SIMULCASTING FROM RACOM

MINING COMMUNICATIONS
• Basic Concepts
  - **Simulcast** is the simultaneous operation of two or more transmitters with overlapping coverage on the same frequency.
  - This means that several repeaters operating on the same frequency is deployed to cover the area required.
Typical problems

- Handheld radio’s can hear the repeater but cannot talk back.
- No coverage inside buildings.
- No coverage in low lying areas.
- No coverage behind hills or mountains.
- No coverage inside pits in opencast mining operations.
- No coverage behind dumps at mines.
• Radio waves at low frequencies can diffract (bend) around object.
• In mobile systems (high frequency band), wave diffraction does not take place, therefore a **deep radio shadow** occurs on the un-illuminated side of the obstruction (e.g., building, hill, truck, or even human being)
Typical Simulcast Coverage
Simulcast Coverage on Overlapping Coverage all sites frequency

Sites can be in any format, in-line, star or a combination.

Seamless Roaming between Sites.

The voting controller measures the “RSSI” of the receivers and decides which one’s audio it will use to modulate the various transmitters with.
What is “nice” about this system

- Existing equipment is used, you do not need to replace mobiles and handheld radio’s.
- Additional repeaters can be added or moved depending on own specific coverage requirements.
- Handheld equipment can now have the same coverage capabilities as mobiles.
Maintenance Issues

- Our equipment does **not** require technical people with **high expertise**.
- A Two-way Radio Technician will have all the know how to maintain and set up the system.
- It is modular and it is **easy to expand** the system.
Why Simulcast

- **The right technology** for modern times
- Spectral efficient
- Provides **excellent coverage** at the right price
- Few alternatives offer the same coverage and you do not need to change existing communications equipment
Simulcast Outlay

- Simulcast Typical outlook
- Simulcast cover All Sites overlapping.
- The Typical problems it **Fixed**
  * Coverage inside building
  * Coverage inside low lying areas
  * Coverage behind Hills or Mountains
  * Coverage inside pits in opencast mining operations.
  * Coverage behind dumps at mines
- We also use the trailer to cover the area
Our Simulcast

Modular System:
The system is designed to customer requirements. It comes in a 19" rack-mount cabinet 1U to 3U depending on no. of channels. Can be used on almost any “Repeaters” with high stability oscillators. (Preferred – Transmitter with external reference oscillator input)

Specifications:
- Maximum number of transmitters per system: 4/8
- Maximum number of receivers per system: 4/16
- Number of RF channels per system: 1, 2 or 8.
- Power Supply: 12 to 15V DC @ 3A or 220VAC
- Size: 2/3u 19” Rack-mount
- Temperature: -10 to +60 degrees C

* Audio Inputs & Outputs:
- Number of Channel / Panel: 2 expandable to 16
- Interface: JR45 per channel
- Line Impedance: 600Ω (Ohms) balanced
- Insertion Loss: 2dB adjustable
- Frequency: 300 to 3400Hz
- Input Level: -6dB to +6dB
- Output Attenuation: 0dB to 13dB adjustable
- Output Impedance: 600Ω (Ohms) balanced

* Control Outputs:
- Output Type: N-Channel
- Sink Current: Max 500mA
- Voltage: 60VDC

* Control Inputs:
- RSSI Voltage: 0 to 5VDC
- Carrier Detect: Logic level 0/5V – Active Hi or Active Low
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