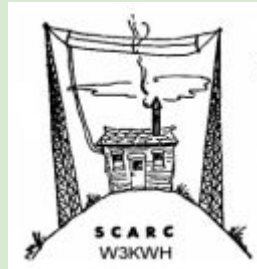




AMATEUR TELEVISION WORKSHOP

**Should we get
ATV back on the air
In Pittsburgh?**





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Disclaimer

We are not experts this is just what we have found out so far researching this topic for today.

We want your input!



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What is ATV?

Amateur television (ATV) is the transmission of broadcast quality video and audio over the wide range of frequencies of radio waves allocated for radio amateur (Ham) use. ATV is used for non-commercial experimentation, pleasure, and public service events. Ham TV stations were on the air in many cities before commercial television stations came on the air. Various transmission standards are used, these include the broadcast transmission standards of NTSC in North America and Japan, and PAL or SECAM elsewhere, utilizing the full refresh rates of those standards. ATV includes the study of building of such transmitters and receivers, and the study of radio propagation of signals travelling between transmitting and receiving stations. ATV is an extension of amateur radio. It is also called HAM TV or fast-scan TV (FSTV), as opposed to slow-scan television (SSTV).

https://en.wikipedia.org/wiki/Amateur_television



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ARRL BAND PLAN - 70cm

420.00-426.00	ATV repeater or simplex with 421.25 MHz video carrier control links and experimental
426.00-432.00	ATV simplex with 427.250-MHz video carrier frequency
432.07-432.10	Weak-signal CW
432.10	70-cm calling frequency
435.00-438.00	Satellite only (internationally)
438.00-444.00	ATV repeater input with 439.250-MHz video carrier frequency and repeater links
442.00-445.00	Repeater inputs and outputs (local option)
446.00	National simplex frequency
447.00-450.00	Repeater inputs and outputs (local option)

Analog CATV (IRC) channel	Channel Bandwidth (MHz)	Video Freq (MHz)	Audio Freq (MHz)
57	420–426	421.25	425.75
58	425–431	426.25	430.75
58	426–432	427.25	431.75
59	432.75–438.75	434.00	438.50
59	432–438	433.25	437.75
60	438–444	439.25	443.75
61	444–450	445.25	449.75



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Channel Bandwidth (MHz)	Video Freq (MHz)	Audio Freq (MHz)
906–912	907.25	911.75
909–915	910.25	914.75
910–916	911.25	915.75
912–918	913.25	917.75
918–924	919.25	923.75
922–928	923.25	927.75

Channel Bandwidth (MHz)	Video Freq (MHz)	Audio Freq (MHz)
1,240 – 1,246	1,241.25	1,245.75
1,252 – 1,258	1,253.25	1,257.75
1,264 – 1,270	1,265.25	1,269.75
1,276 – 1,282	1,277.25	1,281.75
1,288 – 1,294	1,289.25	1,293.75



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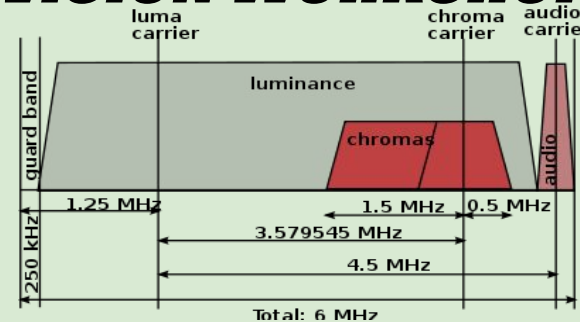
History Of ATV In Pittsburgh

<u>Input</u>	<u>Output</u>	<u>Location</u>	<u>Call Sign</u>	<u>Sponsor</u>	<u>Area</u>
421.2500	439.2500	Acme	W3NBN	LHVHFS	South West
421.2500	910.2500	Hazelwood	WA3PBD	GFMA	Pittsburgh
426.2500	439.2500	Carnegie	W3KWH	SCARC	Pittsburgh



