

TEST REPORT

Application No.: KSCR2601000148AU
FCC ID: 2BS5K-5GY0
Applicant: Heilongjiang Tianyouwei Electronic Co., Ltd
Address of Applicant: No. 9 Kunshan Road, Economic And Technological Development Zone, Suihua City, Heilongjiang Province
Manufacturer: Heilongjiang Tianyouwei Electronic Co., Ltd
Address of Manufacturer: No. 9 Kunshan Road, Economic And Technological Development Zone, Suihua City, Heilongjiang Province
Factory: TYW MANUFACTURING MEXICO, S DE RL DE CV
Address of Factory: Zaraiche 652, Centro Industrial de Guanajuato, Cp 36835, Irapuato, Guanajuato, Mexico
Equipment Under Test (EUT):
EUT Name: Instrument Cluster
Model No.: 5GY0-MMS-01
Standard(s) : 47 CFR Part 15, Subpart C 15.247
Date of Receipt: 2026-01-16
Date of Test: 2026-01-27 to 2026-02-14
Date of Issue: 2026-02-25

Test Result:
Pass*

* In the configuration tested, the EUT complied with the standards specified above.

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Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Revision Record			
Version	Description	Date	Remark
00	Original	2026-02-25	/

Authorized for issue by:			
Tested By		Maker Qi	
		Maker_Qi/Project Engineer	
Approved By		Terry Hou	
		Terry Hou /Reviewer	

2 Test Summary

Radio Spectrum Technical Requirement				
Item	Standard	Method	Requirement	Result
Antenna Requirement	47 CFR Part 15, Subpart C 15.247	N/A	47 CFR Part 15, Subpart C 15.203 & 15.247(b)(4)	Pass

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
Radiated Emissions which fall in the restricted bands	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2020) Section 6.10.5 & 11.12	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Radiated Spurious Emissions Below 1GHz		ANSI C63.10 (2020) Section 6.4,6.5	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Radiated Spurious Emissions Above 1GHz		ANSI C63.10 (2020) Section 6.6 & 11.12	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Maximum Conducted Output Power		ANSI C63.10 (2020) Section 11.9.1	47 CFR Part 15, Subpart C 15.247(b)(3)	Pass
Minimum 6dB Bandwidth		ANSI C63.10 (2020) Section 11.8.1	47 CFR Part 15, Subpart C 15.247a(2)	Pass
Power Spectral Density		ANSI C63.10 (2020) Section 11.10.2	47 CFR Part 15, Subpart C 15.247(e)	Pass
Conducted Band Edges Measurement		ANSI C63.10 (2020) Section 6.10.4	47 CFR Part 15, Subpart C 15.247(d)	Pass
Conducted Spurious Emissions		ANSI C63.10 (2020) Section 11.11	47 CFR Part 15, Subpart C 15.247(d)	Pass

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4 General Information

4.1 Details of E.U.T.

Power supply:	DC 13.5V/0.6A 0.6*13.5W
Operation Frequency:	802.11b/g/n(HT20): 2412MHz to 2462MHz; 802.11n(HT40): 2422MHz to 2452MHz
Modulation Type:	802.11b: DSSS (DBPSK, DQPSK, CCK); 802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)
Number of Channels:	802.11b/g/n(HT20):11;802.11n(HT40):7
Channel Spacing:	5MHz
Antenna Type:	FPC Antenna
Antenna Gain:	6.5dBi (Provided by the manufacturer)

4.2 Power level setting using in test

Channel	11b	11g	11n20
1	18.5	10.5	10
6	18.5	10.5	10
11	18.5	10.5	10
Channel	11n40		
3	9.5		
6	9.5		
9	9.5		

4.3 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
DC power supply	Agilent	E3632A	/
Notebook	LENOVO	K27	EB24537645

4.4 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	8.4×10^{-8}
2	Timeout	2s
3	Duty Cycle	0.37%
4	Occupied Bandwidth	3%
5	RF Conducted Power	0.6dB
6	RF Power Density	2.9dB
7	Conducted Spurious Emissions	0.75dB
8	RF Radiated Power	5.2dB (Below 1GHz)
		5.9dB (Above 1GHz)
9	Radiated Spurious Emission Test	4.2dB (Below 30MHz)
		4.5dB (30MHz-1GHz)
		5.1dB (1GHz-18GHz)
		5.4dB (Above 18GHz)
10	Temperature Test	1°C
11	Humidity Test	3%
12	Supply Voltages	1.5%
13	Time	3%
Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.		

4.5 Test Location

All tests were performed at:

Compliance Certification Services (Kunshan) Inc.

No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China.

Tel: +86 512 5735 5888 Fax: +86 512 5737 0818

No tests were sub-contracted.

Note:

1. SGS is not responsible for wrong test results due to incorrect information (e.g., max. internal working frequency, antenna gain, cable loss, etc) is provided by the applicant. (If applicable).
2. SGS is not responsible for the authenticity, integrity and the validity of the conclusion based on results of the data provided by applicant. (If applicable).
3. Sample source: sent by customer.

4.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **A2LA (Certificate No. 2541.01)**

Compliance Certification Services (Kunshan) Inc. is accredited by the American Association for Laboratory Accreditation (A2LA).

- **FCC (Designation Number: CN1172)**

Compliance Certification Services (Kunshan) Inc. has been recognized as an accredited testing laboratory.

- **ISED (CAB Identifier: CN0072)**

Compliance Certification Services (Kunshan) Inc. has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory.

Company Number: 2324E

- **VCCI (Member No:1938)**

The 3m and 10m Semi-anechoic chamber and Shielded Room of Compliance Certification Services (Kunshan) Inc. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-20134, R-11600, C-11707, T-11499, G-10216 respectively.

4.7 Deviation from Standards

None

4.8 Abnormalities from Standard Conditions

None

5 Equipment List

Item	Equipment	Manufacturer	Model	Inventory No	Cal Date	Cal. Due Date
RF Conducted Test						
1	Spectrum Analyzer	Keysight	N9020A	KUS1911E004-2	07/09/2025	07/08/2026
2	Spectrum Analyzer	Keysight	N9020A	KUS2001M001-2	07/09/2025	07/08/2026
3	Spectrum Analyzer	Keysight	N9030B	KSEM021-1	12/17/2025	12/16/2026
4	Signal Generator	R&S	SMBV100B	KSEM032	12/17/2025	12/16/2026
5	Signal Generator	R&S	SMW200A	KSEM020-1	07/09/2025	07/08/2026
6	Signal Generator	Agilent	N5182A	KUS2001M001-1	07/08/2025	07/07/2026
7	Signal Generator	Agilent	E8257C	KS301066	07/22/2025	07/21/2026
8	Radio Communication Test Station	Anritsu	MT8000A	KSEM001-1	07/09/2025	07/08/2026
9	Radio Communication Analyzer	Anritsu	MT8821C	KSEM002-1	12/17/2025	12/16/2026
10	Universal Radio Communication Tester	R&S	CMW500	KUS1911E004-1	07/08/2025	07/07/2026
11	Switcher	TST	FY562	KUS2001M001-4	12/17/2025	12/16/2026
12	Conducted Test Cable	Thermax	RF01-RF04	CZ301111-CZ301120	12/17/2025	12/16/2026
13	Temp. / Humidity Chamber	TERCHY	MHK-120AK	KS301190	07/15/2025	07/14/2026
14	Temperature & Humidity Recorder	Renke Control	RS-WS-N01-6J	KSEM024-5	12/30/2025	12/29/2026
15	Software	BST	TST-PASS	/	NCR	NCR
RF Radiated Test						
1	Spectrum Analyzer	R&S	FSV40	KUS1806E003	07/09/2025	07/08/2026
2	Universal Radio Communication Tester	R&S	CMW500	KSEM009-1	12/17/2025	12/16/2026
3	Signal Generator	Agilent	E8257C	KS301066	07/22/2025	07/21/2026
4	Loop Antenna (9KHz-30MHz)	COM-POWER	AL-130R	KUS1806E001	07/11/2025	07/10/2026
5	Bilog Antenna (30MHz-1GHz)	TESEQ	CBL 6112D	KUS1806E005	07/12/2025	07/11/2026
6	Horn-antenna(1-18GHz)	Schwarzbeck	BBHA9120D	KS301079	01/11/2026	01/10/2028
7	Horn Antenna(18-40GHz)	Schwarzbeck	BBHA9170	CZ301058	01/11/2026	01/10/2028
8	Amplifier(30MHz~1GHz)	TST	LNA009100G30	KSEM061	12/18/2025	12/17/2026
9	Amplifier(400MHz~8GHz)	TST	LNA004080G30	KSEM062	12/18/2025	12/17/2026
10	Amplifier(1GHz~18GHz)	TST	LNA010180G45	KSEM039	07/09/2025	07/08/2026
11	Amplifier(18~40GHz)	TST	LNA180400G40	KSEM038	07/09/2025	07/08/2026
12	Temperature & Humidity Recorder	Renke Control	RS-WS-N01-6J	KSEM024-4	12/30/2025	12/29/2026
13	Software	ESE	E3_V 6.111221a	/	NCR	NCR
14	Measurement Software	Tonscend	JS32-RE V5.0.0.1	/	NCR	NCR



15	Measurement Software	Tonscend	JS32-RSE V5.0.0.0	/	NCR	NCR
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6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203 & 15.247(b)(4)

6.1.2 Conclusion

Standard Requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:

The antenna is FPC Antenna and no consideration of replacement. The best case gain of the antenna is 6.5dBi.

Antenna location: Refer to internal photo.

7 Radio Spectrum Matter Test Results

7.1 Radiated Emissions which fall in the restricted bands

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209

Test Method: ANSI C63.10 (2020) Section 6.10.5 & 11.12

Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 22.6 °C

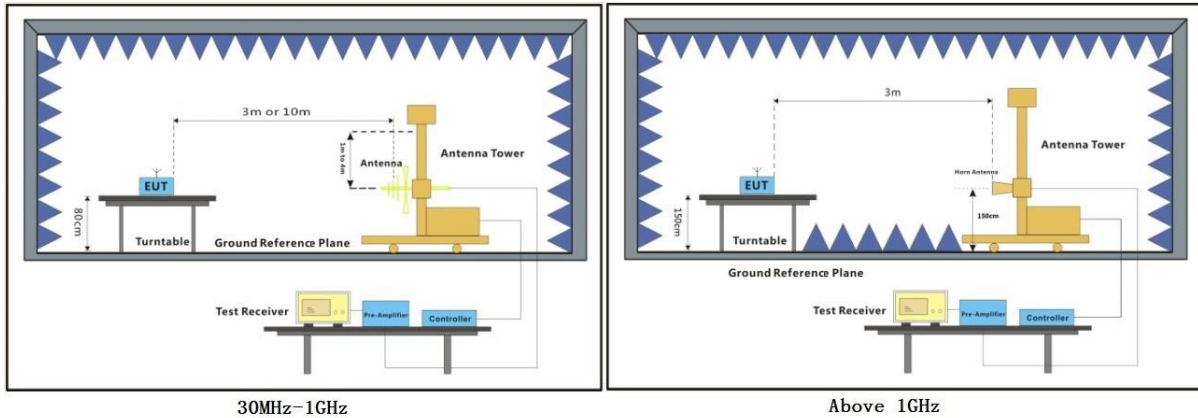
Humidity: 47.6 % RH

Atmospheric Pressure: 1010 mbar

7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.

7.1.3 Test Setup Diagram



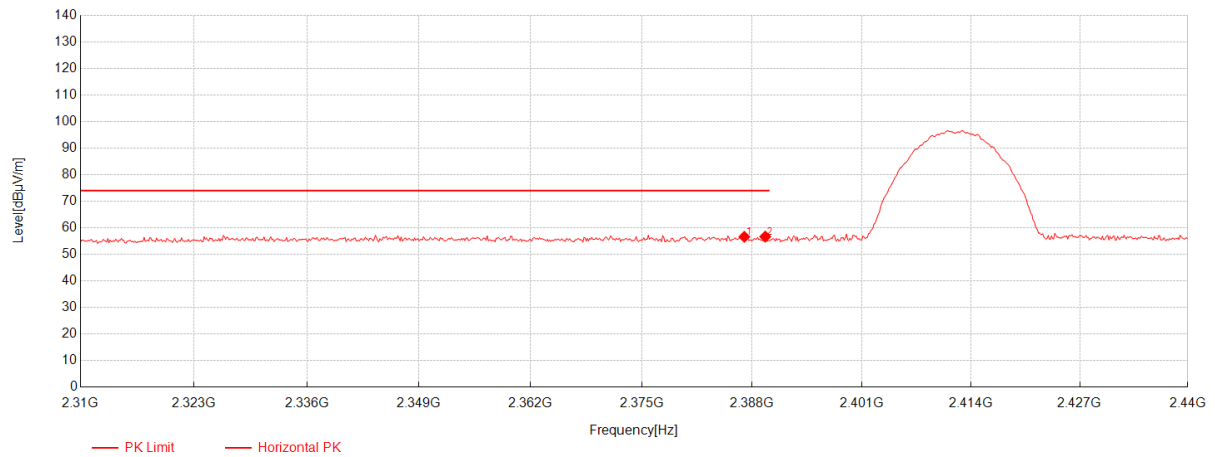
7.1.4 Measurement Procedure and Data

- For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- Test the EUT in the lowest channel, the middle channel, the Highest channel.
- The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- Repeat above procedures until all frequencies measured was complete.

Remark 1: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

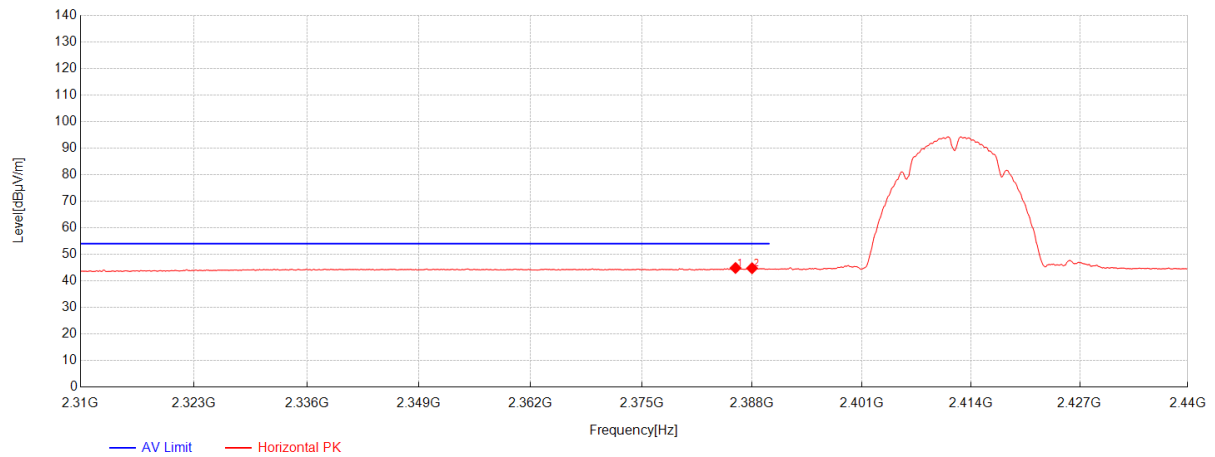
Remark 2: For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

11b_TX_CH_01_Horizontal_Peak



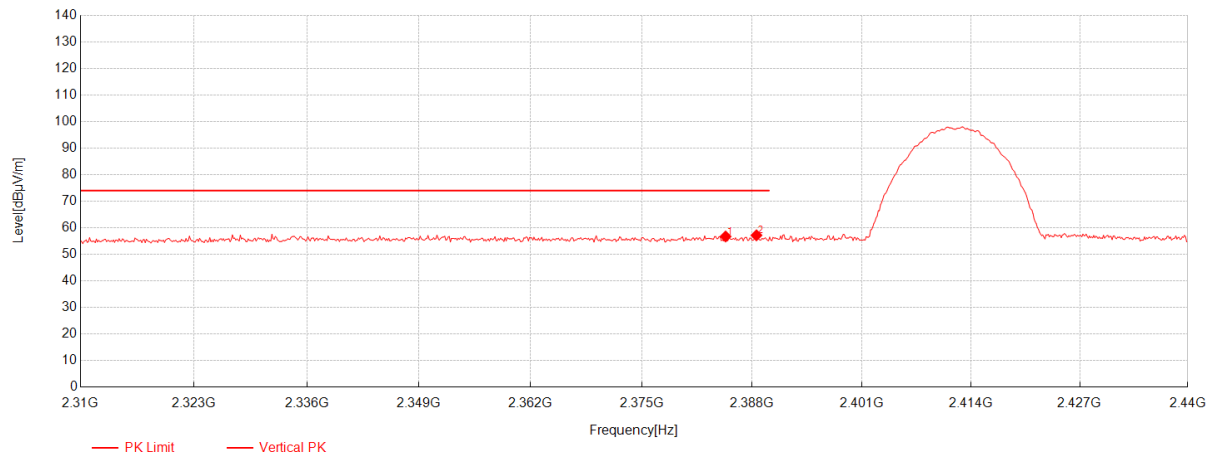
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2387.09	56.05	26.67	-26.14	56.58	74.00	17.42	Horizontal
2	2389.56	56.08	26.70	-26.13	56.65	74.00	17.35	Horizontal

11b_TX_CH_01_Horizontal_Average



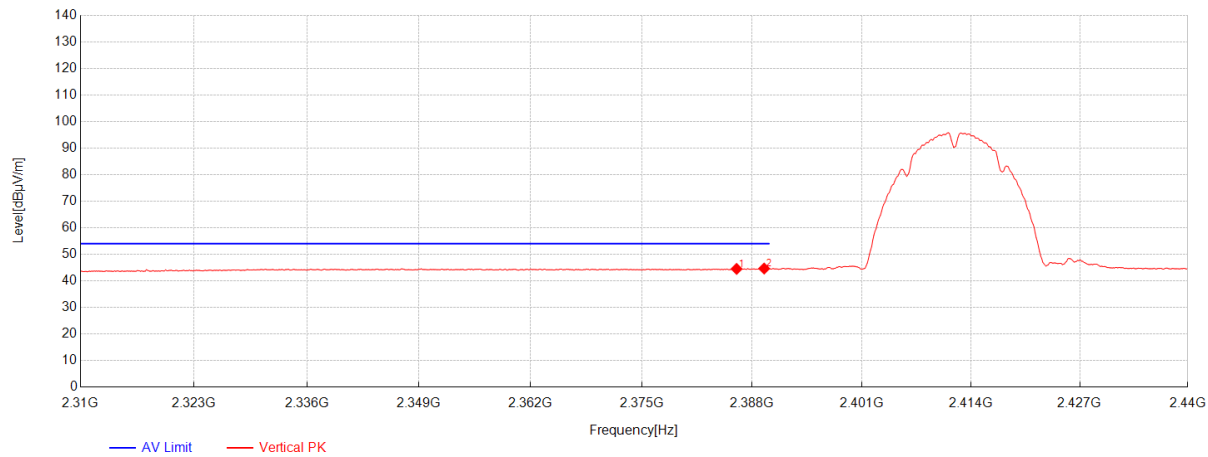
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2386.05	44.34	26.66	-26.15	44.85	54.00	9.15	Horizontal
2	2388	44.20	26.68	-26.14	44.74	54.00	9.26	Horizontal

