Toulouse, 4 July 2001

INTESPACE reference : M3223_C-S

TEST REPORT OF
406 MHz DISTRESS BEACON

MANUFACTURER :	ACR Electronics, Inc.
BEACON MODEL :	RLB35

Written : 4 July 2001
By : Gérard PEYROU
Visa :

Approved : 5/07/01
By : Alain SERDANE
Visa :

Quality Control : 05 07 01
By : Michel BRUNEL
Visa :

Distribution :

- Mr	Cal HAVENS	ACR Electronics, Inc.	(1 copy)
- Mr	S. MIKAILOV	COSPAS/SARSAT Sec	(1 copy)
- Mr	C. GAL	CNES - CT/RC/AD/LM	(1 copy)
- INTESPACE		ITS/AP/ET	(1 copy)

1 - ADMINISRATION

1.1. WORK ORDER

Manufacturer : ACR Electronics, Inc.
Address : 5757 RAVENSWOOD ROAD - FORT LAUDERDALE, FL 33312-6645

Represented by : Mr Cal HAVENS

1.2. INTESPACE TEST CENTER

The test operations have been conducted by : Mr G. PEYROU

1.3. SCHEDULE

Start of test:	17 April 2001
End of test :	22 June 2001

1.4. WORK REFERENCE : **M3223_C-S**

1.5. EQUIPMENT UNDER TEST

The results from this test report concern only the equipment here after referenced :

- Commercial designation :
- Model : RLB35
- Sérial number: 7

2 - TEST FACILITIES

- ARGOS - COSPAS/SARSAT Certification Test Bench.
- Anechoic chamber for antenna test .
- Toulouse CNES MCC .

3 - STANDARDS AND TEST PROCEDURES APPLICABLE

COSPAS-SARSAT standards :

- "C/S T. 001- Issue 3 - Revision 3 - October 1999 "
- "C/S T. 007- Issue 3 - Revision 6 - October 1999"

INTESPACE Radio Beacon Test Procédures :

- " COSPAS-SARSAT Certification Test"	Réf. ITS : 572 AP/QA
- " 406 MHz Caracteristic Antenna Test "	Réf. ITS : 566 AP/QA
- " Radio Beacon Test Report "	Réf. ITS : 579 AP/QA-f

4 - RESULTS

See the following pages :
- application form for a COSPAS-SARSAT 406 MHz beacon Type Approval Certificate,
- summary of 406 MHz beacon test results
- test results : data and graphs
- and manufacturer technical data Annex A

5 - COMMENTS

Prior to Operating LifeTime Test at Minimum Temperature we have examined the Beacon calculation of average current drain before to beacon activation over the rated life battery pack (See the Manufacturer description and calculation Annex A) .

We have agreed with estimate Manufacturer calculation, Cospas Sarsat method, and we have discharge the battery following it .

ITS - AP/ET M3223_C-S
CNES - DSO/RC//AS N° 01-122

APPLICATION FOR A COSPAS - SARSAT 406 MHz BEACON TYPE APPROVAL CERTIFICATE

Beacon Manufacturer : ACR Electronics, Inc.

Beacon model : RLB35

Beacon Number : 7

Name and Location of Beacon Test Facility : INTESPACE / CNES Toulouse

Beacon Type : Aviation : ☐ Land : ☐ Maritime : ☑

Antenna Model : ACR Antenna A3-06-1791-1

Specified Operating Temperature Range -40 °C to 55 °C

Specified Operating Lifetime : 24 hr ☐ 48 hr ☑ Other ☐ Specify :

Beacon Battery Type(s)

Chemistry	: LiSO2
Manufacturer & model n°	: SAFT LO26SX
Size & number of cells	: D size, 3 Cells

Extra Features in Beacon	**No**	**Yes**	**Details**	
a) Auxiliary Radio-Locating Device :	☐	☑	Frequency Power Tx. Duty Cycle	: 121.5 MHz : 17 dBm : 99 %
b) Transmits Encoded Position Data	☐	☑	Nav. Device Type Manufacturer Model	: Internal : GPS : Axiom Navigation : Swift A1
c) Transmits Long Message (144 bits)	☐	☑		
c) Automatic Activation :	☐	☑		
d) Built-in Strobe light :	☐	☑	Intensity Flash rate	: >/= 0.75 : 21
e) Selft-test mode	☐	☑		
f) Other	☑	☐	Specify	:

I hereby confirm that the 406 MHz beacon described above has been successfully tested in accordance with the COSPAS-SARSAT Type Approval Standard (C/S T.007) and complies with the COSPAS-SARSAT Specification (C/ST T.001) as demonstrated in the attached report.

Dated : 05 July 2001 Signed : 

(for test facility)

PARAMÈTRES TO BE MEASURED DURING TESTS		RANGE OF SPECIFICATION	UNITS	TEST RESULTS			COMMENTS
				$T_{min.}$ -40°C (±3)	$T_{amb.}$ 22°C (±3)	$T_{max.}$ 55°C (±3)	
1 - POWER OUTPUT							
o transmitter power output		35 - 39	dBm	36,6	37,5	37,6	
o Power output rise time		< 5	ms	0,85	0,77	0,85	Graphs p, 20, 23 and 26
o power output 1 ms before burst		must be < -10 dBm	√ *	√	√	√	Graphs pages 14 to 16
2 - DIGITAL MESSAGE	Bits number						Data and graphs pages 17 to 26
o bit sync	1-15	15 bits "1"	√	√	√	√	
o frame sync	16-24	9 bits (000101111)	√	√	√	√	
o format flag	25	1 bit	√	1	1	1	
o protocol flag	26	1 bit	√	0	0	0	
o identification/position code	27-85	59 bits	√	√	√	√	
o BCH code	86-106	21 bits	√	√	√	√	
o emerg. code/nat. use/supplem. data	107-112	6 bits	data bits	110111	110111	110111	
o additional data/BCH (if applicable)	113-144	32 bits	√	√	√	√	
o position error (if applicable)		< 5	km	Default pos.	0,000 km	Default pos.	

PARAMÈTRES TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS			COMMENTS
			$T_{min.}$ -40°C (±3)	$T_{amb.}$ 22°C (±3)	$T_{max.}$ 55°C (±3)	
3 - DIGITAL MESSAGE GENERATOR						Data and graphs pages 17 to 26
o repetition rate *** :						
minimum T_R =	47,5	seconds	49,5	49,5	49,5	
maximum T_R =	52,5	seconds	52,5	52,0	52,5	
o bit rate						
minimum f_b =	396	bits/sec.	401,28	401,28	401,27	
maximum f_b =	404	bits/sec.	401,30	401,31	401,29	
o total transmission time :						
short message =	435.6 - 444.4	ms				
long message (optional) =	514.8 - 525.2	ms	519,27	519,35	519,35	
o CW preamble						
minimum T_1 =	158,4	ms	160,27	160,37	160,35	
maximum T_1 =	161,6	ms	160,30	160,38	160,36	
o first burst delay	> 47,5	seconds				

PARAMÈTRES TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS			COMMENTS
			$T_{min.}$ -40°C (±3)	$T_{amb.}$ 22°C (±3)	$T_{max.}$ 55°C (±3)	
4 - MODULATION						Data and graphs
o biphase-L		√	√	√	√	pages 17 to 26
o rise time	50 - 250	microsec.	80	90	80	
o fall time	50 - 250	microsec.	80	90	80	
o phase deviation : positive	+ (1.0 to 1.2)	radians	+ 1,15	+ 1,15	+ 1,15	
o phase deviation : negative	- (1.0 to 1.2)	radians	- 1,16	- 1,12	- 1,11	
o symmetry measurement	≤ 0.05		+ 0,020	+ 0,020	+ 0,024	
5 - 406 MHz TRANSMITTED FREQUENCY						Data pages 18, 21 and 24
o nominal value	406.023 - 406.027 or 406.027 - 406.029***	MHz	406,0245816	406,0245117	406,0245020	
o short term stability	≤ 2×10^{-9}	/100 ms	3,57E-10	3,23E-10	1,05E-10	
o medium term stability						
. slope	(-1 to +1) x 10^{-9}	/minute	-2,61E-11	-2,99E-12	-1,67E-10	
. residual frequency variation	≤ 3×10^{-9}		7,65E-11	1,09E-10	1,10E-10	
6 - SPURIOUS EMISSION **** (into 50 ohms)						See graphs pages 27 to 30
o in-band (406.0 - 406.1 MHz)	see spurious emission mask in C/S T.001	√	√	√	√	

PARAMÈTRES TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS			COMMENTS
			$T_{min.}$ -40°C (±3)	$T_{amb.}$ 22°C (±3)	$T_{max.}$ 55°C (±3)	
7 - 406 MHz VSWR CHECK after open circuit, short cicuit, then while VSWR is 3:1, measure :						See data and graphs pages 31 to 37
o nominal transmitted frequency	406.023 - 406.027 or 406.027 - 406.029***	MHz	406,0245790	406,0244952	406,0245029	
Modulation :						
o rise time	50 - 250	microsec.	79,8	79,8	79,8	
o fall time	50 - 250	microsec.	89,8	89,8	89,8	
o phase deviation : positive	+ (1.0 to 1.2)	radians	1,16	1,13	1,14	
o phase deviation : negative	- (1.0 to 1.2)	radians	-1,11	-1,13	-1,09	
o symmetry measurement	≤ 0.05	√	+ 0,016	+ 0,024	+ 0,024	
o digital message	must be correct	√	√	√	√	
8 - SELF-TEST MODE (if applicable)						Data pages 42 to 44
o frame sync	9 bits (011010000)	√	√	√	√	
o format flag	1/0	bit	1	1	1	
o single radiated burst	≤ 440 /520 (+/- 1%)	ms	439,46	439,54	439,53	
o default position data (if applicable)	must be correct	√	√	√	√	
o description provided		√	√	√	√	
o design data provided on protection against repetitive self-test mode transmissions	protection provided	√	√	√	√	Manufacturer doc. Annex A
o single burst verification	one burst	√	√	√	√	
o provides for beacon 15 Hex ID	must be correct	√	√	√	√	Data page 43

PARAMÈTRES TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS	COMMENTS
9 - THERMAL SHOCK (30° C change)				Data and graphs pages 45 to 52
o Soak temperature :		°C	Tsoak = 55	
o Measurement temperature :		°C	TMeas = 22	
the following parameters are to be met within 15 minutes of beacon and maintained for 2 hours				
o Transmitted frequency :				
- nominal value	406.023 - 406.027 or 406.027 - 406.029***	MHz	406,024503 / 406,024522	
- short term stability	$\leq 2 \times 10^{-9}$	/100 ms	1,00E-09	
- medium term stability :				
. slope	$(-1 \text{ to } +1) \times 10^{-9}$	/minute	-4E-11 / 1E-09	
. residual frequency variation	$\leq 3 \times 10^{-9}$		1,93E-10	
o Transmitted power output	35 - 39	dBm	37,5 / 37,7	
o Digital message	must be corect	√	√	

PARAMÈTRES TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS	COMMENTS
10 - OPERATING LIFETIME AT MINIMUM TEMPERATURE ****				Data and graphs pages 53 to 67
o Duration	> 24	hours	50 hours at Tmin = -40 °C	
o Transmitted frequency :				
- nominal value	406.023 - 406.027 or 406.027 - 406.029***	MHz	406,02456 / 406,024538	
- short term stability		/100 ms	2,3E-10	
- medium term stability				
. slope	(-1 to +1) x 10^{-9}	/minute	-9,7E-10 / 1,0E-10	
. residual frequency variation	≤ 3 x 10^{-9}		1,08E-09	
o Transmitted power output	35 - 39	dBm	36,0 / 36,9	
o Digital message	must be corect	√	√	
11 - TEMPERATURE GRADIENT **** (5° C/hr)				Data and graphs pages 69 to 82
o Transmitted frequency :				
- nominal value	406.023 - 406.027 or 406.027 - 406.029***	MHz	406,024488 / 406,024601	
- short term stability	≤ 2 x 10^{-9}	/100 ms	2,4E-10	
- medium term stability				
. slope	(-1 to +1) x 10^{-9}	/minute	-6,2E-10 / 2,3E-10	
. residual frequency variation	≤ 3 x 10^{-9}		1,2E-09	
o Transmitted power output	35 - 39	dBm	36,8 / 37,8	
o Digital message	must be corect	√	√	
12 - LONG TERM FREQUENCY STABILITY	406.023 - 406.027 or 406.027 - 406.029***	MHz		Constructor explanations in Annex A
o Data provided		√	√	

PARAMÈTRES TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS	COMMENTS
13 - PROTECTION AGAINST CONTINUOUS TRANSMISSION	≤ 45	seconds		Constructor explanations in Annex A
o Description provided		√	√	
14 - SATELLITE QUALITATIVE TESTS ****	successfully located by satellites / LUT			Data and graphs pages 83 to 93
o Results provided		√	√	
15 - ANTENNA CHARACTERISTICS				Antenna test report pages 94 to 103
o Polarization	linear or RHCP	√ √	√	
o VSWR	≤ 1.5	-	no measured	
o $ERP_{max\ EOL}$	≤ 20	Watts	19,0	
o $ERP_{min\ EOL}$	≥ 1.6	Watts	2,5	
o azimuth gain variation at 40° elevation angle	≤ 3	dB	0,8	
16 - BEACON CODING SOFTWARE				
o sample message provided for each coding option of the applicable coding protocol types	must be correct (attach to report)	√	NA	
o sample messages provided , if applicable, with encoded positions at least 5 km apart	must be correct (attach to report)	√	NA	
o sample self-test message provided for each coding option of the applicable coding protocol types	must be correct (attach to report)	√	NA	

PARAMÈTRES TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS	COMMENTS
17 - NAVIGATION SYSTEM**** (as applicable)				See data page 104
o position data default values	must be correct	√	√	
o position acquisition time	< 30	minutes	02:31	
o encoded positon data update interval	> 20	minutes	around 22 minuts	
o positon data input update interval (as applicable)	20 / 1	minutes	NA	
o delta offset :				
- positive direction	must be correct	√	√	
- negative direction	must be correct	√	√	
- overrange to 2 times coarse res.	must be correct	√	√	
o last valid position :				
- retained after nav signal lost	4	hours	4:00	
- cleared when beacon reactived	must be correct	√	√	
o design data provided on protection against beacon degradation due to navigation device, interface or signal failure or malfunction	no degradation	√	√	

* The ticks mark √ can be used where indicated to record that the requirement is met (no value needs to be shown).

