

ELECTROMAGNETIC EMISSIONS **COMPLIANCE REPORT**



Applicant: Manufacturer:	Murata Manufacturing Co., Ltd. 1-10-1, Higashikotari, Nagaokakyo-shi, Kyoto 617-8555 Ja- pan Murata Manufacturing Co., Ltd. 1-10-1, Higashikotari, Nagaokakyo-shi, Kyoto 617-8555 Ja-
	pan
Product Name:	Communication Module
Brand Name:	muRata
Model No.:	LBEE5ZZ1XL, LBEE5ZZ2XS
Model Difference:	Refer to section 1.10
Report Number:	TERF2305001165E2
FCC ID	VPYLBEE5ZZ1XL
Date of EUT Received:	N/A, the test results are fully leveraged from test report num- ber: TERF2211002151E2
Date of Test:	N/A, the test results are fully leveraged from test report num- ber: TERF2211002151E2
Issue Date:	May 04, 2023

Jav Lin

We hereby certify that:

Approved By

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 §15.407.

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

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

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Revision History					
Report Number	Revision	Description	Issue Date	Revised By	Remark
TERF2305001165E2	00	Initial	May 04, 2023	Yami Kuo	

Note:

- 1 . The remark "*" indicates modification of the report upon requests from certification body.
- 2 Variant information of model numbers is provided by the applicant, please refer to section 1.10 of this report for details. Test results of this report are applicable to the sample EUT(s) received and variant models are assessed as electrically identical, no further tests are required for the variant.

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1 **GENERAL INFORMATION**

1.1 **Product Description**

Product Name:	Communication Module
Brand Name:	muRata
Model No.:	LBEE5ZZ1XL, LBEE5ZZ2XS
Model Difference:	Refer to section 1.10
Hardware Version:	1
Firmware Version:	1.1.1.1
EUT Series No.:	1XL: Sample. No2
Power Supply:	3.3Vdc, 1.8Vdc
Test Software (Name/Version)	Tera Term V4.105 / Dut labtool v2.0.0.85

1.2 Modulation & Data Rate

Modulation type:	64QAM, 16QAM, QPSK, BPSK for OFDM
	256QAM for OFDM in 802.11ac
	256QAM,1024QAM for OFDMA in 802.11ax
	802.11 a: 6 - 54 Mbps
	802.11 n_20MHz: up to 144.4 Mbps
	802.11 n_40MHz: up to 300 Mbps
Transition Rate:	802.11 ac_20MHz: up to 173.4 Mbps
וומווזונוטוו ולמנכ.	802.11 ac_40MHz: up to 400 Mbps
	802.11 ax_20MHz: up to 286.8 Mbps
	802.11 ax_40MHz: up to 573.6 Mbps
	802.11 ax_80MHz: up to 1201 Mbps

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1.3 **Antenna Designation**

Antenna Type	Freq. (MHz)	Peak Antenna Gain (dBi)	Directional Gain (dBi)
	5150~5250	4.25	7.26
Dinala	5250~5350	4.25	7.26
Dipole	5475~5725	4.25	7.26
	5725~5850	4.25	7.26

Note:

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

FCC 1.4

Wi-Fi	Frequency Range	Channels	Rated Power(Avg) (dBm) (Worst Case)	Modulation Technology
a/ n_HT/	5180~5240	4	19.94 dBm	OFDMA
ac_VHT/	5260~5320	4	21.94 dBm	OFDM
ax_HE 20M	5500~5720	12	19.42 dBm	OFDM
n_HT	5190~5230	2	14.82 dBm	OFDMA
ac_VHT/ ax_HE	5270~5310	2	18.90 dBm	OFDM
40M	5510~5710	6	18.92 dBm	OFDM
ac_VHT/ ax_HE	5530~5690	3	19.90 dBm	OFDMA
80M	5775	1	18.90 dBm	OFDM

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1.5 **Test Methodology of Applied Standards**

FCC Part 15, Subpart E §15.407 FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01 FCC KDB 662911 D01 Multiple Transmitter Output v02r01 FCC KDB 291074 D02 EMC Measurement v01 ANSI C63.10:2013

1.6 **Test Facility**

Laboratory	Test Site Address	Test Site Name	FCC Designa- tion number	IC CAB identifier
		SAC 1		
		SAC 2		
		SAC 3		
	No. 124 Mar Kung Dood Now Toingi	Conduction 1		
	No.134, Wu Kung Road, New Taipei	Conducted 1	TMOODZ	
	Industrial Park, Wuku District, New Taipei City, Taiwan.	Conducted 2	TW0027	
	Taiper City, Taiwan.	Conducted 3		TW3702
		Conducted 4		
		Conducted 5		
SGS Taiwan Ltd.		Conducted 6		
Central RF Lab.		Conduction C		
(TAF code 3702)	Na 2 Kaji 4at Dd. Quishan District	SAC C		
		SAC D		
		SAC G		
		Conducted A		
	No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan 333	Conducted B	TW0028	
	Tabydan City, Taiwan 555	Conducted C		
		Conducted D		
		Conducted E		
		Conducted F		ļ
		Conducted G		
Note: Test site name is remarked on the equipment list in each section of this report as an indica- tion where measurements occurred in specific test site and address.				

1.7 **Special Accessories**

There are no special accessories used while test was conducted.

1.8 **Equipment Modifications**

There was no modification incorporated into the EUT.

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1.9 Model difference

LBEE5ZZ1XL has a dedicated antenna port for BT.

LBEE5ZZ2XS BT shares same antenna port with WLAN.

Some passive components are different between models as below

LBEE5ZZ1XL	LBEE5ZZ2XS
C 336 No mounted	C336 mounted
C337 mounted	C337 No mounted
L310 mounted	L310 Nomounted

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SYSTEM TEST CONFIGURATION 2

2.1 **EUT Configuration**

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

2.2 **EUT Exercise**

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

2.3 **Test Procedure**

2.3.1 **Conducted Emissions**

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

2.3.2 Conducted Test (RF)

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

2.3.3 **Radiated Emissions**

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

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2.4 Measurement Results Explanation Example

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

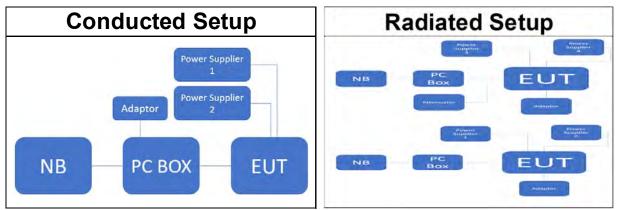
Radiated emission below 30MHz is measured in a 9m*6m*6m semi-anechoic chamber, the measurements correspond to those obtained at an open-field test site.

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

2.4.2 For all conducted test items:

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

2.5 **Test Configuration**



2.6 Control Unit(s)

Conducted Emission Test Site: Conducted D					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Notebook	Lenovo	T420	S0012599	N/A	N/A
Notebook	Lenovo	L420	S0011721	N/A	N/A
		Radiated Emission Tes	st Site: SAC D		
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
LAN Cable	向聯	VPH-02	1500021123	N.C.R	N.C.R
LAN Cable	INVAX	IVX011	N/A	N.C.R	N.C.R
Notebook	Lenovo	T470	P0001293	N/A	N/A
Notebook	Lenovo	T420	S0012599	N/A	N/A
Adapter	APD	NB-65B19	N/A	N/A	N/A
Adapter	FSP	FSP065-REBN2	H6081012364	N.C.R	N.C.R

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3 SUMMARY OF TEST RESULT

FCC Rules	Description Of Test	Result	Note
§15.407(a)	Maximum Conducted Output Power	Compliant	
§15.407(a)	Power Spectral Density	Compliant	
§15.205 §15.209 §15.407(b)	Undesirable Radiated Emis- sions	Compliant	

Note

- 1. N/S Indicates whether item(s) being newly tested [N] or spot checked [S].
- 2. Items other than newly tested [N] are leveraged from test report TERF2211002151E2.

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DESCRIPTION OF TEST MODES 4

4.1 **Operating Frequencies**

Operated band in 5250 MHz ~5350 MHz:

5825

65

СН

54 62

		-	
	20 M	4	0 M
СН	Freq (MHz)	СН	Fre (MH
36	5180	38	519
40	5200	46	523
44	5220		
48	5240		

Operated band in 5150 MHz ~5250 MHz:								
20 M			4	0 M	8	0 M		
СН	Freq (MHz)		СН	Freq (MHz)	СН	Freq (MHz)		
36	5180		38	5190	42	5210		
40	5200		46	5230				
44	5220							
48	5240							

0 M	
Freq (MHz)	
5260	
5280	
5300	
5320	
	Freq (MHz) 5260 5280 5300

	5250 IVI	ΠΖ	~05	
4	0 M		8	0 M
	Freq (MHz)		СН	Freq (MHz)
	5270		58	5290
	5310			

Operated band in 5470 MHz ~5725 MHz:

1	20 M	4	0 M	8	80 M		
СН	Freq (MHz)	СН	Freq (MHz)	СН	Freq (MHz)		
100	5500	102	5510	106	5530		
104	5520	110	5550	122	5610		
108	5540	118	5590	138	5690		
112	5560	126	5630				
116	5580	134	5670				
120	5600	142	5710				
124	5620						

Operated ban	d in 5725 MHz	z ~5850 MHz:

			-					
	20 M		4	0 M	8	80 M		
СН	Freq (MHz)		СН	Freq (MHz)	СН	Freq (MHz)		
149	5745		151	5755	155	5775		
153	5765		159	5795				
157	5785							
161	5805							

Note:

32

136

40

144

5640 5660

5680

5700

5720

5850~5895 MHz is not available for operation in Canada. 1.

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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 mode is programmed.
- 3. Investigation has been done on all the possible configurations for searching the worst case. The given UE is pre-scanned among below modes.

I	Modulation			Tra	nsmiss	sion	Chain		Tra	Single Transmission Spatial		Multiple ansmission Spatial
v	802.11 a	۷	Ch0	۷	Ch1		Ch2	Ch3		1TX	۷	2TX
V	802.11 n	۷	Ch0	۷	Ch1		Ch2	Ch3		SISO	۷	MIMO
V	802.11 ac	۷	Ch0	۷	Ch1		Ch2	Ch3		SISO	۷	MIMO
v	802.11 ax	۷	Ch0	V	Ch1		Ch2	Ch3		SISO	۷	MIMO

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.

