

**SAMPLE & SPECIFICATION FOR APPROVAL****Customer:** Point Mobile Co., Ltd**Model NO:** PM452**Customer P/N:** PM452\_NFC\_ANT\_HM0376-NA (E13-000311-01)**Version:** V1.0**Specification Describe:** PM452 NFC Antenna (FPC+ferrite)**Vendor P/N:** HM0376-NA**Date:** 2024-06-07**Sample and datasheet must be approved for 5 PCS .**

| HUI MI Information |          |           |
|--------------------|----------|-----------|
| Approved By        | Check By | Issued By |
| WangJinhui         | SunQuan  | YiQin     |

| No Customer appointed Material |          |             |                      | Assign Part     |
|--------------------------------|----------|-------------|----------------------|-----------------|
|                                | R&D      |             | QE                   | Sales           |
| Department                     | MD       | HW          | Quality and Eng.Dep. | Sale& Marketing |
| Checked By                     | LIXU     | Li ShengHua | LiWeiWei             | LiMin           |
| Approved By                    | LIXueQin | WangJinhui  | YeLing               | YiQin           |
| Final Judgment                 | LiLinHua | LiLinHua    | LiLinHua             | LiLinHua        |
| Remark                         |          |             |                      |                 |

Suzhou HuiMi Communication Technology Co.,Ltd

**Antenna Approval Sheet**

|              |                                         |             |    |
|--------------|-----------------------------------------|-------------|----|
| Customer     | Point Mobile Co., Ltd                   |             |    |
| Customer P/N | PM452_NFC_ANT_HM0376-NA (E13-000311-01) |             |    |
| Model        | PM452                                   |             |    |
| P/N          | HM0376-NA                               |             |    |
| Description  | PM452-NFC ANTENNA (FPC+ferrite)         |             |    |
| Frequency    | 13.56MHz                                |             |    |
| Initial Date | 2024-06-07                              |             |    |
| Revision     | A                                       |             |    |
| Author       | RF Engineer                             | ME          |    |
|              | WangJinhui                              | SunQuan     |    |
| Tel.         | 18015467688                             | 13405120400 |    |
| Approval     | R&D                                     | PM          | QE |
|              |                                         |             |    |

**Customer Signature**

## Catalog

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## 1. Summary

This is the NFC antenna approval sheet

Working band is 13.56MHz.

