Spectrum Management System for Developing Countries (SMS4DC)

Training on SMS4DC
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BORDER COORDINATION- USER DEFINED AGREEMENTS

WHY BORDER COORDINATION

AGREEMENT

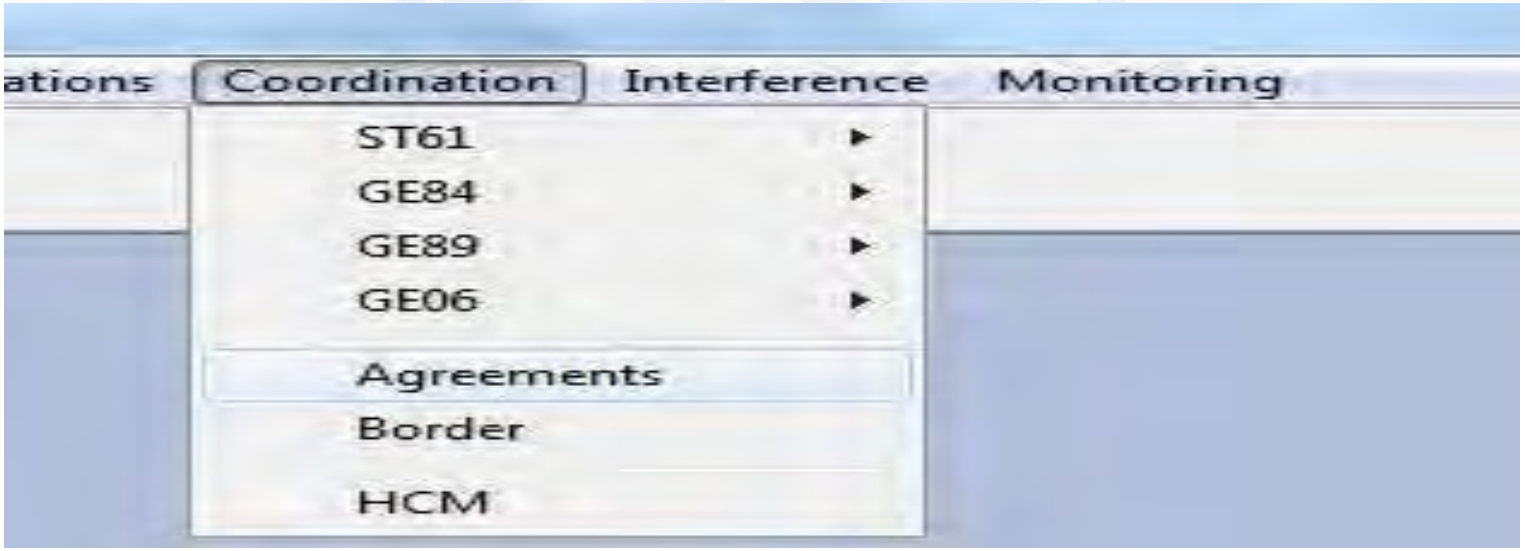
- DEVELOPING EFFECTIVE BILATERAL OR MULTILATERAL AGREEMENTS ON FREQUENCY USE IN BORDER AREAS WILL AID LONG-

  TERM STRATEGIC PLANNING, PROMOTE EFFICIENT SPECTRUM UTILISATION AND HELP AVOID INTERFERENCE

- THE ITEM "AGREEMENT" IN COORDINATION MENU ENABLES THE ENTRY OF USER-DEFINED AGREEMENTS WHICH MAY BE

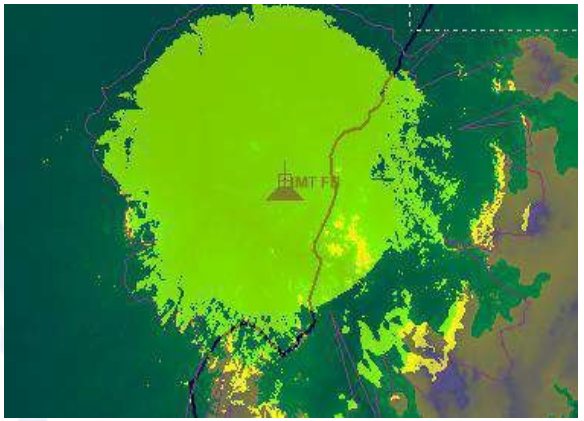
  USED FOR BORDER COORDINATION THROUGH THE "BORDER" ITEM IN SAME MENU.

- EACH AGREEMENT CONSISTS OF TWO PARTS; HEADER AND TECHNICAL CHARACTERISTICS.



WHY BORDER COORDINATION

- RADIOWAVES DO NOT STOP AT THE BORDER OF THE COUNTRY.
- TO AVOID HARMFUL INTERFERENCE FROM THE STATIONS OF ONE COUNTRY INTO THE TERRITORY AND STATIONS OF NEIGHBOR COUNTRIES.
- BILATERAL OR MULTILATERAL AGREEMENTS ON FREQUENCY USE IN BORDER AREAS WILL AID LONG-TERM STRATEGIC PLANNING, PROMOTE EFFICIENT SPECTRUM UTILIZATION.
- AGREE ON ALLOWED INTERFERENCE RANGE AND DISTANCE
- COORDINATING FREQUENCIES AMONG ADMINISTRATIONS BEFORE ASSIGNING THEM.
- QUICK ASSESSMENT OF INTERFERENCE THROUGH AGREED CRITERIA.



