

Workshop 19-21 April 2021

GE84 calculations on eTools

<https://www.itu.int/ITU-R/eTerrestrial/eBroadcasting>

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BR/TSD/BCD



GE84
Plan
optimization

GE84 tools



eTools: Calculations on-demand

[eTools Disclaimer](#)

[eTools Documentations](#)

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

Please select the calculation type

GE84

GE84 Compatibility Analyses

Beta Release

New Calculation

GE84 Compatibility Analyses

GE84 Optimization

All



Notice types – CAUTION: fragment=GE84!

- Notices accepted: T01 (TB5 also accepted)

Date of notification: 12 10 2010 ID1/Unique identification code given by the Administration to the assignment: []

Fragment: Article 11 GE84 ST61

Notification intended for: Addition Modification

12A/ Operating agency: [] 2C/ Date of bringing into use: []

12B/ Address code: [] 10B/ Regular hours of operation (UTC): From [] To []

Assignment characteristics: Antenna characteristics

Station information

4A/ Antenna site name: AAZANEN 4C/ Longitude: 3° 7' 3" W 9EA/ Altitude of site above sea level: 184 m 3A1/ Call sign: []

4B/ Geographic area: MRC Latitude: 35° 15' 7" N 3A2/ Station identification: []

Emission characteristics

1A/ Assigned frequency: 87.7 MHz 7D/ Transmission system: 4 8BH/ Horizontal e.r.p.: [] dBW

7AB/ Bandwidth: 300.000 kHz 9D/ Polarization: V 8BV/ Vertical e.r.p.: 35.000 dBW

Antenna characteristics

9/ Antenna directivity: D 9EB/ Maximum Effective Antenna Height: 209 m 9E/ Height of Antenna Above Ground Level: 25 m

Coordination successfully completed with the following administrations

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

Selected administrations: ALG, E

13C/ Notified remarks: []

T01

Compatibility Analysis

Helping administrations for the planning and coordination of their VHF-FM sound broadcasting services, in the frequency band 87.5-108 MHz, in accordance with the GE84 Agreement

Analyzing the impact to and from other emissions for a new or existing FM service, using method in Annex 2 of Chapter 4, showing the NFS and Eu calculations at the transmitter site.

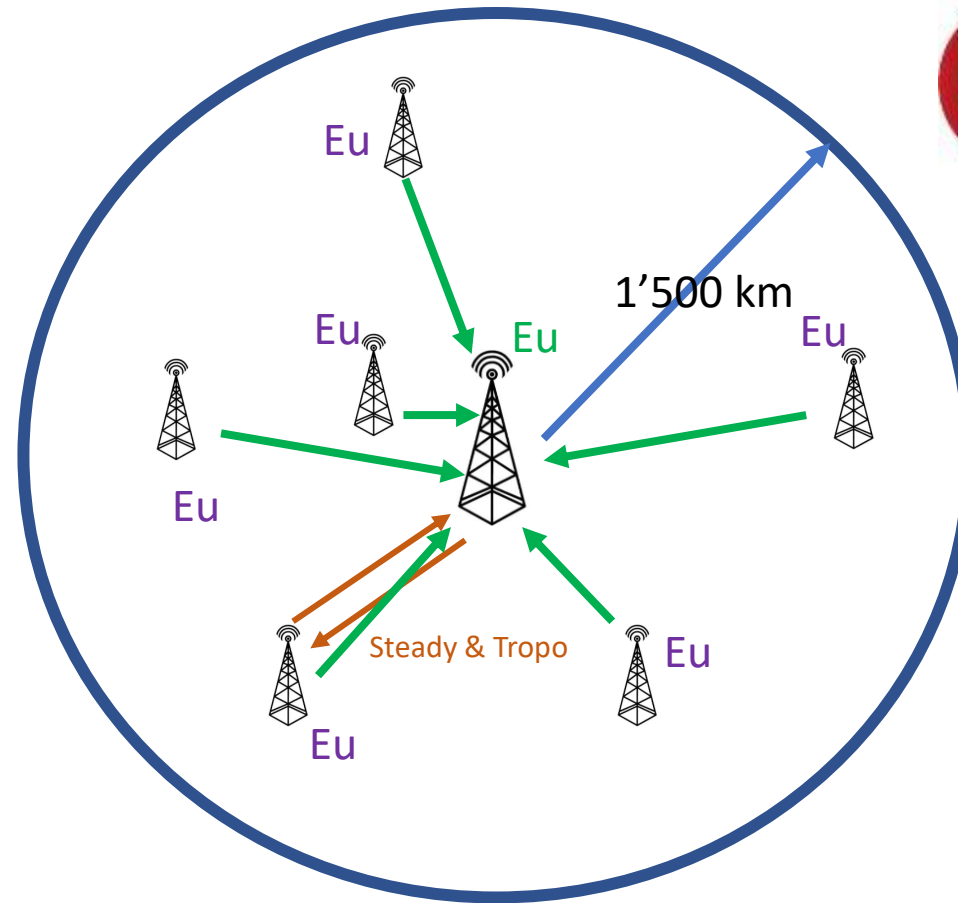
Taking into account the proposed modification and other assignments in the GE84 Plan (recorded assignments and, possibly, proposed modifications)

Caution: The analysis considers the notification forms submitted independently of each other

Some definitions

- ***Nuisance field strength(NFS)***
 - The field strength of the interfering transmitter (at its pertinent e.r.p.) modified by the relevant protection ratio.
 - Considering 1 single source of interference
- ***Usable field strength (Eu)***
 - **Minimum value of the field strength necessary to permit a desired reception quality, under specified receiving conditions, in the presence of natural and man-made noise and interference.**
 - Taking account of the effect of multiple interference
 - For the application of the Article 4 procedure, a statistical computation method is used: the **simplified multiplication method described in Chapter 4 of Annex 2**

Basis of calculations Compatibility analysis



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Based on the coordinates of a station, the tool assesses all identified interference sources within a radius of **1'500 km** for a **given frequency and adjacent frequencies** up to ± 400 kHz.

