

**HNRAO Observing Log**  
**40.673181 N – 80.437885 W**  
**EN90sq**



**Date: July 30, 2019**

**Object: Jupiter – Non-Io-B**

**Observer: Unattended**

|                                |                |                               |               |
|--------------------------------|----------------|-------------------------------|---------------|
| <b>Start - Time UT:</b>        | <b>0301:39</b> | <b>Planetary K-index:</b>     | <b>1</b>      |
| <b>Jupiter Altitude (deg):</b> | <b>24.7</b>    | <b>Jupiter Azimuth (deg):</b> | <b>199.5</b>  |
| <b>Jupiter CML:</b>            | <b>152.5</b>   | <b>Jupiter Io Phase:</b>      | <b>227.83</b> |
| <b>Jupiter RA (hr/min):</b>    | <b>16:53</b>   | <b>Jupiter Dec (hr/min):</b>  | <b>-22:07</b> |
| <b>Hour Angle (hr/min):</b>    | <b>01:16</b>   | <b>Polarization</b>           | <b>RCP</b>    |
| <b>Sun Altitude (deg):</b>     | <b>-22.1</b>   | <b>Sun Azimuth (deg):</b>     | <b>324.5</b>  |
| <b>Sun RA (hr/min):</b>        | <b>08:29</b>   | <b>Sun Dec (hr/min):</b>      | <b>19:04</b>  |

|                                |                |                               |               |
|--------------------------------|----------------|-------------------------------|---------------|
| <b>End – Time UT:</b>          | <b>0304:21</b> | <b>De:</b>                    | <b>-2.6</b>   |
| <b>Jupiter Altitude (deg):</b> | <b>24.6</b>    | <b>Jupiter Azimuth (deg):</b> | <b>200.2</b>  |
| <b>Jupiter CML:</b>            | <b>154.13</b>  | <b>Jupiter Io Phase</b>       | <b>228.22</b> |
| <b>Hour Angle (hr/min):</b>    | <b>01:19</b>   | <b>Duration (min):</b>        | <b>3</b>      |
| <b>Sun Altitude (deg):</b>     | <b>-22.4</b>   | <b>Sun Azimuth (deg):</b>     | <b>325.1</b>  |
| <b>Max Frequency MHz</b>       | <b>21</b>      | <b>Min Frequency MHz</b>      | <b>16</b>     |

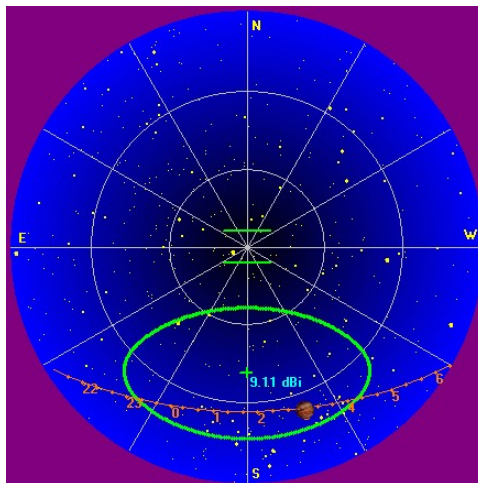
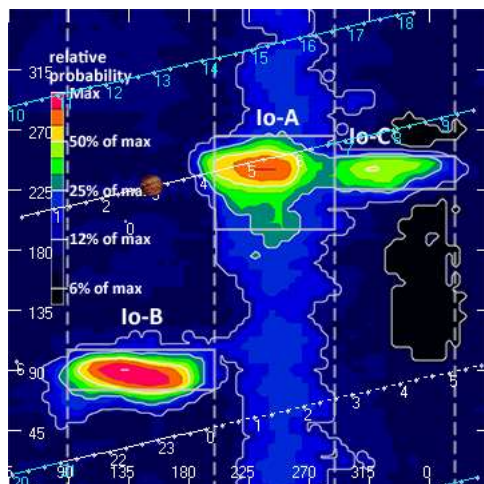
### **Observatory Configuration**

