



# Spot Check Evaluation

---

Reviewed by: Joseph Lin / Supervisor

---

Approved by: Jones Tsai / Manager



**SPORTON INTERNATIONAL INC.**

**No. 52, Hwa Ya 1<sup>st</sup> Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.**



**TABLE OF CONTENTS**

**REVISION HISTORY.....3**

**1. INTRODUCTION SECTION.....4**

**2. DIFFERENCE SECTION .....5**

**3. SPOT CHECK VERIFICATION DATA SECTION .....7**

**4. REFERENCE DETAIL SECTION.....9**



## REVISION HISTORY

| VERSION | DESCRIPTION             | ISSUED DATE   |
|---------|-------------------------|---------------|
| Rev. 01 | Initial issue of report | Mar. 16, 2018 |
|         |                         |               |
|         |                         |               |
|         |                         |               |
|         |                         |               |
|         |                         |               |
|         |                         |               |
|         |                         |               |
|         |                         |               |
|         |                         |               |
|         |                         |               |
|         |                         |               |
|         |                         |               |
|         |                         |               |
|         |                         |               |
|         |                         |               |



## 1. Introduction Section

The original model (FCC ID: IHDT56XE2) and the variant model (FCC ID: IHDT56XE4) has identical PCB layout, antenna, SW implementation for Bluetooth/Wi-Fi/GPS/NFC. Based on their similarity, the FCC Part 15C (equipment class: DTS, DSS, DXX) and Part 15E (equipment class: NII) test data issued test data of IHDT56XE4 references the test data of IHDT56XE2

The original model (FCC ID: IHDT56XE1) and the variant model (FCC ID: IHDT56XE4) has identical PCB layout, antenna, SW implementation for GSM/WCDMA/LTE. Based on their similarity, the FCC Part 22, 24, 27 (equipment class: PCE) test data issued test data of IHDT56XE4 references the test data of IHDT56XE1

The original model (FCC ID: IHDT56XE2) and the variant model (FCC ID: IHDT56XE4) has identical PCB layout, antenna, SW implementation for WCDMA/LTE. Based on their similarity, the FCC Part 22, 24 (equipment class: PCE) test data issued test data of IHDT56XE4 references the test data of IHDT56XE2

The applicant takes full responsibility that the test data as referenced in this report represent compliance for this FCC ID (FCC ID: IHDT56XE4).



## 2. Difference Section

The original model (FCC ID: IHDT56XE2) and the variant model (FCC ID: IHDT56XE4) has identical PCB layout, antenna, SW implementation for Bluetooth/Wi-Fi/NFC/GPS. The details of similarity and difference can be found in the Operating Description.

The original model (FCC ID: IHDT56XE1) and the variant model (FCC ID: IHDT56XE4) has identical PCB layout, antenna, SW implementation for GSM/WCDMA/LTE. Based on their similarity, the FCC Part 22, 24, 27 (equipment class: PCE) test data issued test data of IHDT56XE4 references the test data of IHDT56XE1

The original model (FCC ID: IHDT56XE2) and the variant model (FCC ID: IHDT56XE4) has identical PCB layout, antenna, SW implementation for WCDMA/LTE. Based on their similarity, the FCC Part 22, 24 (equipment class: PCE) test data issued test data of IHDT56XE4 references the test data of IHDT56XE2

Cellular transmitter RF components are different in IHDT56XE4, to support capability for different cellular bands.



The product specification is outlined in the following table:

