

SPECIFICATION



Daxian Communication Technology Limited

深圳市大显科技有限公司

Shenzhen Daxian Technology Co., Ltd.

国光 LV mini speaker mesh 天线组件GGEC LV mini speaker mesh Antenna assembly

产 品 规 格 书

Product Specification

客 户 connection	国光 GGEC	频 段 frequency range	2400 ~ 2500MHz
项目名称 entry name	LV mini speaker	版 本 edition	V1.0
物料编号 Material No	1-DX-858-009	颜 色 Color	黑色 Black
客户料号 Customer Item Number	EAN00298		
R F 设计 R F Design	沈 川 Chuan.Shen	结构设计 Structural Design	闭业智 YeZhi.Bi
品质经理 Quality Manager	胡子寅 Ziyin.Hu	技术总监 Technical Director	张 磊 Lei.Zhang
日 期 Date	2023-03-29		

客户确认:

Customer confirmation:

装配是否符合贵司要求: ☐OK ☐NGWhether the assembly meets your company's requirements: ☐OK ☐NG

深圳市大显科技有限公司

Shenzhen Topant Technology Co., Ltd.

深圳市龙岗区布吉镇吉华路 513 号上水径村(国防培训基地
对面) 达成工业园综合楼 7 楼

TEL:0755-28576002

FAX:0755-84276383

上海分部: 上海市张江高科技园区集成电路产业区龙东大道
3000 号 8 号楼 201 室

TEL:021-61630552

FAX:755-84276383

Buji Town, Longgang District, Shenzhen, China Jihua Road 513,
Shangshuijing Village (opposite the national defense
training base) Dacheng Industrial Park, Building 7.

TEL:0755-28576002

FAX:0755-84276383

Room201, Building8, LongDongRoad3000#, Semiconductor Industry
Park, ZhangJiang Hitech Zone, ShangHai

TEL:021-61630552

FAX:755-84276383

[illegible]

Shenzhen Daxian Technology Co., Ltd. already possesses the information provided by the proprietary technology, which should be strictly confidential and not allowed to be disclosed to any person or company without the prior written consent of Shenzhen Daxian Technology Co., Ltd

索引

Indexes

一、项目说明 Project Description.....	4
二、 mesh 天线 antenna.....	4
1、规格 specifications.....	4
1.1 电气规格标准 Electrical specifications and standards.....	5
1.1.1 电性能指标 Electrical performance index.....	5
1.1.2 天线位置图片 Antenna position picture.....	5
1.1.3 天线位置布局 Antenna Location Layout.....	5
1.1.4 天线装配示意图 Antenna assembly diagram.....	6
1.2 结构规格标准 Structural specifications and standards.....	6
1.2.1 天线组成 Antenna composition..	6
2、测试环境 testing environment.....	7
3、测试 test.	8
3.1 驻波(VSWR)的测试 Test of standing wave (VSWR).....	8
3.1.1 测试连接 Test connection.....	8
3.2 效率、功率 (TRP)、灵敏度 (TIS) 的测试 Testing of efficiency, power (TRP), sensitivity (TIS).....	8
3.2.1 测试的场地 Test site.....	8
3.2.2 测试的仪表 Tested Instruments.....	8
3.2.3 测试数据 test data.....	8
4、VSWR 参数图 Parameter diagram.....	9
5、无源场型图 Passive field pattern diagram.....	10-11
6、暗室 3D 辐射图轴的定义 Definition of the axis of the darkroom 3D radiation map.....	12
7、户外拉距测试 Outdoor Pull distance test.....	13
8、环境处理 Environment processing.....	13
9、结论 conclusion.....	13
三、工程图 schedule drawing.....	14

www.Topant.com.cn
Confidentiality requirements

Shenzhen Daxian Technology Co., Ltd. already possesses the information provided by the proprietary technology, which should be strictly confidential and not allowed to be disclosed to any person or company without the prior written consent of Shenzhen Daxian Technology Co., Ltd

一 项目说明 Project Description

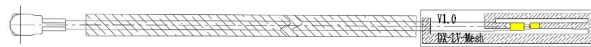
客户名: Customer Name:	国光 GGEC
整机类型: Type of complete machine:	音箱 loudspeaker box
天线频段: Antenna band:	2400 ~ 2500MHz
天线形式: Antenna form:	FPC+同轴线+线材海绵 FPC+coaxial line+wire sponge
馈电形式: Feed form:	焊接 weld
馈脚数量: Number of feed legs:	两个 Two
硬件版本: Hardware version:	/

二 mesh 天线组件 Antenna assembly

1 规格 specifications

本报告主要提供 LV Mini Speaker 项目天线的各项电气和结构性能参数的测试状况。下图为大显设计的天线图片。

This report mainly provides the testing status of various electrical and structural performance parameters of the antenna for the LV Mini Speaker project. The following image shows an antenna with a large display design.



天线外观图

antenna appearing diagram

www.Topant.com.cn

Confidentiality requirements

Shenzhen Daxian Technology Co., Ltd. already possesses the information provided by the proprietary technology, which should be strictly confidential and not allowed to be disclosed to any person or company without the prior written consent of Shenzhen Daxian Technology Co., Ltd

1.1 电气规格标准 Electrical specifications and standards

1.1.1 电性能指标 Electrical performance index

天线工作频段在 **2400 ~ 2500 MHz**。下表是大显设计和量产天线的电性能的指标。

The operating frequency band of the antenna is between 2400 and 2500 MHz. The following table shows the electrical performance indicators of large display design and mass production antennas.

