

FCC Test Report

Product Name : Asset Tracker
Brand Name : Samsara
Model No. : 010-2054, 010-2055, 010-2056
FCC ID : 2AIHD2054

Applicant : SAMSARA NETWORKS INC
Address : 1990 Alameda Street, San Francisco, CA 94103, USA

Date of Receipt : Jul. 05, 2022
Issued Date : Jul. 20, 2022
Report No. : 2270102R-RFUSWL2V01-A
Report Version : V1.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF or any agency of the government.

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.

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Product Name : Asset Tracker
Applicant : SAMSARA NETWORKS INC
Address : 1990 Alameda Street, San Francisco, CA 94103, USA
Manufacturer : WISTRON NEWEB CORP.
Address : 20 Park Avenue II, Hsinchu Science Park, Hsinchu 308, Taiwan
Brand Name : Samsara
Model No. : 010-2054, 010-2055, 010-2056
FCC ID : 2AIHD2054
EUT Voltage : EUT 1: DC 12V from external power source or
DC 3.65V from internal li-ion battery
EUT 2: DC 12V from external power source or
DC 3.65V from internal li-ion battery
EUT 3: DC 4.5V from AA battery (AA battery*3)
Testing Voltage : EUT 1: DC 12V
EUT 2: DC 12V
EUT 3: DC 4.5V
Applicable Standard : FCC CFR Title 47 Part 15 Subpart C Section 15.247
ANSI C63.10: 2013
Laboratory Name : DEKRA Testing and Certification Co., Ltd.
Hsin Chu Laboratory
Address : No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu
County 310, Taiwan, R.O.C.
Test Result : Complied

Documented By

:

Amelia Wu

(Amelia Wu / Project Specialist)

Approved By

:

Rueyyan Lin

(Rueyyan Lin / Supervisor)

The test results relate only to the samples tested.

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Revision History

Version	Description	Issued Date
V1.0	Initial issue of report	Jul. 20, 2022

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1. General Information

1.1. EUT Description

Product Name	Asset Tracker	
Brand Name	Samsara	
Model No.	010-2054, 010-2055, 010-2056	
Frequency Range / Channel Number	IEEE 802.11b/g	2412 ~ 2472 MHz / 13 Channels
	IEEE 802.11n (20 MHz)	2412 ~ 2472 MHz / 13 Channels
	IEEE 802.11n (40 MHz)	2422 ~ 2462 MHz / 9 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 7 and bandwidth defined in 802.11n

The difference for each model is shown as below:

EUT	3	2	1
Model	AG51	AG52	AG53
	010-2054	010-2055	010-2056
Type	Crevasse*	Serac*	Avalanche*
Key ICs			
Battery End-of-Service Monitoring	NA	MAX17260	MAX17260
CAN transceiver	NA	MCP25625 or MCP2515	MCP25625 or MCP2515
ADC Input	NA	2x	2x
Output	NA	1x	1x
CAN Bus	NA	NA	1x
Power			
Primary Power source	3x Primary Cell L91	Secondary Cell (Lithium-ion) 18650 pack (3.65V)	Secondary Cell (Lithium-ion) 18650 pack (3.65V)
External Power source	4.5VDC	9~36 VDC	9~36 VDC
Enclosure			
Rough dimensions	81 x 110 x 31 mm	124 x 81 x 35 mm	124 x 81 x 35 mm
Ambient Temp Rating	-40°C ~ +60°C	-20°C ~ +60°C	-20°C ~ +60°C
Screw	Phillips	Hexalobular socket	Hexalobular socket
The manufacturer declares that RF-related parts and software are unchanged for three models.			

Antenna Information				
Ant.	Brand Name	Model No.	Type	Antenna Gain (dBi)
0	WNC	Antenna-BT/WLAN	PCB	3

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	12	2467 MHz
13	2472 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	10	2457 MHz
11	2462 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
-----------	------------------

Test Items	Test Mode	Test EUT	Modulation	Channel	Result
AC Power Line Conducted Emission	The EUT was DC-powered, it's not necessary to apply to AC power line conducted emission test.				
Maximum Conducted Output Power	Mode 1	EUT 1	11b	1/6/11/12/13	Pass
			11g	1/6/11/12/13	Pass
			11n (20 MHz)	1/6/11/12/13	Pass
			11n (40 MHz)	3/6/9/10/11	Pass
Radiated Emission Below 1 GHz	Mode 1	EUT 1	11n (40 MHz)	10	Pass
		EUT 2	11n (40 MHz)	10	Pass
		EUT 3	11n (40 MHz)	10	Pass
Radiated Emission Above 1 GHz	Mode 1	EUT 1	11b	1/6/11/12/13	Pass
			11g	1/6/11/12/13	Pass
			11n (20 MHz)	1/6/11/12/13	Pass
			11n (40 MHz)	3/6/9/10/11	Pass
Antenna Port Conducted Emission	Mode 1	EUT 1	11b	1/6/11/12/13	Pass
			11g	1/6/11/12/13	Pass
			11n (20 MHz)	1/6/11/12/13	Pass
			11n (40 MHz)	3/6/9/10/11	Pass
Radiated Emission Band Edge	Mode 1	EUT 1	11b	1/6/11/12/13	Pass
			11g	1/6/11/12/13	Pass
			11n (20 MHz)	1/6/11/12/13	Pass
			11n (40 MHz)	3/6/9/10/11	Pass
Occupied Bandwidth & DTS Bandwidth	Mode 1	EUT 1	11b	1/6/11/12/13	Pass
			11g	1/6/11/12/13	Pass
			11n (20 MHz)	1/6/11/12/13	Pass
			11n (40 MHz)	3/6/9/10/11	Pass
Maximum Power Spectral Density	Mode 1	EUT 1	11b	1/6/11/12/13	Pass
			11g	1/6/11/12/13	Pass
			11n (20 MHz)	1/6/11/12/13	Pass
			11n (40 MHz)	3/6/9/10/11	Pass

Note:

- Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2. There are three EUTs, one is EUT 1, the other is EUT 2 and EUT 3.
EUT 1 generated the worst test result for radiated emission below 1GHz test, thus the measurement for other test items will follow this same test configuration.
3. For radiated emission below 1 GHz have performed all modes of operation were investigated and the worst-case emissions are reported.

1.3. Comments and Remarks

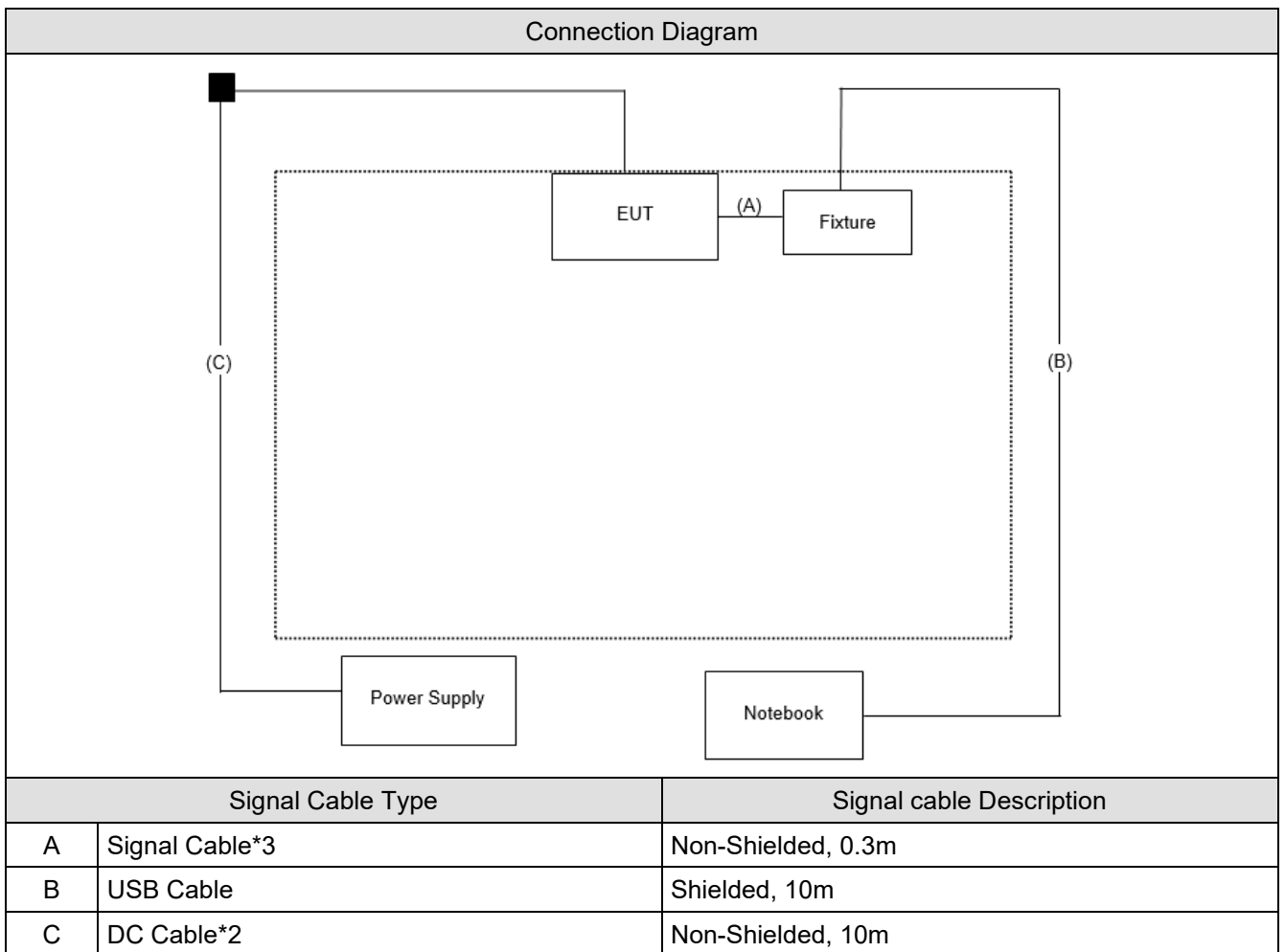
The product specification and testing instructions for the EUT declared in the report are provided by the manufacturer who will take all responsibilities for the accuracy.

1.4. Tested System Details

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

Product		Manufacturer	Model No.	Serial No.
1	Fixture	Oneping	OP-1010C18V-PBAM04D1	N/A
2	Notebook	DELL	Latitude E6320	8611271467
3	Power Supply	Topward	6303D	8095908

1.5. Configuration of Tested System



1.6. EUT Operation of during Test

1	Set the EUT as shown.
2	Execute the control command from software "EspRFTestTool_v2.8".
3	Configure test mode, test channel and data rate.
4	Let the EUT start transmit continuously.
5	Verify that device is working properly.

1.7. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Actually	Tested by	Test Date	Test Site
Temperature (°C)	Maximum Conducted Output Power	23	Clemens Fang	2022/07/09	HC-SR12
Humidity (%RH)		66			
Temperature (°C)	Radiated Emission	23.2	Ling Chen Gray Liao	2022/07/12	HC-CB04
Humidity (%RH)		58			
Temperature (°C)	Antenna Port Conducted Emission	23	Clemens Fang	2022/07/12	HC-SR12
Humidity (%RH)		65			
Temperature (°C)	Radiated Emission Band Edge	22.8	Ling Chen	2022/07/11	HC-CB04
Humidity (%RH)		55			
Temperature (°C)	Occupied Bandwidth & DTS Bandwidth	23	Clemens Fang	2022/07/12	HC-SR12
Humidity (%RH)		65			
Temperature (°C)	Maximum Power Spectral Density	23	Clemens Fang	2022/07/12	HC-SR12
Humidity (%RH)		65			

Note: Test site information refers to 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, SR10-H and HC-SR12.	

1.8. List of Test Equipment

HC-SR12

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
High Speed Peak Power Meter Dual Input	Anritsu	ML2496A	1602004	2021/11/12	2022/11/11
Pulse Power Sensor	Anritsu	MA2411B	1531043	2021/11/12	2022/11/11
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2022/01/07	2023/01/06
Pulse Power Sensor	Anritsu	MA2411B	1531044	2021/11/12	2022/11/11
Power Meter	Keysight	8990B	MY51000248	2022/05/06	2023/05/05
Power Sensor	Keysight	N1923A	MY57240005	2022/05/06	2023/05/05
Spectrum Analyzer	Agilent	N9010A	US47140172	2022/05/08	2023/05/07
Signal & Spectrum Analyzer	R&S	FSV40	101049	2022/04/25	2023/04/24

HC-CB04

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal and Spectrum Analyzer	R&S	FSVA40	101435	2022/05/30	2023/05/29
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2022/01/07	2023/01/06
Trilog Broadband Antenna	Schwarzbeck	VULB 9168	1209	2022/06/14	2023/06/13
Horn Antenna	Schwarzbeck	BBHA 9120D	639	2022/05/06	2023/05/05
Horn Antenna	Schwarzbeck	BBHA 9170	203	2022/02/23	2023/02/22
Pre-Amplifier	EMCI	EMC01820I	980365	2022/04/15	2023/04/14
Pre-Amplifier	EMEC	EM01G18GA	060741	2022/05/06	2023/05/05
Pre-Amplifier	DEKRA	AP-400C	201801231	2021/12/24	2022/12/23
EMI Test Receiver	R&S	ESR7	102260	2021/12/22	2022/12/21
Magnetic Loop Antenna	Teseq	HLA 6121	44287	2021/09/06	2022/09/05
Coaxial Cable(10m)	Suhner	SF102_SF104	HC-CB04	2021/08/09	2022/08/08
Coaxial Cable(3m)	Suhnerr,Rosnol	SF102_Rosnol	HC-CB04	2021/08/17	2022/08/18
Radiated Software	AUDIX	e3 V9	HC-CB04	N/A	N/A

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

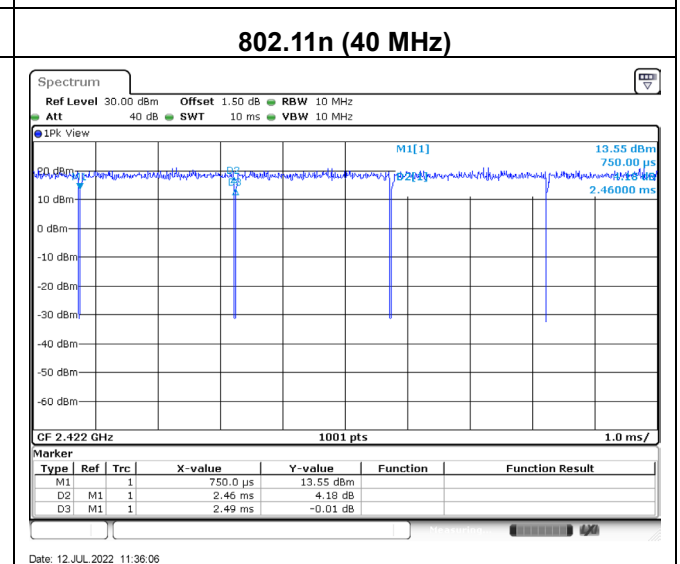
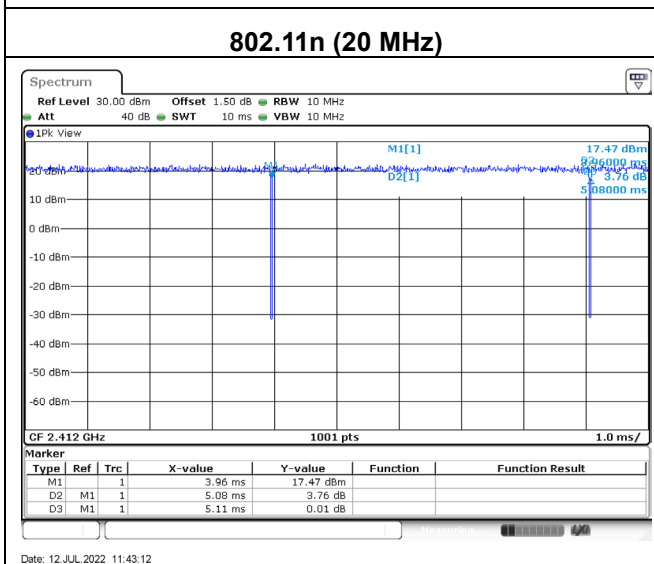
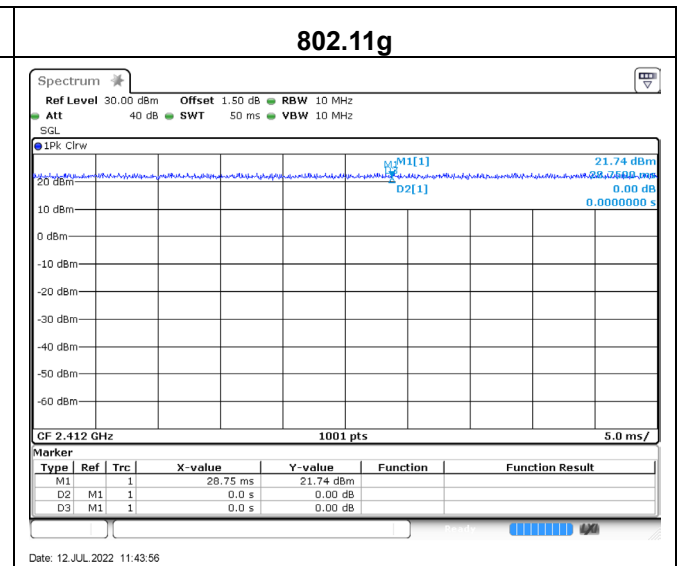
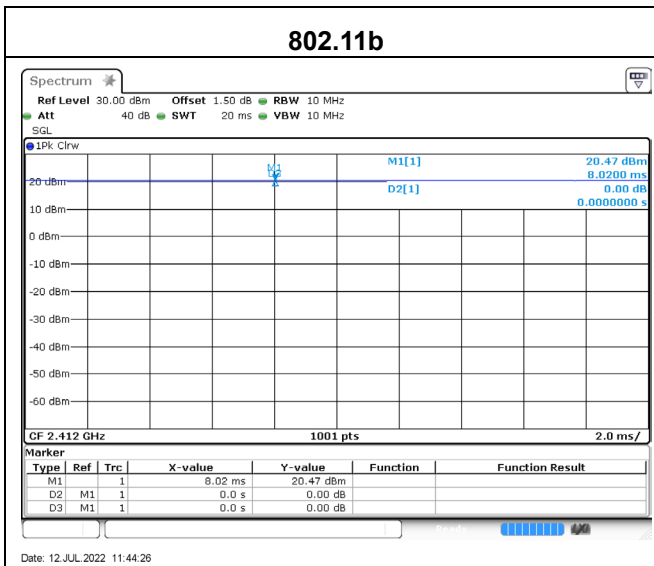
1.9. Measurement Uncertainty

