



Shipstern WiFi/BT Antenna Gain

GoPro | April 8, 2024

WiFi Antenna Drawings, Page 1

DRAWING NOTES:

APPLICABLE DOCUMENTS:

- 970-01011-000 GOPRO PACKAGED PRODUCT SHIPPING & STORAGE TEST PROCEDURE
- 970-01019-000 PRODUCT DEVELOPMENT ENVIRONMENTAL REQUIREMENTS
- 970-01020-000 COSMETIC INSPECTION STANDARD FOR GOPRO PRODUCTS
- 970-01281-000 GOPRO PAINT AND COATINGS QUALIFICATION PROCESS
- 970-01859-000 PRODUCTION PART APPROVAL PROCESS (PPAP) TEMPLATE

1. PREPARE IN ACCORDANCE WITH ASME Y14.8-2009, ASME Y14.12-2012, Y14.5M-2009
2. ALL DIMENSIONS SHOWN SHALL BE CHECKED DURING FIRST ARTICLE INSPECTION, FAI MUST BE APPROVED FOR THE SPECIFIC REVISION OF THIS PART PRIOR TO SHIPMENT OF PARTS TO GoPro, GoPro's PARTNERS OR SUBCONTRACTORS.

PPAP SPECIFICATION 970-01859-000 MUST BE USED TO VALIDATE THE PART DIMENSIONS AND MANUFACTURING PROCESS ALL STAGES, CRITICAL-TO-FUNCTION (CTF) DIMENSIONS WILL BE SPECIFIED BY GOPRO ENGINEERING. STATISTICAL PROCESS CONTROL (SPC) DIMENSIONS WILL BE SPECIFIED BY GoPro ENGINEERING AND PRODUCT QUALITY.

3. PART SHALL CONFORM TO GOPRO COSMETIC STANDARD 970-01020-000.

4. DRAWING FOR INSPECTION PURPOSES ONLY. ACTUAL PART SHALL CONFORM TO PROFILE SYMBOL WITH RESPECT TO 3D ELECTRONIC DATABASE AS APPROVED BY GoPro (UNLESS OTHERWISE SPECIFIED).

[SPC] STATISTICAL PROCESS CONTROL: THESE DIMENSIONS SHALL BE USED FOR DETERMINATION AND QUALIFICATION OF PROCESS CAPABILITY (Cp, Cpk) PER THE GOPRO PPAP SPECIFICATION 970-01859-000.

[XX.XX] CRITICAL-TO-FUNCTION: THESE DIMENSIONS ARE CRITICAL TO FUNCTION AND SHALL BE USED FOR DETERMINATION OF FIT/FORM/FUNCTION (Cp/Cpk PRE-PRODUCTION RELEASE) PER THE GOPRO PPAP SPECIFICATION 970-01859-000.

5. SHEET METAL MATERIAL: SUS301-H, T=0.30MM

PLATING:

