
	<p><b>Manufacturer : MARTEC.</b>  <b>B e a c o n   M o d e l : Kannad</b>  <b>Auto/Auto GPS/Manual/Manual</b>  <b>GPS/Manual+/Manual+ GPS</b></p>	<p><b>INTESPACE Reference</b>  <b>E6668-RTCM</b></p>
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## CHAPTER 2

### INITIAL ALIVENESS TEST

	<p><b>Manufacturer : MARTEC.</b>  <b>B e a c o n   M o d e l : Kannad</b>  <b>Auto/Auto GPS/Manual/Manual</b>  <b>GPS/Manual+/Manual+ GPS</b></p>	<p><b>INTESPACE Reference</b>  <b>E6668-RTCM</b></p>
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## 2.1. TEST SPECIFICATIONS AND SEQUENCE

Following :

- Section A2.1 of C/S T. 007 standard ;
- Section A1.0 of RTCM Recommended Standards for 406 MHz Satellite EPIRBs (Version 2.1 June 20, 2002)
- Measurements at ambient temperature :
  - Transmitter power output,
  - Digital Message,
  - Digital Message Generator,
  - Modulation,
  - Transmitted frequency ,
  - Spurious output,
  - VSWR check,
  - Self-test mode

## 2.2. EQUIPMENT UNDER TEST

Beacon Unit : UUT 6 and UUT7

Name : MARTEC

Type : KANNAD Auto / Auto GPS

Number : 61592 (06) & 38169 (07)

## 2.3 TEST SITE


Toulouse Space Center (CST) - INTESPACE -EQ.

## 2.4. TEST EQUIPMENT

- Argos - Cospas/Sarsat Test Bench.

## 2.5. RESULTS

Data and graphs are reported next page

	<b>Manufacturer : MARTEC.</b> <b>Beacon Model : Kannad</b> <b>Auto/Auto GPS/Manual/Manual</b> <b>GPS/Manual+/Manual+ GPS</b>	<b>INTESPACE Reference</b> <b>E6668-RTCM</b>
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## INITIAL ALIVENESS TEST RESULTS

Beacon Unit : UUT 6  
 Name : Martec  
 Type : Kannad 406 Auto/ Auto GPS/ Manual/ Manual GPS/ Manual+/ Manual+ GPS  
 Number : 61592  
 Date : 18 May 2006

### 406 MHZ MEASUREMENTS

<b>1 – Environmental Temperature ( ° C)</b>			23.4 ° C
<b>2 – POWER OUTPUT</b>			
- Transmission power	dBm	37 ± 2	37.99
- Power risetime	ms	< 5	0.38 ms
- Power falltime	ms	< 5	0.06 ms
<b>3 – SPURIOUS OUTPUT</b>			
- In band	*		OK
- Carrier harmonics	*		
<b>4 –DIGITAL MESSAGE GENERATOR</b>			
- Repetition rate	*		OK
- Bit rate	bits/S	400 ± 4	400.31
- Transmission time	ms	440 ± 4,4	520.64
- CW preamble	ms	160 ± 1,6	160.63
<b>5 – DIGITAL MESSAGE</b>			
- 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	1111
- Encoded Position Data Source	bits	111	1
- Homing	bits	112	0
- BCH 1 code read / calculated	bits	86-106 / 25-85	004D9D / 004D9D
- BCH 2 code read / calculated	bits	133-144 / 107-132	672 / 672
<b>6 – FREQUENCY</b>			
- Nominal value	KHz	406 028 ± 1	- 0.1587
- Short term stability		< 2x10 <sup>-9</sup> /100 ms	7.6 x 10 <sup>-11</sup>

\* See graphs next pages

	<b>Manufacturer : MARTEC.</b> <b>Beacon Model : Kannad</b> <b>Auto/Auto GPS/Manual/Manual</b> <b>GPS/Manual+/Manual+ GPS</b>	<b>INTESPACE Reference</b> <b>E6668-RTCM</b>
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Laboratoire de certification  
Balise COSPAS/SARSAT

Constructeur : MARTEC  
Modele : TOPAZE  
Numero de serie : 61592 UUT6  
Reference : E6668-5  
Type : SARSAT

temperature corrigée : 23.36

Type de certification : Nominal  
Date des mesures : 18 May 2006 16:28:15  
Temperature de palier : 23 °C  
Temperature lue : 23.36 °C


#### Message balise

Message reçu (1-144): FFFE2F8E3F3C261FC0FF001367769F3C0572  
Format flag (25): 1  
Protocole flag (26): 0  
Code pays (27-36): 0227  
Pays : FRANCE  
Code protocole (37-40): 1111  
Protocole utilise : National - Test  
Identification :  
Numero : 61592  
BCH 1 lu/calculé (86-106/25-85): 004090/004090  
BCH 2 lu/calculé (133-144/107-132): 672/672  
Pos. Data Source (111): Internal  
121.5 MHz Homing (112): No  
Additional Data Pos. (110): delta Pos.  
Position GPS de reference lab : N 43°33'34'' E 1°28'42  
Position GPS : Yes  
Position GPS par défaut : Yes

