

Schlumberger Stabilock SI4040 Communication Test Set



Technical Data

Receiver Measurement

Carrier Frequency

Frequency range: 0.4-960 MHz

Resolution: 10 Hz

Accuracy: as ref oscillator

Reference Oscillator

Frequency error: $< 1 \times 10^{-7}$ after 15 min, at 20 °C

Temperature drift: $< 5 \times 10^{-9}$ / °C

Ageing: $< 1 \times 10^{-6}$ / year

Output: 10 MHz, appr. + 5 dBm

Output Level

EMF	with FM and Φ	with AM
at RF socket	0.1 μ V - 0.2 V	up to 0.1 V
at RF DIRECT	1 μ V - 2 V	up to 1 V

Level resolution: 0.1 dB

EMF error at socket RF

20 - 500 MHz: < 1.3 dB \pm 1 digit

0.4 - 960 MHz: < 1.8 dB \pm 1 digit

at RF DIRECT: < 0.7 dB additional

Impedance: 50 Ω

VSWR: < 1.1 at socket RF

at RF DIRECT: < 1.5 / < -5 dBm

Interruption free

Setting range: 26 dB

Error: < 0.1 dB / dB additionally

Spectral Purity

(Interruption free EMF at 0 dB)

Phase noise 25 kHz from carrier

f $<$ 500 MHz < -132 dBc / Hz

f $>$ 500 MHz < -126 dBc / Hz

Residual FM in a 30 Hz to 3 kHz bandwidth

f $<$ 500 MHz < 2 Hz rms

f $>$ 500 MHz < 3 Hz rms

Spurious signals 0.01 to 30 MHz from carrier

< 500 MHz < -80 dBc
 > 500 MHz < -75 dBc
Harmonics < -25 dBc
Residual AM < -70 dB relative to 30%
 AM, CCITT-P53 weighted

FM**Range:** 0 - 20 kHz**Resolution:** 10 Hz / $\Delta f < 4$ kHz, 100 Hz / $\Delta f > 4$ kHz**Modulation frequency****Internal:** 30 Hz - 30 kHz**External:** 2 Hz - 140 kHz (-3 dB)Setting accuracy with $\Delta f < 10$ kHz andfmod 0.3 - 3 kHz < 4% \pm 2 digitfmod 0.03 - 30 kHz < 8% \pm 2 digit**Distortion:** < 2% at $\Delta f < 10$ kHz

and fmod 0.3 - 3 kHz

DC-coupled FM (option)**Range:** 0 - 5 kHz**Resolution:** 10 Hz / $\Delta f < 4$ kHz, 100 Hz / $\Delta f > 4$ kHz**Mod frequency:** 0- 30 kHz**Setting error:** < 4% \pm 2 digit**Distortion:** < 2% / fmod 0.3 - 3 kHz**Frequency offset:** < 150 Hz**Wide Band FM****Maximum frequency deviation**

0.4 - < 60 MHz 80 kHz

60 - < 120 MHz 20 kHz

120 - < 250 MHz 40 kHz

250 - < 960 MHz 80 kHz

 Φ M**Range:** 0 - 6 rad**Resolution:** 0.01 rad**Modulation frequency internal and external:** 100 Hz - 16 kHz**Accuracy:** < 4% \pm s digit, 0.3 - 3 kHz**Frequency response:** < -3 dB / 100 Hz - 16 kHz**Distortion:** < 1% / 0.3 - 3 kHz**AM** (interruption free EMF at 0 dB)**Range:** 0 - 90%**Resolution:** 0.1%**Modulation frequency:**

