REVISIONS				
Rev	ECN	Description	Date	Approved
A	C51921	Release to Production	1/17/12	A.P.
B	C52533	Modified specs	1/25/12	A.P.
C	C54003	Modified by changing magnet pull force & , added FCC logo	03/16/12	A.P
D	C54804	Changed operating temp.to-40/+85	4/27/12	A.P

Approvals	Date	5m, 3V, SMA GPS & GLONASS Trimble Miniature Antenna Specification - RoHS compliant.			
DRAWN: A. Perez	1/19/12				
CHECKED		Sheet	Size	Drawing Number	Revision
ISSUED		1 of 5	A	**70229-52-SP**	**D**

TRIMBLE NAVIGATION
3V MINIATURE GPS/GLONASS ANTENNA WITH 5 M CABLE, SMA CONNECTOR, AND LOW NOISE AMPLIFIER

Part Number 70229-52

Part Number 70229-52-SP

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

SPECIFICATION FOR GPS/GLONASS ANTENNA WITH LOW NOISE AMPLIFIER.
ALL ELECTRICAL VALUES ARE DEFINED AT 25±15°C, 65±20 % RH, POWER HANDLING 1 uWATT, AIR PRESSURE 960 ±100 HPA UNLESS OTHERWISE NOTED. PATCH CHARACTERISTICS ARE MEASURED WITH 70x70 MM GROUND PLANE IN AN ANECHOIC CHAMBER.

1.0 APPLICATION

THIS SPECIFICATION DESCRIBES THE ELECTRICAL AND MECHANICAL CONDITIONS OF THE TRIMBLE MINIATURE ANTENNA, P/N 70229-52.

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 +85°C
3.1.2	STORAGE TEMPERATURE	-40°C TO +85°C
3.1.3	RELATIVE HUMIDITY	65 ± 20% RH

3.2 ELECTRICAL SPECIFICATIONS

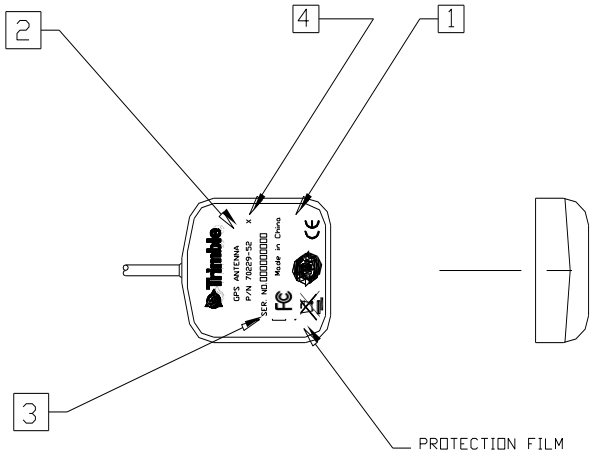
3.2.1	INPUT VOLTAGE	3.3V±0.6V
3.2.2	CURRENT CONSUMPTION	8 +/- 3mA (at 3 +/- .1 V)
3.2.3	OUTPUT CONNECTOR	SMA-PLUG
3.2.4	CABLE	RG 174 5M:BLACK (HALOGEN FREE) TATUNG RG-174, XLPE, E54979