11b_TX_CH_01_Vertical_Peak



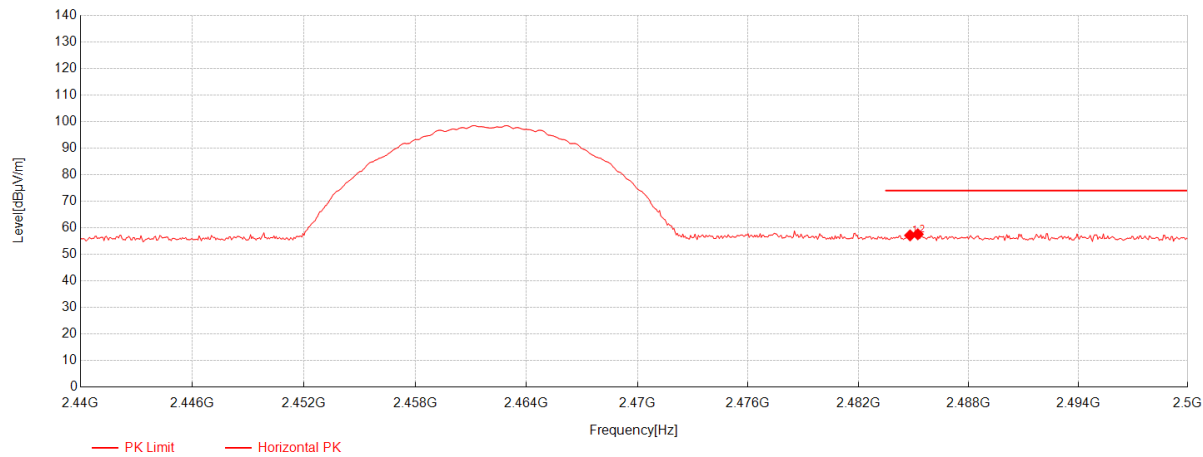
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2384.88	56.19	26.65	-26.15	56.69	74.00	17.31	Vertical
2	2388.52	56.58	26.69	-26.13	57.14	74.00	16.86	Vertical

11b_TX_CH_01_Vertical_Average



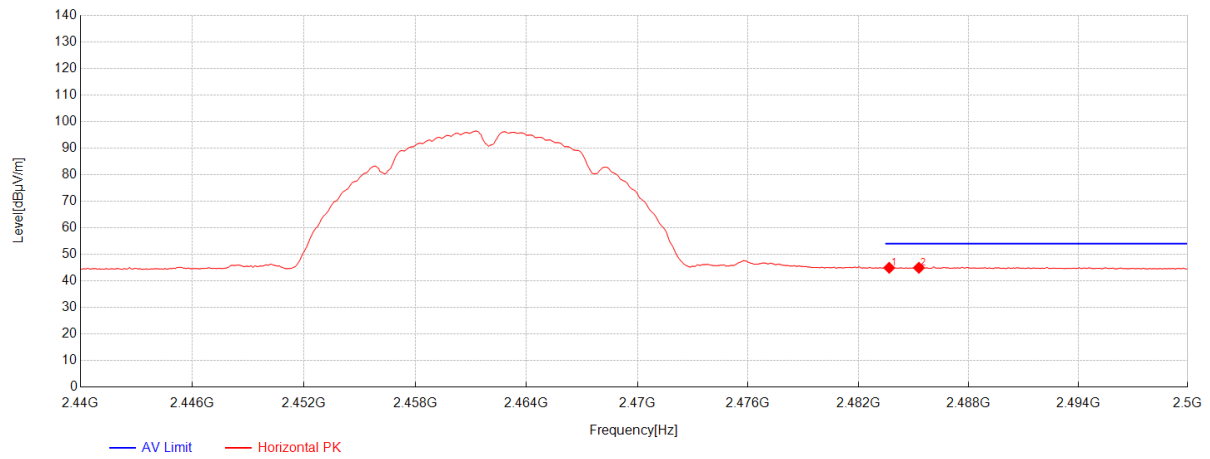
Data List								
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity
1	2386.18	43.98	26.66	-26.14	44.50	54.00	9.50	Vertical
2	2389.43	44.08	26.69	-26.13	44.64	54.00	9.36	Vertical

11b_TX_CH_11_Horizontal_Peak



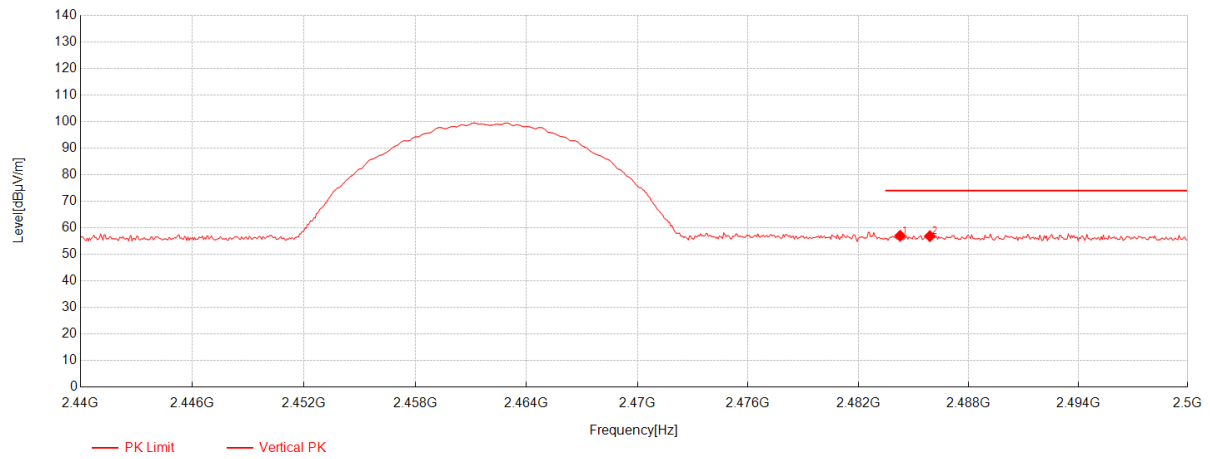
Data List								
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity
1	2484.82	56.20	27.15	-26.24	57.11	74.00	16.89	Horizontal
2	2485.24	56.63	27.15	-26.24	57.54	74.00	16.46	Horizontal

11b_TX_CH_11_Horizontal_Average



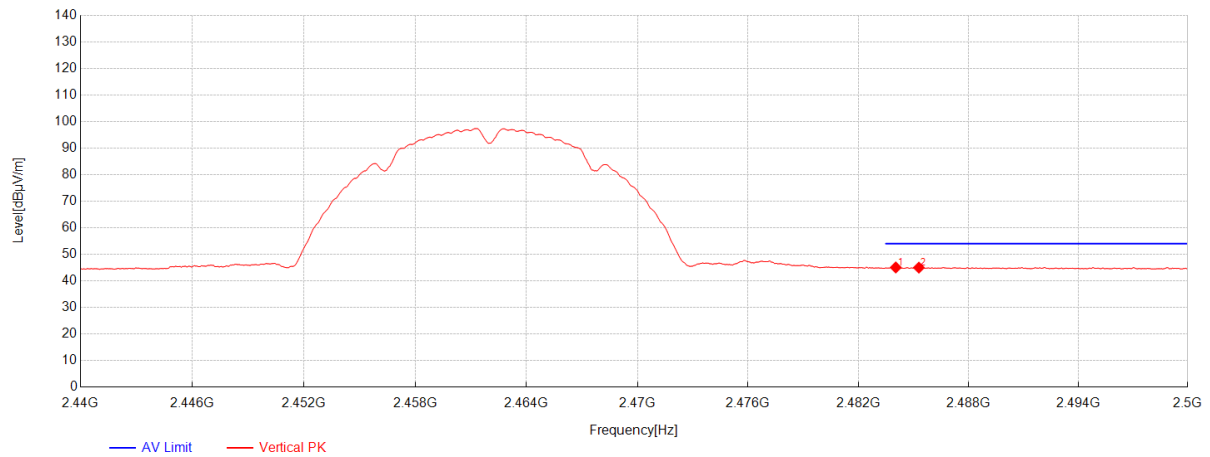
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2483.68	43.99	27.16	-26.24	44.91	54.00	9.09	Horizontal
2	2485.3	44.00	27.15	-26.24	44.91	54.00	9.09	Horizontal

11b_TX_CH_11_Vertical_Peak



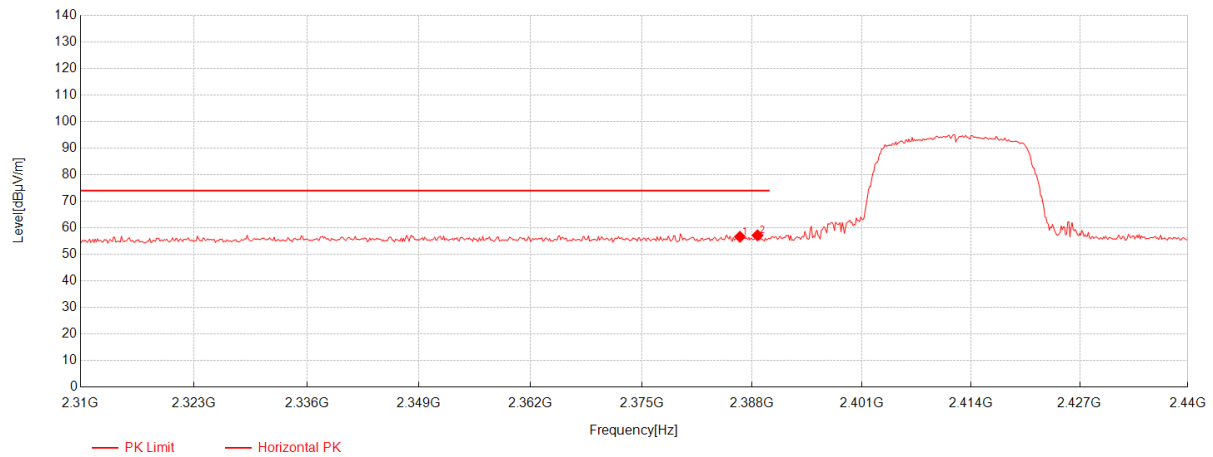
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2484.28	56.02	27.16	-26.24	56.94	74.00	17.06	Vertical
2	2485.9	55.93	27.14	-26.24	56.83	74.00	17.17	Vertical

11b_TX_CH_11_Vertical_Average



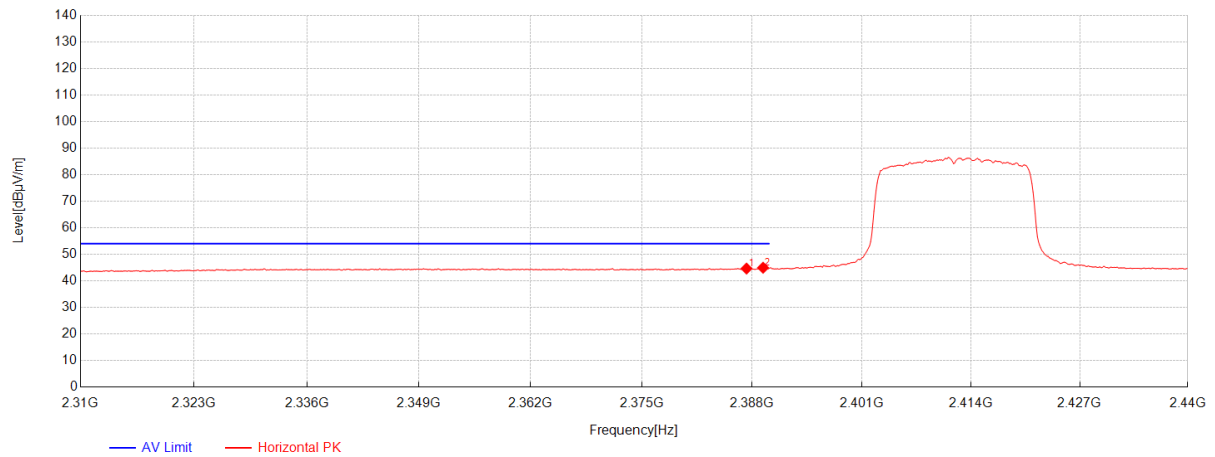
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2484.04	44.12	27.16	-26.24	45.04	54.00	8.96	Vertical
2	2485.3	44.06	27.15	-26.24	44.97	54.00	9.03	Vertical

11n(HT20)_TX_CH_01_Horizontal_Peak



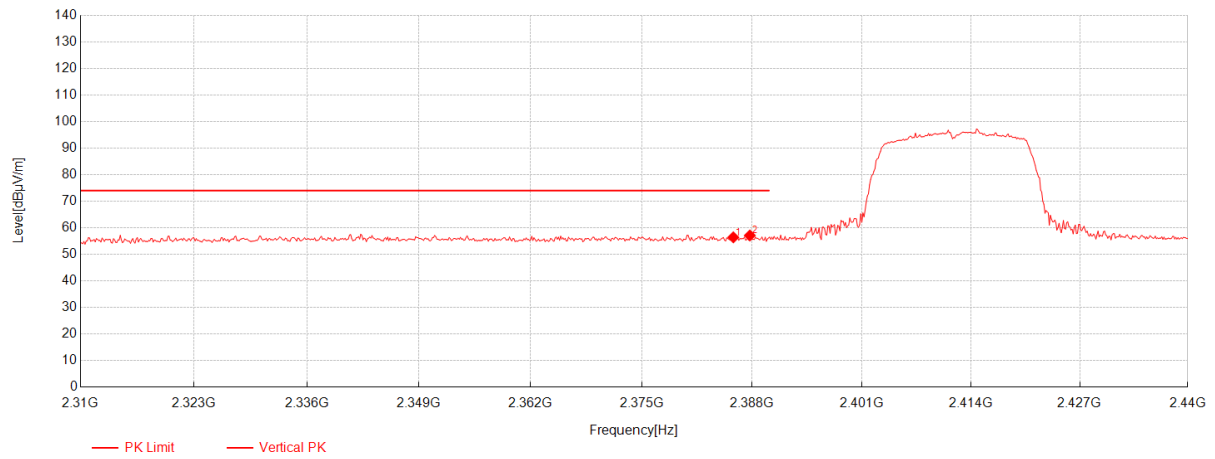
Data List								
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1	2386.57	56.06	26.67	-26.14	56.59	74.00	17.41	Horizontal
2	2388.65	56.57	26.69	-26.13	57.13	74.00	16.87	Horizontal

11n(HT20)_TX_CH_01_Horizontal_Average



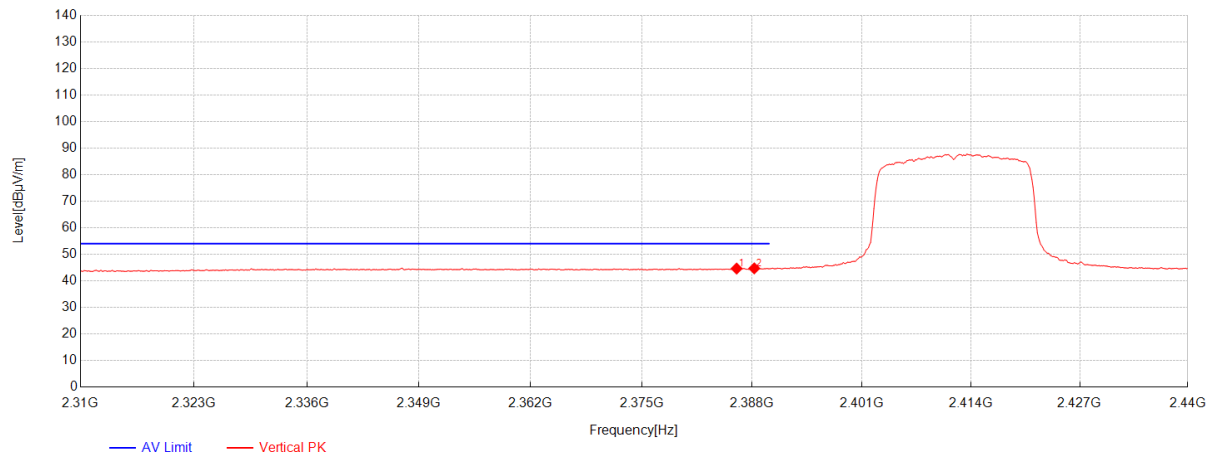
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2387.35	44.10	26.67	-26.14	44.63	54.00	9.37	Horizontal
2	2389.3	44.38	26.69	-26.13	44.94	54.00	9.06	Horizontal

11n(HT20)_TX_CH_01_Vertical_Peak



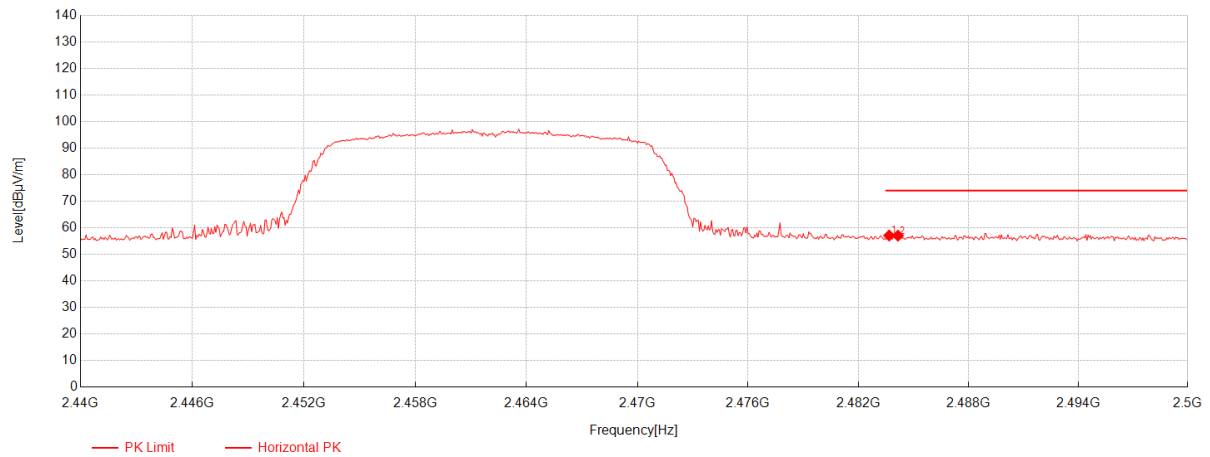
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2385.79	55.87	26.66	-26.15	56.38	74.00	17.62	Vertical
2	2387.74	56.54	26.68	-26.14	57.08	74.00	16.92	Vertical

11n(HT20)_TX_CH_01_Vetical_Average



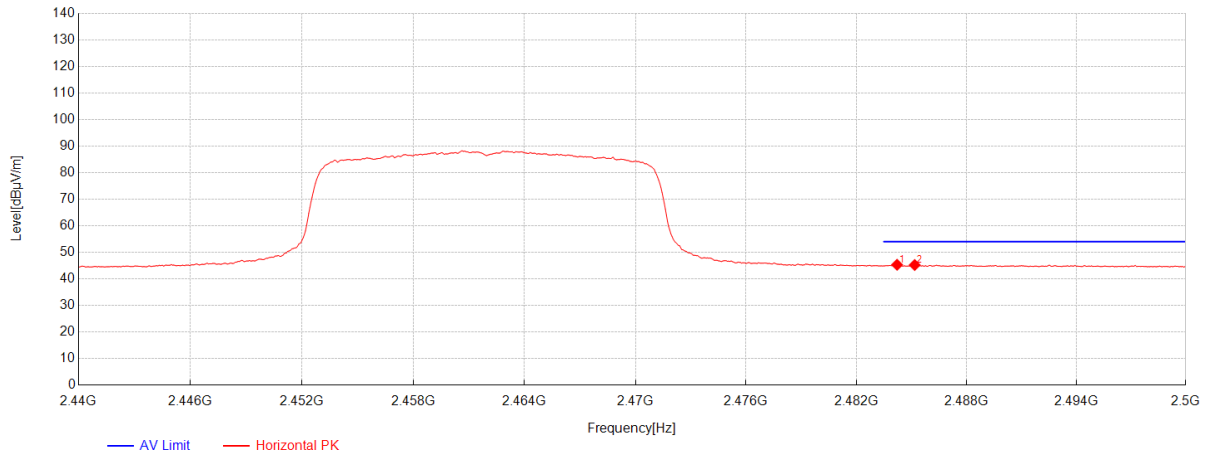
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2386.18	44.11	26.66	-26.14	44.63	54.00	9.37	Vertical
2	2388.26	44.16	26.68	-26.14	44.70	54.00	9.30	Vertical

