Electronic Communications Committee (ECC)
within the European Conference of Postal and Telecommunications Administrations (CEPT)

ECC REPORT 163

THE USAGE OF THE 7125-8500 MHz BAND WITHIN THE CEPT FOR THE ELABORATION OF THE REVISION OF THE ECC/REC/(02)06 FROM VERSION 2002 TO VERSION 2011

Montegrotto Terme, May 2011

0 EXECUTIVE SUMMARY

In process of revising ECC/REC/(02)06 over the period from 2009 to 2011 there was a need to get the overview, of what channelization did CEPT Administrations use in different bands of the frequency range 7125-8500 MHz. This is in order to find solution for limited number of channelization options on one hand, and to allow, on the other hand, a wider implementation of the ECC Recommendation.

A number of the administrations had implemented the Annex 1 (7125-7725 MHz) of the ECC/REC/(02)06 (version 2002). In the gap (7725-7900 MHz) between Annex 1 and Annex 2 (7900-8500 MHz) of ECC/REC/(02)06 (version 2002), a number of administrations had implemented their channel arrangement in accordance with different annexes of Recommendation ITU-R F.385 and Recommendation ITU-R F.386 or national plans.

In 2010, the most implement channel arrangements in the CEPT are summarised below:

Table 1: Major usage of the 7125-8500 MHz within CEPT

ECC/REC/(02)06 (Version 2011)	ECC/REC/(02)06 (Version 2002)	7125-7725 MHz	7900-8500 MHz
ECC/REC/(02)06 Annex 1.1 and Annex 2.1	ECC/REC/(02)06 Annex 1	63.2%	-
ECC/REC/(02)06 Annex 2.3	ECC/REC/(02)06 Annex 2	-	31.6%
ITU-R F.385-9 basic	ITU-R F.385-9 basic	21.1 %	-
ECC/REC/(02)06 Annex 2.2	ITU-R F.385-9 Annex 4	10.5%	
ECC/REC/(02)06 Annex 1.2	ITU-R F.386-8 Annex 6	-	28.9 %
ECC/REC/(02)06 Annex 1.3	ITU-R F.386-8 Annex 2	-	26.3 %

Differences in channel arrangements (e.g. frequency ranges, carrier spacing, duplex spacing) are significant, therefore the harmonization of the band 7125 – 8500 MHz is difficult.

ECC/REC (02)06 (version 2002) did not cover the whole range. It had a gap band between 7725-7900 MHz.

Table 2: Channel arrangement for the ECC/REC/(02)06 – version 2002

<table>
<tr><td></td><td colspan="4">Frequency ranges (MHz)</td></tr>
<tr><td>ECC(02)06 (version 2002)</td><td>7125 - 7425</td><td>7425 - 7725</td><td>7725 – 7900</td><td colspan="2">7900 - 8500</td></tr>
<tr><td>Annex 1</td><td>1st range Arrangement ECC/REC/(02)06 V.2002 An 1.1</td><td>2nd range Arrangement ECC/REC/(02)06 V.2002 An 1.2</td><td rowspan="2">Blank</td><td>–</td><td>–</td></tr>
<tr><td>Annex 2</td><td>–</td><td>–</td><td colspan="2">3rd range Arrangement ECC/REC/(02)06 V.2002 An 2</td></tr>
</table>

The ECC/REC/(02)06 (version 2002) was revised based on the outcome of this report by introducing the most common approaches taken by administrations for managing the whole (or the available portions) of the band 7125-8500 MHz. Two options are introduced depending on the national availability of the various sub-ranges, which give possibility to widely implement the recommendation ECC/REC/(02)06 (version 2011).

Note that the channel arrangement in 7725-8275 MHz, based on Annex 6 to ITU-R Recommendation F.386 (with 29.65 MHz channel arrangement providing 8 bidirectional channels), has been used for a long time by a number of CEPT administrations because no other arrangement is available for this frequency band. However, when planning to restructure the band or in case Administrations are newly designating this band to fixed wireless systems, Administrations are encouraged to consider a new channel arrangement, based on 28 MHz channel separation (providing 9 bidirectional channels), which is provided in ECC/REC/(02)06 (version 2011) as defined in Annex 1.2.1.

<table>
<tr><td></td><td colspan="5">Frequency ranges (MHz)</td></tr>
<tr><td>ECC(02)06 (version 2011)</td><td>7125 - 7425</td><td>7425 - 7725</td><td>7725 – 7900</td><td>7900 - 8275</td><td>8275 - 8500</td></tr>
<tr><td>Annex 1 (1st Option for the whole range)</td><td>1st range Arrangement ECC/REC/(02)06 V.2011 An.1.1</td><td>2nd range Arrangement ECC/REC/(02)06 V.2011 An.1.1</td><td colspan="2">3rd range Arrangement ECC/REC/(02)06 V.2011 An.1.2.2 or An.1.2.1 (new 28 MHz channel arrangement)</td><td>4th range Arrangement ECC/REC/(02)06 V.2011 An.1.3</td></tr>
<tr><td>Annex 2 (2nd Option for the whole range)</td><td>1st range Arrangement ECC/REC/(02)06 V.2011 An.2.1 (same as ECC/REC/(02)06 V.2011 An.1.1)</td><td colspan="2">2nd range Arrangement ECC/REC/(02)06 V.2011 An.2.2</td><td colspan="2">3rd range Arrangement ECC/REC/(02)06 V.2011 An.2.3</td></tr>
</table>

Table 3: Channel arrangement for the ECC/REC/(02)06 – version 2011

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LIST OF ABBREVIATIONS

Abbreviation	Explanation
ADD	Added by administration
An	Annex
CEPT	European Conference of Postal and Telecommunications Administrations
DS	Duplex Spacing
ECC	Electronic Communications Committee
ENG/OB	Electronic News Gathering / Outside Broadcasting
SAB	Service Ancillary to Broadcasting
SAP	Services ancillary to programme making
SG	Study Group
ITU	International Telecommunication Union
MOD	Modified
NJFA	NATO joint civil/Military frequency
P-P	Point to point
REC	Recommendation
UWB	Ultra Wideband

LIST OF COUNTRIES ABBREVIATIONS

ALB	Albania
AND	Andorra
AUT	Austria
AZE	Azerbaijan
BEL	Belgium
BIH	Bosnia-Herzegovina
BLR	Belarus
BUL	Bulgaria
CVA	Vatican City
CYP	Cyprus
CZE	Czech Republic
D	Germany
DNK	Denmark
E	Spain
EST	Estonia
F	France
FIN	Finland
G	United Kingdom
GEO	Georgia
GRC	Greece
HNG	Hungary
HOL	Netherlands
HRV	Croatia
I	Italy
IRL	Ireland
ISL	Iceland
LIE	Liechtenstein
LTU	Lithuania
LUX	Luxembourg
LVA	Latvia
MLT	Malta
MCO	Monaco
MDA	Moldova
MKD	Former Yugoslav Republic of Macedonia
MNE	Montenegro
NOR	Norway
POL	Poland
POR	Portugal
ROU	Romania
RUS	Russian Federation
S	Sweden
SMR	San Marino
SRB	Serbia
SUI	Switzerland
SVK	Slovak Republic
SVN	Slovenia
TUR	Turkey
UKR	Ukraine

The usage of the 7125-8500 MHz band within the CEPT for the elaboration of the revision of the ECC/REC/(02)06 from version 2002 to version 2011

1 INTRODUCTION

In the process of revising recommendation ECC/REC/(02)06 for including additional channel arrangements in the band (7725-8500 MHz), over the period from the beginning of 2009 till the end of 2010, this ECC report was used as a basis for finding a solution to cover the whole frequency range from 7125-8500 MHz by limited number of channelization options on one hand, and allow, on the other hand, a wider implementation of the ECC Recommendation.

It was recognised that a number of the administrations have implemented the ECC/REC/(02)06 (Version 2002) Annex 1 (7125-7725 MHz). It was noted that in the gap (7725-7900 MHz) between Annex 1 and Annex 2 (7900-8500 MHz), a number of administrations had already implemented their channel arrangement in accordance with different annexes of Recommendation ITU-R F.385 and Recommendation ITU-R F.386. Therefore the harmonization of the band 7125-8500 MHz with a limited number of annexes in the revised ECC/REC/(02)06 seemed to be difficult at that point of time.

The aim of this ECC Report was at collecting and assessing the usage of the 7725-8500 MHz band per country in order to get the overview of the usage of the ECC/REC/(02)06 Annex 2 (version 2002). The information on the usage of the 7125-7725 MHz was also provided in this report in order to find the optimal solution for covering the gap between Annex 1 and Annex 2 of ECC/REC/(02)06 (version 2002) with limited number of annexes.

2 USAGE OF THE FREQUENCY BAND 7125-8500 MHz

Data of 38 CEPT countries AUT, BEL, BIH, BLR, BUL, CVA, CYP, CZE, D, DNK, E, EST, F, FIN, G, HNG, HOL, HRV, I, IRL, ISL,LIE, LTU, LUX, LVA, MKD, MLT, NOR, POL, POR, ROU, RUS, S, SRB, SUI, SVK, SVN, TUR has been analysed regarding current usage of frequency bands 7125 – 8500 MHz.

Table 4: Overview of frequency band 7125-8500 MHz usage used within 48 CEPT countries