	RADIATED EMISSION TEST (ABOVE 1 GHz)									
MODE	FREQUENCY	AVAILABLE	TESTED	MODULATION	DATA RATE	ANTENNA				
MODE	BAND (MHz)	CHANNEL	CHANNEL	MODULATION	(Mbps)	PORT				
802.11a	5500~5720	100 to 144	116	OFDM	6	2TX				
802.11n_HT20	5180~5240	36 to 48	40	OFDM	MCS0	2TX				
002.1111_111.20	5500~5720	100 to 144	116	OFDM	MC50	217				
802.11n_HT40	5270~5310	54 to 62	54	OFDM	MCS0	2TX				
002.11n_11140	5510~5710	102 to 142	110,134	OFDM	MC50	217				

	RADIATED EMISSION TEST (ABOVE 1 GHz)									
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	RU CONFIGURATIO	DATA RATE (Mbps)	ANTENNA PORT			
	5180~5240	36 to 48	36,40		FULL RU	MCS0	2TX			
802.11ax_HE20	5260~5320	52 to 64	64	OFDMA	26/0,26/8 52/37,52/40					
	5500~5720	100 to 144	116,140	100/52	106/53					
802.11ax_HE40	5510~5710	102 to 142	110	OFDMA	Full RU	MCS0	2TX			
802.11ax_HE80	5775	155	155	OFDMA	484/66	MC:S0	2TX			

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	CONDUCTED TEST										
MODE	FREQUENC	AVAILABLE	TESTED MODULATIO		DATA RATE	ANTENNA					
WIODE	Y BAND	CHANNEL	CHANNEL	N	(Mbps)	PORT					
802.11a	5500~5720	100 to 144	116	OFDM	6	2тх					
802.11n_HT20	5180~5240	36 to 48	40	OFDM	MCS0	ΩT V					
002.11n_F120	5500~5720	100 to 144	116		WC-50	2TX					
802.11n_HT40	5270~5310	54 to 62	54	OFDM	MCS0	0TV					
002.118_F1140	5510~5670	102 to 142	110,134		WC-50	2TX					

	CONDUCTED TE ST									
MODE	FREQUENC	AVAILABLE	TESTED	MODULATIO	RU	DATA RATE	ANTENNA			
MODE	Y BAND	CHANNEL	CHANNEL	N	CONFIGURA	(Mbps)	PORT			
	5180~5240	36 to 48	36,40		FULL RU 26/0,26/8	MCS0				
802.11ax_HE20	5260~5320	52 to 64	64	OFDMA	52/37,52/40		2TX			
	5500~5720	100 to 144	116,140		106/53					
802.11ax_HE40	5510~5710	102 to 142	110	OFDMA	FULL RU	MCS0	2TX			
802.11ax_HE80	5775	155	155	OFDMA	484/66	MCS0	2TX			

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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5 MEASUREMENT UNCERTAINTY

Test Items	Uncertainty			
AC Power Line Conducted Emission	+/-	2.34	dB	
Output Power measurement	+/-	1	dB	
Emission Bandwidth	+/-	1.53	Hz	
Undesignable radiated emission measure- ment	+/-	1.68	dB	
Peak Power Density	+/-	1.62	dB	
Temperature	+/-	0.4	°C	
Humidity	+/-	3.5	%	
DC / AC Power Source	+/-	1	%	

Radiated Spurious Emission Measurement Uncertainty								
	+/-	2.57	dB	9kHz~30MHz				
Polarization: Vertical	+/-	4.85	dB	30MHz - 1000MHz				
	+/-	4.45	dB	1GHz - 18GHz				
	+/-	4.24	dB	18GHz - 40GHz				
	+/-	2.57	dB	9kHz~30MHz				
Polarization: Horizontal	+/-	4.37	dB	30MHz - 1000MHz				
	+/-	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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MEASUREMENT EQUIPMENT USED 6

6.1 **Condcuted Measurement**

	Co	nducted Emission Test S	Site: Conducted D		
EQUIPMENT TYPE	EQUIPMENT TYPE MFR		MODEL NUMBER SERIAL NUMBER		CAL DUE.
Spectrum Analyzer	KEYSIGHT	N9010B	MY59071574	06/20/2022	06/19/2023
Power Meter	Anritsu	ML2496A	1512003	07/26/2022	07/25/2023
Power Sensor	Anritsu	MA2411B	1339378	07/26/2022	07/25/2023
Power Sensor	Anritsu	MA2411B	1339379	07/26/2022	07/25/2023
DC Power Supply	Agilent	E3640A	MY53130054	09/29/2022	09/28/2023
DC Power Supply	Agilent	E3640A	MY53140006	05/16/2022	05/15/2023
DC Power Supply	HOLA	DP-3003	D7070035	06/09/2022	06/08/2023
DC Power Supply	Gwinstek	SPS-3610	GEV856767	09/29/2022	09/28/2023
Test Software	SGS Taiwan	Radio Test Software	Ver.21	N.C.R	N.C.R
Attenuator	Marvelous	MVE2213-10	RF13	11/16/2022	11/15/2023
Attenuator	Woken	WATT-218FS-10	RF15	11/16/2022	11/15/2023
Attenuator	KEYSIGHT	11716C	8494B TH60075424+8496B TH6075262	11/16/2022	11/15/2023
Coupler	MIDISCO52335	MDC2044-20	RF36	11/16/2022	11/15/2023
DC Block	PASTERNACK	PE8210	RF158	11/16/2022	11/15/2023
Splitter	Marvelous	MVE8576	RF256	11/16/2022	11/15/2023
Switch E-Channel	E-Channel	ETF-1801 RF Switch	EC2100175	11/16/2022	11/15/2023
Coaxial Cables	Woken	00100A1F2A196C	RF62	11/16/2022	11/15/2023
Coaxial Cables	Woken	00100A1F2A196C	RF64	11/16/2022	11/15/2023
Coaxial Cables	Woken	00100A1F1A185C	RF71	11/16/2022	11/15/2023

6.2 **Radiated Measurement**

		Radiated Emission Te	st Site: SAC D		
EQUIPMENT TYPE MFR		MODEL NUMBER	MODEL NUMBER SERIAL NUMBER		CAL DUE.
Broadband Antenna	SCHWARZBECK	VULB 9168	9168-300	11/11/2022	11/10/2023
Horn Antenna	Schwarzbeck	BBHA9170	185	08/22/2022	08/21/2023
Horn Antenna	Schwarzbeck	BBHA9120D	1341	05/31/2022	05/30/2023
Loop Antenna	ETS.LINDGREN	6502	143303	05/14/2022	05/13/2023
3m Site NSA	SGS	966 chamber D	N/A	04/30/2022	04/29/2023
Spectrum Analyzer	KEYSIGHT	N9010A	MY57120200	03/24/2022	03/23/2023
Test Software	audix	e3	E3 20923 SGS Ver.9 (C)	N.C.R	N.C.R
DC Power Supply	Agilent	E3640A	MY53130054	09/29/2022	09/28/2023
DC Power Supply	Agilent	E3640A	MY53140006	05/16/2022	05/15/2023
DC Power Supply	Gwinstek	SPS-3610	GEV856769	09/29/2022	09/28/2023
DC Power Supply	Gwinstek	SPS-3610	GEV856767	09/29/2022	09/28/2023
Pre-Amplifier	EMC Instruments	EM26400	971576	10/02/2022	10/01/2023
Pre-Amplifier	EMC Instruments	EMC9135	980234	11/16/2022	11/15/2023
Pre-Amplifier	EMC Instruments	EMC12630SE	980273	11/16/2022	11/15/2023
Attenuator	Woken	WATT-218FS-10	RF17	11/16/2022	11/15/2023
Coaxial Cable	Huber+Suhner	RG 214/U	W21.01	11/16/2022	11/15/2023
Coaxial Cable	Huber Suhner	EMC106-SM-SM-7200	150703	11/16/2022	11/15/2023
Coaxial Cable	Huber Suhner	SUCOFLEX 104	MY17413/4	11/16/2022	11/15/2023

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

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MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT 7

7.1 Standard Applicable

7.1.1 **Duty Cycle**

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

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

				e-CRF Title	47 §15.407	
Band	(EUT CATEGORY	Conducted Output Power	EIRP	TPC	Antenna Directional Gain Requirements
		Fixed point-to- point	1 Watt(30dBm)	Not required	Not required	23dBi
	U-NII-1 U-NII-2A U-NII-2A V U-NII-2C V	Out door AP	1 Watt(30dBm)	Elevation angle above 30 degrees 125mW (21dBm)	Not required	6dBi
U-INII-1		Indoor AP	1 Watt(30dBm)	Not required	Not required	6dBi
	۷	Other 250mW(23.98dBm)		Not required	Not required	6dBi
U-NII-2A	v	Other	Other 250mW(23.98dBm) or 11dBm+10 log B Not required		When EIRP >500mW At least 6dB below EIRP 1W (30dBm)	6dBi
U-NII-2C	V	Other	250mW(23.98dBm) or 11dBm+10 log B	Not required		6dBi
	٧	Other	1 Watt(30dBm)	Not required	Not required	6dBi
U-NII-3		Fixed point-to-point	1 Watt(30dBm)	Not required	Not required	Not required
reduced by	the amou	0	ection-al gain of the a	ntenna requirements colun ntenna.	nn, the Maximum transm	it power shall be

7.1.2 **Output Power**

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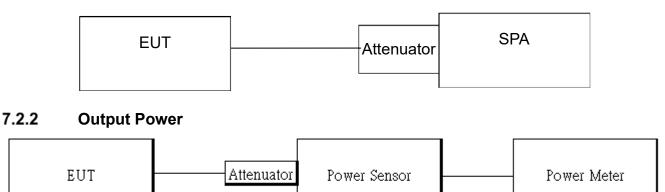
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7.2 **Test Setup**

7.2.1 **Duty Cycle**



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7.3 Measurement Procedure

7.3.1 **Duty Cycle Measurements**

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

7.3.2 **Output Power Measurements**

- 1 Place the EUT on the table and set it in transmitting mode.
- The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules . 2.
- Remove the antenna from the EUT and then connect a low loss RF cable from the an-3. tenna port to the power meter
- 4. Power Meter is used as the auxiliary test equipment to conduct the output power measurement.
- 5. Record the max. reading and add 10 log(1/duty cycle).
- Repeat above procedures until all frequency (low, middle, and high channel) measured 6. were complete.
- 7. MIMO mode: offset is set with "measure and add 10 Log (N)" to measurement for MIMO mode. Offset = cable loss + 10 log (N), where N is number of transmitting antenna, cable loss is specified below.

Note:

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

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

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

where

Each antenna is driven by no more than one spatial stream; NSS = the number of independent spatial streams of data; NANT = the total number of antennas $g_{i,k} = /20$ 10Gk if the kth antenna is being fed by spatial stream i, or zero if it is not; \tilde{G}_k is the gain in dBi of the kth antenna.

The antenna gain is grater than 6 dBi in MIMO mode, therefore the the power density limit autenuation has been applied in the test results.

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7.4 **Duty Cycle Measurement Result**

Mode	Duty Cycle (%) =Ton / (Ton+Toff)	Duty Factor (dB) =10*log(1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
802.11a	98.90	0.05	0.70	0.01
802.11n_20	98.02	0.09	1.45	0.01
802.11ac_20	98.04	0.09	1.43	0.01
802.11n_40	96.22	0.17	2.81	3.00
802.11ac_40	96.26	0.17	2.78	3.00
802.11ac_80	92.31	0.35	5.21	6.00
802.11ax_20	97.54	0.11	1.80	2.00
802.11ax_40	95.63	0.19	3.27	4.00
802.11ax_80	92.71	0.33	5.62	6.00

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802.11a_20MHz_Chain0_5180MHz

Coverna Ca		10.00	-							
Center F	req 5.1800	00000 GH	Z'	Trig. Free Ru			r: Log-Pwr	TINE	N Jan 10, 2020	Frequency
10 dB/div	Ref Offset 1 Ref 30.00	9.8 dB	aintme	#Atten: 30 df	3		۵	Mkr3 1	.448 ms 0.08 dB	Auto Tun
zio rois viete	-	344	-	wardowski	-	-	-			Center Fre 5 180000000 GH
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40.0 50.0										Stop Fre 5.18000000 GH
tes BW 8		GHz	≠vBW	8.0 MHz			Sweep 1	0.00 ms (CF Ste B.000000 MP Auto Ma
1 Δ2 2 F Δ4 4 F 5 6 7	1 (Δ) 1 (Δ) 1 (Δ) 1 (Δ)	1.03	32 mp (Δ) 34 ms 48 ms (Δ) 34 ms	10.60 dB 0.83 dBm 10.08 dB 0.83 dBm	FU7/				en e	Freq Offse OH
7 8 9 10 11				-				-		

