

TEST REPORT

EUT Description	Convertible PC
Brand Name	HP
Model Name	TPN-Q289
FCC ID	PD9AX201NG
IC ID	1000M-AX201NG
Date of Test Start/End	2023-01-02 / 2023-01-04
Features	IEEE 802.11a/b/g/n/ac/ax

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Test Report identification	221107-02.TR02
Revision Control	Rev. 01 This test report replaces any previous versions of this test report (see Section 2)

Table of Contents

1. Table of Contents	
2. Document Revision History	3
3. Test Setup.....	3
4. Test Sample.....	4
5. Test Equipment List.....	4
6. Test Results.....	4
6.1. TX POWER TABLE SUMMARY	4
6.2. TRIGGER LID ANGLE DETECTION AND POWER VERIFICATION 2.4GHZ	5
6.3. TRIGGER LID ANGLE DETECTION AND POWER VERIFICATION 5GHZ	7

2. Document Revision History

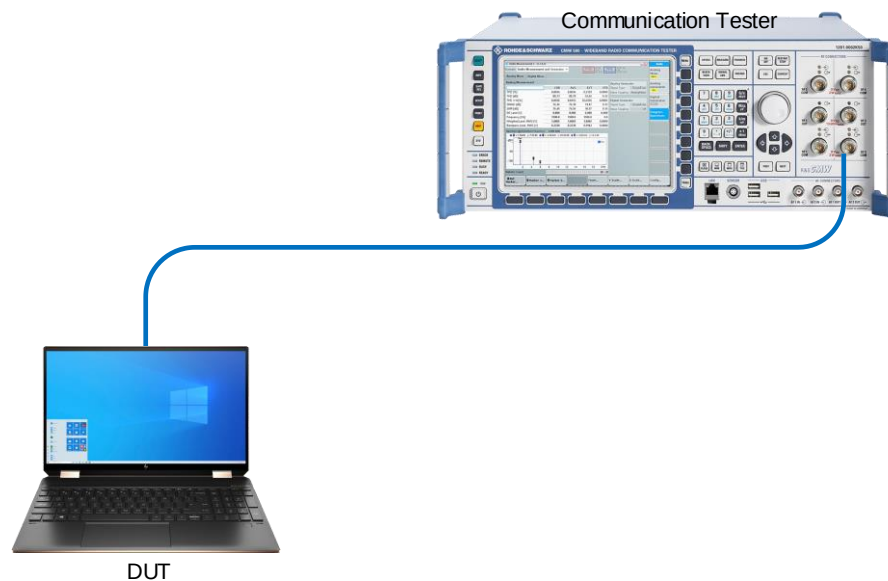
Revision #	Date	Modified by	Revision Details
Rev.00	2023-01-05	Axel. A. G	First Issue
Rev 01	2023-01-16	Cheiel I	Power updated on angle 165~161 in 5GHz table results (page 8)

3. Test Setup

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

- The DUT which AX201NGW module is installed inside convertible PC from HP model TPN-Q289.
- 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 AX201NGW antenna port to the Call Box.

Figure.1 – Validation using conducted power measurement test setup.



4. Test Sample

Sample	ID #	Description	Model	Serial #	Note
#1	221107-02.S02	Convertible PC	TPN-Q289	A5CD2406Z62	-

5. 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 section 3.

ID#	Device	Type/Model	Serial #	Manufacturer	Cal. Date	Cal. Due Date
125-000	Communication Tester	CMW500	129337	Rohde & Schwartz	2021-04-12	2023-04-12
022-003 022-004	RF path (RF cable + Adapters)	-	-	-	RF path loss was verified before usage	

6. Test Results

6.1. Tx Power Table Summary

Device Mode	Lid Angle 0 to 360	Lid Angle 360 to 0	2.4Ghz-Ch6				5Ghz-Ch40			
			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°- 12.5°	0°- 12.5°	Stand by (no Tx transmission)							
Laptop	12.5° - 200°	12.5° - 160°	20.5	20.5	20.30	20.22	18.5	18.5	18.48	18.27
Non-Laptop	200° - 360°	160° - 360°	20.5	20.5	20.30	20.36	18.5	18.5	18.12	18.25

6.2. Trigger lid angle detection and power verification 2.4GHz

The lid is rotating from 0 to 360.

