

Report No.: FR1N0508-02A



: 1 of 16

Page Number

# FCC RADIO TEST REPORT

FCC ID : HD5-CT30PL1N Equipment : Mobile computer

Brand Name : Honeywell Model Name : CT30PL1N

Applicant : Honeywell International Inc.

9680 Old Bailes Road, Fort Mill, SC 29707 USA

Manufacturer : Honeywell International Inc.

9680 Old Bailes Road, Fort Mill, SC 29707 USA

Standard : FCC Part 15 Subpart C §15.247

The product was received on Oct. 26, 2022 and testing was performed from Oct. 27, 2022 to Nov. 10, 2022. We, Sporton International Inc. Wensan Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

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

Approved by: Louis Wu

TEL: 886-3-327-0868

Louis Wu

Sporton International Inc. Wensan Laboratory

No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)

# **Table of Contents**

Report No.: FR1N0508-02A

Hi	story	of this test report	3
Sı	ımmar	y of Test Result	4
1	Gene	ral Description	5
	1.1	Product Feature of Equipment Under Test	5
	1.2	Modification of EUT	5
	1.3	Testing Location	6
	1.4	Applicable Standards	6
2	Test	Configuration of Equipment Under Test	7
	2.1	Carrier Frequency and Channel	7
	2.2	Test Mode	7
	2.3	Connection Diagram of Test System	8
	2.4	Support Unit used in test configuration and system	8
	2.5	EUT Operation Test Setup	8
3	Test	Result	9
	3.1	Output Power Measurement	9
	3.2	Radiated Band Edges and Spurious Emission Measurement	10
	3.3	Antenna Requirements	14
4	List c	of Measuring Equipment	15
5	Unce	rtainty of Evaluation	16
Αŗ	pendi	x A. Conducted Test Results	
Αŗ	pendi	x B. Radiated Spurious Emission	
Αŗ	pendi	x C. Radiated Spurious Emission Plots	
Αŗ	pendi	x D. Duty Cycle Plots	
Αŗ	pendi	x E. Setup Photographs	

TEL: 886-3-327-0868 Page Number : 2 of 16
FAX: 886-3-327-0855 Issue Date : Dec. 13, 2022

Report Version

: 02

Report Template No.: BU5-FR15CWL AC MA Version 2.4

# History of this test report

Report No.: FR1N0508-02A

Report No.	Version	Description	Issue Date
FR1N0508-02A	01	Initial issue of report	Nov. 28, 2022
FR1N0508-02A	02	<ol> <li>Adding description for Radiated Spurious         Emission test.     </li> <li>Revise Summary, Appendix A, Appendix B and         Appendix C     </li> </ol>	

TEL: 886-3-327-0868 Page Number : 3 of 16
FAX: 886-3-327-0855 Issue Date : Dec. 13, 2022

# **Summary of Test Result**

Report No.: FR1N0508-02A

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
-	15.247(a)(2)	6dB Bandwidth	Not Required	-
-	2.1049	99% Occupied Bandwidth	Not Required	-
3.1	15.247(b)	Power Output Measurement	Pass	-
-	15.247(e)	Power Spectral Density	Not Required	-
	15.247(d)	Conducted Band Edges	Not Required	-
-		Conducted Spurious Emission	Not Required	-
3.2	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	Pass	2.37 dB under the limit at 2484.320 MHz 2.37 dB under the limit at 2483.620 MHz
-	15.207	AC Conducted Emission	Not Required	-
3.3	15.203	Antenna Requirement	Pass	-

#### Note:

- 1. Not required means after assessing, test items are not necessary to carry out.
- 2. This is a variant report by changing NFC antenna. All the test cases were performed on original report which can be referred to Sporton Report Number FR1N0508C. Based on the original report, only worst case was verified.

#### Declaration of Conformity:

- The test results (PASS/FAIL) with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
   It's means measurement values may risk exceeding the limit of regulation standards, if measurement uncertainty is include in test results.
- 2. The measurement uncertainty please refer to report "Uncertainty of Evaluation".

#### Comments and Explanations:

The product specifications of the EUT presented in the report are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Wei Chen Report Producer: Doris Chen

TEL: 886-3-327-0868 Page Number : 4 of 16
FAX: 886-3-327-0855 Issue Date : Dec. 13, 2022

# 1 General Description

## 1.1 Product Feature of Equipment Under Test

GSM/WCDMA/LTE, Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n/ac, Wi-Fi 5GHz 802.11a/n/ac, NFC, and GNSS.

