VIAVI Solutions

Data Sheet

VIAVI
3550R

Touch-Screen Radio Test System

General Specifications

RF Signal Generator	
Frequency	
Range	2 MHz - 1 GHz (usable from 500 kHz)
Resolution	1 Hz
Output Level	
Range	T/R Port: -50 to -125 dBm / 707.107 µV to 0.126 µV ANT Port: -30 to -90 dBm / 7071.068 µV to 7.071 µV SWR Port: -5 to -65 dBm / 125743.344 µV to 125.743 µV
Resolution	Step size 0.1 dB
Accuracy	±2 dB; ±1.5 dB typical ±3 dB (<-100 dBm); ±1.5 dB typical
SSB Phase Noise	
-80 dBc / Hz at 20 kHz offset	
-95 dBc / Hz at 1 GHz typical at 20 kHz offset	
Spurious	
Harmonics	-30 dBc, -42 dBc typical
Non-Harmonics	-40 dBc, -50 dBc typical
Residual FM	
<40 Hz in 300 Hz to 3 kHz BW; 6 Hz typical	
Residual AM	
<5% in 300 Hz to 3 kHz BW; 0.65%	
Port Input Protection	
ANT Port	+20 dBm typical
SWR Port	+20 dBm typical
T/R Port	+44 dBm typical
Port VSWR	
ANT Port	<1.5:1
SWR Port	<1.5:1
T/R Port	<1.25:1
FM Modulation (GEN 1 and GEN 2)	
Modulation Frequency Rate	
Range	0 Hz to 20 kHz
Resolution	0.1 Hz
Accuracy	Timebase ±2 Hz
FM Modulation	
Range	Off, 0 Hz to 100 kHz
Resolution	1 Hz
Accuracy	±10% (2 kHz to 50 kHz deviation, 150 Hz to 3 kHz rate) Typically <4% (5.6 kHz deviation, 1 kHz rate)
Total Harmonics Distortion	3%, 1% typical (1 kHz rate, >2 kHz deviation, 300 Hz - 3 kHz BP filter)
External FM Modulation	
Microphone In	
Input Range	Range 1: 2-15 mVrms (8 mVrms nominal) MIC E-OPEN, F-GND Range 2: 35-350 mVrms (100 mVrms nominal) MIC E-GND, F-OPEN Range 3: 2-32 mVrms (20 mVrms nominal) MIC E-OPEN, F-OPEN
Frequency Range	300 Hz to 3 kHz
Deviation Range	Off, 0 Hz to 80 kHz
Modulation Accuracy	±20% (300 Hz to 1.2 kHz) ±30% (>1.2 kHz)
Slope	Positive voltage yields positive deviation
Audio In	
Switchable Loads	150 ohms, 600 ohms, 1 K ohms, High-Z DIV 10 (1 K ohms, 30 Vrms maximum input)
Input Levels	0.05 to 3 Vrms
Frequency Range	300 Hz to 5 kHz
Level Sensitivity	1 kHz / 35 mVrms
Slope	Positive voltage yields positive deviation
AM Modulation (GEN 1 and GEN 2)	
Modulation Frequency Rate	
Range	0 Hz to 20 kHz
Resolution	0.1 Hz