#### Contrôle du message

160.625204  
160.626042  
160.629002  
160.6247  
160.62509  
160.62391  
160.630458  
160.627966  
160.62651  
160.629756  
160.62992  
160.629258  
160.624834  
160.62619  
160.620654  
160.644514  
160.647314  
160.64589

Durée de la porteuse pure	MS	158.4<	<164.6	160.63 +- .02
Durée minimale				160.62
Durée maximale				160.65
Durée de l'émission	MS	514.8<	<525.2	520.64

	<b>Manufacturer : MARTEC.</b> <b>Beacon Model : Kannad</b> <b>Auto/Auto GPS/Manual/Manual</b> <b>GPS/Manual+/Manual+ GPS</b>	<b>INTESPACE Reference</b> <b>E6668-RTCM</b>
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Frequence des bits \_\_\_\_\_

400.3283  
400.31533  
400.31185  
400.31958  
400.31785  
400.30596  
400.31131  
400.29871  
400.31212  
400.30722  
400.30641  
400.31426  
400.31463  
400.31332  
400.30581  
400.30474  
400.3133  
400.3051

Frequence de modulation                      Hz    396.0 < 404.0    400.31 +/- .02

Mesures d'indice \_\_\_\_\_

Excursion de phase totale	rd	<= 2.40	2.21
Excursion de phase positive	rd	4.00 < 1.20	1.11
Excursion de phase negative	rd	-1.20 < -4.00	-1.10
Symetrie de l'excursion	%	<= 5	-1.48

Stabilite de frequence \_\_\_\_\_

F1	F2	F3
49841.10	49841.04	49841.04
49841.00	49841.00	49841.06
49841.10	49841.06	49841.07
49841.12	49841.15	49841.09
49840.53	49841.01	49841.08
49840.60	49841.13	49841.11
49840.63	49841.16	49841.17
49841.21	49841.27	49841.24
49841.23	49841.26	49841.32
49840.78	49841.31	49841.31
49841.46	49841.52	49841.44
49841.43	49841.39	49841.36
49841.40	49841.46	49841.47
49841.46	49841.53	49841.49
49841.60	49841.51	49841.58
49841.50	49841.50	49841.55
49841.62	49841.59	49841.57
49841.57	49841.56	49841.56

Frequence moyenne	F2	Hz	406027841.30
SIGMA2	F2-F1		4.308E-10
SIGMA3	F3-F2		7.569E-11
Slope		min. -1E-9 < 1E-9	1.107E-10
Residual frequency variation		<= 3E-9	1.460E-10



