

ELECTROMAGNETIC EMISSIONS
COMPLIANCE TEST REPORT

Applicant: Murata Electronics North America
2200 Lake Park Drive Smyrna Georgia United States 30080-7604

Manufacturer: Murata Electronics North America
2200 Lake Park Drive Smyrna Georgia United States 30080-7604

Product Name: LBES0ZZ2FR

Brand Name: Murata Electronics North America

Model No./ISED HVIN: LBES0ZZ2FR

Report Number: TERF2312003246E2

FCC ID HSW2FR

IC: 4492A-2FR

Date of EUT Received: Dec. 29, 2023

Date of Test: Dec. 29, 2023 ~ Jun. 21, 2024

Issue Date: Aug. 13, 2024

Approved By

Arno Hsieh

Arno Hsieh

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 and §15.407, ISSED RSS-247.

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

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Revision History

Report Number	Revision	Description	Issue Date	Revised By	Remark
TERF2312003246E2	00	Original.	Aug. 13, 2024	Yami Kuo	

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:	LBES0ZZ2FR
Brand Name:	Murata Electronics North America
Model No.:	LBES0ZZ2FR
Hardware Version:	1
Firmware Version:	1
EUT Series No.:	NO.2-1
Power Supply:	3.3Vdc, 1.8Vdc
Test Software (Name/Version)	DutApiSisoApApp_RW610

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1.2 Test Methodology of Applied Standards

FCC Part 15, Subpart E §15.407

FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

RSS-247 issue 2 Feb. 2017

RSS-Gen, Issue 5 April 2018

ANSI C63.10:2013

1.3 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 indica- tion where measurements occurred in specific test site and address.				

1.4 Special Accessories

There are no special accessories used while test was conducted.

1.5 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 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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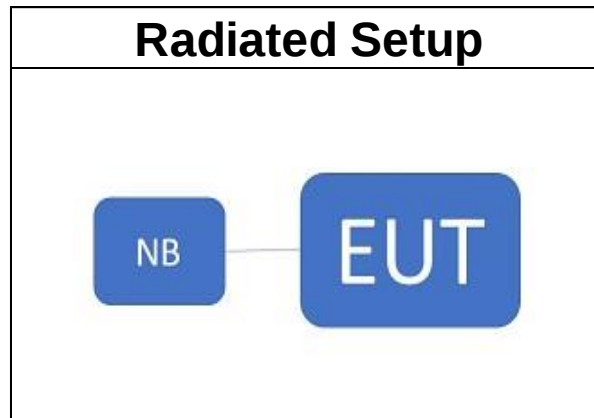
2.4 Measurement Results Explanation Example

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.

2.5 Test Configuration



2.6 Control Unit(s)

Radiated Emission Test Site: SAC D					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
USB Cable	PowerSync	CUBCVARA0010	N/A	N/A	N/A

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3 SUMMARY OF TEST RESULT

FCC Rules	ISED Rules	Description Of Test	Result
§15.205 §15.209 §15.407(b)	RSS-247 §6.2.1~ 4 (2)	Undesirable Radiated Emissions	Compliant

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4 DESCRIPTION OF TEST MODES

4.1 The Worst Test Modes and Channel Details

1. The EUT has been tested under operating condition.
2. Test program used to control the EUT for staying in continuous transmitting mode is programmed.
3. Investigation has been done on all the possible configurations for searching the worst case. The given UE is pre-scanned among below modes.

Test mode

Final test modes are considering the modulation and worse data rate as below table.

Transmitter Unwanted Emissions Outside the 5 GHz RLAN Bands

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE
				(Mbps)
WLAN 2.4G				
802.11b	1 to 13	1	DSSS	1
BLE				
BLE(1Mbps)	0 to 39	0	GFSK	N/A

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE
				(Mbps)
WLAN 5G				
802.11a	36 to 140	36	OFDM	6
BLE				
BLE(1Mbps)	0 to 39	0	GFSK	N/A

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE
				(Mbps)
WLAN 2.4G				
802.11b	1 to 13	1	DSSS	1
Zigbee				
Zigbee	11 to 26	11	DSSS	N/A

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE
				(Mbps)
WLAN 5G				
802.11a	36 to 140	36	OFDM	6
BLE				
Zigbee	11 to 26	11	DSSS	N/A

Note:

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

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5 MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
Conducted emission measurement	+/- 0.77 dB
Temperature	+/- 0.6 °C
Humidity	+/- 3 %
DC / AC Power Source	+/- 1 %

Radiated Spurious Emission Measurement Uncertainty			
Polarization: Vertical	+/-	1.89 dB	9kHz~30MHz
	+/-	4.15 dB	30MHz - 1000MHz
	+/-	3.43 dB	1GHz - 18GHz
	+/-	3.86 dB	18GHz - 40GHz
Polarization: Horizontal	+/-	1.89 dB	9kHz~30MHz
	+/-	4.02 dB	30MHz - 1000MHz
	+/-	3.43 dB	1GHz - 18GHz
	+/-	3.86 dB	18GHz - 40GHz
Radiated Spurious Emission	+/-	2 dB	33GHz-50GHz
	+/-	1.59 dB	50GHz-60GHz
	+/-	1.7 dB	60GHz-90GHz
	+/-	1.64 dB	90GHz-140GHz
	+/-	3.83 dB	140GHz-220GHz

Note:

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
2. The conformity assessment statement in this report is based solely on the test results, measurement uncertainty is excluded.

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6 UNDESIRABLE RADIATED EMISSION MEASUREMENT

6.1 Standard Applicable

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

6.1.1 5150~5850 MHz

Applicable to	Operation Freq. (MHz)	EIRP		Field Strength @ 3m (dBμV/m)
		Freq. (MHz)	Limits (dBm/MHz)	
15.407(b)(1) RSS-247 §6.2.1.2	5150~5250	$f \leq 5150$ $f \geq 5350$	PK: -27	PK: 68.2
15.407(b)(2) RSS-247 §6.2.2.2	5250~5350			
15.407(b)(3) RSS-247 §6.2.3.2	5475~5725	$f \leq 5470$ $f \geq 5725$		
15.407(b)(4)(i) RSS-247 §6.2.4.2	5725~5850	at 75 MHz or more above or below the band edge	PK:-27	PK: 68.2
		increasing linearly from 75~25MHz above or below the band edge	PK:-27~10	PK: 68.2~105.2
		increasing linearly from 25~5MHz above or below the band edge	PK:10~15.6	PK: 105.2~110.8
		increasing linearly from 5~0 MHz above or below the band edge	PK: 15.6~27	PK:110.8~122.2

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6.1.2 5850~5925 MHz

Applicable to	Operation Freq. (MHz)	ETU categories	EIRP		Field Strength @ 3m (dBμV/m)
			Freq. (MHz)	Limits (dBm/MHz)	
15.407(b)(5)(i)	5850~5895 or channel span cross 5725~5895	indoor AP or subordinate device	decrease linealy from 5895 ~ 5925MHz and above	PK:15~-7	PK:110~102
15.407(b)(5)(ii)		Client device		PK:-5~-27	PK:90~68
15.407(b)(5)(iii)		Client / indoor AP / subordinate device	At 5650	PK:-27	PK:68
			increasing linearly from 5650~5700	PK:-27~10	PK:68~105
			increasing linearly from 5700~5720	PK:10~15.6	PK:105~110.6
			increasing linearly from 5720~5725	PK:15.6~27	PK:110.6~122

6.1.3 Spurious Emission

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

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

Note:

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

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SGS Taiwan Ltd.

