

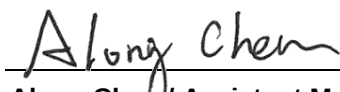
FCC Test Report

FCC ID : IPH-04780
Equipment : IVI Unit
Model No. : TGWW
Brand Name : GARMIN
Applicant : Garmin International, Inc.
Address : 1200 E. 151st Street Olathe, KS 66062 United States
Standard : 47 CFR FCC Part 15.407
Received Date : Jan. 15, 2025
Tested Date : Jan. 15 ~ Jan. 16, 2025

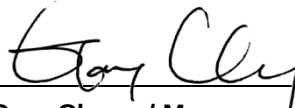
We, International Certification Corporation, would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It shall not be reproduced except in full without the written approval of our laboratory.

Reviewed by:

Approved by:



Along Chen / Assistant Manager



Gary Chang / Manager

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Appendix A. Emission Bandwidth

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Appendix C. Power Spectral Density

Appendix D. Unwanted Emissions

Appendix E. Frequency Stability

Release Record

Report No.	Version	Description	Issued Date
FR3D1301-01	Rev. 01	Initial issue	Jan. 17, 2025

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	AC Power Line Conducted Emissions	Note ¹	N/A
15.407(b) 15.209	Unwanted Emissions	[dBuV/m at 3m]: 446.8MHz 36.04 (Margin-9.96dB) - AV	Pass
15.407(a)	Emission Bandwidth	Meet the requirement of limit	Pass
15.407(e)	6dB bandwidth	Meet the requirement of limit	Pass
15.407(a)	Conducted Output Power	Max Power [dBm]: 5150~5250MHz: 5.65	Pass
15.407(a)	Power Spectral Density	Meet the requirement of limit	Pass
15.407(g)	Frequency Stability	Meet the requirement of limit	Pass
15.203	Antenna Requirement	Meet the requirement of limit	Pass
N/A means Not Applicable. Note ¹ : The EUT consumes DC power from battery, so the test is not required.			

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

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

1 General Description

1.1 Information

This report is issued as a supplementary report to the original ICC report no. FR3D1301. The modification is only concerned with adding 5150-5250MHz band by software setting.

1.1.1 Specification of the Equipment under Test (EUT)

RF General Information					
Frequency Range (MHz)	IEEE Std. 802.11	Ch. Freq. (MHz)	Channel Number	Transmit Chains (N _{TX})	Data Rate
5150-5250	a	5180-5240	36-48 [4]	2	6-54 Mbps
5150-5250	n (HT20)	5180-5240	36-48 [4]	2	MCS 0-15
5150-5250	ac (VHT20)	5180-5240	36-48 [4]	2	MCS 0-9
Note: OFDM BPSK, QPSK, 16QAM, 64QAM and 256QAM modulation.					

1.1.2 Antenna Details

Ant. No.	Brand	Model	Type	Connector	Operating Frequencies (MHz) / Antenna Gain (dBi)
					5150 ~5250
1	HARADA	39215	RHCP	R-SMA	-0.3
2	HARADA	39216	RHCP	R-SMA	0.8

1.1.3 Configuration of Equipment under Test (EUT)

Power Supply Type	12Vdc
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1.1.4 Accessories

N/A

1.1.5 Channel List

802.11a / n HT20 / ac VHT20	
Channel	Frequency(MHz)
36	5180
40	5200
44	5220
48	5240

1.1.6 Test Tool and Duty Cycle

Test Tool	adb tool		
Duty Cycle and Duty Factor	Mode	Duty Cycle (%)	Duty Factor (dB)
	11a	94.63%	0.24
	HT20	94.73%	0.23
	VHT20	89.90%	0.46

1.1.7 Power Index of Test Tool

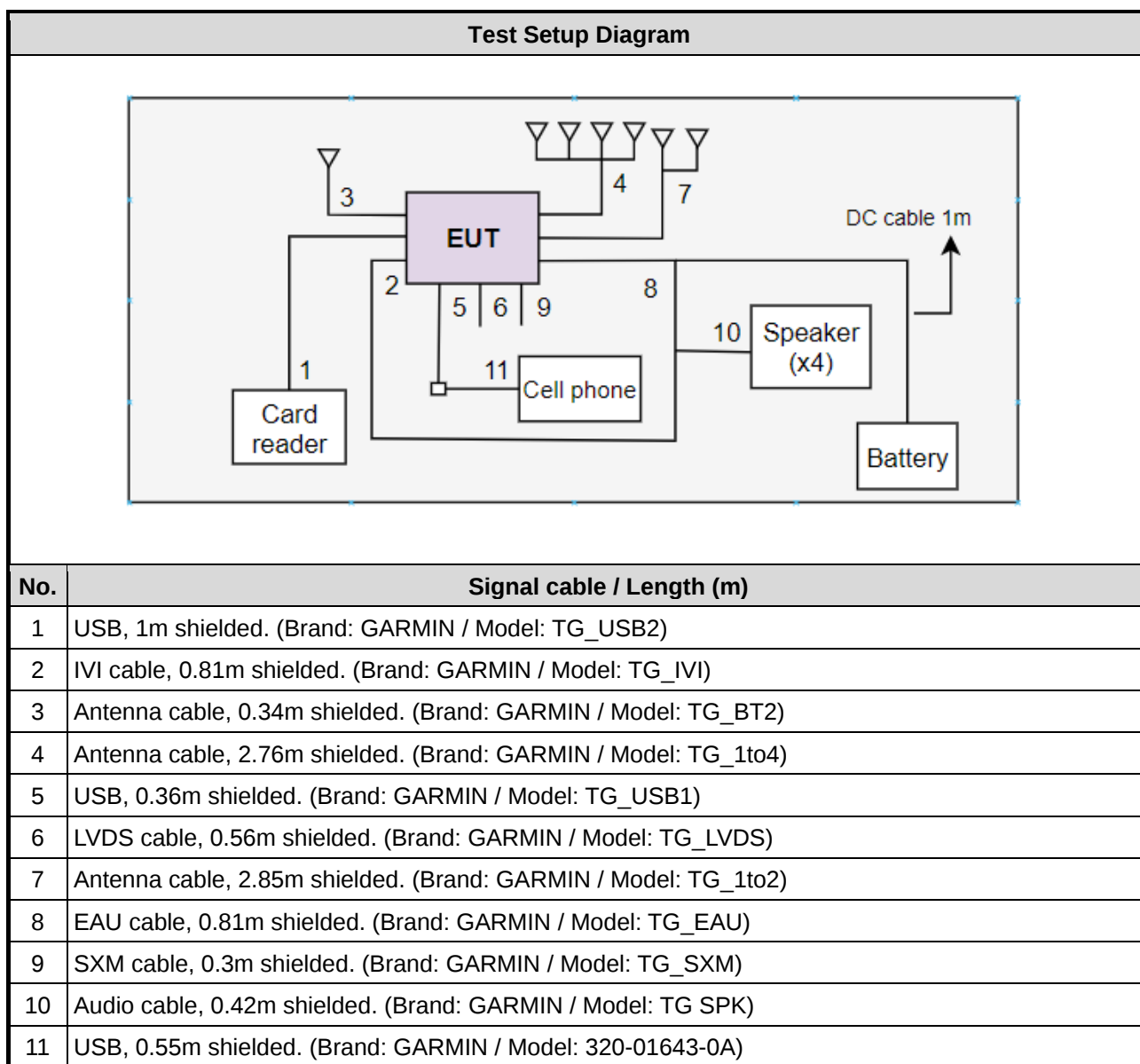
Modulation Mode	Test Frequency (MHz)	Power Index
11a	5180	9
11a	5200	9
11a	5240	9
HT20	5180	6
HT20	5200	6
HT20	5240	6
VHT20	5180	6
VHT20	5200	6
VHT20	5240	6

1.2 Local Support Equipment List

Support Equipment List					
No.	Equipment	Brand	Model	FCC ID	Remarks
1	Card reader	TCSTAR	TYC-MF007	---	---
2	12V DC Battery	Hotai Motor Co, Ltd.	S55B24LS	---	---
3	Cell phone	SAMSUNG	A8	---	---
4	Speaker	GARMIN	TG SPK	---	Provided by applicant.
5	Fixture Board	GARMIN	TG_FB	---	Provided by applicant.
6	Laptop	DELL	Latitude E5470	DoC	---

Note: The fixture board and laptop are disconnected from EUT and removed from test table when EUT is set to transmit continuously.

