UK Interface Requirement 2022

Broadcast transmitters operating in frequency bands administered by Ofcom

Draft under revision

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Contents

Section 1

References

1.1 EN 300 401 – Radio Broadcasting Systems; Digital Audio Broadcasting (DAB) to mobile, portable and fixed receivers.

1.2 EN 300 421 – Digital Video Broadcasting (DVB); Framing structure, channel coding and modulation for 11/12 GHz satellite services.

1.3 EN 300 744 - Digital Video Broadcasting (DVB); Framing structure, channel coding and modulation for digital terrestrial television.

1.4 EN 300 748 – Digital Video Broadcasting (DVB); Multipoint Video Distribution Systems (MVDS) at 10 GHz and above

1.5 EN 300 339 – Electromagnetic compatibility and Radio spectrum Matters; General electromagnetic compatibility for radio communicaitons equipment.

1.6 EN 301 489-11 - Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 11: Specific conditions for terrestrial sound broadcasting service transmitters.

1.7 EN 302 017-1 – Electromagnetic compatibility and Radio spectrum Matters (ERM); Transmitting equipment for the amplitude-modulated (AM) radio broadcast service; Part 1: Technical characteristics and test methods.

1.8 EN 302 017-2 – Electromagnetic compatibility and Radio spectrum Matters (ERM); Transmitting equipment for the amplitude-modulated (AM) radio broadcast service; Part 2: Harmonized EN under article 3.2 of the R&TTE Directive.

1.9 EN 302 018-1 - Electromagnetic compatibility and Radio spectrum Matters (ERM); Transmitting equipment for the frequency-modulated (FM) radio broadcast service; Part 1: Technical characteristics and test methods.

1.10 EN 302 018-2 - Electromagnetic compatibility and Radio spectrum Matters (ERM); Transmitting equipment for the frequency-modulated (FM) radio broadcast service; Part 2: Harmonized EN under article 3.2 of the R&TTE Directive.

1.11 EN 302 077-1 - Electromagnetic compatibility and Radio spectrum Matters (ERM);Transmitting equipment for the Terrestrial - Digital Audio Broadcasting (T-DAB) service;Part 1: Technical characteristics and test methods

1.12 EN 302 077-2 - Electromagnetic compatibility and Radio spectrum Matters (ERM);Transmitting equipment for the Terrestrial - Digital Audio Broadcasting (T-DAB) service;Part 2: Harmonized EN under article 3.2 of the R&TTE Directive

1.13 EN 301 489-14 - Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and

services; Part 14: Specific conditions for analogue and digital terrestrial TV broadcasting service transmitters

1.14 EN 302 296 - Electromagnetic compatibility and Radio spectrum Matters (ERM);Transmitting equipment for the digital television broadcast service, Terrestrial (DVB-T);Harmonized EN under article 3.2 of the R&TTE Directive

1.15 Frequency Clearance for Sound Broadcast Transmitting Stations Information Sheet (In the process of Revision).

1.16 United Kingdom Table of Radio Frequency Allocations (9kHz – 105 GHz) issued by the National Frequency Planning Group on behalf of the Cabinet Official Committee on UK Spectrum Strategy.

Section 2

Foreword

2.1 The Radio Equipment and Telecommunications Terminal Equipment Directive 99/5/EC (R&TTE Directive) was implemented in the United Kingdom (UK) on the 8 April 2000 by The Radio Equipment and Telecommunications Terminal Equipment Regulations 2000, Statutory Instrument 2000 No. 730. In accordance with Articles 4.1 and 7.2 of Directive 1999/5/EC, this UK Interface Requirement contains the requirements for the licensing and use of Broadcasting in the specified frequency bands.

2.2 Nothing in this UK Radio Interface Requirement shall preclude the need for equipment to comply with Directive 1999/5/EC.

2.3 It is required by the Wireless Telegraphy Act 2006 that no radio equipment is installed or used in the UK except under the authority of a licence granted by or otherwise exempted by regulations made by Ofcom. It is a condition of such a licence or exemption regulations as appropriate that, in order to be installed or used in the UK, the equipment must meet the minimum requirements specified in this UK Interface Requirement for the stated equipment types and for the stated frequency bands. Nothing in this UK Interface Requirement shall preclude equipment from being placed on the market in the UK that complies with the 'essential requirements' specified in Directive 1999/5/EC.

2.4 The requirements given in the main body of this UK Radio Interface Requirement will apply to the licensing of broadcasting transmitters.

2.5 This UK Radio Interface Requirement will be revised as necessary, for example to follow:

i) current technology developments for reasons related to the effective and appropriate use of the spectrum in particular maximising spectrum utilisation;

and

ii) changes to the available spectrum allocated for Broadcasting.

2.6 All UK Radio Interface Requirements notified under Directive 1998/34/EC will be published and will be made available free of charge from the Ofcom web-site at http://stakeholders.ofcom.org.uk/spectrum/technical/interface-requirements/

2.7 Further information on this UK Radio Interface Requirement can be obtained from the technical enquiry contact given at the back of this document.

Section 3

Minimum requirements for operation within the UK

3.1 The minimum requirements in this document are made for reasons related to the effective and appropriate use of the radio spectrum, in particular maximising spectrum utilisation.

3.2 This UK Radio Interface Requirement gives a high level description of how the spectrum in the UK is used for Broadcasting. It does not prescribe technical interpretation of the ‘essential requirements’ of Directive 1999/5/EC.

3.3 This UK Radio Interface Requirement therefore stipulates the necessary equipment parameters for the licensing of broadcasting transmitters in the UK. Tables 3.1 to 3.16 contain the relevant equipment parameters. These taken together with the ‘essential requirements’ detailed in Article 3.2 of Directive 1999/5/EC constitute the minimum requirements for Broadcasting within the UK. Nothing in this UK Interface Requirement shall preclude equipment from being placed on the market in the UK that complies with the ‘essential requirements’ specified in Directive 1999/5/EC.

3.4 The technical parameters specified in the UK Radio Interface Requirement are applied to achieve the desired level of compatibility within the broadcasting service and with other Radiocommunication services, whilst promoting enterprise, innovation and competition.

3.5 This UK Radio Interface requirement provides the necessary technical information which facilitates access to the Broadcasting spectrum by making clear the assumptions that are made in planning the use of the Broadcasting spectrum in the UK. It is not the intention of this UK Radio Interface Requirement to duplicate or impose any additional ‘essential requirements’ of the Directive 1999/5/EC on products. Any specified parameters within this document are for the purpose of identifying product options and not as a national de facto product requirement.

Table 3.1: Minimum requirements for the use of: - LF Audio Broadcasting operating in the 148.5 - 255 kHz band		
Mandatory (1-9)		
1	**Frequency / Bands**	148.5 to 255 kHz
2	**Radio service**	Broadcasting Service (Sound)
3	**Application**	LF Audio Broadcast
4	**Channelling / modulation**	9 kHz maximum channel bandwidth
5	**Maximum transmit power limit**	See Note 1
6	**Channel occupation rules**	-
7	**Duplex type / separation**	-
8	**Licensing Regime**	Yes
9	**Additional essential requirements**	-
Informative (10-13)		
10	Frequency planning assumptions	-
11	Reference	See Section 1
12	Remarks	-
13	Notification Number	2013/124?/UK

Table 3.2: Minimum requirements for the use of: - MF Audio Broadcasting operating in the 526.5 - 1606.5 kHz band		
Mandatory (1-9)		
1	**Frequency / Bands**	526.5 to 1606.5 kHz
2	**Radio service**	Broadcasting Service (Sound)
3	**Application**	MF Audio Broadcast
4	**Channelling / modulation**	9kHz maximum channel bandwidth
5	**Maximum transmit power limit**	See Note 1
6	**Channel occupation rules**	-
7	**Duplex type / separation**	-
8	**Licensing Regime**	Yes
9	**Additional essential requirements**	-
Informative (10-13)		
10	Frequency planning assumptions	-
11	Reference	See Section 1
12	Remarks	-
13	Notification Number	2013/124?/UK

Note 1: The effective radiated power is dependent on the co-ordination process, which addresses the effect of potential interference with other broadcast assignments in the band and with adjacent band services in accordance with ITU International Broadcasting Treaty Geneva 1975.

Table 3.3: Minimum requirements for the use of: - HF Audio Broadcasting operating in the 3950 - 4000 kHz band		
Mandatory (1-9)		
1	**Frequency / Bands**	3950 to 4000 kHz
2	**Radio service**	Broadcasting Service (Sound)
3	**Application**	HF Audio Broadcast
4	**Channelling / modulation**	10 kHz maximum channel bandwidth
5	**Maximum transmit power limit**	See Note 1
6	**Channel occupation rules**	-
7	**Duplex type / separation**	-
8	**Licensing Regime**	Yes
9	**Additional essential requirements**	-
Informative (10-13)		
10	Frequency planning assumptions	-
11	Reference	See Section 1
12	Remarks	-
13	Notification Number	2013/124?/UK

Table 3.4: Minimum requirements for the use of: - HF Audio Broadcasting operating in the 5900 – 6200 kHz band		
Mandatory (1-9)		
1	**Frequency / Bands**	5900 to 6200 kHz
2	**Radio service**	Broadcasting Service (Sound)
3	**Application**	HF Audio Broadcast
4	**Channelling / modulation**	10 kHz maximum channel bandwidth
5	**Maximum transmit power limit**	See Note 1 and Note 2
6	**Channel occupation rules**	-
7	**Duplex type / separation**	-
8	**Licensing Regime**	Yes
9	**Additional essential requirements**	-
Informative (10-13)		
10	Frequency planning assumptions	-
11	Reference	See Section 1
12	Remarks	-
13	Notification Number	2013/124?/UK

Note 1: The effective radiated power is dependent on the co-ordination process, which addresses the effect of potential interference with other broadcast assignments in the band and with adjacent band services.
Note 2: ITU Radio Regulations Appendix 12 procedures apply.

Table 3.5: Minimum requirements for the use of: - HF Audio Broadcasting operating in the 7200 – 7450 kHz band		
Mandatory (1-9)		
1	**Frequency / Bands**	7200 to 7450 kHz
2	**Radio service**	Broadcasting Service (Sound)
3	**Application**	HF Audio Broadcast
4	**Channelling / modulation**	10 kHz maximum channel bandwidth
5	**Maximum transmit power limit**	See Note 1
6	**Channel occupation rules**	-
7	**Duplex type / separation**	-
8	**Licensing Regime**	Yes
9	**Additional essential requirements**	-
Informative (10-13)		
10	Frequency planning assumptions	-
11	Reference	See Section 1
12	Remarks	-
13	Notification Number	2013/124?/UK

Table 3.6: Minimum requirements for the use of: - HF Audio Broadcasting operating in the 9400 – 9900 kHz band		
Mandatory (1-9)		
1	**Frequency / Bands**	9400 to 9900 kHz
2	**Radio service**	Broadcasting Service (Sound)
3	**Application**	HF Audio Broadcast
4	**Channelling / modulation**	10 kHz maximum channel bandwidth
5	**Maximum transmit power limit**	See Note 1
6	**Channel occupation rules**	-
7	**Duplex type / separation**	-
8	**Licensing Regime**	Yes
9	**Additional essential requirements**	-
Informative (10-13)		
10	Frequency planning assumptions	-
11	Reference	See Section 1
12	Remarks	-
13	Notification Number	2013/124?/UK

Note 1: The effective radiated power is dependent on the co-ordination process, which addresses the effect of potential interference with other broadcast assignments in the band and with adjacent band services. ITU Radio Regulations Appendix 12 procedures apply.

