

ELECTROMAGNETIC EMISSIONS **COMPLIANCE REPORT**



Applicant: Manufacturer: Product Name:	ATEN INTERNATIONAL CO., LTD. 3F, No.125, Sec. 2, Datung Road, Sijhih District, New Taipei City 22183, Taiwan (R.O.C.) ATEN INTERNATIONAL CO., LTD. 3F, No.125, Sec. 2, Datung Road, Sijhih District, New Taipei City 22183, Taiwan (R.O.C.) 4K Wireless Presentation Switch
Brand Name:	ATEN
Model No.:	Main: VP2021 Variant: VP2020/VP2030/VP2031
Model Difference:	Differences in functional and appearance
Report Number:	TERF2303000790ER
FCC ID	JYX-VP2021
Date of EUT Received:	March 31, 2023
Date of Test:	April 06, 2023~April 27, 2023
Issue Date:	June 15, 2023

Blen Tay

Approved By

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Central RF Lab The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10:2013 and the energy emitted by the sample EUT comply with FCC rule part §15.407.

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					
TERF2303000790ER	00	Original	June 15, 2023	Celery Wei						

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, test results of this report are applicable to the sample EUT(s) received. And are assessed as electrically identical in RF characteristics, therefore, no further assessment required for the variant(s).

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GENERAL INFORMATION 1

1.1 **Product Description**

Product Name:	4K Wireless Presentation Switch
Brand Name:	ATEN
Model No.:	Main: VP2021 Variant: VP2020/VP2030/VP2031
Model Difference:	Differences in functional and appearance
Hardware Version:	MP
Firmware Version:	N/A
EUT Series No.:	47A101124540065
Power Supply:	12V from AC/DC Adapter
Test Software (Name/Version)	Windows 10

1.2 Modulation & Data Rate

Modulation type:	64QAM, 16QAM, QPSK, BPSK for OFDM
wouldion type.	256QAM for OFDM in 802.11ac
	802.11 a: 6 - 54 Mbps
	802.11 n_20MHz: up to 144.4 Mbps
Transition Rate:	802.11 n_40MHz: up to 300 Mbps
Hansilion Nale.	802.11 ac_20MHz: up to 173.4 Mbps
	802.11 ac_40MHz: up to 400 Mbps
	802.11 ac_80MHz: up to 866.6 Mbps

1.3 **Antenna Designation**

Antenna Type	Freq. (MHz)	Peak Antenna Gain (dBi)	Directional Gain (dBi)
Dipolo	5150~5250	2.20	5.21
Dipole	5725~5825	2.31	5.32

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.

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Wi-Fi	Frequency Range	Channels	Rated Power(Avg) (dBm) (Worst Case)	Modulation Technology
a/ n_HT/	5180~5240	4	15.99 dBm	OFDM
ac_VHT	5745-5825	5	15.99 dBm	OFDM
n_HT/ ac_VHT	5190~5230	2	15.98 dBm	OFDM
40M	5755-5795	2	15.93 dBm	OFDM
ac_VHT	5210	1	13.98 dBm	OFDM
80M	5775	1	13.98 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**

FCC Designa- tion number	IC CAB identifier
TW0027	
100027	
	TW3702
TW0028	
	E IF

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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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.

Radiated Emissions 2.3.3

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

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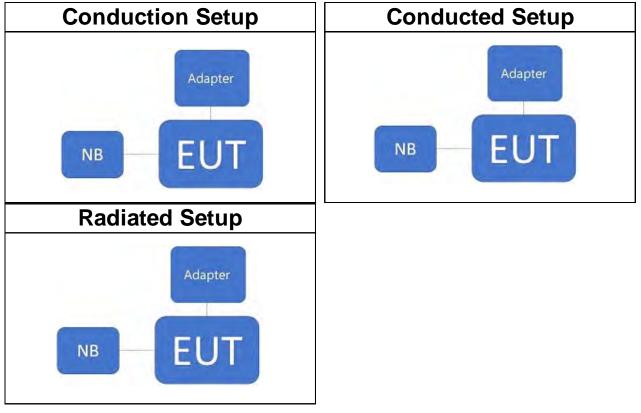


2.4 Measurement Results Explanation Example

2.4.1 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)

AC Power-Line Conducted Emission Test Site: Conduction 1									
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.				
AC/DC Adapter	DELTA	DPS-40AB-11	JABD2243017436	N/A	N/A				
Notebook	HP	HSN-Q35C-4	5CD238GDV5	N/A	N/A				
Conducted Emission Test Site: Conducted 1									
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.				
Notebook	НР	HSN-Q35C-4	5CD238GDV5	N/A	N/A				
		Radiated Emissic	on Test Site: SAC 1						
EQUIPMENT TYPE MFR MODEL NUMBER SERIAL NUMBER LAST CAL. CAL DUE.									
AC/DC Adapter	DELTA	DPS-40AB-11	JABD2243017436	N/A	N/A				
Notebook	HP	HSN-Q35C-4	5CD238GDV5	N/A	N/A				

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3 SUMMARY OF TEST RESULT

FCC Rules	Description Of Test	Result
§15.207	AC Power Line Conducted Emission	Compliant
§15.407(e)	Emission Bandwidth	Compliant
§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
§15.407(c)	Transmission in case of Ab- sence of Information	Compliant
§15.203	Antenna Requirement	Compliant

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DESCRIPTION OF TEST MODES Δ

4.1 **Operating Frequencies**

perated band in 5150 MHz ~5250 MHz: 20 M 40 M 80 M Freq Freq Freq CH CH CH (MHz) (MHz) (MHz) 42 36 5180 38 5190 5210 40 5200 46 5230 44 5220 48 5240

Operated band in 5725 MHz ~5850 MHz:

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

The Worst Test Modes and Channel Details 4.2

- 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.

161

165

5805

5825

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		Transmission Chain							Tr	Single ansmission Spatial	Tr	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		1TX	۷	2TX
v	802.11 ac	۷	Ch0	۷	Ch1		Ch2		Ch3		1TX	۷	2TX
	802.11 ax		Ch0		Ch1		Ch2		Ch3		1TX		2TX

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Therefore, below summary is the modes of test configuration that yield the highest read-4. ing and generate the highest emission chosen to carry out the relevantly mandatory test items.

			CON	DUCTED TEST		
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	T EST ED CHANNEL	MODULATION	DATA RATE (Mbps)	ANT ENNA PORT
802.11a	5180~5240	36 to 48	36,44,48	OFDM	6	2T X
	5745~5825 5180~5240	149 to 165 36 to 48	149,157,165 36,44,48			
802.11n_HT20	5745~5825	149 to 165	149,157,165	OFDM	MCS0	2T X
802.11n_HT40	5190~5230 5755~5795	38 to 46 151 to 159	38,46 151,159	OFDM	MCS0	2TX
802.11ac_VHT80	5210 5775	42 155	42 155	OFDM	MCS0	2TX
		RA		ION TEST (BEL	_OW 1 GHz)	
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	T EST ED CHANNEL	MODULATION	DATA RATE (Mbps)	ANT ENNA PORT
802.11a	5180~5240 5745~5825	36 to 48 149 to 165	44 157	OFDM	6	2T X
		RA		SION TEST (AB	OVE 1 GHz)	
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	T EST ED CHANNEL	MODULATION	DATA RATE (Mbps)	ANT ENNA PORT
802.11a	5180~5240 5745~5825	36 to 48 149 to 165	36,44,48 149,157,165	OFDM	6	2T X
802.11n_HT20	5180~5240 5745~5825	36 to 48 149 to 165	36,44,48 149,157,165	OFDM	MCS0	2T X
802.11n_HT40	5190~5230 5755~5795	38 to 46	38,46	OFDM	MCS0	2TX
802.11ac_VHT 80	5210 5775	42	42	OFDM	MCS0	2T X

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	Un	certain	ty
AC Power Line Conducted Emission	+/-	2.32	dB
Output Power measurement	+/-	1	dB
Emission Bandwidth	+/-	1.53	Hz
Undesignable radiated emission measure- ment	+/-	1.68	dB
Peak Power Density	+/-	2.16	dB
Temperature	+/-	0.7	°C
Humidity	+/-	3	%
DC / AC Power Source	+/-	1	%

Radiated Spurious Emission Measurement Uncertainty				
Polarization: Vertical	+/-	2.8	dB	9kHz~30MHz
	+/-	4.82	dB	30MHz - 1000MHz
	+/-	4.37	dB	1GHz - 18GHz
	+/-	4.21	dB	18GHz - 40GHz
	+/-	2.8	dB	9kHz~30MHz
Polarization: Horizontal	+/-	4.54	dB	30MHz - 1000MHz
Polarization: norizontal	+/-	4.37	dB	1GHz - 18GHz
	+/-	4.21	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

Emission from AC power line 6.1

	AC Power-Line Conducted Emission Test Site: Conduction 1						
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.		
Test Software	Audix	e3	Ver. 9.210322	N.C.R	N.C.R		
LISN	SCHWARZBECK	NSLK 8127	1040	08/23/2022	08/22/2023		
Coaxial Cables	EMC Instruments Corp.	EMCCFD300-BM- BM-3000	161207	06/22/2022	06/21/2023		
EMI Test Receiver	R&S	ESCI 7	100759	08/22/2022	08/21/2023		

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	05/19/2022	05/18/2023	
Test Software	SGS	Radio Test Software	Ver. 21	N.C.R	N.C.R	
Power Meter	Anritsu	ML2496A	1242004	10/26/2022	10/25/2023	
Power Sensor	Anritsu	MA2411B	1207365	10/26/2022	10/25/2023	
Power Sensor	Anritsu	MA2411B	1207368	10/26/2022	10/25/2023	
Attenuator	Mini-Circuit	BW-S10W2+	2	12/13/2022	12/12/2023	
DC Block	Mini-Circuits	BLK-18-S+	1	12/13/2022	12/12/2023	

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6.3 **Radiated Measurement**

Radiated Emission Test Site: SAC 1					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Horn Antenna	SCHWARZBECK	BBHA9120D	D803	12/30/2022	12/29/2023
Bi-log Antenna	TESEO	CBL 6112D	35242 & AT-N0555	12/27/2022	12/26/2023
Loop Antenna	ETS.LINDGREN	6502	148045	10/05/2022	10/04/2023
Horn Antenna	SCHWARZBECK	BBHA9170	184	12/30/2022	12/29/2023
EXA Spectrum Analyzer	KEYSIGHT	N9010B	MY60242081	10/06/2022	10/05/2023
Test Software	Audix	e3	Ver. 9.210322	N.C.R	N.C.R
EMI Test Receiver	R&S	ESCI 7	100759	08/22/2022	08/21/2023
Site Cal	SGS	SAC 1	N/A	01/01/2023	12/31/2023
Pre-Amplifier	HP	8447D	2944A09469	12/13/2022	12/12/2023
Pre-Amplifier	HP	8449B	3008A01973	12/13/2022	12/12/2023
Pre-Amplifier	EMCI	EMC184045B	980135	10/27/2022	10/26/2023
Bandreject Filter 5150-5350	Micro-Tronics	BRM50703	1	12/13/2022	12/12/2023
Bandreject Filter 5725-5875	Micro-Tronics	BRM50705	1	12/13/2022	12/12/2023
8.6GHz High Pass Filter	Titan	T04H86002600060S0 1	210619-2-7	12/13/2022	12/12/2023
Coaxial Cable	Huber Suhner	succoflex 102	MY2622/2	12/13/2022	12/12/2023
Coaxial Cable	Huber Suhner	succoflex 104A	800086/4a	12/13/2022	12/12/2023
Coaxial Cable	Huber Suhner	EMC 104-SM-SM- 2000	160123	12/13/2022	12/12/2023
Coaxial Cable	Huber Suhner	SUCOFLEX 102	MY2630/2	12/13/2022	12/12/2023
Coaxial Cable	Huber Suhner	SUCOFLEX 102	MY22962/2	12/13/2022	12/12/2023

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

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CONDUCTED EMISSION TEST 7

7.1 Standard Applicable

Frequency range within 150 kHz to 30 MHz 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					

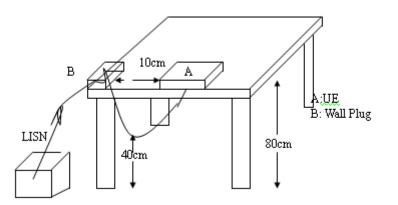
1. The lower limit shall apply at the transition frequencies

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 rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
- 3. The LISN was connected with 120Vac/60Hz power source.

7.3 Test SET-UP



Measurement Procedure 7.4

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

7.5 **Measurement Result**

Note: Refer to next page for measurement data and plots. Note2: The * reveals the worst-case results that closest to the limit.

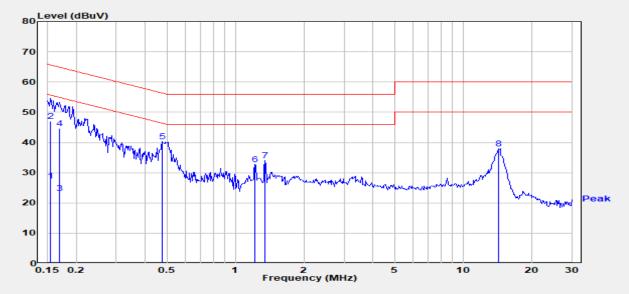
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AC POWER LINE CONDUCTED EMISSION TEST DATA

Report Number	:TERF2303000790ER
Test Mode	:WLAN_5G
Power	:120V/60Hz
Probe	:L

Test Site :Conduction 1 Test Date :2023-04-27 Temp./Humi. :24.9/51 Engineer :WJ Lin



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV	dBµV	dB
0.155	Average	17.14	10.25	27.39	55.74	-28.35
0.155	QP	36.74	10.25	46.99	65.74	-18.75
0.170	Average	12.87	10.25	23.12	54.98	-31.86
0.170	QP	34.34	10.25	44.59	64.98	-20.39
0.478	Peak	30.02	10.25	40.27	56.37	-16.10
1.220	Peak	22.13	10.57	32.69	56.00	-23.31
1.349	Peak	23.33	10.67	34.00	56.00	-22.00
14.354	Peak	27.14	10.79	37.94	60.00	-22.06

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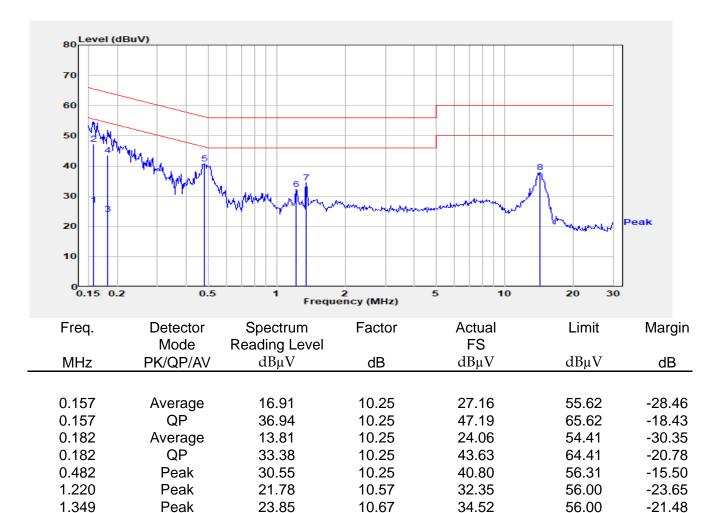
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Report Number	:TERF2303000790ER
Test Mode	:WLAN_5G
Power	:120V/60Hz
Probe	:N

Test Site	:Conduction 1
Test Date	:2023-04-27
Temp./Humi.	:24.9/51
Engineer	:WJ Lin



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Peak

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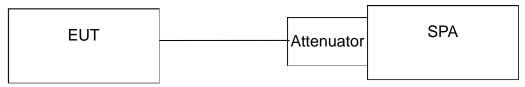


EMISSION BANDWIDTH MEASUREMENT 8

8.1 Standard Applicable

There is no limit bandwidth for U-NII-1, U-NII-2-A and U-NII-2-C. The minimum of 6dB Bandwidth measurement is 0.5 MHz for U-NII-3.

8.2 **Test Setup**



8.3 Measurement Procedure

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules.
- 3. Remove the antenna from the EUT and then connect a low loss RF cable from the Antenna port to the spectrum analyzer.
 - 3.a. 26dB Band width Measurement: Set the spectrum analyzer as 1% of emission BW Sweep=auto,
 - Detector = Peak,

Trace Mode = Max Hold.

Manually readjust RBW until the RBW/EBW ratio is 1% based on EBW as observed on the result of pre-sequence measurement.

- 3.b. Mark the peak frequency and –26dB (upper and lower) frequency.
- 4. Repeat the procedures as list above until all test default channels (low, middle, and high) are completed.
- 5. Minimum Emission Bandwidth for the band 5.725-5.850GHz. a. Set the spectrum analyzer as RBW = 100 kHz, VBW = 3*RBW, Span = large enough to capture all products of the modulation process, Detector=Peak, Sweep=auto b. Mark the peak frequency and -6dB (upper and lower) frequency.
- 6. Repeat above procedures until all frequency of interest measured was complete.

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8.4 **Measurement Result**

8.4.1 **FCC Occupied Bandwidth**

802.11a_Ch0

Freq. (MHz)	26dB BW (MHz)	Offset	10 Log (B) (dB)
5180	18.46	12.73	12.660
5220	18.34	12.73	12.630
5240	18.44	12.73	12.660

802.11a_Ch0

Freq. (MHz)	6dB BW (MHz)	Offset	10 Log (B) (dB)
5745	16.33	12.73	12.130
5785	16.33	12.73	12.130
5825	16.34	12.73	12.130

802.11a_Ch0

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5240	5248.18	< 5250
5745	5736.83	> 5725

802.11a_Ch1

Freq. (MHz)	26dB BW (MHz)	Offset	10 Log (B) (dB)
5180	18.37	12.73	12.640
5220	18.36	12.73	12.640
5240	18.39	12.73	12.650

802.11a_Ch1

Freq. (MHz)	6dB BW (MHz)	Offset	10 Log (B) (dB)
5745	16.34	12.73	12.130
5785	16.35	12.73	12.140
5825	16.34	12.73	12.130

802.11a_Ch1

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5240	5248.19	< 5250
5745	5736.82	> 5725

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802.11n HT20 Ch0

Freq. (MHz)	26dB BW (MHz)	Offset	10 Log (B) (dB)
5180	19.33	12.73	12.860
5220	19.21	12.73	12.840
5240	19.37	12.73	12.870

802.11n_HT20_Ch0

Freq. (MHz)	6dB BW (MHz)	Offset	10 Log (B) (dB)
5745	17.57	12.73	12.450
5785	17.58	12.73	12.450
5825	17.64	12.73	12.460

802.11n HT20 Ch1

26dB BW (MHz)	Offset	10 Log (B) (dB)
19.29	12.73	12.850
19.33	12.73	12.860
19.27	12.73	12.850
	BW (MHz) 19.29 19.33	BW (MHz) Offset 19.29 12.73 19.33 12.73

802.11n_HT20_Ch1

Freq. (MHz)	6dB BW (MHz)	Offset	10 Log (B) (dB)
5745	17.53	12.73	12.440
5785	17.57	12.73	12.450
5825	17.61	12.73	12.460

802.11n_HT20_Ch0

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5240	5248.77	< 5250
5745	5736.23	> 5725

802.11n_HT40_Ch0

Freq. (MHz)	26dB BW (MHz)	Offset	10 Log (B) (dB)
5190	39.98	12.73	16.020
5230	40.67	12.73	16.090

802.11n_HT40_Ch0

Freq. (MHz)	6dB BW (MHz)	Offset	10 Log (B) (dB)
5755	35.07	12.73	15.450
5795	35.11	12.73	15.450

802.11n_HT40_Ch0

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5230	5248.05	< 5250
5755	5737.07	> 5725

802.11n_HT20_Ch1

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5240	5248.77	< 5250
5745	5736.22	> 5725

802.11n HT40 Ch1

Freq. (MHz)	26dB BW (MHz)	Offset	10 Log (B) (dB)
5190	41.07	12.73	16.140
5230	40.49	12.73	16.070

802.11n_HT40_Ch1

Freq. (MHz)	6dB BW (MHz)	Offset	10 Log (B) (dB)
5755	33.82	12.73	15.290
5795	35.20	12.73	15.470

802.11n_HT40_Ch1

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5230	5248.02	< 5250
5755	5737.02	> 5725

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802.11ac_VHT80_Ch0

Freq. (MHz)	26dB BW (MHz)	Offset	10 Log (B) (dB)
5210	80.81	12.73	19.070

802.11ac_VHT80_Ch0

Freq. (MHz)	6dB BW (MHz)	Offset	10 Log (B) (dB)
5775	73.85	12.73	18.680

802.11ac_VHT80_Ch0

Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5210	5247.47	< 5250
5775	5737.48	> 5725

802.11ac VHT80 Ch1

Freq. (MHz)	26dB BW (MHz)	Offset	10 Log (B) (dB)
5210	81.06	12.73	19.090

802.11ac VHT80 Ch1

Freq. (MHz)	6dB BW (MHz)	Offset	10 Log (B) (dB)
5775	75.07	12.73	18.750

802.11ac_VHT80_Ch1

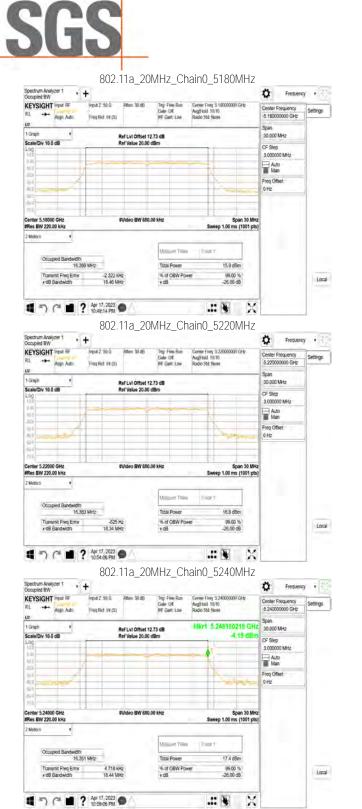
Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5210	5247.35	< 5250
5775	5737.45	> 5725