1.3 Test Setup Chart



1.4 The Equipment List

Test Item	Radiated Emission				
Test Site	966 chamber1 / (03CH01-WS)				
Tested Date	Jan. 16, 2025				
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until
Receiver	R&S	ESR3	101657	Mar. 05, 2024	Mar. 04, 2025
Spectrum Analyzer	R&S	FSV40	101498	Nov. 12, 2024	Nov. 11, 2025
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 05, 2024	Nov. 04, 2025
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Aug. 09, 2024	Aug. 08, 2025
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Nov. 28, 2024	Nov. 27, 2025
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 18, 2024	Nov. 17, 2025
Preamplifier	EMC	EMC02325	980225	Jun. 17, 2024	Jun. 16, 2025
Preamplifier	EMC	EMC118A45SE	980898	Jul. 05, 2024	Jul. 04, 2025
Preamplifier	EMC	EMC184045SE	980903	Jul. 30, 2024	Jul. 29, 2025
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Oct. 02, 2024	Oct. 01, 2025
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Oct. 02, 2024	Oct. 01, 2025
LF cable 11M	EMC	EMCCFD400-NW-N W-11000	200801	Oct. 02, 2024	Oct. 01, 2025
LF cable 1M	EMC	EMCCFD400-NM-N M-1000	160502	Oct. 02, 2024	Oct. 01, 2025
RF Cable	EMC	EMC104-35M-35M- 8000	210920	Oct. 02, 2024	Oct. 01, 2025
RF Cable	EMC	EMC104-35M-35M- 3000	210922	Oct. 02, 2024	Oct. 01, 2025
Attenuator	Pasternack	PE7005-10	10-1	Oct. 02, 2024	Oct. 01, 2025
HIGHPASS FILTER 7.5-18G	STI	STI15-9722	STI-HP7.5G-A	Oct. 02, 2024	Oct. 01, 2025
Measurement Software	Sporton	SENSE-EMI	V5.11	NA	NA
Measurement Software	Sporton	SENSE-15407_NII	V5.11	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Tested Date	Jan. 15, 2025				
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV3044	101516	Jun. 17, 2024	Jun. 16, 2025
Power Meter	Anritsu	ML2495A	1241002	Nov. 26, 2024	Nov. 25, 2025
Power Sensor	Anritsu	MA2411B	1207366	Nov. 26, 2024	Nov. 25, 2025
TEMP&HUMIDITY CHAMBER	GIANT FORCE	GCT-225-40-SP-SD	MAF1212-002	Jul. 01, 2024	Jun. 30, 2025
DC POWER SOURCE	GW INSTRON	GPC-6030D	GES855395	Nov. 06, 2024	Nov. 05, 2025
Attenuator	Pasternack	PE7005-10	10-2	Oct. 04, 2024	Oct. 03, 2025
Measurement Software	Sporton	SENSE-15407_NII	V5.11	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.5 Test Standards

47 CFR FCC Part 15.407
ANSI C63.10-2013

1.6 Reference Guidance

FCC KDB 412172 D01 Determining ERP and EIRP v01r01
FCC KDB 662911 D01 Multiple Transmitter Output v02r01
FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01

1.7 Deviation from Test Standard and Measurement Procedure

None

1.8 Measurement Uncertainty

The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor ($k=2$)).

Measurement Uncertainty	
Parameters	Uncertainty
Bandwidth	± 34.130 Hz
Conducted power	± 0.808 dB
Frequency error	$\pm 1 \times 10^{-9}$
Power density	± 0.583 dB
Conducted emission	± 2.715 dB
AC conducted emission	± 2.92 dB
Unwanted Emission ≤ 1 GHz	± 3.41 dB
Unwanted Emission > 1 GHz	± 4.59 dB
Time	$\pm 0.1\%$
Temperature	± 0.4 °C

2 Test Configuration

2.1 Testing Facility

Test Laboratory	International Certification Corporation
Test Site	03CH01-WS, TH01-WS
Address of Test Site	No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

- FCC Designation No.: TW2732
- FCC site registration No.: 181692
- ISSED#: 10807A
- CAB identifier: TW2732

2.2 The Worst Test Modes and Channel Details

Test item	Modulation Mode	Test Frequency (MHz)	Data Rate	Test Configuration
Unwanted Emissions ≤1GHz	11a	5200	6 Mbps	---
Conducted Output Power	11a HT20 VHT20	5180 / 5200 / 5240 5180 / 5200 / 5240 5180 / 5200 / 5240	6 Mbps MCS 0 MCS 0	
Unwanted Emissions >1GHz Emission Bandwidth Power Spectral Density	11a VHT20	5180 / 5200 / 5240 5180 / 5200 / 5240	6 Mbps MCS 0	---
Frequency Stability	Un-modulation	5200	---	---
NOTE: 1. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The Z-plane results were found as the worst case and were shown in this report.				

3 Transmitter Test Results

3.1 Emission Bandwidth

3.1.1 Test Procedures

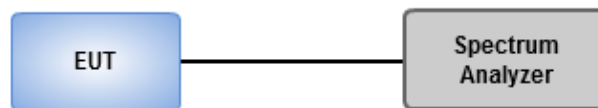
26dB Bandwidth

1. Set RBW = approximately 1% of the emission bandwidth.
2. Set the VBW > RBW, Detector = Peak.
3. Trace mode = max hold.
4. Measure the maximum width of the emission that is 26 dB down from the peak of the emission.

Occupied Bandwidth

1. Set RBW = 1 % to 5 % of the OBW.
2. Set VBW $\geq$ 3 RBW.
3. Sample detection and single sweep mode shall be used.
4. Use the 99 % power bandwidth function of the instrument.

3.1.2 Test Setup



3.1.3 Test Results

Ambient Condition	18°C / 69%	Tested By	Akun Chung
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Refer to Appendix A.

3.2 Conducted Output Power

3.2.1 Limit of Conducted Output Power

Frequency band 5150-5250 MHz		
Operating Mode		Limit
☒	Outdoor access point	Conducted Power: 1 W The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm)
☐	Indoor access point	Conducted Power: 1 W
☐	Fixed point-to-point access points	Conducted Power: 1 W
☐	Client devices	Conducted Power: 250 mW

Frequency Band (MHz)		Limit
☐	5250 ~ 5350	Conducted Power: 250mW or 11dBm+10 log B
☐	5470 ~ 5725	Conducted Power: 250mW or 11dBm+10 log B
Note: "B" is the 26dB emission bandwidth in MHz.		

3.2.2 Test Procedures

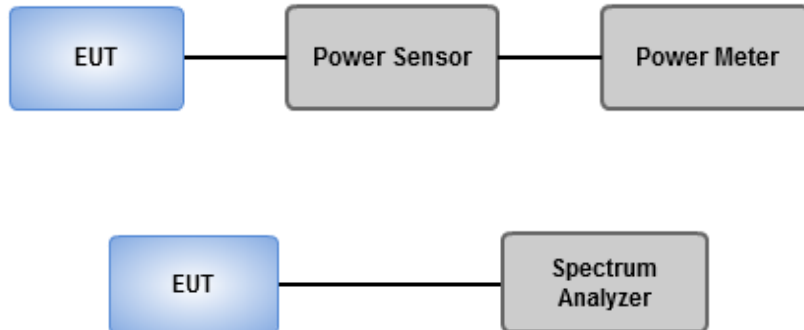
Method PM-G (Measurement using a gated RF average power meter)

Measurements is performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

Spectrum analyzer (For channel that extends across the 5.725 GHz boundary)

1. Set RBW = 1MHz, VBW = 3MHz, Sweep time = Auto, Detector = RMS.
2. Trace average at least 100 traces in power averaging mode.
3. Compute power by integrating the spectrum across the 26 dB EBW.
4. Add 10 log(1/X, X:duty cycle) if duty cycle is <98%).

3.2.3 Test Setup



3.2.4 Test Results

Ambient Condition	18°C / 69%	Tested By	Akun Chung
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Refer to Appendix B.

3.3 Power Spectral Density

3.3.1 Limit of Power Spectral Density

Frequency band 5150-5250 MHz		
Operating Mode		Limit
☒	Outdoor access point	17 dBm / MHz
☐	Indoor access point	17 dBm / MHz
☐	Fixed point-to-point access points	17 dBm / MHz
☐	Client devices	11 dBm / MHz

Frequency Band (MHz)		Limit
☐	5250 ~ 5350	11 dBm / MHz
☐	5470 ~ 5725	11 dBm / MHz

3.3.2 Test Procedures

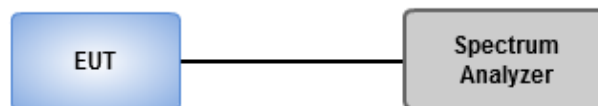
Duty cycle $\geq$ 98 %

1. Set RBW = 1 MHz, VBW = 3 MHz, Sweep time = auto, Detector = RMS.
2. Trace average 100 traces.
3. Use the peak marker function to determine the maximum amplitude level.

Duty cycle < 98 %

1. Set RBW = 1 MHz, VBW = 3 MHz, Detector = RMS.
2. Set sweep time $\geq 10 \times (\text{number of points in sweep}) \times (\text{total on/off period of the transmitted signal})$.
3. Perform a single sweep.
4. Use the peak marker function to determine the maximum amplitude level.
5. Add $10 \log(1/x)$, where x is the duty cycle.

3.3.3 Test Setup



3.3.4 Test Results

Ambient Condition	18°C / 69%	Tested By	Akun Chung
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Refer to Appendix C.

