

Antenna specification for approval

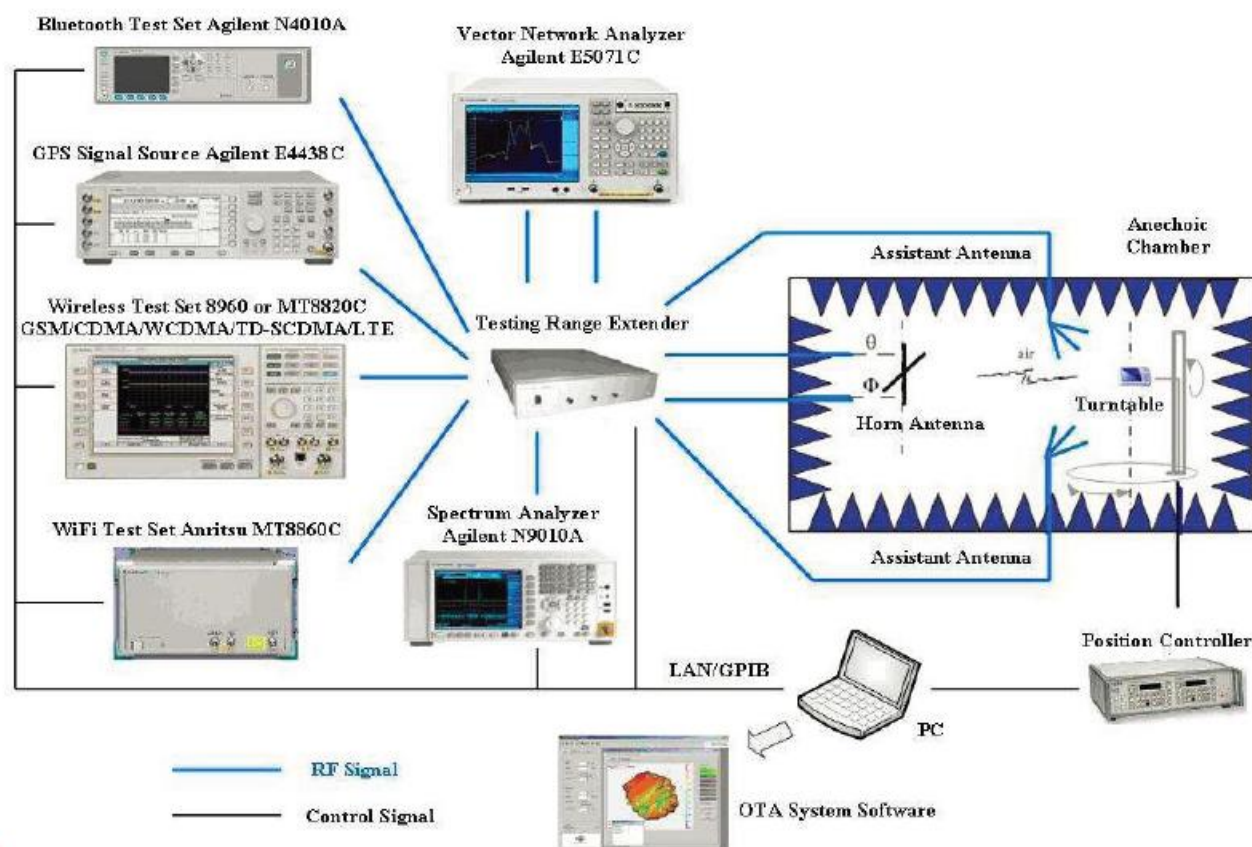
Customer name	VisuScience Meditech Co., Ltd.		
Model	VMC-100 Meibomian Gland Imaging Camera -AP6256 module		
Antenna frequency	2.4GHZ&5GHz		
Antenna function	WIFI&BT&5Gwifi antenna		
Antenna material	FPC	FPC color	black
model	SF967F-1B2-A		
Material number	SF967F-1L11G-060-A		
Customer Part Number			
Ward accepted the signature		Client acknowledges signature	
structure		Purchase	
Document control		structure	
radio frequency		engineering	
To examine		QC	
Responsible LTT		To examine	
date 2023.01.31	Seal area	date 2023.01.31	Seal area