Adm.	7125-7425 MHz		7425-7725 MHz		7725-8275 MHz		8275-8500 MHz		Military
	Actual boundaries	Arrangement references	Actual boundaries	Arrangement references	Actual boundaries	Arrangement references	Actual boundaries	Arrangement references	Actual boundaries
ALB									
AND									
AUT	7125 MHz – 7425 MHz	National 1.A (100 kHz – 7 MHz, DS 161MHz)	7425 – 7725 MHz	ITU-R F.385-9-An 3H (28MHz, DS 168MHz, fo=7597 MHz) ITU-R 385-9 An 1 (28 MHz, DS 154 MHz) As of 2011: ECC/REC/(02)06 An 1.1.2 (V.2011) = (An 1.2 (V.2002)) (28 MHz only	7750 – 8017 MHz	National 1.B (28 MHz,Simplex)	7900 - 8500 MHz	ECC/REC/(02)06 An 2.3 (V.2011) = (An 2 (V.2002))	7857 - 7902 MHz, 8017 - 8062 MHz
AZE									
BEL	7375 MHz - 7484 MHz, 7596 MHz - 7729 MHz, 7841 MHz - 7900 MHz	SAP/SAB Point-to-Point video link	7450-7900 MHz	ECC/REC/(02)06 An 2.2 (V.2011) = (ITU-R F.385-9 An 4)) (7/14/28 MHz DS 245 MHz)			8200-8500 MHz	ITU-R F.386-8 basic (11.662/2x16.662 MHz, DS 151.614 MHz)	7250 - 7750 MHz, 7900 - 8400 MHz
BIH	7125 MHz - 7425 MHz	ECC/REC/(02)06 An 1.1.1 (V.2011) = (An 1.1 (2002))	7425 – 7725 MHz	ECC/REC/(02)06 An 1.1.2 (V.2011) = (An 1.2 (V.2002))	7725 – 8275 MHz	ECC/REC/(02)06 An 1.2 (V.2011) = (ITU-R F. 386-8 An 6) (29.65 MHz, DS 311.32 MHz)	8275 – 8500 MHz	ECC/REC/(02)06 An 1.3 (V.2011) = (ITU-R F.386-8 An 2) (7/14/28 MHz , DS 119 MHz)	7250-7300 MHz
BLR	7187-7243 MHz 7355-7425 MH	ITU-R F.385-9 Basic (7/14/28 MHz, DS 161 MHz) for 154 MHz DS ECC/REC/(02)06 An 1.1.1 (V.2011) = (An 1.1 (2002)) for 168 MHz DS: National raster 7 (7/14/28 MHz). 258 RRL	7425-7700 MHz	ITU-R F.385-9 Basic (7/14/28 MHz, DS 161 MHz) ITU-R F.385-9 An 1 (DS 154 MHz) 1055 RRL	7900-8275 MHz	ITU-R F.386-8 An 3 (28 MHz, DS 266 MHz) 88 RRL	8275-8400 MHz	ITU-R F.386-8 An 3 (28 MHz, DS-266 MHz) 88 RRL	
BUL	7110 MHz - 7750 MHz	ITU-R F.385-9 An 3L (28MHz, DS 196MHz, fo=7275 MHz)	7425 - 7.725 MHz	ECC/REC/(02)06 An 2.2 (V.2011) = (ITU-R F.385-9 An 4) (7/14/28 MHz, DS 245 MHz)	7725 - 7970 MHz	ECC/REC/(02)06 An 1.2 (V.2011) = ITU-R F. 386-8 An 6 (29.65 MHz, DS 311.32 MHz)	7970 - 8500 MHz	Military	7970 - 8500 MHz
CVA	7110 - 7425 MHz	ITU-R F.385-9 An 3L (28MHz, DS 196MHz, fo=7275 MHz)	7250 - 7300 MHz		7425 - 7750 MHz	ITU-R F.385-9 An3H (28MHz, DS 168MHz, fo=7597 MHz)			
CYP	7125 - 7425 MHz	ECC/REC/(02)06 An 1.1.1 (V.2011) = (An 1.1 (2002))	7425 – 7725 MHz	ECC/REC/(02)06 An 1.1.2 (V.2011) = (An 1.2 (V.2002))	7900 - 8500 MHz	ECC/REC/(02)06 An 2.3 (V.2011) = (An 2 (V.2002))	7900 - 8500 MHz	ECC/REC/(02)06 An 2.3 (V.2011) = (An 2 (V.2002))	
CZE	7125 - 7425 MHz	National 6-MOD ITU-R F.385-9 Basic (14 MHz DS 161 MHz, fo=7275 MHz)	7425 – 7725 MHz	ITU-R F.385-9 basic, (7/(14) MHz, DS 161 MHz, fo=7575 MHz)	7725 – 8275 MHz	Military	8275 – 8500 MHz	Military	7125–7219, 7247–7380, 7408–7423,5 7718,5 – 8500 MHz

Adm.	7125-7425 MHz		7425-7725 MHz		7725-8275 MHz		8275-8500 MHz		Military
	Actual boundaries	Arrangement references	Actual boundaries	Arrangement references	Actual boundaries	Arrangement references	Actual boundaries	Arrangement references	Actual boundaries
D	7125 MHz - 7425 MHz	ITU-R F.385-9 Basic (3.5/7/14 MHz DS 161 MHz, fo=7275 MHz)	7425 – 7725 MHz	ECC/REC/(02)06 An 1.1.2 (V.2011) = (An 1.2 (V.2002)) (28MHz/56MHz only CCDP)	7750 MHz-8500 MHz	Military	7750 MHz-8500 MHz	Military	7750 MHz-8500 MHz
DNK	7125 - 7425 MHz 7250-7300MHz	ECC/REC/(02)06 An 1.1.1 (V.2011) = (An 1.1 (2002)) (NJFA)[1]	7425 – 7725 MHz	ECC/REC/(02)06 An 1.1.2 (V.2011) = (An 1.2 (V.2002))	7750 - 7850 MHz	5.461B	7900 - 8500 MHz 7900 – 8025MHz	ECC/REC/(02)06 An 2.3 (V.2011) = (An 2 (V.2002)) (NJFA)	7250 - 7300 MHz, 7900 - 8025 MHz
E	7125 MHz - 7425 MHz	ITU-R F.385-9 Basic (7/14/28 MHz, DS 161 MHz, fo=7275 MHz)	7425 MHz - 7725 MHz	ITU-R F.385-9 An1 (28 MHz, DS 154 MHz)	7725 MHz - 8275 MHz	ECC/REC/(02)06 An 1.2 (V.2011) = (ITU-R F. 386-8 An 6) (29.65 MHz, DS 311.32 MHz)	8275 MHz - 8500 MHz	ECC/REC/(02)06 An 1.3 (V.2011) = (ITU-R F.386-8 An 2) (28 M, DS 119 M, 14 M, DS 126 M)	
EST	7125–7425 MHz	ITU-R F.385-9 Basic (28 MHz)	7425-7725 MHz	ITU-R F.385-9 Basic (28 MHz)	7725-8275 MHz		8275-8500 MHz	ITU-R F.386-8 An 3 (14 / 28 MHz)	Civil-military sharing 7250-7300 MHz 7975-8025 MHz 8275-8500 MHz
F	7110 - 7250 MHz	28MHz, FX, SAP/SAB P-P link, Temporary individual authorisations	7750 - 7890 MHz	28MHz, FX, SAP/SAB P-P video link, Temporary individual authorisations	8025 -8500 MHz	ITU-R F.386-8 An 5 (28/14/7/(3.5 MHz ADD), DS 208 MHz)	8025 -8500 MHz	ITU-R F.386-8 An 5 (28/14/7/(3.5 MHz ADD), DS 208 MHz)	7250 -7375 MHz 7890 -7900 MHz, 7900 - 8025 MHz
FIN	7.107 - 7415 MHz	National 2A (28 MHz, DS 168)	7414 - 7722 MHz	National 2B (7/14/28 MHz, DS 168)	7732.875 - 8500 MHz	National 2C (29.65 MHz, DS 266.85)	7900 – 8500 MHz	planned ECC/REC/(02)06 An 2.3 (V.2011) = (An 2 (V.2002))	
G	7110 MHz - 7250 MHz, 7300 MHz - 7425 MHz	SAP/SAB and ENG/OB	7425 MHz - 7900 MHz	ECC/REC/(02)06 An 2.2 (V.2011) = (ITU-R F.385-9 An 4)) (7/14/28 MHz, DS 245 MHz)	7900 – 8400 MHz	Military	8460 MHz - 8500 MHz	SAP/SAB and ENG/OB	7900 – 8400 MHz
GEO									
GRC									
HNG	7125 MHz - 7425 MHz	ECC/REC/(02)06 An 1.1.1 (V.2011) = (An 1.1 (2002)) - governmental use	7425 MHz - 7725 MHz	ECC/REC/(02)06 An 1.1.2 (V.2011) = (An 1.2 (V.2002))	7725 MHz - 7900 MHz	National 5A, simplex, P-P for ENG	7900 MHz - 8200 MHz, 8200 MHz - 8500 MHz	National 5B1 (MOD of ECC/REC/(02)06 An 1.1.1 (V.2011) = (An 1.1 (2002)) fc=8050 MHz), National 5B2 (MOD of ECC/REC/(02)06 An 1.1.2 (V.2011) = (An 1.2 (V.2002)), fc=8350 MHz)	
HOL	7425 MHz – 7568 MHz	ECC/REC/(02)06 An 1.1.2, An 3 (V.2011) = (An 1.2 (V.2002)) (28/56 MHz)	7582 MHz - 7725 MHz	ECC/REC/(02)06 An 1.1.2, An 3 (V.2011) = (An 1.2 (V.2002)) (28/56 MHz)					
HRV	7125 MHz - 7425 MHz	One duplex channel (28 MHz, DS 154 MHz– 7235 / 7389 MHz)	7425 – 7725 MHz	ECC/REC/(02)06 An 1.1.2 (V.2011) = (An 1.2 (V.2002))	7725 – 8275 MHz	ECC/REC/(02)06 An 1.2 (V.2011) = (ITU-R F. 386-8 An 6) (29.65 MHz, DS 311.32 MHz)	8275 – 8500 MHz	ECC/REC/(02)06 An 1.3 (V.2011) = (ITU-R F.386-8 An 2) (28 M, DS 119 M, 14 M, DS 126 M)	7250 – 7375 MHz 7900 – 8025 MHz
I	7110 - 7425 MHz	ITU-R F.385-9-An 3L (28MHz, DS 196MHz, fo=7275 MHz)	7250 - 7300 MHz	Military	7425 - 7750 MHz ……. 7750 – 8500 MHz	ITU-R F.385-9 An 3H (28MHz, DS 168MHz, fo=7597 MHz) ..... Military	7750 - 8500 MHz	Military	7250 - 7300 MHz, 7750 - 8500 MHz

