

MATERIAL FOR APPROVAL

Number: LM-BD-MQ-QE-003 V5.0

Supplier (Agent):	Shenzhen Hydemen Electronics Co., Ltd.		
Item Specification:	UWB Antenna (front lock)		
Brand (Model):	DA4		
Lumi Material Number:	B0151200-000199		
Version information:	V1	Content of Change :	
Drawing Version:	V1	Content of Change :	
Admission Category:	☐ A. New Material ☐ B. Substitute Material ☐ C. Temporary Sample ☐ D. Version Upgrade ☐ E. Agent Replacement		
Sample delivery date:			
Supplier Sign-off	Structure/Electronic	Quality	approval

Lumi Acknowledgement Column						
Concurrence						
Product ☐	Certification ☐	Structure ☐	ID ☐	Packaging ☐	Hardware ☐	Quality ☐

Is it a key material: ☐ Yes ☐ No (This item is to be filled in by Lumi)

	Date	2025.3.19	Version No	V1.0
	Subject Aqara DA4-(H3333) Front Door Lock Installation Manual			

1. Specification

1.1 General Standard

General Specification	
Model name	DA4
Antenna type	Cable antenna

1.2 Packing, Shipping, Handling

1.2.1 Exterior Option

1. The names of the customers and manufacturers should be indicated.

Please make sure to note the names of both the customers and the manufacturers.

1.2.2 Packing

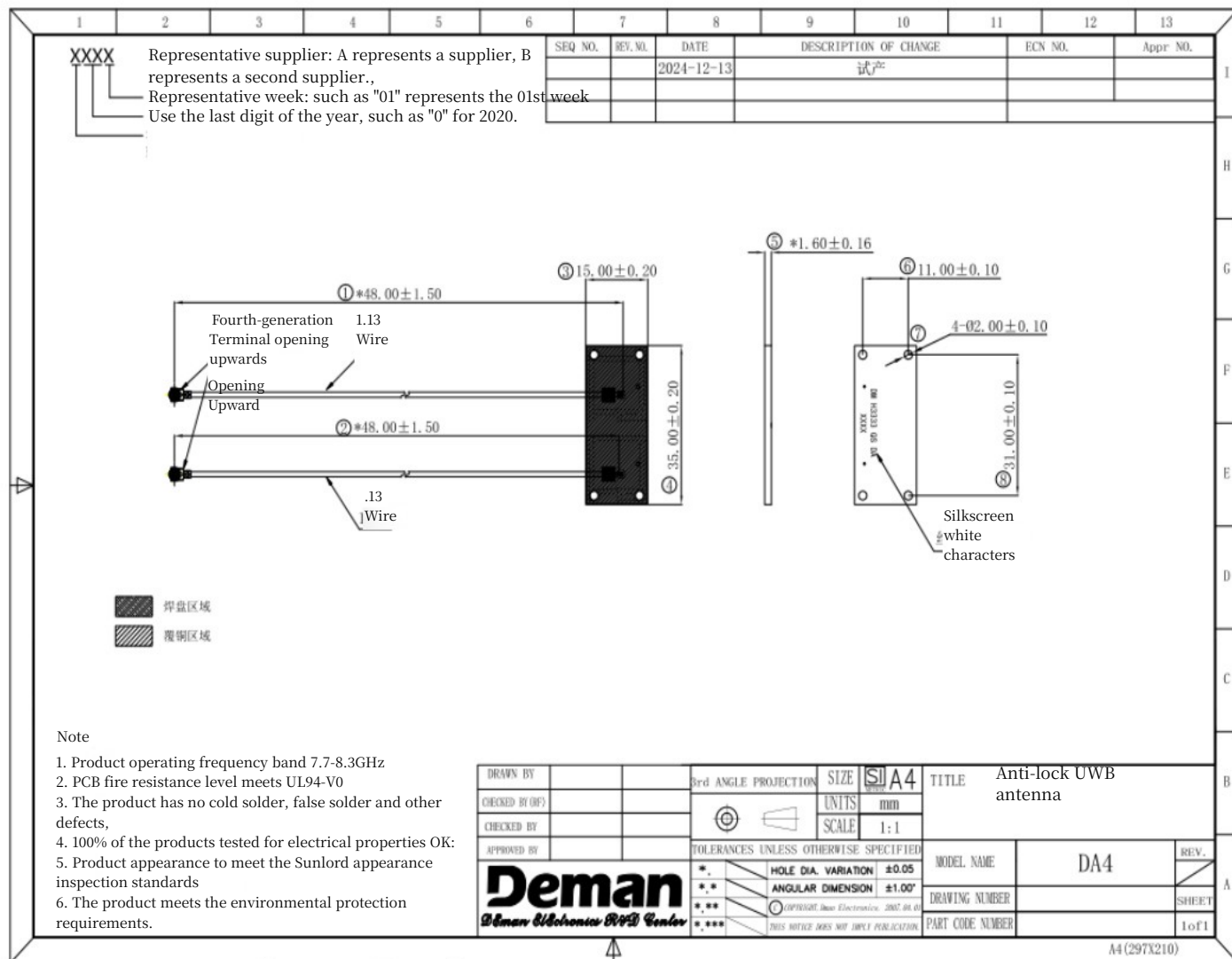
1. The products should be carefully packed, in order to avoid collision and vibration in transit.

