# TEST REPORT

| | |
|---|---|
| EUT Description | **Convertible PC** |
| Brand Name | **HP** |
| Model Name | **HSN-I61C** |
| FCC ID | **B94HNI61CKL4** |
| ISED ID | **21374-FM350GL** |
| Date of Test Start/End | **2024-02-21 / 2024-02-21** |
| Features | **WWAN 2G, 3G, 4G, 5G**<br>**IEEE 802.11a/b/g/n/ac/ax** |

| | |
|---|---|
| Applicant | **HP Inc.** |
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| | |
|---|---|
| Test Report identification | **231128-05.TR01** |
| Revision Control | **Rev. 01**<br>**This test report replaces any previous versions of this test report**<br>(see Section 8) |

The test results relate only to the samples tested.

Reviewed by

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by Chei el IN
Date: 2024.03.01
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## 1. Standards, reference documents and applicable test methods

a. KDB 388624 D02 Pre-Approval Guidance List v18, PRE-APPROVAL GUIDANCE LIST

b. FCC Presentations TCB Workshop November 2019, RF exposure procedures.

## 2. General conditions, competences and guarantees

- ✓ Intel WRF Lab only provides testing services and is committed to providing reliable, unbiased test results and interpretations.
- ✓ Intel WRF Lab is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.
- ✓ Intel WRF Lab has developed calibration and proficiency programs for its measurement equipment to ensure correlated and reliable results to its customers.
- ✓ This report is only referred to the item that has undergone the test.
- ✓ This report does not imply an approval of the product by the Certification Bodies or competent Authorities.

## 3. Environmental Conditions

✓ At the site where the measurements were performed the following limits were not exceeded during the tests:

| | |
|---|---|
| Temperature | 21.9ºC ± 1ºC |
| Humidity | 38% ± 4% |

## 4. Test Sample

| Sample | ID # | Description | Model | Serial # | Note |
|---|---|---|---|---|---|
| #1 | 231128-05.S09 | Convertible PC | HSN-I61C | 0003770DBJ | - |

## 5. EUT Features

The herein information is provided by the customer.
Intel WRF Lab declines any responsibility for the accuracy of the stated customer provided information, especially if it has any impact on the correctness of test results presented in this report.

| | |
|---|---|
| Brand Name | HP |
| Model Name | HSN-I61C |
| Prototype / Production | Pre-Production |
| Host Identification | Convertible PC |

## 6. Remarks and comments

1. The test report is validation of the G sensor functionality

## 7. Test Results summary

### 7.1. WWAN Tx Power Table Summary

| Device Mode | Lid Angle range | LCD Direction | LTE Band 7 – 20MHz – QPSK 1RB-1 | |
|---|---|---|---|---|
| | | | Target Power (dBm) | Measured Power (dBm) |
| | | | Antenna ANT5 (Main) | |
| Lid Close | 0°≤ - <30° | - | Standby | Standby |
| Notebook | 30°≤ - <130° | 0° | 25.0 | 23.4 |
| Tablet | 130°≤ - <200°<br>200°≤ - <340°<br>340°≤ - <360° | 0°<br>90°or 270° | 12.0 | 11.8 |
| Tent | 200°≤ - <340° | 180° | 12.0 | 11.8 |
| Stand | 200°≤ - <340° | 0° | 25.0 | 23.4 |

## 8. Document Revision History

| Revision # | Modified by | Revision Details |
|---|---|---|
| Rev.00 | Cheiel In | Initial release |
| Rev.01 | Cheiel In | Typo correction on cellular model name upon customer request |

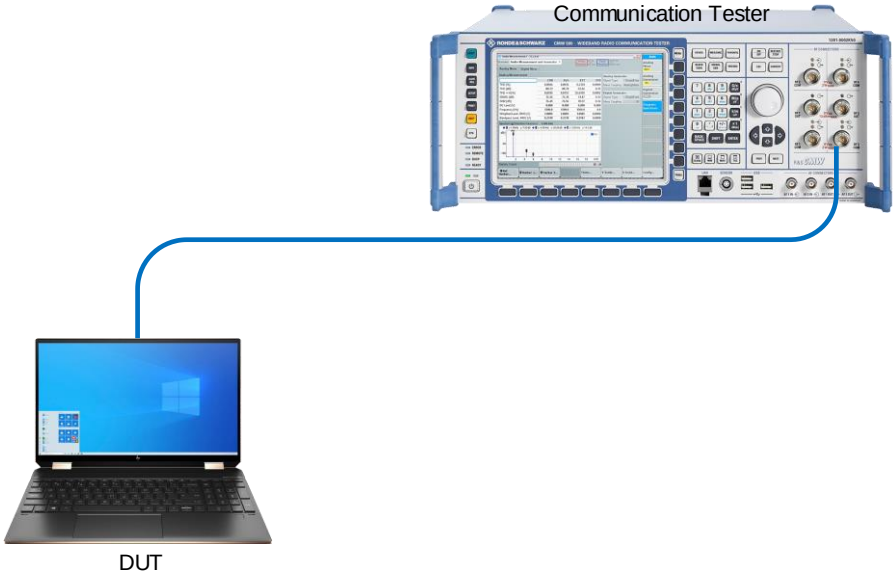
# Annex A. Test & System description

## A.1 Test setup

The conducted power measurement test setup is described in the following and illustrated in Figure 1.

