

Coordination Agreement relating to the VHF Band (174-230 MHz)
between the Administrations of
Denmark (DNK) - Germany (D) – Poland (POL) – Sweden (S)

The administrations of

Denmark (*hereinafter referred to as DNK*)
(*Danish Energy Agency*)

and

the Federal Republic of Germany (*hereinafter referred to as D*)
(*Federal Network Agency – Bundesnetzagentur für Elektrizität, Gas, Telekommunikation, Post
und Eisenbahnen*)

and

Poland (*hereinafter referred to as POL*)
(*Office of Electronic Communications*)

and

Sweden (*hereinafter referred to as S*)
(*Swedish Post and Telecom Authority*)

- together hereinafter referred to as The Administrations -

shall conclude the following agreement on
the frequency co-ordination in the band 174 – 230 MHz

1 Background

The administrations of Denmark, Germany, Poland and Sweden have worked together in order to optimize the GE06 plan for T-DAB in the band 174-230 MHz. The planning has taken into account that Germany intends to use the band 174-230 MHz band solely for T-DAB audio broadcasting with the 1,7 MHz T-DAB raster, whereas Denmark, Poland and Sweden also use the band for DVB-T(2) digital terrestrial television (DTT) and intend to keep their current 7 MHz entries in the GE06 plan.

2 Changes to the GE06-plan

The optimization of the GE06 plan consists of the changes outlined in this section 2 .

Specific stipulations between some administrations are given in *Annex 1*.

An illustration of the Layers in the four countries is given in *Annex 2*.

Handwritten signatures and dates:
Jm 9/4 JTK 15/4 Jyplui 28/04 [Signature] 19/5

2.1 Additions of Allotments

The following Allotments (RN6) are accepted by The Administrations as additions to the GE06 plan:

2.1.1 Denmark

Name	Block
THISTED	8C
VARDE	9D
HEDENSTED	8D
AABENRAA	9B
JYDERUP	8C
KOEBENHAVN	9B
ROE	12A

See *Annex 3* for information about the shapes.

2.1.2 Germany

Name	Block	Block	Block	Block	Remark
AURICH	6C				
AURICH-CUXHAVEN	8D				
BRANDENBURG	10B	12D	7A		
BREMEN_LAND	5B	6A	6D		
BUNDESWEIT01_BB	5C (Annex 1, Section A1.4.1)				Nationwide Layer 1; Federal State Brandenburg (Note 1)
BUNDESWEIT01_HH	5C (Annex 1, Section A1.4.1)				Nationwide Layer 1; Federal State Hamburg (Note 1)
BUNDESWEIT01_MV	5C (Annex 1, Section A1.4.1)				Nationwide Layer 1; Federal State Mecklenburg-Vorpomm. (Note 1)
BUNDESWEIT01_NI	5C (Annex 1, Section A1.4.1)				Nationwide Layer 1; Federal State Niedersachsen (Note 1)
BUNDESWEIT01_SH	5C (Annex 1, Section A1.4.1)				Nationwide Layer 1; Federal State Schleswig-Holstein (Note 1)
BUNDESWEIT01_ST	5C (Annex 1, Section A1.4.1)				Nationwide Layer 1; Federal State Sachsen-Anhalt (Note 1)
BUNDESWEIT02_BB	5D (Annex 1, Section A1.4.1)				Nationwide Layer 2; Federal State Brandenburg (Note 1)