The product should be packed with care to prevent collision and vibration during transportation.

2. The Packing material should be a paper box, and this type of carton cannot damage the products in the box.

The material of the packaging box should be a cardboard box, and this type of cardboard box must not damage the products inside the box.

2. Antenna drawing Product Drawing



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3. FAI Report

Version: A									
Table number	Table name								
F-042-005-20	Full size inspection report								
Product model	H3333-Front lock antenna		Product batch number			/			
Test date	2024/12/23		Test sample size			5PCS			
Test equipment	Image measuring instrument, micrometer		Tester			Chen Hongwei			
Size number	1	2	3	4	5	6	7.1	7.2	7.3
Standard size	48.00	48.00	15.00	35.00	1.60	11.00	2.00	2.00	2.00
Positive tolerance	1.50	1.50	0.20	0.20	0.16	0.10	0.10	0.10	0.10
Negative tolerance	-1.50	-1.50	-0.20	-0.20	-0.16	-0.10	-0.10	-0.10	-0.10
Specification upper limit	49.50	49.50	15.20	35.20	1.76	11.10	2.10	2.10	2.10
Specification lower limit	46.50	46.50	14.80	34.80	1.44	10.90	1.90	1.90	1.90
1	47.66	47.77	14.97	35.14	1.71	10.99	2.04	2.04	2.02
2	48.30	48.25	14.97	35.12	1.72	10.98	2.04	2.03	2.04
3	47.86	47.99	14.96	35.10	1.68	11.02	2.03	2.03	2.03
4	47.95	48.11	15.04	35.09	1.72	10.99	2.05	2.04	2.02
5	48.03	48.05	15.02	35.12	1.70	10.98	2.06	2.02	2.04
Judgment	OK	OK	OK	OK	OK	OK	OK	OK	OK
Size number	7.4	8							
Standard size	2.00	31.00							
Positive tolerance	0.10	0.10							
Negative tolerance	-0.10	-0.10							
Specification upper limit	2.10	31.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Specification lower limit	1.90	30.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	2.03	31.01							
2	2.04	31.00							
3	2.02	30.99							
4	2.03	31.02							
5	2.04	31.00							
Judgment	OK	OK	OK	OK	OK	OK	OK	OK	OK

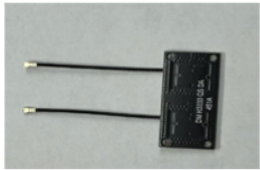
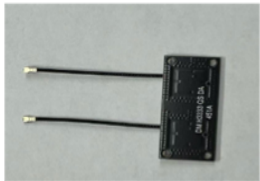
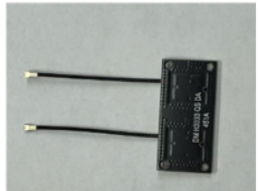
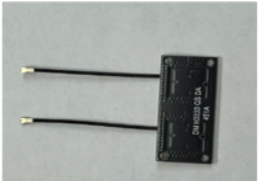
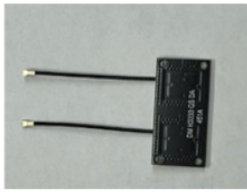
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4、CPK Report

