SUMMARY

1 - Introduction

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

2 - Summary

2.1 - Instrument Unavailability

No instrument unavailabilies during the reported period.

Sub-system	Start	Stop	Planned
ASAR	YYYY-MM-DD hh:mm:ss	YYYY-MM-DD hh:mm:ss	---

2.2 - Browse Visual Inspection

Although an anomaly is detected on P1 and P1A cal pulses, no anomalies are observed on available browse products.

2.3 - Data Analysis

- Figure of paragraph 4.3 shows variations on P1 amplitude and P1A amplitude and phase.
-Only the second part of the antenna is concerned with the rows 25 to 32 affected.
-P1 presents a gain jump of around 1-2 dB while no sgnificant changes on P1 phase.
-P1A increases around 3-6dB while The phase on P1A decreases of ~40-80 degrees depending on row number.
- Figure od paragraph 4.1 shows that the anomaly has started on the 03-AUG-2003 around 21:00
-Nominal Doppler behaviour
-Nominal anomalies on raw data statistics

3 - Module Stepping Mode

No anomalies observed MS products because they have been acquired before the start of the anomaly reported:
Available MS products are:
-ASA_MS__0PNPDK20030803_192118_000000152018_00385_07453_0059.N1
-ASA_MS__0PNPDK20030803_192258_000000152018_00385_07453_0060.N1

The drift in phase for TR module 3 on Tile B3 has decreased to a stable configuration as shown in the figure below.

Polarisation	Start Time
V	20030803 192258
H	20030803 192118

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

- Variations on P1 amplitude and P1A amplitude phase are noticed.
- Anomaly has started on 03-AUG-2003 around 21:00
- The plot of paragraph 4.3 shows that only the second part of the antenna is concerned from row 25 to 32

4.1 - Daily statistics

row	stat	AveP1	AveP2	AveP3
25	mean	-3.12751	-23.4699	-8.10334
	stdev	0.136537	0.0617828	0.00213177
26	mean	-4.35623	-16.3214	-8.10334
	stdev	0.462354	0.0741447	0.00213177

4.2 - Cyclic statistics

row	stat	AveP1	AveP2	AveP3
25	mean	-3.29076	-23.5384	-8.10155
	stdev	0.0216966	0.0587223	0.00259184
26	mean	-4.68836	-16.3619	-8.10155
	stdev	0.0355935	0.0707034	0.00259184

4.3 - cal pulses monitoring (all rows)

5 - RAW data statistics

No anomalies observed.

5.1 - Input mean I/Q

channel	stat	DSS-B

MEAN I	mean	0.000478307
	stdev	3.03930e-07
MEAN Q	mean	0.000310824
	stdev	3.16461e-07

5.2 - Input stdev I/Q

channel	stat	DSS-B
STDEV I	mean	0.115325
	stdev	0.00161308
STDEV Q	mean	0.115444
	stdev	0.00164465

5.3 - Gain imbalance I/Q

6 - Wave Doppler Analysis

No anomalies observed Doppler evolution.
Doppler analysis performed over the last 60 days

