

STB100 Beacon Test Bench
 Technical Specifications
 Revision 2.00

STB100	Options			
	-add AIS (Rx)	-add AIS (Rx&Tx)	-add SGB	

406 MHz Measurements					Uncertainty			
First Generation Beacon								
Measures all Cospas-Sarsat Frequency Channels						•	✓	
15 HEX ID & Full HEX						•	✓	
Decodes all Cospas-Sarsat protocols						•	✓	
Frequency (Ext Ref)						•	± 1 Hz	
Frequency (Int Ref)						•	± 50 Hz	
Leaving factory						•	± 1.0 ppm/yr	
Long Term						•	± 1.0 ppm/yr	
Frequency Stability ¹ (using Ext Reference)	Nominal Frequency	•				± 2.5 x 10 ⁻¹¹		
	Short Term	•						
	Medium Term – Mean Slope	•						
	Medium Term - Residual	•						
Power ²						•	± 0.25 dB	
Power rise time						•	± 0.5 ms	
Pre-burst level						•	± 1.0 dB	
Pulse Repetition period						•	± 10 ms	
Bit rate						•	± 0.1 bps	
CW preamble time						•	± 0.8 ms	
Total transmission time						•	± 0.8 ms	
Rise time						•	± 10 µs	
Fall time						•	± 10 µs	
Phase deviation: positive						•	± 0.02 rad	
Phase deviation: negative						•	± 0.02 rad	
Modulation phase symmetry						•	± 0.005	
Second Generation Beacon (SGB)								
Decodes all Cospas-Sarsat Protocols						•	✓	
23 HEX ID and Full HEX						•	✓	
Power						•	± 0.25 dB	
Power Rise/Fall Time						•	± 0.1 ms	
Pre-Burst and Post-Burst Level						•	± 1.0 dB	
Total Transmission Time						•	± 0.25 ms	
Nominal Frequency (Ext Ref)						•	± 25 Hz	
(Int Ref) Leaving Factory						•	± 25 Hz	
(Int Ref) Long Term						•	± 1.0 ppm/yr	
Frequency Stability						•	Coming Soon	
Chip Rate Average						•	± 0.05 cps	
Chip Rate Variation						•	± 0.05 cps ²	
I, Q Relative Offset						•	± 0.5 %	
I, Q Peak to Peak Amplitude						•	± 0.5 %	
Out-of-Band Emissions						•	± 0.1 %	
Error Vector Magnitude						•	± 1.0 %	
121.5/243 MHz Measurements								
Frequency (Ext Ref)						•	± 30 Hz	
Frequency (Int Ref)						•	± 60 Hz	
Leaving factory						•	± 1.0 ppm/yr	
Long Term						•	± 1.0 ppm/yr	
Peak Power						•	± 1.0 dB	
Sweep Direction						•	✓	
Audio Frequency - upper						•	± 30 Hz	
Audio Frequency - lower						•	± 30 Hz	
Audio Sweep Range						•	± 60 Hz	
Modulation Index						•	± 5%	
Sweep Rep Rate						•	± 0.1 Hz	
Duty Cycle						•	± 2%	
AIS Measurements								
Frequency (AIS1 & AIS2) (Ext Ref)						•	•	± 30 Hz
Frequency (AIS1 & AIS2) (Int Ref)						•	•	± 60 Hz
Leaving factory						•	•	± 1.0 ppm/yr
Long Term						•	•	± 1.0 ppm/yr
Power						•	•	± 1.0 dB
AIS Messages Decode						•	•	✓
Tx AIS Transceiver (Class A & B)						•	•	✓
Graphic Measurements								
-406 spectrum mask graphics data						•	•	✓
-406 output power during burst graphic data						•	•	✓
-406 phase modulation graphics data						•	•	✓

Interface Parameters		
50 Ω RF Input		
Connector	BNC-f	
VSWR	1.20:1	
Dynamic Range	406 MHz Burst	+20 dBm to +43 dBm
	121.5 MHz/243 MHz	+5 dBm to +35 dBm
	AIS	+20 dBm to +43 dBm
Absolute Maximum Input Level (Burst)		+43 dBm
Absolute Maximum Input Level (Continuous)		+35 dBm
Antenna RF Input		
RF Range		
406 MHz	>10 m	
121.5 MHz/243 MHz	>2 m	
AIS	>10 m	
Connector	SMA-m (RP)	
Absolute Maximum Input Level		10 dBm
10 MHz Input		
Connector	SMA-f	
VSWR	1.20:1	
Input Level Range		-10 to +10 dBm
GPS ANT Input		
Connector	SMA-f	
Bias		+5V current limited
USER I/O Connector		
Connector	D-subminiature, 26 pin, HD	
Functions:		
-AUX I/O	-8 I/O lines, 5V TTL Tolerant	
-AUX ADC	-8 analog inputs, 0V -12 V	
-RELAY1	-Relay1 NC/NO 60V 2A	
-RELAY2	-Relay2 NC/NO 60V 2A	
-PPS Out	-GPS 1 PPS Output	
-GPS Tx	-GPS Tx	
-GPS Rx	-GPS Rx	
-Ground	-Ground	
PPS OUT		
Connector	SMA-f	
Level		Logic level
AC Power Input		
Connector	IEC 320 Appliance Input	
Fuse	240V 1A	
Voltage	85-264 VAC	
Frequency	47-63 Hz	
Environmental and Mechanical		
Operating Temperature Range		+10°C to +35°C
Storage Temperature Range		-20°C to +60°C
Temperature Probe type		RTD
Dimensions: w x l x h mm (inches)		210 (8.3) x 280 (11.1) x 64 (2.5)
Weight		2.73 kg (6.0 lbs)

Miscellaneous Measurements	Range	Uncertainty
Vin @ DC PWR IN	1V to 30V	± 2%
Vout @DC PWR OUT	1V to 30V	± 2%
Iout @DC PWR OUT	5mA to 8A	± 2% (>100mA)
leakage current @DC PWR OUT	200 nA to 40 µA	± 5%
Vdropout (Vin to Vout)	100 mV at 2 A	<
Aux Analog Input (Aux ADCn)	0 – 12V	± 2%
Temperature (probe 1 and probe 2)	-60°C to +75°C	± 0.5 C°

¹User must supply a stable 10MHz Reference

² 35-39 dBm

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Preliminary - Subject to change

Patent Pending