



Antenna Gain Test Report

Project No.:	4788488983
Client Name:	Sphero, Inc
Client Address:	4 th Floor 299QRC Nos.287-299 Queen's Road Central Hong Kong
Product Name:	Sphero BOLT
Manufacture:	Sphero, Inc
Antenna Type:	Insert Antenna
Antenna Size:	19.37mm X 13.90mm X1.92mm
Project Engineer:	Dean Hua
Test Result:	Information only
Test Standards:	IEEE Std 149-1977
Issued Date:	2018.5.17

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1. Test Equipment Information

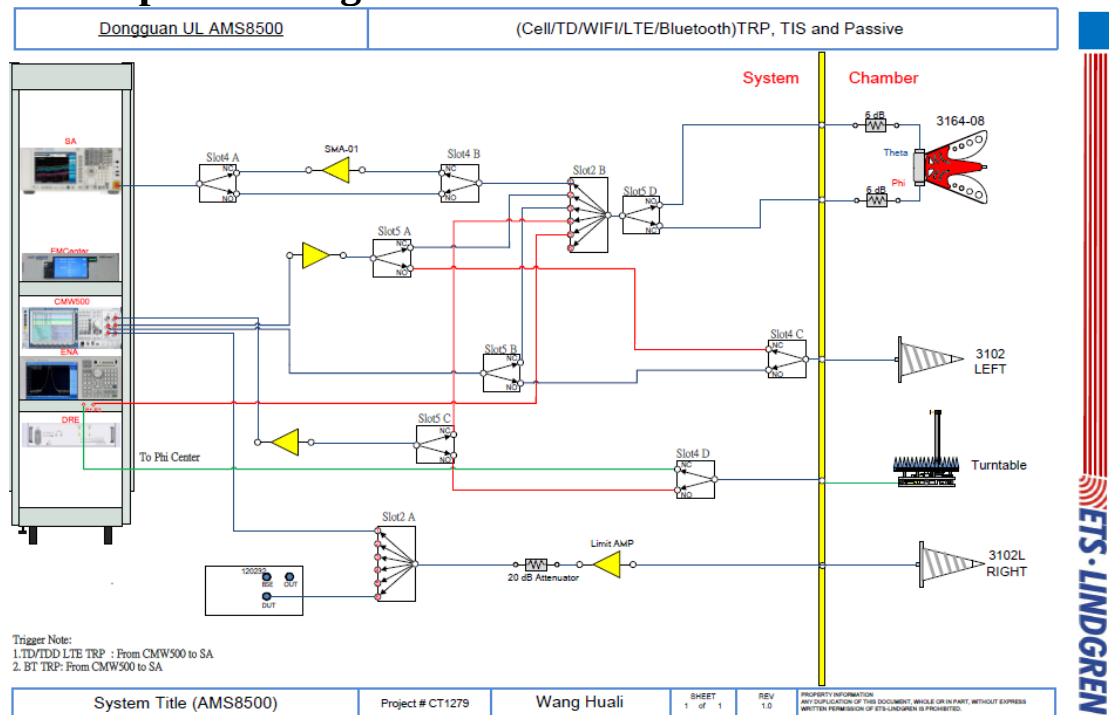
Equipment	Manufacturer	Mode No.	Serial No.	Cal date	Cal Due
Test Chamber	ETS-Lindgren	8500	/	/	/
Test Software	ETS-Lindgren	EMQuest V1.09	/	/	/
Network Analyzer	Keysight	E5071C	MY46524531	2017.12.12	2018.12.12

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2. Setup block diagram



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3. Test Temperature and

Temperature: 19.6°C

Humidity: 61%

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4. Test Step Flow

- 1) Maintain the test ambient temperature of 23 ± 2 C, the instrument is powered on and preheated for more than 30 minutes;
- 2) Turn on the darkroom power supply, connect the test cable, and set up the sample according to the standard;
- 3) Outline sets the test content objectives and conducts calibration tests;
- 4) Run the software, when the test is completed, export the corresponding test diagram and test data, and save to the corresponding directory.