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Analog TV - NTSC



An NTSC television channel as transmitted occupies a total bandwidth of 6 MHz. The actual video signal, which is amplitude-modulated, is transmitted between 500 kHz and 5.45 MHz above the lower bound of the channel. The video carrier is 1.25 MHz above the lower bound of the channel. Like most AM signals, the video carrier generates two sidebands, one above the carrier and one below. The sidebands are each 4.2 MHz wide. The entire upper sideband is transmitted, but only 1.25 MHz of the lower sideband, known as a vestigial sideband, is transmitted. The color subcarrier, as noted above, is 3.579545 MHz above the video carrier, and is quadrature-amplitude-modulated with a suppressed carrier. The audio signal is frequency-modulated, like the audio signals broadcast by FM radio stations in the 88–108 MHz band, but with a 25 kHz maximum frequency deviation, as opposed to 75 kHz as is used on the FM band, making analog television audio signals sound quieter than FM radio signals as received on a wideband receiver. The main audio carrier is 4.5 MHz above the video carrier, making it 250 kHz below the top of the channel.

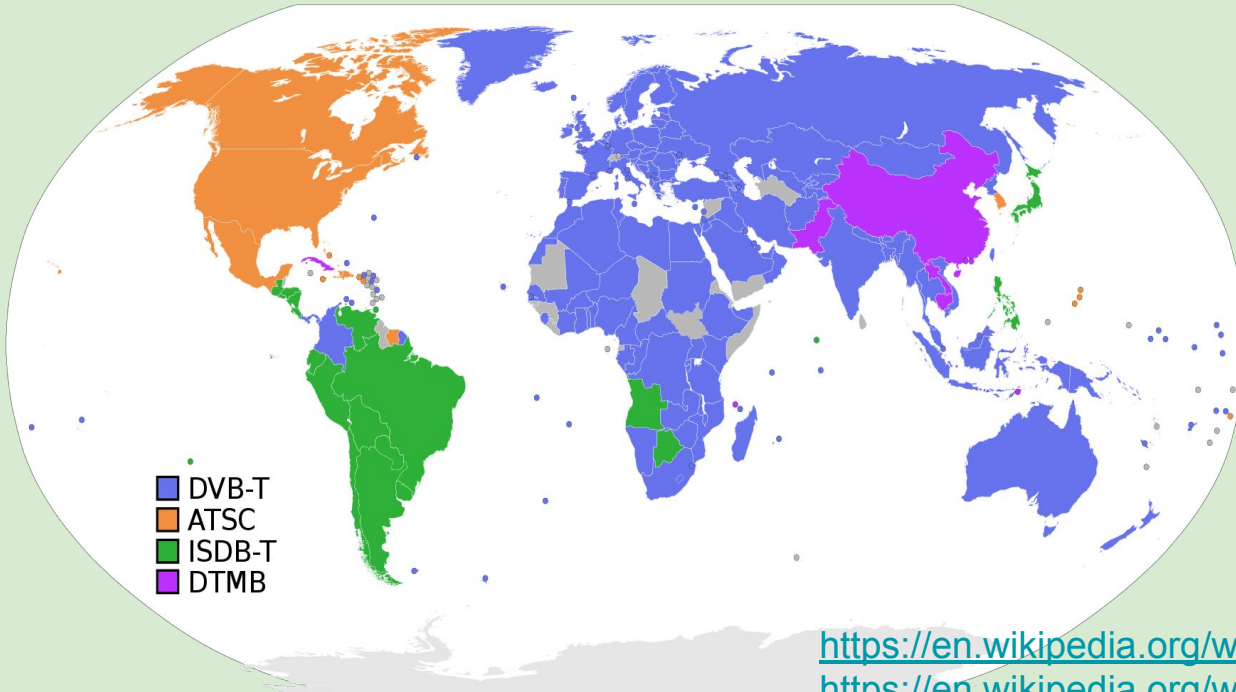
<https://en.wikipedia.org/wiki/NTSC>



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Digital TV - DVB-T or ATSC?

