



TST-1080

Antenna performance

Test personnel: Ethan Cheng

Test date: 2022/06/24

Outline

- ❑ scope
- ❑ Antenna specification
- ❑ Antenna Drawing
- ❑ Antenna placement
- ❑ TEST METHODOLOGY
- ❑ Antenna performance
 - The placement of antenna
 - efficiency and peak gain
 - Radiation pattern of antenna
- ❑ Summary
- ❑ Next activity

Scope



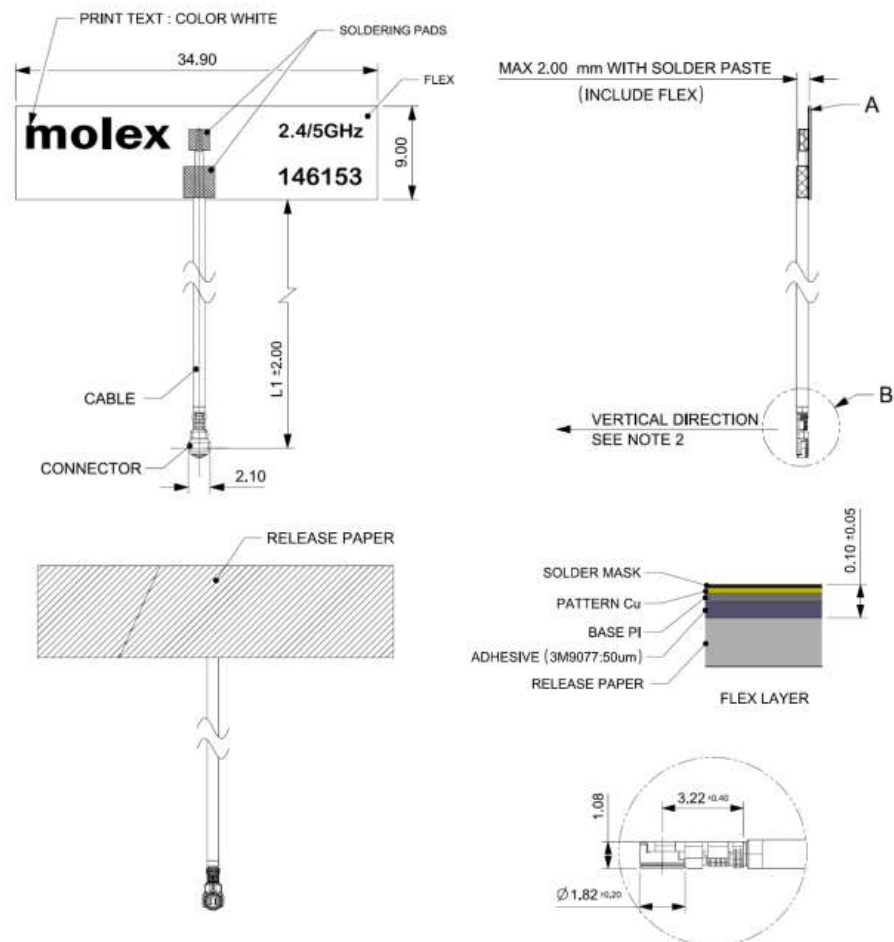
This report is intended to provide a high-level antenna system review of TST-1080 touch pad. By through the integration, detecting and correcting, from the project.

This Product Specification covers the mechanical, electrical and environmental performances specification for WiFi and Bluetooth application

Antenna specification of Molex

Product name	WIFI 6E FLEX CABLE BALANCE ANTENNA		
Part number	146153		
Frequency	2.4GHz-2.5GHz	5.15GHz-5.85GHz	5.925GHz-7.125GHz
Polarization	Linear		
Operating with matching	-40°C to 85°C		
Storage with matching	-40°C to 85°C		
RF Power	2 Watts		
Impedance with matching	50 Ohms		
Antenna type	Flex		
Connector type	146153 0XXX	146153 1XXX	
	Compatible MHF1	Compatible MHF4	
User Implementation type	Adhesive 3M9077		
Cable diameter	Ø1.13mm		

