HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq

Date: 12 May 2017

Object: Jupiter – Io-A

Observer: Unattended

Start of pass:	**0530 UT**	**Planetary K-index:**	**2**
Jupiter Altitude (deg):	**32.9**	**Jupiter Azimuth (deg):**	**227.8**
Jupiter CML:	**198.81**	**Jupiter Io Phase:**	**206.86**
Jupiter RA (hr/min):	**12:55**	**Jupiter Dec (hr/min):**	**-04:13**
Hour Angle (hr/min):	**02:34**	**Polarization**	**RCP**
Sun Altitude (deg):	**-31.4**	**Sun Azimuth (deg):**	**005.4**
Sun RA (hr/min):	**03:10**	**Sun Dec (hr/min):**	**17:42**

End of pass:	**0619 UT**		
Jupiter Altitude (deg):	**25.5**	**Jupiter Azimuth (deg):**	**238.9**
Jupiter CML:	**228.44**	**Jupiter Io Phase**	**213.84**
Hour Angle (hr/min):	**03:23**		
Sun Altitude (deg):	**-29.5**	**Sun Azimuth (deg):**	**018.8**

Observations made using:

1. FSX-8S fed by the TFD array
    a. 7.7 dB loss between TFD and Multicouplers.
    b. Connect to array through HNRAO Multicoupler #1 and #2, port 2
        i. HNRAO Multicoupler #1 – TFD/LCP
        ii. HNRAO Multicoupler #2 – TFD/RCP
            1. Port 1 having 10 dB of gain, all other ports have 3 dB gain.
2. FSX-2 fed by the LWA array directly
    a. LWA element configuration – 90 degrees
3. JOVE 2 receiver fed by phased JOVE dipoles @ 13’
    a. 12’ 6” phase cable - phased for 2016-17 season
    b. Calibrated 19 April 2017
    c. Connected to dipoles through HNRAO Multicoupler #3, port 1.
        i. 3.165 dB loss between Multicoupler and dipoles.
4. Icom R75 receiver fed by experimental DDRR antenna directly.
    a. Calibrated 19 April 2017
5. SDRPlay
    a. RSP1 (2) and RSP2 (1)

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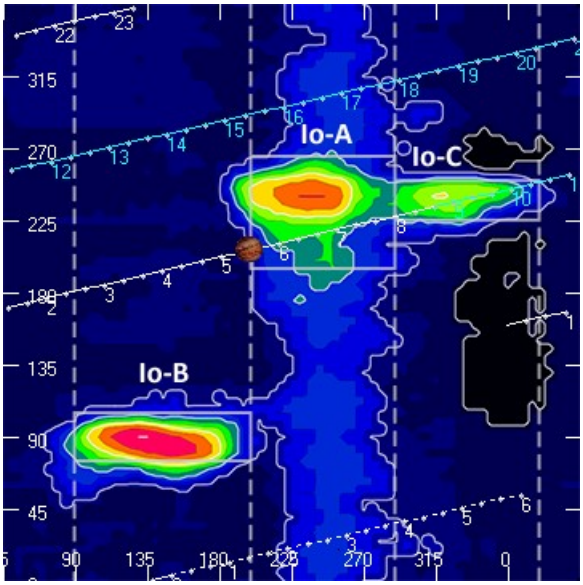
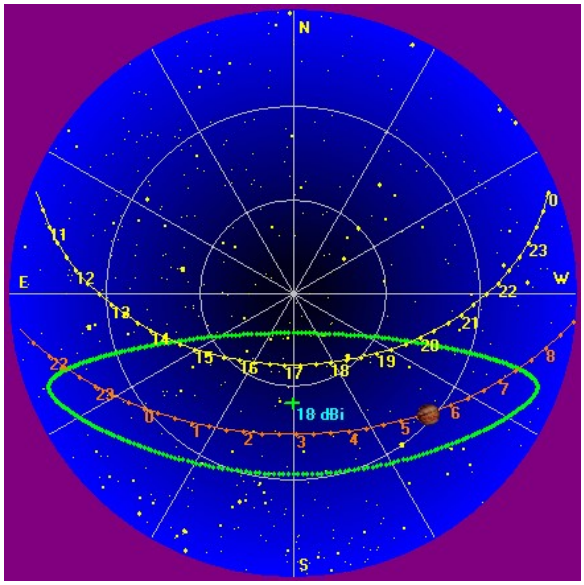
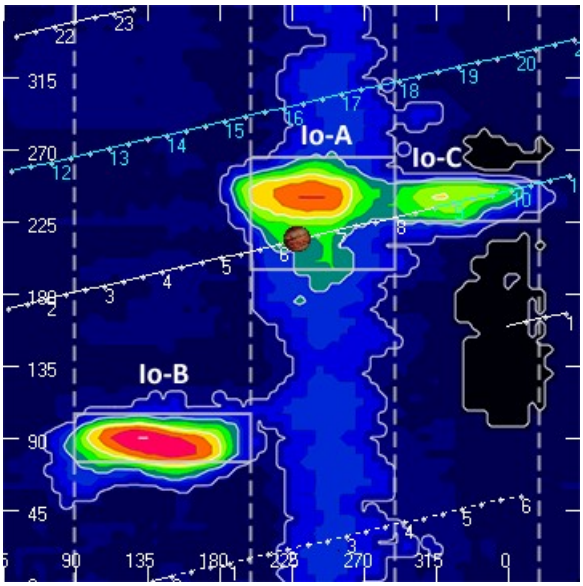
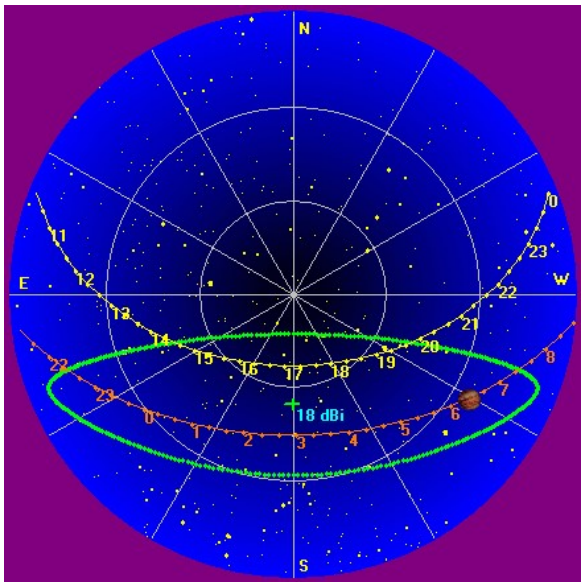