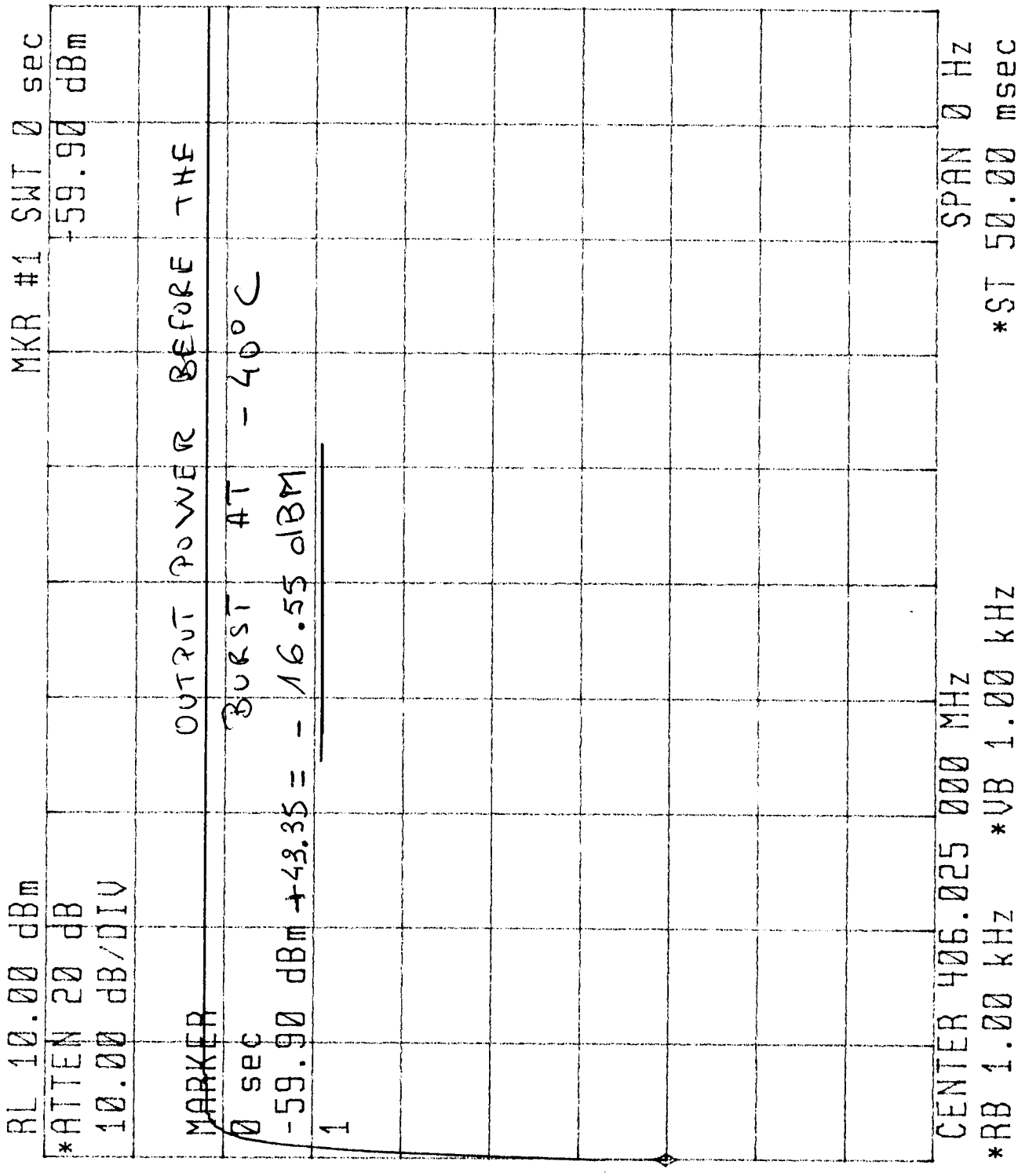
** If $(T_{R\,max} - T_{R\,min}) \leq 1$ second, the manufacturer must provide a technical explanation, as describes in section A3.1.1.

*** From 1 January 2000 new 406MHz beacon models submitted for type approval can be set to transmit at 406.028 Mhz ± 1 kHz . The transmitted frequency sall not vary more than + 2 kHz / - 5 kHz from 406.028 MHz in 5 years . It sall not vary more than 2 parts in 10^9 in 100 ms . After 1 January 2002, all new beacon models submitted for the type approval must be set at the frequency 406.028 MHz ± 1 kHz and satisfy the above stability requirements .

**** attach graphs of test results for test number 6, 9, 10 and 11 and a summary table of results for test number 14, and, if applicable , test number 17.

TRANSMITTER OUTPUT POWER RISE TIME TEST RESULT ON
RLB35 ACR Electronics, Inc.
N° 7
(1 ms before 10 % of the burst)

at -40° C, 22° C and 55° C

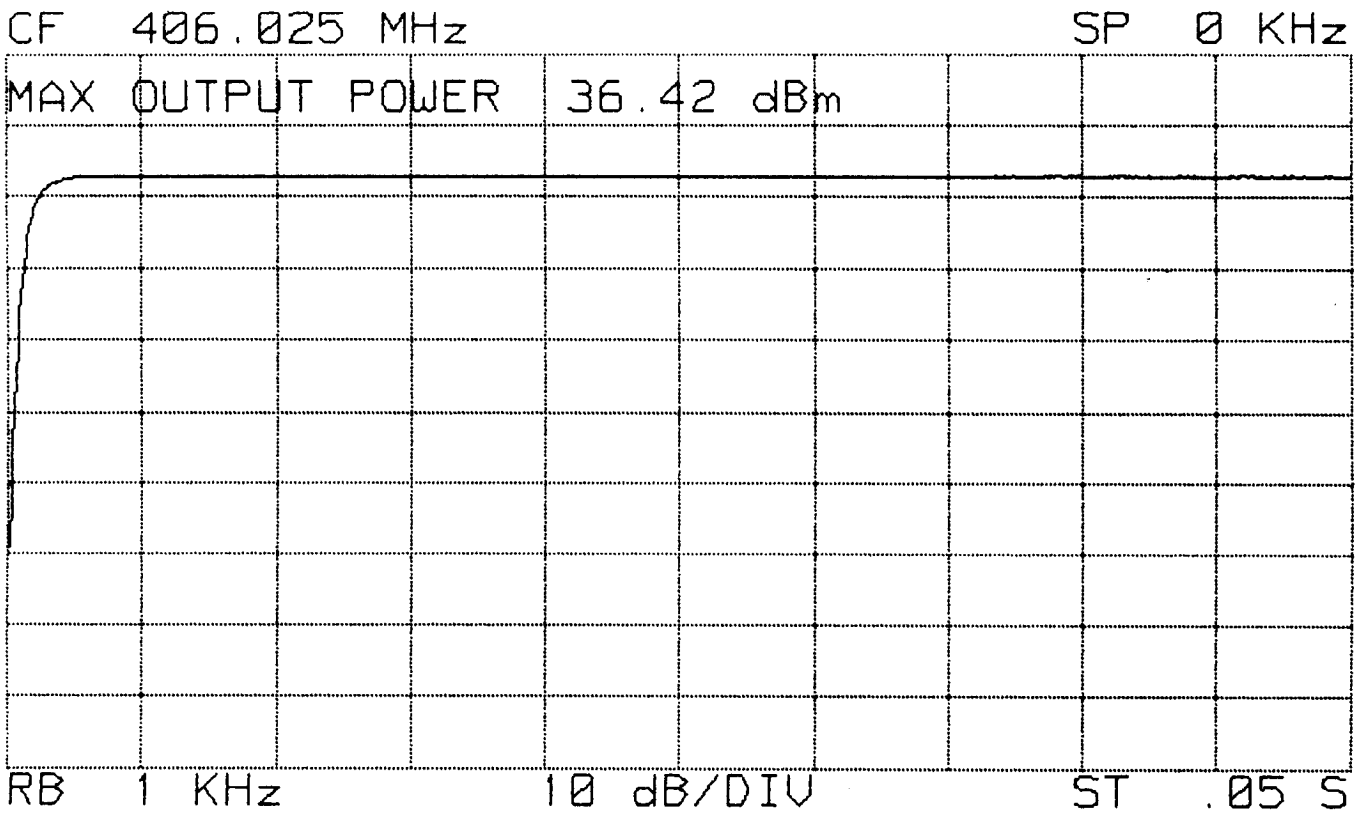

RL 10.00 dBm
*ATTEN 20 dB
10.00 dB/DIV
MKR #1 SWT 0 sec
+59.90 dBm
OUTPUT POWER BEFORE THE
BURST AT -40°C
MARKER
0 sec
-59.90 dBm +43.35 = -16.55 dBM
1
CENTER 406.025 000 MHz
SPAN 0 Hz
*RB 1.00 kHz
*VB 1.00 kHz
*ST 50.00 msec

OUTPUT POWER BEFORE THE BURST

AT + 22°C

+ 36.42 dBm − 53 dBm = − 16,6 dBm

Puissance avant emission

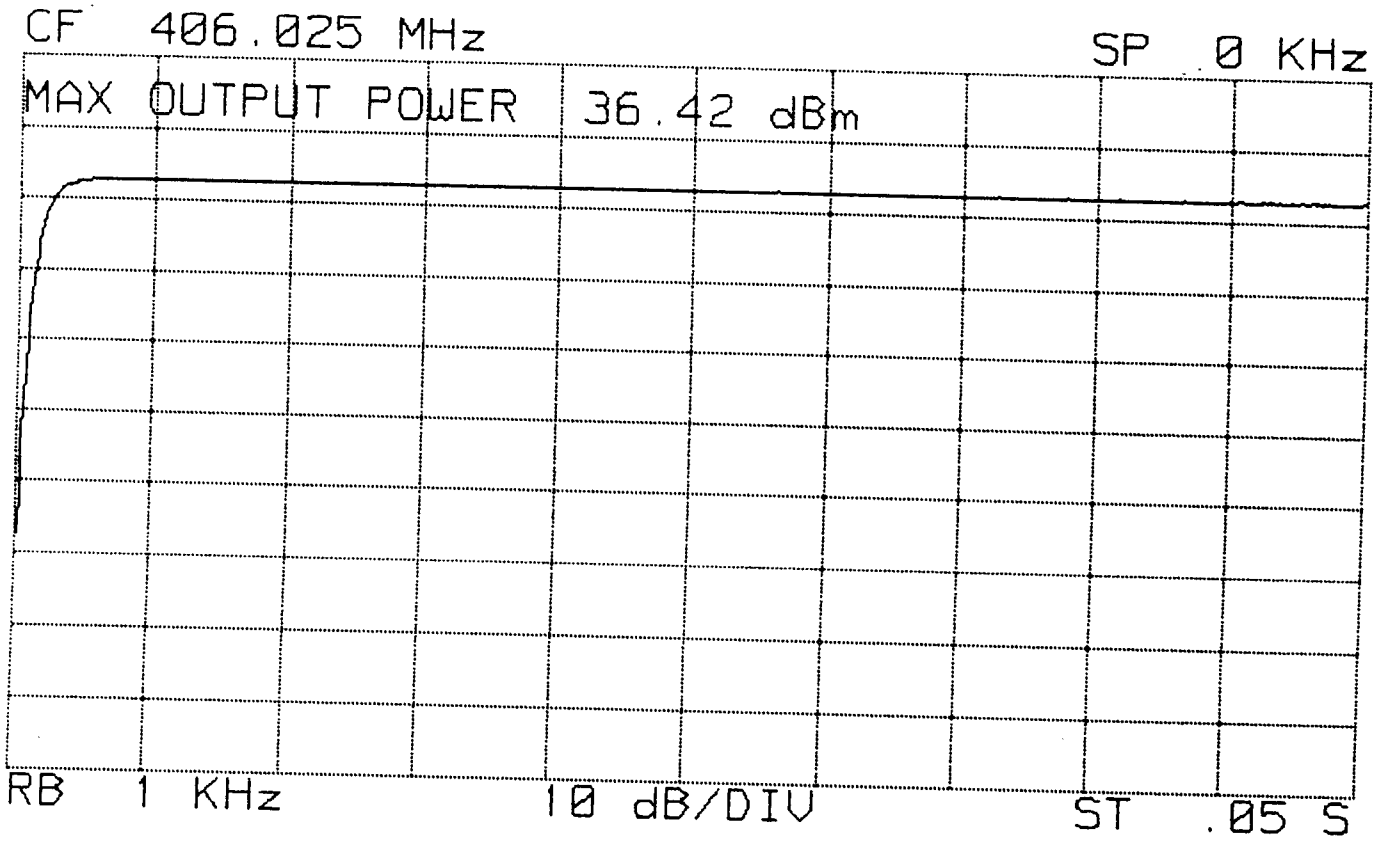


OUTPUT POWER BEFORE THE BURST

AT +55°C

+36.40 dBm − 50 dBm = −13,6 dBm

Puissance avant emission



CERTIFICATION TEST RESULTS ON
RLB35 ACR Electronics, Inc.
N° 7

at -40° C, 22° C and 55° C

Certification Test at -40°C Date of test : 25 Apr 2001

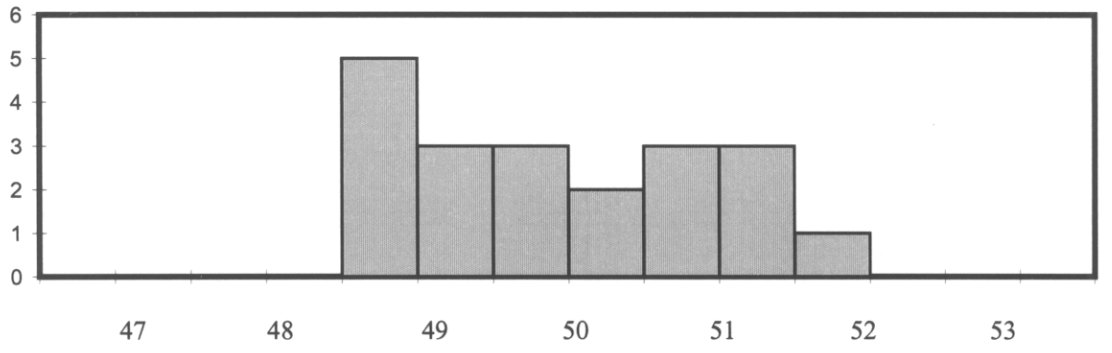
Manufacturer : ACR
Beacon Type : RLB35
Number : 7