Frequency Range	Frequency (MHz)	VSWR
mesh	2400 ~ 2500	≤ 2

2 结构规格标准 Structural specifications and standards

1.2.1 天线组成 Antenna composition

天线主要是由 FPC+同轴线+线材海绵 组成。

The antenna is mainly composed of FPC+coaxial line+wire sponge.

www.Topant.com.cn

Confidentiality requirements

Shenzhen Daxian Technology Co., Ltd. already possesses the information provided by the proprietary technology, which should be strictly confidential and not allowed to be disclosed to any person or company without the prior written consent of Shenzhen Daxian Technology Co., Ltd

2、测试设备 The Equipment of Active Test

Satimo 3D Chamber $6 \times 4 \times 4$ (m)

Agilent 8960 E5515c

Network analyzer-R&S ZVL



图 2

Figure 2

www.Topant.com.cn
Confidentiality requirements

Shenzhen Daxian Technology Co., Ltd. already possesses the information provided by the proprietary technology, which should be strictly confidential and not allowed to be disclosed to any person or company without the prior written consent of Shenzhen Daxian Technology Co., Ltd

3 测试 test

3.1 驻波(VSWR)的测试 Test of standing wave (VSWR)

3.1.1 测试连接: VSWR 测试装置依次的连接为: R&S ZVL 网络分析仪 → 测试线 → 测试治

Test connection: The VSWR test device is sequentially connected as follows: R&S ZVL network analyzer → test line → test fixture

实测(附图)Actual measurement (attached drawing)

3.2 增益及效率、功率 (TRP)、灵敏度 (TIS) 的测试

Gain and efficiency, power (TRP), sensitivity (TIS) testing

3.2.1 测试的场地 Test site:

大显微波暗室。测试频率范围为 400MHz—6GHz, 静区范围为 50cm 圆周, 反射率小于 -50 dB。

Large display microwave anechoic chamber. The test frequency range is 400MHz - 6GHz, the static zone range is 50cm circumferential, and the reflectivity is less than -50dB.

3.2.2 测试的仪表 Tested Instruments:

R&S ZVL 网络分析仪、Agilent8960 E5515C、标准喇叭天线、法国 SATIMO-SG24SYSTEM 系统、打印机等。

R&S ZVL network analyzer, Agilent 8960 E5515C, standard horn antenna, French SATIMO-SG24SYSTEM system, printer, etc.

3.2.3 测试数据 : 在微波暗室中, 测试的功率和灵敏度相关的数值如下表

Test data: In a microwave anechoic chamber, the values related to the power and sensitivity tested are shown in the table below

无源效率&增益 Passive efficiency&gain:

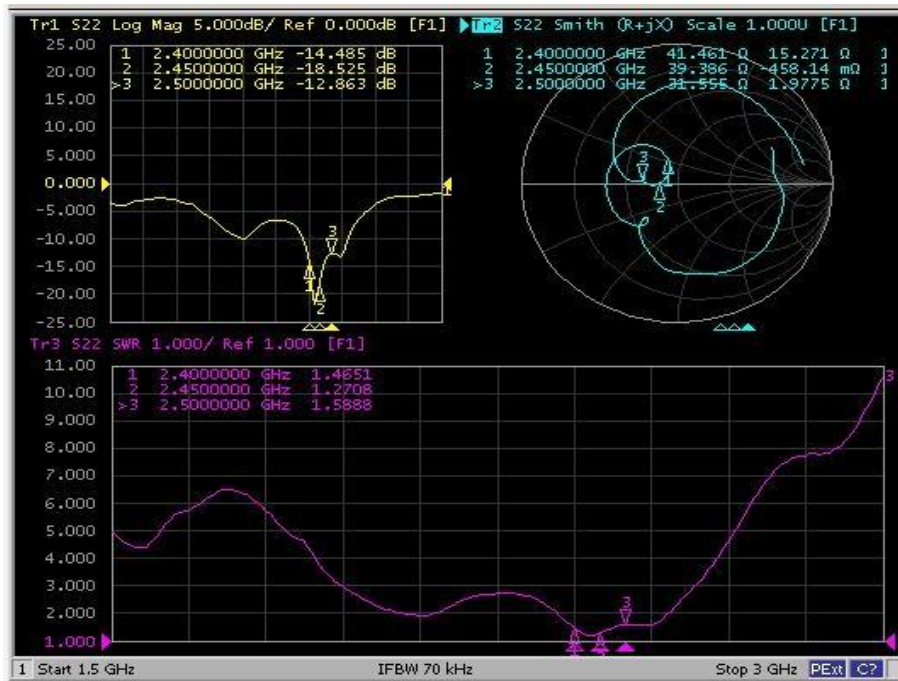
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
2400	39.64	-4.02	1.11
2410	39.99	-3.98	1.53
2420	39.77	-4.00	1.25
2430	40.33	-3.94	1.79
2440	40.06	-3.97	1.26
2450	40.79	-3.89	1.34
2460	39.59	-4.02	1.21
2470	39.07	-4.08	1.04
2480	39.84	-4.00	1.23
2490	39.51	-4.03	1.29
2500	38.38	-4.16	1.57

www.Topant.com.cn

Confidentiality requirements

Shenzhen Daxian Technology Co., Ltd. already possesses the information provided by the proprietary technology, which should be strictly confidential and not allowed to be disclosed to any person or company without the prior written consent of Shenzhen Daxian Technology Co., Ltd