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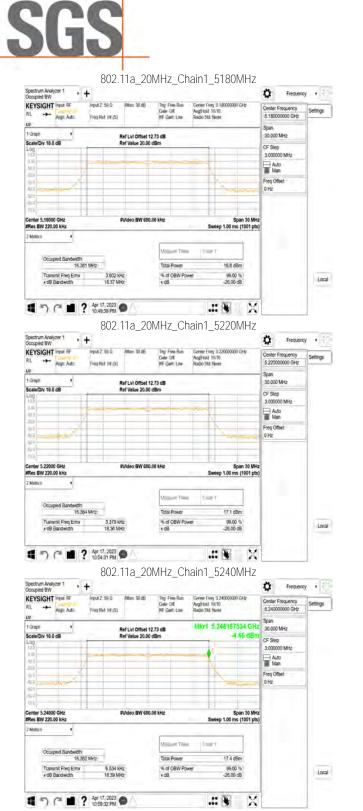
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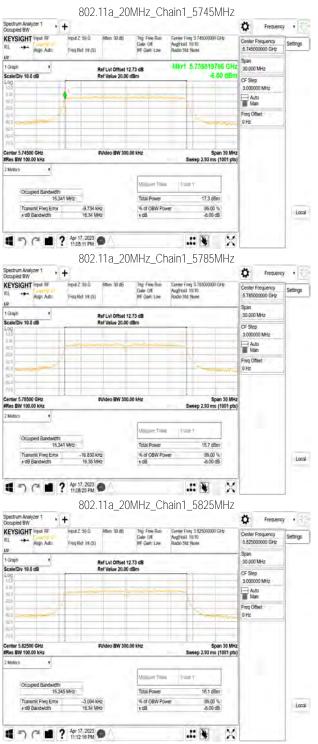
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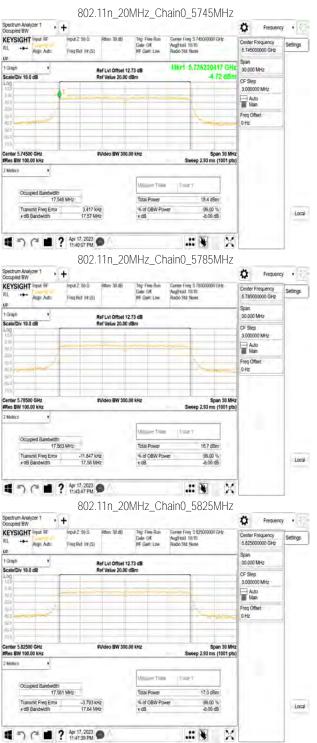
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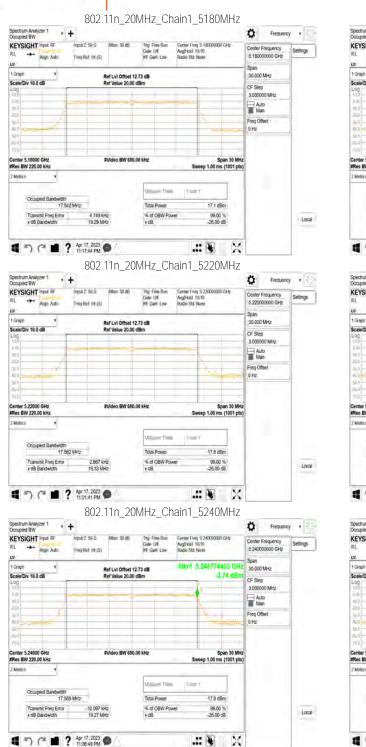
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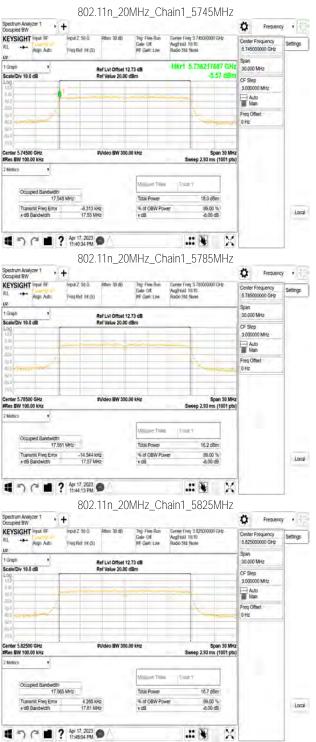
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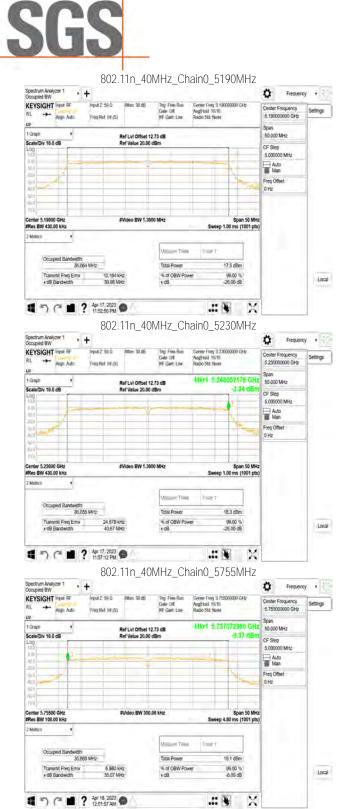
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802.11n_40MHz_Chain0_5795MHz Spectrum Analyzer 1 Occupied BW Frequency + ++ Ö Thy Free Run Gale Off IFF Gan Low KEYSIGHT ingest FIF mut 7 50.0 Attany 30.49 AvgHold quency on rate Settings --5 795000 Algn Auto Frog Ret Int (5) 12 1 Griph 50.000 MHz Ref Lvi Offset 12.73 dB ContailTite 10.0 etc. CF Slep 5.000000 MHz Auto Man Freq Offse 0 Hz Center 5 79500 0 PVideo BW 300.00 kHz Span 50 MH Res BW 100.00 kHz Sweep 4.80 ms (1001 pts Trans Trate 1 Occupied Bandw 35.992 MHz Total Power 17.4 dBm Transmit Freq Error x dB Bandwidth 21.414 MHz 35.11 MHz * of OBW Power * cB 99.00 % -6.00 dB Local 1) (I ? Apr 18 2023) .: 🐳 X 802.11n_40MHz_Chain1_5190MHz Spectrum Analyzer 1 Occupied BW ø Frequency + 1+ Thy Free Run Gale Off INF Gan: Low KEYSIGHT ingent FIF reut Z 50 0 Atten 30 dB Center Free 5 10000000 CHt 5 19000000 GHz AvgHold 10/10 Radio Std Note Settings -Frog Ret Int (5) Span 50.000 MHz 1 Graph Ref Lvi Offset 12.73 dB Ref Value 20.00 cmm Scala/Div 10.0 dB CF Slep 5.000000 MHz Auto Freq Offse 0 Hz #Video BW 1.3000 MH Span 50 M Center 5.19000 GHz #Res BW 430.00 kHz Sweep 1.00 ms (1001 pts Trans trane 1 Occupied Bandwidth 38.115 MHz Total Power 18.1 dBm Transmit Freq Error # dB Bandwinth * of OBW Power * oB 13.691 kHz 41.07 MHz 99.00 % 26.00 dB Local X 1 5 C 1 ? Apr 17, 2023 11 1 802.11n_40MHz_Chain1_5230MHz Spectrum Analyzer 1 Occupiest BW Frequency + ø 1+ vp.d.Z. 50 0. Attany 30 dB Thy Free Run Gale Off INF Gan Low Center Freq 523000000 EHz Settings AvgHold 10/10 Radio St Nove 5.23000000 GH Anny Auto From Bet Int (5) Mkr1 5.248 124211 GH 50,000 MHz Gript Ref Lvi Offset 12.73 dl Ref Value 20.00 dBm Scala/Div 10.0 dB 3.43 CF Slep 5.000000 MHz Auto Man Freq Offse 0 Hz enter 5.23000 GHz Res BW 430.00 kHz Sweep 1.00 ms (1001 pt ingent Trans Frank 1 Occupied Bandwidth 36.072 MHz Total Power 18.5 dBm Transmit Freq Error # dB Bandwise * of OBW Power 40.49 MHz 99.00 % Local X 1 7 C 1 ? Apr 17,2023 1 1

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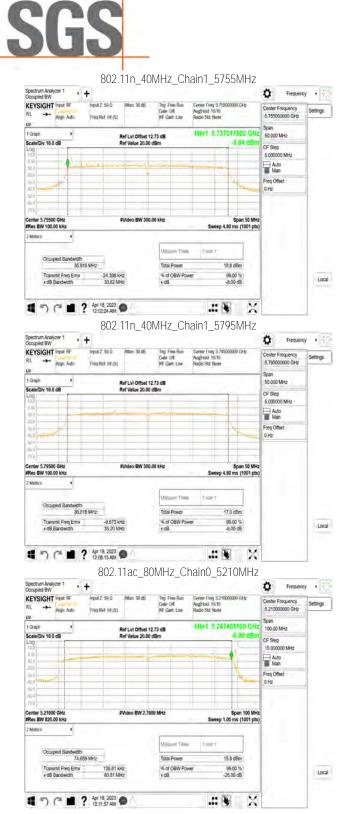
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802.11ac_80MHz_Chain0_5775MHz Spectrum Analyzer 1 Occupied BW Frequency + + + Ö KEYSIGHT ingest FIF mat 7 500 Thy Free Run Gale Off Attany 10.45 quency on rate Settings AvgHold 10 Radio Std N -Algn ha 5.775 Frog Ret Int (5) 12 Mkr1 5.737484371 GHz 1 Griph 00.00 MH Ref LVI Offset 12.73 dB 10.65 ContailTite 10.0 etc CF Slep 10.000000 MHz Auto Man Freq Offse 0 Hz Center 5.77500 EVideo RW 300.00 kHz an 100 M Res BW 100.00 kH Sweep 9.60 ms (1001 pts The Party of Control o Frank 1 Occupied Band 74.719 MHz Total Power 16.2 dBm Transmit Freq Enter # dB Bandwidth -156.13 kHz 73.85 MHz * of OBW Power * cB 99.00 % -6.00 dB Local 1) C 1 ? Apr 18, 2023 .:: 💱 X 802.11ac_80MHz_Chain1_5210MHz Spectrum Analyzer 1 Occupied BW Frequency : ø 1+ Thy Free Run Gale Off IFF Gan Low KEYSIGHT ingent FIF put 7 50 0 Attany 30 dB Carrier Free 5/210000000 CHts S 21000000 GHz AvgHold 10/10 Settings -Frog Ret Int (5) MKr1 5.247346838 GHz 1 Graph Ref Lvi Offset 12.73 dB Ref Value 20.00 cmm 100.00 MHz Scala/Div 10.0 dB 5 12 1 CF Slep 10.000000 MH Auto Man Freq Offse 0 Hz EVideo BW 2.7000 MH Center 5.21000 GHz #Res BW 820.00 kHz Sweep 1.00 ms (1001 pts) Trans trane 1 Occupied Bandwidth 74.579 MHz Total Power 16.2 dBm * of OBW Power * oB Transmit Freq Error # dB Bandwine 57.338 kH 99.00 % 26.00 dB Local 1 5 C 1 ? Apr 18, 2023 X 1 3 802.11ac_80MHz_Chain1_5775MHz Spectrum Analyzer 1 Occupiést BW Frequency + ø 1+ vput Z 50 0 Attany 30 dB Thy Free Run Gale Off INF Gan Low 000 744 Settings AvgHold 10/10 Radio St Nove Ann An From Bet Int (5) 5.775000000 GHg in MKr1 5.737451238 GH 100.00 MHz 1 Gript Ref Lvi Offset 12.73 dl Ref Value 20.00 dBm Scala/Div 10.0 dB 11.69 CF Slep 10.000000 MHz Auto Man Freq Offse 0 Hz enter 5.77500 GHz Res BW 100.00 kHz Sweep 9.60 ms (1001 pts Name Trans 1 Frank 1 Occupied Bandwidth 74,926 MHz Total Power 15.5 dBm Transmit Freq Error * of OBW Power 99.00 % -85.762 kHz Local 1 5 C 1 ? Apr 18, 2023 X 1 1

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MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT 9

9.1 Standard Applicable

9.1.1 **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		Out door AP	1 Watt(30dBm)	Elevation angle above 30 degrees 125mW (21dBm)	Not required	6dBi				
0.1411.1		Indoor AP	1 Watt(30dBm)	Not required	Not required	6dBi				
v		Other	250mW(23.98dBm)	Not required	Not required	6dBi				
U-NII-2A		Other	250mW(23.98dBm) or 11dBm+10 log B	Not required	When EIRP >500mW At least 6dB below EIRP	6dBi				
U-NII-2C		Other	250mW(23.98dBm) or 11dBm+10 log B	Not required	1W (30dBm)	6dBi				
U-NII-3	٧	Other	1 Watt(30dBm)	Not required	Not required	6dBi				
0-1111-5		Fixed point-to-point	1 Watt(30dBm)	Not required	Not required	Not required				
		Indoor AP (a channel spans 5725~5850 and 5850~5895MHz)	Not required	36dBm	Not required	Not required				
U-NII-4		indoor client (a channel spans 5725~5850 and 5850~5895MHz)	Not required	30dBm	Not required	Not required				
		subordinate device	Not required	36dBm	Not required	Not required				

9.1.2 **Output Power**

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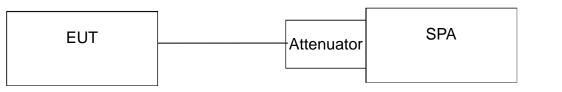
2. For the 10 log B, B is the 26 dB emission bandwidth.

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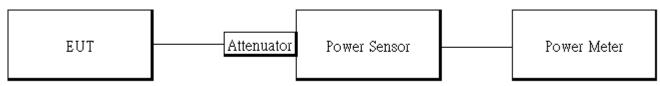


9.2 Test Setup

9.2.1 **Duty Cycle**



9.2.2 **Output Power**



9.3 Measurement Procedure

9.3.1 **Duty Cycle Measurements**

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

9.3.2 **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.
- 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 is used as the auxiliary test equipment to conduct the output power meas-4. urement.
- Record the max. reading and add 10 log(1/duty cycle). 5.
- Repeat above procedures until all frequency (low, middle, and high channel) measured 6. were complete.
- MIMO mode: offset is set with "measure and add 10 Log (N)" to measurement for MIMO mode. Offset = 7. cable loss + 10 log (N), where N is number of transmitting antenna, cable loss is specified below.

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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 j, or zero if it is not; \tilde{G}_k is the gain in dBi of the kth antenna.

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

Mode	Duty Cycle (%) =Ton / (Ton+Toff)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
802.11a	92.14	0.36	0.48	1.00
802.11n_20	93.57	0.29	0.52	1.00
802.11ac_20	93.33	0.30	0.52	1.00
802.11n_40	87.08	0.60	1.06	2.00
802.11ac_40	88.15	0.55	1.05	2.00
802.11ac_80	72.87	1.37	2.16	3.00

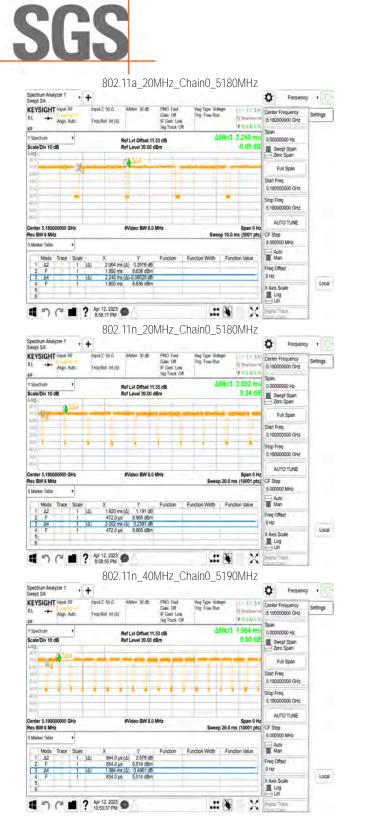
9.4 **Duty Cycle Measurement Result**

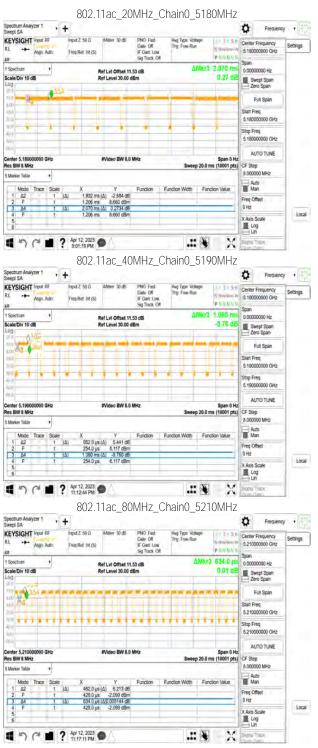
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9.5 **Output Power Measurement Result**

9.5.1 **Output power**

802.11a Ch0

Frequency (MHz)	Data Rate	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
5180	6	60	12.94	19.659	23.98	PASS
5220	6	60	12.91	19.523	23.98	PASS
5240	6	60	12.93	19.613	23.98	PASS
5745	6	65	12.92	19.568	30	PASS
5785	6	65	12.95	19.704	30	PASS
5825	6	66	12.97	19.795	30	PASS
	(MHz) 5180 5220 5240 5745 5785	(MHz) Rate 5180 6 5220 6 5240 6 5745 6 5785 6	(MHz) Rate set 5180 6 60 5220 6 60 5240 6 60 5745 6 65 5785 6 65	Frequency (MHz) Data Rate Power set POWER (dBm) 5180 6 60 12.94 5220 6 60 12.94 5220 6 60 12.91 5240 6 60 12.93 5745 6 65 12.92 5785 6 65 12.95	Frequency (MHz) Data Rate Power set POWER (dBm) POWER (mW) 5180 6 60 12.94 19.659 5220 6 60 12.91 19.523 5240 6 60 12.93 19.613 5745 6 65 12.92 19.568 5785 6 65 12.95 19.704	Frequency (MHz) Data Rate Power set POWER (dBm) POWER (mW) LIMIT (dBm) 5180 6 60 12.94 19.659 23.98 5220 6 60 12.91 19.523 23.98 5220 6 60 12.93 19.613 23.98 5240 6 60 12.92 19.613 23.98 5745 6 65 12.92 19.568 30 5785 6 65 12.95 19.704 30

802.11a_Ch1

СН	Frequency (MHz)	Data Rate	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	6	60	12.84	19.211	23.98	PASS
44	5220	6	60	12.79	18.991	23.98	PASS
48	5240	6	60	12.86	19.300	23.98	PASS
149	5745	6	65	12.89	19.434	30	PASS
157	5785	6	65	12.87	19.344	30	PASS
165	5825	6	66	12.80	19.035	30	PASS

802.11a 2TX

	Frequency	Data	Power	Avg. POW	/ER (dBm)	TOTAL POWER	TOTAL	REQUIRED	
СН	(MHz)	Rate	set	Ch0	Ch0 Ch1		POWER (mW)	LIMIT (dBm)	RESULT
36	5180	6	66	12.66	12.56	15.98	39.628	23.98	PASS
44	5220	6	66	12.63	12.57	15.97	39.537	23.98	PASS
48	5240	6	66	12.59	12.66	15.99	39.719	23.98	PASS
149	5745	6	72	12.66	12.58	15.99	39.719	30	PASS
157	5785	6	72	12.61	12.53	15.94	39.264	30	PASS
165	5825	6	73	12.68	12.55	15.98	39.628	30	PASS

802.11n_HT20_Ch0

СН	Frequency (MHz)	Data Rate	Power set	TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	MCS0	60	12.87	19.358	23.98	PASS
44	5220	MCS0	60	12.84	19.225	23.98	PASS
48	5240	MCS0	60	12.90	19.492	23.98	PASS
149	5745	MCS0	66	12.89	19.447	30	PASS
157	5785	MCS0	66	12.76	18.874	30	PASS
165	5825	MCS0	67	12.68	18.529	30	PASS

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802.11n_HT20_Ch1

СН	Frequency (MHz)	Data Rate			ower set	TOTAL POWEF (dBm)		/ER	L	QUIRED LIMIT dBm)	RESULT
36	5180	MCS0			60	12.80	19.0	49	9 23.98		PASS
44	5220	MCS0			60 12.78		18.9	18.961		23.98	PASS
48	5240	MCS0			60	12.66	18.4	44	2	23.98	PASS
149	5745	MCS0		66		12.62	18.2	75		30	PASS
157	5785	MCS0			66	12.72	18.7	01		30	PASS
165	5825	MCS0			67	12.61	18.2	33		30	PASS
802.11n_HT2	20_2TX				I					I	
СН	Frequency	Data	Pow		Avg. PO	WER (dBm)	TOTAL POWER		TAL WER	REQUIREI LIMIT	RESULT
	(MHz)	Rate	se		Ch0	Ch1	(dBm)		W)	(dBm)	
36	5180	MCS0	68		12.68	12.61	15.94		264	23.98	PASS
44	5220	MCS0	68		12.58	12.54	15.86		548	23.98	PASS
48	5240 5745	MCS0 MCS0	68 73		12.69 12.73	12.66 12.63	15.97 15.98		537 628	23.98 30	PASS PASS
149	5785	MCS0	73		12.73	12.03	15.97		537	30	PASS
165	5825	MCS0	74		12.84	12.54	15.99		719	30	PASS
802.11n_H	IT40_Ch0				1			1		•	
СН	Frequency (MHz)	Data Rate			ower Set	TOTAL POWER (dBm)		/ER	L	QUIRED LIMIT dBm)	RESULT
38	5190	MCS0			62	12.95	19.7	28	2	23.98	PASS
46	5230	MCS0			62	12.91	19.5	47	2	23.98	PASS
151	5755	MCS0			67	12.93	19.6	37		30	PASS
159	5795	MCS0			68	12.87	19.3	68		30	PASS
802.11n_H											
СН	Frequency (MHz)	Data Rate			ower set	TOTAL POWER (dBm)		/ER	L	QUIRED LIMIT dBm)	RESULT
38	5190	MCS0			62	12.89	19.4	57	2	23.98	PASS
46	5230	MCS0			62	12.82	19.1	46	2	23.98	PASS
151	5755	MCS0			67	12.71	18.6	67		30	PASS
159	5795	MCS0			68	12.68	18.5	39		30	PASS
802.11n_HT4	40_2TX		-								
СН	Frequency (MHz)	Data Rate	Pow se		Avg. PO Ch0	WER (dBm) Ch1	TOTAL POWER (dBm)	POV	TAL WER W)	REQUIREI LIMIT (dBm)	RESULT
38	5190	MCS0	70)	12.43	12.31	15.98	39.	628	23.98	PASS
46	5230	MCS0	70)	12.39	12.32	15.97	39.	537	23.98	PASS
151	5755	MCS0	75		12.41	12.22	15.93		174	30	PASS
159	5795	MCS0	76	6	12.43	12.15	15.90	38.	905	30	PASS

