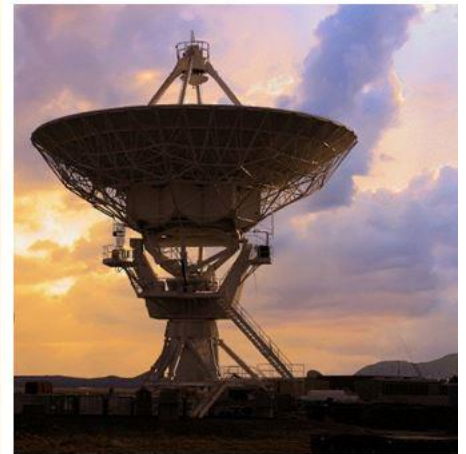


Model 855B Multi-Channel RF and MW Signal Generators



Features

- Very low phase noise
- Industry lowest phase drift
- Ultra-fast switching
- Phase-coherent switching option
- Multi-channel phase-coherent outputs
- Variable external clock reference output

Applications

- Radar simulation
- Quantum computing
- High volume automated testing
- Phased array antenna / beamforming
- Electronic warfare
- SatCom R&D



Model 855B Datasheet

300 kHz to 6, 12, 20, 33 and 40 GHz

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DEFINITIONS

- The specifications in the following pages describe the warranted performance of the instrument for 23 ± 5 °C after a 30-minute warm-up period (unless otherwise stated).

Min/Max: Parameter range that is guaranteed by product design, and/or production tested. Warranted performance specifications include guard-bands to account for the expected statistical performance distribution, measurement uncertainties, and changes in performance due to environmental conditions.

Typical: Expected mean values, not warranted performance.

INTRODUCTION

- **A 1U rackmount, 300 kHz to 6, 12, 20, 33, or 40 GHz ultra-low phase noise, 25 μ s phase coherent switching, multi-channel signal generator.**

The Model 855B is a phase-coherent, multi-channel, high output power, ultra-fast switching and ultra-low phase noise signal generator with a frequency range from 300 kHz to 6, 12, 20, 33 or 40 GHz. It is ideally suited for a wide range of applications, where good signal quality, accurate and wide output power ranges, and very stable phase coherence among all channels are required. Excellent phase noise is combined with good spurious, harmonic rejection and optionally leading-edge switching speed of 25 μ s.

A high-stability OCXO reference provides excellent frequency accuracy and stability. The generator accepts a wide range of external references including the commonly used 10 and 100 MHz for higher phase synchronization, and a flexible reference choice in the range of 1-250 MHz for those applications with customer- or system-specific reference frequencies. Moreover, the Model 855B features a pair of BNC-specific high-frequency CLK ports (one input and one output) that enables excellent phase synchronization among the outputs from multiple 855B modules.

The Model 855B comes in a standard 19 inch 1U (up to 4 channels) rack-mountable module form. It can be intuitively controlled by a PC based GUI Software. Moreover, the instrument offers various communication interfaces like USB, LAN or GPIB. Each interface allows for easy and fast communication using SCPI 1999 command set. Remote control of the instrument can be quickly attained from any host system. A customer-supplied application programming interface (API) or programming examples for Matlab, Labview, C++ and other commercially available tools make the control implementation very straightforward.

SPECIFICATIONS

Frequency Parameters / Range

PARAMETER	MIN	TYPICAL	MAX	NOTE
Frequency Range	300 kHz		6 GHz	855B-06
	300 kHz		12 GHz	855B-12
	300 kHz		20 GHz	855B-20
	300 kHz		33 GHz	855B-33
	300 kHz		40 GHz	855B-40
Resolution		<0.001 Hz		
Phase Adjustment Range	0 deg		360 deg	Individually adjustable per channel
Phase Resolution		0.1 deg		
Switching Speed				After SCPI command received Option FS
CW Mode		1.5 ms		
Sweep/List mode		500 μs 25 μs		

Phase Noise

PARAMETER	MIN	TYPICAL	MAX	NOTE
SSB Phase noise at 1 GHz				See plots/tables Max output power, ALC Off
At 10 Hz from carrier		-87 dBc/Hz -98 dBc/Hz	-76 dBc/Hz -86 dBc/Hz	Option LN
At 1 kHz from carrier		-130 dBc/Hz	-125 dBc/Hz	
At 100 kHz from carrier		-145 dBc/Hz	-140 dBc/Hz	
SSB Phase Noise at 4 GHz				Max output power, ALC Off
At 10 Hz from carrier		-74 dBc/Hz -85 dBc/Hz	-68 dBc/Hz -74 dBc/Hz	Option LN
At 1 kHz from carrier		-116 dBc/Hz	-111 dBc/Hz ¹	
At 100 kHz from carrier		-136 dBc/Hz	-131 dBc/Hz	
SSB Phase noise at 10 GHz				Max output power, ALC Off
At 10 Hz from carrier		-67 dBc/Hz -77 dBc/Hz	-60 dBc/Hz -66 dBc/Hz	Option LN
At 1 kHz from carrier		-108 dBc/Hz	-103 dBc/Hz	
At 100 kHz from carrier		-127 dBc/Hz	-122 dBc/Hz	

¹With option PHS, the phase noise for offsets >= 100 Hz at frequencies between 1.1 GHz and 10 GHz is typically 10 dB higher.

Figure 1: Phase Noise with and without Option LN (at 1 GHz and max. output power)

