



# **ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT**





Page: 1 of 80

Applicant: Quanta Computer Inc.

NO.188, Wenhua 2nd Rd., Guishan Dist., Taoyuan City

33377, Taiwan (R.O.C.)

Manufacturer: Quanta Computer Inc.

NO.188, Wenhua 2nd Rd., Guishan Dist., Taoyuan City

33377, Taiwan (R.O.C.)

**Product Name: Smart Watch** 

**Brand Name:** Verizon Wireless

Model No.: QTAX59

**Report Number:** TERF2402000337ER

FCC ID HFS-QTAX59

Date of EUT Received: January 2, 2024

February 6, 2024~March 12, 2024 Date of Test:

Issue Date: April 15, 2024

CHUN-CHIEH, CHIEN

Approved By\_\_\_\_\_

Chun Chieh, Chen

### 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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Report No.: TERF2402000337ER

Page: 2 of 80

Revision History									
Report Number	Revision	Description	Issue Date	Revised By	Remark				
TERF2402000337ER	00	Original	Apr. 15, 2024	Candice Li					

### Note:

- 1. The remark "\*" indicates modification of the report upon requests from certification
- 2 \ Variant information of main and 2nd / 3rd source is provided by the applicant, test results of this report are applicable to the sample EUT(s) received. 3rd source only changes the memory and does not need to be verified after judgment. The TX Emissions was added to measure the above differences. The rest of the internal circuit board wiring technology and radio frequency functions of the main components are the same. Please refer to the attached file (Product information) for details.

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Page: 3 of 80



# **Table of Contents**

1	GENERAL INFORMATION	4
2	SYSTEM TEST CONFIGURATION	7
3	SUMMARY OF TEST RESULTS	10
4	DESCRIPTION OF TEST MODES	11
5	MEASUREMENT UNCERTAINTY	14
6	MEASUREMENT EQUIPMENT USED	15
7	CONDUCTED EMISSION TEST	17
8	PEAK OUTPUT POWER MEASUREMENT	21
9	EMISSION BANDWIDTH MEASUREMENT	26
10	CONDUCTED BAND EDGES AND SPURIOUS EMISSION MEASUREMENT	30
11	RADIATED BANDEDGE AND SPURIOUS EMISSION MEASUREMENT	38
12	POWER SPECTRAL DENSITY	76
13	ANTENNA REQUIREMENT	80

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Page: 4 of 80



## **GENERAL INFORMATION**

### 1.1 **Product Description**

Product Name:	Smart Watch
Brand Name:	Verizon Wireless
Model No.:	QTAX59
Hardware Version:	N/A
Firmware Version:	N/A
EUT Series No. (IMEI):	353862890001908 (Conducted) 353862890001759 (Conduction, Radiated) 353862890001593 (Radiated_2nd Source)
Power Supply:	3.87Vdc from Rechargeable Li-polymer Battery
Test Software (Name/Version)	QRCT/4.0.88.1

### 1.2 **RF Specification**

### WLAN 2.4GHz

Wi-Fi	Frequency	Channels	Rated Pov	wer (dBm)	Modulation	
VVI-I I	Range	Charmers	Peak	Avg.	Technology	
802.11b	2412~2462	11	22.39	19.67	DSSS	
802.11g	2412~2462	11	23.07	16.24	OFDM	
802.11n_HT20	2412~2462	11	22.99	15.89	OFDM	
Modulation	CCK, DQPSK, DBPSK for DSSS in 802.11b					
Wodulation	64QAM, 16QAM, QPSK, BPSK for OFDM in 802.11g,11n					
	802.11b: 1/2/5.5/11 Mbps					
Data Rat	802.11g: 6/9/12/18/24/36/48/54 Mbps					
	802.11n_HT20:up to 72.2Mbps					

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Page: 5 of 80

**Antenna Designation** 

Antenna	Supplier	Antenna	Freq.	Peak Antenna	
Type		Part No.	(MHz)	Gain (dBi)	
PIFA	Suzhou Ariconn Communications Co., Ltd.	DQ623113700	2400~2500	-2.17	

### Note:

- 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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Page: 6 of 80

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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 ANSI C63.10:2013

## 1.5 Test Facility

Laboratory	Test Site Address	Test Site Name	FCC Designa- tion number	IC CAB
		SAC 1		
		SAC 2		
		SAC 3		
	No 424 My Kyng Bood Noy Toingi	Conduction 1		
	No.134, Wu Kung Road, New Taipei	Conducted 1	TM0027	
	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.		Conduction C		
(TAF code 3702)		SAC C		
		SAC D		
		SAC G		
	No 2 Kaii 4at Dd. Cwiahan Diatriat	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		

**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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Page: 7 of 80

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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Page: 8 of 80

## **Measurement Results Explanation Example**

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

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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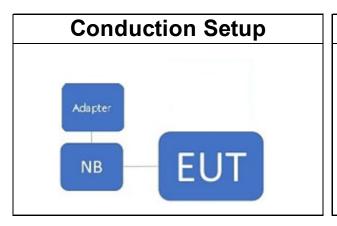
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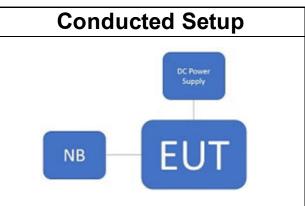
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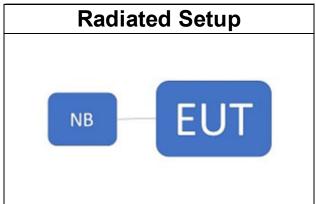
Page: 9 of 80



### 2.5 **Test Configuration**







#### 2.6 Control Unit(s)

**EQUIPMENT TYPE** 

Notebook

	-(-)								
	AC Power-Line Conducted Emission Test Site: Conduction 1								
EQUIPMENT TYPE	MFR	CAL DUE.							
Notebook	Lenovo	T14	PF-380WLW	N/A	N/A				
Adapter	Lenovo	ADLX65YAC3D	N/A	N/A	N/A				
	С	onducted Emission	Test Site: Conducted	1					
EQUIPMENT TYPE	EQUIPMENT TYPE MFR		SERIAL NUMBER	LAST CAL.	CAL DUE.				
Notebook	Lenovo T14		PF-380WLW	N/A	N/A				
Radiated Emission Test Site: SAC 1									

**MODEL NUMBER** 

T14

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MFR

Lenovo

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SERIAL NUMBER

PF-380WLW

LAST CAL.

N/A

CAL DUE.

N/A



Page: 10 of 80



## 3 SUMMARY OF TEST RESULTS

FCC Rules	FCC Rules Description Of Test				
§15.207(a)	AC Power Line Conducted Emission	Compliant			
§15.247(b) (3)	Peak Output Power	Compliant			
§15.247(a)(2)	Emission Bandwidth	Compliant			
§15.209	Conducted Band Edge	Compliant			
§15.247(d)	and Spurious Emission	Compliant			
§15.209	Radiated Band Edge	Compliant			
§15.247(d)	and Spurious Emission	Compilant			
§15.205	Restricted Bands	Compliant			
§15.247(e)	Power Spectral Density	Compliant			
§15.203	Antenna Requirement	Compliant			

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Page: 11 of 80



**DESCRIPTION OF TEST MODES** 

### 4.1 **Operating Frequencies**

### 2400~2483.5 MHz 20MHz Freq. CH (MHz) 2412 1 2 2417 3 2422 4 2427 2432 5 2437 6 7 2442 8 2447 9 2452 10 2457

2462

11

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Page: 12 of 80

### 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.

The gevin UE is pre-scanned among below modes.

	Modulation		Transmission Chain					Single Transmission Spatial		Multi Transmission 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 ac		Ch0	Ch1		Ch2		Ch3		1TX		1TX
	802.11 ax		Ch0	Ch1		Ch2		Ch3		1TX		1TX

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 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				

TRANSMIT 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			

TRANSMIT 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				

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Report No.: TERF2402000337ER

Page: 13 of 80

### 2nd Source

TRANSMIT RADIATED EMISSION TEST (ABOVE 1 GHz)							
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT		
802.11b	1 to 11	11	DSSS	1	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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Page: 14 of 80

## **MEASUREMENT UNCERTAINTY**

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		
Polarization. Vertical	+/-	3.43	dB	1GHz - 18GHz		
	+/-	3.86	dB	18GHz - 40GHz		
	+/-	1.89	dB	9kHz~30MHz		
Polarization: Horizontal	+/-	4.02	dB	30MHz - 1000MHz		
Polarization. Horizontal	+/-	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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Page: 15 of 80



## MEASUREMENT EQUIPMENT USED

### 6.1 **Emission from AC power line**

AC Power-Line Conducted Emission Test Site: Conduction 1							
	AC POWER	-Line Conducted Emi					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.		
Test Software	Audix	e3	Ver. 9.210616	N.C.R	N.C.R		
LISN	SCHWARZBECK	NSLK 8127	1040	09/06/2023	09/05/2024		
Coaxial Cables	EMC Instruments Corp.	EMCCFD300-BM- BM-3000	161207	06/22/2023	06/21/2024		
Pulse Limiter	SCHWARZBECK	VTSD 9561F-N	793	06/22/2023	06/21/2024		
EMI Test Receiver	R&S	ESCI 7	100759	08/21/2023	08/20/2024		

#### 6.2 **Condcuted Measurement**

Conducted Emission Test Site: Conducted 1								
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.			
EXA Spectrum Analyzer	KEYSIGHT	N9010B	MY59071571	06/07/2023	06/06/2024			
Test Software	SGS	Radio Test Software	Ver. 21	N.C.R	N.C.R			
Power Meter	Anritsu	ML2496A	1242004	10/24/2023	10/23/2024			
Power Sensor	Anritsu	MA2411B	1207365	10/24/2023	10/23/2024			
Power Sensor	Anritsu	MA2411B	1207368	10/24/2023	10/23/2024			
DC Power Supply	Agilent	E3640A	MY52410006	01/02/2024	01/01/2025			
Attenuator	Mini-Circuits	BW-S10W2+	1	12/12/2023	12/11/2024			
DC Block	Mini-Circuits	BLK-18-S+	31129	12/12/2023	12/11/2024			

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Page: 16 of 80



### **Radiated Measurement**

Radiated Emission Test Site: SAC 1							
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.		
Loop Antenna	COM-POWER	AL-130R	10160104	12/04/2023	12/03/2024		
Horn Antenna	RF SPIN	DRH0844	LE2D05A0844	07/03/2023	07/02/2024		
Horn Antenna	SCHWARZBECK	BBHA9120D	D803	01/12/2024	01/11/2025		
Bi-log Antenna	TESEO	CBL 6112D	35242 & AT-N0555	12/18/2023	12/17/2024		
EXA Spectrum Analyzer	KEYSIGHT	N9010B	MY60242081	10/17/2023	10/16/2024		
Test Software	Audix	e3	Ver. 9.210616	N.C.R	N.C.R		
Site Cal	SGS	SAC 1	N/A	08/31/2023	08/30/2024		
Pre-Amplifier	EMCI	EMC184045B	980135	08/31/2023	08/30/2024		
Pre-Amplifier	НР	8447D	2944A09469	08/31/2023	08/30/2024		
Pre-Amplifier	EMCI	EMC118A45SEE	980933	07/31/2023	07/30/2024		
4G High Pass Filter	WI	WHKX4.0	24	12/12/2023	12/11/2024		
Band Reject Filter 2400-2483.5	EWT	EWT-14-0166	M3	12/12/2023	12/11/2024		
Coaxial Cables	Huber Suhner	SUCOFLEX 102	RX Cable 18G-40G MY2630/2+805062/2	08/31/2023	08/30/2024		
Coaxial Cable	EMCI	EMC104-SM-SM- 8000+EMC106-SM- SM-7600	RX Cable 9K- 18G(160125+150817 )	09/12/2023	09/11/2024		

