# PRELIMINARY REPORT OF 041228

ATTENTION: This report is automatically generated no comments are provided on data analysis

### last update on Mon Jan 10 09:41:52 GMT 2005


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## 1 - Introduction

This report is based on the analysis of wave mode level-1 cross spectra (ASA_WVS_1P), global monitoring products (ASA_GM1_1P), which are the available few hours after the acquisition, on the browse (BP) products and
on the Module Stepping (MS) product.

## 2 - Summary

### 2.1 - Instrument Unavailability

ASAR was in heater refuse mode due to an ICB command error.
Unavailability started on 27 Dec 2004 01:50:26.000 UTC (Orbit = 14772) to 27-DEC-2004 07:16:17 UTC

### 2.2 - Auxiliary files

**Summary of the auxiliary files used from 2005-01-09 00:00:00 to 2005-01-10 09:41:52**

| PDHS-K | | | | | |
|---|---|---|---|---|---|
| **AUXILIARY FILE** | **WVS** | **GM1** | **IMM** | **APM** | **WSM** |
| ASA_INS_AXVIEC20041215_180208_20030211_000000_20051231_000000 | 28 | 40 | 5 | 1 | 4 |
| ASA_XCA_AXVIEC20041027_164238_20040412_000000_20051231_000000 | 28 | 40 | 5 | 1 | 4 |
| ASA_CON_AXVIEC20041215_175442_20030601_000000_20051231_000000 | 28 | 40 | 5 | 1 | 4 |
| ASA_XCH_AXVIEC20041215_180350_20020301_000000_20051231_000000 | 28 | 40 | 5 | 1 | 4 |

| PDHS-E | | | | | |
|---|---|---|---|---|---|
| **AUXILIARY FILE** | **WVS** | **GM1** | **IMM** | **APM** | **WSM** |
| ASA_INS_AXVIEC20041215_180208_20030211_000000_20051231_000000 | 46 | 46 | 1 | 6 | 1 |
| ASA_XCA_AXVIEC20041027_164238_20040412_000000_20051231_000000 | 46 | 46 | 1 | 6 | 1 |
| ASA_CON_AXVIEC20041215_175442_20030601_000000_20051231_000000 | 46 | 46 | 1 | 6 | 1 |
| ASA_XCH_AXVIEC20041215_180350_20020301_000000_20051231_000000 | 46 | 46 | 1 | 6 | 1 |

### 2.3 - Browse Visual Inspection

### 2.4 - Data Analysis

-Stable wave internal calibration pulses gain and phase.
-Stable raw data statistics.
-Nominal Doppler behavior.

## 3 - Module Stepping Mode

The MS mode provides an internal health check on an individual module basis.
The purpose of this mode is to identify to identify any malfunctionning modules and to identify modules for which calibration offsets are to be applied.
No anomalies observed on available MS products:

| Polarisation | Start Time |
|---|---|
| V | 20041225 064402 |
| H | 20041226 061225 |

**MSM in V/V polarisation**

| Pre-launch Reference | DDS-B (2003-06-12) reference |
|---|---|
| ☒ | ☒ |
| ☒ | ☒ |

| | |
|---|---|
| ☒ | ☒ |
| ☒ | ☒ |

**MSM in H/H polarisation**

| Pre-launch Reference | DDS-B (2003-06-12) reference |
|---|---|
| ☒ | ☒ |
| ☒ | ☒ |
| ☒ | ☒ |
| ☒ | ☒ |

# 4 - Internal calibration Results

No anomalies observed.

## 4.1 - Daily statistics

### 4.1.1 - Evolution for WVS

| Evolution of cal pulses for WVS |
|---|
| ☒ |
| ☒ |

### 4.1.2 - Evolution for GM1

| Evolution of cal pulses for GM1 |
|---|
| ☒ |
| ☒ |

## 4.2 - Cyclic statistics

### 4.2.1 - Evolution for WVS

| Evolution of cal pulses for WVS |
| --- |
| |

### P1a Cyclic statistics

| row | pulse | mean (dB) | stdev (dB) | slope(dB/cycle) |
| --- | --- | --- | --- | --- |

### P1 Cyclic statistics

| row | pulse | mean (dB) | stdev (dB) | slope(dB/cycle) |
| --- | --- | --- | --- | --- |
| 3 | P1 | -3.456359 | 0.029325 | 0.053260 |
| 7 | P1 | -3.098686 | 0.024636 | 0.038037 |
| 11 | P1 | -4.645360 | 0.045899 | -0.024009 |
| 15 | P1 | -5.665599 | 0.038853 | -0.026299 |
| 19 | P1 | -3.650098 | 0.006021 | -0.019020 |
| 22 | P1 | -4.575012 | 0.017002 | 0.014301 |
| 26 | P1 | -4.937560 | 0.024097 | 0.014831 |
| 30 | P1 | -7.111671 | 0.013646 | -0.042035 |
| 3 | P1 | -15.948070 | 0.112782 | 0.020432 |
| 7 | P1 | -15.511132 | 0.163663 | 0.036437 |
| 11 | P1 | -20.736044 | 0.540851 | -0.245691 |
| 15 | P1 | -11.622050 | 0.095284 | -0.010391 |
| 19 | P1 | -14.155821 | 0.033790 | -0.030105 |
| 22 | P1 | -16.096016 | 0.465725 | 0.227306 |
| 26 | P1 | -17.766314 | 0.263327 | 0.152136 |
| 30 | P1 | -17.890810 | 0.306723 | 0.027418 |

### P2 Cyclic statistics

| row | pulse | mean (dB) | stdev (dB) | slope(dB/cycle) |
| --- | --- | --- | --- | --- |
| 3 | P2 | -22.354010 | 0.086073 | 0.055549 |
| 7 | P2 | -22.573427 | 0.169414 | 0.085829 |
| 11 | P2 | -14.902974 | 0.177343 | 0.164506 |
| 15 | P2 | -7.165026 | 0.116958 | 0.073432 |
| 19 | P2 | -9.729764 | 0.204774 | 0.089574 |
| 22 | P2 | -17.177025 | 0.099145 | 0.085443 |
| 26 | P2 | -16.530483 | 0.113968 | 0.033595 |

| | | | | |
|---|---|---|---|---|
| 30 | P2 | -18.972336 | 0.083182 | 0.077177 |

**P3 Cyclic statistics**

| row | pulse | mean (dB) | stdev (dB) | slope(dB/cycle) |
|---|---|---|---|---|
| 3 | P3 | -8.208827 | 0.007115 | 0.003375 |
| 7 | P3 | -8.208879 | 0.007118 | 0.003686 |
| 11 | P3 | -8.208879 | 0.007117 | 0.003665 |
| 15 | P3 | -8.208863 | 0.007115 | 0.003581 |
| 19 | P3 | -8.208845 | 0.007115 | 0.003459 |
| 22 | P3 | -8.208815 | 0.007116 | 0.003294 |
| 26 | P3 | -8.208834 | 0.007115 | 0.003400 |
| 30 | P3 | -8.208395 | 0.007142 | 0.005413 |

### 4.2.2 - Evolution for GM1

| Evolution of cal pulses for GM1 |
|---|
| ☒ |

**P1a Cyclic statistics**

| row | pulse | mean (dB) | stdev (dB) | slope(dB/cycle) |
|---|---|---|---|---|

**P1 Cyclic statistics**

| row | pulse | mean (dB) | stdev (dB) | slope(dB/cycle) |
|---|---|---|---|---|
| 3 | P1 | -2.848138 | 0.111407 | 0.032663 |
| 7 | P1 | -2.980281 | 0.064690 | 0.030196 |
| 11 | P1 | -3.945280 | 0.048557 | -0.018155 |
| 15 | P1 | -3.518842 | 0.078649 | 0.009239 |
| 19 | P1 | -3.607435 | 0.013040 | -0.017956 |
| 22 | P1 | -5.616555 | 0.069130 | -0.057002 |
| 26 | P1 | -6.511249 | 0.023353 | -0.045711 |
| 30 | P1 | -6.303619 | 0.043786 | -0.003767 |
| 3 | P1 | -10.700169 | 0.059168 | -0.205370 |
| 7 | P1 | -10.120179 | 0.156988 | -0.059285 |
| 11 | P1 | -12.423753 | 0.199108 | -0.137426 |

| | | | | |
|---|---|---|---|---|
| 15 | P1 | -11.725865 | 0.099236 | -0.047920 |
| 19 | P1 | -15.640315 | 0.049002 | -0.019425 |
| 22 | P1 | -24.138897 | 2.068337 | 0.141933 |
| 26 | P1 | -15.047259 | 0.389522 | 0.267653 |
| 30 | P1 | -20.132681 | 0.933147 | 0.161436 |

**P2 Cyclic statistics**

| row | pulse | mean (dB) | stdev (dB) | slope(dB/cycle) |
|---|---|---|---|---|
| 3 | P2 | -18.032656 | 0.036870 | 0.082592 |
| 7 | P2 | -22.618324 | 0.031133 | 0.105177 |
| 11 | P2 | -10.692492 | 0.035594 | 0.205433 |
| 15 | P2 | -5.061032 | 0.024925 | 0.027899 |
| 19 | P2 | -6.963401 | 0.035462 | 0.043247 |
| 22 | P2 | -7.306838 | 0.027303 | 0.076275 |
| 26 | P2 | -23.960266 | 0.018966 | 0.009556 |
| 30 | P2 | -22.028259 | 0.021352 | 0.101432 |

**P3 Cyclic statistics**

| row | pulse | mean (dB) | stdev (dB) | slope(dB/cycle) |
|---|---|---|---|---|
| 3 | P3 | -8.041819 | 0.002939 | 0.001891 |
| 7 | P3 | -8.041821 | 0.002940 | 0.002061 |
| 11 | P3 | -8.041757 | 0.002932 | 0.002330 |
| 15 | P3 | -8.041782 | 0.002937 | 0.001347 |
| 19 | P3 | -8.041820 | 0.002944 | 0.002112 |
| 22 | P3 | -8.041851 | 0.002942 | 0.001764 |
| 26 | P3 | -8.041893 | 0.002938 | 0.001841 |
| 30 | P3 | -8.041775 | 0.002929 | 0.001945 |

## 4.3 - cal pulses monitoring (all rows)

### 4.3.1 - Evolution for WVS

☒

### 4.3.2 - Evolution for GM1

☒

# 5 - RAW data statistics

No anomalies observed.

## 5.1 - Input mean I/Q

| channel | stat | DSS-B |
|---|---|---|
| MEAN I | mean | 0.000442219 |
| | stdev | 2.38953e-07 |
| MEAN Q | mean | 0.000508825 |
| | stdev | 2.50736e-07 |

## 5.2 - Input stdev I/Q

| channel | stat | DSS-B |
|---|---|---|
| STDEV I | mean | 0.126028 |
| | stdev | 0.000977476 |
| STDEV Q | mean | 0.126264 |
| | stdev | 0.000986420 |

## 5.3 - Gain imbalance I/Q

# 6 - Doppler Analysis

Preliminary report.The data is not yet controled

## 6.1 - Unbiased Doppler Error for WVS

| Evolution of unbiased Doppler error (Real - Expected) |
|---|
| |
| Acsending |
| |

| |
|---|
| Descending |

## 6.2 - Absolute Doppler for WVS

| **Evolution of Absolute Doppler** |
|---|
| ☒ |
| Acsending |
| ☒ |
| Descending |

## 6.3 - Doppler evolution versus ANX for WVS

| **Evolution Doppler error versus ANX** |
|---|
| ☒ |

## 6.4 - Unbiased Doppler Error for GM1

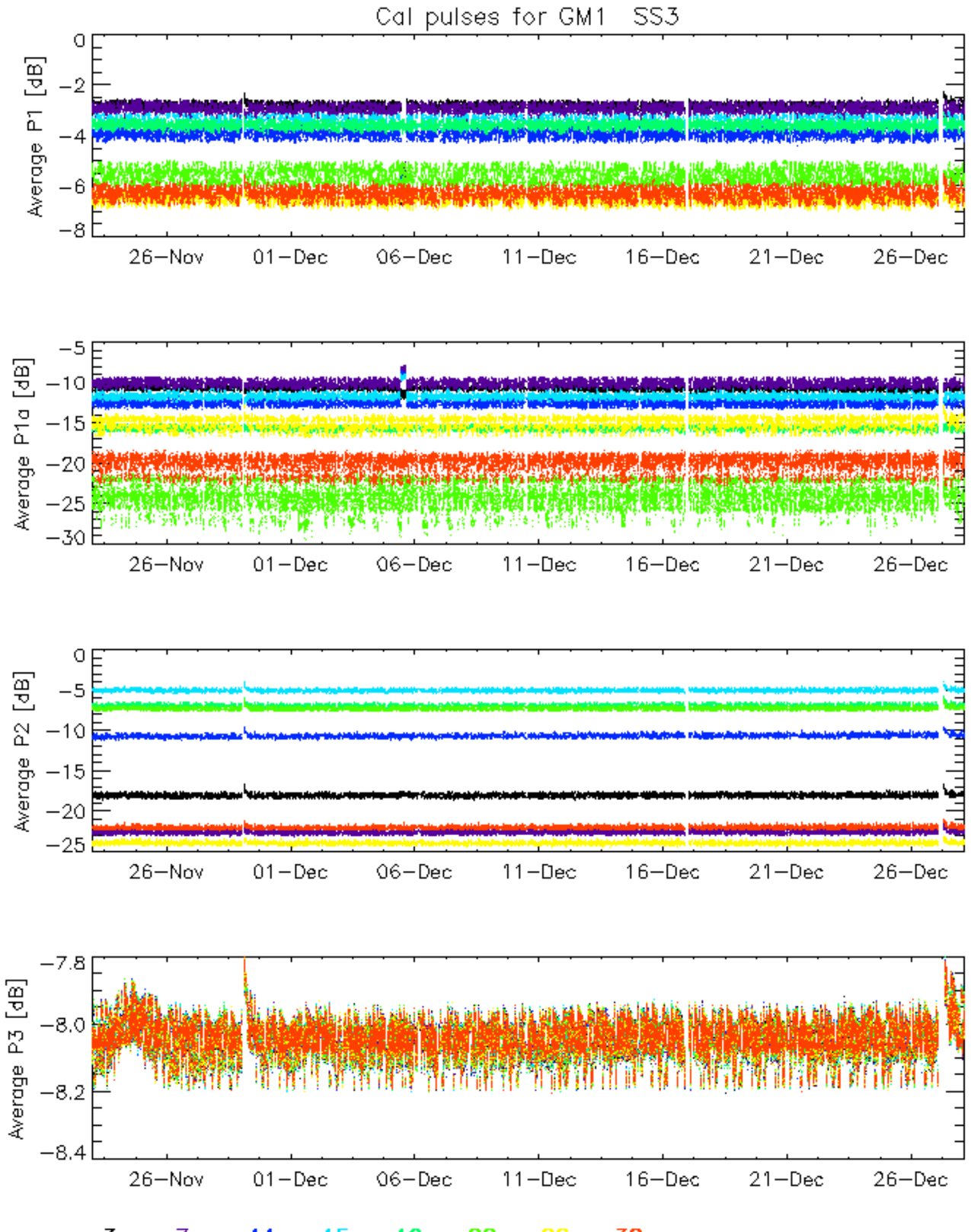
| **Evolution of unbiased Doppler error (Real - Expected)** |
|---|
| ☒ |
| Acsending |
| ☒ |
| Descending |