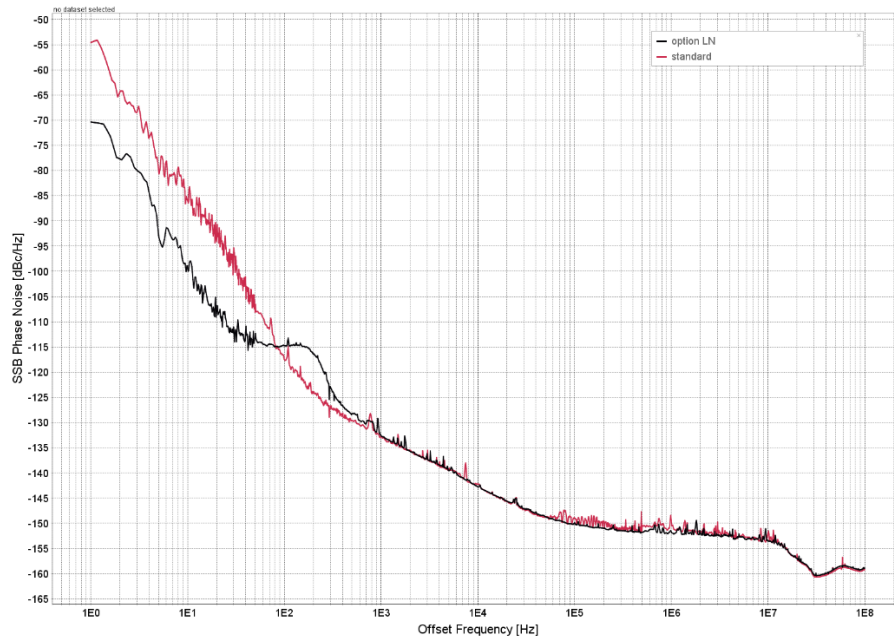
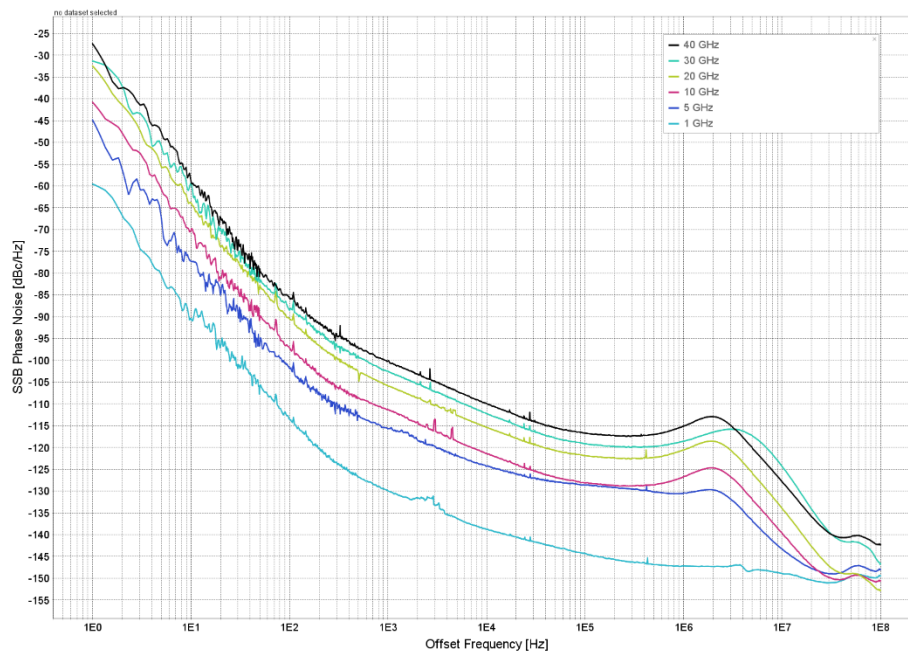


Figure 2: Phase Noise without Option LN (at max. output power)

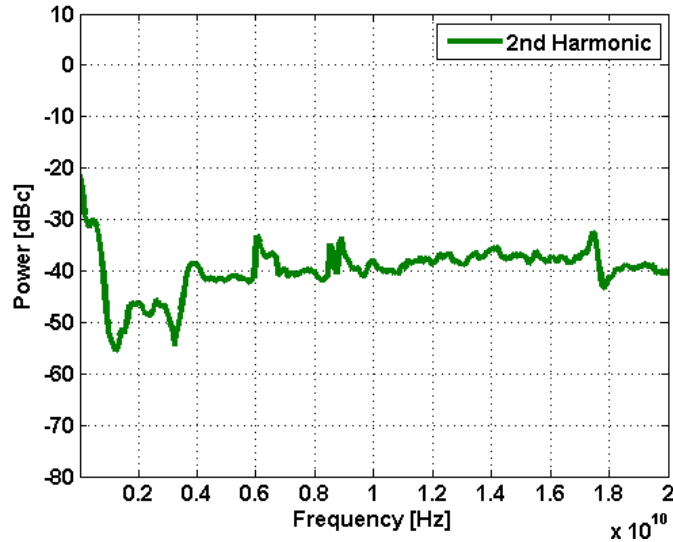


Spectral Purity

PARAMETER	MIN	TYPICAL	MAX	NOTE
Harmonics 6, 12, 20G				At +5 dBm output power
50 to 200 MHz		-30 dBc	-20 dBc	
200 to 600 MHz		-35 dBc	-25 dBc	
600 MHz to 6 GHz		-40 dBc	-30 dBc	
6 to 30 GHz		-35 dBc	-25 dBc	
Harmonics 33, 40G				
50 to 200 MHz		-30 dBc	-20 dBc	
200 MHz to 12 GHz		-35 dBc	-30 dBc	
12 to 20 GHz		-30 dBc	-20 dBc	
> 20 GHz		-25 dBc		
Sub-Harmonics				

< 5 GHz		-75 dBc	-70 dBc	
5-20 GHz		-70 dBc	-65 dBc	
> 20 GHz		-55 dBc		
Non-Harmonic Spurious				> 10 kHz offset
< 1.2 GHz		-90 dBc	-60 dBc	
1.2 to 2.5 GHz		-92 dBc	-60 dBc	
2.5 to 5 GHz		-87 dBc	-60 dBc	
5 to 10 GHz		-80 dBc	-60 dBc	
10 to 20 GHz		-75 dBc	-50 dBc	
20 to 40 GHz		-67 dBc		

Figure 3: 855B / 40G Harmonic Performance



Level Performance

PARAMETER	MIN	TYPICAL	MAX	NOTE
Output Power Level 855B/06/12/20/33/40G				
< 100 MHz	-20 dBm		+20 dBm	
100 MHz to 6 GHz	-20 dBm		+25 dBm	
6 GHz to 18 GHz	-20 dBm		+23 dBm	
18 GHz to 20 GHz	-20 dBm		+20 dBm	
20 GHz to 40 GHz	-20 dBm		+18 dBm	
Output Power Level 855B-06/12/20G				Option PE4
10 MHz to 12 GHz	-80 dBm		+20 dBm	
12 GHz to 15 GHz	-80 dBm		+18 dBm	
15 GHz to 20 GHz	-80 dBm		+15 dBm	
Output Power Level 855B-33/40				Option PE4
10 MHz to 20 GHz	-50 dBm		+19 dBm	
20 to 33 GHz	-50 dBm		+16 dBm	
33 to 40 GHz	-50 dBm		+15 dBm	
Power Resolution		0.01 dB		
Thermal Drift		0.015 dB/°C		