## 2. Antenna Structure

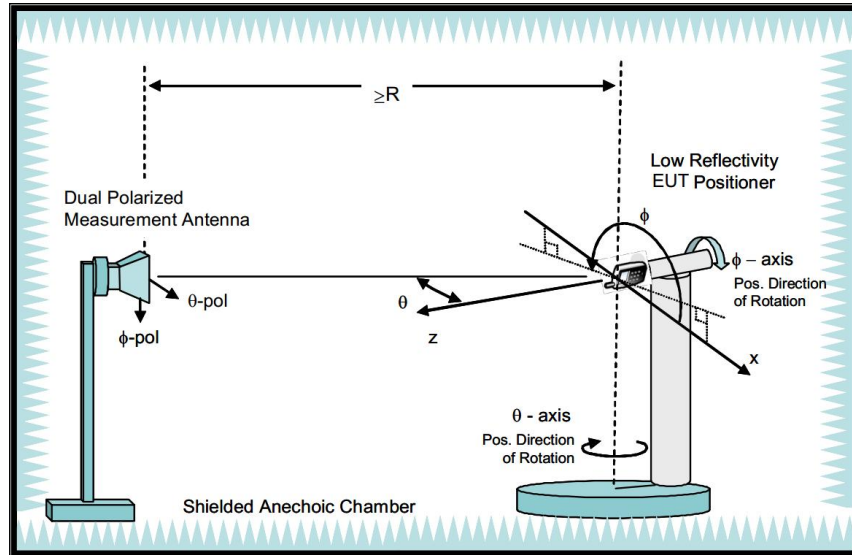
FPC+ferrite

## 3. Device Conditions



Picture 1 PM452 mobile phone photograph

## 4. Test Environment



**Picture 2 Test Environment photo**

## 5. Antenna Test Results

### 5.1 Antenna Photos



**Picture 3 NFC antenna photograph**

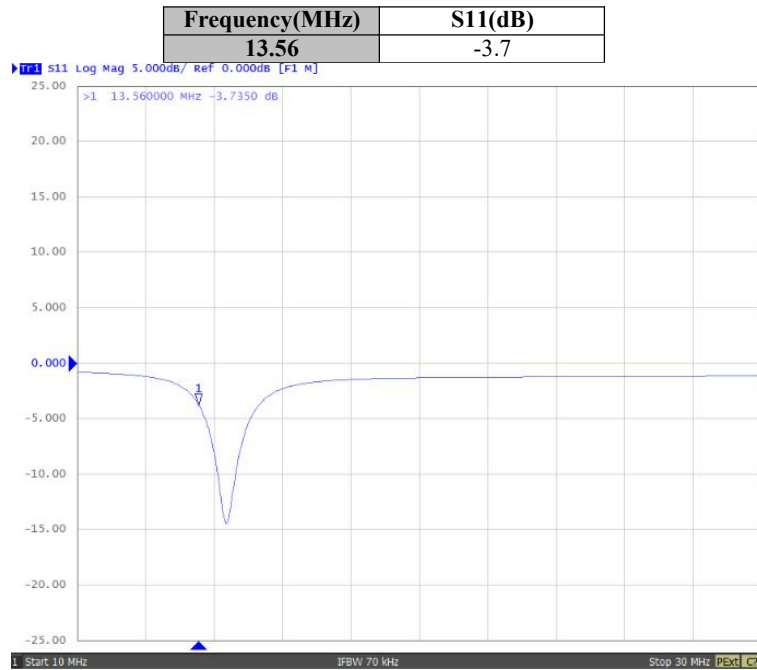
|                                                |            |
|------------------------------------------------|------------|
| Project Name:PointmobilePM452_NFC antenna      | Document:  |
| Date :2024-06-07                               | Version: A |
| Pointmobile_PM452_NFC antenna Approval Sheet_A |            |

### 5.2 Matching Network

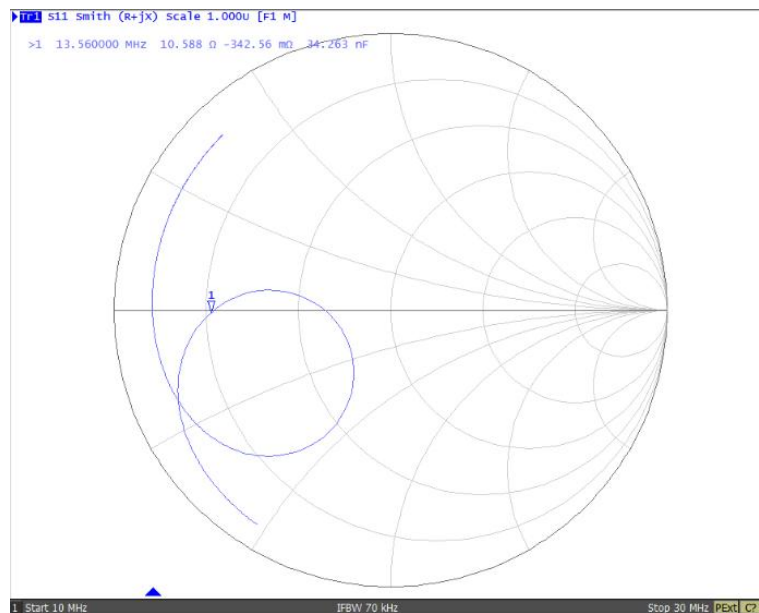
|                   | Location    | Value | Accuracy |
|-------------------|-------------|-------|----------|
| <b>EMC Filter</b> | L1500/L1501 | 77nH  |          |
|                   | C1513/C1515 | 560pF |          |
| <b>Cs</b>         | C1511/C1517 | 150pF | ±2%      |
|                   | C1512/C1516 | 15pF  | ±2%      |
| <b>Ccdmp</b>      | C1509/C1518 | 180pF | ±2%      |
|                   | C1510/C1519 | 68pF  | ±2%      |
| <b>Rp</b>         | C1514       | 27pF  | ±2%      |
| <b>Cp</b>         | R1504       | 1.5KΩ |          |