[1] Nato Joint Civil/Military Frequency

Adm.	7125-7425 MHz		7425-7725 MHz		7725-8275 MHz		8275-8500 MHz		Military
	Actual boundaries	Arrangement references	Actual boundaries	Arrangement references	Actual boundaries	Arrangement references	Actual boundaries	Arrangement references	Actual boundaries
IRL	7125 MHz - 7425 MHz	ECC/REC/(02)06 An 1.1.1 (V.2011) = (An 1.1 (2002)) (7/14/28 MHz, DS 154 MHz)	7425 – 7725 MHz	ECC/REC/(02)06 An 1.1.2 (V.2011) = (An 1.2 (V.2002)) (7/14/28 MHz, DS 154 MHz)	7725 – 8275 MHz	ECC/REC/(02)06 An 1.2 (V.2011) = (ITU-R F. 386-8 An 6 = F.386-6 An 1) (29.65 MHz, DS 311.32 MHz)	8275 – 8500 MHz	ECC/REC/(02)06 An 1.3 (V.2011) = (ITU-R F.386-8 An 2 = F.386-6 An 3) (28 M, DS 119 M, 14 M, DS 126 M) (3.5/7/14 MHz)	
ISL	7125 MHz - 7425 MHz	ECC/REC/(02)06 An 1.1.1 (V.2011) = (An 1.1 (2002))	7425 MHz - 7725 MHz	ECC/REC/(02)06 An 1.1.2 (V.2011) = (An 1.2 (V.2002))	7725 MHz - 7900 MHz	Not in use	7900 - 8500 MHz	ECC/REC/(02)06 An 2.3 (V.2011) = (An2 (V.2002))	
LIE	7125 MHz - 7425 MHz	ECC/REC/(02)06 An 1.1.1 (V.2011) = (An 1.1 (2002)) (7/14 MHz,	7425 – 7725 MHz	ECC/REC/(02)06 An 1.1.2 (V.2011) = (An 1.2 (V.2002)) (14/28 MHz,	7725 – 8275 MHz	UWB applications	8275 – 8500 MHz	UWB applications	
LTU	7125 MHz - 7425 MHz	ITU-R F.385-9 Basic (7/14/28 MHz, DS 161 MHz)	7425 MHz - 7725 MHz	ECC/REC/(02)06 An 1.1.2 (V.2011) = (An 1.2 (V.2002))	7750-7900 MHz	National 4 (7/14/28 MHz, Simplex)	7900 - 8500 MHz	ECC/REC/(02)06 An 2.3 (V.2011) = (An2 (V.2002))	
LUX	7125 MHz - 7425 MHz	ECC/REC/(02)06 An 1.1.1 (V.2011) = (An 1.1 (2002))	7425 MHz - 7725 MHz	ECC/REC/(02)06 An 1.1.2 (V.2011) = (An 1.2 (V.2002))	7725 MHz - 8275 MHz	ECC/REC/(02)06 An 1.2 (V.2011) = (ITU-R F. 386-8 An 6) (29.65 MHz, DS 311.32 MHz)	8275 MHz - 8500 MHz	ECC/REC/(02)06 An 1.3 (V.2011) = (ITU-R F.386-8 An 2) (28 M, DS 119 M, 14 M, DS 126 M)	7250 - 7300 MHz, 7975 - 8025 MHz
LVA	7125 MHz - 7250 MHz, 7331 MHz - 7800 MHz	ITU-R F.385	7331 MHz - 7800 MHz	ITU-R F.385	7900 MHz - 7925 MHz, 8024 MHz - 8500 MHz	ECC/REC/(02)06 An 2.3 (V.2011) = (An 2 (V.2002))	8024 MHz - 8500 MHz	ECC/REC/(02)06 An 2.3 (V.2011) = (An2 (V.2002))	7250 - 7331 MHz, 7850 - 7900 MHz, 7975 - 8024 MHz
MLT	7125 MHz - 7425 MHz	ECC/REC/(02)06 An 1.1.1 (V.2011) = (An 1.1 (2002))	7425 MHz - 7725 MHz	ECC/REC/(02)06 An 1.1.2 (V.2011) = (An 1.2 (V.2002))	7725 MHz - 8275 MHz	ECC/REC/(02)06 An 2.3 (V.2011) = (An 2 (V.2002))	8275 MHz - 8500 MHz	ECC/REC/(02)06 An 2.3 (V.2011) = (An2 (V.2002))	
MCO									
MDA									
MKD	7125 MHz - 7425 MHz	ITU-R F.385-9 Basic (3.5/7/14 MHz DS 161 MHz, fo=7275 MHz)	7425 MHz - 7725 MHz	ITU-R F.385-9 An1 compatible with ECC/REC/(02)06 An 1.1.2 (V.2011) = (An 1.2 (V.2002)), ITU-R F.385-9 Basic (7MHz, DS 161 MHz, fo=7575 MHz)	7725 – 8275 MHz	ECC/REC/(02)06 An 1.2 (V.2011) = (ITU-R F. 386-8 An 6) (29.65 MHz, DS 311.32 MHz)	8275 – 8500 MHz	ECC/REC/(02)06 An 1.3 (V.2011) = (ITU-R F.386-8 An 2 = F.386-6 An 3) (28 M, DS 119 M, 14 M, DS 126 M)	
MNE									
NOR	7125 MHz – 7425 MHz	ITU-R F.385-9 Basic (7 MHz, DS 161 MHz), National 3A for 28 M channel	7425 – 7725 MHz	ITU-R F.385-9 Basic (7 MHz, DS 161 MHz) National 3B (28MHz, DS 161 MHz)	7900 - 8500 MHz	ECC/REC/(02)06 An 2.3 (V.2011) = (An 2 (V.2002))	7900 - 8500 MHz	ECC/REC/(02)06 An 2.3 (V.2011) = (An 2 (V.2002))	
POL	7075 MHz – 7450 MHz	ITU-R F.385-9 Basic (7 /14 MHz, DS 161 MHz, ITU-R SG09)	7300 – 7750 MHz	ITU-R F.385-9 Basic (7 /(14) MHz, DS 161 MHz, ITU-R SG09)	~~7750 – 8125 MHz~~	~~ECC/REC/(02)06 An 1.3 (V.2011) = (ITU-R F.386-8 An 2) (28 M, DS 119 M, 14 M, DS 126 M) ITU-R SG09~~ ~~??? SIAE: ECC/REC/(02)06 An 1.3 (V.2011) = (ITU-R F.386-8 An 2) is 8275-8500; either it refers to An 1.2 and ITU-R An 6, or ??~~	8275– 8500 MHz	ECC/REC/(02)06 An 1.3 (V.2011) = (ITU-R F.386-8 An 2) (28 M, DS 119 M, 14 M, DS 126 M)	7075 – 8500 MHz SIAE: just for saving space (all contiguous channels)

Adm.	7125-7425 MHz		7425-7725 MHz		7725-8275 MHz		8275-8500 MHz		Military
	Actual boundaries	Arrangement references	Actual boundaries	Arrangement references	Actual boundaries	Arrangement references	Actual boundaries	Arrangement references	Actual boundaries
POR	7125 MHz - 7425 MHz	ECC/REC/(02)06 An 1.1.1 (V.2011) = (An 1.1 (2002)) (1.75/3.5/7/14/ 28 MHz, DS 154 MHz)	7425 – 7725 MHz	ECC/REC/(02)06 An 1.1.2 (V.2011) = (An 1.2 (V.2002)) (1.75/3.5/7/14/28 MHz, DS 154 MHz) ECC/REC/(02)06 An 3 (56 MHz, DS 154 MHz)	7730-7975 / 8040-8290 MHz	ECC/REC/(02)06 An 1.2 (V.2011) = (ITU-R F. 386-8 An 6) (29.65 MHz, DS 311.32 MHz)			
ROU	7125 MHz - 7425 MHz	ECC/REC/(02)06 An 1.1.1 (V.2011) = (An 1.1 (2002))	7425 – 7725 MHz	ECC/REC/(02)06 An 1.1.2 (V.2011) = (An 1.2 (V.2002))	7725 – 8275 MHz	ECC/REC/(02)06 An 1.2 (V.2011) = (ITU-R F. 386-8 An 6) (29.65 MHz, DS 311.32 MHz) ECC/REC/(02)06 An 2.3 (V.2011) = (An 2 (V.2002)) (Exceptional cases)	8275 – 8500 MHz	ECC/REC/(02)06 An 1.3 (V.2011) = (ITU-R F.386-8 An 2) (28 M, DS 119 M, 14 M, DS 126 M)	
RUS	7250 MHz - 7550 MHz	ITU-R F.385-9 An 5 (3.5/7/14/28 MHz DS 161 MHz)			7900 – 8400 MHz	ITU-R F.386-8 An 3 (28M, DS 266)	7900 – 8400 MHz	ITU-R F.386-8 An 3 (28M, DS 266)	
S	7125 MHz – 7425 MHz	Military	7425 – 7725 MHz	ECC/REC/(02)06 An 1.1.2 (V.2011) = (An 1.2 (V.2002))	7725 - 7900 MHz	No new FS-assignment in this segment between the “An1 and 2 bands”. Issued licenses, where the duplex separation Rx/Tx is 364 MHz, expire 2015.	7900 – 8500 MHz	ECC/REC/(02)06 An 2.3 (V.2011) = (An 2 (V.2002))	7125 – 7425 MHz
SMR									
SRB	7125 MHz - 7425 MHz	ECC/REC/(02)06 An 1.1.1 (V.2011) = (An 1.1 (2002))	7425 – 7725 MHz	ITU-R F.385-9 Basic (7 MHz DS 161 MHz) MOD. ITU-R F.385-9 Basic (14/28 MHz, DS 161 MHz)	7725 – 8275 MHz	ECC/REC/(02)06 An 1.2 (V.2011) = (ITU-R F. 386-8 An 6) (29.65 MHz, DS 311.32 MHz)	8275 – 8500 MHz	ECC/REC/(02)06 An 1.3 (V.2011) = (ITU-R F.386-8 An 2) (28 M, DS 119 M, 14 M, DS 126 M)	
SUI	7125 MHz - 7425 MHz	ECC/REC/(02)06 An 1.1.1 (V.2011) = (An 1.1 (2002)) (7/14 MHz,)	7425 – 7725 MHz	ECC/REC/(02)06 An 1.1.2 (V.2011) = (An 1.2 (V.2002)) (14/28 MHz,)	7750 MHz - 8500 MHz	Military	7750 MHz - 8500 MHz	Military	7750 MHz - 8500 MHz
SVK	7125 MHz - 7425 MHz	ECC/REC/(02)06 An 1.1.1 (V.2011) = (An 1.1 (2002))	7425 – 7725 MHz	ITU-R F.385-9 Basic (3.5/7/14 MHz) DS 161 MHz	7750 MHz - 8500 MHz	Military	7750 MHz - 8500 MHz	Military	7750 MHz - 8500 MHz
SVN	7125 MHz - 7425 MHz	ECC/REC/(02)06 An 1.1.1 (V.2011) = (An 1.1 (2002))	7425 – 7725 MHz	ECC/REC/(02)06 An 1.1.2 (V.2011) = (An 1.2 (V.2002))	7725 – 8275 MHz	ECC/REC/(02)06 An 1.2 (V.2011) = (ITU-R F. 386-8 An 6) (29.65 MHz, DS 311.32 MHz)	8275 – 8500 MHz	ECC/REC/(02)06 An 1.3 (V.2011) = (ITU-R F.386-8 An 2) (28 M, DS 119 M, 14 M, DS 126 M)	7975 – 8025 MHz
TUR	7125 MHz - 7425 MHz	ITU-R F.385-9 Basic (7/14 /28MHz, DS 161 MHz, fo=7275 MHz)	7425 MHz - 7900 MHz	ECC/REC/(02)06 An 2.2 (V.2011) = (ITU-R F.385-9 An 4)) (7/14/28 MHz, DS 245 MHz)	7900 - 8500 MHz	Military ECC/REC/(02)06 An 2.3 (V.2011) = (An2 (V.2002))	7900 - 8500 MHz	Military ECC/REC/(02)06 An 2.3 (V.2011) = (An 2 (V.2002))	7900 - 8500 MHz
UKR									

2.1 Analysis of frequency bands 7125 – 8 500 MHz by sub-bands

Analysis has been done for 4 sub-bands: 7125 – 7425 MHz, 7 425-7 725 MHz, 7 725-8 275 MHz and 8 275 - 8 500 MHz, Figure 1).