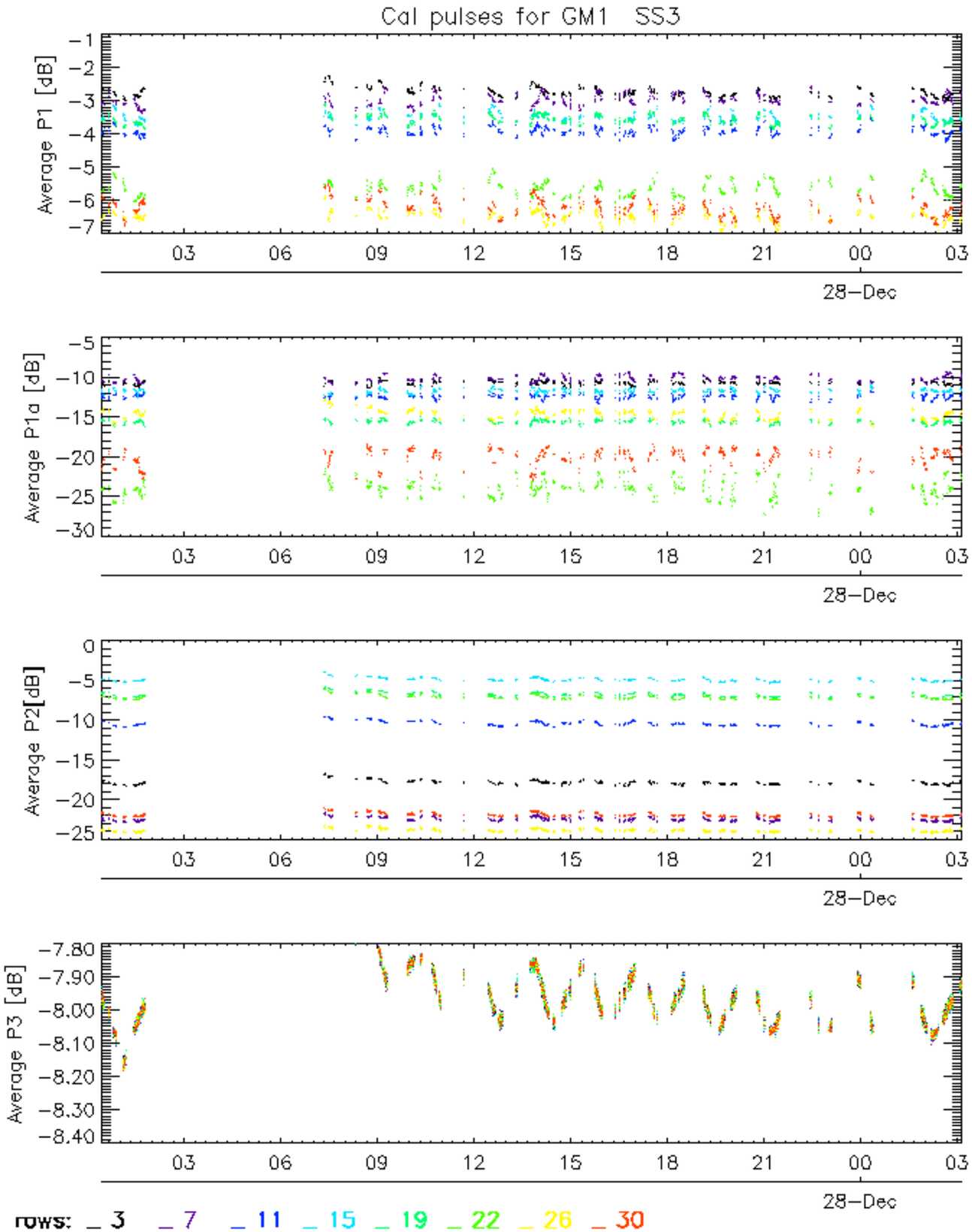
## 6.5 - Absolute Doppler for GM1

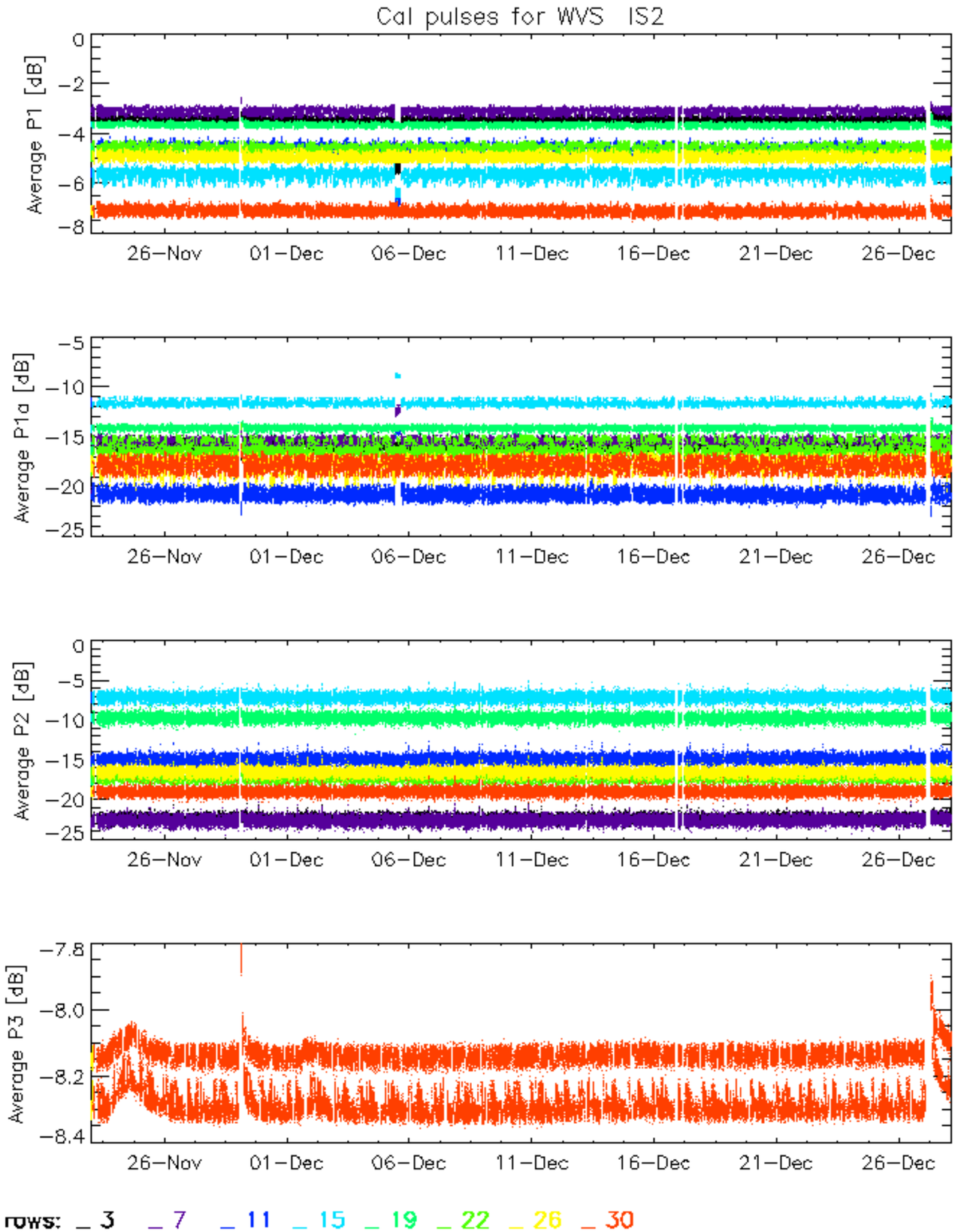
| **Evolution of Absolute Doppler** |
|---|
| ☒ |
| Acsending |
| ☒ |
| Descending |

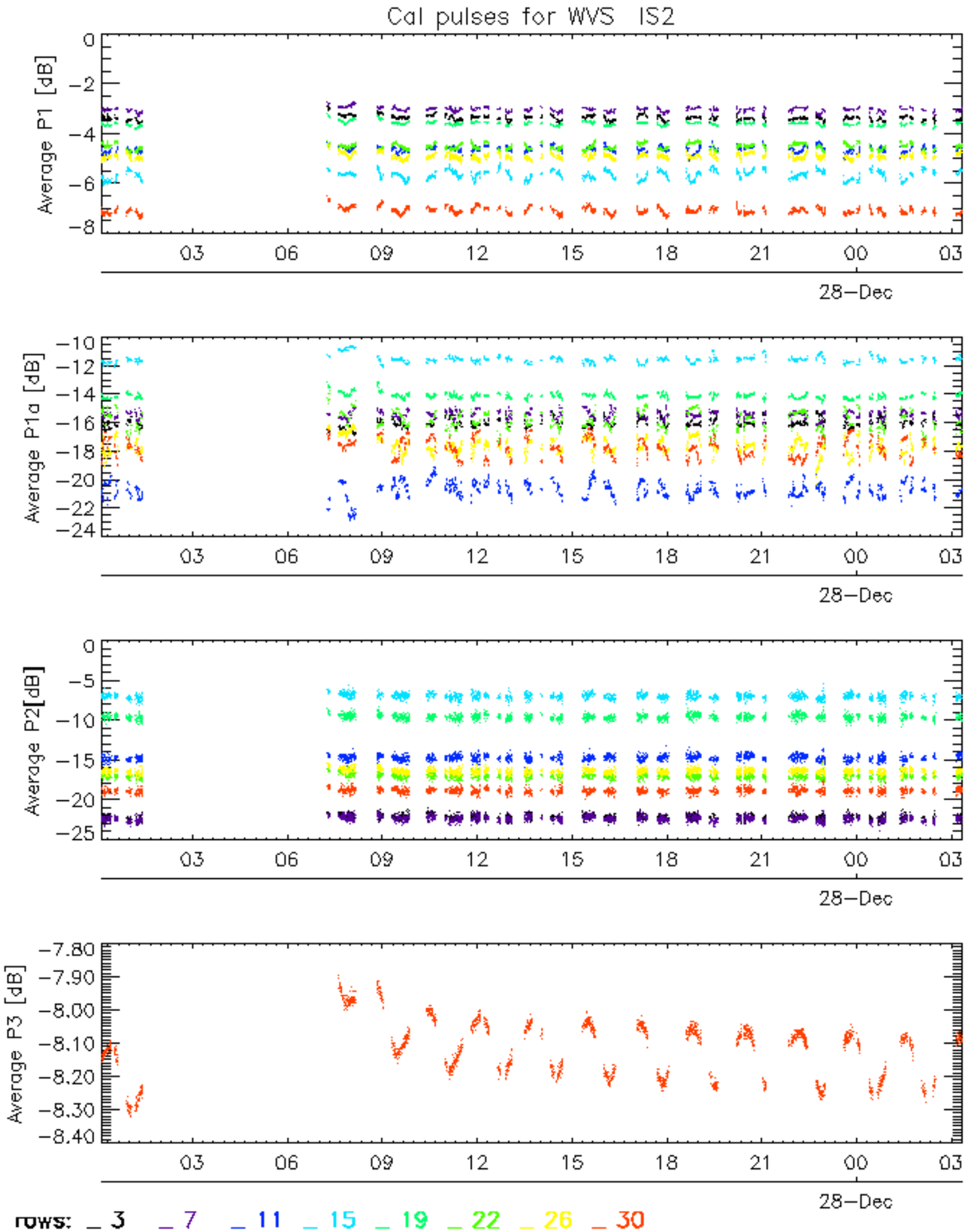
## 6.6 - Doppler evolution versus ANX for GM1

**Evolution Doppler error versus ANX**

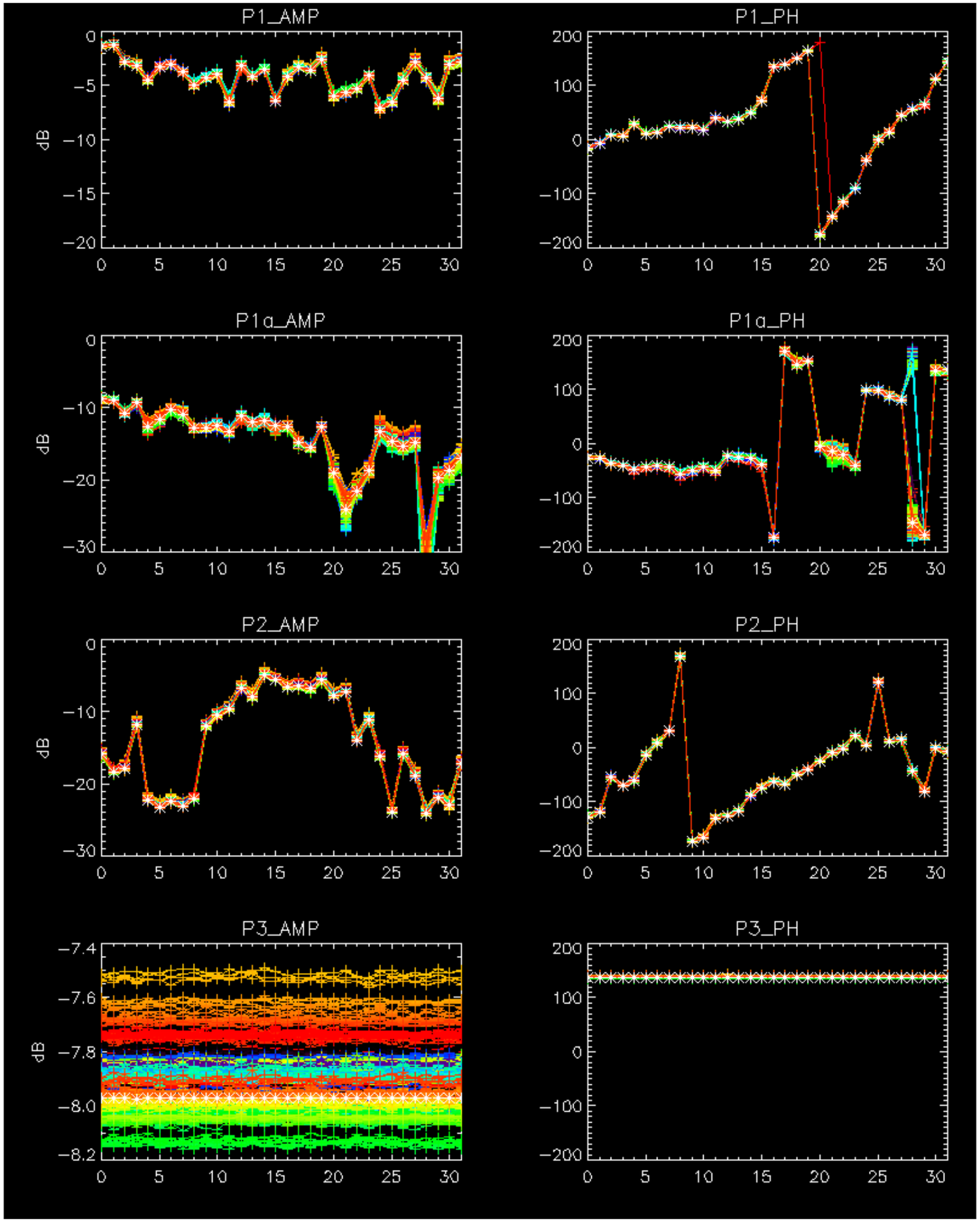

Cal pulses for GM1 SS3
Average P1 [dB]
0
−2
−4
−6
−8
Average P1a [dB]
−5
−10
−15
−20
−25
−30
Average P2 [dB]
0
−5
−10
−15
−20
−25
Average P3 [dB]
−7.8
−8.0
−8.2
−8.4
26−Nov
01−Dec
06−Dec
11−Dec
16−Dec
21−Dec
26−Dec
rows: _ 3 _ 7 _ 11 _ 15 _ 19 _ 22 _ 26 _ 30

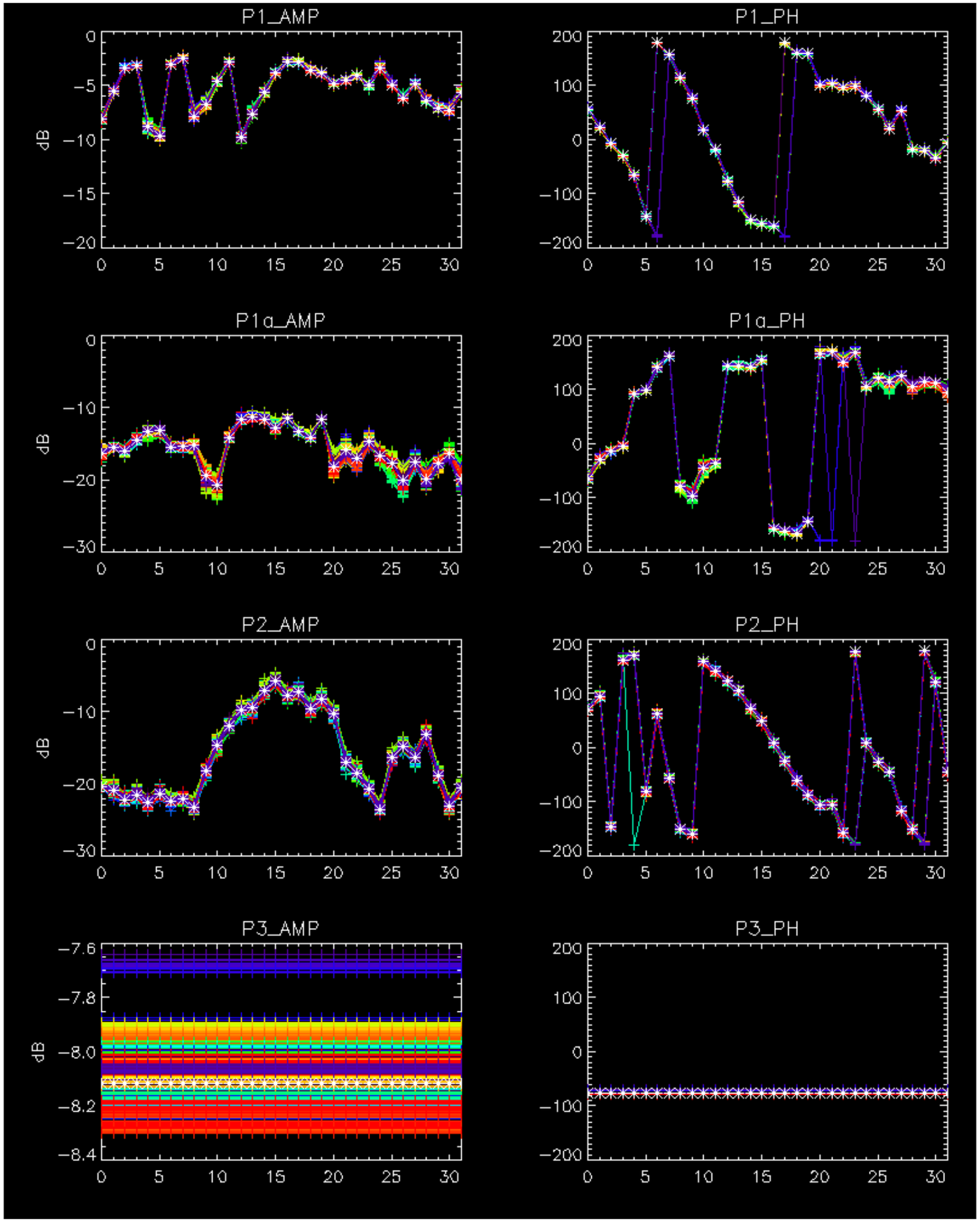

Cal pulses for GM1 SS3
Average P1 [dB]
−1
−2
−3
−4
−5
−6
−7
03
06
09
12
15
18
21
00
03
28−Dec
Average P1a [dB]
−5
−10
−15
−20
−25
−30
03
06
09
12
15
18
21
00
03
28−Dec
Average P2[dB]
0
−5
−10
−15
−20
−25
03
06
09
12
15
18
21
00
03
28−Dec
Average P3 [dB]
−7.80
−7.90
−8.00
−8.10
−8.20
−8.30
−8.40
03
06
09
12
15
18
21
00
03
28−Dec
rows: _ 3 _ 7 _ 11 _ 15 _ 19 _ 22 _ 26 _ 30


Cal pulses for WVS IS2
Average P1 [dB]
0
−2
−4
−6
−8
Average P1a [dB]
−5
−10
−15
−20
−25
Average P2 [dB]
0
−5
−10
−15
−20
−25
Average P3 [dB]
−7.8
−8.0
−8.2
−8.4
26−Nov
01−Dec
06−Dec
11−Dec
16−Dec
21−Dec
26−Dec
rows: _ 3 _ 7 _ 11 _ 15 _ 19 _ 22 _ 26 _ 30


Cal pulses for WVS IS2
Average P1 [dB]
0
−2
−4
−6
−8
03
06
09
12
15
18
21
00
03
28−Dec
Average P1a [dB]
−10
−12
−14
−16
−18
−20
−22
−24
28−Dec
Average P2[dB]
0
−5
−10
−15
−20
−25
28−Dec
Average P3 [dB]
−7.80
−7.90
−8.00
−8.10
−8.20
−8.30
−8.40
28−Dec
rows: 3 7 11 15 19 22 26 30

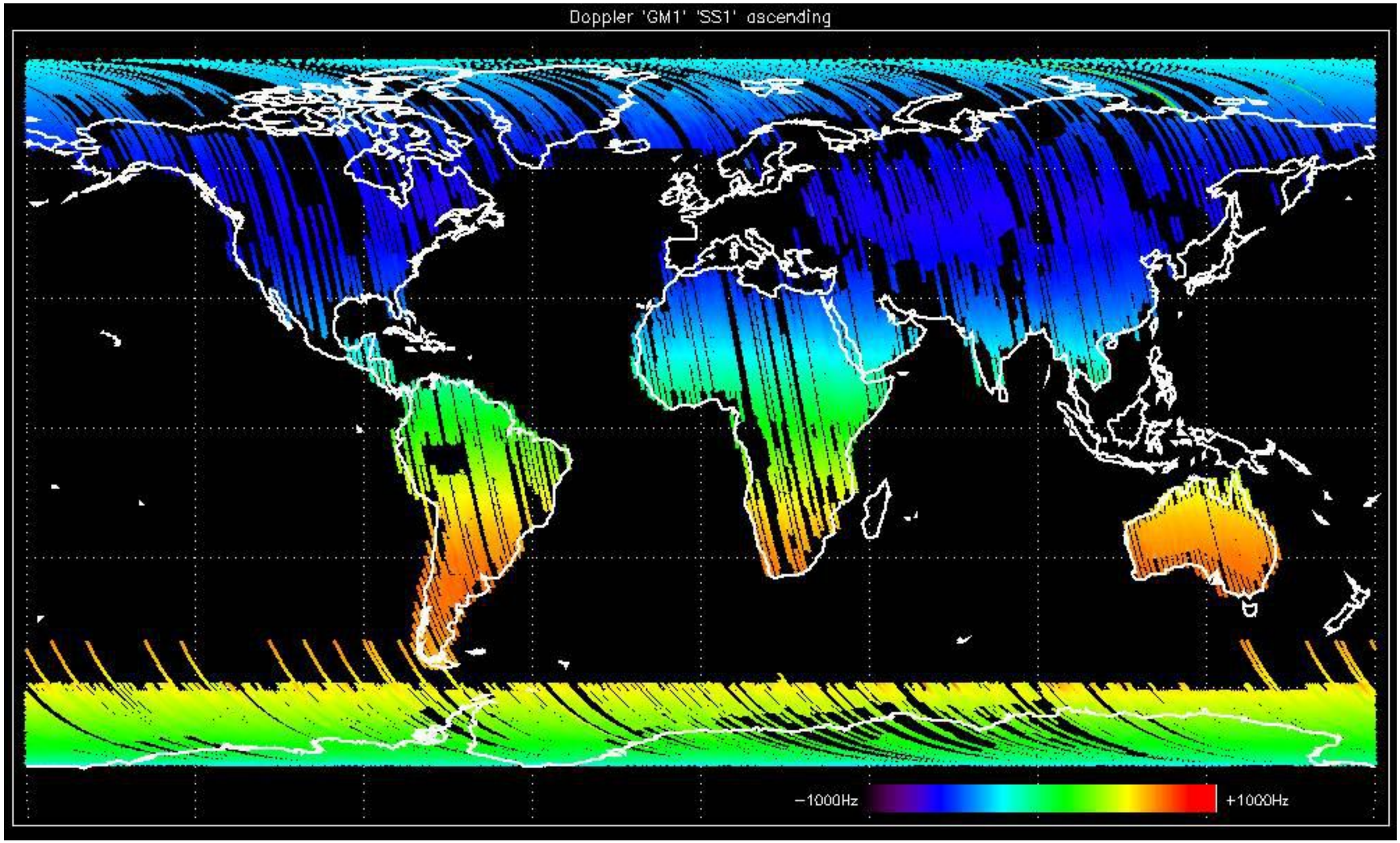
No anomalies observed.

