

Attachment 7. – Power Verification for Magnetic Hall effect sensor

The magnetic Hall sensor applied to this device is used to reduce the output Power when the DUT is switched from laptop mode to convertible mode. In the laptop state, it becomes convertible mode by touching the lid of the screen with the keyboard. The magnetic sensor applied to this DUT operates when the DUT's screen lid is close to the laptop keyboard, so it changes from max power (20dBm) of laptop mode to reduced power of convertible mode.

The verification test for the power reduction of the magnetic sensor applied to this product was conducted according to the TCBC Workshop note in November 2019.,

Per Nov. 2019 TCB workshop notes, Hall Effect for laptops/tablets Guidance.

Hall Effect sensors are becoming increasingly prevalent in laptops and tablets, especially for convertible laptops/tablets that switch modes (laptop, to stand mode, to tent mode, to tablet mode)

These sensors are often used to trigger power reduction based on the particular use mode

This power reduction occurs when the lid angle reaches a certain value.

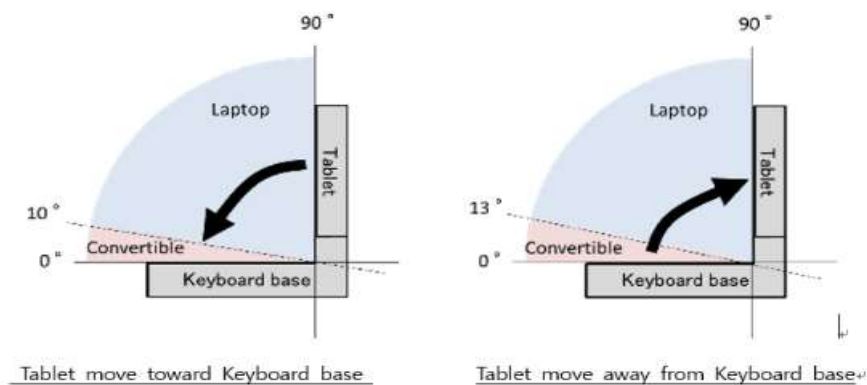
The following guidance should be applied to laptops/tablets that use Hall Effect sensors to detect lid angle for the purpose of power reduction.

1. With the lid is in closed mode (0 degrees), open the screen in 10 degree steps until laptop mode is obtained
2. Lower the screen 5 degrees. Closed mode should be reobtained. If not keep lowering in 5 degree steps.
3. Open the screen in 1 degree steps until laptop mode is reobtained
4. Continue opening the screen in 1 degree steps until at least 5 degrees past where laptop mode was obtained

Then continue opening the screen in 10 degree steps until tablet mode is obtained

-Power measurements should be taken at each step

-Reverse this procedure going from tablet mode back down to closed mode



1.Power Reduction Verification for Magnetic Sensor

WLAN Mode	Magnetic sensor operation	
	Close (0°) to Open(90°)	open (90°) -> close(0°)
2.4 802.11b	14	12
2.4 GHz 802.11g	14	12
2.4 GHz 802.11n	14	12
2.4 GHz 802.11n 40MHz	14	12
5 GHz 802.11a	14	12
5 GHz 802.11n 20MHz	14	12
5 GHz 802.11ac 20MHz	14	12
5 GHz 802.11n 40MHz	14	12
5 GHz 802.11ac 40MHz	14	12
5 GHz 802.11ac 80MHz	14	12

Degree Measurement verification for Magnetic sensor

1.1 Close (0°) to Open(90°) : convertible Mode to Laptop Mode

1.1.1. With the lid is in closed mode (0 degrees), open the screen in 10 degree steps until laptop mode is

obtained

Close (0°) to Open(90°)												
Ant	mode	Dgree[°]	0	10	20	30	40	50	60	70	80	90
Main Ant	2.4 802.11b	Measured Power [dBm]	15.84	15.86	20.22	20.26	20.31	20.12	20.19	20.19	20.30	20.17
	2.4 GHz 802.11g	Measured Power [dBm]	15.87	15.73	19.40	19.40	19.48	19.40	19.39	19.52	19.55	19.40
	2.4 GHz 802.11n	Measured Power [dBm]	15.68	15.84	19.55	19.41	19.37	19.35	19.49	19.42	19.54	19.47
	2.4 GHz 802.11n 40MHz	Measured Power [dBm]	15.60	15.57	17.14	17.24	17.20	17.30	17.14	17.18	17.27	17.14
	5 GHz 802.11a	Measured Power [dBm]	13.78	13.78	20.78	20.83	20.72	20.85	20.78	20.69	20.76	20.74
	5 GHz 802.11n 20MHz	Measured Power [dBm]	13.95	13.76	20.70	20.63	20.74	20.61	20.69	20.77	20.64	20.73
	5 GHz 802.11ac 20MHz	Measured Power [dBm]	13.82	13.68	20.90	20.86	20.77	20.82	20.73	20.87	20.73	20.82
	5 GHz 802.11n 40MHz	Measured Power [dBm]	13.88	13.82	20.65	20.74	20.70	20.77	20.71	20.61	20.71	20.59
	5 GHz 802.11ac 40MHz	Measured Power [dBm]	13.61	13.50	20.54	20.66	20.52	20.59	20.48	20.49	20.54	20.65
	5 GHz 802.11ac 80MHz	Measured Power [dBm]	13.59	13.53	19.62	19.56	19.47	19.56	19.52	19.60	19.47	19.60
Aux Ant	2.4 802.11b	Measured Power [dBm]	16.02	16.11	20.79	20.78	20.72	20.71	20.84	20.68	20.81	20.77
	2.4 GHz 802.11g	Measured Power [dBm]	15.63	15.71	20.20	20.17	20.28	20.26	20.15	20.18	20.34	20.24
	2.4 GHz 802.11n	Measured Power [dBm]	15.75	15.72	20.54	20.53	20.43	20.55	20.49	20.57	20.59	20.51
	2.4 GHz 802.11n 40MHz	Measured Power [dBm]	15.73	15.75	18.07	18.09	17.96	18.02	17.96	18.03	18.03	17.90
	5 GHz 802.11a	Measured Power [dBm]	13.73	13.84	20.77	20.73	20.77	20.89	20.89	20.77	20.76	20.76
	5 GHz 802.11n 20MHz	Measured Power [dBm]	13.78	13.84	20.76	20.83	20.78	20.76	20.71	20.67	20.82	20.74
	5 GHz 802.11ac 20MHz	Measured Power [dBm]	13.76	13.79	20.92	20.78	20.94	20.80	20.91	20.87	20.77	20.91
	5 GHz 802.11n 40MHz	Measured Power [dBm]	13.74	13.80	20.16	20.15	20.29	20.18	20.33	20.23	20.25	20.26
	5 GHz 802.11ac 40MHz	Measured Power [dBm]	13.79	13.77	20.26	20.34	20.37	20.45	20.29	20.34	20.41	20.28
	5 GHz 802.11ac 80MHz	Measured Power [dBm]	13.57	13.53	18.24	18.36	18.24	18.28	18.20	18.16	18.17	18.27

1.1.2. Lower the screen 5 degrees. Closed mode should be reobtained. If not keep lowering in 5 degree

steps.

Close (0°) to Open(90°)							
Ant	mode	Dgree[°]	0	5	10	15	20
Main Ant	2.4 802.11b	Measured Power [dBm]	15.93	16.01	15.90	20.26	20.24
	2.4 GHz 802.11g	Measured Power [dBm]	15.75	15.79	15.70	19.54	19.47
	2.4 GHz 802.11n	Measured Power [dBm]	15.66	15.78	15.77	19.47	19.37
	2.4 GHz 802.11n 40MHz	Measured Power [dBm]	15.57	15.67	15.72	17.22	17.23
	5 GHz 802.11a	Measured Power [dBm]	13.78	13.70	13.87	20.79	20.82
	5 GHz 802.11n 20MHz	Measured Power [dBm]	13.79	13.91	13.96	20.70	20.71
	5 GHz 802.11ac 20MHz	Measured Power [dBm]	13.77	13.64	13.68	20.91	20.72
	5 GHz 802.11n 40MHz	Measured Power [dBm]	13.87	13.73	13.81	20.66	20.73
	5 GHz 802.11ac 40MHz	Measured Power [dBm]	13.48	13.43	13.49	20.63	20.61
	5 GHz 802.11ac 80MHz	Measured Power [dBm]	13.52	13.51	13.42	19.55	19.44
Aux Ant	2.4 802.11b	Measured Power [dBm]	16.06	15.92	16.01	20.76	20.79
	2.4 GHz 802.11g	Measured Power [dBm]	15.73	15.60	15.78	20.29	20.27
	2.4 GHz 802.11n	Measured Power [dBm]	15.79	15.81	15.63	20.58	20.44
	2.4 GHz 802.11n 40MHz	Measured Power [dBm]	15.85	15.79	15.69	17.98	17.90
	5 GHz 802.11a	Measured Power [dBm]	13.80	13.70	13.80	20.83	20.92
	5 GHz 802.11n 20MHz	Measured Power [dBm]	13.84	13.78	13.75	20.73	20.80
	5 GHz 802.11ac 20MHz	Measured Power [dBm]	13.81	13.72	13.72	20.86	20.82
	5 GHz 802.11n 40MHz	Measured Power [dBm]	13.66	13.68	13.75	20.24	20.23
	5 GHz 802.11ac 40MHz	Measured Power [dBm]	13.72	13.87	13.82	20.43	20.45
	5 GHz 802.11ac 80MHz	Measured Power [dBm]	13.55	13.53	13.49	18.35	18.34

1.1.3.Open the screen in 1 degree steps until laptop mode is reobtained

Close (0°) to Open(90°)													
Ant	mode	Dgree[°]	0	1	2	3	4	5	6	7	8	9	10
Main Ant	2.4 802.11b	Measured Power [dBm]	15.88	15.90	15.90	15.98	15.96	16.03	15.87	15.84	15.90	16.00	15.95
	2.4 GHz 802.11g	Measured Power [dBm]	15.75	15.81	15.77	15.79	15.72	15.80	15.76	15.71	15.78	15.89	15.71
	2.4 GHz 802.11n	Measured Power [dBm]	15.78	15.84	15.71	15.74	15.73	15.76	15.82	15.67	15.85	15.69	15.72
	2.4 GHz 802.11n 40MHz	Measured Power [dBm]	15.55	15.70	15.61	15.61	15.55	15.65	15.68	15.64	15.69	15.73	15.65
	5 GHz 802.11a	Measured Power [dBm]	13.77	13.70	13.80	13.70	13.77	13.88	13.80	13.82	13.80	13.78	13.77
	5 GHz 802.11n 20MHz	Measured Power [dBm]	13.77	13.82	13.90	13.88	13.86	13.95	13.87	13.92	13.91	13.89	13.90
	5 GHz 802.11ac 20MHz	Measured Power [dBm]	13.81	13.75	13.76	13.79	13.65	13.81	13.78	13.70	13.75	13.65	13.78
	5 GHz 802.11n 40MHz	Measured Power [dBm]	13.92	13.90	13.93	13.88	13.93	13.86	13.83	13.78	13.85	13.78	13.83
	5 GHz 802.11ac 40MHz	Measured Power [dBm]	13.56	13.62	13.54	13.59	13.60	13.56	13.51	13.43	13.46	13.60	13.57
	5 GHz 802.11ac 80MHz	Measured Power [dBm]	13.52	13.51	13.59	13.57	13.47	13.42	13.50	13.49	13.48	13.48	13.40
Aux Ant	2.4 802.11b	Measured Power [dBm]	16.10	16.11	15.99	16.07	15.95	16.11	16.02	15.95	15.96	15.92	16.11
	2.4 GHz 802.11g	Measured Power [dBm]	15.78	15.78	15.61	15.65	15.65	15.62	15.68	15.73	15.66	15.62	15.58
	2.4 GHz 802.11n	Measured Power [dBm]	15.68	15.69	15.64	15.68	15.72	15.76	15.77	15.75	15.67	15.63	15.76
	2.4 GHz 802.11n 40MHz	Measured Power [dBm]	15.71	15.69	15.74	15.71	15.88	15.85	15.72	15.84	15.85	15.69	15.87
	5 GHz 802.11a	Measured Power [dBm]	13.88	13.85	13.74	13.85	13.74	13.89	13.76	13.77	13.81	13.70	13.83
	5 GHz 802.11n 20MHz	Measured Power [dBm]	13.93	13.92	13.75	13.83	13.74	13.88	13.74	13.79	13.75	13.76	13.74
	5 GHz 802.11ac 20MHz	Measured Power [dBm]	13.69	13.67	13.68	13.62	13.68	13.77	13.62	13.74	13.75	13.74	13.66
	5 GHz 802.11n 40MHz	Measured Power [dBm]	13.63	13.79	13.75	13.80	13.70	13.79	13.75	13.69	13.67	13.65	13.80
	5 GHz 802.11ac 40MHz	Measured Power [dBm]	13.77	13.71	13.88	13.74	13.74	13.75	13.91	13.83	13.76	13.87	13.80
	5 GHz 802.11ac 80MHz	Measured Power [dBm]	13.60	13.42	13.55	13.47	13.46	13.54	13.61	13.60	13.44	13.45	13.60

Close (0°) to Open(90°)									
11	12	13	14	15	16	17	18	19	20
16.02	15.95	15.85	15.88	20.21	20.15	20.22	20.29	20.18	20.12
15.78	15.79	15.76	15.88	19.55	19.57	19.40	19.48	19.42	19.54
15.77	15.80	15.80	15.76	19.44	19.55	19.35	19.54	19.36	19.43
15.69	15.72	15.54	15.74	17.24	17.31	17.28	17.13	17.17	17.31
13.87	13.74	13.87	13.74	20.73	20.70	20.77	20.67	20.84	20.84
13.77	13.77	13.92	13.77	20.61	20.59	20.62	20.71	20.72	20.70
13.62	13.67	13.80	13.74	20.79	20.82	20.86	20.73	20.82	20.75
13.85	13.76	13.73	13.75	20.77	20.67	20.66	20.62	20.69	20.62
13.62	13.49	13.60	13.42	20.63	20.60	20.55	20.53	20.66	20.58
13.49	13.48	13.50	13.48	19.51	19.45	19.49	19.47	19.60	19.50
15.95	15.93	15.97	15.91	20.73	20.81	20.70	20.84	20.70	20.65
15.69	15.61	15.77	15.77	20.19	20.20	20.25	20.31	20.27	20.30
15.79	15.71	15.82	15.67	20.42	20.60	20.60	20.60	20.46	20.57
15.86	15.83	15.83	15.85	17.91	18.10	17.91	18.03	18.02	18.09
13.76	13.81	13.82	13.84	20.83	20.87	20.80	20.74	20.76	20.92
13.87	13.82	13.82	13.84	20.75	20.68	20.68	20.75	20.80	20.84
13.75	13.81	13.79	13.71	20.84	20.85	20.92	20.94	20.93	20.92
13.76	13.76	13.72	13.67	20.18	20.25	20.32	20.15	20.28	20.22
13.71	13.82	13.89	13.78	20.40	20.39	20.46	20.42	20.43	20.37
13.58	13.61	13.47	13.43	18.29	18.35	18.16	18.18	18.28	18.17

1.1.4.Continue opening the screen in 1 degree steps until at least 5 degrees past where laptop mode was obtained

Close (0°) to Open(90°)													
Ant	mode	Dgree[°]	10	11	12	13	14	15	16	17	18	19	20
Main Ant	2.4 802.11b	Measured Power [dBm]	15.94	16.02	15.92	15.88	15.90	20.20	20.18	20.28	20.17	20.27	20.24
	2.4 GHz 802.11g	Measured Power [dBm]	15.83	15.73	15.81	15.82	15.87	19.58	19.38	19.50	19.54	19.50	19.43
	2.4 GHz 802.11n	Measured Power [dBm]	15.76	15.74	15.79	15.77	15.77	19.50	19.55	19.36	19.45	19.46	19.54
	2.4 GHz 802.11n 40MHz	Measured Power [dBm]	15.55	15.57	15.57	15.64	15.63	17.30	17.32	17.15	17.29	17.27	17.23
	5 GHz 802.11a	Measured Power [dBm]	13.82	13.84	13.85	13.72	13.79	20.70	20.71	20.70	20.85	20.87	20.84
	5 GHz 802.11n 20MHz	Measured Power [dBm]	13.76	13.88	13.87	13.76	13.79	20.64	20.79	20.66	20.66	20.71	20.61
	5 GHz 802.11ac 20MHz	Measured Power [dBm]	13.78	13.72	13.73	13.69	13.65	20.78	20.78	20.80	20.77	20.73	20.89
	5 GHz 802.11n 40MHz	Measured Power [dBm]	13.91	13.73	13.78	13.91	13.77	20.65	20.65	20.60	20.60	20.59	20.60
	5 GHz 802.11ac 40MHz	Measured Power [dBm]	13.42	13.52	13.49	13.44	13.53	20.66	20.58	20.63	20.48	20.50	20.64
	5 GHz 802.11ac 80MHz	Measured Power [dBm]	13.53	13.55	13.41	13.41	13.47	19.63	19.63	19.53	19.51	19.61	19.49
Aux Ant	2.4 802.11b	Measured Power [dBm]	15.94	15.97	15.91	16.10	16.10	20.78	20.82	20.75	20.81	20.75	20.66
	2.4 GHz 802.11g	Measured Power [dBm]	15.64	15.59	15.72	15.60	15.61	20.20	20.23	20.17	20.24	20.28	20.28
	2.4 GHz 802.11n	Measured Power [dBm]	15.67	15.64	15.70	15.81	15.81	20.55	20.58	20.45	20.49	20.45	20.59
	2.4 GHz 802.11n 40MHz	Measured Power [dBm]	15.69	15.77	15.75	15.75	15.88	17.96	18.09	17.97	17.94	17.92	18.10
	5 GHz 802.11a	Measured Power [dBm]	13.79	13.88	13.75	13.81	13.72	20.82	20.84	20.82	20.90	20.80	20.76
	5 GHz 802.11n 20MHz	Measured Power [dBm]	13.80	13.80	13.86	13.76	13.79	20.82	20.84	20.83	20.70	20.70	20.76
	5 GHz 802.11ac 20MHz	Measured Power [dBm]	13.79	13.80	13.68	13.73	13.71	20.84	20.95	20.76	20.91	20.94	20.77
	5 GHz 802.11n 40MHz	Measured Power [dBm]	13.64	13.79	13.81	13.76	13.76	20.22	20.14	20.27	20.19	20.15	20.25
	5 GHz 802.11ac 40MHz	Measured Power [dBm]	13.72	13.85	13.71	13.84	13.84	20.34	20.43	20.41	20.32	20.42	20.38
	5 GHz 802.11ac 80MHz	Measured Power [dBm]	13.54	13.53	13.52	13.60	13.59	18.23	18.29	18.28	18.16	18.36	18.23

