TEST REPORT

EUT Description	**Convertible PC**
Brand Name	**HP**
Model Name	**TPN-Q296**
FCC ID	**PD9AX211NG**
ISED ID	**1000M-AX211NG**
Date of Test Start/End	**2023-09-12 / 2023-09-12**
Features	**IEEE 802.11a/b/g/n/ac/ax**

Applicant	**Intel Corporation SAS**
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Test Report identification	**230816-02.TR01**
Revision Control	**Rev. 00** **This test report replaces any previous versions of this test report** (see Section 7)

The test results relate only to the samples tested.

Reviewed by

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Date: 2023.09.13 11:54:45 +02'00'

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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	26ºC ± 1ºC
Humidity	55% ± 4.7%

4. Test Sample

Sample	ID #	Description	Model	Serial #	Note
#1	230816-02.S06	Convertible PC	TPN-Q296	A5CD327BYVF	WLAN sku

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	TPN-Q296
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. WLAN Tx Power Table Summary

Device Mode	Lid Angle range	2.4GHz-CH6 802.11b				5GHz-CH120 802.11a			
		Target Power (dBm)		Measured Power (dBm)		Target Power (dBm)		Measured Power (dBm)	
		Antenna AUX	Antenna MAIN	Antenna AUX	Antenna MAIN	Antenna AUX	Antenna MAIN	Antenna AUX	Antenna MAIN
Lid Close	0°≤ - <15°	Standby	Standby	Standby	Standby	Standby	Standby	Standby	Standby
Laptop	15°< - ≤200° - Laptop to Non-Laptop 15°< - ≤160° - Non-Laptop to Laptop	20.5	20.5	19.40	19.43	20.5	20.5	19.42	19.19
Non-Laptop	200°< - ≤360° - Laptop to Non-Laptop 160°< - ≤360°° - Non-Laptop to Laptop	20.5	20.5	19.40	19.43	16.5	15.5	15.3	14.12

8. Document Revision History

Revision #	Modified by	Revision Details
Rev.00	Axel G	-

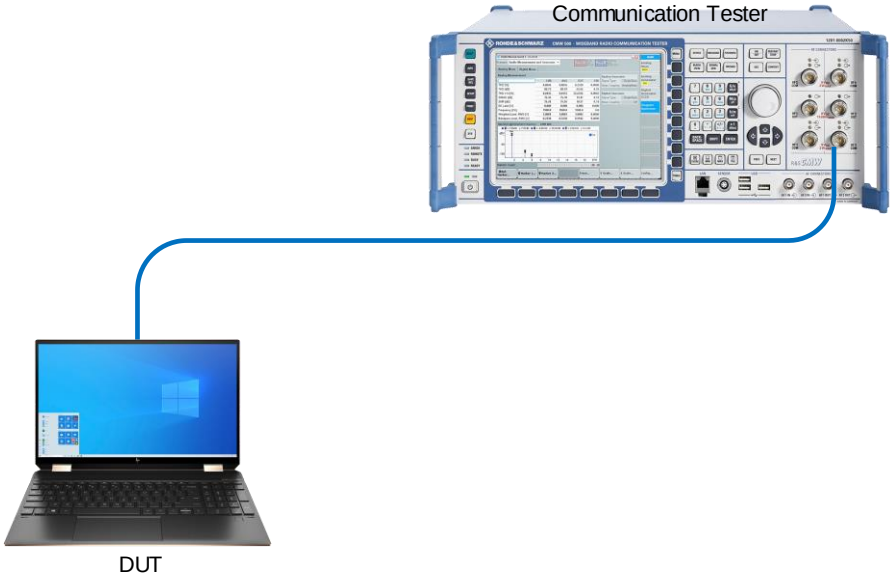
Annex A. Test & System description

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 *TPN-Q296.* An *AX211NGW* connectivity 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 180 degrees, in a clamshell style, i.e., from closed mode to open mode, to “tent” mode, and finally, to Non-Laptop 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 Non-Laptop mode
5. Reverse the previous procedure to go from Non-Laptop 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	