3.4 Unwanted Emissions

3.4.1 Limit of Unwanted Emissions

Restricted Band Emissions Limit			
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1:
Qusai-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit

Note 2:
Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

Un-restricted band emissions above 1GHz Limit	
Operating Band	Limit
5.15 - 5.25 GHz	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]
5.25 - 5.35 GHz	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]
5.47 - 5.725 GHz	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]

Note 1: Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. 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 of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

3.4.2 Test Procedures

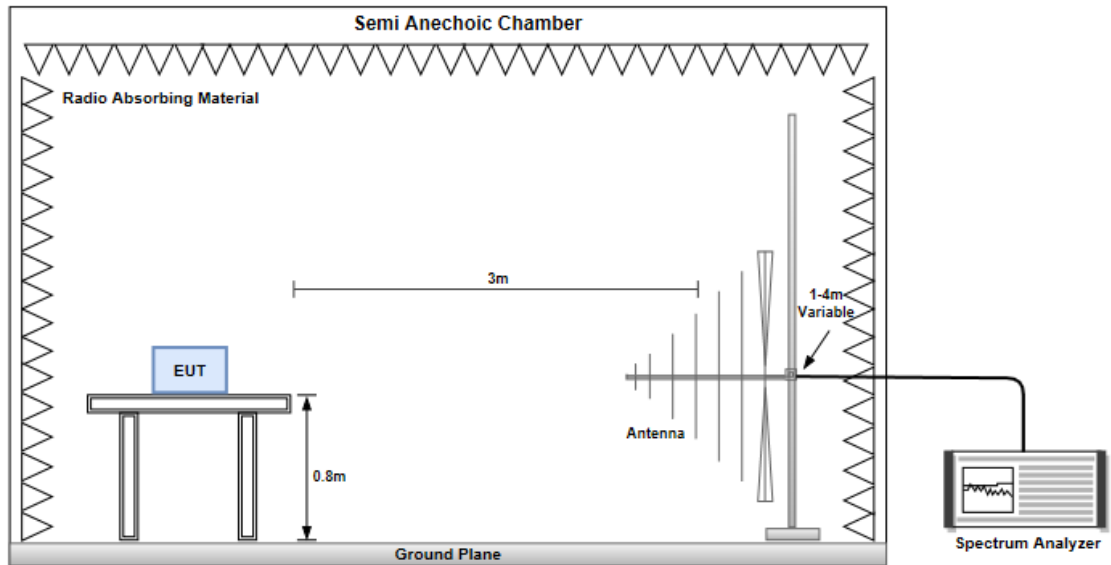
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

Note:

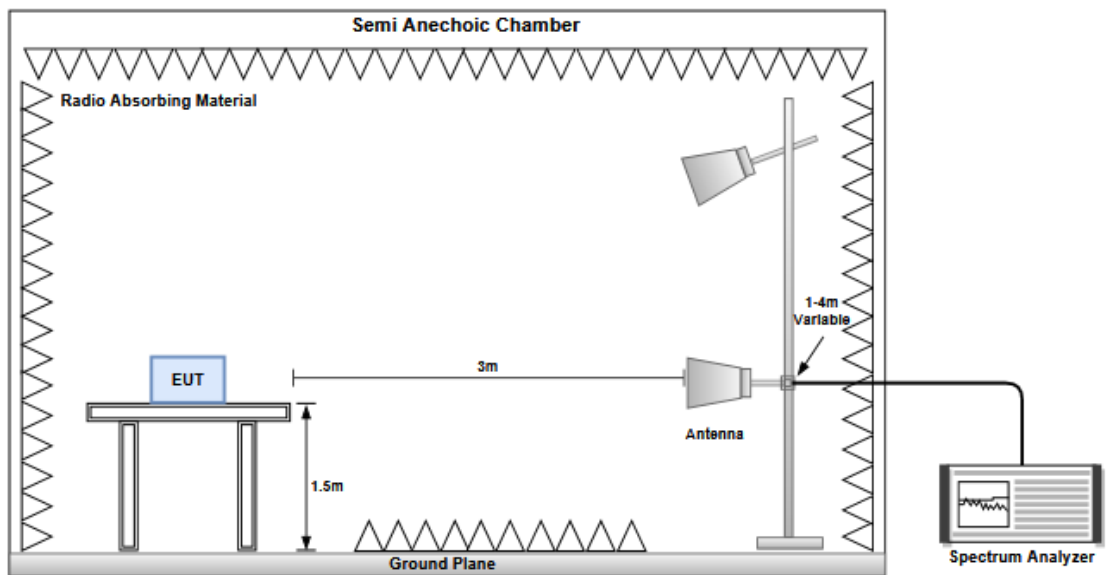
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above 1GHz.

3.4.3 Test Setup

Unwanted Emissions below 1 GHz



Unwanted Emissions above 1 GHz



3.4.4 Test Results

Refer to Appendix D.

3.5 Frequency Stability

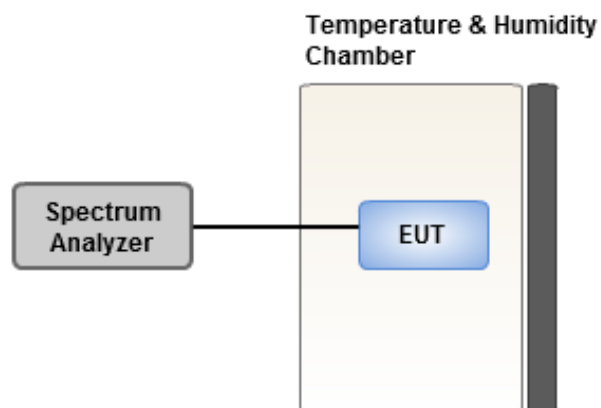
3.5.1 Limit of Frequency Stability

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

3.5.2 Test Procedures

1. The EUT is installed in an environment test chamber with external power source.
2. Set the chamber to operate at 20 centigrade and external power source to output at nominal voltage of EUT.
3. A sufficient stabilization period at each temperature is used prior to each frequency measurement.
4. When temperature is stabled, measure the frequency stability.
5. The test shall be performed under normal and extreme condition for temperature and voltage.

3.5.3 Test Setup



3.5.4 Test Results

Ambient Condition	18°C / 69%	Tested By	Akun Chung
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Refer to Appendix E.

4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corporation (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website <http://www.icertifi.com.tw>.

Linkou

Tel: 886-2-2601-1640

No.30-2, Ding Fwu Tsuen, Lin Kou
District, New Taipei City, Taiwan
(R.O.C.)

Kwei Shan

Tel: 886-3-271-8666

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St., Kwei Shan Dist., Tao Yuan
City 33381, Taiwan (R.O.C.)
No.2-1, Lane 6, Wen San 3rd
St., Kwei Shan Dist., Tao Yuan
City 33381, Taiwan (R.O.C.)

Kwei Shan Site II

Tel: 886-3-271-8640

No.14-1, Lane 19, Wen San 3rd
St., Kwei Shan Dist., Tao Yuan
City 33381, Taiwan (R.O.C.)

If you have any suggestion, please feel free to contact us as below information.

Tel: 886-3-271-8666

Fax: 886-3-318-0345

Email: ICC_Service@icertifi.com.tw

==END==

Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
5.15-5.25GHz	-	-	-	-	-
802.11a_Nss1,(6Mbps)_2TX	19.536M	16.299M	16M3D1D	18.876M	16.252M
802.11ac VHT20_Nss1,(MCS0)_2TX	19.932M	17.442M	17M4D1D	19.404M	17.348M

Max-N dB = Maximum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;
Max-OBW = Maximum 99% occupied bandwidth;
Min-N dB = Minimum 6dB down bandwidth for 5.725-5.85GHz band / Minimum 26dB down bandwidth for other band;
Min-OBW = Minimum 99% occupied bandwidth

Result

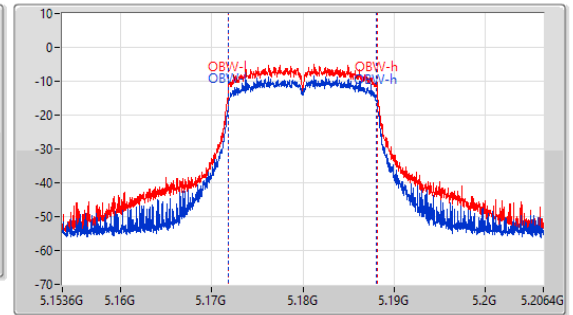
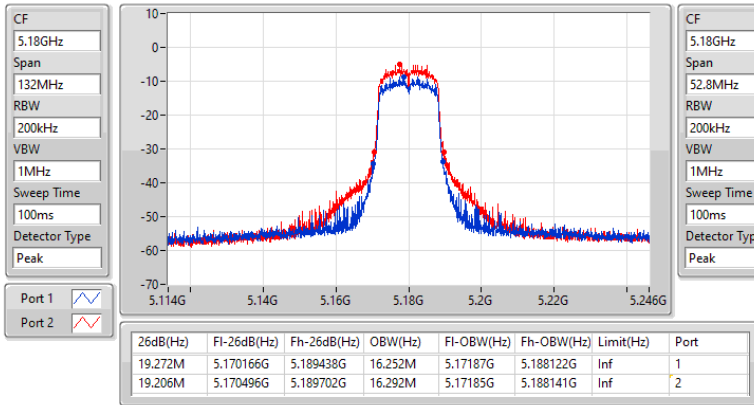
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)	Port 2-N dB (Hz)	Port 2-OBW (Hz)
802.11a_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
5180MHz	Pass	Inf	19.272M	16.252M	19.206M	16.292M
5200MHz	Pass	Inf	18.876M	16.253M	19.536M	16.299M
5240MHz	Pass	Inf	19.338M	16.252M	19.206M	16.277M
802.11ac VHT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5180MHz	Pass	Inf	19.8M	17.348M	19.734M	17.427M
5200MHz	Pass	Inf	19.602M	17.361M	19.8M	17.435M
5240MHz	Pass	Inf	19.932M	17.366M	19.404M	17.442M