Mode	Angle (degrees)	Measured Power 2.4GHz-Ch6 (dBm)	
		AUX	MAIN
Lid close	0	Standby	Standby
	10	Standby	Standby
Laptop	20	20.30	20.22
Laptop	15	20.30	20.22
Lid close	10	Standby	Standby
	11	Standby	Standby
	12	Standby	Standby
Laptop	13	20.30	20.22
	14	20.30	20.22
	15	20.30	20.22
	16	20.30	20.22
	17	20.30	20.22
	20	20.30	20.22
	30	20.30	20.22
	40	20.30	20.22
	50	20.30	20.22
	60	20.30	20.22
	70	20.30	20.22
	80	20.30	20.22
	90	20.30	20.22
	100	20.30	20.22
	110	20.30	20.22
	120	20.30	20.22
	130	20.30	20.22
	140	20.30	20.22
	150	20.30	20.22
	160	20.30	20.22
	170	20.30	20.22
	180	20.30	20.22
	190	20.30	20.22
Non-Laptop	200	20.30	20.36

Mode	Angle (degrees)	Measured Power 2.4GHz-Ch6 (dBm)	
		AUX	MAIN
Non-Laptop	200	20.30	20.36
Laptop	195	20.30	20.22
	196	20.30	20.22
	197	20.30	20.22
	198	20.30	20.22
	199	20.30	20.22
Non-Laptop	200	20.30	20.36
	201	20.30	20.36
	202	20.30	20.36
	203	20.30	20.36
	204	20.30	20.36
	205	20.30	20.36
	210	20.30	20.36
	220	20.30	20.36
	230	20.30	20.36
	240	20.30	20.36
	260	20.30	20.36
	270	20.30	20.36
	280	20.30	20.36
	290	20.30	20.36
	300	20.30	20.36
	310	20.30	20.36
	320	20.30	20.36
	330	20.30	20.36
	340	20.30	20.36
	350	20.30	20.36
	360	20.30	20.36

The lid is rotating from 360 degrees to 0 degree.

Mode	Angle (degrees)	Measured Power 2.4GHz-Ch6 (dBm)	
		AUX	MAIN
Non-Laptop	360	20.30	20.36
	350	20.30	20.36
	340	20.30	20.36
	330	20.30	20.36
	320	20.30	20.36
	310	20.30	20.36
	300	20.30	20.36
	290	20.30	20.36
	280	20.30	20.36
	270	20.30	20.36
	260	20.30	20.36
	240	20.30	20.36
	230	20.30	20.36
	220	20.30	20.36
	210	20.30	20.36
	200	20.30	20.36
	190	20.30	20.36
	180	20.30	20.36
	170	20.30	20.36
	160	20.30	20.22
Laptop	165	20.30	20.36
Non-Laptop	164	20.30	20.36
	163	20.30	20.36
	162	20.30	20.36
	161	20.30	20.36
Laptop	160	20.30	20.22

Mode	Angle (degrees)	Measured Power 2.4GHz-Ch6 (dBm)	
		AUX	MAIN
Laptop	159	20.30	20.22
	158	20.30	20.22
	157	20.30	20.22
	156	20.30	20.22
	155	20.30	20.22
	150	20.30	20.22
	140	20.30	20.22
	130	20.30	20.22
	120	20.30	20.22
	110	20.30	20.22
	100	20.30	20.22
	90	20.30	20.22
	80	20.30	20.22
	70	20.30	20.22
	60	20.30	20.22
	50	20.30	20.22
	40	20.30	20.22
	30	20.30	20.22
	20	20.30	20.22
	10	Standby	Standby
	15	20.30	20.22
Laptop	14	20.30	20.22
	13	20.30	20.22
Lid close	12	Standby	Standby
	11	Standby	Standby
	10	Standby	Standby
	9	Standby	Standby
	8	Standby	Standby
	0	Standby	Standby

