Fermilab Morocco Site Visit Summary

Kevin Bandura (Carnegie)
Kermit Carlson (Fermilab)
John Marriner (Fermilab)
Dave McGinnis (Fermilab)
Ralph Pasquinelli (Fermilab)

The Hosts
Hassane and Khalid

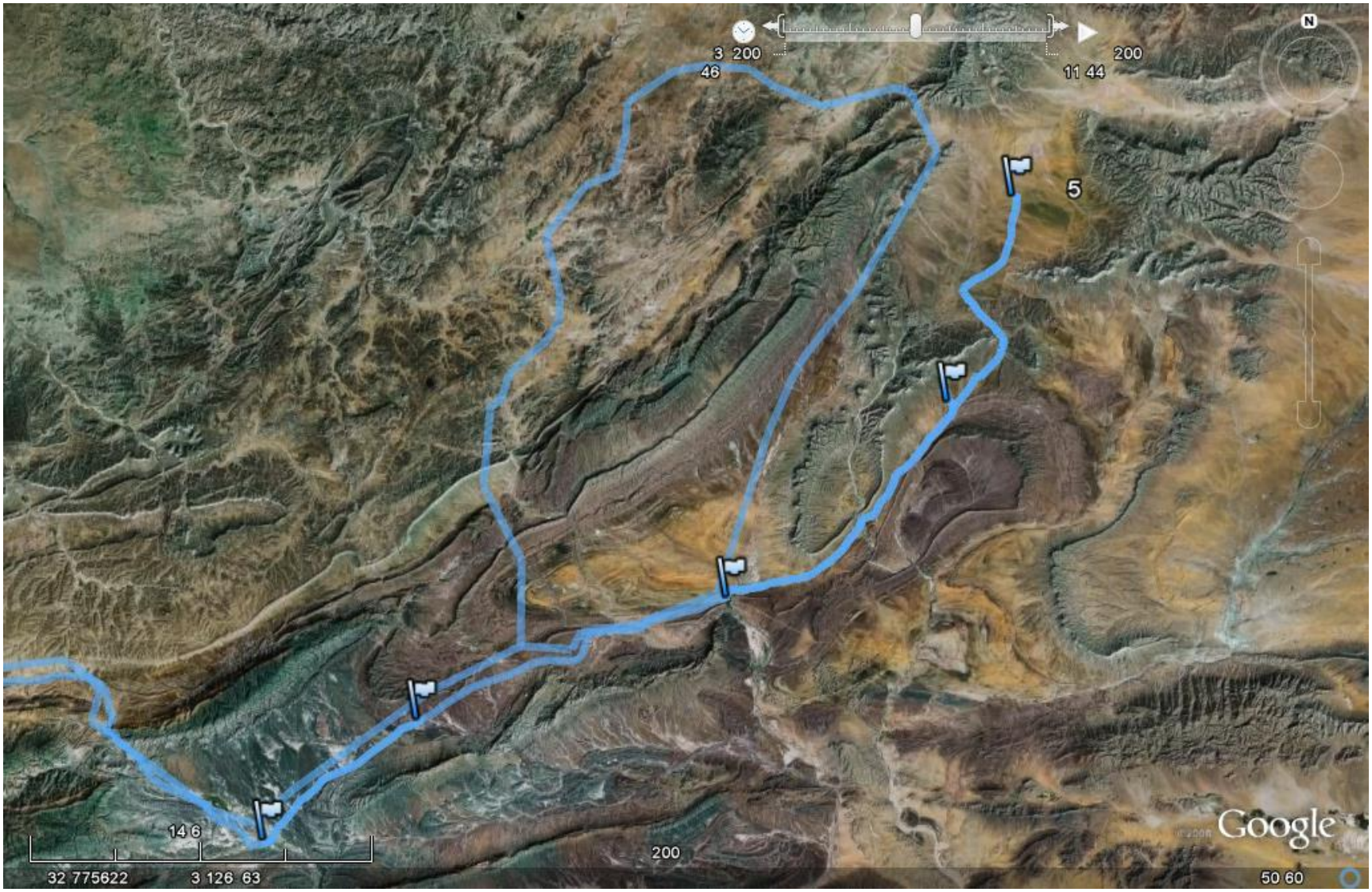
Night Measurements

Moroccan Hospitality

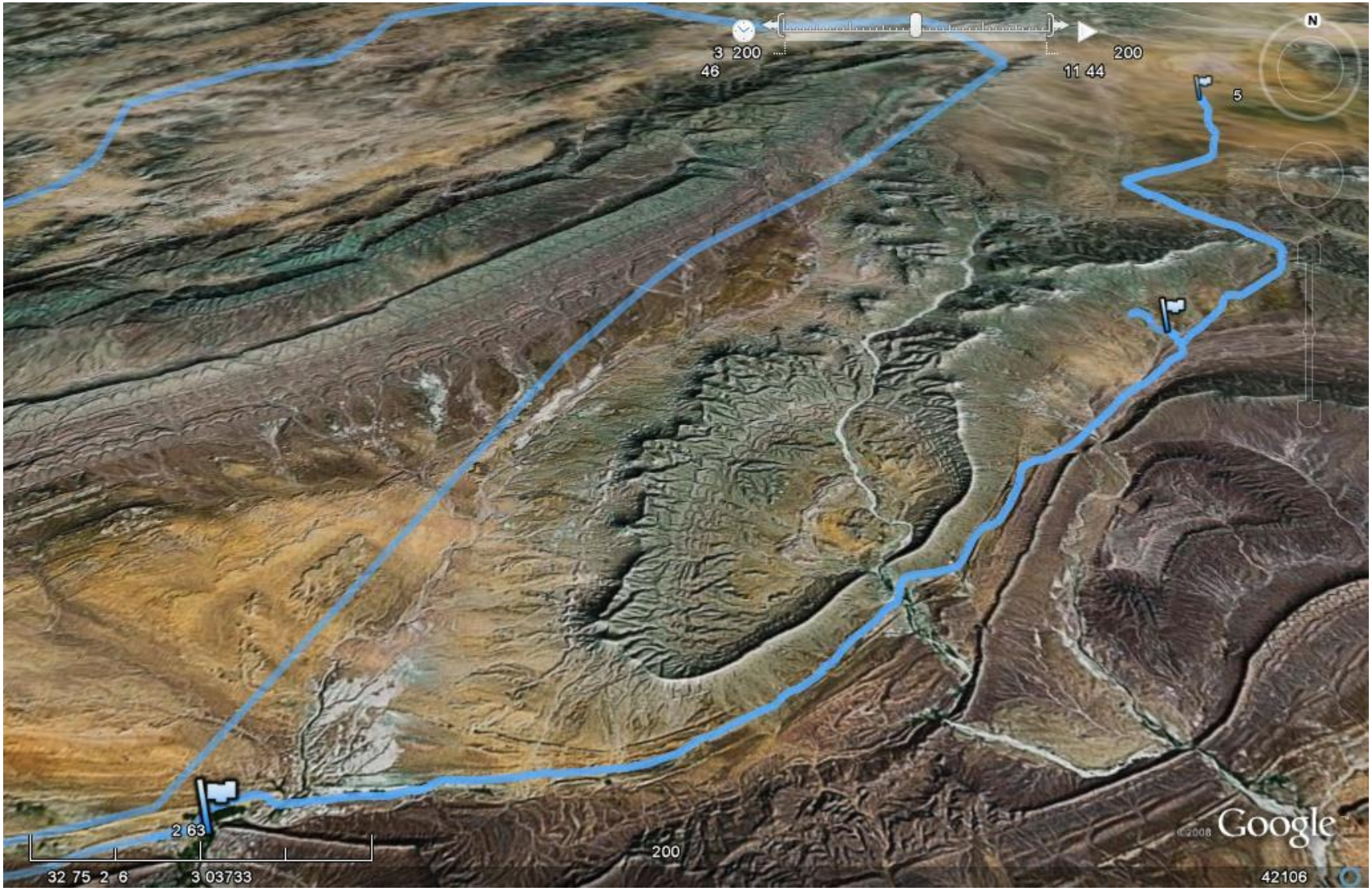
Morocco Travel Route and All Sites

Moroccan Travel Route and Measured Sites

Moroccan Desired and Actual Travel Route



Moroccan Desired and Actual Travel Route



Test Landscape

Measurements

File Name	Date	Latitude degees N	Longitude degrees W	Elevation m	Antenna	Pointing	Start Freq MHz	Stop Freq MHz	Step Freq kHz
pp8a	1/6/2009 16:55	32.60925	3.32593	1360	Discone	All	245	1255	6.25
pp5a	1/7/2009 16:54	32.79833	2.93024	1303	Discone	All	45	2055	1.5625
pp5aSS	1/7/2009 18:15	32.79833	2.93024	1303	Log Per	South	45	2055	6.25
pp5aWW	1/7/2009 19:28	32.79833	2.93024	1303	Log Per	West	45	2055	6.25
pp5aNN	1/7/2009 20:29	32.79833	2.93024	1303	Log Per	North	45	2055	6.25
pp5aEE	1/7/2009 21:23	32.79833	2.93024	1303	Log Per	East	45	2055	6.25
pp5aNE	1/7/2009 22:15	32.79833	2.93024	1303	Log Per	North East	45	2055	6.25
pp5aSE	1/7/2009 23:08	32.79833	2.93024	1303	Log Per	South East	45	2055	6.25
pp5aSW	1/8/2009 0:00	32.79833	2.93024	1303	Log Per	South West	45	2055	6.25
pp5aNW	1/8/2009 0:51	32.79833	2.93024	1303	Log Per	North West	45	2055	6.25
pp5b	1/8/2009 12:04	32.92462	2.87838	1465	Discone	All	45	2055	6.25

