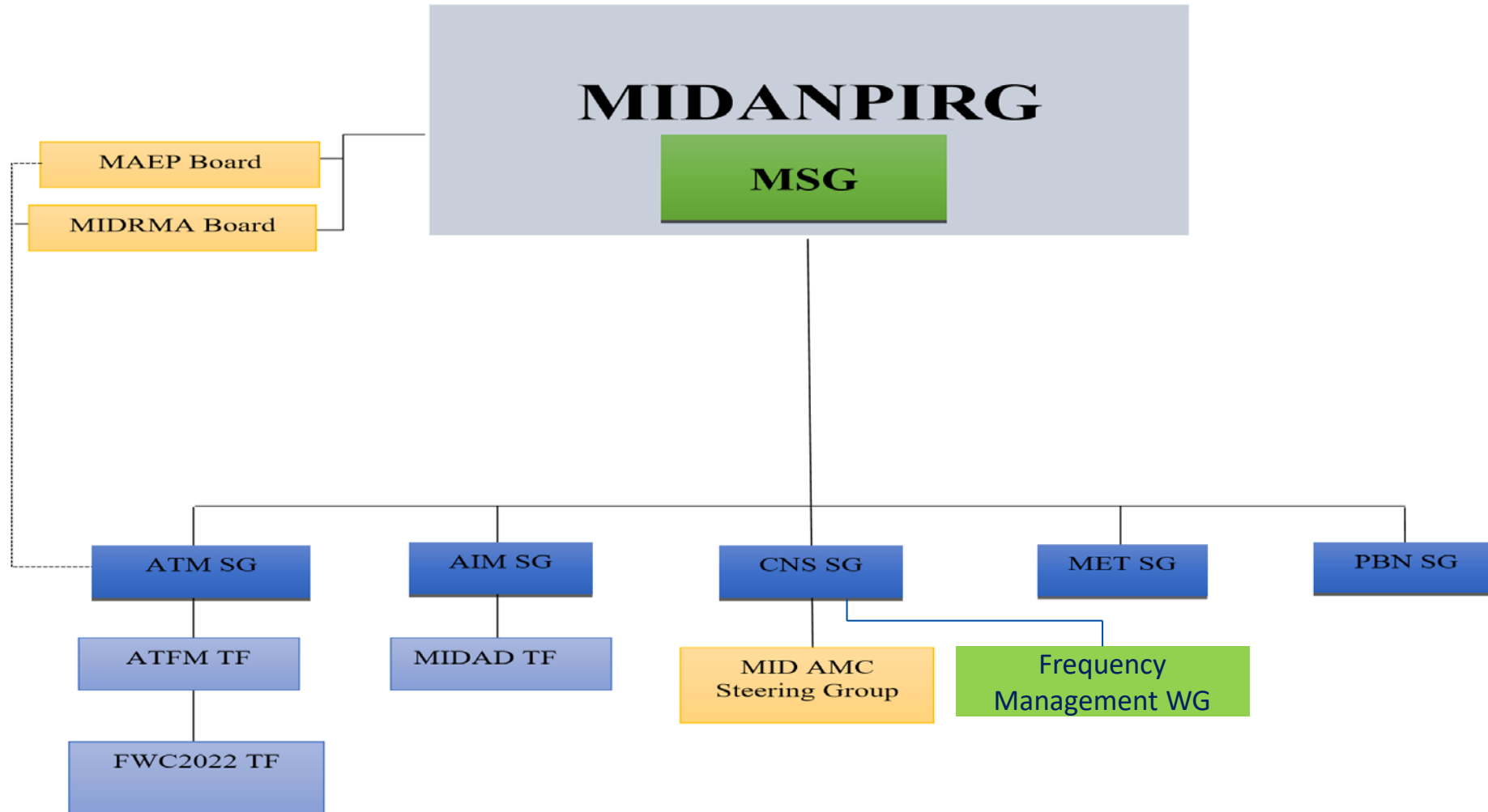
No.	Conclusions & Decisions	Concerns/ Challenges/ Rationale	Deliverables/ To be initiated by		Target Date	Status/ Remarks
C. 17/33	<p><b>FREQUENCY MANAGEMENT AD-HOC WORKING GROUP</b></p> <p>That, the Frequency Management Ad-hoc Working Group be established with Terms of Reference as at Appendix 6.2U.</p>	<p>To support States in fulfilling ICAO Radio Frequency Spectrum Requirements</p>	<p>State Letter</p>	<p>ICAO</p>	<p>August 2019</p>	<p><b>Actioned</b></p> <p>SL AN7/38 – 19/243 dated 6 Aug. 2019 (Replies: Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon Oman &amp; Qatar)</p> <p><i>First meeting of the FM WG/1 will be conducted via VTC in July 2020 to address urgent matters</i></p>



- The MIDANPIRG/17 meeting agreed to establish a Frequency Management Ad-hoc Working Group
- composed of representatives from States (CAA and TRA) to:
  - support States in fulfilling ICAO Radio Frequency Spectrum Requirements
  - develop MID Region frequency assignment plan
  - find solutions for the interference occurrences between MID States in a timely manner
  - 
  - 
  - etc.