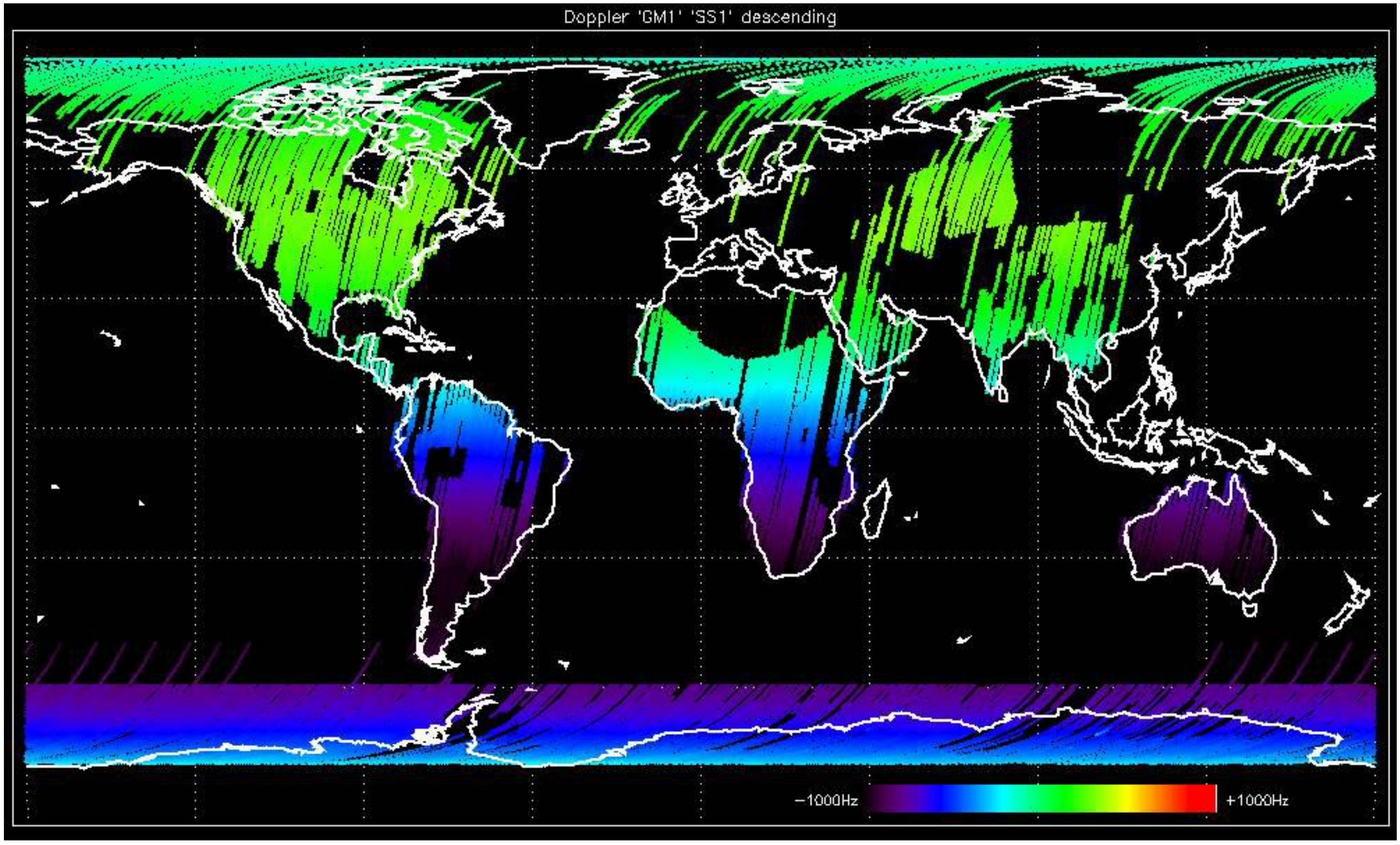

P1_AMP
dB
0
−5
−10
−15
−20
0 5 10 15 20 25 30
P1_PH
200
100
0
−100
−200
0 5 10 15 20 25 30
P1a_AMP
dB
0
−10
−20
−30
0 5 10 15 20 25 30
P1a_PH
200
100
0
−100
−200
0 5 10 15 20 25 30
P2_AMP
dB
0
−10
−20
−30
0 5 10 15 20 25 30
P2_PH
200
100
0
−100
−200
0 5 10 15 20 25 30
P3_AMP
dB
−7.4
−7.6
−7.8
−8.0
−8.2
0 5 10 15 20 25 30
P3_PH
200
100
0
−100
−200
0 5 10 15 20 25 30

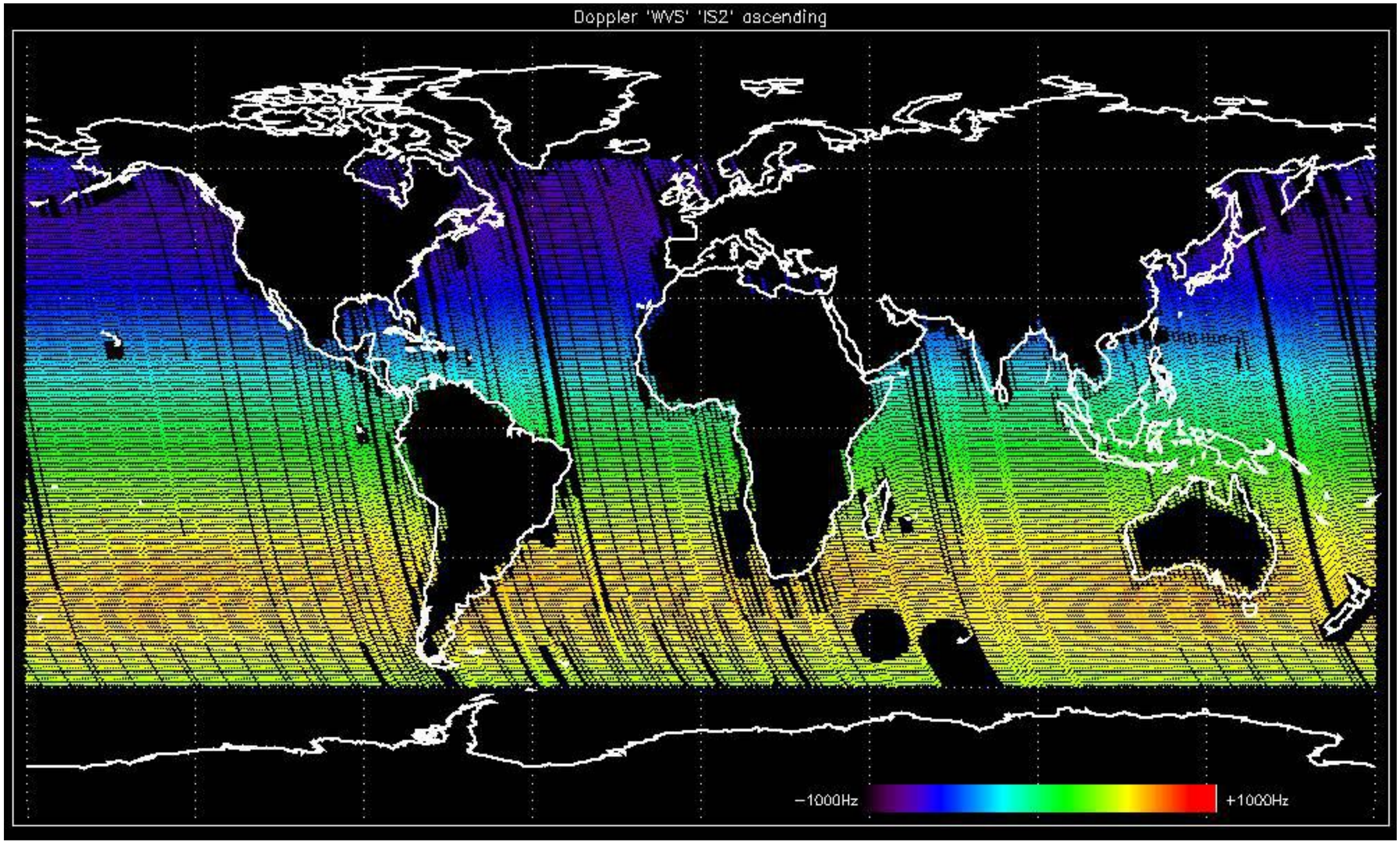

P1_AMP
P1_PH
P1a_AMP
P1a_PH
P2_AMP
P2_PH
P3_AMP
P3_PH
dB

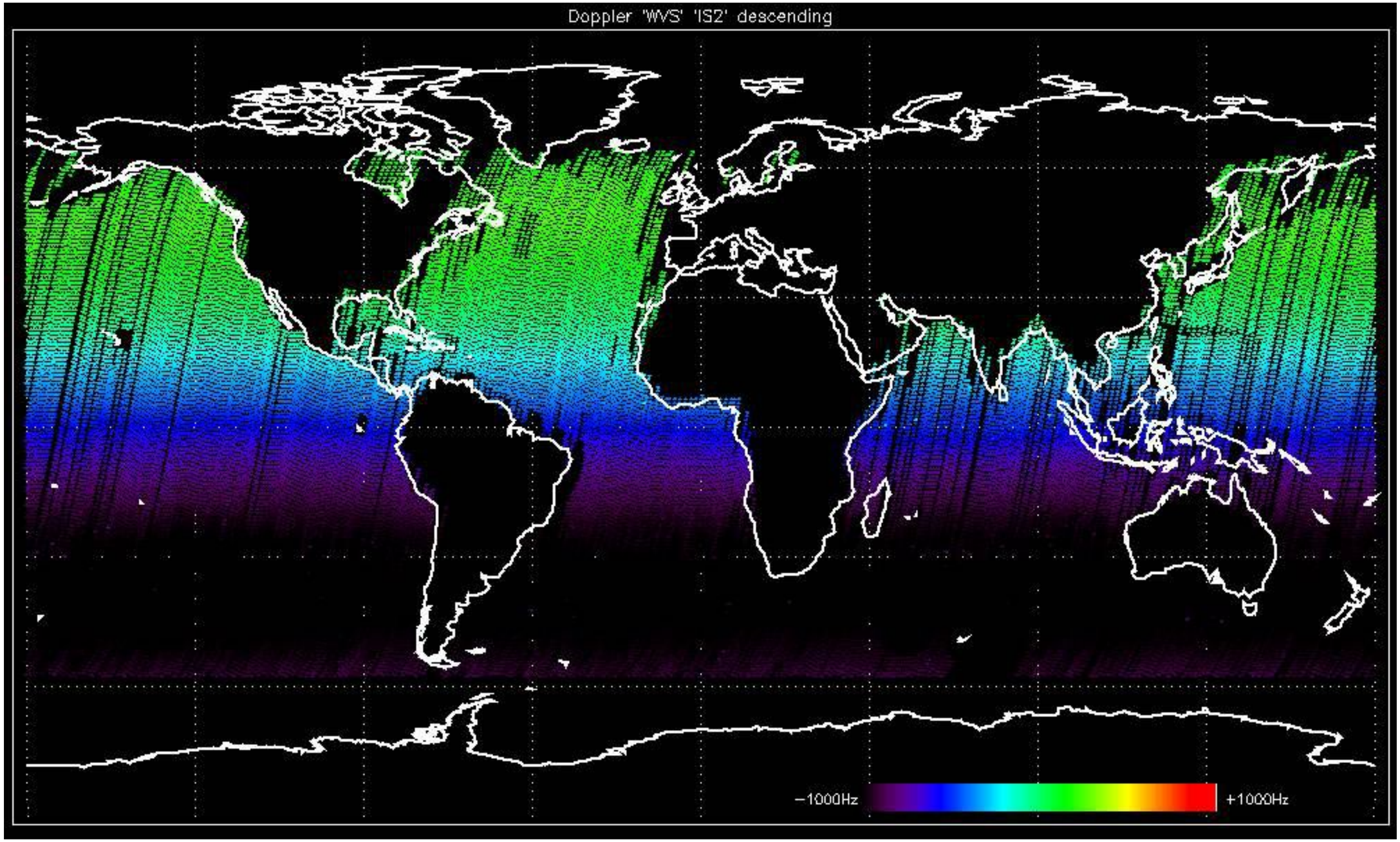
-Stable wave internal calibration pulses gain and phase.
-Stable raw data statistics.
-Nominal Doppler behavior.

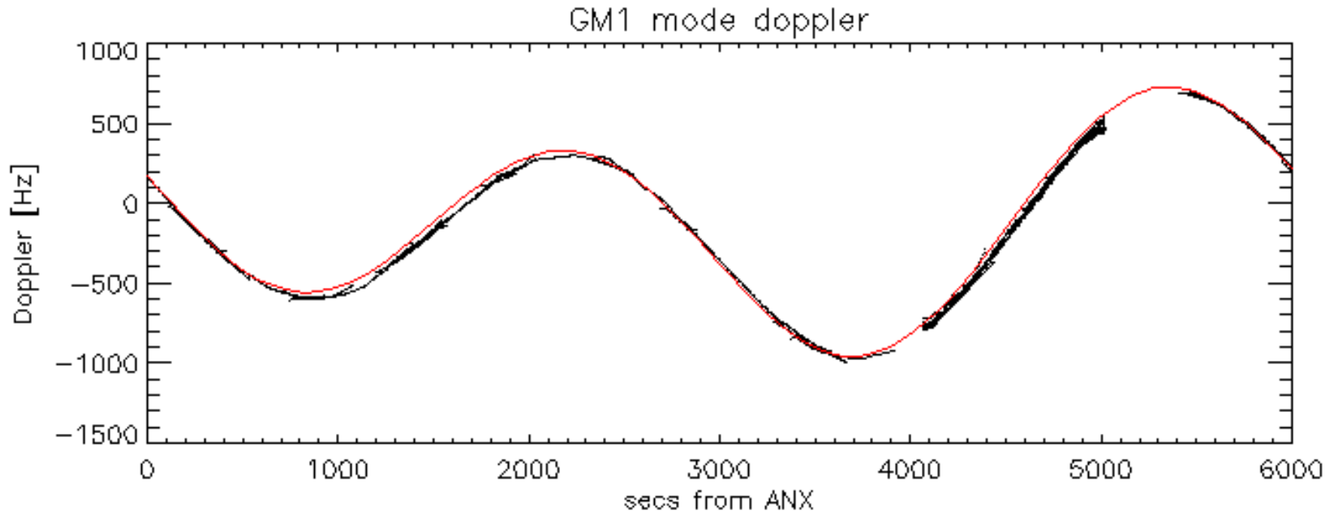
Preliminary report.The data is not yet controled