1.2 Open(90°) to Close(0°) : Laptop to convertible Mode

1.2.1. With the lid is in closed mode (0 degrees), open the screen in 10 degree steps until laptop mode is

obtained

open (90°) -> close(0°)												
Ant	mode	Angle [°]	90	80	70	60	50	40	30	20	10	0
Main Ant	2.4 802.11b	Measured Power [dBm]	20.31	20.17	20.24	20.15	20.22	20.13	20.22	20.23	15.91	15.96
	2.4 GHz 802.11g	Measured Power [dBm]	19.52	19.46	19.40	19.53	19.39	19.45	19.52	19.54	15.74	15.82
	2.4 GHz 802.11n	Measured Power [dBm]	19.47	19.39	19.53	19.51	19.54	19.42	19.46	19.45	15.84	15.80
	2.4 GHz 802.11n 40MHz	Measured Power [dBm]	17.31	17.14	17.20	17.25	17.13	17.19	17.13	17.21	15.74	15.65
	5 GHz 802.11a	Measured Power [dBm]	20.68	20.87	20.86	20.72	20.79	20.86	20.81	20.72	13.81	13.84
	5 GHz 802.11n 20MHz	Measured Power [dBm]	20.67	20.68	20.77	20.63	20.73	20.73	20.73	20.78	13.80	13.88
	5 GHz 802.11ac 20MHz	Measured Power [dBm]	20.82	20.84	20.73	20.89	20.86	20.85	20.74	20.89	13.75	13.68
	5 GHz 802.11n 40MHz	Measured Power [dBm]	20.58	20.70	20.75	20.59	20.68	20.65	20.71	20.63	13.92	13.73
	5 GHz 802.11ac 40MHz	Measured Power [dBm]	20.51	20.59	20.56	20.64	20.60	20.64	20.62	20.49	13.43	13.48
	5 GHz 802.11ac 80MHz	Measured Power [dBm]	19.51	19.63	19.45	19.57	19.57	19.54	19.56	19.63	13.59	13.45
Aux Ant	2.4 802.11b	Measured Power [dBm]	20.69	20.65	20.66	20.69	20.75	20.67	20.71	20.68	15.99	15.91
	2.4 GHz 802.11g	Measured Power [dBm]	20.15	20.18	20.18	20.26	20.19	20.31	20.23	20.32	15.68	15.75
	2.4 GHz 802.11n	Measured Power [dBm]	20.52	20.51	20.55	20.48	20.41	20.60	20.45	20.49	15.69	15.77
	2.4 GHz 802.11n 40MHz	Measured Power [dBm]	17.95	18.04	17.90	17.90	18.01	18.09	18.03	17.93	15.84	15.81
	5 GHz 802.11a	Measured Power [dBm]	20.72	20.88	20.74	20.74	20.89	20.92	20.74	20.81	13.72	13.72
	5 GHz 802.11n 20MHz	Measured Power [dBm]	20.83	20.74	20.72	20.81	20.86	20.75	20.75	20.76	13.73	13.80
	5 GHz 802.11ac 20MHz	Measured Power [dBm]	20.90	20.86	20.80	20.85	20.95	20.91	20.95	20.83	13.65	13.65
	5 GHz 802.11n 40MHz	Measured Power [dBm]	20.17	20.20	20.32	20.32	20.20	20.22	20.20	20.13	13.63	13.75
	5 GHz 802.11ac 40MHz	Measured Power [dBm]	20.44	20.38	20.46	20.38	20.35	20.37	20.44	20.43	13.86	13.85
	5 GHz 802.11ac 80MHz	Measured Power [dBm]	18.33	18.26	18.24	18.33	18.32	18.20	18.17	18.30	13.60	13.55