| FCC ID        |                                         |                                   | IHDT56XE1                                                            | IHDT56XE2               | IHDT56XE4                   |
|---------------|-----------------------------------------|-----------------------------------|----------------------------------------------------------------------|-------------------------|-----------------------------|
| Wireless Tech | Mode                                    |                                   | Frequency (MHz)                                                      |                         |                             |
| GSM           | GSM Voice<br>GPRS (GMSK)<br>EDGE (8PSK) | Multi-Slot<br>Class 12<br>DTM: No | 850/1900                                                             | 850/1900                | 850/1900                    |
| UMTS          | AMR/RCM12.2Kbps<br>HSDPA/HSUPA/DC-HSDPA |                                   | B5/B4/B2                                                             | B5/B4/B2                | B5/B4/B2                    |
| LTE (FDD)     | QPSK<br>16QAM<br>64QAM                  |                                   | B2/B4/B5/B7/B12/<br>B13/B14//B17/B2<br>5/B26/B30/B38/<br>B41/B66/B71 | B2/B4/B5/B7/B13/<br>B66 | B2/B4/B5/B7/B12/<br>B17/B66 |
| CDMA          | RC1/RC3                                 |                                   | BC0/BC1/BC10                                                         | BC0/BC1                 | -                           |
| Wi-Fi         | 11b/11g/11n(HT20)                       |                                   | 2412-2462                                                            |                         |                             |
|               | 11a/11n(HT20)/11n(HT40)/                |                                   | 5180-5240                                                            |                         |                             |
|               | 11ac(VHT20)/                            |                                   | 5260-5320                                                            |                         |                             |
|               | 11ac(VHT40)/                            |                                   | 5500-5700                                                            |                         |                             |
|               | 11ac(VHT80)                             |                                   | 5745-5825<br>*5600-5650 notched                                      |                         |                             |
| Bluetooth     | V5.0 LE                                 |                                   | 2402-2480 MHz                                                        |                         |                             |
| NFC           | ASK                                     |                                   | 13.56MHz                                                             |                         |                             |



### 3. Spot Check Verification Data Section

Summary of the spot check:

| Test Item                              | Mode                   | IHDT56XE2<br>Worst Result          | IHDT56XE4<br>Worst Result                                                | Difference (dB) |
|----------------------------------------|------------------------|------------------------------------|--------------------------------------------------------------------------|-----------------|
| Average<br>Conducted<br>Power<br>(dBm) | 802.11b                | 18.97                              | 18.99                                                                    | -0.02           |
|                                        | 802.11g                | 16.97                              | 16.94                                                                    | 0.03            |
|                                        | 11n HT20               | 16.88                              | 16.95                                                                    | -0.07           |
|                                        | BT (1Mbps)             | 12.26                              | 11.94                                                                    | 0.32            |
|                                        | BT (2Mbps)             | 9.79                               | 9.25                                                                     | 0.54            |
|                                        | BT (3Mbps)             | 9.81                               | 9.31                                                                     | 0.5             |
|                                        | BT-LE 1Mbps            | 12.15                              | 12.03                                                                    | 0.12            |
|                                        | BT-LE 2Mbps            | 12.35                              | 11.94                                                                    | 0.41            |
|                                        | 11a, 5.2GHz            | 16.95                              | 16.84                                                                    | 0.11            |
|                                        | 11n HT20, 5.2GHz       | 16.80                              | 16.99                                                                    | -0.19           |
|                                        | 11n HT40, 5.2GHz       | 15.85                              | 15.98                                                                    | -0.13           |
|                                        | 11ac VHT20, 5.2GHz     | 15.97                              | 15.93                                                                    | 0.04            |
|                                        | 11ac VHT40, 5.2GHz     | 14.74                              | 14.98                                                                    | -0.24           |
|                                        | 11ac VHT80, 5.2GHz     | 14.60                              | 14.69                                                                    | -0.09           |
|                                        | 11a, 5.3GHz            | 16.88                              | 16.89                                                                    | -0.01           |
|                                        | 11n HT20, 5.3GHz       | 16.81                              | 16.99                                                                    | -0.18           |
|                                        | 11n HT40, 5.3GHz       | 15.79                              | 15.95                                                                    | -0.16           |
|                                        | 11ac VHT20, 5.3GHz     | 15.91                              | 15.96                                                                    | -0.05           |
|                                        | 11ac VHT40, 5.3GHz     | 14.59                              | 14.99                                                                    | -0.40           |
|                                        | 11ac VHT80, 5.3GHz     | 14.56                              | 14.61                                                                    | -0.05           |
|                                        | 11a, 5.5GHz            | 16.71                              | 16.99                                                                    | -0.28           |
|                                        | 11n HT20, 5.5GHz       | 16.66                              | 16.94                                                                    | -0.28           |
|                                        | 11n HT40, 5.5GHz       | 15.88                              | 15.97                                                                    | -0.09           |
|                                        | 11ac VHT20, 5.5GHz     | 15.88                              | 15.95                                                                    | -0.07           |
|                                        | 11ac VHT40, 5.5GHz     | 14.80                              | 14.99                                                                    | -0.19           |
|                                        | 11ac VHT80, 5.5GHz     | 14.84                              | 14.99                                                                    | -0.15           |
|                                        | 11a, 5.8GHz            | 16.96                              | 16.99                                                                    | -0.03           |
|                                        | 11n HT20, 5.8GHz       | 16.93                              | 16.97                                                                    | -0.04           |
|                                        | 11n HT40, 5.8GHz       | 15.96                              | 15.87                                                                    | 0.09            |
|                                        | 11ac VHT20, 5.8GHz     | 15.90                              | 15.94                                                                    | -0.04           |
|                                        | 11ac VHT40, 5.8GHz     | 14.89                              | 14.98                                                                    | -0.09           |
|                                        | 11ac VHT80, 5.8GHz     | 14.93                              | 14.72                                                                    | 0.21            |
|                                        | UMTS B2 (RMC 12.2Kbps) | 22.66                              | 22.67                                                                    | -0.01           |
|                                        | UMTS B5 (RMC 12.2Kbps) | 22.50                              | 22.59                                                                    | -0.09           |
|                                        | LTE B2 (FDD - QPSK)    | 23.50                              | 22.94                                                                    | 0.56            |
|                                        | LTE B5 (FDD - QPSK)    | 22.93                              | 22.38                                                                    | 0.55            |
|                                        | IMEI of test sample    | 351885090004200<br>351885090004549 | 354102090009834<br>354102090009842<br>354102090009370<br>354102090009388 |                 |
|                                        | Test date              | 2018/01/18~2018/03/03              | 2018/01/18~2018/03/12                                                    |                 |
|                                        | Mode                   | IHDT56XE1<br>Worst Result          | IHDT56XE4<br>Worst Result                                                | Difference (dB) |
|                                        | GSM(GPRS) 1900         | 29.73                              | 29.37                                                                    | 0.36            |
|                                        | EDGE 1900              | 25.48                              | 25.52                                                                    | -0.04-          |
|                                        | UMTS B4 (RMC 12.2Kbps) | 22.74                              | 22.70                                                                    | 0.04            |
|                                        | LTE B4 (FDD - QPSK)    | 22.84                              | 22.59                                                                    | 0.25            |
|                                        | LTE B7 (FDD - QPSK)    | 22.83                              | 22.30                                                                    | 0.53            |
|                                        | LTE B12 (FDD - QPSK)   | 22.78                              | 22.37                                                                    | 0.41            |
|                                        | LTE B17 (FDD - QPSK)   | 22.73                              | 22.33                                                                    | 0.40            |
|                                        | LTE B66 (FDD - QPSK)   | 22.93                              | 22.71                                                                    | 0.22            |
|                                        | IMEI of test sample    | 351886090013043                    | 354102090013794<br>354102090013802                                       |                 |
|                                        | Test date              | 2018/01/18~2018/03/02              | 2018/01/18~2018/03/07                                                    |                 |



