



# Digital Switchover Transmitter Details

London Region

Issue 3.0

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# Digital Switchover Transmitter Details: London Region

This document contains details of the transmission characteristics which the television transmitter network will adopt at digital switchover. Details for pre-switchover digital transmitters are available on the Ofcom website ([www.ofcom.org.uk](http://www.ofcom.org.uk)).

This information is primarily intended to help systems installers make initial preparations for switchover by highlighting those transmitters where frequency allocations and aerial group requirements are likely to change.

A key to column headings is provided in the Glossary.

Please note that although we anticipate that this frequency plan will remain relatively stable in the run-up to switchover, it may prove necessary to make changes to some aspects of the plan with the aim of maximising coverage across the UK. If you would like to be kept informed of any changes, please join our digital transmitter mailing list by sending an email to [broadcast.technical@ofcom.org.uk](mailto:broadcast.technical@ofcom.org.uk), with the word 'subscribe' as the message subject.

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## Crystal Palace transmitter group - Public Service Broadcaster (PSB) Multiplexes

Site Name	NGR	BBC A		D3&4		BBC B		DSO Aerial Group	Pre-DSO Aerial Group	Analogue Frequencies				
		Channel	ERP	Channel	ERP	Channel	ERP			BBC1	BBC2	ITV1	C4	C5
<b>Crystal Palace</b>	<b>TQ339712</b>	<b>23</b>	<b>200kW</b>	<b>26</b>	<b>200kW</b>	<b>30-</b>	<b>200kW</b>	<b>AH</b>	<b>AH</b>	<b>26</b>	<b>33</b>	<b>23</b>	<b>30</b>	
Alexandra Palace <sup>a</sup>	TQ296900	49	70W	58	70W	54	70W	C/DH	C/DH	58	64	61	54	
Assendon	SU734856	59	2W	55	2W	50	2W	C/DV	C/DV	55	68	58	65	
Biggin Hill <sup>b</sup>	TQ411587	39	2W	45	2W	42	2W	BV	E/WV	45	52	49	67	
Biggin Hill Link	TQ417591	59	0.4W	55	0.4W	50	0.4W	C/DH	C/DH	55	62	59	65	
Bishop's Stortford	TL499214	59	14W	55	14W	50	14W	C/DV	C/DV	55	62	59	49	
Cane Hill	TQ291588	58	5W	49	5W	54	5W	C/DV	C/DV	61	54	58	68	
Caterham	TQ343557	59	6W	55	6W	50	6W	C/DV	C/DV	55	62	59	65	
Chepping Wycombe	SU877911	44	20W	41	20W	47	20W	BV	BV	51	44	41	47	
Chesham	SP956008	43	20W	40	20W	46	20W	BV	BV	40	46	43	50	
Chingford	TQ380946	60	2W	57	2W	53	2W	C/DV	C/DV	56	50	52	48	
Croydon Old Town	TQ319647	52	6.6W	56	6.6W	48	6.6W	C/DV	C/DV	49	56	52	67	59
Dorking HP	TQ169482	44	9W	41	9W	47	9W	BH	BH	51	44	41	47	
Dorking VP	TQ169482	44	4.4W	41	4.4W	47	4.4W	BV	BV	51	44	41	47	
East Grinstead	TQ386360	43	23W	55	23W	50	23W	E/WV	E/WV	40	56	46	59	
Edmonton	TQ345934	60	20W	57	20W	53	20W	C/DH	E/WH	57	42	60	53	
Farningham	TQ547660	52	13W	48	13W	56	13W	C/DV	C/DV	48	56	50	58	
Finchley	TQ251908	48	13W	52	13W	56	13W	C/DV	C/DV	52	56	49	67	
Forest Row	TQ438362	56	24W	58	24W	40	24W	E/WV	C/DV	48	54	62	66	

<sup>a</sup> Between the first and second stages of switchover at Alexandra Palace, BBC A will use channel 61

<sup>b</sup> Between the first and second stages of switchover at Biggin Hill, BBC A will use channel 49

