



# Digital Switchover Transmitter Details

Granada Region

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# Digital Switchover Transmitter Details: Granada Region

This document contains details of the transmission characteristics which the television transmitter network in the Granada region adopted at digital switchover.

A key to column headings is provided in the Glossary.

If you would like to be kept informed of any changes or update to these details, 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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## Douglas transmitter group - Public Service Broadcaster (PSB) Multiplexes

Site Name	NGR	BBC A		D3&4		BBC B		Aerial Group
		Channel	ERP	Channel	ERP	Channel	ERP	
Douglas	SC373746	53	1kW	60	1kW	57	1kW	C/DV
Beary Peak <sup>a</sup>	SC295832	46	200W	43	200W	50	200W	BV
Foxdale	SC292778	26	2W	23	2W	29	2W	AV
Glenmaye	SC232803	60	10W	57	10W	53	10W	C/DV
Jurby <sup>a</sup>	SC365991	46	40W	43	40W	50	40W	BV
Kimmeragh	NX450000	44	100W	41	100W	47	100W	BV
Laxey	SC437836	46	20W	43	20W	50	20W	BV
Port St Mary <sup>a</sup>	SC206678	46	2kW	43	2kW	50	2kW	BV
Ramsey	SC453934	49-	100W	45-	100W	42	100W	BH
Union Mills	SC343769	46	2.5W	43	2.5W	50	2.5W	BV

## Winter Hill and relays - Public Service Broadcaster (PSB) Multiplexes

Site Name	NGR	BBC A		D3&4		BBC B		Aerial Group
		Channel	ERP	Channel	ERP	Channel	ERP	
<b>Winter Hill</b>	<b>SD660144</b>	<b>62-</b>	<b>100kW</b>	<b>59</b>	<b>100kW</b>	<b>54-</b>	<b>100kW</b>	<b>C/DH</b>
Austwick	SD783672	45	6.3W	49	6.3W	42	6.3W	BV
Backbarrow	SD358841	53	2W	60	2W	57	2W	C/DV
Bacup	SD878224	46	50W	43	50W	50	50W	BV
Barrow Town Hall	SD198691	44	2W	41+	2W	47	2W	BV
Bidston	SJ271899	44	25W	41+	25W	47	25W	BV
Birch Vale	SK028861	46	50W	43	50W	50	50W	BV
Blackburn	SD703275	46	2W	43	2W	50	2W	BV
Bollington	SJ941778	27	4.2W	24	4.2W	21+	4.2W	AV
Brinscall	SD630223	21+	2W	24	2W	27	2W	AV
Broadbottom	SJ987933	45	2W	42	2W	49	2W	BV
Brook Bottom	SD969029	53	2W	60	2W	57	2W	C/DV
Burbage	SK044726	47	2.8W	41+	2.8W	44	2.8W	BV
Buxton	SK059753	27	200W	24	200W	21+	200W	AV
Cartmel	SD375793	28	2W	25	2W	22	2W	AH
Chaigley	SD686446	27	2W	24	2W	21+	2W	AV
Chatburn	SD765445	26	2W	23	2W	29	2W	AV

<sup>a</sup> Beary Peak, Jurby, and Port St Mary operate as a single frequency network (SFN).

Site Name	NGR	BBC A		D3&4		BBC B		Aerial Group
		Channel	ERP	Channel	ERP	Channel	ERP	
Chinley	SK035827	53	2.4W	60	2.4W	57	2.4W	C/DV
Congleton	SJ865619	44	40W	41+	40W	47	40W	BV
Dalton	SD229745	46	5W	43	5W	50	5W	BV
Darwen	SD708223	45	100W	49	100W	42	100W	BV
Delph	SD987080	26	2W	23	2W	29	2W	AV
Dog Hill	SD951091	46	17W	43	17W	50	17W	BV
Elton	SJ457735	27	12.6W	24	12.6W	21+	12.6W	AV
Far Highfield	SD543672	52	2.8W	56	2.8W	48	2.8W	C/DH
Glossop	SK027953	28	50W	25	50W	22	50W	AV
Haslingden	SD795236	26	2kW	23	2kW	29	2kW	AV
Haughton Green	SJ934925	46	2W	43	2W	50	2W	BH
Ladder Hill	SK027788	26	200W	23	200W	29	200W	AV
Lancaster	SD490662	27-	2kW	24-	2kW	21+	2kW	AV
Langley	SJ938709	27	2W	24	2W	21+	2W	AV
Lees	SD961039	28	2W	25	2W	22	2W	AH
Littleborough	SD950166	27	100W	24	100W	21+	100W	AV
Macclesfield	SJ925725	28	7.4W	25	7.4W	22	7.4W	AV
Manchester Hulme	SJ828966	44	2W	41+	2W	47	2W	BV
Melling HP	SD602703	57	0.84W	60	0.84W	53	0.84W	C/DH
Melling VP	SD602703	57	5W	60	5W	53	5W	C/DV
Middleton	SD876058	28	8W	25	8W	22	8W	AV
Millom Park	SD162830	28	43W	25	43W	22	43W	AV
Moss Bank	SJ509974	27	2W	24	2W	21+	2W	AV
Mottram In Longdendale	SJ988961	46	2W	43	2W	50	2W	BV
Newchurch	SD840226	21+	2W	24	2W	27	2W	AH
Norden	SD861142	53-	2W	57	2W	60	2W	C/D
North Oldham	SD928060	27	8W	24	8W	21+	8W	AV
Oakenhead	SD806234	44	20W	41+	20W	47	20W	BV
Over Biddulph	SJ896605	57	4.4W	53-	4.4W	60	4.4W	C/DV
Parbold	SD477112	44	30W	41+	30W	47	30W	BV
Pendle Forest	SD825383	28+	100W	25+	100W	22+	100W	AV
Penny Bridge	SD311836	26	6.2W	23	6.2W	29	6.2W	AV
Portwood	SJ908911	28	2W	25	2W	22	2W	AV
Prestbury	SJ888763	46	2W	43	2W	50	2W	BV
Ramsbottom	SD803159	53	16W	60	16W	57	16W	C/DV
Ribblesdale	SD814719	44	6W	41+	6W	47	6W	BV

Site Name	NGR	BBC A		D3&4		BBC B		Aerial Group
		Channel	ERP	Channel	ERP	Channel	ERP	
Romiley	SJ954904	44	2.2W	41+	2.2W	47	2.2W	BV
Roose HP	SD220692	22	10W	28	10W	25	10W	AH
Roose VP	SD220692	22	20W	28	20W	25	20W	AV
Saddleworth	SD987049	45	400W	49+	400W	42	400W	BV
Skelmersdale	SD502074	51	100W	48	100W	52	100W	C/DH (BH)
Stavely In Cartmel	SD383854	46	2.4W	43	2.4W	50	2.4W	BV
Stockport	SJ867904	24	2W	21+	2W	27	2W	AH
Storeton	SJ314841	28	560W	25	560W	22	560W	AV
Trawden	SD909378	53	40W	60	40W	57	40W	C/DV
Urswick	SD263739	44	2W	41+	2W	47	2W	BV
Walton Le Dale	SD545291	27	2W	24	2W	21+	2W	AH
Wardle	SD915172	28	2W	25	2W	22	2W	AH
West Kirby	SJ224862	27	15W	24	15W	21+	15W	AV
Whaley Bridge	SK011815	45	2W	49	2W	42	2W	BV
Whalley	SD729352	46	10W	43	10W	50	10W	BV
Whitewell	SD833245	53	16W	60	16W	57	16W	C/DV
Whitworth	SD886202	28	50W	25	50W	22	50W	AV
Woodhook	SD762277	45	2W	49	2W	42	2W	BV

### Winter Hill and relays - Commercial (COM) Multiplexes

Site Name	NGR	SDN		Arqiva A		Arqiva B		Aerial Group
		Channel	ERP	Channel	ERP	Channel	ERP	
<b>Winter Hill<sup>b</sup></b>	<b>SD660144</b>	<b>58</b>	<b>100kW</b>	<b>61-</b>	<b>100kW</b>	<b>55</b>	<b>100kW</b>	<b>C/DH</b>
Lancaster	SD490662	25+	2kW	28+	2kW	22+	2kW	AV
Pendle Forest	SD825383	27-	100W	21+	100W	24-	100W	AV
Saddleworth	SD987049	51-	400W	52+	400W	48-	400W	BV
Storeton	SJ314841	23	560W	26	560W	29	560W	AV

<sup>b</sup> Winter Hill Arqiva B will operate at 12.5kW until September 2011

## 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. Channel numbers highlighted in red are likely to be affected in future by the clearance of channels 61 and 62: see the '800 MHz Clearance' section below.
ERP	The Effective Radiated Power of the multiplex, in watts (W) or kilowatts (kW)
Aerial Group:	Suggested aerial group for reception of the 3 PSB multiplexes (and the 3 COM multiplexes, where broadcast) from this transmitter. See below for more information on aerial groups. The final character in this column indicates whether signals are horizontally (H) or vertically (V) polarised.
Aerial Group Colour codes:	All frequencies at this transmitter were formerly used by analogue channels.
	One or more digital frequencies at this transmitter were formerly unused at this transmitter by analogue TV, but all digital channels fall within the former analogue aerial group.
	One or more digital frequencies at this transmitter were formerly unused at this transmitter by analogue TV, and at least one of these frequencies also falls outside the former analogue aerial group.
DSO	Digital Switchover
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

The naming convention for the six multiplexes changed at switchover, and the table below compares their pre-switchover and post-switchover designations:

Pre-Switchover Name	Post-Switchover Name	Operator
Multiplex 1	BBC A	BBC
Multiplex 2	D3&4	Digital 3 & 4
Multiplex A	SDN	SDN
Multiplex B	BBC B	BBC
Multiplex C	Arqiva A	Arqiva
Multiplex D	Arqiva B	Arqiva

## 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

## Transmission Modes

The post-switchover transmission mode for all multiplexes except BBC B is 64QAM modulation, coding rate 2/3, & 8K FFT.

The BBC B multiplex uses the DVB-T2 standard: 256QAM modulation, coding rate 2/3, & 32K FFT.

## 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.

## 800 MHz clearance

In order to align the frequencies released by digital switchover for alternative uses with those released by other European countries, UHF channels 61 and 62 will be 'cleared' of digital TV services over the coming years. UHF channels 39 and 40 (which were previously among the channels due to be released for other uses after switchover) will instead now be retained for TV broadcasting.

In order to minimise changes to domestic aerial groups, the general approach for adopting these changes is that multiplexes using channels 61 or 62 will move to channels 49 or 50, and multiplexes using channels 49 or 50 will move to channels 39 or 40. Other channels may also be affected in some cases. The changes will either be carried out at digital switchover, or sometime after switchover completes (e.g. during 2013). If the changes are to be carried out at digital switchover, an updated version of this guide will be issued.

Multiplexes using channels 61, 62, 49, or 50 are highlighted in red in this guide to indicate that these allocations are likely to change in the future.

## 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	12/7/2007	Document Issued
2.0	24/10/2007	Additional explanatory text and revised document format. Winter Hill transitional arrangement added.
3.0	5/11/2008	Com mux names revised. Map removed and replaced with link to online version. Transmission mode section revised to include DVB-T2.
4.0	15/6/2009	Offsets added. New Skelmersdale relay added. Channel order at Middleton revised.
5.0	10/9/2009	Douglas transmitter group added, and removed from Border regional guide (Douglas now carries Granada regional services). Other minor editorial changes.
6.0	5/1/2011	Format and text changed for post-switchover situation, and analogue details removed. Initial 800Mhz clearance information added. Transitional arrangements footnotes updated.

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