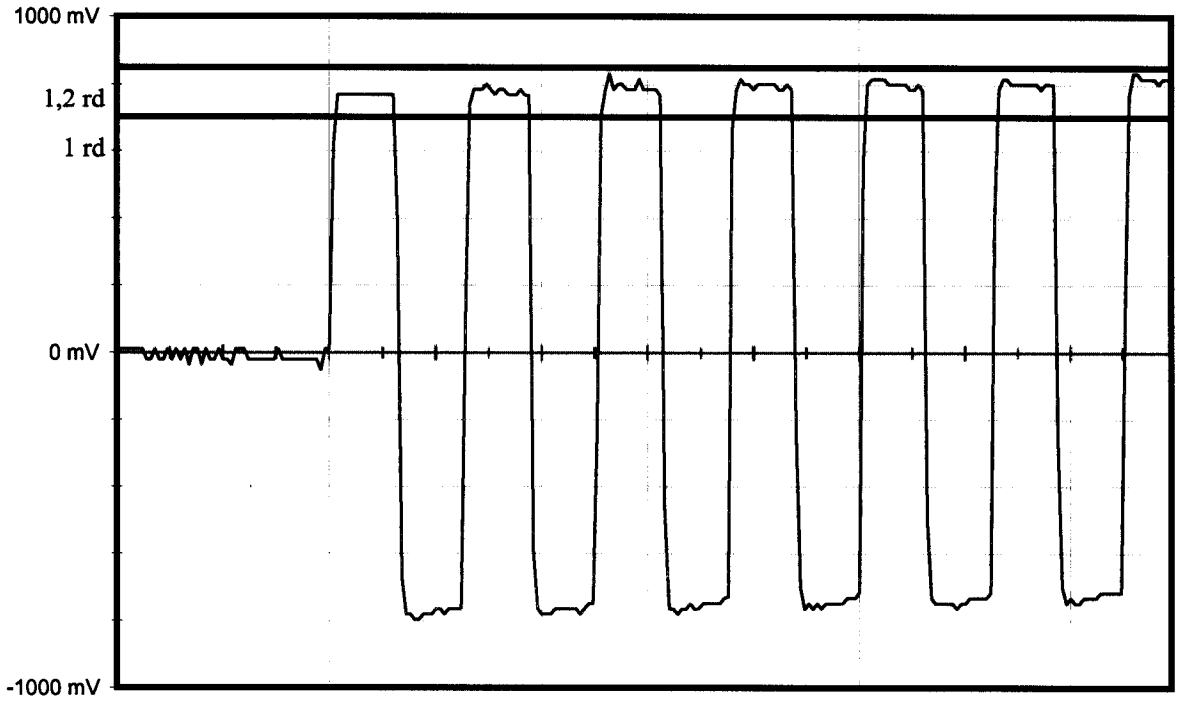
Message

Message received		FFFE2F96EE2EC0017FDFFC0A6D3783E0F66C
Format Flag	25	1
Protocol flag	26	0
Ident./Position code	27-85	0
Country Code/Country	27-36	366 / USA
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		
Calculated BCH1	25-85	1029B4
Readed BCH1	86-106	1029B4
Homing	112	1
Em.cod/nat.use/supp.data	107-112	110111
Encod pos data	111	1
Fixed Data "1"	108	1 OK
Calculated BCH2	107-132	66C
Readed BCH2	133-144	66C
Latitude position		Nord 127,75° 0' 60"
Longitude position		Est 255,75° 0' 60"
Delta position		Default pos.

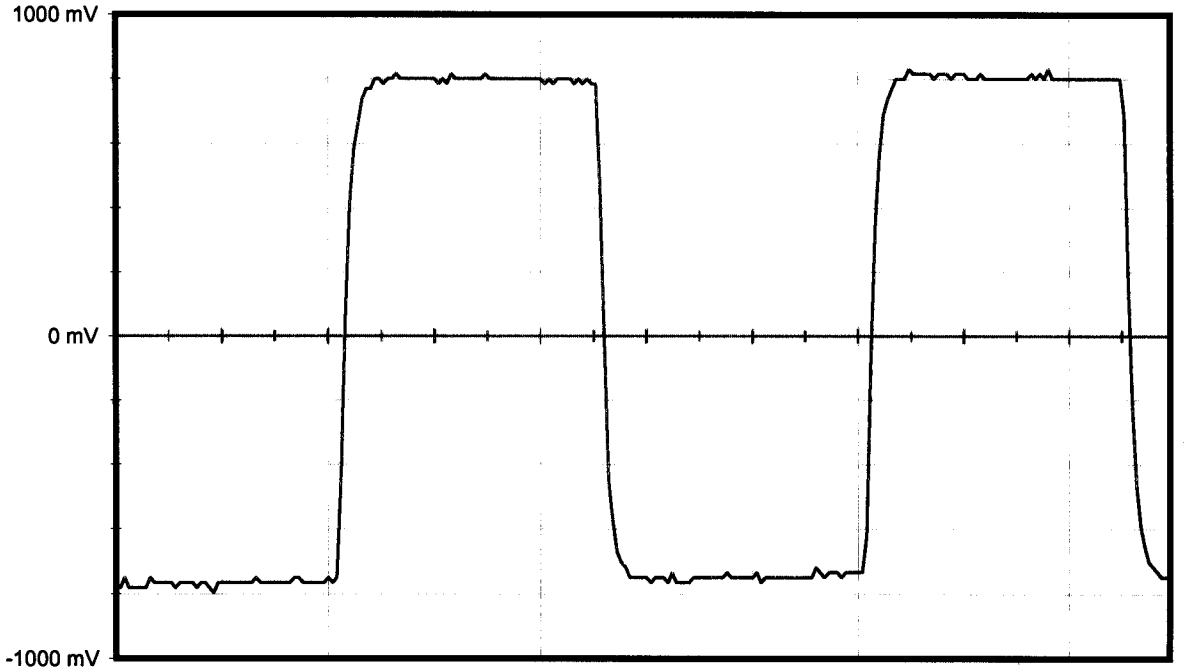
Electrical and other parameters

CW preamble	ms 158,4 <	< 162,6	160,29
Total transmission time	ms 513,8 <	<526,2	519,27
Modulation frequency	Hz 395,4<	< 404,6	401,29
Phase deviation : total	rd	<=2,40	2,30
Phase deviation : positive	rd 1,00 <	< 1,20	1,15
Phase deviation : negative	rd -1,20 <	< -1,00	-1,16
Symmetry measurement	%	<=5 %	2,01
Nominal frequency : F2	Hz		406024581,64
Short term2			8,66E-11
Short term3			3,57E-10
Slope			-2,61E-11
Residual			7,65E-11
406 MHz power output	dBm		36,6
Homing frequency	MHz		121,50
121,5 MHz power output	dBm		18,1
Soak temperature	°C		-40,3
Extra feature			No

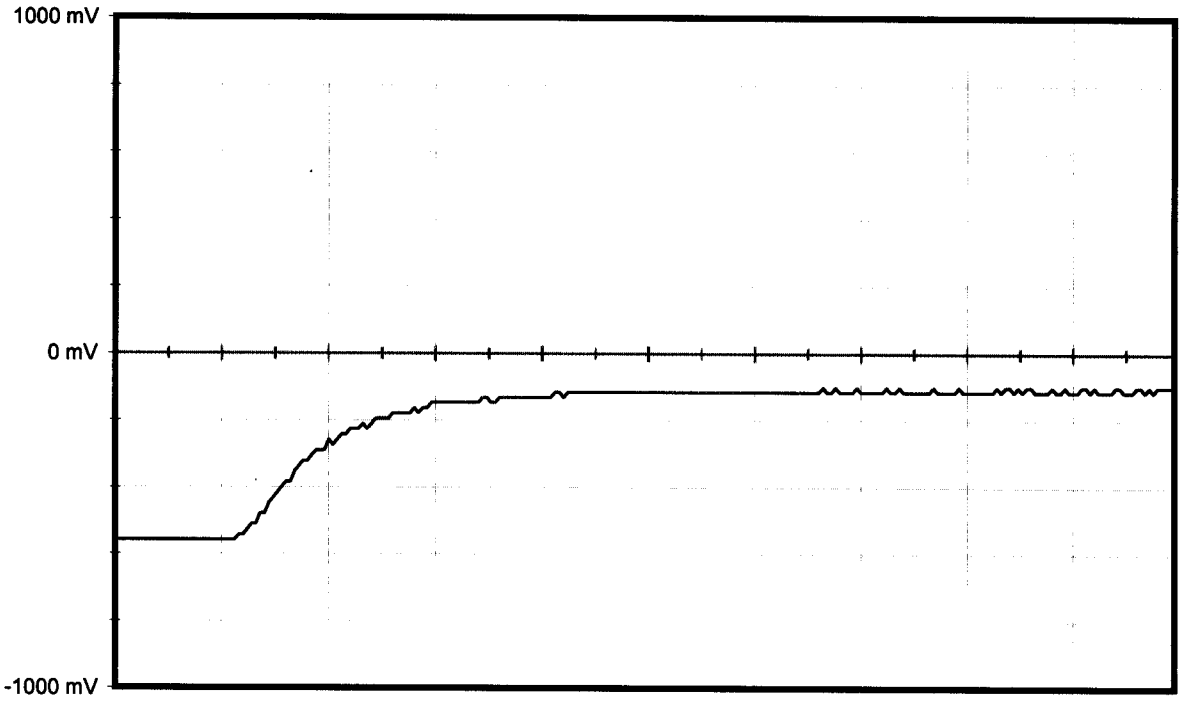




0 ms 10 ms 20 ms
Vmarker1 850 mv ==> 1,2 rd 2 ms/div.
Vmarker2 700 mv ==> 1 rd

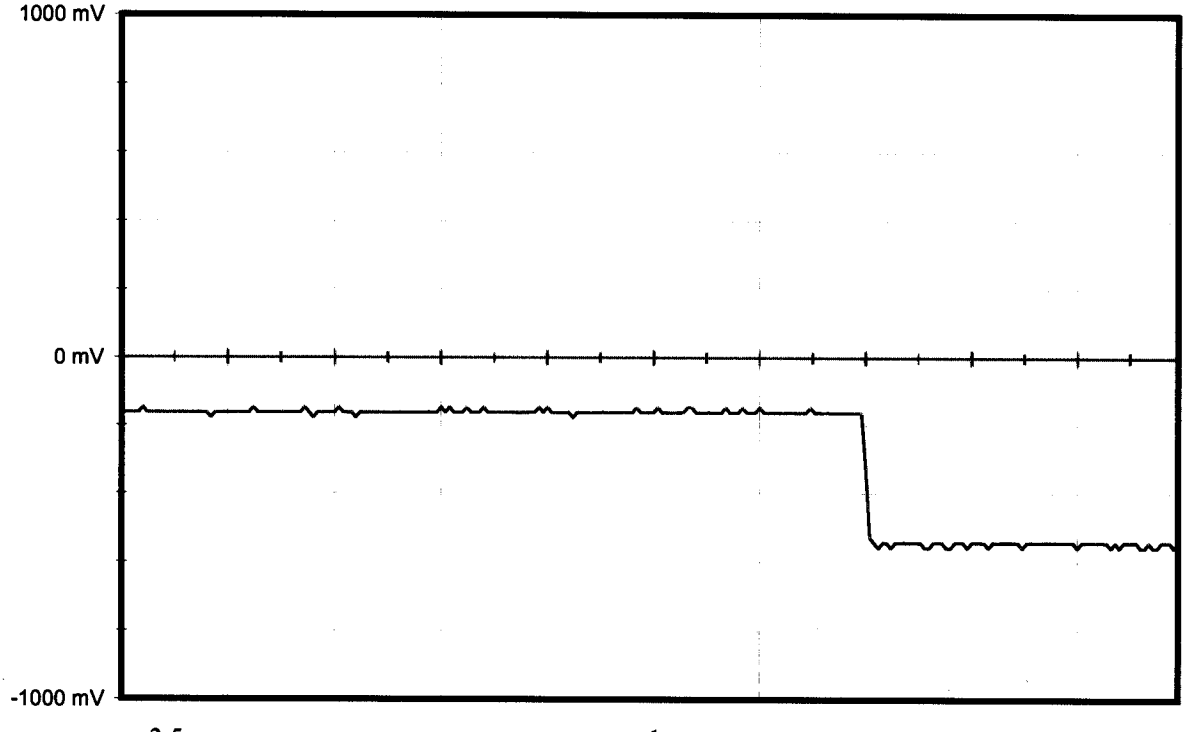


8 ms 10,5 ms 13 ms
Duty Cycle : 0,020 0,5 ms/div.
falltime(1)<= 79,8404 us risetime(1)<= 79,8404 us
+width(1) 1,21756 ms -widht(1) 1,26746 ms



-1 ms 1,5 ms 4 ms

risetime(1)<= 848,303 us 0,5 ms/div.



-3,5 ms -1 ms 1,5 ms

falltime(1)<= 29,9399 us 0,5 ms/div.