**Manufacturer : MARTEC.**  
**Beacon Model : Kannad**  
**Auto/Auto GPS/Manual/Manual**  
**GPS/Manual+/Manual+ GPS**

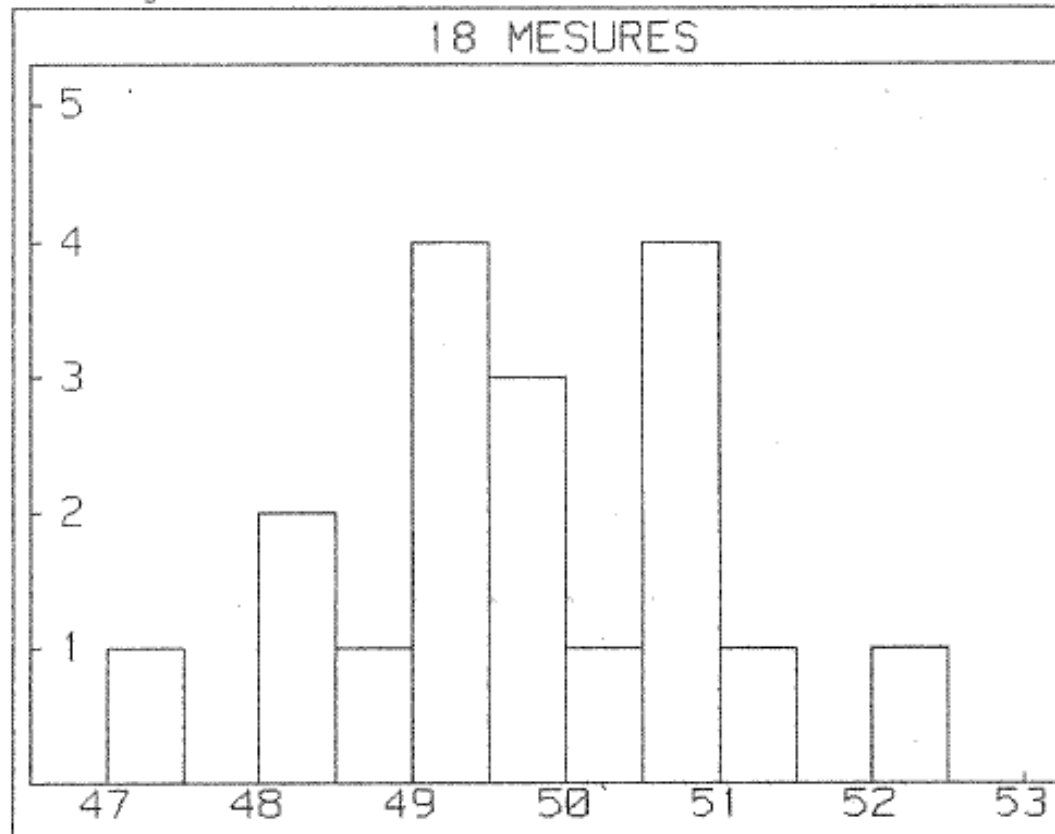
**INTESPACE Reference**

**E6668-RTCM**

Recurrence des émissions

52.2250061035  
49.1610107422  
48.950012207  
49.0209960938  
50.9230041504  
48.3699951172  
51.3029785156  
49.0209960938  
49.6110229492  
49.4109802246  
47.3880004883  
50.5930175781  
48.0390014648  
49.6820068359  
50.782989502  
50.0719909668  
49.6810131836  
50.983001709

Periode Min : 47.3880004883  
Periode Max : 52.2250061035  
Periode Moy : 49.7298346625  
Periode Sigma : 1.20022119634





Manufacturer : MARTEC.  
Beacon Model : Kannad  
Auto/Auto GPS/Manual/Manual  
GPS/Manual+/Manual+ GPS

INTESPACE Reference

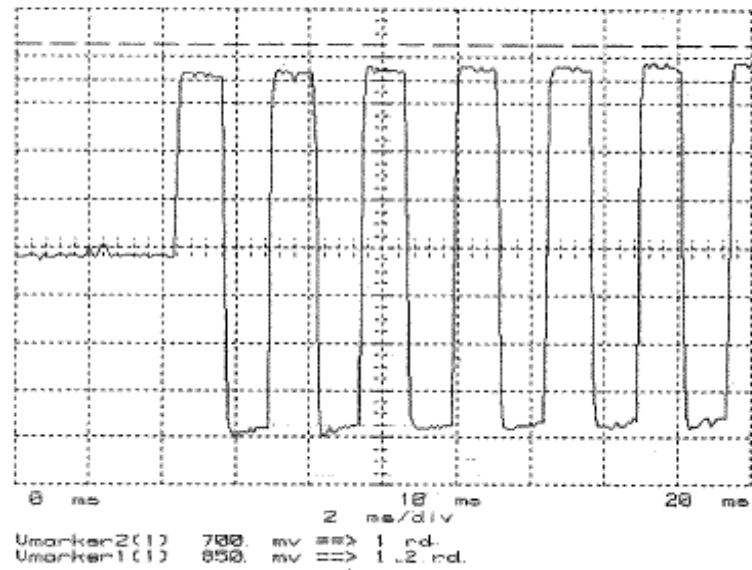
E6668-RTCM

#### Mesures de puissance

-41.39  
-13.91  
-8.78  
-6.43  
-4.89  
-3.85  
-3.46  
-3.13  
-2.85  
-2.83  
-2.83  
-2.86  
-4.06  
-5.8  
-8.75