Serial number	Certification number	Material type	Date of issue	Remarks
1	A2220186128101ER1	Tinned copper wire	2022-05-17	One year
2	CANEC2200386502	halogen	2022-01-12	One year
3	CANEC2200386501	Adhesive	2022-01-12	One year
4	SHAEC2200415801	FEP sheath	2023-01-13	One year
5	SHAEC2127178503	FEP insulation	2022-12-15	One year
6	SZXEC2203054804	Tin wire	2022-09-19	One year
7	SZXEC2203054808	Tin	2022-09-19	One year
8	ETR22300684	Printing ink	2022-03-09	One year
9	EKR22501369	Substrate	2022-05-27	One year
10	CANEC2124348308	EVA foam	2023-01-03	One year
11	SZXEC2202709609	Conductive cloth	2022-08-16	One year
12	CANEC2218227002	Gold plating	2022-08-30	One year

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I: Device Support & Testable Antenna Type



Antenna function	Frequency Range	test instrument	test method	standard test
2G antenna (GSM)	824MHz-960MHz, 1710MHz-1990MHz	5071B、8960 OTA darkroom	Active test, passive test	Soward standards, customer requirements
3G antenna (WCDMA/TDSCDMA/CDMA-EVDO/2000)	824MHz-960MHz, 1710MHz-2170MHz	5071B、8960 OTA darkroom	Active test, passive test	Soward standards, customer requirements
4G antenna (LTE-FDD/LTE-TDD)		5071B、CMW500、 SP8011、OTA darkroom	Active test, passive test	Soward standards, customer requirements
WIFI antenna	2.4GHz-2.48GHz, 5.15GHz-5.35GHz, 5.725GHz-5.825GHz	5071B、CMW500、OTA darkroom、router、 PC	Active test, passive test, APK actual test, throughput test	Soward standards, customer requirements
BT antenna	2.4GHz-2.48GHz,	5071B、OTA darkroom 、Bluetooth Speaker	Passive test, actual test	Soward standards, customer requirements
Positioning antenna (GPS, GLONASS, Beidou, Galileo)	1.575.42MHz±10MHz 1602MHz+0.5625MHz 1561MHz+2.046MHz	5071B、OTA darkroom 、APK	Passive test, actual test	Soward standards, customer requirements
NFC antenna	13.56MHz	5071B、Dedicated test fixture、OTA darkroom、APK	Passive test, actual test	Soward standards, customer requirements
Remote control antenna	433MHz	5071B、OTA darkroom	Passive test, actual test	Soward standards, customer requirements

II: Overview

(1) Antenna performance

1. This approval sheet supports for MID project. FPC antennas include in this project. This report is for the performance of WIFI&BT antenna.
2. Antenna shape size: Meet the requirement of MID
3. Antenna band: 2.4GHz~5GHz
4. Antenna material: Antenna material meet the requirement of MID
5. Adhesive performance: Adhesive performance meet the requirement of MID
6. Antenna performance meet the spec below:

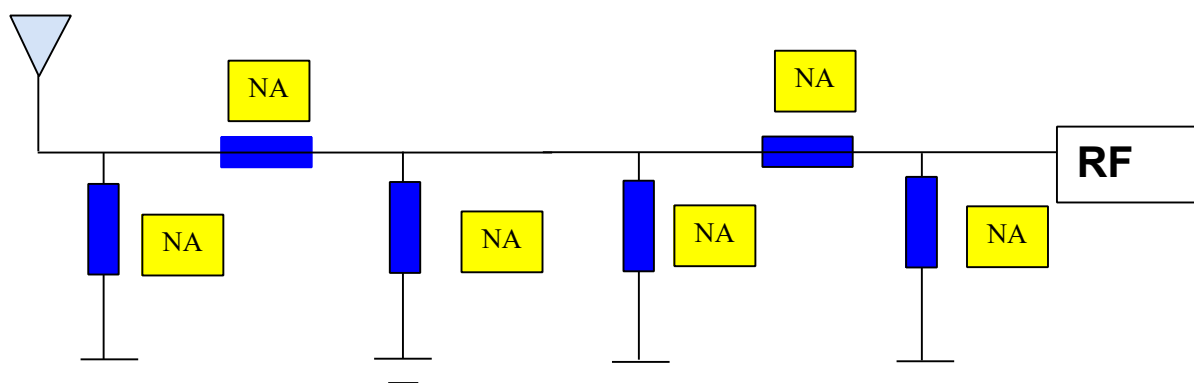
Description	2.4GHz~5GHz	Units
VSWR	≤ 2.0	
Average Antenna Gain	≥ -4.5	dB
Antenna Efficiency	≥ 40	%
Feed Impedance	50 ohms	
Operating Temperature	-40 to +85 deg C	
Polarization / Azimuth	Linear / Omni-directional	

