

Coordination agreement relating to DTT in the band 470 – 694 MHz between Germany and Poland

1. Background

In light of the Decision of the European Parliament and of the Council (EU) 2017/899 of 17 May 2017 on the use of the 470-790 MHz frequency band in the Union (Official Journal of the European Union L138/131 of 25 May 2017), by 30 June 2020, the member states of the European Union shall allow the use of the 694-790 MHz (700 MHz) frequency band for terrestrial systems capable of providing wireless broadband electronic communications services.

Within the framework of the North-Eastern Digital Dividend Implementation Forum (NEDDIF) the Administrations of Germany and Poland discussed the future use of the 470 – 694 MHz band for DTT. Both Administrations concluded with the Administrations of Denmark and Sweden on a common frequency plan in June 2016 (June 21st 2016). Negotiations have been concluded successfully between the Administrations of Germany and Poland in order to find a common final planning solution enabling the use of up to six layers in each country and complementing the agreement from June 21st 2016. The Administrations of Poland and Germany agree to the following.

2. Changes to the GE06 Plan

In order to re-plan the band 470-694 MHz a number of changes have to be done to the existing GE06 Plan.

2.1 Additions

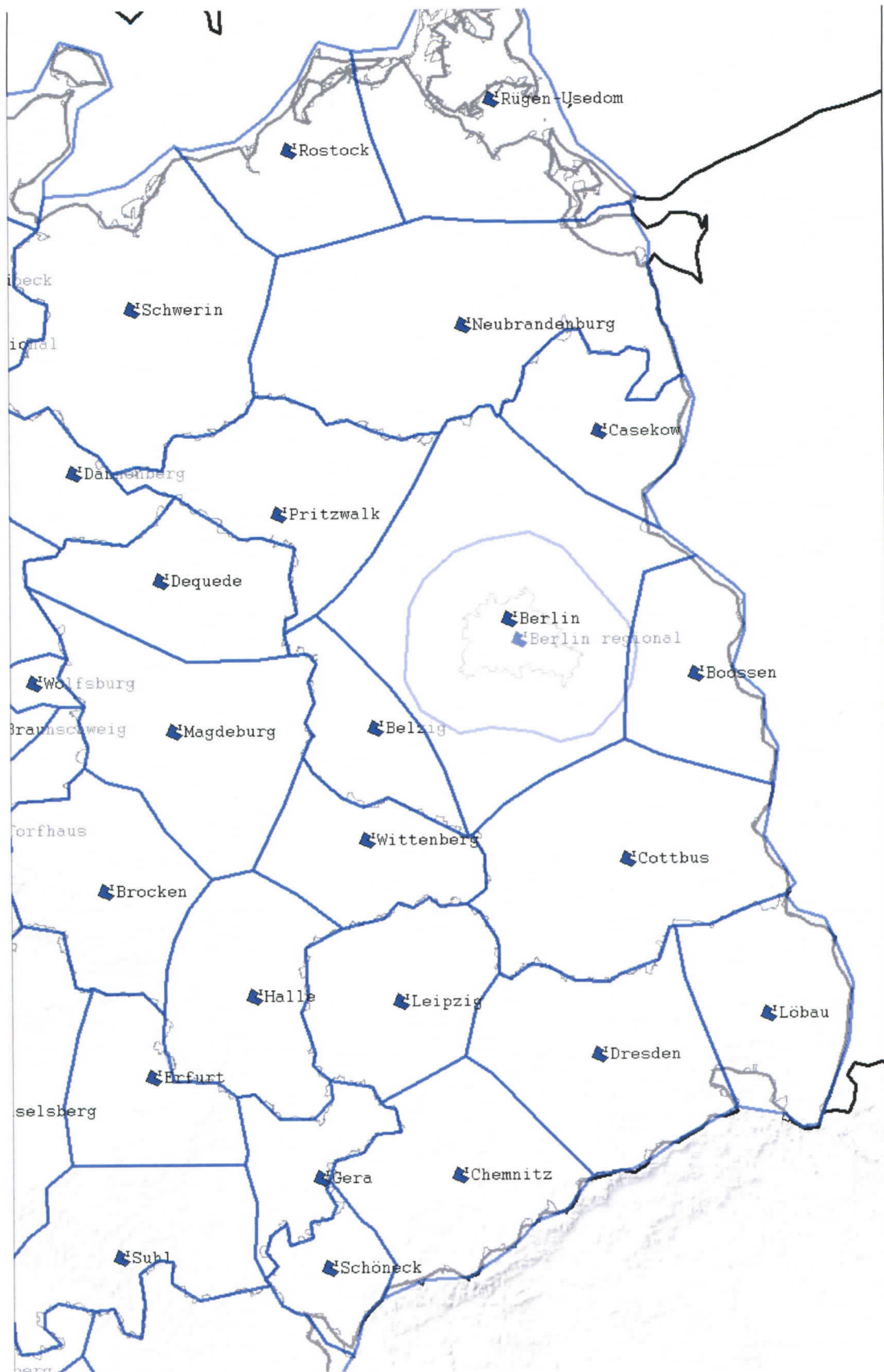
In the following section all entries having a channel number and section ADD or MOD may be implemented from the day of entry into force of the present agreement. The status of the channels with the entry GE06 remains unchanged, since they are in the GE06 plan already and still valid.