**Picture 4 Matching network of NFC antenna**

### 5.3 Return Loss( $S_{11}$ , Smith)

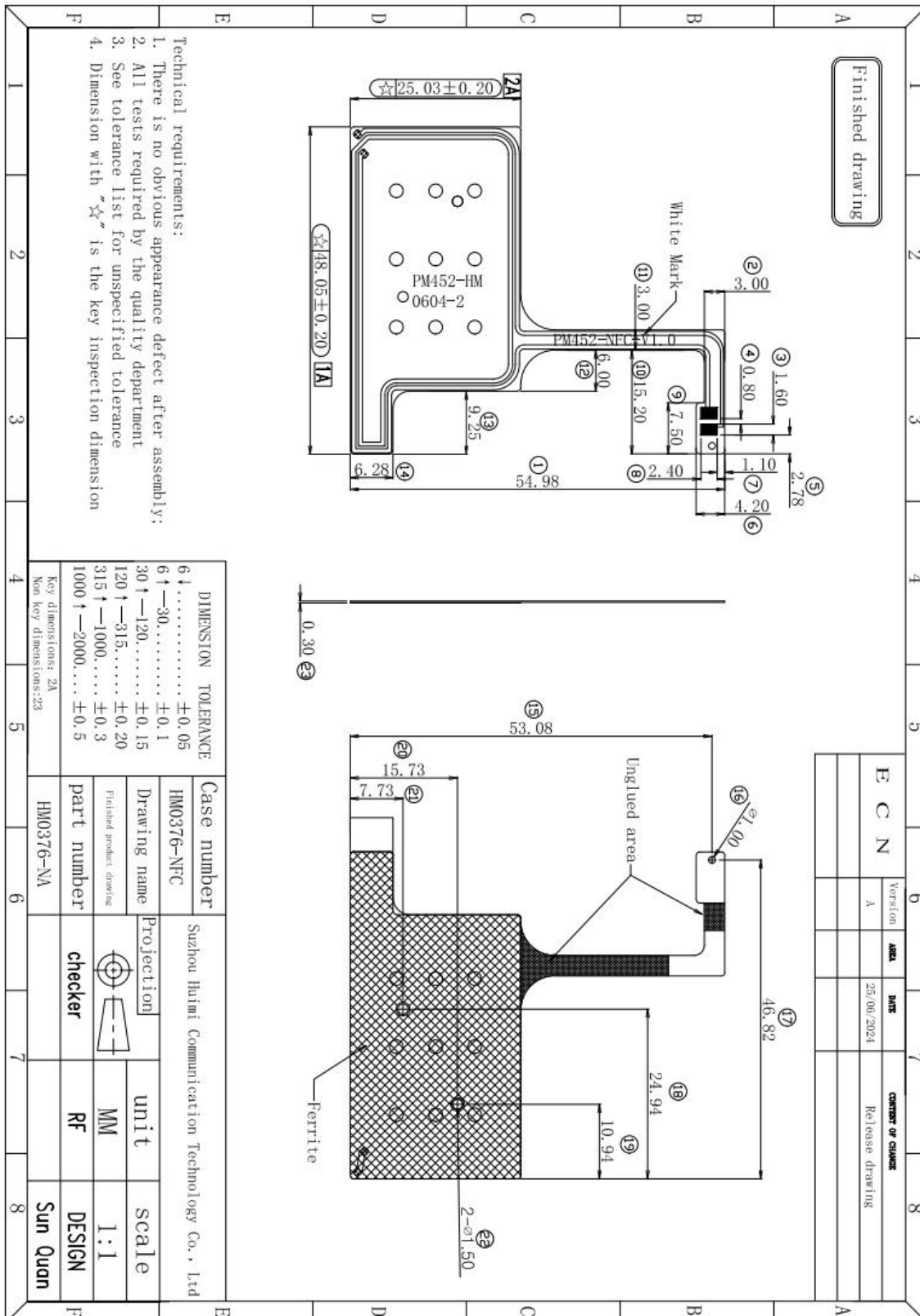


Picture 5 NFC antenna reflection coefficients ( $S_{11}$ )



Picture 6 NFC antenna reflection coefficients (Smith)

