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

ASAR unavailability for Antenna reset on 04-AUG-2003 detailed on table below.
The unavailability was caused by Temperature anomaly on tile E2 and science data abnormaly

Sub-system	Start	Stop	Planned
ASAR	2003-08-04 12:43:24	2003-08-04 19:18:46	yes

2.2 - Browse Visual Inspection

No anomalies observed on available browse products

2.3 - Data Analysis

After the anomaly reported on the on 04-AUG-2003 ASAR is back to nominal behaviour:
-Nominal MS results
-Stable wave internal calibration pulses gain and phase.
-Stable raw data statistics.
-Nominal Doppler behaviour.

3 - Module Stepping Mode

- The anomaly was firtly detected by temperature anomaly on tile E2.
- The results from the available MS products acquire just before the return to nominal operation do not show problems on any tile.

- No anomalies observed on available MS products:
ASA_MS__0PNPDK20030804_203017_000000152018_00400_07468_0062.N1
ASA_MS__0PNPDK20030804_203157_000000152018_00400_07468_0061.N1

- Stabilisation of the B3-3 module drift in transmit phase on H polarisation as shown below:

Polarisation	Start Time
V	20030804 203157
H	20030804 203017

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

The plot of paragraph shows that ASAR is back to normal operations on 04-AUG-2003 19:18:46 after an antenna reset.

4.1 - Daily statistics

row	stat	AveP1	AveP2	AveP3
3	mean	-3.80951	-22.5535	-8.10857
	stdev	0.00525408	0.0635159	0.00227537
10	mean	-6.84917	-19.3249	-8.10857
	stdev	0.0413435	0.0617443	0.00227537

☒

4.2 - Cyclic statistics

row	stat	AveP1	AveP2	AveP3
3	mean	-3.86771	-22.5678	-8.10186
	stdev	0.0875994	0.0627056	0.00258338
10	mean	-6.97862	-19.3255	-8.10186
	stdev	0.417552	0.0616523	0.00258338

☒

4.3 - cal pulses monitoring (all rows)

☒

5 - RAW data statistics

Anomaly has no major impact on the raw data statistics

No anomalies observed.

5.1 - Input mean I/Q

channel	stat	DSS-B
MEAN I	mean	0.000478173
	stdev	3.04242e-07
MEAN Q	mean	0.000309128
	stdev	3.16242e-07

5.2 - Input stdev I/Q

channel	stat	DSS-B
STDEV I	mean	0.115362
	stdev	0.00161924
STDEV Q	mean	0.115483
	stdev	0.00165090

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

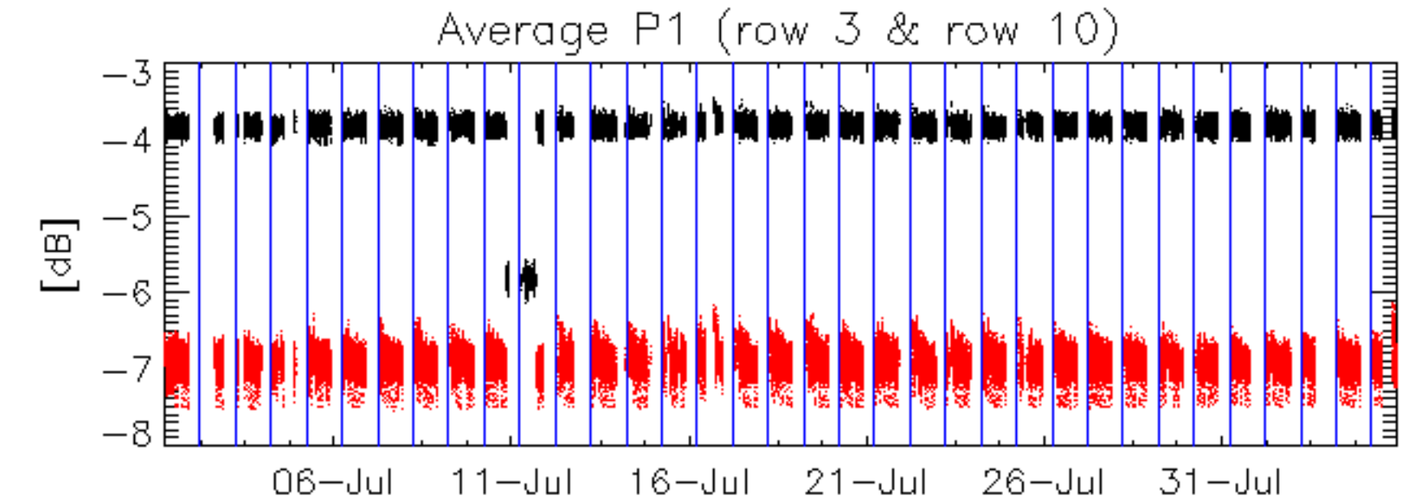
6.3 - Doppler evolution versus ANX

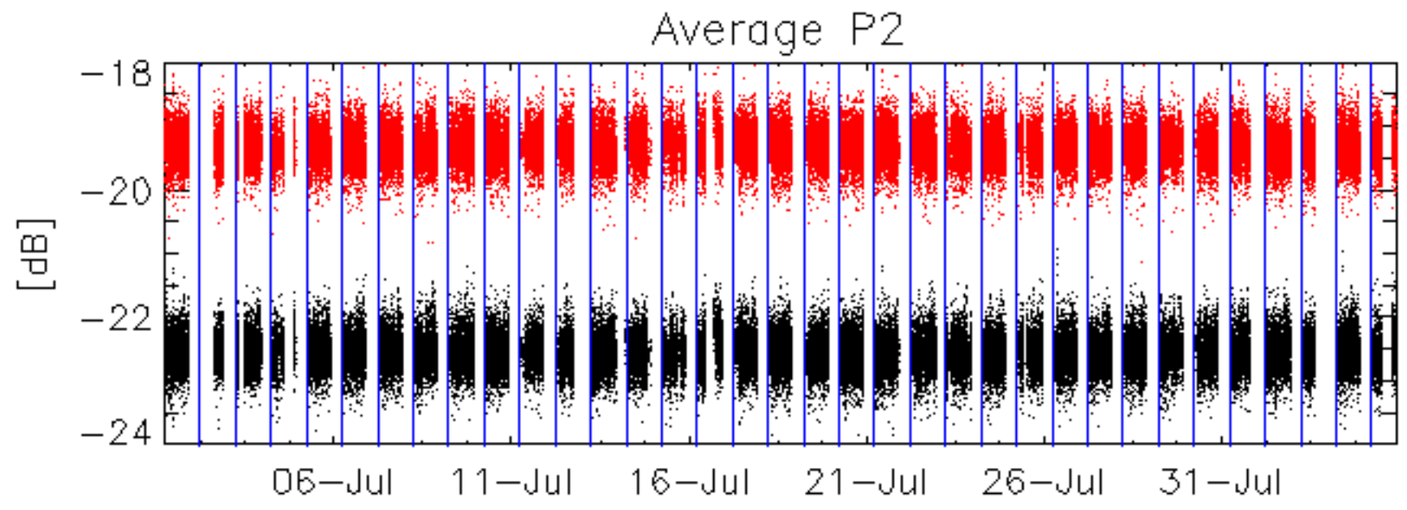
Evolution Doppler error versus ANX

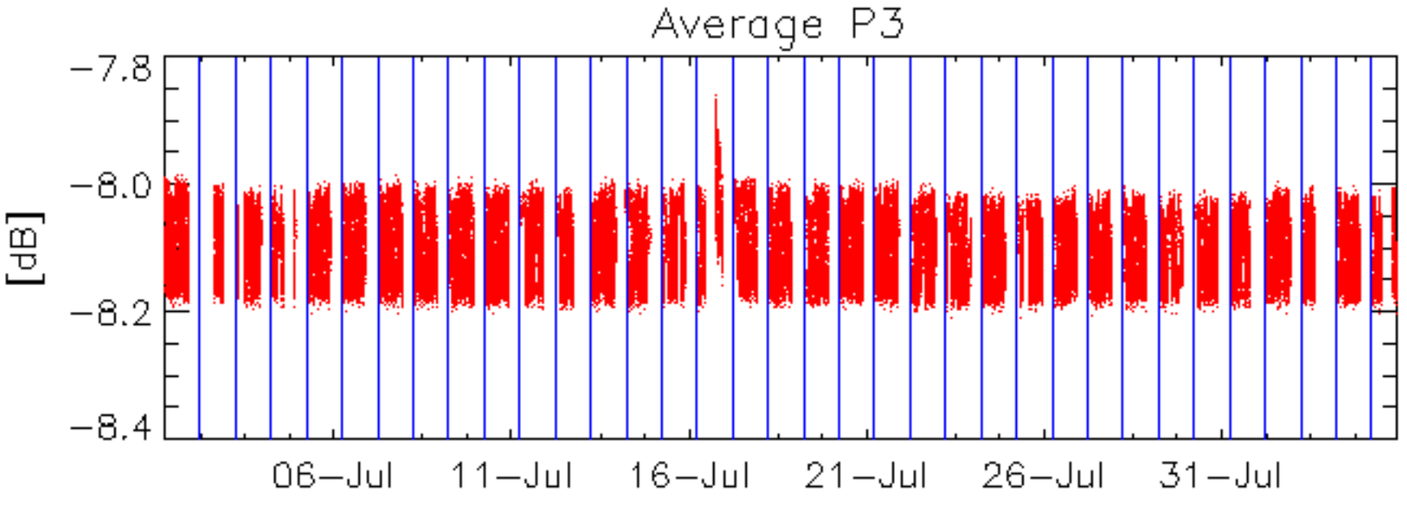
5 - Product samples

Entire Browse product:
ASA_IM__BPZPDK20030804_211107_000000592018_00401_07469_1098.N1

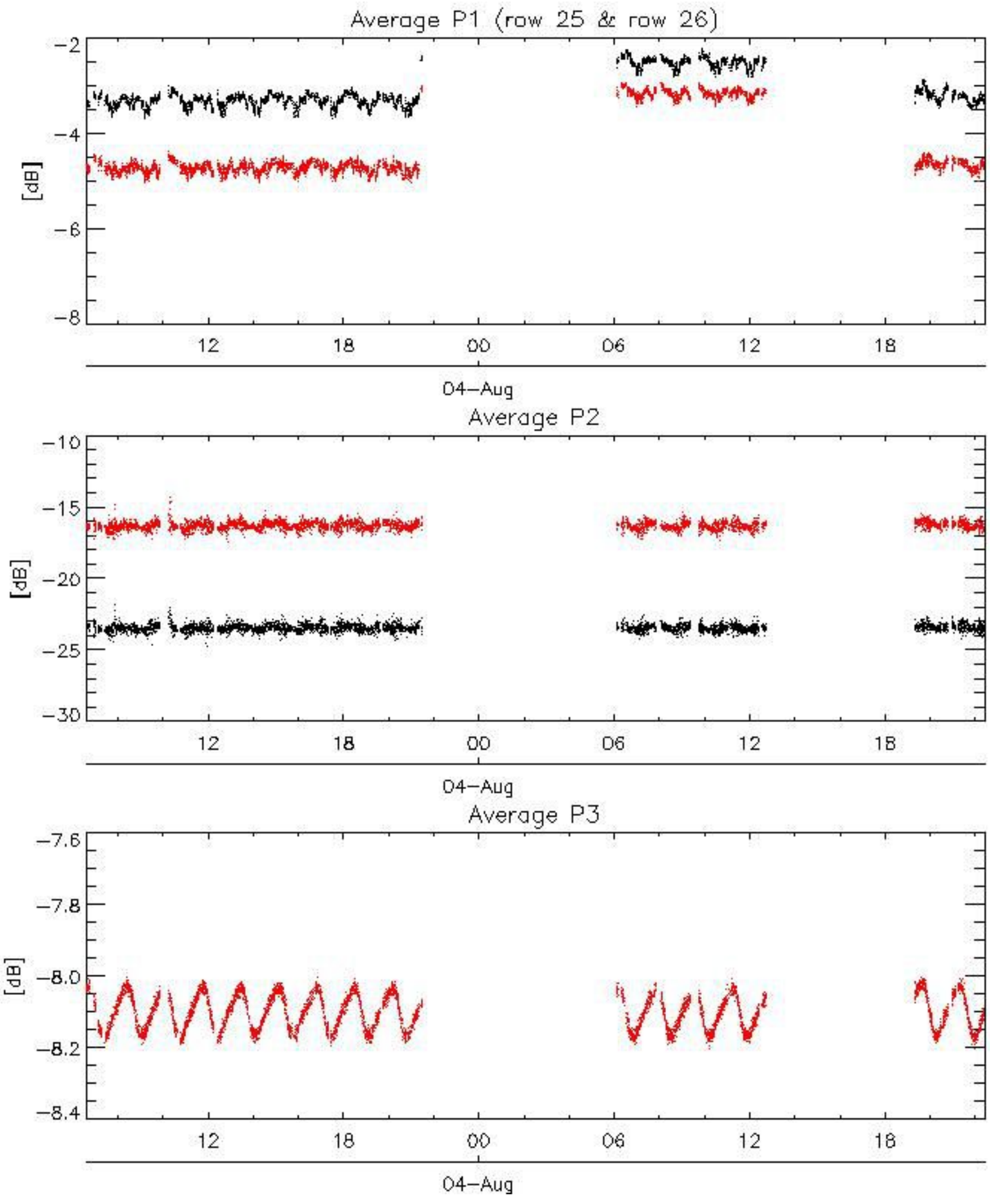
Entire Browse product:
ASA_WVS_1PNPDK20030805_083752_000009452018_00407_07475_1977.hdr

