

# HFBC Exercises

## World Radiocommunication Seminar 2012 (WRS-12)



### Exercise 1 – HFBC REQ 1.3 - Data Capture

#### Purpose and objectives:

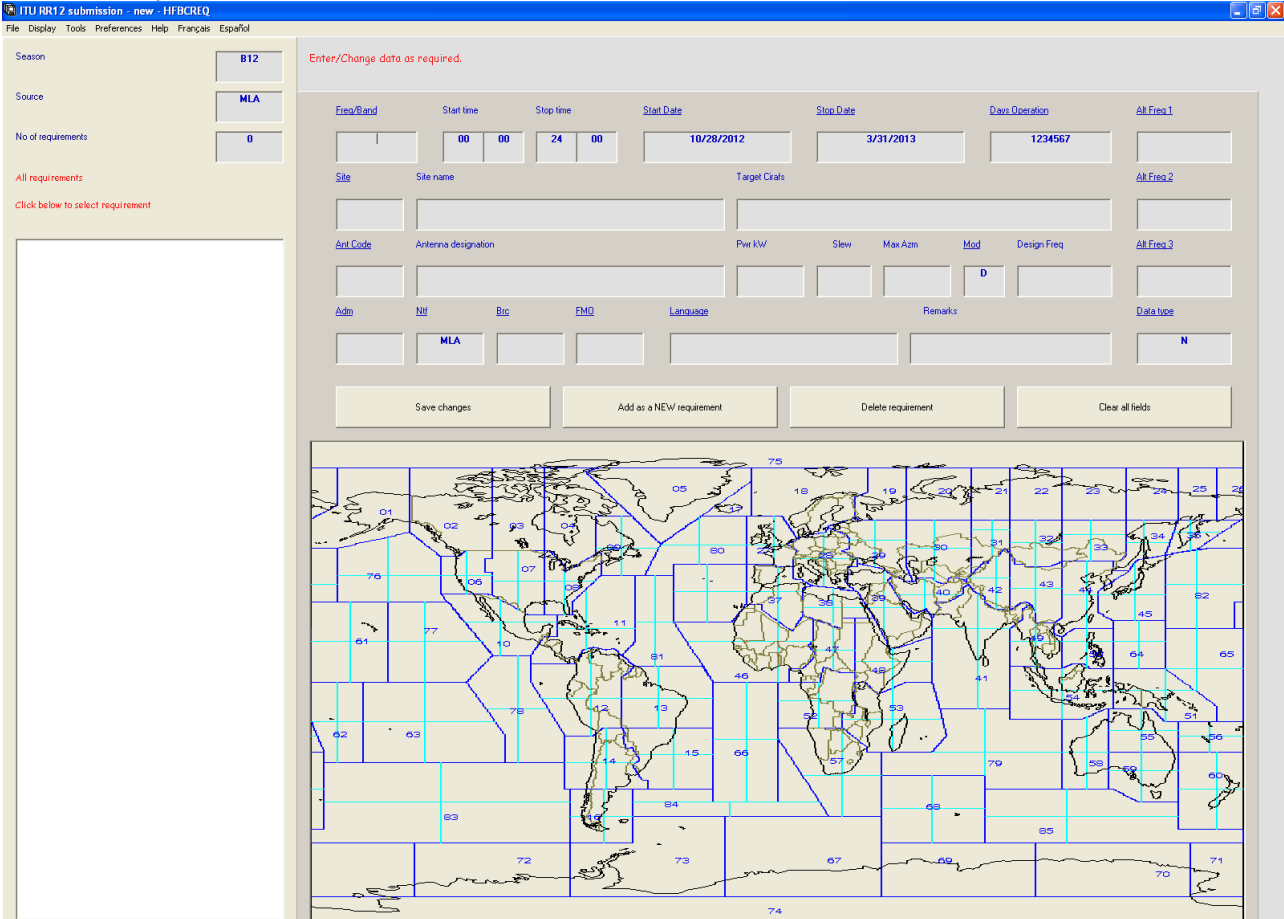
A simple requirement file for notification to the ITU has to be created and saved using the Data Capture software HFBC REQ 1.3.

#### Input data:

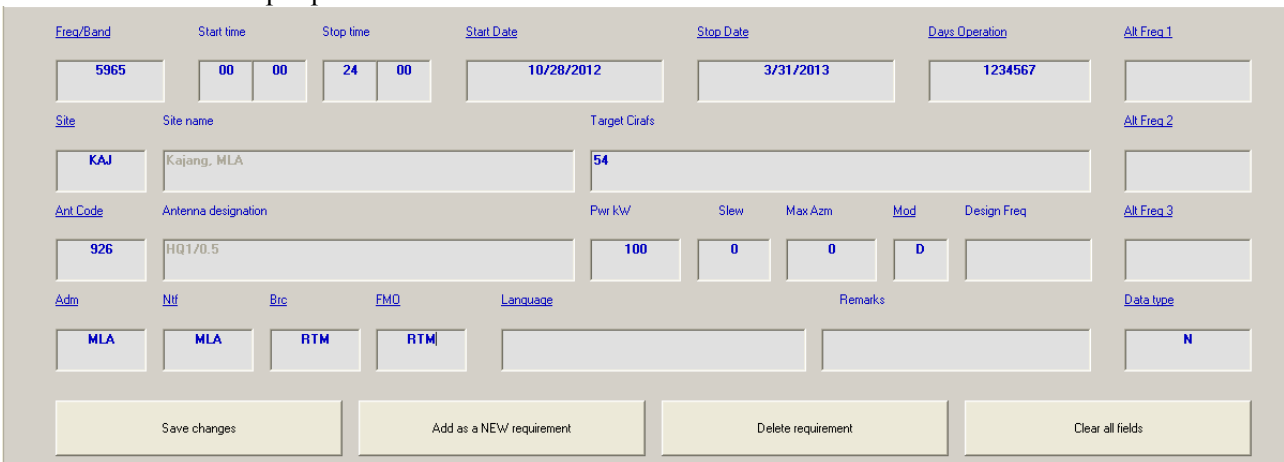
- Requirement file should cover the season B12 (October 2012 – March 2013)
- Administration responsible: Malaysia
- One requirement to be included in the requirement file:
  - Frequency: 5965 [MHz]
  - Transmission time slot: 00:00-24:00 [UTC]
  - Start Time: code: 00 00
  - Stop time: code: 24 00
  - Coverage area: Malaysia, Indonesia, 54 [CIRAF zones]
  - Transmitter site location: Kajang, code: KAJ
  - Transmitting power: 100 [kW]
  - Azimuth of the maximum radiation: 0 [Degrees]
  - Antenna slew angle: 0 [Degrees]
  - Antenna type: Quadrant antenna HQ1/0.5, antenna code: 926
  - Days of operation: From Monday to Friday, code: 1234567
  - Period of operation: From 28-Oct-2012 to 31-Mar-2013
  - Start Date: 28/10/2012
  - Stop date: 31/03/2013
  - Modulation: Double-side, code: D
  - Language used for the transmission: Malay, language code: May
  - Broadcaster: Radio Television Malaysia, code: RTM
  - Frequency manager organization: Radio Television Malaysia, code: RTM
  - Alternative frequency: None
  - Data type: new requirement, code N

