



Test report No:
2680235R.701A

FCC TEST REPORT

Product Name	Cleco Connected Electronic Torque Wrench
Trademark	NA
Model and /or type reference	ETWC25IC-NA, ETWC100IC-NA, ETWC340IC-NA
FCC ID	2BGBLETW01
Applicant's name / address	Apex Tool Group 670 Industrial Drive Lexington, SC 29072, USA
Test method requested, standard	47 CFR FCC Part 15 (Section 15.247) ANSI C63.10: 2020
Verdict Summary	IN COMPLIANCE
Tested By (name / position & signature)	Tim Cao / Project Manager 
Approved by (name / position & signature)	Frank He / Technical Manager 
Date of issue	2026-09-15
Report Version	V1.0
Report template No.	Template_FCC Part 15C-RF-V1.0

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COMPETENCES AND GUARANTEES

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

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

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

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

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

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GENERAL CONDITIONS

Test Location	No. 668, Jiangling Nanxiang Road, Wujiang District, Suzhou City, Jiangsu Province, 215200 People's Republic of China
Test Facility	A2LA (Certificate No. 3235.01) CNAS (Certificate No. L5313) FCC - Designation Number: CN1199 Test Firm Registration Number: 566524 ISED - CAB identifier: CN0040 IC#: 4075B
Date (receive sample)	Aug. 08, 2026
Date (start test)	Aug. 10, 2026
Date (finish test)	Aug. 30, 2026

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or Competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA.
5. The measurement result is considered in conformance with the requirement if it is within the prescribed limit, it is not necessary to account the uncertainty associated with the measurement result.

DOCUMENT HISTORY

Report No.	Version	Description	Issued Date
2680235R.701A	V1.0	Initial issue of report.	2026-09-15

TEST SUMMARY

Requirement – Test Item	Standard(s)	Verdict	Remark
DTS Bandwidth	FCC 15.247(a)(2)	PASS	Test data please refer to Appendix
Maximum conducted output power	15.247 (b)(3)	PASS	Test data please refer to Appendix
Maximum power spectral density	FCC 15.247(e)	PASS	Test data please refer to Appendix
Band edge measurements	FCC 15.247(d) FCC 15.205 FCC 15.209	PASS	Test data please refer to Appendix
Conducted Spurious Emission	FCC 15.247(d), FCC 15.209	PASS	Test data please refer to Appendix
Duty cycle	ANSI C63.10	PASS	Test data please refer to Appendix
Emissions in Restricted Bands	FCC 15.205 FCC 15.209	PASS	Test data please refer to Appendix
AC Power Line Conducted Emission	FCC 15.207	PASS	Test data please refer to Appendix
Antenna Requirement	FCC 15.203	PASS	---

USED EQUIPMENT

Conducted Test

Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Shielded room	Maorui	5m*4m*3m	SR103	2023.08.23	2028.08.22
Wideband Radio Communication	R&S	CMW 500	163864	2026.05.08	2027.05.07
Signal Generator	R&S	SMR 20	100654	2026.05.08	2027.05.07
MAX Signal Analyzer	Keysight	N9020B	MY63490118	2026.08.04	2027.08.03
RF Control Unit	Tonscend	JS0806-2	806JS2X021710251017	2026.06.23	2027.06.22
Frequency extender for EXG or MXG	Keysight	N5182BX07	MY59362500	2026.06.17	2027.06.16
MXG-B RF Vector Signal Generator	Keysight	N5182B	MY61252529	2026.06.17	2027.06.16
Test Software	Tonscend	TS1120	JS1120-3	N/A	N/A

Radiated Emission (9KHz-1GHz)

Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
semi-anechoic chamber	Maorui	9m*6m*6m	AC102	2023.08.23	2028.08.22
Bilog Antenna	TESEQ	CBL6112D	57867	2026.05.11	2027.05.10
EMI test receiver	R&S	ESR7	102753	2026.05.08	2027.05.07
Temperature/Humidity Meter	RITERS	RTS-8S	13	2026.08.29	2027.08.28
Temperature/Humidity Meter	RITERS	RTS-8S	15	2026.08.25	2027.08.24
Dekra test software	Dekra	N/A	N/A	N/A	N/A

AC Power Line Conducted Emission

Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Shielded room	Maorui	9m*4m*4m	SR104	2023.08.23	2028.08.22
V-network	R&S	ENV216	101516	2026.05.10	2027.05.09
EMI test receiver	R&S	ESR3	103140	2026.05.07	2027.05.06
V-LISN	R&S	ENV4200	100748	2026.05.10	2027.05.09
Temperature/Humidity Meter	RITERS	RTS-8S	026	2026.08.29	2027.08.28
Dekra test software	Dekra	N/A	N/A	N/A	N/A

Radiated Emission Band Edge (1GHz-40GHz)

Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Fully-anechoic chamber	Maorui	9m*6m*6m	AC103	2023.08.23	2028.08.22
MAX Signal Analyzer	Keysight	N9020B	MY63490118	2026.08.04	2027.08.03
Horn Antenna	RF SPIN	DRH18-E	KV2D11A18ES	2025.10.19	2026.10.18
Low Noise Amplifier	Tonscend	TAP01018048S	AP23J8060307	2025.10.16	2026.10.15
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	01312	2025.10.24	2026.10.23
Low Noise Amplifier	ESE	LNA1840	LNA23070301	2025.10.16	2026.10.15
Temperature/Humidity Meter	RITERS	RTS-8S	010	2026.08.25	2027.08.24
Test Software	Tonscend	J536	JS36-RSE	N/A	N/A

UNCERTAINTY

Uncertainties have been calculated according to the DEKRA internal document. The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%.

Test item Test Location	Uncertainty
AC Power Line Conducted Emission	9kHz~150kHz: 2.8 dB 150kHz~30MHz: 2.4 dB
Peak Power Output	± 1.3 dB
Radiated Emission(30MHz~1GHz)	Horizontal: 30MHz~200MHz: 3.5 dB 300MHz~1GHz: 3.6 dB Vertical: 30MHz~200MHz: 3.6 dB 300MHz~1GHz: 3.5 dB
Radiated Emission(1GHz~26.5GHz)	Horizontal: 1GHz~18GHz: 5.0 dB Vertical: 1GHz~18GHz: 4.8 dB Horizontal: 18GHz~26.5GHz: 5.3 dB Vertical: 18GHz~26.5GHz: 4.9 dB
RF antenna conducted test	± 1.3 dB
Carrier Frequency Separation	± 1.0 kHz
Number of Hopping Frequencies	± 1.0 kHz
Time of Occupancy (Dwell Time)	± 0.10 us
Radiated Emission Band Edge	± 3.9 dB
DTS Bandwidth	± 1.0 kHz
Occupied Bandwidth	± 1.0 kHz
Power Density	± 1.3 dB

1 GENERAL INFORMATION

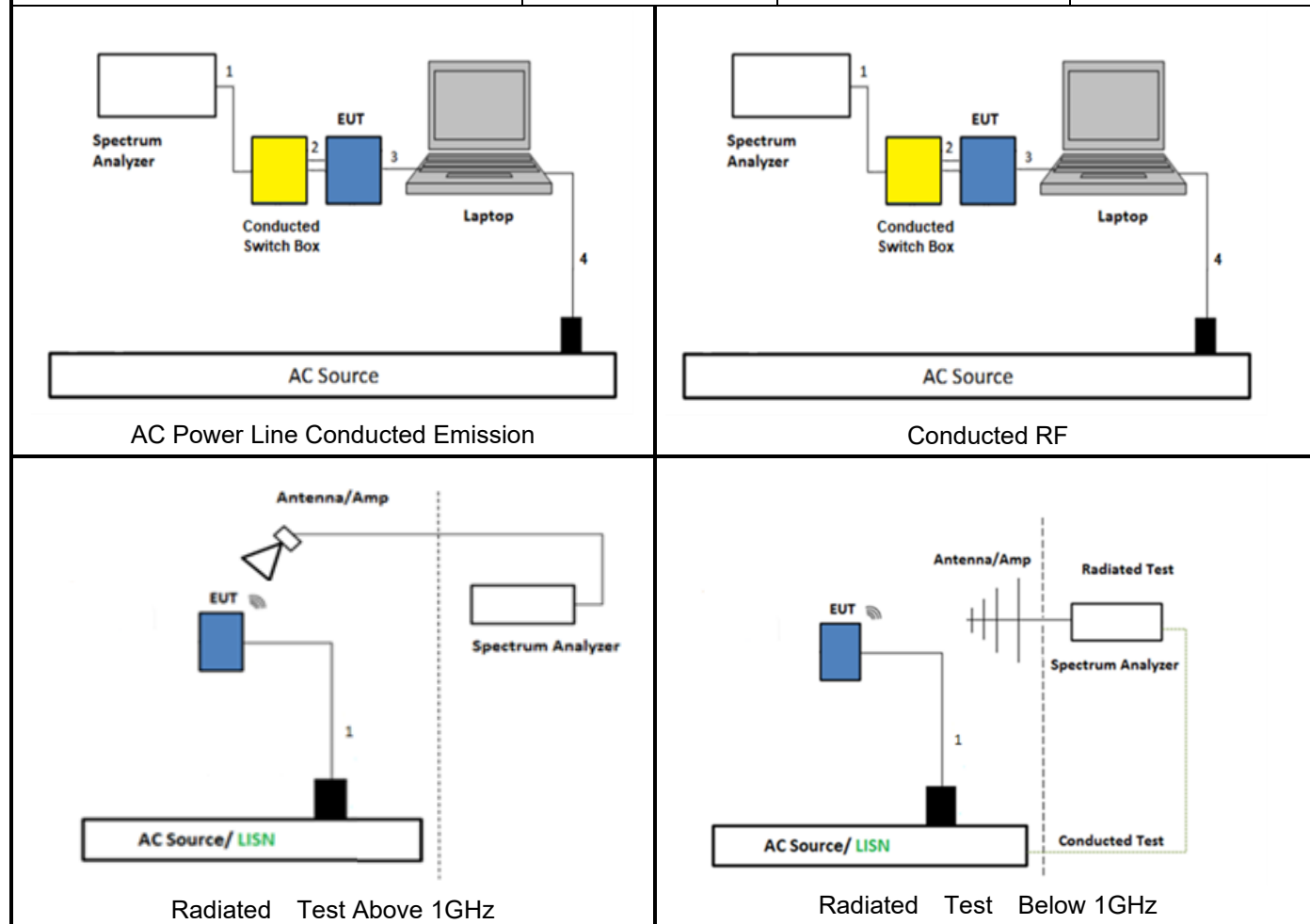
Product Name	Cleco Connected Electronic Torque Wrench	
Model No.	ETWC25IC-NA, ETWC100IC-NA, ETWC340IC-NA	
Trademark.	NA	
FCC ID.....	2BGBLETW01	
Hardware Version.....	NA	
Software Version	NA	
Model Differences	Differences of the three models are the torque head dimensions and the length of mechanical part.	
Manufacturer	Apex Tool Group	
Manufacturer Address	670 Industrial Drive Lexington, SC 29072, USA	
Factory.....	Jacobs Chuck Manufacturing (Suzhou) Co.,. Ltd.	
Factory Address	No. 26, Baiyu Road, S.I.P. Suzhou, China	
Power Supply	3.6 Vdc, EUT is equipped with an adapter to power it via AC/DC.	
SN.....	RF Conducted	#1
	RSE	#2
Wireless specification	Wi-Fi	
Wireless specification	802.11b / g / n	
Operating frequency range(s)	2412~2462MHz	
Type of Modulation	DSSS / OFDM	
Smart System	☒	SISO
	☐	MIMO-CDD
Device category	☐	Fixed point-to-point
	☐	Emit multiple directional beams, simultaneously or sequentially
	☒	Other cases
Antenna type	PCB	
Antenna Gain	4.0 dBi	
Remark: As above information is provided and confirmed by the applicant. DEKRA is not liable to the accuracy, suitability, reliability or/and integrity of the information.		

Power setting in test

2.4GHz WLAN	Mode	Channel	Frequency (MHz)	Power Setting
	802.11b 1Mbps	1	2412	115.0
		6	2437	115.0
		11	2462	115.0
	802.11g 6Mbps	1	2412	103.0
		6	2437	103.0
		11	2462	103.0
	802.11n-HT20 MCS0	1	2412	92.0
		6	2437	92.0
		11	2462	92.0
	802.11n-HT40 MCS0	3	2422	89.0
		6	2437	89.0
		9	2452	89.0

2 DESCRIPTION OF TEST SETUP

Auxiliary equipment	Type / Version	Manufacturer	Supplied by
(1) Notebook	Think pad x220	Lenovo	Adapter
(2) Ethernet cable	N/A	N/A	N/A
(3) Ethernet cable	N/A	N/A	N/A
Software	Type / Version	Manufacturer	Supplied by
ADB	N/A	N/A	N/A



Accessories Information	Cable		
	Length used during test [m]	Attached during test	Shielded
(2) Ethernet cable	1	☒	☒
(3) Ethernet cable	8	☒	☒

3 VERDICT SUMMARY SECTION

This chapter presents an overview of standards and results. Refer to the next chapters for details of measured test results and applied test levels.

3.1 Standards

Standard	Year	Description
FCC CFR Title 47 Part 15 Subpart C Section 15.247	2020	Operation within the bands 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz.
ANSI C63.10	2020	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
KDB 558074 D01V05r02	2019	Guidance for performing compliance measurements on Digital Transmission System (DTS) operating under section 15.247
KDB 662911 D01V02r01	2020	Provision to Allow Measurement of Directional Gain of Multi-Antenna Systems for Compliance Verification

3.2 Deviation(s) from the Standard(s) / Test Specification(s)

The following deviation(s) was / were made from the published requirements of the listed standards: N/A.

(Please define the deviations from the standard(s) if applicable)

4 TEST RESULTS

4.1 AC Power Line Conducted Emission

VERDICT: PASS

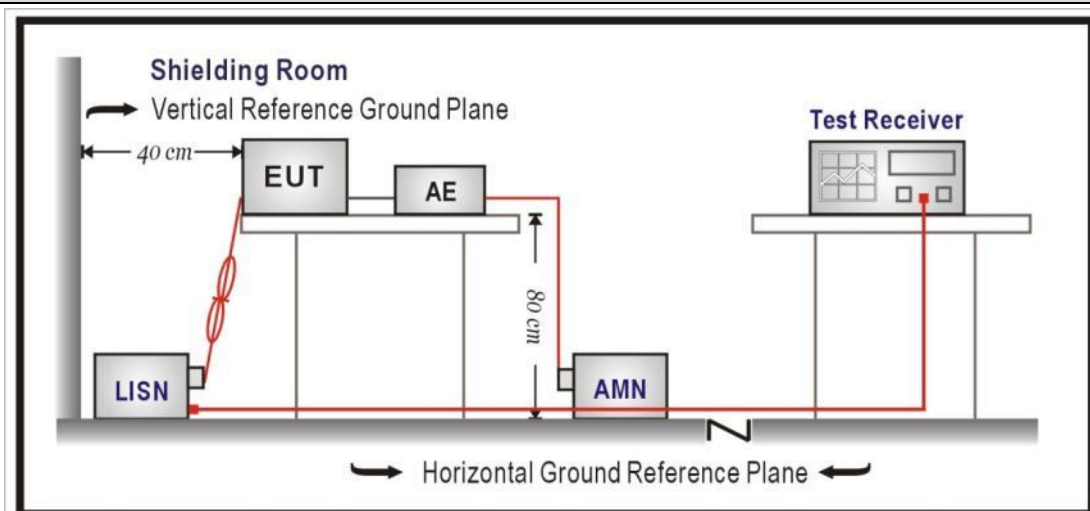
4.1.1 Limit

Standard	FCC Part 15 Subpart C Paragraph 15.207	
Frequency range [MHz]	Limit: QP [dB(μV) ¹⁾]	Limit: AV [dB(μV) ¹⁾]
0,15 - 0,50	66 - 56 ²⁾	56 - 46 ²⁾
0,50 - 5,0	56	46
5,0 - 30	60	50

¹⁾ At the transition frequency, the lower limit applies.

²⁾ The limit decreases linearly with the logarithm of the frequency.

4.1.2 Test Setup



4.1.3 Test Procedure

	References Rule	Chapter	Item
☒	ANSI C63.10	6.2	Standard test method for ac power-line conducted emissions from unlicensed wireless devices

4.2 Emissions in restricted frequency bands**VERDICT: PASS****4.2.1 Limit****Standard** FCC Part 15 Subpart C Paragraph 15.205; 15.209

Restricted Bands of operation for FCC

Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 – 0.110	16.42 – 16.423	399.9 – 410	4.5 – 5.15
0.495 – 0.505	16.69475 – 16.69525	608 – 614	5.35 – 5.46
2.1735 – 2.1905	16.80425 – 16.80475	960 – 1240	7.25 – 7.75
4.125 – 4.128	25.5 – 25.67	1300 – 1427	8.025 – 8.5
4.17725 – 4.17775	37.5 – 38.25	1435 – 1626.5	9.0 – 9.2
4.20725 – 4.20775	73 – 74.6	1645.5 – 1646.5	9.3 – 9.5
6.215 – 6.218	74.8 – 75.2	1660 – 1710	10.6 – 12.7
6.26775 – 6.26825	108 – 121.94	1718.8 – 1722.2	13.25 – 13.4
6.31175 – 6.31225	123 – 138	2200 – 2300	14.47 – 14.5
8.291 – 8.294	149.9 – 150.05	2310 – 2390	15.35 – 16.2
8.362 – 8.366	156.52475 – 156.52525	2483.5 – 2500	17.7 – 21.4
8.37625 – 8.38675	156.7 – 156.9	2690 – 2900	22.01 – 23.12
8.81425 – 8.81475	162.0125 – 167.17	3260 – 3267	23.6 – 24.0
12.29 – 12.293	167.72 – 173.2	3332 – 3339	31.2 – 31.8
12.51975 – 12.52025	240 – 285	3345.8 – 3358	36.43 – 36.5
12.57675 – 12.57725	322 – 335.4	3600 – 4400	Above 38.6
13.36 – 13.41	--	--	--

Restricted Band Emissions Limit

Frequency (MHz)	Field strength (μV/m)	Field strength (dBμV/m)	Measurement distance (m)
0.009 - 0.49	2400/F(kHz)	48.5 – 13.8	300 _(Note 1)
0.49 - 1.705	24000/F(kHz)	33.8 - 23	30 _(Note 1)
1.705 - 30	30	29.5	30 _(Note 1)
30 - 88	100	40	3 _(Note 2)
88 - 216	150	43.5	3 _(Note 2)
216 - 960	200	46	3 _(Note 2)
Above 960	500	54	3 _(Note 2)

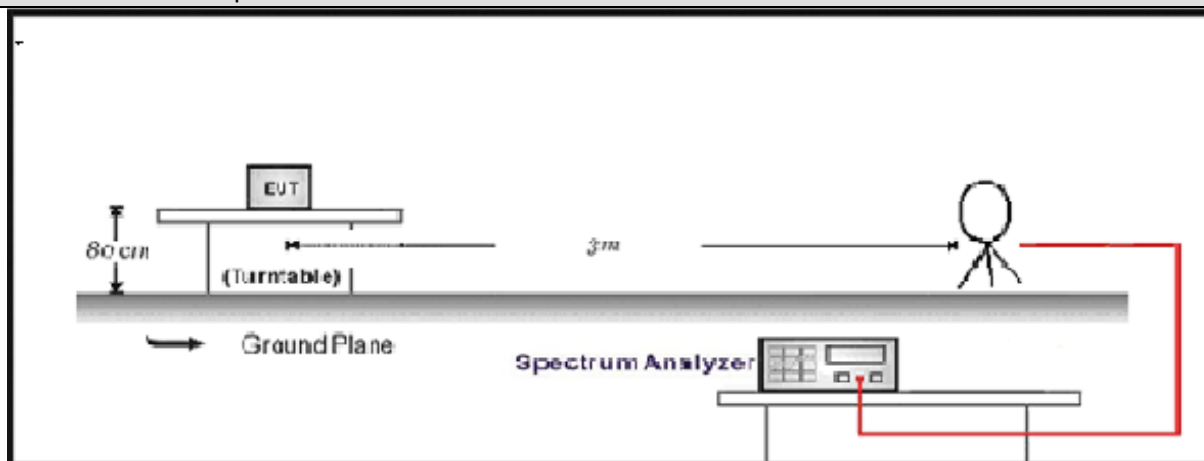
Note 1: At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade).

