

# MURS–New Wireless Technology for Text & Location Share without Cellular Signal to P2P

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## ABSTRACT

This paper initiate, new Sky Range wireless Device for P2P communication without cellular signal and cost. This new technology works through cognitive digital radio signal combined with an application that generates its own signal and automatically coordinate with other units within range your smart phone (151-154 MHz). This new technology will be able to transmit to any user with range (151-154 MHz) frequencies to P2P. The new Sky Range Device act as a two way radio for mobile phone through Bluetooth LE without cellular signal. This creates a kind of transitory radio network that can be used to send message and sharing location through Android Application in Multi User Radio Signal (MURS).

**Keywords:** SRD, MURS, CB, Bluetooth LE, FCC.

## 1. INTRODUCTION

First pair your smart phone to your Sky Range Device wireless through Bluetooth to P2P (Fig: 1). [1] this technology needs 24ish feet of your phone, so that the two can communicate with each other. [7] Send your message over Bluetooth to the smart phone application it's paired with. All of this happens in milliseconds. It's designed for times when you would otherwise require a two way radio so similar walkie talkie setup to communicate. Fortune connects to a mobile device using Bluetooth Low Energy,

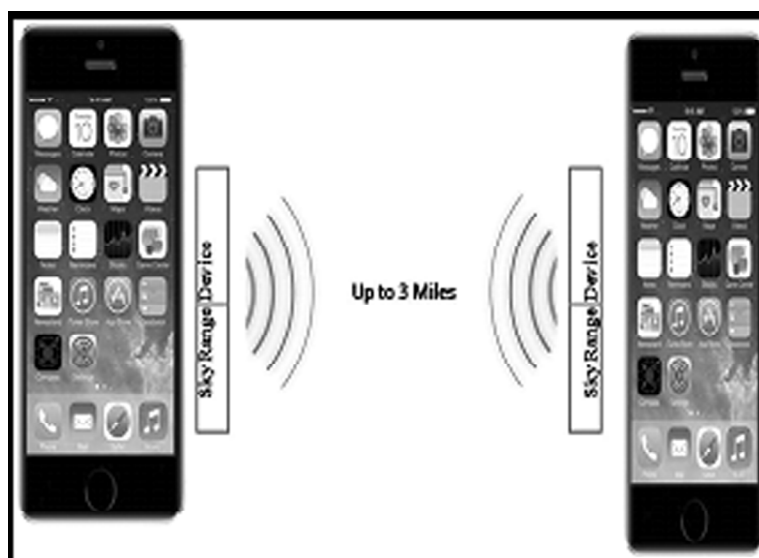


Figure 1: Sky Range Device

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[5] meaning it needs to remain within about 20 feet of the device to work. The Sky Range Device application is available free for Android phones. When you type your text or ask the application will automatically come under Sky Range Device without cellular signal. It can able to send text up to 155 characters and share location to P2P.

## 2. IMPLEMENTATION METHOD

The new technology itself pairs an Android cell phone device running the Sky Range Device application. Message cab is sent through the application to the other Sky Range Device user in the near environs. [8] It's operating on the MURS band (151-154 MHz). The Multi use Radio Service is an unlicensed two way radio service similar to citizens band (CB).[7] The MURS range will vary depending on antenna size and placement. With an external antenna, range 10 miles and MURS operation are authorized anywhere CB station is authorized and within or over any area of the world where radio service are regulated by the FCC. The following hardware specification is to crate Sky Range Device Deceive [3].

- Antenna
- 2-watt radio
- Flash memory good for 125's of message
- Rechargeable Lithium polymer battery
- Micro USB connector
- Bluetooth LED data interface
- Status indicator light

## 3. DEVELOPING METHODS

Nearly all ICs on the PCB are low power variants, which allow to Sky Range Device to achieve a long run time on such a meager battery. [2] The main ARM microcontroller is from the free scale paired with the 16 Mbits flash chips (Fig: 2) from programming and message buffer are kept. The MURS radio signal is implemented on top of the silicon labs Ki560 transceiver. This chip control +12 dBm transmission power an excellent sensitivity of -123 dBm and transmit power to claim 2 W. [9] The printed circuit board (PCB) is extremely bright white Led from the outside indicator light, one red LED near USB port for charging indication. [4] This device range covering Fractal antenna is that design to maximize of antenna length and increase coverage distance and receive or transmit electromagnetic radiation within a give frequency (151-154 MHz).

## 4. DEVICE WORKING PROCESS

The device like a small USB drive, but it's not a storage data. This device only used for message and location communication where cellular in not working. The user can connect the smart phone with this device and communicate with the owner of another device. The Sky range device has a communication range up to 6.4 Km; in the city 1.6 Km. the range can be increased to the hill station to attach the device to a long Aria [9].Pairing with a [10] smart phone through Bluetooth LE to send and receive message over long range radio frequency (151-154 MHz) interfacing through the Sky Range Device application on smart phone. And share the location with other device through low bandwidth.

