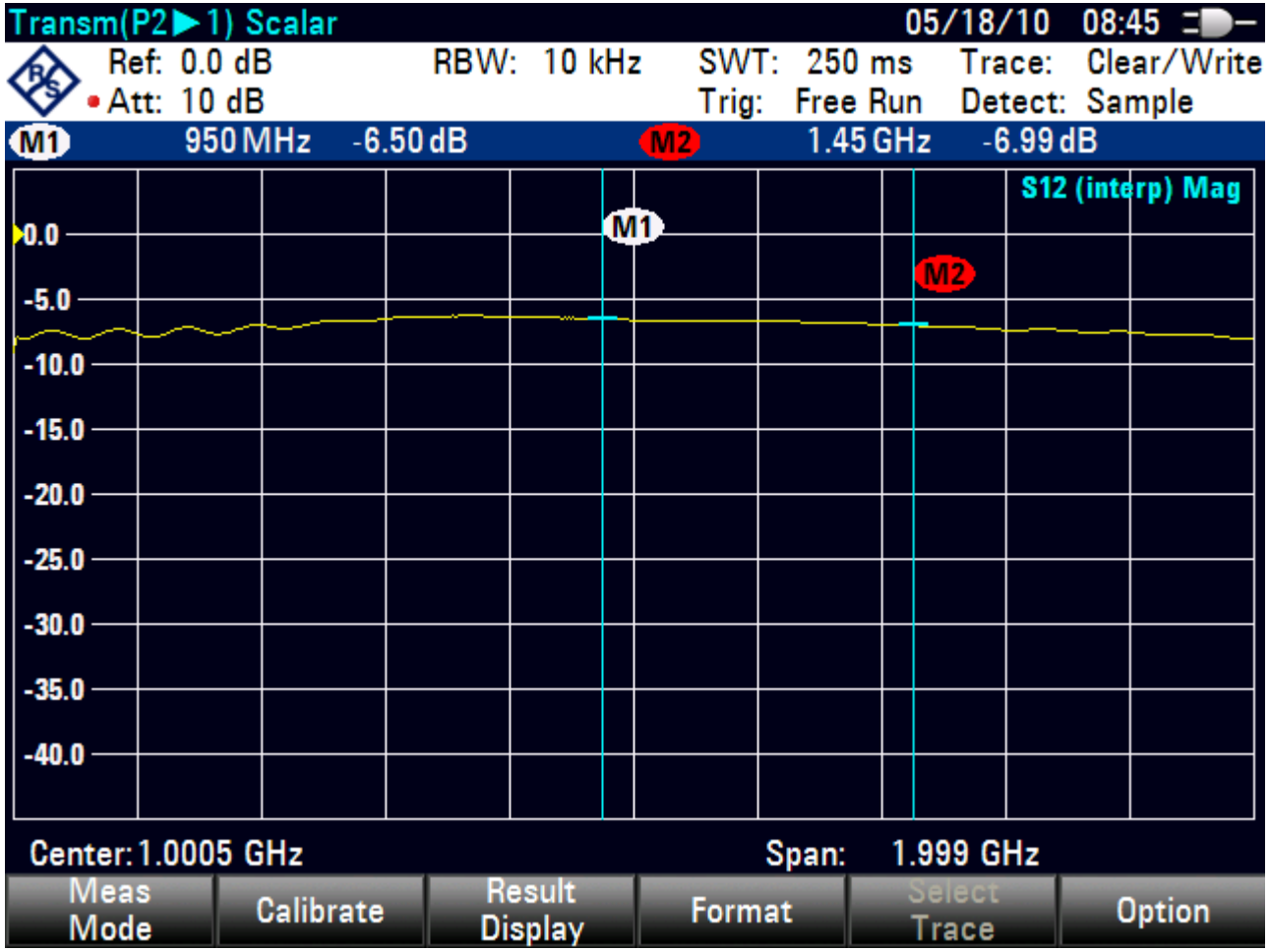
May 17, 2010

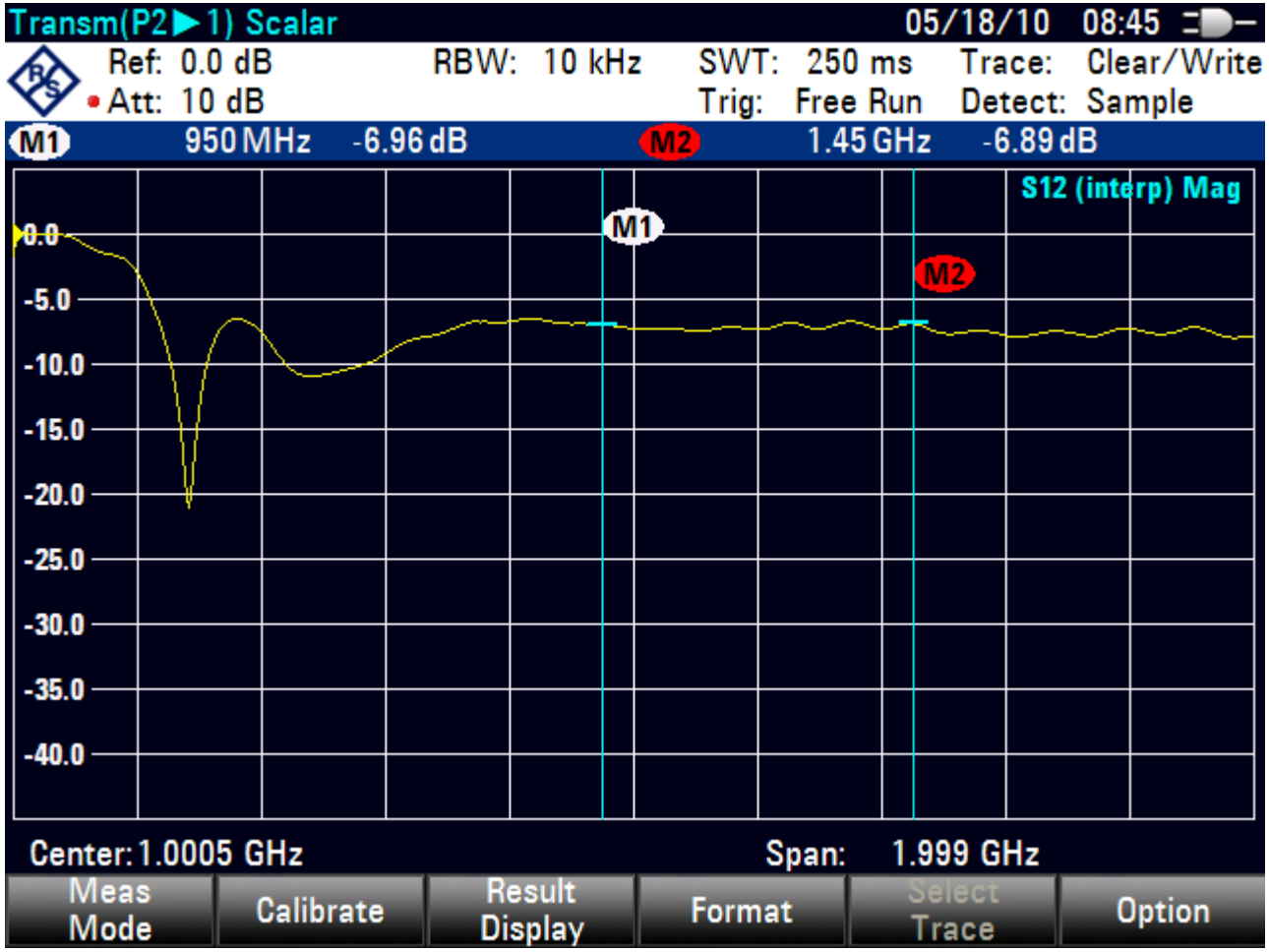
Introduction

The following waveforms measure ‘insertion loss’ and ‘isolation’ on two (randomly chosen) headend TVRO L-band 4 port splitters. All measurements were taken with a Rohde & Schwarz FSH818 Spectrum analyzer & tracking generator, with test lead and adaptor losses ‘normalized’ to the 0 dB reference line, therefore the *loss values* shown on the diagrams are the precise (accuracy better than .1 dB) insertion loss and/or isolation values. The horizontal (frequency) axis is from 0 to 2 GHz.

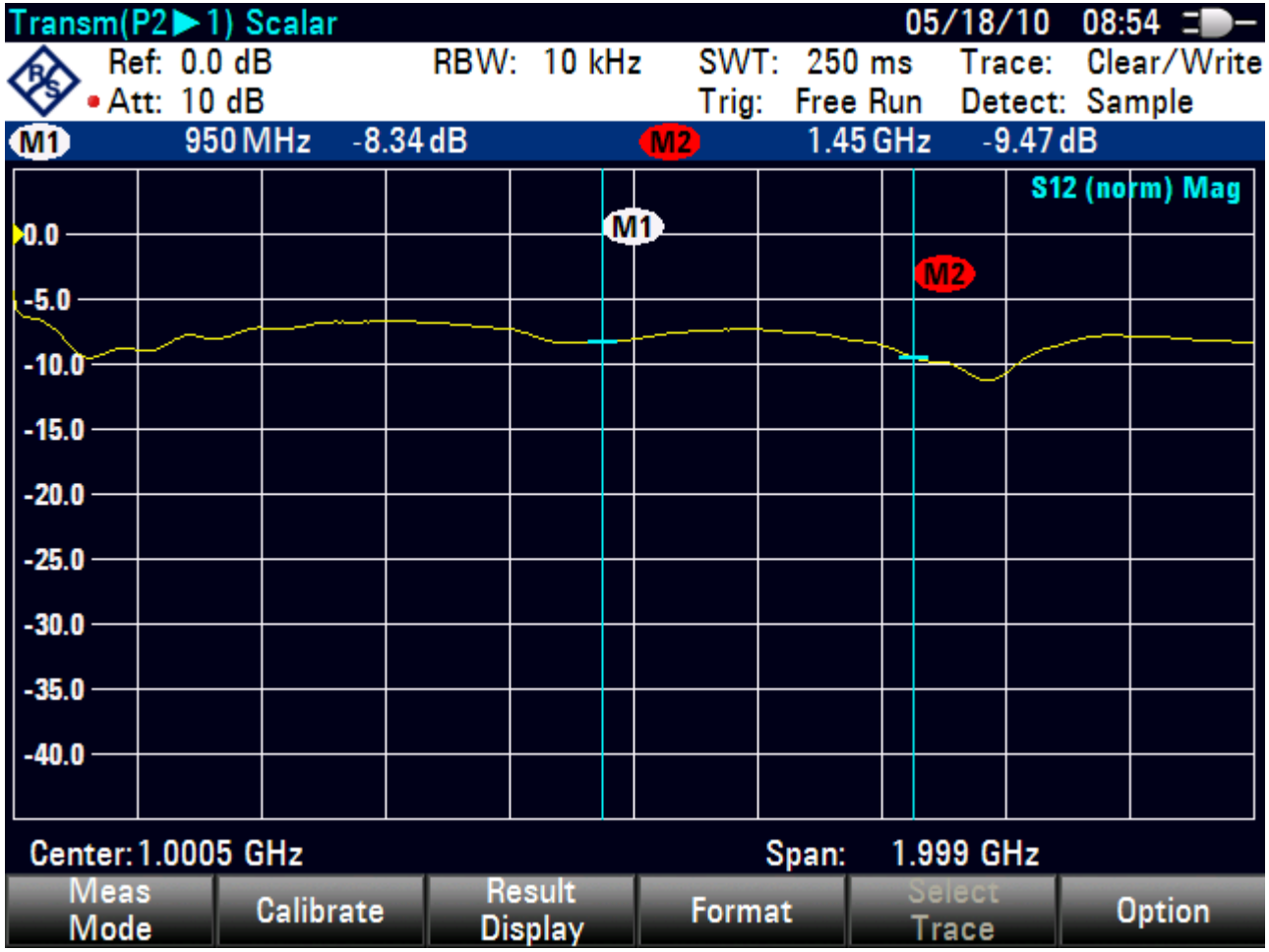
The following waveforms demonstrate that not all L band splitters are created equal, as the first splitter tested (name brand) had measurably better response, lower insertion loss, and greater port-to-port isolation than the second splitter (also a well known brand, but without the manufacturing quality of the first).



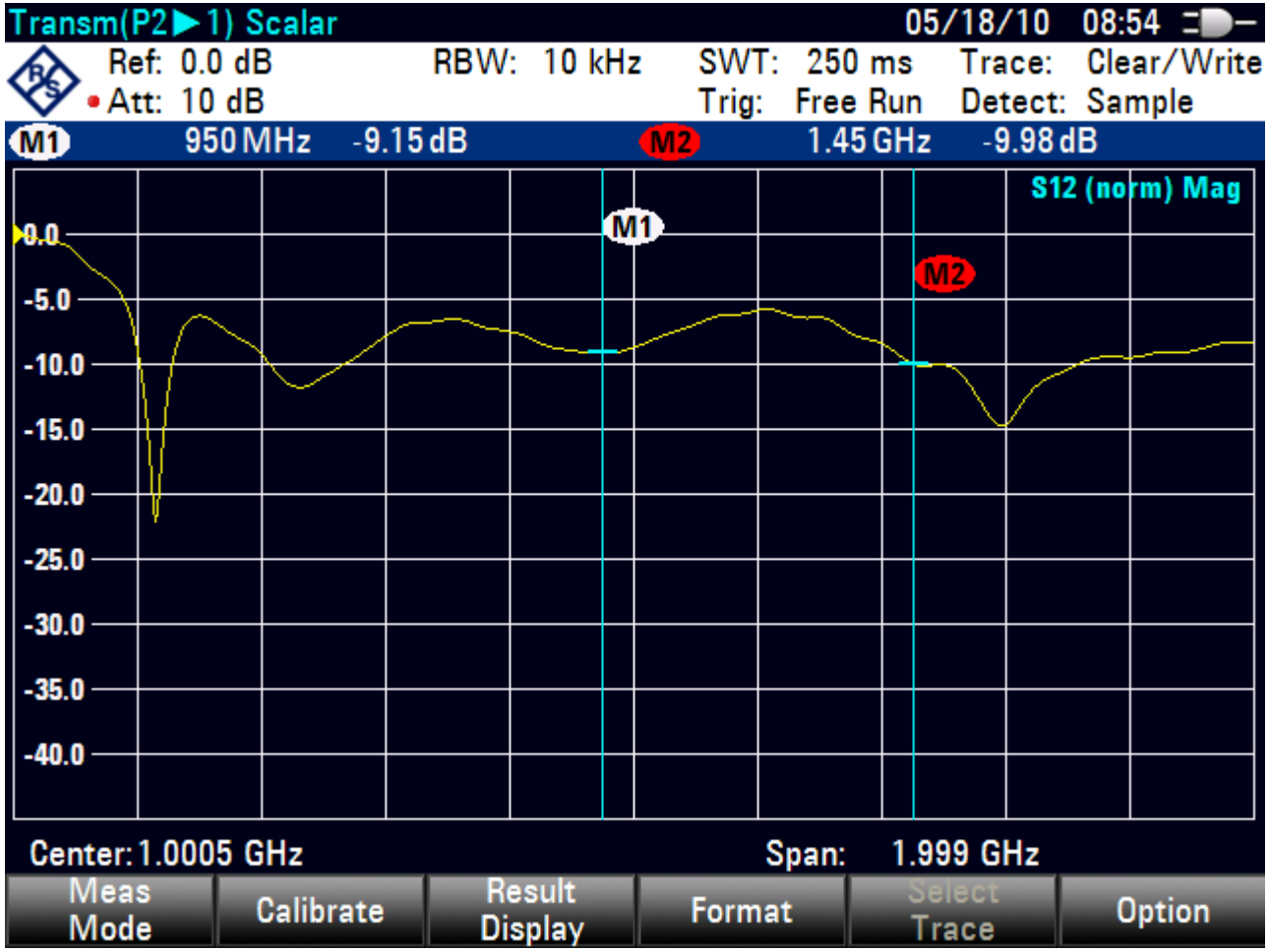
Insertion loss from (Brand A) coupler input to one of the four output legs. Unused ports were terminated. Insertion loss at 950 MHz is 6.5 dB and 7 dB at 1450 MHz.



Insertion loss from coupler (Brand A) input to one of the four output legs. Unused ports were poorly terminated.
Insertion loss values remain close to those measured with the unused legs properly terminated,
although out-of-band response is clearly affected.

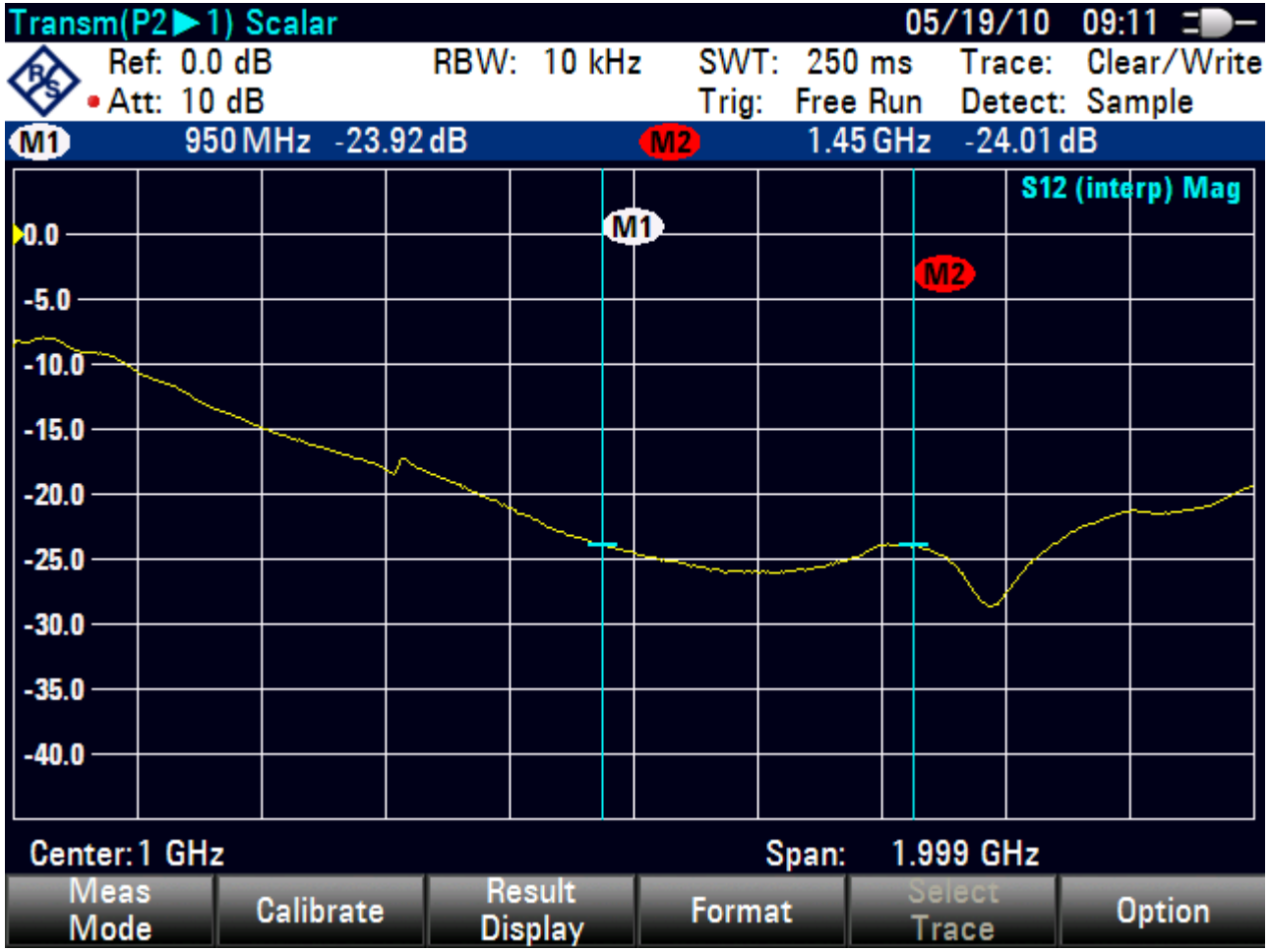


Insertion loss from (Brand B) coupler input to one of the four output legs. Unused ports were terminated. The insertion loss runs 2 to 2.5 dB higher than that measured on Brand A!

