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# ELECTROMAGNETIC EMISSIONS **COMPLIANCE REPORT**





Applicant: Quanta Computer Inc.

No. 188, Wenhua 2nd Road, Guishan District, Taoyuan City

33377, Taiwan

Manufacturer: Quanta Computer Inc.

No. 188, Wenhua 2nd Road, Guishan District, Taoyuan City

33377, Taiwan

Clover Flex **Product Name:** 

**Brand Name:** Clover Model No.: C405

**Model Difference:** N/A

**Report Number:** TERF2206000778E2

FCC ID HFS-C405

IC: 1787B-C405

Date of EUT Received: June 02, 2022

June 07, 2022 ~ June 27, 2022 Date of Test:

Issue Date: July 18, 2022

Approved By

### 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, ISED RSS-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	Remark
TERF2206000778E2	00	Original	July 18, 2022	Violetta Tang	

### Note:

1 . The remark "\*" indicates modification of the report upon requests from certification

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# **GENERAL INFORMATION**

#### 1.1 **Product Description**

Product Name:	Clover Flex
Brand Name:	Clover
Model No.:	C405
Model Difference:	N/A
Hardware Version:	N/A
Firmware Version:	N/A
EUT Series No.:	C045UT20760001
Power Supply:	7.6Vdc from Rechargeable Li-ion Polymer Battery
Test Software (Name/Version)	QRCT V4.0.00163.0

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#### 1.2 **RF Specification**

### WLAN 2.4GHz

Frequency	Channels	Rated Power	Modulation		
Range	Orianinois	in dBm (Peak)	Technology		
2412~2462	11	19.97	DSSS		
2412~2462	11	21.19	OFDM		
2412~2462	11	21.49	OFDM		
2422~2452	7	21.92	OFDM		
Modulation type:		CCK, DQPSK, DBPSK for DSSS			
		64QAM, 16QAM, QPSK, BPSK for OFDM			
Data Rate:		802.11 b: 1/2/5.5/11 Mbps			
		802.11 g: 6/9/12/18/24/36/48/54 Mbps			
		802.11 n_20MHz:up to 72.2Mbps			
		802.11 n_40MHz:up to 150Mbps			
	Range  2412~2462  2412~2462  2412~2452  2422~2452  n type:	Range Channels  2412~2462 11  2412~2462 11  2412~2462 11  2422~2452 7  CCK, DQPS  64QAM, 160  802.11 b: 1/  802.11 g: 6/  802.11 n_20	Range Channels in dBm (Peak)  2412~2462 11 19.97  2412~2462 11 21.19  2412~2462 11 21.49  2422~2452 7 21.92  CCK, DQPSK, DBPSK for DSS  64QAM, 16QAM, QPSK, BPSK  802.11 b: 1/2/5.5/11 Mbps  802.11 g: 6/9/12/18/24/36/48/54  802.11 n_20MHz:up to 72.2Mbp		

## WLAN 2.4GHz for IC

Wi-Fi	Frequency Range	Channels	Rated Power in dBm (Peak)	Rated Power in dBm (EIRP)	Modulation Technology	
802.11b	2412~2462	11	19.97	20.58	DSSS	
802.11g	2412~2462	11	21.19	19.55	OFDM	
802.11n20	2412~2462	11	21.49	19.96	OFDM	
802.11n40	2422~2452	7	21.92	18.83	OFDM	
·		CCK, DQPSK, DBPSK for DSSS				
Modulation type:		64QAM, 16QAM, QPSK, BPSK for OFDM				
		802.11 b: 1/2/5.5/11 Mbps				
Data Rate:		802.11 g: 6/9/12/18/24/36/48/54 Mbps				
		802.11 n_20MHz:up to 72.2Mbps				
		802.11 n_40MHz:up to 150Mbps				

1.3 **Antenna Designation** 

Antenna	Freq.	Peak Antenna
Type	(MHz)	Gain (dBi)
Loop	2412~2462	3.11

Note: Antenna information is provided by the applicant.

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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

RSS-247 issue 2 Feb. 2017

RSS-Gen, Issue 5 (Amendment 2, February 2021)

ANSI C63.10:2013

#### 1.5 **Test Facility**

Laboratory	Test Site Address	Test Site Name	FCC Designa- tion number	IC CAB identifier
		SAC 1		
		SAC 3		
		Conduction 1		
	No.134, Wu Kung Road, New Taipei	Conducted 1		
	Industrial Park, Wuku District, New	Conducted 2	TW0027	TW3702
	Taipei City, Taiwan.	Conducted 3		
		Conducted 4	_	
		Conducted 5		
SGS Taiwan Ltd.		Conducted 6		
Central RF Lab.	No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan 333	Conduction C	TW0028	
(TAF code 3702)		SAC C		
(1A1 code 3702)		SAC D		
		SAC G		
		Conducted A		
		Conducted B		
		Conducted C		
		Conducted D		
		Conducted E		
		Conducted F		
		Conducted G		

Note: Test site name is remarked on the equipment list in each section of this report as an indication 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

#### 2.1 **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.

#### **Radiated Emissions** 2.3.3

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.

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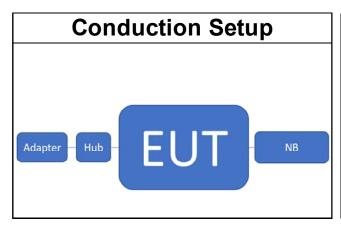
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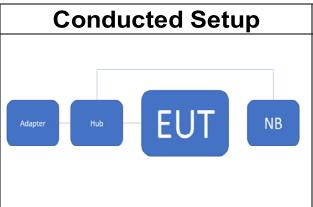
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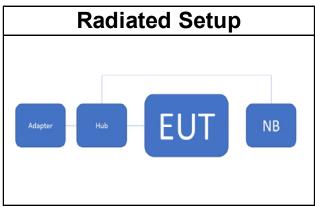


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#### 2.5 **Test Configuration**







#### 2.6 Control Unit(s)

	AC Power-Line Conducted Emission Test Site: Conduction C					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.	
Adapter	Clover	FSP040-RHBN3	N/A	N/A	N/A	
Notebook	НР	TP00096A	PF-1KVTP7	N/A	N/A	
Hub	Clover	H305	H035WT20440103	N/A	N/A	
	Conducted Emission Test Site: Conducted D					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.	
Adapter	Clover	FSP040-RHBN3	N/A	N/A	N/A	
Hub	Clover	H305	H035WT20440103	N/A	N/A	
Notebook	Lenovo	L420	S0011721	N/A	N/A	

	Radiated Emission Test Site: SAC G					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.	
Adapter	Clover	FSP040-RHBN3	N/A	N/A	N/A	
Notebook	HP	TP00096A	PF-1KVTP7	N/A	N/A	
Hub	Clover	H305	H035WT20440103	N/A	N/A	

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# **SUMMARY OF TEST RESULTS**

FCC Rules	ISED Rules	Description Of Test	Result
§15.207(a)	RSS-Gen §8.8	AC Power Line Conducted Emission	Compliant
§15.247(b)	RSS-247 §5.4 d	Peak Output Power	Compliant
§15.247(a)(2)	RSS-247 §5.2 a RSS-Gen §6.7	Emission Bandwidth	Compliant
§15.205 §15.209 §15.247(d)	RSS-247 §5.5 RSS-Gen §8.9 RSS-Gen §8.10 RSS-Gen §6.13	Radiated & Conducted Band Edge and Spurious Emission	Compliant
§15.247(e)	RSS-247 §5.2 b	Power Spectral Density	Compliant
§15.203	N/A	Antenna Requirement	Compliant

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# **DESCRIPTION OF TEST MODES**

#### 4.1 **Operating Frequencies**

### Modulation of 20MHz nominal bandwidth

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

### Modulation of 40MHz nominal bandwidth

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

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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

The given UE is pre-scanned among below modes.

	Modulation			Tra	ınsmiss	sion	Chain		Т	Single ransmission Spatial	T	Multi ransmission Spatial
٧	802.11 b	٧	Ch0		Ch1		Ch2	Ch3	٧	1TX		1TX
٧	802.11 g	٧	Ch0		Ch1		Ch2	Ch3	٧	1TX		1TX
٧	802.11 n	٧	Ch0		Ch1		Ch2	Ch3	٧	1TX		1TX
	802.11 ax		Ch0		Ch1		Ch2	Ch3		1TX		1TX

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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							
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT		
802.11b	1 to 11	1,6,11	DSSS	1	ch0		
802.11g	1 to 11	1,6,11	OFDM	6	ch0		
802.11n (HT20)	1 to 11	1,6,11	OFDM	MCS0	ch0		
802.11n (HT40)	3 to 9	3,6,9	OFDM	MCS0	ch0		

RADIATED EMISSION TEST (BELOW 1 GHz)							
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT		
802.11g	1 to 11	6	OFDM	6	ch0		

RADIATED EMISSION TEST (ABOVE 1 GHz)								
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT			
802.11b	1 to 11	1,6,11	DSSS	1	ch0			
802.11g	1 to 11	1,6,11	OFDM	6	ch0			
802.11n (HT20)	1 to 11	1,6,11	OFDM	MCS0	ch0			
802.11n (HT40)	3 to 9	3,6,9	OFDM	MCS0	ch0			

### Note:

The field strength of radiated emission was measured as the EUT positioned in different orthogonal planes (E1/E2/H) based on actual usage of the EUT to pre-scan the emissions for determining the worst case scenario.

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## **MEASUREMENT UNCERTAINTY**

Test Items	Un	certain	ty
AC Power Line Conducted Emission	+/-	2.34	dB
Output Power measurement	+/-	1	dB
Emission Bandwidth	+/-	1.53	Hz
Undesignable radiated emission measurement	+/-	1.68	dB
Peak Power Density	+/-	1.62	dB
Temperature	+/-	0.4	Ĉ
Humidity	+/-	3.5	%
DC / AC Power Source	+/-	1	%

Radiated Spurious Emission Measurement Uncertainty					
	+/-	2.57	dB	9kHz~30MHz	
Dalani-atian Mantical	+/-	4.85	dB	30MHz - 1000MHz	
Polarization: Vertical	+/-	4.45	dB	1GHz - 18GHz	
	+/-	4.24	dB	18GHz - 40GHz	
	+/-	2.57	dB	9kHz~30MHz	
[	+/-	4.37	dB	30MHz - 1000MHz	
Polarization: Horizontal	+/-	4.45	dB	1GHz - 18GHz	
	+/-	4.24	dB	18GHz - 40GHz	

### 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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# 6 MEASUREMENT EQUIPMENT USED

# 6.1 Emission from AC power line

	AC Power-Line Conducted Emission Test Site: Conduction C							
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.			
LISN	SCHWARZBECK Mess- Elektronik	NSLK8127	973	04/13/2022	04/12/2023			
EMI Test Receiver	R&S	ESCI	101342	04/25/2022	04/24/2023			
Coaxial Cable	EC Lab	RF-HY-CAB-250	RF-HY-CAB-250-01	03/27/2022	03/26/2023			
Coaxial Cable	EMC Instruments Corp	EMC5D-BM-BM-3000	1401004	03/27/2022	03/26/2023			
Pulse Limiter	EC La b	VTSD 9561F-N	485	03/27/2022	03/26/2023			
Test Software	audix	e3	E3 20923 SGS Ver.9 ( C	N.C.R	N.C.R			

### 6.2 Conducted Measurement

	Conducted Emission Test Site: Conducted D								
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.				
Spectrum Analyzer	KEYSIGHT	N9010B	MY59071574	06/25/2021	06/24/2022				
Spectrum Analyzer	KEYSIGHT	N9010B	MY59071574	06/20/2022	06/19/2023				
Power Meter	Anritsu	ML2496A	1512003	07/27/2021	07/26/2022				
Power Sensor	Anritsu	MA2411B	1339378	07/27/2021	07/26/2022				
Power Sensor	Anritsu	MA2411B	1339379	07/27/2021	07/26/2022				
Attenuator	Marvelous	WATT-218FS-10	RF17	11/18/2021	11/17/2022				
Attenuator	Marvelous	WATT-218FS-10	RF18	11/18/2021	11/17/2022				
DC Block	PASTERNACK	PE8210	RF158	11/18/2021	11/17/2022				

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#### **Radiated Measurement** 6.3

	Radiated Emission Test Site: SAC G							
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.			
Broadband Antenna	SCHWARZBECK	VULB 9168	1206	02/15/2022	02/14/2023			
Horn Antenna	Schwarzbeck	BBHA9170	184	12/16/2021	12/15/2022			
Horn Antenna	RF SPIN	DRH18-E	210105A18E	04/08/2022	04/07/2023			
Loop Antenna	ETS.LINDGREN	6502	143303	05/06/2022	05/07/2023			
3m Site NSA	SGS	966 chamber G	N/A	03/30/2022	03/29/2023			
Spectrum Analyzer	KEYSIGHT	N9010A	MY51440113	07/13/2021	07/12/2022			
Test Software	audix	e3	E3 20923 SGS Ver.9 ( C )	N.C.R	N.C.R			
Pre-Amplifier	EMC Instruments	EMC184045B	980135	10/27/2021	10/26/2022			
Pre-Amplifier	EMC Instruments	EMC330N	980781	03/15/2022	03/14/2023			
Pre-Amplifier	EMC Instruments	EMC118A45SE	980815	03/15/2022	03/14/2023			
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM- 8000-5000-2000	210216 ` 210217 ` 210218	03/15/2022	03/14/2023			
Coaxial Cable	EMC Instruments	EMC104-SM-SM-8000- 5000-5000	210219 · 210220 · 210221	03/15/2022	03/14/2023			
Coaxial Cable	EMC Instruments	EMC105-NM-NM- 5000-15000	210224 ` 210306	03/15/2022	03/14/2023			

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

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### **CONDUCTED EMISSION TEST**

#### 7.1 Standard Applicable

Frequency range within 150kHz to 30MHz shall not exceed the Limit table as below.