Normalization

$$N = \frac{P(mW)}{G_{amp} R_{bw} \left(\frac{c}{f}\right)^2 \frac{D}{4\pi} \frac{1000mW}{W}}$$

G_{amp} = Amplifier Gain x Cable Loss

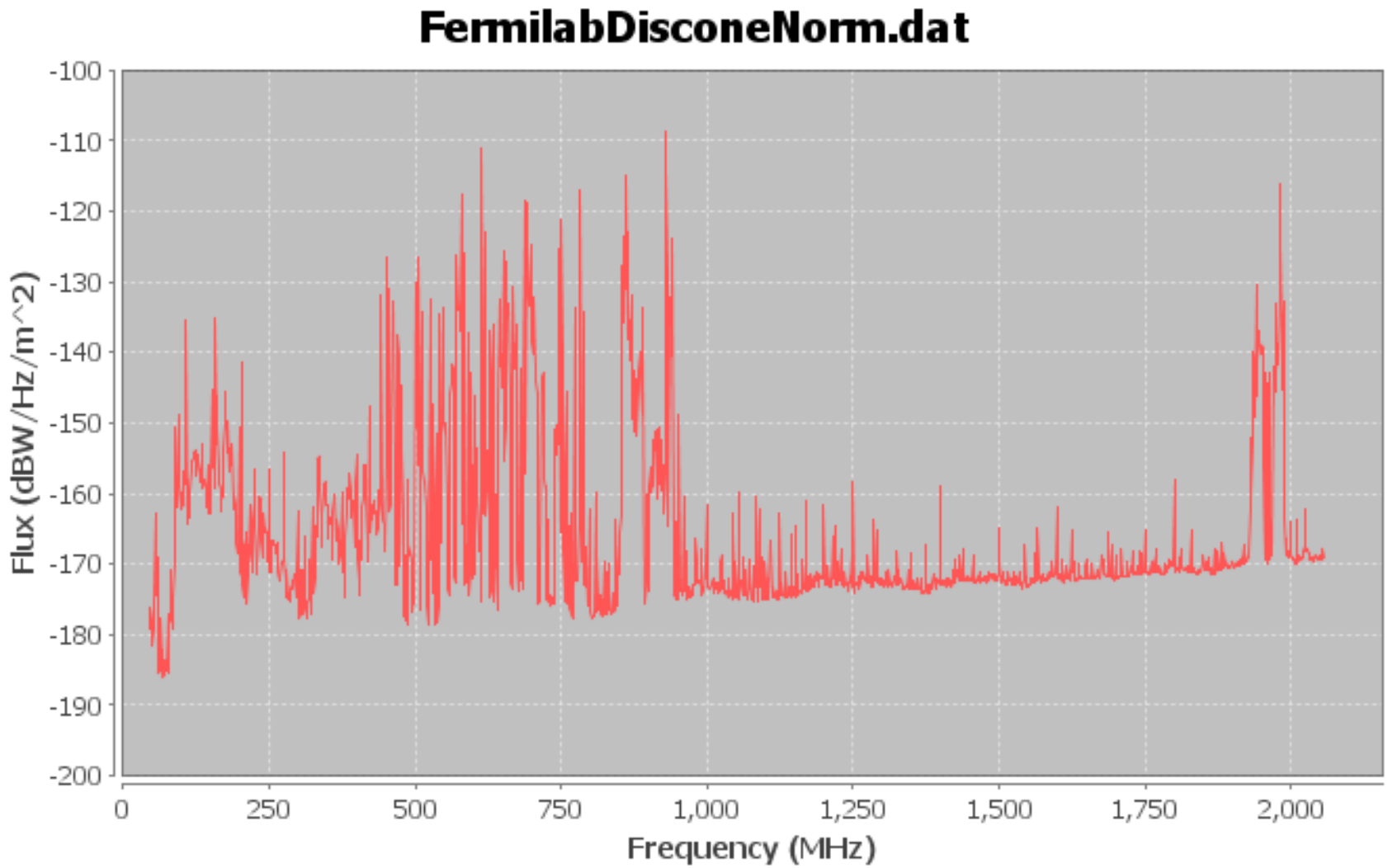
R_{bw} = Resolution Bandwidth of the spectrum (25kHz)

$\left(\frac{c}{f}\right)^2 \frac{D}{4\pi}$ = Area of the antenna

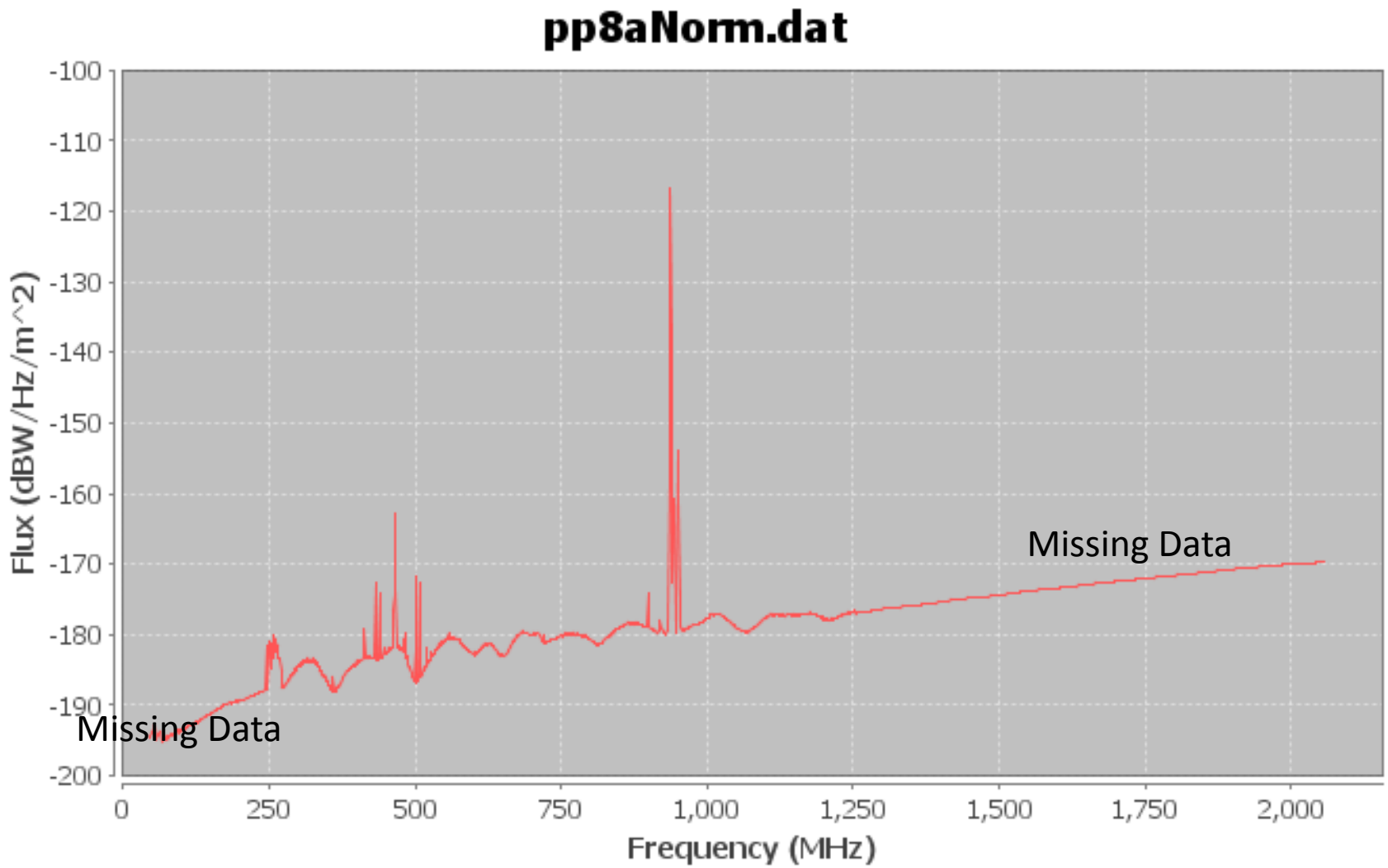
D=2dBi (Discone)

