

Red Rose Repeater Association

Longer Wavelength Amateur Radio



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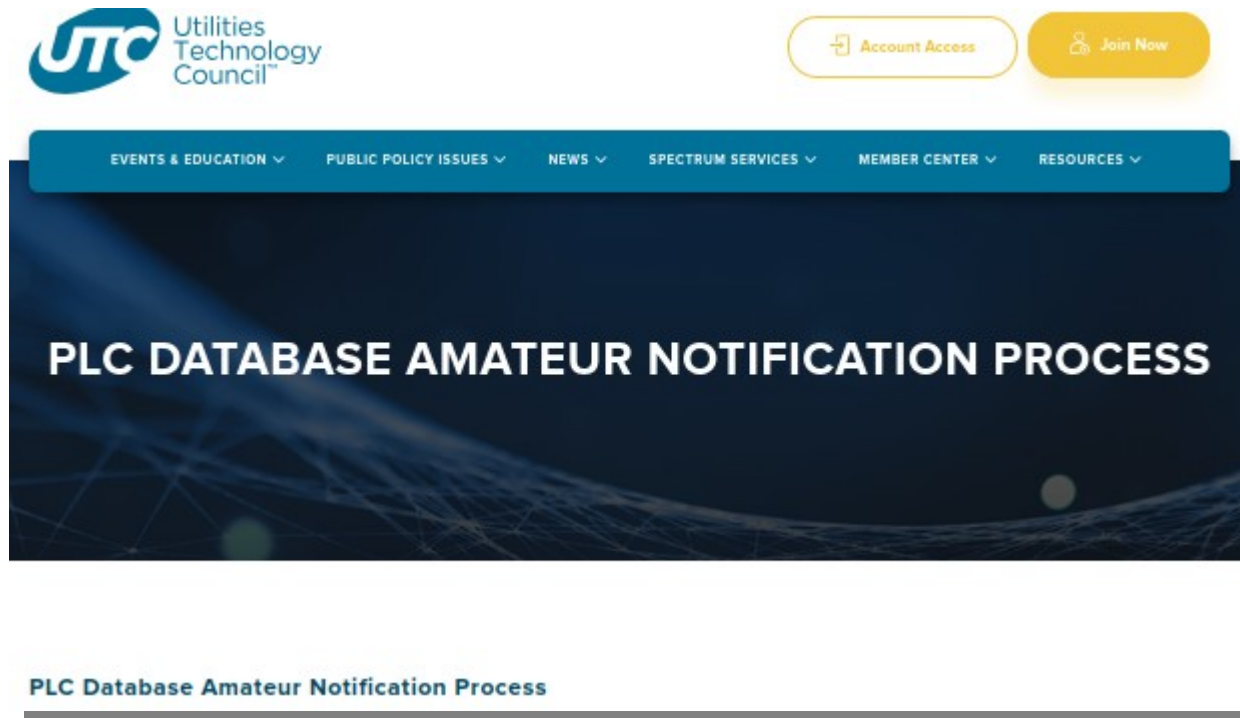
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Why Longer Wavelength Amateur Radio?

- Officially opened 630m and 2200m bands in spring of 2017
 - No longer experimental bands
 - Has been a hard push by ARRL since the 1970's
- Technical benefits regarding the longer wavelengths
 - Can go around obstacles (refract) more easily
 - Line-of-sight is less of a factor
 - Excellent for EME communications
- 472-479kHz (630m): The band is only 7kHz wide? 5W?
- 135.7-137.8 kHz (2200m): The band is only 2.1kHz wide? 1W??
- Bands allow for voice and RTTY

What if I want to try it?

- Amateurs wishing to operate on either 2,200m or 630m must first register with the Utilities Technology Council (UTC) online at:
<https://utc.org/plc-database-amateur-notification-process/>
- You need only register once for each band.



So What Are the Longer Wavelength Frequencies?

- HF – Commonly used frequencies for Amateur Radio, contesting or otherwise
- MF – We think of this as broadcast AM radio, but also includes the 160m band and the 630m band
- LF – This includes the 2200m band
- VLF – Low frequency, impractical for voice, but used for slow digital information and can penetrate up to 40m in saltwater

RF Spectrum Ranges

<i>Range Name</i>	<i>Abbreviation</i>	<i>Frequency Range</i>
Very Low Frequency	VLF	3 kHz - 30 kHz
Low Frequency	LF	30 kHz - 300 kHz
Medium Frequency	MF	300 kHz - 3 MHz
High Frequency	HF	3 MHz - 30 MHz
Very High Frequency	VHF	30 MHz - 300 MHz
Ultra High Frequency	UHF	300 MHz - 3 GHz
Super High Frequency	SHF	3 GHz - 30 GHz
Extremely High Frequency	EHF	30 GHz - 300 GHz

What is available for Amateur Radio on the longer wavelengths?

- Transverters
 - Minikits: EME223 630m Band Transverter
 - <https://www.minikits.com.au/eme223>
 - Single-band transverter (\$155 Aus => \$100 US)
- Many operators make their own transverters



What is available for Amateur Radio on the longer wavelengths?

- Transceivers

- QRP Labs: QDX-M Digital Transceiver

- <https://qrp-labs.com/qdxm.html>
 - Single-band kit, with built-in SDR circuitry (\$65)



What is available for Amateur Radio on the longer wavelengths?

- Transceivers

- Multus SDR: Geminus MKII

- https://www.multus-sdr.com/index.php?rt=product/product&path=79_90&product_id=195
- Dual-band kit, for both 630m and 2200m (\$310)
- Mostly built, just needs final assembly



What About That Antenna?

- The longer the wavelength, the longer the antenna
- Lower power requirements for the 630m and 2200m bands mean less concern over size of electronic output stages
- Antenna does need wire...
 - 630m => 1900'
 - 2200m => 6700'



What About RF Exposure?

- The frequencies of MW/LW cannot be considered ionizing radiation, frequency is too low to be ionizing
- Direct contact can still cause RF burn
- Maximum allowable power density is 100mW/cm²
- 630m Band
 - 5W power, CW signal
 - 2.5cm (~1") away from the antenna while transmitting
- 2200m Band
 - 1W power, CW signal
 - 1cm (~3/8") away from the antenna while transmitting