#### Solution - Steps to be followed:

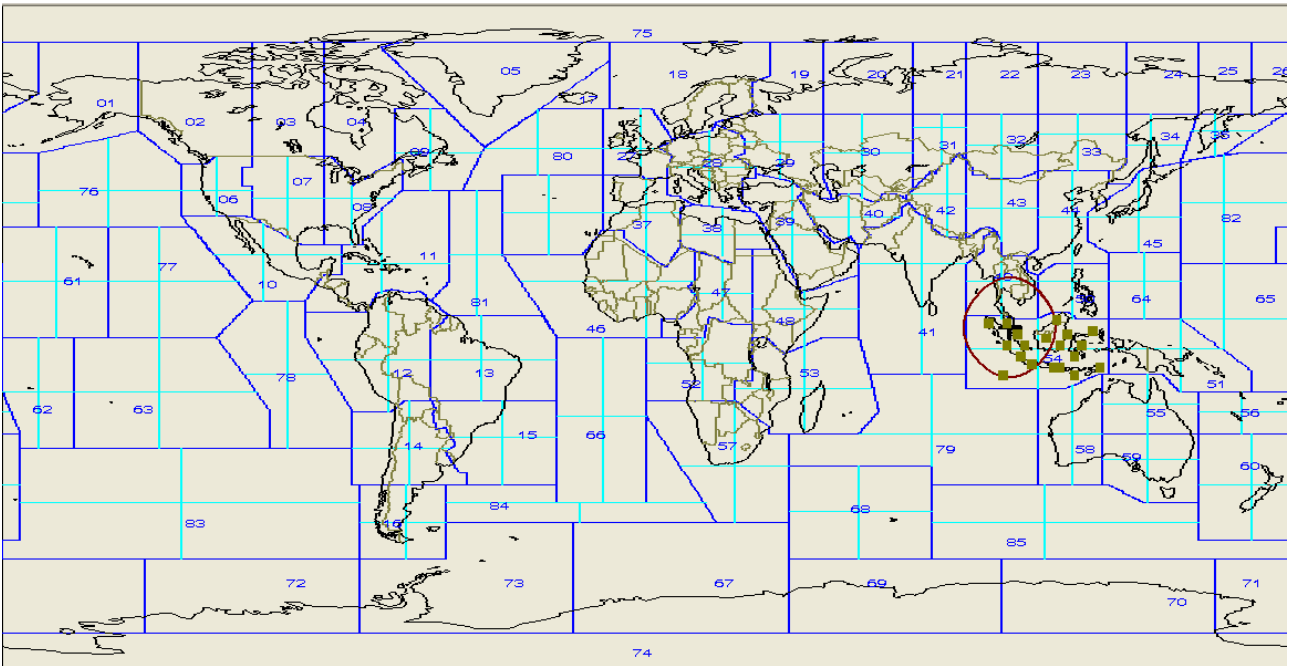
1. Run the HFBC REQ 1.3 software.
2. Configure the “Open” dialog box:  
“Requirement file to ITU”; Open a new requirement file, “B12 season”.
3. Configure the “Authorised Notifying Organisations” dialog box.  
“MLA, Malaysia”.



4. Type in or select from the item titles the appropriate input data for the requirement.
5. Check data in the input part of the screen. It should be:

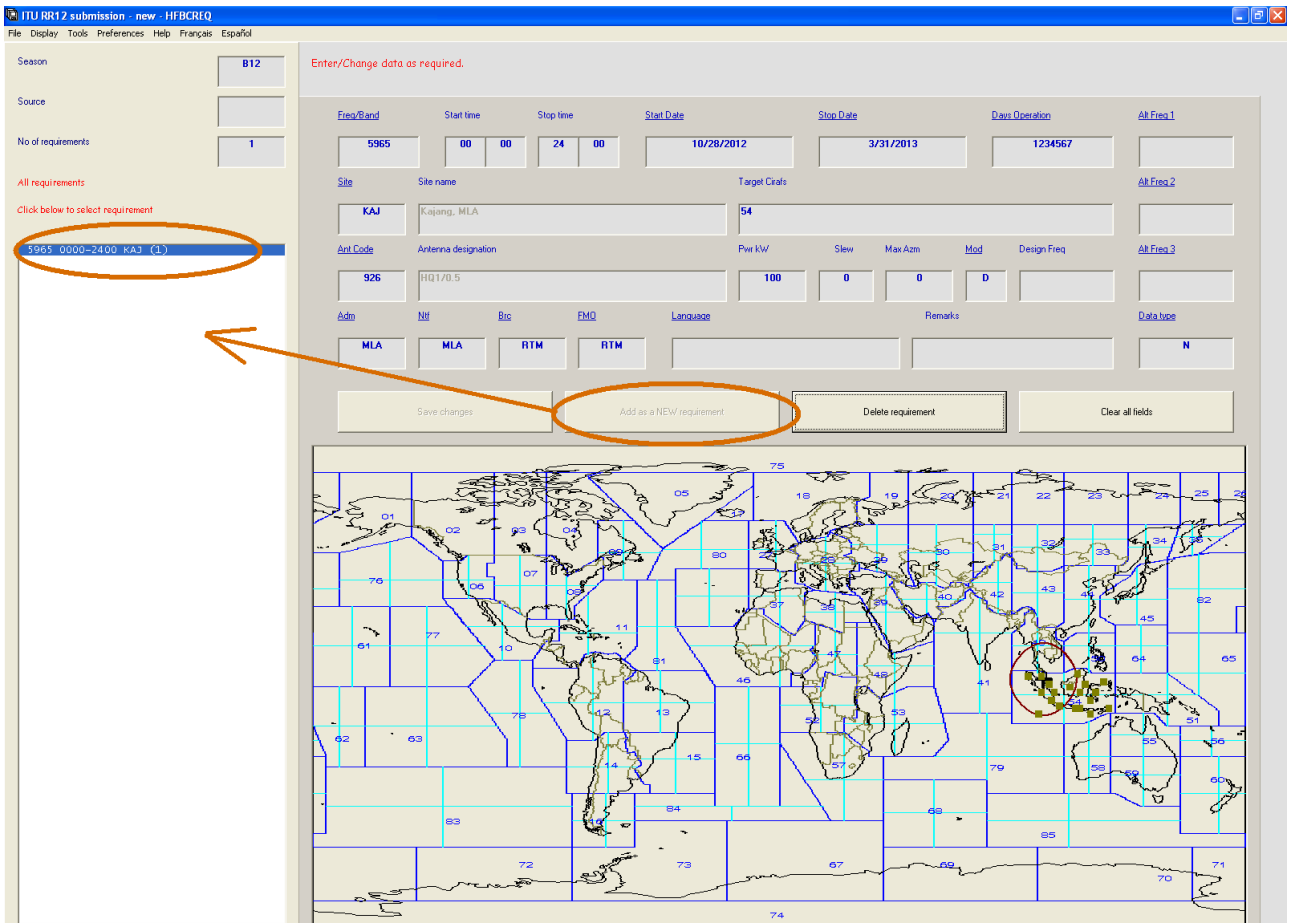


6. The graphical part of the screen should display the antenna diagram of the selected antenna system and the requested target service area:



7. To save the requirement, click on “Add as a NEW requirement” button, then OK.

8. Please note that this first added requirement appears in left blank box which contains a short list of all requirements included in the notification file.



9. From the main “File” menu, select “Save”. A dialog box appears requesting you to select the code of the organization authorized to submit requirements on behalf of your administration. Select the code MLA.
10. Select a folder on your computer to save the file. Please note that automatically, the proposed name of your requirement file is set to: **[Season][Notifying organization].txt (B12MLA.txt)**
11. Your file is saved as a simple text file format and ready to be sent to the Bureau.
12. Close the application.

## Exercise 2 – HFBC VAL 2.0 - Data validation

### Purpose and objectives:

Open an old submitted requirement file (from previous season). Validate it for season B12 using the Data Validation software HFBC VAL 2.0 and correct it. Save the file under the name of B12MLIfromB11.txt

### Input data:

- Existing requirement file: B11-MLI.txt

### Solution - Steps to be followed:

- Execute the HFBC VAL 2.0 software.
- Select from the main “File” menu “Open”, and then locate the B11-MLI.txt file.
- From the main “Validate” menu, select “B12” for season B12.

```

HFBC VAL 2.0 - M:\BRTSD\BCD\HFBC\docs\Seminars\2012\B11-MLI.txt
File Edit Validate Tools Help Français Español

61 error(s): Total number of requirements = 30

; B11 MLI 19-JUL-2011
;
; pour notification à l'UIT
; No totale des besoins 30
;
; à l'exception de la première ligne (contenant saison, org notificatrice, date)
; Lignes commençant avec virgule (;) sont ignorées par le programme
;
; créée par HFBCREQ 1.3 on 19/07/2011 12:16:45
;
-----
;FREQ DEBU FIN ZONES CIRAF LOC PUIS AZIMUTE PIV ANT JOURS DDATE FDATE MOD AFRQ LANGUE ADH RDP ORG REQ# VIE ALTI ALT2 ALT3 NOTES
-----
;
5995 0600 0800 46 BKO 100 0 0 925 1234567 301011 250312 D 5995 MLI MTR 1 N MLI
5995 1800 2400 46 BKO 100 0 0 925 1234567 301011 250312 D 7295 MLI MTR 2 N MLI
7295 0800 0900 46 BKO 100 0 0 925 1234567 301011 250312 D 7295 MLI CRI 3 N MLI
7295 2300 0000 46 BKO 100 0 0 925 1234567 301011 250312 D 7295 MLI CRI 4 N MLI
9635 0800 1800 46 BKO 100 45 0 216 1234567 301011 250312 D 9635 MLI MTR 5 N MLI
11640 1800 1830 46E,47W BKO 100 0 0 206 1234567 301011 250312 D 11640 MLI CRI 6 N MLI
11640 1830 1930 47E,48NW BKO 100 85 0 206 1234567 301011 250312 D 11640 MLI CRI 7 N MLI
11640 1930 2000 52S,53W BKO 100 111 0 216 1234567 301011 250312 D 11640 MLI CRI 8 N MLI
11640 2000 2100 48SW,52NE,53 BKO 100 111 0 216 1234567 301011 250312 D 11640 MLI CRI 9 N MLI
11640 2100 2130 48SW,52NE,53 BKO 100 111 0 216 1234567 301011 250312 D 11640 MLI CRI 10 N MLI
11975 2130 2230 46 BKO 100 20 0 216 1234567 301011 250312 D 11640 MLI CRI 11 N MLI
11975 2230 2300 37,38W BKO 100 20 0 216 1234567 301011 250312 D 11640 MLI CRI 12 N MLI
11975 2300 0000 37,38W BKO 100 20 0 216 1234567 301011 250312 D 11640 MLI CRI 13 N MLI
13630 1930 2000 52,53 BKO 100 111 0 206 1234567 301011 250312 D 13630 MLI CRI 14 N MLI
13630 2000 2100 48,53 BKO 100 111 0 206 1234567 301011 250312 D 13630 MLI CRI 15 N MLI
13630 2130 2230 46,47,52 BKO 100 111 0 216 1234567 301011 250312 D 13630 MLI CRI 16 N MLI
13630 2100 2130 48,53 BKO 100 111 0 206 1234567 301011 250312 D 13630 MLI CRI 17 N MLI
13645 1700 1800 48SW,53NW BKO 100 111 0 206 1234567 301011 250312 D 13645 MLI CRI 18 N MLI
13645 1800 1830 46 BKO 100 111 0 206 1234567 301011 250312 D 13645 MLI CRI 19 N MLI
13685 1300 1400 46 BKO 100 111 0 206 1234567 301011 250312 D 13685 MLI CRI 20 N MLI
13685 1400 1500 52N,53 BKO 100 111 0 206 1234567 301011 250312 D 13685 MLI CRI 21 N MLI
13685 1500 1600 52N,53 BKO 100 111 0 206 1234567 301011 250312 D 13685 MLI CRI 22 N MLI
13685 1830 1930 37,38 BKO 100 20 0 216 1234567 301011 250312 D 13685 MLI CRI 23 N MLI
15125 1600 1700 47E,48NW BKO 100 85 0 206 1234567 301011 250312 D 15125 MLI CRI 24 N MLI
15125 1700 1800 48SW,53NW BKO 100 111 0 216 1234567 301011 250312 D 15125 MLI CRI 25 N MLI
15505 2230 2300 46,48 BKO 100 85 0 206 1234567 301011 250312 D 15505 MLI CRI 26 N MLI
17630 1400 1500 46,48 BKO 100 85 0 206 1234567 301011 250312 D 17630 MLI CRI 27 N MLI
17630 1500 1600 46,48 BKO 100 85 0 206 1234567 301011 250312 D 17630 MLI CRI 28 N MLI
17880 1300 1400 46,47,52 BKO 100 111 0 216 1234567 301011 250312 D 17880 MLI CRI 29 N MLI
17880 1600 1700 37,38 BKO 100 20 0 216 1234567 301011 250312 D 17880 MLI CRI 30 N MLI

```

Note that errors detected by the software appear in red.