The following Allotments are accepted by the above mentioned Administrations as additions (ADD) to the GE06 Plan:

Germany

Germany optimized the structure of all allotment shapes according to the service areas of the main transmitters within the allotments. Germany will use the same shape structures for all layers. For this reason Germany will withdraw all allotments and assignments from the GE06 Plan and will add new allotments having these new shapes (ANNEX 1: "DVB-T2_Allotmentdata_D_17.11.2016.zip"). All changes correspond to the mutually agreed common final plan.





Picture 1. DTT allotments in Germany.

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Allotment	L1	L2	L3	L4	L5	L6	L7/L8
Rügen-Usedom	29 (GE06)	36 (GE06)	26 (ADD)	46 (GE06)	24 (ADD)	44 (ADD)	
Rostock	29 (GE06)	36 (ADD)	26 (GE06)	46 (GE06)	24 (GE06)	44 (ADD)	
Neubrandenburg	29 (ADD)	36 (GE06)	22 (GE06)	46 (ADD)	23 (GE06)	44 (ADD)	
Schwerin	29 (ADD)	36 (ADD)	26 (GE06)	46 (ADD)	24 (GE06)	44 (ADD)	
Casekow	25 (GE06)	33 (GE06)	22 (ADD)	40 (ADD)	23 (ADD)	27 (GE06)	
Pritzwalk	21 (GE06)	35 (ADD)	28 (ADD)	31 (GE06)	42 (GE06)	27 (ADD)	
Berlin	25 (GE06)	33 (GE06)	40 (ADD)	31 (ADD)	42 (ADD)	27 (GE06)	39 (ADD) / 47 (GE06)
Boossen	25 (GE06)	33 (GE06)	40 (ADD)	31 (ADD)	29 (ADD)	43 (ADD)	
Dippmannsdorf	25 (GE06)	33 (GE06)	40 (ADD)	31 (ADD)	42 (ADD)	27 (GE06)	
Cottbus	34 (ADD)	36 (GE06)	40 (GE06)	44 (ADD)	29 (ADD)	23 (GE06)	
Dequede	34 (GE06)	35 (GE06)	45 (GE06)	32 (ADD)	48 (ADD)	30 (ADD)	
Magdeburg	34 (GE06)	37 (ADD)	45 (GE06)	46 (ADD)	29 (GE06)	30 (GE06)	
Loebau	34 (GE06)	36 (GE06)	39 (GE06)	27 (GE06)	29 (ADD)	42 (ADD)	40 (ADD)*
Dresden	34 (ADD)	36 (GE06)	39 (GE06)	46 (GE06)	29 (GE06)	42 (ADD)	37 (ADD)*
Wittenberg	24 (ADD)	37 (ADD)	38 (GE06)	28 (ADD)	43 (ADD)	26 (GE06)	
Leipzig	24 (ADD)	22 (GE06)	35 (GE06)	28 (ADD)	43 (ADD)	26 (GE06)	31 (ADD)*
Halle	24 (GE06)	22 (GE06)	38 (GE06)	28(GE06)	43 (GE06)	26 (GE06)	40 (ADD)*
Gera	25 (ADD)	22 (GE06)	27 (GE06)	28 (ADD)	43 (ADD)	47 (GE06)	
Chemnitz	25 (GE06)	22 (GE06)	32 (GE06)	46 (GE06)	29 (ADD)	42 (GE06)	30, 34 (ADD)*
Schoeneck	25 (GE06)	22 (GE06)	32 (GE06)	46 (GE06)	23 (ADD)	42 (GE06)	

