ANNEX 5

Methods and criteria for assessing compatibility between DVB-T and services* other than broadcasting

1. Other services and sharing situations

Broadcasting does not have exclusive access to the frequency bands allocated to the broadcasting service. A number of sharing situations exist and these vary from one country to another, both in terms of the 'other service' involved and its status in Radio Regulatory terms.

The sharing situations include:

- radiodetermination in the UK in channel 36;
- radioastronomy in channel 38;
- various military (ground and airborne) services in Band V up to channel 69;
- services ancillary to broadcasting and programme making (SAB/SAP);
- any other service sharing with television in Bands III, IV and V up to channel 69.

When considering sharing, the status of services has to be taken into account. In this context, Radio Astronomy is a special case; although allocated on a secondary basis the Radio Regulations urge that other radio services take measures to protect Radio Astronomy observations.

[1]Methods and criteria for sharing situations, which involve only broadcasting services, are dealt with in Annex 1.

1.1 Lists of other services

Lists of other services in the Bands III, IV and V are given in Tables A5.1 and A5.2. These lists are provided for information only and may not be complete.

The letter Y (Yes) in the 'information available' column indicates that tables of parameters are given in Sections 2 and, or 3.

In Annex 5 Sections 2 and 3 the 'service identifiers'** shown in Tables A5.1 and A5.2 are followed by the numbers 7 or 8 to indicate whether the protection ratios given relate to 7 or 8 MHz DVB - T services.

* Reference to services in this Annex is used in the general sense and does not necessarily reflect the definition of Services in the Radio Regulations.

** The 'service identifier' used in this Annex has no correspondence with the class of stations as used in the Radio Regulations.

Table A5.1

List of other services in Band III

Service	Frequency (MHz)	Country	Service Identifier	Information available (Y/N)
SAP/SAB	173.7 - 230	UK	NR, NS, NT	Y, Y, Y
SAP/SAB	174 - 223	Germany	NR	Y
SAP/SAB	175.5 - 178.5 183.5 - 186.5	France	NX	N
SAP/SAB	181 - 216	Netherlands	NR, NS, NT	Y, Y, Y
SAP/SAB	174.3 - 178.5	Sweden	NY	N
SAP/SAB	174 - 230	Italy	NR	Y
SAP/SAB	174 - 195	Spain	NR	Y
SAP/SAB	174 - 230	Belgium	NR	Y
SAP/SAB	174 - 230	Switzerland	NR	Y
SAP/SAB	174 - 230	Portugal	NR	Y
SAP/SAB	174 - 230	Slovak Republic	NW	N
SAP/SAB	174 - 223	Luxembourg	NR	Y
Medical Telemetry	218 - 221	Netherlands	LA	Y
Medical Telemetry	174 - 230	Switzerland	LA	Y
Medical Telemetry	174 - 176	Belgium	LA	Y
Hearing Aids	174 - 223	Germany	LB	Y
Hearing Aids	173.35 - 175.02	UK	LB	Y
Short Range Devices	223.5 - 225	France	LC	Y
PMR Trunked Systems	174 - 217	UK	MT	Y
PMR Trunked System	223 - 230	Spain	MT	Y
Mobile System	174 - 223	France	MM	Y
Mobile System	174 - 230	Italy	MM	Y
Mobile System	174 - 181	Netherlands	MM	Y
Military Radio Relays	174 - 223	East Europe	FX	N
Defence Systems	225 - 230	Belgium	XE	N
Military Services	223 - 230	France	XF	N
Military Services	223 - 225	Luxembourg	XF	N

Table A5.2

List of other services in Bands IV and V

Mobile service:
470 to 790 MHz, secondary in some countries according to S5.296
790 to 862 MHz, primary in some countries according to S5.316