- Change the “FDATE” and “TDATE” fields to the date of season B12.  
From the main “Tools” menu select “Change the Start/Stop dates to...” B12.  
Indicate “Y” in Old Data column.  
Select “Validate” for B12 season.

No errors!

```
HFBC VAL 2.0 - M:\VRTSD\BDCV\HFBC\docs\Seminars\2012\B11-MLI.txt
File Edit Validate Tools Help Français Español

Select Validate to check file... or Select other available options

P B12 MLI 13-Nov-2012
generated from previous submitted requirement file B11-MLI.txt
;
; pour notification à l'U.I.
; No totale des besoins 30
;
; à l'exception de la première ligne (contenant saison. org notificatrice, date)
; Lignes commençant avec virgule (;) sont ignorées par le programme
;
; crée par HFBCREQ 1.3 on 19/07/2011 12:16:45
;
-----
;FREQ DEBU FIN ZONES CIRAF LOC PUIS AZINUTE PIV AMT JOURS DDATE FDATE MOD AFRQ LANGUE ADM RDF ORG REQ# VIE ALT1 ALT2 ALT3 NOTES
-----
;
5995 0600 0800 46 EKO 100 0 0 925 1234567 281012 310313 D 5995 MLI MTR 1 Y MLI
5995 1800 2400 46 EKO 100 0 0 925 1234567 281012 310313 D MLI MTR 2 Y MLI
7295 0800 0900 46 EKO 100 0 0 925 1234567 281012 310313 D 7295 MLI CRI 3 Y MLI
7295 2300 0000 46 EKO 100 0 0 925 1234567 281012 310313 D 7295 MLI CRI 4 Y MLI
6635 0800 1800 46 EKO 100 45 0 925 1234567 281012 310313 D 6635 MLI MTR 5 Y MLI
```

5. Save the file as **B12MLIfromB11.txt**

6. Close the application.

## Exercise 3 – ITU HFBC 5.2 – Propagation and compatibility analysis

### Purpose and objectives:

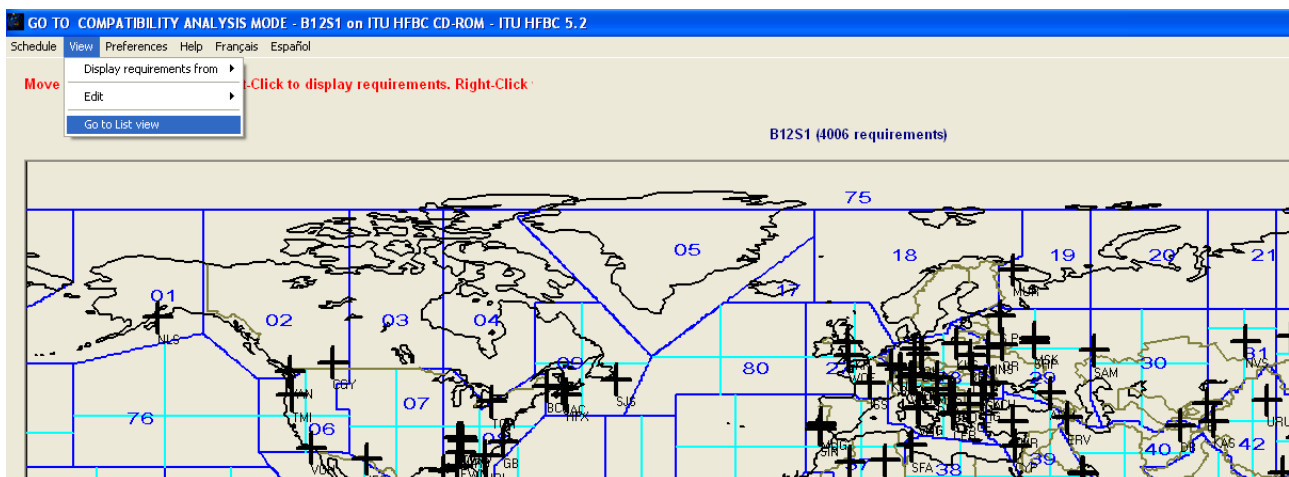
Analyze the Basic Service Reliability (**BSR**) and Time Service Circuit (**TSC**) for specific group of requirements published in ITU HFBC schedule (**in the list view mode**).

### Input date:

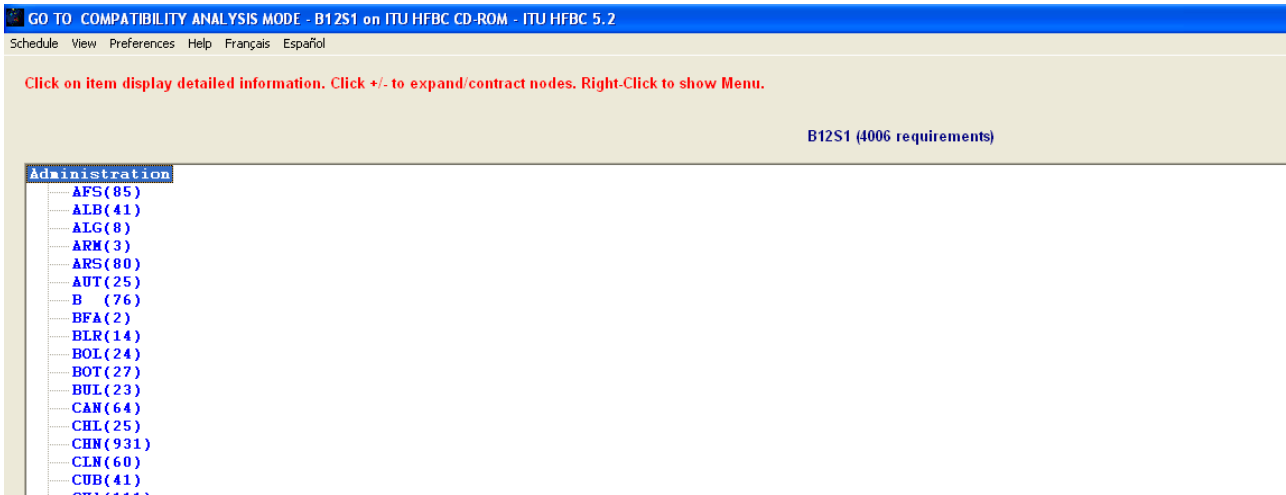
- (CD-ROM) HFBC Schedule B12S1.