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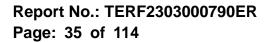
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802.11ac_VHT20_Ch0

	Frequency	Data	P	ower	TOTAL	TOT				
СН	(MHz)	Rate	:	set	POWER (dBm)	POW (mV			IMIT IBm)	RESULT
	5400	1000				-	-		-	
36	5180	MCS0		60	12.85	19.2			3.98	PASS
44	5220	MCS0		60	12.73	18.7		23.98		PASS
48	5240	MCS0		60	12.80	19.0		23.98		PASS
149	5745	MCS0		66	12.77	18.9	23		30	PASS
157	5785	MCS0		66	12.74	18.7	92		30	PASS
165	5825	MCS0		67	12.67	18.4	92		30	PASS
802.11ac_	VHT20_Ch1								T	
	Frequency	Data	P	ower	TOTAL	тот			UIRED	
СН	(MHz)	Rate		set	POWER				IMIT	RESULT
	()				(dBm)	(mV	-	(d	lBm)	
36	5180	MCS0		60	12.79	19.0	10	2	3.98	PASS
44	5220	MCS0		60	12.70	18.6	20	2	3.98	PASS
48	5240	MCS0		60	12.63	18.3	22	2	3.98	PASS
149	5745	MCS0		66	12.60	18.1	96		30	PASS
157	5785	MCS0		66	12.67	18.4	92		30	PASS
165	5825	MCS0		67	12.61	18.2	38		30	PASS
802.11ac_VH	IT20_2TX									
	Frequency	Data	Power	Avg. PO	WER (dBm)	TOTAL	TOT		REQUIRED	
СН	(MHz)	Rate	set	Ch0	Ch1	POWER (dBm)	POWI (mW		LIMIT (dBm)	RESUL
36	5180	MCS0	68	12.65	12.59	15.93	39.17		23.98	PASS
44	5220	MCS0	68	12.54	12.5	15.83	38.28		23.98	PASS
48	5240	MCS0	68	12.67	12.63	15.96	39.44	46	23.98	PASS
149	5745	MCS0	73	12.71	12.57	15.95	39.35	55	30	PASS
157	5785	MCS0	73	12.73	12.57	15.96	39.44		30	
157 165	5785 5825	MCS0 MCS0	73 74	12.73 12.8	12.57 12.5		39.44 39.44		30 30	PASS PASS
157 165	5785				12.5	15.96 15.96	39.44	46	30	
157 165 802.11ac_	5785 5825		74		12.5 TOTAL	15.96 15.96 TOT	39.44 AL	46 REQ	30 UIRED	PASS
157 165	5785 5825 VHT40_Ch0	MCS0	74	12.8	12.5 TOTAL POWER	15.96 15.96 TOT POW	39.44 AL /ER	46 REQ	30 RUIRED IMIT	
157 165 802.11ac_ CH	5785 5825 VHT40_Ch0 Frequency (MHz)	MCS0 Data Rate	74	12.8 ower set	12.5 TOTAL POWER (dBm)	15.96 15.96 TOT POW (mV	39.44 AL /ER V)	46 REQ LI (d	30 UIRED IMIT IBm)	PASS RESUL
157 165 802.11ac_ CH 38	5785 5825 VHT40_Ch0 Frequency (MHz) 5190	MCS0 Data Rate MCS0	74	12.8 ower set 62	12.5 TOTAL POWER (dBm) 12.92	15.96 15.96 TOT POW (mV 19.5	39.44 AL /ER V) 78	46 REQ L (d	30 RUIRED IMIT IBm) 3.98	PASS RESUL ⁻ PASS
157 165 802.11ac_ CH 38 46	5785 5825 VHT40_Ch0 Frequency (MHz) 5190 5230	MCS0 Data Rate MCS0 MCS0	P4	12.8 ower set 62 62	12.5 TOTAL POWER (dBm) 12.92 12.84	15.96 15.96 TOT POW (mV 19.5 19.2	39.44 AL /ER V) 78 21	46 REQ (d 2 2	30 RUIRED IMIT IBm) 3.98 3.98	PASS RESUL PASS PASS
157 165 802.11ac_ CH 38 46 151	5785 5825 VHT40_Ch0 Frequency (MHz) 5190 5230 5755	MCS0 Data Rate MCS0 MCS0 MCS0		12.8 ower set 62 62 67	12.5 TOTAL POWER (dBm) 12.92 12.84 12.85	15.96 15.96 TOT POW (mV 19.5 19.2 19.2	39.44 AL /ER M) 78 21 65	46 REQ (d 2 2	30 EUIRED IMIT IBm) 3.98 3.98 30	PASS RESUL PASS PASS PASS
157 165 802.11ac_ CH 38 46 151 159	5785 5825 VHT40_Ch0 Frequency (MHz) 5190 5230 5755 5795	MCS0 Data Rate MCS0 MCS0		12.8 ower set 62 62	12.5 TOTAL POWER (dBm) 12.92 12.84	15.96 15.96 TOT POW (mV 19.5 19.2	39.44 AL /ER M) 78 21 65	46 REQ (d 2 2	30 RUIRED IMIT IBm) 3.98 3.98	PASS RESUL PASS PASS
157 165 802.11ac_ CH 38 46 151 159	5785 5825 VHT40_Ch0 Frequency (MHz) 5190 5230 5755	MCS0 Data Rate MCS0 MCS0 MCS0		12.8 ower set 62 62 67	12.5 TOTAL POWER (dBm) 12.92 12.84 12.85 12.79	15.96 15.96 TOT POW (mV 19.5 19.2 19.2 19.2	39.44 AL /ER /V) 78 21 65 01	46 REQ (d 2 2	30 IVIRED IMIT IBm) 3.98 3.98 30 30 30	PASS RESUL PASS PASS PASS
157 165 802.11ac_ CH 38 46 151 159 802.11ac_	5785 5825 VHT40_Ch0 Frequency (MHz) 5190 5230 5755 5795 VHT40_Ch1	MCS0 Data Rate MCS0 MCS0 MCS0 MCS0		12.8 ower set 62 62 62 63	12.5 TOTAL POWER (dBm) 12.92 12.84 12.85 12.79 TOTAL	15.96 15.96 TOT POW (mV 19.5 19.2 19.2 19.2 19.0 TOT	39.44 AL /ER V) 78 21 65 01 AL	46 REQ (d 2 2 REQ	30 IMIT IBM) 3.98 30 30 30 SUIRED	PASS RESUL PASS PASS PASS PASS
157 165 802.11ac_ CH 38 46 151 159	5785 5825 VHT40_Ch0 Frequency (MHz) 5190 5230 5755 5795 VHT40_Ch1 Frequency	MCS0 Data Rate MCS0 MCS0 MCS0 MCS0 Data	Pe	12.8 ower set 62 62 67 68 0wer	12.5 TOTAL POWER (dBm) 12.92 12.84 12.85 12.79 TOTAL POWER	15.96 15.96 TOT POW (mV 19.5 19.2 19.2 19.0 19.0 TOT POW	39.44 AL /ER /V) 78 21 65 01 /AL /ER	REQ (d 2 REQ	30 IMIT IBM) 3.98 30 30 30 RUIRED IMIT	PASS RESUL PASS PASS PASS PASS
157 165 802.11ac_ CH 38 46 151 159 802.11ac_	5785 5825 VHT40_Ch0 Frequency (MHz) 5190 5230 5755 5795 VHT40_Ch1	MCS0 Data Rate MCS0 MCS0 MCS0 MCS0	Pe	12.8 ower set 62 62 62 63	12.5 TOTAL POWER (dBm) 12.92 12.84 12.85 12.79 TOTAL	15.96 15.96 TOT POW (mV 19.5 19.2 19.2 19.2 19.0 TOT	39.44 AL /ER /V) 78 21 65 01 /AL /ER	REQ (d 2 REQ	30 IMIT IBM) 3.98 30 30 30 SUIRED	PASS RESUL PASS PASS PASS PASS
157 165 802.11ac_ CH 38 46 151 159 802.11ac_	5785 5825 VHT40_Ch0 Frequency (MHz) 5190 5230 5755 5795 VHT40_Ch1 Frequency	MCS0 Data Rate MCS0 MCS0 MCS0 MCS0 Data		12.8 ower set 62 62 67 68 0wer	12.5 TOTAL POWER (dBm) 12.92 12.84 12.85 12.79 TOTAL POWER	15.96 15.96 TOT POW (mV 19.5 19.2 19.2 19.0 19.0 TOT POW	39.44 AL /ER V) 78 21 65 01 CAL /ER V)	REQ C C C C C C C C C C C C C C C C C C C	30 EUIRED IMIT IBm) 3.98 30 30 30 EUIRED IMIT	PASS RESUL PASS PASS PASS PASS
157 165 802.11ac_ CH 38 46 151 159 802.11ac_ CH	5785 5825 VHT40_Ch0 Frequency (MHz) 5190 5230 5755 5795 VHT40_Ch1 Frequency (MHz)	MCS0 Data Rate MCS0 MCS0 MCS0 MCS0 Data Rate		12.8 ower set 62 62 67 68 ower set	12.5 TOTAL POWER (dBm) 12.92 12.84 12.85 12.79 TOTAL POWER (dBm)	15.96 15.96 TOT POW (mV 19.5 19.2 19.2 19.0 TOT POW (mV	39.44 AL /ER V) 78 21 65 01 65 01 /ER V) 41	46 REQ (d 22 2 2 8 EQ (d (d 2	30 IMIT IBm) 3.98 3.98 30 30 30 RUIRED IMIT IBm)	PASS PASS PASS PASS PASS PASS
157 165 802.11ac_ CH 38 46 151 159 802.11ac_ CH 38	5785 5825 VHT40_Ch0 Frequency (MHz) 5190 5230 5755 5795 VHT40_Ch1 Frequency (MHz) 5190 5795 VHT40_Ch1 Frequency (MHz) 5190	MCS0 Data Rate MCS0 MCS0 MCS0 MCS0 Data Rate MCS0	Pe	12.8 ower set 62 67 68 ower set 62	12.5 TOTAL POWER (dBm) 12.92 12.84 12.85 12.79 TOTAL POWER (dBm) 12.66	15.96 15.96 TOT POW (mV 19.5 19.2 19.2 19.0 TOT POW (mV 18.4	39.44 AL /ER /V) 78 21 65 01 /AL /ER /V) 41 69	REQ Ll (d 2 2 Ll (d 2 Ll (d 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	30 IMIT IBM) 3.98 3.98 30 30 30 UIRED IMIT IBM) 3.98	PASS PASS PASS PASS PASS RESUL
157 165 802.11ac_ CH 38 46 151 159 802.11ac_ CH 38 46	5785 5825 VHT40_Ch0 Frequency (MHz) 5190 5230 5755 5795 VHT40_Ch1 Frequency (MHz) 5190 5795 VHT40_Ch1 Frequency (MHz) 5190 5230	MCS0 Data Rate MCS0 MCS0 MCS0 MCS0 Data Rate MCS0 MCS0		12.8 ower set 62 62 67 68 ower set 62 63 64 65 66 62 63	12.5 TOTAL POWER (dBm) 12.92 12.84 12.85 12.79 TOTAL POWER (dBm) 12.66 12.69	15.96 15.96 TOT POW (mV 19.5 19.2 19.2 19.2 19.0 TOT POW (mV 18.4 18.5	39.44 AL /ER /V) 78 21 65 01 /AL /ER /V) 41 69 88	46 REQ (d (d 2 2 2 2 8 8 8 8 8 8 9 8 9 9 9 9 9 9 9 9	30 IMIT IBM) 3.98 3.98 30 30 30 30 UIRED IMIT IBM) 3.98 3.98	PASS PASS PASS PASS PASS PASS PASS PASS
157 165 802.11ac_ CH 38 46 151 159 802.11ac_ CH 38 46 151 159	5785 5825 VHT40_Ch0 Frequency (MHz) 5190 5230 5755 5795 VHT40_Ch1 Frequency (MHz) 5190 5230 5755 5795 VHT40_Ch1 Frequency (MHz) 5190 5230 5755 5795	MCS0 Data Rate MCS0 MCS0 MCS0 MCS0 Data Rate MCS0 MCS0 MCS0		12.8 ower set 62 62 67 68 ower set 62 67 68	12.5 TOTAL POWER (dBm) 12.92 12.84 12.85 12.79 TOTAL POWER (dBm) 12.66 12.69 12.60	15.96 15.96 TOT POW (mV 19.5 19.2 19.2 19.0 TOT POW (mV 18.4 18.5 18.1	39.44 AL /ER /V) 78 21 65 01 /AL /ER /V) 41 69 88	46 REQ (d (d 2 2 2 2 8 8 8 8 8 8 9 8 9 9 9 9 9 9 9 9	30 EUIRED IMIT IBm) 3.98 3.98 30 30 20 EUIRED IMIT IBm) 3.98 3.98 3.98 3.98 3.98 3.98 3.98 3.98 3.98 3.98 3.00 20 20 20 20 20 20 20 20 20	PASS PASS PASS PASS PASS PASS PASS PASS
157 165 802.11ac_ CH 38 46 151 159 802.11ac_ CH 38 46 151 159 38 46 151 159 38 246	5785 5825 VHT40_Ch0 Frequency (MHz) 5190 5230 5755 5795 VHT40_Ch1 Frequency (MHz) 5190 5230 5755 5795 VHT40_Ch1 Frequency (MHz) 5190 5230 5795 VHT20_Ch1	MCS0 Data Rate MCS0 MCS0 MCS0 MCS0 Data Rate MCS0 MCS0 MCS0 MCS0 MCS0		12.8 ower 52 62 62 67 68 ower 52 62 63 62 63	12.5 TOTAL POWER (dBm) 12.92 12.84 12.85 12.79 TOTAL POWER (dBm) 12.66 12.69 12.60	15.96 15.96 TOT POW (mV 19.5 19.2 19.2 19.2 19.0 TOT POW (mV 18.4 18.5 18.1 18.1 18.1	39.44 AL /ER V) 78 21 65 01 AL /ER V) 41 69 88 46 V	46 REQ (d 2 2 REQ (d 2 2 2 	30 EUIRED IMIT IBm) 3.98 3.98 30 30 30 EUIRED IMIT IBm) 3.98 3.98 3.98 3.98 3.98 3.98 3.98 3.98 3.98 3.98 3.98 3.98 8 3.98 3	PASS PASS PASS PASS PASS PASS PASS PASS
157 165 802.11ac_ CH 38 46 151 159 802.11ac_ CH 38 46 151 159	5785 5825 VHT40_Ch0 Frequency (MHz) 5190 5230 5755 5795 VHT40_Ch1 Frequency (MHz) 5190 5230 5755 5795 VHT40_Ch1 Frequency (MHz) 5190 5230 5795 VHT2 5190 5230 5795 IT40_2TX Frequency Frequency	MCS0 Data Rate MCS0 MCS0 MCS0 MCS0 MCS0 MCS0 MCS0 MCS0	Peer	12.8 ower set 62 62 67 68 0 62 62 62 62 62 62 62 62 62 62	12.5 TOTAL POWER (dBm) 12.92 12.84 12.85 12.79 TOTAL POWER (dBm) 12.66 12.69 12.60 12.59 WER (dBm)	15.96 15.96 TOT POW (mV 19.5 19.2 19.2 19.2 19.0 TOT POW (mV 18.4 18.5 18.1 18.1 18.1 70TAL POWER	39.44 AL /ER V) 78 21 65 01 AL /ER V) 41 69 88 46 V) 41 69 88 46	46 REQ (d 2 2 REQ Ll (d 2 2 2 4 L k REQ Ll (d 2 2 2 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	30 EUIRED IMIT IBm) 3.98 3.98 30 30 20 EUIRED IMIT IBm) 3.98 3.98 3.98 3.98 3.98 3.98 3.98 3.98 3.98 3.98 8 3.98 8 3.98 1.98	PASS PASS PASS PASS PASS PASS PASS PASS
<u>157</u> 165 802.11ас_ СН 38 46 151 159 802.11ас_ СН 38 46 151 159 802.11ас_VH сн	5785 5825 VHT40_Ch0 Frequency (MHz) 5190 5230 5755 5795 VHT40_Ch1 Frequency (MHz) 5190 5230 5755 5795 VHT40_Ch1 Frequency (MHz) 5190 5230 5755 5795 IT40_2TX Frequency (MHz)	MCS0 Data Rate MCS0 MCS0 MCS0 MCS0 MCS0 MCS0 MCS0 MCS0	Power set	12.8 ower 62 62 67 68 ower set 62 63 ower set 62 63 Avg. PO Ch0	12.5 TOTAL POWER (dBm) 12.92 12.84 12.85 12.79 TOTAL POWER (dBm) 12.60 12.69 12.60 12.59 WER (dBm)	15.96 15.96 TOT POW (mV 19.2 19.2 19.2 19.2 19.0 TOT POW (mV 18.4 18.5 18.1 18.1 18.1 TOTAL POWER (dBm)	39.44 AL /ER V) 78 21 65 01 AL /ER V) 41 69 88 46 V POWE (mW	46 REQ (d 2 2 REQ L (d 2 2 2 4 L (d 2 2 4 4 L (d 4 2 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	30 EUIRED IMIT IBm) 3.98 3.98 30 30 20 EUIRED IMIT IBm) 3.98 3.98 3.98 3.98 3.98 3.98 3.98 3.98 3.98 3.98 3.98 3.98 3.0 EUIRED IMIT IBm) 3.98 3.08 3.0	PASS PASS PASS PASS PASS PASS PASS PASS
157 165 802.11ac_ CH 38 46 151 159 802.11ac_ CH 38 46 151 159 802.11ac_VH cH 38	5785 5825 VHT40_Ch0 Frequency (MHz) 5190 5230 5755 5795 VHT40_Ch1 Frequency (MHz) 5190 5230 5755 5795 VHT40_Ch1 Frequency (MHz) 5190 5230 5755 5795 VHT2 Frequency (MHz) 5190 5230 5755 5795 IT40_2TX Frequency (MHz) 5190	MCS0 Data Rate MCS0 MCS0 MCS0 MCS0 MCS0 MCS0 MCS0 MCS0	74 Pe Pe Pe Pe Pee Pee Pee Pee Pee Pee Pee Power set 70	12.8 ower set 62 62 67 68 ower set 62 63 Avg. PO' Ch0 12.44	12.5 TOTAL POWER (dBm) 12.92 12.84 12.85 12.79 TOTAL POWER (dBm) 12.66 12.69 12.60 12.59 WER (dBm) Ch1 12.28	15.96 15.96 15.96 TOT POW (mV 19.2 19.2 19.2 19.2 19.0 19.0 19.0 19.2 19.0 19.2 19.2 19.0 19.2 19.0 19.2 19.2 19.0 19.2 19.2 19.2 19.2 19.2 19.2 19.0 19.2 19.2 19.2 19.2 19.2 19.2 19.2 19.2	39.44 AL /ER V) 78 21 65 01 AL /ER V) 41 69 88 46 V) 41 69 88 46 V) 41 69 88 46 V) V V V V V V V V V V V V V	46 REQ (d 2 2 8 8 8 4 4 8 8 8 4	30 EUIRED IMIT IBm) 3.98 3.98 30 30 20 EUIRED IMIT IBm) 3.98	PASS PASS PASS PASS PASS PASS PASS PASS
<u>157</u> 165 802.11ас_ СН 38 46 151 159 802.11ас_ СН 38 46 151 159 802.11ас_VH сн	5785 5825 VHT40_Ch0 Frequency (MHz) 5190 5230 5755 5795 VHT40_Ch1 Frequency (MHz) 5190 5230 5755 5795 VHT40_Ch1 Frequency (MHz) 5190 5230 5755 5795 IT40_2TX Frequency (MHz)	MCS0 Data Rate MCS0 MCS0 MCS0 MCS0 MCS0 MCS0 MCS0 MCS0	Power set	12.8 ower 62 62 67 68 ower set 62 63 ower set 62 63 Avg. PO Ch0	12.5 TOTAL POWER (dBm) 12.92 12.84 12.85 12.79 TOTAL POWER (dBm) 12.60 12.69 12.60 12.59 WER (dBm)	15.96 15.96 TOT POW (mV 19.2 19.2 19.2 19.2 19.0 TOT POW (mV 18.4 18.5 18.1 18.1 18.1 18.1 TOTAL POWER (dBm)	39.44 AL /ER V) 78 21 65 01 AL /ER V) 41 69 88 46 V POWE (mW	46 REQ (d 2 2 2 REQ L (d 2 2 2 2 4 8 8 8 8 8 9 34 74	30 EUIRED IMIT IBm) 3.98 3.98 30 30 20 EUIRED IMIT IBm) 3.98 3.98 3.98 3.98 3.98 3.98 3.98 3.98 3.98 3.98 3.98 3.98 3.0 EUIRED IMIT IBm) 3.98 3.08 3.0	PASS PASS PASS PASS PASS PASS PASS PASS

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802.11ac_VHT80_Ch0

СН	Frequency (MHz)	Data Rate	F	ower set	TOTAL POWEF (dBm)	R POW	/ER	REQUIRED LIMIT (dBm)	RESULT
42	5210	MCS0		52	10.73	11.8	43	23.98	PASS
155	5775	MCS0		57	10.95	12.4	58	30	PASS
802.11ac_	VHT80_Ch1								
СН	Frequency (MHz)	Data Rate	F	Power set	TOTAL POWEF (dBm)	R POW	/ER	REQUIRED LIMIT (dBm)	RESULT
42	5210	MCS0		52	10.69 11.73		34 23.98		PASS
155	5775	MCS0		59	10.80	12.0	35	30	PASS
802.11ac_VI	T80_2TX								
СН	Frequency (MHz)	Data Rate	Power set	-	WER (dBm)	POWER	TOTA POWE	R LIMIT	D RESULT
42	5210	MCS0	58	Ch0 9.67	Ch1 9.51	(dBm)	(mW) 25.003	, , ,	PASS
42 155	5210	MCS0	63	9.66	9.51	13.98 13.98	25.00		PASS

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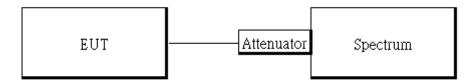


10 MAXIMUM POWER SPECTRAL DENSITY

10.1 **Standard Applicable**

Operation Bands	EU	T CATEGORY	e-CRF Title 47 §15.407 Power Spectral Density	Antenna Directional Gain Requirements
		Outdoor Access Point (Master)	1. 17dBm/ MHz 2. EIRP<=125mW(21dBm) at any elevation angle > 30°	6dBi
U-NII-1		Indoor Access Point (Master)	17dBm / MHz	6dBi
		Fixed point-to- point Access Ponit	17dBm / MHz	23dBi
	٧	Client device	11dBm / MHz	6dBi
U-NII-2A		All	11dBm / MHz	6dBi
U-NII-2C		All	11dBm / MHz	6dBi
U-NII-3	V	All	30dBm / 500kHz	6dBi
		Indoor AP	20dBm / MHz e.i.r.p.	Not required
U-NII-4		indoor client	14dBm / MHz e.i.r.p.	Not required
		subordinate device	20dBm / MHz e.i.r.p.	Not required
	0	0	in greater than the antenna requirements colum amount in dB that the direction-al gain of the a	

10.2 **Test Setup**



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10.3 **Measurement Procedure**

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules .
- 3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to Spectrum.