Table 3.7: Minimum requirements for the use of: - HF Audio Broadcasting operating in the 11600 - 12100 kHz band		
Mandatory (1-9)		
1	**Frequency / Bands**	11600 to 12100 kHz
2	**Radio service**	Broadcasting Service (Sound)
3	**Application**	HF Audio Broadcast
4	**Channelling / modulation**	10 kHz maximum channel bandwidth
5	**Maximum transmit power limit**	See Note 1
6	**Channel occupation rules**	-
7	**Duplex type / separation**	-
8	**Licensing Regime**	Yes
9	**Additional essential requirements**	-
Informative (10-13)		
10	Frequency planning assumptions	-
11	Reference	See Section 1
12	Remarks	-
13	Notification Number	2013/12?/UK

Table 3.8: Minimum requirements for the use of: - HF Audio Broadcasting operating in the 13570 - 13870 kHz band		
Mandatory (1-9)		
1	**Frequency / Bands**	13570 to 13870 kHz
2	**Radio service**	Broadcasting Service (Sound)
3	**Application**	HF Audio Broadcast
4	**Channelling / modulation**	10 kHz maximum channel bandwidth
5	**Maximum transmit power limit**	See Note 1
6	**Channel occupation rules**	-
7	**Duplex type / separation**	-
8	**Licensing Regime**	Yes
9	**Additional essential requirements**	-
Informative (10-13)		
10	Frequency planning assumptions	-
11	Reference	See Section 1
12	Remarks	-
13	Notification Number	2013/124?/UK

Note 1: The effective radiated power is dependent on the co-ordination process, which addresses the effect of potential interference with other broadcast assignments in the band and with adjacent band services. ITU Radio Regulations Appendix 12 procedures apply.

Table 3.9: Minimum requirements for the use of: - HF Audio Broadcasting operating in the 15100 - 15800 kHz band		
Mandatory (1-9)		
1	**Frequency / Bands**	15100 to 15800 kHz
2	**Radio service**	Broadcasting Service (Sound)
3	**Application**	HF Audio Broadcast
4	**Channelling / modulation**	10 kHz maximum channel bandwidth
5	**Maximum transmit power limit**	See Note 1
6	**Channel occupation rules**	-
7	**Duplex type / separation**	-
8	**Licensing Regime**	Yes
9	**Additional essential requirements**	-
Informative (10-13)		
10	Frequency planning assumptions	-
11	Reference	See Section 1
12	Remarks	-
13	Notification Number	2013/124?/UK

Table 3.10: Minimum requirements for the use of: - HF Audio Broadcasting operating in the 17480 - 17900 kHz band		
Mandatory (1-9)		
1	**Frequency / Bands**	17480 to 17900 kHz
2	**Radio service**	Broadcasting Service (Sound)
3	**Application**	HF Audio Broadcast
4	**Channelling / modulation**	10 kHz maximum channel bandwidth
5	**Maximum transmit power limit**	See Note 1
6	**Channel occupation rules**	-
7	**Duplex type / separation**	-
8	**Licensing Regime**	Yes
9	**Additional essential requirements**	-
Informative (10-13)		
10	Frequency planning assumptions	-
11	Reference	See Section 1
12	Remarks	-
13	Notification Number	2013/124?/UK

Note 1: The effective radiated power is dependent on the co-ordination process, which addresses the effect of potential interference with other broadcast assignments in the band and with adjacent band services. ITU Radio Regulations Appendix 12 procedures apply.

Table 3.11: Minimum requirements for the use of: - HF Audio Broadcasting operating in the 18900 - 19020 kHz band		
Mandatory (1-9)		
1	**Frequency / Bands**	18900 to 19020 kHz
2	**Radio service**	Broadcasting Service (Sound)
3	**Application**	HF Audio Broadcast
4	**Channelling / modulation**	10 kHz maximum channel bandwidth
5	**Maximum transmit power limit**	See Note 1
6	**Channel occupation rules**	-
7	**Duplex type / separation**	-
8	**Licensing Regime**	Yes
9	**Additional essential requirements**	-
Informative (10-13)		
10	Frequency planning assumptions	-
11	Reference	See Section 1
12	Remarks	-
13	Notification Number	2013/124?/UK

Table 3.12: Minimum requirements for the use of: - HF Audio Broadcasting operating in the 21450 - 21850 kHz band		
Mandatory (1-9)		
1	**Frequency / Bands**	21450 to 21850 kHz
2	**Radio service**	Broadcasting Service (Sound)
3	**Application**	HF Audio Broadcast
4	**Channelling / modulation**	10 kHz maximum channel bandwidth
5	**Maximum transmit power limit**	See Note 1
6	**Channel occupation rules**	-
7	**Duplex type / separation**	-
8	**Licensing Regime**	Yes
9	**Additional essential requirements**	-
Informative (10-13)		
10	Frequency planning assumptions	-
11	Reference	See Section 1
12	Remarks	-
13	Notification Number	2013/124?/UK

Note 1: The effective radiated power is dependent on the co-ordination process, which addresses the effect of potential interference with other broadcast assignments in the band and with adjacent band services. ITU Radio Regulations Appendix 12 procedures apply.

Table 3.13: Minimum requirements for the use of: - HF Audio Broadcasting operating in the 25670 - 26100 kHz band		
Mandatory (1-9)		
1	**Frequency / Bands**	25670 to 26100 kHz
2	**Radio service**	Broadcasting Service (Sound)
3	**Application**	HF Audio Broadcast
4	**Channelling / modulation**	10 kHz maximum channel bandwidth
5	**Maximum transmit power limit**	See Note 1 and Note 2
6	**Channel occupation rules**	-
7	**Duplex type / separation**	-
8	**Licensing Regime**	Yes
9	**Additional essential requirements**	-
Informative (10-13)		
10	Frequency planning assumptions	-
11	Reference	See Section 1
12	Remarks	-
13	Notification Number	2013/124?/UK

Table 3.14: Minimum requirements for the use of: - Terrestrial Audio Broadcasting operating in the 87.5 - 108 MHz band		
Mandatory (1-9)		
1	**Frequency / Bands**	87.5 to 108 MHz
2	**Radio service**	Broadcasting Service (Sound)
3	**Application**	Terrestrial Audio Broadcast
4	**Channelling / modulation**	200 kHz maximum channel bandwidth
5	**Maximum transmit power limit**	See Note 1 and Note 3
6	**Channel occupation rules**	-
7	**Duplex type / separation**	-
8	**Licensing Regime**	Yes
9	**Additional essential requirements**	-
Informative (10-13)		
10	Frequency planning assumptions	-
11	Reference	See Section 1
12	Remarks	-
13	Notification Number	2013/124?/UK

Note 1: The effective radiated power is dependent on the co-ordination process, which addresses the effect of potential interference with other broadcast assignments in the band and with adjacent band services.

Note 2: ITU Radio Regulations Appendix 12 procedures apply.

Note 3 ITU Broadcasting Regional Agreement Geneva 1984 applies

Table 3.15: Minimum requirements for the use of: - Terrestrial Digital Audio Broadcasting operating in the 217.5 - 230 MHz band		
Mandatory (1-9)		
1	**Frequency / Bands**	217.5 to 230 MHz
2	**Radio service**	Broadcasting Service (Sound)
3	**Application**	Terrestrial Digital Audio Broadcast
4	**Channelling / modulation**	1.55 MHz maximum channel bandwidth
5	**Maximum transmit power limit**	See Note 1
6	**Channel occupation rules**	-
7	**Duplex type / separation**	-
8	**Licensing Regime**	Yes
9	**Additional essential requirements**	-
Informative (10-13)		
10	Frequency planning assumptions	-
11	Reference	See Section 1
12	Remarks	-
13	Notification Number	2013/124?/UK

Table 3.16: Minimum requirements for the use of: - Terrestrial Television Broadcasting operating in the 470 – 790 MHz band		
Mandatory (1-9)		
1	**Frequency / Bands**	470 to to 790 MHz
2	**Radio service**	Broadcasting Service (Television)
3	**Application**	Terrestrial Television Broadcast
4	**Channelling / modulation**	8 MHz maximum channel bandwidth
5	**Maximum transmit power limit**	See Note 1
6	**Channel occupation rules**	-
7	**Duplex type / separation**	-
8	**Licensing Regime**	Yes
9	**Additional essential requirements**	-
Informative (10-13)		
10	Frequency planning assumptions	See Section 4
11	Reference	See Section 1
12	Remarks	-
13	Notification Number	2013/124?/UK

Note 1: The effective radiated power is dependent on the co-ordination process, which addresses the effect of potential interference with other broadcast assignments in the band and with adjacent band services. ITU Broadcasting Regional Agreement Geneva 2006 applies.

Section 4

Additional performance parameters

(Informative)

Out of band emission limits are given as mean power level measured in 4 kHz bandwidth, where 0 dB corresponds to the mean output power.

For non co-sited transmitters serving the same area assessment will need to be made on a case-by-case basis.

For the case of transmitters employing DVB-T2 Extended Carrier Mode (EC) signals Channel frequency offsets are permissible on a case by case basis with agreement with Ofcom.

Tables 4.1 to 4.6 summarise the relative spectral density masks that can be used for co-sited transmitters operating within UHF spectrum Bands IV/V, providing it can be demonstrated that there will be negligible impact to:

- the UK's Digital Television Frequency Plan (as defined by Ofcom);
- international broadcasting assignments and allotments appearing in the Geneva 2006 Plan and bilateral co-ordination agreements;
- other primary terrestrial services contained in Annex 5 to the Final Acts of RRC06.

The values proposed in Tables 4.1 to 4.6 and Figures 4.1 to 4.18 are without prejudice to Directive 1999/5/EC, and in particular to the right to be put into service that this Directive confers on radio equipment conforming with the appropriate harmonised standards.

The UK will notify digital TV assignments for entry into the Geneva 2006 Plan under Article 4 of the Geneva 2006 Agreement with a non-critical mask.

DVB-T and DVB-T2 assignments will be brought into use under Article 5 of the GE06 Agreement and Article 11 of the Radio Regulations (MIFR) with parameters appropriate to the modulation and mode in use.