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

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Member of SGS Group

6.2 Measurement Equipment Used:

Radiated Emission Test Site: SAC D					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
3m Site NSA	SGS	966 chamber D	N/A	04/30/2024	04/29/2025
Active Loop Antenna	COM-POWER	AL-130R	10160105	12/04/2023	12/03/2024
Broadband Antenna	SCHWARZBECK	VULB 9168	9168-617	12/14/2023	12/13/2024
Coaxial Cable	Huber+Suhner	EMC106-SM-SM-7200	150703	11/15/2023	11/14/2024
Coaxial Cable	Huber+Suhner	RG 214/U	W21.01	11/15/2023	11/14/2024
Horn Antenna	Schwarzbeck	BBHA9120D	1341	05/30/2024	05/29/2025
Horn Antenna	SCHWARZBECK	BBHA9170	185	08/21/2023	08/20/2024
Pre-Amplifier	EMC Instruments	EMC12630SE	980273	11/15/2023	11/14/2024
Pre-Amplifier	EMC Instruments	EMC18405SEE	980881	11/15/2023	11/14/2024
Pre-Amplifier	EMC Instruments	EMC9135	980234	11/15/2023	11/14/2024
Spectrum Analyzer	KEYSIGHT	N9010A	MY57120200	04/03/2024	04/02/2025
Test Software	audix	e3	E3 20923 SGS Ver.9 (C)	N.C.R	N.C.R

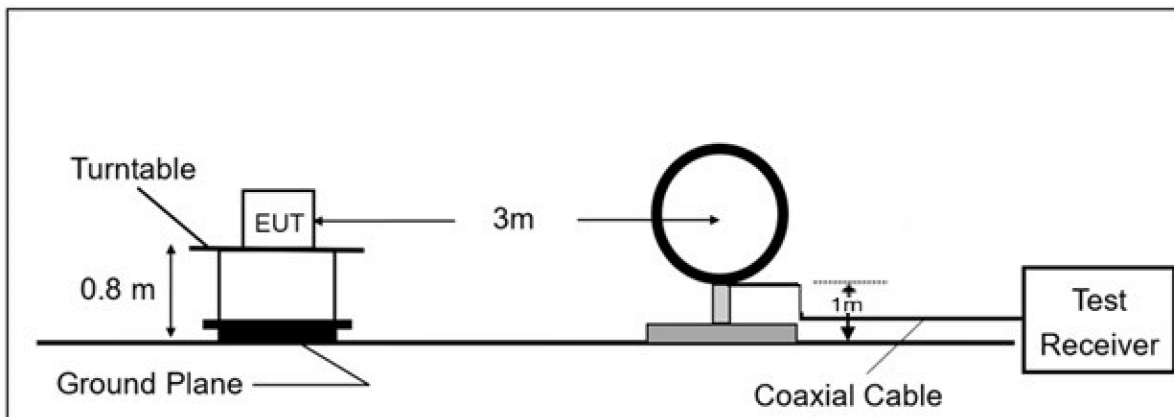
NOTE: N.C.R refers to Not Calibrated Required.

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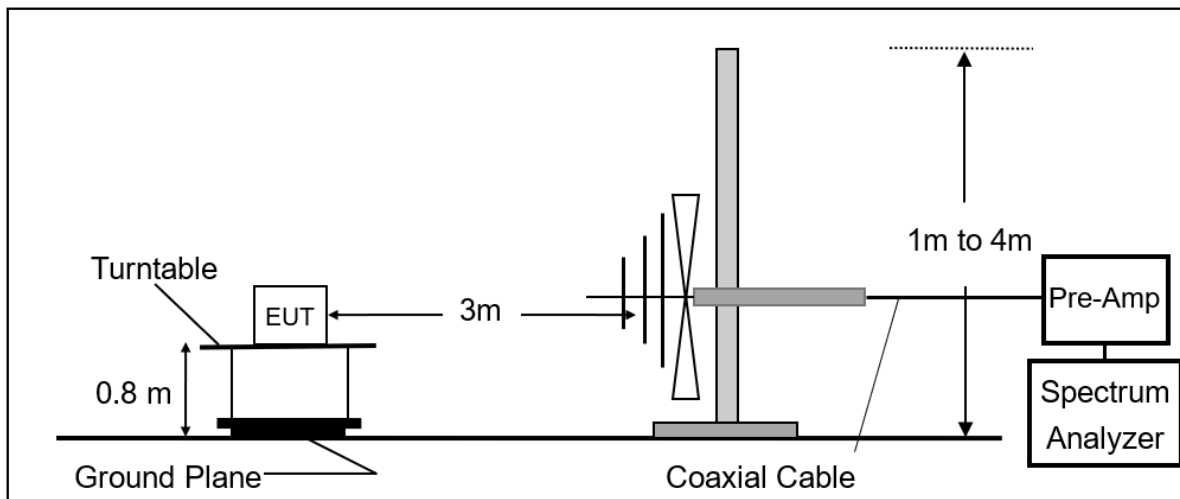
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6.3 Test Setup

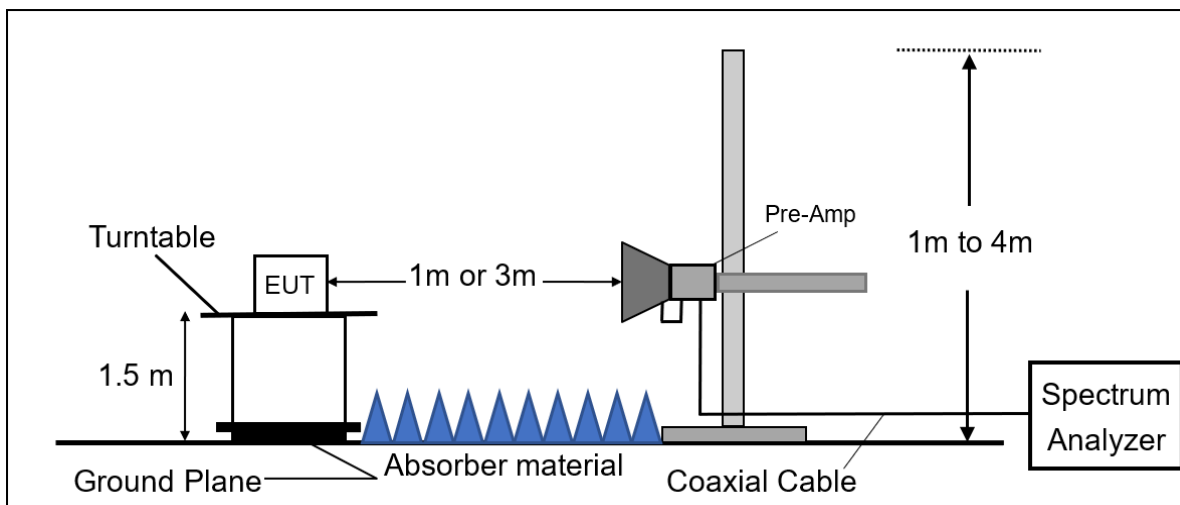
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz.