Table 5: Overview of channel arrangements in the frequency range 7125-8500 MHz used within 38 CEPT countries

Overview of channel arrangements used in the frequency bands 7125 – 8500 MHz

					All Adm.	38	
7125 – 7425 MHz	Freq. Range	Carrier spacing (MHz)	DS		No. Of A	% of Adm.	
ITU-R F.385-9 An3L	7 110 - 7 425 MHz	28	196		3	7,9	
ECC/REC/(02)06 An1 A.1.1	7 125 - 7 425 MHz	28/14/7/3.5/1.75	154		16	42,1	
ITU-R F.385-9 basic L	7 125 – 7 425 MHz	28/14/7/(3.5)	161		7	18,4	
National 1.A	7 125 – 7 425 MHz	0.1 - 7	161		1	2,6	
National 2.A	7 107 - 7 415 MHz	28	168		1	2,6	
National 3.A	7 125 – 7 425 MHz	28	161		1	2,6	
National 6 - MOD 385-9 bas	7 125 – 7 425 MHz	14	161		1	2,6	
National 7	7355 - 7425 MHz	28/14/7	168		1	2,6	
7 425-7 725 MHz	Freq. Range	Carrier spacing (MHz)	DS				% of Adm.
ECC/REC/(02)06 An1 A1.2	7 425-7 725 MHz	(56)/28/14/7/3.5/1.75	154	Compatible	19	50,0	Together
ITU-R F.385-9 An1	7 425-7 725 MHz	28	154	Compatible	5	13,2	**63,158**
ITU-R F.385-9 basic H	7 425-7 725 MHz	28/14/7	161		7	18,4	
ITU-R F.385-9 An3H	7 425-7 750 MHz	28	168		3	7,9	
ITU-R F.385-9 An4	7 425-7 900 MHz	28/14/7	245		4	10,5	
ITU-R F.385-9 An5	7 250-7 550 MHz	28/14/7/3.5	161		1	2,6	
National 2.B	7 415 - 7 722 MHz	28/14/7	168		1	2,6	
National 3.B	7 425-7 725 MHz	28	161		1	2,6	
7 725-8 275 MHz	Freq. Range	Carrier spacing (MHz)	DS				
ECC/REC/(02)06 An2	7900-8500 MHz	28/14/7/3.5/1.75	310		12	31,6	
ITU-R F.385-9 An3H	7 425-7 750 MHz	28	168		3	7,9	
ITU-R F.385-9 An4	7 425-7 900 MHz	28/14/7	245		4	10,5	
ITU-R F.385-9 An5	7 250-7 550 MHz	28/14/7/3.5	161		1	2,6	
ITU-R F.386-8 An7 = ITU-R F.386-6 basic	8 200-8 500 MHz	16,662	151,61		1	2,6	
ITU-R F.386-8 An3	7 900-8 400 MHz	28/14/07	266		4	10,5	
ITU-R F.386-8 An5	8 025-8 500 MHz	28/14/7/(3.5)	208		1	2,6	
ITU-R F.386-8 An6 = ITU-R F.386-6 An1	7 725-8 275 MHz	29,65	311,32		12	31,6	
National 1.B	7 750 – 8 017 MHz	28	N/A		1	2,6	
National 2.C	7732.875 - 8500 MHz	29,65	266,85		1	2,6	
National 4	7750-7900 MHz	28/14/7	N/A		1	2,6	
National 5A	7725-7900 MHz	28/1.75	N/A		1	2,6	
National 5B1	7900 -8200 MHz	14/7/3.5/1.75	154		1	2,6	
8 275 - 8 500 MHz	Freq. Range	Carrier spacing (MHz)	DS				
ECC/REC/(02)06 An2	7900-8500 MHz	28/14/7/3.5/1.75	310		12	31,6	
ITU-R F.386-8 An7 = ITU-R F.386-6 basic	8 200-8 500 MHz	16,662	151,61		1	2,6	
ITU-R F.386-8 An2 = ITU-R F.386-6 An3	8 275 - 8 500 MHz	28/14	119/126		10	26,3	
ITU-R F.386-8 An3	7 900-8 400 MHz	28/14/07	266		4	10,5	
ITU-R F.386-8 An5	8 025-8 500 MHz	28/14/7/(3.5)	208		1	2,6	
National 5B2	8200-8500 MHz	14/7/3.5/1.75	154		1	2,6	
				Legend			
Most popular usage than ECC/REC/(02)06:	ITU-R F.385-9 basic	Not proposed yet			Used by >=4 Adm.		
	ITU-R F.385-9 An4	Not proposed yet			Used by 2-3 Adm.		
	ITU-R F.386-8 An2	Already proposed to add as An4			1 Adm, >1000 links		
	ITU-R F.386-8 An3	Already proposed to add as An6					
	ITU-R F.386-8 An6	Already proposed to add as An3					

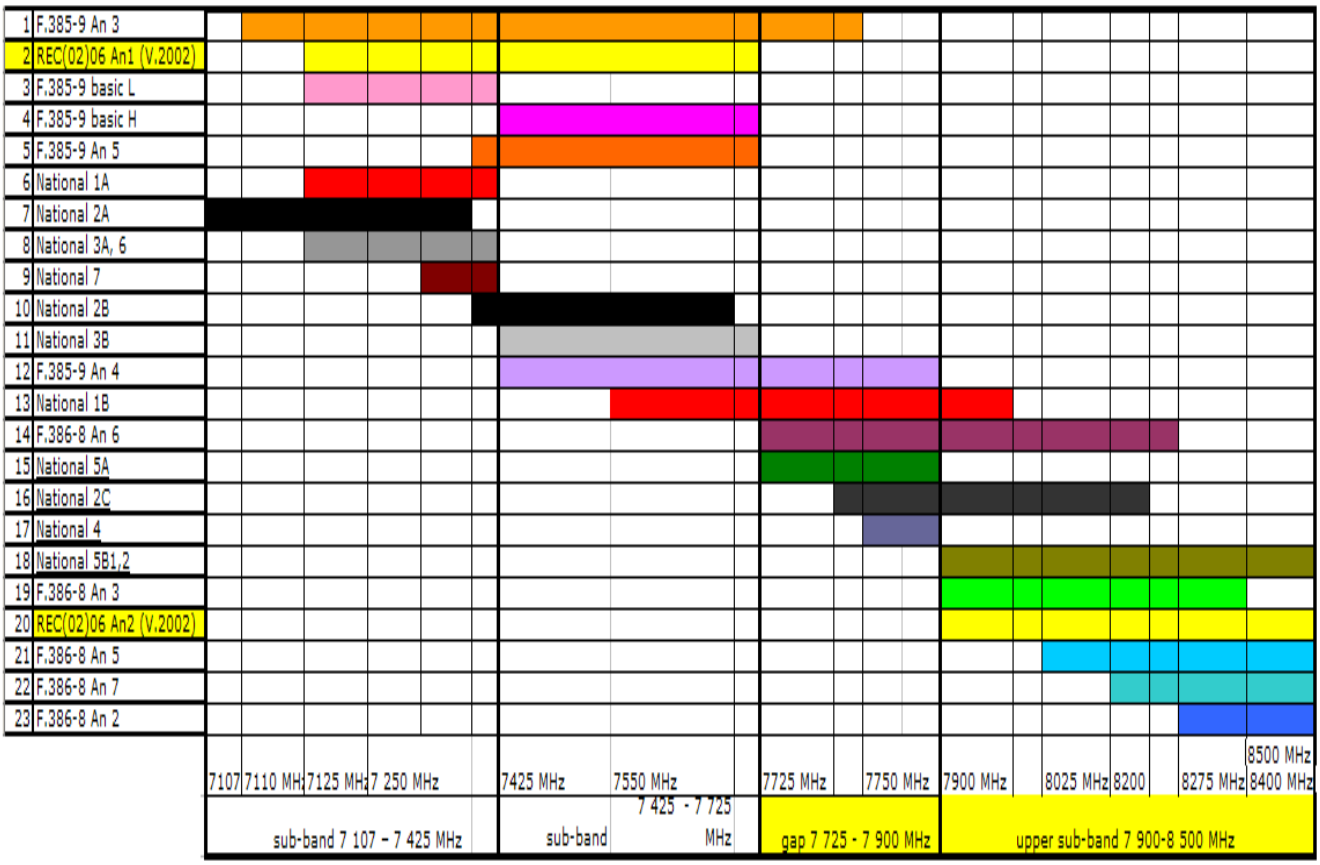

Figure 1: Channel arrangements in the frequency range 7125-8500 MHz (annexes refer to the ECC/REC/(02)06 version 2002 unless otherwise mentioned)

2.2 Military usage of the frequency bands 7125-8 500 MHz

In most countries military is present in at least part of the band 7125-8500 MHz. The overview is presented in **Error! Reference source not found.**. Parts of the band 7125-8500 MHz are used for military purpose. They are illustrated in Figure 2.