### 4.1. Internal Working Method

The Sky Range Device needs to be 20 feet minimum of your smart phone through connected through Bluetooth LE device. This Sky Range Device is used in combination with the software part, which include Sky Range Device and Android smart phone messaging application. This application used for both transmission and receiving user front last part. [5] It's designed through VHF radio modem for Sky Range Device hardware setup is very

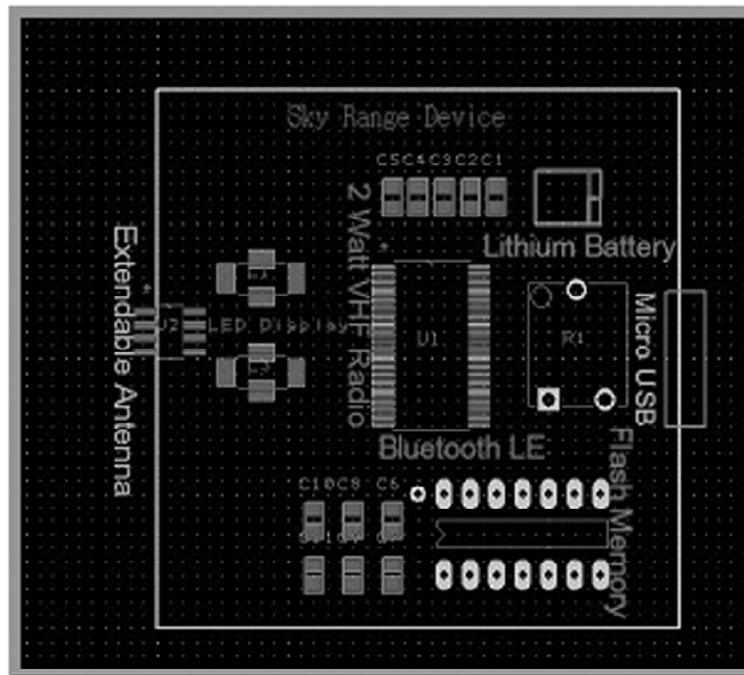


Figure 2: Sky Range Device Inner Working Layouts

demanding design and limits of battery life, size, shape, range, power. [9] The range is determined by two simple factors transmit power and sensitivity. Both are measured in dBm and changing one has, per dBm the same effect. A 15 dBm improvement in receive sensitivity. The user sends through Sky Range Device application to send messages to other end through smart phone and Sky Range Device need to be within 20 feet of each other in order to work. [2] The Sky Range Device of sender uses long wave radio frequency (151-154 MHz) to send off the messages or location to the Sky Range Device of receiver. Last, the Sky Range Device to pair through Bluetooth LE to receiver side forward this message to receiver smart phone.

## 4.2. Security

Messages are encrypted using public and private key ciphering RSA 1025 and without middle server storing this message. [5] Once they are deleted the message, there is no possible to trace [11]. The signal is sent directly from one Sky Range Device to another without a middle server or other midway, message and location data are not stored anywhere that a third party could gain access to others [10].

### 4.2.1. Application of Sky Range Device

- Send and receive message without cost and without network connectivity
- Sharing location on detailed offline map without cost
- One to one and group messaging
- Delivery acknowledgement and message resend
- End to end encryption (124 – bit)
- Upgradeable through firmware and software updates

### 4.2.2. Way of Working Sky Range Device

1. Smart phone sender (X) sends message through application
2. Smart phone sender (X) Sky Range Device receives the message and sends it through long range radio frequency to receiver Sky Range device.

- 3. Sky Range Device paired with recipient's smart phone (Y) receive the message.
- 4. Message is forwarded to recipient where it appears in smart phone (Y) Sky Range Device

### 5. SIMULATION TESTING RESULT

Here we declared the type simulation report to Sky Range Device frequency. Fig-4 the other device similar result would be delivered for frequency, such as Wifi, other wireless network reaches up to 5 feet with interaction. The X-is source part frequently two locations (sender / receiver) are not well connected from another device. The Y-is destination part frequently not connection well from source X-Y.

Fig. 5 In Sky Range Device senders X-always start with the high feet to share text and location. Frequently two locations are connected well from X-Y. Fig. 5 The Sky Range Device frequency waves [12] always working proper radio wave channel (151-154 MHz). Where the X-and Y connected frequently without any noise interaction. Fig. 5 is the radio wave signal (151-154) MHz full occupied from X-Y (sender / receiver) side with high feed radio wave frequency. [12] There is no interaction, signal breakage, no data loss in device.