4. For U-NII1, U-NII-2A, U-NII-2C Band:

Set RBW=1MHz, VBW=3MHz, where span is enough to capture the entire bandwidth, Sweep time = Auto (1001 pts), Detector = power averaging (rms), if available. Otherwise, use sample detector mode, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)

For U-NII-3 Band:

Set RBW=300kHz, VBW=1MHz, where span is enough to capture the entire bandwidth, Sweep time = Auto, detector = RMS or sample, traces 100 sweeps of video averaging.

In addition, measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10 log (500 kHz/RBW) to the measured result.

- 5. User the cursor on spectrum to peak search the highest level of trace
- 6. Record the max. reading and add 10 log(1/duty cycle).
- 7. Repeat above procedures until all default test channel (low, middle, and high) was complete.

Note: For the test of PSD at MIMO mode, the highest emission of worst case employing Measure and add 10 log (N) technical is reported after the comparison between Main Antenna at single transmitting mode and Aux that yields the higher value. The MIMO transmitting mode produces higher value of outcome.

Note:

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

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

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

where

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

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

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10.4 **Measurement Result**

		POWER DE	NSITY 802.11a MC	DE			
Frequency (MHz)	Ch0 meas PSD (dBm/MHz)	Ch1 meas PSD (dBm/MHz)	Duty Factor (dB)	Total Corr'd F	²SD(dBm/MHz)	Limit	Margin (dB)
5180	-0.032	0.838	0.36	3.	80	11.00 dBm/MHz	-7.20
5220	0.791	1.478	0.36	4.	52	11.00 dBm/MHz	-6.48
5240	0.853	1.110	0.36	4.	35	11.00 dBm/MHz	-6.65
Frequency (MHz)	Ch0 meas PSD (dBm/300kHz)	Ch1 meas PSD (dBm/300kHz)	Duty Factor (dB)	10log (500kHz/RBW) Factor(dB)	Total Corr'd PSD (dBm/500kHz)	Limit	Margin (dB)
5745	-3.194	-3.493	0.36	2.22	2.25	30.00 dBm/500kHz	-27.75
5785	-4.933	-5.045	0.36	2.22	0.60	30.00 dBm/500kHz	-29.40
5825	-5.054	-5.318	0.36	2.22	0.41	30.00 dBm/500kHz	-29.59
		POWER DENS	ITY 802.11n HT20	MODE			•
Frequency (MHz)	Ch0 meas PSD (dBm/MHz)	Ch1 meas PSD (dBm/MHz)	Duty Factor (dB)	Total Corr'd F	PSD(dBm/MHz)	Limit	Margin (dB)
5180	0.029	0.921	0.29	3.	80	11.00 dBm/MHz	-7.20
5220	0.356	0.968	0.29	3.	97	11.00 dBm/MHz	-7.03
5240	1.162	1.163	0.29	4.	46	11.00 dBm/MHz	-6.54
Frequency (MHz)	Ch0 meas PSD (dBm/300kHz)	Ch1 meas PSD (dBm/300kHz)	Duty Factor (dB)	10log (500kHz/RBW) Factor(dB)	Total Corr'd PSD (dBm/500kHz)	Limit	Margin (dB)
5745	-3.568	-3.899	0.29	2.22	1.79	30.00 dBm/500kHz	-28.21
5785	-5.335	-5.522	0.29	2.22	0.09	30.00 dBm/500kHz	-29.91
5825	-5.292	-5.554	0.29	2.22	0.10	30.00 dBm/500kHz	-29.90
		POWER DENS	ITY 802.11n HT40	MODE			
Frequency (MHz)	Ch0 meas PSD (dBm/MHz)	Ch1 meas PSD (dBm/MHz)	Duty Factor (dB)	Total Corr'd F	PSD(dBm/MHz)	Limit	Margin (dB)
5190	-2.575	-1.696	0.60	1.	50	11.00 dBm/MHz	-9.50
5230	-1.804	-1.808	0.60	1.	80	11.00 dBm/MHz	-9.20
Frequency (MHz)	Ch0 meas PSD (dBm/300kHz)	Ch1 meas PSD (dBm/300kHz)	Duty Factor (dB)	10log (500kHz/RBW) Factor(dB)	Total Corr'd PSD (dBm/500kHz)	Limit	Margin (dB)
5755	-6.361	-6.796	0.60	2.22	-0.74	30.00 dBm/500kHz	-30.74
5795	-8.316	-8.464	0.60	2.22	-2.56	30.00 dBm/500kHz	-32.56
		POWER DENSIT	Y 802.11ac VHT80	MODE			
Frequency (MHz)	Ch0 meas PSD (dBm/MHz)	Ch1 meas PSD (dBm/MHz)	Duty Factor (dB)	Total Corr'd F	°SD(dBm/MHz)	Limit	Margin (dB)
5210	-8.764	-8.048	1.37	-4.	.01	11.00 dBm/MHz	-15.01
Frequency (MHz)	Ch0 meas PSD (dBm/300kHz)	Ch1 meas PSD (dBm/300kHz)	Duty Factor (dB)	10log (500kHz/RBW) Factor(dB)	Total Corr'd PSD (dBm/500kHz)	Limit	Margin (dB)

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Report No.: TERF2303000790ER Page: 40 of 114



802.11a_20MHz_Chain1_5745MHz ø Frequency + (RMS) 1 1 1 5 Center Fit PNO Feed Settings ANRAN Span 50.0000000 MHz Mkr1 5,743 70 GHz Ref Lvi Offset 12.73 dB -3.493 dB Swept Span Zero Span Full Spar Start Freq 5.7200000 OD GH Stop Freq 5.770000000 GHz AUTO TUNE #Video BW 1.0 MH Span 50.00 MH Sweep 1.00 ms (1001 pts) CF Step 5.000000 MH Auto Man Function Width Function Value X Y 5.743 70 GHz -3.493 dBm Freq Offsel 0 Hz Local X Axis Scale Log Lin 1) (* 1 ? Apr 17, 2023 .:: 💱 X 802.11a_20MHz_Chain1_5785MHz ø 1.5 Frequency ±Ation 30 dB PNQ Fast Gale Off IF Care Low Sig Teack Off shing Type: Power (RMS) = 1 + 5 Trig: Free Ruit Center Frequency Settings. 5.78500000 GHD ASSAN Ref Lvi Offset 12.73 dB Mkr1 5.787 45 GHz 50.000000 MHz 5045 0 Zero Span ٠ Full Span Start Freq 576 no cue Stop Freq 5.8100000 AUTO TUNE #Video BW 1.0 MHz Span 50.00 MHz Sweep 1.00 ms (1001 pts) CF Step 5.000000 MH Auto Man Function Function Width Function Value A Y 5.787 45 GHz -5.045 dBm Freq Offset 0 Hz Local X Axis Scale Log X 1 5 (* 1 ? Apr 17, 2023 D 1. 19 802.11a_20MHz_Chain1_5825MHz ø Frequency + strag Type Power (RMS) 1111 10 dF PNO Fast Gale Off Center Fre Settings 5.825000000 GH ASSN kr1 5.826 80 GHz 50.000000 MHz Ref Lvi Offset 12.73 dB -5318 di Zero Span 4 Full Span tart Fred 5.50000000 GHz Stop Freq 5.850000 AUTO TUNE #Video BW 1.0 MH Span 50.00 MHz Sweep 1.00 ms (1001 pts) CF Step 5.000000 MH Auto Man Function Function Width Function Value 5.626 80 GHz -5.318 dBm Freq Offsel 0 Hz Local X Axis Scale X 1) (* 1 ? Apr 17, 2023 .: 👻

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574500

Swept Span Zero Span

Start Freq 5.7200000

Full Spar

Stop Freq 5.770000000 GHz

AUTO TUNE

5.000000 MH

Auto Man

Freq Offsel

X Axis Scale

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AUTO TUNE

5.000000 MH

Auto Man

Freq Offset 0 Hz

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Stop Freq 5.850000

Full Span

5.50000000 GHz

AUTO TUNE

5.000000 MH

Auto Man

Freq Offsel 0 Hz

X Axis Scale

5.78500000 GHD

0 Hz

OD GH

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Settings

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Settings

Local

Frequency +

Settings

Local

Frequency



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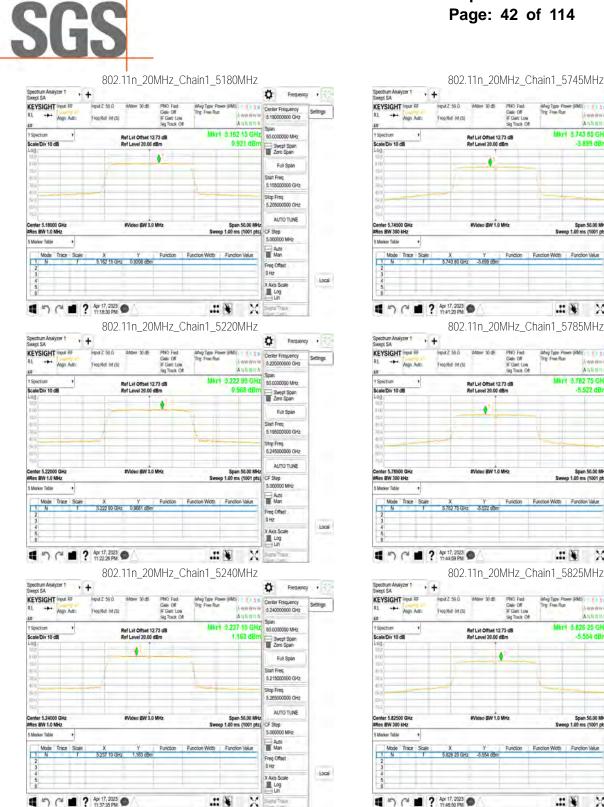
574500

any Type Power (RMS) 11110 Center Fr

ASSANT

Frequency +

Settings



MKr1 5.743 85 GHz 50.000000 MHz -3.899 de Swept Span Zero Span Full Spar Start Freq 5.7200000 OD GH5 Stap Freq 5.770000000 GHz AUTO TUNE Span 50.00 MHz Sweep 1.00 ms (1001 pts) CF Step 5.000000 MH Auto Man Function Width Function Value Freq Offsel 0 Hz Local X Axis Scak Log .:: 💱 X 802.11n_20MHz_Chain1_5785MHz ø 4 33 Frequency string Type Power (RMS) = 1 = 1 Trig Free Rus Center Frequency Settings 5.78500000 GHD ASSA Mkr1 5.782 75 GHz 50.000000 MHz -5 522 AL Zero Span Full Span tart Freq 576 00 GHz Stop Freq 5.810000000 GH AUTO TUNE Span 50.00 MHz Sweep 1.00 ms (1001 pts) CF Step 5.000000 MH Auto Man Function Function Width Function Value Freq Offset 0 Hz Local X Axis Scale Log X .: ¥ 802.11n_20MHz_Chain1_5825MHz ø Frequency + strag Type Power (RMS) 1111 Center Fre Settings 5.825000000 GH ASSN Mkr1 5.826 25 GHz 50,000000 MHz -5.554 dl Zero Span Full Span tart Fred 5.50000000 GHz Stop Freq 5.850000 AUTO TUNE Span 50.00 MHz Sweep 1.00 ms (1001 pts) CF Step 5.000000 MH Auto Man Function Function Width Function Value Freq Offsel 0 Hz Local X Axis Scale

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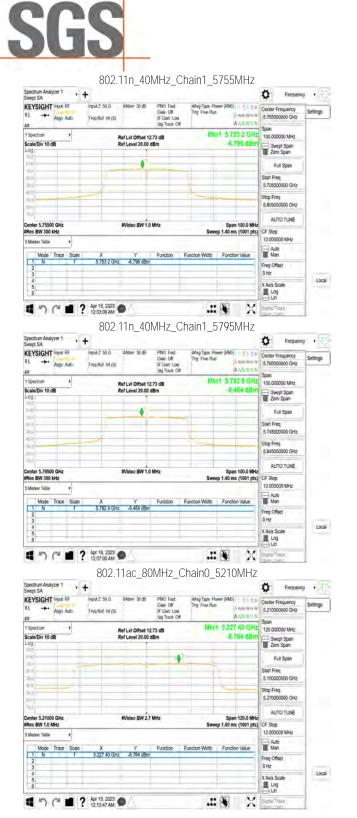
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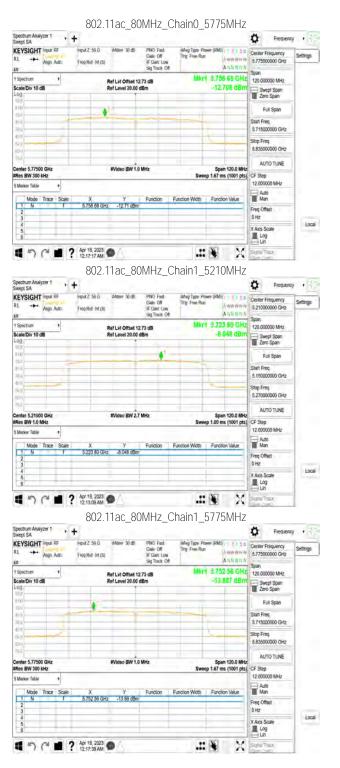
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11 UNDESIRABLE RADIATED EMISSION MEASUREMENT

11.1 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.

11.1.1 5150~5850 MHz

Applicable	Operation	EIRP		Field Strength @ 3m (dBµV/m)	
to	Freq. (MHz)	Freq. (MHz)	Limits (dBm/MHz)		
15.407(b)(1) RSS-247 §6.2.1.2	5150~5250	f ≤ 5150			
15.407(b)(2) RSS-247 §6.2.2.2	5250~5350	f ≥ 5350	PK: -27	PK: 68.2	
15.407(b)(3) RSS-247 §6.2.3.2	5475~5725	f ≤ 5470 f ≥ 5725			
		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:-27~10		
RSS-247 §6.2.4.2		increasing linearly from 25~5MHz above or below the band edge		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	

11.1.2 **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.

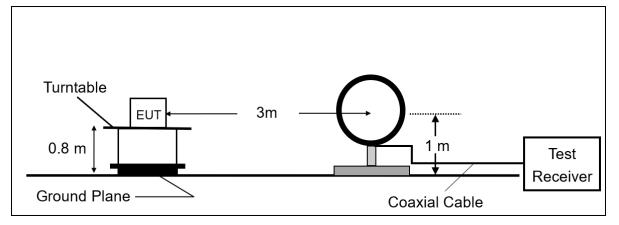
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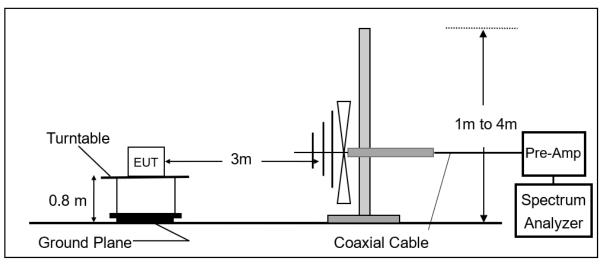


11.2 **Test Setup**

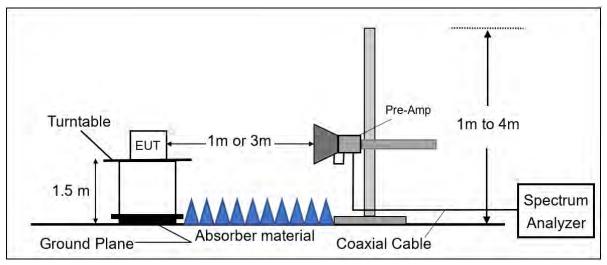
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz.



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



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



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11.3 Measurement Procedure

- 1. The testing follows FCC KDB 789033 D02.
- **2.** The EUT was placed on a turn table with 0.8m for frequency< 1GHz and 1.5m for frequency> 1GHz above ground plane.
- **3.** The turn table shall rotate 360 degrees to determine the position of maximum emission level.
- **4.** EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
- 5. Set the spectrum analyzer as RBW=100 kHz and VBW=300 kHz for Peak Detector (PK) at frequency between 30MHz and 1 GHz
- **6.** Use receiver mode as RBW=120 kHz for Quasi-peak (QP) at frequency between 30MHz and 1 GHz.
- 7. Set the spectrum analyzer as RBW=1 MHz, VBW=3 MHz for Maximum Emission Measurements at frequency above 1 GHz.
- 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 frequency 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) AG* = *Amplifier Gain*

RA = Reading Amplitude AF = Antenna Factor

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

Actual FS(dB μ V/m) = SPA. Reading level(dB μ V) + Factor(dB) Factor(dB) = Antenna Factor(dB μ 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.

