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Supersedes Doc. No.	
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Document Name/Description:

Specifications
Of the
AR-61A-01 Rubidium Standard

	Design	Check	Approve	Config. Mgt.
Name	A. V.	B. L.	A.S.	
Signature				
Date	15/10/2002			

Change History:

REV	DESCRIPTION	DATE	ECO No.	APPROVED
1	Initial Revision	15/10/2002		
2	Customer remarks updating	24/11/2002		
3	Add of Picture	31/3/2005		
4	Change name	5/7/2005		

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Specifications AR61A-01

<i>Electrical Performance</i>					
Output Frequency	10MHz Main output / Sine wave / 5±2dBm / 50 Ω load 10MHz Aux output* / Sine wave /5±2dBm / 50 Ω load				
BIT (Built In Test) output	RS-422 discrete line ('0'=Rb OK, '1'=Rb Fail)				
Long Term Stability (Aging)	< ±7x10 ⁻⁹ sec for 15 years under all environmental conditions				
Time Drift	±26uSec per hour (after 15 years)				
Short Term Stability (Allan Deviation)	4 x 10 ⁻¹¹ @1 SEC 2 x 10 ⁻¹¹ @10 SEC 4 x 10 ⁻¹² @100 SEC				
Phase Noise SSB (quiescent)	< -100 dBc/Hz @10Hz < -135 dBc/Hz @100Hz < -145 dBc/Hz @1kHz < -150 dBc/Hz @FLOOR				
Phase Noise (under environmental condition as vibration, acceleration, temp etc)	< -85 dBc/Hz @10Hz < -105 dBc/Hz @100Hz < -120 dBc/Hz @1kHz < -145 dBc/Hz @FLOOR				
Spurious (quiescent)	< -100 dBc (up to 100KHz)				
Harmonics	< -40 dBc				
Stability Over Temperature Range	-40°C - +75°C: ±8x10 ⁻¹⁰ +75°C - +85°C: ±2x10 ⁻⁹ (for 1 hour max) with max slew rate of 2°C/min				
Input Voltage Sensitivity	±1x10 ⁻¹⁰ over ±5% variation				
Load Output Sensitivity	±1x10 ⁻¹⁰ over ±10% variation				
Over Turn-Off to Turn-On cycles	±5x10 ⁻¹⁰ over 5000 cycles				
Warm Up Time	< 5 min for ±5x10 ⁻⁹ (at -40°C)				
Voltage Supply	15 Vdc ±5%				
Power Consumption	<table style="width: 100%; border: none;"> <tr> <td style="text-align: right; padding-right: 10px;">Turn On</td> <td>30W (4 min) @25°C 45W @ -40°C</td> </tr> <tr> <td style="text-align: right; padding-right: 10px;">Steady State</td> <td>30W @ -40°C 18W @ +25°C 10W @ +85°C</td> </tr> </table>	Turn On	30W (4 min) @25°C 45W @ -40°C	Steady State	30W @ -40°C 18W @ +25°C 10W @ +85°C
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*The auxiliary output will be tested only for amplitude and frequency accuracy.

<i>Physical</i>	
Dimensions / Weight	8.25cm x 8.25cm x 11.43 cm / <1kg
Without Shock Mount	
Include Shock Mount	12.5cm x 12.5cm x 16 cm / <2 kg

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<i>Environmental Performance</i>																							
Temperature	<table border="0"> <tr> <td style="padding-right: 20px;">Operating</td> <td>-40°C - +75°C</td> </tr> <tr> <td>Operating for 1 hour maximum</td> <td>+75°C - +85°C</td> </tr> <tr> <td>Storage</td> <td>-40°C - +85°C</td> </tr> </table>	Operating	-40°C - +75°C	Operating for 1 hour maximum	+75°C - +85°C	Storage	-40°C - +85°C																
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Humidity	95% non-condensing																						
Altitude	Up to 45,000 ft																						
Salt Atmosphere	48 hours, 5% NaCl @35°C per MIL-STD-810F & Method 509.4 Proc. 1																						
Acceleration**	<table border="0"> <tr> <td style="padding-right: 20px;">Operating</td> <td>±6 G @ 3 axis</td> </tr> <tr> <td>Non operating</td> <td>±7.5 G @ 3 axis</td> </tr> </table>	Operating	±6 G @ 3 axis	Non operating	±7.5 G @ 3 axis																		
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Vibrations **	<table border="0"> <tr> <td style="padding-right: 20px;">Operating</td> <td>8.25 grams over 20 - 20,000 Hz</td> </tr> <tr> <td>Non operating</td> <td>16.5 grams over 20 - 20,000 Hz</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th colspan="3" style="text-align: center;"><i>Spectral Density Power (g²/Hz)</i></th> </tr> <tr> <th style="text-align: center;"><i>Frequency (Hz)</i></th> <th style="text-align: center;"><i>Operating</i></th> <th style="text-align: center;"><i>Non Operating</i></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;"><i>20-100</i></td> <td colspan="2" style="text-align: center;">+3dB/oct</td> </tr> <tr> <td style="text-align: center;"><i>100</i></td> <td style="text-align: center;">0.04</td> <td style="text-align: center;">0.16</td> </tr> <tr> <td style="text-align: center;"><i>1100</i></td> <td style="text-align: center;">0.04</td> <td style="text-align: center;">0.16</td> </tr> <tr> <td style="text-align: center;"><i>1100-2000</i></td> <td colspan="2" style="text-align: center;">-3dB/oct</td> </tr> </tbody> </table>	Operating	8.25 grams over 20 - 20,000 Hz	Non operating	16.5 grams over 20 - 20,000 Hz	<i>Spectral Density Power (g²/Hz)</i>			<i>Frequency (Hz)</i>	<i>Operating</i>	<i>Non Operating</i>	<i>20-100</i>	+3dB/oct		<i>100</i>	0.04	0.16	<i>1100</i>	0.04	0.16	<i>1100-2000</i>	-3dB/oct	
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Mechanical Shock**	<table border="0"> <tr> <td style="padding-right: 20px;">Operating</td> <td>20 g @ X axis 11mSec / Y axis 11mSec / Z axis 40mSec (3 shocks per axis, total 18 shocks)</td> </tr> <tr> <td>Non operating</td> <td>40 g @ 3 axis 11mSec (2 shocks per axis, total 12 shocks)</td> </tr> </table>	Operating	20 g @ X axis 11mSec / Y axis 11mSec / Z axis 40mSec (3 shocks per axis, total 18 shocks)	Non operating	40 g @ 3 axis 11mSec (2 shocks per axis, total 12 shocks)																		
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Transportation Shock	MIL-STD-810E, METHOD 516.4																						
Gravitation Sensitivity	±1x10 ⁻⁹ per g for short time < 1 sec ±2x10 ⁻¹⁰ per g for long period																						
Explosive Atmosphere	MIL-STD-810D, Method 511.3, Procedure 1																						
Acoustic Noise	MIL-STD-810D, Method 515.4, Fig. 515.4, 30 min., Total SPL 140 dB																						
Magnetic Field Sensitivity	3x10 ⁻¹¹ /gauss																						
EMI (MIL-STD-461D)	CS-114 (400KHz-10GHz) CS-115 CS-116 RE-102 (10KHz-18GHz) RS-103 (10KHz-18GHz) Levels TBD																						
MTBF	> 10,000 hours @ 80°C AUF > 36,990 hours @ 75°C AIC																						
Storage Reliability	>96.5% for two years between two maintenance operations, this for 15 years under GF@30°C (K=50) conditions																						

**Including Shock Mount

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