



FCC RADIO TEST REPORT

FCC ID : B94TNQ296PC
Equipment : Notebook PC
Brand Name : HP
Model Name : TPN-Q296
Applicant : HP Inc.
1501 Page Mill Road, Palo Alto CA, 94304, USA
Standard : FCC 47 CFR Part 2, 22(H), 24(E), 27(L)

The product was received on Aug. 22, 2023 and testing was performed from Sep. 18, 2023 to Sep. 18, 2023. We, Sporton International Inc. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA-603-E and has been in compliance with the applicable technical standards.

The test results in this partial report apply exclusively to the tested model / sample. Without written approval from Sporton International Inc. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

Sporton International Inc. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)



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Appendix A. Test Results of Conducted Test



History of this test report

| Report No. | Version | Description | Issue Date |
|--------------|---------|-------------------------|---------------|
| FG382109-04E | 01 | Initial issue of report | Oct. 06, 2023 |
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Summary of Test Result

| Report Clause | Ref Std. Clause | Test Items | Result (PASS/FAIL) | Remark |
|---------------|---|---|--------------------|----------|
| 3.2 | §2.1046 | Conducted Output Power | Pass | - |
| | §22.913 (a)(5) | Effective Radiated Power (WCDMA Band V) | | |
| | §24.232 (c) | Equivalent Isotropic Radiated Power (WCDMA Band II) | | |
| | §27.50 (d)(4) | Equivalent Isotropic Radiated Power (WCDMA Band IV) | | |
| - | §24.232 (d) | Peak-to-Average Ratio | - | See Note |
| - | §2.1049 §22.917 (b) §24.238 (b) §27.53 (g) | Occupied Bandwidth (WCDMA Band V) (WCDMA Band II) (WCDMA Band IV) | - | See Note |
| - | §2.1051 §22.917 (a) §24.238 (a) §27.53 (g) | Band Edge Measurement (WCDMA Band V) (WCDMA Band II) (WCDMA Band IV) | - | See Note |
| - | §2.1051 §22.917 (a) §24.238 (a) §27.53 (g) | Conducted Emission (WCDMA Band V) (WCDMA Band II) (WCDMA Band IV) | - | See Note |
| - | §2.1055 §22.355 §24.235 §27.54 | Frequency Stability Temperature & Voltage | - | See Note |
| - | §2.1053 §22.917 (a) §24.238 (a) §27.53 (h) | Field Strength of Spurious Radiation (WCDMA Band V) (WCDMA Band II) (WCDMA Band IV) | - | See Note |

Remark:

- For host device, Field Strength of Spurious Radiation, Effective Radiated Power and Equivalent Isotropic Radiated Power are verified and complies with the limit in this test report.
- For host device, the Conducted Output Power is no difference after compared to module (Model: FM101-GL)



| |
|---|
| Conformity Assessment Condition: |
| 1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturee who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account. |
| 2. The measurement uncertainty please refer to each test result in the section "Measurement Uncertainty". |
| Disclaimer: |
| The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity. |

Reviewed by: Sheng Kuo

Report Producer: Michelle Chen



1 General Description

1.1 Product Feature of Equipment Under Test

| Product Feature | |
|------------------------|--|
| General Specs | WCDMA/LTE, Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n /ax, Wi-Fi 5GHz 802.11a/n/ac/ax, and Wi-Fi 6GHz 802.11ax |
| Sample 1 | EUT with Vendor 1 |
| Sample 2 | EUT with Vendor 2 |
| Integrated WLAN Module | Brand Name: Intel® Wi-Fi 6E AX211 Model Name: AX211NGW FCC ID: PD9AX211NG |
| Integrated WLAN Module | Brand Name: MediaTek Model Name: MT7921 FCC ID: B94-MT7921S |
| Antenna Type | WWAN: PIFA Antenna WLAN: <Ant. 1>: PIFA Antenna <Ant. 2>: PIFA Antenna Bluetooth: PIFA Antenna |

| WWAN Antenna Information | | | | |
|--------------------------|--------------|--------------------------------------|-----------------|--|
| Main Antenna | Manufacturer | Vendor 1 | Peak gain (dBi) | Cellular Band: 1.50 dBi PCS Band: 0.10 dBi AWS Band: -0.50 dBi |
| | Part number | DQ6E1LTE100 (MDA-LTE1LTE1-01-001) | Type | PIFA |
| | Manufacturer | Vendor 2 | Peak gain (dBi) | Cellular Band: 1.49 dBi PCS Band: 0.13 dBi AWS Band: 0.17 dBi |
| | Part number | DQ6915G0200 (81ELA915.G02) | Type | PIFA |

Remark: The above EUT's information was declared by manufacturer. Please refer to Disclaimer in report summary.