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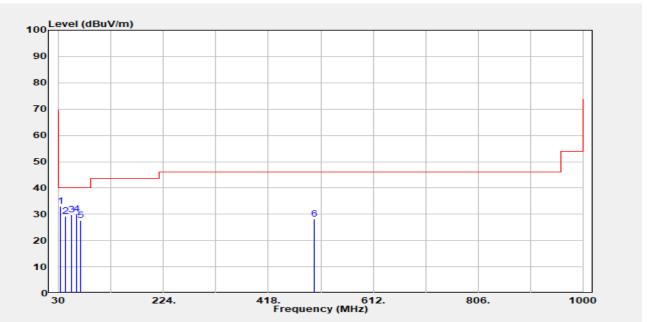
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Radiated Spurious Emission Measurement Result 11.6

11.6.1 **Spurious Emission**

Report Number	:TERF2303000790ER	Test Site	:SAC 1
Operation Mode	:802.11a	Test Date	:2023-04-21
Test Frequency	:5220 MHz	Temp./Humi.	:23.6/62
Test Mode	:Tx	Antenna Pol.	:VERTICAL
EUT Pol	:H Plane	Engineer	:WJ Lin



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
32.910	QP	40.24	-7.24	33.00	40.00	-7.00
42.610	Peak	41.57	-12.31	29.26	40.00	-10.74
53.280	Peak	46.73	-16.99	29.74	40.00	-10.26
62.980	Peak	48.36	-18.35	30.01	40.00	-9.99
70.740	Peak	45.77	-18.08	27.68	40.00	-12.32
503.360	Peak	33.45	-5.16	28.29	46.00	-17.71

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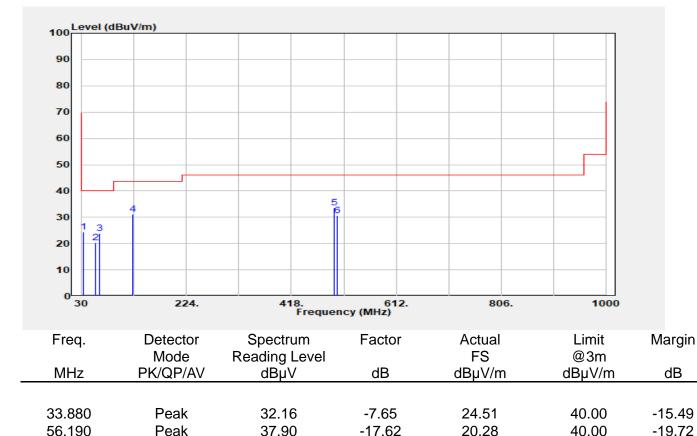
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Report Number	:TERF2303000790ER
Operation Mode	:802.11a
Test Frequency	:5220 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site :SAC 1 :2023-04-21 Test Date Temp./Humi. :23.6/62 Antenna Pol. :HORIZONTAL Engineer :WJ Lin



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42.16

42.85

38.71

35.91

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Peak

Peak

Peak

Peak

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-18.35

-11.76

-5.15

-5.16

23.81

31.09

33.56

30.75

40.00

43.50

46.00

46.00

-16.19

-12.41

-12.44

-15.25

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62.980

124.090

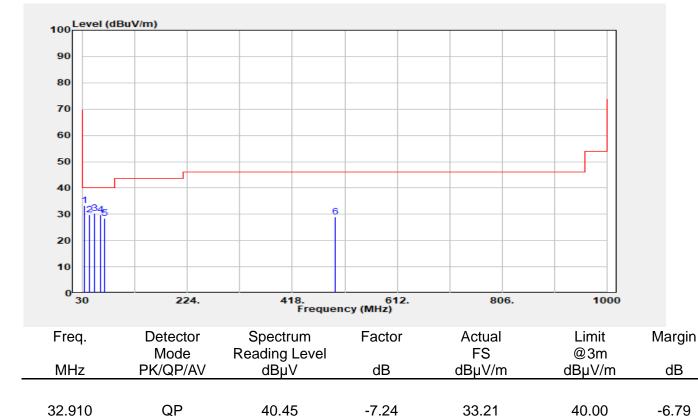
496.570

503.360



Report Number	:TERF2303000790ER
Operation Mode	:802.11a
Test Frequency	:5785 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site :SAC 1 :2023-04-21 Test Date Temp./Humi. :23.6/62 Antenna Pol. :VERTICAL Engineer :WJ Lin



-11.89

-16.77

-18.35

-18.08

-5.15

29.86

30.40

29.92

28.42

28.87

40.00

40.00

40.00

40.00

46.00

-10.14

-9.60

-10.08

-11.58

-17.13

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41.75

47.17

48.27

46.50

34.02

Peak

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41.640

52.310

62.980

70.740

496.570

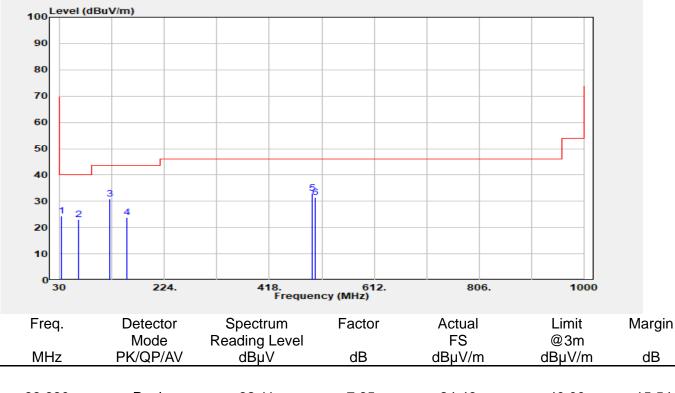
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f (886-2) 2298-0488



Report Number	:TERF2303000790ER
Operation Mode	:802.11a
Test Frequency	:5785 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site :SAC 1 Test Date :2023-04-21 Temp./Humi. :23.6/62 Antenna Pol. :HORIZONTAL Engineer :WJ Lin



33.880	Peak	32.11	-7.65	24.46	40.00	-15.54
63.950	Peak	41.28	-18.17	23.11	40.00	-16.89
123.120	Peak	42.57	-11.70	30.87	43.50	-12.63
154.160	Peak	37.23	-13.26	23.98	43.50	-19.52
496.570	Peak	38.28	-5.15	33.13	46.00	-12.87
503.360	Peak	36.53	-5.16	31.36	46.00	-14.64

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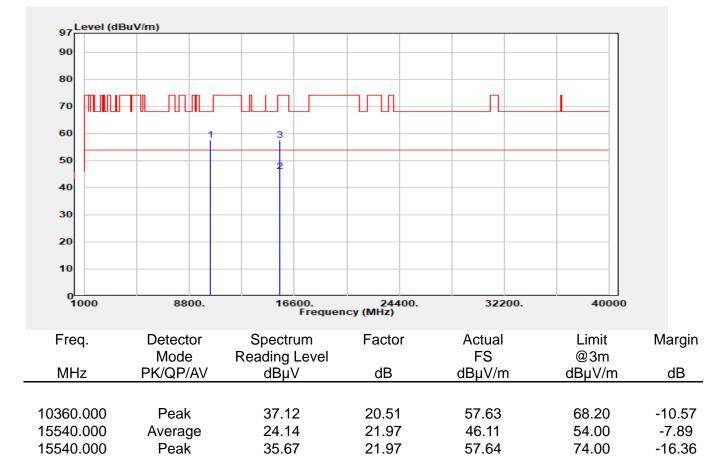
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Report Number	:TERF2303000790ER
Operation Mode	:802.11a
Test Frequency	:5180 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site	:SAC 1
Test Date	:2023-04-21
Temp./Humi.	:23.6/62
Antenna Pol.	:Vertical
Engineer	:WJ Lin



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Report Number	:TERF2303000790ER
Operation Mode	:802.11a
Test Frequency	:5180 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site :SAC 1 Test Date :2023-04-21 Temp./Humi. :23.6/62 Antenna Pol. :Horizontal Engineer :WJ Lin



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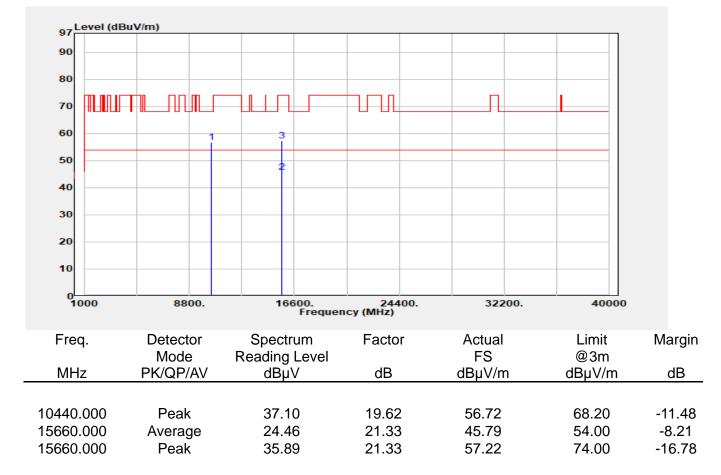
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Report Number	:TERF2303000790ER
Operation Mode	:802.11a
Test Frequency	:5220 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site :SAC 1 Test Date :2023-04-21 Temp./Humi. :23.6/62 Antenna Pol. :Vertical Engineer :WJ Lin



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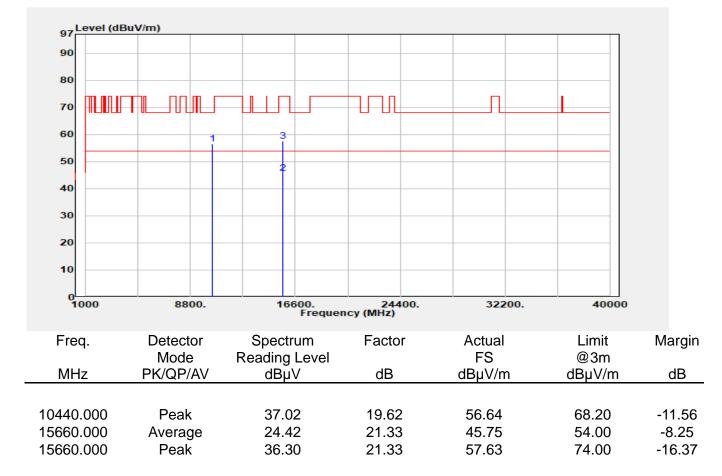
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Report Number	:TERF2303000790ER
Operation Mode	:802.11a
Test Frequency	:5220 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site	:SAC 1
Test Date	:2023-04-21
Temp./Humi.	:23.6/62
Antenna Pol.	:Horizontal
Engineer	:WJ Lin



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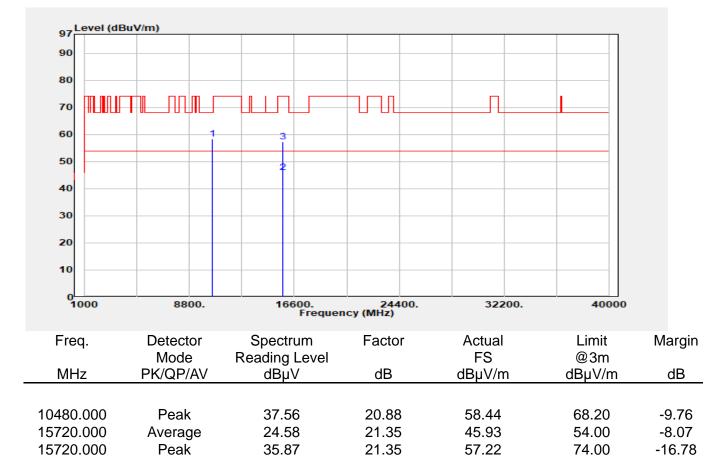
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Report Number	:TERF2303000790ER
Operation Mode	:802.11a
Test Frequency	:5240 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site	:SAC 1
Test Date	:2023-04-21
Temp./Humi.	:23.6/62
Antenna Pol.	:Vertical
Engineer	:WJ Lin



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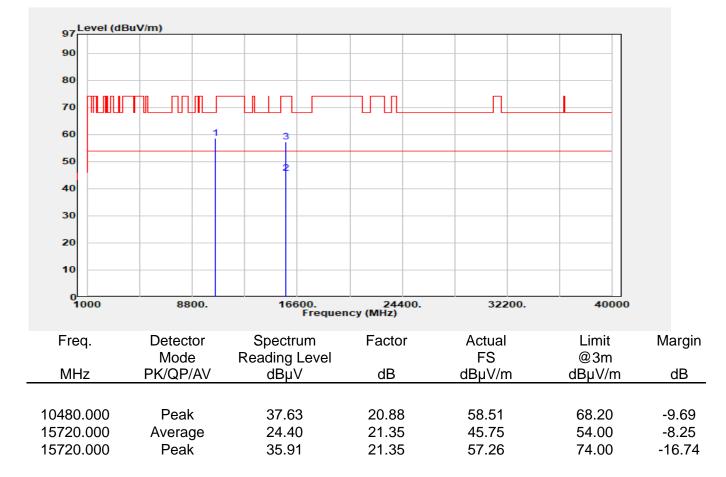
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Report Number	:TERF2303000790ER
Operation Mode	:802.11a
Test Frequency	:5240 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site :SAC 1 Test Date :2023-04-21 Temp./Humi. :23.6/62 Antenna Pol. :Horizontal Engineer :WJ Lin



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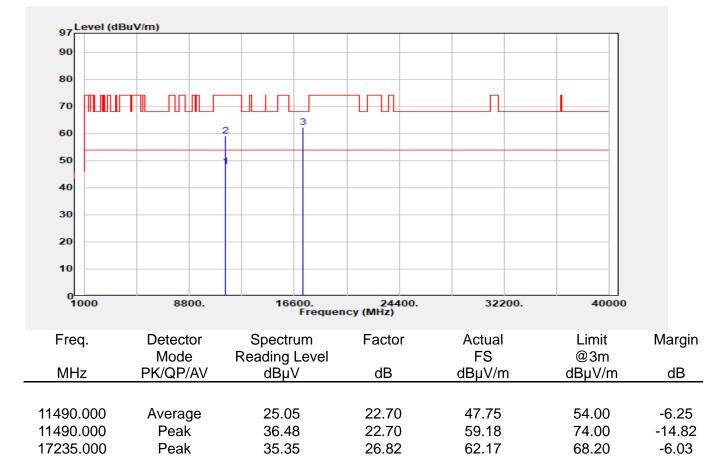
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Report Number	:TERF2303000790ER
Operation Mode	:802.11a
Test Frequency	:5745 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site	:SAC 1
Test Date	:2023-04-21
Temp./Humi.	:23.6/62
Antenna Pol.	:Vertical
Engineer	:WJ Lin



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Report Number	:TERF2303000790ER
Operation Mode	:802.11a
Test Frequency	:5745 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site	:SAC 1
Test Date	:2023-04-21
Temp./Humi.	:23.6/62
Antenna Pol.	:Horizontal
Engineer	:WJ Lin



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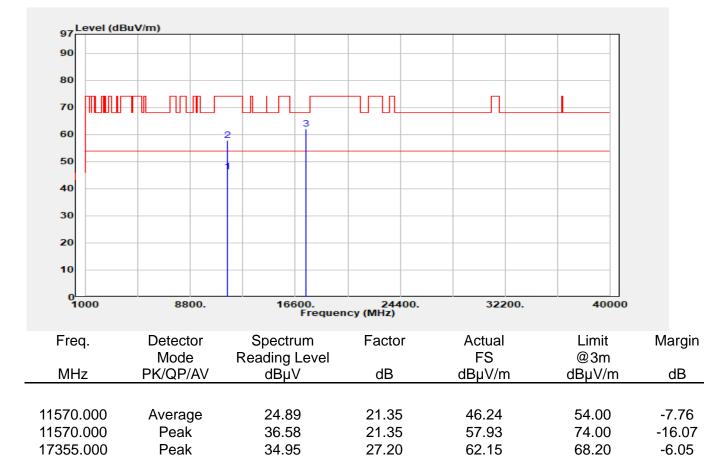
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Report Number	:TERF2303000790ER
Operation Mode	:802.11a
Test Frequency	:5785 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site :SAC 1 Test Date :2023-04-21 Temp./Humi. :23.6/62 Antenna Pol. :Vertical Engineer :WJ Lin



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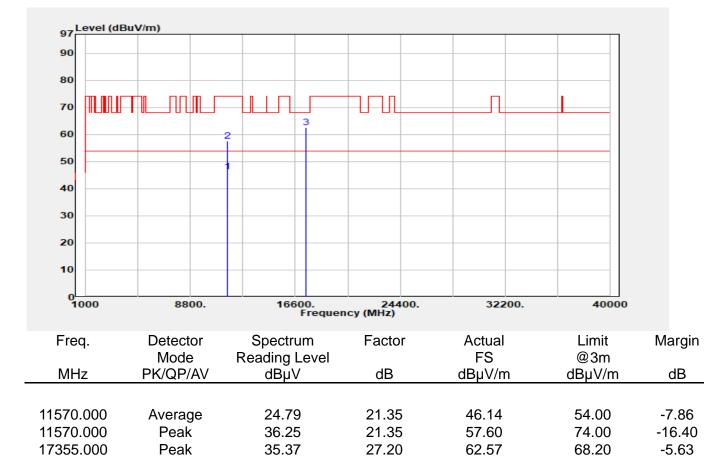
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Report Number	:TERF2303000790ER
Operation Mode	:802.11a
Test Frequency	:5785 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site	:SAC 1
Test Date	:2023-04-21
Temp./Humi.	:23.6/62
Antenna Pol.	:Horizontal
Engineer	:WJ Lin



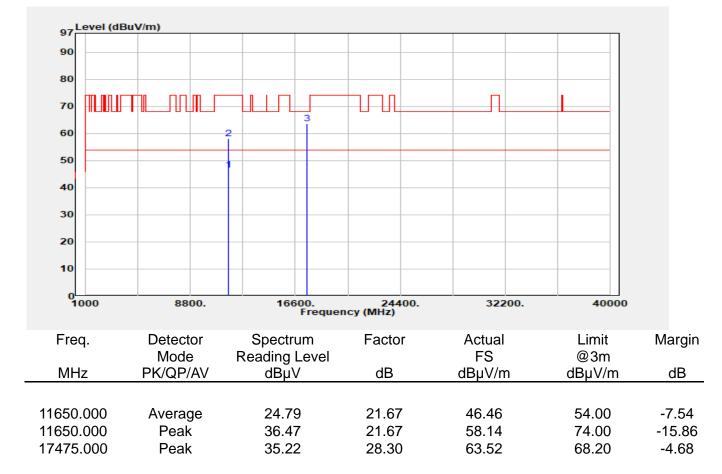
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Report Number	:TERF2303000790ER
Operation Mode	:802.11a
Test Frequency	:5825 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site :SAC 1 Test Date :2023-04-21 Temp./Humi. :23.6/62 Antenna Pol. :Vertical Engineer :WJ Lin



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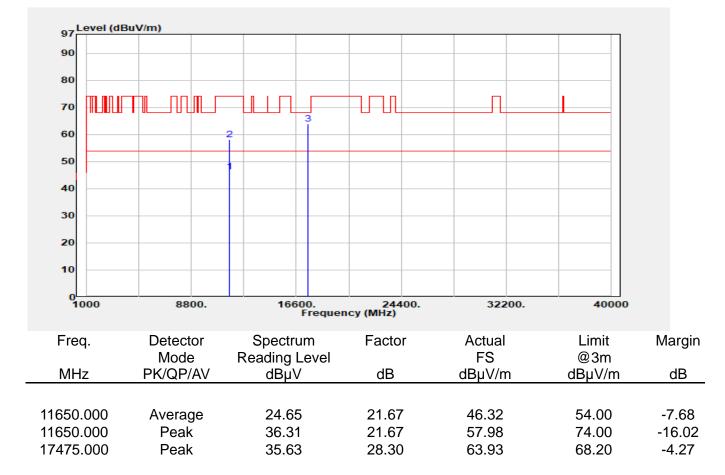
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Report Number	:TERF2303000790ER
Operation Mode	:802.11a
Test Frequency	:5825 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site :SAC 1 Test Date :2023-04-21 Temp./Humi. :23.6/62 Antenna Pol. :Horizontal Engineer :WJ Lin



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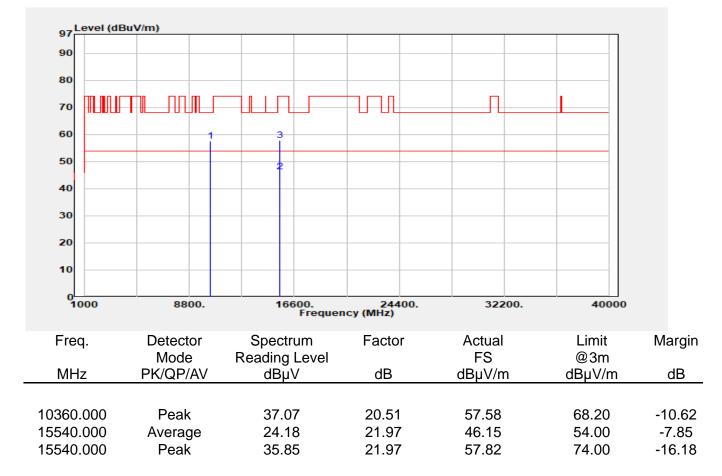
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Report Number	:TERF2303000790ER
Operation Mode	:802.11n20
Test Frequency	:5180 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site	:SAC 1
Test Date	:2023-04-21
Temp./Humi.	:23.6/62
Antenna Pol.	:Vertical
Engineer	:WJ Lin



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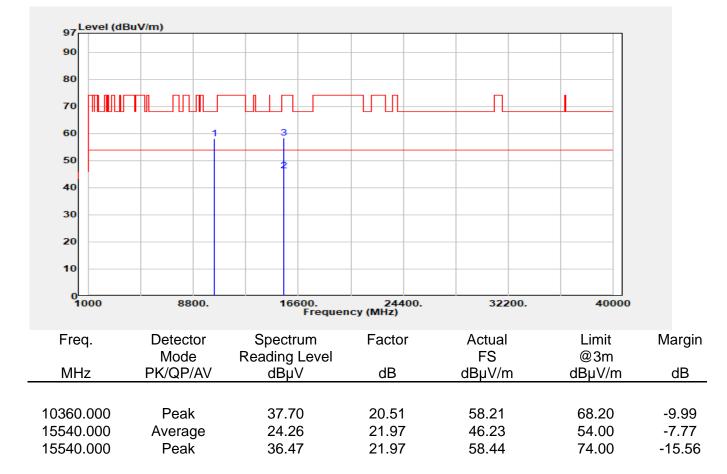
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Report Number	:TERF2303000790ER
Operation Mode	:802.11n20
Test Frequency	:5180 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site :SAC 1 Test Date :2023-04-21 Temp./Humi. :23.6/62 Antenna Pol. :Horizontal Engineer :WJ Lin



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Report Number	:TERF2303000790ER
Operation Mode	:802.11n20
Test Frequency	:5220 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site	:SAC 1
Test Date	:2023-04-21
Temp./Humi.	:23.6/62
Antenna Pol.	:Vertical
Engineer	:WJ Lin



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Report Number	:TERF2303000790ER
Operation Mode	:802.11n20
Test Frequency	:5220 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site	:SAC 1
Test Date	:2023-04-21
Temp./Humi.	:23.6/62
Antenna Pol.	:Horizontal
Engineer	:WJ Lin

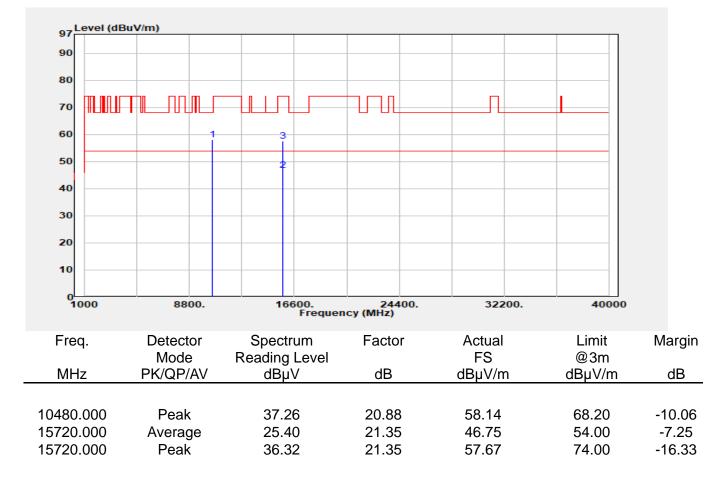


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Report Number	:TERF2303000790ER
Operation Mode	:802.11n20
Test Frequency	:5240 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site	:SAC 1
Test Date	:2023-04-21
Temp./Humi.	:23.6/62
Antenna Pol.	:Vertical
Engineer	:WJ Lin