Puissance emission a 405.026 MHz = 37.99 dBm

#### Oscilloscopes



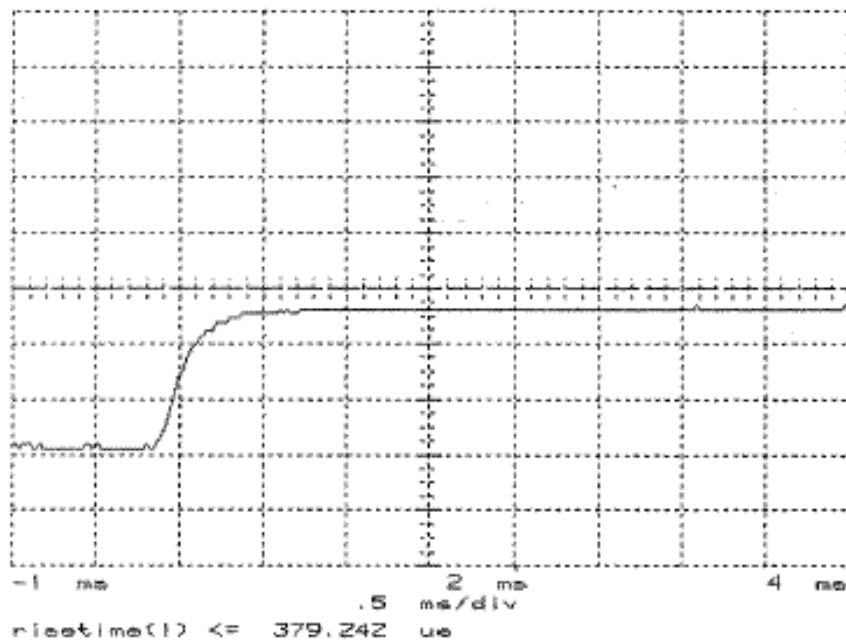
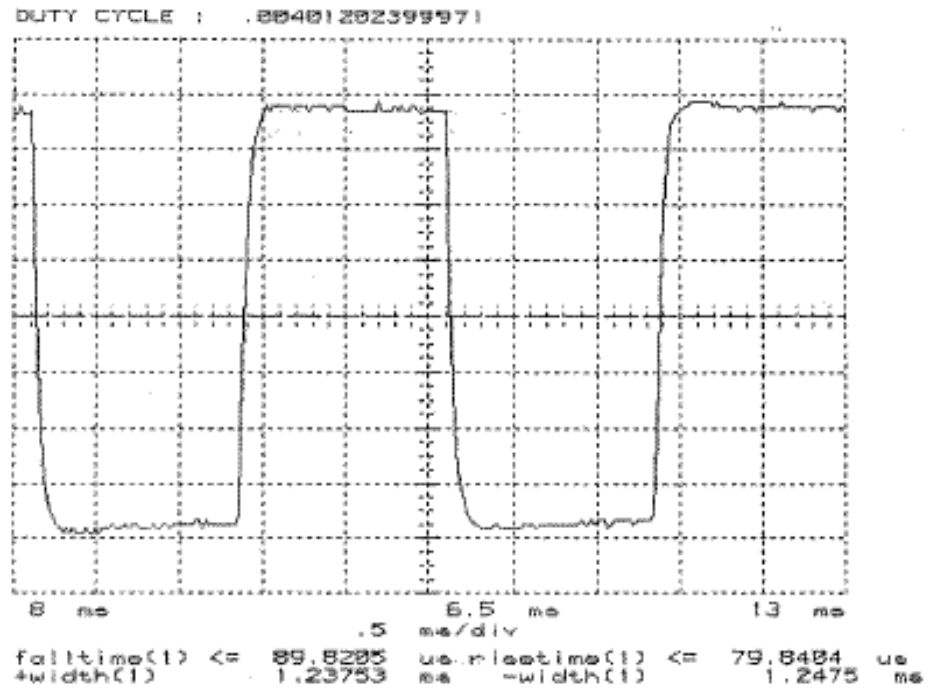
DUTY CYCLE : 4.0E-03



Manufacturer : MARTEC.  
Beacon Model : Kannad  
Auto/Auto GPS/Manual/Manual  
GPS/Manual+/Manual+ GPS

INTESPACE Reference

E6668-RTCM



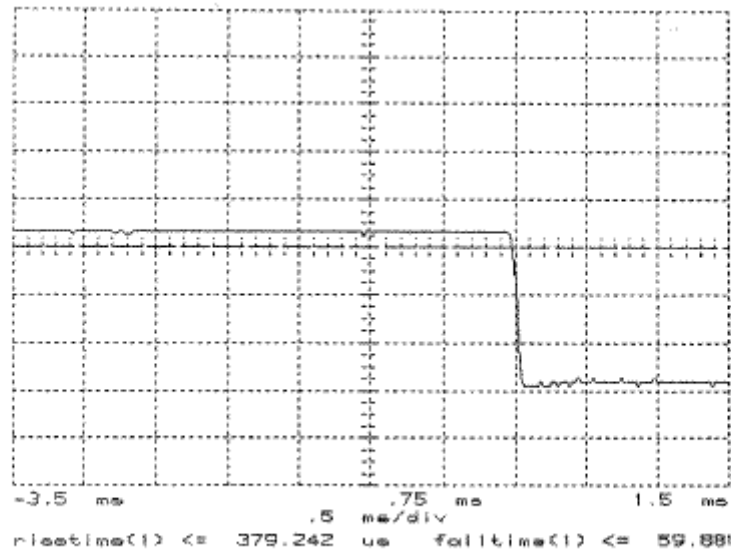




Manufacturer : MARTEC.  
Beacon Model : Kannad  
Auto/Auto GPS/Manual/Manual  
GPS/Manual+/Manual+ GPS