*Compatibility
Analysis
§4.3.7 of the
GE84
Agreement*

4.3.7 If the administration consulted is responsible for:

4.3.7.1 a sound broadcasting station, it should normally accept the proposed modification provided that:

- the resulting usable field strength is not greater than 54 dB(μ V/m); or

- the resulting usable field strength is greater than 54 dB(μ V/m), but is increased by 0.5 dB or less compared with the reference usable field strength.

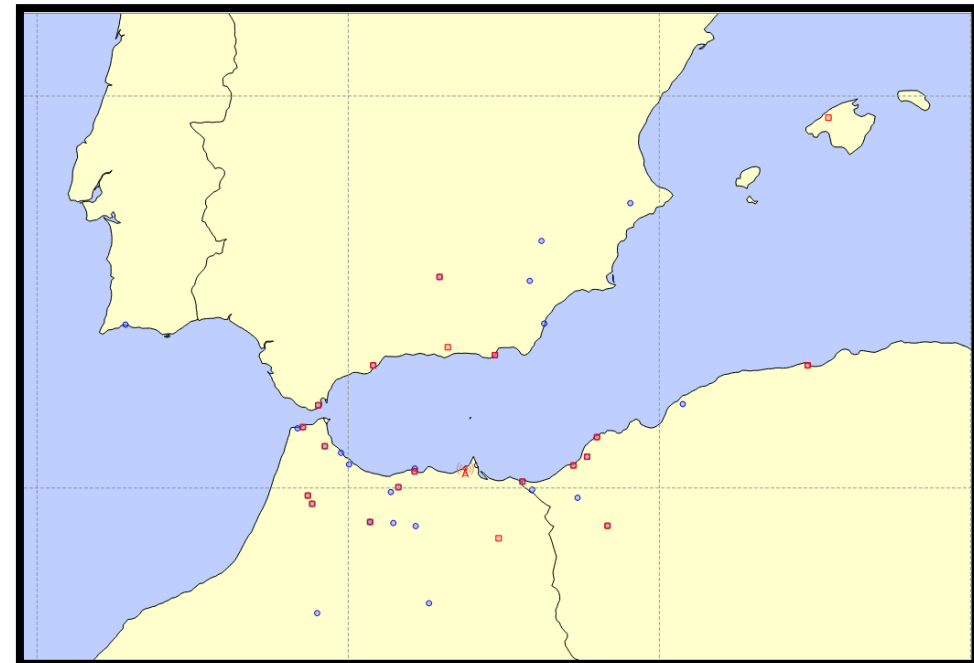
An increase of more than 0.5 dB is open to negotiations, in which more detailed calculation methods may be used

Coordination Exam and Compatibility analysis

Coordination
Examination



Compatibility
Analysis



Coordination Examination: Services likely to be affected



4.2 *Initiation of the modification procedure*

4.2.1 Any administration proposing to modify the characteristics of an assignment appearing in the Plan or to add a new assignment to the Plan shall obtain the agreement of any other administration whose services are likely to be affected.

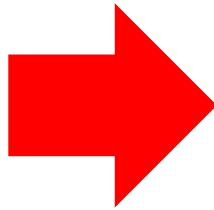
4.2.2 a) The sound broadcasting stations of an administration are likely to be affected by a proposed modification to the Plan if the distance from the station under consideration to the nearest point on the boundary of the country of that administration is less than the limit indicated in Annex 4, Chapter 1.

Other VHF-FM sound
broadcasting stations

4.2.2 b) The television stations of an administration in the band 87.5 - 100 MHz which are in conformity with the Stockholm Agreement (1961) are likely to be affected by a proposed modification to the Plan if the distance

ST61 television

Administration	Coordination Status	Coordination Provision	Source of Status	Date of Coordination Status	Declared Affected
COD	COORD REQUIRED	4.2.2.A	ITU	4 Mar 2020	ITU
4.2.2 c) COD	COORD REQUIRED	4.2.2.F	ITU	4 Mar 2020	ITU
KEN	COORD REQUIRED	4.2.2.F	ITU	4 Mar 2020	ITU
KEN	COORD COMPLETED	COORD	AFFECTED	3 Apr 2020	ITU
4.2.2 d) RRW	COORD REQUIRED	4.2.2.A	ITU	4 Mar 2020	ITU
RRW	COORD REQUIRED	4.2.2.F	ITU	4 Mar 2020	ITU
RRW	COORD COMPLETED	COORD	NOTIFIER	2 Mar 2020	NOTIFIER
4.2.2 e) TZA	COORD REQUIRED	4.2.2.A	ITU	4 Mar 2020	ITU
TZA	COORD REQUIRED	4.2.2.F	ITU	4 Mar 2020	ITU
TZA	COORD COMPLETED	COORD	AFFECTED	20 Apr 2020	ITU
4.2.2 f) TZA	COORD COMPLETED	COORD	NOTIFIER	2 Mar 2020	NOTIFIER
UGA	COORD REQUIRED	4.2.2.A	ITU	4 Mar 2020	ITU
UGA	COORD REQUIRED	4.2.2.F	ITU	4 Mar 2020	ITU
UGA	OBJECTION BY	COORD	AFFECTED	1 Jun 2020	ITU



Compatibility Analysis: Selection criteria

Configuration Information

Top 20 only Consider Tip TV also Polarization Discrimination (dB) Trigger NFS from proposed modification for EU calculations (dB ($\mu\text{V}/\text{m}$))

- Only the 20 main contributors are considered for the Eu calculations
- Consideration of notices present in the TIP
- Consideration of TV stations recorded in the ST61 Plan
- Polarization discrimination in case of orthogonal polarisation (V->H ou H->V)
- As a low NFS does not have a big impact on the Eu calculations, reasonably limited trigger NFS (by default 30 dB($\mu\text{V}/\text{m}$)) will increase the effectiveness of the analysis of the results for the interference generated by the proposed modification.