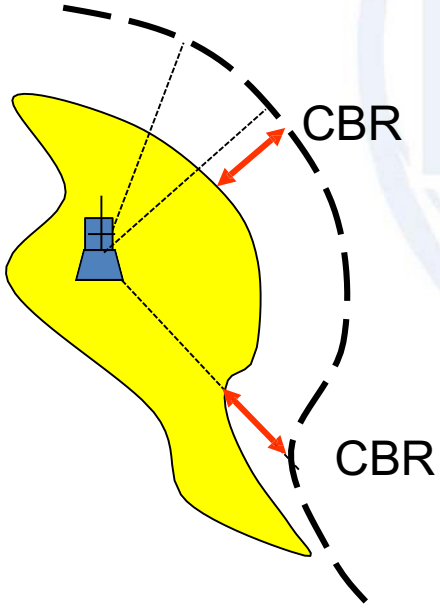
SMS4DC BORDER AGREEMENTS

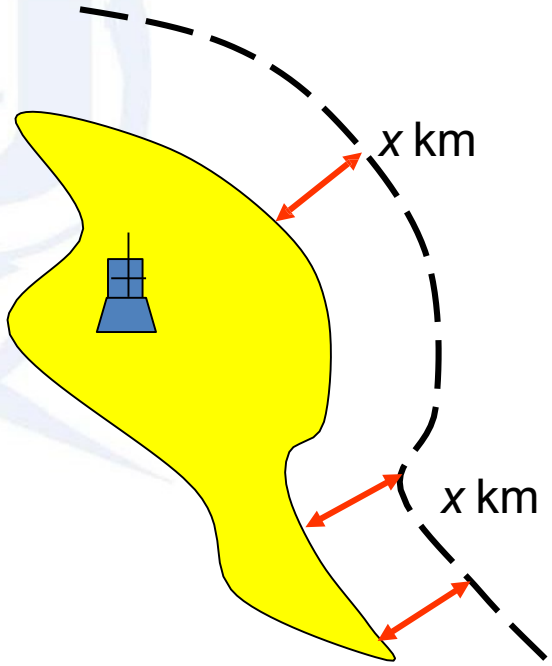
- THE ITEM “AGREEMENT” IN COORDINATION MENU ENABLES THE ENTRY OF USER-DEFINED AGREEMENTS WHICH MAY BE USED FOR BORDER COORDINATION THROUGH THE “BORDER” ITEM IN SAME MENU.
- EACH AGREEMENT CONSISTS OF TWO CPARTS; HEADER AND TECHNICAL CHARACTERISTICS.

HEADER PART	TECHNICAL PART
• NAME OF AGREEMENT • MEMBER COUNTRIES • INCORPORATED RADIO COMMUNICATION SERVICES • PROPAGATION MODELS USED IN THE AGREEMENTS (FREE SPACE AND P.1546) • AGREEMENT CATEGORY	• FREQUENCY BANDS • PREFERENTIAL COUNTRIES IN ANY FREQUENCY BAND • CROSS BORDER RANGE(CBR), X-KM OR COORDINATION DISTANCE. • EFFECTIVE RADIATED POWER AND PERMISSIBLE INTERFERENCE FIELD STRENGTH(PIFS)

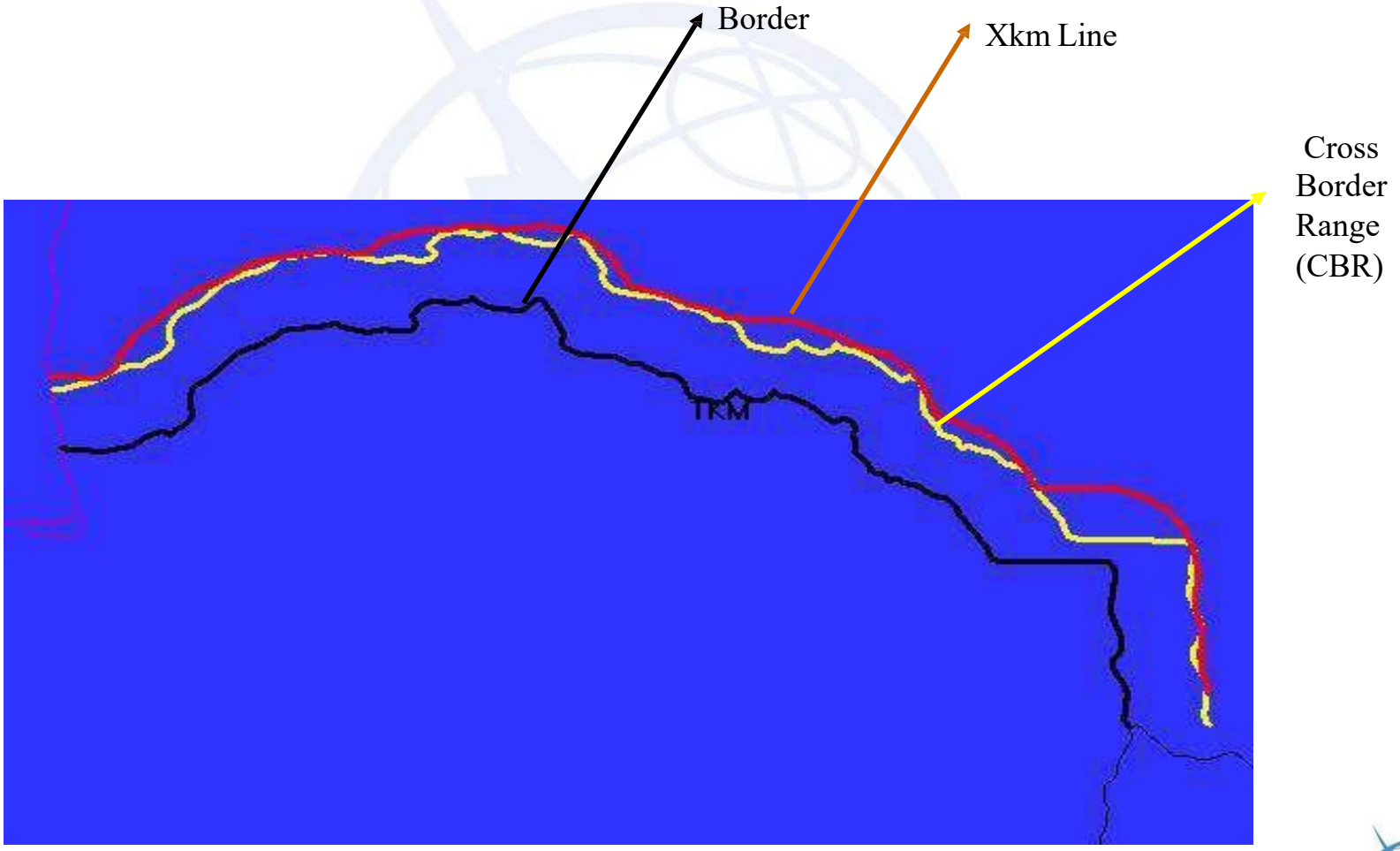
CONTOUR CATEGORIES

Cross Border Range(CBR)	The x-km contour
• is the locus of points where their distances to the border, along the line connecting points to the concerned station, are identical	• is the locus of points where their nearest distance to the border is set at an agreed value of x km.