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
Maximum Conducted Output Power	± 1.16 dB
Radiated Emission	± 3.25 dB below 1 GHz ± 3.32 dB above 1 GHz
Antenna Port Conducted Emission	± 1.60 dB
Radiated Emission Band Edge	± 3.32 dB above 1GHz
DTS Bandwidth	± 282.55 Hz
Occupied Bandwidth	± 282.55 Hz
Maximum Power Spectral Density	± 1.60 dB

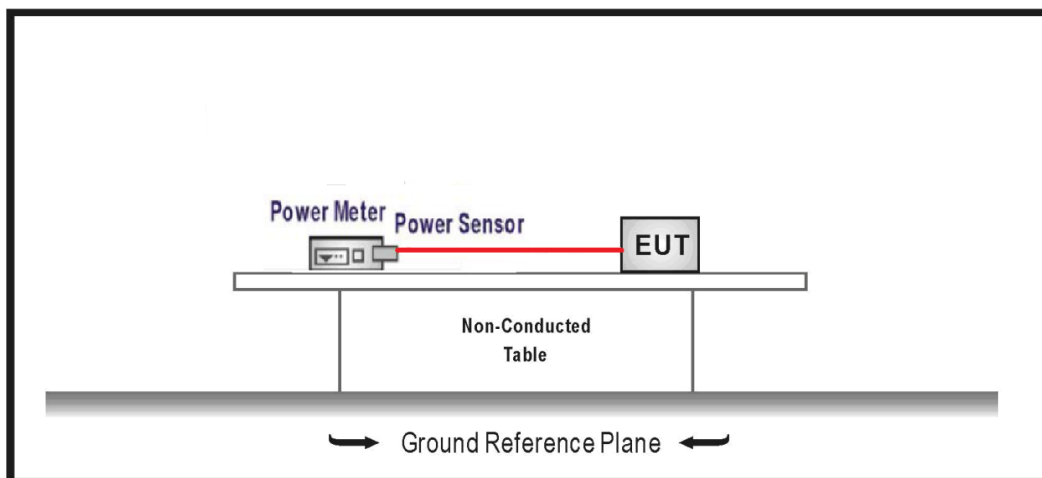
1.10. Duty Cycle

Modulation	On Times (ms)	On+Off Times (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11b	-	-	-	-	-
802.11g	-	-	-	-	-
802.11n (20 MHz)	5.080	5.110	99.41	0.026	0.010
802.11n (40 MHz)	2.460	2.490	98.80	0.053	0.010



2. Maximum Conducted Output Power

2.1. Test Setup



2.2. Test Limit

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

2.3. 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.

2.4. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247.

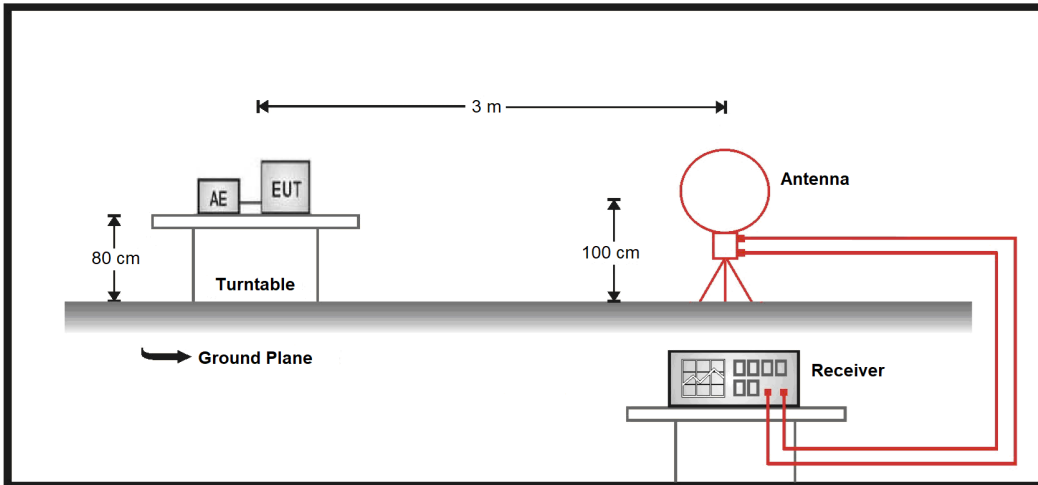
2.5. Test Result of Maximum Conducted Output Power

Modulation	Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Limit (dBm)	Result
802.11b	1	2412	19.230	≤ 30.00	Pass
	6	2437	19.090	≤ 30.00	Pass
	11	2462	20.370	≤ 30.00	Pass
	12	2467	19.970	≤ 30.00	Pass
	13	2472	16.980	≤ 30.00	Pass
802.11g	1	2412	18.120	≤ 30.00	Pass
	6	2437	18.160	≤ 30.00	Pass
	11	2462	16.480	≤ 30.00	Pass
	12	2467	13.750	≤ 30.00	Pass
	13	2472	4.160	≤ 30.00	Pass
802.11n (20 MHz)	1	2412	17.240	≤ 30.00	Pass
	6	2437	17.260	≤ 30.00	Pass
	11	2462	16.010	≤ 30.00	Pass
	12	2467	13.560	≤ 30.00	Pass
	13	2472	2.470	≤ 30.00	Pass
802.11n (40 MHz)	3	2422	16.620	≤ 30.00	Pass
	6	2437	16.870	≤ 30.00	Pass
	9	2452	15.040	≤ 30.00	Pass
	10	2457	14.250	≤ 30.00	Pass
	11	2462	13.070	≤ 30.00	Pass

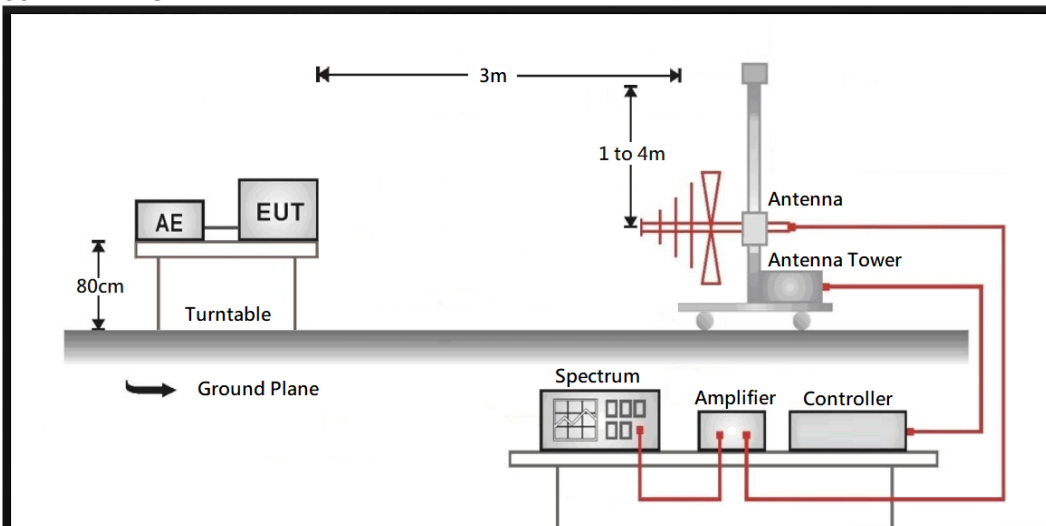
3. Radiated Emission

3.1. Test Setup

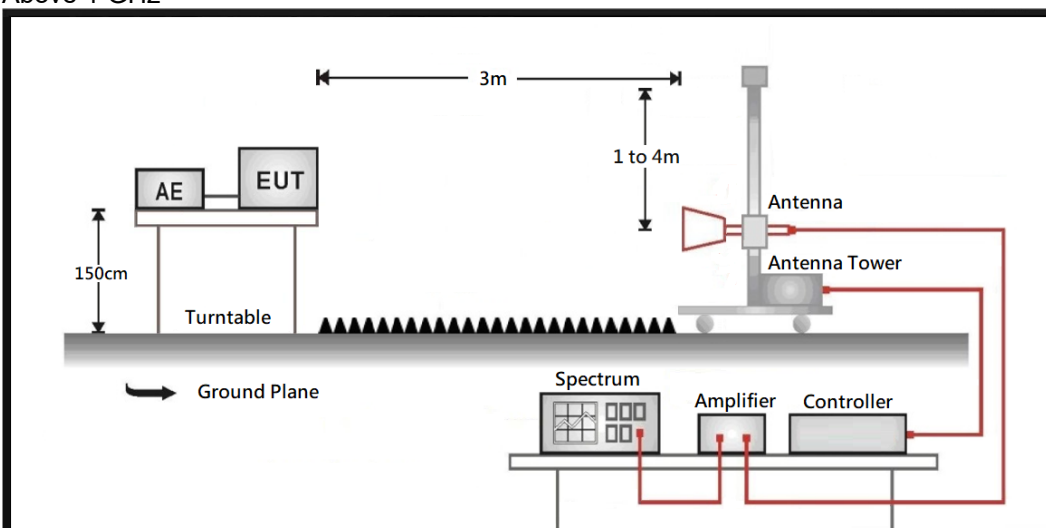
9 kHz ~ 30 MHz



30 MHz ~ 1 GHz



Above 1 GHz



3.2. 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

3.3. 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.

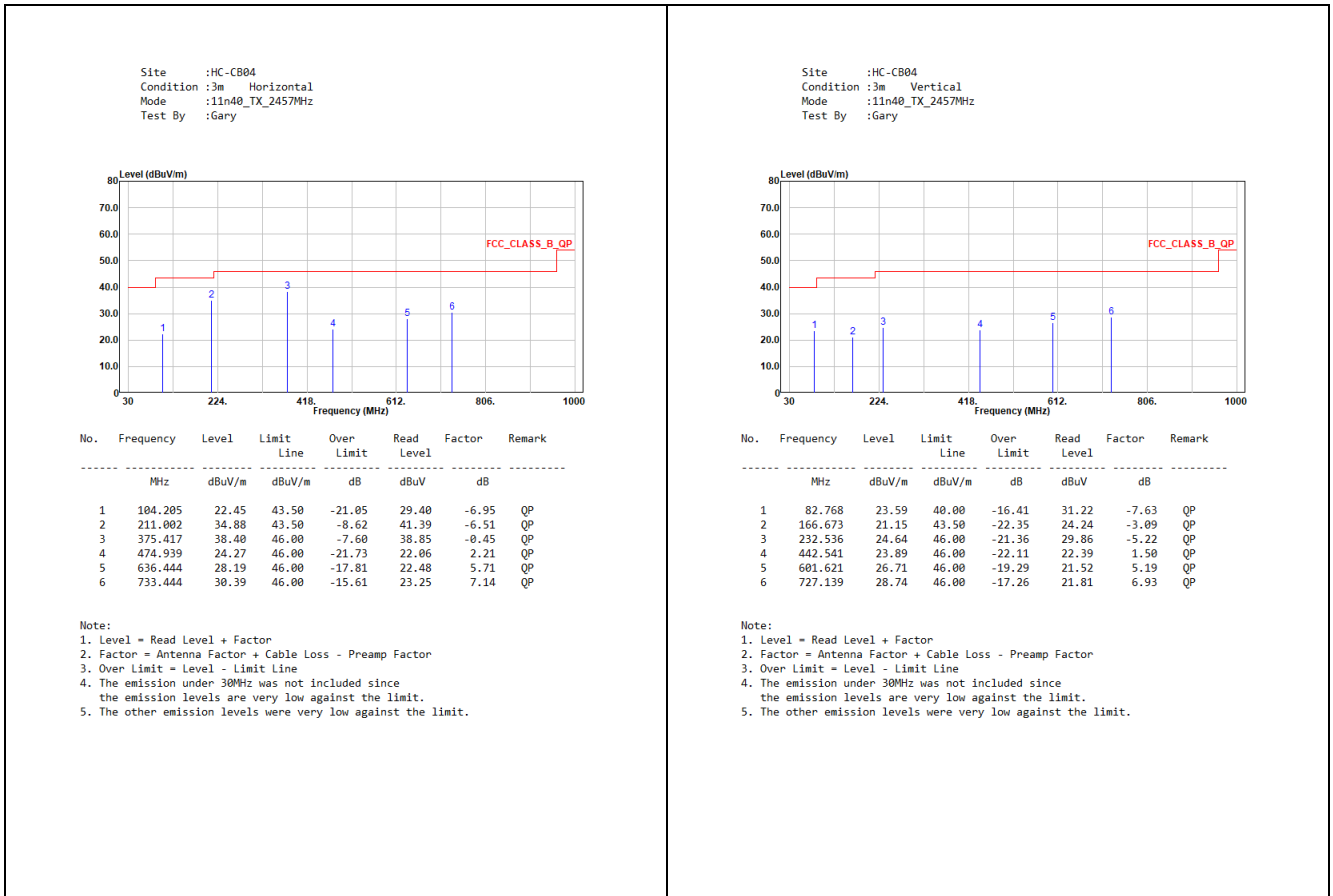
The bandwidth below 1 GHz setting on the field strength meter is 120 kHz and above 1 GHz is 1 MHz.

3.4. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247.

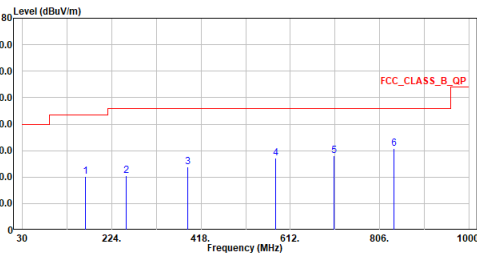
3.5. Test Result of Radiated Emissions (30 MHz ~ 1 GHz)

For EUT 1



For EUT 2

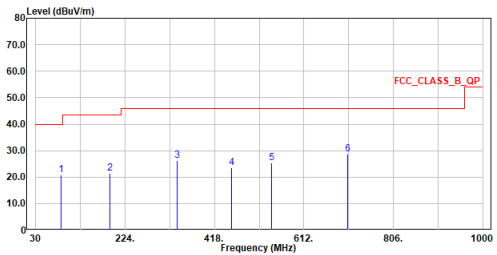
Site :HC-CB04
 Condition :3m Horizontal
 Mode :11n40_TX_2457MHz
 Test By :Gary



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	167.643	20.30	43.50	-23.20	23.55	-3.25	QP
2	255.816	20.49	46.00	-25.51	24.51	-4.02	QP
3	389.191	23.75	46.00	-22.25	23.86	-0.11	QP
4	580.184	27.28	46.00	-18.72	22.98	4.30	QP
5	706.866	27.94	46.00	-18.06	21.29	6.65	QP
6	837.525	30.68	46.00	-15.32	22.24	8.44	QP

Note:
 1. Level = Read Level + Factor
 2. Factor = Antenna Factor + Cable Loss - Preamp Factor
 3. Over Limit = Level - Limit Line
 4. The emission under 30MHz was not included since the emission levels are very low against the limit.
 5. The other emission levels were very low against the limit.

Site :HC-CB04
 Condition :3m Vertical
 Mode :11n40_TX_2457MHz
 Test By :Gary

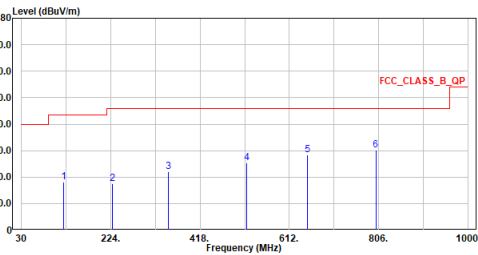


No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	84.902	20.98	40.00	-19.02	29.24	-8.26	QP
2	190.632	21.40	43.50	-22.10	27.10	-5.70	QP
3	337.684	26.38	46.00	-19.62	27.79	-1.41	QP
4	454.472	23.41	46.00	-22.59	21.58	1.83	QP
5	542.063	25.48	46.00	-20.52	22.03	3.45	QP
6	706.672	28.76	46.00	-17.24	22.12	6.64	QP

Note:
 1. Level = Read Level + Factor
 2. Factor = Antenna Factor + Cable Loss - Preamp Factor
 3. Over Limit = Level - Limit Line
 4. The emission under 30MHz was not included since the emission levels are very low against the limit.
 5. The other emission levels were very low against the limit.