Compatibility Analysis : Results

Input notice file validated by the OnlineValidation process on 8/16/2020 10:52:11 AM

Proposed Modification	Administrations with which the limits of 4.3.7.1/4.3.7.2 are exceeded	Eu (dB(μV/m))
87.7MHz_AAZANEN	MRC E ALG	88.85

Select the proposed modification

87.7MHz AAZANEN

GE84 Compatibility Analyses Description

Result Interference To Interference From

Interference received by the proposed modification

Assign ID	Adm	Intent	Stn Cls	Assigned Frequency (MHz)	Polar	Site Name	Total Distance	Cold Sea Path (Km)	Warm Sea Path (Km)	Super refractivity Path (Km)	ERP (dBW)	Azimuth (deg)	Protection Ratio (dB)	NFS (dB(μV/m))	EU Ref (dB(μV/m))	Proposed EU (dB(μV/m))	Current EU (dB(μV/m))	EU increase (dB)
093005085	E	RECORDED	BC	87.7	M	EL EJIDO	167	0	153	0	35	9	37	81.37	88.68	91.57	88.98	2.59
105097287	MRC	RECORDED	BC	87.8	V	Hafa SAFA	203	0	195	0	35	278	25	66.69	97.79	88.37	87.91	0.46
084105732	E	RECORDED	BC	87.7	M	JEREZ DE LA FRONTERA	315	0	224	0	35	301	37	65.58	69.44	80.64	79.55	1.09
084100377	ALG	RECORDED	BC	87.7	H	BEN M'HIDI	86	0	75	0	30.7	102	37	61.18	83.27	95.12	95.09	0.03
115135358	E	RECORDED	BC	87.6	V	CUEVAS ALMANZORA	260	0	178	0	35	25	25	57.7	84.91	79.12	78.79	0.33
084009123	E	RECORDED	BC	87.6	H	MARBELLA	206	0	204	0	35	314	25	56.81	81.7	85.66	85.58	0.08
084009119	E	RECORDED	BC	87.6	M	CORDOBA	324	0	171	0	35	333	25	49.79	68.42	75.21	75.09	0.12
119085531	MRC	RECORDED	BC	87.6	V	Sefrou	226	0	15	0	35	225	25	48.97	79.93	72.89	72.69	0.2

Compatibility analysis: details concerning NFS calculations -



In this example : NFS = interference generated by the contributor to the proposed modification

Assign ID	Adm	Intent	Stn Cls	Assigned Frequency (MHz)	Polar	Site Name	Total Distance	Cold Sea Path (Km)	Warm Sea Path (Km)	Super refractivity Path (Km)	ERP (dBW)	Azimuth (deg)	Protection Ratio (dB)	NFS (dB(µV/m))
084004713	MRC	RECORDED	BC	87.6	H	ZAIO	58	0	6	0	38.1	323	33	86.41
084033664	ALG	RECORDED	BC	87.7	H	AIN-N'SOUR	389	0	289	0	50	260	37	67.58
105097287	MRC	RECORDED	BC	87.8	V	HAFSA SAFA	203	0	195	0	32	97	25	66.6
093005085	E	RECORDED	BC	87.7	M	EL EJIDO	167	0	153	0	22.8	189	37	65.71
084100377	ALG	RECORDED	BC	87.7	H	BEN M'HIDI	86	0	75	0	20	283	37	65.57
084105732	E	RECORDED	BC	87.7	M	JEREZ DE LA FRONTERA	315	0	224	0	37.8	120	37	65.08

Distance site to site & information concerning the various paths

- Total distance (land and sea)
- Cold sea path
- Warm sea path
- Super refractivity path

For co-sites, a minimum distance of 1 km is considered.

e.r.p at pertinent azimuth

NFS
see 3.5 of
Annex 2

Protection ratio (see Tables 2.1 to 2.3 of Annex 2 of GE84 Agreement) depending on:

- Frequency spacing
- Transmission System
- Steady/tropospheric interference

Compatibility Analysis : Results

Result		Interference To		Interference From												Search:				
Export to Excel																				
Assign ID	Adm	Intent	Stn Cls	Assigned Frequency (MHz)	Polar	Site Name	Total Distance	Cold Sea Path (Km)	Warm Sea Path (Km)	Super refractivity Path (Km)	ERP (dBW)	Azimuth (deg)	Protection Ratio (dB)	NFS (dB(μV/m))	EU Ref (dB(μV/m))	Proposed EU (dB(μV/m))	Current EU (dB(μV/m))	EU increase (dB)		
093005085	E	RECORDED	BC	87.7	M	EL EJIDO	167	0	153	0	35	9	37	81.37	88.68	91.57	88.98	2.59		
105097287	MRC	RECORDED	BC	87.8	V	Hafa Safa	203	0	195	0	35	278	25	66.69	97.79	88.37	87.91	0.46		
084105732	E	RECORDED	BC	87.7	M	JEREZ DE LA FRONTERA	315	0	224	0	35	301	37	65.58	69.44	80.64	79.55	1.09		
084100377	ALG	RECORDED	BC	87.7	H	BEN M'HIDI	86	0	75	0	30.7	102	37	61.18	83.27	95.12	95.09	0.03		
115135358	E	RECORDED	BC	87.6	V	CUEVAS ALMANZORA	260	0	178	0	35	25	25	57.7	84.91	79.12	78.79	0.33		
084009123	E	RECORDED	BC	87.6	H	MARBELLA	206	0	204	0	35	314	25	56.81	81.7	85.66	85.58	0.08		
084009119	E	RECORDED	BC	87.6	M	CORDOBA	324	0	171	0	35	333	25	49.79	68.42	75.21	75.09	0.12		
119085531	MRC	RECORDED	BC	87.6	V	Sefrou	226	0	15	0	35	225	25	48.97	79.93	72.89	72.69	0.2		
113097786	E	RECORDED	BC	87.6	M	CEHEGIN	341	0	174	0	35	22	25	48.08	80.42	81.53	81.52	0.01		

interference generated by the proposed modification

- NFS = interference generated by the proposed modification to the affected station
- Eu Ref = Eu calculated at the time the assignment entered the Plan (n/a if not yet RECORDED).
- Current Eu = Eu calculated for the affected station, considering all the interferers (or top 20), But NOT considering the proposed modification
- Proposed Eu = Eu calculated for the affected station, considering all the interferers (or top 20), AND considering the proposed modification

