

ELECTROMAGNETIC EMISSIONS **COMPLIANCE REPORT**



Applicant:	ASUSTeK COMPUTER INC.
Manufacturer:	1F., No. 15, Lide Rd., Beitou Dist., Taipei City 112, TaiwanASUSTeK COMPUTER INC.1F., No. 15, Lide Rd., Beitou Dist., Taipei City 112, Taiwan
Product Name:	Qualcomm WiFi 7/BT Combo module
Brand Name:	Qualcomm
Model No.:	QCNCM825
Model Difference:	N/A
Report Number:	TERF2403000773E2
FCC ID	MSQ-QCNCM825
Date of EUT Received:	March 26, 2024
Date of Test:	March 27,2024~April 09,2024
Issue Date:	April 24, 2024
	ALNO HSieh

Approved By

Arno Hsieh

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We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Central RF Lab The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10:2013 and the energy emitted by the sample EUT comply with FCC rule part §15.247.

The results of this report relate only to the sample identified in this report.

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Revision History						
Report Number Revision Description Issue Date Revised By R						
TERF2403000773E2	00	Original.	April 24, 2024	Karen Huang		

Note:

1 · Variant information of model numbers is provided by the applicant, test results of this report are applicable to the sample EUT(s) received. And are assessed as electrically identical in RF characteristics, therefore, no further assessment required for the variant(s).

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GENERAL INFORMATION 1

1.1 **Product Description**

Product Name:	Qualcomm WiFi 7/BT Combo module
Brand Name:	Qualcomm
Model No.:	QCNCM825
Model Difference:	N/A
Power Supply of Host:	11.67Vdc for Rechargeable Li-Polymer Battery Pack or 5 / 9 / 15 / 20V from AC/DC Adapter
Host Information:	Product Type: Notebook PC Brand Name: ASUS Model Name: S5507Q, S5507QA, S5507QAD, K5507Q, V5507Q, P5507CQ All models are electrically identical, different model names are for marketing purpose.

1.2 **RF** Specification

Modulation type	4096QAM, 1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK, DBPSK, DQPSK, CCK
Transition Rate	802.11 b: up to 11 Mbps 802.11 g: up to 54 Mbps VHT: up to 500 Mbps 802.11 n: up to MCS7 802.11 ax: up to MCS11 802.11 be: up to MCS13
Operating Frequency	2412 ~ 2472 MHz
Number of Channel	802.11b, 802.11g, 802.11n (HT20), VHT20, 802.11ax (HE20), 802.11be (EHT20): 13 802.11n (HT40), VHT40, 802.11ax (HE40), 802.11be (EHT40): 9

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1.3 **Antenna Designation**

Antenna Type	Freq.	Main / Aux	Peak Antenna Gain (dBi)
PIFA	2.4GHz	Main	-0.76
		Aux	-1.49

Note:

- 1. Pre-scanned was done on the above antennas, measurements were demonstrated by using the antenna with the highest gain as the worst case scenarios.
- Antenna information is provided by the applicant. 2.

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1.4 **Test Methodology of Applied Standards**

FCC Part 15, Subpart C §15.247 FCC KDB 558074 D01 15.247 Meas Guidance v05r02 FCC KDB 662911 D01 Multiple Transmitter Output v02r01 ANSI C63.10:2013

1.5 **Test Facility**

Laboratory	Test Site Address	Test Site Name	FCC Designa- tion number	IC CAB identifie
		SAC 1		
		SAC 2		
		SAC 3		
	No.134, Wu Kung Road, New Taipei	Conduction 1		
		Conducted 1		
	Industrial Park, Wuku District, New	Conducted 2	TW0027	
	Taipei City, Taiwan.	Conducted 3		
	······································	Conducted 4	-	
		Conducted 5		
SGS Taiwan Ltd.		Conducted 6		
Central RF Lab.		Conduction C		TW3702
		SAC C]	
(TAF code 3702)		SAC D		
		SAC G		
	No 2 Kaji 1at Rd. Qujahan District	Conducted A		
	No.2, Keji 1st Rd., Guishan District,	Conducted B	TW0028	
	Taoyuan City, Taiwan 333	Conducted C		
		Conducted D		
		Conducted E		
		Conducted F		
		Conducted G		

tion where measurements occurred in specific test site and address.

1.6 **Special Accessories**

There are no special accessories used while test was conducted.

1.7 Equipment Modifications

There was no modification incorporated into the EUT.

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SYSTEM TEST CONFIGURATION 2

2.1 **EUT Configuration**

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 **EUT Exercise**

An engineering test mode (software/firmware) that applicant provided was utilized to manipulate the EUT into transmit, selection of the test channel, and modulation scheme.

2.3 **Test Procedure**

2.3.1 **Conducted Emissions**

The EUT is a placed on a table which is 0.8 m above ground plane. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz. The CISPR Quasi-Peak and Average detector mode is employed. The two LISNs provide 50uH/50 ohm of coupling impedance for the measuring instrument. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

2.3.2 **Conducted Test (RF)**

The active antenna port of the unlicensed wireless device is connected to the spectrum analyzer with attenuator to protect the instrumentation. If a second antenna port is available, it is tested at one operating frequency, with other port(s) appropriately terminated, to verify it has similar output characteristics as the fully tested port.

