Microwave Microsystems Lab

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Resistively Loaded Vee Dipole (RLVD) Generations

- RLVD is a proven candidate for pulse radiation in ground penetration radar
- Developed generations of RLVD's to in improve isolation and reduce pulse ringing



RLVDs (14" x 7")

RLVDs

Elliptical RLVD (5" x 6 ")

UWB Elliptical RLVD

• Wide impedance bandwidth and gain within the band

Back

- Compact size or size reduction
- Guanella balun for impedance transformation





Prototype of the UWB Elliptical RLVD (5" x 6 ")



Direction and magnitude of surface current flow at 1 GHz on elliptical sub-elements with a) $\alpha = 0.5$, b) $\alpha = 1.5$ compared to c) rectangular elements.

UWB Elliptical RLVD

- GEN6 has many design flexibilities
- Measured impedance bandwidth ratio 13:1 or 490-6.41 GHz



a) Base RLVD, b) ERLVD with unity growth rate, ERLVD_{$\Gamma=1$} and c) ERLVD with high growth rate and N=2, ERLVD_{$\Gamma=2.6$}



UWB Elliptical RLVD

• ERLVD has gain



Measured radiation patterns of the prototyped ERLVD and RLVD



Measured and simulated gains for ERLVDs and



Calculated power spectral densities (PSDs) in dB/Hz for the measured received signals at 1 meter

Slow-wave Vivaldi Antenna



Ultrawideband Vivaldi antenna (0.35-50 GHz)







IoT Antennas

- The resonant frequency is around 750 MHz (LTE band 13)
- The results show a good match between simulation and measurement
- VSWR < 2.5:1 at the resonance





Antenna prototype on a slotted ground





Triple Band Antennas for Energy Harvesting Application

Triple bands antenna prototype



90mmx40mmx0.2mm

Simulated and measured gain

Frequency (MHZ)	Simulated Gain (dB)	Measured Gain (dB)
940	0.34	0.38
1930	2.3	2.64
2450	3.5	4.2



UCDAVIS



Ka-band Phased Array Antennas

- Operates from 32-37 GHz
- Achieves ±30° beam steering capability from boresight
- Shows less than 6.75° of beam squint
- Total size of 100mm x 100mm
- Total weight is 12.3 grams









W-Band 64 Element Antenna Array

- ~95 GHz operation
- Printed patch antennas
- Substrate integrated waveguide antennas
- Wide bandwidth operation
- Thin and multi-layered substrate materials
- Total size of 15 x 20mm



Substrate Integrated Waveguide Slot Array



Series Fed Patch Array





W-Band Antennas on LCP



UCDAVIS



W-Band Phased Arrays on LCP







W-Band Phased Arrays on LCP







W-Band Phased Arrays on LCP





Caller M.R.C.

On-wafer Antenna Measurements



Micro-probe antenna measurement system



Measured results

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