MIDANPIRG ORGANIZATIONAL CHART





No.	Conclusions & Decisions	Concerns/ Challenges/ Rationale	Deliverables/ To be initiated by		Target Date	Status/ Remarks
C. 6/27	<p><b>FREQUENCY MANAGEMENT FOCAL POINTS</b></p> <p>That, States, that have not yet done so, be invited to assign Frequency Management Focal Points by 15 February 2019, for a better coordination of frequency management issues, including harmful interference.</p>	To resolve frequency interferences incidents in a timely manner	Frequency focal points	States	15 February 2019	<p>Actioned/completed</p> <p>SL Ref. AN 7/5.7 – 18/411 dated 19 December 2019</p> <p>Replies received from Bahrain, Egypt, Iraq, Jordan, Kuwait, Saudi Arabia, Sudan and UAE</p>



ICAO

UNITING AVIATION

## FM WG members



STATE	MEMBER	ALTERNATE
BAHRAIN	Mr. Ali Abdul Latif Tulefat	
	Mr. Yousif Bucheeri	
EGYPT	Mr. Ahmed Mostafa Mohamed Arman	Mr. Ahmed Abdel Wahab
		Mr. Ahmed saied abdel monsef
IRAN	Mr. Mojtaba Chatrooz	Mr. Ali Ashtiani
IRAQ	Eng. Ali Abd AL-Saheb Mahdi	
JORDAN	Eng. Amena Dodin	Eng. Neveen Askar
KUWAIT	Eng. Fahad Saleh Albaloushi	



STATE	MEMBER	ALTERNATE
LEBANON	ENG. AMIN JABER	ENG. MOHAMAD SAAD
LIBYA		
OMAN	MR. MUSLEH ABDULLAH AL JAHDHAMI	MR. SAID HUSSAIN AL BALUSHI
QATAR	MR. SALEH AL MANSOORI	MR. NAYIF AL JABER
SAUDI ARABIA	MR. TURKI YOUSEF	ENG. RIDAH SALAH DRIDI
SUDAN		
SYRIA	MR. NADIM SALIM	
UAE	ENG. JACOB AVIS	ENG. ABDELRAHMAN AL MUAINI
Yemen		



## Meeting Agenda

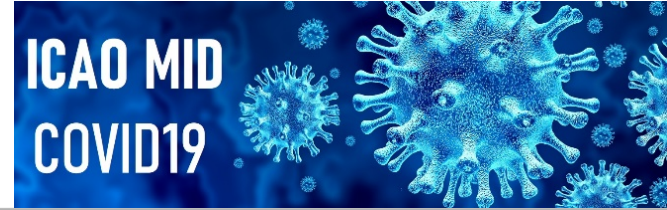


- 1** Adoption of provisional agenda
- 2** Follow-up on MIDANPIRG/17 & MSG/6 conclusions relevant to FM
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## Frequency coordination process

- The current practice of frequency coordination
  - a) Frequency coordination is **performed by the Regional Office**
  - b) **States/GCC can submit** to the Regional Office their requests for new or modified frequency assignments in **any format** (e.g. letter, email)
  
- The **introduction and use of the ICAO Frequency Finder tool** for the coordination of frequency assignments within the MID Region as well as with adjacent Regions has presented the opportunity to **improve the efficiency in the frequency coordination and frequency assignment processes**
  
- Harmful interference incidents management process.



## Frequency coordination process

➤ Preferred format:

Frequency Finder tool offer the option of **generating electronic submissions** for new or modified frequency assignments.

This option permits States to **check a selected frequency** to satisfy any operational need and to **check the compatibility** of this (proposed) frequency with other frequency assignments in the Frequency List.

The electronic submission(s), in the format of an **Excel file**, can be sent to the ICAO Regional Office



## Frequency Finder Tool (FF Tool)

- FF tool latest version (FF2020.04R) is provided with more functional modules, inter alia, new **VHF NAV and Mode S SSR II code** modules

<https://www.icao.int/safety/FSMP/Pages/Documents.aspx?RootFolder=%2Fsafety%2FFSMP%2FDocuments%2FFrequencyFinder&FolderCTID=0x012000B1461A5DA8C64241AA4DE4F91CB1D9AF&View=%7BE11C4C29%2DDDD83%2D4B87%2DAAAE%2D2330E3DE14D8%7D>

- The technical aspects of the frequency coordination are contained in the ICAO Handbook on Radio Frequency Requirements for Civil Aviation (Doc. 9718), Volume II .



## The Minimum System Requirements for Operating Frequency Finder (FF)

- MS Windows 7 or higher
- CPU: Intel Core i5 or better, or equivalent AMD recommended
- RAM: 2GB or higher
- Video display with resolution of 1440 x 900 (or better) recommended
- Google Earth installed on the computer
- The user should have right to install a programme on the computer
- The runtime version does not require FileMaker Pro to be installed on the computer.



