



Spot Check Evaluation

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1st 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 | 6 |
| 4. REFERENCE DETAIL SECTION | 10 |



1. Introduction Section

The original model (FCC ID: IHDT56WB4) and the variant model (FCC ID: IHDT56WB2) has identical PCB layout, antenna, SW implementation for Bluetooth/Wi-Fi/NFC/GPS/ GSM/WCDMA/LTE. Based on their similarity, the FCC Part 15C (equipment class: DTS, DSS, DXX) .Part 15E (equipment class: NII) and Part 24, 27 (equipment class: PCS) test data issued test data of IHDT56WB2 references the test data of IHDT56WB4

The original model (FCC ID: IHDT56WB1) and the variant model (FCC ID: IHDT56WB2) has identical PCB layout, antenna, SW implementation for CDMA. Based on their similarity, Part 24, (equipment class: PCS) test data issued test data of IHDT56WB2 references the test data of IHDT56WB1

The applicant takes full responsibility that the test data as referenced in this report represent compliance for this FCC ID (FCC ID: IHDT56WB2).



2. Difference Section

The original model (FCC ID: IHDT56WB4) and the variant model (FCC ID: IHDT56WB2) has identical PCB layout, antenna, SW implementation for Bluetooth/Wi-Fi/NFC/GPS/ GSM/WCDMA/LTE. The details of similarity and difference can be found in the Operating Description.

The original model (FCC ID: IHDT56WB1) and the variant model (FCC ID: IHDT56WB2) has identical PCB layout, antenna, SW implementation for CDMA. The details of similarity and difference can be found in the Operating Description.

Cellular transmitter RF components are different in IHDT56WB2 to support capability for different cellular bands.

The product specification is outlined in the following table:

| FCC ID | | IHDT56WB4 | IHDT56WB1 | IHDT56WB2 |
|---------------|--|-----------------------------------|---|--|
| Wireless Tech | Mode | Frequency (MHz) | | |
| GSM | GSM Voice GPRS (GMSK) EDGE (8PSK) | Multi-Slot Class 12 DTM: No | 850/1900 | 850/1900 |
| UMTS | AMR/RCM12.2Kbps HSDPA/HSUPA/DC-HSDPA | | B5/B4/B2 | B5/B2 |
| CDMA | SO32/SO55/RTAP153.6Kbps/ RETAP 4096Bits | | - | BC0/BC1/BC10 |
| LTE (FDD) | QPSK 16QAM 64QAM | | B2/B4/B5/B7/B 12/B17/ B25/B26/B30/B 38/B41/ B66 | B2/B4/B5/B7/ B12//B13/B17/ B25/B26/B66 |
| Wi-Fi | 11b/11g/11n(HT20) | | 2412-2462 | |
| | 11a/11n(HT20)/11n(HT40) | | 5180-5240 | |
| | 11ac (VHT20)/11ac (VHT40) | | 5260-5320 | |
| | 11ac (VHT80) | | 5500-5720 5745-5825 | |
| Bluetooth | V5.0 | | 2402-2480 MHz | |
| NFC | ASK | | 13.56 MHz | |



3. Spot Check Verification Data Section

Summary of the spot check:

| Test Item | Mode | IHDT56WB4 Worst Result | IHDT56WB2 Worst Result | Difference (dB) |
|-------------------------------|------------------------|------------------------------------|------------------------------------|-----------------|
| Average Conducted Power (dBm) | 802.11b | 18.90 | 18.87 | 0.03 |
| | 802.11g | 18.58 | 18.56 | 0.02 |
| | 11n HT20 | 18.62 | 18.51 | 0.11 |
| | 11ac VHT20 | 18.58 | 18.48 | 0.1 |
| | BT (1Mbps) | 14.81 | 15.43 | -0.62 |
| | BT (2Mbps) | 9.22 | 9.62 | -0.4 |
| | BT (3Mbps) | 9.25 | 9.72 | -0.47 |
| | BT-LE(1Mbps) | 9.18 | 9.48 | -0.3 |
| | BT-LE(2Mbps) | 9.15 | 9.41 | -0.26 |
| | 11a, 5.2GHz | 20.99 | 20.96 | 0.03 |
| | 11n HT20, 5.2GHz | 20.98 | 20.97 | 0.01 |
| | 11n HT40, 5.2GHz | 20.42 | 20.22 | 0.2 |
| | 11ac VHT20, 5.2GHz | 20.99 | 20.97 | 0.02 |
| | 11ac VHT40, 5.2GHz | 20.49 | 20.27 | 0.22 |
| | 11ac VHT80, 5.2GHz | 18.40 | 18.37 | 0.03 |
| | 11a, 5.3GHz | 21.17 | 21.00 | 0.17 |
| | 11n HT20, 5.3GHz | 21.19 | 20.95 | 0.24 |
| | 11n HT40, 5.3GHz | 20.27 | 19.96 | 0.31 |
| | 11ac VHT20, 5.3GHz | 21.22 | 20.88 | 0.34 |
| | 11ac VHT40, 5.3GHz | 20.31 | 19.89 | 0.42 |
| | 11ac VHT80, 5.3GHz | 16.97 | 16.92 | 0.05 |
| | 11a, 5.5GHz | 21.34 | 21.01 | 0.33 |
| | 11n HT20, 5.5GHz | 21.29 | 21.08 | 0.21 |
| | 11n HT40, 5.5GHz | 20.58 | 20.35 | 0.23 |
| | 11ac VHT20, 5.5GHz | 21.41 | 21.05 | 0.36 |
| | 11ac VHT40, 5.5GHz | 20.60 | 20.25 | 0.35 |
| | 11ac VHT80, 5.5GHz | 21.14 | 20.76 | 0.38 |
| | 11a, 5.8GHz | 21.07 | 20.54 | 0.53 |
| | 11n HT20, 5.8GHz | 21.06 | 20.58 | 0.48 |
| | 11n HT40, 5.8GHz | 20.50 | 19.79 | 0.71 |
| | 11ac VHT20, 5.8GHz | 21.20 | 20.67 | 0.53 |
| | 11ac VHT40, 5.8GHz | 20.52 | 19.99 | 0.53 |
| | 11ac VHT80, 5.8GHz | 21.21 | 20.54 | 0.67 |
| | GSM1900(GPRS) | 29.46 | 29.56 | -0.1 |
| | GSM1900(EDGE) | 25.17 | 25.00 | 0.17 |
| | UMTS B2 (RMC 12.2Kbps) | 22.70 | 22.46 | 0.24 |
| | UMTS B4 (RMC 12.2Kbps) | 22.51 | 22.37 | 0.14 |
| | LTE B2 (FDD - QPSK) | 23.06 | 22.81 | 0.25 |
| | LTE B4 (FDD - QPSK) | 22.92 | 22.84 | 0.08 |
| | LTE B25 (FDD - QPSK) | 22.92 | 23.01 | -0.09 |
| | IMEI of test sample | 353311080000163 353311080000700 | 990007530005260 990007530005609 | |
| | Test date | 2017/04/01~2017/04/26 | 2017/03/31~2017/05/16 | |
| | Mode | IHDT56WB1 Worst Result | IHDT56WB2 Worst Result | Difference (dB) |
| | CDMA BC1 1XRTT | 23.51 | 23.97 | -0.46 |
| | CDMA BC1 1xEV-DO | 23.52 | 23.92 | -0.40 |
| IMEI of test sample | 353310080024744 | 990007530005260 | | |
| Test date | 2017/04/18~2017/04/21 | 2017/04/19~2017/04/21 | | |



| Test Item | Mode | IHDT56WB4 Worst Result | IHDT56WB2 Worst Result | Difference (dB) |
|--|------------------------------------|---|---------------------------|-----------------|
| Radiated Spurious Emission (Band Edge, Harmonic) (dBuV/m) | 802.11b | 53.18 | 53.40 | -0.22 |
| | 802.11n-HT20 | 53.70 | 52.35 | 1.35 |
| | BT (3Mbps) | 55.60 | 56.13 | -0.53 |
| | BT-LE(1Mbps) | 43.15 | 43.57 | -0.42 |
| | BT-LE(2Mbps) | 44.33 | 44.19 | 0.14 |
| | 11n HT40, 5.2GHz | 53.31 | 53.55 | -0.24 |
| | 11n HT40, 5.3GHz | 53.02 | 50.86 | 2.16 |
| | 11n HT80, 5.5GHz | 53.73 | 53.88 | -0.15 |
| | 11a, 5.8GHz | 44.94 | 43.03 | 1.91 |
| | GSM 1900 | -52.20 | -51.35 | 0.85 |
| | GSM 1900 (EDGE) | -58.07 | -58.22 | -0.15 |
| | UMTS B2 (RMC 12.2Kbps) | -48.22 | -50.45 | -2.23 |
| | LTE B2 (FDD - QPSK) | -37.66 | -35.54 | 2.12 |
| | LTE B4 (FDD - QPSK) | -42.82 | -43.49 | -0.67 |
| | LTE B25 (FDD - QPSK) | -39.93 | -42.09 | -2.16 |
| IMEI of test sample | 353311080000163 353311080000221 | 990007530003398 990007530007308 990007530005609 | | |
| Test date | 2017/04/08~2017/04/26 | 2017/04/27~2017/05/13 | | |
| NFC (dBuV/m) | RSE (30MHz to 1G) | 34.18 | 35.37 | -1.19 |
| | IMEI of test sample | 353311080000163 | 990007530007308 | |
| | Test date | 2017/04/08 | 2017/04/21 | |
| | | | | |
| Test Item | Mode | IHDT56WB1 Worst Result | IHDT56WB2 Worst Result | Difference (dB) |
| Radiated Spurious Emission (Band Edge, Harmonic) (dBuV/m) | CDMA BC1 1XRTT | -46.85 | -48.15 | -1.3 |
| | CDMA BC1 1xEV-DO | -48.32 | -46.64 | 1.68 |
| | IMEI of test sample | 353310080024686 | 990007530007308 | |
| | Test date | 2017/04/20~2017/04/24 | 2017/04/19~2017/04/21 | |