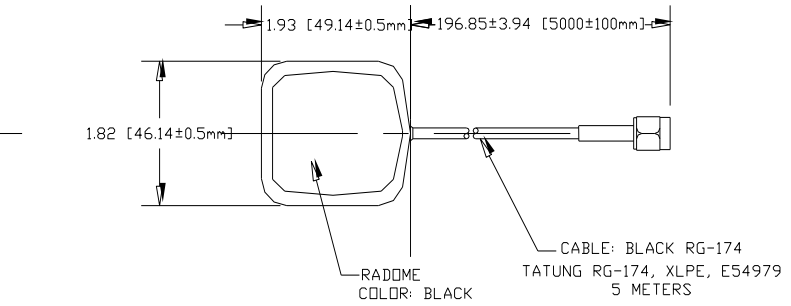
3.3 MECHANICAL SPECIFICATIONS

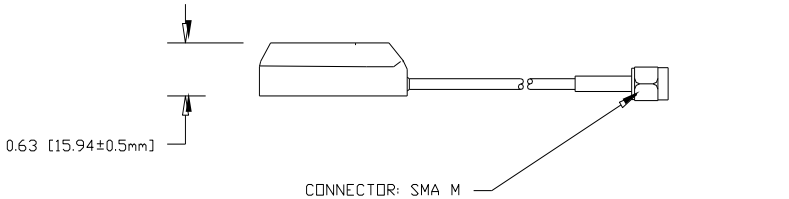
3.3.1	MOUNTING	MAGNET MOUNT
3.3.2	PULLING FORCE OF MAGNET	17.64N Min.
3.3.3	WATER PROOF	WATER PROOF (JISD0203 S2)
3.3.4	SHOCK	50G : VERTICAL AXIS 30G : ALL AXIS
3.3.5	VIBRATION	10 ~ 200Hz. LOG SWEEP 3.0G (SWEEP TIME : 15 MIN.) 3 AXIS
3.3.6	MAGNET MOUNT WITHSTAND	WITHSTAND UP TO SPEED OF 180Km/h.
3.3.7	CABLE PULLING FORCE	49N MIN. Visible or electrical damage must not appear when applying up to 49N pulling force between cable and antenna as well as between cable and connector.
3.3.8	BENDING TEST	AFTER BENDING TEST 90° DEGREE RIGHT AND LEFT x 1,000 CYCLES, NO PERMANENT DAMAGE FOUND.
3.3.9	ANTI-COROSION	BASED ON JIS Z 2371, SPRAY 5% SALT WATER 35°C SHOULD NOT RUST AFTER 96Hrs,
3.3.10	CONFIGURATION AND DIMENSION	SEE MECHANICAL DRAWING
3.3.11	WEIGHT	130 g TYPICAL, INCLUDING CABLE

SPECIFICATION FOR GPS/GLONASS ANTENNA WITH LOW NOISE AMPLIFIER			
4.0	ANTENNA		
	4.1	FREQUENCY RANGE	1,575~1615MHz
	4.2	CENTER FREQUENCY	1593 ± 5MHz
	4.3	AVERAGE GAIN	2.0 dBic TYP
	4.4	POLARIZATION	RHCP
	4.5	AXIAL RATIO	90° : 4.0dB MAX. 10° : 6.0dB MAX. (MOUNTED ON THE 70mm X 70mm SQUARE GROUND PLANE)
	4.6	BANDWIDTH (10dB RETURN LOSS)	43 MHz TYP
5.0	LNA		
	5.1	FREQUENCY RANGE	1,575~1615MHz
	5.2	GAIN	28 ± 3dB (at 3.0 ± 0.1V)
	5.3	NOISE FIGURE	2.0 dB MAX
	5.4	OUT OF BAND REJECTION	f_o=1,593 MHz f_o ± 20MHz 7dB MIN. f_o ± 30MHz 12dB MIN. f_o ± 50MHz 20dB MIN. f_o ± 100MHz 30dB MIN.
	5.5	OUTPUT IMPEDANCE	50Ω
	5.6	OUTPUT VSWR	2.0MAX.
	5.7	OSCILLATION	NO OSCILLATION MUST BE FOUND IN BAND AND OUT BAND. (IN YOKOWO STANDARD MEASUREMENT).
	5.8	ESD	ANTENNA SURFACE ± 15KV CONNECTOR PIN ± 8KV (TEST CONDITION JASOD001-94 C-3)
6.0	OVERALL SPECIFICATIONS (THROUGH ANTENNA, LNA, WITHOUT CABLE LOSS)		
	6.1	CENTER FREQUENCY	1593 MHz
	6.2	FREQUENCY RANGE	1575- 1615 MHz
	6.3	AVERAGE GAIN	30dBic typ(for ground 70X70mm at 3.0 ± 0.1V)
	6.4	OUTPUT IMPEDANCE	50Ω
	6.5	VSWR	2.0 TYP
	6.6	CURRENT	8 ± 3 mA (at 3.0 ± 0.1V)
7.0	MTBF		5.0E+6Hr
8.0	RECOMMENDED STORAGE CONDITION		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.
10	DATA		GAIN (AT 3.0V ± 0.2V f=1593MHz) AND POWER CONSUMPTION AT ROOM Temp.

REVISIONS				
ECN	REV	DESCRIPTION	DATE	APPROVED
C51921	A	PRODUCTION RELEASE	1/17/12	AP
C52533	B	UPDATED SPECS	1/23/12	AP
C54003	C	UDDED FCC LOGO TO LABEL	4/01/12	AP







4 CURRENT REVISION

3 SERIAL NUMBER TO BE 8 DIGITS CODED AS FOLLOWS

XX Y ZZ WWWW

WHERE; XX = DATE (DAY) OF THE MONTH
Y = NUMBER OF THE MONTH 1-9 OCT.=O, NOV.=N, DEC.=D
ZZ = YEAR i.e. 1996 = 6
WWWW=ORDINAL NUMBER OF THE UNIT PRODUCED ON THAT DAY
(ie 0001 thru 9999)

2 PRINTING TO BE BLACK POSITIVE, UV PROTECTION, HELVETICA BOLD CONDENSED

1 LABEL TO BE 50 MICRON THK SILVER MAT ON POLYESTER FILM WITH PERMANENT ADHESIVE

NOTES;

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES (MILLIMETERS) TOLERANCE	CONTRACT NO.		Trimble
	APPROVALS	DATE	
MATERIAL	DRAWN AP	10-03-11	GPS/GLONASS ANTENNA
FINISH	CHECKED		SIZE B | FSCM NO. | DWG NO. 70229-52-AD | REV C
DO NOT SCALE DRAWING	ISSUED AP	10-03-11	SCALE NONE | SHEET 1 OF 1

FILE: 70229-52-AD