Compatibility Analysis : Results

Result		Interference To		Interference From												Search:				
Assign ID	Adm	Intent	Stn Cls	Assigned Frequency (MHz)	Polar	Site Name	Total Distance	Cold Sea Path (Km)	Warm Sea Path (Km)	Super refractivity Path (Km)	ERP (dBW)	Azimuth (deg)	Protection Ratio (dB)	NFS (dB(μV/m))	EU Ref (dB(μV/m))	Proposed EU (dB(μV/m))	Current EU (dB(μV/m))	EU increase (dB)		
093005085	E	RECORDED	BC	87.7	M	EL EJIDO	167	0	153	0	35	9	37	81.37	88.68	91.57	88.98	2.59		
105097287	MRC	RECORDED	BC	87.8	V	Hafa Safa	203	0	195	0	35	278	25	66.69	97.79	88.37	87.91	0.46		
084105732	E	RECORDED	BC	87.7	M	JEREZ DE LA FRONTERA	315	0	224	0	35	301	37	65.58	69.44	80.64	79.55	1.09		
084100377	ALG	RECORDED	BC	87.7	H	BEN M'HIDI	86	0	75	0	30.7	102	37	61.18	83.27	95.12	95.09	0.03		
115135358	E	RECORDED	BC	87.6	V	CUEVAS ALMANZORA	260	0	178	0	35	25	25	57.7	84.91	79.12	78.79	0.33		
084009123	E	RECORDED	BC	87.6	H	MARBELLA	206	0	204	0	35	314	25	56.81	81.7	85.66	85.58	0.08		
084009119	E	RECORDED	BC	87.6	M	CORDOBA	324	0	171	0	35	333	25	49.79	68.42	75.21	75.09	0.12		
119085531	MRC	RECORDED	BC	87.6	V	Sefrou	226	0	15	0	35	225	25	48.97	79.93	72.89	72.69	0.2		
113097786	E	RECORDED	BC	87.6	M	CEHEGIN	341	0	174	0	35	22	25	48.08	80.42	81.53	81.52	0.01		

interference generated by the proposed modification

The line is red:

- If the NFS ≥ 54 dB(μV/m), for protection of FM stations and (52 dBμV/m), for protection of TV stations, or
- If the resulting Eu, taking into consideration the proposed modification -- “Eu with wanted” -- is increased by more than 0.5 dB compared with the Eu Ref

Note : If the proposed modification is a MODIFY notice, its target is considered in the evaluation of the Eu current. It is replaced by the MODIFY notice for the evaluation of the Eu proposed.

Analyse de Compatibilité: Résultats

Fiche de
Notification
AAZANEN

```
<HEAD>  
t_adm=MRC  
</HEAD>  
<NOTICE>  
t_notice_type=T01  
t_fragment=GE84  
t_action=ADD  
t_freq_assgn=87.700000  
t_long=-0030703  
t_lat=+351507  
t site name=AAZANEN  
t_ant_dir=D  
t_erp_v_dbw=35.000  
t_hgt_agl=25  
t_site_alt=184  
t_bdwidth=300.000  
t_d_adm_ntc=2010-10-12  
t_polar=V  
t_tran_sys=4  
t_eff_hgtmax=209  
t_ctry=MRC
```