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BUNDESWEIT02_HH	5D (Annex 1, Section A1.4.1)				Nationwide Layer 2; Federal State Hamburg (Note 1)
BUNDESWEIT02_MV	5D (Annex 1, Section A1.4.1)				Nationwide Layer 2; Federal State Mecklenburg-Vorpomm. (Note 1)
BUNDESWEIT02_NI	5D (Annex 1, Section A1.4.1)				Nationwide Layer 2; Federal State Niedersachsen (Note 1)
BUNDESWEIT02_SH	5D (Annex 1, Section A1.4.1)				Nationwide Layer 2; Federal State Schleswig-Holstein (Note 1)
BUNDESWEIT02_ST	5D (Annex 1, Section A1.4.1)				Nationwide Layer 2; Federal State Sachsen-Anhalt (Note 1)
CUXHAVEN- BREMERHAVEN	6B				
DANNENBERG	6D				
DEQUEDE	6A				
DITHMARSCHEN- STEINBURG	11B	8C			(Including Helgoland)
FLENSBURG-SYLT	11D				
FLENSBURG-SYLT- SCHLESWIG	12B				
HAMBURG	12C	12D	8A		
HAMBURG_REGION	10D	10A			
KIEL	9C (Annex 1, Section A1.4.3)				
KIEL-NEUMUENSTER	5A (Annex 1, Section A1.4.2)				
LUEBECK	9C (Annex 1, Section A1.4.3)	9D (Annex 1, Section A1.4.3)			
LUENEBURG-VERDEN	8B				
LUENEBURG- VISSELHOEVEDE	9B				
MECKLENBURG- VORPOMMERN	5B (Annex 1, Section A1.4.2)	8A (Annex 1, Section A1.8.1)			
MECKLENBURG- VORPOMMERN NW	8D (Annex 1, Section A1.8.1)				
MECKLENBURG- VORPOMMERN OST	8C (Annex 1, Section A1.8.1)				
NEUBRANDENBURG	10D	10C			(Annex 1, Section A.1.8.2) (Annex 1, Section A.1.8.3)
NIEDERSACHSEN	12A	8A (Annex 1, Section A1.8.1)			

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NIEDERSACHSEN-NORDWEST	11A				
ODERLAND-SPREEPASEWALK	9D (Annex 1, Section A1.4.3)				
PASEWALK-UECKERMUENDE	11D				
PRIGNITZ-OBERHAVEL	12C	9C			
ROSTOCK-GUESTROW	11B				
SACHSEN-ANHALT	11C	6B	11A	7C	
SCHLESWIG-HOLSTEIN	9A (Annex 1, Section A1.4.3)	12D	8A (Annex 1, Section A1.8.1)		
SCHWERIN	12B				(Annex 1, Section A.1.8.5)
SCHWERIN-GUESTROW	11D				(Annex 1, Section A.1.8.4)
STADE	11C				
SUEDHOLSTEIN	10C				
UCKERMARK-BARNIM	9A				
UCKERMARK-ODERLAND	12A				
VISSELHOEVEDE-ROSENGARTEN	7B				
VORPOMMERN	8B (Annex 1, Section A1.8.1)				

Note 1: Due to the limitation of test points (max. 99 according to CR/262), large SFNs in Germany have been subdivided into sub-contours for each federal state.

See *Annex 3* for information about the shapes.

2.1.3 Sweden

Name	Block
TROLLHAETTAN	8C
HALMSTAD-VARBERG	8D
MALMOEHUS	11D
KRISTIANSTAD	11D
KRONOBERG	12A

See *Annex 3* for information about the shapes.

2.2 Additions of local allotments

Local allotments are related to small local coverage areas. The conditions for interfering fieldstrengths between local allotments and normal allotments are given in *Annex 1*, section A.1.2.

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2.2.1 Denmark

Name	Block
COPENHAGEN local	9D (<i>Annex 1, Section A.1.6.1</i>)
TREKANTSOMR local	11B
ODENSE local	10D

See *Annex 3* for information about the shapes.

2.2.2 Germany

Name	Block
FLENSBURG local	10B
GREIFSWALD local	7B
HELGOLAND local	10C
KIEL local	10B
LUEBECK local	10B
NEUBRANDENBURG local	7C
SCHWERIN local	7B (<i>Annex 1, Section A.1.4.4</i>)
STADE local	7C
STRALSUND local	7D (<i>Annex 1, Section A.1.4.4</i>)
ROSTOCK local	10A
WILHELMSHAVEN local	9D

See *Annex 3* for information about the shapes.