Report No.: FR1N0508-02A

Product Feature					
HW version	v1.0				
SW version	OS.11.003-HON.11.003				
Sample	Scanner S0703				
Antenna Type	WWAN <ant. 1="">: Loop Antenna  <ant. 2="">: PIFA Antenna  <ant. 3="">: Monopole Antenna  WLAN: PIFA Antenna  Bluetooth: PIFA Antenna  GPS / Glonass / BDS / Galileo: PIFA Antenna  NFC: Loop Antenna</ant.></ant.></ant.>				

Antenna information				
2400 MHz ~ 2483.5 MHz	Peak Gain (dBi)	2.5		

#### Remark:

- 1. The EUT's information above is declared by manufacturer. Please refer to Comments and Explanations in report summary.
- 2. Internal tracking board version is DVT2(NFC) and SW PN is 311.C0.00.1069-G-DEBUG

#### 1.2 Modification of EUT

No modifications made to the EUT during the testing.

TEL: 886-3-327-0868 Page Number : 5 of 16
FAX: 886-3-327-0855 Issue Date : Dec. 13, 2022

# 1.3 Testing Location

Test Site	Sporton International Inc. Wensan Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	Sporton Site No. TH05-HY, 03CH13-HY

Report No.: FR1N0508-02A

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

FCC designation No.: TW3786

# 1.4 Applicable Standards

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

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 D01 15.247 Meas Guidance v05r02
- ANSI C63.10-2013

#### 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.

TEL: 886-3-327-0868 Page Number : 6 of 16
FAX: 886-3-327-0855 Issue Date : Dec. 13, 2022

# 2 Test Configuration of Equipment Under Test

a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: radiation emission (1GHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape), and adjusting the measurement antenna orientation, following C63.10 exploratory test procedures and only the worst case emissions were reported in this report.

Report No.: FR1N0508-02A

## 2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)	
	1	2412	7	2442	
	2	2417	8	2447	
0400 0400 F MILE	3	2422	9	2452	
2400-2483.5 MHz	4	2427	10	2457	
	5	2432	11	2462	
	6	2437			

#### 2.2 Test Mode

The final test modes include the worst data rates for each modulation shown in the table below.

#### Single Antenna

Modulation	Data Rate		
802.11n HT40	MCS0		

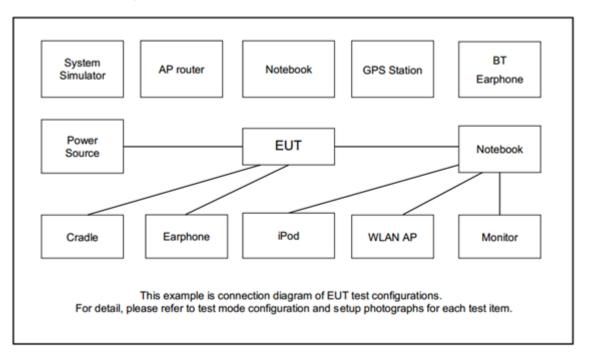
Ch. #	2400-2483.5 MHz
CII.#	802.11n HT40
Low	-
Middle	-
High	09

#### Remark:

- 1. For radiation spurious emission, the modulation and the data rate picked for testing are determined by the Max. RF conducted power.
- Only radiated measurements are used to show compliance with FCC limits for fundamental and spurious emissions.

TEL: 886-3-327-0868 Page Number : 7 of 16
FAX: 886-3-327-0855 Issue Date : Dec. 13, 2022

# 2.3 Connection Diagram of Test System



Report No.: FR1N0508-02A

## 2.4 Support Unit used in test configuration and system

Item	tem Equipment Brand Name		Model Name FCC ID		Data Cable	Power Cord
1.	Notebook	Acer	N18Q13	PD9AX201NG	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m

# 2.5 EUT Operation Test Setup

The RF test items, utility "QRCT Version 4.0.00158.0" was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

TEL: 886-3-327-0868 Page Number : 8 of 16
FAX: 886-3-327-0855 Issue Date : Dec. 13, 2022

#### 3 Test Result

#### 3.1 Output Power Measurement

#### 3.1.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5 MHz, the limit for output power is 30 dBm. If transmitting antenna with directional gain greater than 6 dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

Report No.: FR1N0508-02A

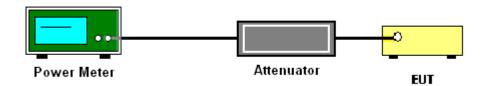
#### 3.1.2 Measuring Instruments

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

#### 3.1.3 Test Procedures

- For Average Power, the testing follows ANSI C63.10 Section 11.9.2.3.2 Method AVGPM-G
- 2. The RF output of EUT is connected to the power meter by RF cable and attenuator. The path loss is compensated to the results for each measurement.
- 3. Set the maximum power setting and enable the EUT to transmit continuously.
- 4. Measure the conducted output power and record the results in the test report.

#### 3.1.4 Test Setup



#### 3.1.5 Test Result of Average Output Power

Please refer to Appendix A.

TEL: 886-3-327-0868 Page Number : 9 of 16
FAX: 886-3-327-0855 Issue Date : Dec. 13, 2022

# 3.2 Radiated Band Edges and Spurious Emission Measurement

#### 3.2.1 Limit of Radiated band edge and Spurious Emission Measurement

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device is measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

Report No.: FR1N0508-02A

Frequency	Field Strength	Measurement Distance		
(MHz)	(microvolts/meter)	(meters)		
0.009 - 0.490	2400/F(kHz)	300		
0.490 – 1.705	24000/F(kHz)	30		
1.705 – 30.0	30	30		
30 – 88	100	3		
88 – 216	150	3		
216 - 960	200	3		
Above 960	500	3		

### 3.2.2 Measuring Instruments

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

TEL: 886-3-327-0868 Page Number : 10 of 16
FAX: 886-3-327-0855 Issue Date : Dec. 13, 2022

#### 3.2.3 Test Procedures

- 1. The testing follows the ANSI C63.10 Section 11.12.1 Radiated emission measurements.
- 2. The EUT is arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.

Report No.: FR1N0508-02A

- 3. The EUT is placed on a turntable with 1.5 meter for frequency above 1 GHz respectively above ground.
- 4. The EUT is set 3 meters away from the receiving antenna, which is mounted on the top of a variable height antenna tower.
- 5. Corrected Reading: Antenna Factor + Cable Loss + Read Level Preamp Factor = Level
- 6. Radiated testing above 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading for scanning all frequencies. When there is no suspected emission found and the harmonic emission level is with at least 6 dB margin against average limit line, the position is marked as "-".
- 7. Use the following spectrum analyzer settings:

For average measurement:

The procedure for method trace averaging is as follows:

- a) RBW = 1 MHz.
- b)  $VBW \ge [3 \times RBW]$ .
- c) Detector = RMS (power averaging), if [span / (# of points in sweep)] ≤ RBW / 2. Satisfying this condition can require increasing the number of points in the sweep or reducing the span. If the condition is not satisfied, then the detector mode shall be set to peak.
- d) Averaging type = power (i.e., rms) (As an alternative, the detector and averaging type may be set for linear voltage averaging.
- e) Sweep time = auto.

TEL: 886-3-327-0868 Page Number : 11 of 16
FAX: 886-3-327-0855 Issue Date : Dec. 13, 2022

f) Perform a trace average of at least 100 traces if the transmission is continuous. If the transmission is not continuous, then the number of traces shall be increased by a factor of 1 / D, where D is the duty cycle. For example, with 50% duty cycle, at least 200 traces shall be averaged. (If a specific emission is demonstrated to be continuous—i.e., 100% duty cycle—then rather than turning ON and OFF with the transmit cycle, at least 100 traces shall be averaged.)

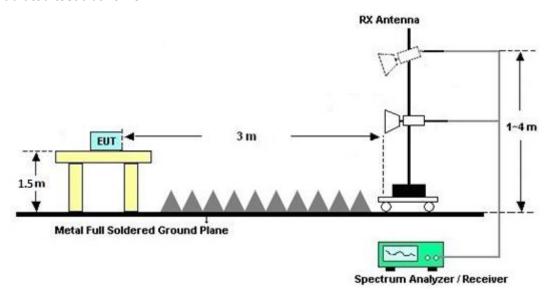
Report No.: FR1N0508-02A

- g) If tests are performed with the EUT transmitting at a duty cycle less than 98%, then a correction factor shall be added to the measurement results prior to comparing with the emission limit, to compute the emission level that would have been measured had the test been performed at 100% duty cycle. The correction factor is computed as follows:
  - 1) If power averaging (rms) mode was used in the preceding step e), then the correction factor is [10 log (1 / D)], where D is the duty cycle. For example, if the transmit duty cycle was 50%, then 3 dB shall be added to the measured emission levels.
  - 2) If a specific emission is demonstrated to be continuous (100% duty cycle) rather than turning ON and OFF with the transmit cycle, then no duty cycle correction is required for that emission.

TEL: 886-3-327-0868 Page Number : 12 of 16
FAX: 886-3-327-0855 Issue Date : Dec. 13, 2022

## 3.2.4 Test Setup

#### For radiated test above 1GHz



Report No.: FR1N0508-02A

: 02

## 3.2.5 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B and C.

## 3.2.6 Duty Cycle

Please refer to Appendix D.

#### 3.2.7 Test Result of Radiated Spurious Emission

Please refer to Appendix B and C.

TEL: 886-3-327-0868 Page Number : 13 of 16
FAX: 886-3-327-0855 Issue Date : Dec. 13, 2022

# 3.3 Antenna Requirements

## 3.3.1 Standard Applicable

The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the rule.

Report No.: FR1N0508-02A

## 3.3.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

TEL: 886-3-327-0868 Page Number : 14 of 16
FAX: 886-3-327-0855 Issue Date : Dec. 13, 2022

# 4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz~40GHz	Feb. 21, 2022	Nov. 03, 2022~ Nov. 10, 2022	Feb. 20, 2023	Radiation (03CH13-HY)
Hygrometer	TECPEL	DTM-303B	TP140325	N/A	Aug. 15, 2022	Nov. 03, 2022~ Nov. 10, 2022	Aug. 14, 2023	Radiation (03CH13-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-1241	1GHz~18GHz	Jul. 25, 2022	Nov. 03, 2022~ Nov. 10, 2022	Jul. 24, 2023	Radiation (03CH13-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1590074	1GHz~18GHz	May. 17 2022	Nov. 03, 2022~ Nov. 10, 2022	May 16, 2023	Radiation (03CH13-HY)
Preamplifier	Keysight	83017A	MY53270147	1GHz~26.5GHz	Oct. 25, 2022	Nov. 03, 2022~ Nov. 10, 2022	Oct. 24, 2023	Radiation (03CH13-HY)
Spectrum Analyzer	Keysight	N9010A	MY55370526	10Hz~44GHz	Mar. 18, 2022	Nov. 03, 2022~ Nov. 10, 2022	Mar. 17, 2023	Radiation (03CH13-HY)
Filter	Wainwright	WLK4-1000-15 30-8000-40SS	SN12	1.53GHz Low Pass Filter	Sep. 13, 2022	Nov. 03, 2022~ Nov. 10, 2022	Sep. 12, 2023	Radiation (03CH13-HY)
Filter	Wainwright	WHKX12-2700 -3000-18000-6 0SS	SN2	3GHz High Pass Filter	Jul. 11, 2022	Nov. 03, 2022~ Nov. 10, 2022	Jul. 10, 2023	Radiation (03CH13-HY)
Filter	Wainwright	WHKX8-5872. 5-6750-18000- 40ST	SN5	6.75GHz High Pass Filter	Mar. 10, 2022	Nov. 03, 2022~ Nov. 10, 2022	Mar. 09, 2023	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126E	0030/126E	30MHz~18GHz	Feb. 09, 2022	Nov. 03, 2022~ Nov. 10, 2022	Feb. 08, 2023	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	804793/4	30MHz~18GHz	Feb. 09, 2022	Nov. 03, 2022~ Nov. 10, 2022	Feb. 08, 2023	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24961/4	30MHz~18GHz	Feb. 09, 2022	Nov. 03, 2022~ Nov. 10, 2022	Feb. 08, 2023	Radiation (03CH13-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Nov. 03, 2022~ Nov. 10, 2022	N/A	Radiation (03CH13-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Nov. 03, 2022~ Nov. 10, 2022	N/A	Radiation (03CH13-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Nov. 03, 2022~ Nov. 10, 2022	N/A	Radiation (03CH13-HY)
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 16, 2021	Oct. 27. 2022	Nov. 15, 2022	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	15I00041SNO 10 (NO:248)	10MHz~6GHz	Dec. 29, 2021	Oct. 27. 2022	Dec. 28, 2022	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101905	10Hz - 40GHz(amp)	Aug. 03, 2022	Oct. 27. 2022	Aug. 02, 2023	Conducted (TH05-HY)

Report No.: FR1N0508-02A

TEL: 886-3-327-0868 Page Number : 15 of 16
FAX: 886-3-327-0855 Issue Date : Dec. 13, 2022

# 5 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 6000 MHz)

Measuring Uncertainty for a Level of Confidence	4.40 dB
of 95% (U = 2Uc(y))	4.40 dB

Report No.: FR1N0508-02A

TEL: 886-3-327-0868 Page Number : 16 of 16
FAX: 886-3-327-0855 Issue Date : Dec. 13, 2022

Report Number : FR1N0508-02A

# Appendix A. Test Result of Conducted Test Items

Test Engineer:	Willy Chang	Temperature:	21~25	°C
Test Date:	2022/10/27	Relative Humidity:	51~54	%

Report Number : FR1N0508-02A

# TEST RESULTS DATA Average Output Power

2.4GHz Band Single Antenna																
Mod.	Data Rate	N⊤x	CH.	Freq. (MHz)	Average Conducted Power (dBm)		Po Lir	Conducted Power DG Limit (dBi) (dBm)		EII Por (dE		EIRP Power Limit (dBm)		Pass /Fail		
					Ant1	Ant2	SUM	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2	
HT40	MCS0	1	9	2452	14.20	-	-	30.00	-	2.50	-	16.70	ı	36.00	i	Pass

Note: Measured power (dBm) has offset with cable loss.

# Appendix B. Radiated Spurious Emission

Test Engineer :	Jacky Hong, Rain Lee and Mancy Chou	Temperature :	20~26°C
rest Engineer .		Relative Humidity :	40~65%

Report No.: FR1N0508-02A

#### 2.4GHz 2400~2483.5MHz

## WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	( dBµV/m )	(dB)	( dBµV/m )	(dBµV)	( dB/m )	( dB )	( dB )	( cm )	(deg)	(P/A)	(H/V)
		2349.48	55.05	-18.95	74	40.82	28	14.02	27.79	100	89	Р	Н
		2370.2	44.03	-9.97	54	29.85	27.92	14.04	27.78	100	89	Α	Н
	*	2452	101.81	-	-	87.65	27.8	14.12	27.76	100	89	Р	Н
	*	2452	94.31	-	-	80.15	27.8	14.12	27.76	100	89	Α	Н
802.11n		2483.9	70.57	-3.43	74	56.44	27.73	14.15	27.75	100	89	Р	Н
HT40		2484.32	51.63	-2.37	54	37.5	27.73	14.15	27.75	100	89	Α	Н
CH 09		2362.22	54.46	-19.54	74	40.26	27.95	14.04	27.79	391	46	Р	٧
2452MHz		2324.98	44.13	-9.87	54	29.88	28.05	14.15	27.8	391	46	Α	٧
	*	2452	100.29	-	-	86.13	27.8	14.12	27.76	391	46	Р	٧
	*	2452	92.63	-	-	78.47	27.8	14.12	27.76	391	46	Α	٧
		2483.55	69.23	-4.77	74	55.1	27.73	14.15	27.75	391	46	Р	٧
		2483.62	51.63	-2.37	54	37.5	27.73	14.15	27.75	391	46	Α	V

Remark

TEL: 886-3-327-0868 Page Number : B1 of B3

<sup>1.</sup> No other spurious found.

<sup>2.</sup> All results are PASS against Peak and Average limit line.

*	Fundamental Frequency which can be ignored. However, the level of any
	unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is <b>over limit</b> line.
P/A	Peak or Average
H/V	Horizontal or Vertical

Report No.: FR1N0508-02A

TEL: 886-3-327-0868 Page Number : B2 of B3

#### A calculation example for radiated spurious emission is shown as below:

Report No.: FR1N0508-02A

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	( dBµV/m )	( dB )	( dBµV/m )	(dBµV)	( dB/m )	( dB )	( dB )	( cm )	(deg)	(P/A)	(H/V)
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	Р	Н
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	Α	Н

- 1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
- 2. Level( $dB\mu V/m$ ) =

Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dB $\mu$ V) - Preamp Factor(dB)

3. Margin(dB) = Level(dB $\mu$ V/m) – Limit Line(dB $\mu$ V/m)

#### For Peak Limit @ 2390MHz:

- 1. Level(dBµV/m)
- = Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBµV) Preamp Factor(dB)
- $= 32.22(dB/m) + 4.58(dB) + 54.51(dB\mu V) 35.86 (dB)$
- $= 55.45 (dB\mu V/m)$
- 2. Margin (dB)
- = Level( $dB\mu V/m$ ) Limit Line( $dB\mu V/m$ )
- $= 55.45(dB\mu V/m) 74(dB\mu V/m)$
- = -18.55(dB)

#### For Average Limit @ 2390MHz:

- 1. Level(dBµV/m)
- = Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBµV) Preamp Factor(dB)
- $= 32.22(dB/m) + 4.58(dB) + 42.6(dB\mu V) 35.86 (dB)$
- $= 43.54 (dB\mu V/m)$
- 2. Margin(dB)
- = Level(dBµV/m) Limit Line(dBµV/m)
- $= 43.54(dB\mu V/m) 54(dB\mu V/m)$
- = -10.46(dB)

Both peak and average measured complies with the limit line, so test result is "PASS".

TEL: 886-3-327-0868 Page Number: B3 of B3

# Appendix C. Radiated Spurious Emission Plots

# Note symbol

Report No.: FR1N0508-02A

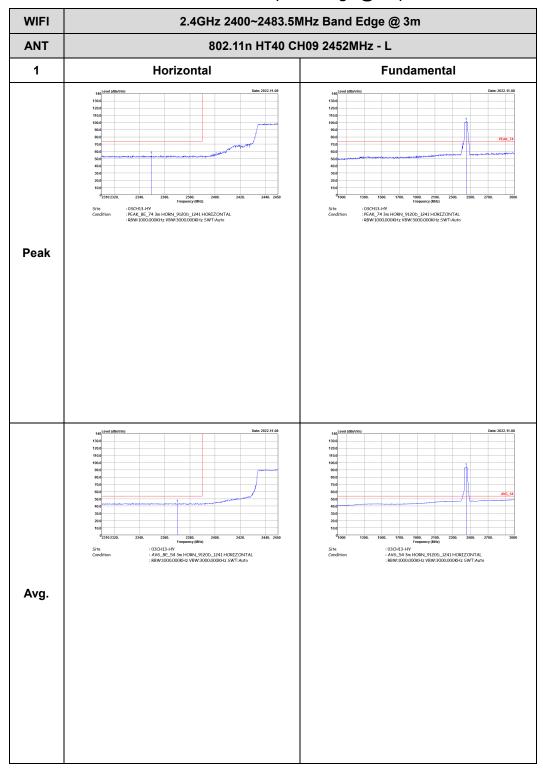
-L	Low channel location
-R	High channel location

TEL: 886-3-327-0868 Page Number : C1 of C5

#### 2.4GHz 2400~2483.5MHz

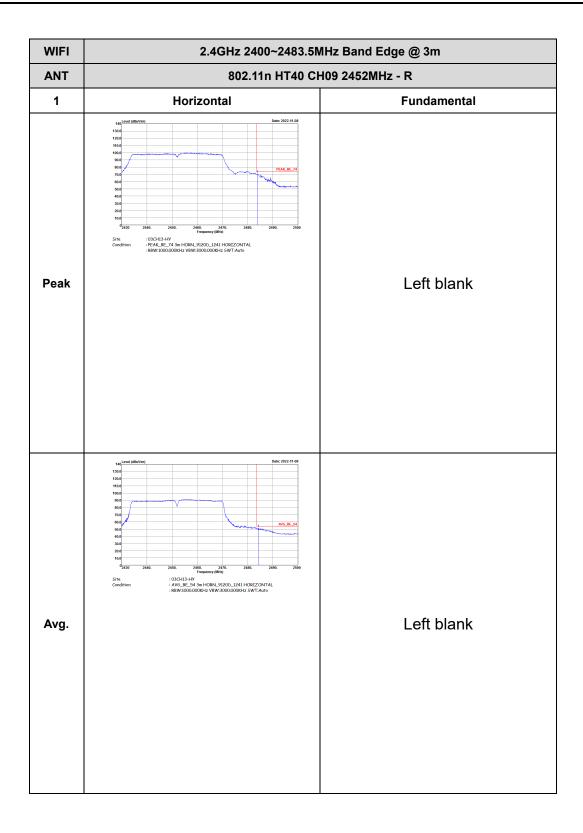
#### WIFI 802.11n HT40 (Band Edge @ 3m)