DVB-T2 is on air in more than 90 countries;
ATSC 3.0 services have launched South Korea and US



<https://en.wikipedia.org/wiki/DVB-T>

https://en.wikipedia.org/wiki/ATSC_standards



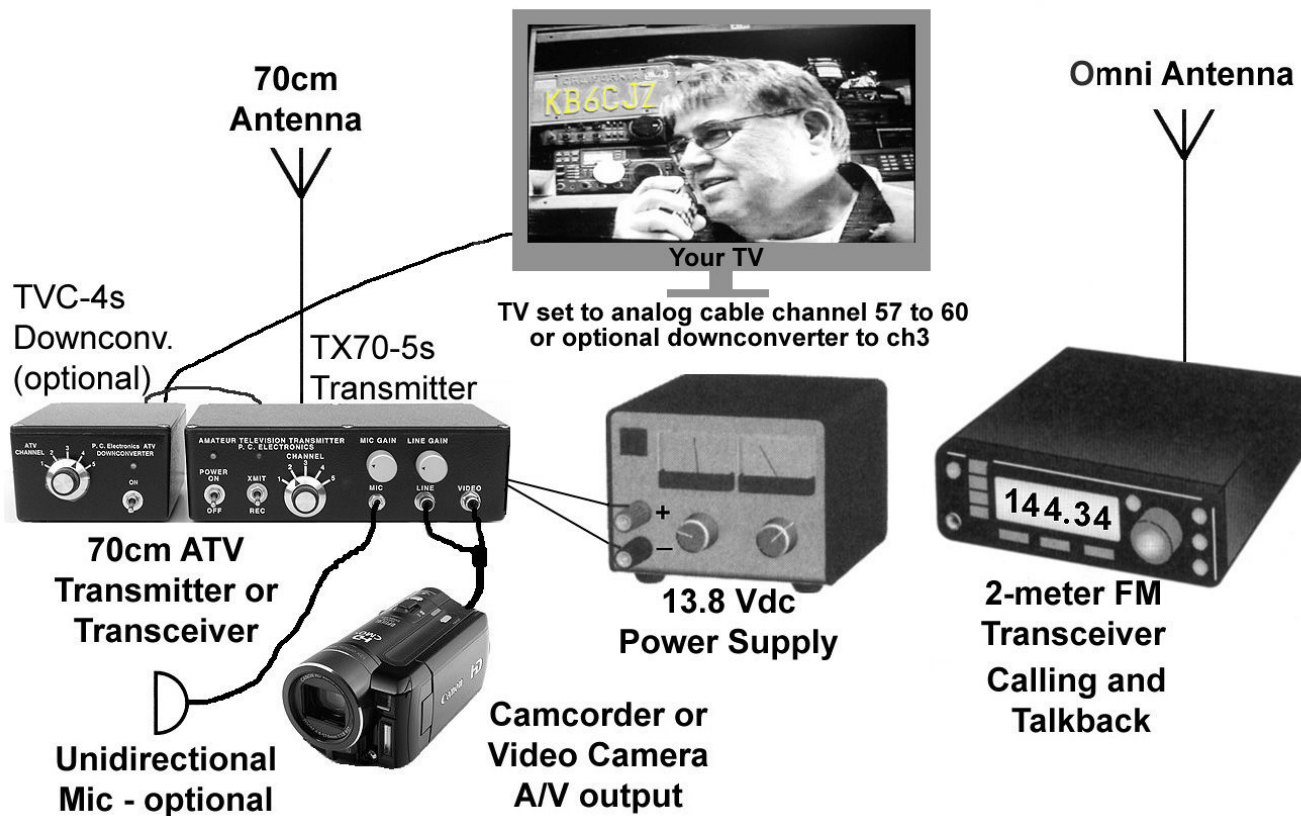
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Equipment Needed