### 2nd Source

	Radiated Emission Test Site: SAC 1								
EQUIPMENT TYPE MFR		MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.				
Horn Antenna	RF SPIN	DRH0844	LE2D05A0844	07/03/2023	07/02/2024				
Horn Antenna	SCHWARZBECK	BBHA9120D	D803	01/12/2024	01/11/2025				
EXA Spectrum Analyzer	KEYSIGHT	N9010B	MY60242081	10/17/2023	10/16/2024				
Test Software	Audix	e3	Ver. 9.210616	N.C.R	N.C.R				
Site Cal	SGS	SAC 1	N/A	08/31/2023	08/30/2024				
Pre-Amplifier	EMCI	EMC184045B	980135	08/31/2023	08/30/2024				
Pre-Amplifier	EMCI	EMC118A45SEE	980933	07/31/2023	07/30/2024				
4G High Pass Filter	WI	WHKX4.0	24	12/12/2023	12/11/2024				
Band Reject Filter 2400-2483.5	EWT	EWT-14-0166	M3	12/12/2023	12/11/2024				
Coaxial Cables	Huber Suhner	SUCOFLEX 102	RX Cable 18G-40G MY2630/2+805062/2	08/31/2023	08/30/2024				
Coaxial Cable	EMCI	EMC104-SM-SM- 8000+EMC106-SM- SM-7600	RX Cable 9K- 18G(160125+150817 )	09/12/2023	09/11/2024				

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

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Page: 17 of 80

## 7 CONDUCTED EMISSION TEST

## 7.1 Standard Applicable

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

Frequency range	Limits (dBuV)				
	,				
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			

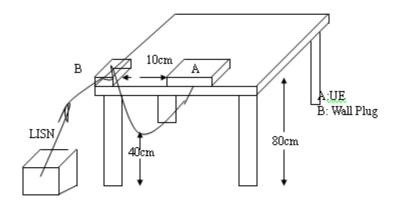
### Note

- 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

## 7.2 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 120-240Vac/60Hz power source.

## 7.3 Test Setup



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Page: 18 of 80

**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 test data reveals the worst-case results that closest to the limit.

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Page: 19 of 80

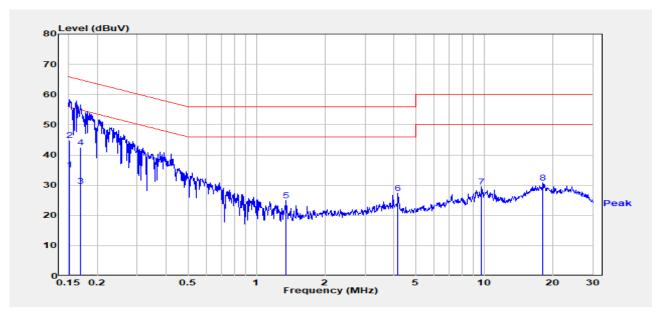


## AC POWER LINE CONDUCTED EMISSION TEST DATA

Report Number :TERF2402000337ER **Test Site** :Conduction 1

Operation Mode: 802.11g Test Date :2024-02-29 :120V/60Hz Temp./Humi. :20.7°C/66% Power

Probe Engineer :Cooper Hsu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS		
MHz	PK/QP/AV	dΒμV	dB	dΒμV	dΒμV	dB
0.151	Average	24.78	10.25	35.03	55.96	-20.93
0.151	QP	34.67	10.25	44.92	65.96	-21.04
0.169	Average	19.38	10.25	29.63	54.99	-25.36
0.169	QP	32.25	10.25	42.50	64.99	-22.49
1.352	Peak	14.28	10.67	24.96	56.00	-31.04
4.180	Peak	16.63	10.63	27.27	56.00	-28.73
9.757	Peak	18.79	10.64	29.42	60.00	-30.58
18.135	Peak	19.80	10.89	30.69	60.00	-29.31

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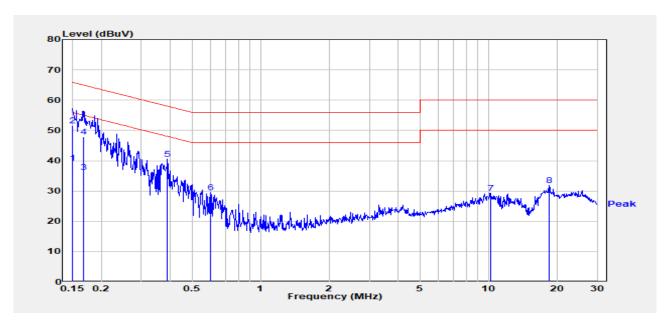


Page: 20 of 80



Report Number :TERF2402000337ER Test Site :Conduction 1

Operation Mode:802.11gTest Date:2024-02-29Power:120V/60HzTemp./Humi.:20.7°C/66%Probe:NEngineer:Cooper Hsu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS		
MHz	PK/QP/AV	dΒμV	dB	dΒμV	dΒμV	dB
0.150	Average	28.92	10.25	39.17	56.00	-16.83
0.150	QP	41.35	10.25	51.60	66.00	-14.40
0.167	Average	25.96	10.25	36.21	55.12	-18.91
0.167	QP	37.75	10.25	48.00	65.12	-17.12
0.389	Peak	30.30	10.25	40.55	58.08	-17.53
0.604	Peak	19.15	10.28	29.43	56.00	-26.57
10.233	Peak	18.68	10.64	29.31	60.00	-30.69
18.426	Peak	21.09	10.81	31.89	60.00	-28.11

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Page: 21 of 80

## PEAK OUTPUT POWER MEASUREMENT

### 8.1 Standard Applicable

#### 8.1.1 **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.

#### 8.1.2 **FCC**

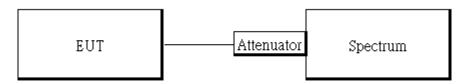
For systems using digital modulation in the 2400-2483.5 MHz bands, the limit for peak output power is 1Watt.

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.

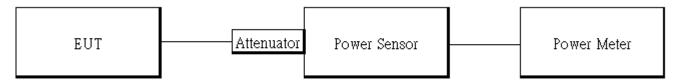
In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of Antenna exceeds 6dBi.

#### 8.2 **Test Setup**

### 8.2.1 **Duty Cycle**



#### 8.2.2 **Output Power:**



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Page: 22 of 80

**Measurement Procedure** 

#### 8.3.1 **Duty Cycle:**

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

#### 8.3.2 **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. 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.

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

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Page: 23 of 80



### 8.4 Measurement Result

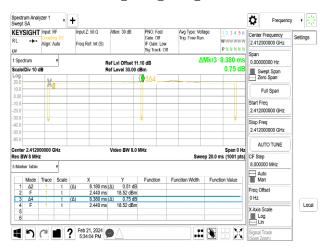
### 8.4.1 Duty Cycle:

## **Duty Cycle**

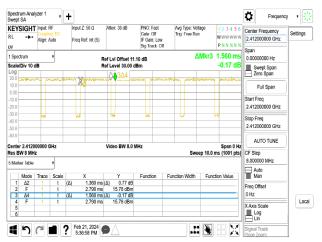
Mode	Duty Cycle (%) = Ton / (Ton+Toff)	Duty Factor (dB) =10*log ( 1/Duty Cycle )	1/T (kHz)	VBW setting (kHz)
802.11b	97.61	0.11	0.12	1.00
802.11g	87.17	0.60	0.74	1.00
802.11n_20	85.18	0.70	0.87	1.00

### 8.4.2 Duty Cycle test plots

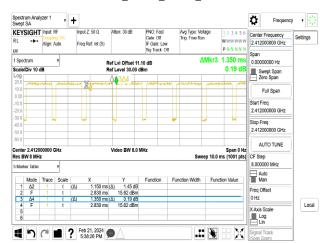
802.11b 20MHz Chain0 2412MHz



802.11g\_20MHz\_Chain0\_2412MHz



802.11n 20MHz Chain0 2412MHz



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Page: 24 of 80



#### 8.4.3 **Output Power**

802.11	1b Ch0					
СН	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	1	21	22.18	30.00	PASS
6	2437	1	21	22.39	30.00	PASS
11	2462	1	21	22.28	30.00	PASS
802.11	1b Ch0					
СН	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (dBm)	Limit (dBm)	RESULT
1	2412	1	21	19.32	30.00	PASS
6	2437	1	21	19.64	30.00	PASS
11	2462	1	21	19.67	30.00	PASS

802.11g Ch0							
СН	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (dBm)	Limit (dBm)	RESULT	
1	2412	6	17.5	23.01	30.00	PASS	
6	2437	6	16.5	23.05	30.00	PASS	
11	2462	6	17	23.07	30.00	PASS	
802.11	802.11g Ch0						
СН	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (dBm)	Limit (dBm)	RESULT	
1	2412	6	17.5	16.19	30.00	PASS	
6	2437	6	16.5	16.21	30.00	PASS	
11	2462	6	17	16.24	30.00	PASS	

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Page: 25 of 80

802.11n_HT_20M Ch0						
СН	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	17	22.96	30.00	PASS
6	2437	MCS0	16	22.97	30.00	PASS
11	2462	MCS0	16.5	22.99	30.00	PASS
802.11	802.11n_HT_20M Ch0					
СН	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	17	15.85	30.00	PASS
6	2437	MCS0	16	15.88	30.00	PASS
11	2462	MCS0	16.5	15.89	30.00	PASS

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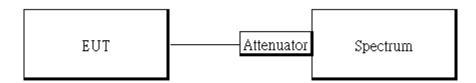
Page: 26 of 80

## **EMISSION BANDWIDTH MEASUREMENT**

### **Standard Applicable** 9.1

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. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

#### 9.3.1 6dB BW measurements

- 1. The testing follows the Measurement Procedure of the KDB 558074 D01.
- 2. Set the spectrum analyzer as

RBW= 100 kHz,

VBW = 3 X RBW,

Span= 2 to 5 times of the OBW,

Sweep=auto, Detector = Peak, and Max hold.

- 3. Mark the upper and lower frequencies of -6dB.
- 4. Repeat above procedures until all test default channel is completed.

