



ICAO

INTERNATIONAL CIVIL AVIATION ORGANIZATION

A UN SPECIALIZED AGENCY



AFI Regional Workshop on SSR Mode S II Code and 24 Bits Addresses assignment

FREQUENCY FINDER TOOL

Prepared by

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REMINDER

Before attending the workshop

Participants are encouraged to:

- Install the latest version of Frequency Finder software(***FF2023.03.RT.exe***) to the computers
- <https://www.icao.int/safety/FSMP/Pages/Documents.aspx?RootFolder=%2Fsafety%2FFSMP%2FDocuments%2FFrequencyFinder&FolderCTID=0x012000B1461A5DA8C64241AA4DE4F91CB1D9AF&View=%7BE11C4C29%2DDD83%2D4B87%2DAAAE%2D2330E3DE14D8%7D>
- Install Google Earth to the computer (<https://www.google.com/earth/versions/#earth-pro>)

Note. – For more details refer to the User Manual : Installing Frequency Finder (Run-time version)



Participants **must bring:**

- their Windows PC that has the runtime version of the Frequency Finder software and Google Earth installed in it.



ABOUT THE FREQUENCY FINDER TOOL

→ Frequency Finder has been developed with FileMaker Pro Advanced



→ Graphical interface with Google Earth



→ Plotting interference

→ VHF COM Module and NAV Module in the Frequency Finder tool. Also, SSR II/SI Code stand-alone Module is available.

→ Global COM list 2, COM list 3 and Table of SSR Mode S II Codes are maintained by Regional Offices

→ Frequency assignment planning criteria as per the Handbook Volume II implemented



→ Calculation of interference areas, assessing compatibility between frequency assignments /searching for compatible SSR II /SI codes



Prep for FF operation

1. Download Runtime version of the Frequency Finder

Download from the FSMP website the zip-file

FF2023.03.RT.exe

www.icao.int/safety/fsmp/documents/frequencyfinder

Remove earlier version of Frequency Finder, if any.

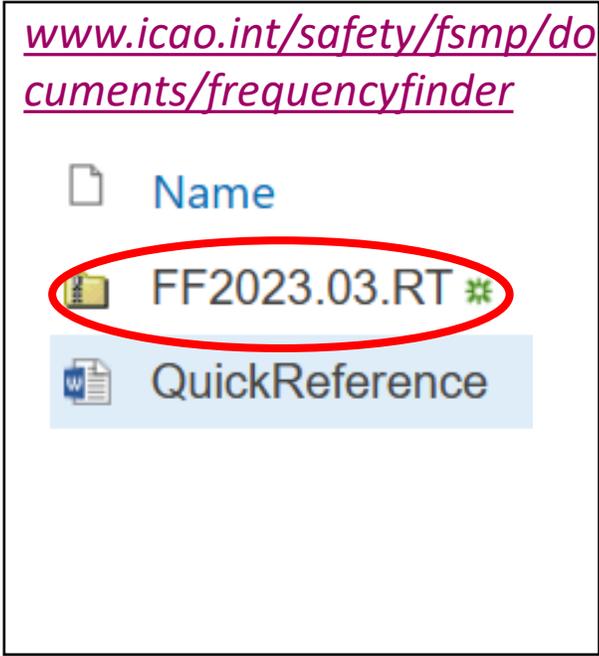
Unzip and run the installer file FF2023.03.Rsetup.exe

Select to create desktop icon

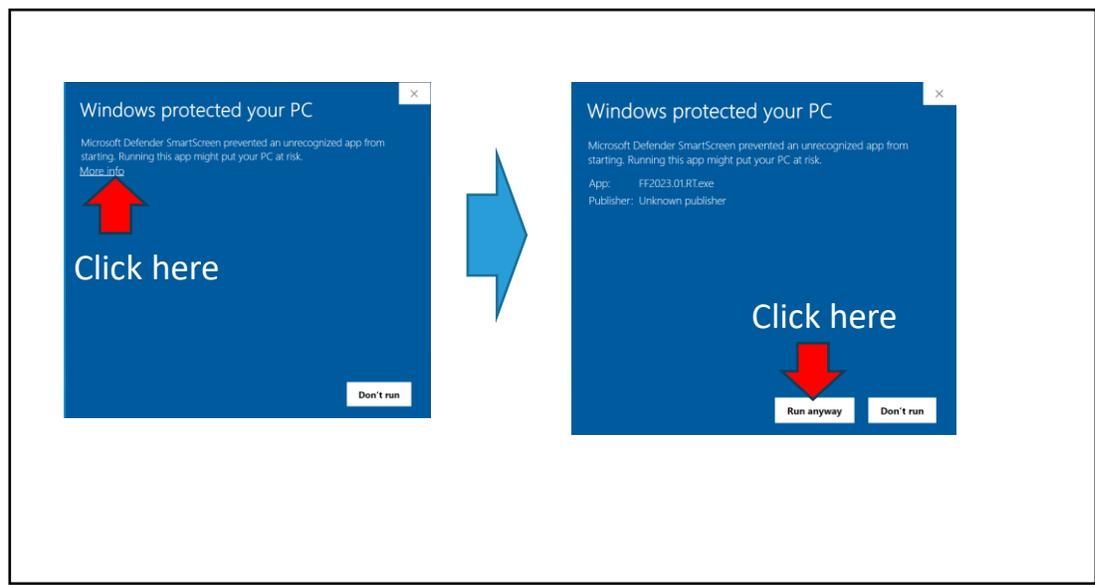
--See next slides

1. Go to the FSMP website. Unzip and run the installer file.
(FF2023.03.RT)
2. Depending on the Windows version, you might get security related checks like below. In that case, please act as required.

1

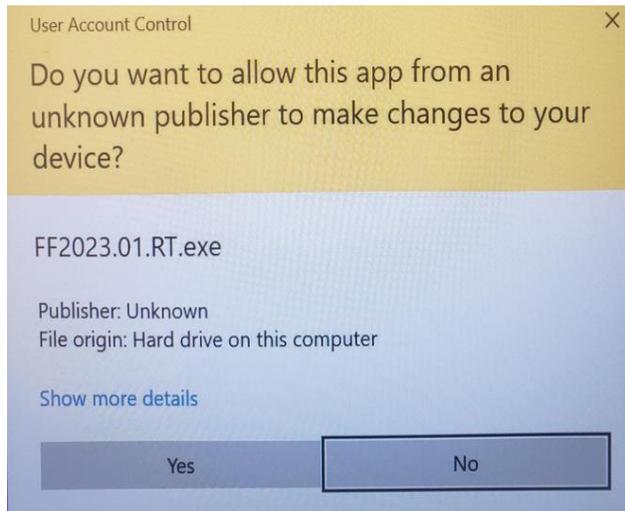


2

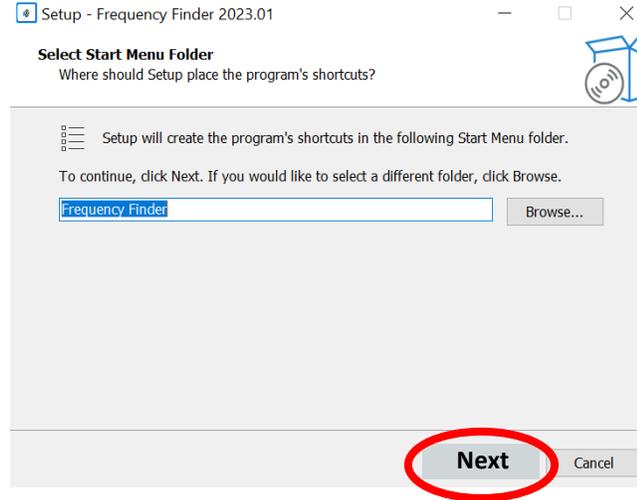


- 3. Click "Yes" in the Welcome to the Setup Wizard message
- 4. Click "Next" in Select Start Menu Folder
- 5. Check to Create a desktop shortcut and click "Next" in Select Additional Tasks message