2.3.3 **Radiated Emissions**

The EUT is a placed on a turn table. For emissions testing at or below 1 GHz, the table height shall be 0.8 m above the reference ground plane. For emission measurements above 1 GHz, the table height shall be 1.5 m. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.

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2.4 Measurement Results Explanation Example

2.4.1 Radiated Emission Test Sites For Measurements From 9 kHz To 30 MHz

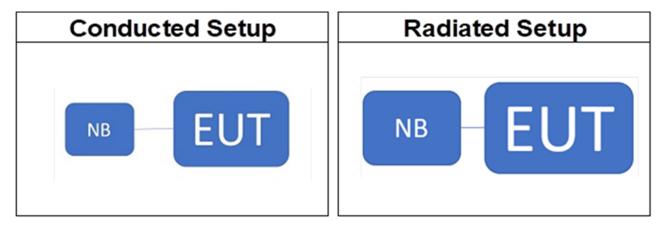
Radiated emission below 30MHz is measured in a 9m*6m*6m semi-anechoic chamber, the measurements correspond to those obtained at an open-field test site.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

2.4.2 For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuation factor between EUT conducted port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly EUT RF output level.

2.5 Test Configuration



2.6 Control Unit(s)

Conducted Emission Test Site: Conducted C						
EQUIPMENT TYPE MFR MODEL NUMBER SERIAL NUMBER LAST CAL. CAL DUE.						
LAN Cable	AMP	AMP-6e	N/A	N/A	N/A	
	Radiated Emission Test Site: SAC C					
EQUIPMENT TYPE MFR MODEL NUMBER SERIAL NUMBER LAST CAL. CAL DUE.						
USB to RJ45	TP-Link	UE300	22085L3000699	N/A	N/A	

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3 SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§15.247(b) (3)	Peak Output Power	Compliant
§15.209 §15.247(d)	Radiated Band Edge	Compliant

Note

1. All of test items are based on client's request.

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DESCRIPTION OF TEST MODES 4

4.1 **Operating Frequencies**

2400~2483.5 MHz					
201	20MHz				
СН	Freq. (MHz)				
1	2412				
2	2417				
3	2422				
4	2427				
5	2432				
6	2437				
7	2442				
8	2447				
9	2452				
10	2457				
11	2462				
12	2467				
13	2472				

40N	/IHz
СН	Freq. (MHz)
3	2422
4	2427
5	2432
6	2437
7	2442
8	2447
9	2452
10	2457
11	2462

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4.2 The Worst Test Modes and Channel Details

- 1. The EUT has been tested under operating condition.
- 2. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.
- 3. Investigation has been done on all the possible configurations for searching the worst case.
- 4. Therefore, below summary is the modes of test configuration that yield the highest reading and generate the highest emission chosen to carry out the relevantly mandatory test items.

	CONDUCTED TEST						
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT		
802.11b	1 to 13	13	DSSS	1	1TX		
802.11g	1 to 13	12,13	OFDM	6	1TX		
802.11n_HT20	1 to 13	12,13	OFDM	MCS0	2TX		
802.11n_HT40	3 to 11	3,9,10,11	OFDM	MCS0	2TX		

TRANSMIT RADIATED EMISSION TEST (ABOVE 1 GHz)							
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT		
802.11b	1 to 13	13	DSSS	1	1Tx		
802.11g	1 to 13	12,13	OFDM	6	1Tx		
802.11n_HT20	1 to 13	12,13	OFDM	MCS0	2TX		
802.11n_HT40	3 to 11	3,9,10,11	OFDM	MCS0	2TX		

Note:

The field strength of radiated emission was measured as the EUT positioned in different orthogonal planes (NB/PAD) based on actual usage of the EUT to pre-scan the emissions for determining the worst case scenario.

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MEASUREMENT UNCERTAINTY 5

Test Items	Un	certain	ty
AC Power Line Conducted Emission	+/-	1.54	dB
Output Power measurement	+/-	0.97	dB
Emission Bandwidth	+/-	1.38	Hz
Conducted emission measurement	+/-	0.77	dB
Peak Power Density	+/-	0.61	dB
Temperature	+/-	0.6	°C
Humidity	+/-	3	%
DC / AC Power Source	+/-	1	%

Radiated Spurious Emission Measurement Uncertainty					
	+/-	1.89	dB	9kHz~30MHz	
Polarization: Vertical	+/-	4.15	dB	30MHz - 1000MHz	
	+/-	3.43	dB	1GHz - 18GHz	
	+/-	3.86	dB	18GHz - 40GHz	
	+/-	1.89	dB	9kHz~30MHz	
Polarization: Horizontal	+/-	4.02	dB	30MHz - 1000MHz	
Polarization. Horizontai	+/-	3.43	dB	1GHz - 18GHz	
	+/-	3.86	dB	18GHz - 40GHz	
	+/-	2	dB	33GHz-50GHz	
	+/-	1.59	dB	50GHz-60GHz	
Radiated Spurious Emission	+/-	1.7	dB	60GHz-90GHz	
	+/-	1.64	dB	90GHz-140GHz	
	+/-	3.83	dB	140GHz-220GHz	

Note:

- 1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
- 2. The conformity assessment statement in this report is based solely on the test results, measurement uncertainty is excluded.