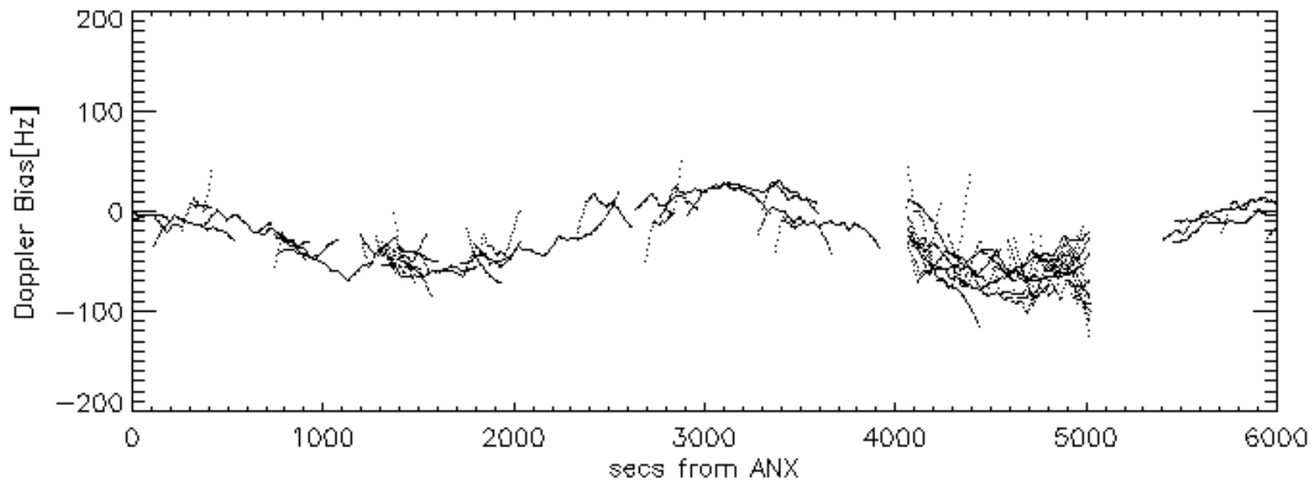

Doppler 'GM1' 'SS1' ascending
−1000Hz
+1000Hz

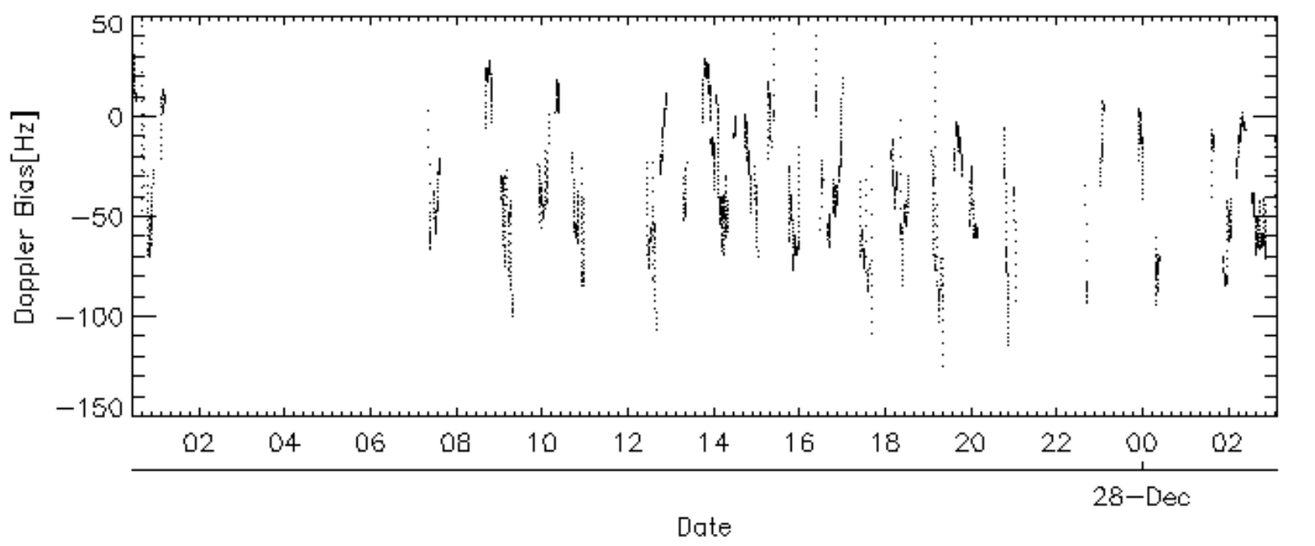

Doppler 'GM1' 'SS1' descending
−1000Hz
+1000Hz

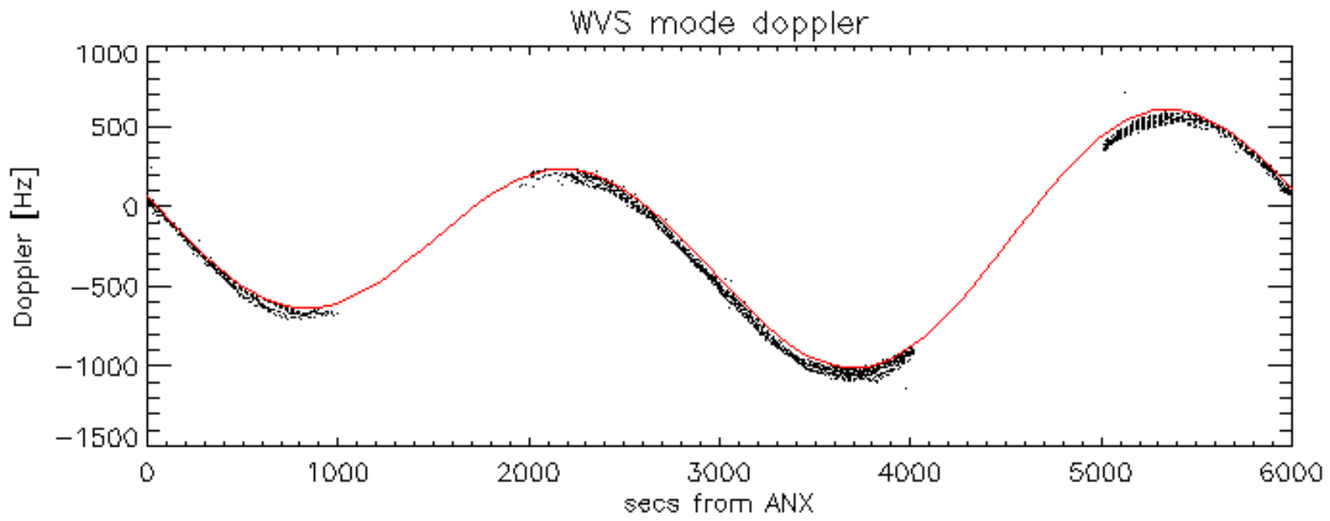

Doppler 'WVS' 'IS2' ascending
−1000Hz
+1000Hz

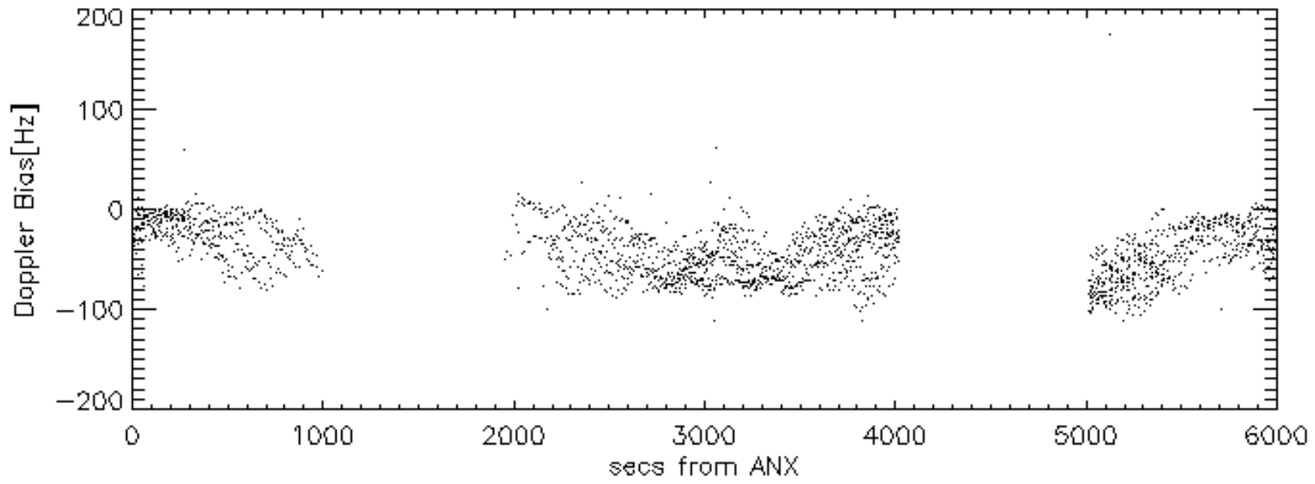

Doppler 'WVS' 'IS2' descending
−1000Hz
+1000Hz

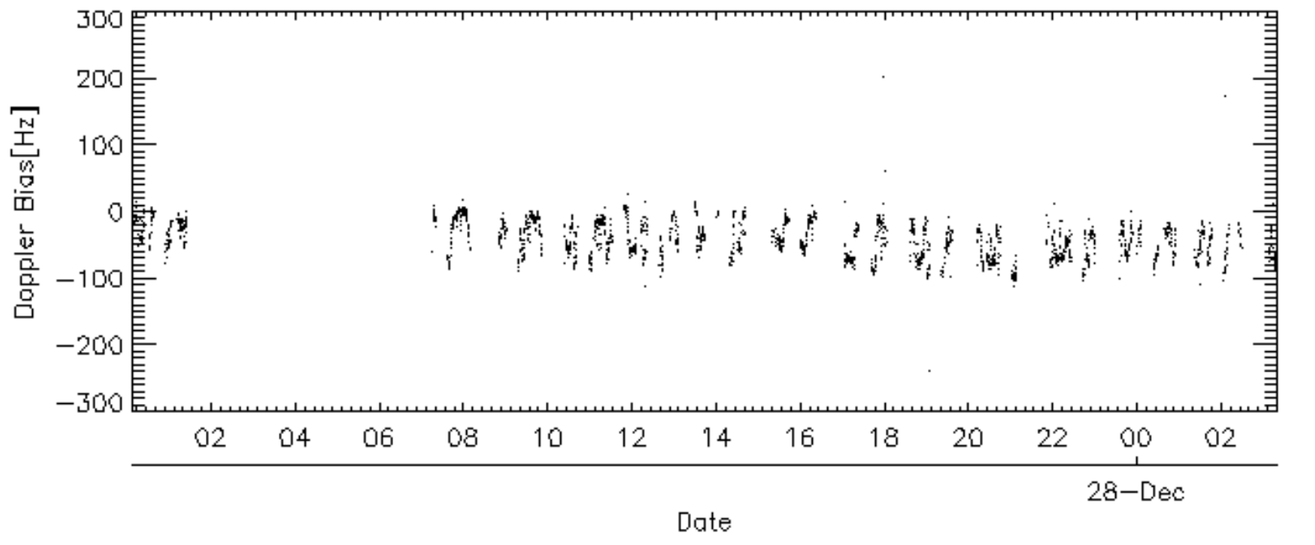

GM1 mode doppler
Doppler [Hz]
1000
500
0
−500
−1000
−1500
0
1000
2000
3000
4000
5000
6000
secs from ANX

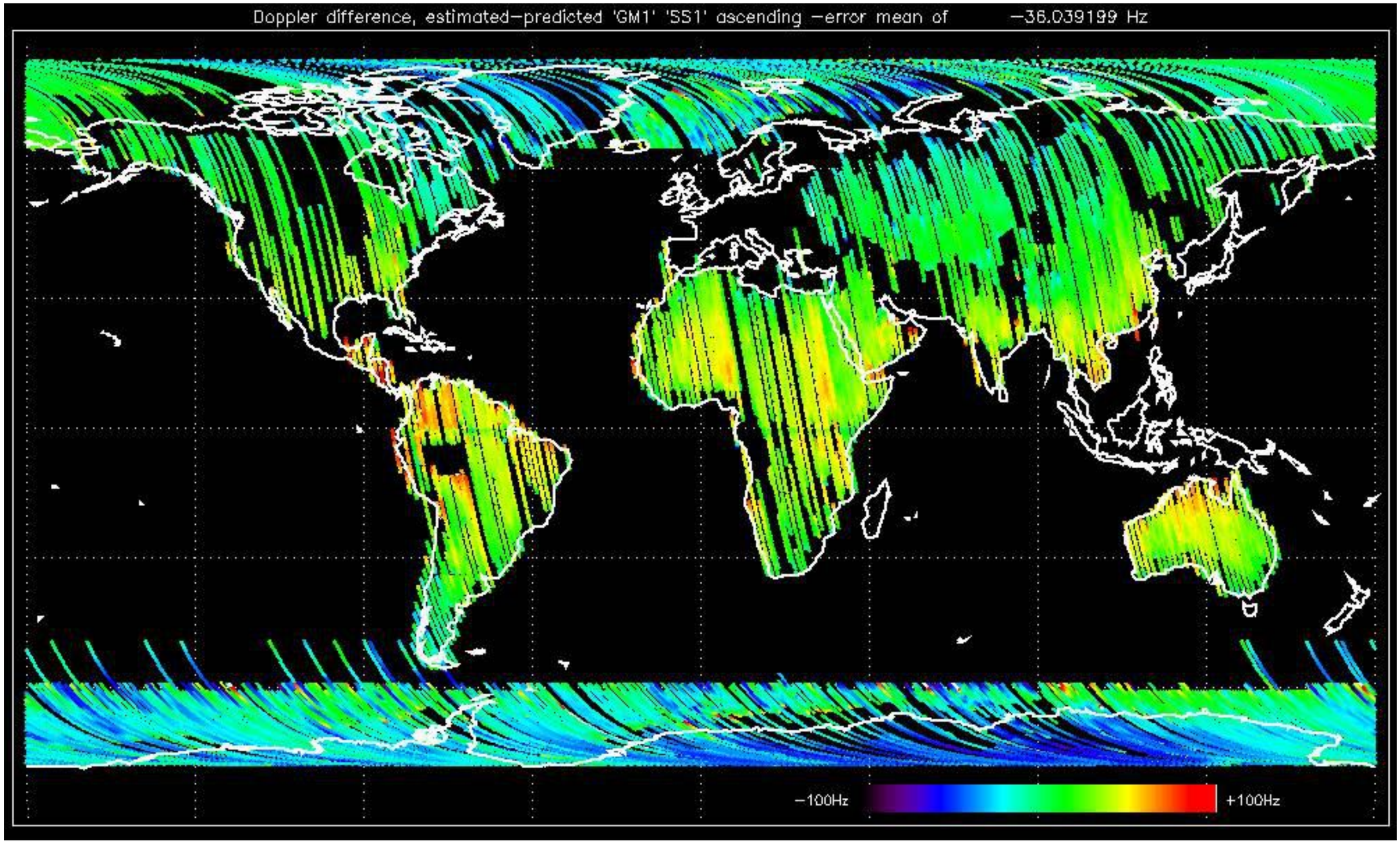

Doppler Bias[Hz]
200
100
0
−100
−200
0
1000
2000
3000
4000
5000
6000
secs from ANX

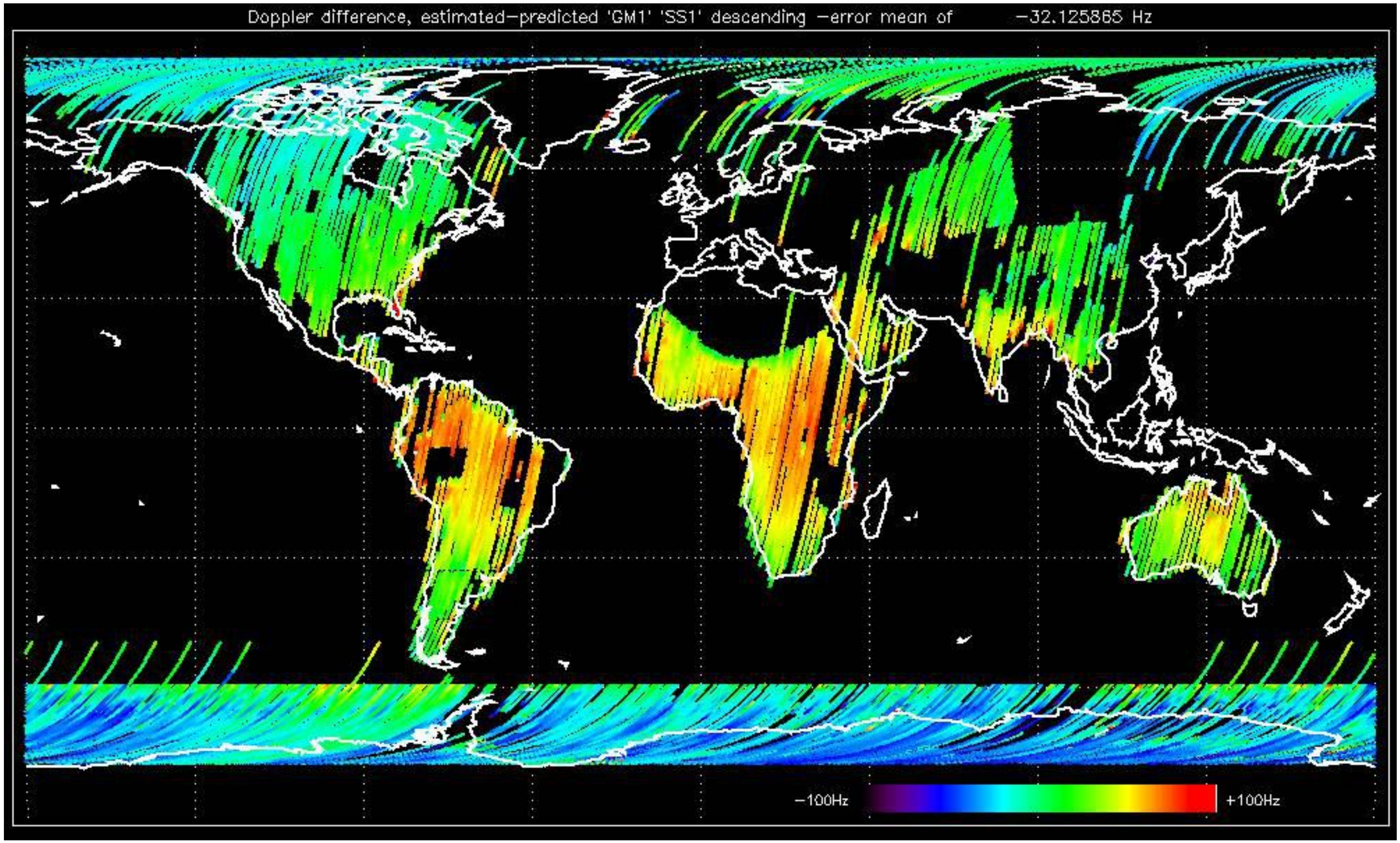

Doppler Bias[Hz]
50
0
−50
−100
−150
02
04
06
08
10
12
14
16
18
20
22
00
02
28−Dec
Date

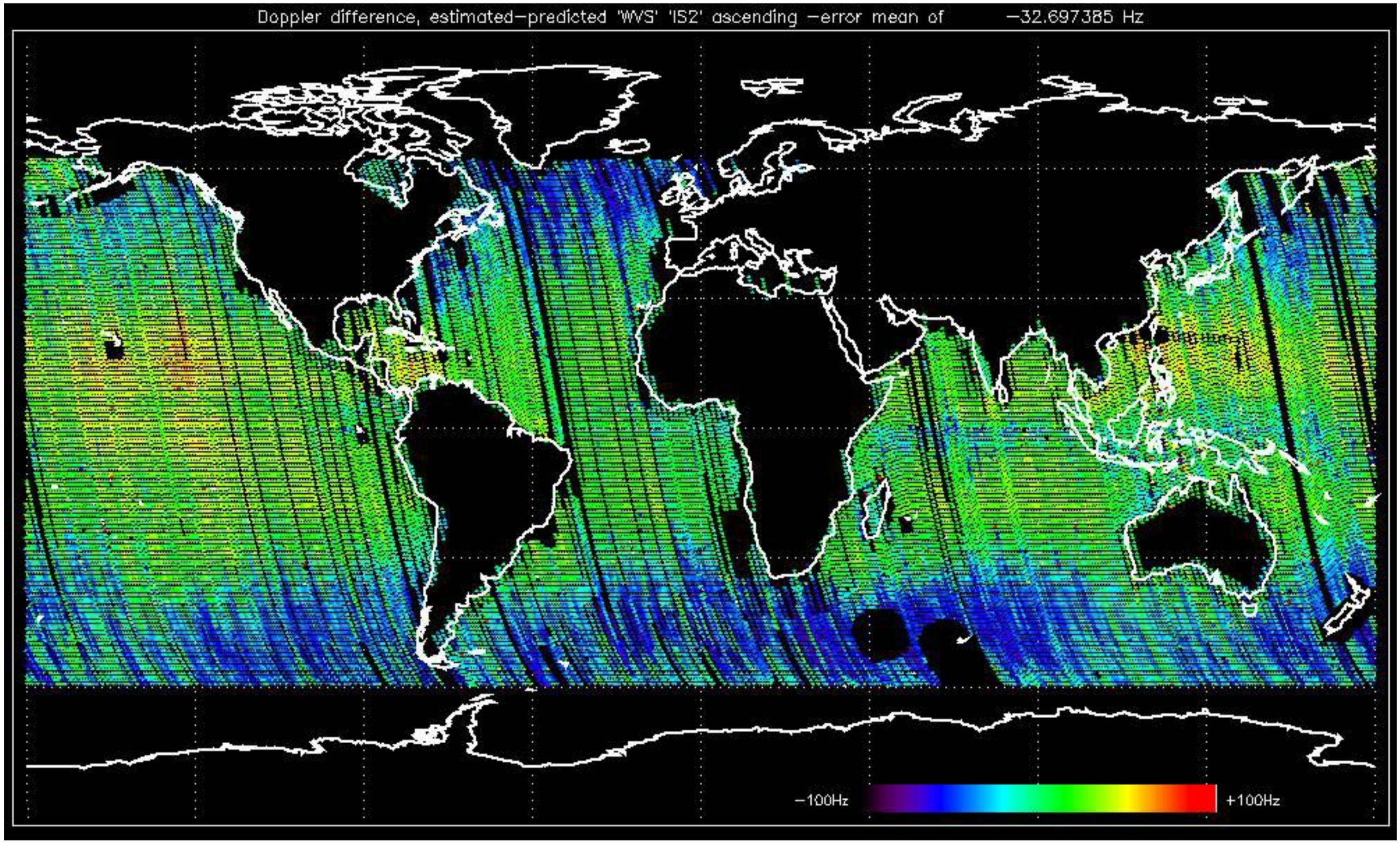

WVS mode doppler
Doppler [Hz]
1000
500
0
−500
−1000
−1500
0
1000
2000
3000
4000
5000
6000
secs from ANX