Port X-N dB = Port X 6dB down bandwidth for 5.725-5.85GHz band / 26dB down bandwidth for other band
Port X-OBW = Port X 99% occupied bandwidth

5.15-5.25GHz_802.11a_Nss1,(6Mbps)_2TX

EBW

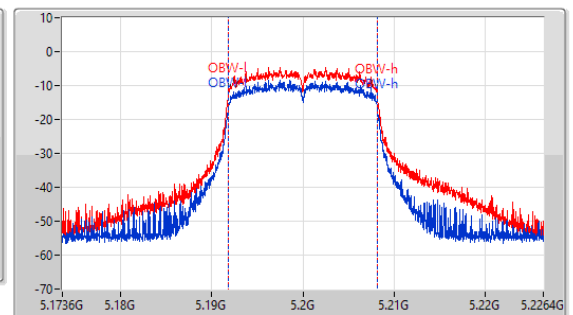
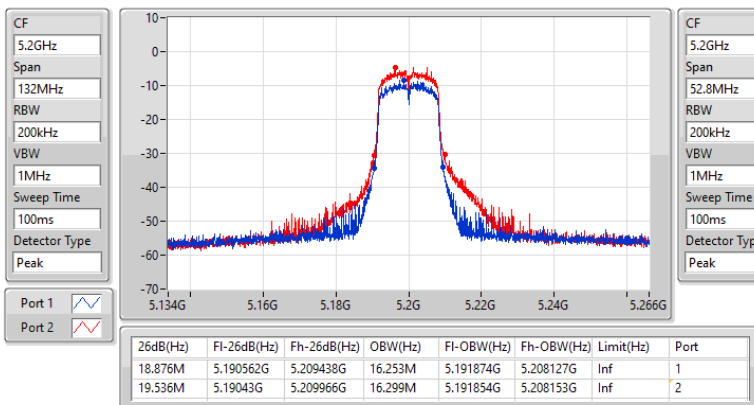
5180MHz



5.15-5.25GHz_802.11a_Nss1,(6Mbps)_2TX

EBW

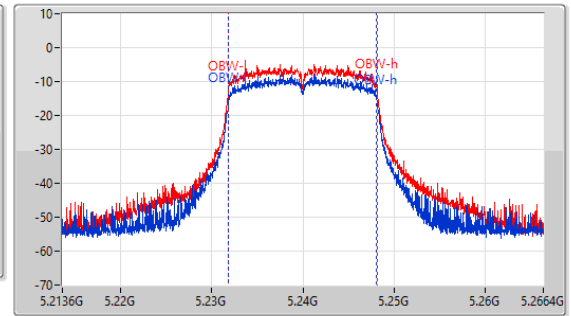
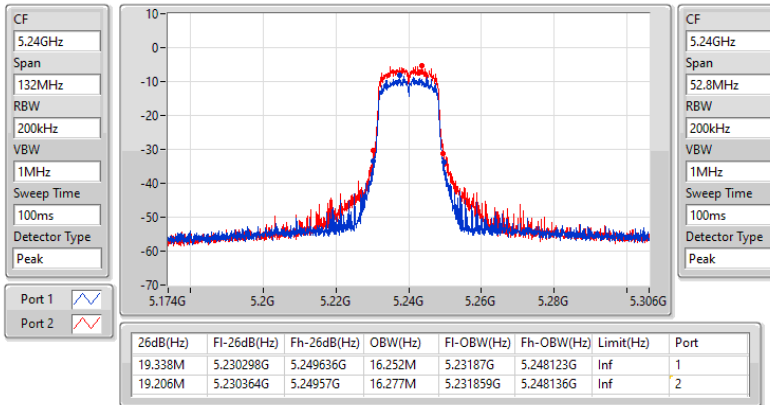
5200MHz



5.15-5.25GHz_802.11a_Nss1,(6Mbps)_2TX

EBW

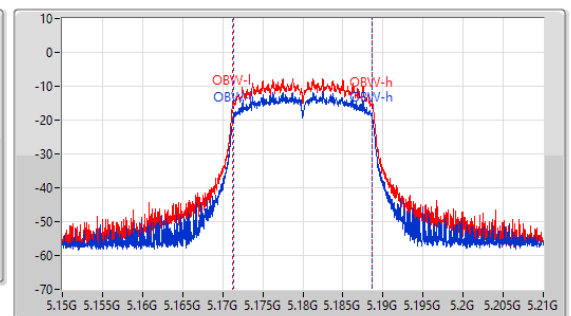
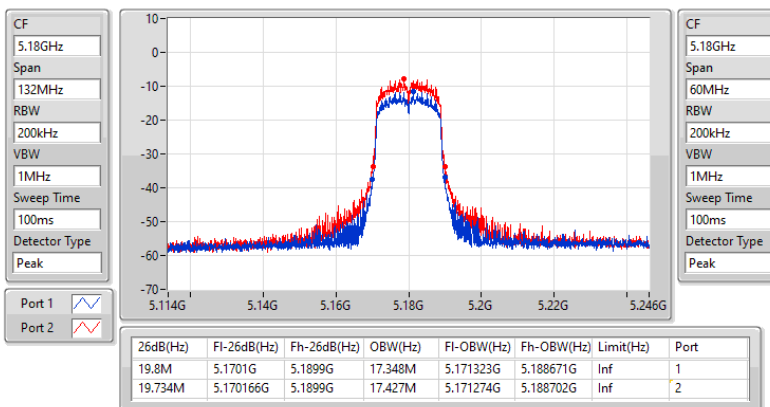
5240MHz



5.15-5.25GHz_802.11ac_VHT20_Nss1,(MCS0)_2TX

EBW

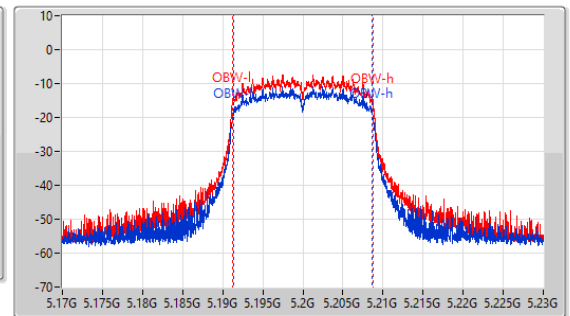
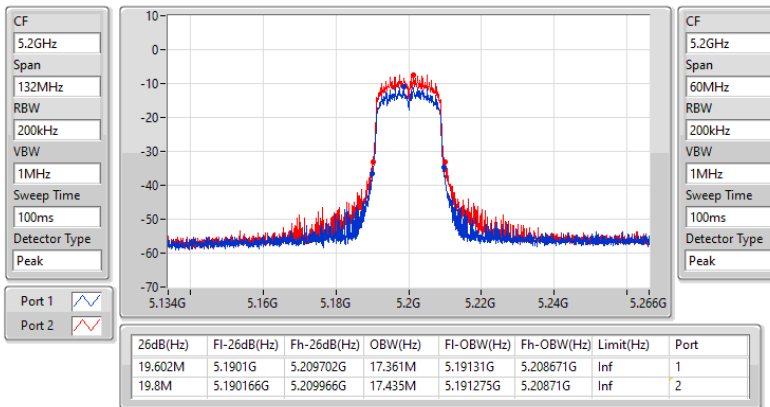
5180MHz



5.15-5.25GHz_802.11ac_VHT20_Nss1,(MCS0)_2TX

EBW

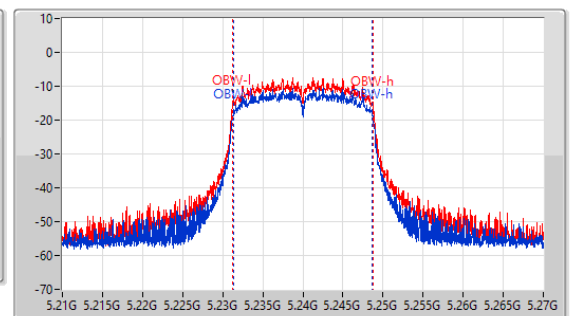
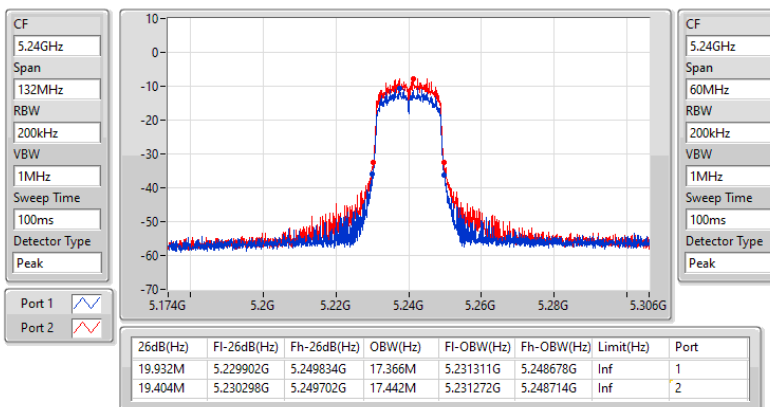
5200MHz