6.1 - Unbiased Doppler Error

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

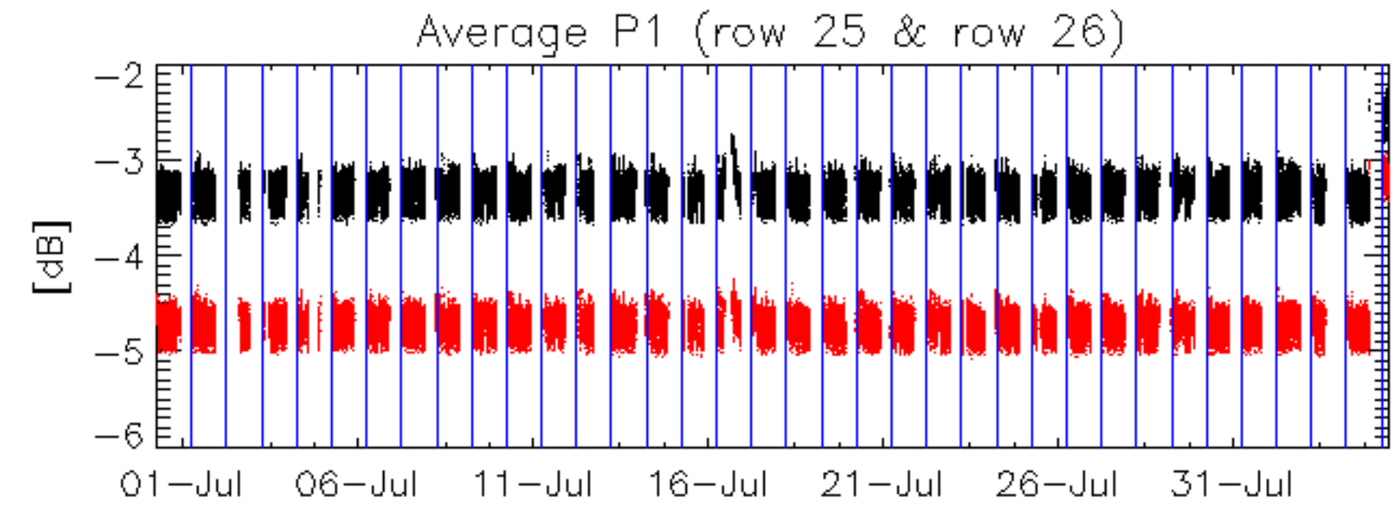
6.2 - Absolute Doppler

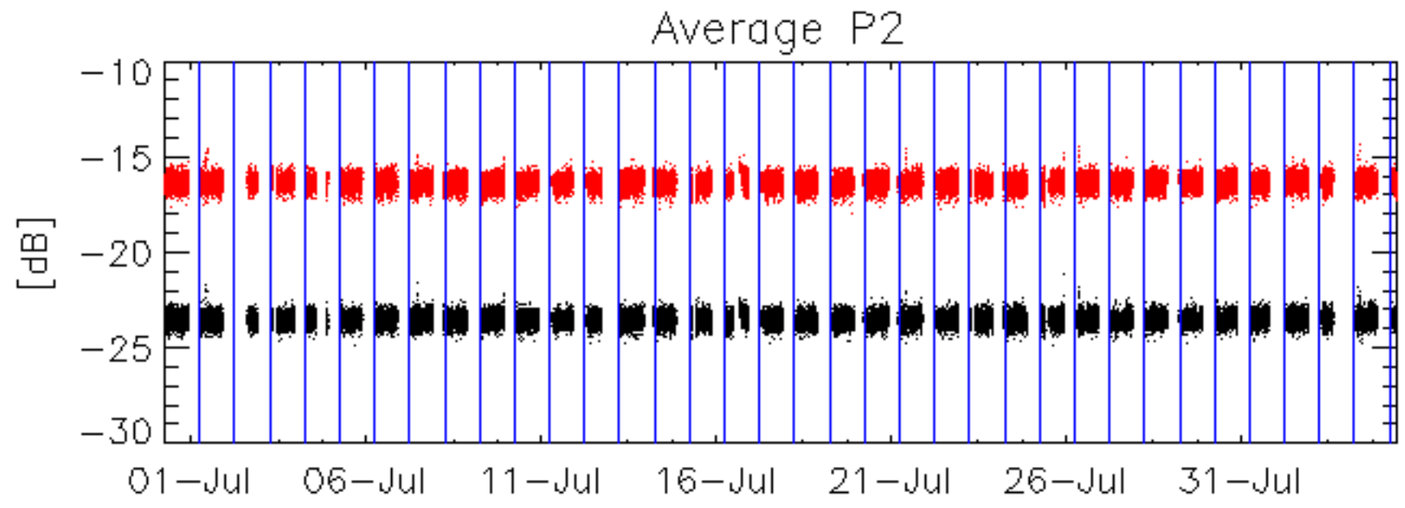
Evolution of Absolute Doppler

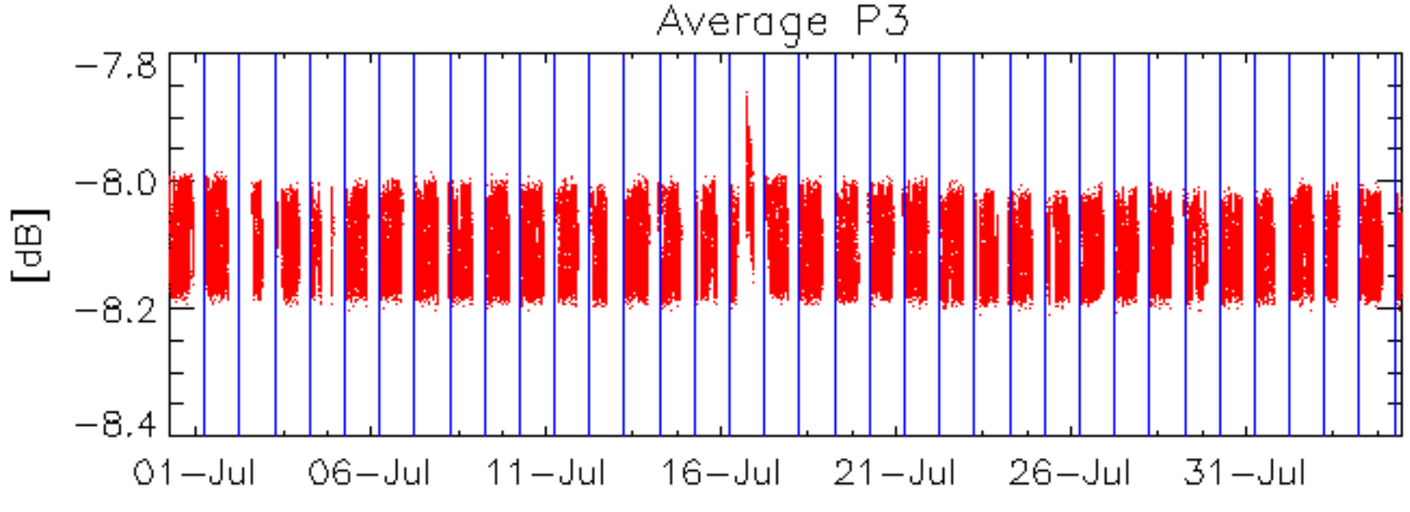
Acsending
Descending

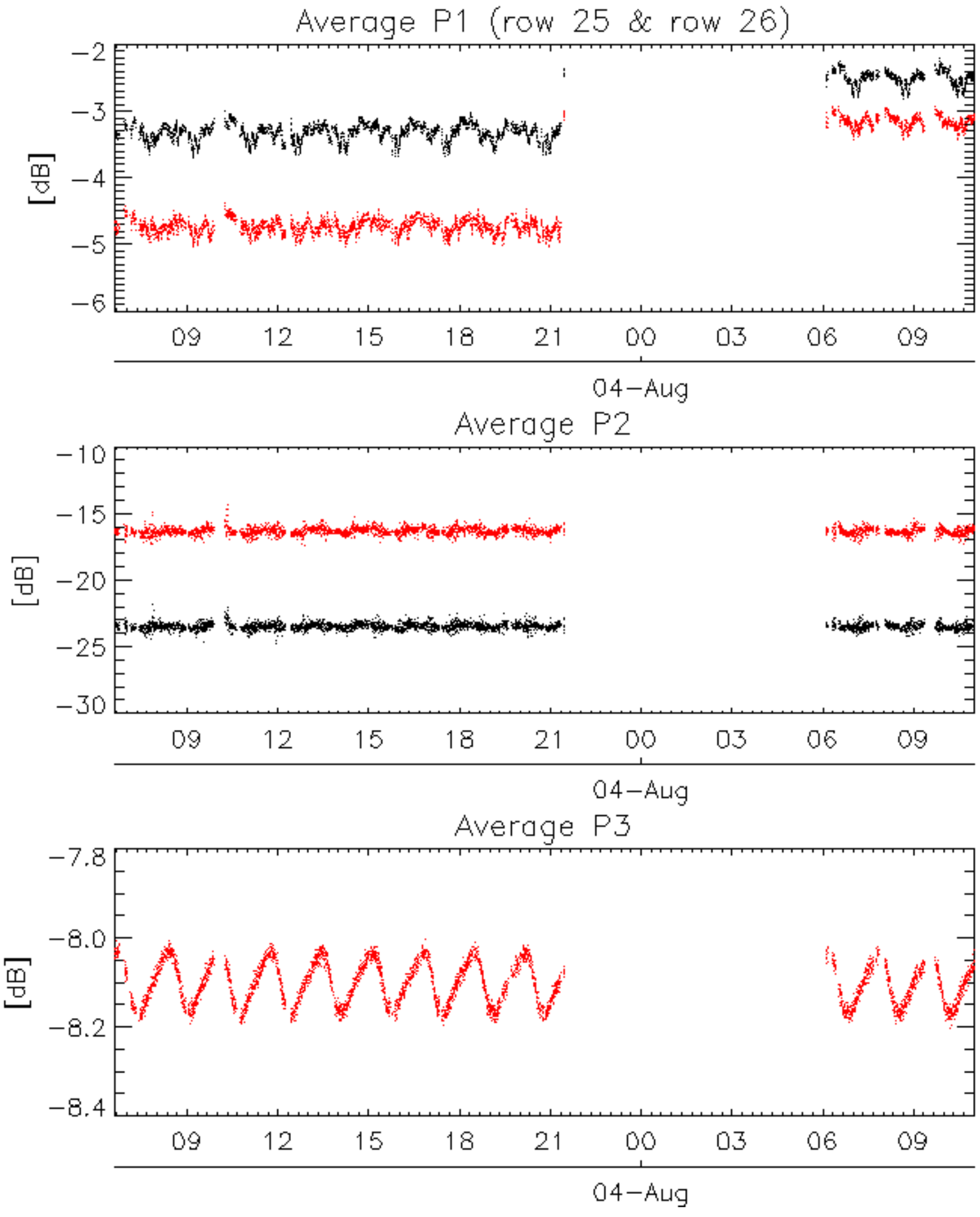
6.3 - Doppler evolution versus ANX

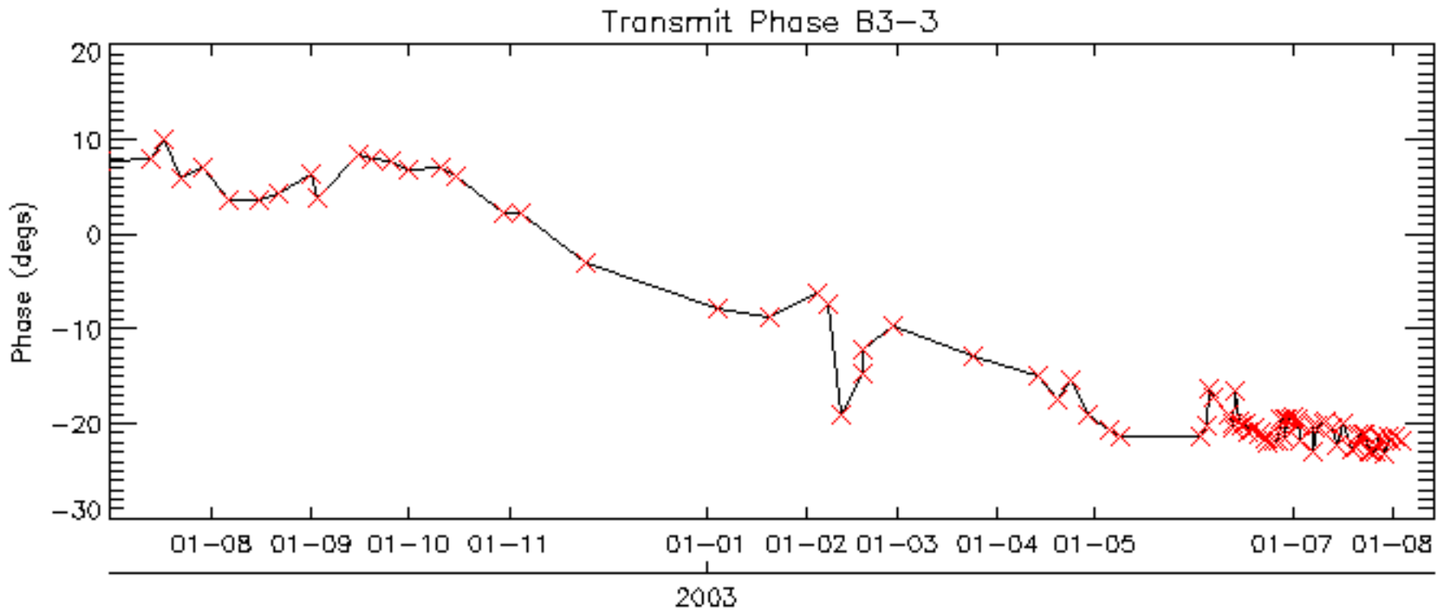
Evolution Doppler error versus ANX



Average P1 (row 25 & row 26)
[dB]
−2
−3
−4
−5
−6
01−Jul
06−Jul
11−Jul
16−Jul
21−Jul
26−Jul
31−Jul


Average P2
[dB]
−10
−15
−20
−25
−30
01−Jul
06−Jul
11−Jul
16−Jul
21−Jul
26−Jul
31−Jul

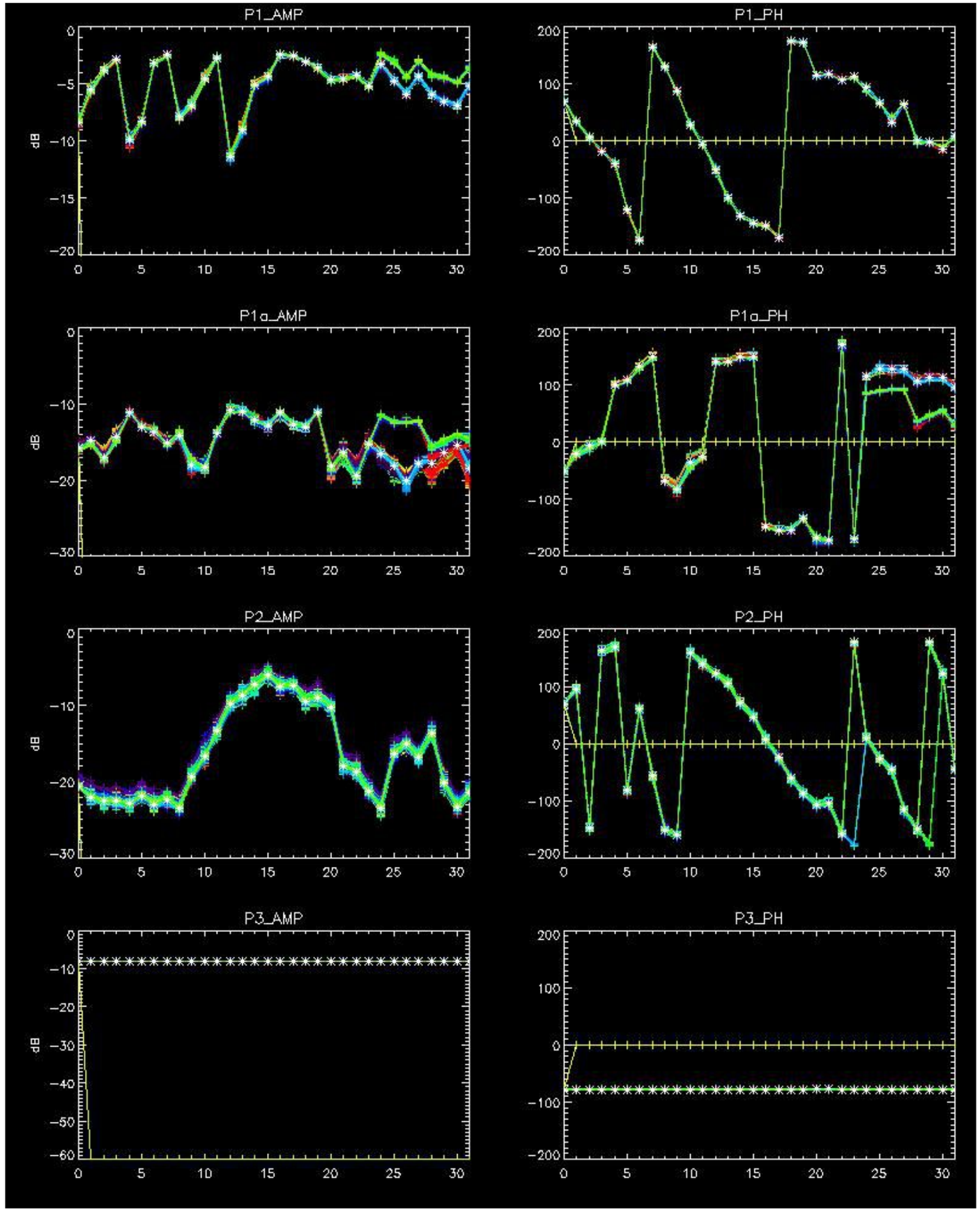

Average P3
[dB]
−7.8
−8.0
−8.2
−8.4
01−Jul
06−Jul
11−Jul
16−Jul
21−Jul
26−Jul
31−Jul


Average P1 (row 25 & row 26)
[dB]
−2
−3
−4
−5
−6
09
12
15
18
21
00
03
06
09
04−Aug
Average P2
[dB]
−10
−15
−20
−25
−30
09
12
15
18
21
00
03
06
09
04−Aug
Average P3
[dB]
−7.8
−8.0
−8.2
−8.4
09
12
15
18
21
00
03
06
09
04−Aug


Transmit Phase B3–3
Phase (degs)
20
10
0
−10
−20
−30
01–08
01–09
01–10
01–11
01–01
01–02
01–03
01–04
01–05
01–07
01–08
2003

Although an anomaly is detected on P1 and P1A cal pulses, no anomalies are observed on available browse products.

- Variations on P1 amplitude and P1A amplitude phase are noticed.
- Anomaly has started on 03-AUG-2003 around 21:00
- The plot of paragraph 4.3 shows that only the second part of the antenna is concerned from row 25 to 32


P1_AMP
P1_PH
P1a_AMP
P1a_PH
P2_AMP
P2_PH
P3_AMP
P3_PH
dB

- Figure of paragraph 4.3 shows variations on P1 amplitude and P1A amplitude and phase.

-Only the second part of the antenna is concerned with the rows 25 to 32 affected.

-P1 presents a gain jump of ~1-2 dB while no sgnificant changes on P1 phase.

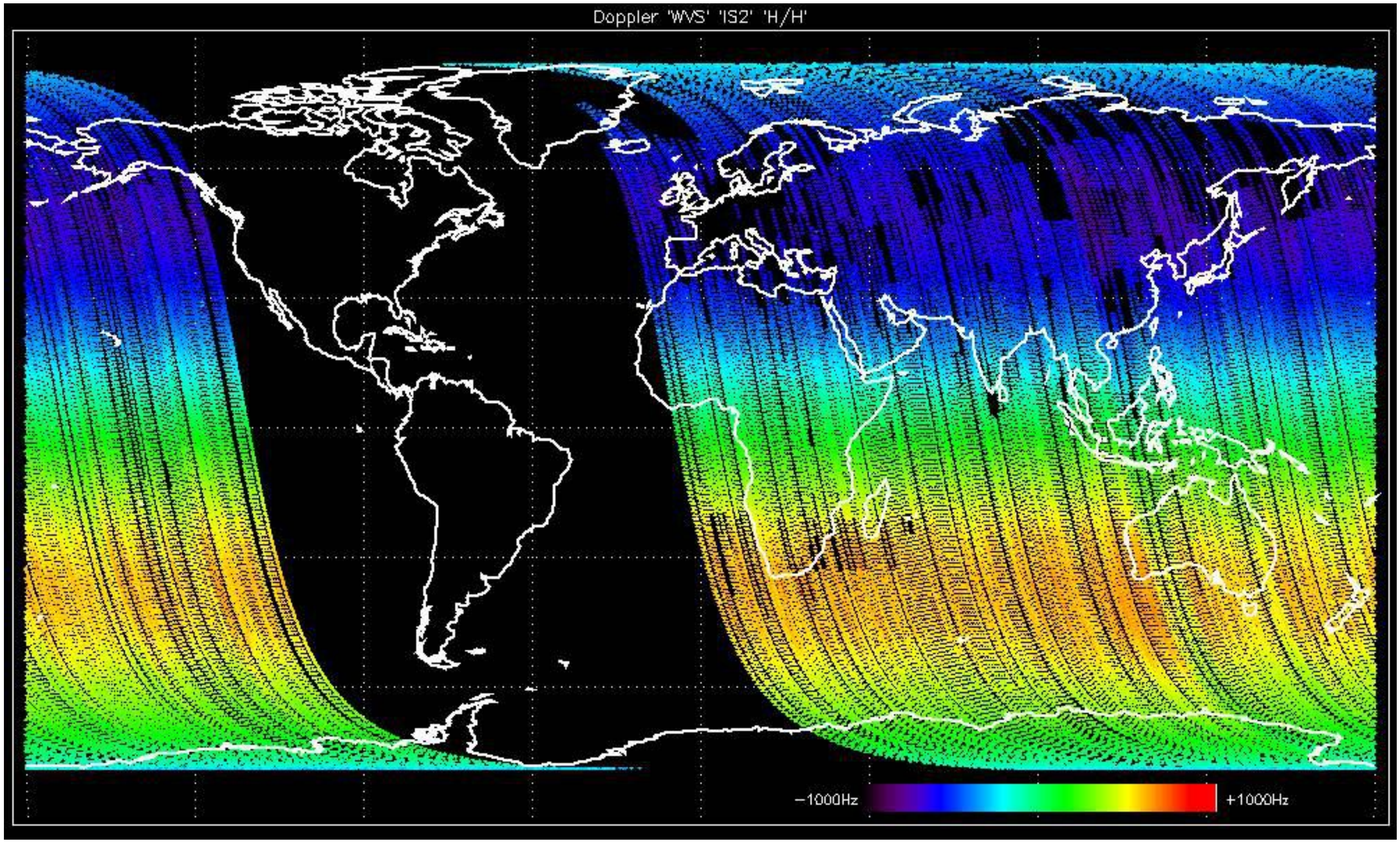
-P1A increases ~3-6dB while The phase on P1A decreases of ~40-80 degrees depending on row number.

