



Renewed research into 3200-3500 MHz and 470-512 MHz band transmitting and receiving equipment in support of new remote content acquisition workflows for sports television and special event productions due to social/physical distancing best practices.

1. With the continuing changes to the various BAS bands, specifically 6GHz and the introduction of unlicensed device operations therein, recent advances in technology, and new work flows due to social/physical distancing measures as recommended and/or mandated by government, state, municipal agencies and insurance companies resulting from the Covid-19 pandemic, CP Communications (“CP”) is renewing research into the 3200-3500 MHz and 470-488 MHz bands begun under call sign WK2XED (file no. 0260-EX-CN-2019). With this new request, CP looks to:
 - a) Test and evaluate new packaging of existing technologies;
 - b) Test and evaluate new remote content capture and equipment remote control technologies and how those will be incorporated within the new packaging.
2. The Tampa area offers CP a significant number of various size venues, both indoors and outdoors, in which to experiment with new designs and workflows to be utilized for CP clients, while close to the CP Florida facility.
3. This research will also help OEM’s of the various equipment CP utilizes to better design their equipment to meet the latest workflow requirements sports entertainment and special events industries are now placing on this equipment.

Goals

1. Evaluation of new RF technologies.
2. Improve packaging of current and new technologies.
3. Research and development of new remote-control technologies.
4. Determine the effects of these changes on equipment battery life.
5. Continue to investigate equipment choices and deployment when applied to remote control vehicles and aerial systems.
6. Continue to ensure interference mitigation to co- and adjacent channel users while optimizing video and communication systems performance.
7. Develop new operating guidelines to help ensure repeatable performance with the different systems at various venues.



Description of Equipment and Operation

RF Video Camera Systems:

An RF video camera system consists of a stationary, handheld or body worn camera which provides a source of video to the system transmitter. The transmitter processes the signal into the proper modulation scheme, at which point the RF signal is broadcast. Multiple local receive antennas with down converters each send their signal to the receiver which will combine/select the various RF paths for the best decoded image. Camera control in turn is facilitated by an RF data link from a primary control point in the venue. This process allows the camera, or multiple cameras, to be used anywhere within the desired coverage area with minimal personnel and human intervention.

RF Communications Systems:

Accompanying the operations of RF cameras is a wireless (RF) communications system to facilitate direct bi-directional communications between the camera technicians and/or operators and the broadcast control room. Typically this communications system utilizes narrowband fixed base and mobile LMR type equipment. The base consists of a temporary full duplex transceiver having a hard wire, bidirectional audio connection with the wired production intercom system. This acts as the interface between the wired and OTA users (camera operators). OTA users in turn utilize standard type LMR portable radios worn on their person to both hear the intercom channel and respond as appropriate.

Equipment Details – RF Video

The mobile transmitters will be Wave Central AXIS TX Pico transmitters with experimental 1-2dBi omni-directional antennas, as well as Masthead Antennas Model 3237-F0, and Peak Antennas CO 340-4.5-FLX mounted to an existing broadcast portable camera system. This system will supply a DVB-T signal which will be received by a Wave Central AXRX2 Multi-way Diversity COFDM H.264 Receiver using both multiple Peak Antennas SCR-340 – 12 Sector antenna and an experimental small form factor directional antenna.



Equipment Details – RF Communications

The base equipment will be comprised of a Hytera RD982-U2 repeater, with an operational tuning range of 450-520 MHz; antennas will be an experimental unity gain small form factor omni-directional, Scala UBO-470N and Comtelco BS450UWB unity gain antenna; various candidate isolators, hybrid couplers, duplexers, pre-selectors, and channel mask filters to be evaluated as part of this testing cycle.

The mobile equipment will be Hytera PD782U-2 and PD412 portable two-way radios utilizing the OEM “whip” antenna.