Certification Test at 22°C

Date of test : 18 Apr 2001

Manufacturer : ACR

Beacon Type : RLB35

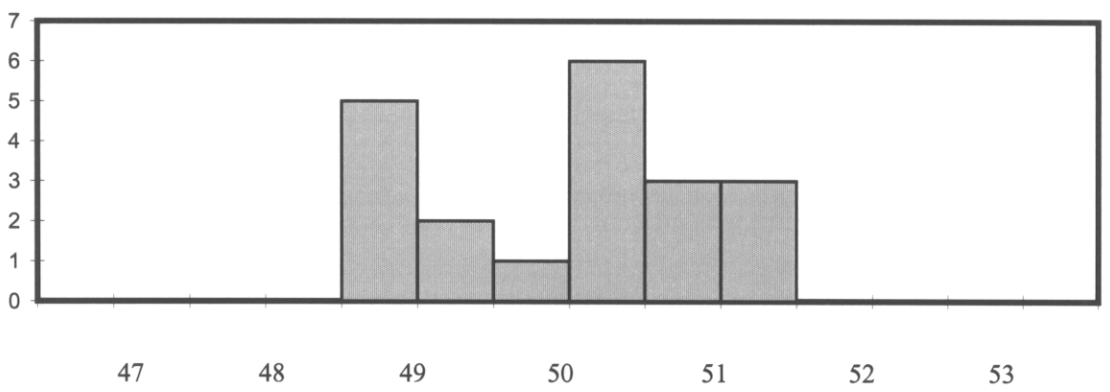
Number : 7

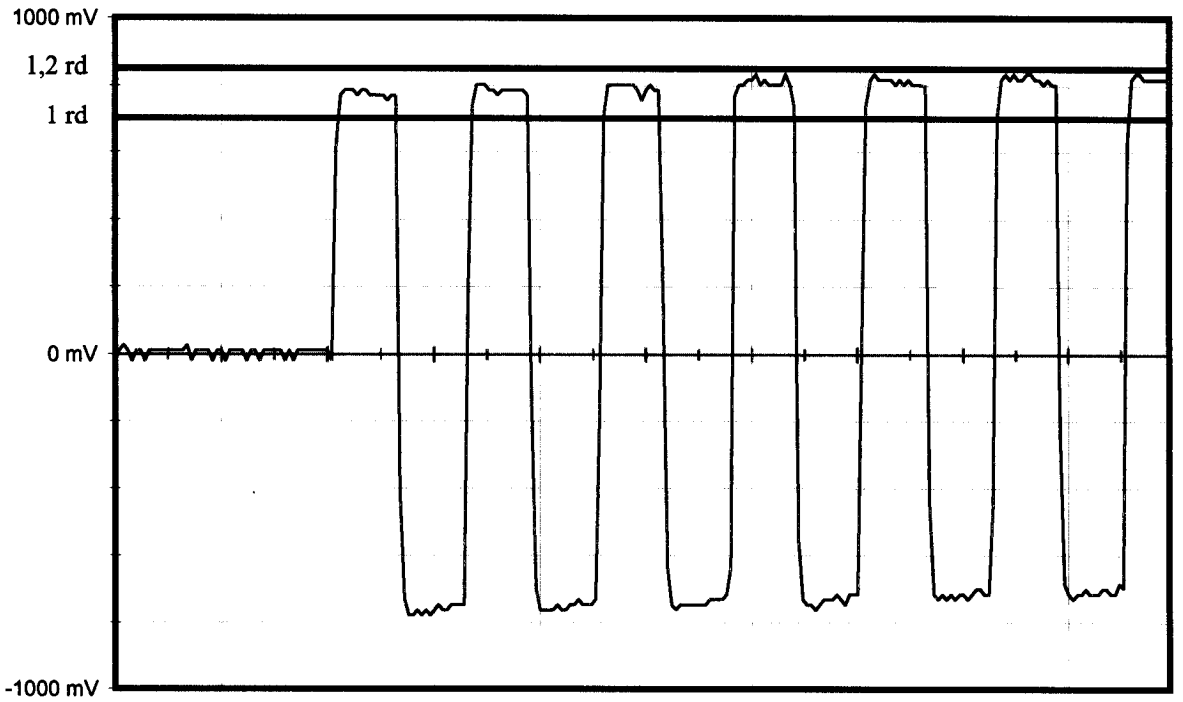
Message

Message received		FFFE2F96EE2EC0012C00221D917769FCB6D1
Format Flag	25	1
Protocol flag	26	0
Ident./Position code	27-85	0
Country Code/Country	27-36	366 / USA
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		
Calculated BCH1	25-85	87645
Readed BCH1	86-106	87645
Homing	112	1
Em.cod/nat.use/supp.data	107-112	110111
Encod pos data	111	1
Fixed Data "1"	108	1
Calculated BCH2	107-132	6D1
Readed BCH2	133-144	6D1
Latitude position		Nord 43° 33' 32"
Longitude position		Est 1° 28' 44"
Delta position		0,000 km

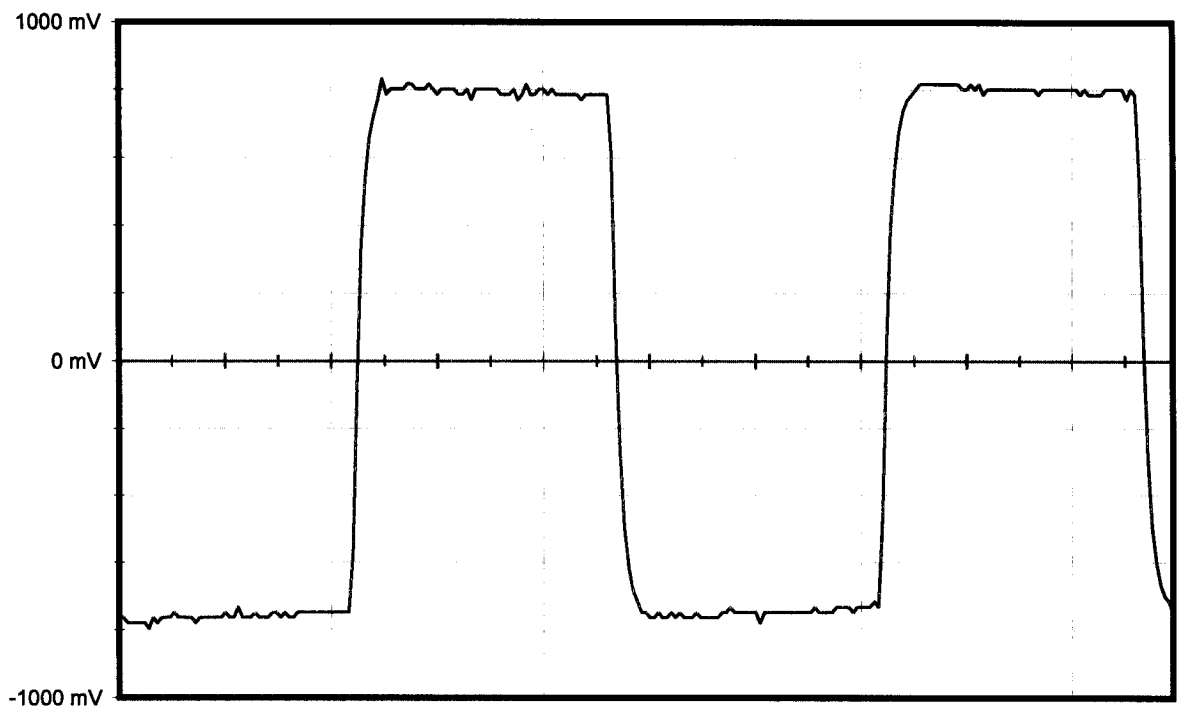
Electrical and other parameters

CW preamble	ms 158,4 <	< 162,6	160,37
Total transmission time	ms 513,8 <	<526,2	519,35
Modulation frequency	Hz 395,4<	< 404,6	401,29
Phase deviation : total	rd	<=2,40	2,27
Phase deviation : positive	rd 1,00 <	< 1,20	1,15
Phase deviation : negative	rd -1,20 <	< -1,00	-1,12
Symmetry measurement	%	<=5 %	2,01
Nominal frequency : F2	Hz		406024511,70
Short term2			1,34E-10
Short term3			3,23E-10
Slope			-2,99E-12
Residual			1,09E-10
406 MHz power output	dBm		37,5
Homing frequency	MHz		121,50
121,5 MHz power output	dBm		17,9
Soak temperature	°C		22,5
Extra feature			No

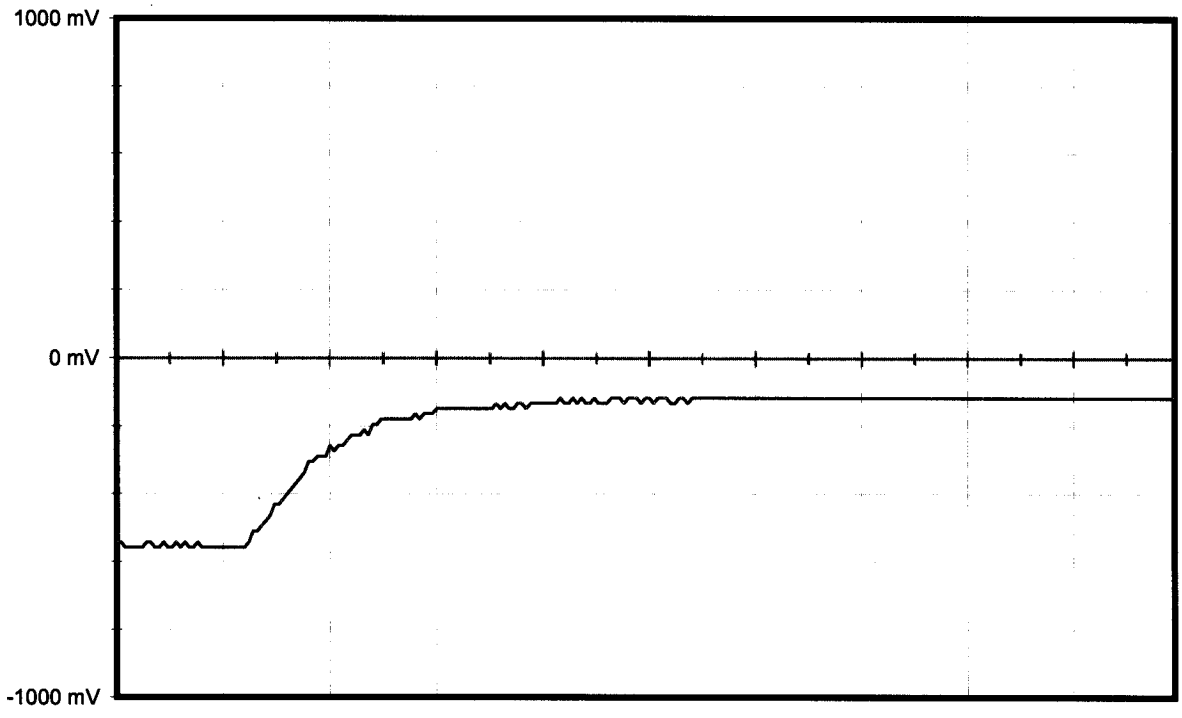




0 ms 10 ms 20 ms
Vmarker1 850 mv ==> 1,2 rd 2 ms/div.
Vmarker2 700 mv ==> 1 rd

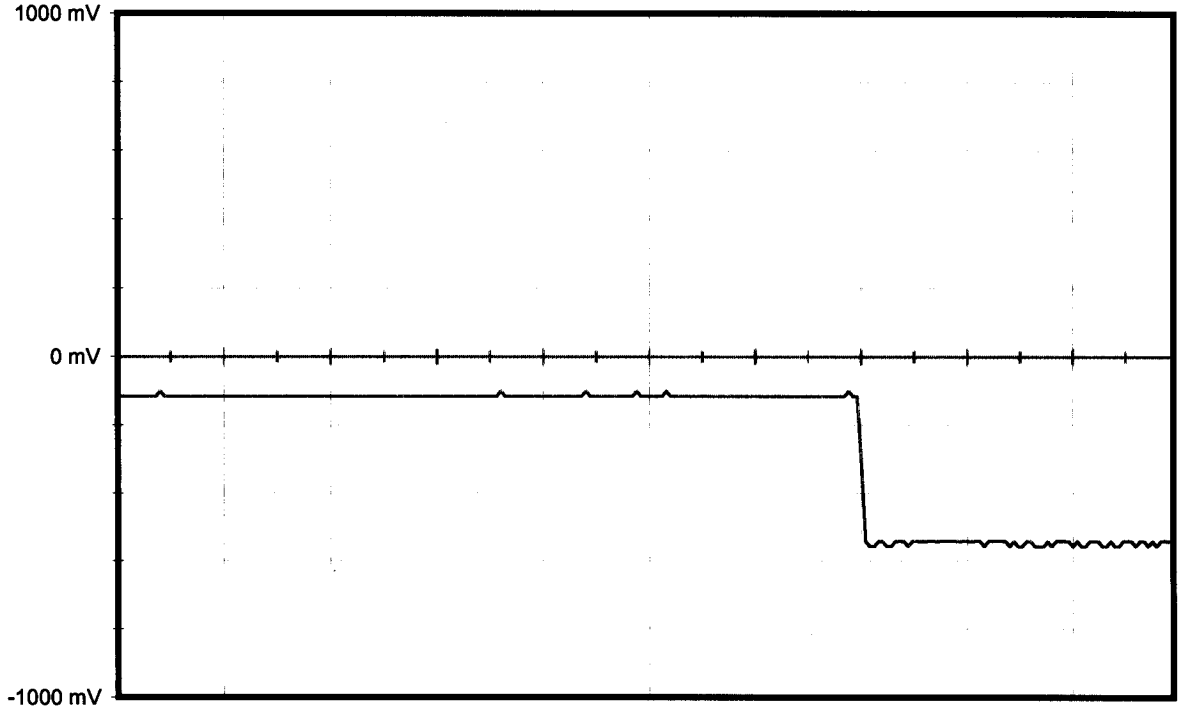


8 ms 10,5 ms 13 ms
Duty Cycle : 0,020 0,5 ms/div.
falltime(1)<= 89,8205 us risetime(1)<= 89,8205 us
+width(1) 1,21756 ms -widht(1) 1,26746 ms



-1 ms 1,5 ms 4 ms

risetime(1)<= 768,463 us 0,5 ms/div.



-3,5 ms -1 ms 1,5 ms

falltime(1)<= 19,9599 us 0,5 ms/div.