## 6. Mechanical Drawings



## 7. Dimension Report

| Suzhou Huimi Communication Technology Co., Ltd |      |       |              |      |      |       |       |       |       |       |  |           |    |
|------------------------------------------------|------|-------|--------------|------|------|-------|-------|-------|-------|-------|--|-----------|----|
| Dimensional inspection report                  |      |       |              |      |      |       |       |       |       |       |  |           |    |
| 客户                                             |      |       | Point Mobile |      |      | 产品名称  |       | PM452 |       | 图纸版本号 |  | A         |    |
| 我司案号                                           |      |       | HM0376       |      |      | 天线名称  |       | NFC   |       | 测量日期  |  | 2024-7-10 |    |
| 序号                                             | 尺寸性质 | 尺寸    | 公差           |      | 测量工具 |       |       |       |       |       |  | OK/NG     | 备注 |
|                                                |      |       | 上限           | 下限   |      |       |       |       |       |       |  |           |    |
| 1A                                             | *    | 48.05 | 0.20         | 0.20 |      | 48.12 | 48.15 | 48.09 | 48.11 | 48.08 |  | OK        |    |
| 2A                                             | *    | 25.03 | 0.20         | 0.20 |      | 25.08 | 25.10 | 25.09 | 25.13 | 25.12 |  | OK        |    |
| 1                                              |      | 54.98 | 0.20         | 0.20 |      | 55.09 | 55.15 | 55.13 | 55.15 | 55.16 |  | OK        |    |
| 2                                              |      | 3.00  | 0.10         | 0.10 |      | 3.01  | 3.00  | 2.98  | 3.03  | 3.02  |  | OK        |    |
| 3                                              |      | 1.60  | 0.10         | 0.10 |      | 1.63  | 1.62  | 1.65  | 1.63  | 1.62  |  | OK        |    |
| 4                                              |      | 0.80  | 0.10         | 0.10 |      | 0.79  | 0.81  | 0.80  | 0.78  | 0.80  |  | OK        |    |
| 5                                              |      | 2.78  | 0.10         | 0.10 |      | 2.79  | 2.81  | 2.82  | 2.79  | 2.80  |  | OK        |    |
| 6                                              |      | 4.20  | 0.10         | 0.10 |      | 4.15  | 4.18  | 4.16  | 4.16  | 4.17  |  | OK        |    |
| 7                                              |      | 1.10  | 0.10         | 0.10 |      | 1.12  | 1.09  | 1.11  | 1.10  | 1.13  |  | OK        |    |
| 8                                              |      | 2.40  | 0.10         | 0.10 |      | 2.42  | 2.45  | 2.43  | 2.40  | 2.41  |  | OK        |    |
| 9                                              |      | 7.50  | 0.10         | 0.10 |      | 7.53  | 7.50  | 7.52  | 7.53  | 7.51  |  | OK        |    |
| 10                                             |      | 15.20 | 0.10         | 0.10 |      | 15.21 | 15.25 | 15.24 | 15.23 | 15.18 |  | OK        |    |
| 11                                             |      | 3.00  | 0.10         | 0.10 |      | 3.05  | 3.07  | 3.06  | 3.05  | 3.08  |  | OK        |    |
| 12                                             |      | 6.00  | 0.10         | 0.10 |      | 6.03  | 6.05  | 6.08  | 6.02  | 6.03  |  | OK        |    |
| 13                                             |      | 9.25  | 0.10         | 0.10 |      | 9.27  | 9.28  | 9.26  | 9.25  | 9.23  |  | OK        |    |
| 14                                             |      | 6.28  | 0.10         | 0.10 |      | 6.32  | 6.35  | 6.29  | 6.32  | 6.30  |  | OK        |    |
| 15                                             |      | 53.08 | 0.20         | 0.20 |      | 53.15 | 53.18 | 53.21 | 53.16 | 53.17 |  | OK        |    |
| 16                                             |      | 1.00  | 0.05         | 0.05 |      | 0.99  | 0.98  | 1.01  | 1.00  | 1.02  |  | OK        |    |
| 17                                             |      | 46.82 | 0.20         | 0.20 |      | 46.89 | 46.81 | 46.86 | 46.83 | 46.85 |  | OK        |    |
| 18                                             |      | 24.94 | 0.10         | 0.10 |      | 24.95 | 24.96 | 24.98 | 24.96 | 24.93 |  | OK        |    |
| 19                                             |      | 10.94 | 0.10         | 0.10 |      | 10.99 | 10.95 | 10.93 | 10.96 | 10.95 |  | OK        |    |
| 20                                             |      | 15.73 | 0.10         | 0.10 |      | 15.79 | 15.77 | 15.76 | 15.76 | 15.77 |  | OK        |    |
| 21                                             |      | 7.73  | 0.10         | 0.10 |      | 7.75  | 7.79  | 7.78  | 7.78  | 7.75  |  | OK        |    |
| 22                                             |      | 1.50  | 0.05         | 0.05 |      | 1.52  | 1.53  | 1.49  | 1.51  | 1.50  |  | OK        |    |
|                                                |      | 1.50  | 0.05         | 0.05 |      | 1.52  | 1.50  | 1.51  | 1.50  | 1.52  |  | OK        |    |
| 23                                             |      | 0.30  | 0.10         | 0.10 |      | 0.29  | 0.28  | 0.29  | 0.28  | 0.29  |  | OK        |    |
|                                                |      |       |              |      |      |       |       |       |       |       |  |           |    |
|                                                |      |       |              |      |      |       |       |       |       |       |  |           |    |
|                                                |      |       |              |      |      |       |       |       |       |       |  |           |    |
|                                                |      |       |              |      |      |       |       |       |       |       |  |           |    |
|                                                |      |       |              |      |      |       |       |       |       |       |  |           |    |
|                                                |      |       |              |      |      |       |       |       |       |       |  |           |    |

