




International Telecommunication Union



**ITU**

**ITU REGIONAL FREQUENCY  
COORDINATION MEETING  
ON THE USE OF THE  
VHF/UHF BANDS**

**MANAGUA, NICARAGUA  
8-10 MARCH 2017**

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# BR software tools for terrestrial services

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International Telecommunication Union



# Agenda

- **Overview of BR International Frequency Information Circular (BRIFIC): software and database**
- **Overview of BR online tools**
  - **Online Validation, eMIFR tools, WISFAT (official submission to the BR) for all terrestrial services**
  - **The eBCD2.0 platform for broadcasting services**
- **Compatibility Analyses Display software (CA Display)**



# BR IFIC

For subscribers

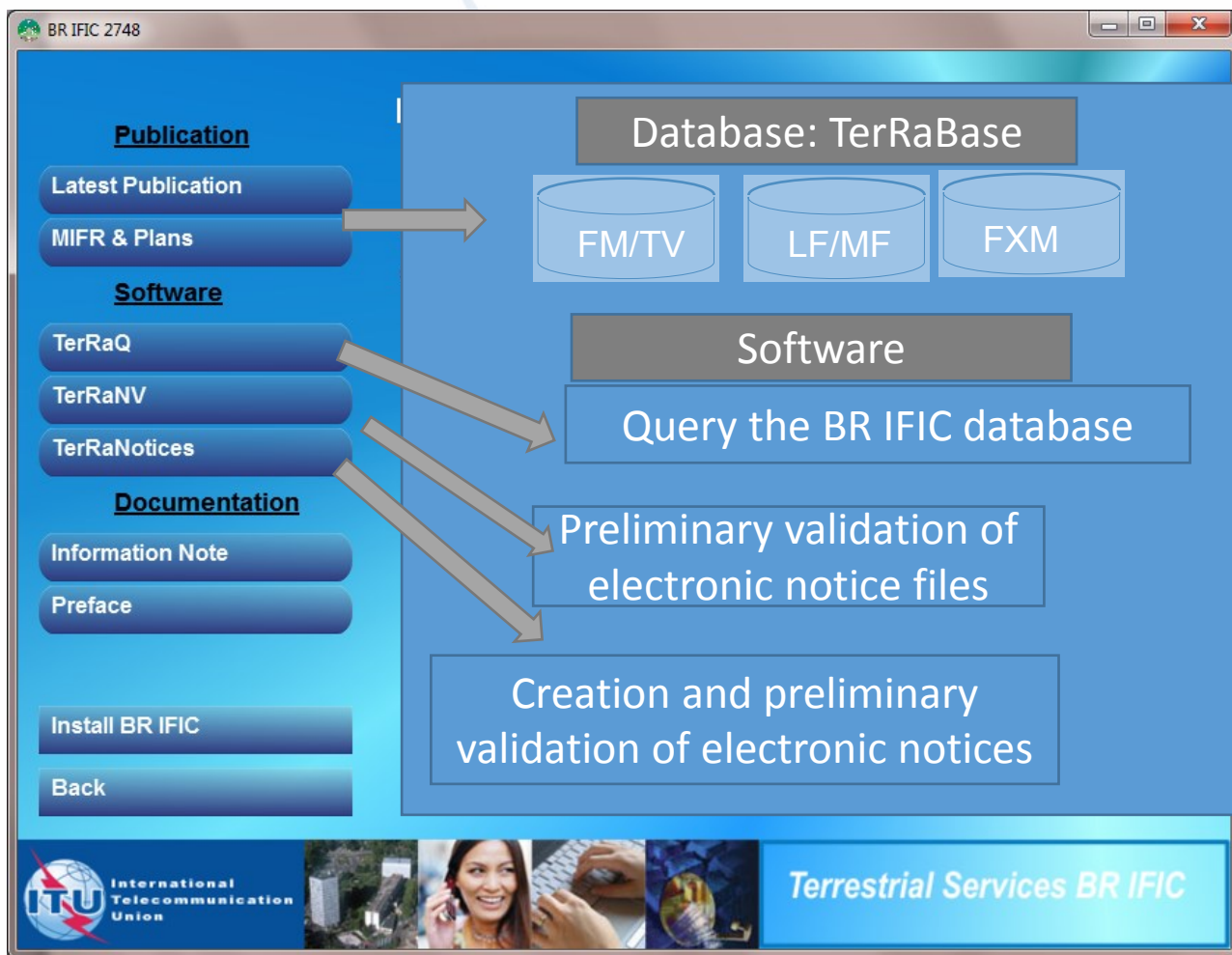
## BR International Frequency information Circular

- Provide information on the frequency assignments and allotments recorded in the Master International Frequency Register and World-wide or Regional Plans, as well as on frequencies prescribed for common use.
- Published once every two weeks
- Arabic, Chinese, English, French, Russian and Spanish.