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Analog Equipment

MFJ-8708 ATV Transmitters **\$239.99**



- * Spurious emissions: less than 35dBc
- * Frequency Control: PLL (Digital Phase locked loop) with crystal reference
- * Transmit power: 50-100mW
- * RF output connector: BNC female
- * Modulation: AM (Amplitude Modulation)
- * Video Input: NTSC/PAL video 1 V P-P into 75 ohms
- * Audio Input (Line level): 0.01 V to 2V p-p into 10k
- * Audio deviation (FM): 25 kHz adjustable (0.01V to 2V p-p into 10k)
- * Audio sub-carrier frequency: 4.5 MHz
- * Audio Input connector: RCA Female
- * Input voltage: 9V at 260mA



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Analog Equipment



HMMA, Holland Electronics Mini Agile Analog Modulator **\$272**

Mini Agile Analog Modulator

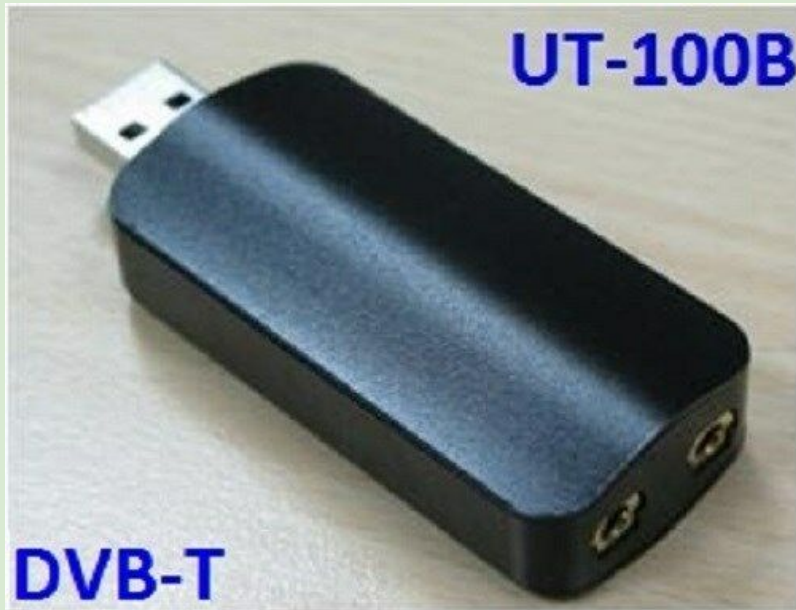
Features:

- SAW Filtered, PLL Controlled Modulators
- Stereo Encoder Available
- Low Out-of-Band Noise
- LED Channel Display
- Stereo Encoders Available
- Front Panel Push Button Controls
- Covering 860 MHz (cable ch's 2-135)



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Digital Television - Equipment





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Digital Equipment - DVB-T

Basic DVB-T Digital ATV Station

Transmitter/Receiver from HiDes company
Amplifier - Class A 10 watts
Antenna Relay – UHF Coaxial SMA/BNC/N
WebCam - Logitech C920 or built-in a laptop
HDMI Camera - Sony/Cannon Camcorder (optional)
Yagi - 70cm - 10 elements
PC - Win 7, 8, 10 (HDMI video out optional)





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Digital Equipment - DVB-T



UT-100B (DVB-T Tx/Rx Full Duplex, 2/3/4MHz demodulator)

Condition: New

Quantity:

More than 10 available / [8 sold](#)

Price: **US \$230.00**

[No Interest if paid in full in 6 mo on \\$99+*](#)

[Buy It Now](#)

[Add to cart](#)

[Add to Watchlist](#)

☐ [2-year protection plan](#) from SquareTrade - \$30.99

Shipping: **FREE** Standard Shipping from outside US | [See details](#)

International shipment of items may be subject to customs processing and additional charges.