For EUT 3

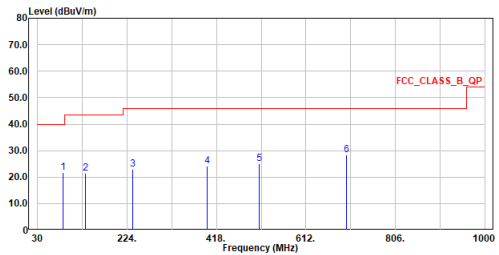
Site :HC-CB04
 Condition :3m Horizontal
 Mode :11n40_TX_2457MHz
 Test By :Gary



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	122.150	18.17	43.50	-25.33	23.11	-4.94	QP
2	227.589	17.61	46.00	-28.39	23.44	-5.83	QP
3	350.003	21.89	46.00	-24.11	23.14	-1.25	QP
4	519.074	25.35	46.00	-20.65	22.22	3.13	QP
5	651.576	28.26	46.00	-17.74	22.33	5.93	QP
6	799.792	30.15	46.00	-15.85	22.22	7.93	QP

Note:
 1. Level = Read Level + Factor
 2. Factor = Antenna Factor + Cable Loss - Preamp Factor
 3. Over Limit = Level - Limit Line
 4. The emission under 30MHz was not included since the emission levels are very low against the limit.
 5. The other emission levels were very low against the limit.

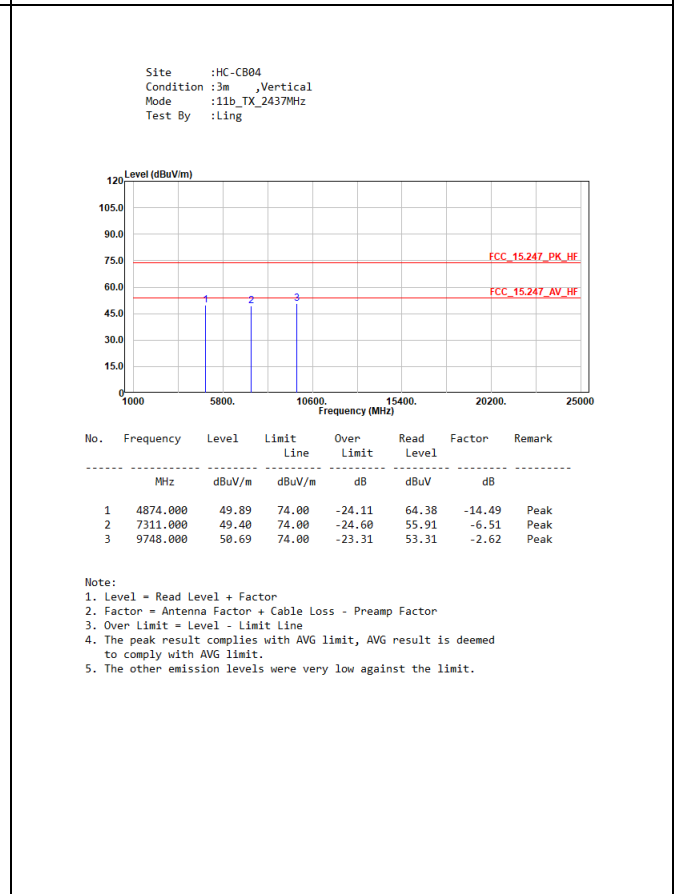
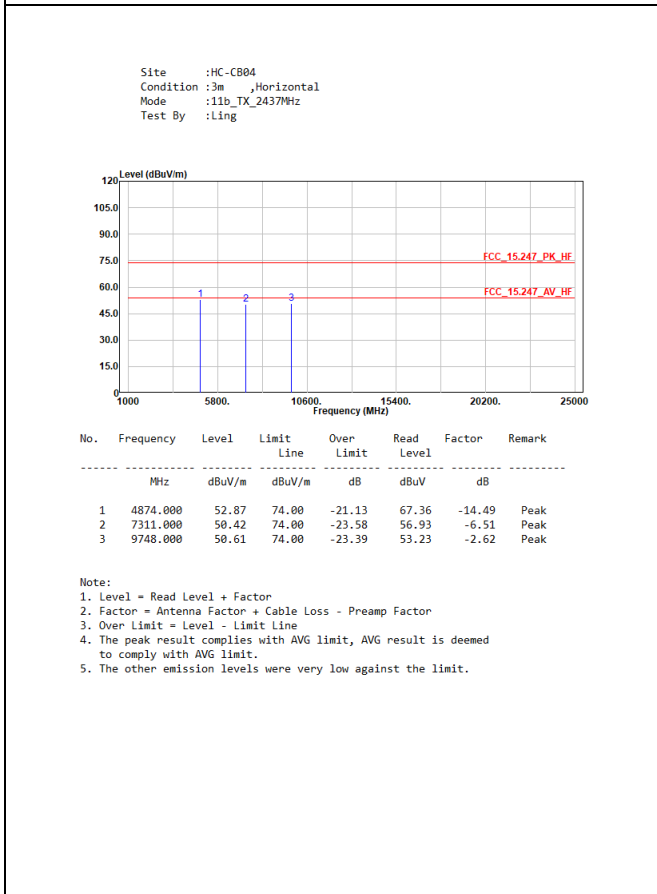
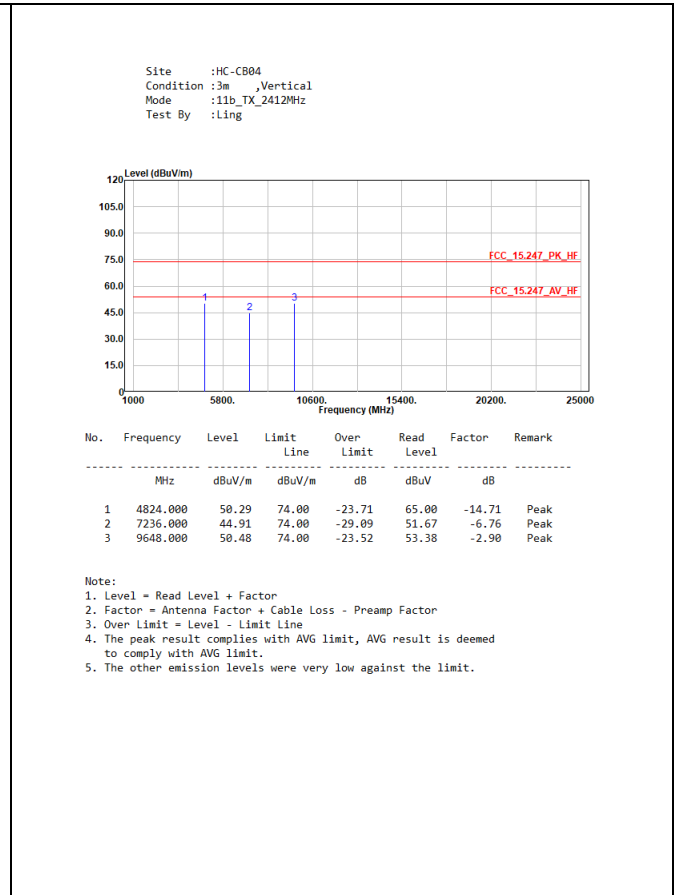
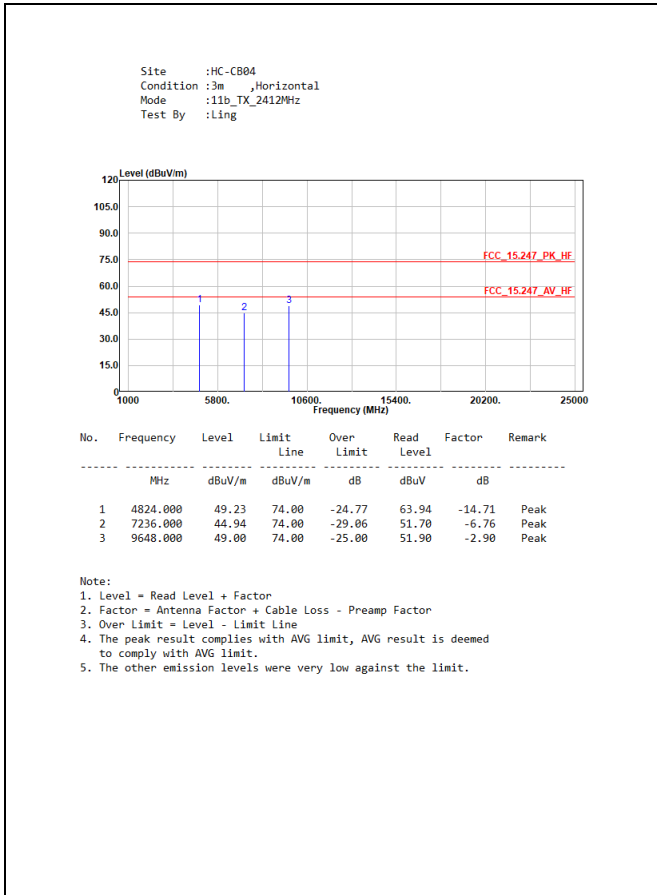
Site :HC-CB04
 Condition :3m Vertical
 Mode :11n40_TX_2457MHz
 Test By :Gary

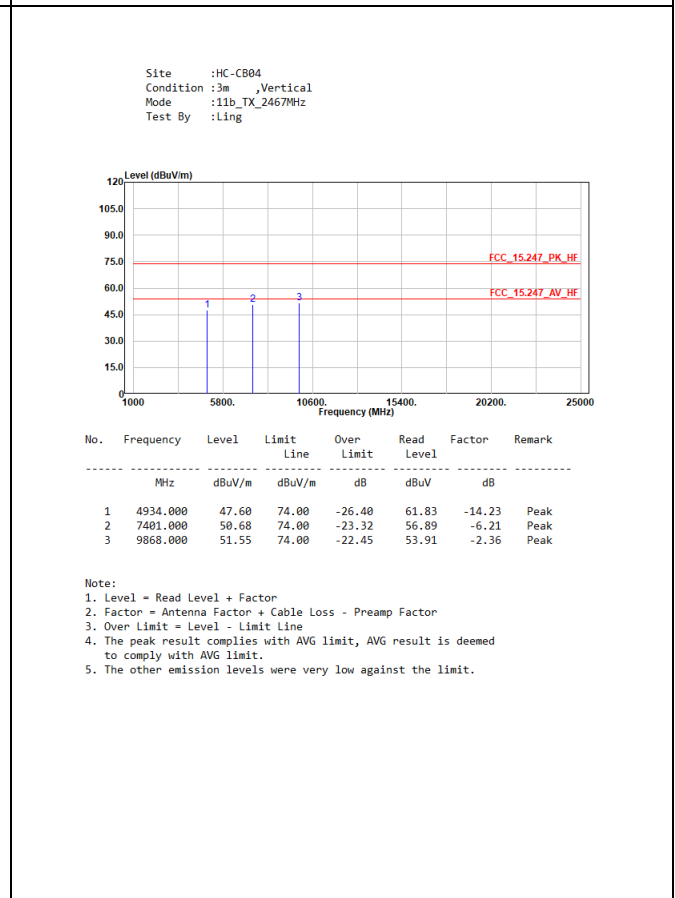
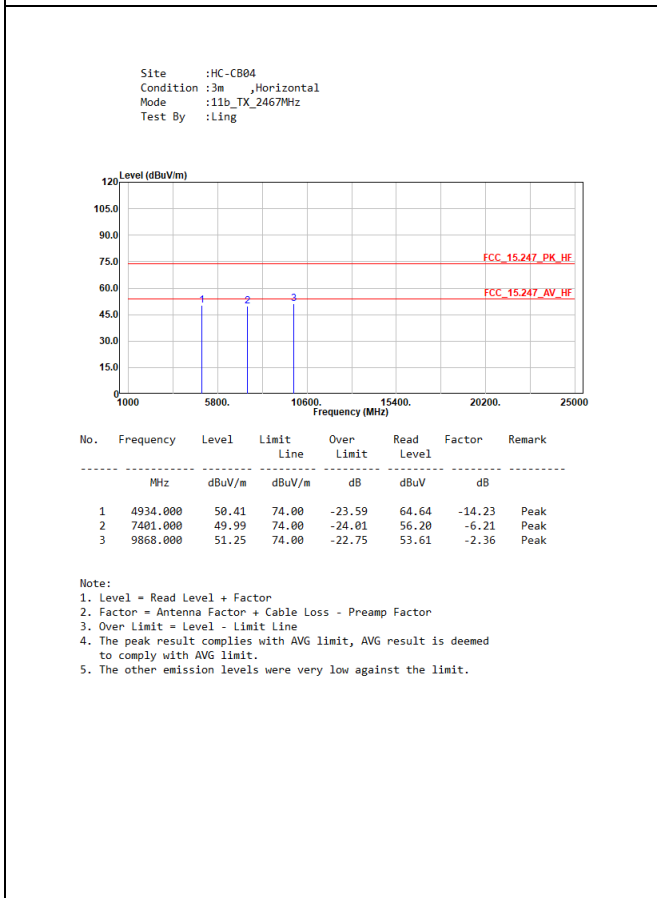
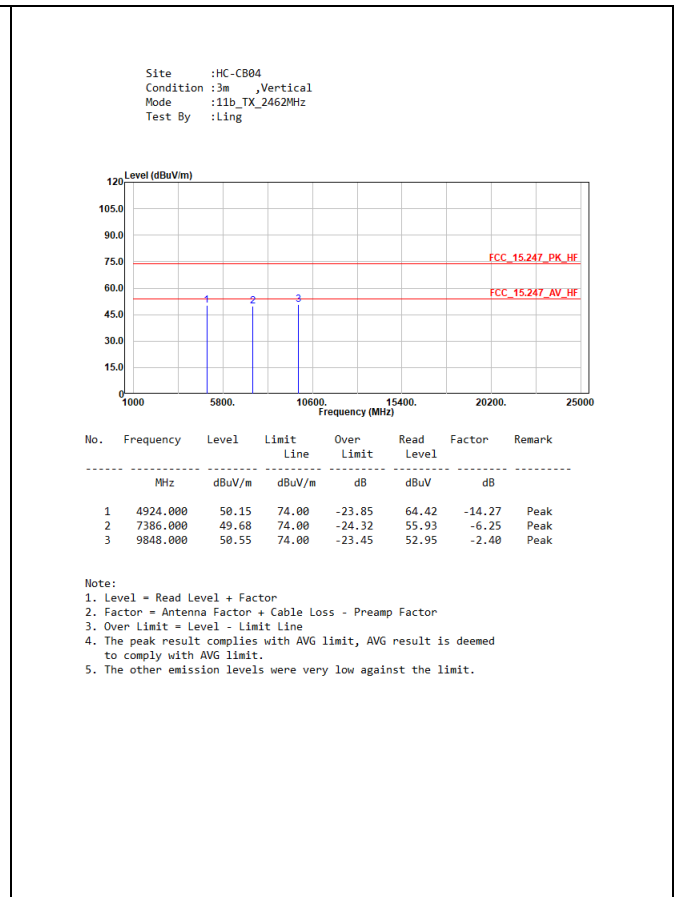
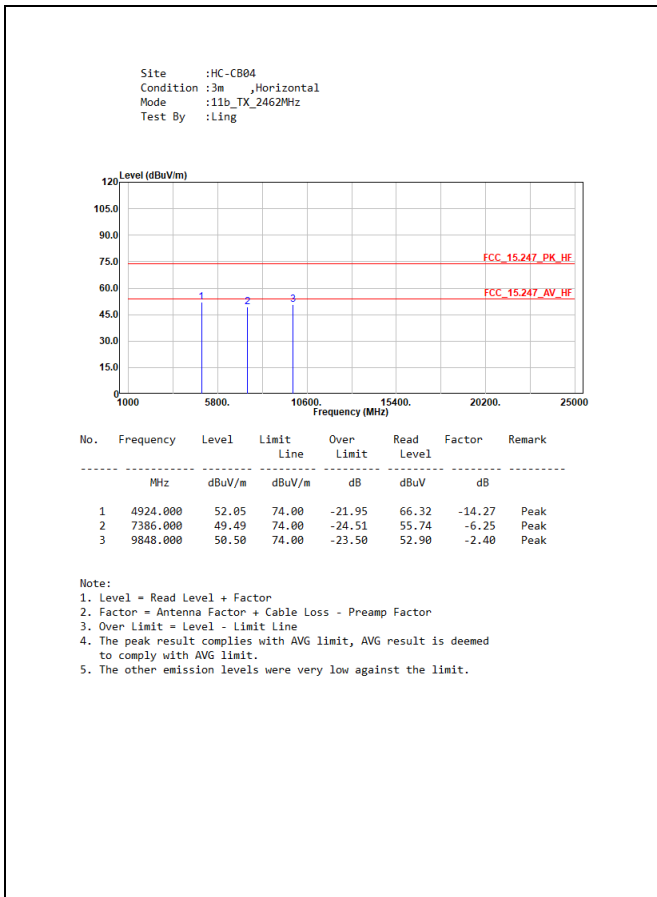


