

Digital Storage and Mixed Signal Oscilloscopes

2560B Series



Features and benefits

- Bandwidth up to 350 MHz
- 4 analog channels
- Maximum sampling rate of 2 GSa/s
- 200 Mpts memory depth
- Maximum waveform update rates of 120,000 (normal mode) and 500,000 (sequence mode) waveforms per second
- History and sequence mode store a maximum of 90,000 frames
- 10.1" capacitive touchscreen supports touchscreen gestures
- 10-bit mode improves vertical resolution
- Advance triggers with trigger zone support
- Built-in 50 MHz arbitrary waveform generator
- Power analysis tool evaluates 11 different parameters
- Automatic measurements with statistics and histogram
- Math function supports 2 traces and a formula editor
- 2 Mpts FFT provides high resolution when viewing signals in the frequency domain
- Additional 16 digital channels standard in MSO models (option available for DSO)
- Serial bus decoder supports I²C, SPI, UART, CAN and LIN protocols
- High speed Pass/Fail testing and custom masking editor tool
- Control the oscilloscope from a standard web browser via the built-in web server
- USBTMC-compliant device port and LAN interfaces standard

The 2560B Digital Storage (DSO) and Mixed Signal Oscilloscope (MSO) series expands debugging capabilities with new and improved features not found in previous models. Each model provides 4 channels with 200 Mpts memory depth and a maximum sample rate of 2 GSa/s.

Equipped with a 10.1" (1024 x 600) capacitive touchscreen and high waveform update rate of 120,000 waveforms per second, these oscilloscopes can capture infrequent glitches with excellent signal fidelity.

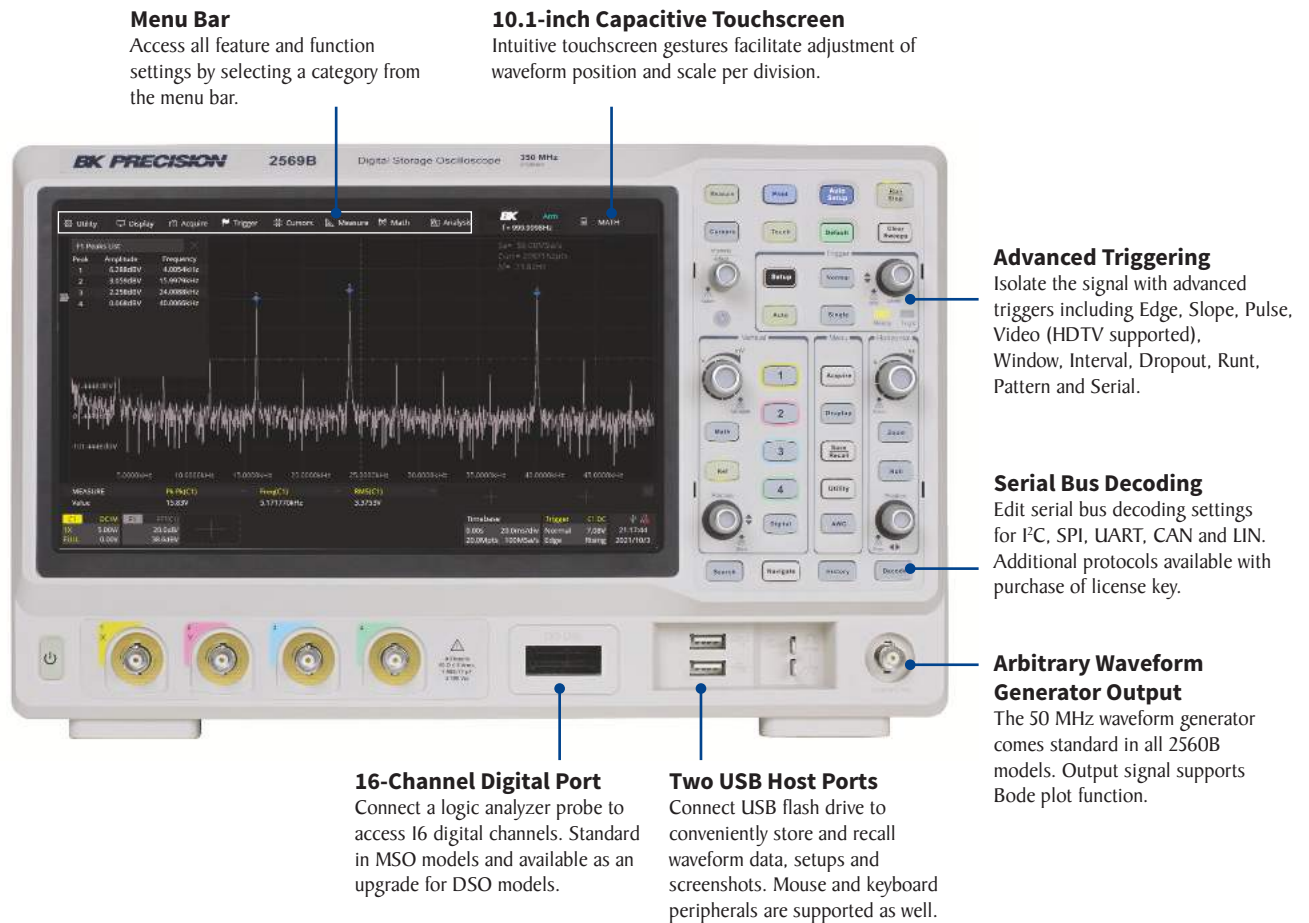
The logic analyzer and decode software provide 16 additional digital channels and serial bus decoding support for I²C, SPI, UART, CAN and LIN protocols.