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



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



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6.4 Measurement Procedure

1. The testing follows FCC KDB 789033 D02.
2. The EUT was placed on a turn table with 0.8m for frequency < 1GHz and 1.5m for frequency > 1GHz above ground plane.
3. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
4. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
5. Set the spectrum analyzer as RBW=100 kHz and VBW=300 kHz for Peak Detector (PK) at frequency between 30MHz and 1 GHz
6. Use receiver mode as RBW=120 kHz for Quasi-peak (QP) at frequency between 30MHz and 1 GHz.
7. Set the spectrum analyzer as RBW=1 MHz, VBW=3 MHz for Maximum Emission Measurements at frequency above 1 GHz.
8. Set the spectrum analyzer as RBW=1 MHz, VBW=10 Hz (Duty cycle > 98%) or VBW $\geq 1/T$ (Duty cycle < 98%) for Average Emission Measurements at frequency above 1 GHz.
9. When measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.
10. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
11. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
12. Repeat above procedures until all frequency measured were complete.

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6.5 Field Strength Calculation

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

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

Where *FS* = Field Strength

CL = Cable Attenuation Factor (Cable Loss)

RA = Reading Amplitude

AG = Amplifier Gain

AF = Antenna Factor

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

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

Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

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

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

Pre-scan was done at frequency 5.47 GHz and 5.85 GHz for bandedge measurement of straddle channels 138, 142 and 144 which was 20dB lower than the limit per 15.31(o) & RSS-GEN §6.13.2 was not reported.

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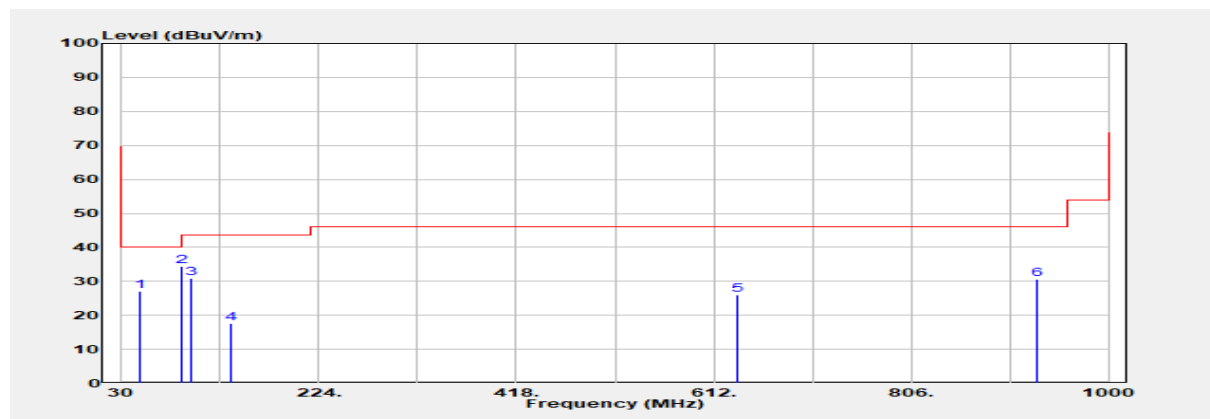
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6.7 Radiated Spurious Emission Measurement Result

6.7.1 Spurious Emission

Report Number :TERF2312003246E2
Operation Mode :802.11b+BLE 1M
Test Frequency :2412 MHz + 2402 MHz
Test Mode :Tx
EUT Pol :E2 Plane

Test Site :SAC D
Test Date :2024-06-21
Temp./Humi. :22.3 °C/65%
Antenna Pol. :Vertical
Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
47.460	Peak	43.87	-16.83	27.04	40.00	-12.96
89.170	Peak	57.10	-22.76	34.34	43.50	-9.16
98.870	Peak	53.01	-22.22	30.79	43.50	-12.71
136.700	Peak	34.70	-17.16	17.54	43.50	-25.96
635.280	Peak	34.26	-8.28	25.99	46.00	-20.01
930.160	Peak	34.85	-4.20	30.66	46.00	-15.34

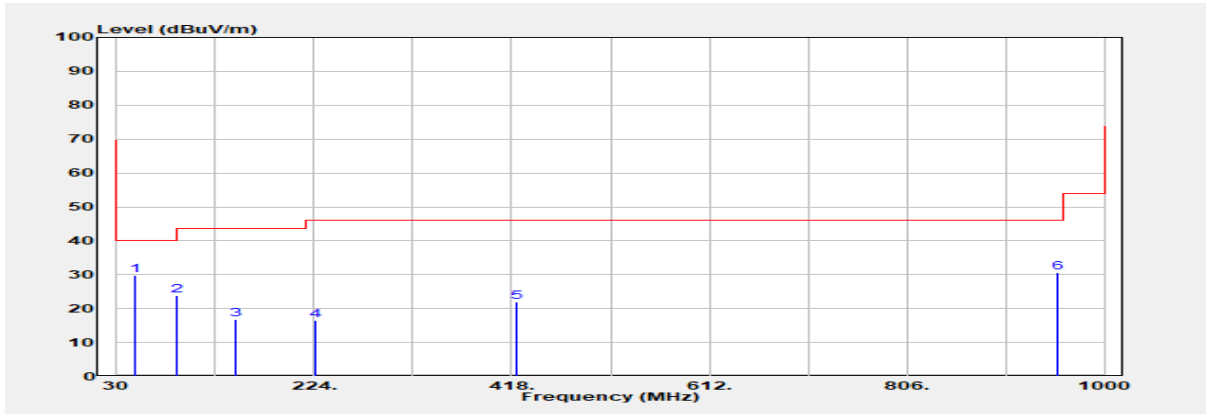
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Report Number :TERF2312003246E2
Operation Mode :802.11b+BLE 1M
Test Frequency :2412 MHz + 2402 MHz
Test Mode :Tx
EUT Pol :E2 Plane

