



---

# Methodology for finding of new channels for digital terrestrial television

ITU Radiocommunication Bureau

---



# Overview

---

- Tools to be used
- Frequency bands and TV channels
- Procedure diagram
- CA Display tool



# Tools to be used



**eBCD 2.0**  
Broadcasting Online

**eQry**      **ePub**  
**eTools**      **myAdmin**

**TerRaQ**  
**TerRaNotices**

**CA Display**

**WISFAT**



# Frequency bands and TV channels

- ✓ Frequency bands: 174 – 216 MHz  
470 – 698 MHz
- ✓ TV channels (assigned frequencies):
  - 6 MHz raster: 7 (177 MHz) – 13 (213 MHz)  
14 (473 MHz) – 51 (695 MHz), **excl. ch.37 (611 MHz)**
  - 8 MHz raster: 5 (178 MHz) – 9 (210 MHz)  
21 (474 MHz) – 48 (690 MHz), **excl. ch.38 (610 MHz)**
  - special case (“flexible channel”):
    - 6 MHz raster: 83 (887 MHz)
    - 8 MHz raster: 69 (858 MHz)

*“flexible channel” – means that during compatibility analysis calculations, the software will scan all available channels in the frequency bands mentioned above and show electromagnetic situation on each channel*
- ✓ List of TV channels and corresponding frequencies – see Doc. INFO-1



# Find a frequency channel process diagram

At the end of the coordination meetings, submit officially to the BR using WISFAT





# Creation/Modification of a T02 notice

TerRaNotices 1.2 (BR, IFC 2838) - [NCG\_ISDB-T\_6MHz.txt\* - T02\*]

File Tools View Language Options Window Help

Notice browser: NCG\_ISDB-T\_6MHz.txt\*  
Head section  
T02/ADD\*

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

Fragment: Article 11  
Notification intended for: Addition

12A/ Operating agency: [dropdown] 2C/ Date of bringing into use: 1 8 2015  
12B/ Address code: A 10B/ Regular hours of operation (UTC): From 00:00 To 24:00

Assignment characteristics: Antenna characteristics

Station information:  
4A/ Antenna site name: Managua  
4B/ Geographic area: NCG  
4C/ Longitude: 86° 15' 21" W  
Latitude: 12° 10' 23" N  
9EA/ Altitude of site above sea level: 41 m  
3A1/ Call sign: [dropdown]  
3A2/ Station identification: [dropdown]

Emission characteristics:  
1A/ Assigned Frequency: 647 MHz  
7A1/ Frequency stability: [dropdown]  
7C1/ Television system: TV  
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: 50 m  
9E/ Height of Antenna Above Ground Level: 50 m

Coordination successfully completed with the following administrations:  
Available administrations: AFG, AFS, AGL, ALB, ALG  
Selected administrations: [empty]  
13C/ Notified remarks: [empty]

T02

08:24 13/02/2017



# Validation and Submission of the notice file to eBCD

---

- ✓ **Validate and save the notice file**
- ✓ **Browse and upload it together with the notice files of neighboring countries to eBCD web-portal - eTools: <https://www.itu.int/ITU-R/eBCD/MemberPages/eCalculations.aspx>**
- ✓ **Complete Submission**



# Getting Compatibility Analysis results

---

- ✓ **Click on Back to calculation history**
- ✓ **Wait for results**
- ✓ **Launch CA Display and open saved .mdb file to view the results**



# CA Display (example)

- ✓ File -> Open compatibility results file **GTM\_ISDB-T\_6MHz\_EI Rodeo\_flex.mdb**
- ✓ View -> Channel distribution statistics
- ✓ Check appropriate boxes and set a default margin
- ✓ Select Administration and click Refresh
- ✓ Select item of interest and click on the blue number
- ✓ List of requirements will appear
- ✓ Select the requirement of interest and click on it

The screenshot shows the CA Display software interface. The main window is titled "Channel Distribution Statistics" and displays a table with the following data:

	Submitted	No available channel or frequency block	No assignable channel or frequency block	Having an assignable channel or a frequency block
Assignments	4	0	0	4
Allotments	0	0	0	0
Total	4	0	0	4

The "Administration" dropdown is set to "GTM" and the "Refresh" button is visible. The "Show assignable channels or freq. blocks if the maximum acceptable margin (dB) is:" checkbox is checked, and the value "4" is entered in the adjacent text box. The "Having an assignable channel or a frequency block" column header and the value "4" in the Assignments row are circled in red.