Maximize productivity with an extensive list of features including trigger zones, waveform recording, pass/fail limit testing and automatic measurements. Display frequency response characteristics using the Bode plot feature or evaluate switching power supplies using the power analysis tool. Standard in all models, the integrated 50 MHz DDS waveform generator provides stimulus output of sine, square, ramp, pulse, noise, DC and arbitrary waveforms to the device under test.

The 2560B series offers a comprehensive set of tools to capture signal anomalies, decode serial bus protocols and ease debug and analysis. Additional options are available for decoding I²S, FlexRay, CAN FD, MIL-STD-1553B, SENT and Manchester protocols.

DSO Model	2565B	2567B	2569B
MSO Model	2565B-MSO	2567B-MSO	2569B-MSO
Bandwidth	100 MHz	200 MHz	350 MHz
Channels	4 Analog		

Front panel

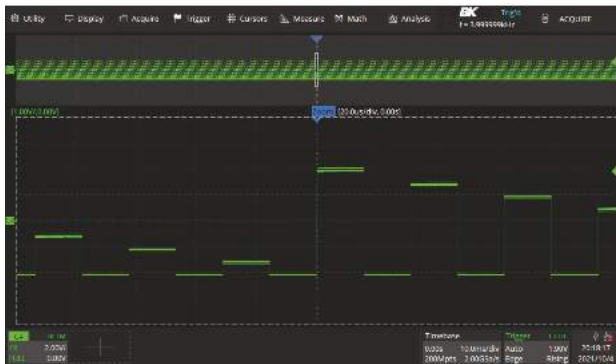


Rear panel



Operation highlights

Best-in-class memory depth of 200 Mpts



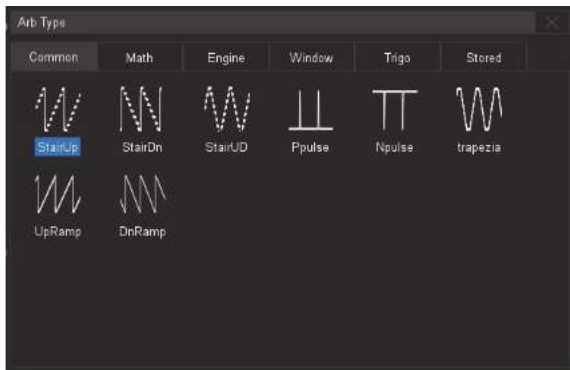
The oscilloscope's exceptionally deep memory allows you to capture waveform details over extended time intervals and at high sampling rates, then zoom into the signal for further analysis.

