

|                                                                                   |                        |                                                                                                              |
|-----------------------------------------------------------------------------------|------------------------|--------------------------------------------------------------------------------------------------------------|
|  | HP-2080M-R 天线          |  <b>RoHS</b><br>Compliant |
| Date of Issue: 2023-06-13                                                         |                        |  <b>ESD Sensitive</b>     |
| Page (1) of (10)                                                                  | iTD Drawing # 20230613 | Revision #: Initial Release                                                                                  |

Source Control Drawing

| Part Description:    | Bluetooth TWS headset |
|----------------------|-----------------------|
| 客 户 料 号:             |                       |
| 客户规格描述:              |                       |
| iTD Part Number:     | HP-2080M R 天线         |
| iTD Software version |                       |
| iTD Hardware version | HP-2080M -R-V4.0      |

Customer Approval

(Please return this copy as a certification of your approval)

|                |  |
|----------------|--|
| Approved by:   |  |
| Approval Date: |  |
| Company Seal:  |  |

PROPRIETARY NOTICE

These documents, and the contained information herein, are proprietary and are not to be reproduced, used or disclosed to others for manufacture or for any other purpose, except as specifically authorized, in writing, by iTD Corporation.

iTD Contact Information:

Eric Lin 林先生  
  
Mb: 15060807099  
  
Email: ljw@itdtek.com  
  
Add:605, Building 2, Gaoxin Industrial ParkPhase II,  
Longchang Road, Xin 'anStreet, Bao 'an District,  
Shenzhen

| Number | Effective date | Change record   |
|--------|----------------|-----------------|
| V4.0   | 2023-6-13      | Initial release |
|        |                |                 |
|        |                |                 |
|        |                |                 |
|        |                |                 |
|        |                |                 |
|        |                |                 |

|    |    |    |
|----|----|----|
| 编制 | 工程 | 审核 |
|    |    |    |

|                                                                                   |                        |                                                                                                              |
|-----------------------------------------------------------------------------------|------------------------|--------------------------------------------------------------------------------------------------------------|
|  | HP-2080M-R 天线          |  <b>RoHS</b><br>Compliant |
| Date of Issue: 2023-06-13                                                         |                        |  <b>ESD Sensitive</b>     |
| Page (3) of (10)                                                                  | iTD Drawing # 20230613 | Revision #: Initial Release                                                                                  |

一、The basic parameters:

| A. Electrical Characteristics            |                   |
|------------------------------------------|-------------------|
| Frequency                                | 2400MHZ~2500MHZ   |
| VSWR                                     | < 3               |
| Avg Efficiency                           | >15%              |
| Impedance                                | 50 ± 25 Ohm       |
| Polarization                             | Linear            |
| Peak Gain                                | 2.4G:-1.04dBi     |
| B. Material & Mechanical Characteristics |                   |
| Material of Radiator                     | FPC      black    |
| Cable Type                               | /                 |
| Connector Type                           | /                 |
| Dimension                                | /                 |
| C. Environmental                         |                   |
| Operation Temperature                    | - 20 °C ~ + 60 °C |
| Storage Temperature                      | - 30 °C ~ + 70 °C |

|                           |                        |                             |
|---------------------------|------------------------|-----------------------------|
|                           | HP-2080M-R 天线          | RoHS Compliant              |
| Date of Issue: 2023-06-13 |                        | ESD Sensitive               |
| Page (4) of (10)          | iTD Drawing # 20230613 | Revision #: Initial Release |