802.11n 20MHz Chain0 5180MHz

Springer Springer Strategy (Springer		_		
enter Freq 5.180000000 GHz	Trig. Free Run	Avg Type: Log-Pwr	07-12-07 PM Jan 10,2012 TRACE 1-2-3-8-1-6 TVPE WWWWWWW SET P N N N N N	Frequency
Ref Offset 19.8 dB dB/div Ref 30.00 dBm	#Atten: 30 dB	-	Mkr3 706.0 µs -7.05 dB	Auto Tune
			-	Center Fred 5.180000000 GHz
				Start Freq 6 18000000 GHz
0 0 0				Stop Fred 5.18000000 GHz
	8.0 MHz		Span 0 Hz .00 ms (10001 pts)	CF Step 8.000000 MHz Auto Mar
Construct For For	-1.36 dB 10.64 dBm -7.05 dB 10.64 dBm	O DA HARDON WORK	FANGLEON WATE	Freq Offset 0 Hz
6 7 8 9 9				
	~	Statio		

802.11n 40MHz Chain0 5190MHz

Conter Freq 5.190000000 GHz Tig Free Ban Matter 30 dB Arg Type Lugger Tig Free Ban Matter 30 dB Frequency 10 dBiddi Ref Offset 198 dB ΔMkr3 370.0 µS Auto T 10 dBiddi Ref Offset 198 dB ΔMkr3 370.0 µS Auto T 10 dBiddi Ref Offset 198 dB ΔMkr3 370.0 µS Auto T 10 dBiddi Ref Offset 198 dB ΔMkr3 370.0 µS Estimation of the transmitter of t
Ref Offset 198 dB ΔMKr3 370,0 μs Auto T 0.68/04 -0.55 dB -0.55 dB -0.55 dB 0.69 -0.55 dB -0.55 dB -0.55 dB 0.69 -0.55 dB -0.55 dB -0.55 dB 0.00 -0.50 dB -0.55 dB -0.55 dB 0.00 -0.55 dB -0.55 dB -0.55 dB 0.00<
201 204 4 4 6 Center 1 5 <t< td=""></t<>
100 100 100 100 100 100 100 100
20.0 Stop / Stop
Res BW 8 MHz #VBW 8.0 MHz Sweep 20.00 ms (10001 pts) 8.000000
MER WOOD THE SOL P PARTER AND PARTER AND PARTER WALE
1 Δ2 1 (Δ) 356 (Δ) (Δ) 11 (d) 2 F 1 170 (Δ) 3.17 (d)m 1 <
7 8 9 9
11]

Report No.: TERF2305001165E2 Page: 20 of 76

802.11ac_20MHz_Chain0_5180MHz

enter Freq 5.1800	D000000 GHz PNC: Fast	Trig. Free Run MAttern: 30 dB	Avg Type: Log Pwr	14 (0: 11 M Jan 10, 202) 19402 1 2 3 4 3 6 19702 1 2 3 4 3 6 1970 1 10 10 10 10	Frequency
0 dB/div Ref 30.00			1	Mkr3 714.0 µs -0.29 dB	Auto Tun
304 100 304					Center Fre 5.180000000 GH
20.0					Start Fre 5.18000000 GH
81.0					Stop Fre 5.18000000 GH
0.0					
Center 5,180000000 tes BW 8 MHz		V 8.0 MHz	Sweep 20	Span 0 Hz 00 ms (10001 pts)	8.000000 MH
Center 5,180000000 Res BW 8 MHz	#VBV		Sweep 20	00 ms (10001 pts)	CF Ste 8,000000 MH Auto Ma
Center 5.180000000 Res BW 8 MHz 1 Δ2 1 (Δ) 2 F 1 t 2 A4 1 t (Δ) 4 F 1 t 8		-6.68 dB 11.09 dBm		00 ms (10001 pts)	8.000000 MH
Center 5.180000000 tes BW 8 MHz 1 Δ2 1 (Δ) 2 F 1 (Δ) 4 F 1 (Δ)	#VBV 700.0 μs (Δ) 324.0 μs 714.0 μs (Δ)	-6.68 dB 11.09 dBm -0 29 dB		00 ms (10001 pts)	B.000000 Mi Auto Ma

802.11ac 40MHz Chain0 5190MHz nter Freq 5.190000000 GHz Avg Type: Log-P Trig. Free Ru ΔMkr3 374.0 μs -1.43 dB Auto Tu Ref 30.00 dBr Center Fre Start Fre Stop Fre CF Step Sweep 20.00 ms (1000) #VBW 8.0 MH: M 101 Freg Offs 01

802.11ac 80MHz Chain0 5210MHz

							an or		-	1000	- 9
Frequency	THESE STATES	Log-Pwr		Run	Trig Free	Z	00000 GH	5.21000	Freq	nter	en
Auto Tun	Mkr3 208.0 µs	-	-	dB	#Atten: 30	ain.t.ms	1FC	Offset 19	Rei	-	
	0.23 dB	_	-	_		_	dBm	f 30.00 d	Re	Bidiv	0 d
Center Fre 5.210000000 GH	and the second second								â.	13	90 90
StartFre	YTYPHIT TO MARKED	****	Harrist P	*****	****	****	***		****	Ĥ	00
5.21000000 GH	HIGH HIGH HIGH HIGH HIGH HIGH HIGH HIGH	unnu		minti	hinin	(JUIII)	111111	111111	the state	11M	0.0
Stop Fre 5.210000000 GH			-	-						-	9.0 9.0 9.0
CF Ste E.000000 Mi	Span 0 Hz 00 ms (10001 pts)	weep 20.	s		8.0 MHz	#VBW	Hz	00000 G	.2100 8 MH		
2010 114	FINGTOW WALLE	ETOYWOR	TEN TRU		3,69 1	2.0 µs (Δ)	19	(4)		Δ2	
Freq Offse 0 F				m iB	0.23 dB 0.23 dB 0.23 dB	80 μs 80 μs (Δ) 80 μs	13	(Δ)	1 t.	F 44 F	2
									-		4557890
		_		1	~		_	-		_	10
		STATIN									

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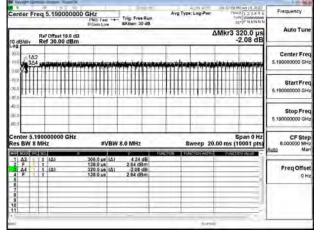
f (886-2) 2298-0488



802.11ax_20MHz_Chain0_5180MHz

Center Fr	eq 5.180	000000	GHZ PNC: Fi		Trig Fr		Avg Ty	pe: Log-Pwr	TRUE	100019.2020 7.1.2.3.8.7.6 WWWWWWWW 7.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1	Frequency
0 dB/div	Ref Offset Ref 30.0		D'Gain1		Rectain.	JO 115			ΔMkr3 5	70.0 µs 0.75 dB	Auto Tune
rea Villa		-		-	-	-		-			Center Free 5.180000000 GH
20.0											Start Free 6.18000000 GH
10.0 10.0 10.0											Stop Fre 5.18000000 GH
enter 5.1 es BW 8	8000000 MHz	0 GHz	-	WBW	8.0 MH	-		Sweep 20).00 ms (1		CF Ste B.000000 Mi- Auto Ma
1 Δ2 2 F 4 F 5	τ (Δ) τ τ (Δ) τ	-	555.0 µ 464.0 µ 570.0 µ 464.0 µ	π (Δ)	4.1- 10.74 0.7 10.74	dB 1Bm 5 dB	enere Sto	and a weath	Parto		Freq Offse 0H
6 7 8 9 10											

802.11ax 40MHz Chain0 5190MHz



7.5 **Output Power Measurement Result**

7.5.1 FCC Output power

802.11a Ch0

сн	Frequency (MHz)	Data Rate	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
116	5580	6	15.5	15.84	38.353	23.94	PASS

802.11a Ch1

сн	Frequency (MHz)	Data Rate		Power set (dBm)			ER	REQUIRED LIMIT (dBm)		RESULT
116	5580	6	1	5.5	15.78	37.8	27	23	3.84	PASS
802.11a_2TX	(•			•			•	
сн	Frequency	Data	Power	Avg. PO	WER (dBm)	TOTAL POWER	TOT/ POWE		REQUIRED LIMIT	RESULT
	(MHz)	Rate	set	Ch0	Ch1	(dBm)	(mW	V)	(dBm)	
116	5580	6	17	15.96	15.85	18.91	77.87	70	22.72	PASS

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802.11ax_80MHz_Chain0_5210MHz

10000000 GHz Avg Type: Log-Pwr Trig: Free Run Avg Type: Log-Pwr Trig: Pree Run Strip Risk Run St	Frequency
text 19.8 dB ΔMkr3 192.0 μs	Auto Tune
-4.46 dB	
the best of a base substant as the for and the second stand of the second state and the second state of th	Center Free 5.210000000 GH
	Start Free 5 210000000 GH
	Stop Fre 5.210000000 GH
000 GHz Span 0 Hz \$	CF Step 8.000000 MH
	<u>410</u> Mar
	Freq Offse
164.0 us 0.72 dBm 192.0 us (b) 4.46 dB 164.0 us 0.72 dBm	
192.0 μs (Δ) -4.46 dB	

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802.11n_HT20_Ch0

сн	Frequency (MHz)	Data Rate	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
40	5200	MCS0	16.5	16.83	48.160	23.98	PASS
116	5580	MCS0	15.5	15.84	38.343	23.98	PASS

802.11n_HT20_Ch1

сн	Frequency (MHz)	Data Rate	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
40	5200	MCS0	16.5	16.78	47.609	23.98	PASS
116	5580	MCS0	15.5	15.78	37.817	23.98	PASS

802.11n_HT20_2TX

ſ	СН	Frequency	Data	Power	Avg. POV	/ER (dBm)	TOTAL POWER	TOTAL POWER	REQUIRED LIMIT	RESULT
	Ch	(MHz)	Rate	set	Ch0	Ch1	(dBm)	(mW)	(dBm)	RESOLI
	40	5200	MCS0	17	16.94	16.79	19.87	97.114	22.72	PASS
	116	5580	MCS0	17.5	15.92	15.82	18.88	77.223	22.72	PASS

802.11ac_VHT20_Ch0

сн	Frequency (MHz)	Data Rate	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
40	5200	MCS0	17	16.75	47.271	23.98	PASS
116	5580	MCS0	16	15.79	37.896	23.98	PASS

802.11ac_VHT20_Ch1

СН	Frequency (MHz)	Data Rate	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
40	5200	MCS0	17	16.70	46.730	23.98	PASS
116	5580	MCS0	16	15.73	37.376	23.98	PASS

802.11ac_VHT20_2TX

сн	Frequency	Data	Power	Avg. POV	VER (dBm)	TOTAL POWER	TOTAL POWER	REQUIRED LIMIT	RESULT
	(MHz)	Rate	set	Ch0	Ch1	(dBm)	(mW)	(dBm)	RESOLT
40	5200	MCS0	17	16.89	16.75	19.83	96.091	22.72	PASS
116	5580	MCS0	15.5	15.87	15.77	18.83	76.323	22.72	PASS

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802.11ax HE20 Ch0

СН	Frequency (MHz)	Data Rate	RU config.	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
		MCS0	full	13.75	13.88	24.424	23.98	PASS
36	5180	MCS0	26/0	10.75	10.78	11.962	23.98	PASS
		MCS0	106/53	16.25	13.89	24.480	23.98	PASS
40	5200	MCS0	full	16	16.86	48.508	23.98	PASS
64	5320	MCS0	26/8	9.25	9.79	9.524	23.98	PASS
04	5520	MCS0	52/40	11.25	11.76	14.991	23.98	PASS
116	5580	MCS0	full	15.5	15.88	38.709	23.98	PASS
140	5700	MCS0	full	13.75	13.90	24.537	23.98	PASS
140	5700	MCS0	52/40	13.5	10.86	12.185	23.98	PASS