Figure 4: Maximum Output Power 855B-20 with and without Option PE4

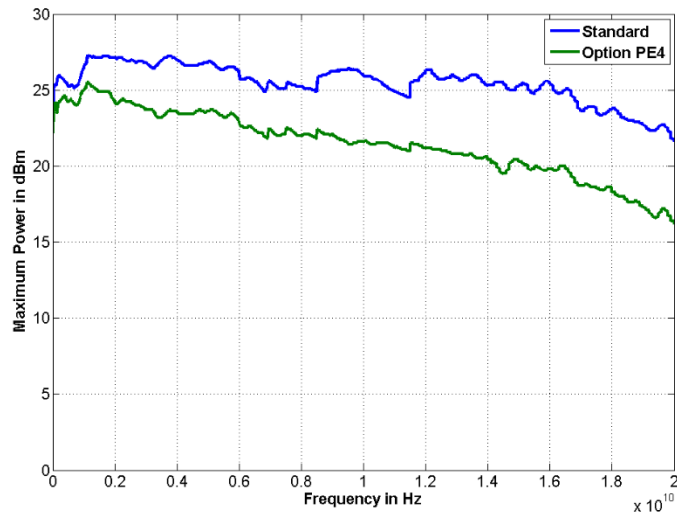


Figure 5: Maximum Output Power 855B-40 with and without Option PE4

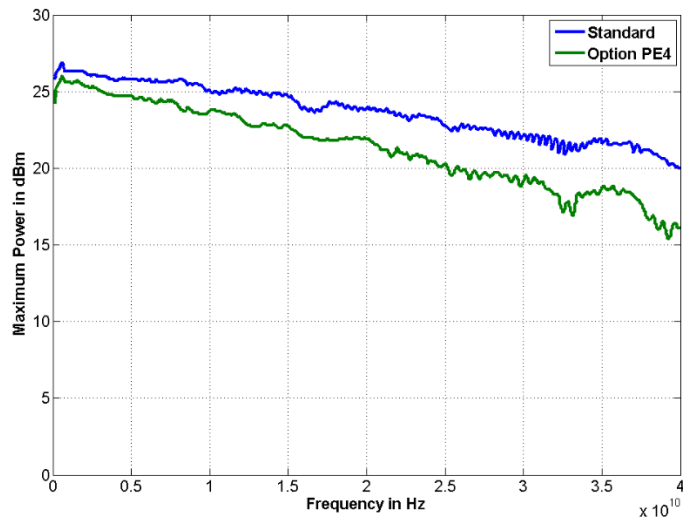
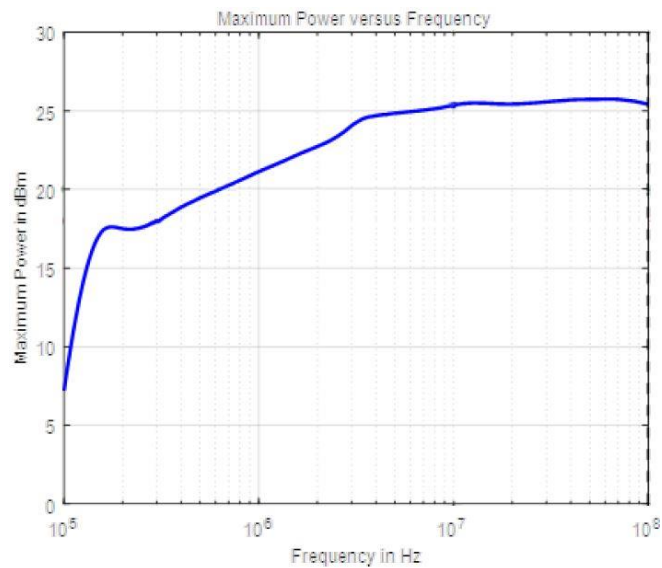


Figure 6: Low Frequency Response 855B-20 (100 kHz to 100 MHz)



Relative Power Error (0.1 dB Step)

(): Typical Value

	Min Power to -50 dBm Option PE4	-50 to -20 dBm Option PE4	-20 to +15 dBm	+15 dBm to Max Power
300 kHz to 20 GHz	(< 0.1 dB)	0.5 dB (< 0.1 dB)	0.5 dB (< 0.1 dB)	(< 0.1 dB)
20 to 26 GHz	N/A	(< 0.1 dB)	(< 0.1 dB)	(< 0.1 dB)
26 to 40 GHz	N/A	(< 0.1 dB) ³	(< 0.1 dB)	(< 0.1 dB)

Power Level Uncertainty

(): Typical Value

	Min Power to -50 dBm Option PE4	-50 to -15 dBm Option PE4	-15 to +15 dBm	+15 dBm to Max Power
< 6 GHz	(4 dB)	1.2 dB	0.8 dB (0.25 dB)	1.2 dB
6 to 12 GHz	(4 dB)	1.3 dB	0.9 dB (0.3 dB)	1.3 dB
12 to 26 GHz	(4 dB)	2.0 dB	1.0 dB (0.3 dB)	2.0 dB
26 to 40 GHz	N/A	2.3 dB	1.2 dB (0.4 dB)	2.3 dB

²Applies to devices with Serial Number >= ###-#####-0888 and to devices with Option PL.

³Applies to the range -45 dBm to -20 dBm

Figure 7: Level Error (300 kHz to 40 GHz, 855B-40)