Site Name	NGR	BBC A		D3&4		BBC B		DSO Aerial Group	Pre-DSO Aerial Group	Analogue Frequencies				
		Channel	ERP	Channel	ERP	Channel	ERP			BBC1	BBC2	ITV1	C4	C5
Gravesend	TQ656715	59	43W	55	43W	53	43W	C/DV	C/DV	55	62	59	49	
Great Missenden <sup>c</sup>	SP905005	49	17W	58	17W	54	17W	C/DV	C/DV	58	64	61	54	
Greenwich	TQ408781	44	3W	41	3W	47	3W	BV	C/DV	56	50	52	48	
Guildford <sup>d</sup>	SU974486	43	2kW	46	2kW	40	2kW	BV	BV	40	46	43	50	
Hammersmith	TQ232786	59	2W	55	2W	50	2W	C/DV	C/DV	48	62	59	65	
Hampstead Heath	TQ272854	47	2W	44	2W	41	2W	BH	BH	51	44	47	41	
Hemel Hempstead	TL087044	44	2kW	41	2kW	47	2kW	E/WV	BV	51	44	41	47	
Hemel Hempstead Town	TL054065	60	8W	57	8W	53	8W	C/DV	C/DV	58	64	61	54	
Henley	SU779822	58	20W	49	20W	54	20W	C/DV	C/DV	48	64	67	54	
Hertford <sup>e</sup>	TL320137	49	500W	58	500W	54	500W	C/DV	C/DV	58	64	61	54	
High Wycombe	SU856942	59	100W	55	100W	50	100W	C/DV	C/DV	55	62	59	65	
Hughenden	SU856974	43	12W	40	12W	46	12W	BV	BV	40	46	43	50	
Kenley	TQ329592	43	28W	40	28W	46	28W	BV	BV	40	46	43	50	
Kensal Town	TQ245820	52	25W	56	25W	48	25W	C/DH	C/DH	56	49	52	67	
Lea Bridge <sup>f</sup>	TQ373879	50	2W	55	2W	59	2W	C/DV	E/WV	55	62	39	59	
Marlow Bottom <sup>g</sup>	SU841885	49	11W	58	11W	54	11W	C/DV	C/DV	58	64	61	54	
Micklefield	SU897933	57	2W	60	2W	53	2W	C/DV	C/DV	54	64	57	67	
Mickleham	TQ163538	58	18W	49	18W	54	18W	C/DV	C/DV	61	55	58	68	

<sup>c</sup> Between the first and second stages of switchover at Great Missenden, BBC A will use channel 61

<sup>d</sup> Between the first and second stages of digital switchover at Guildford, D3&4 will use channel 49.

<sup>e</sup> Between the first and second stages of switchover at Hertford, BBC A will use channel 61

<sup>f</sup> Between the first and second stages of switchover at Lea Bridge, BBC A will use channel 62

<sup>g</sup> Between the first and second stages of switchover at Marlow Bottom, BBC A will use channel 61

Site Name	NGR	BBC A		D3&4		BBC B		DSO Aerial Group	Pre-DSO Aerial Group	Analogue Frequencies				
		Channel	ERP	Channel	ERP	Channel	ERP			BBC1	BBC2	ITV1	C4	C5
New Addington	TQ378628	59	16W	55	16W	50	16W	C/DV	C/DV	64	48	54	68	
New Barnet	TQ265965	59	4W	55	4W	50	4W	C/DV	C/DV	55	62	59	48	
Old Coulsdon	TQ314587	44	2W	41	2W	47	2W	BH	E/WH	48	64	45	66	
Orpington	TQ458652	59	6W	55	6W	50	6W	C/DV	C/DV	55	62	59	66	
Offord	TQ533603	60	6.2W	57	6.2W	53	6.2W	C/DV	C/DV	57	63	60	53	
Poplar <sup>h</sup>	TQ382812	39	4W	45	4W	42	4W	BV	E/WV	45	66	49	68	
Reigate	TQ256521	60-	2kW	57	2kW	53	2kW	WV	C/DV	57	63	60	53	42
Skirmett	SU777902	44	25W	41	25W	47	25W	BV	BV	51	44	41	47	
St Albans	TL132069	57	22W	53	22W	60	22W	C/DV	C/DV	49	63	57	67	
Sutton HP	TQ255647	59	5W	55	5W	50	5W	C/DH	C/DH	55	62	59	65	
Sutton VP	TQ255647	59	5W	55	5W	50	5W	C/DV	C/DV	55	62	59	65	
Walthamstow North	TQ378897	49	2W	45	2W	42	2W	BV	E/WV	45	66	49	68	
Welwyn	TL223161	43	30W	40	30W	46	30W	BV	BV	40	46	43	50	
West Wycombe	SU839936	43	5.6W	40	5.6W	46	5.6W	BV	E/WV	40	46	43	67	
Wonersh	TQ024454	44	21W	41	21W	47	21W	BV	C/DV	48	65	52	67	
Wooburn	SU916873	48	20W	56	20W	52	20W	C/DV	C/DV	49	52	56	68	
Woolwich	TQ460793	60-	126W	57	126W	53	126W	C/DV	C/DV	57	63	60	67	
Worlds End	TQ264773	46	5W	43	5W	40	5W	BV	E/WV	43	50	46	68	