### Solution - Steps to be followed:

1. Execute ITUHFBC 5.2 software.
2. Open schedule: B12S1
3. Select “List view”

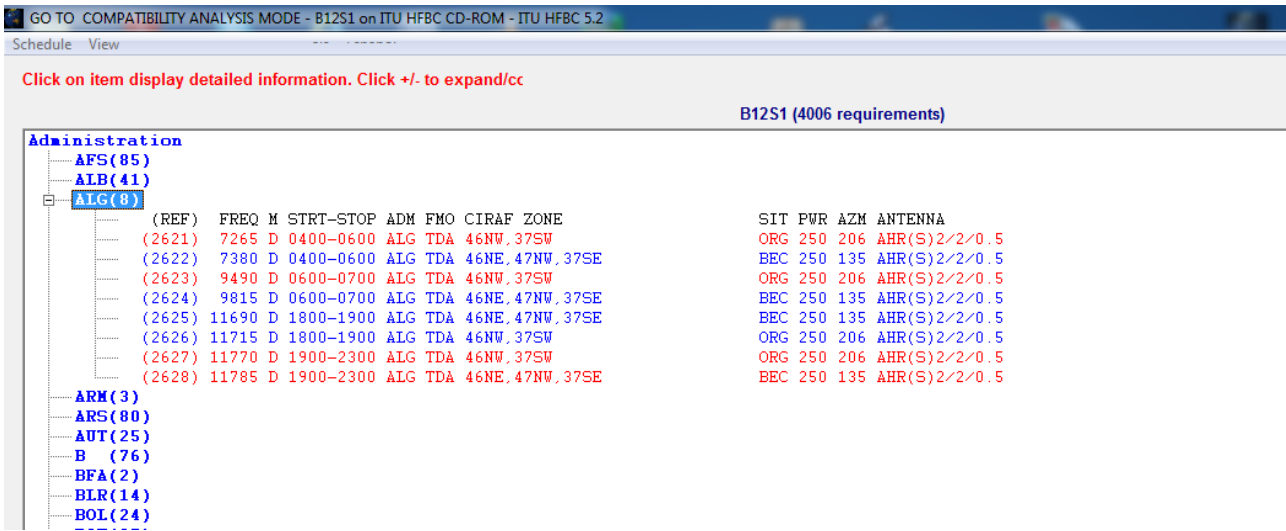


4. The list view is displayed:



5. Display requirements from an administration:  
From “View” menu, select “Display Requirements from”, then select “Administration: ALG (Algeria)”.

6. Click on the ALG (8) to expand the requirements from Algeria.



7. Note the some requirements are displayed in red and some in blue.

8. Note the status bar at the bottom:



Requirements in RED color have BSR or TSC less than 50%.  
Requirements in BLUE color have BSR or TCS more than 50%.

9. Analyze data for the requirements:

BSR and TSC values are presented as numbers from 0 to 9 (from 0% to 90%) for each transmitting hour (from Hour 4 to Hour 6 or 0400-0600...) and for each seasonal period:

November –beginning of the season;  
January –middle of the season;



March –end of the season.

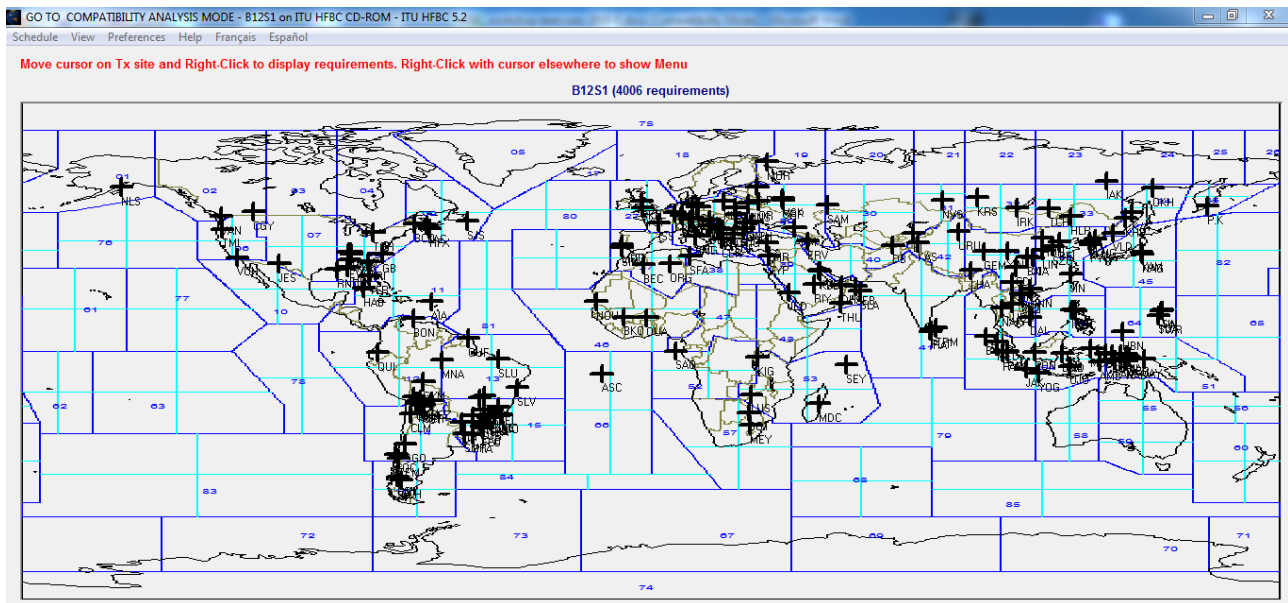
10. Click on a requirement to display detailed results:

(REF)	FREQ	M	STRT-STOP	ADM	FMO	CIRAF	ZONE	SIT	PWR	AZM	ANTENNA
(2621)	7265	D	0400-0600	ALG	TDA	46NW	37SW	ORG	250	206	AHR(S)2/2/0.5
BSR H0405											
Nov 7 3											
Jan 6 1											
Mar 7 6											
TSC H0405 Interfered Cirafs (Wanted/Unwanted FS)											
Nov 2 9											
X - 37SW,46NW(22/41-50/39dBu)											
X - 37SW(21/18-32/18dBu)											
X X 37SW(20/7-20/7dBu)											
Jan 2 9											
X - 37SW,46NW(19/41-40/37dBu)											
X - 37SW(13/21-31/16dBu)											
Mar 2 9											
X - 37SW,46NW(30/41-50/39dBu)											
X - 37SW(25/25-40/25dBu)											
(2622)	7380	D	0400-0600	ALG	TDA	46NE,47NW	37SE	BEC	250	135	AHR(S)2/2/0.5
(2623)	9490	D	0600-0700	ALG	TDA	46NW	37SW	ORG	250	206	AHR(S)2/2/0.5
(2624)	9815	D	0600-0700	ALG	TDA	46NE,47NW	37SE	BEC	250	135	AHR(S)2/2/0.5
(2625)	11690	D	1800-1900	ALG	TDA	46NE,47NW	37SE	BEC	250	135	AHR(S)2/2/0.5
(2626)	11715	D	1800-1900	ALG	TDA	46NW	37SW	ORG	250	206	AHR(S)2/2/0.5
(2627)	11770	D	1900-2300	ALG	TDA	46NW	37SW	ORG	250	206	AHR(S)2/2/0.5
(2628)	11785	D	1900-2300	ALG	TDA	46NE,47NW	37SE	BEC	250	135	AHR(S)2/2/0.5