5. Test Result

Frequency (MHz)	Efficiency (%)	Gain (dBi)
2400	74.0016	2.99948
2402	74.0276	3.0099
2404	74.1471	3.02134
2406	74.3275	3.03269
2408	74.4358	3.04846
2410	74.4071	3.07317
2412	74.4562	3.06956
2414	74.6145	3.0772
2416	74.8908	3.08245
2418	75.1845	3.12776
2420	75.3586	3.13226

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2422	75.6872	3.16608
2424	75.8314	3.15656
2426	76.0154	3.19708
2428	75.8345	3.16485
2430	75.8807	3.19665
2432	75.7655	3.19246
2434	75.6719	3.17599
2436	75.7569	3.20895
2438	75.6976	3.21026
2440	75.6608	3.18668
2442	75.7072	3.2215
2444	75.3849	3.19195
2446	75.0824	3.19133
2448	75.0981	3.1832
2450	74.8703	3.18417
2452	74.8044	3.1875
2454	74.5387	3.18716
2456	74.4774	3.1845
2458	73.9397	3.15093
2460	73.512	3.13106
2462	72.9349	3.11034
2464	72.5058	3.09767
2466	72.0308	3.09423
2468	71.6857	3.0933
2470	71.5832	3.08333
2472	71.4031	3.07606
2474	71.0975	3.07321
2476	70.7431	3.06811
2478	70.3679	3.06415
2480	69.8098	3.03668
2482	69.788	3.04459

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2484	69.5137	3.02962
2486	69.2703	3.05252
2488	69.1962	3.06924
2490	69.2521	3.08116
2492	69.1815	3.07603
2494	69.1663	3.09588
2496	69.2079	3.10889
2498	69.1301	3.11877
2500	69.3314	3.14126

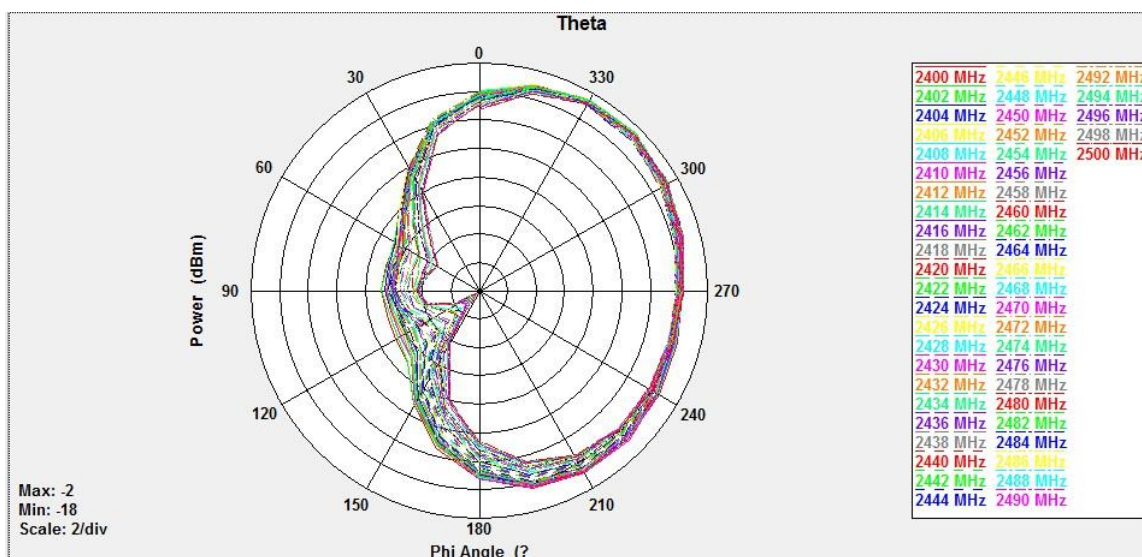
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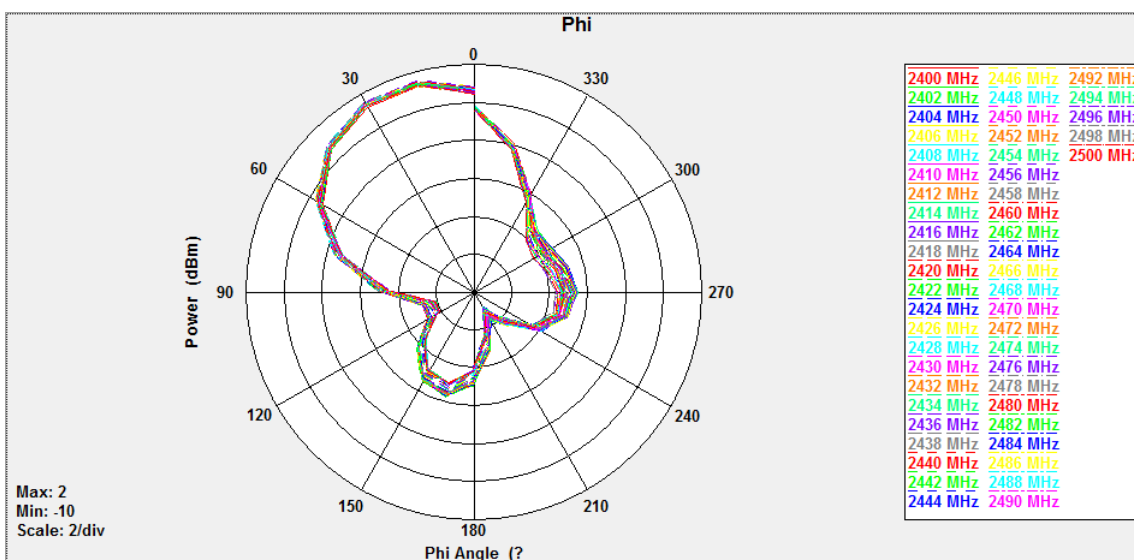


