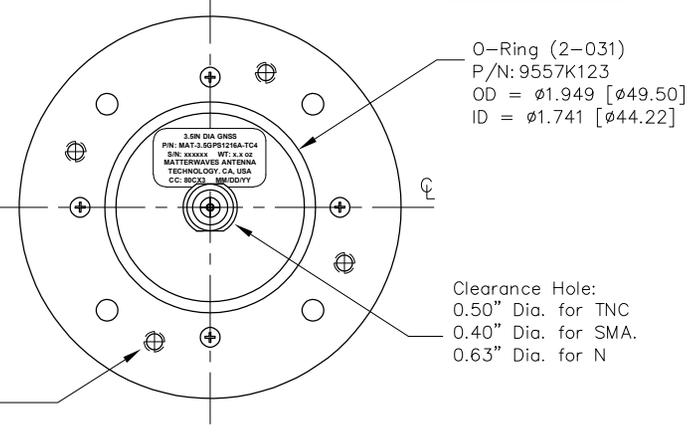
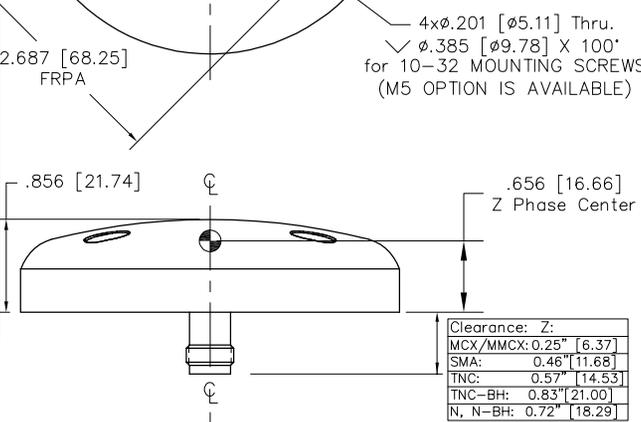
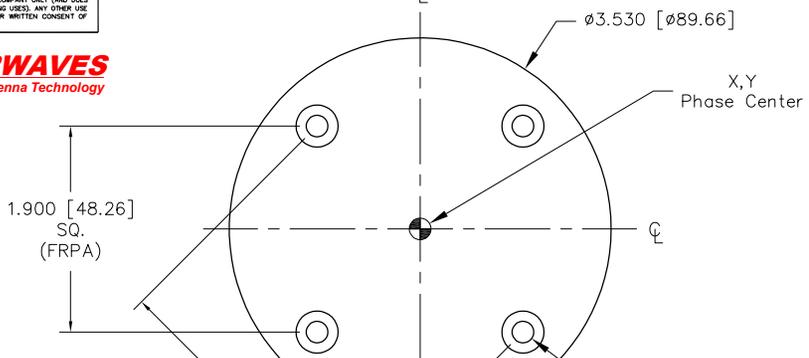


**SPECIFICATIONS**

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

**NOTICE OF PROPRIETARY RIGHTS**  
 THIS DOCUMENT CONTAINS CONFIDENTIAL TECHNICAL DATA INCLUDING TRADE SECRETS PROPRIETARY TO MATTERWAVES CORP. DISCLOSURE OF THIS DATA TO YOU IS EXPRESSLY CONDITIONED UPON YOUR ASSENT THAT ITS USE IS LIMITED TO USE WITHIN YOUR COMPANY ONLY AND DOES NOT INCLUDE MANUFACTURE OR PROCESSING USES. ANY OTHER USE IS STRICTLY PROHIBITED WITHOUT PRIOR WRITTEN CONSENT OF MATTERWAVES CORP.