1.2.2. Lower the screen 5 degrees. Closed mode should be reobtained. If not keep lowering in 5 degree steps.

open (90°) -> close(0°)							
Ant	mode	Dgree[°]	20	15	10	5	0
Main Ant	2.4 802.11b	Measured Power [dBm]	20.13	20.25	15.89	16.04	15.92
	2.4 GHz 802.11g	Measured Power [dBm]	19.46	19.50	15.74	15.72	15.83
	2.4 GHz 802.11n	Measured Power [dBm]	19.40	19.52	15.74	15.84	15.67
	2.4 GHz 802.11n 40MHz	Measured Power [dBm]	17.17	17.19	15.66	15.73	15.74
	5 GHz 802.11a	Measured Power [dBm]	20.84	20.73	13.87	13.73	13.82
	5 GHz 802.11n 20MHz	Measured Power [dBm]	20.65	20.76	13.95	13.88	13.84
	5 GHz 802.11ac 20MHz	Measured Power [dBm]	20.72	20.77	13.77	13.73	13.64
	5 GHz 802.11n 40MHz	Measured Power [dBm]	20.72	20.60	13.81	13.74	13.81
	5 GHz 802.11ac 40MHz	Measured Power [dBm]	20.48	20.60	13.46	13.60	13.56
	5 GHz 802.11ac 80MHz	Measured Power [dBm]	19.64	19.44	13.43	13.49	13.45
Aux Ant	2.4 802.11b	Measured Power [dBm]	20.73	20.83	16.02	16.01	15.91
	2.4 GHz 802.11g	Measured Power [dBm]	20.32	20.28	15.70	15.77	15.66
	2.4 GHz 802.11n	Measured Power [dBm]	20.46	20.40	15.82	15.63	15.72
	2.4 GHz 802.11n 40MHz	Measured Power [dBm]	17.91	18.03	15.84	15.88	15.71
	5 GHz 802.11a	Measured Power [dBm]	20.87	20.80	13.74	13.83	13.72
	5 GHz 802.11n 20MHz	Measured Power [dBm]	20.76	20.74	13.92	13.74	13.92
	5 GHz 802.11ac 20MHz	Measured Power [dBm]	20.83	20.84	13.81	13.76	13.67
	5 GHz 802.11n 40MHz	Measured Power [dBm]	20.24	20.16	13.68	13.65	13.71
	5 GHz 802.11ac 40MHz	Measured Power [dBm]	20.31	20.29	13.84	13.80	13.71
5 GHz 802.11ac 80MHz	Measured Power [dBm]	18.28	18.32	13.46	13.57	13.58	