## 二、Electrical Specification :

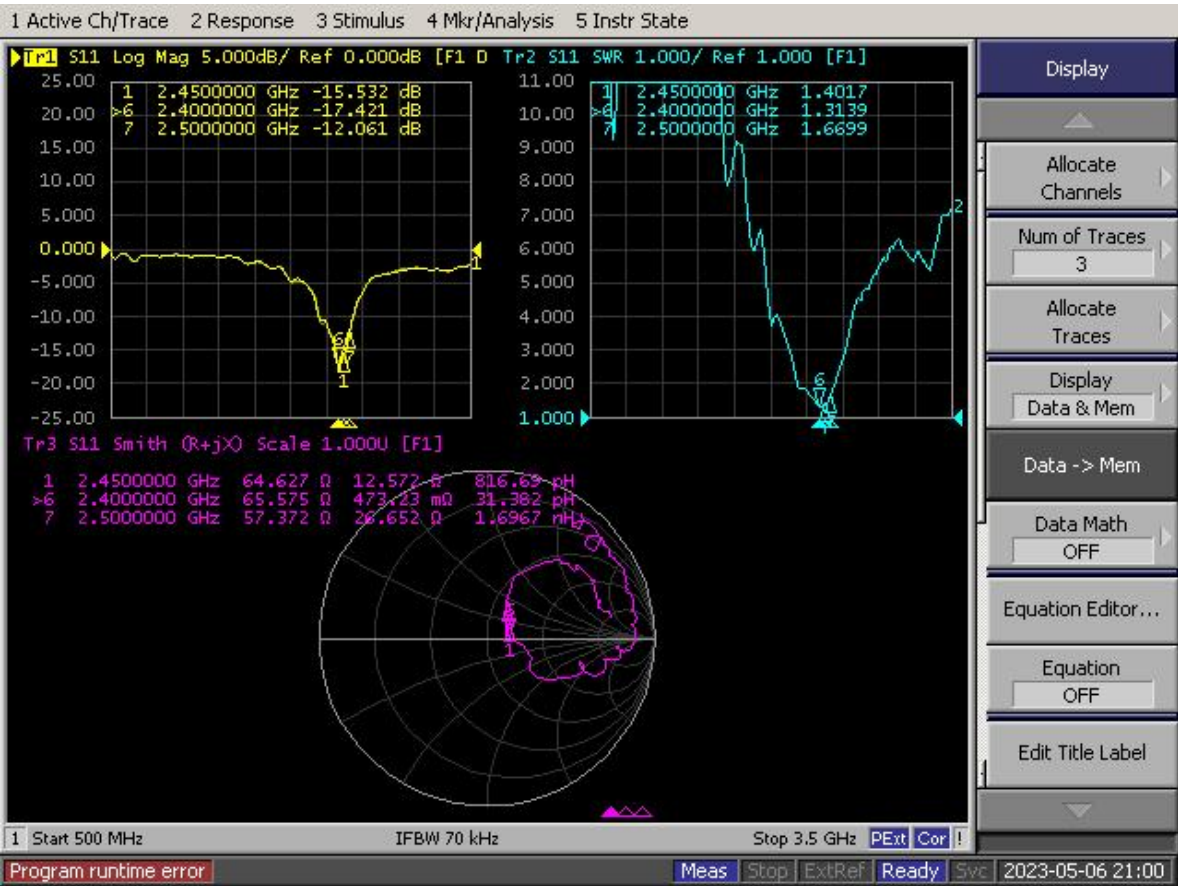
Those specifications were specially defined for 顶设 HP-2080M model.

## 三、VSWR

### 1 Measuring Method

- 1.A 50  $\Omega$  coaxial cable is connected to the antenna. Then this cable is connected to a network analyzer to measure the VSWR
- 2.Keeping this jig away from metal at least 20cm

### 2 Measurement frequency points and VSWR value



|                                                                                   |                        |                                                                                                              |
|-----------------------------------------------------------------------------------|------------------------|--------------------------------------------------------------------------------------------------------------|
|  | HP-2080M-R 天线          |  <b>RoHS</b><br>Compliant |
| Date of Issue: 2023-06-13                                                         |                        |  <b>ESD Sensitive</b>     |
| Page (5) of (10)                                                                  | iTD Drawing # 20230613 | Revision #: Initial Release                                                                                  |

## 四、 Anechoic chamber

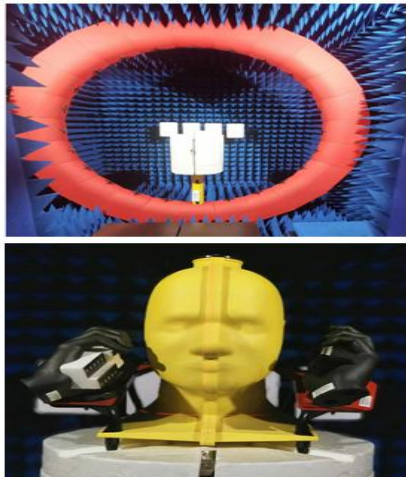
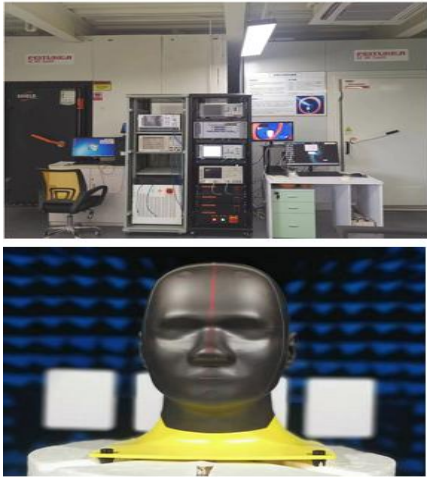
### Introduction:

Microwave darkroom and no reflection chamber, absorbing short wave darkroom dark room. Microwave darkroom by electromagnetic shielding room, filtering and isolation, grounding device, the ventilation duct, indoor distribution system, monitoring system, ceiling wave material part. It is based on the wave absorbing material as the lining of the shield room, it can absorb the most of the electromagnetic energy into the six wall is a better simulation of the free space conditions.

The main working principle of microwave anechoic chamber is according to the electromagnetic wave in the medium from the low magnetic guide magnetic direction of propagation rules, absorbing materials to guide the electromagnetic wave using high permeability, through resonance, a substantial absorption of electromagnetic wave radiation energy, by coupling the electromagnetic energy into heat energy.