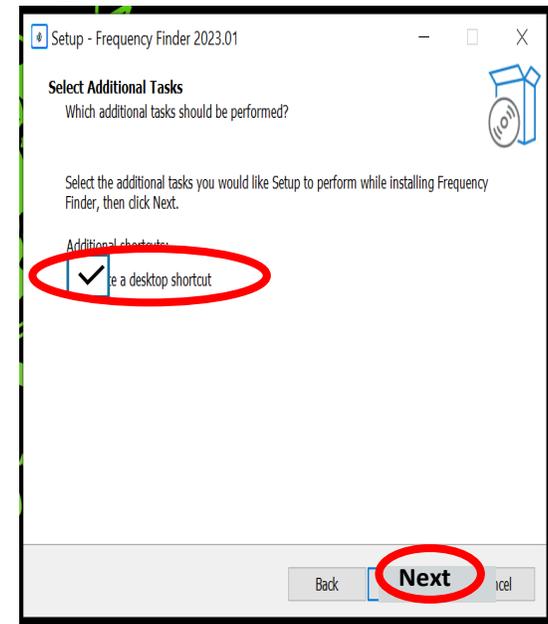
3



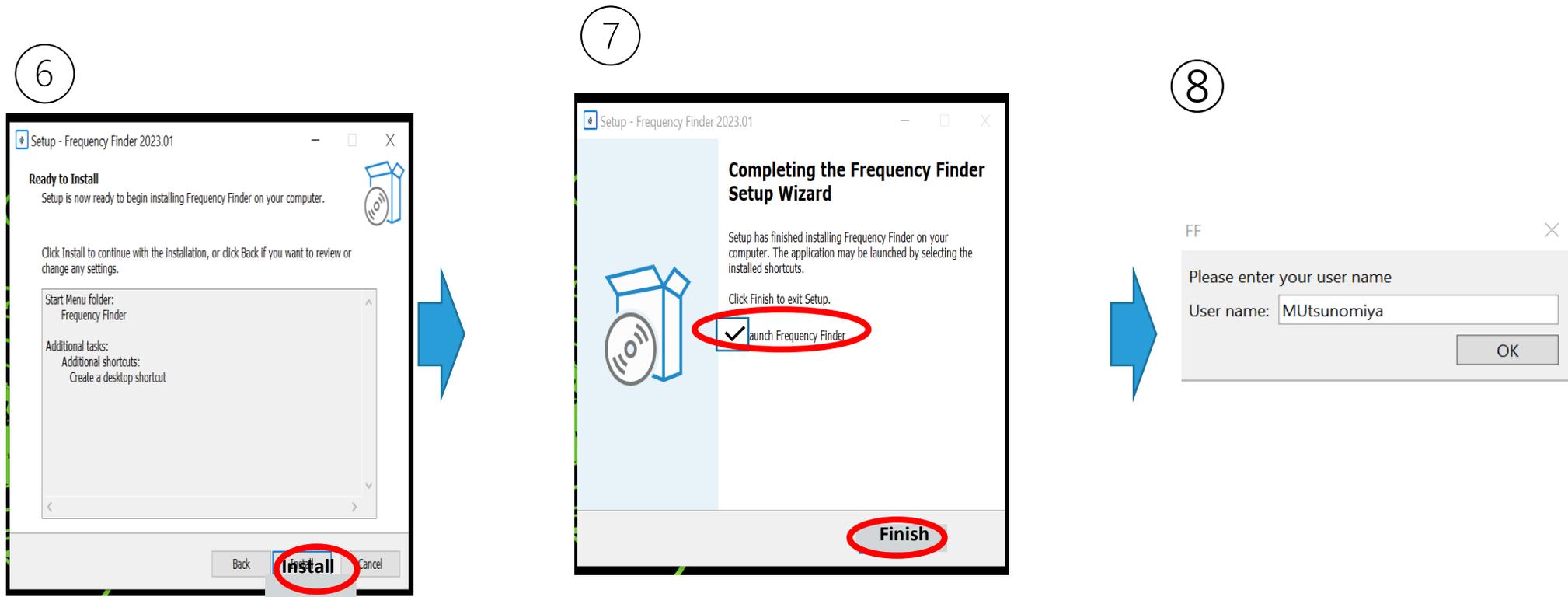
4



5



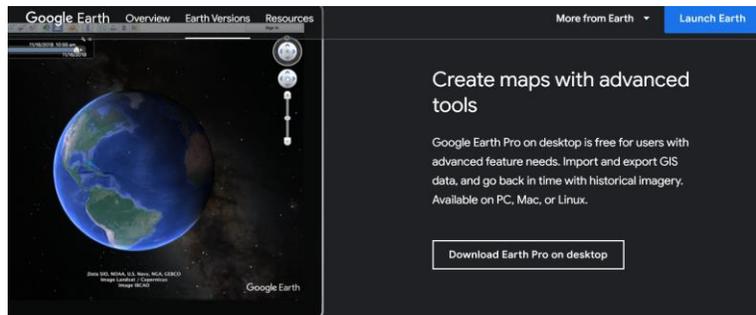
6. Click “Install” reply to a message, Ready to Install,
7. Check to Launch Frequency Finder and click “Finish” for completing the Frequency Finder Setup Wizard.
8. Enter your user name (enter your user name, see example)



Prep for FF operation

2. Download and install google Earth

<https://www.google.com/earth/versions/#earth-pro>



The following settings in Google Earth are recommended:

Tools -> Options

- > Navigation -> set Fly-To Speed to Fast
- > Navigation -> Click “Do not automatically tilt while zooming”
- > General-> click KML Error Handling: Silently accept all unrecognized data.

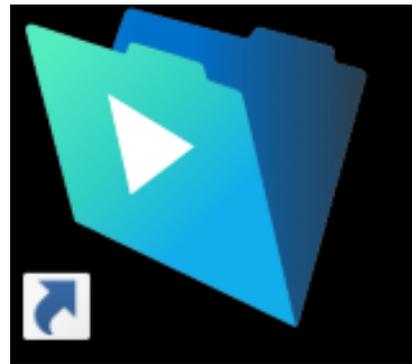
3. More details can be found in the user manual:

(Installing Frequency Finder(Run-time version))

This PC > Windows (C:) > FrequencyFinder

- User manual - Import Submissions.docx
- User manual - InstallFullRegionalOffices.docx
- User manual - InstallRuntime2017.docx
- User manual - Planning criteria Mode S II.docx

Exercises- Start page/Home page



Open Frequency Finder - Start page

The screenshot shows the 'Frequency Finder' application window. The title bar reads 'Frequency Finder' and the menu bar includes 'File', 'Edit', 'View', 'Insert', 'Format', 'Records', 'Scripts', 'Window', and 'Help'. The version is 'FF_2023_03'. The main interface features a world map with three regions highlighted: MEXICO, DAKAR, and LIMA. A 'VHF COM' icon is located at the bottom center. On the right side, there are buttons for 'User Manual' and 'Sync Manual', a 'Time Zone' dropdown set to '-4', and an 'Application' dropdown set to 'Runtime'. Below these are fields for 'Server' (https://frequency.icao.int/fflogin/) and 'User' (State). A message states: 'The server http://frequency.icao.int/fflogin is not operational until the compatibility issues with Windows 10 have been addressed.' There is also a dropdown menu set to '==AFI' and a button labeled 'Click on the SSR'. A modal dialog box titled '<210> Enter Password' is open, containing the text 'Enter Password' and 'You can get the password from the Regional Office.' Below this is a 'Password' input field. A red rounded rectangle highlights the dialog box, and a speech bubble points to it with the text 'Add the password to open the Start page'. At the bottom of the window, it says 'Start page for the frequency assignment planning for CNS systems'.