### BR IFIC (Terrestrial Services)



# BR IFIC Contents



➤ Install on PC  
➤ Run from the DVD

➤ More during  
demo session!



# Notice file and TerRaNotices

```
CTR_T9_ISDB-...
File Edit Format View Help
<KHEAD>
t_adm=CTR
t_d_sent=2016-08-02
</HEAD>
<NOTICE>
t_notice_type=T02
t_fragment=NTFD_RR
t_action=ADD
t_adm_ref_id=ISDB-T 6MHz
t_freq_assgn=647.000000
t_long=0830158
t_lat=+095916
t_site_name=Limon
t_addr_code=A
t_erp_h_dbw=30
t_op_hh_to=24:00
t_prov=RR11.2
t_d_inuse=2015-08-01
t_hgt_agl=50
t_site_alt=3
t_op_hh_fr=00:00
t_d_adm_ntc=2016-08-02
t_polar=H
t_tran_sys=T9
t_eff_hgt_max=53
t_ctry=CTR
<ANT_HGT>
t_eff_hgt@azm0=53
t_eff_hgt@azm10=53
t_eff_hgt@azm20=53
t_eff_hgt@azm30=53
t_eff_hgt@azm40=53
t_eff_hgt@azm50=53
t_eff_hgt@azm60=53
t_eff_hgt@azm70=53
t_eff_hgt@azm80=53
t_eff_hgt@azm90=53
t_eff_hgt@azm100=53
t_eff_hgt@azm110=53
t_eff_hgt@azm120=53
t_eff_hgt@azm130=53
t_eff_hgt@azm140=53
t_eff_hgt@azm150=48
t_eff_hgt@azm160=44
t_eff_hgt@azm170=34
t_eff_hgt@azm180=20
t_eff_hgt@azm190=-11
t_eff_hgt@azm200=-6
t_eff_hgt@azm210=-24
t_eff_hgt@azm220=-4
t_eff_hgt@azm230=-41
t_eff_hgt@azm240=-45
t_eff_hgt@azm250=-17
t_eff_hgt@azm260=-10
t_eff_hgt@azm270=16
t_eff_hgt@azm280=39
t_eff_hgt@azm290=44
t_eff_hgt@azm300=45
t_eff_hgt@azm310=51
t_eff_hgt@azm320=52
t_eff_hgt@azm330=53
t_eff_hgt@azm340=53
t_eff_hgt@azm350=53
</ANT_HGT>
</NOTICE>
<TAIL>
t_num_notices=1
</TAIL>
```

Options Window Help

CTR\_T9\_ISDB-T 6MHz\_647.txt\* - T02

Description

CTR - 02/08/2016  
ISDB-T 6MHz-1

Date of notification: 2 8 2016  
ID1/ Assignment's unique identifier: ISDB-T 6MHz-1

Fragment: Article 11 (selected)  
Notification intended for: Addition (selected)

Assignment characteristics

Station information

4A/ Antenna site name: Limon  
4B/ Geographic area: CTR

4C/ Longitude: 83° 1' 58" W  
Latitude: 9° 59' 16" N

Emission characteristics

1A/ Assigned frequency: 647 MHz  
7A1/ Frequency stability: [dropdown]  
7C1/ Television system: T9  
7C2/ Color system: [dropdown]  
8D/ Vision/Sound Power Ratio: [dropdown] dB  
9D/ Polarization: H  
8BH/ Horizontal e.r.p.: 30 dBW  
8BV/ Vertical e.r.p.: [dropdown] dBW  
1E/ Vision offset: [dropdown] In kHz / In 1/12 LF  
1EA/ Sound offset: [dropdown] In kHz / In 1/12 LF

Antenna characteristics

9/ Antenna directivity: ND  
9EB/ Maximum Effective Antenna Height: 53 m  
9E/ Height of Antenna Above Ground Level: 50 m

Coordination successfully completed with:

Available administrations: AFG, AFS, AGL, ALB, ALG

Errors/warnings in the item number 1 'T02|ADD' of the file 'CTR\_T9\_ISDB-T 6MHz\_647.txt'

Errors/Warnings in the notice:

- Error(s)
  - t\_freq\_assgn : Combination of Assigned Frequency (647.0000 MHz), TV System (T9), Administration (CTR), Geographic Area (CTR), and Fragment (NTFD\_RR) not found in reference table for TV Channels.