Report No.: FR1N0508-02A



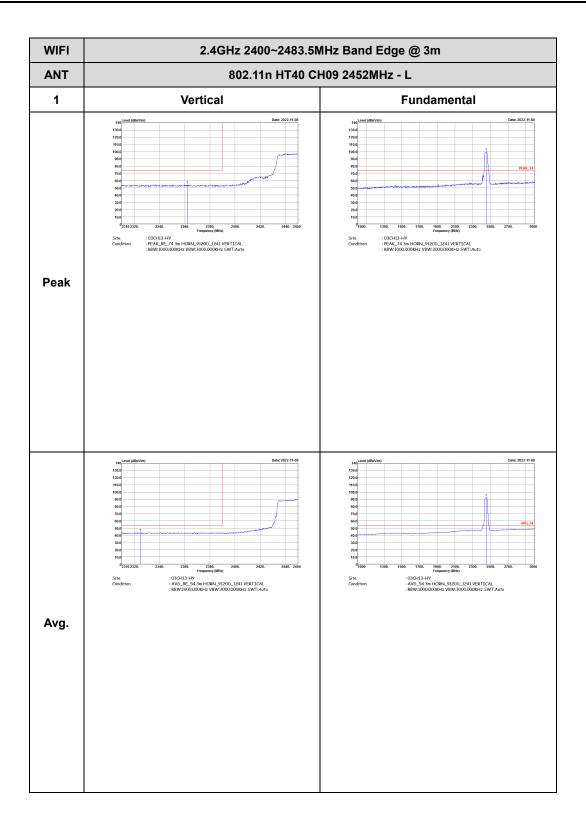
TEL: 886-3-327-0868 Page Number : C2 of C5

Report No.: FR1N0508-02A



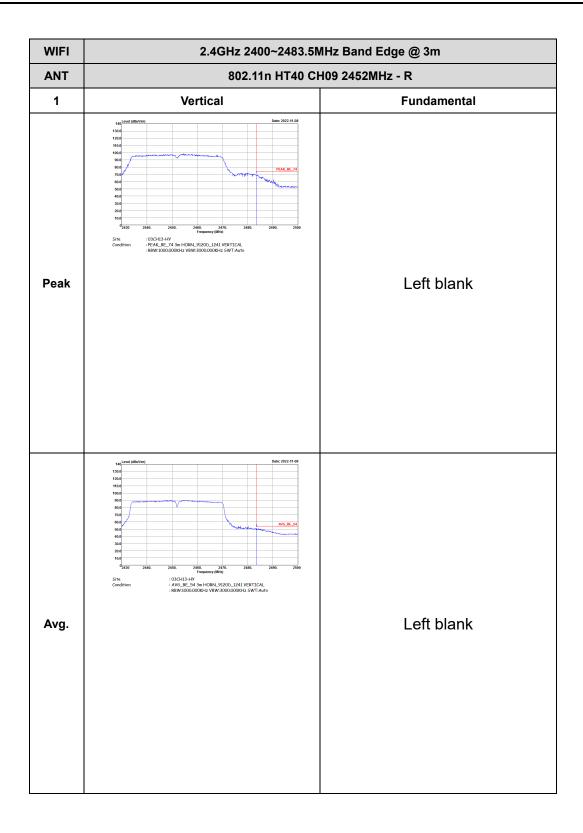
TEL: 886-3-327-0868 Page Number : C3 of C5





TEL: 886-3-327-0868 Page Number : C4 of C5

Report No.: FR1N0508-02A

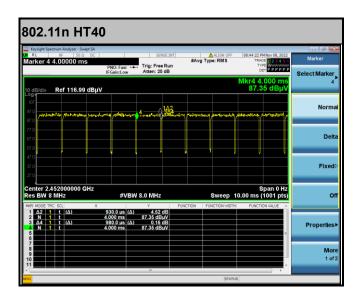


TEL: 886-3-327-0868 Page Number : C5 of C5

# Appendix D. Duty Cycle Plots

Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting	
2.4GHz 802.11n HT40	94.90	930	1.08	3kHz	

Report No.: FR1N0508-02A



TEL: 886-3-327-0868 Page Number : D1 of D1