File Edit View Insert Format Records Scripts Window Help

ICAO OACI ICAO

# FREQUENCY FINDER

FF-2020-3

User Manual ST Time Zone 2  
 Sync Manual NV Pro 16.0.4

**Applications**  
VIEW ROUTES

**Start page - Select system**

VHF COM VHF NAV NDB HF COM SSR II

Server <https://frequency.icao.int/ffopen/>  
 User Regional Office

The server <http://frequency.icao.int/fflogin> is not operational until the compatibility issues with Windows 10 have been addressed.

Active Region  
 ==MID

The ICAO Regional Offices are responsible for the coordination of frequency assignments.

**Start page for frequency assignment planning for CNS systems**

Welcome to the Frequency Finder Server - Open Access (temporary)



a draft frequency assignment in your location

**Station**

Insert from menu or type name

**Region** MID     
  **Key** D 603169     
  **Cat**      
 Channel spacing

**Country**      
  **Ctry**      
 25 kHz

**Location**      
 8.33 kHz

**Latitude**  D ' "  N  S

**Longitude**  D ' "  E  W     
  **Frequency** 0.000

**Service**

**Stat**

**DOC**

- Drop down disabled
- MOD Range (NM)
- MOD Height (feet)

**ER family**

Example: ER-BOT-1

**Required fields** **FIR SECTORNAME**

**PolyID**

**Remarks**

**Upload Status** DN



- Its very important that states provide accurate information to the extent possible about frequency usage.
- Designated Operational Coverage (Range and height)
- Inaccurate info may result in either:
  - an overprotection of the desired facility or,
  - an erroneous incompatibility of current frequency assignments
- ICAO MID office issued a state letters Ref: AN7/5.7-20/117 dated 21 May requesting States to review and update the registered frequencies in the ICAO COM List2 using the exported Excel form.
- Reply received from **12** States (Bahrain, Egypt, Iraq, Iran, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syria and UAE)





Frequency Finder

File Edit View Insert Format Records Scripts Window Help

Start **Home page for ILS, VOR, DME and GBAS systems** [User Manual](#) [Sync Manual](#) [ST](#)

FF-2020-3 [Regional Office](#) Pro 16.0.4 **MID** Connected [VIEW ROUTES](#)

Server <https://frequency.icao.int/ffopen/> Time Zone 2

[Download MOD NAV list 2](#) [Download ALL NAV COM list 2](#)

**Synchronization (all times in UTC; dd/mm/yyyy hh:mm)**

Recent download from Global COM list 2

[Check Sync](#) Download NAV 28/05/2020 01:22:59

**NAV list 2 synchronized**

Recent uploads to Global COM list 2

NAV AFI synchronized	06/02/2019 03:10:33
NAV APAC synchronized	25/05/2020 13:01:24
NAV CAR synchronized	15/12/2019 16:46:22
NAV EUR synchronized	23/09/2018 00:10:34
NAV MID synchronized	14/02/2020 14:51:37
NAV SAM synchronized	15/12/2019 16:00:07
Summary NAV:	25/05/2020 13:01:24

[LOCAL BACK UP](#)

Recover from local back-up  
dd/mm/yyyy  
**26/05/2020 3:01:22**

**Go to COM list 2:**

- [AFI](#)
- [APAC](#)
- [CAR](#)
- [EUR](#)
- [MID](#) Active Region
- [SAM](#)
- [GLOBAL](#)

Polygons ICAO FIR synchronized

For any question or comment, contact Loftur Jonasson at [ljonasson@icao.int](mailto:ljonasson@icao.int) or the CNS Officer at the ICAO Regional Office.  
14 May 2020. Frequency Finder version FF-2020-04R available

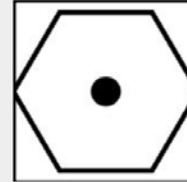


Go to  
**MID COM list 2**

Save as draft record

Save as registered record

Delete draft record



ST

## NEW / MOD / DEL FACILITY

Press Esc to cancel running scripts

records found **1** MOD **DN** Key **928269** D

Insert here new or modified characteristics

Insert from menu or type name

Region MID **New assignment** Cat Select

Country Select from drop-down menu Ctry

Location Select from drop-down menu or type new name

Latitude ? D ? ' ? " ? N S Frequency 0.000

Longitude ? D ? ' ? " ? E W Channel n/a

Facility ILS GlidePath 0.000

ID Select

ILS 25/62.5 Range (NM) 25 Height (feet) 6250 eirp (dBW) 17

Remarks ENTER REMARKS

### System

ILS 1

VOR 2

DME 3

GBAS 5

VDL M4 6

### Channel spacing

100 kHz

50 kHz

25 kHz

Required fields

Test characteristics changes

HFcoSumm

HFadjSumm

UHFcoSumm

UHFadjSumm

Ch\_date3 28/07/2020

Insert here parameters for finding new frequency

Set VHF or UHF (DME)range

START 108.100 MHz

END 111.900 MHz

SEARCH RANGE 108.099...111.901 MHz

Max. # of frequencies 10

# FOUND 0

START SEARCH

VHF freq Summ

UHF ch Summ

Searching

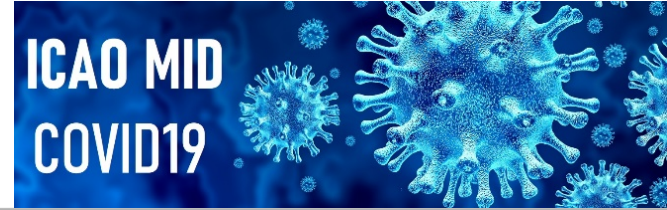
Frequencies/Channels found

Select	VHF	DME	Glide Path
FF1			
FF2			
FF3			
FF4			
FF5			
FF6			
FF7			
FF8			
FF9			
FF10			

Selected Frequency / Channel

View calculation results

MLS selection is currently not included. Frequency Finder inserts automatically the user name and the date of the modification to the table COM list 2 (NAV systems).