- The DUT is convertible PC from *HP* model *HSN-I61C.* An *FM350-GL* cellular module is installed inside
- A control PC is used to configure the call box as an access point to manage the uplink and downlink data traffic.
- Uplink signal power is measured with the Call Box.
- Path loss in the power measurement setup from the wireless module antenna port to the Call Box.

*Figure.1 – Power measurement test setup.*




## A.2 Procedure

The following additional guidance applies only to convertible laptops whose screen rotates around one axis, from 0 degrees to 360 degrees, in a clamshell style, i.e., from closed mode to open mode, to “tent” mode, and finally, to tablet mode. This process must be followed to determine the lid angle where a power reduction occurs, by taking power measurements at each step, as indicated in the step listed here below:

1. From the lid in closed mode (0 degrees), open the screen in 10-degree steps until laptop mode is obtained
2. Lower the screen by 5 degrees increments to verify that the “closed mode” is triggered
3. From the position of the previous step, open the screen in 1-degree increments until laptop mode is triggered again
4. Continue opening the screen in 1-degree increments until at least 5 degrees past where “laptop mode” was obtained, then continue opening the screen in 10-degree steps until the device switches to tablet mode
5. Reverse the previous procedure to go from tablet mode back down to closed mode

## A.3 Test Equipment List

Equipment and accessories used for the conducted power measurement test setup are listed below. The Test Platform (DUT), test setup and associated equipment are shown in A.1.

| ID# | Device | Type/Model | Serial # | Manufacturer | Cal. Date | Cal. Due Date |
|---|---|---|---|---|---|---|
| **125-000** | Communication Tester | CMW500 | 129337 | Rohde & Schwartz | 2023-04-20 | 2025-04-20 |
| **022-003 022-004** | RF path (RF cable + Adapters) | - | - | - | RF path loss was verified before usage | |

## A.4 Measurement Uncertainty Evaluation

The system uncertainty evaluation is shown in the table below with a coverage factor of k = 2 to indicate a 95% level of confidence:

| Measurement type | Uncertainty | Unit |
|---|---|---|
| Power level | ±1 | dB |

# Annex B. Test Results

## B.1 Trigger lid angle detection and power verification LTE B7

### B.1.1 LCD direction 0°

The lid is rotating from 0 to 360. The screen is vertical, LCD direction is 0 degree.

| Mode | Angle (degree) | Measured Power LTE Band 7 – 20MHz – QPSK 1RB-1 ANT5 (Main) |
|---|---|---|
| Lid close | 0 | Standby |
| | 10 | Standby |
| | 20 | Standby |
| Notebook | 30 | 23.4 |
| Lid close | 25 | Standby |
| | 26 | Standby |
| | 27 | Standby |
| | 28 | Standby |
| | 29 | Standby |
| Notebook | 30 | 23.4 |
| | 31 | 23.4 |
| | 32 | 23.4 |
| | 33 | 23.4 |
| | 34 | 23.4 |
| | 35 | 23.4 |
| | 40 | 23.4 |
| | 50 | 23.4 |
| | 60 | 23.4 |
| | 70 | 23.4 |
| | 80 | 23.4 |
| | 90 | 23.4 |
| | 100 | 23.4 |
| | 110 | 23.4 |
| | 120 | 23.4 |
| | 130 | 23.4 |
| Tablet | 140 | 11.8 |
| Notebook | 135 | 23.4 |
| Tablet | 136 | 11.8 |
| | 137 | 11.8 |
| | 138 | 11.8 |
| | 139 | 11.8 |
| | 140 | 11.8 |
| | 150 | 11.8 |
| | 160 | 11.8 |
| | 170 | 11.8 |
| | 180 | 11.8 |
| | 190 | 11.8 |
| | 200 | 11.8 |
| Stand | 210 | 23.4 |
| Tablet | 205 | 11.8 |
| Stand | 206 | 23.4 |
| | 207 | 23.4 |
| | 208 | 23.4 |
| | 209 | 23.4 |
| | 210 | 23.4 |
| | 220 | 23.4 |
| | 230 | 23.4 |

