

REVISIONS				
Rev	ECN	Description	Date	Approved
A	C15574	Release to production	7/15/09	DC
B	C43420	Change tolerance	11/30/10	DC
C	C53550	Add updated assy dwg	3/7/12	AP
D	C55225	Changed water proof spec to IP67	5/15/12	AP
E	C59355	Add loctite threadlocker to connector	11/28/12	AP



Approvals	Date	Bulkhead GPS Antenna – 5V TNC RoHS Compliant Trimble Specification			
DRAWN DC	8/7/09				
CHECKED		Sheet	Size	Drawing Number	Revision
ISSUED		1 of 6	A	70228-70-SP	E

TRIMBLE NAVIGATION LIMITED
BULKHEAD ANTENNA
GPS ANTENNA WITH LOW NOISE AMPLIFIER
RoHS COMPLIANT

Part Number 70228-70

Part Number 70228-70-SP

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SPECIFICATION FOR GPS ANTENNA WITH LOW NOISE AMPLIFIER
RoHS COMPLIANT

1.0 APPLICATION

THIS SPECIFICATION DESCRIBES THE ELECTRICAL AND MECHANICAL CONDITIONS OF THE TRIMBLE BULKHEAD ANTENNA, P/N 70228-70.

2.0 SYSTEM

THIS ANTENNA SYSTEM CONSISTS OF TWO FUNCTIONAL BLOCKS LISTED BELOW.

2.1 ANTENNA ELEMENT

2.2 LNA

SEE ATTACHED FIGURE 2.1

3.0 GENERAL

3.1 ENVIRONMENTAL CONDITIONS

3.1.1	OPERATING TEMPERATURE	-40°C TO +85°C
3.1.2	STORAGE TEMPERATURE	-40°C TO +100°C
3.1.3	RELATIVE HUMIDITY	20% TO 95%

3.2 ELECTRICAL SPECIFICATIONS

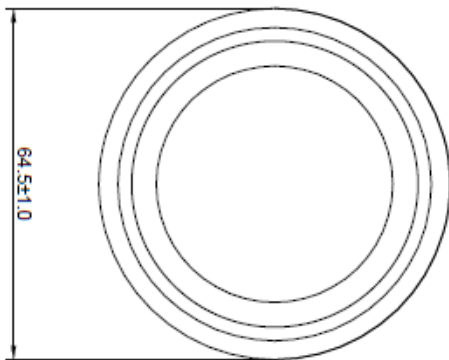
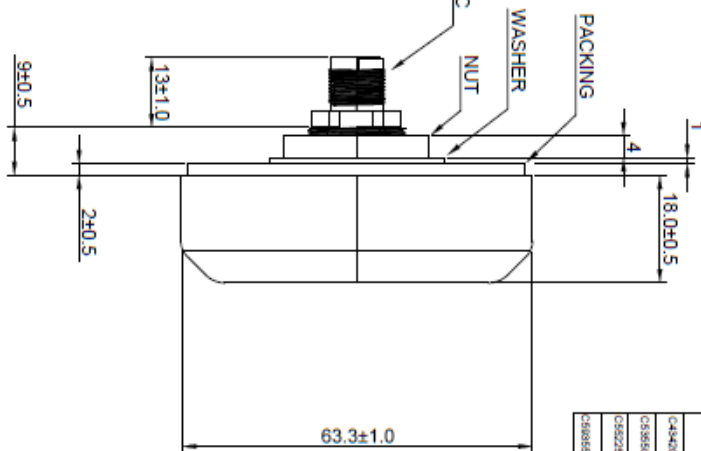
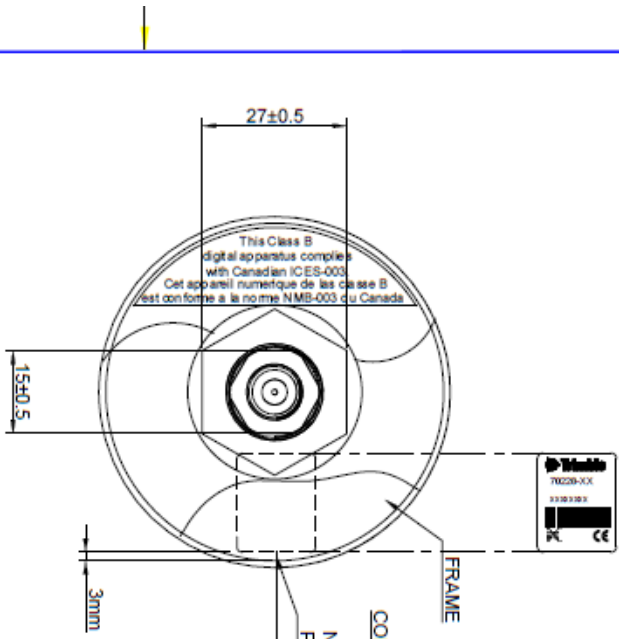
3.2.1	INPUT VOLTAGE	4.75V +/- 0.5V
3.2.2	POWER CONSUMPTION	35mA MAX.
3.2.3	OUTPUT CONNECTOR	TNC (FEMALE)

3.3 MECHANICAL SPECIFICATIONS

3.3.1	MOUNTING	NUT MOUNT
3.3.2	WATER PROOF	IP67 with Cap on Connector
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	150g MAX.