Waveform update rate of 120,000 wfms/s



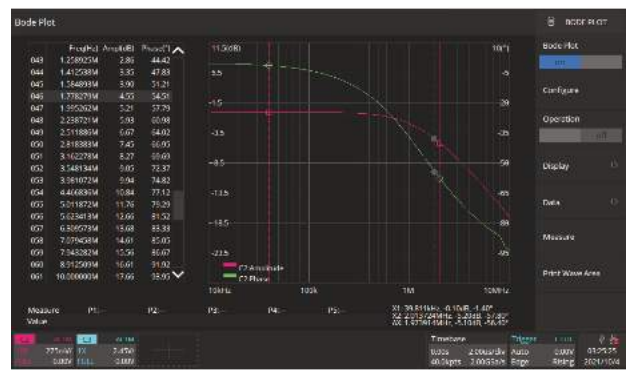
High speed waveform update rate displays infrequent glitches with excellent signal fidelity. Update rate can reach up to 500,000 wfms/s in sequence mode.

50 MHz waveform generator



The built-in DDS waveform generator outputs waveforms with maximum frequencies of 50 MHz and ± 3 V amplitude. Sine, square, ramp, pulse, noise, DC and arbitrary waveforms are available.

Bode plot



The Bode plot feature evaluates the amplitude and phase of a system with respect to frequency. Samples acquired are displayed in a graphical and tabular form.

Power analysis



The power analysis tool can evaluate 11 different power supply or power device parameters such as power quality, inrush current and switching loss.

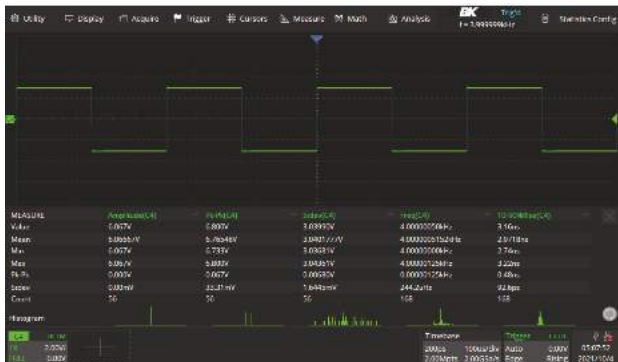
Waveform math



The math function provides a formula editor and various operations including an FFT with maximum memory depth of 2 Mpts. Two operations can be displayed simultaneously.

Operation highlights

Measurements with statistics and histograms



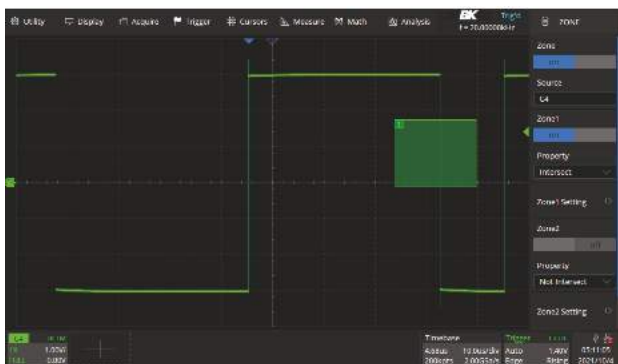
50+ different parameters are readily available with statistics displayed nominally and as a histogram. Measurements can be acquired from function, reference and history waveforms.

Waveform history and recording



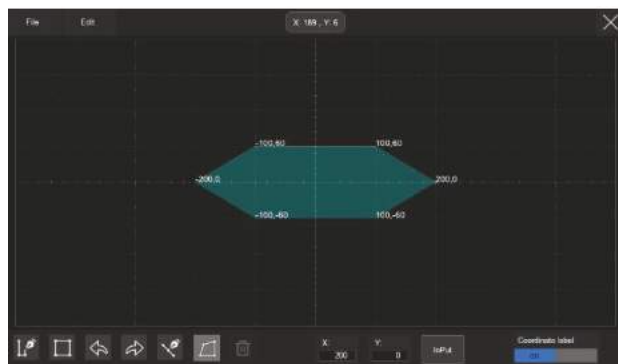
Segmented memory captures important segments of signals without wasting memory on the dead time. The history function can store up to 90,000 triggered waveforms.