CONTOUR CATEGORIES

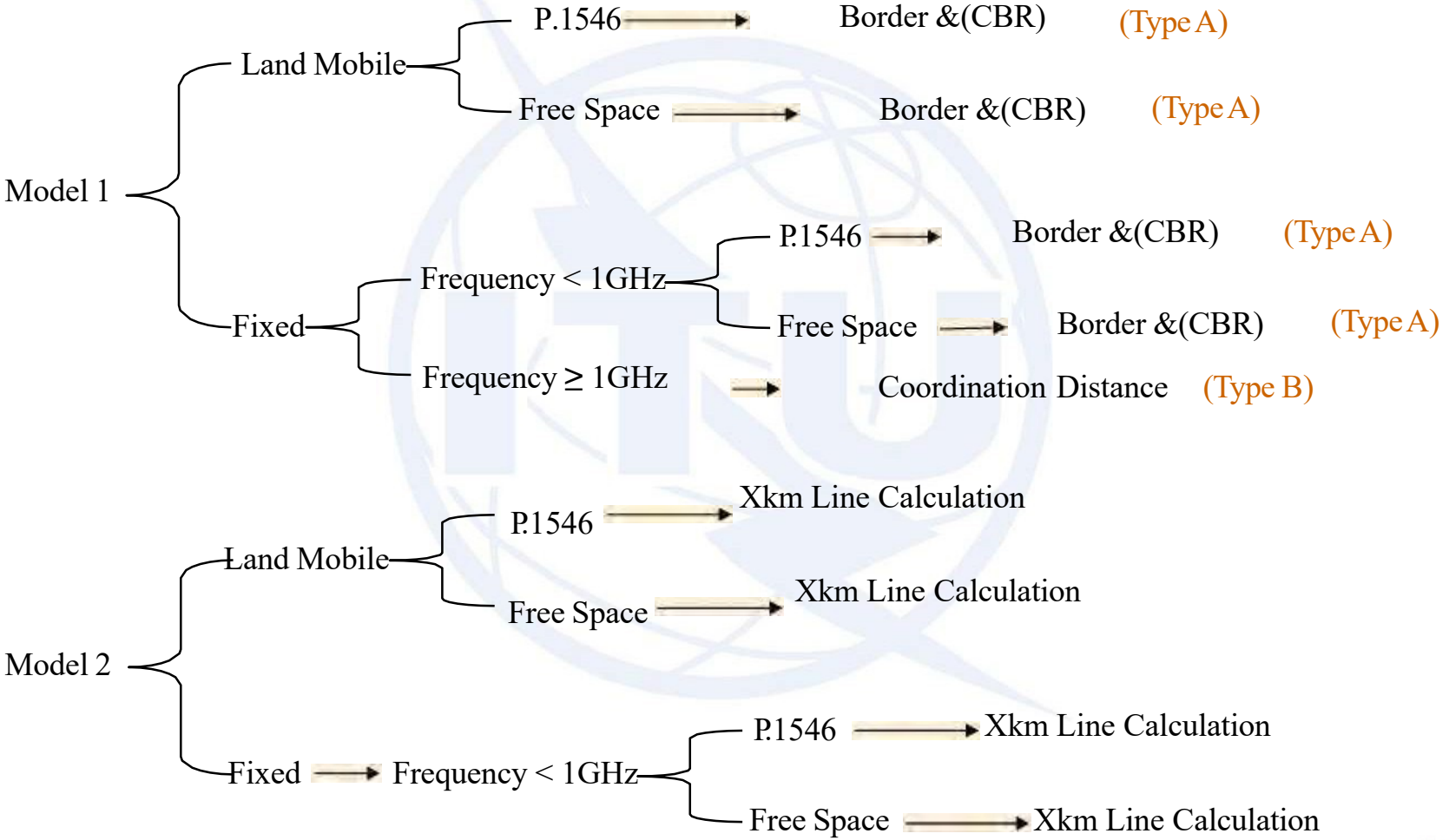


AGREEMENTS TYPES

- **Frequencies requiring co-ordination** :Frequencies which Administrations are required to co-ordinate with the other Administrations affected before a station is put into service.
  - Model 1 (Type A) Land Mobile service (all frequencies) & Fixed service(below 1 GHz) Coordination of selected station is required if field strength on border of concerned administrations exceeds permissible interference level. Also field strength on CBR shall not exceed permissible interference level.
  - Model 1 (Type B) Fixed service above 1 GHz Coordination of selected station is required if distance of the station to border is less than coordination distance

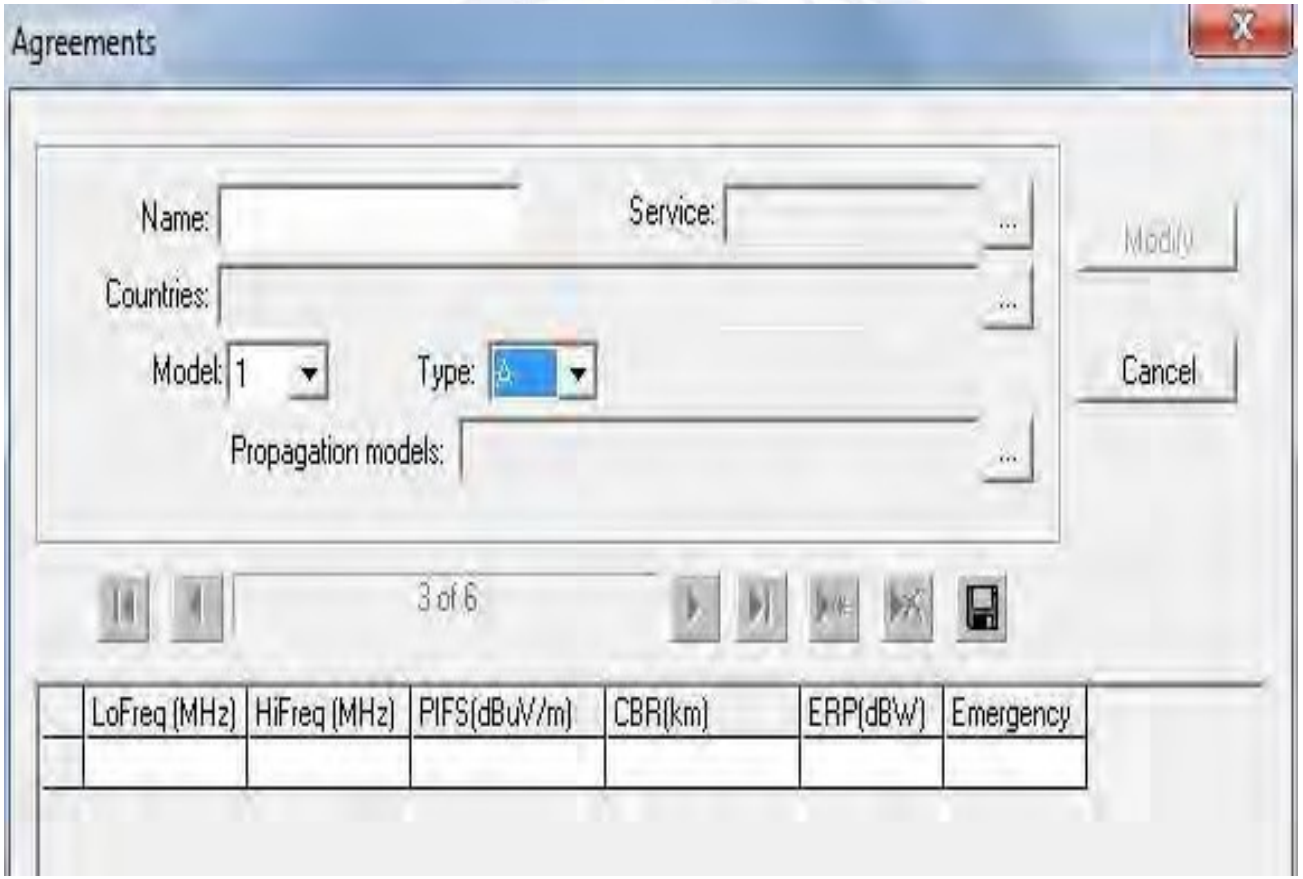
- **Preferential Frequencies** :Frequencies which the Administrations concerned may assign, without prior co-ordination, on the basis of bi- or multilateral agreements.
  - Model 2 : Land Mobile service (all frequencies) and fixed service below 1 GHz Prior co-ordination is not required if field strength of selected station on X-km is less than permissible interference level

