
	<b>EMERGENCY MEASURES RADIO GROUP</b>
	<b>OTTAWA ARES</b>

Two Names - One Group - One Purpose

# **In Building Signal Reinforcement For Amateur Radio Emergency Communications**

# Situation

- In an emergency, EMRG Clients will be operating from multi-room, multi-level, commercial buildings.
  - Examples: Nepean Sportsplex, City Hall
- Most commercial buildings are constructed with concrete and steel, which acts as an RF shield.
- Most amateur repeaters are designed for mobile or base station use, not portable or in building use.
  - Using portables radios outside depends on location.

# Communications Evolution

- Black 500 set in the front hall has been replaced by phones in almost every room, cordless or mobile phones and more than 1 phone line.



- Radio operator beside the main door with cable outside to an antenna has also been replaced.
  - Clients want communications co-located so information can be exchanged quickly, in real time.
  - May require 2 or more voice channels + data channel

# Quality & Consistency

- **QUALITY:** “Better Than Nothing” = Nothing
  - If audio signal quality of 3 and above is considered usable, then providing an audio quality of 1 or 2 is viewed by clients as providing nothing.
- **CONSISTENCY:** The capability and audio quality must be consistent through shift changes.
  - Shift 1 has cross band repeater capability so they can communicate from anywhere inside the building.
  - Shift 2 only has a portable radio so they can only communicate from outside the building.

# Cross Band Repeaters

- Cross band repeaters offer excellent solution to extend coverage to portable radios inside.
- Can be deployed to any building
- Problem with consistency if cross band mobile is in a vehicle and the person leaves.
- Establishing multiple voice channels for a single building becomes more challenging due to the amount of equipment and interference between systems.

# Two EMRG Challenges

## Two Different Solutions

### Ottawa City Hall

- Emergency Operations Centre (EOC)

