



VARIANT FCC TEST REPORT

(Part 15, Subpart C)

Applicant:	Honeywell International Inc Honeywell Safety and Productivity Solutions	
Address:	9680 Old Bailes Road, Fort Mill, SC 29707 United States	

Manufacturer or	Honeywell International Inc			
Supplier:	Honeywell Safety and Productivity	Honeywell Safety and Productivity Solutions		
Address:	9680 Old Bailes Road, Fort Mill, S	C 29707 United States		
Product:	Mobile Computer			
Brand Name:	Honeywell			
Model Name:	CT45P-L1N-E	CT45P-L1N-E		
FCC ID:	HD5-CT45PL1NE	HD5-CT45PL1NE		
Date of tests:	Oct. 14, 2021 ~ Nov. 04, 2021			
The tests have been carried out according to the requirements of the following standard:				
FCC Part 15,	Subpart C, Section 15.247			
🖂 ANSI C63.10-	2013			
CONCLUSION: The submitted sample was found to <u>COMPLY</u> with the test requirement				
Prepared by Simon Wang Approved by Luke Lu				
Engineer / Mobile Department Manager / Mobile Department				
Simon luke lu				
Date: Dec. 15, 2021 Date: Dec. 155, 2021				
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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-P21080006RF13	Original release	Sep. 01, 2021
W7L-P21080009RF13	Based on the original report W7L-P21080006RF13 Changing the SIM to 1 Nano SIM and 1 E-SIM	Sep. 09, 2021
W7L-P21110007RF13	Based on the original report W7L-P21080009RF17 Changing components, added band CA_41C by Software.	Nov. 05, 2021
W7L-211129W001RF1 3	Based on the original report W7L-P21110007RF13 changing components.	Dec. 15, 2021



1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	
15.207	AC Power Conducted Emission	(See Note 2)	
15.205 15.209	Radiated Emissions	(See Note 2)	
15.247(d)	Out of band Emission Measurement	(See Note 2)	
15.247(a)(2)	6dB bandwidth	(See Note 2)	
15.247(b)	Conducted Output power	Compliance (See Note 1)	
15.247(e)	Power Spectral Density	(See Note 2)	
15.203	Antenna Requirement	(See Note 2)	

NOTE:

1. Per the change notice provide by manufactory, the difference is changing components, it takes no effect to the radio module . The power of worst case band has been retested, it's lower than the original report data, and this time only show the max power between the two report.

2. Please refer to original report W7L-P21110007RF13



1.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	UNCERTAINTY	
AC Power Conducted emissions	±2.70dB	
Radiated emissions (30MHz~1GMHz)	±4.98dB	
Radiated emissions (1GMHz ~6GMHz)	±4.70dB	
Radiated emissions (6GMHz ~18GMHz)	±4.60dB	
Radiated emissions (18GMHz ~40GMHz)	±4.12dB	
Conducted emissions	±4.01dB	
Occupied Channel Bandwidth	±43.58KHz	
Conducted Output power	±2.06dB	
Power Spectral Density	±0.85 dB	

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k = 2.



2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

I GENERAL DESCRIPTION OF EUT			
PRODUCT	Mobile Computer		
BRAND NAME	Honeywell		
MODEL NAME	CT45P-L1N-E		
NOMINAL VOLTAGE	3.85Vdc (Lithium-ion cell, battery)		
MODULATION	DSSS, OFDM, GFSK		
	802.11b: 11/ 5.5/ 2.0 / 1.0 Mbps		
	802.11g: 54/ 48/ 36 / 24 / 18 / 9/ 6 Mbps		
	802.11n20: up to 65 Mbps		
TRANSMISSION RATE	802.11n40: up to 135 Mbps		
	BT_LE: 0.125 Mbps /0.5 Mbps /1 Mbps/2 Mbps		
	2SECEND-BT_LE: 0.125 Mbps /0.5 Mbps /1 Mbps/2		
	Mbps		
	2412-2462MHz for 11b/g/n(HT20)		
OPERATING FREQUENCY	2422-2452MHz for 11n(HT40)		
	2402-2480MHz for BT-LE(GFSK)		
	WLAN: 171.79mW (Maximum)		
MAX. OUTPUT POWER	BT-LE: 3.87mW (Maximum) 2SECEND-BT-LE: 3.24mW (Maximum)		
ANTENNA TYPE	PIFA Antenna with 0.51dBi gain		
	J. J		
HW VERSION	V1.0		
SW VERSION	OS.11.002-HON.11.002		
I/O PORTS Refer to user's manual			
CABLE SUPPLIEDUSB cable: unshielded without ferrite, 1.25 meter Earphone cable: unshielded without ferrite, 1.27 m			

NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.



