






Test Report No:
2340262R-RFUSV01S-A

TEST REPORT

FCC Rules&Regulations

Product Name	Peplink Pepwave Wireless Product
Brand Name	 PEPWAVE
Model No.	MAX BR1 Mini M2M MAX-BR1-MINI-M2M-LTE-US-T-PRM MAX-BR1-MINI-M2M-LTEA-US-T-PRM
FCC ID	U8G-P1MT01DB9
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	 Hailey Peng / Senior Engineer
Approved By	 Rueyyan Lin / Supervisor
Date of Receipt	Apr. 12, 2023
Date of Issue	May 23, 2023
Report Version	V1.0

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Test Setup Photograph: Please refer to the file: 2340262R-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.

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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	May 23, 2023


1. General Information

1.1. EUT Description

Product Name	Peplink Pepwave Wireless Product	
Brand Name		
Model No.	MAX BR1 Mini M2M MAX-BR1-MINI-M2M-LTE-US-T-PRM MAX-BR1-MINI-M2M-LTEA-US-T-PRM	
EUT Voltage	Power Port	DC 10~30V AC 120V/60Hz to DC 12V (power by adapter)
	802.3at PoE	DC 50~57V
Frequency Range / Channel Number	IEEE 802.11b/g	2412 ~ 2462 MHz / 11 Channels
	IEEE 802.11n (20 MHz)	2412 ~ 2462 MHz / 11 Channels
	IEEE 802.11n (40 MHz)	2422 ~ 2452 MHz / 7 Channels
Type of Modulation	IEEE 802.11b	DSSS
	IEEE 802.11g/n	OFDM
Data Rate	IEEE 802.11b	1, 2, 5.5, 11 Mbps
	IEEE 802.11g	6, 9, 12, 18, 24, 36, 48, 54 Mbps
	IEEE 802.11n	Support a subset of the combination of GI, MCS 0 ~ MCS 15 and bandwidth defined in 802.11n

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: +12Vdc, 2.0A, 24.0W

The brand name/model number in the following table are all refer to the identical product.

Brand Name	EUT	Model No.	Cellular Module	
			Brand Name	Model No.
	-	MAX BR1 Mini M2M	AirPrime	EM7411
	-		Telit	LE910C4-NF
	1	MAX-BR1-MINI-M2M-LTEA-US-T-PRM	AirPrime	EM7411
	2	MAX-BR1-MINI-M2M-LTE-US-T-PRM	Telit	LE910C4-NF

Assemble different cellular module for the marketing purpose.

Antenna Information					
Ant.	Brand Name	Model No.	Type	Antenna Gain (dBi)	Directional Gain (dBi)
0	YUAN CHEN TECH CO., LTD	ACA-0040-6G1A1-A10	Omni-directional	3.15	6.16
1	YUAN CHEN TECH CO., LTD	ACA-0040-6G1A1-A10	Omni-directional	3.15	

$$\text{Directional Gain} = 10\log [(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{\text{Ant}}]$$

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

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

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

IEEE 802.11b/g & IEEE 802.11n (20 MHz)

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
01	2412 MHz	02	2417 MHz	03	2422 MHz	04	2427 MHz
05	2432 MHz	06	2437 MHz	07	2442 MHz	08	2447 MHz
09	2452 MHz	10	2457 MHz	11	2462 MHz	-	-

IEEE 802.11n (40 MHz)

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
03	2422 MHz	04	2427 MHz	05	2432 MHz	06	2437 MHz
07	2442 MHz	08	2447 MHz	09	2452 MHz	-	-

Note:

1. Regards to the frequency band operation; the lowest, middle and highest frequency of channel were selected to perform the test, and then shown on this report.
2. The above EUT information is declared by the manufacturer.

1.2. Test Mode

DEKRA has verified the construction and function in typical operation. The preliminary tests were performed in different data rate, and to find the worst condition, which was shown in this test report. The following table is the final test mode.

Test Mode	Mode 1: Transmit - power by adapter Mode 2: Transmit - power by 802.3at PoE
-----------	--

Test Items	Test Mode	Test EUT	Modulation	Channel	Result
AC Power Line Conducted Emission	Mode 1	EUT 1	11b	1	Pass
		EUT 2	11b	1	Pass
	Mode 2	EUT 1	11b	1	Pass
		EUT 2	11b	1	Pass
Maximum Conducted Output Power	Mode 1	EUT 1	11b	1/6/11	Pass
			11g	1/6/11	Pass
			11n (20 MHz)	1/6/11	Pass
			11n (40 MHz)	3/6/9	Pass
Radiated Emission Below 1 GHz	Mode 1	EUT 1	11b	1	Pass
	Mode 2	EUT 1	11b	1	Pass
Radiated Emission Above 1 GHz	Mode 1	EUT 1	11b	1/6/11	Pass
			11g	1/6/11	Pass
			11n (20 MHz)	1/6/11	Pass
			11n (40 MHz)	3/6/9	Pass
Antenna Port Conducted Emission	Mode 1	EUT 1	11b	1/6/11	Pass
			11g	1/6/11	Pass
			11n (20 MHz)	1/6/11	Pass
			11n (40 MHz)	3/6/9	Pass
Radiated Emission Band Edge	Mode 1	EUT 1	11b	1/6/11	Pass
			11g	1/6/11	Pass
			11n (20 MHz)	1/6/11	Pass
			11n (40 MHz)	3/6/9	Pass
Occupied Bandwidth & DTS Bandwidth	Mode 1	EUT 1	11b	1/6/11	Pass
			11g	1/6/11	Pass
			11n (20 MHz)	1/6/11	Pass
			11n (40 MHz)	3/6/9	Pass
Maximum Power Spectral Density	Mode 1	EUT 1	11b	1/6/11	Pass
			11g	1/6/11	Pass
			11n (20 MHz)	1/6/11	Pass
			11n (40 MHz)	3/6/9	Pass

Note:

1. Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. The worst case of data rate for 802.11b is 1 Mbps, for 802.11g is 6 Mbps, for 802.11n (20 MHz)/802.11n (40 MHz) are MCS 0, Nss1. (Please refer to the test result of RF output power for detail.)
3. 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.
4. There are two EUTs, one is EUT 1 contains a WWAN module: AirPrime / EM7411 / FCC ID: N7NEM74B, and the other is EUT 2 contains a WWAN module: Telit / LE910C4-NF / FCC ID: RI7LE910CXNF.
 - (1) For AC power line conducted emission and radiated emission co-location tests: Both EUT 1, and EUT 2 were to test and record in this test report.
 - (2) For other test: EUT 1 generated the worst test result for radiated emission test, thus the measurement for other test will follow this same test configuration.
5. 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.
6. The EUT could be applied with 1. WiFi 2.4 GHz + WiFi 5 GHz + WWAN module: WCDMA function and 2. WiFi 2.4 GHz + WiFi 5 GHz + WWAN module: LTE function; therefore Co-location Maximum Permissible Exposure (Please refer to DEKRA Report No.: 2340262R-RFUSV17S-A) and Radiated Emission Co-location (Please refer to Appendix A) tests are added for simultaneously transmit with 1. WiFi 2.4 GHz + WiFi 5 GHz + WWAN module: WCDMA function and 2. WiFi 2.4 GHz + WiFi 5 GHz + WWAN module: LTE function.
7. The EUT contains a WWAN module, and assemble of cellular module refer to the section 1.1 for detail.

1.3. 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.

1.4. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system.

Mode 1: Transmit - power by adapter

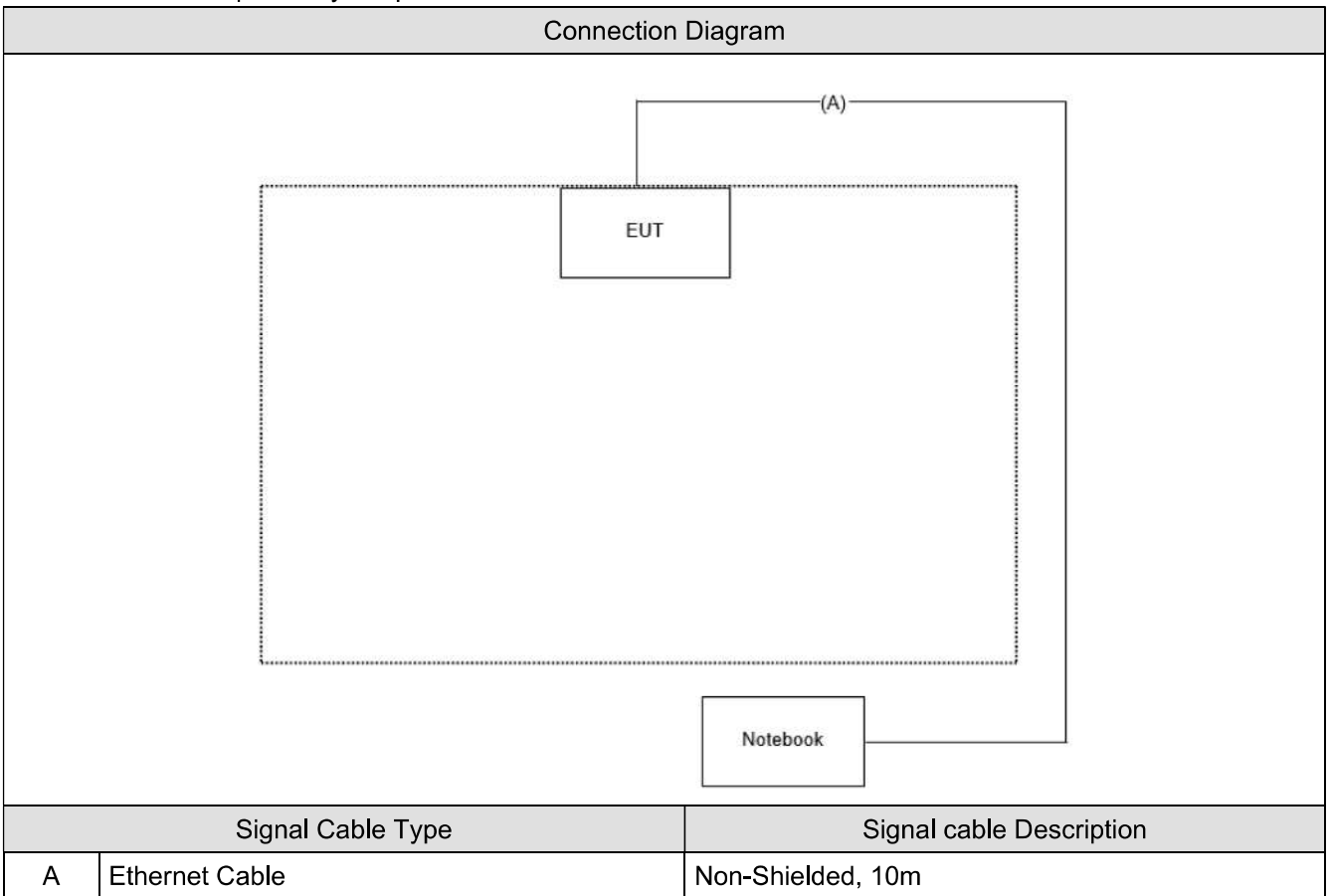
	Product	Manufacturer	Model No.	Serial No.
1	Notebook	DELL	Latitude E6320	8611271467

Mode 2: Transmit - power by 802.3at PoE

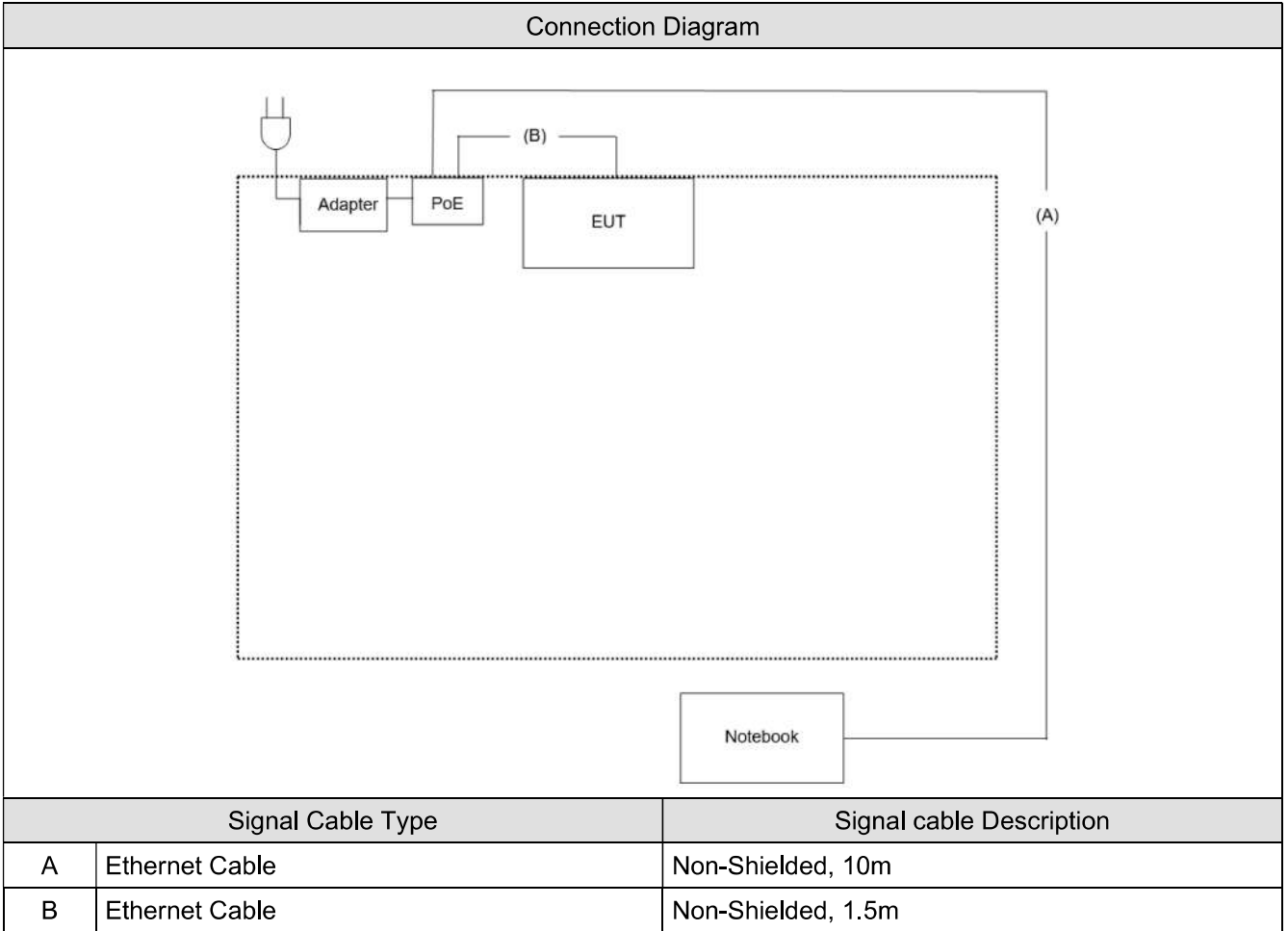
	Product	Manufacturer	Model No.	Serial No.
1	Notebook	DELL	Latitude E6320	8611271467
2	PoE	BulletPOE	BPW541-65W	N/A
3	Adapter	DVE	DSA-24PFS-12 FUS 120200	N/A

1.5. Configuration of Tested System

Mode 1: Transmit - power by adapter



Mode 2: Transmit - power by 802.3at PoE



1.6. EUT Operation of during Test

1	Execute control command by software "MT7615 QA v0.0.2.0".
2	Configure the test mode, the test channel, and the data rate.
3	Press "Start TX" to start the continuous transmitting.
4	Verify that the EUT works properly.