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<ANT_DTAGR_V>  
t_attn@azm0=0  
t_attn@azm10=0  
t_attn@azm20=0  
t_attn@azm30=0  
t_attn@azm40=4.5  
t_attn@azm50=9.5  
t_attn@azm60=14.5  
t_attn@azm70=19.5  
t_attn@azm80=15.5  
t_attn@azm90=10.5  
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t_attn@azm330=0  
t_attn@azm340=0  
t_attn@azm350=0  
</ANT_DTAGR_V>
```

Compatibility Analysis : Link with a PE from MAU



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Export to Excel Export to PDF Google Earth Generate e-notices (Export to SGML) Print

Search:

BR Id	Adm	Site Name	Assigned Frequency	Intent	Coord Completed	Objection By	Coord Required
120014279	MAU	MONT SIMONET	96.1	ADD		F	F

Proposed Modification	Administrations with which the limits of 4.3.7.1/4.3.7.2 are exceeded
96.1MHz_MONT SIMONET	F MAU

interference generated by
MONT SIMONET
96.1 MHz



96.1MHz MONT SIMONET

GE84 Compatibility Analyses Description

Result: **Interference To** Interference From

Export to Excel Search:

Assign ID	Adm	Intent	Stn Cls	Assigned Frequency (MHz)	Polar	Site Name	Total Distance	Cold Sea Path (Km)	Warm Sea Path (Km)	Super refractivity Path (Km)	ERP (dBW)	Azimuth (deg)	Protection Ratio (dB)	NFS (dB(µV/m))	EU Ref (dB(µV/m))	Proposed EU (dB(µV/m))	Current EU (dB(µV/m))	EU increase (dB)
084108313	MAU	RECORDED	BC	96.3	H	BEAU CHAMP	34	0	34	0	35.6	82	7	46.56	75.57	87.09	87.08	0.01
113028244	MAU	RECORDED	BC	96.4	V	MOTTE A TURESEE	27	0	27	0	35.4	55	-7	45.89	100.36	91.4	91.39	0.01
084101552	F	RECORDED	BC	96.2	V	PITON HYACINTHE	219	0	196	0	11	244	25	34.31	89.73	95.69	95.69	0
094003050	F	RECORDED	BC	96.2	V	TROIS BASSINS	236	0	188	0	11	249	25	32.51	114.43	114.43	114.43	0

Compatibility Analysis : Link with a PE from MAU



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Input notice file validated by the OnlineValidation process on 9/28/2020 3:43:43 PM

Proposed Modification	Administrations with which the limits of 4.3.7.1/4.3.7.2 are exceeded	Eu (dB(μV/m))
96.1MHz_MONT SIMONET	F MAU	67.82

interference received by MONT SIMONET 96.1 MHz

Result	Interference To	Interference From	Search:												
Assign ID	Adm	Intent	Stn Cls	Assigned Frequency (MHz)	Polar	Site Name	Total Distance	Cold Sea Path (Km)	Warm Sea Path (Km)	Super refractivity Path (Km)	ERP (dBW)	Azimuth (deg)	Protection Ratio (dB)	NFS (dB(μV/m))	
084101552	F	RECORDED	BC	96.2	V	PITON HYACINTHE	219	0	196	0	33	65	25	56.31	
084023500	F	RECORDED	BC	95.9	V	PITON TEXTOR	210	0	196	0	35	64	7	54.98	
094003050	F	RECORDED	BC	96.2	V	TROIS BASSINS	236	0	188	0	33	70	25	54.51	
084108301	MAU	RECORDED	BC	96.4	H	TAMARIN	9	0	9	0	27	73	-7	53.49	
084108313	MAU	RECORDED	BC	96.3	H	BEAU CHAMP	34	0	34	0	17	262	7	49.29	
084043785	MDG	RECORDED	BC	96.1	H	MORAMANGA	976	0	868	0	50	101	37	44.88	
094003051	F	RECORDED	BC	96.3	V	S DENIS 2	218	0	184	0	27	74	7	41.34	
113028225	MAU	RECORDED	BC	96.4	V	LE MORNE	18	0	18	0	30.2	42	-7	40.96	
094003047	F	RECORDED	BC	95.9	V	LE PORT	231	0	184	0	33	74	7	36.65	
113028244	MAU	RECORDED	BC	96.4	V	MOTTE A THERESE	27	0	27	0	12	235	-7	18.51	
084023520	F	RECORDED	BC	95.8	V	S JOSEPH	214	0	214	0	13	60	-7	5.87	
112126704	F	RECORDED	BC	95.7	V	SAINTE SUZANNE	202	0	186	0	20	72	-20	3.28	
084023600	F	RECORDED	BC	96.5	H	POINTE DES CASCADES	191	0	191	0	23	62	-20	1.08	
084043551	MDG	RECORDED	BC	96.4	H	ANDAPA	1035	0	956	0	50	128	-7	1.01	

Compatibility Analysis : Link with a PE from EGY



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Export to Excel Export to PDF Google Earth Generate e-notices (Export to SGML) Print

BR Id	Adm	Site Name	Assigned Frequency	Intent	Coord Completed	Objection By	Coord Required
120088809	EGY	HALAYEB	88.7	ADD		ARS SDN	ARS SDN
120088810	EGY	HALAYEB	93.7	ADD		ARS SDN	ARS SDN
