XCOM n78 experimental license new application (442) construction permit details

1) Application details

a) Application type: experimental license new application construction permits 442. This application is being filed consistent with the conditions of use specified in Call Sign WU9XDV
b) Applicant: XCOM Labs
c) Station Locations: San Diego (SAN DIEGO), CA - NL 32-53-13; WL 117-10-24
d) FRN: 0028477628
e) Supplemental information:
f) Frequency: 3400 MHz to 3500 MHz
g) Station Class: FX
h) Emission Designator: 100MW7W
i) Authorized Power: 20mW (13dBm) EIRP
j) Frequency Tolerance (+/-): 1.0E-6 %

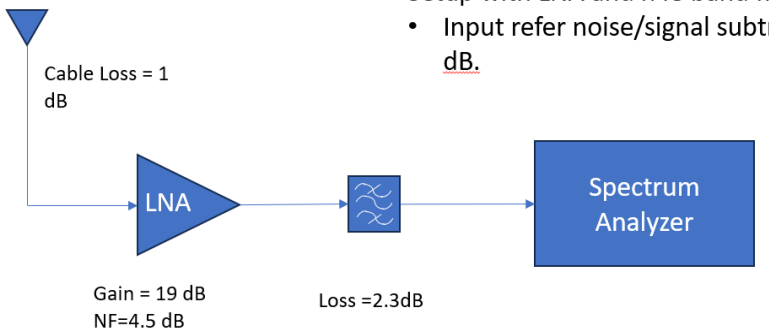
A) Band Usage and Spectrum Readings:

A scan over the band range 3400 to 3500 MHz, 20 minutes duration was conducted. The measurement was conducted outside our facility as shown below. No spectrum or n78 band usage detected above -106dBm/100kHz (input referred)

Measurement setup

Setup with LNA and n48 band filter

- Input refer noise/signal subtract 16 dB.



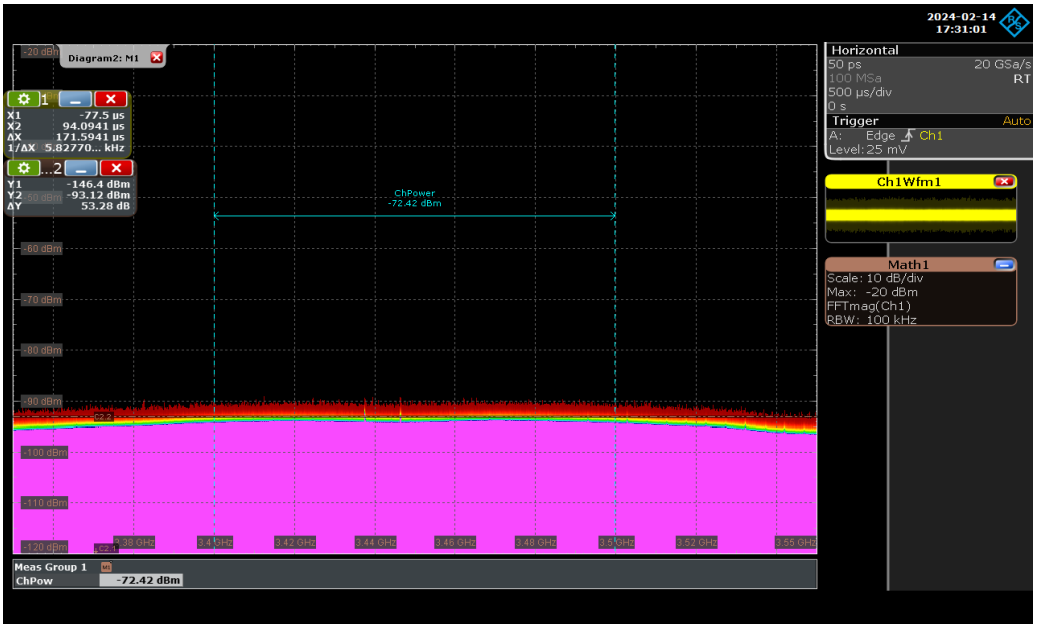
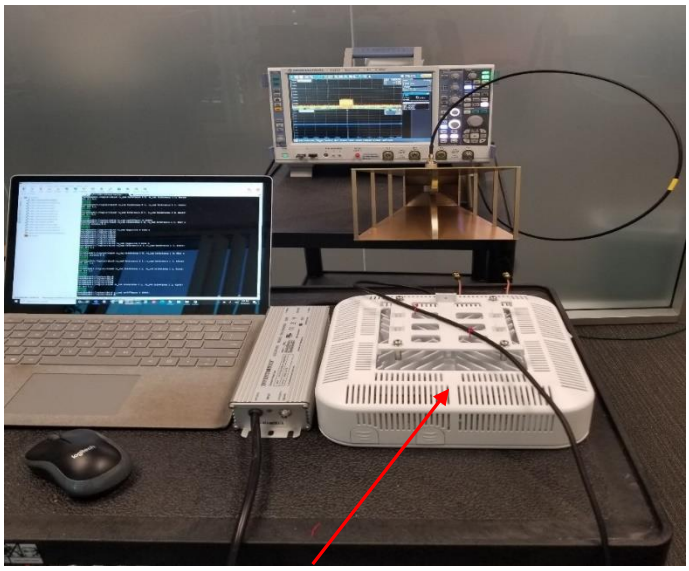


