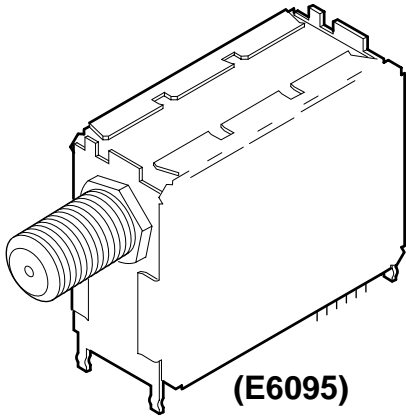
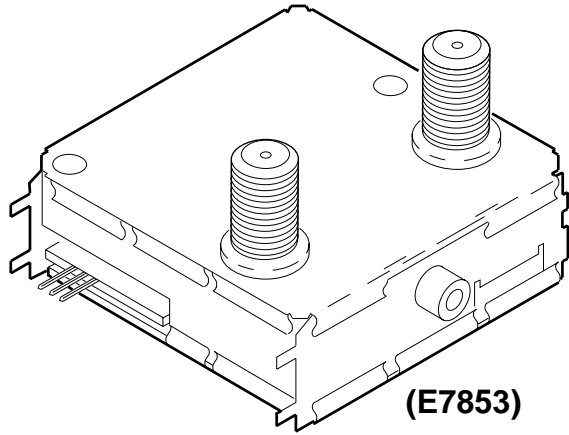