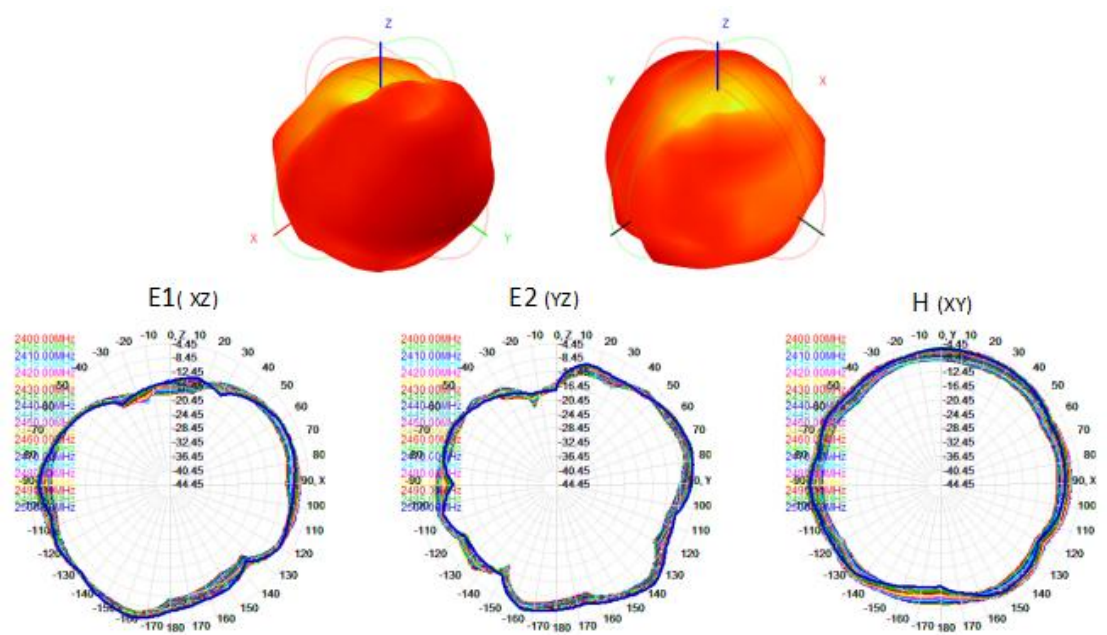
### main performance :

Frequency range:400MHz ~ 6GHz ceiling reflected wave loss materials: 400MHz ~ 6GHz is equal to or more than 15dB (microwave absorbing material by composite wave absorbing materials, namely tapered containing carbon sponge suction wave material paste in ferrite)



五、Gain table of Antenna

无源场型图-R



无源效率增益

| R          |          |            |
|------------|----------|------------|
| Freq (MHz) | Effi (%) | Gain (dBi) |
| 2400       | 17.34    | -1.79      |
| 2410       | 17.76    | -1.80      |
| 2420       | 18.93    | -1.77      |
| 2430       | 19.04    | -1.75      |
| 2440       | 19.77    | -1.48      |
| 2450       | 19.34    | -1.33      |
| 2460       | 18.97    | -1.13      |
| 2470       | 18.46    | -1.88      |
| 2480       | 17.49    | -1.70      |
| 2490       | 17.27    | -1.52      |
| 2500       | 17.05    | -1.45      |

OTA 有源

| 自由空间 |           |           | 二代头模      |           |
|------|-----------|-----------|-----------|-----------|
| BAND | R         |           | R         |           |
|      | TRP (dBm) | TIS (dBm) | TRP (dBm) | TIS (dBm) |
| 0    | 1.83      | -86.24    | 1.59      | -86.18    |
| 39   | 0.55      | -84.21    | -0.41     | -83.84    |
| 78   | 1.22      | -86.29    | -0.88     | -84.21    |

|                           |                        |                                                                                        |
|---------------------------|------------------------|----------------------------------------------------------------------------------------|
| <div>顶设科技<br/>iTd</div>   | HP-2080M-R 天线          | <div><div><div><div></div><div>Pb</div></div></div><div>RoHS<br/>Compliant</div></div> |
| Date of Issue: 2023-06-13 |                        | <div><div><div><div></div><div></div></div></div><div>ESD Sensitive</div></div>        |
| Page (8) of (10)          | iTD Drawing # 20230613 | Revision #: Initial Release                                                            |

六、AntennaDimensions





|                                                                                   |                        |                                                                                                       |
|-----------------------------------------------------------------------------------|------------------------|-------------------------------------------------------------------------------------------------------|
|  | HP-2080M-R 天线          |  RoHS<br>Compliant |
| Date of Issue: 2023-06-13                                                         |                        |  ESD Sensitive     |
| Page (10) of (10)                                                                 | iTD Drawing # 20230613 | Revision #: Initial Release                                                                           |

八、 ROHS:

Antenna EJ. 02-0251. HP-2080M meets RoHS requirements.

九、 Product packaging instructions:

- A. packing should meet the moistureproof, vibration, pressure and mildew proof, etc.
- B. the smallest packing unit logo must have the manufacturer trademarks, product model, name, code and quantity.
- C. in the attached packing list, certificate of approval, and the factory inspection report.

\*\*\*\*\*END\*\*\*\*\*