Chapter 3

VIBRATION TEST

3.1 ADMINISTRATIVE INFORMATION

3.1.1 CLIENT

Martec Kannad

3.1.2 REPRESENTATIVES

For the Client : S. Jincheleau Martec & G. Peyrou ITS/ES
For the Test Laboratory : A. BONAMICHN ITS/EQ

3.1.3 DATES

Start of test : 17 September 2007
End of test : 18 September 2007

3.1.4 INTESPACE FILE REFERENCE :

E7555-RTCM

3.1.5 UNIT UNDER TEST (UUT)

Beacon Unit : UUT1 & UUT2
Name : MARTEC / KANNAD
Type : 406XS3 GPS
Number : UT1 & UT2

3.2 PURPOSE OF THE TEST

Functional checkout of hardware after vibration testing.

3.3 TEST EQUIPMENT

3.3.1 TEST DEVICES

Electrodynamic vibration table, type 27 with GR3
Spectral Dynamics SD2225 digital control panel

3.3.2 METROLOGICAL EQUIPMENT

Vibration Control : accelerometer (analysis and processing)
Vibration Measurements : Spectral Dynamics SD2225
Electrical Beacon Checking : Argos - Cospas/Sarsat Test Bench.

3.4 TEST PROCEDURE

3.4.1 AXIS (See photograph in § 3.7)

X-axis : parallel to the Beacon fixing plane and Beacon « widthways »
Y-axis : parallel to the Beacon fixing plane and Beacon « lengthways »
Z-axis : perpendicular to the Beacon fixing plane

3.4.2 MOUNTING

The beacon is secured to a light-alloy supporting square.
The complete assembly is firmly attached to the moving part of the vibration table according to the required axis.

3.4.3 TEST SPECIFICATIONS AND SEQUENCE

Vibrations following Section A3.0 of RTCM Recommended Standards for 406 MHz Satellite PLBs (Version 1.1 Feb 4, 2003)

Sinewave vibrations on three axis :

Frequency (Hz)	3.5 Peak to Peak Amplitude (mm)
4-10	5
10-15	1.6
15-25	0.8
25-33	0.4

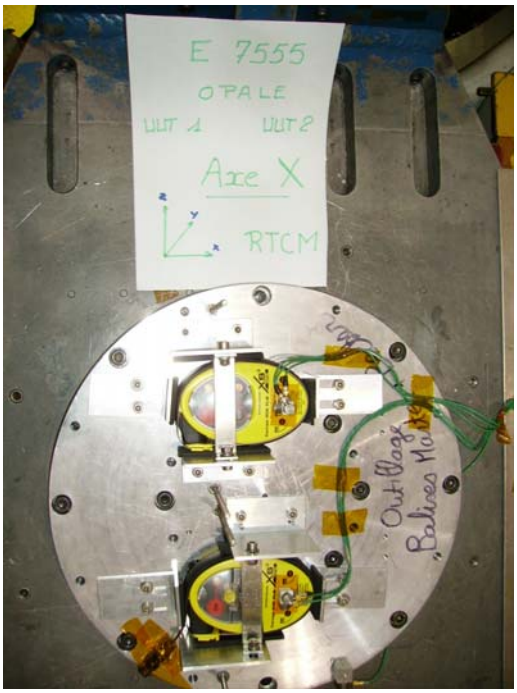
Sweep rate : 1.2 oct/min
Duration : 30 minutes on each axis

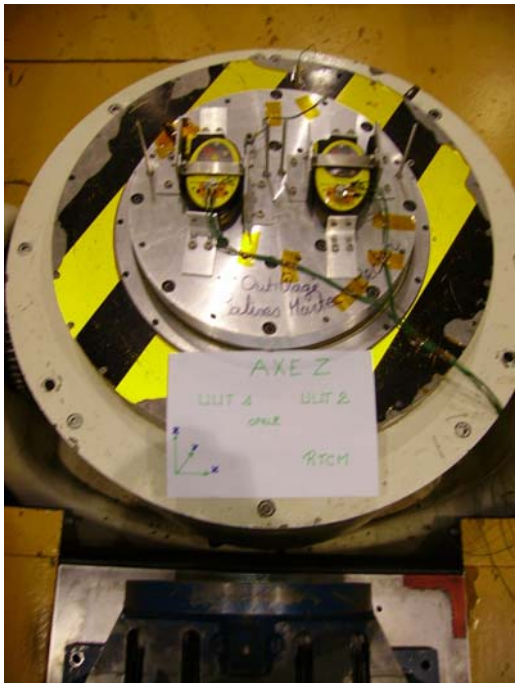
Beacon control : Visual inspection and Aliveness test after the Vibrations Tests

3.5.1 LIST OF SERVO AND CONTROL SENSORS

Sensor	Location	N° acc.	Sensivity pC/g
Servo	Screwed on test holder sheet	TD17	8.94
UUT1			
1X (control)	Glued on the Beacon	5798	6.67
1Y (control)	Glued on the Beacon	12271	3.09
1Z (control)	Glued on the Beacon	5845	6.67
UUT2			
1X (control)	Glued on the Beacon	Ne96	2.69
1Y (control)	Glued on the Beacon	8568	7.94
1Z (control)	Glued on the Beacon	9335	7.38

3.6 PHOTOGRAPH





TEST SCHEDULE

Date / Test n°	Specifications	Paragraph	Events - Observations	
			Test equipment	Unit under test
Sept 17th, 2007 002Z	Sinewave vibrations : Z axis 5 mm p-p from 4 to 10 Hz 1.6 mm p-p from 10 to 15 Hz 0.8 mm p-p from 15 to 25 Hz 0.4 mm p-p from 25 to 33 Hz Sweep duration : 2 min 30 s Total test duration : 30 min	3.7.1	Nominal.	Set up the beacon on test table on Z axis. Functional testing : nominal.
Sept 17th, 2007 003Y	Sinewave vibrations : X axis 5 mm p-p from 4 to 10 Hz 1.6 mm p-p from 10 to 15 Hz 0.8 mm p-p from 15 to 25 Hz 0.4 mm p-p from 25 to 33 Hz Sweep duration : 2 min 30 s Total test duration : 30 min	3.7.2	Nominal	Set up the beacon on test table on Y axis Functional testing : nominal.

Date / Test n°	Specifications	Paragraph	Events - Observations	
			Test equipment	Unit under test
Sept 17th, 2007 004X	Sinewave vibrations : Z axis 5 mm p-p from 4 to 10 Hz 1.6 mm p-p from 10 to 15 Hz 0.8 mm p-p from 15 to 25 Hz 0.4 mm p-p from 25 to 33 Hz Sweep duration : 2 min 30 s Total test duration : 30 min	3.7.3	Nominal	Set up the beacon on test table on X axis Functional testing : nominal Removal of beacon
Visual inspection		3.7.4		Nothing abnormal to note
Sept 17th, 2007 PLB Aliveness Test		3.7.5	Cospas Sarsat Test Bench	Nominal

