



## COMPETITIVE COMPARISON FOR TEGAM 2700 SERIES FUNCTION/ARBITRARY WAVEFORM GENERATORS

Manufacturer Feature	TEGAM 2720	TEGAM 2725	TEGAM 2730	Agilent 33220A	Agilent 33250A	Fluke 281	Fluke 291	Tektronix 3021
<b>Function Generator</b>								
Frequency Accuracy	±20 ppm	±20 ppm	±20 ppm	±20 ppm	±2 ppm	±10 ppm	±10ppm	±1ppm
<b>Sine</b>								
Frequency Range	10uHz - 31MHz	1uHz - 40 MHz	1uHz - 50 MHz	1uHz - 20 MHz	1uHz - 80 MHz	.1mHz - 16MHz	.1mHz - 40MHz	1mHz - 25 MHz
Harmonic Distortion	< 100 kHz	< 20 kHz	< 20 kHz	< 20 kHz	< 1 MHz	< 20 kHz	< 100 kHz	< 20 kHz
1Vp-p	-60 dBc	-65 dBc	-65 dBc	-70 dBc	-60 dBc	-65 dBc	-60 dBc	-70 dBc
Spurious	< 1 MHz -65 dBc	< 1 MHz -65 dBc	< 1 MHz -65 dBc	< 1 MHz -70 dBc	< 1 MHz -60 dBc	< 1 MHz -65 dBc	< 1 MHz -60 dBc	< 1 MHz -60 dBc
<b>Square</b>								
Frequency Range	10uHz - 31MHz	1uHz - 40 MHz	1uHz - 50 MHz	1uHz - 20 MHz	1uHz - 80 MHz	1mHz - 16MHz	1mHz - 16MHz	1mHz - 12.5MHz
Rise/Fall Time	≤ 12 ns	≤ 8 ns	≤ 6 ns	≤ 13 ns	≤ 8 ns	≤ 25 ns	<8ns	≤ 18 ns
Duty Cycle	20-80% to 5MHz 40-60% to 20MHz	20-80% to 10MHz 40-60% to 30MHz	20-80% to 10MHz 40-60% to 30MHz	20-80% to 10MHz 40-60% to 20MHz	20-80% to 25MHz 40-60% to 50MHz 20-80% to 80MHz	N/A	N/A	0.1% to 99.9% increments of 0.1
Overshoot	<2% ±50 mV	<3% ±50 mV	<3% ±50 mV	<2%	<5%	N/A	N/A	<5%
<b>Triangle/Ramp</b>								
Frequency Range	10uHz - 500kHz	1uHz - 5MHz	1uHz - 5MHz	1 uHz to 200 kHz	1uHz - 1 MHz	.1mHz - 100kHz	.1mHz - 500kHz	1mHz - 250kHz
Linearity	< 0.1%	< 0.1%	< 0.1%	< 0.1%	< 0.1%	< 0.1% to 30 kHz	< 0.1% to 30 kHz	< 0.1%
<b>Pulse</b>								
Frequency Range	.5mHz - 10MHz	.5mHz - 10MHz	.5mHz - 25MHz	.5mHz to 5MHz	.5mHz - 50 MHz	.01Hz to 10 MHz	N/A	1mHz to 12.5MHz
Min Rise/Fall Time	10 ns	10 ns	10 ns	<13 ns	5 ns	<25 ns	<8ns	18ns
Min Width	20 ns	20 ns	20 ns	20 ns	8 ns	25 ns	10ns	30ns
Other Wave Types	▪ noise	▪ noise ▪ ramp up/down ▪ exp up/down ▪ Gaussian ▪ sin(x)/x	▪ noise ▪ ramp up/down ▪ exp up/down ▪ Gaussian ▪ sin(x)/x	▪ noise ▪ ramp down ▪ exp up/down ▪ sin(x)/x ▪ cardiac	▪ noise ▪ sin(x)/x ▪ exp up/down ▪ cardiac ▪ DC	▪ cosine ▪ haversine ▪ havercosine ▪ pulse train ▪ sin (x)/x	▪ cosine ▪ haversin/cos ▪ pulse train ▪ ramp up/down ▪ sin (x)/x	▪ noise ▪ gaussian ▪ lorentz ▪ sin (x)/x ▪ 8 others
<b>Arbitrary Waveforms</b>								
Waveform Memory	500 k	1,000 k	4,000 k	64 k	64 k	256 k	1,000k	64k/ch
Waveform Storage	1 segmentable	1 segmentable	1 segmentable	4	4	100	500	4
DAC Resolution	12 bit	14 bit	14 bit	14 bit	12 bit	12 bit	12 bit	14 bit