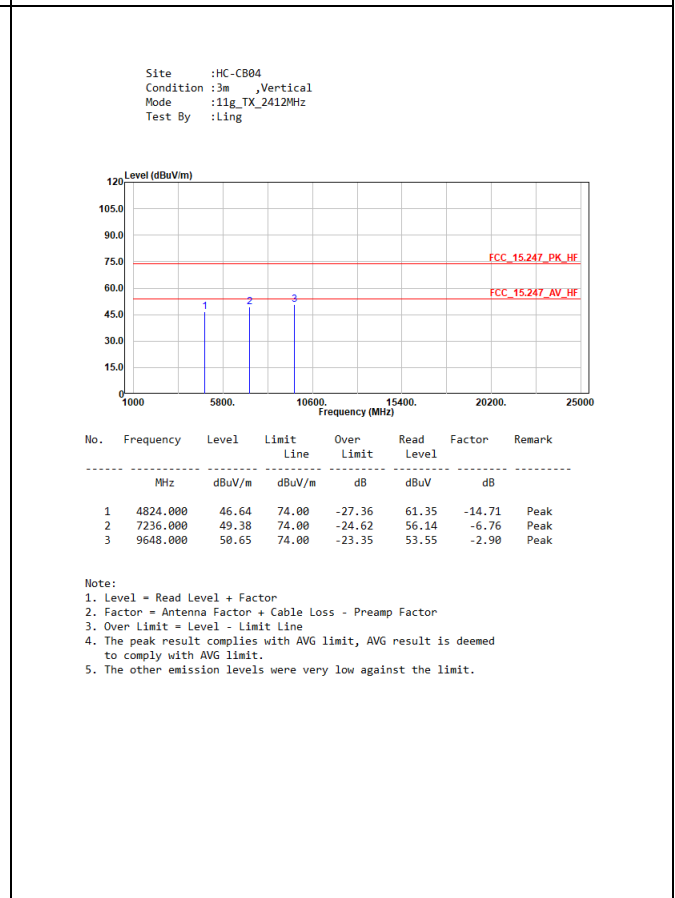
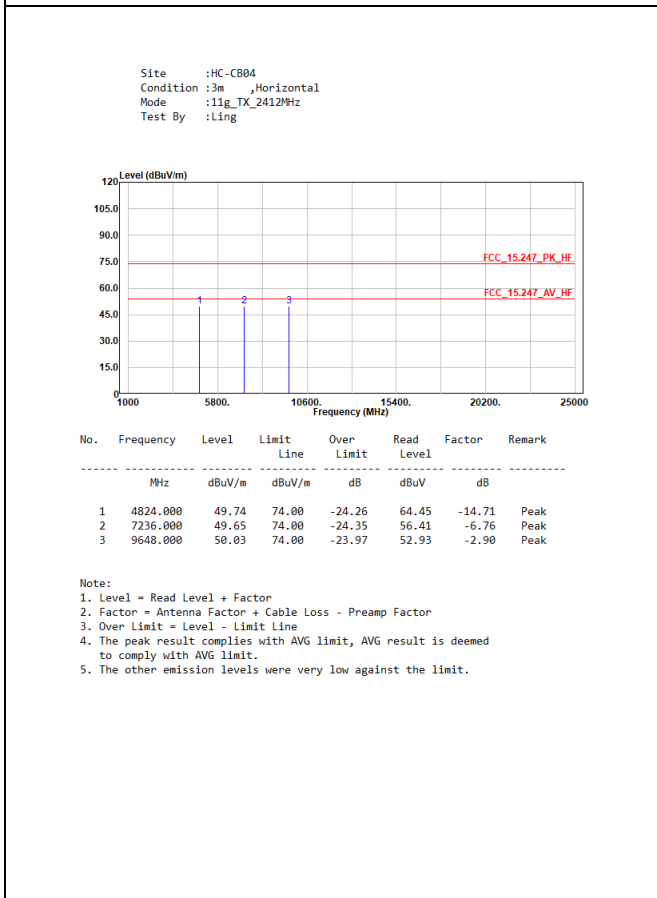
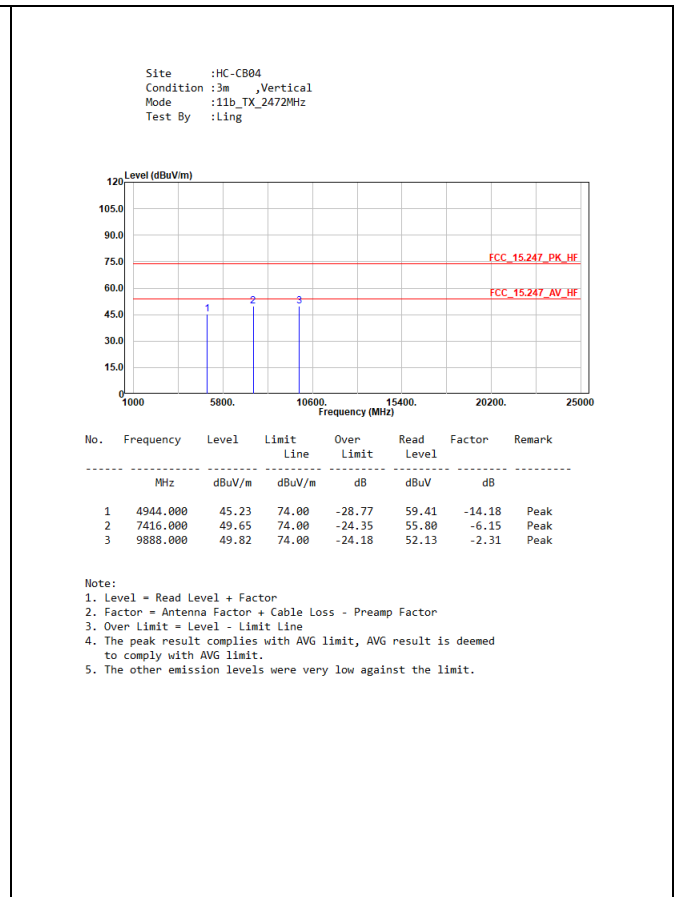
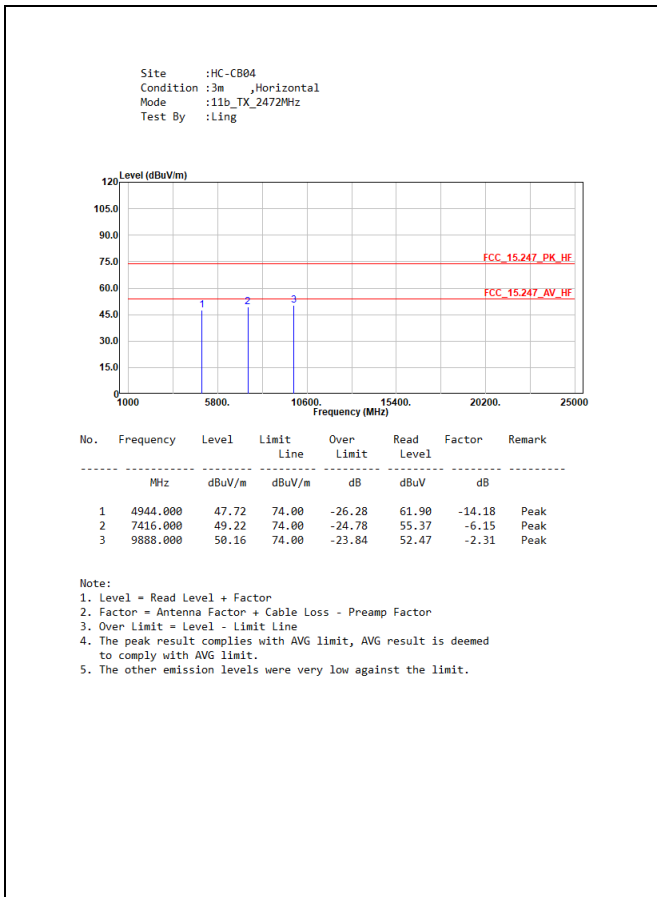
No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	84.708	21.61	40.00	-18.39	29.81	-8.20	QP
2	133.499	21.41	43.50	-22.09	25.43	-4.02	QP
3	235.543	23.03	46.00	-22.97	27.90	-4.87	QP
4	397.824	24.04	46.00	-21.96	23.94	0.10	QP
5	510.926	25.07	46.00	-20.93	22.13	2.94	QP
6	699.203	28.40	46.00	-17.60	21.94	6.46	QP

Note:
 1. Level = Read Level + Factor
 2. Factor = Antenna Factor + Cable Loss - Preamp Factor
 3. Over Limit = Level - Limit Line
 4. The emission under 30MHz was not included since the emission levels are very low against the limit.
 5. The other emission levels were very low against the limit.

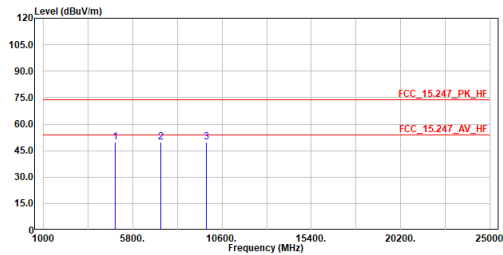
3.6. Test Result of Radiated Emissions (1 GHz ~ 10th Harmonic)







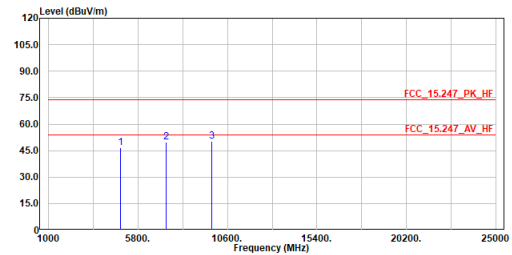
Site :HC-CB04
 Condition :3m ,Horizontal
 Mode :11g_TX_2437MHz
 Test By :Ling



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	4874.000	49.59	74.00	-24.41	64.08	-14.49	Peak
2	7311.000	49.87	74.00	-24.13	56.38	-6.51	Peak
3	9748.000	49.94	74.00	-24.06	52.56	-2.62	Peak

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.

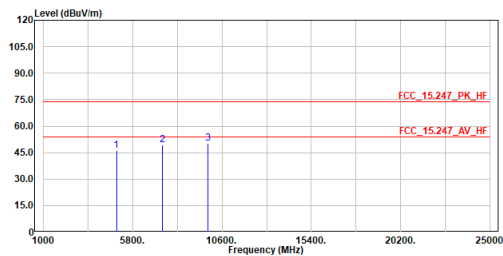
Site :HC-CB04
 Condition :3m ,Vertical
 Mode :11g_TX_2437MHz
 Test By :Ling



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	4874.000	46.58	74.00	-27.42	61.07	-14.49	Peak
2	7311.000	49.96	74.00	-24.04	56.47	-6.51	Peak
3	9748.000	50.44	74.00	-23.56	53.06	-2.62	Peak

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.

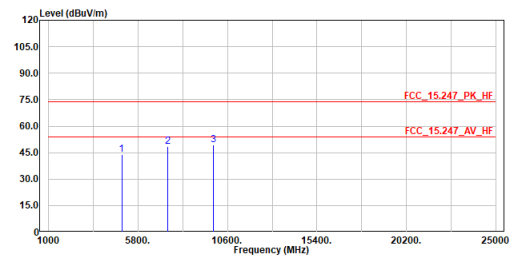
Site :HC-CB04
 Condition :3m ,Horizontal
 Mode :11g_TX_2462MHz
 Test By :Ling



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	4924.000	46.02	74.00	-27.98	60.29	-14.27	Peak
2	7386.000	49.21	74.00	-24.79	55.46	-6.25	Peak
3	9848.000	50.31	74.00	-23.69	52.71	-2.40	Peak

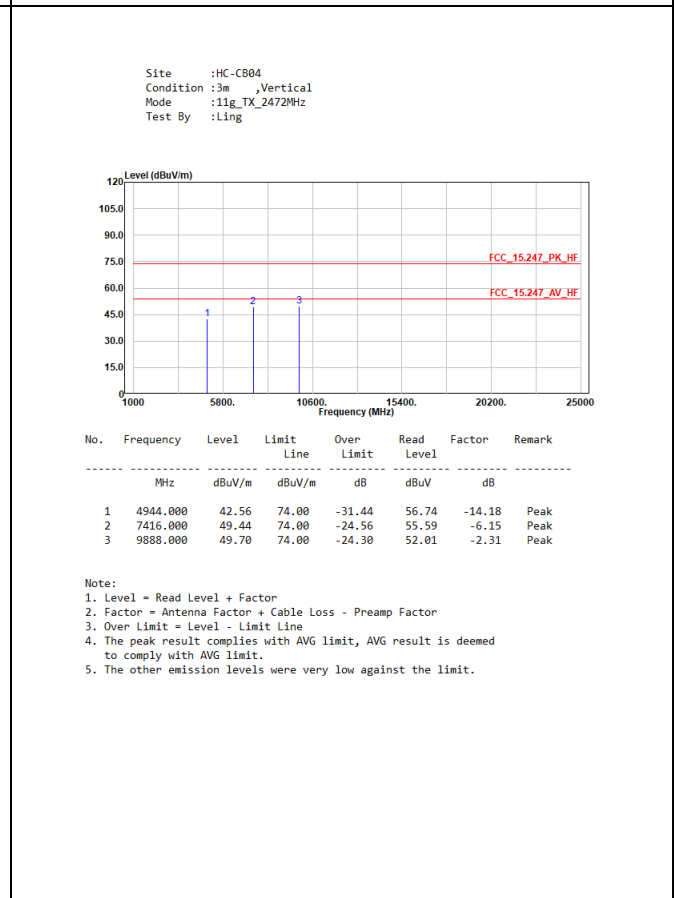
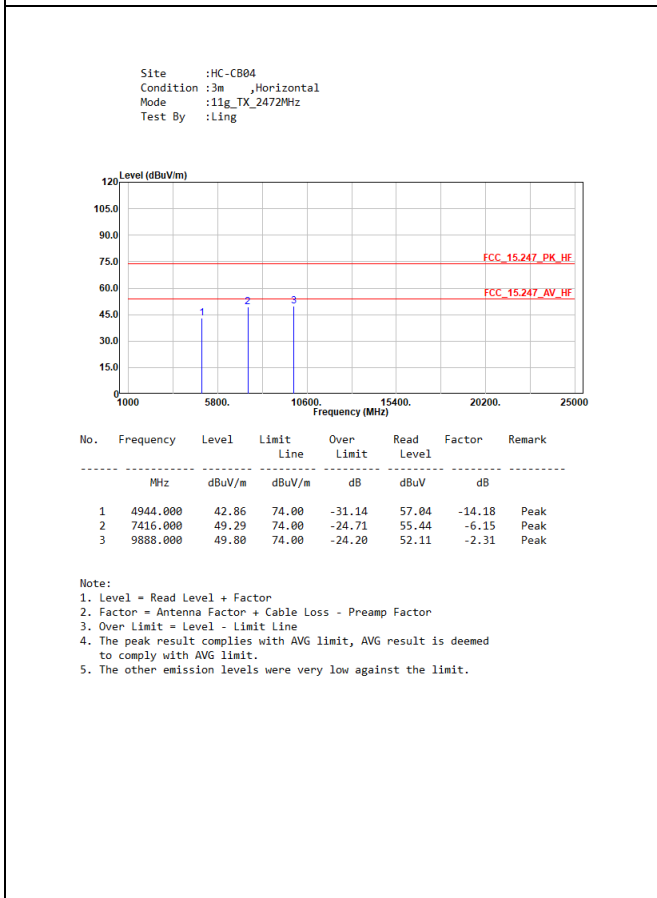
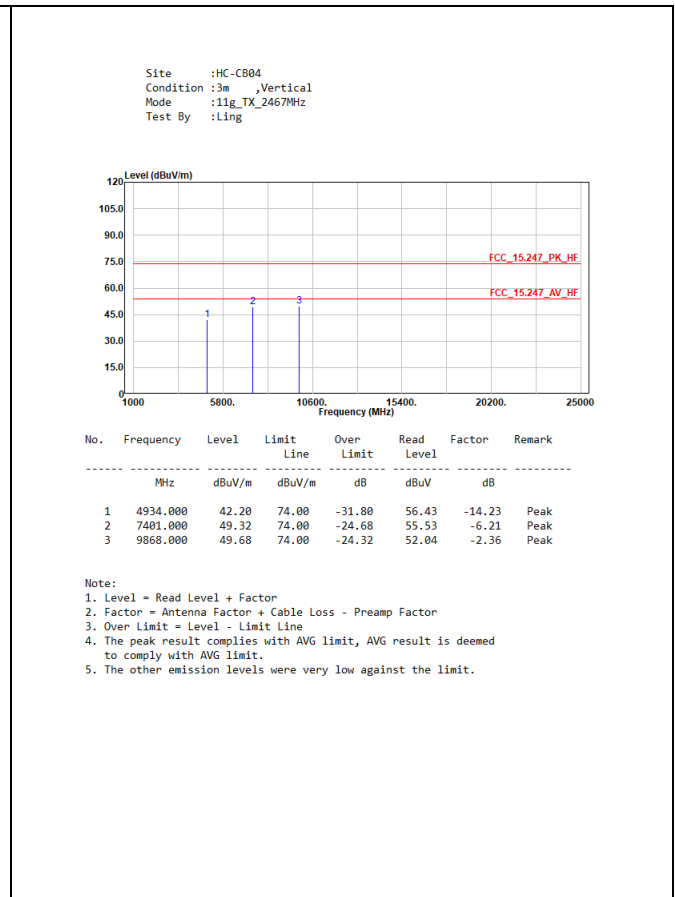
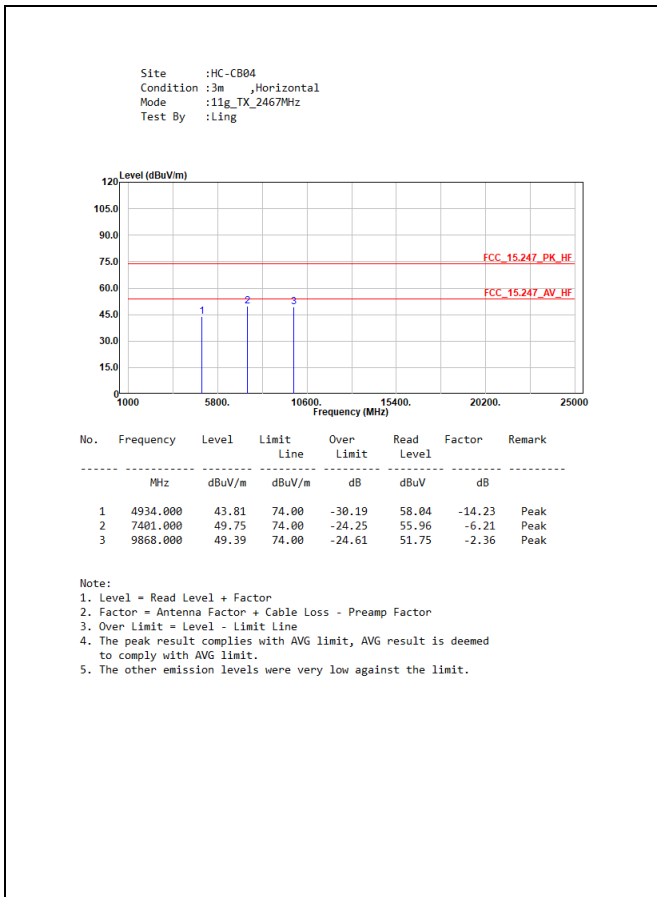
Note:
 1. Level = Read Level + Factor
 2. Factor = Antenna Factor + Cable Loss - Preamp Factor
 3. Over Limit = Level - Limit Line
 4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
 5. The other emission levels were very low against the limit.