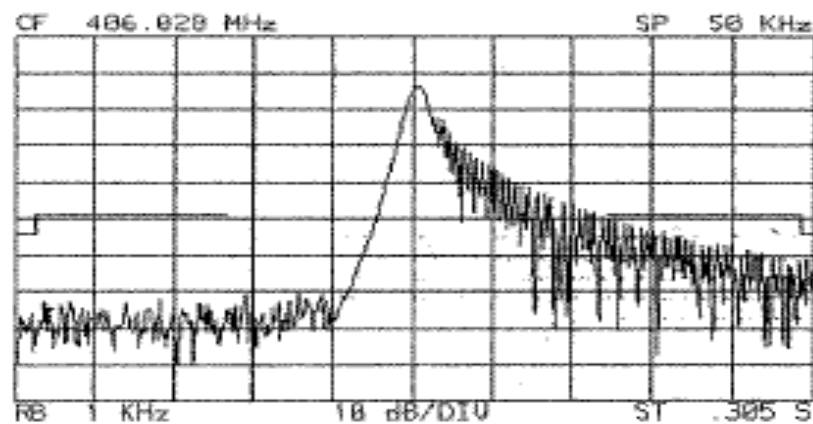
INTESPACE Reference

E6668-RTCM



Spurious

MARTEC  
TOPAZE  
38169 UUT7 (1st At  
18 May 2006  
486 MHz  
TEMP : 23°C







**Manufacturer : MARTEC.**  
**Beacon Model : Kannad**  
**Auto/Auto GPS/Manual/Manual**  
**GPS/Manual+/Manual+ GPS**

**INTESPACE Reference**  
**E6668-RTCM**

Laboratoire de certification  
 Controle balise ARGOS/SARSAT

Constructeur MARTEC  
 Modele TOPAZE  
 Numero de serie 38169 UUT7 (1st Aliveness test  
 Reference E6668-6  
 Type SARSAT

Date de l'essai 18 May 2006 08:27:29  
 Temperature 23.2 Deg C


Message balise

Message reçu (1-144): FFFE2F8E3E25466C2B80368D86F78E4141F0  
 Format flag (25): 1  
 Protocole flag (26): 0  
 Code pays (27-36): 0227  
 Pays : FRANCE  
 Code protocole (37-40): 1110  
 Protocole utilise : Standard - Test  
 Identification :  
 Numero :  
 BCH 1 lu/calculé (86-106/25-85): 1AF6D8/1AF6D8  
 BCH 2 lu/calculé (133-144/107-132): 1F0/1F0  
 Pos. Data Source (111): Internal  
 121.5 MHz Homing (112): Yes  
 Position GPS de reference lab : N 43°33'34'' E 1°20'42  
 Position GPS : Yes  
 Position GPS par defaut : No  
 Latitude position : 43.5°3'36'' Nord  
 Longitude position : 1.5°58'44'' Est  
 Delta position : .076 km

Controle du message

160.623012  
 160.621418  
 160.617458  
 160.622024  
 160.619336  
 160.620668  
 160.620126  
 160.622508  
 160.619822  
 160.618138  
 160.620484  
 160.61943  
 160.622174  
 160.621488  
 160.622278  
 160.621034  
 160.618344  
 160.623392

Duree de la porteeuse pure	mS	158.4	< 164.6	160.62 +/-	.01
Duree minimale				160.62	
Duree maximale				160.62	
Duree de l'emission	mS	644.9	< 625.2	520.65	

	<b>Manufacturer : MARTEC.</b> <b>Beacon Model : Kannad</b> <b>Auto/Auto GPS/Manual/Manual</b> <b>GPS/Manual+/Manual+ GPS</b>	<b>INTESPACE Reference</b> <b>E6668-RTCM</b>
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Frequence des bits

400.29022  
400.2893  
400.29001  
400.28892  
400.29359  
400.28188  
400.29314  
400.30422  
400.27739  
400.29687  
400.29595  
400.28418  
400.27999  
400.29215  
400.29184  
400.29886  
400.30035  
400.29937

Frequence de modulation                      Hz    395.4<    <404.6    400.29 +-    .01


Mesures d'indice

Excursion de phase totale	rd	<= 2.40	2.21
Excursion de phase positive	rd	1.00<    <1.20	1.12
Excursion de phase negative	rd	-1.20<    <-1.00	-1.09
Symetrie de l'excursion	%	<= 5	-1.15

Stabilite de frequence

F1	F2	F3
49875.09	49875.08	49875.08
49875.01	49875.02	49874.98
49875.04	49875.06	49875.00
49875.01	49875.07	49875.07
49875.06	49875.09	49875.08
49875.06	49875.03	49875.03
49875.13	49875.10	49875.07
49875.08	49875.10	49875.00
49875.14	49875.10	49875.09
49875.09	49875.10	49875.09
49875.32	49875.34	49875.32
49875.18	49875.15	49875.17
49875.04	49875.03	49875.04
49874.98	49874.98	49874.87
49874.86	49874.91	49874.98
49874.57	49874.63	49874.59
49874.49	49874.38	49874.44
49874.49	49874.48	49874.50