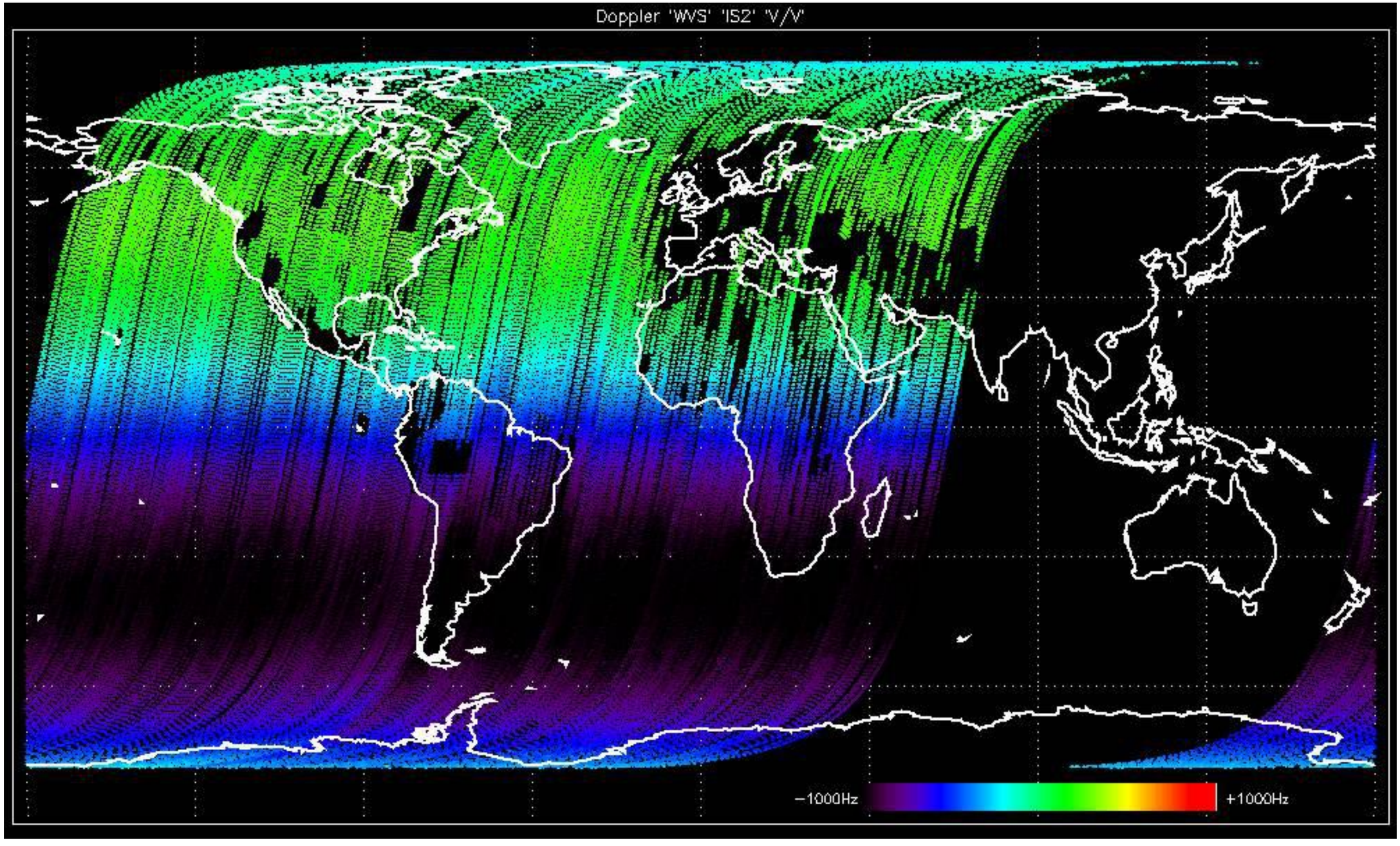
- Figure od paragraph 4.1 shows that the anomaly has started on the 03-AUG-2003 around 21:00

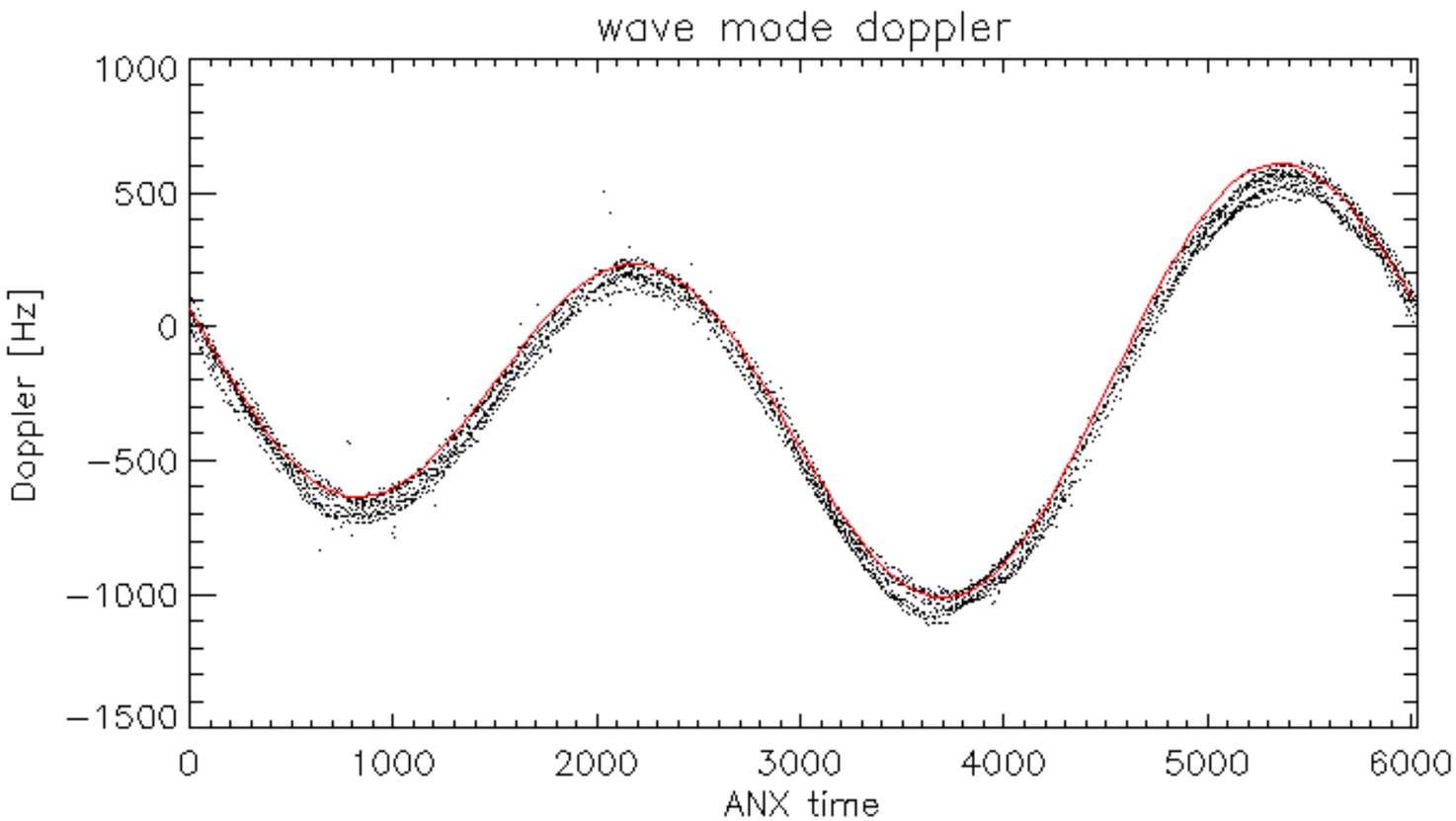
-Nominal Doppler behaviour

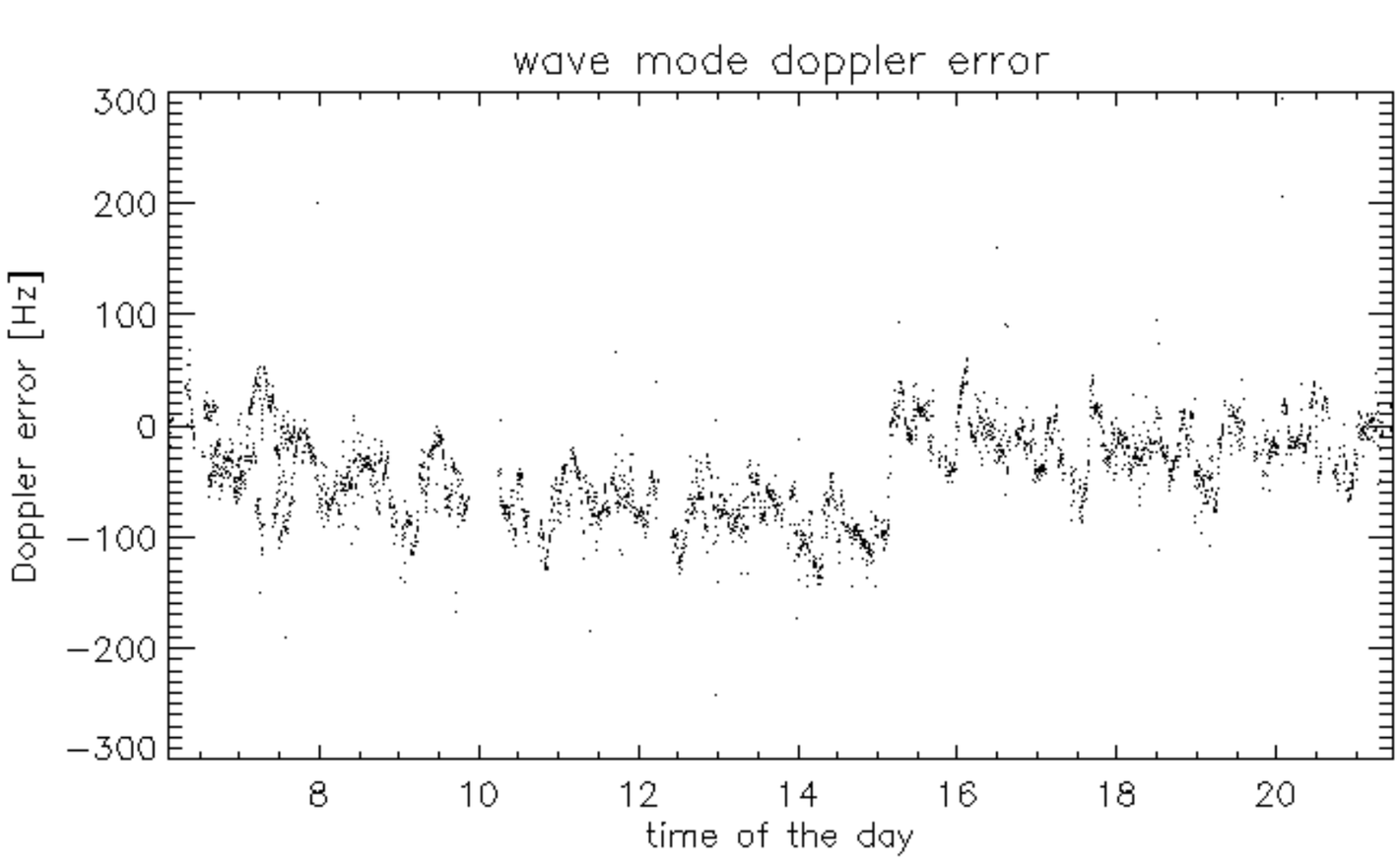
-Nominal anomalies on raw data statistics

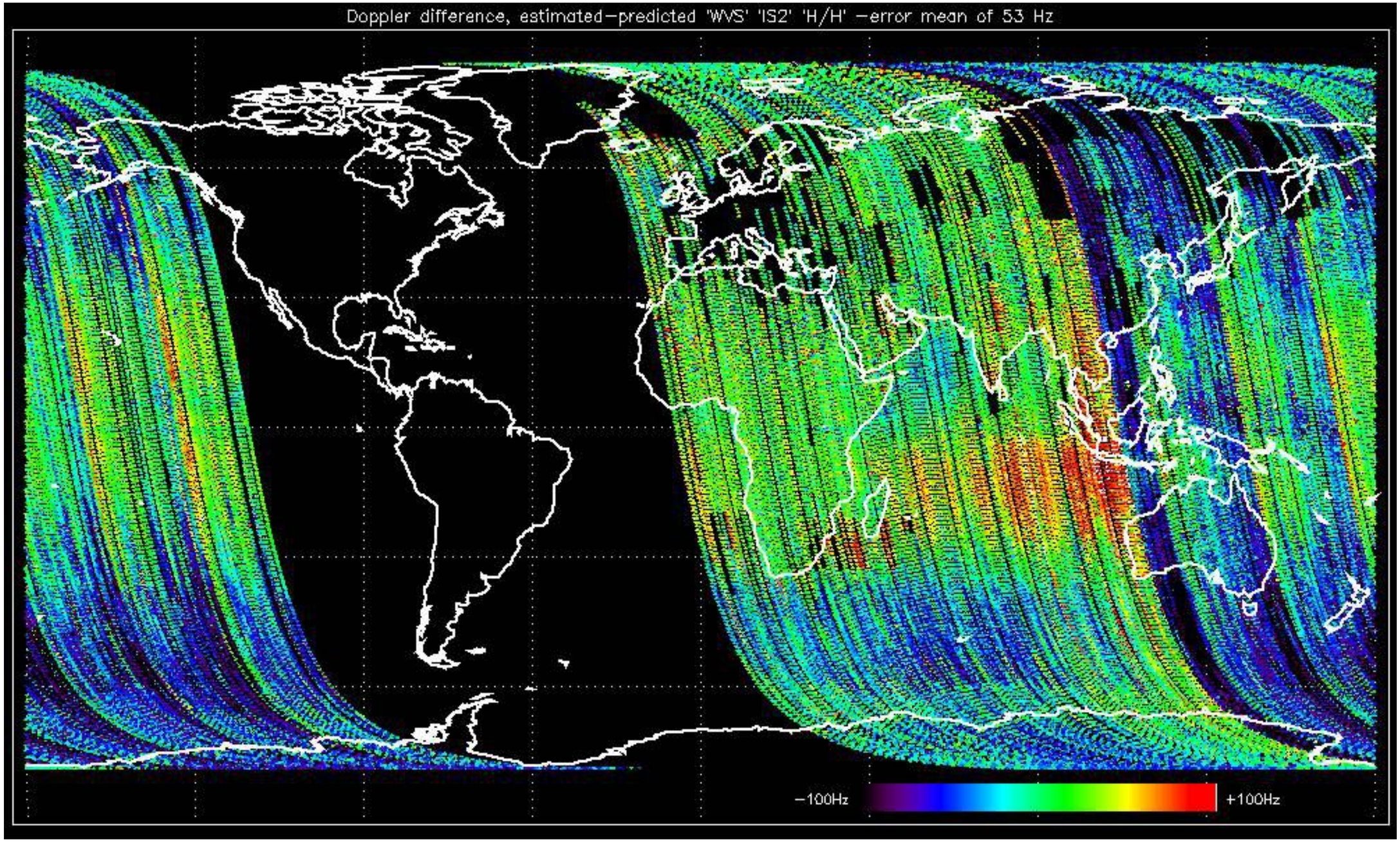
No anomalies observed Doppler evolution.
Doppler analysis performed over the last 60 days