SPECIFICATION FOR GPS ANTENNA WITH LOW NOISE AMPLIFIER

4.0	ANTENNA	
4.1	FREQUENCY RANGE	1,575.42 ± 1.023MHz
4.2	GAIN	90° : 3.0dBi MIN. 20° : -5.0dBi MIN.
4.3	POLARIZATION	RHCP
4.4	AXIAL RATIO	90° : 4.0dB MAX. 10° : 6.0dB MAX.
5.0	LNA	
5.1	FREQUENCY RANGE	1,575.42 ± 1.023MHz
5.2	GAIN	26dB MIN.
5.3	NOISE FIGURE	1.8dB MAX. (+25°C ± 5°C) 2.3dB MAX. (+85°C)
5.4	OUT OF BAND REJECTION	$f_0=1,575.42\text{MHz}$ $f_0\pm 20\text{MHz}$ 7dB MIN. $f_0\pm 30\text{MHz}$ 12dB MIN. $f_0\pm 50\text{MHz}$ 20dB MIN. $f_0\pm 100\text{MHz}$ 30dB MIN.
5.5	OUTPUT IMPEDANCE	50Ω
5.6	OUTPUT VSWR	2.0 MAX.
6.0	OVERALL SPECIFICATIONS (THROUGH ANTENNA, LNA, CABLE AND CONNECTOR)	
6.1	FREQUENCY RANGE	1,575.42 ± 1.023MHz
6.2	GAIN	28 dBi MIN. (-40°C ~ +85°C)
6.3	NOISE FIGURE	2.0dB MAX. (+23°C) 2.5dB MAX. (+85°C)
6.4	OUTPUT IMPEDANCE	50Ω
6.5	VSWR	2.0 MAX.
6.6	OSCILLATION	NO OSCILLATION MUST BE FOUND IN BAND AND OUTBAND.
7.0	MTBF	TBD
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	RELIABILITY TEST	TBD
10.0	EXTERNAL APPEARANCE	NO STAIN OR FLAW MUST BE FOUND.
11.0	DATA	GAIN (AT 4.75V ± 0.2V $f=1575\text{MHz}$) AND POWER CONSUMPTION AT ROOM TEMPERATURE.



REVISIONS				
ECN	REV	DESCRIPTION	DATE	APPROVED
	A	PRODUCTION RELEASE	8/31/09	D.C.
	B	Change tolerance	11/30/10	DC
	C	ROTATE THE NAMEPLATE	3/7/12	AP
	D	ADDED CANADIAN FCC LABEL	5/14/12	AP
	E	ADD LOCTITE THREADLOCKER	11/28/12	AP

- NOTES:
- BEFORE INSTALLING TNC CONNECTOR, APPLY LOCTITE 262 THREADLOCKER TO SECURE THE TNC CONNECTOR TO THE BASE.
 - LABEL TO BE 50 MICRON THK SILVER MAT ON POLYESTER FILM WITH PERMANENT ADHESIVE.
 - PRINTING TO BE BLACK, UV PROTECTION, HELVETICA BOLD CONDENSED.
 - SERIAL NUMBER TO BE 9 DIGITS CODED AS FOLLOWS
XX Y ZZ WWW/
WHERE, XX = DATE (DAY) OF THE MONTH,
Y = NUMBER OF THE MONTH 1-9 OCT+0, NOV=N DEC=D
ZZ = YEAR AS 2009=09
WWW = ORIGINAL NUMBER OF THE UNIT PRODUCED ON THAT DAY (IE 0001 THRU 9999)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS DA - 1-DIGITS X ±.20 ANGLES XX ±.10 ±1.0 XXX ±.05 ±1.0		CONTRACT NO. ○ ORIGINAL DIMENSION ○ DIMENSION TO BE CHANGED	
DRAWN: D.C. CHECKED: [] ISSUED: []		DATE: 8/31/09	
ALL DIMENSIONS IN mm		SCALE: 2X	
BULKHEAD GPS ANTENNA - TNC		DWG NO: 70228-XX-AD	
		SHEET 1 OF 1	

DWG NO. 70228-XX-AD
REV. 01