11n(HT20)_TX_CH_11_Horizontal_Peak



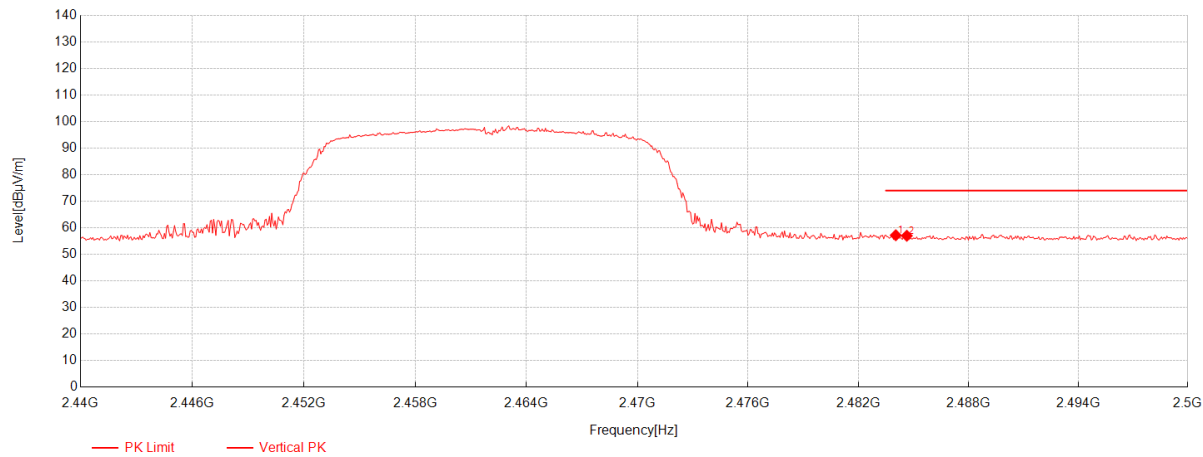
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2483.68	56.15	27.16	-26.24	57.07	74.00	16.93	Horizontal
2	2484.16	56.09	27.16	-26.24	57.01	74.00	16.99	Horizontal

11n(HT20)_TX_CH_11_Horizontal_Average



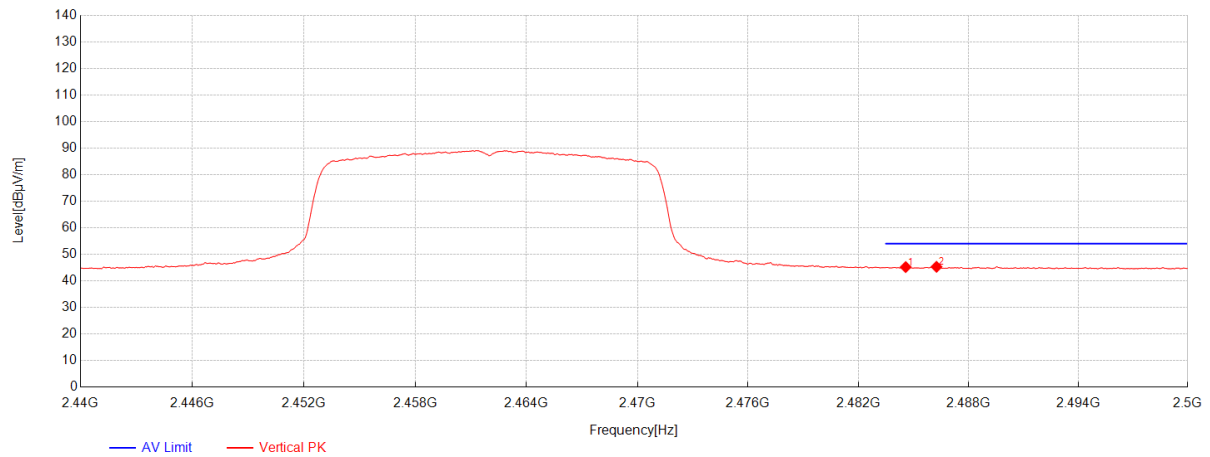
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2484.22	44.38	27.16	-26.24	45.30	54.00	8.70	Horizontal
2	2485.18	44.31	27.15	-26.24	45.22	54.00	8.78	Horizontal

11n(HT20)_TX_CH_11_Vetical_Peak



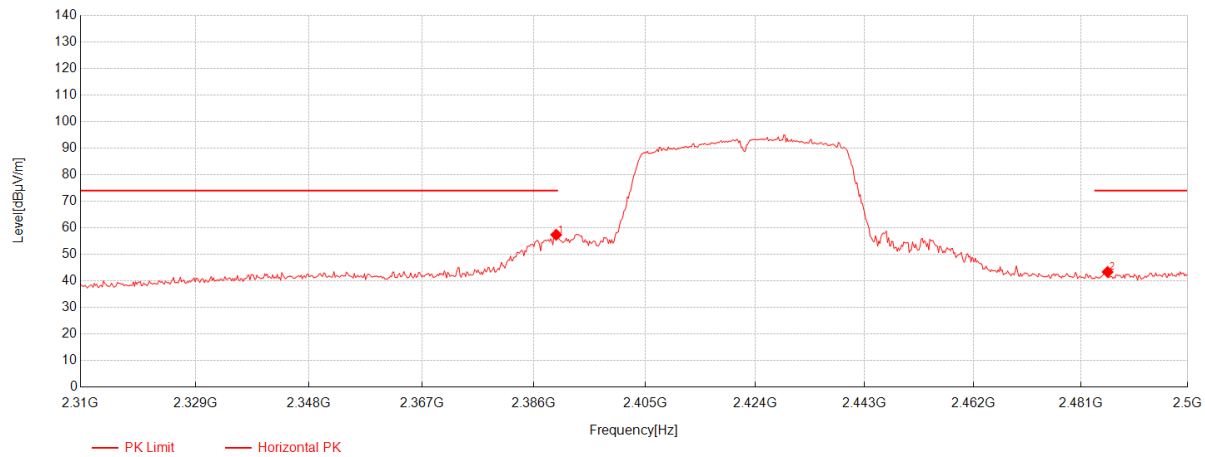
Data List								
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity
1	2484.04	56.25	27.16	-26.24	57.17	74.00	16.83	Vertical
2	2484.64	56.06	27.15	-26.24	56.97	74.00	17.03	Vertical

11n(HT20)_TX_CH_11_Vertical_Average



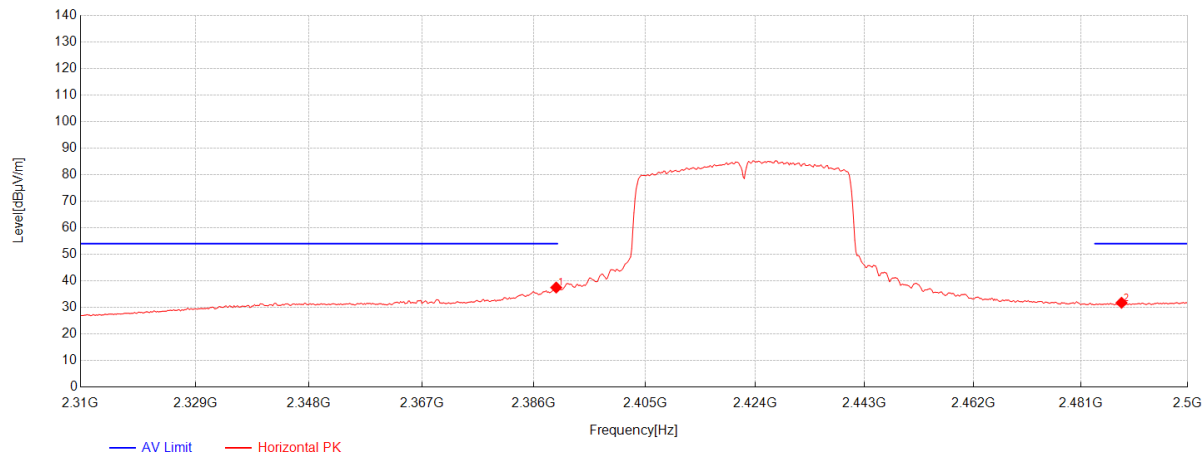
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2484.58	44.28	27.15	-26.24	45.19	54.00	8.81	Vertical
2	2486.26	44.38	27.14	-26.24	45.28	54.00	8.72	Vertical

11n(HT40)_TX_CH_03_Horizontal_Peak



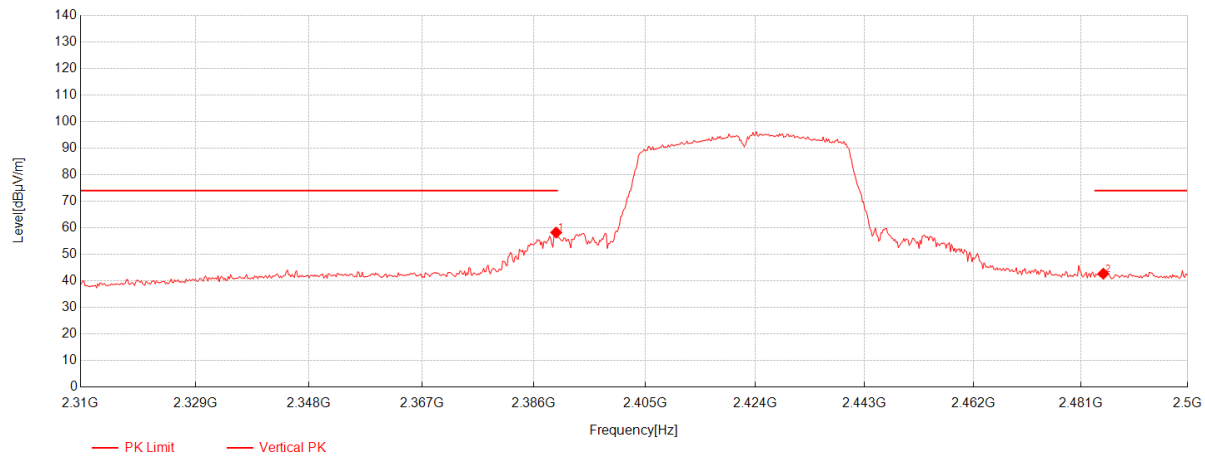
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2389.8	56.78	26.70	-26.13	57.35	74.00	16.65	Horizontal
2	2485.75	42.45	27.14	-26.24	43.35	74.00	30.65	Horizontal

11n(HT40)_TX_CH_03_Horizontal_Average



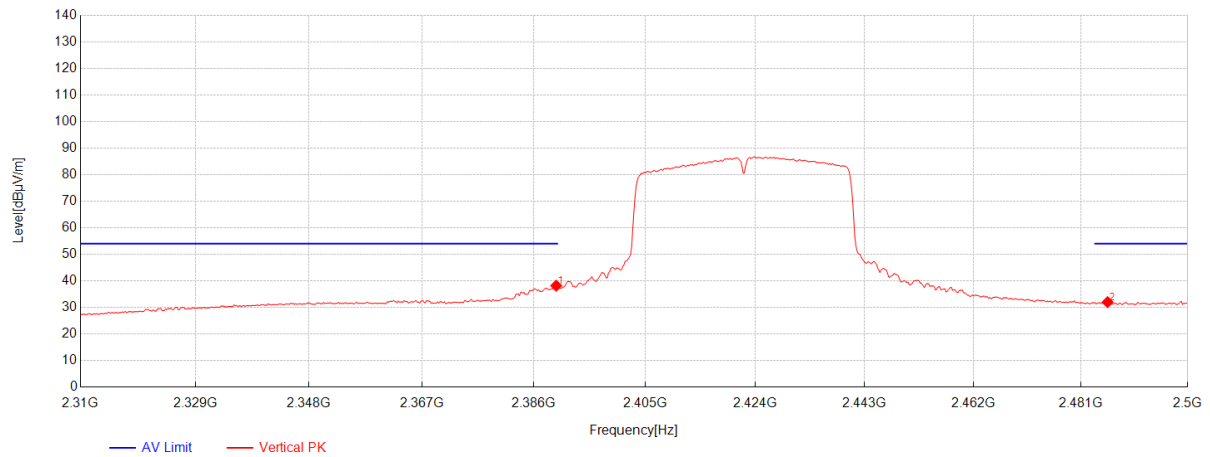
Data List								
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity
1	2389.8	36.91	26.70	-26.13	37.48	54.00	16.52	Horizontal
2	2488.22	30.89	27.12	-26.25	31.76	54.00	22.24	Horizontal

11n(HT40)_TX_CH_03_Vetical_Peak



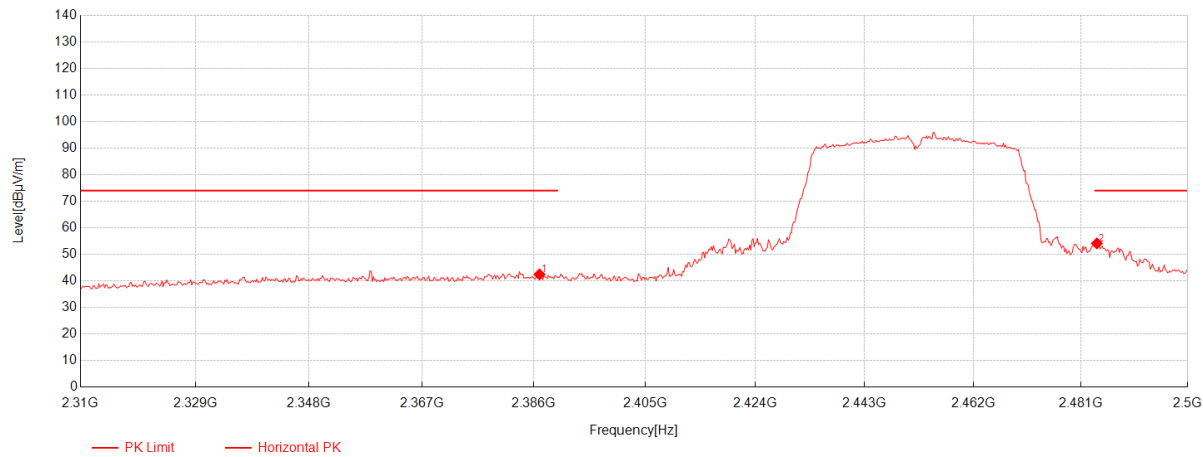
Data List								
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity
1	2389.8	57.62	26.70	-26.13	58.19	74.00	15.81	Vertical
2	2484.99	41.79	27.15	-26.24	42.70	74.00	31.30	Vertical

11n(HT40)_TX_CH_03_Vetical_Average



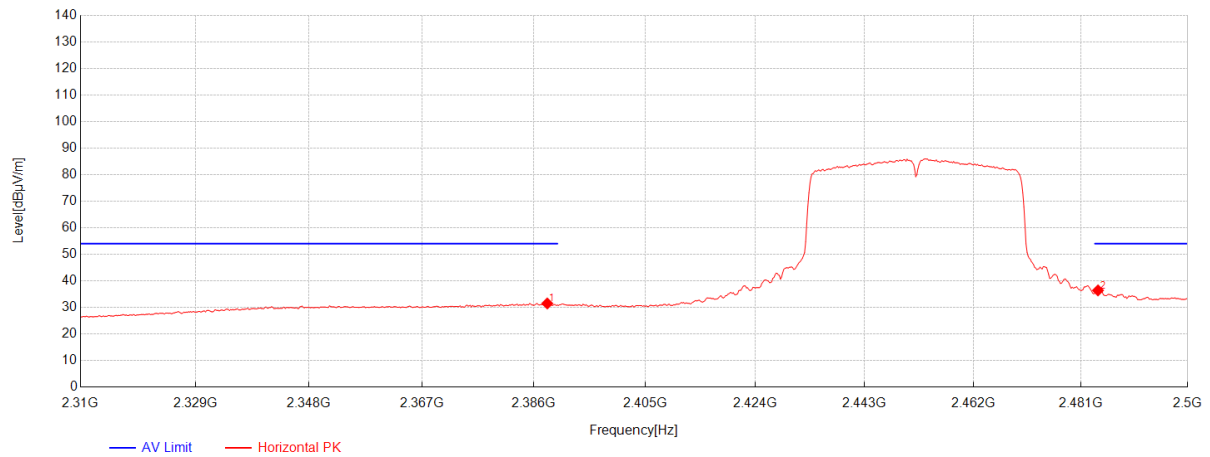
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2389.8	37.62	26.70	-26.13	38.19	54.00	15.81	Vertical
2	2485.75	31.09	27.14	-26.24	31.99	54.00	22.01	Vertical

11n(HT40)_TX_CH_09_Horizontal_Peak



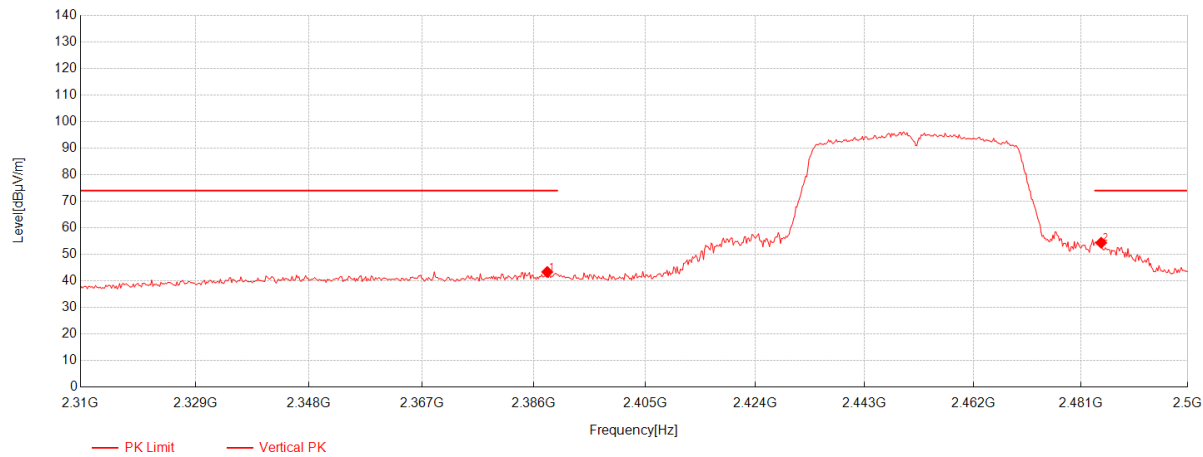
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2386.95	41.89	26.67	-26.14	42.42	74.00	31.58	Horizontal
2	2483.85	53.18	27.16	-26.24	54.10	74.00	19.90	Horizontal

11n(HT40)_TX_CH_09_Horizontal_Average



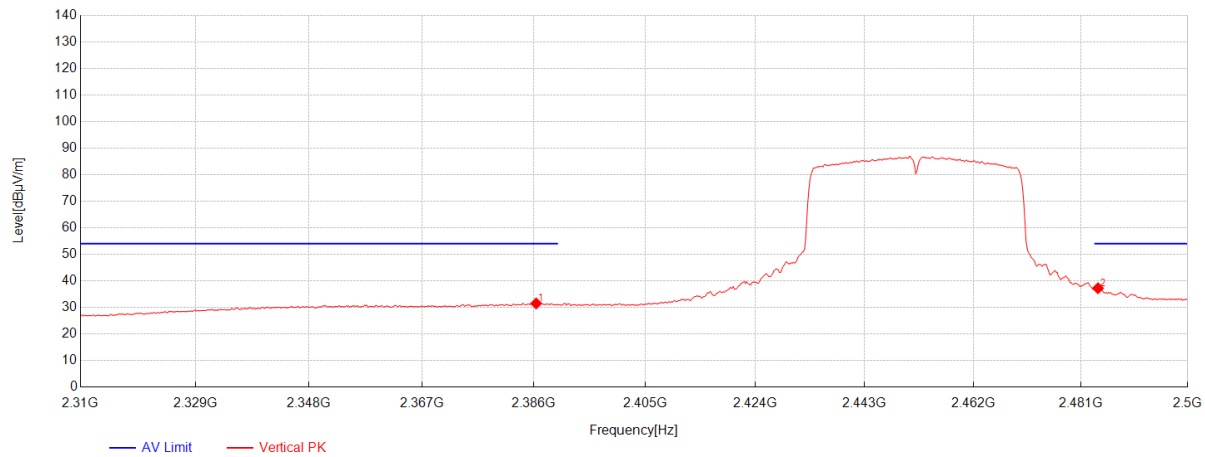
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2388.28	30.95	26.68	-26.14	31.49	54.00	22.51	Horizontal
2	2484.04	35.48	27.16	-26.24	36.40	54.00	17.60	Horizontal