Beginning of Pass





End of Pass

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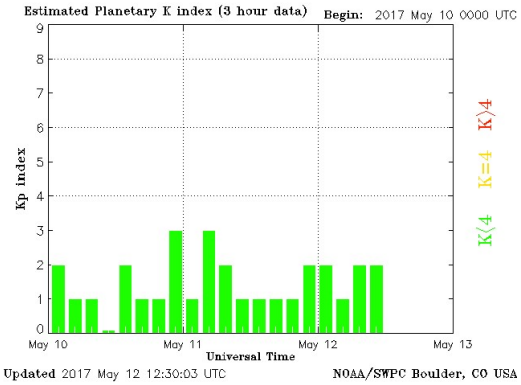

MODE	CML RANGE	Io RANGE	MAX F	POLAR	ARC	NOTES
Io-D	0-200	95-130	18	LH	Early	Also called "fourth source"
Io-B	(105 - 185)	(80-110)	39.5	RH	Early	Also called "early source"
non Io-B	80-200	0-360	38	RH	Early	Voyager info
Io-A	(200-270)	(205-260)	38	RH	Late	Also called "main source"
non-Io-A	(230-280)	0-360	38	RH	Late	
Io-C	(300-20)	(225-260)	36	RH&LH	Late	Also called "third source"
non-Io-C	300-360	0-360	32	RH&LH	Late	Voyager info

https://www.radiosky.com/jupmodes.html

An exceptionally weak Io-A storm. All RCP L-bursts. All emissions were either at galactic background or slightly above galactic background. Observing conditions were very bad with interference dominating the spectrum above 19 MHz. Also, weak lighting was visible as vertical spikes.

First indication of emissions at 0529:50 UT, identifiable by the modulation lanes. Modulations are very clear from 0533:10 UT through 0533:30 UT. Modulation lanes clear enough that a measurement of – 87 kHz/sec was taken. Additional modulation lanes are identifiable at 0537:50 UT with a negative slope of -76 kHz/sec. Modulation lanes can also be seen from 0539:35 UT through 0540 UT but were weak and any reasonable measurement would have been unreliable. A much stronger group of modulation lanes were visible at 0541 UT and a measurement of -79 kHz/sec was made. The largest frequency span of modulation lanes was between 0543 UT and 0544:45 UT. A measurement was taken of -92 kHz/sec, higher that the other measurements taken at lower frequency, but consistent with a higher drift rate at higher frequencies. The last clearly recognizable group of emissions with modulation lanes were at 0619:15 UT.

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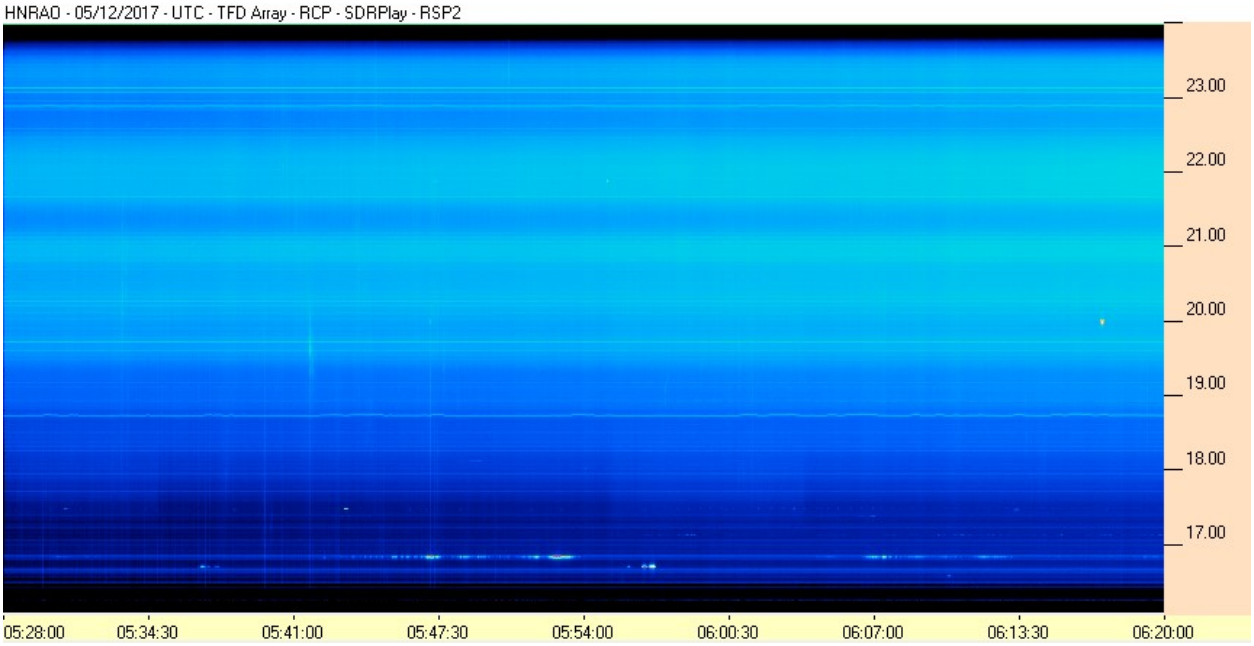
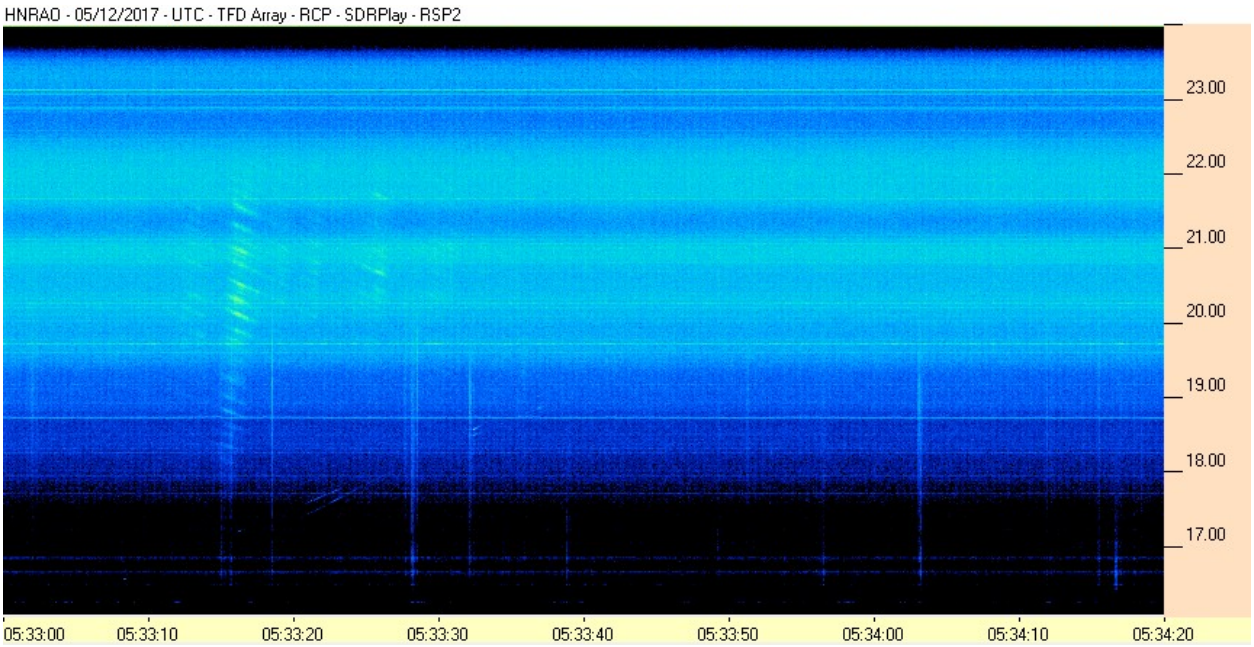
SDRPlay RSP2/TFD Pair