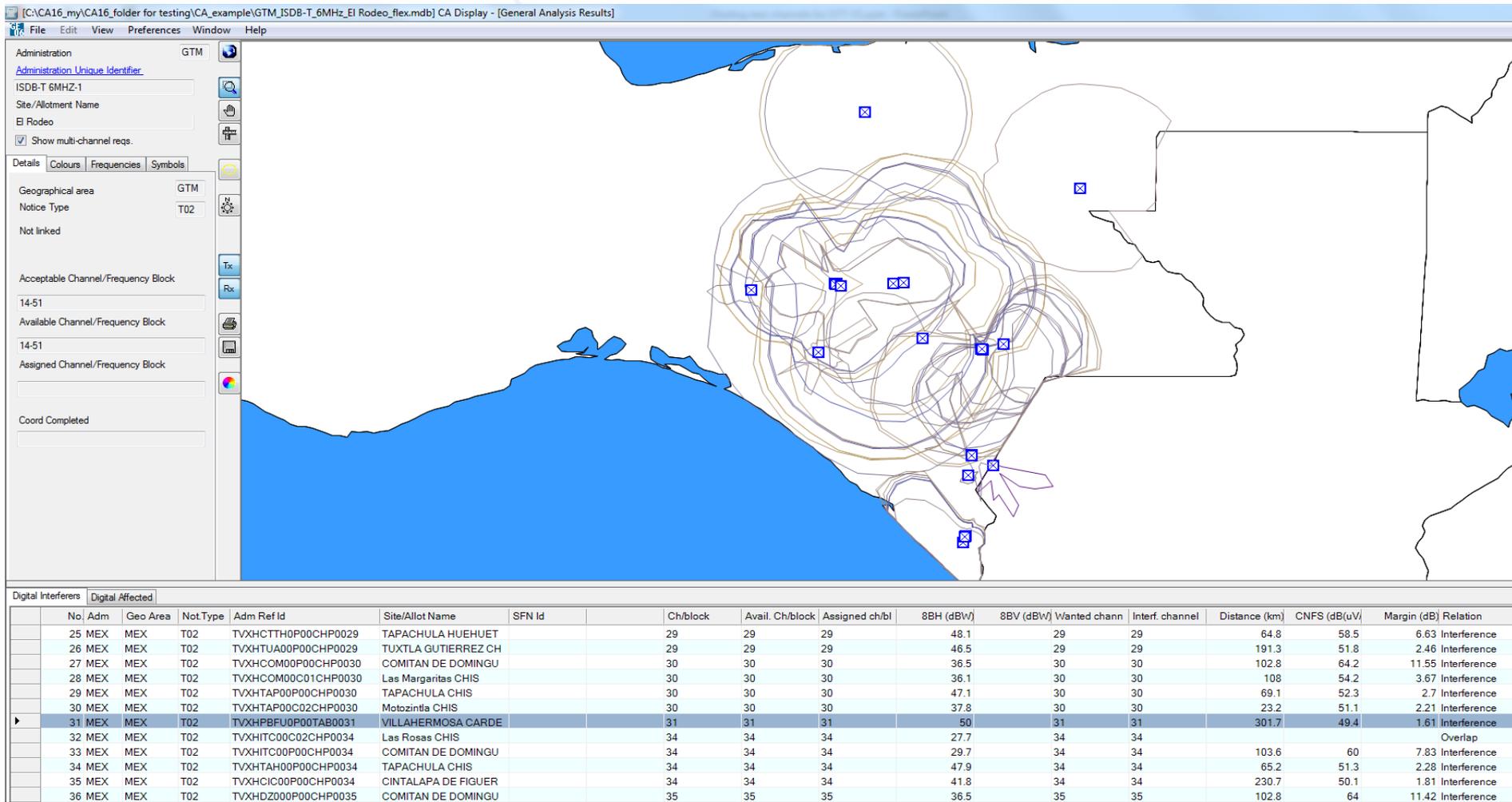
The "Channel Distribution Details - Digital assignments with an assignable channel or frequency block" window is open, showing a table with the following data:

No.	Adm	Geo Area	Adm Ref Id	Not.Type	Site/Allot Name	SFN Id	Ch/block	Avail. Ch/block	Assignable Ch/block	Coord Completed
1	GTM	GTM	ISDB-T 6MHZ-3	T02	EI Rodeo		14-51	14-51	18-19,31,38,40,45,47,49-51	
2	GTM	GTM	ISDB-T 6MHZ-4	T02	EI Rodeo		14-51	14-51	18-19,31,38,40,45,47,49-51	
3	GTM	GTM	ISDB-T 6MHZ-2	T02	EI Rodeo		14-51	14-51	18-19,31,38,40,45,47,49-51	
4	GTM	GTM	ISDB-T 6MHZ-1	T02	EI Rodeo		14-51	14-51	18-19,31,38,40,45,47,49-51	

The row for "4 GTM" is circled in red, and a red arrow points to it.

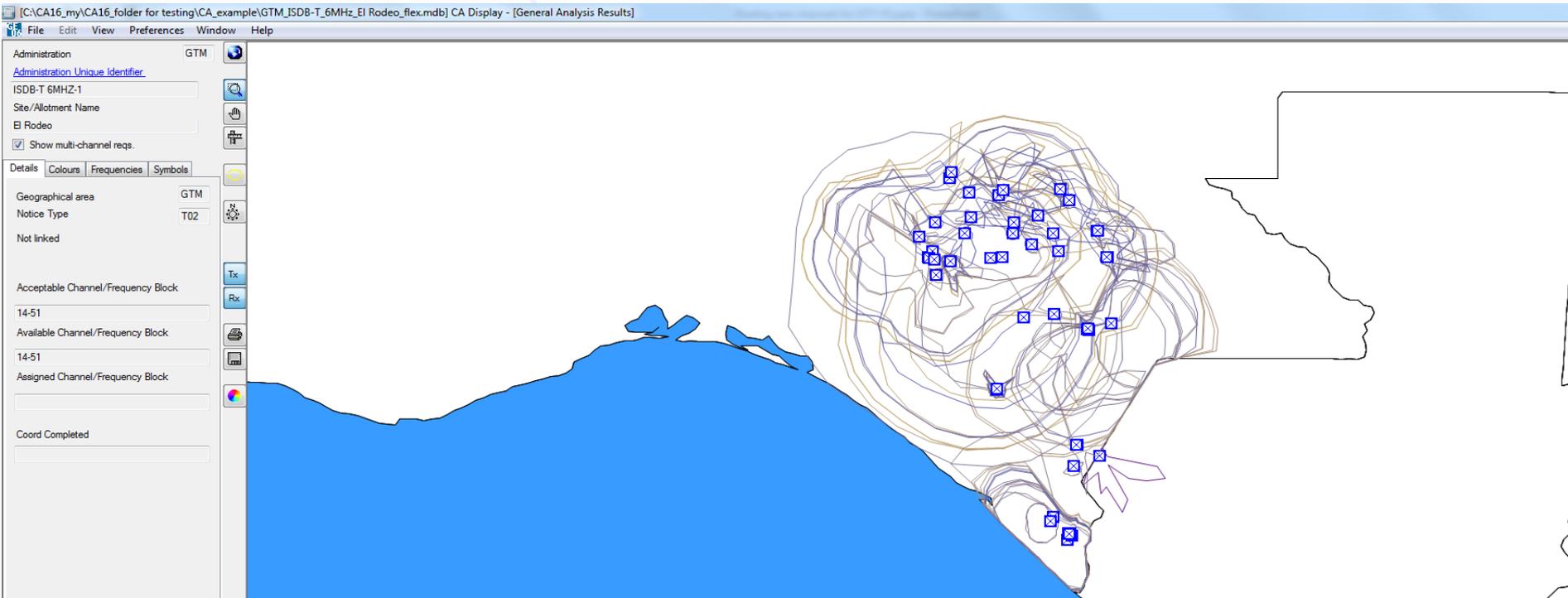


# Analysis of the results (example): List of interferers on ch. 31 (575 MHz)





# Analysis of the results (example): List of affected on ch. 31 (575 MHz)



Digital Interferers		Digital Affected																		
No	Adm	Geo Area	Not Type	Adm Ref Id	Site/Allot Name	SFN Id	Ch/block	Avail. Ch/block	Assigned Ch/bl	8BW (dBW)	8BW (dBW) Wanted Chann	Interf. Channel	Distance (km)	CNFS (dB(uV)	Margin (dB)	Relation				
44	MEX	MEX	T02	TVXHTUA00P00CHP0029	TUXTLA GUTIERREZ CH		29	29	29	46.5	29	29	138.8	37.4	1.98	Interference				
45	MEX	MEX	T02	TVXHTUA00C04CHP0029	San Fernando CHIS		29	29	29	25.8	29	29	205.8	35.7	1.43	Interference				
46	MEX	MEX	T02	TVXHTUA00C05CHP0029	San Francisco Ixhuatan C		29	29	29	25.6	29	29	233.1	35	1.25	Interference				
47	MEX	MEX	T02	TVXHTAP00C02CHP0030	Motozintla CHIS		30	30	30	37.8	30	30	23	94.5	54.67	Interference				
48	MEX	MEX	T02	TVXHC0M00P00CHP0030	COMITAN DE DOMINGU		30	30	30	36.5	30	30	38.3	70.8	31	Interference				