Trigger functions and zone



Isolate desired waveforms using up to two zone triggers. Touchscreen gestures allow users to generate zones by dragging a finger diagonally anywhere on the grid.

Mask test function and editor



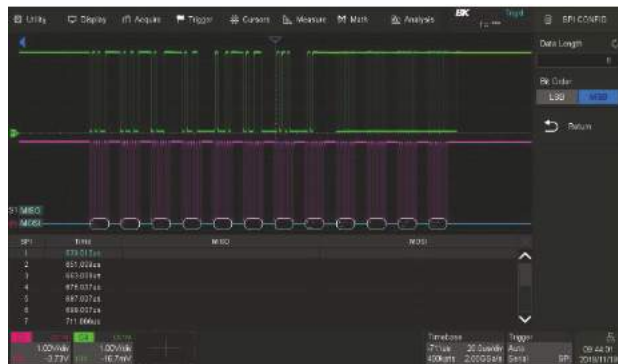
Use the built-in mask editor to create a mask and perform up to 80,000 pass / fail decisions per second. Failed frames can be stored as history frames for evaluation.

Digital Channels / MSO



The MSO feature adds 16 digital channels allowing the acquisition and triggering of mixed signal waveforms.

Serial bus decoding



Serial bus decode supports I²C, SPI, UART, CAN, and LIN protocols. Information is displayed in tabular form.

The tools you need

High bandwidth passive oscilloscope probe

Avoid limiting the bandwidth of your measurement system. All 2560B series models come standard with high bandwidth, slimline passive probes (one per channel), to help you get the most out of your scope.

Model	2565B	2565B-MSO	2567B	2567B-MSO	2569B	2569B-MSO
Probe	PR150B		PR250B		PR500B	
Bandwidth	Four oscilloscope probes 150 MHz		Four oscilloscope probes 250 MHz		Four oscilloscope probes 500 MHz	
Attenuation Value	X1, X10		X10		X10	



16 channel logic probe

The 16-channel color-coded logic probe consists of two eight-channel pods. To make contact with the DUT, the probe connects directly to square pins or clips to test points using the included grabbers. With an input capacitance of only 18 pF and 100 kΩ input impedance, the probe protects the integrity of your signal. The probe is included with MSO models.



Remote Connectivity

Operate the oscilloscope from a remote PC using the built-in web server which provides full access to all the oscilloscope's functions and allows users to install new firmware updates and save screenshots, waveform setup and data. Access the web server through any device on the same network using the oscilloscope's IP address. For safety and security, control of the instrument through the web server can be password protected.



Web server

Specifications

Note: All specifications apply to the unit after a temperature stabilization time of 30 minutes over an ambient temperature range of 23 °C ± 5 °C. Specifications are valid for single unit operation only.

Model	2565B	2567B	2569B
Performance Characteristics			
Bandwidth	100 MHz	200 MHz	350 MHz
Rise Time	3.5 ns	1.7 ns	1 ns
Input Channels	4 analog channels + EXT; 16 digital channels for MSO		
Sample Rate	2 GSa/s (interleaving mode) ¹ 1 GSa/s (non-interleaving mode) ²		
Memory Depth	200 Mpts/ch (interleaving mode) ¹ , 100 Mpts/ch (non-interleaving mode) ²		
Waveform Update Rate	Normal mode: 120,000 waveforms per second		
	Sequence mode: 500,000 waveforms per second		
Vertical System			
Input Coupling	DC, AC, GND		
Input Sensitivity	1 MΩ: 500 μV/div to 10 V/div; 50 Ω: 500 μV/div to 1 V/div		
Input Impedance	1 MΩ ± 2% or 17 pF ± 2pF; 50 Ω: 50 Ω ± 1%		
Max Input Voltage	1 MΩ: ≤ 400 Vpk (DC + AC), DC to 10 kHz 50 Ω: ≤ 5 Vrms, ± 10 Vpk		
DC Gain Accuracy	≤ 3.0%		
DC Offset Accuracy	(1.5% of offset + 1.5% of full scale + 1 mV)		
Ch to Ch Isolation (50 Ω)	DC to 100 MHz: > 40 dB 100 MHz to Max BW: ≥ 34 dB		
Offset Range	500 μV/div to 100 mV/div: ± 2 V 102 mV/div to 1 V/div: ± 20 V 1.02 V/div to 10 V/div: ± 200 V		
Bandwidth Limit	Selectable: 20 MHz, 200 MHz, Full		
SFDR	≥ 40 dB		
Bandwidth Flatness (50 Ω)	10 kHz to BW/10: ±0.5 dB BW/10 to BW/3: ±0.8 dB BW/3 to BW/2/3: +1.0 dB, -1.2 dB BW/2/3 to BW: +2.0 dB, -2.5 dB		
Probe Attenuation	1X, 10X, 100X, Custom		
Horizontal System			
Time Base Range	1 ns/div to 1000 s/div		
Time Base Accuracy	± 1 ppm; ± 1 ppm after first year; ± 3.5 ppm after 10 years		
Ch to Ch Deskew	< 100 ps		

1: Interleaved: only one of CH1 or CH2 and/or only one of CH3 or CH4 is active
2: Non-interleaved: both CH1 and CH2 and/or both CH3 and CH4 are active

Acquisition System	
Peak Detect	1 ns
Interpolation	Sin(x)/x
Resolution	8-bit and 10-bit ³
Sequence	90,000 frames max; re-arm time = 2 μs
Display Characteristics	
Display	10.1" TFT-LCD Capacitive touch screen
Resolution	1024 x 600
Display Modes	Normal, X-Y, Roll (≥ 50 ms/div)
Display Type	Vector, Dot
Persistence	Off, 1 s, 5 s, 10 s, 30 s, infinite
Intensity Grading	256 intensity levels
Color	Normal, Temp. grade; Custom trace colors
Language	English, Spanish, Traditional and Simplified Chinese, French, Japanese, German, Russian, Italian, Portuguese
I/O	
Front Panel	USB 2.0 host x2, Probe compensation
Rear Panel	USB 2.0 device, LAN: 100 Mbps EXT trigger: EXT ≤ 1.5 Vrms, EXT/5 ≤ 7.5 Vrms Aux Out: TRIG OUT 3.3 V LVCMOS; PASS/FAIL OUT 3.3 V TTL
Environmental and Safety	
Temperature	Operating: 0 °C to 40 °C Storage: -20 °C to 60 °C
Humidity	Operating: 85% RH, 40 °C, 24 hrs. Storage: 85% RH, 65 °C, 24 hrs
Altitude	Operating: ≤ 3000 m, Storage: ≤ 15,000 m
Power Consumption	80 W max., 50 W typical, 4 W typical in standby
Input Voltage	100 to 240 Vrms, 50/60 Hz
Electromagnetic Compatibility	EMC directive (2014/30/EU), IEC 61326-1:2012/EN61326-1:2013 (Basic)
Safety	UL 61010-1:2012/R: 2018-II; CAN/CSA-C22.2 No. 61010-1:2012/A1:2018-II. UL 61010-2-030:2018; CAN/CSA-C22.2 No. 61010-2-030:2018.
General	
Dimensions (W x H x D)	13.9" x 8.8" x 4.4" (352 x 224 x 111 mm)
Weight	8.6 lbs (3.9 kg)
Warranty	3 Years
Included Accessories	Four passive probes, power cord, USB Cable, Certificate of Calibration
Optional Accessories	Rack mount kit (RK2560B)

3: 10-bit mode limits bandwidth to 100 MHz (typical) and reduces max memory depth by half

Specifications (cont.)