Note 2: At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation

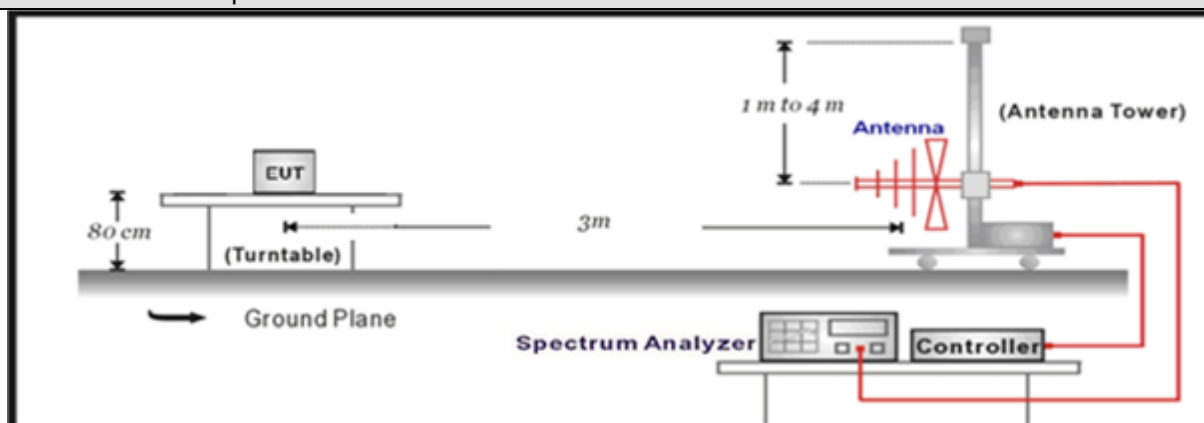
factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

4.2.2 Test Setup

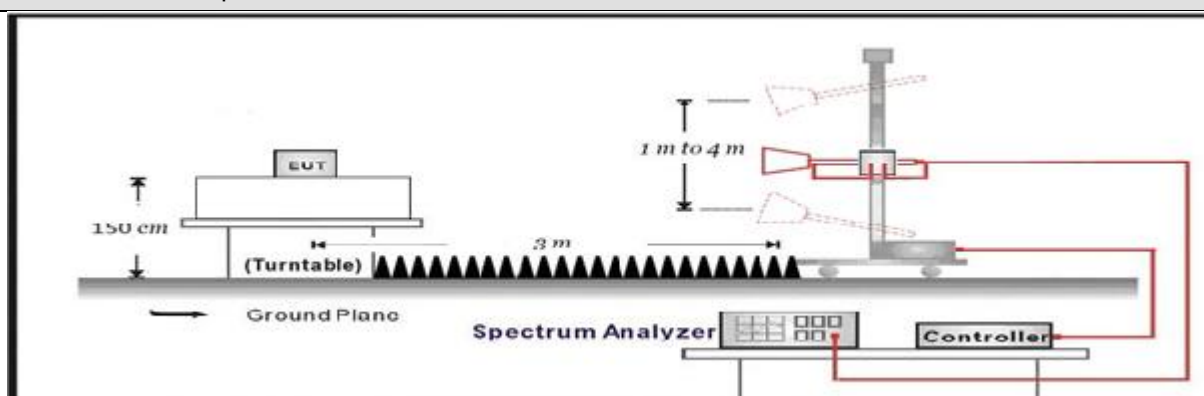
Below 30MHz Test Setup:



30MHz-1GHz Test Setup:



Above 1GHz Test Setup:



4.2.3 Test Procedure

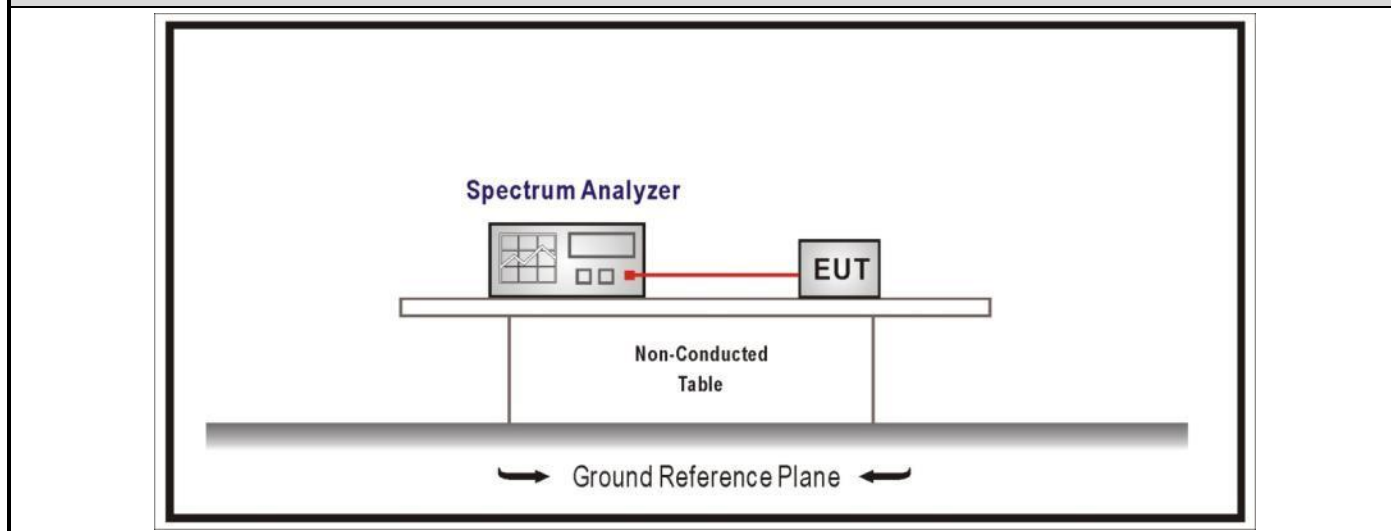
	References Rule		Chapter	Description
☒	ANSI C63.10		11.12	Emissions in restricted frequency bands
	☒	ANSI C63.10	11.12.1	Radiated emission measurements
	☒	ANSI C63.10	6.3	Radiated spurious emission test
	☒	ANSI C63.10	6.4	Radiated emissions from unlicensed wireless devices below 30 MHz
	☒	ANSI C63.10	6.5	Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz
	☒	ANSI C63.10	6.6	Radiated emissions from unlicensed wireless devices above 1 GHz

4.3 Emissions in non-restricted frequency band**VERDICT: PASS****4.3.1 Limit**

Standard	FCC Part 15 Subpart C Paragraph 15.247(d)
RF Output power (Detection methods)	Limit(dB)
RF Output power(Average detector)	30dBc(Note1)
RF Output power(PK detector)	20dBc(Note2)

Note 1: If maximum conducted (average) output power was used to demonstrate compliance as described in 9.2, then the peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum in-band peak PSD level in 100 kHz (i.e., 30 dBc).

Note 2: If the maximum peak conducted output power procedure was used, then the peak output power measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz (i.e., 20 dBc).

4.3.2 Test Setup**4.3.3 Test Procedure**

References Rule		Chapter	Description
☒	ANSI C63.10	11.11	Emissions in non-restricted frequency bands
☒	ANSI C63.10	11.11.1	General
☒	ANSI C63.10	11.11.2	Reference level measurement
☒	ANSI C63.10	11.11.3	Emission level measurement

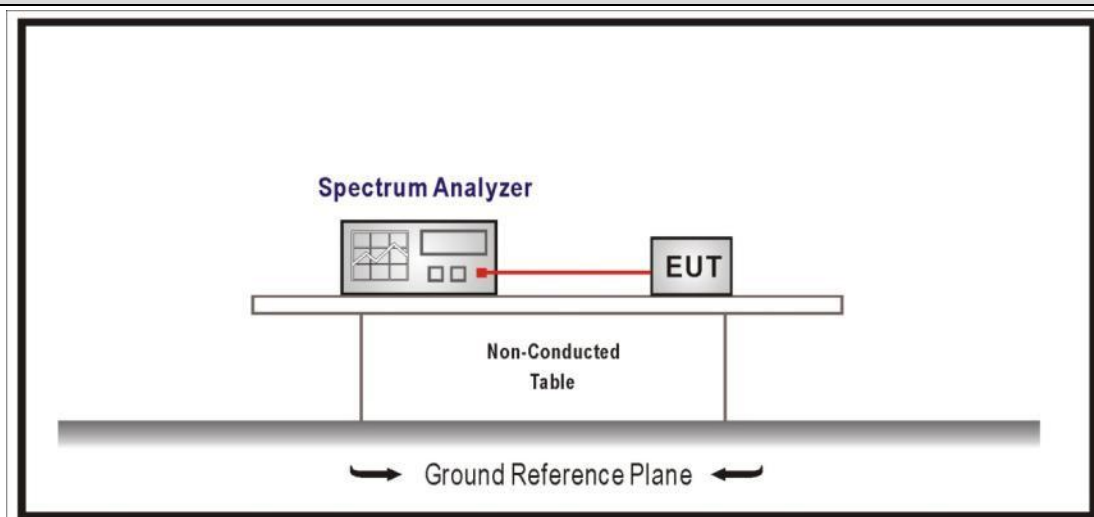
4.4 Duty cycle

VERDICT: PASS

4.4.1 Limit

N/A

4.4.2 Test Setup



4.4.3 Test Procedure

References Rule		Chapter	Description
☒	ANSI C63.10	11.6	Duty cycle (D), transmission duration (T), and maximum power control level

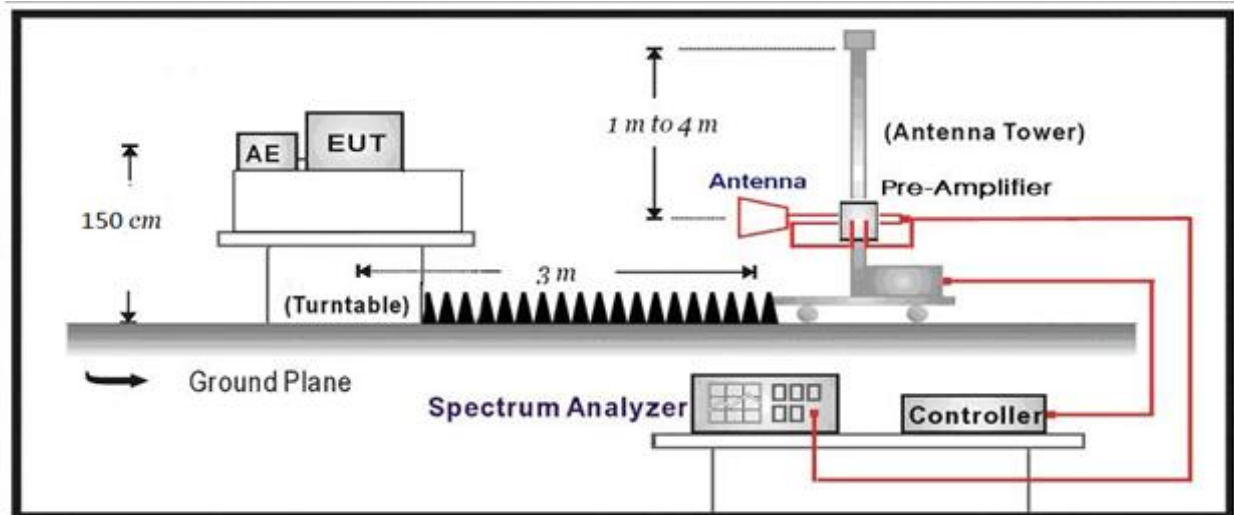
4.5 Radiated Emission Band Edge**VERDICT: PASS****4.5.1 Limit**

Standard		FCC Part 15 Subpart C Paragraph 15.247(d) , 15.205, 15.209		
Frequency bands (MHz)	Detector	Limit (dB μ V/m)	RBW (MHz)	Distance (m)
2310-2390	PK	74	1	3
2483.5-2500	AV	54	1	3

Note: The field strength of emissions appearing within these frequency bands shall not exceed the limits.

4.5.2 Test Setup

Above 1GHz Test Setup:

**4.5.3 Test Procedure**

	References Rule	Chapter	Description
☒	ANSI C63.10	6.10	Band-edge testing
☒	ANSI C63.10	6.10.5	Restricted-band band-edge measurements
☐	ANSI C63.10	6.10.6	Marker-delta method
☒	ANSI C63.10	11.12	Emissions in restricted frequency bands
☒	ANSI C63.10	11.12.1	Radiated emission measurements
☒	ANSI C63.10	6.3	Radiated spurious emission test
☐	ANSI C63.10	6.4	Radiated emissions from unlicensed wireless devices below 30 MHz
☐	ANSI C63.10	6.5	Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz
☒	ANSI C63.10	6.6	Radiated emissions from unlicensed wireless devices above 1 GHz

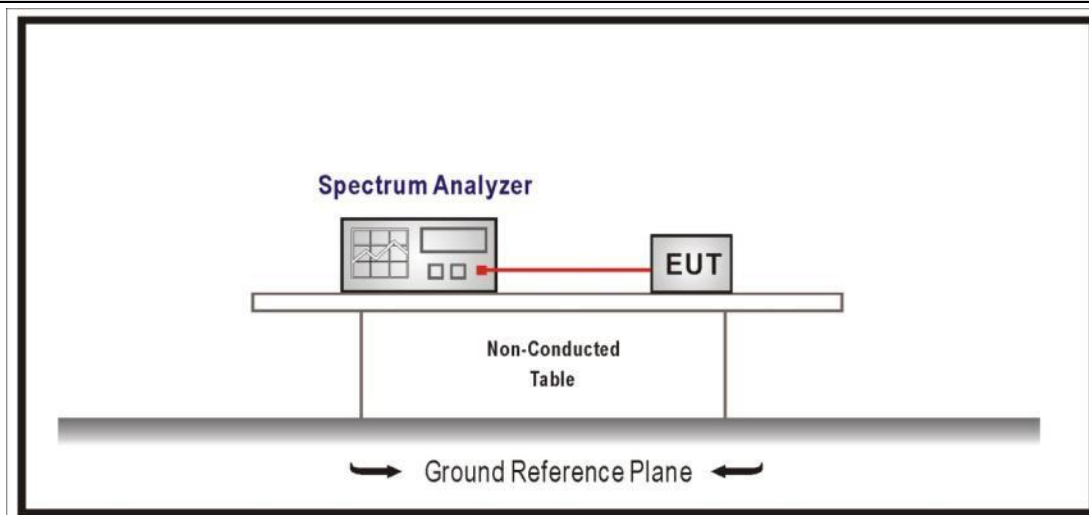
4.6 DTS Bandwidth**VERDICT: PASS****4.6.1 Limit**

Standard	FCC Part 15 Subpart C Paragraph 15.247 (a)(2)
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Systems using digital modulation techniques operate in the 2400-2483.5 MHz. The minimum 6 dB bandwidth shall be at least 500 kHz

Standard	ANSI C63.10 Paragraph 6.7
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The occupied bandwidth or the "99% emission bandwidth" is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained. The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs. The occupied bandwidth should be within the required frequency range.

4.6.2 Test Setup**4.6.3 Test Procedure**

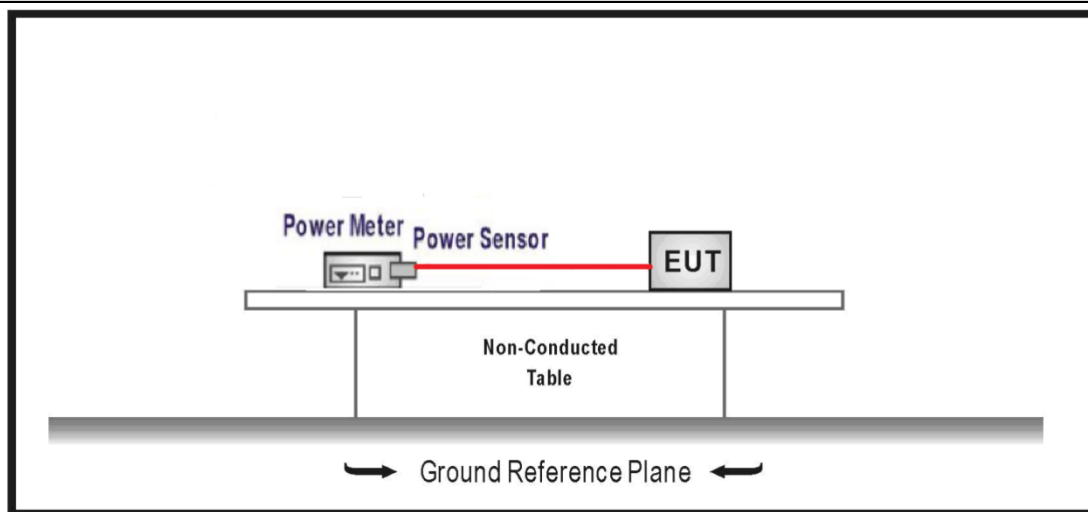
	Reference Rule	Chapter	Description
☒	ANSI C63.10	11.8	DTS bandwidth
	☒ ANSI C63.10	11.8.1	Option 1
	☐ ANSI C63.10	11.8.2	Option 2
☒	ANSI C63.10	6.9	Occupied bandwidth
	☐ ANSI C63.10	6.9.2	relative measurement procedure
	☒ ANSI C63.10	6.9.3	power bandwidth (99%) measurement procedure

4.7 Fundamental emission output power**VERDICT: PASS****4.7.1 Limit**

Standard		FCC Part 15 Subpart C Paragraph 15.247 (b)(3)
☒	GTX <6dBi	Pout≤30dBm
☐	GTX >6dBi	
☐	Non-Fix point-point	Pout≤30-(GTX -6)
☐	Fix point-point	Pout≤30-[(GTX-6)]/3
☐	Point-to-multipoint	Pout≤30-(GTX-6)
☐	Overlap Beams	Pout≤30-[(GTX-6)]/3
☐	Avgregate power transmitted simultaneously on all beams	Pout≤30-[(GTX-6)]/3
☐	single directional beam	Pout≤30-[(GTX-6)]/3+8dB

Note 1 : GTX directional gain of transmitting antennas.

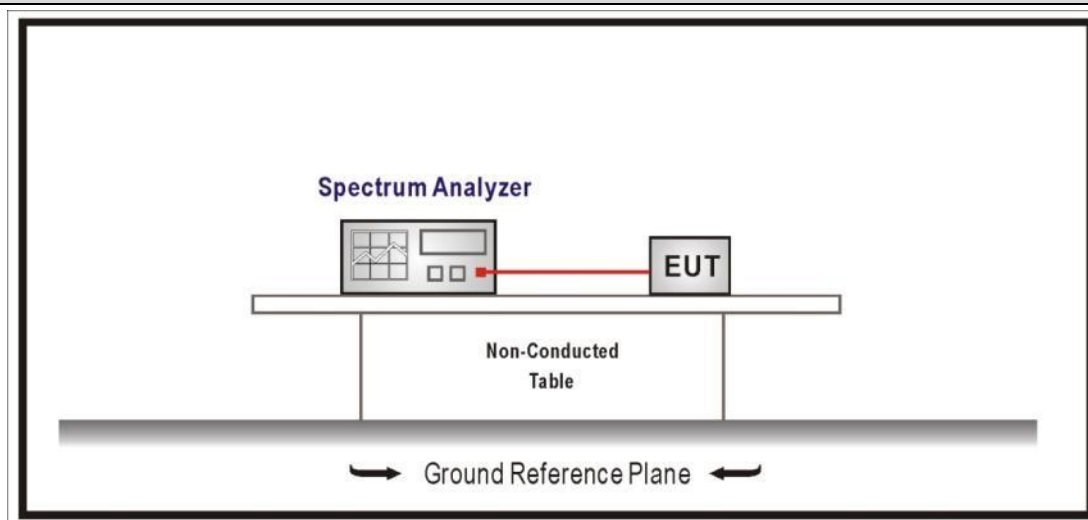
Note 2 : Pout is maximum conducted output power .

4.7.2 Test Setup**4.7.3 Test Procedure**

	References Rule		Chapter	Description
☒	ANSI C63.10		11.9	Fundamental emission output power
☒	ANSI C63.10		11.9.1	Maximum peak conducted output power
	☐	ANSI C63.10	11.9.1.1	RBW ≥ DTS bandwidth
	☒	ANSI C63.10	11.9.1.2	PKPM1 Peak power meter method

4.8 Power Density**VERDICT: PASS****4.8.1 Limit:****Standard**

FCC Part 15 Subpart C Paragraph 15.247 (e)

Power Spectral Density $\leq 8\text{dBm}/3\text{kHz}$ **4.8.2 Test Setup****4.8.3 Test Procedure**

	References Rule		Chapter	Description
☒	ANSI C63.10		11.10	Maximum power spectral density level in the fundamental emission
	☒	ANSI C63.10	11.10.2	Method PKPSD (peak PSD)
☒	KDB 662911		E2)c)	In-Band Power Spectral Density (PSD) Measurements

4.9 Antenna Requirement**VERDICT: PASS****4.9.1 Limit:****Standard**

FCC Part 15 Subpart C Paragraph 15.203

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 shall be considered sufficient to comply with the provisions of this section. 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. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

4.9.2 Antenna Connector Construction:

- | | |
|-------------------------------------|--|
| ☒ | The use of a permanently attached antenna |
| ☐ | The antenna use of a unique coupling to the intentional radiator |
| ☐ | The use of a nonstandard antenna jack or electrical connector |

Please refer to the attached document "Internal Photograph" to show the antenna connector.

5 TEST SETUP PHOTO AND EUT PHOTO

Remark: The test setup photo and EUT Photo please see appendix.