**MODULATORS**



**(E6095)**



**(E7853)**

**NTSC  
RF Modulators**

## MODULATOR SPECIFICATIONS

SPECIFICATION	MODEL NUMBER				
	E1351T	E1352T	E1358T	E1458T	E1551T
Transmission System	Europe Standard	Europe Standard	Europe Standard	Television Standard	Europe Standard
Color System	PAL G	PAL I	PAL G/I	NTSC-M/PAL G/I	PAL G
Output Channel	30 to 39	30 to 39	30 to 39	30 to 39	30 to 39
Output Impedance ( $\Omega$ )	75, unbalanced	75, unbalanced	75, unbalanced	75, unbalanced	75, unbalanced
Power Source (VDC)					
+B (MOD)	5 $\pm$ 0.1	5	5	5	5
+B (BST)	5 $\pm$ 0.1	5	5	5	5
Video Characteristics					
Input Impedance (k $\Omega$ )	1 $\pm$ 30%, unbalanced	1 $\pm$ 30%, unbalanced	1 $\pm$ 30%, unbalanced	1 $\pm$ 30%, unbalanced	1 $\pm$ 30%, unbalanced
Input Signal Level (Vp-p)	1 synchronous (-)	1 synchronous (-)	1 synchronous (-)	1 synchronous (-)	1 synchronous (-)
Modulation Factor					
CH 36	75 $\pm$ 4%	75 $\pm$ 4%	75 $\pm$ 4%	75 $\pm$ 5%	75 $\pm$ 4%
Other Channels	75 $\pm$ 7%	75 $\pm$ 7%	75 $\pm$ 7%	-	75 $\pm$ 7%
V/S Ratio	7 +0.25, -0 3 +0, -0.25	7 +0.25, -0 3 +0, -0.25	7 +0.25, -0 3 +0, -0.25	7 +0.3, -0.3 3 +0.3, -0.3	7 +0.25, -0 3 +0, -0.25
Amplitude Frequency Characteristics (dB)	+2, -3 (maximum)	+2, -3 (maximum)	+2, -3 (maximum)	+2, -3 (maximum)	+2, -3 (maximum)
Differential Gain (%)	$\pm$ 10 (maximum)	$\pm$ 10 (maximum)	$\pm$ 10 (maximum)	$\pm$ 10 (maximum)	$\pm$ 10 (maximum)
Differential Phase ( $^{\circ}$ )					
CH 36	$\pm$ 7 (maximum)	$\pm$ 7 (maximum)	$\pm$ 7 (maximum)	$\pm$ 10 (maximum)	$\pm$ 7 (maximum)
Other Channels	$\pm$ 10 (maximum)	$\pm$ 10 (maximum)	$\pm$ 10 (maximum)	-	$\pm$ 10 (maximum)
Change in Modulation Factor to APL (%)	$\pm$ 5 (maximum)	$\pm$ 5 (maximum)	$\pm$ 5 (maximum)	$\pm$ 5 (maximum)	$\pm$ 5 (maximum)
S/N Ratio (dB)	45 (p-p/rms minimum)	45 (p-p/rms minimum)	45 (p-p/rms minimum)	Fit for practical use	45 (p-p/rms minimum)
Audio System Characteristics					
Input Impedance (k $\Omega$ )	10 unbalanced (minimum)	10 unbalanced (minimum)	10 unbalanced (minimum)	10 unbalanced (minimum)	10 unbalanced (minimum)
Input Signal Level (dBs)	-5	-5	-5	-5	-5
Amplitude Frequency Characteristics (dB)	+2, -3	+2, -3	+2, -3	+3, -3	+2, -3
Modulation Factor	100 $\pm$ 24%	100 $\pm$ 24%	G: 100 $\pm$ 24% I: 110 $\pm$ 28%	M: 80 $\pm$ 20% G/I: 60 $\pm$ 15%	100 $\pm$ 24%
Distortion Rate (%)	2.0 (maximum)	2.0 (maximum)	2.0 (maximum)	3.0 (maximum)	2.0 (maximum)
S/N Ratio (Includes Buzz) (dB)	40 (minimum)	40 (minimum)	42 (minimum)	40 (minimum)	42 (minimum)
Output System Characteristics					
Video Carrier Frequency (kHz)	$\pm$ 500 (maximum)	$\pm$ 500 (maximum)	$\pm$ 500 (maximum)		$\pm$ 500 (maximum)
Audio Frequency (kHz)	5,500 $\pm$ 8 (maximum)	6,000 $\pm$ 8 (maximum)	G: 5,500 $\pm$ 8 (maximum) I: 6,000 $\pm$ 8 (maximum)		5,500 $\pm$ 8 (maximum)
Frequency Float (MHz)	0.2 (minimum)	0.2 (minimum)	0.2 (minimum)		0.2 (minimum)
Video Output Level (dB $\mu$ )	74 +2, -4	74 +2, -4	74 +2, -4		74 +2, -4
Audio Output Level Difference (P/S Ratio) (dB)	16 $\pm$ 4 (maximum)	16 $\pm$ 4 (maximum)	16 $\pm$ 4 (maximum)		16 $\pm$ 4 (maximum)
Output Terminal Spurious (For fp Output Level) (dB)					
Specific Frequency	40 (maximum)	40 (maximum)	40 (maximum)		40 (maximum)
Other Frequencies	42 (maximum)	42 (maximum)	42 (maximum)		42 (maximum)
Spurious Radiation Within the Band (dB)	60 (maximum)	60 (maximum)	60 (maximum)		60 (maximum)
Chroma Beat	61 (maximum)	61 (maximum)	61 (maximum)		61 (maximum)
Antenna In/Tuner Out	Yes/No	Yes/No	Yes/No	Yes/No	Yes/Yes
Connector Type	IEC	IEC	IEC	F	IEC/RCA

## NOTE:

Blocks with only a dash indicate that data is not applicable.