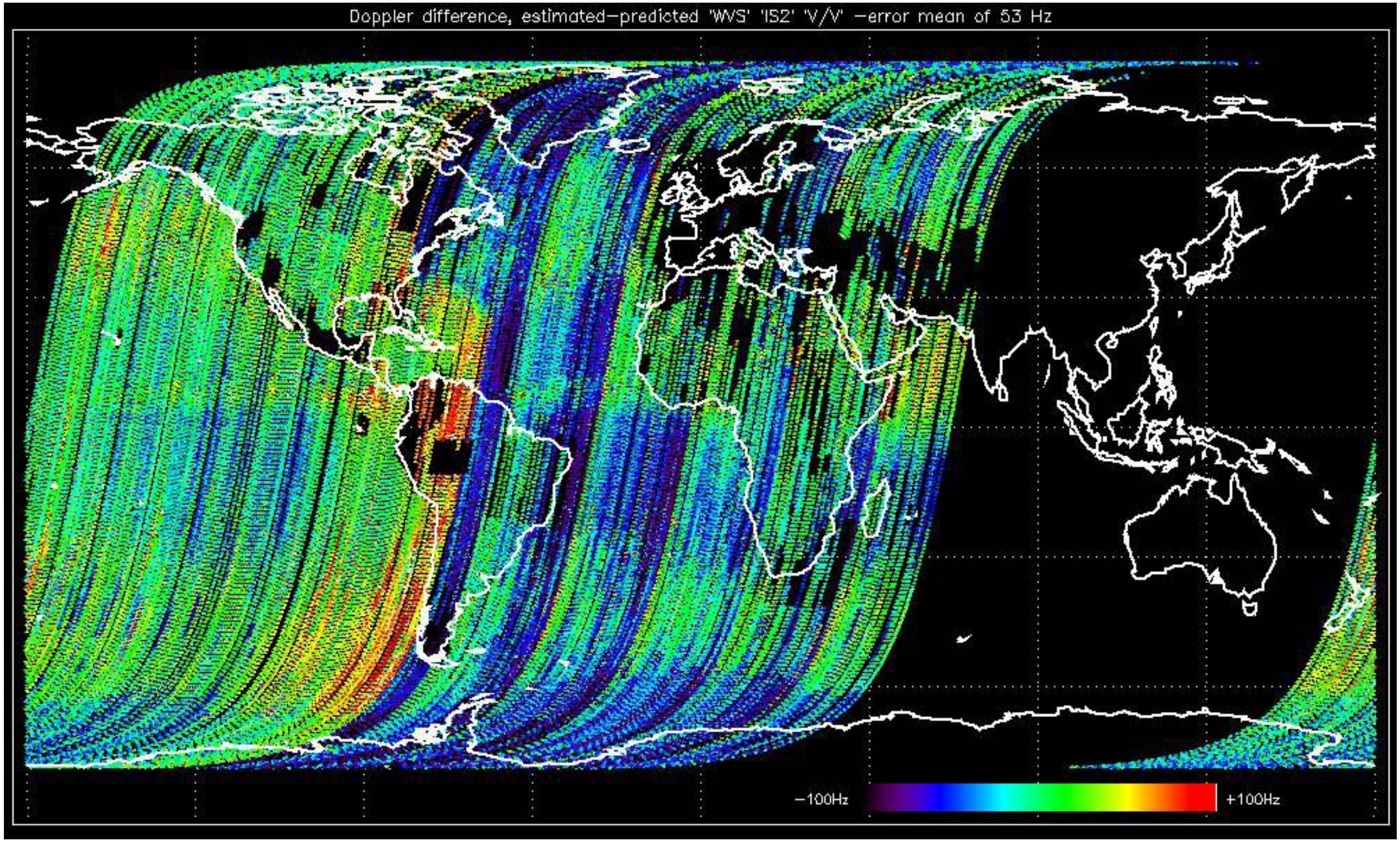

Doppler 'WVS' 'IS2' 'H/H'
−1000Hz
+1000Hz


Doppler 'WVS' 'IS2' 'V/V'
−1000Hz
+1000Hz


wave mode doppler
Doppler [Hz]
1000
500
0
−500
−1000
−1500
0
1000
2000
3000
4000
5000
6000
ANX time


wave mode doppler error
Doppler error [Hz]
300
200
100
0
−100
−200
−300
8
10
12
14
16
18
20
time of the day

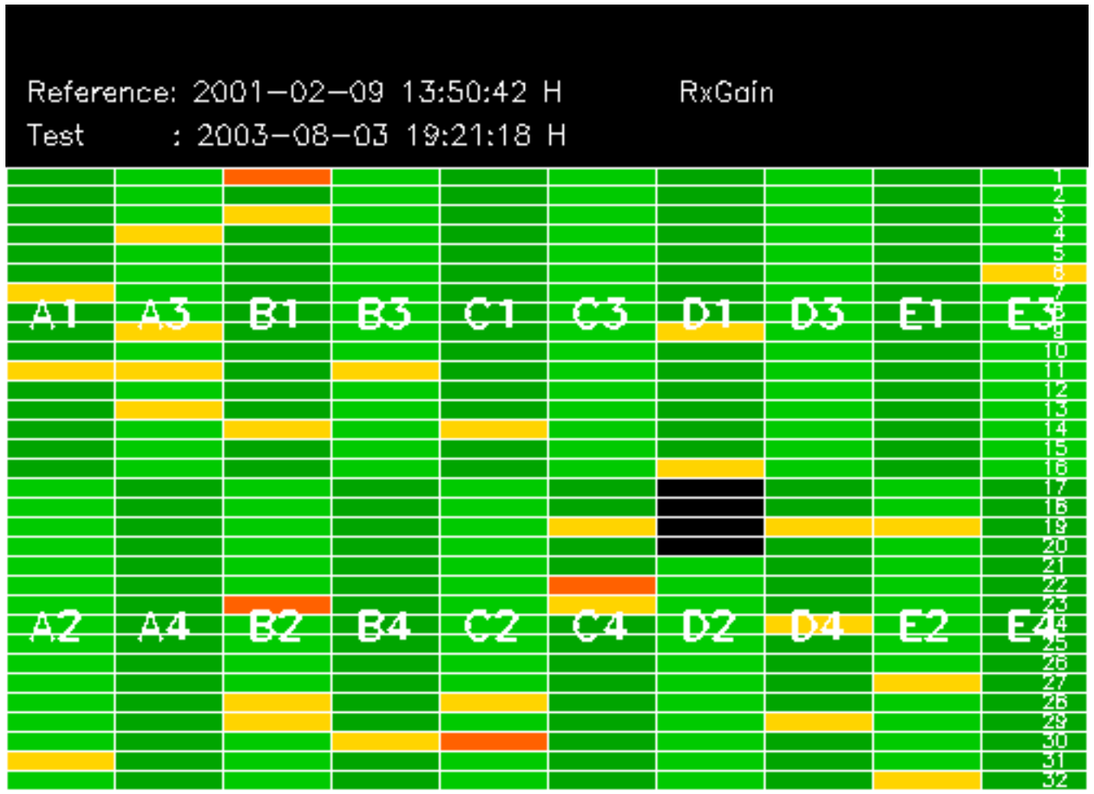

Doppler difference, estimated−predicted 'WVS' 'IS2' 'H/H' −error mean of 53 Hz
−100Hz
+100Hz

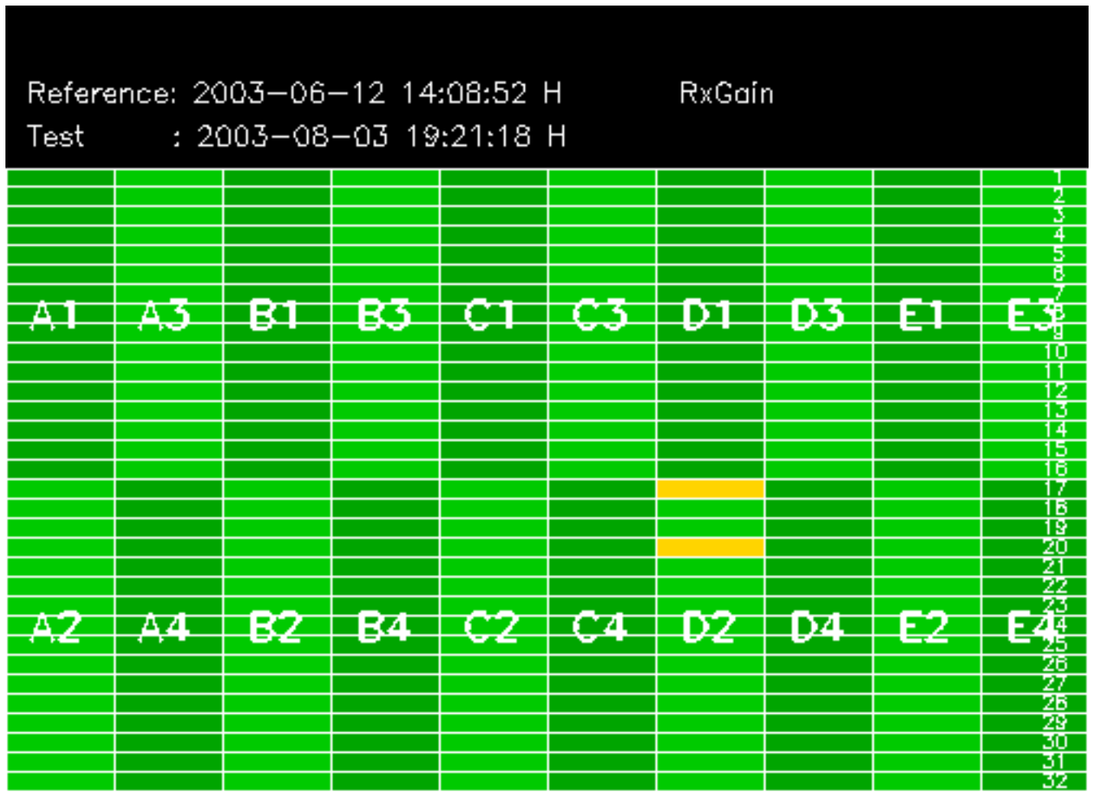

Doppler difference, estimated−predicted 'WVS' 'IS2' 'V/V' −error mean of 53 Hz
−100Hz
+100Hz

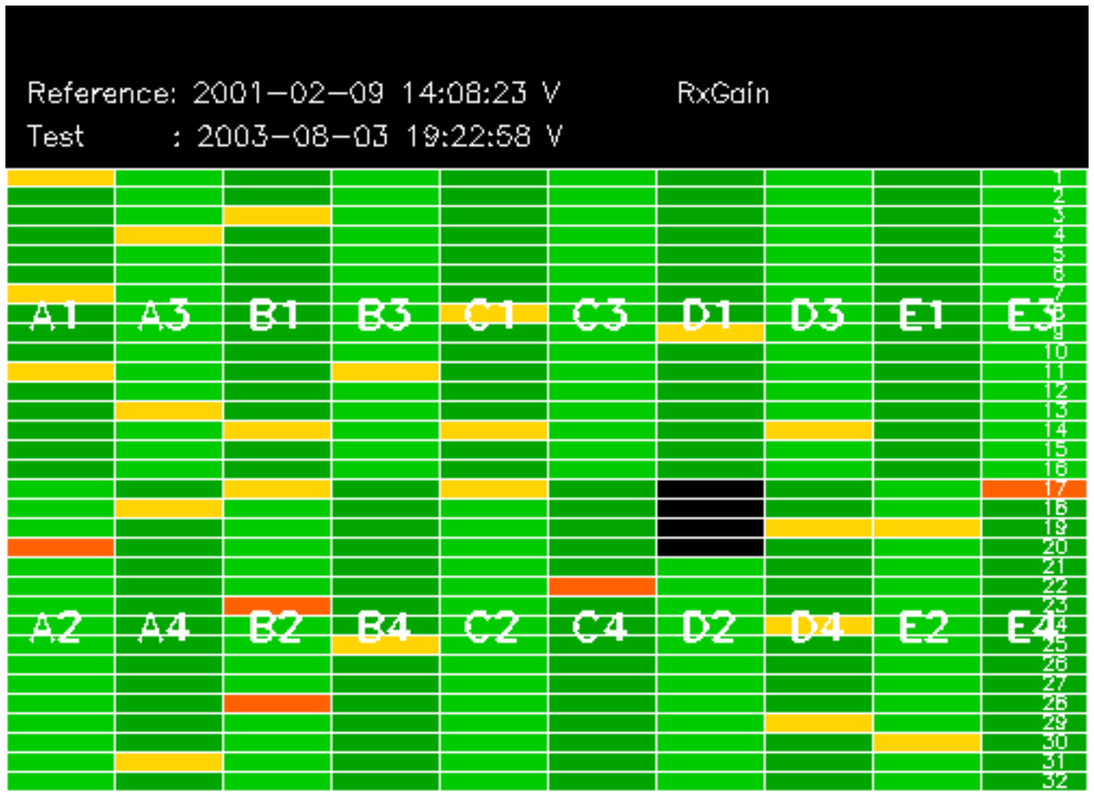
No anomalies observed MS products because they have been acquired before the start of the anomaly reported:
Available MS products are:
-ASA_MS__0PNPDK20030803_192118_000000152018_00385_07453_0059.N1
-ASA_MS__0PNPDK20030803_192258_000000152018_00385_07453_0060.N1