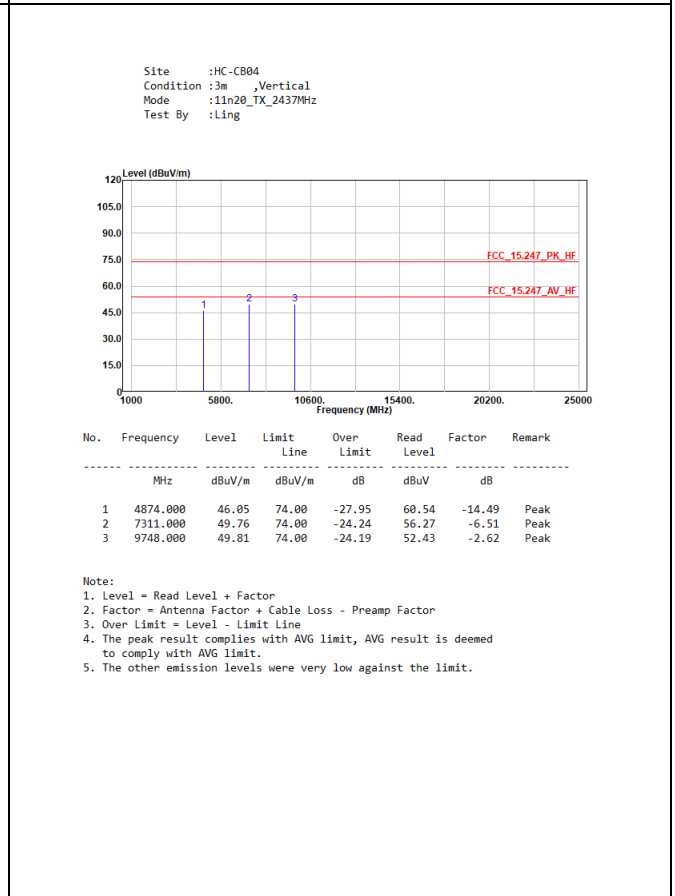
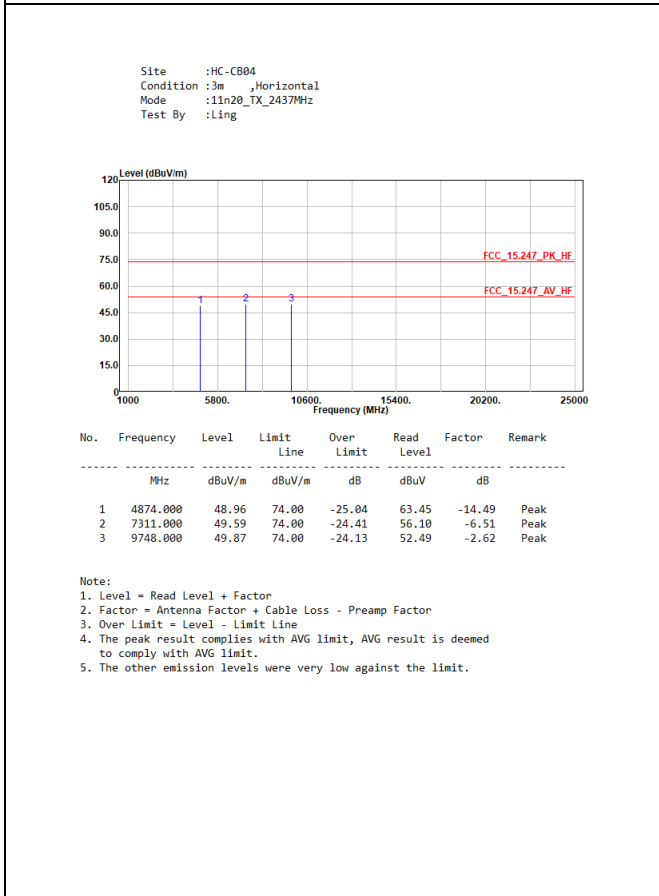
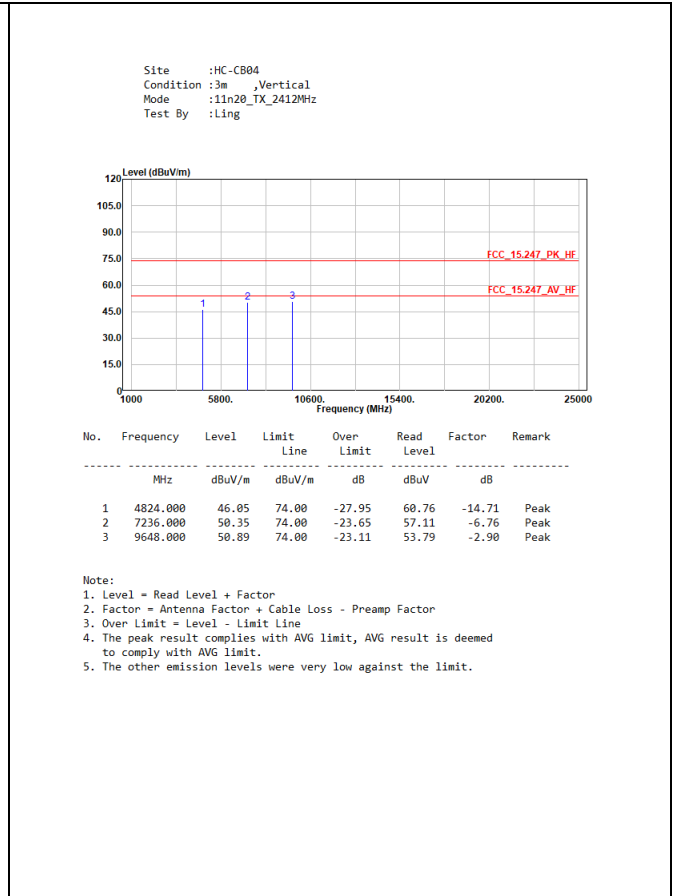
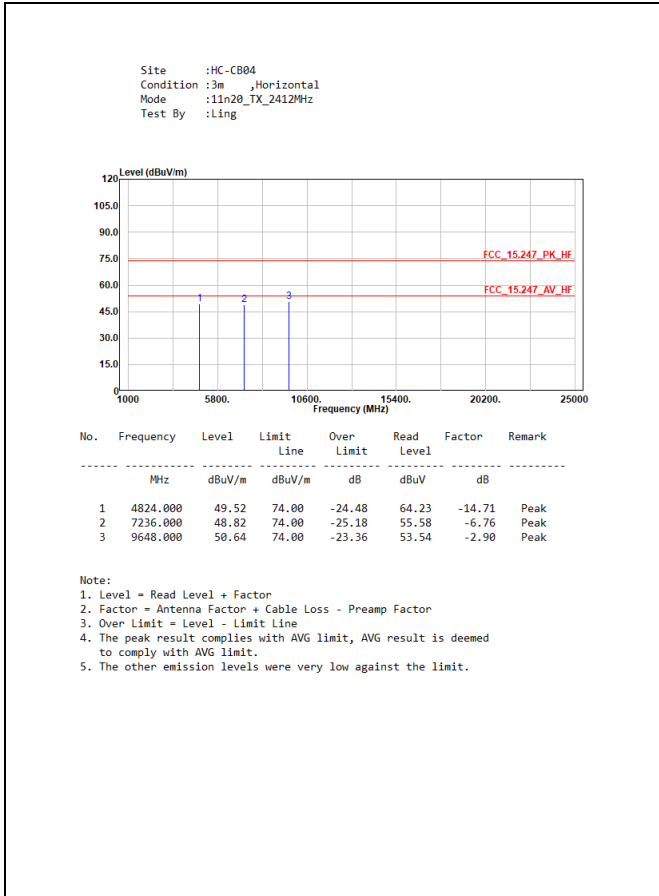
Site :HC-CB04
 Condition :3m ,Vertical
 Mode :11g_TX_2462MHz
 Test By :Ling

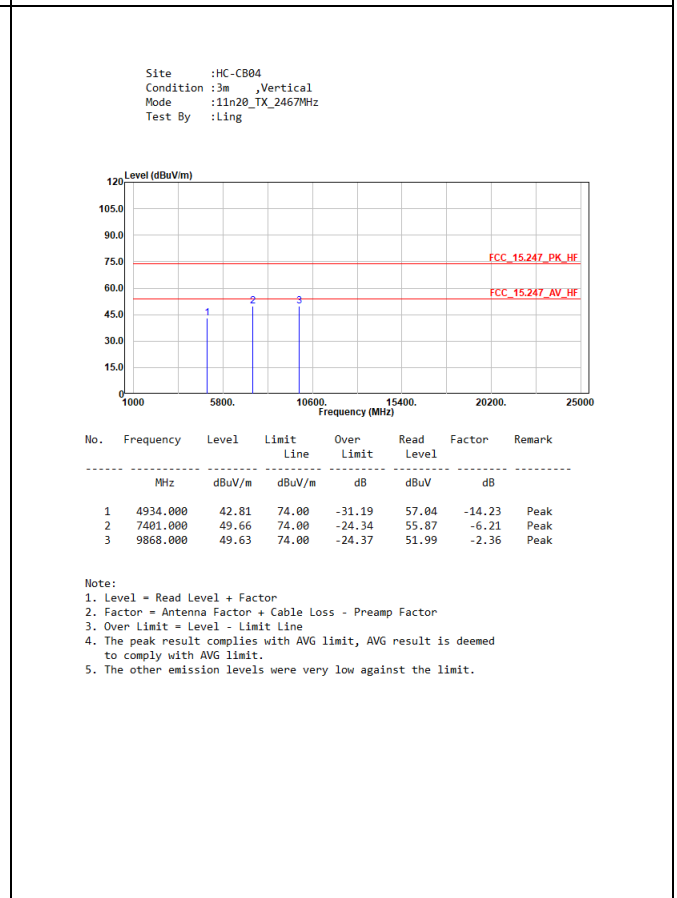
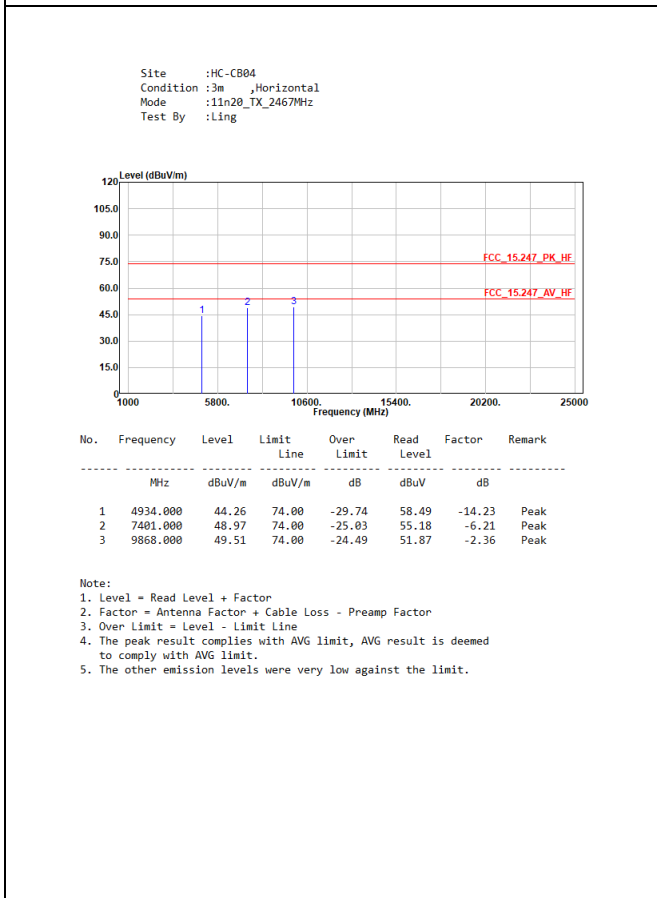
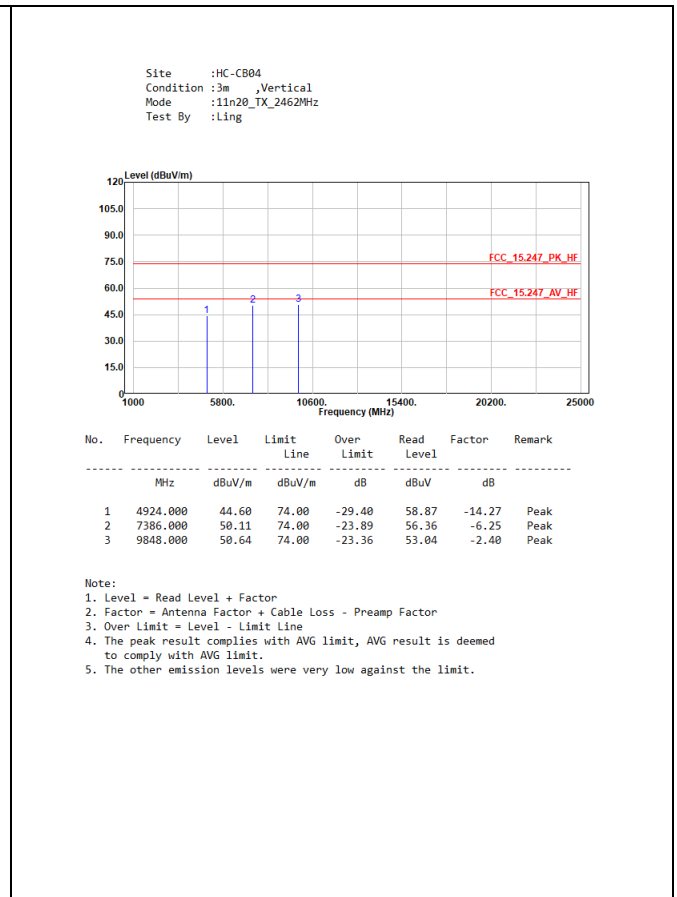
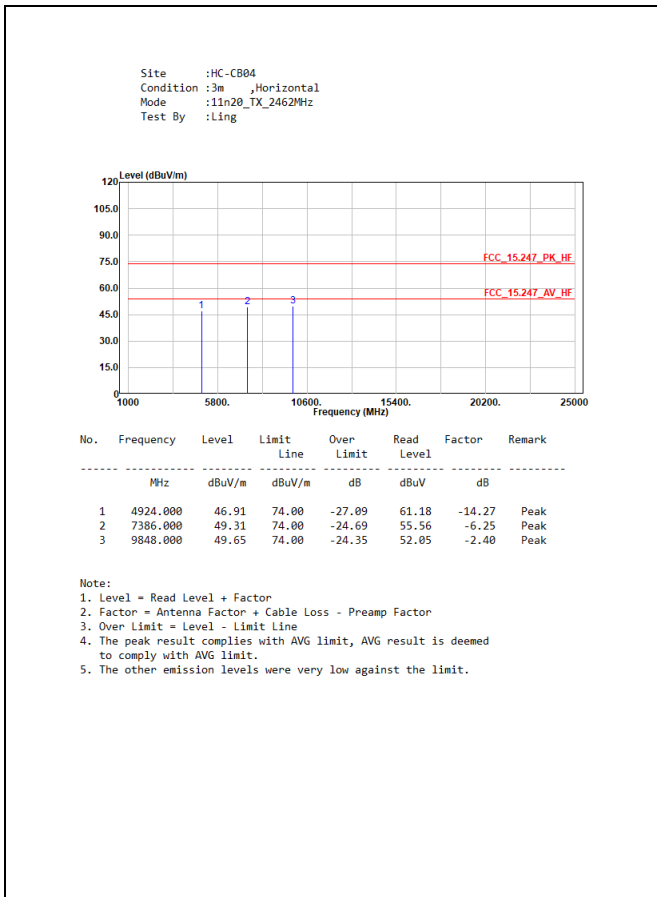