Optional Mounting:  
 4x 10-32 UNC-2B  
 0.250" Deep  
 Equally Spaced  
 On 1.344" Rad.  
 22.5" Offset.  
 (FRPA)

**P/N: MAT-3.5GPS1216A-TC4**

**ELECTRICAL:**

FREQUENCY:	L1 GPS/GLONASS/OmniStar / IRNSS B1-BeiDou / E1/E2/L6-Galileo / QZSS (1540-1610) MHz			L2/L5 GPS/GLONASS / IRNSS B2/B3-Compass / E5/E6-Galileo (1164-1298) MHz		
	RADIATION PATTERN:	HEMISPHERICAL				
POLARIZATION:	RHCP			RHCP		
VSWR:	< 2.0:1			< 2.0:1		
IMPEDANCE:	50 ohms			50 ohms		
ANTENNA GAIN (dBi):	Free Space	5 in G.P.	4 ft G.P.	Free Space	5 in G.P.	4 ft G.P.
@ 90 ° (ZENITH):	+ 3.5	+ 2.6	+ 1.7	+ 0.0	+ 2.0	+ 2.4
@ 10 ° Elevation:	- 3.3	- 4.1	- 3.0	- 6.5	- 4.0	- 6.3
@ 20 ° Elevation:	- 2.3	- 2.8	- 0.1	- 4.7	- 3.0	- 3.2
@ 30 ° Elevation:	- 1.0	- 1.0	+ 1.0	- 3.4	- 2.0	- 1.2
@ 60 - 90 ° Elevation:	> + 2.4	> + 1.7	> + 0.7	> - 1.5	> + 1.3	> 0
BEAM WIDTH (3dB):	95 Deg.	96 Deg.	145 Deg.	105 Deg.	99 Deg.	110 Deg.
AXIAL RATIO:	2 dB			2 dB		
LNA GAIN:	33 dB			33 dB		
LNA NOISE FIGURE:	2.8 dB			2.8 dB		
LNA P1dB Out:	+20 dBm			+20 dBm		
LNA DC POWER:	(2.5 to 24)Vdc @ < 56 mA					
INTERFERENCE REJECTION:	(20-110)MHz: >(40-60)dB, (1360-1536)MHz: >(40-60)dB (1625-1660)MHz: >69 dB, (1625-2600)MHz: >69dB					
LIGHTNING PROTECTION:	INPUT: DC GROUND; OUTPUT: SURGE PROTECTION EN61000-4-5 Level 4					
HIGH POWER, BURNOUT & JAMMING PROTECTION:	Pin Max = +55dBm Microsec Pulse (+69 dBm is Available) 500V/m CW, 3300 V/m @ 10 µs PULSE @ 1 kHz RATE FROM 2MHz to 20 GHz					
MTBF:	1,000,000 Hrs					

**MECHANICAL:**

- SIZE: DIAMETER: 3.530 in. [ 89.66 mm]  
HEIGHT: 0.856 in. [21.7 mm]
- WEIGHT: 8.3 oz. (235 g)
- FINISH: SKYDROL RESISTANT POLYURETHANE ENAMEL  
BASE IRIDIUM PER MIL-C-5541F
- MATERIAL: 6061-T6 ALUMINUM ALLOY BASE  
COMPOSITE RADOME, IMPACT, ABRASION, UV, SOLVENT SKYDROL RESISTANCE, AND FIRE RETARDANT
- CONNECTOR: TNC FEMALE  
(OPTION: SMA, TNC-BH, N, N-BH, MCX, MMCX, SMB, SSMB)
- ENVIRONMENTAL:
- TEMPERATURE: OPERATING: -68 °F TO +185 °F [-55 °C TO +85 °C]  
STORAGE: -71 °F TO +203 °F [-57 °C TO +95 °C]  
70,000 ft.
- ALTITUDE: > 30 G's
- VIBRATION: > 30 G's
- LEAKAGE / IP RATING: HERMETICALLY SEAL / IP69K

**FEDERAL & MILITARY SPECIFICATIONS:**

TSO-C129/C132/C144, MIL-C-5541F(Finish), MIL-DTL-14072(Finish), DO-160/210/228(Test) MIL-STD-810G(Test), MIL-STD-461E/F(Elec Interfer), MIL-STD-464C(ELEC MAG), SAE J1455(Env) MIL-STD-202(Elec Comp), MIL-HDBK-5400/454(Elec Eq), MIL-PRF-39012(Con), MIL-STD-889B(Metal) EN 55155(Terminals), RCC-319-14 (Termination), MIL-STD-129/1285(Marking), MIL-STD-130N-1(ID) MIL-C-85704B(Solvent), MIL-G-81827(Grease), RCC-324-01(Safety), MIL-I-45208A/NAS411-1(HAZ)