Figure: Analyzer Results- span 100 MHz

B) Maximum Outdoor Referred EIRP

- The system operation is limited to indoor-only locations at XCOM's facility.
- The radio units are ceiling mount design with a downward-facing antenna. Units are tested with a downward-facing antenna. Coverage is limited but is sufficient for testing.

- XCOM has performed calibrated EIRP measurements and determined outdoor referred EIRP is reduced at least 29dB due to the setup antenna orientation and building isolation. (refer to calibrated measurement of indoor outdoor isolation).
- The outdoor referred EIRP is -46dB/1MHz (20mW and 100MHz NR). Using the CBRS shared spectrum for reference this is well below the CBRS inband spurious emission limit for licensed operation -25dBm/1MHz. (refer to FCC Emission Limit Part 96.41(e) section).



DUT ceiling mount orientation.

C) Previous filing information-**Calibrated measurement of indoor-outdoor isolation**

- Measurements – Calibrated EIRP
  - Indoor to outdoor isolation was estimated from the differential between calibrated EIRP of the radio unit (RU) measured indoor at 3m reference distance and outdoor at 3m reference distance.
  - Measurements were made at the parking lot two locations A and B representative of each end of the lab and closest to the exterior wall.
  - The test was conducted at the max EIRP of RU. Note this is NOT the proposed operational transmit power, only used for measurement.
  - RU EIRP indoor = 24.4dBm
  - RU EIRP outdoor maximum = -4.9dBm
  - Indoor to outdoor isolation = 24.4 – (-4.9) = 29.3dB.

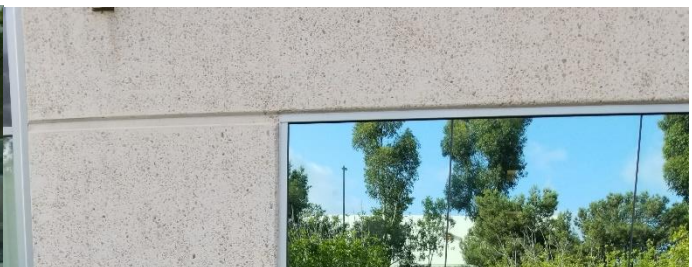
- Calibration of the Xcom RRU device under test (DUT)
  - Calibration of the DUT to determine the EIRP at maximum conducted output power. Refer to 'Test Setup and Calibration' pictures of the calibration setup:
  - DUTs were tested in the CBRS band.
  - All field strength field measurements dBuV/m integrated in 1MHz.
  - All EIRP measurements dBm integrated in the modulation BW; 18MHz.
  - Nominal Conducted TX output power during calibration; 23.32 dBm.
  - Measured Field Strength during calibration at 3m; 107.1 dBuV/m.
  - DUT EIRP 24.4 dBm.

- **Measured Field Strength, outside building in a typical setup.**
  - The lab which will house all devices during development, is on the outside wall of the building. The calibrated DUT was placed in two locations closest to the outside wall where a 3m radiated measurement was possible. Measurement locations A and B are shown below.
  - Measured Field Strength location A building 3m from DUT; 77.79 dBuV/m.
  - Measured Field Strength location B building 3m from DUT; 73.39 dBuV/m.
  - DUT at location A EIRP; -4.9 dBm.
  - DUT at location B EIRP; -9.28 dBm.
  - Isolation location A (24.4 - -4.9) = 29.3dB
  - Isolation location B (24.4 - -9.28) = 33.68dB

  - Minimum isolation 29dB.

Location A

Location B



was conducted outside our facility. The plot below includes a FFT on infinite persistence over a period of 20 minutes. The RBW is 1 MHz – the power level can be interpreted in dBm/MHz. The results show activity from 3300 to 3375MHz and the range 3400-3500MHz appears clear