

# ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT



**FCC Applicant:** Morse Micro Pty Ltd  
Level 8, 10-14 Waterloo St, Surry Hills NSW 2010, Australia  
**FCC Manufacturer:** Morse Micro Pty Ltd  
Level 8, 10-14 Waterloo St, Surry Hills NSW 2010, Australia  
**Product Name:** MM6108-MF08651-US  
**Brand Name:** Morse Micro  
**Model No.:** MM6108-MF08651-US  
**Report Number:** TERF2311002761E2  
**FCC ID** 2A74O-628C73  
**Date of EUT Received:** November 07, 2023  
**Date of Test:** November 07, 2023 ~ December 27, 2023  
**Issue Date:** January 08, 2024

Approved By

Jay Lin

## We hereby certify that:

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

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

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## Revision History

Report Number	Revision	Description	Issue Date	Revised By	Remark
TERF2311002761E2	00	Original.	December 18, 2023	Kate Lai	
TERF2311002761E2	01	Revise: Date of Test 9.3.2 99% BW measurements 10.4 Measurement Result 12.3 Measurement Procedure	January 08, 2024	Kate Lai	*
TERF2311002761E2	02	Revise: 9.3 Measurement Procedure 9.4 Measurement Result	January 08, 2024	Kate Lai	*

**Note:**

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

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## 1 GENERAL INFORMATION

### 1.1 Product Description

Product Name:	MM6108-MF08651-US
Brand Name:	Morse Micro
Model No.:	MM6108-MF08651-US
Hardware Version:	V13.2
Firmware Version:	1.10.0
EUT Series No.:	0-00R2XG
Power Supply:	3.3 Vdc
Test Software (Name/Version)	mm_rf_tester_V1.1

### 1.2 RF Specification

Radio Technology:	802.11ah
Frequency Range:	902~928MHz
Modulation type:	OFDM
Transmit Power:	802.11ah 1M: 26.43 dBm 802.11ah 2M: 26.85 dBm 802.11ah 4M: 26.96 dBm 802.11ah 8M: 27.10 dBm

### 1.3 Antenna Designation

Antenna Type	Freq. (MHz)	Peak Antenna Gain (dBi)
dipole Antenna	902~928	1.00

**Note:**Antenna information is provided by the applicant.

### 1.4 Test Methodology of Applied Standards

FCC Part 15, Subpart C §15.247

FCC KDB 558074 D01 15.247 Meas Guidance v05r02

ANSI C63.10:2013

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## 1.5 Test Facility

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

**Note:** Test site name is remarked on the equipment list in each section of this report as an indication where measurements occurred in specific test site and address.

## 1.6 Special Accessories

There are no special accessories used while test was conducted.

## 1.7 Equipment Modifications

There was no modification incorporated into the EUT.

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## 2 SYSTEM TEST CONFIGURATION

### 2.1 EUT Configuration

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

### 2.2 EUT Exercise

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

### 2.3 Test Procedure

#### 2.3.1 Conducted Emissions

The EUT is 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 30 MHz. The CISPR Quasi-Peak and Average detector mode is employed. The two LISNs provide 50  $\mu$ H/50 ohm of coupling impedance for the measuring instrument. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

#### 2.3.2 Conducted Test (RF)

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

#### 2.3.3 Radiated Emissions

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

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## 2.4 Measurement Results Explanation Example

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

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

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

### 2.4.2 For all conducted test items:

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

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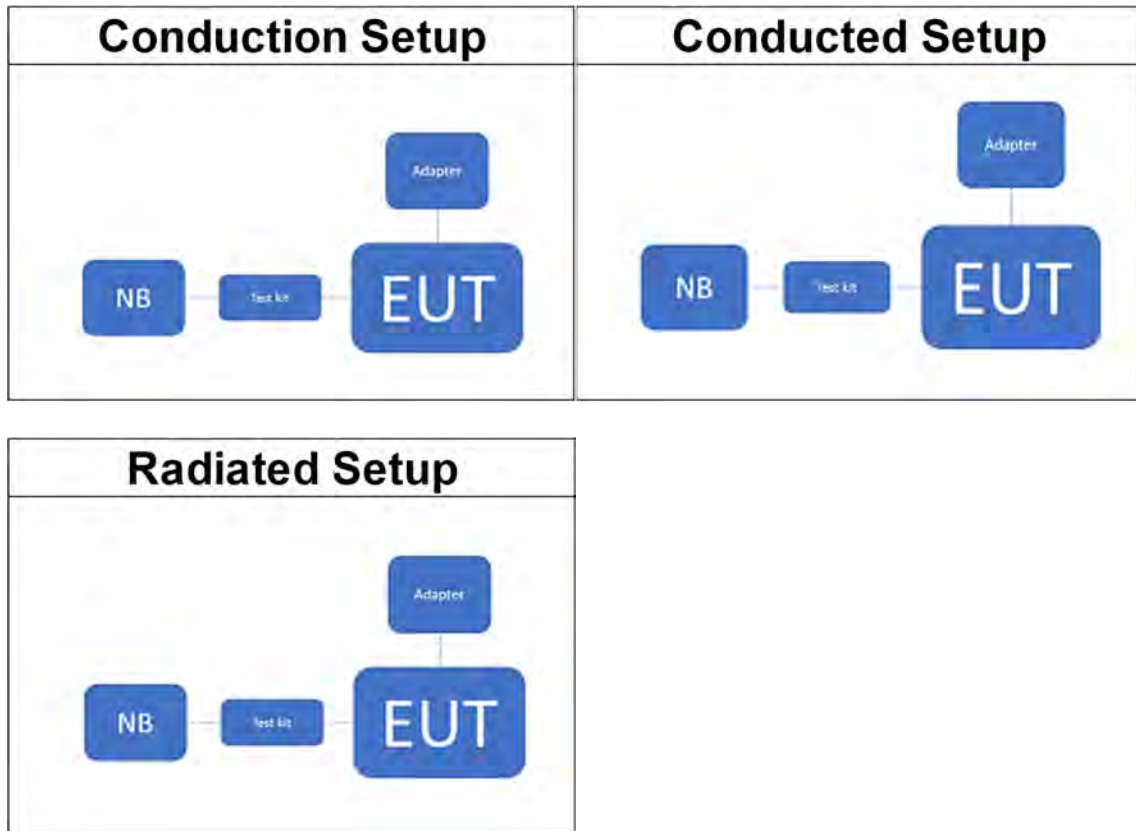
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## 2.5 Test Configuration



## 2.6 Control Unit(s)

AC Power-Line Conducted Emission Test Site: Conduction C					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Notebook	Lenovo	L480	P0002332	N/A	N/A
Adapter	ROHS	RPI-18PFCA-05	N/A	N/A	N/A
Test Kit	Morse Micro	MM_DEBUG	N/A	N/A	N/A

Conducted Emission Test Site: Conducted F					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Notebook	Lenovo	L480	P0002332	N/A	N/A
Adapter	ROHS	RPI-18PFCA-05	N/A	N/A	N/A
Test Kit	Morse Micro	MM-DEBUG	N/A	N/A	N/A

Radiated Emission Test Site: SAC D					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Notebook	Lenovo	L480	P0002332	N/A	N/A
Adapter	ROHS	RPI-18PFCA-05	N/A	N/A	N/A
Test Kit	Morse Micro	MM_DEBUG	N/A	N/A	N/A

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### 3 SUMMARY OF TEST RESULTS

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

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## 4 DESCRIPTION OF TEST MODES

### 4.1 Operating Frequencies

Channel List	OFDM 1M		OFDM 2M		OFDM 4M		OFDM 8M	
	CH	Freq.(MHz)	CH	Freq.(MHz)	CH	Freq.(MHz)	CH	Freq.(MHz)
	3	903.5	6	905	8	906	12	908
	5	904.5	10	907	16	910	28	916
	7	905.5	14	909	24	914	44	924
	9	906.5	18	911	32	918		
	11	907.5	22	913	40	922		
	13	908.5	26	915	48	926		
	15	909.5	30	917				
	17	910.5	34	919				
	19	911.5	38	921				
	21	912.5	42	923				
	23	913.5	46	925				
	25	914.5						
	27	915.5						
	29	916.5						
	31	917.5						
	33	918.5						
	35	919.5						
	37	920.5						
	39	921.5						
	41	922.5						
	43	923.5						
	45	924.5						
47	925.5							
49	926.5							

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## 4.2 The Worst Test Modes and Channel Details

1. The EUT has been tested under operating condition.
2. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.
3. Investigation has been done on all the possible configurations for searching the worst case.

CONDUCTION TEST			
MODE	Power (Voltage)	MODULATION	DATA RATE (Mbps)
802.11ah	120	OFDM	MCS0

CONDUCTED TEST				
MODE	AVAILABLE Frequency (MHz)	TESTED Frequency (MHz)	MODULATION	DATA RATE (Mbps)
802.11ah 1M	902 to 928	903.5,914.5,926.5	OFDM	MCS0
802.11ah 2M	902 to 928	905,915,925	OFDM	MCS0
802.11ah 4M	902 to 928	906,914,922,926	OFDM	MCS0
802.11ah 8M	902 to 928	908,916,924	OFDM	MCS0

RADIATED EMISSION TEST (BELOW 1 GHz)				
MODE	AVAILABLE FREQUENCY (MHz)	TESTED FREQUENCY (MHz)	MODULATION	DATA RATE (Mbps)
802.11ah 1M	902 to 928	914.5	OFDM	MCS0
802.11ah 2M	902 to 928	915	OFDM	MCS0
802.11ah 4M	902 to 928	914	OFDM	MCS0
802.11ah 8M	902 to 928	916	OFDM	MCS0

RADIATED EMISSION TEST (ABOVE 1 GHz)				
MODE	AVAILABLE FREQUENCY (MHz)	TESTED FREQUENCY (MHz)	MODULATION	DATA RATE (Mbps)
802.11ah 1M	902 to 928	903.5,914.5,926.5	OFDM	MCS0
802.11ah 2M	902 to 928	905,915,925	OFDM	MCS0
802.11ah 4M	902 to 928	906,914,922,926	OFDM	MCS0
802.11ah 8M	902 to 928	908,916,924	OFDM	MCS0

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## 5 MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
AC Power Line Conducted Emission	+/- 2.32 dB
Output Power measurement	+/- 1 dB
Emission Bandwidth	+/- 1.53 Hz
Undesignable radiated emission measurement	+/- 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
Polarization: Horizontal	+/-	2.8 dB	9kHz~30MHz
	+/-	4.54 dB	30MHz - 1000MHz
	+/-	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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## 6 MEASUREMENT EQUIPMENT USED

### 6.1 Emission from AC power line

AC Power-Line Conducted Emission Test Site: Conduction C					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
LISN	SCHWARZBECK Mess-Elektronik	NSLK8127	974	06/19/2023	06/18/2024
EMI Test Receiver	R&S	ESCI	101342	04/24/2023	04/23/2024
Coaxial Cable	EC Lab	RF-HY-CAB-250	RF-HY-CAB-250-01	03/27/2023	03/26/2024
Pulse Limiter	EC Lab	VTSD 9561F-N	485	03/27/2023	03/26/2024
Test Software	audix	e3	E3 20923 SGS Ver.9 ( C )	N.C.R	N.C.R
Notebook	Lenovo	L480	P0002332	N/A	N/A

### 6.2 Conducted Measurement

Conducted Emission Test Site: Conducted F					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	KEYSIGHT	N9010B	MY59071574	06/29/2023	06/28/2024
Power Meter	Anritsu	ML2496A	1804002	04/26/2023	04/25/2024
Power Sensor	Anritsu	MA2411B	1726105	04/26/2023	04/25/2024
Test Software	SGS Taiwan	Radio Test Software	Ver.21	N.C.R	N.C.R
Attenuator	Marvelous	MVE2213-10	RF06	11/16/2022	11/15/2023
Attenuator	Marvelous	MVE2213-10	RF12	11/16/2022	11/15/2023
DC Block	PASTERNAK	PE8210	RF153	11/16/2022	11/15/2023
Coaxial Cables	Woken	00100A1F2A196C	RF51	11/16/2022	11/15/2023
Attenuator	Marvelous	MVE2213-10	RF06	11/15/2023	11/14/2024
Attenuator	Marvelous	MVE2213-10	RF12	11/15/2023	11/14/2024
DC Block	PASTERNAK	PE8210	RF153	11/15/2023	11/14/2024
Coaxial Cables	Woken	00100A1F2A196C	RF51	11/15/2023	11/14/2024

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### 6.3 Radiated Measurement

Radiated Emission Test Site: SAC D					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Broadband Antenna	SCHWARZBECK	VULB 9168	9168-617	12/19/2022	12/18/2023
Horn Antenna	Schwarzbeck	BBHA9120D	1341	05/26/2023	05/25/2024
Loop Antenna	ETS.LINDGREN	6502	143303	05/23/2023	05/22/2024
3m Site NSA	SGS	966 chamber D	N/A	04/30/2023	04/29/2024
Spectrum Analyzer	KEYSIGHT	N9010A	MY57120200	03/29/2023	03/28/2024
Test Software	audix	e3	E3 20923 SGS Ver.9 ( C )	N.C.R	N.C.R
Pre-Amplifier	EMC Instruments	EMC9135	980234	11/15/2023	11/14/2024
Pre-Amplifier	EMC Instruments	EMC330N	980781	03/15/2023	03/14/2024
Coaxial Cable	Huber+Suhner	RG 214/U	W21.01	11/15/2023	11/14/2024
Coaxial Cable	Huber+Suhner	EMC106-SM-SM- 7200	150703	11/15/2023	11/14/2024

**NOTE:** No Calibration Required.

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## 7 CONDUCTED EMISSION TEST

### 7.1 Standard Applicable:

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

Frequency range MHz	Limits (dB $\mu$ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

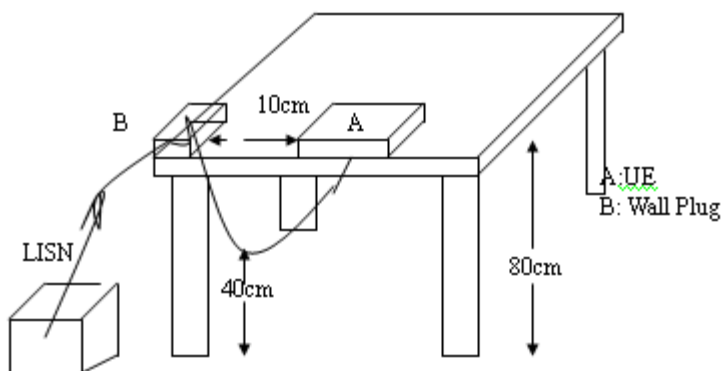
Note

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

### 7.2 EUT Setup:

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

### 7.3 Test Setup



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#### 7.4 Measurement Procedure:

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

#### 7.5 Measurement Result:

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

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

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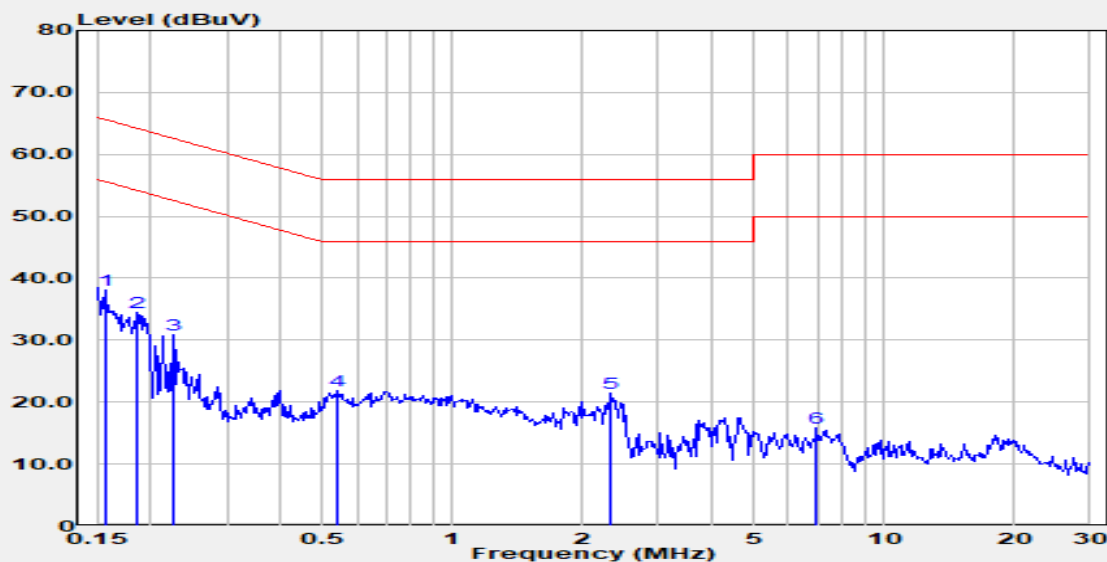
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## AC POWER LINE CONDUCTED EMISSION TEST DATA

Report Number	:TERF2311002761E2	Test Site	:Conduction C
Test Mode	:OFDM 8M	Test Date	:2023-11-27
Power	:120V/60Hz	Temp./Humi.	:20.7°C/66%
Probe	:L1	Engineer	:Howard Huang



Freq. MHz	Detector Mode	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV	Limit dBμV	Margin dB
0.157	Peak	27.40	10.65	38.05	65.65	-27.60
0.185	Peak	23.93	10.65	34.58	64.24	-29.65
0.225	Peak	20.16	10.65	30.81	62.61	-31.81
0.541	Peak	11.28	10.62	21.90	56.00	-34.10
2.329	Peak	10.72	10.80	21.52	56.00	-34.48
6.964	Peak	4.91	10.96	15.87	60.00	-44.13

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Report Number :TERF2311002761E2

Test Site :Conduction C

Test Mode :OFDM 8M

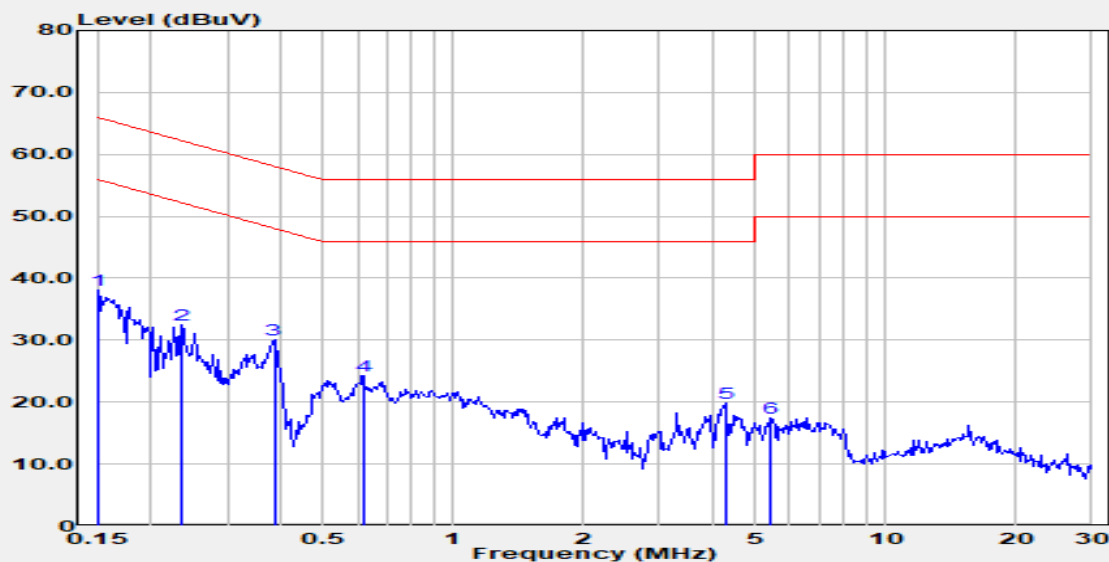
Test Date :2023-11-27

Power :120V/60Hz

Temp./Humi. :20.7°C/66%

Probe :N

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV	Limit dBμV	Margin dB
0.150	Peak	27.51	10.66	38.17	66.00	-27.83
0.235	Peak	21.87	10.64	32.51	62.26	-29.75
0.385	Peak	19.44	10.61	30.06	58.17	-28.12
0.619	Peak	13.66	10.62	24.28	56.00	-31.72
4.256	Peak	8.97	10.89	19.87	56.00	-36.13
5.444	Peak	6.57	10.94	17.50	60.00	-42.50

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## 8 PEAK OUTPUT POWER MEASUREMENT

### 8.1 Standard Applicable:

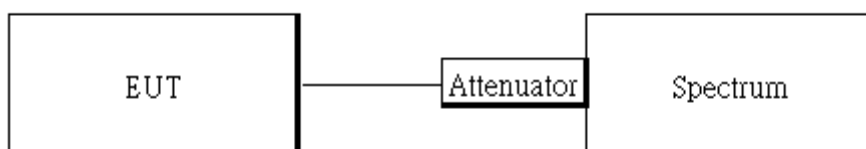
For systems using digital modulation in the 902-928 MHz bands, the limit for peak output power is 1Watt.

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

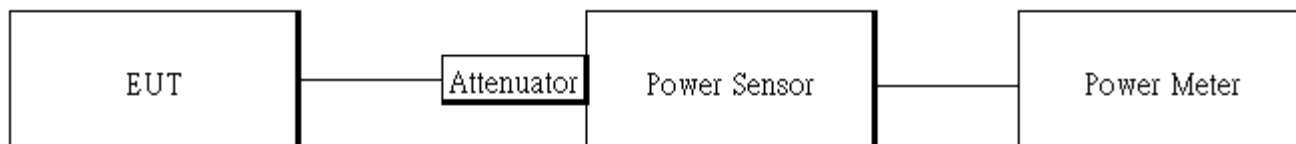
In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of Antenna exceeds 6dBi.

### 8.2 Test Setup

#### 8.2.1 Duty Cycle



#### 8.2.2 Output Power



### 8.3 Measurement Procedure:

#### 8.3.1 Duty Cycle

1. Place the EUT on the table and set it in transmitting mode.
2. Set span = Zero
3. RBW = 8MHz, VBW = 8MHz,
4. Detector = Peak

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### 8.3.2 Output Power

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter.
4. Record the max. Reading as observed from Power Meter.
5. Repeat above procedures until all test default channel measured was complete.

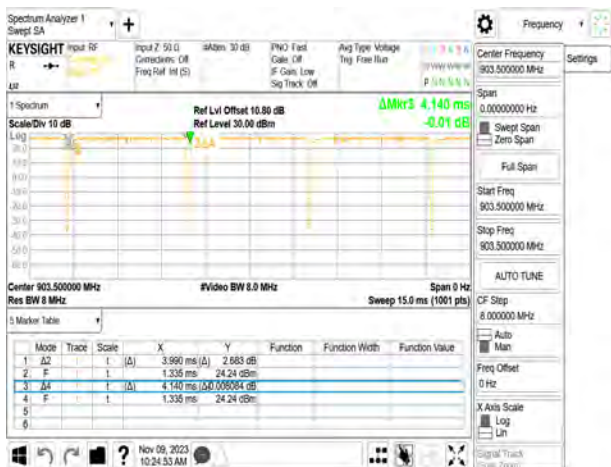
### 8.4 Duty Factor:

	Duty Cycle (%) = Ton / (Ton+Toff)	Duty Factor (dB) =10*log ( 1/Duty Cycle )	1/T (kHz)	VBW setting (kHz)
OFDM 1M	96.38	0.16	0.25	1.00
OFDM 2M	97.78	0.10	0.25	1.00
OFDM 4M	97.78	0.10	0.25	1.00
OFDM 8M	97.78	0.10	0.25	1.00

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OFDM\_1M\_LowCH-903.5



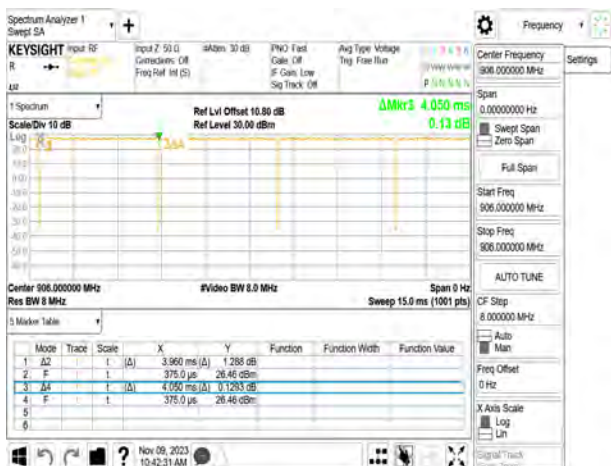
OFDM\_8M\_LowCH-908



OFDM\_2M\_LowCH-905



OFDM\_4M\_LowCH-906



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## 8.5 Output Power:

### 8.5.1 Peak & Avg

#### OFDM 1M mode:

CH	Frequency (MHz)	Power set	Peak Output Power (dBm)	Required Limit (dBm)
3	903.5	default	26.43	30
25	914.5	default	26.41	30
49	926.5	default	26.38	30
CH	Frequency (MHz)	Power set	Avg. Output Power (dBm)	Required Limit (dBm)
3	903.5	default	21.48	30
25	914.5	default	21.43	30
49	926.5	default	21.30	30

**\*Note:**

**1.** Measured by power meter, cable loss 10.8 dB + Duty cycle factor has been offseted to the power meter for Avg. power and cable loss has been offseted for Peak power measurement.