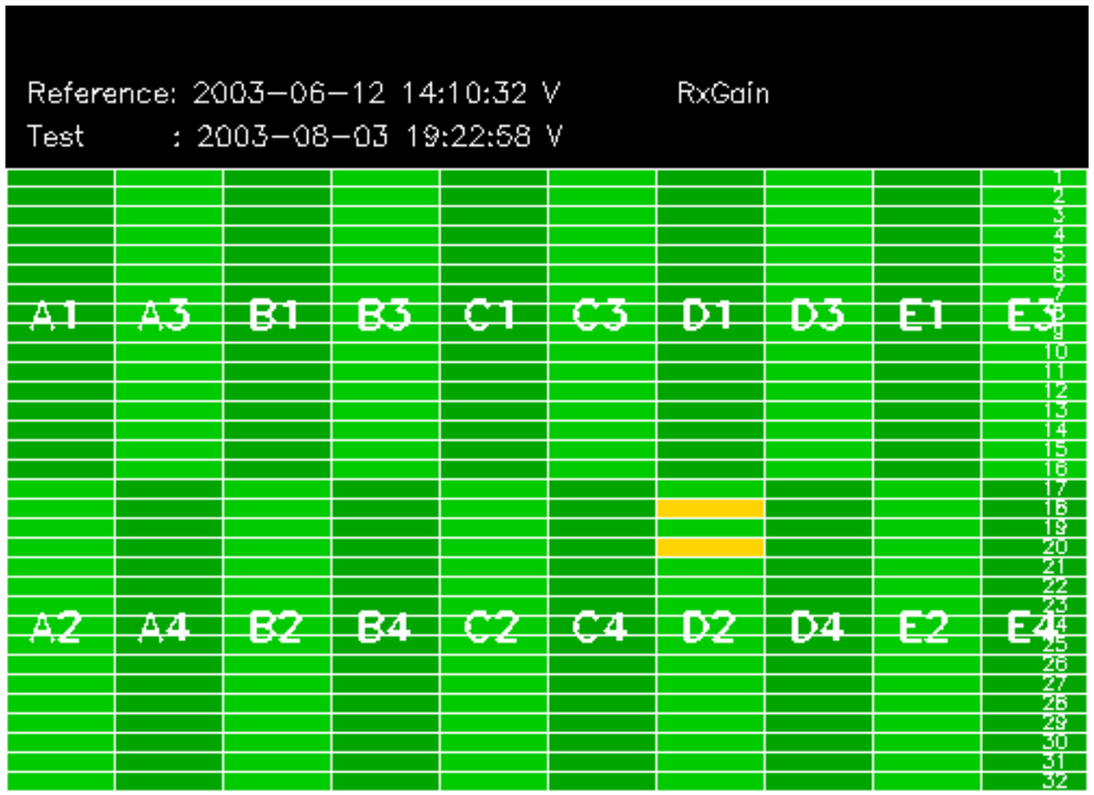
The drift in phase for TR module 3 on Tile B3 has decreased to a stable configuration as shown in the figure below.

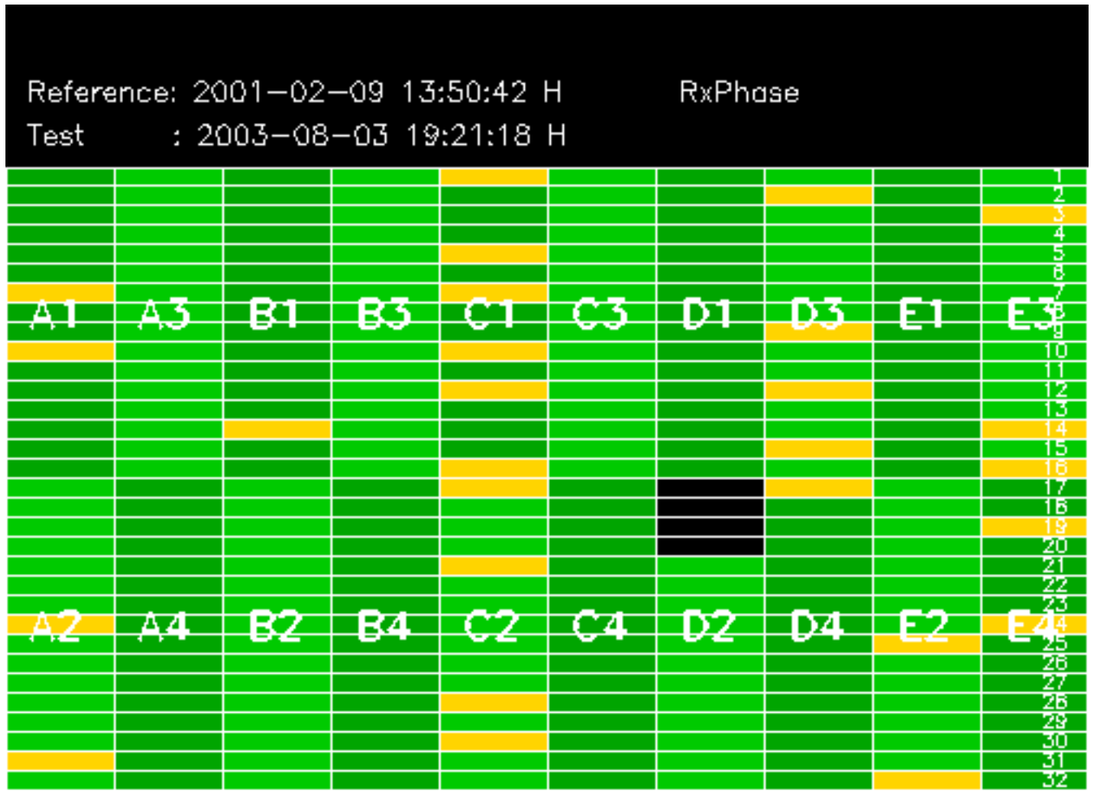
No anomalies observed.

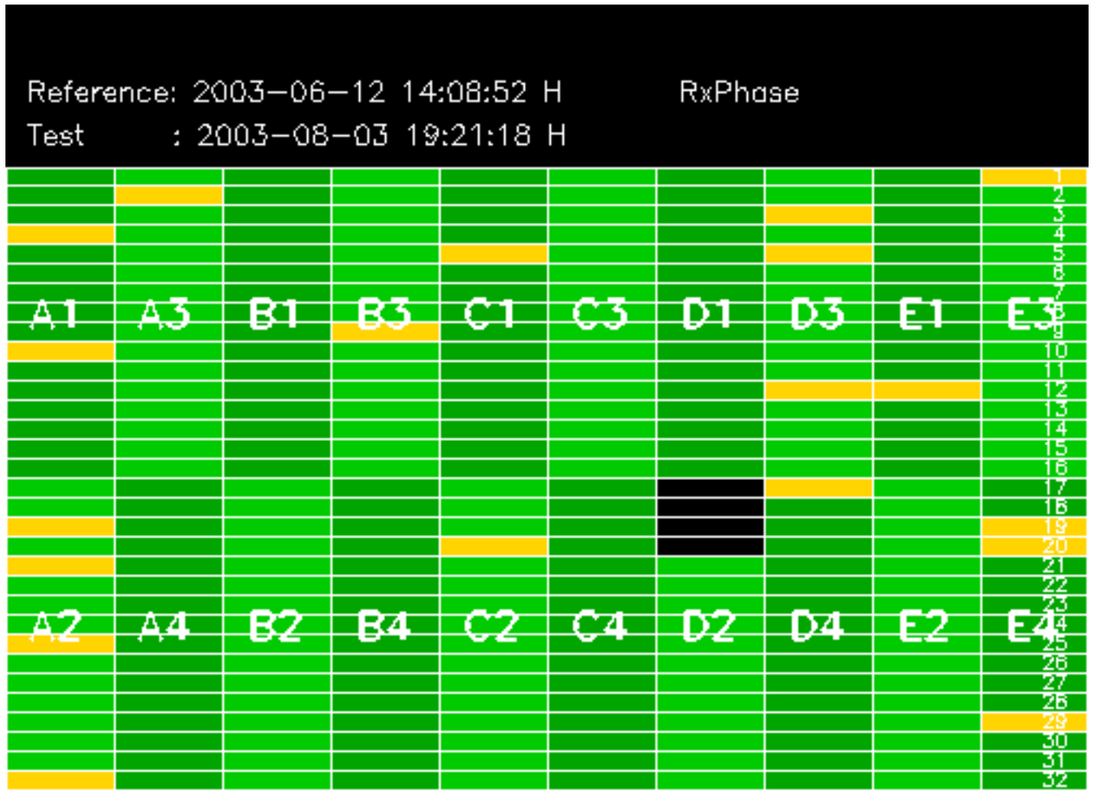

Reference: 2001-02-09 13:50:42 H
Test : 2003-08-03 19:21:18 H
RxGain
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4

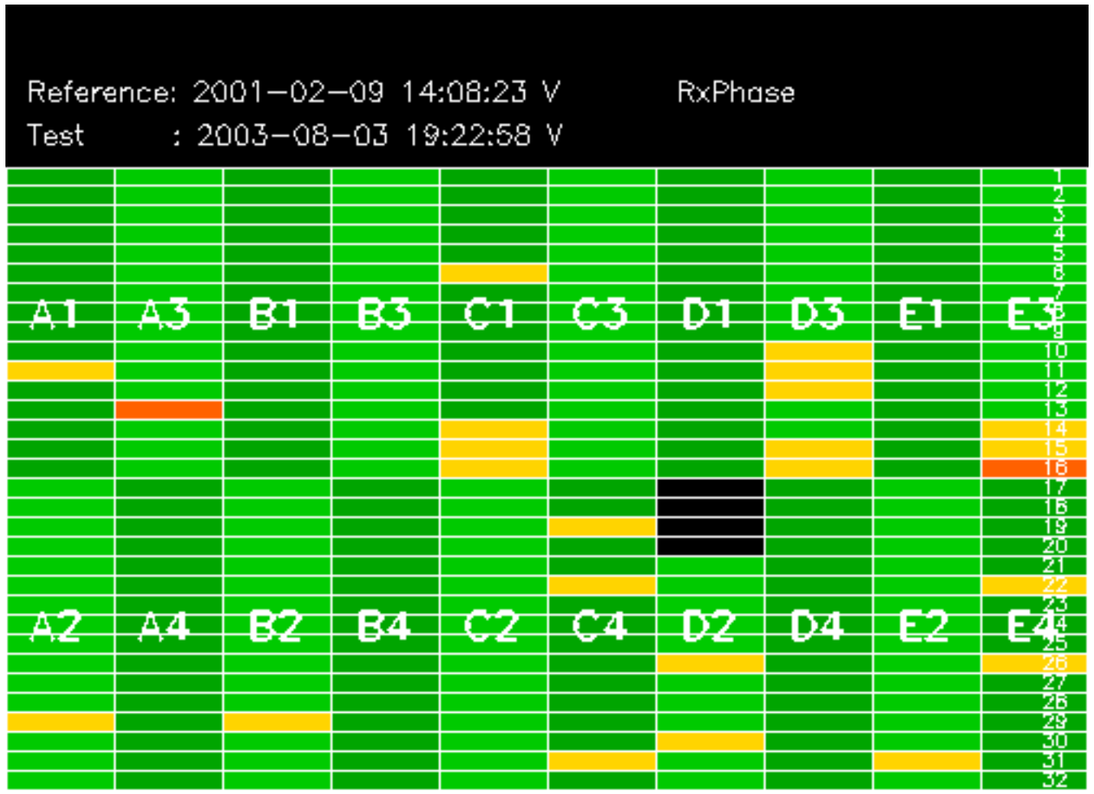

Reference: 2003-06-12 14:08:52 H
Test : 2003-08-03 19:21:18 H
RxGain
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32