Trigger System		
Modes	Auto, Normal, Single	
Trigger Level	Internal: ± 4.1 div from the center of the screen EXT: ± 0.61 V EXT/5: ± 3.05 V	
Hold Off Range	By time: 8 ns to 30 s (8 ns step) By event: 1 to 10,000,000	
CHI to CH4 Coupling	DC	Passes all components of the signal
	AC	Blocks DC components and attenuates signals < 20 Hz
	LFRJ	Attenuates frequency components < 1.2 MHz
	HFRJ	Attenuates frequency components > 600 kHz
	Noise RJ	Increases the trigger hysteresis
EXT Coupling	AC	Blocks DC components and attenuates signals < 8 Hz
	LFRJ	Attenuates frequency components < 33 kHz
	HFRJ	Attenuates frequency components > 967 kHz
CHI to CH4 Sensitivity > 10 mV/div: 5 to 10 mV/div: ≤ 2 mV/div:	Noise RJ OFF	± 0.13 div ± 0.26 div ± 0.5 div
	Noise RJ ON	± 0.33 div ± 0.33 div ± 0.15 div
EXT Sensitivity	200 mVpp, DC to 10 MHz 300 mVpp, 10 MHz to 300 MHz	
EXT/5 Sensitivity	1 Vpp, DC to 10 MHz 1.5 Vpp, 10 MHz to 300 MHz	
Accuracy	CHI to CH4	± 0.2 div
	EXT	± 0.3 div
Jitter	CHI to CH4	< 10 ps rms, 6 divisions pk-pk, 2 ns edge
	EXT	< 200 ps rms
Displacement	Pre-Trigger: 0 to 100% memory Delay-Trigger: 0 to 5,000 div	
Zone	Up to 2 zones, Source: CHI to CH4; Property: intersect, not intersect	
Serial Protocol System		
Protocols	Standard: I ² C, SPI, UART, CAN, LIN Options: CAN FD, FlexRay, I ² S, MIL-STD-1553B, SENT, Manchester	
Decoders	2	
Type	Full duplex	
Source	CHI to CH4 / D0 to D15	
Threshold	-4.1 to 4.1 div	
List	1 to 7 lines	
Data Format	Binary, Decimal, Hex, ASCII	

Trigger Types	
Edge Trigger	
Source	CHI to CH4 / EXT / (EXT/5) / AC Line / D0 to D15
Slope	Rising, Falling, Alternating
Slope Trigger	
Slope	Rising, Falling
Time Range	2 ns to 20 s, 1 ns resolution
Limit Range	\leq , \geq , in range, out of range
Pulse Width Trigger	
Polarity	+wid, -wid
Time Range	2 ns to 20 s, 1 ns resolution
Limit Range	\leq , \geq , in range, out of range
Video Trigger	
Standard	NTSC, PAL, 720p/50, 720p/60, 1080p/50, 1080p/60, 1080i/50, 1080i/60, Custom
Synchronization	Any, Select
Trigger Condition	Line, Field
Window Trigger	
Type	Absolute, Relative
Interval Trigger	
Slope	Rising, Falling
Time Range	2 ns to 20 s, 1 ns resolution
Limit Range	\leq , \geq , in range, out of range
Dropout Trigger	
Slope	Rising, Falling
Timeout Type	Edge, state
Runt Trigger	
Polarity	Positive, Negative
Time Range	2 ns to 20 s, 1 ns resolution
Limit Range	\leq , \geq , in range, out of range
Pattern Trigger	
Setting	Don't care, Low, High
Logic	AND, OR, NAND, NOR
Serial Triggers	
I ² C	Start, Stop, Restart, No Ack, EEPROM, Address & Data, Data Length
SPI	Data
UART	Start, Stop, Data, Parity Error
CAN	All, Remote, ID, ID+Data, Error
LIN	Break, Frame ID, ID+Data, Error
CAN FD	Start, Remote, ID, ID+Data, Error
FlexRay	TSS, Frame, Symbol, Errors
I ² S	Data, Mute, Clip, Glitch, Rising Edge, Falling Edge
MIL-STD-1553B	Transfer, Word, Error, Timing
SENT	Start, Slow channel, Fast channel, Error

Specifications (cont.)