Frequency range		mits BuV)
MHz	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

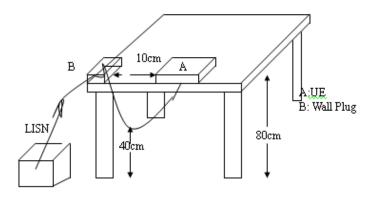
### Note

- 1. The lower limit shall apply at the transition frequencies
- 2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

### **EUT Setup**

- 1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.10:2013.
- 2. The AC/DC Power adaptor of EUT was plug-in LISN. The EUT was placed flushed with the rear of the table.
- 3. The LISN was connected with 120Vac/60Hz power source.

#### 7.3 **Test Setup**



#### 7.4 **Measurement Procedure**

- 1. The EUT was placed on a table which is 0.8m above ground plane.
- 2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 3. Repeat above procedures until all phases of power being supplied by given UE are completed

#### 7.5 **Measurement Result**

Note: Refer to next page for measurement data and plots.

Note2: The \* reveals the worst-case results that closet to the limit.

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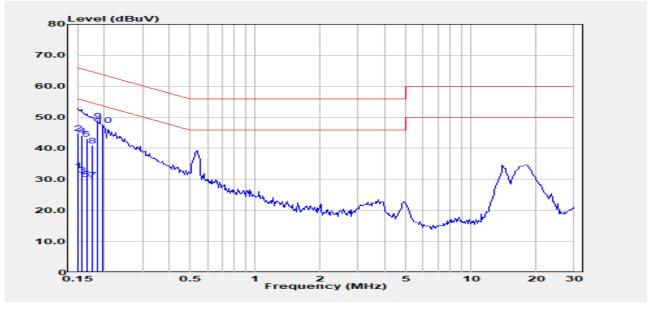
# AC POWER LINE CONDUCTED EMISSION TEST DATA

Report Number :TERF2206000778E2 Test Site :Conduction C

Test Mode :2.4G **Test Date** :2022-06-27

:120V/60Hz Temp./Humi. :24.5/60 Power

Probe :L1 Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS		
MHz	PK/QP/AV	dΒμV	dB	dΒμV	dΒμV	dB
0.152	Average	22.60	10.27	32.87	55.91	-23.04
0.152	QP	34.60	10.27	44.87	65.91	-21.04
0.156	Average	21.20	10.27	31.47	55.65	-24.18
0.156	QP	33.90	10.27	44.17	65.65	-21.48
0.165	Average	19.90	10.27	30.17	55.21	-25.04
0.165	QP	32.90	10.27	43.17	65.21	-22.04
0.176	Average	19.60	10.27	29.87	54.68	-24.81
0.176	QP	30.60	10.27	40.87	64.68	-23.81
0.185	Peak	38.66	10.27	48.93	64.24	-15.31
0.195	Peak	37.33	10.27	47.60	63.80	-16.19

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Report Number :TERF2206000778E2

Test Mode :2.4G

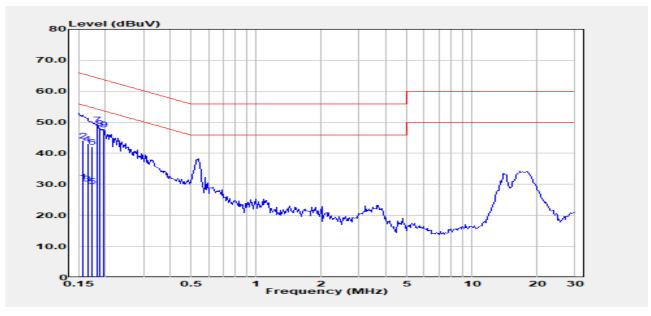
Power :120V/60Hz

Probe :N **Test Site** :Conduction C

**Test Date** :2022-06-27

Temp./Humi. :24.5/60

Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS		
MHz	PK/QP/AV	dΒμV	dB	dΒμV	dΒμV	dB
0.156	Average	20.60	10.28	30.88	55.65	-24.77
0.156	QP	33.90	10.28	44.18	65.65	-21.47
0.165	Average	20.00	10.28	30.28	55.21	-24.93
0.165	QP	32.90	10.28	43.18	65.21	-22.03
0.174	Average	19.20	10.27	29.47	54.77	-25.29
0.174	QP	31.90	10.27	42.17	64.77	-22.59
0.183	Peak	39.06	10.27	49.33	64.33	-14.99
0.189	Peak	37.85	10.27	48.12	64.06	-15.94
0.198	Peak	37.47	10.27	47.74	63.71	-15.97

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### PEAK OUTPUT POWER MEASUREMENT

#### 8.1 Standard Applicable

#### 8.2 **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.

#### 8.3 **Output Power**

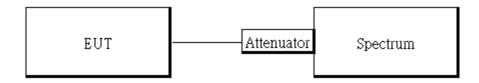
For systems using digital modulation in the 2400-2483.5 MHz bands, the limit for peak output power is 1Watt and the e.i.r.p. shall not exceed 4 W.

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.

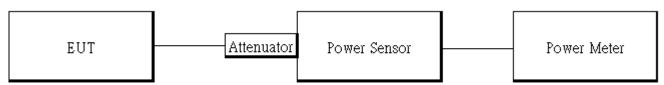
In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of Antenna exceeds 6dBi.

#### 8.4 **Test Setup**

#### 8.4.1 **Duty Cycle**



#### 8.4.2 **Output Power:**



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#### 8.5 **Measurement Procedure**

#### 8.5.1 **Duty Cycle:**

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

#### 8.5.2 **Output Power**

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guid-
- 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.

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

#### 8.6 **Measurement Result**

#### 8.6.1 **Duty Cycle:**

	Duty Cycle (%) = Ton / (Ton+Toff)	Duty Factor (dB) =10*log ( 1/Duty Cycle )	1/T (kHz)	VBW setting (kHz)
802.11b	99.17	0.04	0.08	0.01
802.11g	98.24	0.08	0.48	0.01
802.11n_20	98.11	0.08	0.52	0.01
802.11n_40	94.89	0.23	1.05	2.00

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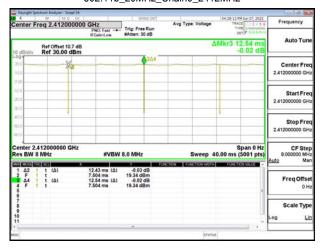
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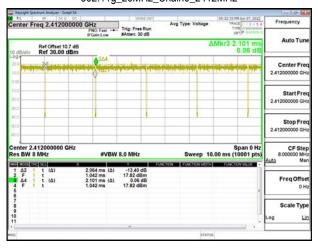
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#### 8.6.2 **Duty Cycle test plots**

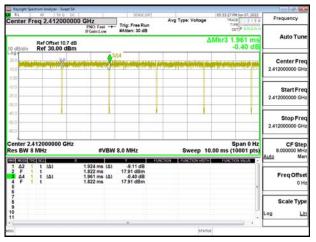
802.11b 20MHz Chain0 2412MHz



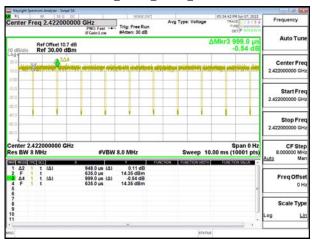
802.11g\_20MHz\_Chain0\_2412MHz



802.11n\_20MHz\_Chain0\_2412MHz



802.11n 40MHz Chain0 2422MHz



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#### 8.6.3 **Output Power**

802.1	1b Ch0					
СН	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	1	16.5	19.97	30.00	PASS
6	2437	1	16.5	19.58	30.00	PASS
11	2462	1	16.5	19.91	30.00	PASS
802.1	1b Ch0					
СН	Freq. (MHz)	Data Rate	Power set	Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
1	2412	1	16.5	17.47	30.00	PASS
6	2437	1	16.5	17.36	30.00	PASS
11	2462	1	16.5	17.46	30.00	PASS

802.1	1g Ch0					
СН	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	6	16	21.19	30.00	PASS
6	2437	6	16	21.04	30.00	PASS
11	2462	6	15.5	20.65	30.00	PASS
802.1	1g Ch0					
СН	Freq. (MHz)	Data Rate	Power set	Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
1	2412	6	16	16.44	30.00	PASS
6	2437	6	16	16.41	30.00	PASS
11	2462	6	15.5	16.22	30.00	PASS

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802.1	1nHT_20N	/I Ch0				
СН	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	15	15.00	30.00	PASS
6	2437	MCS0	16.5	21.49	30.00	PASS
11	2462	MCS0	16	16.00	30.00	PASS
802.1	1nHT_20N	/I Ch0				
СН	Freq. (MHz)	Data Rate	Power set	Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	15	15.44	30.00	PASS
6	2437	MCS0	16.5	16.85	30.00	PASS
11	2462	MCS0	16	16.51	30.00	PASS

802.1	1nHT_40N	/I Ch0				
СН	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
3	2422	MCS0	14.5	21.54	30.00	PASS
6	2437	MCS0	14.5	21.92	30.00	PASS
9	2452	MCS0	14.5	21.43	30.00	PASS
802.1	1nHT_40N	/I Ch0				
СН	Freq. (MHz)	Data Rate	Power set	Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
3	2422	MCS0	14.5	15.67	30.00	PASS
6	2437	MCS0	14.5	15.72	30.00	PASS
9	2452	MCS0	14.5	15.63	30.00	PASS

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802.11	b Ch0						
СН	Freq. (MHz)	Data Rate	Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	RESULT
1	2412	1	17.47	3.11	20.58	36	PASS
6	2437	1	17.36	3.11	20.47	36	PASS
11	2462	1	17.46	3.11	20.57	36	PASS

802.11	g Ch0						
СН	Freq. (MHz)	Data Rate	Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	RESULT
1	2412	6	16.44	3.11	19.55	36	PASS
6	2437	6	16.41	3.11	19.52	36	PASS
11	2462	6	16.22	3.11	19.33	36	PASS

802.11	nHT_20M	1 Ch0					
СН	Freq. (MHz)	Data Rate	Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	15.44	3.11	18.55	36	PASS
6	2437	MCS0	16.85	3.11	19.96	36	PASS
11	2462	MCS0	16.51	3.11	19.62	36	PASS

802.11	nHT_40N	1 Ch0					
СН	Freq. (MHz)	Data Rate	Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	RESULT
3	2422	MCS0	15.67	3.11	18.78	36	PASS
6	2437	MCS0	15.72	3.11	18.83	36	PASS
9	2452	MCS0	15.63	3.11	18.74	36	PASS

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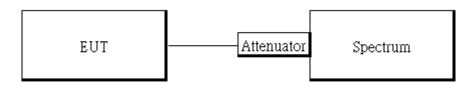
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### **EMISSION BANDWIDTH MEASUREMENT**

#### 9.1 Standard Applicable

The minimum 6 dB bandwidth shall be at least 500 kHz.