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Page: 27 of 80



#### 9.4 **Measurement Result:**

#### 9.4.1 6dB BW measurements

### 802.11b Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	8020.00	≥ 500	PASS
2437	7159.00	≥ 500	PASS
2462	7609.00	≥ 500	PASS

## 802.11g Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	16410.00	≥ 500	PASS
2437	16430.00	≥ 500	PASS
2462	16460.00	≥ 500	PASS

### 802.11n HT 20M Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	17610.00	≥ 500	PASS
2437	17640.00	≥ 500	PASS
2462	17670.00	≥ 500	PASS

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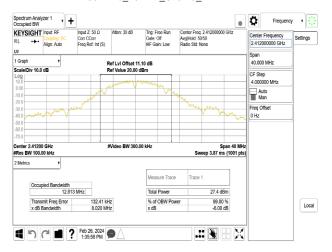
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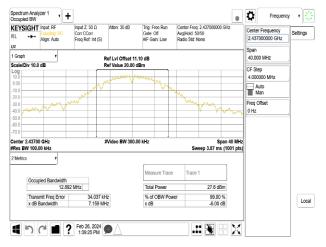
Page: 28 of 80



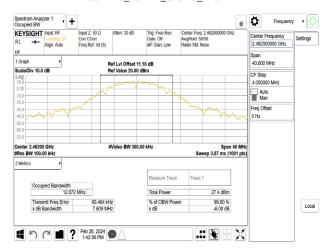
802.11b 20MHz Chain0 2412MHz



802.11b 20MHz Chain0 2437MHz



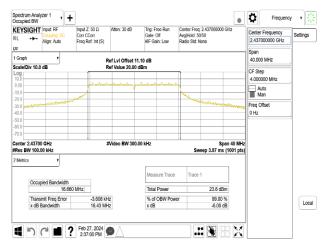
802.11b 20MHz Chain0 2462MHz



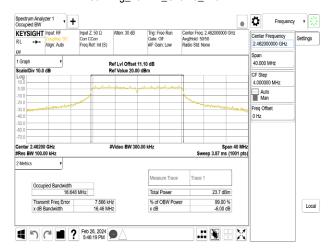
802.11g\_20MHz\_Chain0\_2412MHz



802.11g\_20MHz\_Chain0\_2437MHz



802.11g\_20MHz\_Chain0\_2462MHz



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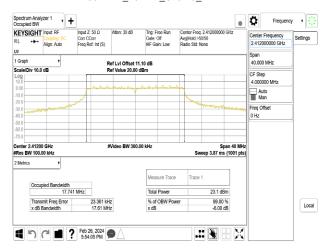
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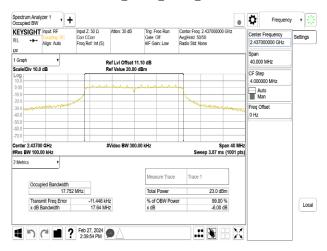
Page: 29 of 80

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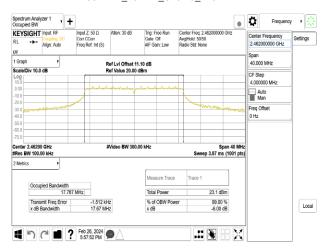
802.11n\_20MHz\_Chain0\_2412MHz



802.11n 20MHz Chain0 2437MHz



802.11n\_20MHz\_Chain0\_2462MHz



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Page: 30 of 80

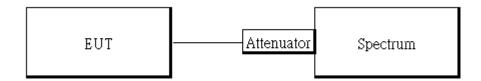
## 10 CONDUCTED BAND EDGES AND SPURIOUS EMISSION MEASUREMENT

### 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), must also comply with the radiated emission limits specified in §15.209(a).

### 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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Page: 31 of 80



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 .
- 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 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.

## **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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Page: 32 of 80



### Measurement Result

### 802.11b Ch0

Reference Level of Limit			
Freq.	PSD	Reference Level of Limit	
(MHz)	(dBm)	(dBm)	
2412	11.88	-8.12	
2437	12.02	-7.98	
2462	12.05	-7.95	

### 802.11q Ch0

Reference Level of Limit			
Freq.	PSD	Reference Level of Limit	
(MHz)	(dBm)	(dBm)	
2412	5.43	-14.57	
2437	4.89	-15.11	
2462	4.93	-15.07	

## 802.11n\_HT\_20M Ch0

Reference Level of Limit				
Freq.	PSD	Reference Level of Limit		
(MHz)	(dBm)	(dBm)		
2412	4.66	-15.34		
2437	4.21	-15.79		
2462	4.36	-15.64		

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Page: 33 of 80



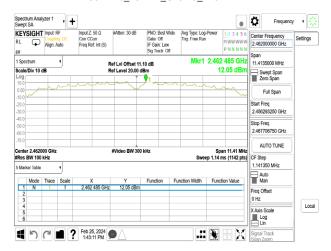
802.11b 20MHz Chain0 2412MHz



802.11b 20MHz Chain0 2437MHz



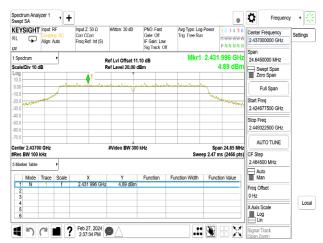
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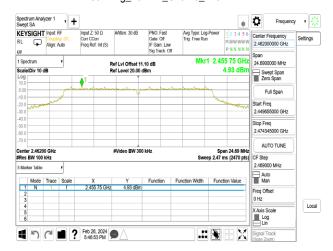
802.11g 20MHz Chain0 2412MHz



802.11g\_20MHz\_Chain0\_2437MHz



802.11g\_20MHz\_Chain0\_2462MHz



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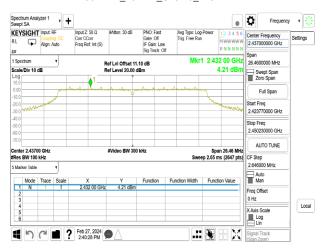


Page: 34 of 80

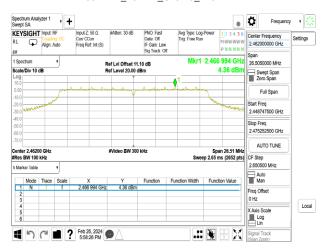
802.11n\_20MHz\_Chain0\_2412MHz



802.11n 20MHz Chain0 2437MHz



802.11n\_20MHz\_Chain0\_2462MHz



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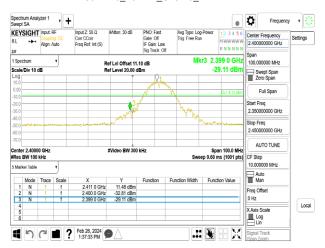
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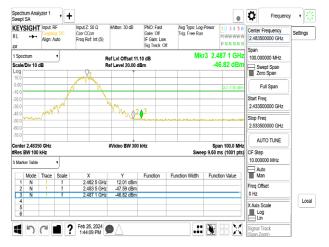
Page: 35 of 80



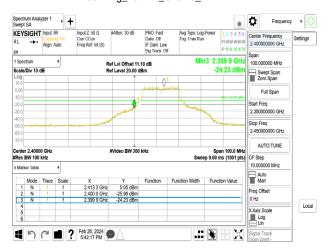
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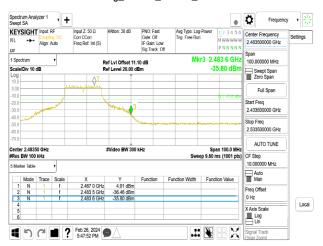
802.11b 20MHz Chain0 2462MHz



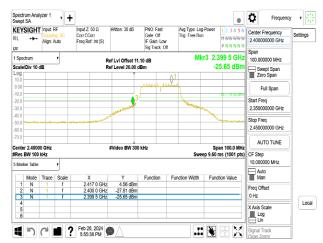
802.11g\_20MHz\_Chain0\_2412MHz



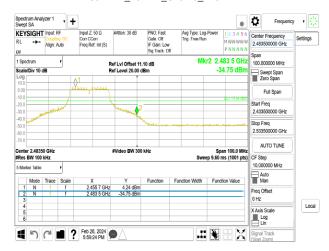
802.11g 20MHz Chain0 2462MHz



802.11n\_20MHz\_Chain0\_2412MHz



802.11n\_20MHz\_Chain0\_2462MHz



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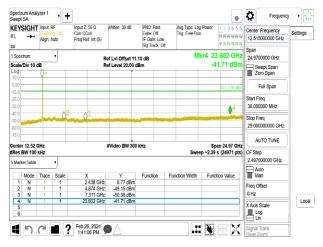
Page: 36 of 80



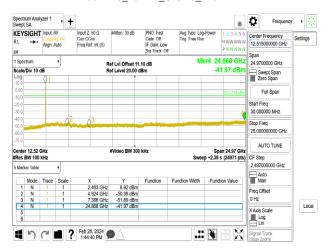
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802.11b 20MHz Chain0 2437MHz



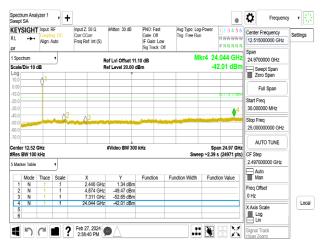
802.11b\_20MHz\_Chain0\_2462MHz



802.11g 20MHz Chain0 2412MHz



802.11g\_20MHz\_Chain0\_2437MHz



802.11g\_20MHz\_Chain0\_2462MHz



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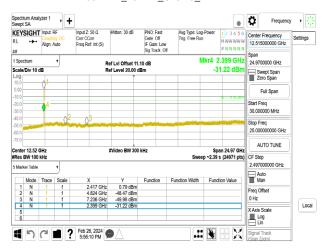
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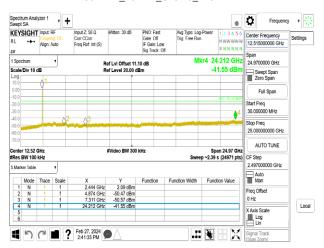
Page: 37 of 80



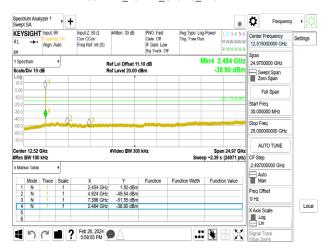
802.11n 20MHz Chain0 2412MHz



802.11n 20MHz Chain0 2437MHz



802.11n\_20MHz\_Chain0\_2462MHz



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Page: 38 of 80

## 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 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:** The lower limit shall apply at the transition frequencies.

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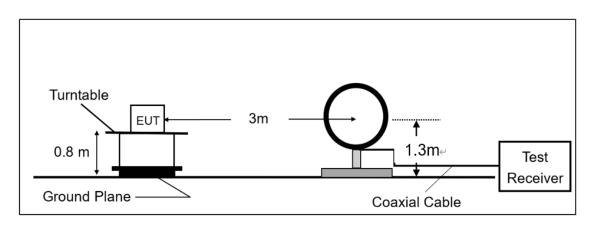


Page: 39 of 80

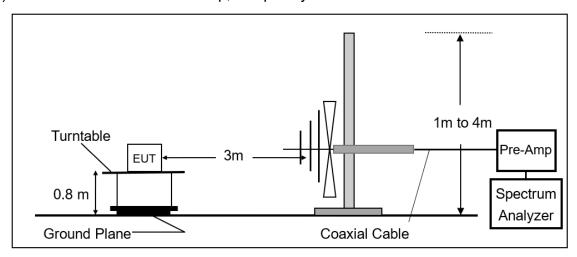


## Test Setup

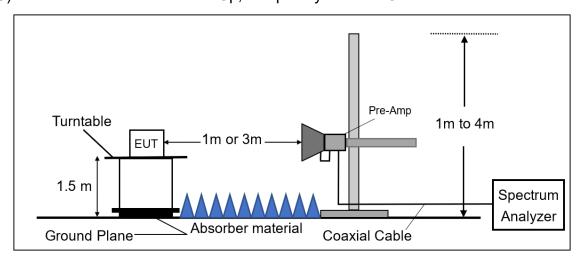
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz.