Serial Decoder	
PC	
Signal	SCL, SDA
Address	7-bit, 10-bit
Decoded Frames (Max.)	2,000
SPI	
Signal	CLK, MISO, MOSI, CS
Edge Select	Rising, Falling
Chip Select	Active high, active low, clock timeout
Bit Order	LSB, MSB
Decoded Frames (Max.)	15,000
UART	
Signal	RX, TX
Data Width	5-bit, 6-bit, 7-bit, 8-bit
Parity Check	None, Odd, Even, Mark, Space
Stop Bit	1-bit, 1.5-bit, 2-bit
Idle Level	High, Low
Bit Order	LSB, MSB
Decoded Frames (Max.)	15,000
CAN	
Decoded Frames (Max.)	2,000
LIN	
Package Revision	Ver1.3, Ver2.0
Baud Rate	Selectable: 600/1200/2400/4800/9600/19200 bps Custom: 300 bps to 20 Mbps
Decoded Frames (Max.)	3,000
CAN FD	
Baud Rate (Nominal)	10 / 25 / 50 / 100 / 250 kbps, 1 Mbps, custom
Baud Rate (Data)	500 kbps, 1 / 2 / 5 / 8 / 10 Mbps, custom
Decoded Frames (Max.)	10,000
FlexRay	
Baud Rate (Data)	2.5 Mbps, 5 Mbps, 10 Mbps, custom
Decoded Frames (Max.)	1,000
I²S	
Signal	BCLK, WS, DATA
Audio Variant	Audio-I2S, Audio-LJ, Audio-RJ
Offset Range	0 to 31
Start Bits	1 to 32
Decoded Frames (Max.)	10,000
MIL-STD-1553B	
Decoded Frames (Max.)	10,000
SENT	
No. of Nibbles	3 to 8
Manchester	
Baud Rate	500 bps to 5 Mbps

Function/Arbitrary Waveform Generator	
Channels	1
Max. Output Frequency	50 MHz
Sampling Rate	125 Msa/s
Frequency Resolution	1 μ Hz
Frequency Accuracy	\pm 50 ppm
Vertical Resolution	14-bit
Amplitude Range	-1.5 V to +1.5 V (into 50 Ω) , -3 V to +3 V (into High-Z)
Waveforms	Sine, Square, Ramp, Pulse, DC, Noise, 45 Arbitrary
Output Impedance	50 Ω \pm 2%
Protection	Over voltage protection, Current limit
Sine	
Frequency	1 μ Hz to 50 MHz
Offset Accuracy (10 kHz)	\pm (1% of loffset value + 3 mV)
Amplitude Flatness	Compare to 10 kHz, 5 Vpp: \pm 0.3 dB, \leq 25 MHz \pm 0.5 dB, $>$ 25 MHz
SFDR	DC to 1 MHz: -60 dBc 1 MHz to 5 MHz: -55 dBc 5 MHz to 50 MHz: -50 dBc 25 MHz to 50 MHz: -40 dBc
Harmonic Distortion	DC to 5 MHz: -50 dBc 5 MHz to 25MHz: -45 dBc 25 MHz to 50 MHz: -40 dBc
Square / Pulse	
Frequency	1 μ Hz to 10 MHz
Duty Cycle	1% to 99%
Edge	$<$ 24 ns (10% to 90%)
Overshoot	$<$ 3% (typical, 1 kHz, 1 Vpp)
Pulse Width	$>$ 50 ns
Jitter (cycle to cycle)	$<$ 500 ps + 10 ppm
Ramp	
Frequency	1 μ Hz to 300 kHz
Linearity	$<$ 0.1% of pk-pk (typical, 1 kHz, 1 Vpp, 50% symmetry)
DC	
Offset Range	\pm 1.5 V (into 50 Ω), \pm 3 V (into Hi-Z)
Accuracy	\pm (1% of loffset value + 3 mV)
Noise	
Bandwidth (-3 dB)	$>$ 25 MHz
Arbitrary	
Frequency	1 μ Hz to 5 MHz
Waveform Memory	16 kpts DDs memory
Sample Rate	125 MSA/s
Wave Import	From U-disk or directly from waveform data of analog channels

Specifications (cont.)