2. This product includes the following four SKU which hardware is exactly same, the difference is described as following, Sample 1 was full test, sample 2 verify the worst case,check worst case Radiated emission:

SAMPLE	EUT CONFIGURATION INFORMATION
1	SKU ID:CT45-L1N-37D1E0G ,Assembled Scanner Imager: 7-S0703
2	SKU ID:CT45-L1N-38D1E0G ,Assembled Scanner Imager: 8 – N6803/S0803
3	SKU ID: CT45-L1N-38D1E0T , Assembled Scanner Imager: 8 – N6803/S0803 for Turkey Only
4	SKU ID: CT45-L1N-37D1E0T, Assembled with Scanner: 7-S0703 for Turkey Only

3. The EUT incorporates a SISO function. Physically, the EUT provides one transmitter and one receiver.

MODULATION MODE	TX/RX FUNCTION
802.11b	1TX /1RX
802.11g	1TX /1RX
802.11n (20MHz)	1TX /1RX
802.11n (40MHz)	1TX /1RX
BT_LE(1MHz)	1TX /1RX
BT_LE(2MHz)	1TX /1RX
BT_LE(S2)	1TX /1RX
BT_LE(S8)	1TX /1RX
2second BT_LE(S8)	1TX /1RX
2second BT_LE(S2)	1TX /1RX
2second BT_LE(1MHz)	1TX /1RX
2second BT_LE(2MHz)	1TX /1RX

4. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

List of Accessory:

ACCESSORIES	BRAND	MODEL	SPECIFICATION	
Battery	Honeywell	CT50-BTSC	Capacity : 3.85vdc 4020mAh	
AC Adapter	HONOR	ADS-12B-06 05010E	I/P:100-240Vac, 0.3A O/P: 5Vdc, 2A	
USB Cable	Honeywell	CT40-SN	Shielded, 1.25meter	
Earphone	VIVO	N/A	Shielded, 1.27meter	
LCD Panel	CASIL	CTM10801920T01	5.0" FHD(1928*1080)	

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2.2 DESCRIPTION OF TEST MODES

11 channels are provided for 802.11b, 802.11g and 802.11n (HT20):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412 MHz	7	2442 MHz
2	2417 MHz	8	2447 MHz
3	2422 MHz	9	2452 MHz
4	2427 MHz	10	2457 MHz
5	2432 MHz	11	2462 MHz
6	2437 MHz		

7 channels are provided for 802.11n (HT40):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
3	2422MHz	7	2442MHz
4	2427MHz	8	2447MHz
5	2432MHz	9	2452MHz
6	2437MHz		

40 channels are provided for BT-LE (GFSK)& 2SECEND-BT-LE(GFSK):

CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480



2.2.1 CONFIGURATION OF SYSTEM UNDER TEST

Please see section 5 photographs of the test configuration for reference.

2.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports. The worst case was found when positioned on Y axis for radiated emission. Following test modes were

selected for the final test, and the final worst case is marked in boldface and recorded in the report:

EUT CONFIGURE		APPLIC	ABLE TO		MODE	
MODE	RE<1G	RE≥1G	PLC	APCM		
-	\checkmark	\checkmark	\checkmark	\checkmark		
Where	RE<1G: Ra	diated Emis	sion below ²	1GHz	RE≥1G: Radiated Emission above 1GHz	

Where

PLC: Power Line Conducted Emission

RE≥1G: Radiated Emission above 1GHz APCM: Antenna Port Conducted Measurement

NOTE: No need to concern of Conducted Emission due to the EUT is powered by battery.

RADIATED EMISSION TEST (BELOW 1GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11n HT20	1 to 11	11	OFDM	MCS0
BT-LE	0 to 39	39	GFSK	2.0
2SECEND-BT-LE	0 to 39	39	GFSK	2.0



RADIATED EMISSION TEST (ABOVE 1GHz):

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1.0
802.11g	1 to 11	1, 6, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	MCS0
802.11n HT40	3 to 9	3, 6, 9	OFDM	MCS0
BT-LE	0 to 39	0,19, 39	GFSK	0.125&0.5&1&2
2SECEND-BT-LE	0 to 39	0,19, 39	GFSK	0.125&0.5&1&2

 \boxtimes Following channel(s) was (were) selected for the final test as listed below.