2.2.3 Poland

Name	Block
GDANSK-GDYNIA - lok	5C
GORZOW - lok	7C
KOSZALIN - lok	11D (<i>Annex 1, Section A.1.9.2</i>)
POZNAN - lok	5C
SLUPSK - lok	10A (<i>Annex 1, Section A.1.9.1</i>)
SZCZECIN - lok	11C (<i>Annex 1, Section A.1.5.1</i>)

See *Annex 3* for information about the shapes.

2.3 Suppressions of Allotments and Assignments

The following Allotments and Assignments are to be deleted (SUPPRESSED) from the GE06 plan.

The suppressions shall be done no later than a year following the successful recording of the additions.

Notwithstanding this, allotments marked with "exception" are not completely covered by the new allotments given in section 2.1.2. They will be suppressed no later than a year after all new and additionally required allotments to recover completely these old allotments have been agreed and recorded successfully.

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Note: The timeframes result from the GE06-plan modification procedures.

2.3.1 Denmark

Name	Channel/block	Type
VARDE	11A	Allotment
HEDENSTED	8C	Allotment
AABENRAA	12B	Allotment
JYDERUP	11B	Allotment
KOEBENHAVN	11D	Allotment
BORNHOLM	11D (Annex 1, Section A.1.3.1)	Allotment

2.3.2 Germany

Name	Channel/block	Type
BERLIN-BRANDENBURG	7	Allotment
BRANDENBURG	12D	Allotment
BRANDENBURG (exception)	11D	Allotment
BRANDENBURG OST (exception)	9B	Allotment
BRANDENBURG WEST (exception)	5A	Allotment
BREMEN	5B	Allotment
BREMEN	7D	Allotment
BREMEN	7B	Allotment
FLENSBURG	5B	Allotment
GREIFSWALD	5D	Allotment
HAMBURG	12C	Allotment
HAMBURG	11C	Allotment
HAMBURG	7A	Allotment
HEIDE	8A	Allotment
KIEL	5C	Allotment
LUEBECK	5A	Allotment
LUENEBURG	5C	Allotment
MAGDEBURG	5D	Allotment
MECKLENBURG-VORPOMMERN	5B	Allotment
MECKLENBURG-VORPOMMERN	11B	Allotment
MECKLENBURG-VORPOMMERN	8	Allotment
NEUBRANDENBURG	9D	Allotment
NEUMUENSTER	5D	Allotment
NIEBUELL	11B	Allotment
NIEDERSACHSEN-OST (exception)	6	Allotment
NIEDERSACHSEN-WEST (exception)	10	Allotment
ROSTOCK	5C	Allotment
SACHSEN-ANHALT (exception)	10	Allotment
SACHSEN-ANHALT (exception)	12C	Allotment

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Name	Channel/block	Type
SCHLESWIG-HOLSTEIN	12D	Allotment
SCHLESWIG-HOLSTEIN	11D	Allotment
SCHLESWIG-HOLSTEIN-HAMBURG	9	Allotment
SCHWERIN	12B	Allotment
Aurich	10	Assignment
Berkenthin 1	9	Assignment
Bredstedt	9	Assignment
Bungsberg	9	Assignment
Bremerhaven Schiffdorf	10	Assignment
Casekow	7	Assignment
Cuxhaven Stadt	10	Assignment
Dequede	10	Assignment
Flensburg	9	Assignment
Hamburg	9	Assignment
Hamburg Moorfleet	9	Assignment
Heide	9	Assignment
Helpterberg	8	Assignment
Kiel	9	Assignment
Marlow	8	Assignment
Pritzwalk	7	Assignment
Roebel Woldzegarten	8	Assignment
Rostock	8	Assignment
Schwerin	8	Assignment
Stralsund Garz	8	Assignment
Zuessow	8	Assignment

2.3.3 Sweden

Name	Channel/block	Type
HALMSTAD-VARBERG	8C	Allotment
MALMOEHUS	12A	Allotment
KRISTIANSTAD	12A	Allotment
KRONOBERG	12C	Allotment

2.3.4 Assignments

Assignments in the GE06-plan are to be suppressed as well (e.g. 1S assignments), if they are

- co-channel to an allotment which is to be suppressed according to section 2.3.1 to 2.3.3 and located within the allotment

or

- co-channel to an allotment which is to be suppressed according to section 2.3.1 to 2.3.3 and located up to 20 km away from such allotment.