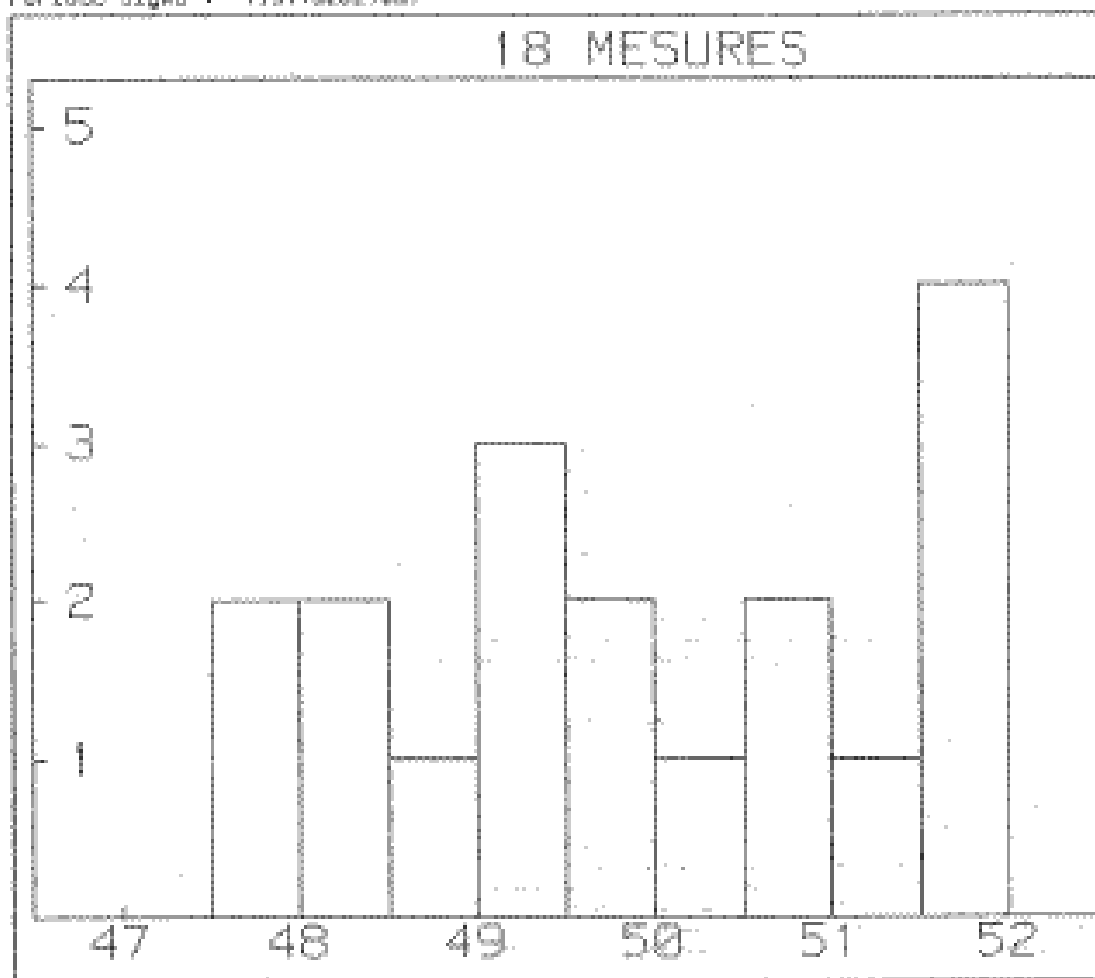
Frequence moyenne	F2	Hz	405027874.98
SIGMA2	F2-F1		7.747E-11
SIGMA3	F3-F2		6.316E-11
Slope		min. -1E-9<    <1E-9	-8.490E-11
Residual frequency variation		<= 3E-9	4.523E-10

	<b>Manufacturer : MARTEC.</b> <b>Beacon Model : Kannad</b> <b>Auto/Auto GPS/Manual/Manual</b> <b>GPS/Manual+/Manual+ GPS</b>	<b>INTESPACE Reference</b> <b>E6668-RTCM</b>
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Recurrence des émissions \_\_\_\_\_

48.9585914551  
51.6340026856  
48.3085875586  
51.5039978027  
49.7428843945  
49.0200087783  
47.6180053711  
51.6039978027  
50.532989502  
49.8128117100  
47.7778846191  
49.1618187422  
49.2218883008  
51.6039816336  
50.9248112385  
51.242888957  
48.1888231954  
50.3328887324

Période Min : 47.6180053711  
Période Max : 51.6039816336  
Période Moy : 49.8488888211  
Période Sigma : 1.37162827007





