Abstracts

A robust ultra-broad-band wireless communication system using SAW chirped delay lines

A. Springer, M. Huemer, L. Reindl, C.C.W. Ruppel, A. Pohl, F. Seifert, W. Gugler and R. Weigel. "A robust ultra-broad-band wireless communication system using SAW chirped delay lines." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2213-2219.

Design and performance of a low-cost wireless communication system for indoor and industrial environments are presented. The system is based on chirp-signal transmission to achieve a robust communication link. For the chirp expansion and compression, surface acoustic wave chirped delay lines fabricated from LiTaO/sub 3/-X112rotY are used. Center frequency, bandwidth, and chirp rate are 348.8 MHz, 80 MHz, and /spl plusmn/40 MHz//spl mu/s, respectively. An optimized square-root weighting was chosen to reduce the sidelobes of the compressed pulse to -42 dB compared to the correlation peak. The chirp filters have been deployed in a hardware demonstrator for data rates of up to 5 Mb/s. Limiting factors for the data rate according to simulations and measurements are mainly intersymbol interferences due to the time overlapping of consecutive symbols and, to a lower extent, the multipath propagation.

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