6. Polarization Pattern Photos

Horizontal Polarization (90°)



Vertical Polarization(90°)

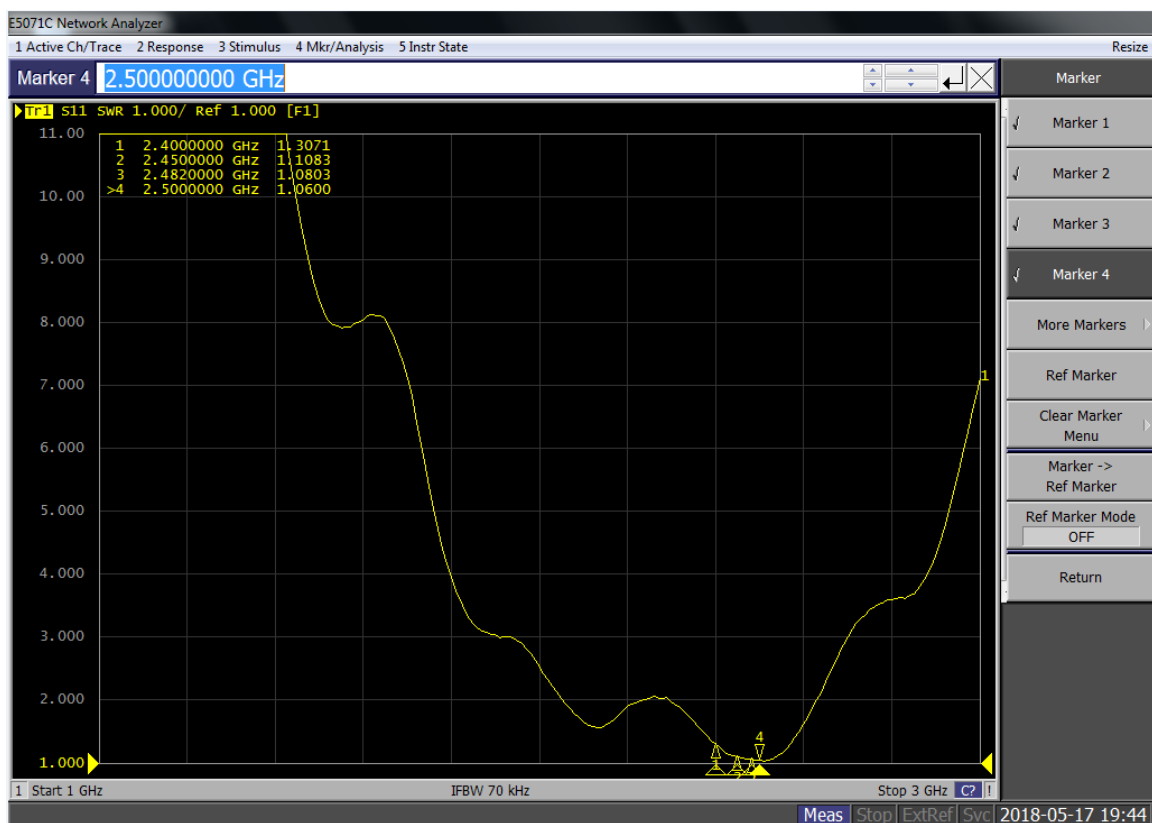


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7. V.S.W.R