3.7 TEST RESULTS

3.7.1 RESULTS OF Z VIBRATION AXIS

```
JournalEssai
------------
sine message log
1.00000
%Test: RTCM_MARTEC.002
%Log: /user/client/e7555/sine/log/RTCM_MARTEC.002.log
09/17/07
09:56:00 Nulling Internal Offsets.
09:56:06 Nulling Completed.
09:56:06 Loop Check Started...
09:56:06 Measuring Ambient Noise...
09:56:16 Searching for Threshold...
09:56:18 Input Overloaded.
09:56:21 Loop Check Completed.
09:56:25 Increasing to Test Level...
09:56:28 Minimum Drive Reached.
09:57:26 Start Level Reached.
09:57:26 Test Starts at 4.000 Hz
09:59:56 Saved Sweep Number 1.00
10:02:26 Saved Sweep Number 2.00
10:04:56 Saved Sweep Number 3.00
10:07:26 Saved Sweep Number 4.00
10:09:56 Saved Sweep Number 5.00
10:12:26 Saved Sweep Number 6.00
10:14:56 Saved Sweep Number 7.00
10:17:26 Saved Sweep Number 8.00
10:19:55 Saved Sweep Number 9.00
10:22:26 Saved Sweep Number 10.00
10:24:55 Saved Sweep Number 11.00
10:27:25 Shutdown Initiated...
10:27:30 Saved Sweep Number 12.00

PostEssai
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Sine Test Summary Listing
Data Storage File Name: RTCM_MARTEC.002
Current Date: Mon Sep 17 2007 10:31:35
DOCUMENTATION:
Title 1: RTCM VIBRATION TEST _ RTCM_Axe Z
Title 2: E7555- UUT MARTEC OPALE
Title 3:
TEST RESULTS:
Test Function: Test
Date at Shutdown: 17-Sep-2007
Time at Shutdown: 10:27:30
Test Completed Normally
Elapsed Time 000:29:58
Remaining Time 000:00:02
Elapsed Sweeps 12.00
Remaining Sweeps 0.00
Frequency at Shutdown: 4.00 Hz
Test Level: 0.00 dB
Maximum Control Error: -9.91 dB @ 10.00 Hz
Table of Alarms Occurrences Maximum Value
Alarm Lines Out: 0
Maximum Drive: 0
Input Overload: 1
CONTROL PARAMETERS:
CONTROL STRATEGY -
Control Spectrum: Maximum
Sweep Mode: Log
SWEEP/COMPRESSION TABLE -
Segment Ending Sweep
Number Frequency Rate Compression
(Hz) (Oct/min) (%)
1 33 1.218 65
REFERENCE TABLE:
REFERENCE PARAMETERS -
Minimum Frequency: 4.000 Hz
Maximum Frequency: 33.000 Hz
Frequency Points: 200.000
Box Tolerance: Disable
SPECTRUM DYNAMIC LIMITS -
Acceleration Range: 15.918 dB
Minimum Acceleration (0-pk): 0.161 g
Maximum Acceleration (0-pk): 1.006 g
Maximum Velocity (0-pk): 0.157 m/s
Maximum Displacement (pk-pk): 5.000 mm
```
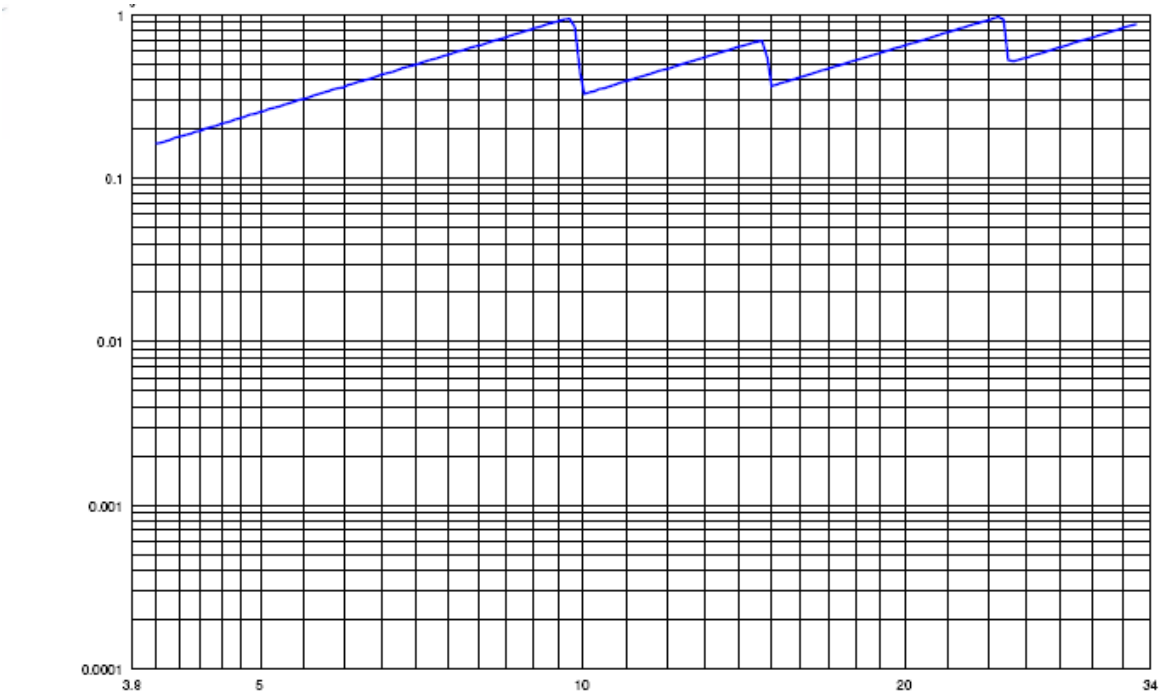
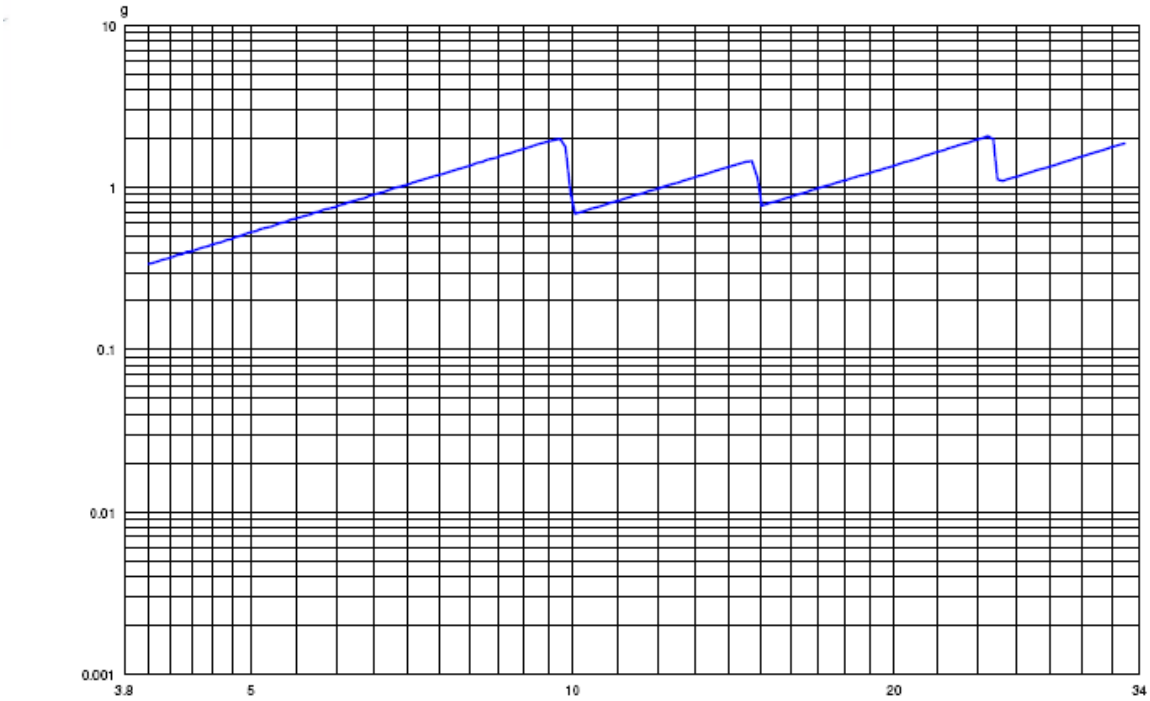
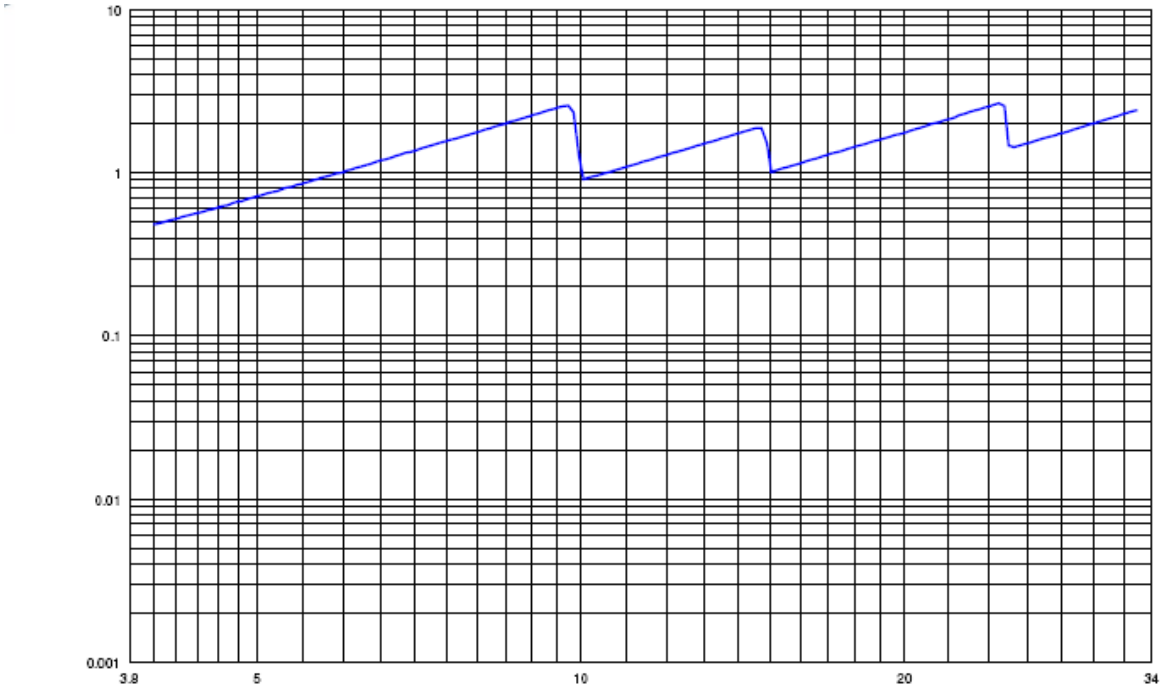

```
CHANNEL TABLE ACP 1:
Channel Channel Loop Sensitivity Input Transducer Control Profile Measurement
Number Type Check (mV/Units) Coupling Type Units Weighting Number Process
1 Control Yes 282.08 AC Accel g 0.00 Fundamental
2 Auxiliary No 210.92 AC Accel g Fundamental
3 Auxiliary No 210.92 AC Accel g Fundamental
4 Auxiliary No 97.71 AC Accel g Fundamental
5 Auxiliary No 230.85 AC Accel g Fundamental
6 Auxiliary No 251.08 AC Accel g BB RMS
7 Auxiliary No 85.00 AC Accel g BB RMS
(Continued for Labels...)
Channel Channel Loop Sensitivity Channel Documentation
Number Type Check (mV/Units) Label 1 Label 2
1 Control Yes 282.08 Pilote UUT1 ET UUT2
2 Auxiliary No 210.92 X SENSOR UUT1
3 Auxiliary No 210.92 Y SENSOR UUT1
4 Auxiliary No 97.71 Z SENSOR UUT1
5 Auxiliary No 230.85 X SENSOR UUT 2
6 Auxiliary No 251.08 Y SENSOR UUT 2
7 Auxiliary No 85.00 Z SENSOR UUT 2
( 9 Inactive Input Channels)
TRANSFER FUNCTION PAIR TABLE:
Enable H(f) Measurement: No
H(f) Response Reference Label
Pair Channel Channel
1 2 1 F de T : mesure en X/pilote
End of Sine Test Summary

Liste des résultats
-------------------
Control | Global | Dataset 12 |
Pilote UUT1 ET UUT2 | Fondamental | Dataset 12 |
X SENSOR UUT1 | Fondamental | Dataset 12 |
Y SENSOR UUT1 | Fondamental | Dataset 12 |
Z SENSOR UUT1 | Fondamental | Dataset 12 |
X SENSOR UUT 2 | Fondamental | Dataset 12 |
Y SENSOR UUT 2 | Global | Dataset 12 |
Z SENSOR UUT 2 | Global | Dataset 12 |
+Alarm | Global | Données acquises sur : SD2 |
-Alarm | Global | Données acquises sur : SD2 |
+Abort | Global | Données acquises sur : SD2 |
-Abort | Global | Données acquises sur : SD2 |
```