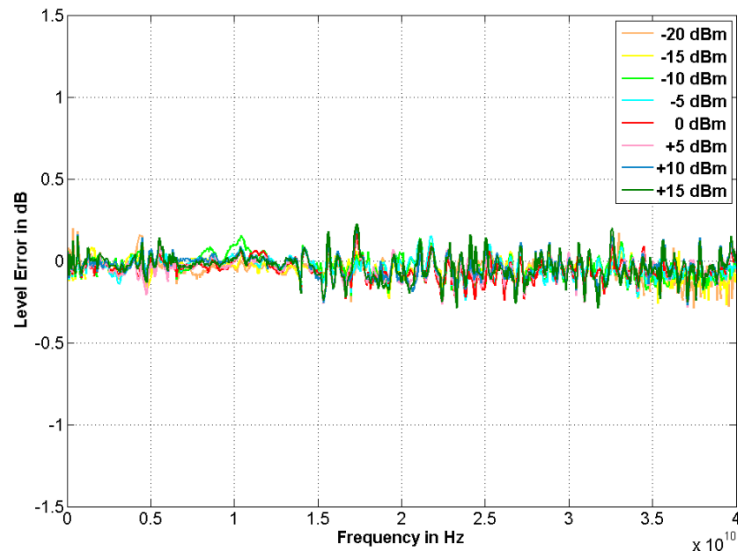


Figure 8: Level Linearity

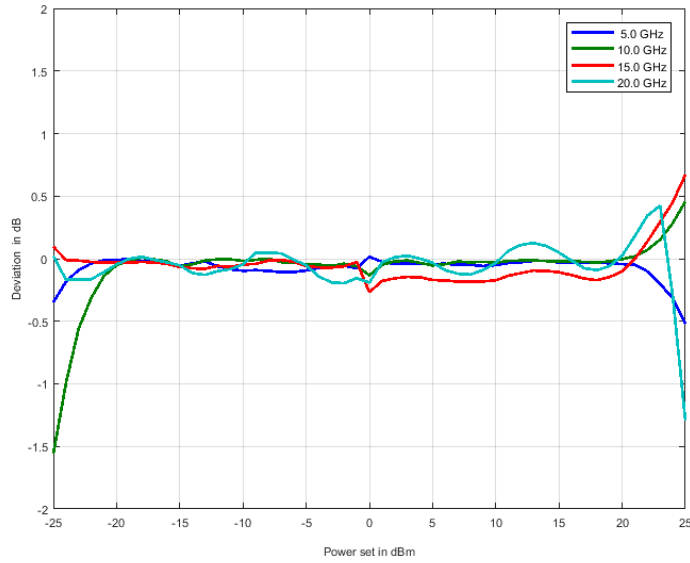
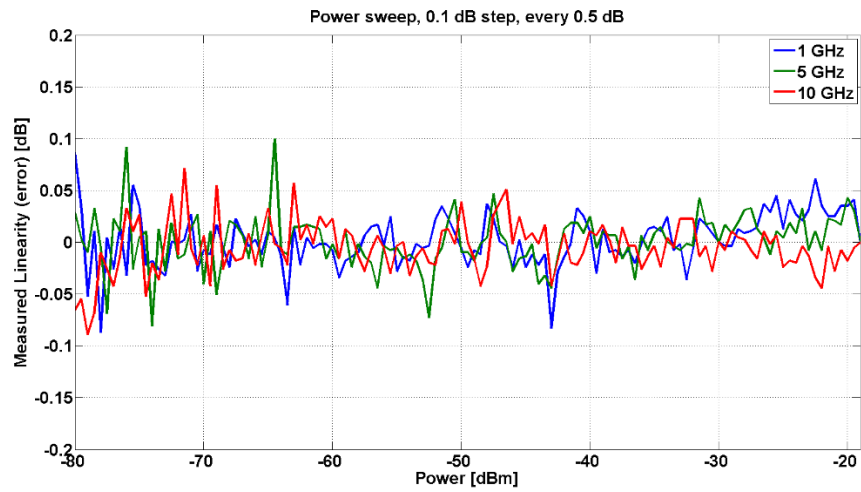


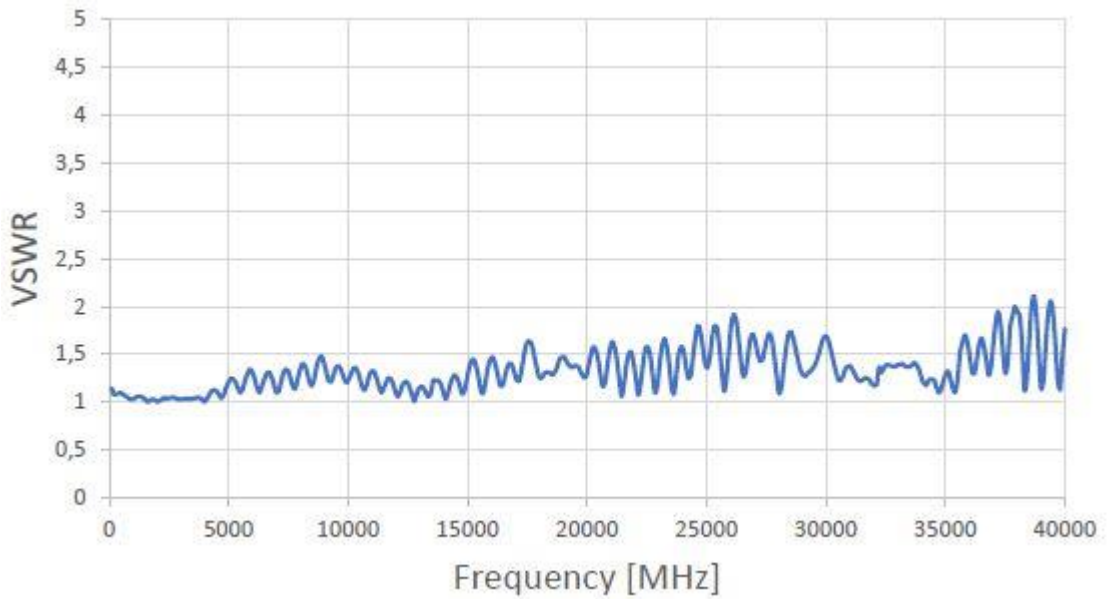
Figure 9: Level Linearity with option PE4



Reverse Power Protection and VSWR

PARAMETER	MIN	TYPICAL	MAX	NOTE
Reverse Power Protection				
DC Voltage			±10 V	
RF Power			26 dBm	
Output Impedance		50 Ohms		
VSWR		1.3	1.5	< 15 GHz
		1.6	1.8	15 to 35 GHz
		1.9	2.2	> 35 GHz

Figure 10: VSWR



Channel to Channel Performance

PARAMETER	MIN	TYPICAL	MAX	NOTE
Isolation				
< 3 GHz	90 dB			
3 to 6.5 GHz	70 dB	80 dB		
> 6 GHz		> 60 dB		
300 kHz to 40 GHz	80 dB	> 90 dB		Option HI, see plot
Relative Phase Stability				See plot
Between Channels		0.096 ps		3 mrad at 5 GHz over 5 hours
Between Synchronized Modules		0.160 ps		5 mrad at 5 GHz over 5 hours
Phase-Coherent Switching				
Phase mismatch at outputs		15 ps		

Figure 11: Channel-to-Channel Isolation with Option HI (Channel under test: Channel 1, frequency f, power 10 dBm – Channel 2, 3, and 4: frequency f + 9 MHz, power 10 dBm – Measurement made on channel 1 at frequency f + 9 MHz)