(REF)	FREQ	M	STRT-STOP	ADM	FMO	SIT	CIRAF	ZONES
(3466)	7265	D	0400-0430	G	RCI	WOF	38E,39SW	
(1766)	7265	D	0500-1700	D	FNA	GOH	18,19,27,28,29,37N	
(813)	7260	D	0257-1205	CHN	RTC	URU	42N	
(3466)	7265	D	0400-0430	G	RCI	WOF	38E,39SW	
(1766)	7265	D	0500-1700	D	FNA	GOH	18,19,27,28,29,37N	
(3466)	7265	D	0400-0430	G	RCI	WOF	38E,39SW	
(1766)	7265	D	0500-1700	D	FNA	GOH	18,19,27,28,29,37N	

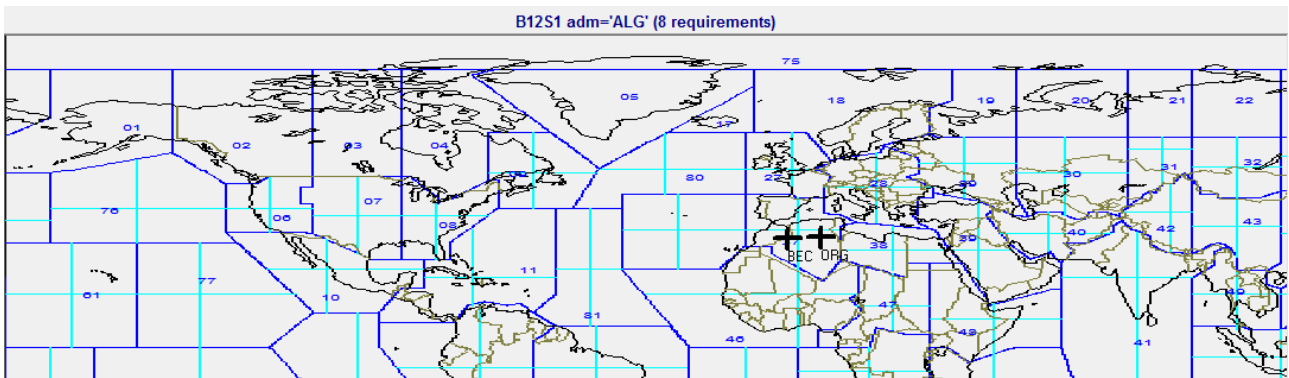
11. From “View” menu, select “Go to Map view”



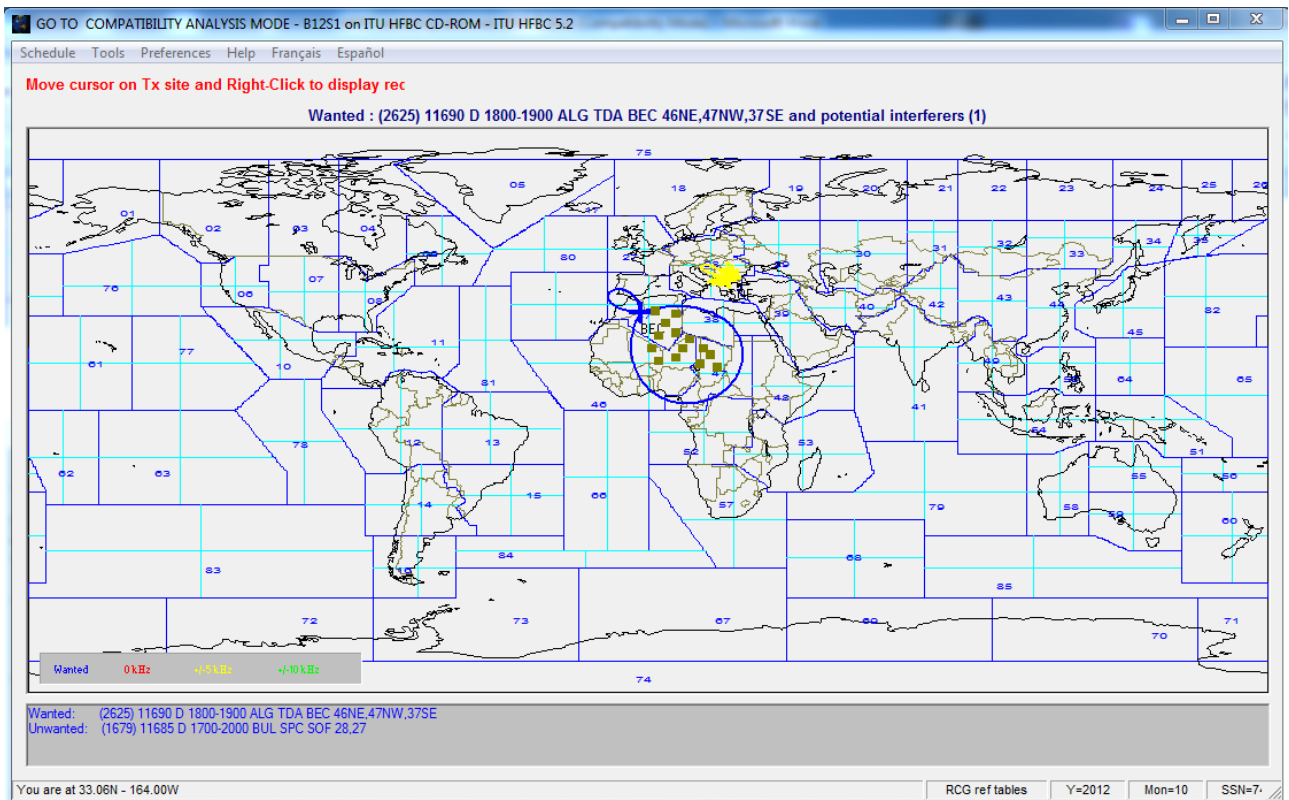
12. Display all requirements from an administration: ALG (Algeria)

Note that the location of the transmitter sites is marked on the map.

13. Right click the transmitter site cross BEC and select the requirement REF. (2625) from the list of the ALG requirements.