1.7. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Actually	Tested by	Test Date	Test Site
Temperature (°C)	AC Power Line Conducted Emission	21.5 ~ 22	Scott Chang Cyril Chen	2023/04/28 ~ 2023/05/09	HC-SR02
Humidity (%RH)		58 ~ 61			
Temperature (°C)	Maximum Conducted Output Power	21	Clemens Fang	2023/04/25	HC-SR12
Humidity (%RH)		66			
Temperature (°C)	Radiated Emission	21 ~ 23.1	Cyril Chen Scott Chang	2023/04/24 ~ 2023/05/08	HC-CB04
Humidity (%RH)		60 ~ 63			
Temperature (°C)	Antenna Port Conducted Emission	21	Clemens Fang	2023/04/25	HC-SR12
Humidity (%RH)		66			
Temperature (°C)	Radiated Emission Band Edge	23	Cyril Chen	2023/04/21	HC-CB04
Humidity (%RH)		61			
Temperature (°C)	Occupied Bandwidth & DTS Bandwidth	21	Clemens Fang	2023/04/25	HC-SR12
Humidity (%RH)		66			
Temperature (°C)	Maximum Power Spectral Density	21	Clemens Fang	2023/04/25	HC-SR12
Humidity (%RH)		66			

Note: Test site information refers to Laboratory Information.

Laboratory Information

USA : **FCC Registration Number: TW3024**
Canada : **CAB identifier : TW3024**

The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our

Web site: <http://www.dekra.com.tw>

If you have any comments, please don't hesitate to contact us. Our test sites as below:

Test Laboratory	DEKRA Testing and Certification Co., Ltd.
Address	1. No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C. 2. No.372, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C.
Phone number	1. +886-3-582-8001 2. +886-3-582-8001
Fax number	1. +886-3-582-8958 2. +886-3-582-8958
E mail address	info.tw@dekra.com
Website	http://www.dekra.com.tw
Note: 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.	

1.8. List of Test Equipment

HC-SR02

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Artificial Mains Network	R&S	ENV4200	848411/010	2022/12/19	2023/12/18
EMI Test Receiver	R&S	ESR3	102608	2022/09/28	2023/09/27
Two-Line V-Network	R&S	ENV216	100096	2022/05/17	2023/05/16
Coaxial Cable(9 m)	Harbour	RG-400	HC-SR02	2022/08/15	2023/08/14
EMI Testing System	AUDIX	e3 210616 dekra V9	HC-SR02	N/A	N/A

HC-SR12

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
High Speed Peak Power Meter Dual Input	Anritsu	ML2496A	1602004	2022/11/02	2023/11/01
Pulse Power Sensor	Anritsu	MA2411B	1531043	2022/11/02	2023/11/01
Pulse Power Sensor	Anritsu	MA2411B	1531044	2022/11/02	2023/11/01
Signal and Spectrum Analyzer	R&S	FSVA40	101435	2022/05/30	2023/05/29

HC-CB04

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2022/09/29	2023/09/28
Trilog Broadband Antenna	Schwarzbeck	VULB 9168	1209	2022/06/14	2023/06/13
Double Ridged Horn Antenna	RF SPIN	DRH18-E	211212A18 EN	2022/11/15	2023/11/14
Horn Antenna	Schwarzbeck	BBHA 9170	203	2023/02/13	2024/02/12
Pre-Amplifier	EMCI	EMC01820I	980364	2022/06/10	2023/06/09
Pre-Amplifier	EMEC	EM01G18GA	060835	2022/07/04	2023/07/03
Pre-Amplifier	DEKRA	AP-400C	201801231	2022/09/27	2023/09/26
EMI Test Receiver	R&S	ESR7	102260	2022/12/01	2023/11/30
Magnetic Loop Antenna	Teseq	HLA 6121	44287	2022/10/21	2023/10/20
Coaxial Cable(10m)	Suhner	SF102_SF104	HC-CB04	2022/08/08	2023/08/07
Coaxial Cable(3m)	Suhner,Rosnol	SF102_UP0264	HC-CB04_1	2022/08/14	2023/08/13
Radiated Software	AUDIX	e3 V9	HC-CB04_1	N/A	N/A

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

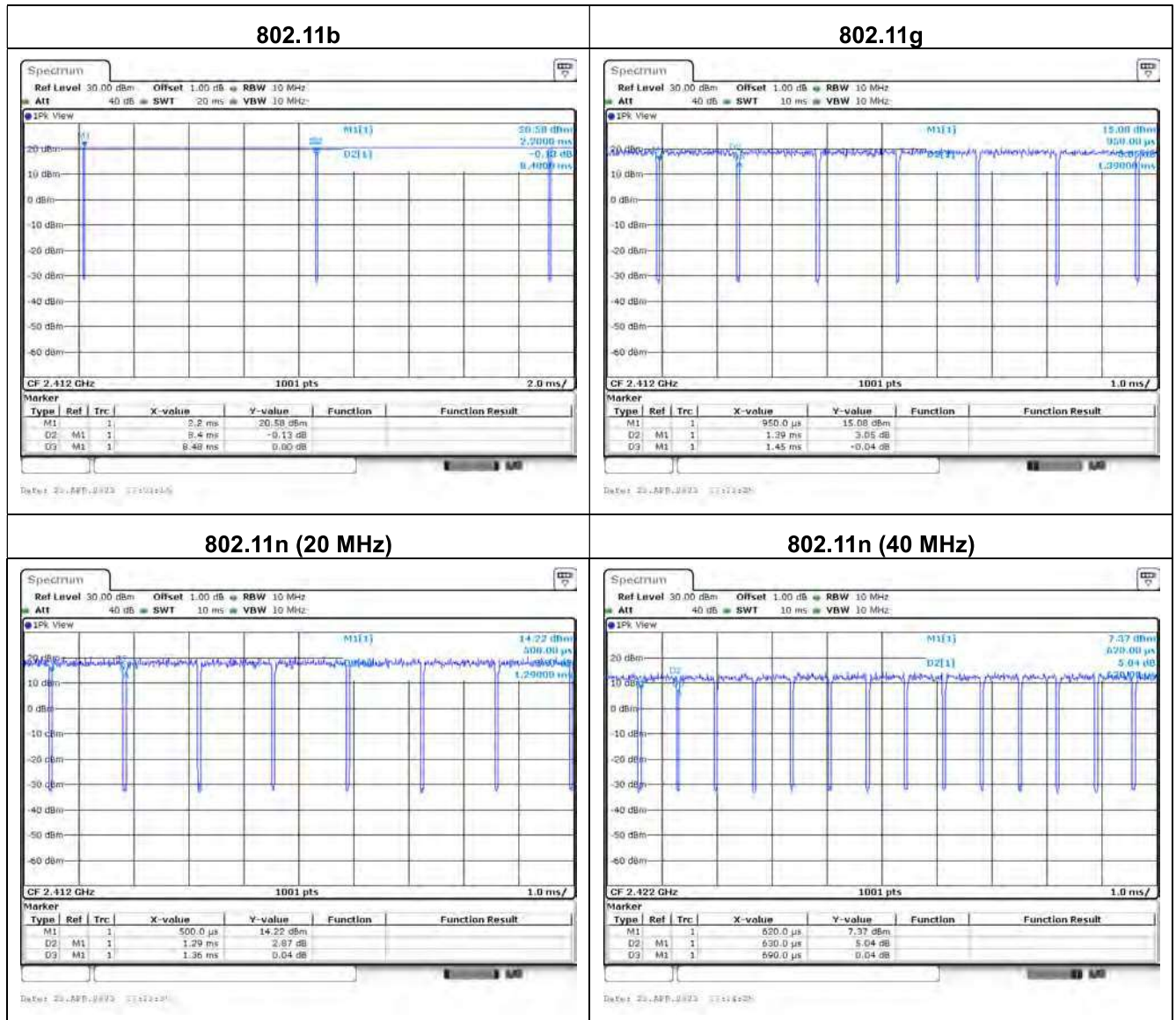
1.9. Measurement Uncertainty

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
Maximum Conducted Output Power	± 1.16 dB
Radiated Emission	± 3.52 dB below 1 GHz ± 3.56 dB above 1 GHz
Antenna Port Conducted Emission	± 2.47 dB
Radiated Emission Band Edge	± 3.56 dB
DTS Bandwidth	± 282.55 Hz
Occupied Bandwidth	± 282.55 Hz
Maximum Power Spectral Density	± 2.47 dB

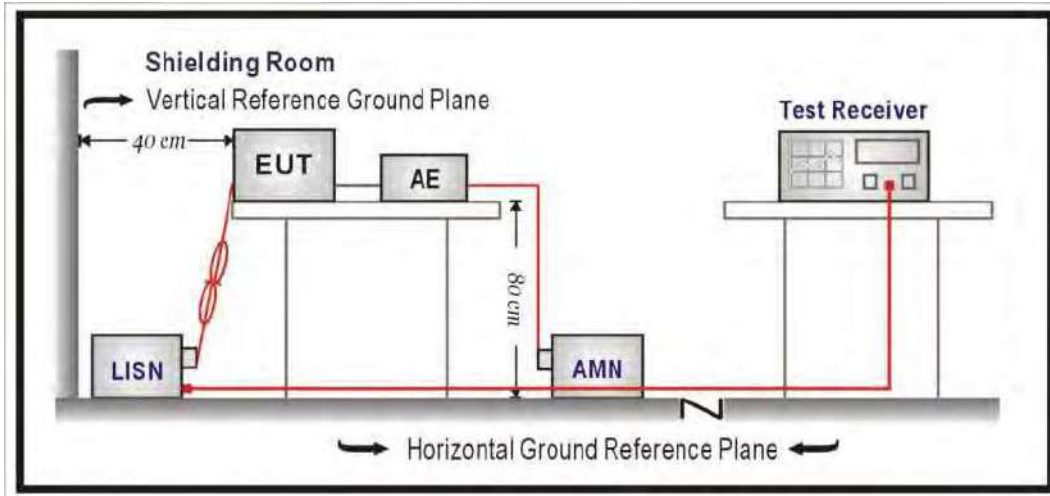
1.10. Duty Cycle

Modulation	On Times (ms)	On+Off Times (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11b	8.400	8.480	99.06	0.041	0.010
802.11g	1.390	1.450	95.86	0.184	0.719
802.11n (20 MHz)	1.290	1.360	94.85	0.229	0.775
802.11n (40 MHz)	0.630	0.690	91.30	0.395	1.587



2. AC Power Line Conducted Emission

2.1. Test Setup



2.2. 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.

2.3. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50 uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50 ohm/50 uH coupling impedance with 50 ohm termination. (Please refer to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.

AC Power Line Conducted Emissions were investigated over the frequency range from 0.15 MHz to 30 MHz using a receiver bandwidth of 9 kHz.

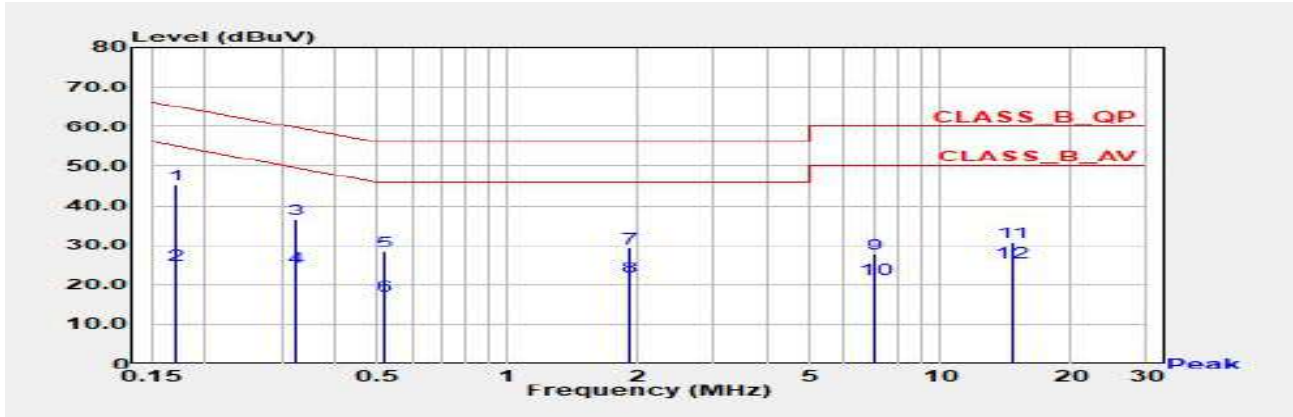
2.4. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247.

2.5. Test Result of AC Power Line Conducted Emission

<For EUT 1>

Test Mode	Mode 1: Transmit - power by adapter	Phase	Line
Test Condition	802.11b / Ant. 0 + Ant. 1 / 2412 MHz		

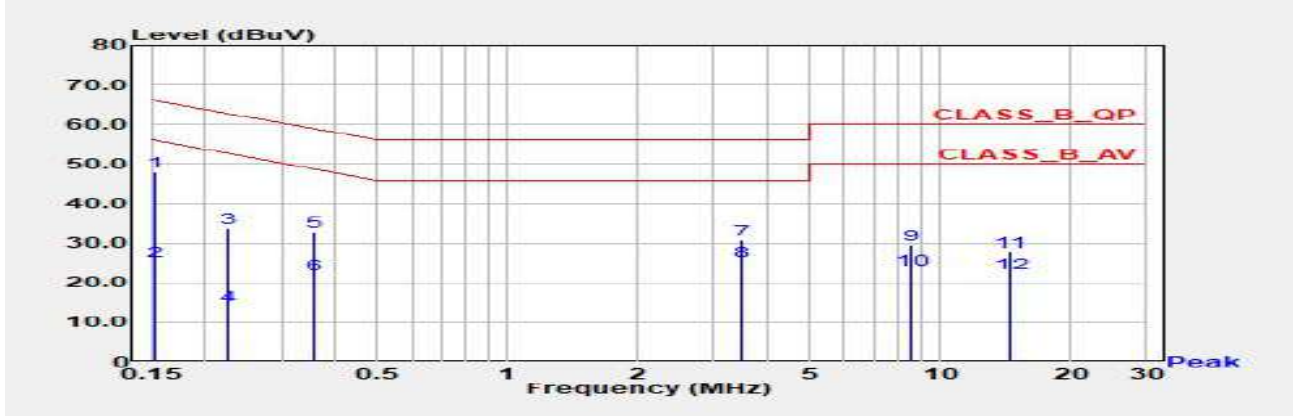


No	Frequency (MHz)	Emission Level (dBUV)	Limit (dBUV)	Margin (dB)	Reading Level (dBUV)	Correct Factor (dB)	Detector Type
*1	0.170	45.42	64.95	-19.53	35.80	9.62	QP
2	0.170	25.11	54.95	-29.84	15.49	9.62	AV
3	0.323	36.40	59.62	-23.22	26.77	9.63	QP
4	0.323	24.50	49.62	-25.13	14.86	9.63	AV
5	0.517	28.33	56.00	-27.67	18.67	9.65	QP
6	0.517	17.35	46.00	-28.65	7.70	9.65	AV
7	1.909	29.28	56.00	-26.72	19.54	9.75	QP
8	1.909	22.10	46.00	-23.90	12.36	9.75	AV
9	7.055	27.91	60.00	-32.09	17.94	9.97	QP
10	7.055	21.44	50.00	-28.56	11.46	9.97	AV
11	14.617	30.93	60.00	-29.07	20.71	10.22	QP
12	14.617	25.55	50.00	-24.45	15.33	10.22	AV