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MEASUREMENT EQUIPMENT USED 6

6.1 **Conducted Measurement**

Conducted Emission Test Site: Conducted C							
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.		
Spectrum Analyzer	KEYSIGHT	N9010B	MY59071573	05/23/2023	05/22/2024		
Power Meter	Anritsu	ML2496A	2138002	08/31/2023	08/30/2024		
Power Sensor	Anritsu	MA2411B	1911390	08/31/2023	08/30/2024		
Power Sensor	Anritsu	MA2411B	1911398	08/31/2023	08/30/2024		
Test Software	SGS Taiwan	Radio Test Software	Ver.21	N.C.R	N.C.R		
Attenuator	Woken	WATT-218FS-10	RF18	11/15/2023	11/14/2024		
Attenuator	Woken	WATT-218FS-10	RF19	11/15/2023	11/14/2024		
DC Block	PASTERNACK	PE8210	RF155	11/15/2023	11/14/2024		

6.2 **Radiated Measurement**

Radiated Emission Test Site: SAC C							
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.		
Horn Antenna	Schwarzbeck	BBHA9120D	1187	01/24/2024	01/23/2025		
3m Site NSA	SGS	966 chamber C	N/A	03/02/2024	03/01/2025		
Spectrum Analyzer	KEYSIGHT	N9010B	MY59071574	06/29/2023	06/28/2024		
Test Software	audix	e3	E3 20923 SGS Ver.9 (C)	N.C.R	N.C.R		
Pre-Amplifier	EMC Instruments	EMC118A45SE	980789	11/15/2023	11/14/2024		
Attenuator	Woken	WATT-218FS-10	RF03	11/15/2023	11/14/2024		
Coaxial Cables	Woken	00100A1F2A196C	RF95	11/15/2023	11/14/2024		

NOTE: N.C.R refers to Not Calibrated Required.

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7 PEAK OUTPUT POWER MEASUREMENT

7.1 Standard Applicable

7.1.1 Duty Cycle

Pre-analysis Check: While conducting average power measurement, duty cycle of each mode shall be checked to ensure its duty cycle in order to compensate for the loss due to insufficient ratio of duty cycle.

All duty cycle is pre-scanned, and result as obtained below shows only the most representative ones where duty cycle is conducted as the given transmission with given virtual operation that expresses the percentage.

7.1.2 Output Power

For systems using digital modulation in the 2400-2483.5 MHz bands, the limit for peak output power is 1Watt.

If the transmitting antenna of directional gain greater than 6dBi are used the peak output power form the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the Antenna exceeds 6dBi.

In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of Antenna exceeds 6dBi.

Note:

As per section F. 2). e). (ii) of FCC KDB 662911 D01

If antenna gains are not equal and each transmit antenna is driven by only one spatial stream, directional gain may be calculated by either of the following formulas.

• DirectionalGain =
$$10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;

NSS = the number of independent spatial streams of data;

NANT = the total number of antennas

 $g_{j,k}$ = 10^{Gk/20} if the kth antenna is being fed by spatial stream j, or zero if it is not;

 G_k is the gain in dBi of the kth antenna.

The antenna gain is not greater than 6 dBi. Therefore, reduction of power is not required.

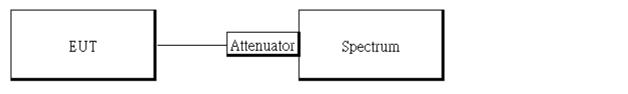
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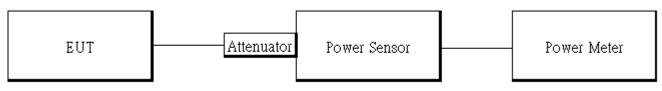


7.2 Test Setup

7.2.1 Duty Cycle



7.2.2 Output Power:



7.3 Measurement Procedure

7.3.1 Duty Cycle:

- 1. Set span = Zero
- 2. RBW = 8MHz
- 3. VBW = 8MHz,
- 4. Detector = Peak

7.3.2 Output Power

- 1. Place the EUT on the table and set it in transmitting mode.
- The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
- 3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter.

Power Meter:

It is used as the auxiliary test equipment to conduct the output power measurement.

- 4. Record the max. Reading as observed from Spectrum or Power Meter.
- 5. MIMO mode: offset is set with "measure and add 10 Log (N)" to measurement for MIMO mode. Offset = cable loss + 10 log (N), where N is number of transmitting antenna, cable loss is specified below.