Table 6: Military usage of the frequency range 7125-8500 MHz within CEPT countries

Adm.	Military	Shared Civil P-P /Military
AUT	7857 - 7902 MHz, 8017 - 8062 MHz	7226 - 7425 MHz, 7780 – 7819 MHz, 7940 – 7979 MHz
BEL	7250 - 7750 MHz, 7900 - 8400 MHz	8200 - 8500 MHz
BIH	7250 - 7300 MHz	7125 - 7425 MHz
BUL	7970 - 8500 MHz	7075 - 7145 MHz, 7250 - 7750 MHz, 7850 - 7970 MHz
CZE	7125 – 7219 MHz, 7247 – 7380 MHz, 7408 – 7423.5 MHz, 7718.5 – 8500 MHz	7219 – 8500 MHz
D	7750 - 8500 MHz	
DNK		7250 - 7300 MHz, 7900 - 8025 MHz
G	7900 – 8400 MHz	
E		7450 - 7850 MHz, 7900 - 8025 MHz
EST		7250-7300 MHz, 7975-8025 MHz, 8275-8500 MHz
F	7250 - 7375 MHz , 7890 - 7900 MHz, 7900 - 8025 MHz.	7375 - 7750 MHz, 8025 - 8500 MHz
HNG		7125 - 7425 MHz,
HRV	7250 – 7375 MHz, 7900 – 8025 MHz	
I	7250 - 7300 MHz, 7750 - 8500 MHz	7300 - 7750 MHz
LUX	7250 - 7300 MHz, 7975 - 8025 MHz	
LVA	7250 - 7331 MHz, 7850 -7900 MHz, 7975 - 8000 MHz, 8000 - 8024 MHz	7723 - 7751 MHz, 7800 - 7850 MHz, 7900 - 7925 MHz, 8024 - 8025 MHz, 8215 - 8271 MHz
NOR		7450 - 7750 MHz, 8025 - 8400 MHz
POL	7250 – 7300 MHz, 7975 – 8025 MHz	7075 – 7250 MHz, 7300 – 7975 MHz, 8025 – 8500 MHz
ROU		7125 – 7425 MHz, 7484 – 7568 / 7638 – 7725 MHz, 7725 – 8500 MHz
S	7125 – 7425 MHz	
SUI	7750 - 8500 MHz	
SVK	7750 - 8500 MHz	
SVN	7975 – 8025 MHz	7250 – 7300 MHz, 8025 – 8400 MHz
TUR	7900 – 8500 MHz	7425 – 7900 MHz

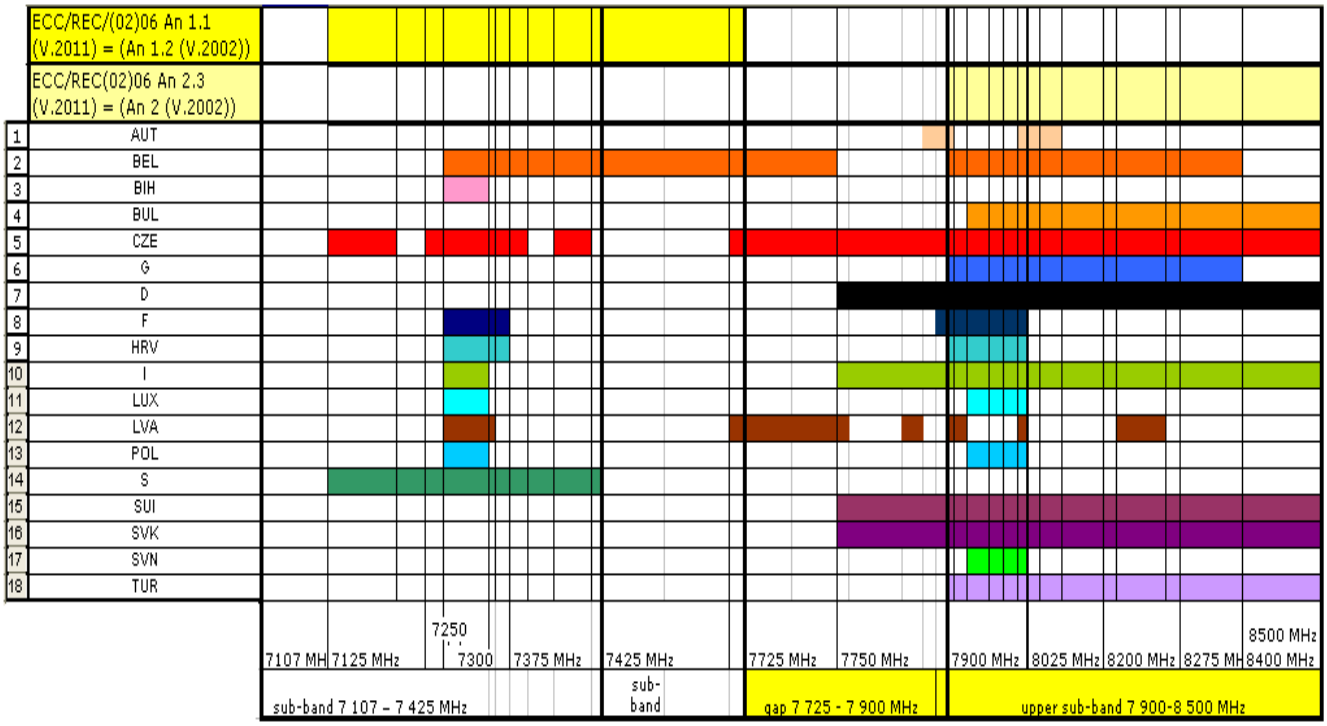

Figure 2: Graphic presentation of parts of the frequency range 7125-8500 MHz used for military within CEPT countries

2.3 Conclusion for frequency bands 7125-8 500 MHz

1. In the lower bands 7125–7725 MHz 63.2 % of administrations use channel arrangements in ECC/REC/(02)06 Annex 1 (version 2002) - ECC/REC/(02)06 Annex 1.1 (version 2011) or ITU-R F.385-9 Annex 1, which are compatible. Other usages are ECC/REC/(02)06 Annex 2.2 (version 2011) - ITU-R F.385-9 Annex 4, ITU-R F.385-9 basic, Annex 3, Annex 5. Some administrations have their own national channel arrangements.
2. In the upper bands 7725-8500 MHz 12 administrations of 38 use ECC/REC/(02)06 Annex 2 (version 2002) - ECC/REC/(02)06 Annex 2.3 (version 2011) (31.6 %). Other usages are ECC/REC/(02)06 Annex 1.2 (version 2011) - ITU-R F.386-8 Annex 6, ECC/REC/(02)06 Annex 1.3 (version 2011) - ITU-R F.386-8 Annex 2, ECC/REC/(02)06 Annex 2.2 (version 2011) - ITU-R F.385-9 Annex 4, ITU-R F.385-9 Annexes 3, 5 and ITU-R F.386-8 basic + Annexes 3, 5, 7 (some administrations have added some additional carrier spacing compatible with the ITU-R Recommendations). Some administrations have their own national channel arrangements.
3. Most commonly used channel arrangements other than in ECC/REC/(02)06 (version 2002) - ECC/REC/(02)06 (version 2011) Annexes 1.1, 2.1, 2.3 are:
   - 7 110 - 7 425 MHz: ITU-R F.385-9 An3L (3 administrations of 38) 7.9 %
   - 7 125 – 7 425 MHz: ITU-R F.385-9 basic L (7 administrations of 38) 18.4 %
   - 7 425 – 7 725 MHz: ITU-R F.385-9 basic H (8 administrations of 38) 21.1 %
   - 7 425-7 750 MHz: ITU-R F.385-9 An3H (3 administrations of 38) 7.9 %
   - 7 425-7 900 MHz: ITU-R F.385-9 Annex 4 - ECC/REC/(02)06 (version 2011) Annex 2.2. (4 administrations of 38) 10.5 %
   - 7 725-8 275 MHz: ITU-R F.386-8 Annex 6 - ECC/REC/(02)06 (version 2011) Annex 1.2. (11 administrations of 38) 28.9 %
   - 8 275 -8 500 MHz: ITU-R F.386-8 Annex 2 - ECC/REC/(02)06 (version 2011) Annex 1.3. (10 administrations of 38) 26.3 %.

4. In most countries military is present in at least part of the band 7125-8500 MHz. But approximately half of the countries have parts of the band allocated for defence systems. In approximately one fourth of the countries a large portion of the band is allocated for military usage. But in only 1 Administration of 38 the whole gap band is used by the military.

3 STUDY OF CHANNEL ARRANGEMENTS IN THE FREQUENCY BAND 7725-8500 MHz OR OVERLAPPING PART OF THIS RANGE

A number of administrations have implemented the current Annex 1 (7125-7725 MHz) of ECC/REC/(02)06. A more detailed analysis is done for the band 7 725-8 500 MHz. In addition in some countries the band 7 425-7725 MHz is also used in conjunction with a lower portion of the band 7 725-8 500 MHz.

3.1 Overview of channel arrangements used within CEPT countries

The usage of the band 7425-8500 MHz within CEPT countries is presented in Table 7.

Table 7: Channel arrangements in the band 7425 – 8500 MHz used within 38 CEPT countries