Start page and the selection of SSR II/SI module

Select "SSR II/SI"

Start page and SSR II/SI Home page

Start

Frequency Finder
Version FF_2023_03
User Manual Time Zone -4
Sync Manual Application Runtime
Server https://frequency.icao.int/fflogin/
User State
The server http://frequency.icao.int/fflogin is not operational until the compatibility issues with Windows 10 have been addressed.
Select from the field below the Region from which you are operating.
==AFI
To select a region for the SSR module, click on the SSR button first
The ICAO Regional Offices are responsible for the coordination of frequency assignments.

② Click "SSR II/SI"

Home page SSR II/SI

The screenshot shows a web application interface for SSR II/SI. At the top, there is a navigation bar with a 'Start' button and a menu. The main header displays 'SSR Mode S II/SI interrogators, SSR Mode A/C and ADS-B' with a red dashed border. Below this, there are buttons for 'User Manual' and 'Sync Manual', and a 'Time Zone -4' indicator. A status bar shows 'Active Region ==AFI' and 'Connection status Connected'. The server URL is 'https://frequency.icao.int/ffopen/'. The main content area includes a 'Go to SSR II/SI CODE list' link, 'Download MOD SSR II/SI codes' and 'Download ALL SSR II/SI codes' buttons, and a 'Check Sync' button. A table shows the last download and sync status. A 'LOCAL BACK UP' button and a 'Recover from local back-up' button are also present. A warning message at the bottom right states: 'Please coordinate SSR Mode S II/SI code assignments with your ICAO Regional Office'. On the left side, there are buttons for different regions: AFI, APAC, CAR, EUR, MID, SAM, and GLOBAL.

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File Edit View Insert Format Records Scripts Window Help

Start

SSR Mode S II/SI interrogators, SSR Mode A/C and ADS-B

User Manual

Sync Manual

Time Zone -4

ST

Version: FF_2023-3, User: State, Application: Runtime, Active Region: ==AFI, Connection status: Connected

Server: https://frequency.icao.int/ffopen/

Go to SSR II/SI CODE list

Download MOD SSR II/SI codes

Download ALL SSR II/SI codes

AFI Active Region

APAC

CAR

EUR

MID

SAM

GLOBAL

Check Sync

Last Download SSR Sync: 20-10-2023 8:17:35.179 PM

Sync status SSR Global List: Synchronized

Date format: dd/mm/yyyy hh:mm:ss (UTC)

Recent uploads to Global SSR	SSR Region	Date	Time	UTC
	SSR AFI synchronized	20-10-2023	4:18:27.567	UTC
	SSR APAC synchronized	07-10-2023	2:14:17.722	UTC
	SSR EUR synchronized	24-11-2021	5:17:20.222	UTC
	SSR CAR synchronized	07-10-2023	2:16:34.614	UTC
	SSR MID synchronized	07-10-2023	2:20:22.845	UTC
	SSR SAM synchronized	16-09-2023	1:45:37.942	UTC

LOCAL BACK UP

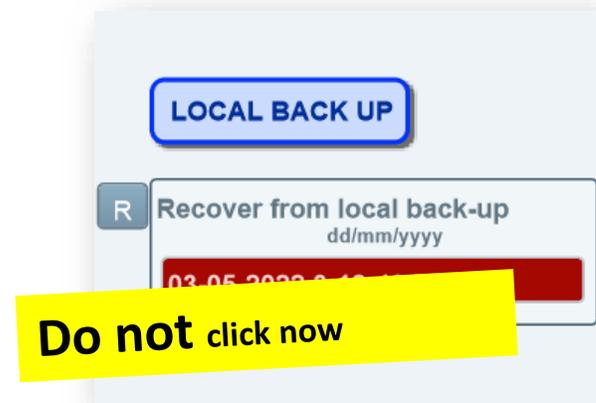
Recover from local back-up
dd/mm/yyyy

Please coordinate SSR Mode S II/SI code assignments with your ICAO Regional Office

Home page SSR II/SI Code list Back-up and recovery

Click “LOCAL BACK UP” to create a backup

Click “R” to recover from local backup



Exercises- Integrity Check

Integrity Check

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File Edit View Insert Format Records Scripts Window Help

Start **SSR Mode S II/SI interrogators, SSR Mode A/C and ADS-B** User Manual Sync Manual Time Zone -4

Version: FF_2023-3, User: State, Application: Runtime, Active Region: ==AFI, Connection status: Connected

Server: https://frequency.icao.int/ffopen/

Go to SSR II/SI CODE list

Download MOD SSR II/SI codes, Download ALL SSR II/SI codes

AFI Active Region

Check Sync

Last Download SSR Sync: 20-10-2023 8:17:35.179 PM

Sync status SSR Global List: Synchronized

Date format: dd/mm/yyyy hh:mm:ss (UTC)

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	SSR MID synchronized	07-10-2023	2:20:22.845	UTC
	SSR SAM synchronized	16-09-2023	1:45:37.942	UTC

LOCAL BACK UP

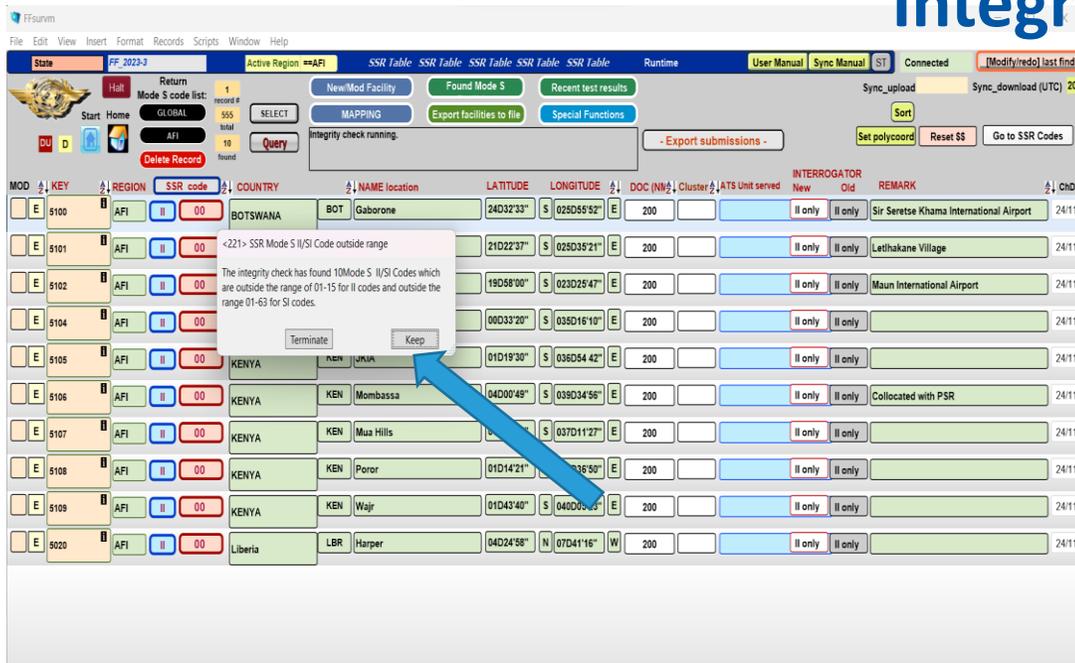
Recover from local back-up dd/mm/yyyy

Please coordinate SSR Mode S II/SI code assignments with your ICAO Regional Office