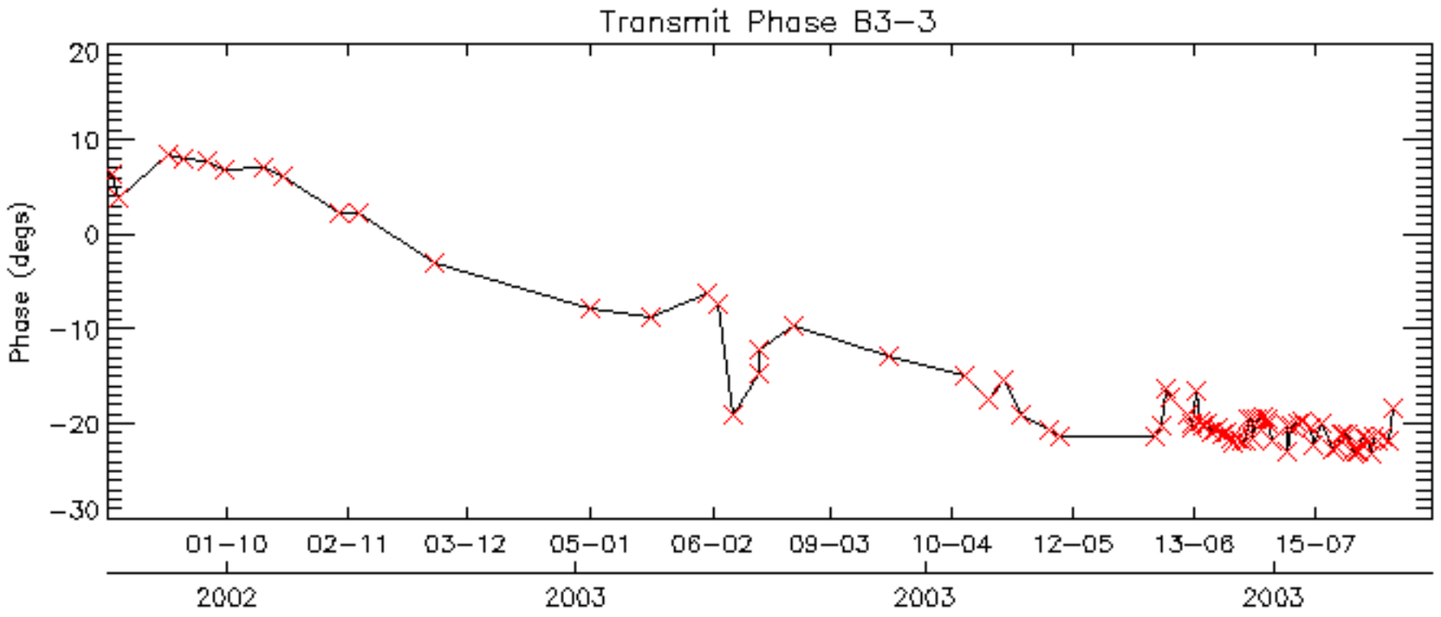

Average P1 (row 3 & row 10)
[dB]
−3
−4
−5
−6
−7
−8
06−Jul
11−Jul
16−Jul
21−Jul
26−Jul
31−Jul


Average P2
[dB]
−18
−20
−22
−24
06−Jul
11−Jul
16−Jul
21−Jul
26−Jul
31−Jul


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

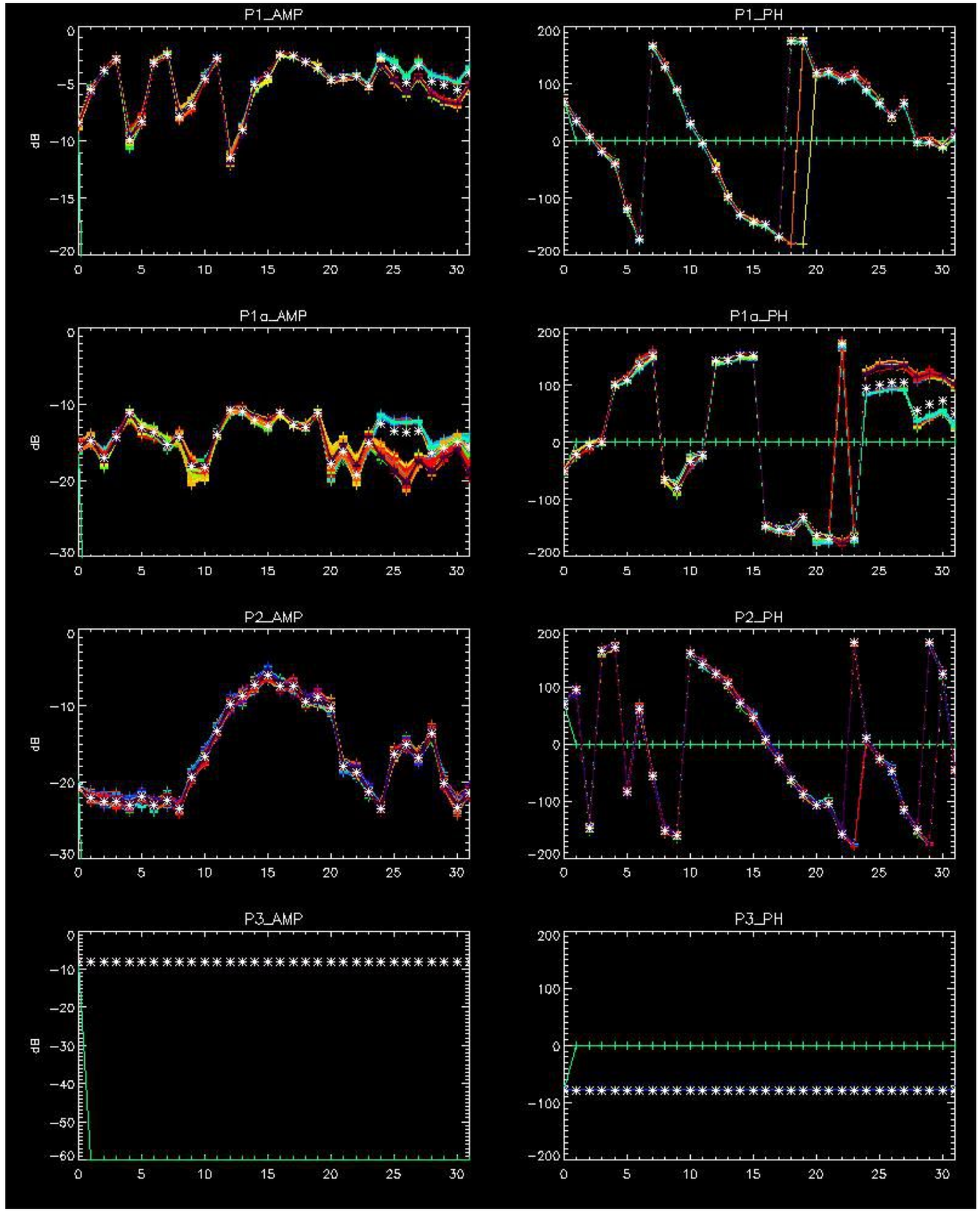
Average P1 (row 3 & row 10)
[dB]
−3
−4
−5
−6
−7
−8
09
12
15
18
21
04−Aug
Average P2
[dB]
−18
−20
−22
−24
09
12
15
18
21
04−Aug
Average P3
[dB]
−7.8
−8.0
−8.2
−8.4
09
12
15
18
21
04−Aug


Average P1 (row 25 & row 26)
[dB]
−2
−4
−6
−8
12
18
00
06
12
18
04−Aug
Average P2
[dB]
−10
−15
−20
−25
−30
12
18
00
06
12
18
04−Aug
Average P3
[dB]
−7.6
−7.8
−8.0
−8.2
−8.4
12
18
00
06
12
18
04−Aug


Transmit Phase B3–3
Phase (degs)
20
10
0
−10
−20
−30
01–10
02–11
03–12
05–01
06–02
09–03
10–04
12–05
13–06
15–07
2002
2003
2003
2003

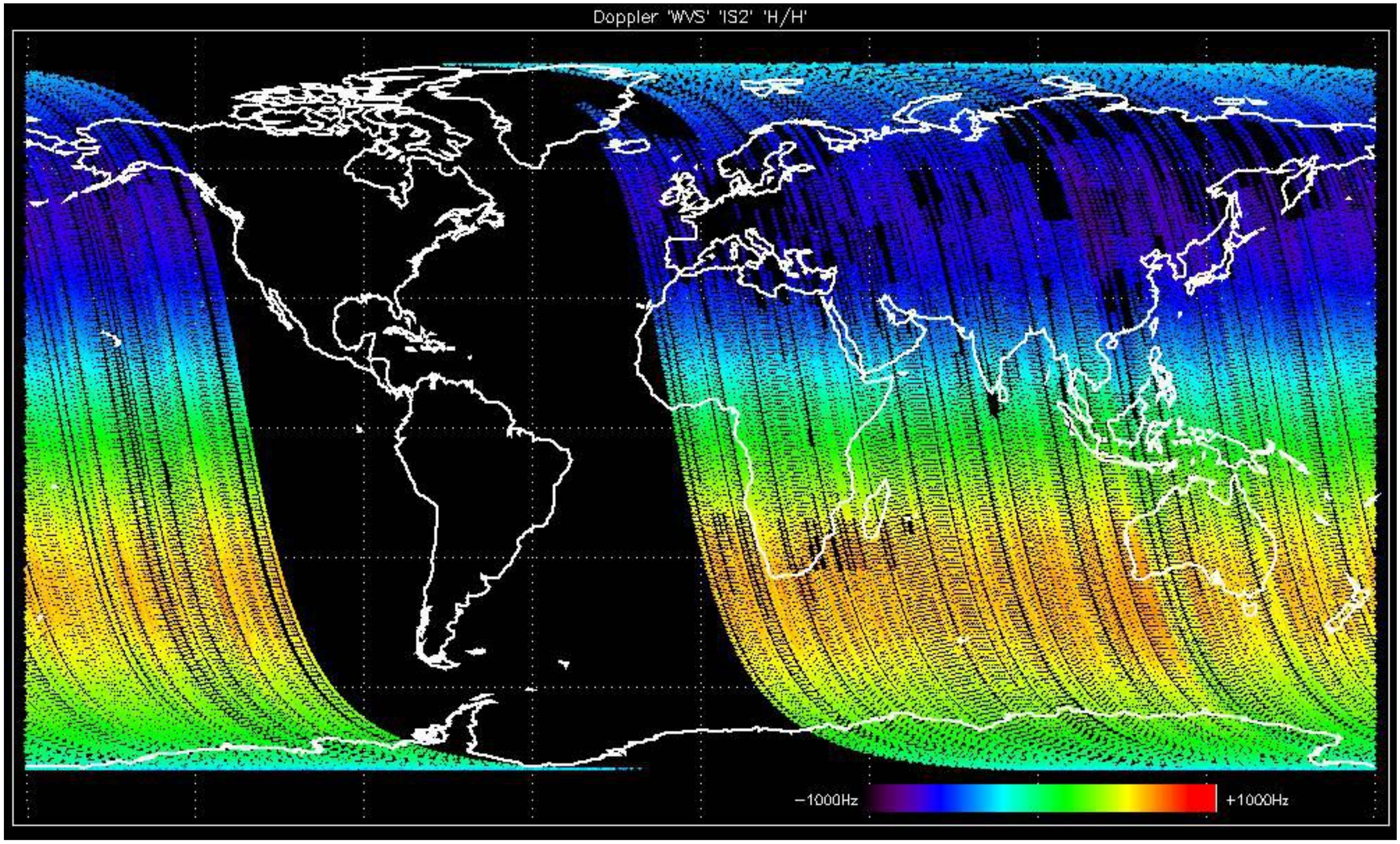
No anomalies observed on available browse products

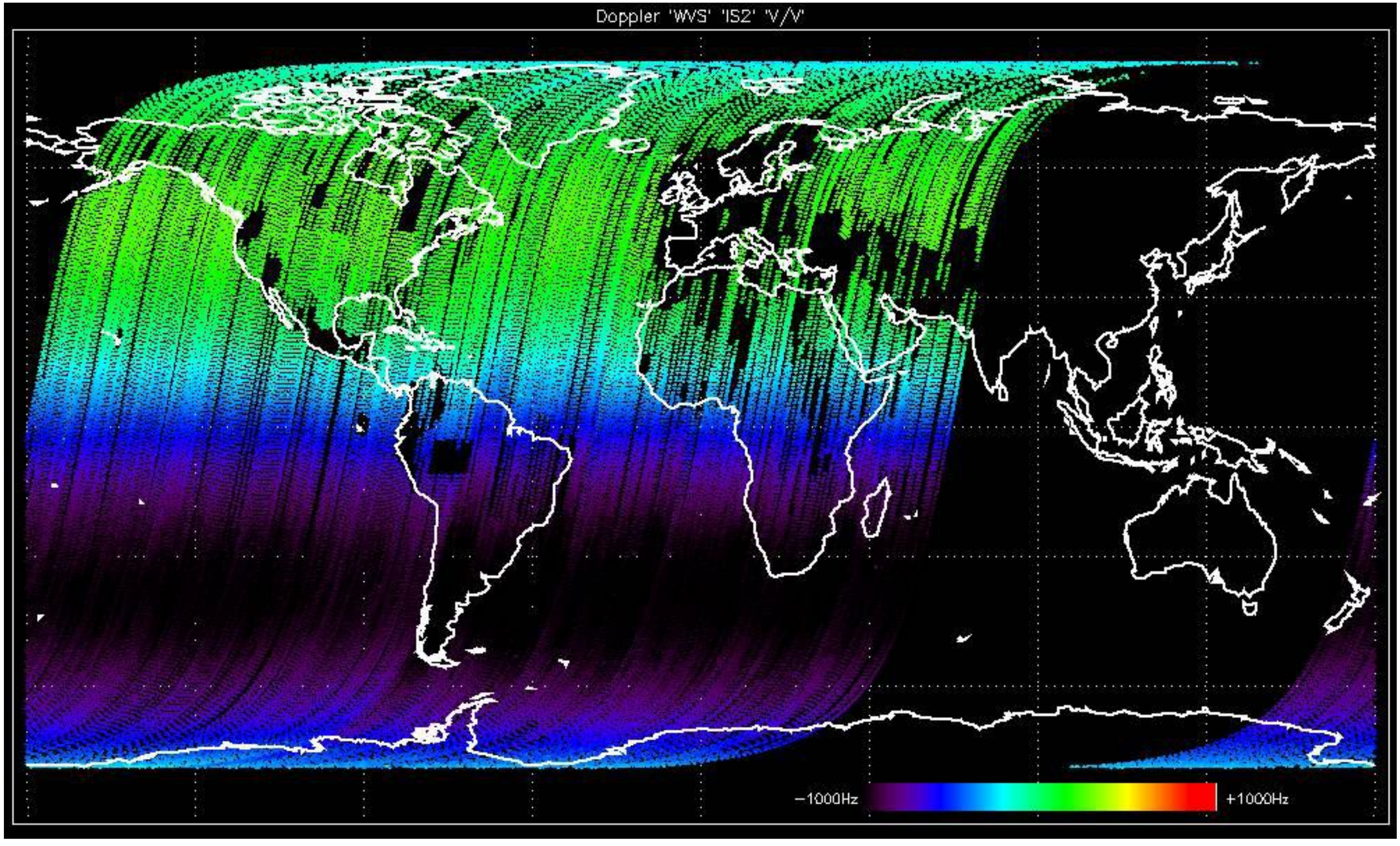
The plot of paragraph shows that ASAR is back to normal operations on 04-AUG-2003 19:18:46 after an antenna reset.