802.11ax_HE20_Ch1

СН	Frequency (MHz)	Data Rate	RU config.	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
		MCS0	full	13.75	13.82	24.089	23.98	PASS
36	5180	MCS0	26/0	11	10.76	11.907	23.98	PASS
		MCS0	106/53	17	13.81	24.034	23.98	PASS
40	5200	MCS0	full	16	16.77	47.514	23.98	PASS
64	5320	MCS0	26/8	9.5	9.77	9.480	23.98	PASS
04	5520	MCS0	52/40	11.5	11.73	14.887	23.98	PASS
116	5580	MCS0	full	15.5	15.83	38.266	23.98	PASS
140	5700	MCS0	full	15.5	13.84	24.200	23.98	PASS
140	5700	MCS0	52/40	13.5	10.79	11.990	23.98	PASS

802.11ax_HE20_2TX

СН	Frequency	Data	RU config.	Power	Avg. POW	/ER (dBm)	TOTAL POWER	TOTAL POWER	REQUIRED LIMIT	RESULT
Ch	(MHz)	Rate	Ku conng.	set	Ch0	Ch1	(dBm)	(mW)	(dBm)	RESULT
		MCS0	full	14.25	14.01	13.78	16.90	49.034	22.72	PASS
36	5180	MCS0	26/0	12.5	10.86	10.73	13.80	24.010	22.72	PASS
		MCS0	106/53	15.75	13.96	13.85	16.91	49.134	22.72	PASS
40	5200	MCS0	full	16.5	16.97	16.90	19.94	98.710	22.72	PASS
64	5320	MCS0	26/8	12.5	9.88	9.73	12.81	19.117	22.72	PASS
04	5520	MCS0	52/40	14.5	11.84	11.70	14.78	30.054	22.72	PASS
116	5580	MCS0	full	15.5	15.97	15.81	18.90	77.611	22.72	PASS
140	5700	MCS0	full	13.75	14.01	13.86	16.94	49.478	22.72	PASS
140	5700	MCS0	52/40	13	10.96	10.87	13.92	24.681	22.72	PASS

802.11n_HT40_Ch0

СН	Frequency (MHz)	Data Rate	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
54	5270	MCS0	15.5	15.90	38.881	23.98	PASS
110	5550	MCS0	14.5	14.88	30.742	23.98	PASS
134	5670	MCS0	15.75	15.90	38.881	23.98	PASS

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802.11n_HT40_Ch1

СН	Frequency (MHz)	Data Rate	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
54	5270	MCS0	15.5	15.84	38.347	23.98	PASS
110	5550	MCS0	14.5	14.82	30.320	23.98	PASS
134	5670	MCS0	15.75	15.84	38.347	23.98	PASS

802.11n_HT40_2TX

	сн	Frequency	Data	Power	Avg. POW	VER (dBm)	TOTAL POWER	TOTAL POWER	REQUIRED	RESULT
	51	(MHz)	Rate	set	Ch0	Ch1	(dBm)	(mW)	(dBm)	RESULT
:	54	5270	MCS0	16	16.02	15.77	18.90	77.704	22.72	PASS
1	110	5550	MCS0	15	15.05	14.79	17.93	62.081	22.72	PASS
1	134	5670	MCS0	16	15.97	15.86	18.92	78.037	22.72	PASS

802.11ac_VHT40_Ch0

сн	Frequency (MHz)	Data Rate	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
54	5270	MCS0	16	15.84	38.333	23.98	PASS
110	5550	MCS0	14.5	14.84	30.449	23.98	PASS
134	5670	MCS0	16.25	15.84	38.333	23.98	PASS

802.11ac_VHT40_Ch1

сн	Frequency (MHz)	Data Rate	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
54	5270	MCS0	16	15.60	36.272	23.98	PASS
110	5550	MCS0	14.5	14.62	28.945	23.98	PASS
134	5670	MCS0	16.25	15.61	36.355	23.98	PASS

802.11ac_VHT40_2TX

сн	Frequency	Data	Power	Avg. POW	VER (dBm)	TOTAL POWER	TOTAL POWER	REQUIRED	RESULT	
Ch	(MHz)	Rate	set	Ch0	Ch1	(dBm)	(mW)	(dBm)	RESULT	
54	5270	MCS0	16.75	15.97	15.76	18.87	77.131	22.72	PASS	
110	5550	MCS0	15	14.99	14.80	17.90	61.688	22.72	PASS	
134	5670	MCS0	16	16.03	15.80	18.92	78.028	22.72	PASS	

802.11ax HE40 Ch0

СН	Frequency (MHz)	Data Rate	RU config.	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT	
110	5550	MCS0	full	15	14.87	30.719	23.98	PASS	
802.11ax_HE40_Ch1									

СН	Frequency (MHz)	Data Rate	RU config.	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
110	5550	MCS0	full	15	14.82	30.367	23.98	PASS

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802.11ax_HE40_2TX

CH	Frequency	Data	RU config.	Power	Avg. POW	/ER (dBm)	TOTAL POWER	TOTAL POWER	REQUIRED LIMIT	RESULT
СН	(MHz)	(MHz) Rate	ite comg.	set	Ch0	Ch1	(dBm)	(mW)	(dBm)	RESOLI
110	5550	MCS0	full	14.5	14.92	14.82	17.88	49.431	22.72	PASS

802.11ax_HE80_Ch0

	сн	Frequency (MHz)	Data Rate	RU config.	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
[155	5775	MCS0	484/66	17.75	15.84	38.360	30	PASS

802.11ax_HE80_Ch1

сн	Frequency (MHz)	Data Rate	RU config.	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
155	5775	MCS0	484/66	18.5	15.77	37.746	30	PASS

802.11ax_HE80_2TX

сн		Frequency	Data	RU config.	Power	Avg. POW	VER (dBm)	TOTAL POWER	TOTAL POWER	REQUIRED	RESULT
	СН	(MHz)	(MHz) Rate	Rate Rate	set	Ch0	Ch1	(dBm)	(mW)	(dBm)	RESOLT
155		5775	MCS0	484/66	17.25	15.96	15.82	18.90	77.618	28.74	PASS

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UNDESIRABLE RADIATED EMISSION MEASUREMENT 8

8.1 Standard Applicable

 $EIRP = ((E^*d)^2) / 30$, where E is the field strength in V/m, d is the measurement distance (3m), EIRP is the equivalent isotropically radiated power in Watts.

5150~5850 MHz 8.1.1

Applicable	Operation	EIRP		Field
Applicable to	Freq. (MHz)	Freq. (MHz)	Limits (dBm/MHz)	Strength @ 3m (dBµV/m)
15.407(b)(1)	5150~5250	f ≤ 5150		
15.407(b)(2)	5250~5350	f ≥ 5350	PK: -27	PK: 68.2
15.407(b)(3)	5475~5725	f ≤ 5470 f ≥ 5725	111. 21	110.00.2
		at 75 MHz or more above or be- low the band edge	PK:-27	PK: 68.2
15.407(b)(4)(i)	5725~5850	increasing linearly from 75~25MHz above or below the band edge		PK: 68.2~105.2
		increasing linearly from 25~5MHz above or below the band edge	PK:10~15.6	PK: 105.2~110.8
		increasing linearly from 5~0 MHz above or below the band edge	PK: 15.6~27	PK:110.8~122.2

8.1.2 **Spurious Emission**

Unwanted spurious emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table:

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.

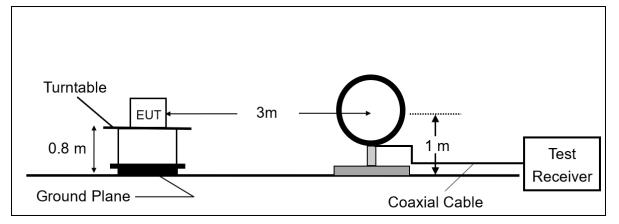
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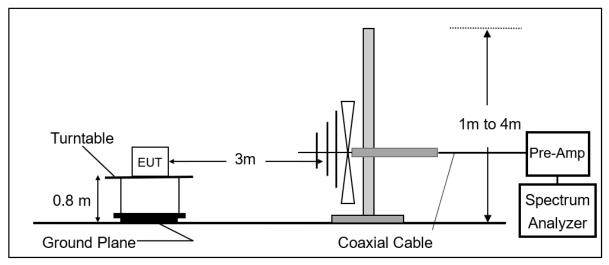


8.2 Test Setup

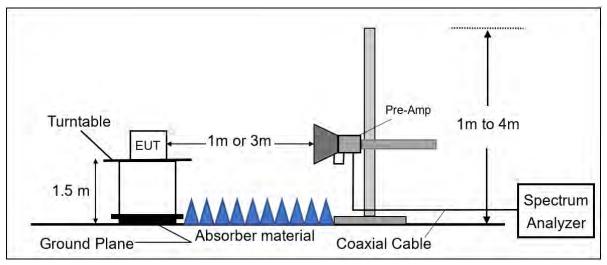
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz.



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



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



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8.3 **Measurement Procedure**

- The testing follows FCC KDB 789033 D02. 1.
- The EUT was placed on a turn table with 0.8m for frequency< 1GHz and 1.5m for fre-2. quency> 1GHz above ground plane.
- 3. 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 4. the highest emissions.
- Set the spectrum analyzer as RBW=100 kHz and VBW=300 kHz for Peak Detector (PK) 5. 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 8. (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 frequency measured were complete.

8.4 **Field Strength Calculation**

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

FS = RA + AF + CL - AG

Where FS = *Field Strength* RA = Reading Amplitude AF = Antenna Factor

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

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) $Factor(dB) = Antenna Factor(dB\mu V/m) + Cable Loss(dB) - Pre_Amplifier Gain(dB)$

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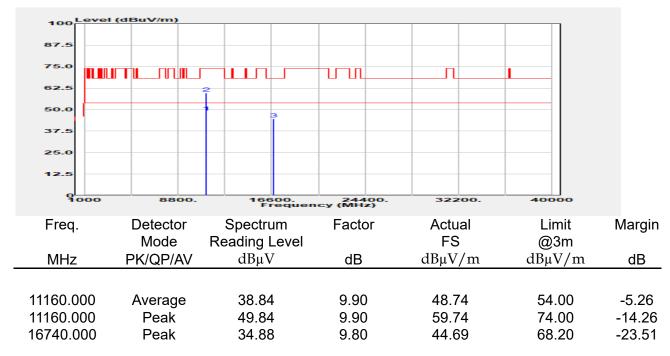
8.5 Test Results of Radiated Spurious Emissions from 9 kHz to 30 MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit per 15.31(o) & RSS-GEN §6.13.2 was not reported.

Radiated Spurious Emission Measurement Result 8.6

8.6.1 **Spurious Emission**

Report Number	:TERF2211002151E2	Test Site	:SAC D
Operation Mode	:802.11a	Test Date	:2022-12-13
Test Frequency	:5580 MHz	Temp./Humi.	:22.7/52
Test Mode	:Tx	Antenna Pol.	:VERTICAL
EUT Pol	:E2 Plane	Engineer	:Howard Huang



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Report Number	:TERF22	11002151E2	-	Test Site	:SAC D	
Operation Mode	e:802.11a		-	Test Date	:2022-12-13	
Test Frequency	:5580 MH	lz		Temp./Humi.	:22.7/52	
Test Mode	:Tx			Antenna Pol.	:HORIZONTAL	
EUT Pol	:E2 Plane	9		Engineer	:Howard Huang	
-				5	5	
100 Level (d	(BuV/m)		1			
87.5						
75.0						
62.5						
50.0		1 3				
37.5						
25.0						
12.5						
9000	8800.	16600. Frequen	24400. icy (MHz)	32200	. 40000	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode PK/QP/AV	Reading Level dBμV	dB	FS dBµV/m	@3m dBμV/m	dB
		αυμν	uD	αυμ γ / Π		
11160.000	Average	33.65	9.90	43.55	54.00	-10.45
11160.000	Peak	44.17	9.90	54.08	74.00	-19.92
16740.000	Peak	34.70	9.80	44.50	68.20	-23.70

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Report Numbe Operation Moe Test Frequenc Test Mode EUT Pol	de :802.11n2	20 1 z	Te Te Ar	st Date :2 mp./Humi. :2 ntenna Pol. :\		
87.5 75.0 62.5 50.0 37.5 25.0 12.5						
1000	8800.	16600. Frequen	24400. icy (MHz)	32200.	40000	
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10400.000 15600.000 15600.000	Peak Average Peak	38.57 26.11 36.40	9.91 7.76 7.76	48.48 33.87 44.16	68.20 54.00 74.00	-19.72 -20.13 -29.84

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Report Numbe Operation Mo Test Frequenc Test Mode EUT Pol	de :802.11n2	20 1 z	Te Te Ar	st Date :: mp./Humi. :: ntenna Pol. :!		
100 Level	(dBuV/m)				1	
87.5						
75.0						
62.5						
50.0						
	1	3				
37.5		2				
25.0						
12.5						
1000	8800.	16600. Frequen	24400. icy (MHz)	32200.	40000	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	-
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10400.000	Peak	37.55	9.91	47.46	68.20	-20.74
15600.000	Average	26.19	7.76	33.95	54.00	-20.05
15600.000	Peak	37.44	7.76	45.19	74.00	-28.81

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Report Number	r :TERF22	11002151E2	Te	st Site	:SAC D	
Operation Mod	e :802.11n2	20	Те	st Date	:2022-12-13	
Test Frequency	/ :5580 MH	lz	Te	mp./Humi.	:22.7/52	
Test Mode	:Tx		Ar	ntenna Pol.	:VERTICAL	
EUT Pol	:E2 Plane	9	Er	ngineer	:Howard Huang	
				0	U	
100 Level (dBuV/m)			1		
87.5						
75.0						
62.5		2				
50.0		3				
37.5						
25.0						
12.5						
1000	8800.	16600. Frequen	24400. icy (MHz)	32200.	40000	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode PK/QP/AV	Reading Level dBμV	dB	FS dBµV/m	@3m dBµV/m	dB
		αυμν	uD	αυμν/ Π	ασμν/ Πι	
11160.000	Average	39.28	9.90	49.18	54.00	-4.82
11160.000	Peak	50.24	9.90	60.14	74.00	-13.86
16740.000	Peak	35.89	9.80	45.70	68.20	-22.50

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Report Number	r :TERF22	11002151E2	Te	est Site	:SAC D	
Operation Mod	e :802.11n2	20	Te	est Date	:2022-12-13	
Test Frequency	/ :5580 MF	łz	Te	emp./Humi.	:22.7/52	
Test Mode	:Tx		A	ntenna Pol.	:HORIZONTAL	
EUT Pol	:E2 Plane	e	E	ngineer	:Howard Huang	
				•	C	
100 Level (dBuV/m)					
87.5						
75.0						
62.5		2				
50.0		3				
37.5						
25.0						
12.5						
1000	8800.	16600. Frequer	24400. icy (MHz)	32200.	40000	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode PK/QP/AV	Reading Level dBµV	dB	FS dBµV/m	@3m dBμV/m	dB
		abut		<i>abµ ()</i> III	ασμ γ π	
11160.000	Average	33.62	9.90	43.52	54.00	-10.48
11160.000	Peak	45.21	9.90	55.11	74.00	-18.89
16740.000	Peak	35.00	9.80	44.81	68.20	-23.39

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Dement Numerican TEDE004400045450

Report Number	r :TERF22	11002151E2	Т	est Site	:SAC D	
Operation Mod	e :802.11n4	40	Т	est Date	:2023-02-01	
Test Frequency	y :5270 M⊦	łz	Т	emp./Humi.	:22.8/56	
Test Mode	:Tx		А	ntenna Pol.	:Vertical	
EUT Pol	:E2 Plane	9	E	ingineer	:Howard Huang	
100 Level (dBuV/m)					
75.0						
62.5	1 11 11 11 11 11 11 11 11 11 11 11 11 1					
50.0		3				
37.5						
25.0						
12.5						
9000	8800.	16600. Frequer	24400. icy (MHz)	32200.	40000	
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
	. .	47 70	40.00	50 45	00.00	40.00
10540.000 15810.000	Peak Average	47.79 26.57	10.38 8.16	58.17 34.74	68.20 54.00	-10.03 -19.26
15810.000	Peak	37.00	8.16	45.17	74.00	-28.83

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Report Numbe Operation Moo Test Frequenc Test Mode EUT Pol	de :802.11n	40 1 z	Te Te Ar	est Date : mp./Humi. : ntenna Pol. :		
100 Level ((dBuV/m)					
75.0						
62.5						
50.0		3				
37.5		2				
25.0						
12.5						
9000	8800.	16600. Frequen	24400. cy (MHz)	32200.	40000	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level dBµV		FS JBuV/m	@3m dBuV/m	
MHz	PK/QP/AV	αδμν	dB	dBµV/m	dBµV/m	dB
10540.000	Peak	43.66	10.38	54.04	68.20	-14.16
15810.000	Average	26.51	8.16	34.67	54.00	-19.33
15810.000	Peak	36.70	8.16	44.87	74.00	-29.13

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Report Number:TERF2211002151E2Test Site:SAC DOperation Mode:802.11n40Test Date:2023-02-01Test Frequency:5550 MHzTemp./Humi.:22.8/56Test Mode:TxAntenna Pol.:VerticalEUT Pol:E2 PlaneEngineer:Howard Huang	
100 Level (dBuV/m)	
75.0	
50.0 3 C	
37.5	
25.0	
12.5	
0 1000 8800. 16600. 24400. 32200. 40000 Frequency (MHz)	
Freq. Detector Spectrum Factor Actual Limit Marg Mode Reading Level FS @3m	gin
MHz PK/QP/AV $dB\mu V$ dB $dB\mu V/m$ dB	3
11100.000 Average 34.91 9.91 44.82 54.00 -9.1	-
11100.000Peak44.819.9154.7274.00-19.116650.000Peak36.709.0445.7468.20-22.1	

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16650.000

Peak

Report Numbe Operation Moo Test Frequenc Test Mode EUT Pol	de :802.11n4	40 Iz		Test Site Test Date Temp./Humi. Antenna Pol. Engineer		I
100 Level	(dBuV/m)					
87.5						
75.0						
62.5						
50.0		23				
37.5		• 1				
25.0						
12.5						
9000						
1000	8800.	16600. Frequen	24400 icy (MHz)	D. 32200	. 40000	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	u dBµV/m	dB
11100.000	Average	29.90	9.91	39.81	54.00	-14.19
11100.000	Peak	38.23	9.91	48.14	74.00	-25.86

9.04

45.83

68.20

-22.37

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36.79

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Report No.: TERF2305001165E2 Page: 39 of 76

-21.50

68.20



17010.000

Peak

Report Numbe Operation Moo Test Frequenc Test Mode EUT Pol	de :802.11n4	40 Iz		•	:SAC D :2023-02 ni. :22.8/56 ol. :Vertical :Howard	-	
100 Level ((dBuV/m)						
87.5							
75.0							
62.5	┱╨ <u></u> ∩Ⴠ╖				I	-	
		2				_	
50.0						-	
37.5						-	
25.0						-	
12.5						-	
9000	8800.	16600.	24400	0. 322	00. 40	000	
	.	-	cy (MHz)	. .		,	
Freq.	Detector	Spectrum	Factor	Actua		imit	Margin
N 41 1-	Mode	Reading Level	D	FS JPV	-)3m .V/m	٩D
MHz	PK/QP/AV	dBμV	dB	dBµV/		uV/m	dB
11340.000	Average	34.11	9.60	43.7	-	4.00	-10.29
11340.000	Peak	39.43	9.60	49.03	3 74	4.00	-24.97

10.85

46.70

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35.85

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Report No.: TERF2305001165E2 Page: 40 of 76



Report Numbe Operation Mo Test Frequenc Test Mode EUT Pol	de :802.11n4	0 z	Te Te Aı	est Date emp./Humi. ntenna Pol.		
100	(dBuV/m)					
87.5						
75.0						
62.5						
50.0		2 3 				
37.5						
25.0						
12.5						
9000	8800.	16600. Frequen	24400. icy (MHz)	32200.	40000	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	Ū
MHz	PK/QP/AV	dBμV	dB	dBµV/m	dBµV/m	dB
11340.000	Average	27.78	9.60	37.38	54.00	-16.62
11340.000	Peak	38.62	9.60	48.22	74.00	-25.78
17010.000	Peak	35.53	10.85	46.38	68.20	-21.82

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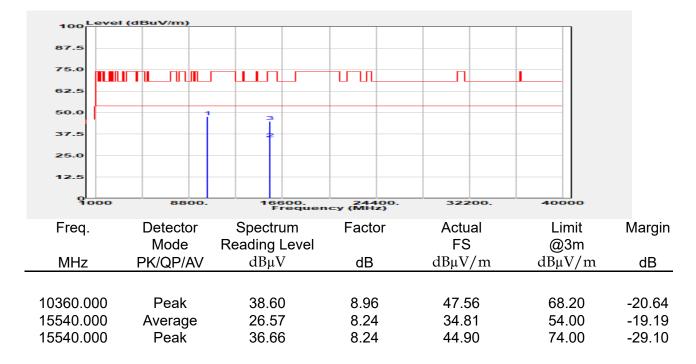
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Report Number	:TERF2211002151E2
Operation Mode	:802.11ax20
Test Frequency	:5180 MHz
Test Mode	:Tx Full RU
EUT Pol	:E2 Plane

Test Site	:SAC D
Test Date	:2023-02-03
Temp./Humi.	:23.1/53
Antenna Pol.	:Vertical
Engineer	:Howard Huang

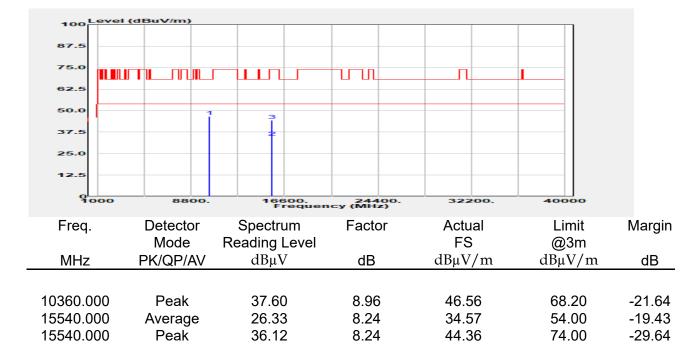


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Test Site	:SAC D
Test Date	:2023-02-03
Temp./Humi.	:23.1/53
Antenna Pol.	:Horizontal
Engineer	:Howard Huang



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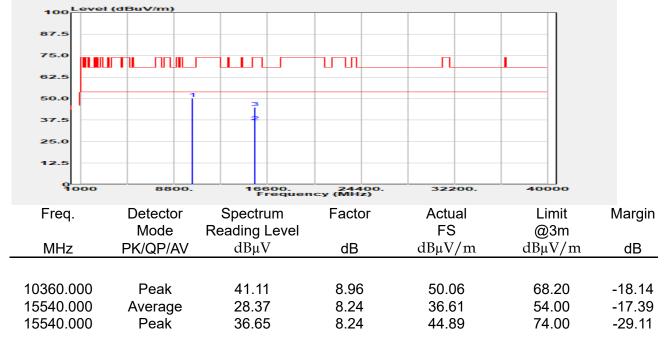
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Report No.: TERF2305001165E2 Page: 43 of 76

Huang



Report Number	:TERF2211002151E2	Test Site	:SAC D
Operation Mode	:802.11ax20	Test Date	:2023-02-02
Test Frequency	:5180 MHz	Temp./Humi.	:22.6/52
Test Mode	:Tx RU 106/53	Antenna Pol.	:Vertical
EUT Pol	:E2 Plane	Engineer	:Howard Hua