Channel 38 and PMSE

In the UK UHF Channel 38 (606 – 614 MHz) is allocated to Programme Making and Special Events (PMSE) in replacement of Channel 69 as a consequence of clearance of the 800 MHz band for mobile services.

Although Radioastronomy does not operate on Channel 38 in the UK, Radioastronomy does still occupy channel 38 in other parts of Europe and international protection requirements apply to Channel 39. The compatibility analysis of Radioastronomy with respect to DVB-T is detailed in ERC Report 85.

Table 4.1: Out of band emission limits for Channels 21, 39 and 60 with ERP ≥ 100W (DVB-T) Graphs in Figures 4.1, 4.2, 4.3 and 4.4

Frequency relative to channel centre frequency (MHz)	Relative level for Channels 21 and 39 (dBc) *(See Note 1)*	Relative level for Channel 60 (dBc) *(See Note 2)*	Relative level for Channels 21 and 39 (dBc)	Relative level for Channel 60 (dBc)
	ERP ≥1kW*		**ERP ≥ 100W***	
-12	-110	-110	-110	-100
-6	-85	-85	-85	-75
-4.2	-67.8	-67.8	-67.8	-67.8
-3.81	-32.8	-32.8	-32.8	-32.8
+3.81	-32.8	-32.8	-32.8	-32.8
+4.2	-67.8	-67.8	-67.8	-67.8
+6	-85	-85	-75	-85
+12	-110	-110	-100	-110

Note 1: Channel frequency offset by +167 kHz.
Note 2: Channel frequency offset by -167 kHz.
***** For ERP values between 1kW and 100W the spectral density values for ± 12 MHz, ± 6 MHz and ± 4.2 MHz are adjusted in proportion to the ERP value.

Table 4.2: Out of band emission limits for Channels 21, 39 and 60 with ERP < 100W (DVB-T) Graphs in Figures 4.5 and 4.6

Frequency relative to channel centre frequency (MHz)	Relative level for Channels 21 and 39 (dBc)	Relative level for Channel 60 (dBc)	Absolute level for Channels 21 and 39 (dBW/4kHz)	Absolute level for Channel 60 (dBW/4kHz)
	ERP < 100W		**ERP < 25W** *(See Note 3)*	
-12	-100	-67.8	-96	-56.8
-6	-75	-67.8	-71	-56.8
-4.2	-67.8	-67.8	-59	-56.8
-3.81	-32.8	-32.8	-18.8	-18.8
+3.81	-32.8	-32.8	-18.8	-18.8
+4.2	-67.8	-67.8	-56.8	-59
+6	-67.8	-75	-56.8	-71
+12	-67.8	-100	-56.8	-96

Note 3: Below 25W either the mask specified for ERP < 100W or ERP < 25W can be used.

Table 4.3: Out of band emission limits for Channels 22 to 37 and 40 to 59 (DVB-T) Graphs in Figures 4.7, 4.8, and 4.9

Frequency relative to channel centre frequency (MHz)	Relative level for Channels 22 to 37 and 40 to 59 (dBc)			Absolute level for Channels 22 to 37 and 40 to 59 (dBW/4kHz)
	ERP > 1kW *	ERP = 100W*	ERP < 100W	ERP < 25W *(See Note 4)*
-12	-110	-100	-67.8	-56.8
-6	-85	-75	-67.8	-56.8
-4.2	-67.8	-67.8	-67.8	-56.8
-3.81	-32.8	-32.8	-32.8	-18.8
+3.81	-32.8	-32.8	-32.8	-18.8
+4.2	-67.8	-67.8	-67.8	-56.8
+6	-85	-75	-67.8	-56.8
+12	-110	-100	-67.8	-56.8

Note 4: Below 25W either the mask specified for ERP < 100W or ERP < 25W can be used.
* For ERP values between 1kW and 100W the spectral density values for ± 12 MHz and ± 6 MHz are adjusted in proportion to the ERP value.

Table 4.4: Out of band emission limits for Channels 21, 39 and 60 with ERP ≥ 100W (DVB-T2) Graphs in Figures 4.10, 4.11, 4.12 and 4.13

Frequency relative to channel centre frequency (MHz)	Relative level for Channels 21 and 39 (dBc) *(See Note 5)*	Relative level for Channel 60 (dBc) *(See Note 6)*	Relative level for Channels 21 and 39 (dBc)	Relative level for Channel 60 (dBc)
	ERP ≥1kW*		**ERP ≥ 100W***	
-12	-110	-110	-110	-100
-6	-85	-85	-85	-75
-4.2	-67.8	-67.8	-67.8	-67.8
-3.9	-32.8	-32.8	-32.8	-32.8
+3.9	-32.8	-32.8	-32.8	-32.8
+4.2	-67.8	-67.8	-67.8	-67.8
+6	-85	-85	-75	-85
+12	-110	-110	-100	-110

Note 5: Channel frequency offset by +167 kHz. The implementation of frequency offsets on DVB-T2 services using 'Extended Carrier Mode' is subject to agreement by Ofcom on a case-by-case basis.
Note 6: Channel frequency offset by -167 kHz. The implementation of frequency offsets on DVB-T2 services using 'Extended Carrier Mode' is subject to agreement by Ofcom on a case-by-case basis.
***** For ERP values between 1kW and 100W the spectral density values for ± 12 MHz, ± 6 MHz and ± 4.2 MHz are adjusted in proportion to the ERP value.

Table 4.5: Out of band emission limits for Channels 21, 39 and 60 with ERP < 100W (DVB-T2) Graphs in Figures 4.14 and 4.15

Frequency relative to channel centre frequency (MHz)	Relative level for Channels 21 and 39 (dBc)	Relative level for Channel 60 (dBc)	Absolute level for Channels 21 and 39 (dBW/4kHz)	Absolute level for Channel 60 (dBW/4kHz)
	ERP < 100W		**ERP < 25W** *(See Note 7)*	
-12	-100	-67.8	-96	-56.8
-6	-75	-67.8	-71	-56.8
-4.2	-67.8	-67.8	-59	-56.8
-3.9	-32.8	-32.8	-18.8	-18.8
+3.9	-32.8	-32.8	-18.8	-18.8
+4.2	-67.8	-67.8	-56.8	-59
+6	-67.8	-75	-56.8	-71
+12	-67.8	-100	-56.8	-96

Note 7: Below 25W either the mask specified for ERP < 100W or ERP < 25W can be used.

Table 4.6: Out of band emission limits for Channels 22 to 37 and 40 to 59 (DVB-T2)
Graphs in Figures 4.16, 4.17 and 4.18

Frequency relative to channel centre frequency (MHz)	Relative level for Channels 22 to 37 and 40 to 59 (dBc)			Absolute level for Channels 22 to 37 and 40 to 59 (dBW/4kHz)
	ERP > 1kW *	ERP = 100W*	ERP < 100W	ERP < 25W *(See Note 8)*
-12	-110	-100	-67.8	-56.8
-6	-85	-75	-67.8	-56.8
-4.2	-67.8	-67.8	-67.8	-56.8
-3.9	-32.8	-32.8	-32.8	-18.8
+3.9	-32.8	-32.8	-32.8	-18.8
+4.2	-67.8	-67.8	-67.8	-56.8
+6	-85	-75	-67.8	-56.8
+12	-110	-100	-67.8	-56.8

Note 8: Below 25W either the mask specified for ERP < 100W or ERP < 25W can be used.
* For ERP values between 1kW and 100W the spectral density values for ± 12 MHz and ± 6 MHz are adjusted in proportion to the ERP value.