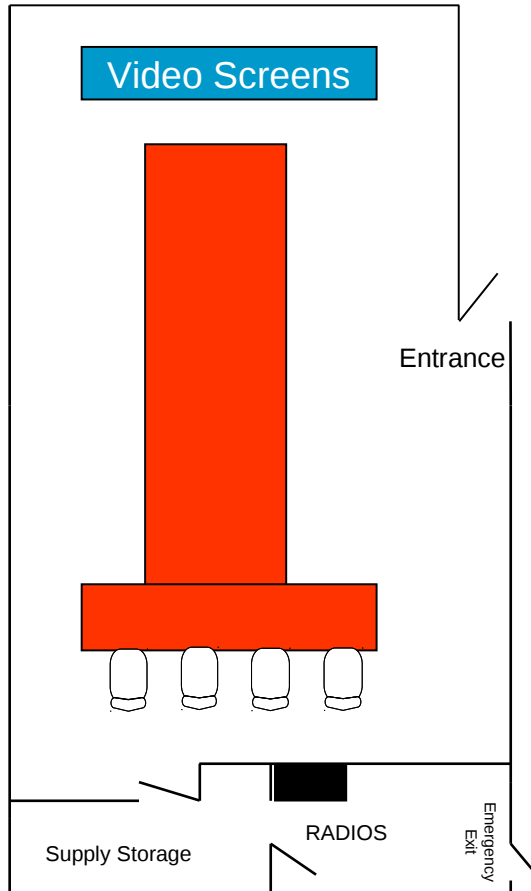


### Ben Franklin Plan

- Emergency Social Services (ESS) Command Centre



# City Hall EOC



## OBJECTIVE:

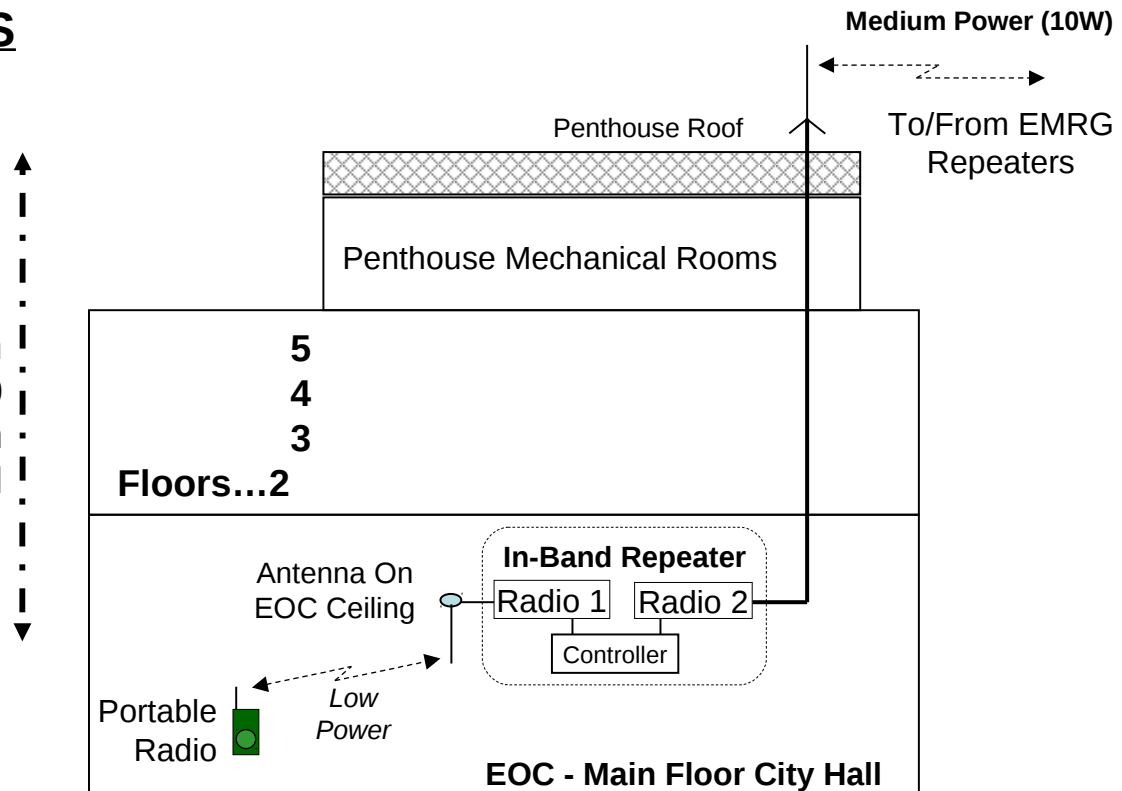
- Provide up to 3 voice channels and 1 data channel in the EOC using portable radios, so the radio operator can sit at any position in the EOC.

# In Band & Cross Band Repeater Extension

## VOICE CHANNELS

- VHF – VHF
- UHF – UHF
- UHF – 220

50 Ft Vertical separation  
from EOC to Roof = 50  
db isolation + isolation  
from concrete and steel  
in 5 floors of building.