* Note: The duty cycle factor and below is compensated to obtain the maximum value of measurement in average.

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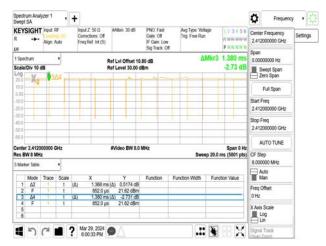
7.4 Measurement Result

7.4.1 **Duty Cycle:**

Mode	Duty Cycle (%) = Ton / (Ton+Toff)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
802.11b	99.13	0.04	0.73	0.01
802.11g	99.15	0.04	0.48	0.01
802.11n_20	98.96	0.05	0.56	0.01
802.11n_40	98.28	0.08	0.97	0.01

7.4.2 **Duty Cycle test plots**

802.11b 20MHz Chain0 2412MHz



802.11g_20MHz_Chain0_2412MHz



802.11n_20MHz_Chain0_2412MHz



802.11n_40MHz_Chain0_2422MHz



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7.4.3 **Output Power**

802.11	1b Ch0					
СН	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (dBm)	Limit (dBm)	RESULT
13	2472	1	15.25	18.64	30.00	PASS
802.11	1b Ch0					
СН	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (dBm)	Limit (dBm)	RESULT
13	2472	1	15.25	14.93	30.00	PASS

802.11	lg Ch0					
СН	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (dBm)	Limit (dBm)	RESULT
12	2467	6	15.25	19.95	30.00	PASS
13	2472	6	16.5	20.96	30.00	PASS
802.11	lg Ch0					•
СН	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (dBm)	Limit (dBm)	RESULT
12	2467	6	15.25	14.69	30.00	PASS
13	2472	6	16.5	13.61	30.00	PASS

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802.11n HT20M 2TX

002.1	11_111200	1_217										
СН	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (dBm)		Power		Power		Total Peak Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1	(ubiii)						
12	2467	MCS0	16	20.34	19.89	23.13	30.00	PASS				
13	2472	MCS0	17.5	18.96	17.89	21.47	30.00	PASS				
802.11	802.11n_HT20M_2TX											
СН	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (dBm)		Total Avg. Output Power (dBm)	Limit (dBm)	RESULT				
				Ch0	Ch1	(dDin)						
12	2467	MCS0	16	14.50	13.39	16.99	30.00	PASS				
13	2472	MCS0	17.5	10.52	10.35	13.44	30.00	PASS				

802.11	n_HT40N	1_2TX						
СН	Freq. (MHz)	Data Rate	Power Setting	•	wer 8m)	Total Peak Output Power (dBm)	Limit (dBm)	RESULT
	0.400		10.5	Ch0	Ch1	00.17		5400
3	2422	MCS0	13.5	20.82	20.07	23.47	30.00	PASS
9	2452	MCS0	13.5	20.98	20.16	23.60	30.00	PASS
10	2457	MCS0	15	19.12	18.66	21.91	30.00	PASS
11	2462	MCS0	20.25	15.89	15.22	18.58	30.00	PASS
802.11	n_HT40N	1_2TX						
СН	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (dBm)		Total Avg. Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1	(ubiii)		
3	2422	MCS0	13.5	14.89	14.50	17.71	30.00	PASS
9	2452	MCS0	13.5	14.99	14.66	17.83	30.00	PASS
10	2457	MCS0	15	13.24	12.74	16.00	30.00	PASS
11	2462	MCS0	20.25	7.79	7.66	10.73	30.00	PASS

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8 RADIATED BANDEDGE AND SPURIOUS EMISSION MEASUREMENT

8.1 Standard Applicable

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands must also comply with the §15.209 limit as below.

And according to §15.33(a) (1), for an intentional radiator operates below 10GHz, the frequency range of measurements: to the tenth harmonic of the highest fundamental frequency or to 40GHz, whichever is lower.

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

Note:

1. The lower limit shall apply at the transition frequencies.

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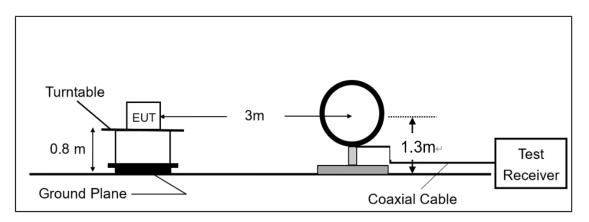
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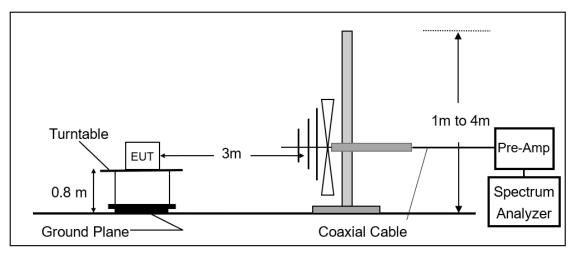


8.2 Test Setup

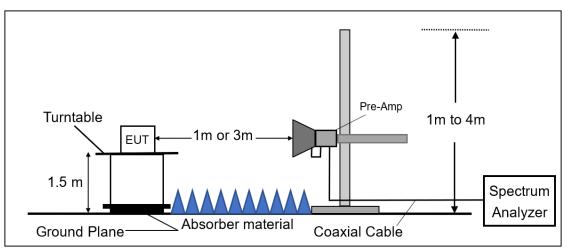
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz.