Appendix

DTS Bandwidth

6dB bandwidth:

TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	10.160	2406.960	2417.120	0.5	PASS
11B	Ant1	2437	10.160	2431.960	2442.120	0.5	PASS
11B	Ant1	2462	10.200	2456.920	2467.120	0.5	PASS
11G	Ant1	2412	16.360	2403.880	2420.240	0.5	PASS
11G	Ant1	2437	16.440	2428.840	2445.280	0.5	PASS
11G	Ant1	2462	15.680	2454.200	2469.880	0.5	PASS
11N20SISO	Ant1	2412	17.600	2403.200	2420.800	0.5	PASS
11N20SISO	Ant1	2437	17.600	2428.240	2445.840	0.5	PASS
11N20SISO	Ant1	2462	16.640	2453.640	2470.280	0.5	PASS
11N40SISO	Ant1	2422	35.680	2404.320	2440.000	0.5	PASS
11N40SISO	Ant1	2437	35.840	2419.160	2455.000	0.5	PASS
11N40SISO	Ant1	2452	35.760	2434.160	2469.920	0.5	PASS

Test Graphs

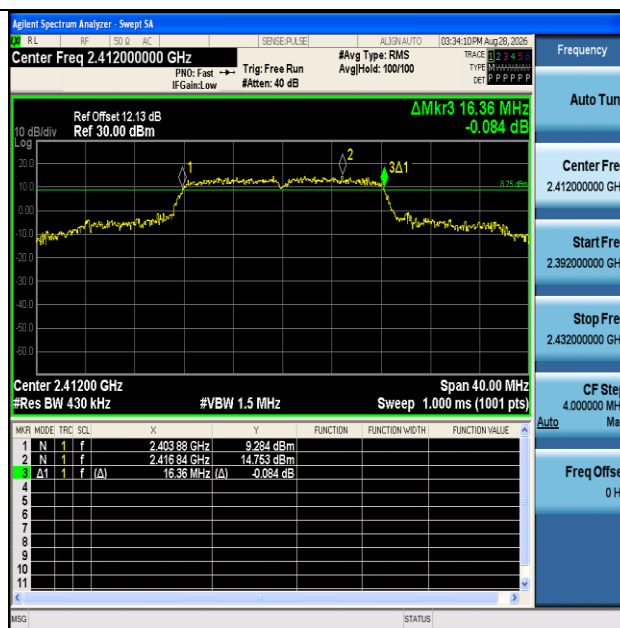




11B-Ant1-2437-PASS



11B-Ant1-2462-PASS



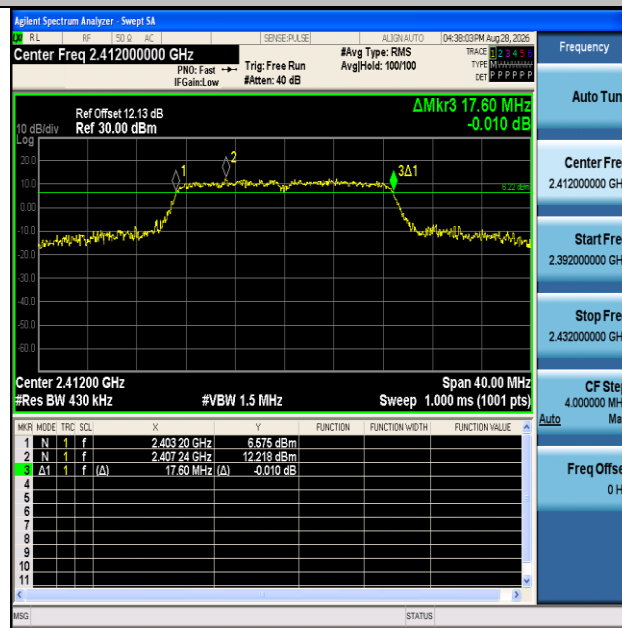
11G-Ant1-2412-PASS



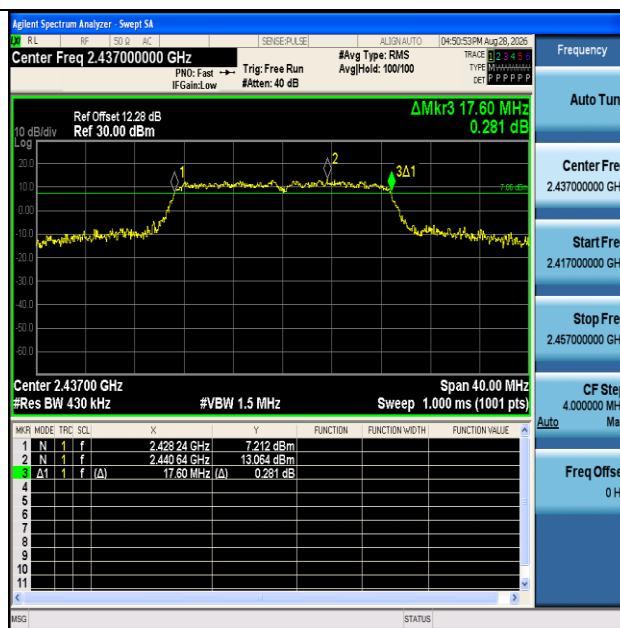
11G-Ant1-2437-PASS



11G-Ant1-2462-PASS



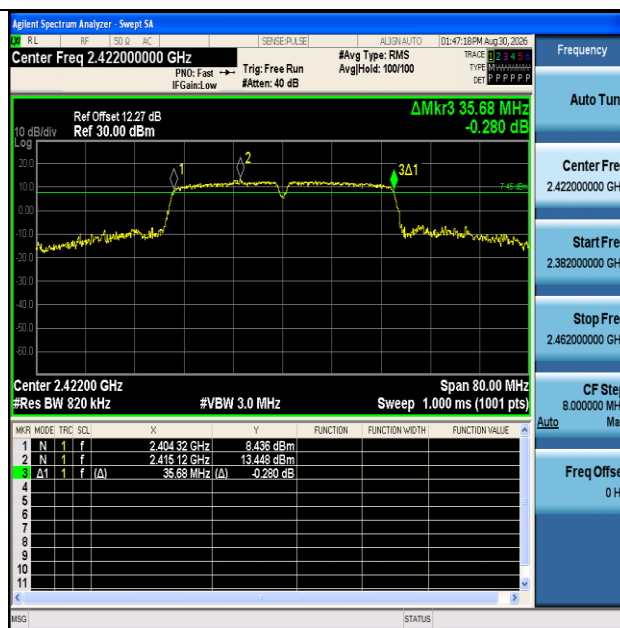
11N20SISO-Ant1-2412-PASS



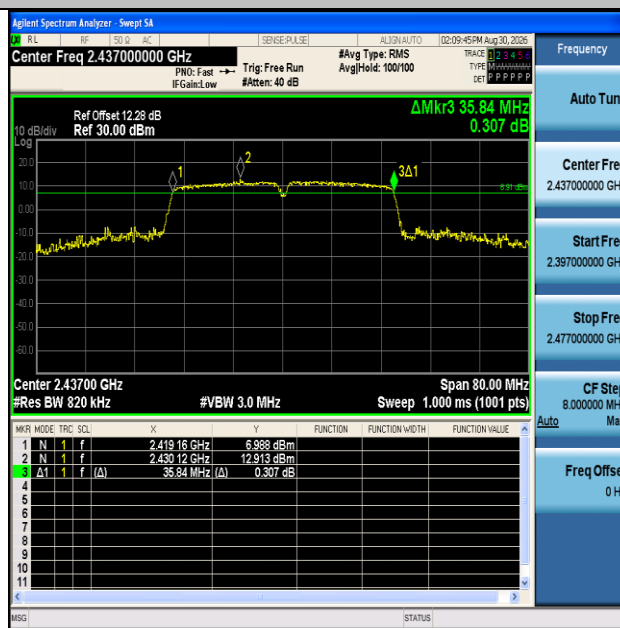
11N20SISO-Ant1-2437-PASS



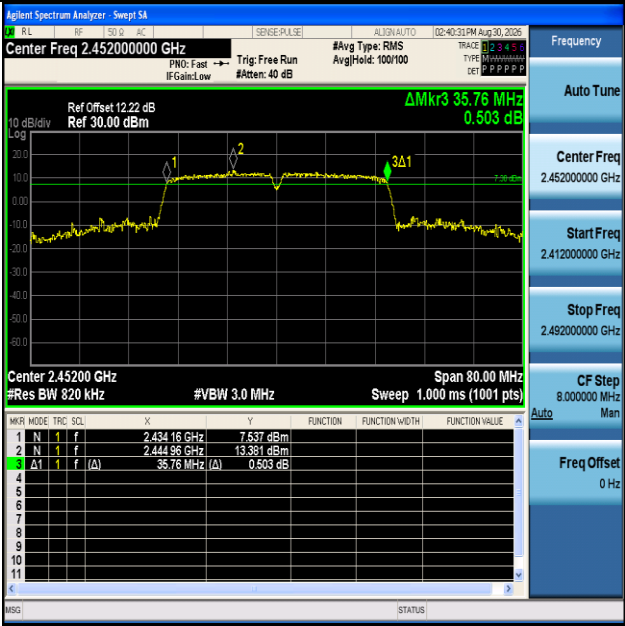
11N20SISO-Ant1-2462-PASS



11N40SISO-Ant1-2422-PASS



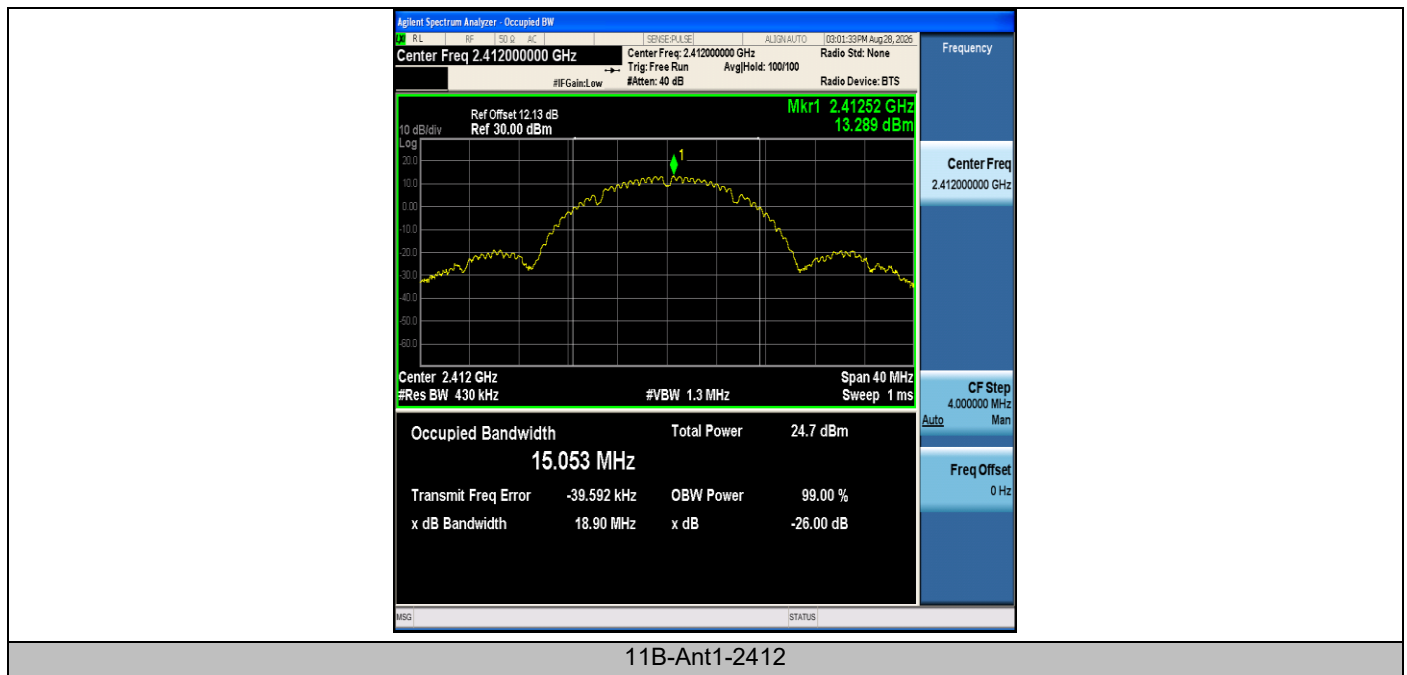
11N40SISO-Ant1-2437-PASS

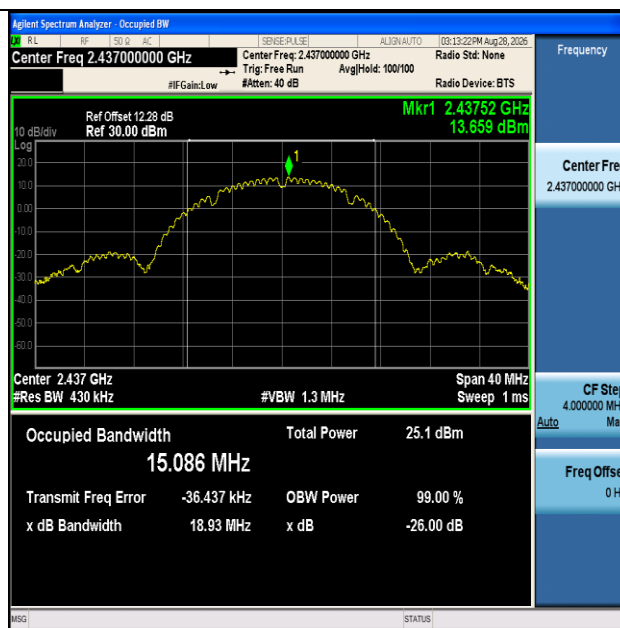


11N40SISO-Ant1-2452-PASS

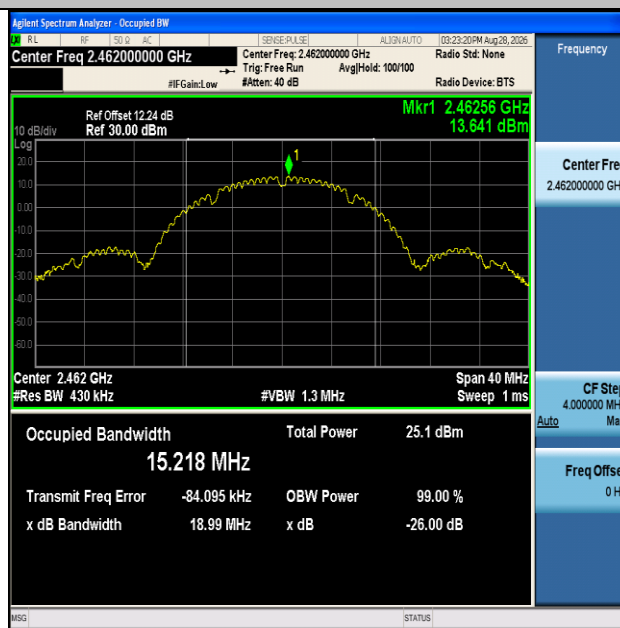
99% Occupied bandwidth:

TestMode	Antenna	Channel Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	15.053	2404.4339	2419.4869	---	---
11B	Ant1	2437	15.086	2429.4206	2444.5066	---	---
11B	Ant1	2462	15.218	2454.3069	2469.5249	---	---
11G	Ant1	2412	24.486	2399.9563	2424.4423	---	---
11G	Ant1	2437	18.344	2427.9465	2446.2905	---	---
11G	Ant1	2462	16.416	2453.8024	2470.2184	---	---
11N20SISO	Ant1	2412	18.804	2402.6895	2421.4935	---	---
11N20SISO	Ant1	2437	19.407	2427.3776	2446.7846	---	---
11N20SISO	Ant1	2462	17.916	2453.0968	2471.0128	---	---
11N40SISO	Ant1	2422	36.881	2403.8206	2440.7016	---	---
11N40SISO	Ant1	2437	36.604	2418.8570	2455.4610	---	---
11N40SISO	Ant1	2452	36.729	2433.7989	2470.5279	---	---