11n(HT40)_TX_CH_09_Vertical_Peak



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2388.28	42.80	26.68	-26.14	43.34	74.00	30.66	Vertical
2	2484.61	53.43	27.15	-26.24	54.34	74.00	19.66	Vertical

11n(HT40)_TX_CH_09_Vertical_Average



Data List								
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity
1	2386.38	30.98	26.66	-26.14	31.50	54.00	22.50	Vertical
2	2484.04	36.30	27.16	-26.24	37.22	54.00	16.78	Vertical

7.2 Radiated Spurious Emissions Below 1GHz

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209

Test Method: ANSI C63.10 (2020) Section 6.4,6.5

Limit:

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)	Field strength (dBμV/m@3m)
0.009-0.490	2400/F(kHz)	300	128.5 to 93.8
0.490-1.705	24000/F(kHz)	30	73.8 to 62.9
1.705-30.0	30	30	69.60
30-88	100	3	40.0
88-216	150	3	43.5
216-960	200	3	46.0
960-1000	500	3	54.0

Note :The emission limits for the range 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 22.6 °C

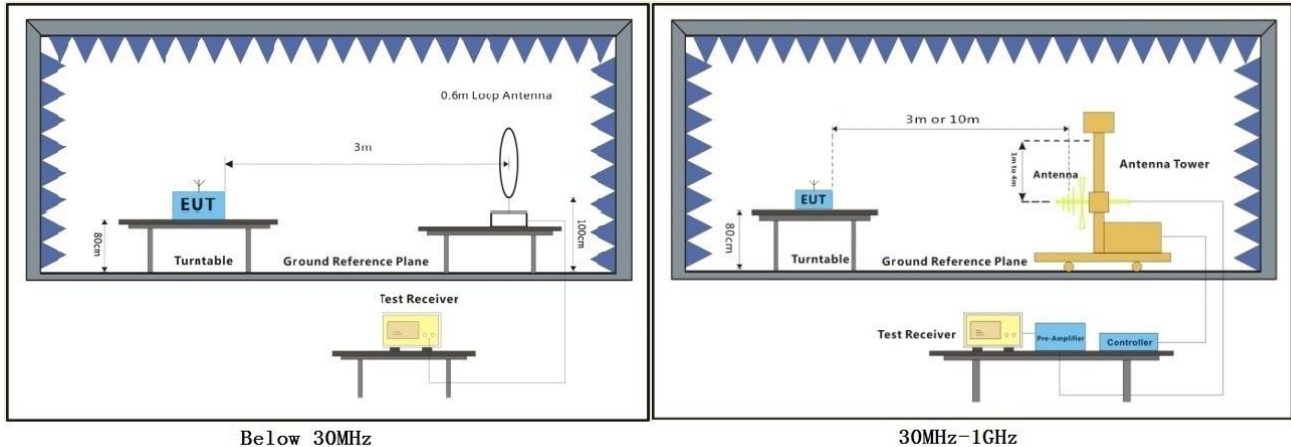
Humidity: 47.6 % RH

Atmospheric Pressure: 1010 mbar

7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested, final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.

7.2.3 Test Setup Diagram



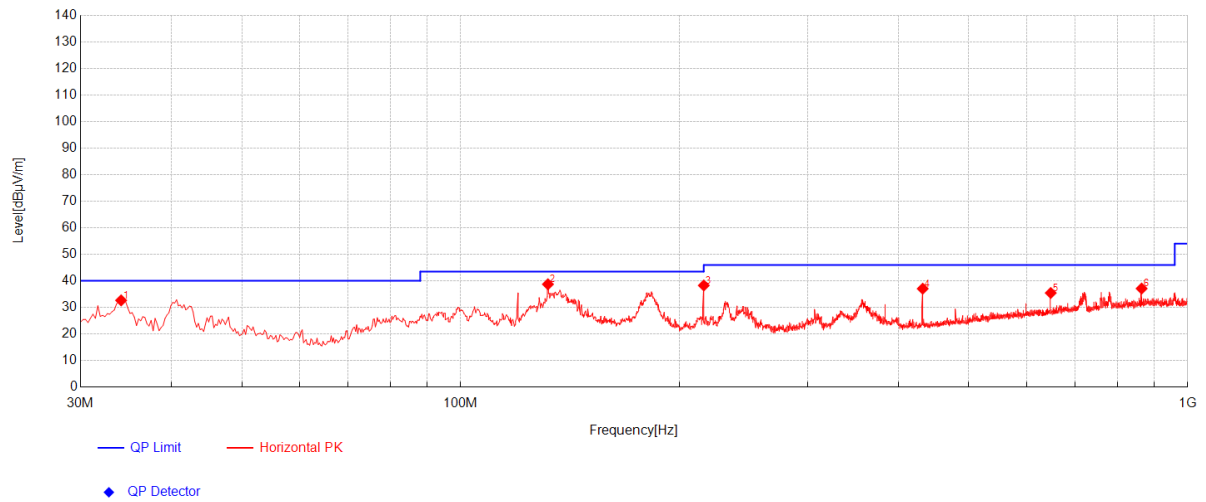
7.2.4 Measurement Procedure and Data

- For below 1GHz, the EUT was placed on the top of a rotating table 0.8m above the ground at a semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3m or 10m away from the interference-receiving antenna, which was mounted on the variable-height antenna tower.
- The antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1m to 4m (for the test frequency of below 30MHz, the antenna was tuned to heights 1m) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using quasi-peak method as specified and then reported in a data sheet.
- Test the EUT in the lowest channel, the middle channel, the Highest channel.
- The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- Repeat above procedures until all frequencies measured was complete.

Remark:

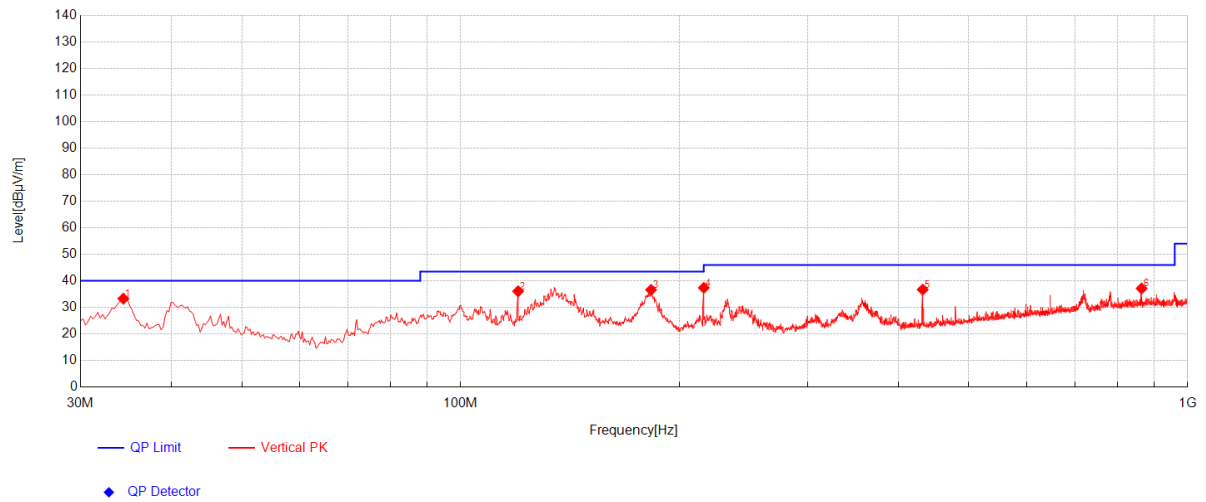
- Scan from 9kHz to 30MHz, the disturbance below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only below points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
- The disturbance below 1GHz was very low and the harmonics were the highest point could be found when testing, so only the worst-case test curve is displayed.

Test Mode: 00; Polarity: Horizontal



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	34.1225	48.67	16.48	-32.49	32.66	40.00	7.34	Horizontal
2	131.85	56.63	13.72	-31.63	38.72	43.50	4.78	Horizontal
3	215.9975	57.98	11.52	-31.23	38.27	43.50	5.23	Horizontal
4	432.065	49.95	17.54	-30.44	37.05	46.00	8.95	Horizontal
5	648.1325	44.11	21.04	-29.71	35.44	46.00	10.56	Horizontal
6	864.2	43.38	22.86	-29.14	37.10	46.00	8.90	Horizontal

Test Mode: 00; Polarity: Vertical



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	34.365	49.54	16.24	-32.48	33.30	40.00	6.70	Vertical
2	119.9675	54.16	13.69	-31.77	36.08	43.50	7.42	Vertical
3	182.775	56.67	11.39	-31.45	36.61	43.50	6.89	Vertical
4	215.9975	57.09	11.52	-31.23	37.38	43.50	6.12	Vertical
5	432.065	49.60	17.54	-30.44	36.70	46.00	9.30	Vertical
6	864.2	43.41	22.86	-29.14	37.13	46.00	8.87	Vertical

7.3 Radiated Spurious Emissions Above 1GHz

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209

Test Method: ANSI C63.10 (2020) Section 6.6 & 11.12

Limit:

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance(meters)
Above 1000	500	3

Note:

At Above 18GHz, measurements may be performed at a distance shorter than that specified in the regulations

Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor+ Aux Factor (if applicable)

The aux factor needs to be added when measurements are performed at a distance other than the limit distance provided.

EX. Above 18GHz, Aux Factor = 20 dB/decade of distance, the aux factor is $20\log(1/3) = -9.54\text{dB}$ (for 1m test distance).

7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 22.6 °C

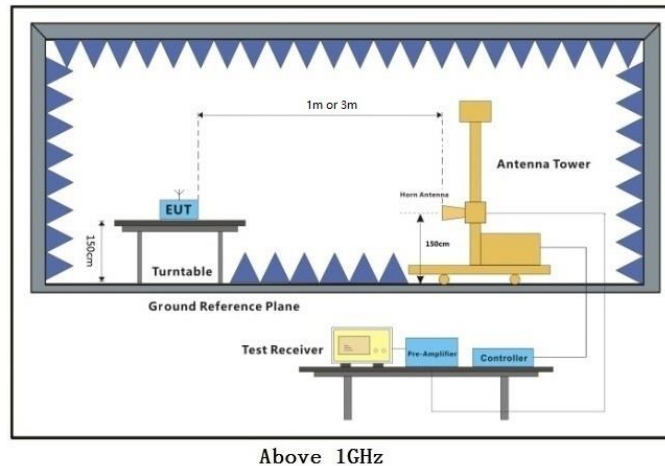
Humidity: 47.7 % RH

Atmospheric Pressure: 1010 mbar

7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.

7.3.3 Test Setup Diagram



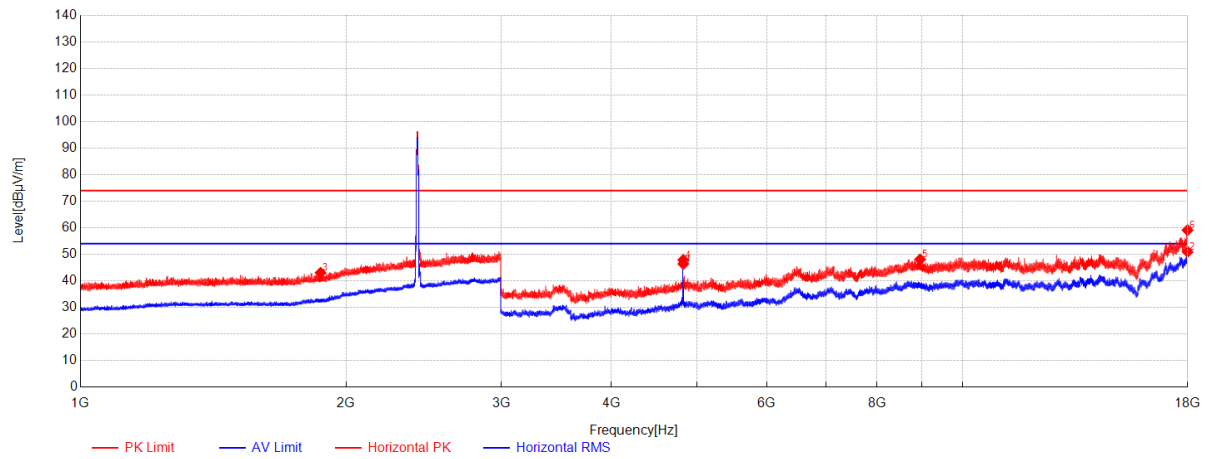
7.3.4 Measurement Procedure and Data

- a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5m above the ground at a 3m fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. The EUT was set 3m away from the interference-receiving antenna from 1GHz to 18GHz, and 1m away from the interference-receiving antenna above 18GHz.
- b. The interference-receiving antenna was mounted on the variable-height antenna tower, with its boresight facing the EUT throughout the test.
- c. The antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1m to 4m and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- g. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- h. Repeat above procedures until all frequencies measured was complete.

Remark:

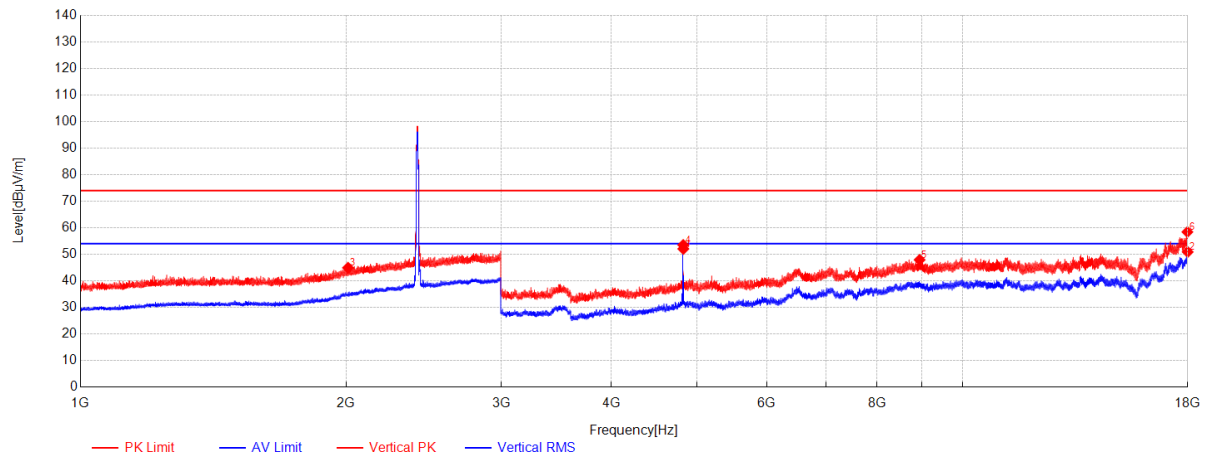
1. Scan from 18GHz to 10th harmonic of the highest frequency or 40 GHz, whichever is lower.
2. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.
3. For the frequency above 18GHz, testing had been executed under all test modes, only the worst-case test curve is displayed in the report.
4. For devices with multiple operating modes, measurements on the middle channel is used to determine the worst-case mode(s). Only the worst-case mode with the highest output power and the mode with the highest output power spectral density for each modulation family (e.g., OFDM and direct sequence spread spectrum) is recorded in the test report.

11b_TX_CH_01_Horizontal



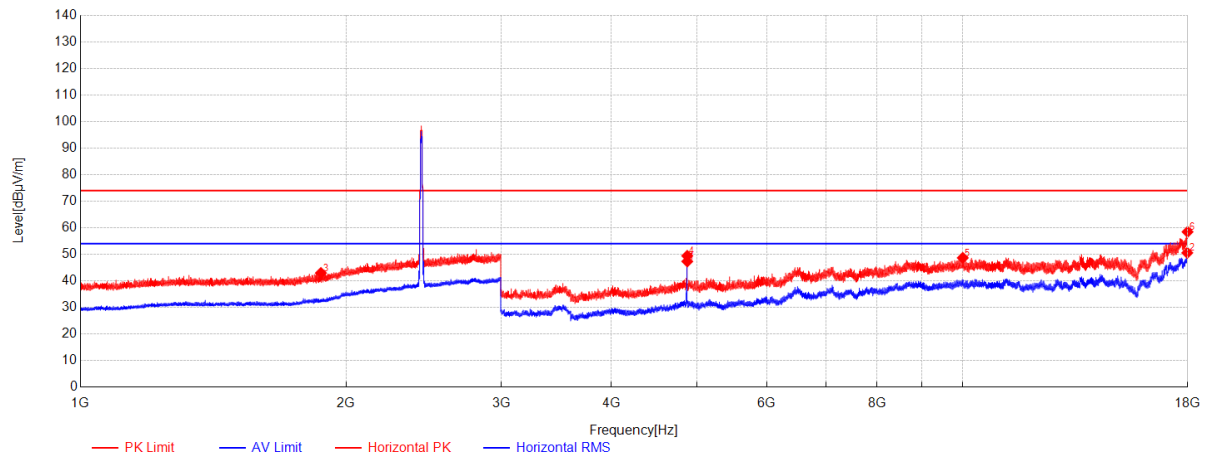
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4824.5	65.12	31.45	-50.19	46.38	54.00	7.62	Horizontal
2	17995.5	48.95	43.20	-41.24	50.91	54.00	3.09	Horizontal
3	1871.5	46.53	24.23	-27.73	43.03	74.00	30.97	Horizontal
4	4824	66.64	31.45	-50.19	47.90	74.00	26.10	Horizontal
5	8951	56.42	37.80	-46.17	48.05	74.00	25.95	Horizontal
6	17990.5	57.20	43.20	-41.32	59.08	74.00	14.92	Horizontal

11b_TX_CH_01_Vertical



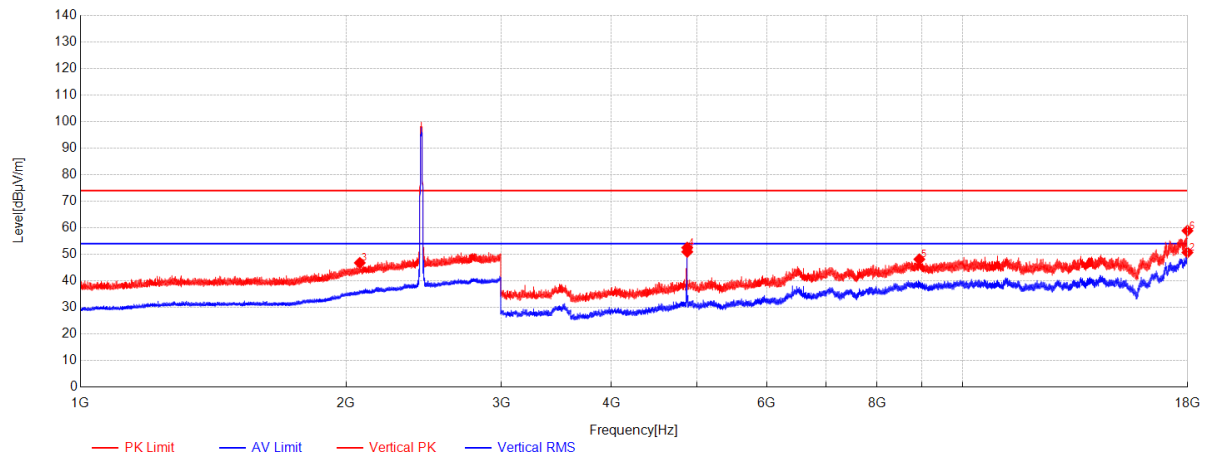
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4824.5	70.78	31.45	-50.19	52.04	54.00	1.96	Vertical
2	17999.5	48.85	43.20	-41.17	50.88	54.00	3.12	Vertical
3	2010.8333	46.80	25.19	-27.07	44.92	74.00	29.08	Vertical
4	4824	72.23	31.45	-50.19	53.49	74.00	20.51	Vertical
5	8940.5	56.30	37.78	-46.18	47.90	74.00	26.10	Vertical
6	17986	56.59	43.20	-41.40	58.39	74.00	15.61	Vertical

