

Highly Flexible and Scalable Millimeter Wave Software Defined Radio

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Opportunity



UAV Communication Systems

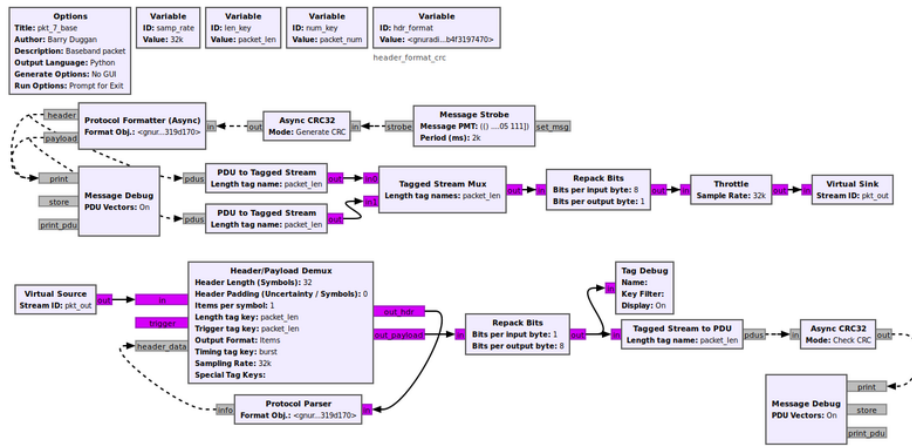


Radio spectrum monitoring

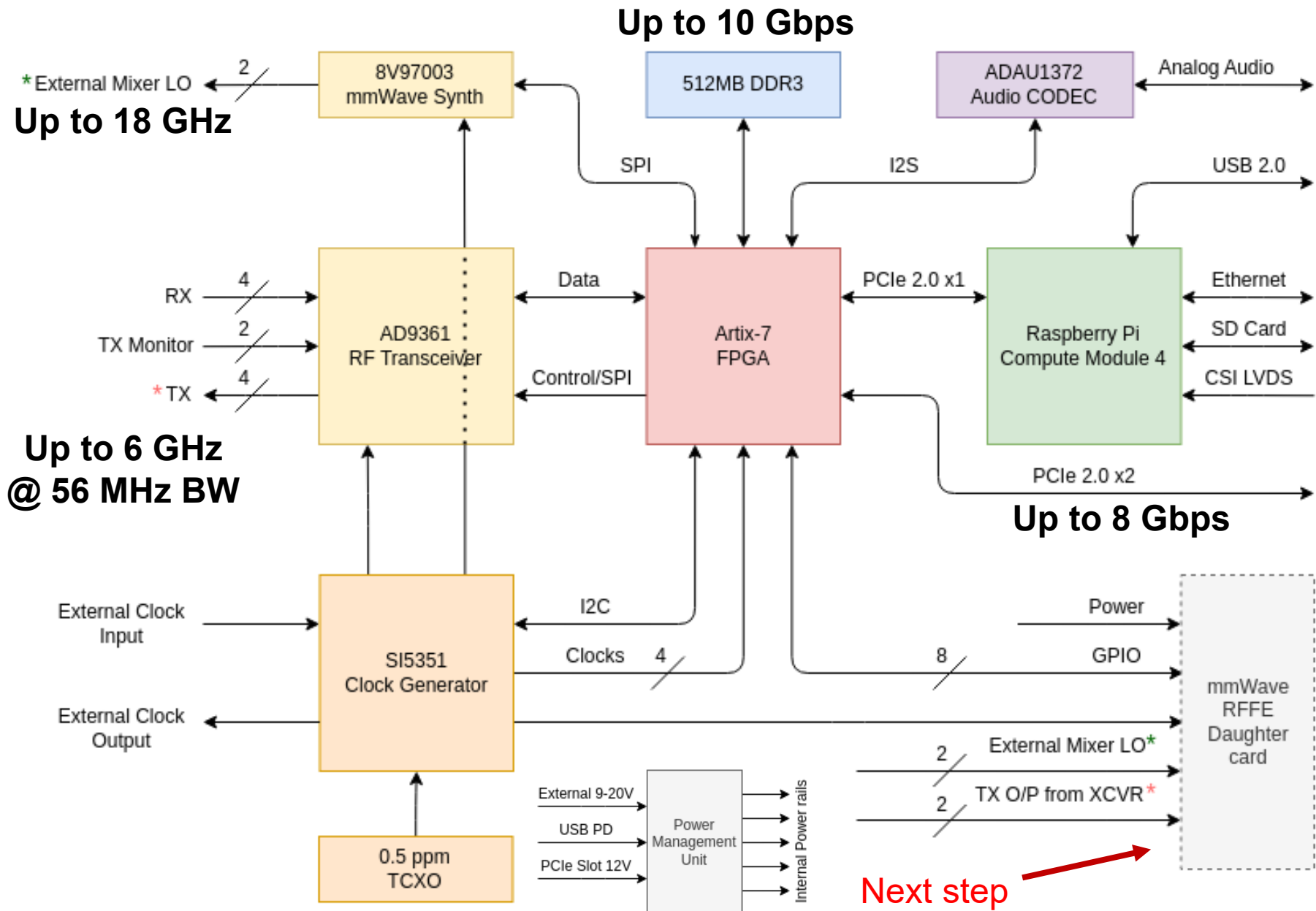


Cellular radios (5G and beyond)

Communication protocol development



SDR Architecture

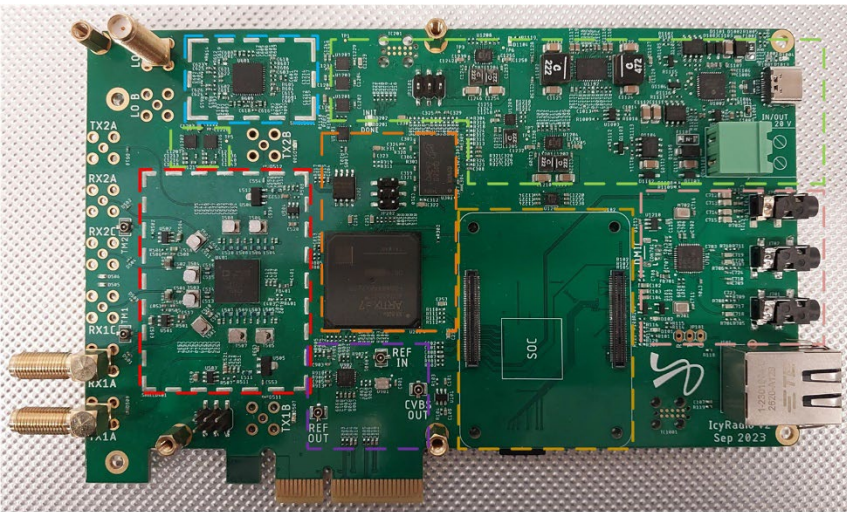


Experimental Results

Wideband spectrum (up to 26.5 GHz) w/ single tone TX @ 3 GHz

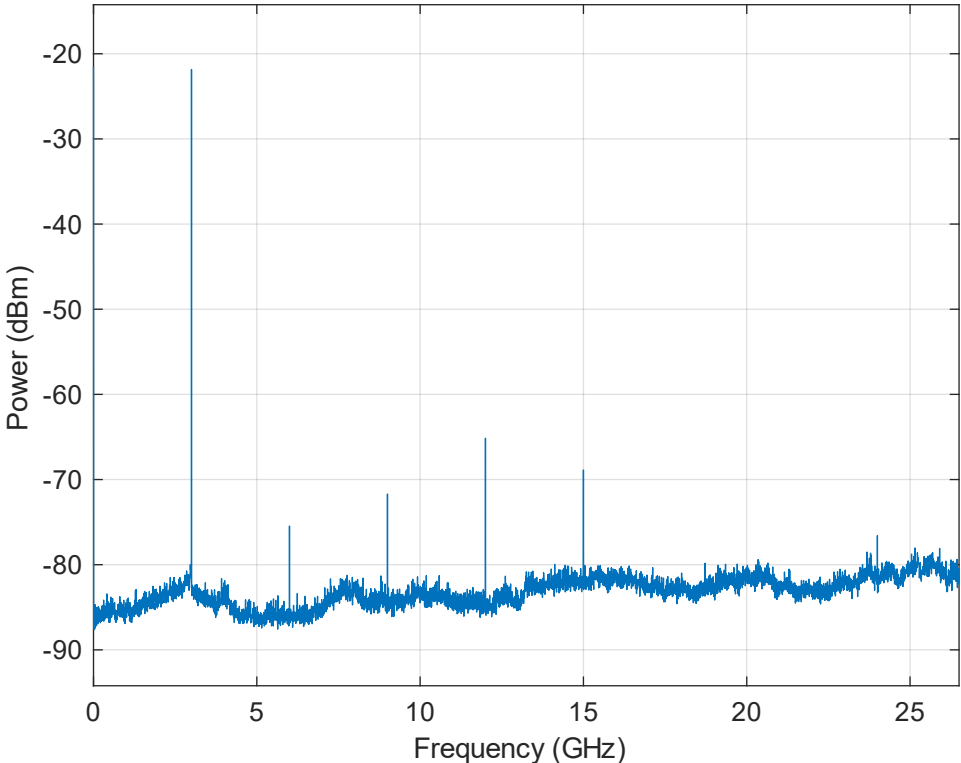
3 GHz (Fundam.)	6 GHz	9 GHz	12 GHz	15 GHz
-21.85 dBm	-75.46 dBm	-71.70 dBm	-65.15 dBm	-68.88 dBm

SDR Base Platform (up to 6GHz)



- - - RF transceiver
- - - mmWave Synth
- - - FPGA + DDR3
- - - System Clocks Generator
- - - Socket for Compute Module 4
- - - Audio CODEC
- - - Power Management Unit

Single tone at 3 GHz



- 6-layer FR-4 stackup

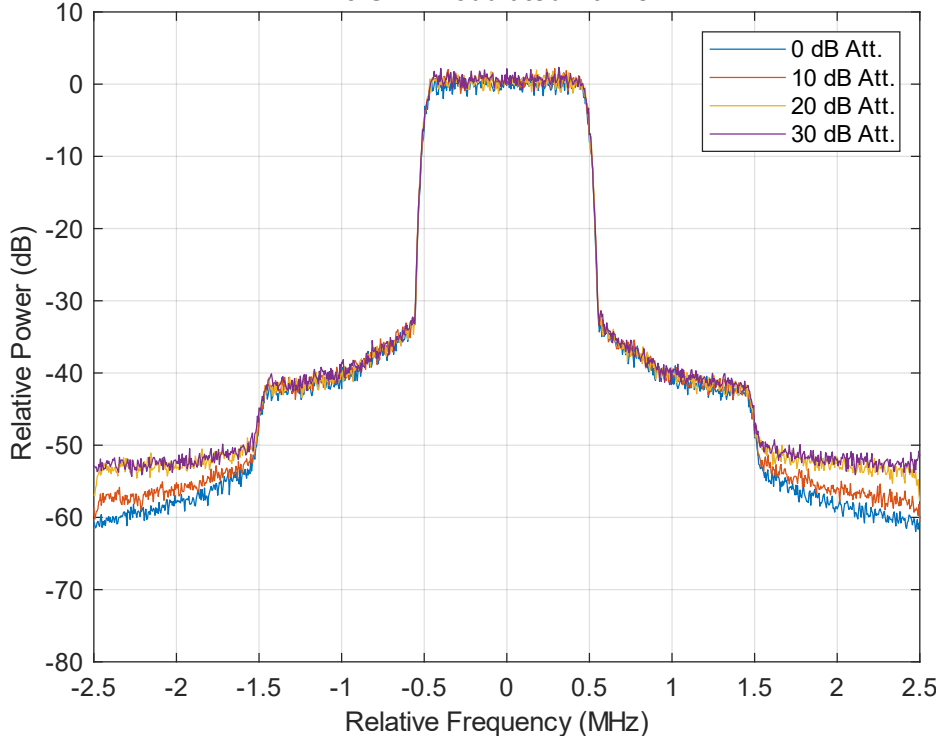
- Clean spectrum
- Low harmonic content

Experimental Results

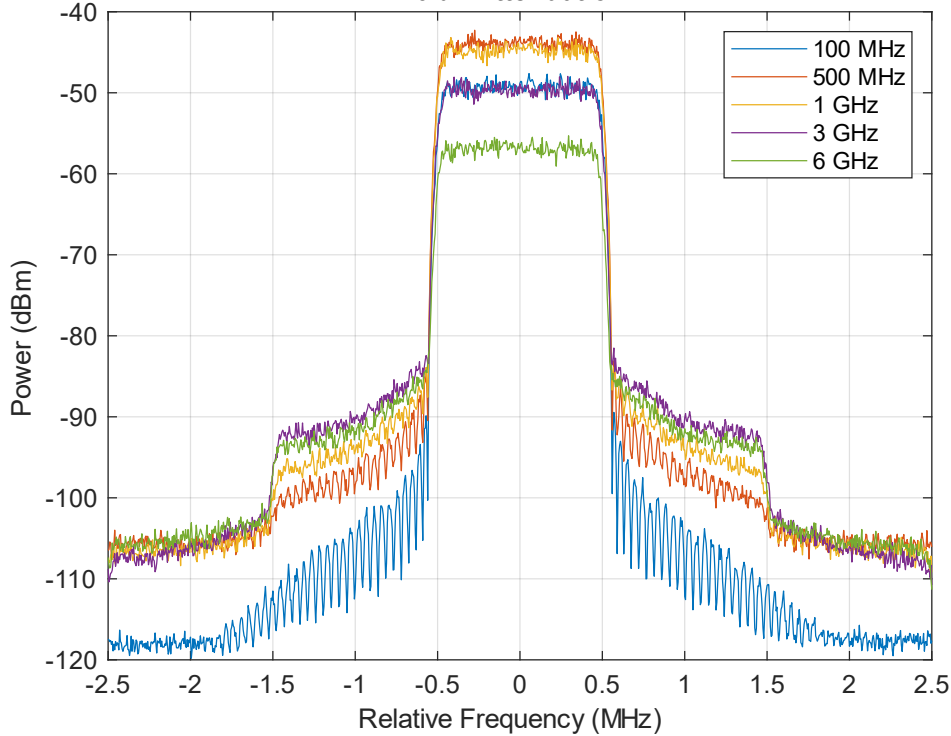
1.5 MHz Modulated carrier at various output power levels (3 GHz)

1.5 MHz Modulated carrier at various frequencies (Max. power)

3 GHz Modulated Carrier



10 dB Attenuation



100 MHz	500 MHz	1 GHz	3 GHz	6 GHz
-40.23 dBc	-49.90 dBc	-45.29 dBc	-38.77 dBc	-33.03 dBc

- Low ACPR, mainly originated in the DSP chain, not in the analog domain

Thank you! Obrigado!