1.2.3.Open the screen in 1 degree steps until laptop mode is reobtained

		open (90°) -> close(0°)											
Ant	mode	Dgree[°]	20	19	18	17	16	15	14	13	12	11	10
Main Ant	2.4 802.11b	Measured Power [dBm]	20.18	20.20	20.28	20.26	20.24	20.23	20.21	20.22	15.96	15.97	15.95
	2.4 GHz 802.11g	Measured Power [dBm]	19.42	19.42	19.45	19.41	19.43	19.40	19.48	19.38	15.81	15.69	15.77
	2.4 GHz 802.11n	Measured Power [dBm]	19.42	19.43	19.43	19.48	19.49	19.35	19.36	19.47	15.71	15.74	15.75
	2.4 GHz 802.11n 40MHz	Measured Power [dBm]	17.31	17.13	17.16	17.28	17.22	17.14	17.16	17.15	15.67	15.66	15.54
	5 GHz 802.11a	Measured Power [dBm]	20.82	20.75	20.71	20.82	20.80	20.75	20.84	20.87	13.69	13.70	13.84
	5 GHz 802.11n 20MHz	Measured Power [dBm]	20.74	20.63	20.75	20.69	20.59	20.59	20.79	20.68	13.90	13.83	13.90
	5 GHz 802.11ac 20MHz	Measured Power [dBm]	20.92	20.83	20.87	20.89	20.80	20.88	20.86	20.89	13.66	13.66	13.64
	5 GHz 802.11n 40MHz	Measured Power [dBm]	20.71	20.62	20.72	20.67	20.68	20.73	20.68	20.69	13.90	13.81	13.75
	5 GHz 802.11ac 40MHz	Measured Power [dBm]	20.53	20.49	20.52	20.66	20.47	20.67	20.53	20.65	13.57	13.48	13.62
	5 GHz 802.11ac 80MHz	Measured Power [dBm]	19.54	19.61	19.64	19.47	19.52	19.52	19.46	19.45	13.47	13.44	13.47
Aux Ant	2.4 802.11b	Measured Power [dBm]	20.69	20.68	20.79	20.68	20.67	20.73	20.69	20.81	16.00	15.99	15.97
	2.4 GHz 802.11g	Measured Power [dBm]	20.23	20.28	20.23	20.24	20.20	20.19	20.35	20.30	15.63	15.65	15.62
	2.4 GHz 802.11n	Measured Power [dBm]	20.56	20.50	20.57	20.46	20.58	20.42	20.40	20.43	15.68	15.78	15.80
	2.4 GHz 802.11n 40MHz	Measured Power [dBm]	17.92	17.98	17.94	17.95	18.00	18.04	18.10	18.02	15.88	15.79	15.84
	5 GHz 802.11a	Measured Power [dBm]	20.91	20.82	20.84	20.90	20.72	20.89	20.85	20.92	13.76	13.80	13.73
	5 GHz 802.11n 20MHz	Measured Power [dBm]	20.79	20.72	20.87	20.78	20.81	20.71	20.77	20.81	13.74	13.90	13.83
	5 GHz 802.11ac 20MHz	Measured Power [dBm]	20.91	20.86	20.80	20.91	20.91	20.80	20.77	20.88	13.64	13.72	13.81
	5 GHz 802.11n 40MHz	Measured Power [dBm]	20.32	20.20	20.13	20.16	20.21	20.30	20.13	20.18	13.66	13.64	13.70
	5 GHz 802.11ac 40MHz	Measured Power [dBm]	20.31	20.32	20.40	20.40	20.44	20.34	20.35	20.36	13.91	13.82	13.85
	5 GHz 802.11ac 80MHz	Measured Power [dBm]	18.30	18.33	18.19	18.16	18.28	18.36	18.31	18.25	13.43	13.46	13.60

open (90°) -> close(0°)									
9	8	7	6	5	4	3	2	1	0
15.84	15.96	16.02	16.01	15.85	15.99	15.88	15.96	15.98	15.88
15.85	15.80	15.87	15.88	15.77	15.80	15.69	15.83	15.79	15.74
15.76	15.74	15.67	15.78	15.77	15.77	15.85	15.73	15.69	15.74
15.61	15.56	15.74	15.66	15.65	15.60	15.69	15.73	15.70	15.55
13.82	13.86	13.79	13.86	13.73	13.78	13.87	13.88	13.88	13.73
13.77	13.83	13.92	13.86	13.81	13.93	13.87	13.84	13.79	13.94
13.78	13.68	13.77	13.66	13.75	13.75	13.69	13.76	13.64	13.80
13.84	13.87	13.73	13.87	13.77	13.91	13.91	13.86	13.88	13.80
13.44	13.42	13.47	13.56	13.57	13.47	13.51	13.58	13.54	13.55
13.48	13.54	13.44	13.56	13.52	13.43	13.56	13.51	13.58	13.41
16.11	16.11	15.92	16.09	16.07	15.99	15.96	15.97	15.98	16.00
15.58	15.62	15.71	15.73	15.61	15.78	15.71	15.69	15.61	15.67
15.64	15.62	15.74	15.81	15.62	15.69	15.76	15.80	15.71	15.62
15.83	15.70	15.75	15.73	15.73	15.81	15.76	15.88	15.89	15.81
13.75	13.82	13.81	13.72	13.87	13.73	13.75	13.82	13.86	13.81
13.87	13.81	13.77	13.83	13.75	13.81	13.76	13.92	13.92	13.75
13.81	13.71	13.82	13.68	13.66	13.63	13.71	13.69	13.72	13.71
13.67	13.66	13.77	13.63	13.69	13.81	13.64	13.83	13.68	13.63
13.85	13.88	13.79	13.76	13.76	13.82	13.71	13.83	13.86	13.79
13.58	13.48	13.42	13.41	13.45	13.53	13.59	13.49	13.42	13.52