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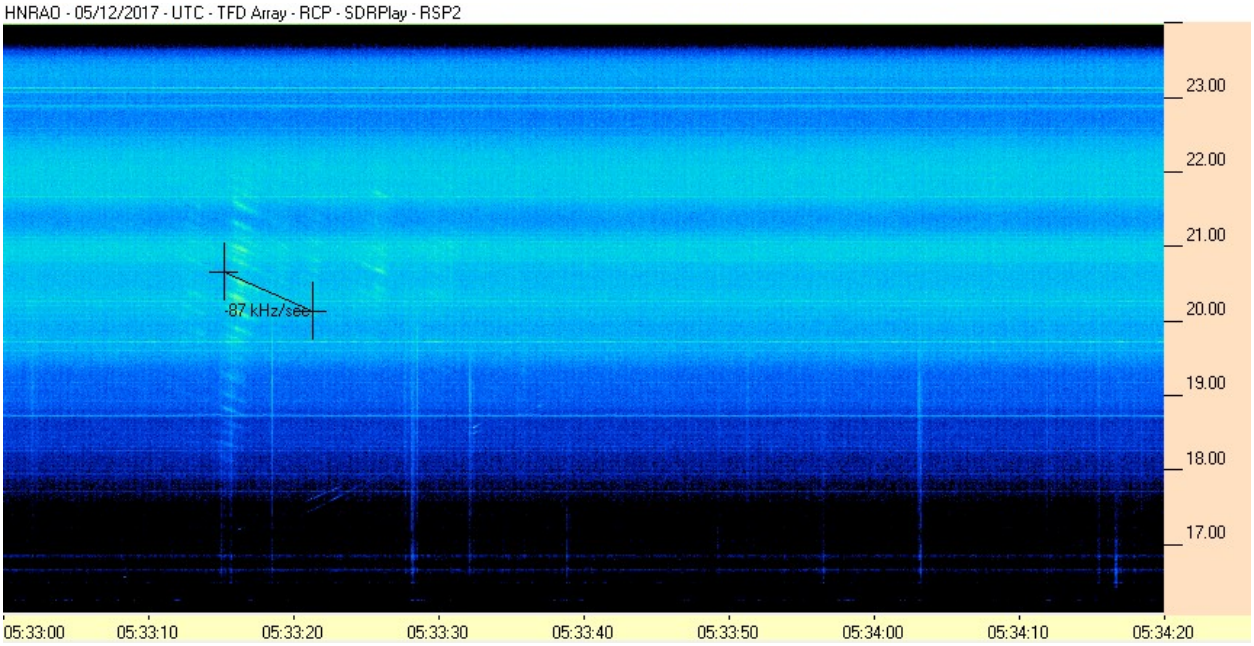