1 Click "AFI"

2 "Integrity Check" will start"
– See Next slide

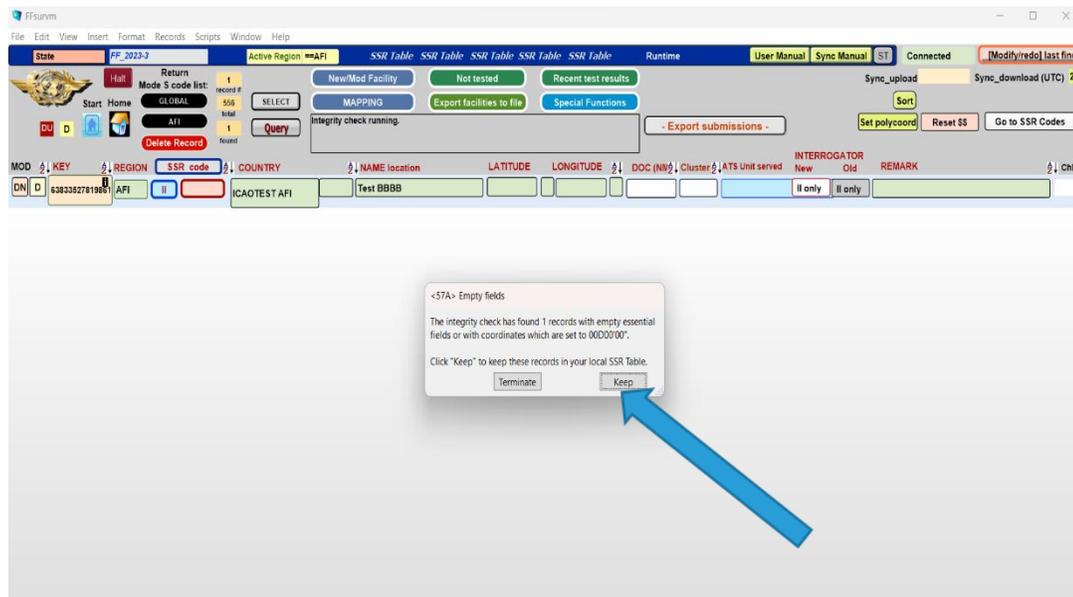
Integrity Check



Integrity Check – Outside the range

Click **“Keep”** to continue integrity check

If you have data with you and can correct some of them, then Click **“Terminate”** to correct data



Integrity Check – Empty Field

Click **“Keep”** to continue integrity check

If you have data with you and can correct some of them, then Click **“Terminate”** to correct data

Integrity Check

The screenshot shows the FFSunm application interface. At the top, there's a menu bar (File, Edit, View, Insert, Format, Records, Scripts, Window, Help) and a toolbar with various buttons like 'New/Mod Facility', 'Not tested', 'Recent test results', 'Sync_upload', 'Sync_download (UTC)', 'Sort', 'Set polycoord', 'Reset \$\$', and 'Go to SSR Codes'. Below the toolbar, there's a section for 'Return Mode S code list' with 'GLOBAL' and 'AFI' options. A table below shows columns for MOD, KEY, REGION, SSR code, COUNTRY, NAME location, LATITUDE, LONGITUDE, DOC (NI), Cluster, ATS Unit served, INTERROGATOR (New, Old), and REMARK. A row is visible with MOD 'DN', KEY 'D', REGION 'AFI', SSR code 'II', COUNTRY 'CAOTEST AFI', NAME location 'Test BBBB', and INTERROGATOR 'II only'. A modal dialog box is open in the center, displaying the text: '<222> Draft records in local SSR list. The local SSR Mode S II/Sl code list contains Draft records that can be converted into Registered records. Click "Convert" to convert these records into registered.' The dialog has 'Convert' and 'Keep' buttons.

Integrity Check – Draft Records

Click **“Keep”** to continue integrity check

If you finished drafting and believe you can convert/delete them as registered/deleted frequency, then you can click **“convert”** to correct data

Integrity Check

Integrity check is



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File Edit View Insert Format Records Scripts Window Help

State: FF_2023-3 Active Region: ==AFI

Runtime: User Manual Sync Manual ST Connected [Modify/redo] last fin

Return Mode S code list: 1 record # 555 total 55 found

Buttons: New/Mod Facility Found Mode S Recent test results Sync_upload Sync_download (UTC) Sort Set polycord Reset \$\$ Go to SSR Codes

Buttons: SELECT MAPPING Export facilities to file Special Functions - Export submissions -

MOD	KEY	REGION	SSR code	COUNTRY	NAME location	LATITUDE	LONGITUDE	DOC (NI)	Cluster	ATS Unit served	INTERROGATOR New	Old	REMARK	Ch
E	5000	AFI	II 01	Benin	BEN Cotonou	06D21'31"	N 002D22'59"	E 200			II only	II only		11/A
E	5119	AFI	II 04	Benin	BEN Cotonou	06D21'31"	N 002D22'59"	E 88			II only	II only		11/A
E	5100	AFI	II 00	BOTSWANA	BOT Gaborone	24D32'33"	S 025D55'52"	E 200			II only	II only	Sir Seretse Khama International Airport	24/A
E	5101	AFI	II 00	BOTSWANA	BOT Letlhakane	21D22'37"	S 025D35'21"	E 200			II only	II only	Letlhakane Village	24/A
E	5102	AFI	II 00	BOTSWANA	BOT Maun	19D58'00"	S 023D25'47"	E 200			II only	II only	Maun International Airport	24/A
E	5001	AFI	II 02	Burkina Faso	BKF Ouagadougou	12D20'53"	N 001D31'06"	W 200			II only	II only		11/A
E	5002	AFI	II 02	Cameroon	CME Douala	04D00'23"	N 009D43'27"	E 200			II only	II only		11/A
E	5003	AFI	II 06	Cape Verde	CPV Monte Tchota	15D02'15"	N 023D37'22"	W 200			II only	II only		11/A
E	5004	AFI	II 01	Cape Verde	CPV Morro Curral	16D45'24"	N 022D56'34"	W 200			II only	II only		11/A
E	5005	AFI	II 02	Cape Verde	CPV Pedra Rachada	17D06'53"	N 025D03'48"	W 200			II only	II only		11/A
E	5006	AFI	II 01	Central African Republic	CAF Bangui	04D23'52"	N 018D31'11"	E 200			II only	II only		11/A
E	5007	AFI	II 03	Chad	TCD N'Djamena	12D08'10"	N 015D02'36"	E 200			II only	II only		11/A
E	5008	AFI	II 01	Comoros	COM Moroni	11D32'08"	S 043D16'32"	E 200			II only	II only		11/A
E	5009	AFI	II 03	Congo	CON Brazzaville	04D14'06"	S 015D15'41"	E 200			II only	II only		11/A

Irdeglat: 6.358611111 Irdeglong: 2.383056555

SSR Mode S Interrogator Identifier (II) Code and Surveillance Identifier (SI) code list, SSR Mode A/C and ADS-B
 This version accommodates interrogators that support II/SI code operations (II/SI+) and do not support II/SI code operations (II/SI)

Now you are in

the SSR II/SI CODE LIST



Exercises- Query

Query

Integrity check is completed!

Now you are in the Regional SSR II.SI CODE List

Click "Query"

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File Edit View Insert Format Records Scripts Window Help

State FF_2023-3 Active Region ==AFI SSR Table SSR Table SSR Table SSR Table Runtime User Manual Sync Manual

Return Mode S code list: 1 record # 556 total

Buttons: New/Mod Facility, Not tested, Recent test results, MAPPING, Export facilities to file, Special Functions, - Export submissions -

MOD	AFI	SSR code	COUNTRY	NAME location	LATITUDE	LONGITUDE	DOC (NN)	Cluster	ATS Unit served	INTERROGATOR
	AFI	01	Benin	BEN Cotonou	06D21'31"	N 00D22'59" E	200			II only II only
E 5119	AFI	04	Benin	BEN Cotonou	06D21'31"	N 00D22'59" E	88			II only II only
E 5100	AFI	00	BOTSWANA	BOT Gaborone	24D32'33"	S 025D55'52" E	200			II only II only
E 5101	AFI	00	BOTSWANA	BOT Letlhakane	21D22'37"	S 025D35'21" E	200			II only II only

Select "information" required for your investigation

Click "Find"

Then you will see the outcome of your Query

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File Edit View Insert Format Requests Scripts Window Help