View generated notice

Close



# Online Validation

The [Online Validation](#) tool allows administrations to validate their notice file, before official submission via WISFAT

The processing system is currently **ONLINE**  
Contact: [brtpr\\_dp@itu.int](mailto:brtpr_dp@itu.int)

[New Validation](#) [Logout](#)

[Refresh](#)

Jobs History for user: manara

☒ Test Packages 31412: click to show all

**Job summary** [Delete](#)

job id	job name	job status
31412	ugatest	Completed

**Job Input**

Adm	E-notice file	Number of Notices
UGA	<a href="#">UGAtest.txt</a>	1

**Job Output**

Parse status: **T\_PARSE\_HAS\_WARNINGS**

Total number of errors: 4

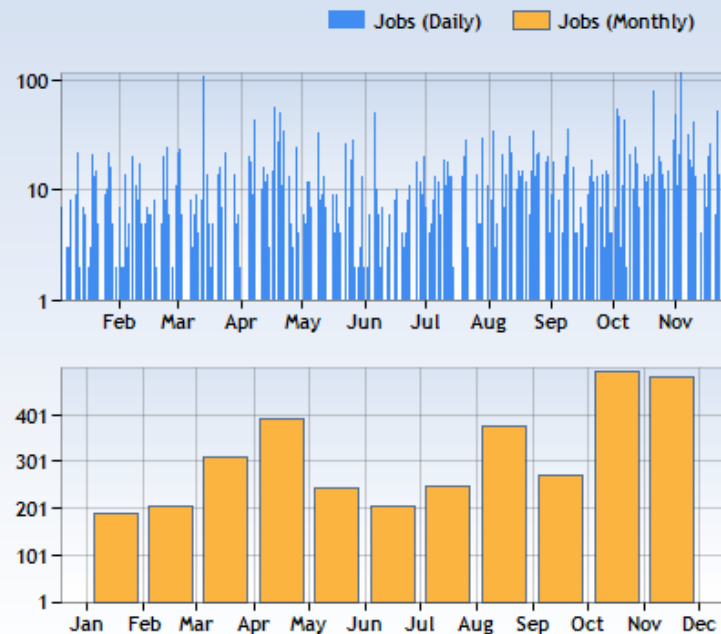
Total number of warnings: 1

**Notice 1 (Line 4) - GT1/MODIFY**

Line 4 : DeepVal Warning - Could not perform further notices validation checking, due to previous errors.  
Line 1 (4) : Error : Either t\_ref\_plan\_cfg OR t\_sys\_var & t\_rx\_mode should be submitted for this notice type.  
Line 17 (20) : Error : t\_ref\_plan\_cfg : invalid value or make sure that the value is typed correctly  
Line 9 (12) : Error : t\_site\_nae : is EITHER not applicable in this case OR check the spelling.  
Line 1 : Error : t\_site\_name : mandatory key missing or the associated key value is invalid.

Reuses TerRaNotice validation software and eTools functionalities in a SOA architecture

## 2016 Statistics



- 64 Administrations
- 163 Users
- > 4500 Validation jobs

More during demo session!





# eMIFR



Delivered prior to WRC-15



MIFR (Terrestrial Services) on-line query (BETA release)

Query system for the simultaneous retrieval of data from the terrestrial portion of the MIFR (FMTV, LFMF and FXM)

☐ MIFR (Broadcasting) ☐ MIFR (FXM) ☒ MIFR (all)

**MIFR (ALL): Selection Criteria**

Administration	Geographic Area	Notice Type	Class of Station
AFG AFS AGL ALB ALG ARG ARM ARS	ABW AFG AFS AGL AIA ALB ALG ALS	1A1 1A2 1A4 1A5 1A7 1B1 1C1 1Z0	AM BC BT

Status ☒ Recorded ☐ Pending

Assigned Frequency MHz  f<sub>min</sub>  f<sub>max</sub>  f<sub>min</sub> ≤ Assigned Frequency ≤ f<sub>max</sub> only

Unique Id. code given by Administration  Identifier assigned by the BR from  to

Date of Receipt (from)  Date of Receipt (to)

Site Name

TORINO

MIFR (All) IFL: 080623514

**Administrative**

**Emission Characteristics**

Assigned Frequency (MHz) 1052 Nature of Service  
Reference (carrier) Frequency  
Class of Emission PXX- Energy dispersal (kHz)  
Bandwidth Code 700K System Type Code(s)

**Station and Site Information**

**Operations**

**Operation 1**

**General Characteristics**

Power Type X Polarization  
Power to the Antenna (dBW) 30 Antenna Directivity  
Radiated Power (dBW) 30 E Azimuth of Maximum Radiation (°)  
Maximum Antenna Gain (dB) Maximum Effective Antenna Height (m)  
Maximum Gain Toward the Local Horizon (dB) Height of Antenna Above Ground Level (m)  
Gain Type Elevation Angle (°)  
Maximum Power Density (dBW/Hz) Beamwidth (°)  
Reference Antenna