POWER LINE CONDUCTED EMISSION TEST

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11n HT20	1 to 11	11	OFDM	MCS0

BANDEDGE MEASUREMENT:

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- \boxtimes Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11b	1 to 11	1, 11	DSSS	1.0
802.11g	1 to 11	1, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 11	OFDM	MCS0
802.11n HT40	3 to 9	3, 9	OFDM	MCS0
BT-LE	0 to 39	0, 39	GFSK	0.125&0.5&1&2
2SECEND-BT-LE	0 to 39	0, 39	GFSK	0.125&0.5&1&2



ANTENNA PORT CONDUCTED MEASUREMENT:

- This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	ССК	1.0
802.11g	1 to 11	1, 6, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	MCS0
802.11n HT40	3 to 9	3, 6, 9	OFDM	MCS0
BT-LE	0 to 39	0,19, 39	GFSK	0.125&0.5&1&2
2SECEND-BT-LE	0 to 39	0,19, 39	GFSK	0.125&0.5&1&2

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE	TESTED BY
RE<1G	23deg. C, 70%RH	DC 3.85V By Battery	Carl Xie
RE≥1G	23deg. C, 70%RH	DC 3.85V By Battery	Carl Xie
PLC	25deg. C, 52%RH	DC 3.85V By Battery	Lily Zhao
APCM	25deg. C, 60%RH	DC 3.85V By Battery	Lily Zhao



2.3 Duty Cycle of Test Signal

WIFI 2.4GHz

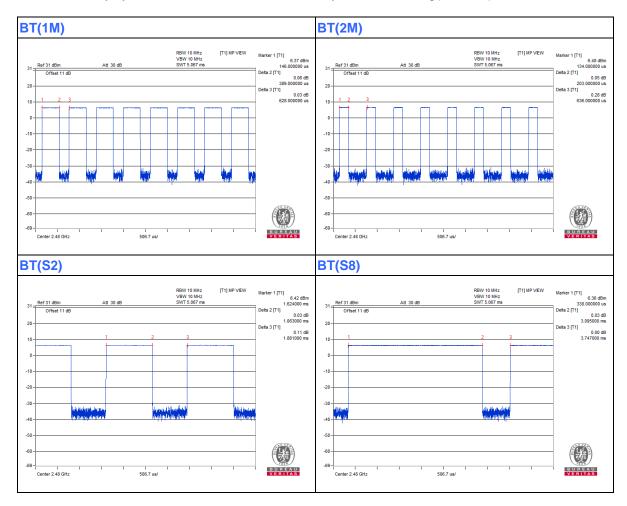
802.11b: Duty cycle = 100%, Duty factor shall not be considered **802.11g:** Duty cycle =2.058/2.102=0.979< 98%, Duty factor = 10 * log(1/0.979) =0.092 **802.11n (HT20):** Duty cycle = 1.92/1.96=0.98=98%, Duty factor shall not be considered **802.11n (HT40):** Duty cycle = 0.943/1.005=0.938< 98%, Duty factor = 10 * log(1/0.938) =0.278

