

Summary of SPECTRA Display Modes

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Mode Options					Mode Number	Colour Resolution (w x h)	Attribute Size (w x h)	Attribute Foreground Colours	Attribute Background Colours	Attribute Cell Bright	Attribute Foreground Bright	Attribute Background Bright	Attribute Cell Flash	Attribute Foreground Flash	Attribute Background Flash	Border Colours	Border Bright	Border Flash	Attribute Size	Attribute Memory Usage
Full cell	Standard border	Single attribute byte	Basic colours	Row	0	32 x 24	8 x 8	8	8	Yes	-	-	Yes	-	-	8	-	-	0.75K	\$5800-\$5AFF
				Quad	1	32 x 48	8 x 4	8	8	Yes	-	-	Yes	-	-	8	-	-	1.5K	\$6000-\$65FF
				Dual	2	32 x 96	8 x 2	8	8	Yes	-	-	Yes	-	-	8	-	-	3K	\$6000-\$6BFF
				Line	3	32 x 192	8 x 1	8	8	Yes	-	-	Yes	-	-	8	-	-	6K	\$6000-\$77FF
		Extra colours		Row	4	32 x 24	8 x 8	64	2	-	-	-	Yes	-	-	8	-	-	0.75K	\$5800-\$5AFF
				Quad	5	32 x 48	8 x 4	64	2	-	-	-	Yes	-	-	8	-	-	1.5K	\$6000-\$65FF
				Dual	6	32 x 96	8 x 2	64	2	-	-	-	Yes	-	-	8	-	-	3K	\$6000-\$6BFF
				Line	7	32 x 192	8 x 1	64	2	-	-	-	Yes	-	-	8	-	-	6K	\$6000-\$77FF
		Double attribute byte	Basic colours	Row	8	32 x 24	8 x 8	8	8	-	Yes	Yes	-	Yes	Yes	8	-	-	1.5K	\$5800-\$5AFF, \$5C00-\$5EFF
				Quad	9	32 x 48	8 x 4	8	8	-	Yes	Yes	-	Yes	Yes	8	-	-	3K	\$6000-\$65FF, \$6800-\$6DFF
				Dual	10	32 x 96	8 x 2	8	8	-	Yes	Yes	-	Yes	Yes	8	-	-	6K	\$6000-\$6BFF, \$7000-\$7BFF
				Line	11	32 x 128 / 32 x 32	8 x 1 / 8 x 2	8	8	-	Yes	Yes	-	Yes	Yes	8	-	-	10K	\$5800-\$77FF
			Extra colours	Row	12	32 x 24	8 x 8	64	64	-	-	-	-	Yes	Yes	8	-	-	1.5K	\$5800-\$5AFF, \$5C00-\$5EFF
				Quad	13	32 x 48	8 x 4	64	64	-	-	-	-	Yes	Yes	8	-	-	3K	\$6000-\$65FF, \$6800-\$6DFF
				Dual	14	32 x 96	8 x 2	64	64	-	-	-	-	Yes	Yes	8	-	-	6K	\$6000-\$6BFF, \$7000-\$7BFF
				Line	15	32 x 128 / 32 x 32	8 x 1 / 8 x 2	64	64	-	-	-	-	Yes	Yes	8	-	-	10K	\$5800-\$77FF
	Enhanced border	Single attribute byte	Basic colours	Row	16	32 x 24	8 x 8	8	8	Yes	-	-	Yes	-	-	8	Yes	Yes	0.75K	\$5800-\$5AFF
				Quad	17	32 x 48	8 x 4	8	8	Yes	-	-	Yes	-	-	8	Yes	Yes	1.5K	\$6000-\$65FF
				Dual	18	32 x 96	8 x 2	8	8	Yes	-	-	Yes	-	-	8	Yes	Yes	3K	\$6000-\$6BFF
				Line	19	32 x 192	8 x 1	8	8	Yes	-	-	Yes	-	-	8	Yes	Yes	6K	\$6000-\$77FF
		Extra colours		Row	20	32 x 24	8 x 8	64	2	-	-	-	Yes	-	-	64	-	-	0.75K	\$5800-\$5AFF
				Quad	21	32 x 48	8 x 4	64	2	-	-	-	Yes	-	-	64	-	-	1.5K	\$6000-\$65FF
				Dual	22	32 x 96	8 x 2	64	2	-	-	-	Yes	-	-	64	-	-	3K	\$6000-\$6BFF