**Receiving Station Information**

**RX1**

Site Name Geographical Type CIRCLE  
Geographic Area Zone ID  
Region 1 Geographical coordinates 007°39'00" E - 45°11'00" N  
Radius (km) 80

**Findings Information**

MIFR (All)

Total number of records 10. Click on headers to sort

Export to Excel

Google Earth

BR Id	Adm	Geo Area	Site Name	Location	Assigned Frequency (MHz)	Intent		
080015495	I	I	TORINO	007°44'00" E - 45°02'00" N	0.657	RECORDED	1A4	BT
080225070	I	I	TORINO COLLINA	007°42'00" E - 45°06'00" N	212.5	RECORDED	1A4	BT
080606153	I	I	TORINO COLLINA	007°40'00" E - 45°04'00" N	522	RECORDED	1A4	BT
080607250	I	I	TORINO	007°44'00" E - 45°02'00" N	546	RECORDED	1A4	BT
080608609	I	I	TORINO	007°39'00" E - 45°04'00" N	578	RECORDED	1A4	BT
080610086	I	I	TORINO	007°44'00" E - 45°02'00" N	626	RECORDED	1A4	BT
103046152	I	I	TORINO	007°44'00" E - 45°02'00" N	746	RECORDED	TB2	
080623514	I	I	TORINO CASELLE	007°39'00" E - 45°11'00" N	1052	RECORDED	1B1	
080623522	I	I	TORINO CASELLE	007°39'00" E - 45°12'00" N	1056	RECORDED	1B1	
080623683	I	I	TORINO POIRINO	007°52'00" E - 44°55'00" N	1116	RECORDED	1B1	AM

Export data to Excel, Google Earth

More during demo session!



# WISFAT

## Web Interface for Submission of Frequency Assignments/allotments for Terrestrial Services

### Submission of Notices for Terrestrial Services

YOU ARE HERE [HOME](#) > [ITU-R](#) > [TERRESTRIAL SERVICES](#) > [TERRESTRIAL PUBLICATION AND REGISTRATION DIVISION](#) >  
[SUBMISSION OF NOTICES FOR TERRESTRIAL SERVICES](#)

SHARE    

Submission of frequency assignment/allotment notices for terrestrial services to the BR for the update of the Master International Frequency Register (MIFR) and/or for the modification of Plans shall be made via the secured web interface WISFAT (Web Interface for Submission of Frequency Assignments/allotments for Terrestrial Services).

As stipulated in [BR Circular-letter CR/297](#) dated 20 January 2009, only notices received via WISFAT, are considered as official submissions.

Access to this interface is restricted to registered notifiers, therefore administrations shall appoint notifier(s) for their administration and inform the BR by sending an official e-mail to [brmail@itu.int](mailto:brmail@itu.int) giving the TIES username, name, position and official e-mail address.

Before submitting notices via WISFAT, administrations are strongly recommended to validate their submissions using the [Online Validation](#) tool. Please note that incomplete notices will be returned to the notifying administration in accordance with provision No. 11.27 of the Radio Regulations.

In addition, administrations are encouraged when submitting many files on the same day, to compress their files into one single file by using for example WinZip or WinRAR.

#### RELATED LINKS

#### CONTACT PERSON

[Notification Tutorial](#)

[Guidance for notification for Terrestrial Services](#)

#### Validation of Terrestrial Frequency Assignment/Allotment Notices

This tool is to assist administrations to validate their frequency assignment/allotment notices before their official submission via WISFAT.

- [How to use the online validation tool](#)

[Access to Online Validation](#)

#### For Official Submission of notices

This web interface is accessible only to registered notifiers, having a TIES account.

- [WISFAT Information document](#)
- [WISFAT Video example](#)

[Access to WISFAT](#)





# eBCD2.0 platform for broadcasting services

[Portal description](#)



## Objectives

Bring the BR closer to Administrations with added-value services

- Up-to-date broadcasting data
- Special Section at publication date
- Calculation-on-demand
- Easily follow-up on plan modification procedures and related deadlines

## Outcome

- Reduce workload on both BR and administrations
- Reduce the need for printed documents