Annex B. Test Results

B.1 Trigger lid angle detection and power verification 2.4GHz

B.1.1 LCD direction 0°

The lid is rotating from 0 to 360. The system base is horizontal

Mode	Angle (degree)	Measured power 2.4GHz-Ch6(dBm)	
		AUX	MAIN
Lid close	0	Standby	Standby
	10	Standby	Standby
Laptop	20	19.4	19.43
Lid close	15	Standby	Standby
	16	Standby	Standby
	17	Standby	Standby
	18	Standby	Standby
	19	Standby	Standby
Laptop	20	19.4	19.43
	21	19.4	19.43
	22	19.4	19.43
	23	19.4	19.43
	24	19.4	19.43
	25	19.4	19.43
	30	19.4	19.43
	40	19.4	19.43
	50	19.4	19.43
	60	19.4	19.43
	70	19.4	19.43
	80	19.4	19.43
	90	19.4	19.43
	100	19.4	19.43
	110	19.4	19.43
	120	19.4	19.43
	130	19.4	19.43
	140	19.4	19.43
	150	19.4	19.43
	160	19.4	19.43
	170	19.4	19.43
	180	19.4	19.43
	190	19.4	19.43
	200	19.4	19.43
Non-Laptop	210	19.4	19.43
	205	19.4	19.43
Laptop	200	19.4	19.43
	201	19.4	19.43
	202	19.4	19.43
	203	19.4	19.43
	204	19.4	19.43
Non-Laptop	205	19.4	19.43
	206	19.4	19.43

Mode	Angle (degree)	Measured power 2.4GHz-Ch6(dBm)	
		AUX	MAIN
Non-Laptop	207	19.4	19.43
	208	19.4	19.43
	209	19.4	19.43
	210	19.4	19.43
	220	19.4	19.43
	230	19.4	19.43
	240	19.4	19.43
	250	19.4	19.43
	260	19.4	19.43
	270	19.4	19.43
	280	19.4	19.43
	290	19.4	19.43
	300	19.4	19.43
	310	19.4	19.43
	320	19.4	19.43
	330	19.4	19.43
	340	19.4	19.43
	350	19.4	19.43
	360	19.4	19.43

The lid is rotating from 360 to 0. The system base is horizontal.

Mode	Angle (degree)	Measured power 2.4GHz-Ch6(dBm)	
		AUX	MAIN
Non-Laptop	360	19.4	19.43
	350	19.4	19.43
	340	19.4	19.43
	330	19.4	19.43
	320	19.4	19.43
	310	19.4	19.43
	300	19.4	19.43
	290	19.4	19.43
	280	19.4	19.43
	270	19.4	19.43
	260	19.4	19.43
	250	19.4	19.43
	240	19.4	19.43
	230	19.4	19.43
	220	19.4	19.43
	210	19.4	19.43
	200	19.4	19.43
	190	19.4	19.43
	180	19.4	19.43
	170	19.4	19.43
	160	19.4	19.43
Laptop	150	19.4	19.43
	155	19.4	19.43
	160	19.4	19.43
Non-Laptop	165	19.4	19.43
	164	19.4	19.43
	163	19.4	19.43
	162	19.4	19.43
	161	19.4	19.43
	160	19.4	19.43

Mode	Angle (degree)	Measured power 2.4GHz-Ch6(dBm)	
		AUX	MAIN
Laptop	159	19.4	19.43
	158	19.4	19.43
	157	19.4	19.43
	156	19.4	19.43
	155	19.4	19.43
	150	19.4	19.43
	140	19.4	19.43
	130	19.4	19.43
	120	19.4	19.43
	110	19.4	19.43
	100	19.4	19.43
	90	19.4	19.43
	80	19.4	19.43
	70	19.4	19.43
	60	19.4	19.43
	50	19.4	19.43
	40	19.4	19.43
	30	19.4	19.43
	20	19.4	19.43
Lid Close	10	Standby	Standby
Laptop	15	19.4	19.43
Lid Close	14	Standby	Standby
	13	Standby	Standby
	12	Standby	Standby
	11	Standby	Standby
	10	Standby	Standby
	0	Standby	Standby