				Line	23	32 x 192	8 x 1	64	2	-	-	-	Yes	-	-	64	-	-	6K	\$6000-\$77FF
		Double attribute byte	Basic colours	Row	24	32 x 24	8 x 8	8	8	-	Yes	Yes	-	Yes	Yes	8	Yes	Yes	1.5K	\$5800-\$5AFF, \$5C00-\$5EFF
				Quad	25	32 x 48	8 x 4	8	8	-	Yes	Yes	-	Yes	Yes	8	Yes	Yes	3K	\$6000-\$65FF, \$6800-\$6DFF
				Dual	26	32 x 96	8 x 2	8	8	-	Yes	Yes	-	Yes	Yes	8	Yes	Yes	6K	\$6000-\$6BFF, \$7000-\$7BFF
				Line	27	32 x 128 / 32 x 32	8 x 1 / 8 x 2	8	8	-	Yes	Yes	-	Yes	Yes	8	Yes	Yes	10K	\$5800-\$77FF
			Extra colours	Row	28	32 x 24	8 x 8	64	64	-	-	-	-	Yes	Yes	64	-	-	1.5K	\$5800-\$5AFF, \$5C00-\$5EFF
				Quad	29	32 x 48	8 x 4	64	64	-	-	-	-	Yes	Yes	64	-	-	3K	\$6000-\$65FF, \$6800-\$6DFF
				Dual	30	32 x 96	8 x 2	64	64	-	-	-	-	Yes	Yes	64	-	-	6K	\$6000-\$6BFF, \$7000-\$7BFF
				Line	31	32 x 128 / 32 x 32	8 x 1 / 8 x 2	64	64	-	-	-	-	Yes	Yes	64	-	-	10K	\$5800-\$77FF
Half cell	Standard border	Single attribute byte	Basic colours	Row	128	64 x 24	4 x 8	8	1	Yes	-	-	Yes	-	-	8	-	-	0.75K	\$5800-\$5AFF
				Quad	129	64 x 48	4 x 4	8	1	Yes	-	-	Yes	-	-	8	-	-	1.5K	\$6000-\$65FF
				Dual	130	64 x 96	4 x 2	8	1	Yes	-	-	Yes	-	-	8	-	-	3K	\$6000-\$6BFF
				Line	131	64 x 192	4 x 1	8	1	Yes	-	-	Yes	-	-	8	-	-	6K	\$6000-\$77FF
		Extra colours		Row	132	64 x 24	4 x 8	2 / 64	1	-	-	-	Yes	-	-	8	-	-	0.75K	\$5800-\$5AFF
				Quad	133	64 x 48	4 x 4	2 / 64	1	-	-	-	Yes	-	-	8	-	-	1.5K	\$6000-\$65FF
				Dual	134	64 x 96	4 x 2	2 / 64	1	-	-	-	Yes	-	-	8	-	-	3K	\$6000-\$6BFF
				Line	135	64 x 192	4 x 1	2 / 64	1	-	-	-	Yes	-	-	8	-	-	6K	\$6000-\$77FF
		Double attribute byte	Basic colours	Row	136	64 x 24	4 x 8	8	8	-	Yes	Yes	-	Yes	Yes	8	-	-	1.5K	\$5800-\$5AFF, \$5C00-\$5EFF
				Quad	137	64 x 48	4 x 4	8	8	-	Yes	Yes	-	Yes	Yes	8	-	-	3K	\$6000-\$65FF, \$6800-\$6DFF
				Dual	138	64 x 96	4 x 2	8	8	-	Yes	Yes	-	Yes	Yes	8	-	-	6K	\$6000-\$6BFF, \$7000-\$7BFF
				Line	139	64 x 128 / 64 x 32	4 x 1 / 4 x 2	8	8	-	Yes	Yes	-	Yes	Yes	8	-	-	10K	\$5800-\$77FF
		Extra colours		Row	140	64 x 24	4 x 8	64	1*	-	-	-	-	Yes	Yes	8	-	-	1.5K	\$5800-\$5AFF, \$5C00-\$5EFF
				Quad	141	64 x 48	4 x 4	64	1*	-	-	-	-	Yes	Yes	8	-	-	3K	\$6000-\$65FF, \$6800-\$6DFF
				Dual	142	64 x 96	4 x 2	64	1*	-	-	-	-	Yes	Yes	8	-	-	6K	\$6000-\$6BFF, \$7000-\$7BFF
				Line	143	64 x 128 / 64 x 32	4 x 1 / 4 x 2	64	1*	-	-	-	-	Yes	Yes	8	-	-	10K	\$5800-\$77FF
	Enhanced border	Single attribute byte	Basic colours	Row	144	64 x 24	4 x 8	8	1	Yes	-	-	Yes	-	-	8	Yes	Yes	0.75K	\$5800-\$5AFF
				Quad	145	64 x 48	4 x 4	8	1	Yes	-	-	Yes	-	-	8	Yes	Yes	1.5K	\$6000-\$65FF