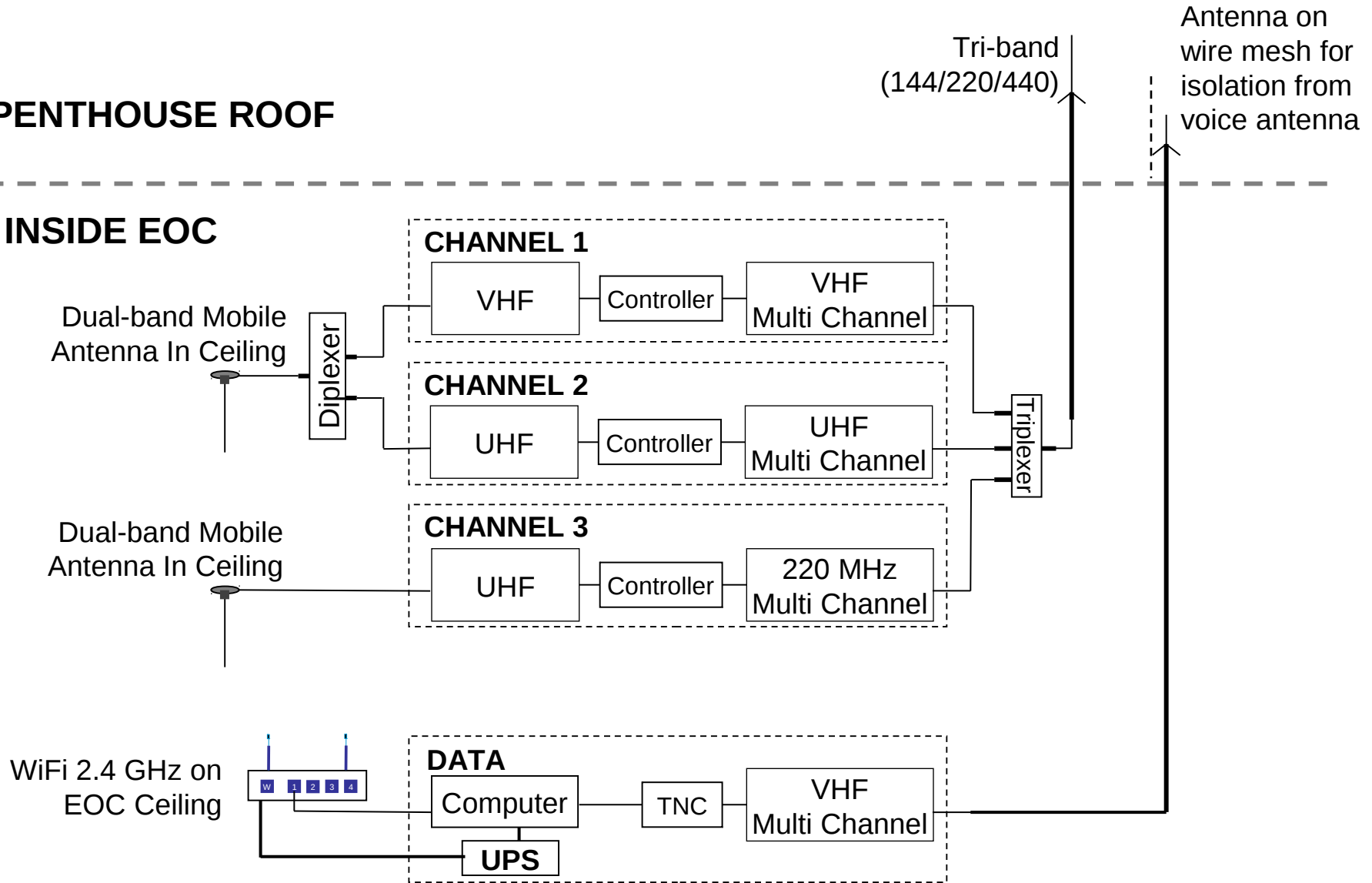


Not To Scale



## PENTHOUSE ROOF

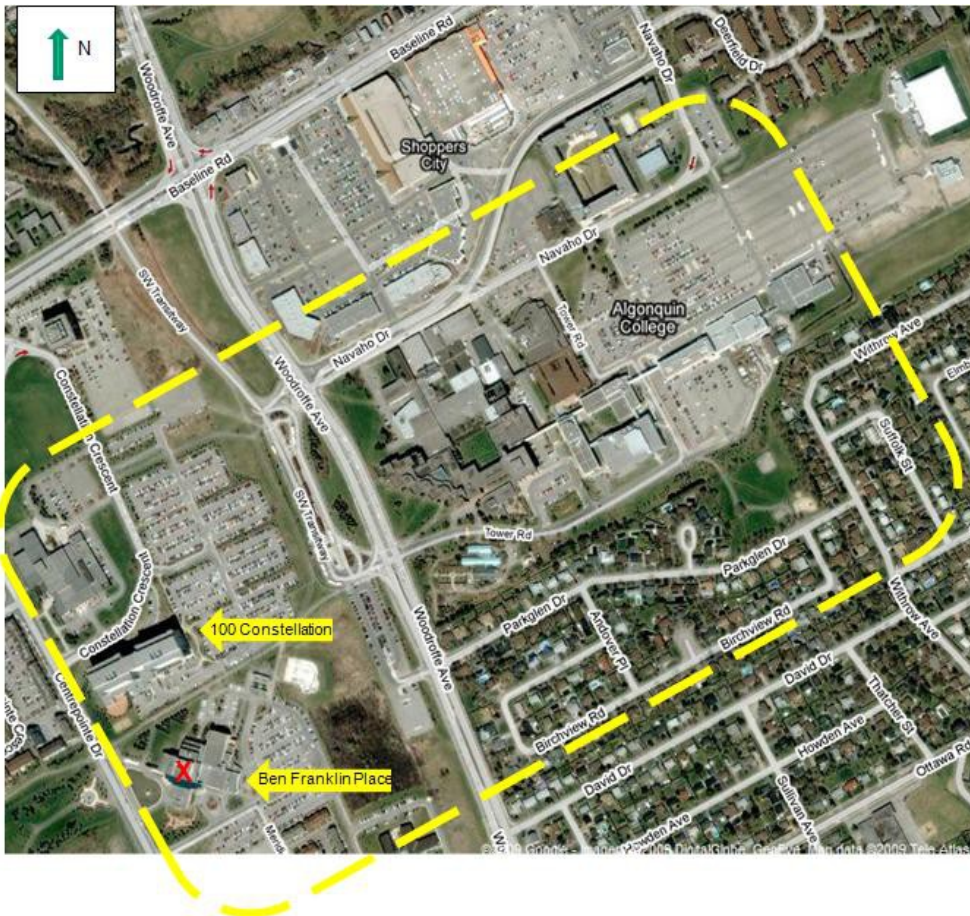