Test Site :SAC D
Test Date :2024-06-21
Temp./Humi. :22.3 °C/65%
Antenna Pol. :Horizontal
Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
47.460	Peak	46.60	-16.83	29.77	40.00	-10.23
89.170	Peak	46.48	-22.76	23.73	43.50	-19.77
147.370	Peak	32.85	-16.03	16.81	43.50	-26.69
224.970	Peak	36.19	-19.71	16.48	46.00	-29.52
421.880	Peak	34.76	-12.80	21.96	46.00	-24.04
954.410	Peak	34.78	-4.06	30.72	46.00	-15.28

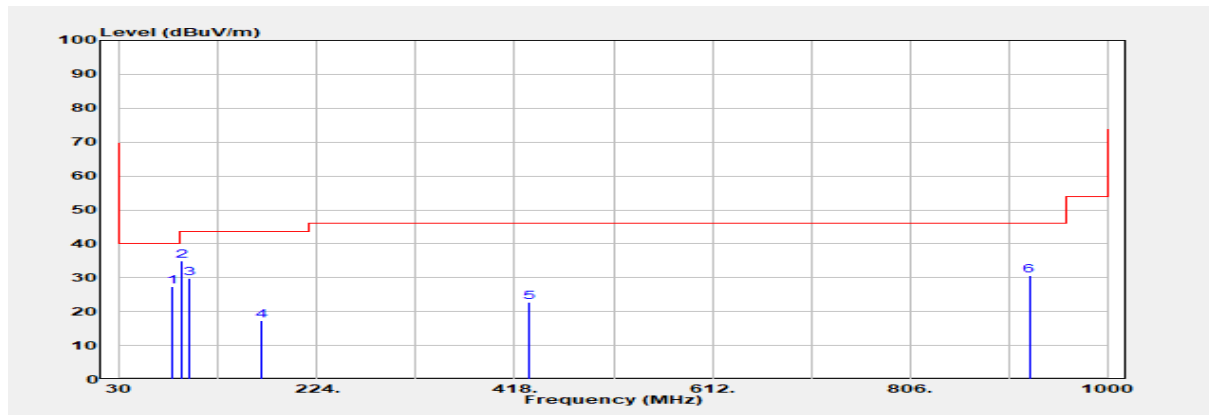
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Report Number :TERF2312003246E2
Operation Mode :802.11b+Zigbee
Test Frequency :2412 MHz + 2405 MHz
Test Mode :Tx
EUT Pol :E2 Plane

Test Site :SAC D
Test Date :2024-06-21
Temp./Humi. :22.3 °C/65%
Antenna Pol. :Vertical
Engineer :Sam Huang



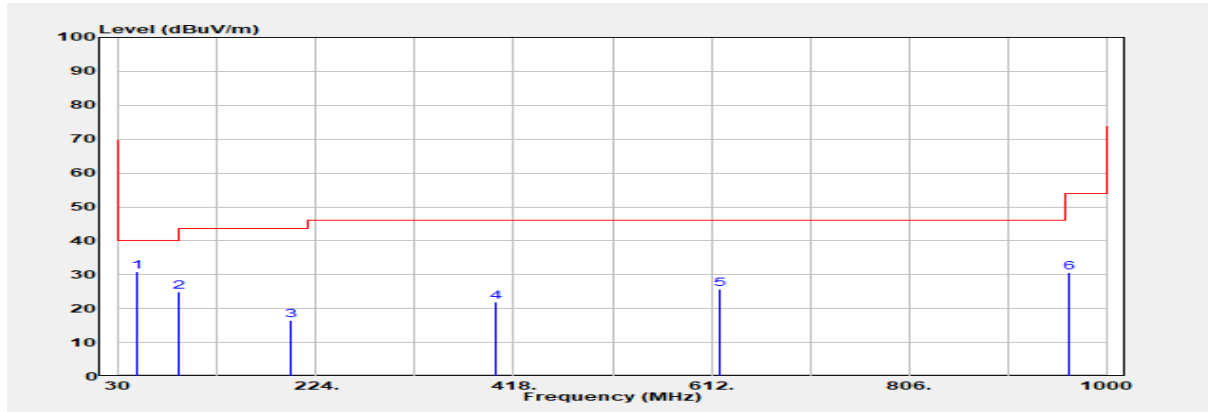
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
81.410	Peak	49.22	-21.97	27.25	40.00	-12.75
90.140	Peak	57.70	-22.67	35.03	43.50	-8.47
97.900	Peak	51.95	-22.18	29.78	43.50	-13.72
169.680	Peak	34.16	-16.84	17.32	43.50	-26.18
431.580	Peak	34.99	-12.14	22.85	46.00	-23.15
923.370	Peak	34.97	-4.33	30.63	46.00	-15.37

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Report Number :TERF2312003246E2
Operation Mode :802.11b+Zigbee
Test Frequency :2412 MHz + 2405 MHz
Test Mode :Tx
EUT Pol :E2 Plane

Test Site :SAC D
Test Date :2024-06-21
Temp./Humi. :22.3 °C/65%
Antenna Pol. :Horizontal
Engineer :Sam Huang



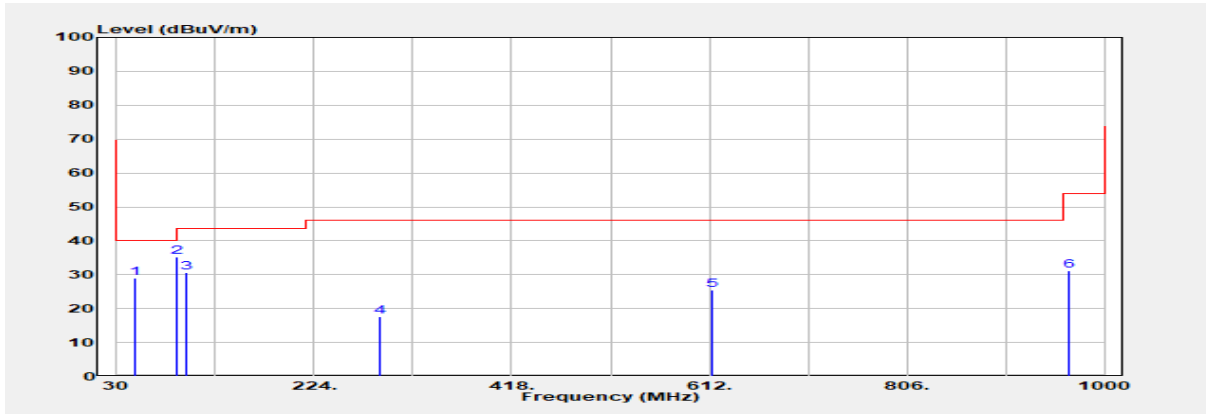
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
47.460	Peak	47.59	-16.83	30.77	40.00	-9.23
89.170	Peak	47.67	-22.76	24.91	43.50	-18.59
199.750	Peak	35.93	-19.48	16.44	43.50	-27.06
399.570	Peak	35.24	-13.35	21.90	46.00	-24.10
619.760	Peak	33.71	-8.08	25.63	46.00	-20.37
964.110	Peak	34.84	-4.12	30.72	54.00	-23.28