## Output

eQry

ePub

eTools

myAdmin

Focal point only

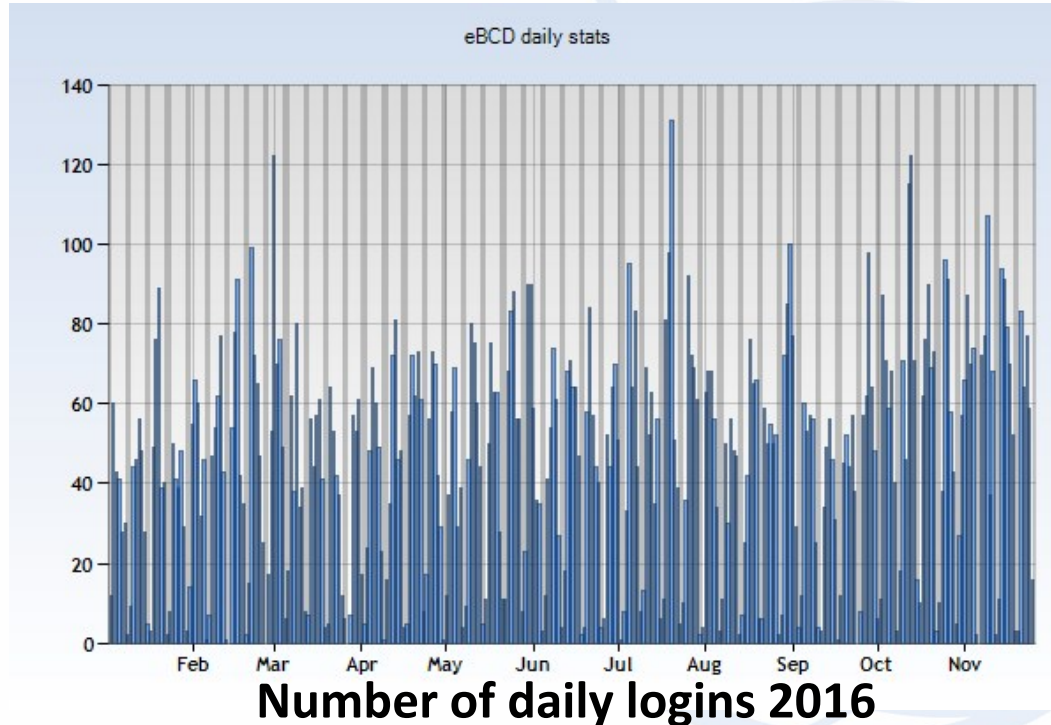
TIES users



**eBCD 2.0**  
Broadcasting Online

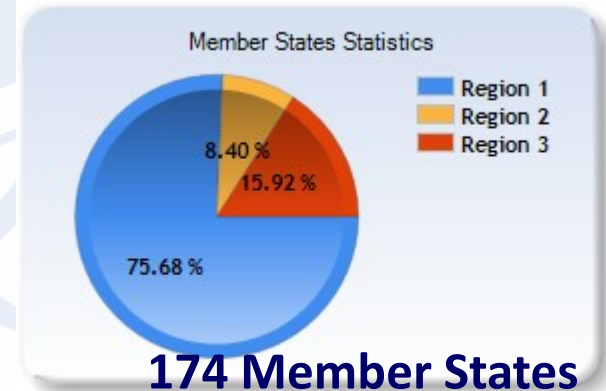
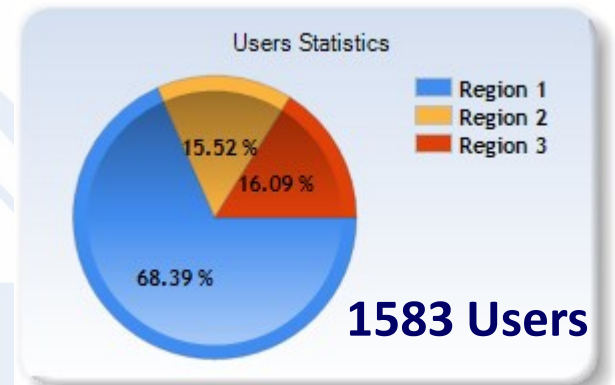


# eBCD2.0 platform for broadcasting services



## Last month statistics:

~60 logins/day, 237 users, 92 Administrations

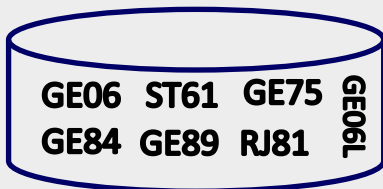


**eBCD 2.0**  
Broadcasting Online



## eQry

**“Online search on  
the Plans ”**



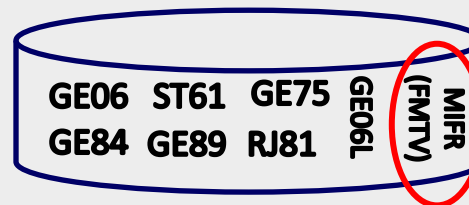
Read-Only copy of BR  
Database (Updated daily)

### Search by:

- Administration
- Geographic Area
- Frequency
- Administration Unique Identifier
- BR Identification number
- Status (Recorded/Published)
- Site/Allotment name