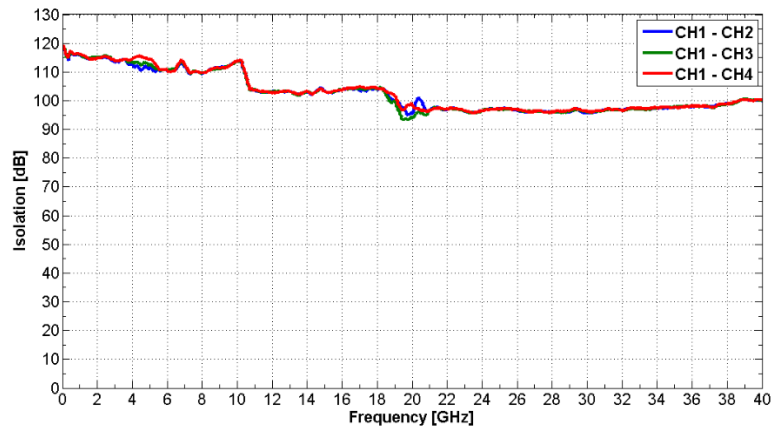


Figure 12: Channel-to-Channel Phase Stability under Different Test Conditions

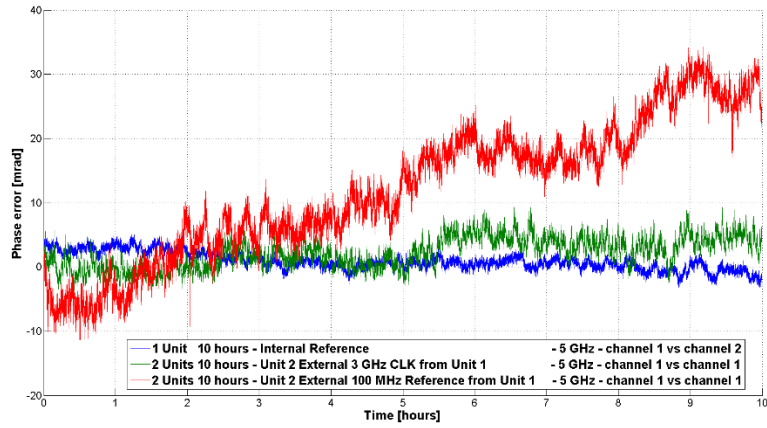


Figure 13: 855B-20 typical time domain channel-to-channel phase error at 10 GHz

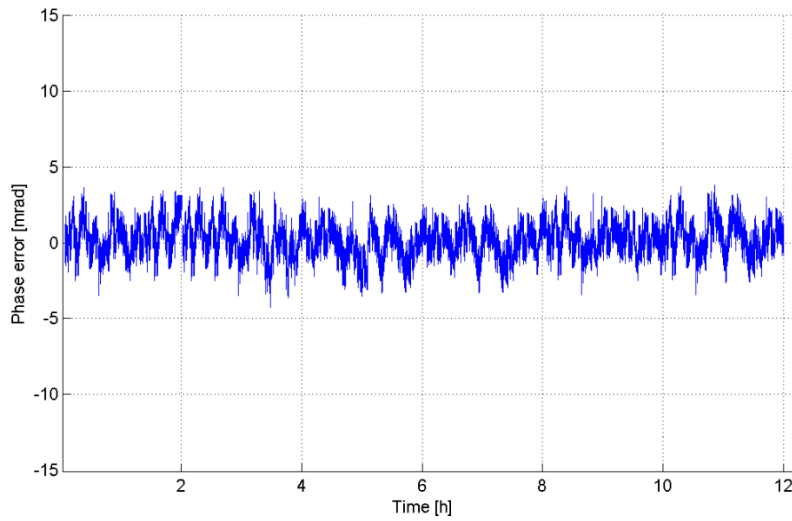


Figure 14: 855B-20 typical time domain channel-to-channel phase error at 20 GHz

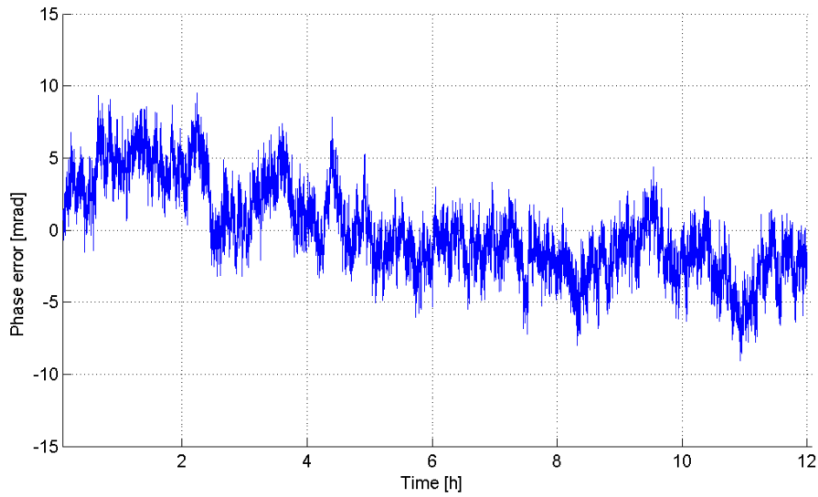
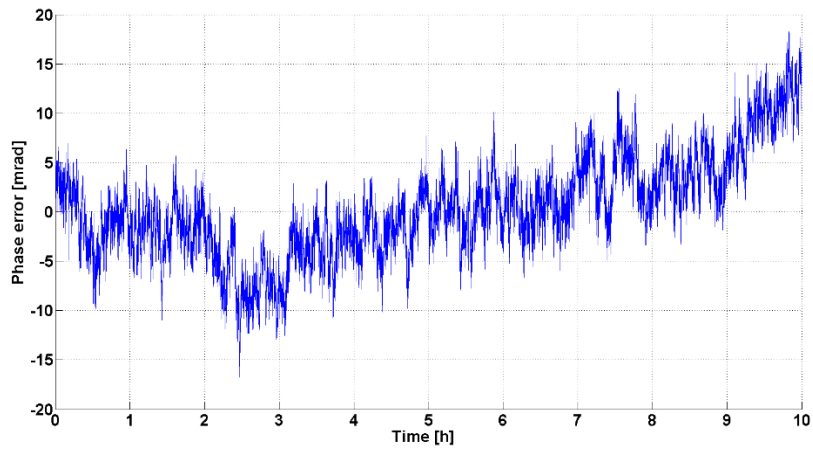