49	MEX	MEX	T02	TVXHTAP00C01CHP0030	Huehuetan CHIS		30	30	30	19.5	30	30	74	59.5	19.7	Interference				
50	MEX	MEX	T02	TVXHTAP00P00CHP0030	TAPACHULA CHIS		30	30	30	47.1	30	30	56.8	57.9	18.12	Interference				
51	MEX	MEX	T02	TVXHC0M00C01CHP0030	Las Margaritas CHIS		30	30	30	36.1	30	30	106.1	51.4	11.88	Interference				
52	MEX	MEX	T02	TVXHOPTC0P00CHP0031	TUXTLA GUTIERREZ CH		31	31	31	39.5	31	31	140.9	37.5	1.96	Interference				
53	MEX	MEX	T02	TVXHHUC00P00CHP0032	HUIXTLA CHIS		32	32	32	46	32	32	44.2	56.3	16.37	Interference				
54	MEX	MEX	T02	TVXHOCC00P00CHP0032	OCOSINGO CHIS		32	32	32	45.9	32	32	173	40	3	Interference				
55	MEX	MEX	T02	TVXHTAA00P00CHP0033	TAPACHULA CHIS		33	33	33	44.3	33	33	46	63.5	23.45	Interference				



# Outcome of the analysis of the compatibility results on ch. 31 (575 MHz)

---

## Conclusions:

- 1) Calculated margins in both directions (for incoming and outgoing interference) do not exceed the established default margin, therefore channel **31** (assigned frequency 575 MHz) can be assigned to this site.
- 2) To fix this, it is necessary to modify the initial notice containing flexible channel **83** (887 MHz) by assigning channel **31** (575 MHz).



## What is next?

Repeat the same analysis for the other possible channels.

For this example, it can be noticed that channels:

**18 (497 MHz), 19 (503 MHz), 38 (617 MHz),  
40 (629 MHz), 45 (659 MHz), 47 (671 MHz),  
49 (683 MHz), 50 (689 MHz) and 51 (695 MHz)**  
can also be assigned to that site.



---

***Thank you for your attention!***

***Questions?***

**[brbcd@itu.int](mailto:brbcd@itu.int)**