*Local TV

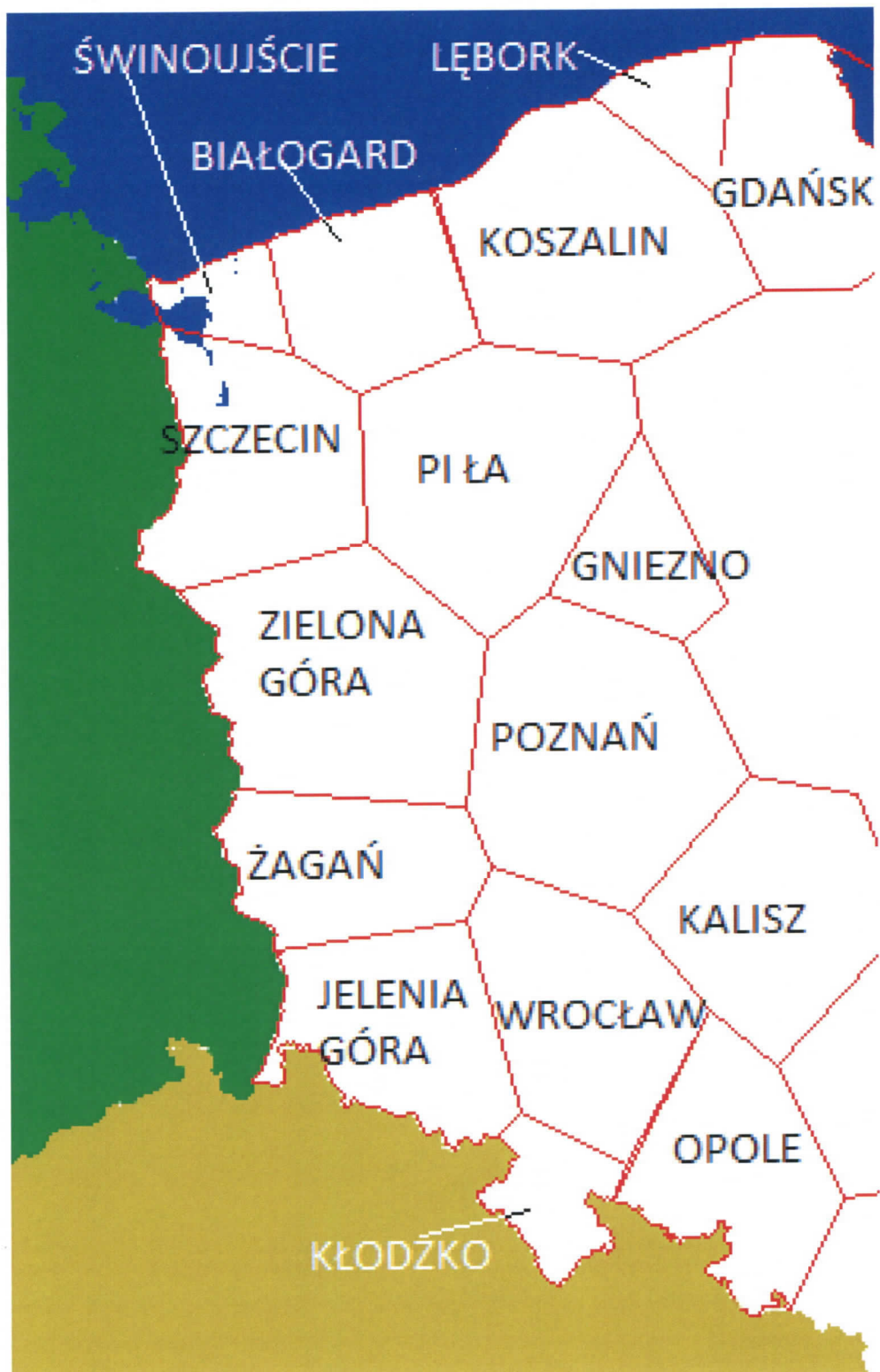
German assignments (ANNEX 2: "ANNEX 2_DVB-T2_D_ASSIGNMENTS_17.11.2016.zip"), have been accepted by Poland in the letter no DZC.WRT.5111.5.2016.3 dated 30.01.2017 (ANNEX 3) and could be implemented without additional coordination.

