

Test Report No:
2330881R-RFUSV01S-A

TEST REPORT

FCC Rules&Regulations

Product Name	Peplink Pepwave Wireless Product
Brand Name	 PEPWAVE
Model No.	UBR Plus UBR-PLUS-LTEA-US-T-PRM
FCC ID	U8G-P1AC200
Applicant's Name / Address	PISMO LABS TECHNOLOGY LIMITED A8, 5/F, HK Spinners Industrial Building, Phase 6, 481 Castle Peak Road, Cheung Sha Wan, Hong Kong
Manufacturer's Name / Address	PISMO LABS TECHNOLOGY LIMITED A8, 5/F, HK Spinners Industrial Building, Phase 6, 481 Castle Peak Road, Cheung Sha Wan, Hong Kong
Test Method Requested, Standard	FCC CFR Title 47 Part 15 Subpart C Section 15.247 ANSI C63.10-2013
Verdict Summary	IN COMPLIANCE
Documented By	 Amelia Wu
Approved By	 Rueyyan Lin
Date of Receipt	Mar. 24, 2023
Date of Issue	Jul. 19, 2023
Report Version	V1.0

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Test Setup Photograph: Please refer to the file: 2330881R-Test Setup Photograph

Competences and Guarantees

DEKRA is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA has a calibration and maintenance program for its measurement equipment.

DEKRA guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated in the report and it is based on the knowledge and technical facilities available at DEKRA at the time of performance of the test.

DEKRA is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

IMPORTANT: No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA.

General Conditions

1. The test results relate only to the samples tested.
2. The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.
3. This report must not be used to claim product endorsement by TAF or any agency of the government.
4. The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.
5. Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Revision History

Version	Description	Issued Date
V1.0	Initial issue of report	Jul. 19, 2023

Summary of Test Result

Report Clause	Test Items	Result (PASS/FAIL)	Remark
3	AC Power Line Conducted Emission	PASS	-
4	Occupied Bandwidth & DTS Bandwidth	PASS	-
5	Maximum Conducted Output Power	PASS	-
6	Maximum Power Spectral Density	PASS	-
7	Antenna Port Conducted Emission	PASS	-
8	Transmitter Radiated Spurious Emission	PASS	-

Comments and Explanations

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Comments and Remarks

The product specification and testing instructions for the EUT declared in the report are provided by the manufacturer who will take all responsibilities for the accuracy.

1. General Information

1.1. EUT Description

Frequency Range	2400 ~ 2483.5 MHz	
Operating Frequency	IEEE 802.11b/g IEEE 802.11n/ac (20 MHz)	2412 ~ 2462 MHz
	IEEE 802.11n/ac (40 MHz)	2422 ~ 2452 MHz
Channel Number	IEEE 802.11b/g IEEE 802.11n/ac (20 MHz)	11 Channels
	IEEE 802.11n/ac (40 MHz)	7 Channels
Type of Modulation	IEEE 802.11b	DSSS-DBPSK, DQPSK, CCK
	IEEE 802.11g/n	OFDM-BPSK, QPSK, 16QAM, 64QAM
	IEEE 802.11ac	OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM

Accessories Information				
No.	Equipment Name	Brand Name	Model No.	Rating
1	Adapter	DVE	DSA-24PFS-12 FUS 120200	INPUT: 100~240Vac, 50/60Hz, 0.8A OUTPUT: +12.0Vdc, 2.0A, 24.0W

The difference for each model is shown as below:

Brand Name		Model No.	Description
	PEP WAVE	UBR Plus	There is nothing different of two models, just for different marketing use.
		UBR-PLUS-LTEA-US-T-PRM	

From the above models, model: UBR Plus was selected as representative model for the test and its data was recorded in this report.

Antenna Information				
Ant.	Brand Name	Model No.	Type	Antenna Gain (dBi)
0	Master Wave	98614PRSX000	Omni-directional	2.44
1	Master Wave	98614PRSX000	Omni-directional	2.44

For IEEE 802.11b/g/n/ac Mode: (2TX, 2RX)

All of the antenna No. can be used as transmitting/receiving antennas, and them can transmit/receive signal simultaneously.

1.2. EUT Information

EUT Voltage	Power Port		DC 10~30V	
			AC 120V/60Hz to DC 12V (power by adapter)	
	802.3at PoE		DC 50~57V	
EUT Function	☒	Point-to-multipoint	☐	Point-to-point
Beamforming Function	☐	With beamforming	☒	Without beamforming

1.3. Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ 47 CFR FCC Part 15
- ♦ ANSI C63.10-2013

The following reference test guidance is not within the scope of accreditation of TAF:

- ♦ KDB 558074 D01 v05r02
- ♦ KDB 662911 D01 v02r01
- ♦ KDB 414788 D01 v01r01

1.4. Testing Location Information

Testing Location Information		
Test Laboratory : DEKRA Testing and Certification Co., Ltd.		
1 (TAF: 3024)	ADD: No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C.	
	TEL: +886-3-582-8001 FAX: +886-3-582-8958	
2 (TAF: 3024)	ADD: No.372, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C.	
	TEL: +886-3-582-8001 FAX: +886-3-582-8958	
Test site number for address 1 includes HC-SR02. Test site number for address 2 includes HC-CB02, HC-CB03, HC-CB04, HC-SR10 and HC-SR12.		

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
AC Conduction Emission	HC-SR02	Igor Tseng	26 / 56	2023/06/20
RF Conducted Emission	HC-SR12	Clemens Fang	21~25 / 57~67	2023/06/28~2023/07/03
Radiated Emission	HC-CB02	Gary Liao	24~25.5 / 59~64	2023/06/13~2023/06/19

1.5. Measurement Uncertainty

Uncertainties have been calculated according to the DEKRA internal document with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)).

Test Item	Uncertainty
AC Power Line Conducted Emission	± 2.34 dB
Occupied Bandwidth & DTS Bandwidth	± 282.55 Hz
Maximum Conducted Output Power	± 1.16 dB
Maximum Power Spectral Density	± 2.47 dB
Antenna Port Conducted Emission	± 2.47 dB
Transmitter Radiated Spurious Emission	± 3.52 dB below 1 GHz ± 3.56 dB above 1 GHz

1.6. List of Test Equipment

HC-SR02

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Cal. Date	Next Cal. Date
Artificial Mains Network	R&S	ENV4200	848411/010	9kHz-30MHz, 4line/100A	2022/12/19	2023/12/18
EMI Test Receiver	R&S	ESR3	102608	9 kHz - 3.6 GHz	2022/09/28	2023/09/27
Two-Line V-Network	R&S	ENV216	100096	9kHz-30MHz	2023/06/02	2024/06/01
Coaxial Cable(9 m)	Harbour	RG-400	HC-SR02	9 kHz-2500 MHz	2022/08/15	2023/08/14
EMI Testing System	AUDIX	e3 210616 dekra V9	HC-SR02	N/A	N/A	N/A

HC-SR12

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Cal. Date	Next Cal. Date
High Speed Peak Power Meter Dual Input	Anritsu	ML2496A	1602004	0.3-40 GHz	2022/11/02	2023/11/01
Pulse Power Sensor	Anritsu	MA2411B	1531043	0.3-40 GHz	2022/11/02	2023/11/01
Pulse Power Sensor	Anritsu	MA2411B	1531044	0.3-40 GHz	2022/11/02	2023/11/01
Signal and Spectrum Analyzer	R&S	FSV40	101869	10Hz-40GHz	2022/07/13	2023/07/12

HC-CB02

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	10 Hz-40 GHz	2022/09/29	2023/09/28
Trilog Broadband Antenna	Schwarzbeck	VULB 9168	1272	30 MHz-2 GHz	2023/04/13	2024/04/12
Double Ridged Horn Antenna	RF SPIN	DRH18-E	211211A18EN	1G-18GHz	2022/11/15	2023/11/14
Horn Antenna	Schwarzbeck	BBHA 9170	203	18G-40GHz	2023/02/13	2024/02/12
Pre-Amplifier	EMCI	EMC01820I	980365	30M-8 GHz,20 dB	2023/04/07	2024/04/06
Pre-Amplifier	EMEC	EM01G18GA	060741	1G-18 GHz,50 dB	2023/05/05	2024/05/04
Pre-Amplifier	DEKRA	AP-400C	201801231	18G-40 GHz,48 dB	2022/09/27	2023/09/26
EMI Test Receiver	R&S	ESR7	102260	10 Hz-7 GHz	2022/12/01	2023/11/30
Magnetic Loop Antenna	Teseq	HLA 6121	44287	0.01-30 MHz	2022/10/21	2023/10/20
Coaxial Cable(13m)	Suhner	SF104	HC-CB02	30M-18 GHz	2022/08/15	2023/08/14
Coaxial Cable(3m)	Suhner,Rosnol	SF102_UP0264	HC-CB02_1	18G-40 GHz 3 m	2022/08/14	2023/08/13
Radiated Software	AUDIX	e3 V9	HC-CB02_1	N/A	N/A	N/A

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

2. Test Configuration of EUT

2.1. Test Condition

EUT Operational Condition		
Testing Voltage	Adapter	AC 120V/60Hz to DC 12V
	802.3at PoE	AC 120V/60Hz to DC 56V