(B) Radiated Emission Test Set-Up, Frequency From 30MHz to 1000MHz.



(C) Radiated Emission Test Set-Up, Frequency Above 1GHz.



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8.3 Measurement Procedure

- 1. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance .
- The EUT was placed on a turn table with 0.8m for frequency< 1GHz and 1.5m for frequency> 1GHz above ground plane.
- 3. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
- 4. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
- 5. Set the spectrum analyzer as RBW=100 kHz and VBW=300 kHz for Peak Detector (PK) at frequency between 30MHz and 1 GHz.
- 6. Use receiver mode as RBW=120 kHz for Quasi-peak (QP) at frequency between 30MHz and 1 GHz.
- 7. Set the spectrum analyzer as RBW=1 MHz, VBW=3 MHz for Maximum Emission Measurements at frequency above 1 GHz.
- 8. Set the spectrum analyzer as RBW=1 MHz, VBW=10 Hz (Duty cycle > 98%) or VBW ≥ 1/T (Duty cycle < 98%) for Average Emission Measurements at frequency above 1 GHz.
- 9. When measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.
- 10. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 11. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 12. Repeat above procedures until all default test channel measured were complete.

8.4 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL – AG

Where FS = Field Strength

CL = Cable Attenuation Factor (Cable Loss) AG = Amplifier Gain

RA = Reading Amplitude

AF = Antenna Factor

The limit of the emission level is expressed in dBuV/m, which converts 20*log(uV/m)

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Actual FS($dB\mu V/m$) = SPA. Reading level($dB\mu V$) + Factor(dB) $Factor(dB) = Antenna Factor(dB\mu V/m) + Cable Loss(dB) - Pre_Amplifier Gain(dB)$

8.5 Test Results of Radiated Spurious Emissions from 9 kHz to 30 MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit per 15.31(o) was not reported.

8.6 **Measurement Result**

Note:

- 1. Refer to next page spectrum analyzer data chart and tabular data sheets.
- Measurements are completed at peak and average level, the mark of average is the 2. highest emission in restricted bands

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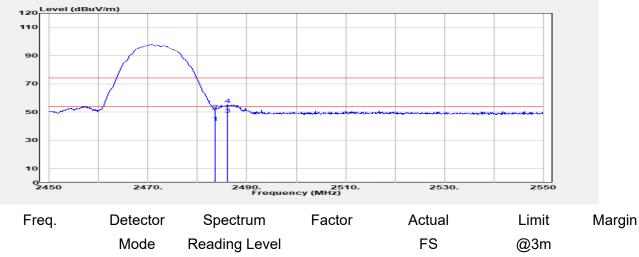
Report No.: TERF2403000773E2 Page: 23 of 40



Radiated Band Edge Measurement Result 8.6.1

Report Number	:TERF2403000773E2
Operation Mode	:802.11b
Test Frequency	:2472 MHz
Test Mode	:Bandedge
EUT Pol	:NB Plane

Test Site :SAC C Test Date :2024-04-01 Temp./Humi. :21.5℃/55% Antenna Pol. :Vertical Engineer :Howard Huang



		0			0		
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
2483.500	Average	46.49	-3.82	42.67	54.00	-11.33	
2483.500	Peak	54.91	-3.82	51.09	74.00	-22.91	
2486.000	Average	52.24	-3.79	48.44	54.00	-5.56	
2486.000	Peak	58.97	-3.79	55.18	74.00	-18.82	

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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Report Numbe Operation Mod Test Frequenc	le :802.11b y :2472 MHz	2		Test Date :20 Temp./Humi. :21		
Test Mode	:Bandedge	9		Antenna Pol. :Ho	rizontal	
EUT Pol	:NB Plane			Engineer :Ho	ward Huang	
120 Level (dBu)	V/m)				· · · · · · · · · · · · · · · · · · ·	
110						
90						
70						
50		- Fritzenson	*******			
30						
10						
0 2450	2470.	2490. Frequen	2510. cy (MHz)	2530.	2550	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBμV	dB	dBµV/m	dBµV/m	dB
2483.500	Average	45.81	-3.82	41.99	54.00	-12.01
2483.500	Peak	55.17	-3.82	51.35	74.00	-22.65
2486.700	Average	49.60	-3.79	45.82	54.00	-8.18
2486.700	Peak	58.28	-3.79	54.50	74.00	-19.50