5.15-5.25GHz_802.11ac_VHT20_Nss1,(MCS0)_2TX

EBW

5240MHz



**Summary**

Mode	Total Power (dBm)	Total Power (W)	EIRP (dBm)	EIRP (W)
5.15-5.25GHz	-	-	-	-
802.11a_Nss1,(6Mbps)_2TX	5.65	0.00367	6.45	0.00442
802.11n HT20_Nss1,(MCS0)_2TX	3.02	0.00200	3.82	0.00241
802.11ac VHT20_Nss1,(MCS0)_2TX	3.22	0.00210	4.02	0.00252

Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Port 2 (dBm)	Total Power (dBm)	Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
802.11a_Nss1,(6Mbps)_2TX	-	-	-	-	-	-	-	-
5180MHz	Pass	0.80	0.08	4.05	5.51	30.00	6.31	36.00
5200MHz	Pass	0.80	0.14	4.21	5.65	30.00	6.45	36.00
5240MHz	Pass	0.80	0.1	4.12	5.57	30.00	6.37	36.00
802.11n HT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
5180MHz	Pass	0.80	-3.52	0.8	2.17	30.00	2.97	36.00
5200MHz	Pass	0.80	-3.38	1.14	2.45	30.00	3.25	36.00
5240MHz	Pass	0.80	-2.86	1.72	3.02	30.00	3.82	36.00
802.11ac VHT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
5180MHz	Pass	0.80	-3.37	1.02	2.37	30.00	3.17	36.00
5200MHz	Pass	0.80	-3.16	1.33	2.65	30.00	3.45	36.00
5240MHz	Pass	0.80	-2.62	1.91	3.22	30.00	4.02	36.00

DG = Directional Gain; Port X = Port X output power



Mode	Result	Gain-Elevation 30° (dBi)	Total Power (dBm)	EIRP-Elevation 30° (dBm)	EIRP Limit- Elevation 30° (dBm)
5.15-5.25GHz_802.11a_Nss1,(6Mbps)_2TX_5180MHz	Pass	0.80	5.51	6.31	21.00
5.15-5.25GHz_802.11a_Nss1,(6Mbps)_2TX_5200MHz	Pass	0.80	5.65	6.45	21.00
5.15-5.25GHz_802.11a_Nss1,(6Mbps)_2TX_5240MHz	Pass	0.80	5.57	6.37	21.00
5.15-5.25GHz_802.11n HT20_Nss1,(MCS0)_2TX_5180MHz	Pass	0.80	2.17	2.97	21.00
5.15-5.25GHz_802.11n HT20_Nss1,(MCS0)_2TX_5200MHz	Pass	0.80	2.45	3.25	21.00
5.15-5.25GHz_802.11n HT20_Nss1,(MCS0)_2TX_5240MHz	Pass	0.80	3.02	3.82	21.00
5.15-5.25GHz_802.11ac VHT20_Nss1,(MCS0)_2TX_5180MHz	Pass	0.80	2.37	3.17	21.00
5.15-5.25GHz_802.11ac VHT20_Nss1,(MCS0)_2TX_5200MHz	Pass	0.80	2.65	3.45	21.00
5.15-5.25GHz_802.11ac VHT20_Nss1,(MCS0)_2TX_5240MHz	Pass	0.80	3.22	4.02	21.00

**Summary**

Mode	PD (dBm/RBW)	EIRP PD (dBm/RBW)
5.15-5.25GHz	-	-
802.11a_Nss1,(6Mbps)_2TX	-5.74	-2.46
802.11ac VHT20_Nss1,(MCS0)_2TX	-9.04	-5.76

RBW = 500kHz for 5.725-5.85GHz band / 1MHz for other band;

Result

Mode	Result	DG (dBi)	Port 1 (dBm/RBW)	Port 2 (dBm/RBW)	PD (dBm/RBW)	PD Limit (dBm/RBW)	EIRP PD (dBm/RBW)	EIRP PD Limit (dBm/RBW)
802.11a_Nss1,(6Mbps)_2TX	-	-	-	-	-	-	-	-
5180MHz	Pass	3.28	-11.70	-7.57	-6.22	17.00	-2.94	23.00
5200MHz	Pass	3.28	-11.21	-8.00	-6.46	17.00	-3.18	23.00
5240MHz	Pass	3.28	-10.77	-7.28	-5.74	17.00	-2.46	23.00
802.11ac VHT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
5180MHz	Pass	3.28	-14.79	-10.66	-9.38	17.00	-6.10	23.00
5200MHz	Pass	3.28	-14.33	-10.45	-9.04	17.00	-5.76	23.00
5240MHz	Pass	3.28	-13.69	-10.91	-9.18	17.00	-5.90	23.00

DG = Directional Gain; RBW = 500kHz for 5.725-5.85GHz band / 1MHz for other band;

PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port X Power Density;

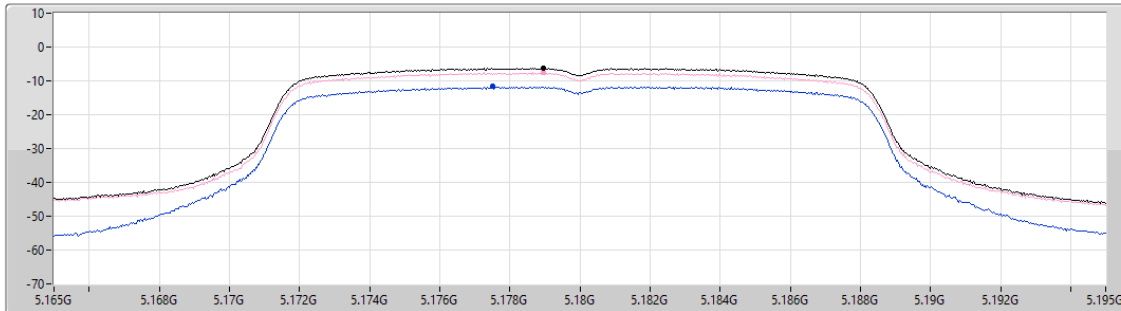


5.15-5.25GHz_802.11a_Nss1,(6Mbps)_2TX

PSD

5180MHz

CF
5.18GHz
Span
30MHz
RBW
1MHz
VBW
3MHz
Sweep Time
1.01ms
Detector Type
RMS



Sum	PD	Port 1	Port 2
(dBm/Hz)	(dBm/Hz)	(dBm/Hz)	(dBm/Hz)
-6.22	-6.22	-11.70	-7.57

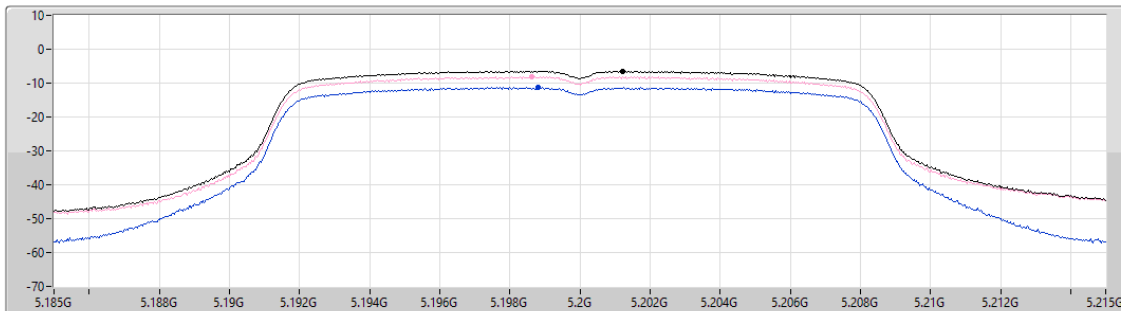
Sum
Port 1
Port 2

5.15-5.25GHz_802.11a_Nss1,(6Mbps)_2TX

PSD

5200MHz

CF
5.2GHz
Span
30MHz
RBW
1MHz
VBW
3MHz
Sweep Time
1.01ms
Detector Type
RMS



Sum	PD	Port 1	Port 2
(dBm/Hz)	(dBm/Hz)	(dBm/Hz)	(dBm/Hz)
-6.46	-6.46	-11.21	-8.00