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2.4 Application of the modified plan

After the entry into force of this agreement only the new plan shall be used for coordination of assignments between The Administrations.

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3 Documentation

Annex 2 shows an illustration of the Layers in the 4 countries.

This Agreement refers to the exchanged technical parameters of the allotments and assignments which were sent to the other administrations according to *Annex 3*.

4 Revision

Revision to this agreement can only be made if all four parties agree.

The specific bilateral stipulations in Annex A, sections A.1.4 to A.1.9 may be modified by bilateral agreements, if the other Administrations are not affected by such modifications.

5 Enter into force

This agreement will enter into force on 2021-06-01 if it has been signed by all four administrations before 2021-06-01.

It is issued in four originals, one for each of the signing administrations.

Jan 9/14 JTK 15/4 Stephen 28/04 AW 19/15

6 Final Remarks

This agreement is without prejudice to the result of coordination agreements that the Administrations sign with other neighbouring countries, nor should it in any way hinder such coordination agreements.

Place København

Date 15/4 2021

For the Danish Energy Agency,
Centre for Telecommunication

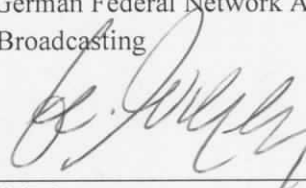


Jeppe Tanderup Kristensen
Chief Advisor

Place Berlin

Date 09.4.21

For the German Federal Network Agency,
Section Broadcasting




Klaus Michels
Head of Section Broadcasting

Place Warszawa

Date 29.04.2021

For the Polish Office of Electronic Communications,
Department of Radio Spectrum



Paweł Krzywiński
Director of the Department of Radio Spectrum

Place STOCKHOLM

Date 19/5 - 2021

For the Swedish Post and Telecom Authority,
Resource Management Department



Jonas Wessel
Director Resource Management Department

A.1 ANNEX 1

A.1.1 General Approach for future use of the plan

Unless otherwise specifically agreed, the following general approach applies.

A.1.1.1 Coordination between the administrations concerned is required, if the cumulative interfering field strength of all already agreed assignments as well as all newly requested assignments for the corresponding allotment exceeds the basic maximum allowable field strength values $E_{max\ int}$ defined as follows:

DVB-T interfered with by 7 MHz DVB-T:	$E_{max\ int} = 38\ \text{dB}\mu\text{V/m}$
DVB-T interfered with by T-DAB:	$E_{max\ int} = 33\ \text{dB}\mu\text{V/m}$
T-DAB interfered with by T-DAB:	$E_{max\ int} = 39\ \text{dB}\mu\text{V/m}$
T-DAB interfered with by 7 MHz DVB-T:	$E_{max\ int} = 45\ \text{dB}\mu\text{V/m}$

Deviating $E_{max\ int}$ values set forth in this Agreement for certain co-block/co-channel relationships shall prevail over these principle values.

The other parties should be informed about all assignments even if coordination is not required according to sentence one of A.1.1.1.

Two or more neighbouring allotments using the same channel/block are treated as one allotment.

A.1.1.2 Field strengths are calculated at 10 meters height for 1% of time, 50% of locations, using the propagation model described in Recommendation ITU-R P.1546-5.

(Note: This model in the version valid in 2006 was used in Geneva RRC-06 Agreement). The parties noted that there are differences in the implementation of land-sea geographical data which could result in discrepancies in the calculated results. Preferably the IDWM land-sea data as published by ITU in the version currently valid should be used, if available.

The application of terrain-based propagation models for the calculation of interference field strengths can be agreed bilaterally for special cases.

A.1.1.3 The power sum method as described in GE06, Annex2, Section 3.1 is used to calculate the cumulative interference field strength.