Sample Clock Range	.02 S/s - 50 MS/s	.01S/s to 80 MS/s	.01S/s to 125 MS/s	50 MS/s	200 MS/s	.1S/s to 40 MS/s	.1S/s to 80 MS/s	250 MS/s
Wave Sequencer	N	N	N	N	N	16 Steps	16 Steps	N
<b>Amplitude</b>								
Range into 50Ω	10mV - 10Vp-p	10mV - 10Vp-p	10mV - 10Vp-p	10mV - 10Vp-p	10mV - 10Vp-p	2.5mV - 10Vp-p	2.5mV - 10Vp-p	10mV - 10Vp-p
Resolution	3.5 digits	3.5 digits	3.5 digits	4 digits	4 digits	3 digits or 1mV	3 digits or 1mV	4 digits
Accuracy >1V	1% ±20 mV	1% ±20 mV	1% ±20 mV	1% ±1 mV	1% ±1 mV	2% ±1 mV	2% ±1 mV	1% ±1 mV
Flatness	0.2 dB to 1MHz 0.5 dB to 20MHz	0.1 dB to 10MHz 1.0 dB to 40MHz	0.1 dB to 10MHz 1.0 dB to 50MHz	0.1 dB to 100kHz 0.15 dB to 5MHz 0.3 dB to 20 MHz	0.1 dB to 10MHz 0.2 dB to 50MHz 0.4 dB to 80 MHz	0.2 dB to 200kHz 1 dB to 10MHz 2.5 dB to 16 MHz	0.2 dB to 1MHz 0.4 dB to 40MHz	0.3 dB to 20MHz 0.5 dB to 25MHz
Units	Vp-p, Vrms, dBm	Vp-p, Vrms, dBm	Vp-p, Vrms, dBm	Vp-p, Vrms, dBm	Vp-p, Vrms, dBm	Vp-p, Vrms, dBm	Vp-p, Vrms, dBm	Vp-p, Vrms, dBm
<b>Offset</b>								
Range into 50Ω	±4.5V	±4.99V	±4.99V	±5.000V	±5.000V	±10.0V	±10.0V	±5.0V
Resolution	3 digits	3 digits	3 digits	4 digits		3 digits or 1mV	3 digits or 1mV	1mV
Accuracy	1% ±10 mV	1% ±10 mV	1% ±10 mV	±2% of offset .5% ±2 mV	1% of setting ± 2mV + .5% amplitude	3% ± 10mV	3% ± 10mV	1% of setting ± 5mV + .5% amplitude



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<b>Operational Modes</b>								
Wave Execution	DDS & TRUE ARB	DDS & TRUE ARB	DDS & TRUE ARB	DDS Only	DDS Only	DDS & TRUE ARB	DDS & TRUE ARB	DDS & TRUE ARB
Continuous	Y	Y	Y	Y	Y	Y	Y	Y
One Shot Trigger	MAN/INT/EXT	MAN/INT/EXT	MAN/INT/EXT	MAN/INT/EXT	MAN/INT/EXT	MAN/INT/EXT	MAN/INT/EXT	MAN/INT/EXT
Gated	MAN/INT/EXT	MAN/INT/EXT	MAN/INT/EXT	MAN/EXT	MAN/EXT	MAN/INT/EXT	MAN/INT/EXT	MAN/INT/EXT
Burst	1 to 99,999	1 to 999,999	1 to 999,999	1 to 50,000, infinite	1 to 1E6, infinite	1 to 1E6	1 to E6	1 to 1E6
Phase Offset	-360° to +360° .1° resolution	-360° to +360° .1° resolution	-360° to +360° .1° resolution	-360° to +360° .001° resolution	-360° to +360° .001° resolution	-360° to +360° .1° resolution	-360° to +360° .1° resolution	-180° to +180° .1° resolution
<b>Outputs</b>								
Main Output	50 Ω	50 Ω	50 Ω	50 Ω	50 Ω	50 Ω	50 Ω	50 Ω
Programmable	Y	Y	Y	N	N	Y	Y	N
Marker Output	STRT/END							
Reference Output	10 MHz	10 MHz	10 MHz	OPTIONAL 10 MHz	10 MHz	10 MHz	10 MHz	10 MHz
<b>Inputs</b>								
Trigger Input	10 MHz max	20 MHz max	20 MHz max	Y	Y	1 MHz max	1 MHz max	10 MHz max