Sum
Port 1
Port 2

5.15-5.25GHz_802.11a_Nss1,(6Mbps)_2TX

PSD

5240MHz

CF
5.24GHz

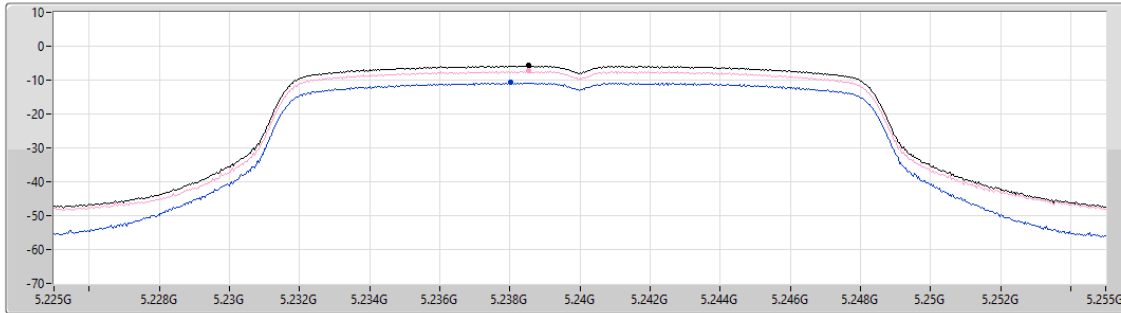
Span
30MHz

RBW
1MHz

VBW
3MHz

Sweep Time
1.01ms

Detector Type
RMS



Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-5.74	-5.74	-10.77	-7.28

5.15-5.25GHz_802.11ac_VHT20_Nss1,(MCS0)_2TX

PSD

5180MHz

CF
5.18GHz

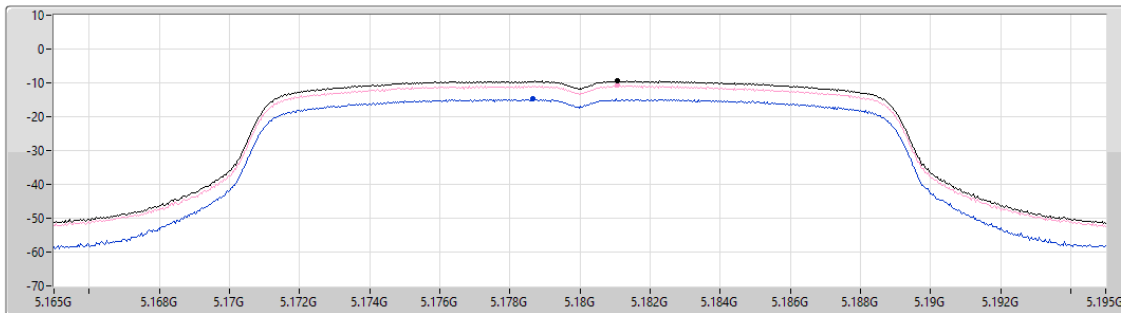
Span
30MHz

RBW
1MHz

VBW
3MHz

Sweep Time
1.01ms

Detector Type
RMS

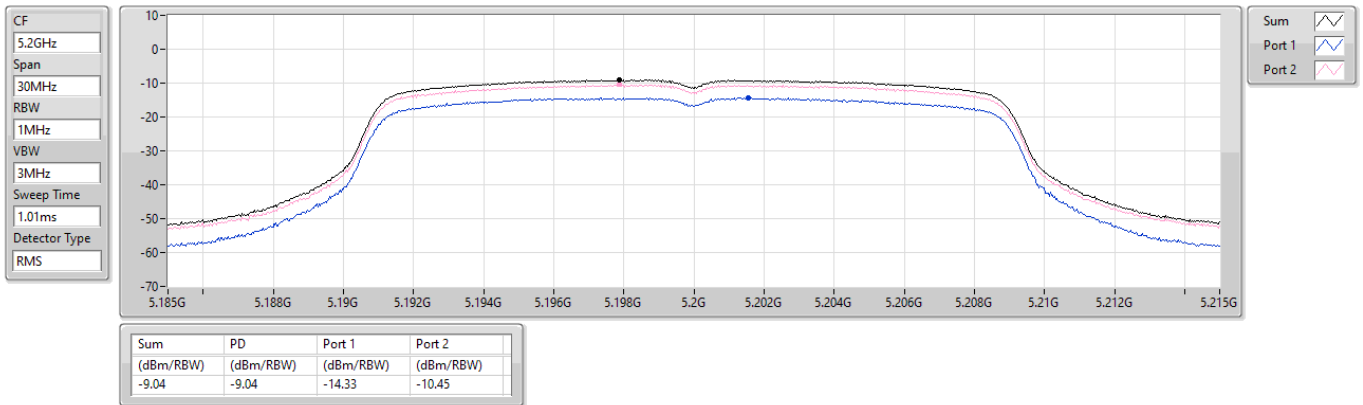


Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-9.38	-9.38	-14.79	-10.66

5.15-5.25GHz_802.11ac VHT20_Nss1,(MCS0)_2TX

PSD

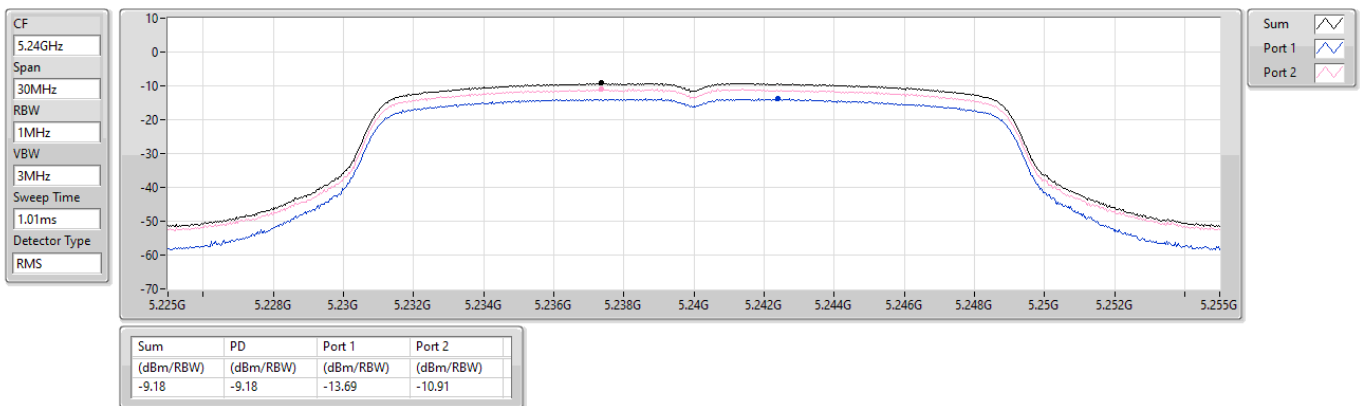
5200MHz



5.15-5.25GHz_802.11ac VHT20_Nss1,(MCS0)_2TX

PSD

5240MHz

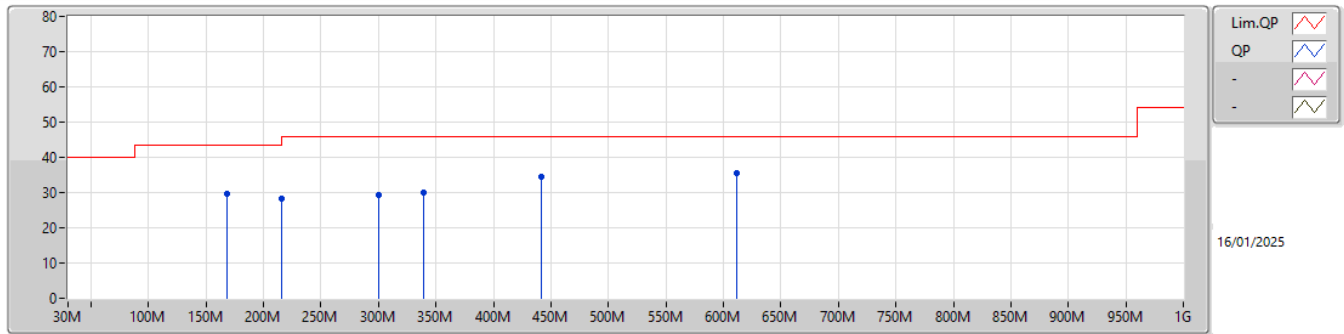




Summary

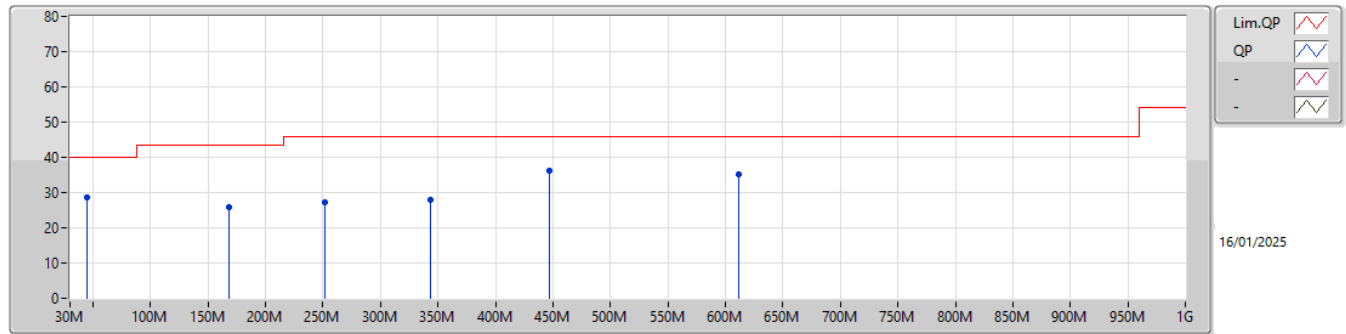
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 1	Pass	PK	446.8M	36.04	46.00	-9.96	Vertical