#### OFDM 2M mode:

CH	Frequency (MHz)	Power set	Peak Output Power (dBm)	Required Limit (dBm)
6	905	default	26.85	30
26	915	default	26.73	30
46	925	default	26.64	30
CH	Frequency (MHz)	Power set	Avg. Output Power (dBm)	Required Limit (dBm)
6	905	default	21.41	30
26	915	default	21.36	30
46	925	default	21.22	30

**\*Note:**

**1.** Measured by power meter, cable loss 10.8 dB + Duty cycle factor has been offseted to the power meter for Avg. power and cable loss has been offseted for Peak power measurement.

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### OFDM 4M mode:

CH	Frequency (MHz)	Power set	Peak Output Power (dBm)	Required Limit (dBm)
8	906	default	<b>26.96</b>	30
24	914	default	26.91	30
40	922	default	26.89	30
48	926	default	25.26	30
CH	Frequency (MHz)	Power set	Avg. Output Power (dBm)	Required Limit (dBm)
8	906	default	<b>21.28</b>	30
24	914	default	21.23	30
40	922	default	21.18	30
48	926	default	17.75	30

**\*Note:**

**1.** Measured by power meter, cable loss 10.8 dB + Duty cycle factor has been offseted to the power meter for Avg. power and cable loss has been offseted for Peak power measurement.

### OFDM 8M mode:

CH	Frequency (MHz)	Power set	Peak Output Power (dBm)	Required Limit (dBm)
12	908	default	<b>27.10</b>	30
28	916	default	26.99	30
44	924	default	26.48	30
CH	Frequency (MHz)	Power set	Avg. Output Power (dBm)	Required Limit (dBm)
12	908	default	<b>21.19</b>	30
28	916	default	21.12	30
44	924	default	19.54	30

**\*Note:**

**1.** Measured by power meter, cable loss 10.8 dB + Duty cycle factor has been offseted to the power meter for Avg. power and cable loss has been offseted for Peak power measurement.

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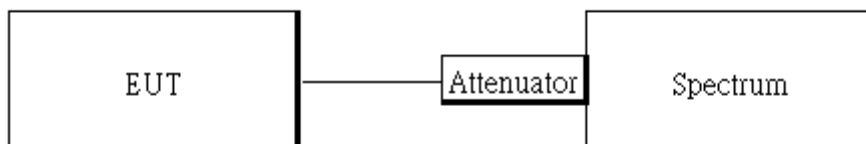
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## 9 EMISSION BANDWIDTH MEASUREMENT

### 9.1 Standard Applicable

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

### 9.2 Test Setup



### 9.3 Measurement Procedure:

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

#### 9.3.1 6dB BW measurements

1. The testing follows the Measurement Procedure of the KDB 558074 D01.
2. Set the spectrum analyzer as  
RBW= 100 kHz ,  
VBW = 3 X RBW,  
Span= 2 to 5 times of the OBW,  
Sweep=auto, Detector = Peak, and Max hold.
3. Mark the upper and lower frequencies of -6dB.
4. Repeat above procedures until all test default channel is completed.

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## 9.4 Measurement Result:

### OFDM 1M mode

Frequency (MHz)	6dB BW (MHz)	Required BW (MHz)	Result
903.5	0.8262	$\geq 0.5$	PASS
914.5	0.8283	$\geq 0.5$	PASS
926.5	0.8228	$\geq 0.5$	PASS

### OFDM 2M mode

Frequency (MHz)	6dB BW (MHz)	Required BW (MHz)	Result
905	1.724	$\geq 0.5$	PASS
915	1.757	$\geq 0.5$	PASS
925	1.753	$\geq 0.5$	PASS

### OFDM 4M mode

Frequency (MHz)	6dB BW (MHz)	Required BW (MHz)	Result
906	3.578	$\geq 0.5$	PASS
914	3.554	$\geq 0.5$	PASS
926	3.552	$\geq 0.5$	PASS

### OFDM 8M mode

Frequency (MHz)	6dB BW (MHz)	Required BW (MHz)	Result
908	7.541	$\geq 0.5$	PASS
916	7.535	$\geq 0.5$	PASS
924	7.544	$\geq 0.5$	PASS

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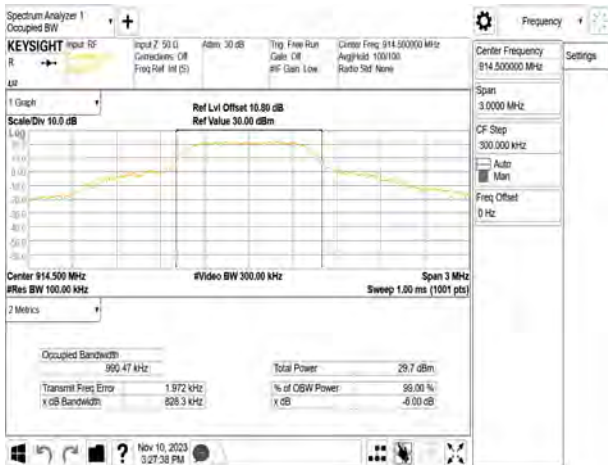
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OFDM\_2M\_LowCH-905



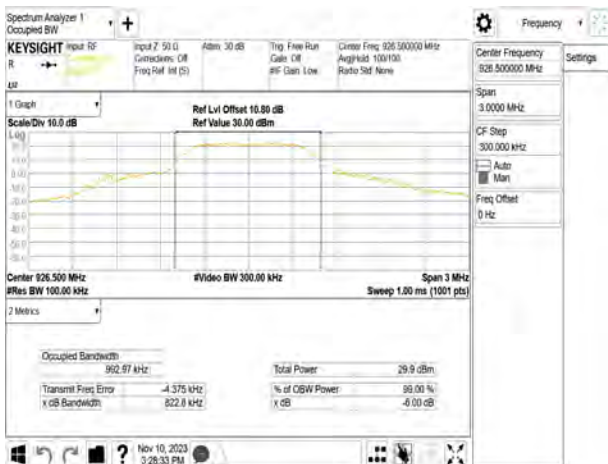
OFDM\_1M\_MidCH-914.5



OFDM\_2M\_MidCH-915



OFDM\_1M\_HighCH-926.5



OFDM\_2M\_HighCH-925

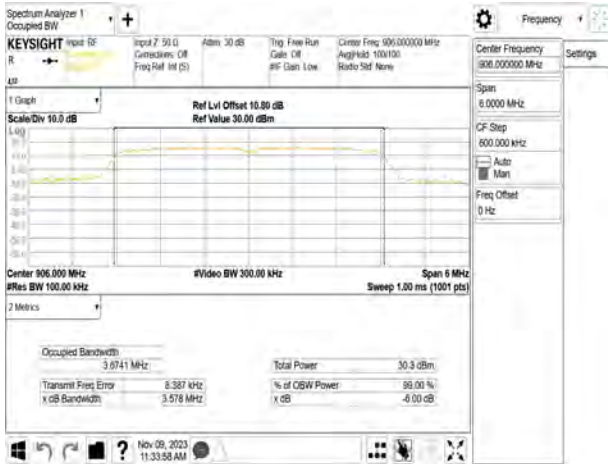


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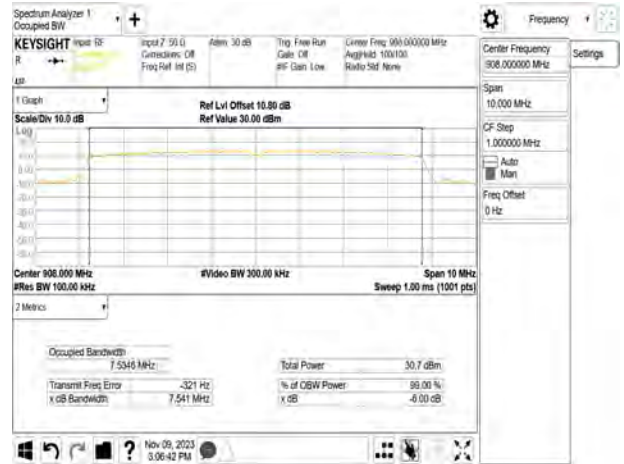
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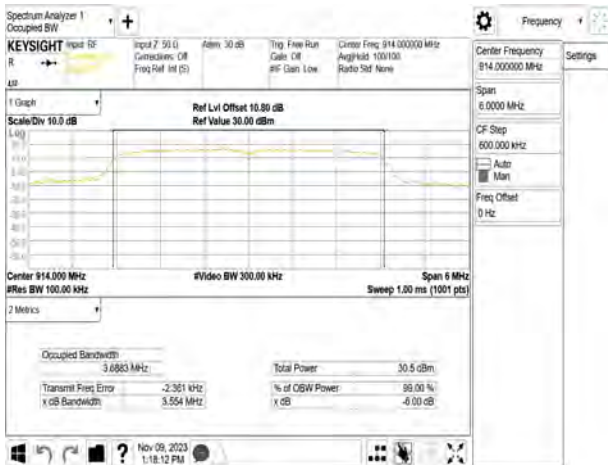
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OFDM\_8M\_LowCH-908



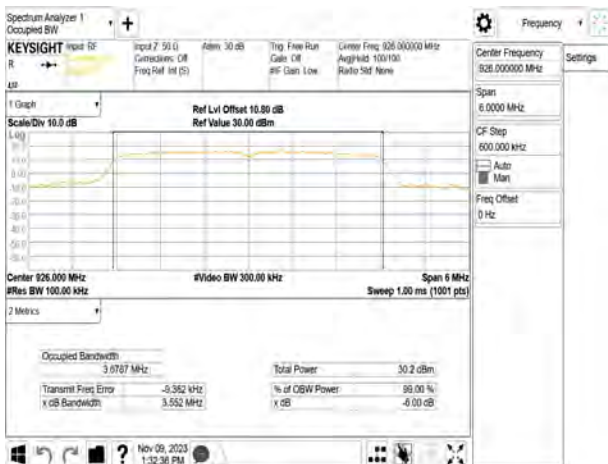
OFDM\_4M\_MidCH-914



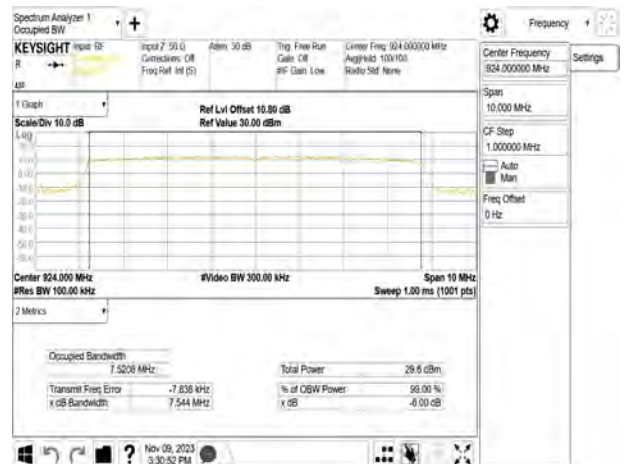
OFDM\_8M\_MidCH-916



OFDM\_4M\_HighCH-926



OFDM\_8M\_HighCH-924



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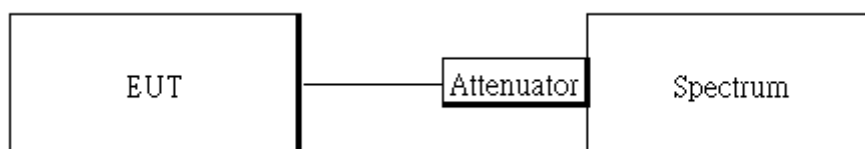
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## 10 CONDUCTED BAND EDGES AND SPURIOUS EMISSION MEASUREMENT

### 10.1 Standard Applicable

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

### 10.2 Test Setup



### 10.3 Measurement Procedure

#### 10.3.1 Reference Level of Emission Limit:

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

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### 10.3.2 Conducted Band Edge:

1. To connect Antenna Port of EUT to Spectrum.
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
4. Set start to edge frequency, and stop frequency of spectrum analyzer so as to encompass the spectrum to be examined.
5. Set the spectrum analyzer as RBW=100 kHz, VBW=300 kHz, Detector = Peak, Sweep = auto
6. Set DL as the limit =  
OFDM 1M & 2M reading on marker of reference level measurement – 30dBm  
OFDM 4M & 8M reading on marker of reference level measurement – 20dBm
7. Mark the highest readings of the emissions outside of 902-928 MHz.
8. Repeat above procedures until all default test channel (low, middle, and high) was complete.

### 10.3.3 Conducted Spurious Emission:

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

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## 10.4 Measurement Result

### OFDM 1M\_ Reference Level of Limit

Frequency (MHz)	RF Power Density (dBm)	Reference Level of Limit = PSD - 30dB (dBm)
903.5	21.83	-8.17
914.5	21.57	-8.43
926.5	21.23	-8.77

**\*Note:**

1.cable loss as 10.8dB that offsets in the spectrum

2.Refer to next page for plots.

### OFDM 2M\_ Reference Level of Limit

Frequency (MHz)	RF Power Density (dBm)	Reference Level of Limit = PSD - 30dB (dBm)
905	19.14	-10.86
915	18.76	-11.24
925	19.73	-10.27

**\*Note:**

1.cable loss as 10.8dB that offsets in the spectrum

2.Refer to next page for plots.

### OFDM 4M\_ Reference Level of Limit

Frequency (MHz)	RF Power Density (dBm)	Reference Level of Limit = PSD - 20dB (dBm)
906	15.79	-4.21
914	15.28	-4.72
926	12.54	-7.46

**\*Note:**

1.cable loss as 10.8dB that offsets in the spectrum

2.Refer to next page for plots.

### OFDM 8M\_ Reference Level of Limit

Frequency (MHz)	RF Power Density (dBm)	Reference Level of Limit = PSD - 20dB (dBm)
908	13.45	-6.55
916	13.20	-6.80
924	12.06	-7.94

**\*Note:**

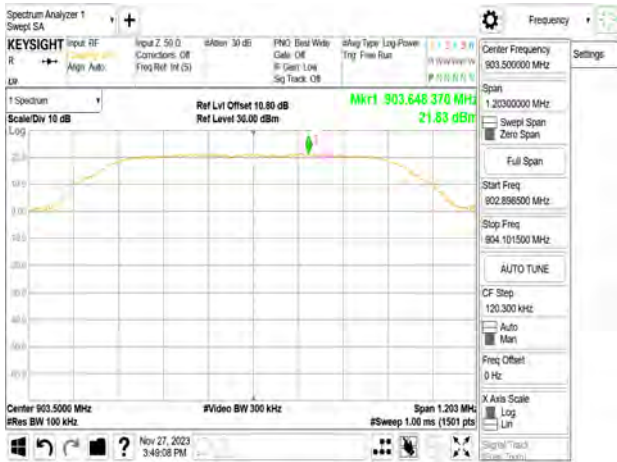
1.cable loss as 10.8dB that offsets in the spectrum

2.Refer to next page for plots.

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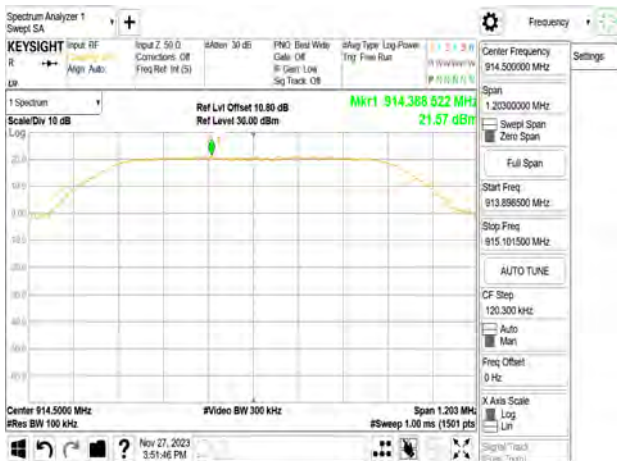
OFDM\_1M\_LowCH-903.5



OFDM\_2M\_LowCH-905



OFDM\_1M\_MidCH-914.5



OFDM\_2M\_MidCH-915



OFDM\_1M\_HighCH-926.5



OFDM\_2M\_HighCH-925



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OFDM\_4M\_LowCH-906



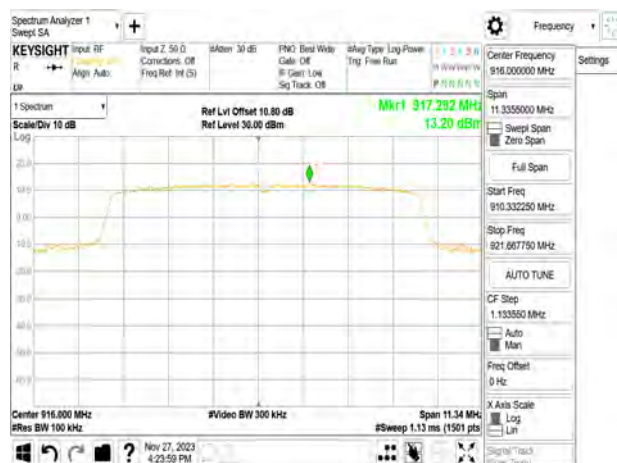
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OFDM\_4M\_MidCH-914



OFDM\_8M\_MidCH-916



OFDM\_4M\_HighCH-926



OFDM\_8M\_HighCH-924



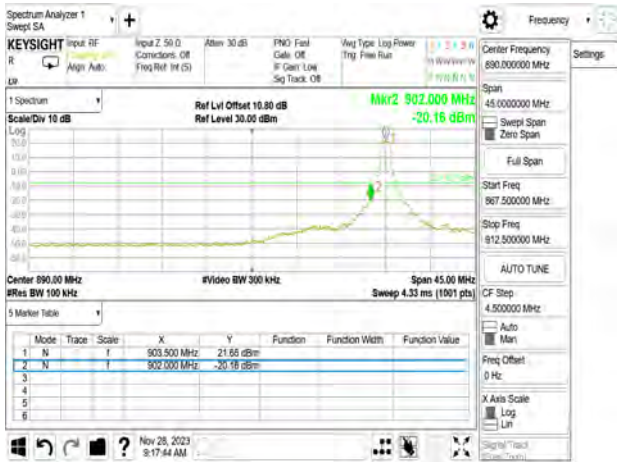
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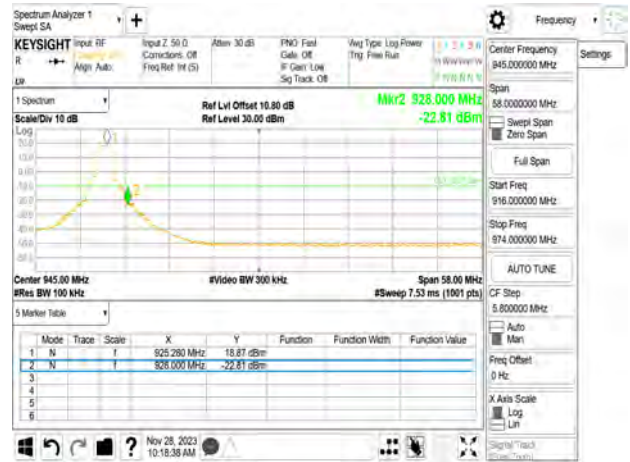
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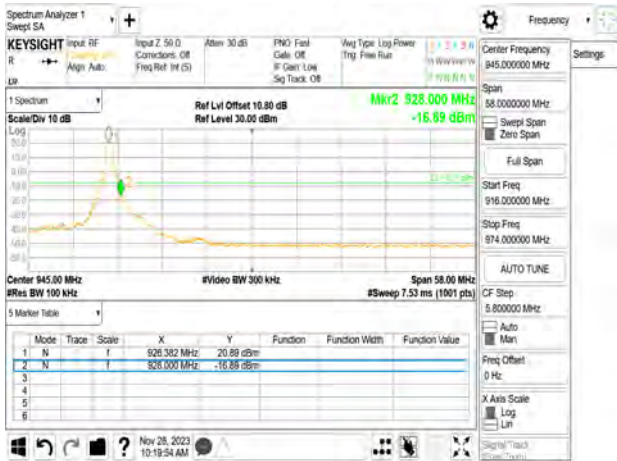
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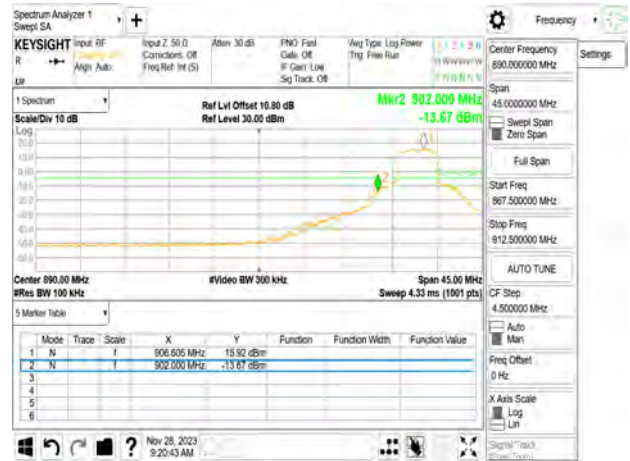
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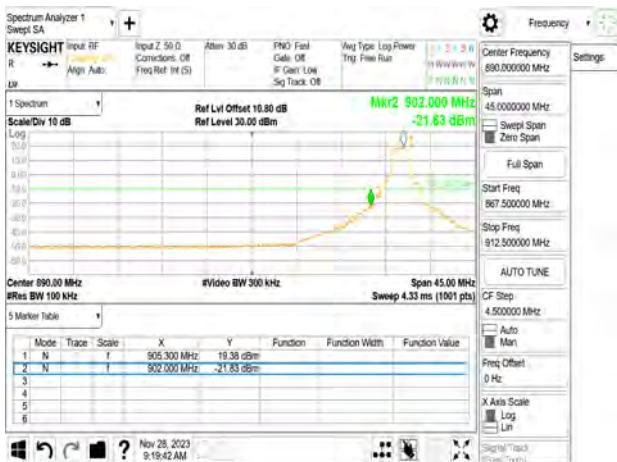
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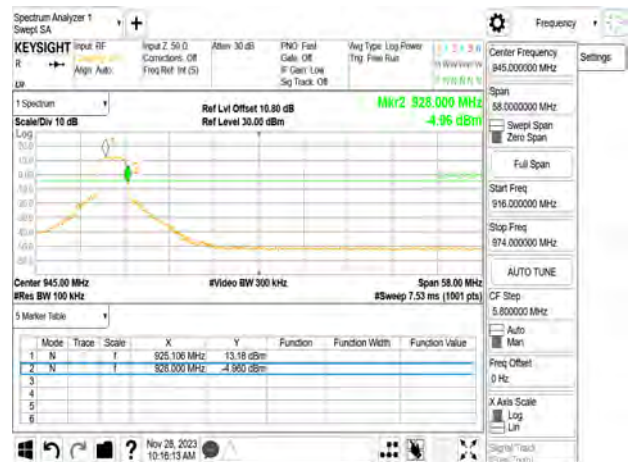
OFDM\_4M\_LowCH-906