Modulation Frequency Rate - Continued	
Accuracy	Timebase ±2 Hz
AM Modulation	
Range	Off, 0 to 100%
Resolution	0.1%
Modulation Accuracy	10% off setting, 150 Hz to 5 kHz rate, 10% to 90% modulation (based on ±peak / 2 measurement)
Total Harmonics Distortion	3% (20% to 90% mod, 1 kHz rate, 300 Hz to 3 kHz BP filter)
External AM Modulation	
Microphone IN	
Input Range	Range 1: 2-15 mVrms (8 mVrms nominal) MIC E-OPEN, F-GND Range 2: 35-350 mVrms (100 mVrms nominal) MIC E-GND, F-OPEN Range 3: 2-32 mVrms (20 mVrms nominal) MIC E-OPEN, F-OPEN
Frequency Range	300 Hz to 3 kHz
Modulation Range	0% to 80%
Audio IN	
Switchable Loads	150 ohms, 600 ohms, 1 K ohms, High-Z DIV 10 (1 K ohm, 30 Vrms maximum input)
Input Levels	0.05 to 3 Vrms
Frequency Range	300 Hz to 5 kHz
Level Sensitivity	1% / 35 mVrms nominal
AFGEN 1 and AFGEN 2	
Frequency	
Range	30 Hz to 5 kHz (spec) 0.0 Hz to 20.0 kHz (usable)
Resolution	0.1 Hz
Accuracy	Timebase ±2 Hz
Output Level	
Range	0 to 1.57 Vrms (into 600 Ω)
Resolution	0.01 Vrms
Accuracy	±10%; Typical 3%
Distortion	3% (1 kHz rate, sine, 300 Hz to 3 kHz); 1% typical
RF Receiver	
Frequency	
Range	2 MHz to 1 GHz (usable from 750 kHz)
Resolution	1 Hz
Accuracy	Same as timebase
Input Amplitude	
Minimum Input Level, Audio Sensitivity	ANT: -80 dBm (22.4 µV), typical 10 dB SINAD (-110 dBm with preamp) T/R: -40 dBm (2236 µV), typical, 10 dB SINAD
Usable Input Level Range	ANT: -60 dBm (-80 dBm with RF Amp On) to -10 dBm (RF Error, Distortion, Modulation, AF Counter and AF Level) ANT: -90 dBm (-110 dBm with RF Amp On) to -10 dBm (RSSI) T/R: -20 dBm (RF Error, Distortion, Modulation, AF Counter and AF Level) T/R: -50 dBm to maximum input level (RSSI)
Maximum Input Level	ANT: +20 dBm / 0.1 W for 10 seconds) T/R: +43 dBm / 20 W (FM) and +37 dBm (AM) +47 dBm / 50 W (FM) and +41 dBm (AM) with 50 W attenuator +51.76 dBm / 150 W (FM) and 45.76 dBm (AM) with 150 W attenuator
AM / FM Demodulation	
IF Bandwidth	FM: 5 kHz, 6.25 kHz, 8.33 kHz, 10 kHz, 12.5 kHz, 25 kHz, 30 kHz, 100 kHz, 300 kHz AM: 5 kHz, 6.25 kHz, 8.33 kHz, 10 kHz, 12.5 kHz, 25 kHz, 30 kHz
Audio Filters Bandwidth	0.3-20 kBP, 0.3-5 kBP, 0.3-3 kBP, 0.3 kHP, CCITT BP, C-Wt BP, 15 K LP, 5 K LP, 3 K LP, 0.3 K LP, 0.02 kHP, 0.02-3 kBP, 0.02-5 kBP
Audio Output Level Sensitivity	FM: (3 Vrms / kHz Dev) * IF BW (kHz) ±15% AM: 7 mVrms / % AM ±15%
Speaker Output	75 dBa min at 0.5 m, 600 - 1800 Hz, max volume)
Volume Control	
Range	0 to 100
LO EMISSIONS	>-50 dBc
RF Frequency Error Meter	
Range	±200 kHz
Resolution	1 Hz
Accuracy	Timebase ±2 Hz
RSSI Indicator (RF Power Within Receiver IF Bandwidth)	
Display Range	dBm: -120 dBm to +43 dBm (+53 dBm with Ext Attn dB set to 20 dB) Watts: 10 pW to 20 W (200 W with Ext Attn dB set to 20 dB)
Usable Meter Reading RF Level Range	T/R Port: -50 dBm to +43 dBm ANT Port (without RF amp on): -90 dBm to -10 dBm ANT Port (with RF amp on): -110 dBm to -10 dBm
Resolution	0.01 dBm
Accuracy	±3 dB; 1.5 dB typical (>-50 dBm into T/R, >-90 dBm into ANT or >-110 dBm into ANT with RF Amp On)
RF Power Meter (Broadband RF Power Into T/R Port)	
Display Range	0 to 43 dBm (0 to 20 W)
Minimum Input Level	0.10 W / +20 dBm
Maximum Input Level	20 W / 43 dBm for 10 minutes at +25° C or until thermal alarm sounds
Resolution	0.01 W / 0.1 dBm
Accuracy	±1 dB; 0.5 dB typical