120177064	EGY	HALAYEB11	88.7	ADD		ARS SDN	ARS SDN
120177065	EGY	HALAYEB11	93.7	ADD		ARS SDN	ARS SDN
120214887	EGY	HALAYEB111	92.3	ADD			ARS SDN
120214888	EGY	HALAYEB112	95.7	ADD			ARS SDN

93.7MHz HALAYEB

GE84 Compatibility Analyses Description

Result Interference To Interference From

Export to Excel

Assign ID	Adm	Intent	Stn Cls	Assigned Frequency (MHz)	Polar	Site Name	Total Distance	Cold Sea Path (Km)	Warm Sea Path (Km)	Super refractivity Path (Km)	ERP (dBW)	Azimuth (deg)	Protection Ratio (dB)	NFS (dB(μV/m))	EU Ref (dB(μV/m))	Proposed EU (dB(μV/m))	Current EU (dB(μV/m))	EU increase (dB)
084025129	EGY	RECORDED	BC	93.5	H	RAS BANAS	215	0	184	0	28	333	7	37.62	54.47	54.53	53.72	0.81
084034087	ARS	RECORDED	BC	93.7	H	AL BAD	720	0	658	0	6.5	347	37	19.01	60.63	60.64	60.63	0.01
084025124	EGY	RECORDED	BC	93.9	H	QUSEIR	497	0	327	0	28	331	7	13.9	59.26	59.3	59.3	0
084025207	EGY	RECORDED	BC	93.6	H	QENA	594	0	123	0	28	319	25	13.33	58.68	58.68	58.68	0
110026091	ETH	RECORDED	BC	93.6	H	AFRERA	1091	0	898	0	28	155	25	12.01	61.59	61.52	61.52	0
084044442	SDN	RECORDED	BC	93.7	H	ABOU HAMED	686	0	0	0	28	248	37	9.35	57.96	57.96	57.96	0
084033813	ARS	RECORDED	BC	93.6	H	MEDINA	387	0	210	0	12	30	25	6.99	54	44.83	44.84	0.01

interference generated by HALAYEB 93.7 MHz



Coordination examination & compatibility Analysis

ex: MT MUTUMBA BDI Polarization V à 87.9MHz

GE84

Export to Excel Export to PDF Google Earth Generate e-notices (Export to SGML) Print Search:

BR Id	Adm	Site Name	Assigned Frequency	Intent	Coord Completed	Objection By	Coord Required
115030707	BDI	MT MUTUMBA	87.9	ADD	KEN RRW TZA	UGA	COD KEN RRW TZA UGA

Administration	Coordination Status	Coordination Provision	Source of Status	Date of Coordination Status	Declared Affected
COD	COORD REQUIRED	4.2.2.A	ITU	4 Mar 2020	ITU
COD	COORD REQUIRED	4.2.2.F	ITU	4 Mar 2020	ITU
KEN	COORD REQUIRED	4.2.2.F	ITU	4 Mar 2020	ITU
KEN	COORD COMPLETED	COORD	AFFECTED	3 Apr 2020	ITU
RRW	COORD REQUIRED	4.2.2.A	ITU	4 Mar 2020	ITU
RRW	COORD REQUIRED	4.2.2.F	ITU	4 Mar 2020	ITU
RRW	COORD COMPLETED	COORD	NOTIFIER	2 Mar 2020	NOTIFIER
TZA	COORD REQUIRED	4.2.2.A	ITU	4 Mar 2020	ITU
TZA	COORD REQUIRED	4.2.2.F	ITU	4 Mar 2020	ITU
TZA	COORD COMPLETED	COORD	AFFECTED	20 Apr 2020	ITU
TZA	COORD COMPLETED	COORD	NOTIFIER	2 Mar 2020	NOTIFIER
UGA	COORD REQUIRED	4.2.2.A	ITU	4 Mar 2020	ITU
UGA	COORD REQUIRED	4.2.2.F	ITU	4 Mar 2020	ITU
UGA	OBJECTION BY	COORD	AFFECTED	1 Jun 2020	ITU

Coordination examination & compatibility Analysis

ex: MT MUTUMBA BDI Polarization V à 87.9MHz

87.9MHz MT MUTUMBA

GE84 Compatibility Analyses Description

Result Interference To Interference From

Export to Excel Search:

Assign ID	Adm	Intent	Stn Cls	Assigned Frequency (MHz)	Polar	Site Name	Total Distance	Cold Sea Path (Km)	Warm Sea Path (Km)	Super refractivity Path (Km)	ERP (dBW)	Azimuth (deg)	Protection Ratio (dB)	NFS (dB(μV/m))	EU Ref (dB(μV/m))	Proposed EU (dB(μV/m))	Current EU (dB(μV/m))	EU increase (dB)
084108077	BDI	RECORDED	BC	87.9	H	MT BIRIME	81	0	0	0	25	150	36	54.99	77.74	78.06	77.78	0.28
115030651	BDI	RECORDED	BC	87.9	H	BUJUMBURA	110	0	0	0	25	224	28	48.67	99.81	99.81	99.81	0
084044435	RRW	RECORDED	BC	88	H	MT KARISIMBI	140	0	0	0	25	334	25	42.84	74.02	74.08	74.03	0.05
084023860	TZA	RECORDED	BC	87.9	H	KASULU	240	0	0	0	25	167	28	33.14	64.58	64.71	64.68	0.03
084045095	UGA	RECORDED	BC	87.9	H	FT PORTAL	372	0	0	0	25	5	37	30.73	76.87	78.16	78.16	0

GE84 Optimization tool

<https://www.itu.int/ITU-R/eTerrestrial/eBroadcasting>

Michèle Coat Degert
BR/TSD/BCD

Optimization Tool

- This tool has been primarily developed to achieve an efficient use of the 87.5-108 MHz (FM) band for analogue sound broadcasting and to allocate new frequencies to FM broadcasting to meet the increasing need for additional frequencies in African countries.