Internal: 30 Hz - 20 kHz

External: 2 Hz - 20 kHz

Setting accuracy at m < 70% and fmod0.3 - 3 kHz < 4% \pm 2 digit0.03 - 10 kHz < 8% \pm 2 digit**Distortion:** < 2% up to 50% AM and fmod 0.3 - 3 kHz**Transmitter Measurement****Frequency Measurement****Frequency range:** 30 kHz - 960 MHz**Resolution:** 10 Hz**Input range**

at RF socket: 0.3 mW - 50 W

at RF DIRECT: 3 - 100 mV

Accuracy: as Ref. Oscillator ± 10 Hz

Frequency Offset Measurement

Frequency range: 2 - 960 MHz

Measuring range: 0 - ± 10 / ± 100 kHz

Resolution: 1 Hz / 10 Hz

Input level range with < 10 kHz offset

at RF socket: 10 μ W - 50 W

at RF DIRECT: 0.5 - 200 mV

Power Measurement

Frequency range: 2 - 960 MHz

Measuring range: 20 mW - 50 W

Resolution: 10 mW - < 10 W

0.1 W > 10 W

Accuracy with average indication

15 - 500 MHz $< 8\% \pm 1$ digit

5 - 960 MHz $< 12\% \pm$ digit

FM Measurement

Frequency range: 2 - 960 MHz

Measuring range: 0 - 50 MHz

Resolution: 10 Hz < 9 kHz

100 Hz ≥ 9 kHz

Accuracy at FM < 10 kHz and

fmod 0.3 - 3 kHz $< 4\% \pm 2$ digit

fmod 0.06 - 10 kHz $< 8\% \pm 2$ digit

Input level range

at RF socket: 0.8 mW - 50 W

at RF DIRECT: 5 - 200 mV

Demod output: DC - 20 kHz (-3 dB)

Wide Band FM Demodulator (option)

Frequency range: 2 - 960 MHz

Measuring range: 0 - 50 kHz

Input level range at socket RF: 10 mW - 50 W

Measuring error with

fmod 0.3 - 50 kHz: $< 5\%$ + residual FM

fmod 50 - 100 kHz: $< 9\%$ + residual FM

Residual FM: < 350 Hz peak / < 500 MHz

< 500 Hz peak / > 500 MHz

Demod output: DC - 140 kHz (-3 dB)

Φ M Measurement

Frequency range: 2 - 960 MHz

Measuring range: 0 - 6 rad (FM dev. < 50 kHz)

Resolution: 0.01 rad

Accuracy at

0.3 - 3 kHz: $< 4\% \pm 2$ digit

0.2 - 10 kHz: $< 8\% \pm 2$ digit

Demod output: 150 Hz - 16 kHz (-3 dB)

General Data

AM Measurement

Frequency range: 2 - 960 MHz

Measuring range: 0 - 99%

Resolution: 0.1%

Accuracy at

fmod 0.3 - 3 kHz: $< 4\% \pm 2$ digit

fmod 0.06 - 10 kHz: < 8% ± 2 digit

Input level range

at RF socket: 0.1 mW - 50 W peak

at RF DIRECT: 7 mV - 1 V peak

Demod output: DC - 20 kHz (-3 dB)

Spurious Modulation Measurement

Weighting: True rms

**Measuring ranges for measuring error < 1 dB,
relative to 3 kHz FM, 3 rad FM or 30% AM**

f < 500 MHz: 0 - 60 dB, CCITT-weighted

f > 500 MHz: 0 - 56 dB, CCITT-weighted

f < 500 MHz: 0 - 48 dB, 0.03 - 30 kHz

f > 500 MHz: 0 - 44 dB, 0.03 - 30 kHz

Input level

at RF socket: > 10 mW

at RF DIRECT: > 20 mV

Adjacent Channel Power Meter (option)

Frequency range: 10.5 - 960 MHz

Input level range

at RF socket: 1 mW - 50 W

at RF DIRECT: 20 - 200 mV

Adjacent channel power measuring range

at f < 499 MHz: -18 to -80 dBc

at f ≥ 499 MHz: -18 to -76 dBc

Usable from -15 dBc

Channel spacings: 10 / 12.5 / 20 / 25 kHz

Measuring error: