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Twisted Pair Cryogenic Low Pass Filters WOON SONG, Korea Reseach Institute of Standards and Science, MUSHTAQ REHMAN, SANG-WAN RYU, Chonnam National University, Korea, YONUK CHONG, Korea Reseach Institute of Standards and Science — For precise electronic-transport measurement at low temperatures, low pass filters are usually required to block external interference. However, since filters designed for the RF often don't work at microwave frequencies, separate low pass filters such as copper powder filter have been used widely, even though the copper powder filter is bulky for many applications. We fabricated a low pass filter consisting of twisted pair of manganin wires wrapped in a copper tape, which can be made compact. We measured its microwave transmission characteristics with various filter parameters such as length, insulation thickness and twisted turns per unit length and compared the result with copper powder filter. The constructed filter with length of one meter showed a high attenuation (more than 60 dB at 1 GHz) with cutoff frequency of about 8 MHz. This result is in good agreement with the theoretical model, which assumes the cable as a resistive transmission line.

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