Adm.	Frequency bands	Description	Freq. bands	Description
AUT	7750 – 8017 MHz	National 1 (28 MHz, Simplex)	7900 - 8500 MHz	ECC/REC(02)06 An 2.3 (V.2010) = (An 2 (V.2002))
BEL	8200-8500 MHz	ITU-R F.386-8 An7 = ITU-R F.386-6 basic (11.662/2x16.662 MHz, DS 151.614 MHz)		
BIH	7725 – 8275 MHz	ECC/REC/(02)06 An 1.2 (V.2010) = (ITU-R F. 386-8 An 6) (29.65 MHz, DS 311.32 MHz)	8275 – 8500 MHz	ITU-R F.386-8 (Annex 2) (7/14/28 MHz , DS 119 MHz)
BLR	7900 - 8275 MHz	ITU-R F.386-8 An3, 28 MHz, DuS-266 MHz	8275-8400 MHz	ITU-R F.386-8 An3,-28 MHz, DuS – 266 MHz
BUL	7725 GHz - 7970 MHz	ECC/REC/(02)06 An 1.2 (V.2010) = (ITU-R F. 386-8 An 6) (29.65 MHz, DS 311.32 MHz)	7970 - 8500 MHz	Military
CVA	7425.00- 7750.00 MHz	ITU_R F.385-9-Annex 3H (28MHz, DS 168MHz, fo=7597 MHz)	7750 - 8500 MHz	
CYP	7900 - 8500 MHz	ECC/REC(02)06 An 2.3 (V.2010) = (An 2 (V.2002))	7900 - 8500 MHz	ECC/REC(02)06 An 2.3 (V.2010) = (An 2 (V.2002))
CZE	7718.5 – 8500 MHz	Military		
D	7750 - 8500 MHz	Military		
DNK	7750 - 7850 MHz	5.461B	7900 - 8500 MHz 7900 - 8025 MHz	ECC/REC(02)06 An 2.3 (V.2010) = (An 2 (V.2002)) , Nato Joint Civil/Military Frequency Agreement
E	7725 - 8275 MHz	ECC/REC/(02)06 An 1.2 (V.2010) = (ITU-R F. 386-8 An 6) (29.65 MHz, DS 311.32 MHz)	8275 - 8500 MHz	ECC/REC/(02)06 An 1.3 (V.2010) = (ITU-R F.386-8 An 2) (28 MHz , DS 119 MHz, 14 MHz, DS 126)
EST	7725 - 8275 MHz		8275-8500 MHz	ITU-R F.386-8 Annex 3 , 14 / 28 MHz
F	8025 - 8500 MHz	ITU-R 386-8An5 (28/14/7/(3.5 MHz ADD), DS 208 MHz)		
FIN	7732.875- 8222.115MHz	National 2C (29.65 MHz, DS 266.85)	7900 - 8500 MHz	planned ECC/REC(02)06 An 2.3 (V.2010) = (An 2 (V.2002))
G	7425 - 7900 MHz	ECC/REC(02)06 An 2.2 (V.2010) = (ITU-R F.385-9 An 4))) (7/14/28 MHz DS 245 MHz)	7900 – 8400 MHz 8460 - 8500 MHz	Military SAP/SAB and ENG/OB
HNG	7725 - 7900 MHz	National 5A, simplex, P-P for ENG	7900- 8200 MHz	National 5B1 (MOD of ECC/REC/(02)06 An 1.1.1 (V.2010) = (An 1.1 (2002)), f_o=8050 MHz)
			8200 - 8500 MHz	National 5B2 (MOD of ECC/REC/(02)06 An 1.1.2 (V.2010) = (An 1.2 (V.2002)), f_o=8350 MHz)
HOL				
HRV	7725 – 8275 MHz	ECC/REC/(02)06 An 1.2 (V.2010) = (ITU-R F. 386-8 An 6) (29.65 MHz, DS 311.32 MHz)	8275 – 8500 MHz	ECC/REC/(02)06 An 1.3 (V.2010) = (ITU-R F.386-8 An 2) (28 MHz , DS 119 MHz, 14 MHz, DS 126)
I	7425 - 7750 MHz	ITU_R F.385-9-Annex 3H (28MHz, DS 168MHz, fo=7597 MHz)	7750 - 8500 MHz	Military
IRL	7725 – 8275 MHz	ECC/REC/(02)06 An 1.2 (V.2010) = (ITU-R F. 386-8 An 6) = ITU-R F.386-6 An1 (29.65 MHz, dusp 311.32 MHz)	8275 – 8500 MHz	ECC/REC/(02)06 An 1.3 (V.2010) = (ITU-R F.386-8 An 2 = F.386-6 An 3) (28 M, DS 119 M, 14 M, DS 126 M) (3.5/7/14 MHz)
ISL	7725 - 7900 MHz	Not in use	7900 - 8500 MHz	ECC/REC(02)06 An 2.3 (V.2010) = (An 2 (V.2002))
LIE	7725 - 8500 MHz	UWB applications		
LTU	7750 - 7900 MHz	National 4 (7/14/28 MHz, Simplex)	7900 - 8500 MHz	ECC/REC(02)06 An 2.3 (V.2010) = (An 2 (V.2002))
LUX	7725 - 8275 MHz	ECC/REC/(02)06 An 1.2 (V.2010) = (ITU-R F. 386-8 An 6) (29.65 MHz, DS 311.32 MHz)	8275 - 8500 MHz	ECC/REC/(02)06 An 1.3 (V.2010) = (ITU-R F.386-8 An 2) (28 MHz , DS 119 MHz, 14 MHz, DS 126)
LVA	7900 - 7925 MHz	ECC/REC(02)06 An 2.3 (V.2010) = (An 2 (V.2002))	8024 - 8500 MHz	ECC/REC(02)06 An 2.3 (V.2010) = (An 2 (V.2002))
MLT	7725 MHz - 8275 MHz	ECC/REC(02)06 An 2.3 (V.2010) = (An 2 (V.2002))	8275 - 8500 MHz	ECC/REC(02)06 An 2.3 (V.2010) = (An 2 (V.2002))
NOR	7900 - 8500 MHz	ECC/REC(02)06 An 2.3 (V.2010) = (An 2 (V.2002))		
POL	7750 – 8125 MHz	ECC/REC/(02)06 An 1.3 (V.2010) = (ITU-R F.386-8 An 2) (28 M, DS 119 M, 14 M, DS 126 M) ITU-R SG09	8215 – 8500 MHz	ECC/REC/(02)06 An 1.3 (V.2010) = (ITU-R F.386-8 An 2) (28 M, DS 119 M, 14 M, DS 126 M)
POR	7730 - 7975 MHz 8040 - 8290 MHz	ECC/REC/(02)06 An 1.2 (V.2010) = (ITU-R F. 386-8 An 6) (29.65 MHz, DS 311.32 MHz)		
ROU	7725 - 8275 MHz	ECC/REC/(02)06 An 1.2 (V.2010) = (ITU-R F. 386-8 An 6) (29.65 MHz, DS 311.32 MHz), ECC/REC(02)06 An 2.3 (V.2010) = (An 2 (V.2002)) (Exceptional cases)	8275 - 8500 MHz	ECC/REC/(02)06 An 1.3 (V.2010) = (ITU-R F.386-8 An 2) (28 MHz , DS 119 MHz, 14 MHz, DS 126)
RUS	7900 – 8400 MHz	F.386-8 Annex 3 (28M, DS 266)		
S	7725 - 7900 MHz	No new FS-assignment in this segment between the "Annex1 and 2 bands". Issued licenses, where the duplex separation Rx/Tx is 364 MHz, expire 2015.	7900 - 8500 MHz	ECC/REC(02)06 An 2.3 (V.2010) = (An 2 (V.2002))
SRB	7725 – 8275 MHz	ECC/REC/(02)06 An 1.2 (V.2010) = (ITU-R F. 386-8 An 6) (29.65 MHz, DS 311.32 MHz)	8275 – 8500 MHz	ECC/REC/(02)06 An 1.3 (V.2010) = (ITU-R F.386-8 An 2) (28 MHz , DS 119 MHz)
SUI	7750 - 8500 MHz	Military		
SVK	7750 - 8500 MHz	Military		
SVN	7725 – 8275 MHz	ECC/REC/(02)06 An 1.2 (V.2010) = (ITU-R F. 386-8 An 6) (29.65 MHz, DS 311.32 MHz)	8275 – 8500 MHz	ECC/REC/(02)06 An 1.3 (V.2010) = (ITU-R F.386-8 An 2) (28 MHz , DS 119 MHz, 14 MHz, DS 126)
TUR	7425 - 7900 MHz	ECC/REC(02)06 An 2.2 (V.2010) = (ITU-R F.385-9 An 4)) 7/14/28 MHz	7900 - 8500 MHz	Military ECC/REC(02)06 An 2.3 (V.2010) = (An 2 (V.2002))

3.2 Descriptions of channel arrangements used within CEPT countries

Overview of channel arrangements used in the frequency bands 7725-8500 MHz

Table 8: Overview of channel arrangements in the bands 7725-8500 MHz used within 38 CEPT countries

Overview of channel arrangements used in the frequency bands 7725 – 8500 MHz

All Adm.	38

7 725-8 500 MHz	Freq. Range	Carrier spacing	DS	Detailed de	No. Of Ad	% of Adm.
ECC/REC(02)06 An 2.3 (V.2011) = (An 2 (V.2002))	7900-8500 MHz	28/14/7/3.5/1.75	310		12	31.6
ITU-R F.385-9 An3H	7 425-7 750 MHz	28	168		3	7.9
ECC/REC(02)06 An 2.2 (V.2011) = ITU-R F.385-9 An4	7 425-7 900 MHz	28/14/7	245		4	10.5
ITU-R F.385-9 An5	7 250-7 550 MHz	28/14/7/3.5	161		1	2.6
ITU-R F.386-8 An7 = ITU-R F.386-6 basic	8 200-8 500 MHz	16.662	151.614		1	2.6
ITU-R F.386-8 An3	7 900-8 400 MHz	28/14/07	266		4	10.5
ITU-R F.386-8 An5	8 025-8 500 MHz	28/14/7/(3.5) MHz	208		1	2.6
ECC/REC/(02)06 An 1.2 (V.2011) = ITU-R F.386-8 An6 = ITU-R F.386-6 An1	7 725-8 275 MHz	29.65	311.32		11	28.9
ECC/REC/(02)06 An 1.3 (V.2011) = ITU-R F.386-8 An2 = ITU-R F.386-6 An3	8 275 - 8 500 MHz	28/14	119/126		10	26.3
National 1.B	7750- 8017 MHz	28	N/A	ANNEX 1:	1	3.6
National 2.C	7732.875 - 8500 MHz	29.65	266.85		1	2.6
National 4	7750-7900 MHz	28/14/7	N/A		1	2.6
National 5A	7725-7900 MHz	28/1.75	N/A		1	2.6
National 5B1	7900 -8200 MHz	14/7/3.5/1.75	154		1	2.6
National 5B2	8200-8500 MHz	14/7/3.5/1.75	154		1	2.6

Most common usage:	ECC/REC/(02)06 An2 (V.2002)	ECC/REC(02)06 An 2.3 (V.2011)
	ITU-R F.386-8 An2	ECC/REC/(02)06 An 1.3 (V.2011)
	ITU-R F.386-8 An6	ECC/REC/(02)06 An 1.2 (V.2011)
	ITU-R F.385-9 An3H	
	ITU-R F.385-9 An4	ECC/REC(02)06 An 2.2 (V.2011)
	ITU-R F.385-9 An5	
	ITU-R F.386-8 An3	
	ITU-R F.386-8 An5	

