HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq

Date: 20 April 2017

Object: Jupiter – Non-Io-B

Observer: Unattended

Start of pass:	**0602 UT**	**Planetary K-index:**	**6**
Jupiter Altitude:	**40.0 degrees**	**Jupiter Azimuth:**	**210.6 degrees**
Jupiter CML:	**144.8**	**Jupiter Io Phase:**	**052.37**
Jupiter RA:	**13:04**	**Jupiter Dec:**	**-05:04**
Hour Angle:	**01:32**	**Polarization**	**RCP**
Sun Altitude:	**-37.6 degrees**	**Sun Azimuth:**	**015.5 degrees**
Sun RA:	**01:46**	**Sun Dec:**	**10:56**

End of pass:	**0629 UT**		
Jupiter Altitude:	**37.1 degrees**	**Jupiter Azimuth:**	**218.3 degrees**
Jupiter CML:	**161.12**	**Jupiter Io Phase**	**056.15**
Hour Angle:	**01:59**		
Sun Altitude:	**-35.8 degrees**	**Sun Azimuth:**	**023.5 degrees**

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. 3.2 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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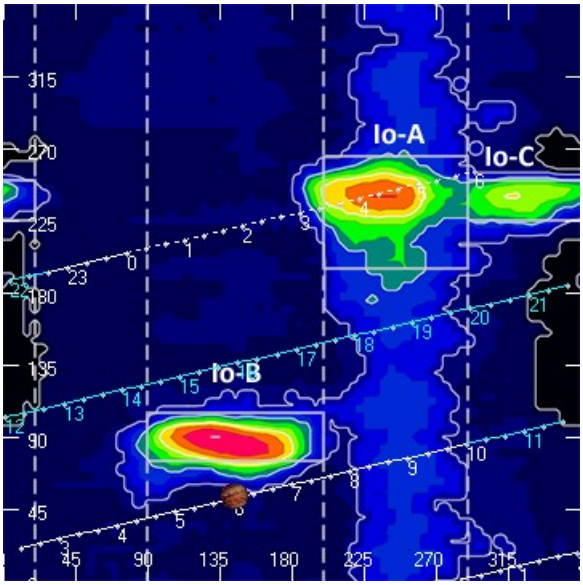
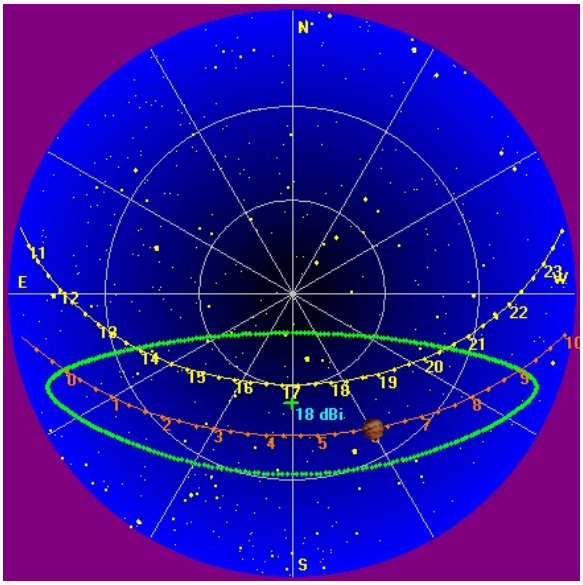
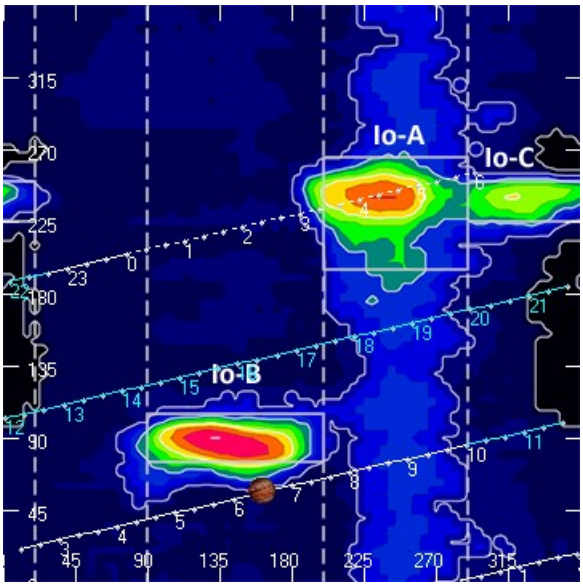
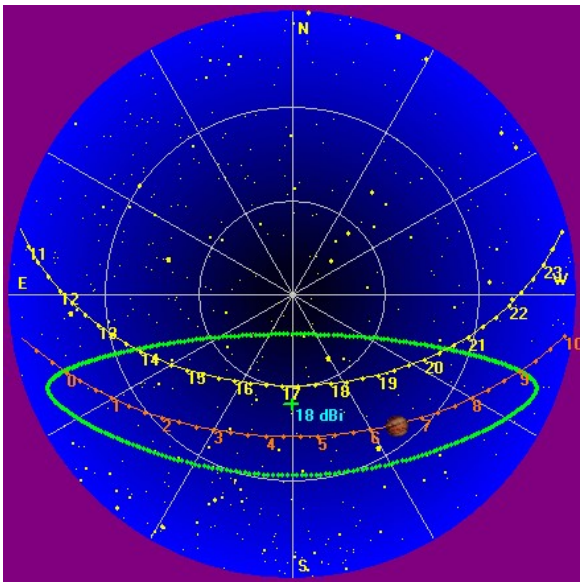




Beginning of Pass





End of Pass

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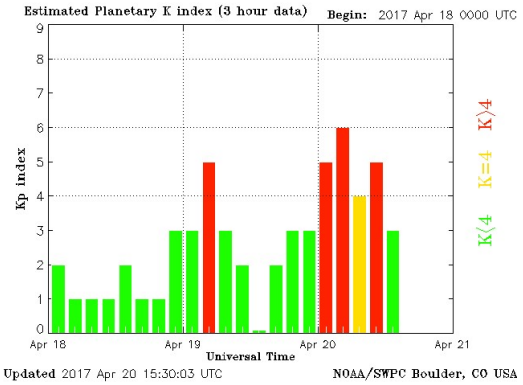
MODE	CML RANGE	Io RANGE	MAX F	POLAR	ARC	NOTES
Io-D	0-200	95-130	18	LH	Early	Also called "fourth source"
Io-B	(105 - 185)	(80-110)	39.5	RH	Early	Also called "early source"
non Io-B	80-200	0-360	38	RH	Early	Voyager info
Io-A	(200-270)	(205-260)	38	RH	Late	Also called "main source"
non-Io-A	(230-280)	0-360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



A weak non-Io-B pass with RCP positive drift L-bursts with positive drift modulation lanes.

Emissions observed with the SDRPlay RSP2 unit resolved them at or slightly stronger than the galactic background.

Emissions were a fraction above the GB as observed with the FSX-2/LWA and FSX-8S/TFD pairs. Only the SDRPlay RSP2 unit enabled me to know there were any emissions at that time.

Frequency appears to be from 15 MHz to 20 MHz, but power line RFI and a nearby lightning storm obscures exact upper frequency. The emissions were at GB for both the FSX-2 and FSX-8S so no frequency determination could be made with those instruments.

One single positive drift modulation lane was clear enough to measure at 120 kHz/sec.

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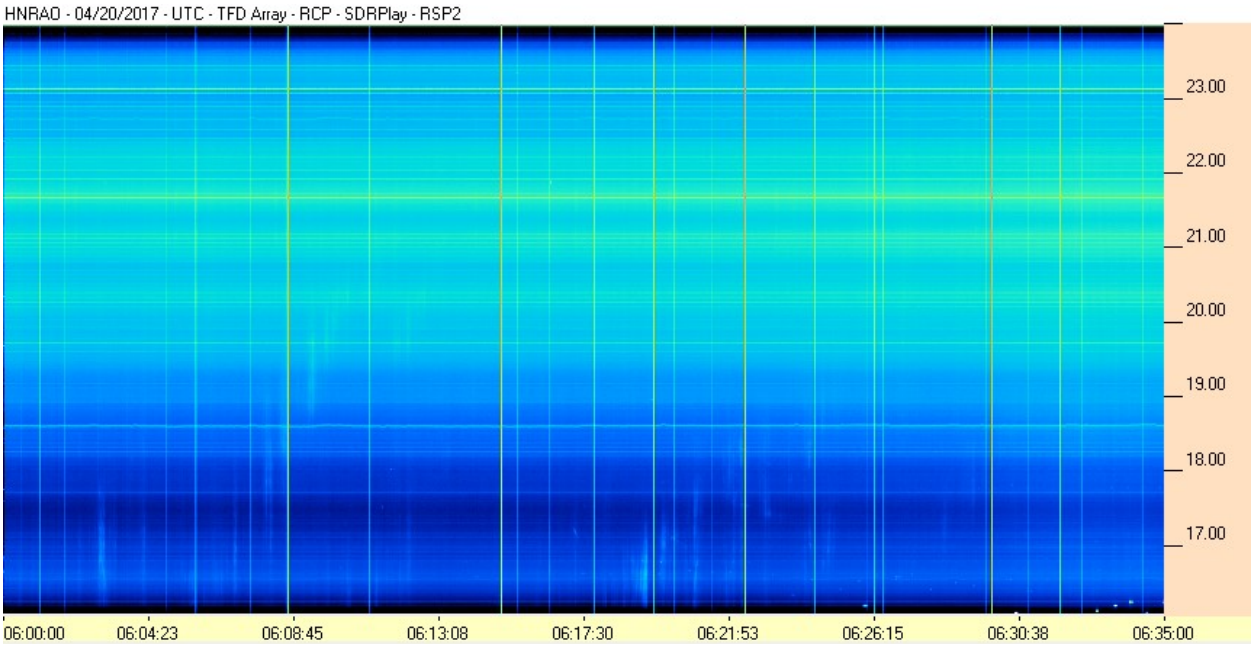
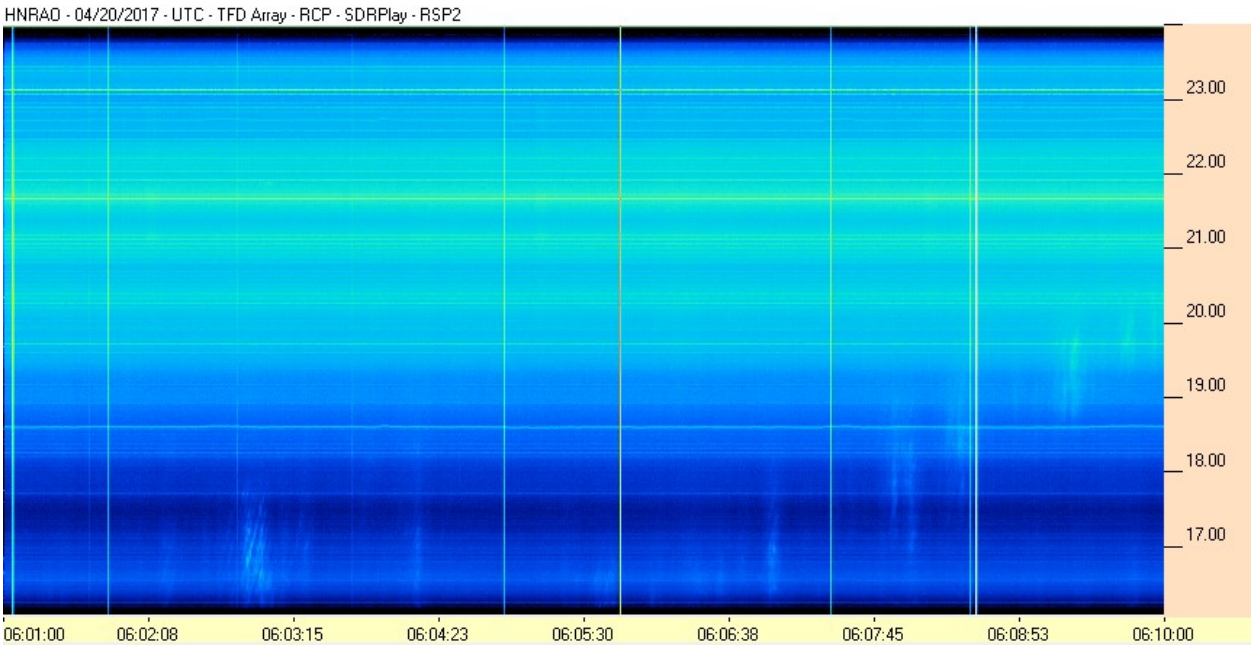
SDRPlay RSP2/TFS Pair





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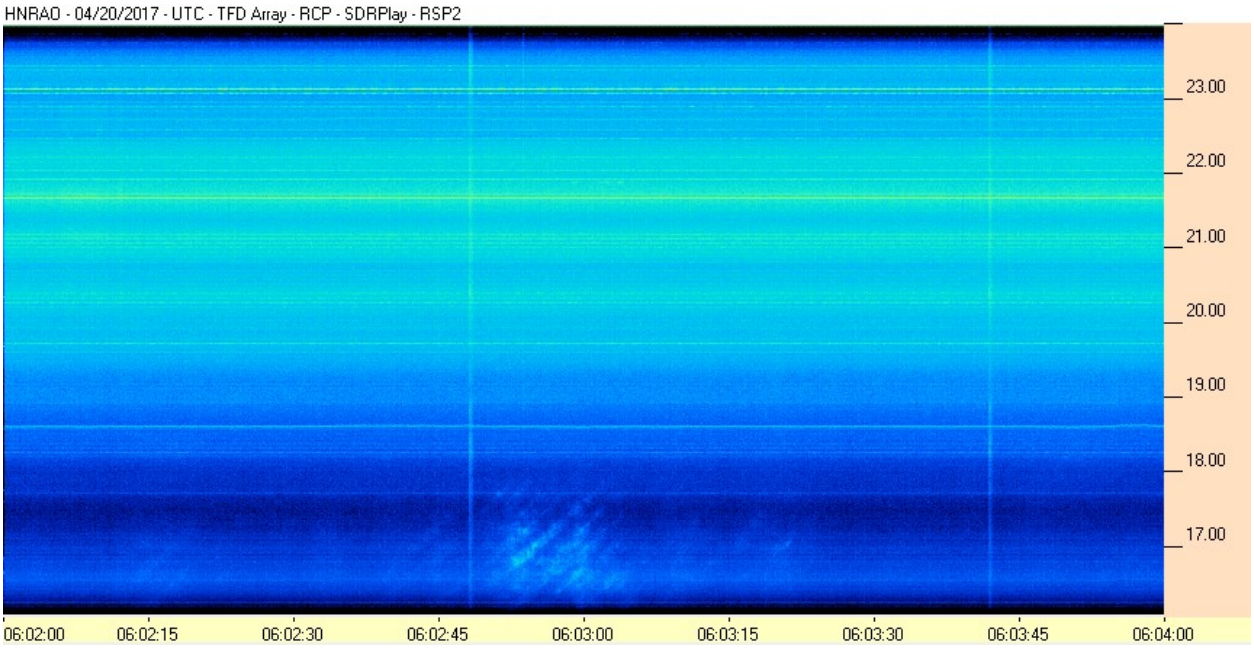

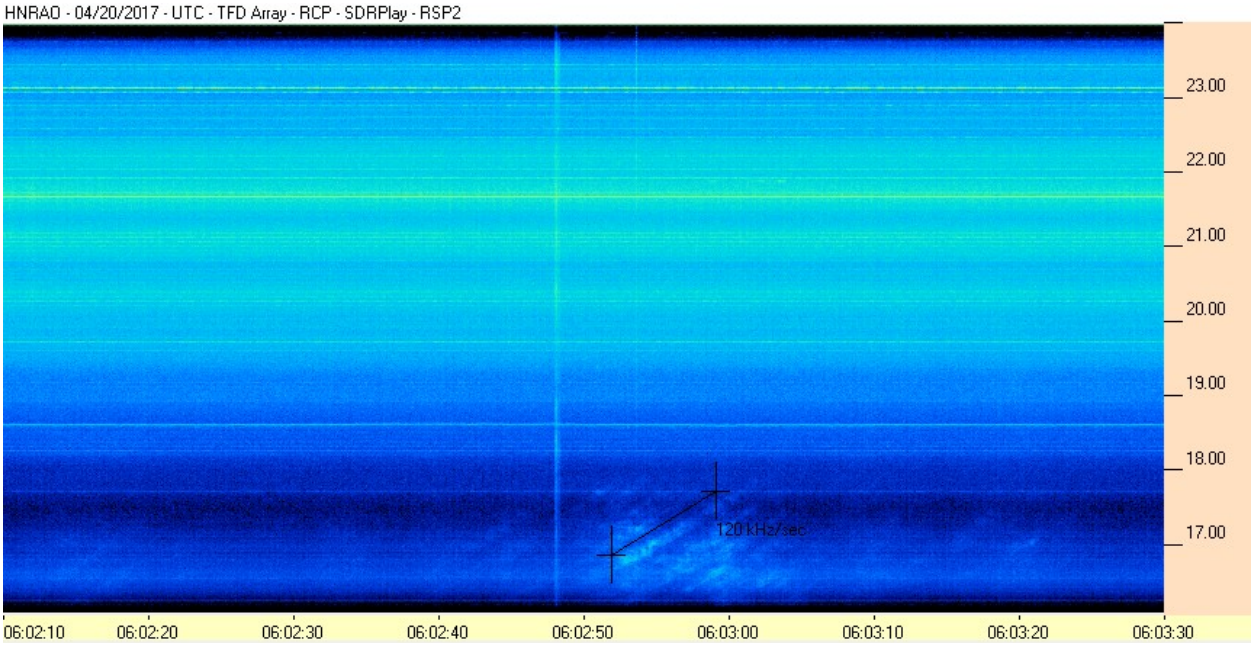

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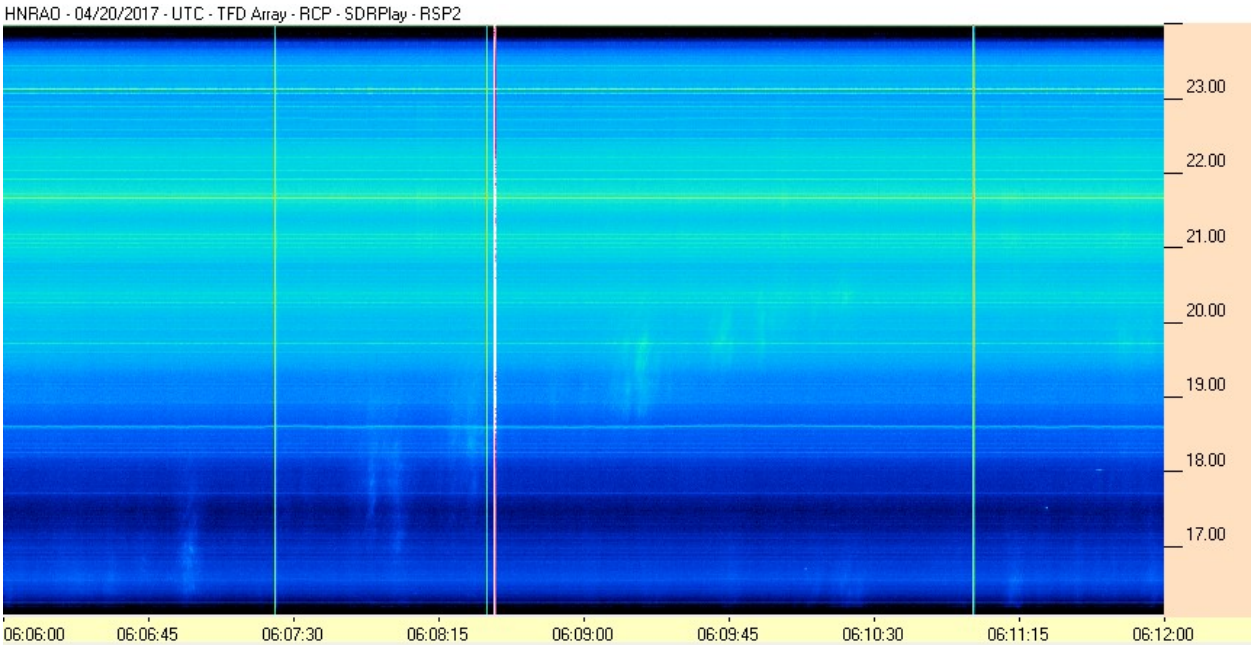

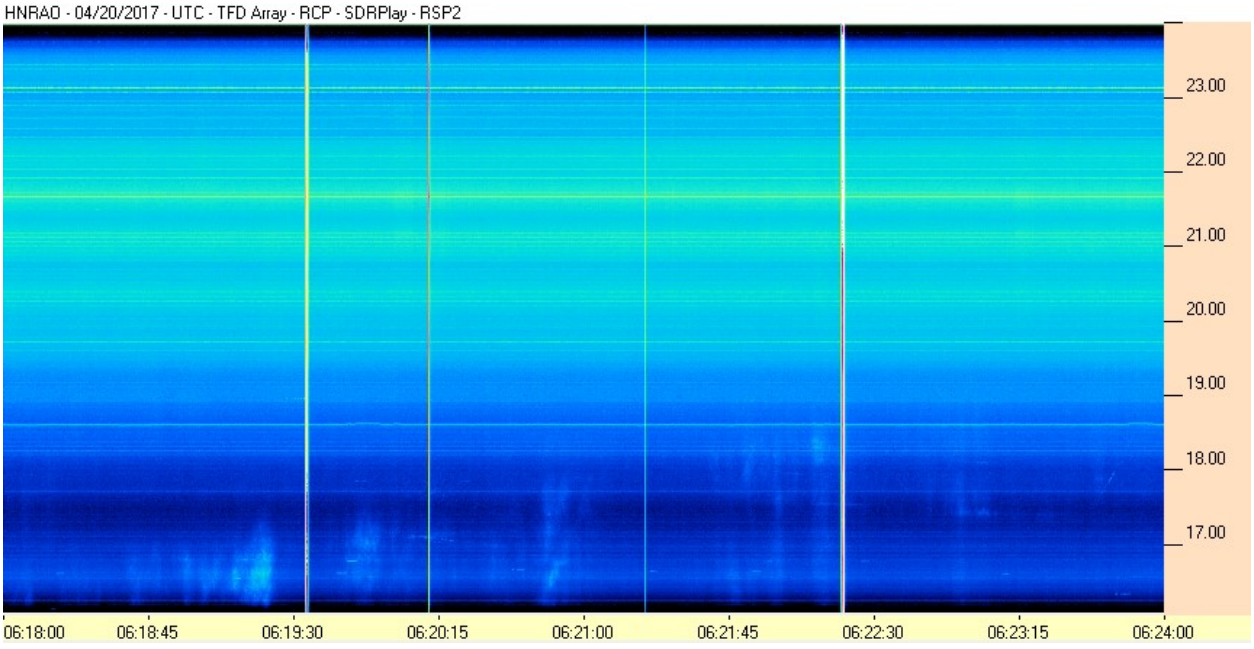

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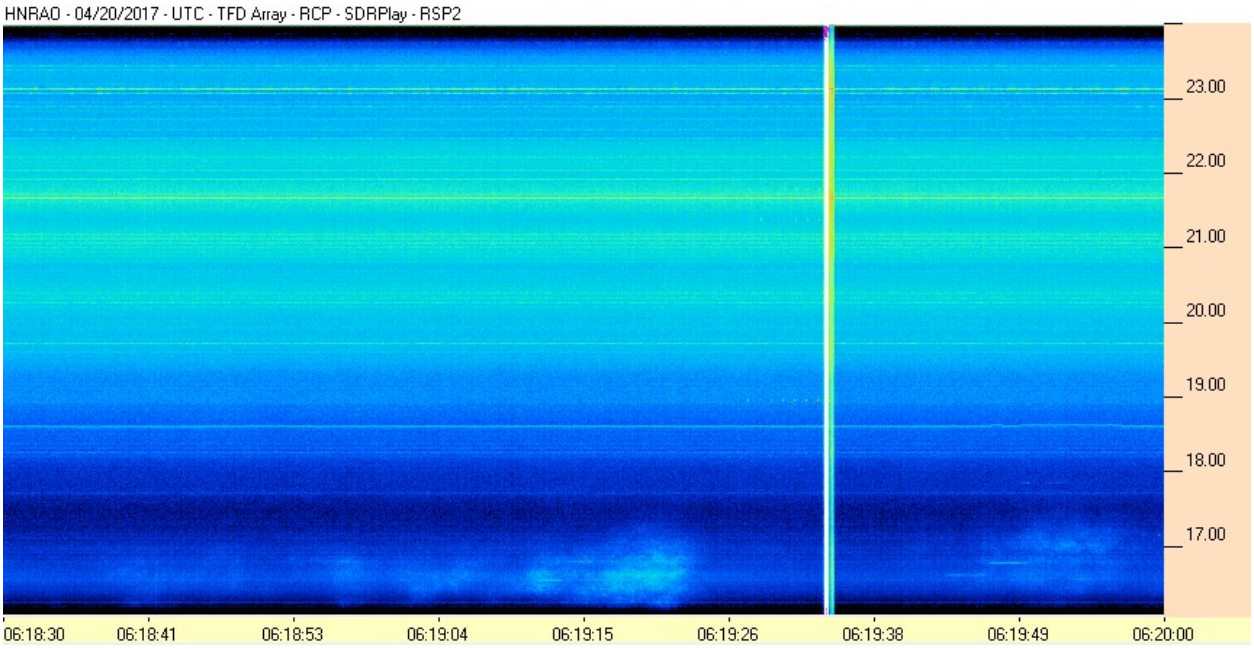

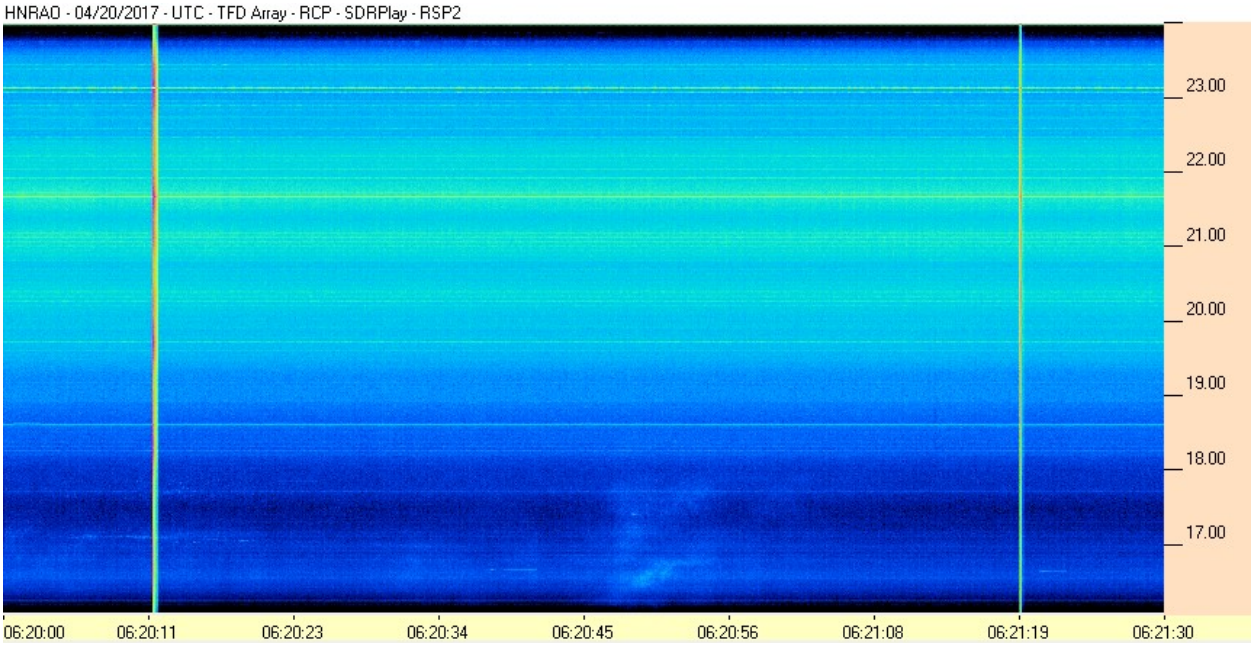

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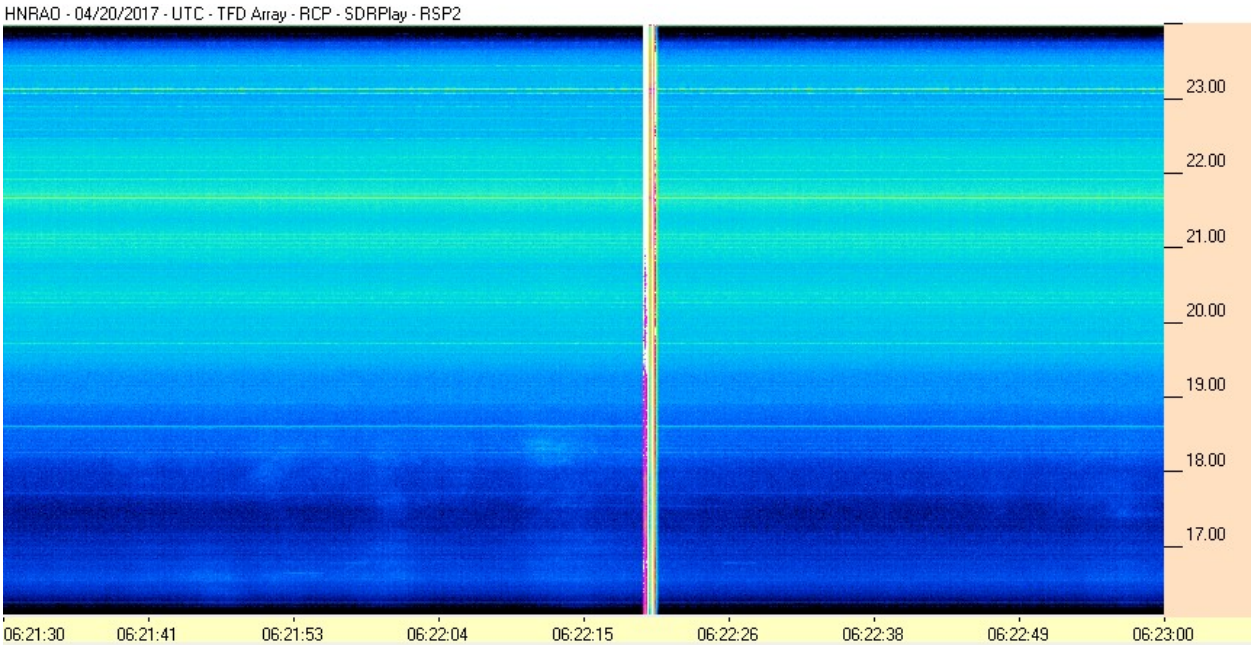
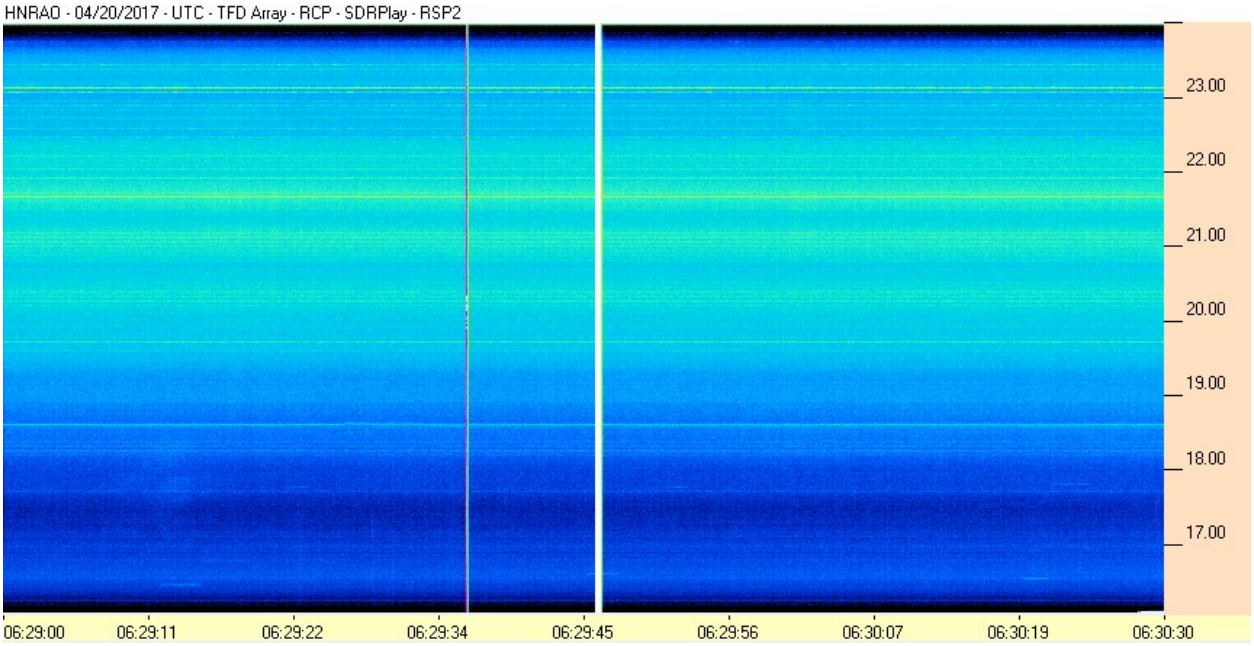
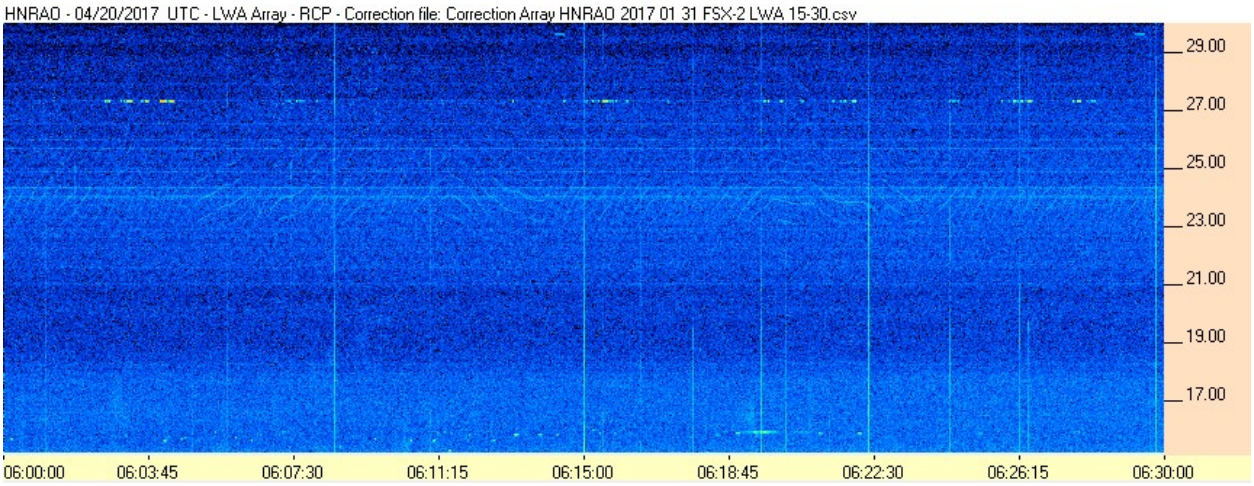
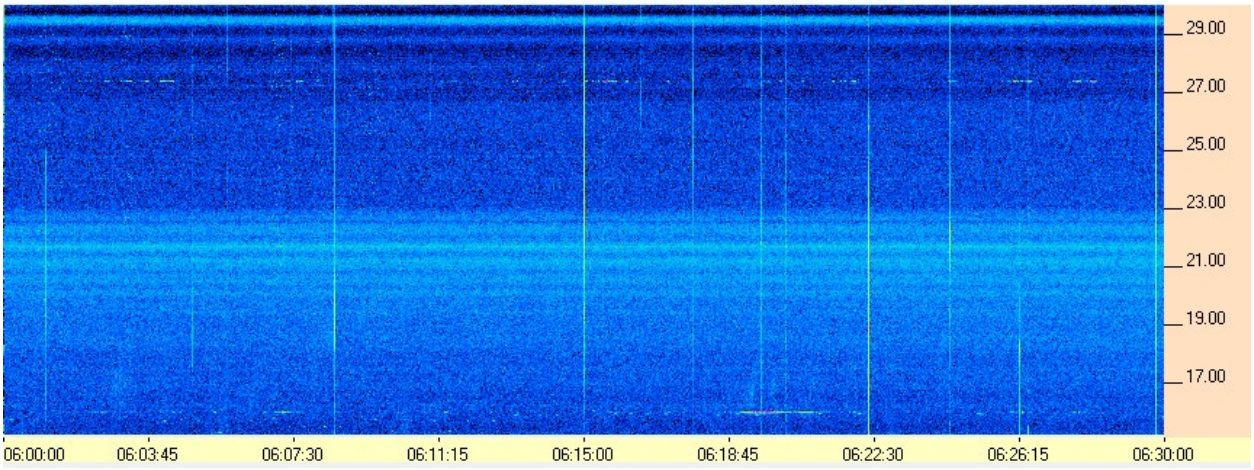




FSX-2/LWA Pair



FSX-8S/TFD Pair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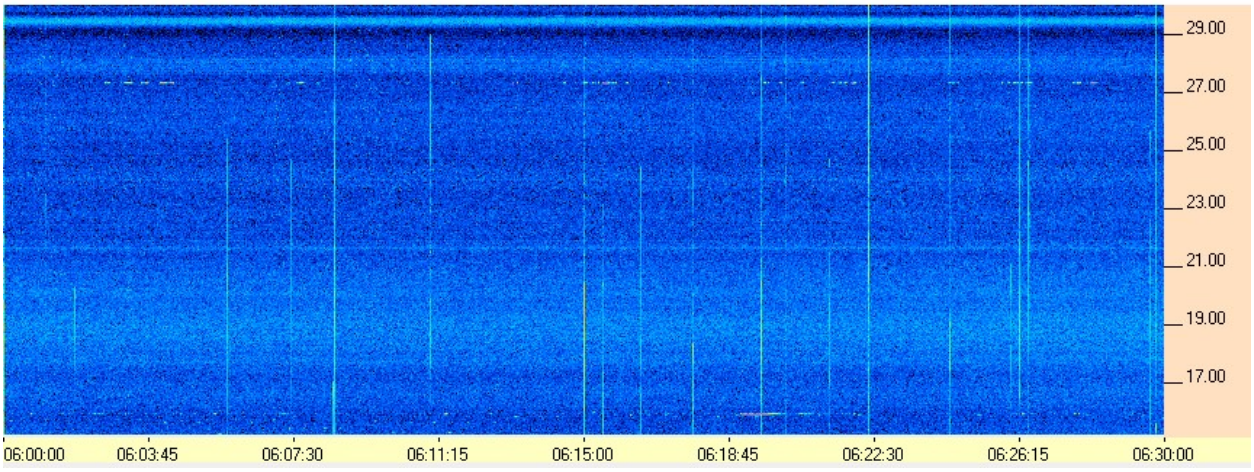
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