A.1.1.4 The cumulative interference field strength is calculated at the boundary of the co-channel/co-block allotments.

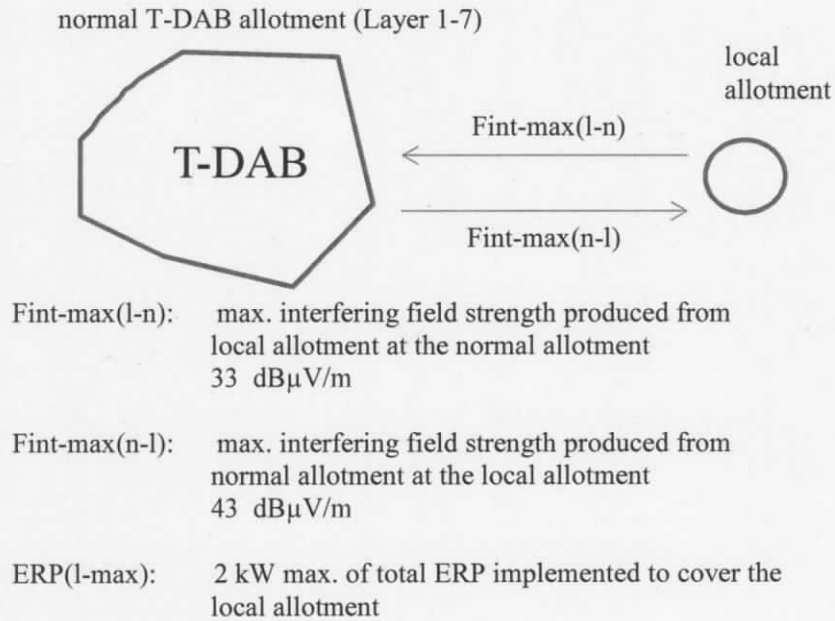
A.1.1.5 Assignments, that are situated within an allotment area, designated to transmit in the same channel as the allotment, but not linked to that allotment, will be treated in the implementation exactly like linked assignments in the RRC 06 planning process. Only the allotment area will be protected. The service area of these assignments outside of the allotment area is not protected.

Jan 9/14 JTK 15/4 Joplui 28/04 AW 19/15

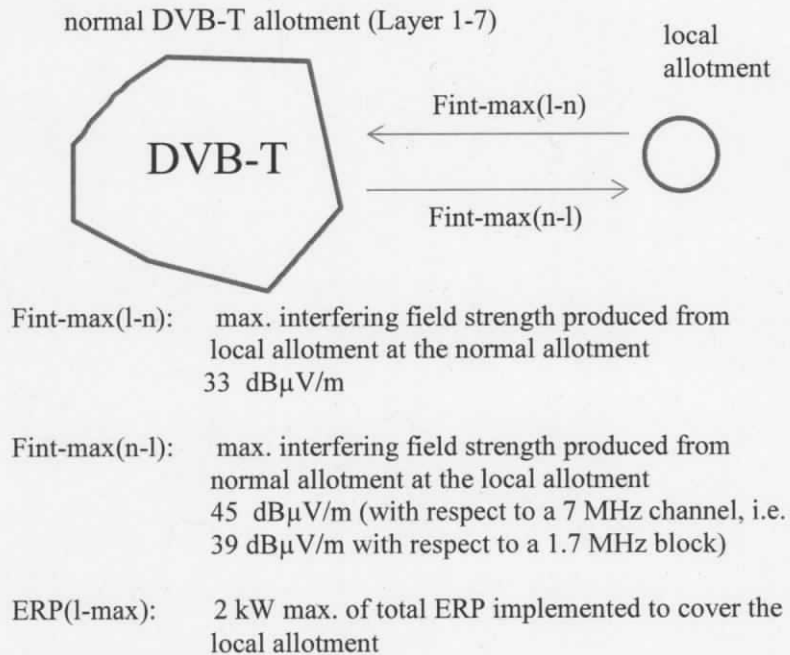
A.1.2 Conditions for local T-DAB Allotment vs. normal T-DAB Allotment

Conditions for interfering field strengths between local allotments and normal allotments. These conditions apply unless a specific exception is mentioned for the allotment in question.

A.1.2.1 Local T-DAB Allotment vs. normal T-DAB Allotment



A.1.2.2 Local DAB allotment vs. normal DVB-T allotment



Jan 9/14 JTK 15/4 Jyplini 23/04 [Signature] 19/5

A.1.3 Specific Stipulations between DNK – D – POL - S

- A.1.3.1 The allotment BORNHOLM 11D is to be treated as deleted. That means it has no implementation right and no protection right. Nevertheless the allotment may be kept in the GE06-plan, but will have to be modified to carry a remark using the t_remarks field saying "D-DNK-POL-S [agreement date]", as a reference to this agreement.

A.1.4 Specific Stipulations between DNK – D

- A.1.4.1 All assignments of the German nationwide layer 1 in blocks 5C (allotments BUNDESWEIT01_**) may produce in sum 36 dB μ V/m at the Danish allotment contour of NIBE-TOLNE-HADSTEN-AARHUS ch 5.
All assignments of the German nationwide layer 2 in block 5D (allotments BUNDESWEIT02_**) may produce in sum 36 dB μ V/m at the Danish allotment contour of NIBE-TOLNE-HADSTEN-AARHUS ch 5.
Assignments that individually produce less than 20 dB μ V/m at the allotment contour will not be included in the summation of interfering field strength and therefore are considered agreed.
- A.1.4.2 All assignments of the German allotment KIEL-NEUMUENSTER block 5A may produce in sum 36 dB μ V/m at the Danish allotment contour of NIBE-TOLNE-HADSTEN-AARHUS ch 5.
All assignments of the D allotment MECKLENBURG-VORPOMMERN block 5B may produce in sum 36 dB μ V/m at the allotment contour of NIBE-TOLNE-HADSTEN-AARHUS ch 5.
- A.1.4.3 All assignments of the German allotment SCHLESWIG-HOLSTEIN-HAMBURG block 9A may produce in sum 39 dB μ V/m at the Danish allotment contour of ROE ch 9.
All assignments of the German allotments LUEBECK block 9C and KIEL block 9C in combination may produce in sum 39 dB μ V/m at the Danish allotment contour of ROE ch 9.
All assignments of the German allotments PASEWALK block 9D and LUEBECK block 9D may produce in sum 39 dB μ V/m at the Danish allotment contour of ROE ch 9.
- A.1.4.4 All assignments of the Danish allotment HEDENSTED-VARDE-AABENRAA-FYN ch 7, may produce in sum
- 46 dB μ V/m (with respect to a 7 MHz channel, i.e. 40 dB μ V/m with respect to a 1.7 MHz block) at the German allotment contour of SCHWERIN local 7B and
 - 49 dB μ V/m (with respect to a 7 MHz channel, i.e. 43 dB μ V/m with respect to a 1.7 MHz block) at the German allotment contour of STRALSUND local 7D.

A.1.5 Specific Stipulations between DNK – POL

- A.1.5.1 All assignments of the DNK allotment REGIONAL BORNHOLM ch 11C, may produce in sum 49 dB μ V/m at the allotment contour of SZCZECIN - lok 11C

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A.1.6 Specific Stipulations between DNK – S

A.1.6.1 The coordinated network of the S allotment GOETEBORG ch 9, may produce 47 dB μ V/m at the allotment contour of COPENHAGEN local 9D.

A.1.7 Specific Stipulations between D-POL

A. 1.7.1 The sum of the interference field strengths at the boundary test points of a DVB-T allotment, provided by all T-DAB transmitters assigned to the interfering allotments, which are converted and possibly reshaped from a co-channel DVB-T allotment, should not exceed 39 dB μ V/m.