## MODULATOR SPECIFICATIONS (cont'd)

SPECIFICATION	MODEL NUMBER				
	E1552T	E1553TG	E1558T	E1559T	E1651T
Transmission System	Europe Standard	Europe Standard	Europe Standard	Europe Standard	Europe Standard
Color System	PAL I	PAL G/K	PAL G/I	PAL I/K	PAL G
Output Channel	30 to 39	30 to 39	30 to 39	30 to 39	30 to 39
Output Impedance ( $\Omega$ )	75, unbalanced	75, unbalanced	75, unbalanced	75, unbalanced	75, unbalanced
Power Source (VDC)					
+B (MOD)	5	5	5	5	5
+B (BST)	5	5	5	5	5
Video Characteristics					
Input Impedance (k $\Omega$ )	1 $\pm$ 30%, unbalanced	1 $\pm$ 30%, unbalanced	1 $\pm$ 30%, unbalanced	1 $\pm$ 30%, unbalanced	1 $\pm$ 30%, unbalanced
Input Signal Level (Vp-p)	1 synchronous (-)	1 synchronous (-)	1 synchronous (-)	1 synchronous (-)	1 synchronous (-)
Modulation Factor					
CH 36	75 $\pm$ 4%	75 $\pm$ 4%	75 $\pm$ 4%	75 $\pm$ 4%	75 $\pm$ 4%
Other Channels	75 $\pm$ 7%	75 $\pm$ 7%	75 $\pm$ 7%	75 $\pm$ 7%	75 $\pm$ 7%
V/S Ratio	7 +0.25, -0 3 +0, -0.25	7 +0.25, -0 3 +0, -0.25	7 +0.25, -0 3 +0, -0.25	7 +0.25, -0 3 +0, -0.25	7 +0.25, -0 3 +0, -0.25
Amplitude Frequency Characteristics (dB)	+2, -3 (maximum)	+2, -3	+2, -3 (maximum)	+2, -3	+2, -3
Differential Gain (%)	$\pm$ 10 (maximum)	$\pm$ 10 (maximum)	$\pm$ 10 (maximum)	$\pm$ 10 (maximum)	$\pm$ 10 (maximum)
Differential Phase ( $^{\circ}$ )					
CH 36	$\pm$ 7 (maximum)	$\pm$ 7 (maximum)	$\pm$ 7 (maximum)	$\pm$ 7 (maximum)	$\pm$ 7 (maximum)
Other Channels	$\pm$ 10 (maximum)	$\pm$ 10 (maximum)	$\pm$ 10 (maximum)	$\pm$ 10 (maximum)	$\pm$ 10 (maximum)
Change in Modulation Factor to APL (%)	$\pm$ 5 (maximum)	$\pm$ 5 (maximum)	$\pm$ 5 (maximum)	$\pm$ 5 (maximum)	$\pm$ 5 (maximum)
S/N Ratio (dB)	45 (p-p/rms minimum)	45 (p-p/rms minimum)	45 (p-p/rms minimum)	45 (p-p/rms minimum)	45 (p-p/rms minimum)
Audio System Characteristics					
Input Impedance (k $\Omega$ )	10 unbalanced (minimum)	10 unbalanced (minimum)	10 unbalanced (minimum)	10 unbalanced (minimum)	10 unbalanced (minimum)
Input Signal Level (dBs)	-5	-5	-5	-5	-5
Amplitude Frequency Characteristics (dB)	+2, -3	+2, -3	+2, -3	+2, -3	+2, -3
Modulation Factor	100 $\pm$ 24%	G: 100 $\pm$ 24% K: 120 $\pm$ 28%	G: 100 $\pm$ 24% I: 110 $\pm$ 26%	I: 100 $\pm$ 24% K: 110 $\pm$ 26%	100 $\pm$ 24%
Distortion Rate (%)	2.0 (maximum)	2.0 (maximum)	2.0 (maximum)	2.0 (maximum)	2.0 (maximum)
S/N Ratio (Includes Buzz) (dB)	45 (minimum)	42 (minimum)	42 (minimum)	42 (minimum)	42 (minimum)
Output System Characteristics					
Video Carrier Frequency (kHz)	$\pm$ 500 (maximum)	$\pm$ 500 (maximum)	$\pm$ 500 (maximum)	$\pm$ 500 (maximum)	$\pm$ 500 (maximum)
Audio Frequency (kHz)	6,000 $\pm$ 8 (maximum)	G: 5,500 $\pm$ 8 (maximum) K: 6,500 $\pm$ 8 (maximum)	G: 5,500 $\pm$ 8 (maximum) I: 6,000 $\pm$ 8 (maximum)	I: 6,000 $\pm$ 8 (maximum) K: 6,500 $\pm$ 8 (maximum)	5,500 $\pm$ 8 (maximum)
Frequency Float (MHz)	0.2 (minimum)	0.2 (minimum)	0.2 (minimum)	0.2 (minimum)	0.2 (minimum)
Video Output Level (dB $\mu$ )	74 +2, -4	74 +2, -4	74 +2, -4	74 +2, -4	74 +2, -4
Audio Output Level Difference (P/S Ratio) (dB)	16 $\pm$ 4 (maximum)	16 $\pm$ 4 (maximum)	16 $\pm$ 4 (maximum)	16 $\pm$ 4 (maximum)	16 $\pm$ 4
Output Terminal Spurious (For fp Output Level) (dB)					
Specific Frequency	40 (maximum)	40 (maximum)	40 (maximum)	40 (maximum)	40 (maximum)
Other Frequencies	42 (maximum)	42 (maximum)	42 (maximum)	42 (maximum)	42 (maximum)
Spurious Radiation Within the Band (dB)	60 (maximum)	60 (maximum)	60 (maximum)	60 (maximum)	60 (maximum)
Chroma Beat	61 (maximum)	61 (maximum)	61 (maximum)	61 (maximum)	61 (maximum)
Antenna In/Tuner Out	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/No
Connector Type	IEC/RCA	IEC/RCA	IEC/RCA	IEC/RCA	IEC