### 6. EXPERIMENTAL RESULT

In order to produce the concert of our proposed system produced helpful results. The experimental result is displayed in Fig: 6.The new technology Sky Range Device an organizing radio wave frequency (151-154

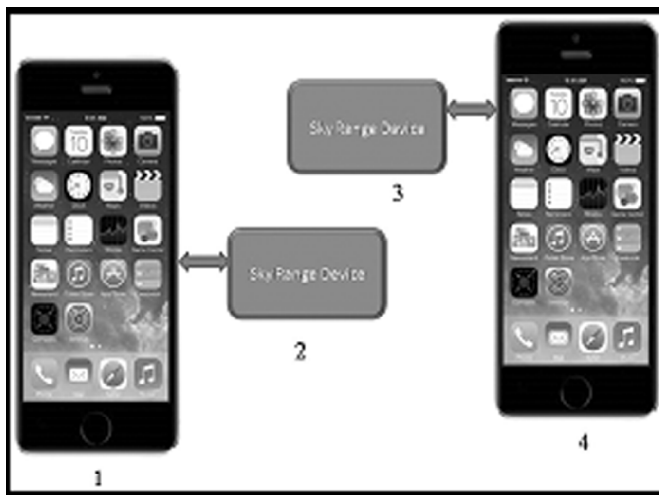


Figure 3: Sky Range Device Way of Working

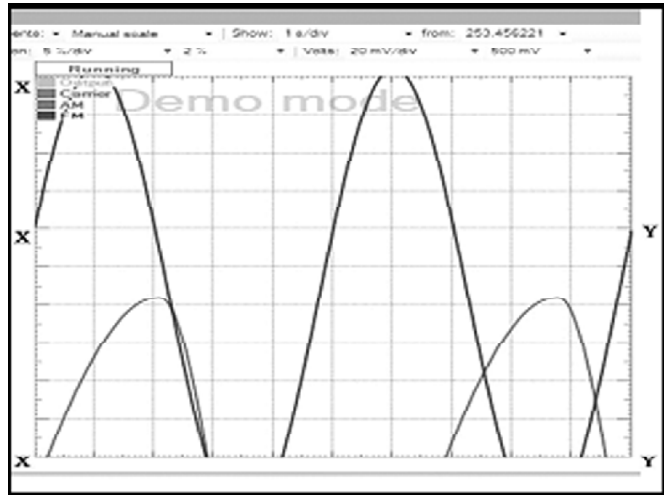


Figure 4: MURS Transmission to SRD

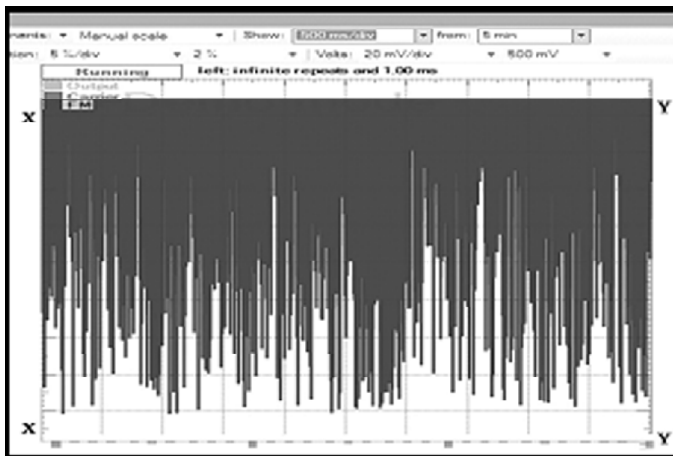


Figure 5: Occupied Signals

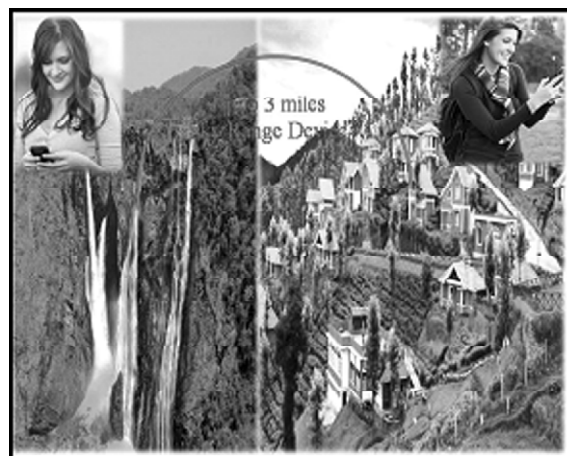


Figure 6: Sky Range Device Transmit Text and Location to P2P

MHz) to transfer text and location. This device allows for easy communicating to another area without cellular signal. The text share up to 3 miles through this device in hill station and outdoor areas. There's no noise interaction, hacking and without cloud server, this device will be processed so no more other person to hack your data's.

## 7. CONCLUSION

In this article, we have introduced is an incredible technology the enable in hardware and software to send text and share location without a cellular network. It can be very useful in rural areas, hill station with unreliable network connectivity. It's truly says no need any network to send text and share location to P2P through radio frequency (151-154 MHz). This Sky Range Device developed the first prototype in smart phone application that communicates with the hardware and software device through multi use radio service (MURS).

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