Service	Frequency (MHz)	Country	Service Identifier	Information available (Y/N)
SAP/SAB	468 - 862 with geographical restrictions	UK	NR, NS, NT	Y, Y, Y
SAP/SAB	470 - 608 614 - 790 798 - 830	Germany	NR, NS, NT	Y, Y, Y
SAP/SAB	470 - 830	France	NA	N
SAP/SAB	800 - 820	Denmark	NR, NS	Y, Y
SAP/SAB	800 - 814 471 - 476.45 854 - 862	Sweden	NR	Y
SAP/SAB	800 - 820	Norway	NR	Y
SAP/SAB	470 - 790	Netherlands	NR, NS, NT	Y, Y, Y
SAP/SAB	470 - 790 830 - 862	Spain	NR, NT	Y, Y
SAP/SAB	470 - 862	Switzerland	NR	Y
SAP/SAB	470 - 790	Austria	NR	Y
SAP/SAB	470 - 478 486 - 494 800.1 - 819.9 855.5 - 861.875	Finland	NR	Y
SAP/SAB	470 - 862	Italy	NR	Y
SAP/SAB	470 - 790	Belgium	NT, NS	Y, Y
SAP/SAB	470 - 862	Portugal	NR	Y
SAP/SAB	470 - 530 570 - 630	Slovak Republic	ND	N
Land Mobile/ENG	470 - 790	Switzerland	NE	N
Land Mobile/ENG	470 - 478	Norway	NF	N
Video Cameras	790 - 862	Switzerland	NG	N
Tactical Radio Relay	790 - 862	Germany	MF	Y
Tactical Radio Relay	830 - 862	France	MF	Y
Tactical Radio Relay	790 - 862 (10 MHz within the Band)	Denmark	MF	Y
Tactical Radio Relay	790 - 798 798 - 806 846 - 854 854 - 862	Netherlands	MD	Y
Tactical Radio Relay	838 - 854	Portugal	MC	N
Tactical Radio Relay	838 - 862	Greece	MF	Y
Tactical Radio Relay	840 - 862	Belgium	MA	N
Tactical Radio Relay	790 - 854	Luxembourg	MA	N

Mobile service:

470 to 790 MHz, secondary in some countries according to S5.296
790 to 862 MHz, primary in some countries according to S5.316

Service	Frequency (MHz)	Country	Service Identifier	Information available (Y/N)
Military Mobile	790 - 800.1 819.9 - 855.5 861.875 - 862	Finland	MG	N
Mobile Links	830 - 862	Spain	MH	Y

Fixed service:

470 to 790 MHz: no allocation in RR
790 to 862 MHz: primary

Service	Frequency (MHz)	Country	Service Identifier	Information available (Y/N)
Fixed links	790 - 862	Norway	FA	Y
Fixed links	790 - 862	Belgium	FB	N
Fixed (receive only)	852 - 860	Norway	FC	N
Fixed links (Studio to Transmitter)	790 - 862	Norway	GN	N
Fixed links (Studio to Transmitter)	838.75 - 852.25	Portugal	GP	Y
Fixed Links (Studio to Transmitter)	830 - 862	Spain	GS	Y
Fixed links military	822 - 862	Portugal	FM	Y
Point -to-Multipoint	845 - 849	Czech Republic	EC	N
Point-to-Multipoint	824 - 830	Poland	EP	N

Aeronautical radio navigation:

Primary under footnote S5.312 in 645 to 862 MHz in some countries

Service	Frequency (MHz)	Country	Service Identifier	Information available (Y/N)
Aeronautical Radio Navigation	800 - 808	Hungary	AA	Y
Aeronautical Radio Navigation	734 - 742 796 - 808	Czech Republic	AA	Y
Aeronautical Radio Navigation	645 - 862	Russia	AA	Y
Aeronautical Radio Navigation	645 - 862	Ukraine	AA	Y
Aeronautical Radio Navigation	645 - 862	Moldova	AA	Y
Aeronautical Radio Navigation (RSBN)	790 - 814	Poland	AA	Y
Aeronautical Radio Navigation (RSP)	830 - 880	Poland	AB	N
Aeronautical Radio Navigation	645 - 862	Romania	AA	Y
Aeronautical Radio Navigation	790 - 808	Slovak Republic	AA	Y
IFF	654 - 678	Hungary	BA	N
IFF	646 - 686	Poland	BB	N

Aeronautical radio navigation:
Primary under footnote S5.312 in 645 to 862 MHz in some countries

Service	Frequency (MHz)	Country	Service Identifier	Information available (Y/N)
Identification System (active response)	730 - 750	Poland	BC	N
Identification System (active response)	734 - 742	Slovak Republic	BD	N
Identification System (active response)	730 - 750	Hungary	BC	N

Radar:
Primary under footnotes S5.302 and S5.312

Service	Frequency (MHz)	Country	Service Identifier	Information available (Y/N)
Radar	590 - 598	UK	XG	Y
Radar	838 - 862	Czech Republic	XZ	N
Radar	838 - 862	Slovak Republic	XY	N
Radar	810 - 862	Romania	XX	N
Radar	825 - 835	Hungary	XY	N

Radioastronomy:
Secondary, to be protected by footnote S5.149

Service	Frequency (MHz)	Country	Service Identifier	Information available (Y/N)
Radioastronomy	608 - 614	UK	XA, XC	Y, Y
Radioastronomy	608 - 614	Germany	XC	Y
Radioastronomy	608 - 614	Poland	XA	Y
Radioastronomy	608 - 614	Netherlands	XA, XB, XC	Y, Y, Y
Radioastronomy	608 - 614	Belgium	XA	Y
Radioastronomy	608 - 614 (projected)	France	XA	Y

1.2 Protection needs of other services

In addition to the parameters:

- centre frequency;
- signal level to be protected;
- protection ratio as a function of frequency separation between digital television and the other service centre frequencies;
- percentage time for which protection is required;
- other service receiving antenna orientation and discrimination (if relevant),

it is also necessary to determine the area or the locations for which the protection of the other service is required.