## NOTE:

Blocks with only a dash indicate that data is not applicable.

## MODULATOR SPECIFICATIONS (cont'd)

SPECIFICATION	MODEL NUMBER				
	E1652T	E1653TG	E1658T	E1659T	E6095
Transmission System	Europe Standard	Europe Standard	Europe Standard	Europe Standard	U.S. Standard
Color System	PAL I	PAL G/K	PAL G/I	PAL I/K	NTSC
Output Channel	30 to 39	30 to 39	30 to 39	30 to 39	2 or 3
Output Impedance ( $\Omega$ )	75, unbalanced	75, unbalanced	75, unbalanced	75, unbalanced	75, unbalanced
Power Source (VDC)					5
+B (MOD)	5	5	5	5	-
+B (BST)	5	5	5	5	-
Video Characteristics					
Input Impedance ( $k\Omega$ )	1 $\pm$ 30%, unbalanced	1 $\pm$ 30%, unbalanced	1 $\pm$ 30%, unbalanced	1 $\pm$ 30%, unbalanced	1 $\pm$ 30%, unbalanced
Input Signal Level (Vp-p)	1 synchronous (-)	1 synchronous (-)	1 synchronous (-)	1 synchronous (-)	1 synchronous (-)
Modulation Factor					78 $\pm$ 7%
CH 36	75 $\pm$ 4%	75 $\pm$ 4%	75 $\pm$ 4%	75 $\pm$ 4%	-
Other Channels	75 $\pm$ 7%	75 $\pm$ 7%	75 $\pm$ 7%	75 $\pm$ 7%	-
V/S Ratio	7 +0.25, -0 3 +0, -0.25	7 +0.25, -0 3 +0, -0.25	7 +0.25, -0 3 +0, -0.25	7 +0.25, -0 3 +0, -0.25	7 +0.25, -0 3 +0, -0.25
Amplitude Frequency Characteristics (dB)	+2, -3 (maximum)	+2, -3 (maximum)	+2, -3 (maximum)	+2, -3 (maximum)	+2, -2
Differential Gain (%)	$\pm$ 10 (maximum)	$\pm$ 10 (maximum)	$\pm$ 10 (maximum)	$\pm$ 10 (maximum)	8 (maximum)
Differential Phase ( $^{\circ}$ )					8 (maximum)
CH 36	$\pm$ 7 (maximum)	$\pm$ 7 (maximum)	$\pm$ 7 (maximum)	$\pm$ 7 (maximum)	-
Other Channels	$\pm$ 10 (maximum)	$\pm$ 10 (maximum)	$\pm$ 10 (maximum)	$\pm$ 10 (maximum)	-
Change in Modulation Factor to APL (%)	$\pm$ 5 (maximum)	$\pm$ 5 (maximum)	$\pm$ 5 (maximum)	$\pm$ 5 (maximum)	$\pm$ 3
S/N Ratio (dB)	45 (p-p/rms minimum)	45 (p-p/rms minimum)	45 (p-p/rms minimum)	45 (p-p/rms minimum)	45 (p-p/rms)
Audio System Characteristics					