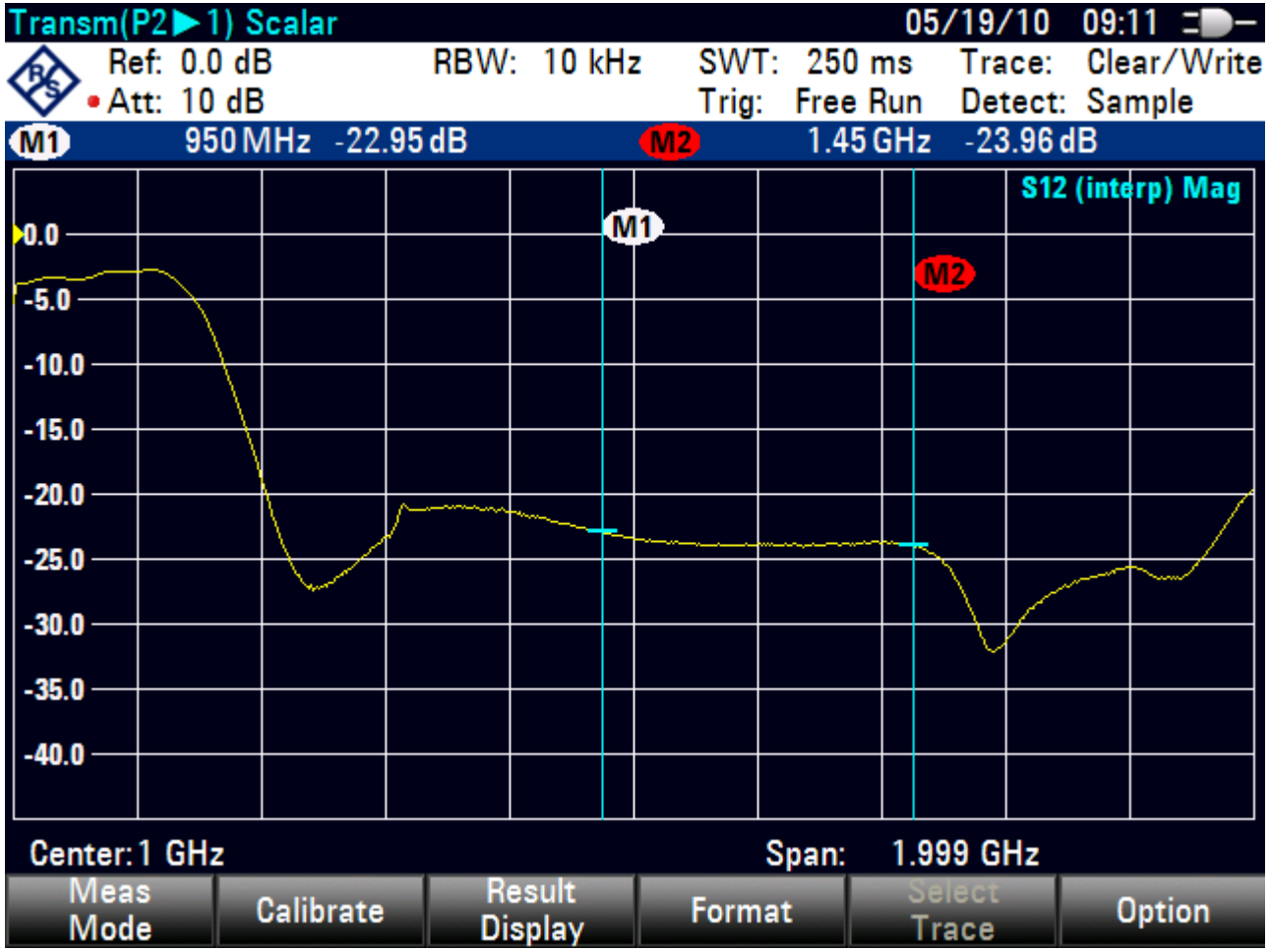


Insertion loss from (Brand B) coupler input to one of the four output legs. Unused ports were poorly terminated.

The insertion loss values on this coupler are affected to a greater degree (than Brand A), and it was also determined (during testing) that the splitter (Brand B) had a loose internal connection affecting it's performance.



Isolation loss on (Brand B) coupler between two output legs, with the unused ports terminated.



Isolation loss on (Brand B) coupler between two output legs, with the unused ports un-terminated.
In this case, the *in-band* response and isolation values are not adversely affected by poor Z on the other ports.