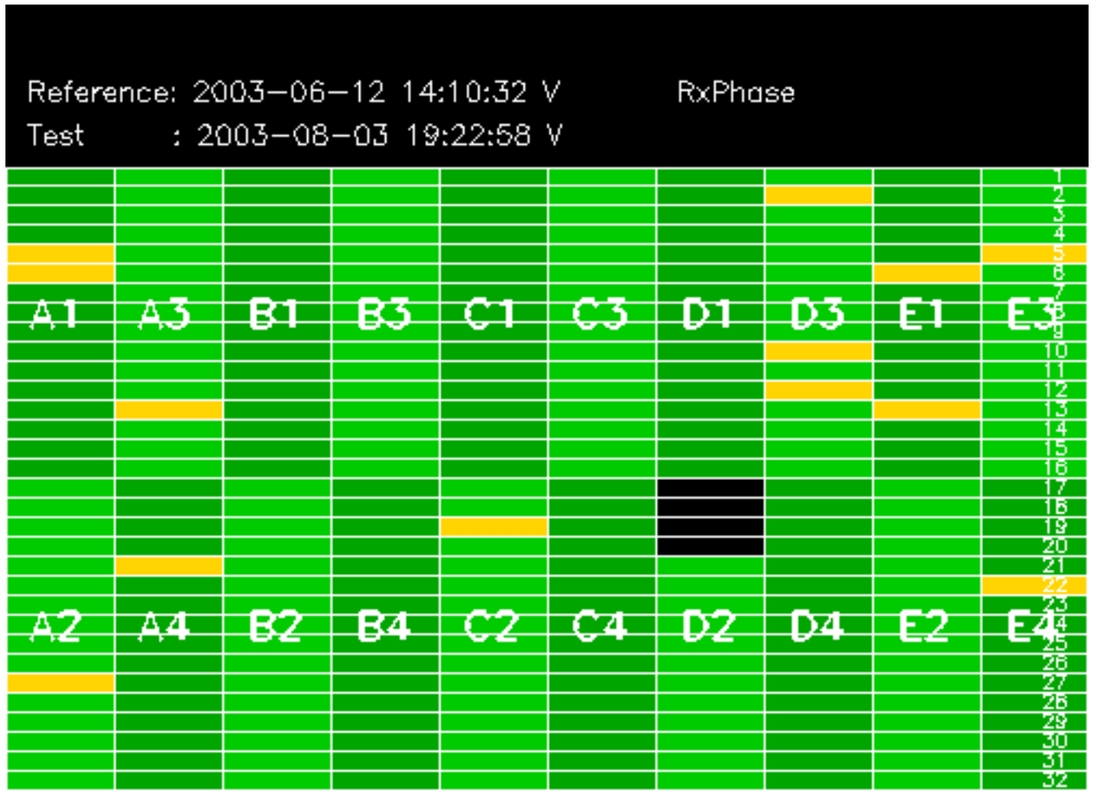

Reference: 2001-02-09 14:08:23 V
Test : 2003-08-03 19:22:58 V
RxGain
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32

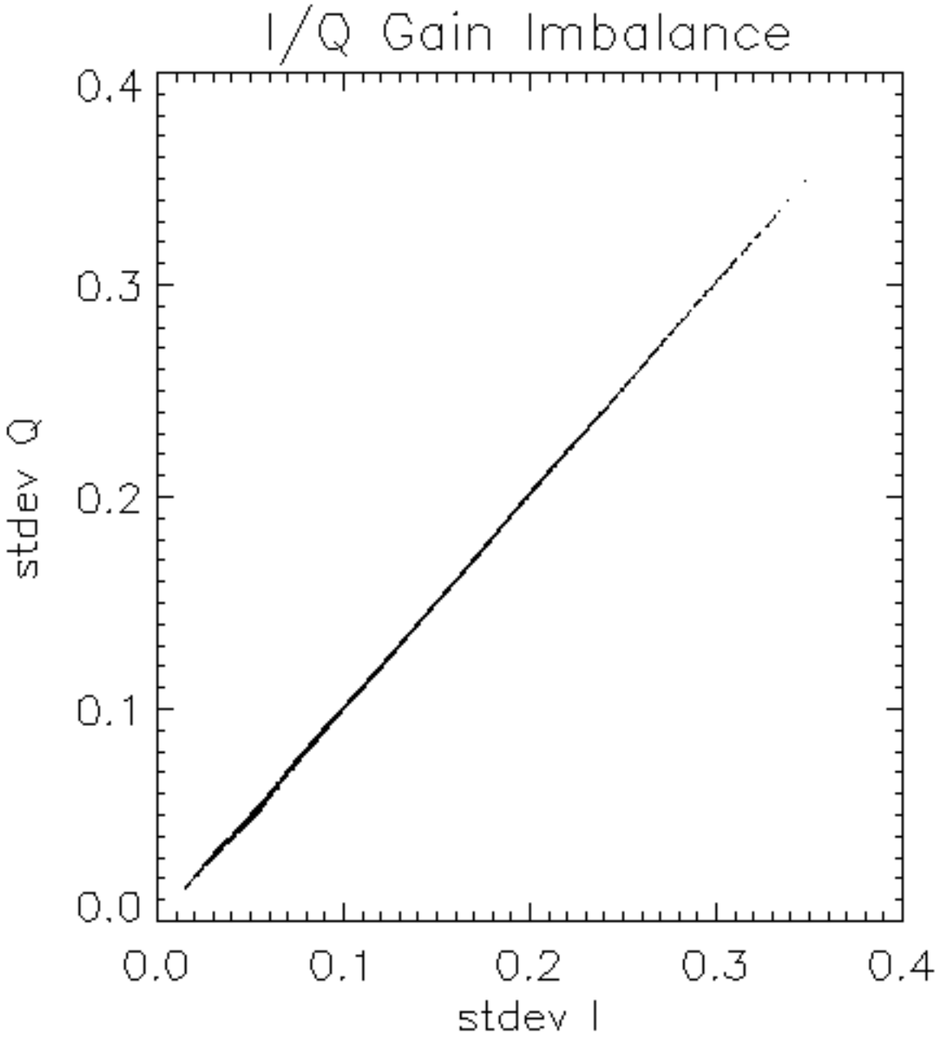

Reference: 2003-06-12 14:10:32 V
Test : 2003-08-03 19:22:58 V
RxGain
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32

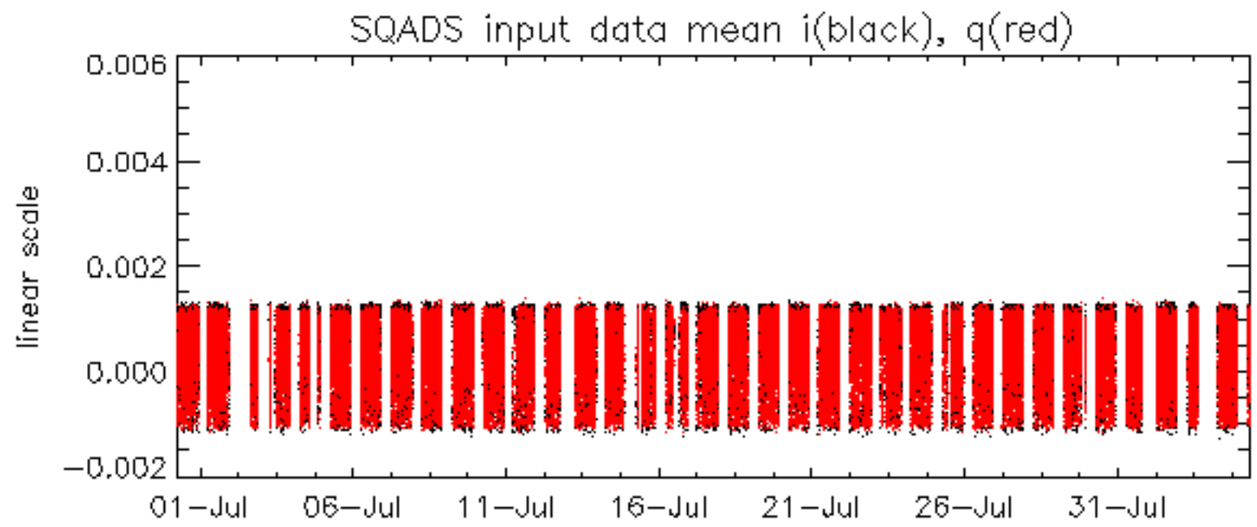

Reference: 2001-02-09 13:50:42 H
RxPhase
Test : 2003-08-03 19:21:18 H
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32

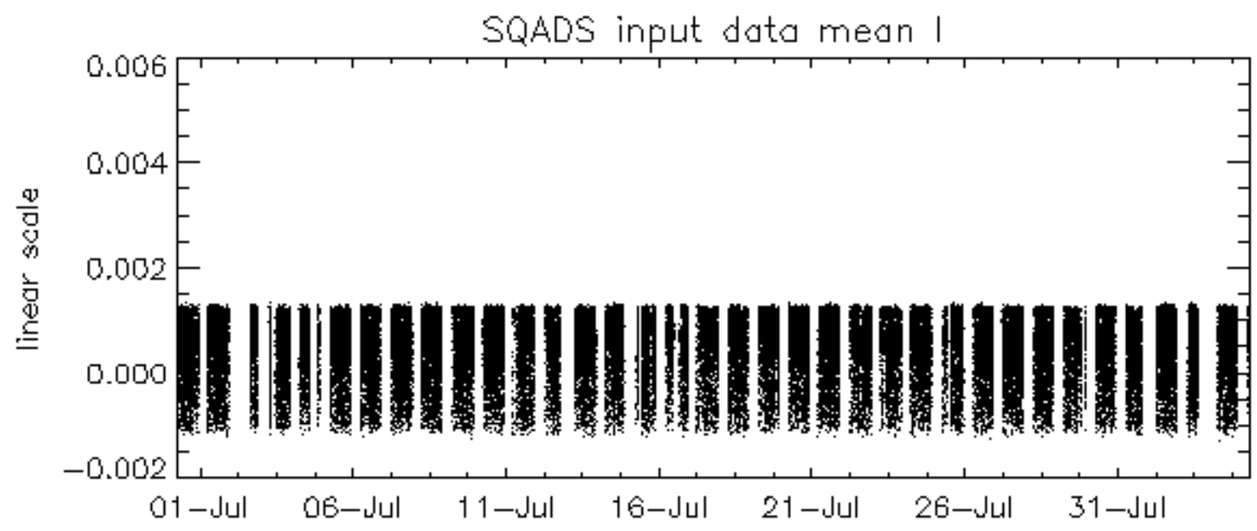

Reference: 2003-06-12 14:08:52 H
Test : 2003-08-03 19:21:18 H
RxPhase
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32

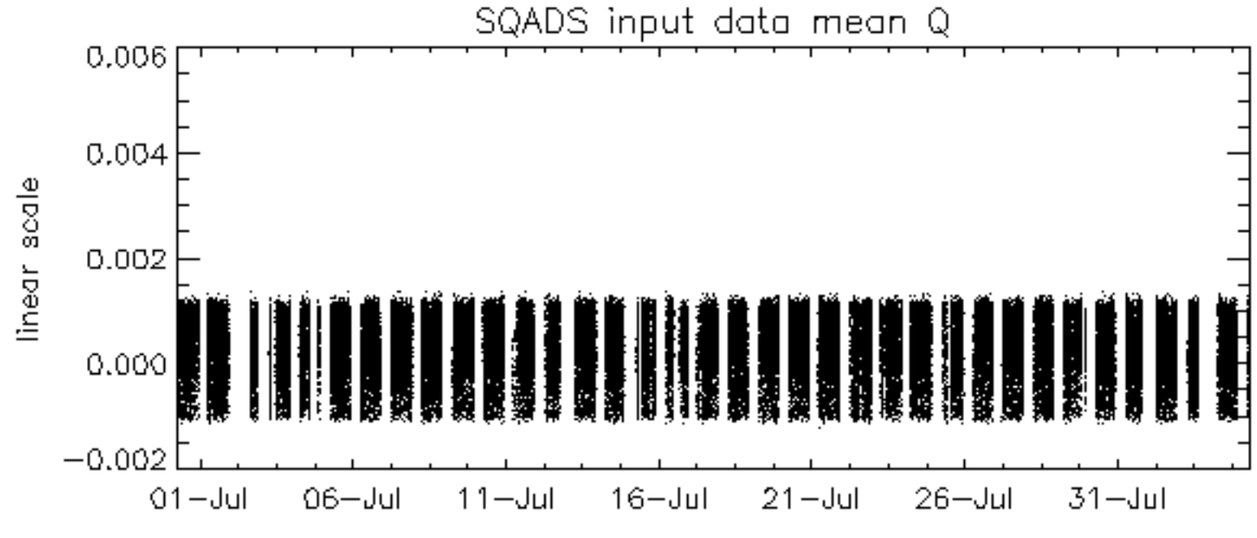

Reference: 2001-02-09 14:08:23 V
Test : 2003-08-03 19:22:58 V
RxPhase
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4