User FF_2023-3 Active Region ==AFI SSR QUERY SSR QUERY SSR QUERY SSR QUERY User Manual Sync Manual ST

Return to Mode S code list: Global AFI

Buttons: Find, New Query

QUERY DATABASE QUERY DATABASE QUERY DATABASE QUERY DATABASE QUERY

Enter your QUERY

Query Database

REGION ==AFI Country code: Select SSR Mode Enter

COUNTRY No country selected R

NAME location No location selected R

Select SSR Code

Select criteria for the query from the fields in the box Query Database:

1. Select geographic parameters Region and, if required, Country/Location
2. Select SSR Mode (II or SI or A/C or ADS-B), if required
3. Select SSR Code, if required
4. Click FIND

Use this window to only enter criteria for your query

Last Query - parameters [Modify/redo] last find

Click here to use the parameters of your most recent query; you can modify these parameters in the box "Query Database"



Query

Query – Select Criteria for the QUERY from the fields in the box Query Database

1. Select geographical parameters Region and ,if required, Country/Location
2. Select SSR Mode (II or SI or A/C or ADS-B) if required
3. Select SSR Code , if required
4. Click **FIND**

Button **New Query** – Enter or re-enter query parameters

Button **Modify/Redo last find**: Enters the query parameters for the most recent query

Button **AFI**– Returns the SSR II/SI code list for the Active Region

Exercises- Query

Exercise 1 - Query database

– Ghana – Accra – SSR Mode – SSR Code

Exercise 2 - Re-do and modify query

– Ghana – Accra – SSR Mode – SSR Code

Exercise 3 - Go back to AFI SSR II/SI code List and return the results of the last Query

Exercise 4 - Find all II/SI code assignments for the SSR Facilities in your STATE

Add, Modify or Delete FACILITY

ADD/ NEW SSR FACILITY OR STATION

Go back to Regional SSR II/SI table

Select NEW/Modify Facility

CLICK New Facility/Add new facility

MOD	KEY	REGION	SSR code	COUNTRY	BEN	Cotonou	LATITUDE	LONGITUDE	DOC (NM)	Cluster	ATS Unit served
E	5000	AFI	01	Benin	BEN	Cotonou	06D21'31"	N 002D22'59"	E	200	
E	5119	AFI	04	Benin	BEN	Cotonou	06D21'31"	N 002D22'59"	E	88	



NEW/MOD SSR
Mode S II, Mode S SI, Mode A/C, ADS-

KEY: D 6.3834e+13 US DN New assignment

REGION: AFI

COUNTRY: ICAO TEST AFI ZZA

NAME (location): Test BBBB

LATITUDE: 05 D 32 21 N

LONGITUDE: 000 D 11 48 E

REMARK: Interrogator capability II only

Cluster: []

Margin (NM): -203

The selected SSR Mode S II Code is NOT compatible

COVERAGE	250	NM
Sector1	250	Sector13 250
Sector2	250	Sector14 250
Sector3	250	Sector15 250
Sector4	250	Sector16 250
Sector5	250	Sector17 250
Sector6	250	Sector18 250
Sector7	250	Sector19 250
Sector8	250	Sector20 250
Sector9	250	Sector21 250
Sector10	250	Sector22 250
Sector11	250	Sector23 250
Sector12	250	Sector24 250

SEARCH: Mode S II Search Range Start End (01 15) START SEARCH

Matching codes: SI-A 03, SI-B 19, SI-C 35, SI-D 51, II 03

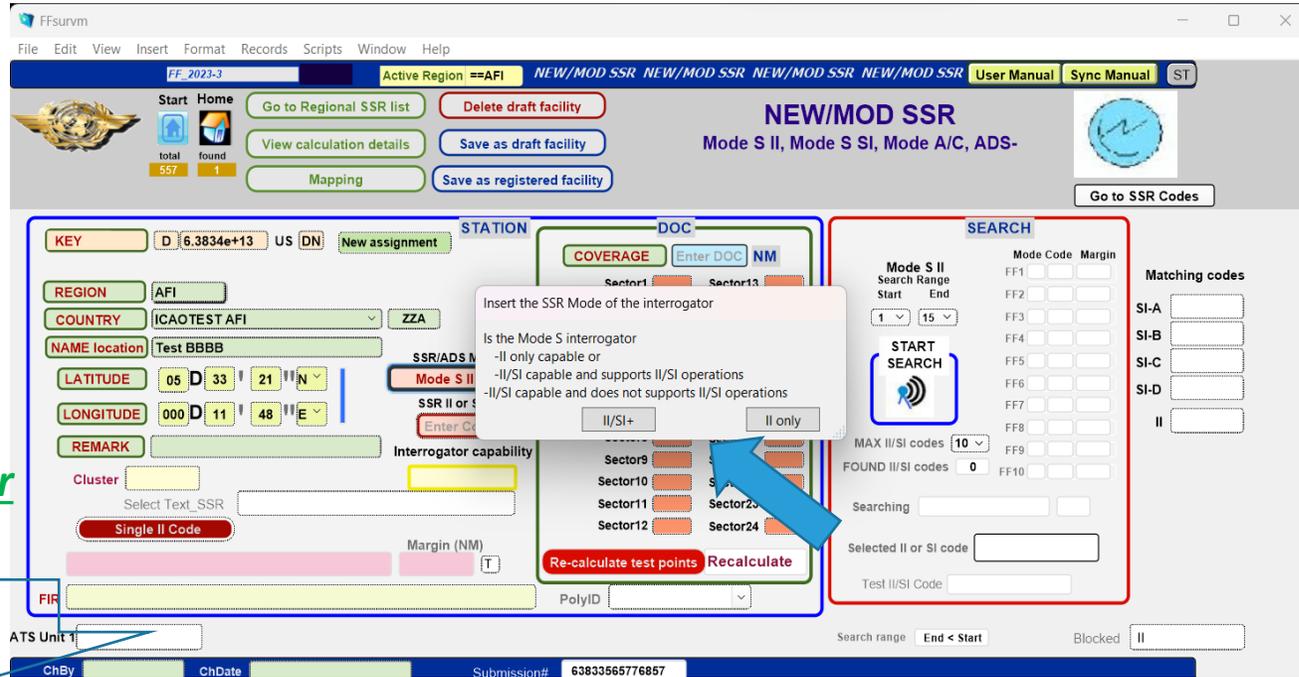
Fill in the station/Facility information



