



Digital Switchover Transmitter Details

STV North Region

Issue 3.0

Issued: 5 January 2011

Digital Switchover Transmitter Details: STV North Region

This document contains details of the transmission characteristics which the television transmitter network in the STV North 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, with the word 'subscribe' as the message subject.

Disclaimer: While every reasonable effort is made to ensure that the information provided in this document is accurate, no guarantees for the currency or accuracy of information are or can be made. The information contained in this document is provided without any representation or endorsement made and without warranty of any kind, whether express or implied.

Angus transmitter group - Public Service Broadcaster (PSB) Multiplexes

Site Name	NGR	BBC A		D3&4		BBC B		Aerial Group
		Channel	ERP	Channel	ERP	Channel	ERP	
Angus	NO394407	60	20kW	53	20kW	57	20kW	C/DH
Auchtermuchty	NO214094	49	20W	42	20W	45	20W	BV
Balmullo	NO426214	49	2W	42	2W	45	2W	BV
Balnaguard	NN956511	49	2W	45	2W	42	2W	BV
Blair Atholl	NN894658	43	8W	46	8W	50	8W	BV
Carie	NN615572	24	20W	27	20W	21+	20W	AV
Crieff	NN814199	23	50W	29	50W	26	50W	AV
Cupar	NO377139	41+	4W	47	4W	44	4W	BV
Dundee Menzieshill ^a	NO368311	21	5W	29	5W	26	5W	AV
Dunkeld	NO046415	41+	16W	47	16W	44-	16W	BV
Dunkeld Town	NO022430	23	2W	29	2W	26	2W	AV
Grandtully	NN917527	61	2W	54	2W	58	2W	C/DV
Kenmore	NN774472	23	24W	29	24W	26	24W	AV
Killin HP	NN602314	49	4W	42	4W	45	4W	BH
Killin VP	NN602314	49	23W	42	23W	45	23W	BV
Lindores	NO250158	43	6W	50	6W	46	6W	BV
Lochearnhead	NN594227	61	2W	54	2W	58	2W	C/DV
Methven	NO016265	25	2W	28	2W	22	2W	AV
Perth	NO108212	49	200W	42+	200W	45+	200W	BV
Pitlochry	NN923564	25	25W	28	25W	22	25W	AV
St Fillans	NN663248	47	13W	41+	13W	44	13W	BV
Strathallan	NN860059	49	6W	42	6W	45	6W	BV
Tay Bridge	NO430284	41+	100W	47	100W	44	100W	BV
Tummel Bridge	NN771600	49	20W	42	20W	45	20W	BV

Angus transmitter group - Commercial (COM) Multiplexes

Site Name	NGR	SDN		Arqiva A		Arqiva B		Aerial Group
		Channel	ERP	Channel	ERP	Channel	ERP	
Angus	NO394407	54	10kW	58	10kW	61	10kW	C/DH

^a Dundee Menzieshill replaces the former Camperdown relay.

Bressay transmitter group - Public Service Broadcaster (PSB) Multiplexes

Site Name	NGR	BBC A		D3&4		BBC B		Aerial Group
		Channel	ERP	Channel	ERP	Channel	ERP	
Bressay	HU503387	28	2kW	25	2kW	22+	2kW	AV
Baltasound	HP635109	46-	36W	43-	36W	50	36W	BV
Collafirth Hill	HU335834	45	800W	42	800W	49	800W	BV
Fetlar	HU588913	47+	250W	44+	250W	41+	250W	BV
Fitful Head	HU346135	44	19W	41+	19W	47	19W	BV
Scalloway	HU398397	62-	6W	59	6W	55	6W	C/DV
Swinister	HU440727	62-	320W	59	320W	55	320W	C/DV
Voe	HU409634	57	2W	60	2W	53	2W	C/DV
Weisdale	HU379512	58	12W	61	12W	54	12W	C/DV

Bressay transmitter group - Commercial (COM) Multiplexes

Site Name	NGR	SDN		Arqiva A		Arqiva B		DSO Aerial Group
		Channel	ERP	Channel	ERP	Channel	ERP	
Bressay	HU503387	27	2kW	24	1kW	21+	1kW	AV