A.1.8 Specific Stipulations between D – S

A.1.8.1 Sweden accepts the following cumulative maximum interfering fieldstrengths from German allotments at the test points of

- the DVB-T allotment KARLSKRONA in each of the Blocks 8A, 8B, 8C, 8D and
- the DAB allotments HALMSTAD/VARBERG 8B and 8D
- given in the following table:

Allotment	Long	Lat	Test-point	Interfering field strength [dB μ V/m]
KARLSKRONA	016E26 58	56N13 07	TP7	38
KARLSKRONA	015E52 16	56N05 50	TP8	35
KARLSKRONA	015E34 29	56N06 03	TP9	37
KARLSKRONA	015E27 02	56N06 21	TP10	38
KARLSKRONA	014E38 07	56N00 29	TP11	39
KARLSKRONA	014E33 05	56N02 49	TP12	37
KARLSKRONA	014E34 08	56N12 57	TP13	38
HALMSTAD/VARBERG	013E11 26	56N18 59	TP12	39
HALMSTAD/VARBERG	012E56 42	56N21 28	TP13	39
HALMSTAD/VARBERG	012E52 57	56N26 39	TP14	38
HALMSTAD/VARBERG	012E42 08	56N27 56	TP15	40

A.1.8.2 All assignments of the allotment NEUBRANDENBURG block 10C may produce in sum 33 dB μ V/m at the allotment contour of MALMOE and KRISTIANSTAD ch 10.

A.1.8.3 All assignments of the allotment NEUBRANDENBURG block 10D may produce in sum 33 dB μ V/m at the allotment contour of MALMOE and KRISTIANSTAD ch 10.

A.1.8.4 All assignments of the allotment SCHWERIN-GUESTROW block 11D may produce in sum 39 dB μ V/m at the allotment contour of MALMOEHUS and KRISTIANSTAD block 11D.

A.1.8.5 All assignments of the allotment SCHWERIN block 12B may produce in sum 39 dB μ V/m at the allotment contour of SWEDEN-NATIONAL block 12B.

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A.1.9 Specific Stipulations between POL – S

- A.1.9.1 All assignments of the Poland local allotment SLUPSK block 10A in combination may produce in sum 33 dB μ V/m at the Swedish allotment contour of MALMOE and KRISTIANSTAD ch 10.
- A.1.9.2 All assignments of the Poland local allotment KOSZALIN block 11D in combination may produce in sum 33 dB μ V/m at the Swedish allotment contour of MALMOEHUS and KRISTIANSTAD block 11D.

Jan 8/4 *JK 15/4* *Steph 28/04* *A 19/5*

A.2 ANNEX 2

Illustration of Layers



ANNEX-2_2020-08-0
7_DNK-D-POL-S_VHF

Jan 9/14 *87K* *15/4* *Kyshin 23/04* *19/5*

A.3 ANNEX 3

TerraSys-datafiles with plan details.

Note: The SHA256 checksum of the files can e.g. be calculated by Windows, using the following command in Windows command line mode: CertUtil -hashfile *file name* SHA256

A.3.1 For **Denmark** (according to Sections 2.1.1 and 2.2.1)



Annex 3.1 Allotments Denmark.zip

SHA256 Checksum of TerraSys-file:

95762bf8f3db56c1191244a4af78a58d7d388f04d25e38adc21c06a79de05684

A.3.2 For **Germany** (according to Sections 2.1.2 and 2.2.2)



Annex 3.2 Allotments Germany.zip

SHA256 Checksum of TerraSys-file:

e7f05d2dc26d1d63e16cd1c61230fb540ac2e108fd247a05f608ab24c12556eb

A.3.3 For **Poland** (according to Section 2.2.3)



Annex 3.3 Allotments Poland.zip

SHA256 Checksum of TerraSys-file:

7097ed0d89b5f3f7bd8b5fc7bf7e4ecb11e8f24b86c45c1ffcfc217edf309a4c

A.3.4 For **Sweden** (according to Section 2.1.3)



Annex 3.4 Allotments Sweden.zip

SHA256 Checksum of TerraSys-file:

c5c90cb755eb514a0982a584fa457f047558a66860ad395db54ff1baf072e04

Mr 9/14 JTK 15/4 Skplni 23/04 [Signature] 19/5