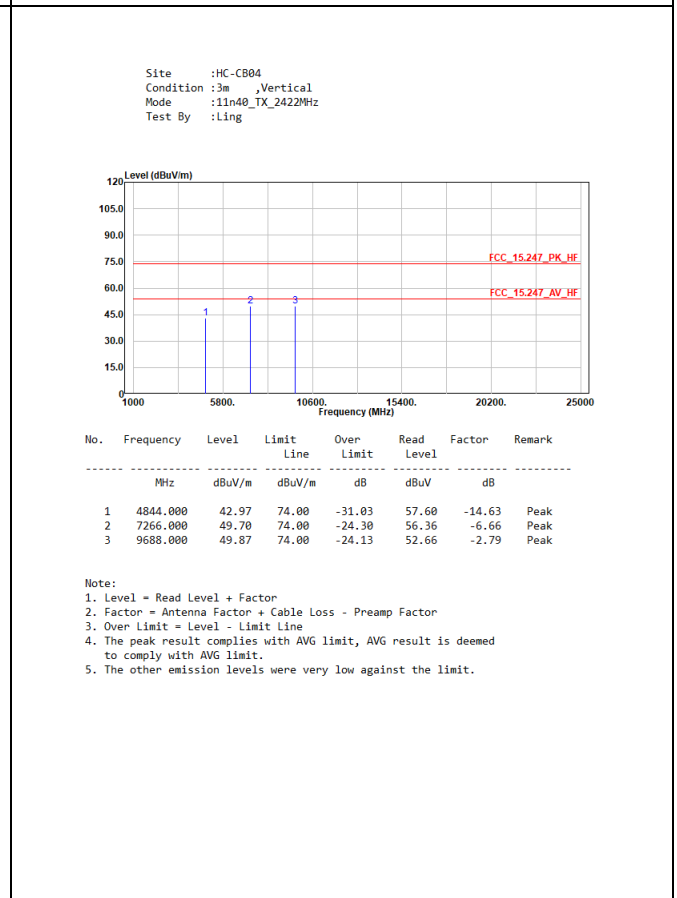
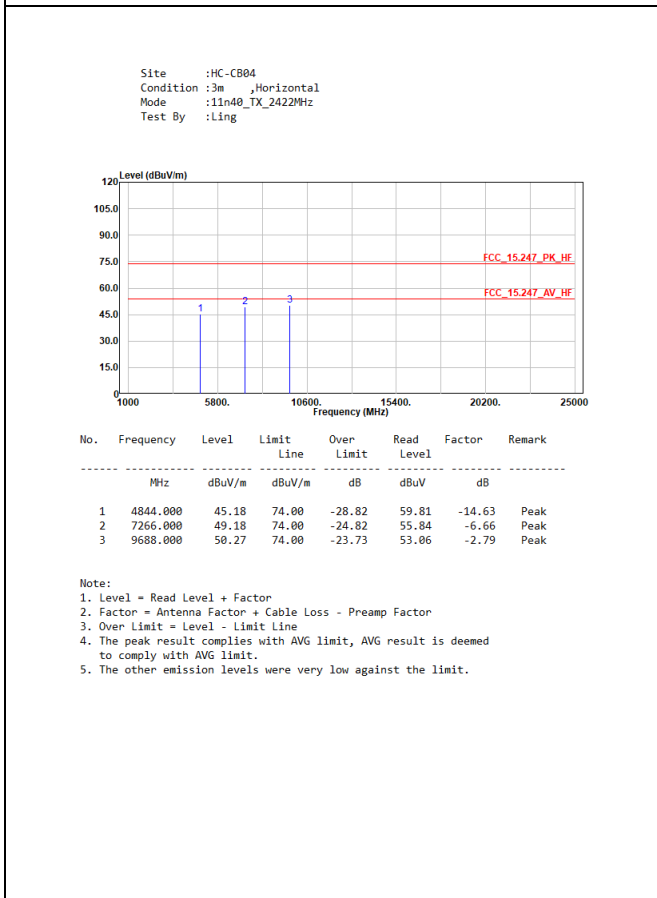
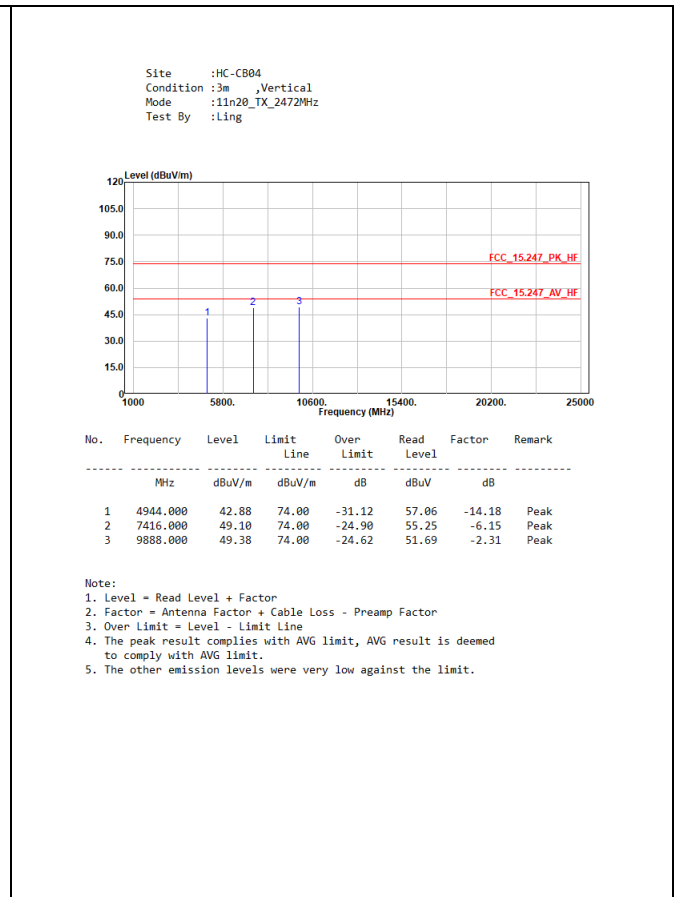
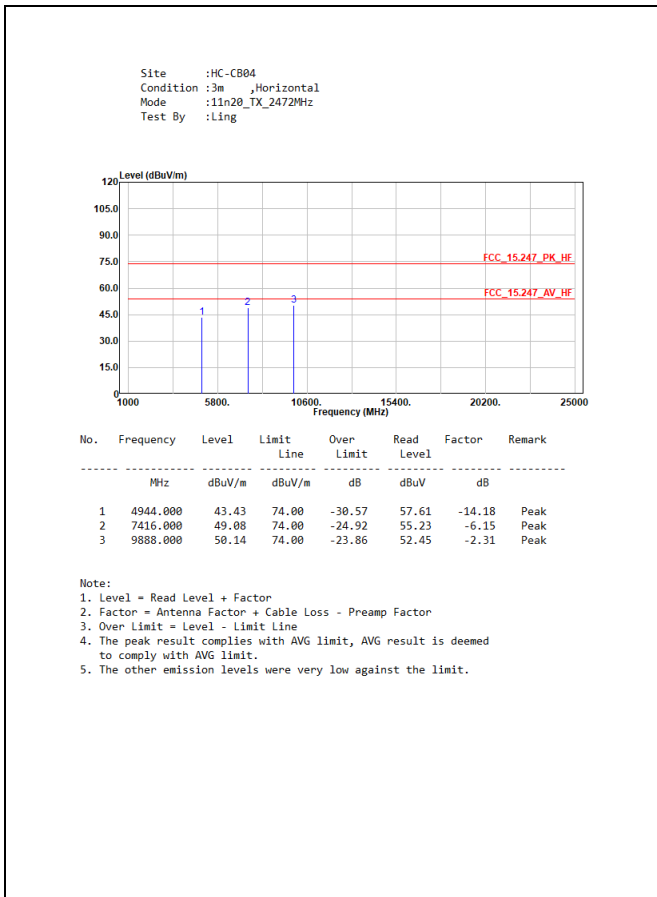
No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	4924.000	43.90	74.00	-30.10	58.17	-14.27	Peak
2	7386.000	48.52	74.00	-25.48	54.77	-6.25	Peak
3	9848.000	49.38	74.00	-24.62	51.78	-2.40	Peak

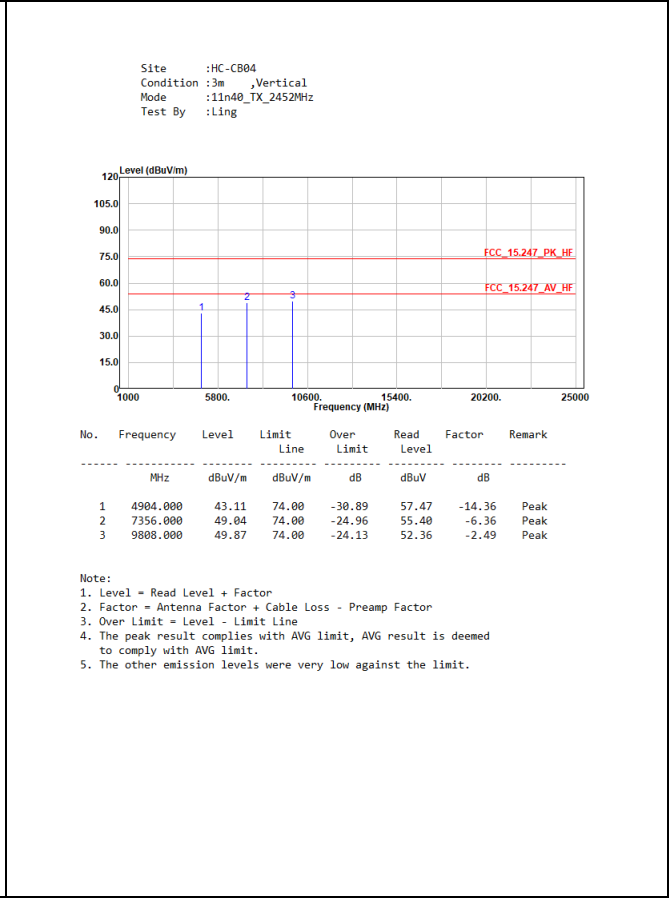
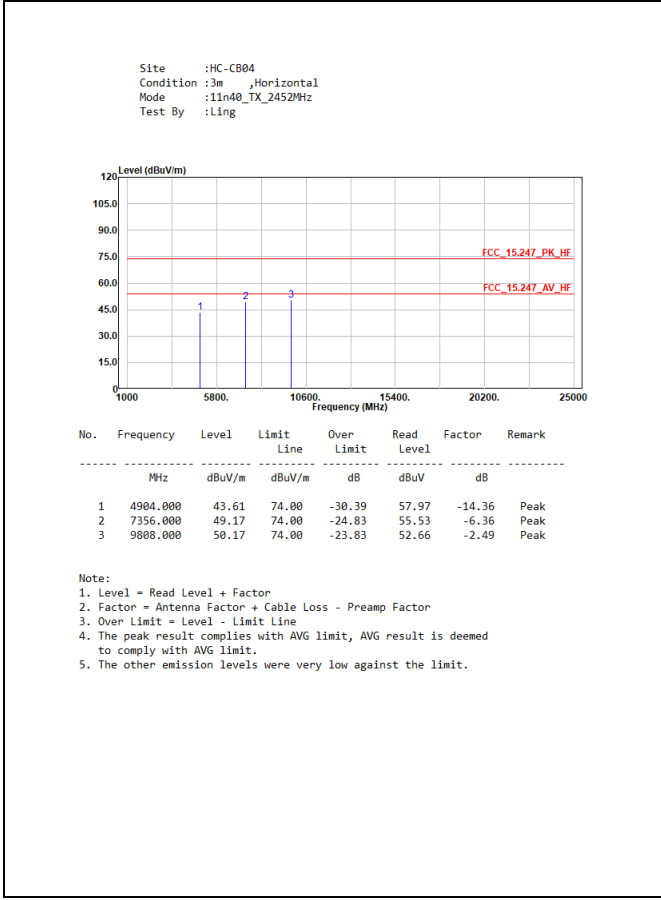
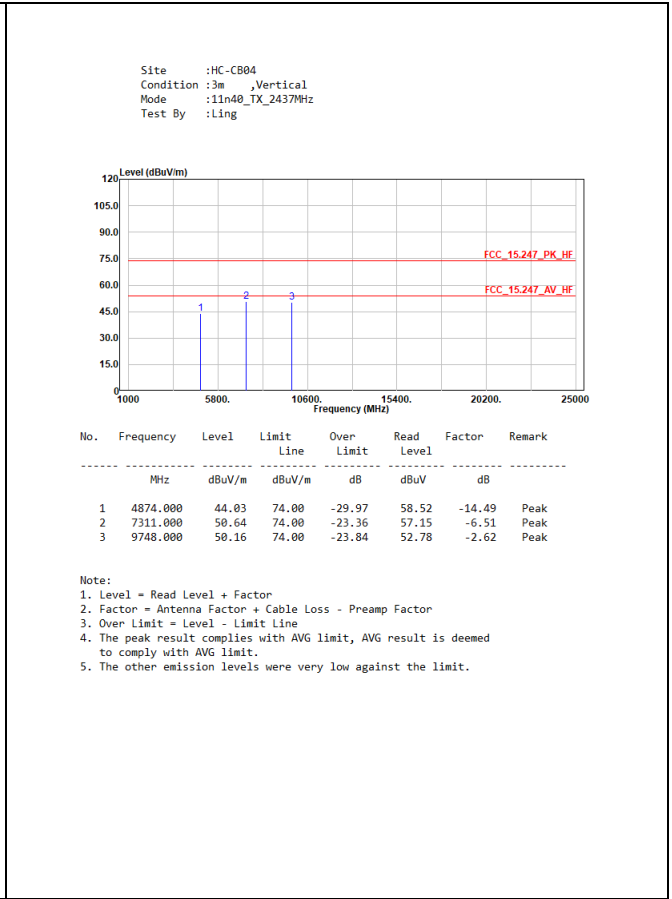
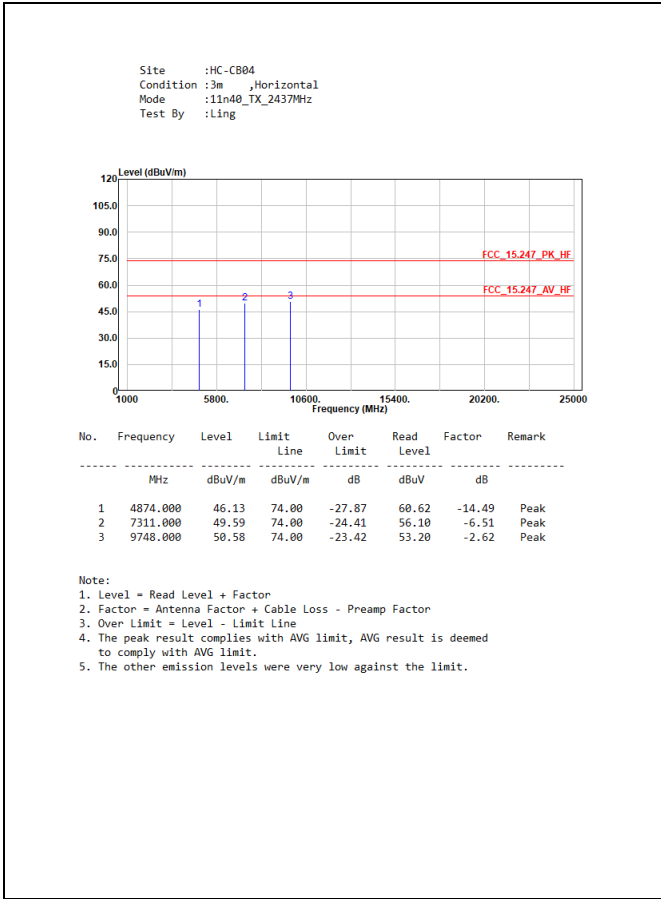
Note:
 1. Level = Read Level + Factor
 2. Factor = Antenna Factor + Cable Loss - Preamp Factor
 3. Over Limit = Level - Limit Line
 4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
 5. The other emission levels were very low against the limit.