The latter may conveniently be done by specifying a set of test point locations (as longitude, latitude and height above ground level, or sea level, as appropriate) which represent either:

- the boundary of the area within which protection is required; or,
- the actual locations at which a receiving installation is, or may be, installed.

In order to avoid some ambiguities, which have created difficulties in the past, special care needs to be taken when specifying information about receiving antenna characteristics for stations of other services:

- in the case of mobile reception, it is assumed that there is neither directivity nor polarisation discrimination and;
- in the case of fixed reception, it is necessary to specify the orientation of the antenna, as well as its co- and cross-polar discrimination as a function of relative bearing.

1.3 Technical elements of other services needed for compatibility calculations

The parameters, which are needed for compatibility calculations, are for transmitting and/or receiving terminals:

- modulation;
- frequency;
- bandwidth;
- maximum radiated power;
- azimuthal radiation pattern;
- polarisation;
- polarisation discrimination;
- site co-ordinates and height information(longitude, latitude and height above ground level, or sea level, as appropriate).;
- protection ratio as a function of frequency separation;
- minimum signal level to be protected for a given installation;
- time percentage to be protected;
- coverage area defined by calculation test points (up to 36).

1.4 Calculation of the protection of other services

A calculation should be made for each of the test points used in the definition of the other service. This calculation should take into account:

- the protection ratio for the frequency difference between the other service and the digital television service;

- the signal level from the interfering assignment;
- other service receiving antenna discrimination (polarisation and directivity), where relevant.

From the above information, the nuisance field strength (at each of the test-points) may be calculated for the other service.

The nuisance field strength, En, is defined as:

$$En = E_i + PR + A$$

where, expressed in dB:

E_i = field strength value of DVB-T assignment
PR = relevant protection ratio
A = relevant receiving antenna discrimination ($A \leq 0$)

During any necessary co-ordination discussions, the nuisance field strength (at each of the test points) may be compared with the minimum signal level to be protected for the other service. (See Annex 4 Section D)

The calculation of the interfering signal level is dependent upon the other service being considered. Rec. ITU-R P.370 (for individual transmitters) or a statistical method (for SFNs) may be used for terrestrial other services, taking into account the relevant percentage of time. However, free-space calculations will be needed for aeronautical (or satellite) services if a line-of-sight condition between other service receiver and interfering transmitter exists.

1.5 Calculation of the protection of digital television

A calculation should be made for each of the test points used in the definition of a digital television coverage area. This calculation should take into account:

- the protection ratio for the frequency difference between the other service and the digital television service;
- the signal level from the other service transmitter;
- the digital television service receiving antenna discrimination (in the case of fixed antenna reception).

From the above information, the nuisance field strength (at each of the boundary test-points) may be calculated for the digital television service.

The nuisance field strength, En, is defined as:

$$En = E_i + PR + C + A$$

where, expressed in dB:

E_i = field strength value of the other service assignment
PR = relevant protection ratio
C = propagation correction factor (to achieve a location probability of 95% instead of 50%). See also Annex 1 Section 6.2.
A = relevant receiving antenna discrimination ($A \leq 0$)

During any necessary co-ordination discussions, the nuisance field strength (at each of the boundary test points) may be compared with the minimum signal level of the digital television service. (See Annex 4 Section E)

2. Protection criteria for other services

Where values are given for the field strength to be protected and receiving antenna height these are default values for the service, which **may** be used in the co-ordination procedure if no values are shown in the ‘other service station record’. Values 999 or -99 in these boxes indicate that specific values **must** be given in the ‘other service station record’. Where the required values have not been included, their development is the subject of further work in accordance with Resolution 3.

Δf is the difference between the centre frequencies of the unwanted and wanted signals ($f_{unwanted}$ - f_{wanted}). In the case of Radioastronomy the wanted signal frequency is the centre of the allocated band.

For SAB/SAP equipment which could operate in the range 470-862 MHz, the default field strength to be protected is shown at 650MHz. The default field strength to be protected (E) may be derived at any other frequency (f) from:

$$E(f) = E(650) + 20\log_{10}(f/650),$$

where

f = frequency in MHz,
E(650) = field strength at a frequency of 650 MHz,
E(f) = field strength at frequency f.

The number 7 or 8 in the 'service identifier' code indicates 7 MHz or 8 MHz DVB-T as the unwanted service.