## ePub

**“Special Sections,  
the publication day!”**



Database Snapshots  
at publication date

### Search by:

- BR IFIC number
- Administration
  - My notifications
  - Notifications which affects me



## "On-demand test calculations"

## eTools

### 2016 statistics

More than **2000 jobs** run by **188 users** from **88 Administrations**

### Calculation Type

GE06D Plan Modification

GE06D Compatibility Analyses

GE84 Compatibility Analyses

CA Compatibility Analyses



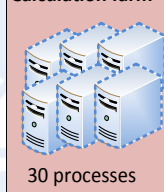
RJ81 Plan modification and what-if studies

ITU-R P.1812 v4 & P.1546 v5



### Back-end infrastructure

Calculation farm



ITU internal farm: 30 processes distributed in such a way to minimize waiting time.



# eTools: e-notice submission

GE06, RJ81, CA Compatibility

GE84

eTools

Validate e-notice files

Upload e-notices

Multiple files from different administrations.

Complete submission

The Online Validation (reuse TerRaNotices software in a SOA architecture) was integrated for GE84 calculation. Integration planned also for GE06, RJ81 and the CA compatibility software



The ITU distributed processing infrastructure will treat your test submission and inform you at completion!



Check your TIES account!

[yourTIESname@ties.itu.int](mailto:yourTIESname@ties.itu.int)

**eBCD 2.0**  
Broadcasting Online



# eTools: job processing, privacy and collaboration

## Job processing

The processing system is currently **ONLINE** (28 processes available)

Please select the calculation type

CA\_compat CA\_compat

New Calculation

Refresh manara

Jobs History for user: manara

Test Packages: click to hide all

Job Id	Job Name	Job Status	Job Type	Date of Request	Date of Start Run	Date of Completion
34977	1st iteration	Success	CA_compat	3/3/2017 8:03:32 PM	3/4/2017 11:56:00 AM	3/4/2017 12:00:06 PM
35012	testVIR	Failed	CA_compat	3/6/2017 5:20:07 PM	3/6/2017 5:20:09 PM	3/6/2017 5:20:10 PM
34912	test	Success	CA_compat	3/2/2017 2:59:18 PM	3/2/2017 3:20:17 PM	3/2/2017 3:21:28 PM

Job summary [Delete](#) [Share](#)

job id	job name	job status
35012	testVIR	Failed

Job Input

Adm	E-notice file	Number of Notices
USA	testVIR.txt	1

Job Output: ERROR

Problem parsing notices:  
Missing effective antenna height pattern for adm: USA site name: CHARLOTTE AMALIE

Please contact [brbcd@itu.int](mailto:brbcd@itu.int)  
if the error message is unclear

## Privacy and collaboration

Jobs (e-notice and results) are owned and visible  
ONLY by submitter...BUT...

... facilitate coordination!

...you can now share them with other eBCD  
registered users! (web2.0)

Around **200 jobs** shared by **72 users**  
from **45 Administrations**

**eBCD 2.0**  
Broadcasting Online





## eTools: Compatibility analyses for Central America planning



Interference calculations between **new requirements** (from electronic notification files) and **existing MIFR notices and recorded assignments**

Job summary <a href="#">Delete</a> <a href="#">Share</a>		
job id	job name	job status
34899	test	Success
Job Input		
Adm	F-notice file	Number of Notices
TRD	<a href="#">TRD_34869_IN.txt</a>	1
Job Output		
<a href="#">Download results</a>		

MS Access mdb file to be  
visualized with CA Display

Similar software was instrumental for  
planning activities in regional organizations

ATU (2012-2013)

ASMG (2014-2015)

➤ Based on the EBU software developed  
for the RRC06 planning

➤ Main changes:

- Propagation model ITU-R P.1546-5  
(refractive index correction) vs ITU-  
R P.1546-2 (propagation zones)
- Protection ratios for all digital  
standards (vs DVB-T only)

More during demo session!

**eBCD 2.0**  
Broadcasting Online



# eTools: RJ81 plan modification and what-if studies

Following CITELE requests (2014-2015)

[eTools Disclaimer](#)

[eTools Documentations](#)

The processing system is currently **ONLINE** (28 processes available)

Please select the calculation type

**RJ81** **RJ81 what-if studies** **Beta Release**

## Job Input

Adm	E-notice file	Number of Notices
ARG	ARG_13493_IN.txt	2

## Job Output

Proposed Modification	Administrations with incompatibilities
760kHz_LU6	CHL B ARG
1140kHz_LU22	CHL ARG