QUANTITY REQD	DESCRIPTION	PART NO	FINISH	ITEM NO
4	WASHER	10-32Washer		3
4	10-32 1IN SCREWS	93085A833		2
1	O-RING & GASKET	9557K123 (2-031) & MAT-G-3.5IN		1

Small Disadvantaged Women-Owned US Antenna Design & Manufacture Company DUNS: 069526517 TIN/EIN: 823039862 DLA ATI(SpEC)/JCP: Approved (0079669)	ANTENNAS@MATTERWAVES.COM ISO9001-2015 CERTIFIED ORIGINALLY DESIGNED S. HUYNH JULY-30-18 APPROVED S. HUYNH JULY-30-18 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES FRACTIONS TOLERANCES ARE: ± 1/64 .XXX .000 ± .1°	www.MATTERWAVES.com TORRENCE, CALIFORNIA, USA 3.5in Diameter Jamming / Interference Protection GNSS ANTENNA D 80CX3 MAT-3.5GPS1216A-TC4 SCALE 1/1 HTS: 8529104000   ECCN: 7A994/5A991.g
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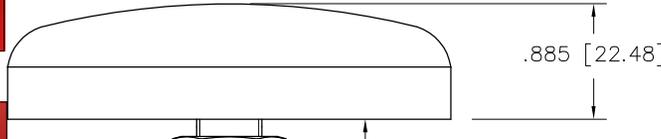
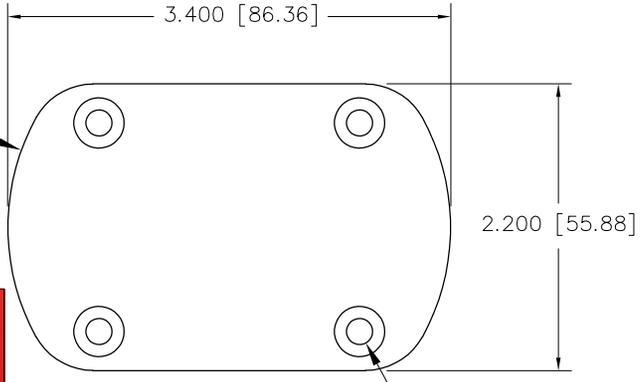
SIZE:	FREQ. BAND:	LNA:	CABLE'S LENGTH:	CONNECTOR:
1.2 = 1.2" Sq., 1 = 2" Sq.	L1 or 15 = L1 GPS	A: WITH LNA	X: NO CABLE, #; CABLE LENGTH (IN)	S: SMA, T: TNC, N: N
1.9 = 1.9" Sq., 2.6 = 2.6" Dia.	L1L2 or 1215 = L1L2 GPS	A5: WITH 43dB LNA	M: MAG, N: NO MAG.	SB: SMB, SSB: SSMB
3.5 = 3.5" Dia., 4 = MINI ARINC	L1L2 or 1215 = L1L2 GPS	P: WITHOUT LNA	MIN: FLUSH MAGENT	M: MCX, MM: MMCX
743= ARINC 743	L1L2L5 = L1L2 GPS/GLONASS		R: RIGHT ANGLE CON.	TB: TNC-BH, NB: N-BH
52 = 5" Dia. SURVEY	L1L2L5, 16 = L1GNSS, GNSS			

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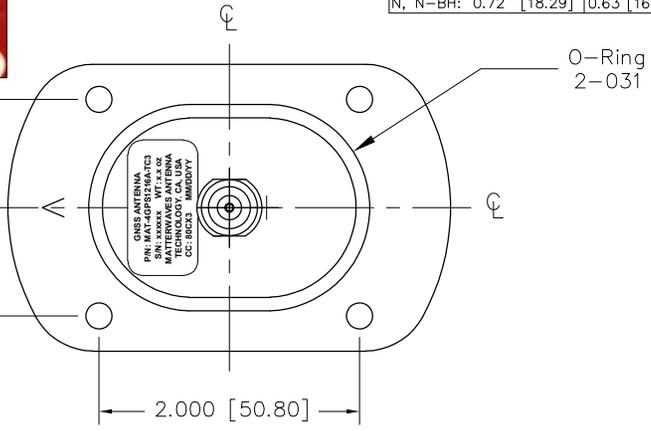
MATTERWAVES' PROPRIETARY