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Report Number :TERF2312003246E2
Operation Mode :802.11ax20+BLE 1M
Test Frequency :5180 MHz + 2402 MHz
Test Mode :Tx
EUT Pol :E2 Plane

Test Site :SAC D
Test Date :2024-06-21
Temp./Humi. :22.3 °C/65%
Antenna Pol. :Vertical
Engineer :Sam Huang



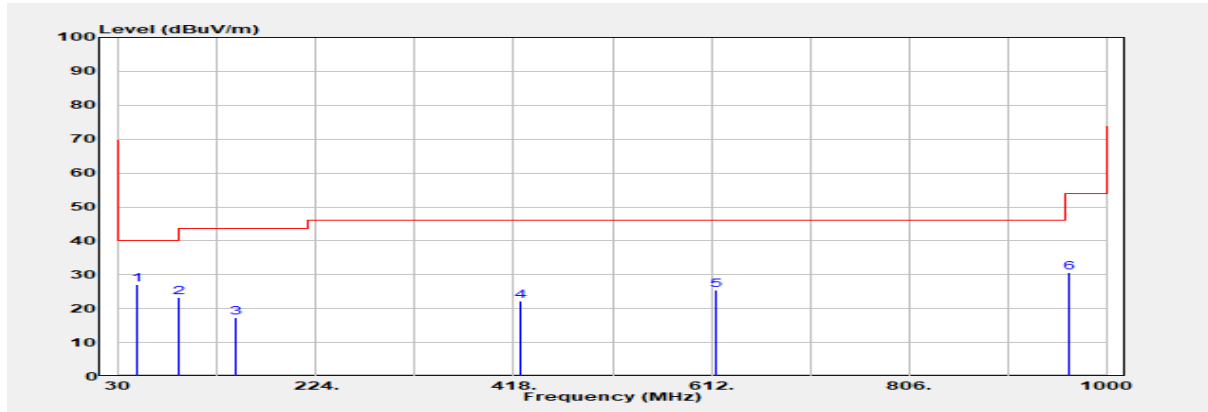
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
47.460	Peak	45.70	-16.83	28.87	40.00	-11.13
89.170	Peak	57.91	-22.76	35.16	43.50	-8.34
98.870	Peak	52.85	-22.22	30.63	43.50	-12.87
288.020	Peak	33.65	-15.96	17.69	46.00	-28.31
614.910	Peak	33.81	-8.26	25.55	46.00	-20.45
966.050	Peak	35.22	-4.18	31.05	54.00	-22.95

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Report Number :TERF2312003246E2
Operation Mode :802.11ax20+BLE 1M
Test Frequency :5180 MHz + 2402 MHz
Test Mode :Tx
EUT Pol :E2 Plane

Test Site :SAC D
Test Date :2024-06-21
Temp./Humi. :22.3 °C/65%
Antenna Pol. :Horizontal
Engineer :Sam Huang



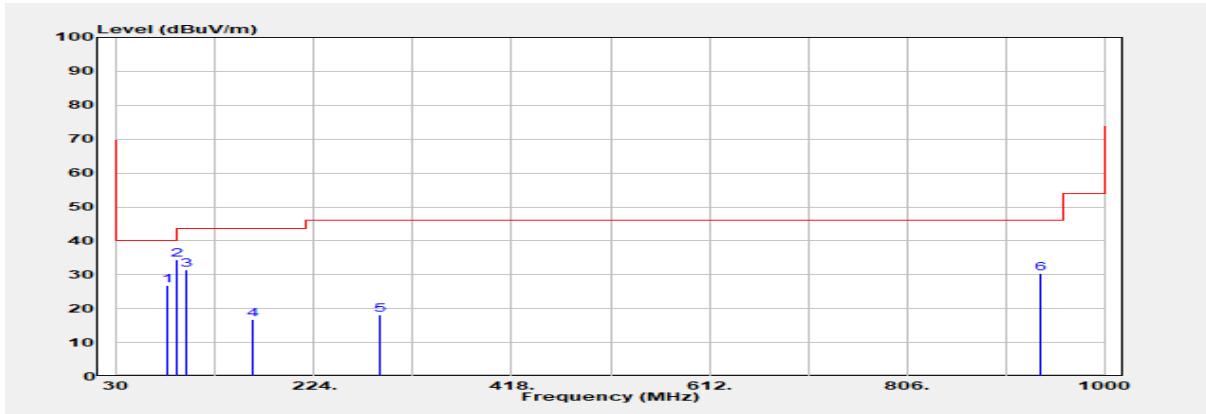
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
47.460	Peak	43.81	-16.83	26.99	40.00	-13.01
89.170	Peak	45.96	-22.76	23.21	43.50	-20.29
145.430	Peak	33.78	-16.37	17.41	43.50	-26.09
424.790	Peak	34.77	-12.56	22.21	46.00	-23.79
616.850	Peak	33.62	-8.19	25.43	46.00	-20.57
964.110	Peak	34.71	-4.12	30.59	54.00	-23.41

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Report Number :TERF2312003246E2
Operation Mode :802.11ax20+Zigbee
Test Frequency :5180 MHz + 2405 MHz
Test Mode :Tx
EUT Pol :E2 Plane

Test Site :SAC D
Test Date :2024-06-21
Temp./Humi. :22.3 °C/65%
Antenna Pol. :Vertical
Engineer :Sam Huang



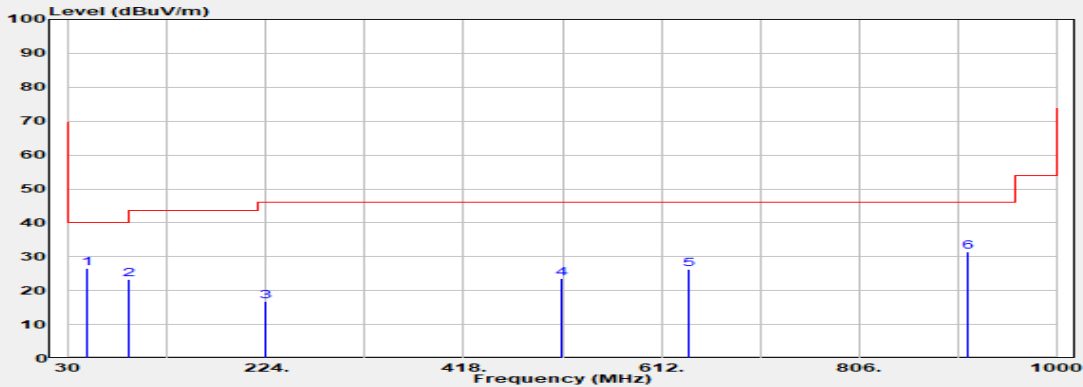
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
80.440	Peak	48.54	-21.75	26.79	40.00	-13.21
89.170	Peak	57.14	-22.76	34.39	43.50	-9.11
98.870	Peak	53.64	-22.22	31.42	43.50	-12.08
163.860	Peak	33.24	-16.51	16.73	43.50	-26.77
288.020	Peak	34.13	-15.96	18.17	46.00	-27.83
936.950	Peak	34.49	-4.01	30.48	46.00	-15.52

