



PRECISION NOISE GENERATORS

10 MHz TO 18 GHz

Features

- Accurate
- Broad Frequency Coverage
- Traceable Calibration



Description

The Maury MT7600 series noise generators are precision solid state devices which provide the calibrated noise power levels required for receiver noise measurements (noise figure or effective input noise temperature). These units can also be used in other applications requiring precise, stable low level noise such as reference sources for radiometry.

The MT7600 series noise generators operate over the range from 10 MHz to 18 GHz. Units are also available with less frequency range, so whether your application is component or sub-assembly testing or measurement of complete receivers over broad or narrow frequency ranges, Maury can probably provide the only noise generator you will ever need.

Specifications

Frequency Range, etc. see chart below
 Calibration Frequencies see chart, page 2
 Calibration Accuracy see chart, page 2
 Input Connector BNC female
 Input Power +28V @ < 30ma
 ENR vs. Temperature 0.01 dB/°C
 ENR vs. Voltage 0.1 dB/% Δ V
 Switching Time < 5 microseconds
 Size see chart, page 2

Model	Frequency Range (GHz)	Nominal ENR ¹	ENR Flatness vs. Frequency	Output Connector	VSWR (Maximum)
MT7615A	0.01 – 1.5	15.5 dB	±0.5 dB	N male	1.2
MT7619A	0.01 – 3.0	15 dB	±1.0 dB	N male	1.2
MT7619B				SMA male	
MT7616A	1.0 – 12.4	15 dB	±1.0 dB	N male	1.4
MT7618E	0.01 – 18.0	15 dB	±1.0 dB	SMA male	0.01 – 12.4 GHz, 1.25 12.4 – 18 GHz, 1.35
MT7618F	0.01 – 18.0	15 dB	±1.0 dB	SMA female	
MT7618L	0.01 – 18.0	6 dB	±1.0 dB	SMA male	
MT7618M	0.01 – 18.0	6 dB	±1.0 dB	N male	
MT7618N	0.01 – 18.0	15 dB	±1.0 dB	N male	1.4

¹ Excess Noise Ratio (ENR) is defined as:

$$ENR_{(dB)} \equiv 10 \text{ LOG}_{10} \left(\frac{T_h}{290} - 1 \right)$$

Where Th is the equivalent hot noise temperature of the generator.



Calibration Frequencies

The following chart shows the frequencies at which each model is calibrated.

Model	Calibration Frequencies (GHz)
MT7615A	0.01, 0.03, 0.3, 1.0, 1.5
MT7616A	1.0, 2.0, 3.95, 8.2, 9.0, 9.8, 12.4
MT7618x	0.01, 0.03, 0.3, 1.0, plus every GHz ²
MT7619x	

Calibration Accuracy

The major contributor to measurement uncertainty in most noise figure or noise temperature set-ups is the calibration uncertainty of the noise generator ENR. All Maury noise generators are shipped with an individual calibration data sheet showing the ENR at each calibration frequency. The chart below shows the uncertainties at each frequency. All ENR calibrations are traceable to a national standards laboratory or a natural physical standard.

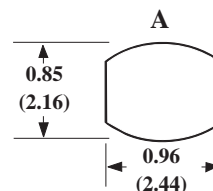
Frequency (GHz)	RSS Uncertainty (dB)	Worst Case Uncertainty (dB)	Traceability ³
0.01	0.14	0.30	H/C
0.03, 0.3	0.14	0.30	EQD
1.0, 2.0	0.14	0.30	EQD
3.0, 4.0	0.13	0.28	NIST
5.0	0.14	0.30	H/C
6.0, 7.0	0.14	0.30	EQD
8.2, 9.0	0.10	0.25	NIST
10.0, 11.0, 12.0, 13.0, 14.0, 15.0, 16.0	0.11	0.25	NIST
17.0, 18.0	0.12	0.25	NIST

² Thru 3 GHz for MT7619x; 18 GHz for MT7618x.

³ Traceability: EQD, Electronic Quality Assurance Directorate, UK; NIST, National Institute of Standards and Technology; H/C, Hot/Cold Thermal Standard; G, Internal Gas Standard.

Dimensions

OUTLINE



Model	Outline	Overall Length in.	(cm)
MT7615A, MT7616A	A	4.6	(11.7)
MT7617B, MT7618E, MT7618L, MT7618N, MT7619A	A	4.5	(11.4)
MT7618F	A	4.4	(11.2)
MT7618M	A	5.9	(15.0)

Model Number Cross Reference

The following chart cross references original Eaton, Electronic Instrumentation Division (EID) models to the new Maury model designation.

EID Model	Maury Model
7615	MT7615A
7616	MT7616A
7618A	MT7618F
7618E	MT7618E
7618EL	MT7618L
7618ELN	MT7618M
7618EN	MT7618N

Maury Noise Products

Other solid state noise generation products include the MT7650 and MT7660 series. These sources provide high level calibrated noise for systems applications. Please refer to Maury data sheet 4N-061 for more information.

Maury also manufactures the most accurate noise calibration standards in the microwave industry. These consist of cryogenically cooled, temperature controlled heated, and ambient terminations. Two or more such terminations can be combined to provide highly accurate, calibrated noise outputs at a single output port. Please consult the factory for more information.