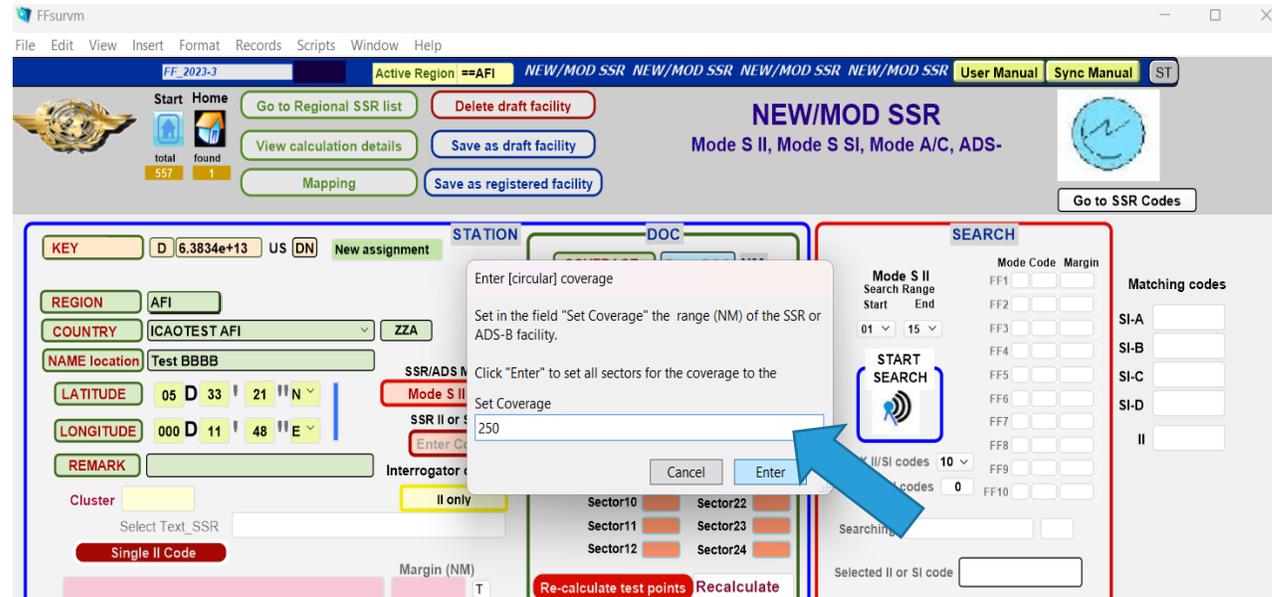
ADD/ NEW SSR FACILITY OR STATION

When inserting the SSR Mode of the Interrogator you will be Prompted to select II/SI+ or II only

You then select the one that correspond to your station/facility



NEXT you fill in your DOC



ADD/ NEW SSR FACILITY OR STATION

Conduct a test
To check if your
Mode S II/SI code selected
Is **COMPATIBLE**

click on **test** “to perform the compatibility test” and click on “single code assignment”.

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File Edit View Insert Format Records Scripts Window Help
FF_2023-3 Active Region ==AFI NEW/MOD SSR NEW/MOD SSR NEW/MOD SSR NEW/MOD SSR User Manual Sync Manual ST

Start Home Go to Regional SSR list Delete draft facility
total found 558 1 View calculation details Save as draft facility
Mapping Save as registered facility

NEW/MOD SSR
Mode S II, Mode S SI, Mode A/C, ADS-

Go to SSR Codes

KEY D 6.3834e+13 US DN New assignment STATION
REGION AFI
COUNTRY ICAOTEST AFI ZZA
NAME location Test BBBB
LATITUDE 05 D 32 21 N
LONGITUDE 000 D 11 48 E
REMARK
Cluster
Select Text_SSR
Test
SSR/ADS Mode Mode S II
SSR II or SI Code 03
Interrogator capability II only
Margin (NM) -203
Re-calculate test points

COVERAGE 250 NM
Sector1 250 Sector13 250
Sector2 250 Sector14 250
Sector3 250 Sector15 250
Sector4 250 Sector16 250
Sector5 250 Sector17 250
Sector6 250 Sector18 250
Sector7 250 Sector19 250
Sector8 250 Sector20 250
Sector9 250 Sector21 250
Sector10 250 Sector22 250
Sector11 250 Sector23 250
Sector12 250 Sector24 250

SEARCH
Mode S II Search Range Start End
Mode Code Margin
FF1
FF2
FF3
FF4
FF5
FF6
FF7
FF8
FF9
FF10
MAX II/SI codes 10
FOUND II/SI codes 0
Searching
Selected II or SI code
Test II/SI Code Tested

Matching codes
SI-A 03
SI-B 19
SI-C 35
SI-D 51
II 03

TS Unit 1

In this Case I selected
II code **03** which the test
Result indicates is not
COMPATIBLE

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File Edit View Insert Format Records Scripts Window Help
FF_2023-3 Active Region ==AFI NEW/MOD SSR NEW/MOD SSR NEW/MOD SSR NEW/MOD SSR User Manual Sync Manual ST

Start Home Go to Regional SSR list Delete draft facility
total found 558 1 View calculation details Save as draft facility
Mapping Save as registered facility

NEW/MOD SSR
Mode S II, Mode S SI, Mode A/C, ADS-

Go to SSR Codes

KEY D 6.3834e+13 US DN New assignment STATION
REGION AFI
COUNTRY ICAOTEST AFI ZZA
NAME location Test BBBB
LATITUDE 05 D 32 21 N
LONGITUDE 000 D 11 48 E
REMARK
Cluster
Select Text_SSR
Test
SSR/ADS Mode Mode S II
SSR II or SI Code 03
Interrogator capability II only
Margin (NM) -203
Re-calculate test points

COVERAGE 250 NM
Sector1 250 Sector13 250
Sector2 250 Sector14 250
Sector3 250 Sector15 250
Sector4 250 Sector16 250
Sector5 250 Sector17 250
Sector6 250 Sector18 250
Sector7 250 Sector19 250
Sector8 250 Sector20 250
Sector9 250 Sector21 250
Sector10 250 Sector22 250
Sector11 250 Sector23 250
Sector12 250 Sector24 250

SEARCH
Mode S II Search Range Start End
Mode Code Margin
FF1
FF2
FF3
FF4
FF5
FF6
FF7
FF8
FF9
FF10
MAX II/SI codes 10
FOUND II/SI codes 0
Searching
Selected II or SI code
Test II/SI Code Tested

Matching codes
SI-A 03
SI-B 19
SI-C 35
SI-D 51
II 03

TS Unit 1

ADD/ NEW SSR FACILITY OR STATION

Click on the **START SEARCH** Button to find a compatible II/SI code

The screenshot shows the SSR configuration interface with three main panels: STATION, DOC, and SEARCH.

- STATION Panel:** Includes fields for KEY (D 6.3834e+13 US DN), REGION (AFI), COUNTRY (ICAO TEST AFI), NAME location (Test BBBB), LATITUDE (05 D 32 21 N), LONGITUDE (000 D 11 48 E), and SSR/ADS Mode (Mode S II). The Interrogator capability is set to II only.
- DOC Panel:** Shows COVERAGE (250 NM) and a grid of 24 sectors, each with a 250 NM range.
- SEARCH Panel:** Displays Mode S II Search Range (Start: 01, End: 15), MAX II/SI codes (10), and FOUND II/SI codes (3). A blue arrow points to the START SEARCH button. The status shows "Searching Search completed" and "Selected II or SI code 15".

Matching codes

SI-A	15
SI-B	31
SI-C	47
SI-D	63
II	15



This screenshot is similar to the one above but includes annotations:

- A blue arrow points to the "Mode S II" dropdown menu in the STATION panel.
- A red box highlights the "FOUND II/SI codes 3" in the SEARCH panel.
- Another red box highlights the "Selected II or SI code 15" in the SEARCH panel.

The SEARCH result found **3 II** Code that are compatible to my station/Facility

The selected II/SI compatible code **15**

ADD/ NEW SSR FACILITY OR STATION

FFsurvm

File Edit View Insert Format Records Scripts Window Help

FF_2023-3 Active Region ==AFI NEW/MOD SSR NEW/MOD SSR NEW/MOD SSR NEW/MOD SSR User Manual Sync Manual ST

Start Home Go to Regional SSR list Delete draft facility Save as draft facility Save as registered facility View calculation details Mapping Go to SSR Codes

total found 559 1

NEW/MOD SSR
Mode S II, Mode S SI, Mode A/C, ADS-

STATION

KEY D 6.3834e+13 US DN New assignment

REGION AFI

COUNTRY ICAOTEST AFI ZZA

NAME location Test BBBB

LATITUDE 06 D 21 31 N

LONGITUDE 002 D 22 59 E

REMARK

Cluster

Select Text_SSR

Test

The selected SSR Mode S II Code is compatible

Margin (NM) 32

FIR

DOC

COVERAGE 200 NM

Sector1	200	Sector13	200
Sector2	200	Sector14	200
Sector3	200	Sector15	200
Sector4	200	Sector16	200
Sector5	200	Sector17	200
Sector6	200	Sector18	200
Sector7	200	Sector19	200
Sector8	200	Sector20	200
Sector9	200	Sector21	200
Sector10	200	Sector22	200
Sector11	200	Sector23	200
Sector12	200	Sector24	200

Re-calculate test points

SEARCH

Mode S II Search Range Start End

Mode Code Margin

FF1	II 02	7
FF2	II 11	32
FF3	II 13	***
FF4	II 14	7
FF5		
FF6		
FF7		
FF8		
FF9		
FF10		

Matching codes

SI-A	11
SI-B	27
SI-C	43
SI-D	59
II	11

MAX II/SI codes 10

FOUND II/SI codes 4

Searching Search completed

Selected II or SI code 15

Test II/SI Code Tested

Select :
“Save as DRAFT facility “
in case you need to work on this
assignment more.