11b_TX_CH_06_Horizontal



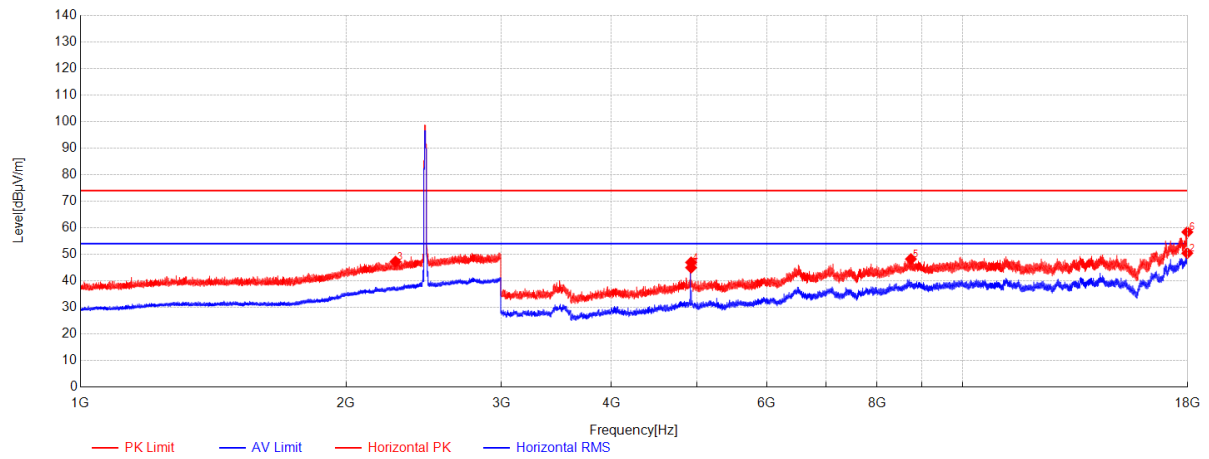
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4874.5	66.42	31.45	-50.56	47.31	54.00	6.69	Horizontal
2	17981.5	48.81	43.20	-41.48	50.53	54.00	3.47	Horizontal
3	1873.3333	46.42	24.27	-27.74	42.95	74.00	31.05	Horizontal
4	4874	68.51	31.45	-50.56	49.40	74.00	24.60	Horizontal
5	10006.5	54.73	38.71	-44.80	48.64	74.00	25.36	Horizontal
6	17994	56.50	43.20	-41.26	58.44	74.00	15.56	Horizontal

11b_TX_CH_06_Vertical



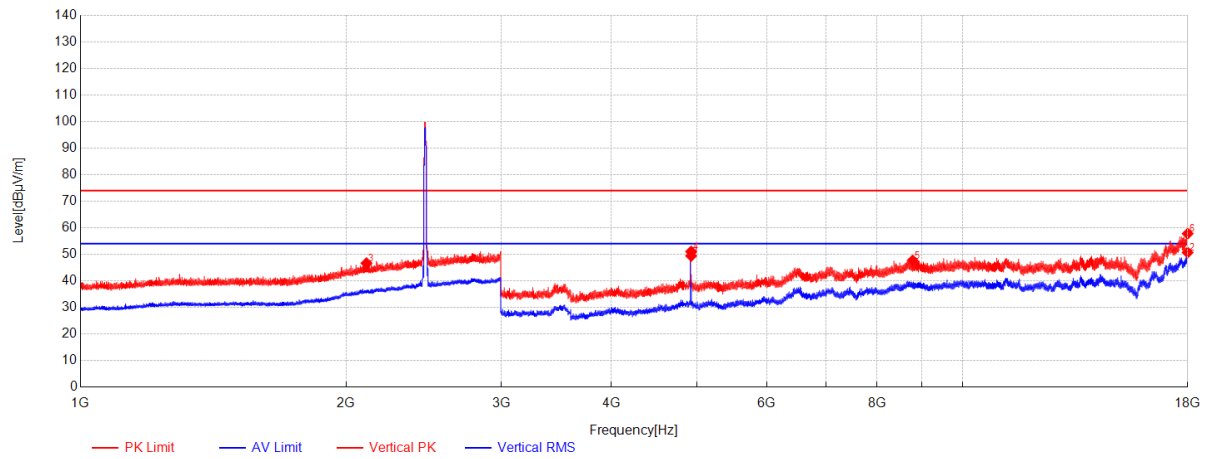
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4874.5	70.03	31.45	-50.56	50.92	54.00	3.08	Vertical
2	17988.5	48.84	43.20	-41.36	50.68	54.00	3.32	Vertical
3	2073.5	48.24	25.48	-26.94	46.78	74.00	27.22	Vertical
4	4874	71.61	31.45	-50.56	52.50	74.00	21.50	Vertical
5	8934.5	56.53	37.77	-46.18	48.12	74.00	25.88	Vertical
6	17988	57.04	43.20	-41.37	58.87	74.00	15.13	Vertical

11b_TX_CH_11_Horizontal



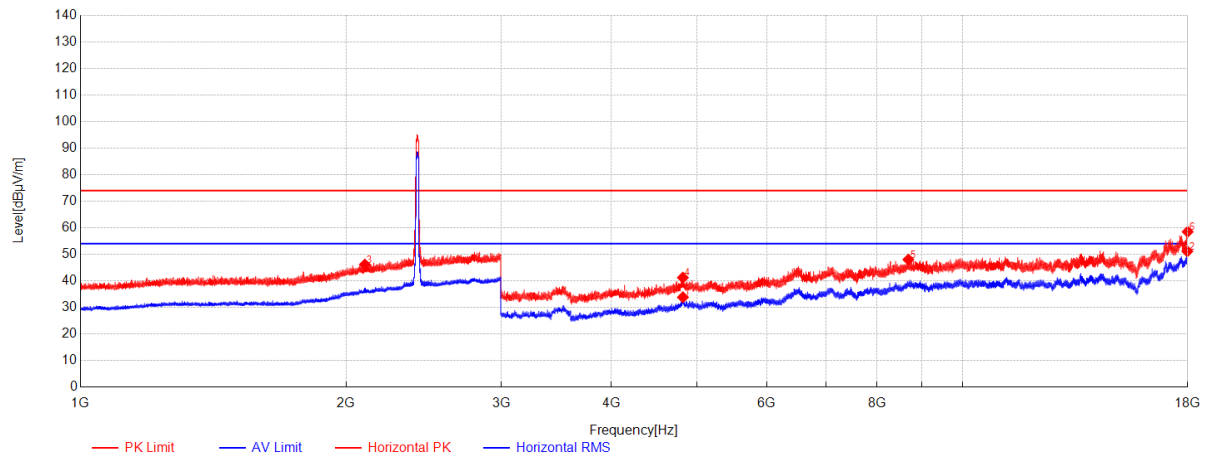
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4924.5	64.21	31.50	-50.73	44.98	54.00	9.02	Horizontal
2	17983	48.66	43.20	-41.45	50.41	54.00	3.59	Horizontal
3	2276	47.29	26.44	-26.50	47.23	74.00	26.77	Horizontal
4	4924	66.15	31.50	-50.73	46.92	74.00	27.08	Horizontal
5	8740	56.59	37.58	-45.98	48.19	74.00	25.81	Horizontal
6	17983.5	56.59	43.20	-41.44	58.35	74.00	15.65	Horizontal

11b_TX_CH_11_Vertical



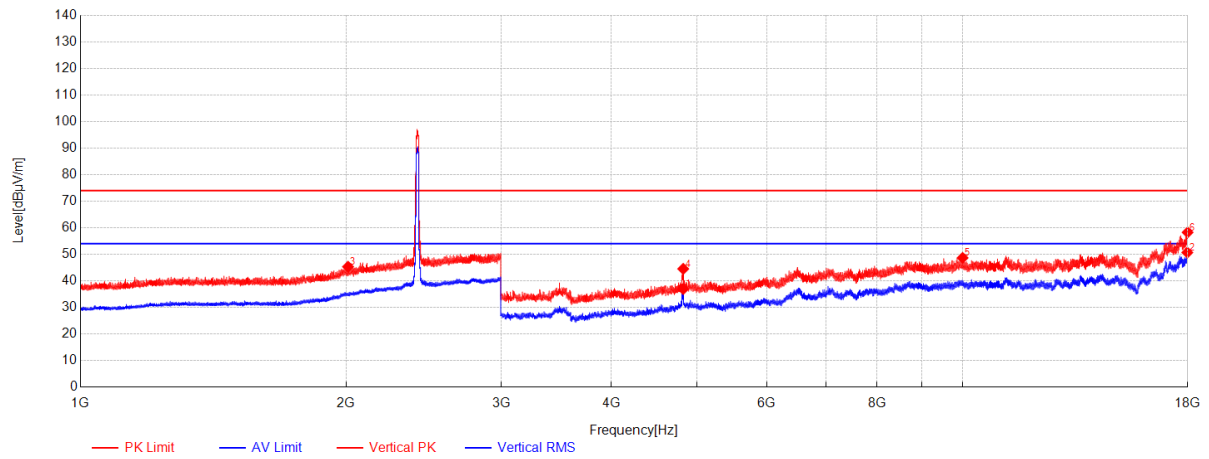
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4924.5	68.63	31.50	-50.73	49.40	54.00	4.60	Vertical
2	17997.5	48.66	43.20	-41.20	50.66	54.00	3.34	Vertical
3	2109.8333	47.68	25.80	-26.84	46.64	74.00	27.36	Vertical
4	4924	70.26	31.50	-50.73	51.03	74.00	22.97	Vertical
5	8779.5	56.33	37.54	-46.21	47.66	74.00	26.34	Vertical
6	17999	55.74	43.20	-41.18	57.76	74.00	16.24	Vertical

11n(HT20)_TX_CH_01_Horizontal



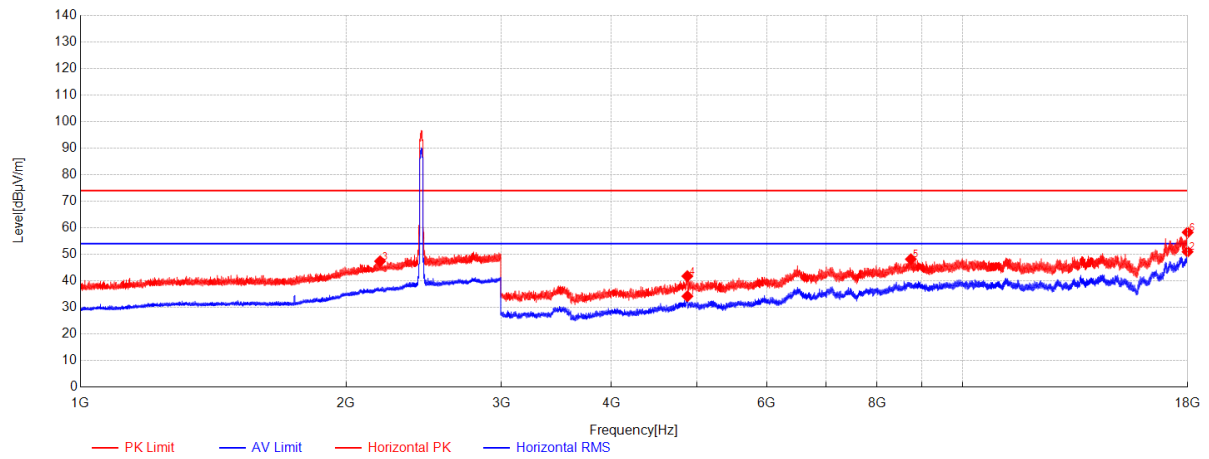
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4819.5	52.51	31.46	-50.15	33.82	54.00	20.18	Horizontal
2	17984.5	49.33	43.20	-41.43	51.10	54.00	2.90	Horizontal
3	2100.8333	47.21	25.80	-26.89	46.12	74.00	27.88	Horizontal
4	4819	59.90	31.46	-50.15	41.21	74.00	32.79	Horizontal
5	8681	56.42	37.46	-45.87	48.01	74.00	25.99	Horizontal
6	17997.5	56.47	43.20	-41.20	58.47	74.00	15.53	Horizontal

11n(HT20)_TX_CH_01_Vertical



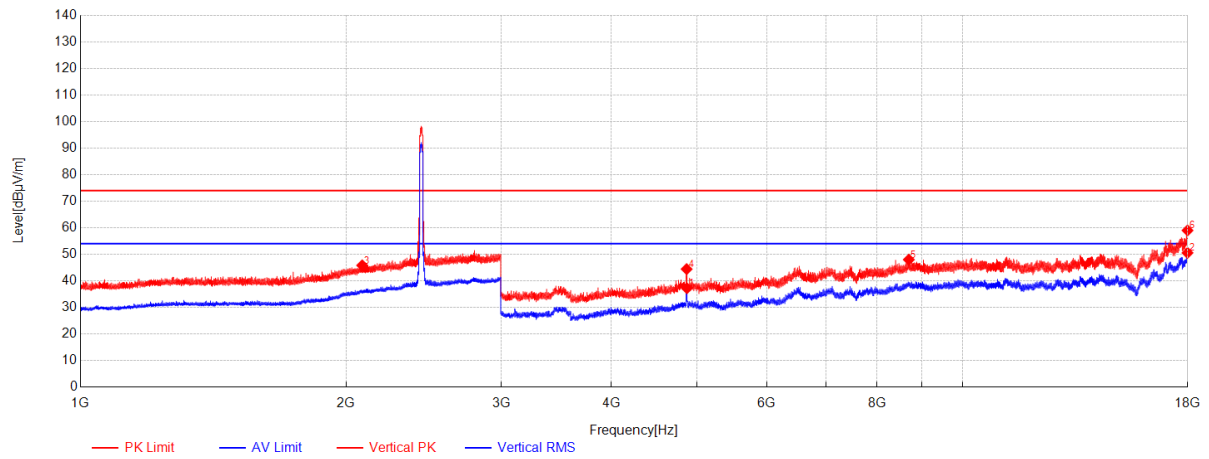
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4823	55.65	31.45	-50.18	36.92	54.00	17.08	Vertical
2	17982	48.94	43.20	-41.47	50.67	54.00	3.33	Vertical
3	2010.6667	47.19	25.19	-27.07	45.31	74.00	28.69	Vertical
4	4823	63.24	31.45	-50.18	44.51	74.00	29.49	Vertical
5	10002.5	54.70	38.71	-44.76	48.65	74.00	25.35	Vertical
6	17996.5	56.26	43.20	-41.22	58.24	74.00	15.76	Vertical

11n(HT20)_TX_CH_06_Horizontal



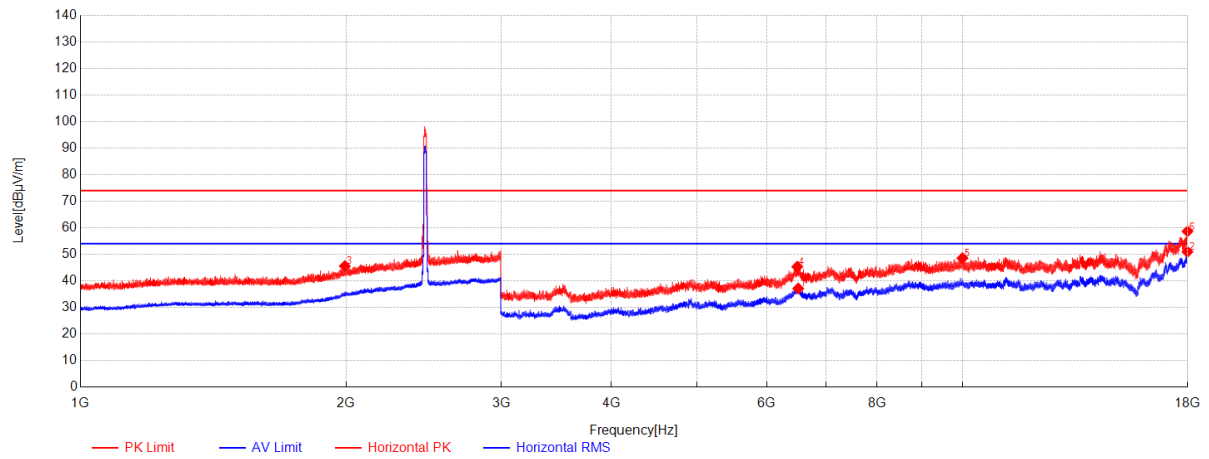
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4876.5	53.33	31.45	-50.58	34.20	54.00	19.80	Horizontal
2	17994.5	48.99	43.20	-41.25	50.94	54.00	3.06	Horizontal
3	2186.1667	47.90	25.90	-26.42	47.38	74.00	26.62	Horizontal
4	4876	60.88	31.45	-50.57	41.76	74.00	32.24	Horizontal
5	8738.5	56.54	37.58	-45.98	48.14	74.00	25.86	Horizontal
6	17999.5	56.22	43.20	-41.17	58.25	74.00	15.75	Horizontal

11n(HT20)_TX_CH_06_Vertical



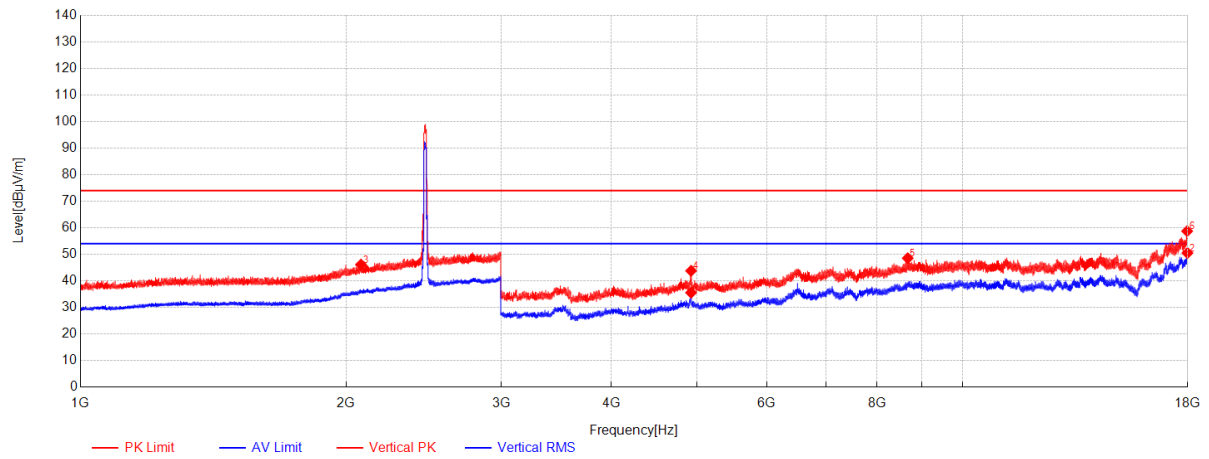
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4870	56.32	31.44	-50.53	37.23	54.00	16.77	Vertical
2	17992.5	48.62	43.20	-41.29	50.53	54.00	3.47	Vertical
3	2086.3333	47.07	25.67	-26.92	45.82	74.00	28.18	Vertical
4	4866.5	63.49	31.43	-50.50	44.42	74.00	29.58	Vertical
5	8693	56.29	37.49	-45.80	47.98	74.00	26.02	Vertical
6	17992	57.07	43.20	-41.30	58.97	74.00	15.03	Vertical