D=11dBi(Log Periodic) (~5dB half space)

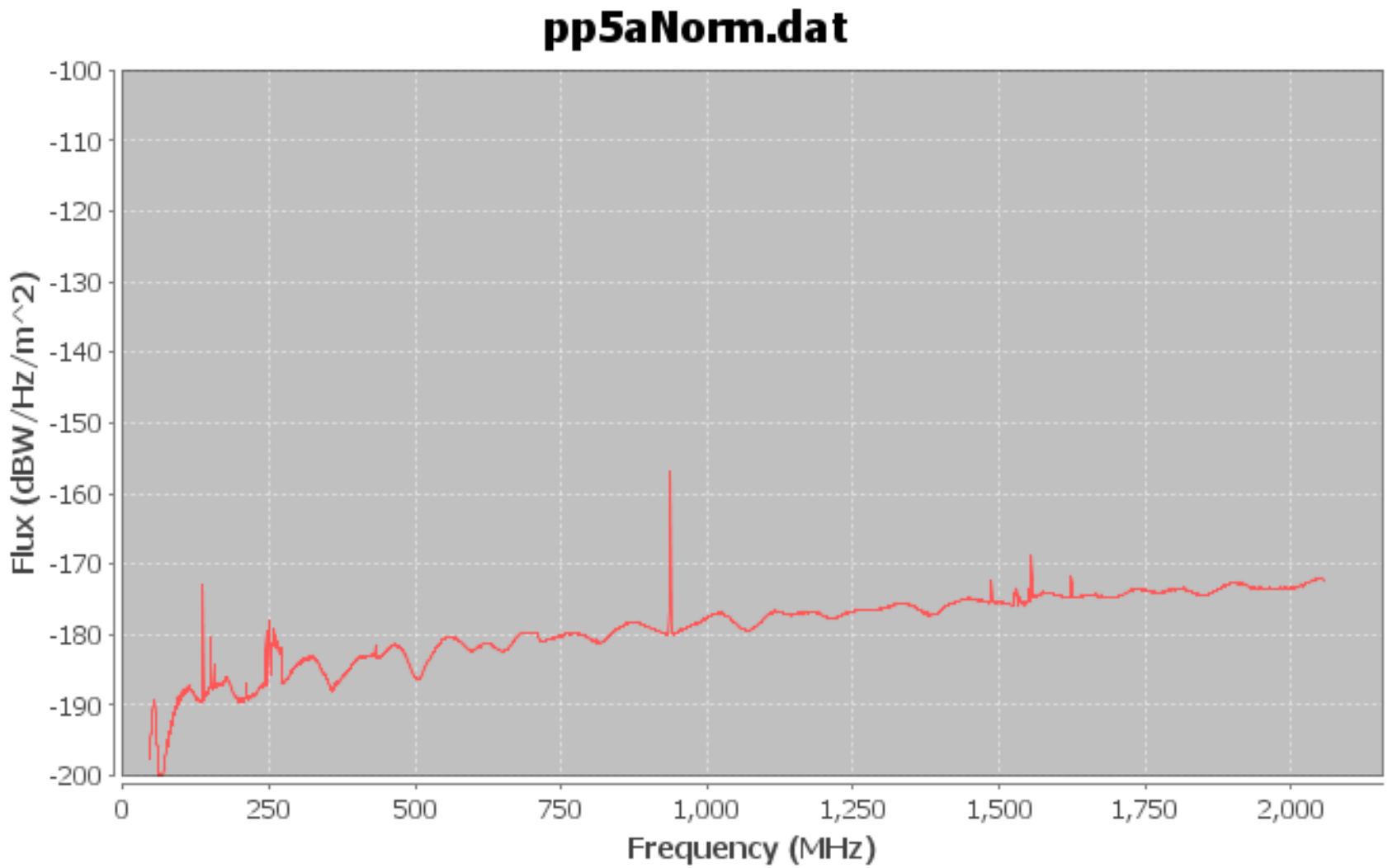
Fermilab Discone



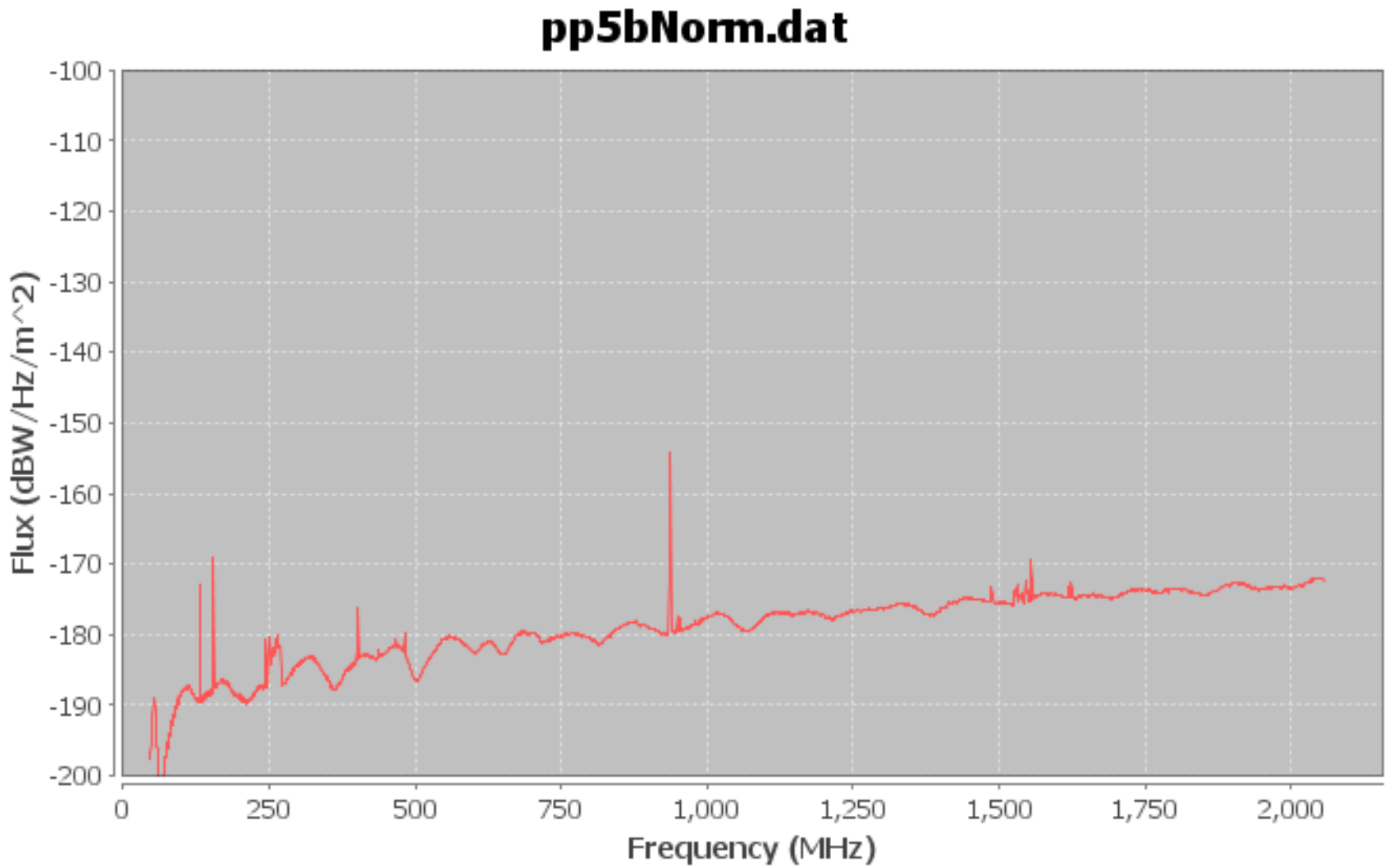
Site 8a Discone



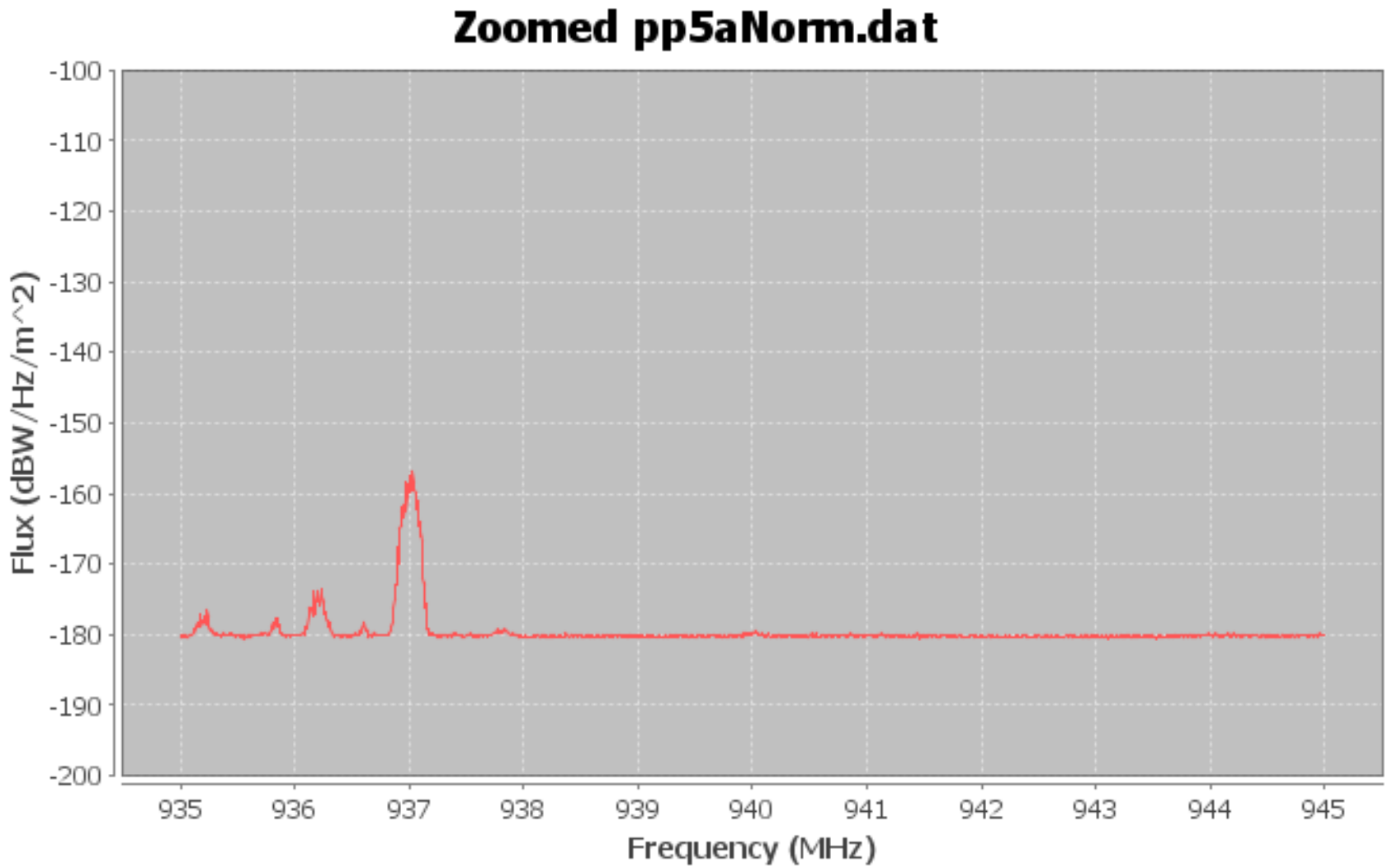