**SPECIFICATIONS**

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED



TNC FEMALE CONNECTOR	
Clearance: Z:	HOLE DIA.:
MCX/MMCX: 0.25" [6.37]	0.40" [11mm]
SMA: 0.46" [11.68]	0.40" [11mm]
TNC: 0.57" [14.53]	0.52" [13mm]
TNC-BH: 0.83" [21.00]	0.52" [13mm]
N, N-BH: 0.72" [18.29]	0.63" [16mm]



Fit to  
1.660 [42.16]  
for 6-32 Screws  
or  
1.600 [40.64]  
for 10-32 Screws  
(Provided)

**P/N: MAT-4GPS1216A-TBC3**

**ELECTRICAL:**

	L1 GPS/GLONASS/OmniStar / IRNSS B1-BeiDou / E1/E2/L6-Galileo / QZSS (1540-1610) MHz			L2/L5 GPS/GLONASS/ IRNSS B2/B3-Compass / E5/E6-Galileo (1164-1298) MHz		
	FREQUENCY:	(1540-1610) MHz				
RADIATION PATTERN:	HEMISPHERICAL					
POLARIZATION:	RHCP			RHCP		
VSWR:	< 2.0:1			< 2.0:1		
IMPEDANCE:	50 ohms			50 ohms		
ANTENNA GAIN (dBi):	Free Space	5 in G.P.	4 ft G.P.	Free Space	5 in G.P.	4 ft G.P.
@ 90 ° (ZENITH):	+ 3.0	+ 2.9	+ 1.7	0.0	+ 2.6	+ 2.4
@ 10 ° Elevation:	- 3.9	- 3.7	- 3.0	- 6.3	- 4.5	- 6.3
@ 20 ° Elevation:	- 3.0	- 2.1	- 0.1	- 4.6	- 3.0	- 3.2
@ 30 ° Elevation:	- 1.5	- 1.0	+ 1.0	- 3.4	- 1.3	- 1.2
@ 60 - 90 ° Elevation:	> + 1.9	> + 2.1	> + 0.7	> - 1.7	> + 1.5	> 0
BEAM WIDTH (3dB):	95 Deg.	100 Deg.	145 Deg.	97 Deg.	105 Deg.	110 Deg.
AXIAL RATIO:	2 dB			2 dB		
LNA GAIN:	33 dB			33 dB		
LNA NOISE FIGURE:	2.8 dB			2.8 dB		
LNA P1dB Out:	+20 dBm			+20 dBm		
LNA DC POWER:	(2.5 to 24)Vdc @ < 56 mA					
INTERFERENCE REJECTION:	(20-110)MHz: >(40-60)dB, (1360-1536)MHz: >(40-60)dB (1625-1660)MHz: >69 dB, (1625-2600)MHz: >69dB					
LIGHTNING PROTECTION:	INPUT: DC GROUND; OUTPUT: SURGE PROTECTION EN61000-4-5 Level 4 Pin Max = +55dBm Microsec Pulse (+69 dBm is Available)					
HIGH POWER, BURNOUT & JAMMING PROTECTION:	500V/m CW, 3300 V/m @ 10 µs PULSE @ 1 kHz RATE FROM 2MHz to 20 GHz					
MTBF:	1,000,000 Hrs					

**MECHANICAL:**

**SIZE:** WIDTH: 2.200 in. [55.88 mm], LENGTH 3.400 in. [86.36 mm], HEIGHT: 0.885 in. [22.48 mm]

**WEIGHT:** 6.5 oz. (184 g)

**FINISH:** SKYDROL RESISTANT POLYURETHANE ENAMEL BASE IRIDITE PER MIL-C-5541F

**MATERIAL:** 6061-T6 ALUMINUM ALLOY BASE COMPOSITE RADOME, IMPACT, ABRASION, UV, SOLVENT SKYDROL RESISTANCE, AND FIRE RETARDANT

**CONNECTOR:** TNC FEMALE BULKHEAD (OPTIONS: SMA, TNC-FB, N, N-BH, MCX, MMCX, SMB, SSMB)

**ENVIRONMENTAL:**

**TEMPERATURE:** OPERATING: -68 °F to +185 °F [-55 °C to +85 °C] STORAGE: -71 °F to +203 °F [-57 °C to +95 °C] 70,000 ft.

