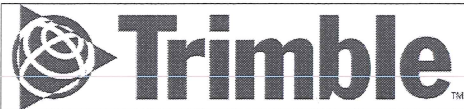


**REVISIONS**

Rev	ECN	Description	Date	Approved
01	Cxxxxx	Pre-release to production	1/9/13	T. Awan



**Bullet III GPS/Glonass – 5V F Connector  
RoHS Compliant Trimble Specification**

Approvals	Date
DRAWN	
CHECKED	
ISSUED	

Sheet	Size	Drawing Number	Revision
1 of 6	A	<b>97860-10-SP</b>	<b>A</b>



**APPROVALS**

Name	Department/Title	Signature	Date (MM/DD/YY)
Tariq Awan	Project Manager	<i>T. Awan</i>	01-29-13
Richard Funderburk	System Architect	<i>Richard Funderburk</i>	2/5/13
Karen Guldan	General Manager	<i>Karen Guldan</i>	2/18/13
Leland Ho	Hardware Engineer	<i>Leland Ho</i>	1/30/13
Haroon Muhammad	Product Marketing	<i>Haroon Muhammad</i>	2/5/13
Julian Dortort	Manager Customer support	<i>Julian Dortort</i>	1/29/13
Armando Perez	Mechanical Engineer	<i>Armando Perez</i>	1/29/13

TRIMBLE NAVIGATION LIMITED  
BULLET ANTENNA  
GPS/GLONASS ANTENNA WITH LOW NOISE AMPLIFIER  
RoHS COMPLIANT

**Part Number 97860-10**

Part Number 97860-10-SP

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Trimble Navigation Limited  
935 Stewart Drive  
Sunnyvale, CA 94085, USA

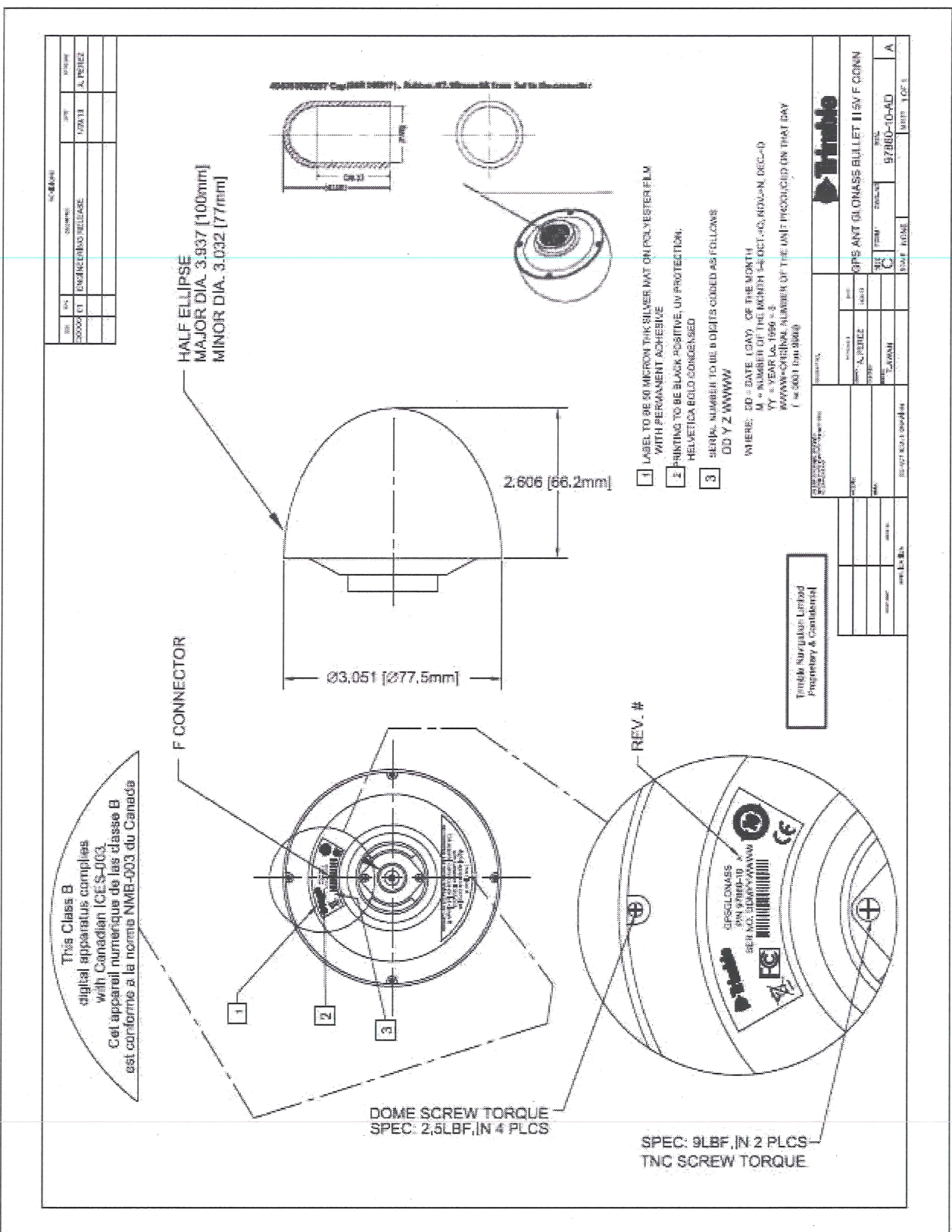
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# Trimble Proprietary - Internal Use Only