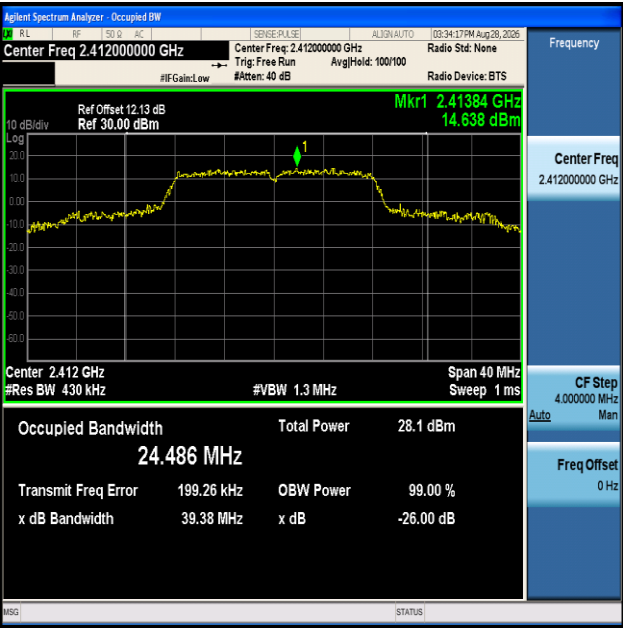
Test Graphs



11B-Ant1-2437



11B-Ant1-2462



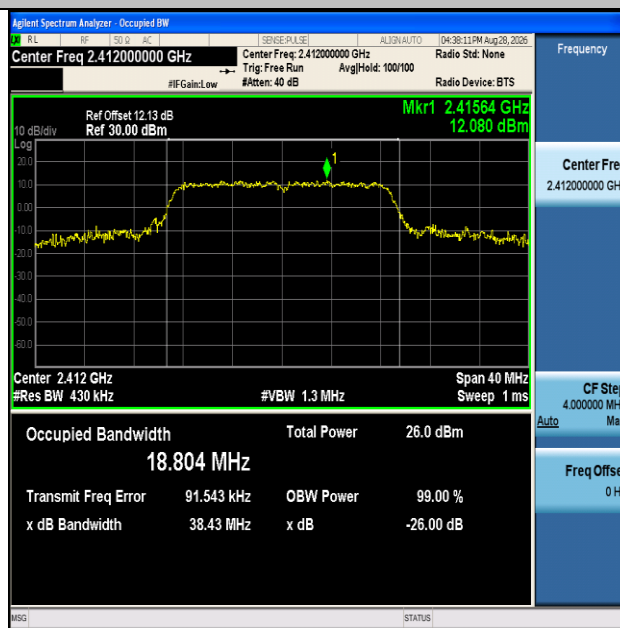
11G-Ant1-2412



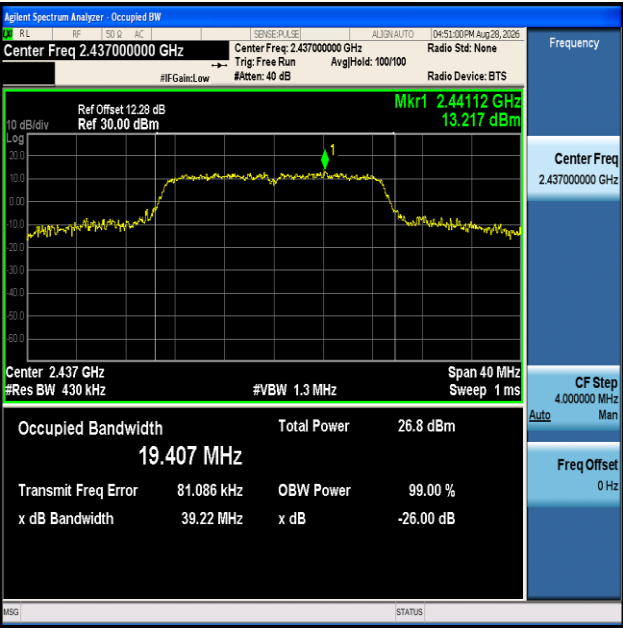
11G-Ant1-2437



11G-Ant1-2462



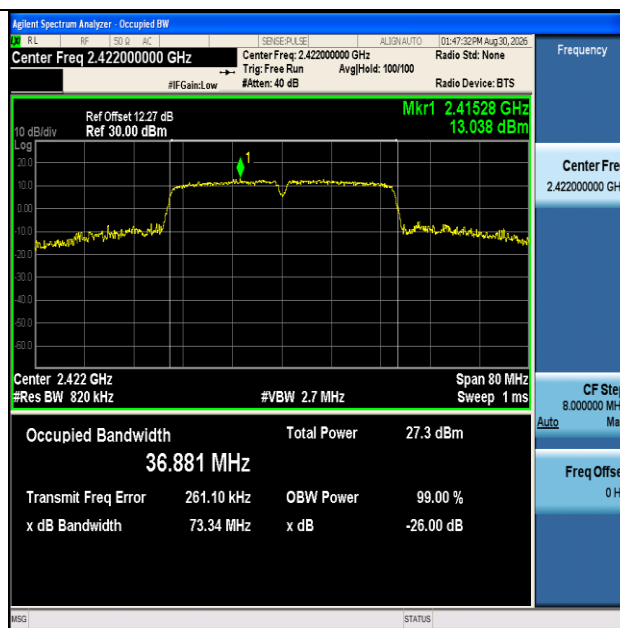
11N20SISO-Ant1-2412



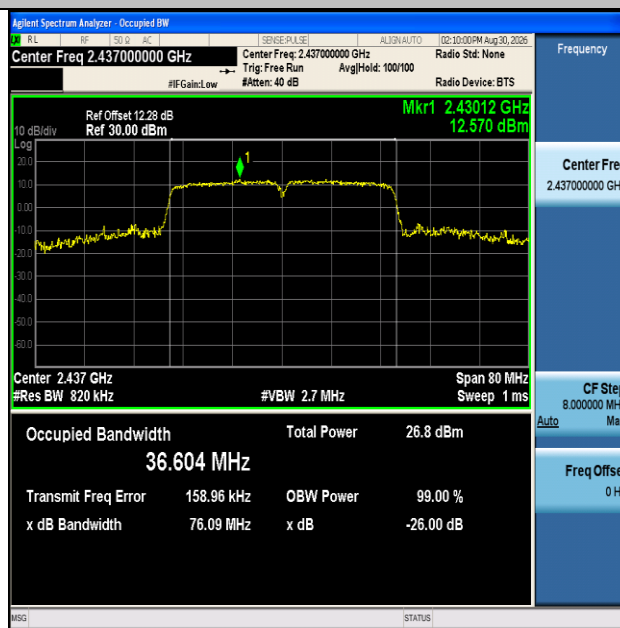
11N20SISO-Ant1-2437



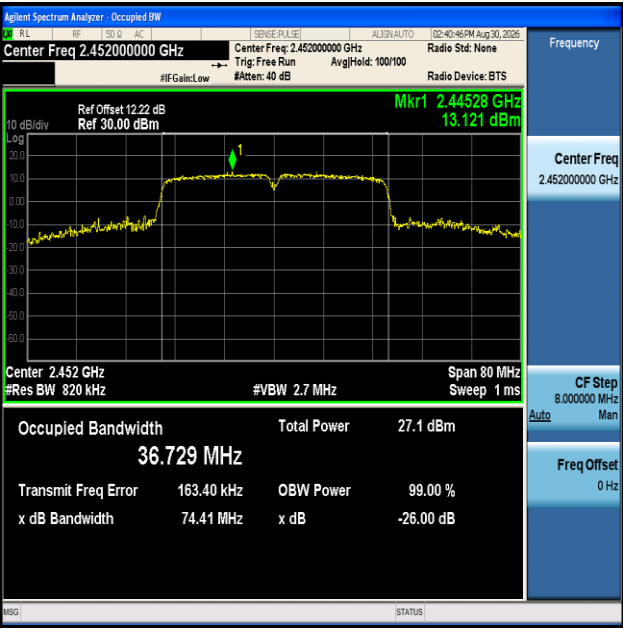
11N20SISO-Ant1-2462



11N40SISO-Ant1-2422



11N40SISO-Ant1-2437



11N40SISO-Ant1-2452

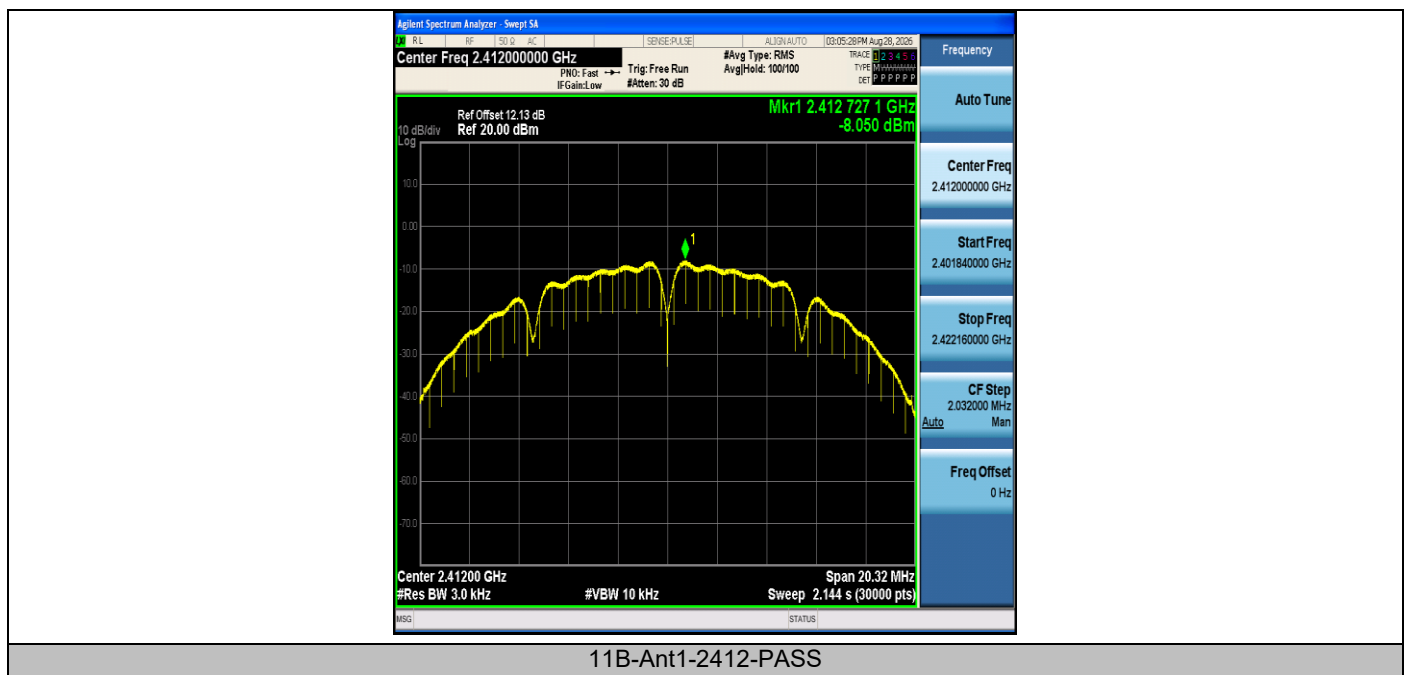
Maximum Conducted Output Power

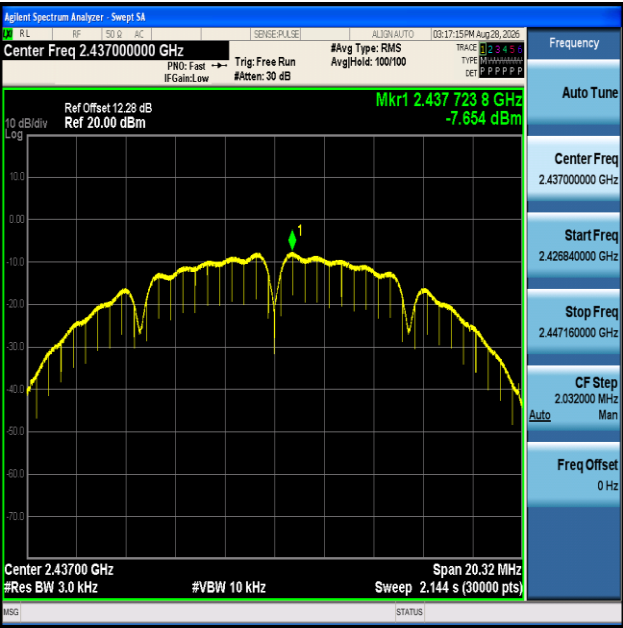
	Mode	Channel	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)
2.4GHz WLAN	802.11b 1Mbps	1	2412	22.12	30.00
		6	2437	22.15	30.00
		11	2462	21.83	30.00
	802.11g 6Mbps	1	2412	24.23	30.00
		6	2437	25.03	30.00
		11	2462	25.88	30.00
	802.11n-HT20 MCS0	1	2412	23.15	30.00
		6	2437	23.24	30.00
		11	2462	23.22	30.00
	802.11n-HT40 MCS0	3	2422	22.38	30.00
		6	2437	22.35	30.00
		9	2452	22.41	30.00

Maximum power spectral density

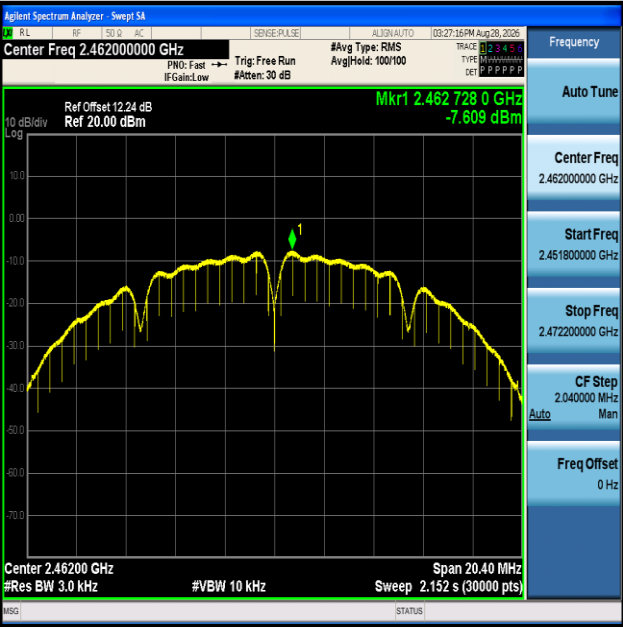
TestMode	Antenna	Frequency[MHz]	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-8.05	≤8.00	PASS
11B	Ant1	2437	-7.65	≤8.00	PASS
11B	Ant1	2462	-7.61	≤8.00	PASS
11G	Ant1	2412	-6.40	≤8.00	PASS
11G	Ant1	2437	-7.74	≤8.00	PASS
11G	Ant1	2462	-8.13	≤8.00	PASS
11N20SISO	Ant1	2412	-8.17	≤8.00	PASS
11N20SISO	Ant1	2437	-7.52	≤8.00	PASS
11N20SISO	Ant1	2462	-8.07	≤8.00	PASS
11N40SISO	Ant1	2422	-7.14	≤8.00	PASS
11N40SISO	Ant1	2437	-7.20	≤8.00	PASS
11N40SISO	Ant1	2452	-7.27	≤8.00	PASS

Test Graphs

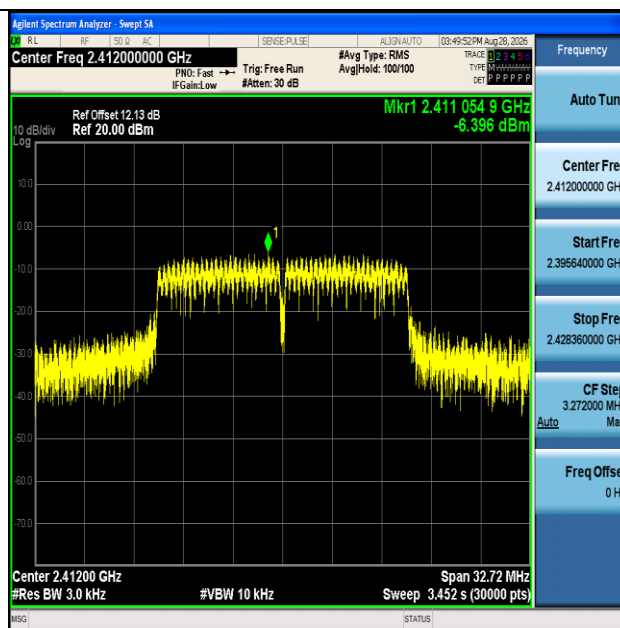




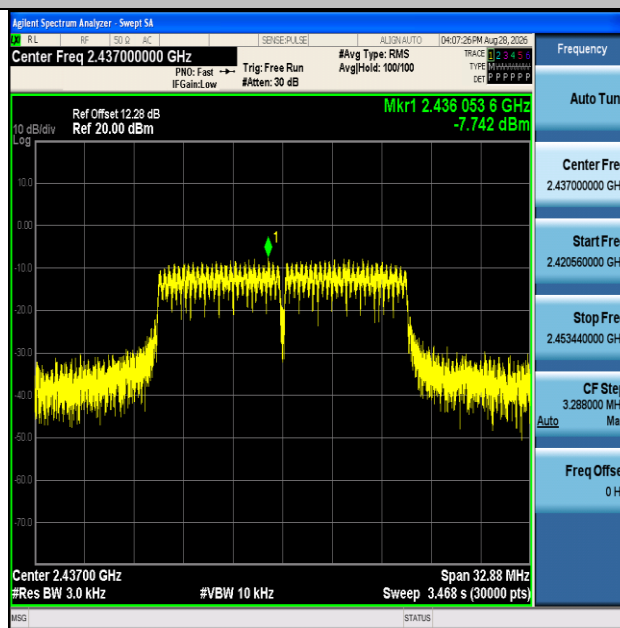
11B-Ant1-2437-PASS



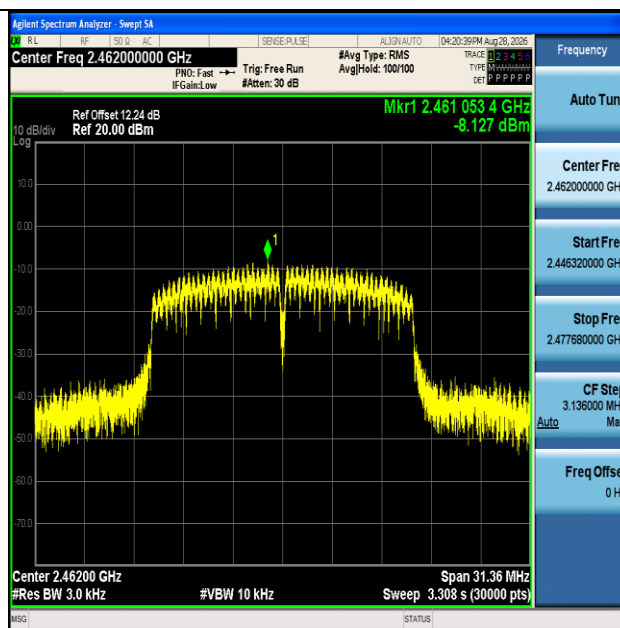
11B-Ant1-2462-PASS



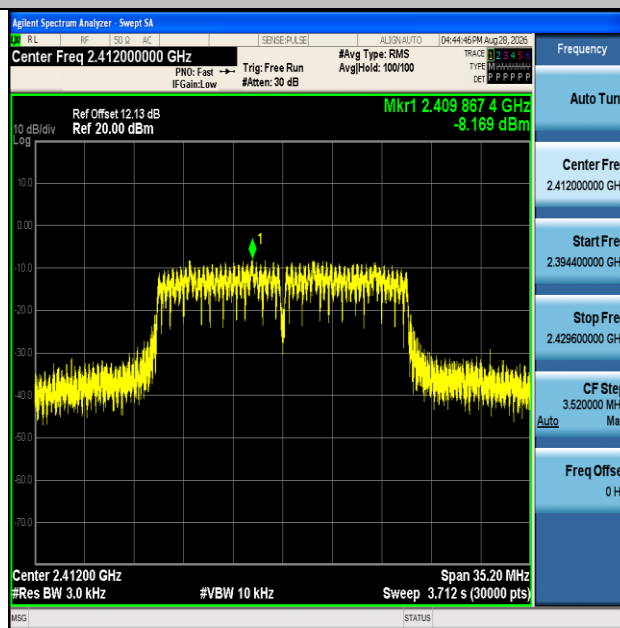
11G-Ant1-2412-PASS



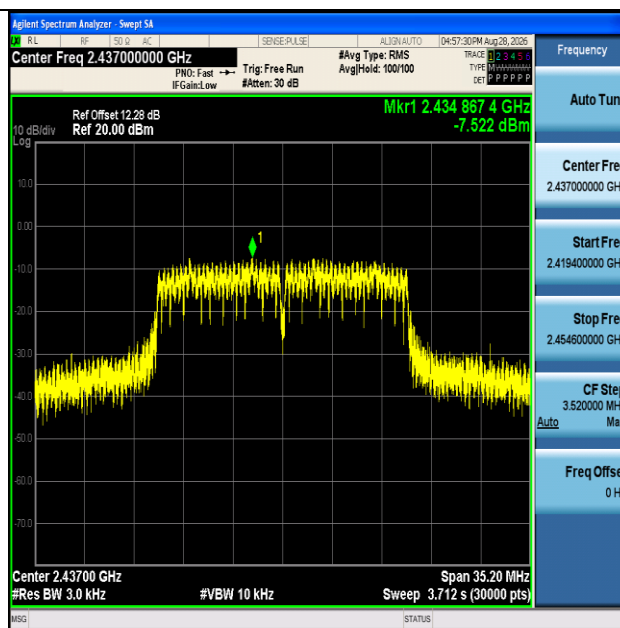
11G-Ant1-2437-PASS



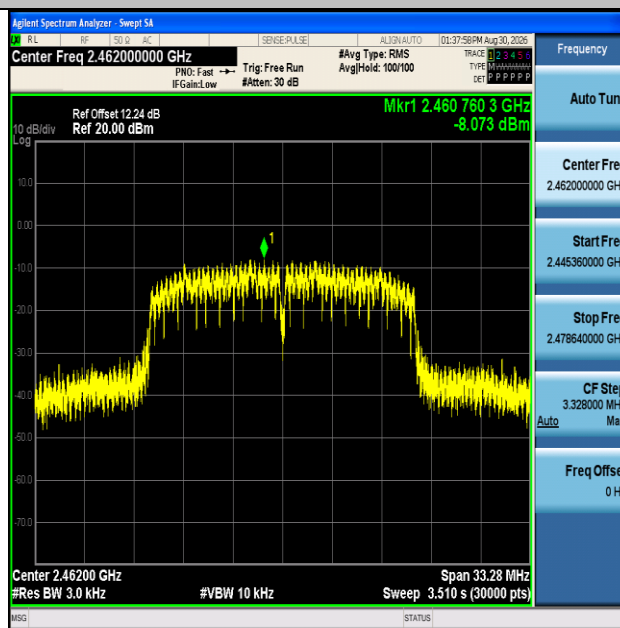
11G-Ant1-2462-PASS



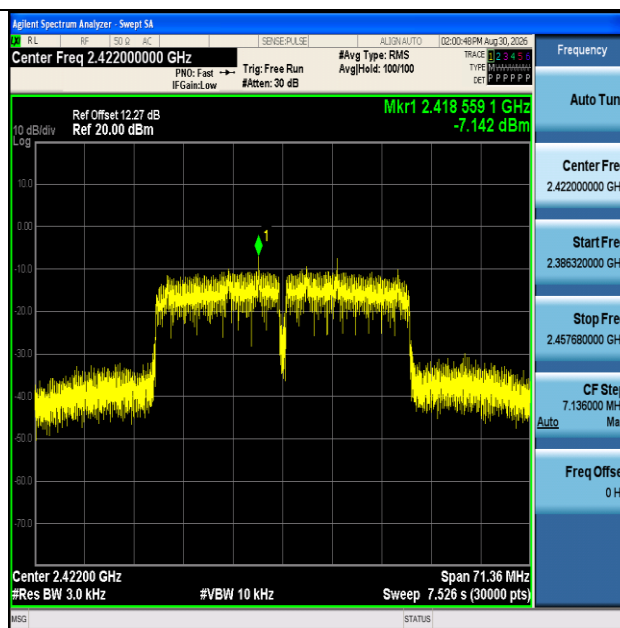
11N20SISO-Ant1-2412-PASS



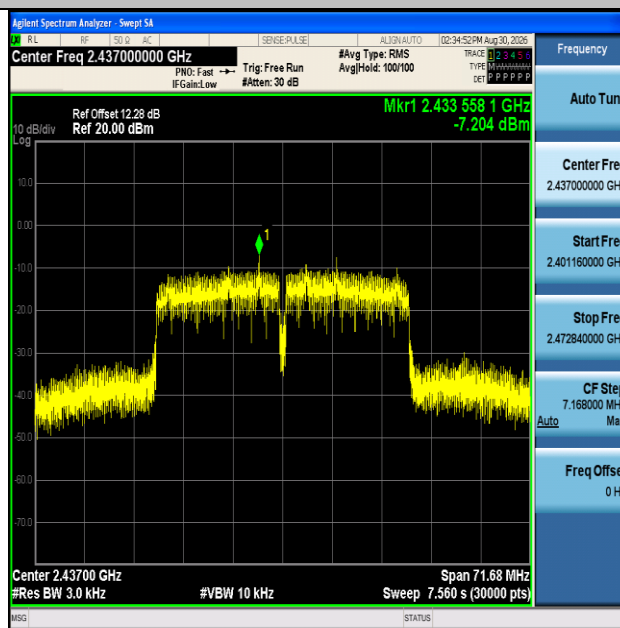
11N20SISO-Ant1-2437-PASS



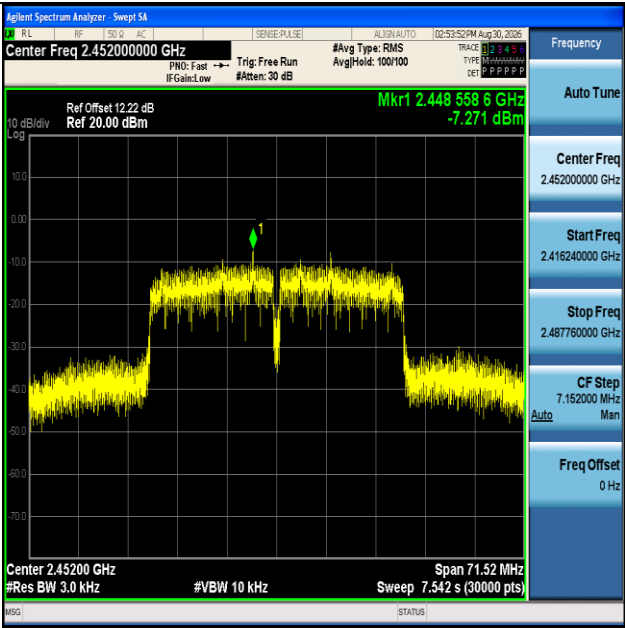
11N20SISO-Ant1-2462-PASS



11N40SISO-Ant1-2422-PASS



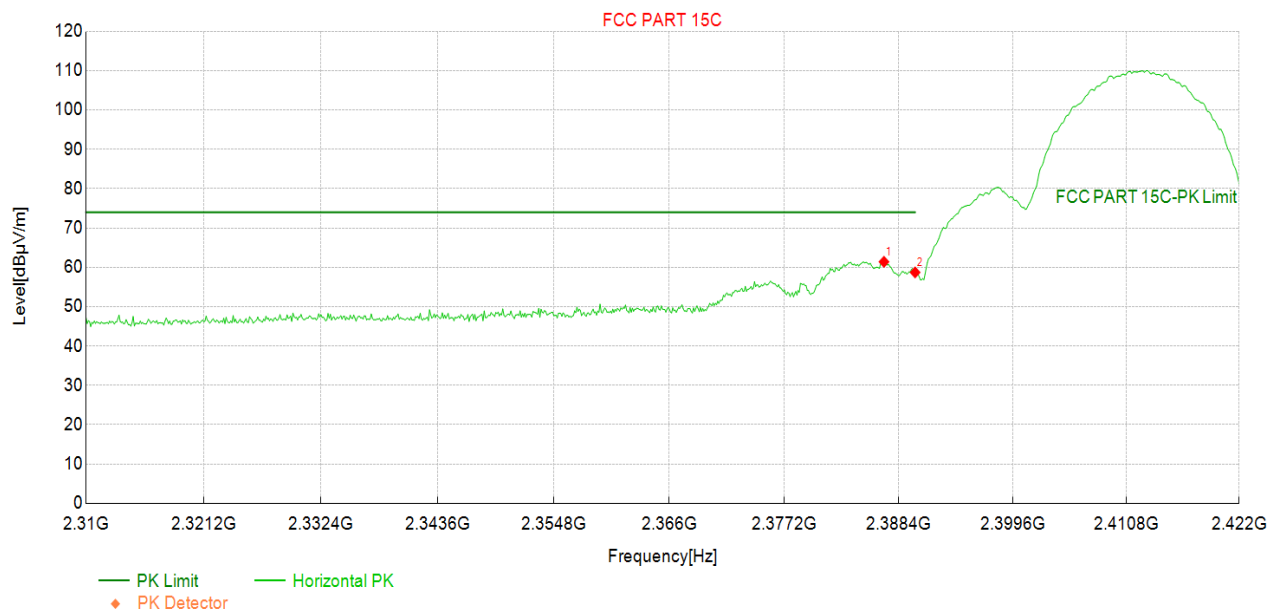
11N40SISO-Ant1-2437-PASS



Band edge measurements

Transmit at 2412MHz by 802.11b

Test Graph

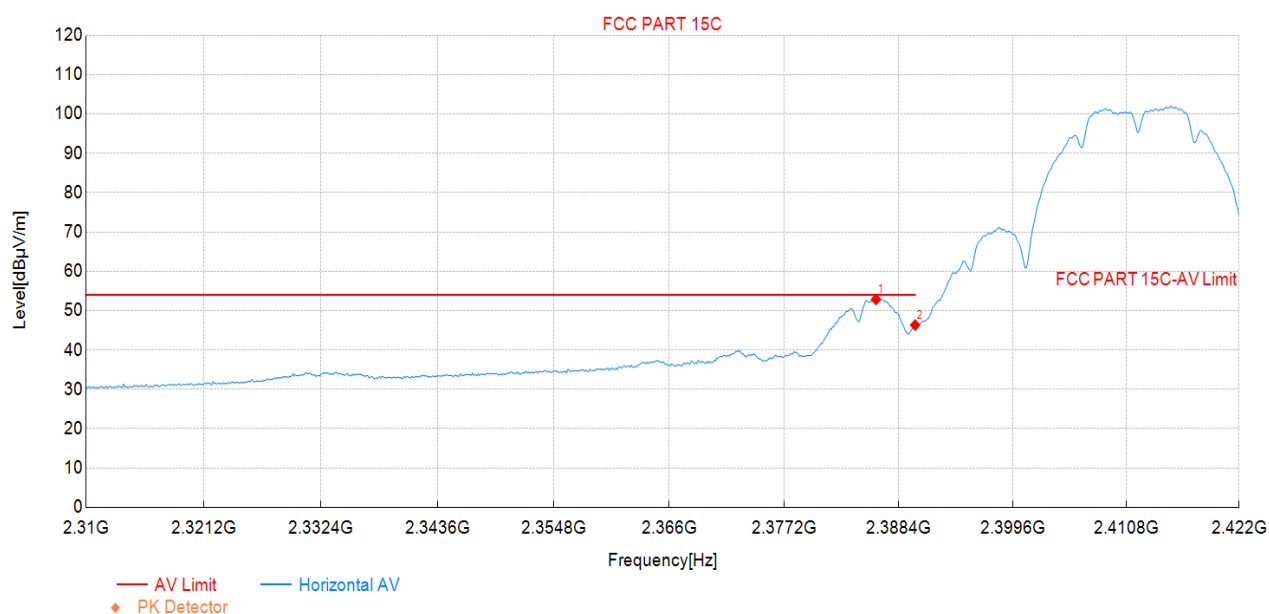


Data List

NO	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdict
1	2386.94	61.52	61.40	-0.120	74.00	12.60	PK	Horizo	PASS
2	2390.00	58.82	58.70	-0.120	74.00	15.30	PK	Horizo	PASS