OFDM\_2M\_LowCH-905



OFDM\_4M\_HighCH-926



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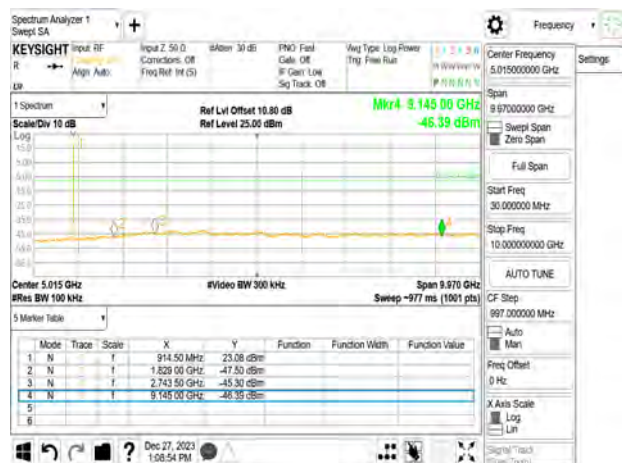
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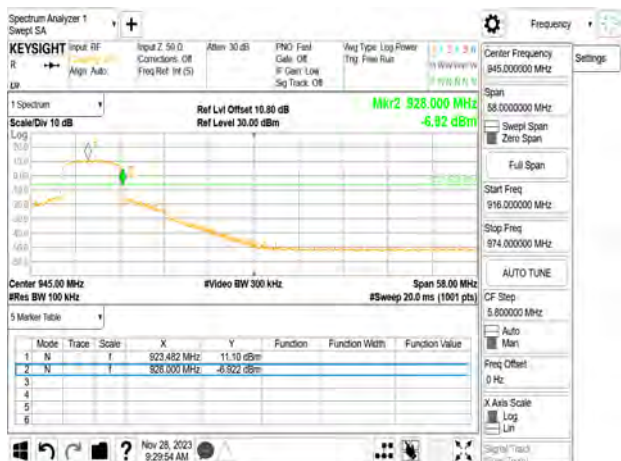
OFDM\_8M\_LowCH-908



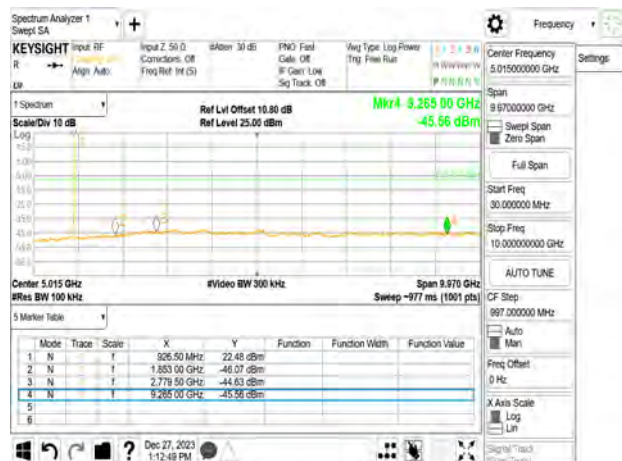
OFDM\_1M\_MidCH-914.5



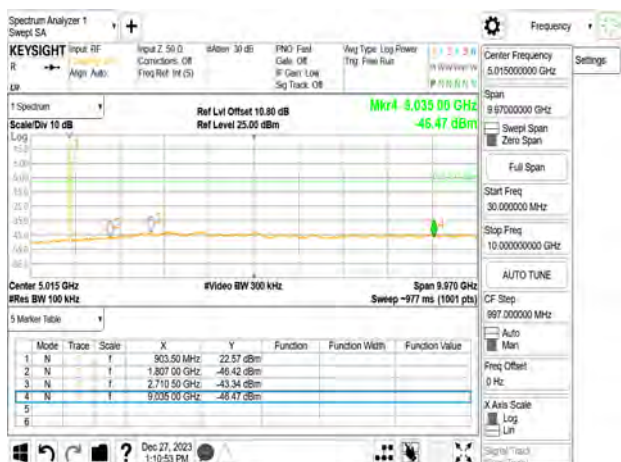
OFDM\_8M\_HighCH-924



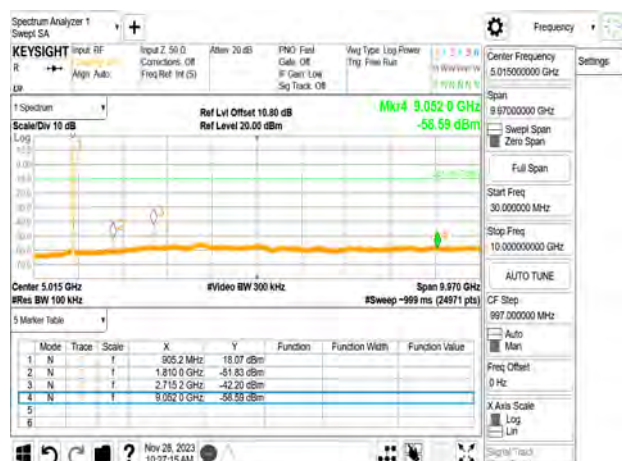
OFDM\_1M\_HighCH-926.5



OFDM\_1M\_LowCH-903.5



OFDM\_2M\_LowCH-905



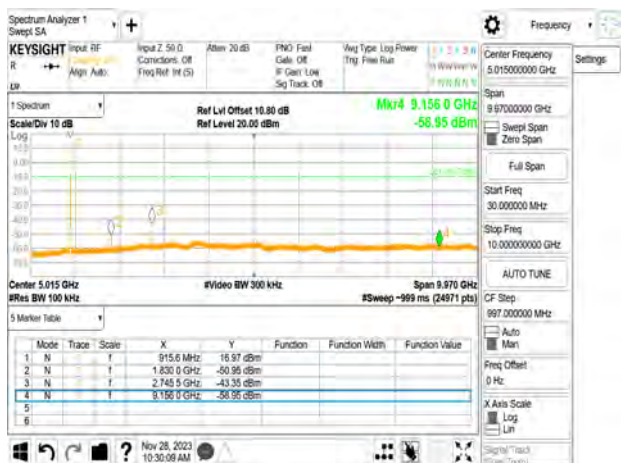
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OFDM\_2M\_MidCH-915



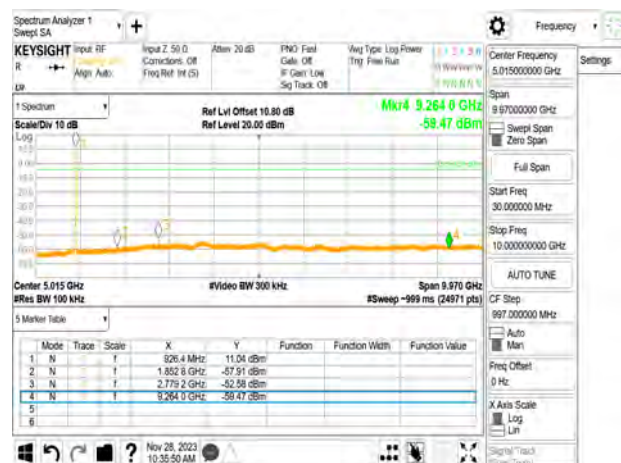
OFDM\_4M\_MidCH-914



OFDM\_2M\_HighCH-925



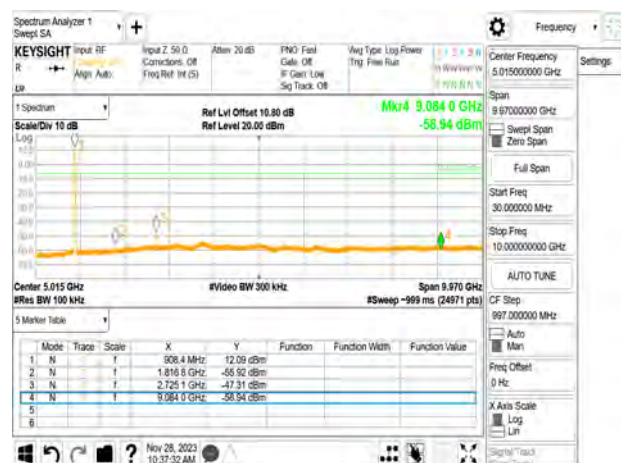
OFDM\_4M\_HighCH-926



OFDM\_4M\_LowCH-906



OFDM\_8M\_LowCH-908

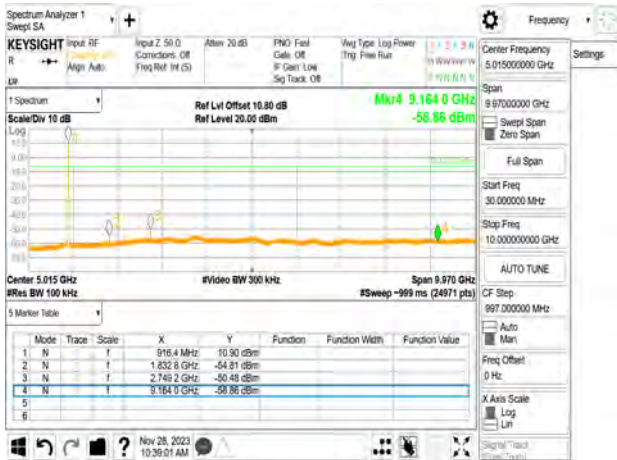


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OFDM\_8M\_MidCH-916



OFDM\_8M\_HighCH-924



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## 11 RADIATED BANDEDGE AND SPURIOUS EMISSION MEASUREMENT

### 11.1 Standard Applicable

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

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

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

**Note:**

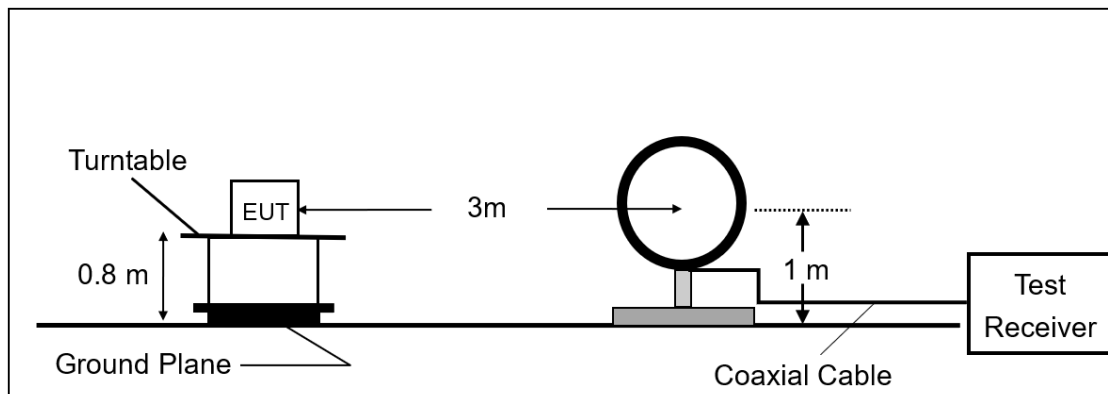
1. The lower limit shall apply at the transition frequencies.

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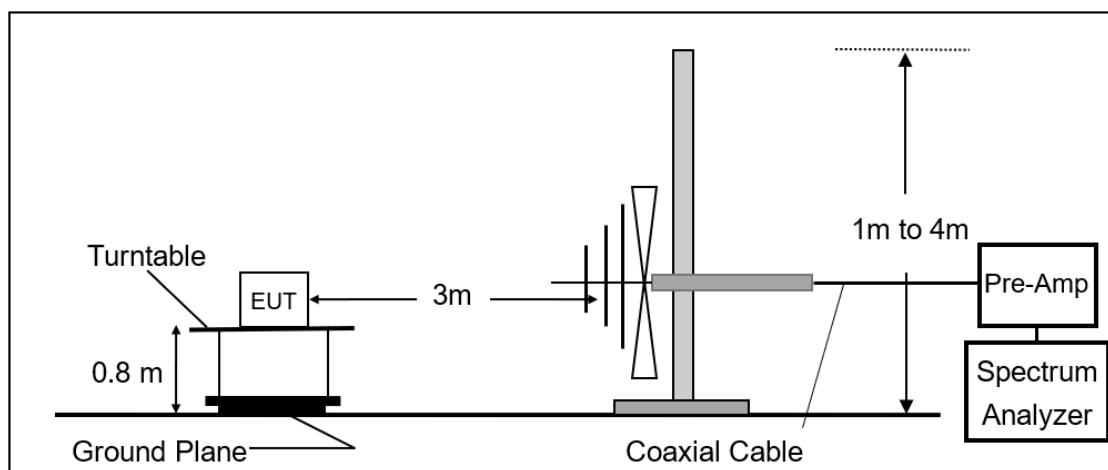
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## 11.2 Test Setup

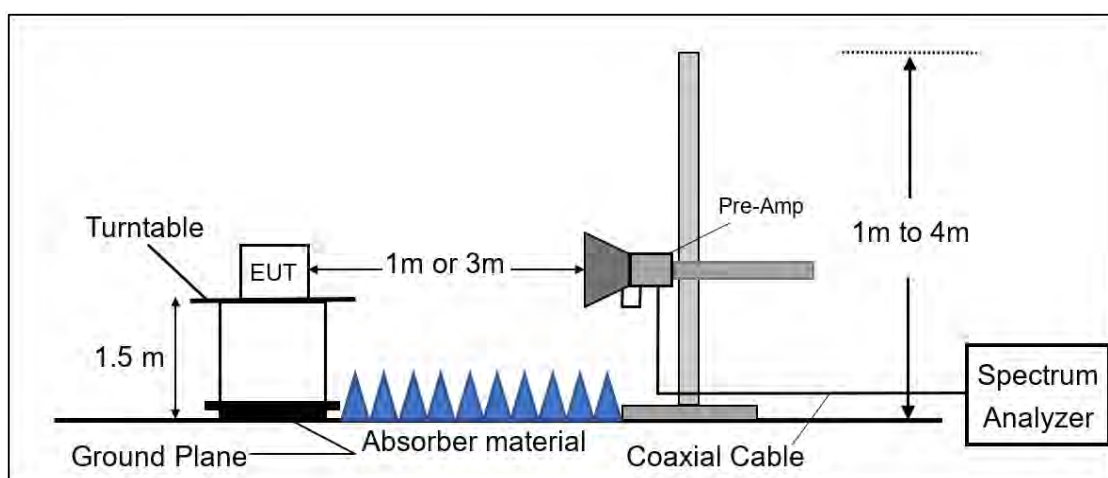
### (A) Radiated Emission Test Set-Up, Frequency Below 30MHz.



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



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



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### 11.3 Measurement Procedure

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

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#### 11.4 Field Strength Calculation

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

$$FS = RA + AF + CL - AG$$

**Where** *FS* = Field Strength

*RA* = Reading Amplitude

*AF* = Antenna Factor

*CL* = Cable Attenuation Factor (Cable Loss)

*AG* = Amplifier Gain

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

*Actual FS(dBuV/m) = SPA. Reading level(dBuV) + Factor(dB)*

*Factor(dB) = Antenna Factor(dBuV/m) + Cable Loss(dB) – Pre\_Amplifier Gain(dB)*

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

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

#### 11.6 Measurement Result:

Note: Refer to next page spectrum analyzer data chart and tabular data sheets.

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### 11.6.1 Radiated Main and Band Edge Measurement Result

Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2023-11-24

Test Frequency :903.5 MHz

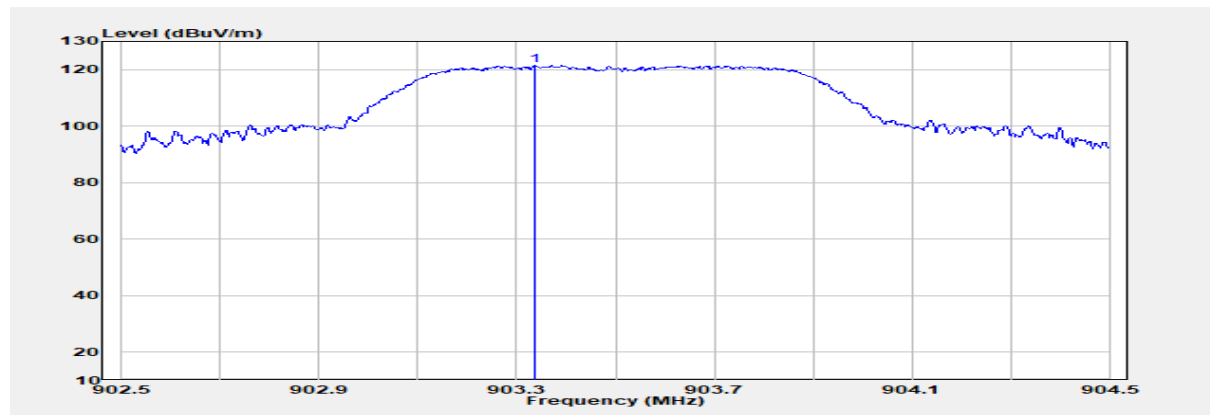
Temp./Humi. :23.5°C/62%

Test Mode :Main

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
903.338	Peak	127.30	-5.77	121.54	-	-

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Member of SGS Group

Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2023-11-24

Test Frequency :903.5 MHz

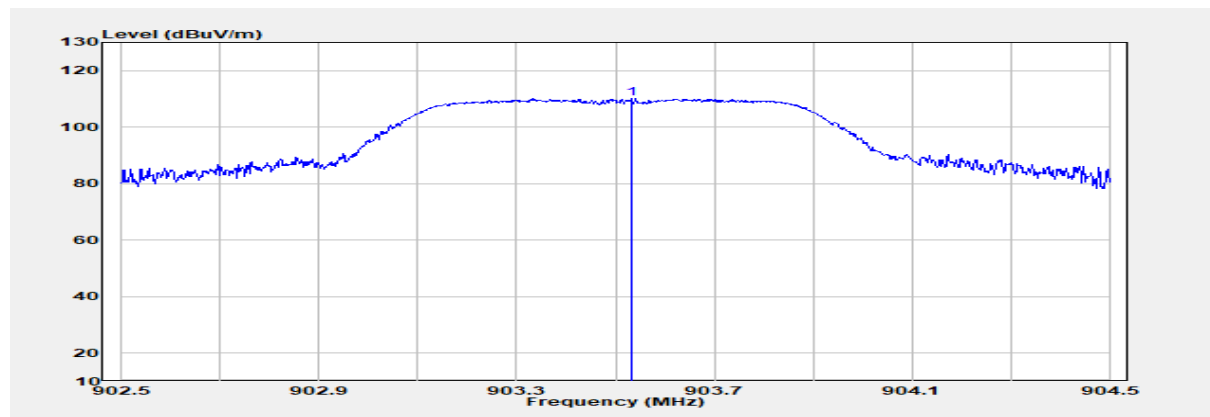
Temp./Humi. :23.5°C/62%

Test Mode :Main

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
903.532	Peak	115.90	-5.76	110.15	-	-

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 2M

Test Date :2023-11-24

Test Frequency :905 MHz

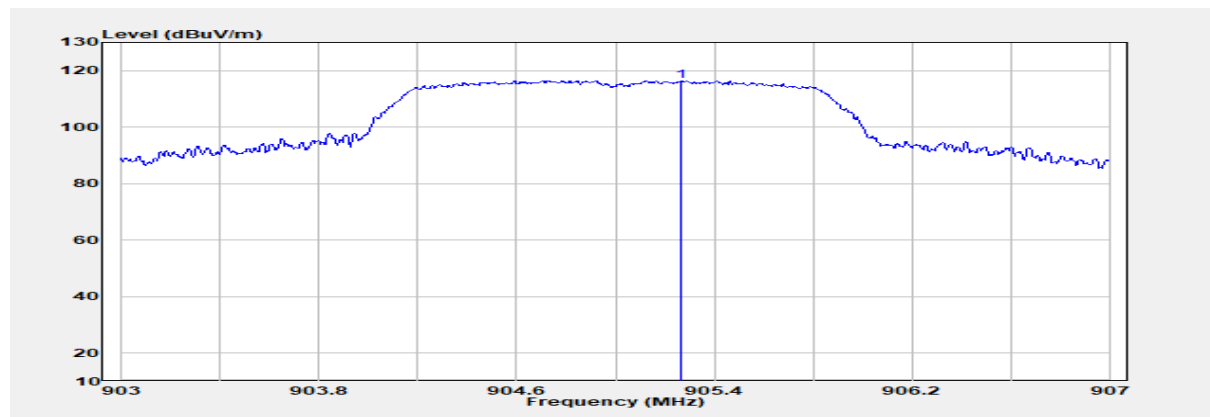
Temp./Humi. :23.5°C/62%

Test Mode :Main

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
905.268	Peak	122.17	-5.69	116.48	-	-

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 2M

Test Date :2023-11-24

Test Frequency :905 MHz

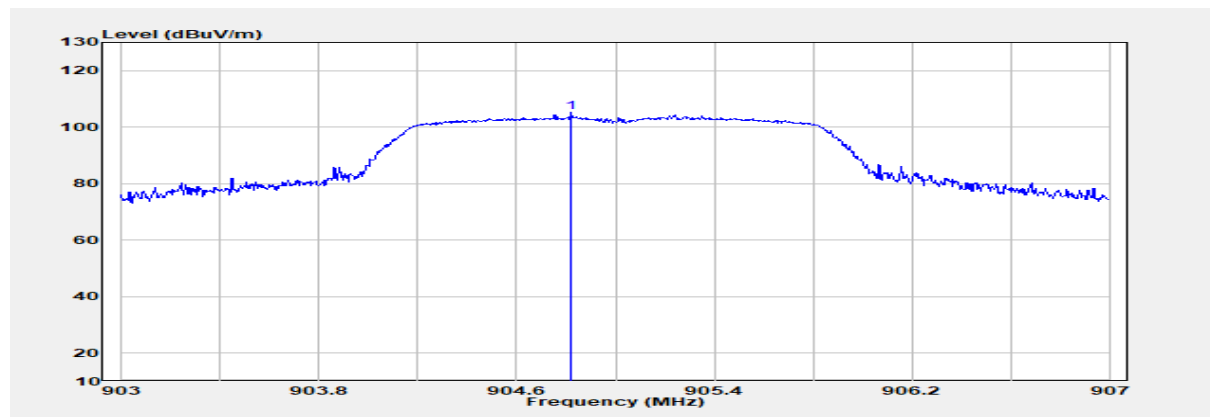
Temp./Humi. :23.5°C/62%

Test Mode :Main

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Howard Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
904.820	Peak	110.92	-5.70	105.22	-	-

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 4M

Test Date :2023-11-28

Test Frequency :906 MHz

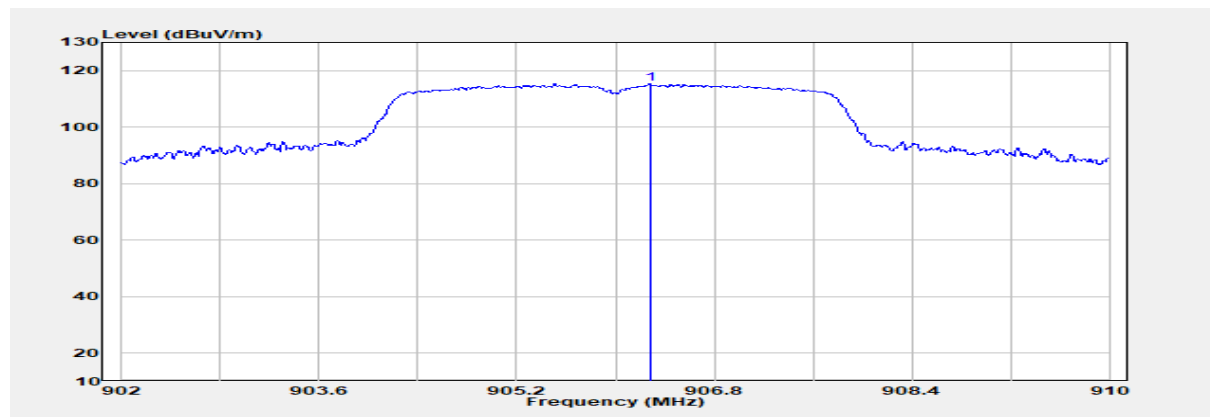
Temp./Humi. :21.5°C/56%

Test Mode :Main

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Howard Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
906.280	Peak	120.93	-5.65	115.28	-	-