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Test Mode	Mode 1: Transmit - power by adapter	Phase	Neutral
Test Condition	802.11b / Ant. 0 + Ant. 1 / 2412 MHz		

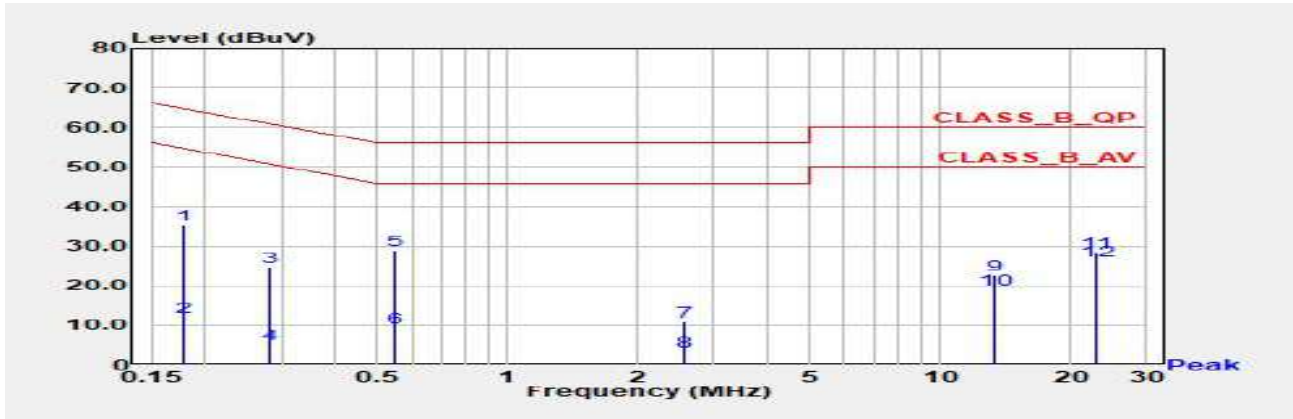


No	Frequency (MHz)	Emission Level (dBUV)	Limit (dBUV)	Margin (dB)	Reading Level (dBUV)	Correct Factor (dB)	Detector Type
*1	0.152	48.08	65.88	-17.80	38.46	9.62	QP
2	0.152	25.30	55.88	-30.58	15.68	9.62	AV
3	0.224	33.67	62.66	-28.99	24.05	9.62	QP
4	0.224	14.05	52.66	-38.61	4.43	9.62	AV
5	0.355	32.92	58.85	-25.93	23.30	9.63	QP
6	0.355	22.05	48.85	-26.80	12.42	9.63	AV
7	3.489	30.82	56.00	-25.18	21.00	9.83	QP
8	3.489	25.43	46.00	-20.57	15.60	9.83	AV
9	8.563	29.65	60.00	-30.35	19.59	10.06	QP
10	8.563	23.38	50.00	-26.62	13.32	10.06	AV
11	14.496	27.88	60.00	-32.12	17.57	10.31	QP
12	14.496	22.40	50.00	-27.60	12.09	10.31	AV

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Test Mode	Mode 2: Transmit - power by 802.3at PoE	Phase	Line
Test Condition	802.11b / Ant. 0 + Ant. 1 / 2412 MHz		

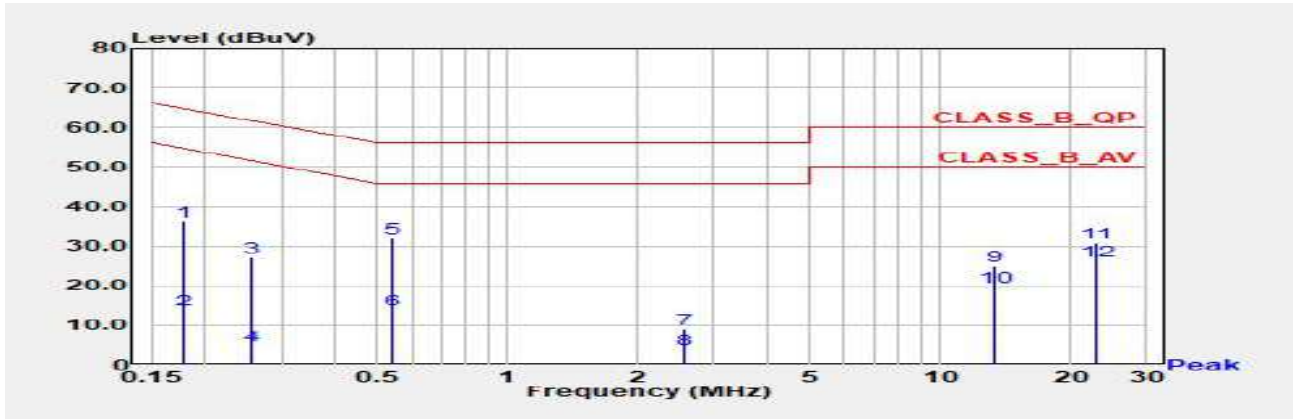


No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.179	35.38	64.52	-29.14	25.76	9.62	QP
2	0.179	12.03	54.52	-42.49	2.42	9.62	AV
3	0.283	24.80	60.73	-35.93	15.18	9.63	QP
4	0.283	5.02	50.73	-45.71	-4.60	9.63	AV
5	0.546	29.05	56.00	-26.95	19.40	9.66	QP
6	0.546	9.24	46.00	-36.76	-0.41	9.66	AV
7	2.546	10.86	56.00	-45.14	1.08	9.78	QP
8	2.546	3.19	46.00	-42.81	-6.59	9.78	AV
9	13.375	22.67	60.00	-37.33	12.49	10.18	QP
10	13.375	18.94	50.00	-31.06	8.76	10.18	AV
11	22.933	28.34	60.00	-31.66	17.93	10.41	QP
*12	22.933	26.29	50.00	-23.71	15.87	10.41	AV

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Test Mode	Mode 2: Transmit - power by 802.3at PoE	Phase	Neutral
Test Condition	802.11b / Ant. 0 + Ant. 1 / 2412 MHz		



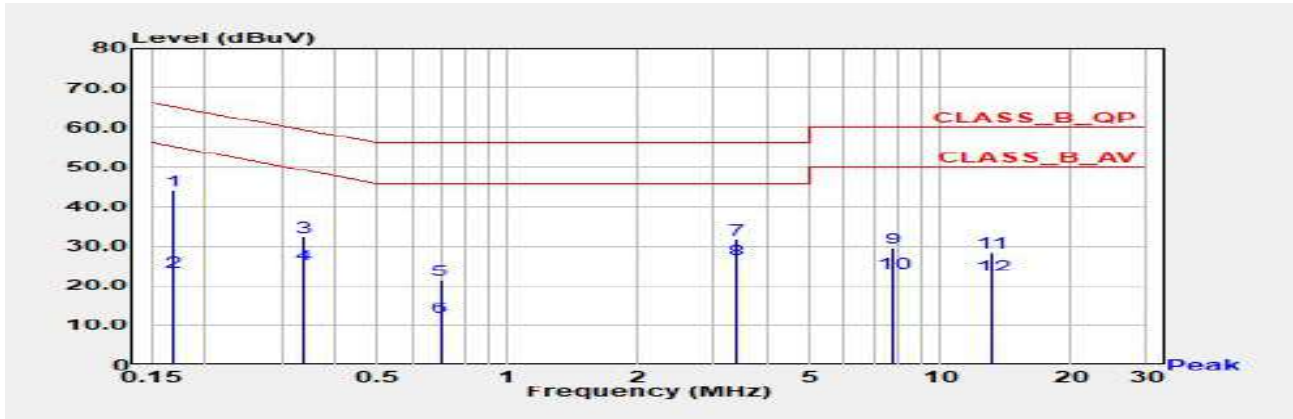
No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.179	36.30	64.52	-28.22	26.68	9.62	QP
2	0.179	13.89	54.52	-40.63	4.27	9.62	AV
3	0.256	27.20	61.57	-34.37	17.58	9.62	QP
4	0.256	4.96	51.57	-46.61	-4.66	9.62	AV
5	0.541	31.98	56.00	-24.02	22.33	9.65	QP
6	0.541	13.89	46.00	-32.11	4.24	9.65	AV
7	2.548	9.18	56.00	-46.82	-0.60	9.78	QP
8	2.548	3.80	46.00	-42.20	-5.98	9.78	AV
9	13.380	25.07	60.00	-34.93	14.81	10.27	QP
10	13.380	19.47	50.00	-30.53	9.21	10.27	AV
11	22.931	30.66	60.00	-29.34	20.03	10.63	QP
*12	22.931	26.12	50.00	-23.88	15.49	10.63	AV

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

<For EUT 2>

Test Mode	Mode 1: Transmit - power by adapter	Phase	Line
Test Condition	802.11b / Ant. 0 + Ant. 1 / 2412 MHz		

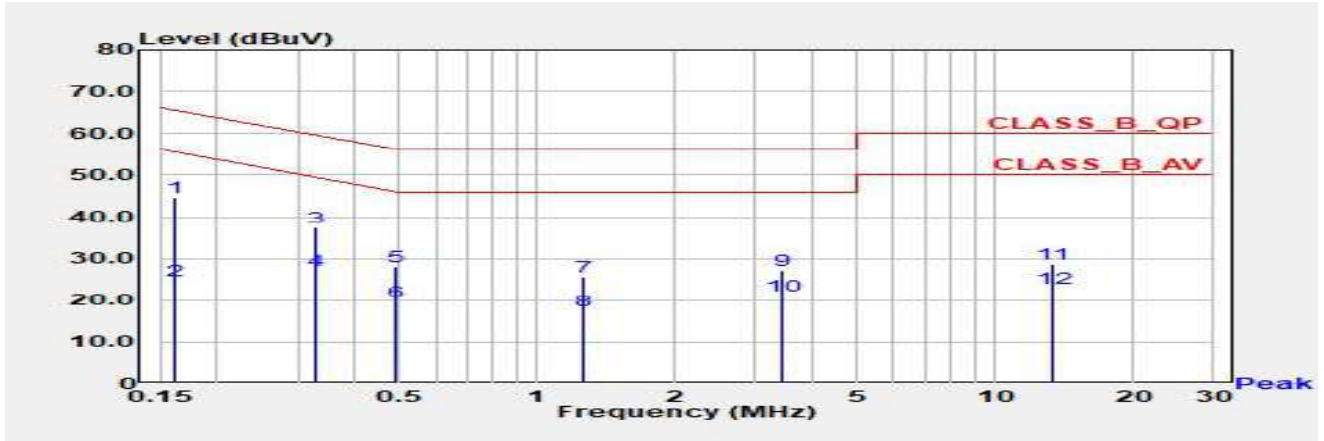


No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.168	44.19	65.06	-20.86	34.58	9.62	QP
2	0.168	23.67	55.06	-31.38	14.06	9.62	AV
3	0.339	32.29	59.23	-26.94	22.65	9.63	QP
4	0.339	25.47	49.23	-23.75	15.84	9.63	AV
5	0.699	21.29	56.00	-34.71	11.62	9.67	QP
6	0.699	12.12	46.00	-33.88	2.45	9.67	AV
7	3.399	31.81	56.00	-24.19	21.99	9.82	QP
*8	3.399	26.47	46.00	-19.53	16.66	9.82	AV
9	7.820	29.55	60.00	-30.45	19.54	10.00	QP
10	7.820	23.26	50.00	-26.74	13.26	10.00	AV
11	13.121	28.23	60.00	-31.77	18.05	10.18	QP
12	13.121	22.73	50.00	-27.27	12.55	10.18	AV

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Test Mode	Mode 1: Transmit - power by adapter	Phase	Neutral
Test Condition	802.11b / Ant. 0 + Ant. 1 / 2412 MHz		

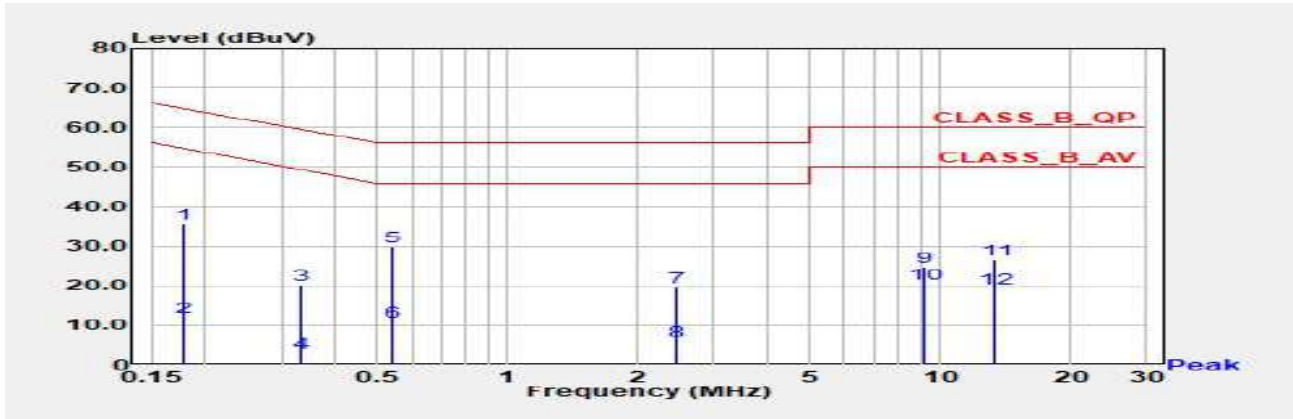


No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
*1	0.161	44.79	65.40	-20.60	35.18	9.62	QP
2	0.161	24.65	55.40	-30.75	15.03	9.62	AV
3	0.330	37.30	59.45	-22.15	27.68	9.63	QP
4	0.330	27.22	49.45	-22.24	17.59	9.63	AV
5	0.490	27.93	56.17	-28.24	18.29	9.64	QP
6	0.490	19.47	46.17	-26.70	9.83	9.64	AV
7	1.261	25.71	56.00	-30.29	16.00	9.71	QP
8	1.261	17.61	46.00	-28.39	7.90	9.71	AV
9	3.446	27.12	56.00	-28.88	17.30	9.82	QP
10	3.446	21.18	46.00	-24.82	11.36	9.82	AV
11	13.344	28.54	60.00	-31.46	18.27	10.26	QP
12	13.344	22.85	50.00	-27.15	12.58	10.26	AV

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Test Mode	Mode 2: Transmit - power by 802.3at PoE	Phase	Line
Test Condition	802.11b / Ant. 0 + Ant. 1 / 2412 MHz		