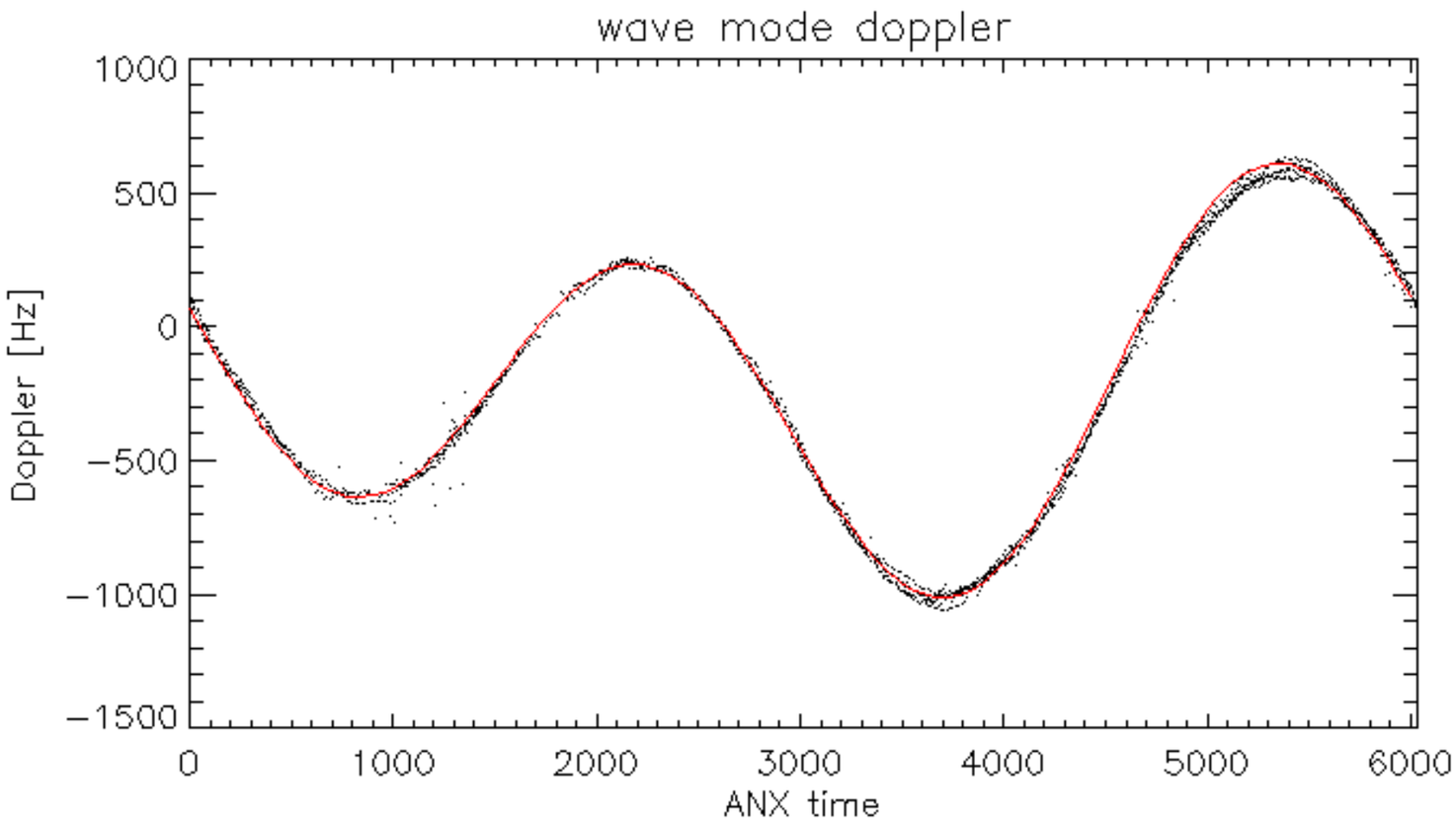

P1_AMP
P1_PH
P1a_AMP
P1a_PH
P2_AMP
P2_PH
P3_AMP
P3_PH
dB

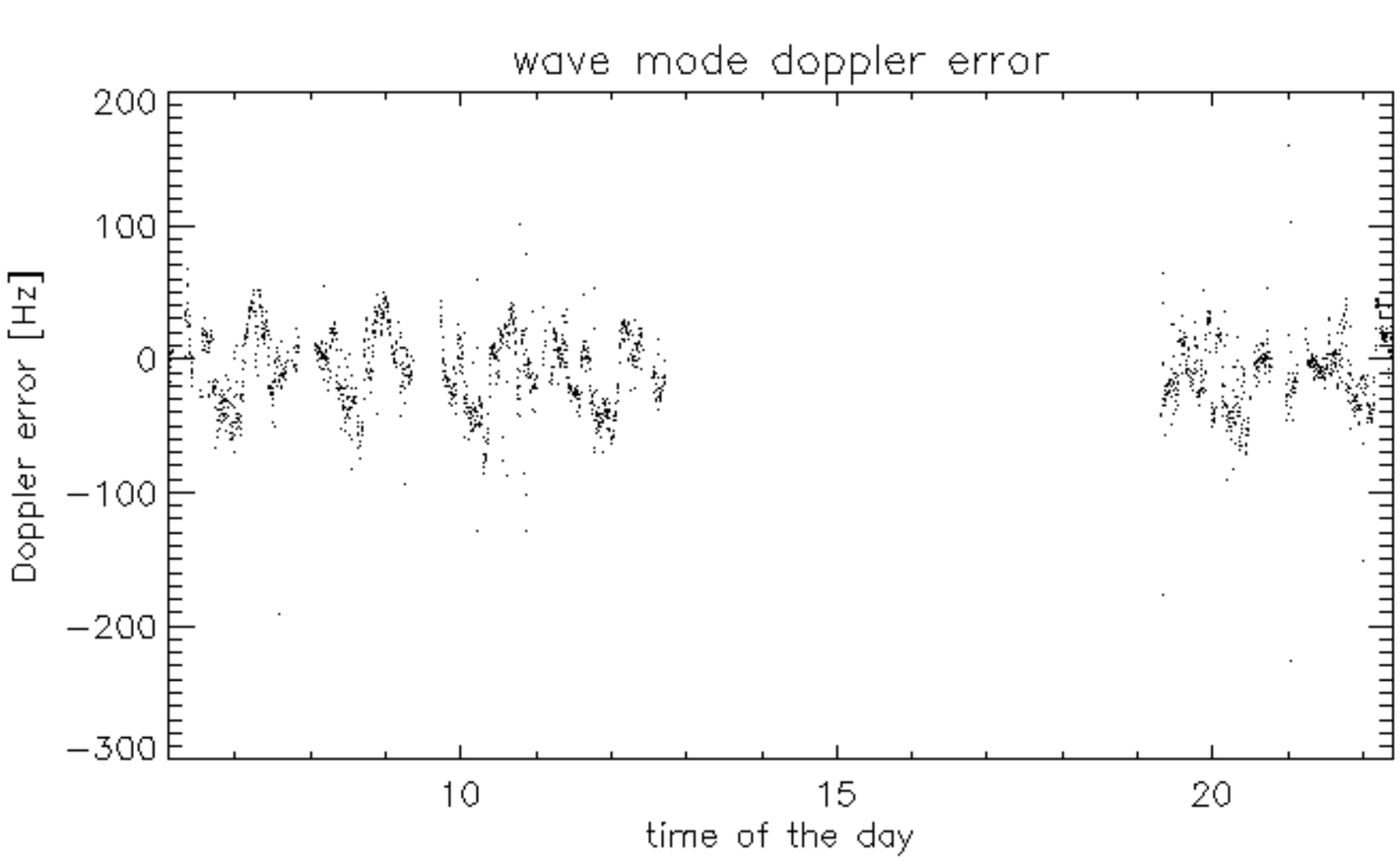
After the anomaly reported on the on 04-AUG-2003 ASAR is back to nominal behaviour:
-Nominal MS results
-Stable wave internal calibration pulses gain and phase.
-Stable raw data statistics.
-Nominal Doppler behaviour.

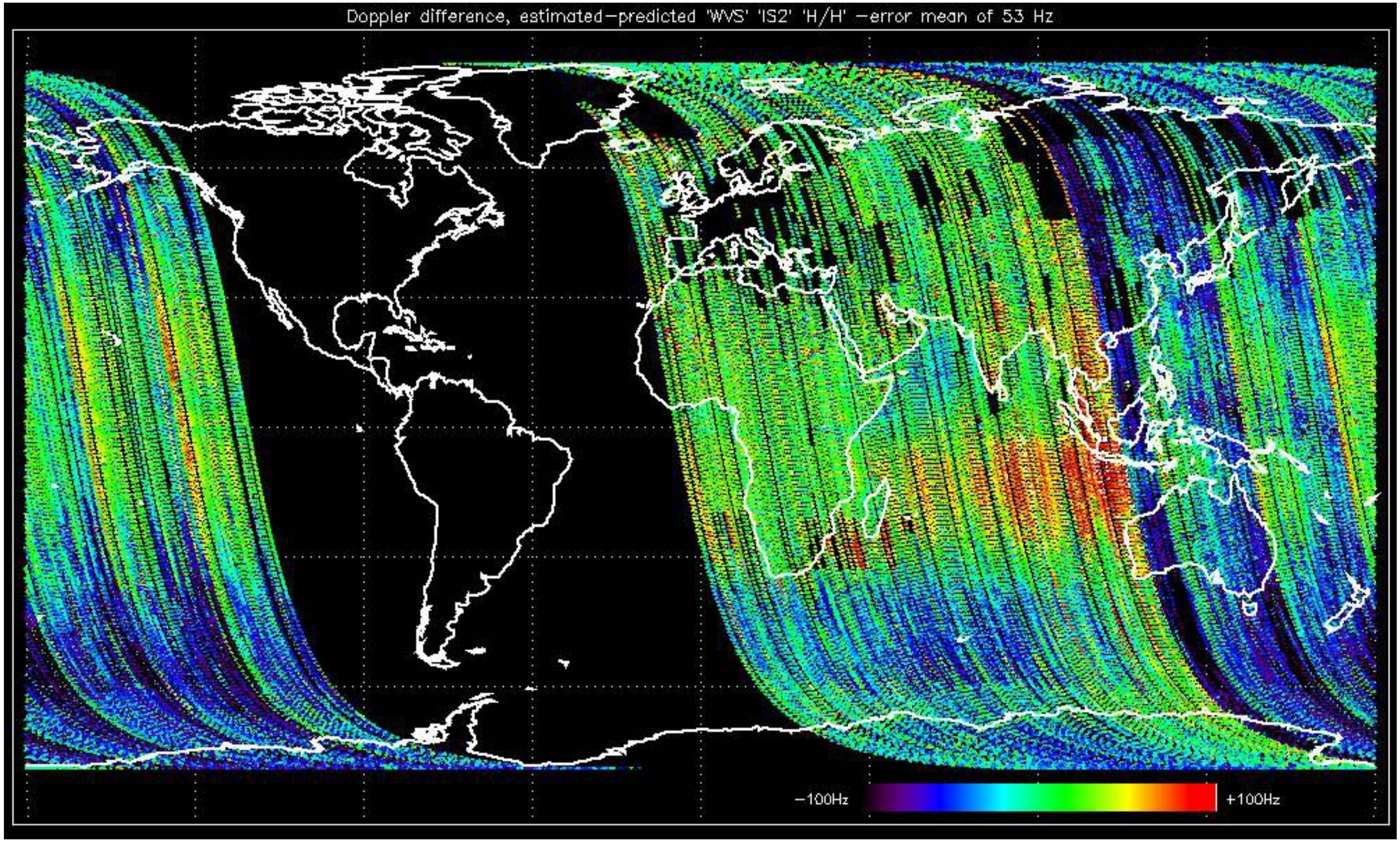
No anomalies observed Doppler evolution.
Doppler analysis performed over the last 60 days