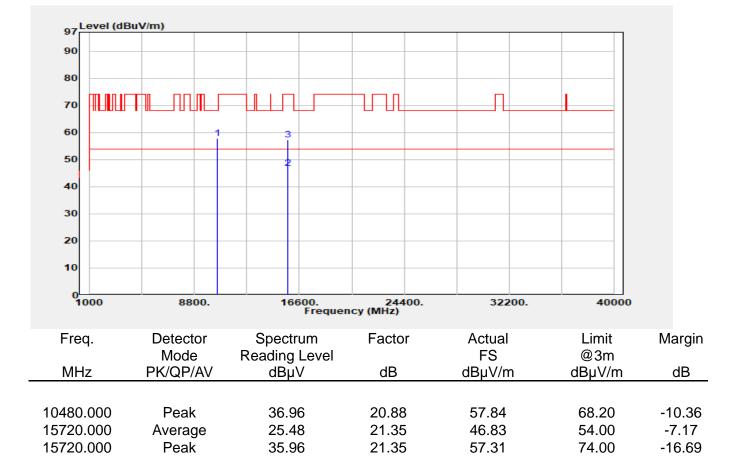
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Report Number	:TERF2303000790ER
Operation Mode	:802.11n20
Test Frequency	:5240 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site :SAC 1 Test Date :2023-04-21 Temp./Humi. :23.6/62 Antenna Pol. :Horizontal Engineer :WJ Lin



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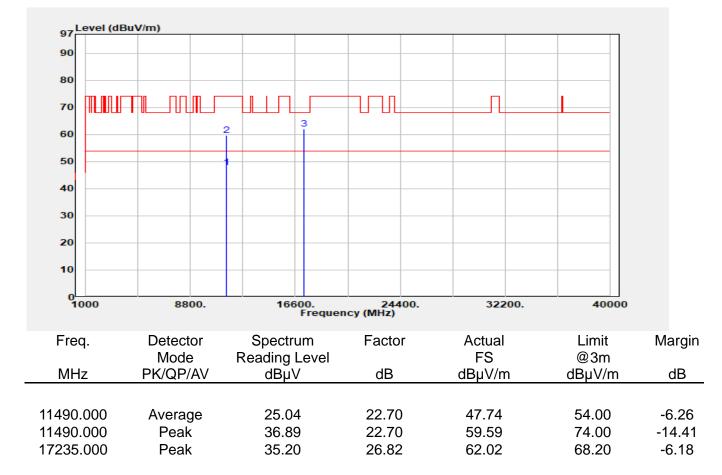
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Report Number	:TERF2303000790ER
Operation Mode	:802.11n20
Test Frequency	:5745 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site :SAC 1 Test Date :2023-04-21 Temp./Humi. :23.6/62 Antenna Pol. :Vertical Engineer :WJ Lin



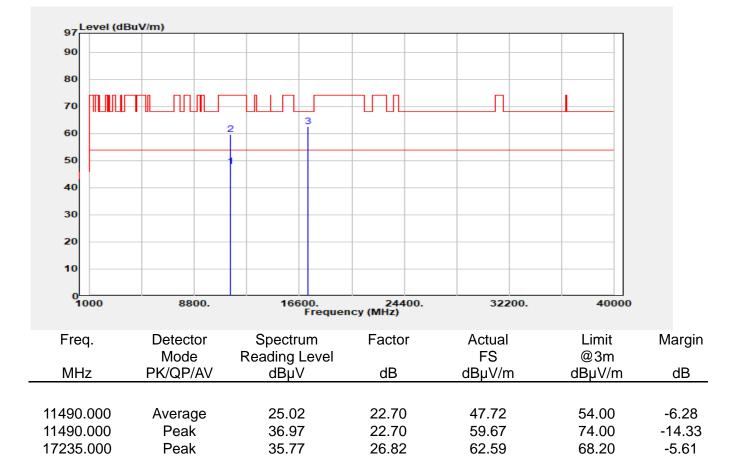
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Report Number	:TERF2303000790ER
Operation Mode	:802.11n20
Test Frequency	:5745 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site :SAC 1 Test Date :2023-04-21 Temp./Humi. :23.6/62 Antenna Pol. :Horizontal Engineer :WJ Lin



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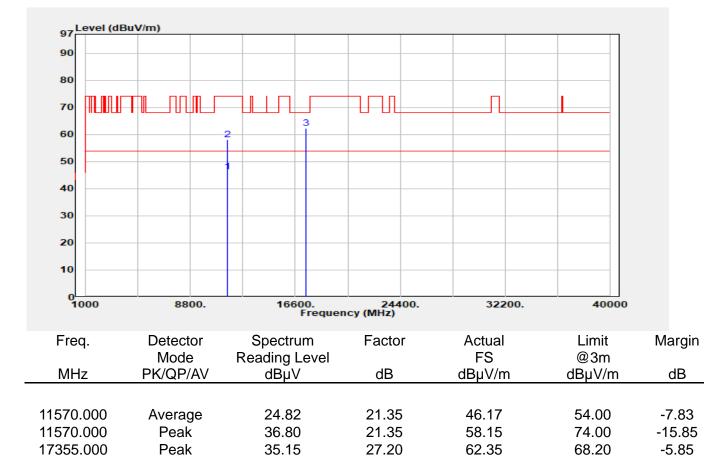
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Report Number	:TERF2303000790ER
Operation Mode	:802.11n20
Test Frequency	:5785 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site :SAC 1 Test Date :2023-04-21 Temp./Humi. :23.6/62 Antenna Pol. :Vertical Engineer :WJ Lin



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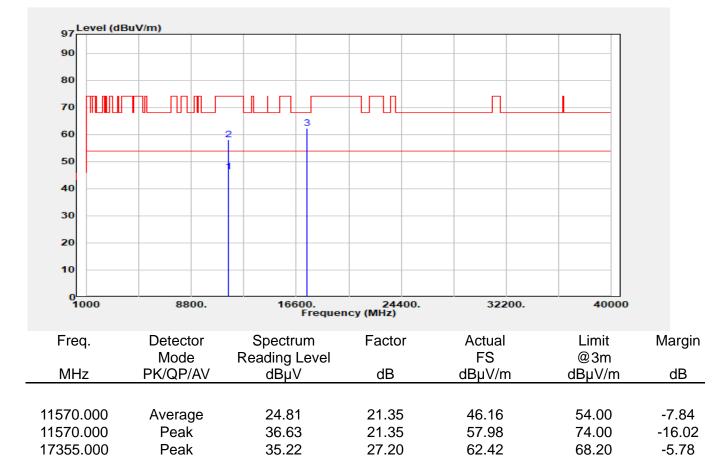
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Report Number	:TERF2303000790ER
Operation Mode	:802.11n20
Test Frequency	:5785 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site	:SAC 1
Test Date	:2023-04-21
Temp./Humi.	:23.6/62
Antenna Pol.	:Horizontal
Engineer	:WJ Lin



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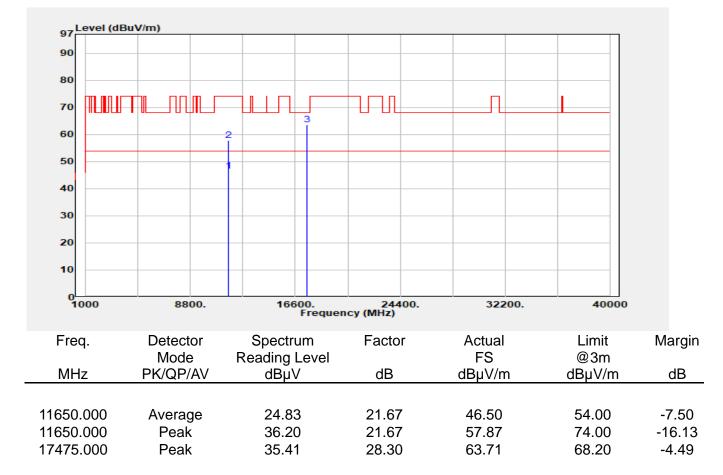
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Report Number	:TERF2303000790ER
Operation Mode	:802.11n20
Test Frequency	:5825 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site	:SAC 1
Test Date	:2023-04-21
Temp./Humi.	:23.6/62
Antenna Pol.	:Vertical
Engineer	:WJ Lin



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Report Number	:TERF2303000790ER
Operation Mode	:802.11n20
Test Frequency	:5825 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site :SAC 1 Test Date :2023-04-21 Temp./Humi. :23.6/62 Antenna Pol. :Horizontal Engineer :WJ Lin



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Report Number	:TERF2303000790ER
Operation Mode	:802.11n40
Test Frequency	:5190 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site	:SAC 1
Test Date	:2023-04-21
Temp./Humi.	:23.6/62
Antenna Pol.	:Vertical
Engineer	:WJ Lin



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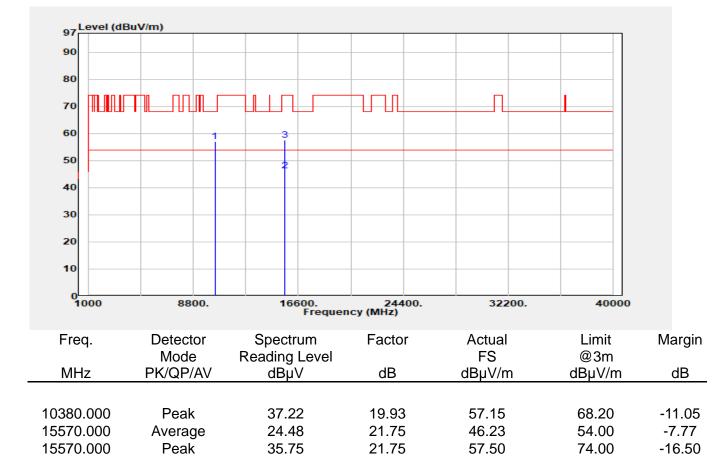
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Report Number	:TERF2303000790ER
Operation Mode	:802.11n40
Test Frequency	:5190 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site :SAC 1 Test Date :2023-04-21 Temp./Humi. :23.6/62 Antenna Pol. :Horizontal Engineer :WJ Lin



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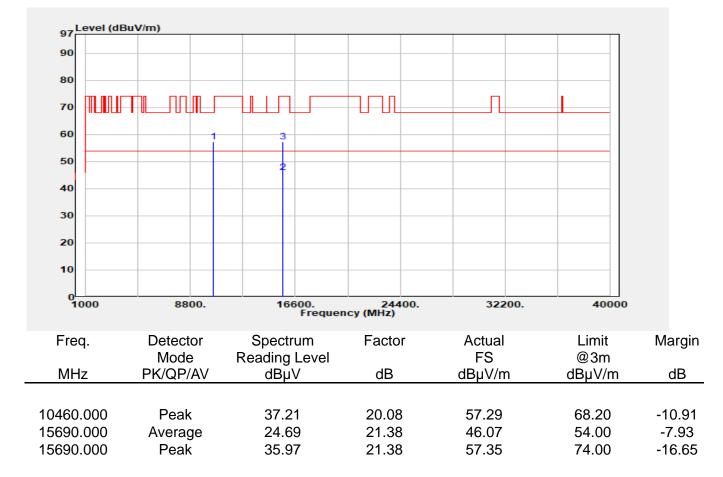
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Report Number	:TERF2303000790ER
Operation Mode	:802.11n40
Test Frequency	:5230 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site :SAC 1 Test Date :2023-04-21 Temp./Humi. :23.6/62 Antenna Pol. :Vertical Engineer :WJ Lin



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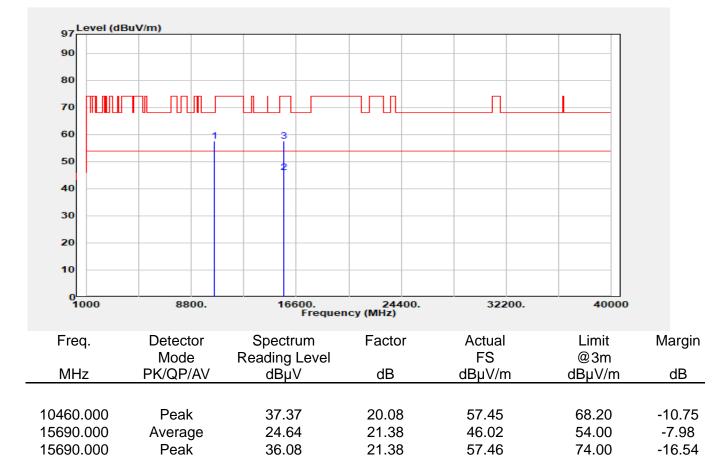
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Report Number	:TERF2303000790ER
Operation Mode	:802.11n40
Test Frequency	:5230 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site	:SAC 1
Test Date	:2023-04-21
Temp./Humi.	:23.6/62
Antenna Pol.	:Horizontal
Engineer	:WJ Lin



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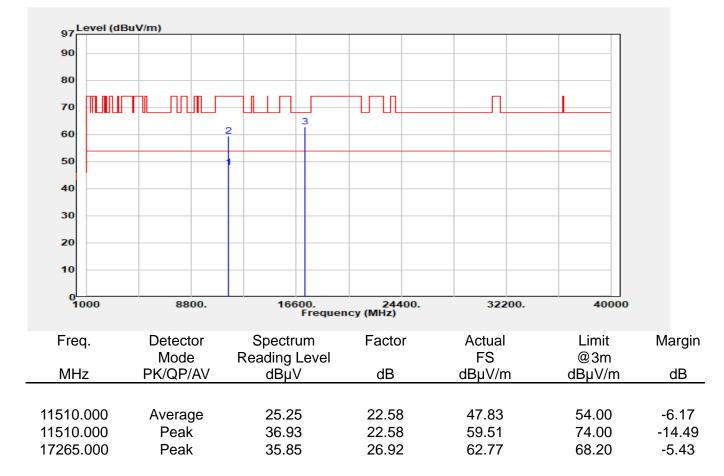
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Report Number	:TERF2303000790ER
Operation Mode	:802.11n40
Test Frequency	:5755 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site :SAC 1 Test Date :2023-04-21 Temp./Humi. :23.6/62 Antenna Pol. :Vertical Engineer :WJ Lin



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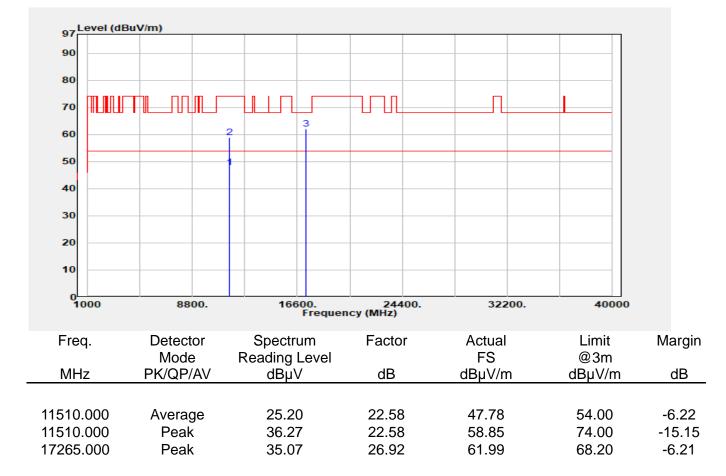
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f (886-2) 2298-0488



Report Number	:TERF2303000790ER
Operation Mode	:802.11n40
Test Frequency	:5755 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site :SAC 1 Test Date :2023-04-21 Temp./Humi. :23.6/62 Antenna Pol. :Horizontal Engineer :WJ Lin



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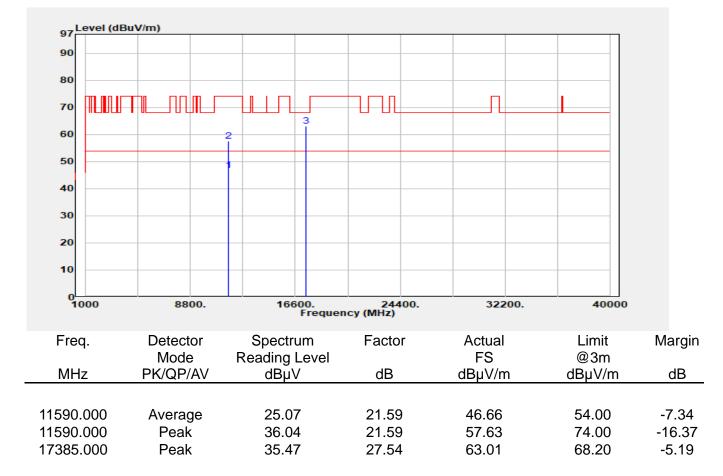
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Report Number	:TERF2303000790ER
Operation Mode	:802.11n40
Test Frequency	:5795 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site	:SAC 1
Test Date	:2023-04-21
Temp./Humi.	:23.6/62
Antenna Pol.	:Vertical
Engineer	:WJ Lin



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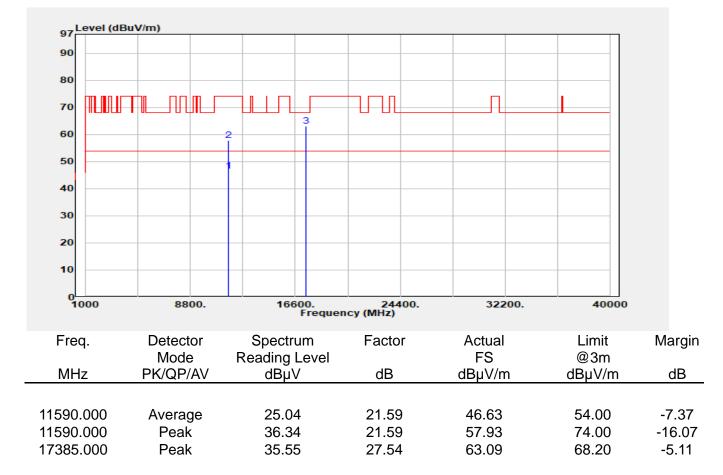
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Report Number	:TERF2303000790ER
Operation Mode	:802.11n40
Test Frequency	:5795 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site	:SAC 1
Test Date	:2023-04-21
Temp./Humi.	:23.6/62
Antenna Pol.	:Horizontal
Engineer	:WJ Lin



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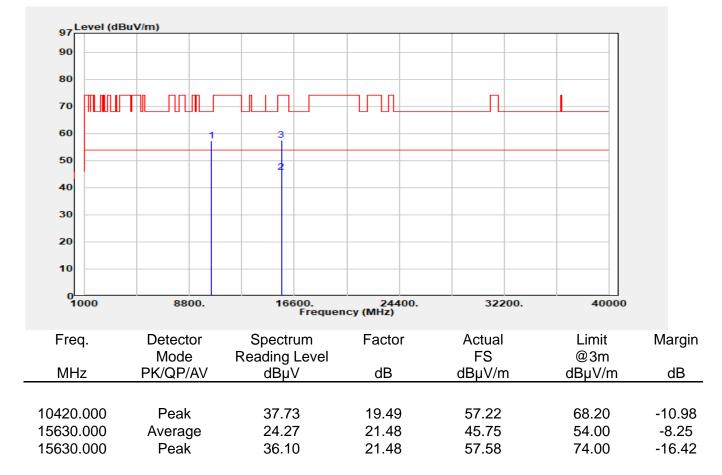
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Report Number	:TERF2303000790ER
Operation Mode	:802.11ac80
Test Frequency	:5210 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site	:SAC 1
Test Date	:2023-04-21
Temp./Humi.	:23.6/62
Antenna Pol.	:Vertical
Engineer	:WJ Lin



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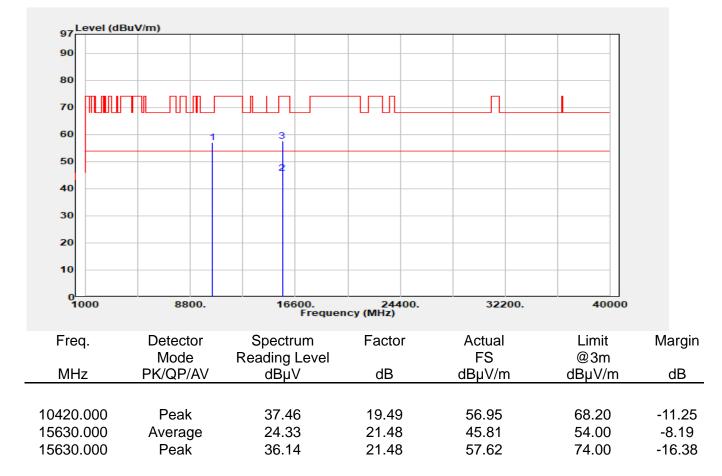
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Report Number	:TERF2303000790ER
Operation Mode	:802.11ac80
Test Frequency	:5210 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site :SAC 1 Test Date :2023-04-21 Temp./Humi. :23.6/62 Antenna Pol. :Horizontal Engineer :WJ Lin



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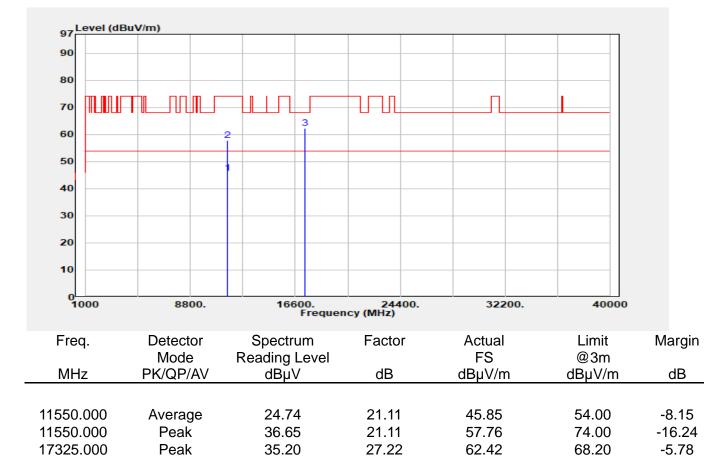
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Report Number	:TERF2303000790ER
Operation Mode	:802.11ac80
Test Frequency	:5775 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site :SAC 1 Test Date :2023-04-21 Temp./Humi. :23.6/62 Antenna Pol. :Vertical Engineer :WJ Lin



