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Product Note 55

Programmable Millimeterwave Tuner CCMT-5010-H (10-50 GHz) with Harmonic Tuning to 60 GHz

Computer Controlled Microwave Tuner, model CCMT-5010-H, is a millimeter-wave programmable tuner using a coaxial 1.9 mm structure and V®-connectors. It generates high reflection factor at the fundamental frequency up to 50 GHz and has independent tuning capability at one harmonic frequency up to 60 GHz. This "combo" tuner can be used for test fixture or on-wafer test setups. On-wafer operation is ensured using appropriate 3 axis micropositioners (see Product Note 53).

Source and Load 10-50 GHz programmable tuners with 2fo hermonic tuning capability (tuned here to ≈59 GHz)

CCMT-5010-H millimeterwave Tuners at a glance

Frequency Range (fo)	10 – 50 GHz
Harmonic Tuning (2fo)	20 – 60 GHz ±1 GHz (using discrete exchangeable resonators)
Max VSWR	10:1 min (see figure 3)
Min VSWR	1.4:1 max
Tuning Resolution	0.38°/ step @ 50 GHz (both fo and 2fo)
Connector type	1.9 mm (V®) male or female
Power Handling	5 Watts
Overall Size	L=7.25", W= 7.0", H=6.0" (without feet)
Weight	11 lbs. (5 kg)
Options	Wafer Probe Bracket, 3 axis Micropositioner (see P.N. 53)

Fundamental and Harmonic Tuning of CCMT-5010-H

Figure 2: Fundamental Tuning turned off (Probe retracted). Harmonic Reflection Factor >0.85 at 59 GHz

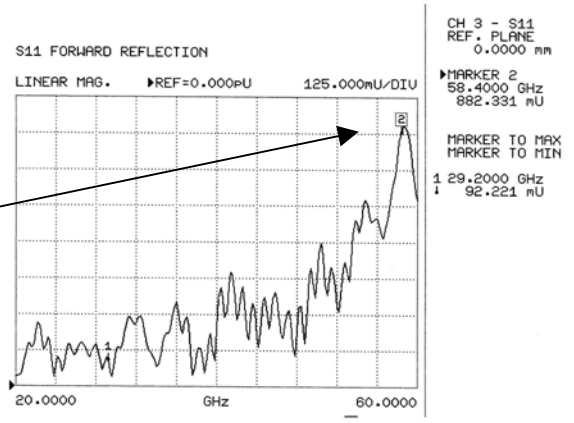
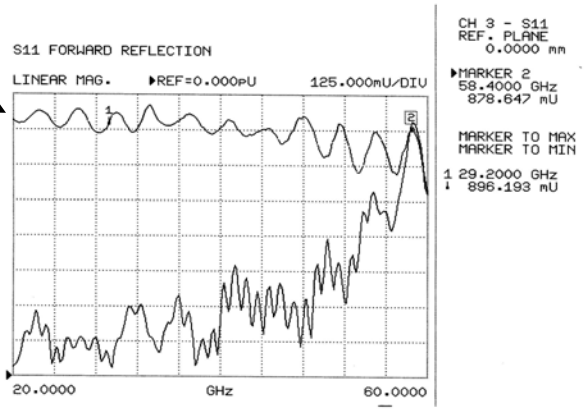
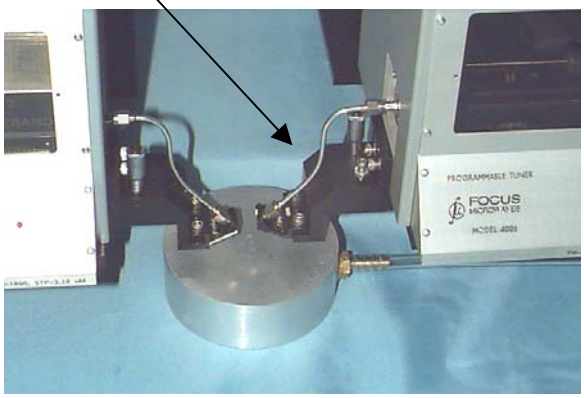


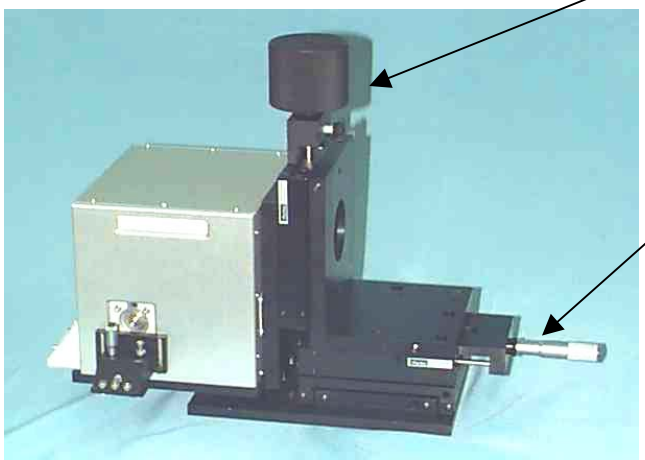
Figure 3: Maximum Fundamental Tuning (Probe inserted). No noticeable effect on Harmonic Tuning.



Probe Brackets with planar alignment



Z-axis (modified for carrying Tuner weight)



Y-axis

3 axis Micropositioner and Probe Bracket for mounting a CCMT on a wafer probe station.