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Member of SGS Group

Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 4M

Test Date :2023-11-28

Test Frequency :906 MHz

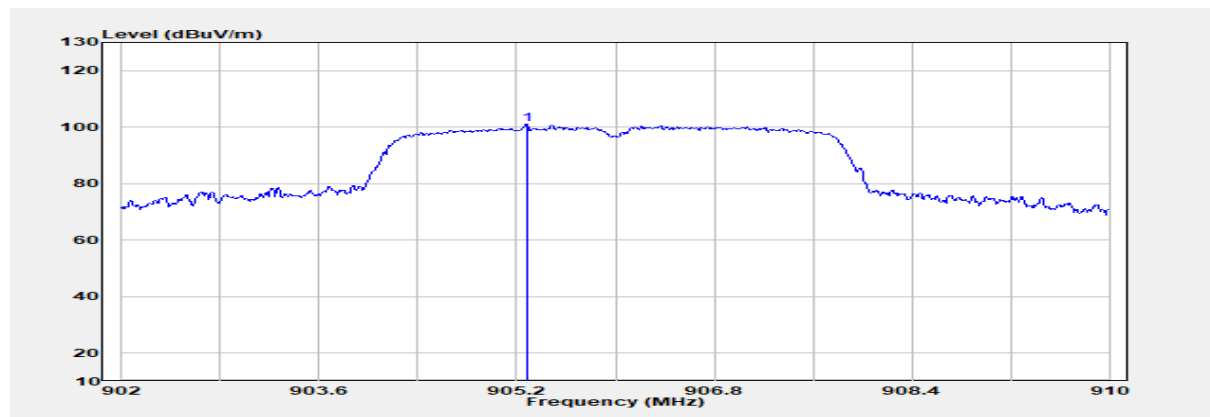
Temp./Humi. :21.5°C/56%

Test Mode :Main

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Howard Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
905.280	Peak	106.71	-5.69	101.02	-	-

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Member of SGS Group

Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 8M

Test Date :2023-11-28

Test Frequency :908 MHz

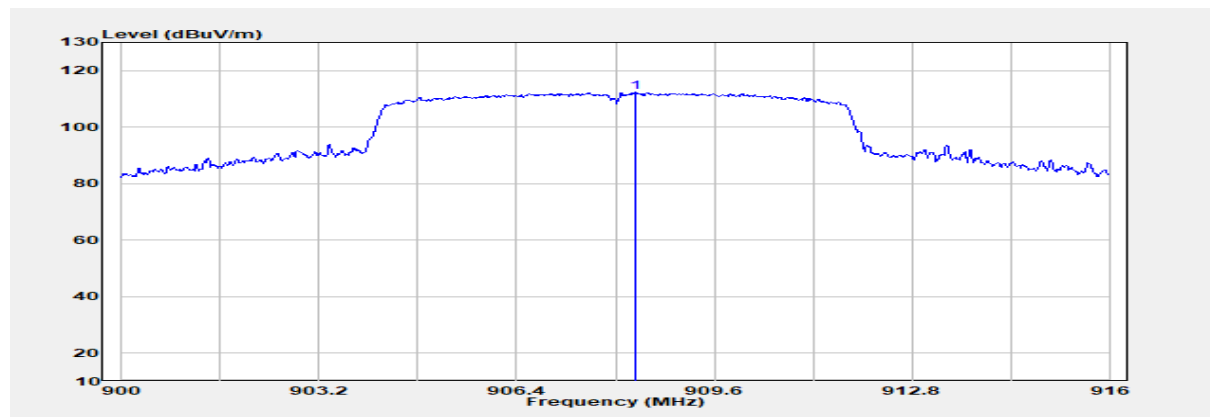
Temp./Humi. :21.5°C/56%

Test Mode :Main

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Howard Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
908.336	Peak	118.16	-5.59	112.57	-	-

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 8M

Test Date :2023-11-28

Test Frequency :908 MHz

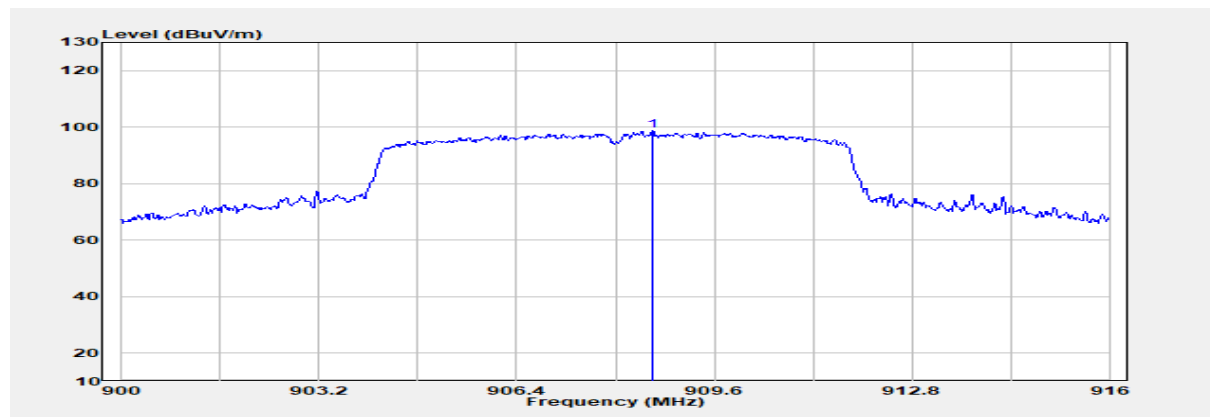
Temp./Humi. :21.5°C/56%

Test Mode :Main

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Howard Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
908.608	Peak	104.35	-5.58	98.77	-	-

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2023-11-24

Test Frequency :903.5 MHz

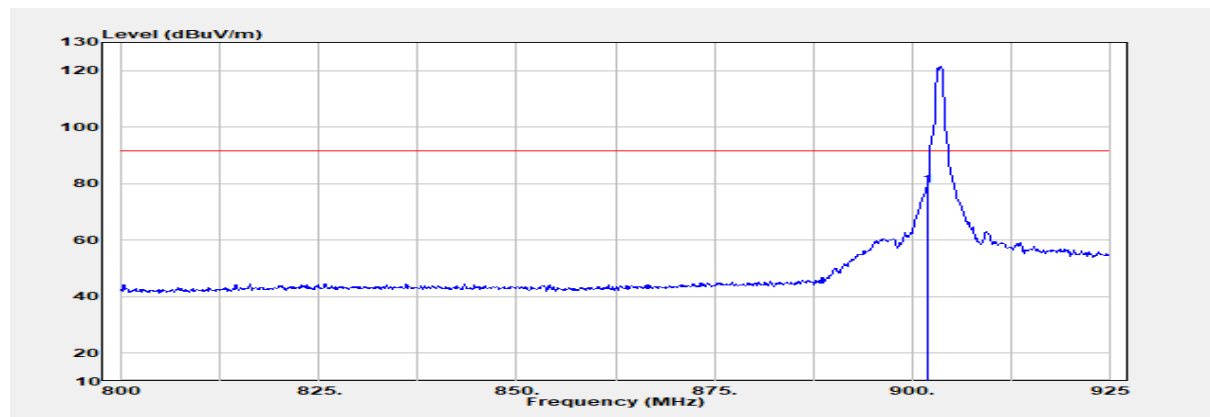
Temp./Humi. :23.5°C/62%

Test Mode :Bandedge

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Howard Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
902.000	Peak	85.14	-5.82	79.32	91.54	-12.22

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2023-11-24

Test Frequency :903.5 MHz

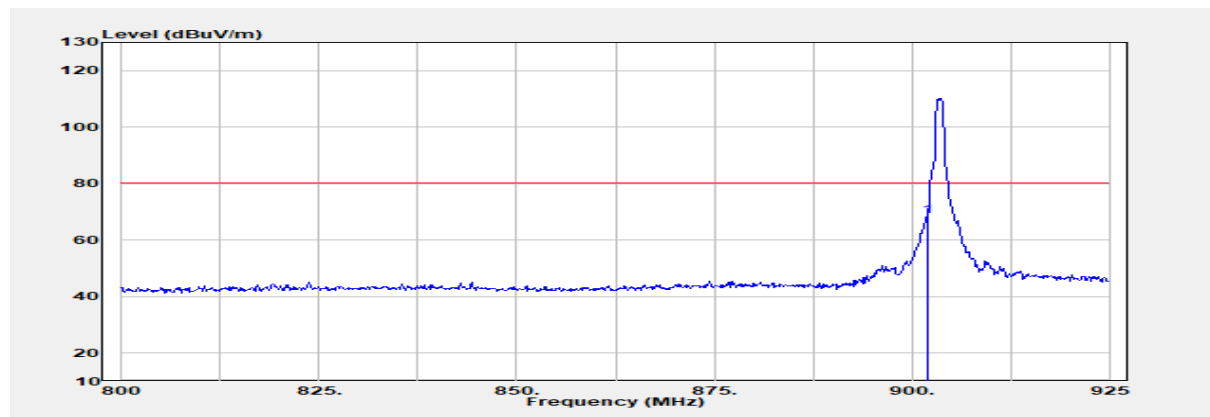
Temp./Humi. :23.5°C/62%

Test Mode :Bandedge

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Howard Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
902.000	Peak	74.25	-5.82	68.42	80.15	-11.73

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2023-11-24

Test Frequency :926.5 MHz

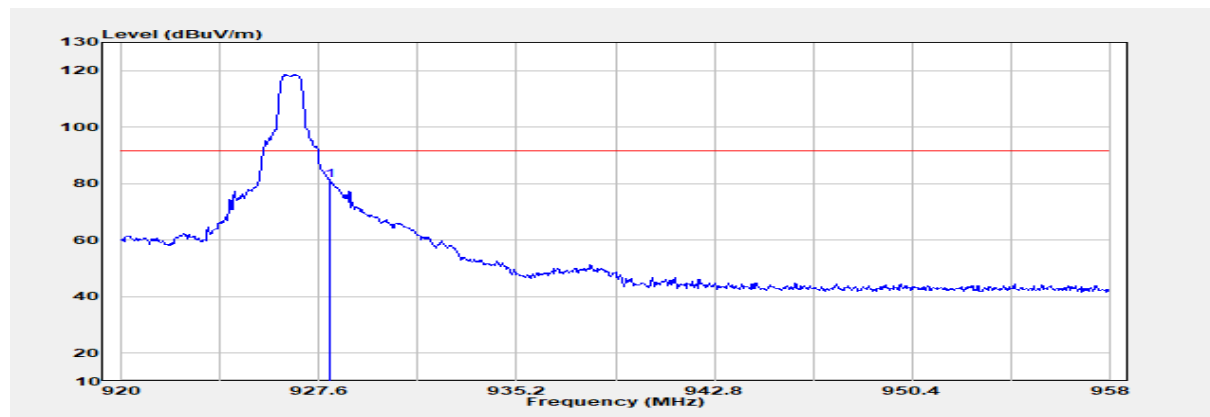
Temp./Humi. :23.5°C/62%

Test Mode :Bandedge

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Howard Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
928.000	Peak	86.01	-4.86	81.16	91.54	-10.38

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2023-11-24

Test Frequency :926.5 MHz

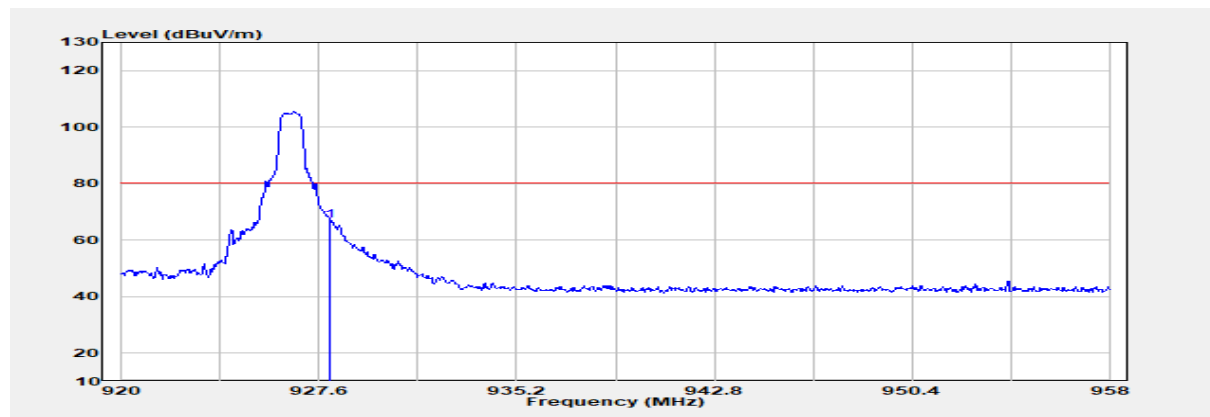
Temp./Humi. :23.5°C/62%

Test Mode :Bandedge

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
928.000	Peak	71.89	-4.86	67.03	80.15	-13.12

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 2M

Test Date :2023-11-24

Test Frequency :905 MHz

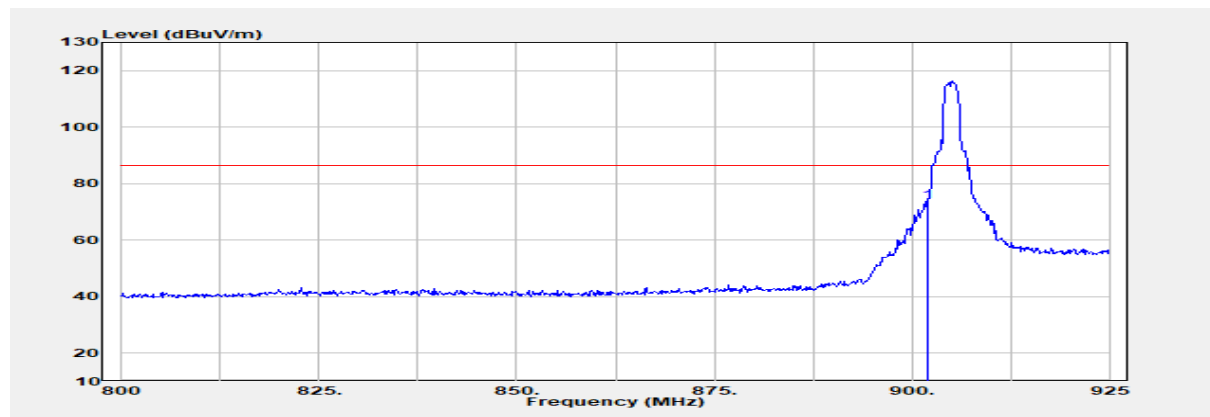
Temp./Humi. :23.5°C/62%

Test Mode :Bandedge

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Howard Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
902.000	Peak	79.46	-5.82	73.64	86.48	-12.84

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 2M

Test Date :2023-11-24

Test Frequency :905 MHz

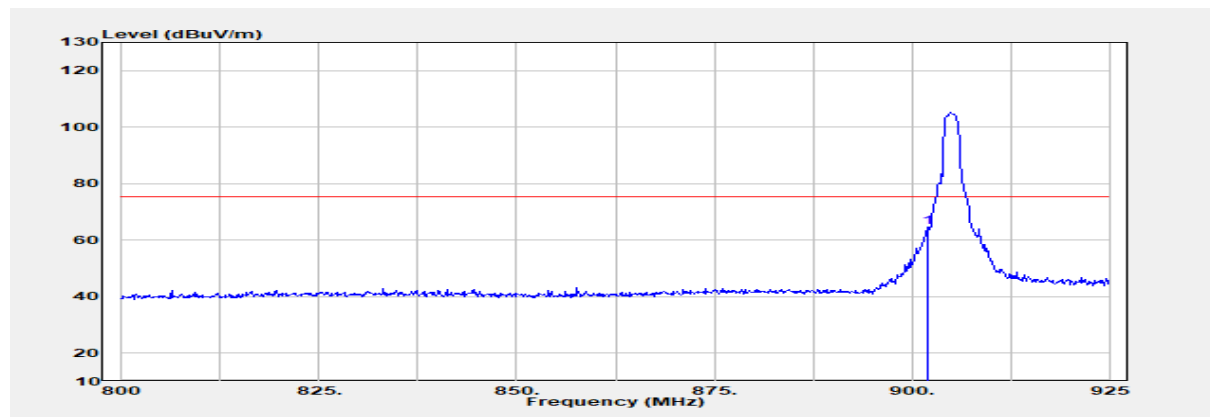
Temp./Humi. :23.5°C/62%

Test Mode :Bandedge

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Howard Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
902.000	Peak	70.31	-5.82	64.49	75.22	-10.73

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 2M

Test Date :2023-11-24

Test Frequency :925 MHz

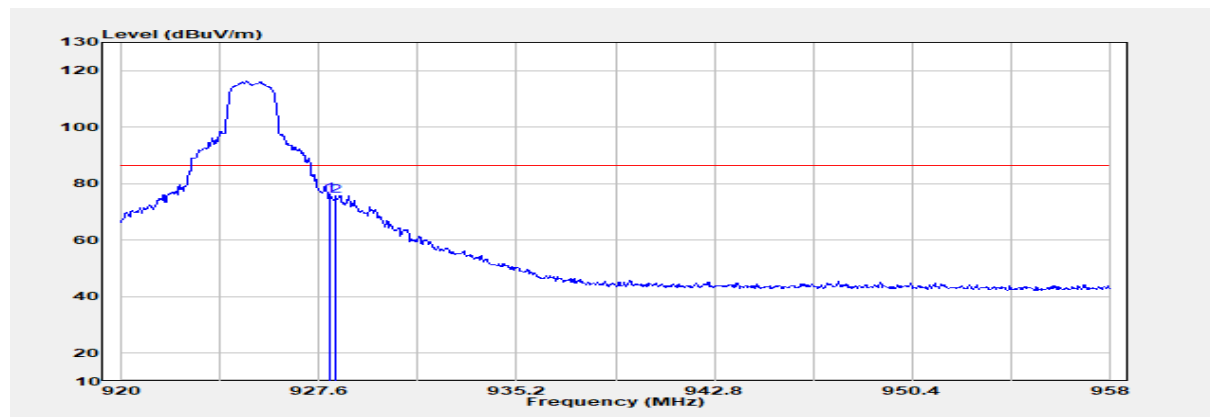
Temp./Humi. :23.5°C/62%

Test Mode :Bandedge

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
928.000	Peak	81.26	-4.86	76.41	86.48	-10.07
928.246	Peak	80.65	-4.86	75.79	86.48	-10.69

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 2M

Test Date :2023-11-24

Test Frequency :925 MHz

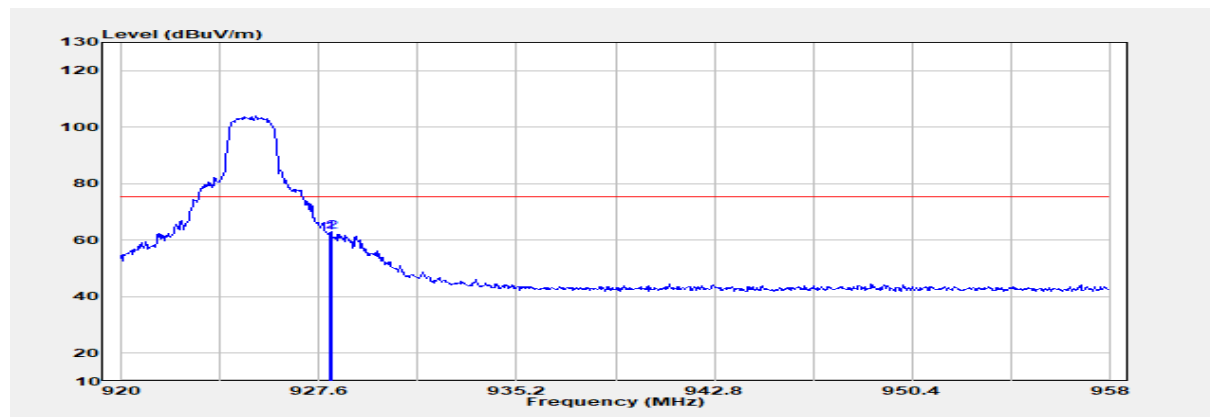
Temp./Humi. :23.5°C/62%

Test Mode :Bandedge

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
928.000	Peak	67.58	-4.86	62.72	75.22	-12.50
928.056	Peak	67.87	-4.86	63.02	75.22	-12.20

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 4M

Test Date :2023-11-28

Test Frequency :906 MHz

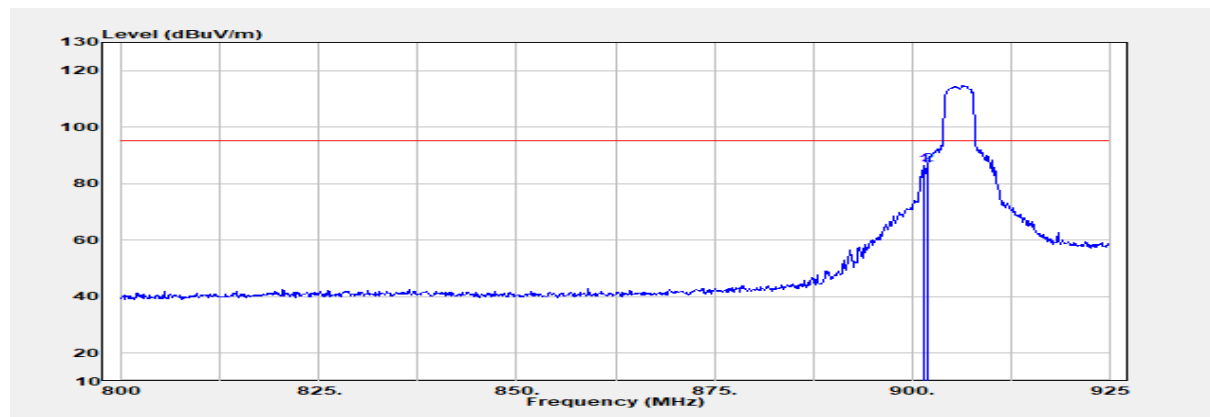
Temp./Humi. :21.5°C/56%

Test Mode :Bandedge

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
901.625	Peak	92.19	-5.84	86.35	95.28	-8.93
902.000	Peak	92.71	-5.82	86.89	95.28	-8.39

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 4M

Test Date :2023-11-28

Test Frequency :906 MHz

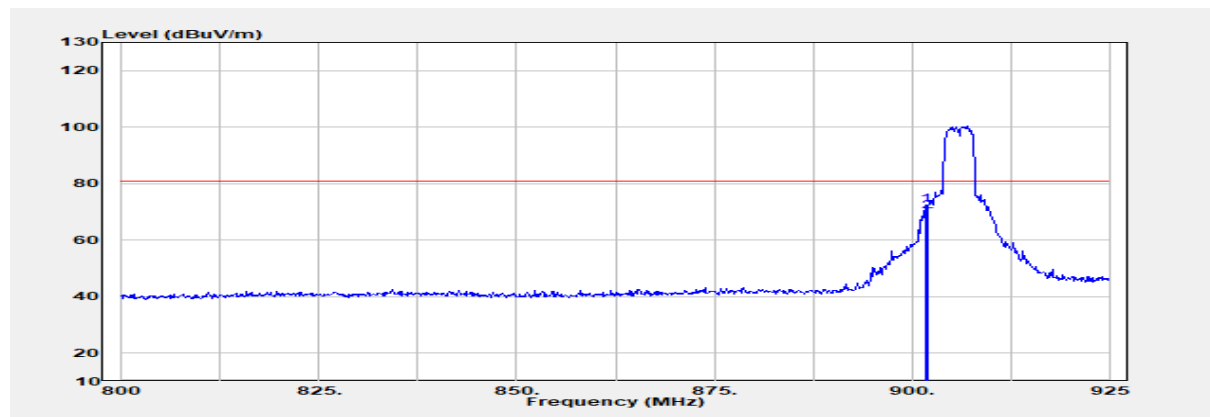
Temp./Humi. :21.5°C/56%

Test Mode :Bandedge

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
901.875	Peak	78.20	-5.83	72.38	81.02	-8.64
902.000	Peak	75.93	-5.82	70.10	81.02	-10.92