Select the proposed modification	Select the affected protected station
All	All

Results sw\_50%\_A sw\_BC gw\_D gw\_N

ID Number	Frequency Assigned (kHz)	Country	Station Name	Class of Station	BR Serial Number Affected	Frequency Assigned Affected (kHz)	Country Affected	Station Name Affected	Class of Station Affected	RJ81 List Affected	Time of Operation	Azimuth (deg)	Distance (km)	Symbol	Protected Value (mV/m)	NFS (mV/m)	NFS or EU before (mV/m)	EU after (mV/m)	Note
1	760	ARG	LU6	B	090001717	760	B	PLANALTO	B	A	N	0	14	Y	2.65	2.39	4.56	5.15	
1	760	ARG	LU6	B	090001717	760	B	PLANALTO	B	A	N	20	14	Y	2.65	2.39	4.56	5.15	
1	760	ARG	LU6	B	090001717	760	B	PLANALTO	B	A	N	40	14	Y	2.65	2.39	4.56	5.15	
1	760	ARG	LU6	B	090001717	760	B	PLANALTO	B	A	N	60	14	Y	2.65	2.41	4.56	5.16	
1	760	ARG	LU6	B	090001717	760	B	PLANALTO	B	A	N	80	14	Y	2.65	2.42	4.56	5.16	
1	760	ARG	LU6	B	090001717	760	B	PLANALTO	B	A	N	100	14	Y	2.65	2.44	4.56	5.17	
1	760	ARG	LU6	B	090001717	760	B	PLANALTO	B	A	N	120	14	Y	2.65	2.46	4.56	5.18	
1	760	ARG	LU6	B	090001717	760	B	PLANALTO	B	A	N	140	14	Y	2.65	2.48	4.56	5.19	
1	760	ARG	LU6	B	090001717	760	B	PLANALTO	B	A	N	160	14	Y	2.65	2.5	4.56	5.2	
1	760	ARG	LU6	B	090001717	760	B	PLANALTO	B	A	N	180	14	Y	2.65	2.51	4.56	5.21	
1	760	ARG	LU6	B	090001717	760	B	PLANALTO	B	A	N	200	14	Y	2.65	2.51	4.56	5.21	
1	760	ARG	LU6	B	090001717	760	B	PLANALTO	B	A	N	220	14	Y	2.65	2.5	4.56	5.2	
1	760	ARG	LU6	B	090001717	760	B	PLANALTO	B	A	N	240	14	Y	2.65	2.49	4.56	5.2	
1	760	ARG	LU6	B	090001717	760	B	PLANALTO	B	A	N	260	14	Y	2.65	2.48	4.56	5.19	
1	760	ARG	LU6	B	090001717	760	B	PLANALTO	B	A	N	280	14	Y	2.65	2.46	4.56	5.18	
1	760	ARG	LU6	B	090001717	760	B	PLANALTO	B	A	N	300	14	Y	2.65	2.44	4.56	5.17	
1	760	ARG	LU6	B	090001717	760	B	PLANALTO	B	A	N	320	14	Y	2.65	2.42	4.56	5.16	
1	760	ARG	LU6	B	090001717	760	B	PLANALTO	B	A	N	340	14	Y	2.65	2.4	4.56	5.16	
1	760	ARG	LU6	B	081010190	760	B	CANDELARIA	C	A	N	200	11	Y	4.18	3.63	7.25	8.11	

## RJ81

- Plan Modification
- What-if studies
- What-if studies configurable Enom

**eBCD 2.0**  
Broadcasting Online



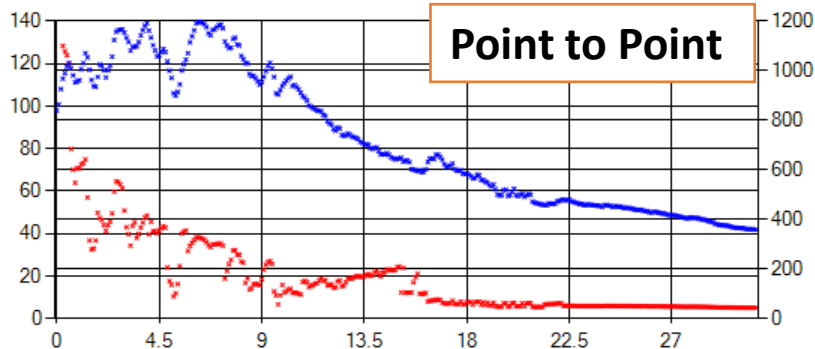
# eTools: ITU-R P series calculations

**P.1812-4(07-15)** Beta Release!

Propagation prediction using terrain profile (deterministic model)

- 30 MHz - 3 GHz
- 0.25 km - 3000 km
- 1% < time < 50%
- 1% < locations < 99%
- Rx and Tx hgt agl <= 3km

SRTM3 terrain database 3 arc-sec resol. (90 m)  
Planned to move to 1 arc-sec (30m) early 2017



More during demo session!