Table number	Table name					
F-042-005-21	Size CPK test report					
Product model	H3333-Front lock antenna			Product batch number	/	
Test date	2024/12/24			Test sample size	32cs	
Test equipment	Image measuring instrument, micrometer			Tester	Li Jiajia	
Size number	1	2	3	5		
Standard size	48.00	48.00	15.00	1.60		
Positive tolerance	1.50	1.50	0.20	0.16		
Negative tolerance	-1.50	-1.50	-0.20	-0.16		
Specification upper limit	49.50	49.50	15.20	1.76		
Specification lower limit	46.50	46.50	14.80	1.44		
1	47.66	47.90	14.97	1.71		
2	47.64	48.11	14.99	1.72		
3	48.02	47.69	15.01	1.70		
4	47.79	47.75	14.98	1.70		
5	47.86	47.85	15.02	1.69		
6	47.66	48.00	14.96	1.72		
7	47.65	48.02	14.97	1.71		
8	48.02	47.64	15.02	1.71		
9	47.34	47.56	14.99	1.70		
10	47.46	47.39	14.96	1.70		
11	47.77	47.70	14.98	1.71		
12	47.45	47.44	15.06	1.69		
13	48.05	47.39	15.04	1.70		
14	48.00	47.36	15.02	1.69		
15	48.02	47.46	15.03	1.69		
16	47.89	47.48	14.98	1.71		
17	47.94	48.26	14.96	1.70		
18	47.55	47.59	14.97	1.70		
19	47.67	47.64	14.99	1.69		
20	47.66	47.55	14.98	1.70		
21	47.74	47.69	15.02	1.70		
22	47.86	47.89	15.00	1.68		
23	47.70	47.88	14.96	1.69		
24	47.55	47.80	14.97	1.70		
25	47.59	48.02	14.98	1.70		
26	47.51	48.06	14.99	1.71		
27	47.69	47.76	15.01	1.70		
28	47.68	47.66	15.00	1.69		
29	48.02	47.57	14.96	1.72		
30	47.79	47.56	14.97	1.74		
31	47.88	47.76	15.00	1.71		
32	47.94	47.88	15.01	1.70		
MAX	48.05	48.26	15.06	1.74		
MIN	47.34	47.36	14.96	1.68		
AVERAGE	47.75	47.73	14.99	1.70		
STDEV	0.19	0.23	0.03	0.01		
CP	2.60	2.17	2.56	4.48		
Cpk	2.17	1.78	2.46	1.61		
Judgment	OK	OK	OK	OK		

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5、Reliability test report

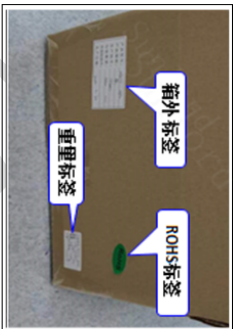
Deman Shenzhen Demen Electronics Co., Ltd.							
Reliability test record							
Customer/supplier	Lumi	Applicant	Zhang Xun	Application Date	2024/12/9	Test Date	2024/12/11
Task number	RRQ-24-121107	Sample Name	UWB-Front Lock Antenna	Sample Properties	PCB+CABLE	Sample Model	H3333-Front Lock
No.	Test item	Test conditions		Determination standard	Sample quantity	Determination result	Remarks
1	Temperature shock	Take the product, store it at low temperature $-40^{\circ}\text{C}\pm 2^{\circ}\text{C}$ for 0.5 hours, then place it in a high temperature environment $85\pm 2^{\circ}\text{C}$ for 0.5 hours within 1 minute, this is one cycle, a total of 48 cycles, rest for 2H		Check that the coating appearance is normal, no peeling, no cracks, no discoloration, etc.	3	OK	
2	High temperature storage	85°C , store for 48H, rest for 2H		Check that the coating appearance is normal, no peeling, no cracks, no discoloration, etc.	3	OK	
3	Low temperature storage	minus 40°C , store for 48H, rest for 2H		Check that the coating appearance is normal, no peeling, no cracks, no discoloration, etc.	3	OK	
4	Constant humidity and heat	Take the product temperature $60^{\circ}\text{C}\pm 2^{\circ}\text{C}$, humidity $95\pm 2\%$; keep for 48H, rest for 2H		Check that the coating appearance is normal, no peeling, no cracks, no discoloration, etc.	3	OK	
5	Salt spray test	Take the product, in an environment $35\pm 3^{\circ}\text{C}$, PH value between 6.5-7.2, salt water concentration of $5\pm 1\%$, spray continuously for 48		The surface of the product shall not be oxidized, rusted, discolored, or show signs of corrosion.	3	OK	
Comprehensive judgment		OK		Measurer	Lu Qiang	Review	Chen Hongwei