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 4M

Test Date :2023-11-28

Test Frequency :922 MHz

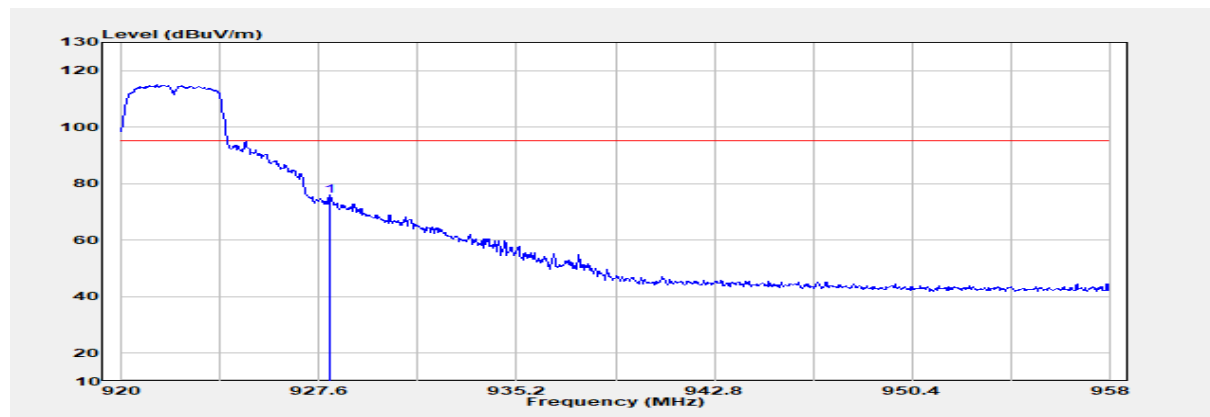
Temp./Humi. :21.5°C/56%

Test Mode :Bandedge

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Howard Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
928.000	Peak	80.58	-4.86	75.72	95.28	-19.56

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 4M

Test Date :2023-11-28

Test Frequency :922 MHz

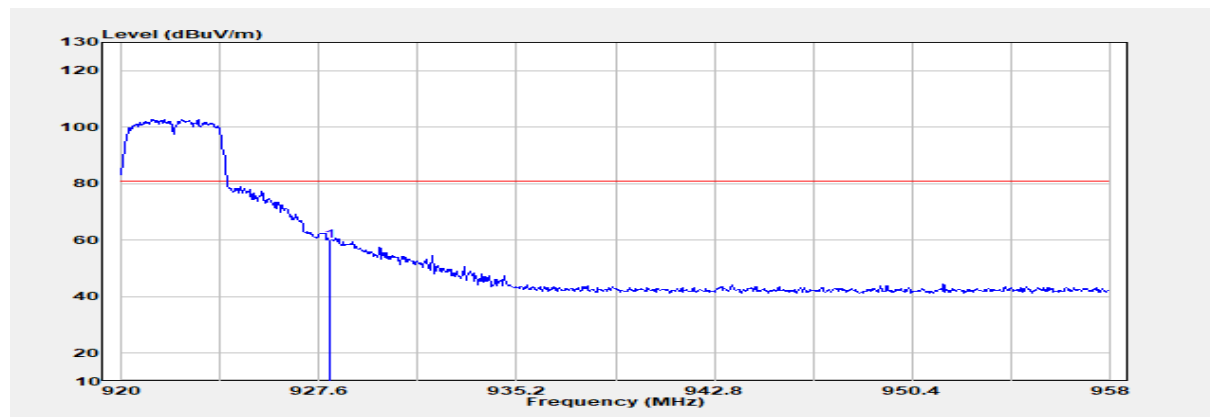
Temp./Humi. :21.5°C/56%

Test Mode :Bandedge

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Howard Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
928.000	Peak	64.70	-4.86	59.84	81.02	-21.18

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 4M

Test Date :2023-11-28

Test Frequency :926 MHz

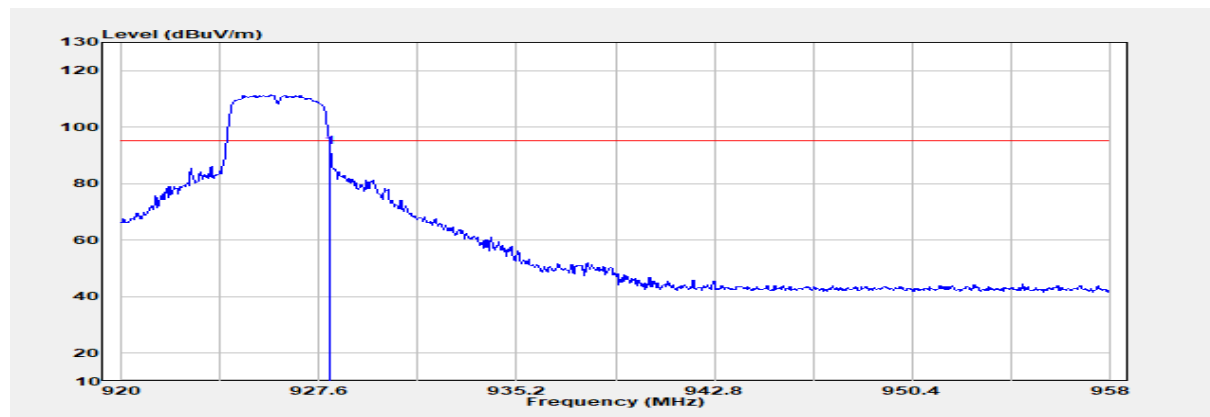
Temp./Humi. :21.5°C/56%

Test Mode :Bandedge

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Howard Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
928.000	Peak	97.69	-4.86	92.83	95.28	-2.45

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 4M

Test Date :2023-11-28

Test Frequency :926 MHz

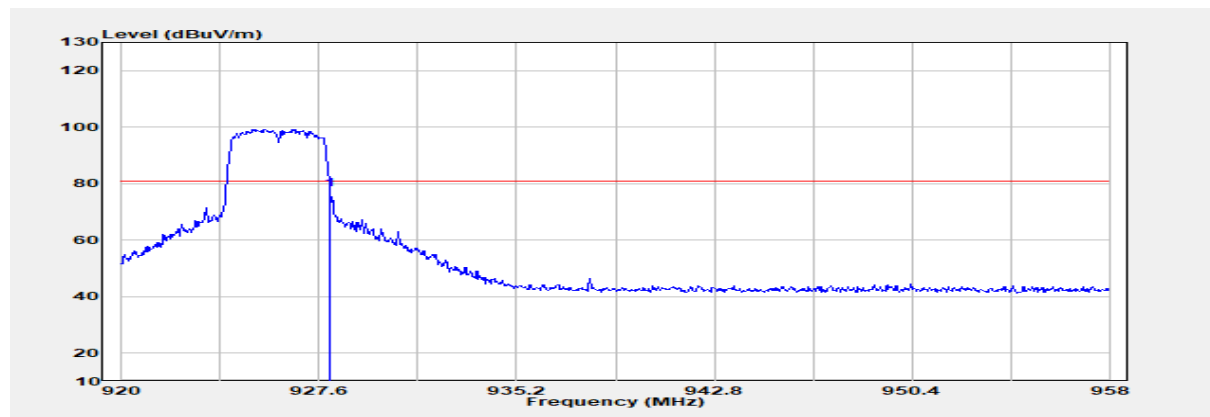
Temp./Humi. :21.5°C/56%

Test Mode :Bandedge

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Howard Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
928.000	Peak	82.78	-4.86	77.92	81.02	-3.10

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 8M

Test Date :2023-11-28

Test Frequency :908 MHz

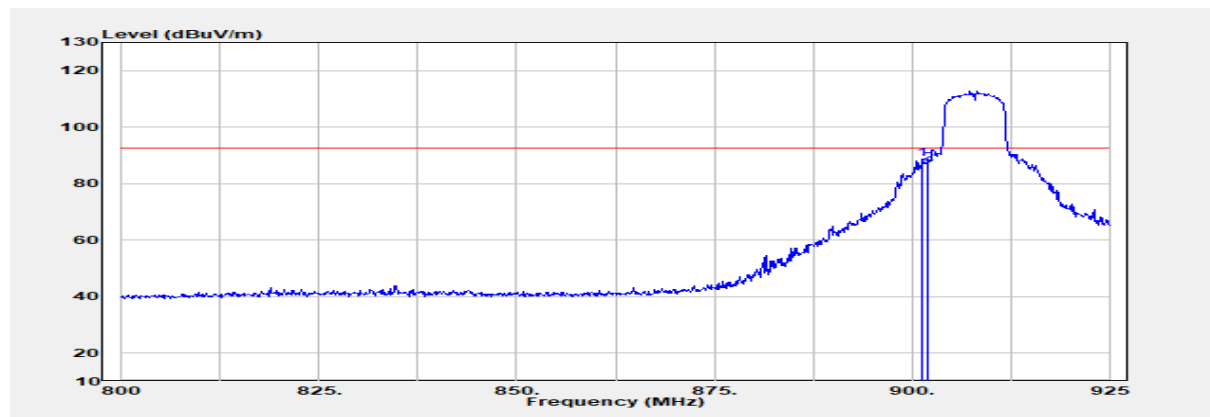
Temp./Humi. :21.5°C/56%

Test Mode :Bandedge

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
901.375	Peak	94.43	-5.85	88.58	92.57	-3.99
902.000	Peak	92.94	-5.82	87.12	92.57	-5.45

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 8M

Test Date :2023-11-28

Test Frequency :908 MHz

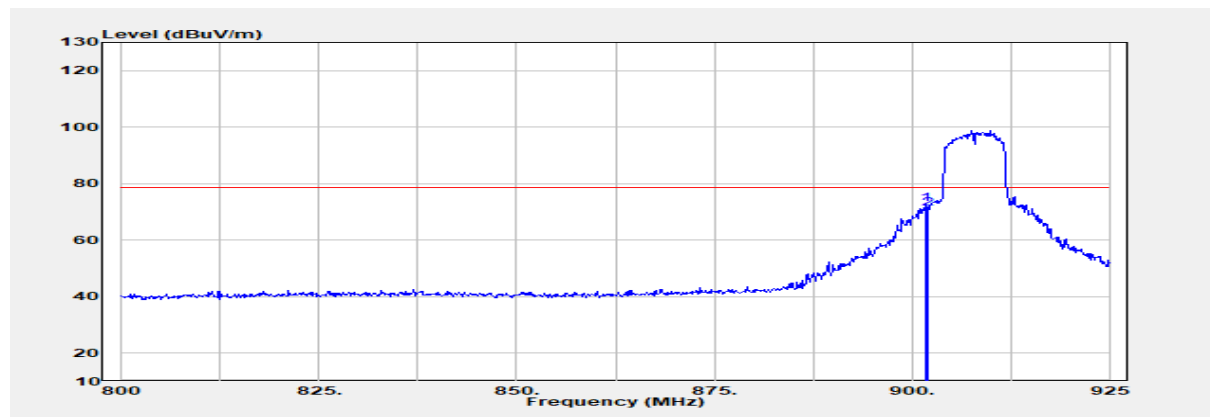
Temp./Humi. :21.5°C/56%

Test Mode :Bandedge

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
901.750	Peak	78.76	-5.83	72.93	78.77	-5.84
902.000	Peak	77.06	-5.82	71.24	78.77	-7.53

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 8M

Test Date :2023-11-28

Test Frequency :924 MHz

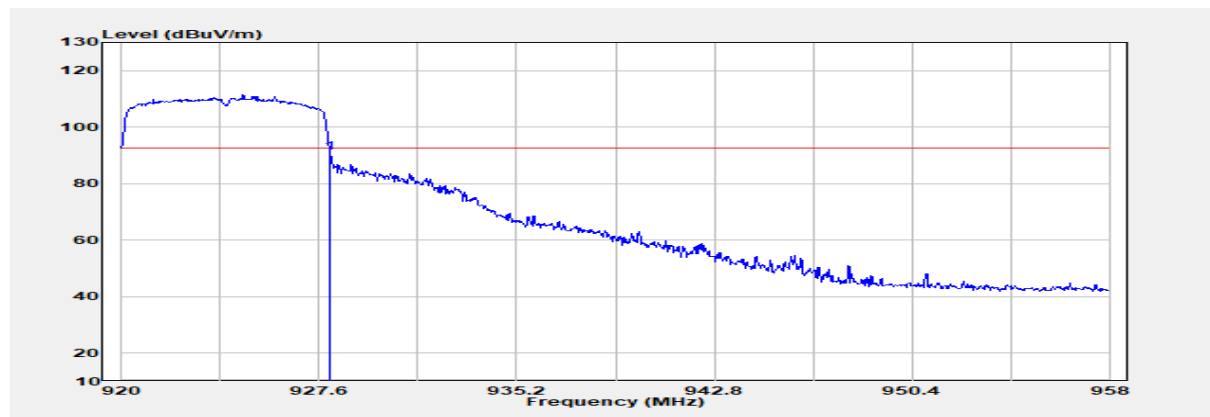
Temp./Humi. :21.5°C/56%

Test Mode :Bandedge

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Howard Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
928.000	Peak	95.83	-4.86	90.98	92.57	-1.59

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 8M

Test Date :2023-11-28

Test Frequency :924 MHz

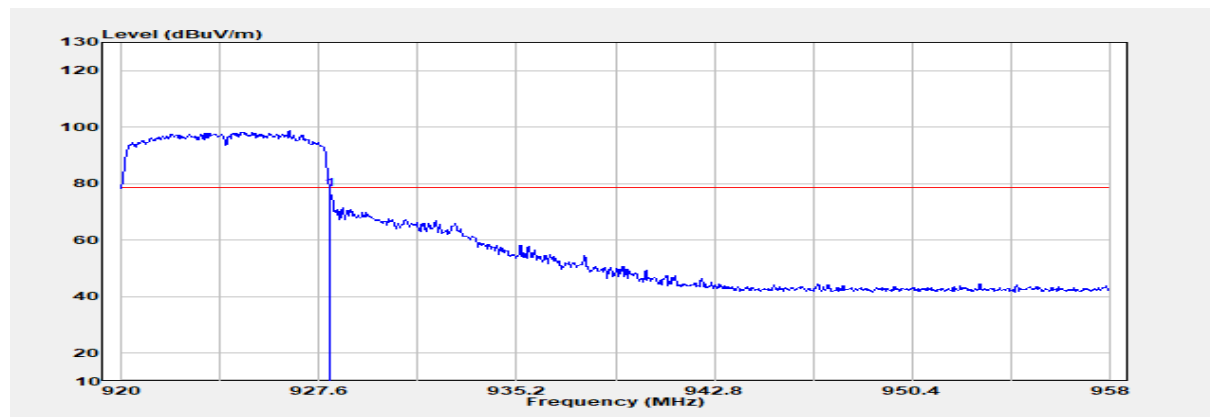
Temp./Humi. :21.5°C/56%

Test Mode :Bandedge

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Howard Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
928.000	Peak	82.99	-4.86	78.13	78.77	-0.64

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## 11.6.2 Radiated Spurious Emission

Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2023-11-24

Test Frequency :914.5 MHz

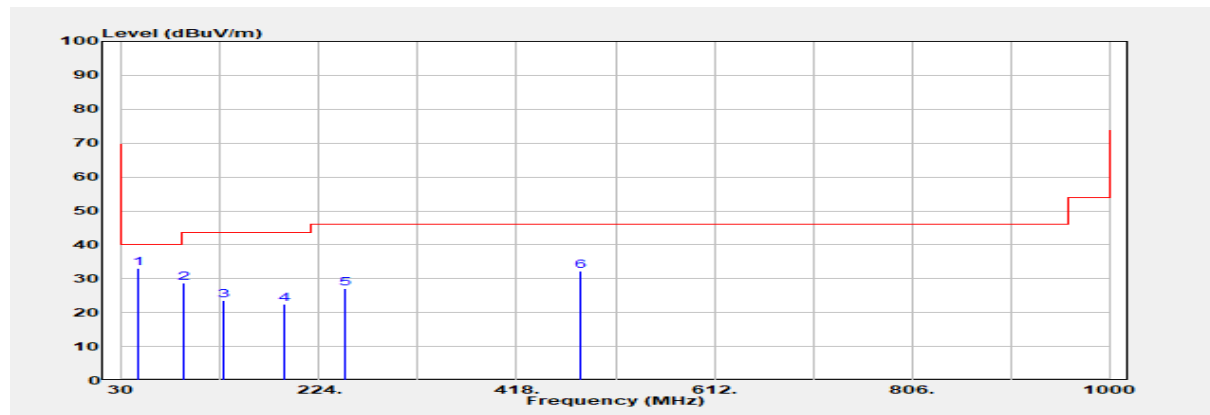
Temp./Humi. :23.5°C/62%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
45.520	Peak	50.23	-17.20	33.03	40.00	-6.97
91.110	Peak	51.69	-22.90	28.79	43.50	-14.71
129.910	Peak	41.48	-18.01	23.48	43.50	-20.02
189.080	Peak	41.79	-19.21	22.58	43.50	-20.92
250.190	Peak	44.35	-17.32	27.04	46.00	-18.96
480.080	Peak	44.27	-11.92	32.35	46.00	-13.65

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2023-11-24

Test Frequency :914.5 MHz

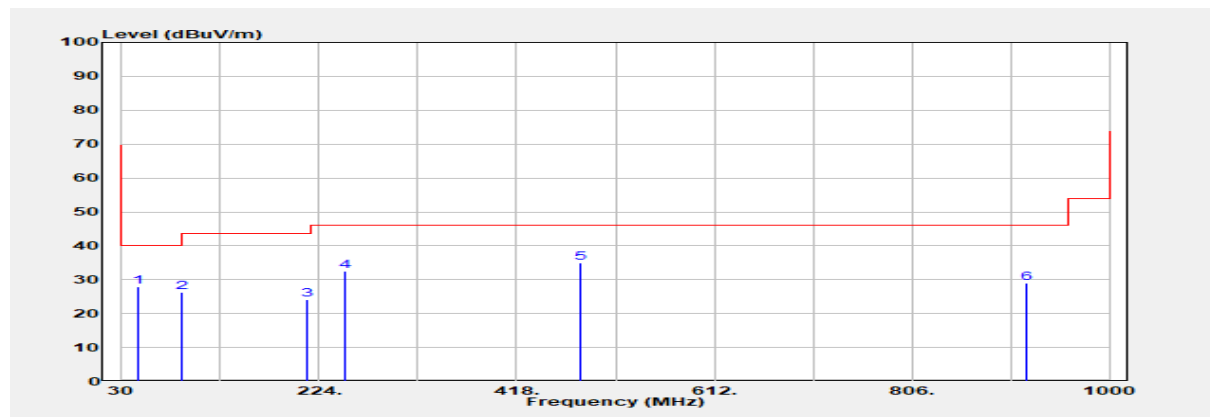
Temp./Humi. :23.5°C/62%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
45.520	Peak	45.14	-17.20	27.94	40.00	-12.06
89.170	Peak	49.30	-23.06	26.24	43.50	-17.26
211.390	Peak	44.34	-20.19	24.15	43.50	-19.35
250.190	Peak	49.90	-17.32	32.58	46.00	-13.42
480.080	Peak	46.76	-11.92	34.84	46.00	-11.16
919.490	Peak	34.01	-5.03	28.98	46.00	-17.02

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 2M

Test Date :2023-11-24

Test Frequency :915MHz

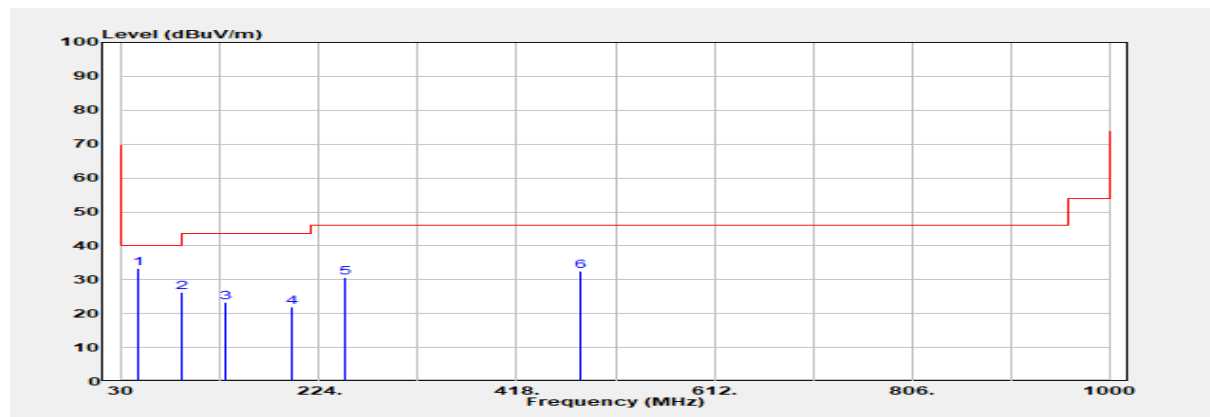
Temp./Humi. :23.5°C/62%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
45.520	Peak	50.45	-17.20	33.25	40.00	-6.75
89.170	Peak	49.23	-23.06	26.18	43.50	-17.32
131.850	Peak	41.17	-17.90	23.26	43.50	-20.24
196.840	Peak	41.71	-19.68	22.03	43.50	-21.47
250.190	Peak	47.92	-17.32	30.60	46.00	-15.40
480.080	Peak	44.37	-11.92	32.45	46.00	-13.55

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Test Site :SAC D

Operation Mode :802.11ah 2M

Test Date :2023-11-24

Test Frequency :915MHz

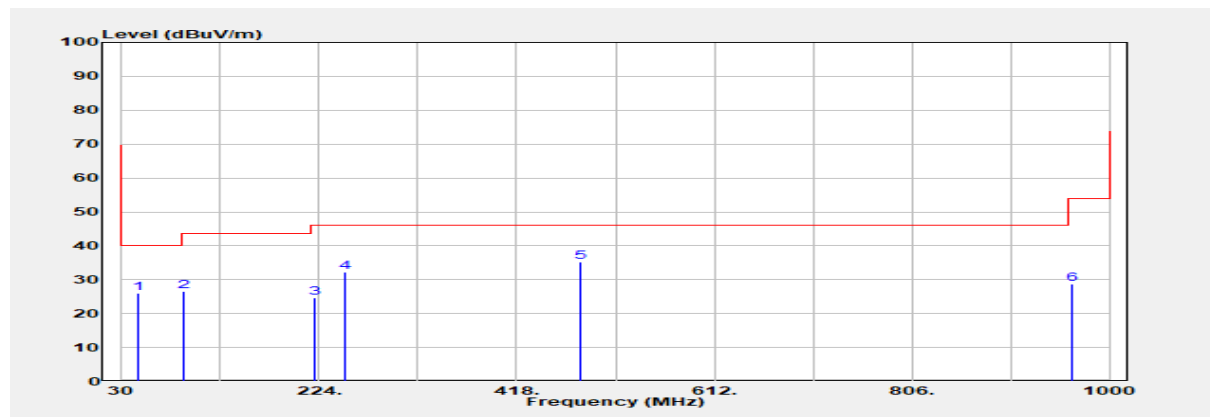
Temp./Humi. :23.5°C/62%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
45.520	Peak	43.20	-17.20	26.00	40.00	-14.00
90.140	Peak	49.43	-22.94	26.49	43.50	-17.01
219.150	Peak	44.15	-19.48	24.67	46.00	-21.33
250.190	Peak	49.58	-17.32	32.26	46.00	-13.74
480.080	Peak	47.20	-11.92	35.28	46.00	-10.72
964.110	Peak	33.18	-4.42	28.77	54.00	-25.23