(2) Mechanical Information

Mechanical Dimension	
Cable Length	060mm/GRAY
Description	WIFI&BT antenna
Material	FPC
Coaxial Cable	50 Ω / O. D. 1.13mm
Environmental	
Operation Temperature	-40 to +85 deg C
Storage Temperature	-40 to +85 deg C

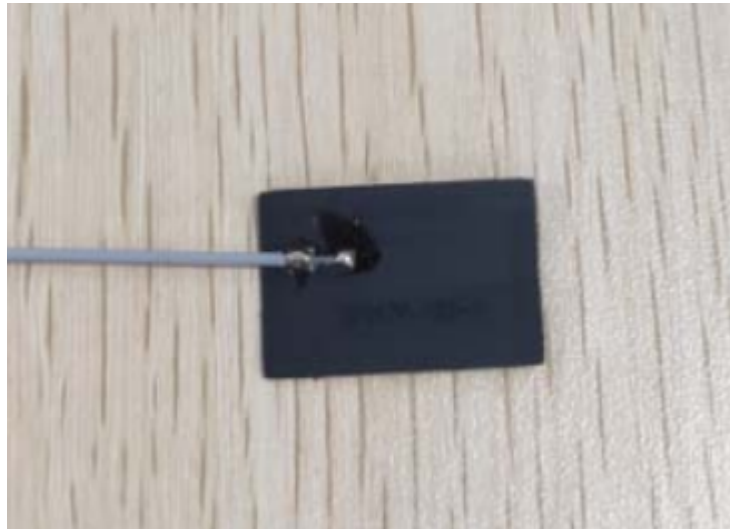
III: Matching Circuit Diagram & Machine Picture & Antenna Picture

(1) Matching circuit



(2) Machine picture & antenna picture





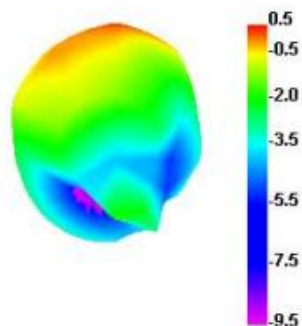
IV:Antenna Standing Wave Ratio & Antenna Efficiency (VSWR)



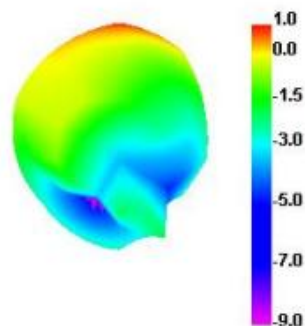
Passive Test For 2.4G				Passive Test For 5G			
Freq	Effi	Effi	Gain	Freq	Effi	Effi	Gain
(MHz)	(%)	(dB)	(dBi)	(MHz)	(%)	(dB)	(dBi)
2400	39.6	-4.02	0.53	5000	58.82	-2.3	1.91
2410	36.81	-4.34	0.13	5100	68.21	-1.66	2.45
2420	40.34	-3.94	0.55	5200	72.24	-1.41	2.49
2430	41.35	-3.84	0.58	5300	69.83	-1.56	2.36
2440	44.05	-3.56	0.93	5400	65.58	-1.83	1.8
2450	45.7	-3.4	1	5500	60.8	-2.16	1.75
2460	43.01	-3.66	0.7	5600	63.12	-2	1.79
2470	40.05	-3.97	0.15	5700	65.46	-1.84	1.82
2480	41.65	-3.8	0.32	5800	64.43	-1.91	1.32
2490	43.98	-3.57	0.45	5900	69.6	-1.57	2.15
2500	46.62	-3.31	0.67	6000	71.49	-1.46	3.15