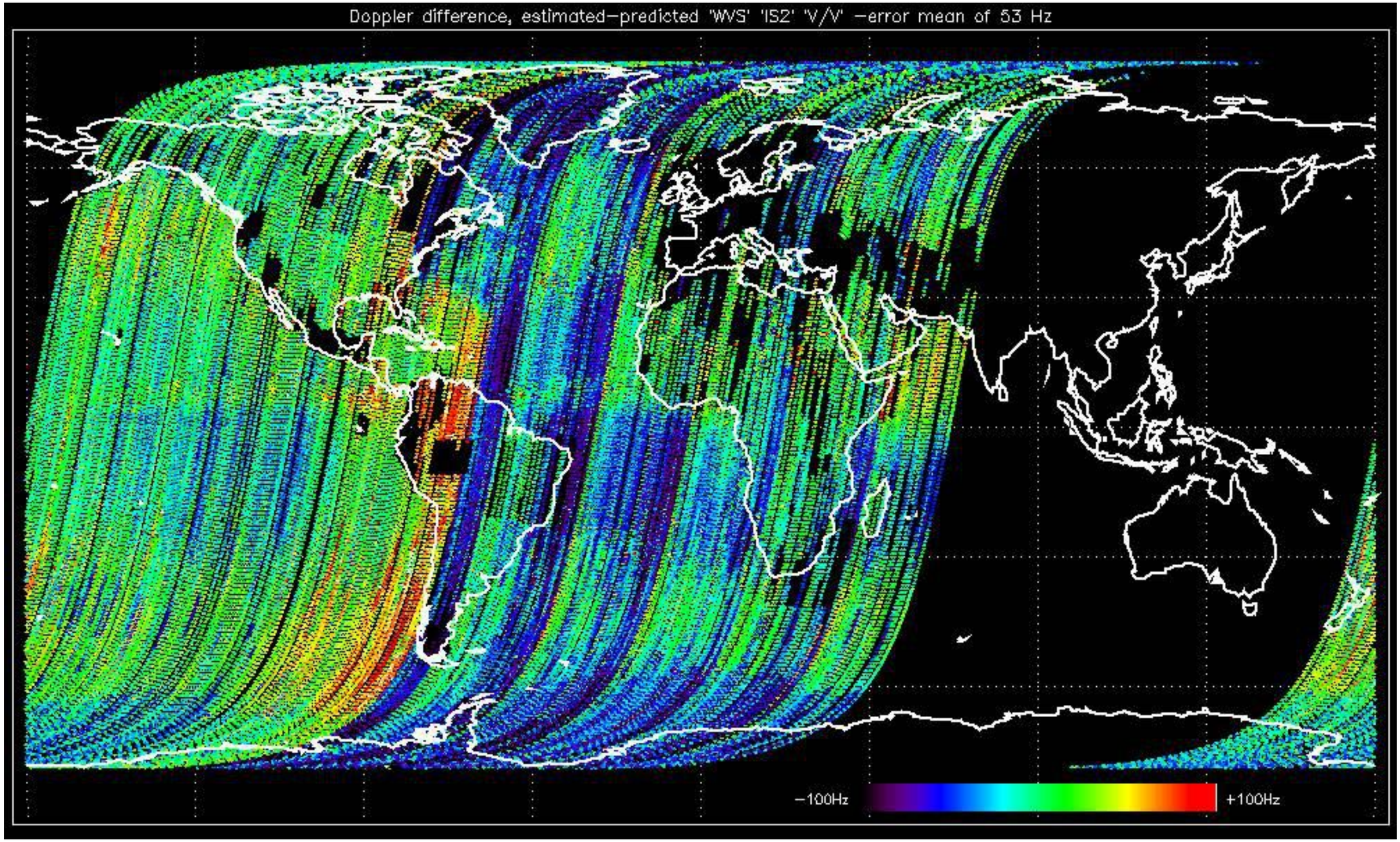

Doppler 'WVS' 'IS2' 'H/H'
−1000Hz
+1000Hz


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]
200
100
0
−100
−200
−300
10
15
20
time of the day


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

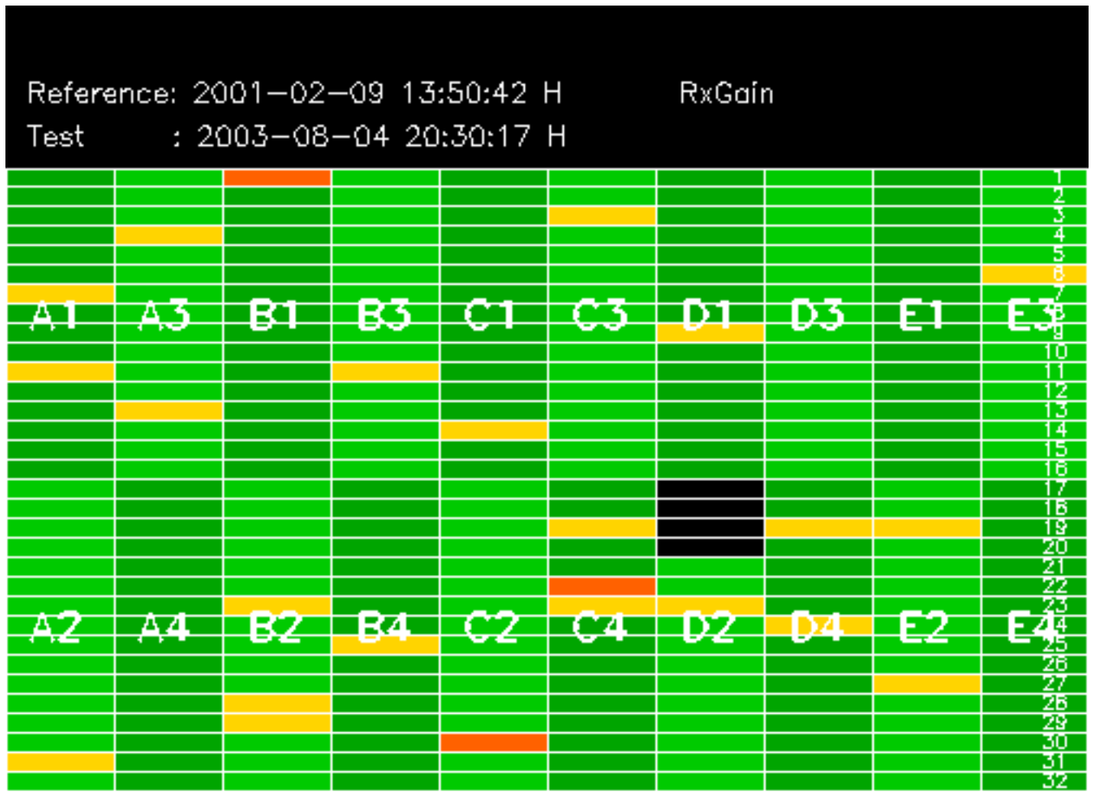

Doppler difference, estimated−predicted 'WVS' 'IS2' 'V/V' −error mean of 53 Hz
−100Hz
+100Hz

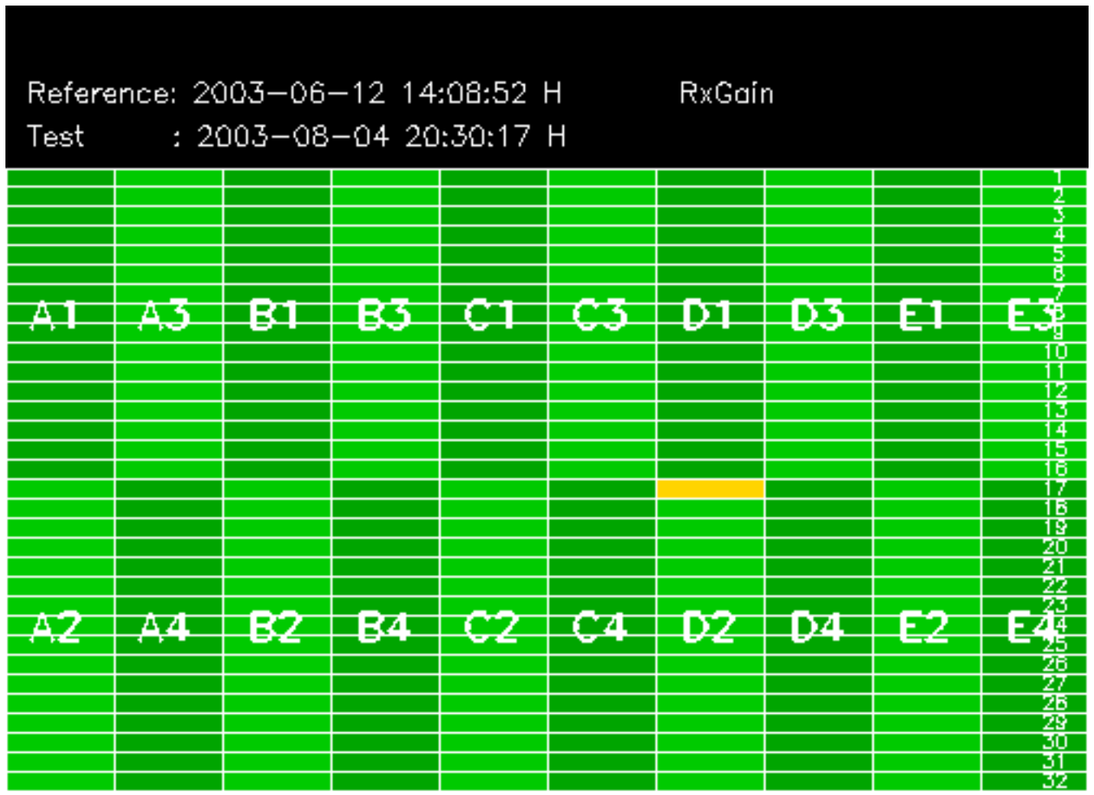
- The anomaly was firtly detected by temperature anomaly on tile E2.
- The results from the available MS products acquire just before the return to nominal operation do not show problems on any tile.

- No anomalies observed on available MS products:
	-ASA_MS__0PNPDK20030804_203017_000000152018_00400_07468_0062.N1
	-ASA_MS__0PNPDK20030804_203157_000000152018_00400_07468_0061.N1

- Stabilisation of the B3-3 module drift in transmit phase on H polarisation as shown below:

Anomaly has no major impact on the raw data statistics
No anomalies observed.


Reference: 2001-02-09 13:50:42 H
Test : 2003-08-04 20:30:17 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 : 2003-08-04 20:30:17 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
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14
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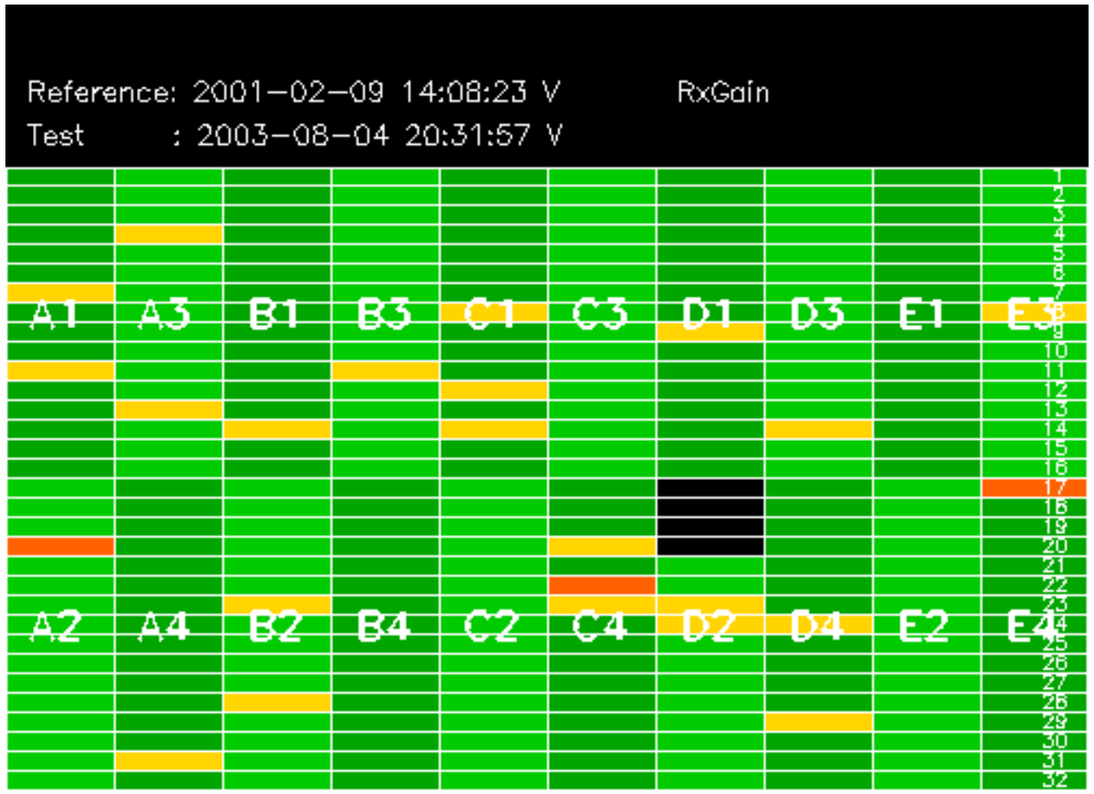
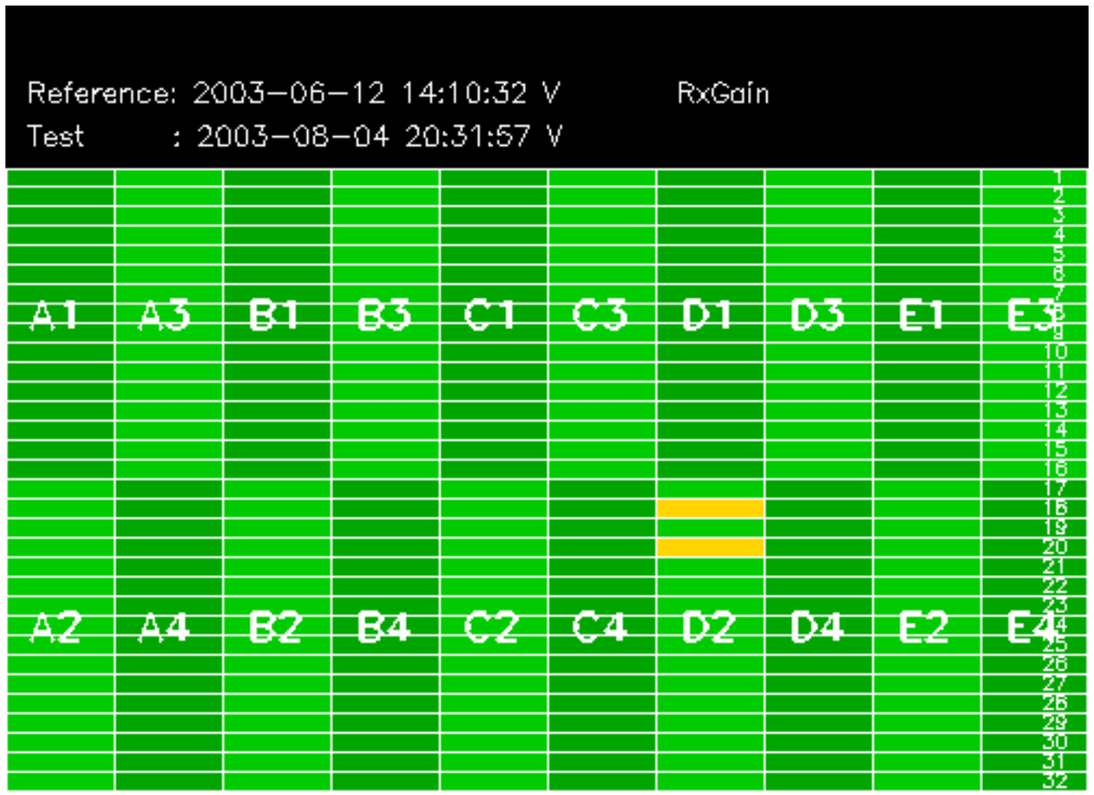
28
29
30
31
32