B.2 Trigger lid angle detection and power verification 5GHz

The lid is rotating from 0 to 360. The system base is horizontal, LCD direction is 0 degree for Laptop mode

Mode	Angle (degree)	Measured power 5GHz-Ch120(dBm)	
		AUX	MAIN
Lid close	0	Standby	Standby
	10	Standby	Standby
Laptop	20	19.42	19.19
Lid close	15	Standby	Standby
	16	Standby	Standby
	17	Standby	Standby
	18	Standby	Standby
	19	Standby	Standby
Laptop	20	19.42	19.19
	21	19.42	19.19
	22	19.42	19.19
	23	19.42	19.19
	24	19.42	19.19
	25	19.42	19.19
	30	19.42	19.19
	40	19.42	19.19
	50	19.42	19.19
	60	19.42	19.19
	70	19.42	19.19
	80	19.42	19.19
	90	19.42	19.19
	100	19.42	19.19
	110	19.42	19.19
	120	19.42	19.19
	130	19.42	19.19
	140	19.42	19.19
	150	19.42	19.19
	160	19.42	19.19
	170	19.42	19.19
	180	19.42	19.19
	190	19.42	19.19
	200	19.42	19.19
Non-Laptop	210	15.30	14.12
	205	15.30	14.12
Laptop	200	19.42	19.19
	201	19.42	19.19
	202	19.42	19.19
	203	19.42	19.19
	204	19.42	19.19
Non-Laptop	205	15.30	14.12
	206	15.30	14.12

Mode	Angle (degree)	Measured power 5GHz-Ch120(dBm)	
		AUX	MAIN
Non-Laptop	207	15.30	14.12
	208	15.30	14.12
	209	15.30	14.12
	210	15.30	14.12
	220	15.30	14.12
	230	15.30	14.12
	240	15.30	14.12
	250	15.30	14.12
	260	15.30	14.12
	270	15.30	14.12
	280	15.30	14.12
	290	15.30	14.12
	300	15.30	14.12
	310	15.30	14.12
	320	15.30	14.12
	330	15.30	14.12
	340	15.30	14.12
	350	15.30	14.12
	360	15.30	14.12

The lid is rotating from 360 to 0. The system base is horizontal

Mode	Angle (degree)	Measured power 5GHz-Ch120(dBm)	
		AUX	MAIN
Non-Laptop	360	15.30	14.12
	350	15.30	14.12
	340	15.30	14.12
	330	15.30	14.12
	320	15.30	14.12
	310	15.30	14.12
	300	15.30	14.12
	290	15.30	14.12
	280	15.30	14.12
	270	15.30	14.12
	260	15.30	14.12
	250	15.30	14.12
	240	15.30	14.12
	230	15.30	14.12
	220	15.30	14.12
	210	15.30	14.12
	200	15.30	14.12
	190	15.30	14.12
	180	15.30	14.12
	170	15.30	14.12
	160	15.30	14.12
Laptop	150	19.42	19.19
	155	19.42	19.19
	160	19.42	19.19
Non-Laptop	165	15.30	14.12
	164	15.30	14.12
	163	15.30	14.12
	162	15.30	14.12
	161	15.30	14.12
	160	15.30	14.12

Mode	Angle (degree)	Measured power 5GHz-Ch120(dBm)	
		AUX	MAIN
Laptop	159	19.42	19.19
	158	19.42	19.19
	157	19.42	19.19
	156	19.42	19.19
	155	19.42	19.19
	150	19.42	19.19
	140	19.42	19.19
	130	19.42	19.19
	120	19.42	19.19
	110	19.42	19.19
	100	19.42	19.19
	90	19.42	19.19
	80	19.42	19.19
	70	19.42	19.19
	60	19.42	19.19
	50	19.42	19.19
	40	19.42	19.19
	30	19.42	19.19
	20	19.42	19.19
Lid Close	10	Standby	Standby
Laptop	15	19.42	19.19
Lid Close	14	Standby	Standby
	13	Standby	Standby
	12	Standby	Standby
	11	Standby	Standby
	10	Standby	Standby
	0	Standby	Standby