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Report Number :TERF2312003246E2
Operation Mode :802.11ax20+Zigbee
Test Frequency :5180 MHz + 2405 MHz
Test Mode :Tx
EUT Pol :E2 Plane

Test Site :SAC D
Test Date :2024-06-21
Temp./Humi. :22.3 °C/65%
Antenna Pol. :Horizontal
Engineer :Sam Huang



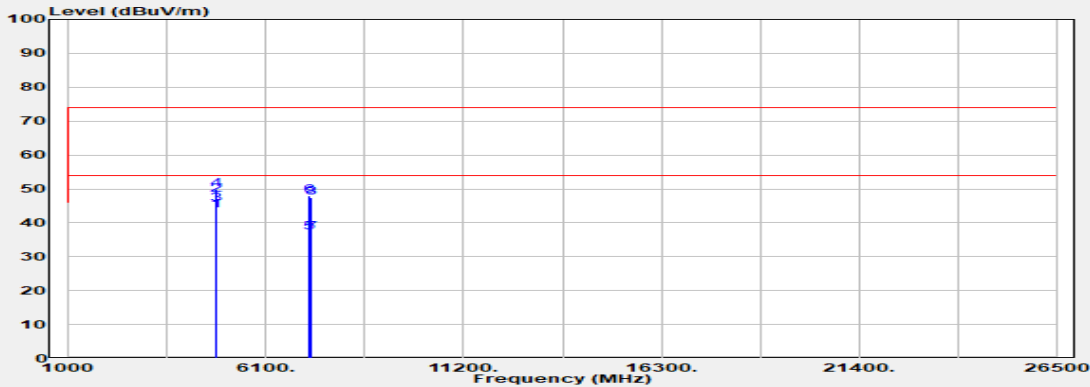
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
47.460	Peak	43.31	-16.83	26.49	40.00	-13.51
89.170	Peak	46.11	-22.76	23.35	43.50	-20.15
223.030	Peak	36.23	-19.55	16.68	46.00	-29.32
514.030	Peak	34.22	-10.62	23.60	46.00	-22.40
639.160	Peak	34.55	-8.28	26.27	46.00	-19.73
912.700	Peak	36.12	-4.79	31.34	46.00	-14.66

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Report Number :TERF2312003246E2
Operation Mode :802.11b+BLE 1M
Test Frequency :2412 MHz + 2402 MHz
Test Mode :Tx
EUT Pol :E2 Plane

Test Site :SAC D
Test Date :2024-06-21
Temp./Humi. :22.3 °C/65%
Antenna Pol. :Vertical
Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
4804.000	Average	42.50	1.17	43.66	54.00	-10.34
4804.000	Peak	47.14	1.17	48.31	74.00	-25.69
4824.000	Average	44.20	1.20	45.40	54.00	-8.60
4824.000	Peak	48.58	1.20	49.78	74.00	-24.22
7206.000	Average	29.30	7.83	37.13	54.00	-16.87
7206.000	Peak	40.04	7.83	47.86	74.00	-26.14
7236.000	Average	28.87	8.16	37.03	54.00	-16.97
7236.000	Peak	39.37	8.16	47.53	74.00	-26.47

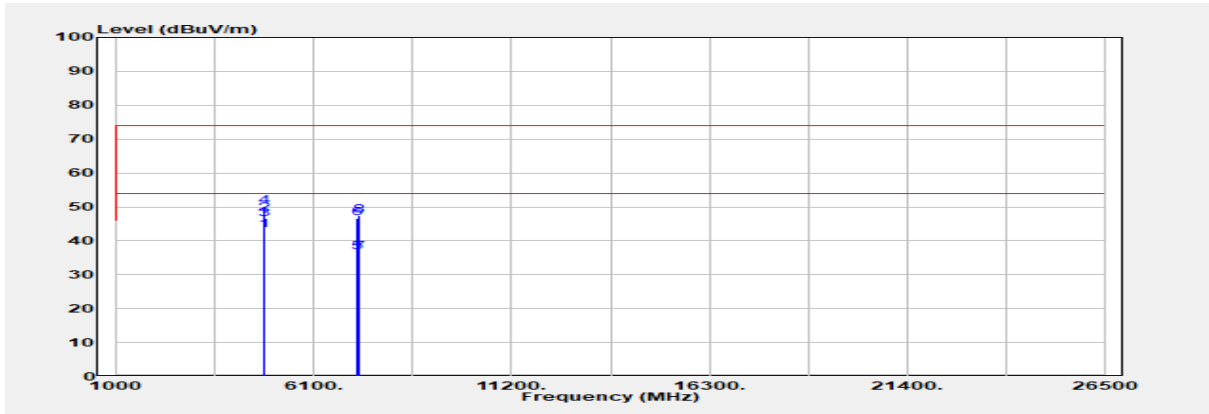
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Report Number :TERF2312003246E2
Operation Mode :802.11b+BLE 1M
Test Frequency :2412 MHz + 2402 MHz
Test Mode :Tx
EUT Pol :E2 Plane

Test Site :SAC D
Test Date :2024-06-21
Temp./Humi. :22.3 °C/65%
Antenna Pol. :Horizontal
Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
4804.000	Average	41.91	1.17	43.08	54.00	-10.92
4804.000	Peak	46.79	1.17	47.96	74.00	-26.04
4824.000	Average	45.11	1.20	46.31	54.00	-7.69
4824.000	Peak	48.98	1.20	50.18	74.00	-23.82
7206.000	Average	28.66	7.83	36.49	54.00	-17.51
7206.000	Peak	38.67	7.83	46.50	74.00	-27.50
7236.000	Average	28.45	8.16	36.61	54.00	-17.39
7236.000	Peak	39.27	8.16	47.43	74.00	-26.57

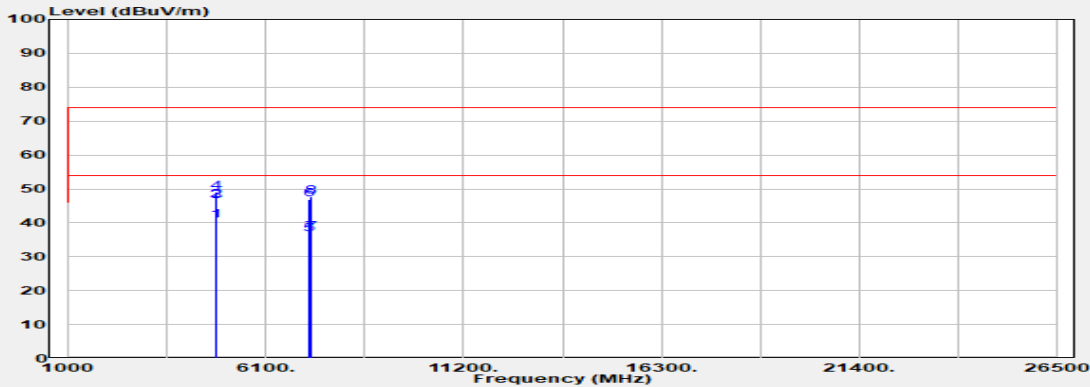
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Report Number :TERF2312003246E2
Operation Mode :802.11b+Zigbee
Test Frequency :2412 MHz + 2405 MHz
Test Mode :Tx
EUT Pol :E2 Plane

Test Site :SAC D
Test Date :2024-06-21
Temp./Humi. :22.3 °C/65%
Antenna Pol. :Vertical
Engineer :Sam Huang



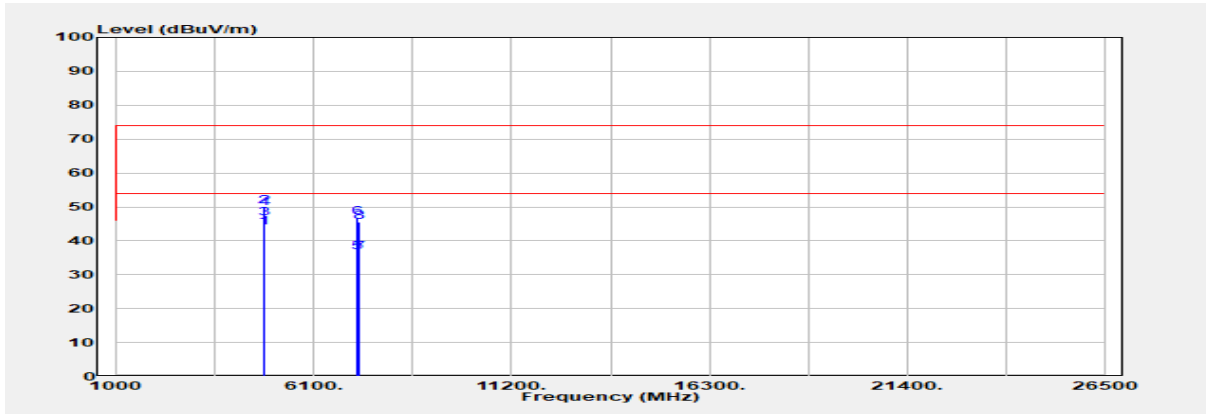
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
4810.000	Average	39.49	1.18	40.66	54.00	-13.34
4810.000	Peak	45.42	1.18	46.60	74.00	-27.40
4824.000	Average	45.15	1.20	46.35	54.00	-7.65
4824.000	Peak	47.98	1.20	49.18	74.00	-24.82
7215.000	Average	28.59	7.93	36.52	54.00	-17.48
7215.000	Peak	38.97	7.93	46.90	74.00	-27.10
7236.000	Average	29.09	8.16	37.25	54.00	-16.75
7236.000	Peak	39.58	8.16	47.75	74.00	-26.25

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Report Number :TERF2312003246E2
Operation Mode :802.11b+Zigbee
Test Frequency :2412 MHz + 2405 MHz
Test Mode :Tx
EUT Pol :E2 Plane

Test Site :SAC D
Test Date :2024-06-21
Temp./Humi. :22.3 °C/65%
Antenna Pol. :Horizontal
Engineer :Sam Huang



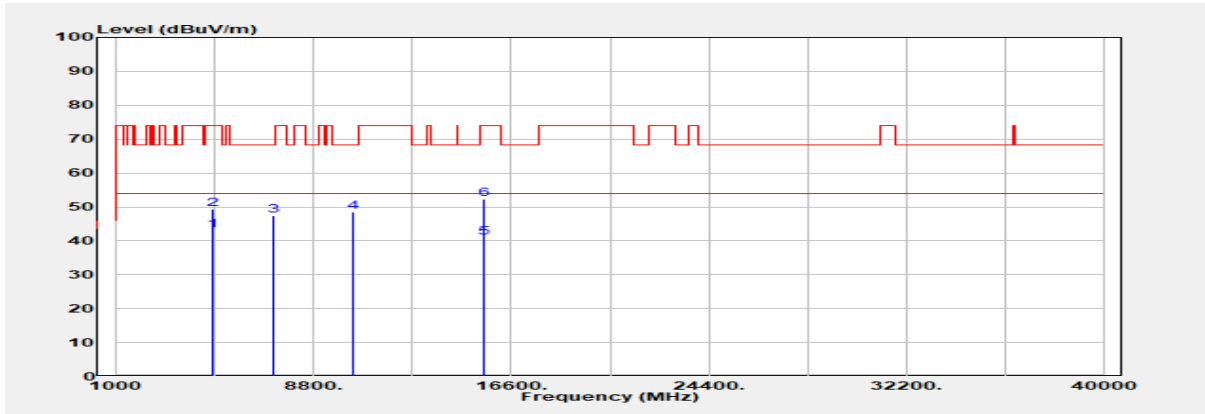
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
4810.000	Average	42.72	1.18	43.89	54.00	-10.11
4810.000	Peak	48.87	1.18	50.05	74.00	-23.95
4824.000	Average	45.47	1.20	46.67	54.00	-7.33
4824.000	Peak	48.46	1.20	49.66	74.00	-24.34
7215.000	Average	28.78	7.93	36.71	54.00	-17.29
7215.000	Peak	39.05	7.93	46.97	74.00	-27.03
7236.000	Average	28.53	8.16	36.69	54.00	-17.31
7236.000	Peak	37.37	8.16	45.53	74.00	-28.47

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Report Number :TERF2312003246E2
Operation Mode :802.11ax20+BLE 1M
Test Frequency :5180 MHz + 2402 MHz
Test Mode :Tx
EUT Pol :E2 Plane

Test Site :SAC D
Test Date :2024-06-21
Temp./Humi. :22.3 °C/65%
Antenna Pol. :Vertical
Engineer :Sam Huang