Reference: 2001-02-09 14:08:23 V
RxGain
Test : 2003-08-04 20:31:57 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 : 2003-08-04 20:31:57 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
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24
25
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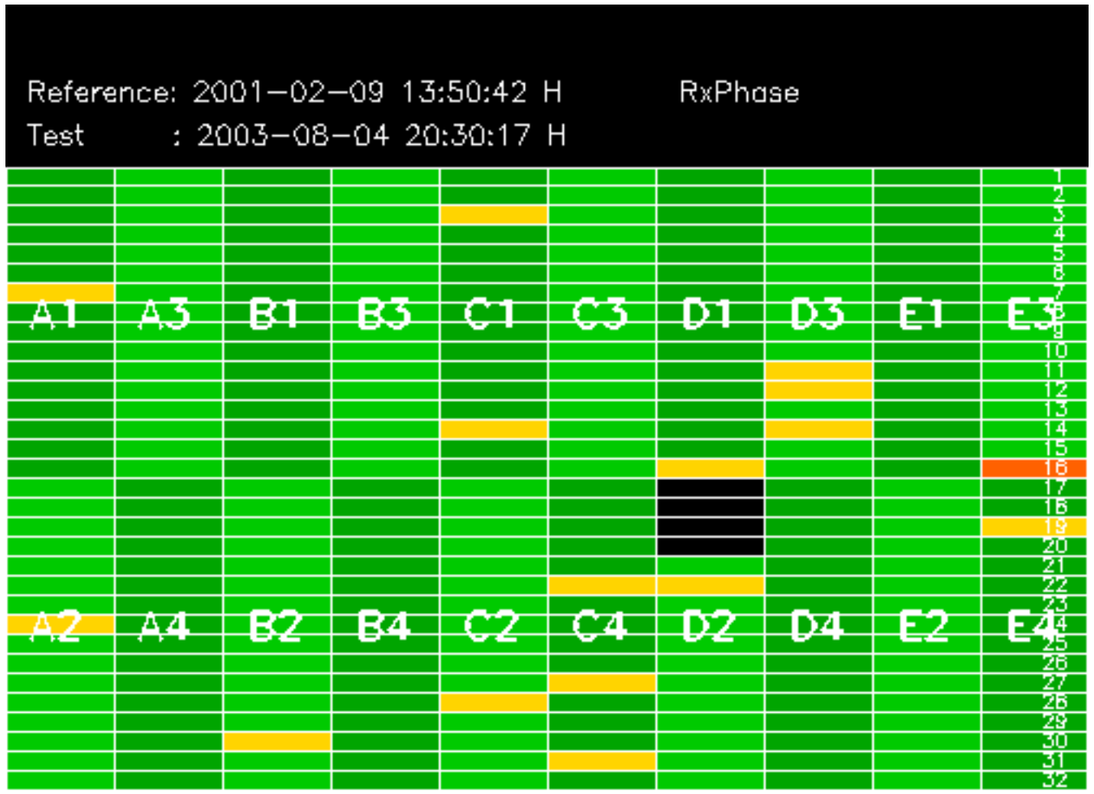
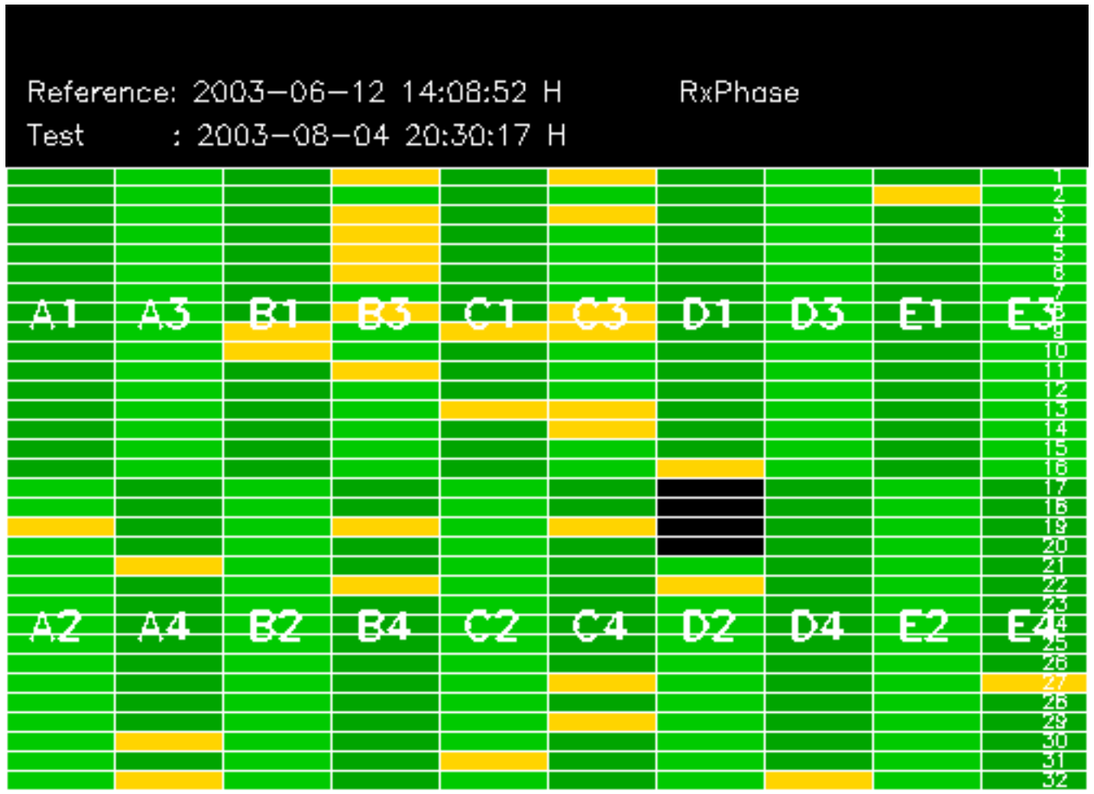
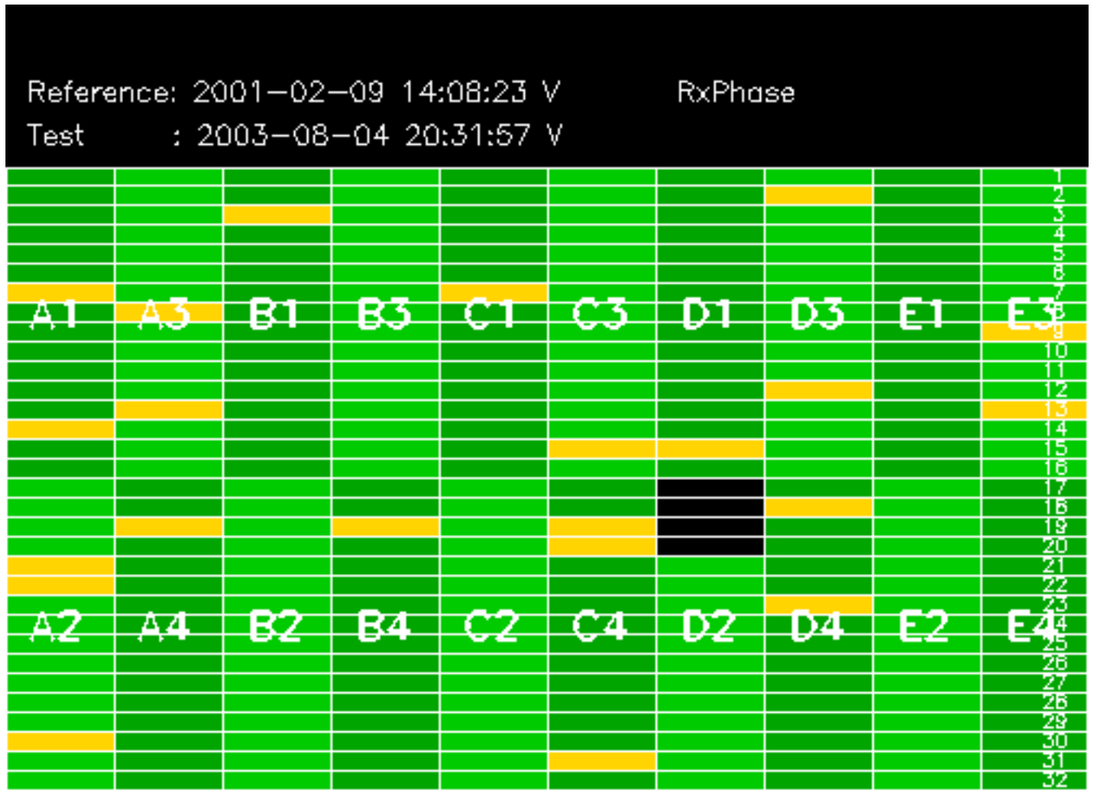
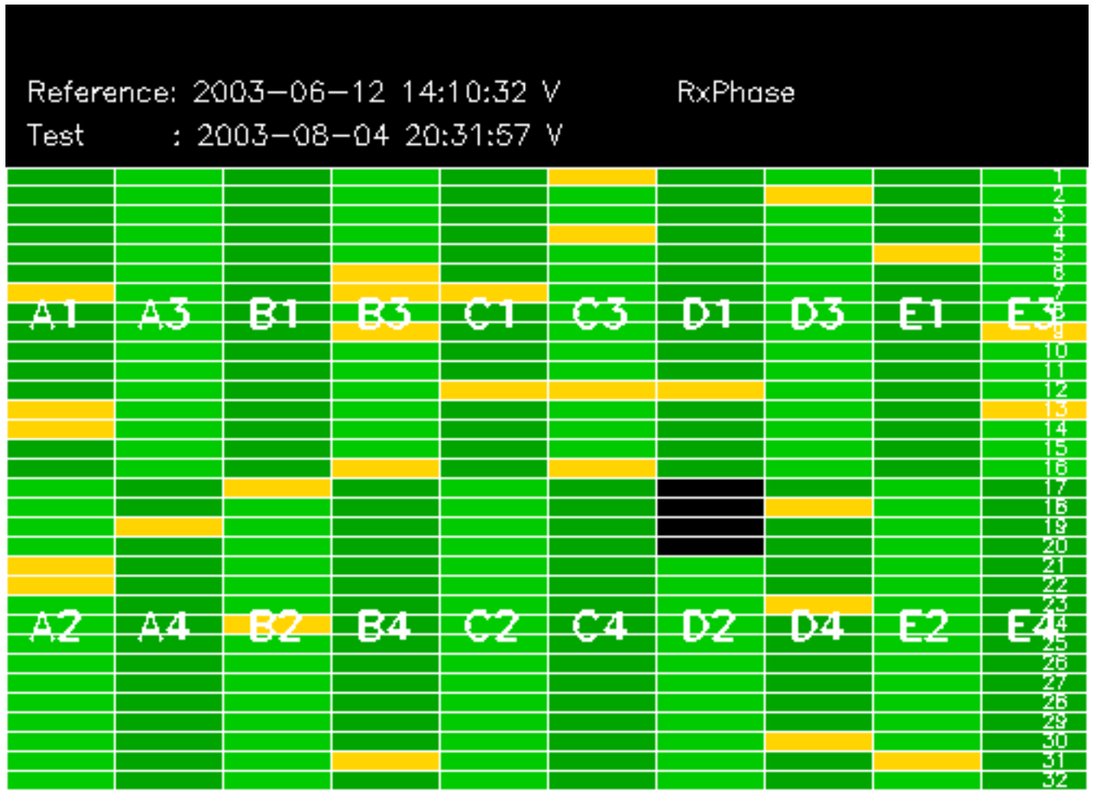
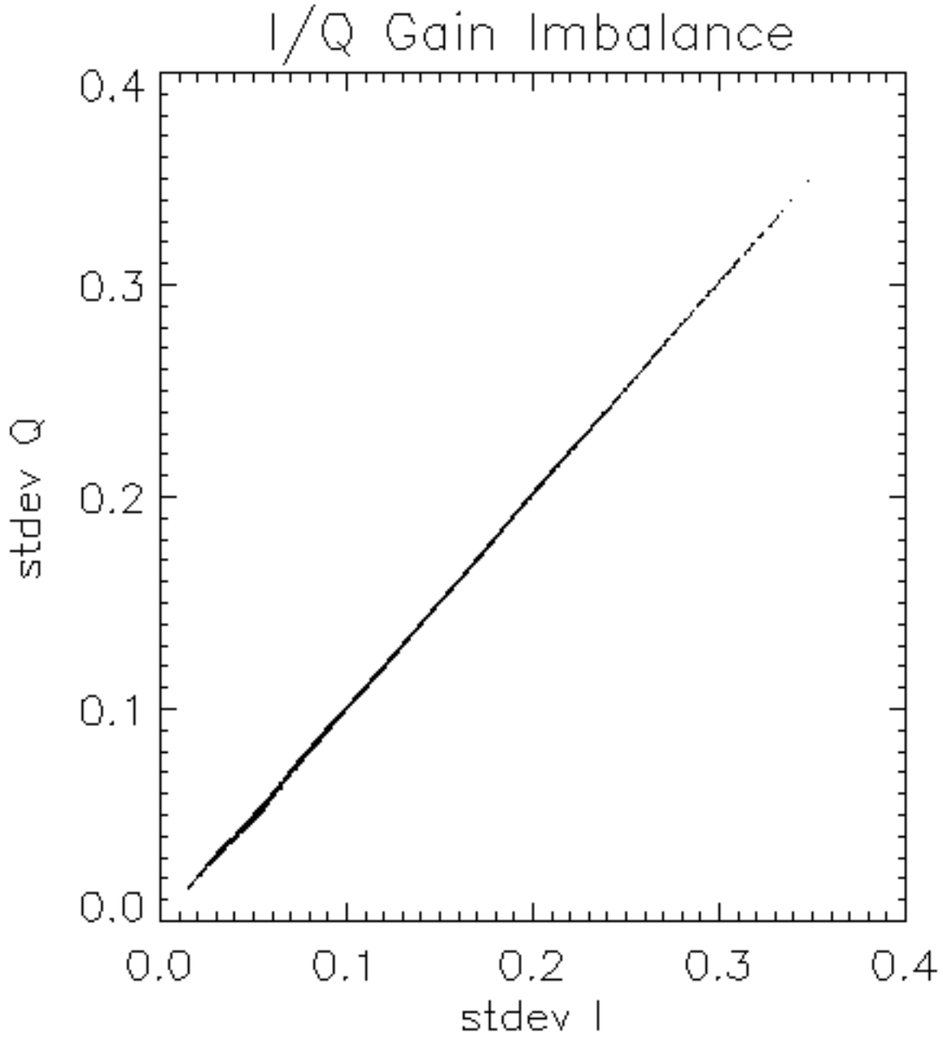
29
30
31
32