Site 5a Discone



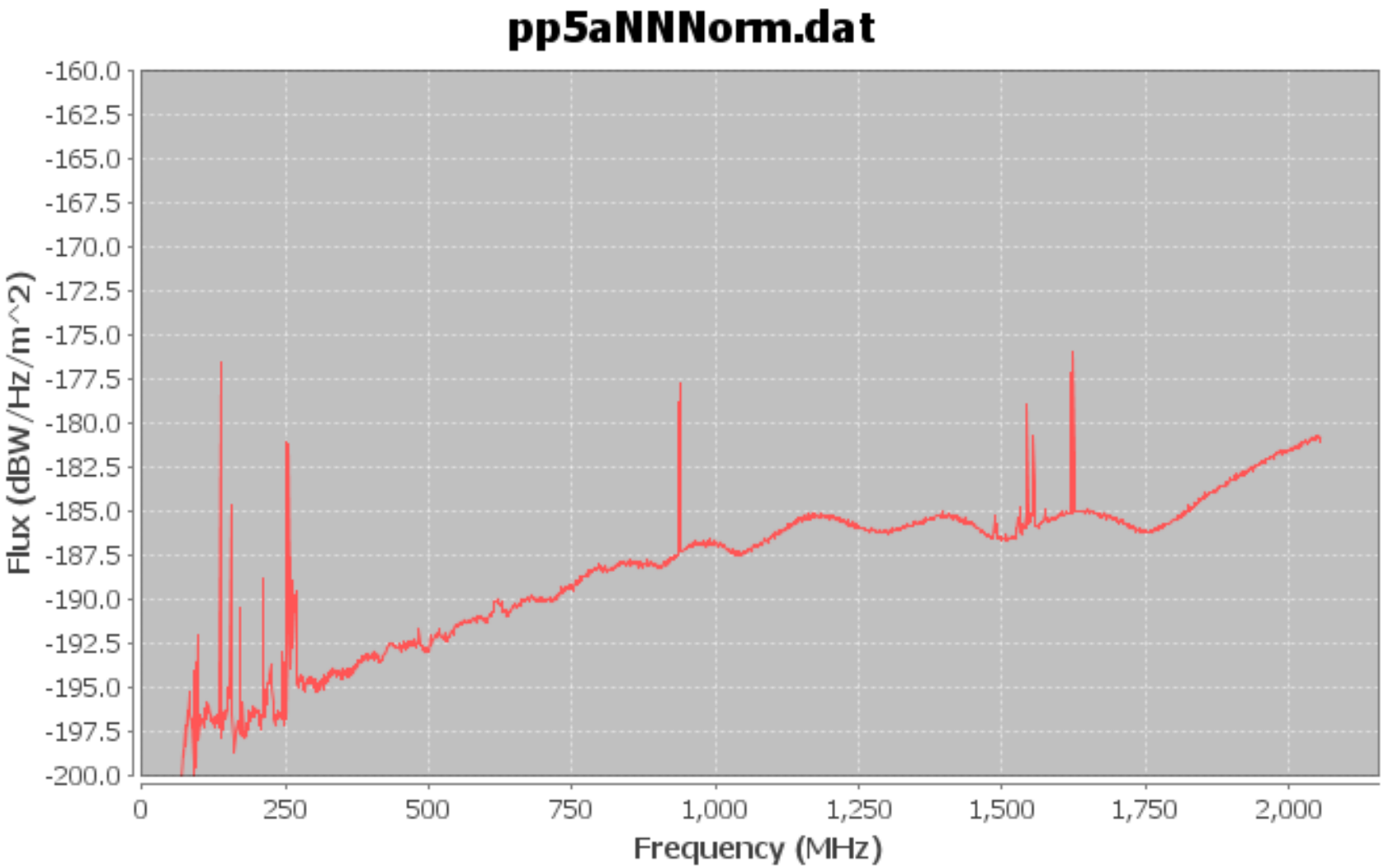
Site 5b Discone



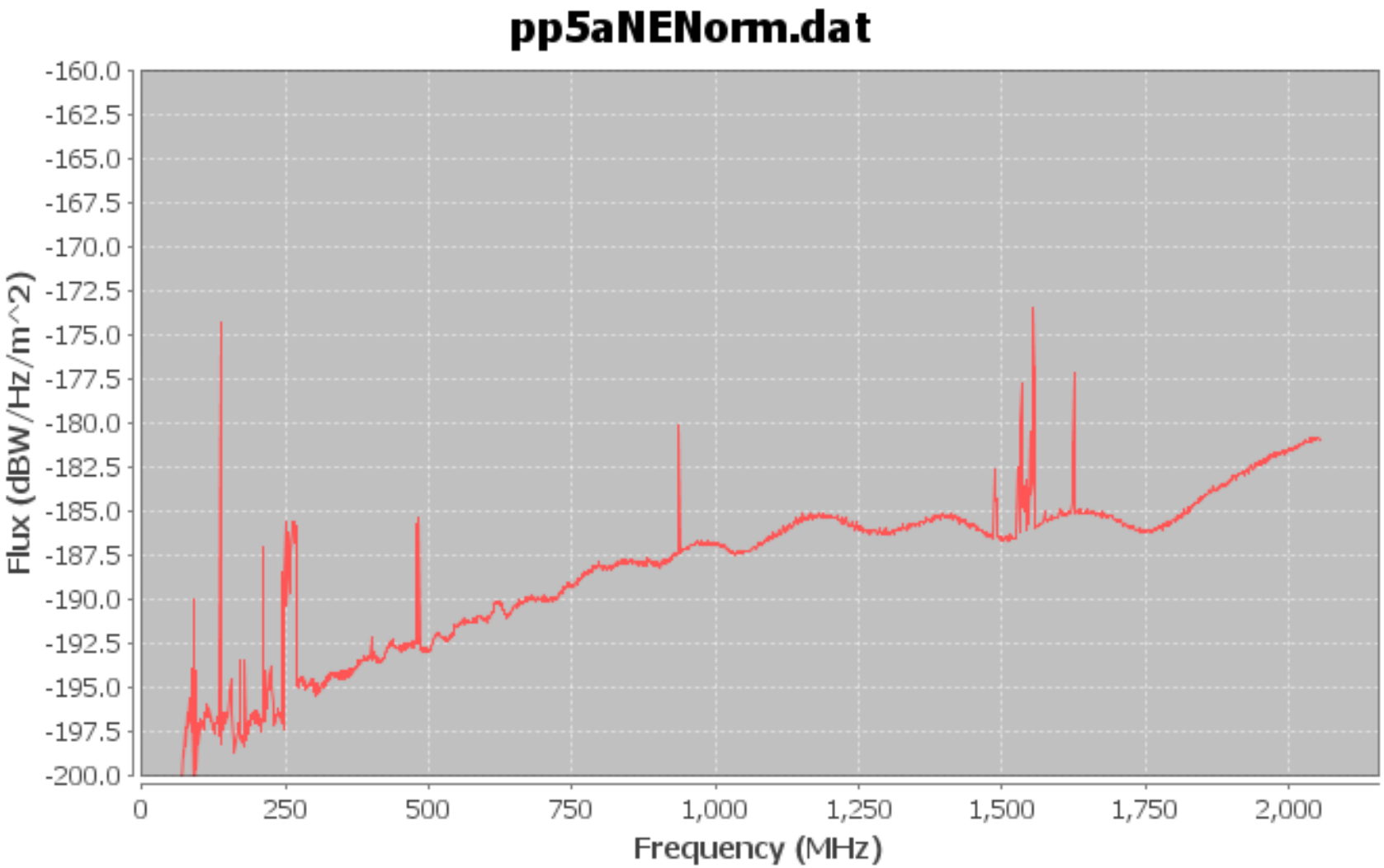
Site 5a Discone at 940 MHz



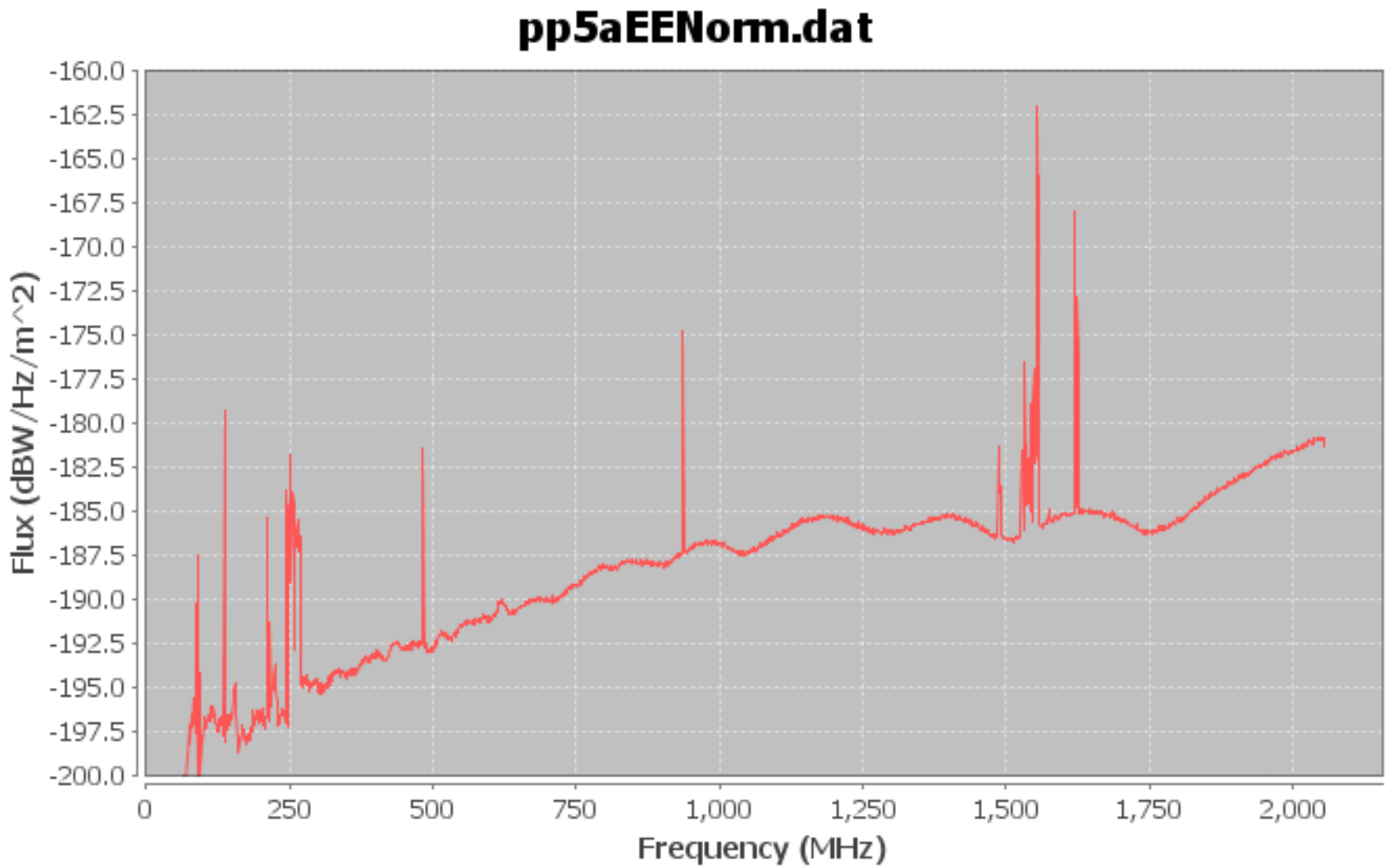