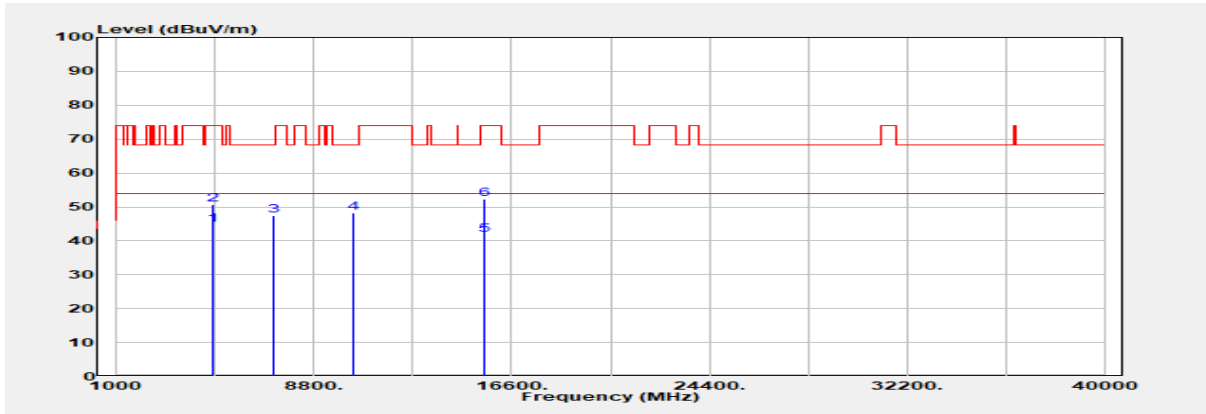
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
4804.000	Average	41.82	1.17	42.99	54.00	-11.01
4804.000	Peak	48.18	1.17	49.34	74.00	-24.66
7206.000	Peak	39.60	7.83	47.42	68.20	-20.78
10360.000	Peak	35.29	13.29	48.58	68.20	-19.62
15540.000	Average	25.41	15.44	40.85	54.00	-13.15
15540.000	Peak	36.80	15.44	52.24	74.00	-21.76

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Report Number :TERF2312003246E2
Operation Mode :802.11ax20+BLE 1M
Test Frequency :5180 MHz + 2402 MHz
Test Mode :Tx
EUT Pol :E2 Plane

Test Site :SAC D
Test Date :2024-06-21
Temp./Humi. :22.3 °C/65%
Antenna Pol. :Horizontal
Engineer :Sam Huang



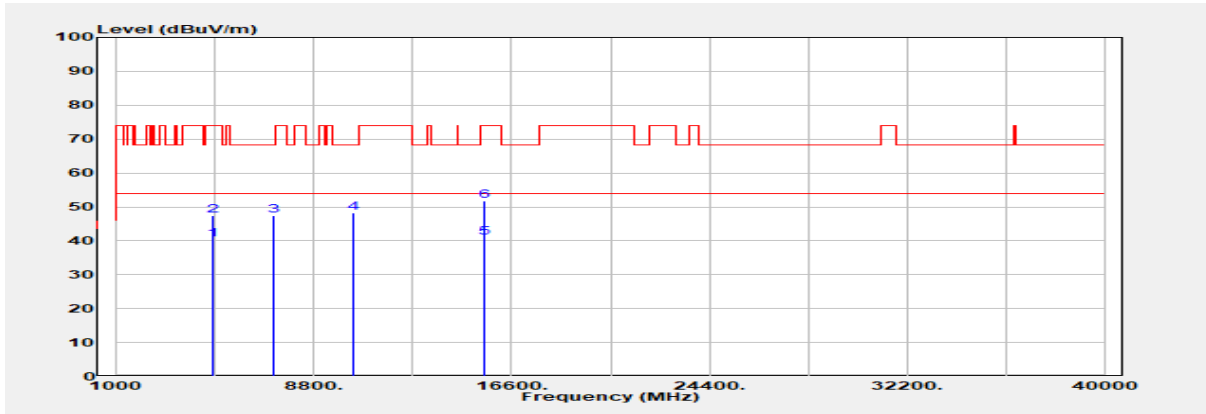
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
4804.000	Average	43.45	1.17	44.62	54.00	-9.38
4804.000	Peak	49.46	1.17	50.62	74.00	-23.38
7206.000	Peak	39.70	7.83	47.53	68.20	-20.67
10360.000	Peak	35.04	13.29	48.33	68.20	-19.87
15540.000	Average	26.23	15.44	41.67	54.00	-12.33
15540.000	Peak	36.87	15.44	52.31	74.00	-21.69

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Report Number :TERF2312003246E2
Operation Mode :802.11ax20+Zigbee
Test Frequency :5180 MHz + 2405 MHz
Test Mode :Tx
EUT Pol :E2 Plane

Test Site :SAC D
Test Date :2024-06-21
Temp./Humi. :22.3 °C/65%
Antenna Pol. :Vertical
Engineer :Sam Huang



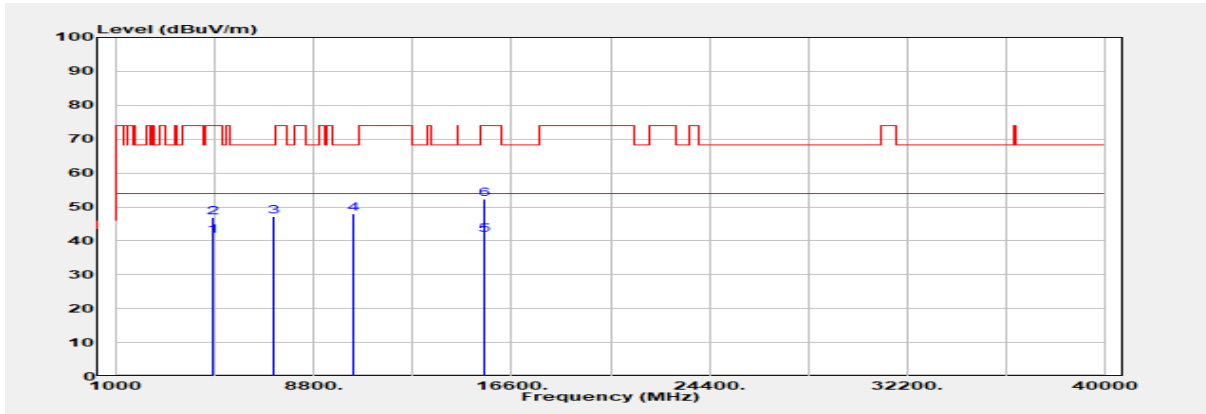
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
4810.000	Average	39.26	1.18	40.44	54.00	-13.56
4810.000	Peak	46.19	1.18	47.36	74.00	-26.64
7215.000	Peak	39.55	7.93	47.48	68.20	-20.72
10360.000	Peak	34.98	13.29	48.27	68.20	-19.93
15540.000	Average	25.57	15.44	41.01	54.00	-12.99
15540.000	Peak	36.45	15.44	51.89	74.00	-22.11

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Report Number :TERF2312003246E2
Operation Mode :802.11ax20+Zigbee
Test Frequency :5180 MHz + 2405 MHz
Test Mode :Tx
EUT Pol :E2 Plane

Test Site :SAC D
Test Date :2024-06-21
Temp./Humi. :22.3 °C/65%
Antenna Pol. :Horizontal
Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
4810.000	Average	40.28	1.18	41.46	54.00	-12.54
4810.000	Peak	45.68	1.18	46.86	74.00	-27.14
7215.000	Peak	39.32	7.93	47.25	68.20	-20.95
10360.000	Peak	34.60	13.29	47.89	68.20	-20.31
15540.000	Average	26.21	15.44	41.65	54.00	-12.35
15540.000	Peak	36.81	15.44	52.25	74.00	-21.75

~ End of Report ~

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