ROHDE&SCHWARZ
Make ideas real

R&S®FPL1000
versus RIGOL RSA5000

Better performance in the lab and in the field

The R&S®FPL1000 combines the functionality of a benchtop analyzer with the portability and usability of a handheld instrument. The optional battery pack and DC power supply make the R&S®FPL1000 a portable instrument for the lab, in the field and in vehicles.

A comparison of specifications shows that the R&S®FPL1000 outperforms the RSA5000 in many points. The RSA5000 seems to be optimized for some specifications, such as the SSB phase noise at 10 kHz offset (see specifications table).

The key feature of the RSA5000 is the 40 MHz real-time bandwidth, but saving IQ data and further analysis is not possible. The R&S®FPL1000 offers many more measurement possibilities than the RSA5000 series, which only has a few options and limited applications beside basic spectrum analysis.

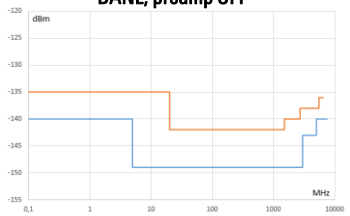
Your benefit	Features
Performance	Best dynamic range (lowest noise and highest TOI) in its class
Portability	Optional battery and DC power
Versatility	A rich set of analysis functions & application options

Parameter	R&S®FPL1000	RIGOL RSA 5000
Frequency range	5 kHz to 7.5 GHz	9 kHz to 6.5 GHz
Screen	1280 x 800 pixel, multi-touch	1024 x 600 pixel, multi-touch
Battery operation	optional	no
12 V/24 V DC operation	optional	no
Internal generator	optional (max. freq. 7.5 GHz) Independent CW, TG, Power Sweep	optional TG (max. freq. 6.5 GHz)
Internal data storage	32 Gbyte (SSD)	512 Mbyte (nom.)
DANL at 1 GHz preamp = OFF	< –149 dBm (–152 dBm typ.)	–142 dBm (–145 dBm typ.)
DANL at 1 GHz preamp = ON	< –163 dBm (–166 dBm typ.)	–162 dBm (–165 dBm typ.)
Spurious	< –70 dBc typ.	–60 dBc
SSB phase noise at 1 GHz (10 kHz offset)	< –108 dBc/Hz typ.	< –108 dBc /1 Hz (typ.)
SSB phase noise at 1 GHz (1 MHz offset)	< –135 dBc/Hz typ.	< –117 dBc /1 Hz (typ.)
Total level measurement uncertainty	< 0.3 dB	< 0.8 dB (nom. , f > 10 MHz)
TOI at 1 GHz (third-order intercept)	> 17 dBm	>11 dBm
Maximum dynamic range TOI at 1 GHz	–110 dB	–102 dB
1 dB compression	+ 7 dBm (nom.)	0 dBm (nom.)

For more information:
https://www.rohde-schwarz.com/product/FPL1000

DANL with and without preamplifier

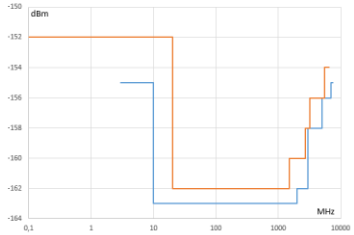
DANL, preamp OFF



R&S®FPL1000
RSA 5000

A low DANL without preamp is required to detect low-level signals in the presence of a strong carrier. At 1 GHz, the R&S®FPL without preamp has a 7 dB better DANL than the RSA5032.

DANL, preamp ON



R&S®FPL1000
RSA 5000

At 1 GHz, the R&S®FPL with preamp switched on is also better than the RSA5032.

Comparison of features and options

Feature	FPL1000	RSA 5000
Noise source control	option	-
Video/demod out	option	-
AF output / loudspeaker	option	-
GPIB interface	option	-
Removeable harddisk	option	-
DC power supply 12/24 V	option	-
Internal Lithium Battery	option	-
AM/FM/φM Demod.	option	-
Noise Figure and Gain	option	-
Advanced Measurements	standard	option
Advanded marker functions	standard	-
Multiview with sequencer	standard	-
EMI measurements	option	option
Vector signal analysis	option	-
NB-IoT analysis	option	-

Rohde & Schwarz offers a high variety of different options which allow the device to be customized to the customers needs.

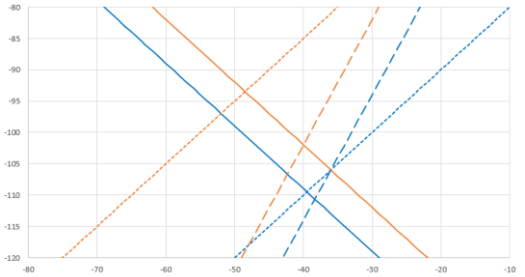
Dynamic range and SSB phase noise

R&S®FPL1000 DANL TOI SHI

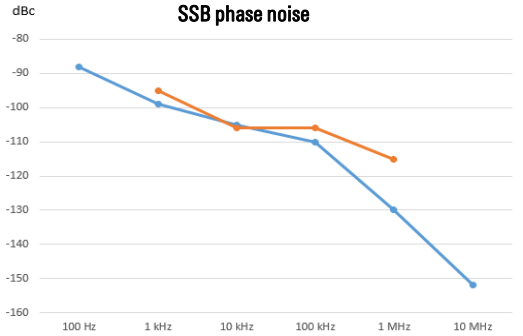
RSA 5000 DANL TOI SHI

A high dynamic range is required for all spectrum measurements in the presence of a strong carrier. The R&S®FPL1000 has a 7 dB better DANL, an 8 dB better TOI and a 16 dB better SHI.

Specifications at 1GHz



SSB phase noise



R&S®FPL1000 (CF= 1 GHz)

RSA 5000 CF= 500 MHz

A low phase noise is required for spectral measurements close to the carrier. The R&S®FPL1000 outperforms the RSA5000 by up to 20 dB. RIGOL specifies the SSB phase noise at a CF of 500 MHz (R&S®FPL: 1 GHz), leading to better SSB PN values of the RSA5000 (a few dB in this comparison). The RSA5000 also seems to be optimized for an offset of 10 kHz.

Competitive summary

The R&S®FPL1000 has:

- Better RF performance (DANL, phase noise, TOI, etc.)
- A bigger screen for better analysis
- Optional battery/DC power (portability and usability in the field)
- A rich set of analysis functions and application options
- Features such as MultiView, noise and phase noise markers and IQ export

Rohde & Schwarz GmbH & Co. KG (www.rohde-schwarz.com)
Rohde & Schwarz customer support (www.rohde-schwarz.com/support) **Rohde & Schwarz training** (www.training.rohde-schwarz.com)
R&S® is a registered trademark of Rohde & Schwarz GmbH & Co. KG | PD 3609.1779.32 | Version 01.10 | June 2020 (kt)