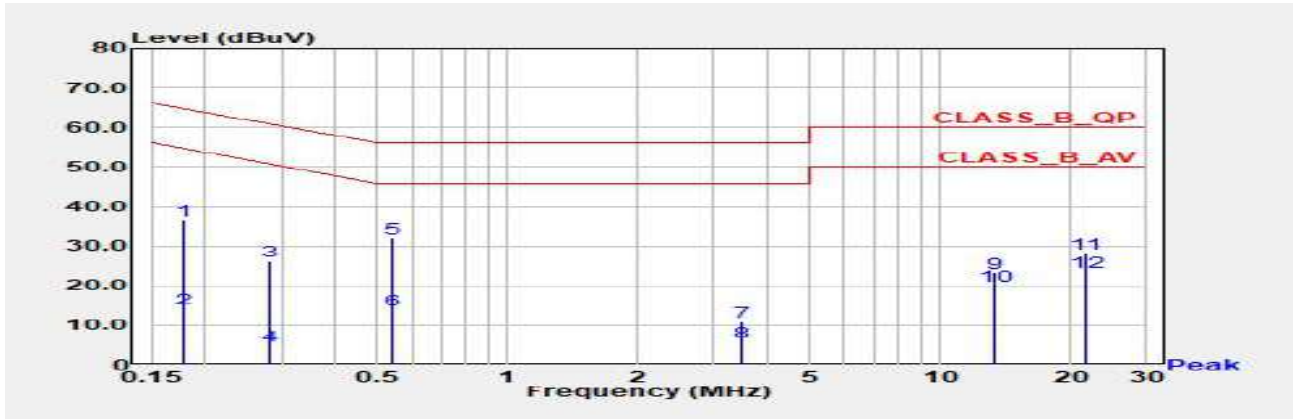


No	Frequency (MHz)	Emission Level (dBUV)	Limit (dBUV)	Margin (dB)	Reading Level (dBUV)	Correct Factor (dB)	Detector Type
1	0.179	35.55	64.52	-28.97	25.93	9.62	QP
2	0.179	12.19	54.52	-42.33	2.57	9.62	AV
3	0.332	20.28	59.39	-39.12	10.64	9.63	QP
4	0.332	2.95	49.39	-46.44	-6.68	9.63	AV
*5	0.544	29.93	56.00	-26.07	20.27	9.66	QP
6	0.544	10.74	46.00	-35.26	1.09	9.66	AV
7	2.465	19.65	56.00	-36.35	9.87	9.77	QP
8	2.465	5.91	46.00	-40.09	-3.86	9.77	AV
9	9.238	24.90	60.00	-35.10	14.84	10.06	QP
10	9.238	20.40	50.00	-29.60	10.34	10.06	AV
11	13.380	26.57	60.00	-33.43	16.38	10.18	QP
12	13.380	19.43	50.00	-30.57	9.25	10.18	AV

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Test Mode	Mode 2: Transmit - power by 802.3at PoE	Phase	Neutral
Test Condition	802.11b / Ant. 0 + Ant. 1 / 2412 MHz		



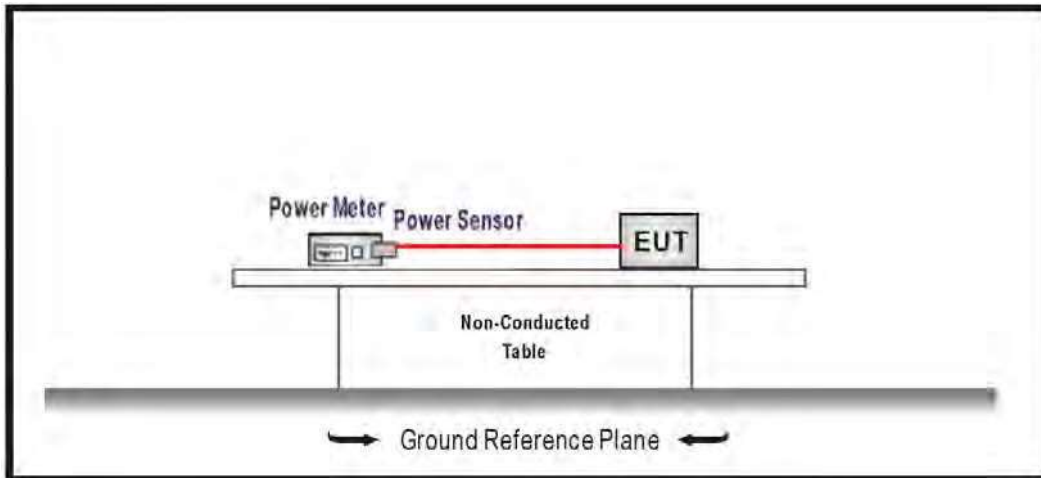
No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.179	36.45	64.52	-28.07	26.83	9.62	QP
2	0.179	14.11	54.52	-40.41	4.50	9.62	AV
3	0.283	26.26	60.73	-34.48	16.64	9.62	QP
4	0.283	4.98	50.73	-45.76	-4.65	9.62	AV
*5	0.541	32.05	56.00	-23.95	22.40	9.65	QP
6	0.541	13.85	46.00	-32.15	4.20	9.65	AV
7	3.484	11.02	56.00	-44.98	1.19	9.83	QP
8	3.484	5.75	46.00	-40.25	-4.08	9.83	AV
9	13.377	23.19	60.00	-36.81	12.93	10.27	QP
10	13.377	19.86	50.00	-30.14	9.60	10.27	AV
11	21.655	27.99	60.00	-32.01	17.40	10.59	QP
12	21.655	23.61	50.00	-26.39	13.02	10.59	AV

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

3. Maximum Conducted Output Power

3.1. Test Setup



3.2. Test Limit

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

3.3. Test Procedures

The EUT was setup according to ANSI C63.10: 2013; tested according to DTS test procedure of KDB 558074 D01 v05r02 for compliance to FCC 47CFR 15.247 requirements.

3.4. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247.

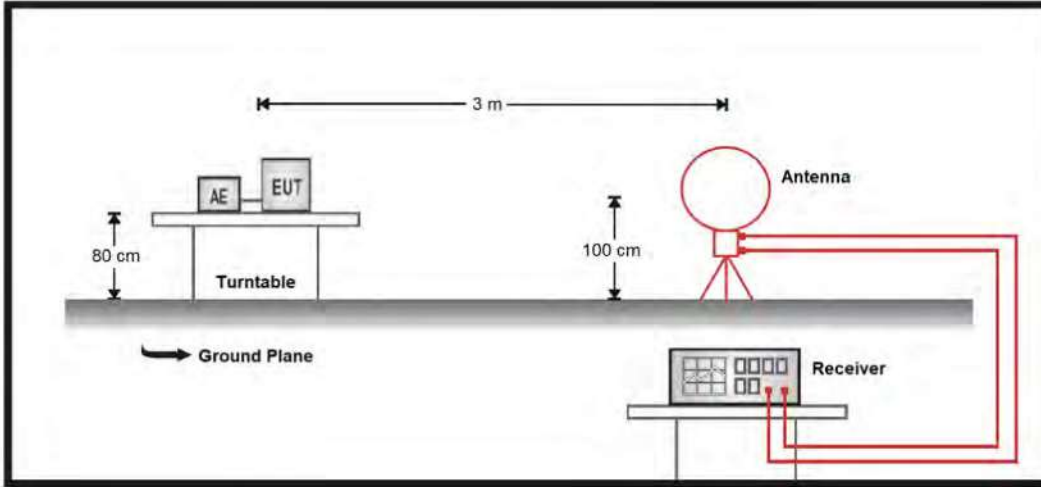
3.5. Test Result of Maximum Conducted Output Power

Modulation	Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)			Limit (dBm)	Result
			Ant. 0	Ant. 1	Total		
802.11b	1	2412	18.94	18.42	21.70	≤ 30.00	Pass
	6	2437	18.91	18.61	21.77	≤ 30.00	Pass
	11	2462	17.58	17.01	20.32	≤ 30.00	Pass
802.11g	1	2412	14.25	14.04	17.16	≤ 30.00	Pass
	6	2437	17.38	17.17	20.29	≤ 30.00	Pass
	11	2462	14.43	14.19	17.32	≤ 30.00	Pass
802.11n (20 MHz)	1	2412	13.45	13.29	16.38	≤ 30.00	Pass
	6	2437	16.35	16.29	19.33	≤ 30.00	Pass
	11	2462	12.46	12.32	15.40	≤ 30.00	Pass
802.11n (40 MHz)	3	2422	10.33	10.16	13.26	≤ 30.00	Pass
	6	2437	14.51	14.22	17.38	≤ 30.00	Pass
	9	2452	10.38	10.57	13.49	≤ 30.00	Pass

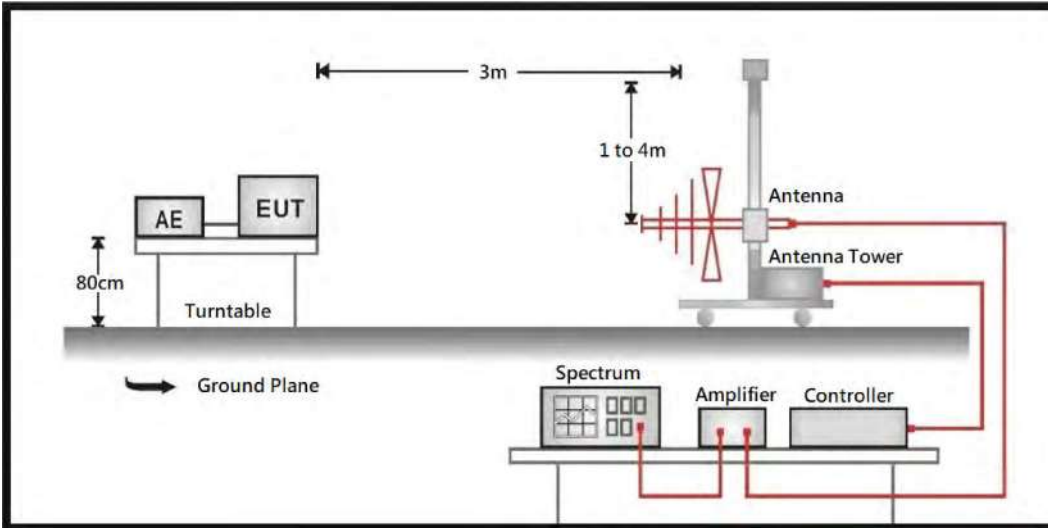
4. Radiated Emission

4.1. Test Setup

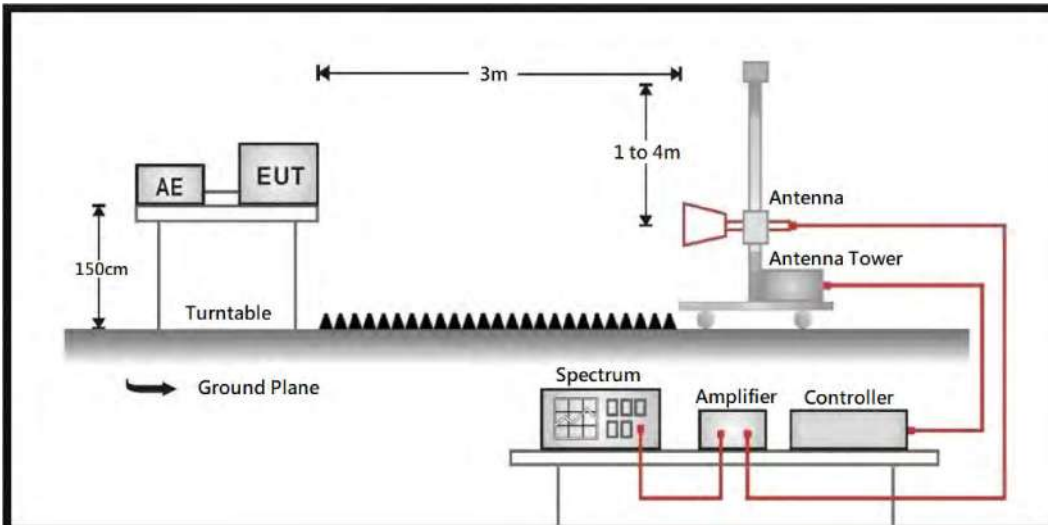
9 kHz ~ 30 MHz



30 MHz ~ 1 GHz



Above 1 GHz



4.2. Test Limit

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 30dB below the level of the fundamental or to the general radiated emission limit in paragraph 15.209, whichever is the lesser attenuation.

Frequency (MHz)	Field strength (uV/m)	Field strength (dBuV/m)	Measurement distance (m)
0.009 – 0.490	2400/F(kHz)	20 log (2400/F(kHz))	300
0.490 – 1.705	24000/F(kHz)	20 log (24000/F(kHz))	30
1.705 - 30	30	29.5	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
Above 960	500	54	3

Remarks:

1. Field strength (dBuV/m) = 20 log Field strength (uV/m)
2. In the Above Table, the tighter limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system

4.3. Test Procedure

The EUT was setup according to ANSI C63.10: 2013 and tested according to DTS test procedure of KDB 558074 D01V05r02 for compliance to FCC 47CFR 15.247 requirements.

The EUT and its simulators are placed on a turn table which is 0.8 or 1.5 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.

On any frequency or frequencies from 9 kHz(include The the lowest oscillator frequency generated within the device up to the 10th harmonic) to 1000 MHz, the limit shown are based on measuring equipment employing a quasi-peak detector function and on any frequency or frequencies above 1000 MHz the radiated limit shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

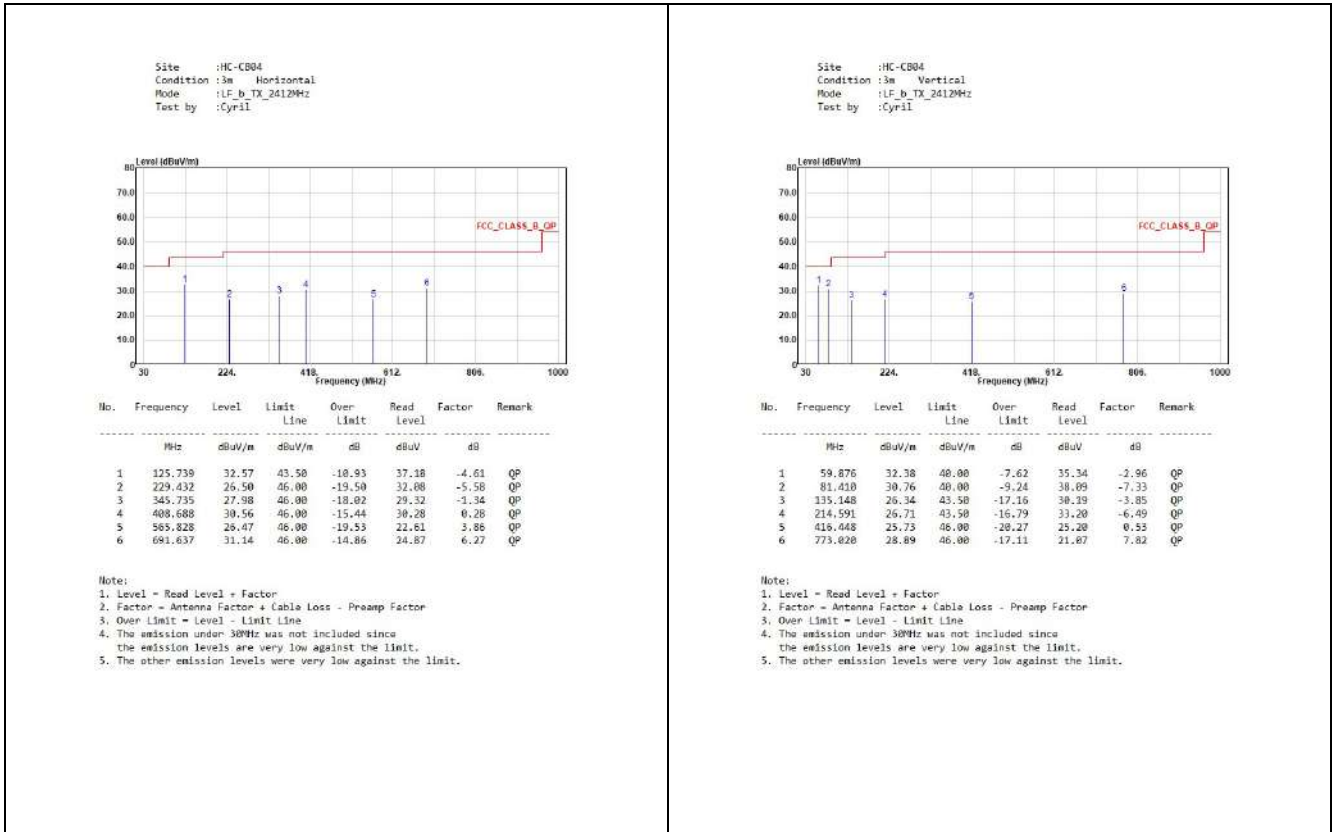
The bandwidth below 1 GHz setting on the field strength meter is 120 kHz and above 1 GHz is 1 MHz.