Legend	
	Used by >=4 Adm.
	Used by 2-3 Adm.
	1 Adm, >1000 links

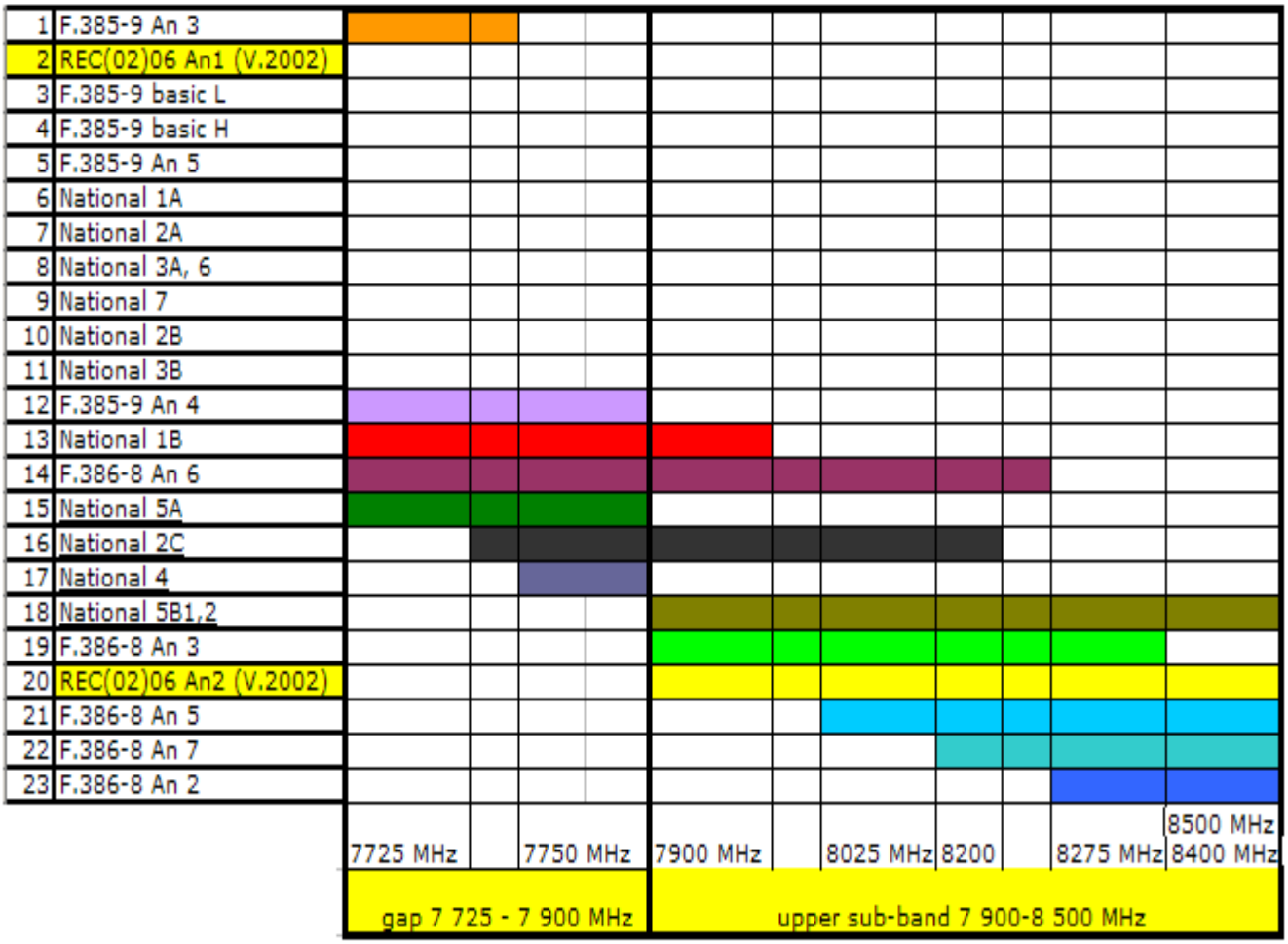

Figure 3: Channel arrangements in the band 7725-8500 MHz
(annexes refer to the ECC/REC/(02)06 version 2002 unless otherwise mentioned)

3.3 Conclusion for frequency band 7725-8500 MHz or bands overlapping this bands

In the band 7 725- 8 500 MHz or overlapping bands 12 administrations of 38 use ECC/REC/(02)06 Annex 2 (version 2002) - ECC/REC/(02)06 Annex 2.3 (version 2011) (31.6 %). Other usages are ECC/REC/(02)06 Annex 1.2 (version 2011) - ITU-R F.386-8 Annex 6, ECC/REC/(02)06 Annex 1.3 (version 2011) - ITU-R F.386-8 Annex 2, ECC/REC/(02)06 Annex 2.2 (version 2011) - ITU-R F.385-9 Annex 4, ITU-R F.385-9 Annexes 3, 5 and ITU-R F.386-8 basic + Annexes 3, 5, 7 (some administrations have added some additional carrier spacing compatible with the ITU-R Recommendations). Some administrations have national channel arrangements.

Most commonly used channel arrangements other than in ECC/REC/(02)06 (version 2002) are:

- 7 425-7 900 MHz: ITU-R F.385-9 Annex 4 - ECC/REC/(02)06 (version 2011) Annex 2.2.
  (4 administrations of 38) 10.5 %
- 7 725-8 275 MHz: ITU-R F.386-8 Annex 6 - ECC/REC/(02)06 (version 2011) Annex 1.2.
  (11 administrations of 38) 28.9 %
- 8 275 -8 500 MHz: ITU-R F.386-8 Annex 2 - ECC/REC/(02)06 (version 2011) Annex 1.3.
  (10 administrations of 38) 26.3 %.

Channel arrangements of some CEPT administrations with >1000 links in the ITU Master register + three most commonly used channel arrangements other than in ECC/REC/(02)06 (version 2002) are:

- 7 425-7 900 MHz: ITU-R F.385-9 Annex 4 - ECC/REC/(02)06 (version 2011) Annex 2.2. (10.5 %)
- 7 725-8 275 MHz: ITU-R F.386-8 Annex 6 - ECC/REC/(02)06 (version 2011) Annex 1.2. (28.9 %)
- 7 250-7 550 MHz: ITU-R F.385-9 Annex 5 (one administration with 18416 links)
- 7 900-8 400 MHz: ITU-R F.386-8 Annex 3 (3 administrations, 1 with 18416 links) (7.9 %)
- 8 025-8 500 MHz ITU-R F.386-8 Annex 5 + 3.5M carrier spacing (one administration with 3407 links)

8 275-8 500 MHz: ITU-R F.386-8 Annex 2 (= ITU-R F.386-6 An3) - ECC/REC/(02)06 (version 2011) Annex 1.3. (26.3 %)

Most administrations have parts of the band allocated to military or other services such as SAP/SAB Point-to-Point video link, SAP/SAB - ENG/OB, UWB applications, BMA or Space research.

4 CONCLUSIONS

A number of the administrations (from 38 responses) had implemented the current Annex 1 (7125-7725 MHz) of ECC/REC/(02)06(version 2002). In the gap (7725-7900 MHz) between Annex 1 and Annex 2 (7900-8500 MHz), a number administrations had implemented their channel arrangement in accordance with different annexes of Recommendation ITU-R F.385 and Recommendation ITU-R F.386. Table 5, Figure 1, Figure 3 and Table 8 are describing differences in channel arrangements

Figure 2 illustrates military usage of parts of the band. In two thirds of the countries military is present in at least part of the band 7125-8500 MHz. But approximately half of the countries have parts of the band allocated for defence systems. In approximately one fourth of the countries a large portion of the band is allocated for military usage (in the lower part or in the upper part of the band). But in only one Administration of 38 the whole gap band is used by the military.

Table 9 summarises the most implement channel arrangement in the CEPT. Figure 4 illustrates the most implemented channel arrangement in the CEPT in 8GHz frequency band (7 125-8 500 MHz) not covered by ECC/REC/(02)06 (Version 2002) Annex 1 and 2.

Table 9: Major usage of the 7125-8500 MHz within CEPT

The most implement channel arrangements in the CEPT are:

ECC/REC/(02)06 (Version 2011)	ECC/REC/(02)06 (Version 2002)	7125-7725 MHz	7900-8500 MHz
ECC/REC/(02)06 Annex 1.1 and Annex 2.1	ECC/REC/(02)06 Annex 1	63.2%	-
ECC/REC/(02)06 Annex 2.3	ECC/REC/(02)06 Annex 2	-	31.6%
ITU-R F.385-9 basic	ITU-R F.385-9 basic	21.1 %	-
ECC/REC/(02)06 Annex 2.2	ITU-R F.385-9 Annex 4	10.5%	
ECC/REC/(02)06 Annex 1.2	ITU-R F.386-8 Annex 6	-	28.9 %
ECC/REC/(02)06 Annex 1.3	ITU-R F.386-8 Annex 2	-	26.3 %

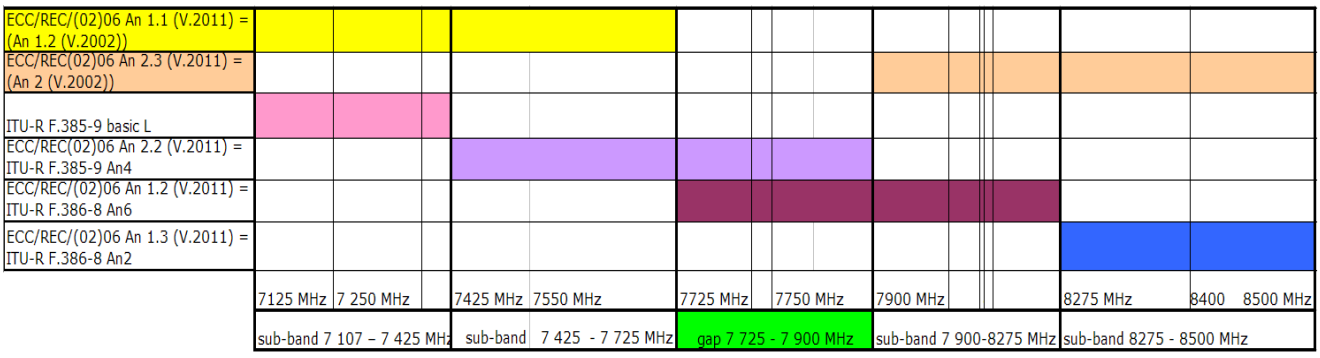

Figure 4: The most implemented channel arrangement in the CEPT in 8GHz frequency band (7 125-8 500 MHz) not covered by ECC/REC/(02)06 (version 2002) Annex 1 and 2

Differences in channel arrangements (e.g. frequency ranges, carrier spacing, duplex spacing) are significant, therefore the harmonization of the band 7125 – 8500 MHz is difficult.

ECC/REC/(02)06 (version 2002) did not cover the whole range. It had a gap band between 7725-7900 MHz.

	Frequency ranges (MHz)				
ECC/REC/(02)06	**7125 - 7425**	**7425 - 7725**	**7725 - 7900**	**7900 - 8500**	
Annex 1	1st range Arrangement ECC/REC/(02)06 V.2002 An 1.1	2nd range Arrangement ECC/REC/(02)06 V.2002 An 1.2	Blank	–	–
Annex 2	–	–		3rd range Arrangement ECC/REC/(02)06 V.2002 An 2	

Table 10: Channel arrangement for the ECC/REC/(02)06 – version 2002

The ECC/REC/(02)06 (version 2002) on the outcome of this report by introducing the most common approach taken by administrations for managing the whole (or the available portions) of the band 7125 – 8500 MHz. Two options are introduced depending on the national availability of the various sub-ranges, which give possibility to widely implement the recommendation ECC/REC/(02)06 (version 2011).

Note that the channel arrangement in 7725-8275 MHz, based on Annex 6 to ITU-R Recommendation F.386 (with 29.65 MHz channel arrangement providing 8 bidirectional channels), has been used for a long time by a number of CEPT administrations because no other arrangement is available for this frequency band. However, when planning to restructure the band or in case Administrations are newly designating this band to fixed wireless systems, Administrations are encouraged to consider a new channel arrangement, based on 28 MHz channel separation (providing 9 bidirectional channels), which is provided in ECC/REC/(02)06 (version 2011) as defined in Annex 1.2.1.