Projet: BALISE MARTEC	Essai: Sinus	Date:17/Sep/2007 10:27:30	Mesure: —— Pilote UUT1 ET UUT2
Modèle: XS3_GPS	Type: Fondamental	Numéro Balayage:	
Référence ITS: E7555	Nom Essai: **RTCM_OPALE**		



Projet: BALISE MARTEC	Essai: Sinus	Date:17/Sep/2007 10:27:30	Mesure: —— Z SENSOR UUT1
Modèle: XS3_GPS	Type: Fondamental	Numéro Balayage:	
Référence ITS: E7555	Nom Essai: **RTCM_OPALE**		



Projet: BALISE MARTEC	Essai: Sinus	Date:17/Sep/2007 10:27:30	Mesure: —— Z SENSOR UUT 2
Modèle: XS3_GPS	Type: Global	Numéro Balayage:	
Référence ITS: E7555		Nom Essai: **RTCM_OPALE**	

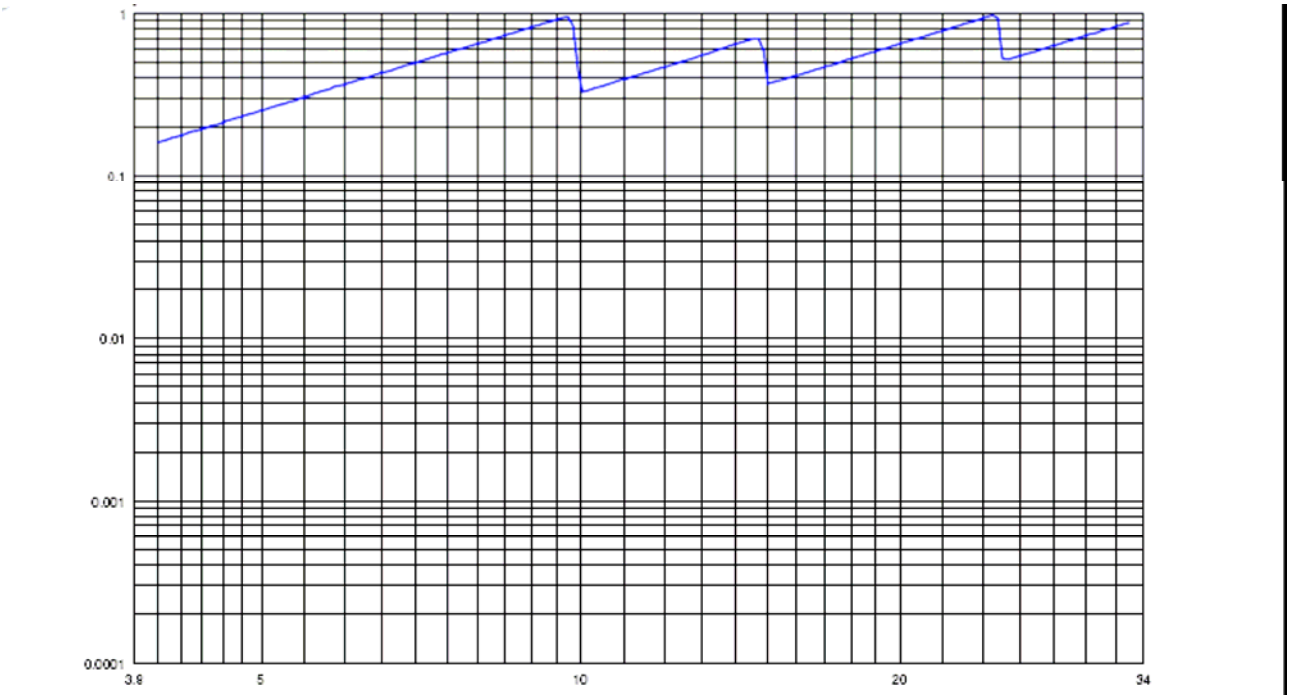
3.7.2 RESULTS OF Y VIBRATION AXIS

```
JournalEssai
------------
sine message log
1.00000
%Test: RTCM_MARTEC.003
%Log: /user/client/e7555/sine/log/RTCM_MARTEC.003.log
09/17/07
13:47:58 Nulling Internal Offsets.
13:48:03 Nulling Completed.
13:48:03 Loop Check Started...
13:48:03 Measuring Ambient Noise...
13:48:11 Searching for Threshold...
13:48:16 Loop Check Completed.
13:48:18 Increasing to Test Level...
13:48:21 Minimum Drive Reached.
13:49:13 Start Level Reached.
13:49:13 Test Starts at 4.000 Hz
13:51:43 Saved Sweep Number 1.00
13:54:13 Saved Sweep Number 2.00
13:56:43 Saved Sweep Number 3.00
13:59:13 Saved Sweep Number 4.00
14:01:43 Saved Sweep Number 5.00
14:04:13 Saved Sweep Number 6.00
14:06:43 Saved Sweep Number 7.00
14:09:13 Saved Sweep Number 8.00
14:11:43 Saved Sweep Number 9.00
14:14:13 Saved Sweep Number 10.00
14:16:43 Saved Sweep Number 11.00
14:19:13 Shutdown Initiated...
14:19:17 Saved Sweep Number 12.00
PostEssai
---------
Sine Test Summary Listing
Data Storage File Name: RTCM_MARTEC.003
Current Date: Mon Sep 17 2007 14:24:55
DOCUMENTATION:
Title 1: RTCM VIBRATION TEST _ RTCM_Axe Y
Title 2: E7555- UUT MARTEC OPALE
Title 3:
TEST RESULTS:
Test Function: Test
Date at Shutdown: 17-Sep-2007
Time at Shutdown: 14:19:17
Test Completed Normally
Elapsed Time 000:29:59
Remaining Time 000:00:01
Elapsed Sweeps 12.00
Remaining Sweeps 0.00
Frequency at Shutdown: 4.00 Hz
Test Level: 0.00 dB
Maximum Control Error: -9.92 dB @ 9.98 Hz
Table of Alarms Occurrences Maximum Value
Alarm Lines Out: 0
Maximum Drive: 0
Input Overload: 0
CONTROL PARAMETERS:
CONTROL STRATEGY -
Control Spectrum: Maximum
Sweep Mode: Log
SWEEP/COMPRESSION TABLE -
Segment Ending Sweep
Number Frequency Rate Compression
(Hz) (Oct/min) (%)
1 33 1.218 65
REFERENCE TABLE:
REFERENCE PARAMETERS -
Minimum Frequency: 4.000 Hz
Maximum Frequency: 33.000 Hz
Frequency Points: 200.000
Box Tolerance: Disable
SPECTRUM DYNAMIC LIMITS -
Acceleration Range: 15.918 dB
Minimum Acceleration (0-pk): 0.161 g
Maximum Acceleration (0-pk): 1.006 g
Maximum Velocity (0-pk): 0.157 m/s
Maximum Displacement (pk-pk): 5.000 mm
```

