Advances in Multi-Band Microstrip Filters

The first of its kind, this work offers a detailed insight into a range of design procedures for dual-band and tri-band microstrip filters, from theory to practical design. Originating from the FP7 MultiWaveS project, this comprehensive resource includes the most recent results from several well-established research groups as well as detailed coverage of competing approaches ranging from the conventional approach, to advanced multi-layer fabrication technologies, and the development and application of several novel geometries and concepts. In-depth coverage of basic theoretical foundations, detailed design procedures and rules, and comparisons of measured and simulated results enable you to select the optimal approach for your purposes and designs, making this an invaluable resource for both students and industry professionals in the field of microwave engineering.

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Abbrevations

2D:	two-dimensional
3D:	three-dimensional
AWR MWO:	Advancing the Wireless Revolution Microwave Office
BPF:	bandpass filter
BW:	bandwidth
CDMA:	code division multiple access
CLC:	capacitively loaded cavities
CRLH:	composite right/left-handed
CSRR:	complementary split ring resonator
CST:	computer simulation technology
CTE:	coefficient of thermal expansion
D-CRLH:	dual composite right/left-handed
DGS:	defected ground structure
DNG:	double-negative
DPS:	double-positive
EM:	electromagnetic
ENZ:	epsilon-near-zero
FBW:	fractional bandwidth
FCC:	Federal Communications Commission
GPR:	grounded patch resonator
GSM:	global system for mobile communications
HFSS:	high-frequency structure simulator
HTCC:	high-temperature cofired ceramics
HTS:	high-temperature superconductor
I/O:	input/output
IEEE:	Institute of Electrical and Electronics Engineers
IFS:	iterated function system
LAN:	local area network
LCP:	liquid crystal polymer
LH:	left-handed
LPF:	lowpass filter
LTCC:	low-temperature cofired ceramics
LTE:	long-term evolution
MEMS:	microelectromechanical system

MIC:	monolithic integrated circuits
MNZ:	mue-near-zero
MROP:	microstrip rectangular open-loop
NZ:	near-zero
PCB:	printed circuit board
PGPR:	perturbed grounded patch resonator
RF:	radio frequency
RFID:	radio frequency identification
RGPR:	rectangular grounded patch resonator
RH:	right-handed
SI-SLR:	stepped impedance stub-loaded resonator
SIR:	stepped impedance resonator
SLR:	stub-loaded resonator
SNG:	single-negative
SoP:	system-on-package
SRR:	split ring resonator
TBCCO:	thallium barium calcium copper oxide
TE:	transverse electric
TEM:	transverse electromagnetic
TL:	transmission line
TM:	transverse magnetic
UMTS:	universal mobile telecommunications system
UWB:	ultra-wideband
WiFi:	wireless local area network product based on the IEEE 802.11 standards
WiMAX:	worldwide interoperability for microwave access
WLAN:	wireless local area network
YBCO:	yttrium barium copper oxide
$\lambda/2$:	half-wavelength
$\lambda/4$:	quarter-wavelength