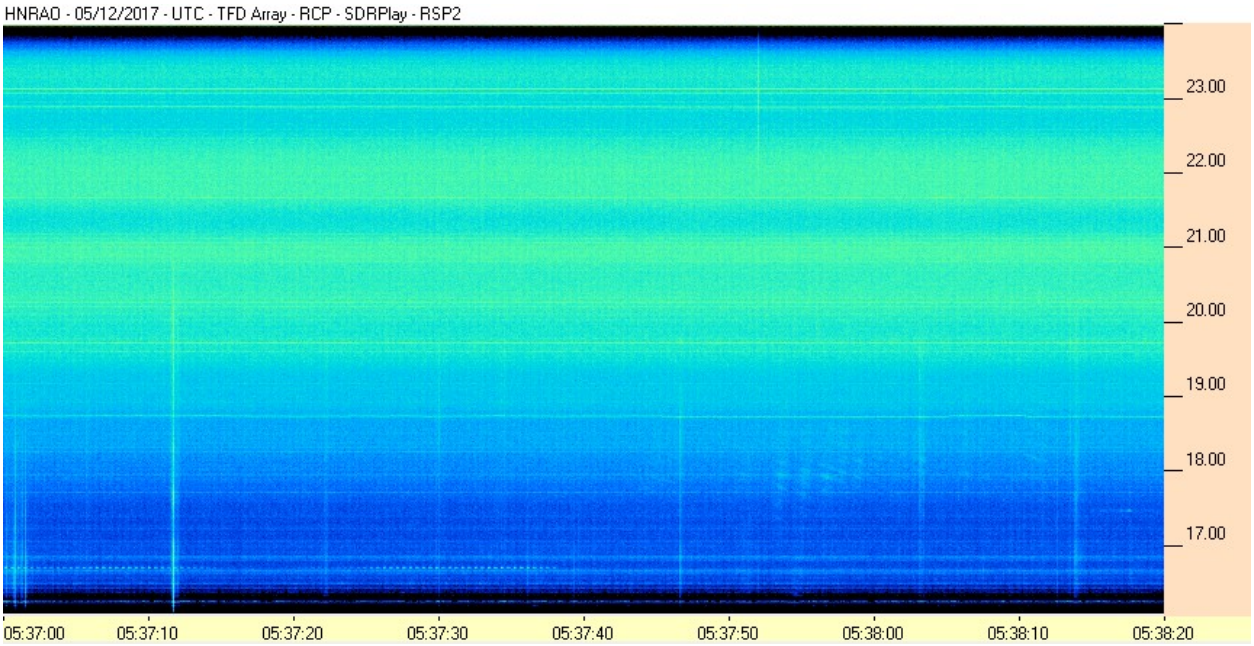

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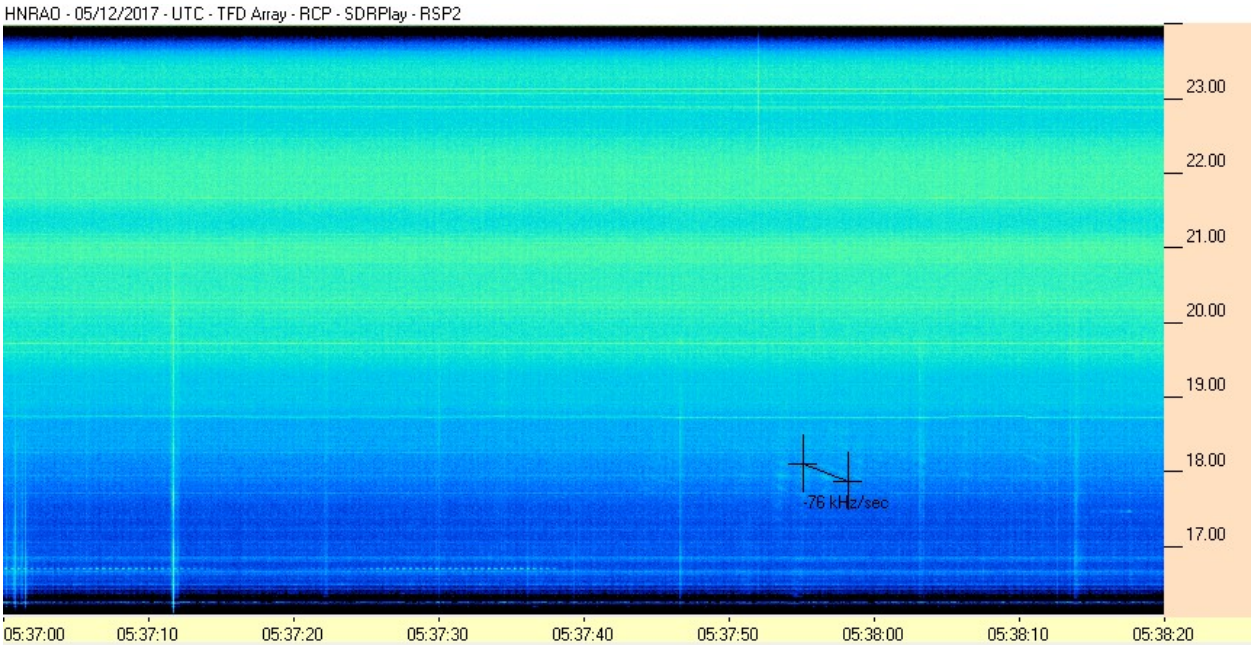

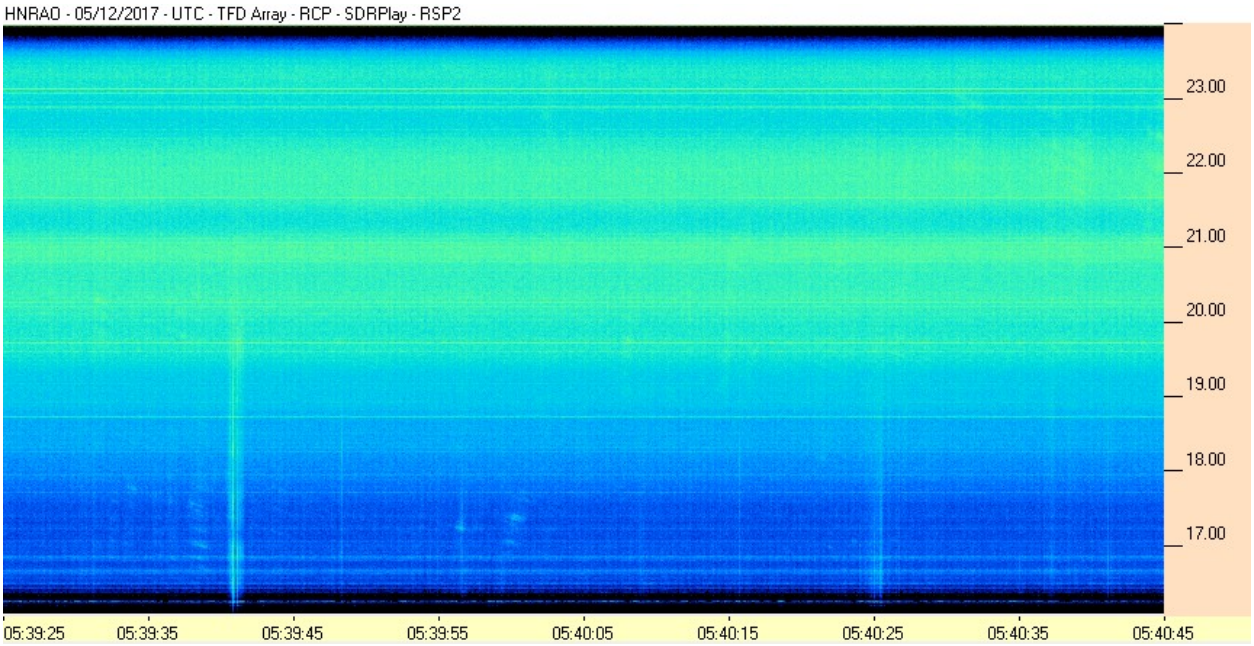

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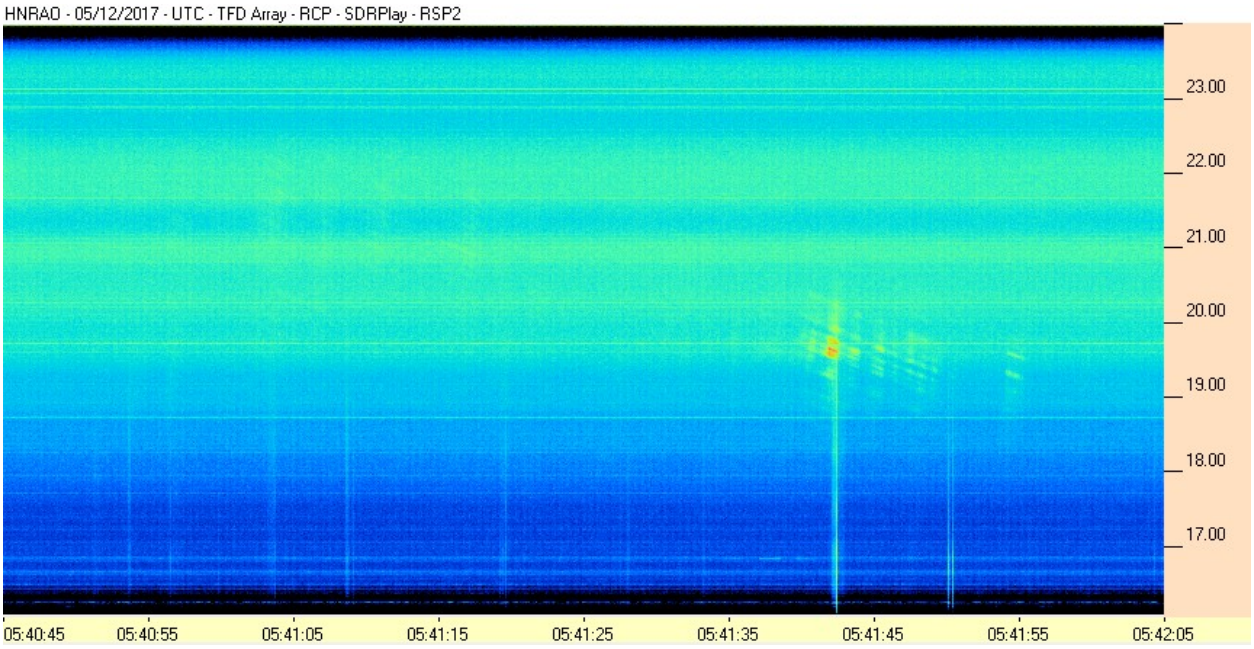

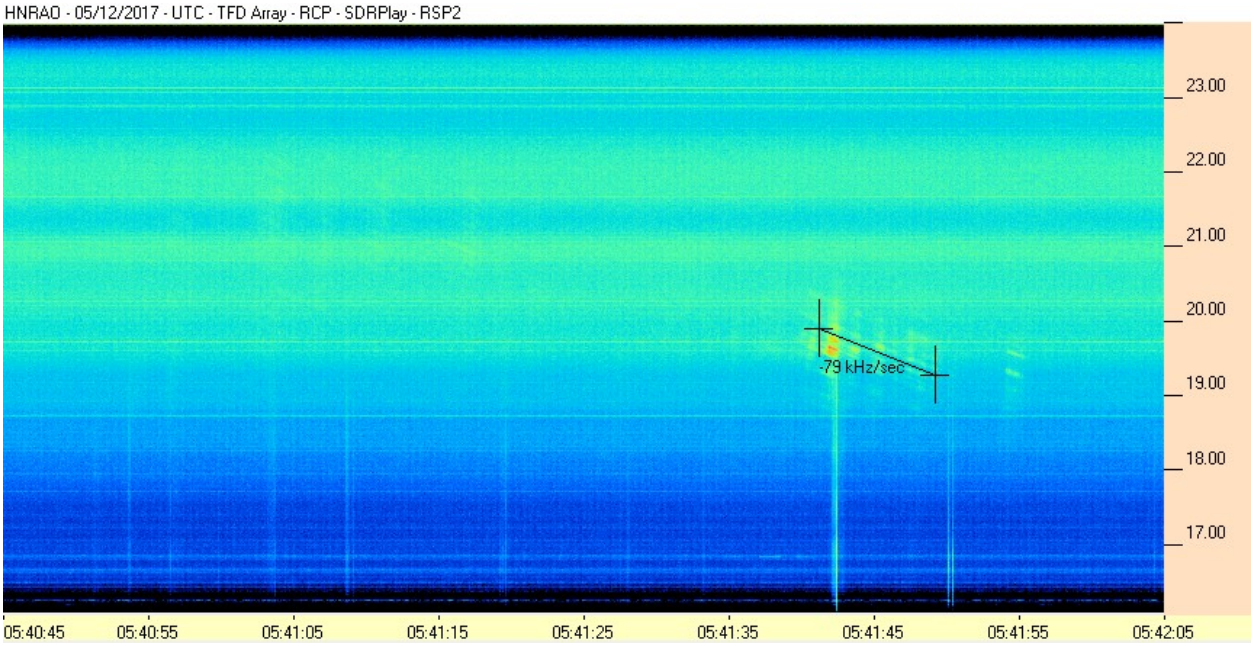

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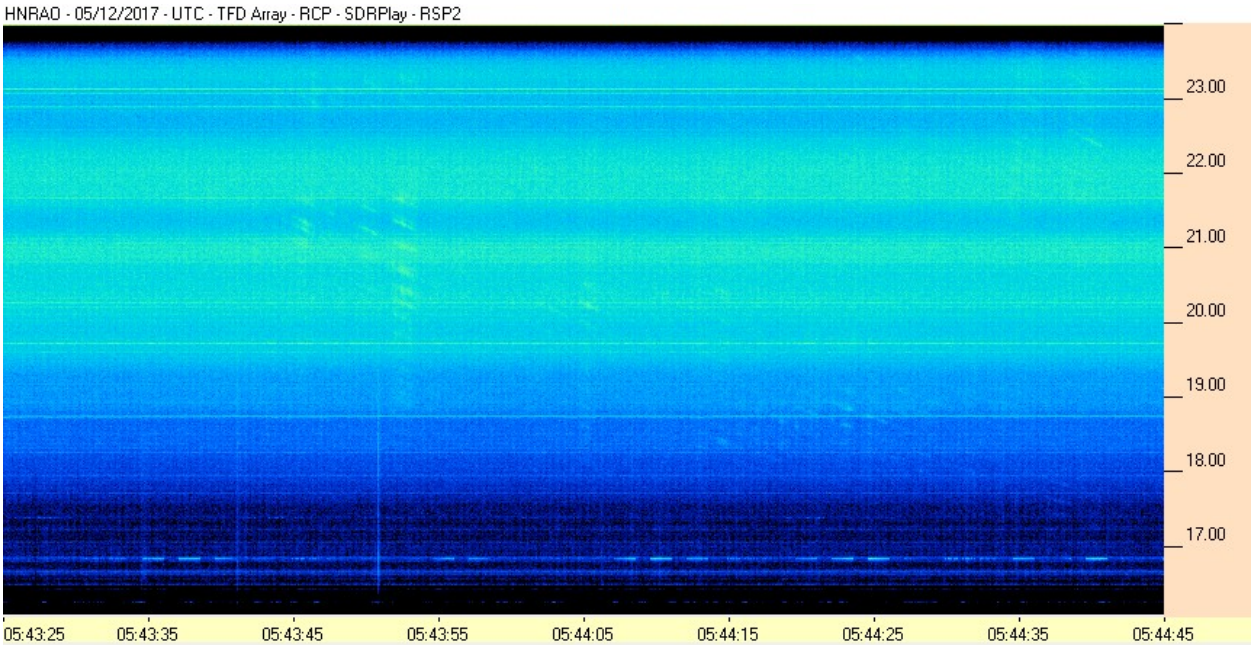

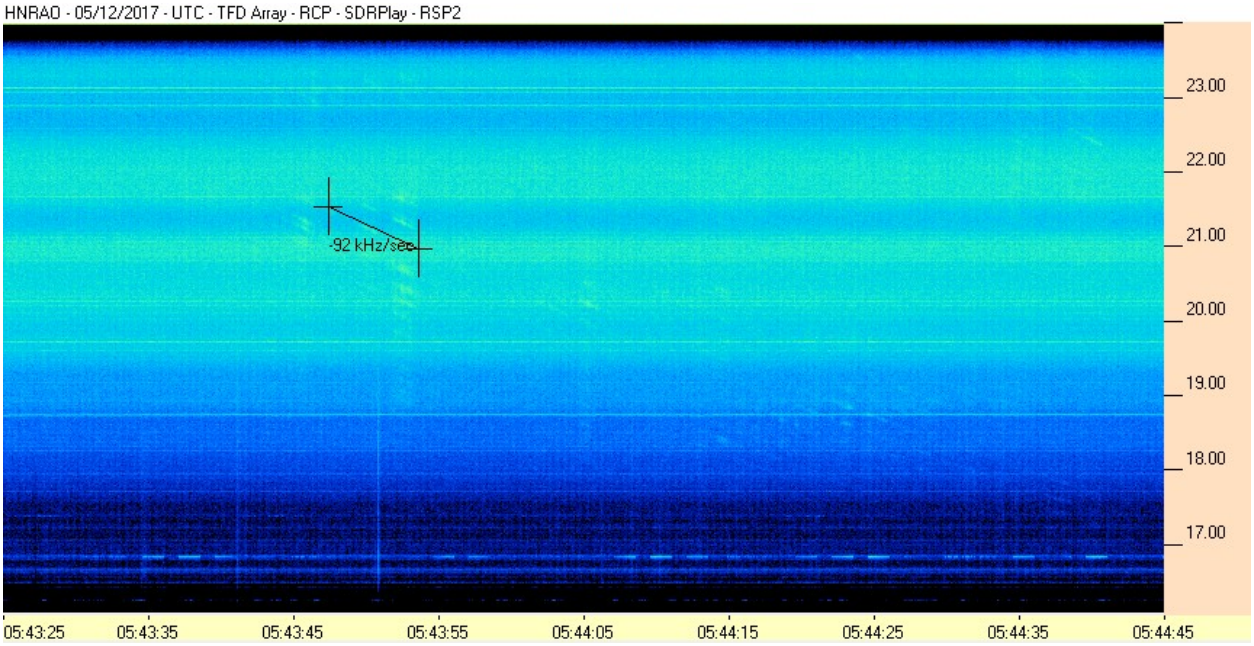

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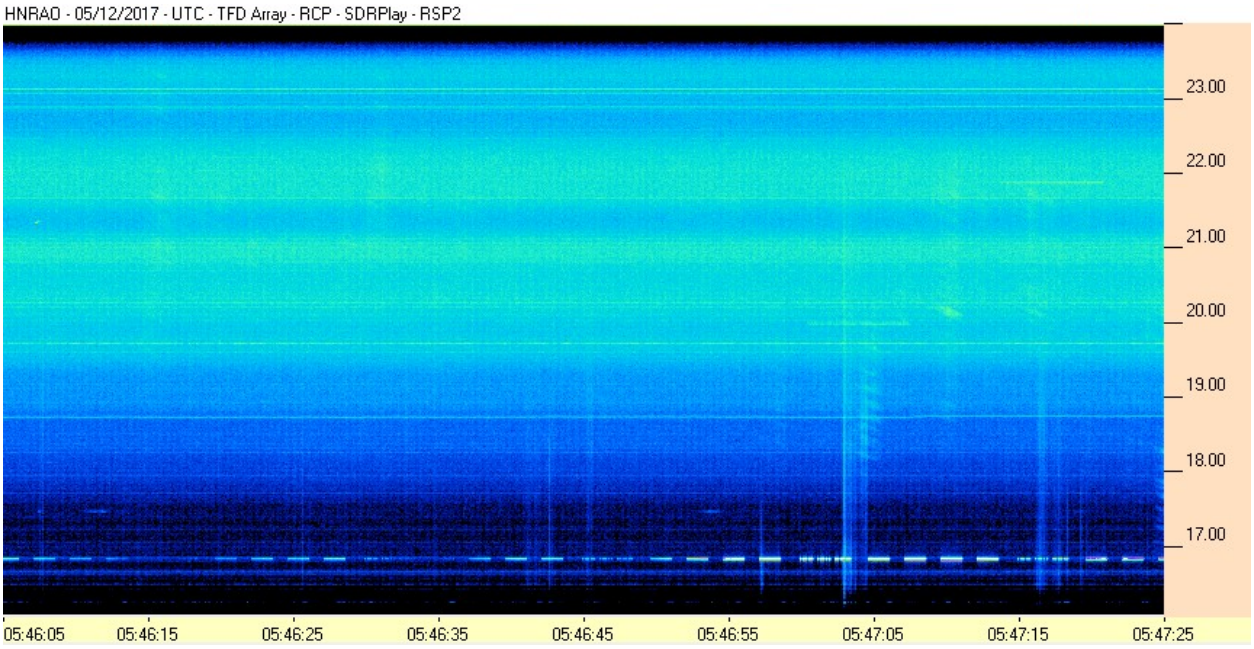

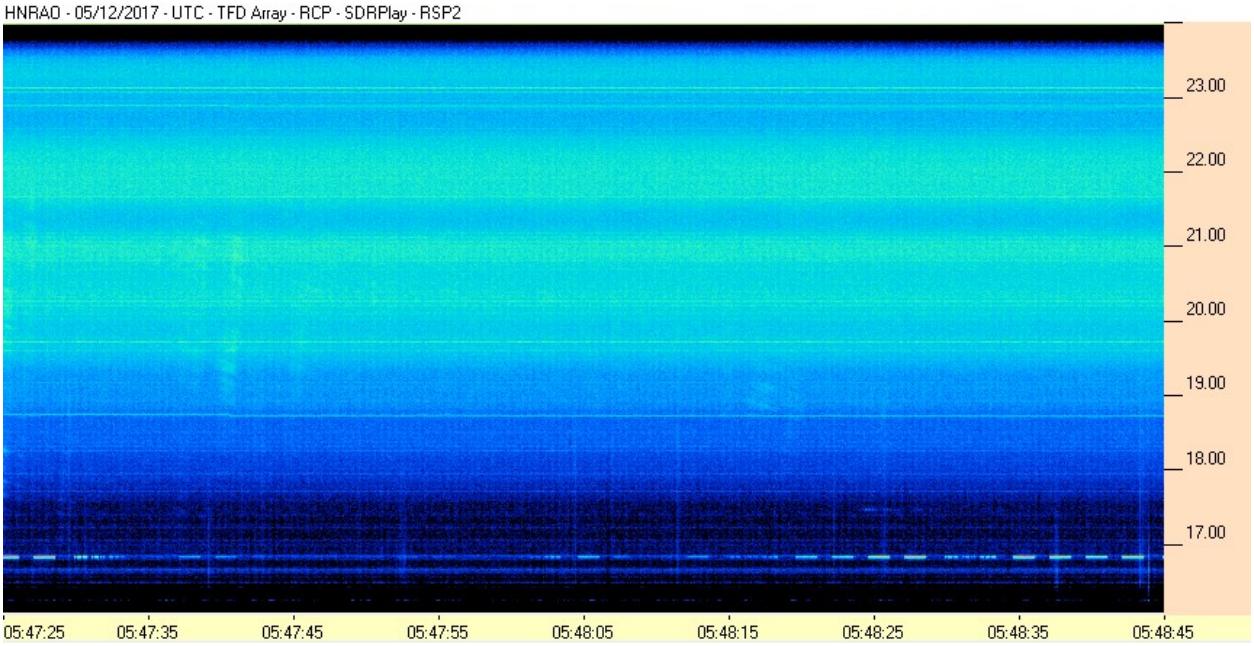

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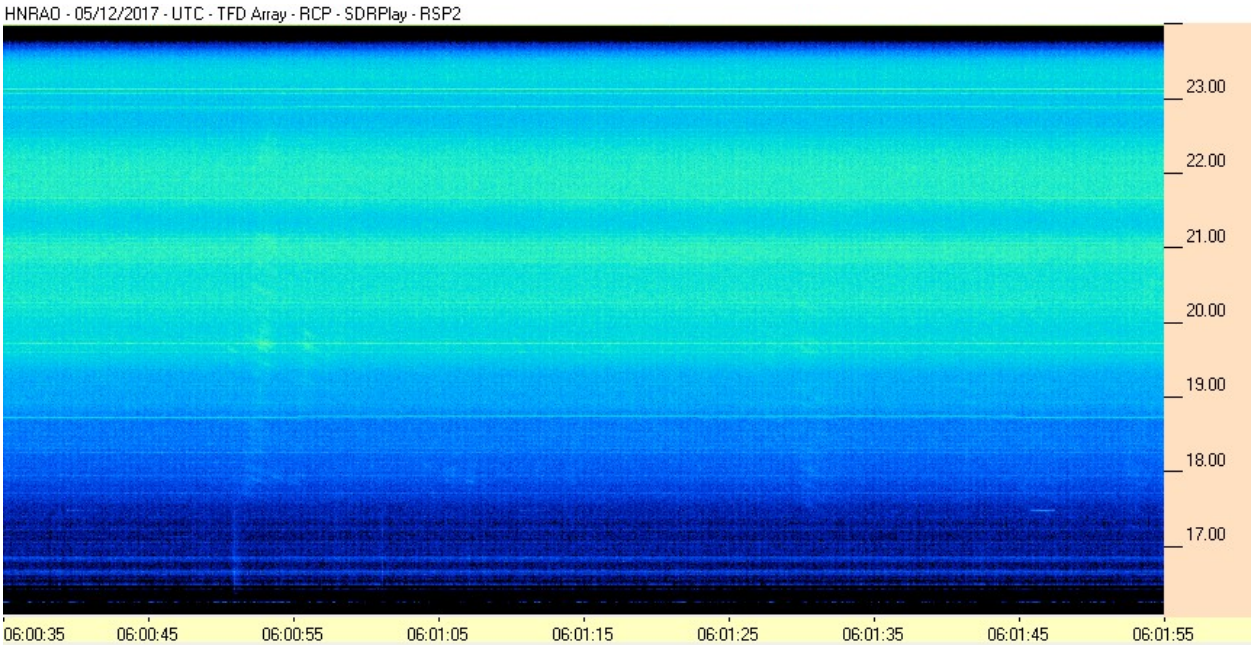