Durriss transmitter group - Public Service Broadcaster (PSB) Multiplexes

Site Name	NGR	BBC A		D3&4		BBC B		Aerial Group
		Channel	ERP	Channel	ERP	Channel	ERP	
Durriss	NO764899	28	100kW	25	100kW	22	100kW	AH
Balgownie	NJ927104	46	8W	43	8W	50	8W	BV
Banff	NJ687617	45	56W	42	56W	49	56W	BV
Boddam	NK126415	45	2W	42	2W	49	2W	BV
Braemar	NO108907	45	3W	42	3W	49	3W	BV
Brechin	NO604590	46	2W	43	2W	50	2W	BV
Ellon	NJ958311	45	2W	49	2W	42	2W	BV
Gartley Moor	NJ546326	58	440W	61	440W	54	440W	C/DV
Gourdon	NO827709	62-	2W	59	2W	55	2W	C/DV
Lumphanan	NJ587049	42	2W	45	2W	49	2W	BV
Peterhead	NK111452	62-	100W	59	100W	55	100W	C/DV
Rosehearty	NJ933663	44	400W	41+	400W	47	400W	BV
Tomintoul	NJ163209	46	2W	43	2W	50	2W	BV

Site Name	NGR	BBC A		D3&4		BBC B		Aerial Group
		Channel	ERP	Channel	ERP	Channel	ERP	
Tullich	NO379984	62	14W	59	14W	55	14W	C/DV

Durriss transmitter group - Commercial (COM) Multiplexes

Site Name	NGR	SDN		Arqiva A		Arqiva B		Aerial Group
		Channel	ERP	Channel	ERP	Channel	ERP	
Durriss ^b	NO764899	23	50kW	26	50kW	29	50kW	AH

Eitshal transmitter group - Public Service Broadcaster (PSB) Multiplexes

Site Name	NGR	BBC A		D3&4		BBC B		Aerial Group
		Channel	ERP	Channel	ERP	Channel	ERP	
Eitshal	NB305303	26	20kW	23	20kW	29	20kW	AH
Badachro	NG779741	46	7W	43	7W	50	7W	BV
Kinlochbervie HP	NC225560	46	3W	43	3W	50	3W	BH
Kinlochbervie VP	NC225560	46	16W	43	16W	50	16W	BV
Lochinver	NC092222	46	2W	43	2W	50	2W	BV
Ness Of Lewis	NB533603	44	6W	41+	6W	47	6W	BV
Poolewe	NG860820	44	3W	47	3W	41+	3W	BV
Staffin	NG495666	45	9W	49	9W	42	9W	BV
Ullapool	NH142935	45	16W	49	16W	42	16W	BV

Eitshal transmitter group - Commercial (COM) Multiplexes

Site Name	NGR	SDN		Arqiva A		Arqiva B		Aerial Group
		Channel	ERP	Channel	ERP	Channel	ERP	
Eitshal	NB305303	25	10kW	22	10kW	28	10kW	AH

^b Until June 2011 SDN will operate on channel 52 (20kW), Arqiva A will operate on channel 41 (5kW), and Arqiva B will operate on channel 51 (10kW) at Durriss.

Keelylang Hill transmitter group - Public Service Broadcaster (PSB) Multiplexes

Site Name	NGR	BBC A		D3&4		BBC B		Aerial Group
		Channel	ERP	Channel	ERP	Channel	ERP	
Keelylang Hill	HY377102	46	20kW	43	20kW	50	20kW	BH
Burgar Hill HP	HY341261	27	1W	24	1W	21+	1W	AH
Burgar Hill VP	HY341261	27	4W	24	4W	21+	4W	AV
Pierowall	HY447497	26	10W	23	10W	29	10W	AV

Keelylang Hill transmitter group - Commercial (COM) Multiplexes

Site Name	NGR	SDN		Arqiva A		Arqiva B		Aerial Group
		Channel	ERP	Channel	ERP	Channel	ERP	
Keelylang Hill	HY377102	42	10kW	45	10kW	49	10kW	BH

Knockmore transmitter group - Public Service Broadcaster (PSB) Multiplexes

Site Name	NGR	BBC A		D3&4		BBC B		Aerial Group
		Channel	ERP	Channel	ERP	Channel	ERP	
Knockmore	NJ321497	26	20kW	23	20kW	29	20kW	WH
Aviemore	NH940125	28	3W	25	3W	22	3W	AV
Avoch	NH702555	58	2W	54	2W	61	2W	C/DV
Balblair Wood	NH593952	62-	17W	59	17W	55	17W	C/DV
Craigellachie	NJ262443	58	14W	61	14W	54	14W	C/DV
Grantown	NJ003267	44	70W	41+	70W	47	70W	BV
Kingussie	NN769985	46	20W	43	20W	50	20W	BV
Lairg	NC573056	44	3W	41+	3W	47	3W	BV

Knockmore transmitter group - Commercial (COM) Multiplexes

Site Name	NGR	SDN		Arqiva A		Arqiva B		Aerial Group
		Channel	ERP	Channel	ERP	Channel	ERP	
Knockmore	NJ321497	53	10kW	57	10kW	60	10kW	WH