| Test Item                                                                | Mode                   | IHDT56XE2<br>Worst Result          | IHDT56XE4<br>Worst Result                                                | Difference (dB) |
|--------------------------------------------------------------------------|------------------------|------------------------------------|--------------------------------------------------------------------------|-----------------|
| Radiated<br>Spurious<br>Emission<br>(Band Edge.<br>Harmonic)<br>(dBuV/m) | 802.11b                | 42.45                              | 41.95                                                                    | 0.5             |
|                                                                          | 802.11gn(20)           | 49.86                              | 50.04                                                                    | -0.18           |
|                                                                          | BT                     | 56.4                               | 54.63                                                                    | 1.77            |
|                                                                          | BT-LE                  | 47.26                              | 46.79                                                                    | 0.47            |
|                                                                          | 11a, 5.2GHz            | 40.69                              | 40.99                                                                    | -0.3            |
|                                                                          | 11n HT40, 5.3GHz       | 50.67                              | 49.21                                                                    | 1.46            |
|                                                                          | 11n HT20, 5.5GHz       | 44.83                              | 46.39                                                                    | -1.56           |
|                                                                          | 11n HT40, 5.8GHz       | 54.76                              | 55.20                                                                    | -0.44           |
|                                                                          | UMTS B4 (RMC 12.2Kbps) | -42.22                             | -42.36                                                                   | -0.14           |
|                                                                          | LTE B4 (FDD - QPSK)    | -37.93                             | -35.06                                                                   | 2.87            |
|                                                                          | LTE B12 (FDD - QPSK)   | -35.66                             | -36.52                                                                   | -0.86           |
|                                                                          | LTE B17 (FDD - QPSK)   | -51.21                             | -53.02                                                                   | -1.81           |
|                                                                          | LTE B66 (FDD - QPSK)   | -40.91                             | -38.59                                                                   | 2.32            |
|                                                                          | IMEI of test sample    | 351885090010702<br>351885090010710 | 354102090018132<br>354102090018140<br>354102090013794<br>354102090013802 |                 |
|                                                                          | Test date              | 2018/01/18~2018/03/03              | 2018/01/18~2018/03/12                                                    |                 |
| NFC<br>(dBuV/m)                                                          | RSE (30MHz to1GHz)     | 36.68                              | 37.51                                                                    | -0.83           |
|                                                                          | IMEI of test sample    | 351885090010710                    | 354102090013836<br>354102090013844                                       |                 |
|                                                                          | Test date              | 2018/01/18~2018/03/02              | 2018/01/18~2018/02/08                                                    |                 |

**Conclusion:**

Radiated spurious emission test against the variant model for non-cellular part based on the worst-case condition from the original model was performed in this filing to demonstrate the test data from original model remains representative for the variant model.

Based on the spot check test result (power levels measured are within 1dB, and the worst case of RSE spot check verification based on the worst condition from the original model is within 3dB, and are compliance with the limits), the test data from the original model is representative for the variant model.

The unwanted, harmonics, radiated spurious emission is reported peak measurement only due to spurious lower than 20dB than the limit, 74dBuV/m



## 4. Reference detail Section

| Rule Part     | Equipment Class | Wireless Technology      | Frequency Band (MHz)                             | Reference FCC ID | Type Grant/Permissive Change | Reference Report Title | Reference Application | Reference Report Sections                    |
|---------------|-----------------|--------------------------|--------------------------------------------------|------------------|------------------------------|------------------------|-----------------------|----------------------------------------------|
| 15C           | DTS             | Bluetooth – LE<br>Wii-Fi | 2400~2483.5                                      | IHDT56XE2        | Original Grant               | FCC RF<br>Test Report  | IHDT56XE4             | Part 15C<br>(FR811821-02B,<br>FR811821-02C)  |
|               | DSS             | Bluetooth                | 2400~2483.5                                      | IHDT56XE2        | Original Grant               | FCC RF<br>Test Report  | IHDT56XE4             | Part 15C<br>(FR811821-02A)                   |
|               | DXX             | NFC                      | 13.56                                            | IHDT56XE2        | Original Grant               | FCC RF<br>Test Report  | IHDT56XE4             | Part 15C<br>(FR811821-02D)                   |
| 15E           | NII             | Wi-Fi                    | 5150~5250<br>5250~5350<br>5470~5725<br>5725~5850 | IHDT56XE2        | Original Grant               | FCC RF<br>Test Report  | IHDT56XE4             | Part 15E<br>(FR811821-02E,<br>FR811821-02F ) |
| Part 22.24.27 | PCE             | WCDMA                    | WCDMA B2/B5                                      | IHDT56XE2        | Original Grant               | FCC RF<br>Test Report  | IHDT56XE4             | Part 22.24.27<br>(FG811821-02A )             |
|               |                 | LTE                      | LTE B2/B5                                        | IHDT56XE2        | Original Grant               | FCC RF<br>Test Report  | IHDT56XE4             | Part 22.24.27<br>(FG811821-02B )             |
|               |                 | GSM/WCDMA                | GSM 1900 (EDGE)1900<br>WCDMA B4                  | IHDT56XE1        | Original Grant               | FCC RF<br>Test Report  | IHDT56XE4             | Part 22.24.27<br>(FG811821A )                |
|               |                 | LTE                      | LTE B4/B7/B12/B17/B66                            | IHDT56XE1        | Original Grant               | FCC RF<br>Test Report  | IHDT56XE4             | Part 22.24.27<br>(FG811821B )                |

End of this report