Figure 15: 855B-40 typical time domain channel-to-channel phase error at 38 GHz

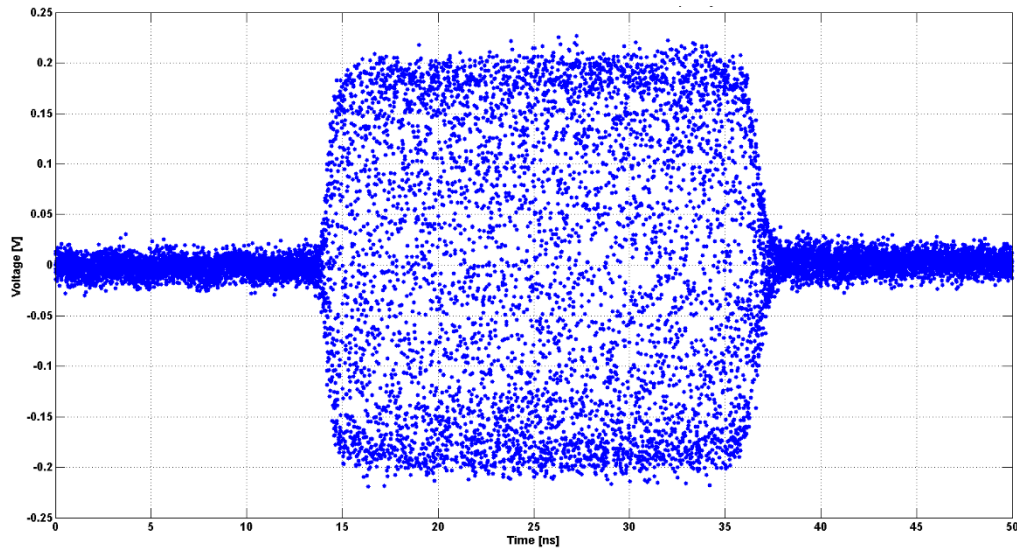


Modulation Capabilities

Pulse Modulation

PARAMETER	MIN	TYPICAL	MAX	NOTE
Pulse Modulation				
Modulation Source		Internal / External		
External input amplitude		TTL		
Pulse rise/fall time		10 ns		
On/off ratio		90 dB 80 dB 75 dB	80 dB 70 dB	f < 6.5 GHz 6.5 to 18 GHz > 18 GHz (power > +10 dBm)
Pulse overshoot			10%	
Pulse delay		20 ns		
Pulse polarity		Normal, Inverse		Selectable
Internal pulse generator				
Repetition frequency (PRF)	0.1 Hz		50 MHz	= 1/T
Duty cycle	1% to 99% in 1% steps			within specified minimum pulse width
Pulse Pattern Modulation & Staggered PRF				using internal pattern generator
Pulse width	25 ns		20 s	
Programmable pattern length	2		65536	
Duty cycle	0.05%		99.95%	
Pulse width resolution		5 ns		
Pulse period (T) accuracy		0.00005xT+ 3ns		
Pulse width accuracy		0.00005xT+ 5ns		
Pulse jitter		2 ns	5 ns	
Polarity		selectable		

Figure 16: 855B-40 25 ns Pulse Modulation – 40 GHz Carrier Frequency



Amplitude Modulation

PARAMETER	MIN	TYPICAL	MAX	NOTE
				Option MOD
Modulation Source		Internal		
Modulation Depth	0%		90%	
Deviation Accuracy		2%	4%	1 kHz rate, 30% depth, 10 dBm
Deviation Resolution		1%		
Distortion (THD)			1%	1 kHz rate, 30% depth, 10 dBm
Modulation rate	0.1 Hz		20 kHz	
Modulation waveforms	Sine			

Frequency Modulation

PARAMETER	MIN	TYPICAL	MAX	NOTE
				Option MOD
Modulation Source		Internal		
Modulation Frequency deviation (peak)	N · 200 MHz			< 1.25 GHz (N=1) 1.25 GHz to 2.5 GHz (N=0.125) 2.5 GHz to 5 GHz (N=0.25) 5 GHz to 10 GHz (N=0.5) 10 GHz to 20 GHz (N=1) 20 GHz to 40 GHz (N=2)
Deviation Accuracy		0.50%	2%	
Distortion (THD)		< 1%		1 kHz rate, 10 kHz deviation
Modulation rate	0.1 Hz		80 kHz	
Modulation waveforms	Sine			

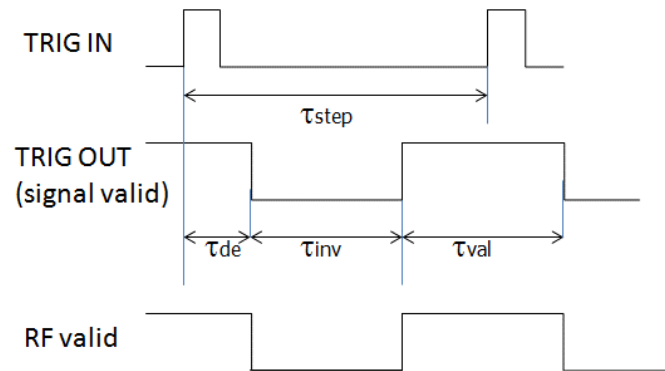
Phase Modulation

PARAMETER	MIN	TYPICAL	MAX	NOTE
				Option MOD
Modulation Source		Internal		
Phase deviation (peak)	0		300 · N · rad	
Deviation Accuracy		0.50%	2%	
Modulation rate	0.1 Hz		80 kHz	

Modulation waveforms	Sine	
Distortion (THD)	< 1%	1 kHz rate & N x rad deviation

Sweeping Capability

PARAMETER	MIN	TYPICAL	MAX	NOTE
Sweep Parameters	Frequency, power, phase, list			
Sweep type	Linear, logarithmic, random			
Step time (t_{step})	500 μ s 25 μ s 50 μ s $\leq 70 \mu$ s			Option FS (1, 2 channels) ⁴ in band Option FS (3, 4 channels) ⁴ in band Option FS cross band
$f < 31.8$ GHz, $f_{step} < 2.2$ GHz	30 μ s 50 μ s $\leq 70 \mu$ s		19998 s	Option NEC (1, 2 channels) ⁴ in band Option NEC (3, 4 channels) ⁴ in band Option NEC cross band
$f < 31.8$ GHz, $f_{step} \geq 2.2$ GHz	100 μ s			Option NEC (1 to 4 channels) ⁴
$f \geq 31.8$ GHz, $f_{step} < 0.55$ GHz	30 μ s 50 μ s $\leq 70 \mu$ s			Option NEC (1, 2 channels) ⁴ in band Option NEC (3, 4 channels) ⁴ in band Option NEC cross band
$f \geq 31.8$ GHz, $f_{step} \geq 0.55$ GHz	500 μ s			Option NEC (1 to 4 channels)
Dwell time (t_{dwell})	15 μ s		9999 s	
Off time (t_{off})	15 μ s		9999 s	
Time resolution		5 ns		
Timing delay (T_{de})		50 ns		
Transient time (T_{inv})			25 μ s	
Timing accuracy per point		5 ns		
Number of points	2		10000	Per channel