SPECIFICATION FOR GPS/GLONASS ANTENNA WITH LOW NOISE AMPLIFIER RoHS COMPLIANT		
1.0	APPLICATION	THIS SPECIFICATION DESCRIBES THE ELECTRICAL AND MECHANICAL CONDITIONS OF THE TRIMBLE BULLET ANTENNA, P/N 97860-10.
2.0	SYSTEM	THIS ANTENNA SYSTEM CONSISTS OF TWO FUNCTIONAL BLOCKS LISTED BELOW.
	2.1	ANTENNA ELEMENT
	2.2	LNA
3.0	GENERAL	
	3.1	ENVIRONMENTAL CONDITIONS
	3.1.1	OPERATING TEMPERATURE      -40°C TO +90°C
	3.1.2	STORAGE TEMPERATURE          -40°C TO +90°C
	3.1.3	RELATIVE HUMIDITY                65 ± 20% RH
	3.2	ELECTRICAL SPECIFICATIONS
	3.2.1	INPUT VOLTAGE                      5.0V +/- 1.0V
	3.2.2	CURRENT CONSUMPTION          21 ± 3mA (AT 5.0 ± 0.1V)
	3.2.3	OUTPUT CONNECTOR                F (FEMALE) ADAM TECH. CA#9234-4 75 Ω
	3.3	MECHANICAL SPECIFICATIONS
	3.3.1	MOUNTING                            NUT MOUNT
	3.3.2	WATER PROOF                        WATER PROOF (IP67) WITH RUBBER CAP ON
	3.3.3	SHOCK                                 50G : VERTICAL AXIS 30G : ALL AXIS
	3.3.4	VIBRATION                            10 ~ 200Hz. LOG. SWEEP 3.0G (SWEEP TIME : 15 MIN.), 3 AXIS
	3.3.5	ANTI-COROSION                      BASED ON JIS Z 2371, SPRAY 5% SALT WATER 35°C SHOULD NOT RUST AFTER 96Hrs.
	3.3.6	CONFIGURATION AND DIMENSION                            SEE MECHANICAL DRAWING
	3.3.7	WEIGHT                                178g ± 10g
	3.3.8	CERTIFICATIONS                      CE, FCC, AND INDUSTRY CANADA(IC)

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SPECIFICATION FOR GPS ANTENNA WITH LOW NOISE AMPLIFIER		
4.0	PATCH	
4.1	FREQUENCY RANGE	1,575MHz~1615MHz
4.2	CENTER FREQUENCY	1588 ± 3 MHz
4.3	BANDWIDTH (10dB RETURN LOSS)	50 MHz TYP
4.4	15.75.42 MHz	3.22 dBic MAX.
4.5	GAIN (0°) 16.02. MHz	3.70 dBic MAX.
	POLARIZATION	R.H.C.P
5.0	LNA	
5.1	FREQUENCY RANGE	1,575MHz~1615MHz
5.2	GAIN 1575.42 MHz	32 ± 3 dB
	1602 MHz	32 ± 3 dB
5.3	NOISE FIGURE	2.0 dB typ
5.4	OUTPUT V.S.W.R	2.5 MAX
5.5	OPERATION VOLTAGE	5.0 ± 1.0V
5.6	CURRENT	21 ± 3mA (at 5.0 ± 0.1V)
6.0	OVERALL SPECIFICATIONS (THROUGH ANTENNA, LNA, WITHOUT CABLE LOSS)	
6.1	FREQUENCY RANGE	1,575MHz~1615MHz
6.2	ZENITH GAIN 1575.42 MHz	35.22 ± 3dBic (+25°C ± 5°C for specific ground plane)
	1602 MHz	35.70 ± 3dBic (+25°C ± 5°C for specific ground plane)
6.3	OUTPUT IMPEDANCE	50Ω
6.4	OUTPUT VSWR	2.5 MAX.
6.5	OPERATION VOLTAGE	5.0 ± 1.0VmA
6.6	CURRENT	21 ± 3Ma (at 5.0 ± 0.1V)
7.0	MTBF	GREATER THAN 300K HRS
8.0	RECOMMENDED STORAGE CONDITION AND STORAGE TERM	STORE IN ROOM CONDITION AS LISTED BELOW: TEMPERATURE -20°C~+45°C, HUMIDITY 80% MAX.
9.0	EXTERNAL APPEARANCE	NO STAIN OR FLAW MUST BE FOUND.



REV	DATE	DESCRIPTION
000001	1/24/11	A. PERICE

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