Transmit at 2412MHz by 802.11b

Test Graph

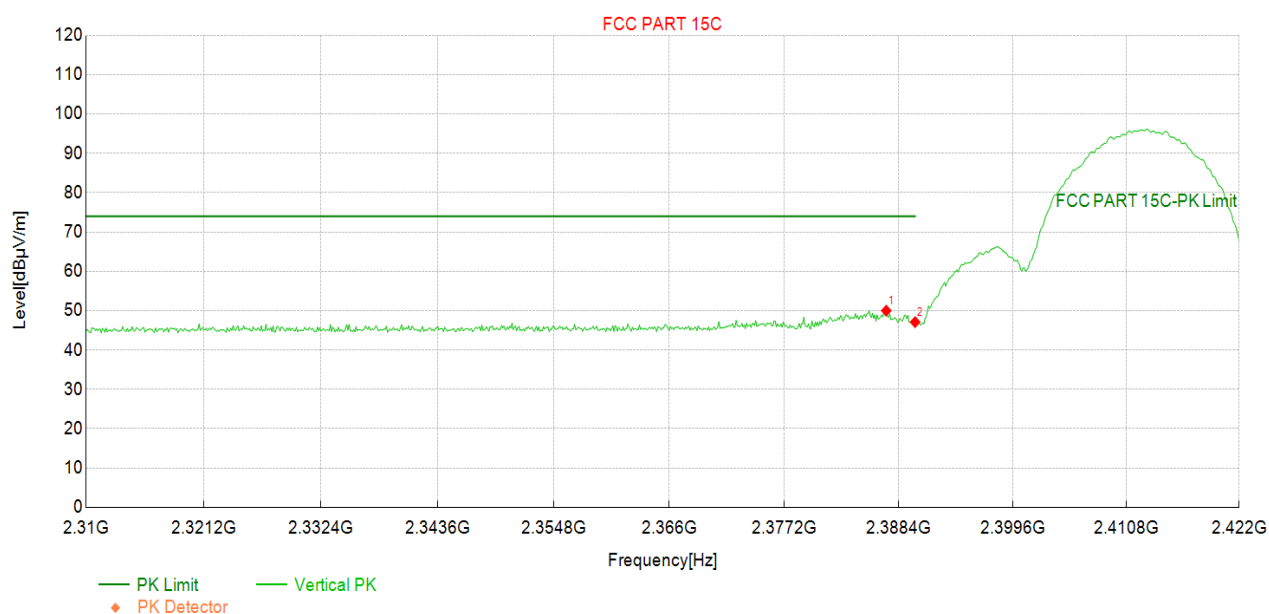


Data List

NO	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdict
1	2386.16	52.98	52.86	-0.120	54.00	1.14	AV	Horizo	PASS
2	2390.00	46.46	46.34	-0.120	54.00	7.66	AV	Horizo	PASS

Transmit at 2412MHz by 802.11b

Test Graph

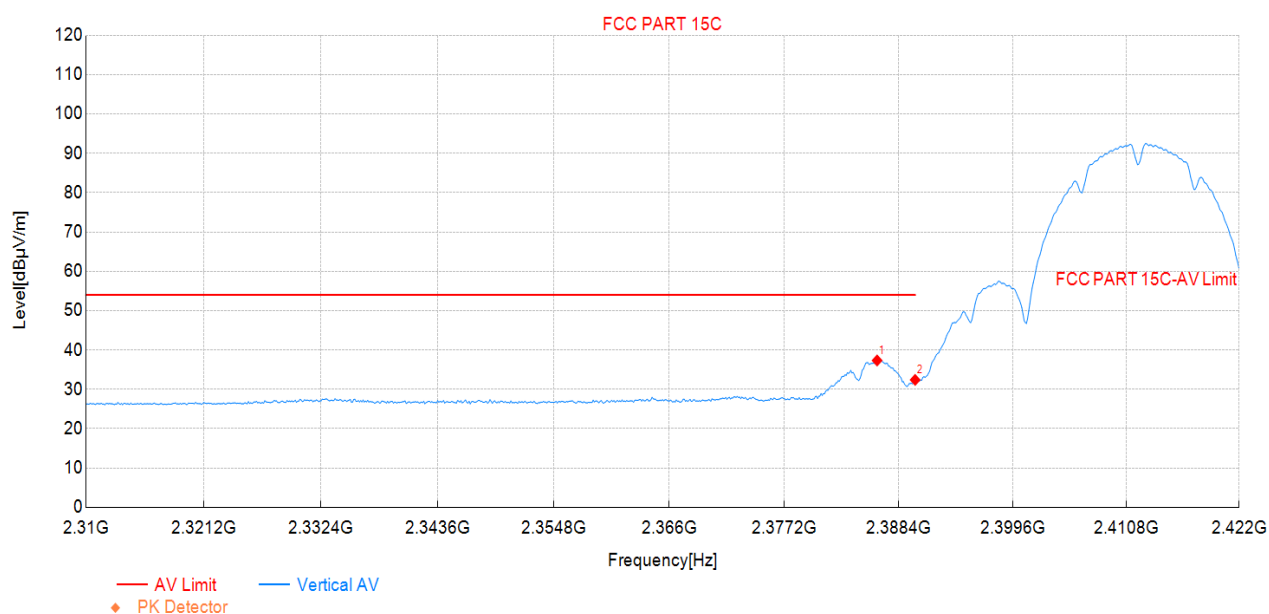


Data List

NO	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdict
1	2387.17	50.12	50.00	-0.120	74.00	24.00	PK	Vertic	PASS
2	2390.00	47.21	47.09	-0.120	74.00	26.91	PK	Vertic	PASS

Transmit at 2412MHz by 802.11b

Test Graph

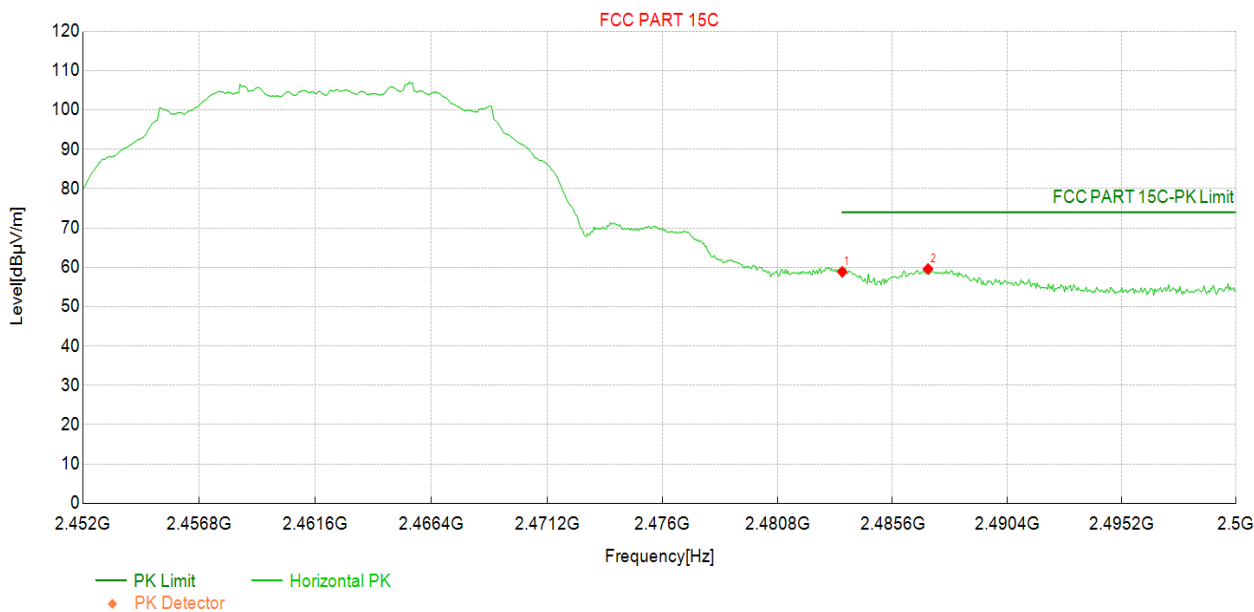


Data List

NO	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdict
1	2386.27	37.46	37.34	-0.120	54.00	16.66	AV	Vertic	PASS
2	2390.00	32.53	32.41	-0.120	54.00	21.59	AV	Vertic	PASS

Transmit at 2462MHz by 802.11b

Test Graph

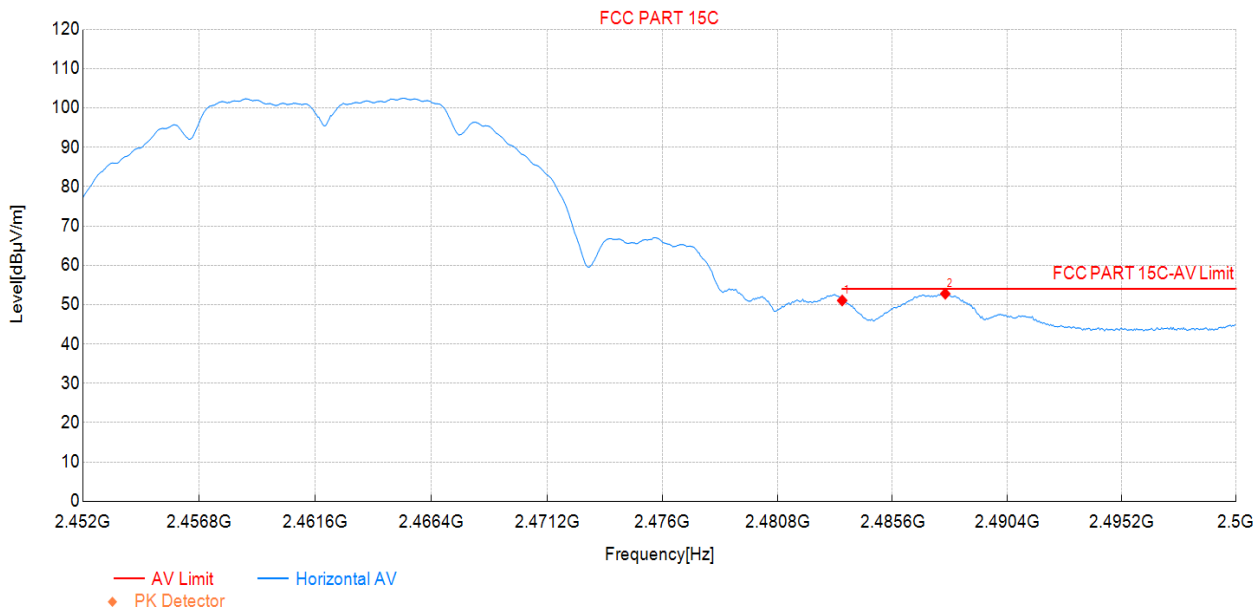


Data List

NO	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdict
1	2483.50	58.69	58.84	0.150	74.00	15.16	PK	Horizo	PASS
2	2487.09	59.42	59.58	0.160	74.00	14.42	PK	Horizo	PASS

Transmit at 2462MHz by 802.11b

Test Graph

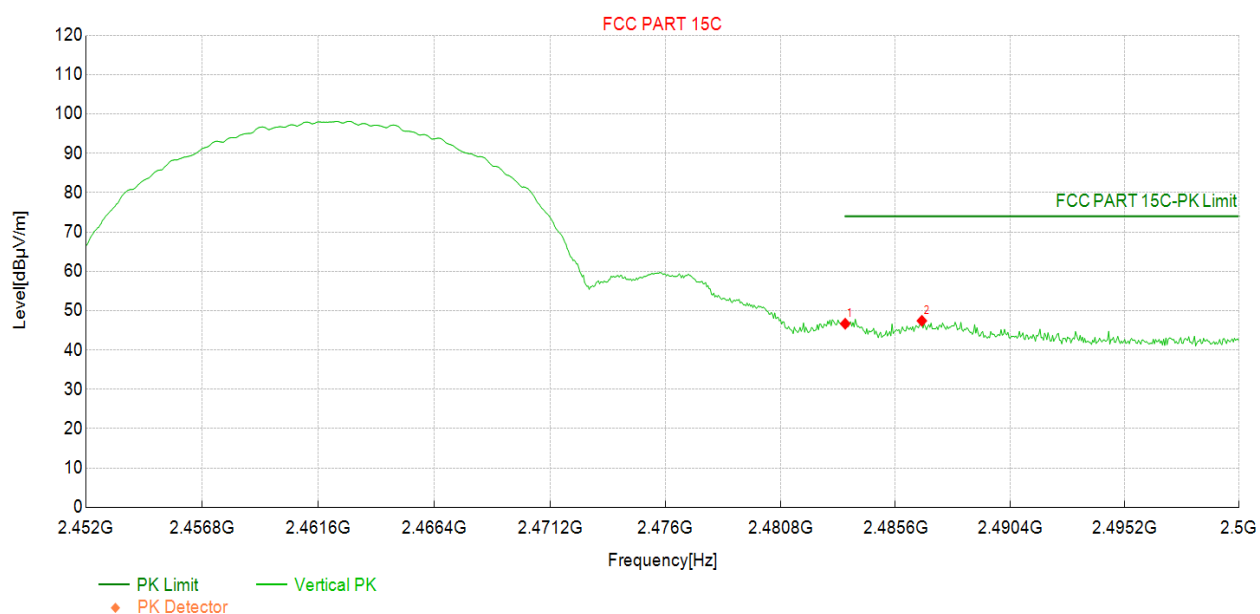


Data List

NO	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdict
1	2483.50	50.91	51.06	0.150	54.00	2.94	AV	Horizo	PASS
2	2487.81	52.61	52.77	0.160	54.00	1.23	AV	Horizo	PASS

Transmit at 2462MHz by 802.11b

Test Graph

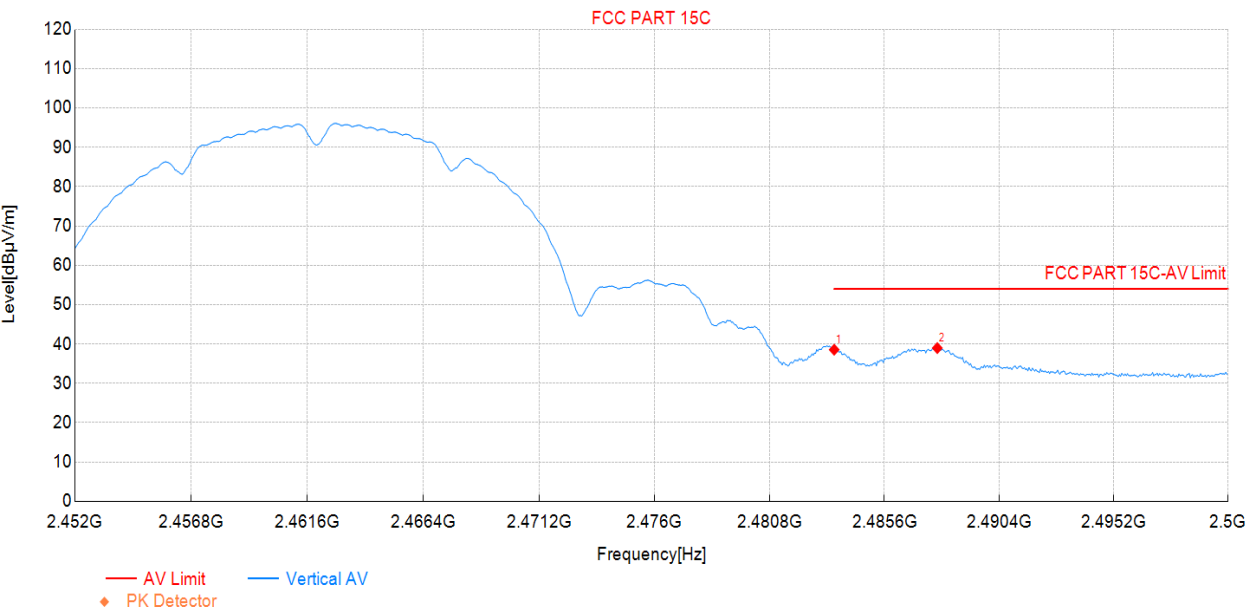


Data List

NO	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdict
1	2483.50	46.53	46.68	0.150	74.00	27.32	PK	Vertic	PASS
2	2486.70	47.26	47.42	0.160	74.00	26.58	PK	Vertic	PASS

Transmit at 2462MHz by 802.11b

Test Graph

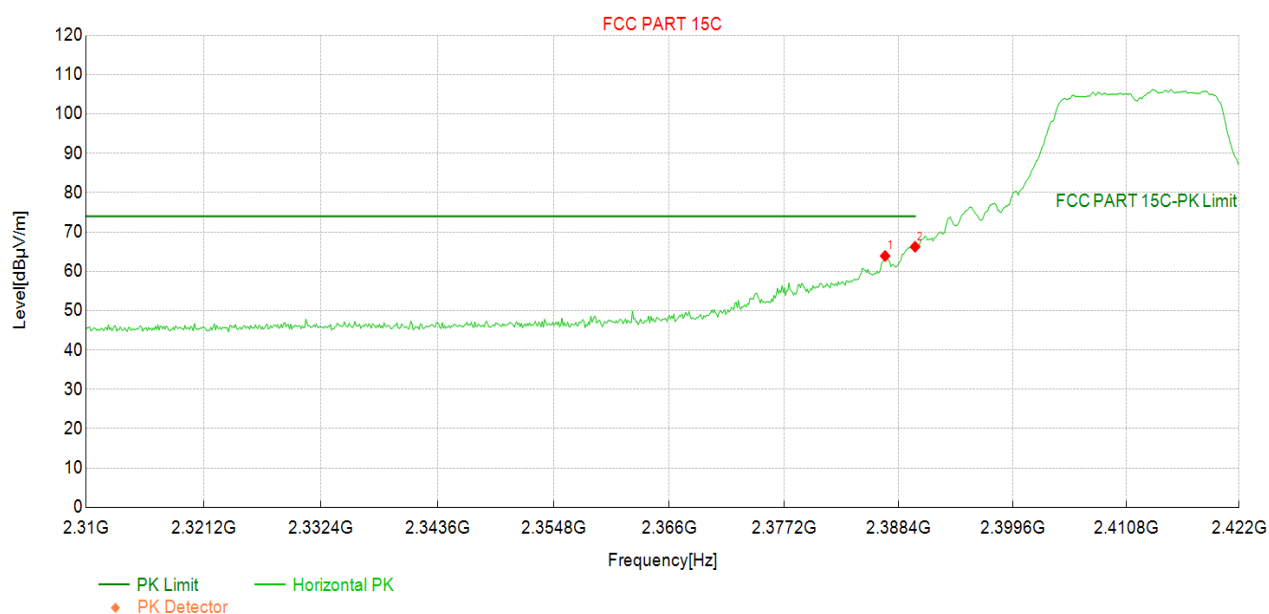


Data List

NO	Frequenc y [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdi ct
1	2483.50	38.40	38.55	0.150	54.00	15.45	AV	Vertic	PASS
2	2487.81	38.81	38.97	0.160	54.00	15.03	AV	Vertic	PASS