| Mode | Angle (degree) | Measured Power LTE Band 7 – 20MHz – QPSK 1RB-1 ANT5 (Main) |
|---|---|---|
| Stand | 240 | 23.4 |
| | 250 | 23.4 |
| | 260 | 23.4 |
| | 270 | 23.4 |
| | 280 | 23.4 |
| | 290 | 23.4 |
| | 300 | 23.4 |
| | 310 | 23.4 |
| | 320 | 23.4 |
| | 330 | 23.4 |
| | 340 | 23.4 |
| Tablet | 350 | 11.8 |
| Stand | 345 | 23.4 |
| Tablet | 346 | 11.8 |
| | 347 | 11.8 |
| | 348 | 11.8 |
| | 349 | 11.8 |
| | 350 | 11.8 |
| | 351 | 11.8 |
| | 360 | 11.8 |

The lid is rotating from 360 degrees to 0 degree. The screen is vertical, LCD direction to 0 degree.

| Mode | Angle (degree) | Measured Power LTE Band 7 – 20MHz – QPSK 1RB-1 ANT5 (Main) |
|---|---|---|
| Tablet | 360 | 11.8 |
| | 350 | 11.8 |
| | 340 | 11.8 |
| Stand | 330 | 23.4 |
| Tablet | 335 | 11.8 |
| Stand | 334 | 23.4 |
| | 333 | 23.4 |
| | 332 | 23.4 |
| | 331 | 23.4 |
| | 330 | 23.4 |
| | 329 | 23.4 |
| | 320 | 23.4 |
| | 310 | 23.4 |
| | 300 | 23.4 |
| | 290 | 23.4 |
| | 280 | 23.4 |
| | 270 | 23.4 |
| | 260 | 23.4 |
| | 250 | 23.4 |
| | 240 | 23.4 |
| | 230 | 23.4 |
| | 220 | 23.4 |
| | 210 | 23.4 |
| | 200 | 23.4 |
| Tablet | 190 | 11.8 |
| Stand | 195 | 23.4 |
| Tablet | 194 | 11.8 |
| | 193 | 11.8 |
| | 192 | 11.8 |
| | 191 | 11.8 |
| | 190 | 11.8 |
| | 180 | 11.8 |
| | 170 | 11.8 |
| | 160 | 11.8 |
| | 150 | 11.8 |
| | 140 | 11.8 |
| | 130 | 11.8 |
| Notebook | 120 | 23.4 |
| Tablet | 125 | 11.8 |
| Notebook | 124 | 23.4 |
| | 123 | 23.4 |
| | 122 | 23.4 |
| | 121 | 23.4 |
| | 120 | 23.4 |

| Mode | Angle (degree) | Measured Power LTE Band 7 – 20MHz – QPSK 1RB-1 ANT5 (Main) |
|---|---|---|
| Notebook | 110 | 23.4 |
| | 100 | 23.4 |
| | 90 | 23.4 |
| | 80 | 23.4 |
| | 70 | 23.4 |
| | 60 | 23.4 |
| | 50 | 23.4 |
| | 40 | 23.4 |
| | 30 | 23.4 |
| Lid close | 20 | Standby |
| Notebook | 25 | 23.4 |
| Lid close | 24 | Standby |
| | 23 | Standby |
| | 22 | Standby |
| | 21 | Standby |
| | 20 | Standby |
| | 10 | Standby |
| | 0 | Standby |

### B.1.2 LCD direction 90/270°

The lid is rotating from 0 to 360 degrees. The screen is vertical, LCD direction to 90 degrees.

| Mode | Angle (degree) | Measured Power LTE Band 7 – 20MHz – QPSK 1RB-1 ANT5 (Main) |
|---|---|---|
| Lid close | 0 | Standby |
| | 10 | Standby |
| | 20 | Standby |
| | 30 | 11.8 |
| | 40 | 11.8 |
| | 50 | 11.8 |
| | 60 | 11.8 |
| | 70 | 11.8 |
| | 80 | 11.8 |
| | 90 | 11.8 |
| | 100 | 11.8 |
| | 110 | 11.8 |
| | 120 | 11.8 |
| | 130 | 11.8 |
| | 140 | 11.8 |
| | 150 | 11.8 |
| | 160 | 11.8 |
| | 170 | 11.8 |
| | 180 | 11.8 |
| | 190 | 11.8 |
| Tablet | 200 | 11.8 |
| | 210 | 11.8 |
| | 220 | 11.8 |
| | 230 | 11.8 |
| | 240 | 11.8 |
| | 250 | 11.8 |
| | 260 | 11.8 |
| | 270 | 11.8 |
| | 280 | 11.8 |
| | 290 | 11.8 |
| | 300 | 11.8 |
| | 310 | 11.8 |
| | 320 | 11.8 |
| | 330 | 11.8 |
| | 340 | 11.8 |
| | 350 | 11.8 |
| | 360 | 11.8 |