2.2. Test Channel Mode

Test Software Version	QSPR v5.0-00197
-----------------------	-----------------

Modulation	Frequency (MHz)	Power Setting
802.11b	2412	8.5
	2437	23.0
	2462	8.5
802.11g	2412	15.0
	2437	23.0
	2462	12.0
802.11ac (20 MHz)	2412	15.0
	2437	23.0
	2462	15.0
802.11ac (40 MHz)	2422	10.5
	2437	14.5
	2452	14.5

<Reference Data>

Modulation	Frequency (MHz)	Power Setting
802.11n (20MHz)	2412	15.0
	2437	23.0
	2462	15.0
802.11n (40MHz)	2422	10.5
	2437	14.5
	2452	14.5

2.3. Duty Cycle

Modulation	On Times (ms)	On+Off Times (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11b	12.225	12.300	99.39	0.027	0.010
802.11g	2.000	2.100	95.24	0.212	0.500
802.11ac (20 MHz)	4.960	5.060	98.02	0.087	0.010
802.11ac (40 MHz)	2.380	2.500	95.20	0.214	0.420

2.4. The Worst Case Measurement Configuration

Tests Item	AC Power Line Conducted Emission
Test Condition	AC power line conducted measurement for line and neutral
Operating Mode	Transmit
1	EUT + Adapter
2	EUT + 802.3at PoE

Tests Item	Occupied Bandwidth & DTS Bandwidth Maximum Conducted Output Power Maximum Power Spectral Density Antenna Port Conducted Emission
Test Condition	Conducted measurement at transmit chains

Tests Item	Transmitter Radiated Spurious Emission
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.
Operating Mode < 1GHz	Transmit
1	EUT + Adapter
2	EUT + 802.3at PoE
Operating Mode > 1GHz	Transmit

Tests Item	Simultaneous Transmission Analysis - Radiated Emission Co-location
Test Condition	Radiated measurement
Operating Mode	Transmit
1	WiFi 2.4 GHz + WiFi 5 GHz + WWAN module 1: LTE + WWAN module 2: LTE
2	WiFi 2.4 GHz + WiFi 5 GHz + WWAN module 1: LTE + WWAN module 2: WCDMA
3	WiFi 2.4 GHz + WiFi 5 GHz + WWAN module 1: WCDMA + WWAN module 2: WCDMA
Refer to Appendix A for Radiated Emission Co-location.	

Tests Item	Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation
Operating Mode	Transmit
1	WiFi 2.4 GHz + WiFi 5 GHz + WWAN module 1: LTE + WWAN module 2: LTE
2	WiFi 2.4 GHz + WiFi 5 GHz + WWAN module 1: LTE + WWAN module 2: WCDMA
3	WiFi 2.4 GHz + WiFi 5 GHz + WWAN module 1: WCDMA + WWAN module 2: WCDMA
Refer to DEKRA Test Report No.: 2330881R-RFUSV17S-A for Co-location RF Exposure Evaluation.	

Note:

1. Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. For radiated emission below 1 GHz and AC power line conducted emission have performed all modes of operation were investigated and the worst-case emissions are reported.
3. The EUT contains two of the same WWAN module (brand name: AirPrime, model: EM7411, FCC ID: N7NEM74B).
4. There are two modes of EUT, one is power by adapter, and the other is power by 802.3at PoE.
 - (1) For AC power line conducted emission and radiated emission below 1 GHz tests: Both power by adapter, and power by 802.3at PoE were to test and record in this test report.
 - (2) For other test: The powered does not affect the test result, so only power by adapter was tested and recorded in this report.