1.2 Modification of EUT

No modifications made to the EUT during the testing.



1.3 Testing Location

| | |
|------------------------------|--|
| Test Site | Sporton International Inc. EMC & Wireless Communications Laboratory |
| Test Site Location | No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978 |
| Test Site No. | Sporton Site No. |
| | TH03-HY |
| Test Engineer | Cotty Hsu |
| Temperature (°C) | 22.2~23.1 |
| Relative Humidity (%) | 51~56 |

Note: The test site complies with ANSI C63.4 2014 requirement.

FCC Designation No.: TW1190

1.4 Applicable Standards

According to the specifications declared by the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ ANSI C63.26-2015
- ♦ ANSI / TIA-603-E
- ♦ FCC 47 CFR Part 2, 22(H), 24(E), 27(L)
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- ♦ FCC KDB 412172 D01 Determining ERP and EIRP v01r01

Remark:

1. All the test items were validated and recorded in accordance with the standards without any modification during the testing.
2. The TAF code is not including all the FCC KDB listed without accreditation.



2 Test Configuration of Equipment Under Test

2.1 Test Mode

Antenna port conducted and radiated test items were performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

All modes, data rates and positions were investigated.

Test modes are chosen to be reported as the worst case configuration below:

| Test Modes | |
|---------------|---------------------|
| Band | Conducted TCs |
| WCDMA Band V | ■ RMC 12.2Kbps Link |
| WCDMA Band II | ■ RMC 12.2Kbps Link |
| WCDMA Band IV | ■ RMC 12.2Kbps Link |

2.2 Frequency List of Low/Middle/High Channels

| Frequency List | | | | |
|----------------|------------------------|--------|--------|---------|
| Band | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| WCDMA Band V | Channel | 4132 | 4182 | 4233 |
| | Frequency | 826.4 | 836.4 | 846.6 |
| WCDMA Band II | Channel | 9262 | 9400 | 9538 |
| | Frequency | 1852.4 | 1880.0 | 1907.6 |
| WCDMA Band IV | Channel | 1312 | 1413 | 1513 |
| | Frequency | 1712.4 | 1732.6 | 1752.6 |

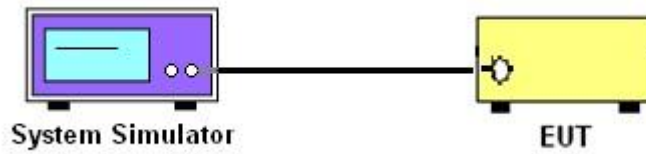
3 Conducted Test Result

3.1 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.1.1 Test Setup

3.1.2 Conducted Output Power



3.1.3 Test Result of Conducted Test

Please refer to Appendix A.



3.2 Conducted Output Power and ERP/EIRP

3.2.1 Description of the Conducted Output Power and ERP/EIRP

A system simulator was used to establish communication with the EUT. Its parameters were set to enforce EUT transmitting at the maximum power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

The ERP of mobile transmitters must not exceed 7 Watts for WCDMA Band V

The EIRP of mobile transmitters must not exceed 2 Watts for WCDMA Band II

The EIRP of mobile transmitters must not exceed 1 Watts for WCDMA Band IV

According to KDB 412172 D01 Power Approach,

$EIRP = P_T + G_T - L_C$, $ERP = EIRP - 2.15$, where

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

L_C = signal attenuation in the connecting cable between the transmitter and antenna in dB

3.2.2 Test Procedures

1. The transmitter output port is connected to the system simulator.
2. Set EUT at maximum power through system simulator.
3. Select the lowest, middle, and the highest channels for each band and different modulation.
4. Measure the maximum burst average power for GSM and maximum average power for other modulation signal.