- Ni 1.5-3.5um ALL SURFACES
- Au 0.025um MINIMUM OVER CONTACT AREA

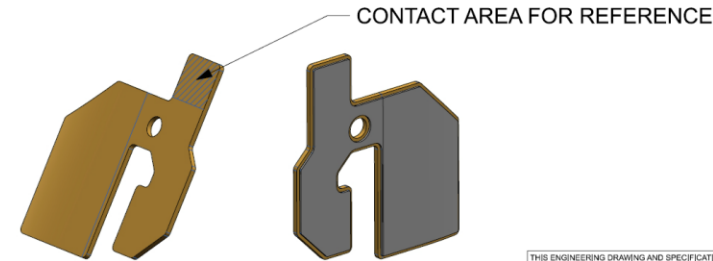
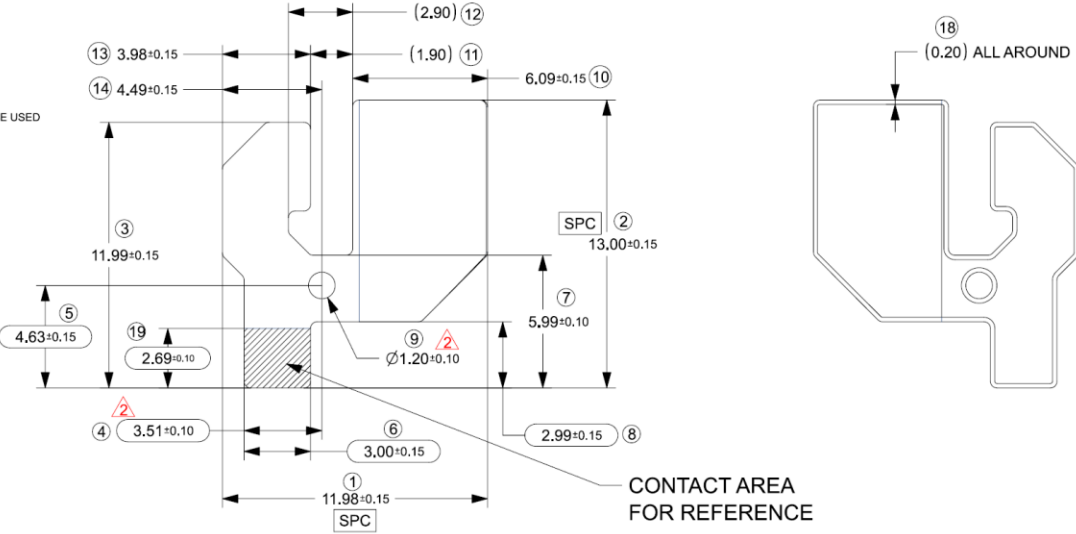
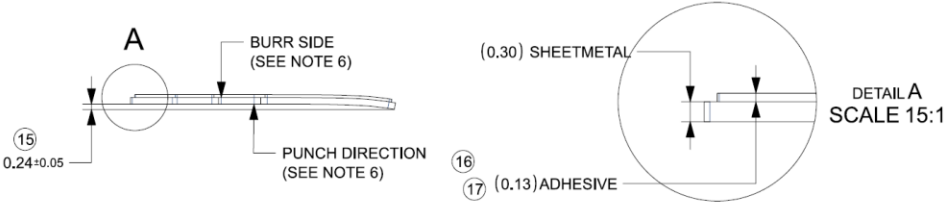
6. PUNCH DIRECTION AS INDICATED
MAX BURR SIZE IS 0.05MM,
AXIAL FAILURE STRENGTH OF INSERT > 5 kgf.

7. ADHESIVE MATERIAL: TESA 75013, T=0.13MM

8. INSPECT APPEARANCE SURFACE TO ASTM E294, STANDARD TERMINOLOGY OF APPEARANCE AND ASTM E1499 GUIDE TO THE SELECTION, EVALUATION, AND TRAINING OF OBSERVERS.

9. THE MATERIALS AND MANUFACTURING METHODS USED IN THE FABRICATION OF THIS PART MUST COMPLY WITH GoPro ENVIRONMENTAL SPECIFICATION 970-01019-000. TEST REPORTS ARE REQUIRED WITH THE FIRST ARTICLE PER 970-01019-000. THIS PART IS INTENDED FOR INTERNAL USE ON THE PRODUCT.3

REV	ECO	DESCRIPTION	DATE	APPROVED
1	146894	RELEASE FOR P2	2019-SEP-17	AS
2	147282	HEATSTAKE LOCATION MOVED, UPDATED DIMENSION 4, 9	2019-NOV-07	AS