2.5. Tested System Details

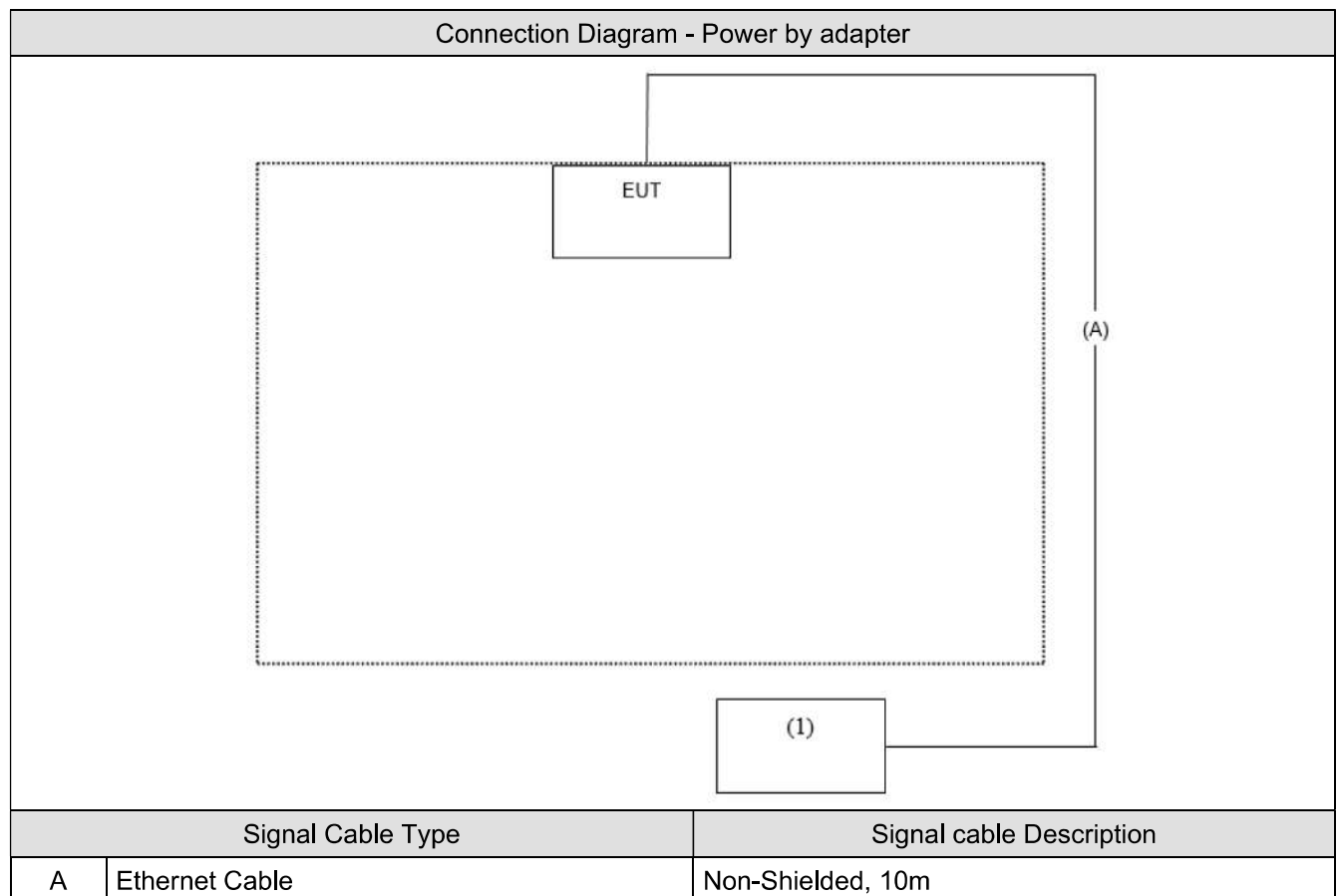
<Power by adapter>

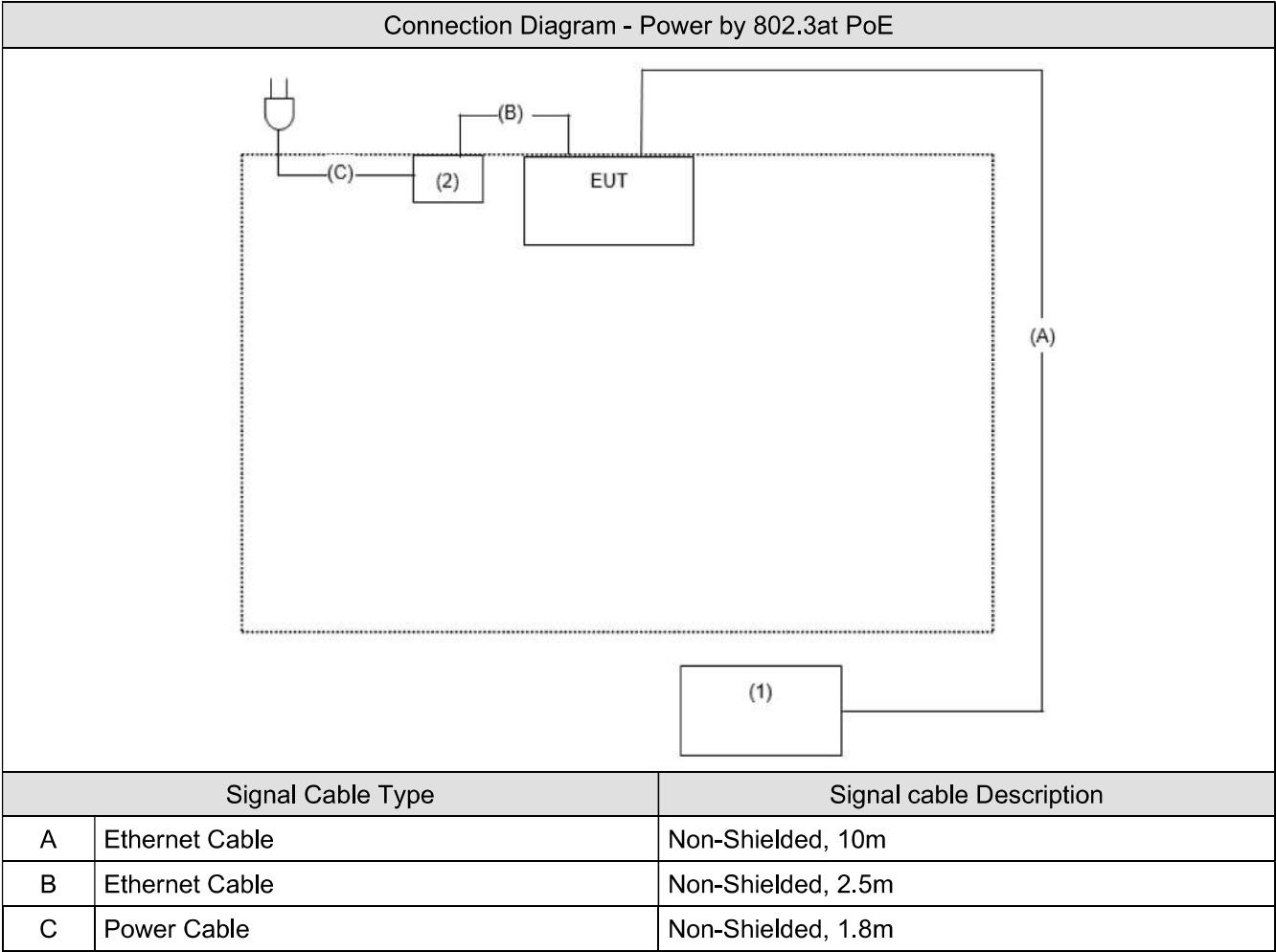
No.	Equipment	Brand Name	Model No.	Serial No.
1	Notebook	Lenovo	Lenovo Ideapad 110 15IBR	PF0MEEB0

<Power by 802.3at PoE>

No.	Equipment	Brand Name	Model No.	Serial No.
1	Notebook	Lenovo	Lenovo Ideapad 110 15IBR	PF0MEEB0
2	802.3at PoE	Billion	BP035-560054QAX	N/A

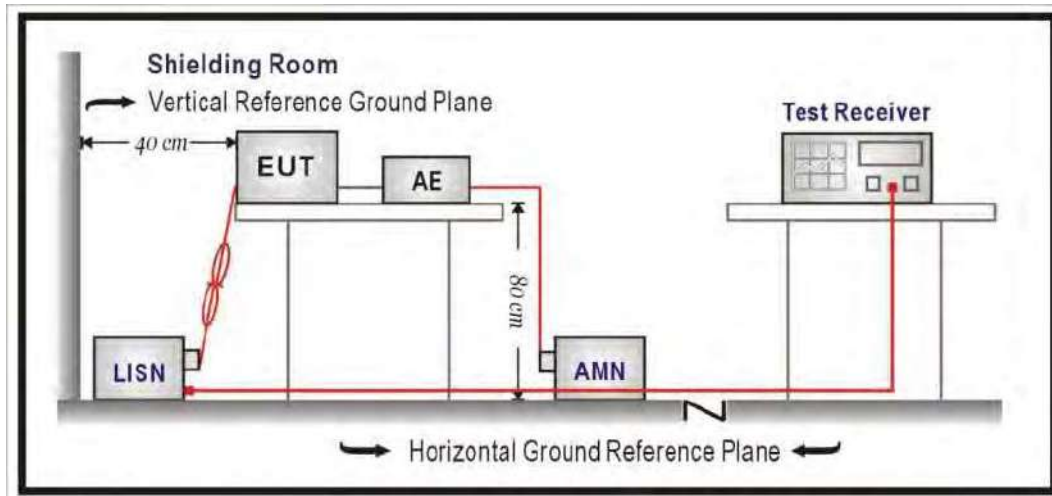
2.6. Configuration of Tested System





3. AC Power Line Conducted Emission

3.1. Test Setup



3.2. Test Limit

Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

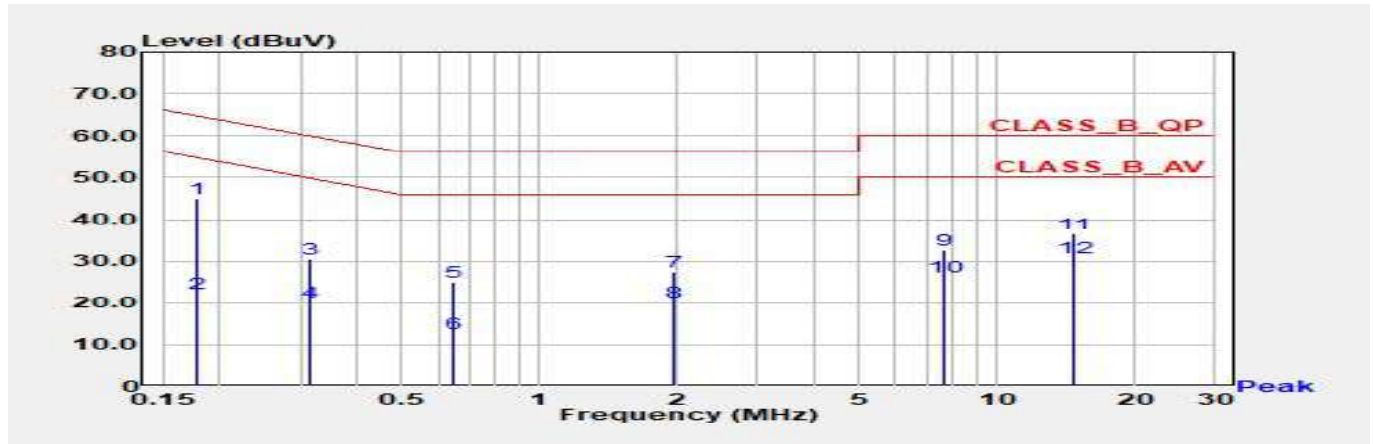
Remarks: In the above table, the tighter limit applies at the band edges.

3.3. Test Procedure

The EUT was setup according to ANSI C63.10: 2013 for AC Power Line Conducted Emissions.

3.4. Test Result of AC Power Line Conducted Emission

Test Mode	Mode 1: EUT + Adapter	Phase	Line
Test Condition	802.11b / Ant. 0 + Ant. 1 / 2437 MHz		

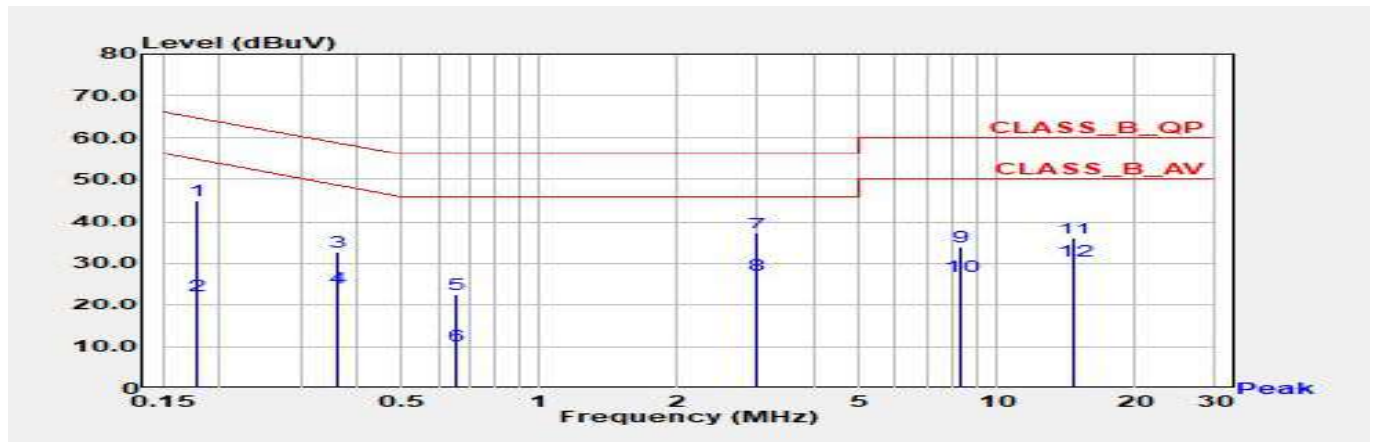


No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
*1	0.177	45.06	64.63	-19.57	35.20	9.86	QP
2	0.177	22.42	54.63	-32.21	12.56	9.86	AV
3	0.316	30.47	59.80	-29.33	20.59	9.88	QP
4	0.316	20.26	49.80	-29.54	10.38	9.88	AV
5	0.649	25.06	56.00	-30.94	15.16	9.90	QP
6	0.649	12.58	46.00	-33.42	2.67	9.90	AV
7	1.957	27.36	56.00	-28.64	17.38	9.98	QP
8	1.957	20.36	46.00	-25.64	10.38	9.98	AV
9	7.640	32.60	60.00	-27.40	22.41	10.19	QP
10	7.640	26.18	50.00	-23.82	15.99	10.19	AV
11	14.628	36.48	60.00	-23.52	26.14	10.34	QP
*12	14.628	30.76	50.00	-19.24	20.42	10.34	AV

Remark:

1. "*" means this data is the worst emission level.
2. Emission Level = Reading Level + Correct Factor (Correct Factor = LISN Insertion Loss + Cable Loss).
3. Margin = Emission Level - Limit.