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Report No.: TERF2305001165E2 Page: 44 of 76



Report Number	:TERF2211002151E2	Test Site	:SAC D
Operation Mode	:802.11ax20	Test Date	:2023-02-02
Test Frequency	:5180 MHz	Temp./Humi.	:22.6/52
Test Mode	:Tx RU 106/53	Antenna Pol.	:Horizontal
EUT Pol	:E2 Plane	Engineer	:Howard Huang
100 Level (di	BuV/m)		

87.5						
75.0						
62.5						
50.0	1	3				
37.5		2				
25.0						
12.5						
9000	8800.					
	8800.	16600. Frequer	24400. icy (MHz)	32200.	40000	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	U
Freq. MHz	Detector	Spectrum		Actual	Limit	Margin dB
	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	U
	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	U
MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	dB

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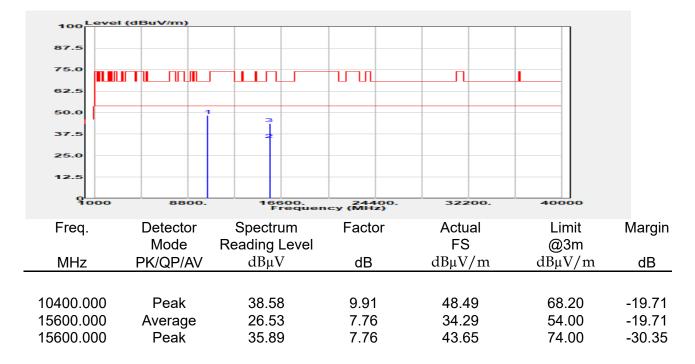
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Report Number	:TERF2211002151E2
Operation Mode	:802.11ax20
Test Frequency	:5200 MHz
Test Mode	:Tx Full RU
EUT Pol	:E2 Plane

Test Site	:SAC D
Test Date	:2023-02-03
Temp./Humi.	:23.1/53
Antenna Pol.	:Vertical
Engineer	:Howard Huang



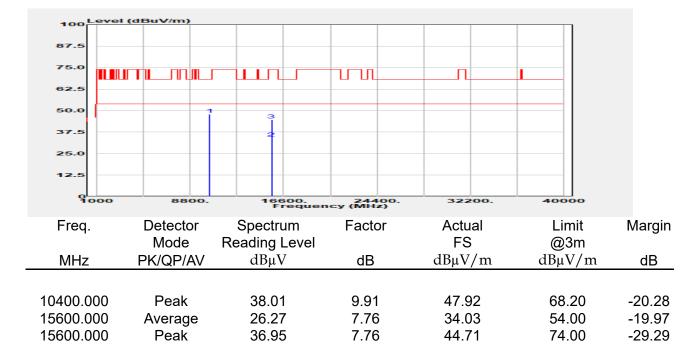
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Report Number	:TERF2211002151E2
Operation Mode	:802.11ax20
Test Frequency	:5200 MHz
Test Mode	:Tx Full RU
EUT Pol	:E2 Plane

Test Site	:SAC D
Test Date	:2023-02-03
Temp./Humi.	:23.1/53
Antenna Pol.	:Horizontal
Engineer	:Howard Huang



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Report No.: TERF2305001165E2 Page: 47 of 76



Report Number	:TERF2211002151E2
Operation Mode	:802.11ax20
Test Frequency	:5320 MHz
Test Mode	:Tx RU 52/40
EUT Pol	:E2 Plane

Test Site	:SAC D
Test Date	:2023-02-02
Temp./Humi.	:22.6/52
Antenna Pol.	:Vertical
Engineer	:Howard Huang



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Report No.: TERF2305001165E2 Page: 48 of 76

:Howard Huang



Report Number	:TERF2211002151E2	Test Site	:SAC D
Operation Mode	:802.11ax20	Test Date	:2023-02-02
Test Frequency	:5320 MHz	Temp./Humi.	:22.6/52
Test Mode	:Tx RU 52/40	Antenna Pol.	:Horizontal
EUT Pol	:E2 Plane	Engineer	:Howard Hu

_				- J	5	
100 Level	(dBuV/m)					
87.5						
75.0						
62.5						
50.0		4				
37.5		• <u>-</u>				
25.0						
12.5						
9000	8800.	16600.	34400	32200.	40000	
1000	8800.	Frequen	24400. icy (MHz)	52200.	40000	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
10640.000	Average	29.20	9.77	38.97	54.00	-15.03
10640.000	Peak	38.50	9.77	48.28	74.00	-25.72
15960.000	Average	28.66	7.80	36.46	54.00	-17.54
15960.000	Peak	36.38	7.80	44.18	74.00	-29.82

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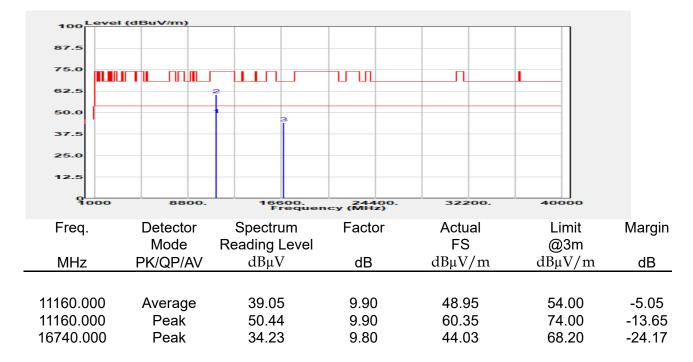
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Report Number	:TERF2211002151E2
Operation Mode	:802.11ax20
Test Frequency	:5580 MHz
Test Mode	:Tx Full RU
EUT Pol	:E2 Plane

Test Site	:SAC D
Test Date	:2022-12-13
Temp./Humi.	:22.7/52
Antenna Pol.	:VERTICAL
Engineer	:Howard Huang



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Margin

dB

-10.32-19.46

-23.32

74.00

68.20



11160.000

16740.000

Peak

Peak

44.63

35.08

Report Numbe Operation Mod Test Frequency Test Mode EUT Pol	e :802.11a	k20 Hz RU		Test Site Test Date Temp./Humi. Antenna Pol. Engineer	:SAC D :2022-12-13 :22.7/52 :HORIZONTAL :Howard Huang	
100 Level (dBuV/m)					
87.5						
75.0						
62.5	┱ш∩∩_⋒_/			Π		
		2				
50.0		1 3				
37.5						
25.0						
12.5						
9000	8800.	16600. Frequer	2440 icy (MHz)	0. 32200	40000	
Freq.	Detector	Spectrum	Factor	- Actual	Limit	
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	
						_
11160.000	Average	33.78	9.90	43.68	54.00	

9.90

9.80

54.54

44.88

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Report Number	:TERF2211002151E2
Operation Mode	:802.11ax20
Test Frequency	:5700 MHz
Test Mode	:Tx Full RU
EUT Pol	:E2 Plane

Test Site	:SAC D
Test Date	:2023-02-02
Temp./Humi.	:22.6/52
Antenna Pol.	:Vertical
Engineer	:Howard Huang

100 Level 87.5 75.0 62.5 50.0		2 3				
37.5 25.0 12.5						
9000	8800.	16600. Frequer	24400. icy (MHz)	32200.	40000	
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11400.000 11400.000 17100.000	Average Peak Peak	29.15 37.83 37.31	9.43 9.43 9.61	38.58 47.25 46.91	54.00 74.00 68.20	-15.42 -26.75 -21.29

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Report Number	:TERF2211002151E2
Operation Mode	:802.11ax20
Test Frequency	:5700 MHz
Test Mode	:Tx Full RU
EUT Pol	:E2 Plane

Test Site	:SAC D
Test Date	:2023-02-02
Temp./Humi.	:22.6/52
Antenna Pol.	:Horizontal
Engineer	:Howard Huang

100 Level	(dBuV/m)				T T	
87.5						
75.0						
62.5						
50.0		2 3				
37.5		<u> </u>				
25.0						
12.5						
1000	8800.	16600. Frequer	24400. icy (MHz)	32200.	40000	
Freq.	Betector	1558guer Spectrum	Factor	Actual	Limit	Margin
		Spectrum Reading Level				Margin
	Detector	Spectrum		Actual	Limit	Margin dB
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	· ·
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	· ·
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBμV/m	Limit @3m dBµV/m	dB

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Report Number	:TERF2211002151E2
Operation Mode	:802.11ax40
Test Frequency	:5550 MHz
Test Mode	:Tx Full RU
EUT Pol	:E2 Plane

Test Site	:SAC D
Test Date	:2023-02-02
Temp./Humi.	:22.6/52
Antenna Pol.	:Vertical
Engineer	:Howard Huang

100 Level	(dBuV/m)			1 1		
87.5						
75.0				Π		
62.5		2				
50.0		3				
37.5						
25.0						
12.5						
9000	8800.	16600. Frequer	24400. icy (MHz)	32200.	40000	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11100.000	Average	35.31	9.91	45.22	54.00	-8.78
11100.000	Peak	44.80	9.91	54.71	74.00	-19.29
16650.000	Peak	37.41	9.04	46.46	68.20	-21.74

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Report Number	:TERF2211002151E2
Operation Mode	:802.11ax40
Test Frequency	:5550 MHz
Test Mode	:Tx Full RU
EUT Pol	:E2 Plane

Test Site	:SAC D
Test Date	:2023-02-02
Temp./Humi.	:22.6/52
Antenna Pol.	:Horizontal
Engineer	:Howard Huang

100 Level	(dBuV/m)					
87.5						
75.0						
62.5						
50.0		2 3				
37.5						
25.0						
12.5						
1000	8800.	16600. Frequer	24400. icy (MHz)	32200.	40000	
Freq.	Betector	Spectrum	Factor	Actual	Limit	Margin
				Actual FS		Margin
	Detector	Spectrum		Actual	Limit	Margin dB
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Ū
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Ū
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	dB

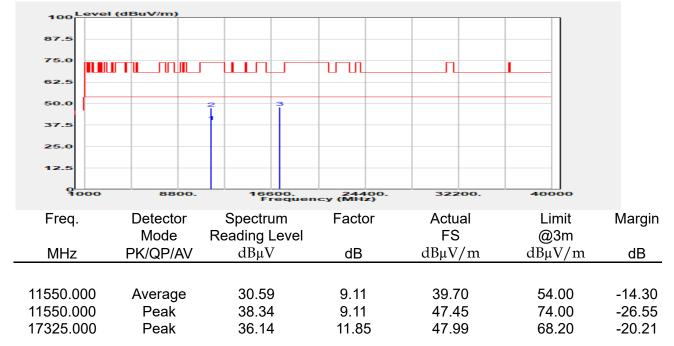
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Report Number	:TERF2211002151E2	Test Site	:SAC D
Operation Mode	:802.11ax80	Test Date	:2023-02-02
Test Frequency	:5775 MHz	Temp./Humi.	:22.6/52
Test Mode	:Tx RU 484/66	Antenna Pol.	:Vertical
EUT Pol	:E2 Plane	Engineer	:Howard Huang



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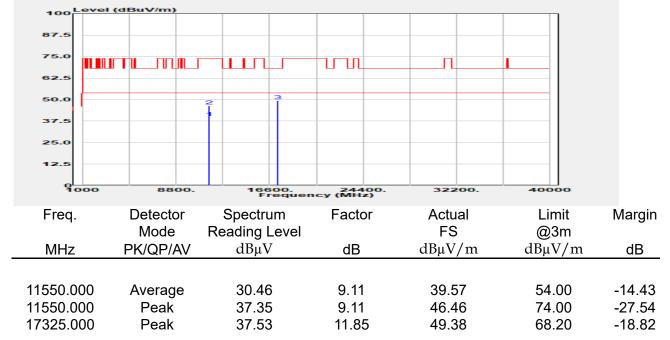
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Report Number	:TERF2211002151E2	Test Site	:SAC D
Operation Mode	:802.11ax80	Test Date	:2023-02-02
Test Frequency	:5775 MHz	Temp./Humi.	:22.6/52
Test Mode	:Tx RU 484/66	Antenna Pol.	:Horizontal
EUT Pol	:E2 Plane	Engineer	:Howard Huang