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



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



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Page: 40 of 80

**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.
- 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 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.
- 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) was not reported.

### 11.6 Measurement Result

## Note:

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

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Page: 42 of 80

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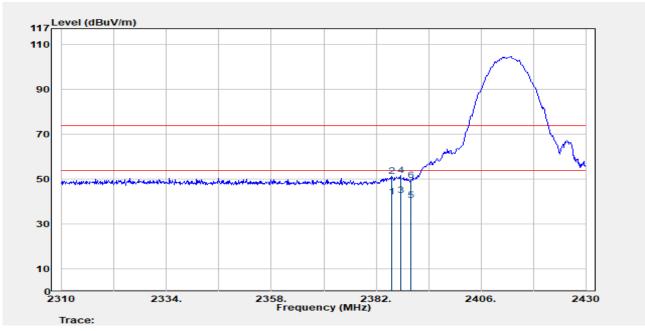
11.6.1 **Radiated Band Edge Measurement Result** 

Report Number Test Site :SAC 1 :TERF2402000337ER

**Operation Mode** :802.11b Test Date :2024-02-23 Test Frequency :2412 MHz Temp./Humi. :24.4°C/50%

Test Mode Antenna Pol. :Vertical :Bandedge

**EUT Pol** :H Plane Engineer :Cooper Hsu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBµV/m	dBµV/m	dB
2385.60	Average	45.17	-3.01	42.16	54.00	-11.84
2385.60	Peak	54.23	-3.01	51.22	74.00	-22.78
2387.64	Average	45.79	-3.01	42.78	54.00	-11.22
2387.64	Peak	54.55	-3.01	51.54	74.00	-22.46
2390.00	Average	43.60	-3.01	40.59	54.00	-13.41
2390.00	Peak	52.48	-3.01	49.47	74.00	-24.53

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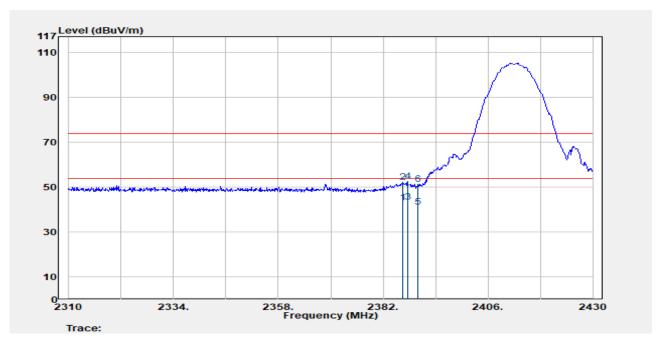






Report Number **Test Site** :SAC 1 :TERF2402000337ER

**Operation Mode** :802.11b Test Date :2024-02-23 **Test Frequency** :2412 MHz Temp./Humi. :24.4°C/50% Test Mode :Bandedge Antenna Pol. :Horizontal **EUT Pol** :H Plane Engineer :Cooper Hsu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBµV/m	dBµV/m	dB
2386.44	Average	46.21	-3.01	43.20	54.00	-10.80
2386.44	Peak	55.29	-3.01	52.28	74.00	-21.72
2387.64	Average	46.51	-3.01	43.50	54.00	-10.50
2387.64	Peak	55.52	-3.01	52.51	74.00	-21.49
2390.00	Average	44.08	-3.01	41.07	54.00	-12.93
2390.00	Peak	54.39	-3.01	51.38	74.00	-22.62

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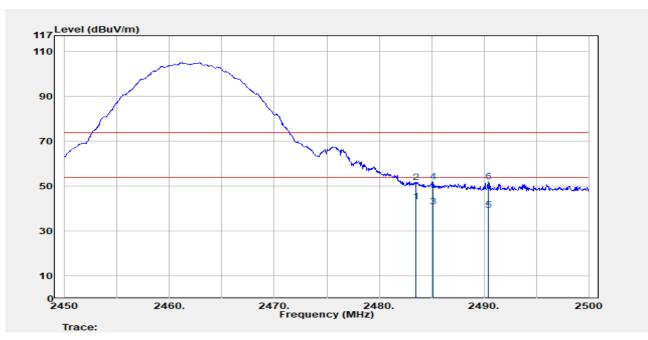
Page: 44 of 80

Report Number **Test Site** :SAC 1 :TERF2402000337ER

**Operation Mode** :802.11b Test Date :2024-02-23 **Test Frequency** :2462 MHz Temp./Humi. :24.4°C/50%

Test Mode :Bandedge Antenna Pol. :Vertical

**EUT Pol** :H Plane Engineer :Cooper Hsu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBµV/m	dBµV/m	dB
2483.50	Average	45.79	-2.77	43.02	54.00	-10.98
2483.50	Peak	54.49	-2.77	51.72	74.00	-22.28
2485.15	Average	43.59	-2.75	40.84	54.00	-13.16
2485.15	Peak	54.60	-2.75	51.85	74.00	-22.15
2490.40	Average	42.10	-2.70	39.40	54.00	-14.60
2490.40	Peak	54.67	-2.70	51.97	74.00	-22.03

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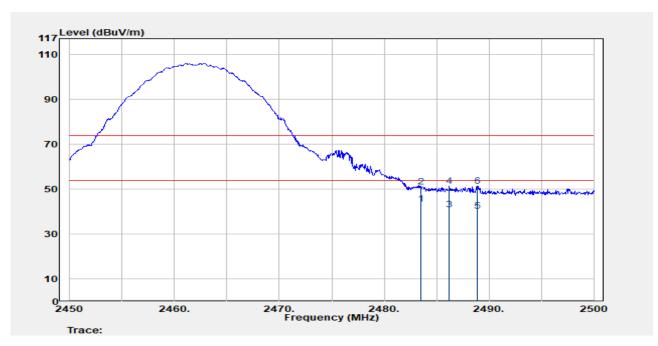


Page: 45 of 80



Report Number :TERF2402000337ER Test Site :SAC 1

**Operation Mode** :802.11b Test Date :2024-02-23 **Test Frequency** :2462 MHz Temp./Humi. :24.4°C/50% Test Mode :Bandedge Antenna Pol. :Horizontal **EUT Pol** :H Plane Engineer :Cooper Hsu



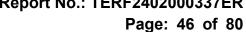
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBµV/m	dBµV/m	dB
2483.50	Average	46.12	-2.77	43.35	54.00	-10.65
2483.50	Peak	53.75	-2.77	50.97	74.00	-23.03
2486.20	Average	43.60	-2.74	40.86	54.00	-13.14
2486.20	Peak	54.08	-2.74	51.34	74.00	-22.66
2488.85	Average	43.01	-2.71	40.30	54.00	-13.70
2488.85	Peak	54.16	-2.71	51.45	74.00	-22.55

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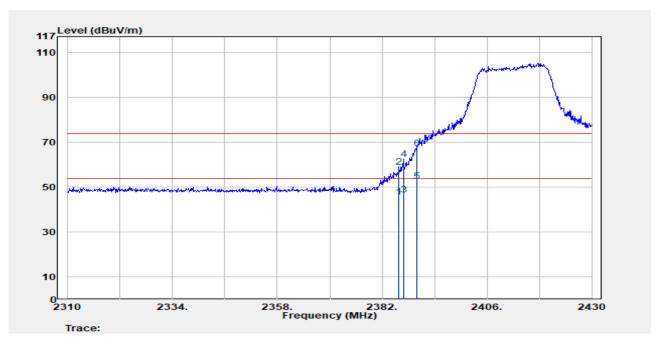


Report Number **Test Site** :SAC 1 :TERF2402000337ER

Operation Mode Test Date :2024-02-23 :802.11g **Test Frequency** :2412 MHz Temp./Humi. :24.4°C/50%

Test Mode :Bandedge Antenna Pol. :Vertical

**EUT Pol** :H Plane Engineer :Cooper Hsu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBµV/m	dBµV/m	dB
2385.84	Average	48.61	-3.01	45.60	54.00	-8.40
2385.84	Peak	61.84	-3.01	58.83	74.00	-15.17
2386.92	Average	49.52	-3.01	46.51	54.00	-7.49
2386.92	Peak	65.52	-3.01	62.51	74.00	-11.49
2390.00	Average	55.73	-3.01	52.72	54.00	-1.28
2390.00	Peak	70.16	-3.01	67.15	74.00	-6.85

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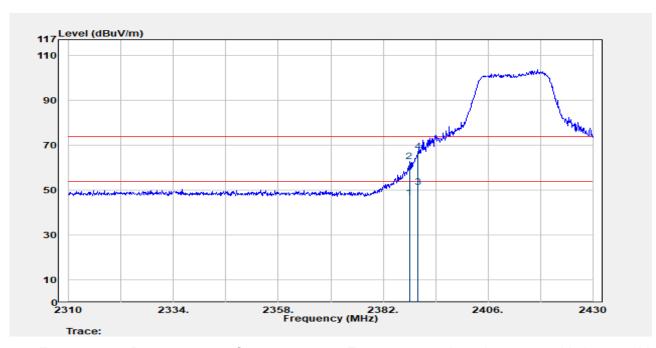


Page: 47 of 80



Report Number **Test Site** :SAC 1 :TERF2402000337ER

Operation Mode Test Date :2024-02-23 :802.11g **Test Frequency** :2412 MHz Temp./Humi. :24.4°C/50% Test Mode :Bandedge Antenna Pol. :Horizontal **EUT Pol** :H Plane Engineer :Cooper Hsu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
2388.00	Average	49.49	-3.01	46.48	54.00	-7.52
2388.00	Peak	65.77	-3.01	62.76	74.00	-11.24
2390.00	Average	54.40	-3.01	51.39	54.00	-2.61
2390.00	Peak	70.36	-3.01	67.35	74.00	-6.65

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Page: 48 of 80

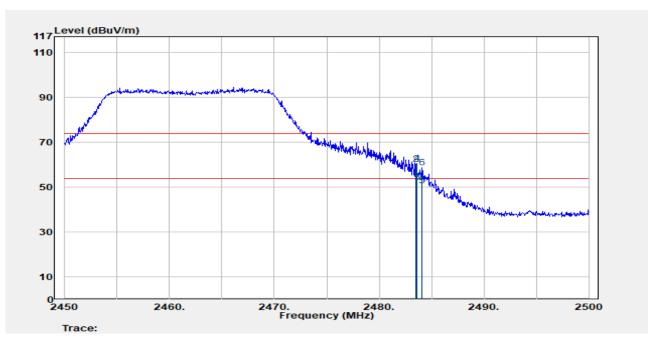


Report Number Test Site :SAC 1 :TERF2402000337ER

Operation Mode Test Date :2024-02-23 :802.11g **Test Frequency** :2462 MHz Temp./Humi. :24.4°C/50%

Test Mode :Bandedge Antenna Pol. :Vertical

**EUT Pol** :H Plane Engineer :Cooper Hsu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBµV/m	dBµV/m	dB
2483.50	Average	55.30	-2.77	52.53	54.00	-1.47
2483.50	Peak	62.93	-2.77	60.16	74.00	-13.84
2483.60	Average	54.96	-2.77	52.19	54.00	-1.81
2483.60	Peak	63.23	-2.77	60.46	74.00	-13.54
2484.10	Average	53.39	-2.77	50.62	54.00	-3.38
2484.10	Peak	61.39	-2.77	58.62	74.00	-15.38

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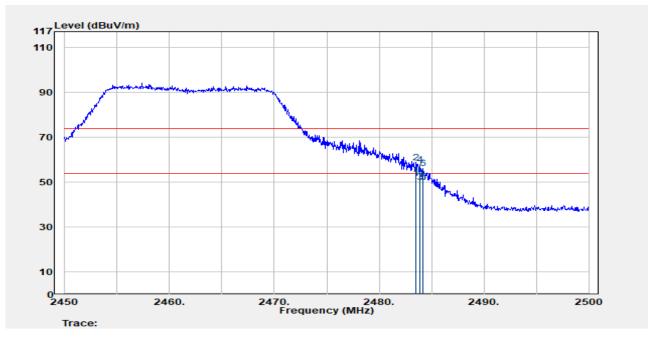


Page: 49 of 80



Report Number :TERF2402000337ER Test Site :SAC 1

Operation Mode Test Date :2024-02-23 :802.11g **Test Frequency** :2462 MHz Temp./Humi. :24.4°C/50% Test Mode :Bandedge Antenna Pol. :Horizontal **EUT Pol** :H Plane Engineer :Cooper Hsu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBµV/m	dBμV/m	dB
2483.50	Average	54.46	-2.77	51.69	54.00	-2.31
2483.50	Peak	61.29	-2.77	58.52	74.00	-15.48
2483.85	Average	52.86	-2.77	50.09	54.00	-3.91
2483.85	Peak	60.49	-2.77	57.72	74.00	-16.28
2484.15	Average	52.73	-2.77	49.96	54.00	-4.04
2484.15	Peak	58.92	-2.77	56.15	74.00	-17.85

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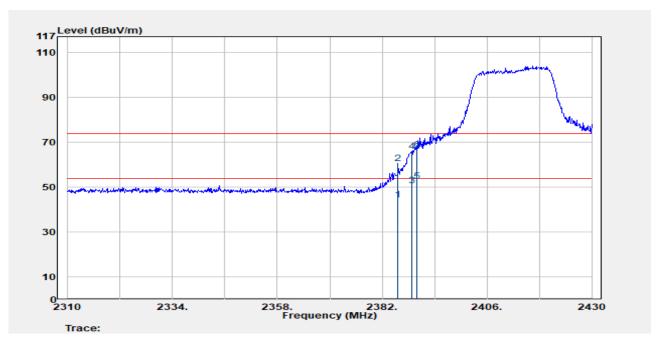
Page: 50 of 80

Report Number **Test Site** :SAC 1 :TERF2402000337ER

**Operation Mode** :802.11n20 Test Date :2024-02-23 **Test Frequency** :2412 MHz Temp./Humi. :24.4°C/50%

Test Mode :Bandedge Antenna Pol. :Vertical

**EUT Pol** :H Plane Engineer :Cooper Hsu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBµV/m	dBµV/m	dB
2385.60	Average	47.55	-3.01	44.54	54.00	-9.46
2385.60	Peak	63.72	-3.01	60.71	74.00	-13.29
2388.72	Average	53.86	-3.01	50.85	54.00	-3.15
2388.72	Peak	68.97	-3.01	65.96	74.00	-8.04
2390.00	Average	55.75	-3.01	52.74	54.00	-1.26
2390.00	Peak	69.72	-3.01	66.71	74.00	-7.29

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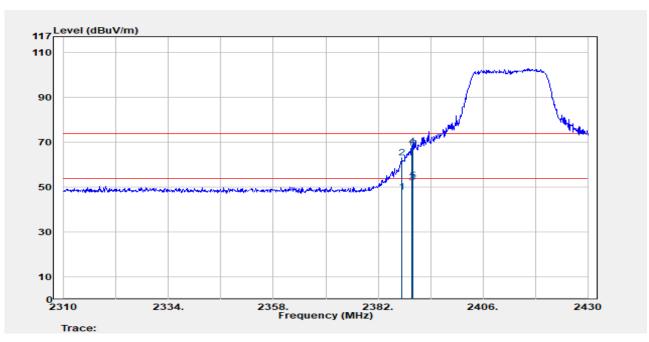


Page: 51 of 80



Report Number :TERF2402000337ER Test Site :SAC 1

**Operation Mode** :802.11n20 Test Date :2024-02-23 **Test Frequency** :2412 MHz Temp./Humi. :24.4°C/50% **Test Mode** :Bandedge Antenna Pol. :Horizontal **EUT Pol** :H Plane Engineer :Cooper Hsu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBµV/m	dBµV/m	dB
2387.40	Average	50.83	-3.01	47.82	54.00	-6.18
2387.40	Peak	65.99	-3.01	62.98	74.00	-11.02
2389.80	Average	55.14	-3.01	52.13	54.00	-1.87
2389.80	Peak	71.06	-3.01	68.05	74.00	-5.95
2390.00	Average	55.82	-3.01	52.81	54.00	-1.19
2390.00	Peak	70.34	-3.01	67.33	74.00	-6.67

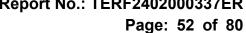
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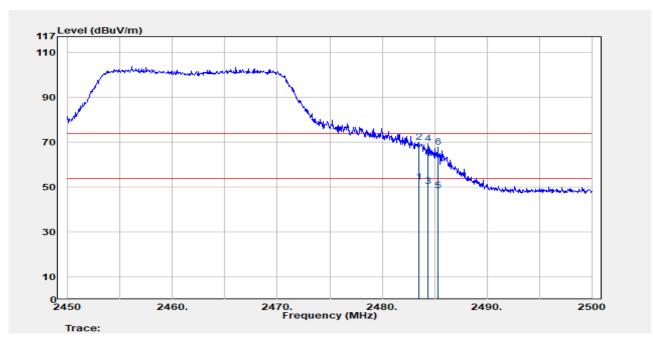


Report Number **Test Site** :SAC 1 :TERF2402000337ER

**Operation Mode** :802.11n20 Test Date :2024-02-23 **Test Frequency** :2462 MHz Temp./Humi. :24.4°C/50%

Test Mode :Bandedge Antenna Pol. :Vertical

**EUT Pol** :H Plane Engineer :Cooper Hsu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBµV/m	dBµV/m	dB
2483.50	Average	54.96	-2.77	52.19	54.00	-1.81
2483.50	Peak	72.91	-2.77	70.14	74.00	-3.86
2484.40	Average	53.21	-2.76	50.45	54.00	-3.55
2484.40	Peak	72.22	-2.76	69.46	74.00	-4.54
2485.30	Average	51.36	-2.75	48.61	54.00	-5.39
2485.30	Peak	70.53	-2.75	67.78	74.00	-6.22

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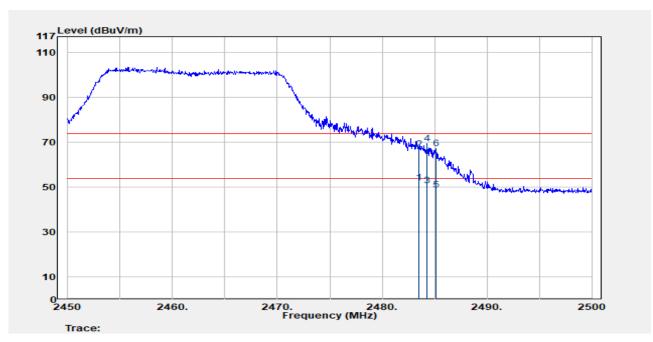


Page: 53 of 80



Report Number :TERF2402000337ER Test Site :SAC 1

**Operation Mode** :802.11n20 Test Date :2024-02-23 **Test Frequency** :2462 MHz Temp./Humi. :24.4°C/50% Test Mode :Bandedge Antenna Pol. :Horizontal **EUT Pol** :H Plane Engineer :Cooper Hsu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBµV/m	dBµV/m	dB
2483.50	Average	54.74	-2.77	51.97	54.00	-2.03
2483.50	Peak	69.57	-2.77	66.80	74.00	-7.20
2484.30	Average	53.39	-2.76	50.63	54.00	-3.37
2484.30	Peak	72.22	-2.76	69.46	74.00	-4.54
2485.15	Average	51.65	-2.75	48.90	54.00	-5.10
2485.15	Peak	69.84	-2.75	67.09	74.00	-6.91

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Page: 54 of 80

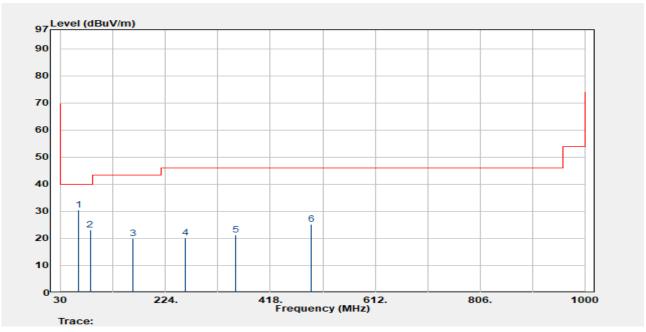
## 11.6.2 Spurious Emission:

Report Number :TERF2402000337ER Test Site :SAC 1

Operation Mode :802.11g Test Date :2024-02-23 Test Frequency :2437 MHz Temp./Humi. :24.4°C/50%

Test Mode :Tx Antenna Pol. :Vertical

EUT Pol :H Plane Engineer :Cooper Hsu



Fred	ı. Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MH:	z PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
62.0	1 Peak	48.82	-18.28	30.53	40.00	-9.47
84.3	2 Peak	39.31	-16.19	23.12	40.00	-16.88
163.8	86 Peak	33.41	-13.36	20.05	43.50	-23.45
260.8	86 Peak	28.73	-8.38	20.35	46.00	-25.65
353.0	)1 Peak	28.84	-7.66	21.19	46.00	-24.81
493.6	66 Peak	30.40	-5.14	25.26	46.00	-20.74

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:Horizontal

Antenna Pol.