Figure 4.1

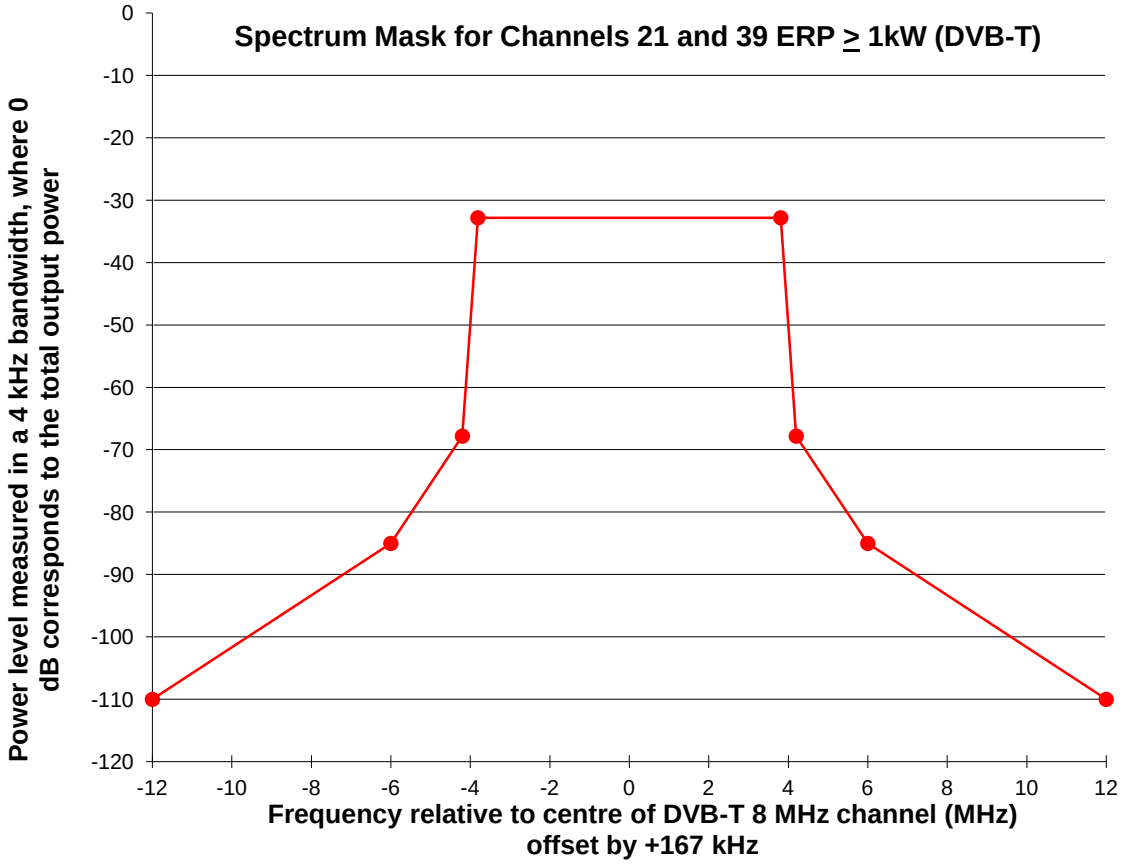


Figure 4.2

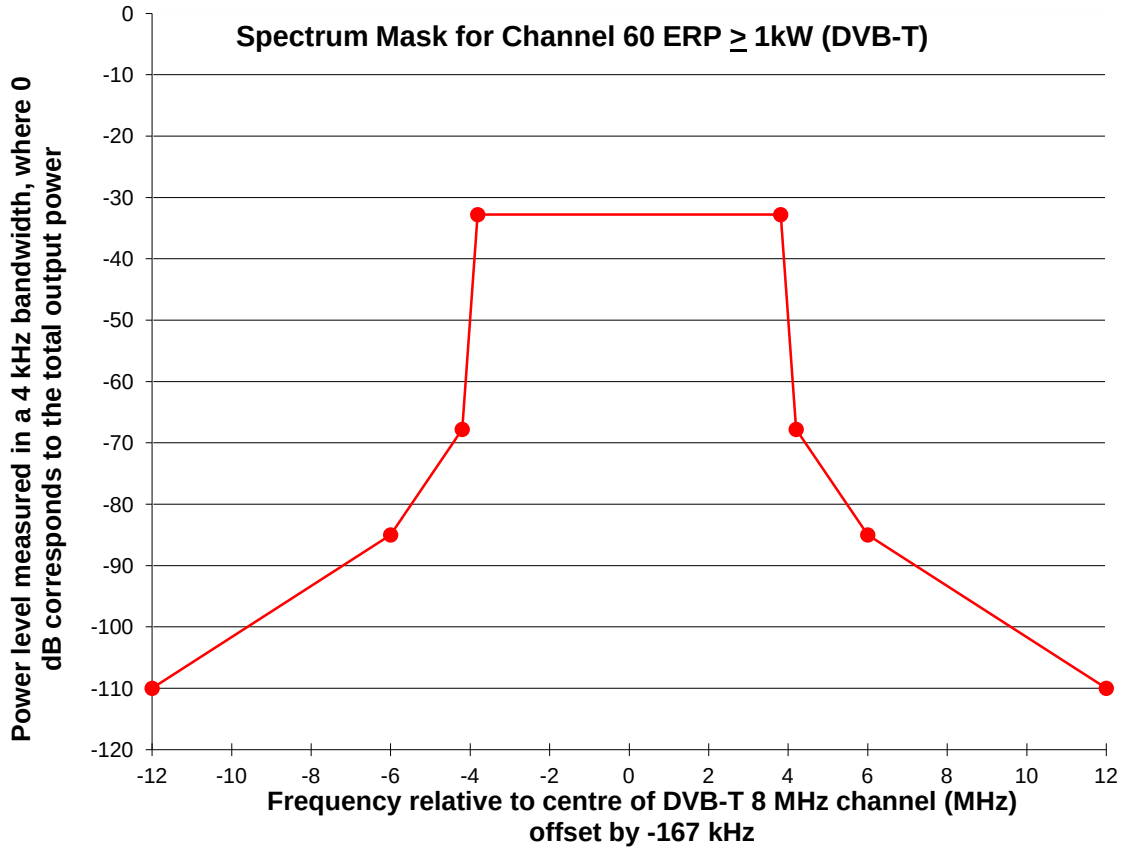


Figure 4.3

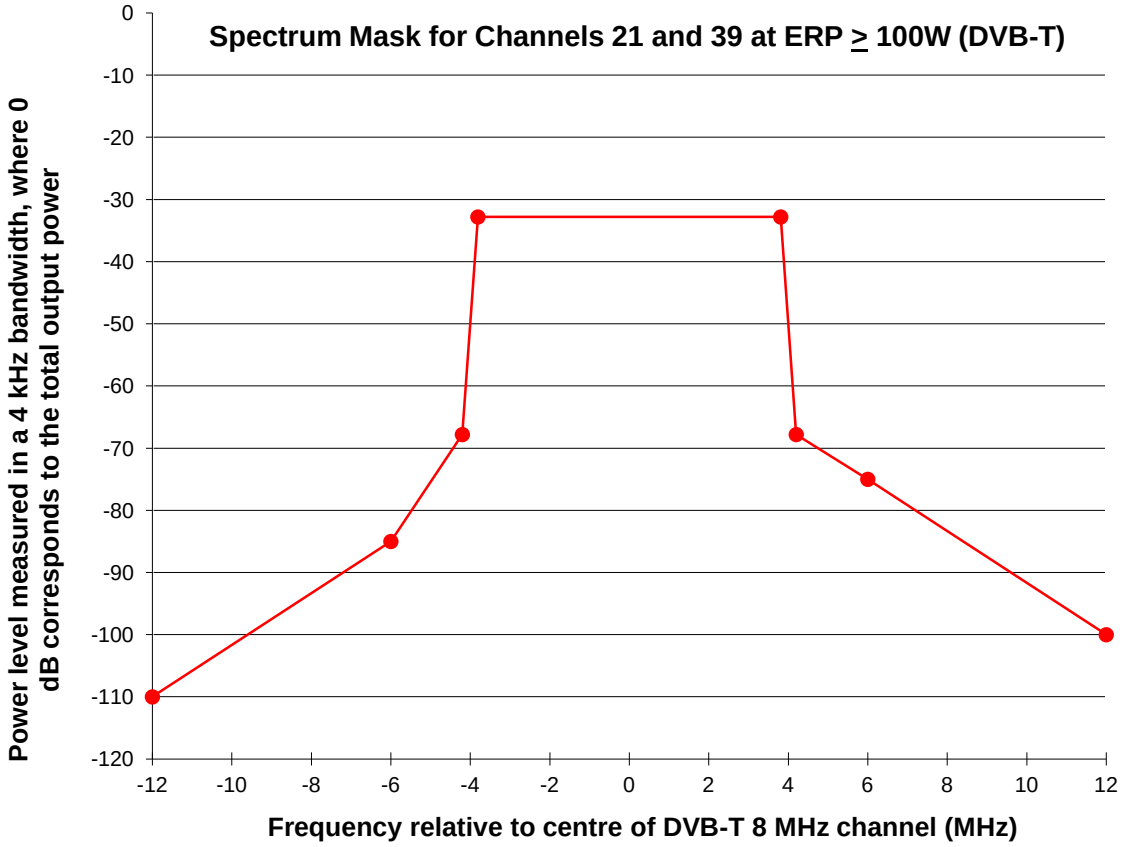


Figure 4.4

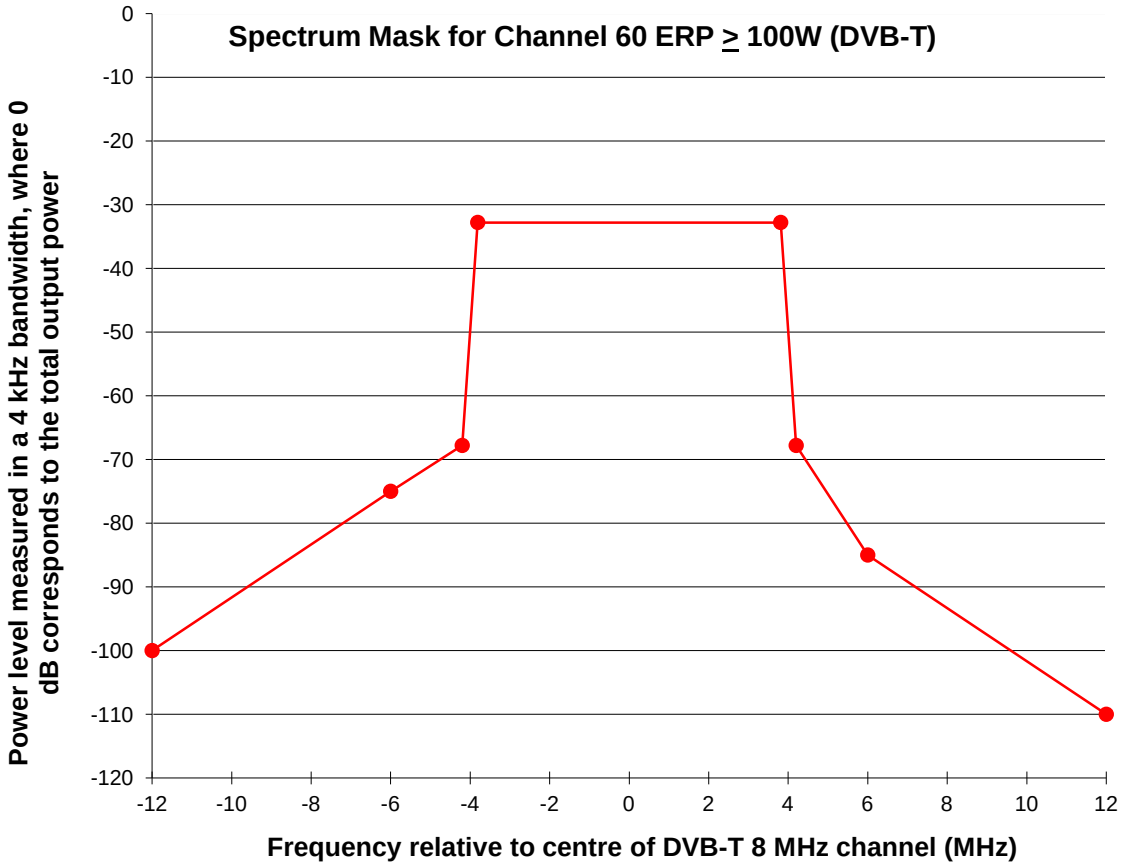


Figure 4.5

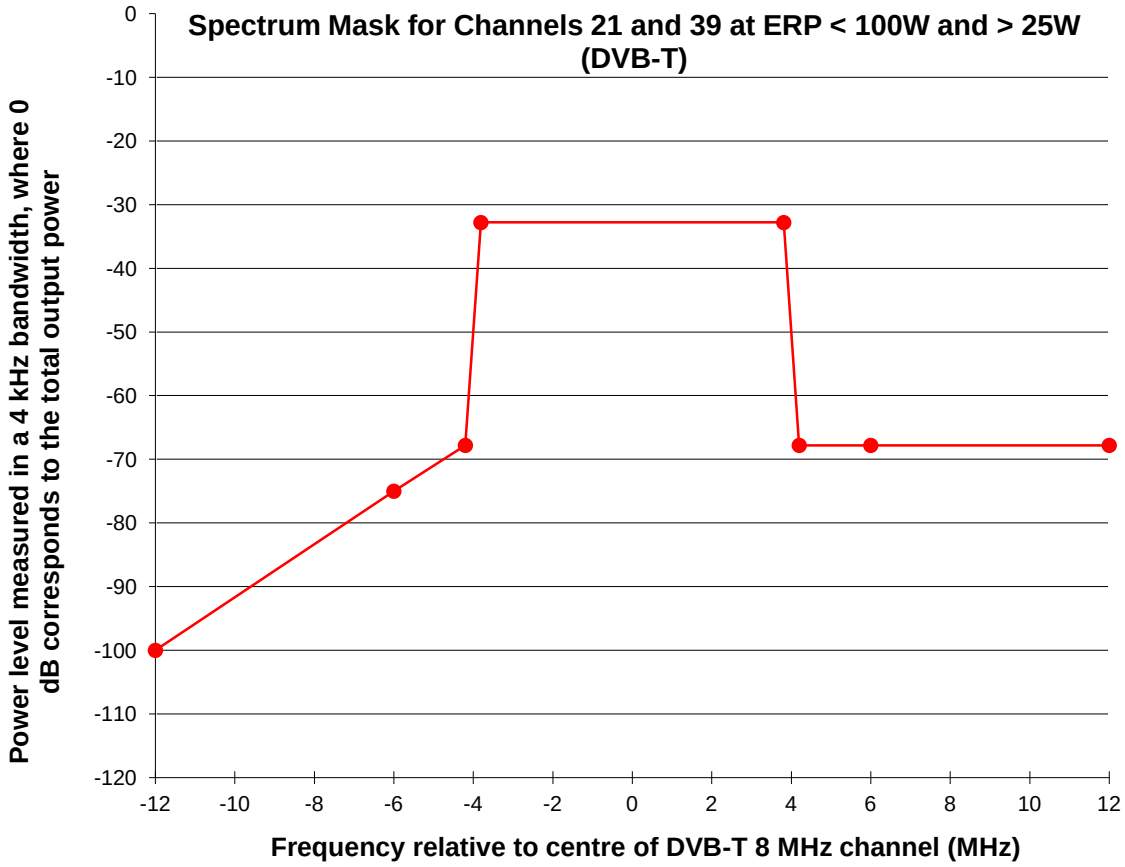