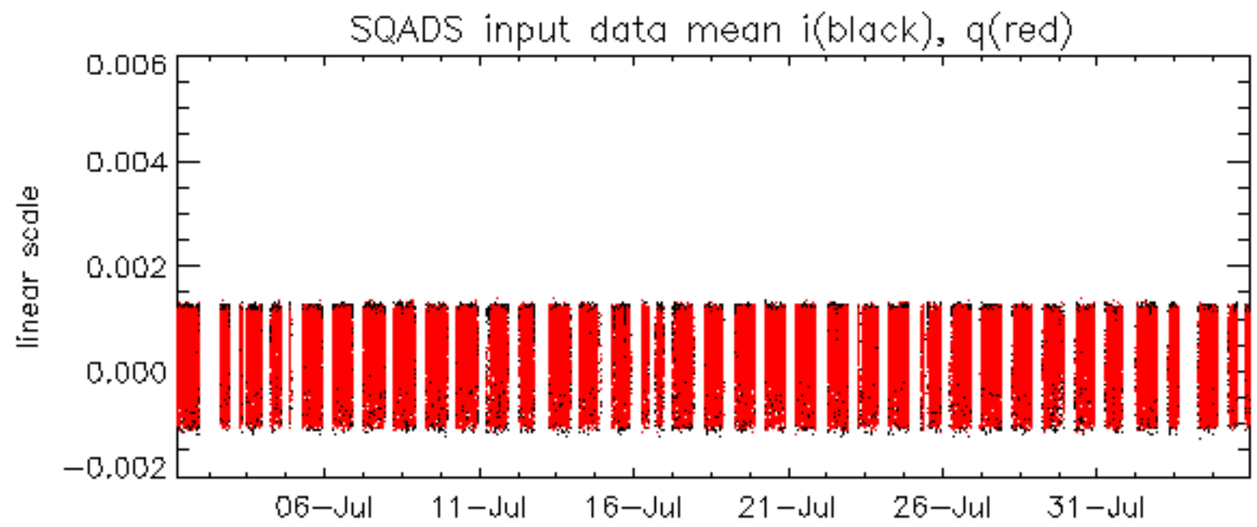

Reference: 2001-02-09 13:50:42 H
RxPhase
Test : 2003-08-04 20:30:17 H
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4

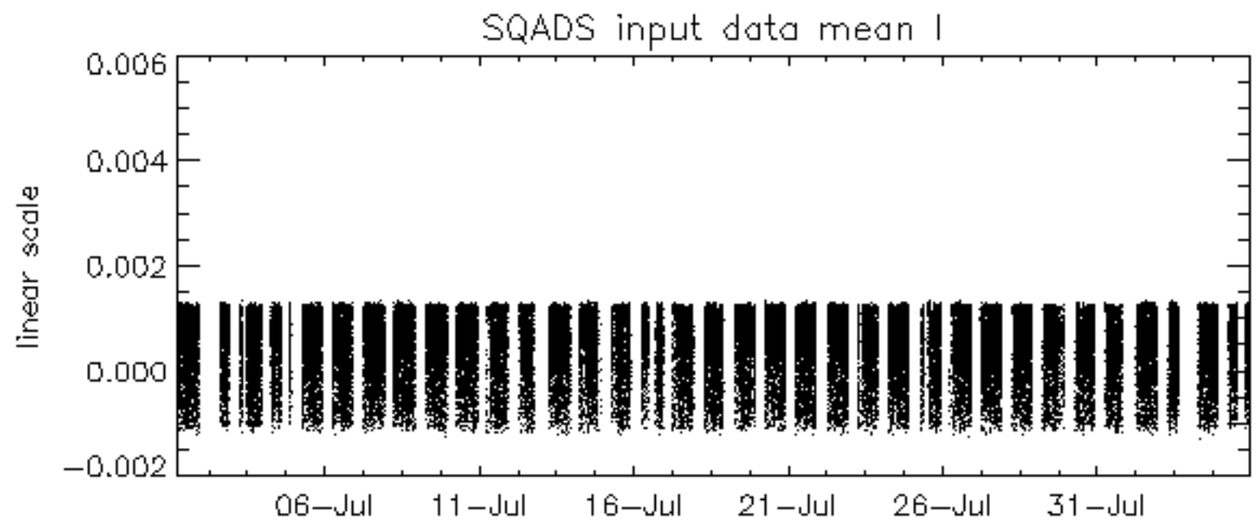

Reference: 2003-06-12 14:08:52 H
RxPhase
Test : 2003-08-04 20:30:17 H
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4

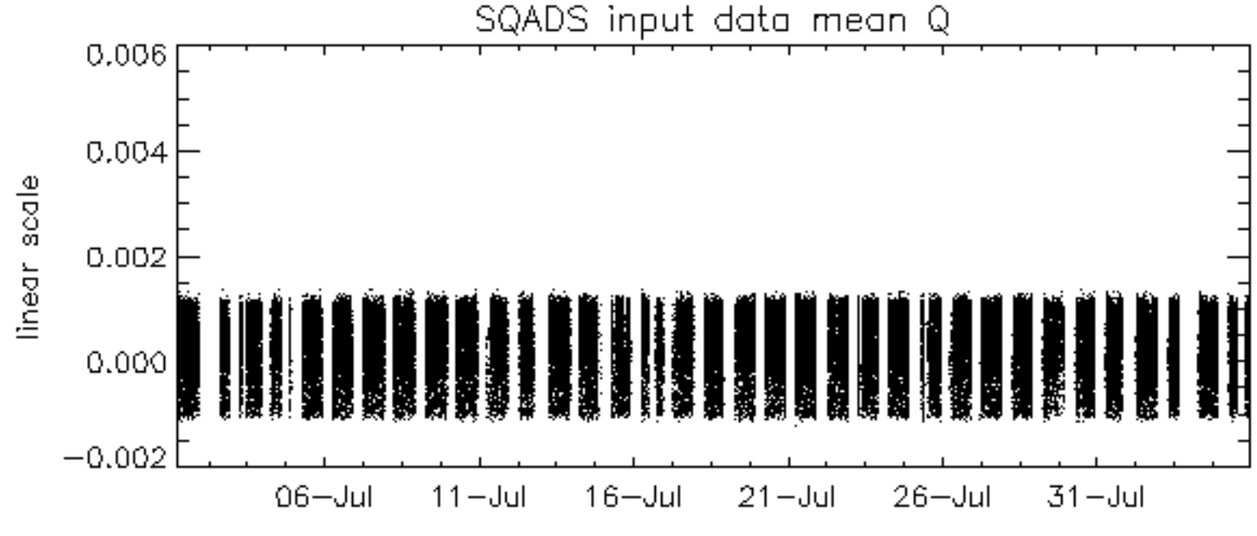

Reference: 2001-02-09 14:08:23 V
Test : 2003-08-04 20:31:57 V
RxPhase
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4

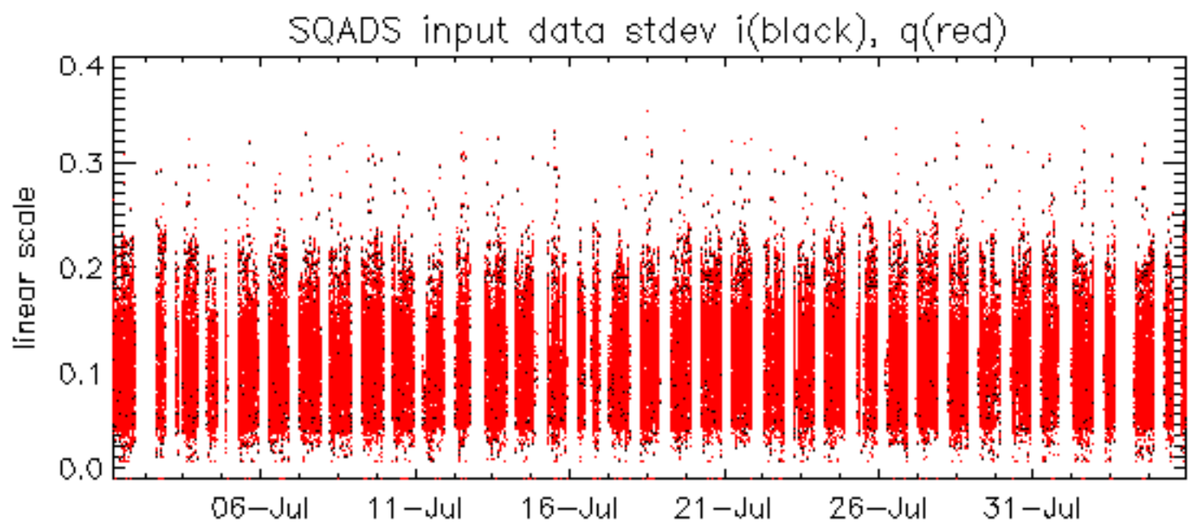

Reference: 2003-06-12 14:10:32 V
Test : 2003-08-04 20:31:57 V
RxPhase
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4