4.4. Test Specification

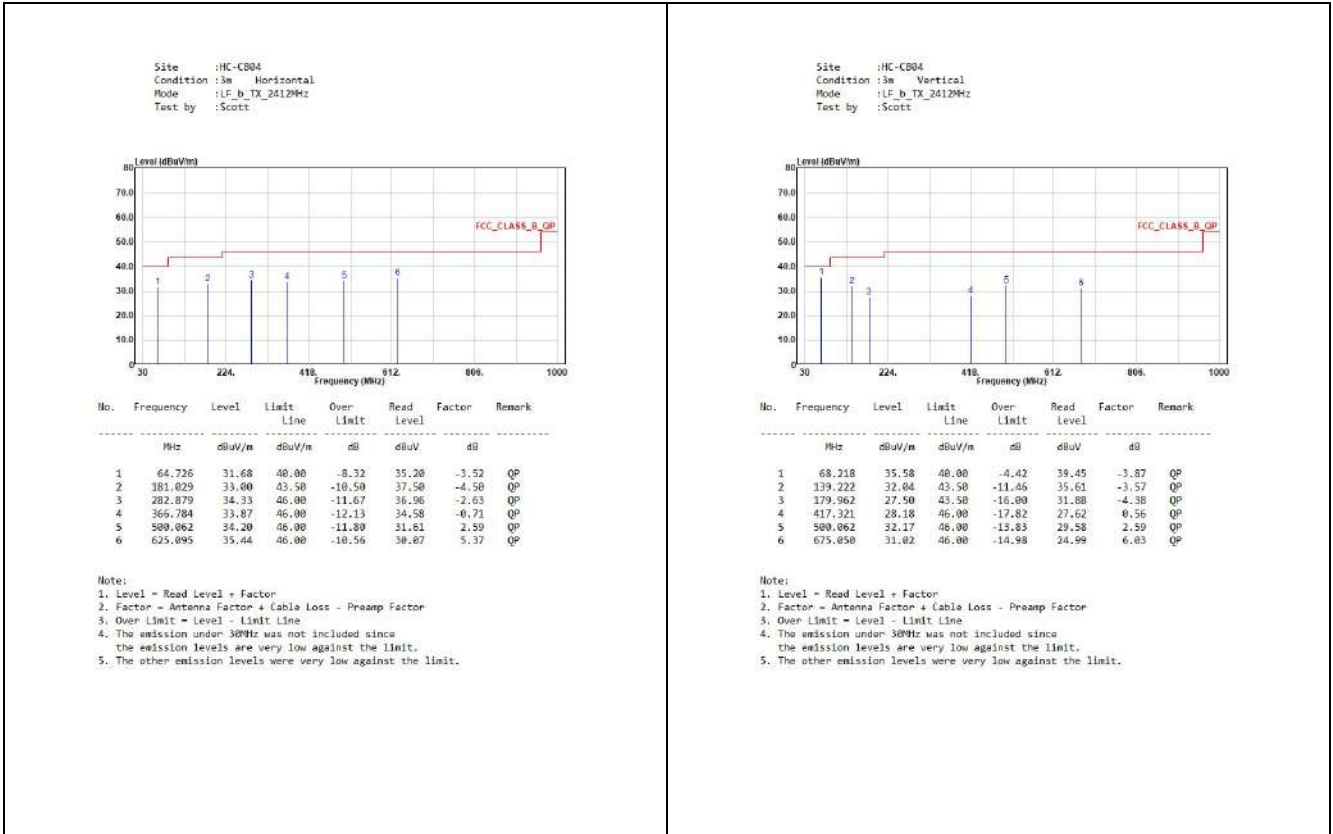
According to FCC Part 15 Subpart C Paragraph 15.247.

4.5. Test Result of Radiated Emissions (30 MHz ~ 1 GHz)

Mode 1: Transmit - power by adapter

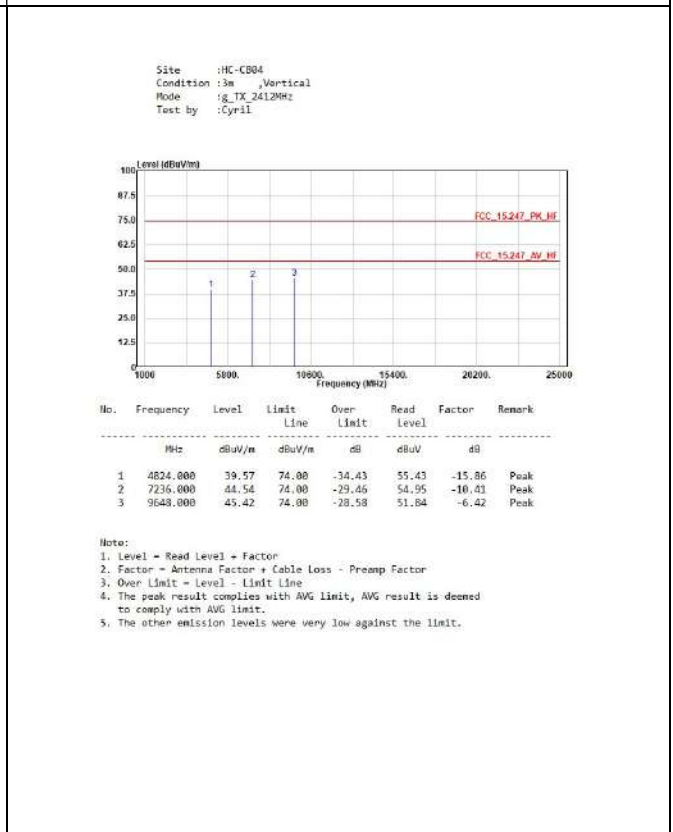
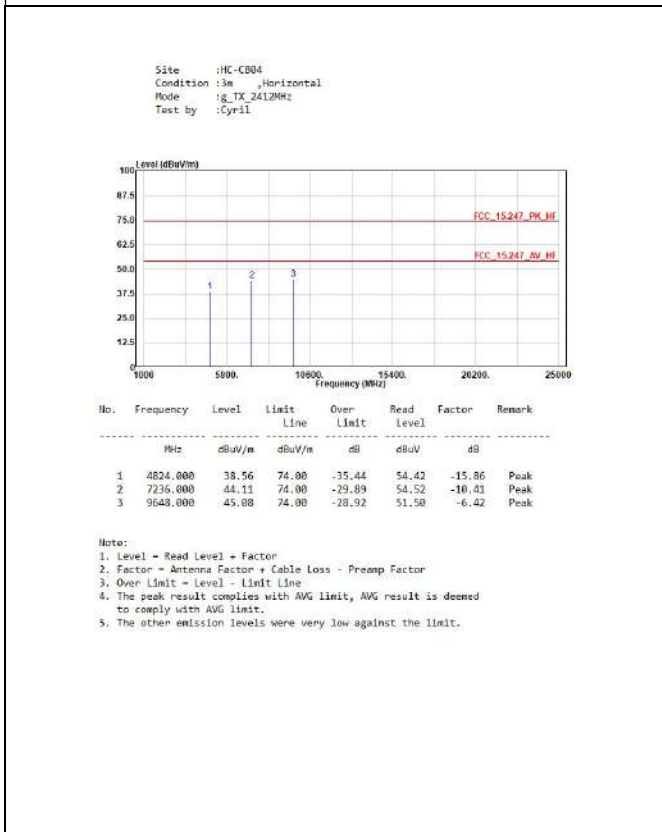
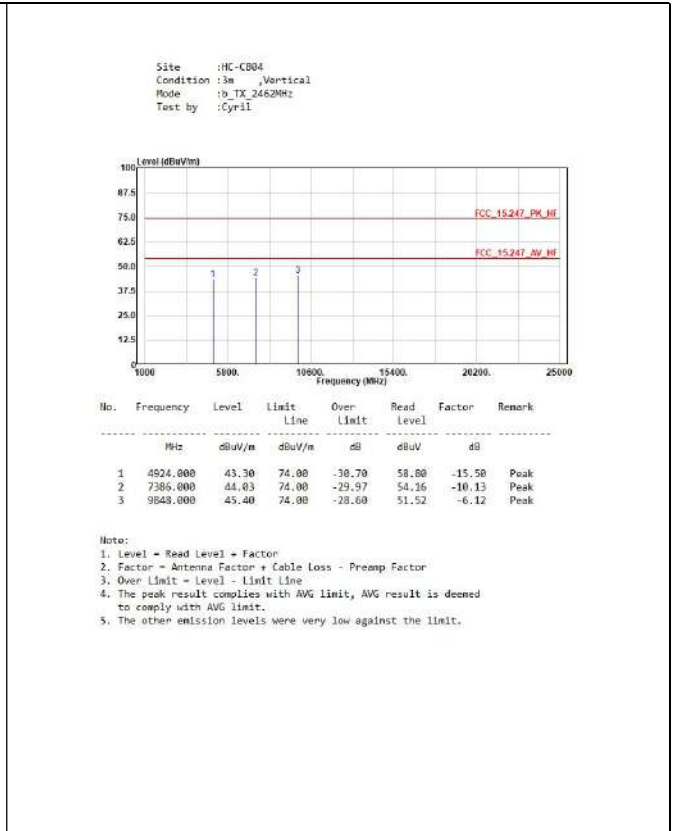
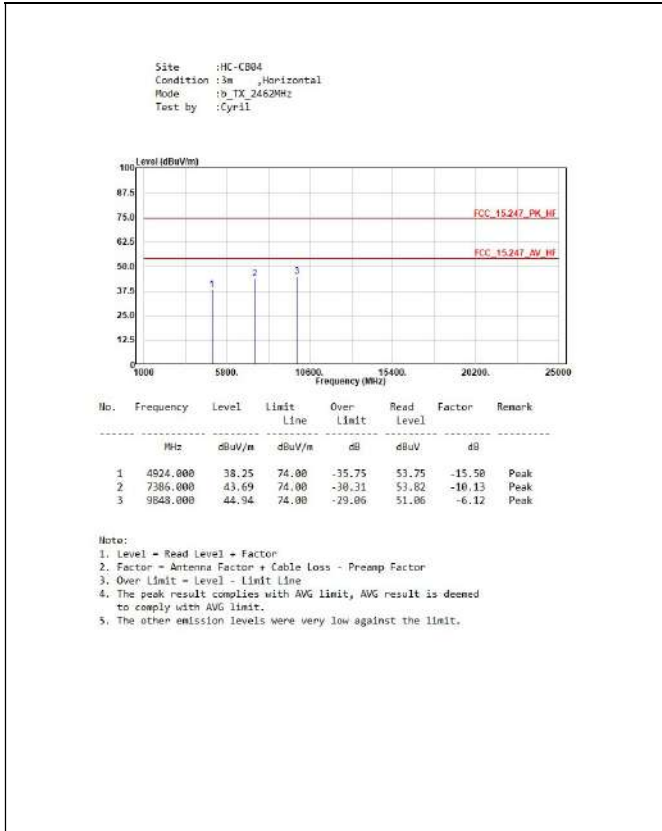