FM Deviation Meter	
Range	500 Hz to ±100 kHz
Modes	Peak+, Peak-, (Peak+ - Peak-) / 2 RMS, dBr
Resolution	0.1 Hz
Accuracy	±10%, 6% typical; of reading 500 Hz to 100 kHz deviation ±5%, 4% typical 1 kHz to 10 kHz deviation, 150 Hz and 1 kHz rate
AM Percent Meter	
Range	5% to 100%
Modes	Peak+, Peak-, (Peak+ - Peak-) / 2 RMS, dBr
Resolution	1%
Accuracy	±5% of reading, 1 kHz rate, 30% to 90% modulation, 3 kHz LPF; 2% typical
Ant-Cable Test	
Frequency Range	2.0 MHz to 1000.0 MHz
Span Range	10.0 MHz to 998 MHz
Start Range	2.0 MHz to 990.0 MHz
Stop Range	12.0 MHz to 1000.0 MHz
Frequency Resolution	0.1 MHz
Markers	6
Immunity to Interfering Signal	Typically -30 dBm
SWR Measurement	
VSWR Range	1.00 to 20.00
Resolution	0.01
VSWR Accuracy	±20% of SWR readings (calibrated) <300 MHz; typical ±30% of SWR readings (calibrated) ≥300 MHz; typical
Return Loss (RL) Measurement	
Range	0.0 to -50.0 dB
Resolution	0.01 dB
Cable Loss Measurement	
Range	0.0 to -50.0 dB
Resolution	0.01 dB
DTF Measurement	
Measurement Range	3 ft to 328 ft 1 m to 100 m
Return Loss Bridge	0.0 to -50.0 dB
Cable Types	USER, RG-8x, RG-8, RG-8foam, RF-8A, RF-55, RF-55A, RF55B, RG-58, RG-58foam, RG-58A, RG-58B, RG-58C, RG-174, RG-213, RG-214, RG-223, RG-400
Velocity	0.00 to 1.00, automatically selected to cable type
Loss	0.00 to 100.00 dB per 100 ft, automatically selected by cable type
Est Length	40, 80, 200 or 400 ft 12.2, 24.4, 61 or 121.9 m
Audio Meters	
Audio Input (Audio IN)	
Source	BNC, Input on front panel
Frequency Range	300 Hz to 10 kHz
Level Range	0.2 Vp-p to 5 Vp-p
SINAD Meter (with 1 kHz Audio)	
Measurement Sources	Audio in, demod
Audio Frequency	1 kHz
Display Range	0 to 40 dB
Resolution	0.1 dB
Accuracy	±1.5 dB from 8 to 40 dB; ±1.0 dB typical
Distortion Meter	
Measurement Sources	Audio in, demod
Audio Frequency	1 kHz
Reading Range	0% to 100%
Resolution	0.1%
Accuracy	±10 from 1% to 20%; ±1 count
Audio Frequency Counter	
Input Demodulation Range	FM: 15 Hz to 20 kHz (IF BW set appropriately for received modulation BW) AM: 100 Hz to 10 kHz (IF BW set appropriately for received modulation BW) Audio Input Level: 10 mVp-p to 5 Vp-p
Audio Input Range	15 Hz to 20 kHz
Ext Audio Input	10 mVp-p to 5 Vp-p
Resolution	0.1 Hz
Accuracy	±1 Hz
Audio Frequency Level Meter	
Measurement Sources	Audio in, DVM
Frequency Range	200 Hz to <5 kHz
Input Level	Audio in 10 mV rms to 3 V rms (x1) 1 V rms to 30 V rms (/10) DVM 10 mV rms to 3 V rms (x1) 1 V rms to 30 V rms (/20)
Display Unit Resolution	Volts 0.001 V mV 0.001 mV dBuV 0.001 dBuV dBm 0.001 dBm Watts 0.001 W
Accuracy	±5%; ±2% typical; Audio In
Channel Analyzer (Optional)	
Frequency	
Range	2 MHz to 1 GHz (Usable from 250 kHz)
Resolution	1 Hz
Accuracy	Same as timebase

Frequency - Continued	
Span	10 kHz to 5 MHz in 1, 2, 5 sequence
Wide Analyzer	10 kHz to 50 MHz in 1, 2, 5 sequence
Effective RBW	
Range	19 Hz to 25 kHz (Effective RBW calculated based on FFT window type and Span)
Power Bandwidth	
Offset Range	0 to ±2.495 MHz
Bandwidth Range	1 kHz to 5 MHz in a 1, 2, 5 sequence (maximum bandwidth is the selective span)
Power Bandwidth Display Range	-137 dBm to +43 dBm
Power Bandwidth Display Resolution	0.001 dBm
Power Bandwidth Accuracy	±3 dB (>-50 dBm into T/R, >-90 dBm into ANT or >-110 dBm into ANT with RF Amp On)
Markers	6
Displayed Average Noise Level (DANL)	-120 dBm (typical, 10 kHz span) -14 dBm with pre-amp enabled
Oscilloscope (Optional)	
Source	DVM, Audio In, Demod
Traces	One
Markers	Six
Maximum Input Level	+30 Vrms
Trigger	
Type	Auto, Norm
Edge	Rising, Falling
Trigger Level Range	-30 to +30 Vrms
Horizontal Range	0.5 ms / div to 0.1 sec / div
Accuracy	3% of full scale
Vertical Range	
FM demod	0.1 kHz to 50 kHz / div in a 1, 2, 5 sequence
AM demod	5, 10, 20, 50% / div
DVM and Audio in	10 mV to 10 V / div in a 1, 2, 5 sequence
Accuracy	10% of full scale
Coupling	DVM Input: AC, DC and GND Audio in: AC
Input Impedance	DVM Input: 1 MΩ Audio in: 150 Ω, 600 Ω, 1 KΩ, High-Z, Div by 10
Bandwidth	5 kHz
Occupied Bandwidth (Optional) (Requires Channel Analyzer Option)	
Frequency	
Range	2 MHz to 1 GHz (Usable from 250 kHz)