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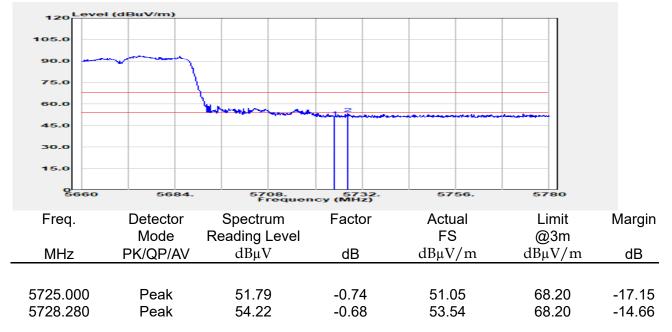
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8.6.2 Band edge falling to restricted band

Report Number	:TERF2211002151E2	Test Site	:SAC D
Operation Mode	:802.11n40	Test Date	:2023-02-04
Test Frequency	:5670 MHz	Temp./Humi.	:24.4/40
Test Mode	:Bandedge	Antenna Pol.	:Vertical
EUT Pol	:E2 Plane	Engineer	:Howard Huang



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Report Number Operation Mode Test Frequency Test Mode EUT Pol	e:802.11n40	1		Test Date Temp./Humi. Antenna Pol.		
120 Level (d	BuV/m)					
105.0	m					
90.0	+					
75.0	+					
60.0		the work of the second	martin			
45.0						
30.0						
15.0						
5660	5684.	5708. Frequen	5732. cy (MHz)	. 5756.	5780	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode F	Reading Level		FS	@3m	-
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5725.000	Peak	57.24	-0.74	56.50	68.20	-11.70
5727.920	Peak	59.56	-0.69	58.87	68.20	-9.33

Unless other west stated the results structure the state report results in provide the structure of the state and state of the state of the state and st prosecuted to the fullest extent of the law.

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Report No.: TERF2305001165E2 Page: 59 of 76

-20.67

-11.33

-22.85

74.00

54.00

74.00



5104.100

5150.000

5150.000

Report Number Operation Mode Test Frequency Test Mode EUT Pol	e :802.11ax ⁄ :5180 MH	(20 Iz je Full RU		Test Site Test Date Temp./Humi. Antenna Pol Engineer		g
120 Level (dBuV/m)					
105.0						
90.0						
75.0						
60.0						
45.0	man a man a man		and share	And the second second	and the second second	
30.0						
30.0						
15.0						
9 4500	4640.	4780. Frequen	4920 cy (MHz)	. 5060	. 5200	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
•	Mode	Reading Level		FS	@3m	5
MHz	PK/QP/AV	dBµV	dB	dBµV/n	<u> </u>	dB
5104.100	Average	43.36	-1.34	42.02	54.00	-11.98
01011100		10100		.2.02	0 1100	

-1.34

-0.67

-0.67

54.67

43.34

51.82

Peak

Average

Peak

53.33

42.67

51.15

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Report No.: TERF2305001165E2 Page: 60 of 76



Dement Numerican TEDE004400045450

Report Number	:TERF22	11002151E2		Test Site	:SAC D	
Operation Mode	e :802.11a	x20		Test Date	:2023-02-04	
Test Frequency	:5180 Mł	Ηz		Temp./Humi.	:24.4/40	
Test Mode	:Bandedg	ge Full RU		Antenna Pol.	:Horizontal	
EUT Pol	:E2 Plane	e		Engineer	:Howard Huang	
120 Level (d	IBuV/m)		1			
105.0						
90.0						
75.0					<u> </u>	
60.0						
45.0						
30.0						
15.0						
4500	4640.	4780. Frequen	4920. cy (MHz)	5060.	5200	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
N 41 1-	Mode	Reading Level	٩D	FS dBuV/m	@3m	D
MHz	PK/QP/AV	dBμV	dB	dBµV/m	dBµV/m	dB
5148.900	Average	43.90	-0.69	43.22	54.00	-10.78
5148.900	Peak	54.21	-0.69	53.53	74.00	-20.47
5150.000	Average	43.82	-0.67	43.15	54.00	-10.85
5150.000	Peak	53.72	-0.67	53.05	74.00	-20.95

Test Olta

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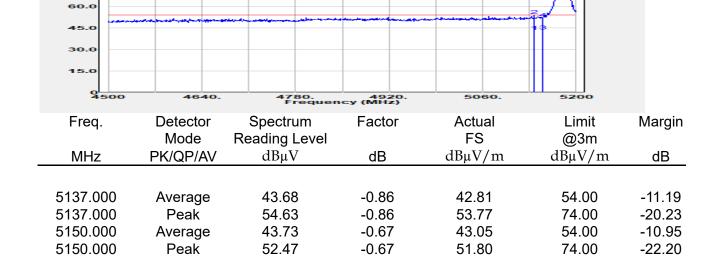
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90.0 75.0

Report Number	:TERF2211002151E2	Test Site	:SAC D
Operation Mode	e :802.11ax20	Test Date	:2023-02-04
Test Frequency	:5180 MHz	Temp./Humi.	:24.4/40
Test Mode	:Bandedge RU 26/0	Antenna Pol.	:Vertical
EUT Pol	:E2 Plane	Engineer	:Howard Huang
120 Level (d	BuV/m)		
120 Level (d	BuV/m)		



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Report No.: TERF2305001165E2 Page: 62 of 76



90.0 75.0 60.0 45.0 30.0 15.0 2

Freq.

MHz

5149.600

5149.600

5150.000

5150.000

Report Number	:TERF2211002151E2	Test Site	:SAC D
Operation Mode	e :802.11ax20	Test Date	:2023-02-04
Test Frequency	:5180 MHz	Temp./Humi.	:24.4/40
Test Mode	:Bandedge RU 26/0	Antenna Pol	. :Horizontal
EUT Pol	:E2 Plane	Engineer	:Howard Huang
120 Level (d	BuV/m)		
105.0			
			M I

4780. 4920. Frequency (MHz)

Factor

dB

-0.68

-0.68

-0.67

-0.67

Spectrum

Reading Level

dBµV

44.60

58.70

44.64

58.79

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4640.

Detector

Mode

PK/QP/AV

Average

Peak

Average

Peak

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5060.

Limit

@3m

dBµV/m

54.00

74.00

54.00

74.00

Margin

dB

-10.08

-15.98

-10.04

-15.88

Actual

FS

dBµV/m

43.92

58.02 43.96

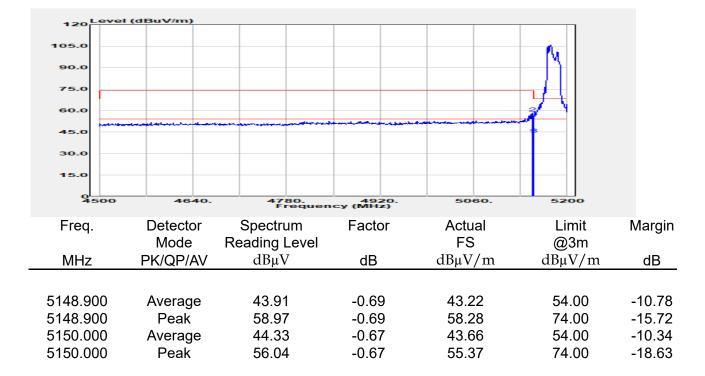
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Report No.: TERF2305001165E2 Page: 63 of 76



Report Number	:TERF2211002151E2
Operation Mode	:802.11ax20
Test Frequency	:5180 MHz
Test Mode	:Bandedge RU 106/53
EUT Pol	:E2 Plane

Test Site	:SAC D
Test Date	:2023-02-04
Temp./Humi.	:24.4/40
Antenna Pol.	:Vertical
Engineer	:Howard Huang



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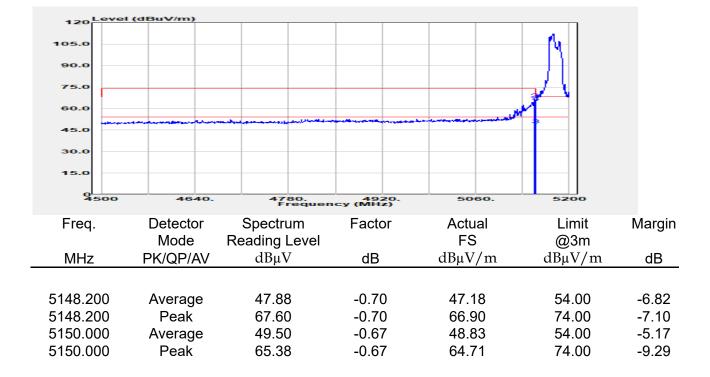
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Report Number	:TERF2211002151E2
Operation Mode	:802.11ax20
Test Frequency	:5180 MHz
Test Mode	:Bandedge RU 106/53
EUT Pol	:E2 Plane

Test Site	:SAC D
Test Date	:2023-02-04
Temp./Humi.	:24.4/40
Antenna Pol.	:Horizontal
Engineer	:Howard Huang



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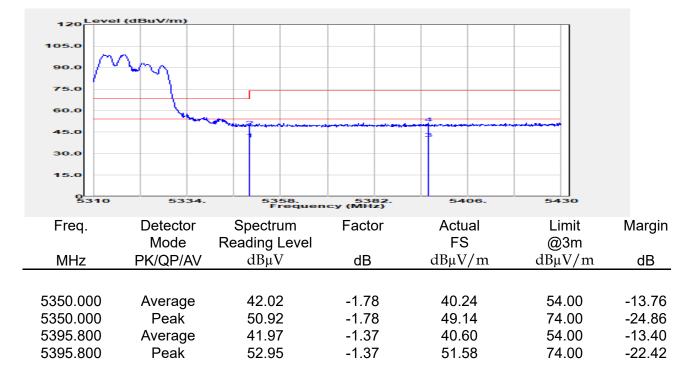
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Report No.: TERF2305001165E2 Page: 65 of 76



Report Number	:TERF2211002151E2	Te
Operation Mode	:802.11ax20	Te
Test Frequency	:5320 MHz	Te
Test Mode	:Bandedge RU 26/8	An
EUT Pol	:E2 Plane	En

Test Site	:SAC D
Test Date	:2023-02-04
Temp./Humi.	:24.4/40
Antenna Pol.	:Vertical
Engineer	:Howard Huang



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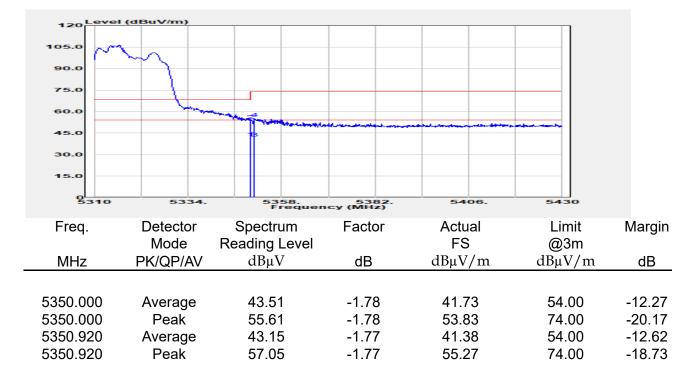
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Report No.: TERF2305001165E2 Page: 66 of 76



Report Number	:TERF2211002151E2	Te
Operation Mode	:802.11ax20	Te
Test Frequency	:5320 MHz	Te
Test Mode	:Bandedge RU 26/8	A
EUT Pol	:E2 Plane	E

Test Site	:SAC D
Test Date	:2023-02-04
Temp./Humi.	:24.4/40
Antenna Pol.	:Horizontal
Engineer	:Howard Huang



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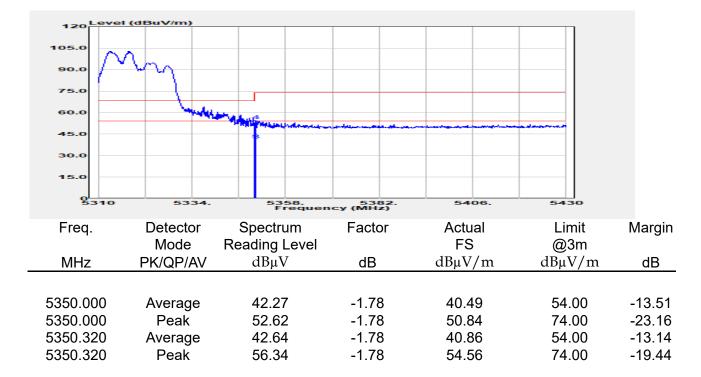
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Report No.: TERF2305001165E2 Page: 67 of 76



Report Number	:TERF2211002151E2
Operation Mode	:802.11ax20
Test Frequency	:5320 MHz
Test Mode	:Bandedge RU 52/40
EUT Pol	:E2 Plane

Test Site	:SAC D
Test Date	:2023-02-04
Temp./Humi.	:24.4/40
Antenna Pol.	:Vertical
Engineer	:Howard Huang



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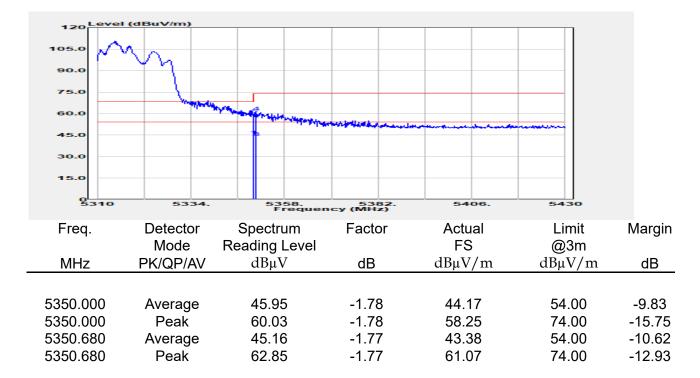
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Report No.: TERF2305001165E2 Page: 68 of 76



Report Number	:TERF2211002151E2
Operation Mode	:802.11ax20
Test Frequency	:5320 MHz
Test Mode	:Bandedge RU 52/40
EUT Pol	:E2 Plane

Test Site	:SAC D
Test Date	:2023-02-04
Temp./Humi.	:24.4/40
Antenna Pol.	:Horizontal
Engineer	:Howard Huang



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Report No.: TERF2305001165E2 Page: 69 of 76



Report Number Operation Mod Test Frequency Test Mode EUT Pol	e :802.11ax	20 z e Full RU	- - -	Test Date Temp./Humi. Antenna Pol.		
120Level (dBuV/m)					
105.0						
90.0	- man					
75.0	+					
60.0	White the state	Hally Hilling and and and				
45.0		and the second second second	os magnetes de la com	and the second		
30.0						
15.0						
5690	5714.			5786.		
2690	5714.	5738. Frequen	5762. cy (MHz)	5786.	5810	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5725.000	Peak	52.61	-0.74	51.86	68.20	-16.34
5726.240	Peak	59.00	-0.72	58.28	68.20	-9.92

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Report No.: TERF2305001165E2 Page: 70 of 76

-8.81 -4.75

68.20

68.20



5725.000

5726.600

Dava and Nicoraham TEDE004400045450

Peak

Peak

60.13

64.16

Report Number	:TERF221	1002151E2	Т	est Site	:SAC D	
Operation Mode	e:802.11ax2	20	Т	est Date	:2023-02-04	
Test Frequency	:5700 MHz	2	Т	emp./Humi.	:24.4/40	
Test Mode	:Bandedge	e Full RU	А	ntenna Pol	. :Horizontal	
EUT Pol	:E2 Plane		E	ngineer	:Howard Huar	ng
120 Level (d	BuV/m)					
105.0	my					
90.0						
75.0						
60.0	way with	and like and a second				
45.0						
30.0						
15.0						
0 5690	5714.	5738. Frequen	5762. cy (MHz)	5786	. 5810	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
		Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/n	n dBµV/m	ı dB

-0.74

-0.71

59.39

63.45

T--+ 0:+-

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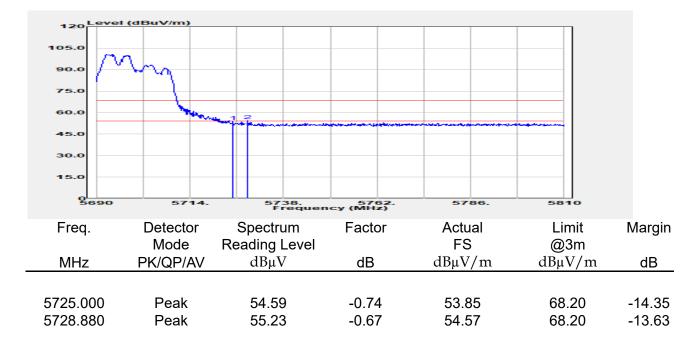
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Report No.: TERF2305001165E2 Page: 71 of 76



RF2211002151E2
2.11ax20
0 MHz
ndedge RU 52/40
Plane

Test Site	:SAC D
Test Date	:2023-02-04
Temp./Humi.	:24.4/40
Antenna Pol.	:Vertical
Engineer	:Howard Huang



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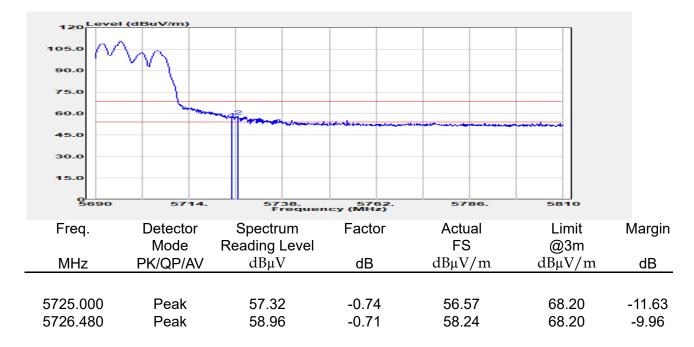
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Report Number	:TERF2211002151E2
Operation Mode	:802.11ax20
Test Frequency	:5700 MHz
Test Mode	:Bandedge RU 52/40
EUT Pol	:E2 Plane

Test Site	:SAC D
Test Date	:2023-02-04
Temp./Humi.	:24.4/40
Antenna Pol.	:Horizontal
Engineer	:Howard Huang



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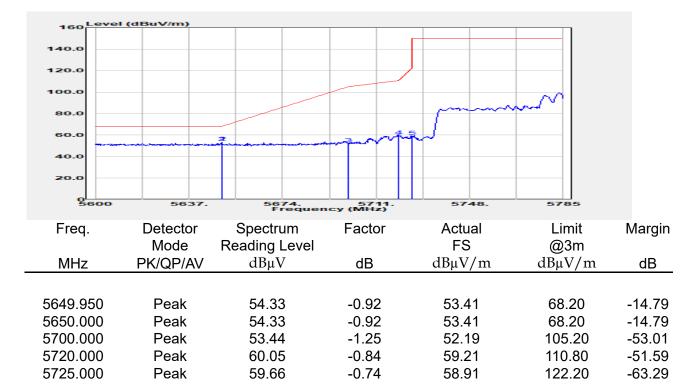
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:TERF2211002151E2
:802.11ax80
:5775 MHz
:Bandedge RU 484/66
:E2 Plane

Test Site	:SAC D
Test Date	:2023-02-04
Temp./Humi.	:24.4/40
Antenna Pol.	:Vertical
Engineer	:Howard Huang



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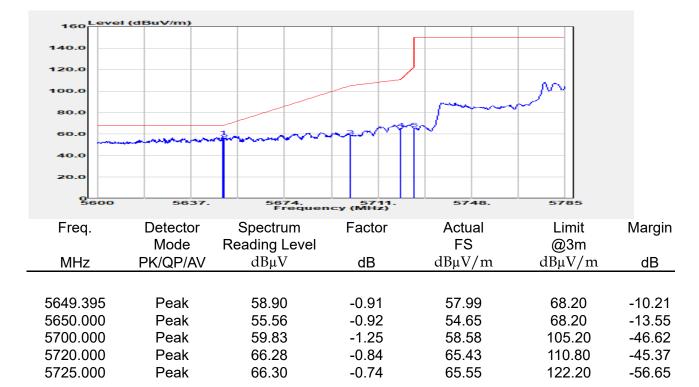
台灣檢驗科技股份有限公司

Report No.: TERF2305001165E2 Page: 74 of 76



:TERF2211002151E2
:802.11ax80
:5775 MHz
:Bandedge RU 484/66
:E2 Plane

Test Site	:SAC D
Test Date	:2023-02-04
Temp./Humi.	:24.4/40
Antenna Pol.	:Horizontal
Engineer	:Howard Huang



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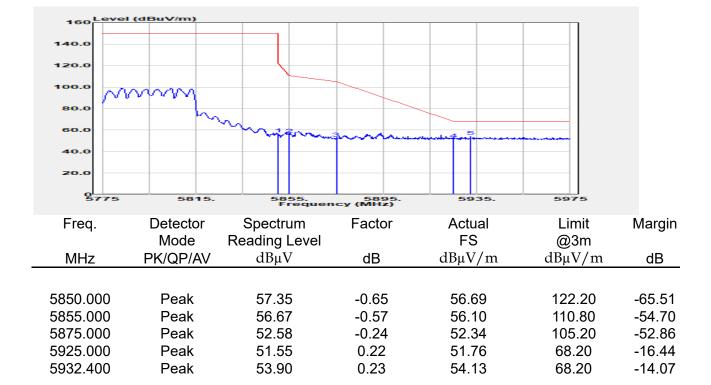
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Report Number	:TERF2211002151E2
Operation Mode	:802.11ax80
Test Frequency	:5775 MHz
Test Mode	:Bandedge RU 484/66
EUT Pol	:E2 Plane

Test Site	:SAC D
Test Date	:2023-02-04
Temp./Humi.	:24.4/40
Antenna Pol.	:Vertical
Engineer	:Howard Huang



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Dava and Nicoraham TEDE004400045450

Report Number	:TERF22	11002151E2		Test Site	:SAC D	
Operation Mode	:802.11a	x80		Test Date	:2023-02-04	
Test Frequency	:5775 MH	Ηz		Temp./Humi.	:24.4/40	
Test Mode	:Bandedg	ge RU 484/66		Antenna Pol.	:Horizontal	
EUT Pol	:E2 Plane	e		Engineer	:Howard Huang	
160 Level (d	BuV/m)					
120.0						
100.0 MM	m					
80.0	h					
60.0		mom	m			
40.0						
20.0						
9	5815.	5855.	5895. cy (MHz)	5935.	5975	
-		Frequen		A ()		·
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz F	PK/QP/AV	dBµV	dB	dBµV/m	0	dB
5850.000	Peak	64.09	-0.65	63.44	122.20	-58.76
5855.000	Peak	66.77	-0.57	66.20	110.80	-44.60
5875.000	Peak	59.52	-0.24	59.28	105.20	-45.92
5925.000	Peak	56.52	0.22	56.74	68.20	-11.46

T--+ 0:+-

~ End of Report ~

0.22

57.74

68.20

-10.46

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57.52

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5925.400

Peak