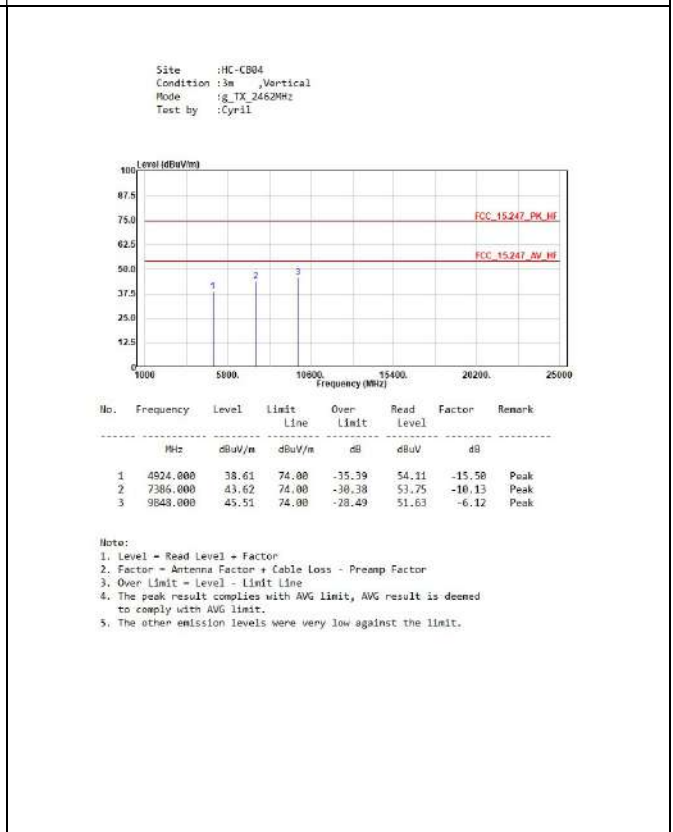
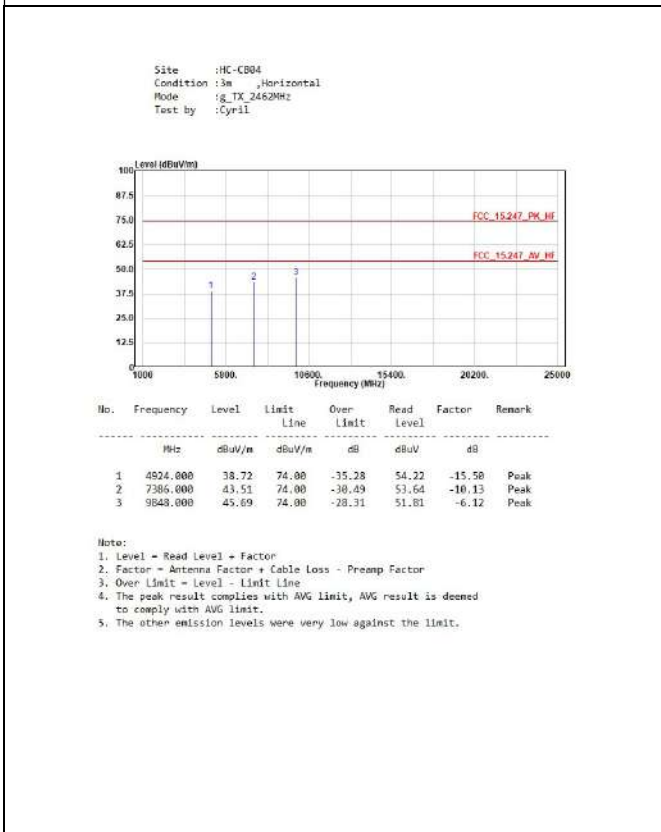
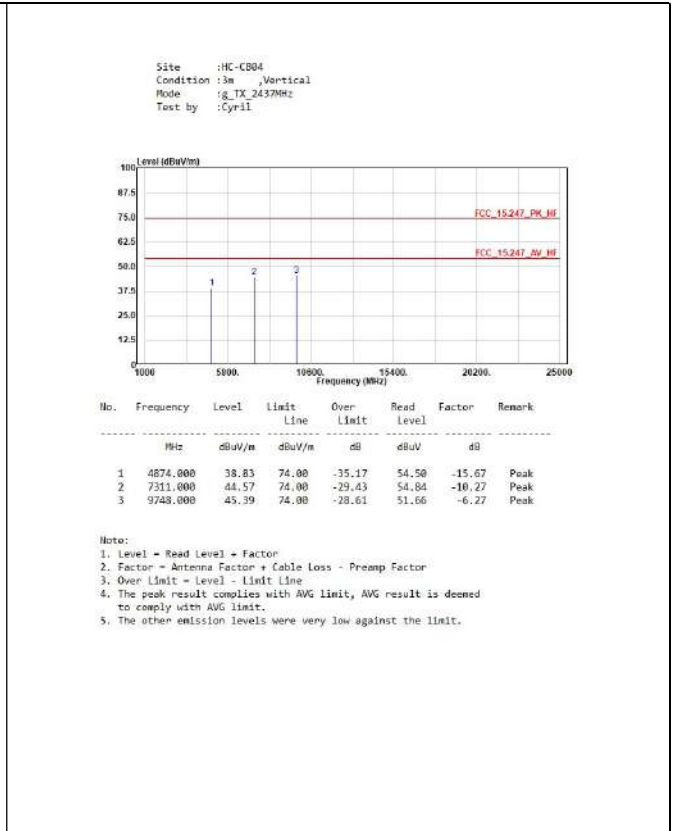
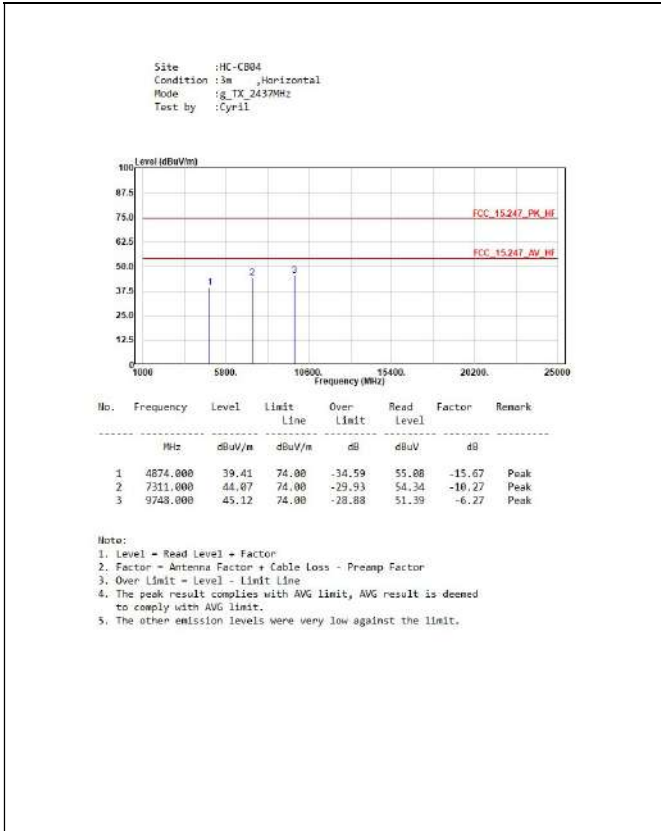
Mode 2: Transmit - power by 802.3at PoE

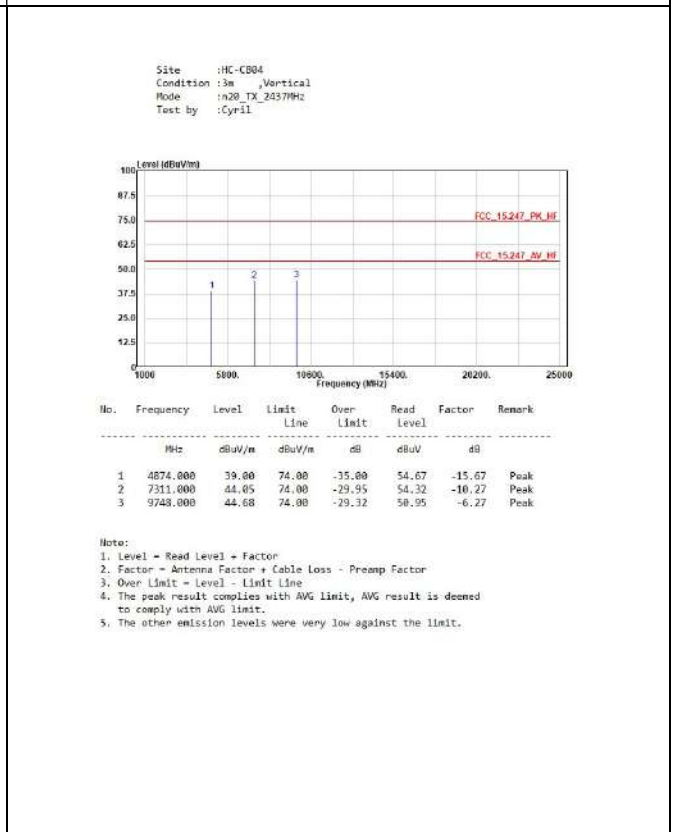
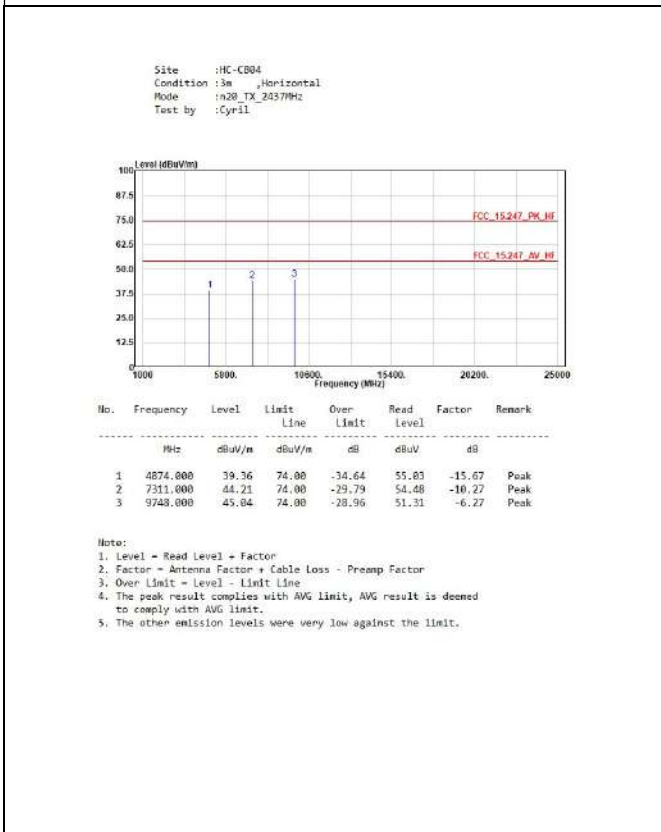
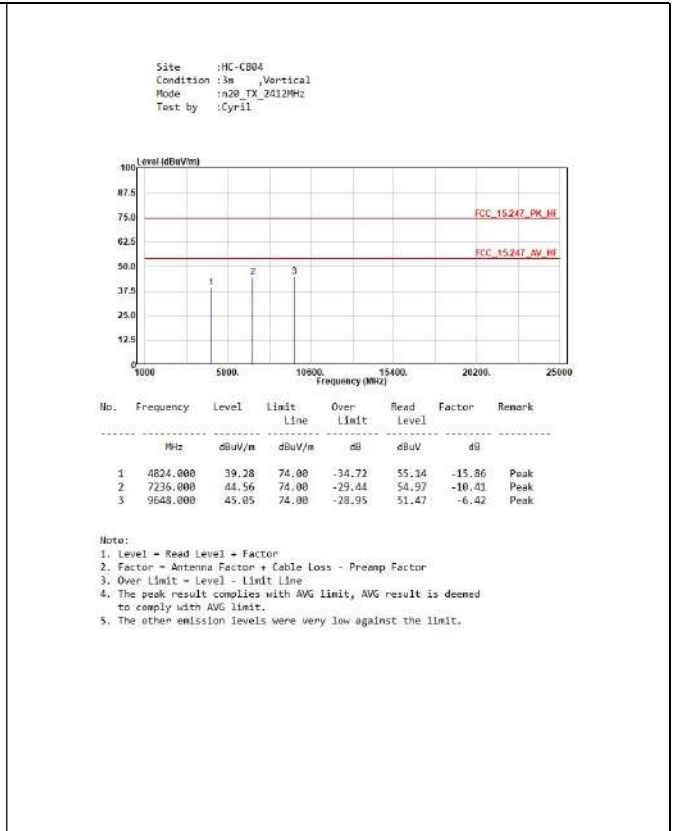
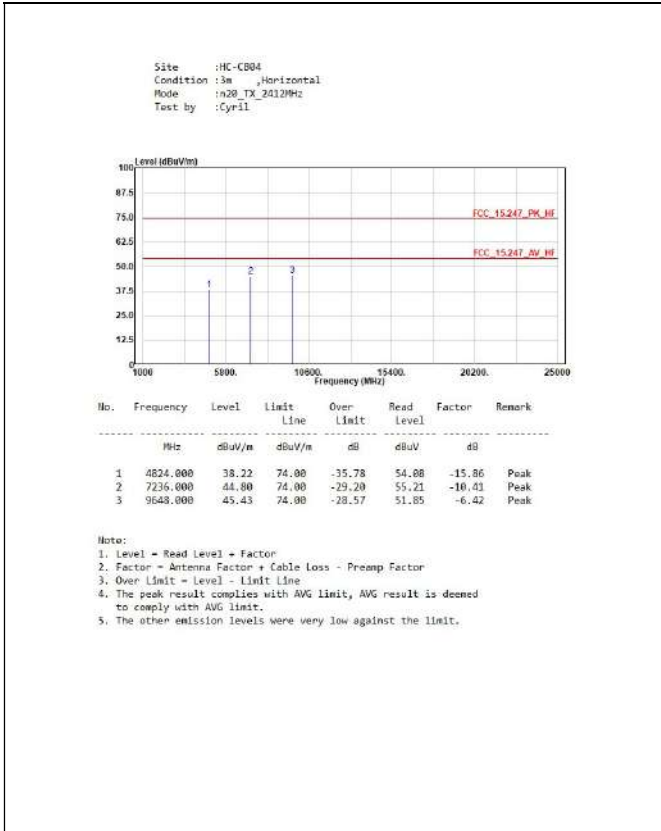


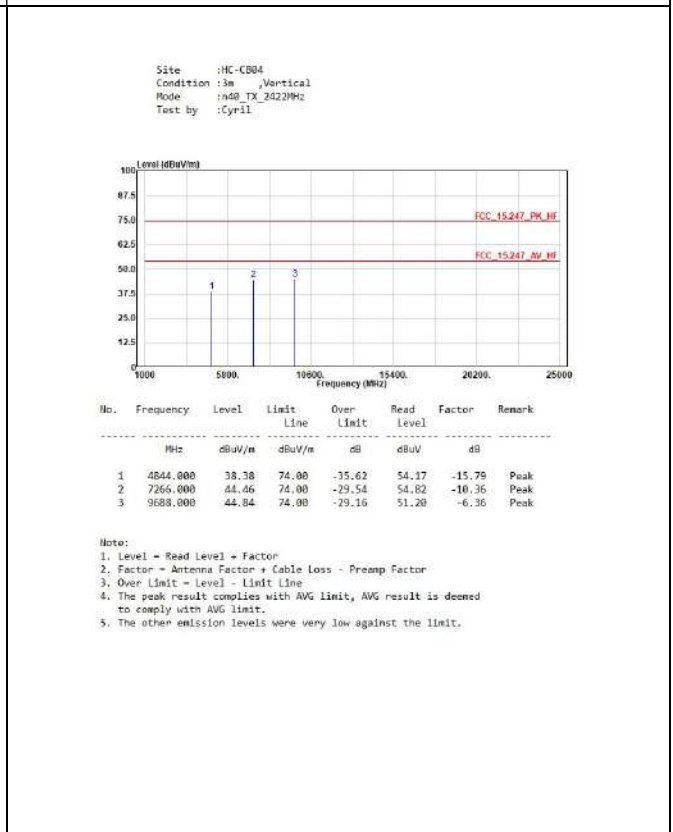
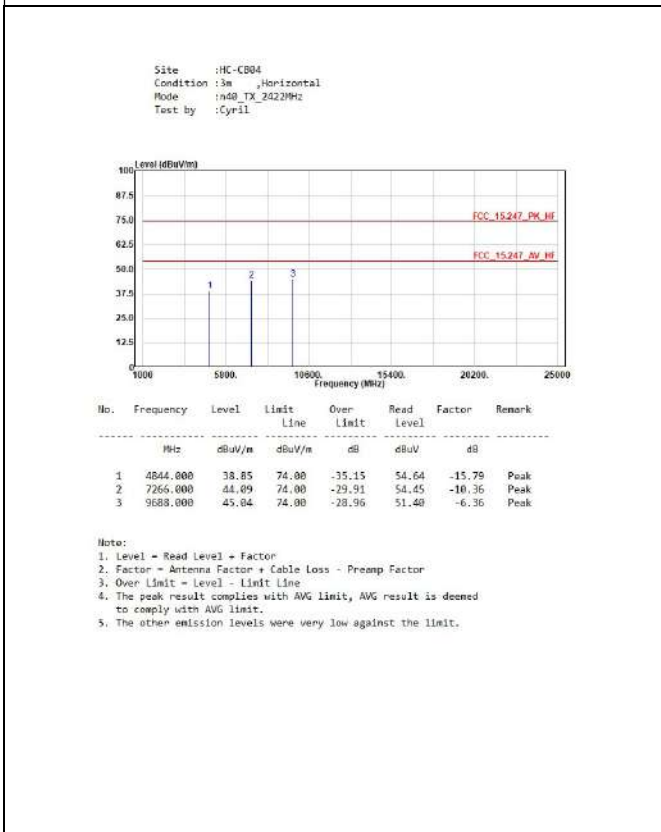
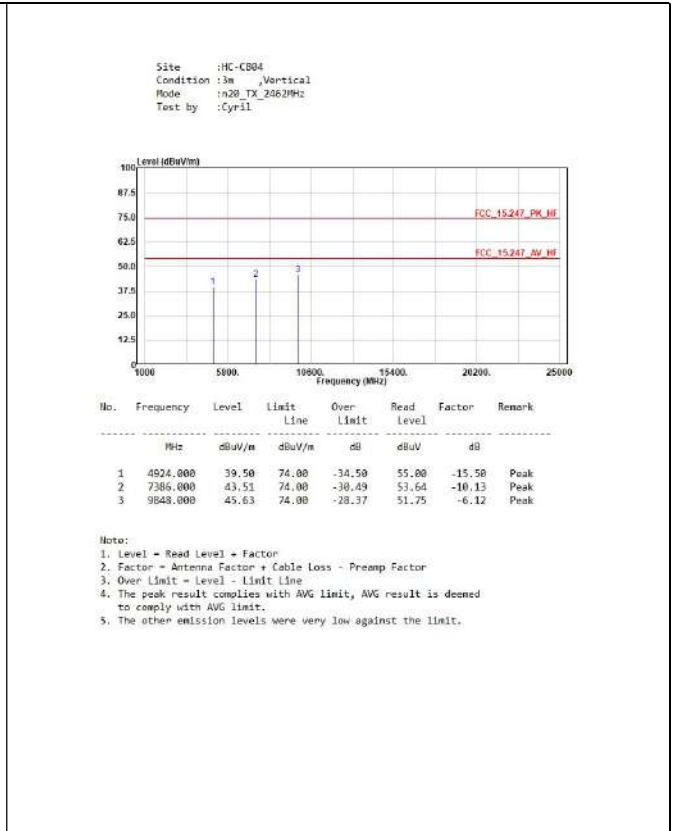
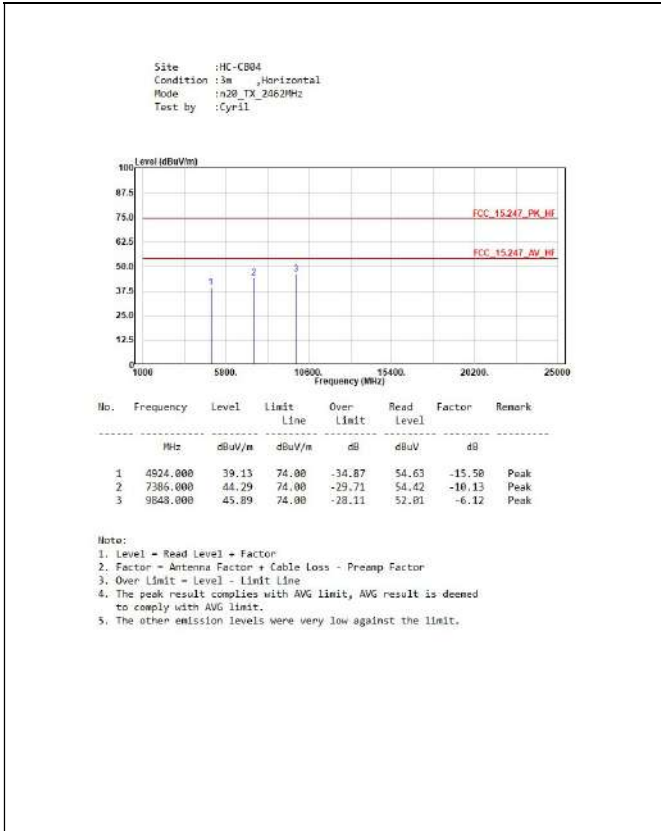
4.6. Test Result of Radiated Emissions (1 GHz ~ 10th Harmonic)