Manufacturer : MARTEC.  
Beacon Model : Kannad  
Auto/Auto GPS/Manual/Manual  
GPS/Manual+/Manual+ GPS

INTESPACE Reference

E6668-RTCM

Mesures de puissance

-41.43  
-9.16  
-5.86  
-4.01  
-2.72  
-2.59  
-2.59  
-2.59  
-2.59  
-2.6  
-2.6  
-3.04  
-4.42  
-6.5  
-10.62

Puissance emission a 406.028 MHz = 38.34 dBm

Mesures du 121.5

121501.346  
121501.345  
121501.344  
121501.344  
121501.344

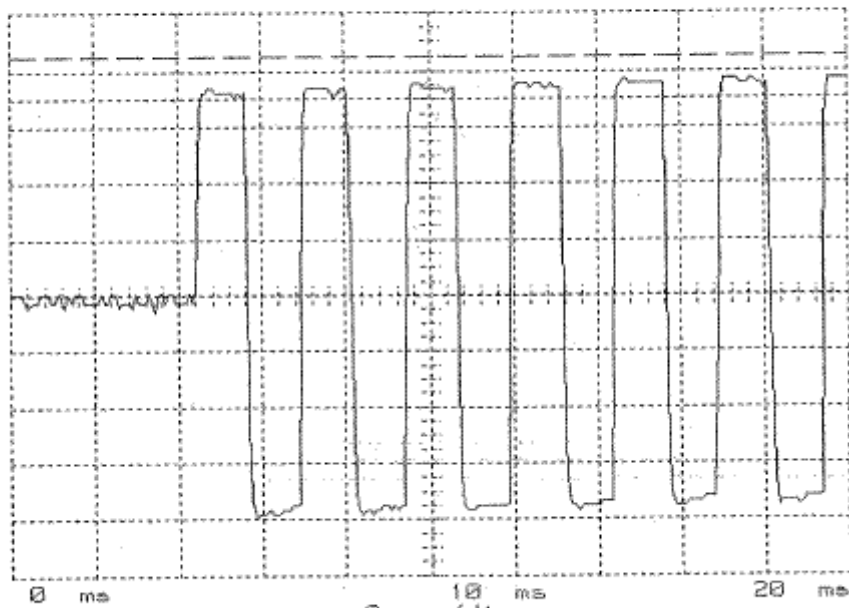
Frequence moy 121.5 MHz

121501.34

Puissance

19.0

Oscilloscopes