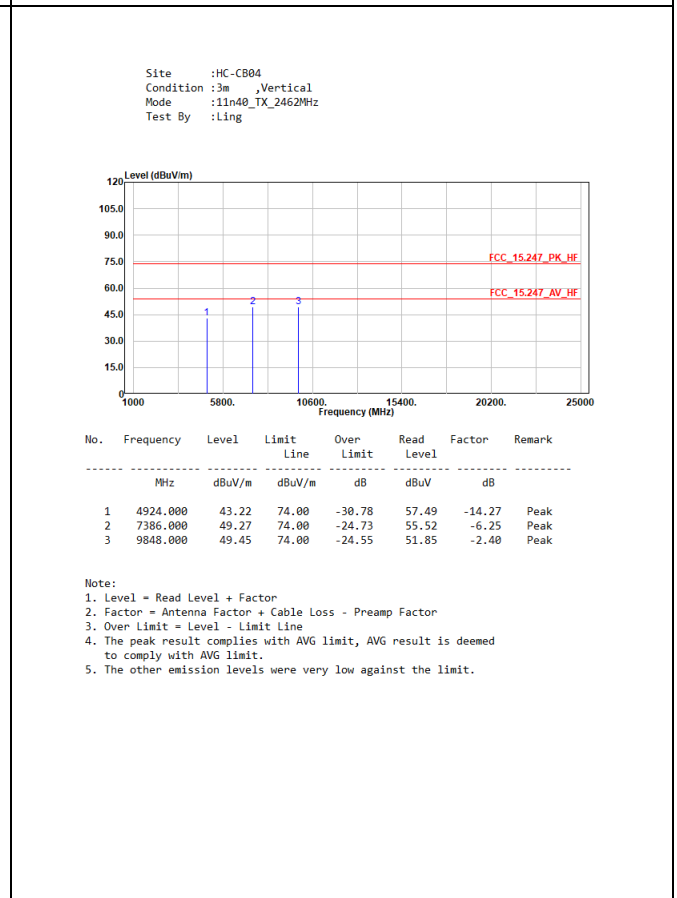
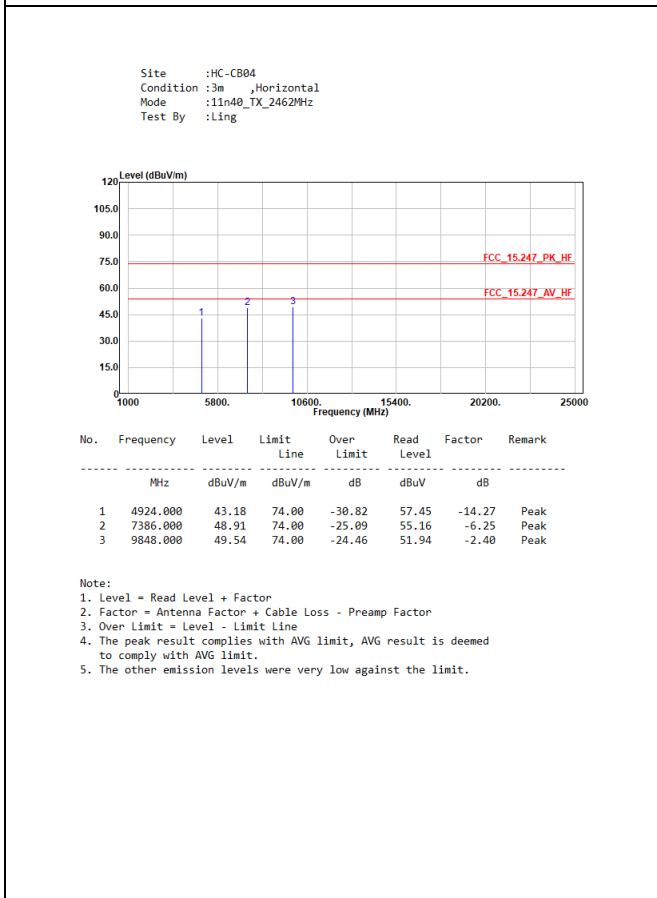
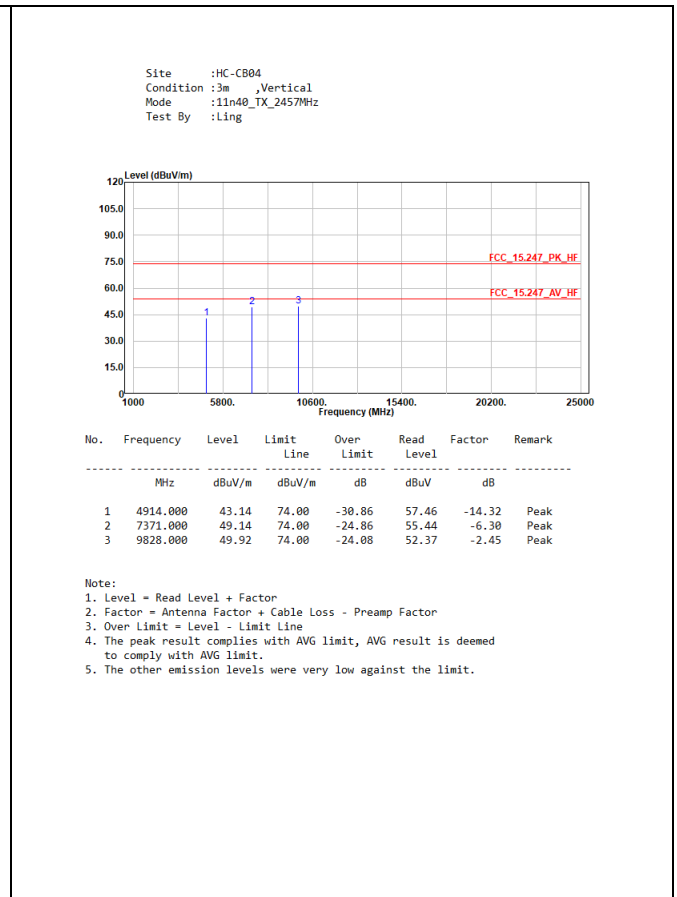
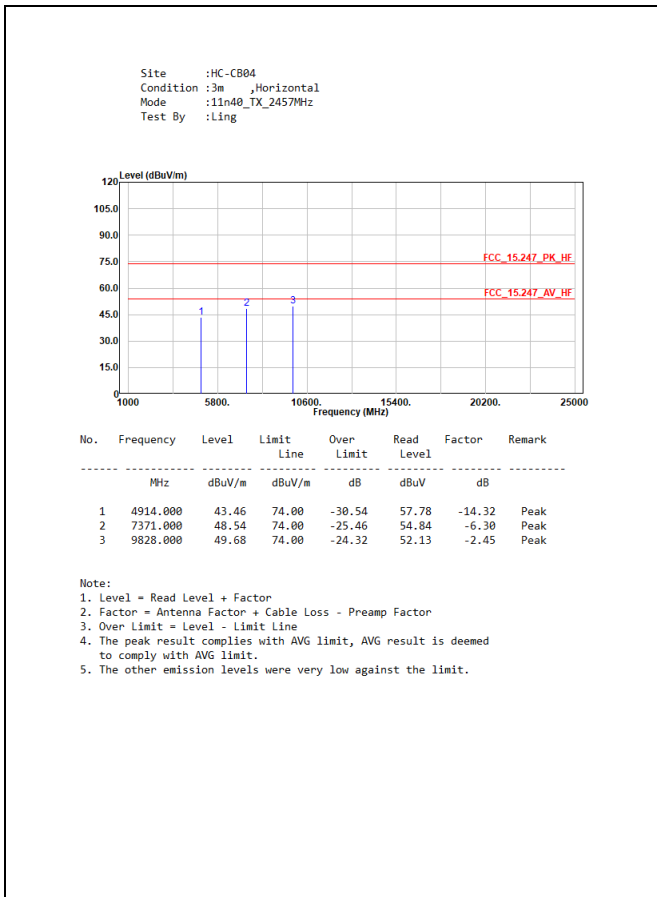






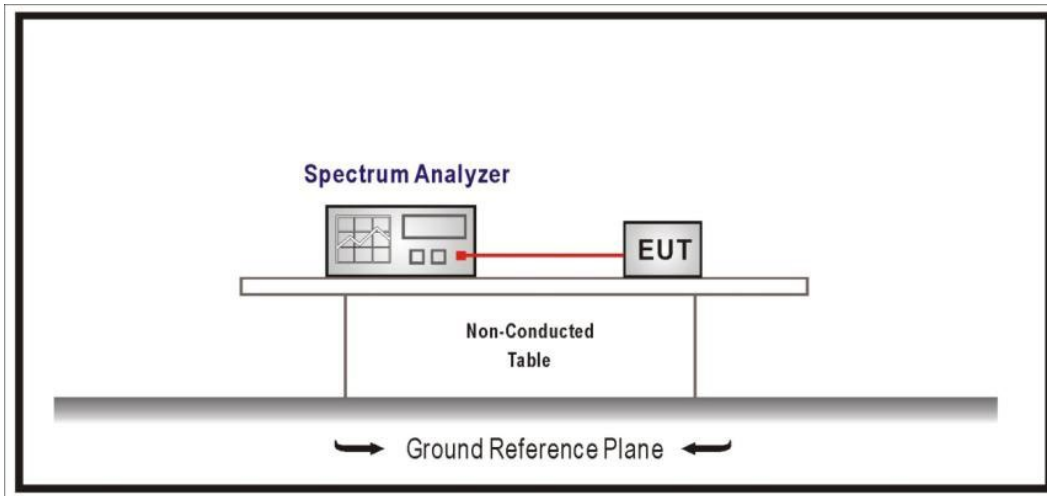






4. Antenna Port Conducted Emission

4.1. Test Setup



4.2. 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)).

4.3. Test Procedure

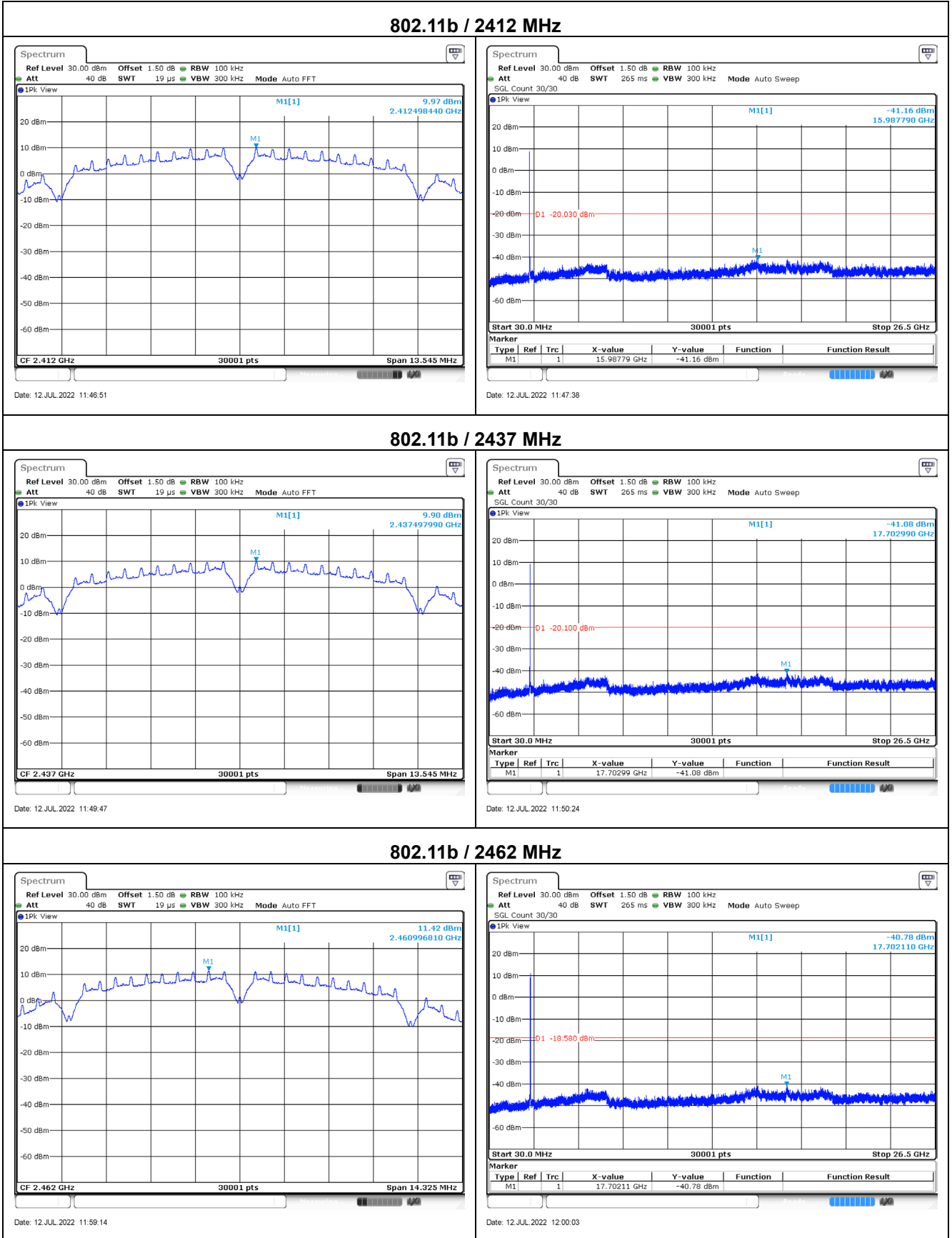
The EUT was setup according to ANSI C63.10: 2013 and tested according to DTS test procedure of KDB 558074 D01 V05r02 for compliance to FCC 47CFR 15.247 requirements.

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

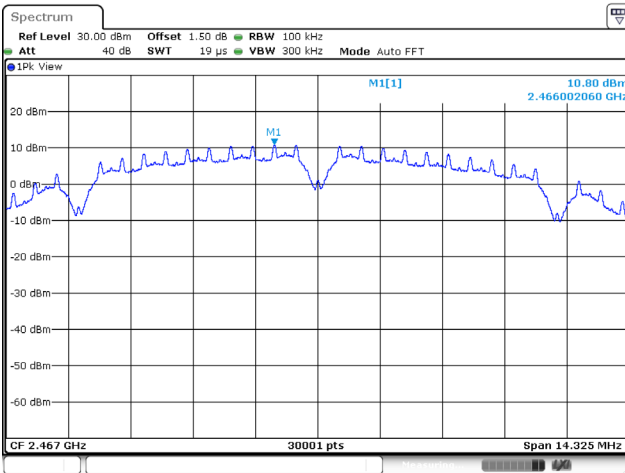
4.4. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247.

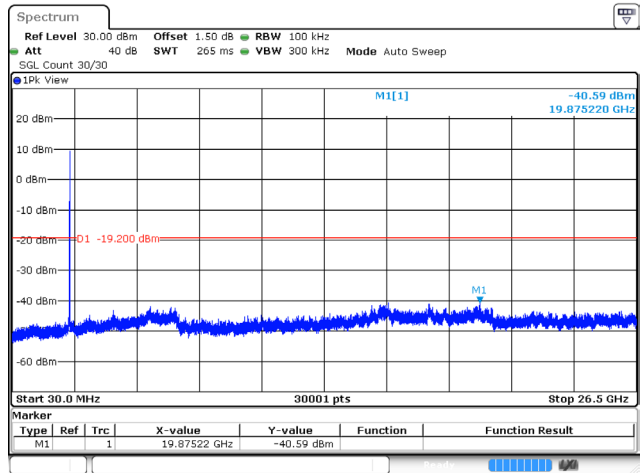
4.5. Test Result of Antenna Port Conducted Emission



