

**SERPE-IESM**

S.A. au capital de 1 920 000 Euros / 12 594 374,40 Francs
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N° TVA intracommunautaire FR 39 335 230 942

**TELECOPIE**

DE :	Patrice BRAULT	A :	FCC
DATE :	2 september 99	ATTENTION:	Frank COPENICH
NOMBRE DE PAGES :	1+12	COPIE :	
N° DE MESSAGE :	99 7663	N° FAX :	00 10301 344 2050

Re : FCC ID OKFLANNADEPIRB

applicant : SERPE IESM

Correspondence reference number EA94236

Dear sir ,

Further to your mail , we submit with this fax our answers.

We hope that they will be in accordance to your request. If not, let us know what additional measures do you need, we will send them Asap.

Thank you in advance

Best regards

Patrice BRAULT
Chief engineer.

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DIM00330A

**KANNAD 406 FW
&
KANNAD 406 SW**

Re : FCC ID OKFLANNADEPIRB

applicant : SERPE IESM

Correspondence reference number EA94236

Subject : Answer to mail FCC dated 08 august 99

Written by P Brault SERPE IESM

chief engineer

1 Purpose

This note is to answer to the mail from Frank Coperich FCC dated the 5 august 99. Test data results specified in section 2.1046 to 2.1055 must be submitted. In this paper our intention is answer to this request. The Epirbs are distress transmitter used only in case of grave situation. Value of parameters are not so good that we understood in the FCC paper but comply with RTCM and Cospas Sarsat requirements.

In 2 resume of the FCC data results

In 3 extract of specification applicable on the correspondent point of the FCC data

In 4 results and comments : Some results are already include in our file: we have indicated pages of location, we have completed by two spectrum on the 121.5 MHz in annex. We do not have result regarding the spurious on antenna, if necessary they must be performed.

In annex 2 complementary spectrum on the 406.025 and 121.5 MHz

Kannad 406 WH and SW - FCC*1 september 1999***2 Measurements required by FCC**

- § 2 1046 : *RF power output*
§ 2 1047 : *Modulation characteristics*
§ 2 1049 : *Occupied bandwidth*
modulated at a level of 0.5% of the total mean power radiated (- 46 dB)
§ 2 1051 : *Spurious emissions at antenna terminals loaded on suitable load*
§ 2 1053 : *spurious emissions: measure by radiation.*
§ 2 1055 : *Frequency stability*

3 COSPAS SARSAT requirements

The Kannad 406 WH and SW Epirb are distress radiobeacon compliant with Cospas Sarsat requirement (C/S T 001 and C/S T007). The specification for the Epirb are also in the RTCM recommended standard special committee NO 110 V 2.0.

Such Epirb is a dual transmitter: 406, 025 MHz and 121.5 MHz . The specified characteristics are

Main transmitter 406.025 MHz

P UHF output 37 dBm +/- 2 dB

Frequency

Nominal carrier 406.025 MHz +/- 0.002 MHz
stability long term +/- 0.005 MHz

Digital message

Repetition period 47.5 to 52.5 sec
Transmission time 440 ms +/- 1 %

Modulation phase modulation 16 K 0G1D

Positive and negative 1.1 +/- 0.1 rds peak referenced to unmodulated carrier
Modulation rise time 150 us +/- 100 us
Bit rate 400 b/s +/- 1%

Kannad 406 WH and SW - FCC*1 september 1999**Spurious mask*

<i>Fc + 3 KHz</i>	<i>- 20 dBc</i>
<i>Fc + 7 KHz</i>	<i>-30 dBc</i>
<i>Fc + 12 KHz</i>	<i>-35 dBc</i>
<i>Fc + 24 KHz</i>	<i>- 40 dBc</i>
<i>Outside 406.0 and 406.1</i>	<i>- 30 dBc</i>

*121.5 MHz**nominal carrier 121.5 MHz +/- 50 ppm**PERP 25 mW, 0 dB, + 6 dB**Transmission continuous**Modulation amplitude modulated (3K20A3X)**Audio signal 300 to 1600 Hz**Factor 0.85 to 1.0**Sweep repetition 2 to 4 Hz**Emission limits Fc +/- 12.5 KHz - 25 dB**Fc +/- 25 KHz - 35 dB**Fc +/- 62.5 KHz - 30 dB*