Waveform Analysis	
Cursors	
Source	CHI to CH4, D0 to D15, Math, Ref
Type	Manual: Time X1, X2, (X1 – X2), (1/ΔT) Voltage/Current: Y1, Y2, (Y1 – Y2) Track: Time X1, X2, (X1 – X2)
Waveform Measurements	
Source	CHI to CH4, D0 to D15, F1 to F2, Ref, History, Z1 to Z4
Mode	Simple, Advanced
Range	Screen, Gate
Vertical	Max, Min, Pk-Pk, Top, Base, Amplitude, Mean, Cycle Mean, Stdev, Cycle Stdev, RMS, Cycle RMS, Median, Cycle Median, FOV, FPRE, ROV, RPRE, Level@Trigger
Horizontal	Period, Frequency, Time@max, Time@min, +Width, -Width, 10-90% Rise time, 90-10% Fall time, Rise time, Fall time, +Burst Width, -Burst Width, +Duty Cycle, -Duty Cycle, Delay, Time@Middle, Cycle-Cycle jitter
Miscellaneous	+Area@DC, -Area@DC, Area@DC, Absolute Area@DC, +Area@AC, -Area@AC, Area@AC, Absolute Area@AC, Cycles, Rising Edges, Falling Edges, Edges, Positive pulses, Negative pulses
Delay	Phase, FRFR, FRFF, FFFR, FFFF, FRLR, FRLF, FFLR, FFLF, Skew
Statistics	Current, Mean, Min, Max, Stdev, Count, Histogram, Trend
Waveform Math	
Trace	F1, F2
Source	CHI to CH4, Z1 to Z4, F1 to F2
Operation	+, -, *, ÷, FFT, d/dt, ∫dt, √, Identity, Negation, x , Sign, e ^x , 10 ^x , ln, lg, Interpolation, Average, ERES, Formula Editor
FFT	Length: Selectable from 2 kpts to 2 Mpts Window: Rectangular, Blackman, Hanning, Hamming, Flattop Display: Full Screen, Split, Exclusive Mode: Normal, Max hold, Average Tools: Peaks, Markers
Search	
Source	CHI to CH4, History
Mode	Edge, Slope, Pulse, Interval, Runt
Copy Setting	Copy from trigger, Copy to trigger
Mask Test	
Source	CHI to CH4, Z1 to Z4
Mask Generator	Auto: Creates mask based off reference signal Custom: Create masks using coordinate system
Test Speed	80,000 frames/s (typical)

Bode Plot	
Source	CHI to CH4
Supported Sources	Built-in waveform generator 4050B and 4060B series waveform generators
Sweep Type	Simple, Vari-level
Frequency	Mode: Linear, Logarithmic Range: 10 Hz to 120 MHz
Measure	Upper cutoff frequency, Lower cutoff frequency, Bandwidth, Gain margin, Phase margin
Power Analysis	
Measurements	Power quality, Current harmonics, Inrush current, Switching loss, Slew rate, Modulation, Output ripple, Turn on/turn off, Transient response, PSSR, Efficiency
Counter	
Source	CHI to CH4
Frequency Resolution	7 digits
Totalizer	Counter on edges, support Gate and Trigger
Navigate	
Type	Search event, Time, History frame

MSO (Digital Channels)	
Model Number	LA2560B
Upgradeable from DSO	Yes
MSO Channels	16 Ch: D0 to D7, D8 to D15
Sample Rate	500 MSa/s (Maximum)
Memory Depth	50 Mpts/ch
Pulse Detect	3.3 ns
Level Range	-10 V to +10 V
Logic Type	TTL, CMOS, LVCMOS3.3, LVCMOS2.5, Custom
Skew	D0 to D15: ± 1 sampling interval Digital to Analog: ± (1 sampling interval + 1 ns)