Test Mode	Mode 1: EUT + Adapter	Phase	Neutral
Test Condition	802.11b / Ant. 0 + Ant. 1 / 2437 MHz		

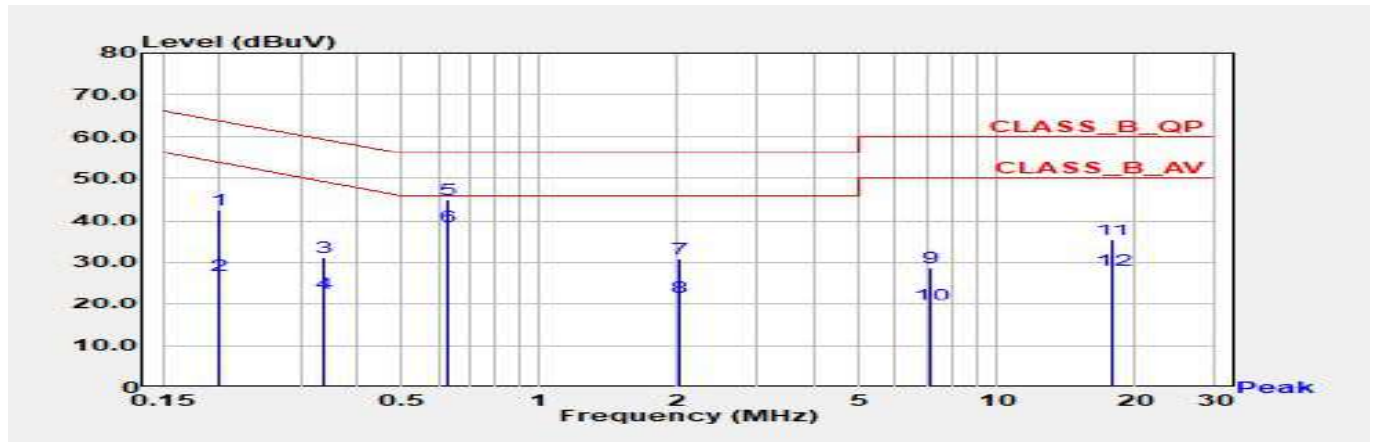


No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.177	44.92	64.63	-19.71	35.09	9.83	QP
2	0.177	22.23	54.63	-32.39	12.40	9.83	AV
3	0.361	32.50	58.69	-26.20	22.63	9.87	QP
4	0.361	24.23	48.69	-24.46	14.36	9.87	AV
5	0.654	22.79	56.00	-33.21	12.89	9.89	QP
6	0.654	10.40	46.00	-35.60	0.50	9.89	AV
*7	2.980	37.17	56.00	-18.83	27.16	10.01	QP
*8	2.980	27.09	46.00	-18.91	17.08	10.01	AV
9	8.324	33.67	60.00	-26.33	23.51	10.17	QP
10	8.324	26.82	50.00	-23.18	16.66	10.17	AV
11	14.691	36.04	60.00	-23.96	25.78	10.26	QP
12	14.691	30.39	50.00	-19.61	20.13	10.26	AV

Remark:

1. "*" means this data is the worst emission level.
2. Emission Level = Reading Level + Correct Factor (Correct Factor = LISN Insertion Loss + Cable Loss).
3. Margin = Emission Level - Limit.

Test Mode	Mode 2: EUT + 802.3at PoE	Phase	Line
Test Condition	802.11b / Ant. 0 + Ant. 1 / 2437 MHz		

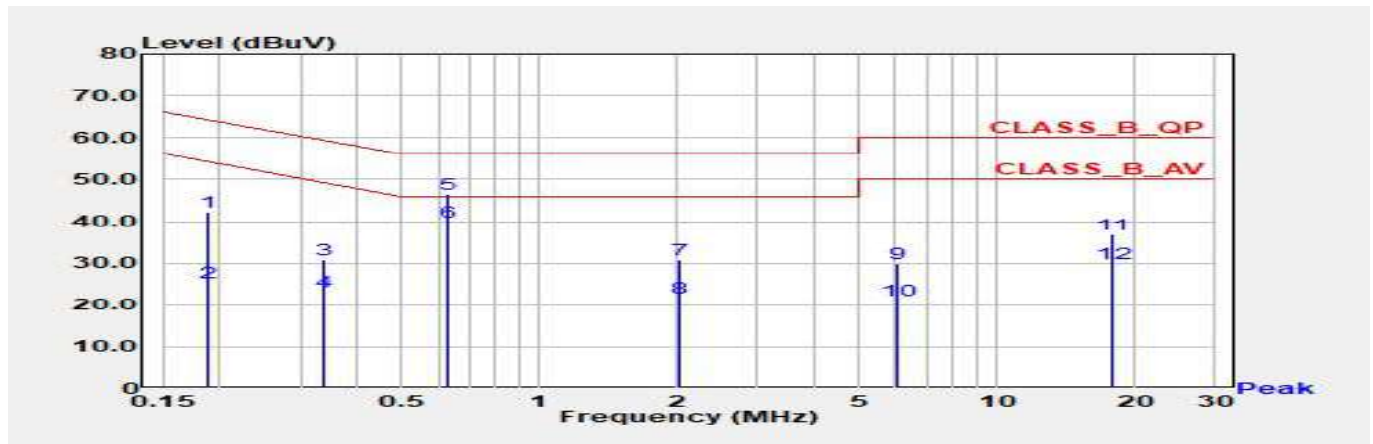


No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.199	42.65	63.63	-20.99	32.77	9.87	QP
2	0.199	26.93	53.63	-26.70	17.06	9.87	AV
3	0.337	31.07	59.28	-28.21	21.20	9.88	QP
4	0.337	22.66	49.28	-26.62	12.78	9.88	AV
*5	0.631	45.07	56.00	-10.93	35.17	9.90	QP
*6	0.631	38.76	46.00	-7.24	28.86	9.90	AV
7	2.020	30.79	56.00	-25.21	20.81	9.98	QP
8	2.020	21.82	46.00	-24.18	11.84	9.98	AV
9	7.152	28.78	60.00	-31.22	18.60	10.18	QP
10	7.152	20.04	50.00	-29.96	9.87	10.18	AV
11	17.839	35.31	60.00	-24.69	24.92	10.40	QP
12	17.839	28.06	50.00	-21.94	17.67	10.40	AV

Remark:

1. "*" means this data is the worst emission level.
2. Emission Level = Reading Level + Correct Factor (Correct Factor = LISN Insertion Loss + Cable Loss).
3. Margin = Emission Level - Limit.

Test Mode	Mode 2: EUT + 802.3at PoE	Phase	Neutral
Test Condition	802.11b / Ant. 0 + Ant. 1 / 2437 MHz		



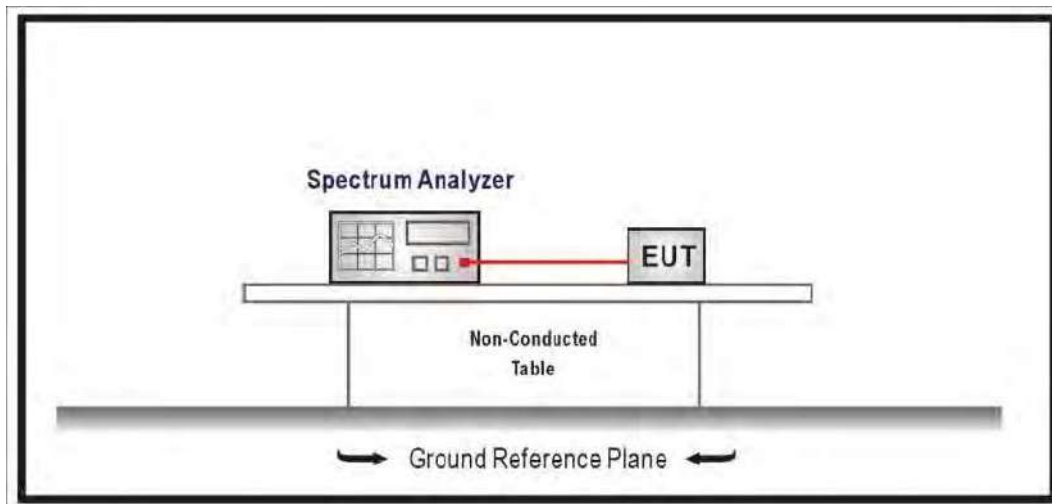
No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.188	42.11	64.11	-22.00	32.27	9.84	QP
2	0.188	25.37	54.11	-28.74	15.53	9.84	AV
3	0.337	30.70	59.28	-28.59	20.83	9.87	QP
4	0.337	23.16	49.28	-26.12	13.29	9.87	AV
*5	0.631	46.36	56.00	-9.64	36.47	9.89	QP
*6	0.631	40.00	46.00	-6.00	30.11	9.89	AV
7	2.017	30.82	56.00	-25.18	20.85	9.97	QP
8	2.017	21.64	46.00	-24.36	11.67	9.97	AV
9	6.056	29.91	60.00	-30.09	19.80	10.11	QP
10	6.056	21.23	50.00	-28.77	11.13	10.11	AV
11	17.866	36.94	60.00	-23.06	26.66	10.28	QP
12	17.866	29.76	50.00	-20.24	19.48	10.28	AV

Remark:

1. "*" means this data is the worst emission level.
2. Emission Level = Reading Level + Correct Factor (Correct Factor = LISN Insertion Loss + Cable Loss).
3. Margin = Emission Level - Limit.