**8. Reliability Test Report**

|                                                                                     |             |      |             |       |                                                                                  |      |                                      |
|-------------------------------------------------------------------------------------|-------------|------|-------------|-------|----------------------------------------------------------------------------------|------|--------------------------------------|
| 苏州微米通讯科技有限公司<br>Suzhou Huimi Communication Technology Co., Ltd<br>恒温恒湿、油墨附着力测试报告    |             |      |             |       |                                                                                  |      |                                      |
| 客户                                                                                  | pointmobile | 日期   | 2024. 3. 27 | 厂内编号  | 20240327009                                                                      |      |                                      |
| 料号                                                                                  | HM0376-NA   | 数量   | 5PCS        | 测试时间  | 24H                                                                              |      |                                      |
| 材料规格                                                                                | 182025      | 供应商  | 蔡伦格蒂        | 参考标准  | MIL-SDT-202Method017IEC60749-25<br>JEDEC JESD22-A104-B IEC68- 2-1MIL-STD-2168-85 |      |                                      |
| 测试目的：检测产品的可靠性及镀层的结合力、镀层抗氧化及抗腐蚀能力。                                                   |             |      |             |       |                                                                                  |      |                                      |
| 设备名称：高低温测试箱                                                                         |             |      |             |       |                                                                                  |      |                                      |
| <b>实验室环境</b>                                                                        |             |      |             |       |                                                                                  |      |                                      |
| 温度                                                                                  | 25.4摄氏度±1   | 相对湿度 | 65%±1       | 大气压   |                                                                                  | 1Mpa |                                      |
| <b>测试参数</b>                                                                         |             |      |             |       |                                                                                  |      |                                      |
| 湿度                                                                                  | 高温          | 70℃  | 低温          |       | 温度公差                                                                             | 1℃   |                                      |
| 时间                                                                                  | 恒温          | 高温   | 24H         | 高温升温  | 10min                                                                            | 备注   | 1、高温升温是从常温，升至设定高温2、低温降温是指从设定高温降至设定低温 |
|                                                                                     |             | 低温   |             | 低温降温  |                                                                                  |      |                                      |
| 循环次数                                                                                | 0           |      | 其他          | 相对湿度  | 95%                                                                              | ±1%  |                                      |
| 外观检验                                                                                | 分层          | ACC  | 褶皱          | ACC   | 起泡                                                                               | ACC  | 油墨脱落 ACC                             |
| 判定结果ACC为通过，NG为不合格。                                                                  |             |      |             |       |                                                                                  |      |                                      |
| <b>百格测试</b>                                                                         |             |      |             |       |                                                                                  |      |                                      |
| 工具                                                                                  | 百格刀，3M600胶带 |      |             | 结论    | 以3M600对百格区域做3次90° 拉力测试，油墨脱落面积小于5%，可满足测试要求。                                       |      |                                      |
|  |             |      |             |       |                                                                                  |      |                                      |
| 测试员： 李胜华                                                                            |             |      |             | 审核：孙泉 |                                                                                  |      |                                      |

