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JTIDS/MIDS Triple Band Bandpass Filter

Joint Tactical Information Distribution System (JTIDS)/Multifunctional Information Distribution System (MIDS) provides secure communications for US and NATO air and missile defense platforms, utilizing TDMA in the 962 to 1215 MHz frequency band. Transmitter and receiver share a common antenna, with the filter at the base of the antenna often specified as a high-power, low-loss device. Overlapping bands between JTIDS/MIDS and Tactical Air Navigation (TACAN)/Identification Friend or Foe (IFF) necessitate two additional notch filters at 1030 MHz and 1090 MHz, to mitigate IFF interference and to attenuate signals by 50 dB to protect the JTIDS/MIDS receiver. A common realization scheme for the three filters is a cascade of two narrow-band notch filters with a wide-band bandpass filter, which is a bulky solution when each filter is designed for low loss and high power.

SPCL-00192 is K&L Microwave's integrated solution, designed with in-house software CKTTOOL by dividing the 962 to 1215 MHz passband into three independent bands. For high Q (low loss) and high power handling, the solution of choice is TEM (compline) resonators. The result is a temperature-stable array of magnetically-coupled resonators in a relatively small package, measuring only 1.5" x 1.75" x 6.1" (excluding connectors). Foregoing physical inverters between adjacent notch filter resonators (prior art) maximizes the performance-to-volume ratio and improves assembly and tuning time.

For further information and performance data, please contact K&L Microwave.

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The following are the electrical specifications;

Minimum Passbands: 962-1012, 1048-1070 and 1108-1215 MHz

Average Passband Insertion Loss: 1.5 dB Max

Maximum -3 dBc Stopband Points: 1012, 1048, 1070 and 1108 MHz

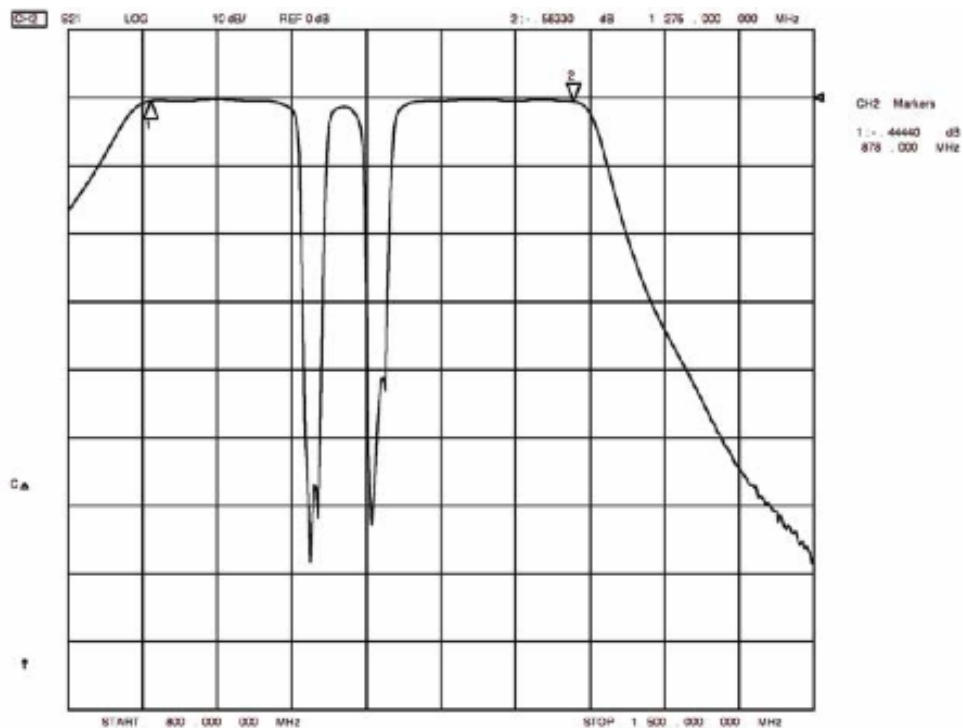
Maximum Passband VSWR: 1.5:1

Average Group Delay: 22 ns

Stopbands: 1023-1037 MHz and 1083-1097 MHz

Minimum Stopband Rejection:
-58 dBc 1023-1037 MHz
-41 dBc 1083-1097 MHz
-50 dBc 1900-18000 MHz

Minimum TDMA power: 250 Watts Peak, 50 Watts Average
Minimum TACAN power: 400 Watts Peak, 4 Watts Average



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