4. Occupied Bandwidth & DTS Bandwidth

4.1. Test Setup



4.2. Test Limit

The 6 dB bandwidth: ≥ 0.50 MHz.

Occupied Bandwidth: NA

4.3. Test Procedures

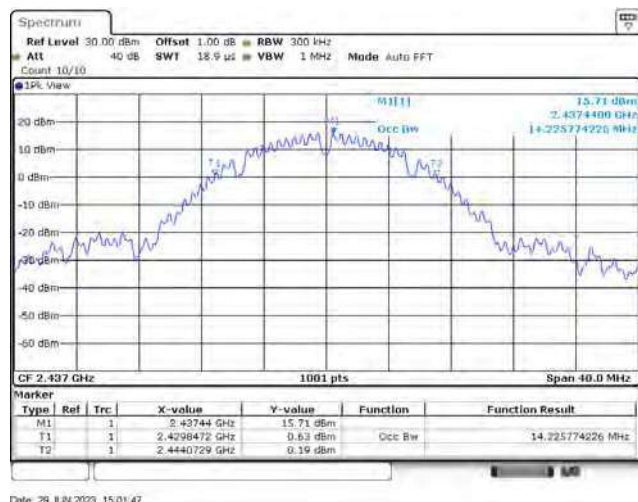
The EUT was setup according to ANSI C63.10: 2013; tested according to DTS test procedure of KDB 558074.

4.4. Test Result of Occupied Bandwidth

Modulation	Frequency (MHz)	Occupied Bandwidth (MHz)		Limit (MHz)
		Ant. 0	Ant. 1	
802.11b	2412	13.586	13.506	-
	2437	14.225	14.225	-
	2462	14.145	14.065	-
802.11g	2412	16.463	16.383	-
	2437	17.262	16.983	-
	2462	16.663	16.583	-
802.11ac (20 MHz)	2412	17.622	17.622	-
	2437	18.101	18.101	-
	2462	17.782	17.782	-
802.11ac (40 MHz)	2422	36.043	35.884	-
	2437	35.804	35.964	-
	2452	36.043	36.283	-

Spectrum plot of maximum value

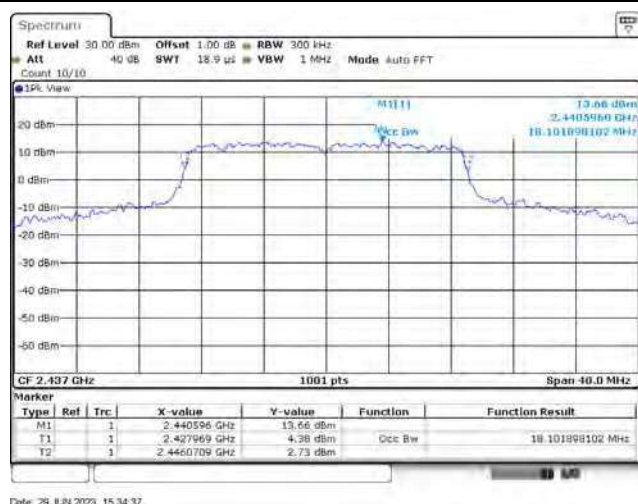
802.11b / Ant. 0 / 2437 MHz



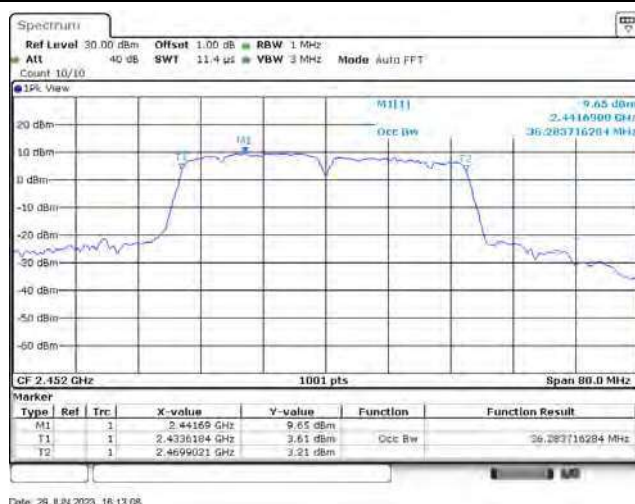
802.11g / Ant. 0 / 2437 MHz



802.11ac (20 MHz) / Ant. 0 / 2437 MHz



802.11ac (40 MHz) / Ant. 1 / 2452 MHz

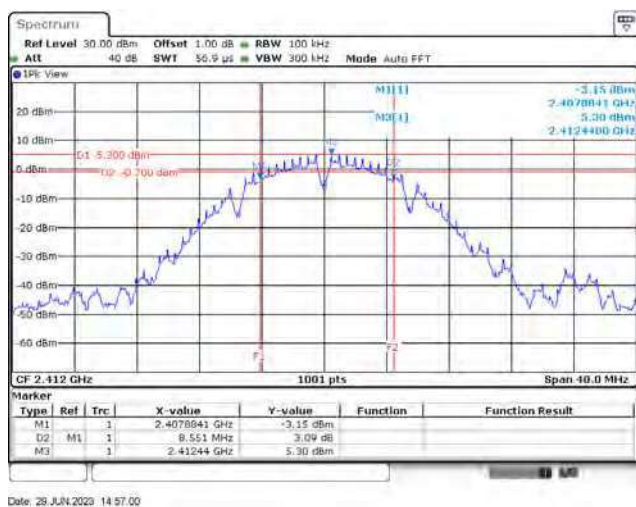


4.5. Test Result of DTS Bandwidth

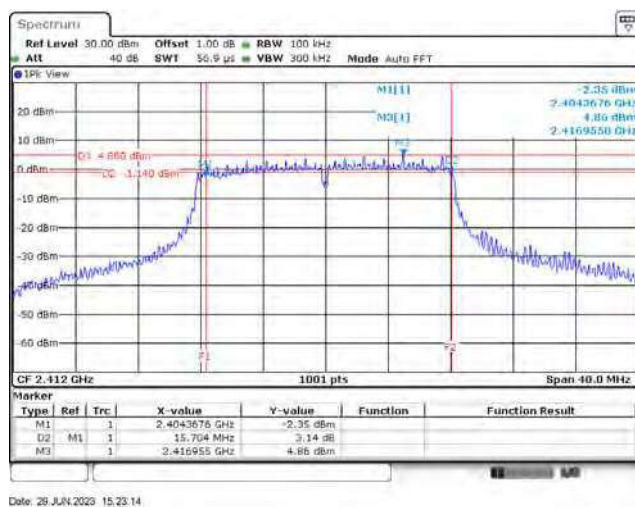
Modulation	Frequency (MHz)	DTS Bandwidth (MHz)		Limit (MHz)	Result
		Ant. 0	Ant. 1		
802.11b	2412	9.031	8.551	≥ 0.50	Pass
	2437	9.031	9.071	≥ 0.50	Pass
	2462	9.510	9.031	≥ 0.50	Pass
802.11g	2412	16.304	15.704	≥ 0.50	Pass
	2437	16.304	16.304	≥ 0.50	Pass
	2462	16.344	16.344	≥ 0.50	Pass
802.11ac (20 MHz)	2412	17.183	16.943	≥ 0.50	Pass
	2437	17.542	17.542	≥ 0.50	Pass
	2462	17.582	17.582	≥ 0.50	Pass
802.11ac (40 MHz)	2422	35.405	35.644	≥ 0.50	Pass
	2437	35.085	32.607	≥ 0.50	Pass
	2452	35.005	35.325	≥ 0.50	Pass