				Dual	146	64 x 96	4 x 2	8	1	Yes	-	-	Yes	-	-	8	Yes	Yes	3K	\$6000-\$6BFF
				Line	147	64 x 192	4 x 1	8	1	Yes	-	-	Yes	-	-	8	Yes	Yes	6K	\$6000-\$77FF
		Extra colours		Row	148	64 x 24	4 x 8	2 / 64	1	-	-	-	Yes	-	-	64	-	-	0.75K	\$5800-\$5AFF
				Quad	149	64 x 48	4 x 4	2 / 64	1	-	-	-	Yes	-	-	64	-	-	1.5K	\$6000-\$65FF
				Dual	150	64 x 96	4 x 2	2 / 64	1	-	-	-	Yes	-	-	64	-	-	3K	\$6000-\$6BFF
				Line	151	64 x 192	4 x 1	2 / 64	1	-	-	-	Yes	-	-	64	-	-	6K	\$6000-\$77FF
		Double attribute byte	Basic colours	Row	152	64 x 24	4 x 8	8	8	-	Yes	Yes	-	Yes	Yes	8	Yes	Yes	1.5K	\$5800-\$5AFF, \$5C00-\$5EFF
				Quad	153	64 x 48	4 x 4	8	8	-	Yes	Yes	-	Yes	Yes	8	Yes	Yes	3K	\$6000-\$65FF, \$6800-\$6DFF
				Dual	154	64 x 96	4 x 2	8	8	-	Yes	Yes	-	Yes	Yes	8	Yes	Yes	6K	\$6000-\$6BFF, \$7000-\$7BFF
				Line	155	64 x 128 / 64 x 32	4 x 1 / 4 x 2	8	8	-	Yes	Yes	-	Yes	Yes	8	Yes	Yes	10K	\$5800-\$77FF
		Extra colours		Row	156	64 x 24	4 x 8	64	1*	-	-	-	-	Yes	Yes	64	-	-	1.5K	\$5800-\$5AFF, \$5C00-\$5EFF
				Quad	157	64 x 48	4 x 4	64	1*	-	-	-	-	Yes	Yes	64	-	-	3K	\$6000-\$65FF, \$6800-\$6DFF
				Dual	158	64 x 96	4 x 2	64	1*	-	-	-	-	Yes	Yes	64	-	-	6K	\$6000-\$6BFF, \$7000-\$7BFF
				Line	159	64 x 128 / 64 x 32	4 x 1 / 4 x 2	64	1*	-	-	-	-	Yes	Yes	64	-	-	10K	\$5800-\$77FF

The pixel resolution in each display mode is 256 x 192.

Attribute = Size of the smallest pixel block covered by a single colour value.

Cell = Attribute file byte, which can contain 1 attribute (8 pixels wide) or 2 attributes (each 4 pixels wide).

Where 8 colours are stated, these are the standard range of Spectrum colours.

An attribute or border which supports a Bright option can display 15 unique colours.

* = The SPECTRA specification states that this option should be 2 but the actual SPECTRA interface does not have sufficient resources available to implement it.

2 / 64 = Number of colours for odd numbered attributes / Number of colours for even numbered attributes.

32 x 128 / 32 x 32 = 128 single pixel lines (each attribute 8 x 1 pixels) followed by 32 two pixel lines (each attribute 8 x 2 pixels).

64 x 128 / 64 x 32 = 128 single pixel lines (each attribute 4 x 1 pixels) followed by 32 two pixel lines (each attribute 4 x 2 pixels).

All modes can be double buffered, i.e. all drawing occurs to one display / attribute file while another is being shown. This allows the process of drawing to the screen to be invisible to the user and hence no flicker seen.