GSM/WCDMA /CDMA

| Maximum ERP/EIRP (W) | System | Type of Modulation | FCC ID IHDT56WB4 | FCC ID IHDT56WB2 |
|----------------------------|----------------------------|--------------------|---------------------|---------------------|
| | GPRS1900 | GMSK | 0.9462 | 0.9683 |
| | GSM1900 EDGE class 8 | 8PSK | 0.3524 | 0.3388 |
| | WCDMA Band II RMC 12.2Kbps | BPSK | 0.1995 | 0.1888 |
| | WCDMA Band IV RMC 12.2Kbps | BPSK | 0.1589 | 0.1849 |
| | System | Type of Modulation | FCC ID IHDT56WB1 | FCC ID IHDT56WB2 |
| | CDMA BC1 1XRTT | QPSK | 0.2377 | 0.2673 |
| | CDMA BC1 1xEV-DO | QPSK | 0.2410 | 0.2642 |

LTE

| Maximum ERP/EIRP (W) | System | Type of Modulation | BW (MHz) | FCC ID IHDT56WB4 | FCC ID IHDT56WB2 |
|----------------------------|---------|--------------------|----------|---------------------|---------------------|
| | LTE B2 | QPSK | 20 | 0.2075 | 0.2046 |
| | | 16QAM | 15 | 0.1816 | 0.1766 |
| | | 64QAM | 20 | 0.1626 | 0.1671 |
| | LTE B4 | QPSK | 20 | 0.2099 | 0.2061 |
| | | 16QAM | 20 | 0.1782 | 0.1734 |
| | | 64QAM | 20 | 0.1652 | 0.1652 |
| | LTE B25 | QPSK | 20 | 0.1667 | 0.1702 |
| | | 16QAM | 20 | 0.1426 | 0.1422 |
| | | 64QAM | 20 | 0.1030 | 0.1030 |



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 Wii-Fi | 2400~2483.5 | IHDT56WB4 | Original Grant | FCC RF Test Report | IHDT56WB2 | Part 15C (FR733129B, FR733129C) |
| | DSS | Bluetooth | 2400~2483.5 | IHDT56WB4 | Original Grant | FCC RF Test Report | IHDT56WB2 | Part 15C (FR733129A) |
| | DXX | NFC | 13.56 | IHDT56WB4 | Original Grant | FCC RF Test Report | IHDT56WB2 | Part 15C (FR733129D) |
| 15E | Nil | Wi-Fi | 5150~5250 5250~5350 5470~5725 5725~5850 | IHDT56WB4 | Original Grant | FCC RF Test Report | IHDT56WB2 | Part 15E (FR733129E, FR733129F, FZ733129) |
| Part 24.27 | PCS | GSM WCDMA | GSM(GPRS)1900 GSM(EDGE)1900 WCDMA B2/B4 | IHDT56WB4 | Original Grant | FCC RF Test Report | IHDT56WB2 | Part 22.24.27 (FG733129-A) |
| Part 24.27 | PCS | LTE | LTE B2/B4/B25 | IHDT56WB4 | Original Grant | FCC RF Test Report | IHDT56WB2 | Part 22.24.27 (FG733129-B) |
| Part 24 | PCS | CDMA | BC1 | IHDT56WB1 | Original Grant | FCC RF Test Report | IHDT56WB2 | Part 22.24.27 (FG733129-02B) |

End of this report