Spectrum plot of worst value

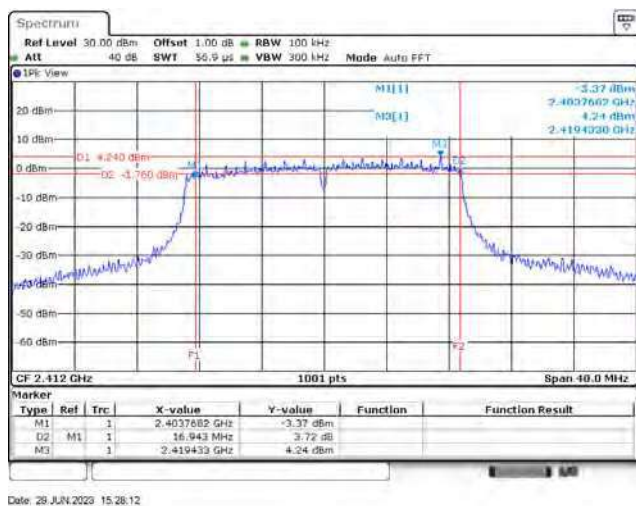
802.11b / Ant. 1 / 2412 MHz



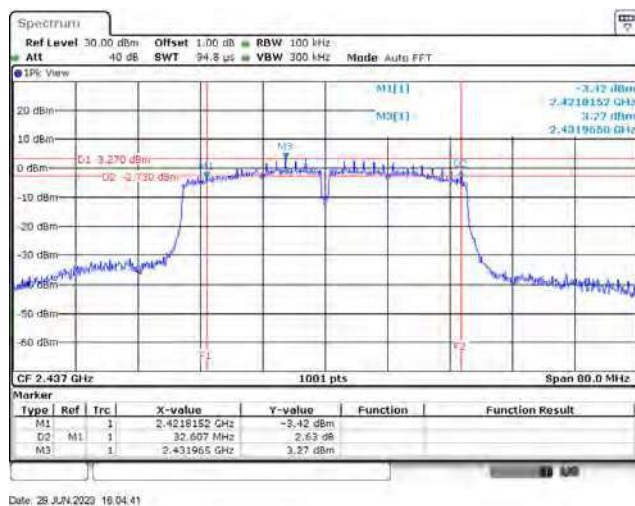
802.11g / Ant. 1 / 2412 MHz



802.11ac (20 MHz) / Ant. 1 / 2412 MHz

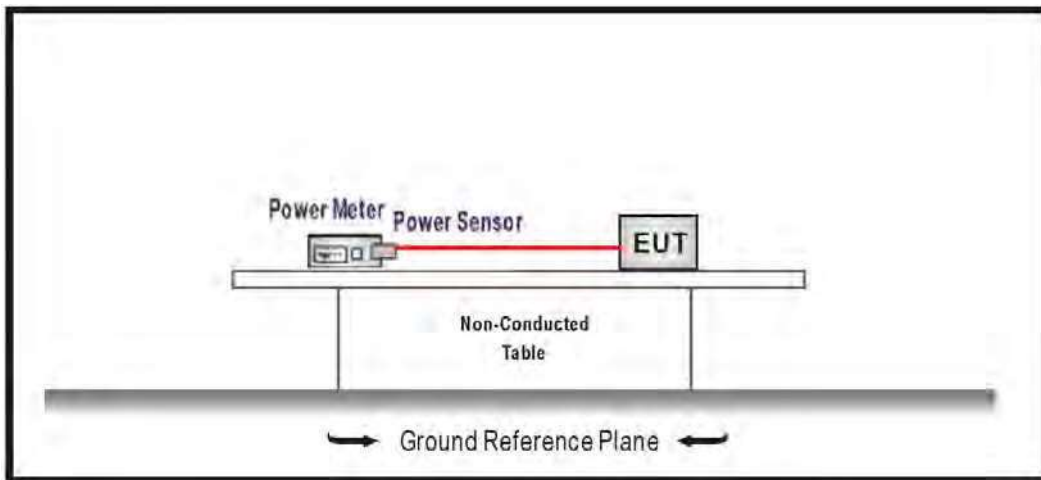


802.11ac (40 MHz) / Ant. 1 / 2437 MHz



5. Maximum Conducted Output Power

5.1. Test Setup



5.2. Test Limit

The maximum conducted output power shall be less 30 dBm (1 Watt).

5.3. Test Procedures

The EUT was setup according to ANSI C63.10: 2013; tested according to DTS test procedure of KDB 558074.

5.4. Test Result of Maximum Conducted Output Power

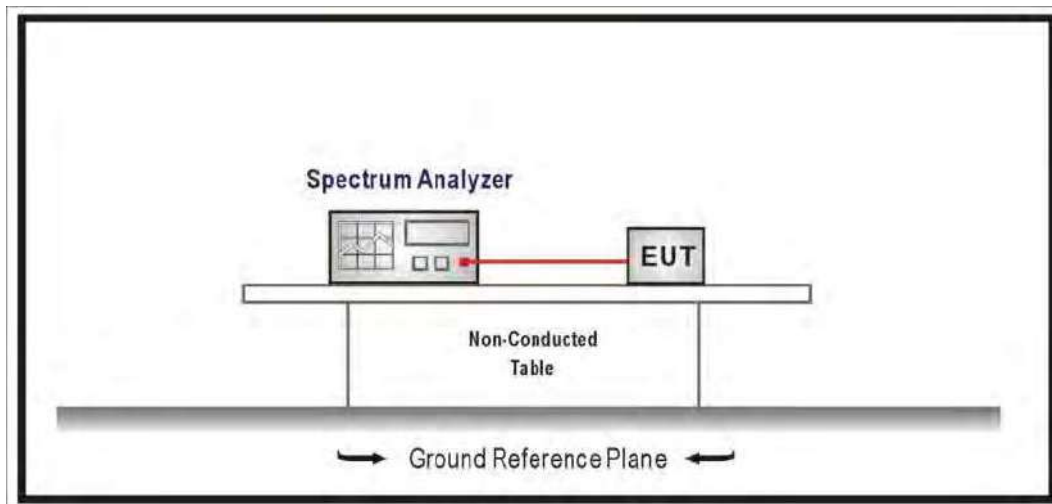
Modulation	Frequency (MHz)	Maximum Conducted Output Power (dBm)			Limit (dBm)	Result
		Ant. 0	Ant. 1	Total		
802.11b	2412	14.47	14.02	17.26	≤ 30.00	Pass
	2437	24.42	24.24	27.34	≤ 30.00	Pass
	2462	12.43	14.65	16.69	≤ 30.00	Pass
802.11g	2412	17.26	16.38	19.85	≤ 30.00	Pass
	2437	23.37	23.15	26.27	≤ 30.00	Pass
	2462	15.36	15.51	18.45	≤ 30.00	Pass
802.11ac (20 MHz)	2412	17.07	16.24	19.69	≤ 30.00	Pass
	2437	23.14	22.98	26.07	≤ 30.00	Pass
	2462	15.36	15.43	18.41	≤ 30.00	Pass
802.11ac (40 MHz)	2422	16.64	12.27	17.99	≤ 30.00	Pass
	2437	17.31	17.04	20.19	≤ 30.00	Pass
	2452	16.44	16.35	19.41	≤ 30.00	Pass

<Reference Data>

Modulation	Frequency (MHz)	Maximum Conducted Output Power (dBm)		
		Ant. 0	Ant. 1	Total
802.11n (20 MHz)	2412	16.95	16.08	19.55
	2437	22.97	22.85	25.92
	2462	15.22	15.31	18.28
802.11n (40 MHz)	2422	16.49	12.14	17.85
	2437	17.15	16.93	20.05
	2452	16.27	16.21	19.25

6. Maximum Power Spectral Density

6.1. Test Setup



6.2. Test Limit

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

6.3. Test Procedures

The EUT was setup according to ANSI C63.10: 2013; tested according to DTS test procedure of KDB 558074.

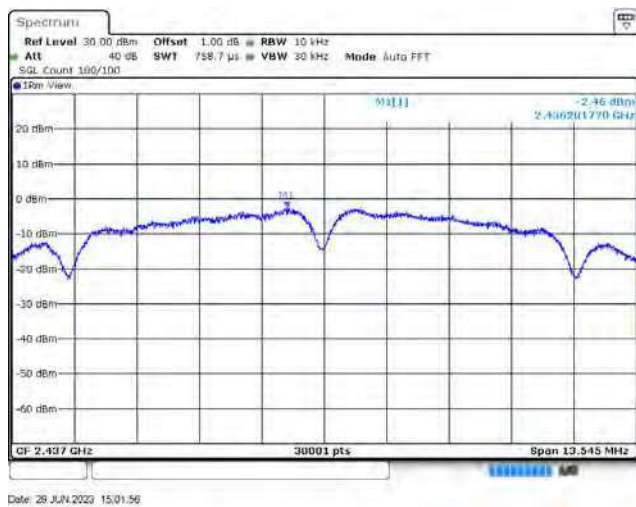
6.4. Test Result of Maximum Power Spectral Density