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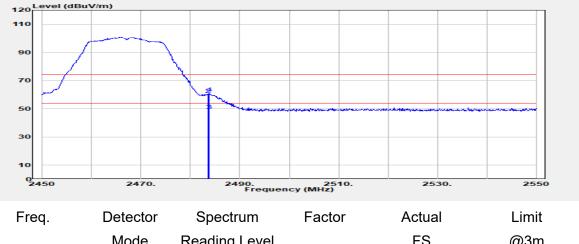
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Report Number	:TERF2403000773E2
Operation Mode	:802.11g
Test Frequency	:2467 MHz
Test Mode	:Bandedge
EUT Pol	:NB Plane

Test Site	:SAC C
Test Date	:2024-04-01
Temp./Humi.	:21.5℃/55%
Antenna Pol.	:Vertical
Engineer	:Howard Huang



	Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
_	MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
	2483.500	Average	52.98	-3.82	49.16	54.00	-4.84
	2483.500	Peak	64.08	-3.82	60.26	74.00	-13.74
	2483.700	Average	52.70	-3.82	48.88	54.00	-5.12
	2483.700	Peak	65.10	-3.82	61.28	74.00	-12.72

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Report Number :TERF2403000773E2 Operation Mode :802.11g Test Frequency :2467 MHz					AC C 024-04-01 .5℃/55%	
Test Mode	:Bandedge	e		Antenna Pol. :He	orizontal	
EUT Pol	:NB Plane		l	Engineer :Ho	oward Huang	
120 Level (dBu 110 90 70 50 30 10 2450	2470.	2490. Frequent	2510. cy (MH2)	2530.	2550	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.500	Average	49.95	-3.82	46.13	54.00	-7.87
2483.500	Peak	61.57	-3.82	57.75	74.00	-16.25
2483.800	Average	49.87	-3.82	46.06	54.00	-7.94
2483.800	Peak	61.52	-3.82	57.70	74.00	-16.30

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Margin

dB

-5.40 -14.22 -5.73

-14.31

74.00



Report Number :TERF2403000773E2 Test Site :SAC C									
Operation Mod	Operation Mode :802.11g Test Date :2024-04-01								
Test Frequence	cy :2472 MH	lz		Temp./Humi.	:21.5℃/55%				
Test Mode	:Bandedg	je		Antenna Pol.	:Vertical				
EUT Pol	:NB Plane	9		Engineer	:Howard Huang				
120 Level (dBu 110 90 70 50 30 10 2450	2470.	2490. Frequer	2510. CCY (MHZ)	2530.					
Freq.	Detector	Spectrum	Factor	Actual	Limit				
	Mode	Reading Level		FS	@3m				
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m				
2483.500	Average	52.42	-3.82	48.60	54.00				
2483.500	Peak	63.60	-3.82	59.78	74.00				
2483.600	Average	52.09	-3.82	48.27	54.00				

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63.51

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-3.82

59.69

2483.600

Peak



Report Numbe Operation Mod Test Frequenc Test Mode EUT Pol	le :802.11g	z		Test Date :202 Temp./Humi. :21 Antenna Pol. :Ho		
120 Level (dBu 110 90 70 50 30 10 0 2450	V/m)	2490.	2510. cy (MHz)	2530.	2550	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
1104.		Reading Level	i dotor	FS	@3m	margin
MHz	PK/QP/AV	dBμV	dB	dBµV/m	dBµV/m	dB
2483.500	Average	49.21	-3.82	45.39	54.00	-8.61
2483.500	Peak	61.24	-3.82	57.42	74.00	-16.58
2483.600	Average	49.09	-3.82	45.27	54.00	-8.73
2483.600	Peak	60.05	-3.82	56.23	74.00	-17.77

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Report Number :TERF2403000773E2			Test Site :SAC C					
-	Operation Mode :802.11n20				Test Date :2024-04-08			
Test Frequence	cy :2467 MHz	2	Т	emp./Humi. :	20.9℃/64%			
Test Mode	:Bandedge	9	A	ntenna Pol. :	Vertical			
EUT Pol	:NB Plane		E	ngineer :	Howard Huang			
120 Level (dBu 110 90 70 50 30 10 0 2450	2470.	2490. Frequen	2510. су (МН2)	2530.				
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin		
	Mode	Reading Level		FS	@3m			
MHz	PK/QP/AV	dBμV	dB	dBµV/m	dBµV/m	dB		
2483.500	Average	51.22	-3.82	47.40	54.00	-6.60		
2483.500	Peak	61.67	-3.82	57.85	74.00	-16.15		
2484.000	Average	50.91	-3.81	47.10	54.00	-6.90		
2484.000	Peak	62.16	-3.81	58.35	74.00	-15.65		