1.2.4.Continue opening the screen in 1 degree steps until at least 5 degrees past where laptop mode was obtained

open (90°) -> close(0°)													
Ant	mode	Dgree[°]	17	16	15	14	13	12	9	8	7	6	5
Main Ant	2.4 802.11b	Measured Power [dBm]	20.25	20.15	20.2	20.1	20.1	15.8	15.9	15.9	15.9	15.9	15.8
	2.4 GHz 802.11g	Measured Power [dBm]	19.45	19.4	19.4	19.4	19.4	15.6	15.8	15.7	15.8	15.8	15.8
	2.4 GHz 802.11n	Measured Power [dBm]	19.46	19.3	19.4	19.4	19.4	15.7	15.7	15.6	15.7	15.7	15.7
	2.4 GHz 802.11n 40MHz	Measured Power [dBm]	17.18	17.2	17.1	17.2	17.2	15.7	15.6	15.6	15.5	15.6	15.5
	5 GHz 802.11a	Measured Power [dBm]	20.70	20.7	20.6	20.8	20.7	13.7	13.8	13.8	13.8	13.7	13.8
	5 GHz 802.11n 20MHz	Measured Power [dBm]	20.73	20.7	20.7	20.7	20.5	13.8	13.8	13.9	13.7	13.8	13.7
	5 GHz 802.11ac 20MHz	Measured Power [dBm]	20.92	20.8	20.8	20.8	20.7	13.7	13.7	13.6	13.7	13.6	13.6
	5 GHz 802.11n 40MHz	Measured Power [dBm]	20.78	20.7	20.6	20.6	20.6	13.8	13.7	13.9	13.8	13.7	13.8
	5 GHz 802.11ac 40MHz	Measured Power [dBm]	20.67	20.5	20.4	20.5	20.6	13.5	13.5	13.5	13.4	13.5	13.4
	5 GHz 802.11ac 80MHz	Measured Power [dBm]	19.54	19.5	19.4	19.5	19.4	13.5	13.5	13.4	13.4	13.4	13.5
Aux Ant	2.4 802.11b	Measured Power [dBm]	20.84	20.7	20.7	20.7	20.6	16.0	15.9	15.9	15.9	15.9	16.0
	2.4 GHz 802.11g	Measured Power [dBm]	20.29	20.1	20.3	20.3	20.2	15.7	15.6	15.7	15.7	15.6	15.6
	2.4 GHz 802.11n	Measured Power [dBm]	20.44	20.4	20.5	20.5	20.4	15.6	15.6	15.8	15.6	15.6	15.8
	2.4 GHz 802.11n 40MHz	Measured Power [dBm]	17.92	18.0	18.0	17.9	18.1	15.7	15.7	15.7	15.8	15.7	15.7
	5 GHz 802.11a	Measured Power [dBm]	20.91	20.7	20.7	20.8	20.7	13.8	13.9	13.8	13.8	13.8	13.8
	5 GHz 802.11n 20MHz	Measured Power [dBm]	20.71	20.6	20.7	20.8	20.6	13.7	13.7	13.7	13.7	13.7	13.7
	5 GHz 802.11ac 20MHz	Measured Power [dBm]	20.80	20.7	20.8	20.7	20.8	13.6	13.6	13.7	13.6	13.6	13.6
	5 GHz 802.11n 40MHz	Measured Power [dBm]	20.27	20.2	20.1	20.2	20.2	13.6	13.8	13.8	13.7	13.7	13.8
	5 GHz 802.11ac 40MHz	Measured Power [dBm]	20.34	20.3	20.3	20.3	20.3	13.7	13.7	13.8	13.7	13.8	13.7
	5 GHz 802.11ac 80MHz	Measured Power [dBm]	18.18	18.2	18.2	18.3	18.2	13.4	13.4	13.6	13.5	13.4	13.4

2. Conclusion

We verified that when the magnetic sensor of the device goes from convertible mode (0 degrees) to laptop mode (90 degrees), it goes from reduction power to max power at an angle of 15 degrees. In addition, it was verified as above that when the laptop mode (90 degrees) is converted into the convertible mode (0 degrees), the maximum power is in a reduction power state at 12 degrees.