### INSIDE EOC



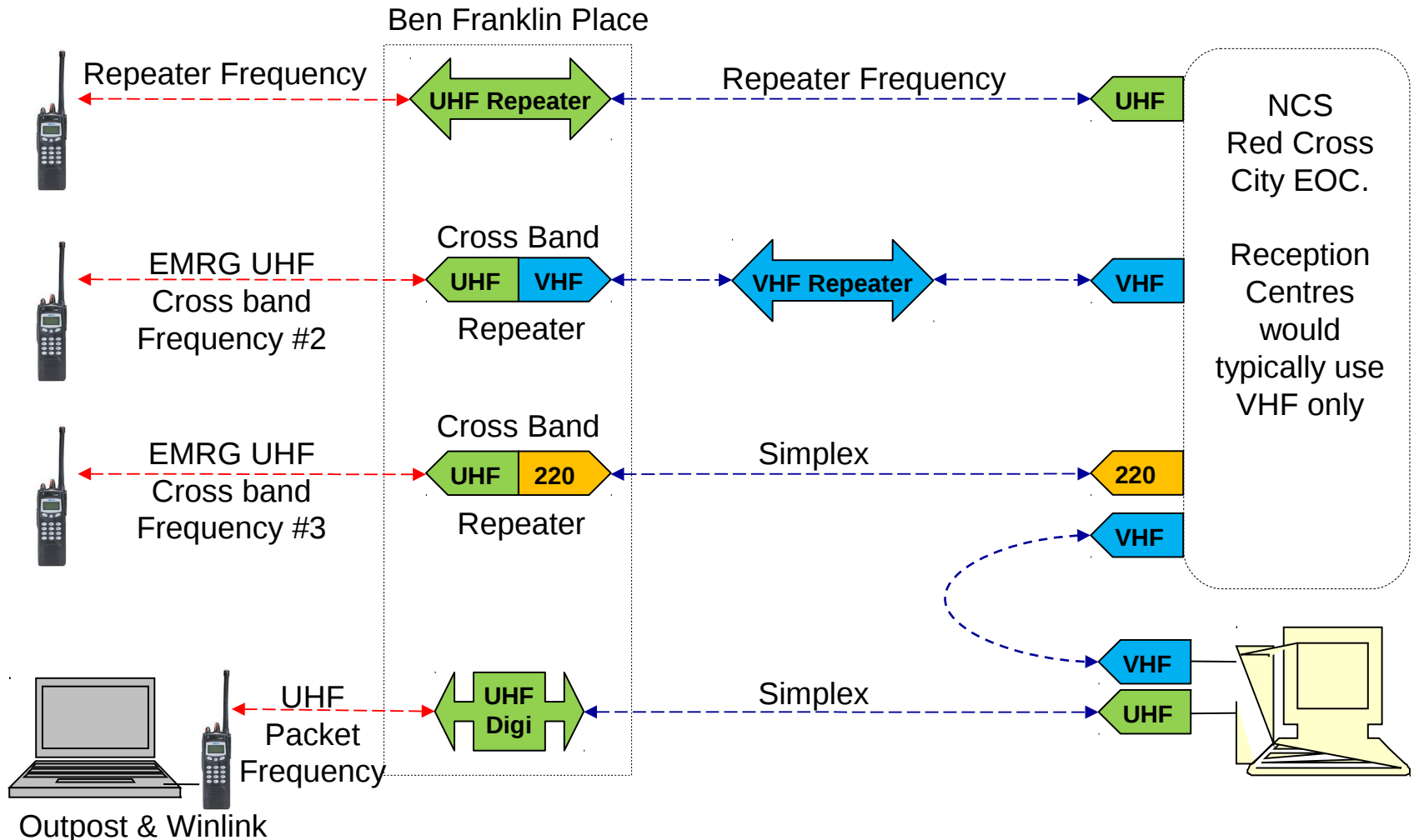
# Ben Franklin Place (BFP)