**ALTITUDE:** > 30 G's

**VIBRATION:** > 30 G's

**LEAKAGE / IP RATING:** HERMETICALLY SEAL / IP69K

**FEDERAL & MILITARY SPECIFICATIONS:**

TSO-C129/C132/C144, MIL-C-5541F(Finish), MIL-DTL-14072(Finish), DO-160/210/228(Test) MIL-STD-810G(Test), MIL-STD-461E(F/Elec Interfer), MIL-STD-464C(ELEC MAG), SAE J1455(Env) MIL-STD-202(Elec Comp), MIL-HDBK-5400/454(Elec Eq), MIL-PRF-39012(Con), MIL-STD-889B(Metal) EN 55155(Terminals), RCC-319-14 (Termination), MIL-STD-129/1285(Marking), MIL-STD-130N-1(ID) MIL-C-85704B(Solvent), MIL-G-81827(Grease), RCC-324-01(Safety), MIL-I-45208A/NAS411-1(HAZ)

QUANTITY REQD	DESCRIPTION	PART NO	ITEM NO
4	10-32 1IN MOUNTING SCREW & WASHER	93085A833/10-32Washer	3
4	6-32 1IN MOUNTING SCREW & WASHER	91771A153/6-32Washer1	2
1	O-RING	9557K123 (2-031)	1

Small Disadvantaged Women-Owned US Antenna Design & Manufacture Company DUNS: 069526517 TIN/EIN: 823039862 DLA ATI(SPEC)/JCP: Approved (0079669)	<b>ANTENNAS@MATTERWAVES.COM</b> ISO9001-2015 CERTIFIED ORIGINALLY DESIGNED BY: S. HUYNH APPROVED BY: S. HUYNH DEC-01-17 DEC-01-17 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES ± 1/64 ±.010 ± 1° ±.004 ±.005	<b>www.MATTERWAVES.com</b> TORRANCE, CALIFORNIA, USA <b>MINI ARINC JAMMING PROTECTION DAGR RA2 FOOT PRINT ACTIVE GNSS ANTENNA</b> D 80CX3 SCALE 1/1 HTS: 8529104000   ECCN: 7A994/5A991.g
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SIZE:	FREQ. BAND:	LNA:	CABLE'S LENGTH:	CONNECTOR:	COLOR PER FED-STD-595B:
1.2 = 1.2" Sq., 1 = 2" Sq.	L1 or 15 = L1 GPS	A: WITH LNA	X: NO CABLE, #; CABLE LENGTH (IN)	S: SMA, T: TNC, N: N	-1: GLOSS WHITE #17925
1.9 = 1.9" Sq., 2.6 = 2.6" Dia.	L1L2 or 1215 = L1L2 GPS	AS: WITH 43dB LNA	M: MAG, N: NO MAG.	SB: SMB, SSB: SSMB	-2: LUSTERLESS GRAY #36320
3.5 = 3.5" Dia., 4 = MINI ARINC	L1L2 or 1215 = L1L2 GPS	P: WITHOUT LNA	IR: RIGHT ANGLE CON.	M: MCM, MM: MMCX	-3: CAMO GREEN #34094
743= ARINC 743	L1L2L5 = L1L2 GPS/GLONASS			TB: TNC-BH, NB: N-BH	-30: OLIVE DRAB GREEN #34088
52 = 5" Dia. SURVEY	L1L2L5, 16 = L1GNSS, GNSS				-4: LUSTERLESS BLACK #37038
					-5: DESERT SAND #33446