STB100 Beacon Test Bench
Technical Specifications
Revision 2.02

406 MHz Measurements	STB100	add AIS (Rx)	add AIS (Rx & Tx)	add SGB	Uncertainty
First Generation Beacon (FGB)					
Measures all Cospas-Sarsat Frequency Channels	•				-
15 HEX ID & Full HEX	•				-
Decodes all Cospas-Sarsat Protocols	•				-
Frequency[1] (Ext Ref)	•				± 1 Hz
Frequency (Int Ref) Leaving Factory Long Term	•				 ± 50 Hz ± 1.0 ppm/yr
Frequency Stability[1] (using Ext Reference) – Nominal Frequency	•				± 2.5 x 10^{-11}
Frequency Stability[1] (using Ext Reference) – Short Term	•				
Frequency Stability[1] (using Ext Reference) – Medium Term – Mean Slope	•				
Frequency Stability[1] (using Ext Reference) – 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[2]				•	± 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
Frequency[1] (Ext Ref)				•	± 25 Hz
Frequency (Int Ref) Leaving Factory Long Term				•	 ± 50 Hz ± 1.0 ppm/yr
Short Term Frequency Stability				•	± 0.7 ppb
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[1] (Ext Ref)	•				± 30 Hz
Frequency (Int Ref) Leaving Factory Long Term	•				 ± 60 Hz ± 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[1] (AIS1 & AIS2) (Ext Ref)		•	•		± 30 Hz
Frequency (AIS1 & AIS2) (Int Ref) Leaving Factory Long Term		•	•		 ± 60 Hz ± 1.0 ppm/yr
Power		•	•		± 1.0 dB
AIS Messages Decode		•	•		-
Tx Frequency[1]			•		± 1 Hz
Graphic Measurements					
-406 Spectrum Mask Graphic Data	•			•	-
-406 Output Power During Burst Graphic Data	•			•	-
-406 Phase Modulation Graphics Data	•				-

50 Ω RF Input		
Connector		BNC-f
VSWR		1.20:1
Dynamic Range		
Direct Mode	121.5 MHz	-10 dBm to +34 dBm
Direct Mode	243 MHz	-8 dBm to + 34 dBm
Direct Mode	406 MHz	+10 dBm to +40 dBm
Direct Mode	AIS	-28 dBm to + 40 dBm
Screen Box Mode	121.5 MHz	-16 dBm to +20 dBm (1% to 110%)
Screen Box Mode	243 MHz	-22 dBm to +20 dBm (1% to 110%)
Screen Box Mode	406 MHz	-12 dBm to +30 dBm (1% to 110%)
Screen Box Mode	AIS	+10 dBm to +30 dBm (1% to 110%)
Maximum Input Power (Continuous RF)		+34.8 dBm
Maximum Input Power (406, 121.5, 243)		+40 dBm, Max 1 s @ ≤ 20% Duty Cycle
Maximum Input Power (AIS)		+43 dBm, Max 27 mS @ ≤ 2% Duty Cycle
Antenna RF Input		
Connector		SMA-m (RP)
Range		
406 MHz 121.5 MHz/243 MHz AIS		 >2 m >10 m
Maximum Input Power 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 -AUX ADC -RELAY1 -RELAY2 -PPS Out -GPS Tx -GPS Rx -Ground		 -8 I/O lines, 5V TTL Tolerant -8 analog inputs, 0V -12 V -Relay1 NC/NO 60V 2A -Relay2 NC/NO 60V 2A -GPS 1 PPS Output -GPS Tx -GPS Rx -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) Weight		210 (8.3) x 280 (11.1) x 64 (2.5) 2.73 kg (6.0 lbs)
Miscellaneous Measurements		**Range**
Vin @ DC PWR IN		1V to 30V
Vout @DC PWR OUT		1V to 30V
Iout @DC PWR OUT		5mA to 8A
Leakage Current @DC PWR OUT		200 nA to 40 µA
Vdropout (Vin to Vout)		100 mV at 2 A
Aux Analog Input (Aux ADCn)		0 – 12V
Temperature (Probe 1 and Probe 2)		-60°C to +75°C

[1] User must supply a stable 10MHz Reference
[2] 35-39 dBm

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Patent Pending

Preliminary - Subject to change

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