“Save as REGISTERED facility “
in case you completed the
assignment and ready for
submission

Export Submissions

Export Submissions

The screenshot shows the FFsurvm application interface. At the top, there is a menu bar with 'File', 'Edit', 'View', 'Insert', 'Format', 'Records', 'Scripts', 'Window', and 'Help'. Below the menu bar, there are several tabs and buttons. The 'Export submissions' button is highlighted in red. Other buttons include 'New/Mod Facility', 'TEST Mode S Facility', 'Recent test results', 'MAPPING', 'Export facilities to file', and 'Special Functions'. The interface also displays various data fields and a table with columns for MOD, KEY, REGION, SSR code, COUNTRY, NAME location, LATITUDE, LONGITUDE, DOC (NN), Cluster, and ATS Unit served.

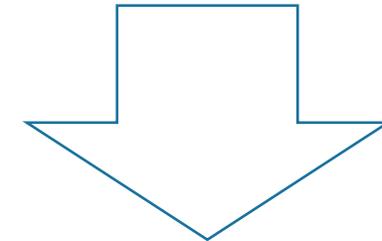
1

Click **“Export submission”** to report New, Mod or Del frequency to regional officer



The dialog box contains the following text: '<110> Open excel file', 'An Excel file will be created containing your submissions which you can attach later to an email message to the Regional Office.', and a 'Cancel' button. The 'Cancel' button is highlighted in red.

2



The screenshot shows an Excel spreadsheet with the following data:

Key	ChBy	Sector1	Sector2	Sector3
6.38336E+13	itefutor	200	200	200

Below the spreadsheet, a save dialog box is open, showing the file name 'SSR AFI ZZA 22-10-2023 123447 PM' and the file type 'Excel Workbook (*.xlsx)'. The 'Save' button is highlighted in red.

Through a dialogue box, the State (user) can consult the excel file prior submission to the ICAO Regional Office (RO) by email;

Mapping

Go back to [Regional SSR II/SI table](#)

Select station or Facility you want to Map

FFSurvm

File Edit View Insert Format Records Scripts Window Help

State: FF_2023-3 Active Region: ==AFI

Return Mode S code list: 1 record #, 558 total, 58 found

Buttons: New/Mod Facility, TEST Mode S Facility, Recent test results, MAPPING, Export facilities to file, Special Functions, - Export submissions -

MOD	KEY	REGION	SSR code	COUNTRY	NAME location	LATITUDE	LONGITUDE	DOC (NM)	Cluster	ATS Unit served
E	5000	AFI	01	Benin	BEN Cotonou	06D21'31"	N 002D22'59"	E 200		
E	5119	AFI	04	Benin	BEN Cotonou	06D21'31"	N 002D22'59"	E 88		
E	5100	AFI	00	BOTSWANA	BOT Gaborone	24D32'33"	S 025D55'52"	E 200		
E	5101	AFI	00	BOTSWANA	BOT Letlhakane	21D22'37"	S 025D35'21"	E 200		
E	5102	AFI	00	BOTSWANA	BOT Maun	19D58'00"	S 023D25'47"	E 200		

In this Example I selected

[ICAOTEST AFI with KEY number 63833568216233](#)

Find ICAOTEST AFI and **CLICK** on the **SELECT** button

FFSurvm

File Edit View Insert Format Records Scripts Window Help

State: FF_2023-3 Active Region: ==AFI

Return Mode S code list: 1 record #, 558 total, 1 found

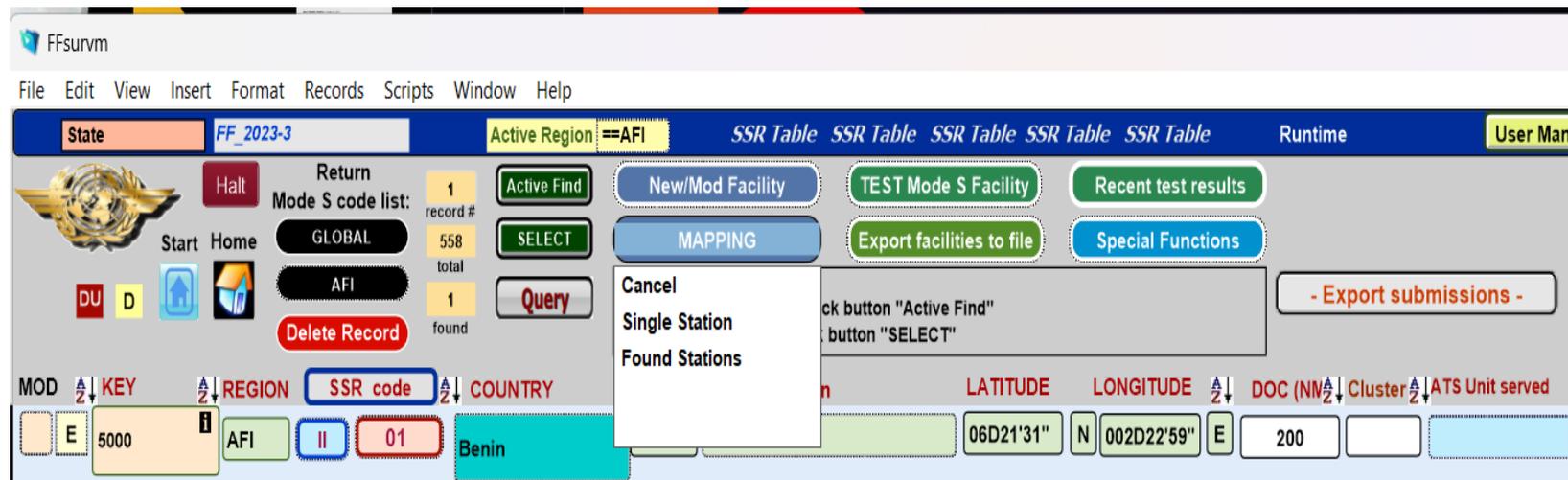
Buttons: Active Find, New/Mod Facility, TEST Mode S Facility, Recent test results, MAPPING, Export facilities to file, Special Functions, - Export submissions -

Message: Selection active. To return to the selection click button "Active Find". To cancel the selection click button "SELECT"

MOD	KEY	REGION	SSR code	COUNTRY	NAME location	LATITUDE	LONGITUDE	DOC (NM)	Cluster	ATS Unit served
DN	D	63833568216233	AFI	15	ICAOTEST AFI	ZZA Test BBBB	05D32'21"	N 000D11'48"	E 250	