4、VSWR 参数图 VSWR parameter diagram



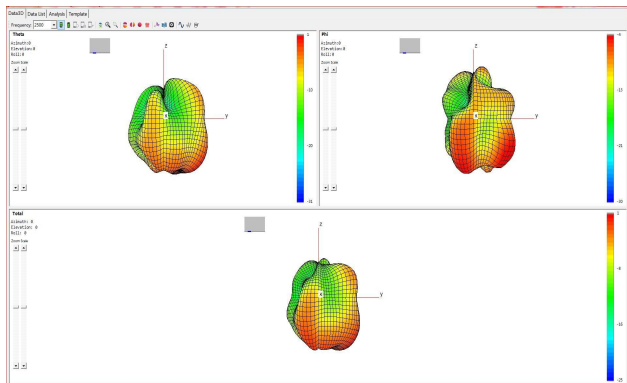
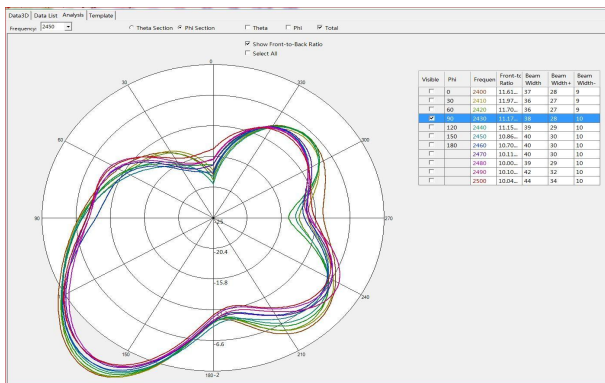
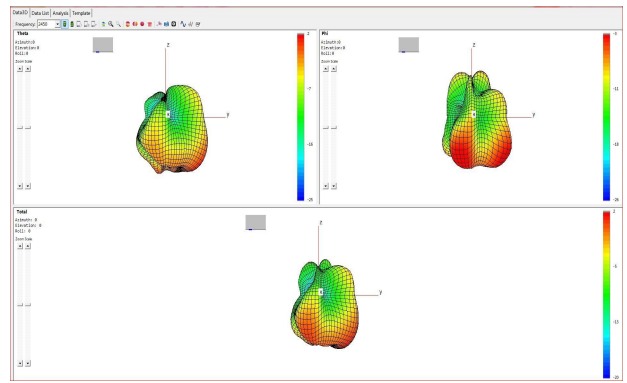
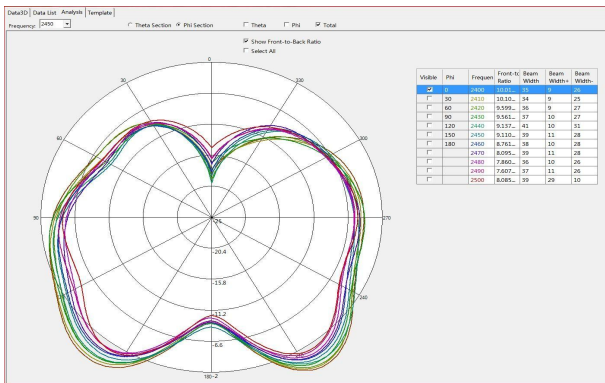
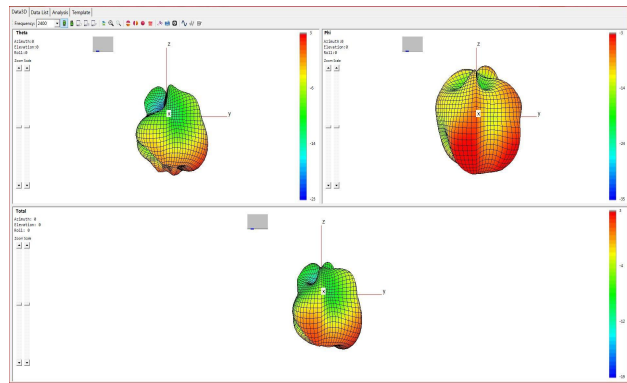
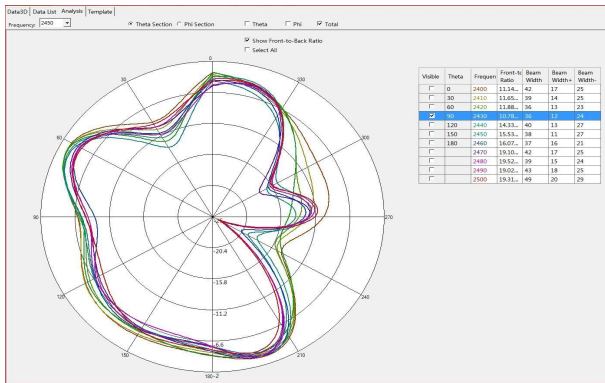
www.Topant.com.cn