Page: 55 of 80

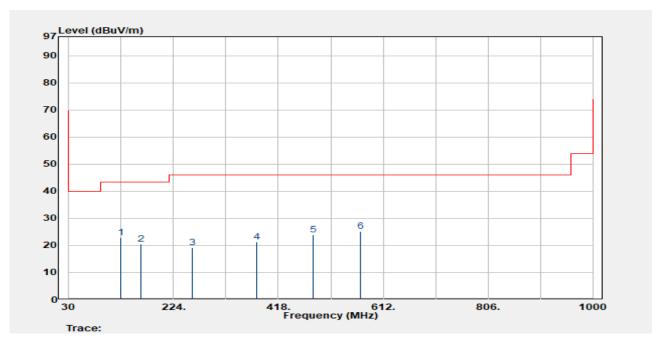


Report Number **Test Site** :SAC 1 :TERF2402000337ER

Operation Mode :802.11g Test Date :2024-02-23 **Test Frequency** :2437 MHz Temp./Humi. :24.4°C/50%

Test Mode :Tx

**EUT Pol** :H Plane Engineer :Cooper Hsu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBμV/m	dΒμV/m	dB
126.03	Peak	34.51	-11.67	22.84	43.50	-20.66
163.86	Peak	33.80	-13.36	20.43	43.50	-23.07
258.92	Peak	27.72	-8.46	19.25	46.00	-26.75
377.26	Peak	28.79	-7.56	21.24	46.00	-24.76
482.02	Peak	29.32	-5.30	24.02	46.00	-21.98
570.29	Peak	28.69	-3.57	25.12	46.00	-20.88

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Page: 56 of 80

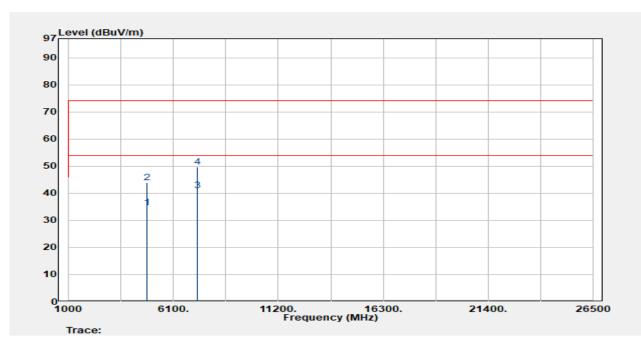


Report Number **Test Site** :SAC 1 :TERF2402000337ER

Operation Mode :802.11b Test Date :2024-02-23 **Test Frequency** :2412 MHz Temp./Humi. :24.4°C/50%

Test Mode :Tx Antenna Pol. :Vertical

**EUT Pol** :H Plane :Cooper Hsu Engineer



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBµV/m	dBμV/m	dB
4824.00	Average	31.76	3.03	34.79	54.00	-19.21
4824.00	Peak	40.88	3.03	43.91	74.00	-30.09
7236.00	Average	31.86	9.07	40.93	54.00	-13.07
7236.00	Peak	40.71	9.07	49.78	74.00	-24.22

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Antenna Pol. :Horizontal

Page: 57 of 80



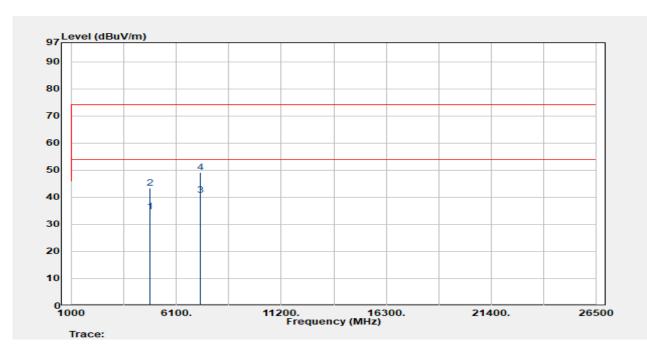
Report Number :TERF2402000337ER Test Site :SAC 1

 Operation Mode
 :802.11b
 Test Date
 :2024-02-23

 Test Frequency
 :2412 MHz
 Temp./Humi.
 :24.4 ℃ /50%

Test Mode :Tx

EUT Pol :H Plane Engineer :Cooper Hsu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
4824.00	Average	31.67	3.03	34.70	54.00	-19.30
4824.00	Peak	40.35	3.03	43.38	74.00	-30.62
7236.00	Average	31.66	9.07	40.73	54.00	-13.27
7236.00	Peak	40.02	9.07	49.10	74.00	-24.90

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Page: 58 of 80

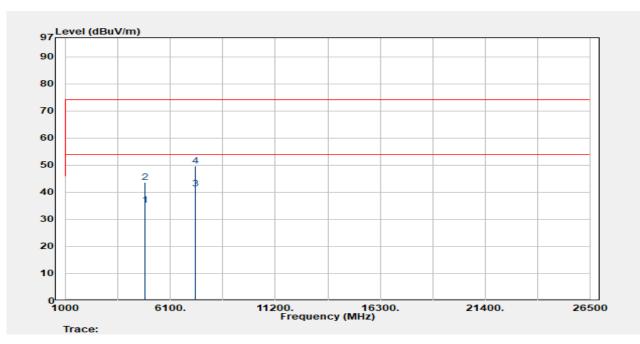


Report Number **Test Site** :SAC 1 :TERF2402000337ER

Operation Mode :802.11b Test Date :2024-02-23 **Test Frequency** :2437 MHz Temp./Humi. :24.4°C/50%

Test Mode :Tx Antenna Pol. :Vertical

**EUT Pol** :H Plane :Cooper Hsu Engineer



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
4874.00	Average	32.01	3.12	35.13	54.00	-18.87
4874.00	Peak	40.46	3.12	43.58	74.00	-30.42
7311.00	Average	31.84	9.42	41.26	54.00	-12.74
7311.00	Peak	40.27	9.42	49.70	74.00	-24.30

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Antenna Pol. :Horizontal

Page: 59 of 80

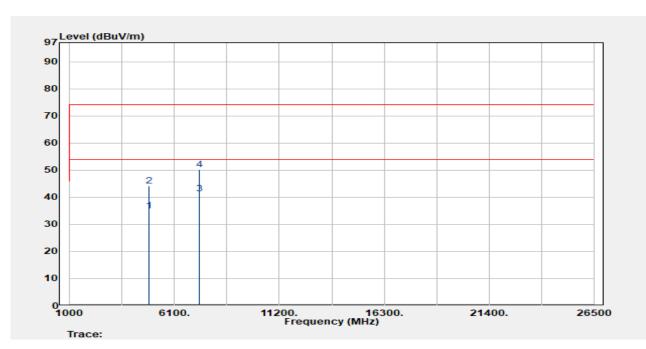


Report Number **Test Site** :SAC 1 :TERF2402000337ER

Operation Mode :802.11b Test Date :2024-02-23 **Test Frequency** :2437 MHz Temp./Humi. :24.4°C/50%

Test Mode :Tx

**EUT Pol** :H Plane :Cooper Hsu Engineer



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
4874.00	Average	31.90	3.12	35.02	54.00	-18.98
4874.00	Peak	41.05	3.12	44.17	74.00	-29.83
7311.00	Average	31.89	9.42	41.31	54.00	-12.69
7311.00	Peak	40.70	9.42	50.13	74.00	-23.87

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Page: 60 of 80

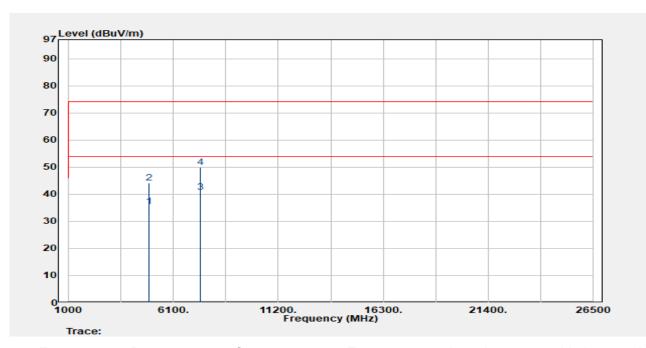


Report Number **Test Site** :SAC 1 :TERF2402000337ER

Operation Mode :802.11b Test Date :2024-02-23 **Test Frequency** :2462 MHz Temp./Humi. :24.4°C/50%

Test Mode :Tx Antenna Pol. :Vertical

**EUT Pol** :H Plane :Cooper Hsu Engineer



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBµV/m	dBμV/m	dB
4924.00	Average	32.20	3.32	35.52	54.00	-18.48
4924.00	Peak	40.71	3.32	44.03	74.00	-29.97
7386.00	Average	31.37	9.33	40.70	54.00	-13.30
7386.00	Peak	40.62	9.33	49.95	74.00	-24.05

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Antenna Pol. :Horizontal

Page: 61 of 80

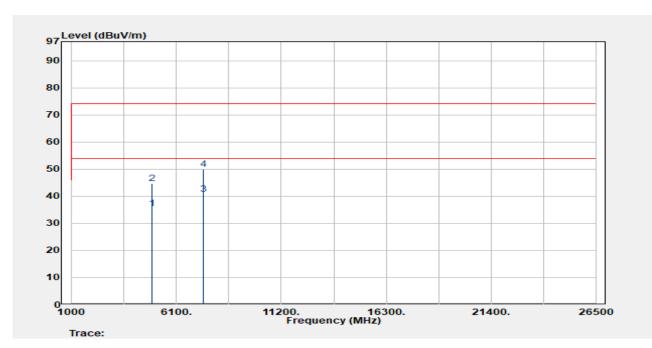


Report Number **Test Site** :SAC 1 :TERF2402000337ER

Operation Mode :802.11b Test Date :2024-02-23 **Test Frequency** :2462 MHz Temp./Humi. :24.4°C/50%

Test Mode :Tx

**EUT Pol** :H Plane :Cooper Hsu Engineer



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
4924.00	Average	32.15	3.32	35.47	54.00	-18.53
4924.00	Peak	41.29	3.32	44.62	74.00	-29.38
7386.00	Average	31.33	9.33	40.66	54.00	-13.34
7386.00	Peak	40.74	9.33	50.07	74.00	-23.93

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Page: 62 of 80

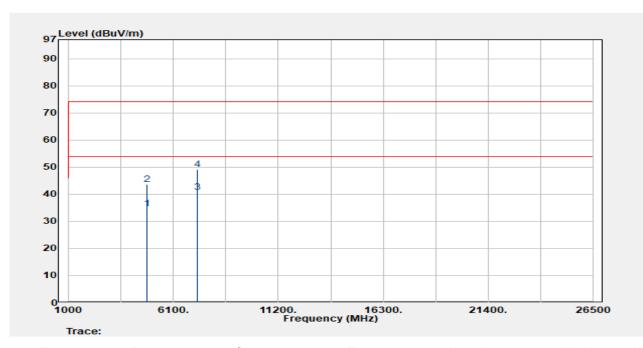


Report Number **Test Site** :SAC 1 :TERF2402000337ER

Operation Mode :802.11g Test Date :2024-02-23 **Test Frequency** :2412 MHz Temp./Humi. :24.4°C/50%

Test Mode :Tx Antenna Pol. :Vertical

**EUT Pol** :H Plane :Cooper Hsu Engineer



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBµV/m	dBμV/m	dB
4824.00	Average	31.66	3.03	34.69	54.00	-19.31
4824.00	Peak	40.63	3.03	43.67	74.00	-30.33
7236.00	Average	31.76	9.07	40.83	54.00	-13.17
7236.00	Peak	40.08	9.07	49.15	74.00	-24.85

