3rd and final frequency coordination meeting
on the GE84 Plan Optimization for Africa

3ème et dernière réunion de coordination
des fréquences sur l'optimisation
du Plan GE84 pour l'Afrique

24 - 28 January 2022

AFRICAN TELECOMMUNICATIONS UNION
UNION AFRICAINE DES TÉLÉCOMMUNICATIONS

Compatibility analysis for new frequency requirements and optimization of planning using BR software tools

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BR/TSD/BCD

Overview

- Tools to be used
- Frequency band and assigned frequencies
- Technical basis for the GE84 Opt process
- Process diagrams
- Creation of a FLEX requirement
- Compatibility calculations
- Analysis of the results

BR Tools to be used

eBCD 2.0
Broadcasting Online

eQry
ePub
eTools
myAdmin

TerRaQ

TerRaNotices

WISFAT

Frequency band and assigned frequencies

- ✓ **Frequency band: 87.6 - 107.9 MHz**
- ✓ **Assigned frequencies: 87.6; 87.7;…; 107.8; 107.9 MHz (100 kHz step)**
- ✓ **Special case ("flexible frequency (flexible channel)"):**

"flexible channel" – means that during compatibility calculations, the software will scan all frequencies in the frequency band mentioned above and show electromagnetic situation on each co- and adjacent frequencies.

Technical basis for GE84 Optimization process

- Technical criteria used for compatibility calculations – GE84 Agreement (uniform 100 kHz frequency step, protection ratios etc.)

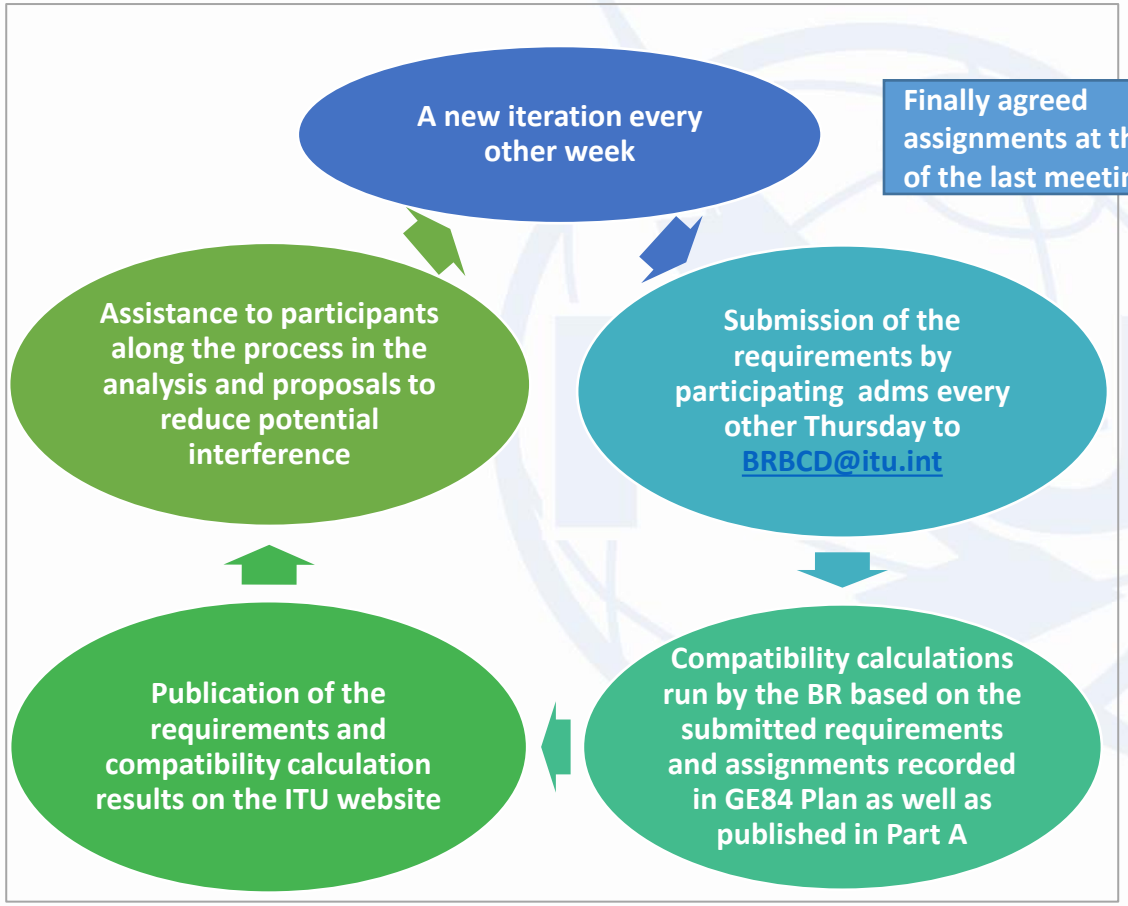
- Propagation models: GE84 curves/ITU-R Rec. P.1812

- Assignments recorded in the GE84 Plan and as well as assignments published in Part A of Special Sections GE84 are taken into account

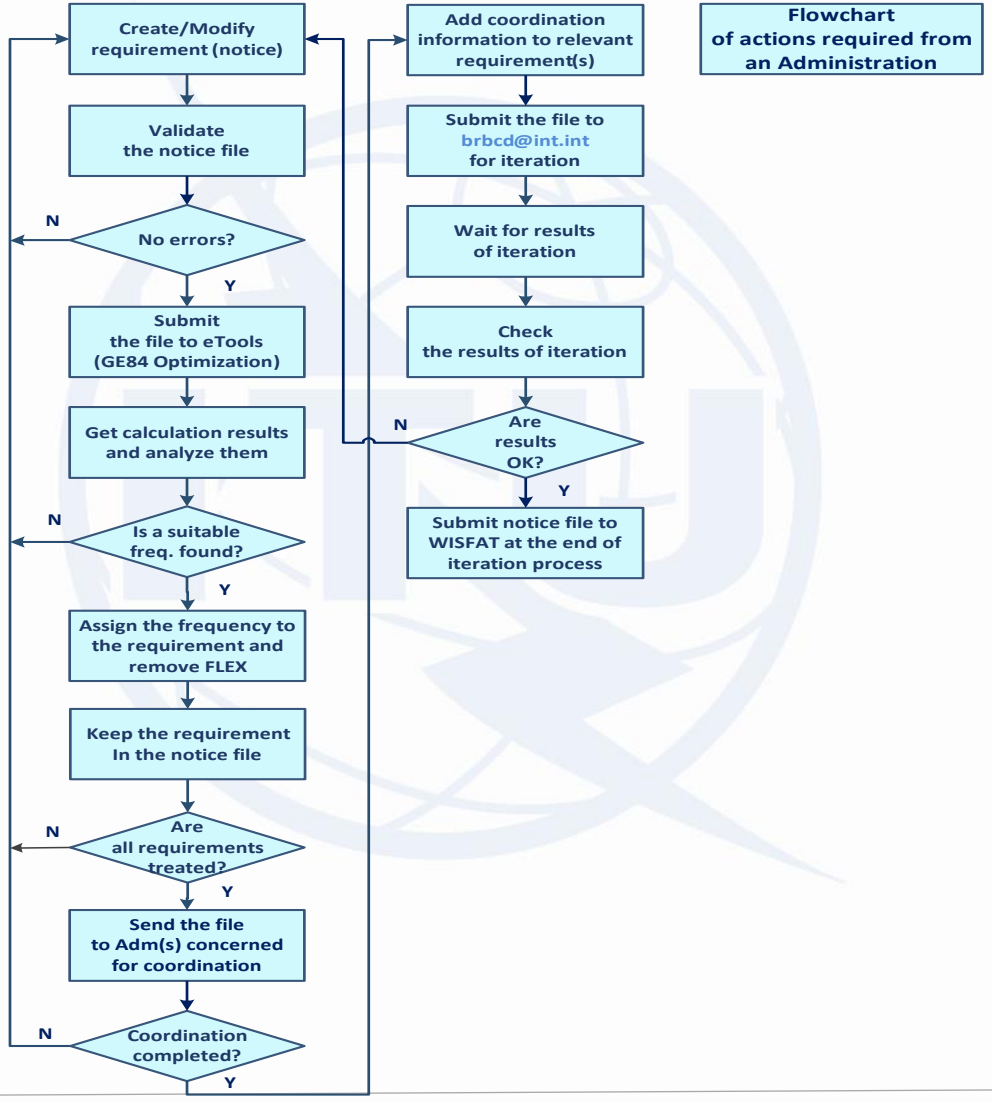
- Assignments to other primary services in adjacent bands are not taken into account

