TBMR-110M

DC - 110 MHz high speed EMI-Analyzer

Datasheet

Rev.1.0

1   Main Features

- EMI Analyzer 1 Hz - 110 MHz (Measurement Receiver)

  - -162 dBm/Hz noise floor down to 1 kHz
  - 7-band hardware pre-selector filter bank.
  - 30 dBm maximum input power
  - CISPR-16, ANSI and MIL-STD compliant detectors
  - Peak, Quasi-Peak, Average, CISPR-Average, RMS and CISPR-RMS detectors working in parallel.
  - Sweep, STFFT and direct parallel resolution bandwidth setting (-3 dB and -6dB)
  - Numerous predefined Standards, ready to load and use
  - Pre-measurement with selective Peak measurement
  - Direct fast compliant STFFT measurement
  - Many pre-defined transducers, antenna factors and various other compensation files
  - Many data manipulation, display and documentation features
  - Direct control from EMCview or standalone operation
  - Quick load of predefined setups

- Spectrum Analyzer

  - 1 Hz - 110 MHz measurement range
  - Tracking Generator
  - 0.1 Hz to 3.5 MHz arbitrary RBW and VBW setting
  - Zero Span operation with time domain triggering
  - Linear, log amplitude and frequency display
  - Sweep, STFFT and direct parallel resolution bandwidth setting
  - Parallel RMS, Pos./Neg. peak and average detector
  - Trace Memory option, normalization
  - Equation based trace display
  - Peak hold
  - Noise marker, max and band power display
  - Quick load of predefined setups

- Tracking Analyzer 1 Hz - 110 MHz

  - Linear and logarithmic sweep
  - -50 dBm to 0 dBm adjustable TG power
  - 120 dB dynamic range
  - Use of power correction file and level correction file
  - Quick load of predefined setups.

- Oscilloscope 250 MS/s, DC - 110 MHz

    - 1 ns/DIV to 1 s/DIV horizontal resolution
    - Interpolated sampling up to 4 GS/s
    - Real-time Sampling up to 250 MS/s, 14 Bit
    - Up to 16 MS sampling size
    - Various Trigger options
    - Vertical CIC Filter option for noise reduction
    - Many automatic measurement features

- Demodulator

    - Direct demodulation into the PC sound system
    - FM, AM and SSB demodulator
    - Adjustable bandwidth, center frequency and demodulator parameters
    - Automatic demodulation parameter measurements

- IQ Stream Generator

    - GNU-Radio data source.
    - Directly stream floating point I and Q data into file or network
    - Adjustable center frequency and bandwidth

- Remote Control

    - Direct remote control of the EMI Analyzer over network
    - Text based protocol
    - EMCview compatible

2   Specifications

Parameter	Description	Value/Range	Remark
Operating Voltage	Mains Voltage Range	100-120 VAC / 200 - 240 VAC, 50-60 Hz	Mains voltage selection switch
Operating Temperature		0 °C – 40 °C,	
Storage Temperature		-20 °C – 60 °C	
Frequency Range	Oscilloscope	DC - 110 MHz	True DC coupled
	Spectrum Analyzer	1 Hz - 110 MHz	Max. 0V DC
	EMI Analyzer	1 Hz - 110 MHz	Max. 0V DC
	Tracking Analyzer	1 Hz - 110 MHz	Max. 0V DC
Reference Frequency accuracy	Initial accuracy after 30 minutes warm-up	+/- 10 ppm	
RF Input connector		50 Ohm, Type-N	
RF input VSWR		< 1 : 1.15	10 … 30dB att.
		< 1 : 1.5	0 … 30dB gain
Maximum RF input level	Attenuation / gain	+30 dBm/137dBµV/7V	20dB/30dB att.
	dependent	+25 dBm/132dBµV/4V	10 dB att.
	Negative att. = gain	+15 dBm/122dBµV/1.25V	0 … -30dB att.
Input RF attenuator		0 - 30 dB in 10 dB steps	
Input LNA		0 - 30 dB in 10 dB steps	
Amplitude Accuracy	DC - 110 MHz	Better +/- 0.8 dB	at 18°C - 28°C
Noise (DANL)	f = 10 Hz	- 132 dBm typ.	RBW = 1Hz
	f = 100 Hz	- 144 dBm typ.	RBW = 1Hz
	f = 1 kHz	- 149 dBm typ.	RBW = 1Hz
	f = 10 kHz	-156 dBm typ.	RBW = 1Hz
	f = 100 kHz	- 160 dBm typ.	RBW = 1Hz
	f > 1MHz - 110 MHz	- 162 dBm typ.	RBW = 1Hz
Intercept Point 2	f = 10 MHz	+ 50 dBm typ.	ATT = 0 dB
Intercept Point 3	f_1 = 32 MHz, f2= 33 MHz	+ 43 dBm typ.	ATT = 30 dB
		+ 24 dBm typ.	ATT = 0 dB
		- 6 dBm typ.	ATT = -30 dB
Resolution Bandwidth		0.1 Hz - 3.5 MHz	arbitrary
Video Bandwidth		0.1 Hz - 3.5 MHz	arbitrary
Pre-Selector Filter Bank		7 Bands + Bypass	6th order band-pass
Sampling Rate		250 MSPS, 14 Bit	
Detector		RMS, pos./neg. Peak, Average, Quasi Peak, CISPR Average, CISPR RMS.	According to CISPR-16-1-1 and Mil Std. 461
Processing		Sweep, STFFT, parallel sweep	
Tracking Generator frequency stability		+/- 25 ppm	
Tracking Generator amplitude stability		better +/- 0.5 dB	
Tracking Generator amplitude range	DC - 100 MHz	-50 dBm to 0 dBm	
	100 MHz - 110 MHz	-50 dBm to -10 dBm	
Dimensions / weight		L x W x H: 33 x 38 x 12 cm; 5.2 kg	

Attenuation [dB]	Absolute Max. Input Level [dBm, dBμV, V]
30	30 dBm, 137 dBuV, 7 V
20	30 dBm, 137 dBuV, 7 V
10	25 dBm, 132 dBuV, 4 V
0	15 dBm, 122 dBuV, 1.25 V
-10 (equivalent 10dB gain)	15 dBm, 122 dBuV, 1.25 V
-20 (equivalent 20dB gain)	15 dBm, 122 dBuV, 1.25 V
-30 (equivalent 30dB gain)	15 dBm, 122 dBuV, 1.25 V

3 History

Version	Date	Application software version	Changes
V1.0	24.4.2024	V1.2	Initial document

The application software version refers to the most recent version available at the time of writing the datasheet.