Site 5A Log Periodic North



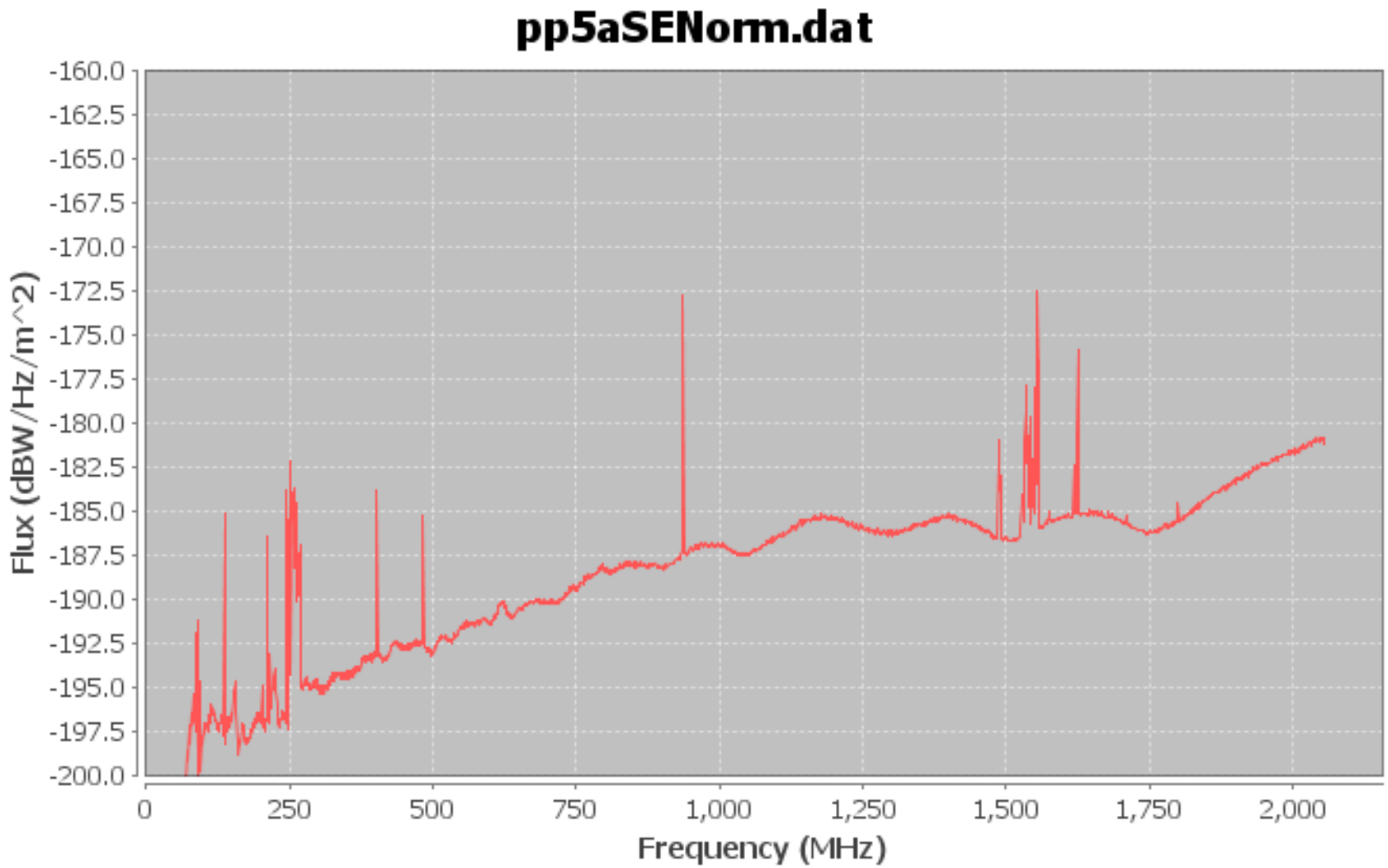
Site 5A Log Periodic North-East



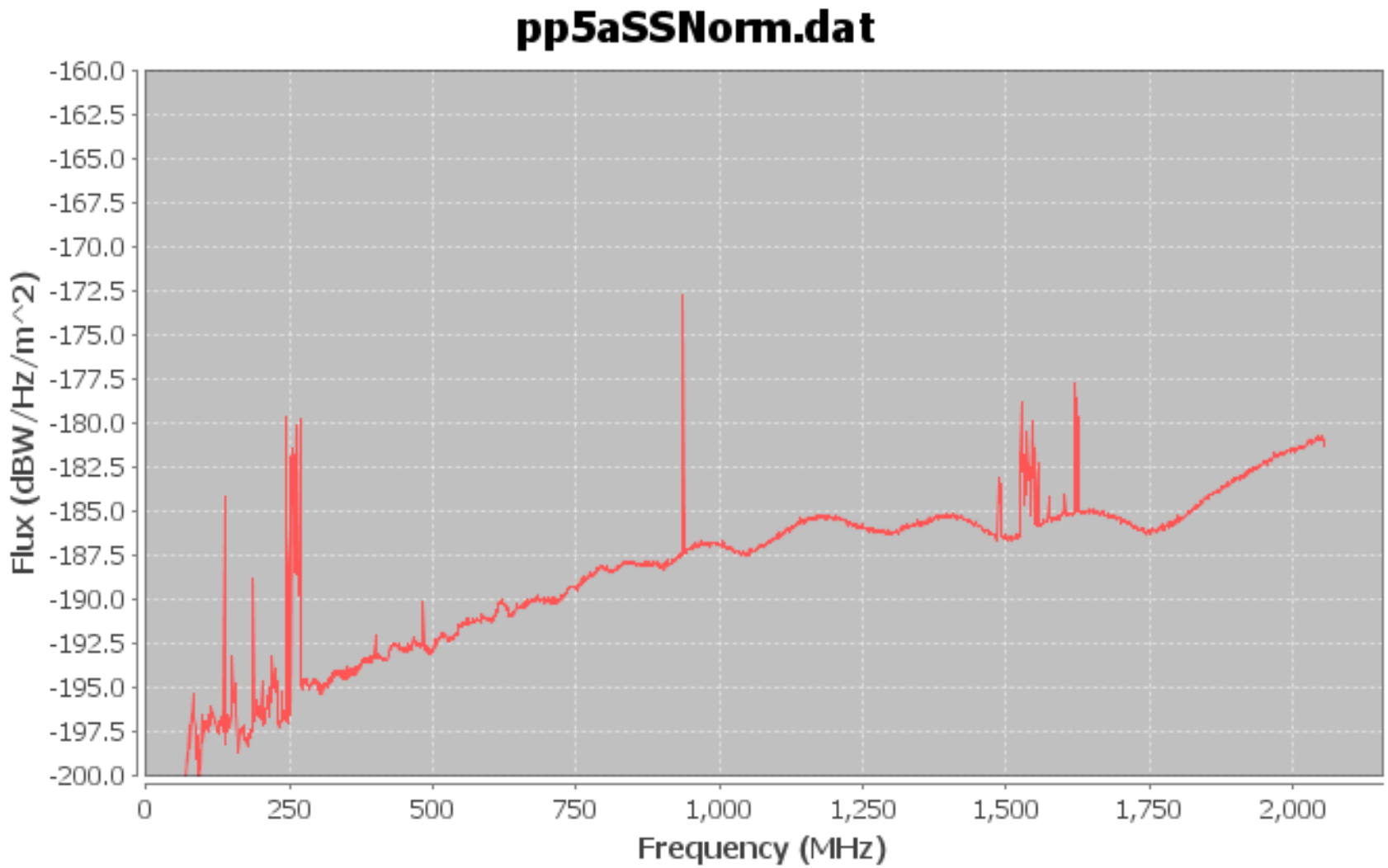
Site 5A Log Periodic East



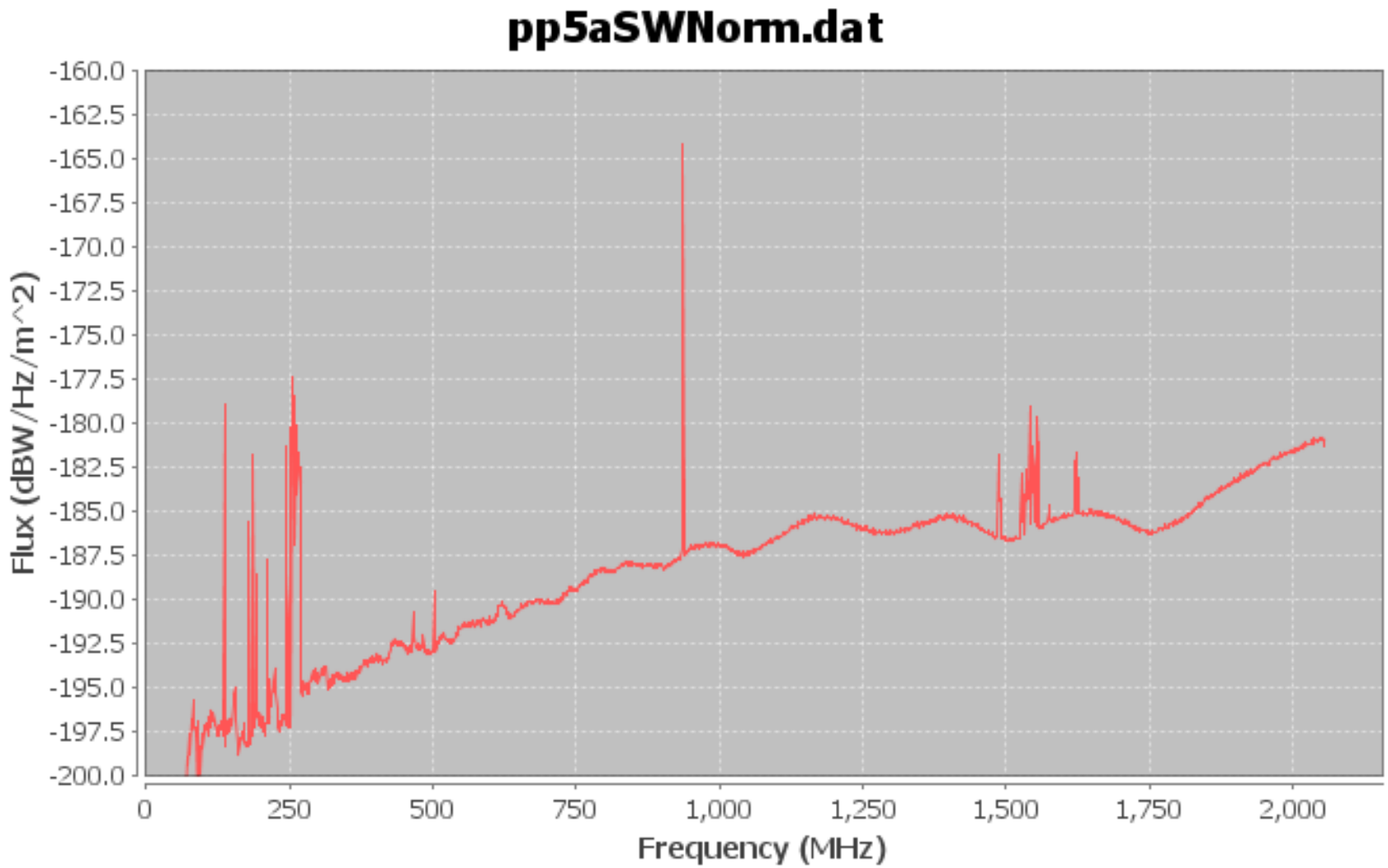