Certification Test at 55°C

Date of test : 19 Apr 2001

Manufacturer : ACR

Beacon Type : RLB35

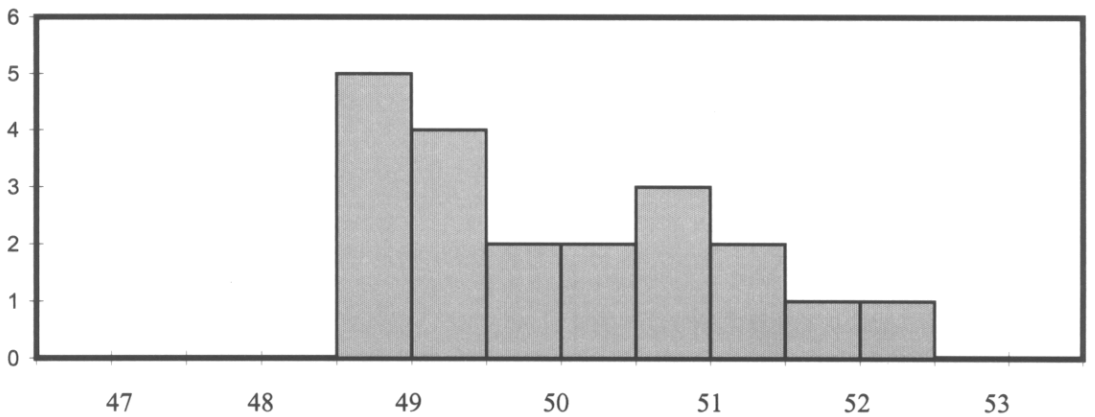
Number : 7

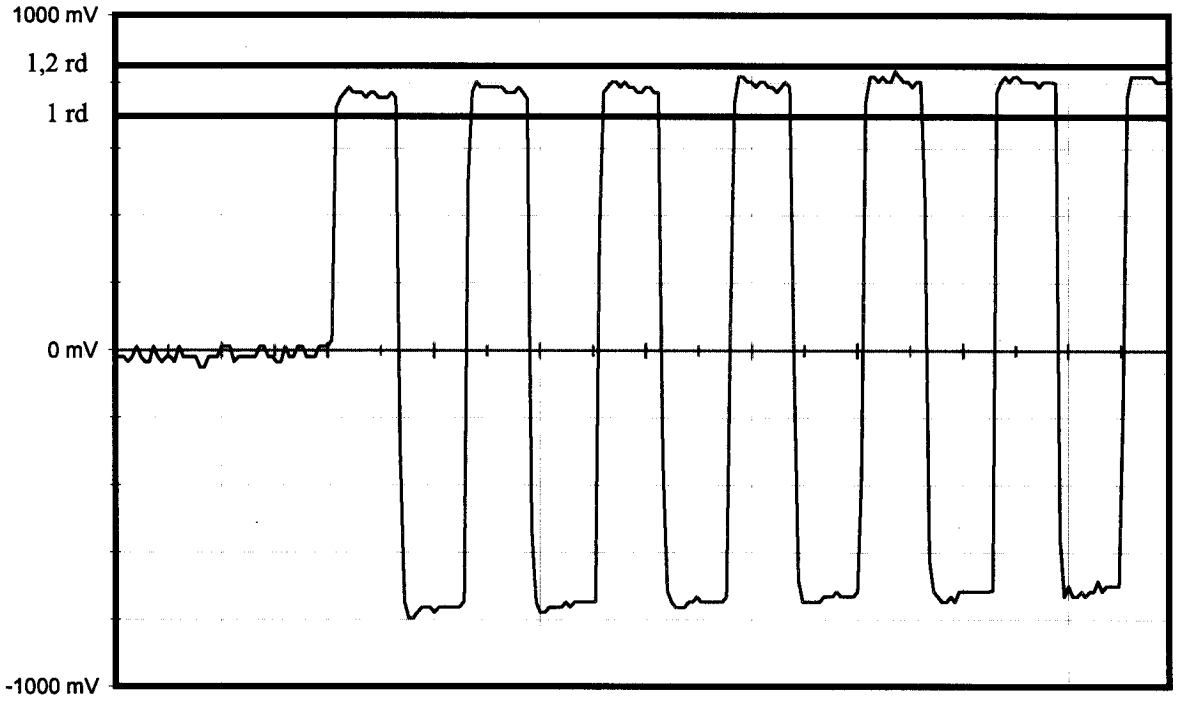
Message

Message received		FFFE2F96EE2EC0017FDFFC0A6D3783E0F66C
Format Flag	25	1
Protocol flag	26	0
Ident./Position code	27-85	0
Country Code/Country	27-36	366 / USA
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		
Calculated BCH1	25-85	1029B4
Readed BCH1	86-106	1029B4
Homing	112	1
Em.cod/nat.use/supp.data	107-112	110111
Encod pos data	111	1
Fixed Data "1"	108	1
Calculated BCH2	107-132	66C
Readed BCH2	133-144	66C
Latitude position		Nord 127,75° 0' 60"
Longitude position		Est 255,75° 0' 60"
Delta position		Default pos.

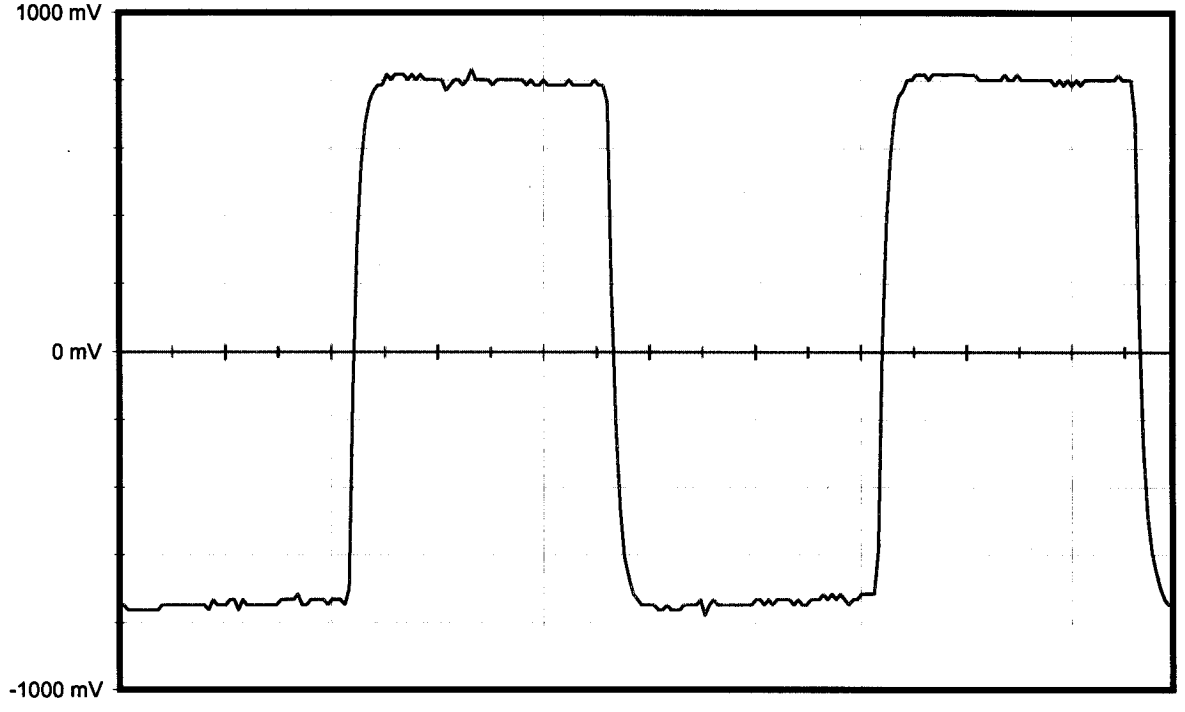
Electrical and other parameters

CW preamble	ms 158,4 <	< 162,6	160,35
Total transmission time	ms 513,8 <	<526,2	519,35
Modulation frequency	Hz 395,4<	< 404,6	401,29
Phase deviation : total	rd	<=2,40	2,26
Phase deviation : positive	rd 1,00 <	< 1,20	1,15
Phase deviation : negative	rd -1,20 <	< -1,00	-1,11
Symmetry measurement	%	<=5 %	2,40
Nominal frequency : F2	Hz		406024502,04
Short term2			1,86E-10
Short term3			1,05E-10
Slope			-1,67E-10
Residual			1,10E-10
406 MHz power output	dBm		37,6
Homing frequency	MHz		121,50
121,5 MHz power output	dBm		17,6
Soak temperature	°C		19,1
Extra feature			No

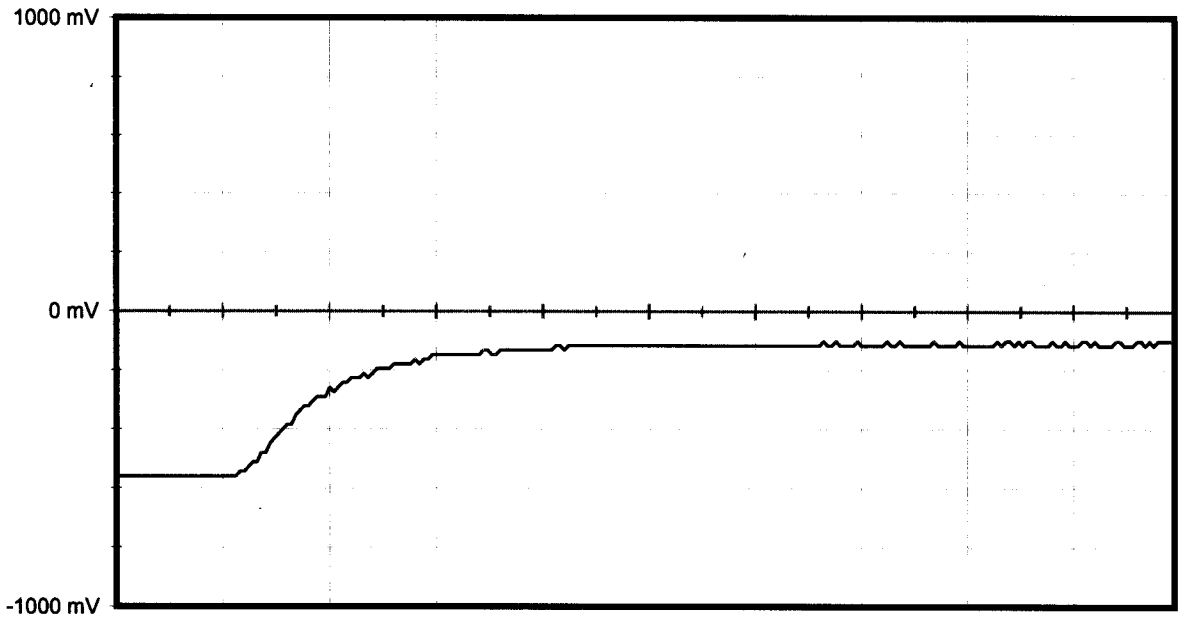




0 ms 10 ms 20 ms
Vmarker1 850 mv ==> 1,2 rd 2 ms/div.
Vmarker2 700 mv ==> 1 rd

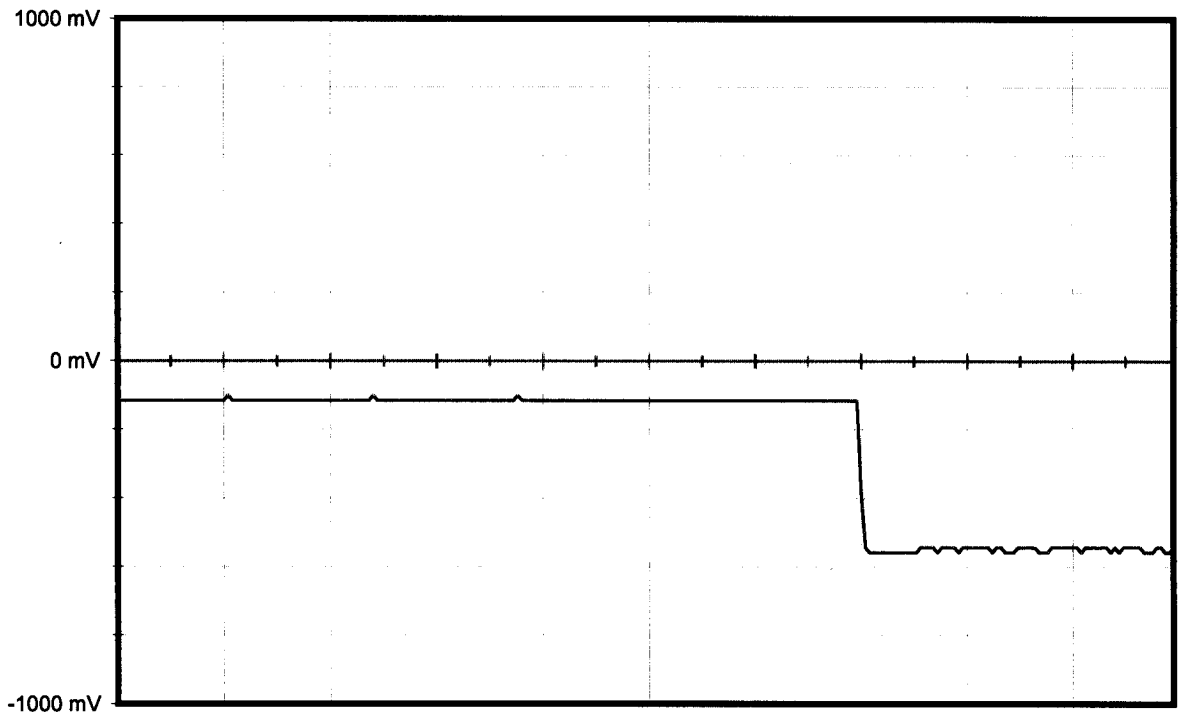


8 ms 10,5 ms 13 ms
Duty Cycle : 0,024 0,5 ms/div.
falltime(1)<= 79,8404 us risetime(1)<= 79,8404 us
+width(1) 1,21756 ms -widht(1) 1,27744 ms



-1 ms 1,5 ms 4 ms

risetime(1)<= 848,303 us 0,5 ms/div.



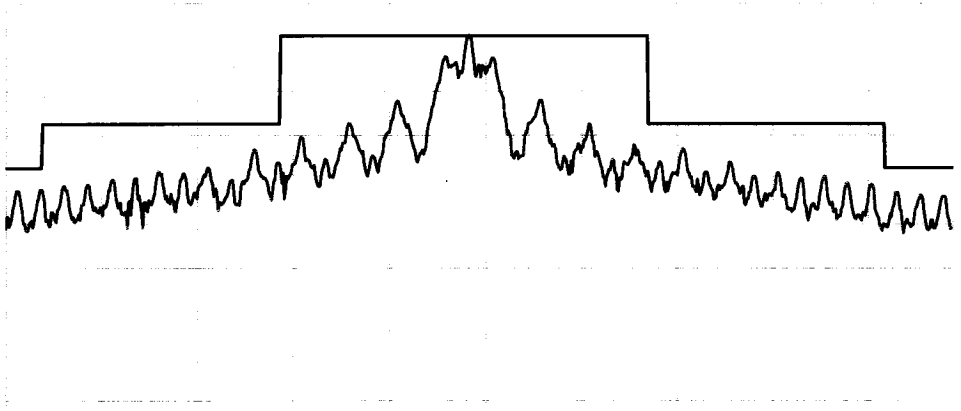
-3,5 ms -1 ms 1,5 ms

falltime(1)<= 29,9399 us 0,5 ms/div.