#### 9.2 **Test Setup**



#### 9.3 Measurement Procedure

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. 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 spectrum analyzer.
- 4. Set the spectrum analyzer as

RBW= 100kHz.

VBW = 3 X RBW.

Span= 2 to 5 times of the OBW,

Sweep=auto,

Detector = Peak, and Max hold for -6dB Bandwidth test.

5. Set the spectrum analyzer as

RBW= 1 % to 5% of 99% Bandwidth,

VBW ≥ 3 X RBW,

Span= large enough to capture all products of the modulation process,

Sweep=auto,

Detector = Peak, and Max hold for 99% Bandwidth test.

- 6. Turn on the 99% bandwidth function, max reading.
- 7. Repeat above procedures until all test default channel is completed

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#### 9.4 6dB Bandwidth

### 802.11b Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	8110.00	≥ 500	PASS
2437	8114.00	≥ 500	PASS
2462	8114.00	≥ 500	PASS

## 802.11g Ch0

Freq.	6dB BW	Limit	Result
(MHz)	(kHz)	(kHz)	Resuit
2412	15360.00	≥ 500	PASS
2437	15390.00	≥ 500	PASS
2462	15950.00	≥ 500	PASS

### 802.11nHT\_20M Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	15170.00	≥ 500	PASS
2437	15740.00	≥ 500	PASS
2462	16380.00	≥ 500	PASS

## 802.11nHT\_40M Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2422	35390.00	≥ 500	PASS
2437	35200.00	≥ 500	PASS
2452	35150.00	≥ 500	PASS

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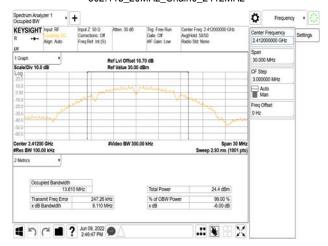
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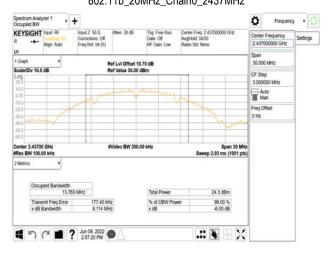


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### 802.11b\_20MHz\_Chain0\_2412MHz



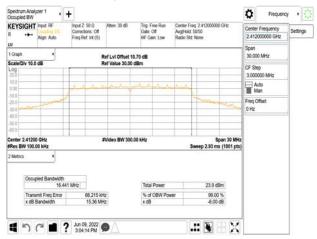
# 802.11b\_20MHz\_Chain0\_2437MHz



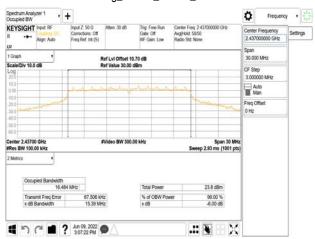
### 802.11b 20MHz Chain0 2462MHz



### 802.11g\_20MHz\_Chain0\_2412MHz



802.11g\_20MHz\_Chain0\_2437MHz



802.11g 20MHz Chain0 2462MHz



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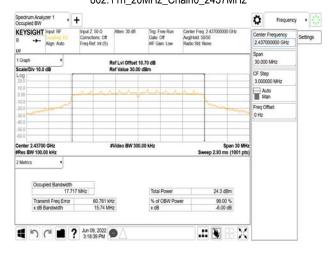


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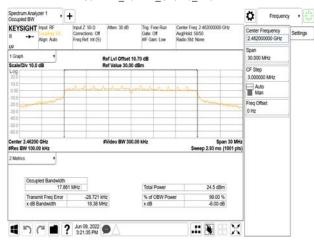
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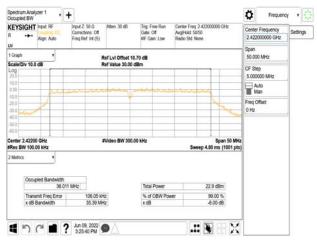
# 802.11n\_20MHz\_Chain0\_2437MHz



### 802.11n 20MHz Chain0 2462MHz



### 802.11n\_40MHz\_Chain0\_2422MHz



802.11n\_40MHz\_Chain0\_2437MHz



802.11n 40MHz Chain0 2452MHz



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## 9.5 99% Bandwidth

### 802.11b Ch0

Freq.	99% BW	
(MHz)	(MHz)	
2412	13.615	
2437	13.741	
2462	14.049	

# 802.11g Ch0

302.11g 3110		
Freq.	99% BW	
(MHz)	(MHz)	
2412	16.669	
2437	16.778	
2462	16.958	

### 802.11n\_HT20M Ch0

Freq.	99% BW
(MHz)	(MHz)
2412	17.88
2437	17.967
2462	18.22

### 802.11n\_HT40M Ch0

Freq.	99% BW
(MHz)	(MHz)
2422	36.213
2437	36.211
2452	36.126

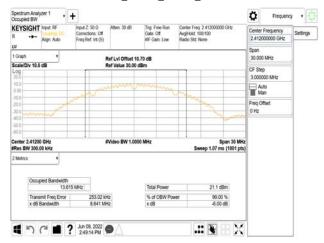
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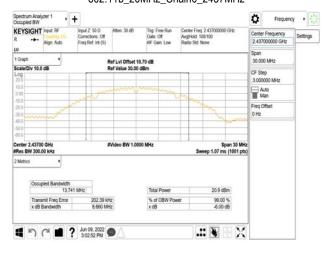


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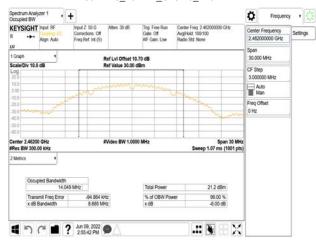
### 802.11b\_20MHz\_Chain0\_2412MHz



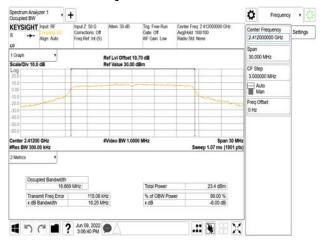
## 802.11b\_20MHz\_Chain0\_2437MHz



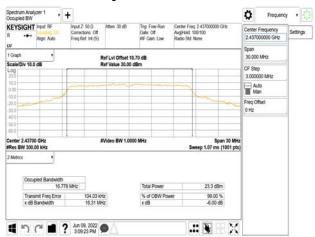
802.11b 20MHz Chain0 2462MHz



802.11g\_20MHz\_Chain0\_2412MHz



802.11g\_20MHz\_Chain0\_2437MHz



802.11g 20MHz Chain0 2462MHz



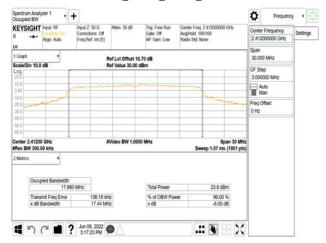
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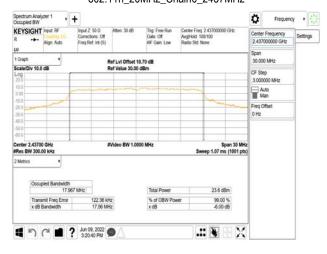


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### 802.11n\_20MHz\_Chain0\_2412MHz



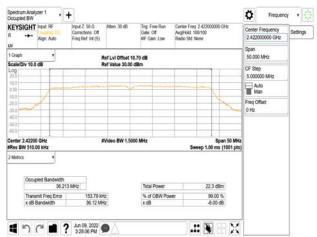
# 802.11n\_20MHz\_Chain0\_2437MHz



### 802.11n 20MHz Chain0 2462MHz



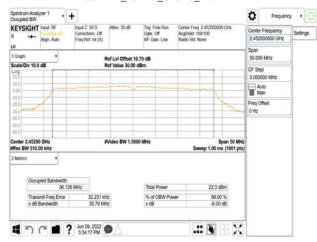
### 802.11n\_40MHz\_Chain0\_2422MHz



802.11n\_40MHz\_Chain0\_2437MHz



802.11n 40MHz Chain0 2452MHz



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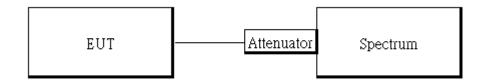
### 10 CONDUCTED BAND EDGES AND SPURIOUS EMISSION MEASUREMENT

#### 10.1 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

In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a) & RSS-Gen §8.10, must also comply with the radiated emission limits specified in §15.209(a) & RSS-Gen §8.9.

#### 10.2 **Test Setup**



#### 10.3 **Measurement Procedure**

#### 10.3.1 **Reference Level of Emission Limit:**

- 1. Set analyzer center frequency to DTS channel center frequency.
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
- 3. Set the span to 1.5 times the DTS channel bandwidth.
- 4. Set the RBW = 100kHz & VBW = 300 kHz.
- 5. Detector = peak.
- 6. Sweep time = auto couple.
- 7. Trace mode = max hold.
- 8. Allow trace to fully stabilize.
- 9. Use the peak marker function to determine the maximum amplitude level.

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#### 10.3.2 **Conducted Band Edge:**

- 1. To connect Antenna Port of EUT to Spectrum.
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
- Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 4. Set start to edge frequency, and stop frequency of spectrum analyzer so as to encompass the spectrum to be examined.
- 5. Set the spectrum analyzer as RBW=100 kHz, VBW=300 kHz, Detector = Peak, Sweep = auto
- 6. Mark the highest reading of the emission as the reference level measurement.
- 7. Set DL as the limit = reading on marker of reference level measurement 20dBm
- 8. Mark the highest readings of the emissions outside of 2400MHz~2483.5MHz.
- 9. Repeat above procedures until all default test channel (low, middle, and high) was complete.

#### 10.3.3 **Conducted Spurious Emission:**

- 1. To connect Antenna Port of EUT to Spectrum
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
- 3. Set RBW = 100 kHz & VBW= 300 kHz, Detector = Peak, Sweep = Auto.
- 4. Allow trace to fully stabilize.
- 5. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
- 6. Repeat above procedures until all default test channel measured were complete.

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### 10.4 Measurement Result

### 802.11b Ch0

002.11.0 0.10		
Reference Level of Limit		
Freq.	PSD	Reference Level of Limit
(MHz)	(dBm)	(dBm)
2412	9.20	-10.80
2437	8.94	-11.06
2462	9.28	-10.72

# 802.11g Ch0

Reference Level of Limit 802.11g mode		
Freq.	PSD	Reference Level of Limit
(MHz)	(dBm)	(dBm)
2412	6.50	-13.50
2437	7.14	-12.86
2462	6.13	-13.87

## 802.11nHT\_20M Ch0

Reference Level of Limit 802.11n20 MODE		
Freq.	PSD	Reference Level of Limit
(MHz)	(dBm)	(dBm)
2412	7.99	-12.01
2437	7.59	-12.41
2462	7.28	-12.72

## 802.11nHT\_40M Ch0

Reference Level of Limit 802.11n40 MODE		
Freq.	PSD	Reference Level of Limit
(MHz)	(dBm)	(dBm)
2422	2.46	-17.54
2437	2.63	-17.37
2452	3	-17.00

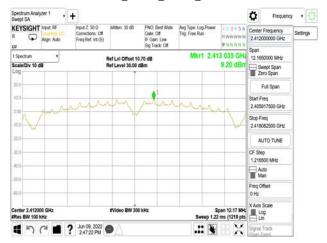
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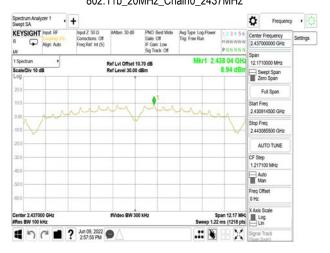


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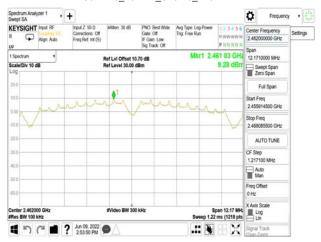
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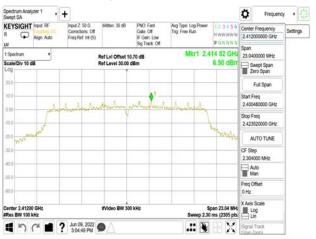
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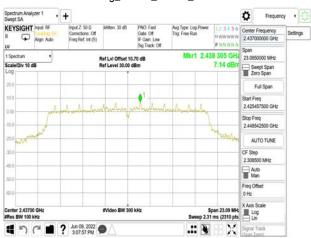
802.11b 20MHz Chain0 2462MHz



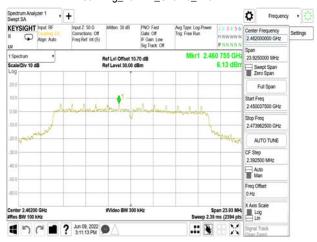
802.11g\_20MHz\_Chain0\_2412MHz



802.11g\_20MHz\_Chain0\_2437MHz



802.11g 20MHz Chain0 2462MHz



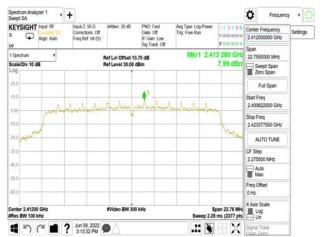
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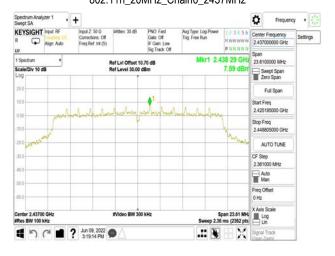


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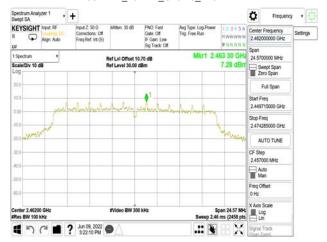
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# 802.11n\_20MHz\_Chain0\_2437MHz



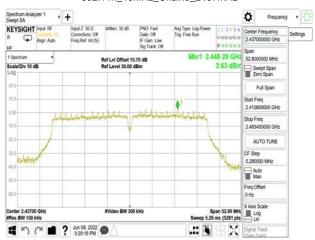
802.11n 20MHz Chain0 2462MHz



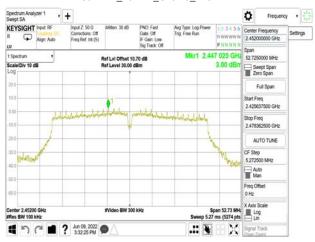
802.11n\_40MHz\_Chain0\_2422MHz



802.11n\_40MHz\_Chain0\_2437MHz



802.11n 40MHz Chain0 2452MHz



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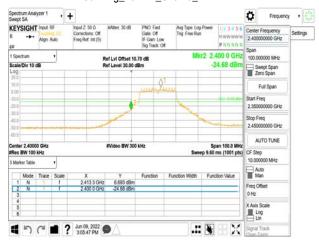
### 802.11b\_20MHz\_Chain0\_2412MHz



802.11b\_20MHz\_Chain0\_2462MHz



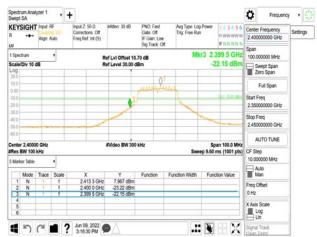
802.11g\_20MHz\_Chain0\_2412MHz



802.11g\_20MHz\_Chain0\_2462MHz



802.11n\_20MHz\_Chain0\_2412MHz



802.11n 20MHz Chain0 2462MHz



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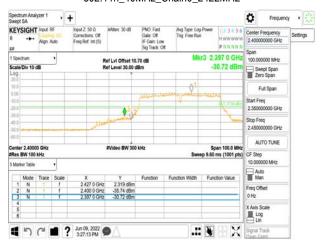
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## 802.11n\_40MHz\_Chain0\_2422MHz



## 802.11n\_40MHz\_Chain0\_2452MHz



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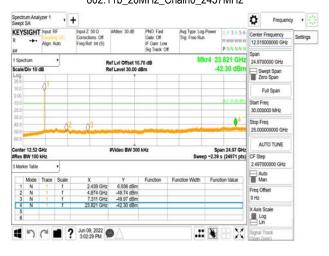


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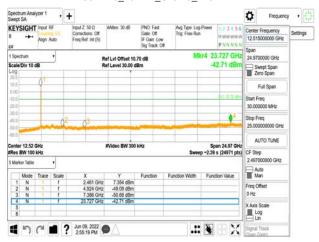
## 802.11b\_20MHz\_Chain0\_2412MHz



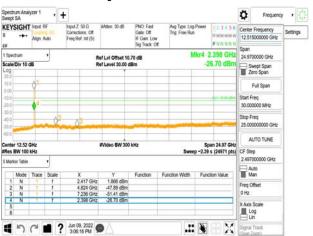
802.11b\_20MHz\_Chain0\_2437MHz



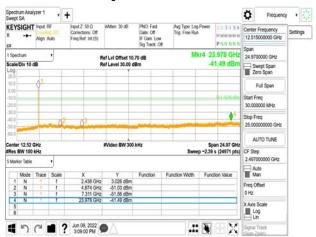
802.11b 20MHz Chain0 2462MHz



802.11g\_20MHz\_Chain0\_2412MHz



802.11g\_20MHz\_Chain0\_2437MHz



802.11g\_20MHz\_Chain0\_2462MHz



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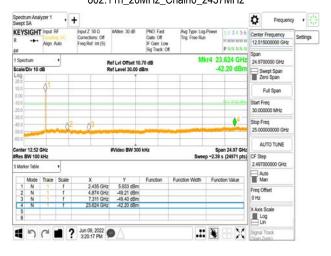


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### 802.11n\_20MHz\_Chain0\_2412MHz



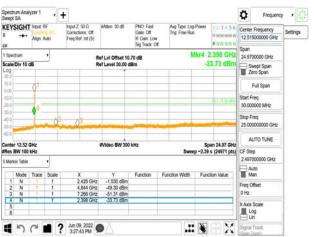
802.11n\_20MHz\_Chain0\_2437MHz



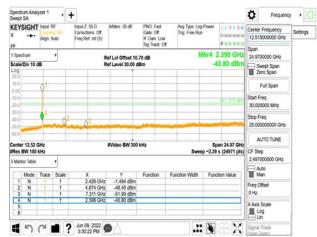
802.11n 20MHz Chain0 2462MHz



802.11n\_40MHz\_Chain0\_2422MHz



802.11n\_40MHz\_Chain0\_2437MHz



802.11n 40MHz Chain0 2452MHz



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# 11 RADIATED BANDEDGE AND SPURIOUS EMISSION MEASUREMENT

#### 11.1 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 and RSS-Gen §8.9 Table 5 and 6 limit as below.

And according to §15.33(a) (1) & RSS-Gen §6.13.2.a, 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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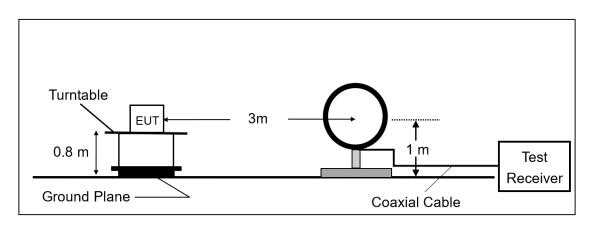
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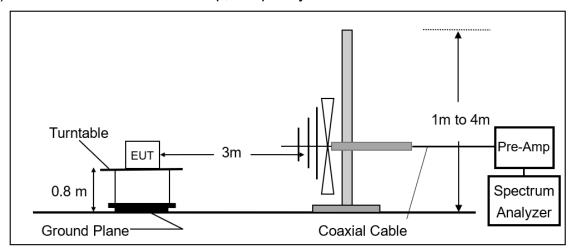
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#### 11.2 **Test Setup**

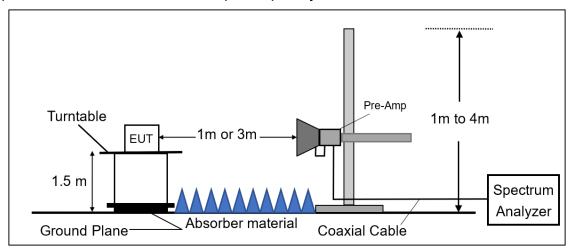
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz.



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



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



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# 11.3 Measurement Procedure

- 1. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
- 2. 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.

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# 11.4 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)

RA = Reading Amplitude AG = Amplifier Gain

AF = Antenna Factor

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

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

# 11.5 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) & RSS-GEN §6.13.2 was not reported.

## 11.6 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 highest emission in restricted bands

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#### 11.6.1 **Radiated Band Edge Measurement Result**

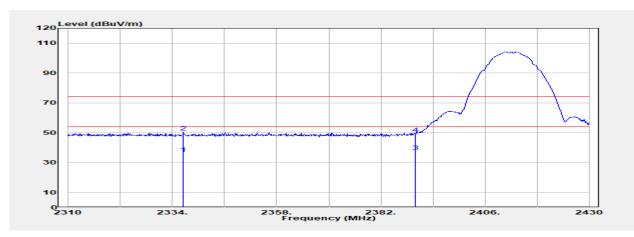
Report Number :TERF2206000778E2 :SAC G Chamber Test Site

Operation Mode: 802.11b Test Date :2022-06-21

Test Frequency :2412 MHz Temp./Humi. :23.5/66

Test Mode :Bandedge Antenna Pol. :Vertical

**EUT Pol** :E1 Plane Engineer :Quentin Liu



	Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin	
		Mode	Reading Level		FS	@3m		
_	MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB	
	2336.520	Average	39.94	-3.70	36.25	54.00	-17.75	
	2336.520	Peak	54.05	-3.70	50.36	74.00	-23.64	
	2390.000	Average	41.36	-3.80	37.56	54.00	-16.44	
	2390.000	Peak	53.13	-3.80	49.33	74.00	-24.67	

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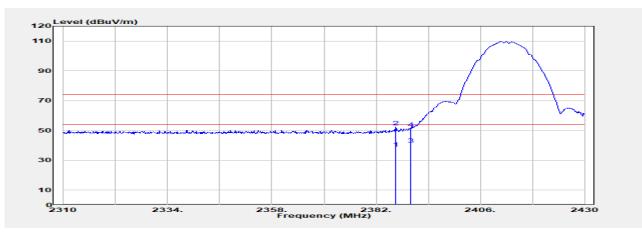


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Report Number :TERF2206000778E2 Test Site :SAC G Chamber

Operation Mode: 802.11b **Test Date** :2022-06-21 Test Frequency :2412 MHz Temp./Humi. :23.5/66 Test Mode :Bandedge Antenna Pol. :Horizontal

**EUT Pol** :E1 Plane Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
2386.560	Average	41.84	-3.79	38.05	54.00	-15.95
2386.560	Peak	56.18	-3.79	52.40	74.00	-21.60
2390.000	Average	44.31	-3.80	40.51	54.00	-13.49
2390.000	Peak	55.28	-3.80	51.48	74.00	-22.52

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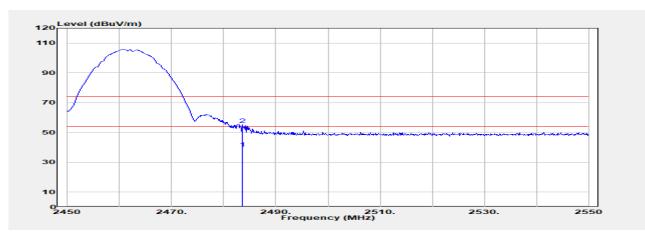
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Report Number :TERF2206000778E2 Test Site :SAC G Chamber

Operation Mode :802.11b Test Date :2022-06-21

Test Frequency :2462 MHz Temp./Humi. :23.5/66
Test Mode :Bandedge Antenna Pol. :Vertical

EUT Pol :E1 Plane Engineer :Quentin Liu



	Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
_	MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
	2483.500	Average	43.26	-3.82	39.44	54.00	-14.56
	2483.500	Peak	59.21	-3.82	55.39	74.00	-18.61

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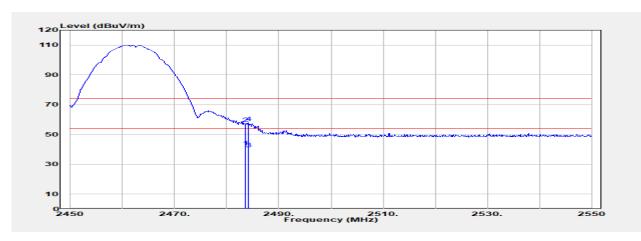


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Report Number :TERF2206000778E2 **Test Site** :SAC G Chamber

Operation Mode: 802.11b **Test Date** :2022-06-21 Test Frequency :2462 MHz Temp./Humi. :23.5/66 Test Mode :Bandedge Antenna Pol. :Horizontal

**EUT Pol** :E1 Plane Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
2483.500	Average	45.57	-3.82	41.75	54.00	-12.25
2483.500	Peak	61.02	-3.82	57.20	74.00	-16.80
2484.100	Average	44.22	-3.82	40.40	54.00	-13.60
2484.100	Peak	61.57	-3.82	57.75	74.00	-16.25

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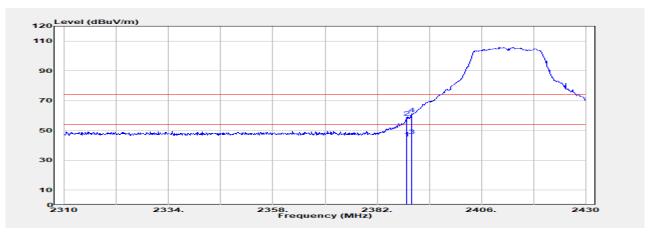
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Report Number :TERF2206000778E2 Test Site :SAC G Chamber

Operation Mode: 802.11g **Test Date** :2022-06-21

Test Frequency :2412 MHz Temp./Humi. :23.5/66 Test Mode Antenna Pol. :Vertical :Bandedge

**EUT Pol** :E1 Plane Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
2388.840	Average	48.56	-3.80	44.77	54.00	-9.23
2388.840	Peak	62.65	-3.80	58.85	74.00	-15.15
2390.000	Average	50.35	-3.80	46.55	54.00	-7.45
2390.000	Peak	65.10	-3.80	61.30	74.00	-12.70

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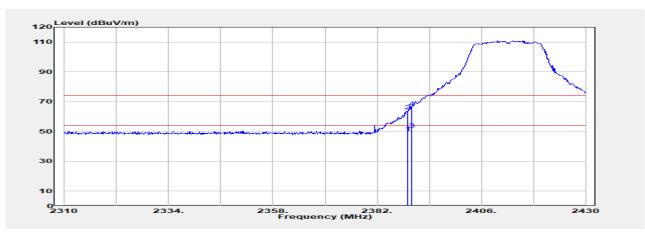
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Report Number :TERF2206000778E2 Test Site :SAC G Chamber

Operation Mode: 802.11g **Test Date** :2022-06-21 Test Frequency :2412 MHz Temp./Humi. :23.5/66 Test Mode :Bandedge Antenna Pol. :Horizontal **EUT Pol** :E1 Plane Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin	
	Mode	Reading Level		FS	@3m		
MHz	PK/QP/AVG	$dB\mu V$	dB	dBμV/m	dBμV/m	dB	
2388.960	Average	53.01	-3.80	49.21	54.00	-4.79	
2388.960	Peak	67.42	-3.80	63.63	74.00	-10.37	
2390.000	Average	55.08	-3.80	51.28	54.00	-2.72	
2390.000	Peak	69.69	-3.80	65.89	74.00	-8.11	

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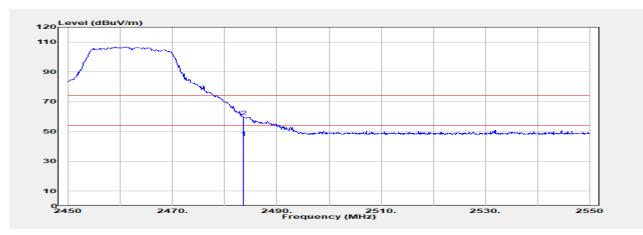
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Report Number :TERF2206000778E2 **Test Site** :SAC G Chamber

Operation Mode: 802.11g **Test Date** :2022-06-21

Test Frequency :2462 MHz Temp./Humi. :23.5/66 Antenna Pol. :Vertical Test Mode :Bandedge

**EUT Pol** :E1 Plane Engineer :Quentin Liu



	Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
_	MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
	2483.500	Average	49.71	-3.82	45.89	54.00	-8.11
	2483.500	Peak	63.74	-3.82	59.92	74.00	-14.08

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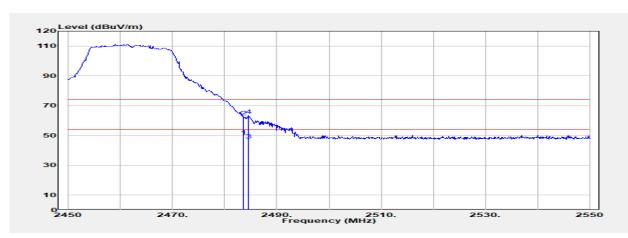
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Report Number :TERF2206000778E2 Test Site :SAC G Chamber

Operation Mode: 802.11g **Test Date** :2022-06-21 Test Frequency :2462 MHz Temp./Humi. :23.5/66 Test Mode :Bandedge Antenna Pol. :Horizontal **EUT Pol** :E1 Plane Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
2483.500	Average	53.22	-3.82	49.40	54.00	-4.60
2483.500	Peak	66.17	-3.82	62.35	74.00	-11.65
2484.600	Average	50.54	-3.81	46.73	54.00	-7.27
2484.600	Peak	67.16	-3.81	63.35	74.00	-10.65

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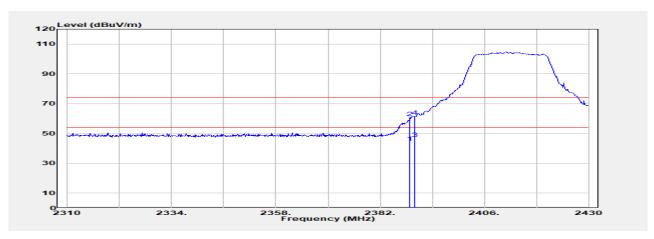
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Report Number :TERF2206000778E2 Test Site :SAC G Chamber

Operation Mode :802.11n20 Test Date :2022-06-21

Test Frequency :2412 MHz Temp./Humi. :23.5/66
Test Mode :Bandedge Antenna Pol. :Vertical

EUT Pol :E1 Plane Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
2388.840	Average	47.54	-3.80	43.75	54.00	-10.25
2388.840	Peak	64.34	-3.80	60.54	74.00	-13.46
2390.000	Average	50.17	-3.80	46.37	54.00	-7.63
2390.000	Peak	65.16	-3.80	61.36	74.00	-12.64

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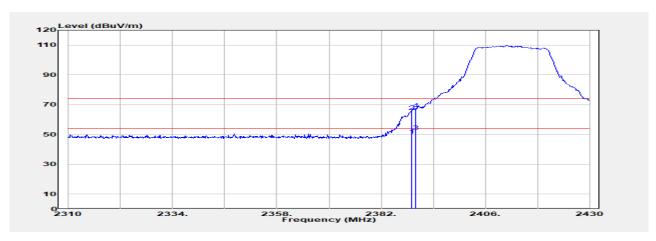


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Report Number :TERF2206000778E2 **Test Site** :SAC G Chamber

Operation Mode: 802.11n20 **Test Date** :2022-06-21 Test Frequency :2412 MHz Temp./Humi. :23.5/66 Test Mode :Bandedge Antenna Pol. :Horizontal

**EUT Pol** :E1 Plane Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
2388.960	Average	53.25	-3.80	49.45	54.00	-4.55
2388.960	Peak	69.08	-3.80	65.29	74.00	-8.71
2390.000	Average	55.76	-3.80	51.96	54.00	-2.04
2390.000	Peak	70.78	-3.80	66.98	74.00	-7.02

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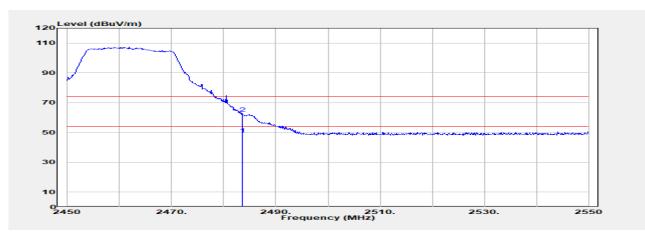
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Report Number :TERF2206000778E2 Test Site :SAC G Chamber

Operation Mode :802.11n20 Test Date :2022-06-21

Test Frequency :2462 MHz Temp./Humi. :23.5/66
Test Mode :Bandedge Antenna Pol. :Vertical

EUT Pol :E1 Plane Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
2483.500	Average	52.52	-3.82	48.70	54.00	-5.30
2483.500	Peak	66.48	-3.82	62.66	74.00	-11.34

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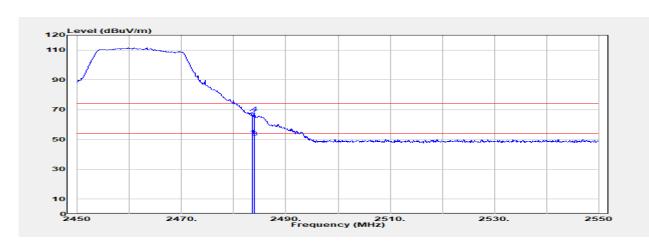


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Report Number :TERF2206000778E2 **Test Site** :SAC G Chamber

Operation Mode: 802.11n20 **Test Date** :2022-06-21 Test Frequency :2462 MHz Temp./Humi. :23.5/66

Test Mode :Bandedge Antenna Pol. :Horizontal **EUT Pol** :E1 Plane Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
2483.500	Average	56.29	-3.82	52.47	54.00	-1.53
2483.500	Peak	69.68	-3.82	65.87	74.00	-8.13
2483.900	Average	55.28	-3.82	51.46	54.00	-2.54
2483.900	Peak	71.72	-3.82	67.90	74.00	-6.10

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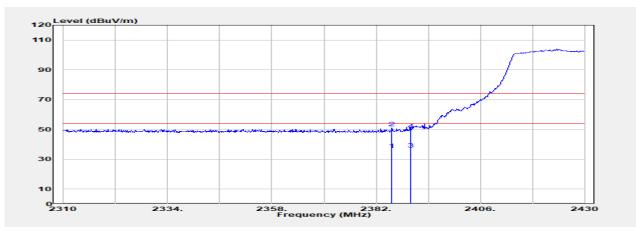
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Report Number :TERF2206000778E2 Test Site :SAC G Chamber

Operation Mode: 802.11n40 **Test Date** :2022-06-21

Test Frequency :2422 MHz Temp./Humi. :23.5/66 Antenna Pol. :Vertical Test Mode :Bandedge

**EUT Pol** :E1 Plane Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
2385.600	Average	40.19	-3.78	36.41	54.00	-17.59
2385.600	Peak	54.87	-3.78	51.09	74.00	-22.91
2390.000	Average	40.62	-3.80	36.82	54.00	-17.18
2390.000	Peak	53.54	-3.80	49.73	74.00	-24.27

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:Bandedge

Test Mode

Report No.: TERF2206000778E2

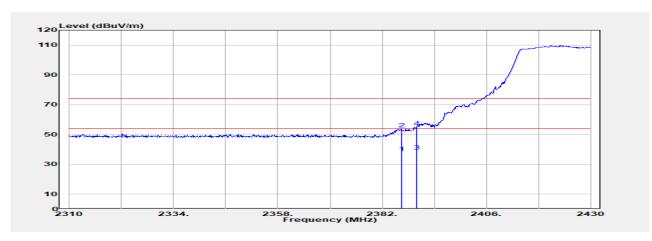
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Antenna Pol. :Horizontal

Report Number :TERF2206000778E2 **Test Site** :SAC G Chamber

Operation Mode: 802.11n40 **Test Date** :2022-06-21 Test Frequency :2422 MHz Temp./Humi. :23.5/66

**EUT Pol** :E1 Plane Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
2386.440	Average	41.38	-3.79	37.59	54.00	-16.41
2386.440	Peak	57.44	-3.79	53.65	74.00	-20.35
2390.000	Average	42.48	-3.80	38.68	54.00	-15.32
2390.000	Peak	58.88	-3.80	55.08	74.00	-18.92

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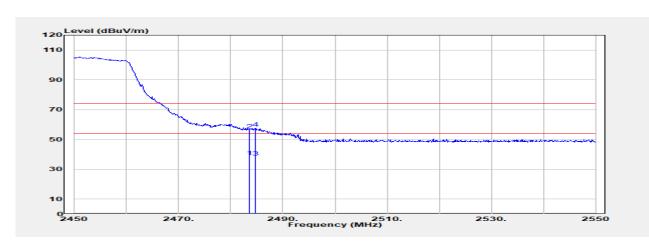
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Report Number :TERF2206000778E2 **Test Site** :SAC G Chamber

Operation Mode: 802.11n40 **Test Date** :2022-06-21

Test Frequency :2452 MHz Temp./Humi. :23.5/66 Antenna Pol. :Vertical Test Mode :Bandedge

**EUT Pol** :E1 Plane Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
2483.500	Average	42.26	-3.82	38.44	54.00	-15.56
2483.500	Peak	59.94	-3.82	56.12	74.00	-17.88
2484.700	Average	41.83	-3.81	38.02	54.00	-15.98
2484.700	Peak	61.34	-3.81	57.53	74.00	-16.47

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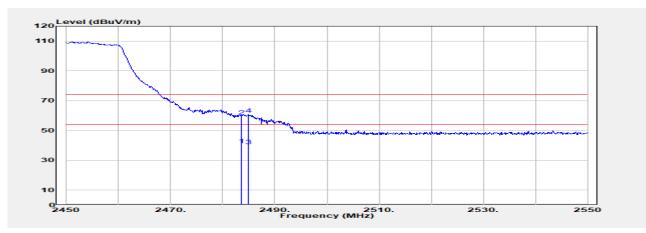


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:Quentin Liu

Report Number :TERF2206000778E2 Test Site :SAC G Chamber

Operation Mode: 802.11n40 **Test Date** :2022-06-21 Test Frequency :2452 MHz Temp./Humi. :23.5/66 Test Mode :Bandedge Antenna Pol. :Horizontal **EUT Pol** :E1 Plane



Engineer

	Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
_	MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
	2483.500	Average	44.09	-3.82	40.27	54.00	-13.73
	2483.500	Peak	63.38	-3.82	59.56	74.00	-14.44
	2485.000	Average	43.54	-3.81	39.73	54.00	-14.27
	2485.000	Peak	64.78	-3.81	60.97	74.00	-13.03

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#### 11.6.2 **Spurious Emission:**

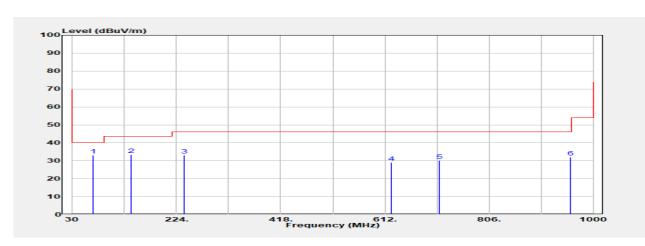
Report Number :TERF2206000778E2 Test Site :SAC G

Operation Mode: 802.11g Test Date :2022-06-27

Test Frequency :2437 MHz Temp./Humi. :22/69

Test Mode :Tx Antenna Pol. :Vertical

**EUT Pol** :E1 Plane Engineer :Quentin Liu



	Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin	
		Mode	Reading Level		FS	@3m		
_	MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB	
	68.800	Peak	47.75	-14.73	33.02	40.00	-6.98	
	139.610	Peak	46.79	-13.44	33.35	43.50	-10.15	
	238.550	Peak	47.78	-14.79	32.99	46.00	-13.01	
	624.610	Peak	34.22	-5.26	28.95	46.00	-17.05	
	713.850	Peak	33.25	-3.17	30.09	46.00	-15.91	
	958.290	Peak	31.53	0.50	32.03	46.00	-13.97	

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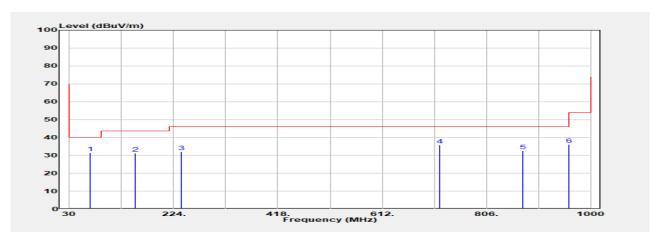
Report Number :TERF2206000778E2 Test Site :SAC G

Operation Mode: 802.11g Test Date :2022-06-27

Test Frequency :2437 MHz Temp./Humi. :22/69

Test Mode :Tx Antenna Pol. :Horizontal

**EUT Pol** :E1 Plane Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
67.830	Peak	45.76	-14.43	31.34	40.00	-8.66
152.220	Peak	44.12	-13.02	31.10	43.50	-12.40
238.550	Peak	46.63	-14.79	31.84	46.00	-14.16
719.670	Peak	38.44	-2.80	35.64	46.00	-10.36
874.870	Peak	33.37	-0.75	32.62	46.00	-13.38
960.230	Peak	35.51	0.43	35.93	54.00	-18.07

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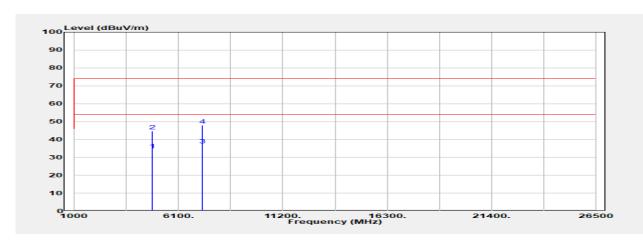
Report Number :TERF2206000778E2 Test Site :SAC G Chamber

Operation Mode: 802.11b **Test Date** :2022-06-23

Test Frequency :2412 MHz Temp./Humi. :21.8/70

Test Mode :Tx Antenna Pol. :Vertical

**EUT Pol** :E1 Plane Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
4824.000	Average	30.79	3.31	34.11	54.00	-19.89
4824.000	Peak	41.45	3.31	44.76	74.00	-29.24
7236.000	Average	29.43	7.56	36.99	54.00	-17.01
7236.000	Peak	40.45	7.56	48.00	74.00	-26.00

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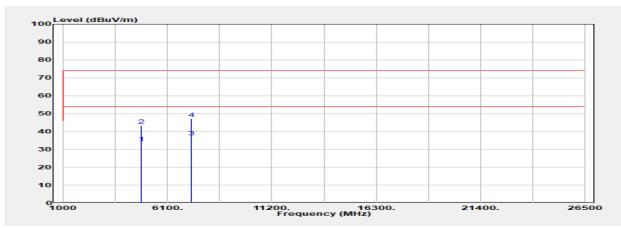
Report Number :TERF2206000778E2 Test Site :SAC G Chamber

Operation Mode: 802.11b **Test Date** :2022-06-23

Test Frequency :2412 MHz Temp./Humi. :21.8/70

Test Mode :Tx Antenna Pol. :Horizontal

**EUT Pol** :E1 Plane Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
 MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
4824.000	Average	30.16	3.31	33.47	54.00	-20.53
4824.000	Peak	40.05	3.31	43.36	74.00	-30.64
7236.000	Average	29.43	7.56	36.99	54.00	-17.01
7236.000	Peak	39.68	7.56	47.24	74.00	-26.76

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:E1 Plane

**EUT Pol** 

Report No.: TERF2206000778E2

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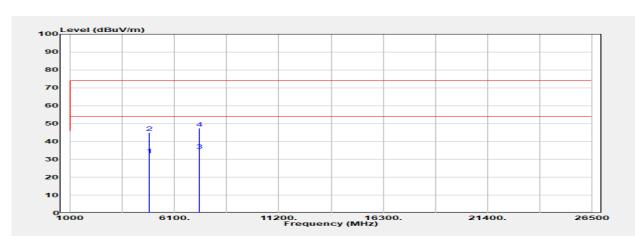
:Quentin Liu

Report Number :TERF2206000778E2 **Test Site** :SAC G Chamber

Operation Mode: 802.11b **Test Date** :2022-06-23

Test Frequency :2437 MHz Temp./Humi. :21.8/70

Test Mode :Tx Antenna Pol. :Vertical



Engineer

Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
4874.000	Average	29.04	3.48	32.52	54.00	-21.48
4874.000	Peak	41.56	3.48	45.04	74.00	-28.96
7311.000	Average	27.46	7.62	35.08	54.00	-18.92
7311.000	Peak	39.91	7.62	47.53	74.00	-26.47

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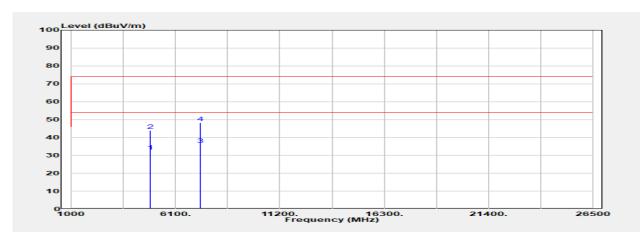
Report Number :TERF2206000778E2 Test Site :SAC G Chamber

Operation Mode: 802.11b **Test Date** :2022-06-23

Test Frequency :2437 MHz Temp./Humi. :21.8/70

Test Mode :Tx Antenna Pol. :Horizontal

**EUT Pol** :E1 Plane Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
4874.000	Average	28.73	3.48	32.21	54.00	-21.79
4874.000	Peak	40.29	3.48	43.77	74.00	-30.23
7311.000	Average	28.31	7.62	35.93	54.00	-18.07
7311.000	Peak	40.68	7.62	48.31	74.00	-25.69

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:E1 Plane

**EUT Pol** 

Report No.: TERF2206000778E2

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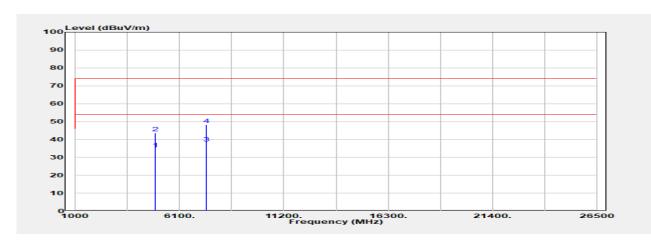
:Quentin Liu

Report Number :TERF2206000778E2 **Test Site** :SAC G Chamber

Operation Mode: 802.11b **Test Date** :2022-06-23

Test Frequency :2462 MHz Temp./Humi. :21.8/70

Test Mode :Tx Antenna Pol. :Vertical



Engineer

	Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
_	MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
	4924.000	Average	31.34	3.41	34.76	54.00	-19.24
	4924.000	Peak	40.14	3.41	43.55	74.00	-30.45
	7386.000	Average	30.33	7.74	38.07	54.00	-15.93
	7386.000	Peak	40.44	7.74	48.18	74.00	-25.82

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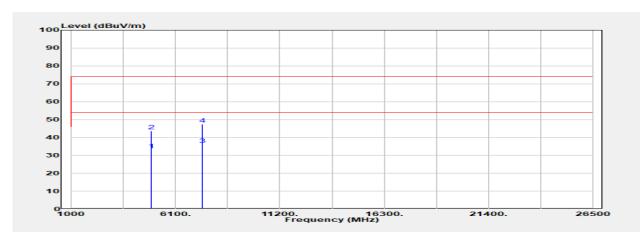
Report Number :TERF2206000778E2 Test Site :SAC G Chamber

Operation Mode: 802.11b **Test Date** :2022-06-23

Test Frequency :2462 MHz Temp./Humi. :21.8/70

Test Mode :Tx Antenna Pol. :Horizontal

**EUT Pol** :E1 Plane Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
4924.000	Average	29.72	3.41	33.14	54.00	-20.86
4924.000	Peak	40.19	3.41	43.60	74.00	-30.40
7386.000	Average	28.43	7.74	36.17	54.00	-17.83
7386.000	Peak	39.73	7.74	47.48	74.00	-26.52

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:E1 Plane

**EUT Pol** 

Report No.: TERF2206000778E2

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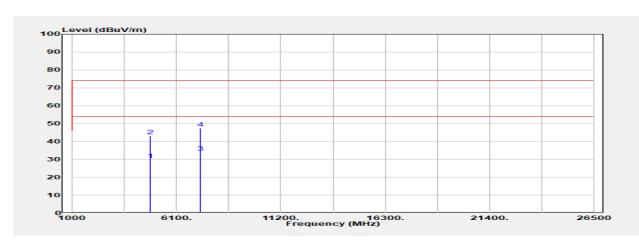
:Quentin Liu