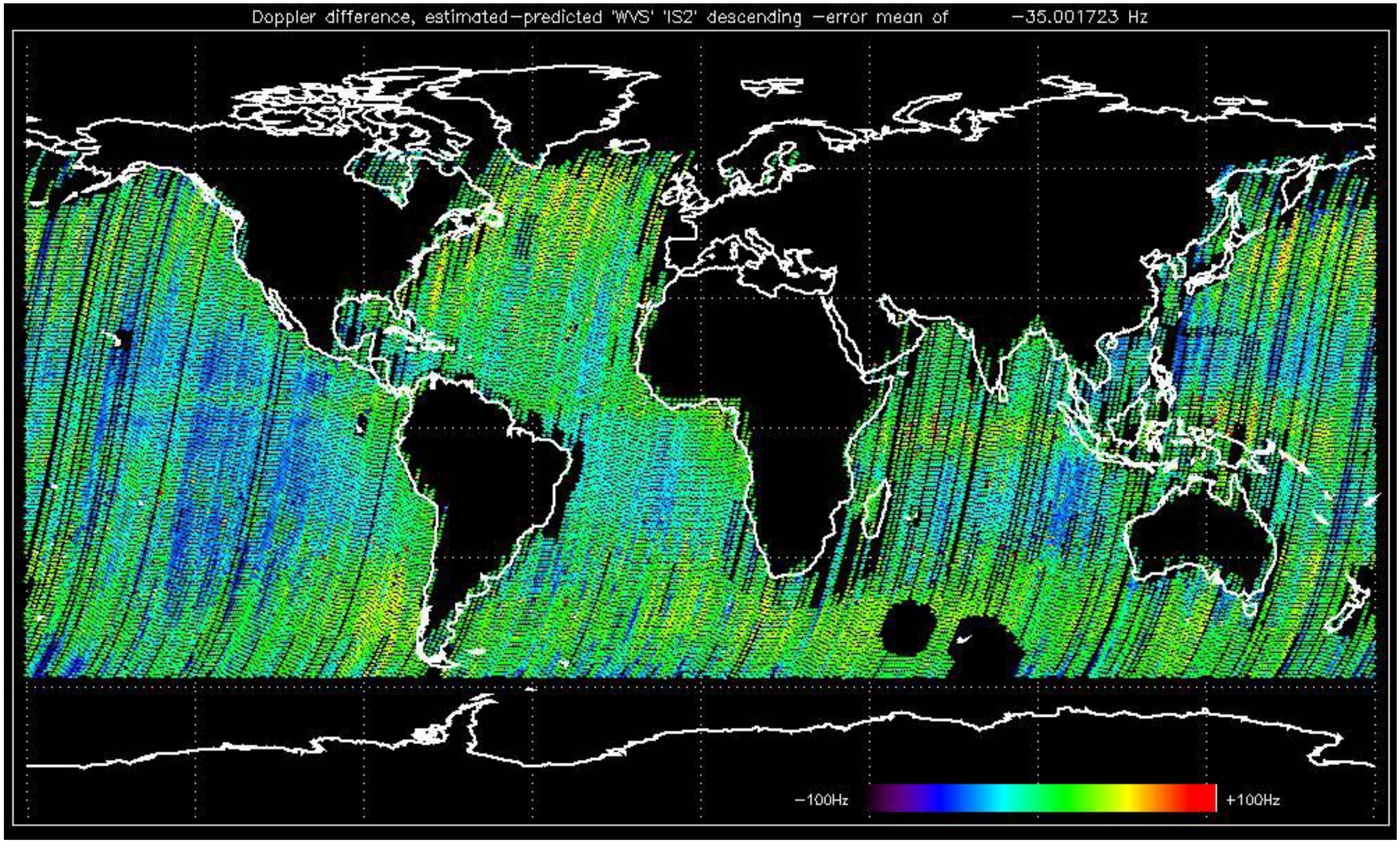

Doppler Bias[Hz]
200
100
0
−100
−200
0
1000
2000
3000
4000
5000
6000
secs from ANX


Doppler Bias[Hz]
300
200
100
0
−100
−200
−300
02
04
06
08
10
12
14
16
18
20
22
00
02
28−Dec
Date


Doppler difference, estimated−predicted 'GM1' 'SS1' ascending −error mean of −36.039199 Hz
−100Hz
+100Hz

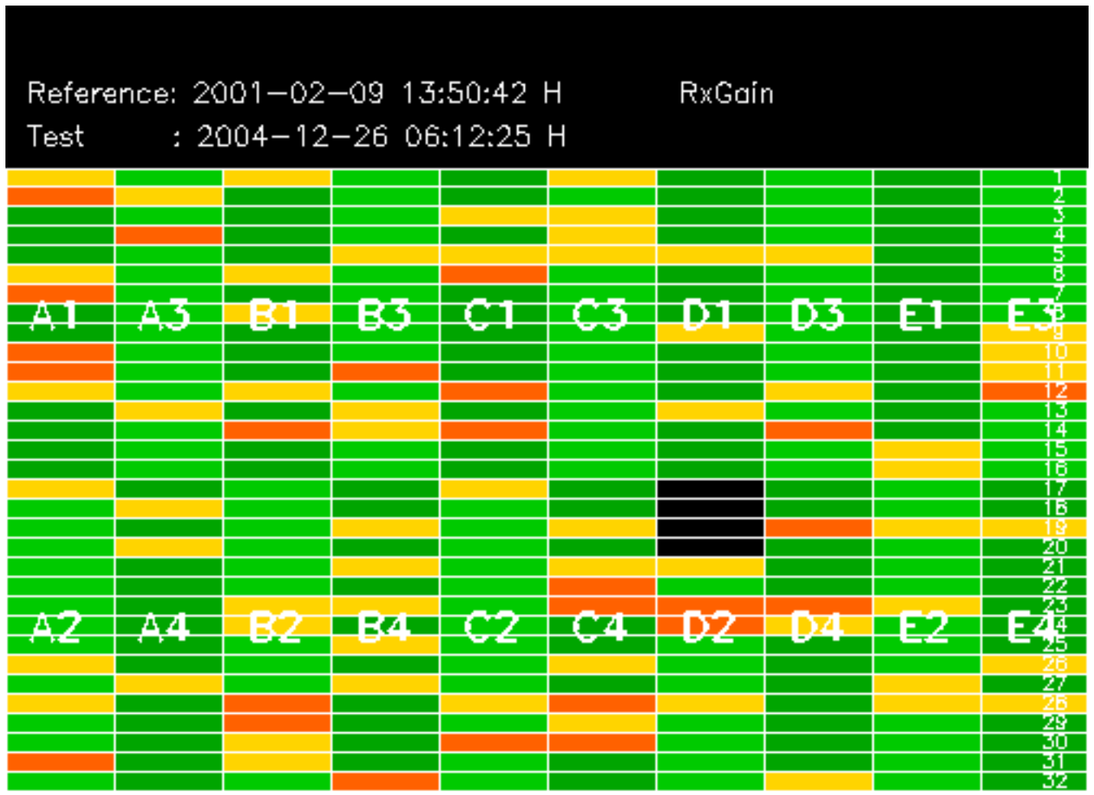

Doppler difference, estimated-predicted 'GM1' 'SS1' descending -error mean of -32.125865 Hz
-100Hz
+100Hz

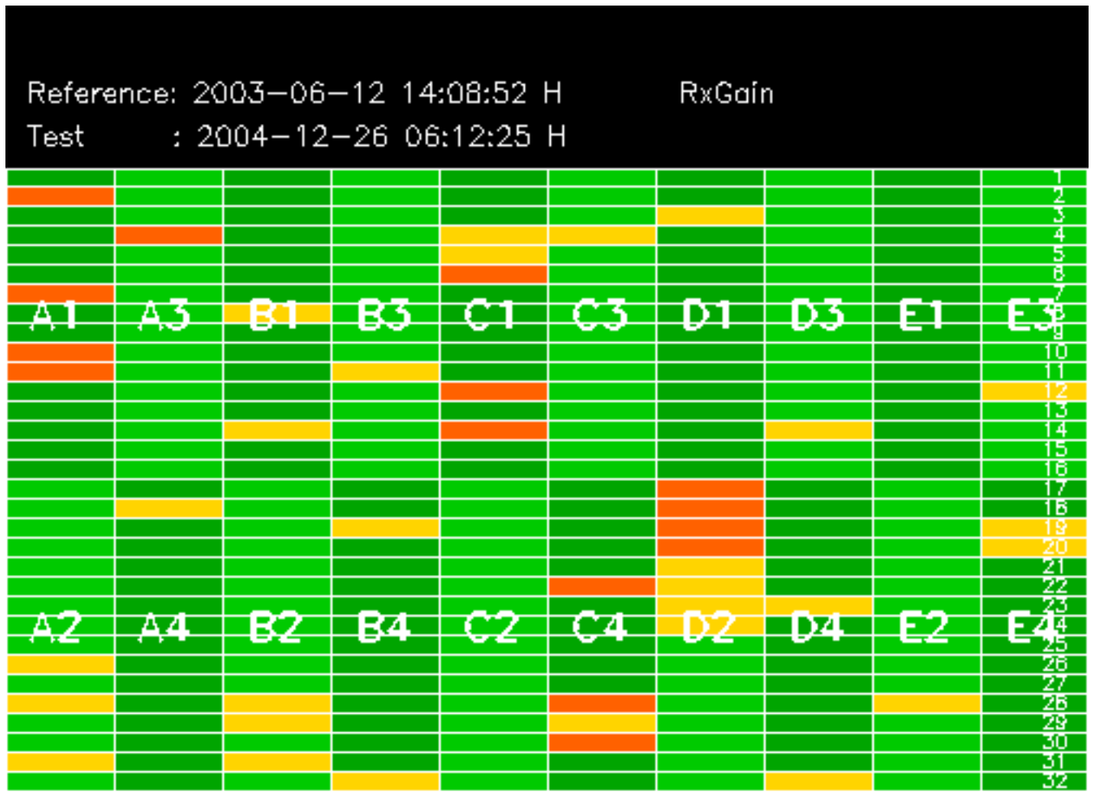

Doppler difference, estimated−predicted 'WVS' 'IS2' ascending −error mean of −32.697385 Hz
−100Hz
+100Hz


Doppler difference, estimated−predicted 'WVS' 'IS2' descending −error mean of −35.001723 Hz
−100Hz
+100Hz

The MS mode provides an internal health check on an individual module basis.
The purpose of this mode is to identify to identify any malfunctionning modules and
to identify modules for which calibration offsets are to be applied.
No anomalies observed on available MS products:

No anomalies observed.


Reference: 2001-02-09 13:50:42 H
Test : 2004-12-26 06:12:25 H
RxGain
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4


Reference: 2003-06-12 14:08:52 H
Test : 2004-12-26 06:12:25 H
RxGain
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4
1
2
3
4
5
6
7
8
9
10
11
12
13
14
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16
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26
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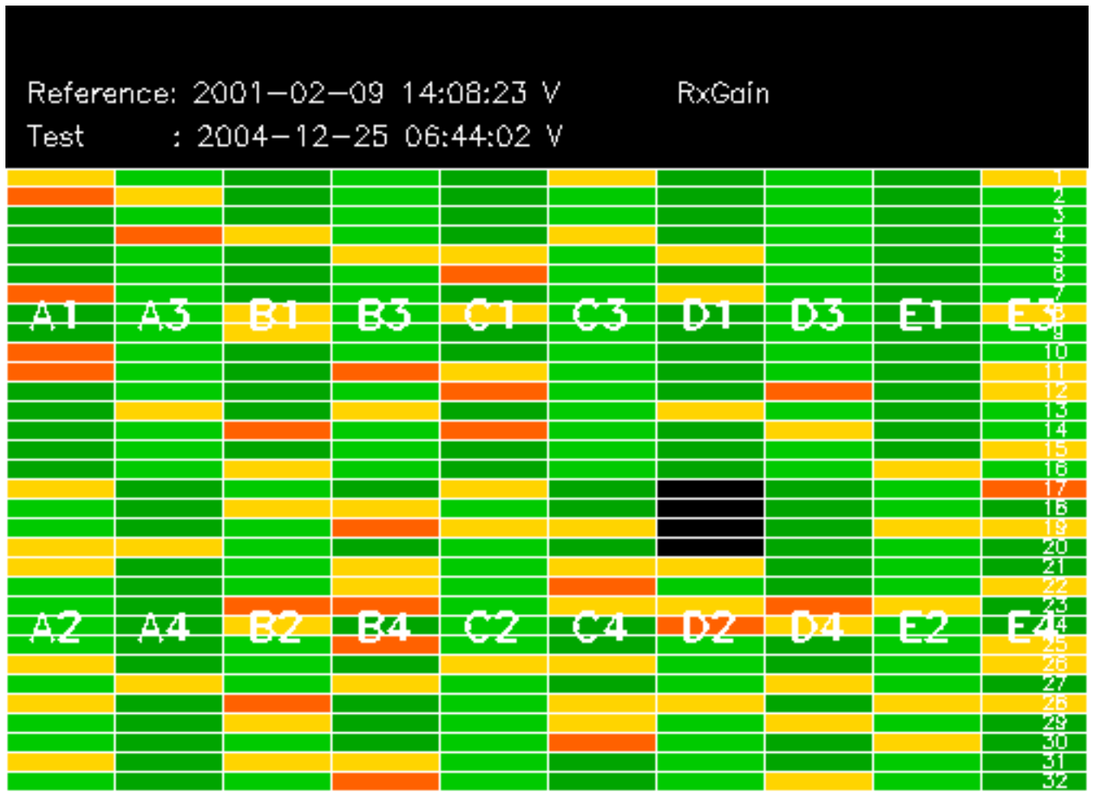
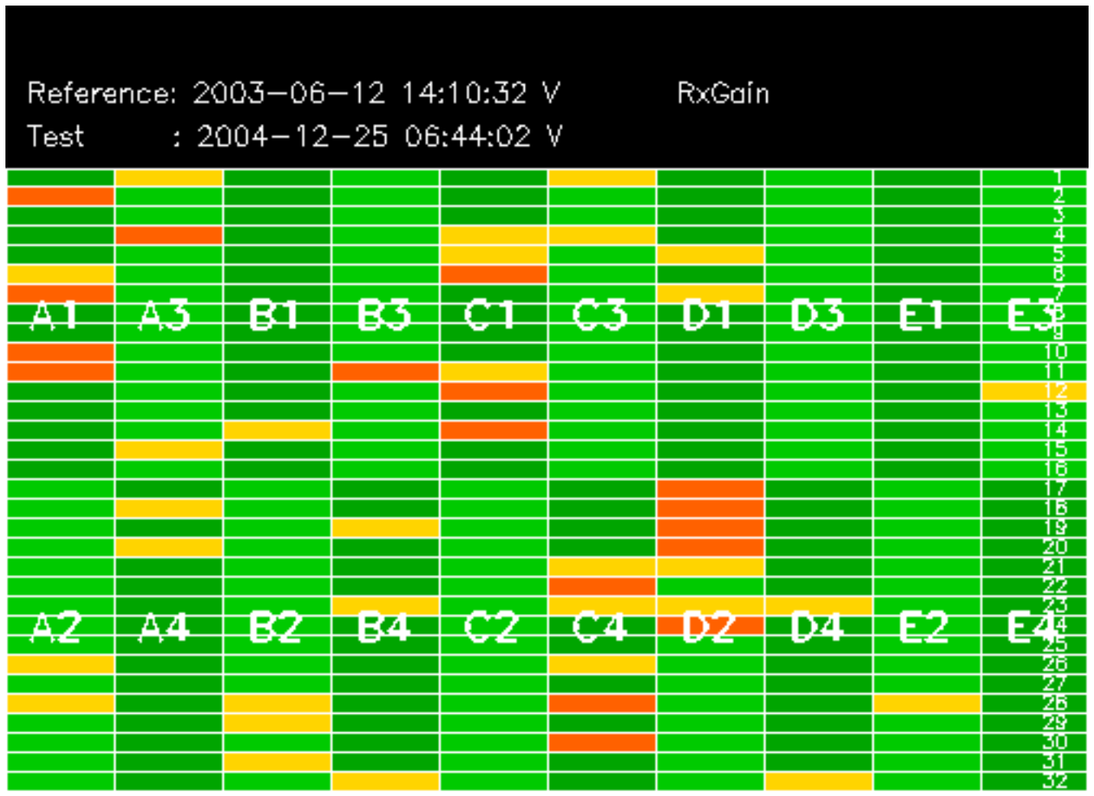
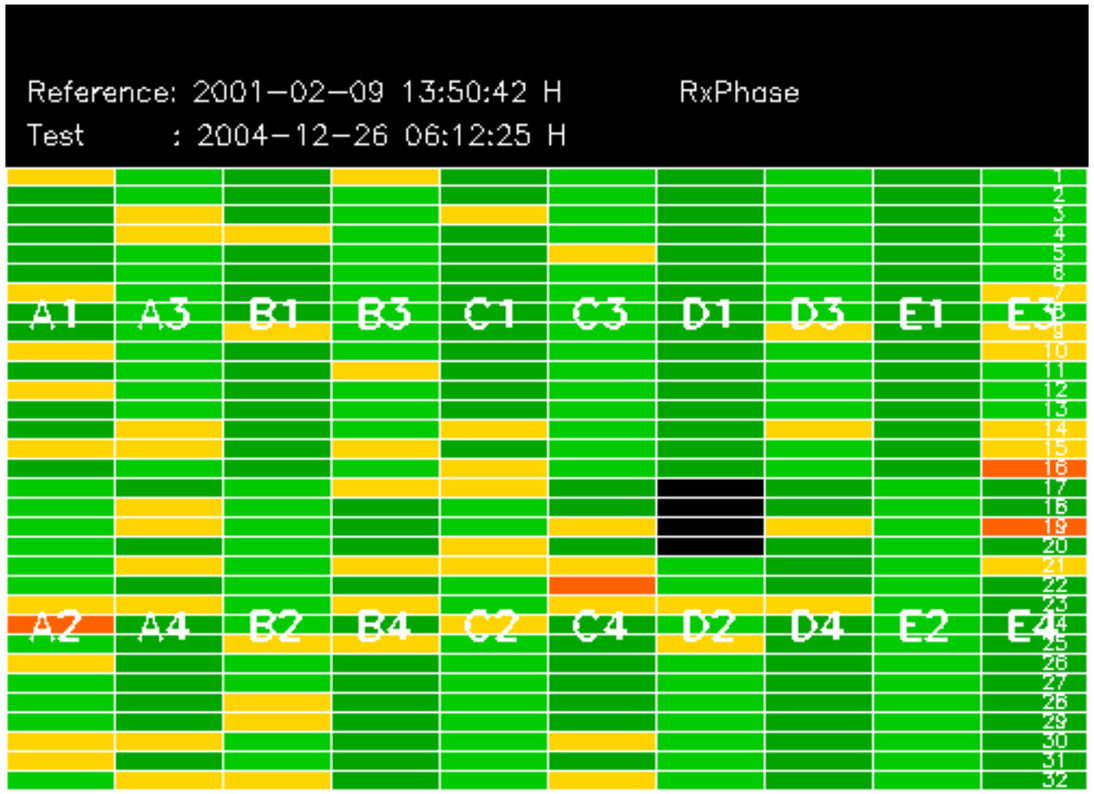
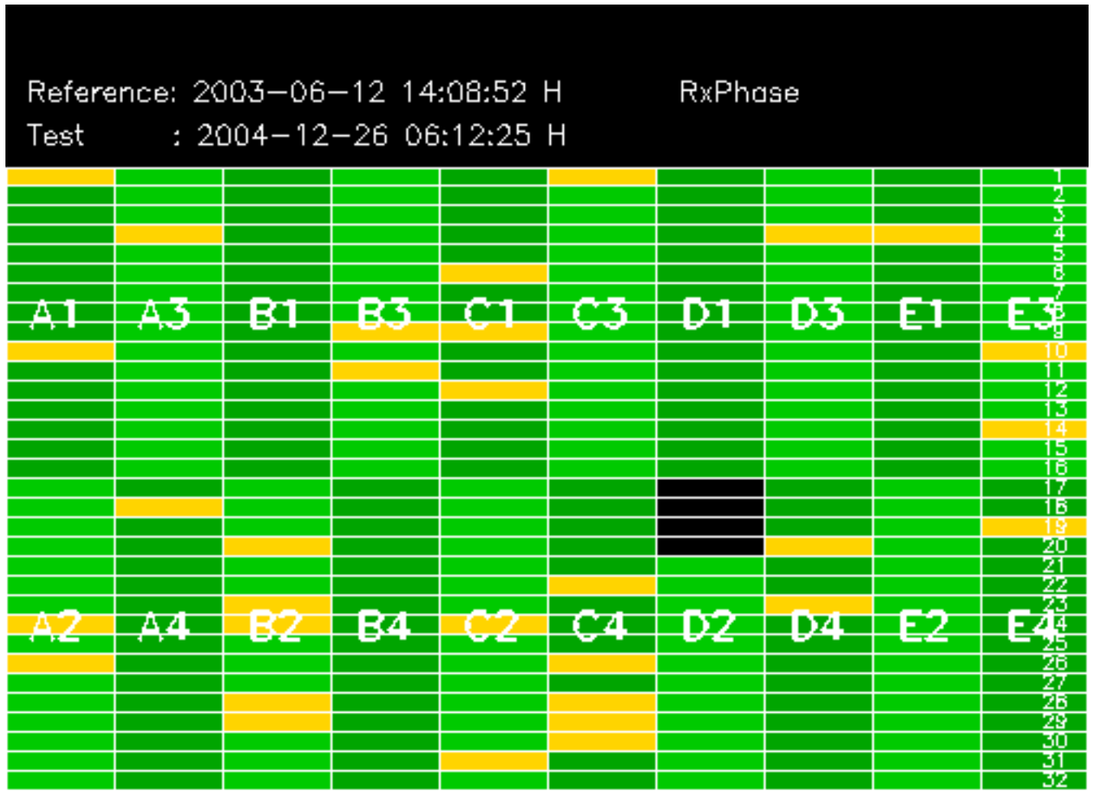
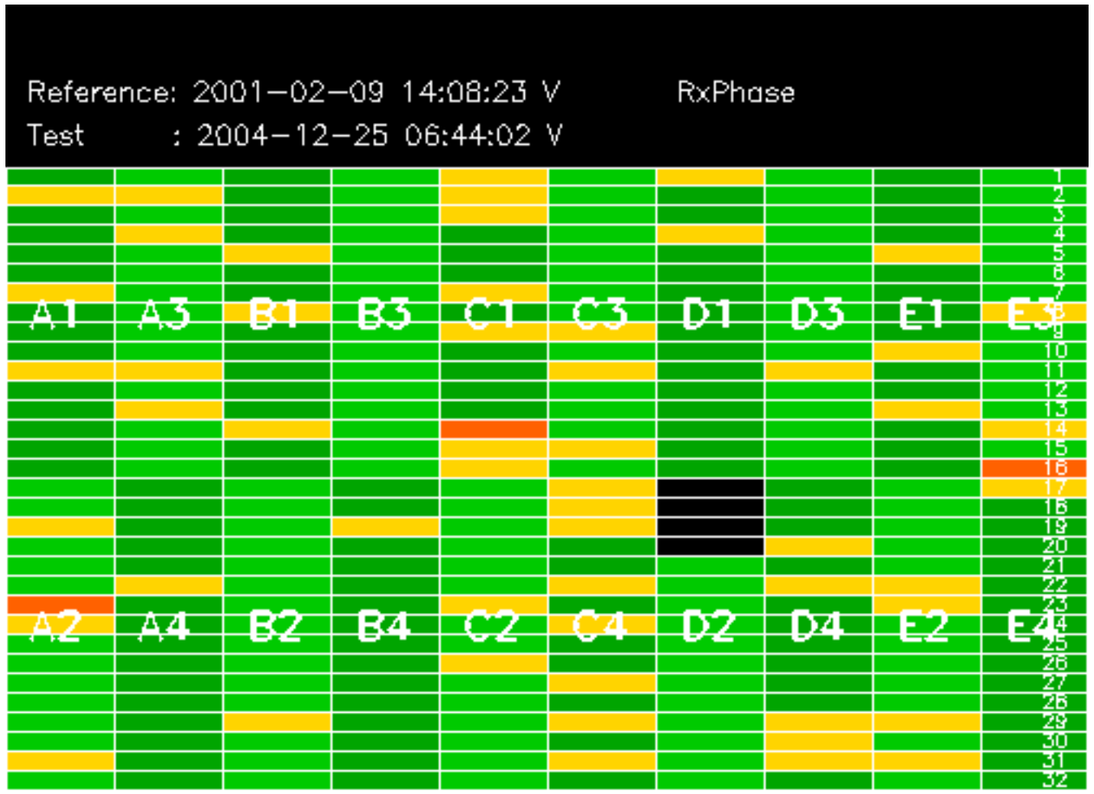
28
29
30
31
32