- In some cases, it may be possible that **States have put into operation NAV facilities** with frequency assignments that have **not been coordinated** with ICAO. This may **result** in such facilities **not being protected** from harmful interference or such facilities **causing harmful** interference to facilities for which the frequency assignment has been coordinated with ICAO.
- it is recognized that some NAV facilities are in operation and do not cause harmful interference to NAV facilities that are in operation in adjacent countries may not require coordination with ICAO; in these cases, States **themselves are responsible for the necessary (internal) frequency coordination.**
- ICAO holds the view that frequency assignments that have been coordinated with ICAO **have priority over those** that have not been coordinated.



- The meeting is invited to urge States to:
  - 1) *Download the latest version of the FF tool;*
  - 2) *Provide ICAO with updated frequency list for COM VHF and NAV with accurate info to the extent possible if have not done so;*
  - 3) *Use FF tool in frequency coordination process;*
  - 4) *Provide feedback on FF tool usage, suggestions, bugs, recommendations,....,etc;*
  - 5) *Nominate FM members if have not done so; and*
  - 6) *Participate actively in the frequency management workshop planned in November 2020 and FM WG/2 meeting in Morocco.*

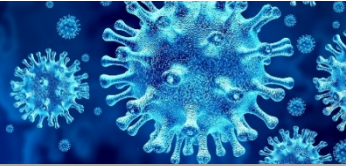
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- 6 any other business

Day 2 Meeting time : 1000 UTC???

Zoom invitation will be sent in a while

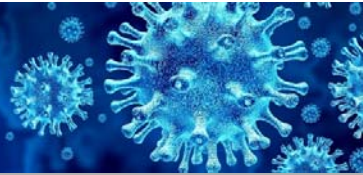


Thank you for your Attention



ICAO | UNITING AVIATION

ICAO MID  
COVID19



Appendix B

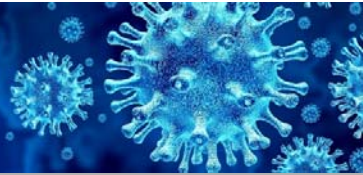
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Virtual meeting



28-29/7/2020

Day 2 presentation

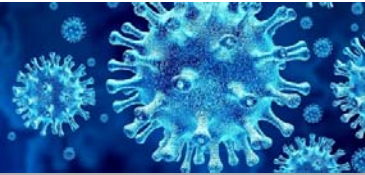


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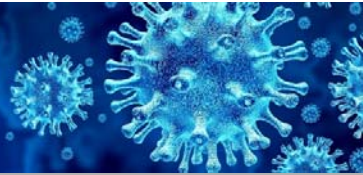




## Meeting Agenda



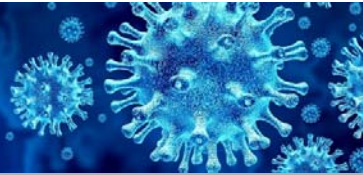
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## **Spectrum capacity assessment for the frequency band 108 – 117.975 MHz**

An assessment of available spectrum for VHF NAV systems (ILS/DME and VOR/DME) operating in the frequency band 108 – 117.975 MHz was performed with the view to:

- Determine the need for a full implementation of 50 kHz channel spacing
- Identify areas where future implementation of ILS or VOF systems may be difficult.



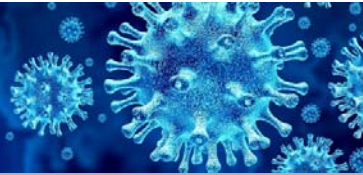
## Spectrum capacity assessment for the frequency band 108 – 117.975 MHz

### Organization of the simulation

For this purpose, a set of (fictious) requirements for new ILS/DME and VOR/DME facilities was generated as follows:

- For each airport for which one (or more) ILS facilities are in the ICAO COM list 2 a requirement for an additional ILS/DME facility was established
- For each airport for which one (or more) ILS facilities are in the ICAO COM list 2 the requirement for an additional VOR/DME facility was established

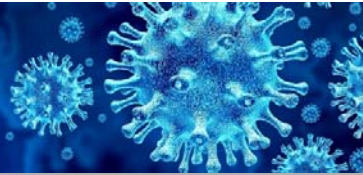
The result was for 98 airports in the MID Region the addition of a single ILS/DME facility at each airport as well as the addition of a single VOR/DME facility at each airport.