Frequency Reference

PARAMETER	MIN	TYPICAL	MAX	NOTE
Internal Reference Frequency		100 MHz 10 MHz		Option LN
Temperature stability 0 to 50 degC			± 100 ppb ± 20 ppb	Option LN
Aging 1 st year			1000 ppb 30 ppb 20 ppb	Option LN Option LN+
Aging per day			5 ppb 0.5 ppb	After 30 days operations Option LN
Warm-up time		5 min		
Output of internal reference		10 MHz 100 MHz		REF OUT port, selectable
Output of High Frequency Glock		3 GHz		CLK OUT port

Output power		0 dBm 9 dBm		High phase synchronous mode 10 MHz, 3 GHz 100 MHz
Output impedance		50 Ohms		
Bypass Internal Reference Input		100, 1000 MHz		*Options LN/LN+ are bypassed
Phase Lock to External Reference	1 MHz	10 MHz integer MHz	250 MHz	REF IN port Option VREF *Options LN/LN+ are bypassed
High Frequency Clock Input (Bypass Internal Reference)		3 GHz		CLK IN port High phase synchronous mode
Reference input level				
10 MHz or 1-250 MHz or 3 GHz	-5 dBm	0 dBm	+10 dBm	
100, 1000 MHz	+5 dBm		+13 dBm	
Lock Range				
10 MHz or 1-250 MHz			±1.5 ppm	
100 MHz			100 ppm	
Reference input impedance		50 Ohms		

Trigger (TRIG IN)

PARAMETER	MIN	TYPICAL	MAX	NOTE
Trigger Types		Continuous Single (point) Gated Gated Direction		
Trigger Source		External Bus (LAN, USB)		
Trigger Modes		Continuous free run Trigger and run Reset and Run		
Trigger Latency		5 ns		
Trigger Uncertainty		10 ns		
External Trigger delay	50 ns		40 s	settable
External delay resolution		5 ns		
Trigger modulo	1		255	Execute only on Nth trigger event
Trigger Polarity		Rising Falling		
External trigger input threshold	0.85 V	0.9 V	0.95 V	TTL Compatible
External trigger input voltage range	- 0.5 V		+5.5 V	TTL Compatible
External trigger input hysteresis		60 mV		

Multi-Purpose Output (FUNC OUT): Output is TRIG OUT at rear panel

PARAMETER	MIN	TYPICAL	MAX	NOTE
MULTIFUNCTION GENERATOR				
Sine, triangle, square wave				
Frequency range	1 Hz 1 Hz		3 MHz 1 MHz 50 kHz	Sine Triangle Square
Frequency resolution		0.1 Hz		
Output voltage amplitude peak-peak	10 mV	5 V	2 V	Sine, triangle Square (CMOS output)
Harmonic Distortion		1%		< 100 kHz, 1 Vpp
Output impedance		50 Ohms CMOS		Sine, triangle Square wave

VIDEO OUTPUT (of internal pulse modulator)

Output		CMOS		
Period	30 ns		50 s	
Pulse width	15 ns		50 s	
RF delay		10 ns		

TRIGGER OUT Synchronization mode for multiple sources

Modes	Trigger on sweep start Trigger on each point Signal Valid	
-------	---	--

Connectors (Front)



- Power Switch
- LED Indicator
 - Power ON
 - Remote
 - RF ON (per channel)
- RF Outputs:
 - 855B-33, 40: K (2.92 mm) female
 - 855B-06, 12, 20: SMA female
- External pulse modulation inputs: BNC female

Connectors (Rear)




- Unit-to-unit synchronization signal input (SYNC IN): SMA female *5
- Unit-to-unit synchronization signal output (SYNC OUT): SMA female *5
- High Stability Reference input (CLK IN, 3 GHz): SMA female
- High Stability Reference output (CLK OUT, 3 GHz): SMA female
- Trigger output (TRIG OUT): BNC female
- Trigger input (TRIG IN): BNC female
- Reference input (REF IN): BNC female
- GPIB: IEEE-488.2, 1987 with listen and talk (optional)
- LAN connection: RJ-45
- USB 2.0 device
- FUSE (3.15 A)
- 100-240V AV power plug

⁵Allows to extend option PHS over multiple units (unreleased)