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Page: 63 of 80

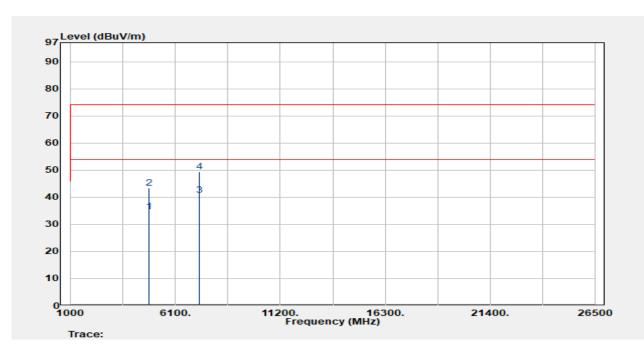


Report Number **Test Site** :SAC 1 :TERF2402000337ER

Operation Mode :802.11g Test Date :2024-02-23 **Test Frequency** :2412 MHz Temp./Humi. :24.4°C/50% Antenna Pol. :Horizontal

Test Mode :Tx

**EUT Pol** :H Plane :Cooper Hsu Engineer



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
4824.00	Average	31.78	3.03	34.81	54.00	-19.19
4824.00	Peak	40.42	3.03	43.45	74.00	-30.55
7236.00	Average	31.77	9.07	40.84	54.00	-13.16
7236.00	Peak	40.39	9.07	49.46	74.00	-24.54

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Page: 64 of 80

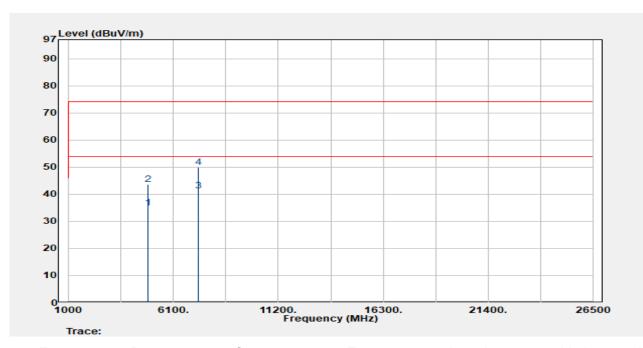


Report Number Test Site :SAC 1 :TERF2402000337ER

Operation Mode :802.11g Test Date :2024-02-23 **Test Frequency** :2437 MHz Temp./Humi. :24.4°C/50%

Test Mode :Tx Antenna Pol. :Vertical

**EUT Pol** :H Plane :Cooper Hsu Engineer



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
4874.00	Average	31.94	3.12	35.06	54.00	-18.94
4874.00	Peak	40.50	3.12	43.62	74.00	-30.38
7311.00	Average	31.81	9.42	41.23	54.00	-12.77
7311.00	Peak	40.54	9.42	49.96	74.00	-24.04

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Antenna Pol. :Horizontal

Page: 65 of 80

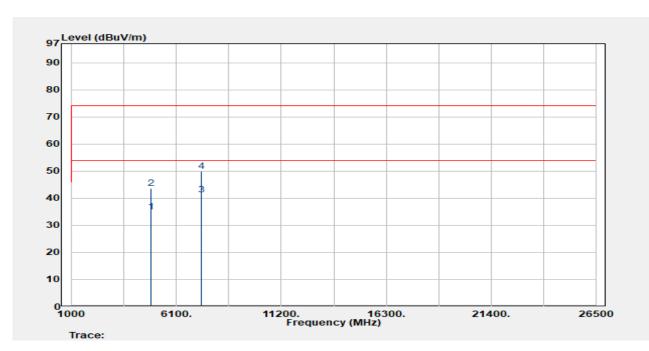


Report Number **Test Site** :SAC 1 :TERF2402000337ER

Operation Mode :802.11g Test Date :2024-02-23 **Test Frequency** :2437 MHz Temp./Humi. :24.4°C/50%

Test Mode :Tx

**EUT Pol** :H Plane :Cooper Hsu Engineer



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
4874.00	Average	31.95	3.12	35.07	54.00	-18.93
4874.00	Peak	40.48	3.12	43.60	74.00	-30.40
7311.00	Average	31.74	9.42	41.16	54.00	-12.84
7311.00	Peak	40.59	9.42	50.01	74.00	-23.99

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Page: 66 of 80

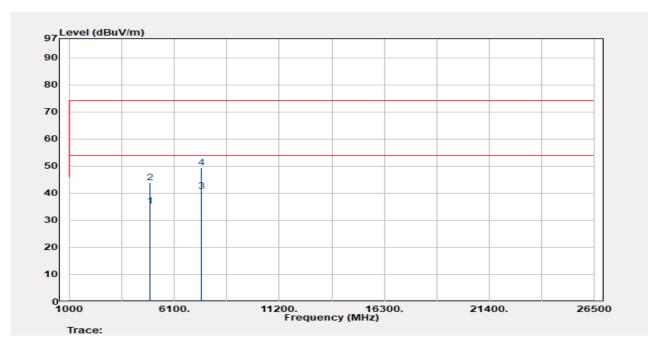


Report Number **Test Site** :SAC 1 :TERF2402000337ER

Operation Mode :802.11g Test Date :2024-02-23 **Test Frequency** :2462 MHz Temp./Humi. :24.4°C/50%

Test Mode :Tx Antenna Pol. :Vertical

**EUT Pol** :H Plane :Cooper Hsu Engineer



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
4924.00	Average	32.00	3.32	35.32	54.00	-18.68
4924.00	Peak	40.54	3.32	43.86	74.00	-30.14
7386.00	Average	31.49	9.33	40.82	54.00	-13.18
7386.00	Peak	40.11	9.33	49.44	74.00	-24.56

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Antenna Pol. :Horizontal

Page: 67 of 80

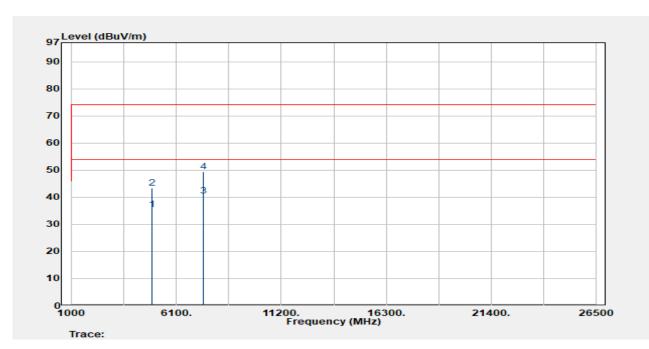


Report Number **Test Site** :SAC 1 :TERF2402000337ER

Operation Mode :802.11g Test Date :2024-02-23 **Test Frequency** :2462 MHz Temp./Humi. :24.4°C/50%

Test Mode :Tx

**EUT Pol** :H Plane :Cooper Hsu Engineer



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBµV/m	dBμV/m	dB
4924.00	Average	32.05	3.32	35.37	54.00	-18.63
4924.00	Peak	40.15	3.32	43.48	74.00	-30.52
7386.00	Average	31.24	9.33	40.57	54.00	-13.43
7386.00	Peak	40.18	9.33	49.50	74.00	-24.50

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Page: 68 of 80

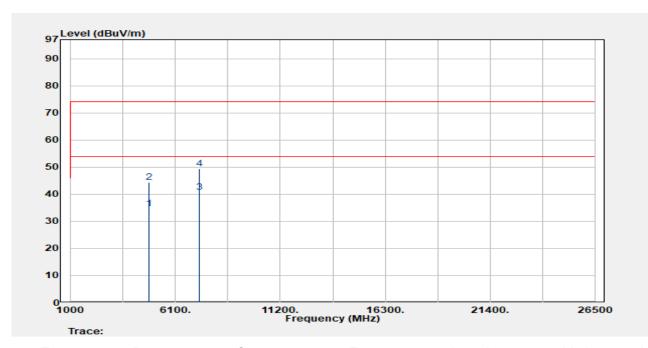


Report Number **Test Site** :SAC 1 :TERF2402000337ER

Operation Mode :802.11n20 Test Date :2024-02-23 **Test Frequency** :2412 MHz Temp./Humi. :24.4°C/50%

Test Mode :Tx Antenna Pol. :Vertical

**EUT Pol** :H Plane :Cooper Hsu Engineer



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
4824.00	Average	31.60	3.03	34.63	54.00	-19.37
4824.00	Peak	41.36	3.03	44.39	74.00	-29.61
7236.00	Average	31.73	9.07	40.80	54.00	-13.20
7236.00	Peak	40.44	9.07	49.51	74.00	-24.49

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Page: 69 of 80

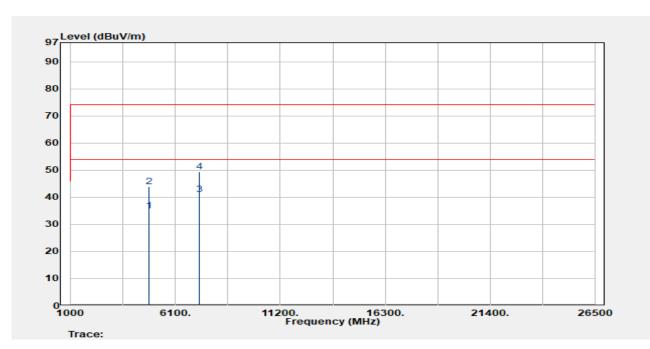


Report Number **Test Site** :SAC 1 :TERF2402000337ER

Operation Mode :802.11n20 Test Date :2024-02-23 **Test Frequency** :2412 MHz Temp./Humi. :24.4°C/50% Antenna Pol. :Horizontal :Tx

Test Mode

**EUT Pol** :H Plane :Cooper Hsu Engineer



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
4824.00	Average	31.80	3.03	34.83	54.00	-19.17
4824.00	Peak	40.95	3.03	43.98	74.00	-30.02
7236.00	Average	31.81	9.07	40.88	54.00	-13.12
7236.00	Peak	40.34	9.07	49.41	74.00	-24.59

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Page: 70 of 80



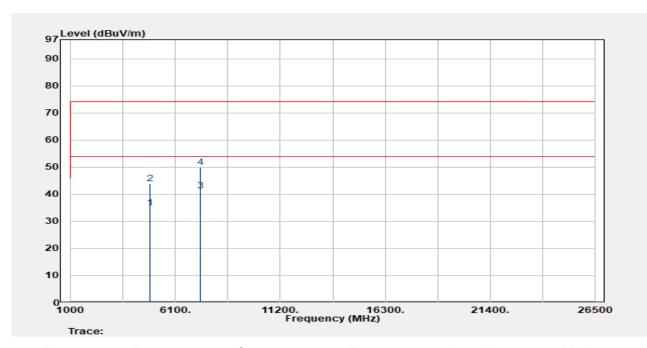
Report Number :TERF2402000337ER Test Site :SAC 1

 Operation Mode
 :802.11n20
 Test Date
 :2024-02-23

 Test Frequency
 :2437 MHz
 Temp./Humi.
 :24.4°C/50%

Test Mode :Tx Antenna Pol. :Vertical

EUT Pol :H Plane Engineer :Cooper Hsu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBµV/m	dBμV/m	dB
4874.00	Average	31.94	3.12	35.06	54.00	-18.94
4874.00	Peak	40.73	3.12	43.86	74.00	-30.14
7311.00	Average	31.75	9.42	41.17	54.00	-12.83
7311.00	Peak	40.55	9.42	49.97	74.00	-24.03

