

MPD

MICROWAVE PRODUCT DIGEST

Editorial Statement of Purpose

Microwave Product Digest serves RF and microwave design engineers, research and development engineers, applications engineers and engineering managers. These professionals, working in facilities that serve both the commercial and government markets, are involved with the design, development, application, and use of systems and subsystems, devices, and techniques involving frequencies from RF to light.

Editor

Karen Hoppe
editor@mpdigest.com

Contributing Editor

Barry Manz
manzcom@gmail.com

Senior Production Editor

Erin Almaleh
eperry@mpdigest.com

Copy Editor

Sue Goldenberg

Circulation Manager

Claire Ferrante
subscription@mpdigest.com

Director of Marketing

Rosalind Markhouse
rmarkhouse@mpdigest.com

Publishing Coordinator

Eileen Rocco
eerocco@mpdigest.com

Website Coordinator

Chris Montero
chris@inrworx.net

Publisher

Doug Markhouse
douglasmeow@mpdigest.com

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This publication is issued without charge, upon written request, to qualified persons. Periodical Postage paid at Yonkers, NY and additional mailing offices.

POSTMASTER: Send address changes to Microwave Product Digest, P.O. Box 1024, Englewood Cliffs, NJ 07632-9971.

Pub. Agree. # 40112540
Return Undeliverable Canadian addresses to:

IMEX
P.O. Box 4332 Station Road
Toronto, ON M5W3J4

Microwave Product Digest (USPS 007889) (ISSN 1061754X) is published 12 times a year by Octagon Communications, Inc., 167 South Broadway, Hastings-on-Hudson, NY 10706.



FROM THE EDITOR



Karen Hoppe
Editor, *MPD*

Designing Power Amplifiers to Operate and Coexist in the Public Safety Domain

A prominent provider of wireless solutions approached us for assistance in developing power amplifiers for their systems because their engineers believed their current systems would not meet FCC Narrowbanding requirements for the next year. They supplied us with their specifications, mostly around the VHF/UHF, 700MHz, & 800 MHz Public Safety Bands anywhere from 5 MHz to 20 MHz bandwidths with 6 KHz and 12.5 KHz modulation spacing in their digital transmission capabilities. Although “the customer is always right” motto prevails in our business model, our diligent and always curious Product Line Manager decided to research and find out for himself if these specified power amplifiers that he was about to design would meet FCC requirements.

The FCC has implemented the Narrowbanding Mandate which states that all public safety and industrial/business land mobile radio systems operating in the 150-174 MHz and 421-470 MHz bands must cease using 25 kHz efficiency technology and begin using 12.5 kHz efficiency technology. The purpose of Narrowbanding is to operate more efficiently creating additional channel capacity, either with narrower channel bandwidths or an increased number of voice paths or a higher data rate per channel to support more users. The deadline for conforming to the Narrowbanding Mandate is January 1, 2013.

The 700 MHz Public Safety Band comprises 24 megahertz of spectrum designated for public safety use. The Narrowband segment of 769-775/799-805 MHz consists of 1920 6.25 KHz-wide channels operating as 960 pairs. 800 MHz

Band Reconfiguration was implemented to address the growing problem of harmful interference caused by high-density commercial wireless systems to 800 MHz public safety communication systems at 806-824 MHz paired with spectrum at 851-869 MHz. All FCC requirements and further information can be found at: www.fcc.gov/topic/emergency-communications

To meet requirements, power amplifiers have to be very linear at all these very narrowbands to perform with efficiency. AccelComm is already prepared to meet these new stringent FCC requirements for its customers by providing power amplifiers with RF Predistortion techniques which are capable of compensating for nonlinearities such as AM-AM and AM-PM distortions, spectral regrowth, memory effects and other signal impairments. For more information on all AccelComm products and capabilities, visit: <http://www.accelcommgroup.com>

IN MY OPINION



Dimitrios B. Kontolios
Sales & Applications
Engineer
AccelComm/
AC Group, Inc