Figure 4.6

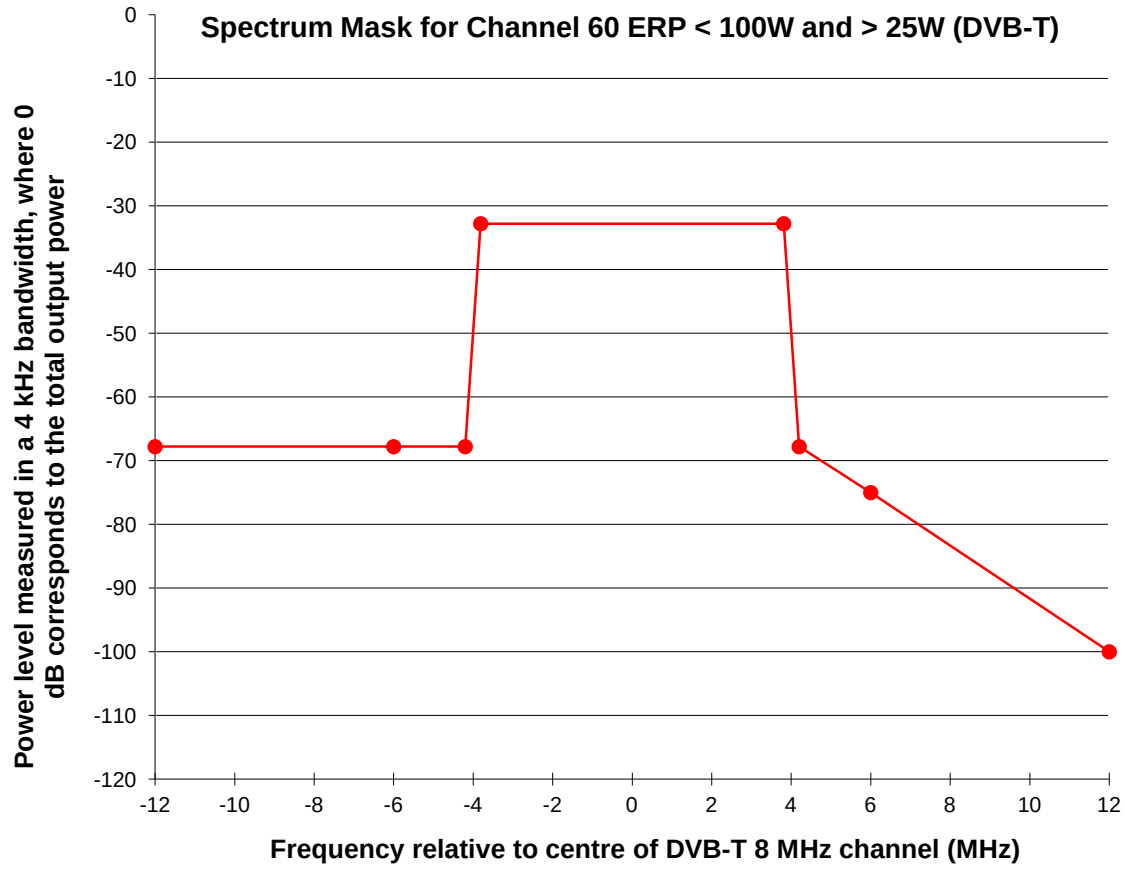


Figure 4.7

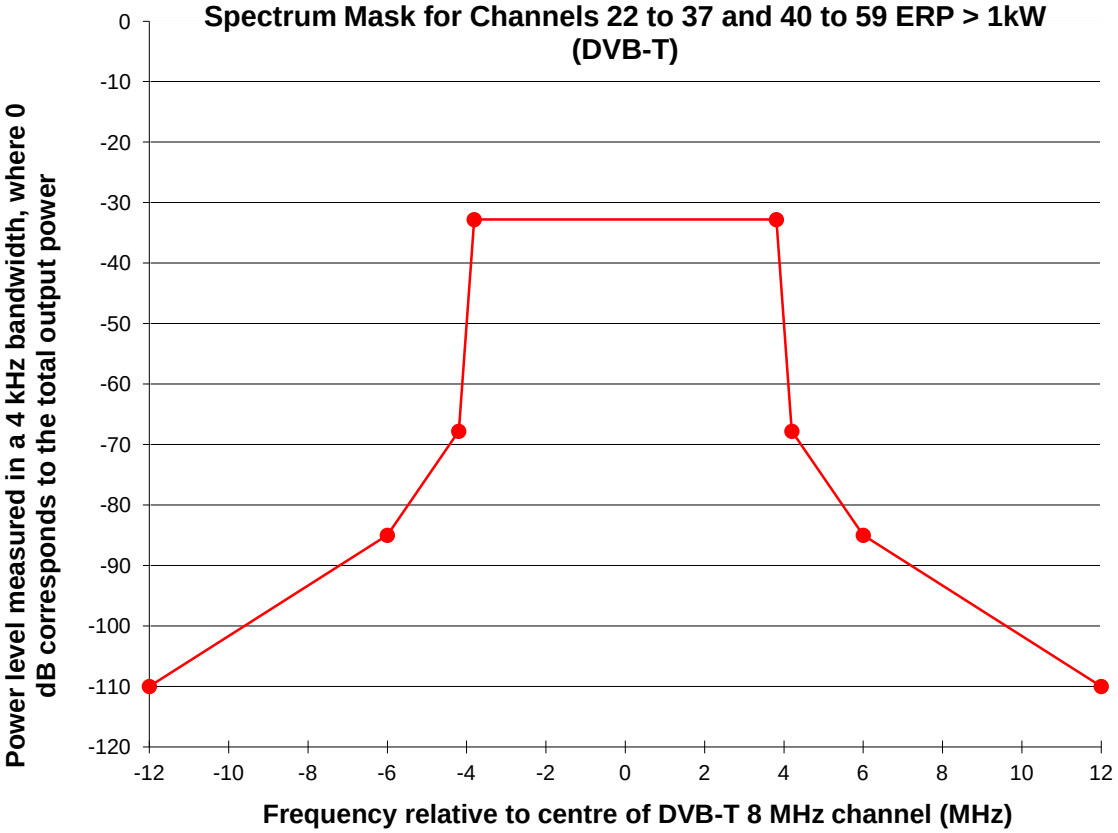


Figure 4.8

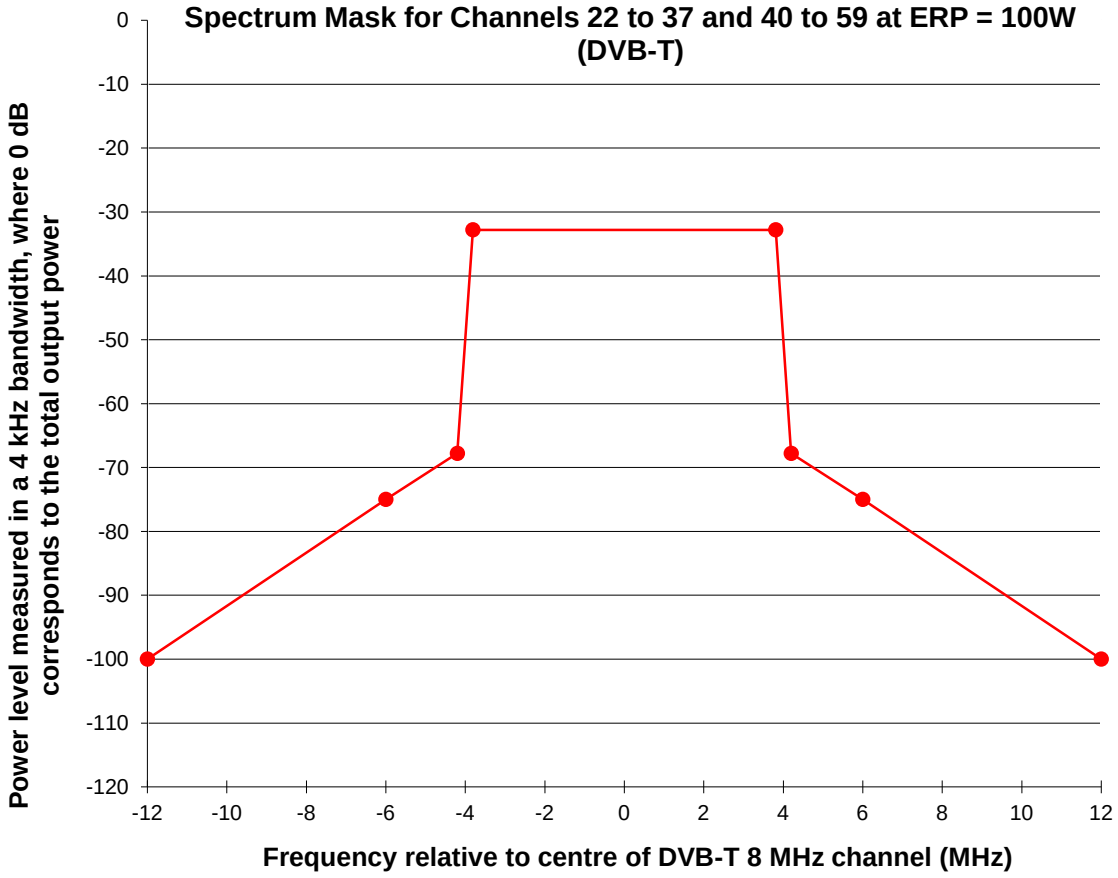


Figure 4.9

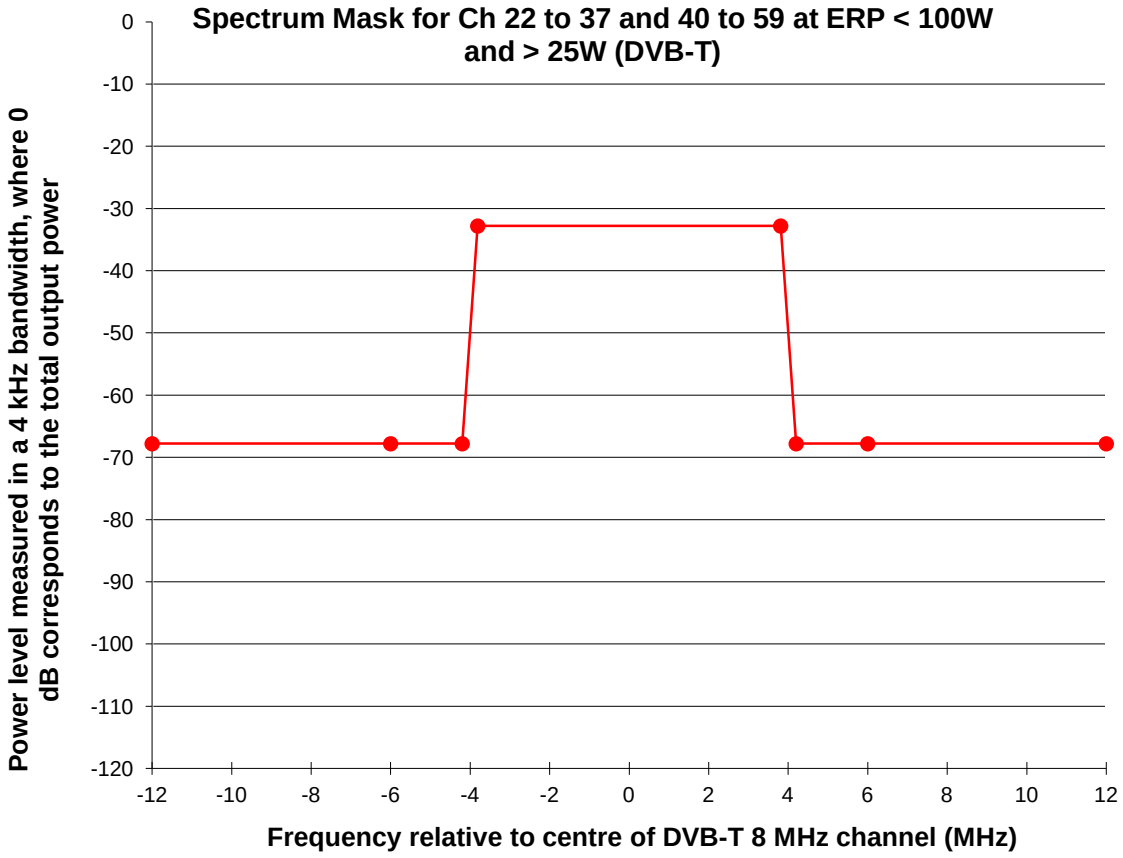


Figure 4.10

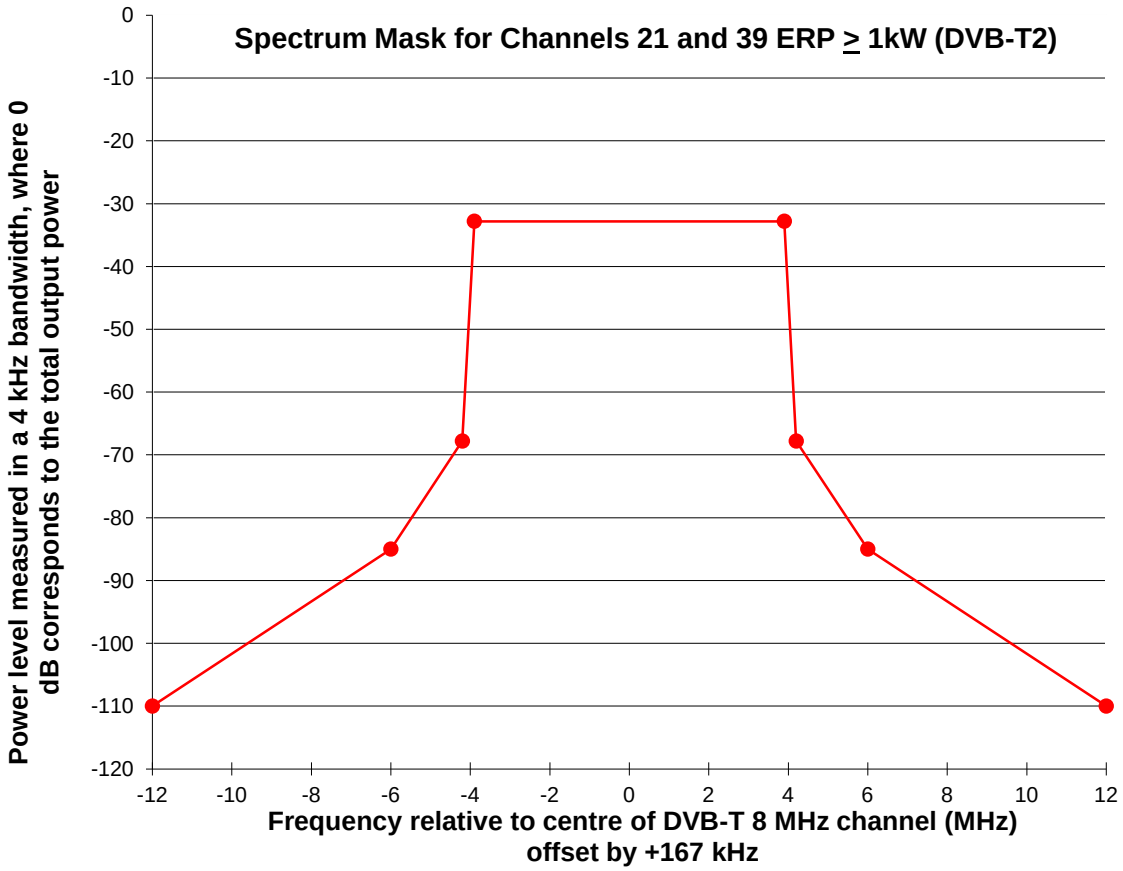


Figure 4.11