SPURIOUS EMISSIONS RESULTS
RLB35 ACR Electronics, Inc.
N° 7
at -40° C, 22° C and 55° C

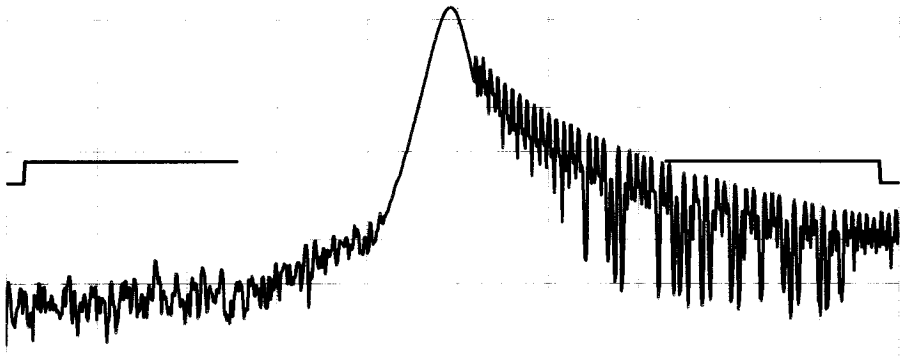
ACR Electronics, Inc.
RLB35
7
Certification nominale
406 MHz
-40 °C

CF : 406,025 MHz SP : 16 KHz



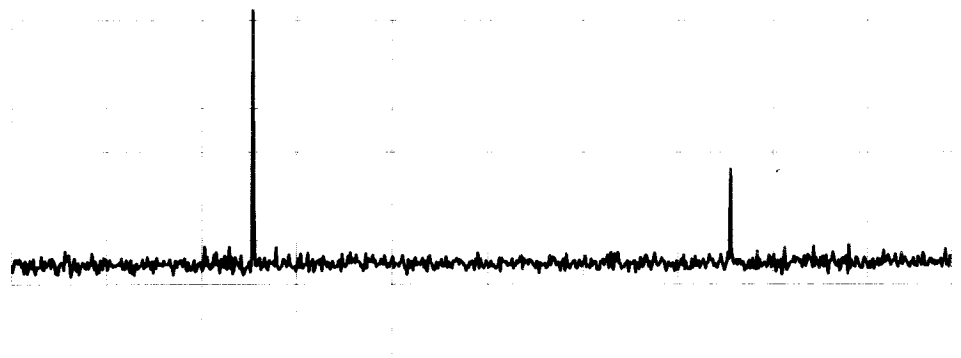
Rb : 0,1 KHz 10 dB/div. St : 4,8 S

CF : 406,025 MHz SP : 50 KHz



Rb : 1 KHz 10 dB/div. St : 0,305 S

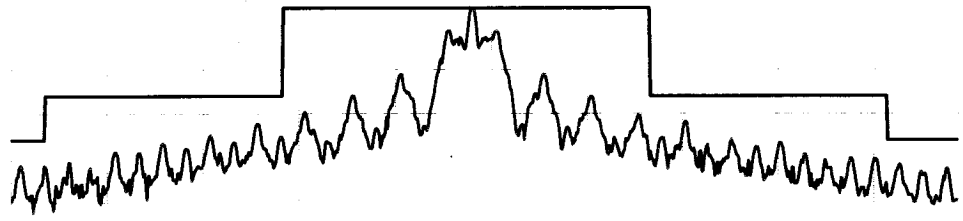
CF : 600 MHz Delta : -36,21 dB SP : 800000 KHz



Rb : 100 KHz 10 dB/div. St : 0,24 S

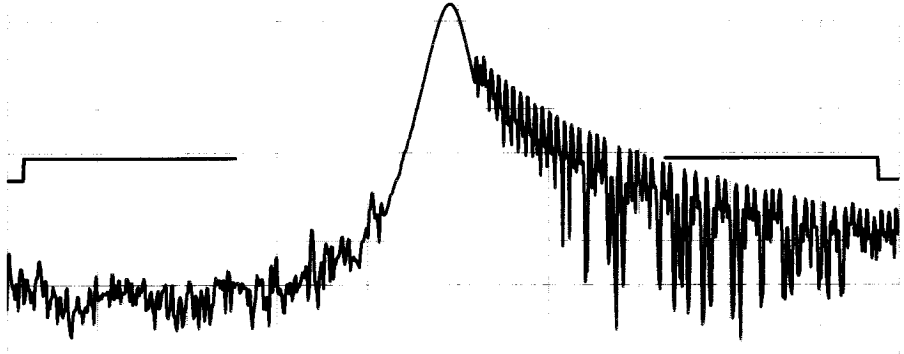
ACR Electronics, Inc.
RLB35
7
Certification nominale
406 MHz
22 °C

CF : 406,025 MHz SP : 16 KHz



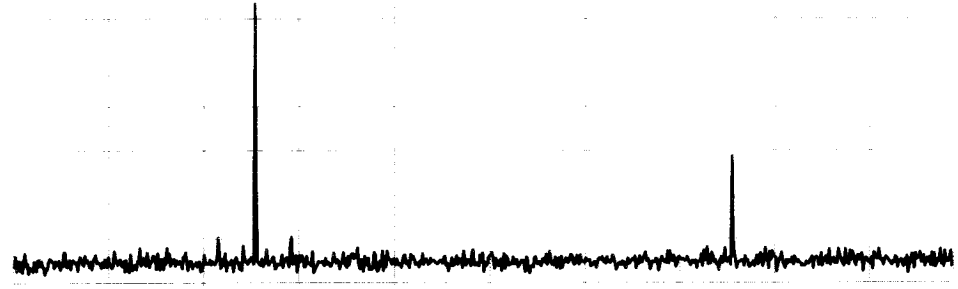
Rb : 0,1 KHz 10 dB/div. St : 4,8 S

CF : 406,025 MHz SP : 50 KHz



Rb : 1 KHz 10 dB/div. St : 0,305 S

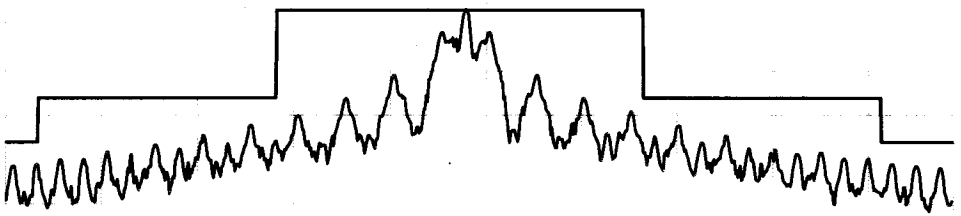
CF : 600 MHz Delta : -34,72 dB SP : 800000 KHz



Rb : 100 KHz 10 dB/div. St : 0,24 S

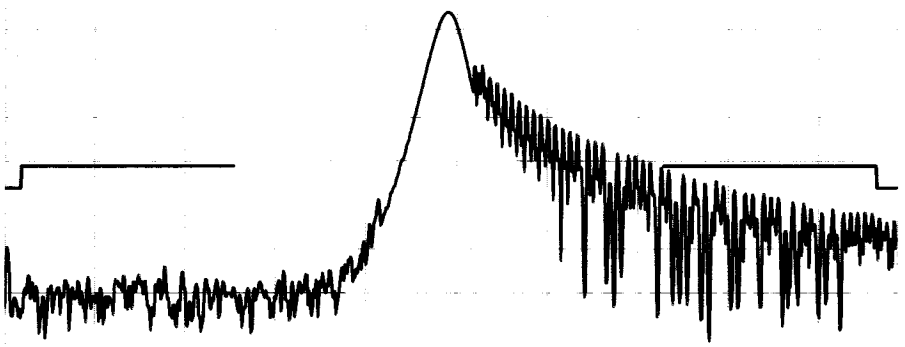
ACR Electronics, Inc.
RLB35
7
Certification nominale
406 MHz
55 °C

CF : 406,025 MHz SP : 16 KHz



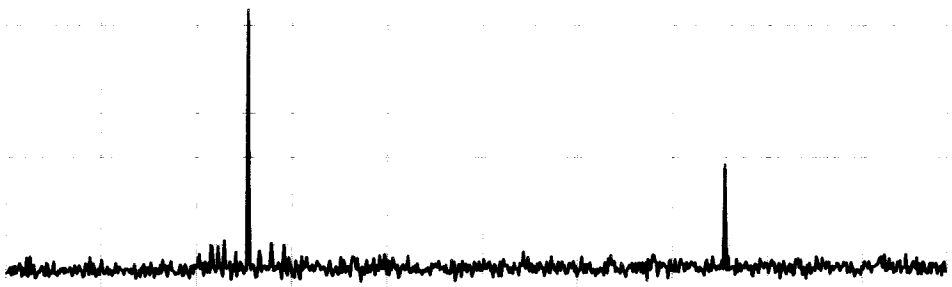
Rb : 0,1 KHz 10 dB/div. St : 4,8 S

CF : 406,025 MHz SP : 50 KHz



Rb : 1 KHz 10 dB/div. St : 0,305 S

CF : 600 MHz Delta : -35,15 dB SP : 800000 KHz



Rb : 100 KHz 10 dB/div. St : 0,24 S

406 MHz VSWR 3:1 TEST RESULTS ON
RLB35 ACR Electronics, Inc.
N° 7

at -40° C, 22° C and 55° C

Certification Test VSWR at -40°C

Date of test : 25 Apr 2001

Manufacturer : ACR

Beacon Type : RLB35

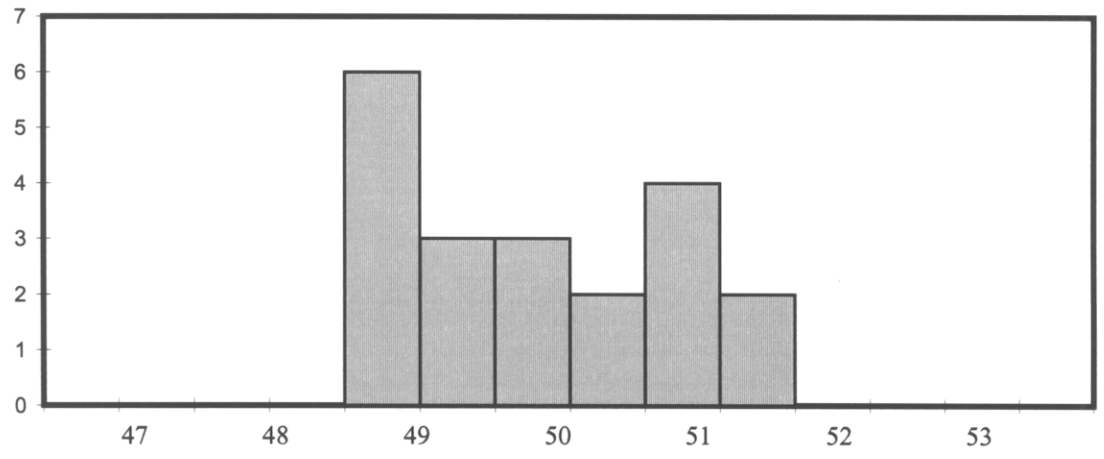
Number : 7

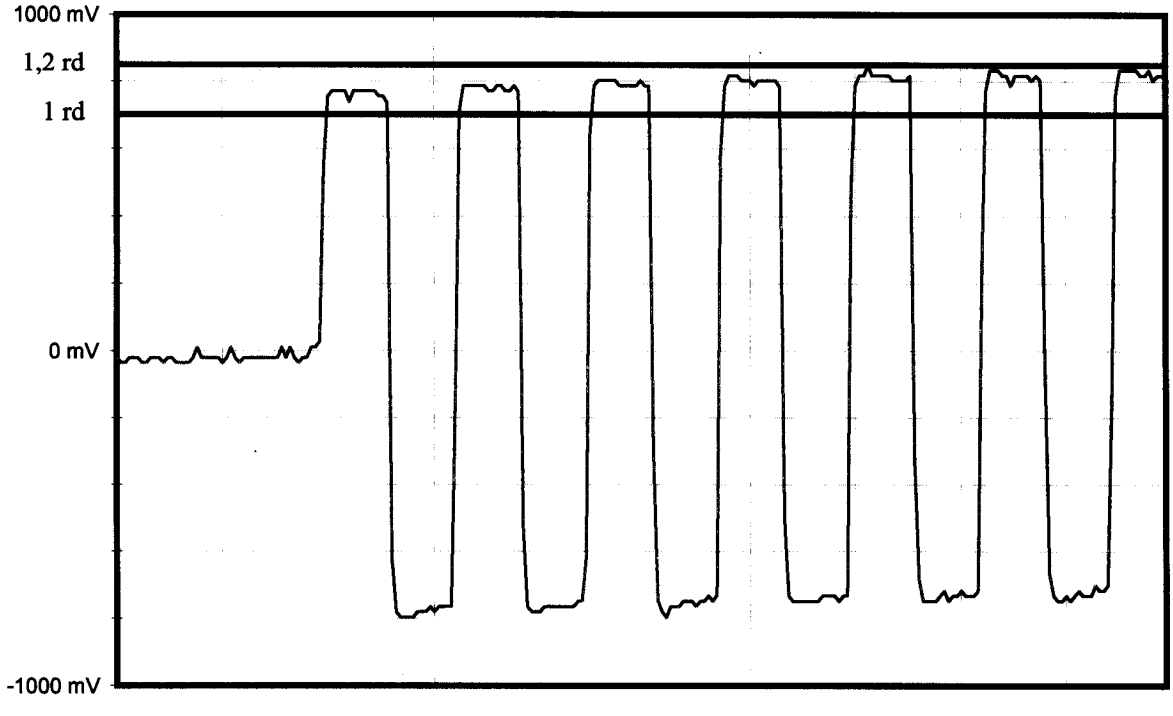
Message

Message received		FFFE2F96EE2EC0012C00221D9177693CA1AF
Format Flag	25	1
Protocol flag	26	0
Ident./Position code	27-85	0
Country Code/Country	27-36	366 / USA
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		
Calculated BCH1	25-85	87645
Readed BCH1	86-106	87645
Homing	112	1
Em.cod/nat.use/supp.data	107-112	110111
Encod pos data	111	1
Fixed Data "1"	108	1
Calculated BCH2	107-132	1AF
Readed BCH2	147-144	1AF
Latitude position		Nord 43° 33' 44"
Longitude position		Est 1° 28' 40"
Delta position		0,000 km