802.11b		802.11g
Ref 31 dBm All 30 dB SWT 5.087 ms 31 Ref 31 dBm All 30 dB SWT 5.087 ms 20	MP VEW Marker 1 [] 0.00 dBm 0.000000 ns 0.00000 ns 0.00000 ns 0.00000 ns 0.00000 ns	REV 10 MHz VEW 10 MHz VEW 10 MHz VEW 10 MHz ([1] JM P VEW VEW 10 MHz 10 MHz Marter 1 [1] 10 Deta 2 [1] T7.8 dBm 20 Deta 2 [1] 17.8 dBm 20 Deta 2 [1] Deta 3 [1] 0 18 dB 2.102000 ms 10
-40 -50 -69 Center 2.462 GHz 500.7 us/ 802.11n (HT20)		-40 -50 -60 -60 -60 -60 -60 -60 -60 -60 -60 -6
	MP VEW Marker 1 [7] 17.77 dBm 17.77 dBm 17.70 dB 1.72000 ms 1.92000 ms 1.92000 ms 1.92000 ms 1.920000 ms 1.950000 ms	RBW 10 MHz [[1] JIP VEW Marter 1 [[1] 10.22.dBm 31= Ref 31 dBm Att 30 dB SWT 5.067 ms Deta 2 [11] 0.82.dBm 20 Offset 11 dB 3.46 dB SWT 5.067 ms Deta 2 [11] 0.843 dB 20 Intro 11 refs 11 a BL Att 30 dB SWT 5.067 ms Deta 2 [11] 0.02 dB 20 Intro 11 refs 11 a BL Att 30 dB SWT 5.067 ms Deta 2 [11] 0.02 dB 20 Intro 11 refs 11 a BL Att 30 dB SWT 5.067 ms Deta 2 [11] 0.02 dB 20 Intro 11 refs 11 a BL Att 30 dB SWT 5.067 ms Deta 2 [11] 0.02 dB 20 Intro 11 refs 11 a BL Att 30 dB Intro 11 refs 11 a BL Deta 2 [11] 0.02 dB 10 Att 30 dB Intro 11 refs 11 a BL 0.00 dB 1.005000 ms 1 Intro 11 refs 11 a BL Intro 11 refs 11 a BL
-50 -60 -69 Center 2.462 GHz 506.7 us/		-500 -800 -890 - 699 - Center 2 452 GHz 506.7 us/



BT LE

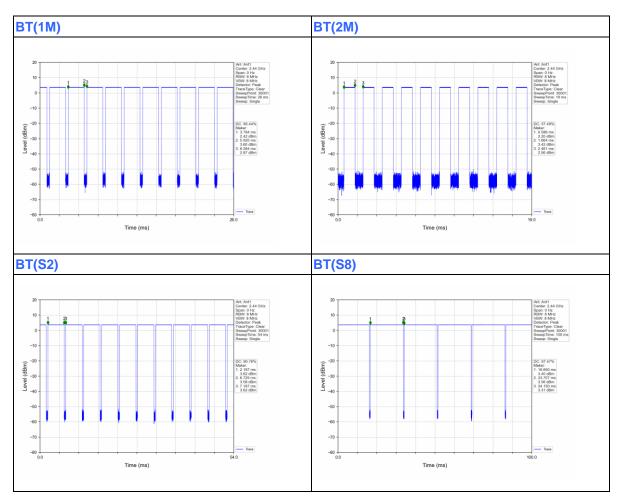
1BLE -1M: Duty cycle = 0.389/0.628=0.619 < 98%, Duty factor = 10 * log(1/0.619) =2.083 **1BLE -2M:** Duty cycle =0.203/0.636=0.319< 98%, Duty factor = 10 * log(1/0.319) = 4.962 **1BLE -S2:** Duty cycle = 1.063/1.881=0.565< 98%, Duty factor = 10 * log(1/0.565) =2.480 **1BLE -S8:** Duty cycle =3.095/3.747=0.826<98%, Duty factor = 10 * log(1/0.826) =0.830





2SECEND-BT LE

2BLE -1M: Duty cycle = 2.136/2.500=0.854 < 98%, Duty factor = 10 * log(1/0.854) =0.685 **2BLE -2M:** Duty cycle =1.078/1.875=0.575< 98%, Duty factor = 10 * log(1/0.575) = 2.403 **2BLE -S2:** Duty cycle = 4.538/5.000=0.908< 98%, Duty factor = 10 * log(1/0.908) =0.419 **2BLE -S8:** Duty cycle =17.057/17.500=0.975<98%, Duty factor = 10 * log(1/0.975) =0.110





2.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C, Section 15.247

KDB 558074 D01 DTS Meas Guidance v05r02

ANSI C63.10-2013

Note :

- 1. All test items have been performed and recorded as per the above standards.
- 2. The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (Certification). The test report has been issued separately.

2.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Desktop	Lenovo	M73 SFF	PC04GRQV	N/A
2	Desktop	Lenovo	M73 SFF	PC06CS27	N/A
3	Laptop	Lenovo	Thnikpad T450	PC-049PT1	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	AC Line: Unshielded, Detachable 1.5m
2	AC Line: Unshielded, Detachable 1.5m
3	AC Line: Unshielded, Detachable 1.5m



3 PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).



4 APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

----END----