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Report Number :TERF2403000773E2					ACC	
-	Operation Mode :802.11n20				024-04-08	
Test Frequence	cy :2467 MH	Z	-	Temp./Humi. :2	0.9℃/64%	
Test Mode	:Bandedge	Э	1	Antenna Pol. :H	orizontal	
EUT Pol	:NB Plane		I	Engineer :H	oward Huang	
Level (dBu	IV/m)					
120 Level (abb						
90						
70						
50			**************************************		******	
30						
10						
0 2450	2470.	2490. Frequen	2510. cy (MHz)	2530.	2550	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
Tieq.		•	i actor	FS		Margin
		Reading Level			@3m	
MHz	PK/QP/AV	dBμV	dB	dBµV/m	dBµV/m	dB
2483.500	Average	47.95	-3.82	44.13	54.00	-9.87
2483.500	Peak	60.44	-3.82	56.62	74.00	-17.38
2483.600	Average	48.04	-3.82	44.22	54.00	-9.78
2483.600	Peak	59.83	-3.82	56.01	74.00	-17.99

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Report Number :TERF2403000773E2					C C			
Operation Mo	Operation Mode :802.11n20				Test Date :2024-04-08			
Test Frequend	cy :2472 MH	Z	Т	emp./Humi. :20	.9℃/64%			
Test Mode	:Bandedge	9	A	ntenna Pol. :Ve	rtical			
EUT Pol	:NB Plane		E	Engineer :Ho	ward Huang			
120 Level (dBu	uV/m)	1 1						
110								
90								
70	1	Eff.						
50		B With minimum		aterian are an unit by a subary the area				
30								
10								
0L 2450	2470.	2490. Frequen	2510. cy (MHz)	2530.	2550			
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin		
	Mode	Reading Level		FS	@3m			
MHz	PK/QP/AV	dBμV	dB	dBµV/m	dBµV/m	dB		
2483.500	Average	51.66	-3.82	47.84	54.00	-6.16		
2483.500	Peak	66.01	-3.82	62.19	74.00	-11.81		
2484.400	Average	48.89	-3.81	45.08	54.00	-8.92		
2484.400	Peak	65.47	-3.81	61.66	74.00	-12.34		

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Report Number :TERF2403000773E2					C C			
Operation Mod	Operation Mode :802.11n20				Test Date :2024-04-08			
Test Frequence	Test Frequency :2472 MHz				Temp./Humi. :20.9℃/64%			
Test Mode	:Bandedg	e	1	Antenna Pol. :Ho	rizontal			
EUT Pol	:NB Plane	•	E	Engineer :Hc	ward Huang			
120 Level (dBu	iV/m)							
110								
90		-						
70		R						
50		3 The second adde		an a				
30								
10								
0 2450	2470.	2490. Frequen	2510. cy (MHz)	2530.	2550			
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin		
	Mode	Reading Level		FS	@3m			
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB		
2483.500	Average	49.42	-3.82	45.60	54.00	-8.40		
2483.500	Peak	65.26	-3.82	61.44	74.00	-12.56		
2483.600	Average	49.02	-3.82	45.21	54.00	-8.79		
2483.600	Peak	64.98	-3.82	61.16	74.00	-12.84		

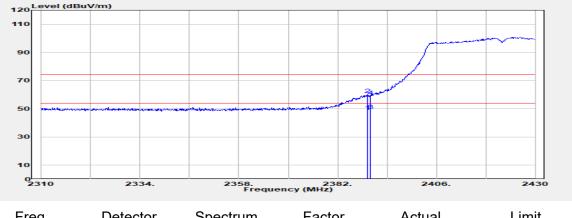
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Report Number	:TERF2403000773E2
Operation Mode	:802.11n40
Test Frequency	:2422 MHz
Test Mode	:Bandedge
EUT Pol	:NB Plane

Test Site	:SAC C
Test Date	:2024-04-08
Temp./Humi.	:20.9℃/64%
Antenna Pol.	:Vertical
Engineer	:Howard Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2389.320	Average	52.37	-4.24	48.13	54.00	-5.87
2389.320	Peak	64.36	-4.24	60.12	74.00	-13.88
2390.000	Average	52.91	-4.25	48.66	54.00	-5.34
2390.000	Peak	63.20	-4.25	58.95	74.00	-15.05

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Report Numb					SAC C	
Operation Mo	de :802.11n4	0	-	Test Date :2	2024-04-08	
Test Frequen	cy :2422 MHz	Ζ	-	Temp./Humi. :2	20.9℃/64%	
Test Mode	:Bandedge	e	1	Antenna Pol. :ł	Horizontal	
EUT Pol	:NB Plane		I	Engineer :H	Howard Huang	
120 Level (dB	uV/m)				1	
110						
90						
70						
50	A ward hind the company		- Andrew Andrew Street			
30						
10						
02310	2334.	2358. Frequen	2382. cy (MHz)	2406.	2430	
_						
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2389.920	Average	48.72	-4.25	44.47	54.00	-9.53
2389.920	Peak	60.22	-4.25	55.97	74.00	-18.03
2390.000	Average	48.81	-4.25	44.56	54.00	-9.44
2390.000	Peak	60.04	-4.25	55.79	74.00	-18.21