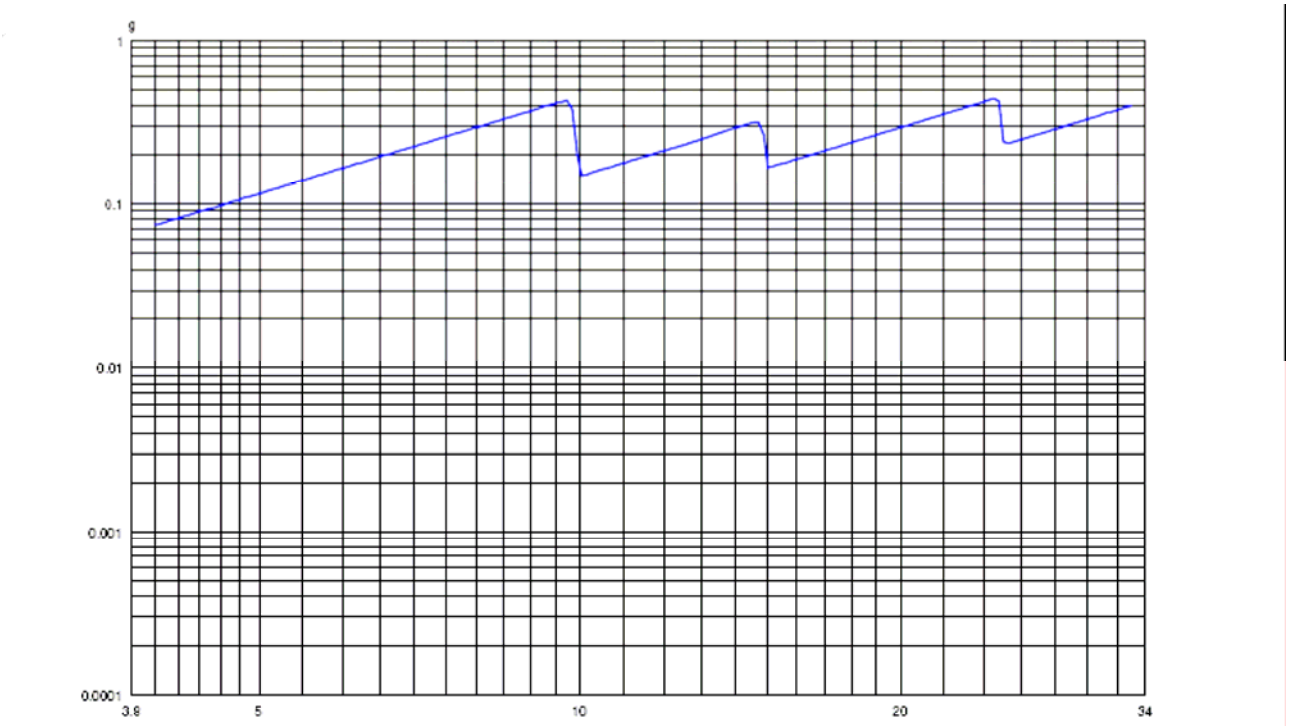
CHANNEL TABLE ACP 1:
Channel Channel Loop Sensitivity Input Transducer Control Profile Measurement
Number Type Check (mV/Units) Coupling Type Units Weighting Number Process
1 Control Yes 282.08 AC Accel g 0.00 Fundamental
2 Auxiliary No 210.92 AC Accel g Fundamental
3 Auxiliary No 210.92 AC Accel g Fundamental
4 Auxiliary No 97.71 AC Accel g Fundamental
5 Auxiliary No 230.85 AC Accel g Fundamental
6 Auxiliary No 251.08 AC Accel g BB RMS
7 Auxiliary No 85.00 AC Accel g BB RMS
(Continued for Labels...)
Channel Channel Loop Sensitivity Channel Documentation
Number Type Check (mV/Units) Label 1 Label 2
1 Control Yes 282.08 Pilote UUT1 ET UUT2
2 Auxiliary No 210.92 X SENSOR UUT1
3 Auxiliary No 210.92 Y SENSOR UUT1
4 Auxiliary No 97.71 Z SENSOR UUT1
5 Auxiliary No 230.85 X SENSOR UUT 2
6 Auxiliary No 251.08 Y SENSOR UUT 2
7 Auxiliary No 85.00 Z SENSOR UUT 2
(9 Inactive Input Channels)
TRANSFER FUNCTION PAIR TABLE:
Enable H(f) Measurement: No
H(f) Response Reference Label
Pair Channel Channel
1 2 1 F de T : mesure en X/pilote
End of Sine Test Summary

Liste des résultats

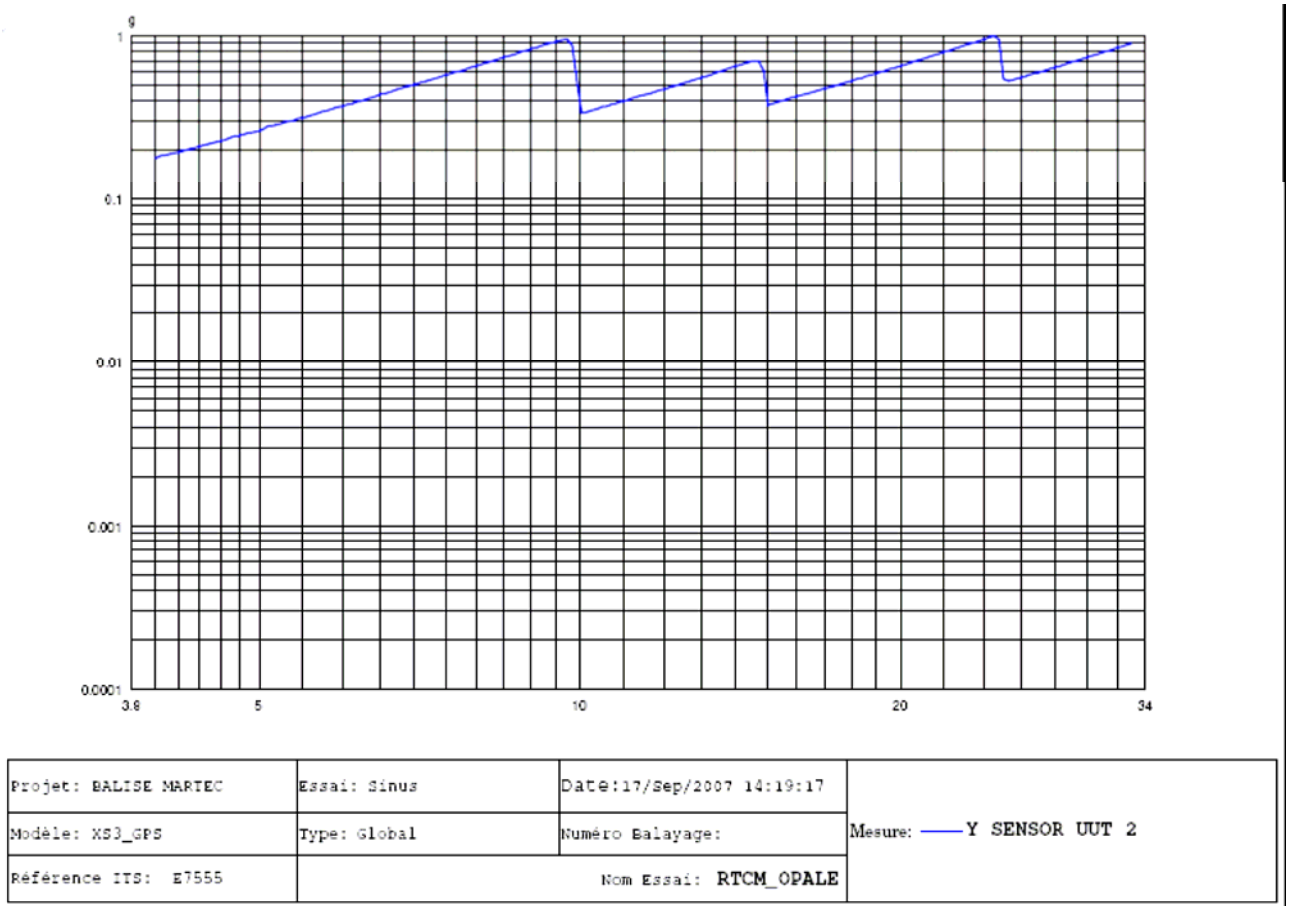
Control	Global	Dataset 12
Pilote UUT1 ET UUT2	Fondamental	Dataset 12
X SENSOR UUT1	Fondamental	Dataset 12
Y SENSOR UUT1	Fondamental	Dataset 12
Z SENSOR UUT1	Fondamental	Dataset 12
X SENSOR UUT 2	Fondamental	Dataset 12
Y SENSOR UUT 2	Global	Dataset 12
Z SENSOR UUT 2	Global	Dataset 12
+Alarm	Global	Données acquises sur : SD2
-Alarm	Global	Données acquises sur : SD2
+Abort	Global	Données acquises sur : SD2
-Abort	Global	Données acquises sur : SD2



Projet: BALISE MARTEC	Essai: Sinus	Date:17/Sep/2007 14:19:17	Mesure: Pilote UUT1 ET UUT2
Modèle: XS3_GPS	Type: Fondamental	Numéro Balayage:	
Référence ITS: E7555	Nom Essai: RTCM_OPALE		



Projet: BALISE MARTEC	Essai: Sinus	Date:17/Sep/2007 14:19:17	Mesure: Y SENSOR UUT1
Modèle: XS3_GPS	Type: Fondamental	Numéro Balayage:	
Référence ITS: E7555	Nom Essai: RTCM_OPALE		



Projet: BALISE MARTEC	Essai: Sinus	Date:17/Sep/2007 14:19:17	Mesure: —— Y SENSOR UUT 2
Modèle: XS3_GPS	Type: Global	Numéro Balayage:	
Référence ITS: E7555	Nom Essai: RTCM_OPALE		