4 List of Measuring Equipment

| Instrument | Brand Name | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|------------------------------|------------|---|------------|-------------------------------------|------------------|---------------|---------------|---------------------|
| Radio Communication Analyzer | Anritsu | MT8821C | 6262025353 | LTE FDD/TDD LTE-2CC DLCA/ULCA | Oct. 13, 2022 | Sep. 18, 2023 | Oct. 12, 2023 | Conducted (TH03-HY) |
| Coupler | Warison | 20dB 25W SMA Directional Coupler | #B | 1-18GHz | Jan. 06, 2023 | Sep. 18, 2023 | Jan. 05, 2024 | Conducted (TH03-HY) |



Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power) & ERP / EIRP

| WCDMA Band V Maximum Average Power [dBm] (GT - LC = 1.5 dB) | | | | | |
|---|----------|-------|-------|-----------|---------|
| Channel | 4132 | 4182 | 4233 | ERP (dBm) | ERP (W) |
| Frequency | 826.4 | 836.4 | 846.6 | | |
| RMC 12.2K | 23.58 | 23.75 | 23.74 | 23.10 | 0.2042 |
| HSDPA Subtest-1 | 22.49 | 22.79 | 22.73 | | |
| HSDPA Subtest-2 | 22.60 | 22.70 | 22.71 | | |
| HSDPA Subtest-3 | 22.07 | 22.16 | 22.17 | | |
| HSDPA Subtest-4 | 21.97 | 22.24 | 22.17 | | |
| HSUPA Subtest-1 | 22.56 | 22.73 | 22.63 | | |
| HSUPA Subtest-2 | 20.40 | 20.74 | 20.58 | | |
| HSUPA Subtest-3 | 21.42 | 21.71 | 21.66 | | |
| HSUPA Subtest-4 | 20.44 | 20.75 | 20.68 | | |
| HSUPA Subtest-5 | 22.30 | 22.50 | 22.50 | | |
| Limit | ERP < 7W | | | | |

| WCDMA Band II Maximum Average Power [dBm] (GT - LC = 0.13 dB) | | | | | |
|---|-----------|-------|--------|------------|----------|
| Channel | 9262 | 9400 | 9538 | EIRP (dBm) | EIRP (W) |
| Frequency | 1852.4 | 1880 | 1907.6 | | |
| RMC 12.2K | 24.17 | 24.08 | 23.92 | 24.30 | 0.2692 |
| HSDPA Subtest-1 | 23.13 | 23.16 | 23.01 | | |
| HSDPA Subtest-2 | 23.11 | 23.14 | 23.05 | | |
| HSDPA Subtest-3 | 22.61 | 22.59 | 22.52 | | |
| HSDPA Subtest-4 | 22.57 | 22.59 | 22.40 | | |
| HSUPA Subtest-1 | 23.15 | 23.05 | 22.98 | | |
| HSUPA Subtest-2 | 21.12 | 21.18 | 20.91 | | |
| HSUPA Subtest-3 | 22.17 | 22.08 | 21.99 | | |
| HSUPA Subtest-4 | 21.18 | 21.11 | 21.05 | | |
| HSUPA Subtest-5 | 23.00 | 23.10 | 22.90 | | |
| Limit | EIRP < 2W | | | | |

| WCDMA Band IV Maximum Average Power [dBm] (GT - LC = 0.17 dB) | | | | | |
|---|-----------|--------|--------|------------|----------|
| Channel | 1312 | 1413 | 1513 | EIRP (dBm) | EIRP (W) |
| Frequency | 1712.4 | 1732.6 | 1752.6 | | |
| RMC 12.2K | 24.04 | 23.92 | 24.13 | 24.30 | 0.2692 |
| HSDPA Subtest-1 | 22.97 | 23.02 | 23.11 | | |
| HSDPA Subtest-2 | 22.86 | 22.89 | 23.12 | | |
| HSDPA Subtest-3 | 22.89 | 22.87 | 22.56 | | |
| HSDPA Subtest-4 | 22.88 | 22.91 | 22.59 | | |
| HSUPA Subtest-1 | 22.96 | 22.93 | 23.06 | | |
| HSUPA Subtest-2 | 21.02 | 20.93 | 21.03 | | |
| HSUPA Subtest-3 | 21.91 | 21.98 | 22.08 | | |
| HSUPA Subtest-4 | 20.93 | 20.99 | 21.15 | | |
| HSUPA Subtest-5 | 22.90 | 22.80 | 22.90 | | |
| Limit | EIRP < 1W | | | | |

THE END