Located in: 桃園縣, default, Taiwan

Delivery: Estimated between **Fri, Nov. 26 and Thu, Dec. 23**

This item has an extended handling time and a delivery estimate **greater than 14 business days**.

Please allow additional time if international delivery is subject to customs processing.

Returns: 14 day returns. Buyer pays for return shipping | [See details](#)

<https://www.ebay.com/itm/223682097561?hash=item34147df199:g:4pIAAOxyJX1TBXMV>



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Digital Equipment - DVB-T



HV-310E

DVB-T

**+0.5dBm@1250Mhz
+15dBm @474~930Mhz**

Hover to zoom

HV-310E FPV FullHD Video Transmitter, HDMI/ CVBS to DVB-T modulator

Condition: New

Quantity: 3 available
17 sold / [See feedback](#)

Price: **US \$279.00**
[No interest if paid in full in 6 mo on \\$29+*](#)

[Buy It Now](#)

[Add to cart](#)

[Add to Watchlist](#)

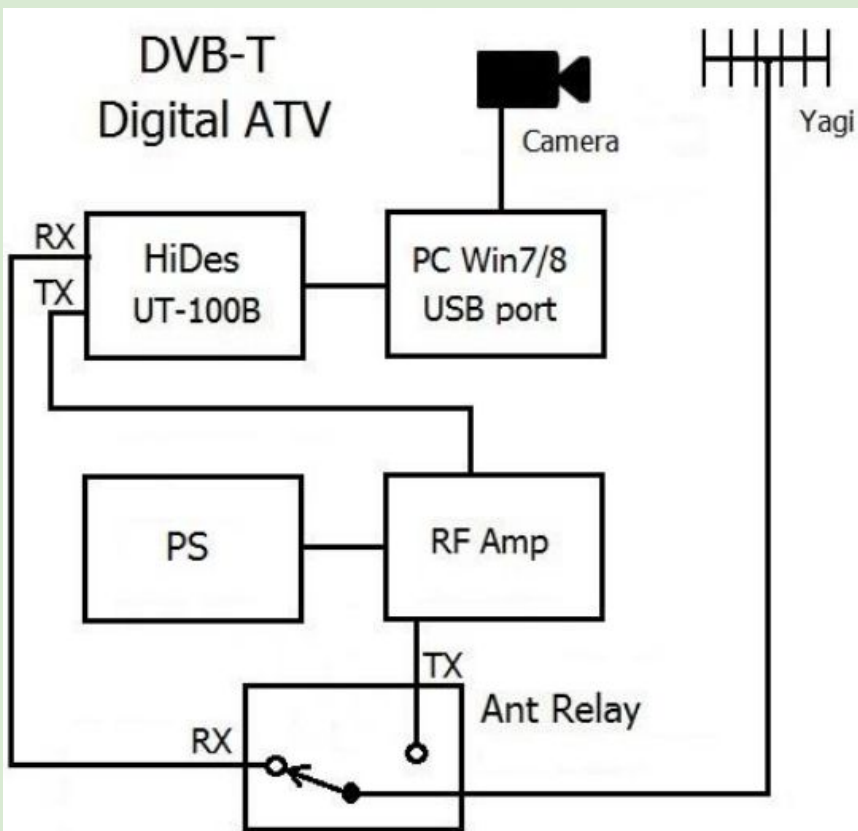
☐ [3-year protection plan](#) from SquareTrade - \$41.99

12 watchers

Shipping: **FREE** Standard Shipping from outside US | [See details](#)
International shipment of items may be subject to customs processing and additional charges.