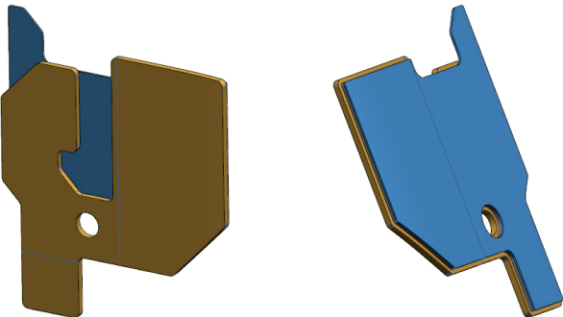
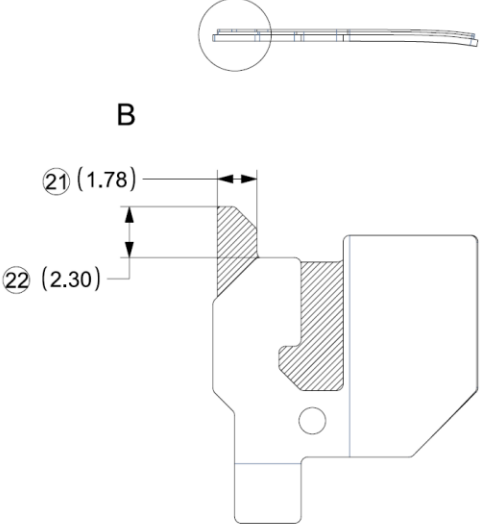
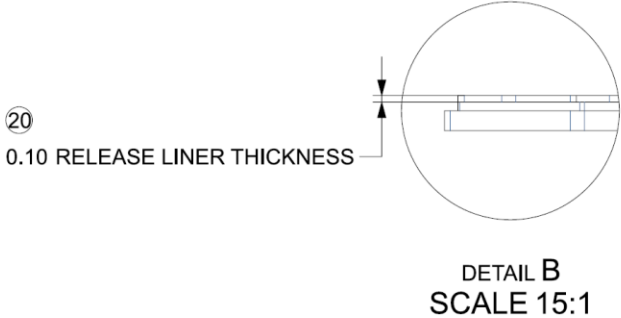


CPSS1 uses the same WiFi antenna as CPBL1/CPKG1/CPST1

PREPARED BY AKSHAY SHINDE	DATE 2019-SEP-06		
CHECKED BY KIELAN CROW	DATE 2019-SEP-06		
FILENAME 425-28809-000			
LIFECYCLES STATE		PART DESCRIPTION ANTENNA WI-FI, BOILERS	
PARTS MUST BE RoHS COMPLAINT		THIRD ANGLE PROJECTION	
ALL DIMENSIONS ARE IN MILLIMETERS			
SIZE A3		DRAWING NUMBER 425-28809-000	REV 2
DO NOT SCALE DRAWING		PAGE 1 of 2	

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CPSS1 uses the same WiFi antenna as CPBL1/CPKG1/CPST1