Input Impedance ( $k\Omega$ )	10 unbalanced (minimum)	10 unbalanced (minimum)	10 unbalanced (minimum)	10 unbalanced (minimum)	50 unbalanced (minimum)
Input Signal Level (dBs)	-5	-5	-5	-5	-8.7
Amplitude Frequency Characteristics (dB)	+2, -3	+2, -3	+2, -3	+2, -3	+2, -2 (100 Hz to 10 kHz) +3, -3 (11 kHz to 100 kHz)
Modulation Factor	100 $\pm$ 24%	G: 100 $\pm$ 24% K: 120 $\pm$ 28%	G: 100 $\pm$ 24% I: 110 $\pm$ 26%	I: 100 $\pm$ 24% K: 110 $\pm$ 26%	100 $\pm$ 20%
Distortion Rate (%)	2.0 (maximum)	2.0 (maximum)	2.0 (maximum)	2.0 (maximum)	2.0 (maximum)
S/N Ratio (Includes Buzz) (dB)	45 (minimum)	45 (minimum)	42 (minimum)	45 (minimum)	45 (minimum)
Output System Characteristics					
Video Carrier Frequency (kHz)	$\pm$ 500 (maximum)	$\pm$ 500 (maximum)	$\pm$ 500 (maximum)	$\pm$ 500 (maximum)	$\pm$ 100
Audio Frequency (kHz)	6,000 $\pm$ 8 (maximum)	G: 5,500 $\pm$ 8 (maximum) I: 6,500 $\pm$ 8 (maximum)	I: 5,500 $\pm$ 8 (maximum) K: 6,000 $\pm$ 8 (maximum)	I: 6,000 $\pm$ 8 (maximum) K: 6,500 $\pm$ 8 (maximum)	4,500 $\pm$ 5
Frequency Float (MHz)	0.2 (minimum)	0.2 (minimum)	0.2 (minimum)	0.2 (minimum)	-
Video Output Level (dB $\mu$ )	75 +2, -4	74 +2, -4	74 +2, -4	74 +2, -4	66 $\pm$ 3
Audio Output Level Difference (P/S Ratio) (dB)	16 $\pm$ 4 (maximum)	16 $\pm$ 4 (maximum)	16 $\pm$ 4 (maximum)	16 $\pm$ 4 (maximum)	16 $\pm$ 3
Output Terminal Spurious (For fp Output Level) (dB)					
Specific Frequency	40 (maximum)	40 (maximum)	40 (maximum)	40 (maximum)	16 +4, -3
Other Frequencies	42 (maximum)	42 (maximum)	42 (maximum)	42 (maximum)	30 (maximum)
Spurious Radiation Within the Band (dB)	60 (maximum)	60 (maximum)	60 (maximum)	60 (maximum)	60 (maximum)
Chroma Beat	61 (maximum)	61 (maximum)	61 (maximum)	61 (maximum)	60 (maximum)
Antenna In/Tuner Out	Yes/No	Yes/No	Yes/No	Yes/No	No/No
Connector Type	IEC	IEC	IEC	IEC	F

## NOTE:

Blocks with only a dash indicate that data is not applicable.