The lid is rotating from 360 to 0 degree. The screen is vertical, LCD direction to 90 or 270 degrees.

| Mode | Angle (degree) | Measured Power LTE Band 7 – 20MHz – QPSK 1RB-1 ANT5 (Main) |
|---|---|---|
| Tablet | 360 | 11.8 |
| | 350 | 11.8 |
| | 340 | 11.8 |
| | 330 | 11.8 |
| | 320 | 11.8 |
| | 310 | 11.8 |
| | 300 | 11.8 |
| | 290 | 11.8 |
| | 280 | 11.8 |
| | 270 | 11.8 |
| | 260 | 11.8 |
| | 250 | 11.8 |
| | 240 | 11.8 |
| | 230 | 11.8 |
| | 220 | 11.8 |
| | 210 | 11.8 |
| | 200 | 11.8 |
| | 190 | 11.8 |
| | 180 | 11.8 |
| | 170 | 11.8 |
| | 160 | 11.8 |
| | 150 | 11.8 |
| | 140 | 11.8 |
| | 130 | 11.8 |
| | 120 | 11.8 |
| | 110 | 11.8 |
| | 100 | 11.8 |
| | 90 | 11.8 |
| | 80 | 11.8 |
| | 70 | 11.8 |
| | 60 | 11.8 |
| | 50 | 11.8 |
| | 40 | 11.8 |
| | 30 | 11.8 |
| Lid close | 20 | Standby |
| | 10 | Standby |
| | 0 | Standby |

### B.1.3 LCD direction 180°

The lid is rotating from 360 degrees to 180 degrees. The screen is vertical, LCD direction to 180 degrees.
Note: The LCD direction switch to 0 degrees for low angle.

| Mode | Angle (degree) | Measured Power LTE Band 7 – 20MHz – QPSK 1RB-1 ANT5 (Main) |
|---|---|---|
| Tablet | 360 | 11.8 |
| | 350 | 11.8 |
| | 340 | 11.8 |
| Tent | 330 | 11.8 |
| Tablet | 335 | 11.8 |
| Tent | 334 | 11.8 |
| | 333 | 11.8 |
| | 332 | 11.8 |
| | 331 | 11.8 |
| | 330 | 11.8 |
| | 320 | 11.8 |
| | 310 | 11.8 |
| | 300 | 11.8 |
| | 290 | 11.8 |
| | 280 | 11.8 |
| | 270 | 11.8 |
| | 260 | 11.8 |
| | 250 | 11.8 |
| | 240 | 11.8 |
| | 230 | 11.8 |
| | 220 | 11.8 |
| | 210 | 11.8 |
| | 200 | 11.8 |
| Tablet | 190 | 11.8 |
| Tent | 195 | 11.8 |
| Tablet | 194 | 11.8 |
| | 193 | 11.8 |
| | 192 | 11.8 |
| | 191 | 11.8 |
| | 190 | 11.8 |
| | 180 | 11.8 |

The lid is rotating from 180 degrees to 360 degrees. The screen is vertical, LCD direction to 180 degrees.
Note: The LCD direction switch to 0 degrees for low angle.

| Mode | Angle (degree) | Measured Power LTE Band 7 – 20MHz – QPSK 1RB-1 ANT5 (Main) |
|---|---|---|
| Tablet | 180 | 11.8 |
| | 190 | 11.8 |
| Tent | 200 | 11.8 |
| Tablet | 195 | 11.8 |
| Tent | 196 | 11.8 |
| | 197 | 11.8 |
| | 198 | 11.8 |
| | 199 | 11.8 |
| | 200 | 11.8 |
| | 210 | 11.8 |
| | 220 | 11.8 |
| | 230 | 11.8 |
| | 240 | 11.8 |
| | 250 | 11.8 |
| | 260 | 11.8 |
| | 270 | 11.8 |
| | 280 | 11.8 |
| | 290 | 11.8 |
| | 300 | 11.8 |
| | 310 | 11.8 |
| | 320 | 11.8 |
| | 330 | 11.8 |
| Tablet | 340 | 11.8 |
| Tent | 335 | 11.8 |
| | 336 | 11.8 |
| | 337 | 11.8 |
| | 338 | 11.8 |
| | 339 | 11.8 |
| Tablet | 340 | 11.8 |
| | 350 | 11.8 |
| | 360 | 11.8 |