AGREEMENTS TYPES



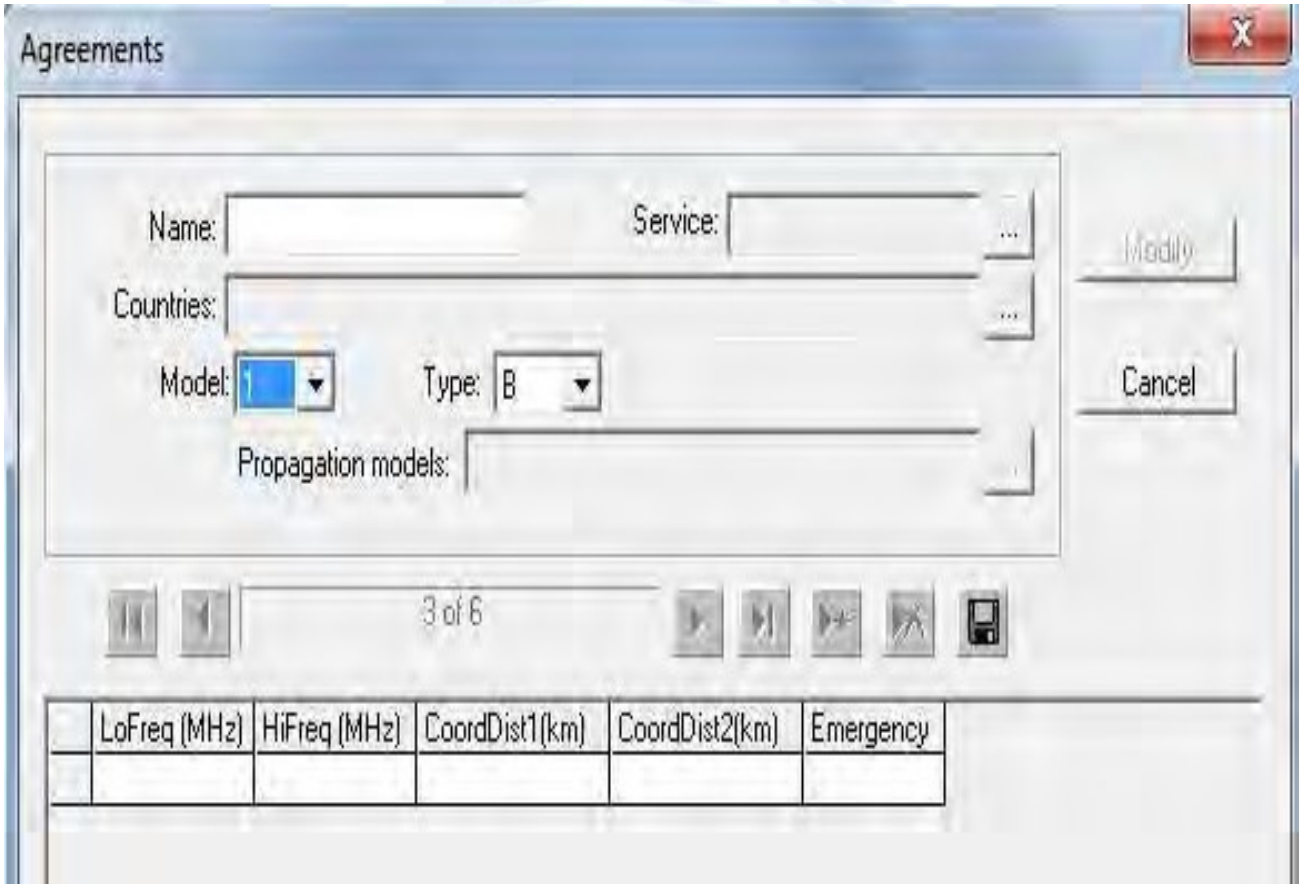
AGREEMENTS TYPES

Model 1 TypeA



AGREEMENTS TYPES

Model 1 Type B



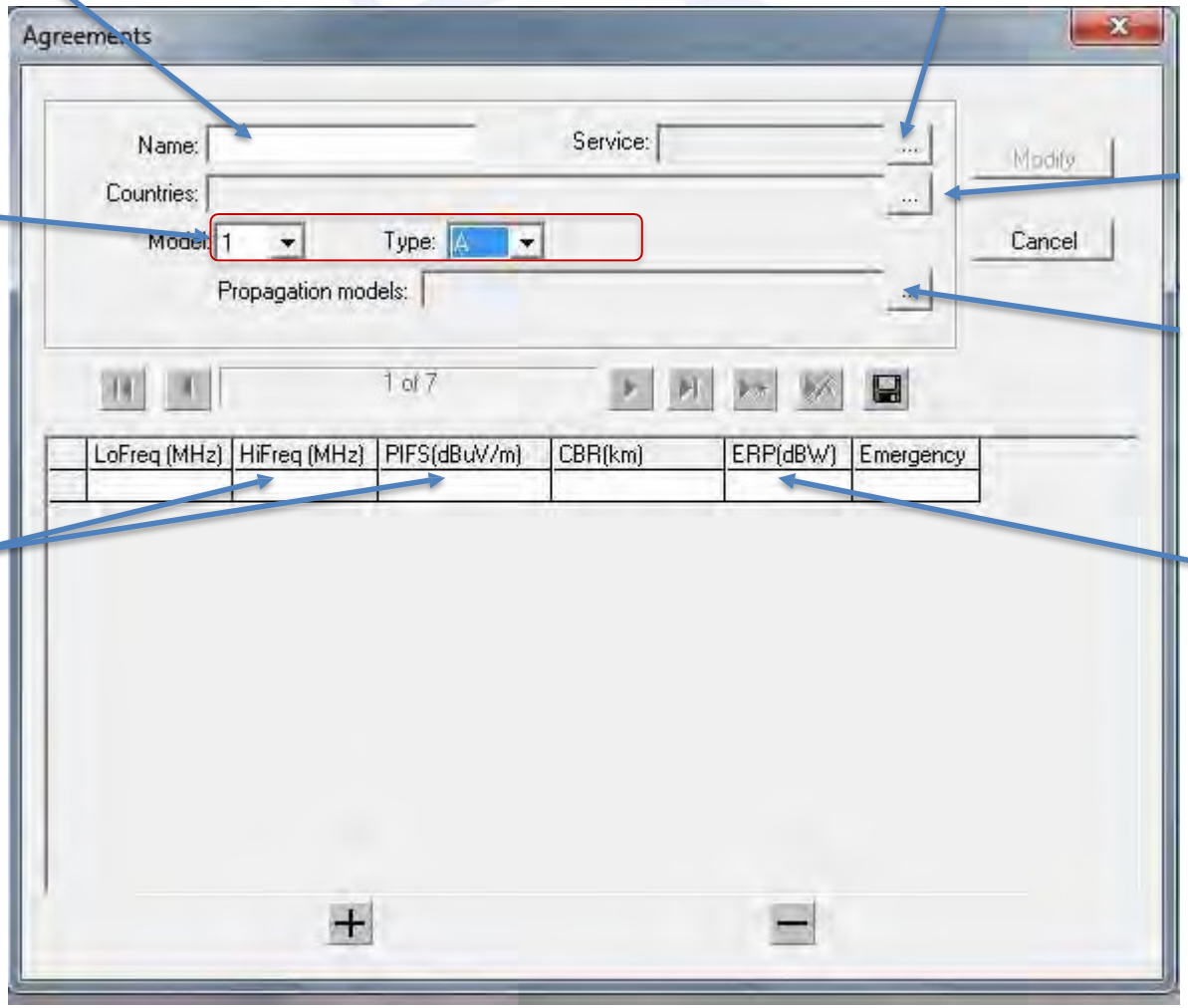
AGREEMENTS TYPES

Field name	Description	Category	
		Mode	Type
AgID	The ID number of an agreement in the database.	All	All
LoFreq,HiFreq	The lower and upper edge of the applicable frequency range (MHz).	All	All
PrefCountries	The list of preferential countries. If this cell in relevant row or the row is selected, the "Preferential Countries" push button can be used for choosing and inserting data in this cell.	2	---
PIFS	Permissible Interference Field Strength. This value (in dBμV/m) is compared with the calculated field strength value to determine whether or not coordination is necessary.	All	A
CBR	The CBR (Cross Border Range), in km, is the distance beyond the national border used to establish a contour of points. The distance of any point on this contour to the border, along the line connecting to the concerned station, will be identical and equal to CBR (see Figure 3.175).	1	A
X-km	The X-km, in km, is the distance beyond national border used to establish a contour of points. The nearest distance of any point on this contour to the border will be identical and equal to X-km (see Figure 3.175).	2	
CoordDist1	The coordination distance used where the summation of station height, above sea level, and antenna height, above ground level, is less than β00 metres.	1	B
CoordDist2	The coordination distance used where the summation of station height, above sea level, and antenna height, above ground level, is over 300 metres.	1	B
ERP	The Effective Radiated Power (ERP), in dBW, of reference transmitter, used for field strength calculations (except in type B, mode 1).	All	A
Emergency	The code indicating the operation type for the frequency band, 1 for emergency and 0 for normal operation modes. This field is available for all categories of agreement.	All	All