- This tool can also be used by all the administrations party to the GE84 Agreement.

Optimization Tool

Goal

- to allocate new frequencies to FM broadcasting to meet the growing need for additional frequencies

Results

- Nuisance Field strength (NFS) generated and received by a proposed requirement in view to identify additional frequencies

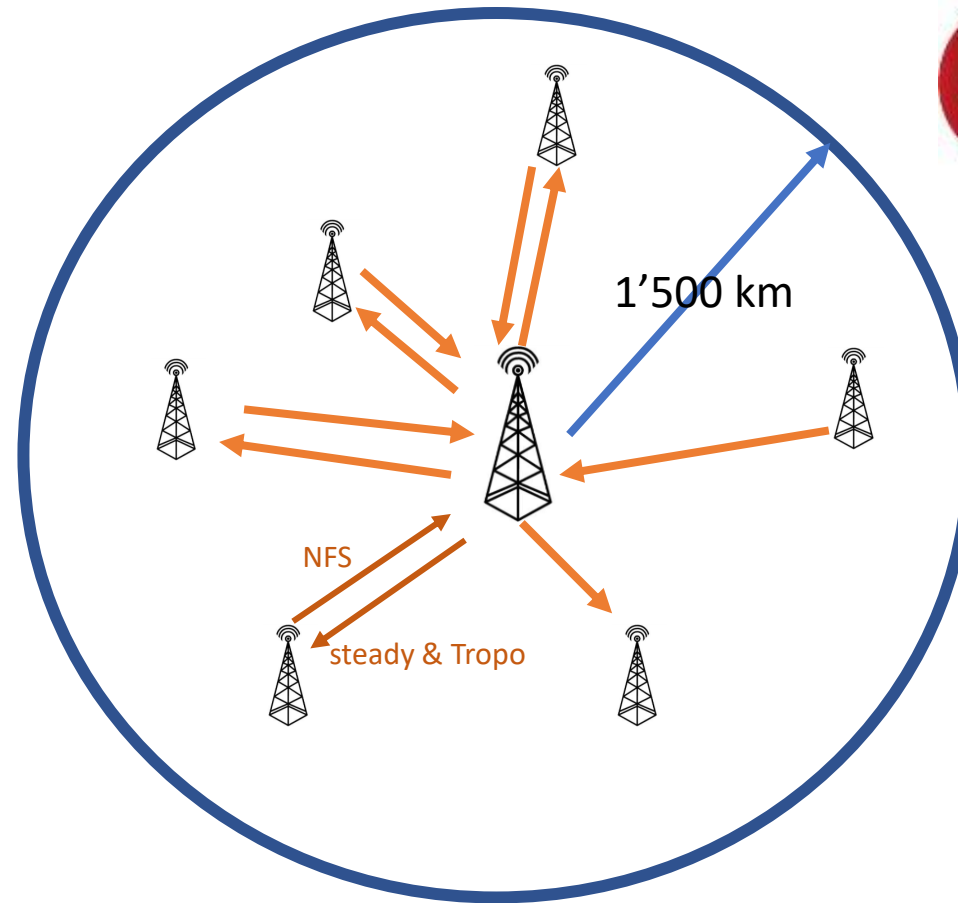
Analysis of the results

- Search for an assignable frequency based on predefined criteria

Optimization Tool



GE84
Plan
optimization

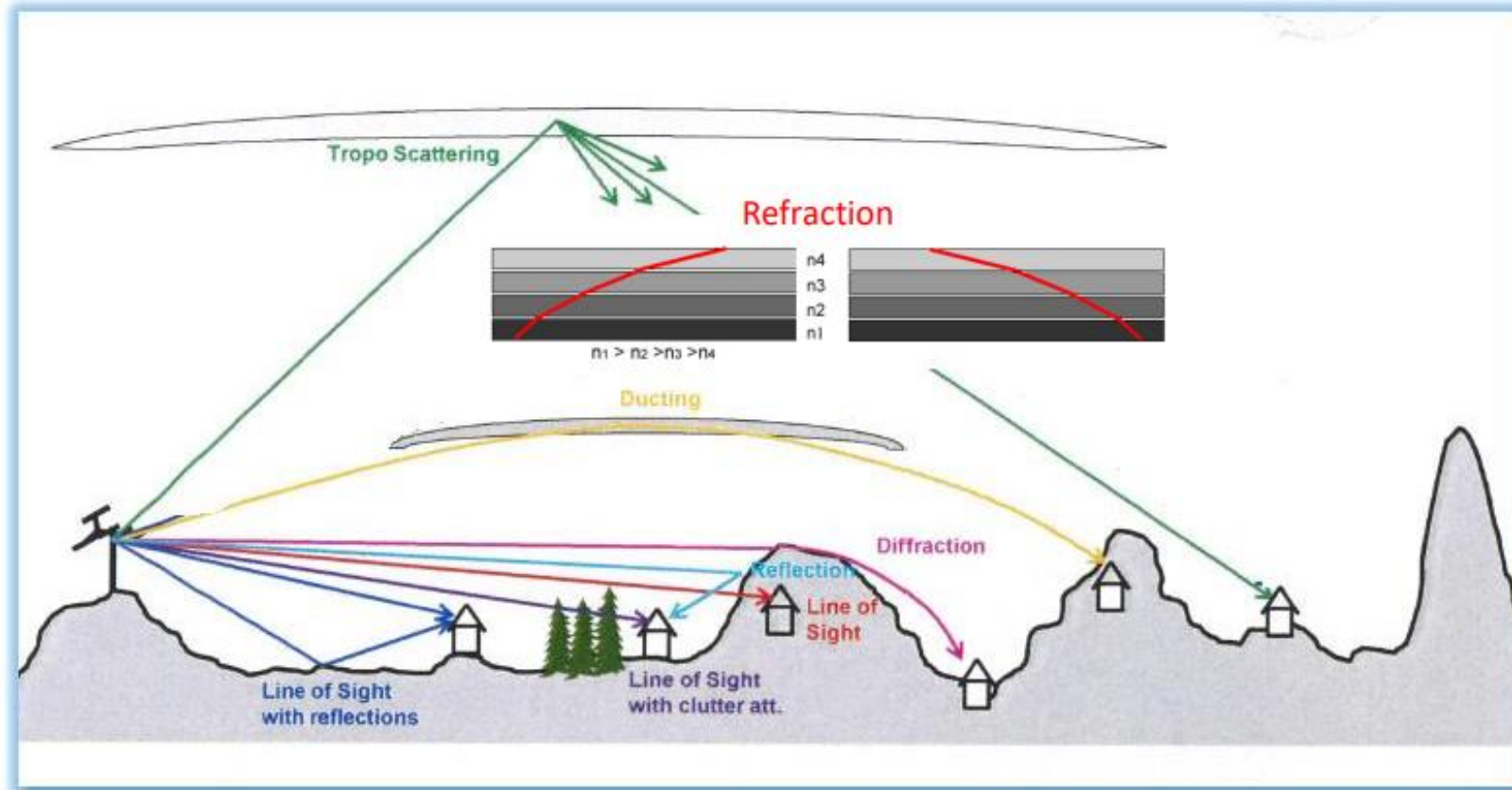


Based on the coordinates of a station, the tool assesses all identified interference sources within a radius of **1'500 km** for a **given frequency and adjacent frequencies** up to ± 400 kHz.



Rec. ITU-R P. 1812

Propagation mechanisms in the VHF/UHF band



Adapted from LS Telecom Propagation training material



Optimization Tool

- **Compatibility between the requirements submitted to the calculations considered**
- Introduction of the notion of **requirements with a flexible frequency.**
- For flexible frequency requirements, **the entire FM band (87.6 to 107.9 MHz) is analysed in steps of 100 kHz.**
- The objective is/was, **as a first step**, to submit **flexible frequency requirements** in order to identify the most suitable frequencies. **In the following steps**, the user can begin to fix/set frequencies until all requirements are assigned an **appropriate fixed frequency.**
- **IMPORTANT: Flexible frequency requirements should be removed before the end of the exercise**

FLEX channels will not be accepted **starting Iteration 9, Thursday, 13 May 2021.**

No drastic changes to requirements **starting Iteration 12, Thursday, 24 June 2021.**



Optimization tool

**Flexible
Frequency
Requirement**

T01

Date of notification: [dropdown] ID1/ Unique identification code given by the Administration to the assignment: [text box]

Fragment: Article 11 GE84 ST61
Notification intended for: Addition Modification [...]

12A/ Operating agency: [dropdown] 2C/ Date of bringing into use: [dropdown]

12B/ Address code: [dropdown] 10B/ Regular hours of operation (UTC): From [dropdown] To [dropdown]

Assignment characteristics | Antenna characteristics

Station information
4A/ Antenna site name: KIBWEZI
4B/ Geographic area: KEN
4C/ Longitude: 37° 55' 0" E
Latitude: 2° 22' 0" S
9EA/ Altitude of site above sea level: 1087 m
3A1/ Call sign: [text box]
3A2/ Station identification: FLEX

Emission characteristics
1A/ Assigned frequency: 87.7 MHz
7AB/ Bandwidth: 300.000 kHz
7D/ Transmission system: 4
9D/ Polarization: H
8BH/ Horizontal e.r.p.: 47.800 dBW
8BV/ Vertical e.r.p.: [text box] dBW

Antenna characteristics
9/ Antenna directivity: D
9EB/ Maximum Effective Antenna Height: 342 m
9E/ Height of Antenna Above Ground Level: 100 m

Coordination successfully completed with the following administrations
Available administrations: AFG, AFS, AGL, ALB, ALG
Selected administrations: [empty box]
Buttons: Add >, < Remove, << Clear

13C/ Notified remarks: [text area]



Optimization tool

Calculation
criteria

Consider Tip TV also Polarization Discrimination (dB)

Criteria for
the definition
of assignable
frequencies

Ignore self interference Ignore interference received Acceptable NFS (dB ($\mu\text{V}/\text{m}$))

Select the
Adm to be
analyzed

Configuration Information (only results with Nuisance Field Strength (NFS) ≥ 30 dB ($\mu\text{V}/\text{m}$) will be displayed):

Consider Tip TV also Polarization Discrimination (dB)

Job Output

Input notice file validated by the OnlineValidation process on 4/19/2021 7:50:13 AM