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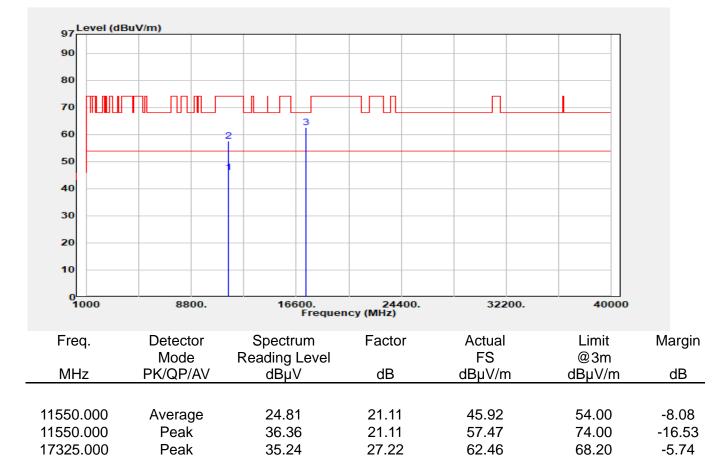
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Report Number	:TERF2303000790ER
Operation Mode	:802.11ac80
Test Frequency	:5775 MHz
Test Mode	:Tx
EUT Pol	:H Plane

Test Site	:SAC 1
Test Date	:2023-04-21
Temp./Humi.	:23.6/62
Antenna Pol.	:Horizontal
Engineer	:WJ Lin



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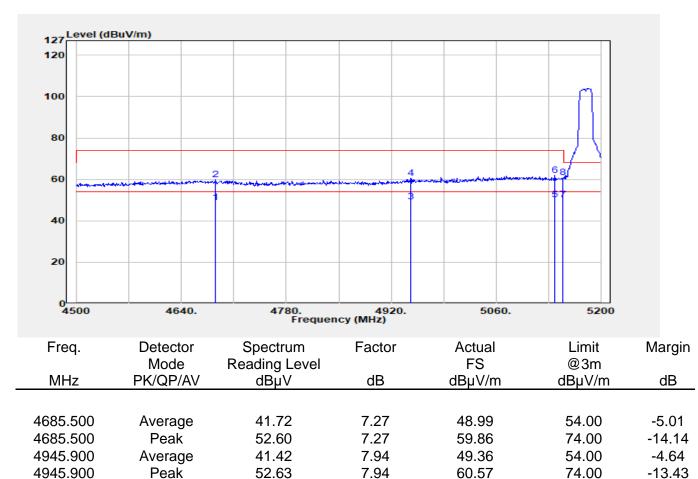
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Report No.: TERF2303000790ER Page: 89 of 114



Band edge falling to restricted band 11.6.2

(Bandedge)			
Report Number	:TERF2303000790ER	Test Site	:SAC 1
Operation Mode	:802.11a	Test Date	:2023-04-21
Test Frequency	:5180 MHz	Temp./Humi.	:23.6/62
Test Mode	:Bandedge	Antenna Pol.	:Vertical
EUT Pol	:H Plane	Engineer	:WJ Lin



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41.69

53.25

41.65

52.22

Average

Peak

Average

Peak

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8.72

8.72

8.61

8.61

50.41

61.97

50.26

60.82

54.00

74.00

54.00

74.00

-3.59

-12.03

-3.74

-13.18

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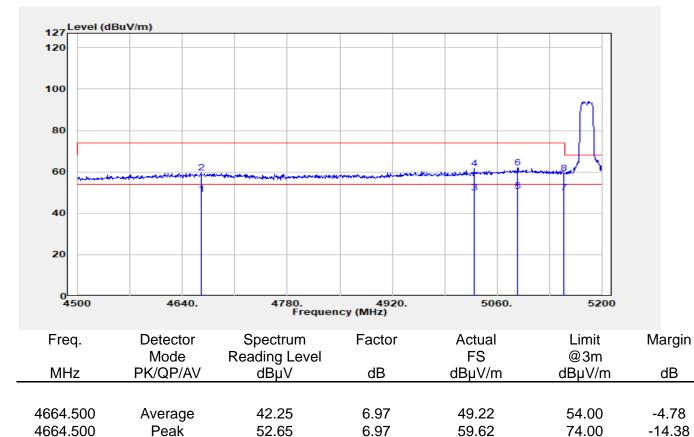
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Report Number	:TERF2303000790ER		
Operation Mode	:802.11a		
Test Frequency	:5180 MHz		
Test Mode	:Bandedge		
EUT Pol	:H Plane		

Test Site :SAC 1 :2023-04-21 Test Date Temp./Humi. :23.6/62 Antenna Pol. :Horizontal Engineer :WJ Lin



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41.77

53.60

41.77

53.08

41.38

50.51

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Average

Peak

Average

Peak

Average

Peak

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5029.200

5029.200

5088.000

5088.000

5150.000

5150.000

f (886-2) 2298-0488

8.08

8.08

8.92

8.92

8.61

8.61

49.85

61.69

50.69

62.00

49.99

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54.00

74.00

-4.15

-12.31

-3.31

-12.00

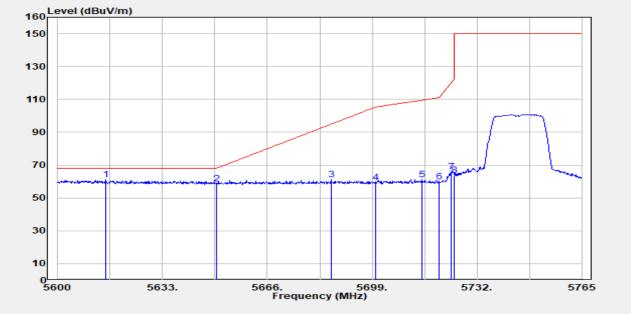
-4.01

-14.88



Report Number	:TERF2303000790ER		
Operation Mode	:802.11a		
Test Frequency	:5745 MHz		
Test Mode	:Bandedge		
EUT Pol	:H Plane		

Test Site :SAC 1 Test Date :2023-04-21 Temp./Humi. :23.6/62 Antenna Pol. :Vertical Engineer :WJ Lin



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5615.015	Peak	52.18	9.00	61.18	68.20	-7.02
5650.000	Peak	49.97	8.49	58.45	68.20	-9.75
5686.130	Peak	52.01	8.98	61.00	94.94	-33.94
5700.000	Peak	50.18	9.17	59.35	105.20	-45.85
5714.675	Peak	52.00	9.24	61.23	109.31	-48.07
5720.000	Peak	50.51	9.26	59.76	110.80	-51.04
5723.750	Peak	56.60	9.27	65.88	119.35	-53.47
5725.000	Peak	54.64	9.28	63.92	122.20	-58.28

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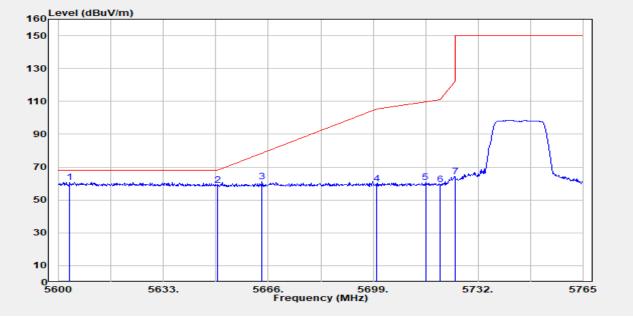
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Report Number	:TERF2303000790ER			
Operation Mode	:802.11a			
Test Frequency	:5745 MHz			
Test Mode	:Bandedge			
EUT Pol	:H Plane			

Test Site	:SAC 1
Test Date	:2023-04-21
Temp./Humi.	:23.6/62
Antenna Pol.	:Horizontal
Engineer	:WJ Lin



Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
Peak	51.71	9.17	60.89	68.20	-7.31
Peak	50.68	8.49	59.17	68.20	-9.03
Peak	52.45	8.68	61.13	78.57	-17.45
Peak	50.61	9.17	59.78	105.20	-45.42
Peak	51.66	9.24	60.90	109.54	-48.64
Peak	50.29	9.26	59.54	110.80	-51.26
Peak	54.79	9.28	64.06	122.20	-58.14
	Mode PK/QP/AV Peak Peak Peak Peak Peak Peak	Mode PK/QP/AVReading Level dBµVPeak51.71Peak50.68Peak52.45Peak50.61Peak51.66Peak50.29	Mode PK/QP/AVReading Level dBµVdBPeak51.719.17Peak50.688.49Peak52.458.68Peak50.619.17Peak51.669.24Peak50.299.26	Mode PK/QP/AV Reading Level dBμV FS dBμV/m Peak 51.71 9.17 60.89 Peak 50.68 8.49 59.17 Peak 52.45 8.68 61.13 Peak 50.61 9.17 59.78 Peak 51.66 9.24 60.90 Peak 50.29 9.26 59.54	Mode PK/QP/AVReading Level dBµVFS dB@3m dBµV/mPeak51.719.1760.8968.20Peak50.688.4959.1768.20Peak52.458.6861.1378.57Peak50.619.1759.78105.20Peak51.669.2460.90109.54Peak50.299.2659.54110.80

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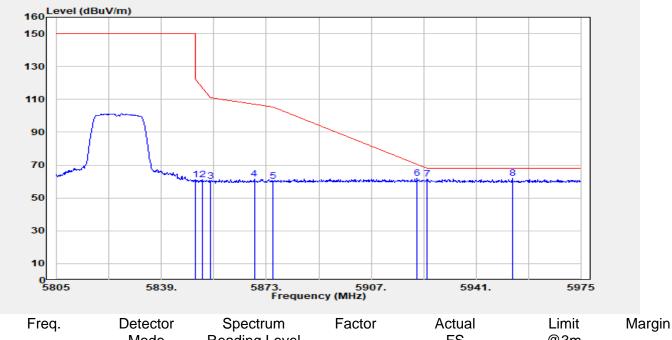
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f (886-2) 2298-0488



Report Number	:TERF2303000790ER		
Operation Mode	:802.11a		
Test Frequency	:5825 MHz		
Test Mode	:Bandedge		
EUT Pol	:H Plane		

Test Site :SAC 1 Test Date :2023-04-21 Temp./Humi. :23.6/62 Antenna Pol. :Vertical Engineer :WJ Lin



		Iviode	Reading Level		F5	@3m	
	MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
-							
	5850.000	Peak	51.14	9.88	61.02	122.20	-61.18
	5852.260	Peak	51.16	9.89	61.05	117.05	-56.00
	5855.000	Peak	50.35	9.91	60.26	110.80	-50.54
	5869.090	Peak	51.60	10.01	61.61	106.85	-45.24
	5875.000	Peak	50.40	10.05	60.45	105.20	-44.75
	5921.960	Peak	51.72	10.12	61.84	70.45	-8.61
	5925.000	Peak	51.38	10.11	61.49	68.20	-6.71
	5952.900	Peak	51.88	10.01	61.89	68.20	-6.31

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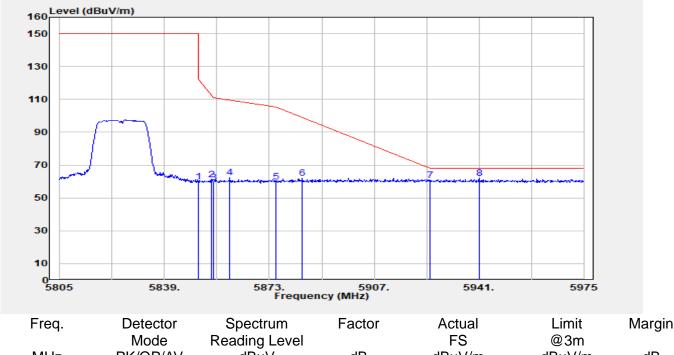
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Report Number	:TERF2303000790ER
Operation Mode	:802.11a
Test Frequency	:5825 MHz
Test Mode	:Bandedge
EUT Pol	:H Plane

Test Site :SAC 1 Test Date :2023-04-21 Temp./Humi. :23.6/62 Antenna Pol. :Horizontal Engineer :WJ Lin



MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5850.000	Peak	50.08	9.88	59.96	122.20	-62.24
5854.130	Peak	51.18	9.91	61.09	112.78	-51.70
5855.000	Peak	49.32	9.91	59.24	110.80	-51.56
5860.250	Peak	52.63	9.95	62.58	109.33	-46.75
5875.000	Peak	49.71	10.05	59.75	105.20	-45.45
5883.710	Peak	51.72	10.11	61.83	98.75	-36.92
5925.000	Peak	50.69	10.11	60.80	68.20	-7.40
5941.000	Peak	51.80	10.04	61.84	68.20	-6.36

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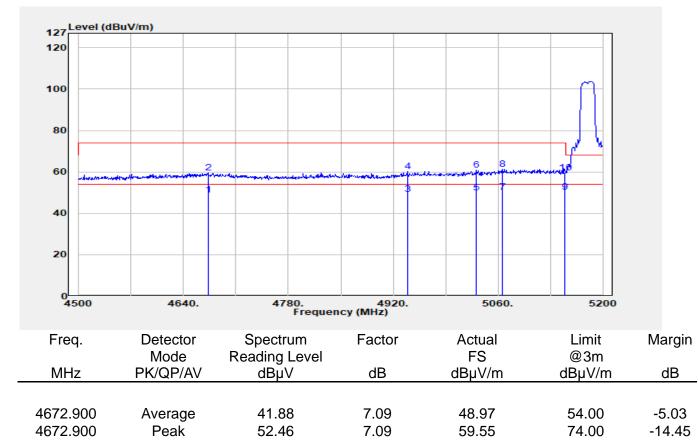
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f (886-2) 2298-0488



Report Number	:TERF2303000790ER
Operation Mode	:802.11n20
Test Frequency	:5180 MHz
Test Mode	:Bandedge
EUT Pol	:H Plane

Test Site	:SAC 1
Test Date	:2023-04-21
Temp./Humi.	:23.6/62
Antenna Pol.	:Vertical
Engineer	:WJ Lin



7.81

7.81

8.12

8.12

8.61

8.61

8.61

8.61

49.10

60.34

49.85

60.77

50.30

61.16

50.23

59.58

54.00

74.00

54.00

74.00

54.00

74.00

54.00

74.00

-4.90

-13.66

-4.15

-13.23

-3.70

-12.84

-3.77

-14.42

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.

41.29

52.53

41.73

52.65

41.69

52.54

41.62

50.98

Average

Peak

Average

Peak

Average

Peak

Average

Peak

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4938.900

4938.900

5031.300

5031.300

5065.600

5065.600

5150.000

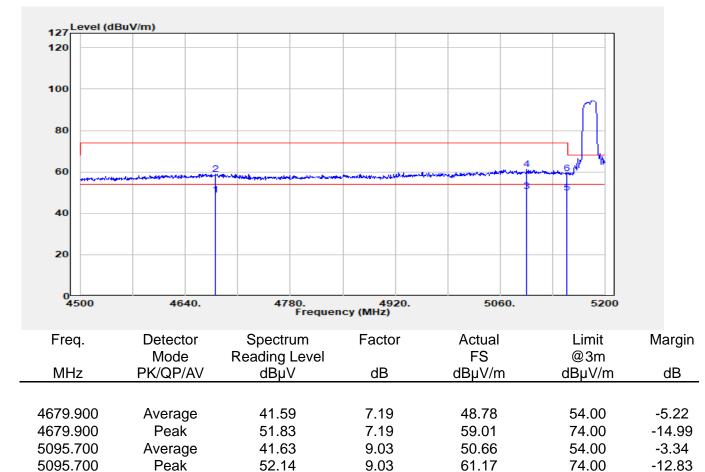
5150.000

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Report Number	:TERF2303000790ER
Operation Mode	:802.11n20
Test Frequency	:5180 MHz
Test Mode	:Bandedge
EUT Pol	:H Plane

Test Site	:SAC 1
Test Date	:2023-04-21
Temp./Humi.	:23.6/62
Antenna Pol.	:Horizontal
Engineer	:WJ Lin



41.46

50.61

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Average

Peak

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8.61

8.61

50.07

59.22

54.00

74.00

-3.93

-14.78

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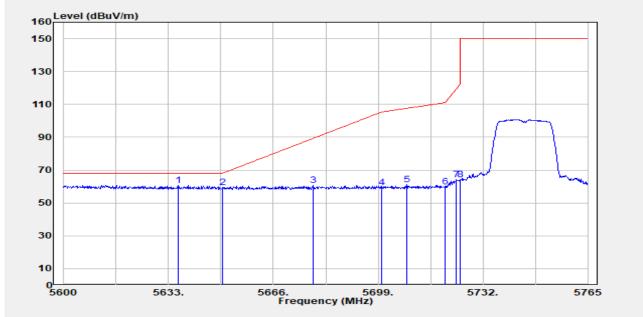
5150.000

5150.000



Report Number	:TERF2303000790ER
Operation Mode	:802.11n20
Test Frequency	:5745 MHz
Test Mode	:Bandedge
EUT Pol	:H Plane

Test Site	:SAC 1
Test Date	:2023-04-21
Temp./Humi.	:23.6/62
Antenna Pol.	:Vertical
Engineer	:WJ Lin



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5635.970	Peak	52.15	8.69	60.84	68.20	-7.36
5650.000	Peak	50.95	8.49	59.43	68.20	-8.77
5678.540	Peak	52.01	8.88	60.89	89.32	-28.43
5700.000	Peak	50.14	9.17	59.31	105.20	-45.89
5707.910	Peak	51.74	9.21	60.95	107.41	-46.46
5720.000	Peak	50.78	9.26	60.04	110.80	-50.76
5723.585	Peak	54.85	9.27	64.12	118.97	-54.85
5725.000	Peak	54.77	9.28	64.05	122.20	-58.15

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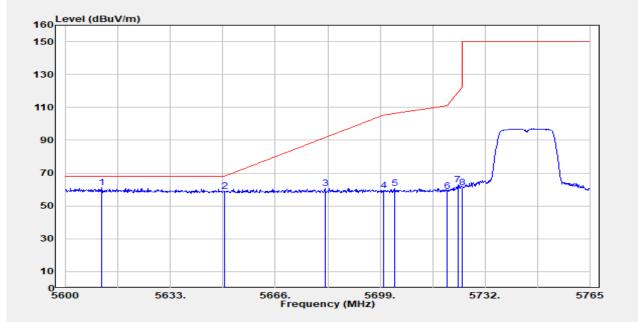
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Report Number	:TERF2303000790ER
Operation Mode	:802.11n20
Test Frequency	:5745 MHz
Test Mode	:Bandedge
EUT Pol	:H Plane

Test Site	:SAC 1
Test Date	:2023-04-21
Temp./Humi.	:23.6/62
Antenna Pol.	:Horizontal
Engineer	:WJ Lin



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5611.385	Peak	51.88	9.06	60.93	68.20	-7.27
5650.000	Peak	50.31	8.49	58.80	68.20	-9.40
5681.675	Peak	51.79	8.92	60.71	91.64	-30.93
5700.000	Peak	50.26	9.17	59.43	105.20	-45.77
5703.455	Peak	51.62	9.19	60.81	106.17	-45.36
5720.000	Peak	49.51	9.26	58.76	110.80	-52.04
5723.420	Peak	53.62	9.27	62.90	118.60	-55.70
5725.000	Peak	52.05	9.28	61.33	122.20	-60.87

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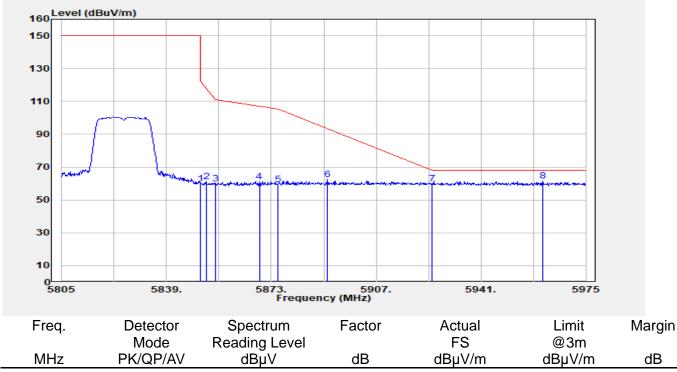
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Report Number	:TERF2303000790ER
Operation Mode	:802.11n20
Test Frequency	:5825 MHz
Test Mode	:Bandedge
EUT Pol	:H Plane

Test Site :SAC 1 Test Date :2023-04-21 Temp./Humi. :23.6/62 Antenna Pol. :Vertical Engineer :WJ Lin



5850.000	Peak	49.76	9.88	59.64	122.20	-62.56
5851.920	Peak	51.30	9.89	61.20	117.82	-56.63
5855.000	Peak	50.03	9.91	59.94	110.80	-50.86
5869.090	Peak	51.28	10.01	61.28	106.85	-45.57
5875.000	Peak	49.57	10.05	59.62	105.20	-45.58
5891.190	Peak	52.27	10.16	62.43	93.22	-30.79
5925.000	Peak	49.52	10.11	59.63	68.20	-8.57
5961.230	Peak	51.69	10.04	61.73	68.20	-6.47

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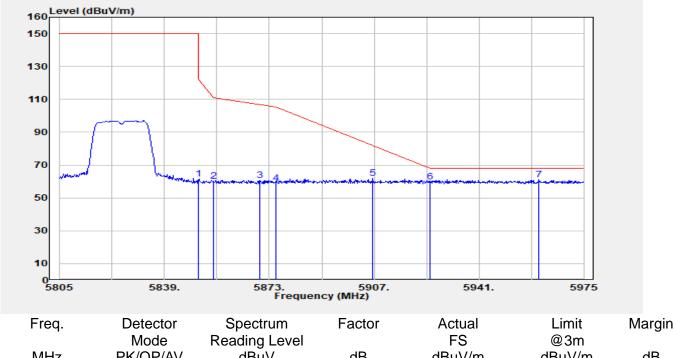
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Report Number	:TERF2303000790ER
Operation Mode	:802.11n20
Test Frequency	:5825 MHz
Test Mode	:Bandedge
EUT Pol	:H Plane

Test Site :SAC 1 Test Date :2023-04-21 Temp./Humi. :23.6/62 Antenna Pol. :Horizontal Engineer :WJ Lin



INIHZ	PK/QP/AV	αΒμν	aв	aBhr/w	abhr/w	aв
5850.000	Peak	51.51	9.88	61.39	122.20	-60.81
5855.000	Peak	50.17	9.91	60.09	110.80	-50.71
5869.940	Peak	50.90	10.01	60.92	106.62	-45.70
5875.000	Peak	48.88	10.05	58.93	105.20	-46.27
5906.660	Peak	51.97	10.19	62.16	81.77	-19.62
5925.000	Peak	49.70	10.11	59.81	68.20	-8.39
5960.550	Peak	51.30	10.04	61.33	68.20	-6.87

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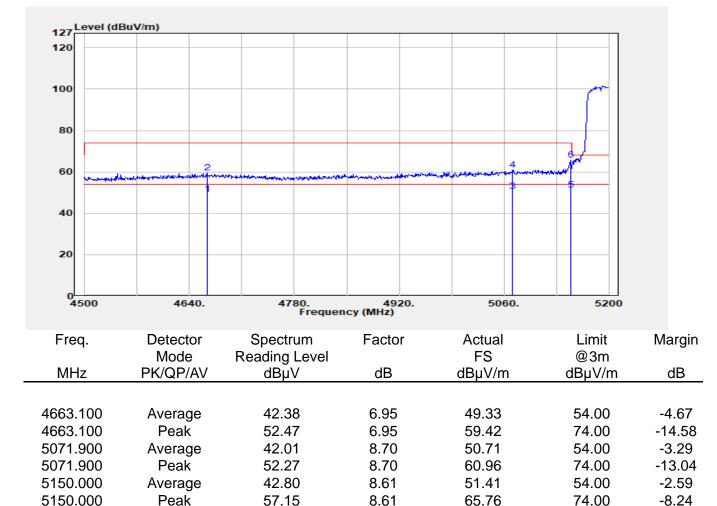
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Report Number	:TERF2303000790ER
Operation Mode	:802.11n40
Test Frequency	:5190 MHz
Test Mode	:Bandedge
EUT Pol	:H Plane

Test Site :SAC 1 :2023-04-21 Test Date Temp./Humi. :23.6/62 Antenna Pol. :Vertical Engineer :WJ Lin



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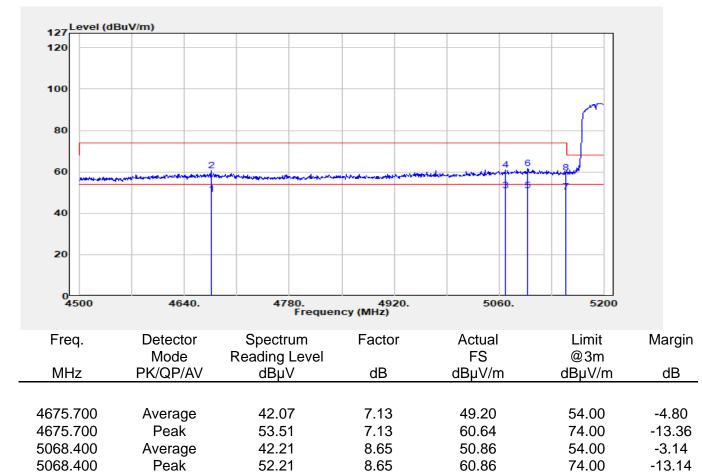
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Report Number	:TERF2303000790ER
Operation Mode	:802.11n40
Test Frequency	:5190 MHz
Test Mode	:Bandedge
EUT Pol	:H Plane

Test Site	:SAC 1
Test Date	:2023-04-21
Temp./Humi.	:23.6/62
Antenna Pol.	:Horizontal
Engineer	:WJ Lin



Average

Peak

Average

Peak

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9.07

9.07

8.61

8.61

51.06

61.62

50.38

59.48

54.00

74.00

54.00

74.00

-2.94

-12.38

-3.62

-14.52

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5098.500

5098.500

5150.000

5150.000

41.99

52.55

41.77

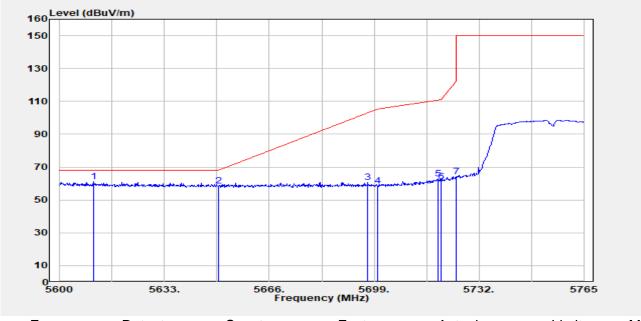
50.87

f (886-2) 2298-0488



Report Number	:TERF2303000790ER
Operation Mode	:802.11n40
Test Frequency	:5755 MHz
Test Mode	:Bandedge
EUT Pol	:H Plane

Test Site	:SAC 1
Test Date	:2023-04-21
Temp./Humi.	:23.6/62
Antenna Pol.	:Vertical
Engineer	:WJ Lin



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5610.725	Peak	52.05	9.07	61.12	68.20	-7.08
5650.000	Peak	50.13	8.49	58.61	68.20	-9.59
5697.020	Peak	51.72	9.13	60.86	102.99	-42.14
5700.000	Peak	49.49	9.17	58.66	105.20	-46.54
5719.130	Peak	53.80	9.25	63.05	110.56	-47.50
5720.000	Peak	52.08	9.26	61.34	110.80	-49.46
5725.000	Peak	54.90	9.28	64.17	122.20	-58.03

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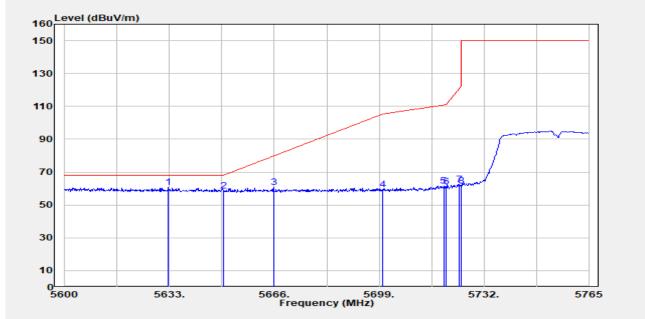
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Report Number	:TERF2303000790ER
Operation Mode	:802.11n40
Test Frequency	:5755 MHz
Test Mode	:Bandedge
EUT Pol	:H Plane

Test Site	:SAC 1
Test Date	:2023-04-21
Temp./Humi.	:23.6/62
Antenna Pol.	:Horizontal
Engineer	:WJ Lin



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5632.670	Peak	51.79	8.74	60.54	68.20	-7.66
5650.000	Peak	50.22	8.49	58.70	68.20	-9.50
5665.835	Peak	51.99	8.70	60.70	79.92	-19.22
5700.000	Peak	50.37	9.17	59.54	105.20	-45.66
5719.295	Peak	52.30	9.25	61.55	110.60	-49.05
5720.000	Peak	51.70	9.26	60.96	110.80	-49.84
5724.080	Peak	53.25	9.27	62.52	120.10	-57.58
5725.000	Peak	52.12	9.28	61.40	122.20	-60.80

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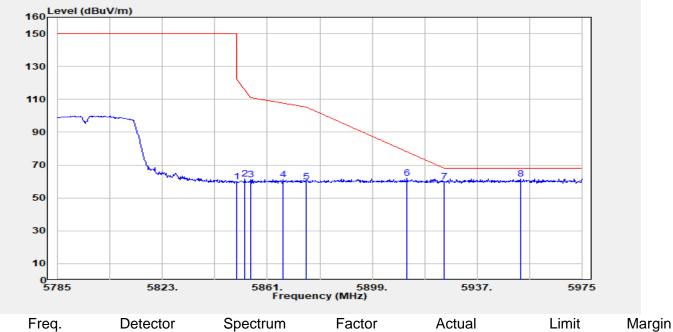
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Report Number	:TERF2303000790ER
Operation Mode	:802.11n40
Test Frequency	:5795 MHz
Test Mode	:Bandedge
EUT Pol	:H Plane

Test Site :SAC 1 Test Date :2023-04-21 Temp./Humi. :23.6/62 Antenna Pol. :Vertical Engineer :WJ Lin



MHz	Mode PK/QP/AV	Reading Level dBµV	dB	FS dBµV/m	@3m dBµV/m	dB
5850.000 5852.830 5855.000 5866.700 5875.000 5911.730 5925.000	Peak Peak Peak Peak Peak Peak Peak Peak	50.05 51.71 51.26 51.07 49.58 51.79 49.61	9.88 9.90 9.91 9.99 10.05 10.17 10.11	59.93 61.61 61.18 61.06 59.63 61.95 59.72	122.20 115.75 110.80 107.52 105.20 78.02 68.20	-62.27 -54.14 -49.62 -46.47 -45.57 -16.07 -8.48
5952.770	Peak	51.57	10.01	61.58	68.20	-6.62

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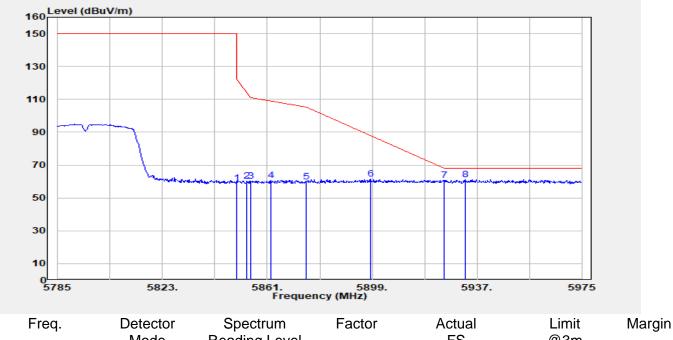
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Report Number	:TERF2303000790ER
Operation Mode	:802.11n40
Test Frequency	:5795 MHz
Test Mode	:Bandedge
EUT Pol	:H Plane

Test Site :SAC 1 :2023-04-21 Test Date Temp./Humi. :23.6/62 Antenna Pol. :Horizontal Engineer :WJ Lin



	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5850.000	Peak	49.26	9.88	59.14	122.20	-63.06
5853.590	Peak	50.48	9.90	60.38	114.02	-53.63
5855.000	Peak	50.20	9.91	60.12	110.80	-50.68
5862.330	Peak	50.95	9.96	60.91	108.75	-47.84
5875.000	Peak	49.79	10.05	59.84	105.20	-45.36
5898.620	Peak	51.32	10.21	61.52	87.72	-26.20
5925.000	Peak	50.74	10.11	60.84	68.20	-7.36
5932.630	Peak	51.17	10.08	61.25	68.20	-6.95

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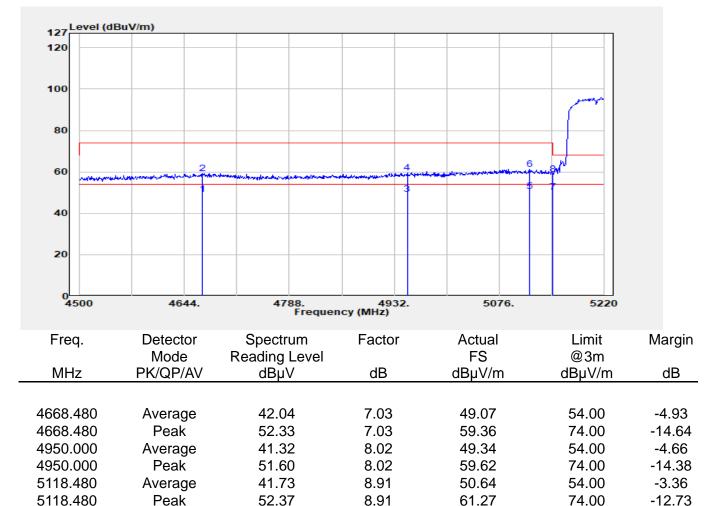
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Report Number	:TERF2303000790ER
Operation Mode	:802.11ac80
Test Frequency	:5210 MHz
Test Mode	:Bandedge
EUT Pol	:H Plane

Test Site :SAC 1 :2023-04-21 Test Date Temp./Humi. :23.6/62 Antenna Pol. :Vertical Engineer :WJ Lin



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41.50

50.41

Average

Peak

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8.61

8.61

50.11

59.01

54.00

74.00

-3.89

-14.99

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5150.000

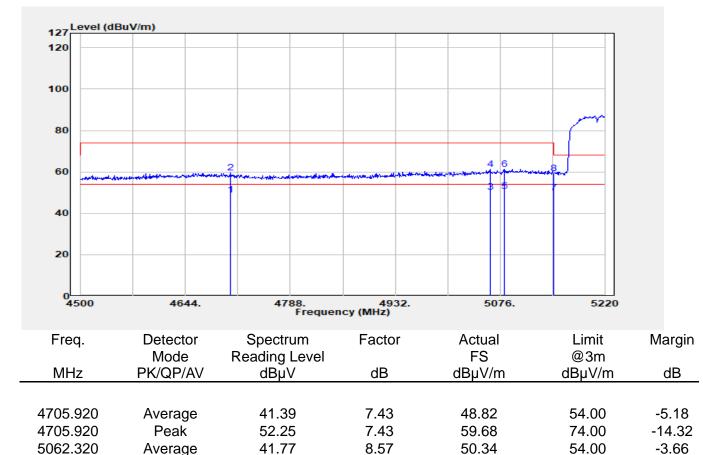
5150.000

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Report Number	:TERF2303000790ER
Operation Mode	:802.11ac80
Test Frequency	:5210 MHz
Test Mode	:Bandedge
EUT Pol	:H Plane

Test Site	:SAC 1
Test Date	:2023-04-21
Temp./Humi.	:23.6/62
Antenna Pol.	:Horizontal
Engineer	:WJ Lin



52.72

41.77

52.53

41.33

50.43

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Peak

Average

Peak

Average

Peak

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8.57

8.84

8.84

8.61

8.61

61.28

50.61

61.36

49.94

59.03

74.00

54.00

74.00

54.00

74.00

-12.72

-3.39

-12.64

-4.06

-14.97

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan/新北市五股區新北產業園區五工路 134 號

5062.320

5081.760

5081.760

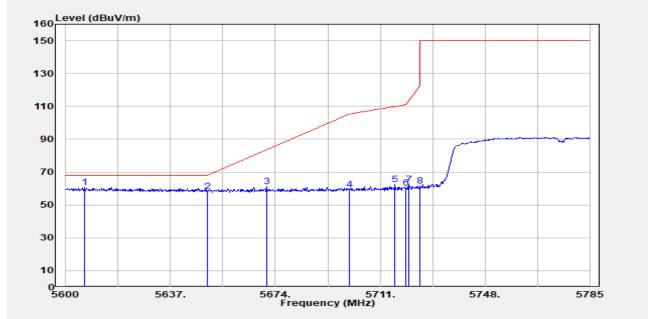
5150.000

5150.000



Report Number	:TERF2303000790ER
Operation Mode	:802.11ac80
Test Frequency	:5775 MHz
Test Mode	:Bandedge
EUT Pol	:H Plane

Test Site	:SAC 1
Test Date	:2023-04-21
Temp./Humi.	:23.6/62
Antenna Pol.	:Vertical
Engineer	:WJ Lin



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode PK/QP/AV	Reading Level dBµV	dB	FS dBµV/m	@3m dBµV/m	dB
5606.660	Peak	51.56	9.13	60.69	68.20	-7.51
5650.000	Peak	49.80	8.49	58.28	68.20	-9.92
5670.855	Peak	52.17	8.77	60.94	83.63	-22.69
5700.000	Peak	50.32	9.17	59.49	105.20	-45.71
5716.180	Peak	53.23	9.24	62.47	109.73	-47.26
5720.000	Peak	51.10	9.26	60.36	110.80	-50.44
5721.175	Peak	52.98	9.26	62.25	113.48	-51.23
5725.000	Peak	52.31	9.28	61.59	122.20	-60.61

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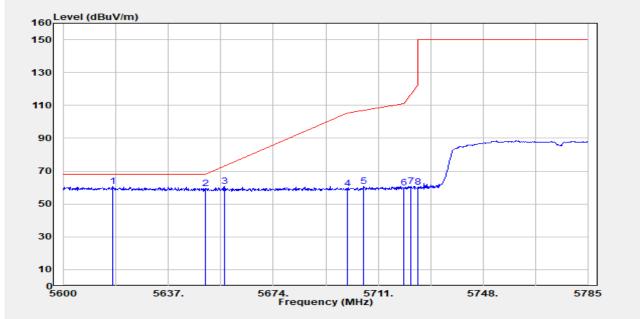
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Report Number	:TERF2303000790ER
Operation Mode	:802.11ac80
Test Frequency	:5775 MHz
Test Mode	:Bandedge
EUT Pol	:H Plane

Test Site	:SAC 1
Test Date	:2023-04-21
Temp./Humi.	:23.6/62
Antenna Pol.	:Horizontal
Engineer	:WJ Lin



Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
Peak	51.69	8.97	60.66	68.20	-7.54
Peak	50.95	8.49	59.44	68.20	-8.76
Peak	51.95	8.58	60.53	73.23	-12.70
Peak	50.09	9.17	59.26	105.20	-45.94
Peak	51.36	9.20	60.56	106.88	-46.32
Peak	50.68	9.26	59.94	110.80	-50.86
Peak	51.42	9.27	60.69	116.85	-56.16
Peak	51.15	9.28	60.43	122.20	-61.77
	Mode PK/QP/AV Peak Peak Peak Peak Peak Peak Peak Peak	Mode PK/QP/AVReading Level dBµVPeak51.69Peak50.95Peak51.95Peak50.09Peak51.36Peak50.68Peak51.42	Mode PK/QP/AV Reading Level dBμV dB Peak 51.69 8.97 Peak 50.95 8.49 Peak 51.95 8.58 Peak 51.36 9.20 Peak 50.68 9.26 Peak 51.42 9.27	Mode PK/QP/AV Reading Level dBμV FS dBμV/m Peak 51.69 8.97 60.66 Peak 50.95 8.49 59.44 Peak 51.95 8.58 60.53 Peak 50.09 9.17 59.26 Peak 51.36 9.20 60.56 Peak 51.42 9.27 60.69	Mode PK/QP/AVReading Level dBµVFS dB@3m dBµV/mPeak51.698.9760.6668.20Peak50.958.4959.4468.20Peak51.958.5860.5373.23Peak51.958.5860.5373.23Peak50.099.1759.26105.20Peak51.369.2060.56106.88Peak51.689.2659.94110.80Peak51.429.2760.69116.85

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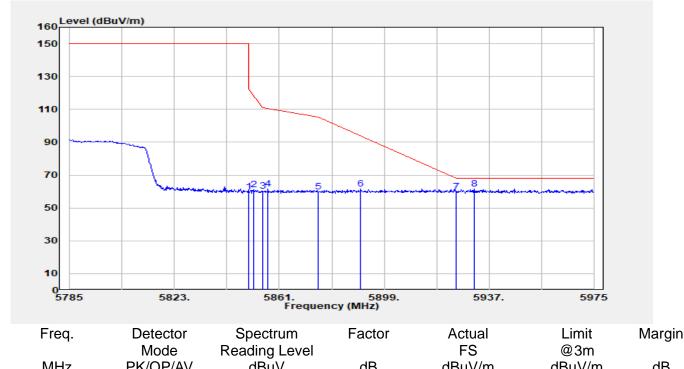
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Report Number	:TERF2303000790ER
Operation Mode	:802.11ac80
Test Frequency	:5775 MHz
Test Mode	:Bandedge
EUT Pol	:H Plane

Test Site :SAC 1 :2023-04-21 Test Date Temp./Humi. :23.6/62 Antenna Pol. :Vertical Engineer :WJ Lin



IVIHZ	PK/QP/AV	авµл	aв	αθμν/m	abh nu	aв
5850.000	Peak	49.90	9.88	59.78	122.20	-62.42
5851.690	Peak	51.07	9.89	60.96	118.35	-57.39
5855.000	Peak	50.20	9.91	60.11	110.80	-50.69
5856.820	Peak	51.49	9.93	61.42	110.29	-48.87
5875.000	Peak	49.76	10.05	59.80	105.20	-45.40
5890.450	Peak	51.53	10.15	61.68	93.77	-32.08
5925.000	Peak	49.93	10.11	60.04	68.20	-8.16
5931.680	Peak	51.47	10.08	61.55	68.20	-6.65

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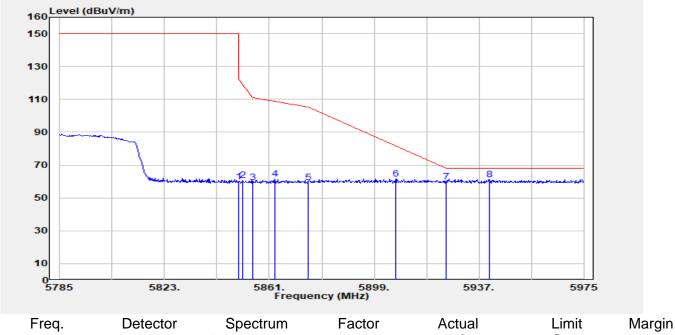
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Report Number	:TERF2303000790ER			
Operation Mode	:802.11ac80			
Test Frequency	:5775 MHz			
Test Mode	:Bandedge			
EUT Pol	:H Plane			

Test Site :SAC 1 Test Date :2023-04-21 Temp./Humi. :23.6/62 Antenna Pol. :Horizontal Engineer :WJ Lin



	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5850.000	Peak	49.99	9.88	59.87	122.20	-62.33
5851.500	Peak	50.70	9.89	60.59	118.78	-58.19
5855.000	Peak	49.50	9.91	59.41	110.80	-51.39
5863.090	Peak	51.67	9.97	61.64	108.53	-46.90
5875.000	Peak	49.43	10.05	59.48	105.20	-45.72
5906.980	Peak	51.57	10.19	61.76	81.53	-19.78
5925.000	Peak	49.63	10.11	59.74	68.20	-8.46
5940.990	Peak	51.27	10.04	61.31	68.20	-6.89

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12 TRANSMISSION IN THE ABSENCE OF DATA

12.1 Standard Applicable

According to §15.407(c)

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.

12.2 Result

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ASK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

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13 ANTENNA REQUIREMENT

13.1 Standard Applicable

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

13.2 Antenna Connected Construction

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

~ End of Report ~

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