3.7.3 RESULTS OF X VIBRATION AXIS

```
JournalEssai
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sine message log
1.00000
%Test: RTCM_MARTEC.004
%Log: /user/client/e7555/sine/log/RTCM_MARTEC.004.log
09/17/07
15:06:46 Nulling Internal Offsets.
15:06:51 Nulling Completed.
15:06:51 Loop Check Started...
15:06:52 Measuring Ambient Noise...
15:07:00 Searching for Threshold...
15:07:06 Loop Check Completed.
15:07:30 Increasing to Test Level...
15:07:33 Minimum Drive Reached.
15:07:52 Start Level Reached.
15:07:52 Test Starts at 4.000 Hz
15:10:22 Saved Sweep Number 1.00
15:12:52 Saved Sweep Number 2.00
15:15:22 Saved Sweep Number 3.00
15:17:52 Saved Sweep Number 4.00
15:20:22 Saved Sweep Number 5.00
15:22:52 Saved Sweep Number 6.00
15:25:22 Saved Sweep Number 7.00
15:27:52 Saved Sweep Number 8.00
15:30:22 Saved Sweep Number 9.00
15:32:52 Saved Sweep Number 10.00
15:35:22 Saved Sweep Number 11.00
15:37:52 Shutdown Initiated...
15:37:56 Saved Sweep Number 12.00
PostEssai
---------
Sine Test Summary Listing
Data Storage File Name: RTCM_MARTEC.004
Current Date: Mon Sep 17 2007 15:41:53
DOCUMENTATION:
Title 1: RTCM VIBRATION TEST _ RTCM_Axe X
Title 2: E7555- UUT MARTEC OPALE
Title 3:
TEST RESULTS:
Test Function: Test
Date at Shutdown: 17-Sep-2007
Time at Shutdown: 15:37:56
Test Completed Normally
Elapsed Time 000:29:59
Remaining Time 000:00:01
Elapsed Sweeps 12.00
Remaining Sweeps 0.00
Frequency at Shutdown: 4.00 Hz
Test Level: 0.00 dB
Maximum Control Error: 9.96 dB @ 10.02 Hz
Table of Alarms Occurrences Maximum Value
Alarm Lines Out: 0
Maximum Drive: 0
Input Overload: 0
CONTROL PARAMETERS:
CONTROL STRATEGY -
Control Spectrum: Maximum
Sweep Mode: Log
SWEEP/COMPRESSION TABLE -
Segment Ending Sweep
Number Frequency Rate Compression
(Hz) (Oct/min) (%)
1 33 1.218 65
REFERENCE TABLE:
REFERENCE PARAMETERS -
Minimum Frequency: 4.000 Hz
Maximum Frequency: 33.000 Hz
Frequency Points: 200.000
Box Tolerance: Disable
SPECTRUM DYNAMIC LIMITS -
Acceleration Range: 15.918 dB
Minimum Acceleration (0-pk): 0.161 g
Maximum Acceleration (0-pk): 1.006 g
Maximum Velocity (0-pk): 0.157 m/s
Maximum Displacement (pk-pk): 5.000 mm
```

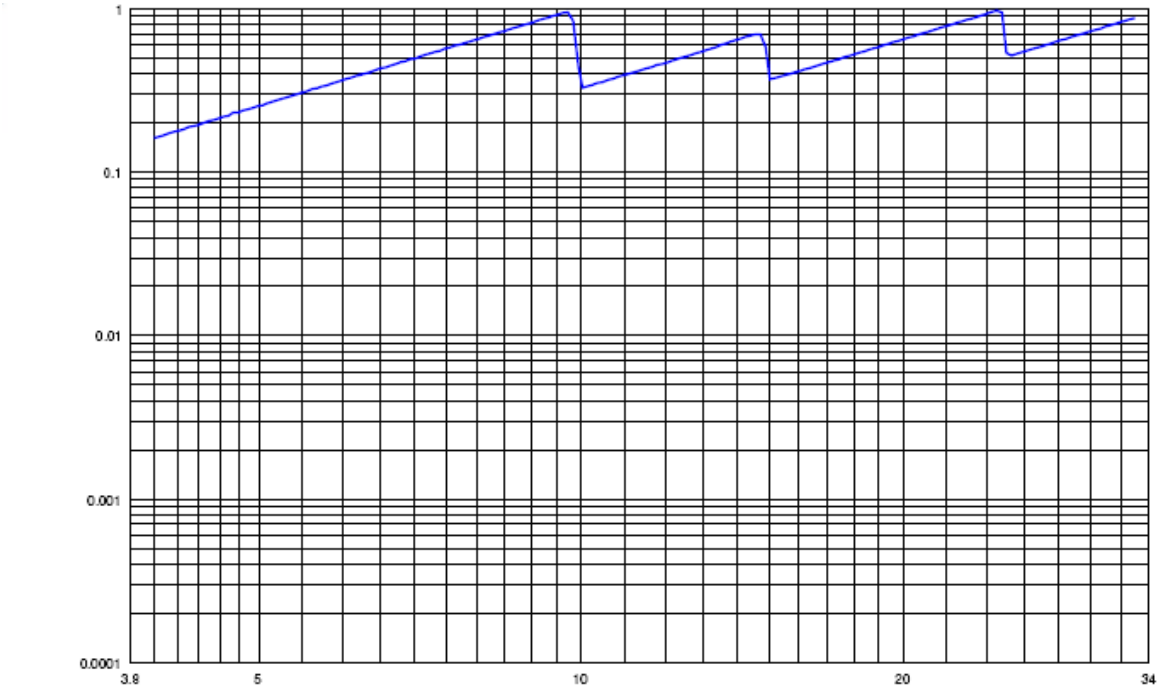
CHANNEL TABLE ACP 1:

Channel Channel Loop Sensitivity Input Transducer Control Profile Measurement
Number Type Check (mV/Units) Coupling Type Units Weighting Number Process
1 Control Yes 282.08 AC Accel g 0.00 Fundamental
2 Auxiliary No 210.92 AC Accel g Fundamental
3 Auxiliary No 210.92 AC Accel g Fundamental
4 Auxiliary No 97.71 AC Accel g Fundamental
5 Auxiliary No 230.85 AC Accel g Fundamental
6 Auxiliary No 251.08 AC Accel g BB RMS
7 Auxiliary No 85.00 AC Accel g BB RMS
(Continued for Labels...)

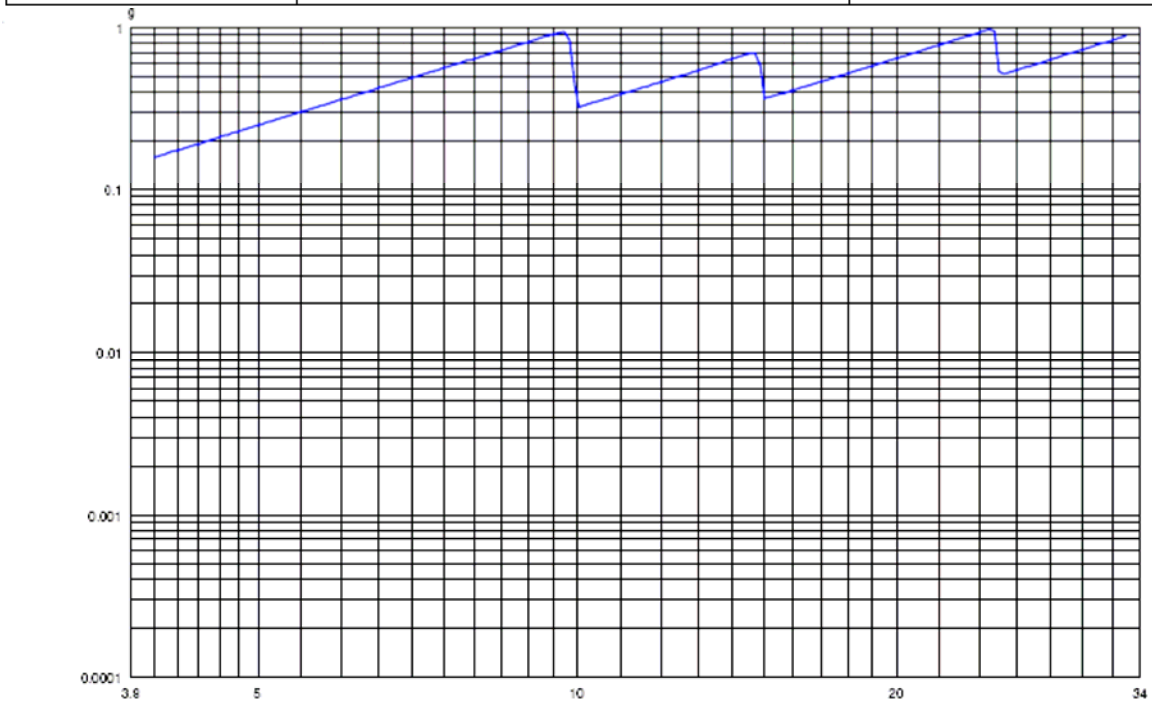
Channel Channel Loop Sensitivity Channel Documentation
Number Type Check (mV/Units) Label 1 Label 2
1 Control Yes 282.08 Pilote UUT1 ET UUT2
2 Auxiliary No 210.92 X SENSOR UUT1
3 Auxiliary No 210.92 Y SENSOR UUT1
4 Auxiliary No 97.71 Z SENSOR UUT1
5 Auxiliary No 230.85 X SENSOR UUT 2
6 Auxiliary No 251.08 Y SENSOR UUT 2
7 Auxiliary No 85.00 Z SENSOR UUT 2
(9 Inactive Input Channels)