Wanted:	Aero Radio Nav RSBN		Default field strength to be protected (dBμV/m)			42	Default Receiving antenna height (m)			10
Service Identifier	AA8									
Unwanted	DVB-T/8 MHz									
Δf (MHz)	-12.0	-6.0	-4.2	-3.8	0.0	3.8	4.2	6.0	12.0	
PR (dB)	-87.2	-62.2	-50.2	0.0	0.0	0.0	-50.2	-62.2	-87.2	

Wanted:	Fixed Link		Default field strength to be protected (dBμV/m)			26	Default Receiving antenna height (m)			-99
Service Identifier	FA8									
Unwanted	DVB-T/8 MHz									
Δf (MHz)	-10.0	-5.0	-4.0	-3.0	0.0	3.0	4.0	5.0	10.0	
PR (dB)	-55.0	-4.0	6.0	8.5	9.0	8.5	6.0	-4.0	-55.0	

Wanted:	Military fixed		Default field strength to be protected (dBμV/m)			18	Default Receiving antenna height (m)			35
Service Identifier	FM8									
Unwanted	DVB-T/8 MHz									
Δf (MHz)	-10.0	-5.0	-4.0	0.0	4.0	5.0	10.0			
PR (dB)	-50.0	1.0	11.0	14.0	11.0	1.0	-50.0			

Wanted:	Studio Transmitter Link		Default field strength to be protected (dBμV/m)			66	Default Receiving antenna height (m)			21
Service Identifier	GP8									
Unwanted	DVB-T/8 MHz									
Δf (MHz)	-12.0	-10.0	-8.0	-6.0	-4.2	-3.8	-3.6	0.0	3.6	3.8
PR (dB)	-18.0	-17.0	-12.0	-9.0	-5.0	36.0	43.0	43.0	43.0	36.0
Δf (MHz)	4.2	6.0	8.0	10.0	12.0					
PR (dB)	-5.0	-9.0	-12.0	-17.0	-18.0					

Wanted:	Studio Transmitter Link		Default field strength to be protected (dBμV/m)			60.5	Default Receiving antenna height (m)			21
Service Identifier	GS8									
Unwanted	DVB-T/8 MHz									
Δf (MHz)	-12.0	-10.0	-8.0	-6.0	-4.2	-3.8	-3.6	0.0	3.6	3.8
PR (dB)	-18.0	-17.0	-12.0	-9.0	-5.0	36.0	43.0	43.0	43.0	36.0
Δf (MHz)	4.2	6.0	8.0	10.0	12.0					
PR (dB)	-5.0	-9.0	-12.0	-17.0	-18.0					

Wanted:	Medical telemetry		Default field strength to be protected (dBμV/m)			999	Default Receiving antenna height (m)			1.5
Service Identifier	LA7									
Unwanted	DVB-T/7 MHz									
Δf (MHz)	-4.0	-3.4	0.0	3.4	4.0					
PR (dB)	-60.0	-12.0	-12.0	-12.0	-60.0					

Wanted:	Medical Telemetry		Default field strength to be protected (dBµV/m)			999	Default Receiving antenna height (m)		1.5
Service Identifier	LA8								
Unwanted	DVB-T/8 MHz								
Δf (MHz)	-4.5	-3.9	0.0	3.9	4.5				
PR (dB)	-60.0	-13.0	-13.0	-13.0	60.0				

Wanted:	Hearing Aids		Default field strength to be protected (dBµV/m)				Default Receiving antenna height (m)		1.5
Service Identifier	LB7								
Unwanted	DVB-T/7 MHz								
Δf (MHz)	-4.0	-3.4	0.0	3.4	4.0				
PR (dB)									

Missing values need to be provided, according to the procedure in Resolution 3.

Wanted:	Hearing Aids		Default field strength to be protected (dBµV/m)				Default Receiving antenna height (m)		1.5
Service Identifier	LB8								
Unwanted	DVB-T/8 MHz								
Δf (MHz)	-4.5	-3.9	0.0	3.9	4.5				
PR (dB)									

Missing values need to be provided, according to the procedure in Resolution 3.

Wanted:	Short Range Devices		Default field strength to be protected (dBµV/m)				Default Receiving antenna height (m)		
Service Identifier	LC7								
Unwanted	DVB-T/7 MHz								
Δf (MHz)	-4.0	-3.4	0.0	3.4	4.0				
PR (dB)	-22.0	22.0	22.0	22.0	-22.0				

Missing values need to be provided, according to the procedure in Resolution 3.

Wanted:	Short Range Devices		Default field strength to be protected (dBµV/m)				Default Receiving antenna height (m)		
Service Identifier	LC8								
Unwanted	DVB-T/8 MHz								
Δf (MHz)	-4.5	-3.9	0.0	3.9	4.5				
PR (dB)	-22.0	21.0	21.0	21.0	-22.0				

Missing values need to be provided, according to the procedure in Resolution 3.

Wanted:	Tactical Radio Relay		Default field strength to be protected (dBµV/m)			27	Default Receiving antenna height (m)		10
Service Identifier	MD8								
Unwanted	DVB-T/8 MHz								
Δf (MHz)	-4.23	-3.77	0.0	3.77	4.23				
PR (dB)	-48.0	2.0	2.0	2.0	-48.0				

Wanted:	Tactical Radio Relay		Default field strength to be protected (dBµV/m)			27	Default Receiving antenna height (m)		17
Service Identifier	MF8								
Unwanted	DVB-T/8 MHz								
Δf (MHz)	-6.5	-5.0	-3.5	0.0	3.5	5.0	6.5		
PR (dB)	-40.7	-20.7	-0.7	-0.7	-0.7	-20.7	-40.7		

Wanted:	Mobile Link		Default field strength to be protected (dBµV/m)			25.5	Default Receiving antenna height (m)		5
Service Identifier	MH8								
Unwanted	DVB-T/8 MHz								
Δf (MHz)	-12.0	-10.0	-8.0	-6.0	-4.2	-3.8	-3.6	0.0	3.6	3.8
PR (dB)	-50.0	-50.0	-45.0	-40.0	-35.0	7.0	12.0	12.0	12.0	7.0
Δf (MHz)	4.2	6.0	8.0	10.0	12.0					
PR (dB)	-35.0	-40.0	-45.0	-50.0	-50.0					

Wanted:	Mobile System		Default field strength to be protected (dBµV/m)			999	Default Receiving antenna height (m)		1.5
Service Identifier	MM7								
Unwanted	DVB-T/7 MHz								
Δf (MHz)	-4.0	-3.4	0.0	3.4	4.0				
PR (dB)	-60.0	6.0	6.0	6.0	-60.0				

Wanted:	Mobile System		Default field strength to be protected (dBµV/m)			999	Default Receiving antenna height (m)		1.5
Service Identifier	MM8								
Unwanted	DVB-T/8 MHz								
Δf (MHz)	-4.5	-3.9	0.0	3.9	4.5				
PR (dB)	-60.0	5.0	5.0	5.0	-60.0				

Wanted:	PMR, Trunked Systems		Default field strength to be protected (dBµV/m)			24	Default Receiving antenna height (m)		1.5
Service Identifier	MT7								
Unwanted	DVB-T/7 MHz								
Δf (MHz)	-4.0	-3.4	0.0	3.4	4.0				
PR (dB)	-58.0	-18.0	-18.0	-18.0	-58.0				

Wanted:	PMR, Trunked Systems		Default field strength to be protected (dBµV/m)			24	Default Receiving antenna height (m)		1.5
Service Identifier	MT8								
Unwanted	DVB-T/8 MHz								
Δf (MHz)	-4.5	-3.9	0.0	3.9	4.5				
PR (dB)	-58.0	-19.0	-19.0	-19.0	-58.0				

Wanted:	Radiomicrophone (Companded)		Default field strength to be protected (dBµV/m)			68	Default Receiving antenna height (m)		1.5
Service Identifier	NR7		at Frequency (MHz)			650			
Unwanted	DVB-T/7 MHz								
Δf (MHz)	-10.5	-8.75	-7.0	-5.25	-3.68	-3.32	-3.15	0.0	3.15	3.32
PR (dB)	-49.0	-49.0	-44.0	-39.0	-34.0	8.0	13.0	13.0	13.0	8.0
Δf (MHz)	3.68	5.25	7.0	8.75	10.5					
PR (dB)	-34.0	-39.0	-44.0	-49.0	-49.0					

Wanted:	Radiomicrophone (Companded)		Default field strength to be protected (dBµV/m)			68	Default Receiving antenna height (m)		1.5
Service Identifier	NR8		at Frequency (MHz)			650			
Unwanted	DVB-T/8 MHz								
Δf (MHz)	-12.0	-10.0	-8.0	-6.0	-4.2	-3.8	-3.6	0.0	3.6	3.8
PR (dB)	-50.0	-50.0	-45.0	-40.0	-35.0	7.0	12.0	12.0	12.0	7.0
Δf (MHz)	4.2	6.0	8.0	10.0	12.0					
PR (dB)	-35.0	-40.0	-45.0	-50.0	-50.0					

Wanted:	OB link, (stereo non-companded)		Default field strength to be protected (dBµV/m)			86	Default Receiving antenna height (m)		10
Service Identifier	NS7		at Frequency (MHz)			650			
Unwanted	DVB-T/7 MHz								
Δf (MHz)	-10.5	-8.75	-7.0	-5.25	-3.68	-3.32	-3.15	0.0	3.15	3.32
PR (dB)	-17.0	-16.0	-11.0	-8.0	-4.0	37.0	44.0	44.0	44.0	37.0
Δf (MHz)	3.68	5.25	7.0	8.75	10.5					
PR (dB)	-4.0	-8.0	-11.0	-16.0	-17.0					

Wanted:	OB link (stereo, non-companded)		Default field strength to be protected (dBµV/m)			86	Default Receiving antenna height (m)		10
Service Identifier	NS8		at Frequency (MHz)			650			
Unwanted	DVB-T/8 MHz								
Δf (MHz)	-12.0	-10.0	-8.0	-6.0	-4.2	-3.8	-3.6	0.0	3.6	3.8
PR (dB)	-18.0	-17.0	-12.0	-9.0	-5.0	36.0	43.0	43.0	43.0	36.0
Δf (MHz)	4.2	6.0	8.0	10.0	12.0					
PR (dB)	-5.0	-9.0	-12.0	-17.0	-18.0					

Wanted:	Talkback (Non-Companded)		Default field strength to be protected (dBµV/m)			31	Default Receiving antenna height (m)			1.5
Service Identifier	NT7		at Frequency (MHz)			650				
Unwanted	DVB-T/7 MHz									
Δf (MHz)	-10.5	-8.75	-7.0	-5.25	-3.68	-3.32	-3.15	0.0	3.15	3.32
PR (dB)	-96.0	-91.0	-84.0	-79.0	-69.0	-19.0	-13.0	-13.0	-13.0	-19.0
Δf (MHz)	3.68	5.25	7.0	8.75	10.5					
PR (dB)	-69.0	-79.0	-84.0	-91.0	-96.0					

Wanted:	Talkback (Non-companded)		Default field strength to be protected (dBµV/m)			31	Default Receiving antenna height (m)			1.5
Service Identifier	NT8		at Frequency (MHz)			650				
Unwanted	DVB-T/8 MHz									
Δf (MHz)	-12.0	-10.0	-8.0	-6.0	-4.2	-3.8	-3.6	0.0	3.6	3.8
PR (dB)	-97.0	-92.0	-85.0	-80.0	-70.0	-20.0	-14.0	-14.0	-14.0	-20.0
Δf (MHz)	4.2	6.0	8.0	10.0	12.0					
PR (dB)	-70.0	-80.0	-85.0	-92.0	-97.0					

Wanted:	Radio Astronomy CH38 single telescope		Default field strength to be protected (dBµV/m)			-39	Default Receiving antenna height (m)			50
Service Identifier	XA8									
Unwanted	DVB-T/8 MHz									
Δf (MHz)	-9.0	-7.0	-6.8	0.0	6.8	7.0	9.0			
PR (dB)	-66.2	-45.8	-1.2	-1.2	-1.2	-45.8	-66.2			

Wanted:	Radio Astronomy CH38 interferometer		Default field strength to be protected (dBµV/m)			-33	Default Receiving antenna height (m)			10
Service Identifier	XB8									
Unwanted	DVB-T/8 MHz									
Δf (MHz)	-9.0	-7.0	-6.8	0.0	6.8	7.0	9.0			
PR (dB)	-66.2	-45.8	-1.2	-1.2	-1.2	-45.8	-66.2			

Wanted:	Radio Astronomy CH38 VLBI		Default field strength to be protected (dBµV/m)			3	Default Receiving antenna height (m)			50
Service Identifier	XC8									
Unwanted	DVB-T/8 MHz									
Δf (MHz)	-9.0	-7.0	-6.8	0.0	6.8	7.0	9.0			
PR (dB)	-66.2	-45.8	-1.2	-1.2	-1.2	-45.8	-66.2			

Wanted:	CH36 Airport Radars (UK)		Default field strength to be protected (dBµV/m)			-12	Default Receiving antenna height (m)			7
Service Identifier	XG8									
Unwanted	DVB-T/8 MHz									
Δf (MHz)	-5.0	-4.0	-3.0	0.0	3.0	4.0	5.0			
PR (dB)	-79.0	-40.0	0.0	0.0	0.0	-40.0	-79.0			

3. Protection criteria for DVB-T

Where values are given for the effective radiated power and antenna height these are default values for the service, which **may** be used in the co-ordination procedure if no values are shown in the 'other service station record'. Values of 999 or -99 in these boxes indicate that specific values **must** be given in the 'other service station record'. Where the required values have not been included, their development is the subject of further work in accordance with Resolution 3.

Δf is the difference between the centre frequencies of the unwanted and wanted signals ($f_{unwanted} - f_{wanted}$).

All the protection ratios given relate to the system mode used for the reference receiving conditions in Annex 1 Section 8, that is with a required C/N value of 20 dB.

The number 7 or 8 in the 'service identifier' code indicates 7 MHz or 8 MHz DVB-T as the wanted service.