| <b>Spectrograph Receiver</b> | <b>Antenna</b> | <b>Polarization</b>      | <b>System Loss</b>   | <b>Multicoupler</b> | <b>Multicoupler port</b>     | <b>Calibrated</b>          |
|------------------------------|----------------|--------------------------|----------------------|---------------------|------------------------------|----------------------------|
| FSX-8S                       | TFD            | RCP<br>LCP               | -8.35 dB<br>-7.59 dB | #2 RCP<br>#1 LCP    | Port 1 +10dB<br>Port 1 +10dB | Twice daily<br>Twice daily |
| FSX-2                        | LWA            | RCP/LCP<br>manual select |                      | N/A                 | N/A                          | N/A                        |
| SDRPlay RSP2 #1              | TFD            | RCP                      | -8.35 dB             | #2 RCP              | Port 2 +3dB                  | Twice daily                |
| SDRPlay RSP2 #2              | TFD            | LCP                      | -7.59 dB             | #1 LCP              | Port 2 +3dB                  | Twice daily                |
| JOVE II HNRAO #2             | Jove dipoles   | Linear                   | -3.66 dB             | #3 Linear           | Port 4 +3 dB                 | 7/19/2019                  |

JOVE dipoles phased @ 32 degrees for 2018-2019 season  
 TFD array phased @ 35 degrees for 2018-2019 season  
 LWA antenna phased @ 35 degrees and orientation for observation: 45 degrees  
 Radio Sky Spectrograph software version 2.9.25  
 Radio-SkyPipe software version 2.7.33  
 Radio-Jupiter Pro software version 3.8.2

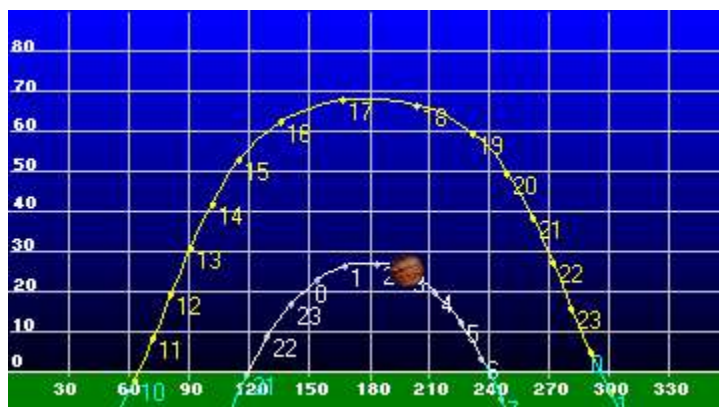
**All times are synced with a local GPS locked NTP server.**

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Beginning of Pass

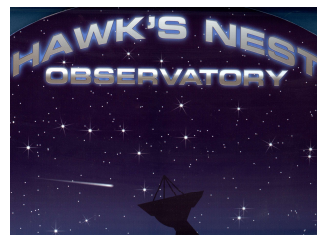
End of Pass



| 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                |

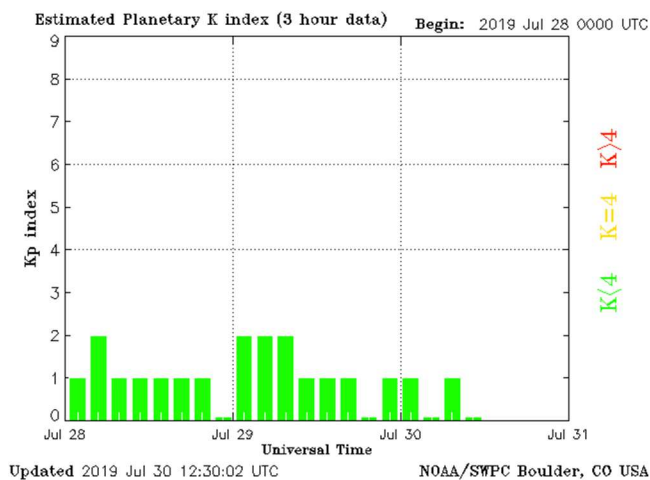
<https://www.radiosky.com/jupmodes.html>

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| Modulation Lanes Designations* |                     |
|--------------------------------|---------------------|
| L - Burst                      | S-Burst             |
| L1 – No lanes                  | S1 – No lanes       |
| L2 - Positive slope            | S2 – Positive slope |
| L3 - Cross hatched             | S3 – Cross hatched  |
| L4 – Negative slope            | S4 – Negative slope |

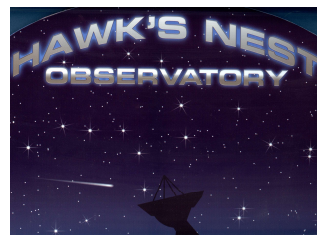
\*Modulation Lanes in the Dynamic Spectra of Jovian L-bursts, J.J. Riihimaa, Astron. & Astrophys. 4, 1970



A 3 minute non-Lo-B storm with L-bursts and L2 modulation lanes. Emissions identifiable by the L2 modulation lanes. Nothing else of note.