TRANSFER FUNCTION PAIR TABLE:
Enable H(f) Measurement: No
H(f) Response Reference Label
Pair Channel Channel
1 2 1 F de T : mesure en X/pilote
End of Sine Test Summary

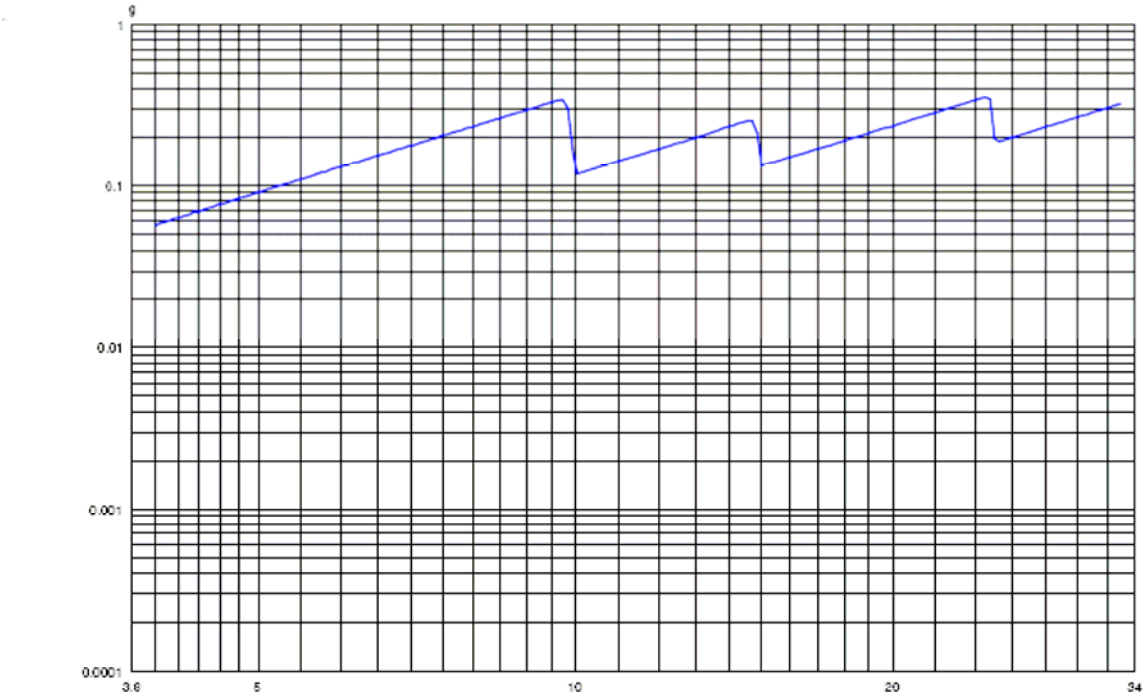
Control | Global | Dataset 12 |
Pilote UUT1 ET UUT2 | Fondamental | Dataset 12 |
X SENSOR UUT1 | Fondamental | Dataset 12 |
Y SENSOR UUT1 | Fondamental | Dataset 12 |
Z SENSOR UUT1 | Fondamental | Dataset 12 |
X SENSOR UUT 2 | Fondamental | Dataset 12 |
Y SENSOR UUT 2 | Global | Dataset 12 |
Z SENSOR UUT 2 | Global | Dataset 12 |



Projet: BALISE MARTEC	Essai: Sinus	Date:17/Sep/2007 15:37:56	Mesure: —— Pilote UUT1 ET UUT2
Modèle: XS3_GPS	Type: Fondamental	Numéro Balayage:	
Référence ITS: E7555	Nom Essai: RTCM_OPALE		



Projet: BALISE MARTEC	Essai: Sinus	Date:17/Sep/2007 15:37:56	Mesure: —— X SENSOR UUT1
Modèle: XS3_GPS	Type: Fondamental	Numéro Balayage:	
Référence ITS: E7555	Nom Essai: RTCM_OPALE		



Projet: BALISE MARTEC	Essai: Sinus	Date:17/Sep/2007 15:37:56	Mesure: X SENSOR UUT 2
Modèle: XS3_GPS	Type: Fondamental	Numéro Balayage:	
Référence ITS: E7555	Nom Essai: RTCM_ODALE		

3.7.4 BEACON CHECKOUT

Test using a portable test bench and visual inspection confirmed that the beacon does not activate in an untimely manner during vibration testing.

3.7.5 FINAL CONTROL

3.7.5.1 External mechanical inspection.

A visual inspection was done on all external mechanical parts.
Result : nominal.

3.7.5.2 Aliveness test results

Result : nominal.
Data and graphs are reported next page

3.7.6 VIBRATION ALIVENESS TEST RESULTS

Beacon Unit : UUT1
Name : MARTEC / KANNAD
Type : 406XS3 GPS
Number : UT1

Date : September 17th, 2007

406 MHz Measurements

1 - Environmental Temperature (° C)			+ 22° C
2 - POWER OUTPUT			
- Transmission power	dBm	37 ± 2	35.31
- Power risetime	ms	< 5	0.04
- Power falltime	ms	< 5	0.04
3 - SPURIOUS OUTPUT *			
- In band			OK
- Carrier harmonics			
4 -DIGITAL MESSAGE GENERATOR *			
- Repetition rate			50±2.5
- Bit rate	bits/S	400 ± 4	401.47
- Transmission time	ms	440 ± 4.4 / 520 ± 5.2	519.65
- CW preamble	ms	160 ± 1.6	160.37
5 – DIGITAL MESSAGE *			
- Bit and frame sync	bits	1-24	FFFE2F
- Format flag	bit	25	1
- Protocol flag	bit	26	0
- Country code	bits	27-36	0227
- Protocol	bits	37-40	1110
- Encoded Position Data Source	bits	111	1
- Homing	bits	112	1
- BCH 1 code read / calculated	bits	86-106 / 25-85	1ABFEB / 1ABFEB
- BCH 2 code read / calculated	bits	133-144 / 107-132	1F0 / 1F0
6 - FREQUENCY	KHz	406 025 ± 2 or	
- Nominal value		406 028 ± 1	406 027.790
- Short term stability		< 210^{-9}/100 ms	5.4 x 10^{-11}