Poland

Poland will use the same shape structures in layers: L1, L2, L4, L5, L6. A different shape will be applied in L3 layer to match the administrative boundaries of the regions (ANNEX 4: POL_Shape_Structure.zip).

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Picture 2. DTT allotments in Poland.

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Picture 3. Regional layer L3 in Poland.

Allotment	L1	L2	L3 REG	L4	L5	L6	L7
Białogard	21 (GE06)	47 (ADD)		28(GE06)	37(ADD)	35(ADD)	
Białogard zachodniopomorskie			38 (MOD)				
Gdańsk	25 (ADD)	44 (ADD)		22 (GE06)	37 (GE06)	45 (ADD)	
Gdańsk pomorskie			24 (ADD)**				

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Lębork	25 (GE06)	44 (ADD)		22 (GE06)	37 (GE06)	35 (GE06)	
Koszalin	23(GE06)	47(GE06)		28(ADD)	37(ADD)	35(ADD)	
Koszalin pomorskie			48 (ADD)***				
Piła	24(GE06)	43(GE06)		42(GE06)	44(ADD)	35(ADD)	
Piła wielkopolskie			31 (GE06)				
Piła zachodniopomorskie			33 (ADD)				
Poznań	23 (GE06)	39 (GE06)		42 (ADD)	29 (ADD)	28 (GE06)	
Poznań wielkopolskie			27 (GE06)				
Kalisz	40 (GE06)	38 (GE06)		32 (ADD)	44 (GE06)	37 (GE06)	
Kalisz wielkopolskie			31 (GE06)				
Szczecin	41(GE06)	34(GE06)		30(GE06)	37(ADD)	35(GE06)	
Szczecin zachodniopomorskie			48 (GE06)				
Świnoujście	21(ADD)	34(GE06)	48(GE06)	28(ADD))	37(ADD)	35(GE06)	
Wrocław	46 (ADD)	47 (ADD)		22 (ADD)	33 (GE06)	35 (ADD)	27 (ADD)*
Kłodzko	46 (ADD)	47 (ADD)		22 (ADD)	33 (ADD)	35 (ADD)	
Wrocław dolnośląskie			25 (GE06)				
Zielona Góra	21 (GE06)	45 (GE06)		26 (GE06)	38 (ADD)	28 (ADD)	
Zielona Góra lubuskie			32 (GE06)				
Żagań	21 (GE06)	45 (GE06)	32 (GE06)	22 (GE06)	30 (ADD)	35 (ADD)	
Jelenia Góra	24 (ADD)	47 (GE06)		22 (ADD)	30 (GE06)	35 (GE06)	38, 43 (ADD)*
Jelenia Góra dolnośląskie			37**** (MOD)				

*Local TV

** instead of channel 24, channel 48 will be used temporarily until the coordination with the Russian Federation is finalized, which is expected by June 30th 2020

*** instead of channel 48, channel 24 will be used temporarily until the coordination with the Russian Federation is finalized, which is expected by June 30th 2020

**** Germany will measure the use of the current channel 49 to verify the compatibility with the implementation in Dresden. If needed, both administration will seek for an alternative solution, e.g. increasing the power of the German transmitters by 3dB. If Germany verifies the compatibility the implementation of channel 37 is agreed.

If for any reason, the final channels of the above mentioned frequency plan are not available at the desired dates, both Administrations will discuss in due time an extension of the temporary use or find an alternative solution.

Polish assignments which are provided in the embedded files of Annex 5 (ANNEX5_POL_Assignments.zip) are accepted by Germany and could be implemented without additional coordination.

2.2 Suppressions

The following Polish allotments and related assignments should be treated as deleted and should have no implementation rights and no protection rights. Nevertheless the following allotments may be kept in the GE06 Plan, but will have to be modified to carry a remark using the t_remarks field saying "D-POL 23.01.2018", as a reference to the present agreement.

The date of entry into effect of the deletions should occur simultaneously with the beginning of the use of the channels with section ADD in point 2.1 to the present agreement :

Poland

Allotment	L1	L2
Białogard	45	
Gdańsk	35	48
Koszalin	40	44
Kalisz	48	
Wrocław	42	
Zielona Góra	29	46
Żagań	41	48

Germany

Germany will withdraw all allotments and assignments from the GE06 Plan and will substitute the allotments with new allotments having modified shapes.