Transmit at 2412MHz by 802.11g

Test Graph

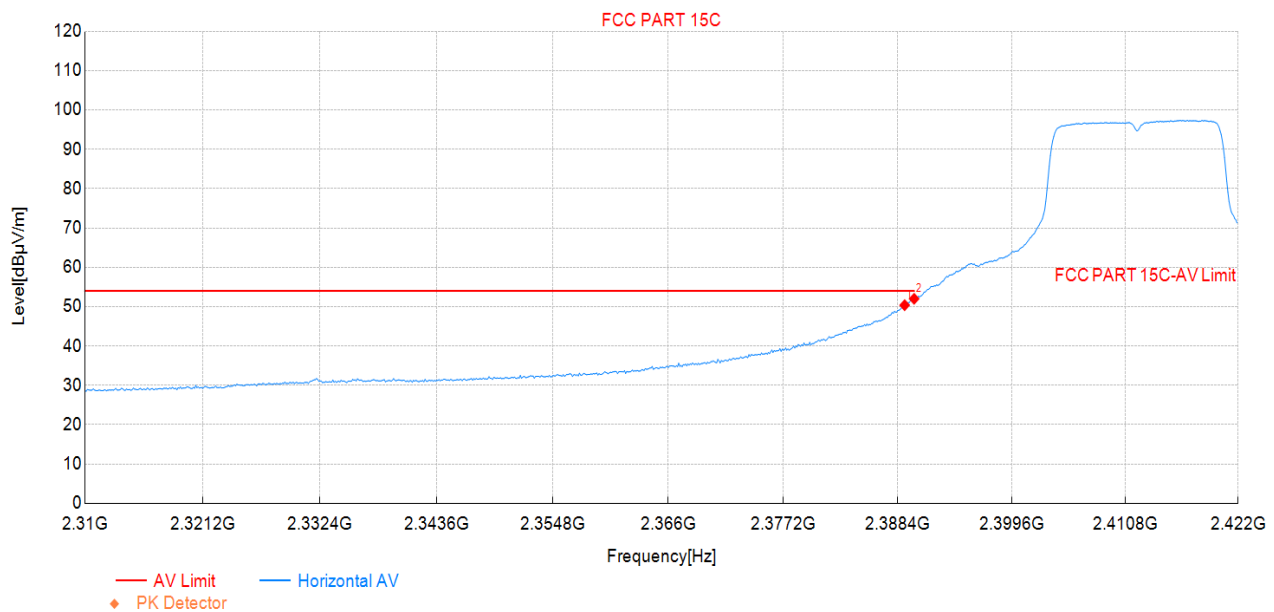


Data List

NO	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdict
1	2387.06	64.02	63.90	-0.120	74.00	10.10	PK	Horizo	PASS
2	2390.00	66.36	66.24	-0.120	74.00	7.76	PK	Horizo	PASS

Transmit at 2412MHz by 802.11g

Test Graph

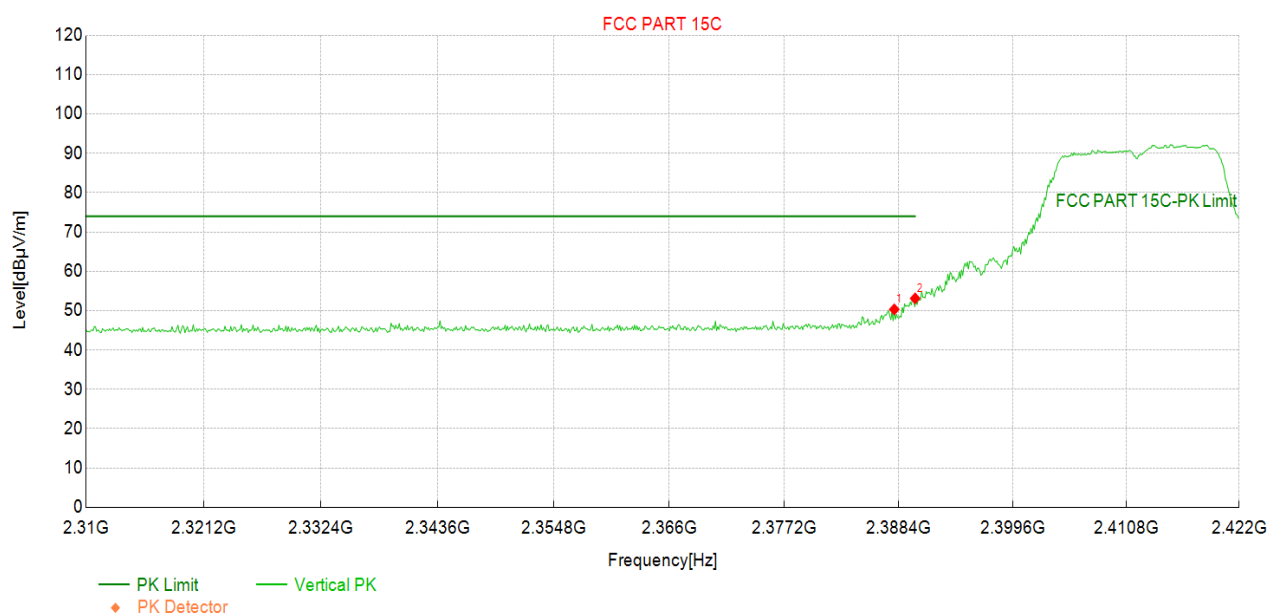


Data List

NO	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdict
1	2389.07	50.49	50.37	-0.120	54.00	3.63	AV	Horizo	PASS
2	2390.00	52.12	52.00	-0.120	54.00	2.00	AV	Horizo	PASS

Transmit at 2412MHz by 802.11g

Test Graph

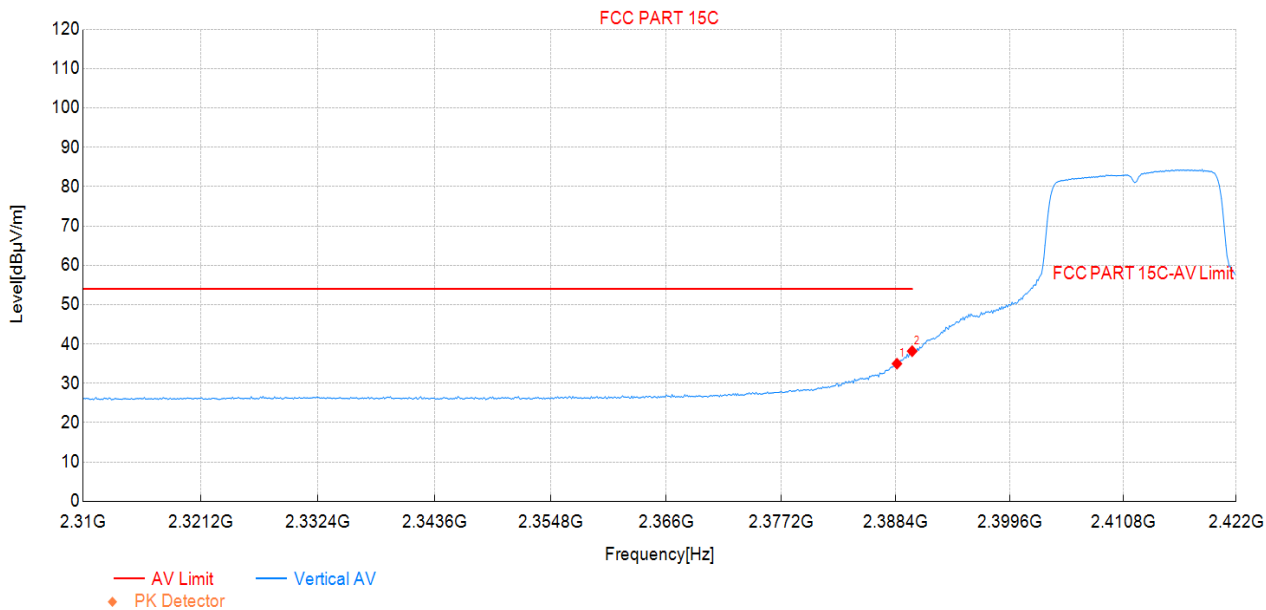


Data List

NO	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdict
1	2387.95	50.44	50.32	-0.120	74.00	23.68	PK	Vertic	PASS
2	2390.00	53.24	53.12	-0.120	74.00	20.88	PK	Vertic	PASS

Transmit at 2412MHz by 802.11g

Test Graph

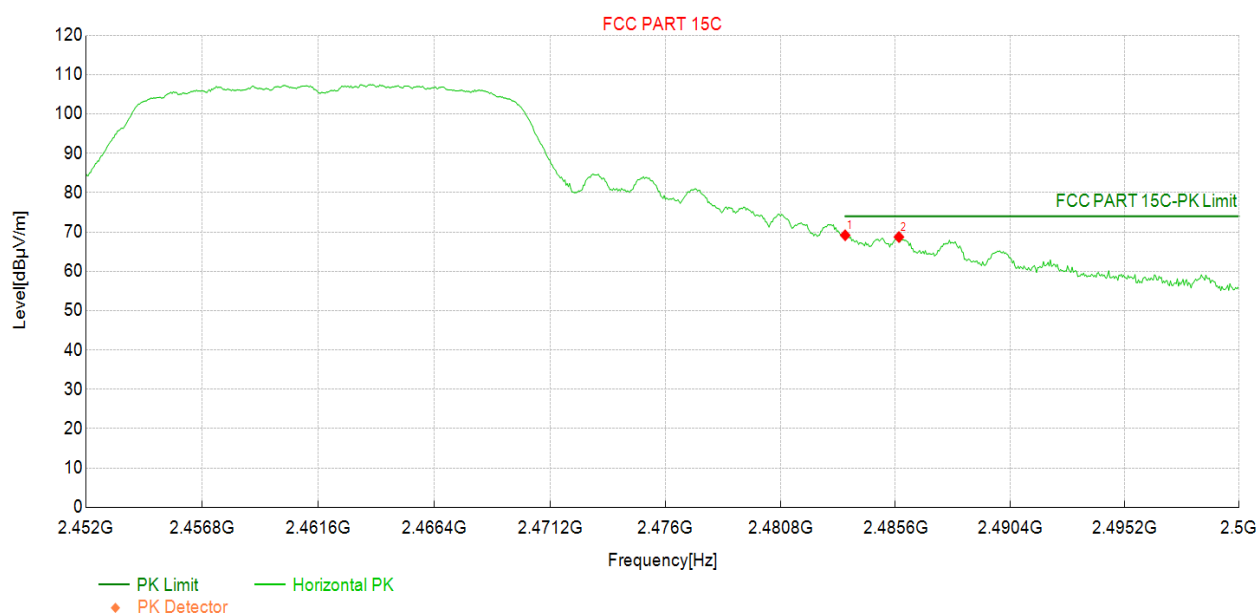


Data List

NO	Frequency [MHz]	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Det	Pol	Verdict
1	2388.51	35.11	34.99	-0.120	54.00	19.01	AV	Vertic	PASS
2	2390.00	38.30	38.18	-0.120	54.00	15.82	AV	Vertic	PASS

Transmit at 2462MHz by 802.11g

Test Graph

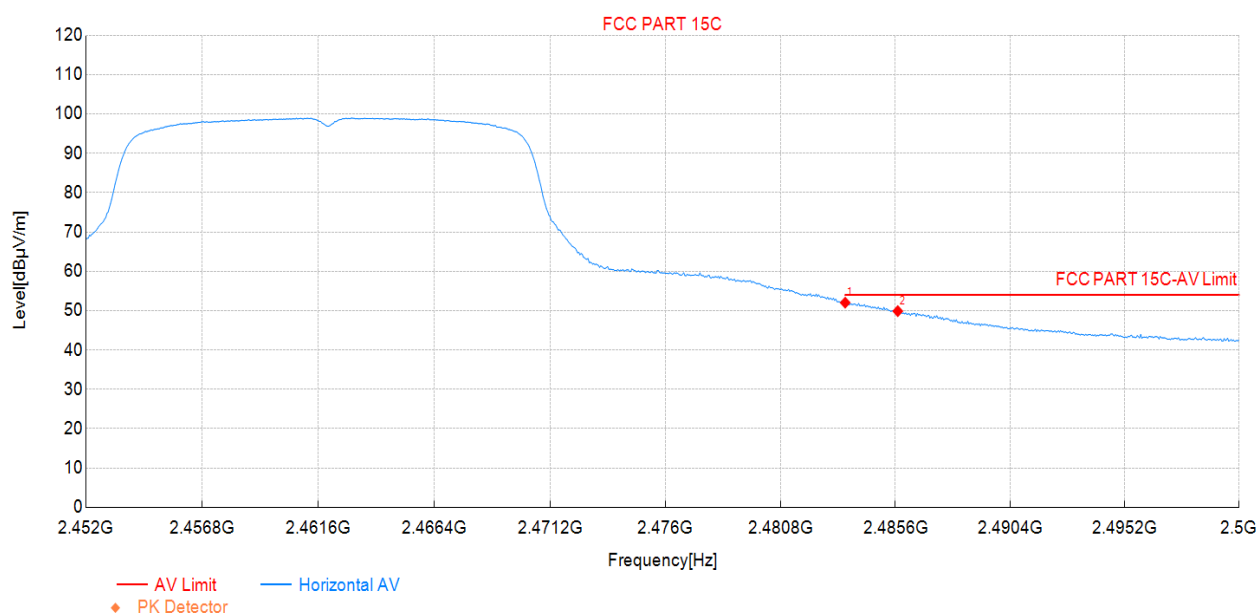


Data List

NO	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdict
1	2483.50	69.01	69.16	0.150	74.00	4.84	PK	Horizo	PASS
2	2485.74	68.55	68.71	0.160	74.00	5.29	PK	Horizo	PASS

Transmit at 2462MHz by 802.11g

Test Graph

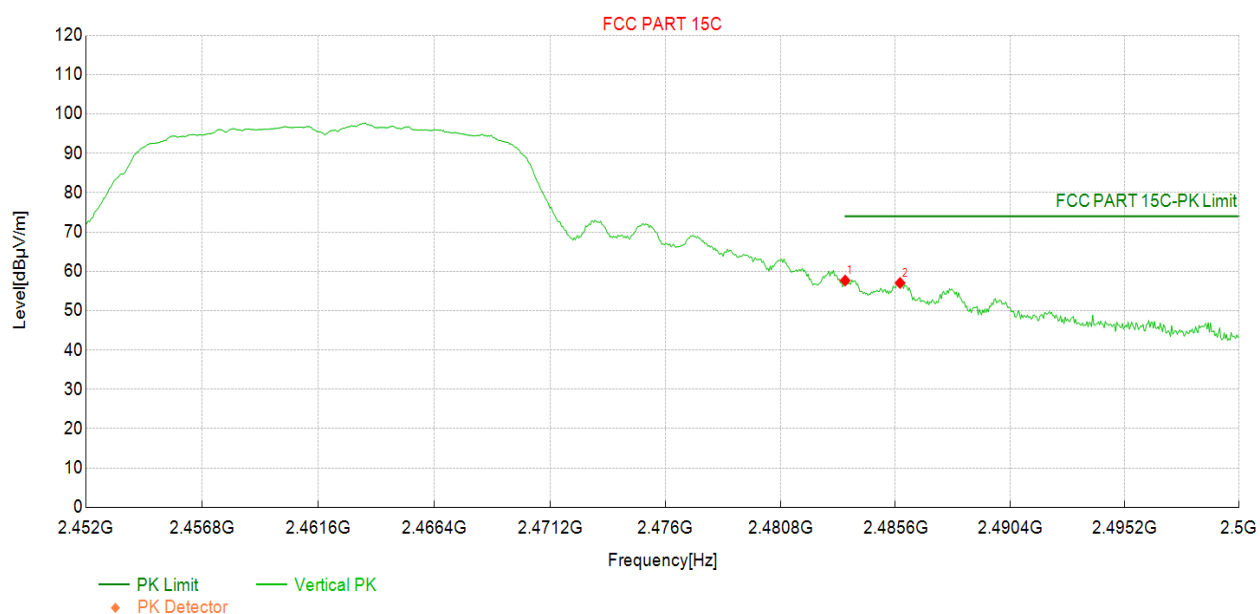


Data List

NO	Frequenc y [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdi ct
1	2483.50	51.88	52.03	0.150	54.00	1.97	AV	Horizo	PASS
2	2485.70	49.72	49.88	0.160	54.00	4.12	AV	Horizo	PASS

Transmit at 2462MHz by 802.11g

Test Graph

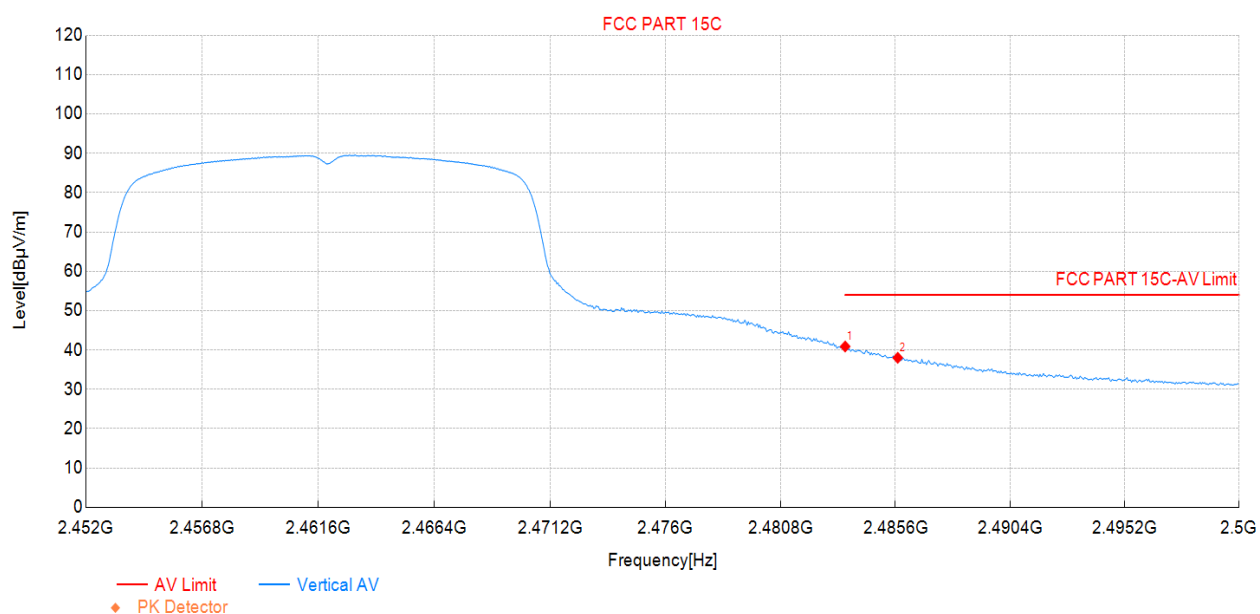


Data List

NO	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdict
1	2483.50	57.50	57.65	0.150	74.00	16.35	PK	Vertic	PASS
2	2485.79	56.88	57.04	0.160	74.00	16.96	PK	Vertic	PASS

Transmit at 2462MHz by 802.11g

Test Graph

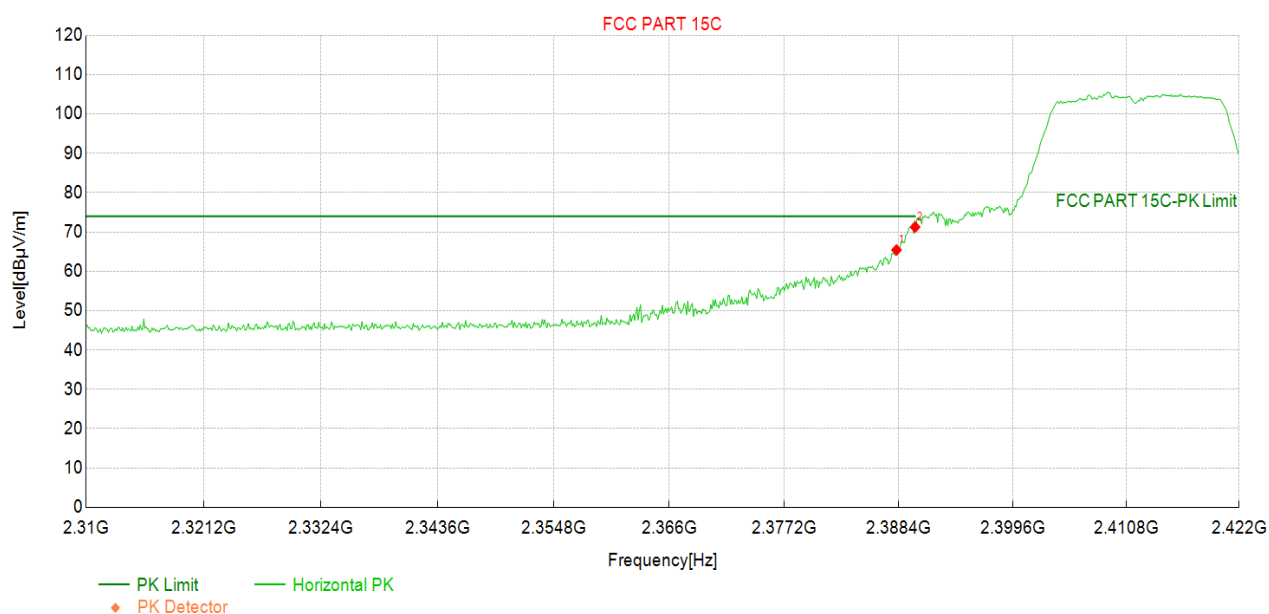


Data List

NO	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdict
1	2483.50	40.74	40.89	0.150	54.00	13.11	AV	Vertic	PASS
2	2485.70	37.86	38.02	0.160	54.00	15.98	AV	Vertic	PASS

Transmit at 2412MHz by 802.11n(20MHz)

Test Graph

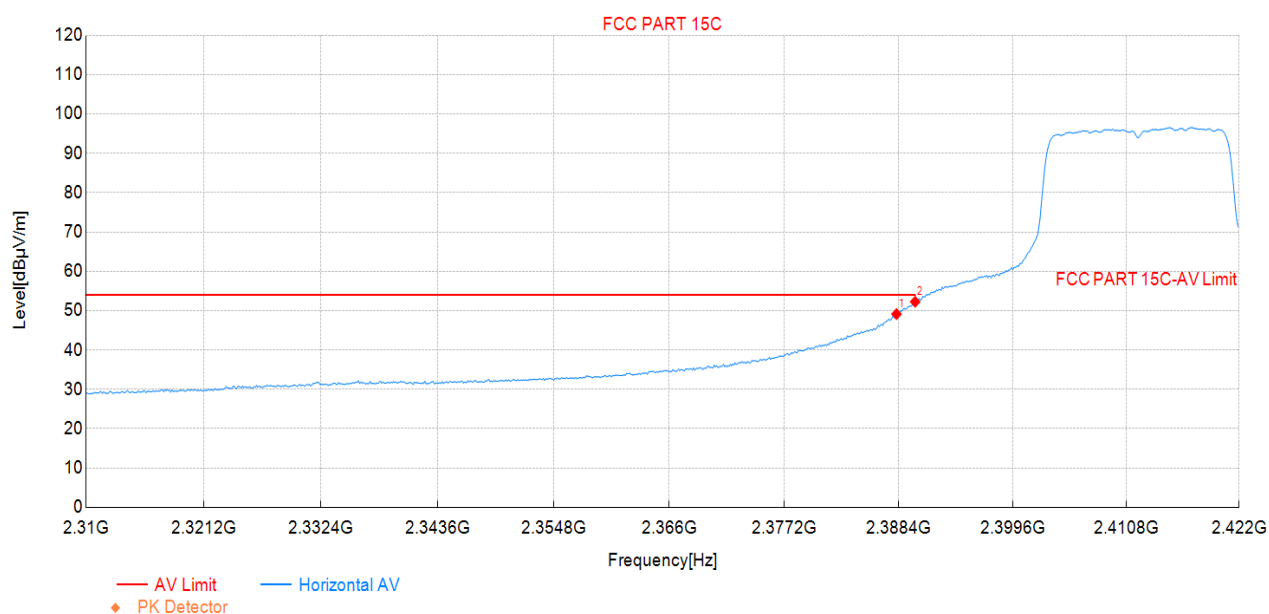


Data List

NO	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdict
1	2388.18	65.54	65.42	-0.120	74.00	8.58	PK	Horizo	PASS
2	2390.00	71.36	71.24	-0.120	74.00	2.76	PK	Horizo	PASS