Modulation	Frequency (MHz)	Power Spectral Density (dBm / 3kHz)			Limit (dBm / 3kHz)	Result
		Ant. 0	Ant. 1	Total		
802.11b	2412	-12.200	-13.000	-9.545	≤ 8.00	Pass
	2437	-2.460	-2.480	0.567	≤ 8.00	Pass
	2462	-15.050	-14.890	-11.932	≤ 8.00	Pass
802.11g	2412	-12.690	-13.460	-9.836	≤ 8.00	Pass
	2437	-6.330	-6.650	-3.265	≤ 8.00	Pass
	2462	-14.410	-14.430	-11.198	≤ 8.00	Pass
802.11ac (20 MHz)	2412	-13.210	-13.570	-9.750	≤ 8.00	Pass
	2437	-7.070	-6.930	-3.363	≤ 8.00	Pass
	2462	-14.560	-15.220	-11.241	≤ 8.00	Pass
802.11ac (40 MHz)	2422	-15.160	-20.250	-13.362	≤ 8.00	Pass
	2437	-15.690	-15.390	-11.901	≤ 8.00	Pass
	2452	-15.660	-15.540	-11.963	≤ 8.00	Pass

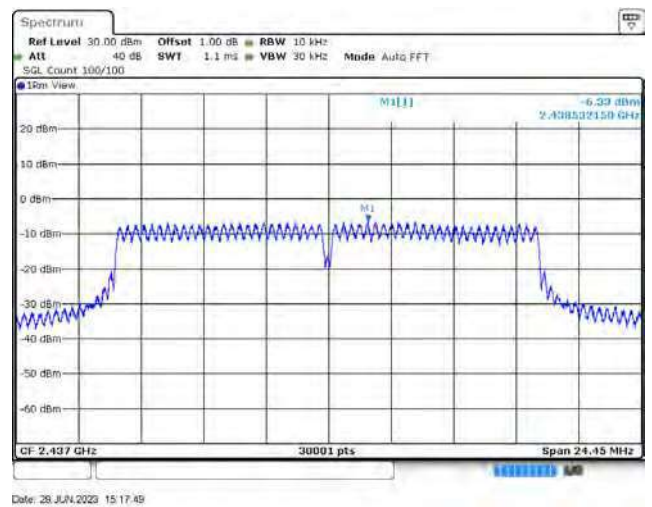
Note: Total power spectral density = power spectral density + duty factor, and the duty factor refer to section 1.10.

Spectrum plot of worst value

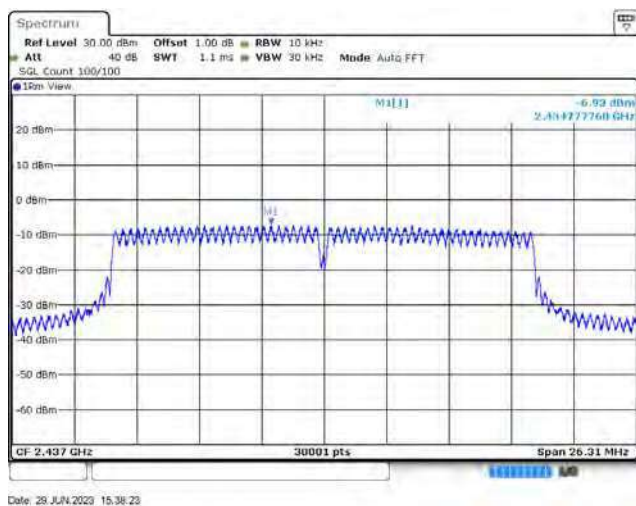
802.11b / Ant. 0 / 2437 MHz



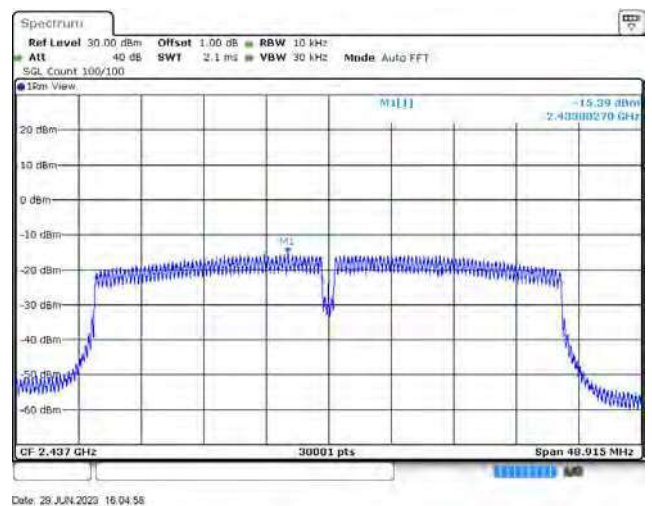
802.11g / Ant. 0 / 2437 MHz



802.11n (20 MHz) / Ant. 1 / 2437 MHz

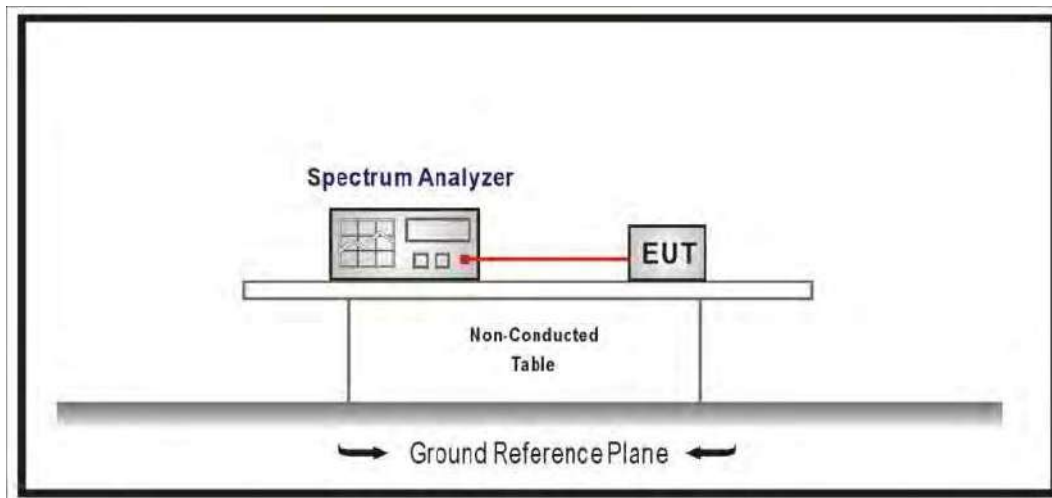


802.11n (40 MHz) / Ant. 1 / 2437 MHz



7. Antenna Port Conducted Emission

7.1. Test Setup



7.2. Test Limit

RF output power procedure	Limit (dBc)
Peak output power procedure	20
Average output power procedure	30

Remarks:

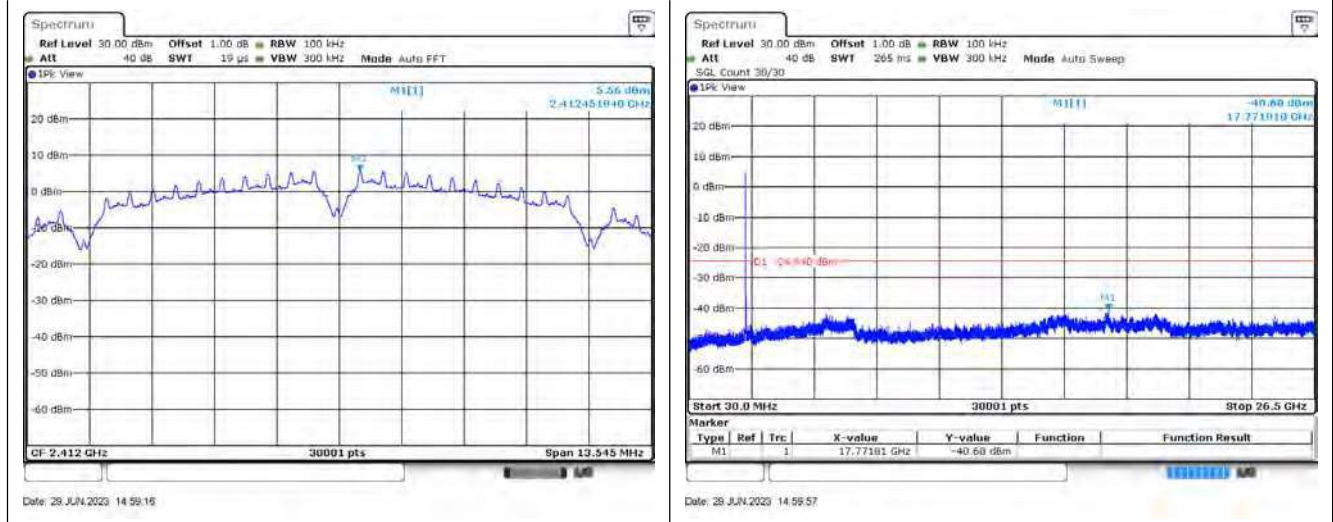
1. In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains 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 limit.
2. If the transmitter complies with the conducted power limit based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