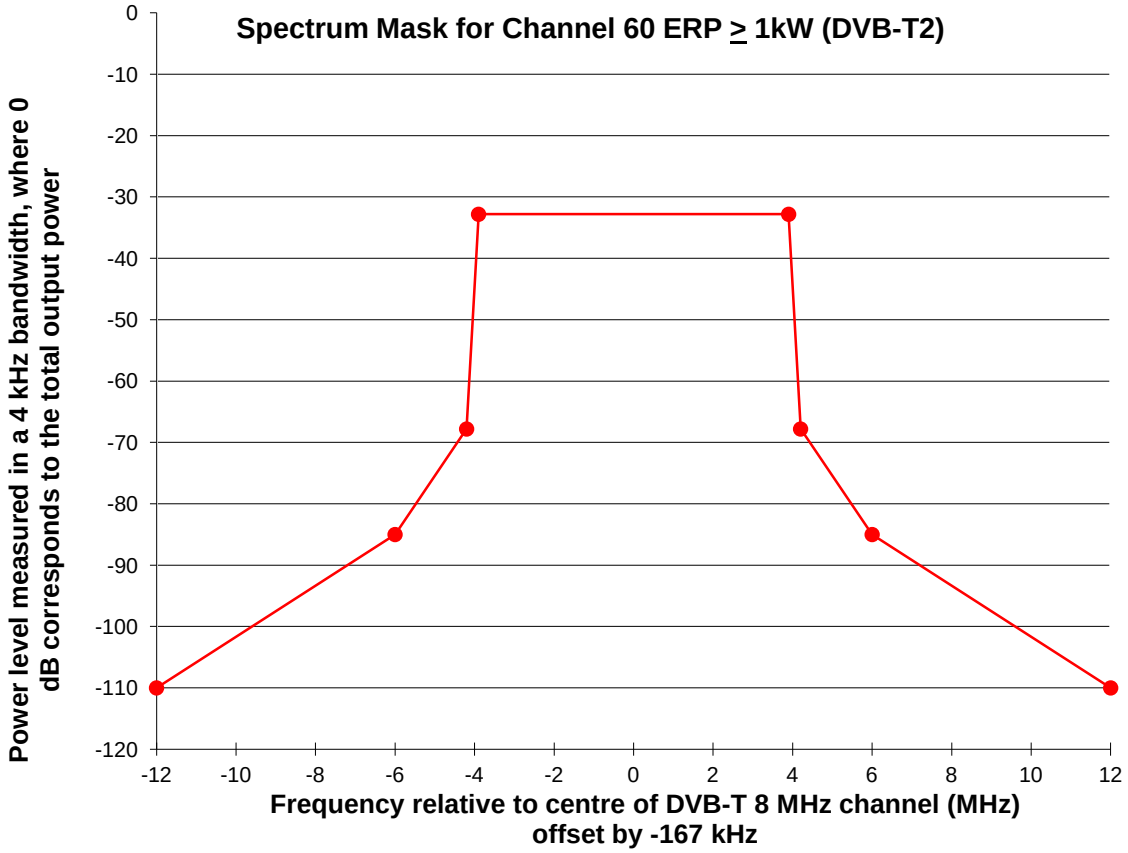


Figure 4.12

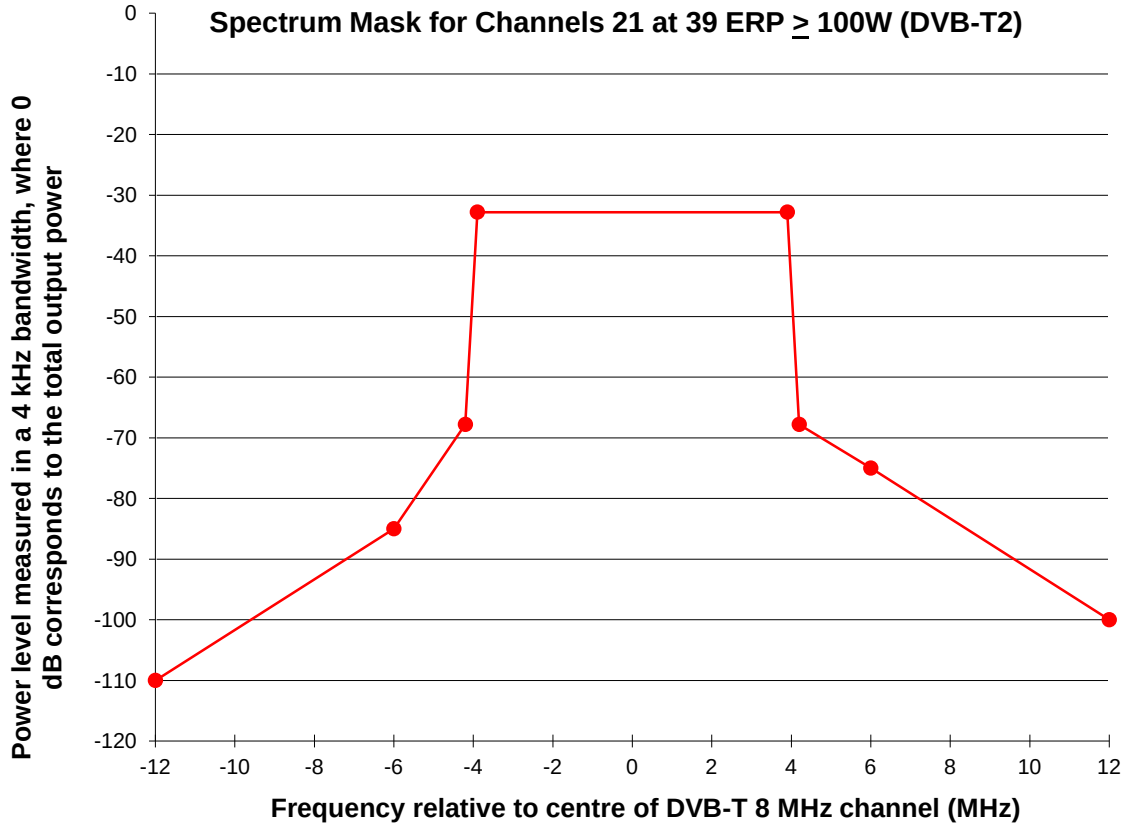


Figure 4.13

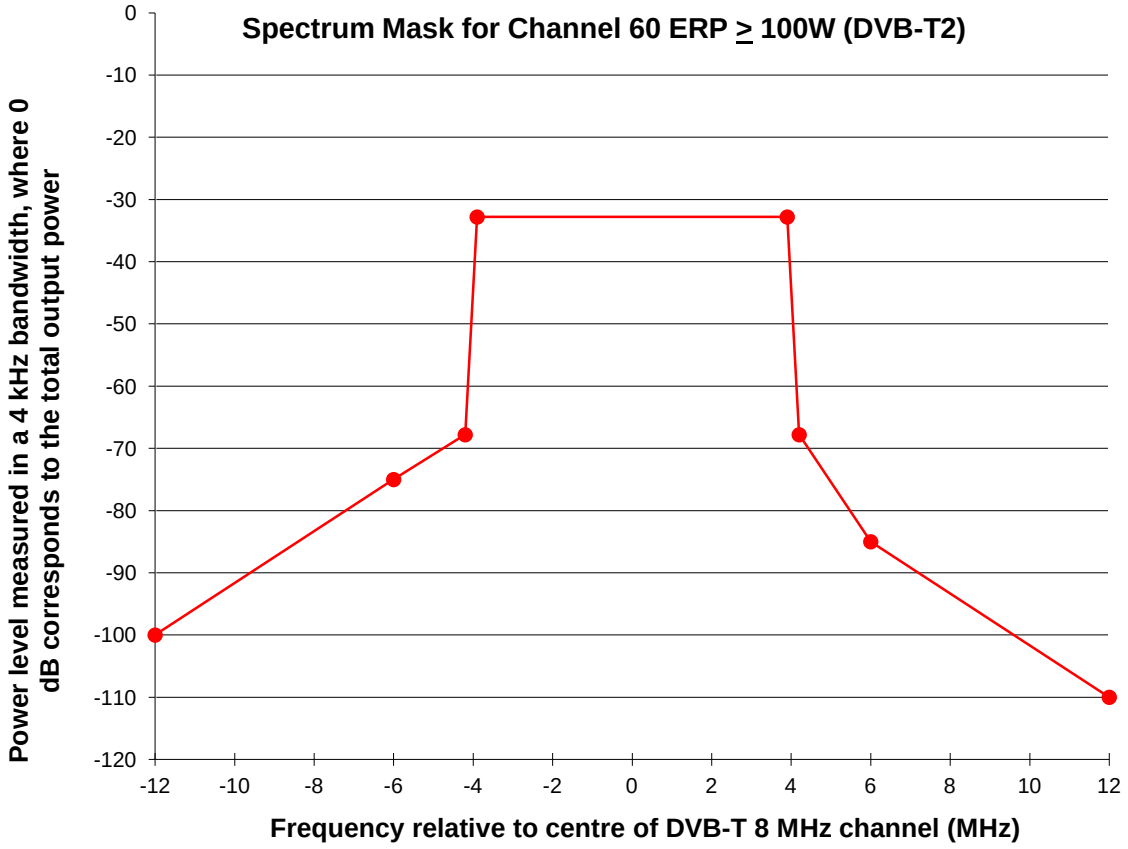


Figure 4.14

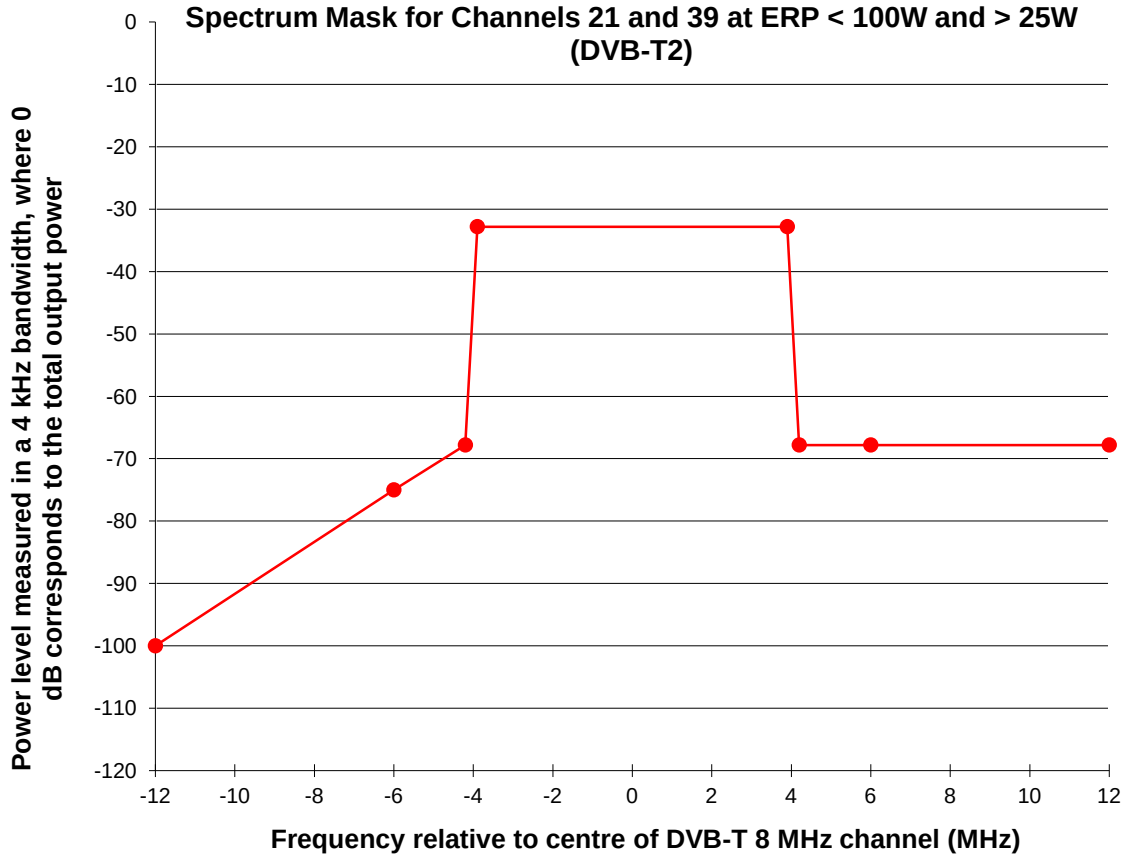


Figure 4.15

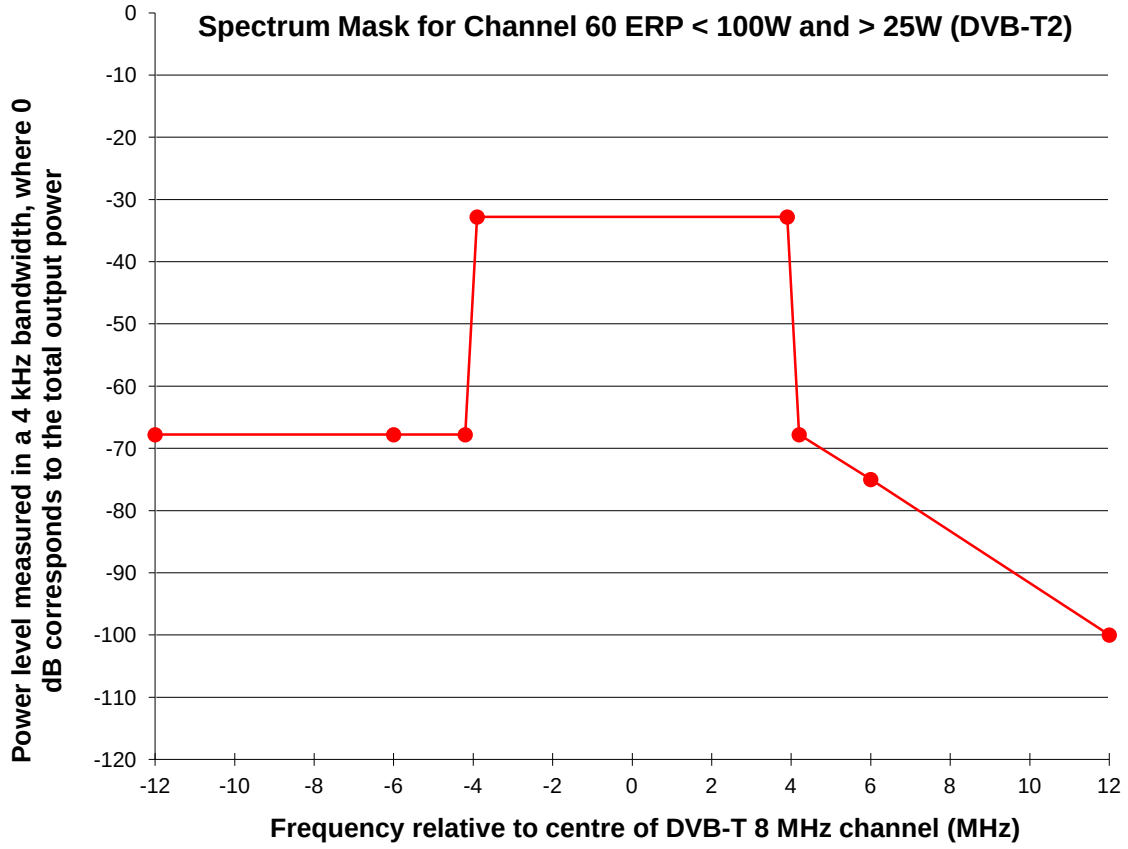


Figure 4.16