Antenna Drawing of Molex 145153



TEST METHODOLOGY

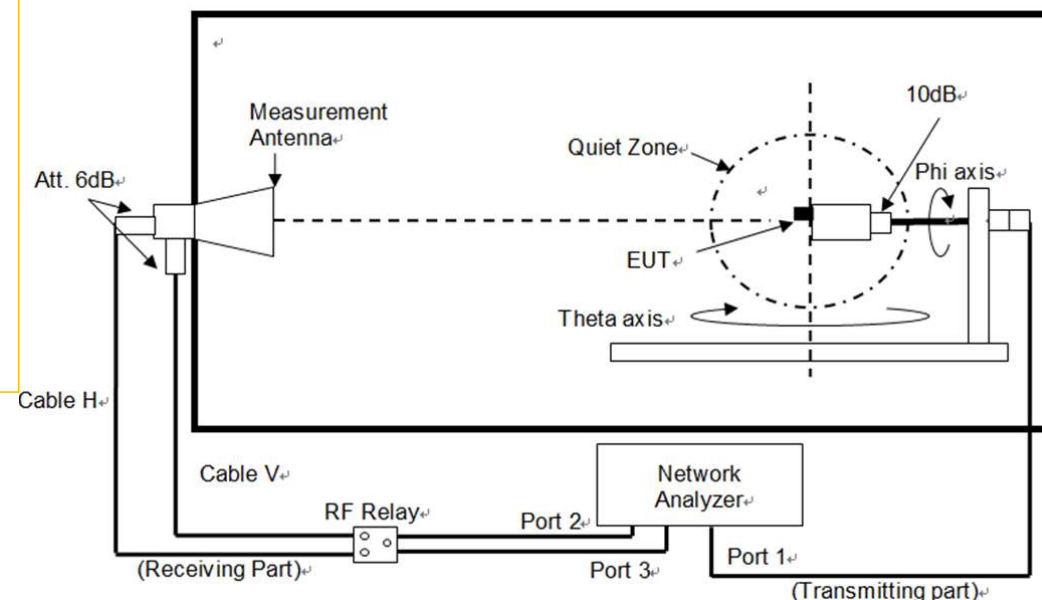
The radiation pattern must have the omni positions. The radiation pattern measurements are performed in the three dimensional anechoic chamber. The chamber provides less than reflectivity from 700MHz through 8GHz. The chamber is calibrated using standard horn antenna. The gain here is expressed as dBi that standardizes the isotropic antenna. The gain measurements are also performed in the same chamber described previously.

Testing tool

EMQuest Data Acquisition and Analysis Software	Version 1.14 Build 10265	SN: 1312
--	-----------------------------	----------

Equipment

Name	Manufacturer	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
ENA Series Network Analyzer	Keysight	E5071C	MY46100746	2021/07/01	2022/06/30
RF Switch	Keysight	3499A	00155745	NCR	NCR
Multi-Axis Positioner Controller	ETS-Lindgren	2090	N/A	NCR	NCR
Medium-Duty Positioner	ETS-Lindgren	2015	N/A	NCR	NCR
Measurement Horn Antenna	EMCO	3164-08	00102092	NCR	NCR