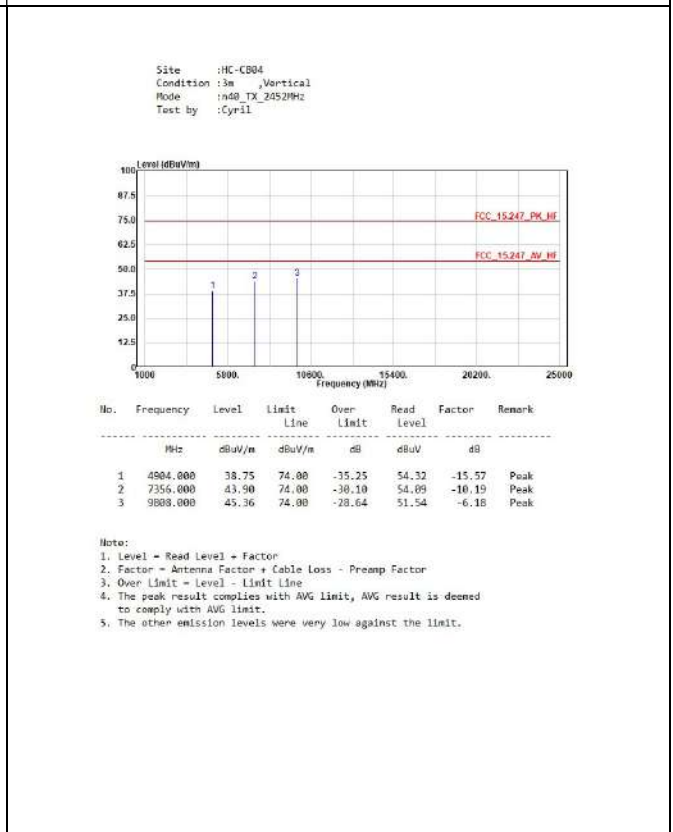
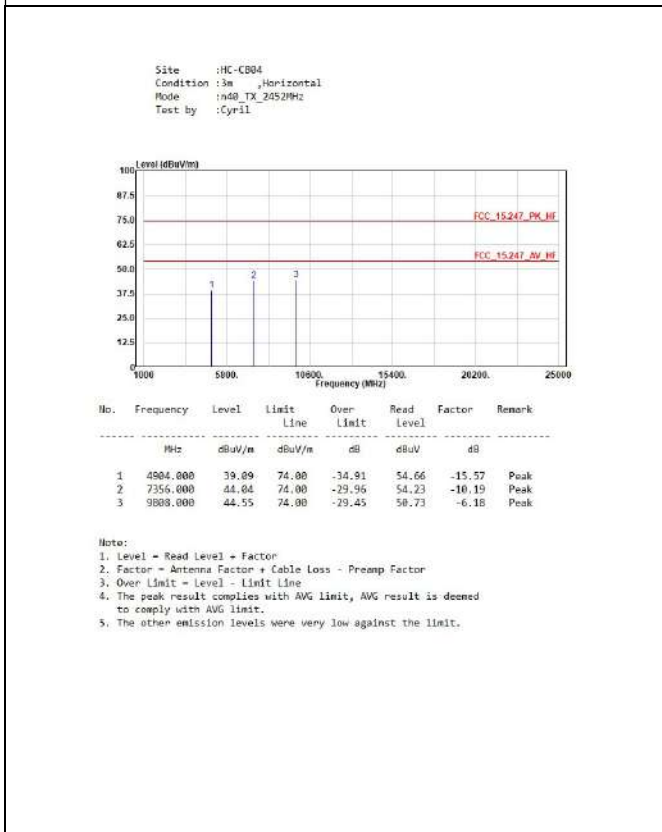
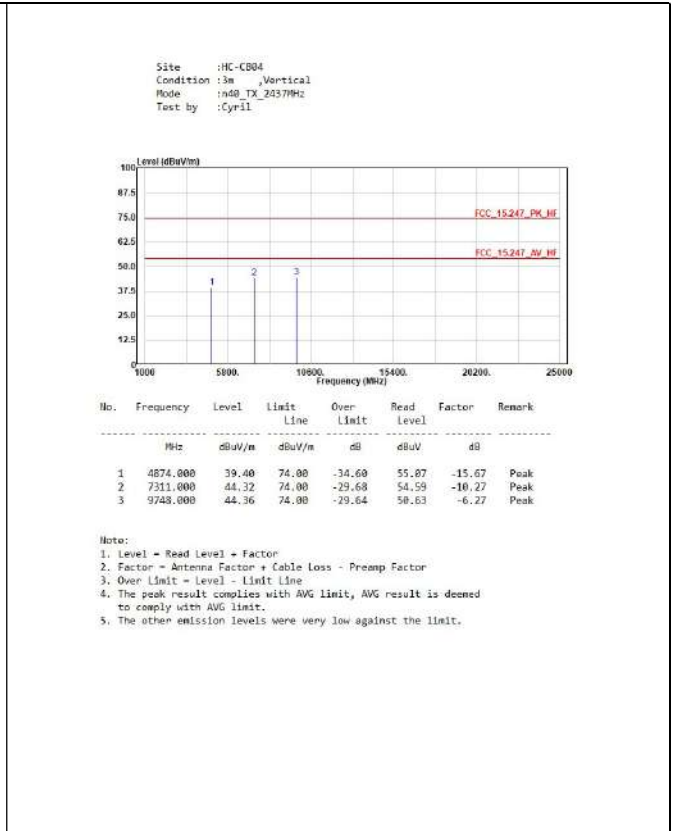
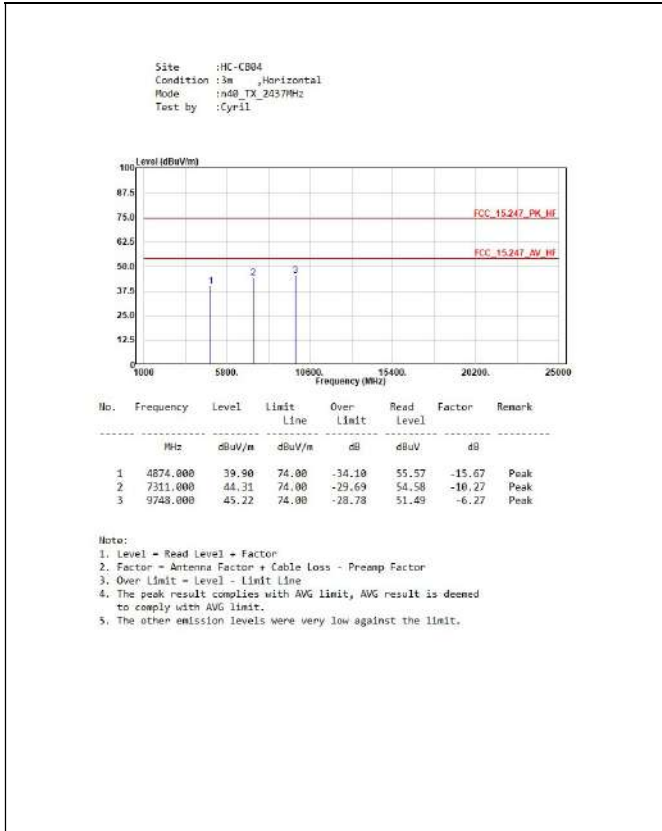
<p>Site :HC-CB04 Condition :3m ,Horizontal Mode :9_TX_2412MHz Test by :Cyril</p> <table border="1"> <thead> <tr> <th>No.</th> <th>Frequency</th> <th>Level</th> <th>Limit</th> <th>Over</th> <th>Read</th> <th>Factor</th> <th>Remark</th> </tr> <tr> <th></th> <th>MHz</th> <th>dBuV/m</th> <th>dBuV/m</th> <th>dB</th> <th>dBuV</th> <th>dB</th> <th></th> </tr> </thead> <tbody> <tr> <td>1</td> <td>4824.000</td> <td>39.52</td> <td>74.00</td> <td>-34.48</td> <td>55.38</td> <td>-15.86</td> <td>Peak</td> </tr> <tr> <td>2</td> <td>7236.000</td> <td>45.45</td> <td>74.00</td> <td>-28.55</td> <td>55.86</td> <td>-10.41</td> <td>Peak</td> </tr> <tr> <td>3</td> <td>9648.000</td> <td>45.28</td> <td>74.00</td> <td>-28.72</td> <td>51.70</td> <td>-6.42</td> <td>Peak</td> </tr> </tbody> </table> <p>Note: 1. Level = Read Level + Factor 2. Factor = Antenna Factor + Cable Loss - Preamp Factor 3. Over Limit = Level - Limit Line 4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit. 5. The other emission levels were very low against the limit.</p>	No.	Frequency	Level	Limit	Over	Read	Factor	Remark		MHz	dBuV/m	dBuV/m	dB	dBuV	dB		1	4824.000	39.52	74.00	-34.48	55.38	-15.86	Peak	2	7236.000	45.45	74.00	-28.55	55.86	-10.41	Peak	3	9648.000	45.28	74.00	-28.72	51.70	-6.42	Peak	<p>Site :HC-CB04 Condition :3m ,Vertical Mode :9_TX_2412MHz Test by :Cyril</p> <table border="1"> <thead> <tr> <th>No.</th> <th>Frequency</th> <th>Level</th> <th>Limit</th> <th>Over</th> <th>Read</th> <th>Factor</th> <th>Remark</th> </tr> <tr> <th></th> <th>MHz</th> <th>dBuV/m</th> <th>dBuV/m</th> <th>dB</th> <th>dBuV</th> <th>dB</th> <th></th> </tr> </thead> <tbody> <tr> <td>1</td> <td>4824.000</td> <td>41.72</td> <td>74.00</td> <td>-32.28</td> <td>57.58</td> <td>-15.86</td> <td>Peak</td> </tr> <tr> <td>2</td> <td>7236.000</td> <td>44.97</td> <td>74.00</td> <td>-29.03</td> <td>55.38</td> <td>-10.41</td> <td>Peak</td> </tr> <tr> <td>3</td> <td>9648.000</td> <td>45.18</td> <td>74.00</td> <td>-27.82</td> <td>52.60</td> <td>-6.42</td> <td>Peak</td> </tr> </tbody> </table> <p>Note: 1. Level = Read Level + Factor 2. Factor = Antenna Factor + Cable Loss - Preamp Factor 3. Over Limit = Level - Limit Line 4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit. 5. The other emission levels were very low against the limit.</p>	No.	Frequency	Level	Limit	Over	Read	Factor	Remark		MHz	dBuV/m	dBuV/m	dB	dBuV	dB		1	4824.000	41.72	74.00	-32.28	57.58	-15.86	Peak	2	7236.000	44.97	74.00	-29.03	55.38	-10.41	Peak	3	9648.000	45.18	74.00	-27.82	52.60	-6.42	Peak
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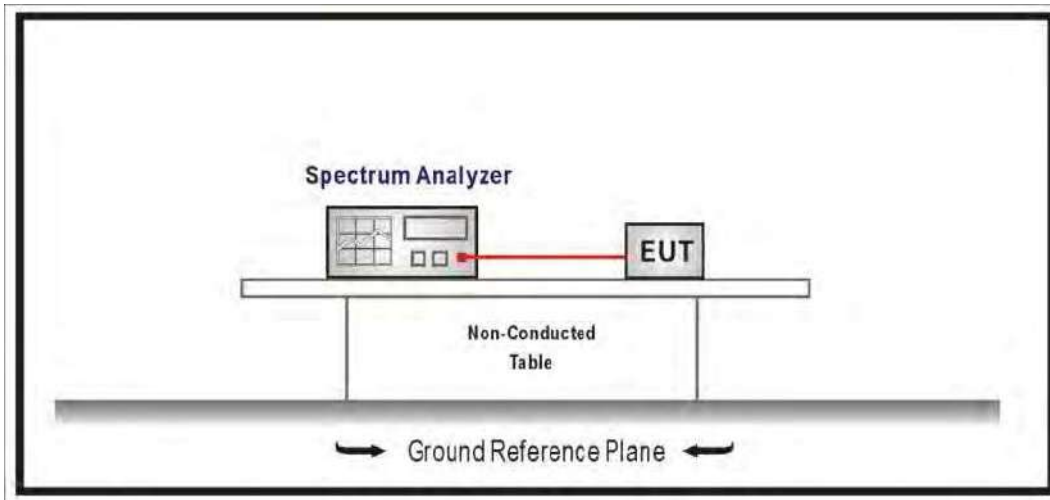






5. Antenna Port Conducted Emission

5.1. Test Setup



5.2. Test Limit

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. 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. Attenuation below the general limit 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 limit specified in §15.209(a) (see §15.205(c)).