## Spectrum capacity assessment for the frequency band 108 – 117.975 MHz

### Organization of the simulation

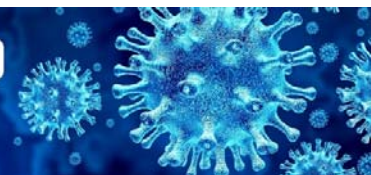
- A check was performed to find for each facility in the simulation a frequency assignment for equipment designed for 100 kHz channel spacing and for 50 kHz channel spacing (mixed environment). Any ILS or VOR facility that could not be assigned a frequency on a 100 kHz channels was considered in the simulation for a frequency assignment on a 50 kHz channel.
- A separate simulation is planned performed with using only 50 kHz channel spacing characteristics for the Localizer and the VOR.



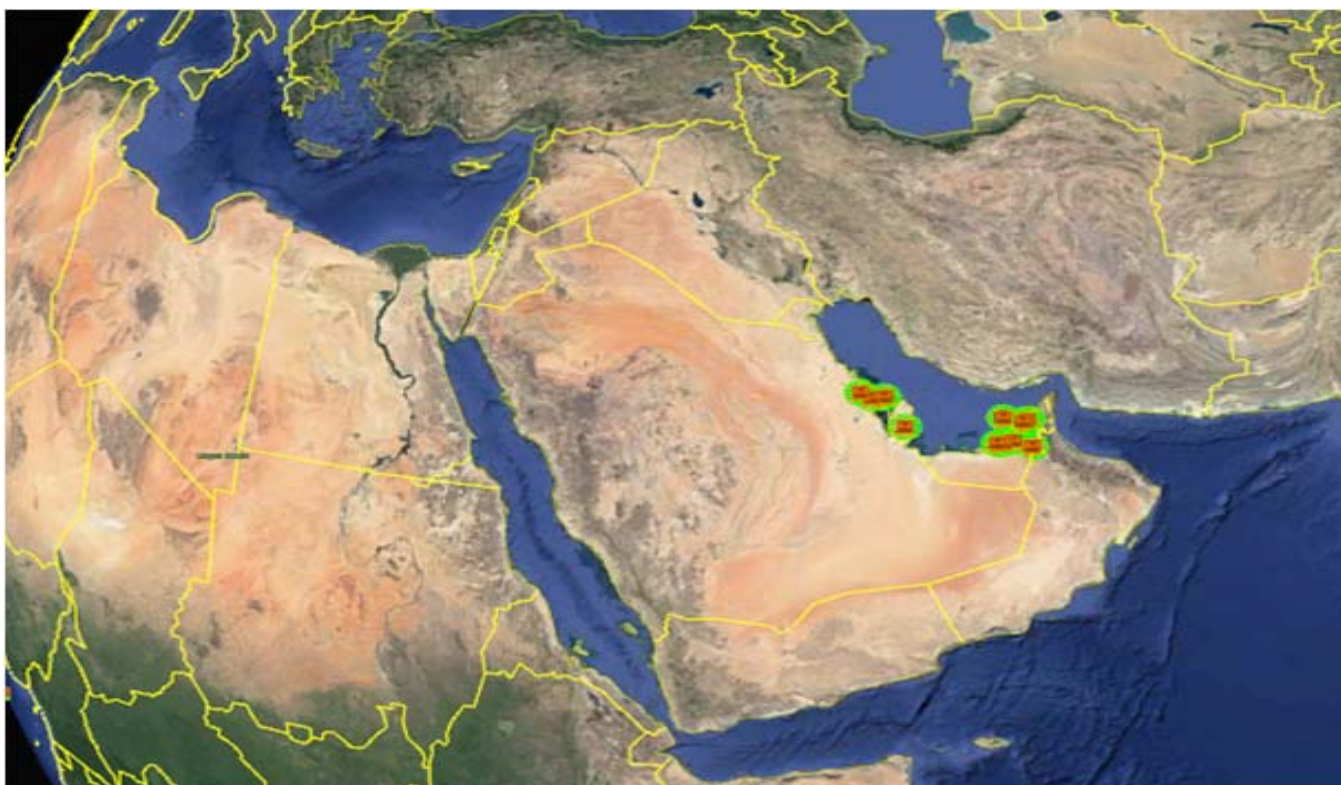
## Spectrum capacity assessment for the frequency band 108 – 117.975 MHz

### Result

- In the MID Region, 98 requirements for an ILS/DME frequency were established and 477 requirements for a VOR/DME and 98 requirements for an ILS/DME
- ILS/DME - No frequency could be assigned to 16 (out of 98) ILS/DME facilities