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6、 Process flow chart

Deman		Commercial Secret Level: 2nd Grade	File type: job instructions	Version: 01																											
Document number	File name			Make Dai Yunlong 2024-12-25																											
	H3333-Process flow diagram of the front lock antenna																														
Effective date: 2024-12-25																															
1.Scope of application																															
This work process is applicable to the use of H3333-front lock antenna.																															
2.Purpose																															
Regulate the product operation process to ensure the normal circulation of product production.																															
3.Homework Process																															
<table><tr><th>Process description</th><th>Process flow diagram</th><th>Note</th></tr><tr><td>Incoming inspection</td><td> 1 </td><td></td></tr><tr><td>Material preparation</td><td> 2 </td><td></td></tr><tr><td>Cable welding</td><td> 3 </td><td></td></tr><tr><td>PCB panel separation</td><td> 4 </td><td></td></tr><tr><td>Testing★</td><td> 5 </td><td></td></tr><tr><td>Appearance★</td><td> 6 </td><td></td></tr><tr><td>Packaging Stocking</td><td> 7 </td><td></td></tr><tr><td>Stocking</td><td> </td><td></td></tr></table>					Process description	Process flow diagram	Note	Incoming inspection	1		Material preparation	2		Cable welding	3		PCB panel separation	4		Testing★	5		Appearance★	6		Packaging Stocking	7		Stocking		
Process description	Process flow diagram	Note																													
Incoming inspection	1																														
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Testing★	5																														
Appearance★	6																														
Packaging Stocking	7																														
Stocking																															
Process identification: "□" indicates operation; "◇" indicates quality inspection; "→" indicates handling, "▽" indicates warehousing																															
Note: ★ denotes key processes.																															

7、Packaging specifications

Document number		File name		File type: job instructions			Version: 01
		H3333-Pre-locked antenna shipping packaging diagram		Approval		Review	Compilation
生效日期: 2024-12-24				Ke liyan 2024-12-24		Li keming 2024-12-24	Dai yunlong 2024-12-24
1.Purpose Ensure the quality of H3333-front lock antenna products during shipment transportation.							
2. Scope of application H3333-Front lock antenna							
3.packaging scheme Shipping packaging process							
Packaging steps (text)	Prepare products and packaging materials	Bundle the products into 10pcs/bundle, each PE bag contains 2 bundles of products i.e. 20pcs/bag	The bag with the product is placed in a blister box, 8 bags of product are placed in one box, i.e. 160p/box;	Close the box lid and seal it with transparent, label-free tape	Packaged products are loaded into cardboard boxes, 1 box contains 10 boxes of products; 1 box is 1600pcs of products the blank area inside the box	Seal the box; packaging completed	
							
	(with illustrations)						
							
Note	1. Carton material: K=K; 2. Carton size: 40*28*20 (CM) ; 3. Cart loading capacity: 1600 PCS; 4. Number of bags filled in each PE bag: 20PCS, number of full boxes: 10 PCS; 5. The remaining space in the carton must be filled with air bubble bags;						