3. The principles concerning the use of the 470-694 MHz band

Administrations agreed on the following:


1. Unless there is no other provision, for unlinked assignments which are located inside or not further than 25 km from the co-channel allotment they belong to, only protection of the allotment can be claimed. The coverage of the assignment outside the allotment area will not be protected.
2. In the case that two or more assignments are operating in an SFN the basis for calculation of interference shall be the power sum of all transmitters in the relevant SFN.

Any other future implementation of an allotment shall be coordinated if the cumulative interfering field strength exceeds the values listed in Annex 6 on the area of any existing co-channel allotment.

4. Reference email

Both Administrations recognize that the agreed technical characteristics of the agreed assignments and allotments are those exchanged in the email of the 22nd of January 2018 from Sascha Falahat at 3 pm.



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5. Revision

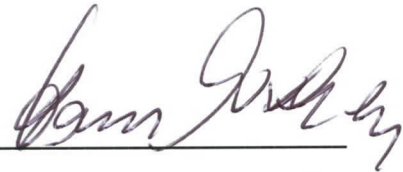
Revision to this agreement can only be made by mutual written consent.

6. Enter into force

This agreement will enter into force upon the signature of two Administrations.

Place *Mainz*
Date *22/01/2018*
For the German Bundesnetzagentur

Place *Mainz*
Date *23/01/2018*
For the Polish Office of Electronic Communication




Klaus Michels
Head of Section Broadcasting




Wiktor Segal
Director of Department of Frequency Resources
Management

Annex 1:

German allotment shapes
 ANNEX 1_DVB-T2 Allotmentdata D 17.11.2016.zip
DVB-T2_Allotmentdata_D_17.11.2016.zip

W. K.


Annex 2:

German assignments
 ANNEX2_DVB-T2_D_ASSIGNMENTS_17.11.2016.zip
ANNEX 2_DVB-T2_D_ASSIGNMENTS_17.11.2016.zip

Wang


Wang

Annex 3:

<p>Letter DZC.WRT.5111.5.2016.3</p>
<p> ANNEX 3_30-01-2017_DZC\</p>
<p>ANNEX 3_30-01- 2017_DZC.WRT.5111.5.2017.3_ModGE06Plan.pdf</p>


WRT

Annex 4:

Polish shape structure
 ANEX 4_POL_Shape_Struct
ANNEX 4_POL_Shape_Structure.zip

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Annex 5:

Polish assignments
 ANNEX 5_POL_Assignments.
ANNEX 5_POL_Assignments.zip

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Annex 6 Implementation conditions

Interfering field strength requiring coordination

If the cumulative interfering field strength exceeds the values listed in Table 1 below on the boundary of any co-channel allotment in the GE06 Plan, coordination with the other party is needed.

For affected DVB-T allotments the $E_{\max \text{ int}}$ in Table 1 should be used (irrespective of the technical characteristics of the plan entry).

DVB-T interfered by DVB-T for 650 MHz respectively

Reference planning configuration	RPC2
Reference location probability	95%
Reference C/N [dB]	19
Reference (E_{med})ref [dB μ V/m] at 650 MHz	78
CF at 650 MHz	12.8
$E_{\max \text{ int}}$ [dB μ V/m] at 650 MHz	49

Table 1 $E_{\max \text{ int}}$ for DVB-T interfered by DVB-T

In UHF the value should be adjusted with respect to frequency with $30 \cdot \log(f/f_{650})$, f in MHz.

Derivation maximum allowable interfering field strength

The maximum allowable interfering field strength, $E_{\max \text{ int}}$, at any test point given by the input requirement is calculated as follows:

$$E_{\max \text{ int}} = E_{\text{med}} + f_{\text{corr}} - CF - PR$$

where

E_{med} is the minimum median equivalent field strength (in dB μ V/m) for 650 MHz, respectively;

f_{corr} is the frequency correction (in dB) for UHF, given by $30 \cdot \log(f/f_{650})$, f in MHz;

CF is the combined location correction factor: $CF = q \sqrt{(\sigma_w^2 + \sigma_i^2)}$;

q is the distribution factor;

σ_w is the standard deviation of the lognormal distribution of the wanted signal (in dB);

σ_i is the standard deviation of the lognormal distribution of the interfering signal (in dB);

PR is the appropriate protection ratio;

When the interfering system is of the same type as the wanted one, PR is equal to C/N for the wanted system's RPC. PR and C/N are taken from Addendum 12 to Document 7-E, input from CEPT to RRC-06.