Site 5A Log Periodic South-East



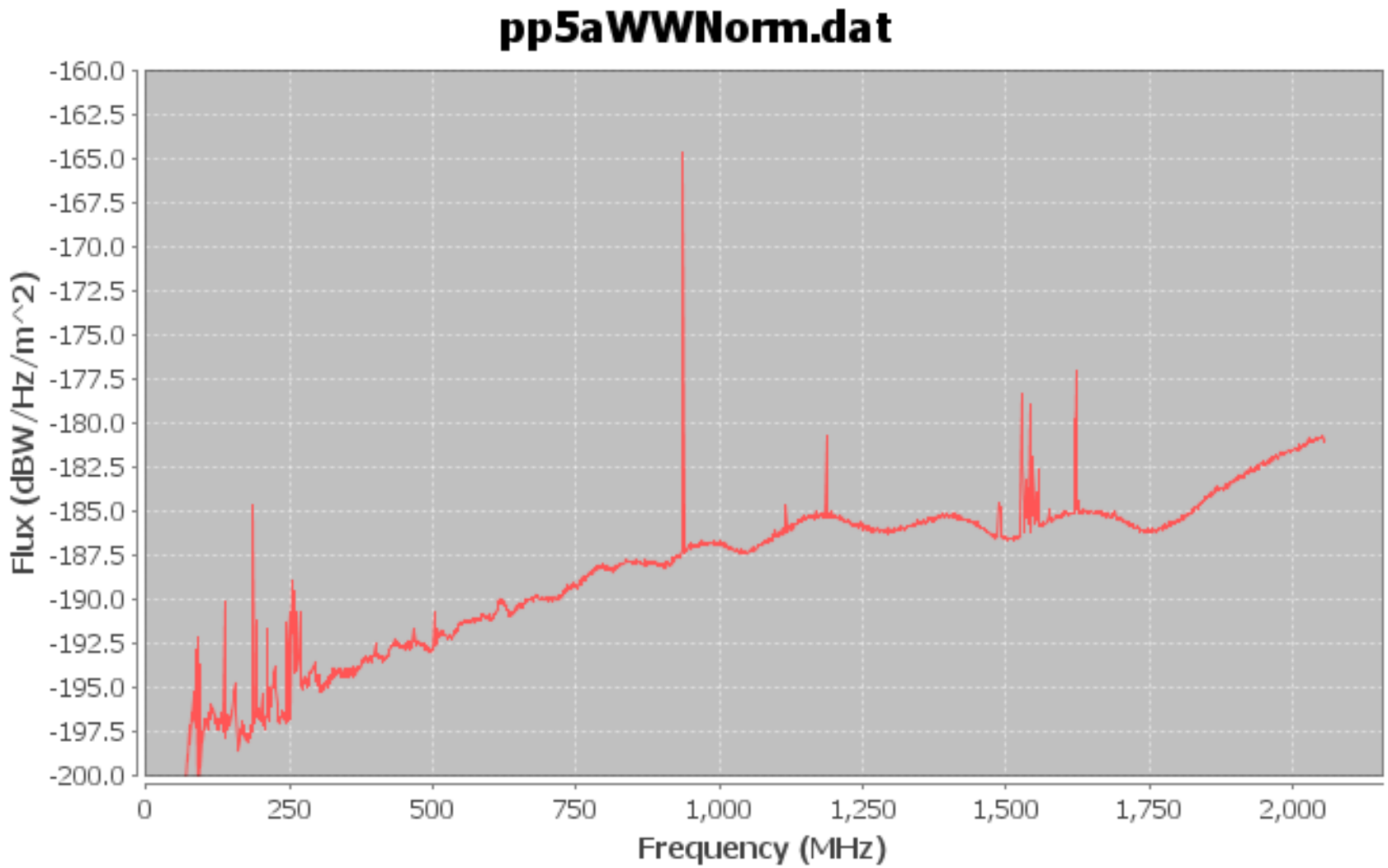
Site 5A Log Periodic South



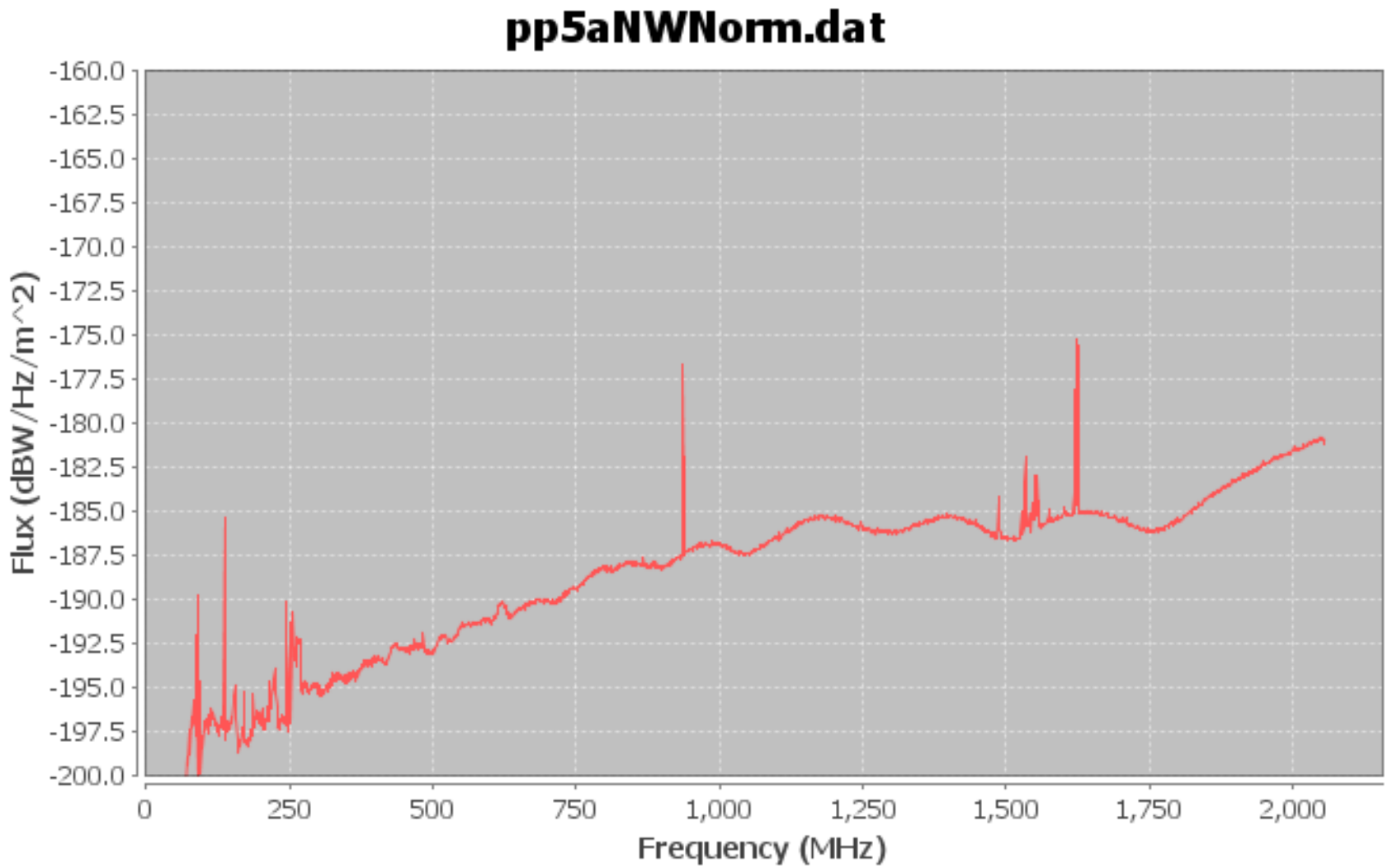
Site 5A Log Periodic South-West