Confidentiality requirements

Shenzhen Daxian Technology Co., Ltd. already possesses the information provided by the proprietary technology, which should be strictly confidential and not allowed to be disclosed to any person or company without the prior written consent of Shenzhen Daxian Technology Co., Ltd

5、无源场型图-2450MHz

Passive Field Pattern Diagram - 2450MHz

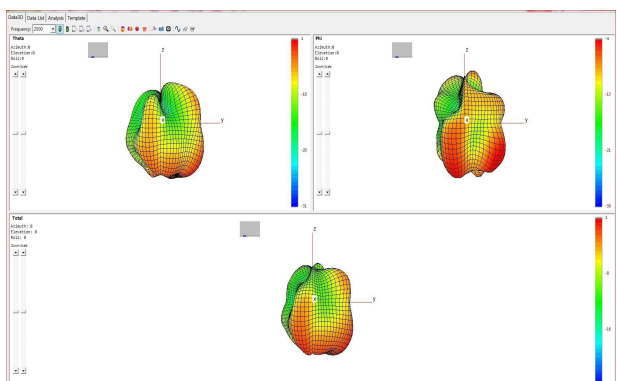
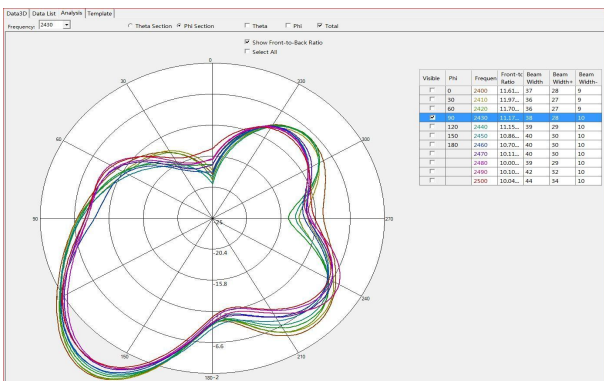
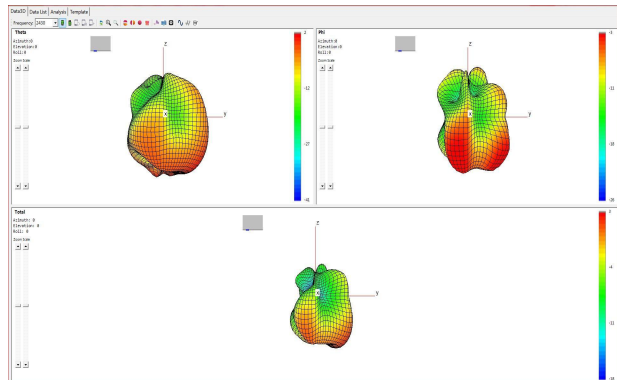
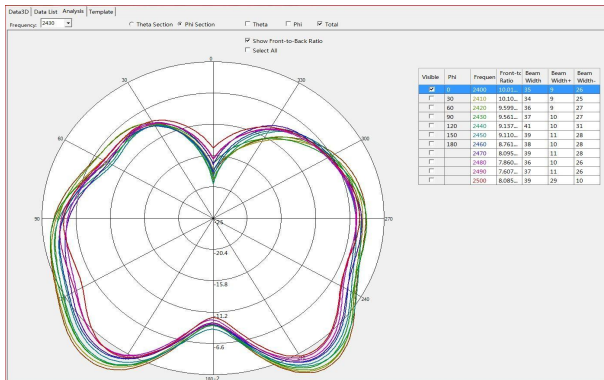
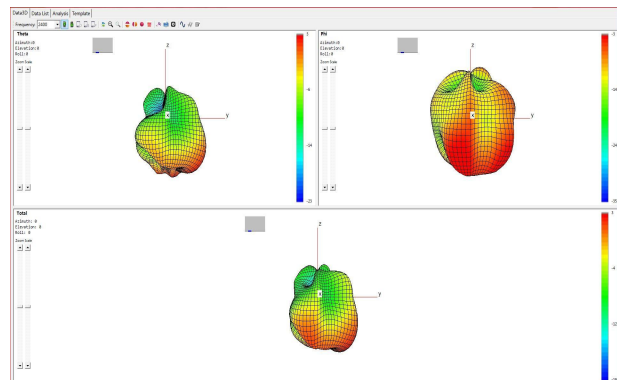
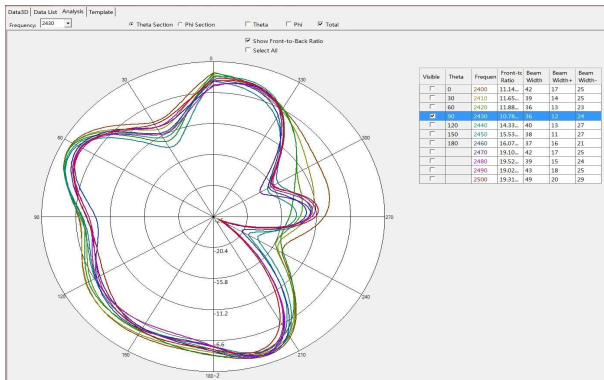


www.Topant.com.cn
Confidentiality requirements

Shenzhen Daxian Technology Co., Ltd. already possesses the information provided by the proprietary technology, which should be strictly confidential and not allowed to be disclosed to any person or company without the prior written consent of Shenzhen Daxian Technology Co., Ltd