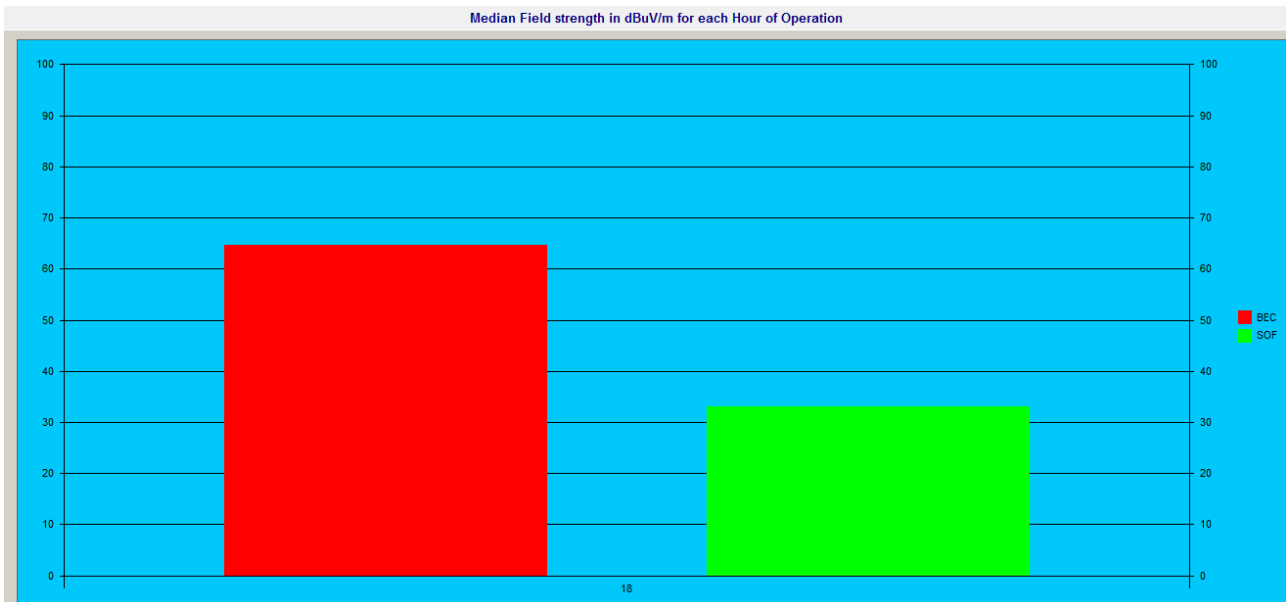
The antenna pattern of the selected requirement (2625) is displayed on the map in blue. The requirement appears in the list as Wanted. Other “Unwanted” requirements are indicated as potential interferers. Potential interfering requirements on the same channel are displayed in red, those on the adjusting channels +/- 5 kHz in yellow, and those in on +/- 10 kHz channels in green.



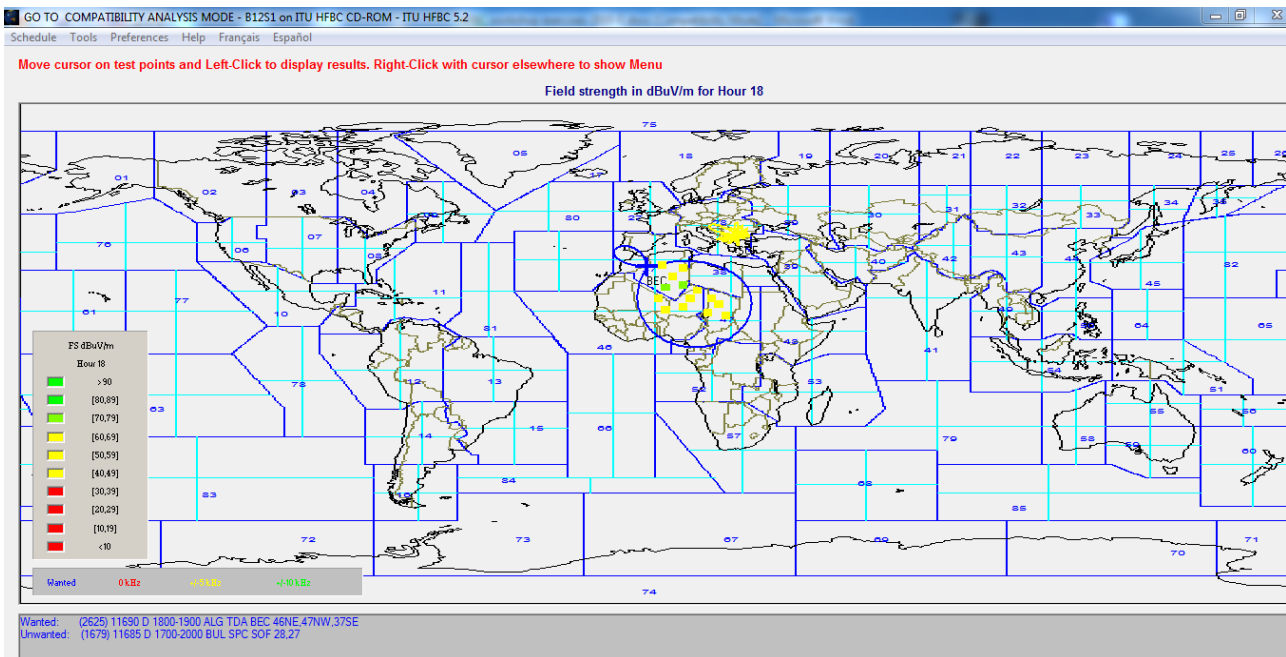
14. From “Tools” menu, select “Calculate”, then “Run compatibility analysis”.

The software calculates...

15. A chart of the median Field Strength for each hour of operation is displayed:



16. Display the compatibility analysis on the map:  
From “Tool”, select “Show Map”.



17. Display the other parameters: Field Strength, Power received, Basic circuit reliability, Signal to Interference, Overall circuit reliability.