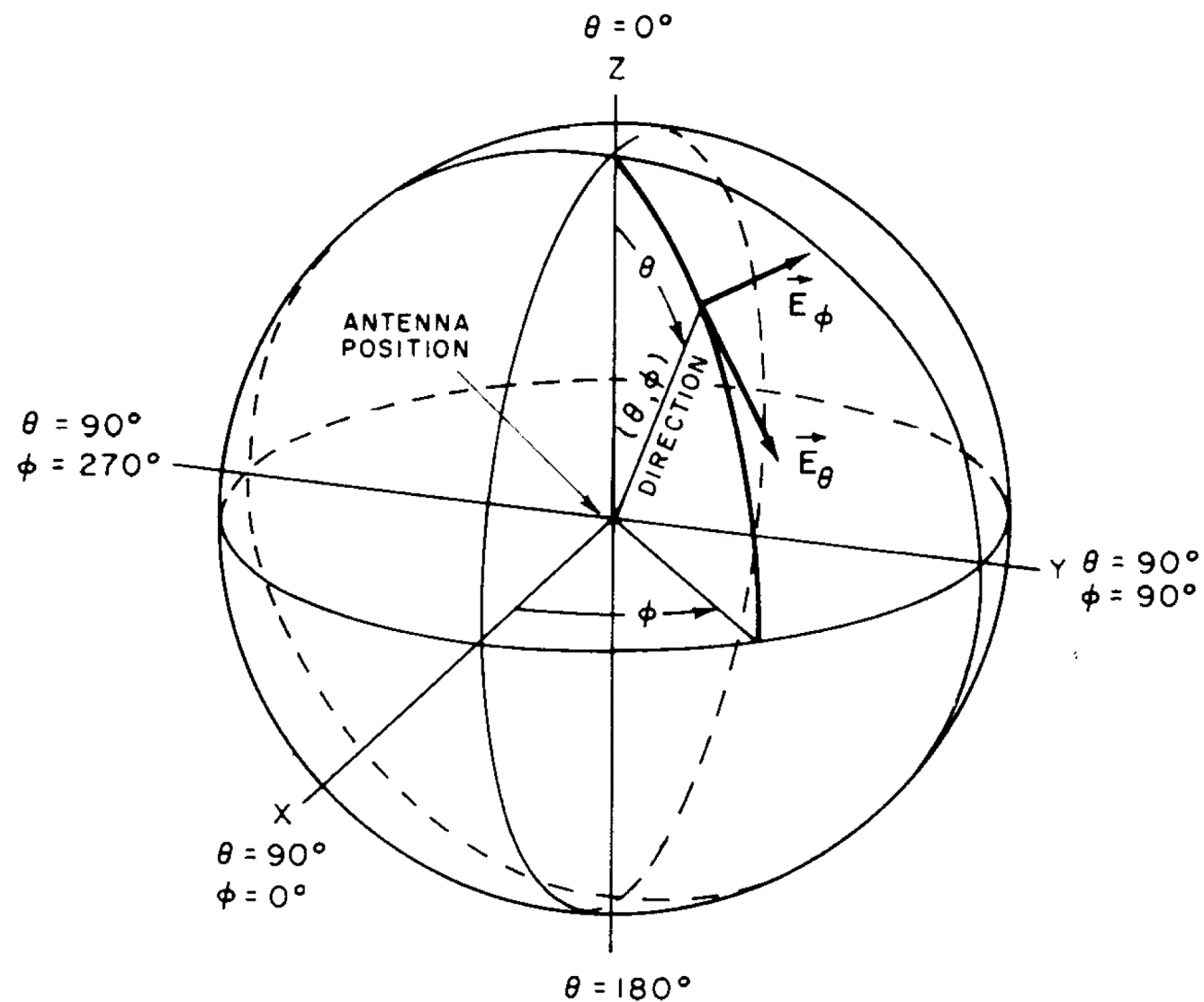
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PART DESCRIPTION		
ANTENNA WI-FI, BOILERS		
SIZE	DRAWING NUMBER	REV
A3	425-28809-000	2
DO NOT SCALE DRAWING		SHEET 2 OF 2