## MODULATOR SPECIFICATIONS (cont'd)

SPECIFICATION	MODEL NUMBER		
	E7656	E7853	E7854
Transmission System	Europe Standard	U.S. Standard	U.S. Standard
Color System	PAL B	NTSC	NTSC (PAL M)
Output Channel	3, 4	3, 4	3, 4
Output Impedance ( $\Omega$ )	75, unbalanced	75, unbalanced	75, unbalanced
Power Source (VDC)			
+B (MOD)	5	5	5
+B (BST)	-	-	-
Video Characteristics			
Input Impedance ( $k\Omega$ )	1 $\pm$ 30%, unbalanced	1 $\pm$ 30%, unbalanced	1 $\pm$ 30%, unbalanced
Input Signal Level (Vp-p)	1 synchronous (-)	1 synchronous (-)	1 synchronous (-)
Modulation Factor	77 $\pm$ 7%	77 $\pm$ 7%	77 $\pm$ 5%
CH 36	-	-	-
Other Channels	-	-	-
V/S Ratio	7 +0.25, -0 3 +0, -0.25	7 +0.25, -0 3 +0, -0.25	7 +0.25, -0 3 +0, -0.25
Amplitude Frequency Characteristics (dB)	+2, -3 (maximum)	+2, -3 (maximum)	+2, -3 (maximum)
Differential Gain (%)	10 (maximum)	10 (maximum)	10 (maximum)
Differential Phase ( $^{\circ}$ )	10 (maximum)	10 (maximum)	10 (maximum)
CH 36	-	-	-
Other Channels	-	-	-
Change in Modulation Factor to APL (%)	$\pm$ 5 (maximum)	$\pm$ 5 (maximum)	$\pm$ 5 (maximum)
S/N Ratio (dB)	45 (p-p/rms minimum)	45 (p-p/rms minimum)	45 (p-p/rms minimum)
Audio System Characteristics			
Input Impedance ( $k\Omega$ )	10 unbalanced (minimum)	30 unbalanced (minimum)	30 unbalanced (minimum)
Input Signal Level (dBs)	-5	1.24 Vp-p	1.04 Vp-p
Amplitude Frequency Characteristics (dB)	+2, -3	+2, -3	+2, -3
Modulation Factor	100 $\pm$ 20%	100 $\pm$ 20%	80 $\pm$ 16%
Distortion Rate (%)	3.0 (maximum)	3.0 (maximum)	3.0 (maximum)
S/N Ratio (Includes Buzz) (dB)	45 (minimum)	45 (minimum)	45 (minimum)
Output System Characteristics			
Video Carrier Frequency (kHz)	$\pm$ 100 (maximum)	$\pm$ 100 (maximum)	$\pm$ 100 (maximum)
Audio Frequency (kHz)	5,500 $\pm$ 7 (maximum)	4,500 $\pm$ 7 (maximum)	4,500 $\pm$ 7 (maximum)
Frequency Float (MHz)	-	-	-
Video Output Level (dB $\mu$ )	74 $\pm$ 3	66 $\pm$ 3 (maximum)	74 $\pm$ 3 (maximum)
Audio Output Level Difference (P/S Ratio) (dB)	16 +4, -3	16 +4, -3 (maximum)	16 +4, -3 (maximum)
Output Terminal Spurious (For fp Output Level) (dB)			
Specific Frequency	30 (maximum)	30 (maximum)	30 (minimum)
Other Frequencies	30 (maximum)	30 (maximum)	30 (minimum)
Spurious Radiation Within the Band (dB)	60 (maximum)	60 (maximum)	60 (minimum)
Chroma Beat	50 (maximum)	50 (maximum)	50 (minimum)
Antenna In/Tuner Out	Yes/No	Yes/Yes	Yes/Yes
Connector Type	IEC/RCA	F/RCA	F/RCA

## NOTE:

Blocks with only a dash indicate that data is not applicable.