

FCC Experimental (Conventional) License Application Attachments -
Research Testing Description

Form 442 Confirmation Number: **EL241415**
Form 442 File Number: **0131-EX-CN-2020**
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Required attachment #1

a. The complete program of research and experimentation proposed including description of equipment and theory of operation.

Passive intermodulation (PIM) testing of space hardware. This involves illuminating hardware with 2x high power beams for a period of 2 minutes and measuring the strength of the reflected intermodulated signal. Tx frequencies at this time are 1500-1560MHz and 17 to 21 GHz. Tx signals are simple single-frequency tones.

b. The specific objectives sought to be accomplished.

Measure PIM response of hardware. If hardware is found to have a PIM response, use the equipment to find the source of the PIM and make appropriate design changes.

c. How the program of experimentation has a reasonable promise of contribution to the development, extension, expansion or utilization of the radio art, or is along line not already investigated.

The goal of all hardware is to be PIM free. The program measures PIM response of new hardware designs not previously tested. In the case of communication satellites, PIM free response increases throughput. In the case of a scientific instrument (i.e. radiometer) PIM free response increases accuracy.