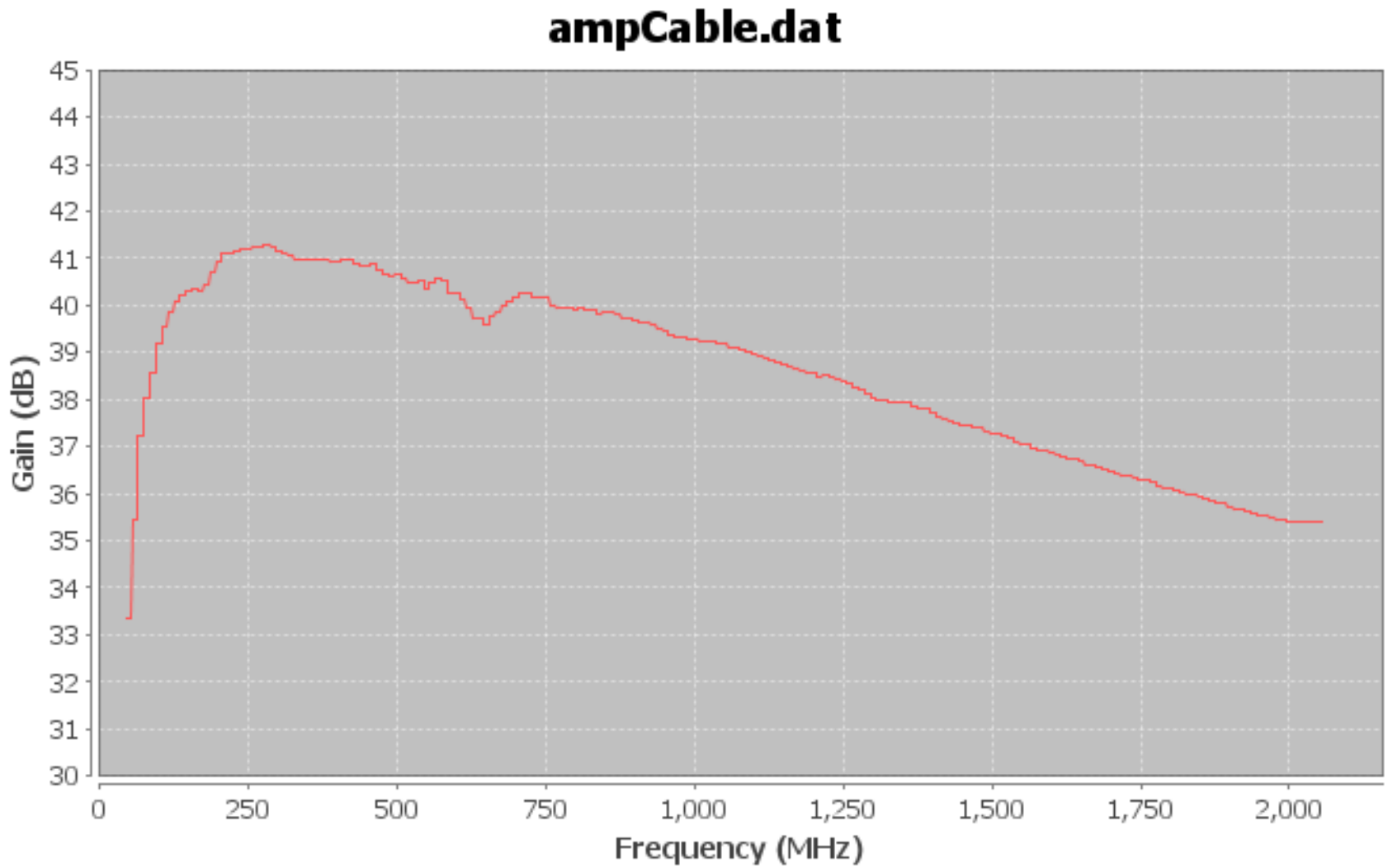
Site 5A Log Periodic West



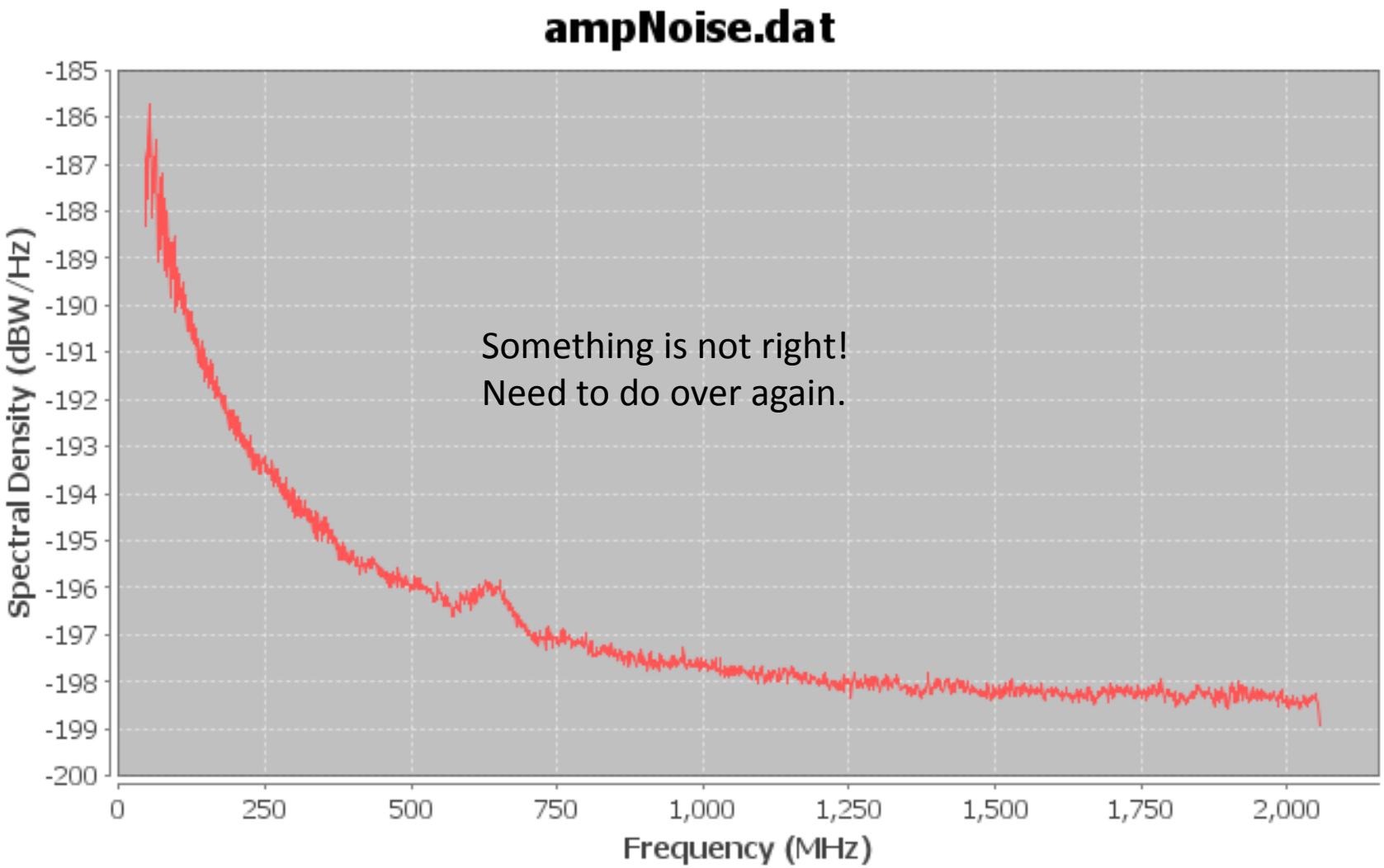
Site 5A Log Periodic North-West



Amplifier & Cable Transfer Function



Amplifier Noise



Next Steps in Analysis

- Re-do amplifier noise measurement.
- Calculate integrated power of selected RFI spikes
- Plot integrated power of selected RFI spikes as a function of antenna pointing