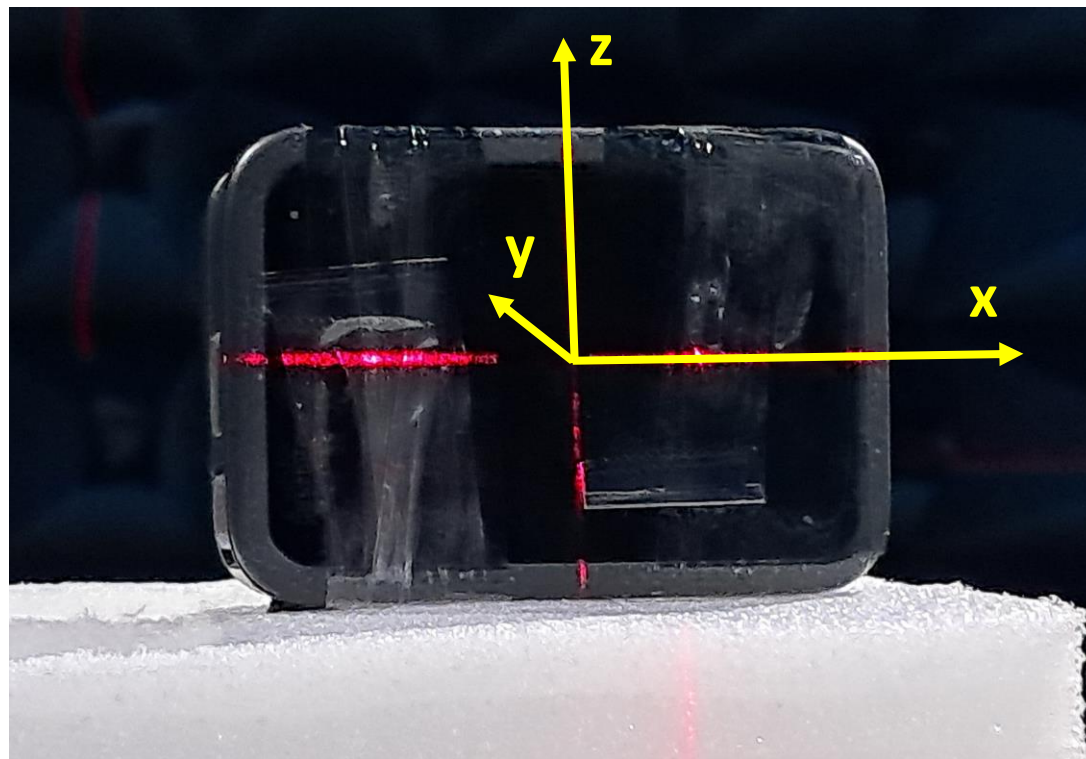
Measured Peak Gain of the WiFi antenna

Band [GHz]	Frequency [MHz]	Antenna Peak Gain [dBi]
2.4	2412	-1.08
	2442	-1.22
	2462	-1.47
5	5200	0.30
	5300	1.15
	5600	2.13
	5785	2.51