802.11b / 2467 MHz

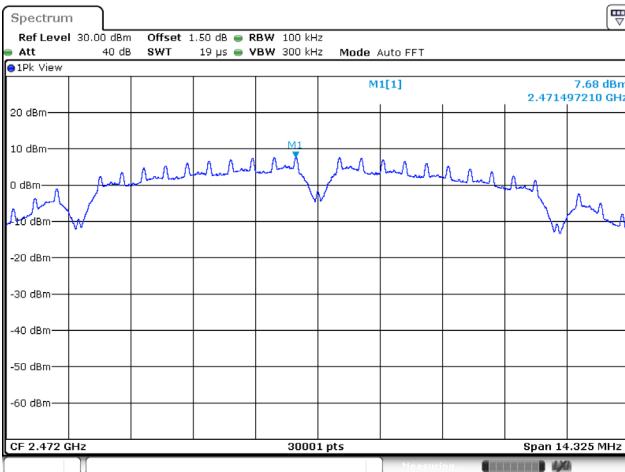


Date: 12.JUL.2022 13:07:21

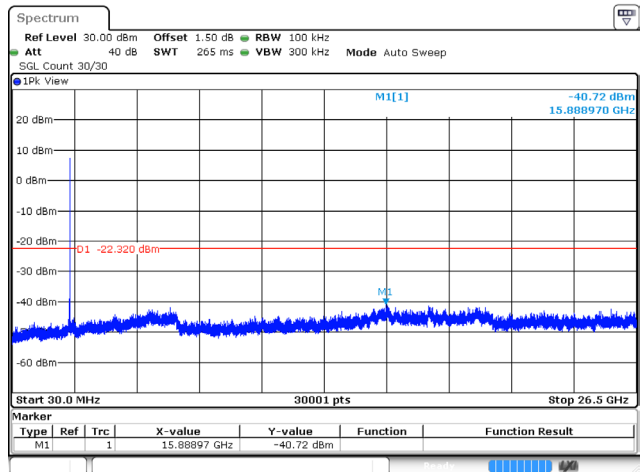


Date: 12.JUL.2022 13:08:09

802.11b / 2472 MHz

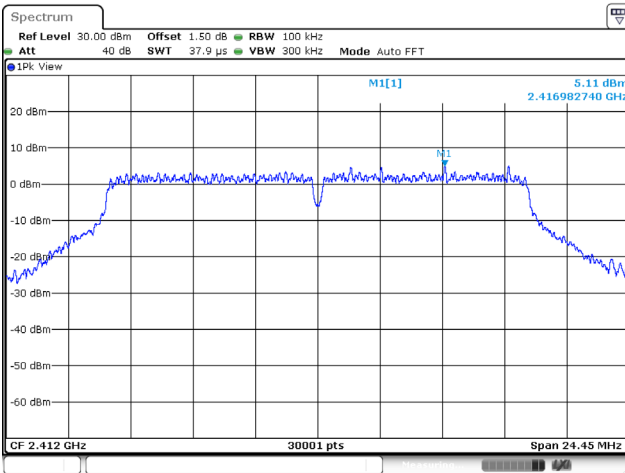


Date: 12.JUL.2022 13:15:11

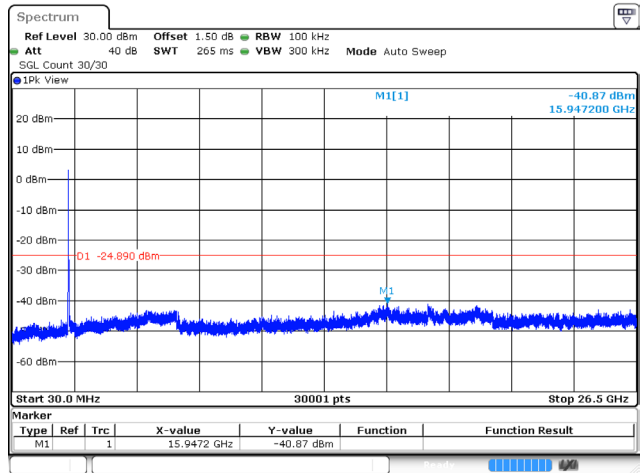


Date: 12.JUL.2022 13:16:00

802.11g / 2412 MHz

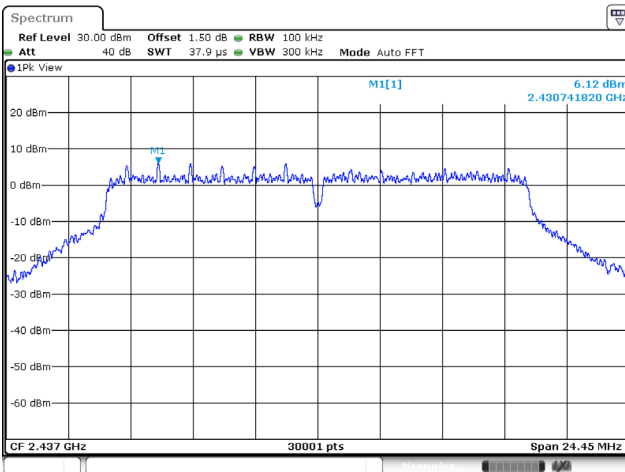


Date: 12.JUL.2022 13:29:59

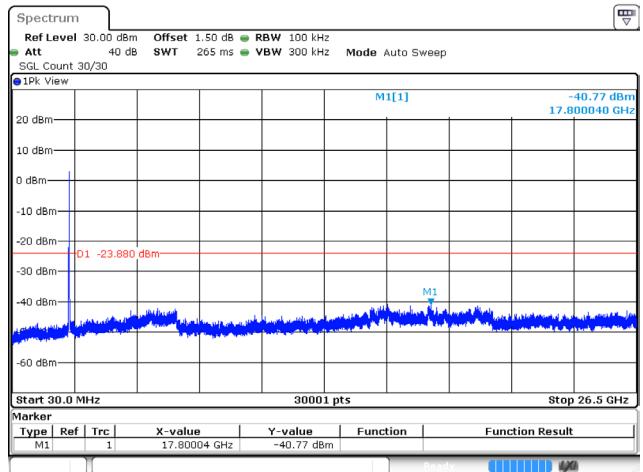


Date: 12.JUL.2022 13:30:47

802.11g / 2437 MHz

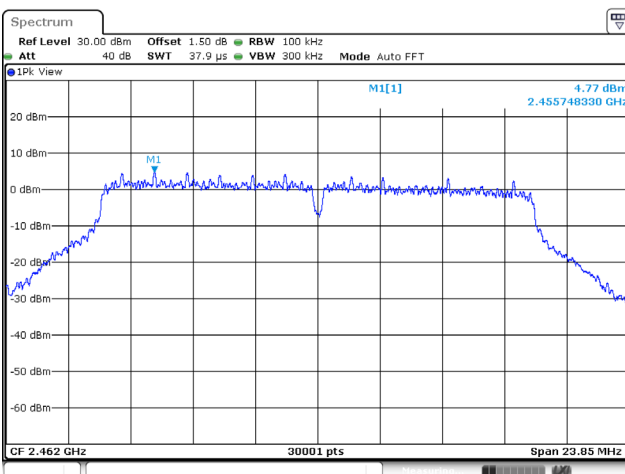


Date: 12.JUL.2022 13:27:24

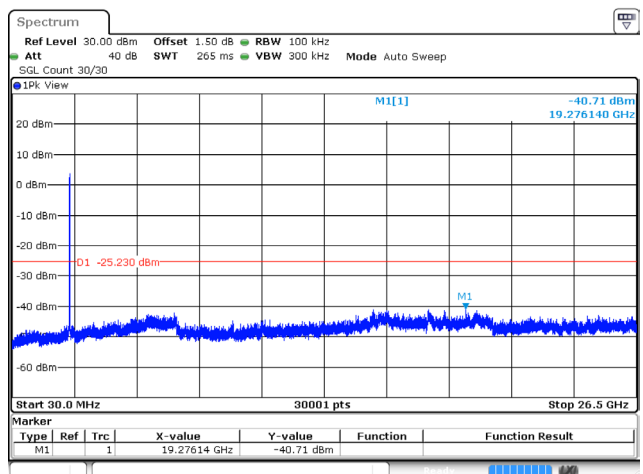


Date: 12.JUL.2022 13:28:01

802.11g / 2462 MHz

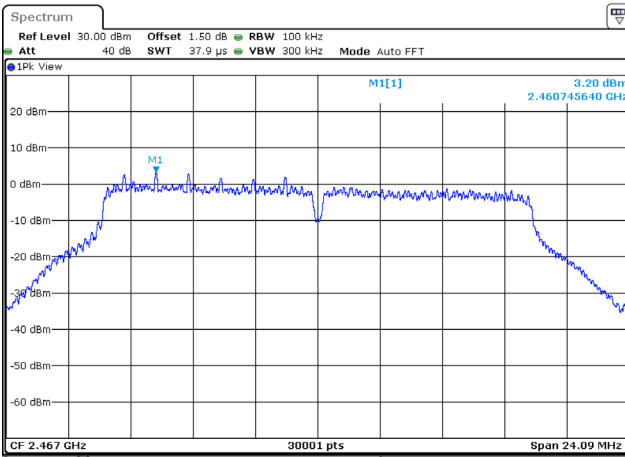


Date: 12.JUL.2022 13:23:28

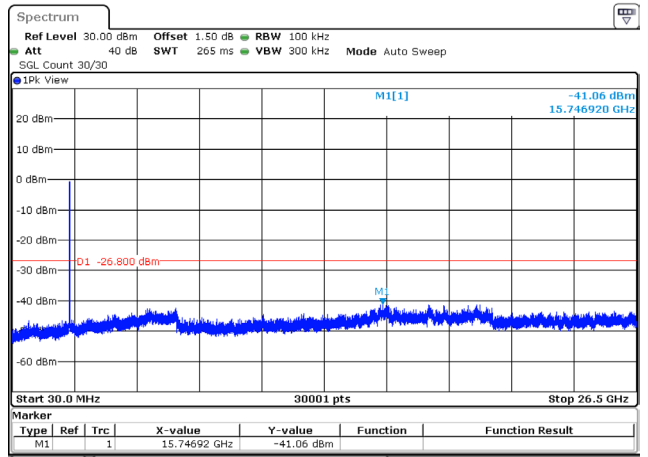


Date: 12.JUL.2022 13:24:15

802.11g / 2467 MHz

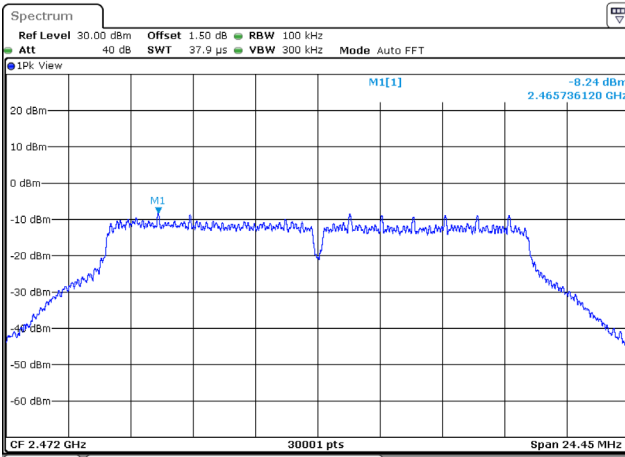


Date: 12.JUL.2022 13:20:39

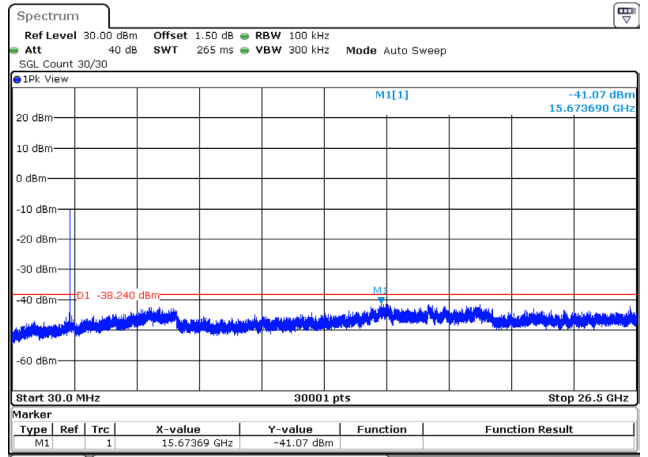


Date: 12.JUL.2022 13:21:25

802.11g / 2472 MHz

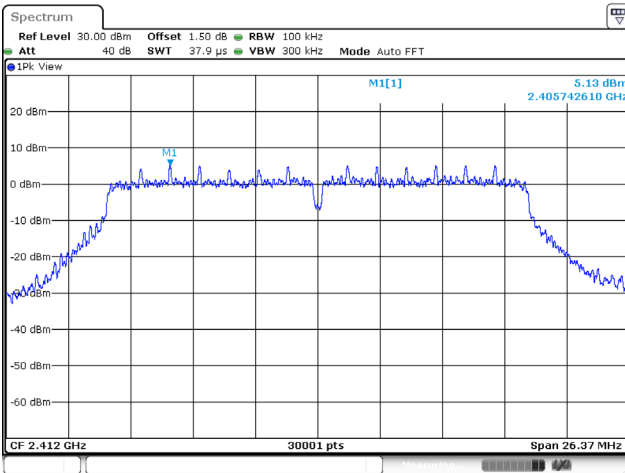


Date: 12.JUL.2022 13:17:53

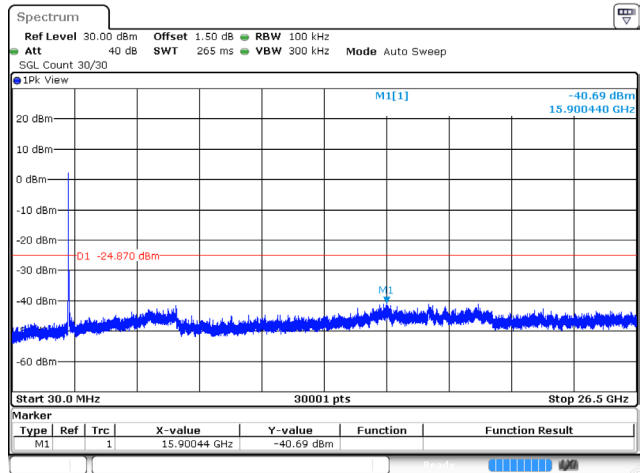


Date: 12.JUL.2022 13:18:42

802.11n (20 MHz) / 2412 MHz

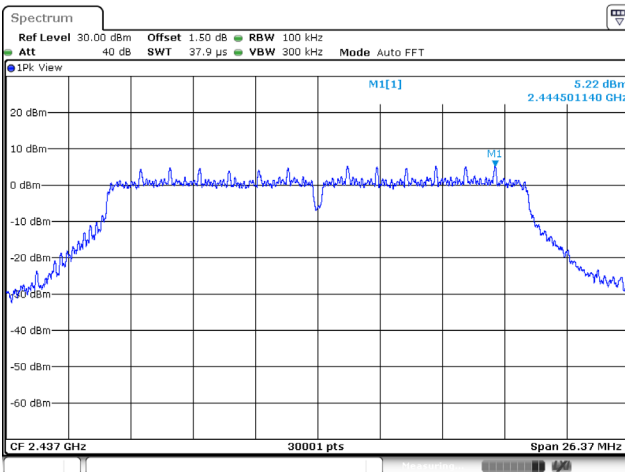


Date: 12.JUL.2022 13:38:33

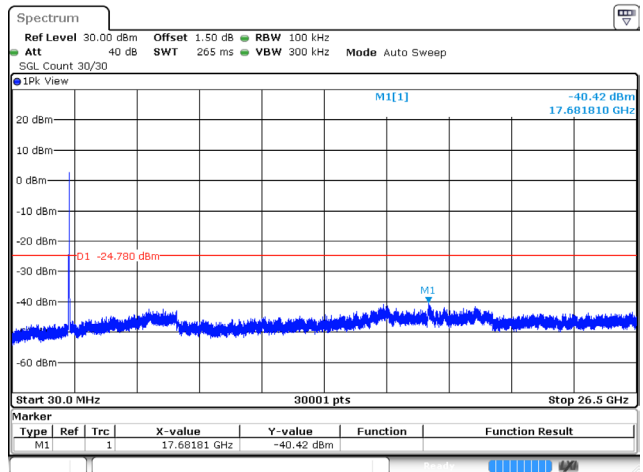


Date: 12.JUL.2022 13:39:21

802.11n (20 MHz) / 2437 MHz

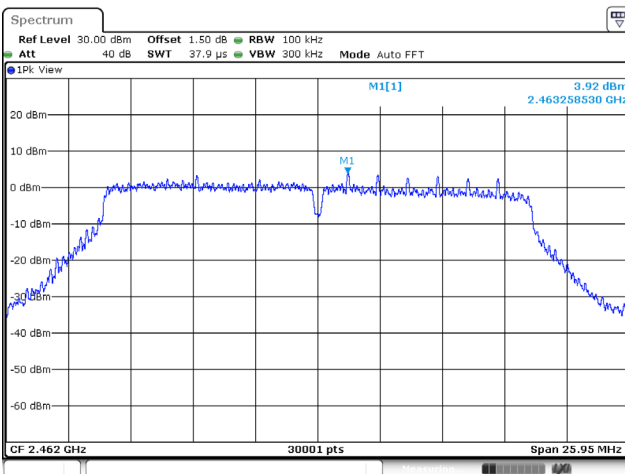


Date: 12.JUL.2022 13:42:44

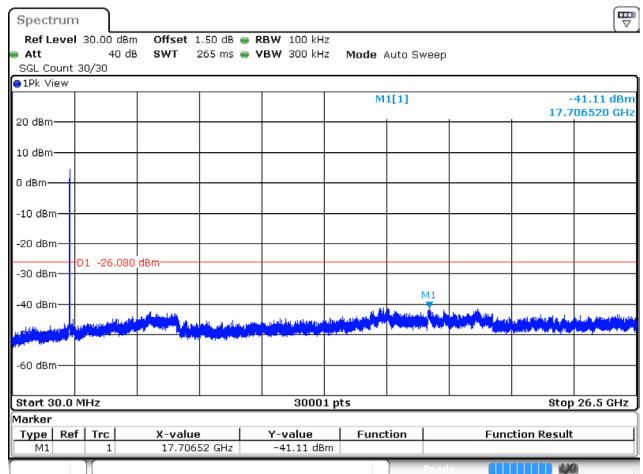


Date: 12.JUL.2022 13:43:20

802.11n (20 MHz) / 2462 MHz

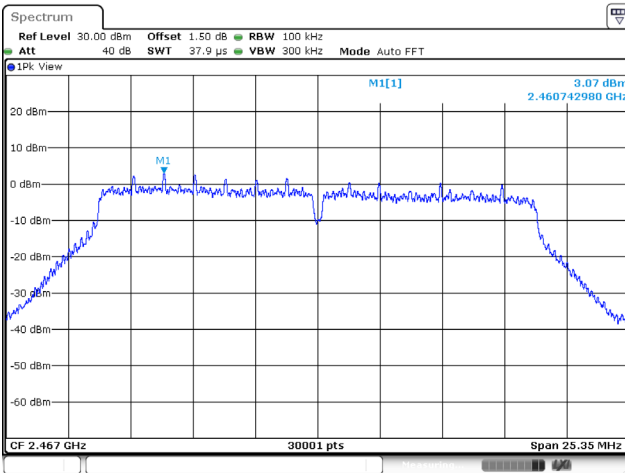


Date: 12.JUL.2022 13:51:30

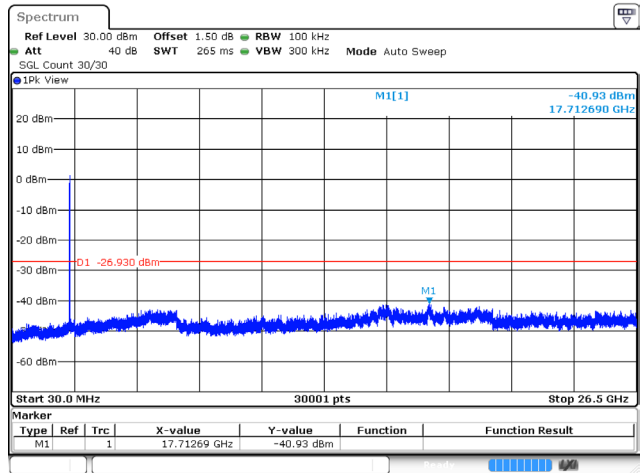


Date: 12.JUL.2022 13:52:16

802.11n (20 MHz) / 2467 MHz

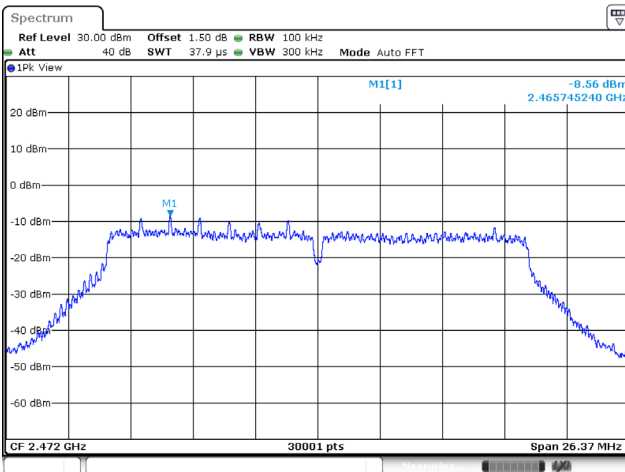


Date: 12.JUL.2022 13:53:53

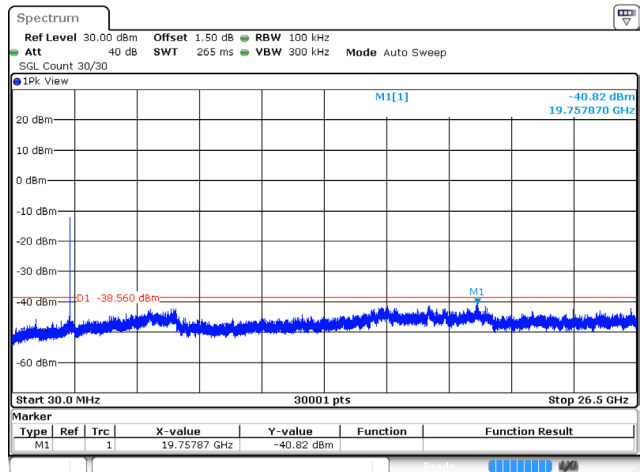


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802.11n (20 MHz) / 2472 MHz



Date: 12.JUL.2022 14:12:24



Date: 12.JUL.2022 14:13:12