

STB100 Beacon Test Bench  
 Technical Specifications  
 Revision 2.00

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

406 MHz Measurements					Uncertainty		
<b>First Generation Beacon</b>							
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 <sup>1</sup> (using Ext Reference)	Nominal Frequency	•				± 2.5 x 10 <sup>-11</sup>	
	Short Term	•					
	Medium Term – Mean Slope	•					
	Medium Term - Residual	•					
Power <sup>2</sup>						•	± 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
<b>Second Generation Beacon (SGB)</b>							
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 <sup>2</sup>
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 %
<b>121.5/243 MHz Measurements</b>							
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%
<b>AIS Measurements</b>							
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)						•	✓
<b>Graphic Measurements</b>							
-406 spectrum mask graphics data						•	✓
-406 output power during burst graphic data						•	✓
-406 phase modulation graphics data						•	✓

Interface Parameters	
<b>50 Ω RF Input</b>	
Connector	BNC-f
VSWR	1.20:1
Dynamic Range	406 MHz Burst 121.5 MHz/243 MHz AIS
	+20 dBm to +43 dBm +5 dBm to +35 dBm +20 dBm to +43 dBm
Absolute Maximum Input Level (Burst)	+43 dBm
Absolute Maximum Input Level (Continuous)	+35 dBm
<b>Antenna RF Input</b>	
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
<b>10 MHz Input</b>	
Connector	SMA-f
VSWR	1.20:1
Input Level Range	-10 to +10 dBm
<b>GPS ANT Input</b>	
Connector	SMA-f
Bias	+5V current limited
<b>USER I/O Connector</b>	
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
<b>PPS OUT</b>	
Connector	SMA-f
Level	Logic level
<b>AC Power Input</b>	
Connector	IEC 320 Appliance Input
Fuse	240V 1A
Voltage	85-264 VAC
Frequency	47-63 Hz
<b>Environmental and Mechanical</b>	
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°

<sup>1</sup>User must supply a stable 10MHz Reference  
<sup>2</sup> 35-39 dBm

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Preliminary - Subject to change

Patent Pending