Wanted	DVB-T/8 MHz								
Unwanted	Aero Radio Nav RSBN		Default e.r.p. (dBW)	27		Default Transmitting antenna height (m)		10 000	
Service Identifier	AA8								
Δf (MHz)									
PR (dB)									

Missing values need to be provided, according to the procedure in Resolution 3.

Wanted	DVB-T/8 MHz								
Unwanted	Fixed Link		Default e.r.p. (dBW)	18		Default Transmitting antenna height (m)		-99	
Service Identifier	FA8								
Δf (MHz)									
PR (dB)									

Missing values need to be provided, according to the procedure in Resolution 3.

Wanted	DVB-T/8 MHz								
Unwanted	Military Fixed Link		Default e.r.p. (dBW)	4		Default Transmitting antenna height (m)		35	
Service Identifier	FM8								
Δf (MHz)									
PR (dB)									

Missing values need to be provided, according to the procedure in Resolution 3.

Wanted	DVB-T/8 MHz								
Unwanted	Studio Transmitter Link		Default e.r.p. (dBW)	15		Default Transmitting antenna height (m)		21	
Service Identifier	GP8								
Δf (MHz)	-12	-4.5	-3.9	0.0	3.9	4.5	12.0		
PR (dB)	-32.0	-27.0	4.0	4.0	4.0	-27.0	-32.0		

Wanted	DVB-T/8 MHz								
Unwanted	Studio Transmitter Link		Default e.r.p. (dBW)	10		Default Transmitting antenna height (m)		21	
Service Identifier	GS8								
Δf (MHz)	-12.0	-4.5	-3.9	0.0	3.9	4.5	12.0		
PR (dB)	-32.0	-27.0	4.0	4.0	4.0	-27.0	-32.0		

Wanted	DVB-T/7 MHz								
Unwanted	Medical Telemetry		Default e.r.p. (dBW)	999		Default Transmitting antenna height (m)		1.5	
Service Identifier	LA7								
Δf (MHz)	-10.5	-4.0	-3.4	0.0	3.4	4.0	10.5		
PR (dB)	-32.0	-27.0	4.0	4.0	4.0	-27.0	-32.0		

Wanted	DVB-T/8 MHz								
Unwanted	Medical Telemetry		Default e.r.p. (dBW)		999		Default Transmitting antenna height (m)		1.5
Service Identifier	LA8								
Δf (MHz)	-12.0	-4.5	-3.9	0.0	3.9	4.5	12.0		
PR (dB)	-32.0	-27.0	4.0	4.0	4.0	-27.0	-32.0		

Wanted	DVB-T/7 MHz								
Unwanted	Hearing Aids		Default e.r.p. (dBW)		-20		Default Transmitting antenna height (m)		1.5
Service Identifier	LB7								
Δf (MHz)	-10.5	-4.0	-3.4	0.0	3.4	4.0	10.5		
PR (dB)	-32.0	-27.0	4.0	4.0	4.0	-27.0	-32.0		

Wanted	DVB-T/8 MHz								
Unwanted	Hearing Aids		Default e.r.p. (dBW)		-20		Default Transmitting antenna height (m)		1.5
Service Identifier	LB8								
Δf (MHz)	-12.0	-4.5	-3.9	0.0	3.9	4.5	12.0		
PR (dB)	-32.0	-27.0	4.0	4.0	4.0	-27.0	-32.0		

Wanted	DVB-T/7 MHz								
Unwanted	Short Range Devices		Default e.r.p. (dBW)				Default Transmitting antenna height (m)		
Service Identifier	LC7								
Δf (MHz)	-10.5	-4.0	-3.4	0.0	3.4	4.0	10.5		
PR (dB)	-32.0	-27.0	4.0	4.0	4.0	-27.0	-32.0		

Missing values need to be provided, according to the procedure in Resolution 3.

Wanted	DVB-T/8 MHz								
Unwanted	Short Range Devices		Default e.r.p. (dBW)				Default Transmitting antenna height (m)		
Service Identifier	LC8								
Δf (MHz)	-12.0	-4.5	-3.9	0.0	3.9	4.5	12.0		
PR (dB)	-32.0	-27.0	4.0	4.0	4.0	-27.0	-32.0		

Missing values need to be provided, according to the procedure in Resolution 3.

Wanted	DVB-T/8 MHz								
Unwanted	Tactical Radio Relay		Default e.r.p. (dBW)		20		Default Transmitting antenna height (m)		10
Service Identifier	MD8								
Δf (MHz)									
PR (dB)									

Missing values need to be provided, according to the procedure in Resolution 3.

Wanted	DVB-T/8 MHz								
Unwanted	Tactical Radio Relay		Default e.r.p. (dBW)		16		Default Transmitting antenna height (m)		17
Service Identifier	MF8								
Δf (MHz)									
PR (dB)									

Missing values need to be provided, according to the procedure in Resolution 3.