V:3D pattern

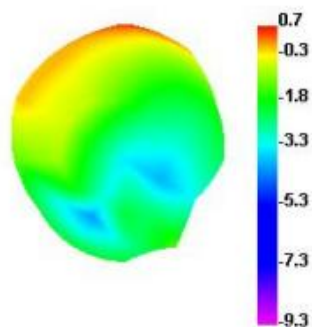
2400.000MHz



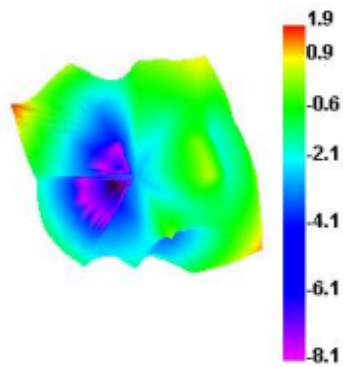
2450.000MHz



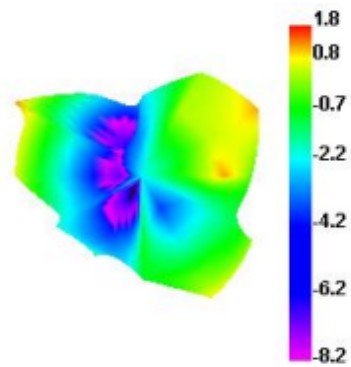
2500.000MHz



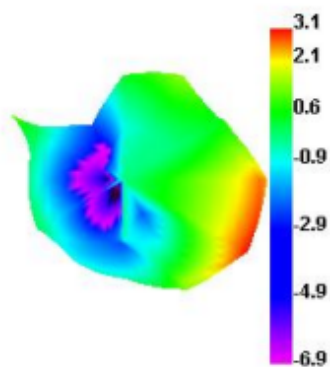
5000.000MHz



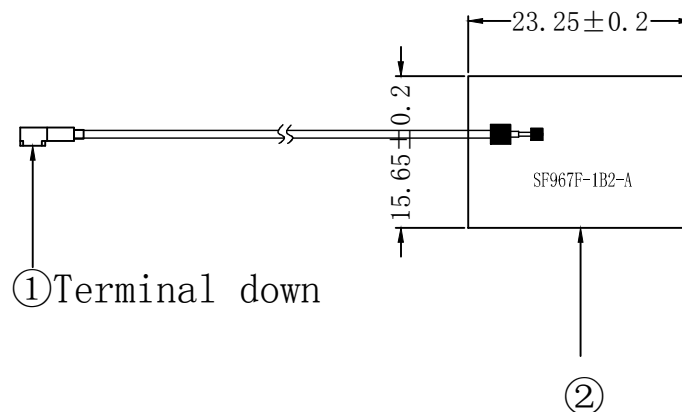
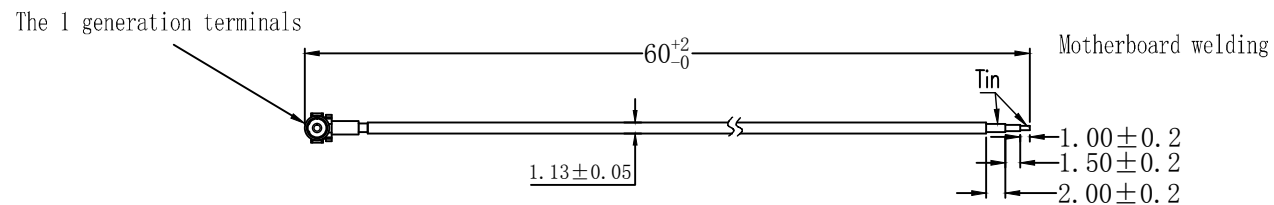
5500.000MHz



6000.000MHz



六:Structural drawing



technical requirements:

- 1.* for critical dimensions;
- 2.Size conform to the requirements of the drawings;
- 3.No virtual welding welding point, false welding. Require full welding points.
- 4.Network test pass.
- 5.No marked tolerance according toSJ/T 10628 1995 6classes;



5											SWARD			ShenZhen SWARD Communication Technology Co.Ltd
4														SF967F-1L11G-060-A
3					signatures	date	mass	signatures	date	time markup			percentage	ROHS
2	FPC	black	1	SF967F-1B2-A						1		A	1 : 1	
1	coaxial line	GRAY	1	φ=1.13	RF									
	name	color	quantity	specifications	audits			approval						