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Page: 71 of 80

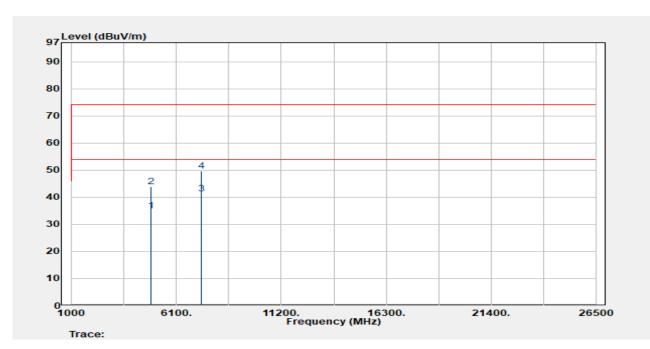


Report Number **Test Site** :SAC 1 :TERF2402000337ER

Operation Mode :802.11n20 Test Date :2024-02-23 **Test Frequency** :2437 MHz Temp./Humi. :24.4°C/50% Antenna Pol. :Horizontal

Test Mode :Tx

**EUT Pol** :H Plane :Cooper Hsu Engineer



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
4874.00	Average	31.94	3.12	35.06	54.00	-18.94
4874.00	Peak	40.70	3.12	43.82	74.00	-30.18
7311.00	Average	31.83	9.42	41.25	54.00	-12.75
7311.00	Peak	40.33	9.42	49.75	74.00	-24.25

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Page: 72 of 80

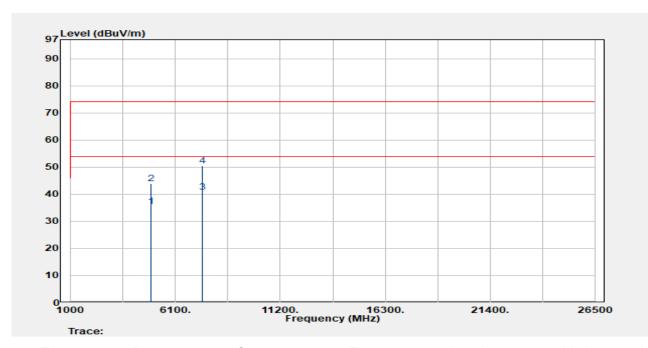


Report Number **Test Site** :SAC 1 :TERF2402000337ER

Operation Mode :802.11n20 Test Date :2024-02-23 **Test Frequency** :2462 MHz Temp./Humi. :24.4°C/50%

Test Mode :Tx Antenna Pol. :Vertical

**EUT Pol** :H Plane :Cooper Hsu Engineer



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
4924.00	Average	32.13	3.32	35.45	54.00	-18.55
4924.00	Peak	40.56	3.32	43.88	74.00	-30.12
7386.00	Average	31.38	9.33	40.71	54.00	-13.29
7386.00	Peak	41.13	9.33	50.45	74.00	-23.55

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Page: 73 of 80

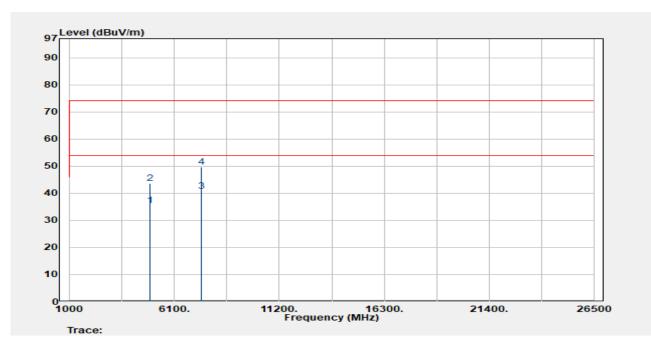


Report Number **Test Site** :SAC 1 :TERF2402000337ER

Operation Mode :802.11n20 Test Date :2024-02-23 **Test Frequency** :2462 MHz Temp./Humi. :24.4°C/50% Antenna Pol. :Horizontal

Test Mode :Tx

**EUT Pol** :H Plane :Cooper Hsu Engineer



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
4924.00	Average	32.05	3.32	35.37	54.00	-18.63
4924.00	Peak	40.29	3.32	43.61	74.00	-30.39
7386.00	Average	31.35	9.33	40.68	54.00	-13.32
7386.00	Peak	40.36	9.33	49.69	74.00	-24.31

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Page: 74 of 80



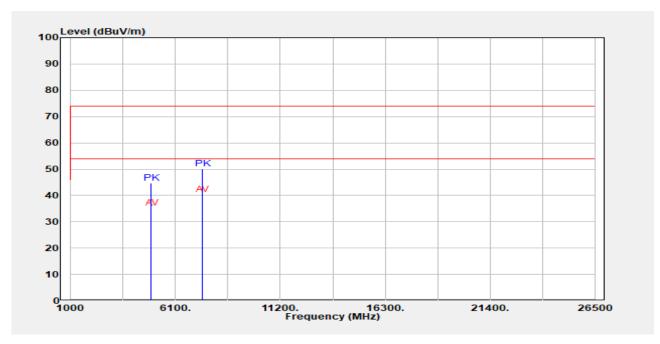
## 2nd Source

Report Number Test Site :SAC 1 :TERF2402000337ER

Operation Mode :802.11b Test Date :2024-03-12 Temp./Humi. :25.3°C/53% Test Frequency :2462 MHz

Test Mode :Tx Antenna Pol. :Vertical

**EUT Pol** :E2 Plane Engineer :Cooper Hsu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dBµV/m	dBμV/m	dB
4924.00	Average	31.86	3.32	35.18	54.00	-18.82
4924.00	Peak	41.33	3.32	44.65	74.00	-29.35
7386.00	Average	31.05	9.33	40.38	54.00	-13.62
7386.00	Peak	40.94	9.33	50.27	74.00	-23.73

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Antenna Pol. :Horizontal

Page: 75 of 80



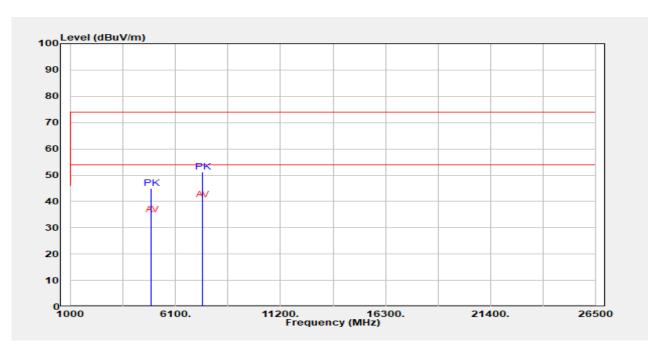
Report Number :TERF2402000337ER Test Site :SAC 1

 Operation Mode
 :802.11b
 Test Date
 :2024-03-12

 Test Frequency
 :2462 MHz
 Temp./Humi.
 :25.3°C/53%

Test Mode :Tx

EUT Pol :E2 Plane Engineer :Cooper Hsu



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dΒμV	dB	dΒμV/m	dBμV/m	dB
4924.00	Average	31.76	3.32	35.08	54.00	-18.92
4924.00	Peak	41.61	3.32	44.93	74.00	-29.07
7386.00	Average	31.20	9.33	40.53	54.00	-13.47
7386.00	Peak	42.02	9.33	51.35	74.00	-22.65

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Page: 76 of 80

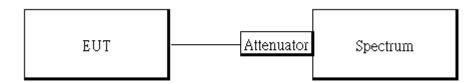
## 12 POWER SPECTRAL DENSITY

### 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.

### 12.2 **Test Setup**



#### 12.3 **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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Page: 77 of 80



# 12.4 Power spectral density

POWER DENSITY 802.11b							
Freq.	Ch0	PSD	Limit	Dooult			
(MHz)	PSD	(dBm/3kHz)	(dBm/3kHz)	Result			
2412	-0.42	-0.42	8.00	PASS			
2437	-1.75	-1.75	8.00	PASS			
2462	-2	-2.00	8.00	PASS			

POWER DENSITY 802.11g						
Freq.	Ch0	PSD	Limit	Result		
(MHz)	PSD	(dBm/3kHz)	(dBm/3kHz)			
2412	-8.78	-8.78	8.00	PASS		
2437	-8.89	-8.89	8.00	PASS		
2462	-9.65	-9.65	8.00	PASS		

POWER DENSITY 802.11n HT20						
Freq.	Ch0	PSD	Limit	Result		
(MHz)	PSD	(dBm/3kHz)	(dBm/3kHz)	i Ne Suit		
2412	-9.99	-9.99	8.00	PASS		
2437	-10.52	-10.52	8.00	PASS		
2462	-9.77	-9.77	8.00	PASS		

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Page: 78 of 80



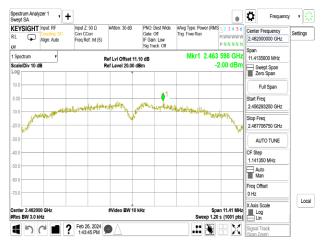
802.11b 20MHz Chain0 2412MHz



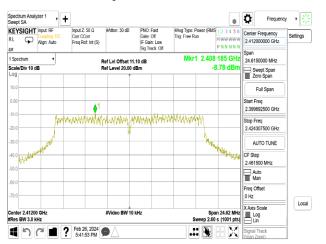
802.11b 20MHz Chain0 2437MHz



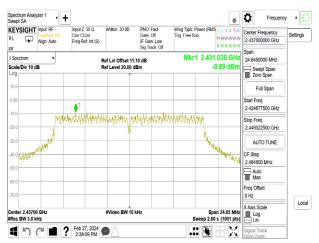
802.11b\_20MHz\_Chain0\_2462MHz



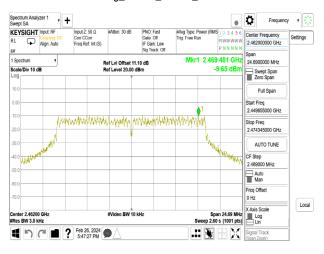
802.11g\_20MHz\_Chain0\_2412MHz



802.11g\_20MHz\_Chain0\_2437MHz



802.11g\_20MHz\_Chain0\_2462MHz



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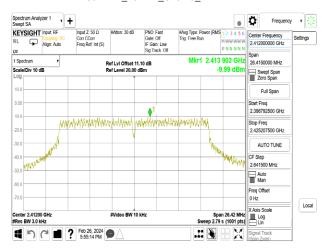
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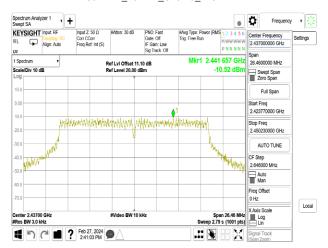
Page: 79 of 80



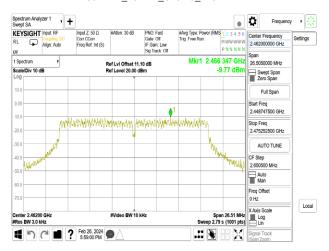
### 802.11n 20MHz Chain0 2412MHz



### 802.11n 20MHz Chain0 2437MHz



### 802.11n\_20MHz\_Chain0\_2462MHz



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Page: 80 of 80



# 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 complies with this requirement and no consideration of replacement. Please see EUT photo for details.

~ End of Report ~

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