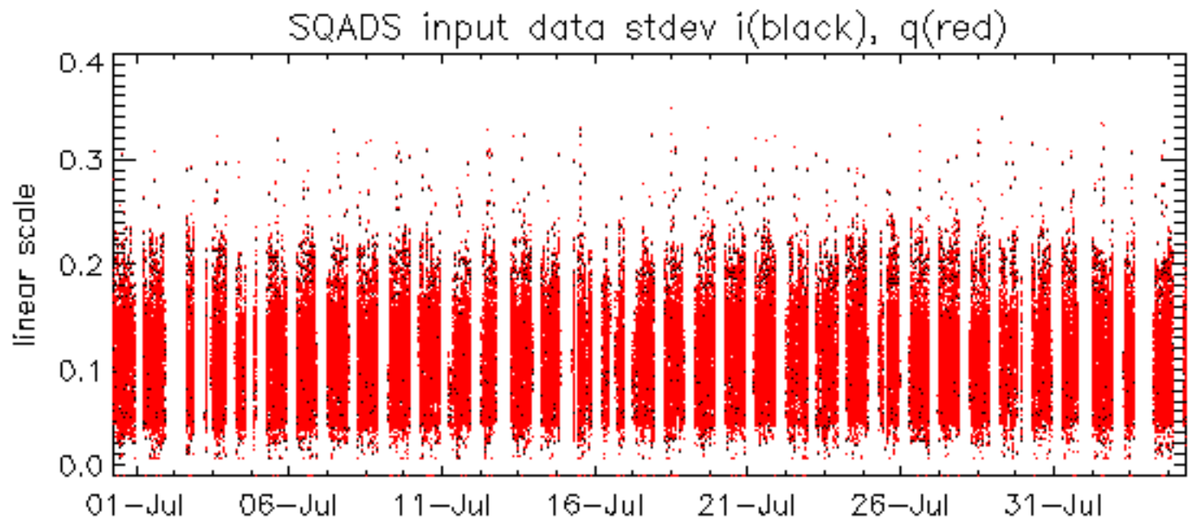

Reference: 2003-06-12 14:10:32 V
Test : 2003-08-03 19:22:58 V
RxPhase
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32

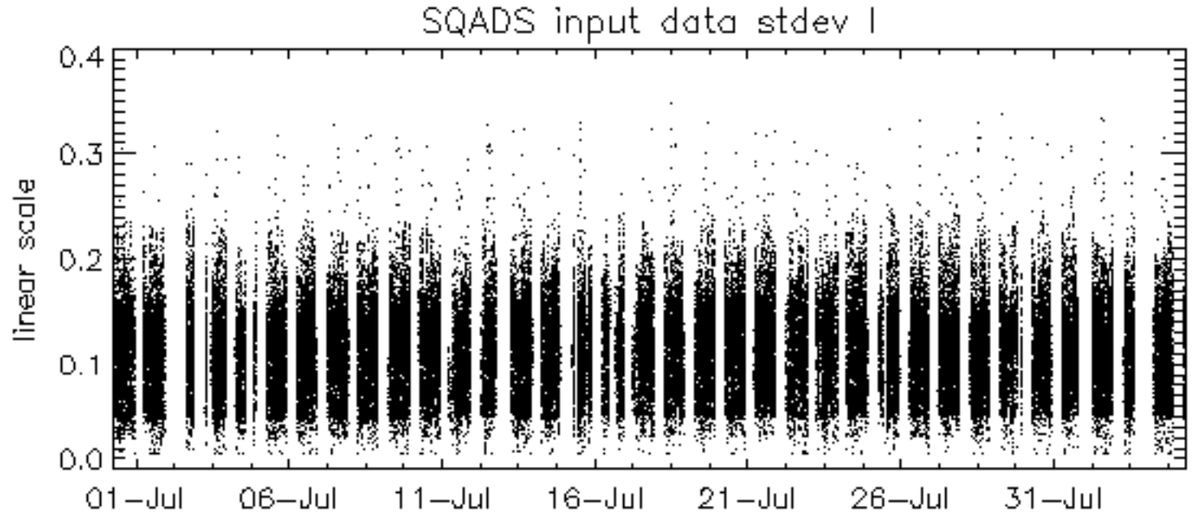

I/Q Gain Imbalance
0.4
0.3
0.2
0.1
0.0
stdev Q
0.0
0.1
0.2
0.3
0.4
stdev I

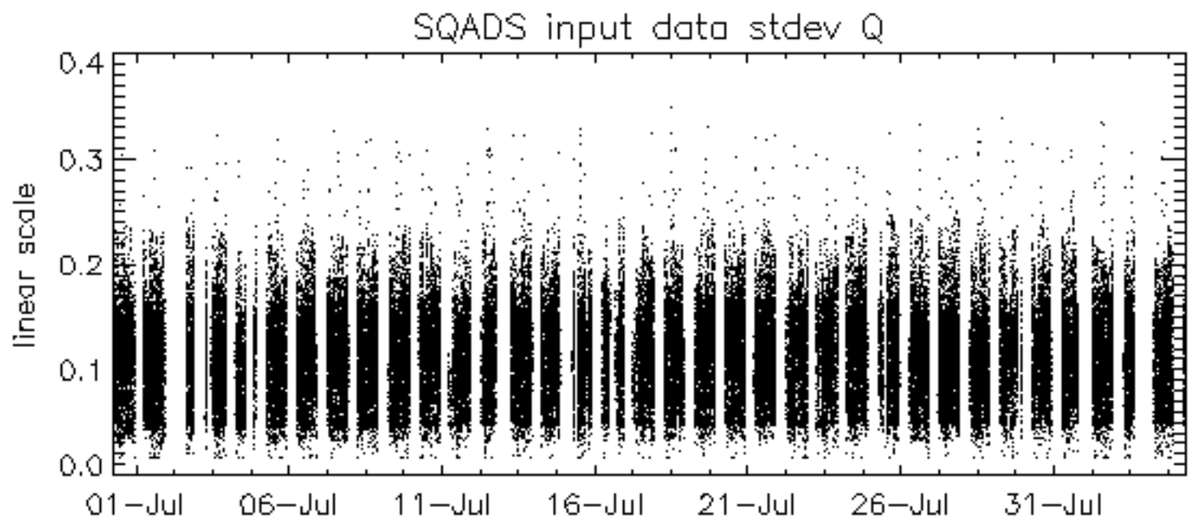

SQADS input data mean i(black), q(red)
linear scale
0.006
0.004
0.002
0.000
−0.002
01−Jul
06−Jul
11−Jul
16−Jul
21−Jul
26−Jul
31−Jul

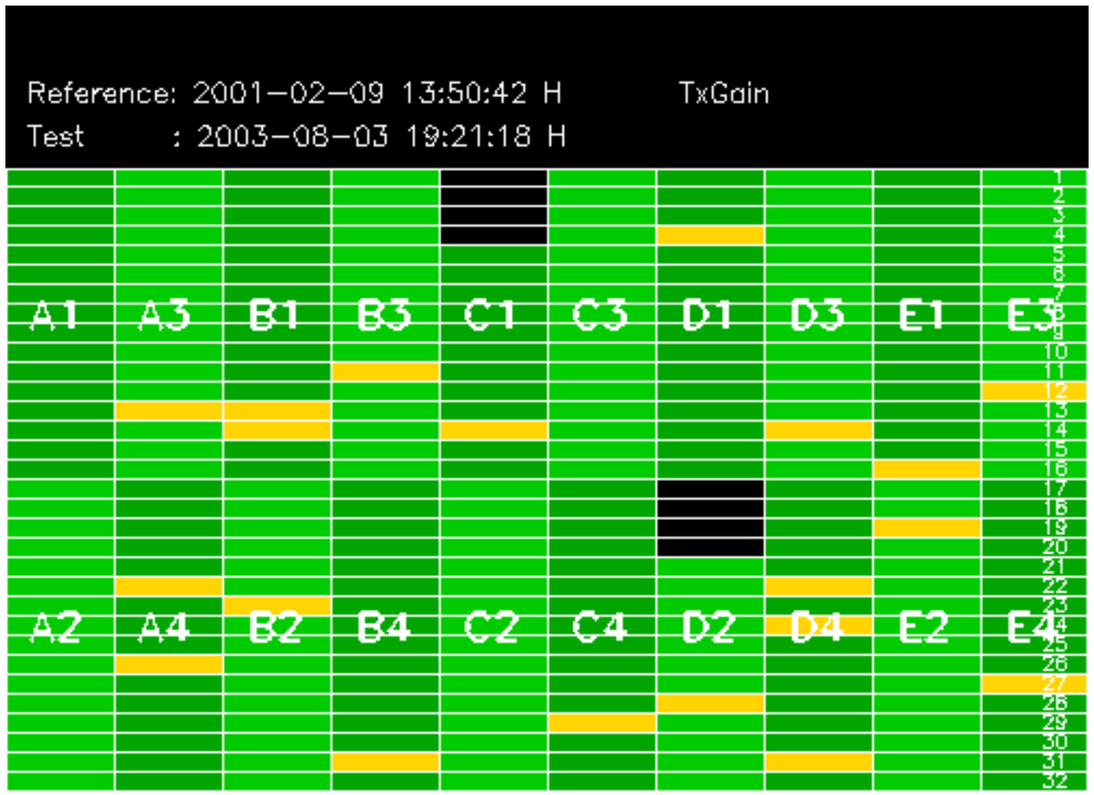

SQADS input data mean I
linear scale
0.006
0.004
0.002
0.000
−0.002
01−Jul
06−Jul
11−Jul
16−Jul
21−Jul
26−Jul
31−Jul

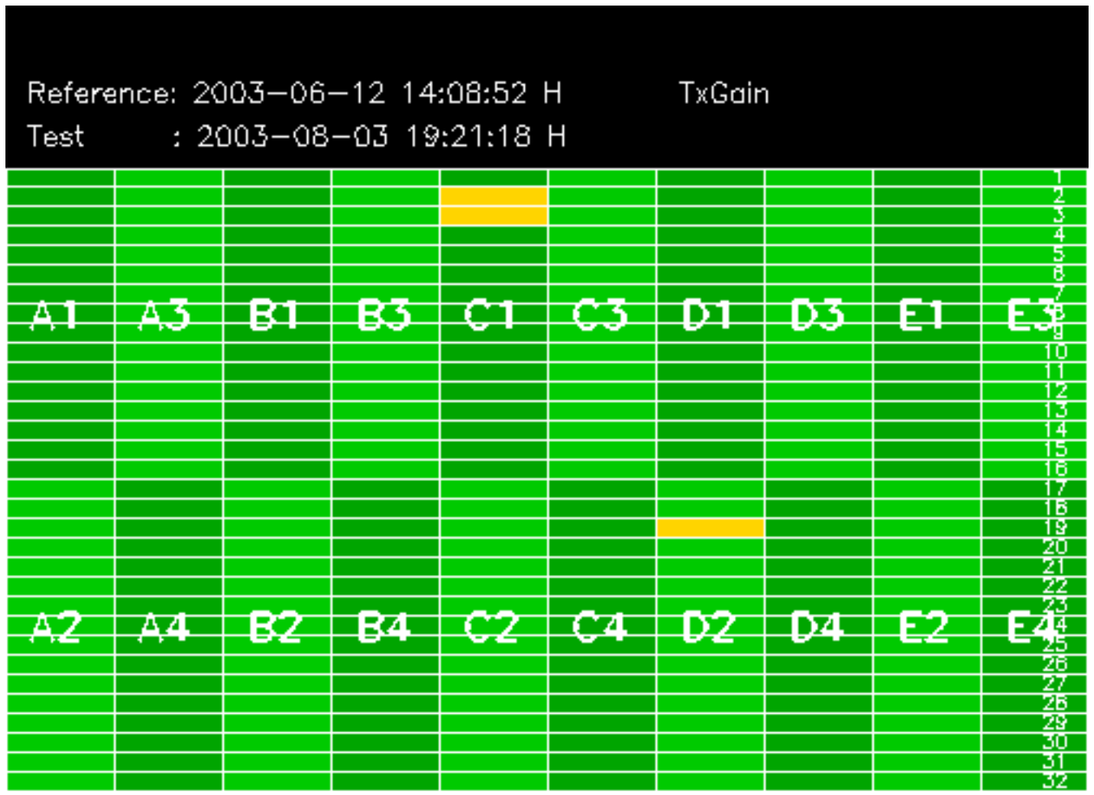

SQADS input data mean Q
linear scale
0.006
0.004
0.002
0.000
−0.002
01−Jul
06−Jul
11−Jul
16−Jul
21−Jul
26−Jul
31−Jul


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

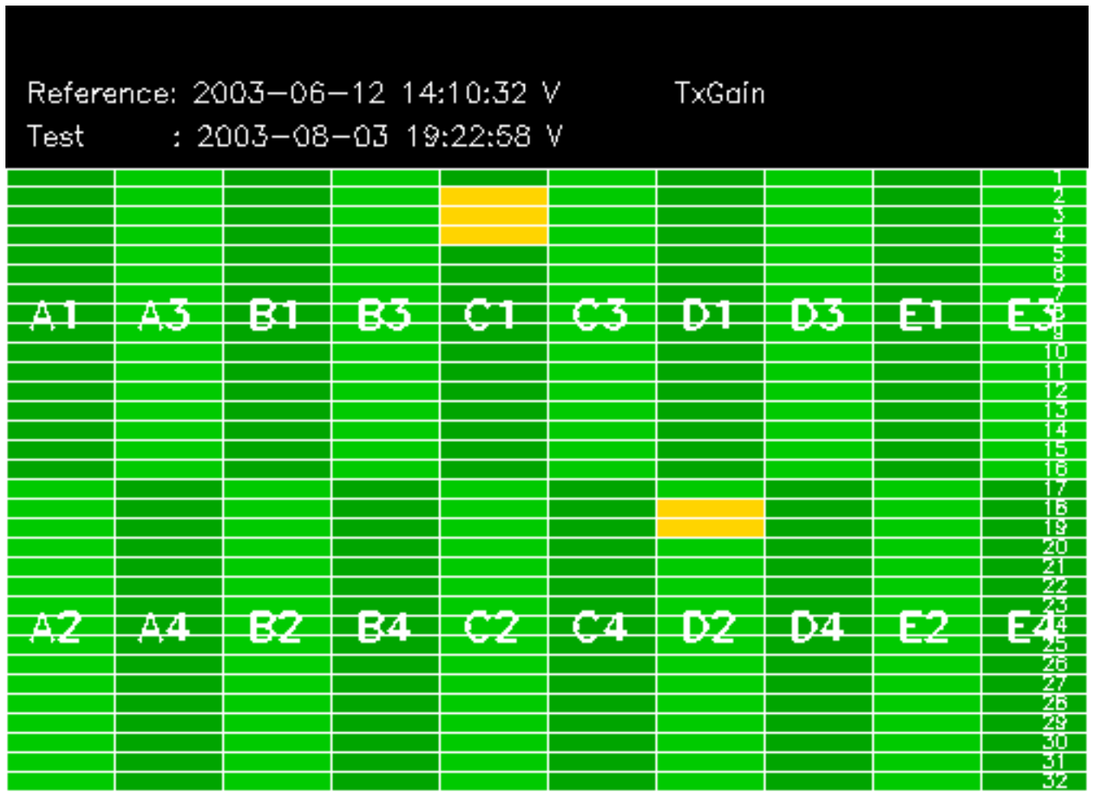

SQADS input data stdev I
linear scale
0.4
0.3
0.2
0.1
0.0
01−Jul
06−Jul
11−Jul
16−Jul
21−Jul
26−Jul
31−Jul