Electrical and other parameters

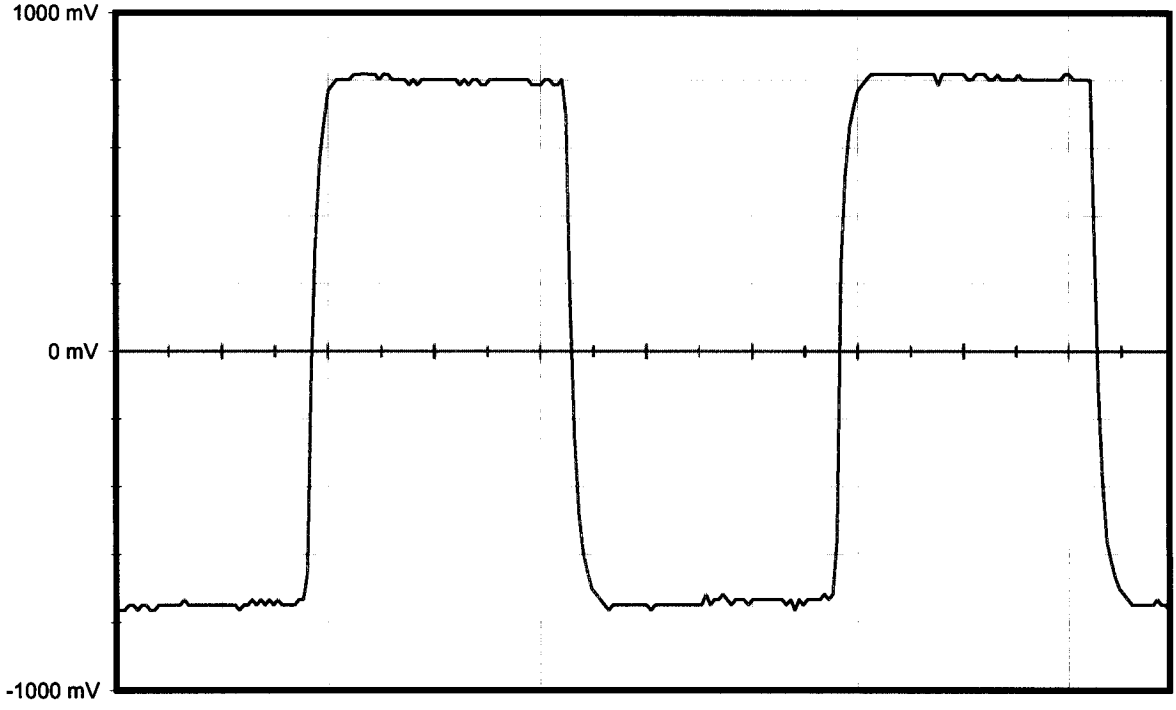
Rise time Modulation	ms			0,0798
Fall time Modulation	ms			0,0898
Phase deviation :positive	rd	1,00 <	< 1,20	1,16
Phase deviation : negative	rd	-1,20 <	< -1,00	-1,11
Symmetry measurement	%		<=5 %	1,61
Nominal frequency : F2	Hz			406024579,01





Vmarker1 850 mv ==> 1,2 rd
Vmarker2 700 mv ==> 1 rd

2 ms/div.



Duty Cycle : 0,016
falltime(1)<= 89,8205 us
+width(1) 1,21756 ms

0,5 ms/div.
risetime(1)<= 79,8404 us
-widht(1) 1,25749 ms

Certification Test VSWR at 22°C

Date of test : 27 Apr 2001

Manufacturer : ACR

Beacon Type : RLB35

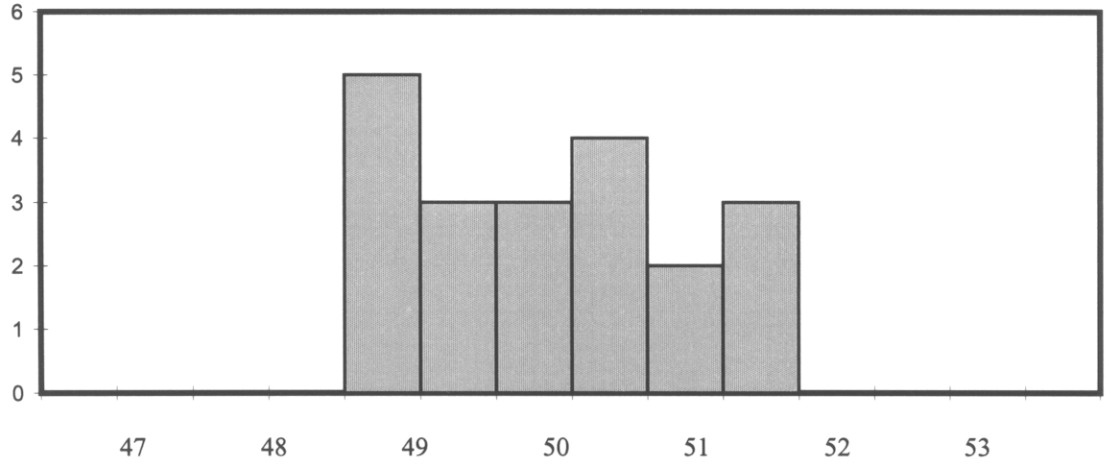
Number : 7

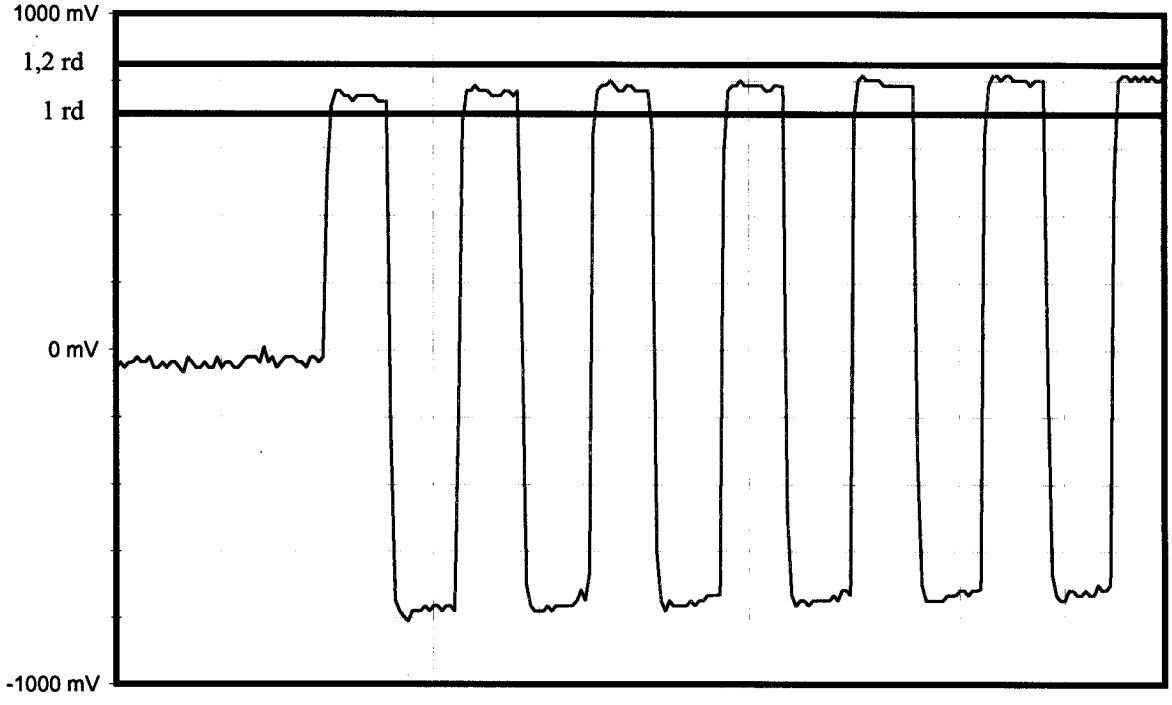
Message

Message received		FFFE2F96EE2EC0017FDFFC0A6D3783E0F66C
Format Flag	25	1
Protocol flag	26	0
Ident./Position code	27-85	0
Country Code/Country	27-36	366 / USA
Protocol Code : U/Std-Nat	37-39/37-40	1110
Protocol Code Used	37-39/37-40	Test-Standard Location
Identification Data	40-85/41-64/41-5	
Identification Used		
Calculated BCH1	25-85	1029B4
Readed BCH1	86-106	1029B4
Homing	112	1
Em.cod/nat.use/supp.data	107-112	110111
Encod pos data	111	1
Fixed Data "1"	108	1
Calculated BCH2	107-132	66C
Readed BCH2	147-144	66C
Latitude position		Nord 127,75° 0' 60"
Longitude position		Est 255,75° 0' 60"
Delta position		Default pos.

Electrical and other parameters

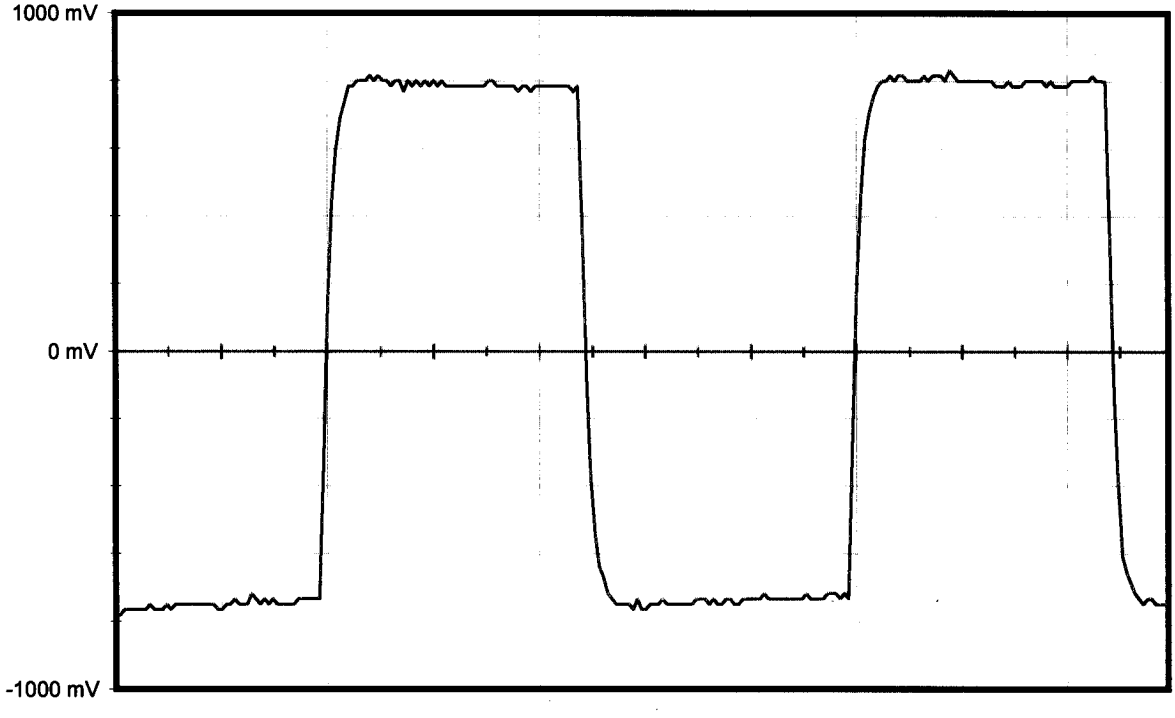
Rise time Modulation	ms			0,0798
Fall time Modulation	ms			0,0898
Phase deviation :positive	rd	1,00 <	< 1,20	1,13
Phase deviation : negative	rd	-1,20 <	< -1,00	-1,13
Symmetry measurement	%		<=5 %	2,40
Nominal frequency : F2	Hz			406024495,15





Vmarker1 850 mv ==> 1,2 rd
Vmarker2 700 mv ==> 1 rd

2 ms/div.