苏州微米通讯科技有限公司  
 Suzhou Huimi Communication Technology Co., Ltd  
**盐雾试验报告**

|                                                                                                |             |               |            |
|------------------------------------------------------------------------------------------------|-------------|---------------|------------|
| 客户                                                                                             | pointmobile | 电镀类型          | 电镀镍金       |
| 料号                                                                                             | HM0376-NA   | 测样数量          | 5PCS       |
| 盐雾测试规格                                                                                         | NSS中性盐雾测试   | 测试标准          | APC-TM-650 |
| 溶液值                                                                                            | 5%NACl      | 盐雾箱的温度        | 47°C       |
| 大气压力                                                                                           | 1Mpa        |               |            |
| 喷雾方式                                                                                           | 连续性         | 盐雾沉降数         | 2ml        |
| 盐酸成分                                                                                           | NSS         | 货品素材          | 天线板        |
| 喷雾开始时间                                                                                         | 2024.3.27   | 测试结束时间        | 2024.3.29  |
| 测试观察时间                                                                                         | 观察现象        |               |            |
| 2024.3.27 7:00                                                                                 | 板面检查无异常入实验室 |               |            |
| 2024.3.28 7:00                                                                                 | 连续喷雾24H无异常  |               |            |
| 224.3.29 7:00                                                                                  | 连续喷雾48H无异常  |               |            |
| 实验结果图片                                                                                         |             |               |            |
| <div></div> |             |               |            |
| 测试员                                                                                            | 李胜华         | 审核<br>(加盖单位章) |            |
| 结论                                                                                             | PASS        |               |            |

备注:

常用的盐雾测试方法有: NSS中性盐雾测试: AASS酸性盐雾试验, CASS酮酸加速试验  
 AASS试验是在NSS中性盐雾试验中加入冰酸调PH=3.0 3.3  
 CASS试验是在NSS中性盐雾试验溶液中加入0.26g/L的氯化铜.

9. Packing Method

| 苏州微米通讯科技有限公司 |             |                     |                                                                                     |    |           |    |       |      |           |
|--------------|-------------|---------------------|-------------------------------------------------------------------------------------|----|-----------|----|-------|------|-----------|
| 包装作业规范       |             |                     |                                                                                     |    |           |    |       |      |           |
| 客户           | PointMobile | 产品名称                | PM452-NFC                                                                           | 料号 | HM0376-NA | 修订 | 0     | 制定日期 | 2024-7-10 |
| 包装材料明细       |             |                     | 图示说明                                                                                |    |           |    | 操作说明  |      |           |
| 编号           | 品名          | 规格                  |  |    |           |    |       |      |           |
| 1            | PE袋         | 90*65               |                                                                                     |    |           |    |       |      |           |
| 2            | 泡壳          | 280*190             |                                                                                     |    |           |    |       |      |           |
| 3            | 纸箱          | 300*200             |                                                                                     |    |           |    |       |      |           |
|              |             |                     | 1. 将NFC产品摆整齐，放入PE袋中。10pcs/PE袋                                                       |    |           |    |       |      |           |
|              |             |                     | 2. 将装好PE袋的产品，用透明胶带将PE袋口部封好。                                                         |    |           |    |       |      |           |
|              |             |                     | 3. 将封好PE袋的产品放入泡壳中，每格2袋，错开放入，每盘5格。100pcs/盘                                           |    |           |    |       |      |           |
|              |             |                     |    |    |           |    |       |      |           |
|              |             |                     |   |    |           |    |       |      |           |
|              |             |                     |  |    |           |    |       |      |           |
|              |             |                     | 4. 将已放入产品的泡壳重量堆放，2500pcs/25盘/摆，最上层加上空盘盖子                                            |    |           |    |       |      |           |
|              |             |                     | 5. 将包装好的产品，数量确认ok，打包装入纸箱，贴好标签                                                       |    |           |    |       |      |           |
|              |             |                     | 6. 包装完毕，封箱，外箱贴出货标签，以及ROHS/HF标签，2500pcs/摆/箱                                          |    |           |    |       |      |           |
| 项次           | 使用工具        | 注意事项                |                                                                                     |    |           |    | 文管发行章 |      |           |
| 1            | 手（指）套       | 1 作业人员必须带手（指）套      |                                                                                     |    |           |    |       |      |           |
| 2            | 封箱机         | 2 装箱不可多装，少装，尾数需贴尾数票 |                                                                                     |    |           |    |       |      |           |
| 3            | 封箱胶带        | 3 随时做好现场内5S工作       |                                                                                     |    |           |    |       |      |           |
| 核准：易琴琴       |             | 审核：孙泉               |                                                                                     |    | 制定：李胜华    |    |       |      |           |