* See data and graphs next pages

Certification Test at 22°C Date of test : 17-sept-2007

Manufacturer : MARTEC/KANNAD

Beacon Type : XS3-GPS

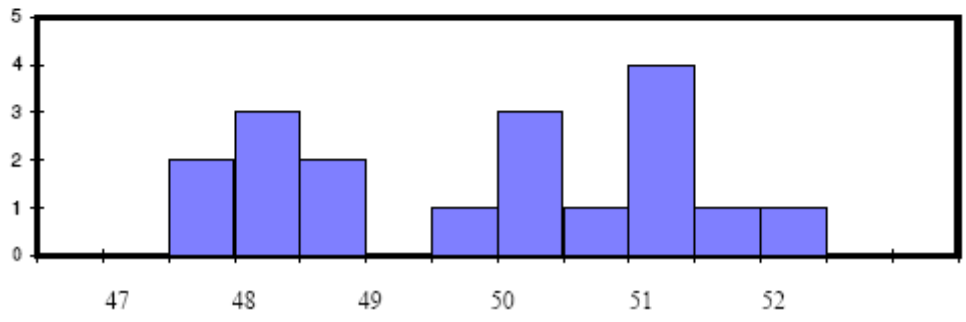
Number : UUT1 after_vib

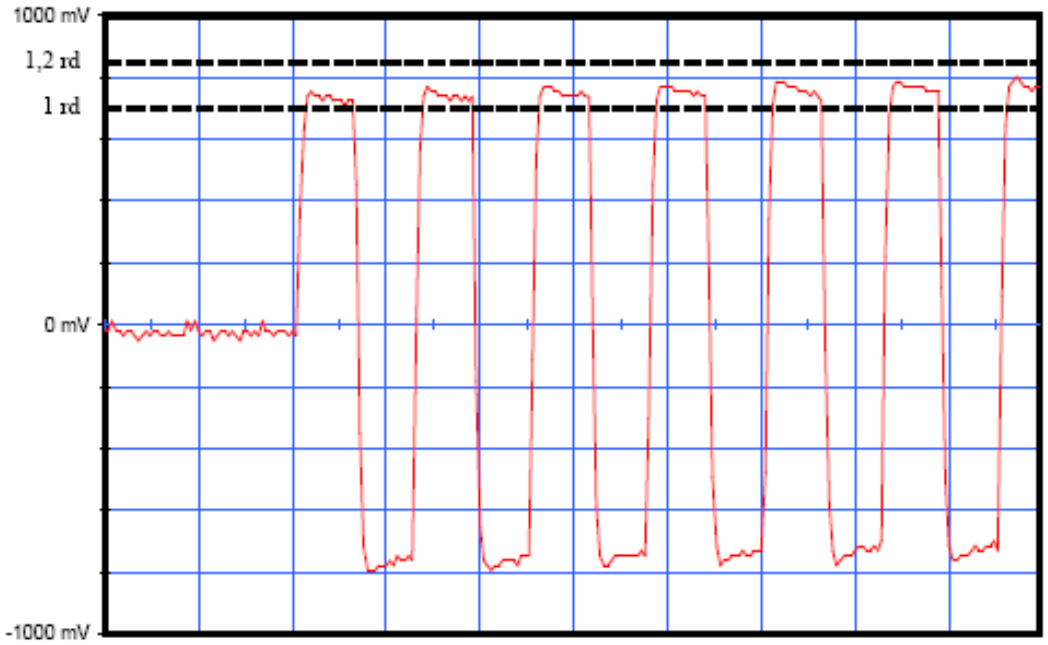
Message

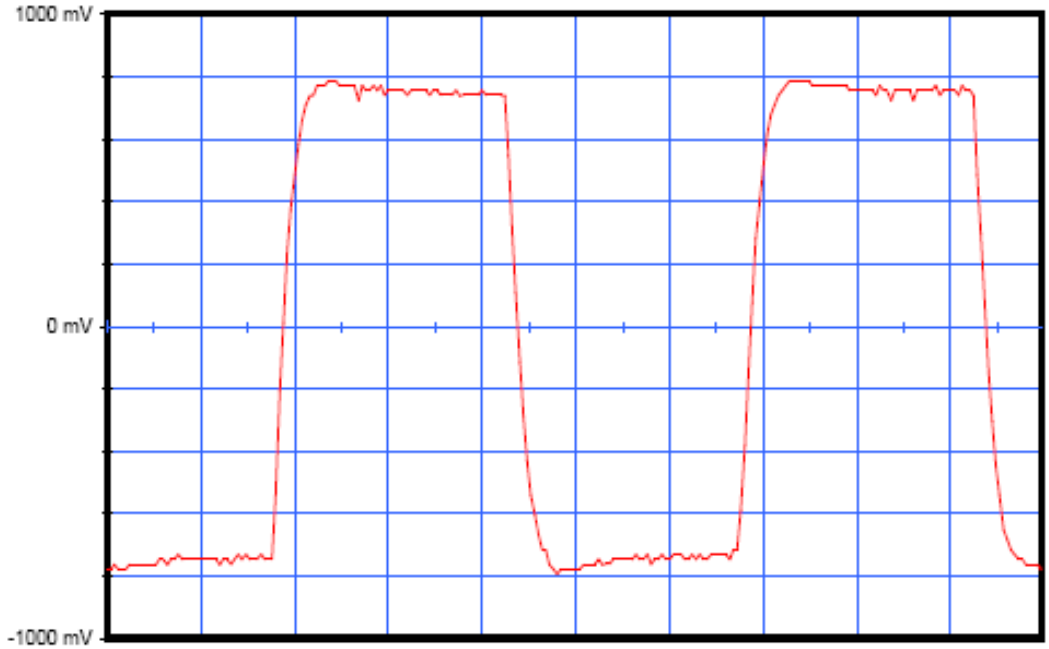
Message received		FFFE2F8E3E2295E02B8036AFFAF78E4141F0	
Format Flag	25	1	
Protocol flag	26	0	
Ident./Position code	27-85	0	
Country Code/Country	27-36	227 / FRANCE	
Protocol Code : U/Std-Nat	37-39/37-40	1110	
Protocol Code Used	37-39/37-40	Test-Standard Location	
Identification Data	40-85/41-64/41-58		
Identification Used		0	
Calculated BCH1	25-85	1ABFEB	
Encoded BCH1	86-106	1ABFEB	
Homing	112	1	
Em.cod/nat.use/supp.data	107-112	110111	
Encod pos data	111	1	Internal
Fixed Data "1"	108	1	OK
Calculated BCH2	107-132	1F0	
Encoded BCH2	133-144	1F0	
Latitude position		Nord 43° 33' 36"	
Longitude position		Est 1° 28' 44"	
Delta position	< 0,5 km	0,087 km	

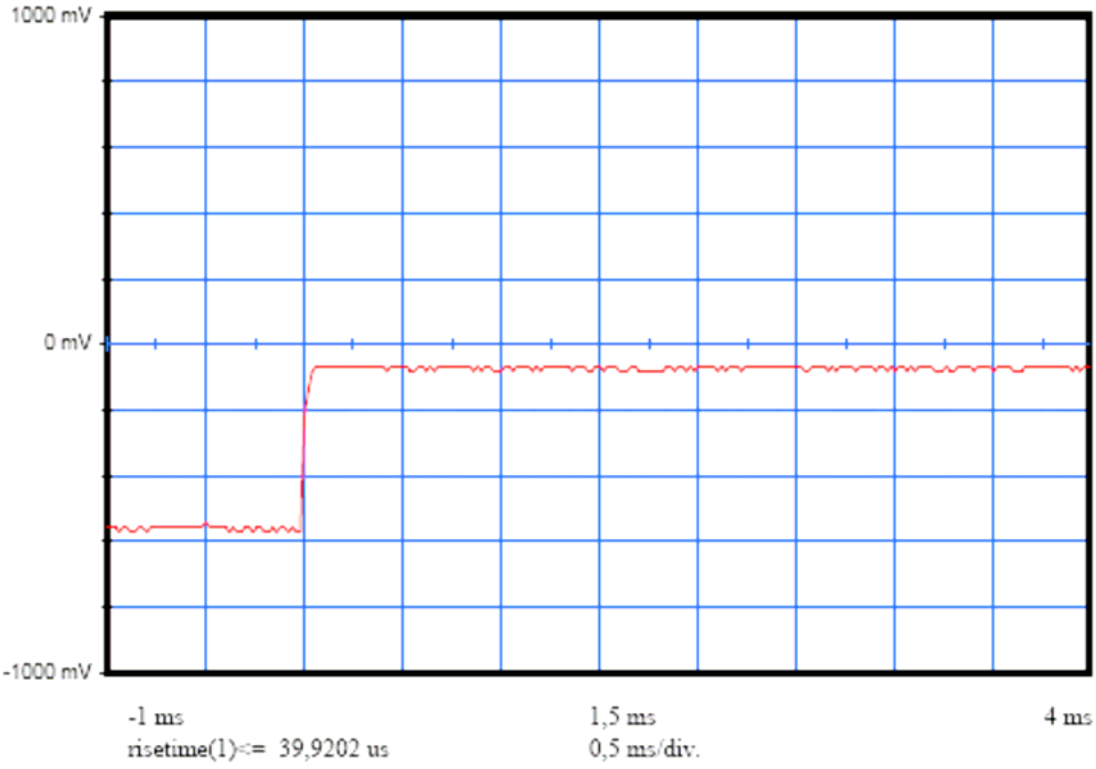
Electrical and other parameters

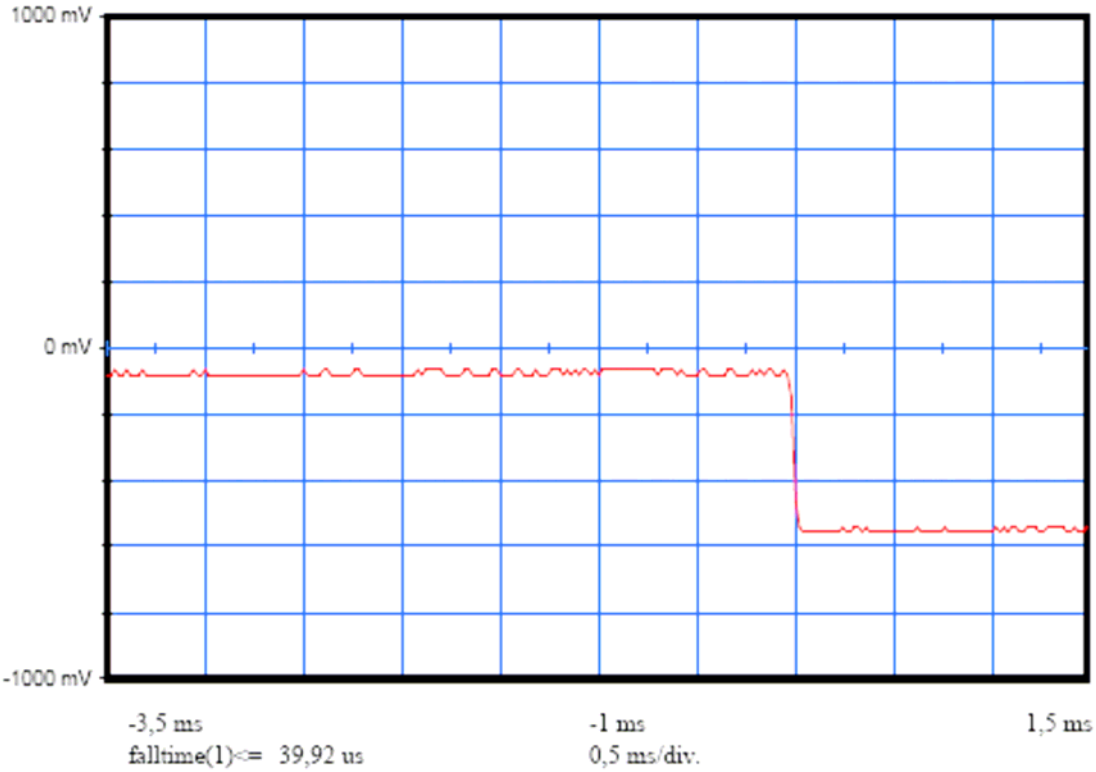
CW preamble	ms 158,4 <	< 161,6	160,37
Total transmission time	ms 514,8 <	<525,2	519,65
Modulation frequency	Hz 396<	< 404	401,47
Phase deviation : total	rd	<=2,40	2,16
Phase deviation : positive	rd 1,00 <	< 1,20	1,08
Phase deviation : negative	rd -1,20 <	< -1,00	-1,08
Symmetry measurement	%	<=5 %	0,80
Nominal frequency : F2	Hz		406027789,75
Short term2			5,45E-11
Short term3			1,36E-10
Slope			-8,44E-11
Residual			9,96E-11
406 MHz power output	dBm		35,3
Homing frequency	MHz		121,50
121,5 MHz power output	dBm		16,8
Soak temperature	°C		23,7
Extra feature			No
First Burst Delay	> 47,5 sec		> 50 sec