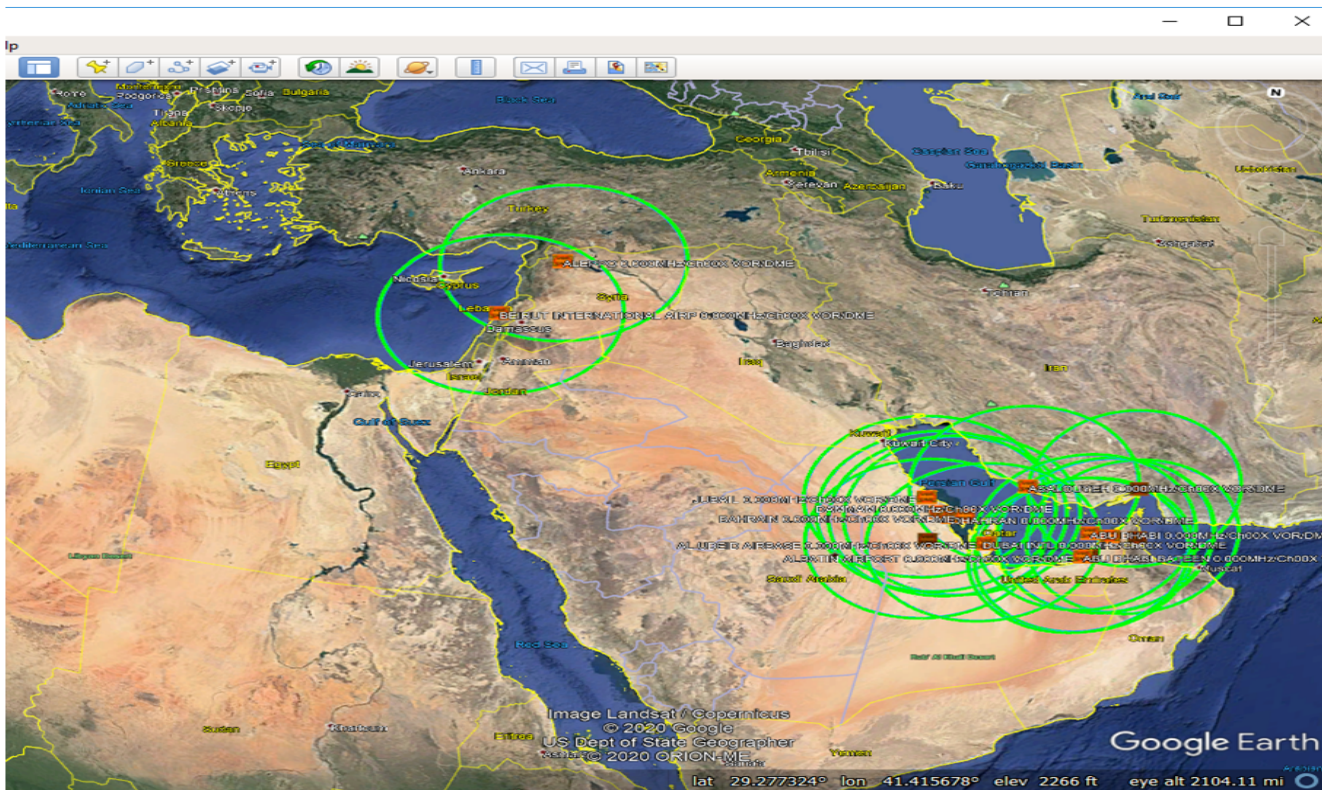
## Spectrum capacity assessment for the frequency band 108 – 117.975 MHz



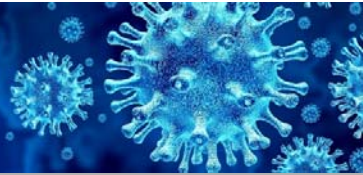
Locations of  
ILS/DME  
facilities where  
no frequency  
assignment  
could be made



## Spectrum capacity assessment for the frequency band 108 – 117.975 MHz



VOR/DME - No frequency on 100 kHz channels could be assigned to 17 VOR/DME facilities

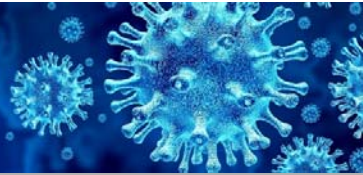


## Spectrum capacity assessment for the frequency band 108 – 117.975 MHz

### Conclusions

- From the simulation it can be concluded that currently in the MID Region in the area around the UAE as well as in the northern part of the MID Region the frequency band is heavily congested or saturated for ILS/DME and VOR/DME frequency assignments.
- A further simulation is being prepared.
- The congestion in the areas identified may raise questions with regard to additional implementation of requirements for GBAS/VDB frequency assignments in these areas.

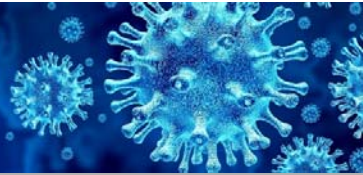




## Spectrum capacity assessment for the frequency band 108 – 117.975 MHz

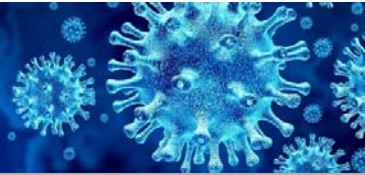
### Next action(s)

- To update the NAV module with operating facilities in the MID Region; **Ongoing**
- study the feasibility of implementing 50KHz channel spacing; and
- To develop a rolling frequency assignment plan for VHF-COM and ILS, VOR, DME and GBAS/VDB facilities that is aimed at satisfying the operational needs from States until 2030. (States plans to install future NAV and/or COM facilities???)