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Margin



Report Numbe Operation Moe Test Frequenc Test Mode EUT Pol	de :802.11n4	l0 Iz e		Test Site Test Date Temp./Humi. Antenna Pol. Engineer	
120 Level (dBu	ıV/m)				
110					
~~~~					
90					
70		- 1			
		man from the second sec			
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0L 2450	2470.	2490. Frequen	2510 icy (MHz)	. 2530	. 2550
Freq.	Detector	Spectrum	Factor	Actual	Limit
	Mode	Reading Level		FS	@3m
MHz	PK/QP/AV	dBµV	dB	dBµV/m	-
		•		. 1	• •

MHz	PK/QP/AV	dBμV	dB	dBµV/m	dBµV/m	dB
2483.500	Average	55.68	-3.82	51.86	54.00	-2.14
2483.500	Peak	66.93	-3.82	63.11	74.00	-10.89
2486.500	Average	53.06	-3.79	49.27	54.00	-4.73
2486.500	Peak	68.41	-3.79	64.62	74.00	-9.38

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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Report Numbe Operation Mo					AC C 24-04-08	
Test Frequend	cy :2452 MH	z	Т	emp./Humi. :20	.9℃/64%	
Test Mode	:Bandedg	е	A	ntenna Pol. :Ho	orizontal	
EUT Pol	:NB Plane	e	E	Engineer :Ho	ward Huang	
120 Level (dBu	ıV/m)					
90						
70		and the second s				
50				an an the second se	****	
30						
10						
2450	2470.	2490. Frequen	2510. cy (MHz)	2530.	2550	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.500	Average	50.41	-3.82	46.59	54.00	-7.41
2483.500	Peak	63.27	-3.82	59.45	74.00	-14.55
2483.600	Average	50.28	-3.82	46.46	54.00	-7.54
2483.600	Peak	63.33	-3.82	59.51	74.00	-14.49

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Report Numbe Operation Moo Test Frequenc Test Mode EUT Pol	de :802.11n40	)	-	Test Date :20 Temp./Humi. :20 Antenna Pol. :Ve		
120 Level (dBu 110 90 70 50 30 10 02450	2470.	2490. Frequen	2510. CV (MHZ)	2530.	2550	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode F PK/QP/AV	Reading Level dBµV	dB	FS dBμV/m	@3m dBµV/m	dB
2483.500 2483.500 2483.800	Average Peak Average	55.61 68.62 55.14	-3.82 -3.82 -3.82	51.79 64.80 51.32	54.00 74.00 54.00	-2.21 -9.20 -2.68
2483.800	Peak	67.85	-3.82	64.03	74.00	-9.97

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Report Numbe Operation Mo					AC C 24-04-08	
•				-		
Test Frequence	-			emp./Humi. :20		
Test Mode	:Bandedge			ntenna Pol. :Ho		
EUT Pol	:NB Plane		E	ngineer :Hc	ward Huang	
120 Level (dBu	ıV/m)					
110						
90						
70		a la				
50			and the second	water with the sector of the sector		
30						
10						
0 2450	2470.	2490. Frequen	2510. cy (MHZ)	2530.	2550	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBμV	dB	dBµV/m	dBµV/m	dB
2483.500	Average	53.41	-3.82	49.59	54.00	-4.41
2483.500	Peak	66.14	-3.82	62.32	74.00	-11.68
2483.800	Average	53.01	-3.82	49.19	54.00	-4.81
2483.800	Peak	66.05	-3.82	62.23	74.00	-11.77

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Report Numbe	er :TERF240	3000773E2	Te	est Site :SA	VC C	
Operation Mod	de:802.11n4	0	Te	est Date :20	24-04-09	
Test Frequence	cy :2462 MH	Z	Τe	mp./Humi. :18	.5℃/65%	
Test Mode	:Bandedge	Э	Ar	ntenna Pol. :Ve	rtical	
EUT Pol	:NB Plane		Er	ngineer :Ho	ward Huang	
120 Level (dBu	iV/m)	1				
110						
90		$\neg$				
70						
50			Land Black of Longer Whites			
30						
10						
0 2450	2470.	2490. Frequen	2510. cy (MHz)	2530.	2550	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.500	Average	49.82	-3.82	46.00	54.00	-8.00
2483.500	Peak	65.78	-3.82	61.96	74.00	-12.04
2483.700	Average	49.26	-3.82	45.44	54.00	-8.56
2483.700	Peak	65.50	-3.82	61.68	74.00	-12.32

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Report Number	de :802.11n4	0	Т	Test Date :20	CC 24-04-09	
Test Frequence	-			Femp./Humi. :18		
Test Mode	:Bandedg	e	A	Antenna Pol. :Ho	rizontal	
EUT Pol	:NB Plane	)	E	Engineer :Ho	ward Huang	
120 Level (dBu	ıV/m)	1 1				
110						
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0L 2450	2470.	2490. Frequen	2510. cy (MHz)	2530.	2550	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.500	Average	46.81	-3.82	42.99	54.00	-11.01
2483.500	Peak	61.85	-3.82	58.03	74.00	-15.97
2483.600	Average	46.52	-3.82	42.70	54.00	-11.30
2483.600	Peak	61.71	-3.82	57.89	74.00	-16.11

~ End of Report ~

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