Transmit at 2412MHz by 802.11n(20MHz)

Test Graph

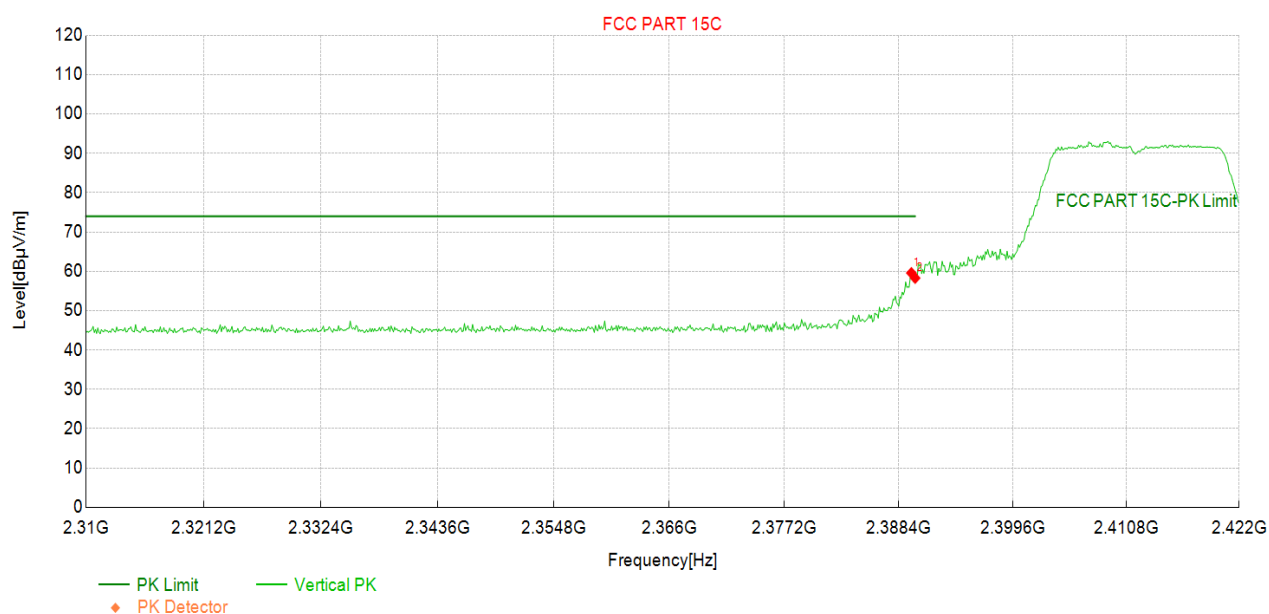


Data List

NO	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdict
1	2388.18	49.25	49.13	-0.120	54.00	4.87	AV	Horizo	PASS
2	2390.00	52.38	52.26	-0.120	54.00	1.74	AV	Horizo	PASS

Transmit at 2412MHz by 802.11n(20MHz)

Test Graph

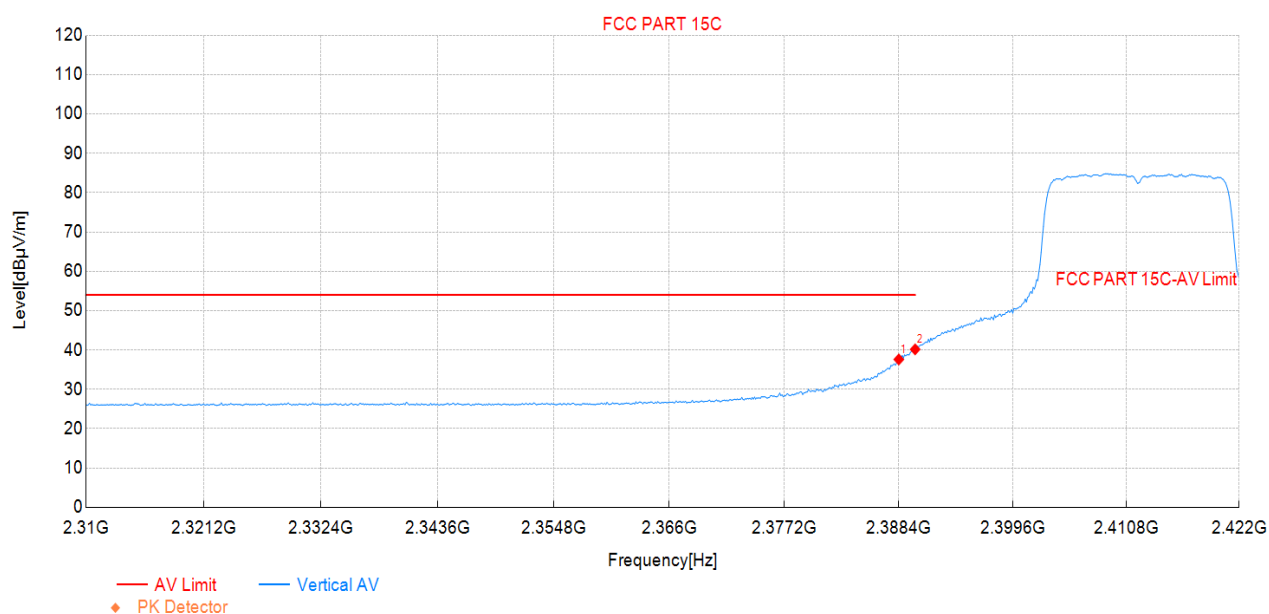


Data List

NO	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdict
1	2389.63	59.70	59.58	-0.120	74.00	14.42	PK	Vertic	PASS
2	2390.00	58.41	58.29	-0.120	74.00	15.71	PK	Vertic	PASS

Transmit at 2412MHz by 802.11n(20MHz)

Test Graph

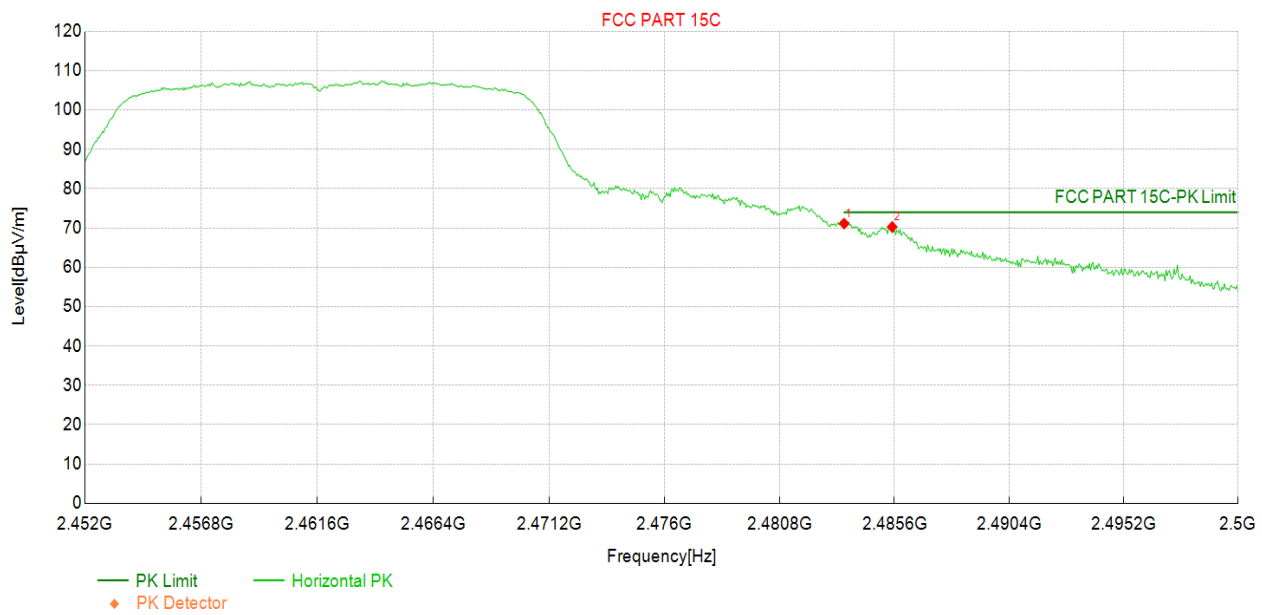


Data List

NO	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdict
1	2388.40	37.72	37.60	-0.120	54.00	16.40	AV	Vertic	PASS
2	2390.00	40.28	40.16	-0.120	54.00	13.84	AV	Vertic	PASS

Transmit at 2462MHz by 802.11n(20MHz)

Test Graph

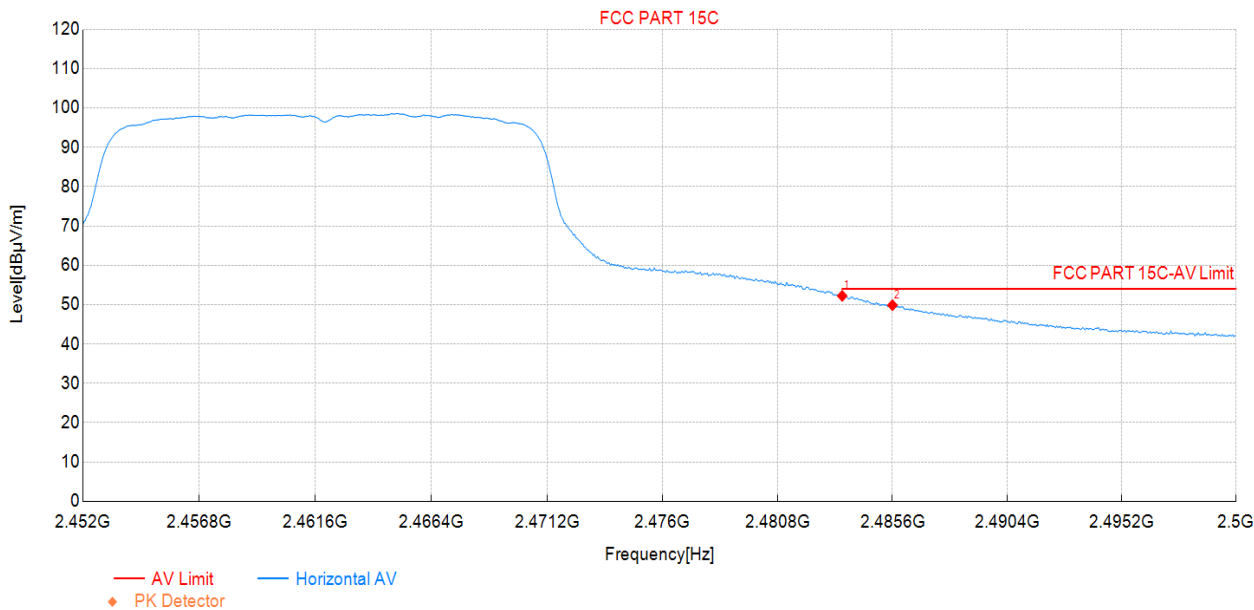


Data List

NO	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdict
1	2483.50	70.95	71.10	0.150	74.00	2.90	PK	Horizo	PASS
2	2485.50	70.10	70.26	0.160	74.00	3.74	PK	Horizo	PASS

Transmit at 2462MHz by 802.11n(20MHz)

Test Graph

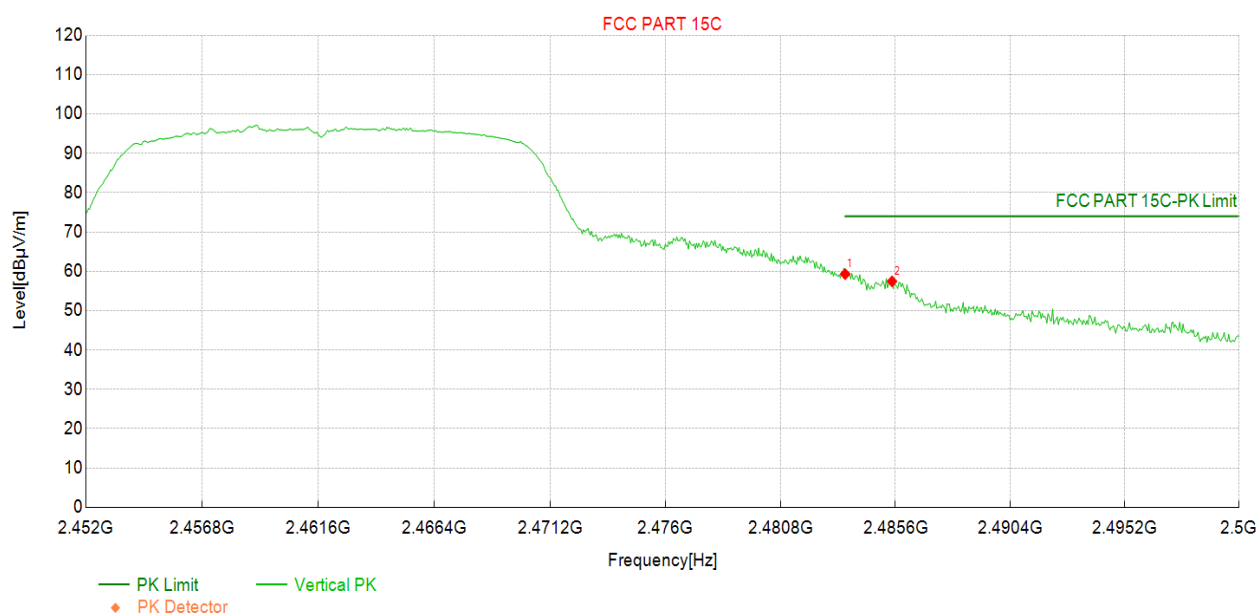


Data List

NO	Frequenc y [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdi ct
1	2483.50	52.07	52.22	0.150	54.00	1.78	AV	Horizo	PASS
2	2485.60	49.71	49.87	0.160	54.00	4.13	AV	Horizo	PASS

Transmit at 2462MHz by 802.11n(20MHz)

Test Graph

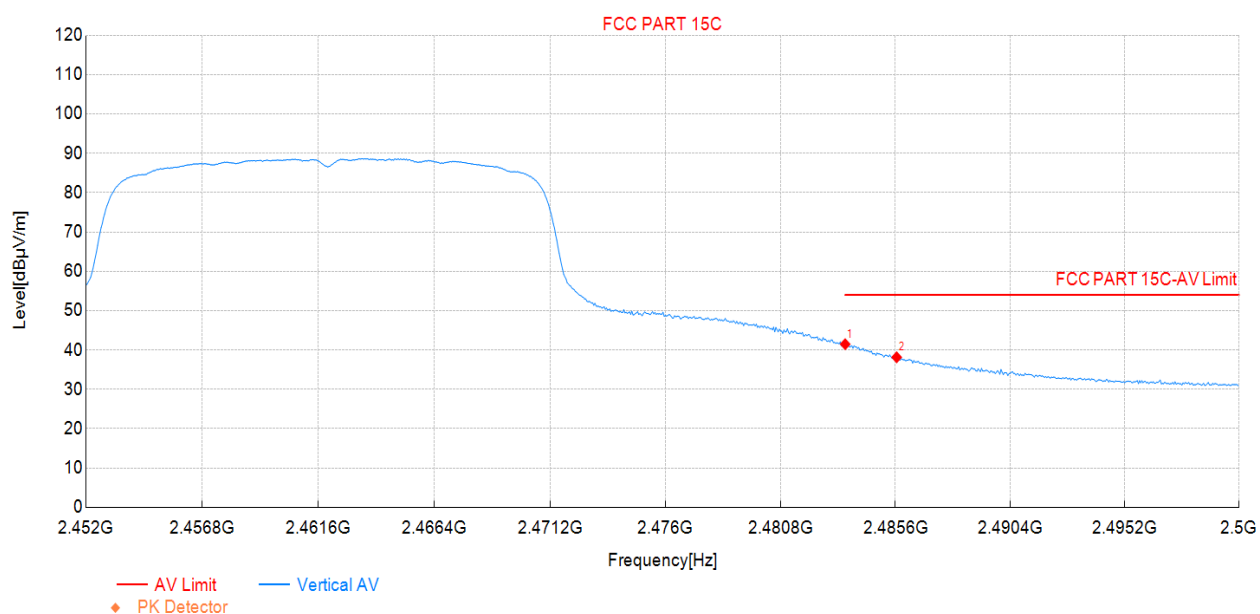


Data List

NO	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdict
1	2483.50	59.14	59.29	0.150	74.00	14.71	PK	Vertic	PASS
2	2485.46	57.28	57.44	0.160	74.00	16.56	PK	Vertic	PASS

Transmit at 2462MHz by 802.11n(20MHz)

Test Graph

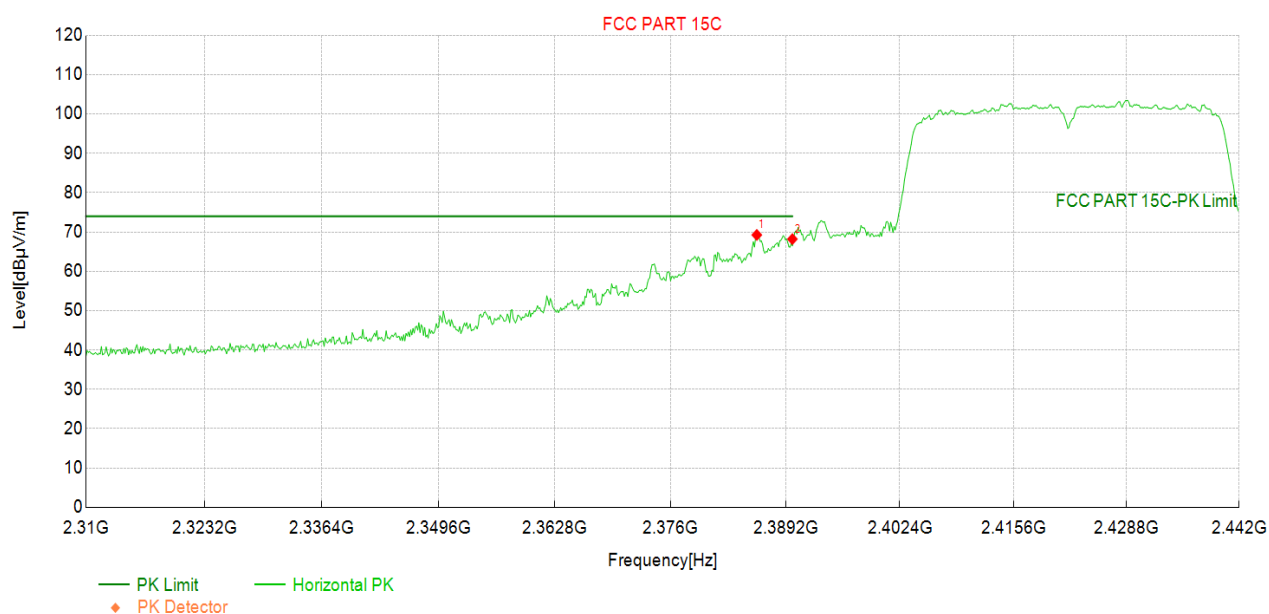


Data List

NO	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdict
1	2483.50	41.33	41.48	0.150	54.00	12.52	AV	Vertic	PASS
2	2485.65	37.99	38.15	0.160	54.00	15.85	AV	Vertic	PASS

Transmit at 2422MHz by 802.11n(40MHz)

Test Graph

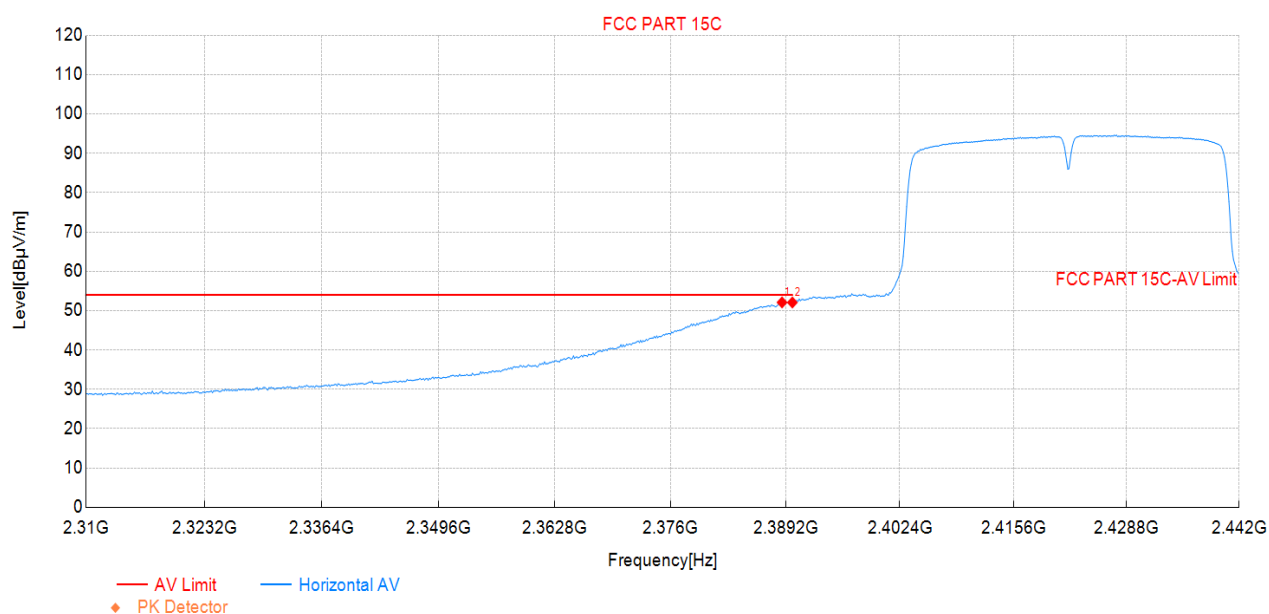


Data List

NO	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdict
1	2385.90	69.36	69.24	-0.120	74.00	4.76	PK	Horizo	PASS
2	2390.00	68.31	68.19	-0.120	74.00	5.81	PK	Horizo	PASS