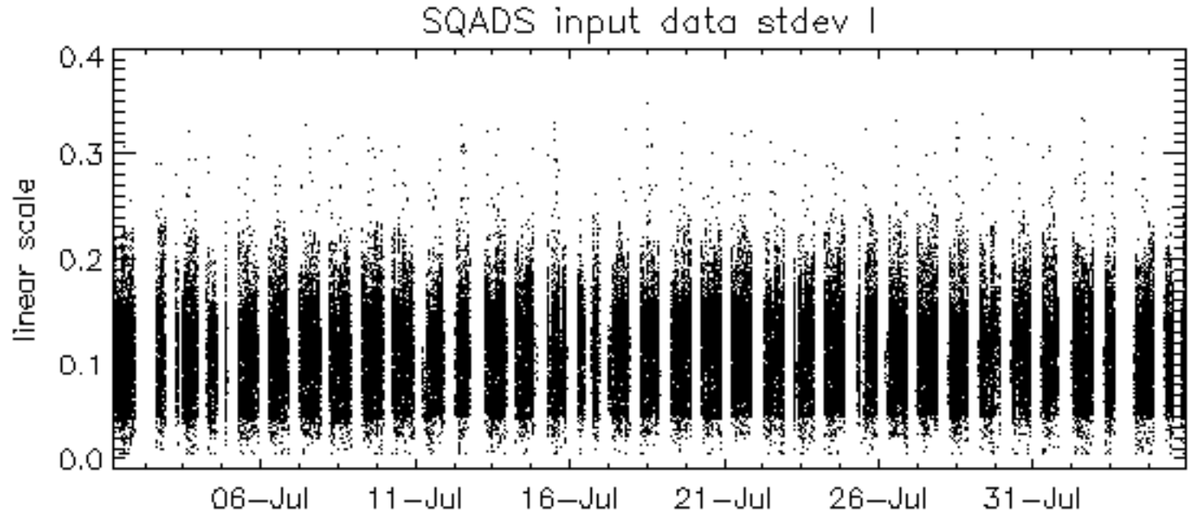

I/Q Gain Imbalance
0.4
0.3
0.2
0.1
0.0
stdev Q
0.0
0.1
0.2
0.3
0.4
stdev I

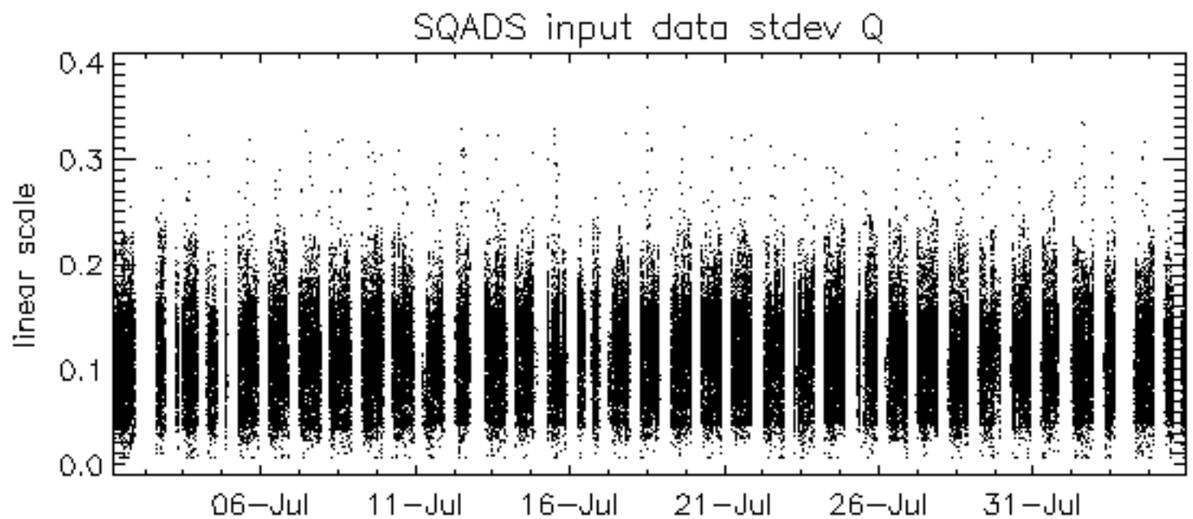

SQADS input data mean i(black), q(red)
linear scale
0.006
0.004
0.002
0.000
−0.002
06−Jul
11−Jul
16−Jul
21−Jul
26−Jul
31−Jul

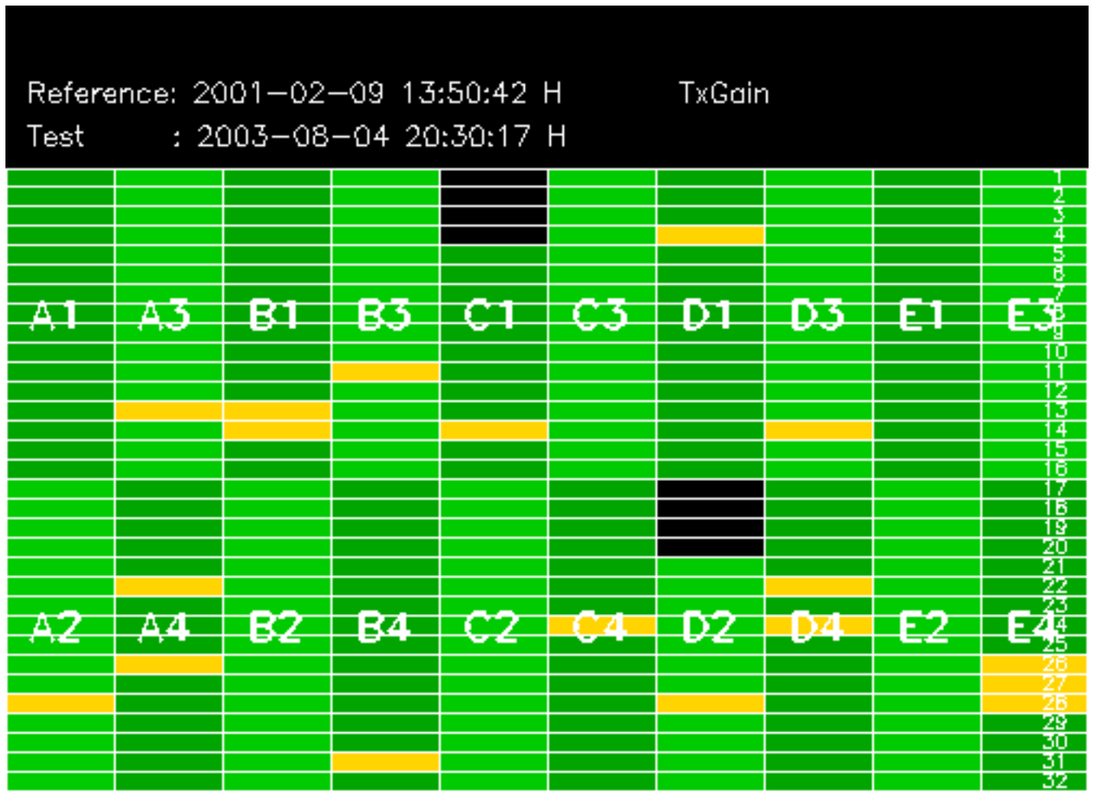

SQADS input data mean I
linear scale
0.006
0.004
0.002
0.000
−0.002
06−Jul
11−Jul
16−Jul
21−Jul
26−Jul
31−Jul

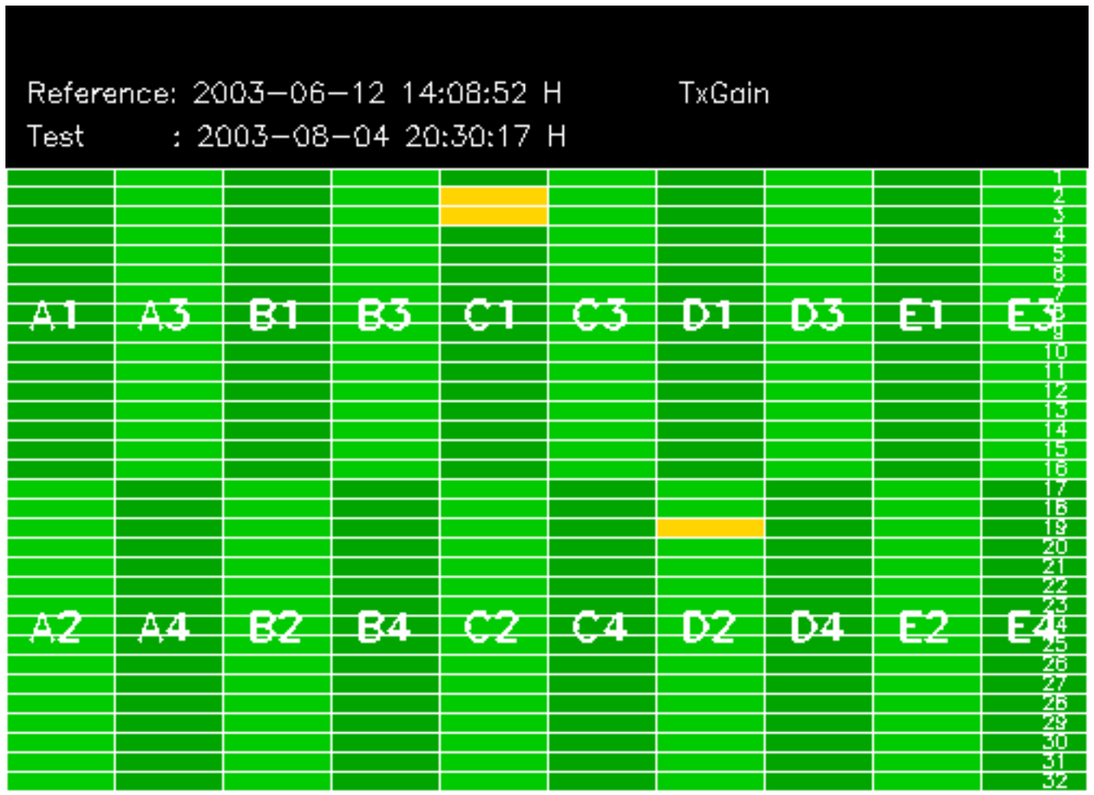

SQADS input data mean Q
linear scale
0.006
0.004
0.002
0.000
−0.002
06−Jul
11−Jul
16−Jul
21−Jul
26−Jul
31−Jul


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


Reference: 2001-02-09 13:50:42 H
Test : 2003-08-04 20:30:17 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 : 2003-08-04 20:30:17 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
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8
9
10
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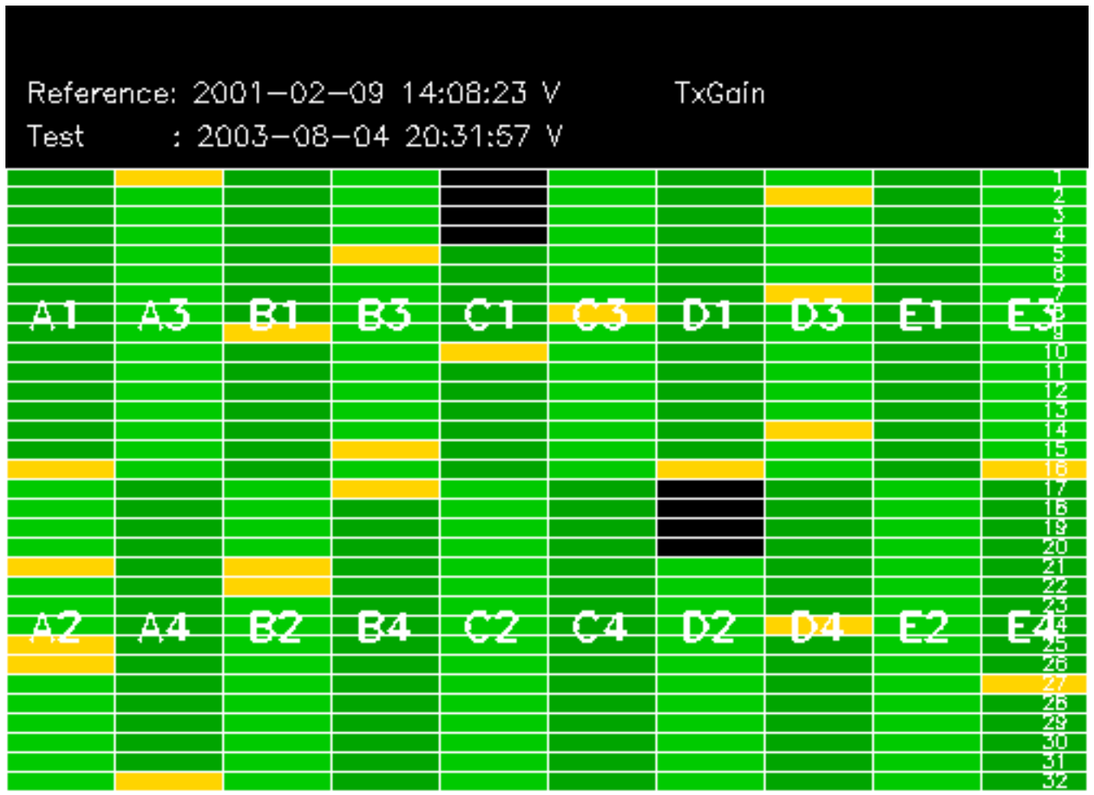
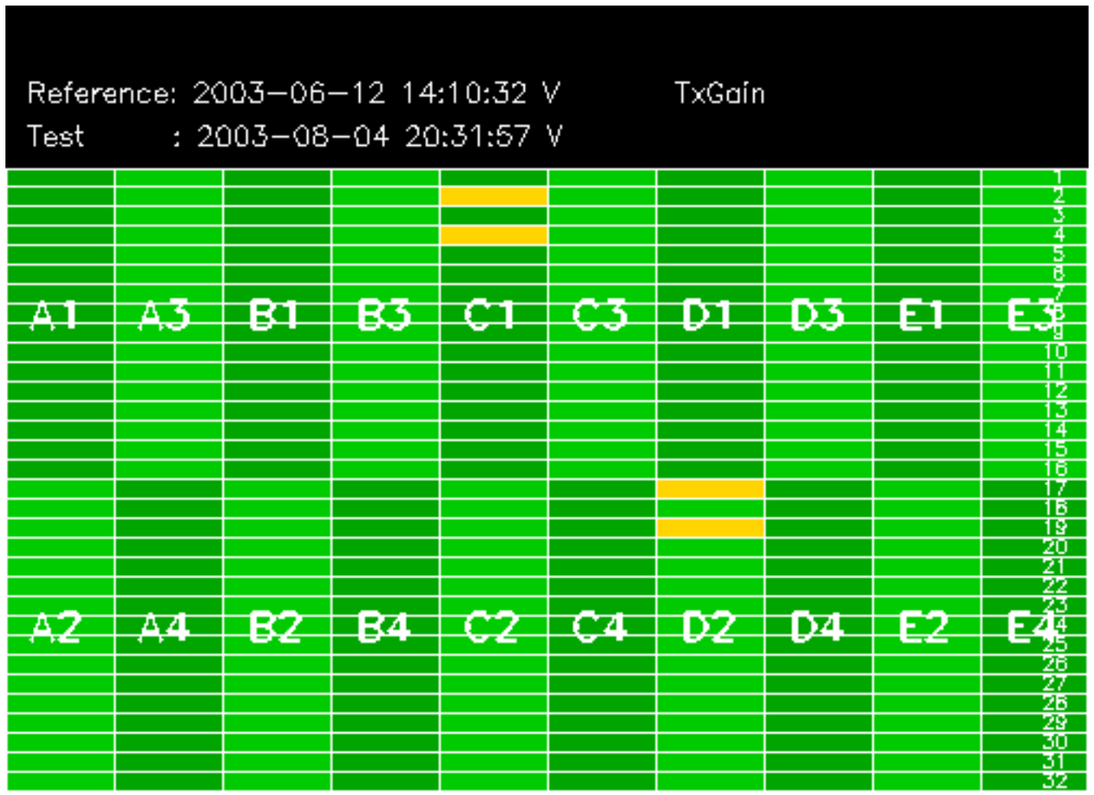
31
32