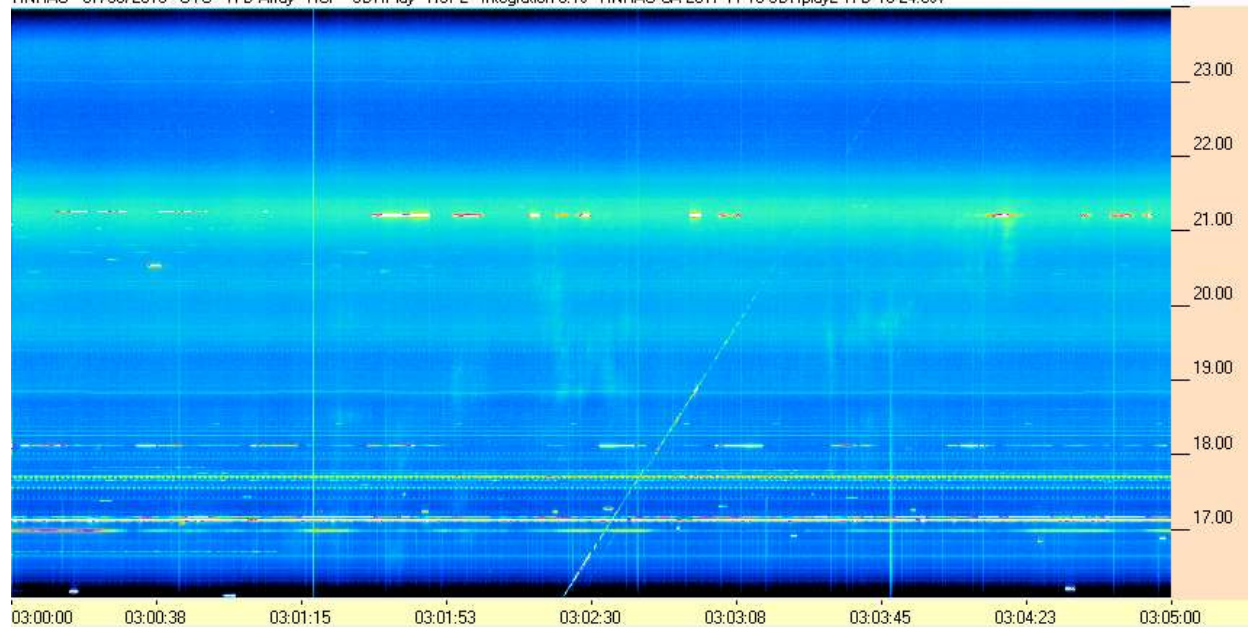
EOR

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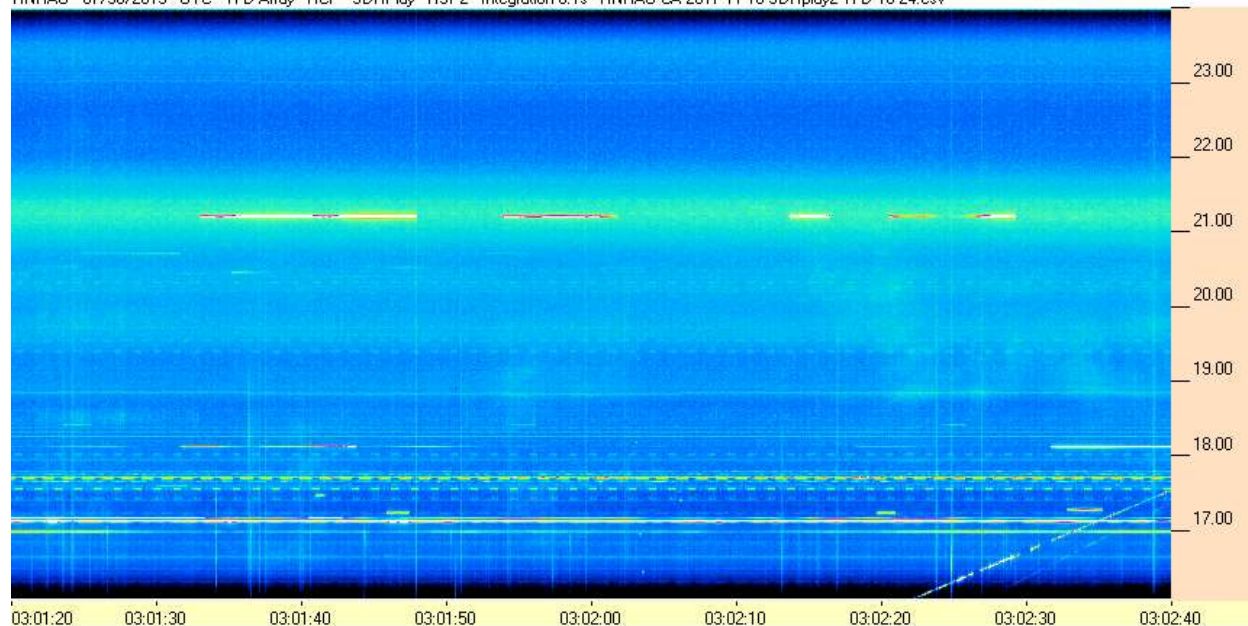


**SDRPlay RSP2 / TFD Array**

HNRAO - 07/30/2019 - UTC - TFD Array - RCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv



HNRAO - 07/30/2019 - UTC - TFD Array - RCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv

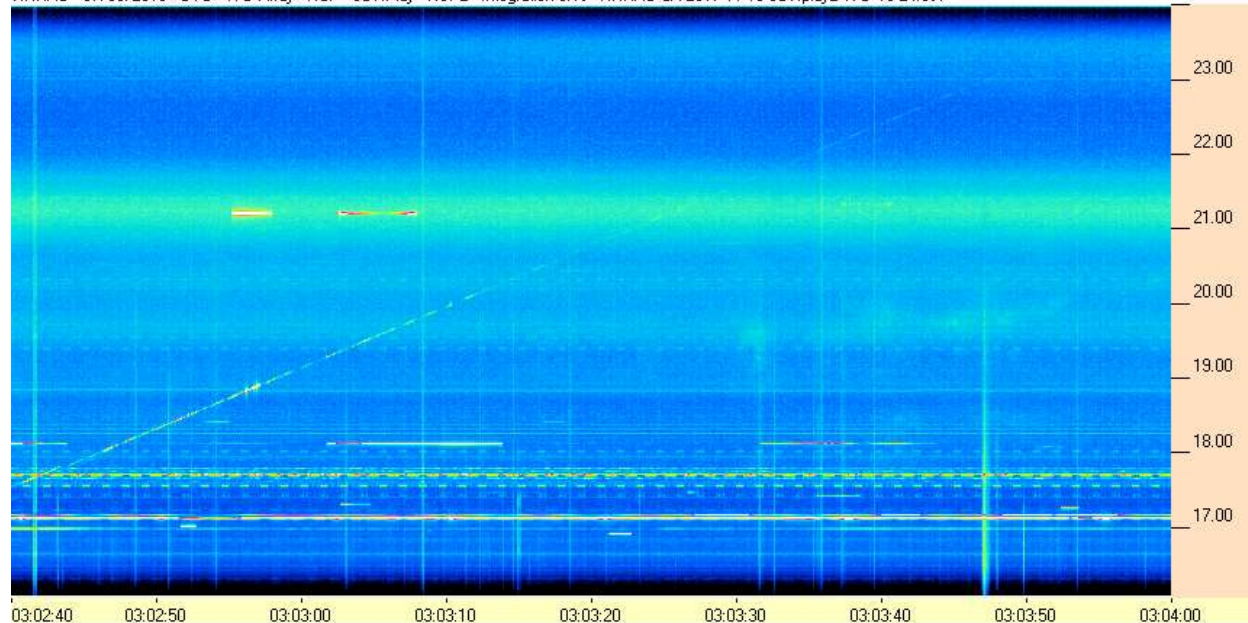




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