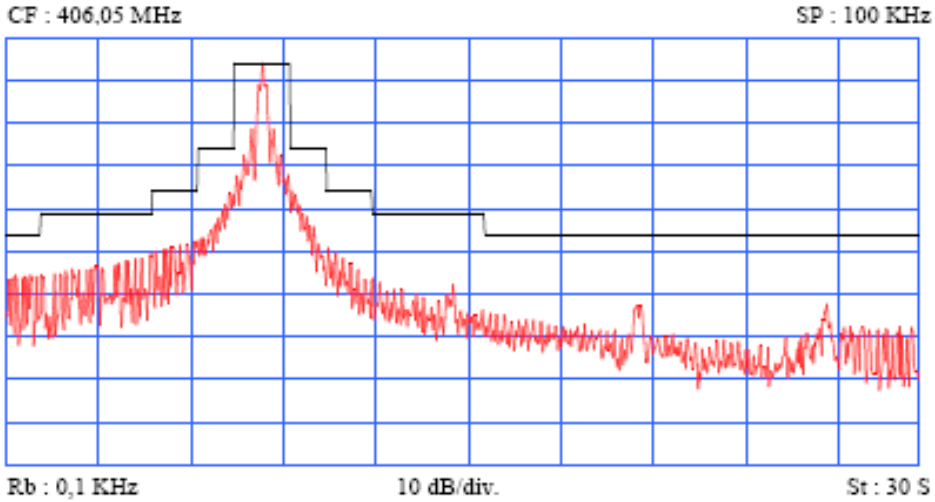

1000 mV
1,2 rd
1 rd
0 mV
-1000 mV
0 ms
10 ms
20 ms
Vmarker1 850 mv ==> 1,2 rd
Vmarker2 700 mv ==> 1 rd
2 ms/div.

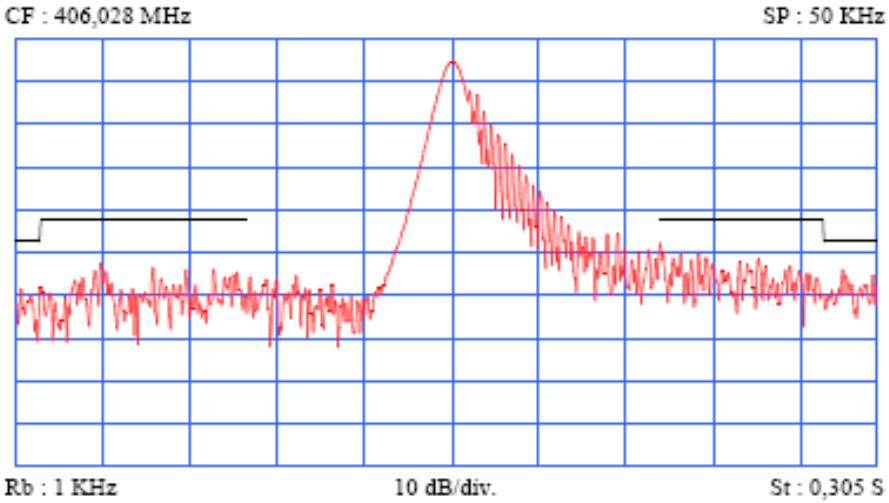

1000 mV
0 mV
-1000 mV
8 ms
10,5 ms
13 ms
Duty Cycle : 0,008
falltime(1)<= 149,701 us
+width(1) 1,25748 ms
0,5 ms/div.
risetime(1)<= 139,721 us
-widht(1) 1,23752 ms

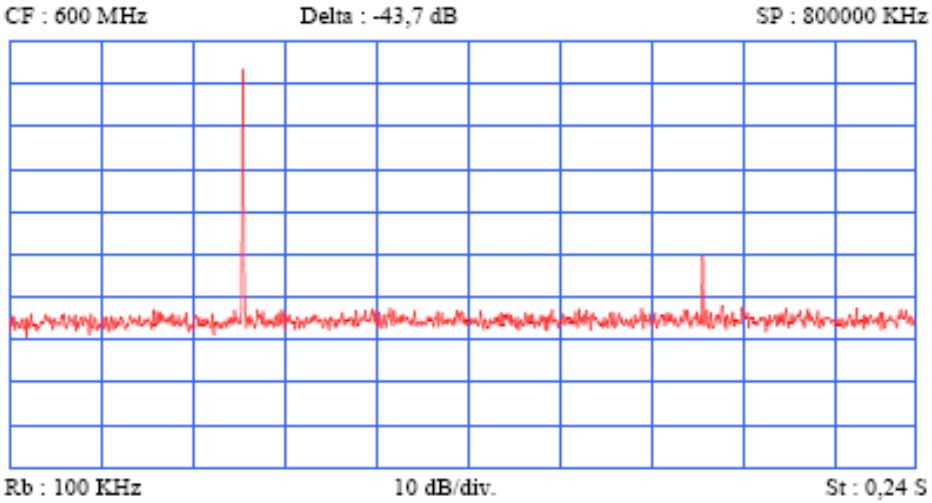

1000 mV
0 mV
-1000 mV
-1 ms
1,5 ms
4 ms
risetime(1)<= 39,9202 us
0,5 ms/div.


1000 mV
0 mV
-1000 mV
-3,5 ms
-1 ms
1,5 ms
falltime(1)<= 39,92 us
0,5 ms/div.

MARTEC/KANNAD
XS3-GPS
UUT1 after_vib
Certification nominale
406 MHz
22 °C

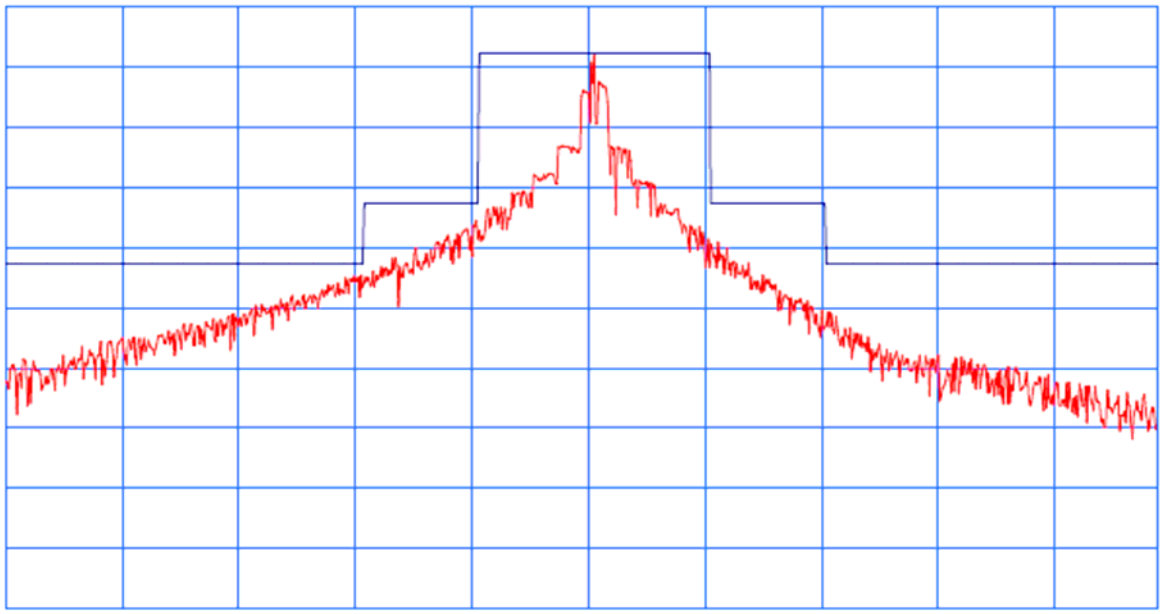






MARTEC/KANNAD
XS3-GPS
UUT1 after_vib
Certification nominale
121,5 MHz
22 °C

CF : 121,5 MHz SP : 125 KHz



Rb : 0,1 KHz 10 dB/div. St : 37,5 S