Report Number :TERF2206000778E2 Test Site :SAC G Chamber

Operation Mode: 802.11g **Test Date** :2022-06-23

Test Frequency :2412 MHz Temp./Humi. :21.8/70

Test Mode :Tx Antenna Pol. :Vertical



Engineer

Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
4824.000	Average	26.60	3.31	29.91	54.00	-24.09
4824.000	Peak	39.73	3.31	43.04	74.00	-30.96
7236.000	Average	26.43	7.56	33.99	54.00	-20.01
7236.000	Peak	39.87	7.56	47.42	74.00	-26.58

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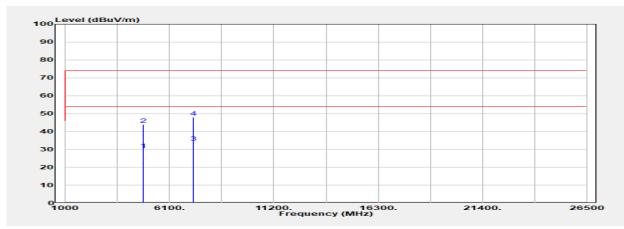
Report Number :TERF2206000778E2 Test Site :SAC G Chamber

Operation Mode: 802.11g **Test Date** :2022-06-23

Test Frequency :2412 MHz Temp./Humi. :21.8/70

Test Mode :Tx Antenna Pol. :Horizontal

**EUT Pol** :E1 Plane Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
4824.000	Average	26.38	3.31	29.69	54.00	-24.31
4824.000	Peak	40.50	3.31	43.81	74.00	-30.19
7236.000	Average	26.43	7.56	33.99	54.00	-20.01
7236.000	Peak	40.48	7.56	48.03	74.00	-25.97

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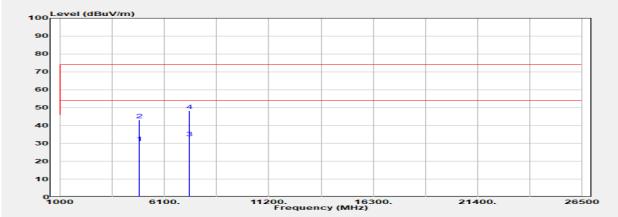
Report Number :TERF2206000778E2 Test Site :SAC G Chamber

Operation Mode: 802.11g **Test Date** :2022-06-23

Test Frequency :2437 MHz Temp./Humi. :21.8/70

Test Mode :Tx Antenna Pol. :Vertical

**EUT Pol** :E1 Plane Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
4874.000	Average	26.76	3.48	30.24	54.00	-23.76
4874.000	Peak	39.50	3.48	42.98	74.00	-31.02
7311.000	Average	25.48	7.62	33.10	54.00	-20.90
7311.000	Peak	40.65	7.62	48.27	74.00	-25.73

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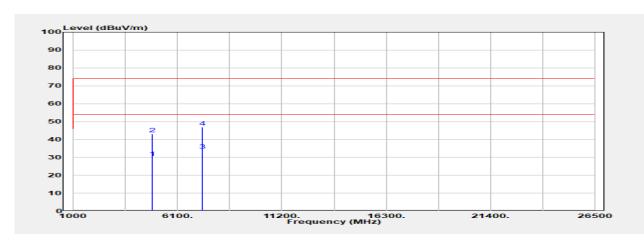
Report Number :TERF2206000778E2 Test Site :SAC G Chamber

Operation Mode: 802.11g **Test Date** :2022-06-23

Test Frequency :2437 MHz Temp./Humi. :21.8/70

Test Mode :Tx Antenna Pol. :Horizontal

**EUT Pol** :E1 Plane Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
4874.000	Average	26.42	3.48	29.90	54.00	-24.10
4874.000	Peak	39.71	3.48	43.19	74.00	-30.81
7311.000	Average	26.23	7.62	33.85	54.00	-20.15
7311.000	Peak	39.20	7.62	46.82	74.00	-27.18

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:E1 Plane

**EUT Pol** 

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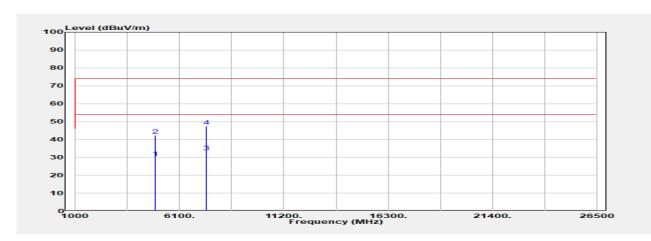
:Quentin Liu

Report Number :TERF2206000778E2 Test Site :SAC G Chamber

Operation Mode: 802.11g **Test Date** :2022-06-23

Test Frequency :2462 MHz Temp./Humi. :21.8/70

Test Mode :Tx Antenna Pol. :Vertical



Engineer

Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin	
	Mode	Reading Level		FS	@3m		
MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB	
4924.000	Average	26.33	3.41	29.74	54.00	-24.26	
4924.000	Peak	38.98	3.41	42.39	74.00	-31.61	
7386.000	Average	25.43	7.74	33.17	54.00	-20.83	
7386.000	Peak	39.64	7.74	47.38	74.00	-26.62	

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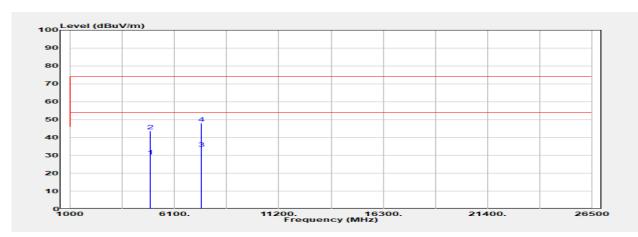
Report Number :TERF2206000778E2 Test Site :SAC G Chamber

Operation Mode: 802.11g **Test Date** :2022-06-23

Test Frequency :2462 MHz Temp./Humi. :21.8/70

Test Mode :Tx Antenna Pol. :Horizontal

**EUT Pol** :E1 Plane Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
4924.000	Average	26.12	3.41	29.53	54.00	-24.47
4924.000	Peak	40.26	3.41	43.67	74.00	-30.33
7386.000	Average	26.02	7.74	33.76	54.00	-20.24
7386.000	Peak	40.14	7.74	47.88	74.00	-26.12

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:E1 Plane

**EUT Pol** 

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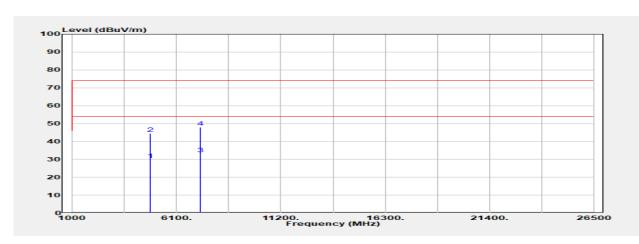
:Quentin Liu

Report Number :TERF2206000778E2 Test Site :SAC G Chamber

Operation Mode: 802.11n20 **Test Date** :2022-06-23

Test Frequency :2412 MHz Temp./Humi. :21.8/70

Test Mode :Tx Antenna Pol. :Vertical



Engineer

Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
4824.000	Average	26.57	3.31	29.88	54.00	-24.12
4824.000	Peak	41.21	3.31	44.52	74.00	-29.48
7236.000	Average	25.43	7.56	32.99	54.00	-21.01
7236.000	Peak	40.48	7.56	48.04	74.00	-25.96

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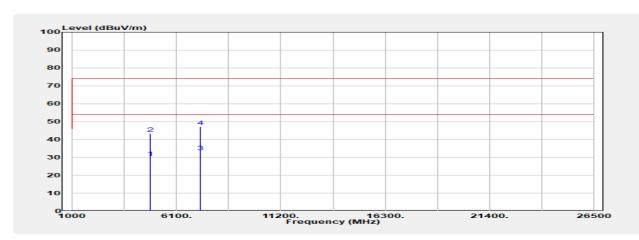
Report Number :TERF2206000778E2 Test Site :SAC G Chamber

Operation Mode: 802.11n20 **Test Date** :2022-06-23

Test Frequency :2412 MHz Temp./Humi. :21.8/70

Test Mode :Tx Antenna Pol. :Horizontal

**EUT Pol** :E1 Plane Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
4824.000	Average	26.37	3.31	29.68	54.00	-24.32
4824.000	Peak	40.04	3.31	43.35	74.00	-30.65
7236.000	Average	25.41	7.56	32.97	54.00	-21.03
7236.000	Peak	39.48	7.56	47.03	74.00	-26.97

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:E1 Plane

**EUT Pol** 

Report No.: TERF2206000778E2

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:Quentin Liu

Report Number :TERF2206000778E2 **Test Site** :SAC G Chamber

Operation Mode: 802.11n20 **Test Date** :2022-06-23

Test Frequency :2437 MHz Temp./Humi. :21.8/70

Test Mode :Tx Antenna Pol. :Vertical



Engineer

	Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
_	MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
	4874.000	Average	26.68	3.48	30.16	54.00	-23.84
	4874.000	Peak	40.60	3.48	44.08	74.00	-29.92
	7311.000	Average	24.53	7.62	32.15	54.00	-21.85
	7311.000	Peak	38.95	7.62	46.57	74.00	-27.43

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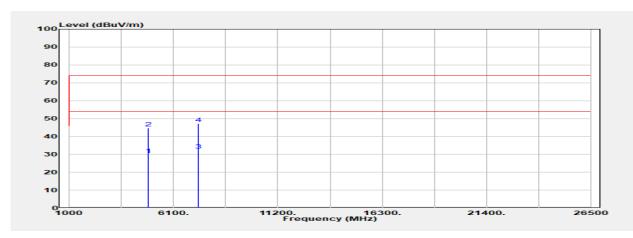
Report Number :TERF2206000778E2 Test Site :SAC G Chamber

Operation Mode: 802.11n20 **Test Date** :2022-06-23

Test Frequency :2437 MHz Temp./Humi. :21.8/70

Test Mode :Tx Antenna Pol. :Horizontal

**EUT Pol** :E1 Plane Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
4874.000	Average	26.39	3.48	29.87	54.00	-24.13
4874.000	Peak	41.15	3.48	44.63	74.00	-29.37
7311.000	Average	24.53	7.62	32.15	54.00	-21.85
7311.000	Peak	39.56	7.62	47.18	74.00	-26.82

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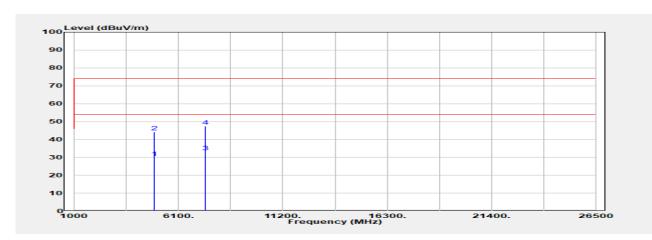
Report Number :TERF2206000778E2 Test Site :SAC G Chamber

Operation Mode: 802.11n20 **Test Date** :2022-06-23

Test Frequency :2462 MHz Temp./Humi. :21.8/70

Test Mode :Tx Antenna Pol. :Vertical

**EUT Pol** :E1 Plane Engineer :Quentin Liu



	Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
_	MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
	4924.000	Average	26.43	3.41	29.84	54.00	-24.16
	4924.000	Peak	40.81	3.41	44.22	74.00	-29.78
	7386.000	Average	25.32	7.74	33.06	54.00	-20.94
	7386.000	Peak	39.59	7.74	47.34	74.00	-26.66

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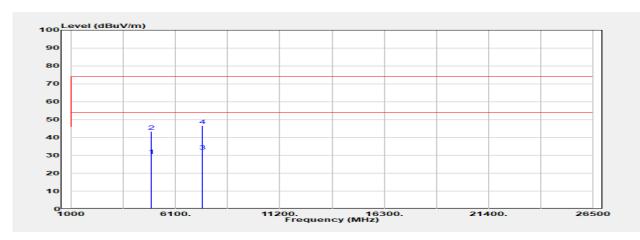
Report Number :TERF2206000778E2 Test Site :SAC G Chamber

Operation Mode: 802.11n20 **Test Date** :2022-06-23

Test Frequency :2462 MHz Temp./Humi. :21.8/70

Test Mode :Tx Antenna Pol. :Horizontal

**EUT Pol** :E1 Plane Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
4924.000	Average	26.39	3.41	29.81	54.00	-24.19
4924.000	Peak	40.03	3.41	43.45	74.00	-30.55
7386.000	Average	24.46	7.74	32.20	54.00	-21.80
7386.000	Peak	38.87	7.74	46.61	74.00	-27.39