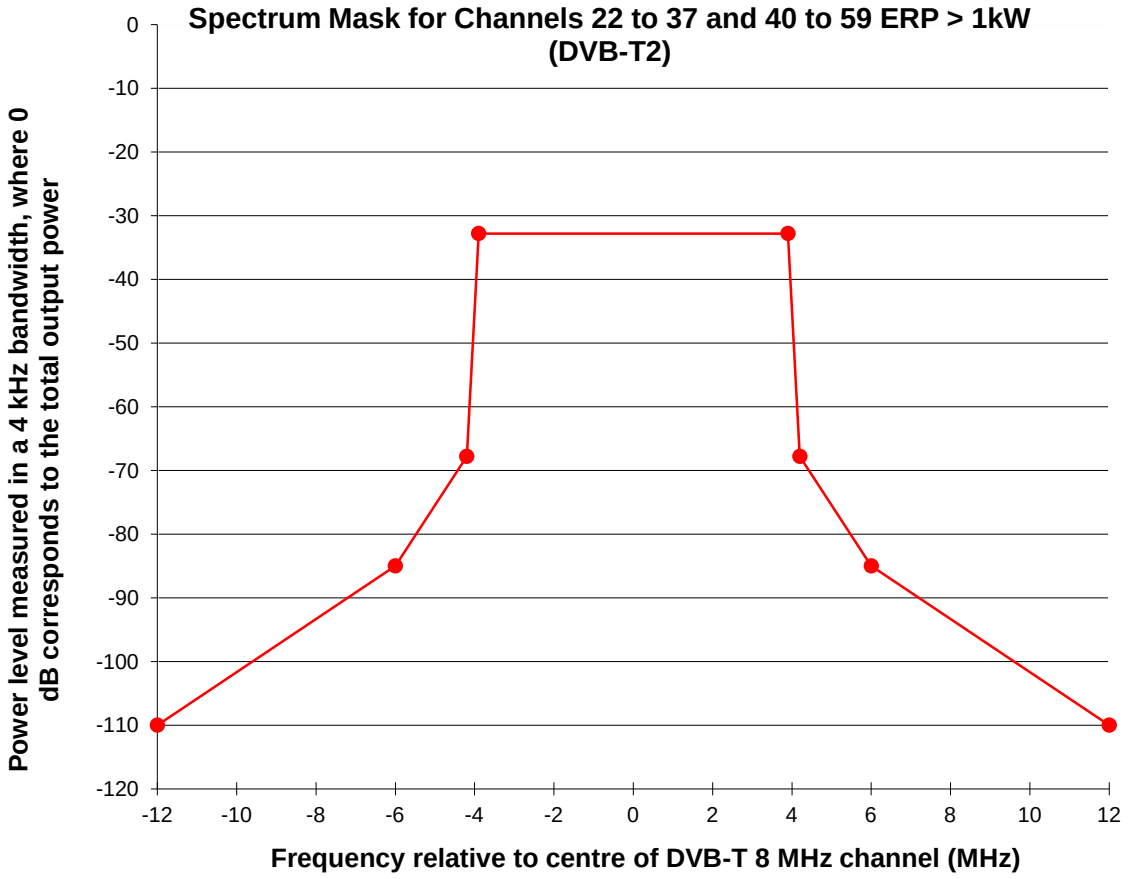


Figure 4.17

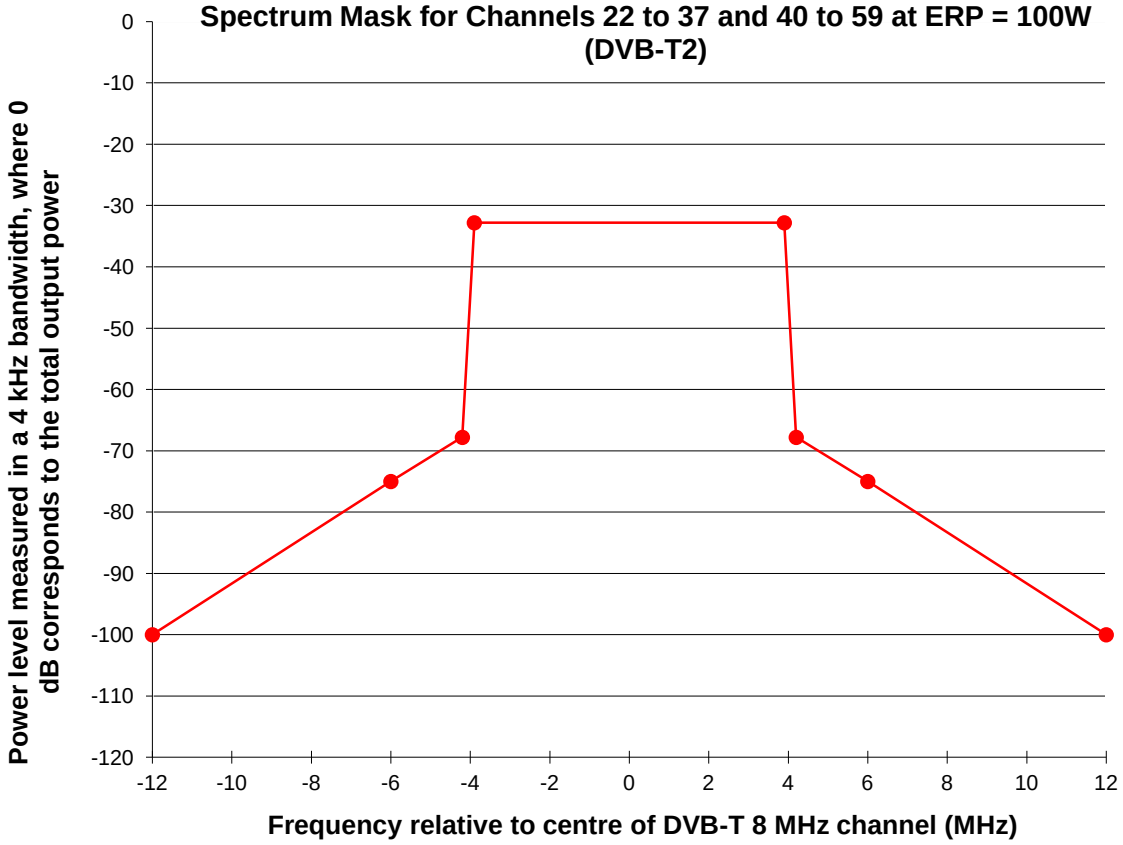
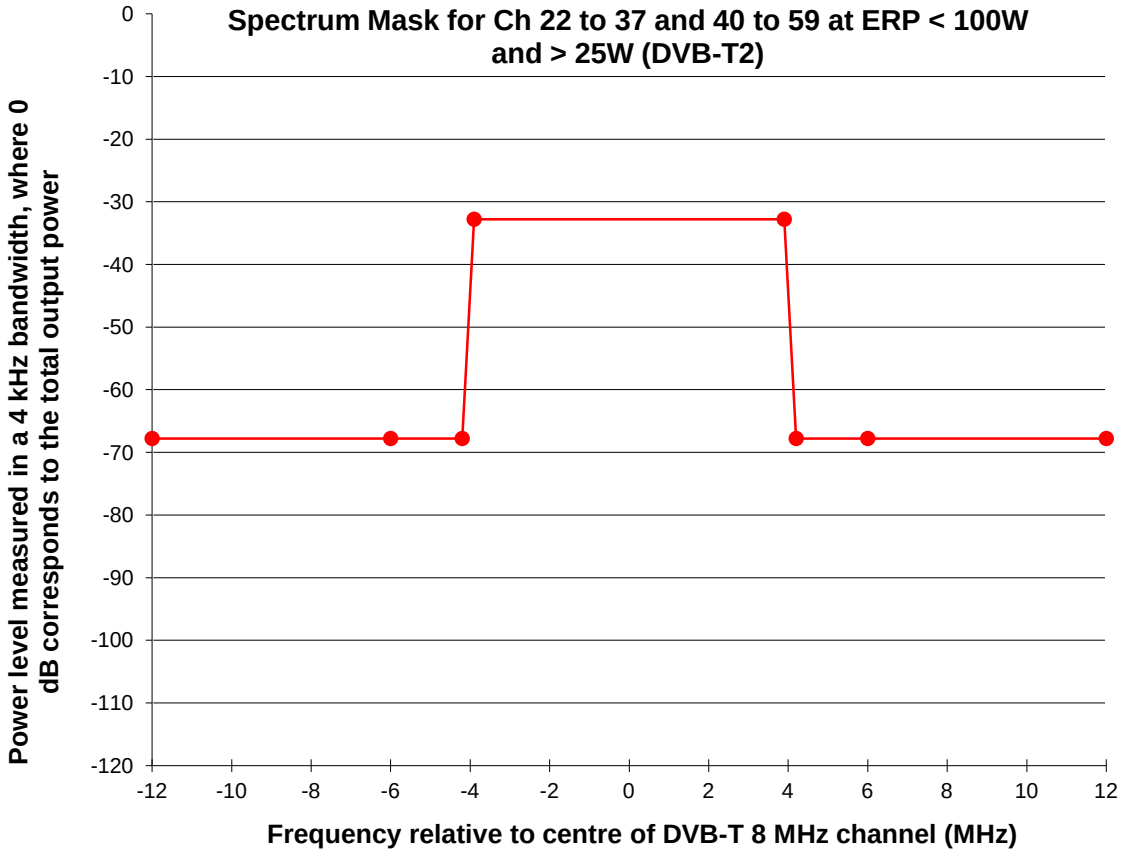


Figure 4.18



Section 5

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Section 6

Document history

Version	Date	Changes
2.0	August 2004	Amended to Ofcom format
3.0	February 2006	Update to Section 4
4.0	April 2007	Revised
Draft 5.0	February 2013	Section 1 updated (work in process) Tables and Section 4 revised to include DVB-T2 parameters and modifications to UK UHF frequency allocations for 800MHz clearance