11n(HT20)_TX_CH_11_Horizontal



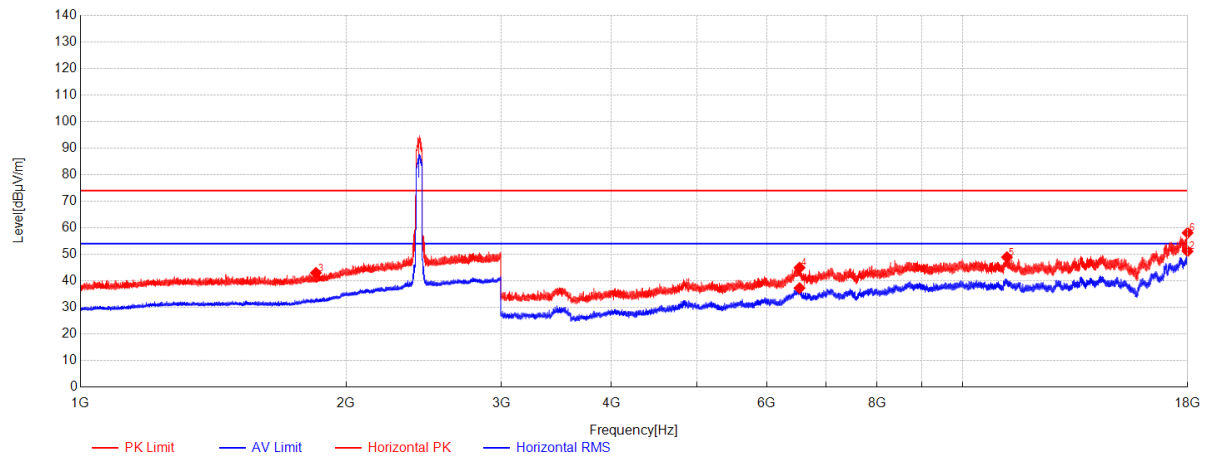
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	6512	49.28	34.32	-46.49	37.11	54.00	16.89	Horizontal
2	17988	49.09	43.20	-41.37	50.92	54.00	3.08	Horizontal
3	1993.8333	47.56	25.14	-27.13	45.57	74.00	28.43	Horizontal
4	6496	57.35	34.20	-46.23	45.32	74.00	28.68	Horizontal
5	9998	54.56	38.72	-44.74	48.54	74.00	25.46	Horizontal
6	17991.5	56.73	43.20	-41.31	58.62	74.00	15.38	Horizontal

11n(HT20)_TX_CH_11_Vertical



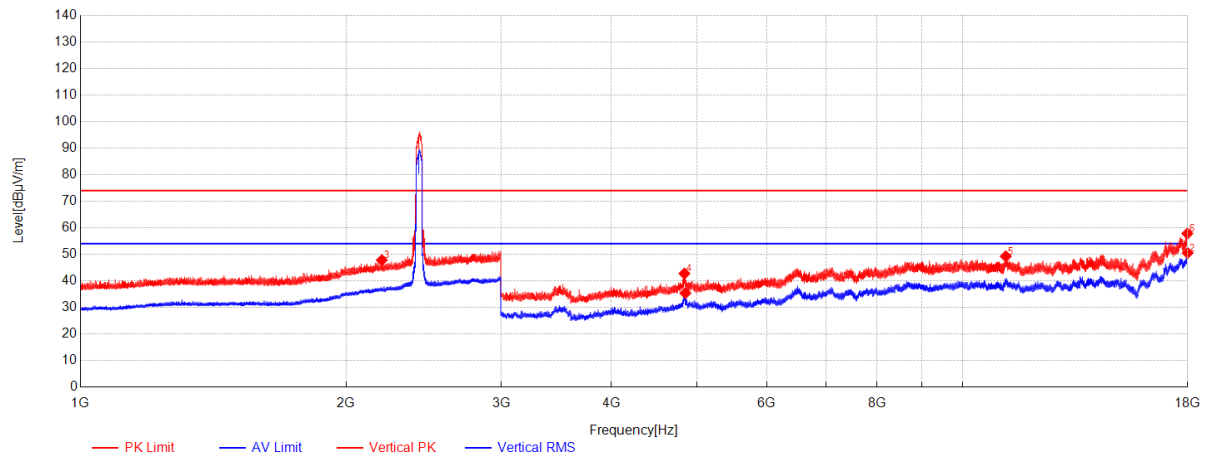
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4923.5	54.78	31.50	-50.73	35.55	54.00	18.45	Vertical
2	17988	48.65	43.20	-41.37	50.48	54.00	3.52	Vertical
3	2080	47.24	25.80	-26.93	46.11	74.00	27.89	Vertical
4	4924	63.01	31.50	-50.73	43.78	74.00	30.22	Vertical
5	8667.5	57.03	37.44	-45.94	48.53	74.00	25.47	Vertical
6	17975	57.10	43.20	-41.59	58.71	74.00	15.29	Vertical

11n(HT40)_TX_CH_03_Horizontal



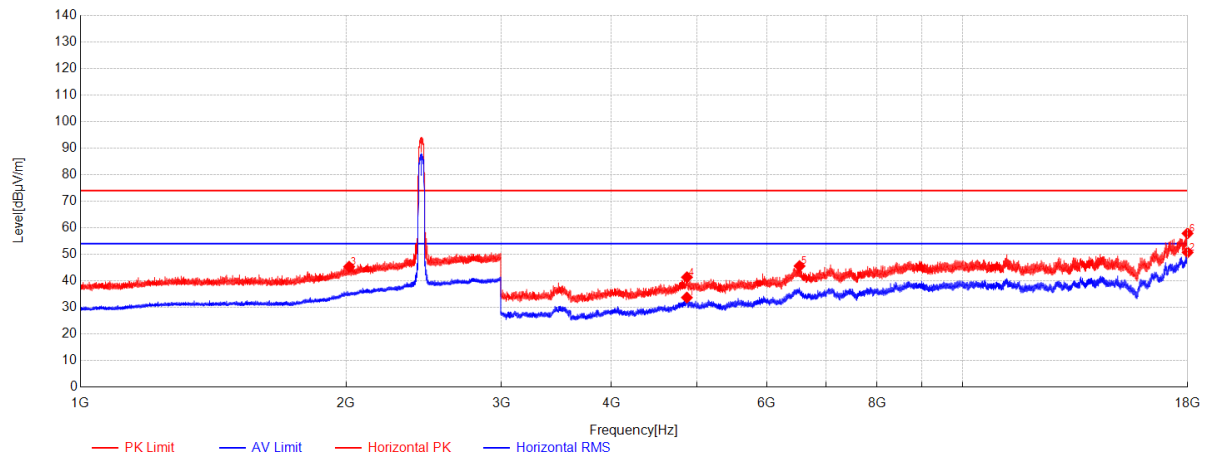
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	6535	49.83	34.55	-47.09	37.29	54.00	16.71	Horizontal
2	17995.5	49.19	43.20	-41.24	51.15	54.00	2.85	Horizontal
3	1849	46.44	24.26	-27.70	43.00	74.00	31.00	Horizontal
4	6534	57.46	34.54	-47.06	44.94	74.00	29.06	Horizontal
5	11230.5	53.59	39.56	-44.26	48.89	74.00	25.11	Horizontal
6	17998	56.05	43.20	-41.19	58.06	74.00	15.94	Horizontal

11n(HT40)_TX_CH_03_Vertical



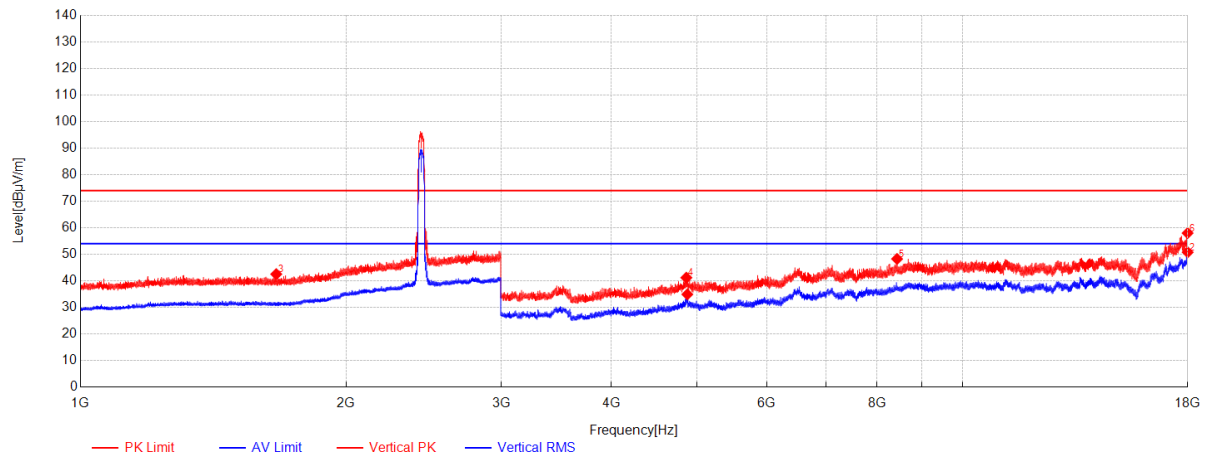
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4850.5	54.34	31.40	-50.38	35.36	54.00	18.64	Vertical
2	17997.5	48.49	43.20	-41.20	50.49	54.00	3.51	Vertical
3	2196	48.25	25.90	-26.37	47.78	74.00	26.22	Vertical
4	4838.5	61.60	31.42	-50.29	42.73	74.00	31.27	Vertical
5	11195	54.00	39.48	-44.25	49.23	74.00	24.77	Vertical
6	17983	56.06	43.20	-41.45	57.81	74.00	16.19	Vertical

11n(HT40)_TX_CH_06_Horizontal



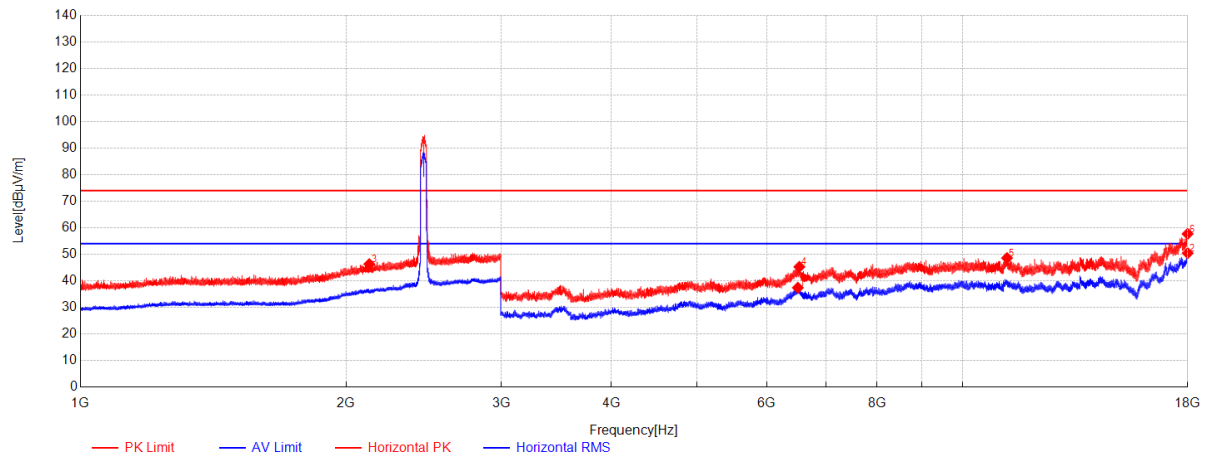
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4870	52.80	31.44	-50.53	33.71	54.00	20.29	Horizontal
2	17997	48.72	43.20	-41.21	50.71	54.00	3.29	Horizontal
3	2016.5	47.24	25.14	-27.06	45.32	74.00	28.68	Horizontal
4	4871	60.45	31.44	-50.54	41.35	74.00	32.65	Horizontal
5	6535	58.11	34.55	-47.09	45.57	74.00	28.43	Horizontal
6	17993	55.93	43.20	-41.28	57.85	74.00	16.15	Horizontal

11n(HT40)_TX_CH_06_Vertical



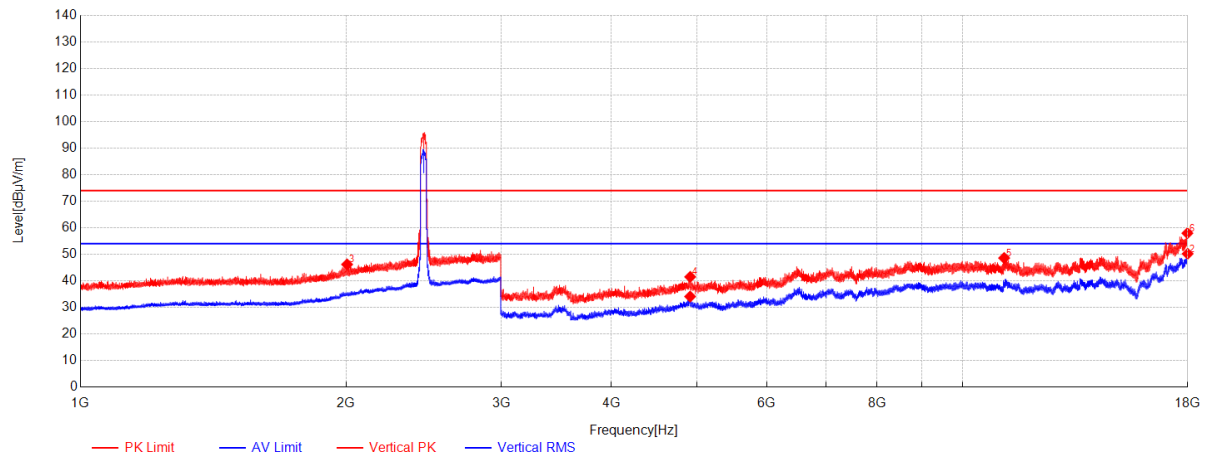
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4875.5	54.04	31.45	-50.57	34.92	54.00	19.08	Vertical
2	18000	48.72	43.20	-41.16	50.76	54.00	3.24	Vertical
3	1667.1667	46.91	23.70	-28.09	42.52	74.00	31.48	Vertical
4	4863	60.25	31.43	-50.48	41.20	74.00	32.80	Vertical
5	8429	58.35	36.93	-47.04	48.24	74.00	25.76	Vertical
6	17996.5	55.99	43.20	-41.22	57.97	74.00	16.03	Vertical

11n(HT40)_TX_CH_09_Horizontal



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	6506.5	49.48	34.27	-46.34	37.41	54.00	16.59	Horizontal
2	17999.5	48.39	43.20	-41.17	50.42	54.00	3.58	Horizontal
3	2125.5	47.30	25.74	-26.75	46.29	74.00	27.71	Horizontal
4	6532	57.76	34.52	-47.01	45.27	74.00	28.73	Horizontal
5	11232	53.28	39.56	-44.26	48.58	74.00	25.42	Horizontal
6	17996	55.70	43.20	-41.23	57.67	74.00	16.33	Horizontal

11n(HT40)_TX_CH_09_Vertical



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4911.5	53.34	31.50	-50.74	34.10	54.00	19.90	Vertical
2	17998.5	48.18	43.20	-41.19	50.19	54.00	3.81	Vertical
3	2006	48.05	25.20	-27.08	46.17	74.00	27.83	Vertical
4	4912.5	60.74	31.50	-50.74	41.50	74.00	32.50	Vertical
5	11148	53.95	39.31	-44.67	48.59	74.00	25.41	Vertical
6	17986.5	56.11	43.20	-41.39	57.92	74.00	16.08	Vertical

7.4 Maximum Conducted Output Power

Test Requirement 47 CFR Part 15, Subpart C 15.247(b)(3)

Test Method: ANSI C63.10 (2020) Section 11.9.1

Limit:

Frequency range(MHz)	Output power of the intentional radiator(watt)
902-928	1 for ≥ 50 hopping channels
	0.25 for $25 \leq$ hopping channels < 50
	1 for digital modulation
2400-2483.5	1 for ≥ 75 non-overlapping hopping channels
	0.125 for all other frequency hopping systems
	1 for digital modulation
5725-5850	1 for frequency hopping systems and digital modulation

7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 22.6 °C

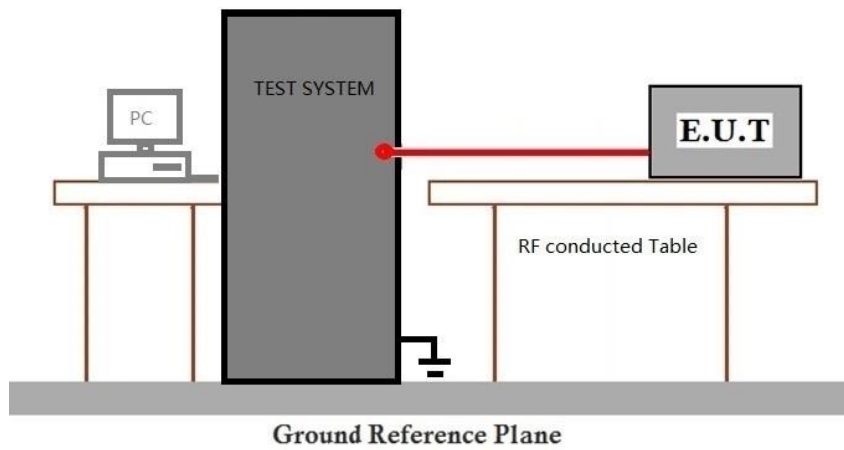
Humidity: 47.8 % RH

Atmospheric Pressure: 1010 mbar

7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.

7.4.3 Test Setup Diagram



7.4.4 Measurement Procedure and Data

Note: Since the verify power the same operating range bandwidth and smaller power can be covered by the higher power.

Please Refer to Appendix for Details

7.5 Minimum 6dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.247a(2)

Test Method: ANSI C63.10 (2020) Section 11.8.1

Limit:

≥500 kHz

7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 22.6 °C

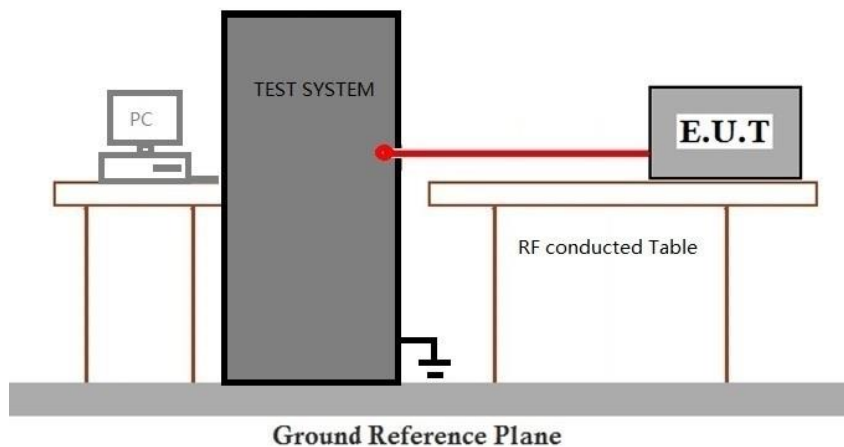
Humidity: 47.7 % RH

Atmospheric Pressure: 1010 mbar

7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.