Ignore self interference Ignore interference received Acceptable NFS (dB ($\mu\text{V}/\text{m}$))

Select Administration

SOM

Evaluate Statistics

Online demo

<https://www.itu.int/ITU-R/eTerrestrial/eBroadcasting>



ONLY applied to Reqt's with a FIXED frequency!!!!

The coordination info of the Plan Entries is not taken into account

Optimization Tool

Introduction of Coordination

T01

Date of notification: [dropdown] ID1/ Unique identification code given by the Administration to the assignment: [text box]

Fragment: Article 11 GE84 ST61
Notification intended for: Addition Modification [...]

12A/ Operating agency: [dropdown] 2C/ Date of bringing into use: [dropdown]

12B/ Address code: [dropdown] 10B/ Regular hours of operation (UTC): From [time] To [time]

Assignment characteristics: [tab] Antenna characteristics: [tab]

Station information: 4A/ Antenna site name: KIBWEZI 4C/ Longitude: 37° 55' 0" E 9EA/ Altitude of site above sea level: 1087 m 3A1/ Call sign: [text box]
4B/ Geographic area: KEN Latitude: 2° 22' 0" S 3A2/ Station identification: FLEX

Emission characteristics: 1A/ Assigned frequency: 87.7 MHz 7D/ Transmission system: 4 8BH/ Horizontal e.r.p.: 47.800 dBW
7AB/ Bandwidth: 300.000 kHz 9D/ Polarization: H 8BV/ Vertical e.r.p.: [text box] dBW

Antenna characteristics: 9/ Antenna directivity: D 9EB/ Maximum Effective Antenna Height: 342 m 9E/ Height of Antenna Above Ground Level: 100 m

Coordination successfully completed with the following administrations

Available administrations	Selected administrations
AFG	
AFS	
AGL	
ALB	
ΔI G	

3C/ Notified remarks: [text area]

AFS Augrabies – Agreement from NMB

Ignore self interference Ignore interference received Acceptable NFS (dB (μV/m))

Optimization Tool

Introduction of Coordination

Adm	Submitted	Assignable	Non Assignable
AFS	2	1	1
NMB	1	1	0

Showing results for submitted requirements from AFS

Select requirement:

104 MHz-AUGRABIES (020°24'00"E-28°34'00"S) System 4 Polarization V

GE84 Optimization Description

Summary [104 MHz-AUGRABIES (020°24'00"E-28°34'00"S) System 4 Polarization V]

Details of the requirement under consideration

Show top 5 interferers in the summary Show top 5 affected in the summary

Excel

Frequency (MHz)	Max NFS Generated (dB(μV/m))	Max NFS Received (dB(μV/m))	Top five affected																
			Assign ID	Adm.	Intent	Class	Freq.	Pol.	Site Name	Dist.	Cold Sea	Warm Sea	Sup. Refc.	ERP	Azim.	Prot. Ratio	NFS	Coord.	
104	58.15	50.21	3	NMB	ADD	BC	104.2	V	ARIAMSVLEI	73	0	0	0	37	310.9	7	58.15	Yes	
			2	AFS	ADD	BC	104	H	DE AAR	406	0	0	0	37	122.2	37	37.45	---	
			084002558	NMB	RECORDED	BC	103.7	H	ARIAMSVLEI	73	0	0	0	37	310.9	-7	34.15	Yes	



Optimization Tool

Introduction of Coordination

AFS AUGRABIES (Assign ID 1) – Agreement from NMB –
Impact on interference received for NMB ARIAMSVLEI

Select requirement:

104.2 MHz-ARIAMSVLEI (019°50'00"E-28°08'00"S) System 4 Polarization V

GE84 Optimization Description

Summary [104.2 MHz-ARIAMSVLEI (019°50'00"E-28°08'00"S) System 4 Polarization V]

Details of the requirement under consideration

Show top 5 interferers in the summary Show top 5 affected in the summary

Frequency (MHz)	Max NFS Generated (dB(μV/m))	Max NFS Received (dB(μV/m))	Top five interferers																
			Assign ID	Adm.	Intent	Class	Freq.	Pol.	Site Name	Dist.	Cold Sea	Warm Sea	Sup. Refr.	ERP	Azim.	Prot. Ratio	NFS	Coord.	
104.2	49.11	58.15	1	AFS	ADD	BC	104	V	AUGRABIES	73	0	0	0	37	310.9	7	58.15	Yes	
			084002199	NMB	RECORDED	BC	104.3	H	KEETMANSHOOP	241	0	0	0	47	136.1	25	52.23	---	
			084000416	AFS	RECORDED	BC	104.5	H	AUGRABIES	73	0	0	0	47	310.9	-7	44.69	---	
			084000284	AFS	RECORDED	BC	104.3	H	GARIES	296	0	0	0	37	35.4	25	38.92	---	

Thank you for your attention
Questions ?