Mode 1



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB/m)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB/m)	CL (dB)	PA (dB)		
PK	168M	29.79	43.50	-13.71	-8.97	3	Horizontal	-	-	-	38.76	18.00	1.29	28.26		
PK	216M	28.17	43.50	-15.33	-11.71	3	Horizontal	-	-	-	39.88	15.10	1.46	28.27		
PK	300M	29.28	46.00	-16.72	-7.84	3	Horizontal	-	-	-	37.12	18.60	1.79	28.23		
PK	339.3M	30.00	46.00	-16.00	-7.10	3	Horizontal	-	-	-	37.10	19.30	1.81	28.21		
PK	441.3M	34.36	46.00	-11.64	-4.38	3	Horizontal	-	-	-	38.74	21.83	1.97	28.18		
PK	612M	35.68	46.00	-10.32	-0.67	3	Horizontal	-	-	-	36.35	25.08	2.41	28.16		

Mode 1



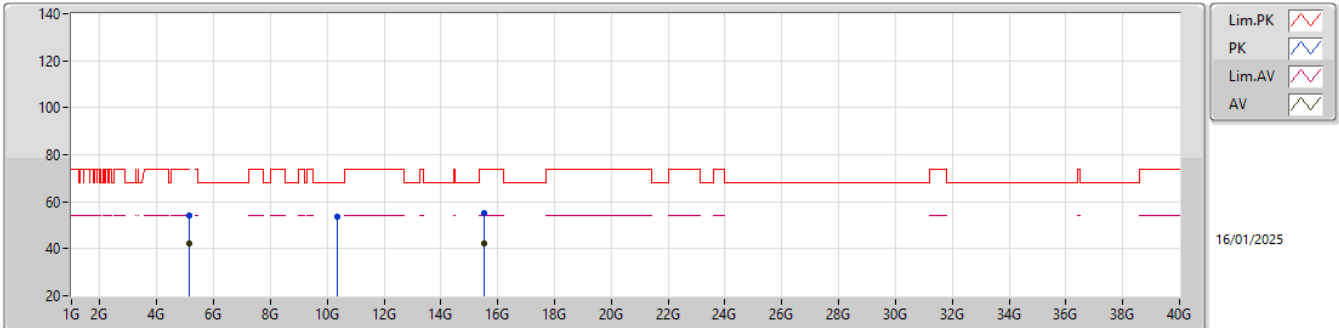
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB/m)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB/m)	CL (dB)	PA (dB)		
PK	44.3M	28.75	40.00	-11.25	-8.72	3	Vertical	-	-	-	37.47	18.79	0.61	28.12		
PK	168M	25.89	43.50	-17.61	-8.97	3	Vertical	-	-	-	34.86	18.00	1.29	28.26		
PK	252M	27.26	46.00	-18.74	-9.69	3	Vertical	-	-	-	36.95	16.98	1.58	28.25		
PK	343.8M	27.81	46.00	-18.19	-7.00	3	Vertical	-	-	-	34.81	19.38	1.82	28.20		
PK	446.8M	36.04	46.00	-9.96	-4.24	3	Vertical	-	-	-	40.28	21.97	1.97	28.18		
PK	612M	35.17	46.00	-10.83	-0.67	3	Vertical	-	-	-	35.84	25.08	2.41	28.16		

**Summary**

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
5.15-5.25GHz	-	-	-	-	-	-	-	-	-	-	-
802.11a_Nss1,(6Mbps)_2TX	Pass	AV	5.15G	42.54	54.00	-11.46	3	Horizontal	20	2.01	-
802.11ac VHT20_Nss1,(MCS0)_2TX	Pass	AV	5.15G	42.50	54.00	-11.50	3	Horizontal	21	1.99	-

5.15-5.25GHz_802.11a_Nss1,(6Mbps)_2TX

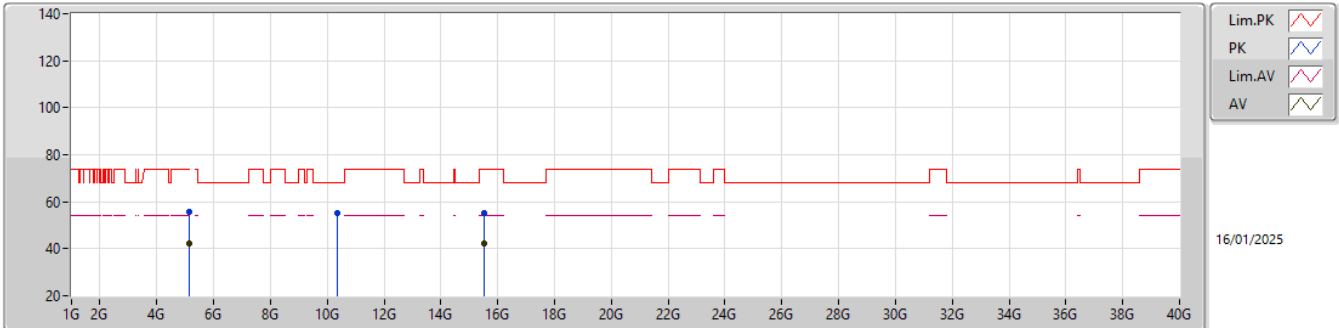
5180MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB/m)	CL (dB)	PA (dB)			
AV	5.15G	42.43	54.00	-11.57	42.13	3	Horizontal	18	2.04	-	32.00	7.00	38.70			
PK	5.15G	54.18	74.00	-19.82	53.88	3	Horizontal	18	2.04	-	32.00	7.00	38.70			
PK	10.36G	53.84	68.20	-14.36	46.11	3	Horizontal	125	1.00	-	39.82	9.99	42.08			
AV	15.54G	42.15	54.00	-11.85	38.12	3	Horizontal	135	1.00	-	38.30	11.40	45.67			
PK	15.54G	55.24	74.00	-18.76	51.21	3	Horizontal	135	1.00	-	38.30	11.40	45.67			

5.15-5.25GHz_802.11a_Nss1,(6Mbps)_2TX

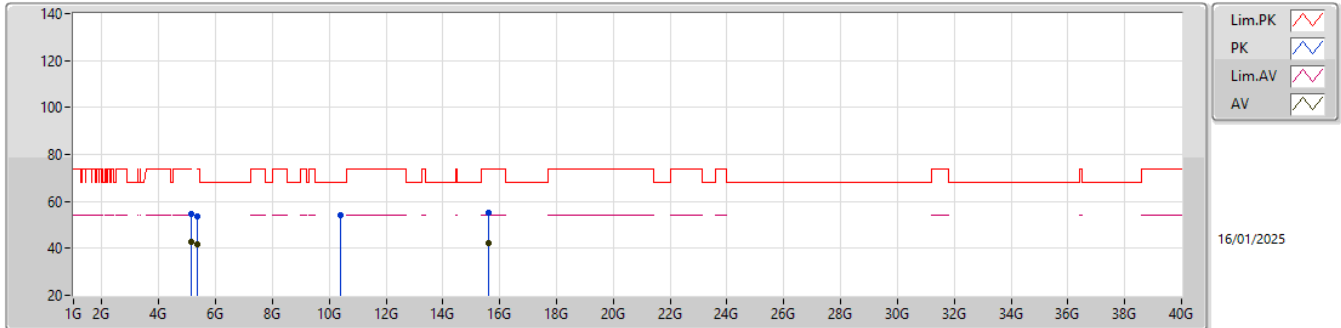
5180MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB/m)	CL (dB)	PA (dB)			
AV	5.15G	42.19	54.00	-11.81	41.89	3	Vertical	359	1.36	-	32.00	7.00	38.70			
PK	5.15G	55.81	74.00	-18.19	55.51	3	Vertical	359	1.36	-	32.00	7.00	38.70			
PK	10.36G	54.96	68.20	-13.24	47.23	3	Vertical	154	1.00	-	39.82	9.99	42.08			
AV	15.54G	42.05	54.00	-11.95	38.02	3	Vertical	208	1.00	-	38.30	11.40	45.67			
PK	15.54G	55.26	74.00	-18.74	51.23	3	Vertical	208	1.00	-	38.30	11.40	45.67			