Kannad 406 WH and SW - FCC*1 september 1999***4 RESULTS**

Test results are enclosed in the file sent to FCC , part 4: COSPAS/ SARSAT 406 MHz BEACON TYPE APPROVAL TEST RESULTS / CNES-DGA/RC/AD/LM N°98-56

4.1 406.025 MHz

406.025 MHz			
\$ 2 1046	RF power output	36.8 dBm	See page 1
\$ 2 1047	Modulation characteristics	2.29 rd	See pages 3 and 10 to 21
\$ 2 1049	Occupied bandwidth	Rejection of 46 dB at FC +/- 15 KHz	See page 11
\$ 2 1051	Spurious emissions at antenna terminals	H2 rejected at -45 dB	See page 11
\$ 2 1053	spurious emissions: field strength	See fig 3 in annex	The antenna of the EPIRB is tuned on the 406 and 121.5 MHz other frequencies (spurious are attenuated comparing spurious at antenna terminals)
\$ 2 1055	Frequency stability	At -20°C 406.024999 At -55°C 406.024928	See page 3

Kannad 406 WH and SW - FCC*1 september 1999***4.2 121.5 MHz**

121.5 MHz			
§ 2 1046	<i>RF power output</i>	16.38 dBm peak power	See page 0
§ 2 1047	<i>Modulation characteristics</i>	In compliance with Cospas-Sarsat and RTCM specifications	
§ 2 1049	<i>Occupied bandwidth</i>	-76 KHz to +54 KHz at -46 dBc	See figure 1 joined
§ 2 1051	<i>Spurious emissions at antenna terminals</i>	H 2 → -35dBc (243MHz) H3 → -45 dBc	See figure 2 joined 243 MHz is a distress frequency no specified rejection is ordinary required
§ 2 1053	<i>spurious emissions</i>	Sec fig 4	The antenna of the EPIRB is tuned on the 406 and 121.5 MHz
§ 2 1055	<i>Frequency stability</i>	121.5038 at - 20 °C 121.502 at + 20 °C 121.5008 at +55 °C	

4.3 Annex

- Figure 1** illustration of occupied bandwidth on production Epirb
spectrum in max hold mode during more than 10 seconds Span 100 KHz
Centred on 121.5 MHz.
- Figure 2** illustration of spurious at terminal antenna
Centred at 406 MHz, Span 1000 MHz
- Figure 3** spurious on antenna at 406 MHz
- Figure 4** spurious on antenna at 121.5 MHz