Transmit at 2422MHz by 802.11n(40MHz)

Test Graph

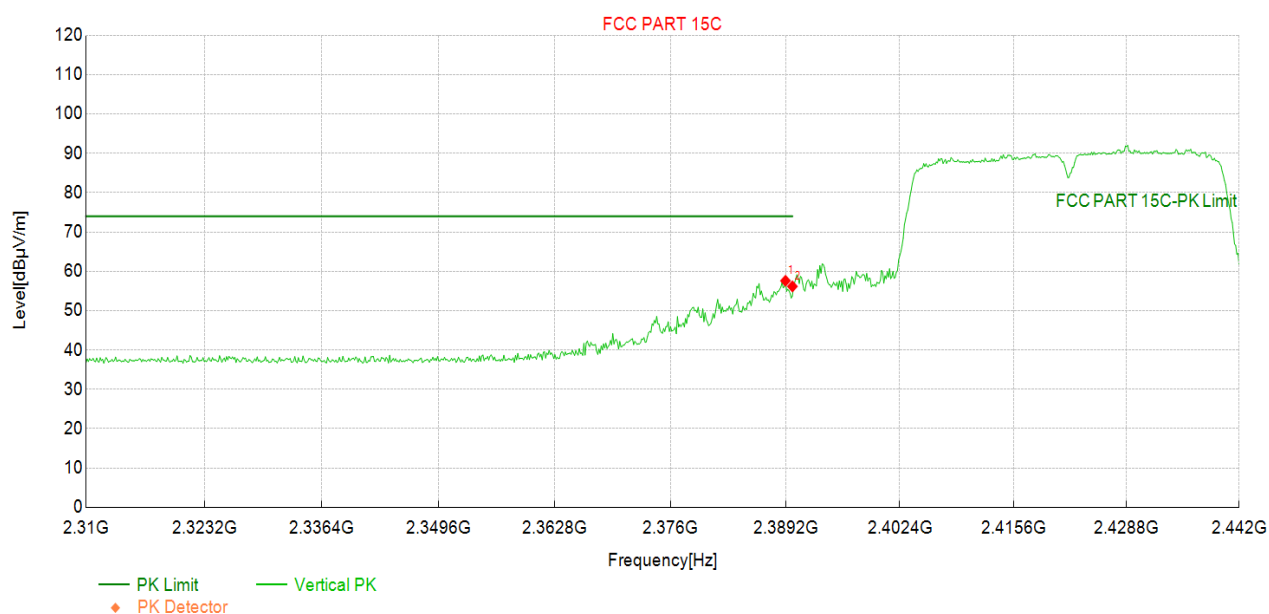


Data List

NO	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdict
1	2388.80	52.22	52.10	-0.120	54.00	1.90	AV	Horizo	PASS
2	2390.00	52.20	52.08	-0.120	54.00	1.92	AV	Horizo	PASS

Transmit at 2422MHz by 802.11n(40MHz)

Test Graph

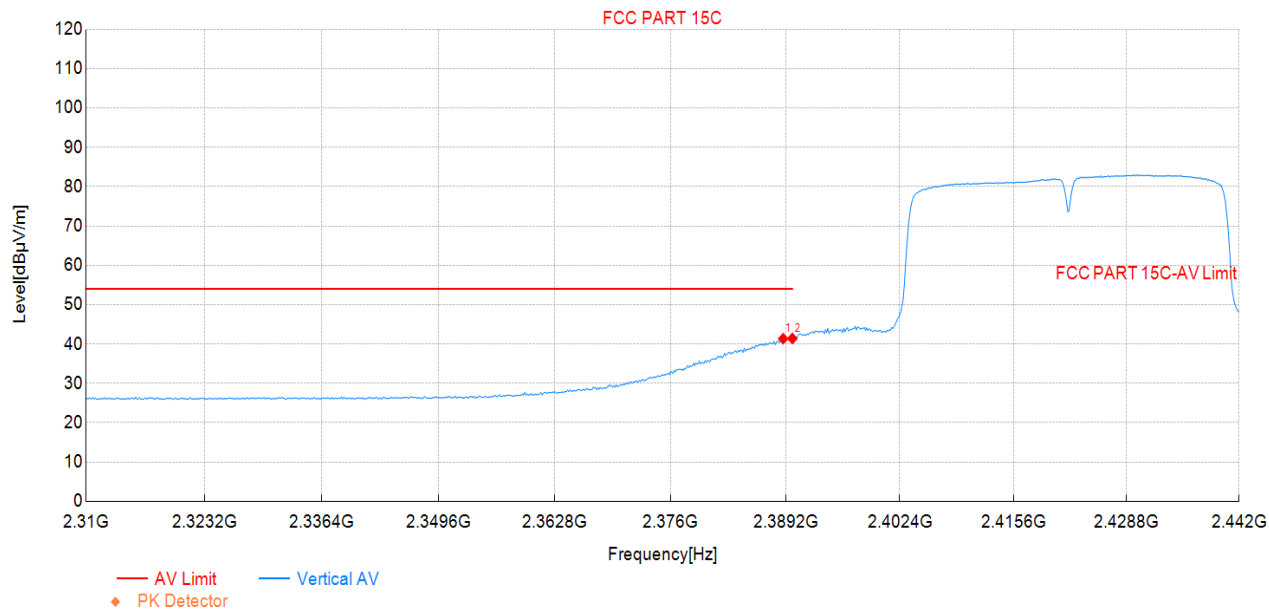


Data List

NO	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdict
1	2389.20	57.72	57.60	-0.120	74.00	16.40	PK	Vertic	PASS
2	2390.00	56.29	56.17	-0.120	74.00	17.83	PK	Vertic	PASS

Transmit at 2422MHz by 802.11n(40MHz)

Test Graph

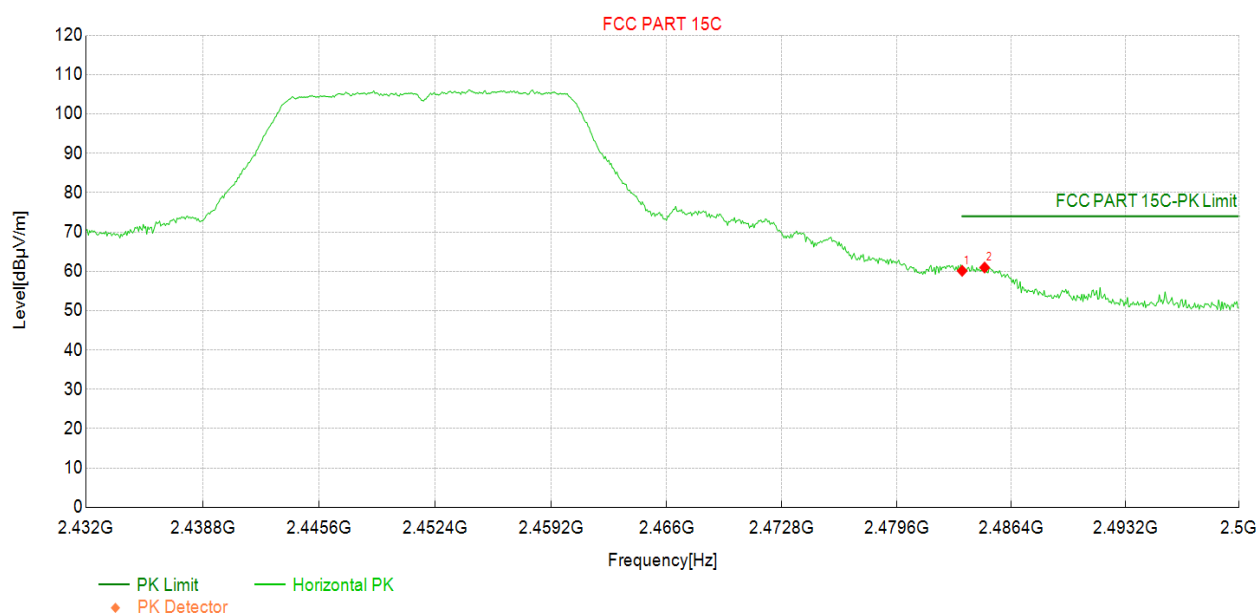


Data List

NO	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdict
1	2388.94	41.47	41.35	-0.120	54.00	12.65	AV	Vertic	PASS
2	2390.00	41.52	41.40	-0.120	54.00	12.60	AV	Vertic	PASS

Transmit at 2452MHz by 802.11n(40MHz)

Test Graph

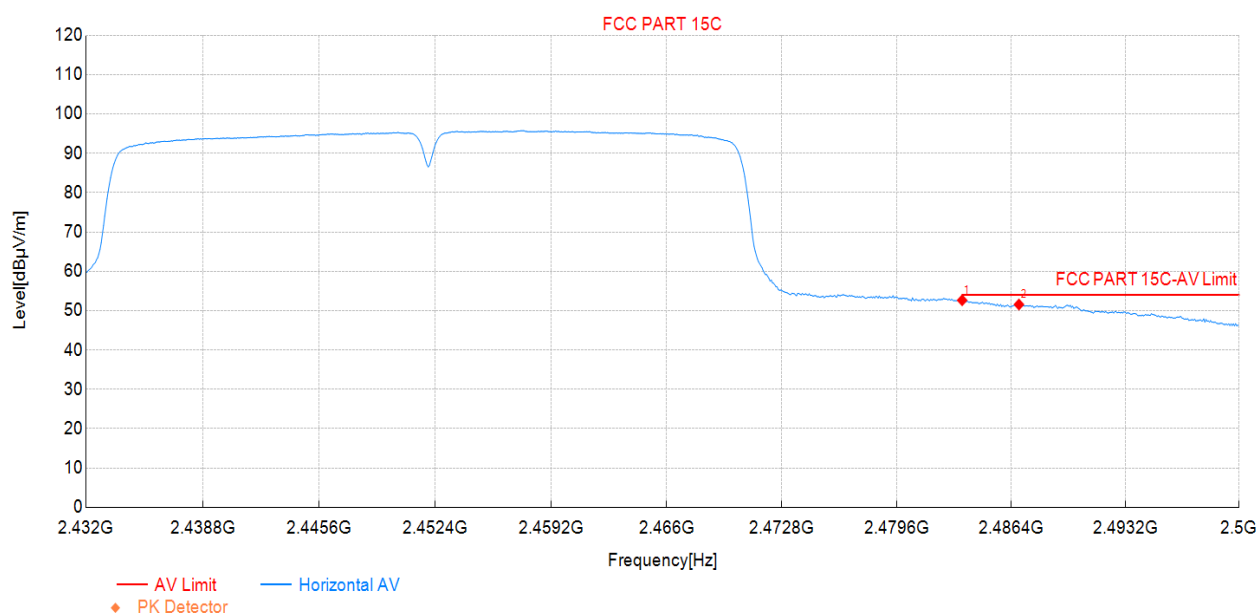


Data List

NO	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdict
1	2483.50	59.97	60.12	0.150	74.00	13.88	PK	Horizo	PASS
2	2484.84	60.81	60.96	0.150	74.00	13.04	PK	Horizo	PASS

Transmit at 2452MHz by 802.11n(40MHz)

Test Graph

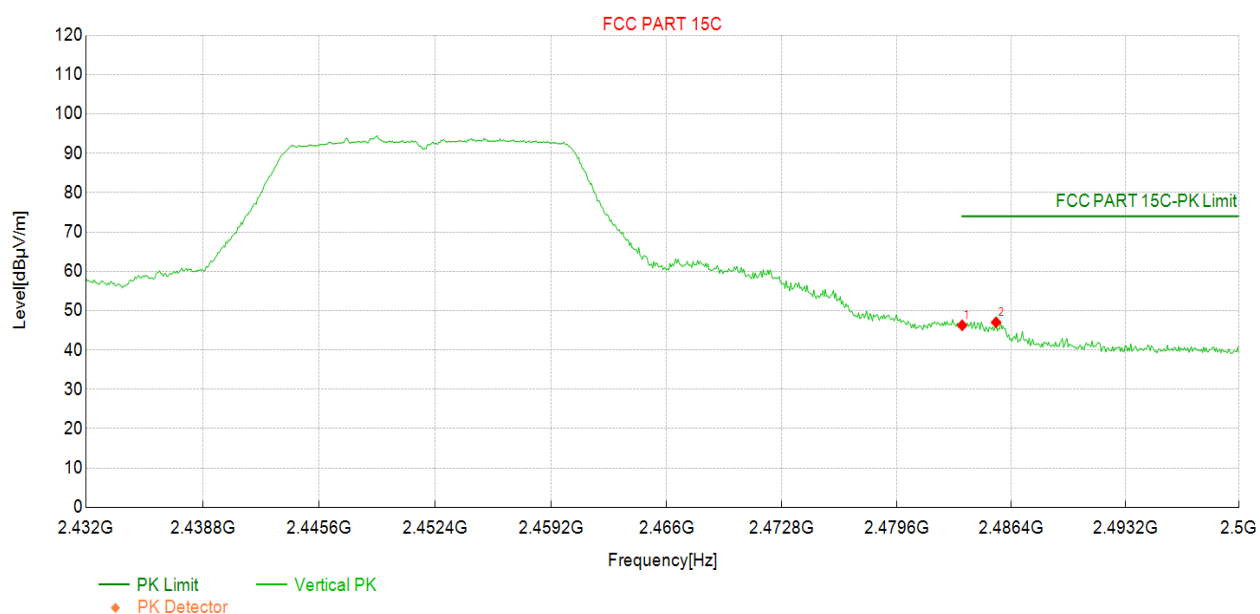


Data List

NO	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdict
1	2483.50	52.49	52.64	0.150	54.00	1.36	AV	Horizo	PASS
2	2486.88	51.40	51.56	0.160	54.00	2.44	AV	Horizo	PASS

Transmit at 2452MHz by 802.11n(40MHz)

Test Graph

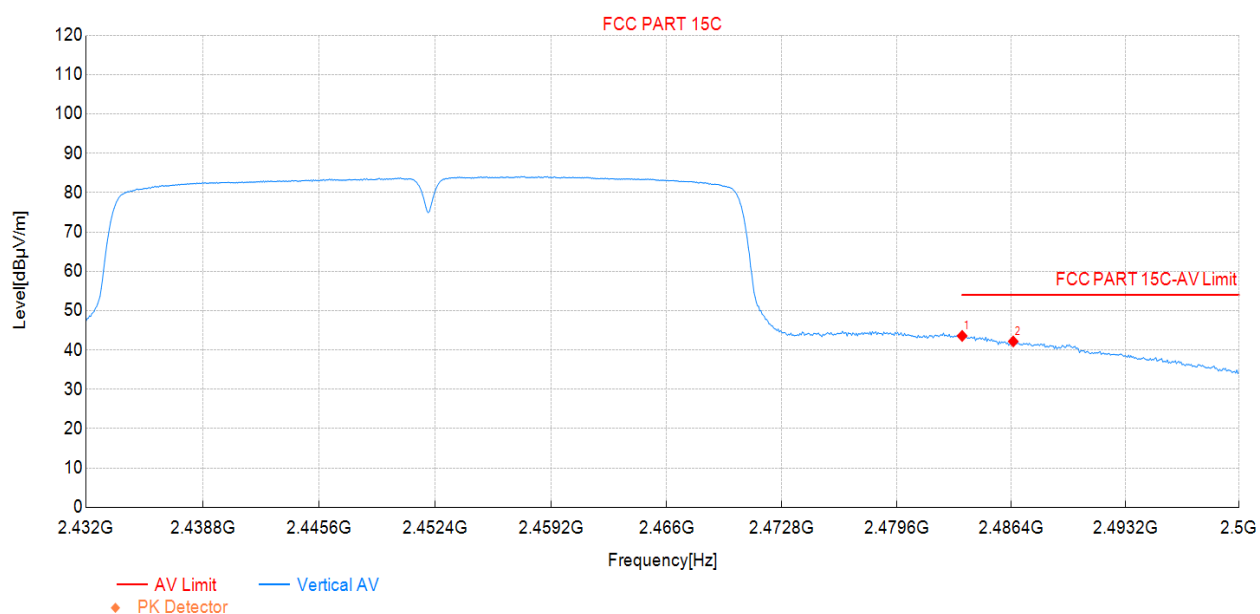


Data List

NO	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdict
1	2483.50	46.14	46.29	0.150	74.00	27.71	PK	Vertic	PASS
2	2485.52	46.88	47.04	0.160	74.00	26.96	PK	Vertic	PASS

Transmit at 2452MHz by 802.11n(40MHz)

Test Graph



Data List

NO	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Det	Pol	Verdict
1	2483.50	43.44	43.59	0.150	54.00	10.41	AV	Vertic	PASS
2	2486.54	42.02	42.18	0.160	54.00	11.82	AV	Vertic	PASS

Note: Level = Reading + Factor (Antenna factor + Amplifier factor + Cable loss)

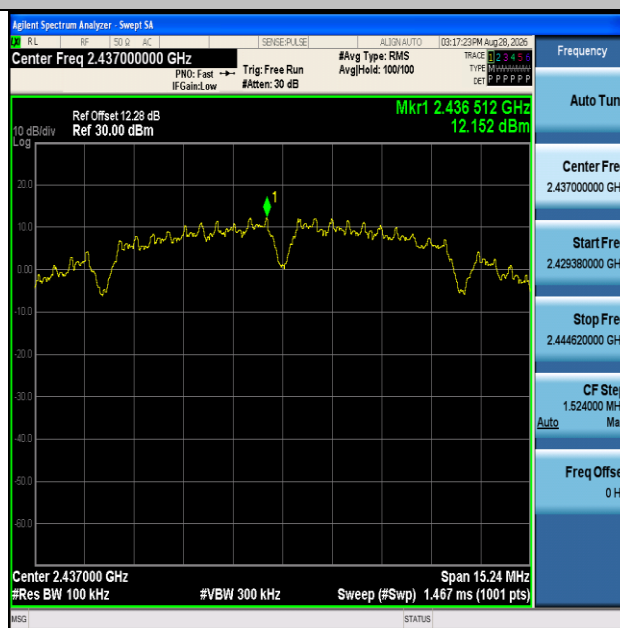
Conducted Spurious Emission

Reference level measurement

Test Graphs



11B-Ant1-2412-PASS



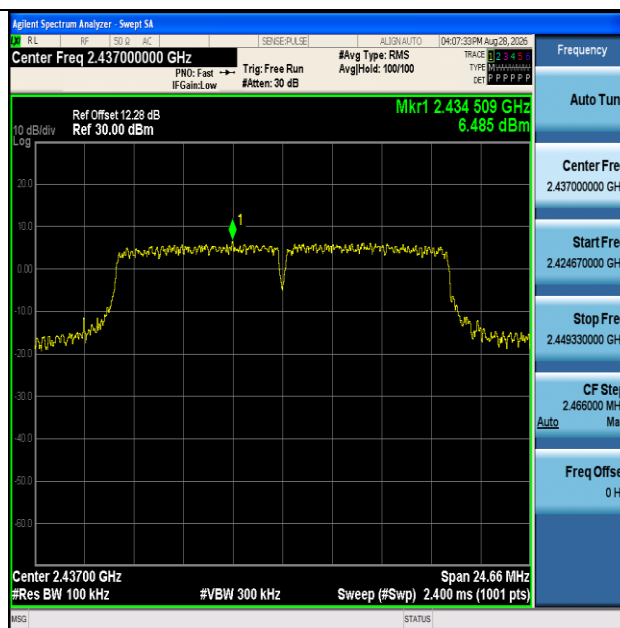
11B-Ant1-2437-PASS



11B-Ant1-2462-PASS



11G-Ant1-2412-PASS



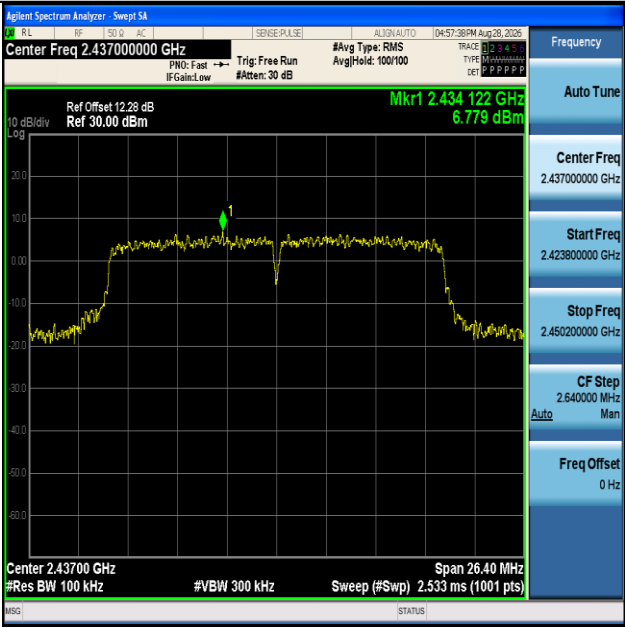
11G-Ant1-2437-PASS



11G-Ant1-2462-PASS



11N20SISO-Ant1-2412-PASS



11N20SISO-Ant1-2437-PASS



11N20SISO-Ant1-2462-PASS



11N40SISO-Ant1-2422-PASS



11N40SISO-Ant1-2437-PASS



11N40SISO-Ant1-2452-PASS

Band edge measurements Test Graphs



11B-Ant1-2412-PASS



11B-Ant1-2462-PASS