Modulation Input	5 Vp-p = 100%	5 Vp-p = 100%	5 Vp-p = 100%	5 Vp-p = 100%	10 Vp-p = Full Scale	1 Vp-p = 100%	1 Vp-p = 100%	1 Vp-p = 100%
Reference Input	10 MHz	10 MHz	10 MHz	OPTIONAL 10 MHz ±500Hz	10 MHz	10 MHz	10 MHz	10 MHz
Summing Input	NONE	5 Vp-p max	5 Vp-p max	N	N	2 Vp-p max	2 Vp-p max	N
<b>Modulation</b>								
Amplitude Modulation	SIN/SQU/TRI/PUL INT/EXT .01 Hz to 20 kHz	SIN/SQU/TRI INT/EXT .01 Hz to 20 kHz	SIN/SQU/TRI INT/EXT .01 Hz to 20 kHz	SIN/SQU/RAM/ARB INT/EXT .002 Hz to 20 kHz	SIN/SQU/RAM/ARB INT/EXT .002 Hz to 20 kHz	ALL WAVES INT/EXT DC to 100 kHz	ALL WAVES INT/EXT DC to 500 kHz	No:Pulse,DC,Noise INT/EXT .002 Hz to 50 kHz
Frequency Modulation	SIN/SQU/TRI INT/EXT .01Hz to 20kHz	SIN/SQU/TRI INT/EXT .01Hz to 20kHz	SIN/SQU/TRI INT/EXT .01Hz to 20kHz	SIN/SQU/RAM/ARB INT/EXT .002 Hz to 20 kHz	SIN/SQU/RAM/ARB INT/EXT .002 Hz to 20 kHz	N	N	SIN/SQU/RAM/ARB INT/EXT .002 Hz to 50 kHz
FSK	SIN/SQU/TRI INT/EXT .01Hz to 1MHz	SIN/SQU/TRI INT/EXT .01Hz to 1MHz	SIN/SQU/TRI INT/EXT .01Hz to 1MHz	SIN/SQU/RAM/ARB INT/EXT .002 Hz to 100 kHz	SIN/SQU/RAM/ARB INT/EXT .002 Hz to 1 MHz	N	N	SIN/SQU/RAM/ARB INT/EXT .002Hz to 1MHz
PWM	In Development	In Development	In Development	PULSE INT/EXT .002 Hz to 20 kHz	N	N	N	PULSE INT/EXT .002 Hz to 50 kHz
Phase Modulation	In Development	In Development	In Development	SIN/SQU/RAM/ARB INT/EXT .002 Hz to 20 kHz	N	N	N	SIN/SQU/RAM/ARB INT/EXT .002 Hz to 50 kHz
Other	-	-	-	-	-	SCM	AM/SCM	
<b>Sweep</b>								
Frequency Range	20 ms – 500s	10 ms – 500s	10 ms – 500s	1 ms – 500 s	1 ms – 500 s	30 ms – 999s	1 ms – 999s	10 ms – 100s
Tune	I IN/I OG	I IN/I OG	I IN/I OG	I IN/I OG	I IN/I OG	I IN/I OG	I IN/I OG	I IN/I OG
<b>Com Interfaces</b>								
Standard	RS232, GPIB	RS232, GPIB	RS232, GPIB	USB, GPIB, LAN	RS232, GPIB	RS232, GPIB	RS232, GPIB, USB	USB 1.1 Only
Optional	USB to RS232 Converter	USB to RS232 Converter	USB to RS232 Converter	GPIB to USB Converter	GPIB to USB Converter		Compact Flash	
User Software	WaveWorks DDS LabVIEW 7.0 & 8.0 Driver	WaveWorks DDS LabVIEW 7.0 & 8.0 Driver	WaveWorks DDS LabVIEW 7.0 & 8.0 Driver	Intuilink LabVIEW 6.0 & 7.0 Driver	Intuilink LabVIEW 6.0 & 7.0 Driver	FLUKE Software LabVIEW 8.0 Driver	FLUKE Software LabVIEW 8.0 Driver	No LabVIEW Driver
Accessories	Single/Dual Rack	Single/Dual Rack	Single/Dual Rack	Single/Dual Rack	Single/Dual Rack	Single Rack	Single Rack	Single Rack
Warranty	3 Years	3 Years	3 Years	1 Year	1 Year	1 Year	1 Year	3 Years
List Price	\$1,695	\$1,995	\$2,995	\$1,853	\$4,553	\$1,995	\$3,295	\$1,780