Rosemarkie transmitter group - Public Service Broadcaster (PSB) Multiplexes

Site Name	NGR	BBC A		D3&4		BBC B		Aerial Group
		Channel	ERP	Channel	ERP	Channel	ERP	
Rosemarkie	NH761622	45	20kW	49	20kW	42	20kW	BH
Auchmore Wood	NH483501	28	20W	25	20W	22	20W	AV
Cromarty	NH787676	28	2W	25	2W	22	2W	AV
Fodderty	NH511606	58	24W	61	24W	54	24W	C/DV
Fort Augustus	NH360049	26	2W	23	2W	29	2W	AV
Glen Convinth	NH506392	27	7W	24	7W	21+	7W	AV
Glen Urquhart HP	NH442295	44	2W	41+	2W	47	2W	BH
Glen Urquhart VP	NH442295	44	18W	41+	18W	47	18W	BV
Inverness	NH667447	62-	7W	55	7W	59	7W	C/DV
Tomatin	NH822288	28	3W	25	3W	22	3W	AV
Tomich	NH306276	27	3W	24	3W	21+	3W	AV
Tomich Link	NH321265	45	2W	49	2W	42	2W	BV
Wester Erchite	NH577307	27	3W	24	3W	21+	3W	AV

Rosemarkie transmitter group - Commercial (COM) Multiplexes

Site Name	NGR	SDN		Arqiva A		Arqiva B		Aerial Group
		Channel	ERP	Channel	ERP	Channel	ERP	
Rosemarkie	NH761622	43	10kW	46	10kW	50	10kW	BH

Rumster Forest transmitter group - Public Service Broadcaster (PSB) Multiplexes

Site Name	NGR	BBC A		D3&4		BBC B		Aerial Group
		Channel	ERP	Channel	ERP	Channel	ERP	
Rumster Forest	ND197385	27	20kW	24	20kW	21+	20kW	WH
Ben Tongue	NC604588	45	7W	49	7W	42	7W	BV
Durness	NC409672	57	2W	53	2W	60	2W	C/DV
Melvich	NC880637	44	11W	41+	11W	47	11W	BV
Thurso	ND119673	57	2W	60	2W	53	2W	C/DV

Rumster Forest transmitter group - Commercial (COM) Multiplexes

Site Name	NGR	SDN		Arqiva A		Arqiva B		Aerial Group
		Channel	ERP	Channel	ERP	Channel	ERP	
Rumster Forest	ND197385	30-	10kW	59	10kW	62-	10kW	WH

Skriaig transmitter group - Public Service Broadcaster (PSB) Multiplexes

Site Name	NGR	BBC A		D3&4		BBC B		Aerial Group
		Channel	ERP	Channel	ERP	Channel	ERP	
Skriaig	NG451408	27	320W	24	320W	21+	320W	AV
Ardintoul	NG832242	45	9W	49	9W	42	9W	BV
Attadale	NG924392	28	2W	25	2W	22	2W	AV
Borve	NF648018	28	2W	25	2W	22	2W	AV
Bruernish	NF719023	43	2W	46	2W	50	2W	BV
Clettraval	NF751716	44	400W	41+	400W	47	400W	BV
Daliburgh	NF735217	60	6W	57	6W	53	6W	C/DV
Duncraig	NG827324	44	33W	41+	33W	47	33W	BV
Inverarish	NG557343	46	8W	43	8W	50	8W	BV
Kilbride South Uist	NF752148	49	26W	45	26W	42	26W	BV
Kylerhea	NG752206	44	10W	41+	10W	47	10W	BV
Lochmaddy HP	NF951727	28	40W	25	40W	22	40W	AH
Lochmaddy VP	NF951727	28	2W	25	2W	22	2W	AV
Penifiler	NG489416	45	8W	49	8W	42	8W	BV
Scoval HP	NG181514	62-	132W	59	132W	55	132W	C/DH
Scoval VP	NG181514	62-	32W	59	32W	55	32W	C/DV
Tarbert Harris	NB154001	45	19W	49	19W	42	19W	BV
Uig	NG383640	46	2W	43	2W	50	2W	BV

Glossary

Site Name:	The name of the transmitter site. Primary transmitters in each transmitter group are highlighted in bold , 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	4/11/2008	Document Issued
2.0	9/2/2010	Offsets added. Skriaig now a separate DSO group. Rosehearty ERP change. Transitional arrangements revised.
3.0	5/1/2011	Format and text changed for post-switchover situation, and analogue details removed. Initial 800Mhz clearance information added. Dundee Menzieshill added and Camperdown removed. Bressay Arqiva A & Arqiva B ERPs corrected.

© Ofcom copyright 2011. All material provided by Ofcom is owned by Ofcom or is licensed to Ofcom and is protected by copyright, trade marks, service marks, patents or other proprietary rights and laws. The Ofcom logo is a registered trademark.