AGREEMENTS FIELDS

Agreement name

Services considered



Category of agreements

Member countries

Propagation models used in the agreements

Frequency band definition

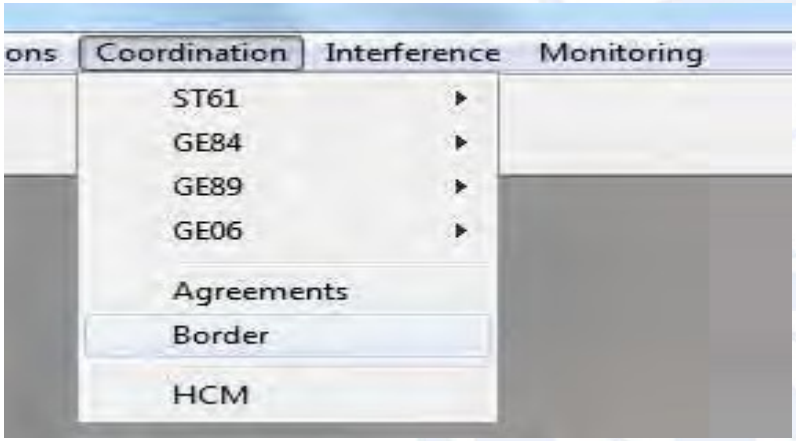
ERP of reference transmitter

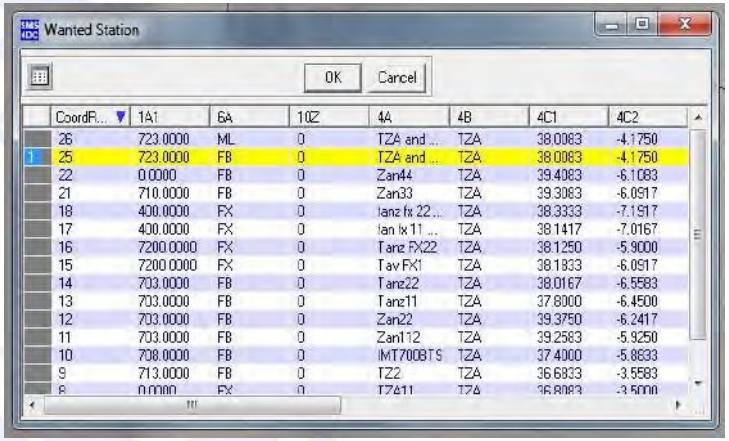
BORDER COORDINATION CALCULATIONS

Select border under coordination menu

Choose wanted station

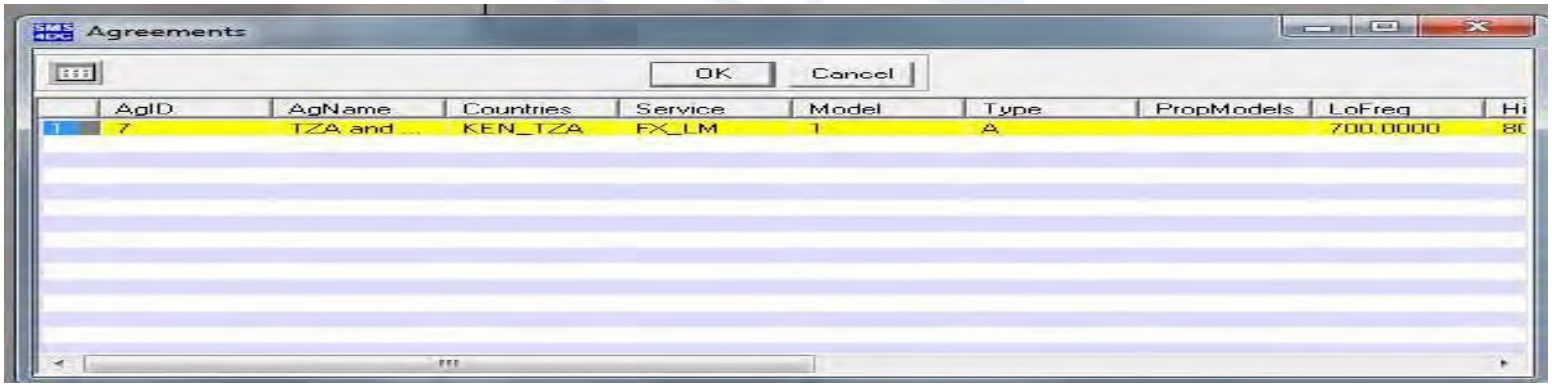
1





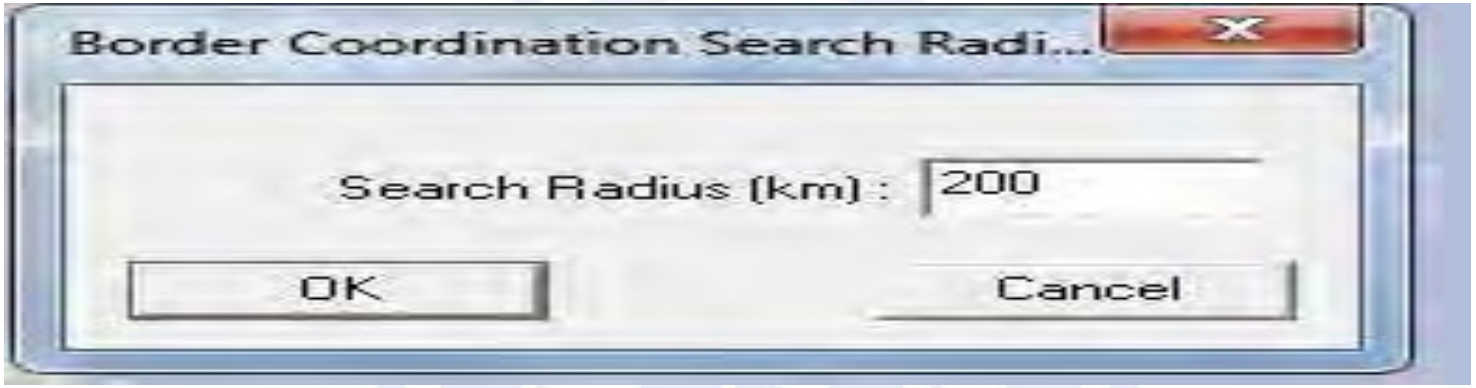
Applicable agreement (or agreements) will be displayed, The applicability of agreements will depend on the frequency, country and service type of the selected station.

2



BORDER COORDINATION CALCULATIONS

1. After choosing one of the presented applicable agreements, the search radius will be requested as additional criteria.



Applicable agreement (or agreements) will be displayed, The applicability of agreements will depend on the frequency, country and service type of the selected station.

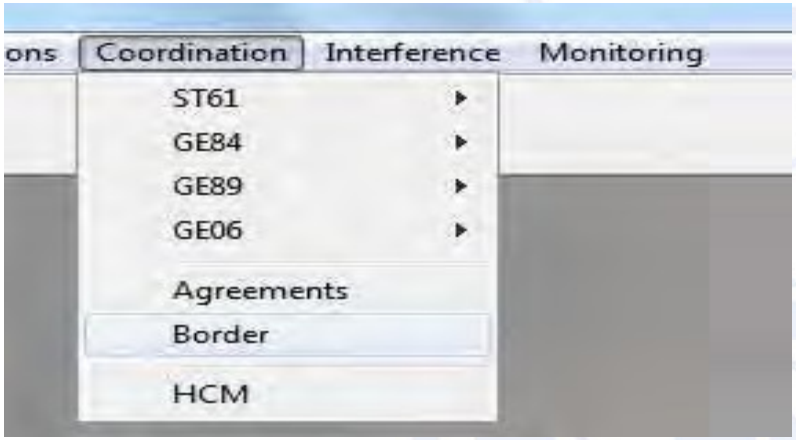
2.