occupied band width

121.5 MHz

max hold

Fig 1

MKR 54.6 KHz
-45.90 dB

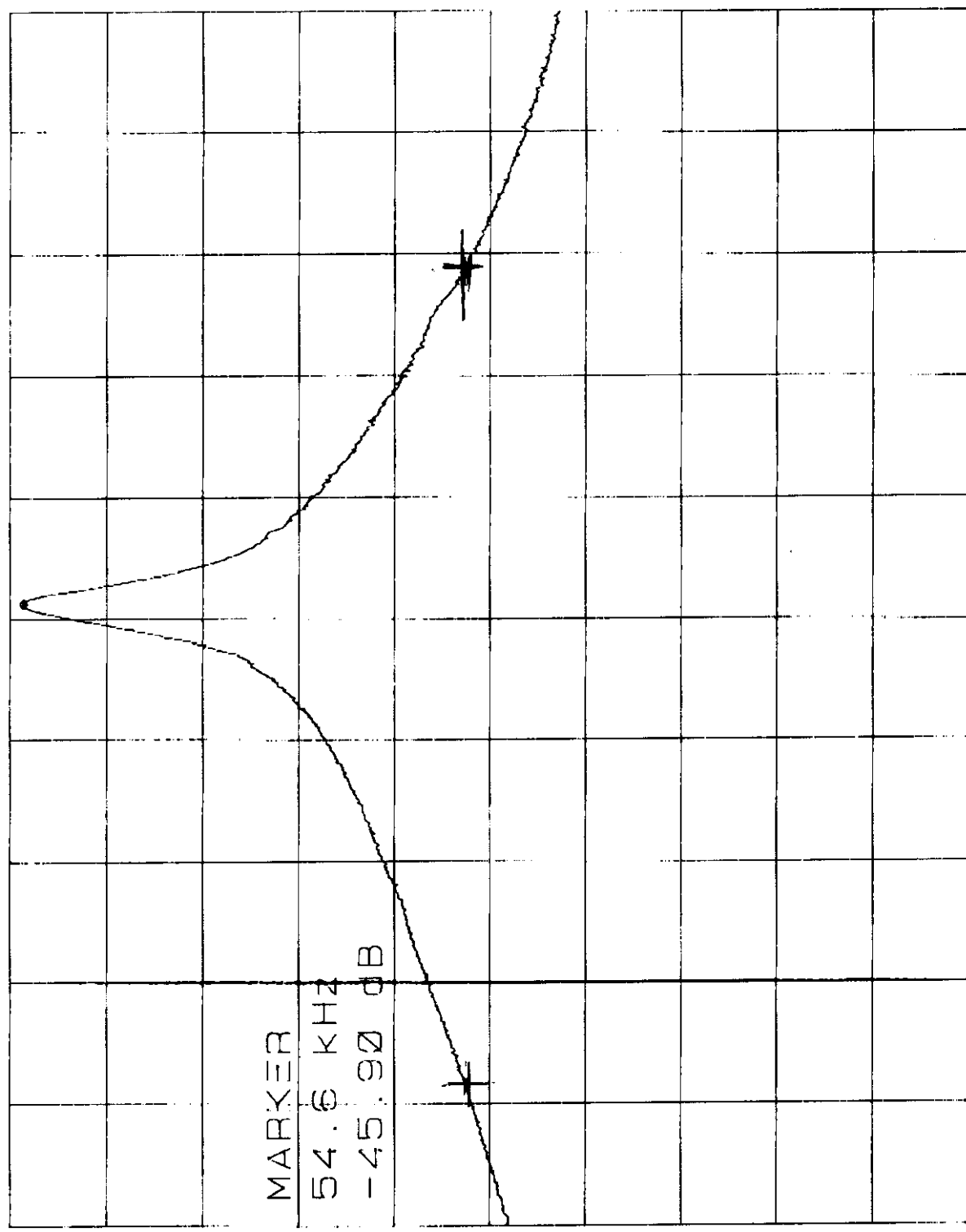
ATTEN 20 dB

REF 10.0 dBm

10 dB/

SAMPLE

01 / 09 / 99



SPAN 200.0 KHz
SWP 100 msec

VBW 3 KHz

CENTER 121.5000 MHz
RES BW 3 KHz

SPURIOUS al terminal

1.19

1.19

MKR 119 MHz
8.50 dBm

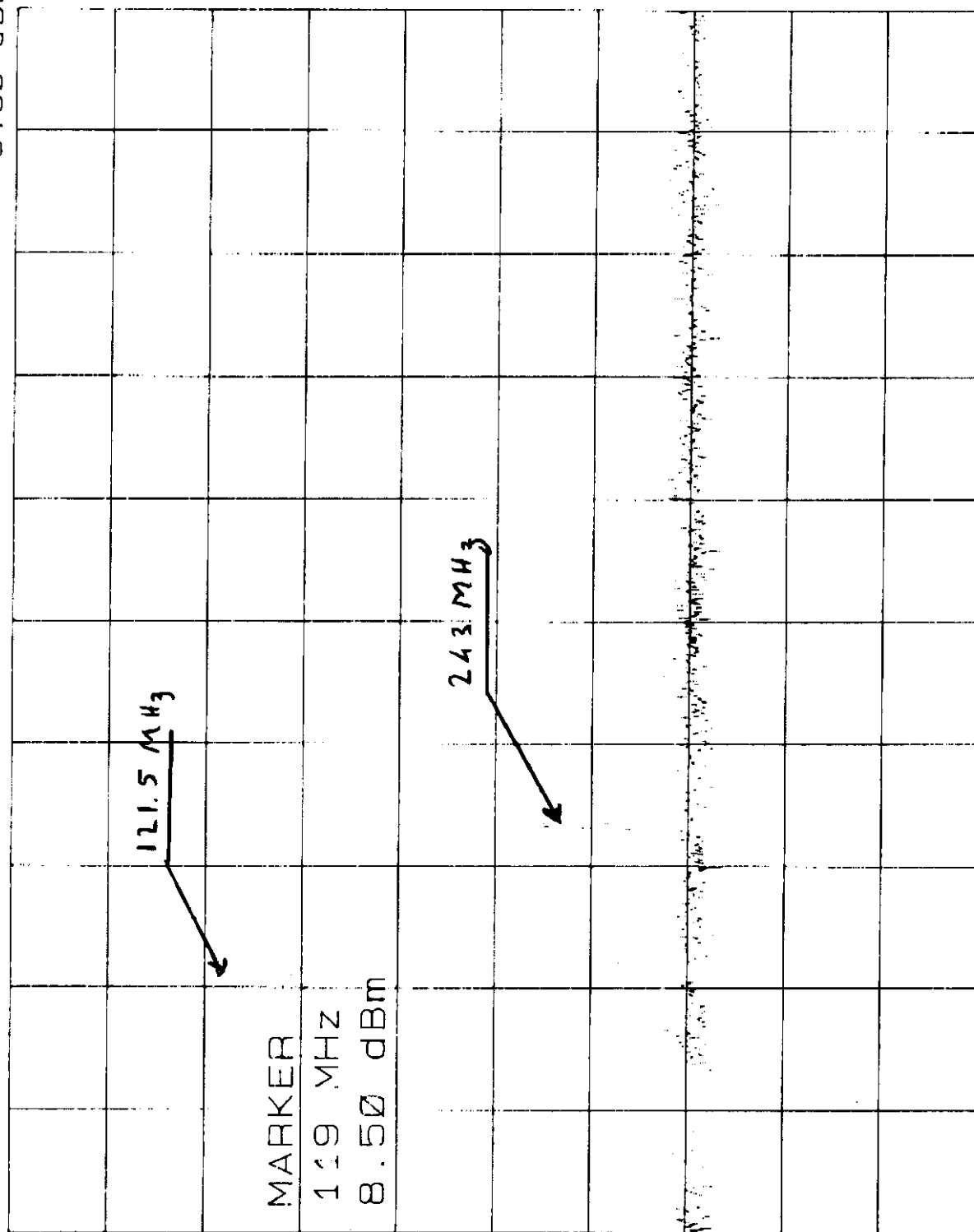
ATTEN 40 dB

REF 30.0 dBm

10 dB/

SAMPLE

01 / 09 / 99



SPAN 1000 MHz
SWP 20 msec

VBW 1 MHz

RES BW 3 MHz

CENTER 406 MHz

406.025 MHz

spurious radiated

MKR 401 MHz
-8.50 dBm

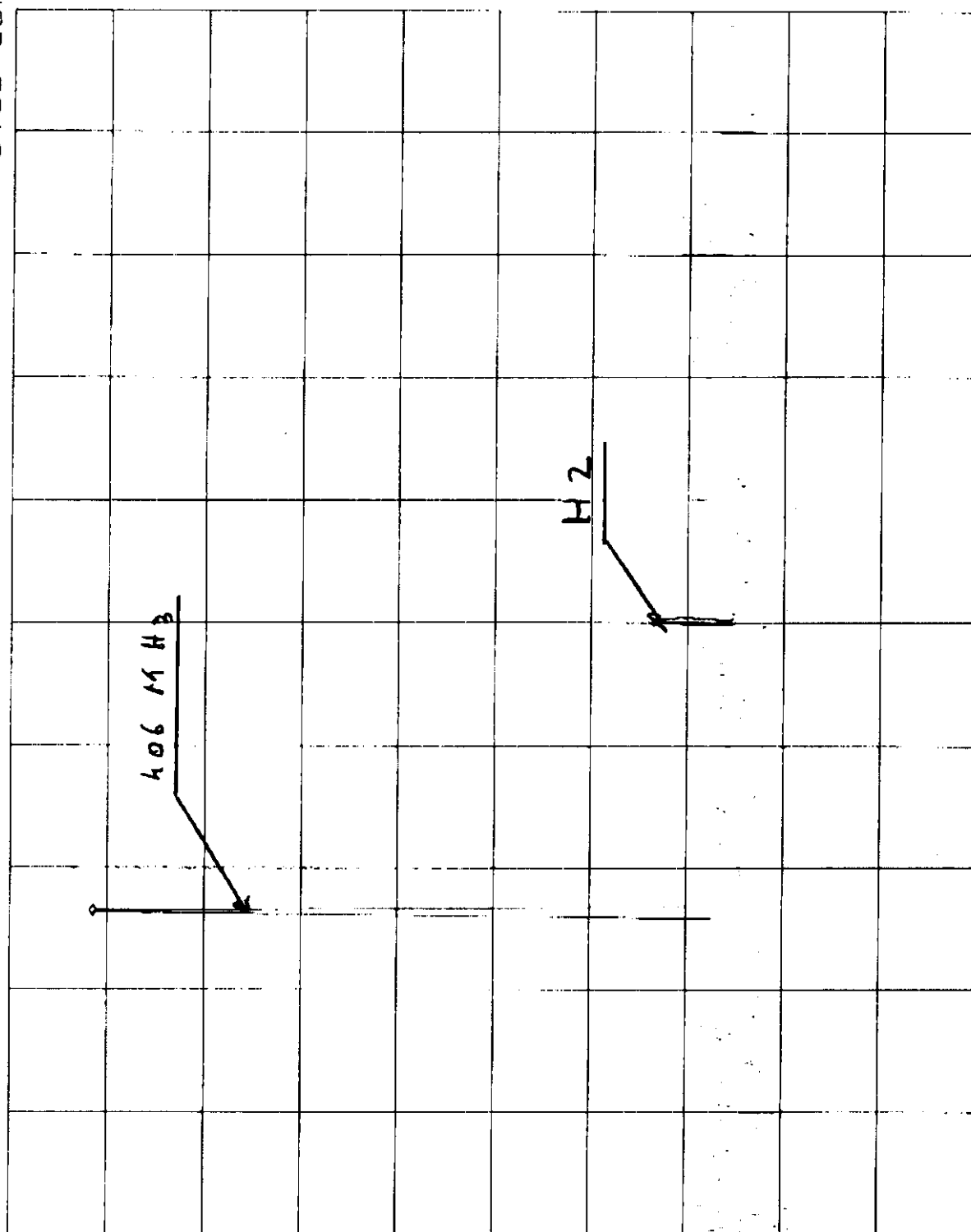
ATTEN 10 dB

REF .0 dBm

10 dB/

SAMPLE

01/09/99



CENTER 800 MHz

RES BW 3 MHz

VBW 1 MHz

SPAN 1700 MHz