Wanted	DVB-T/8 MHz								
Unwanted	Mobile Link		Default e.r.p. (dBW)		3		Default Transmitting antenna height (m)		5
Service Identifier	MH8								
Δf (MHz)	-12.0	-4.5	-3.9	0.0	3.9	4.5	12.0		
PR (dB)	-32.0	-27.0	4.0	4.0	4.0	-27.0	-32.0		

Wanted	DVB-T/7 MHz								
Unwanted	Mobile System		Default e.r.p. (dBW)		999		Default Transmitting antenna height (m)		1.5
Service Identifier	MM7								
Δf (MHz)	-10.5	-4.0	-3.4	0.0	3.4	4.0	10.5		
PR (dB)	-32.0	-27.0	4.0	4.0	4.0	-27.0	-32.0		

Wanted	DVB-T/8 MHz								
Unwanted	Mobile System		Default e.r.p. (dBW)		999		Default Transmitting antenna height (m)		1.5
Service Identifier	MM8								
Δf (MHz)	-12.0	-4.5	-3.9	0.0	3.9	4.5	12.0		
PR (dB)	-32.0	-27.0	4.0	4.0	4.0	-27.0	-32.0		

Wanted	DVB-T/7 MHz								
Unwanted	PMR, Trunked Systems		Default e.r.p. (dBW)		999		Default Transmitting antenna height (m)		1.5
Service Identifier	MT7								
Δf (MHz)	-10.5	-4.0	-3.4	0.0	3.4	4.0	10.5		
PR (dB)	-32.0	-27.0	4.0	4.0	4.0	-27.0	-32.0		

Wanted	DVB-T/8 MHz								
Unwanted	PMR, Trunked Systems		Default e.r.p. (dBW)		999		Default Transmitting antenna height (m)		1.5
Service Identifier	MT8								
Δf (MHz)	-12.0	-4.5	-3.9	0.0	3.9	4.5	12.0		
PR (dB)	-32.0	-27.0	4.0	4.0	4.0	-27.0	-32.0		

Wanted	DVB-T/7 MHz								
Unwanted	Radiomic Companded		Default e.r.p. (dBW)		-13		Default Transmitting antenna height (m)		1.5
Service Identifier	NR7								
Δf (MHz)	-10.5	-3.94	-3.40	0.0	3.40	3.94	10.5		
PR (dB)	-32.0	-27.0	4.0	4.0	4.0	-27.0	-32.0		

Wanted	DVB-T/8 MHz								
Unwanted	Radiomic (Companded)		Default e.r.p. (dBW)		-13		Default Transmitting antenna height (m)		1.5
Service Identifier	NR8								
Δf (MHz)	-12.0	-4.5	-3.9	0.0	3.9	4.5	12.0		
PR (dB)	-32.0	-27.0	4.0	4.0	4.0	-27.0	-32.0		

Wanted	DVB-T/7 MHz								
Unwanted	OB link (stereo, non-companded)		Default e.r.p. (dBW)		14		Default Transmitting antenna height (m)		10
Service Identifier	NS7								
Δf (MHz)	-10.5	-3.94	-3.40	0.0	3.40	3.94	10.5		
PR (dB)	-32.0	-27.0	4.0	4.0	4.0	-27.0	-32.0		

Wanted	DVB-T/8 MHz								
Unwanted	OB link (stereo, non-companded)		Default e.r.p. (dBW)		14		Default Transmitting antenna height (m)		10
Service Identifier	NS8								
Δf (MHz)	-12.0	-4.5	-3.9	0.0	3.9	4.5	12.0		
PR (dB)	-32.0	-27.0	4.0	4.0	4.0	-27.0	-32.0		

Wanted	DVB-T/7 MHz								
Unwanted	Talkback (Non-companded)		Default e.r.p. (dBW)		0		Default Transmitting antenna height (m)		5
Service Identifier	NT7								
Δf (MHz)	-10.5	-3.94	-3.40	0.0	3.40	3.94	10.5		
PR (dB)	-32.0	-27.0	4.0	4.0	4.0	-27.0	-32.0		

Wanted	DVB-T/8 MHz								
Unwanted	Talkback (Non-companded)		Default e.r.p. (dBW)		0		Default Transmitting antenna height (m)		5
Service Identifier	NT8								
Δf (MHz)	-12.0	-4.5	-3.9	0.0	3.9	4.5	12.0		
PR (dB)	-32.0	-27.0	4.0	4.0	4.0	-27.0	-32.0		

Wanted	DVB-T/8 MHz								
Unwanted	CH36 Airport Radar (UK)		Default e.r.p. (dBW)		999		Default Transmitting antenna height (m)		7
Service Identifier	XG8								
Δf (MHz)									
PR (dB)									

Missing values need to be provided, according to the procedure in Resolution 3.