- Some criteria agreed by administrations at the 1st Frequency Coordination meeting:
  - To stop submissions of new modifications to the GE84 Plan until the end of the coordination meetings;
  - To submit requirements every other Thursday by 18:00 Geneva time to brbcd@itu.int for the next iteration. If an administration does not submit its requirements, the requirements used for the previous iteration will be taken;
  - General maximum acceptable Nuisance Field Strength (NFS) value is **54 dB(μV/m)**. This value can be reviewed by involved administrations during bi- or multi-lateral negotiations

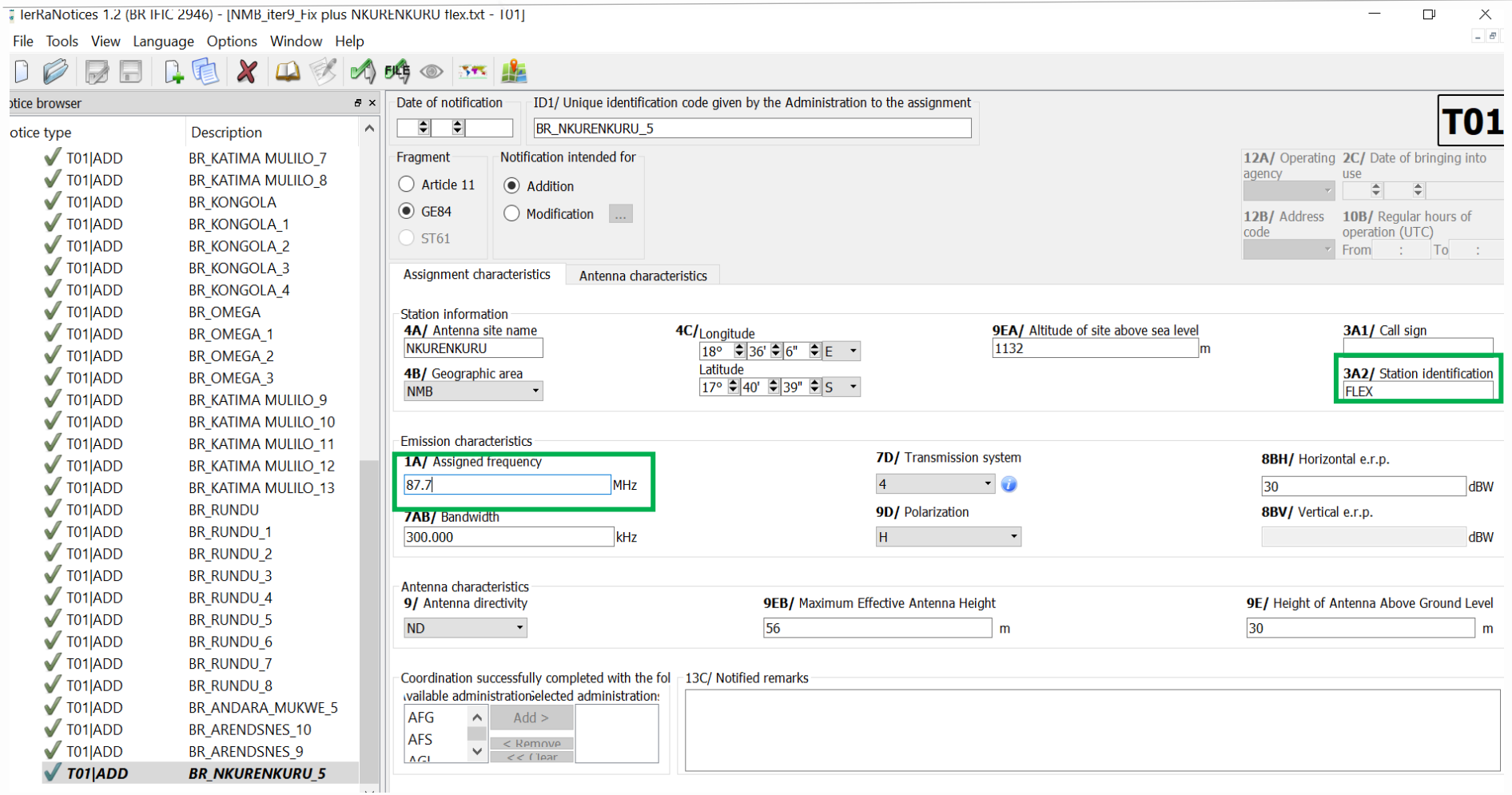
GE84 Optimization process and BR assistance