5.1 无源场型图-2430MHz

Passive Field Pattern Diagram - 2430MHz



www.Topant.com.cn
Confidentiality requirements

Shenzhen Daxian Technology Co., Ltd. already possesses the information provided by the proprietary technology, which should be strictly confidential and not allowed to be disclosed to any person or company without the prior written consent of Shenzhen Daxian Technology Co., Ltd

7、户外拉距测试 Outdoor pull distance test



测试场地 Test site	机器摆放方向 Machine placement direction	BT (苹果13) BT (Iphone13)	BT (苹果6s) BT (Iphone6s)
鹤洲 HeZhou	前 Front	80m	70m
	后 Behind	80m	70m
	左 Left	90m	70m
	右 Right	90m	70m

8、环境处理 Environmental treatment

上半球金属壳与主板和按键小板的红色圈内螺丝柱平面出做 打磨处理，使主板和按键小板与上半球的金属壳体接地充分。

Grind the surface of the upper hemisphere metal shell and the red circle inner screw stud of the main board and key board to fully ground the main board and key board to the upper hemisphere metal shell.

9、结论 conclusion

此天线是在客户提供样机基础上设计，电参数和结构性能已达到技术要求，请确认！

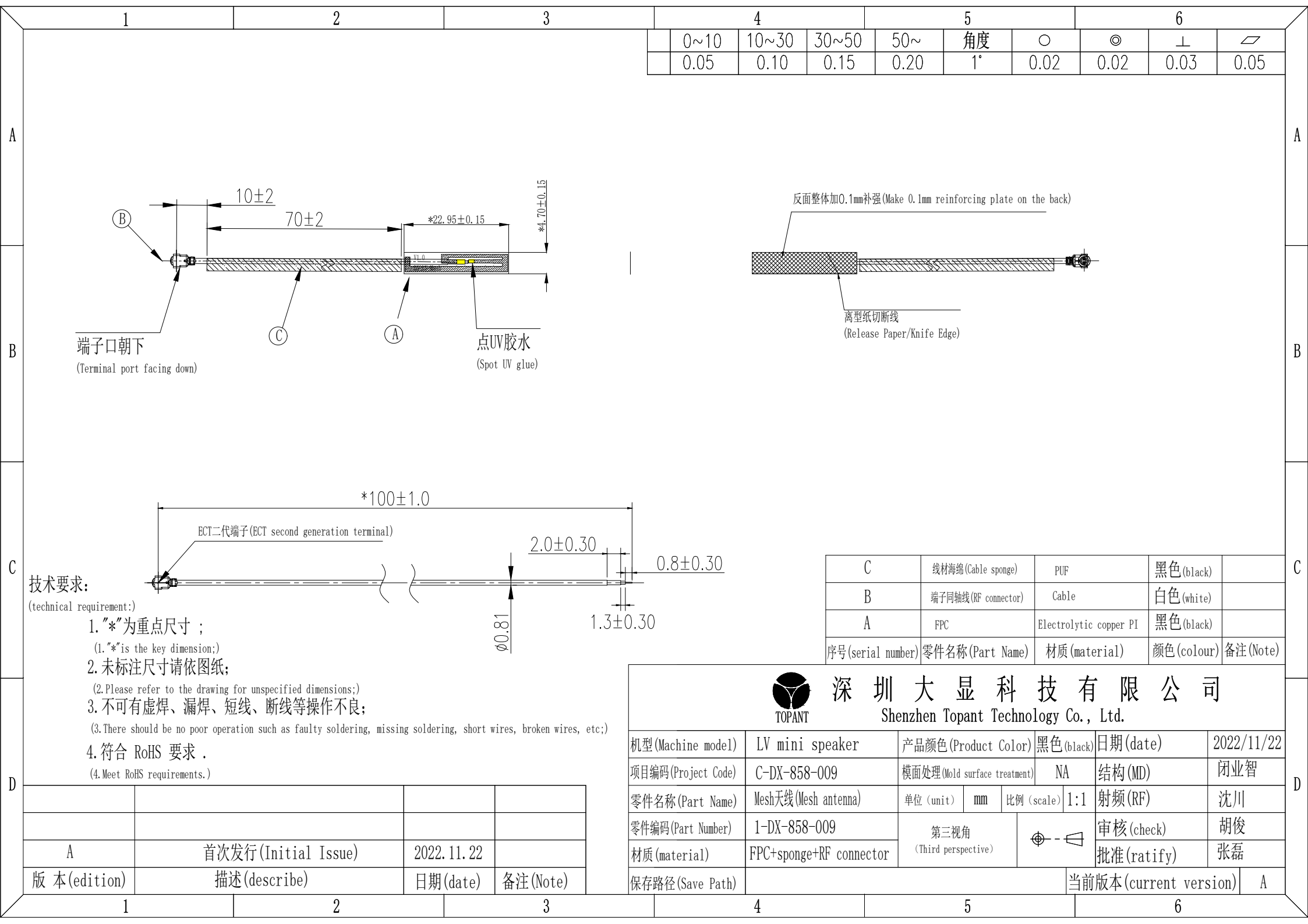
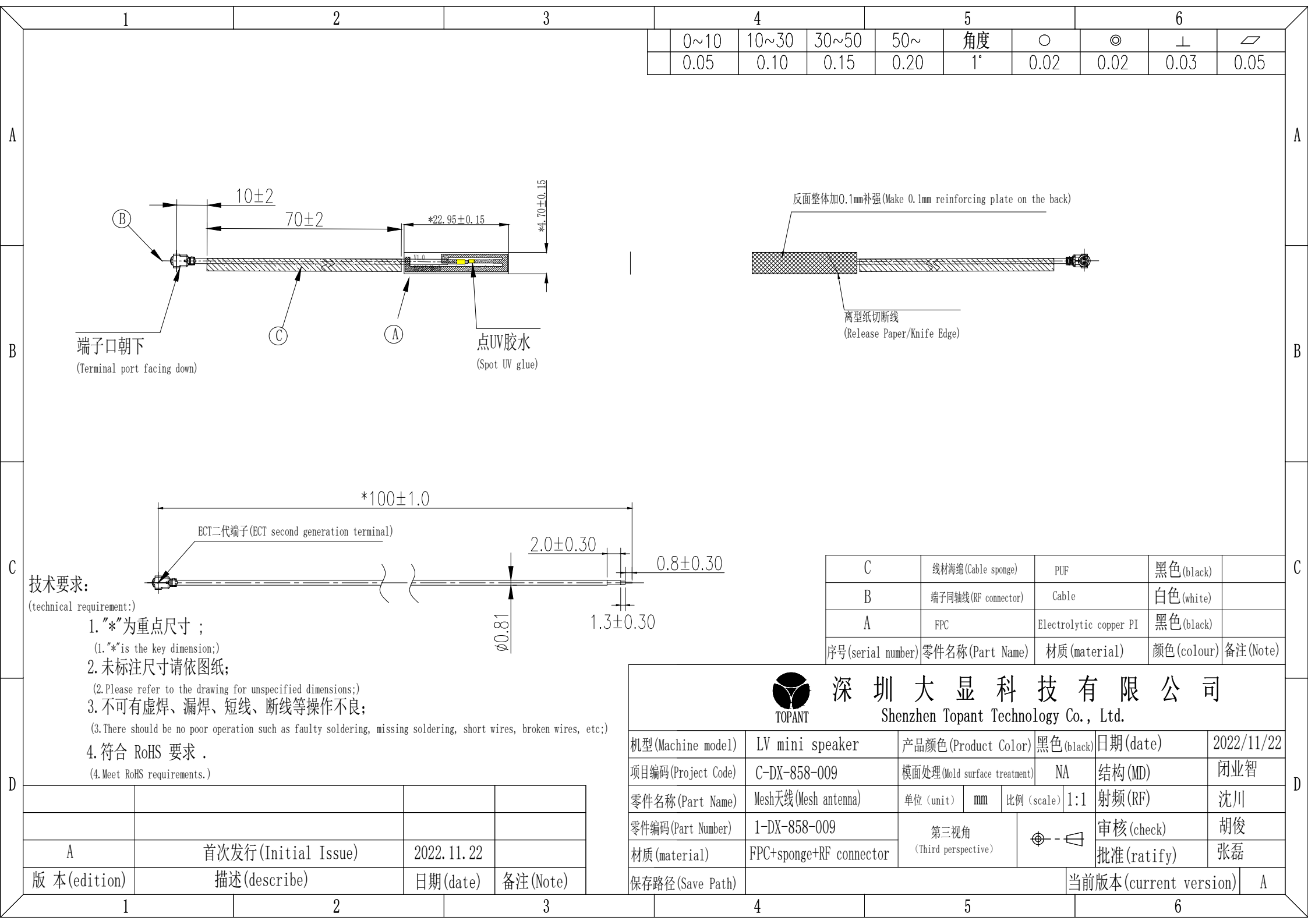
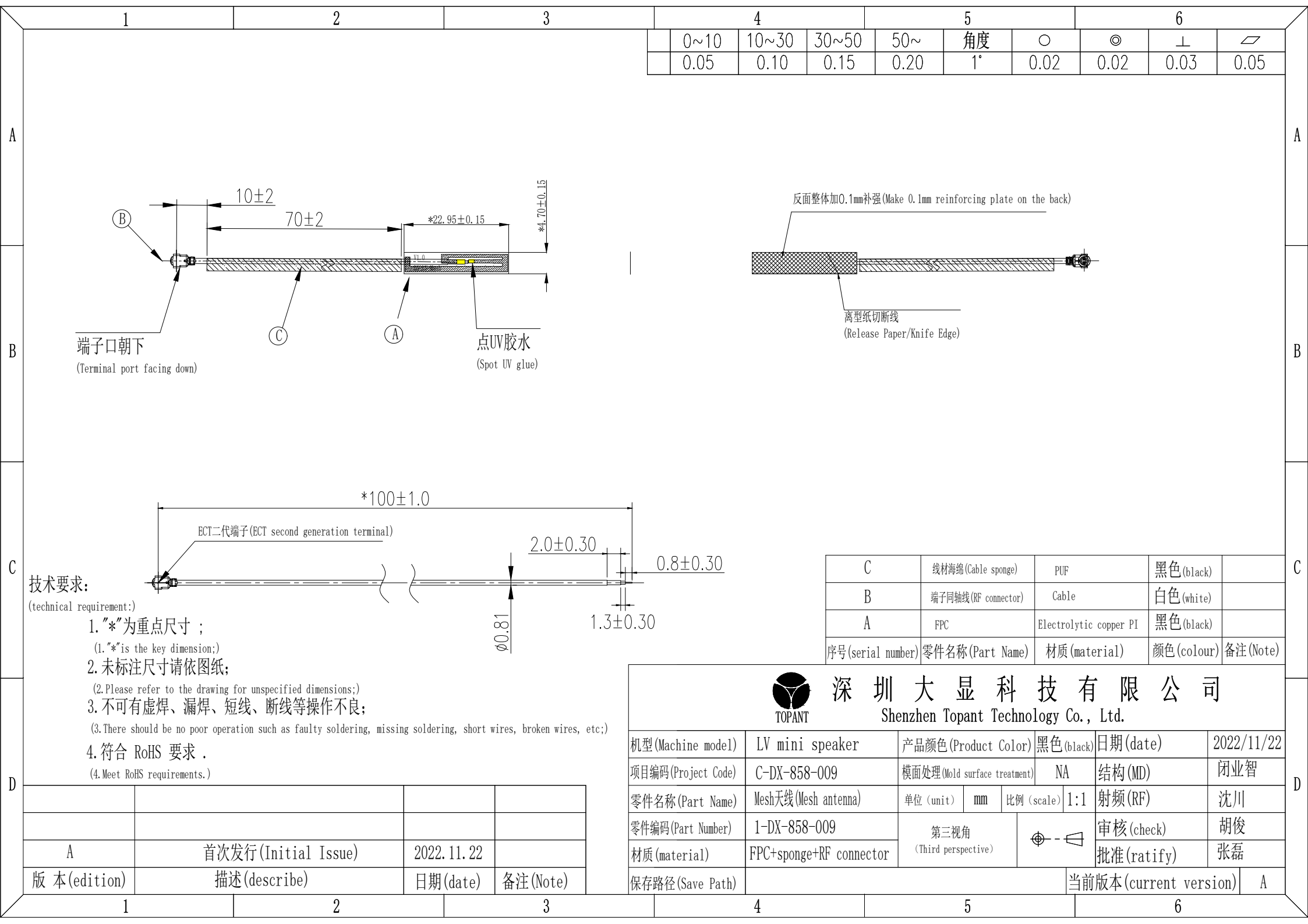
This antenna is designed based on the prototype provided by the customer. The electrical parameters and structural performance have met the technical requirements, please confirm!