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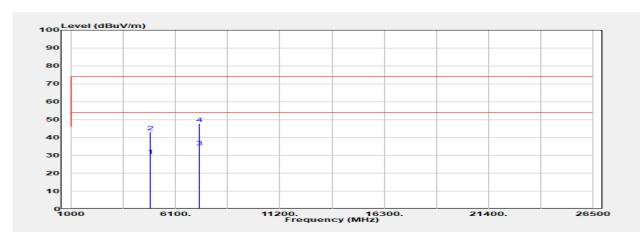
Report Number :TERF2206000778E2 **Test Site** :SAC G Chamber

Operation Mode: 802.11n40 **Test Date** :2022-06-23

Test Frequency :2422 MHz Temp./Humi. :21.8/70

Test Mode :Tx Antenna Pol. :Vertical

**EUT Pol** :E1 Plane Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
4844.000	Average	26.65	3.16	29.81	54.00	-24.19
4844.000	Peak	39.91	3.16	43.07	74.00	-30.93
7266.000	Average	26.33	8.37	34.70	54.00	-19.30
7266.000	Peak	39.41	8.37	47.78	74.00	-26.22

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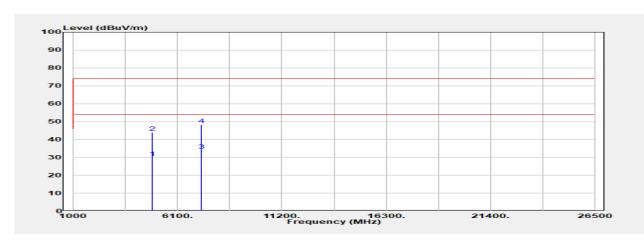
Report Number :TERF2206000778E2 Test Site :SAC G Chamber

Operation Mode: 802.11n40 **Test Date** :2022-06-23

Test Frequency :2422 MHz Temp./Humi. :21.8/70

Test Mode :Tx Antenna Pol. :Horizontal

**EUT Pol** :E1 Plane Engineer :Quentin Liu



	Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
_	MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
	4844.000	Average	26.52	3.16	29.68	54.00	-24.32
	4844.000	Peak	40.65	3.16	43.81	74.00	-30.19
	7266.000	Average	25.46	8.37	33.83	54.00	-20.17
	7266.000	Peak	39.88	8.37	48.25	74.00	-25.75

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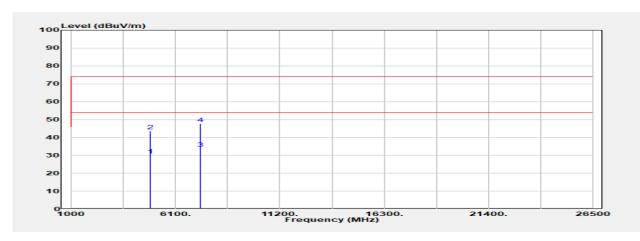
Report Number :TERF2206000778E2 **Test Site** :SAC G Chamber

Operation Mode: 802.11n40 **Test Date** :2022-06-23

Test Frequency :2437 MHz Temp./Humi. :21.8/70

Test Mode :Tx Antenna Pol. :Vertical

**EUT Pol** :E1 Plane Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
 MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
4874.000	Average	26.64	3.48	30.12	54.00	-23.88
4874.000	Peak	40.04	3.48	43.53	74.00	-30.47
7311.000	Average	26.13	7.62	33.75	54.00	-20.25
7311.000	Peak	40.06	7.62	47.68	74.00	-26.32

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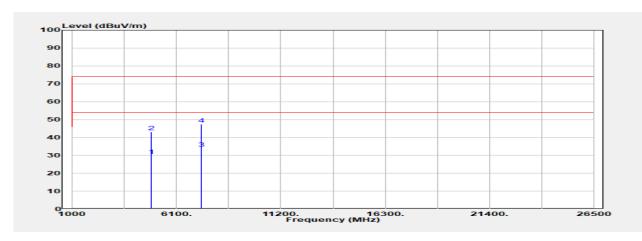
Report Number :TERF2206000778E2 Test Site :SAC G Chamber

Operation Mode: 802.11n40 **Test Date** :2022-06-23

Test Frequency :2437 MHz Temp./Humi. :21.8/70

Test Mode :Tx Antenna Pol. :Horizontal

**EUT Pol** :E1 Plane Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin	
	Mode	Reading Level		FS	@3m		
MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB	
4874.000	Average	26.40	3.48	29.88	54.00	-24.12	
4874.000	Peak	39.61	3.48	43.09	74.00	-30.91	
7311.000	Average	26.35	7.62	33.97	54.00	-20.03	
7311.000	Peak	39.69	7.62	47.31	74.00	-26.69	

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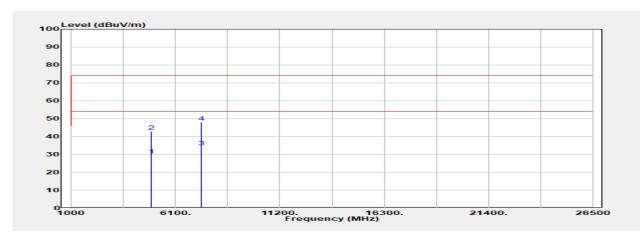
Report Number :TERF2206000778E2 **Test Site** :SAC G Chamber

Operation Mode: 802.11n40 **Test Date** :2022-06-23

Test Frequency :2452 MHz Temp./Humi. :21.8/70

Test Mode :Tx Antenna Pol. :Vertical

**EUT Pol** :E1 Plane Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
4904.000	Average	26.15	3.29	29.44	54.00	-24.56
4904.000	Peak	39.46	3.29	42.75	74.00	-31.25
7356.000	Average	26.12	7.97	34.09	54.00	-19.91
7356.000	Peak	39.93	7.97	47.90	74.00	-26.10

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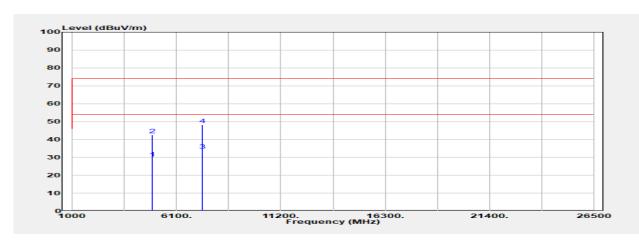
Report Number :TERF2206000778E2 Test Site :SAC G Chamber

Operation Mode: 802.11n40 **Test Date** :2022-06-23

Test Frequency :2452 MHz Temp./Humi. :21.8/70

Test Mode :Tx Antenna Pol. :Horizontal

**EUT Pol** :E1 Plane Engineer :Quentin Liu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AVG	dΒμV	dB	dBμV/m	dBμV/m	dB
4904.000	Average	26.12	3.29	29.41	54.00	-24.59
4904.000	Peak	39.31	3.29	42.60	74.00	-31.40
7356.000	Average	25.78	7.97	33.75	54.00	-20.25
7356.000	Peak	40.38	7.97	48.35	74.00	-25.65

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# 12 POWER SPECTRAL DENSITY

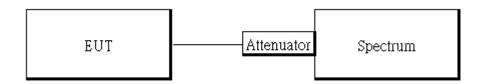
### 12.1 Standard Applicable

Per Part 15.247 (e)

The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission.

This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

# 12.2 Test Setup



## **Measurement Procedure**

- 1. Set analyzer center frequency to DTS channel center frequency.
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
- 3. Set the span to 1.5 times the DTS channel bandwidth.
- 4. Set the RBW = 3 kHz & VBW = 10 kHz.
- 5. Detector = peak.
- 6. Sweep time = auto couple.
- 7. Trace mode = max hold.
- 8. Allow trace to fully stabilize.
- 9. Use the peak marker function to determine the maximum amplitude level.

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# 12.4 Power spectral density

	POWER DENSITY 802.11b						
Freq.	Ch0	PSD	Limit	Dogult			
(MHz)	PSD	(dBm/3kHz)	(dBm/3kHz)	Result			
2412	-8.43	-8.43	8.00	PASS			
2437	-8.72	-8.72	8.00	PASS			
2462	-7.85	-7.85	8.00	PASS			

	POWER DENSITY 802.11g					
Freq.	Ch0 PSD Limit Page					
(MHz)	PSD	PSD (dBm/3kHz) (dBm/3kHz)		Result		
2412	-10.49	-10.49	8.00	PASS		
2437	-9.28	-9.28	8.00	PASS		
2462	-11.13	-11.13	8.00	PASS		

	POWER DENSITY 802.11n HT20						
Freq.	Ch0	PSD	Limit	Result			
(MHz)	PSD	(dBm/3kHz)	(dBm/3kHz)	Nesuit			
2412	-10.58	-10.58	8.00	PASS			
2437	-9.89	-9.89	8.00	PASS			
2462	-10.6	-10.60	8.00	PASS			

	POWER DENSITY 802.11n HT40						
Freq.	Ch0 PSD Limit Do						
(MHz)	PSD	(dBm/3kHz)	Hz) (dBm/3kHz) Re				
2422	-14.27	-14.27	8.00	PASS			
2437	-13.9	-13.90	8.00	PASS			
2452	-12.42	-12.42	8.00	PASS			

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### 802.11b\_20MHz\_Chain0\_2412MHz



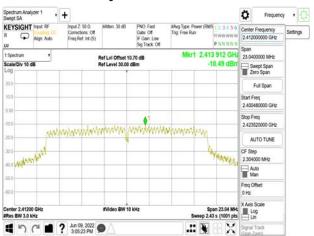
802.11b\_20MHz\_Chain0\_2437MHz



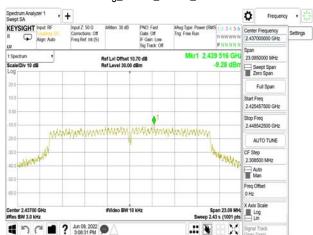
802.11b 20MHz Chain0 2462MHz



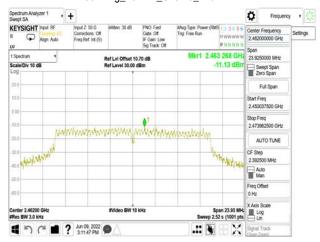
802.11g\_20MHz\_Chain0\_2412MHz



802.11g\_20MHz\_Chain0\_2437MHz



802.11g\_20MHz\_Chain0\_2462MHz



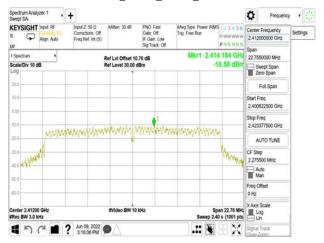
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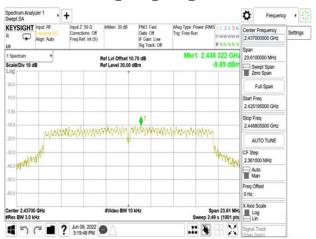


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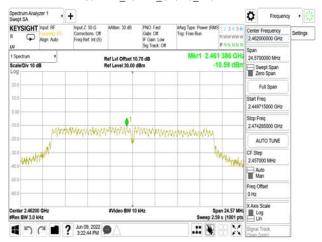
### 802.11n\_20MHz\_Chain0\_2412MHz



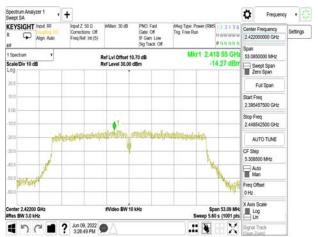
802.11n\_20MHz\_Chain0\_2437MHz



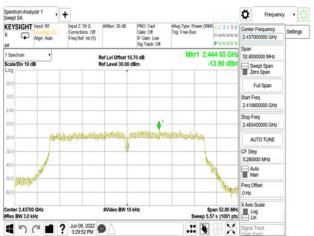
802.11n 20MHz Chain0 2462MHz



802.11n\_40MHz\_Chain0\_2422MHz



802.11n\_40MHz\_Chain0\_2437MHz



802.11n 40MHz Chain0 2452MHz



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# 13 ANTENNA REQUIREMENT

#### 13.1 Standard Applicable

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. 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 provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§ 15.211, 15.213, 15.217, 15.219, 15.221, or § 15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

#### 13.2 **Antenna Connected Construction**

The antenna is designed as permanently attached and no consideration of replacement. Please see EUT photo for details.

~ End of Report ~

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