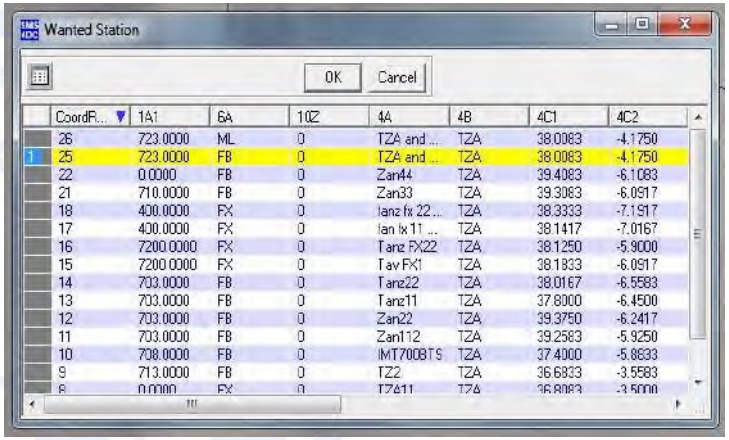
BORDER COORDINATION CALCULATIONS

Select border under coordination menu

Choose wanted station

1





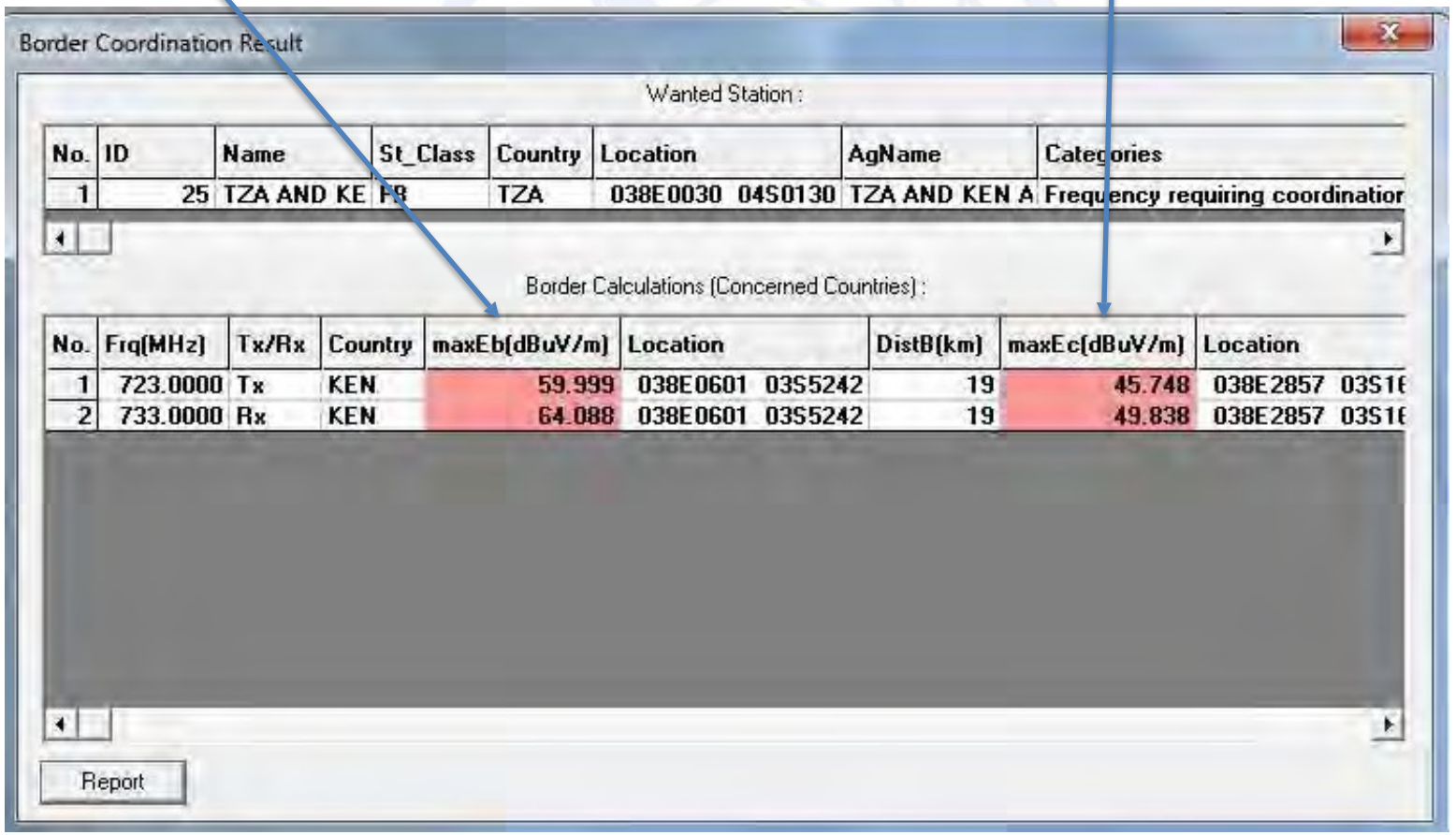
Applicable agreement (or agreements) will be displayed, The applicability of agreements will depend on the frequency, country and service type of the selected station.