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 4M

Test Date :2023-11-24

Test Frequency :914 MHz

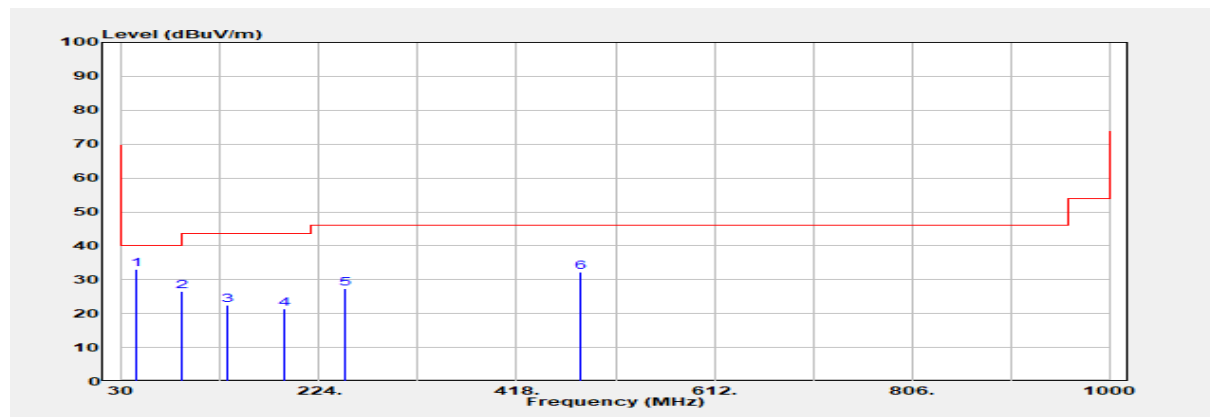
Temp./Humi. :23.5°C/62%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
44.550	Peak	50.60	-17.45	33.15	40.00	-6.85
88.200	Peak	49.53	-23.10	26.43	43.50	-17.07
133.790	Peak	40.08	-17.61	22.47	43.50	-21.03
190.050	Peak	40.79	-19.29	21.50	43.50	-22.00
250.190	Peak	44.79	-17.32	27.47	46.00	-18.53
480.080	Peak	44.27	-11.92	32.35	46.00	-13.65

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 4M

Test Date :2023-11-24

Test Frequency :914 MHz

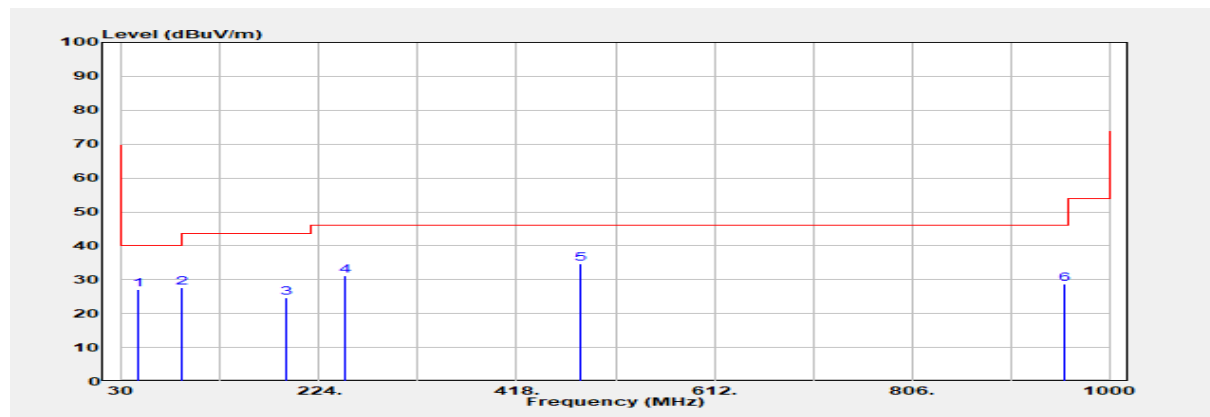
Temp./Humi. :23.5°C/62%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
45.520	Peak	44.27	-17.20	27.07	40.00	-12.93
89.170	Peak	50.65	-23.06	27.59	43.50	-15.91
191.020	Peak	43.94	-19.28	24.66	43.50	-18.84
250.190	Peak	48.55	-17.32	31.23	46.00	-14.77
480.080	Peak	46.63	-11.92	34.71	46.00	-11.29
956.350	Peak	33.19	-4.39	28.80	46.00	-17.20

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 8M

Test Date :2023-11-24

Test Frequency :916 MHz

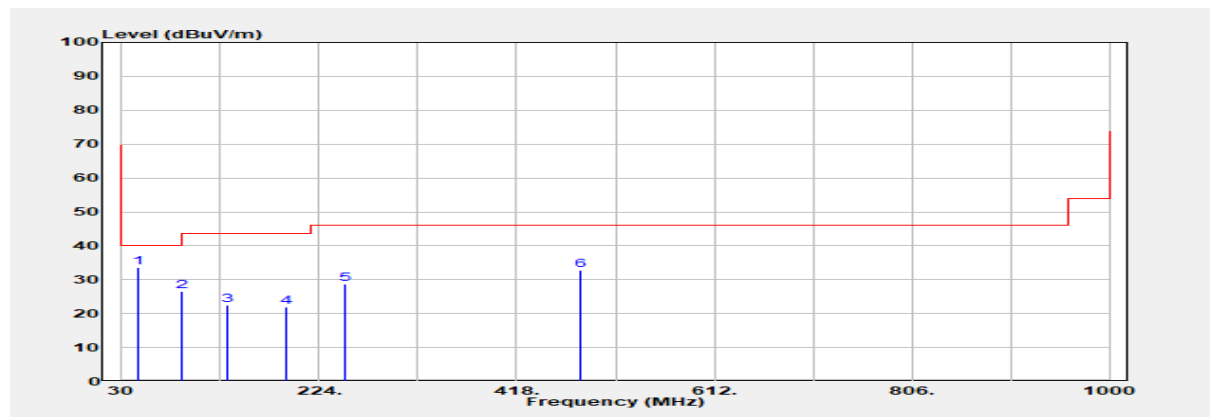
Temp./Humi. :23.5°C/62%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
45.520	Peak	50.69	-17.20	33.49	40.00	-6.51
89.170	Peak	49.49	-23.06	26.43	43.50	-17.07
133.790	Peak	40.10	-17.61	22.49	43.50	-21.01
191.020	Peak	41.16	-19.28	21.88	43.50	-21.62
250.190	Peak	46.01	-17.32	28.69	46.00	-17.31
480.080	Peak	44.83	-11.92	32.91	46.00	-13.09

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 8M

Test Date :2023-11-24

Test Frequency :916 MHz

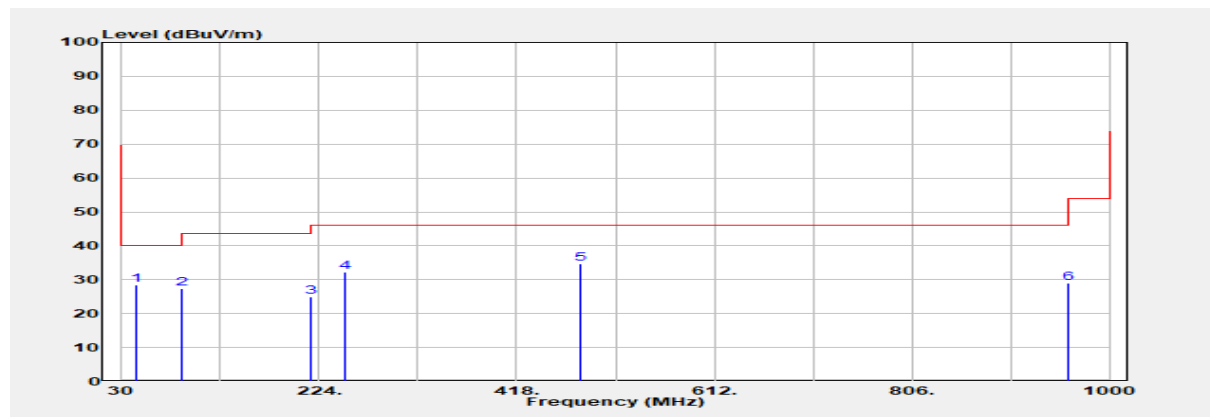
Temp./Humi. :23.5°C/62%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
44.550	Peak	45.79	-17.45	28.34	40.00	-11.66
89.170	Peak	50.33	-23.06	27.27	43.50	-16.23
216.240	Peak	44.57	-19.75	24.83	46.00	-21.17
250.190	Peak	49.63	-17.32	32.31	46.00	-13.69
480.080	Peak	46.65	-11.92	34.73	46.00	-11.27
960.230	Peak	33.24	-4.25	28.99	54.00	-25.01

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2023-11-28

Test Frequency :903.5 MHz

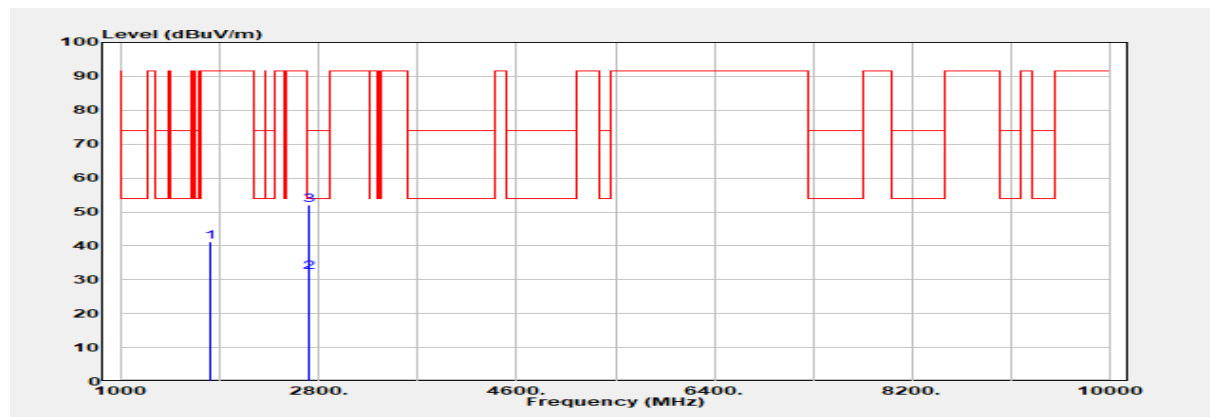
Temp./Humi. :21.5°C/56%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
1807.000	Peak	49.20	-7.91	41.29	91.54	-50.25
2710.500	Average	35.88	-3.64	32.24	54.00	-21.76
2710.500	Peak	55.69	-3.64	52.05	74.00	-21.95

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2023-11-28

Test Frequency :903.5 MHz

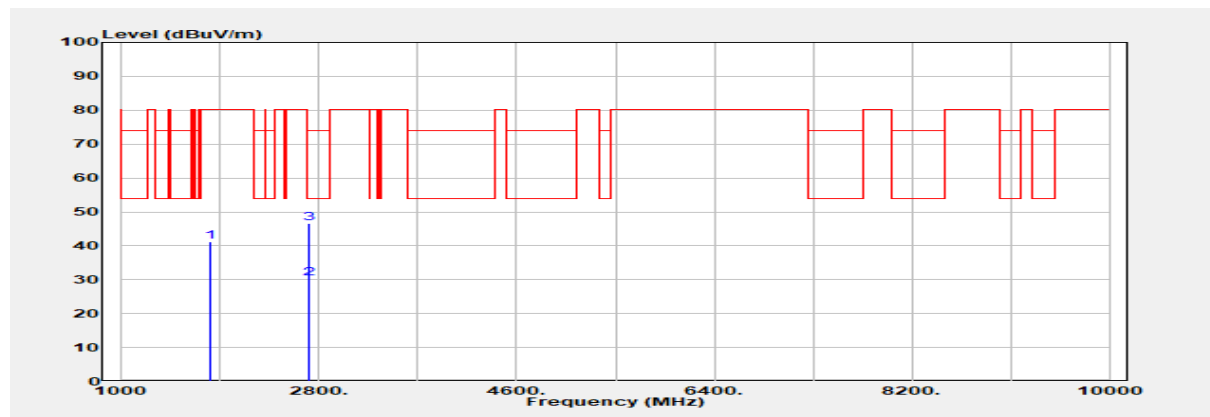
Temp./Humi. :21.5°C/56%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
1807.000	Peak	48.97	-7.91	41.06	80.15	-39.09
2710.500	Average	34.10	-3.64	30.46	54.00	-23.54
2710.500	Peak	50.30	-3.64	46.66	74.00	-27.34

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2023-11-24

Test Frequency :914.5 MHz

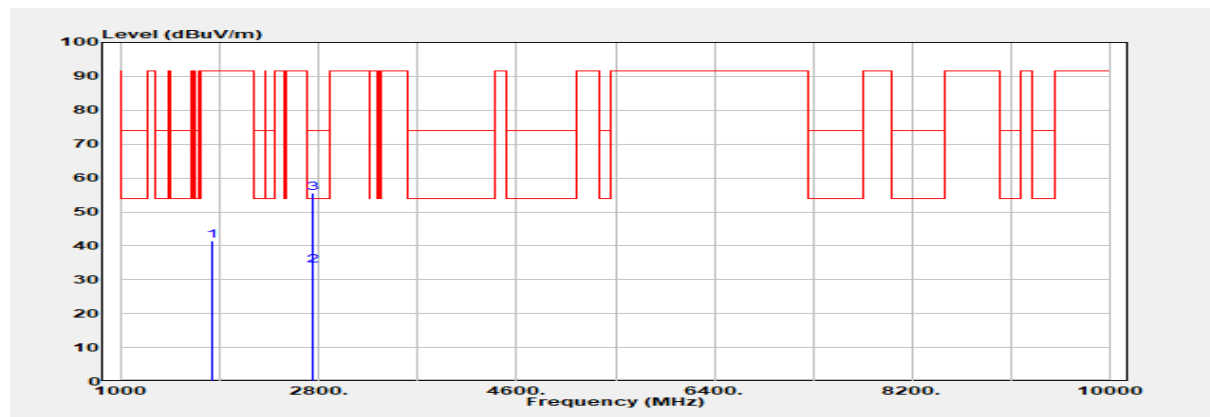
Temp./Humi. :23.5°C/62%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
1829.000	Peak	49.43	-7.87	41.56	91.54	-49.98
2743.500	Average	37.98	-3.95	34.02	54.00	-19.98
2743.500	Peak	59.56	-3.95	55.61	74.00	-18.39

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2023-11-24

Test Frequency :914.5 MHz

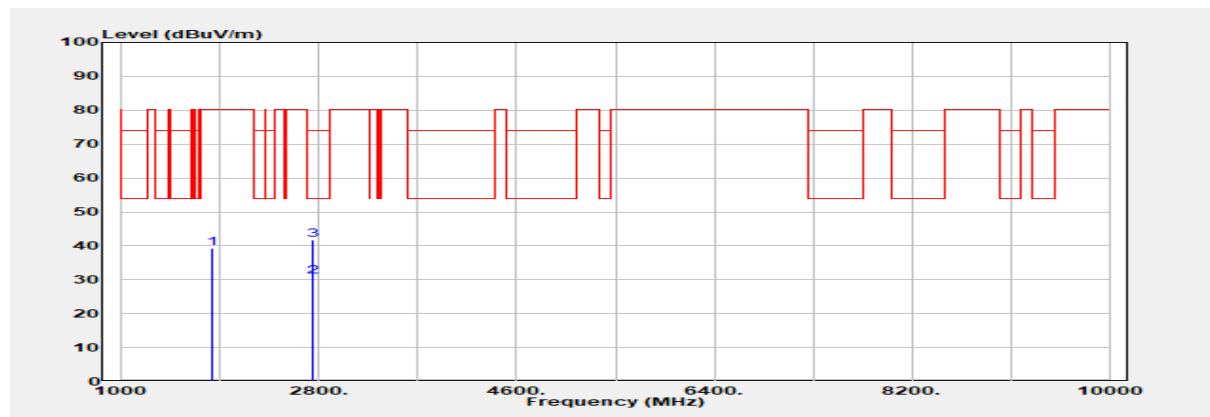
Temp./Humi. :23.5°C/62%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
1829.000	Peak	47.09	-7.87	39.21	80.15	-40.94
2743.500	Average	34.78	-3.95	30.83	54.00	-23.17
2743.500	Peak	45.72	-3.95	41.76	74.00	-32.24

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2023-11-24

Test Frequency :926.5 MHz

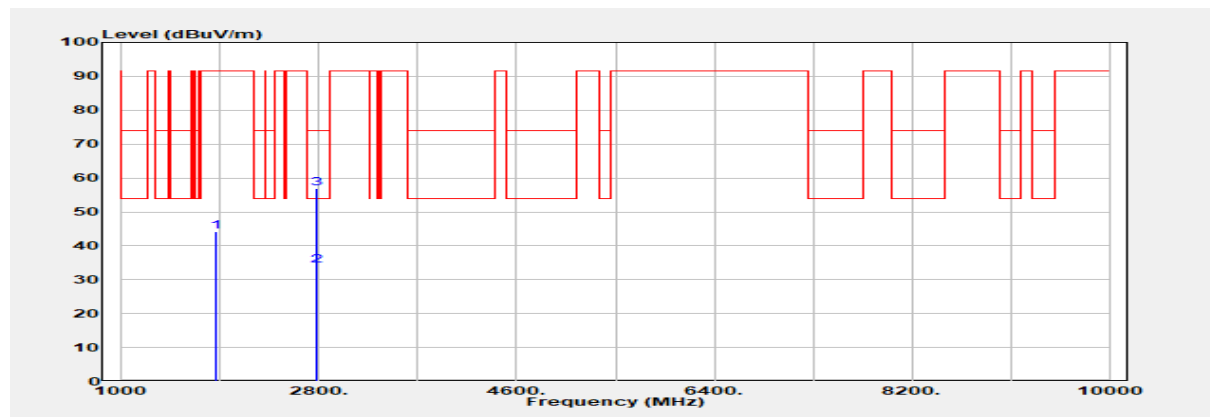
Temp./Humi. :23.5°C/62%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
1853.000	Peak	52.08	-7.84	44.24	91.54	-47.30
2779.500	Average	38.10	-4.08	34.02	54.00	-19.98
2779.500	Peak	60.88	-4.08	56.79	74.00	-17.21

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2023-11-24

Test Frequency :926.5 MHz

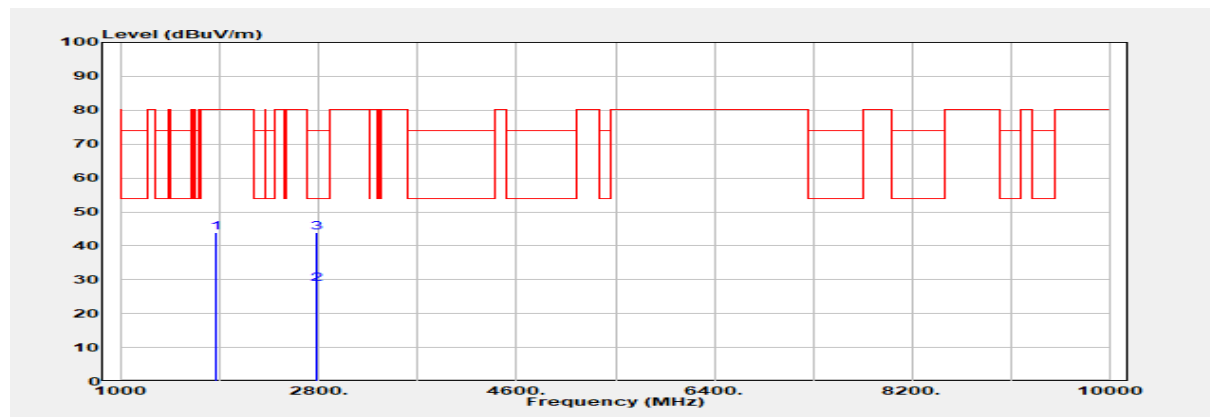
Temp./Humi. :23.5°C/62%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
1853.000	Peak	51.79	-7.84	43.96	80.15	-36.19
2779.500	Average	32.88	-4.08	28.79	54.00	-25.21
2779.500	Peak	47.98	-4.08	43.90	74.00	-30.10

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 2M

Test Date :2023-11-28

Test Frequency :905 MHz

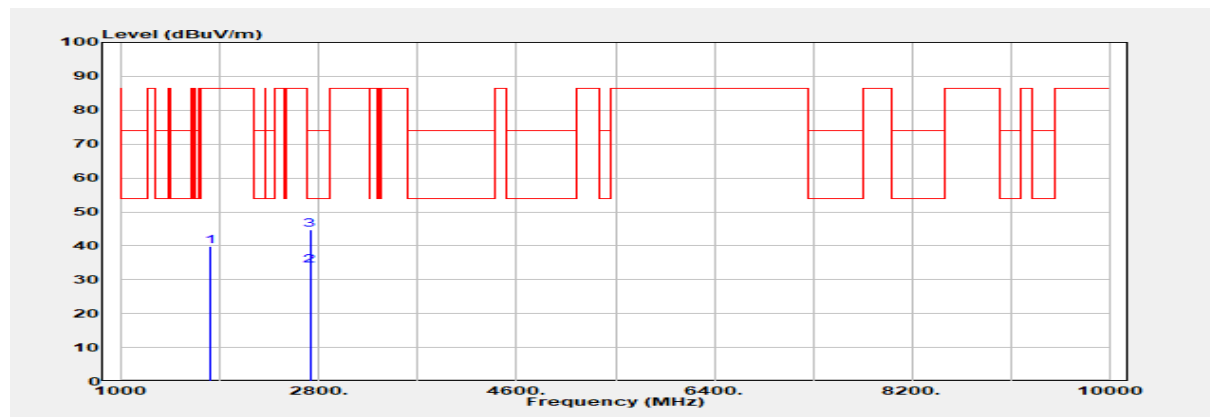
Temp./Humi. :21.5°C/56%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
1810.000	Peak	47.77	-7.90	39.86	86.48	-46.62
2715.000	Average	37.93	-3.68	34.25	54.00	-19.75
2715.000	Peak	48.33	-3.68	44.65	74.00	-29.35

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 2M

Test Date :2023-11-28

Test Frequency :905 MHz

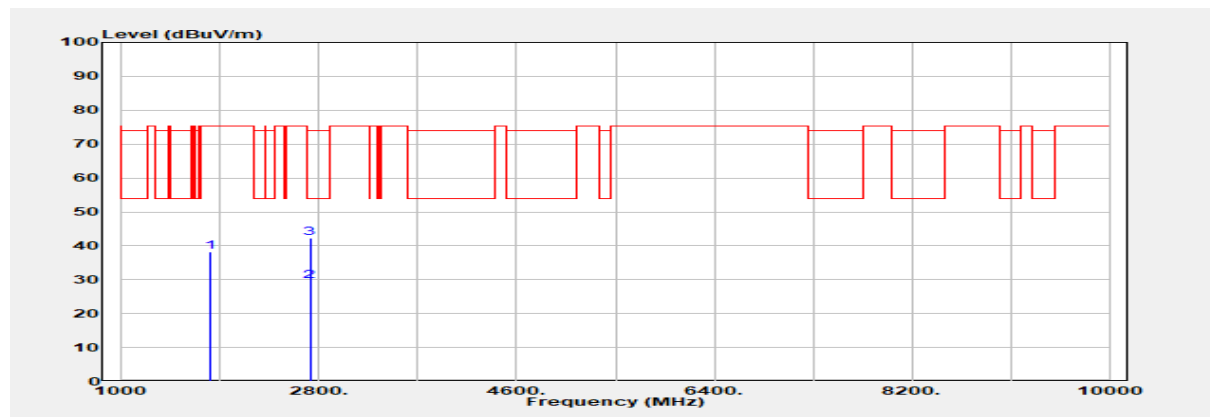
Temp./Humi. :21.5°C/56%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
1810.000	Peak	46.12	-7.90	38.21	75.22	-37.01
2715.000	Average	33.28	-3.68	29.60	54.00	-24.40
2715.000	Peak	45.84	-3.68	42.16	74.00	-31.84

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 2M

Test Date :2023-11-24

Test Frequency :915 MHz

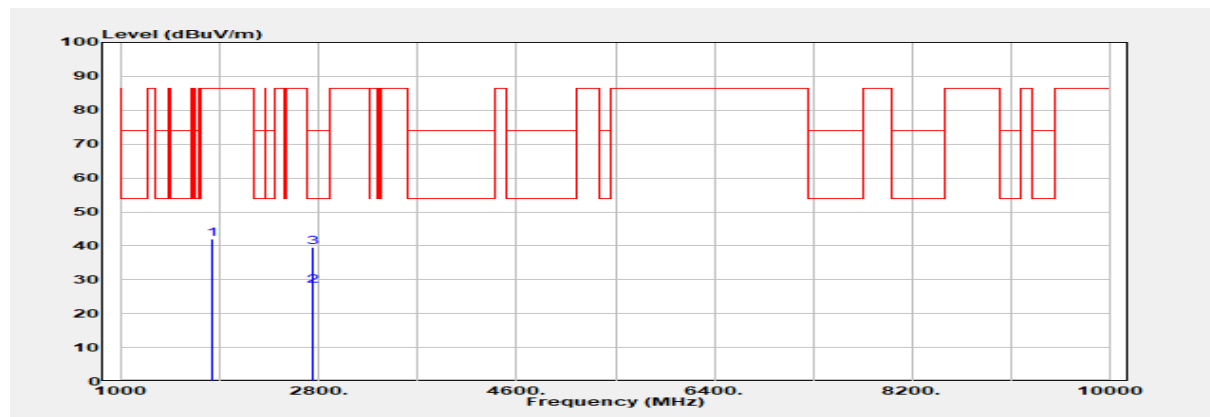
Temp./Humi. :23.5°C/62%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
1830.000	Peak	49.92	-7.87	42.04	86.48	-44.44
2745.000	Average	32.12	-3.97	28.15	54.00	-25.85
2745.000	Peak	43.44	-3.97	39.47	74.00	-34.53

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 2M

Test Date :2023-11-24

Test Frequency :915 MHz

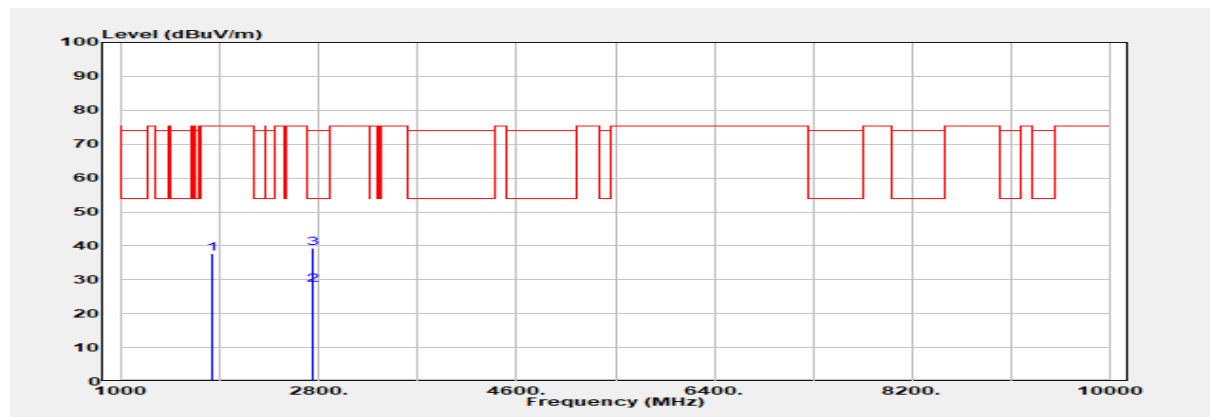
Temp./Humi. :23.5°C/62%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
1830.000	Peak	45.54	-7.87	37.67	75.22	-37.55
2745.000	Average	32.50	-3.97	28.53	54.00	-25.47
2745.000	Peak	43.37	-3.97	39.40	74.00	-34.60

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 2M

Test Date :2023-11-24

Test Frequency :925 MHz

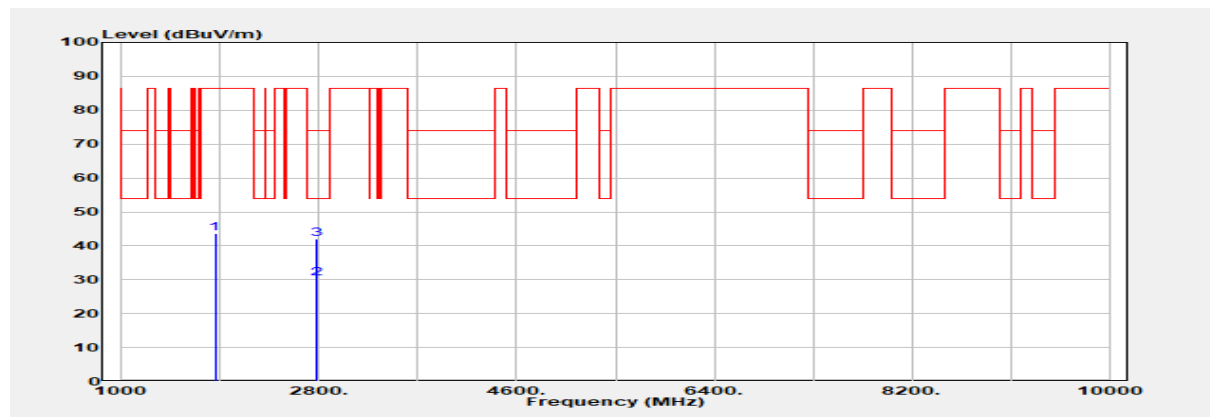
Temp./Humi. :23.5°C/62%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
1850.000	Peak	51.56	-7.84	43.72	86.48	-42.76
2775.000	Average	34.36	-4.07	30.29	54.00	-23.71
2775.000	Peak	46.17	-4.07	42.10	74.00	-31.90

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Member of SGS Group

Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 2M

Test Date :2023-11-24

Test Frequency :925 MHz

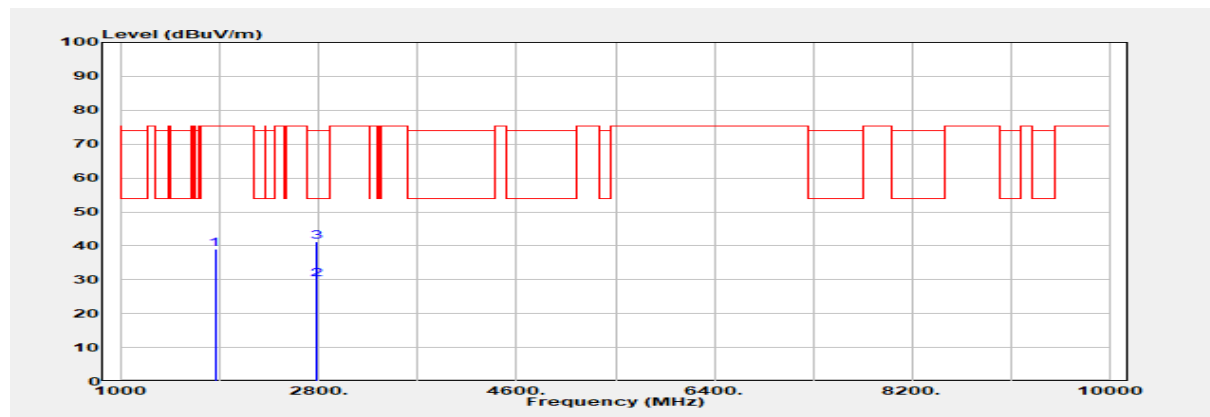
Temp./Humi. :23.5°C/62%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
1850.000	Peak	46.96	-7.84	39.12	75.22	-36.10
2775.000	Average	34.28	-4.07	30.20	54.00	-23.80
2775.000	Peak	45.32	-4.07	41.25	74.00	-32.75

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 4M

Test Date :2023-11-28

Test Frequency :906 MHz

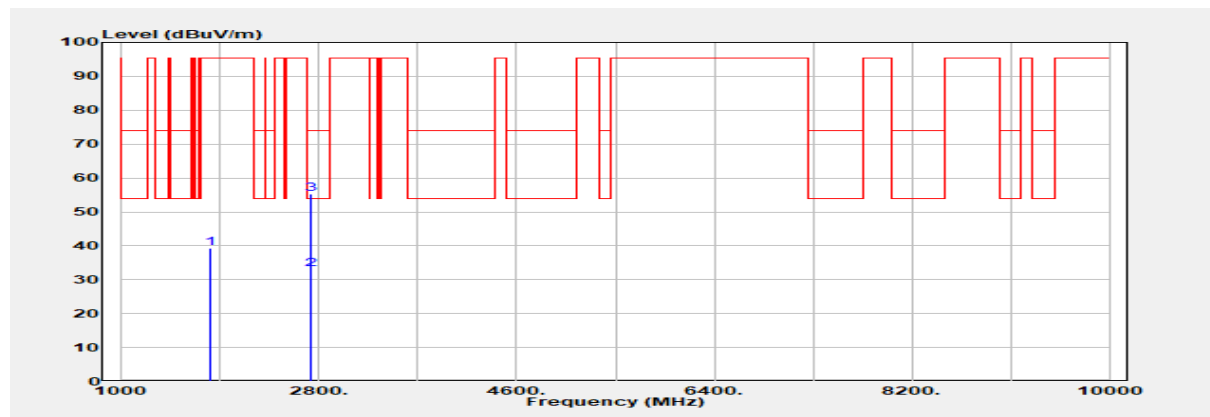
Temp./Humi. :21.5°C/56%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
1812.000	Peak	47.17	-7.90	39.27	95.28	-56.01
2718.000	Average	36.71	-3.71	33.00	54.00	-21.00
2718.000	Peak	59.01	-3.71	55.30	74.00	-18.70

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 4M

Test Date :2023-11-28

Test Frequency :906 MHz

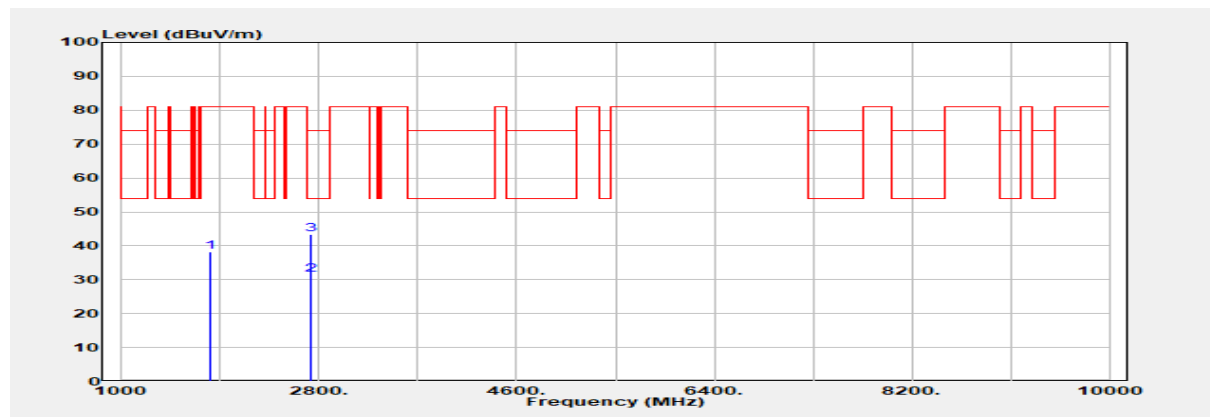
Temp./Humi. :21.5°C/56%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
1812.000	Peak	46.06	-7.90	38.16	81.02	-42.86
2718.000	Average	35.18	-3.71	31.47	54.00	-22.53
2718.000	Peak	47.04	-3.71	43.33	74.00	-30.67

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 4M

Test Date :2023-11-24

Test Frequency :914 MHz

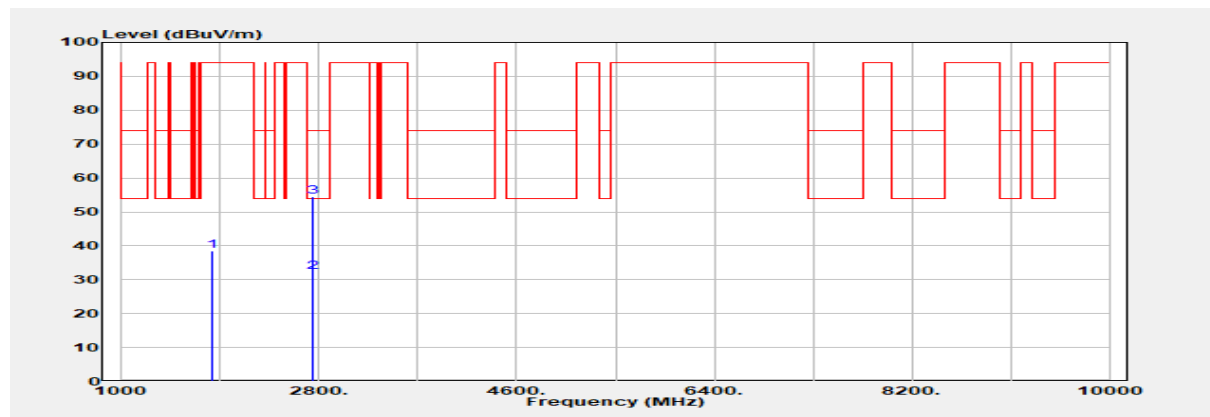
Temp./Humi. :23.5°C/62%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
1828.000	Peak	46.33	-7.87	38.45	95.28	-56.83
2742.000	Average	36.09	-3.94	32.15	54.00	-21.85
2742.000	Peak	58.31	-3.94	54.37	74.00	-19.63

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 4M

Test Date :2023-11-24

Test Frequency :914 MHz

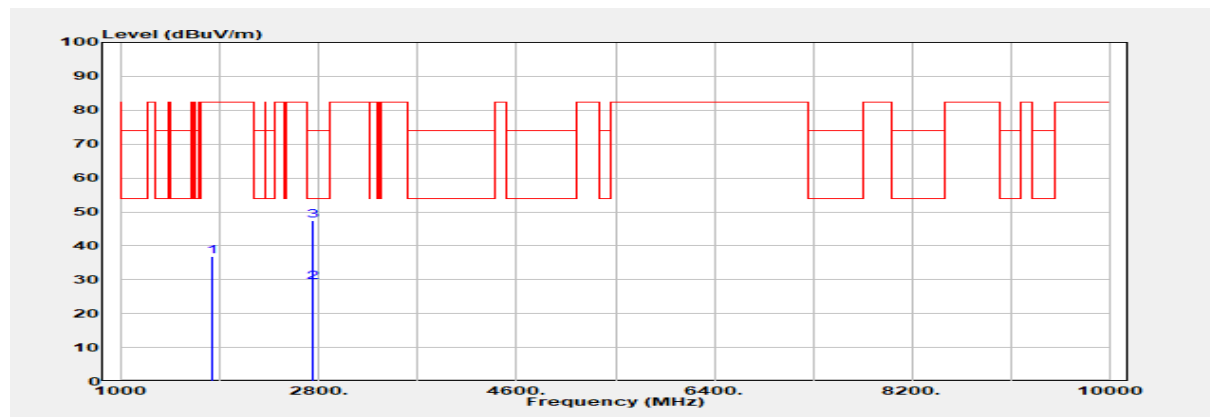
Temp./Humi. :23.5°C/62%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
1828.000	Peak	44.83	-7.87	36.96	81.02	-44.06
2742.000	Average	33.10	-3.94	29.16	54.00	-24.84
2742.000	Peak	51.46	-3.94	47.52	74.00	-26.48

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 4M

Test Date :2023-11-28

Test Frequency :922 MHz

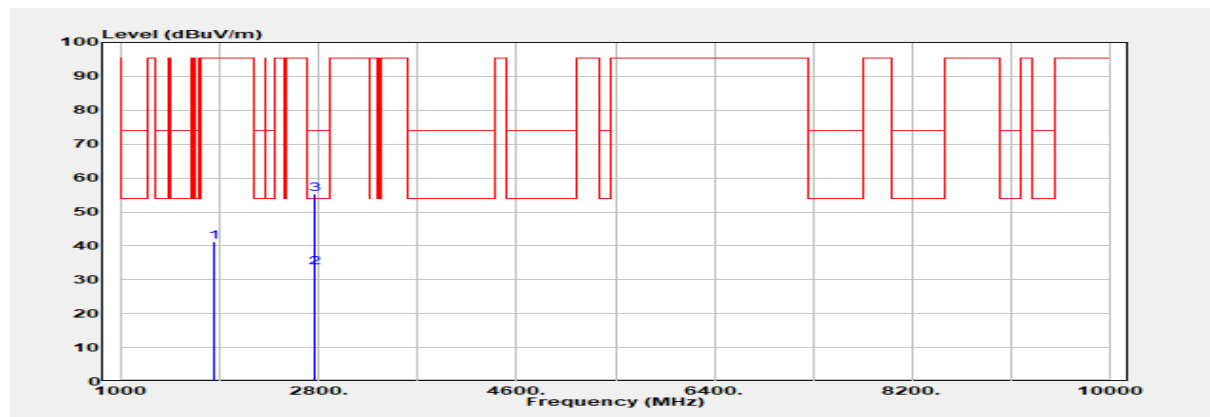
Temp./Humi. :21.5°C/56%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
1844.000	Peak	49.17	-7.85	41.32	95.28	-53.96
2766.000	Average	37.74	-4.05	33.69	54.00	-20.31
2766.000	Peak	59.23	-4.05	55.18	74.00	-18.82

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 4M

Test Date :2023-11-28

Test Frequency :922 MHz

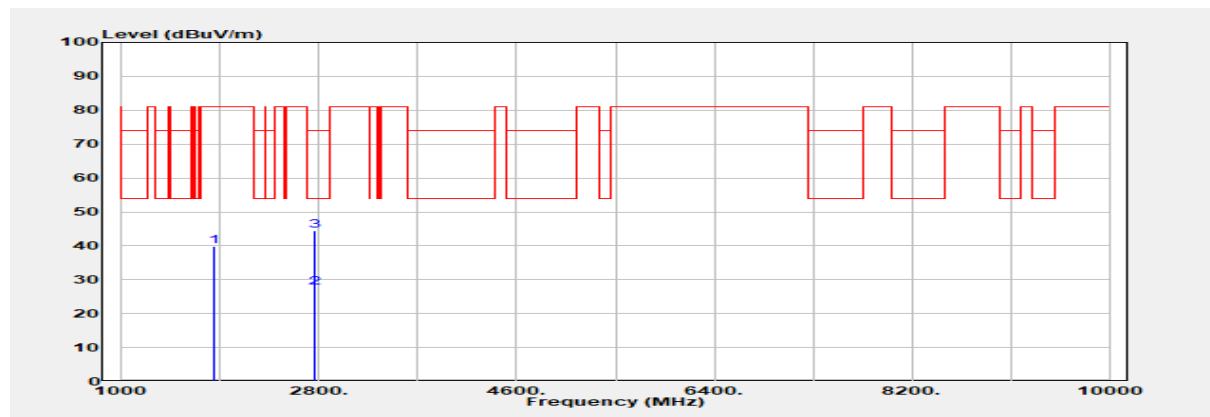
Temp./Humi. :21.5°C/56%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
1844.000	Peak	47.75	-7.85	39.90	81.02	-41.12
2766.000	Average	31.67	-4.05	27.62	54.00	-26.38
2766.000	Peak	48.53	-4.05	44.48	74.00	-29.52

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 4M

Test Date :2023-11-24

Test Frequency :926 MHz

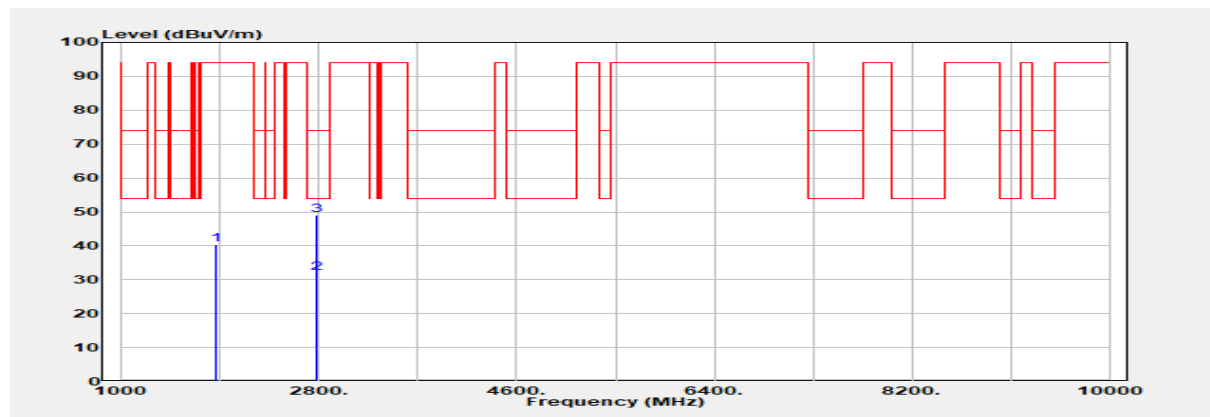
Temp./Humi. :23.5°C/62%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
1852.000	Peak	48.24	-7.84	40.40	95.28	-54.88
2778.000	Average	36.10	-4.08	32.02	54.00	-21.98
2778.000	Peak	53.01	-4.08	48.93	74.00	-25.07

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 4M

Test Date :2023-11-24

Test Frequency :926 MHz

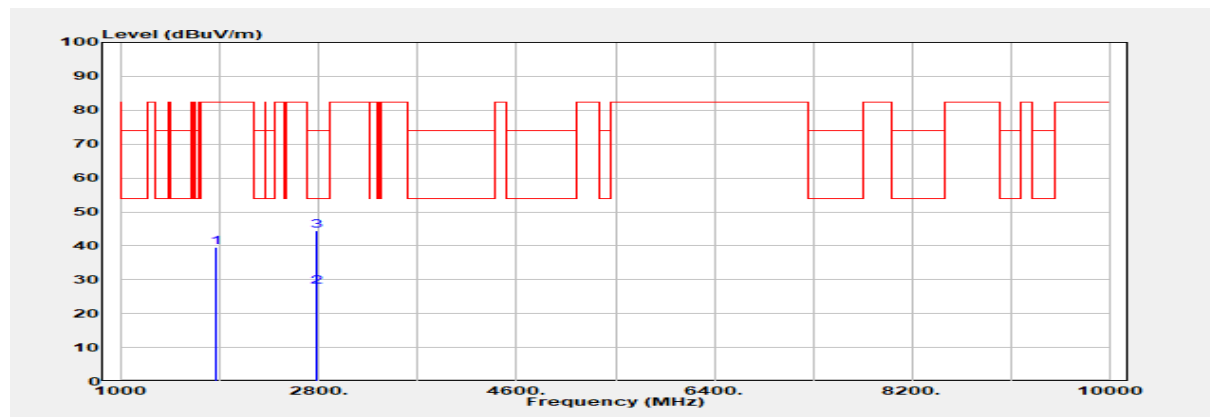
Temp./Humi. :23.5°C/62%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Howard Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
1852.000	Peak	47.38	-7.84	39.55	81.02	-41.47
2778.000	Average	32.08	-4.08	28.00	54.00	-26.00
2778.000	Peak	48.52	-4.08	44.44	74.00	-29.56