**P.1546-5(09-13)** Beta Release!

Propagation prediction (empirical model)

- 30 MHz - 3 GHz
- 1 km - 1000 km
- 1% < time < 50%
- 1% < locations < 99%
- TX eff hgt <= 3km

Terrain database can be used (clearance angle correction) to improve accuracy

**Point to Area**



**eBCD 2.0**  
Broadcasting Online



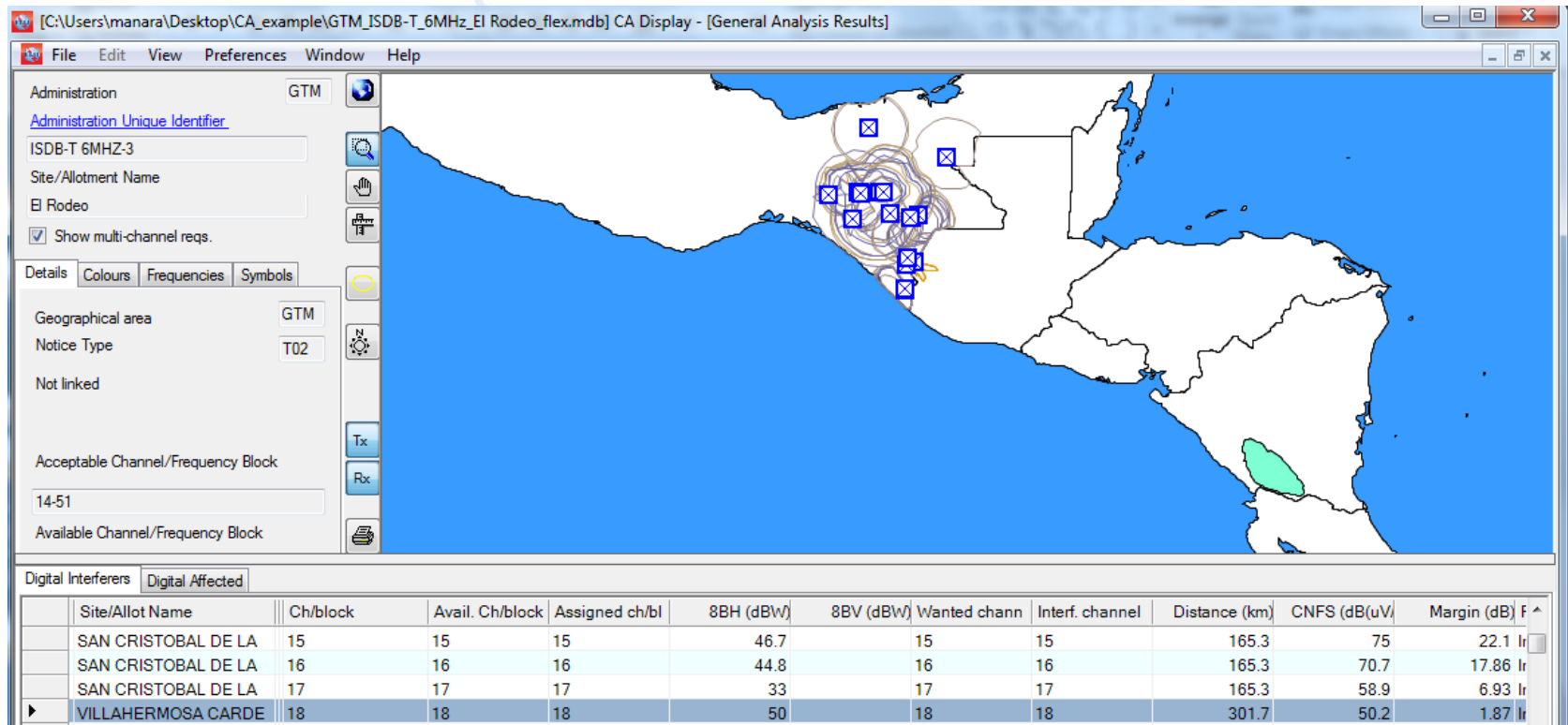
# CA display

- Standalone application for the visualization of compatibility analyses results and search for new channels
- Web-based installation from the **ITU Regional Frequency Coordination for Central America and Caribbean** [web page](#)
- Automatic updates (check for updates at application startup)
- Input: MS Access database downloaded from eTools
- Possibility to perform detailed one-to-one interference calculations

Next presentation: How to use the CA display to analyse compatibility results for finding new channels for DTT



# CA display



More during demo session!



*“Thanks for your attention!”*