www.Topant.com.cn

Confidentiality requirements

Shenzhen Daxian Technology Co., Ltd. already possesses the information provided by the proprietary technology, which should be strictly confidential and not allowed to be disclosed to any person or company without the prior written consent of Shenzhen Daxian Technology Co., Ltd

</



Technical drawing and assembly instructions for a Mini Speaker (LV mini speaker).

Dimensions and Tolerances:

- Overall length: 100 ± 1.0
- Terminal port length: 10 ± 2
- Distance from terminal port to center of FPC: 70 ± 2
- FPC length: 22.95 ± 0.15
- Distance from FPC to center of RF connector: 2.0 ± 0.30
- Distance from RF connector to end of cable: 0.8 ± 0.30
- Wire diameter: $\phi 0.81$
- Distance from terminal port to end of cable: 1.3 ± 0.30

Assembly Instructions:

- Terminal port facing down (端子口朝下).
- Spot UV glue (点UV胶水).
- Release Paper/Knife Edge (离型纸切断线).
- Make 0.1mm reinforcing plate on the back (反面整体加0.1mm补强).

Technical Requirements:

- "*" is the key dimension.
- Please refer to the drawing for unspecified dimensions.
- There should be no poor operation such as faulty soldering, missing soldering, short wires, broken wires, etc.
- Meet RoHS requirements.

Part List:

Part Name	Material	Color	Note
ECT second generation terminal	PUF	Black (black)	
RF connector	Cable	White (white)	
FPC	Electrolytic copper PI	Black (black)	

Company Information:

深圳大显科技有限公司
Shenzhen Topant Technology Co., Ltd.

Product Information:

Machine Model	Product Color	Date
LV mini speaker	Black (black)	2022/11/22

Project Information:

Project Code	Mold Surface Treatment	Structure
C-DX-858-009	NA	MD

Part Information:

Part Name	Unit	Scale	Frequency
Mesh antenna	mm	1:1	RF

Part Number: 1-DX-858-009

Material: FPC+sponge+RF connector

Third Perspective View: (Third perspective)

Approval:

Check	Check
胡俊	张磊

Save Path:

Current Version: A

Technical drawing and assembly instructions for a Mini Speaker (LV mini speaker).