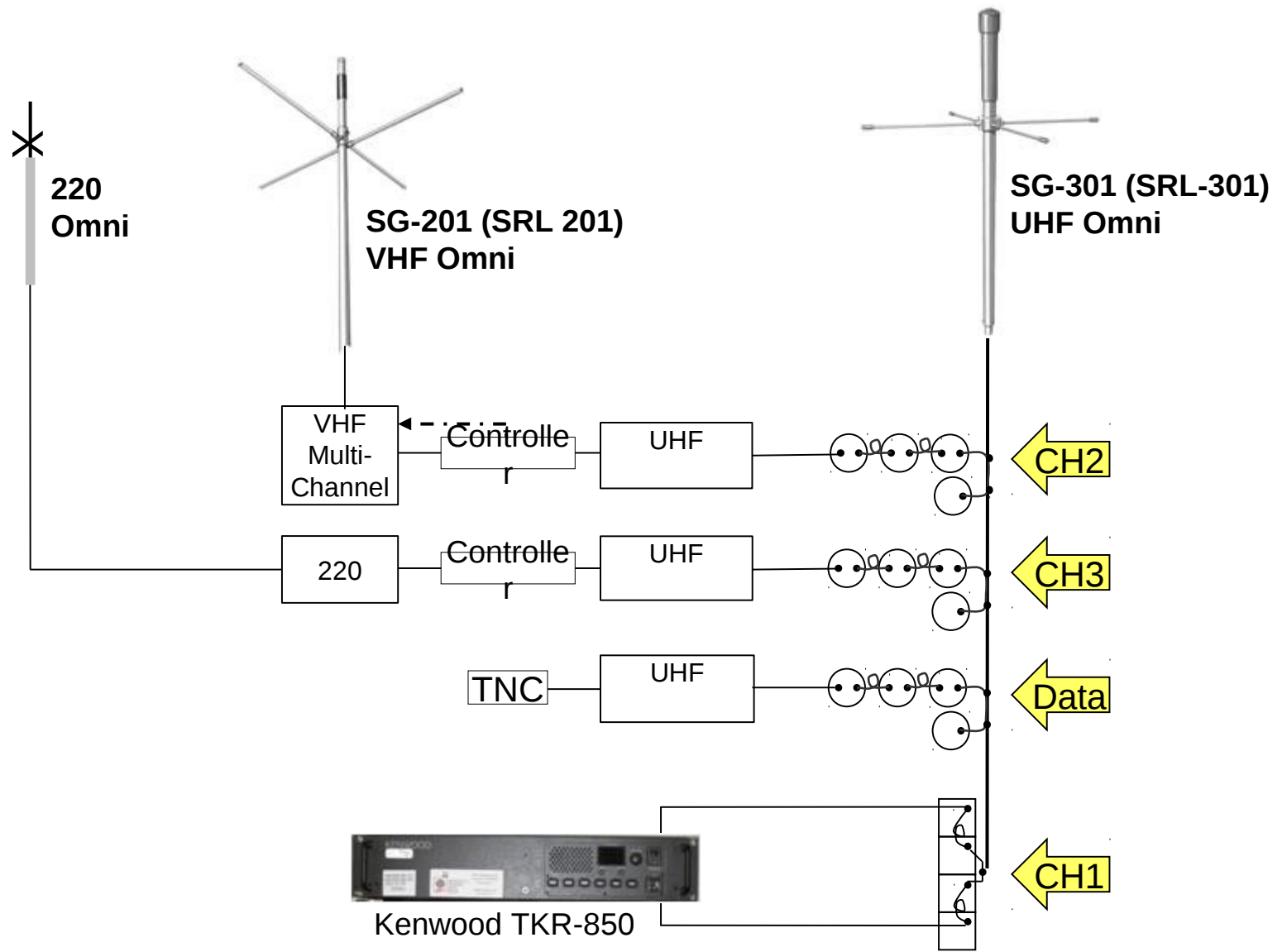
## OBJECTIVE:

- Provide 3 voice channels and 1 data channel using portable radios in BFP, & 100 Constellation, and extending to Algonquin College.

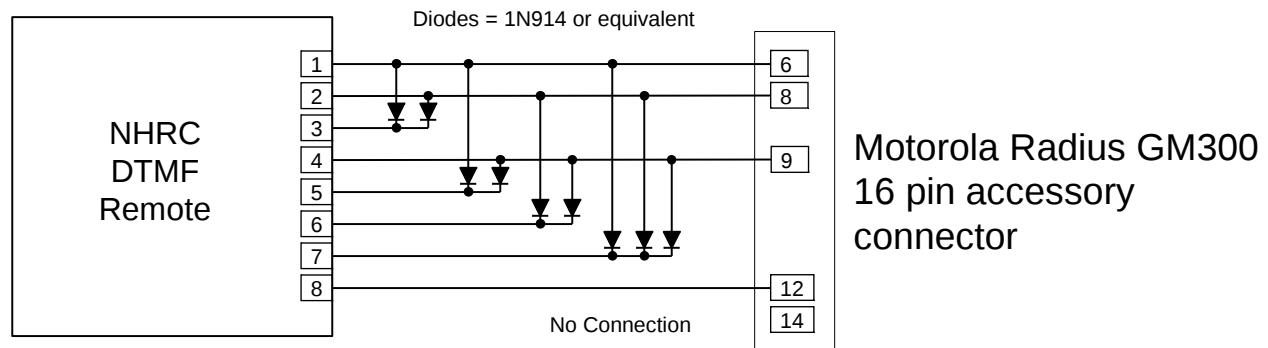
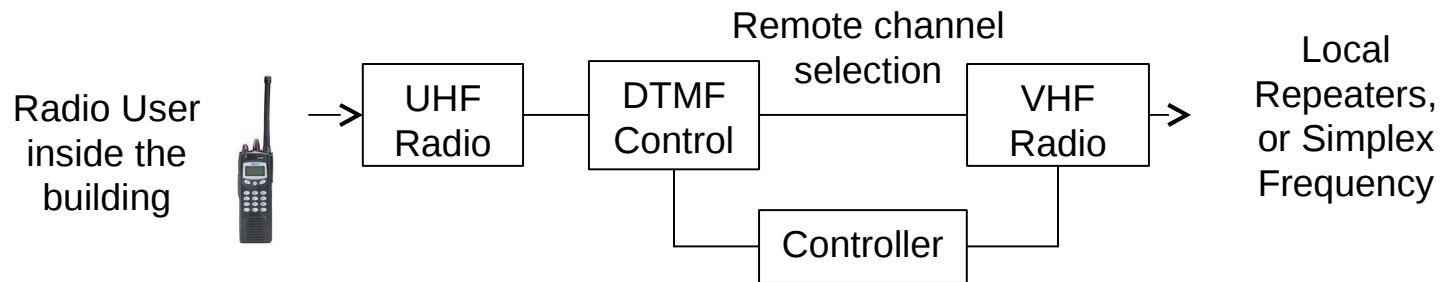


# Multi Coupling + Cross Band Repeaters





# Remote Channel Control



# SUMMARY

- The world's expectation is crystal clear wireless communications any time, any place.
  - In the Swiss Air crash, even amateurs would turn to cell phones if the radio link was noisy.
- The technology exists and is available to Amateur radio to implement solutions that provide the coverage and audio quality required.

# www.emrg.ca

The EMRG web site provides information related to Amateur radio emergency communications, specifically as it relates to the City of Ottawa.

- Project Information
- Newsletters
- Upcoming Events
- Documentation
- Links to related information

Information: **training @ emrg . ca**