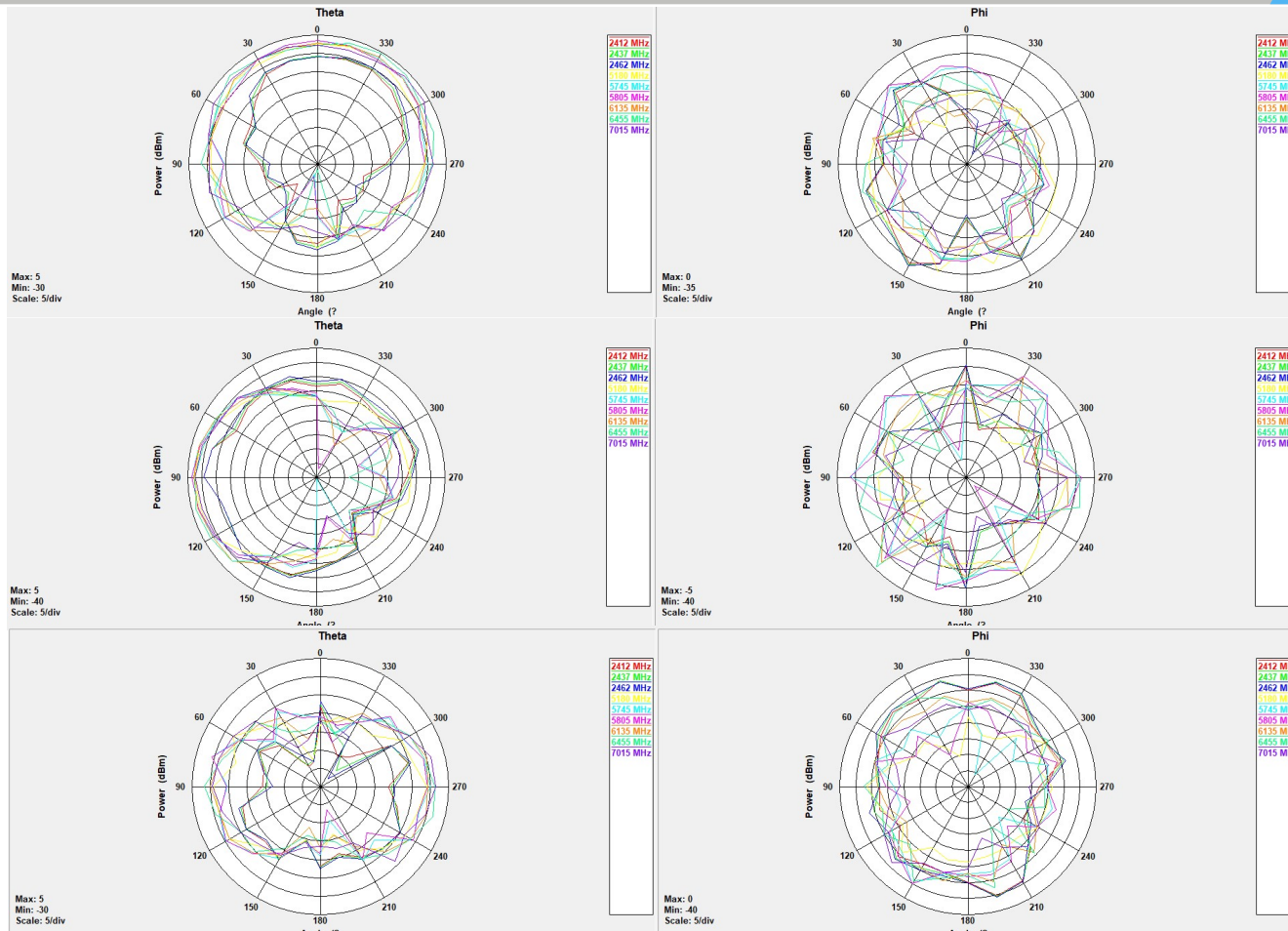
Chamber information

Name	Manufacturer	Type/Model	Serial Number
Anechoic Chamber	ETS-Lindgren	AMS-8500	N/A

ANT 2 efficiency and peak gain

Model	綠點_TST1080_3D_Gain_FS_2412-7015MHz_Cont15_Ant								
Test / Position	Gain /Free Space								
Frequency	2412	2437	2462	5180	5745	5805	6135	6455	7015
Ant. Port Input Pwr. (dB)	0	0	0	0	0	0	0	0	0
Tot. Rad. Pwr. (dB)	-6.08	-5.72	-5.36	-3.17	-2.14	-2.14	-2.03	-1.57	-2.14
Peak EIRP (dB)	-0.68	-0.33	0.08	3.17	3.56	3.71	3.93	4.86	3.79
Directivity (dBi)	5.40	5.39	5.44	6.34	5.70	5.85	5.96	6.43	5.93
Efficiency (dB)	-6.08	-5.72	-5.36	-3.17	-2.14	-2.14	-2.03	-1.57	-2.14
Efficiency (%)	24.64	26.78	29.08	48.17	61.15	61.06	62.68	69.67	61.12
Gain (dBi)	-0.68	-0.33	0.08	3.17	3.56	3.71	3.93	4.86	3.79
NHPRP $\pm\pi/4$ (dB)	-7.35	-7.04	-6.73	-3.63	-2.64	-2.67	-2.54	-2.09	-2.64
NHPRP $\pm\pi/6$ (dB)	-8.49	-8.18	-7.88	-4.59	-3.61	-3.66	-3.56	-3.15	-3.60