Standard Spherical Coordinate System Used in Antenna Measurements

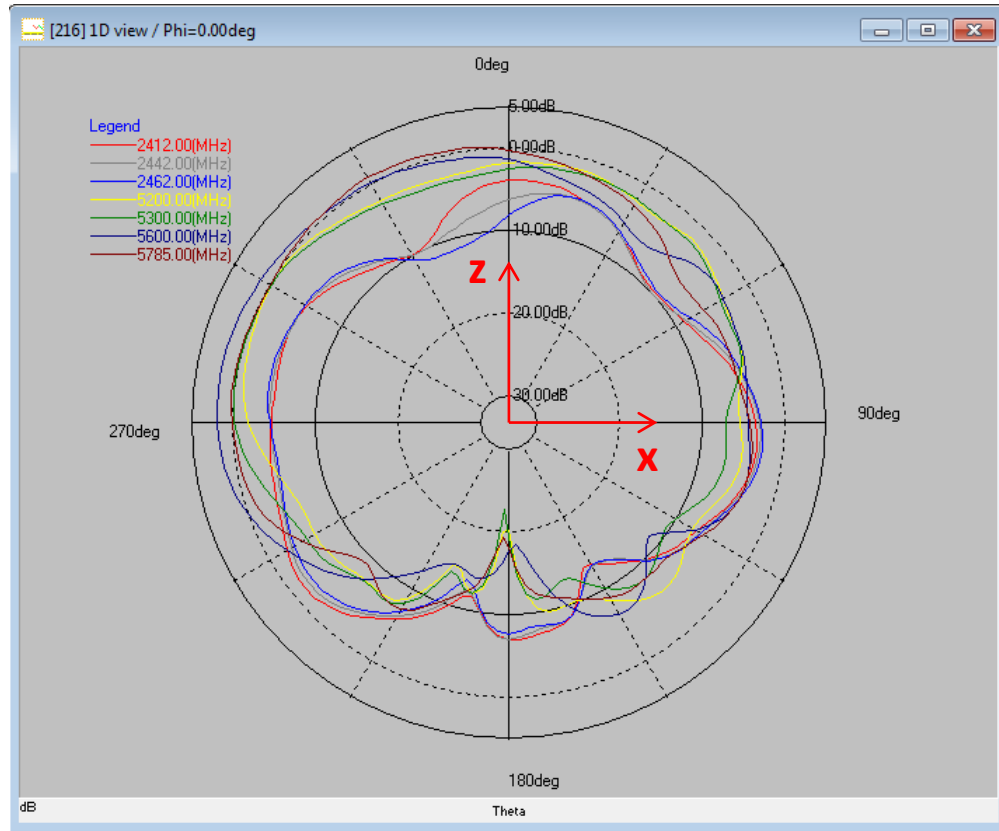


Test Setup in the Anechoic Chamber

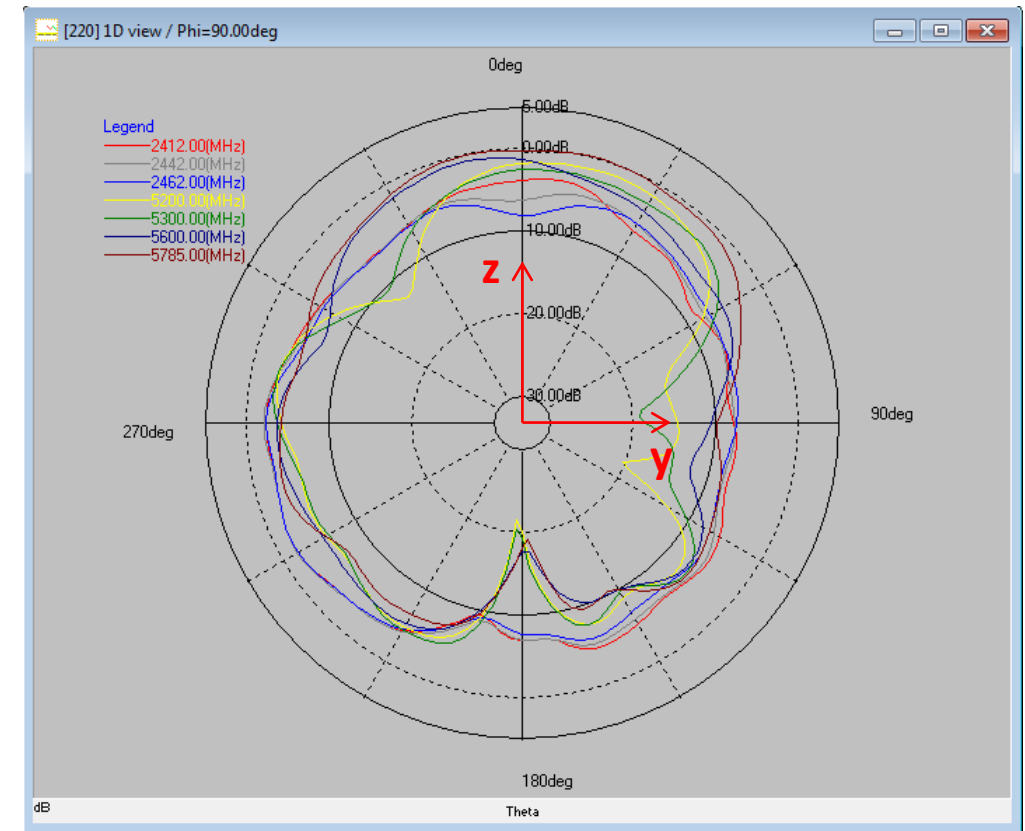


WiFi Antenna Radiation Patterns in the Vertical Planes

XZ plane ($\phi=0^\circ$)



YZ plane ($\phi=90^\circ$)



WiFi Antenna Radiation Patterns in the Horizontal Plane

XY plane ($\theta=90^\circ$)