5.3. Test Procedure

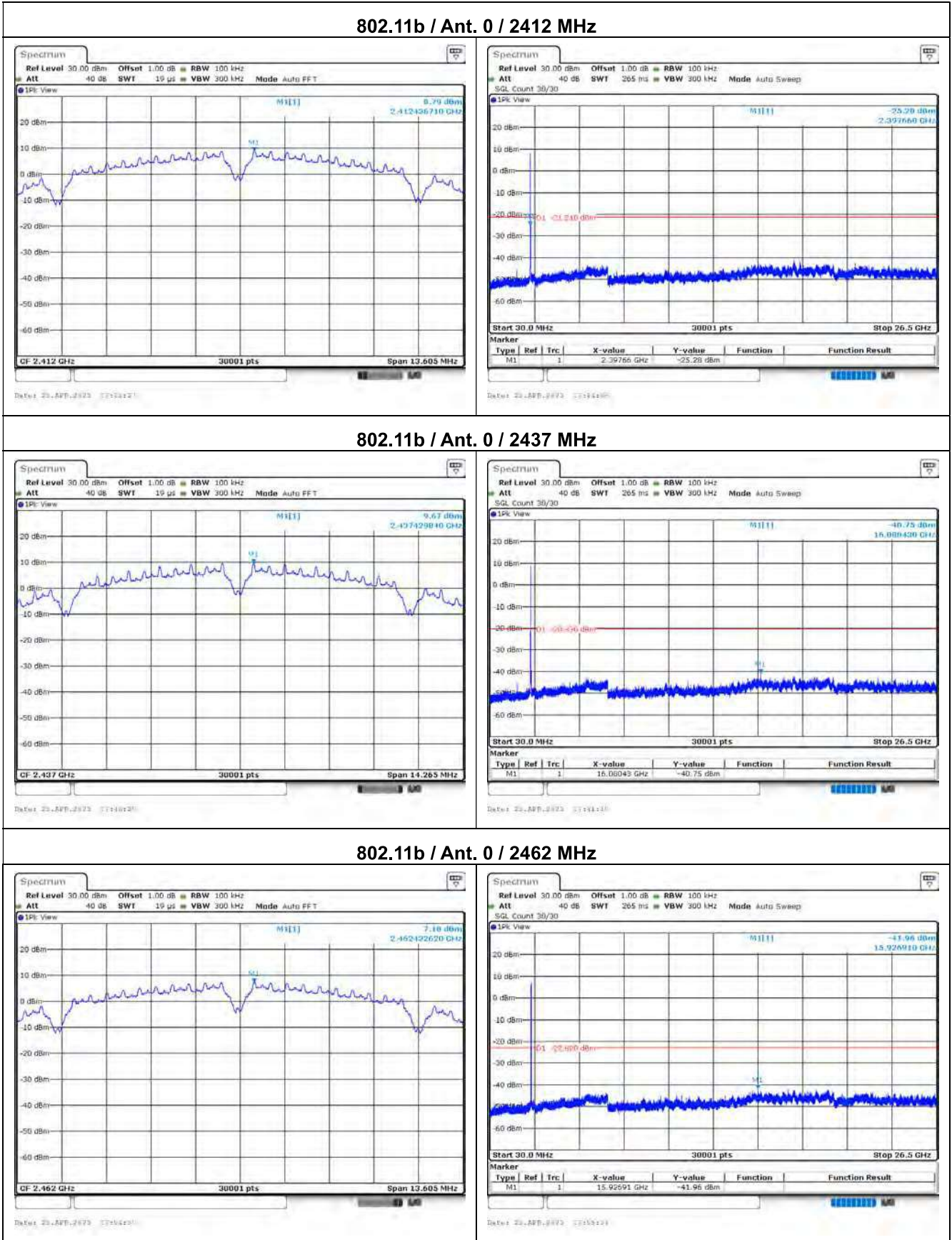
The EUT was setup according to ANSI C63.10: 2013 and tested according to DTS test procedure of KDB 558074 D01 V05r02 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 100 kHz, Set VBW > RBW, scan up through 10th harmonic.

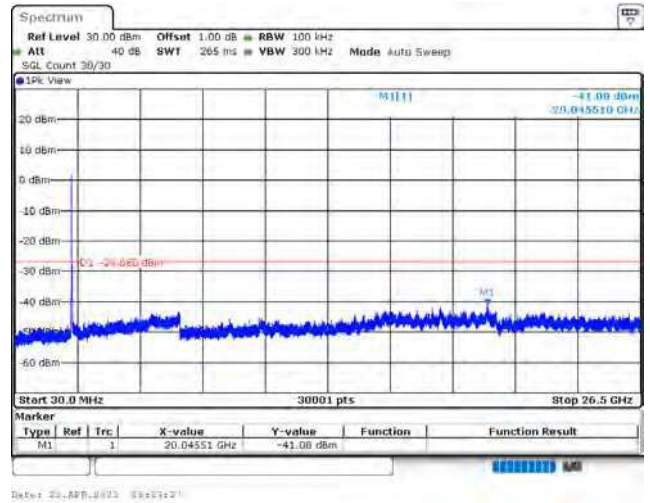
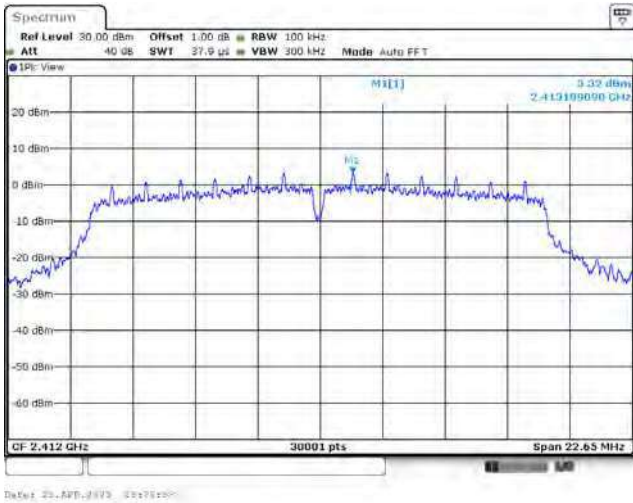
5.4. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247.

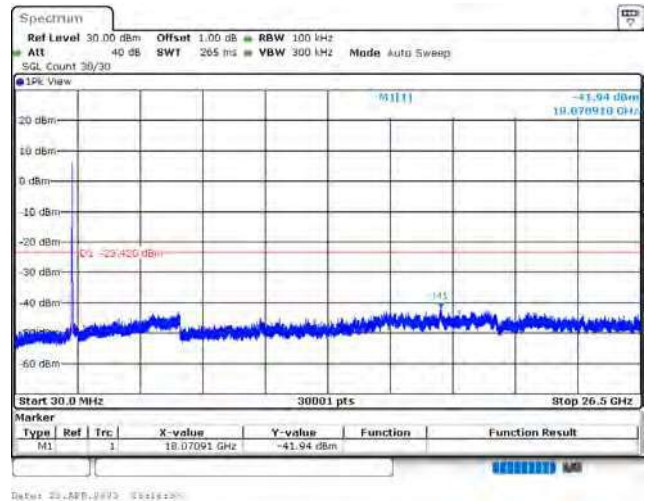
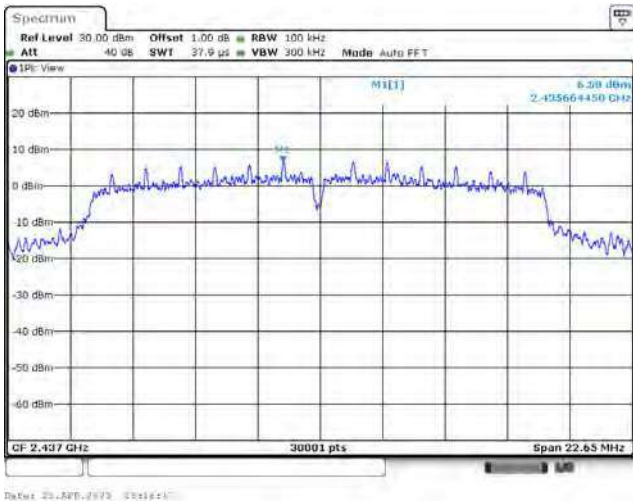
5.5. Test Result of Antenna Port Conducted Emission



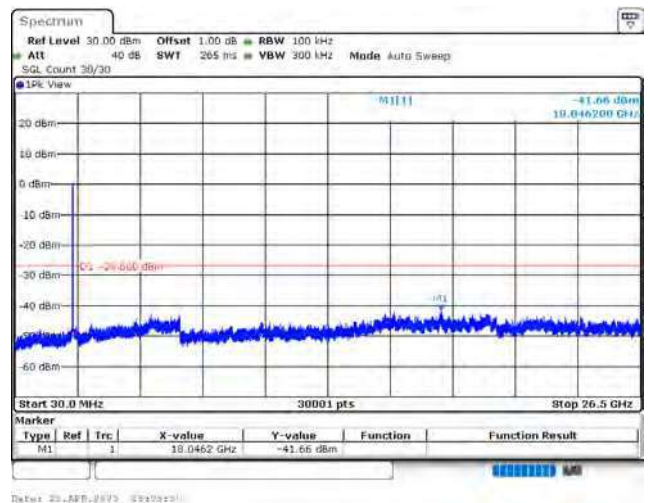
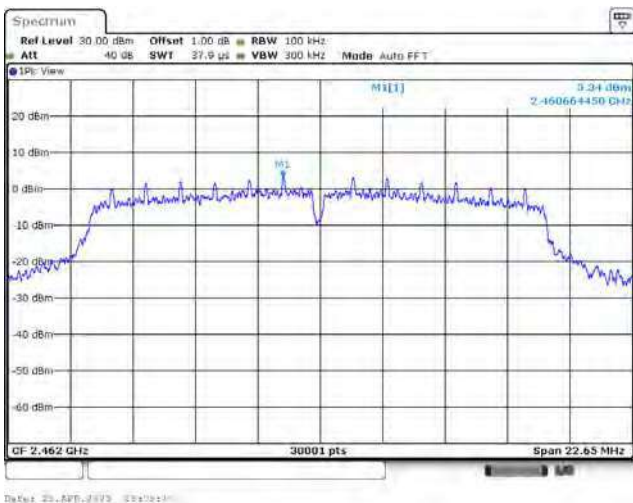
802.11g / Ant. 0 / 2412 MHz



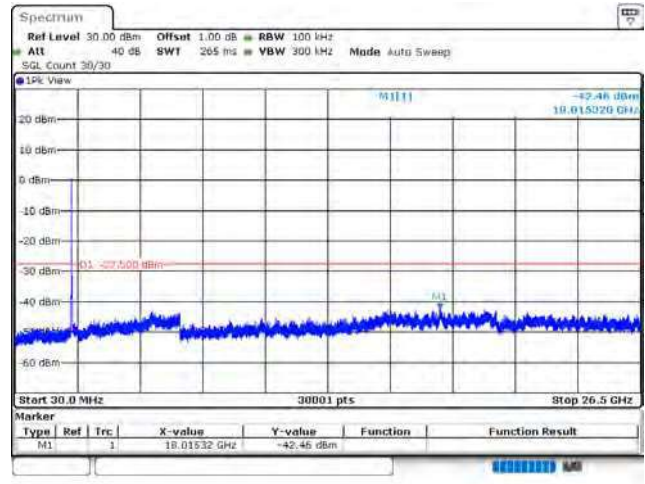
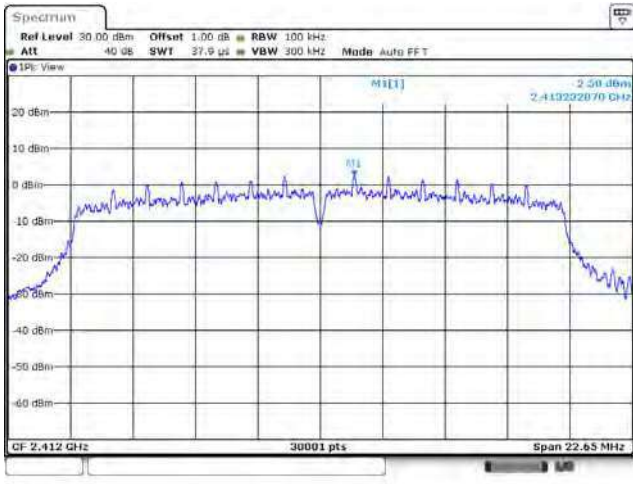
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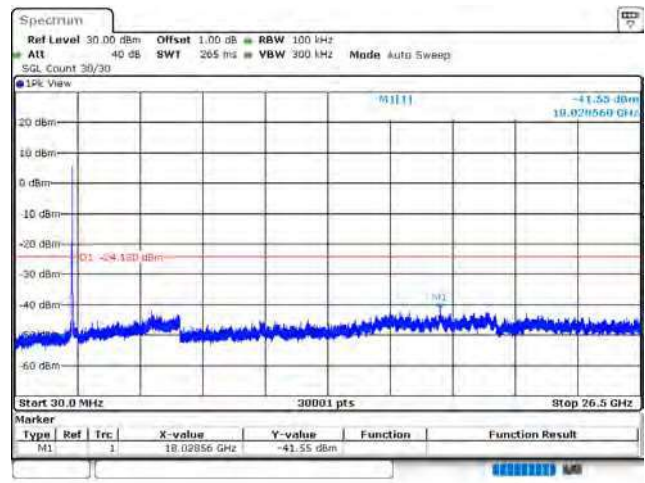
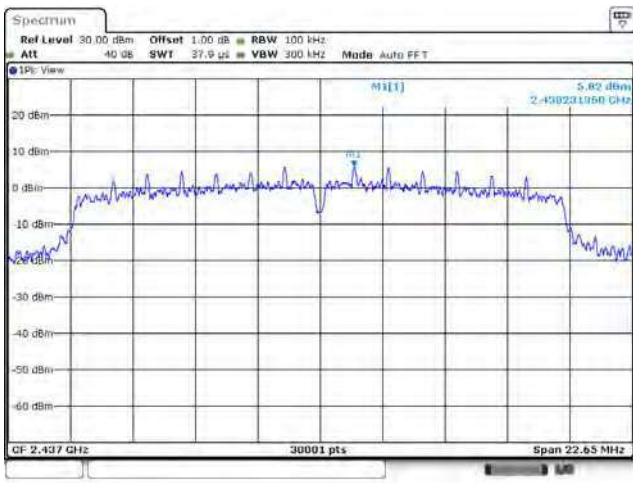
802.11g / Ant. 0 / 2462 MHz



802.11n (20 MHz) / Ant. 0 / 2412 MHz



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



802.11n (20 MHz) / Ant. 0 / 2462 MHz