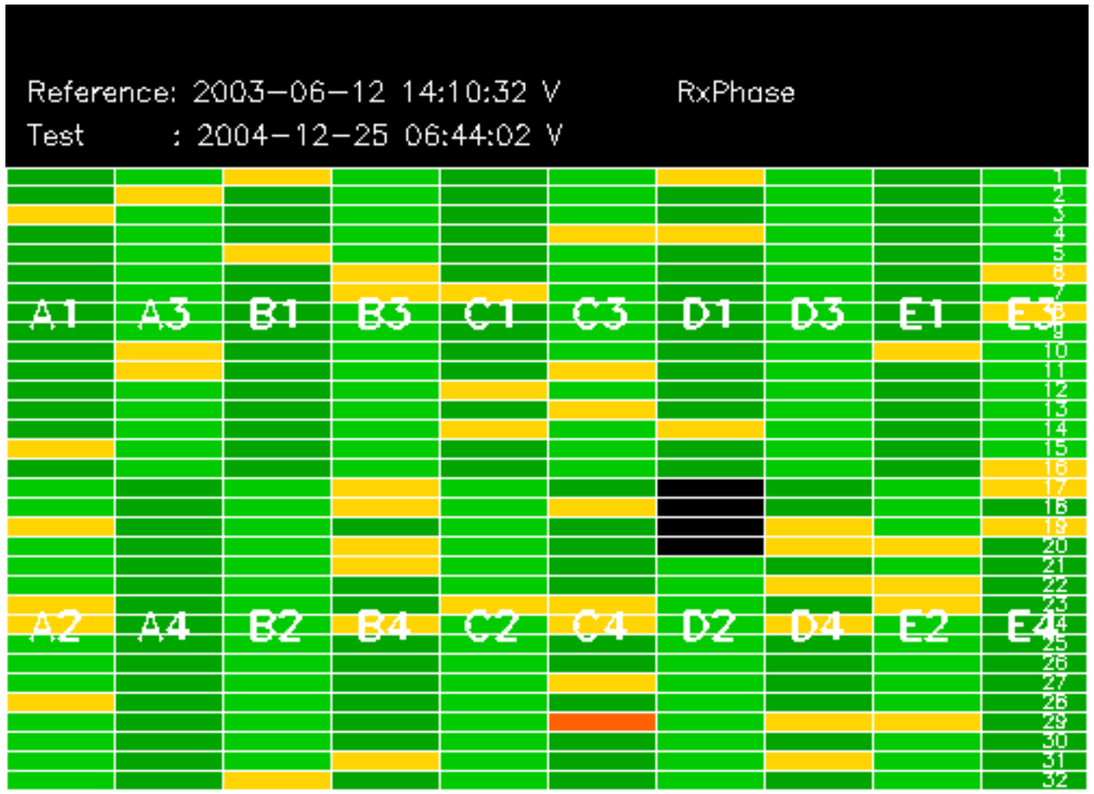

Reference: 2001-02-09 14:08:23 V
Test : 2004-12-25 06:44:02 V
RxGain
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32

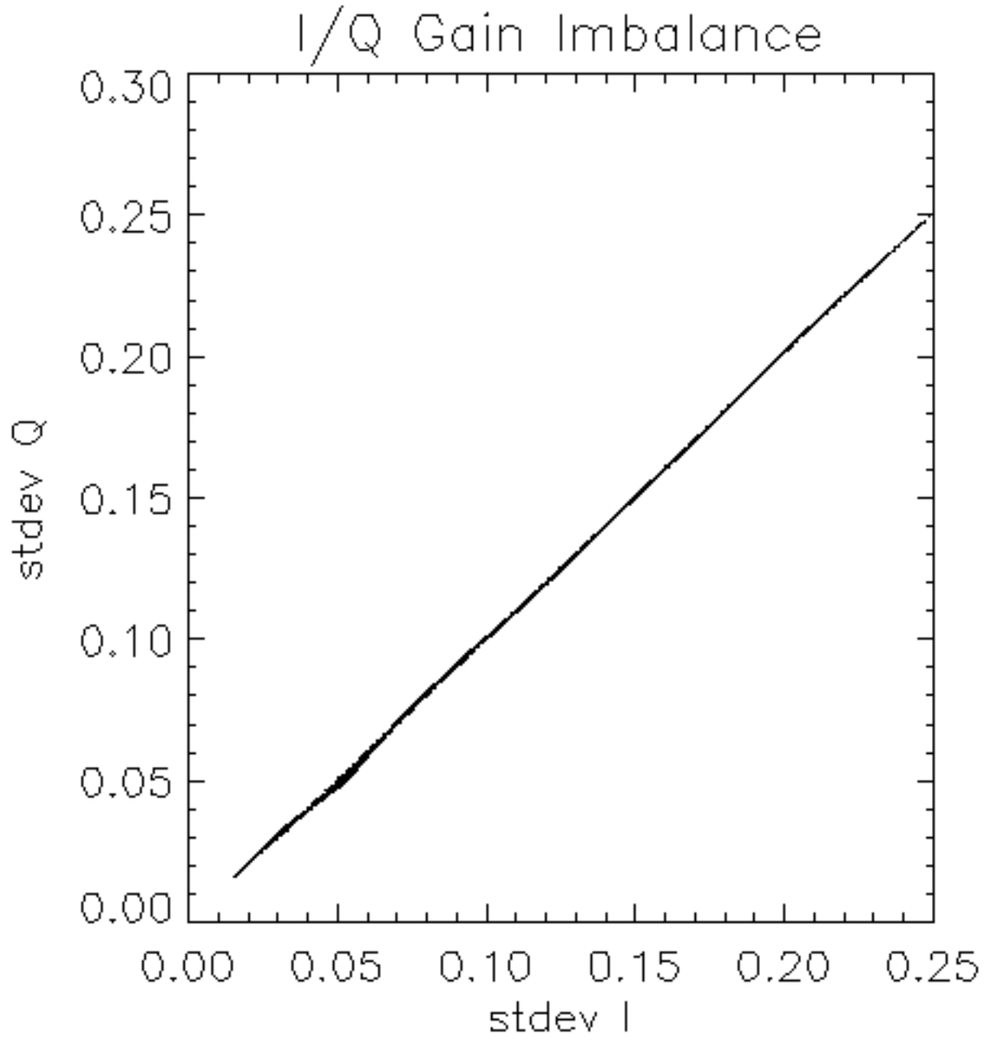

Reference: 2003-06-12 14:10:32 V
Test : 2004-12-25 06:44:02 V
RxGain
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32

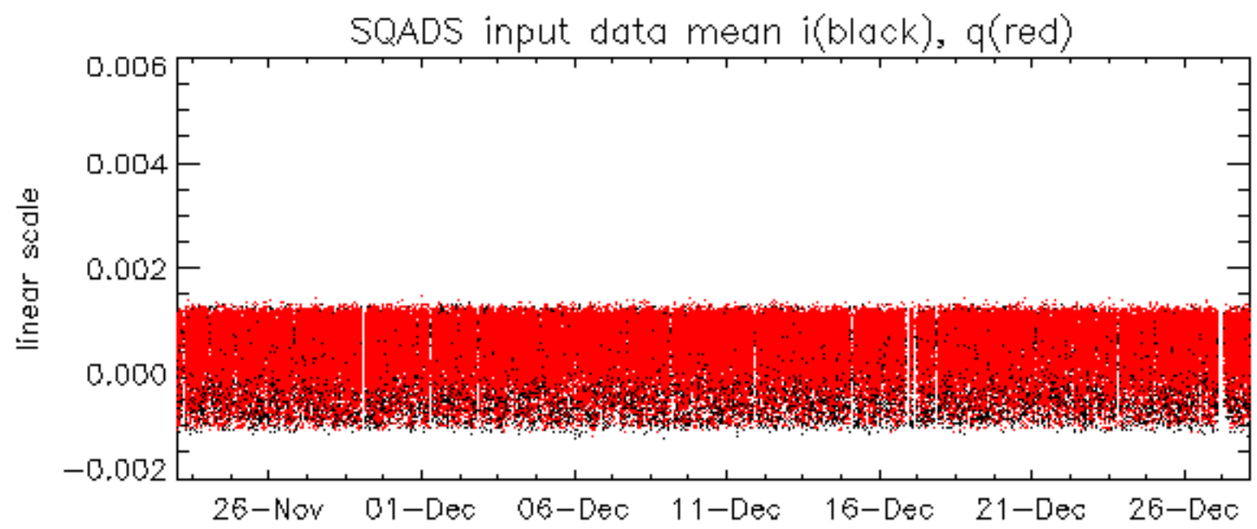

Reference: 2001-02-09 13:50:42 H
Test : 2004-12-26 06:12:25 H
RxPhase
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4

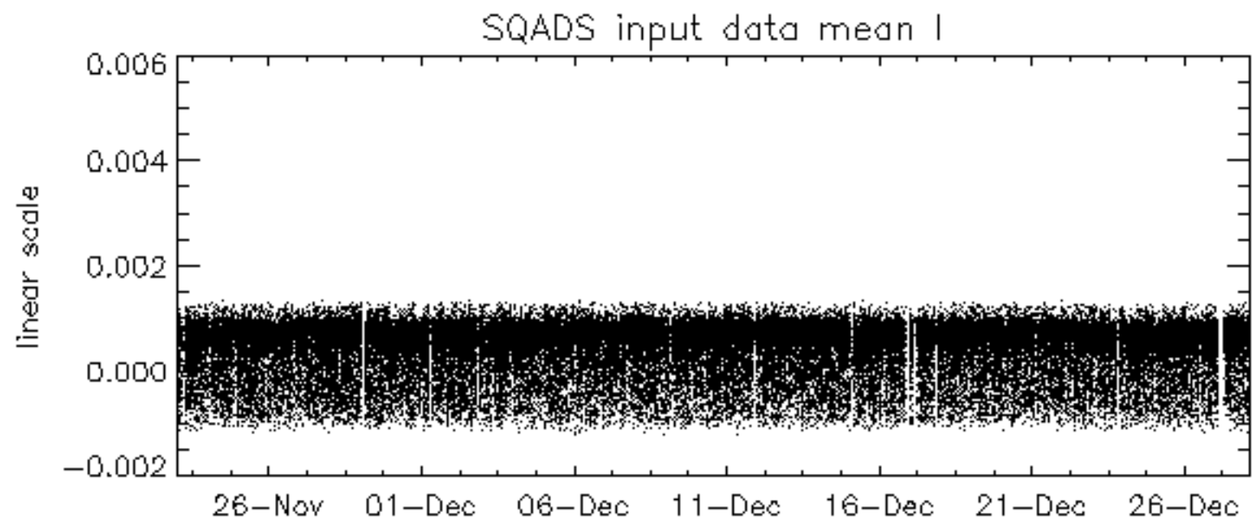

Reference: 2003-06-12 14:08:52 H
Test : 2004-12-26 06:12:25 H
RxPhase
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4

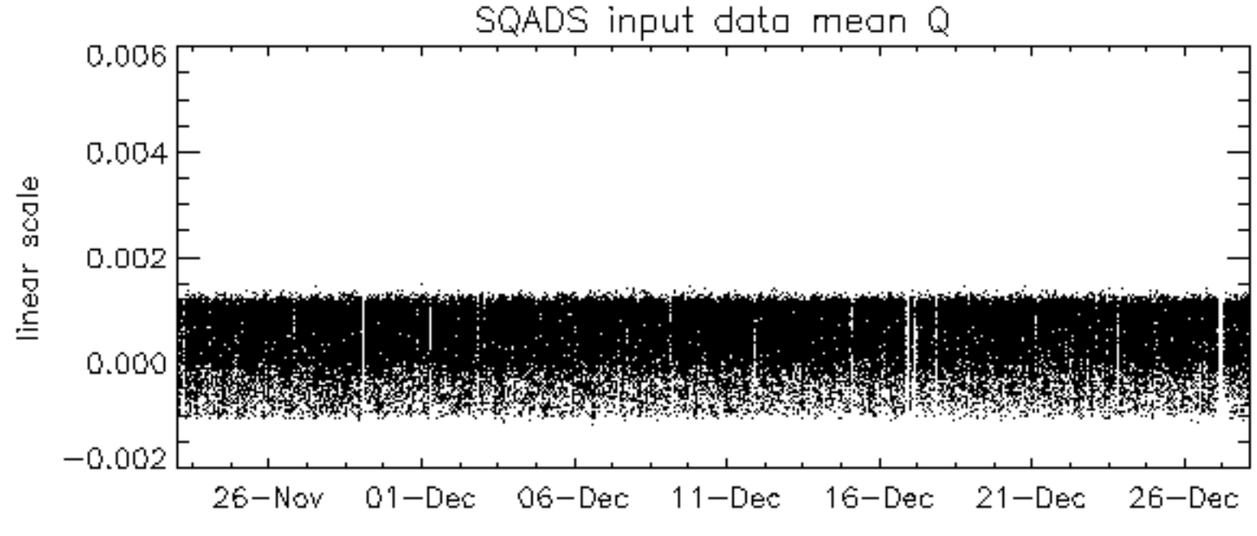

Reference: 2001-02-09 14:08:23 V
RxPhase
Test : 2004-12-25 06:44:02 V
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4

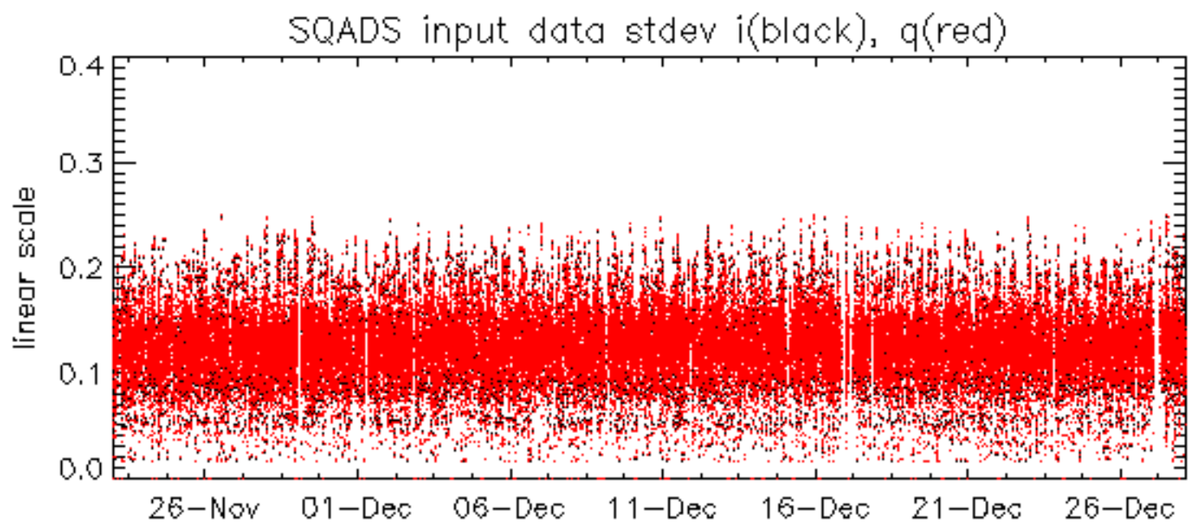

Reference: 2003-06-12 14:10:32 V
Test : 2004-12-25 06:44:02 V
RxPhase
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4

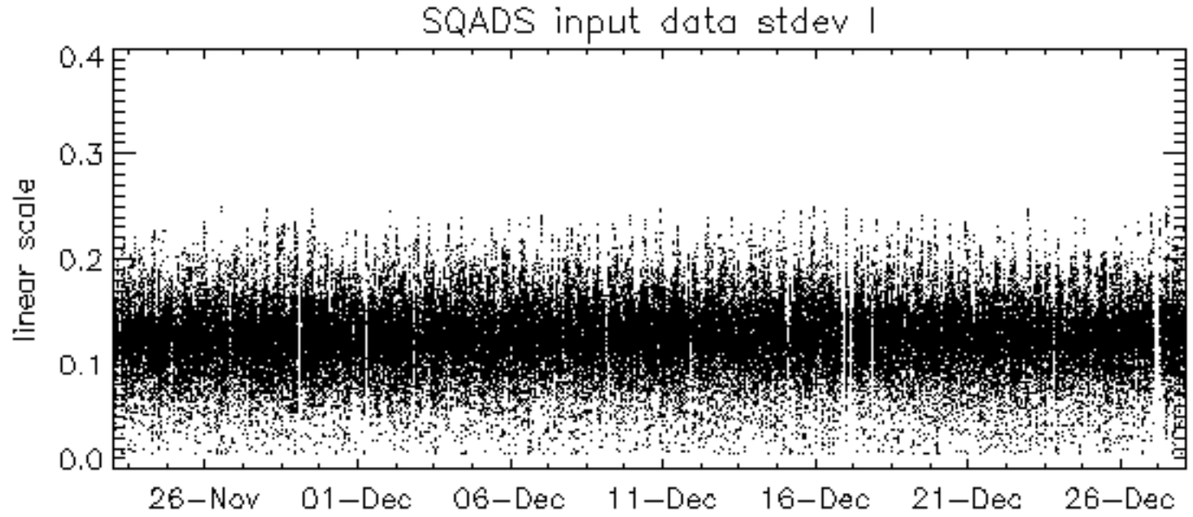

I/Q Gain Imbalance
0.30
0.25
0.20
0.15
0.10
0.05
0.00
stdev Q
0.00
0.05
0.10
0.15
0.20
0.25
stdev I