Dimensions and Tolerances:

- Overall length: 100 ± 1.0
- Terminal port length: 10 ± 2
- Distance from terminal port to center of FPC: 70 ± 2
- FPC length: 22.95 ± 0.15
- Distance from FPC to center of RF connector: 2.0 ± 0.30
- Distance from RF connector to end of cable: 0.8 ± 0.30
- Wire diameter: $\phi 0.81$
- Distance from terminal port to end of cable: 1.3 ± 0.30

Assembly Instructions:

- Terminal port facing down (端子口朝下).
- Spot UV glue (点UV胶水).
- Release Paper/Knife Edge (离型纸切断线).
- Make 0.1mm reinforcing plate on the back (反面整体加0.1mm补强).

Technical Requirements:

- "*" is the key dimension.
- Please refer to the drawing for unspecified dimensions.
- There should be no poor operation such as faulty soldering, missing soldering, short wires, broken wires, etc.
- Meet RoHS requirements.

Part List:

Part Name	Material	Color	Note
ECT second generation terminal	PUF	Black (black)	
RF connector	Cable	White (white)	
FPC	Electrolytic copper PI	Black (black)	

Company Information:

深圳大显科技有限公司
Shenzhen Topant Technology Co., Ltd.

Product Information:

Machine Model	Product Color	Date
LV mini speaker	Black (black)	2022/11/22

Project Information:

Project Code	Mold Surface Treatment	Structure
C-DX-858-009	NA	MD

Part Information:

Part Name	Unit	Scale	Frequency
Mesh antenna	mm	1:1	RF

Part Number: 1-DX-858-009

Material: FPC+sponge+RF connector

Third Perspective View: (Third perspective)

Approval:

Check	Check
胡俊	张磊

Save Path:

Current Version: A

Technical drawing and assembly instructions for a Mini Speaker (LV mini speaker).

Dimensions and Tolerances:

- Overall length: 100 ± 1.0
- Terminal port length: 10 ± 2
- Distance from terminal port to center of FPC: 70 ± 2
- FPC length: 22.95 ± 0.15
- Distance from FPC to center of RF connector: 2.0 ± 0.30
- Distance from RF connector to end of cable: 0.8 ± 0.30
- Wire diameter: $\phi 0.81$
- Distance from terminal port to end of cable: 1.3 ± 0.30

Assembly Instructions:

- Terminal port facing down (端子口朝下).
- Spot UV glue (点UV胶水).
- Release Paper/Knife Edge (离型纸切断线).
- Make 0.1mm reinforcing plate on the back (反面整体加0.1mm补强).

Technical Requirements:

- "*" is the key dimension.
- Please refer to the drawing for unspecified dimensions.
- There should be no poor operation such as faulty soldering, missing soldering, short wires, broken wires, etc.
- Meet RoHS requirements.

Part List:

Part Name	Material	Color	Note
ECT second generation terminal	PUF	Black (black)	
RF connector	Cable	White (white)	
FPC	Electrolytic copper PI	Black (black)	

Company Information:

深圳大显科技有限公司
Shenzhen Topant Technology Co., Ltd.

Product Information:

Machine Model	Product Color	Date
LV mini speaker	Black (black)	2022/11/22

Project Information:

Project Code	Mold Surface Treatment	Structure
C-DX-858-009	NA	MD

Part Information:

Part Name	Unit	Scale	Frequency
Mesh antenna	mm	1:1	RF

Part Number: 1-DX-858-009

Material: FPC+sponge+RF connector

Third Perspective View: (Third perspective)

Approval:

Check	Check
胡俊	张磊

Save Path:

Current Version: A

Technical drawing and assembly instructions for a Mini Speaker (LV mini speaker).

Dimensions and Tolerances:

- Overall length: 100 ± 1.0
- Terminal port length: 10 ± 2
- Distance from terminal port to center of FPC: 70 ± 2
- FPC length: 22.95 ± 0.15
- Distance from FPC to center of RF connector: 2.0 ± 0.30
- Distance from RF connector to end of cable: 0.8 ± 0.30
- Wire diameter: $\phi 0.81$
- Distance from terminal port to end of cable: 1.3 ± 0.30

Assembly Instructions:

- Terminal port facing down (端子口朝下).
- Spot UV glue (点UV胶水).
- Release Paper/Knife Edge (离型纸切断线).
- Make 0.1mm reinforcing plate on the back (反面整体加0.1mm补强).

Technical Requirements:

- "*" is the key dimension.
- Please refer to the drawing for unspecified dimensions.
- There should be no poor operation such as faulty soldering, missing soldering, short wires, broken wires, etc.
- Meet RoHS requirements.

Part List:

Part Name	Material	Color	Note
ECT second generation terminal	PUF	Black (black)	
RF connector	Cable	White (white)	
FPC	Electrolytic copper PI	Black (black)	

Company Information:

深圳大显科技有限公司
Shenzhen Topant Technology Co., Ltd.

Product Information:

Machine Model	Product Color	Date
LV mini speaker	Black (black)	2022/11/22

Project Information:

Project Code	Mold Surface Treatment	Structure
C-DX-858-009	NA	MD

Part Information:

Part Name	Unit	Scale	Frequency
Mesh antenna	mm	1:1	RF

Part Number: 1-DX-858-009

Material: FPC+sponge+RF connector

Third Perspective View: (Third perspective)

Approval:

Check	Check
胡俊	张磊

Save Path:

Current Version: A