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8、QC Engineering drawing

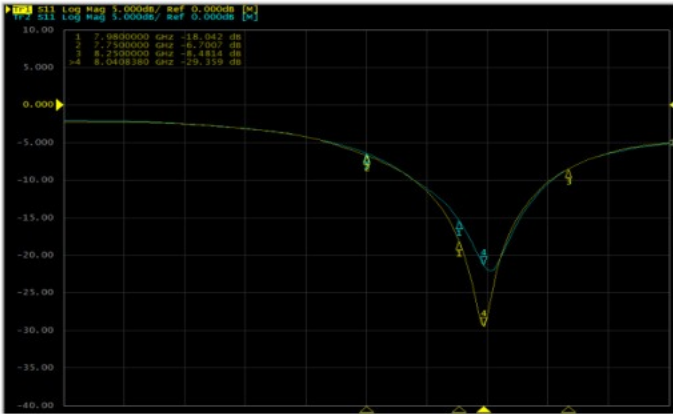
Control plan													
☐ Sample ☐ Trial production ☒ Production			Contact/Phone				Date(original)		Modified date		Revision number		
Control plan number:							2024/12/20		2024/12/20		A		
Part number/latest change:			Group members: Ke liyan, Li Keming, Wu Chuanjiang, Jiang Hanchao, Wang Zongshun, Chen Yanghui, Luo Yangming				Customer engineering approval/date						
Part name/description: H3333-Front lock antenna finished product			Supplier/Factory Approval/Date: 2024-12-20				Customer quality approval/date						
Supplier/Factory: Hyde Gate		Supplier number:		Other approvals/dates				Other approvals/dates					
Part/Process Number	Process name/Operation instructions	Machine, instrument, fixture, mold	characteristic			Characteristics; classification	Method					Action plan	
			NO.	Process input characteristics	Output product features		Product/process; specification/tolerance	Evaluation measurement technology	Sampling		Control method		
									Sample size	Frequency			
1	Raw material inbound management	Visual inspection	-	SIP; limit sample	appearance	#	Inspection Specification for Raw Materials	Visual inspection	II level check, AQL MA=0.4 MI=0.65	Level spot	Incoming inspection records	(Quality exception feedback form for supplied goods)	
		Dial caliper 2D	-	Drawing size	Size		Drawing size	Dial caliper 2D	2PCS	Batch sampling	Incoming inspection	(Quality exception feedback form for supplied goods)	
		Network analyzer	-	Sample electrical properties	Electrical performance		Sample electrical properties	Sample comparison	5PCS	Batch sampling	Incoming inspection	(Quality exception feedback form for supplied goods)	
		Reliability tester	WI-043-003	Reliability inspection	Reliability		Reliability inspection specification	Reliability tester	Each item 3pcs	January	Reliability test report	(Quality exception feedback form for supplied goods)	
		ROHS testing instrument	WI-043-003	RoHS 2.0 Standard	Harmful substances		RoHS 2.0 Standard	ROHS testing instrument	1pcs	January	Environmental protection test	(Quality exception feedback form for supplied goods)	
2	Cable line welding	welding equipment	-	Temperature	Size	*	380±40℃	Dial caliper 2D	1PCS	2H	Full Inspection	Pick out the nonconforming products and put them into the bad	
					appearance			Visual inspection	5PCS	2H	Full Inspection	Pick out the nonconforming products and put them into the bad	
3	PCB panel separation	Visual inspection	-	SOP、SIP	appearance	#	See SOP、SIP	Visual inspection	5PCS	2H	Full Inspection	Pick out the nonconforming products and put them into the bad product box.	
4	RF test	Test fixture (4th generation terminal block)	-	Deviation frequency specifications at each frequency point	-	*	Low frequency: ±30MHz High frequency: ±50MHz	Network division	5PCS	2H	Full Inspection	Pick out the nonconforming products and put them into the bad product box.	
			-	Power on calibration	-		Network calibration block	network calibration block	1 time	Every class	Record Sheet	(Quality exception feedback form for supplied goods) Use the net to calibrate the machine	
			-	RF Test standard samples; open-short circuit samples	-		Standard sample, open short circuit sample	Standard sample; open short	1 time	2H	Record Sheet	Use standard samples, open-short circuit samples for inspection network separation	
			-	GRR<20%	-		See the process inspection specification	Test fixture	1 time	Every mouth	Record Sheet	Test fixture debugging	
			-	Gold fixture correlation with replica fixture	Fixture relevance		±50KHz	Test fixture	1 time	Every mouth	Record Sheet	Test fixture debugging	
			-	Air pressure	-		-	Barometer	1 time	2H	Record Sheet	Regulate air pressure within the control range	
			-	SOP、SIP	appearance		See SOP、SIP	Visual inspection	5PCS	2H	Full Inspection	Pick out the nonconforming products and put them into the bad	
			-	-	Defect types and		See SOP、SIP	Visual inspection	5PCS	2H	Full Inspection	Pick out the nonconforming products and put them into the bad	
5	Appearance	Lux meter	-	Light meter	Light intensity	*	Illuminance standard: 800-1200LUX	Lux meter	1 time	January	Record Sheet	Adjust the light intensity within the control range	
		Reliability tester	WI-043-003	Reliability inspection	Reliability		Reliability inspection specification	Reliability tester	Each item 3pcs	January	Record Sheet	(Quality exception feedback form)	
		Electronic scale	-	SOP	Number of packages		#	Refer to packaging specifications	Visual; Electronic scale	Full Inspection	Continuous	Full Inspection	Inspect the products with good appearance for counting and visual confirmation
		Finished product shipment packaging requirements	Electronic scale	Full Inspection	each batch			Full Inspection	Confirm visually and by weighing.				
7	Shipment	eyeball; estimate	-	SIP/SOP	Quantity/Outer packaging	#	Finished product shipment inspection specifications	Visual inspection	Full Inspection	each batch	Full Inspection	Visual confirmation	
*Represent key #Represent conventional process;													