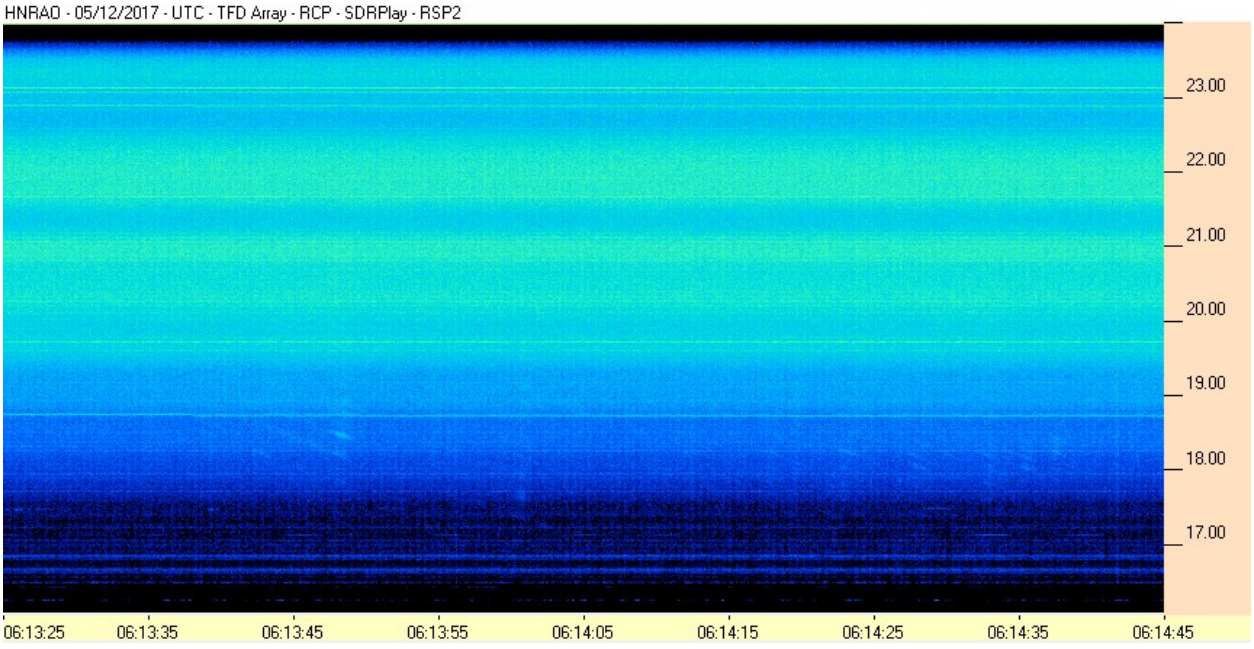

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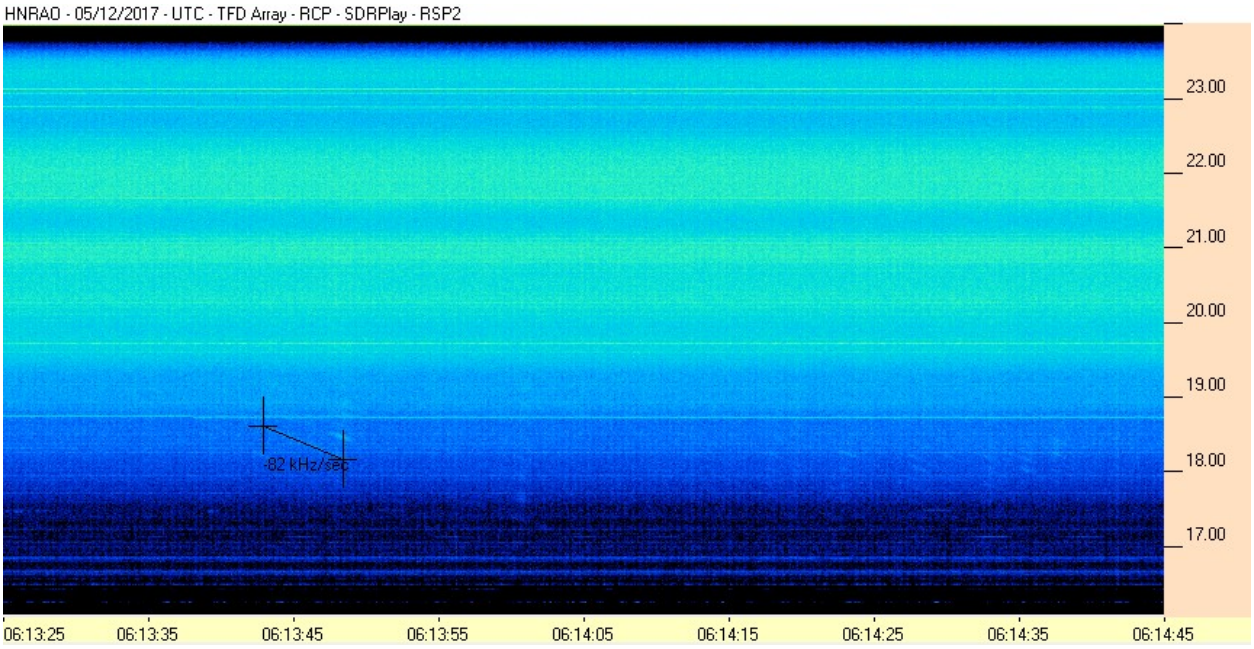
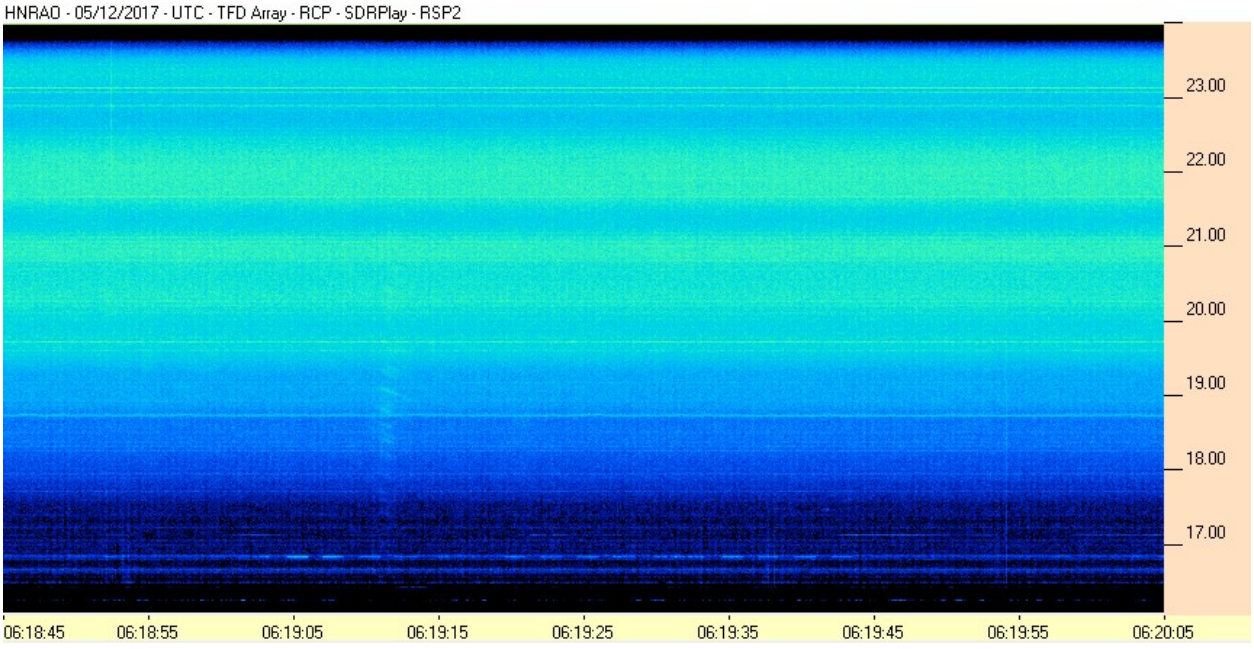
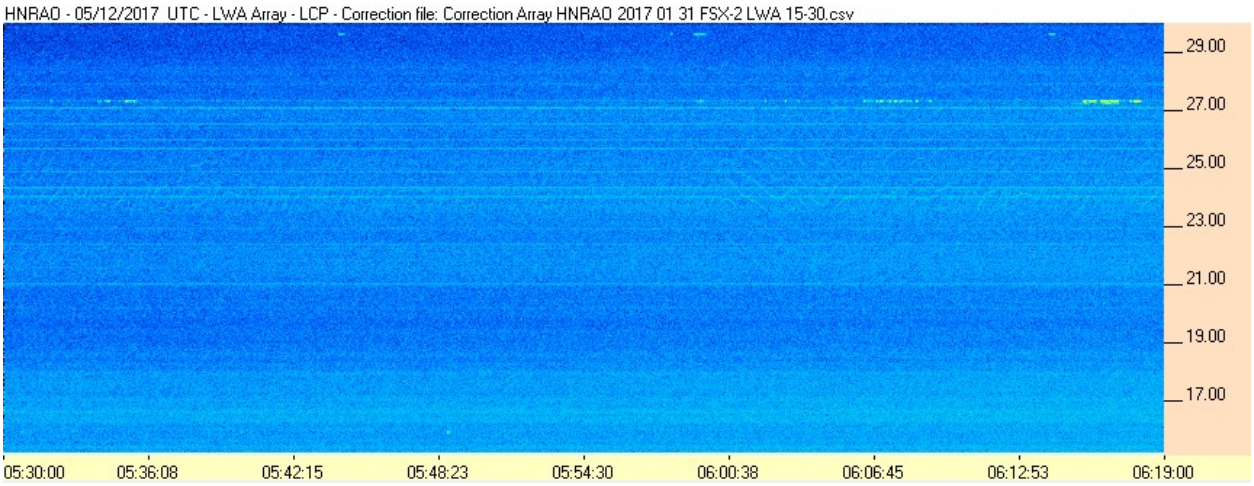




FSX-2/LWA Pair



FSX-8S/TFD Pair