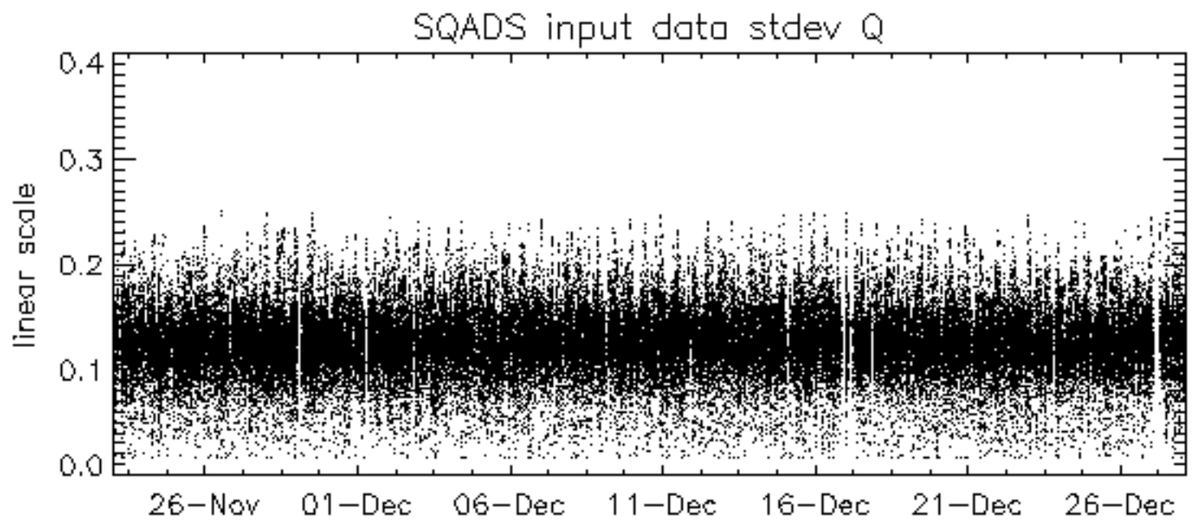

SQADS input data mean i(black), q(red)
linear scale
0.006
0.004
0.002
0.000
−0.002
26−Nov
01−Dec
06−Dec
11−Dec
16−Dec
21−Dec
26−Dec

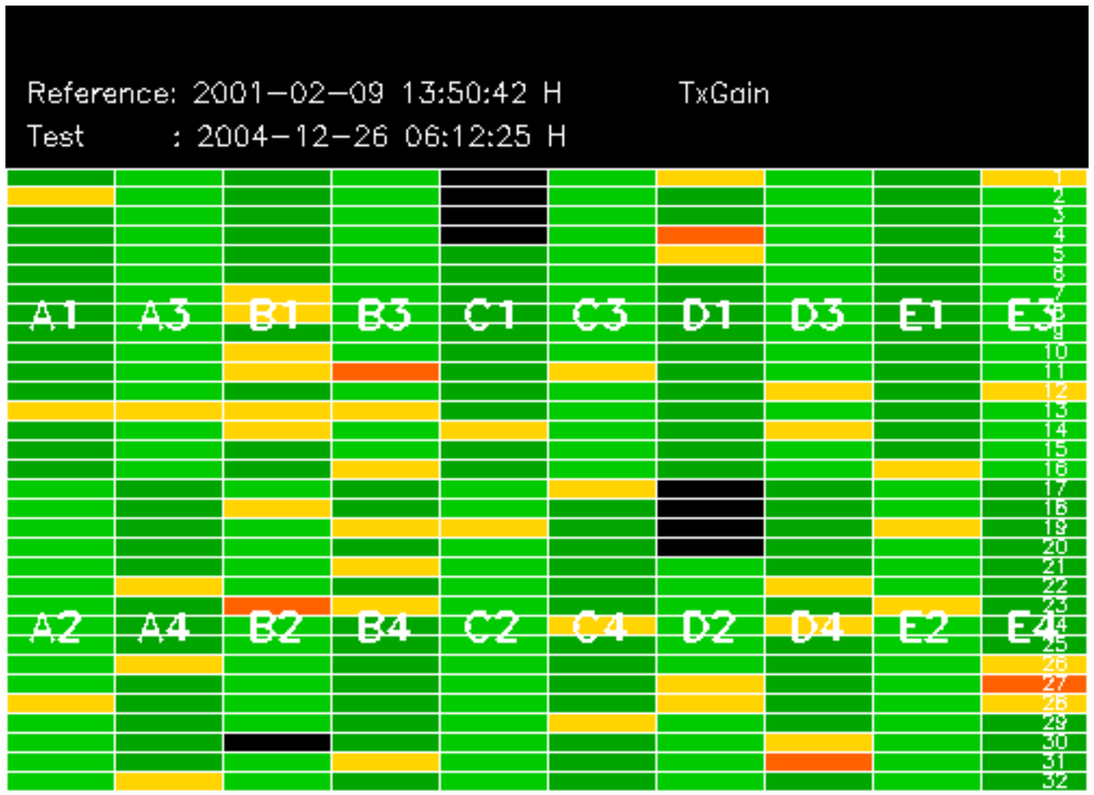

SQADS input data mean I
linear scale
0.006
0.004
0.002
0.000
−0.002
26−Nov
01−Dec
06−Dec
11−Dec
16−Dec
21−Dec
26−Dec

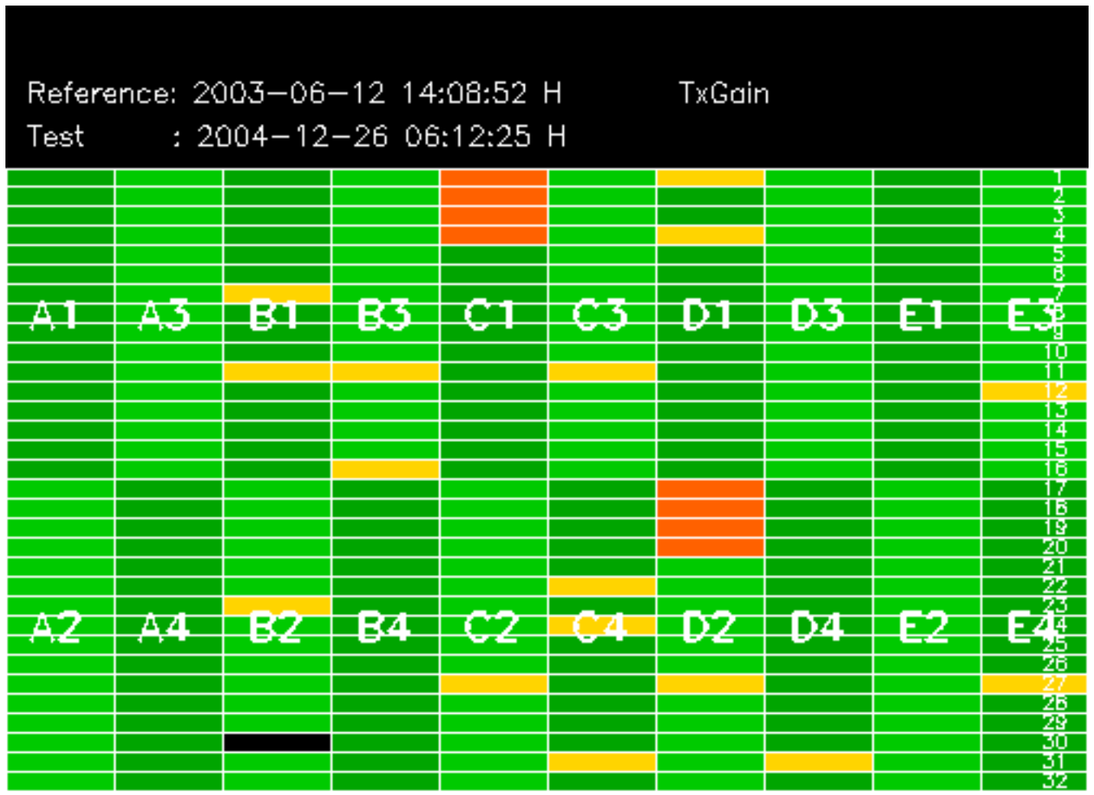

SQADS input data mean Q
linear scale
0.006
0.004
0.002
0.000
−0.002
26−Nov
01−Dec
06−Dec
11−Dec
16−Dec
21−Dec
26−Dec

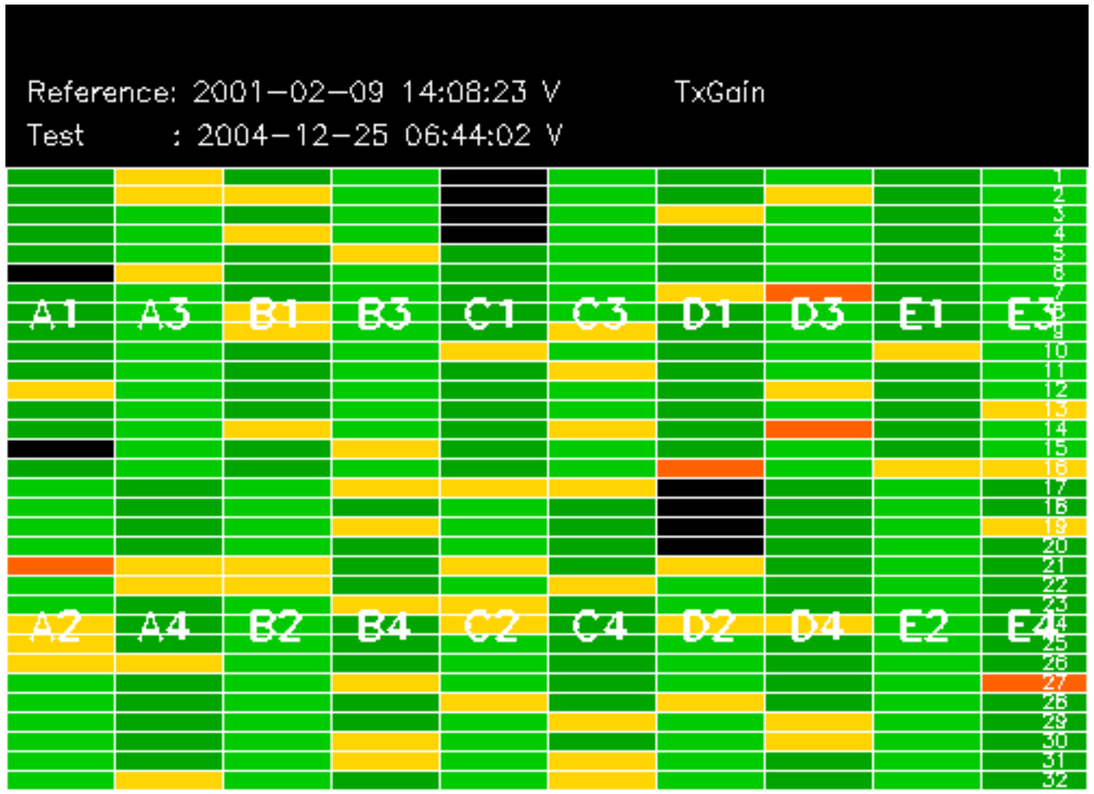

SQADS input data stdev i(black), q(red)
linear scale
0.4
0.3
0.2
0.1
0.0
26-Nov
01-Dec
06-Dec
11-Dec
16-Dec
21-Dec
26-Dec

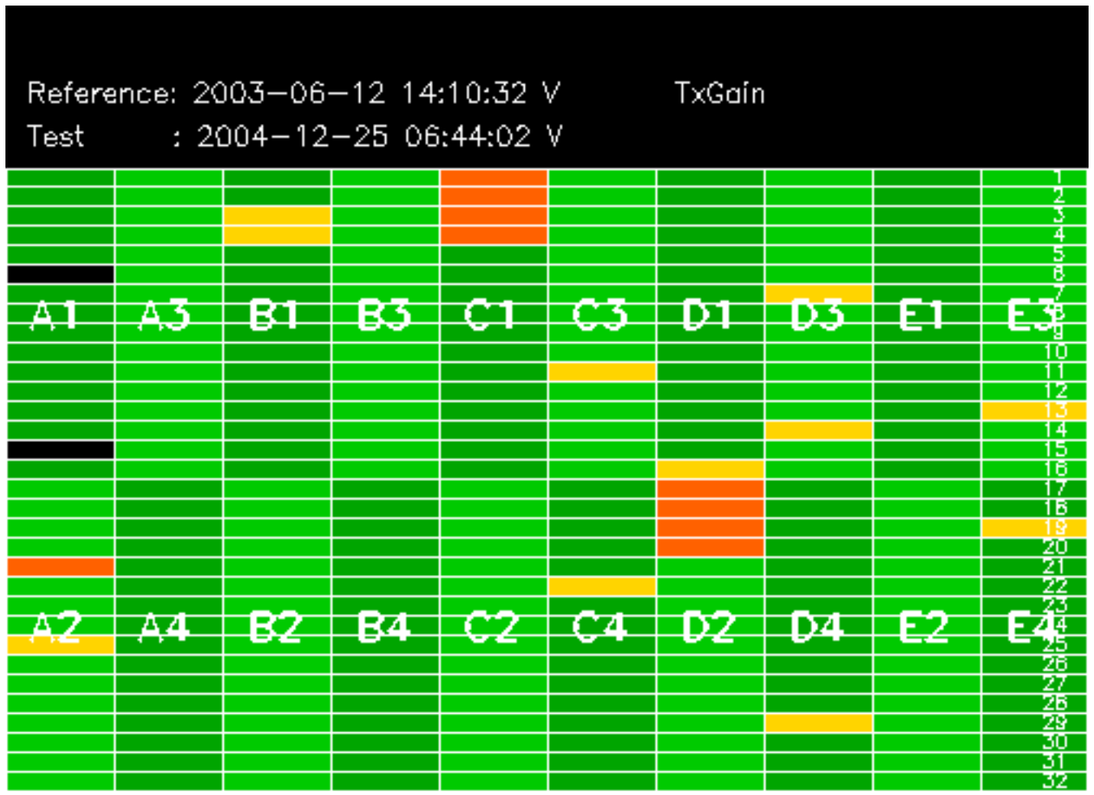

SQADS input data stdev I
linear scale
0.4
0.3
0.2
0.1
0.0
26-Nov
01-Dec
06-Dec
11-Dec
16-Dec
21-Dec
26-Dec

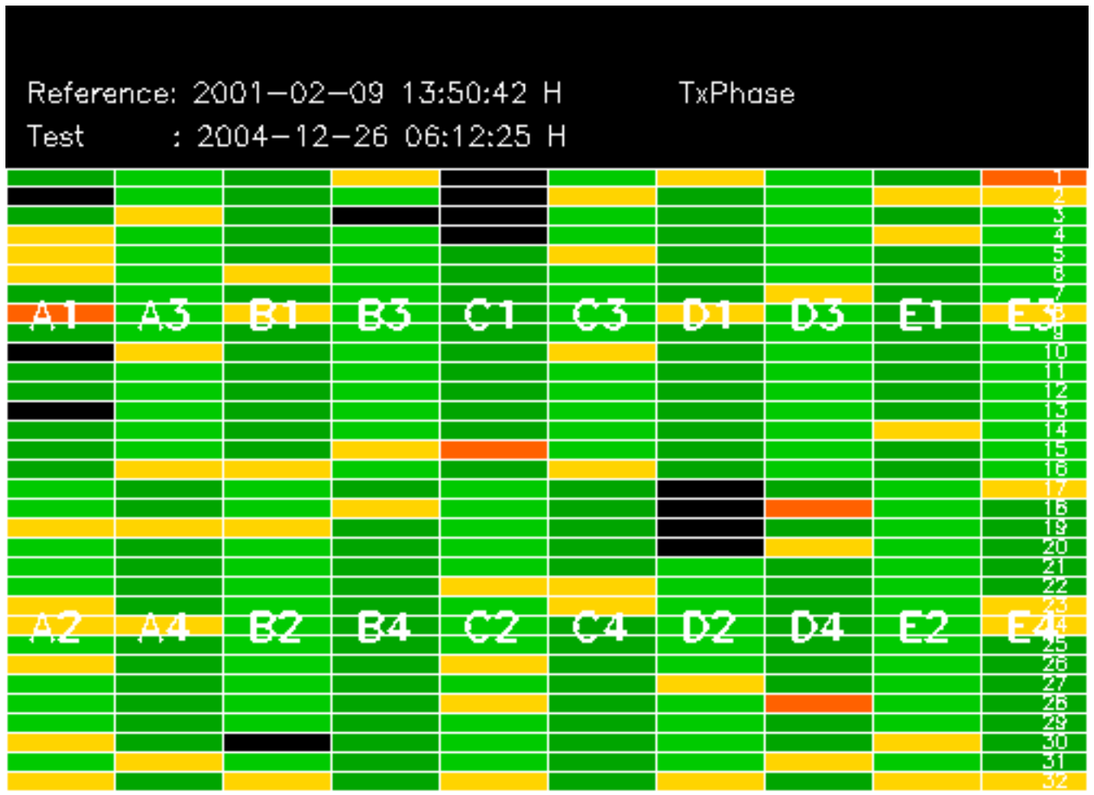

SQADS input data stdev Q
linear scale
0.4
0.3
0.2
0.1
0.0
26-Nov
01-Dec
06-Dec
11-Dec
16-Dec
21-Dec
26-Dec

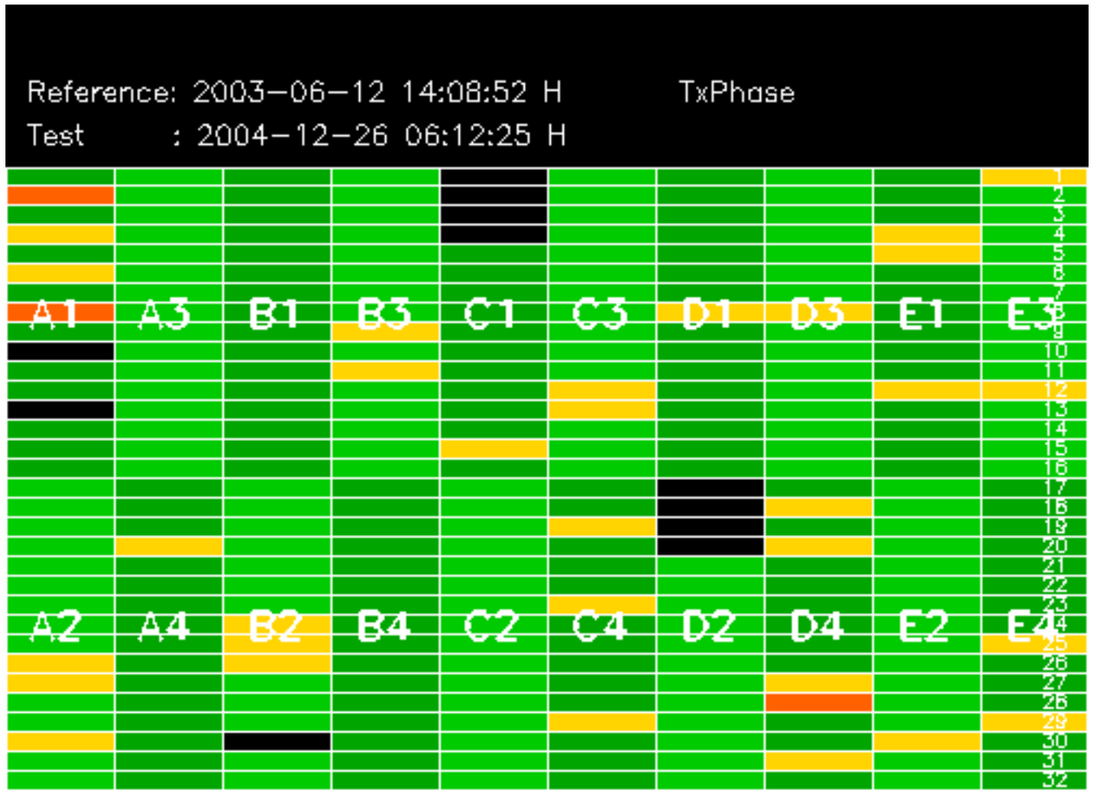

Reference: 2001-02-09 13:50:42 H
Test : 2004-12-26 06:12:25 H
TxGain
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4