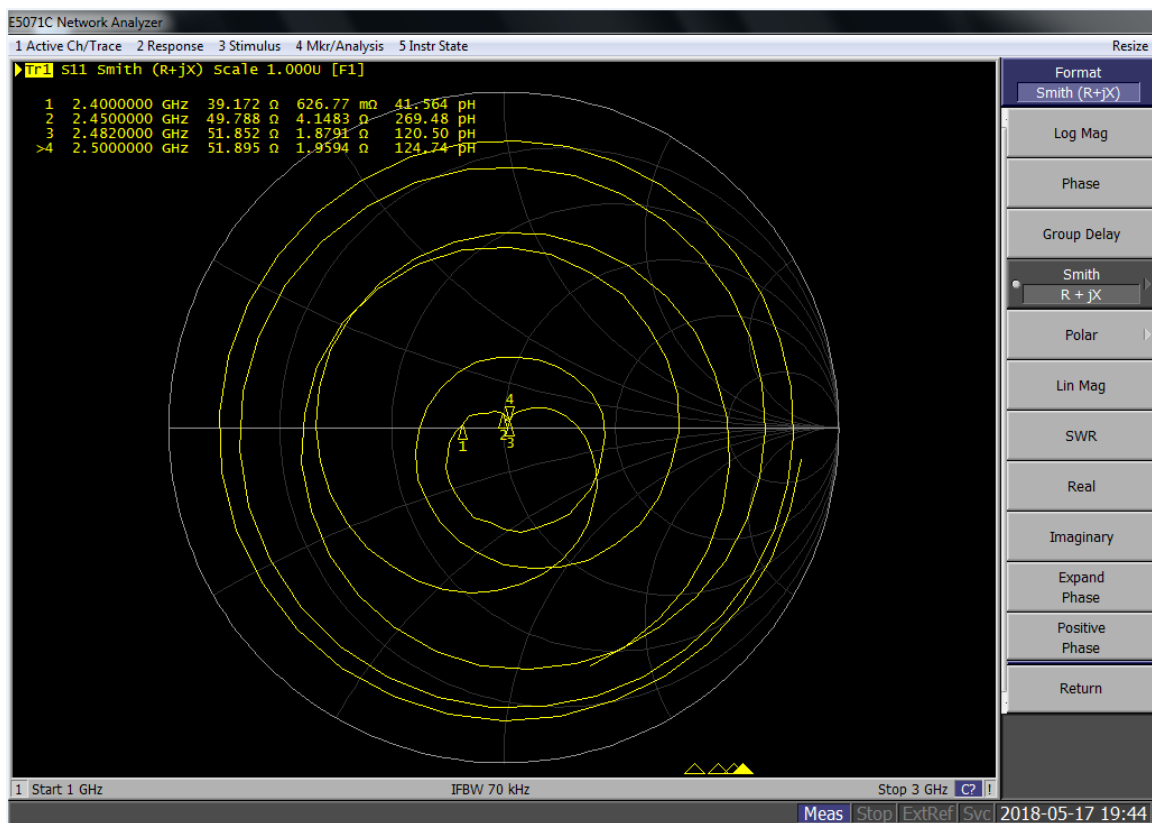


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8. Smith



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