GE84 Optimization process and activity of administrations



Creation of a flex requirement



Validation and Submission of notice file(s) to eBroadcasting

✓ Validation of notice(s):

- Initial - by TerRaNotices*: File -> Validate and save file*
- Deep – by Online validation tool at:

- https://www.itu.int/ITU-R/terrestrial/OnlineValidation/Login.aspx *or*

- https://www.itu.int/ITU-R/eTerrestrial/eValidation

The notice file shall not contain errors.

✓ Submission of the notices to eBroadcasting:

- Go to web-portal - eTools: https://www.itu.int/ITU-R/eTerrestrial/ECalculations
- Select:
  - *GE84* calculation type
  - *GE84 Optimization* option
- Click on New calculation
- Change configuration information if needed. More information and description of results can be found in *etools Documentations -> GE84 Optimization*
- Browse and Upload the notice file together with the notice file(s) of neighboring country(-ies) to eBCD web-portal
- Label your job and click on Submit

Getting compatibility calculation results

- ✓ Click on Back to calculation history
- ✓ Wait for results (either email message received or by clicking time-to-time on Refresh until job status becomes *Success*)
- ✓ Click on the job Id number to see the results
- ✓ Select desired modes for considering interference and Set Acceptable NFS value (for example 54 dB(μV/m))
- ✓ Select Evaluate Statistics option
- ✓ Select an Administration
- ✓ Click on Evaluate Statistics
- ✓ Select the desired requirement for analysis
- ✓ Analyze compatibility calculation results

Outcome of compatibility analysis
Fixing of a selected frequency

1) For flex requirements please note frequency(-ies) on which calculated NFSs in both directions (received and generated) do not exceed the acceptable NFS value, i.e. frequency (-ies) assignable to this site (highlighted in green).

2) To assign a specific frequency (to fix a frequency) from the list of assignable ones, it is necessary to modify the initial flex requirement (notice) containing 87.7 MHz and FLEX by changing 87.7 MHz to a selected one and remove FLEX.

3) While fixing of a selected frequency, please bear in mind that adjacent frequencies in the range ±300 kHz from the selected one are further considered as non-assignable for this site.

Outcome of compatibility analysis
General recommendations

If no assignable frequency has been found, it is advisable to apply for a selected frequency the following:

- **Detailed calculations involving a digital terrain map (for example based on Rec. ITU-R P.1812).**
- **Coordination with neighbors concerned. In case of successful coordination insert this information in the COORD section of the notice.**
- **Change of technical characteristics of the requirement in question. Please keep in mind that the calculated NFSs might be changed by modifying:**
  - **Polarization, location;**
  - **Antenna height, Effective Radiated Power (for generated NFS only).**
- **Removal of excessive requirements.**
- **Combination of above.**
- **Select another frequency and repeat measures above.**

Outcome of compatibility analysis
Another chance: Best practices approach

If still no assignable frequency has been found, by using this approach it is also possible to assign frequencies with 400 kHz difference between co-sited transmitters as shown on example rounded in green below:

Transmitter Location	CT	Freq. MHz	Station	Coverage area	Pol	ERP in dBW	Mode	Longitude	Latitude	Coord X	Coord Y	ASL
AARAU OBERHOLZ	AG	97.7	Radio 32	*Aarau, Erlinsbach, Kölliken*	V	20	S	8° 2' 28" E	47° 22' 38" N	2645490	1247555	486
AARBURG FESTUNG	AG	91.3	SRF 3	*K103 Umfahrung Aarburg*			S	7° 54' 11" E	47° 19' 34" N	2635110	1241795	406
	AG	94.0	Radio Argovia				S	7° 54' 11" E	47° 19' 34" N	2635110	1241795	406
	AG	96.0	SRF 1				S	7° 54' 11" E	47° 19' 34" N	2635110	1241795	406
	AG	97.3	Radio 32				S	7° 54' 11" E	47° 19' 34" N	2635110	1241795	406
AARBURG PARADISLI	AG	91.3	SRF 3	*K103 Umfahrung Aarburg*			S	7° 54' 22" E	47° 19' 13" N	2635340	1241155	408
	AG	94.0	Radio Argovia				S	7° 54' 22" E	47° 19' 13" N	2635340	1241155	408
	AG	96.0	SRF 1				S	7° 54' 22" E	47° 19' 13" N	2635340	1241155	408
	AG	97.3	Radio 32				S	7° 54' 22" E	47° 19' 13" N	2635340	1241155	408
ABBAYE PONT AGOUILLONS	VD	87.6	Espace 2	*Vallée de Joux*	V	30	S	6° 20' 2" E	46° 40' 14" N	2515461	1169417	1145
	VD	99.5	La Première		V	30	S	6° 20' 2" E	46° 40' 14" N	2515461	1169417	1145
	VD	101.4	Couleur 3		V	30	S	6° 20' 2" E	46° 40' 14" N	2515461	1169417	1145
ADELBODEN WINTERTAL	BE	88.1	SRF 1	*Adelboden*	V	13	S	7° 33' 5" E	46° 28' 52" N	2608648	1147773	1449
	BE	90.2	SRF 2 Kultur		V	13	S	7° 33' 5" E	46° 28' 52" N	2608648	1147773	1449
	BE	104.9	SRF 3		V	13	S	7° 33' 5" E	46° 28' 52" N	2608648	1147773	1449
AESCH HAUPTSTRASSE	BL	96.7	SRF 1	*Dornach, Gempen*	V	19	S	7° 35' 48" E	47° 28' 12" N	2611911	1257717	314
AESCH ZUERICH UETLIBERG	ZH	88.0		*A4*			S	8° 30' 54" E	47° 20' 39" N	2681348	1244255	429
	ZH	93.6	Radio 1				S	8° 30' 54" E	47° 20' 39" N	2681348	1244255	429
	ZH	94.6	SRF 1				S	8° 30' 54" E	47° 20' 39" N	2681348	1244255	429
	ZH	99.2	Radio Central				S	8° 30' 54" E	47° 20' 39" N	2681348	1244255	429
	ZH	99.6	SRF 2 Kultur				S	8° 30' 54" E	47° 20' 39" N	2681348	1244255	429
	ZH	100.9					S	8° 30' 54" E	47° 20' 39" N	2681348	1244255	429
	ZH	102.8	Radio 24				S	8° 30' 54" E	47° 20' 39" N	2681348	1244255	429
	ZH	105.8	SRF 3				S	8° 30' 54" E	47° 20' 39" N	2681348	1244255	429
	ZH	106.7	Radio Zürisee				S	8° 30' 54" E	47° 20' 39" N	2681348	1244255	429

Source: ***Swiss Federal Office of Communications (OFCOM)*** *https://www.bakom.admin.ch/bakom/en/homepage/frequencies-and-antennas/broadcasting.html*

Important! The procedure is not automatic. Due attention should be paid to other interferers/affected

Some useful links

- https://www.itu.int/en/ITU-R/terrestrial/broadcast/africa/Pages/default.aspx
- https://www.itu.int/en/ITU-R/terrestrial/broadcast/Pages/FMTV.aspx
- https://www.itu.int/en/ITU-R/terrestrial/tpr/Pages/FMTVNotices.aspx#FMTVNotices
- https://www.itu.int/en/ITU-R/terrestrial/broadcast/africa/Documents/1stMeteeng/info_docs/INFO_GE84Opt-1-E_final.pdf

Thank you for your attention!

Questions?

brbcd@itu.int