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 %

2) Explanation of why XCOM is requesting n78 Band experimental license STA:

a) XCOM has developed an 5G advanced coherent distributed MIMO system for dense and hyper dense wireless deployments.
k) XCOM is requesting a STA for operating low power <20mW indoor only operation in 3400-3500MHz (3GPP band n78). This application is consistent with the conditions of use specified in a previous Call Sign WU9XDV

b) Validation of the distributed MIMO requires antenna unit spacing of approximately 10m, beyond the limits of conducted setups. The STA would enable testing, validation and demonstration of the system.
c) The experimental license STA is to ensure operation and testing can continue during the interim period between FCC Part96 certification and completion of interop testing of the XCOM CBSDs and with commercial SAS account activation implementation rollouts.
d) AR, VR, XR technology development and commercialization for real world educational and training, medical research and advanced interactive application development.
e) The key performance indicator (KPI) measurements for mobility, user density (in 3 dimensions) and reliability require over-the-air validation (OTA) in XCOM test lab. The experimental license would enable the demonstration of the unique RF performance characteristics of the system to enable a novel industrial automation use case. XCOM has constructed a demonstration area of approximately 50ftx50ft that has been successfully used to demonstrate real world applications for/to commercial, military and educational representatives. The experimental license would be invaluable to ensure continued operation of this setup (see Figure 1) for both development and demonstration.
f) Our indoor OTA system consists of 12 RRUs. It is permanently located in the XCOM lab facility and is not for outdoor use. The maximum transmit power of each RRU is limited 20mW (13dBm) in accordance with the experimental license. The RRU internal antenna are mounted downwards (towards the floor). Effective coordination is achieved by interference

avoidance. Please see the response to (2) for more details. The system has been operated successfully without any interference issues for the period of the existing license.

g) SAS capability is a feature in our commercial roadmap which is close to completion and to be operational with SAS administrator within the next 3 months' time period. We have contracted with Federated for SAS support and interop testing and have access to their SAS tool to monitor active CBSDs within the local area. We are actively working on the SAS certification and have completed the FCC RRU certification testing for commercial rollouts.

3) Explanation of how it would specifically avoid causing interference to incumbent and commercial operations in the band, including General Authorized Access (GAA).

a) The system is currently operating at a maximum transmit power of 20mW (13dBm) EIRP (radio unit- antenna sum). The experimental license STA maximum power could be limited to this power level.
b) The system operation is limited to indoor-only locations at XCOM's facility.
c) 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.
d) 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 the measurement section for more details)
e) The outdoor referred interference is -28.5dB/1MHz (20mW and 20MHz LTE). This is below the CBRS inband spurious emission limit for licensed operation -25dBm/1MHz. (refer to FCC Emission Limit Part 96.41(e) section).
f) For 100MHz NR testing the emissions per 1MHz is further reduced by the bandwidth scaling.
g) In conclusion, proponents are operating a low power indoor test system. Any interference in the band is at a level below the spurious emission limits of other operators in the band.

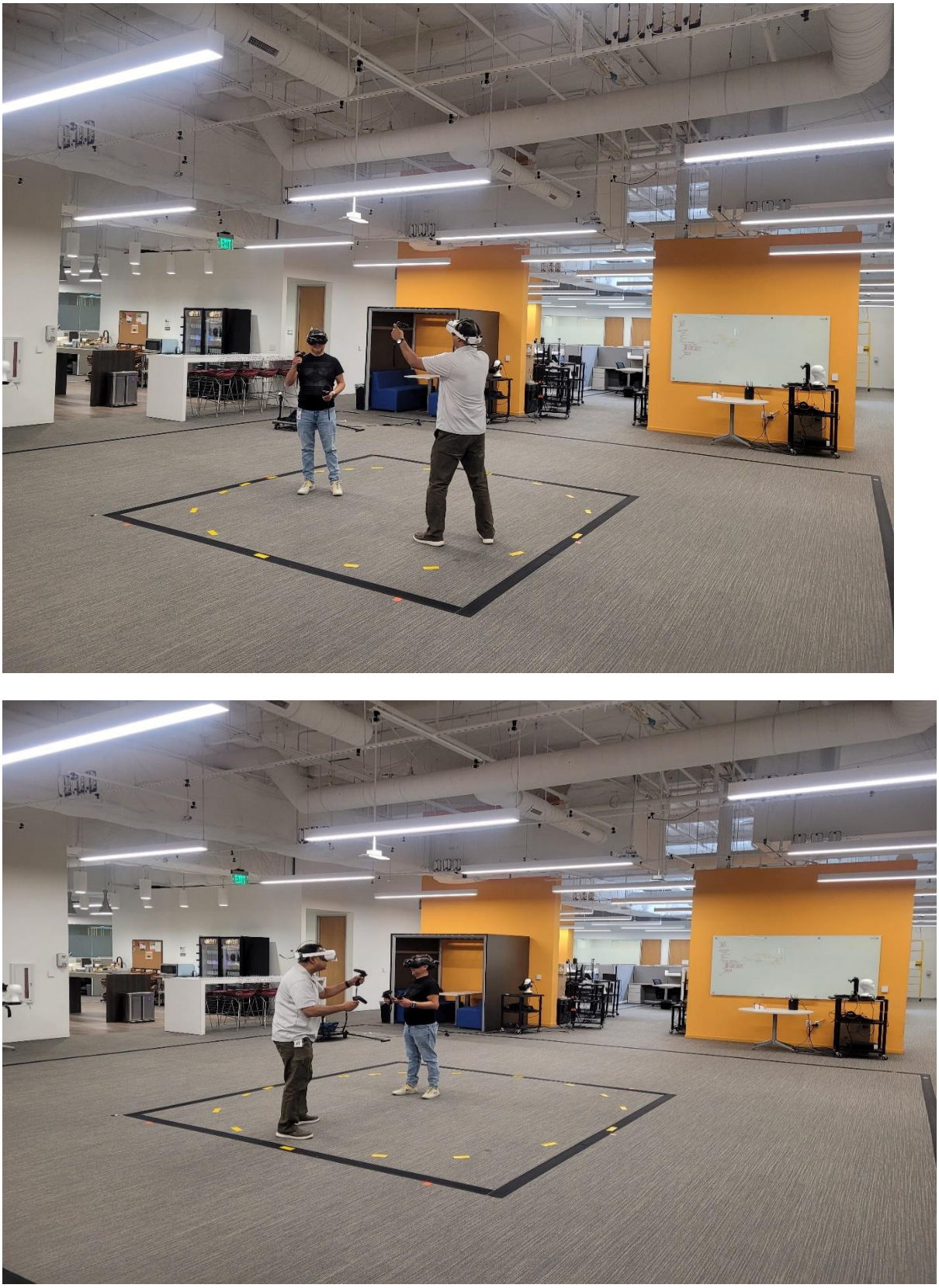

Figure 1: XCOM test lab