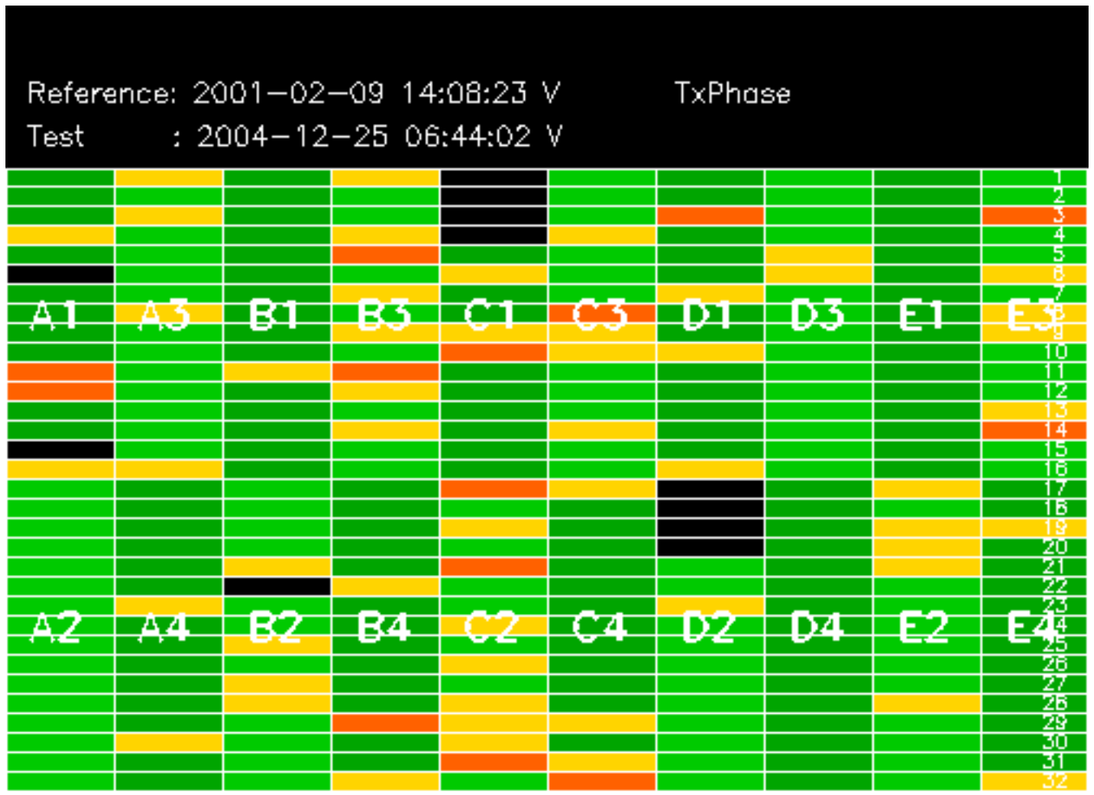

Reference: 2003-06-12 14:08:52 H
Test : 2004-12-26 06:12:25 H
TxGain
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4

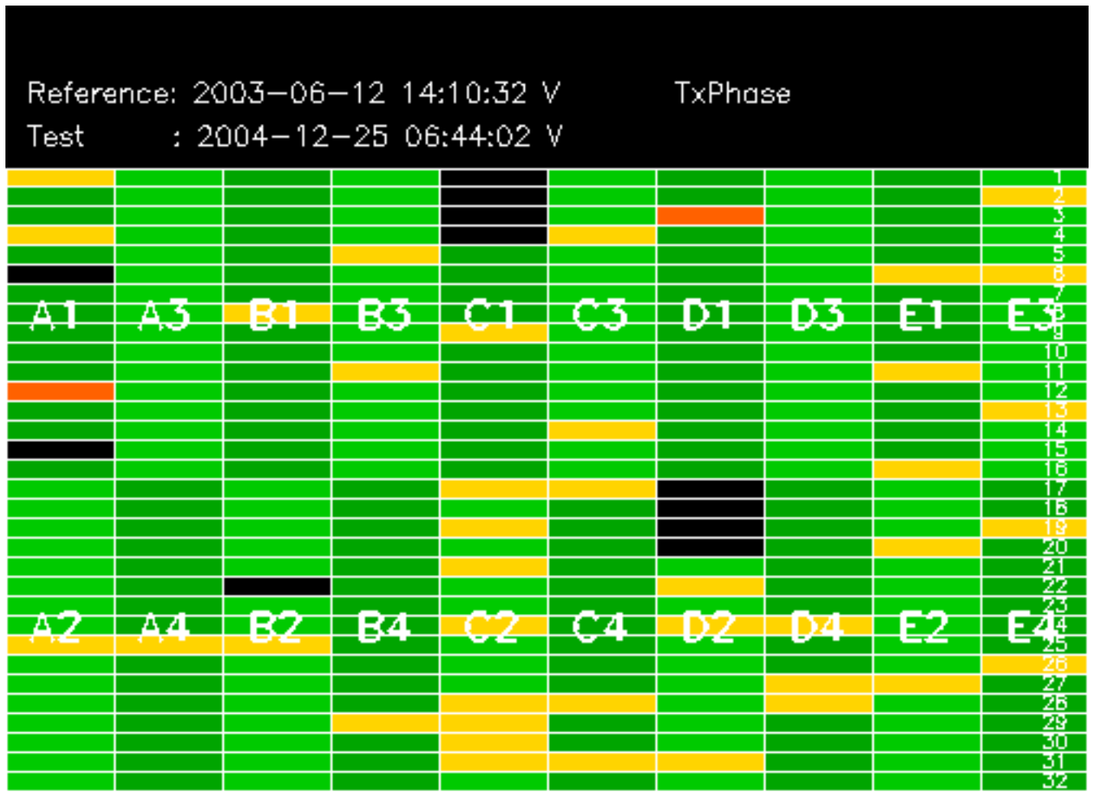

Reference: 2001-02-09 14:08:23 V
Test : 2004-12-25 06:44:02 V
TxGain
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4

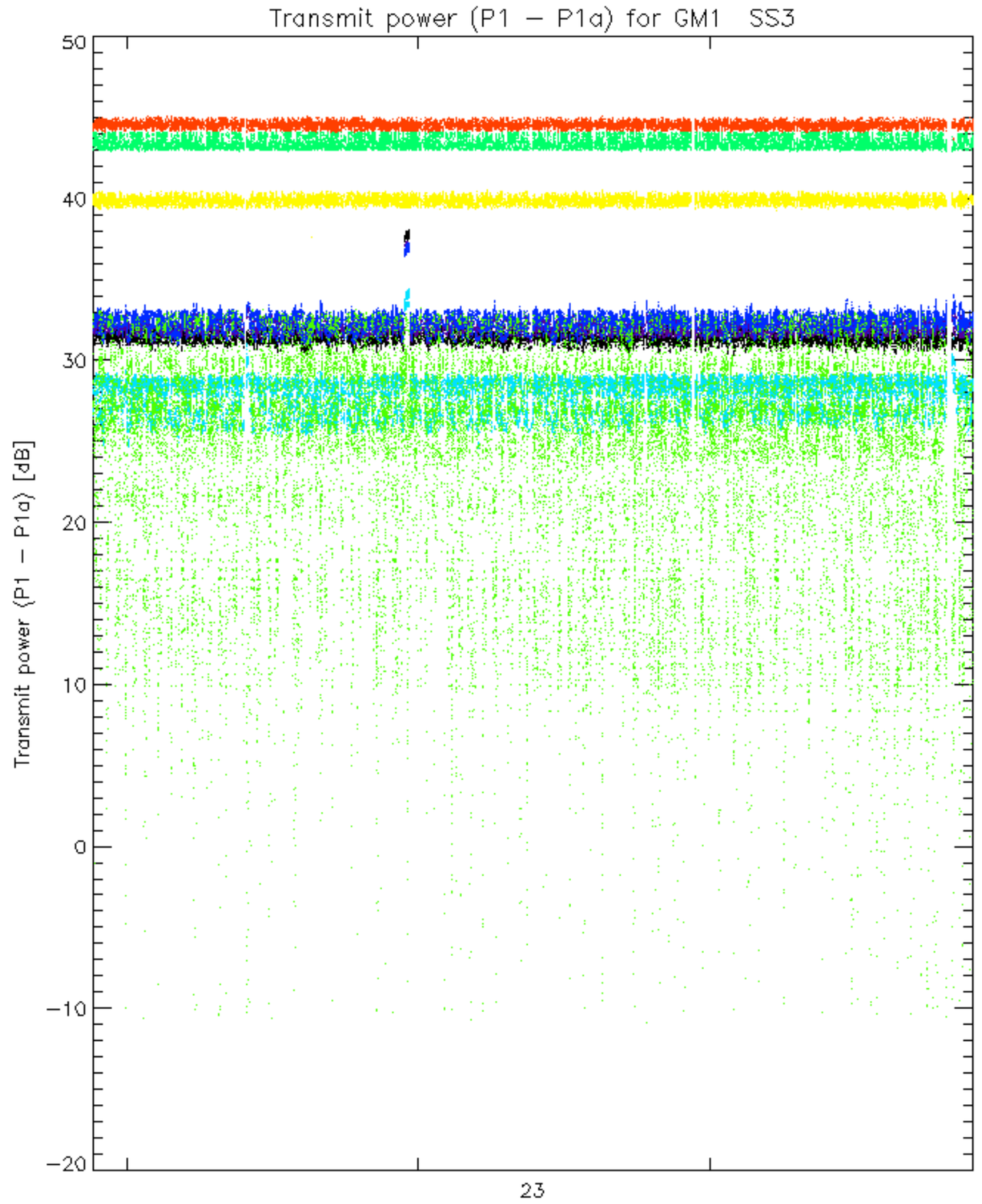

Reference: 2003-06-12 14:10:32 V
Test : 2004-12-25 06:44:02 V
TxGain
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32

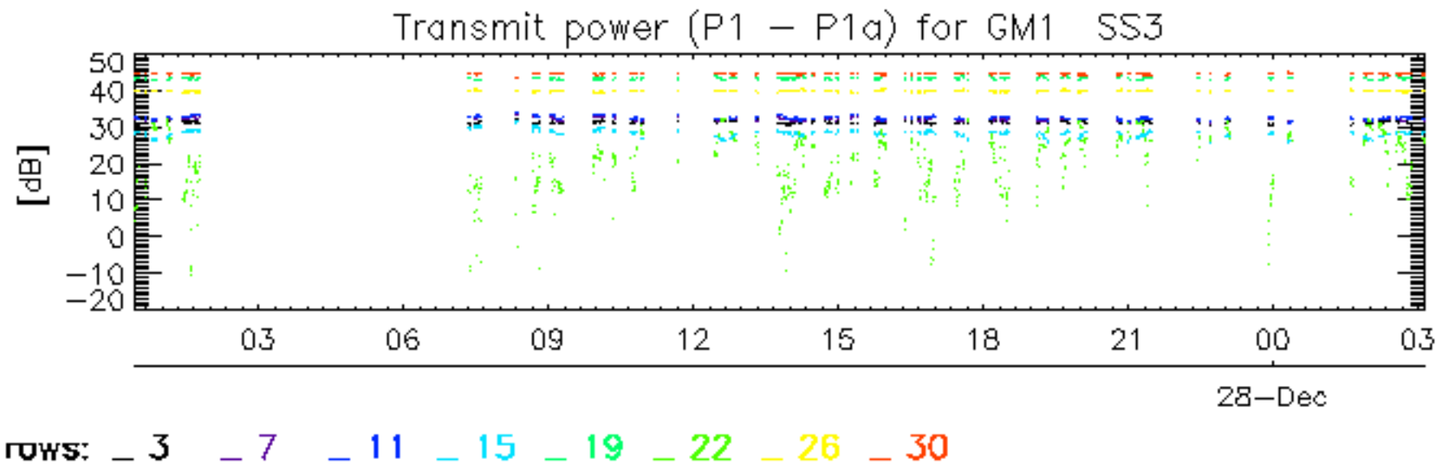

Reference: 2001-02-09 13:50:42 H
TxPhase
Test : 2004-12-26 06:12:25 H
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4

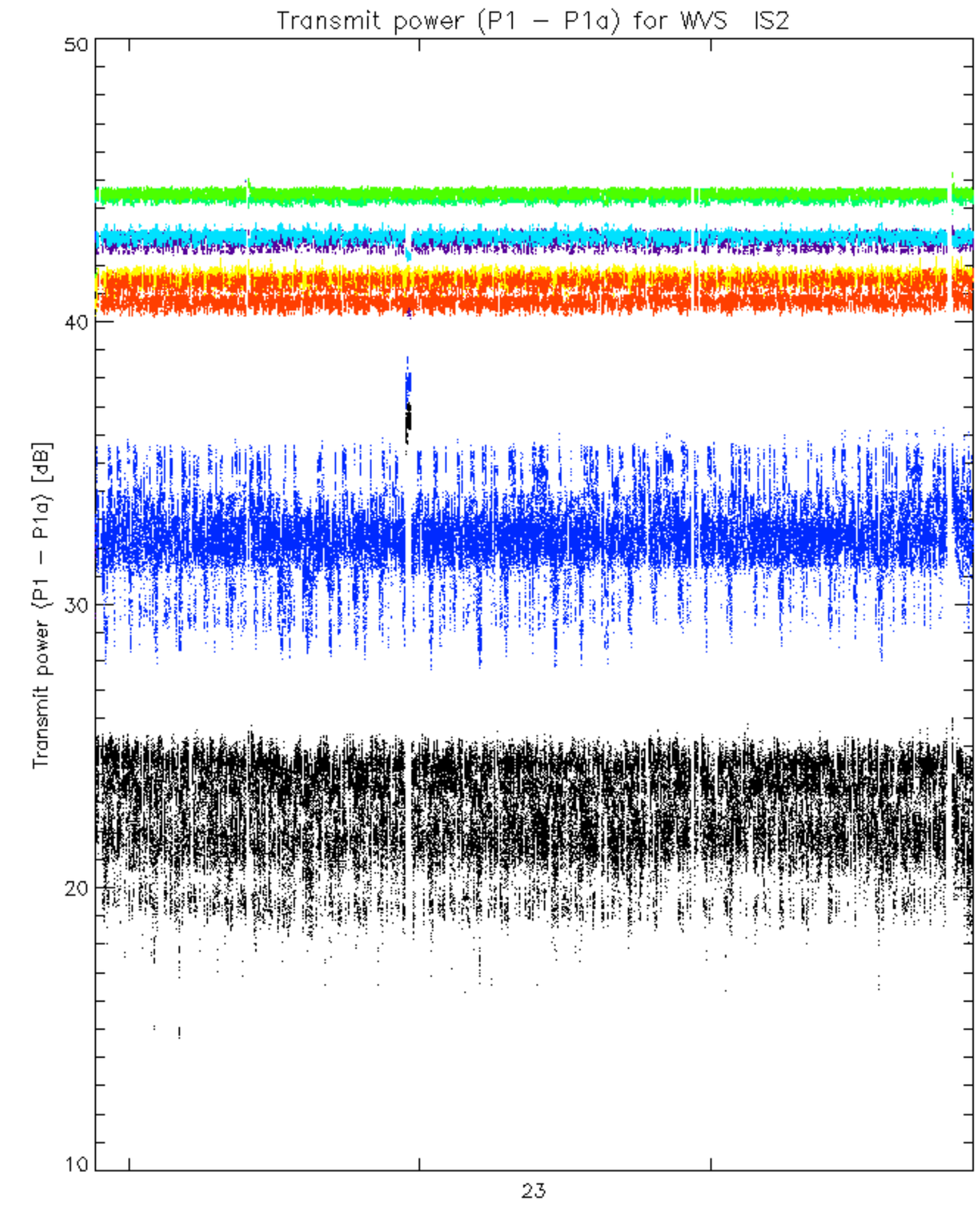

Reference: 2003-06-12 14:08:52 H
Test : 2004-12-26 06:12:25 H
TxPhase
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4

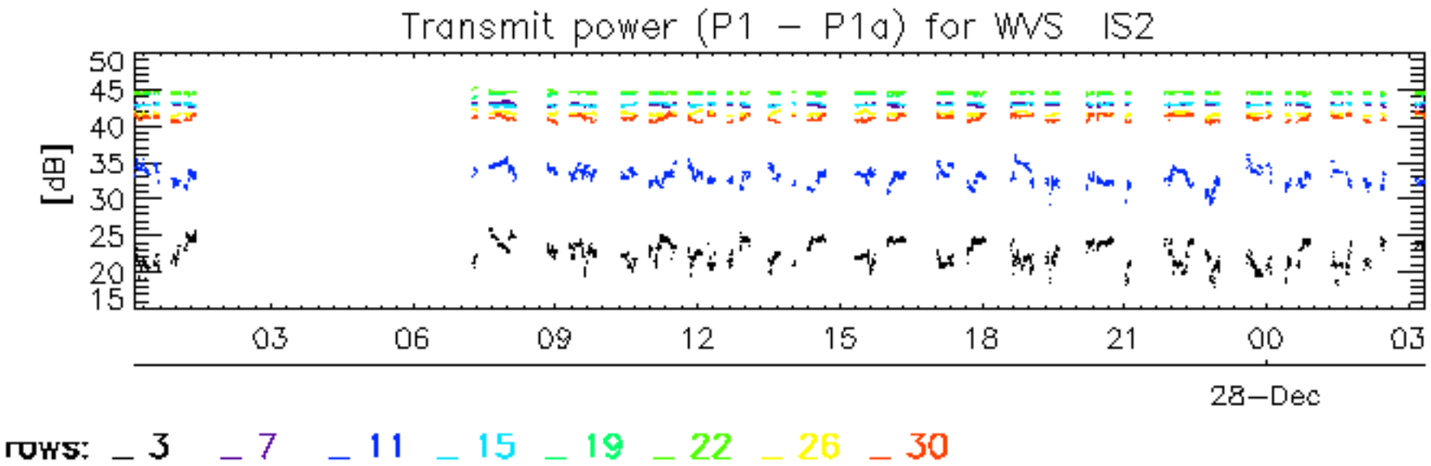

Reference: 2001-02-09 14:08:23 V
TxPhase
Test : 2004-12-25 06:44:02 V
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4


Reference: 2003-06-12 14:10:32 V
Test : 2004-12-25 06:44:02 V
TxPhase
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4


Transmit power (P1 – P1a) for GM1 SS3
Transmit power (P1 – P1a) [dB]
50
40
30
20
10
0
−10
−20
23
rows: 3 7 11 15 19 22 26 30


Transmit power (P1 – P1a) for GM1 SS3
[dB]
50
40
30
20
10
0
−10
−20
03
06
09
12
15
18
21
00
03
28–Dec
rows: 3 7 11 15 19 22 26 30


Transmit power (P1 – P1a) for WVS IS2
Transmit power (P1 – P1a) [dB]
50
40
30
20
10
23
rows: 3 7 11 15 19 22 26 30


Transmit power (P1 – P1a) for WVS IS2
[dB]
50
45
40
35
30
25
20
15
03
06
09
12
15
18
21
00
03
28–Dec
rows: 3 7 11 15 19 22 26 30

ASAR was in heater refuse mode due to an ICB command error.
Unavailability started on 27 Dec 2004 01:50:26.000 UTC (Orbit = 14772) to 27-DEC-2004 07:16:17 UTC