## 10. Storage Management Method

|                   |           |
|-------------------|-----------|
| Storage condition | -30℃~+70℃ |
| Storage period    | 24 months |

\*PM452 is RoHS certified including this material.

## 11. Shipping inspection criterion

|                                                                    |              |                                                                                                       |      |               |                       |                        |
|--------------------------------------------------------------------|--------------|-------------------------------------------------------------------------------------------------------|------|---------------|-----------------------|------------------------|
| 文件类别                                                               |              | NFC 成品检验规范                                                                                            |      | 文件编号          | 版本版次                  | 页次                     |
| 三阶文件                                                               |              |                                                                                                       |      | HM-QP-08-008A | A                     | 1/1                    |
| 一、目的：让检验人员了解成品检验之规范<br>二、范围：适用于NFC成品检验用，<br>三、客户：/<br>四、作业内容及判定标准： |              |                                                                                                       |      |               |                       |                        |
| 抽样计划                                                               |              | MIL-STD-105E 正常单次抽样 LEVEL II                                                                          |      |               |                       |                        |
| AQL                                                                |              | CR=0 MAJ=0.25% MIN=0.4% AQL0.40                                                                       |      |               |                       |                        |
| AQL level                                                          |              | AQL0.010, AQL0.015, AQL0.025, AQL0.040, AQL0.065, AQL0.10, AQL0.15, AQL0.25, AQL0.40, AQL0.65, AQL1.0 |      |               |                       |                        |
| 项次                                                                 | 检验项目         | 检验标准                                                                                                  | CR   | MAJ           | MIN                   | 检验仪器                   |
| 1                                                                  | 尺寸           | 按最新图面标示A之尺寸规格进行检测<br>每批出货量测10PCS                                                                      | V    |               |                       | 游标卡尺<br>投影仪、2.5D<br>治具 |
| 2                                                                  | 导通测试         | 按照《双面板产品导通测试规范》进行检测                                                                                   | V    |               |                       | 万用表                    |
| 3                                                                  | 外观检验         | 1. 材质:FPC+铁氧体<br>2. 检查正面的铁氧体不可有露铜、气泡、颗粒、起皱、脏污、堵孔等不良；<br>3. 反面贴好的产品不可有贴歪、脏污等不良；                        |      |               | V                     | 目视<br>2.5D<br>限度样品     |
| 4                                                                  | 成品包装         | 1. 泡壳、纸箱、标签必须符合RoHS要求。<br>2. 产品进行分装，每包产品装好之后摆放到泡壳<br>3. 将泡壳叠放，进行包装，封箱，外箱贴合格标签<br>4. 包装数量参照Bom。        |      |               | V                     | 目视                     |
| 修订记录                                                               | NO           | 修订日期                                                                                                  | 修订内容 | 版本            | 修订日期 年 月 日            |                        |
|                                                                    | 1            |                                                                                                       |      |               | 制定日期 2019 年 10 月 18 日 |                        |
|                                                                    | 2            |                                                                                                       |      |               | 核 准                   | 技术审核 制 订               |
|                                                                    | 3            |                                                                                                       |      |               | 易琴琴                   | 王金辉 孙泉                 |
|                                                                    | 苏州微米通讯科技有限公司 |                                                                                                       |      |               |                       |                        |