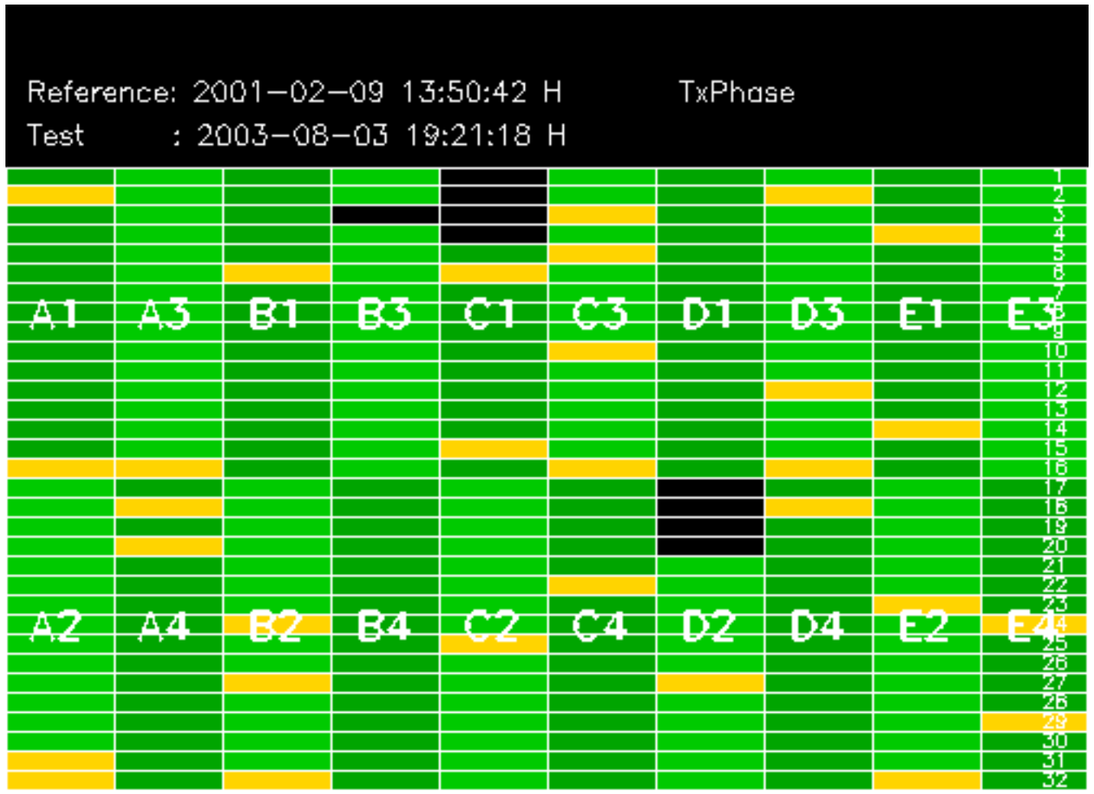

SQADS input data stdev Q
linear scale
0.4
0.3
0.2
0.1
0.0
01−Jul
06−Jul
11−Jul
16−Jul
21−Jul
26−Jul
31−Jul

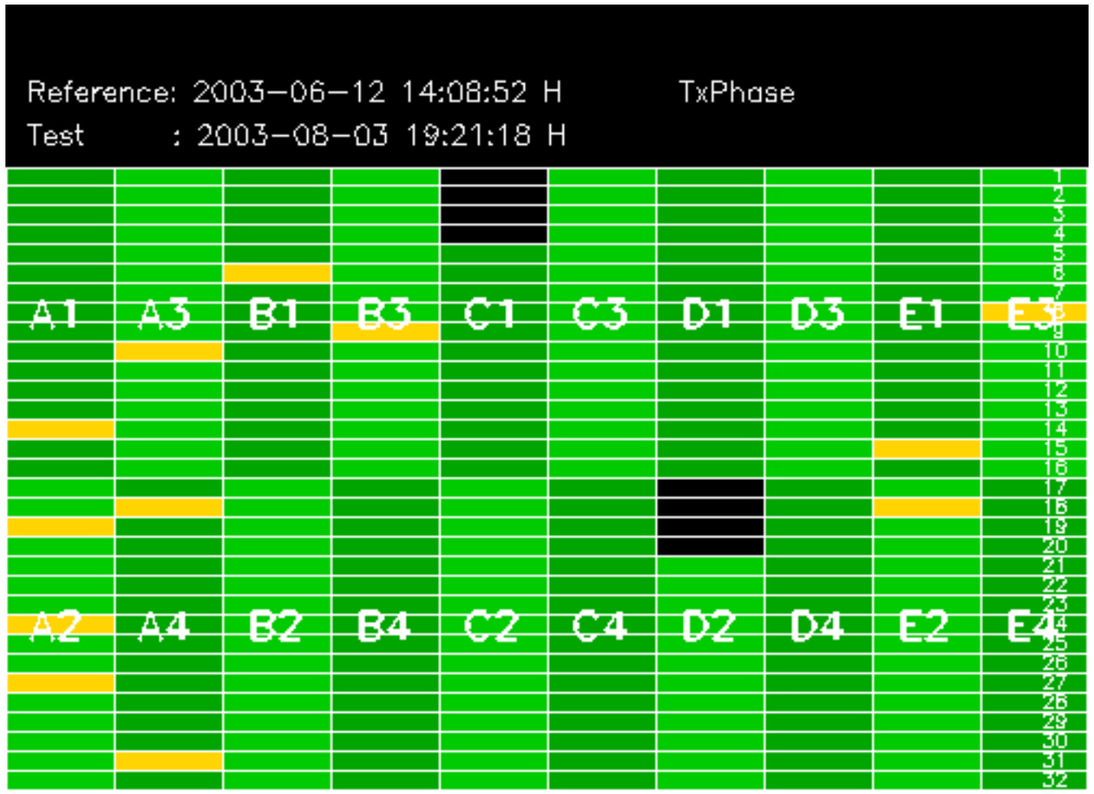

Reference: 2001-02-09 13:50:42 H
Test : 2003-08-03 19:21:18 H
TxGain
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4

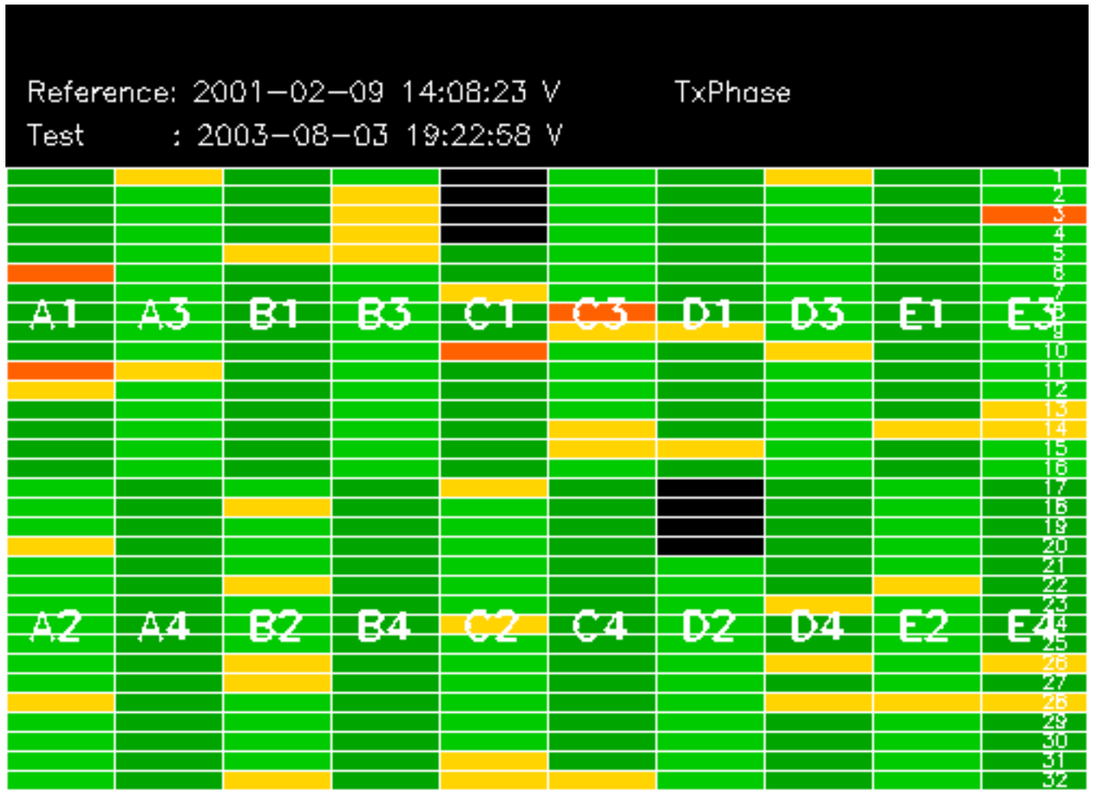

Reference: 2003-06-12 14:08:52 H
Test : 2003-08-03 19:21:18 H
TxGain
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32

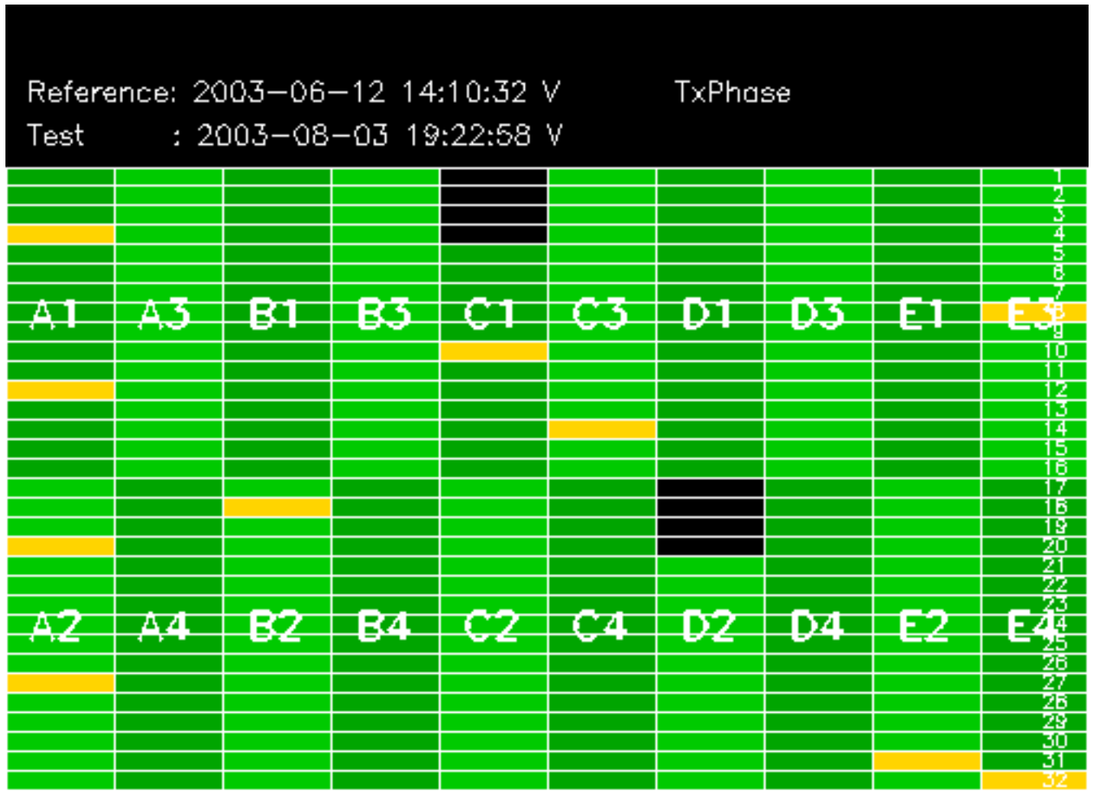

Reference: 2001-02-09 14:08:23 V
Test : 2003-08-03 19:22:58 V
TxGain
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32


Reference: 2003-06-12 14:10:32 V
Test : 2003-08-03 19:22:58 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
Test : 2003-08-03 19:21:18 H
TxPhase
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 : 2003-08-03 19:21:18 H
TxPhase
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 14:08:23 V
Test : 2003-08-03 19:22:58 V
TxPhase
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 : 2003-08-03 19:22:58 V
TxPhase
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4

No instrument unavailabilies during the reported period.