## Revision of the Handbook on Radio Frequency Spectrum Requirement for Civil Aviation (DOC9718), Volume II

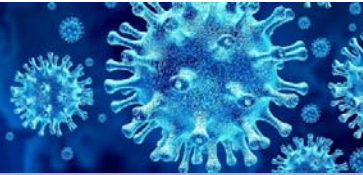
- The Handbook on Radio Frequency Spectrum Requirements for Civil Aviation (DOC 9718), Volume II, Frequency assignment planning criteria for aeronautical radio communication and navigation systems, was published in 2013 as the first edition
- There are 2 chapters and 3 appendices in the present Handbook, including Chapter 1. General Methodology for compatibility Analysis, and Chapter 2. Aeronautical VHF air-ground radio communication system operating in the band 117.975-137MHz.
- In the Navigation Systems Panel (NSP), work has been progressed on the development of frequency assignment planning criteria for NAV systems (ILS, VOR, DME and GBAS/VDB). This work is now mature and is expected to be approved by the NSP in November 2020



## Meeting Agenda



- 1 Adoption of provisional agenda
- 2 Follow-up on MIDANPIRG/17 & MSG/6 conclusions relevant to FM
- 3 Update on frequency finder tool
- 4 Spectrum capacity assessment for the band 108-117.975 MHz
- 5 Future work programme
- 6 any other business



The FMWG will undertake the following tasks in the work required to manage the MID Region frequency assignments in order to ensure sufficient access to the resource for the provision of aeronautical communication, navigation and surveillance services (CNS) in an efficient and safe manner:

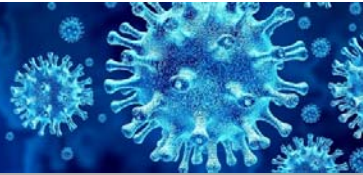
- develop MID Region frequency assignment plan including long term spectrum usage of radio systems;
- validate the ICAO Global database and keep it up to date;
- resolve current frequency assignments conflict in the ICAO Global database;
- develop recommendation or proposal for improvement to the existing regional VHF frequency assignment process based on the ICAO Global Spectrum Management tool, ICAO 9718 Volume II Handbook provision and current coordination issues;
- propose solutions for the interference incidents occurred in MID Region states in a timely manner;
- escalate the intentional frequency interference matters and coordinate with other relevant international organizations, as and when required;
- provide guidance/support to States to protect the GNSS signals;



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## Terms Of Reference (TOR)

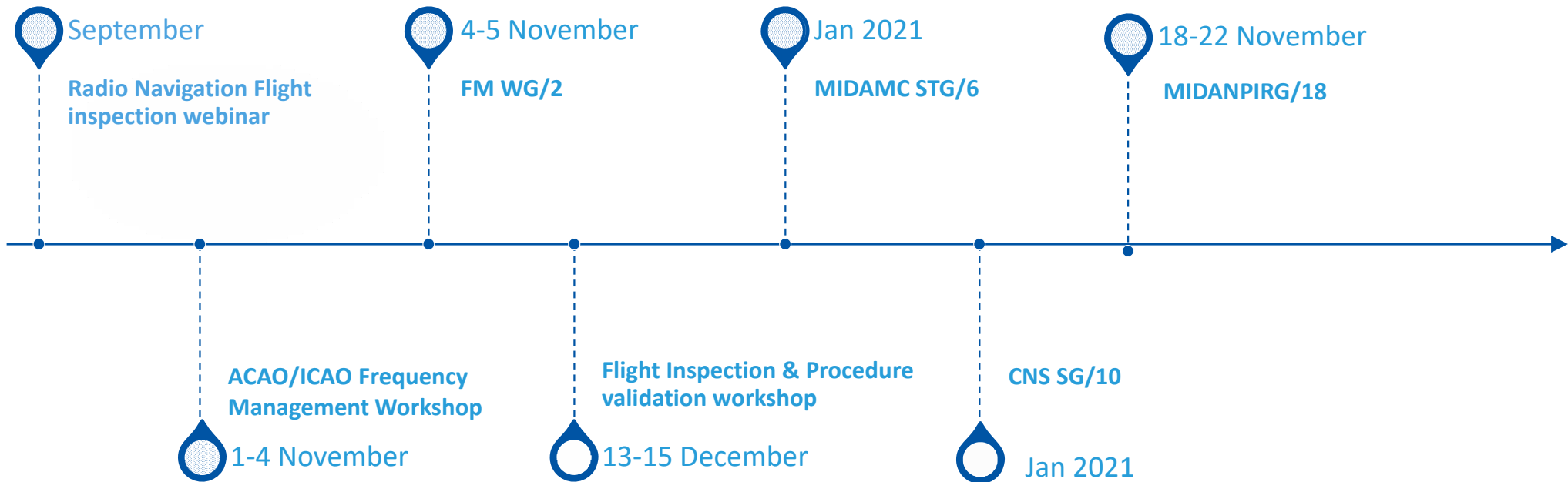
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- collaborate with ITU and other relevant international organization to address frequent interference incidents;
- support for ICAO Position at World Radio Communication Conference (WRC) and ensure MID States' support ICAO at ITU meetings;
- collaborate with Regional Groups; Arab Spectrum Management Group (ASMG) and African Telecommunication Union (ATU), to support ICAO position at WRC;
- ensure the continuous and coherent development of the relevant sections of the MID eANP, taking into account the evolving operational requirements in the MID Region and the need for harmonization with the adjacent regions in compliance with the Global Air Navigation Plan;
- develops recommendations for CNS SG about how to address the future operational needs and limitations in VHF voice communications, aiming at avoiding introduction of 8.33 kHz spacing in the MID Region for as long as practicable; and
- Frequency Management Working Group will be responsible for overall supervision of the frequency issues in the MID Region and will review/update the FMWG work plan whenever required.