7.3. Test Procedure

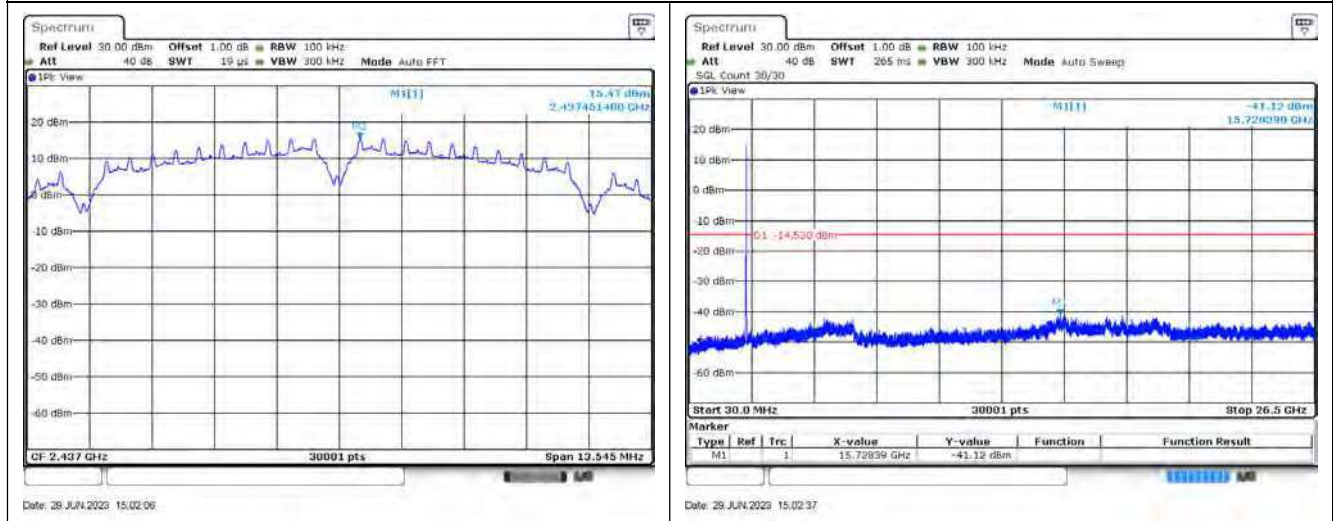
The EUT was setup according to ANSI C63.10: 2013 and tested according to DTS test procedure of KDB 558074.

7.4. Test Result of Antenna Port Conducted Emission

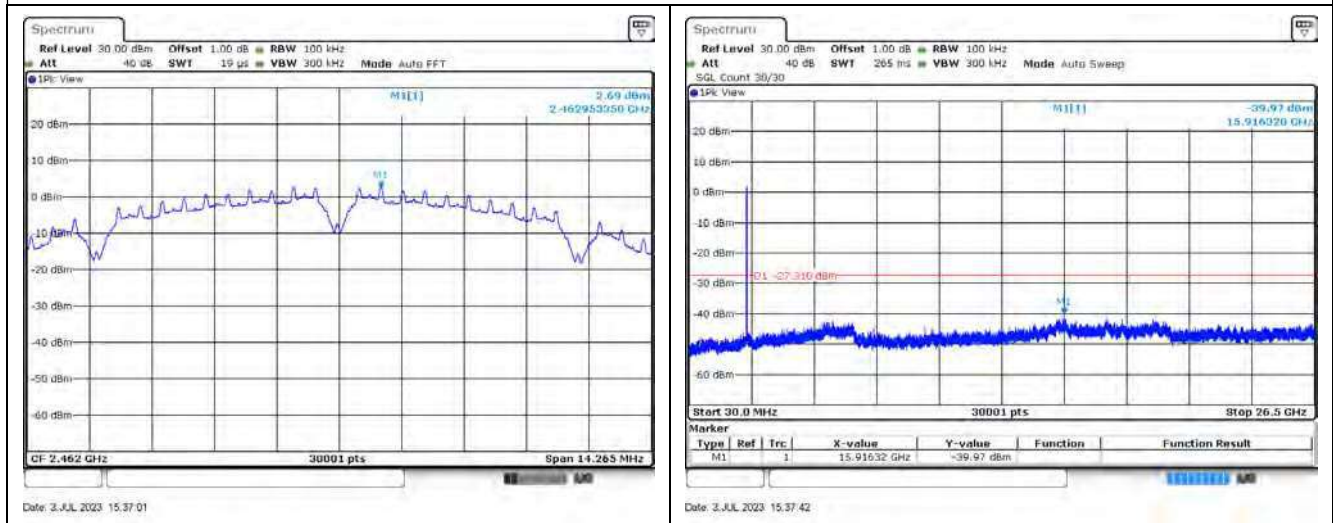
802.11b / Ant. 0 / 2412 MHz



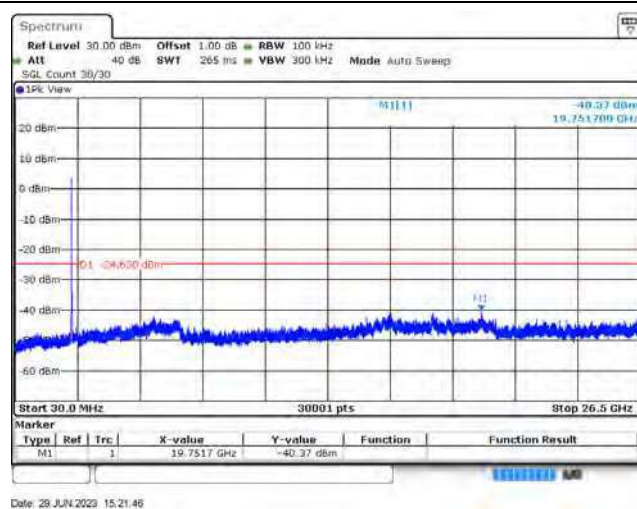
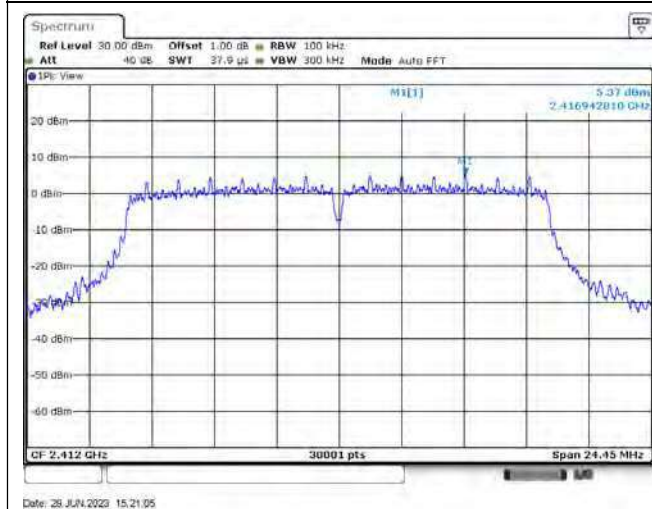
802.11b / Ant. 0 / 2437 MHz



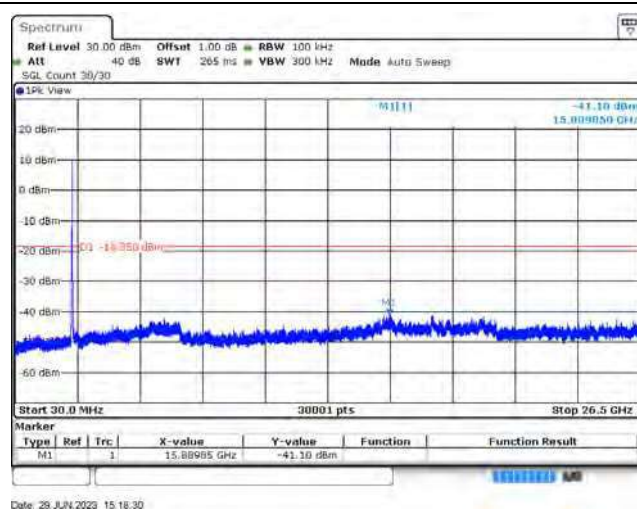
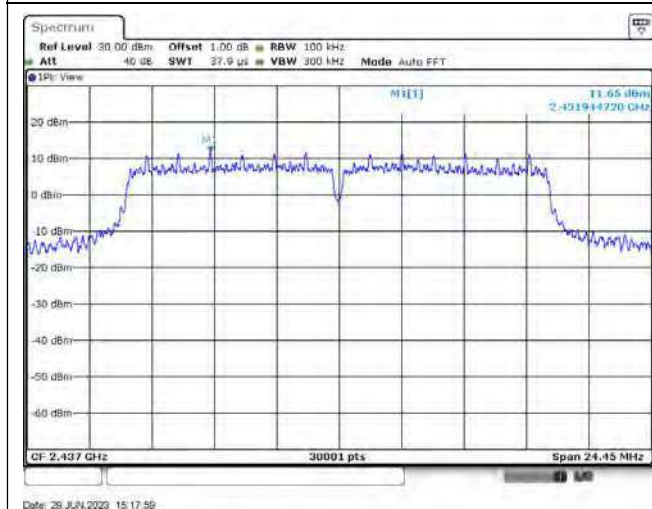
802.11b / Ant. 0 / 2462 MHz



802.11g / Ant. 0 / 2412 MHz



802.11g / Ant. 0 / 2437 MHz



802.11g / Ant. 0 / 2462 MHz