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Recommend Reading

https://files.tapr.org/meetings/DCC_2016/DCC2016-D5-Integrating_High_Definition_Digital_Amateur_Televisi_on_Into_Your_Ham_Station_Mel_Whitten_K0PFX.pdf

D5: INTEGRATING HIGH DEFINITION DIGITAL AMATEUR TELEVISION INTO YOUR HAM STATION

Mel Whitten, KØPFX
mel@melwhitten.com





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Digital Television - ATSC





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Digital Television - ATSC



ATSC Modulator 1 Route HDMI 1080P HD To ATSC RF Audio Ethernet/Panel Setting

Condition: New

Quantity:

1

More than 10 available / [1 sold](#)

Price: **US \$309.35**

[\\$27 for 12 months with PayPal Credit*](#)

[Buy it Now](#)

[Add to cart](#)

[Add to Watchlist](#)

☐ [2-year protection plan](#) from SquareTrade - \$24.99

10 watchers

Shipping: **\$30.00** Standard SpeedPAK from Greater China | [See details](#)

International shipment of items may be subject to customs processing and additional charges.

Located in: Shen Zhen, China

Delivery: Estimated between **Mon, Nov. 22** and **Tue, Dec. 7**

Please note the delivery estimate is greater than 11 business days.

Please allow additional time if international delivery is subject to customs processing.

Returns: Seller does not accept returns | [See details](#)

<https://www.ebay.com/itm/274918240596?hash=item4002677154:g:EXgAAOSwYEFhQrSi>



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Digital Television - ATSC

Here the issue there not a lot of
information about hams using
ATSC modulators.



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Links

ATV Handbook:

<http://www.arrl.org/files/file/Technology/pdf/an-55a-atv-handbook-1.pdf>

Introduction to ATV - 1993

<http://www.arrl.org/files/file/Technology/tis/info/pdf/49319.pdf>

<http://www.arrl.org/files/file/Technology/tis/info/pdf/59343.pdf>

<http://www.arrl.org/files/file/Technology/tis/info/pdf/69335.pdf>

DVB-T A Solution for ARES Television Operations

<http://www.arrl.org/files/file/Technology/tis/info/pdf/ARESTVOPJune2015QST.pdf>

P. C. Electronics

<https://hamtv.com/>

AMATEUR TELEVISION IN CENTRAL OHIO

<https://www.atco.tv/>

Amateur Radio Operators Convert to Digital Television

<https://tinyurl.com/2e9e2kkm>



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More Links

Amateur Radio – TV Products

<https://kh6htv.com/>

Introduction to Amateur Digital Television

<https://kh6htv.files.wordpress.com/2021/02/an-45a-dtv-book.pdf>

Arizona Amateurs on Television

https://www.qsl.net/ki7cx/aatv_f.htm

British Amateur Television Club

<https://batc.org.uk/>

Radio Society of Great Britain

<https://rsgb.org/main/technical/amateur-television/>

Digital Television, 3rd Edition - Herve Benoit

<https://tinyurl.com/22h2hbvm>



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You Tube Videos

Digital Amateur Television with Mel Whitten, K0PFX

<https://www.youtube.com/watch?v=9OPn-LkHx4s>

RSGB ATV Introduction Video

https://rs.gb.services/public/video/ATV_1080p25.mp4

Amateur Television Network - Youtube Channel

<https://www.youtube.com/c/AmateurTelevisionNetwork/videos>

DATV Express software

<https://www.youtube.com/watch?v=4PEtxLd9T1w>



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***So What Should
Steel City ARC
Do?***



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Steel City ARC - Beacon ATV Plans



Top of Hour: Analog ATV Beacon

In Between: CW Beacon

Bottom of Hour: Digital ATV Beacon

In Between: CW Beacon

***Note!** No funding for this has been approved by the SCARC club yet.*



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Steel City ARC - Beacon ATV Plans

Monthly Video Net?

Broadcast Zoom Meeting Giving Everyone A Chance To Be Seen

Area Clubs Updates and Upcoming Events for WPA

Training Videos

Talkback on 2m - 147.030 MHz

Website To Provide A Place For Signal Reports Entry

QSL For Confirm Signal Reports



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Steel City ARC - Future ATV Plans

Repeater?

Depends On The Interest In Amateur Television



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***Thank you
For Attending***