6.3. Trigger lid angle detection and power verification 5GHz

The lid is rotating from 0 to 360

Mode	Angle (degrees)	Measured Power 5GHz-Ch40 (dBm)	
		AUX	MAIN
Lid close	0	Standby	Standby
	10	Standby	Standby
Laptop	20	18.48	18.27
Laptop	15	18.48	18.27
Lid close	10	Standby	Standby
	11	Standby	Standby
	12	Standby	Standby
Laptop	13	18.48	18.27
	14	18.48	18.27
	15	18.48	18.27
	16	18.48	18.27
	17	18.48	18.27
	20	18.48	18.27
	30	18.48	18.27
	40	18.48	18.27
	50	18.48	18.27
	60	18.48	18.27
	70	18.48	18.27
	80	18.48	18.27
	90	18.48	18.27
	100	18.48	18.27
	110	18.48	18.27
	120	18.48	18.27
	130	18.48	18.27
	140	18.48	18.27
	150	18.48	18.27
	160	18.48	18.27
	170	18.48	18.27
	180	18.48	18.27
	190	18.48	18.27
Non-Laptop	200	18.12	18.25

Mode	Angle (degrees)	Measured Power 5GHz-Ch40 (dBm)	
		AUX	MAIN
Non-Laptop	200	18.12	18.25
Laptop	195	18.48	18.27
	196	18.48	18.27
	197	18.48	18.27
	198	18.48	18.27
	199	18.48	18.27
Non-Laptop	200	18.12	18.25
	201	18.12	18.25
	202	18.12	18.25
	203	18.12	18.25
	204	18.12	18.25
	205	18.12	18.25
	210	18.12	18.25
	220	18.12	18.25
	230	18.12	18.25
	240	18.12	18.25
	260	18.12	18.25
	270	18.12	18.25
	280	18.12	18.25
	290	18.12	18.25
	300	18.12	18.25
	310	18.12	18.25
	320	18.12	18.25
	330	18.12	18.25
	340	18.12	18.25
	350	18.12	18.25
	360	18.12	18.25

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

Mode	Angle (degrees)	Measured Power 5GHz-Ch40 (dBm)	
		AUX	MAIN
Non-Laptop	360	18.12	18.25
	350	18.12	18.25
	340	18.12	18.25
	330	18.12	18.25
	320	18.12	18.25
	310	18.12	18.25
	300	18.12	18.25
	290	18.12	18.25
	280	18.12	18.25
	270	18.12	18.25
	260	18.12	18.25
	240	18.12	18.25
	230	18.12	18.25
	220	18.12	18.25
	210	18.12	18.25
	200	18.12	18.25
	190	18.12	18.25
	180	18.12	18.25
	170	18.12	18.25
	160	18.48	18.27
Laptop	160	18.48	18.27
Non-Laptop	165	18.12	18.25
	164	18.12	18.25
	163	18.12	18.25
	162	18.12	18.25
	161	18.12	18.25
Laptop	160	18.48	18.27

Mode	Angle (degrees)	Measured Power 5GHz-Ch40 (dBm)	
		AUX	MAIN
Laptop	159	18.48	18.27
	158	18.48	18.27
	157	18.48	18.27
	156	18.48	18.27
	155	18.48	18.27
	150	18.48	18.27
	140	18.48	18.27
	130	18.48	18.27
	120	18.48	18.27
	110	18.48	18.27
	100	18.48	18.27
	90	18.48	18.27
	80	18.48	18.27
	70	18.48	18.27
	60	18.48	18.27
	50	18.48	18.27
	40	18.48	18.27
	30	18.48	18.27
	20	18.48	18.27
	10	Standby	Standby
	15	18.48	18.27
Laptop	14	18.48	18.27
	13	18.48	18.27
	12	Standby	Standby
Lid close	11	Standby	Standby
	10	Standby	Standby
	9	Standby	Standby
	8	Standby	Standby
	0	Standby	Standby