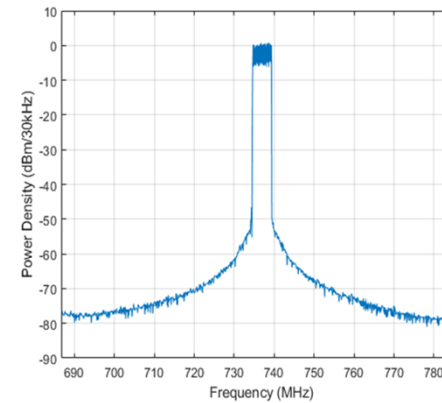


JHU/APL 5G Technology Research with MIRACLE Transceiver

- Background
 - This STA Application covers research initiated under the contract, HQ003419D0006
 - JHU/APL University Affiliated Research Center (UARC) and Eridan (OEM) were funded by OUSD R&E (Dr. Joe Evans, Technical Director/5G) to build SDR-based 5G UE and gNB using Eridan's MIRACLE Software Defined Radio (SDR)
 - MIRACLE SDR Transmitter is very spectrum efficient with very low phase noise based on Gallium Nitride (GaN) technology.
- Purpose
 - To test the MIRACLE SDR-based base station (gNB) performance against the commercial-off-the-shelf (COTS) 5G base station using an Ericsson radio (2203) on the Verizon network
- Method
 - Measure data rate vs distance using a COTS gNB and MIRACLE – based gNB at Perryman Test Area (PTA)
 - Evaluate video stream quality over two different gNBs
 - Routinely collect radar data to gather statistics on false alarms and environmental clutter (birds, weather, etc.)
- Locations – *Only 1 location will be used at any one time*
 - Perryman Test Area APG, MD (39°27'43.72"N, 76°11'31.49"W)
 - JHU/APL test range (39°10'08.8"N, 76°53'31.3"W)
- MIRACLE SDR and COTS Radio by Ericsson
 - Ave. +24 dBm Tx Power, +39 dBm EIRP
 - Frequencies
 - 840 (UL) / 885 (DL) MHz, 5M00F7W
 - 1902.5 (UL) / 1982.5 (DL) MHz, 10M0F7W
 - Modulation: OFDM
- FCC License Request
 - 10/1/2020 – 12/31/2020
 - Formal agreement with Verizon negotiated, submitted as an attachment



MIRACLE Transceiver