SWP 20 msec

spurious radiatedMKR 120 MHz
-25.50 dBm

ATTEN 10 dB

REF .0 dBm

10 dB/

SAMPLE

MARKER

120 MHz

-25.50 dBm

121.5 MHz

243 MHz

x

01/09/99

CENTER 800 MHz

RES BW 3 MHz

VBW 1 MHz

SPAN 1700 MHz
SWP 20 msec

U.S. Department
of Transportation

United States
Coast Guard



Commandant
United States Coast Guard

U.S. Coast Guard (G-MSE-4)
2100 Second St. S.W.
Washington, DC 20593
Phone: (202) 267-1444
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942361

16714/161.011/SERPE-IESM

March 26, 1999

Ms. Reine Petch
SERPE-IESM
ZI des 5 Chemins
56520 Guidel
FRANCE

Dear Ms. Petch:

We have completed a review of the materials provided for the KANNAD 406 WH satellite Emergency Position Indicating Radio Beacon. Based on the information provided and the tests carried out, and in accordance with 47 CFR 80.1061(c)(2), we conclude that the KANNAD 406 WH, Category 1, 406 MHz satellite EPIRB, meets the relevant requirements of the RTCM recommended standards for 406 MHz satellite EPIRBs (version 2.0, RTCM paper 4-97/SC-110-STD).

Sincerely,

R. L. MARKLE
Chief, Lifesaving and Fire Safety Standards Division
Office of Design and Engineering Standards
By direction of the Commandant

Copy: Prosar, Inc.
FCC (EAB)

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FCC LABORATORY
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