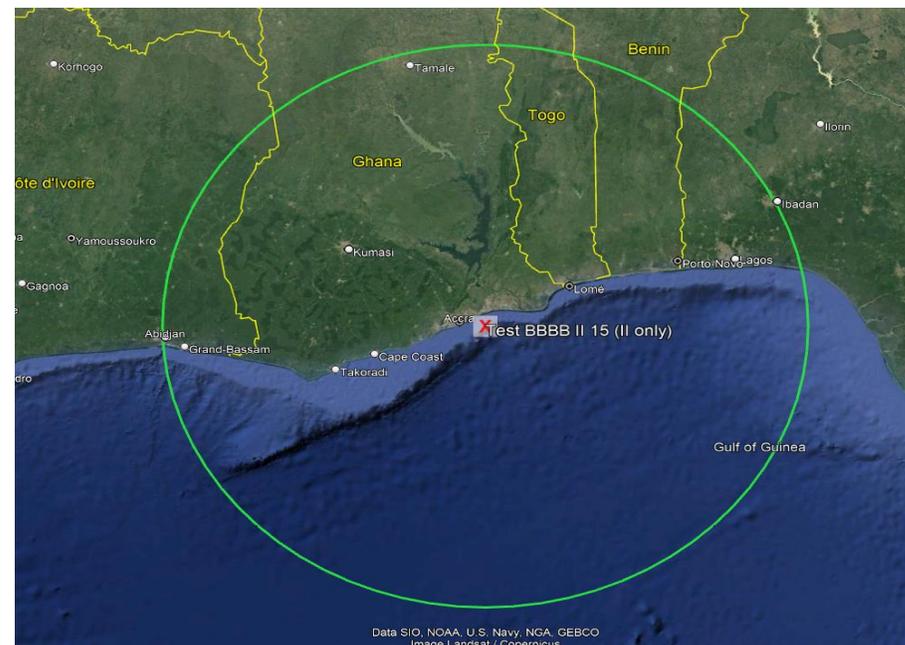
CLCIK on Mapping and Select station or Facility you want to Map

E.g., ICAOTEST AFI



It take you to Google Earth where you can see you mapped Station/Facility

You see test station **BBBB II 15 only**



Exercises - Mapping

Exercise 1 – Map SSR II or SI or ADS- Facilities in your state

II/SI/ADS-B COMPATIBILITY TEST

Exercises

Test Single Mode S Facility

- 1.** Perform compatibility test – single Mode S facility
 - Query: Ghana – Accra - SSR Mode – SSR Code
 - Click Single Mode S facility

EXERCISE II/SI/ADS-B COMPATIBILITY TEST

Exercise 1: Ghana –Accra – II code 04

FFsurvm

File Edit View Insert Format Requests Scripts Window Help

User Active Region ==AFI SSR QUERY SSR QUERY SSR QUERY SSR QUERY

Return to Mode S code list: Global AFI

SSR Query Query the data base for SSR or ADS-B facilities

Find New Query

QUERY DATABASE QUERY DATABASE QUERY DATABASE QUERY DATABASE QUERY

Enter your QUERY

Query Database

REGION ==AFI Country code: Select SSR Mode ==II

COUNTRY ==Ghana R

NAME location ==Accra R Select SSR Code 04

Select criteria for the query from the fields in the box Query Database:

1. Select geographic parameters Region and, if required, Country/Location
2. Select SSR Mode (II or SI or A/C or ADS-B), if required
3. Select SSR Code, if required
4. Click FIND

Use this window to only enter criteria for your query

Last Query - parameters

[Modify/redo] last find

Click here to use the parameters of your most recent query you can modify these parameters

① Click “Query”

② Enter Query
Select State: Ghana
Location: Accra
SSR Mode : II
SSR Code :04

③ Click “Find”

FFsurvm

File Edit View Insert Format Records Scripts Window Help

State Active Region ==AFI SSR Table SSR Table SSR Table SSR Table SSR Table Runtime User Manual Sync Manual ST Connected [Modify/redo] last find

Return Mode S code list: 1 record # 558 total 1 found

Active Find New/Mod Facility TEST Mode S Facility Recent test results

SELECT MAPPING Cancel Single Mode S Facility Found Mod

Query active. To return the query click the button. To return to the query or cancel click the button.

- Export submissions - Set polycoord Reset \$\$ Go to SSR Codes

MOD	KEY	REGION	SSR code	COUNTRY	NAME location	LONGITUDE	DOC (NM)	Cluster	ATS Unit served	INTERROGATOR	REMARK	ChDa
E	5102	AFI	II	Ghana	GHA Accra	06D36'43" N	000D10'04" W	200		II only	II only	11/09/

Frequency Finder found 1 entry with the II code 04 in Accra

Select Key No. 5102 (Accra) and

Select Single Mode S facility

FFsurvm
File Edit View Insert Format Records Scripts Window Help

SSR Mode S Data Base Details same and matching Mode S II/SI code compatibility Calculation of same and/or matching Mode S II/SI Code separation distances

Record number / Found records 1 / 6 Found records / Total records 6 / 6

AFI Show all records SSR Same or Matching II/SI Code Plot interference contours ALL

Capability II only Match SI_Ag 04
SSR II Slg II Match SI_Bg 20
SSR II Codeg 4 Match SI_Cg 36
Match Ilg 04 Match SI_Dg 52

Record	Cluster	AFI	Country	Location	Accra	Margin to 1	Margin from 1	Plot coverage	Plot interference	Sectorname
E 5012	II II 04		Ghana	200NM	47 NM	-129 NM	Not Compatible	Plot coverage	Key	Latitude 05D36'43" N Longitude 000D10'04" W
E 5119	II II 04		Benin	88NM	47 NM	-129 NM	Not Compatible	Plot interference	KeyNo Overlap	Latitude 06D21'31" N Longitude 002D22'59" E
E 4025	II II 04		Ecuador	200NM	63 NM	-63 NM	Not Compatible	Plot interference	KeyNo Overlap	Latitude 00D00'00" N Longitude 000D00'00" E
E 4031	II II 04		Peru	200NM	63 NM	-63 NM	Not Compatible	Plot interference	KeyNo Overlap	Latitude 00D00'00" N Longitude 000D00'00" E
E 5011	II II 04		Gabon	200NM	252 NM	252 NM	Compatible	Plot interference	KeyNo Overlap	Latitude 00D27'39" N Longitude 009D24'44" E
E 5027	II II 04		Nigeria	200NM	256 NM	256 NM	Compatible	Plot interference	KeyNo Overlap	Latitude 12D24'28" N Longitude 008D31'10" E

Calculation of SSR Same or Matching II/SI code is displayed.

We have 3 results indicating Not compatible / No Overlap

2 results indicating Compatible with no overlap

FFsurvm
File Edit View Insert Format Records Scripts Window Help

SSR Mode S Data Base Details same and matching Mode S II/SI code compatibility Calculation of same and/or matching Mode S II/SI Code separation distances

Record number / Found records 1 / 6 Found records / Total records 6 / 6

AFI Show all records SSR Same or Matching II/SI Code Plot interference contours ALL

Capability II only Match SI_Ag 04
SSR II Slg II Match SI_Bg 20
SSR II Codeg 4 Match SI_Cg 36
Match Ilg 04 Match SI_Dg 52

Record	Cluster	AFI	Country	Location	Accra	Margin to 1	Margin from 1	Plot coverage	Plot interference	Sectorname
E 5012	II II 04		Ghana	200NM	47 NM	-129 NM	Not Compatible	Plot coverage	Key	Latitude 05D36'43" N Longitude 000D10'04" W
E 5119	II II 04		Benin	88NM	47 NM	-129 NM	Not Compatible	Plot interference	KeyNo Overlap	Latitude 06D21'31" N Longitude 002D22'59" E
E 4025	II II 04		Ecuador	200NM	63 NM	-63 NM	Not Compatible	Plot interference	KeyNo Overlap	Latitude 00D00'00" N Longitude 000D00'00" E
E 4031	II II 04		Peru	200NM	63 NM	-63 NM	Not Compatible	Plot interference	KeyNo Overlap	Latitude 00D00'00" N Longitude 000D00'00" E
E 5011	II II 04		Gabon	200NM	252 NM	252 NM	Compatible	Plot interference	KeyNo Overlap	Latitude 00D27'39" N Longitude 009D24'44" E
E 5027	II II 04		Nigeria	200NM	256 NM	256 NM	Compatible	Plot interference	KeyNo Overlap	Latitude 12D24'28" N Longitude 008D31'10" E



Select "plot interference contour all" if you want to see the result on Map as well

INTERFERENCE CONTOURS MAP





Thank You!