*Represent key #Represent conventional process;

9. Performance Report

Source-free data-S11

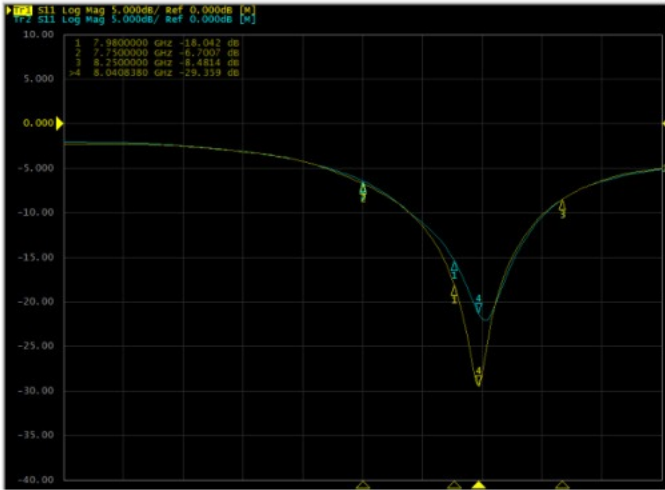
Tr 1:ANT 1
Tr 1:ANT 2



Project	ANT 1	ANT 2
S11 (min)	-29dB	-21dB

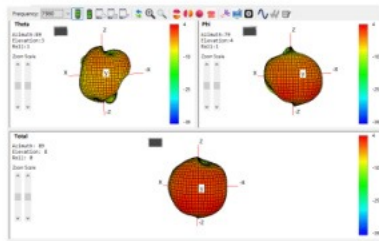
Passive Data-VSWR

Tr 1:ANT 1
Tr 1:ANT 2

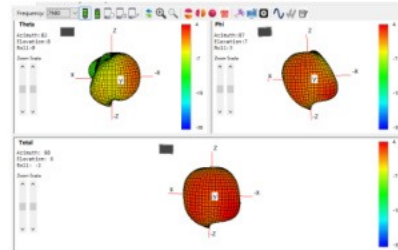


Project	ANT 1	ANT 2
VSWR (min)	1	1.2

Passive Data-3D

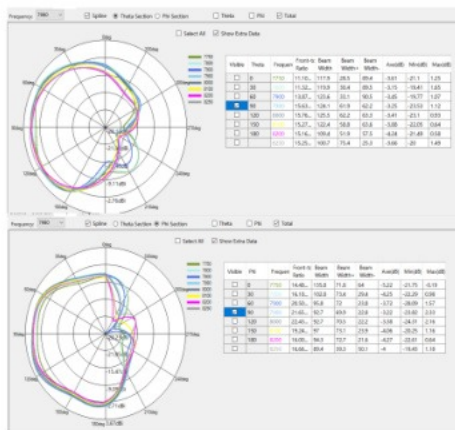


ANT 1

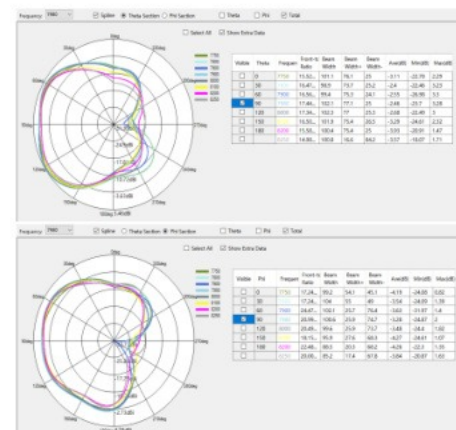


ANT 2

Source-free data-2D



ANT 1



ANT 2

Source-free data-efficiency / gain



summary

From the current environment the testing data is as follows:

Project	ANT 1	ANT 2
S11 (min)	-29dB	-21dB
VSWR(min)	1	1.2
Gain (max)	3.5dB around	3.5dB around
efficiency	-3.5dB (45%)	-3.5dB (45% drop

)

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10、Green Materials



UWB Antenna (front lock)
Ring
SaveData.zip

ET Confidential