7.5.3 Test Setup Diagram



7.5.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.6 Power Spectral Density

Test Requirement 47 CFR Part 15, Subpart C 15.247(e)

Test Method: ANSI C63.10 (2020) Section 11.10.2

Limit:

≤8dBm in any 3 kHz band during any time interval of continuous transmission

7.6.1 E.U.T. Operation

Operating Environment:

Temperature: 22.6 °C

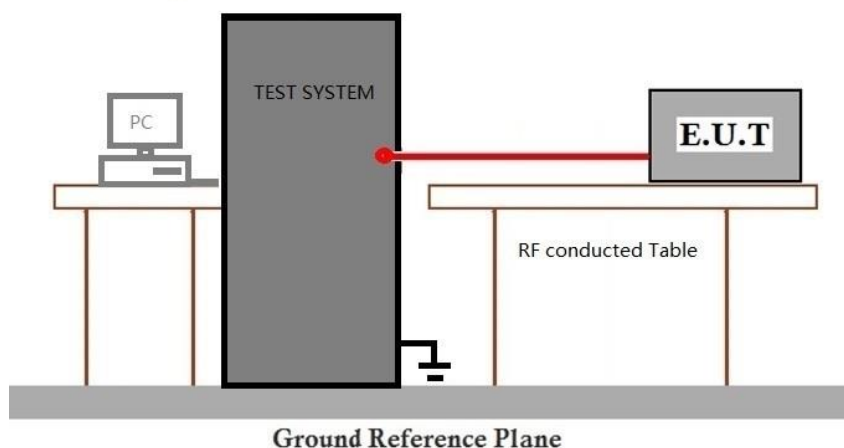
Humidity: 47.7 % RH

Atmospheric Pressure: 1010 mbar

7.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.

7.6.3 Test Setup Diagram



7.6.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.7 Conducted Band Edges Measurement

Test Requirement 47 CFR Part 15, Subpart C 15.247(d)

Test Method: ANSI C63.10 (2020) Section 6.10.4

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 limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 22.6 °C

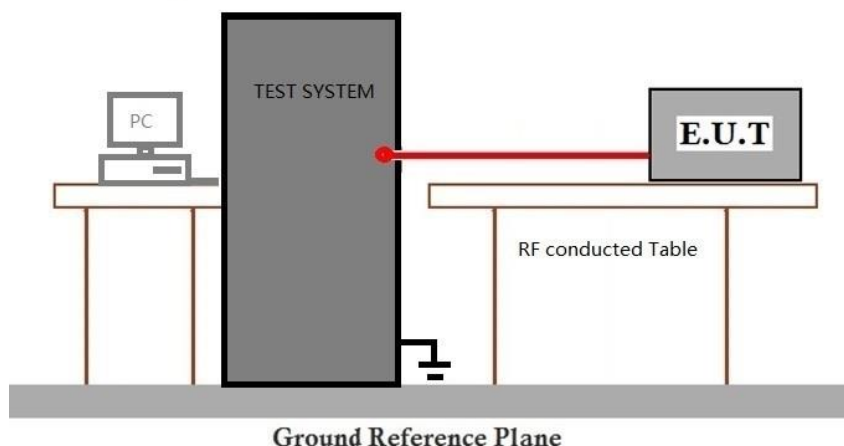
Humidity: 47.7 % RH

Atmospheric Pressure: 1010 mbar

7.7.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.

7.7.3 Test Setup Diagram





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7.7.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.8 Conducted Spurious Emissions

Test Requirement 47 CFR Part 15, Subpart C 15.247(d)

Test Method: ANSI C63.10 (2020) Section 11.11

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 limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

7.8.1 E.U.T. Operation

Operating Environment:

Temperature: 22.6 °C

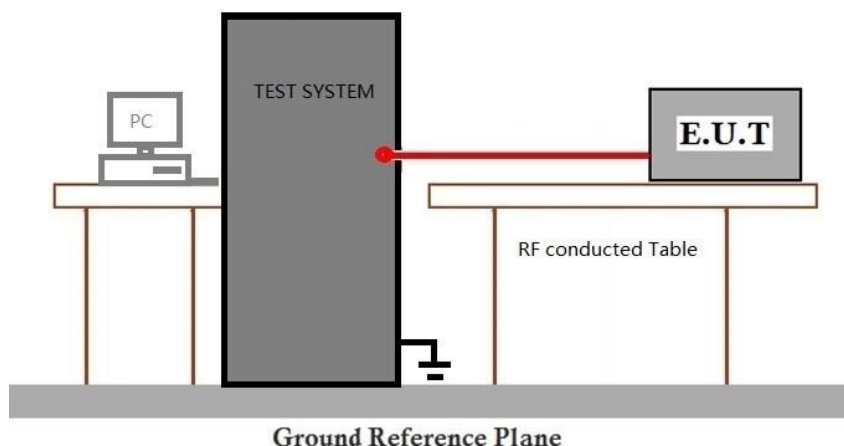
Humidity: 47.7 % RH

Atmospheric Pressure: 1010 mbar

7.8.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.

7.8.3 Test Setup Diagram





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7.8.4 Measurement Procedure and Data

Please Refer to Appendix for Details



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8 Test Setup Photo

Refer to Appendix - Test Setup Photo for KSCR2601000148AU

9 EUT Constructional Details (EUT Photos)

Refer to Appendix_Photographs of EUT Constructional Details for KSCR2601000148AU

10 Appendix

1. Duty Cycle

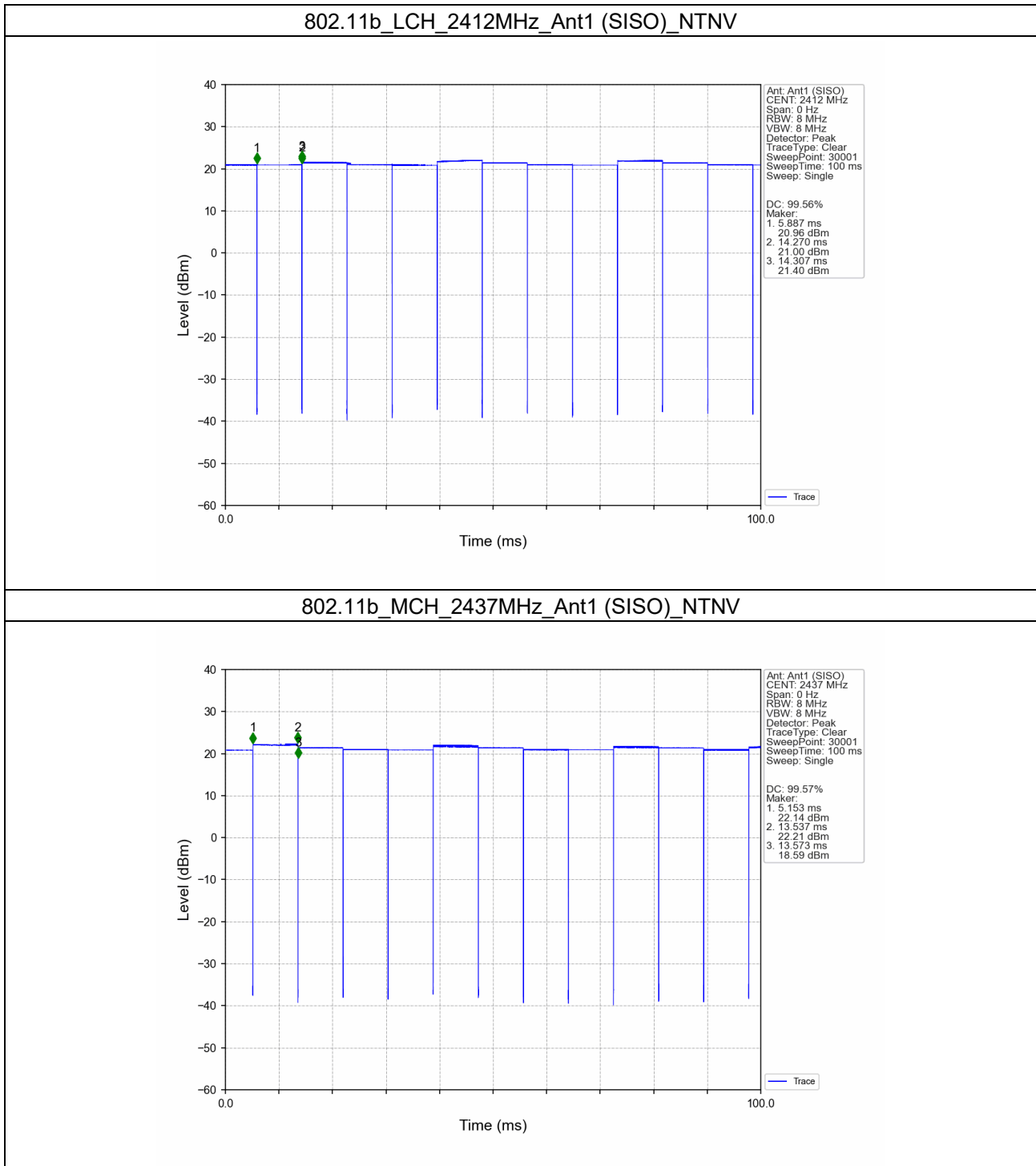
1.1 Test Result

1.1.1 Ant1

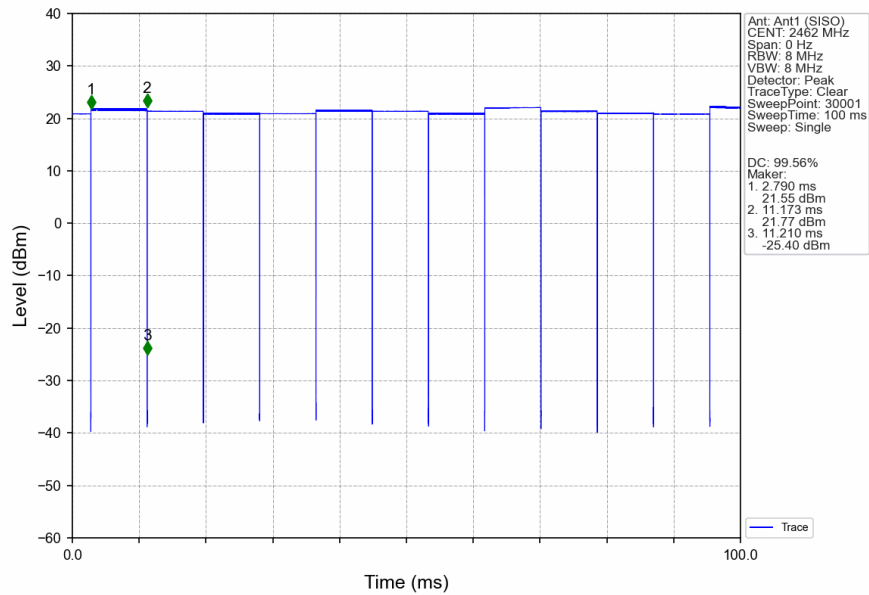
Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
802.11b	SISO	2412	8.383	8.420	99.56	0.02	0.00
		2437	8.384	8.420	99.57	0.02	0.00
		2462	8.383	8.420	99.56	0.02	0.04
802.11g	SISO	2412	1.394	1.436	97.08	0.13	0.03
		2437	1.394	1.436	97.08	0.13	0.00
		2462	1.394	1.437	97.01	0.13	0.03
802.11n (HT20)	SISO	2412	1.302	1.345	96.80	0.14	0.03
		2437	1.302	1.345	96.80	0.14	0.03
		2462	1.302	1.344	96.88	0.14	0.03
802.11n (HT40)	SISO	2422	0.637	0.680	93.68	0.28	0.03
		2437	0.638	0.680	93.82	0.28	0.03
		2452	0.638	0.680	93.82	0.28	0.03

1.2 Test Graph

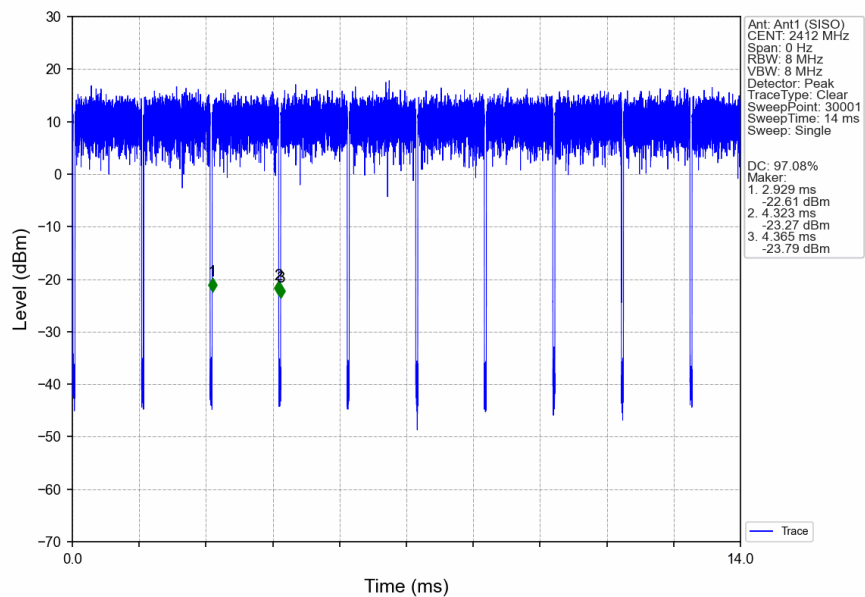
1.2.1 Ant1



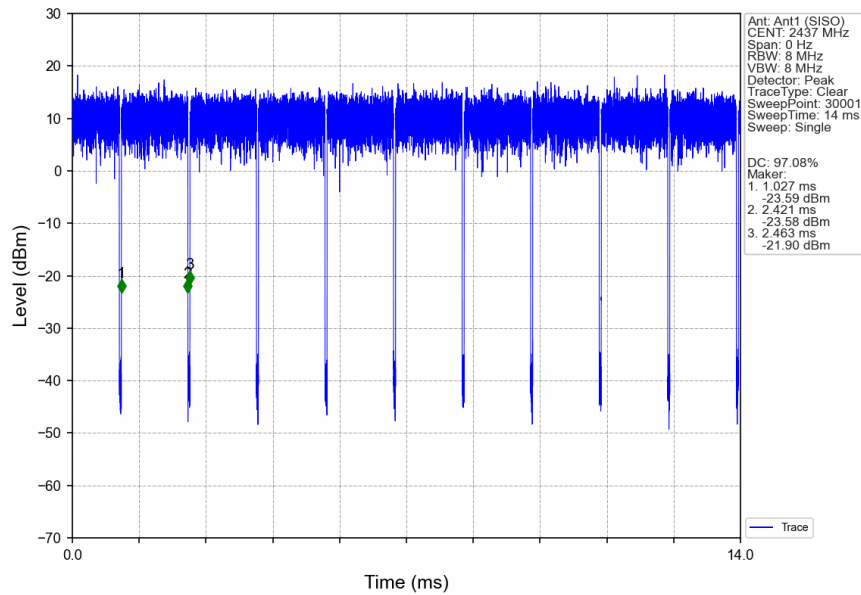
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



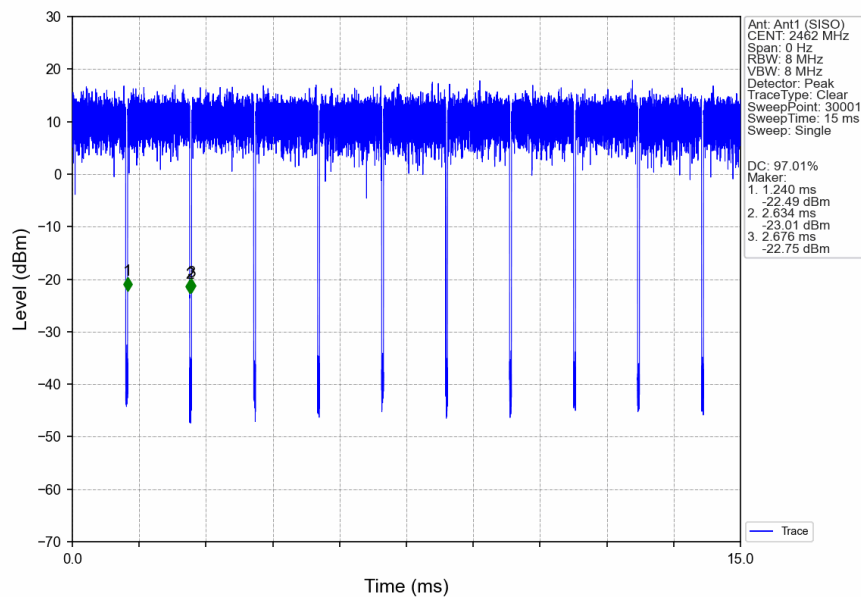
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



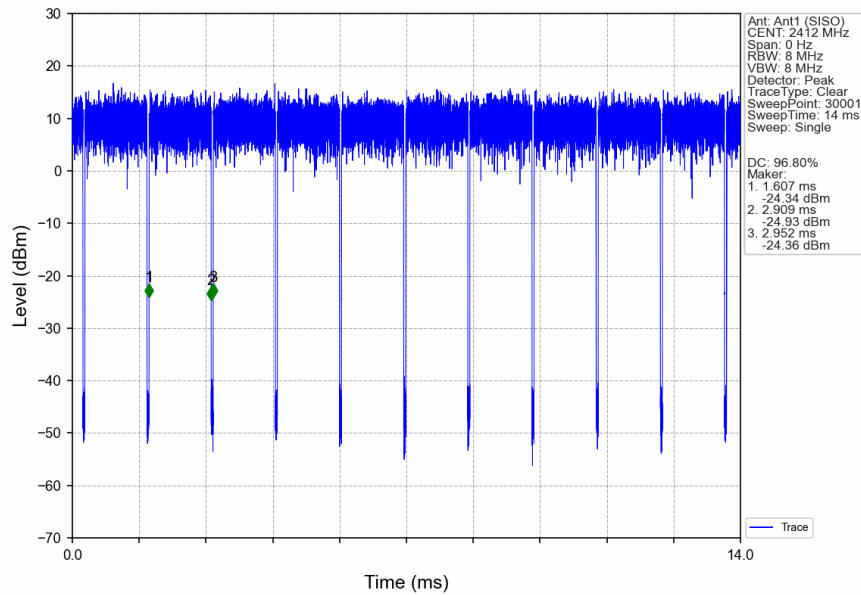
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



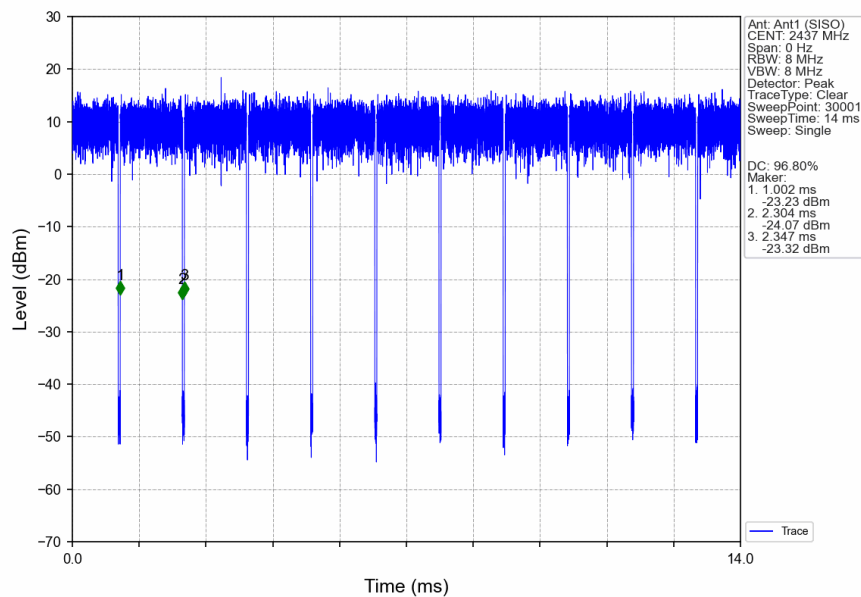
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