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 8M

Test Date :2023-11-28

Test Frequency :908 MHz

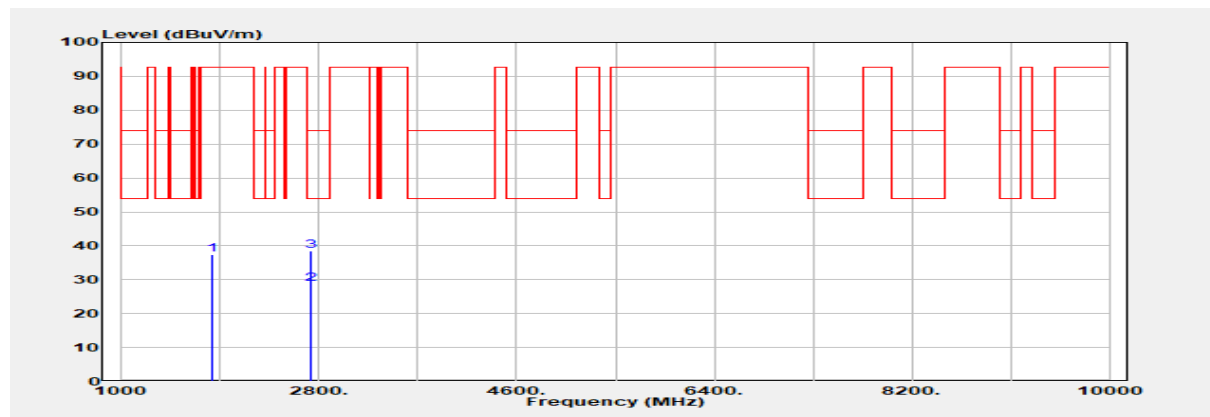
Temp./Humi. :21.5°C/56%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
1816.000	Peak	45.17	-7.89	37.27	92.57	-55.30
2724.000	Average	32.42	-3.77	28.65	54.00	-25.35
2724.000	Peak	42.30	-3.77	38.53	74.00	-35.47

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 8M

Test Date :2023-11-28

Test Frequency :908 MHz

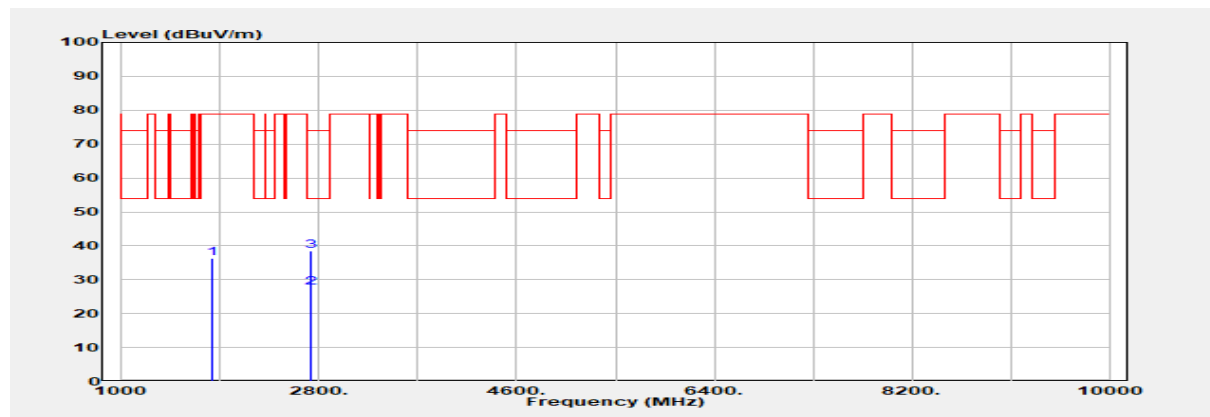
Temp./Humi. :21.5°C/56%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
1816.000	Peak	44.30	-7.89	36.41	78.77	-42.36
2724.000	Average	31.42	-3.77	27.66	54.00	-26.34
2724.000	Peak	42.24	-3.77	38.47	74.00	-35.53

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 8M

Test Date :2023-11-24

Test Frequency :916 MHz

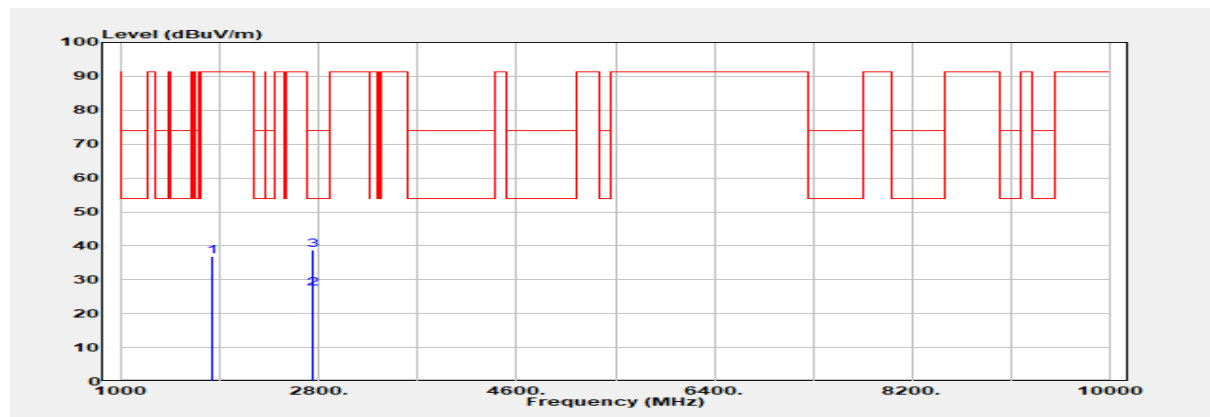
Temp./Humi. :23.5°C/62%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
1832.000	Peak	44.74	-7.87	36.87	92.57	-55.7
2748.000	Average	31.49	-4.00	27.49	54.00	-26.51
2748.000	Peak	42.72	-4.00	38.73	74.00	-35.27

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Member of SGS Group

Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 8M

Test Date :2023-11-24

Test Frequency :916 MHz

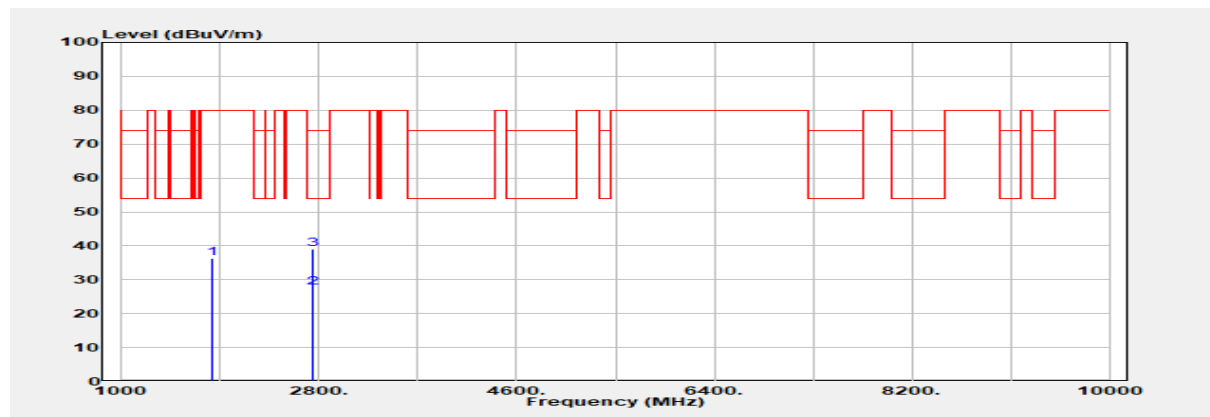
Temp./Humi. :23.5°C/62%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
1832.000	Peak	44.07	-7.87	36.20	78.77	-42.57
2748.000	Average	31.74	-4.00	27.75	54.00	-26.25
2748.000	Peak	43.07	-4.00	39.07	74.00	-34.93

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 8M

Test Date :2023-11-24

Test Frequency :924 MHz

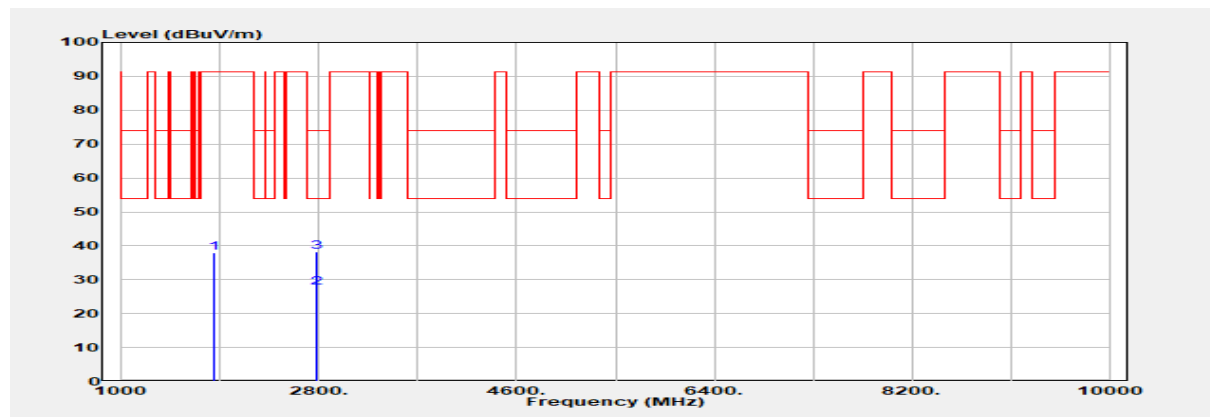
Temp./Humi. :23.5°C/62%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
1848.000	Peak	45.90	-7.84	38.06	92.57	-54.51
2772.000	Average	31.58	-4.07	27.52	54.00	-26.48
2772.000	Peak	42.25	-4.07	38.18	74.00	-35.82

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Report Number :TERF2311002761E2

Test Site :SAC D

Operation Mode :802.11ah 8M

Test Date :2023-11-24

Test Frequency :924 MHz

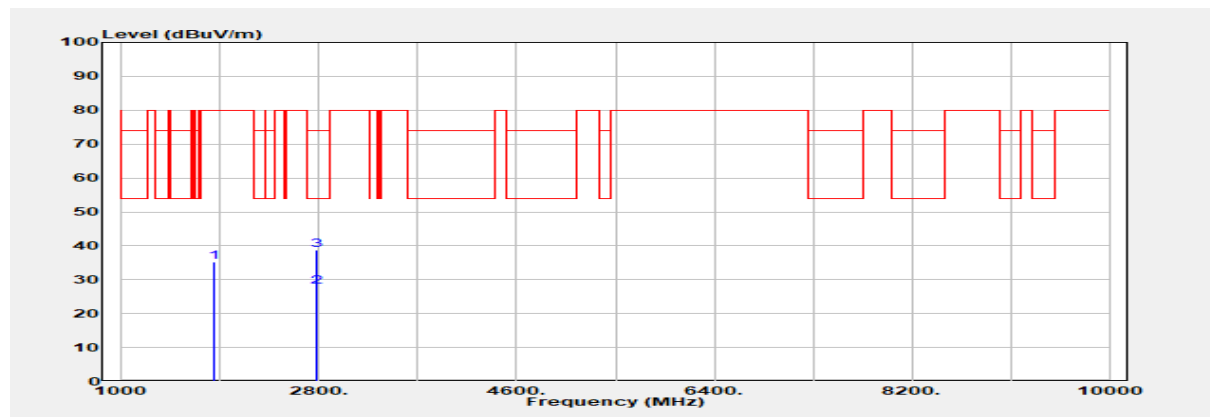
Temp./Humi. :23.5°C/62%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Howard Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
1848.000	Peak	43.13	-7.84	35.29	78.77	-43.48
2772.000	Average	31.88	-4.07	27.81	54.00	-26.19
2772.000	Peak	42.83	-4.07	38.76	74.00	-35.24

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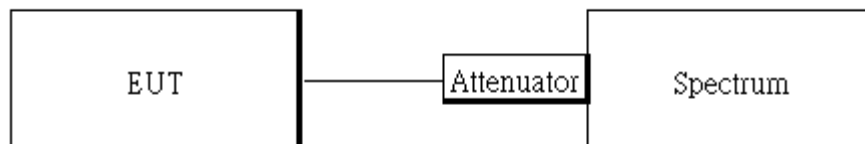


## 12 POWER SPECTRAL DENSITY

### 12.1 Standard Applicable:

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

### 12.2 Test Setup



### 12.3 Measurement Procedure:

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

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**12.4 Measurement Result:****12.4.1 Average Power Spectral Density****OFDM 1M mode**

Frequency (MHz)	RF Power Density (dBm/3kHz)	RF Power Density +Duty Factor (dBm/3kHz)	Duty Factor (dBm)	Maximum Limit (dBm/3kHz)	Result
903.5	1.754	1.914	0.16	8	PASS
914.5	1.733	1.893	0.16	8	PASS
926.5	1.723	1.883	0.16	8	PASS

**\*Note:****1.cable loss as 10.8dB that offsets in the spectrum****OFDM 2M mode**

Frequency (MHz)	RF Power Density (dBm/3kHz)	RF Power Density +Duty Factor (dBm/3kHz)	Duty Factor (dBm)	Maximum Limit (dBm/3kHz)	Result
905	-2.323	-2.226	0.10	8	PASS
915	-2.877	-2.780	0.10	8	PASS
925	-2.927	-2.830	0.10	8	PASS

**\*Note:****1.cable loss as 10.8dB that offsets in the spectrum**

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## 12.4.2 Peak Power Spectral Density

### OFDM 4M mode

Frequency (MHz)	RF Power Density (dBm/3kHz)	Offset	Maximum Limit (dBm/3kHz)	Result
906	3.050	10.80	8	PASS
914	2.660	10.80	8	PASS
926	-1.000	10.80	8	PASS

**\*Note:**

*1.cable loss as 10.8dB that offsets in the spectrum*

### OFDM 8M mode

Frequency (MHz)	RF Power Density (dBm/3kHz)	Offset	Maximum Limit (dBm/3kHz)	Result
908	-0.320	10.80	8	PASS
916	-0.570	10.80	8	PASS
924	-1.960	10.80	8	PASS

**\*Note:**

*1.cable loss as 10.8dB that offsets in the spectrum*

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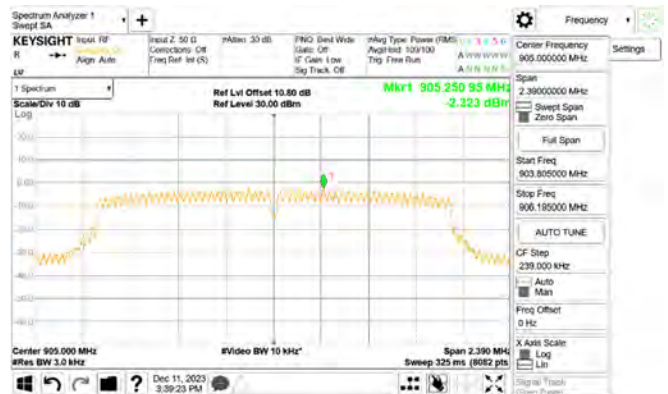
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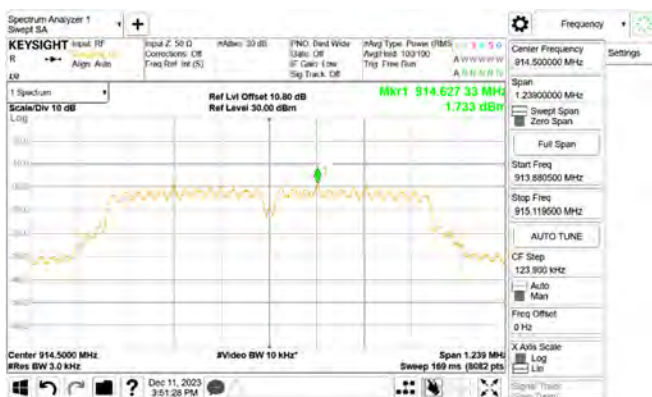
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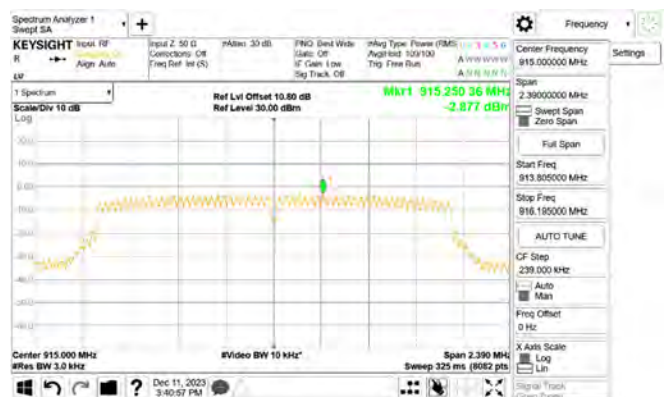
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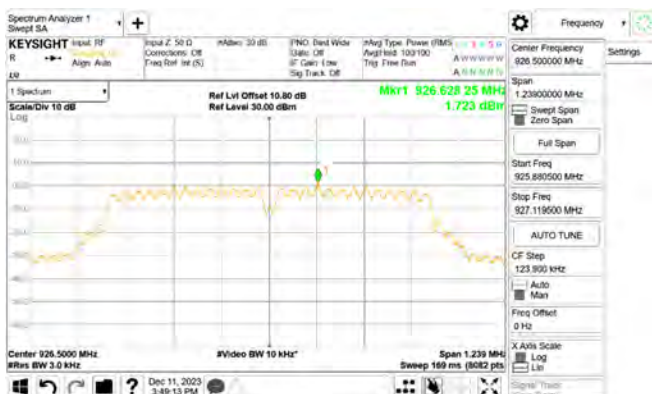
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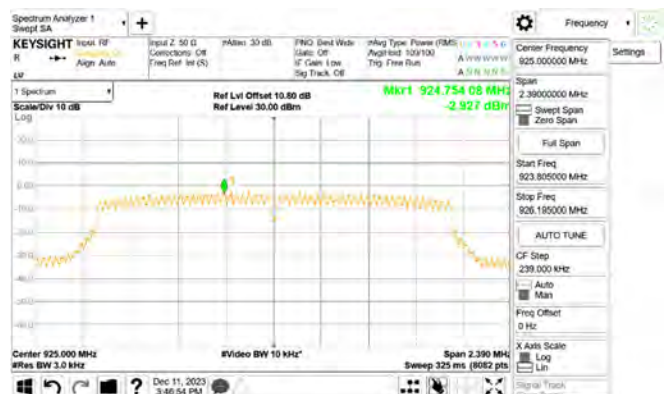
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OFDM\_2M\_HighCH-925



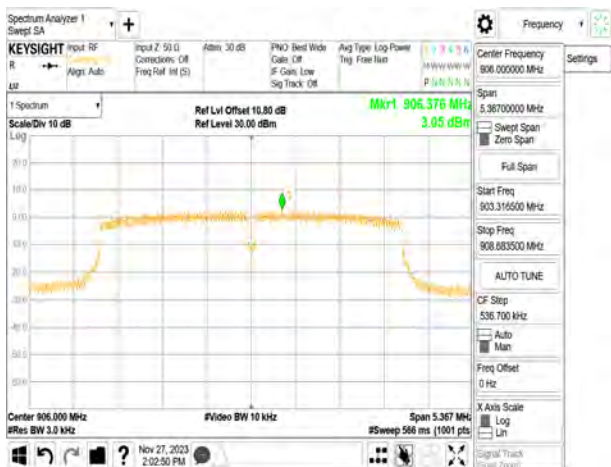
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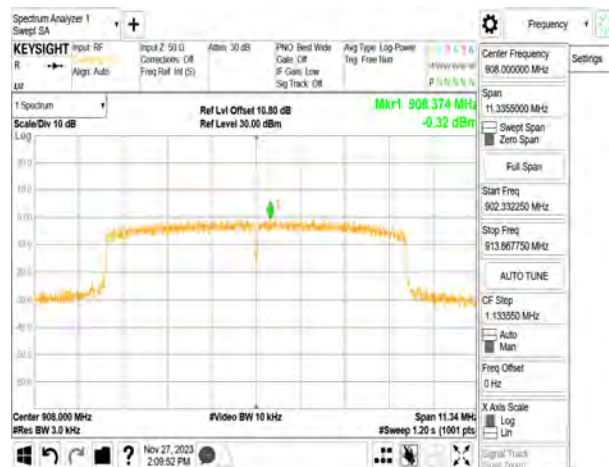
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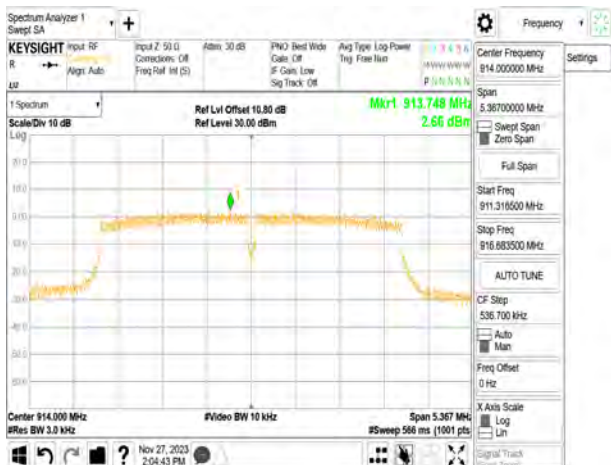
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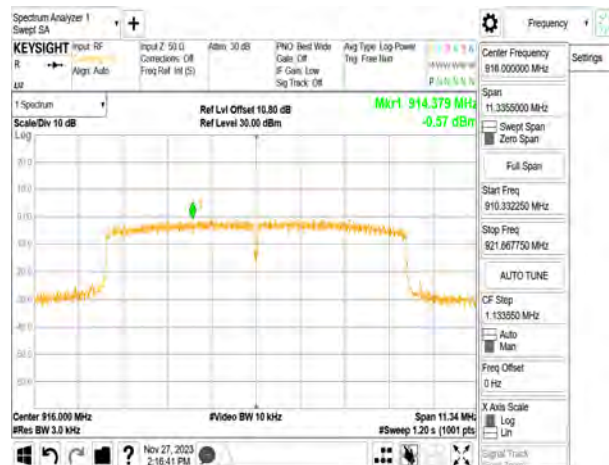
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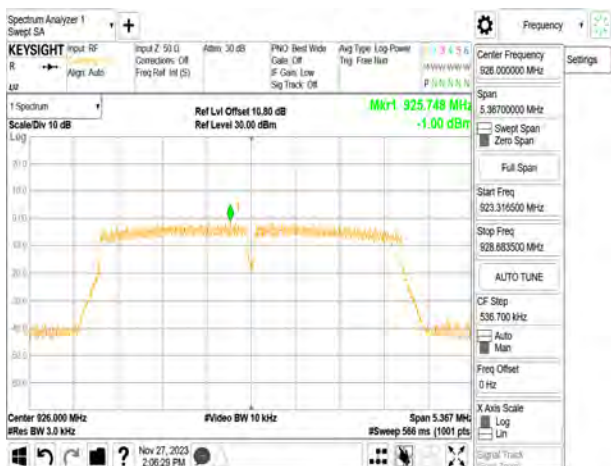
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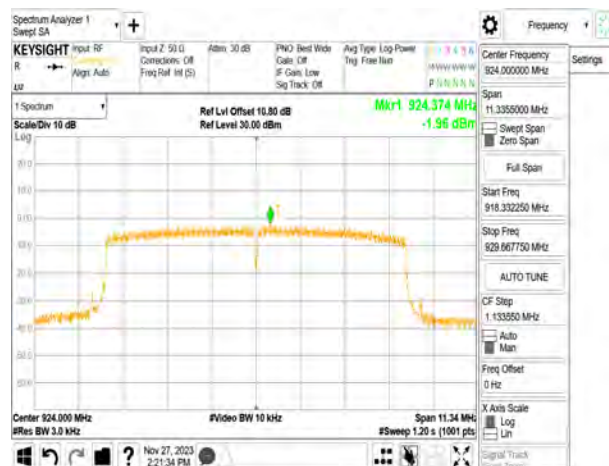
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OFDM\_4M\_HighCH-926



OFDM\_8M\_HighCH-924



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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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