<sup>h</sup> Between the first and second stages of switchover at Poplar, BBC A will use channel 49

### Crystal Palace transmitter group - Commercial (COM) Multiplexes

Site Name	NGR	SDN		Arqiva A		Arqiva B		DSO Aerial Group	Pre-DSO Aerial Group	Analogue Frequencies				
		Channel	ERP	Channel	ERP	Channel	ERP			BBC1	BBC2	ITV1	C4	C5
<b>Crystal Palace</b>	<b>TQ339712</b>	<b>25</b>	<b>200kW</b>	<b>22</b>	<b>200kW</b>	<b>28-</b>	<b>200kW</b>	<b>AH</b>	<b>AH</b>	<b>26</b>	<b>33</b>	<b>23</b>	<b>30</b>	
Guildford	SU974486	48	2kW	52	2kW	49	2kW	BV	BV	40	46	43	50	
Hemel Hempstead	TL087044	50	2kW	59	2kW	55	2kW	E/WV	BV	51	44	41	47	
Reigate	TQ256521	21+	2kW	24	2kW	27	2kW	WV	C/DV	57	63	60	53	42

## Glossary

Site Name:	The name of the transmitter site. Primary transmitters in each transmitter group are highlighted in <b>bold</b> , with their dependent relays listed alphabetically below them. Public Service Broadcaster (PSB) and Commercial (COM) multiplexes are shown in separate tables.
NGR:	The location of the transmitter site, in Ordnance Survey National Grid Reference format.
Multiplex names:	The post-switchover name of the multiplex. See below for more details
Channel	The UHF channel number of the multiplex. The centre frequency, $F_c$ (in Megahertz) of the multiplex can be calculated using $F_c=8n+306$ , where $n$ is the UHF channel number. A + or - following the channel number indicates that the frequency is offset by +0.167MHz or -0.167MHz with respect to the channel centre.
ERP	The Effective Radiated Power of the multiplex, in watts (W) or kilowatts (kW)
DSO	Digital Switchover
DSO Aerial Group:	Suggested aerial group for reception of the 3 PSB multiplexes (and the 3 COM multiplexes, where broadcast) from this transmitter after digital switchover. See below for more information on aerial groups. The final character in this column indicates whether signals are horizontally (H) or vertically (V) polarised.
DSO Aerial Group Colour codes:	All DSO frequencies at this transmitter are re-assigned analogue frequencies. If aerials and cabling are in good condition, viewers should not need to replace them.
	One or more DSO frequencies were previously unused at this transmitter by analogue TV, but all DSO channels fall within the analogue aerial group. If aerials and cabling are in good condition, replacement should not be necessary. Some changes may be required to larger systems which contain channelised components, such as communal aerial (MATV / IRS) systems.
	One or more DSO frequencies were previously unused at this transmitter by analogue TV, and these also fall outside the existing analogue aerial group. Therefore a replacement aerial of a different group may be required. Some changes may be required to larger systems which contain channelised components, such as communal aerial (MATV / IRS) systems.
Pre-DSO Aerial Group:	Suggested aerial group for reception of analogue services from this transmitter. The aerial groups shown are based upon four-channel reception and do not take into account Channel 5's analogue frequencies where these are out of group.
Analogue channels:	The UHF channel numbers of the analogue services currently broadcast from this transmitter site. The nominal analogue vision carrier frequency, $F_v$ (in Megahertz) of the service can be calculated using $F_v=8n+303.25$ , where $n$ is the UHF channel number.
Single Frequency networks (SFNs)	In order to maximise digital coverage, some transmitter sites will operate as Single Frequency Networks (SFNs) at switchover. In an SFN, neighbouring transmitters use the same frequencies as each other.

## Multiplex Names and Transmission Modes

The naming convention for the DTT multiplexes changes at switchover. The table below compares the post-switchover and pre-switchover names, and provides information on transmission modes:

Post-Switchover Name	Pre-Switchover Name	Operator	Post-switchover Transmission Mode
BBC A (PSB)	Multiplex 1	BBC	DVB-T: 64 QAM, code rate 2/3, 8K FFT
D3&4 (PSB)	Multiplex 2	Digital 3 & 4	DVB-T: 64 QAM, code rate 2/3, 8K FFT
BBC B (PSB)	Multiplex B	BBC	DVB-T2: 256 QAM, code rate 2/3, 32K FFT
SDN (COM)	Multiplex A	SDN	DVB-T: 64 QAM, code rate 3/4, 8K FFT <sup>9</sup>
Arqiva A (COM)	Multiplex C	Arqiva	DVB-T: 64-QAM, code rate 3/4, 8K FFT <sup>9</sup>
Arqiva B (COM)	Multiplex D	Arqiva	DVB-T: 64-QAM, code rate 3/4, 8K FFT <sup>9</sup>

## Aerial Groups

Television aerials are designed to operate most efficiently over a specific range of frequencies, as shown in the table below. For guidance, this document suggests a suitable aerial group for reception of the digital services from each transmitter. Where a transmitter uses a semi-wideband channel grouping (E or K), a wideband (W) aerial is also suggested as an alternative. The colour codes in the table below are often used by aerial manufacturers to aid identification of the aerial's group.

Aerial Group	Channels	Colour Code
A	21-37	Red
B	35-53	Yellow
C/D	48-68	Green
E	35-68	Brown
K	21-48	Grey
W	21-68	Black

## Transitional Transmission Characteristics

Transmission frequencies are intensively used in many parts of the UK. To avoid unnecessary interference being caused to viewers, a certain number of multiplexes will need to operate with 'transitional' transmission characteristics for a limited period following switchover at particular transmitters. These transitional characteristics are only likely to affect a small proportion of sites. For example, some channels may need to operate at slightly reduced power levels compared to the final post-switchover allocations shown in this booklet. This is primarily in order to prevent interference being caused to neighbouring transmitters which may not switch over until later in the regional sequence. Full power operation will be adopted when these interference constraints are removed, generally when the neighbouring transmitter or region switches over. Details of known transitional arrangements affecting individual transmitters are provided in footnotes.

<sup>9</sup> At a limited number of transmitters one or more COM multiplexes may continue to use their pre-switchover transmission mode for a short period following switchover. COM multiplexes at some transmitters which have switched over currently operate at 64 QAM code rate 2/3, but all COM multiplexes are expected to move to 64 QAM rate 3/4 by summer 2012. Digital UK's postcode checker provides more information.

## **Analogue Channel Changes**

For engineering reasons, some analogue channel allocations may need to be altered in the period immediately before switchover begins at a particular transmitter. This may involve swapping the frequencies of some programme services. In other cases, a previously unused analogue frequency may need to be used temporarily to allow high-power digital broadcasts to begin. Information on channel changes will be available from Digital UK in the run up to switchover.

## **Switchover Dates**

Up-to-date information on switchover dates is available from Digital UK

[www.digitaluk.co.uk](http://www.digitaluk.co.uk).

## **Transmitter Locations**

Maps showing the location of TV transmitters within individual regions are available on Ofcom's website at:

<http://stakeholders.ofcom.org.uk/broadcasting/guidance/tech-guidance>

## Document History

Version	Date	Details
1.0	17/6/2010	Document Issued
2.0	5/1/2011	Guildford BBC B & Arqiva B channels changed. Hemel Hempstead SDN channel changed. Womersley & Dorking HP/VP channel orders changed. Minor editorial amendments.
3.0	20/1/2012	Channel usage changes at Alexandra Palace, Assendon, Biggin Hill, Biggin Hill Link, Bishop's Stortford, Cane Hill, Caterham, East Grinstead, Forest Row, Great Missenden, Hammersmith, Henley, Hertford, High Wycombe, Hughenden, Kenley, Lea Bridge, Marlow Bottom, Mickleham, New Addington, New Barnet, Poplar, Sutton HP, Sutton VP, Welwyn, West Wycombe, & Worlds End. Channel order changes at Chepping Wycombe, Greenwich, Old Coulsdon, Skirmett, & Wooburn. ERP changes at New Addington & New Barnet. Guildford aerial group corrected.  Other editorial amendments.

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