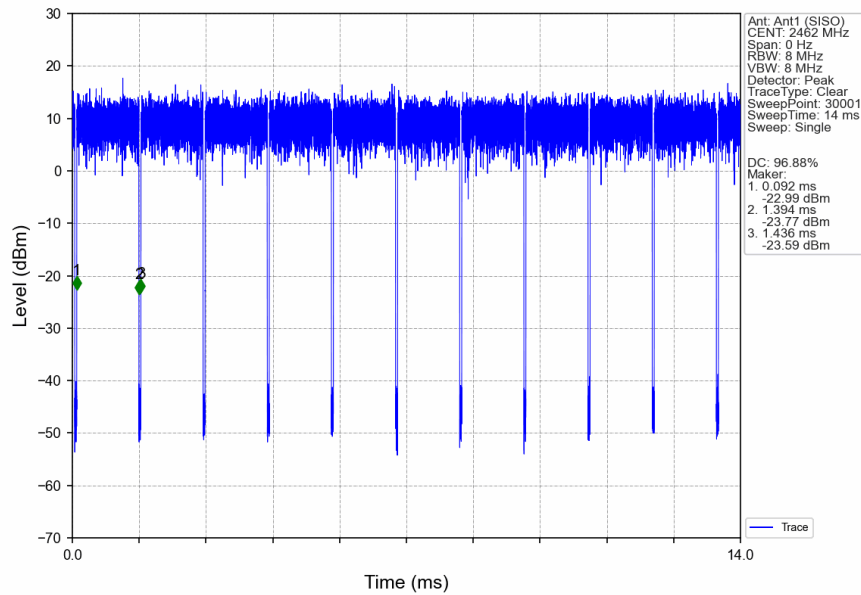
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



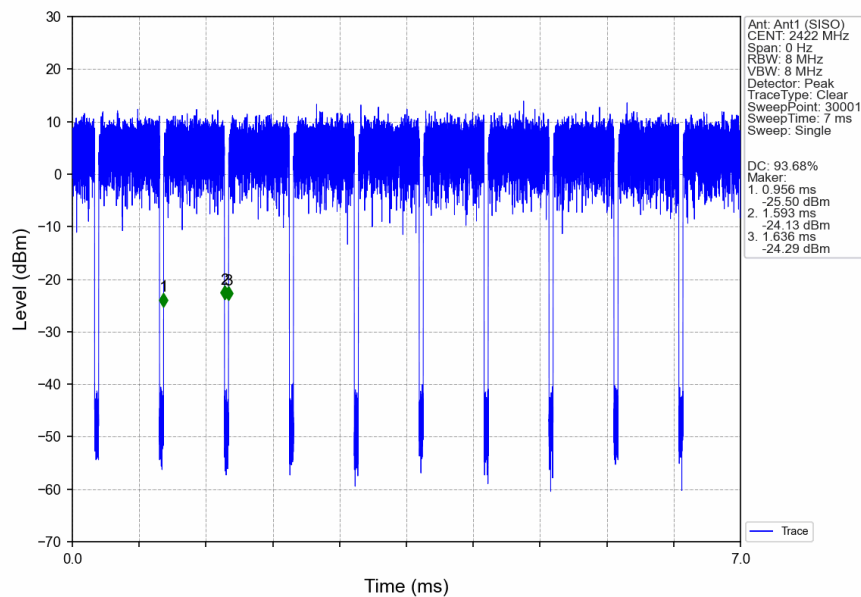
802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



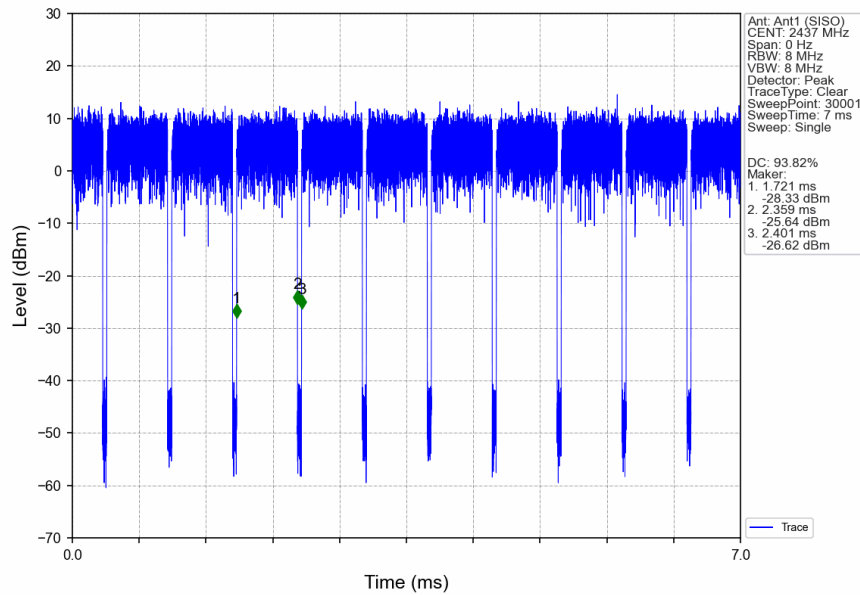
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



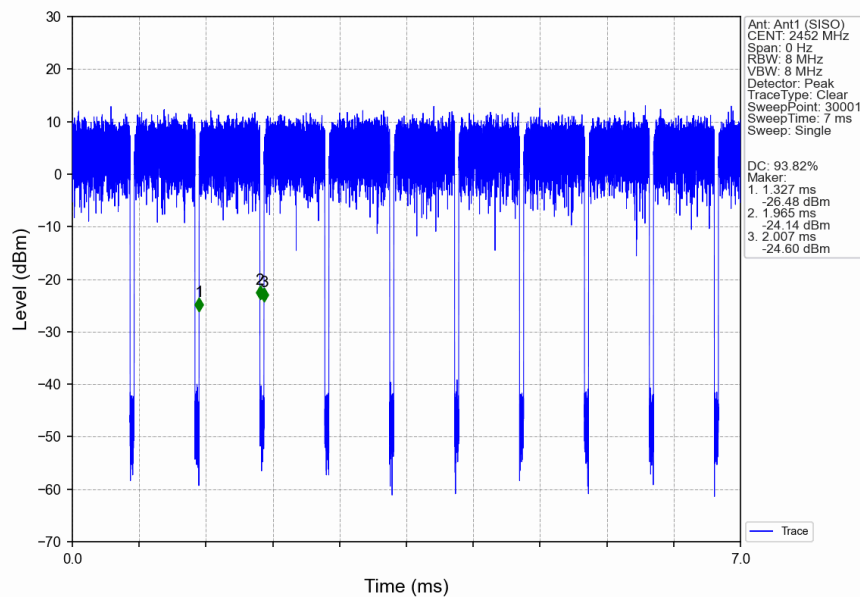
802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



2. Bandwidth

2.1 Test Result

2.1.1 OBW

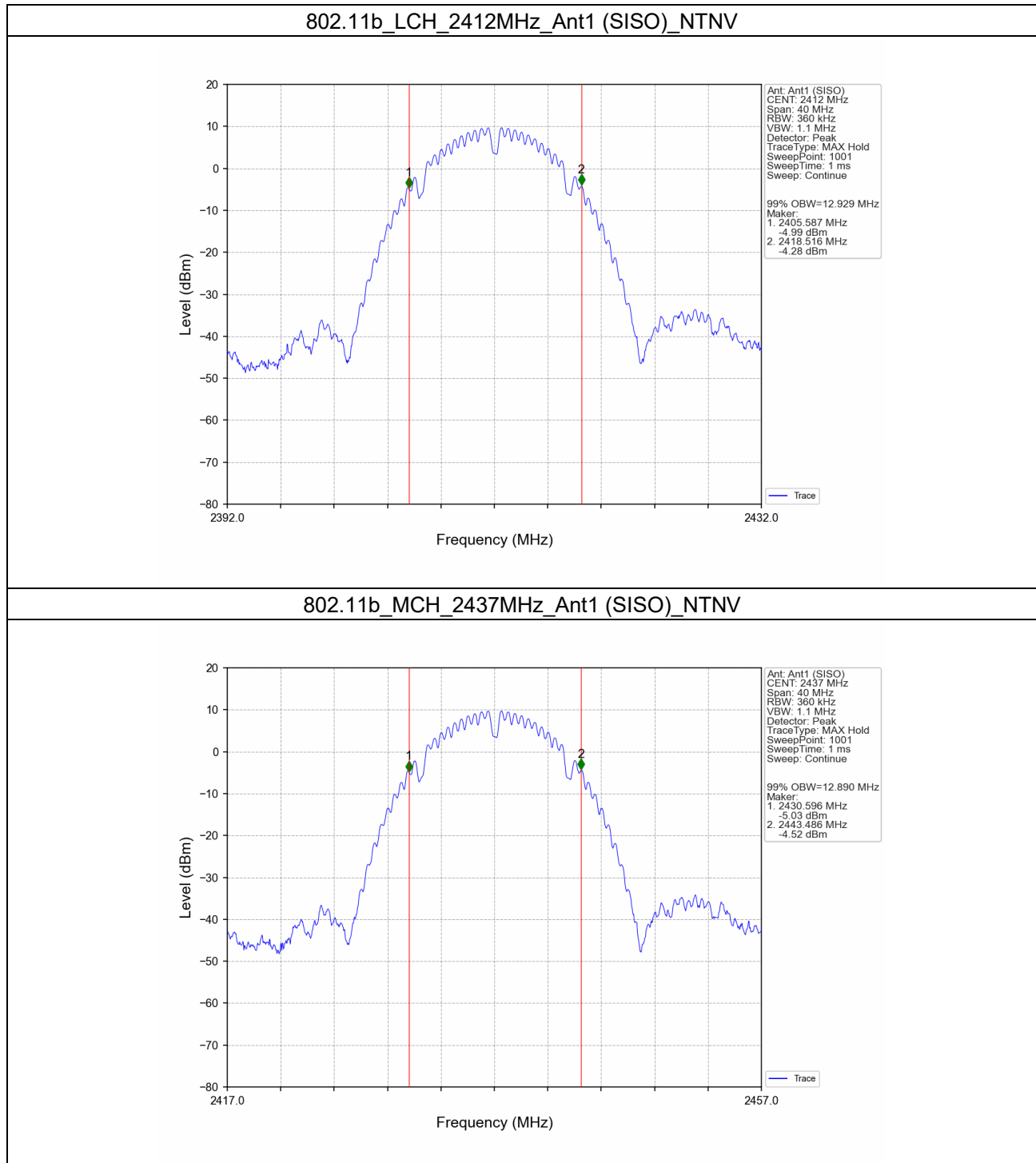
Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)		Verdict
				Result	Limit	
802.11b	SISO	2412	1	12.929	/	Pass
		2437	1	12.890	/	Pass
		2462	1	12.870	/	Pass
802.11g	SISO	2412	1	17.330	/	Pass
		2437	1	17.283	/	Pass
		2462	1	17.304	/	Pass
802.11n (HT20)	SISO	2412	1	18.141	/	Pass
		2437	1	18.189	/	Pass
		2462	1	18.111	/	Pass
802.11n (HT40)	SISO	2422	1	36.352	/	Pass
		2437	1	36.486	/	Pass
		2452	1	36.437	/	Pass

2.1.2 6dB BW

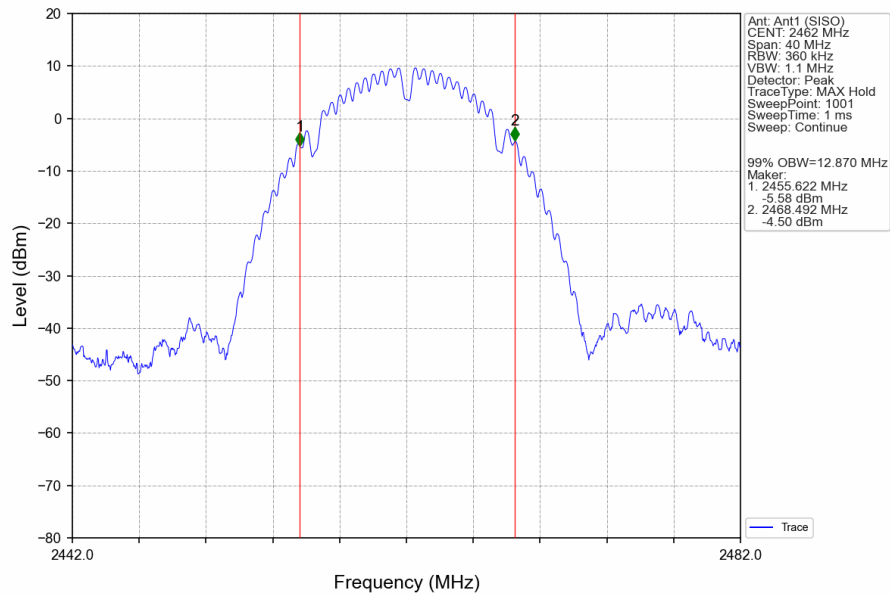
Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
802.11b	SISO	2412	1	8.247	≥ 0.5	Pass
		2437	1	8.241	≥ 0.5	Pass
		2462	1	8.242	≥ 0.5	Pass
802.11g	SISO	2412	1	16.264	≥ 0.5	Pass
		2437	1	16.078	≥ 0.5	Pass
		2462	1	16.251	≥ 0.5	Pass
802.11n (HT20)	SISO	2412	1	17.468	≥ 0.5	Pass
		2437	1	16.931	≥ 0.5	Pass
		2462	1	17.367	≥ 0.5	Pass
802.11n (HT40)	SISO	2422	1	35.102	≥ 0.5	Pass
		2437	1	35.515	≥ 0.5	Pass
		2452	1	35.728	≥ 0.5	Pass

2.2 Test Graph

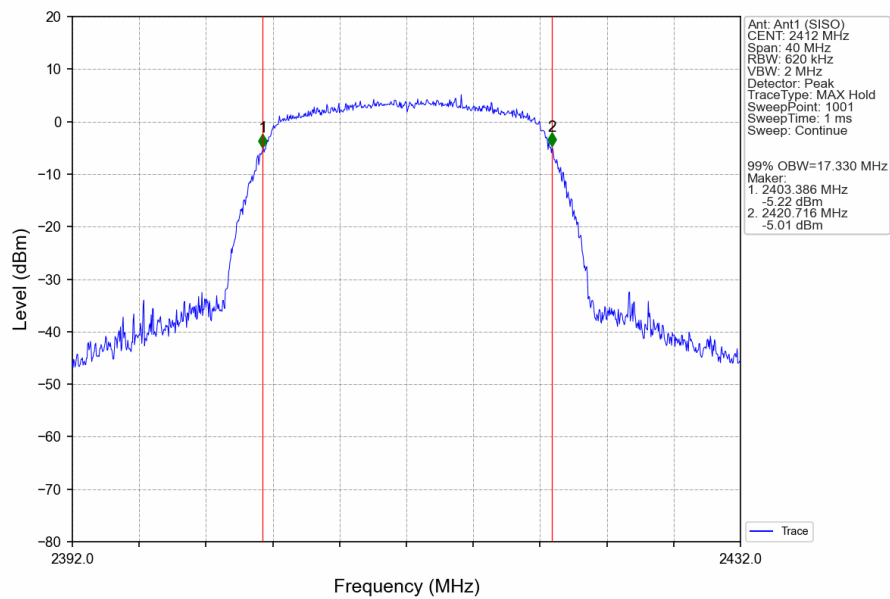
2.2.1 OBW



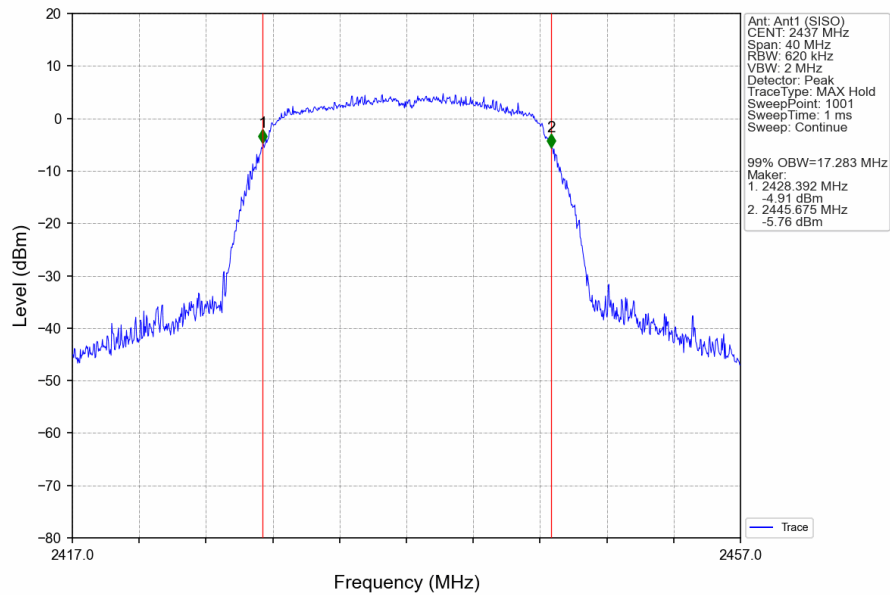
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



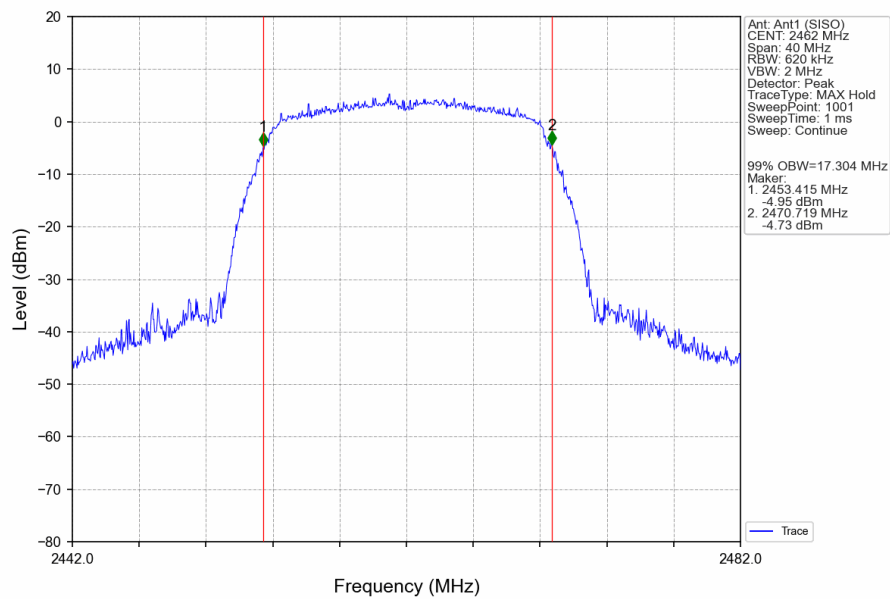
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



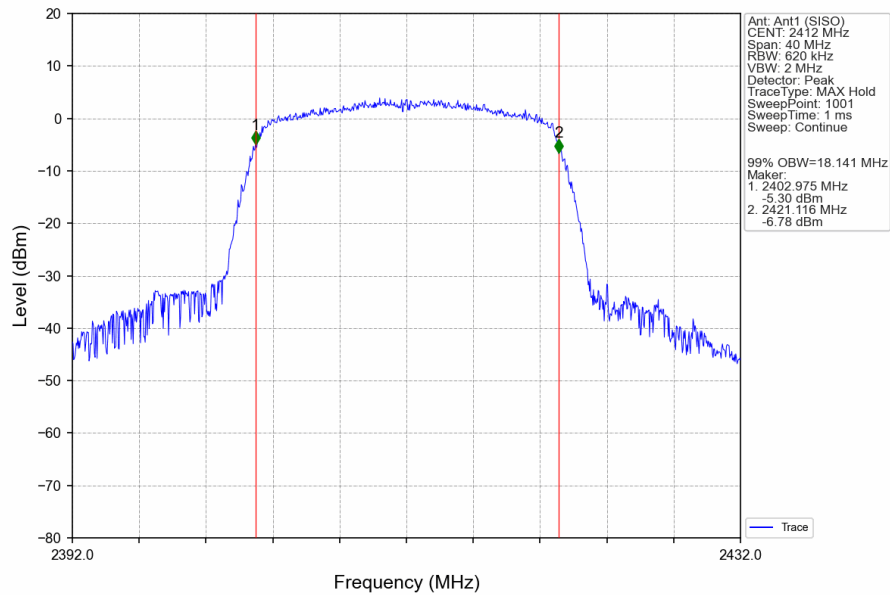
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV

