



SCHOOL OF ENGINEERING
College of Computing, Engineering, and Construction

UNIVERSITY *of*
NORTH FLORIDA™

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Form 442, Question 4: Government Project Description

The University of North Florida is assisting the National Oceanic and Atmospheric Administration with the development of a satellite communications waveform that will be deployed on the Geostationary Operational Environmental Satellites. The downlink will operate between approximately 468.725 MHz and 468.875 MHz. The use of this spectrum by the Federal Government for meteorological services is secondary. To field test robust communications schemes that can be received on earth in this band it will be necessary to transmit anticipated FCC, Title 47, Part 90, primary, co-channel interference signals in proximity to a NOAA test receiver antenna mounted at ground level. In this band the most likely interference signals will be mobile units in the industrial business pool operating analog narrowband FM or digital modulation (DMR or P25) in a 12.5kHz primary allocation channel. This experimental license will permit the generation of test interference signals during actual over the air tests of the NOAA communications scheme. The use of 1 Watt portable radios will be sufficient to verify the impact of part 90 primary users on proposed NOAA satellite communication schemes.

Form 442, Question 6: Description of Research Project

To develop a robust communications scheme for NOAA that will transmit a space-to-ground signal from geostationary orbit at approximately 468.8MHz without causing interference to FCC primary users and that can function in the presence of interference from those primary users will require a sophisticated communications scheme that will first be simulated, then bench tested, and then field tested. During field tests NOAA will transmit NTIA compliant signals to the GOES spacecraft that will then be downlinked in 50 kHz or 100 kHz segments between 468.725MHz and 468.825MHz and received at the University of North Florida. To investigate the impact of the FCC primary users on the proposed schemes it will be necessary to briefly operate Part 90 mobile radios in the available channels that overlap the planned NOAA spectrum. There are 13 such Part 90, 12.5kHz channels and these were deemed sufficient for testing. Part 90 mobile radios (handheld portables) will be operated in proximity to ground level NOAA receivers for short transactions (10-20 seconds each) to simulate actual radio use. The channel will be monitored prior to and after all transmissions. Proper identification will also be given.