Reference: 2001-02-09 14:08:23 V
Test : 2003-08-04 20:31:57 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 : 2003-08-04 20:31:57 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
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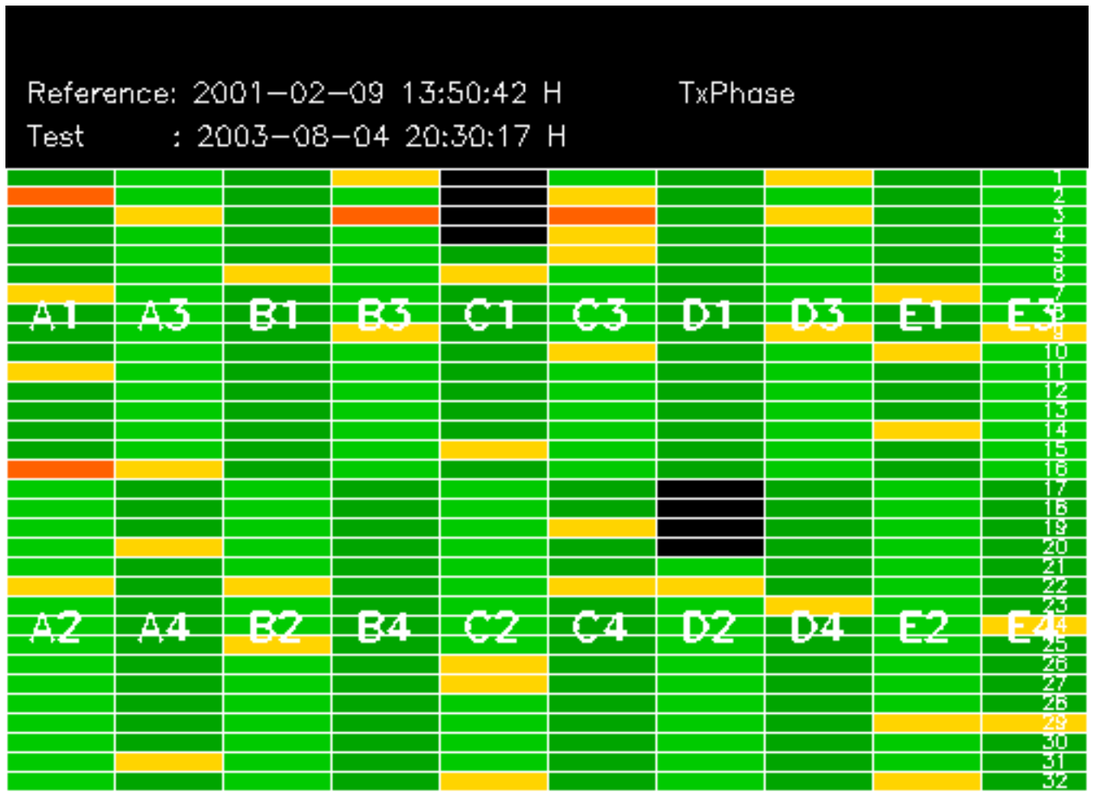
Reference: 2001-02-09 13:50:42 H
TxPhase
Test : 2003-08-04 20:30:17 H
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4
1
2
3
4
5
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8
9
10
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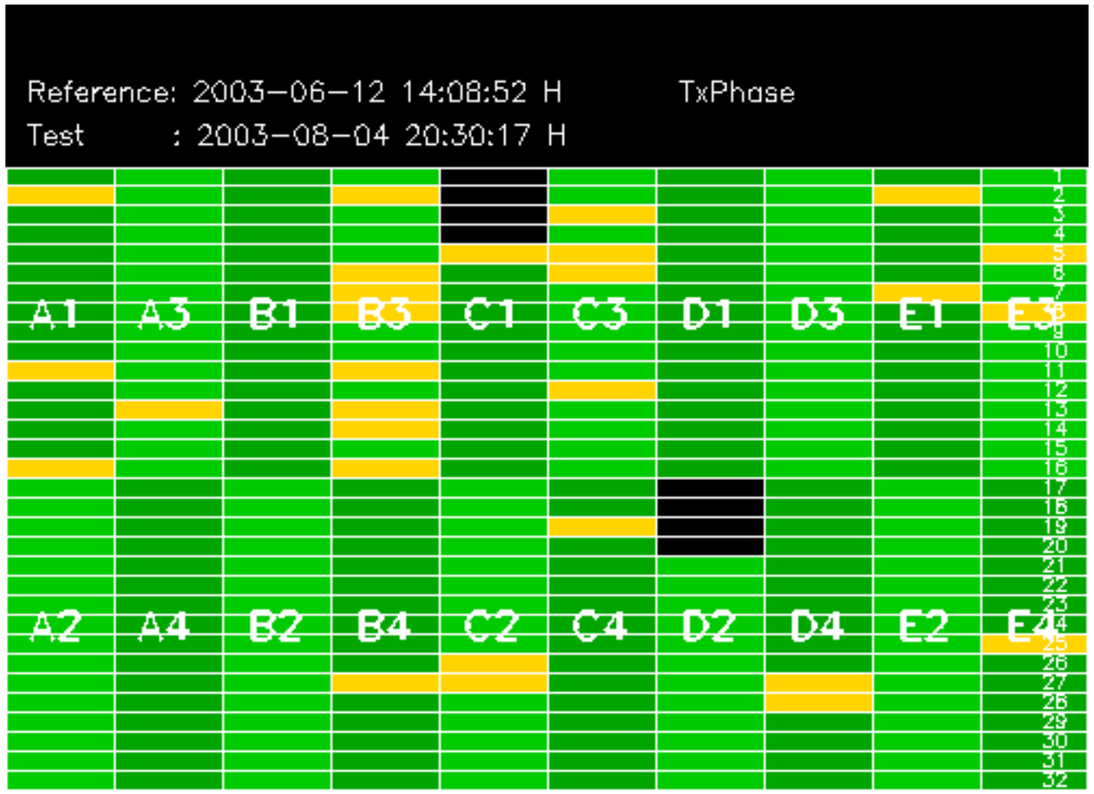
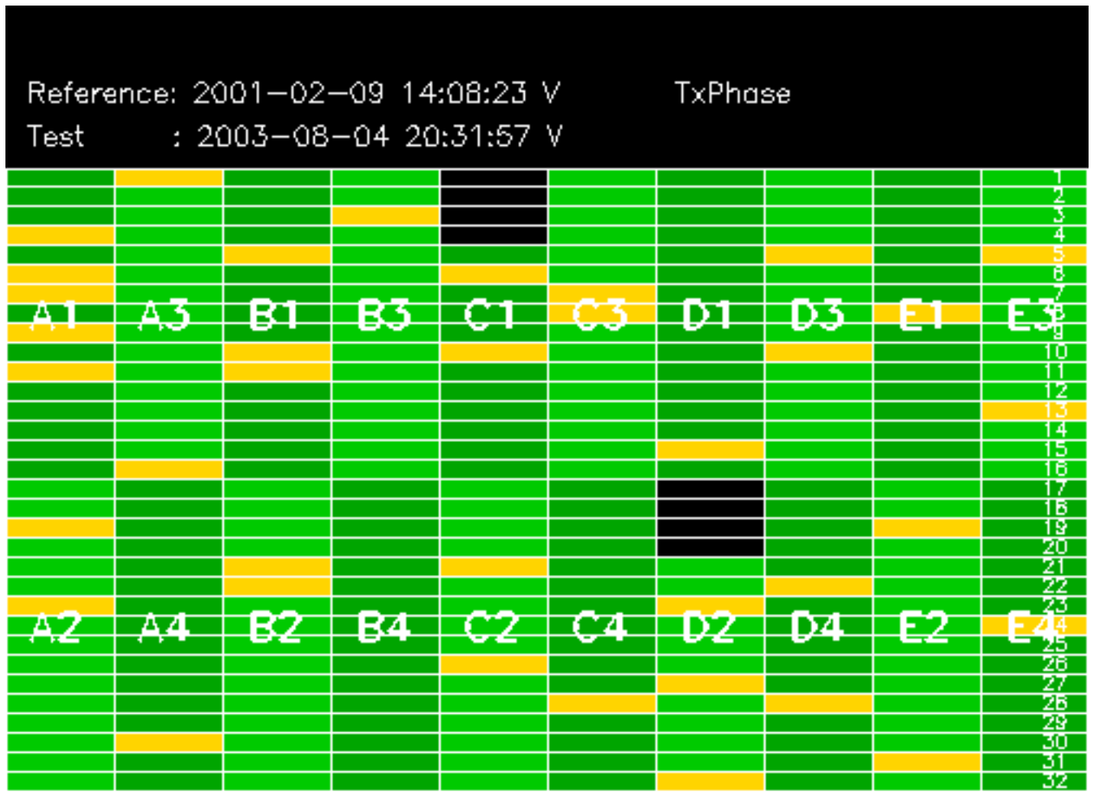
32


Reference: 2003-06-12 14:08:52 H
Test : 2003-08-04 20:30:17 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 : 2003-08-04 20:31:57 V
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4
1
2
3
4
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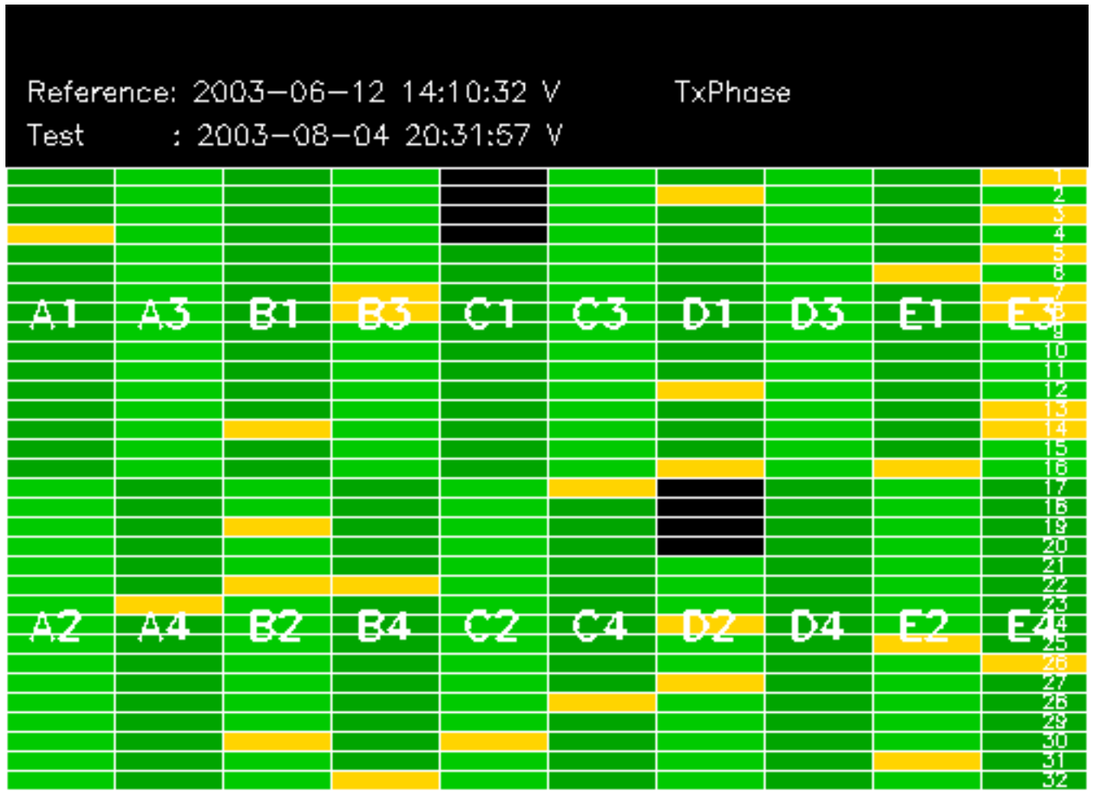
Reference: 2003-06-12 14:10:32 V
Test : 2003-08-04 20:31:57 V
TxPhase
A1
A3
B1
B3
C1
C3
D1
D3
E1
E3
A2
A4
B2
B4
C2
C4
D2
D4
E2
E4

ASAR unavailability for Antenna reset on 04-AUG-2003 detailed on table below.
The anomaly was caused by Temperature anomaly on tile E2 and science data abnormaly