 **Casings Standard 19" 1U**



 **High Isolation Casing 19" 1U (Option HI, rack mount kit included)**



ORDERING INFORMATION

HOST MODEL	PRODUCT	DESCRIPTION
855B	855B-06-1	1-channel 300 kHz to 6 GHz ultra-low phase noise, fast switching signal generator, 19" 1HU rack-mount module
855B	855B-06-2	2-channel 300 kHz to 6 GHz ultra-low phase noise, fast switching signal generator, 19" 1HU rack-mount module
855B	855B-06-3	3-channel 300 kHz to 6 GHz ultra-low phase noise, fast switching signal generator, 19" 1HU rack-mount module
855B	855B-06-4	4-channel 300 kHz to 6 GHz ultra-low phase noise, fast switching signal generator, 19" 1HU rack-mount module
855B	855B-12-1	1-channel 300 kHz to 12 GHz ultra-low phase noise, fast switching signal generator, 19" 1HU rack-mount module
855B	855B-12-2	2-channel 300 kHz to 12 GHz ultra-low phase noise, fast switching signal generator, 19" 1HU rack-mount module
855B	855B-12-3	3-channel 300 kHz to 12 GHz ultra-low phase noise, fast switching signal generator, 19" 1HU rack-mount module
855B	855B-12-4	4-channel 300 kHz to 12 GHz ultra-low phase noise, fast switching signal generator, 19" 1HU rack-mount module
855B	855B-20-1	1-channel 300 kHz to 20 GHz ultra-low phase noise, fast switching signal generator, 19" 1HU rack-mount module
855B	855B-20-2	2-channel 300 kHz to 20 GHz ultra-low phase noise, fast switching signal generator, 19" 1HU rack-mount module
855B	855B-20-3	3-channel 300 kHz to 20 GHz ultra-low phase noise, fast switching signal generator, 19" 1HU rack-mount module
855B	855B-20-4	4-channel 300 kHz to 20 GHz ultra-low phase noise, fast switching signal generator, 19" 1HU rack-mount module
855B	855B-33-1	1-channel 300 kHz to 33 GHz ultra-low phase noise, fast switching signal generator, 19" 1HU rack-mount module
855B	855B-33-2	2-channel 300 kHz to 33 GHz ultra-low phase noise, fast switching signal generator, 19" 1HU rack-mount module
855B	855B-33-3	3-channel 300 kHz to 33 GHz ultra-low phase noise, fast switching signal generator, 19" 1HU rack-mount module
855B	855B-33-4	4-channel 300 kHz to 33 GHz ultra-low phase noise, fast switching signal generator, 19" 1HU rack-mount module
855B	855B-40-1	1-channel 300 kHz to 40 GHz ultra-low phase noise, fast switching signal generator, 19" 1HU rack-mount module
855B	855B-40-2	2-channel 300 kHz to 40 GHz ultra-low phase noise, fast switching signal generator, 19" 1HU rack-mount module
855B	855B-40-3	3-channel 300 kHz to 40 GHz ultra-low phase noise, fast switching signal generator, 19" 1HU rack-mount module
855B	855B-40-4	4-channel 300 kHz to 40 GHz ultra-low phase noise, fast switching signal generator, 19" 1HU rack-mount module
855B	Option LN	Enhanced close in phase noise and frequency stability
855B	Option LN+	Option LN with improved long term frequency stability
855B-06-12	Option PE4-12	Electrical step attenuator (6 & 12 GHz version)
855B-20	Option PE4-20	Electrical step attenuator (20 GHz version)
855B-33/40	Option PE4-40	Electrical step attenuator (33 & 40 GHz version)
855B	Option PHS	Phase coherent switching
855B	Option FS	Ultra-fast switching speed
855B	Option MOD	Amplitude, frequency, phase modulations added
855B	Option VREF	Flexible external reference frequency support in range 1 to 250 MHz
855B	Option GPIB	GPIB interface
855B	Option FLASH	MicroSD card slot for removable SD memory
855B	Option HI	High isolation 19" 1U casing (highly improved channel-to-channel isolation)
855B	Option IEC	IEC 17025 Calibration with Certificate
855B	Option Retrofit	Applies when options are back-ordered

GENERAL CHARACTERISTICS

Remote Programming Interfaces:

- Ethernet 100BaseT LAN interface
- USB 2.0 device
- GPIB (IEEE-488.2, 1987) with listen and talk (Option GPIB)
- Control language: SCPI Version 1999.0

Power requirements: 100 - 240 VAC, 50 or 60 Hz, 160W maximum (80W + 20W per channel)

Environmental: Levels similar to MIL-PRF-28800F Class ¾

Safety/EMC complies with applicable Safety and EMC regulations and directives.

Weight: 21 lbs [\leq 10.0 kg] net

Dimensions: 19" 1U enclosure

855B-06/12/20: 1.7 in H x 16.8 in W x 18.3 in L [44 mm H x 426 mm W x 465 mm]

855B-33/40: 1.7 in H x 16.8 in W x 19.1 in L [44 mm H x 426 mm W x 485 mm]

Dimensions: 19" 1U HI enclosure

1.7 in H x 17.3 in W x 18.5 in L [44 mm H x 440 mm W x 470 mm L]

Document History

Version	Date	Author	Notes
V10	2015-06-15	Jk	First release
V1.01	2015-08-15	Jk	Updated power ranges
V1.02	2015-09-15	Jk	Added harmonic and spurious specs
V1.10	2016-02-15	Jk	Refined parameters
V1.11	2016-02-22	Jk	Added phase noise plot
V1.20	2016-04-08	Jk	Pictures, sweeping and trigger information, dimensions, options
V1.21	2016-07-12	Sd	Replaced pictures with higher resolution
V1.30	2016-07-18	Jk	Additional performance data
V1.31	2016-12-02	Jk	Added pictures
V1.32	2017-1-09	Jk	Frequency stability information added Harmonic specs refined
V1.40	2017-2-19	Jk	Production release
V1.41	2017-5-30	Jk	Power level accuracy refined, phase stability specified
V1.42	2017-7-27	Jk	Intra-pulse modulation
V1.43	2017-10-27	Jk	Updates for 20 GHz model
V1.45	2017-12-5	Jk	Updates for 20 GHz model
V1.50	2018-2-5	Jk	Updates for option ULN; PHS, IPM
V1.51	2018-3-15	Jk	Mode updates on option ULN
V1.52	2018-4-5	Jk	Added parameters for reference section
V1.53	2018-5-15	Jk	New plots
V1.54	2018-6-25	Jk	Ch to ch isolation, phase stability specs
V1.55	2018-7-25	Jk	Ref input
V1.56	2018-10-18	MH	Ref inputs / outputs, SYSREF, ordering information
V1.57	2019-02-28	MH	New layout Added option LN and option FS
V1.58	2019-03-07	MH	Corrected Harmonic Values < 200 MHz, 855B-33/40 enclosure dimensions
V1.59	2019-04-08	MH	Added power consumption, edited Options
V1.60	2019-05-11	MH	ULN only
V1.61	2019-06-24	MH	Corrected connectors description
V1.62	2020-11-23	MH	Changed reference output options, updated phase noise plots, added option HI
V1.64	2020-12-07	MH	Added Channel-to-channel phase stability in picoseconds
V1.65	2021-01-20	MH	Updated pulse width, option MOD (adds AM, FM and Phase Mod capability), added option LN+
V1.68	2022-08-08	MH	Added PE Linearity spec / updated PE values, switching speed, 10 MHz Ref bypass info
V1.69	2022-11-21	MH	Added indication for which serial number the data sheet applies
V1.70	2023-01-18	MH	Added number of points for sweeps, values Phase Noise 4 GHz and 10 GHz, footnote for PE Linearity
V1.71	2023-02-14	MH	Added option NEC, added single channel 855B
V1.72	2023-05-24	MH	Corrected non-harmonic spurious values, added Multi-purpose output info for TRIG OUT port, added footnote on phase noise with opt PHS
V1.73	2023-06-07	EE/MH	New Structure
V1.74	2023-12-04	AP/MH	Added phase-stability plots

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