Duty Cycle : 0,024
falltime(1)<= 89,8205 us
+width(1) 1,21756 ms

0,5 ms/div.
risetime(1)<= 79,8404 us
-widht(1) 1,27745 ms

Certification Test VSWR at 55°C

Date of test : 19 Apr 2001

Manufacturer : ACR

Beacon Type : RLB35

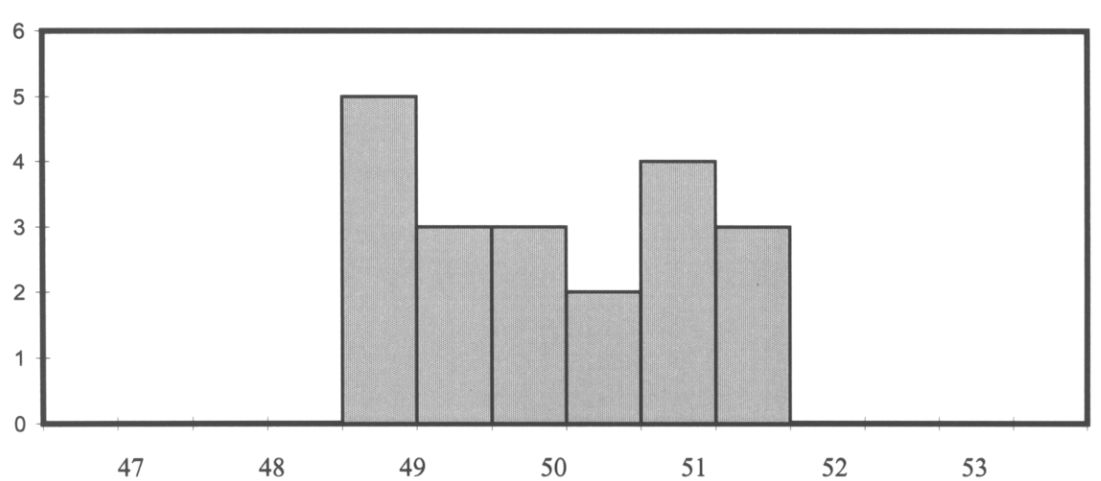
Number : 7

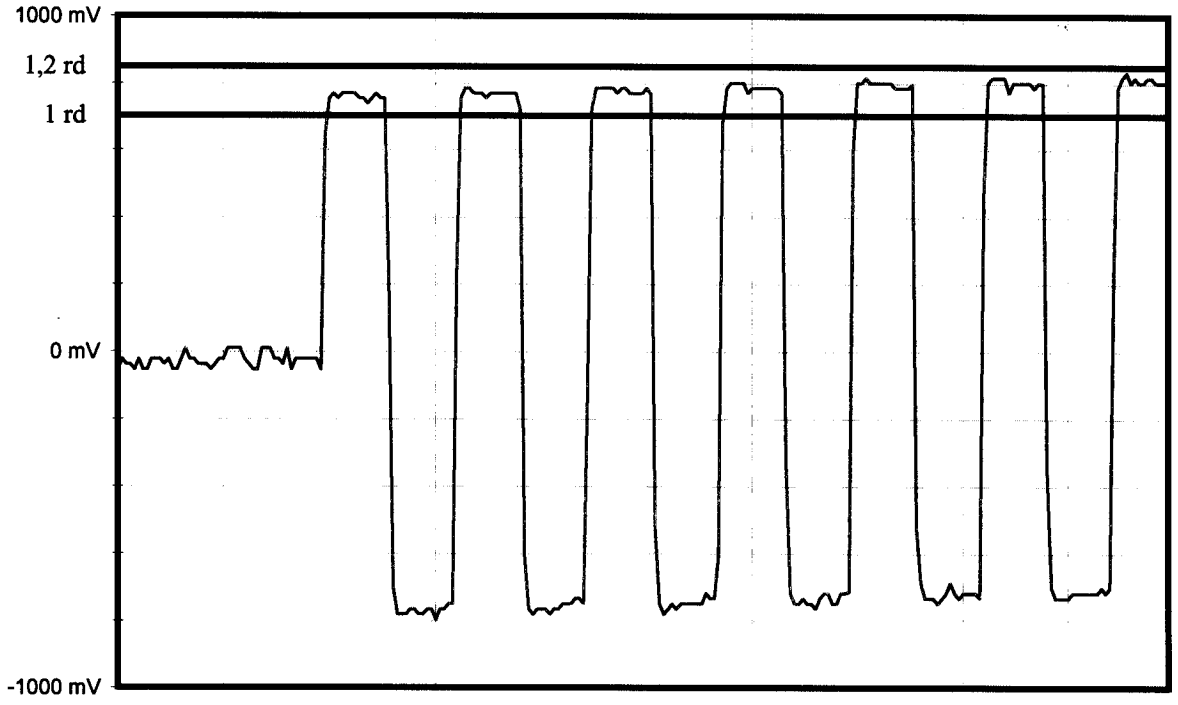
Message

Message received		FFFE2F96EE2EC0017FDFFC0A6D3783E0F66C
Format Flag	25	1
Protocol flag	26	0
Ident./Position code	27-85	0
Country Code/Country	27-36	366 / USA
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		
Calculated BCH1	25-85	1029B4
Readed BCH1	86-106	1029B4
Homing	112	1
Em.cod/nat.use/supp.data	107-112	110111
Encod pos data	111	1
Fixed Data "1"	108	1
Calculated BCH2	107-132	66C
Readed BCH2	147-144	66C
Latitude position		Nord 127,75° 0' 60"
Longitude position		Est 255,75° 0' 60"
Delta position		Default pos.

Electrical and other parameters

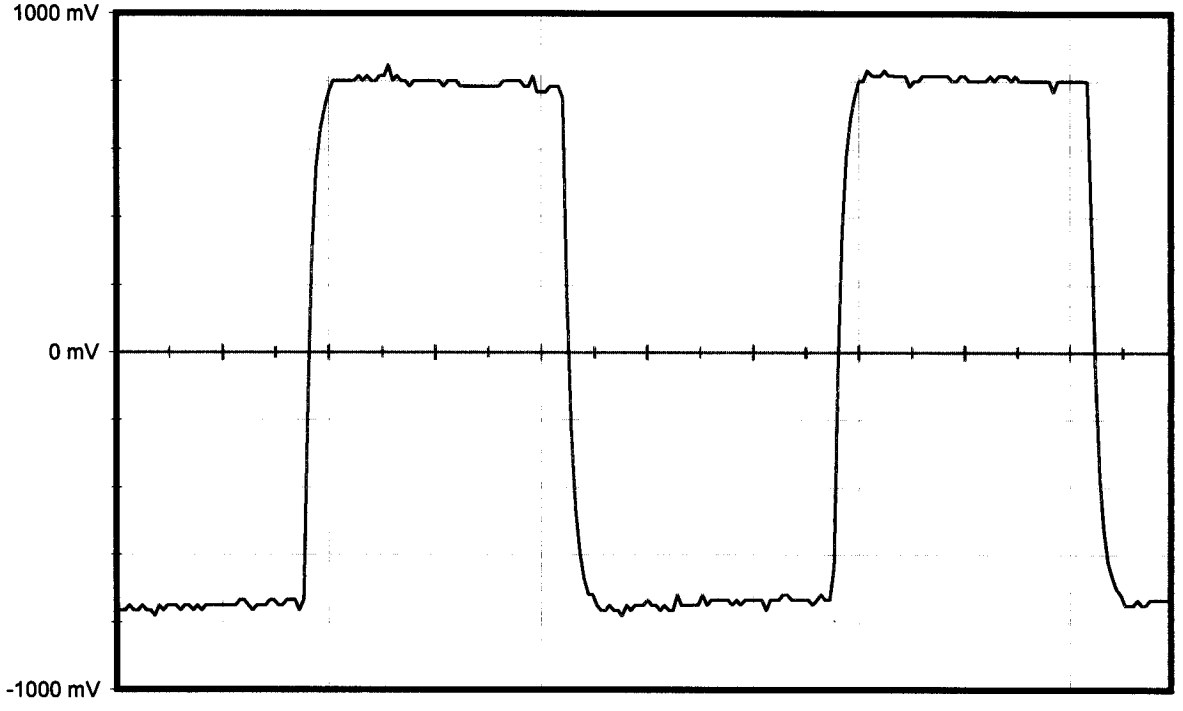
Rise time Modulation	ms			0,0898
Fall time Modulation	ms			0,0798
Phase deviation :positive	rd	1,00 <	< 1,20	1,14
Phase deviation : negative	rd	-1,20 <	< -1,00	-1,09
Symmetry measurement	%		<=5 %	2,40
Nominal frequency : F2	Hz			406024502,93





Vmarker1 850 mv ==> 1,2 rd
Vmarker2 700 mv ==> 1 rd

2 ms/div.



Duty Cycle : 0,024
falltime(1)<= 89,8205 us
+width(1) 1,21756 ms

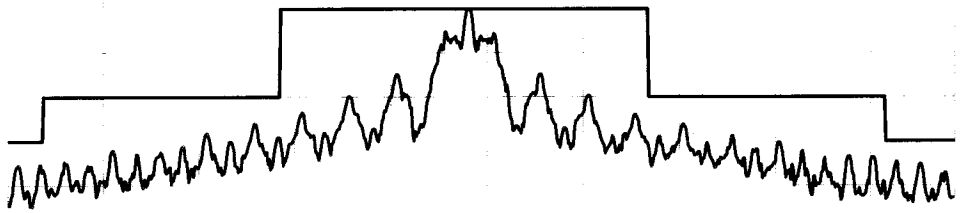
0,5 ms/div.
risetime(1)<= 79,8404 us
-widht(1) 1,27745 ms

VSWR SPURIOUS EMISSIONS RESULTS
RLB35 ACR Electronics, Inc.
N° 7

at -40° C, 22° C and 55° C

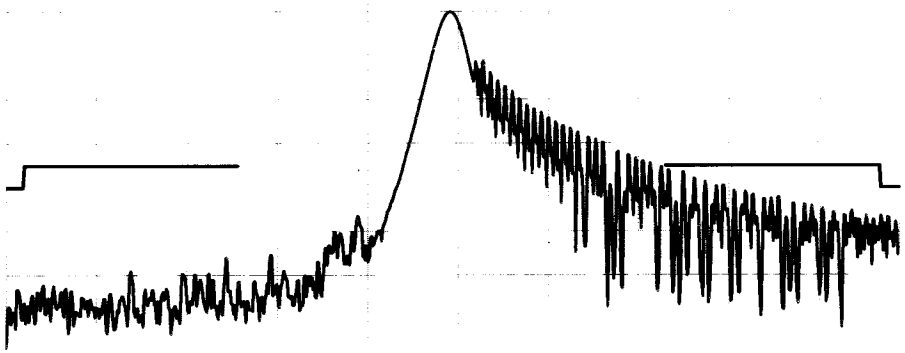
ACR Electronics, Inc.
RLB35
7
Certification VSWR
406 MHz
-40 °C

CF : 406,025 MHz SP : 16 KHz



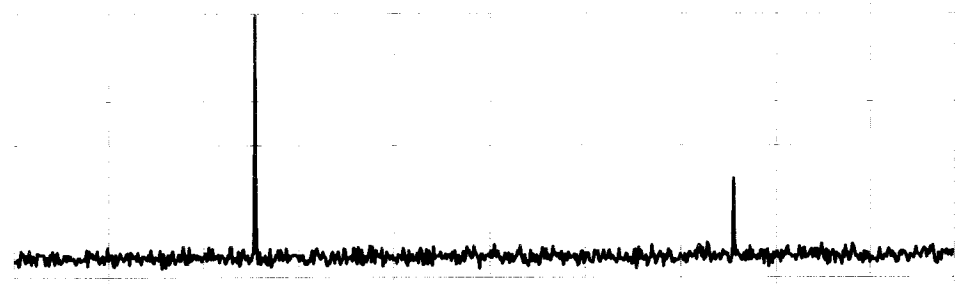
Rb : 0,1 KHz 10 dB/div. St : 4,8 S

CF : 406,025 MHz SP : 50 KHz



Rb : 1 KHz 10 dB/div. St : 0,305 S

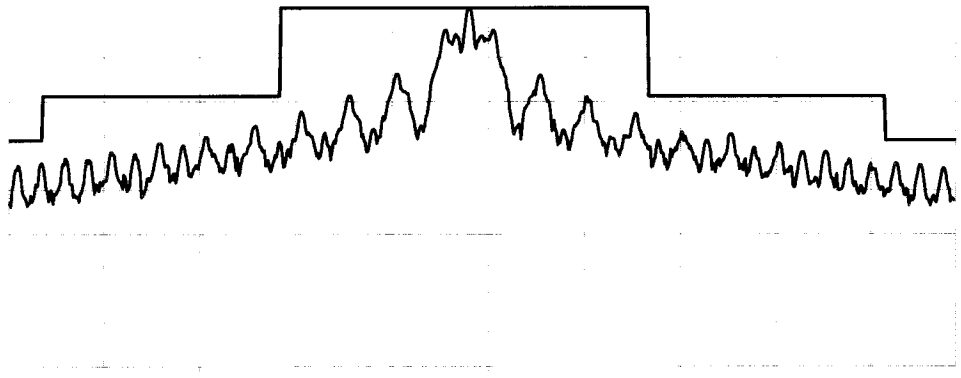
CF : 600 MHz Delta : -37,09 dB SP : 800000 KHz



Rb : 100 KHz 10 dB/div. St : 0,24 S

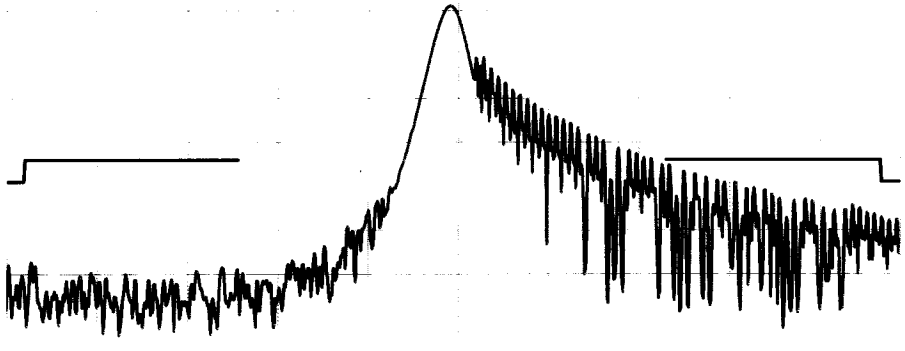
ACR Electronics, Inc.
RLB35
7
Certification VSWR
406 MHz
22 °C

CF : 406,025 MHz SP : 16 KHz



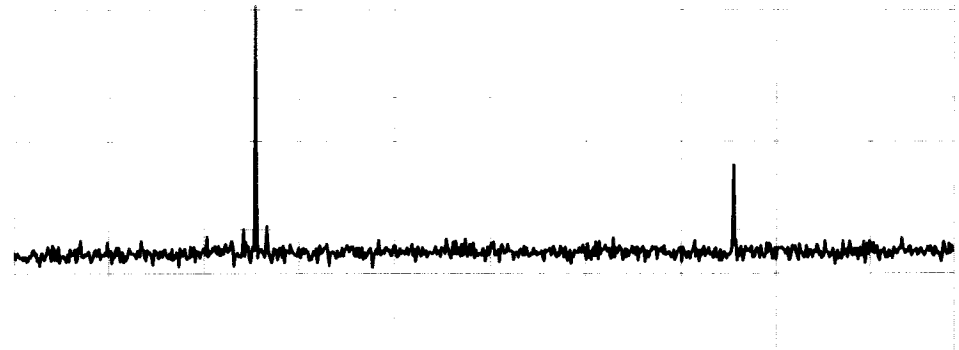
Rb : 0,1 KHz 10 dB/div. St : 4,8 S

CF : 406,025 MHz SP : 50 KHz



Rb : 1 KHz 10 dB/div. St : 0,305 S

CF : 600 MHz Delta : -36,09 dB SP : 800000 KHz



Rb : 100 KHz 10 dB/div. St : 0,24 S