Bandwidth Measurement Range	
Percentile	1.0% to 100%, selectable in 0.1% steps
OBW Display	
Span Range	10 kHz, 20 kHz, 50 kHz, 100 kHz, 200 kHz, 500 kHz, 1 MHz, 2 MHz, and 5 MHz; selectable
OBW Power Resolution	0.01 dB
OBW Frequency Resolution	1 Hz (step size = span range / 128)
Accuracy	
OBW Power	±3 dB (±1.5 dB typical)
OBW Frequency	±1% of span range (Hanning window selected)
Modes	Live
Timebase	
Temperature Stability	±0.15 ppm at -20° C to 70° C
Aging	0.5 ppm / First Year 0.3 ppm / After First Year
Warm-up Time	3 min

Environmental / Physical

Overall Dimensions	231 mm x 285 mm x 70 mm (W X L X D) 9.1 in x 11.2 in x 2.8 in
Weight	8.3 lbs (3.75 kg); 12 lbs (5.4 kg) with accessories
Temperature	Storage: 51° C to +71° C storage **Note: Battery must not be subjected to temperatures below –20° C, nor above +60° C**
Operation	3550R - DC only Operation: -20° C to +55° C (battery removed, contingent upon applied RF power over time). 3550R Battery Operation: -20° C to +40° C (typical based on internal temperature rise and usage of the instrument). **Note: Battery to be charged as temperature between 0° C to +45° C**
Altitude	4600 M - MIL-PRF-28800F Class 2
Humidty	95% Maximum (Non-condensing) MIL-PRF-28800F Class 2
Shock, Functional	30 G - MIL-PRF-28800F Class 2
Bench Handling	MIL-PRF-28800F Class 2
Vibration	MIL-PRF-28800F Class 2
AC Input Power (AC to DC Converter / Charger Unit)	
AC Input Voltage Range	100 to 240 VAC, 1.5 A max, 47 Hz - 63 Hz
Operating Temperature	0° C to +40° C
Storage Temperature	-20° C to +85° C
EMI	EN55022 Class B, EN61000-3-2 Class D
Safety	UL 1950, CSA 22.2 No. 234 and No. 950, IEC 950 / EN 60950

DC Input Power	
DC Input Voltage Range (DC INPUT CONNECTOR)	11 VDC to 32 VDC
DC Power Input, Max (DC INPUT CONNECTOR)	55 W
DC Power Input, Nominal (DC INPUT CONNECTOR)	25 W
DC Fuse Requirement (DC INPUT CONNECTOR)	5 A, 32 VDC, Type F
Battery	
Battery Type	Lithium Ion (Li Ion) battery pack **Note: Battery must not be subjected to temperatures below –20° C, nor above +60° C**
Battery Operation Time	100% Backlight: 3 1/2 hours typical 40% Backlight: 4 hours typical Minimum Backlight: 4 1/2 hours typical
Battery Charge Time	4 hours **Note: Battery to be charged at temperatures between 0° C and +45° C only**

Compliance

EMC	
Emissions	MIL-PRF-28800F EN61326: 1998 Class A EN61000-3-2 EN61000-3-3
Immunity	MIL-PRF-28800F EN61326: 1998
Safety	
Standard	UL 61010-1, CSA
Environmental	
Acoustic Noise	MIL-PRF-28800F Class 2
Explosive Atmosphere	MIL-PRF-28800F Class 2
Dust Resistance	MIL-PRF-28800F Class 2
Drip Proof	MIL-PRF-28800F Class 2
Blowing Rain	MIL-PRF-28800F Class 2
Solar Radiation	MIL-PRF-28800F Class 2

1. "Specifications" describe product performance over the specified operating temperature range and frequency range are covered by the product warranty. "Typical" numbers are specified at ambient, room temperature (23° C) and describes a characteristic that 95% of product exhibit (±2 standard deviations) with a 95% confidence level at room temperature (23° C). Typical characteristics are not covered by product warranty.

2. Use reason when working with RF test instruments.All thermal ratings are dependent upon applied RF power. The 3550R will alarm once the internal temperature of the 3550R exceeds predetermined limits. Applying power continuously in high ambient temperature conditions will result in a heat build-up within any instrument. The 3550R is rated for (43 dBm) for 10 minutes at +25° C or until thermal alarm sounds. Exceeding these conditions will result in thermal shutdown.

VIAVI Solutions

Contact Us +1 316 522 4981
AvComm.Sales@viavisolutions.com

To reach the VIAVI office nearest you, visit viavisolutions.com/contact.

3550R-ss-rts-nse-ae
30187475 901 0219