Table 11: Channel arrangement for the ECC/REC/(02)06 – version 2011

	Frequency ranges (MHz)				
ECC/REC/(02)06	**7125 - 7425**	**7425 - 7725**	**7725 - 7900**	**7900 - 8275**	**8275 - 8500**
Annex 1 (1st Option for the whole range)	1st range Arrangement ECC/REC/(02)06 V.2011 An.1.1 (ECC/REC/(02)06 V.2002 An 1.1)	2nd range Arrangement ECC/REC/(02)06 V.2011 An.1.1 (ECC/REC/(02)06 V.2002 An 1.2)	3rd range Arrangement ECC/REC/(02)06 V.2011 An.1.2.2 or An.1.2.1 (new 28 MHz channel arrangement)		4th range Arrangement ECC/REC/(02)06 V.2011 An.1.3 (from ITU-R F.386-8 Annex 2)
Annex 2 (2nd Option for the whole range)	1st range Arrangement ECC/REC/(02)06 V.2011 An.2.1 (same as ECC/REC/(02)06 V.2011 An.1.1 (ECC/REC/(02)06 V.2002 An 1.1)	2nd range Arrangement ECC/REC/(02)06 V.2011 An.2.2 (from ITU-R F.385-9 Annex 4)		3rd range Arrangement ECC/REC/(02)06 V.2011 An.2.3 (ECC/REC/(02)06 V.2002 An 2)	

ANNEX 1: NATIONAL PLAN 1 (AUT)

A. Frequency band 7125-7425 MHz: 7124.5-7264.5 MHz in pair with 7285.5-7425.5 MHz

A national channel plan is applied with maximum channel bandwidth of 7 MHz. Applicable radio interface description is in FSB-RR007:

- Service: Fixed
- Utilization: Point-to-Point links for private networks or networks of public importance, shared civil/military use.
- Technical specifications:
  - Licensing regime: Individual assignment.
  - Duplex = 161 MHz
  - n x 100 kHz, n = 1, 2, …….70
  - Output power = 40 dBm
  - Max. e.i.r.p. = 40 dBW

B. Frequency band 7750-8017 MHz: 7754-7852 MHz and 7933-8017 MHz

A national channel plan is applied with maximum channel bandwidth of 28 MHz. Applicable radio interface description is in FSB-RR067:

- Service: Fixed
- Utilization: Point-to-Point video links for BC, civil use.
- Technical specifications:
  - Licensing regime: Individual assignment.
  - Simplex
  - 28 MHz
  - Channels for H Polarisation: 7782 MHz, 7810 MHz, 7838 MHz, 7961 MHz, 7989 MHz
  - Channels for V Polarisation: 7768 MHz, 7796 MHz, 7824 MHz, 7947 MHz, 7975 MHz, 8003 MHz
  - Output power = 43 dBm
  - Max. e.i.r.p. = 47 dBW

ANNEX 2: NATIONAL PLAN 2 (FIN)

A. Frequency band 7107 – 7415 MHz

Channel arrangement in the frequency range 7107-7415 MHz is modified from the ITU-R Recommendation F.358 with a centre frequency of 7261 MHz. Only 28 MHz channel separation is in use, and the frequencies (MHz) of the individual channels are expressed by the following relationships:

lower half of the band: $f_n = f_0 - 168 + 28\,n$
upper half of the band: $f_n' = f_0 + 28\,n$

where:

n = 1, 2, 3, 4 and 5.

B. Frequency band 7415 - 7722 MHz

Channel arrangement in the frequency range 7414 - 7722 MHz is modified from the ITU-R recommendation F.358 with a centre frequency of 7568 MHz. 7, 14 and 28 MHz channel separations are in use. The frequencies (MHz) of the individual channels with 7 MHz separation are expressed by the following relationships:

lower half of the band: $f_n = f_0 - 157.5 + 7\,n$
upper half of the band: $f_n' = f_0 + 10.5 + 7\,n$

where:

n = 13, 14, ... , 20.

The frequencies (MHz) of the individual channels with 14 MHz separation are expressed by the following relationships:

lower half of the band: $f_n = f_0 - 161 + 14\,n$
upper half of the band: $f_n' = f_0 + 7 + 14\,n$

where:

n = 7, 8, ... , 10

The frequencies (MHz) of the individual channels with 28 MHz separation are expressed by the following relationships:

lower half of the band: $f_n = f_0 - 168 + 28\,n$
upper half of the band: $f_n' = f_0 + 28\,n$

where:

n = 1, 2, 3, 4 and 5.

C. Frequency band 7732.875 - 8222.115 MHz

Channel arrangement in the frequency range 7732.875 - 8222.115 MHz is a national channel arrangement with a centre frequency of 7977.495 MHz. Only 29.65 MHz channel separation is in use. The frequencies (MHz) of the individual channels are expressed by the following relationships:

lower half of the band: $f_n = f_0 - 259.445 + 29.65\,n$
upper half of the band: $f_n' = f_0 - 7.405 + 29.65\,n$

where:

n = 1, 2, ..., 8.

ANNEX 3: NATIONAL PLAN 3 (NOR)

A. Frequency band 7125-7425 MHz

Channel plan for 28 MHz channels:

lower half of the band: $fn = f_0 - 175 + 28\ n$

upper half of the band: $fn2' = f_0\ 14 + 7\ n$

where:

$f_0 = 7275$ MHz

n = 1, 2, 3, 4 or 5

Duplex = 161 MHz

B. Frequency band 7425-7725 MHz

Channel plan for 28 MHz

realized by the same f_0 and the following relationship:

lower half of the band is taken from ITU-R-F.385-9, Annex 1, point 4:

$fn = f_0 - 175 + 28\ n$

upper half of the band is not in accordance to any international recommendations:

$fn' = f_0 - 14 + 28\ n$

where:

n = 1, 2, 3, 4 and 5

f_0=7575 MHz

Duplex = 161 MHz

ANNEX 4: NATIONAL PLAN 4 (LTU)

Frequency band 7750-7900 MHz:

One way low capacity Point-to-Point links

$f_n = 7743 + 28 \cdot n$
$f_n = 7743 + 7 + 14 \cdot n$
$f_n = 7743 + 3.5 + 7 \cdot n$

ANNEX 5: NATIONAL PLAN 5 (HNG)

A. Frequency band 7725-7900 MHz

– Service: Fixed
– Utilization: Point-to-Point ENG for civil use.
– Technical specifications:
  - Licensing regime: Individual assignment.
  - Channel centre frequencies:
    TV channels: 7743 MHz, 7771 MHz, 7799 MHz, 7827 MHz, 7855 MHz, 7883 MHz
    Radio channels: Subdivision of 28 MHz TV channels by 16.
  - Minimum antenna gain: min. G = 30 dBi
  - Max. e.i.r.p. = 40 dBW

B1 Frequency band 7900 - 8200 MHz

– Service: Fixed
– Utilization: Point-to-Point for civil use.
– Technical specifications:
  - Licensing regime: Individual assignment.
  - Channelling and channel capacities:

1.75	MHz	min.	2 Mbit/s,
3.5	MHz	min.	4 Mbit/s,
7	MHz	min.	8 Mbit/s,
14	MHz	min.	16 Mbit/s.

  - Minimum antenna gain: min. G = 40 dBi
  - Max. e.i.r.p. as a function of the hop length
    if L < 20 km then max. e.i.r.p. = 40 – 20 log (20/L) (L in kms)
    if L ≥ 20 km then max. e.i.r.p. = 40 dBW

Channel centre frequencies according to formulas in ECC/REC/(02)06, Annex 1,

f0 = 8050 MHz

Then the centre frequencies (MHz) of individual channels are expressed by the following relationships:

a) for channel spacing of 14 MHz:
lower half of the band: $fn = f0 - 154 + 14 \cdot n$,
upper half of the band: $fn' = f0 + 14 \cdot n$, where $n = 1,2,\ldots, 10$;

b) for channel spacing of 7 MHz:
lower half of the band: $fn = f0 - 150.5 + 7 \cdot n$,
upper half of the band: $fn' = f0 + 3.5 + 7 \cdot n$, where $n = 1,2,\ldots, 20$;

c) for channel spacing of 3.5 MHz:
lower half of the band: $fn = f0 - 148.75 + 3.5 \cdot n$,
upper half of the band: $fn' = f0 + 5.25 + 3.5 \cdot n$, where $n = 1,2,\ldots, 40$;

d) for channel spacing of 1.75 MHz:
lower half of the band: $fn = f0 - 147.875 + 1.75 \cdot n$,
upper half of the band: $fn' = f0 + 6.125 + 1.75 \cdot n$, where $n = 1,2,\ldots, 80$.

The duplex separation between Tx/Rx is 154 MHz,

B2 Frequency band 8200 - 8500 MHz

- Service: Fixed
- Utilization: Point-to-Point for civil use.
- Technical specifications:
  - Licensing regime: Individual assignment.
  - Channelling and channel capacities:

1.75	MHz	min.	2 Mbit/s,
3.5	MHz	min.	4 Mbit/s,
7	MHz	min.	8 Mbit/s,
14	MHz	min.	16 Mbit/s.

  - Minimum antenna gain: min. G = 40 dBi
  - Max. e.i.r.p. as a function of the hop length
    if L < 20 km then max. e.i.r.p. = 40 – 20 log (20/L) (L in kms)
    if L ≥ 20 km then max. e.i.r.p. = 40 dBW

Channel centre frequencies according to formulas in ECC/REC/(02)06, Annex 1,

f0 = 8350 MHz

Then the centre frequencies (MHz) of individual channels are expressed by the following relationships:

a) for channel spacing of 14 MHz:
lower half of the band: $fn = f0 - 154 + 14 \cdot n$,
upper half of the band: $fn' = f0 + 14 \cdot n$, where $n = 1,2,\ldots, 10$;

b) for channel spacing of 7 MHz:
lower half of the band: $fn = f0 - 150.5 + 7 \cdot n$,
upper half of the band: $fn' = f0 + 3.5 + 7 \cdot n$, where $n = 1,2,\ldots, 20$;

c) for channel spacing of 3.5 MHz:
lower half of the band: $fn = f0 - 148.75 + 3.5 \cdot n$,
upper half of the band: $fn' = f0 + 5.25 + 3.5 \cdot n$, where $n = 1,2,\ldots, 40$;

d) for channel spacing of 1.75 MHz:
lower half of the band: $fn = f0 - 147.875 + 1.75 \cdot n$,
upper half of the band: $fn' = f0 + 6.125 + 1.75 \cdot n$, where $n = 1,2,\ldots, 80$.

The duplex separation between Tx/Rx is 154 MHz,

ANNEX 6: NATIONAL PLAN 6 (CZE)

Frequency band 7125-7425 MHz

The band 7125-7425 MHz may be used by fixed links point-point and following conditions apply:

a) the channel separation is 14 MHz, whereas centre frequencies fn and fn' [MHz] of particular operating channels are in relation to the reference frequency f_0 = 7275 MHz given by formulas

$fn = f_0 - 147 + 14n$ in the lower part of the band and
$fn' = f_0 + 14 + 14n$ in the upper part of the band,

where n = 1, 2, 3 up to 8.

The arrangement is derived from Recommendation ITU-R F.385-7 – Radio-frequency channel arrangements for radio-relay systems operating in the 7 GHz band.),

b) for radio channels Nos. 1 to 6 the Office issues individual authorisations valid till 31 December 2007. Radio channels Nos. 7 and 8 may be used without limitation.

ANNEX 7: LIST OF REFERENCES

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