## Future Work Programme





## Meeting Agenda

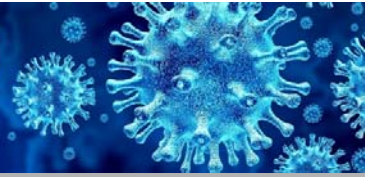


- 1** Adoption of provisional agenda
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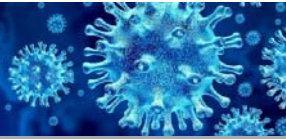
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## Frequency Management Workshop for GCC States





**Thank you for your Attention**

**Frequency Management WG/1**
**Virtual Meeting**
**Tuesday, 28 July 2020 & Wednesday, 29 July 2020**

State/ Org	Contact	Title
<b>Bahrain</b>	Mr. Ali Abdul Latif Tulefat	A/Chief Air Navigation Systems Engineering
	Mr. Yousif Ahmed Bucheer	Telecommunication Engineer
<b>Egypt</b>	Mr. Ahmed Mostafa Mohamed Arman	Senior CNS inspector at ECAA/ Frequency Management Focal point
	Mr. Ahmed Abdel Wahab Mohamed Elmarady	Senior CNS inspector at ECAA
	Mr. Ahmed Saied Abdel Monsef	Senior CNS inspector at ECAA
<b>Iran</b>	Mr. Mojtaba Chatrooz	Senior Expert of Aeronautical Frequency
	Mr. Ali Ashtiani	Expert of Frequency Affair
<b>Iraq</b>	Mr. Ali Abdul Sahib Nasrullah	Mobile Communications Supervisor/ Frequency Management Focal Point
<b>Jordan</b>	Eng. Amena Dodin	Technical Support Director
	Mr. Ibrahim Faraj	
	Mr. Ibrahim Riyad	
	Mr. Mahmoud Ibrahim	
	Eng. Neveen Askar	Head of COM/NAV - ADMIN
	Eng. Ala Abualia	Head of Maintenance Division
	Eng. Taghreed Al-assad	Head of COM/NAV - KHIA
<b>Kuwait</b>	Eng. Fahad Albaloushi	Superintendent of Communication Equipment
<b>Lebanon</b>	Eng. Amin Jaber	Chief Maintenance Equipment Department
<b>Oman</b>	Mr. Khaled Eltanany	CNS Safety Inspector
	Mr. Vilina Eka Lestari	CNS Safety Inspector
	Mr. Said Hussain Al Balushi	Chief of Communication
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	Mr. Michael Bersaluna	Electronics Engineer, CAA
	Mrs. Aysha Maarefi	Electronics Technician

State/ Org	Contact	Title
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	Eng. Ridah Salah Dridi	
<b>Syria</b>	Eng. Nadim Salim	Director of CNS
<b>UAE</b>	Mr. Abdulla Al Sayed	Head of CNS Engineering
	Mr. James Smith	
	Mr. Saleh Al Masabi	
	Mr. Greg Kurten	Director CNS
	Mr. Mohamed Al Ahmed	
	Mrs. Jacob Avis	Inspector – Air Navigation CNS
	Mr. Ahmed Al Obeidli	
	Mr. Saleh Al Masabi	
	Mr. Basel Mohamed	CNS Engineer
<b>GCC</b>	Mr. Hamed Fuad Alkhaja	
	Mr. Tariq Ahmed Alkhan	
	Eng. Ali A.Hameed Saleh	Communication Engineer Telecommunications Bureau
	Mr. Khalifa Ebrahim Khalifa	
	Mr. Fahad Ebrahim Al-Qassab	
	Mr. Mohamed Sadeq	
	Mr. Sami Ameen Mustafa	
	Mr. Abdulrahman Almuaini	
	Mr. Mohamed Almarzouqi	
	Mr. Tareq Alsaif	
	Mr. Mohamad Alsenafi	
	Mrs. Sara Alkandari	
<b>ICAO-MID</b>	Mrs. Muna Alnadaf	Regional Officer, Communication, Navigation and Surveillance (CNS)
	Mrs. Sonia El Sakka	ICT/ Marketing Regional Coordinator and Trainer
	Mrs. Hoda Gabriel	Technical Assistant (TA)