2

CALCULATIONS RESULTS MODEL 1 TYPE A

Maximum field strength on border line

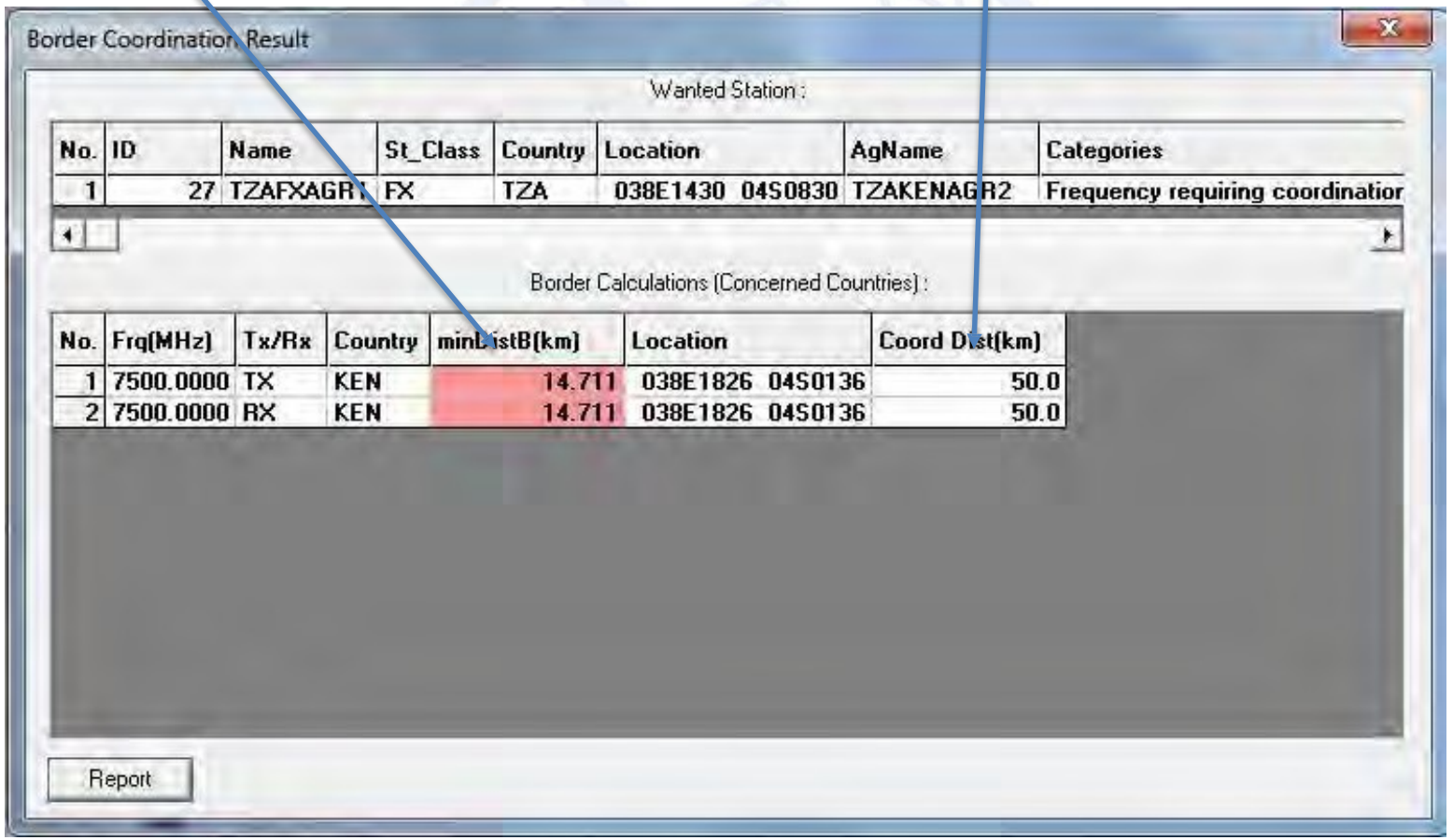
Maximum field strength on CBR



CALCULATIONS RESULTS MODEL 1 TYPE B

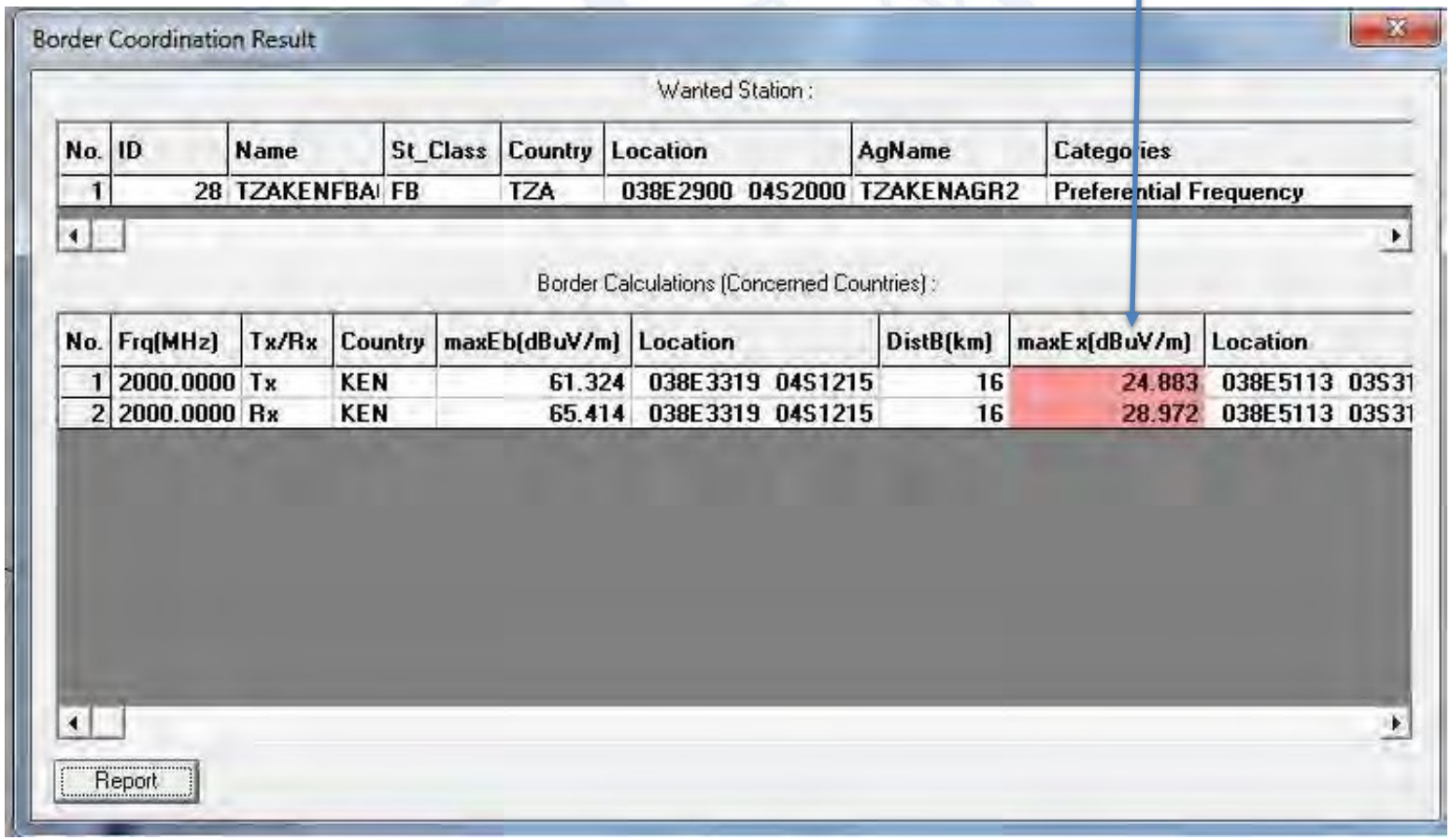
Minimum distance to the border

Coordination distance



CALCULATIONS RESULTS MODEL 2

Maximum field strength on X-km contour



BORDER COORDINATION RESULTS PARAMETERS

Field	Description	Type of Agreement		
		Frequency Requiring coordination		Preferential Frequency
		Type A: LM in all frequency and FX below 1GHz	**Type B**: FX above 1GHz	LM in all frequency and FX below 1GHz
Frequency	Frequency under investigation	X	X	X
TX or RX	Mode of frequency under investigation	X	X	X
Concerned countries	Countries likely to be affected by a station in another country	X	X	X
Max. Eb	Maximum field strength on border line	X		X
Max. Eb location	The location of maximum Eb	X		X
DistB	Distance of wanted station to the maximum Eb location	X		X
Max Ec	Maximum field strength on CBR (Figure 3.175)	X		
Max. Ec location	The location of maximum Ec	X		
DistC	Distance of wanted station to the maximum Ec location	X		
Max Ex	Maximum field strength on X-km contour (Figure 3.175)			X
Max. Ex location	The location of maximum Ex			X
DistX	Distance of wanted station to the maximum Ex location			X
PIFS	Permissible Interference Field Strength in accordance with agreement	X		X
CBR	Cross Border Range in accordance with agreement	X		
X-km	Contour of X km beyond wanted country border line			X
Min. DistB	Minimum distance of wanted station to the border line		X	
Min DistB location	The location of maximum Eb		X	
Coord. Dist.	Minimum permitted distance to the border (from agreement) for comparison with MinDistB		X	

Thank you!