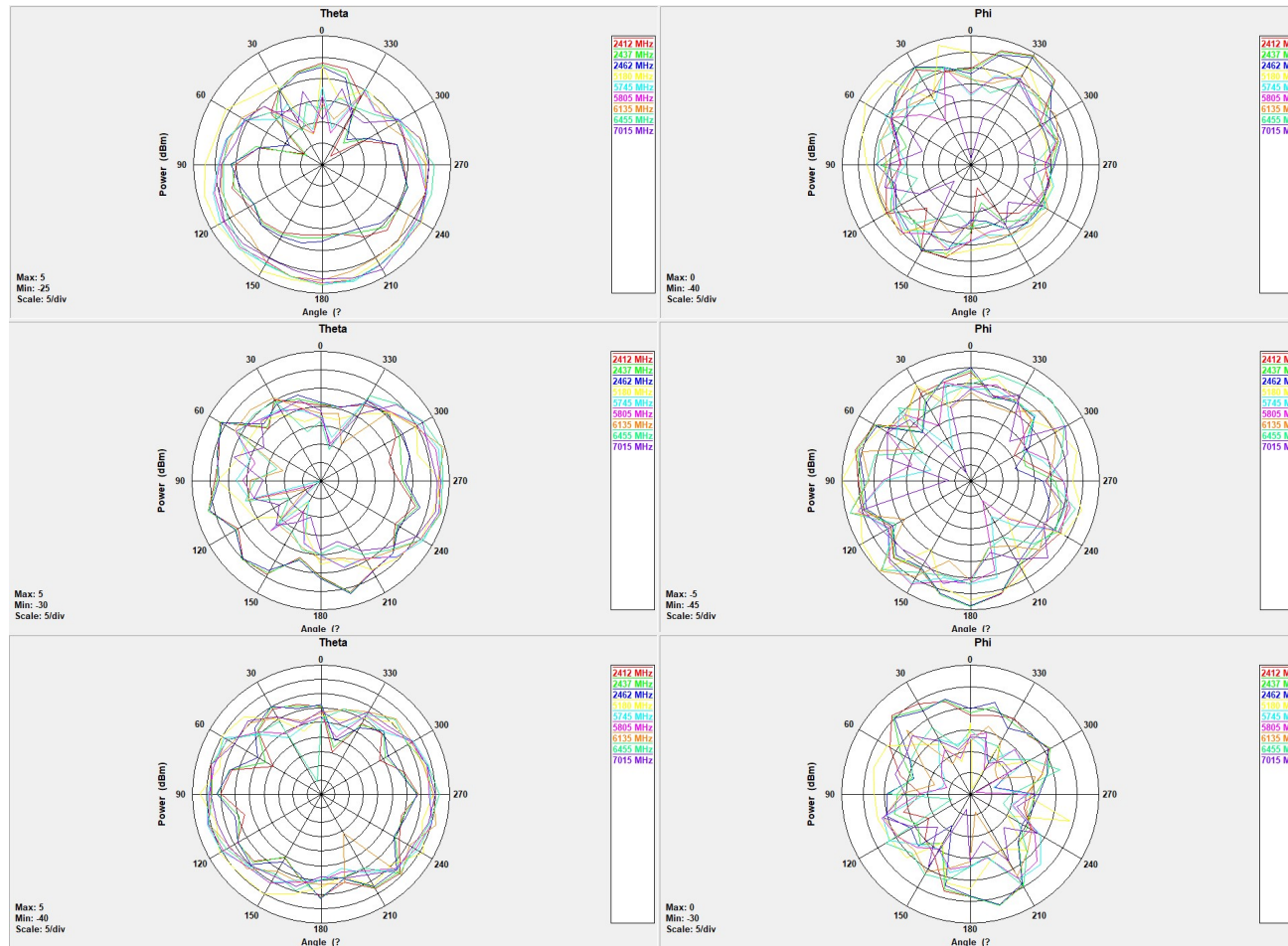
Radiation pattern of antenna 2



ANT 1 efficiency and peak gain

Model	綠點_TST1080_3D_Gain_FS_2412-7015MHz_Cont15_Ant								
Test / Position	Gain /Free Space								
Frequency	2412	2437	2462	5180	5745	5805	6135	6455	7015
Ant. Port Input Pwr. (dB)	0	0	0	0	0	0	0	0	0
Tot. Rad. Pwr. (dB)	-3.20	-3.36	-3.57	-1.66	-1.90	-2.26	-1.81	-1.59	-2.59
Peak EIRP (dB)	2.78	2.52	2.11	4.08	3.36	3.58	4.63	4.08	3.19
Directivity (dBi)	5.98	5.88	5.68	5.75	5.26	5.84	6.44	5.67	5.78
Efficiency (dB)	-3.20	-3.36	-3.57	-1.66	-1.90	-2.26	-1.81	-1.59	-2.59
Efficiency (%)	47.84	46.18	43.99	68.16	64.59	59.49	65.89	69.33	55.04
Gain (dBi)	2.78	2.52	2.11	4.08	3.36	3.58	4.63	4.08	3.19
NHPRP $\pm\pi/4$ (dB)	-4.68	-4.85	-5.08	-2.44	-2.41	-2.79	-2.38	-2.16	-3.17
NHPRP $\pm\pi/6$ (dB)	-6.26	-6.42	-6.65	-3.61	-3.44	-3.81	-3.33	-3.22	-4.29

Radiation pattern of antenna 1



XY plan

XZ plan

YZ plan



Thank you

JABIL
ENGINEERED SOLUTIONS GROUP