Umarker2(1) 700 mv ==> 1 nd  
Umarker1(1) 850 mv ==> 1.2 nd

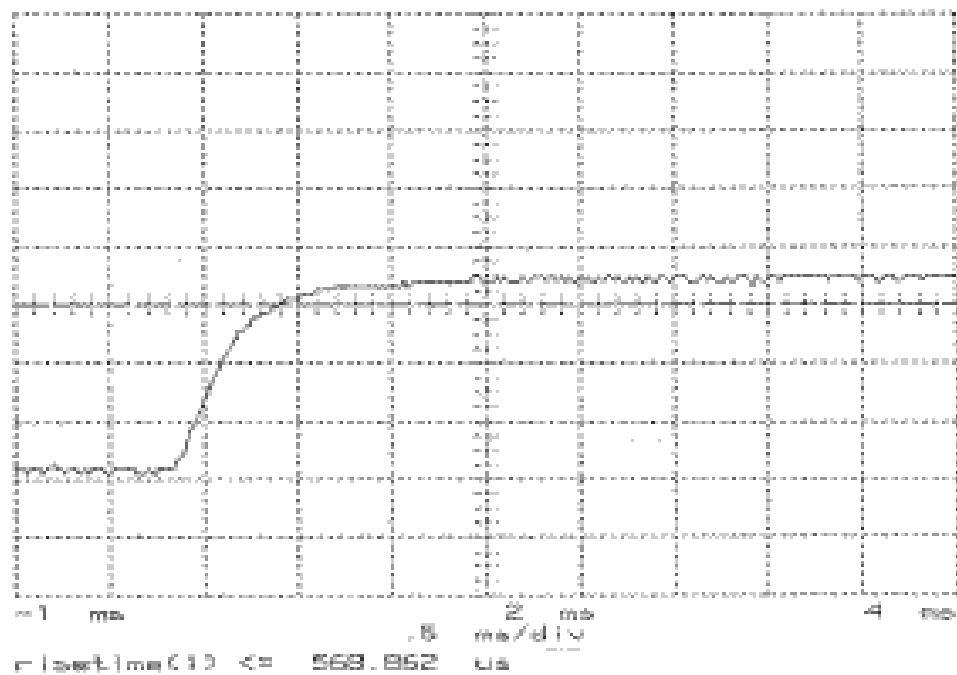
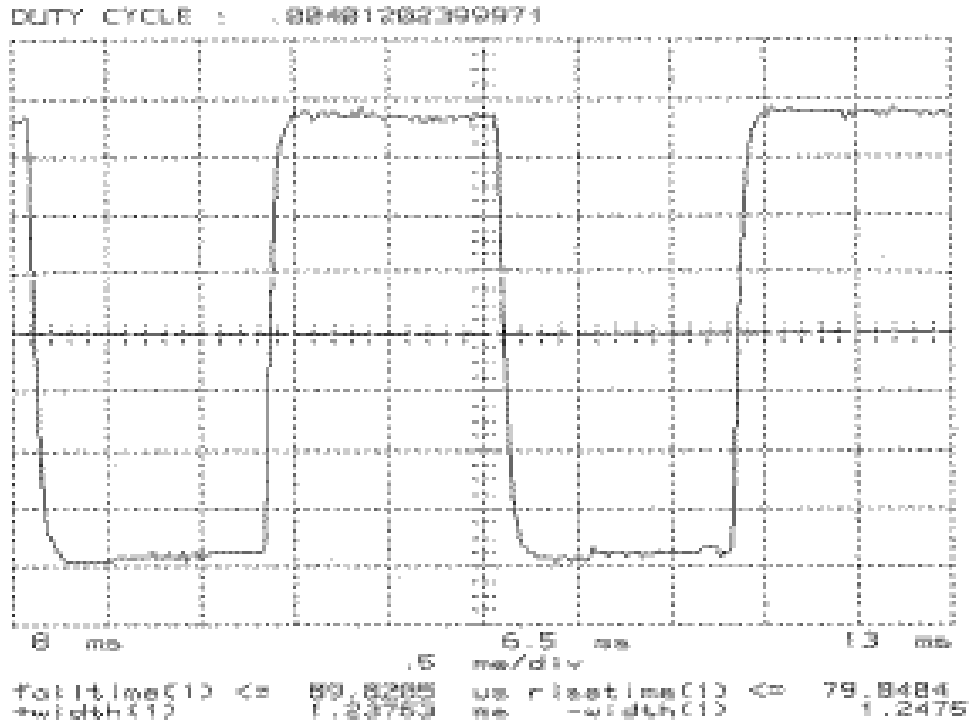
DUTY CYCLE : 4.0E-03



Manufacturer : MARTEC.  
Beacon Model : Kannad  
Auto/Auto GPS/Manual/Manual  
GPS/Manual+/Manual+ GPS

INTESPACE Reference

E6668-RTCM

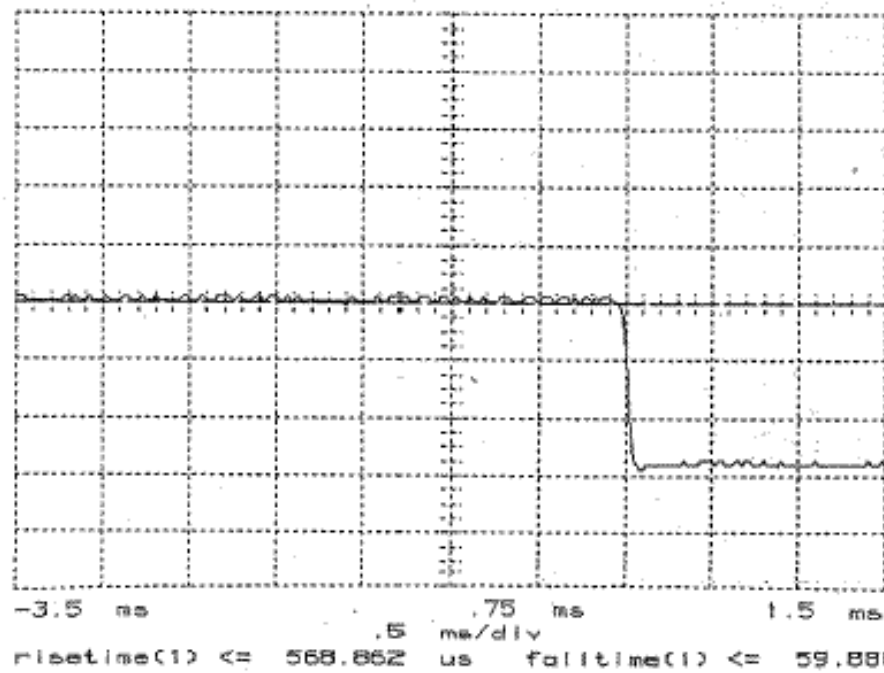




**Manufacturer : MARTEC.**  
**Beacon Model : Kannad**  
**Auto/Auto GPS/Manual/Manual**  
**GPS/Manual+/Manual+ GPS**

**INTESPACE Reference**

**E6668-RTCM**



Spurious