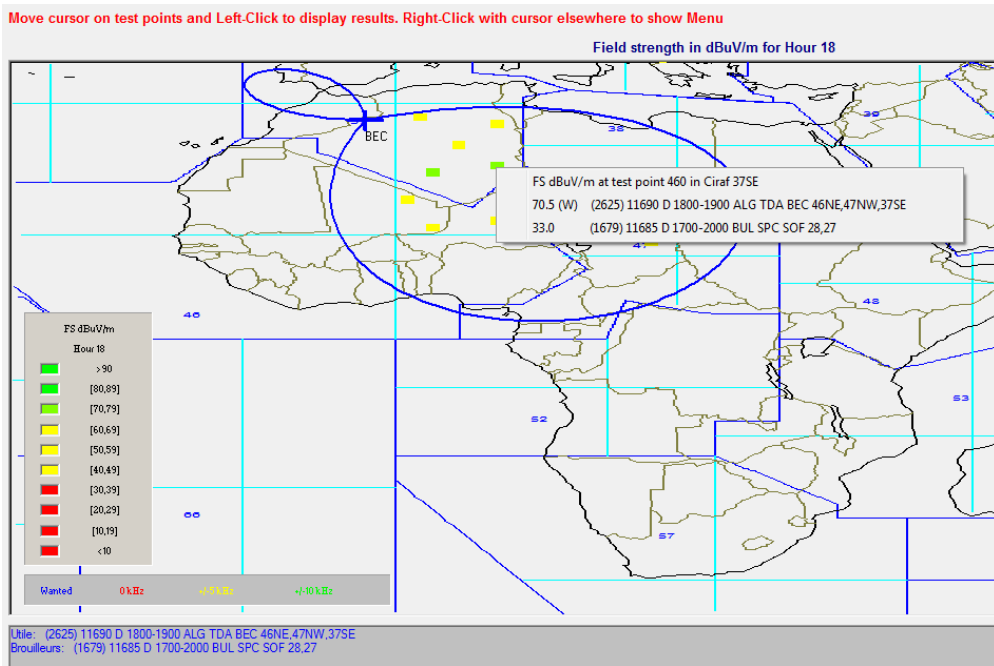
From “Tools”, select “Select Values”, then:

- “FS” – Field Strength
- “PWR” – Power received
- “BCR” – Basic circuit reliability
- “StoI” – Signal to Interference
- “OCR” – Overall circuit reliability

18. Switch between the different types values: Minimum, Median, and Maximum of the currently displayed parameter.

From “Tools” menu, select “Select Values Types”, then “Minimum”/”Median”/”Maximum”.

19. Zoom the map: click inside a continent, in this case, Africa:



## Exercise 4 – HFBC ANT 1.0 – HF transmitting antennas

### Purpose and objectives:

Display horizontal and vertical patterns of an antenna.

### Input data:

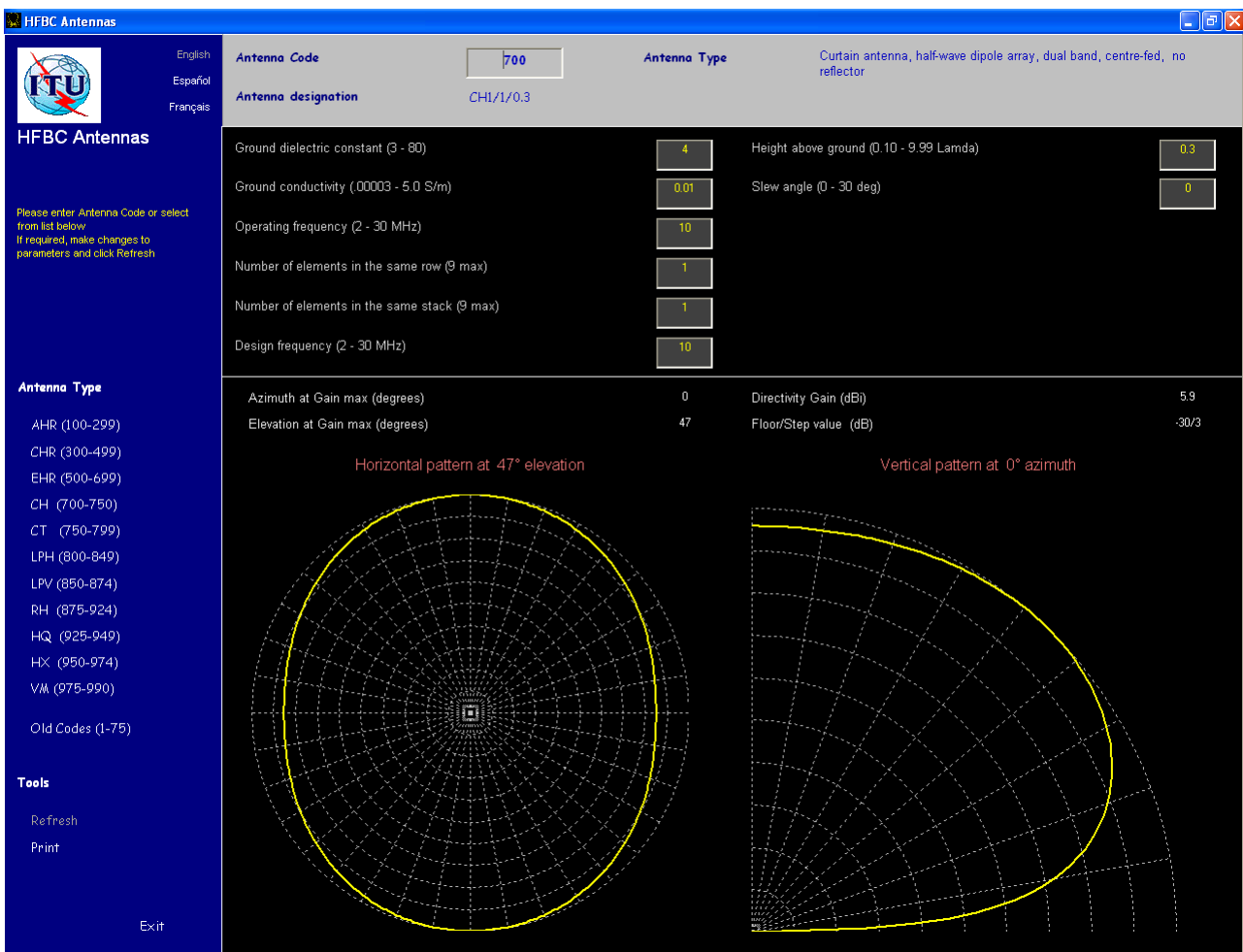
- Curtain antenna, half-wave dipole array, dual band, centre-fed, no reflector. Antenna type: CH1/1/0.3, antenna code: 700

This software is often used to determine the code, the description, and the parameters of the commonly used HF transmission antennas.

### Solution - Steps to be followed:

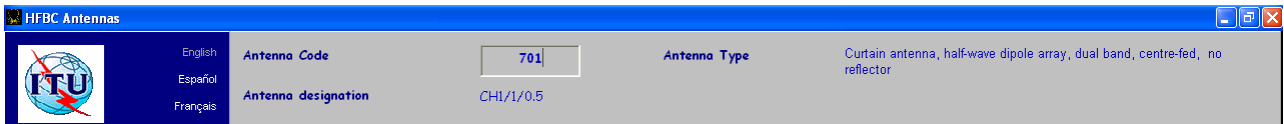
1. Execute the HFBC ANT 1.0 software.
2. Select the type of the antenna:

From the left menu “Antenna type”, select “CH (700-750)”, then from the list select “700 CH1/1/0.3”.



The selected antenna and its characteristics are displayed.

3. Select an antenna by specifying its code:  
Type the code in the “Antenna code box”:



4. Print the antenna parameters:  
From the left menu, click on "Print".

5. Close the application.