5.15-5.25GHz_802.11a_Nss1,(6Mbps)_2TX

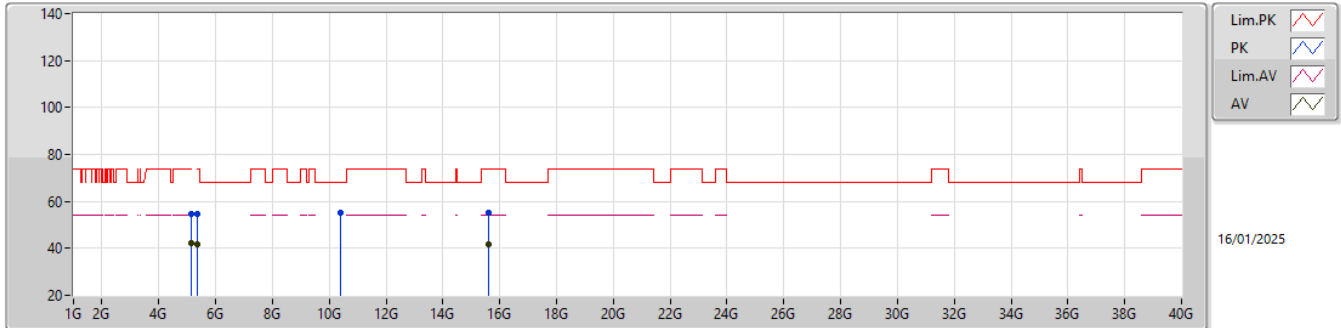
5200MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB/m)	CL (dB)	PA (dB)				
AV	5.15G	42.54	54.00	-11.46	42.24	3	Horizontal	20	2.01	-	32.00	7.00	38.70				
PK	5.15G	54.43	74.00	-19.57	54.13	3	Horizontal	20	2.01	-	32.00	7.00	38.70				
AV	5.35G	41.90	54.00	-12.10	42.21	3	Horizontal	20	2.01	-	31.30	7.17	38.78				
PK	5.35G	53.85	74.00	-20.15	54.16	3	Horizontal	20	2.01	-	31.30	7.17	38.78				
PK	10.4G	54.07	68.20	-14.13	46.28	3	Horizontal	133	1.00	-	39.90	10.00	42.11				
AV	15.6G	42.02	54.00	-11.98	38.21	3	Horizontal	215	1.00	-	38.00	11.45	45.64				
PK	15.6G	55.11	74.00	-18.89	51.30	3	Horizontal	215	1.00	-	38.00	11.45	45.64				

5.15-5.25GHz_802.11a_Nss1,(6Mbps)_2TX

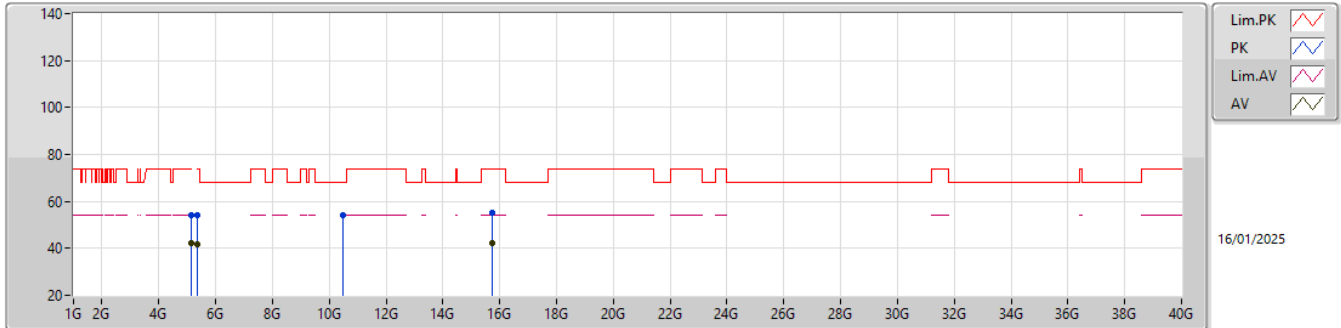
5200MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB/m)	CL (dB)	PA (dB)			
AV	5.15G	42.32	54.00	-11.68	42.02	3	Vertical	348	1.38	-	32.00	7.00	38.70			
PK	5.15G	54.81	74.00	-19.19	54.51	3	Vertical	348	1.38	-	32.00	7.00	38.70			
AV	5.35G	41.72	54.00	-12.28	42.03	3	Vertical	348	1.38	-	31.30	7.17	38.78			
PK	5.35G	54.44	74.00	-19.56	54.75	3	Vertical	348	1.38	-	31.30	7.17	38.78			
PK	10.4G	55.17	68.20	-13.03	47.38	3	Vertical	125	1.00	-	39.90	10.00	42.11			
AV	15.6G	41.96	54.00	-12.04	38.15	3	Vertical	204	1.00	-	38.00	11.45	45.64			
PK	15.6G	55.24	74.00	-18.76	51.43	3	Vertical	204	1.00	-	38.00	11.45	45.64			

5.15-5.25GHz_802.11a_Nss1,(6Mbps)_2TX

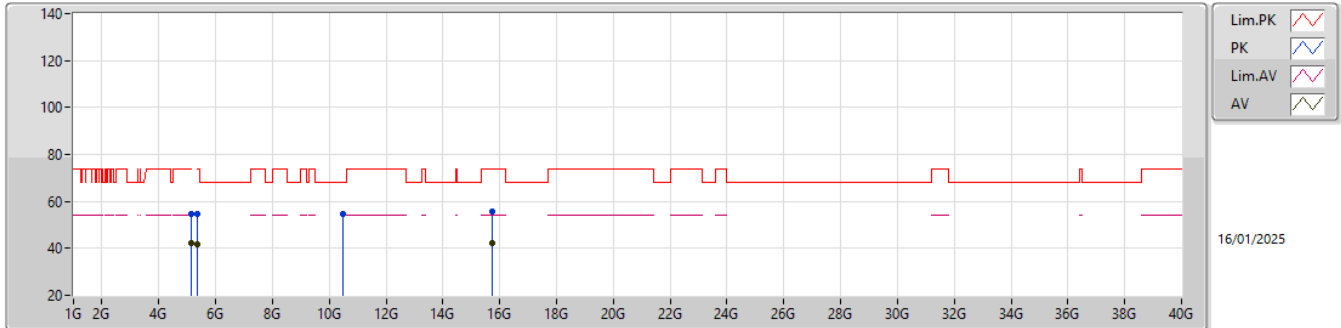
5240MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB/m)	CL (dB)	PA (dB)				
AV	5.15G	42.41	54.00	-11.59	42.11	3	Horizontal	23	2.02	-	32.00	7.00	38.70				
PK	5.15G	54.16	74.00	-19.84	53.86	3	Horizontal	23	2.02	-	32.00	7.00	38.70				
AV	5.35G	41.85	54.00	-12.15	42.16	3	Horizontal	23	2.02	-	31.30	7.17	38.78				
PK	5.35G	54.26	74.00	-19.74	54.57	3	Horizontal	23	2.02	-	31.30	7.17	38.78				
PK	10.48G	54.32	68.20	-13.88	46.57	3	Horizontal	158	1.00	-	39.90	10.02	42.17				
AV	15.72G	42.28	54.00	-11.72	38.33	3	Horizontal	223	1.00	-	37.98	11.55	45.58				
PK	15.72G	55.23	74.00	-18.77	51.28	3	Horizontal	223	1.00	-	37.98	11.55	45.58				

5.15-5.25GHz_802.11a_Nss1,(6Mbps)_2TX

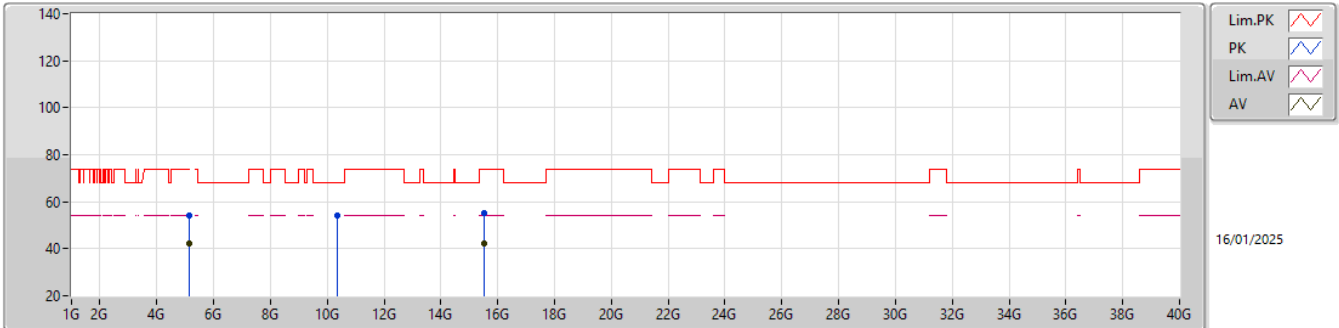
5240MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB/m)	CL (dB)	PA (dB)			
AV	5.15G	42.40	54.00	-11.60	42.10	3	Vertical	351	1.33	-	32.00	7.00	38.70			
PK	5.15G	54.63	74.00	-19.37	54.33	3	Vertical	351	1.33	-	32.00	7.00	38.70			
AV	5.35G	41.75	54.00	-12.25	42.06	3	Vertical	351	1.33	-	31.30	7.17	38.78			
PK	5.35G	54.53	74.00	-19.47	54.84	3	Vertical	351	1.33	-	31.30	7.17	38.78			
PK	10.48G	54.86	68.20	-13.34	47.11	3	Vertical	123	1.00	-	39.90	10.02	42.17			
AV	15.72G	42.15	54.00	-11.85	38.20	3	Vertical	224	1.00	-	37.98	11.55	45.58			
PK	15.72G	55.51	74.00	-18.49	51.56	3	Vertical	224	1.00	-	37.98	11.55	45.58			

5.15-5.25GHz_802.11ac VHT20_Nss1,(MCS0)_2TX

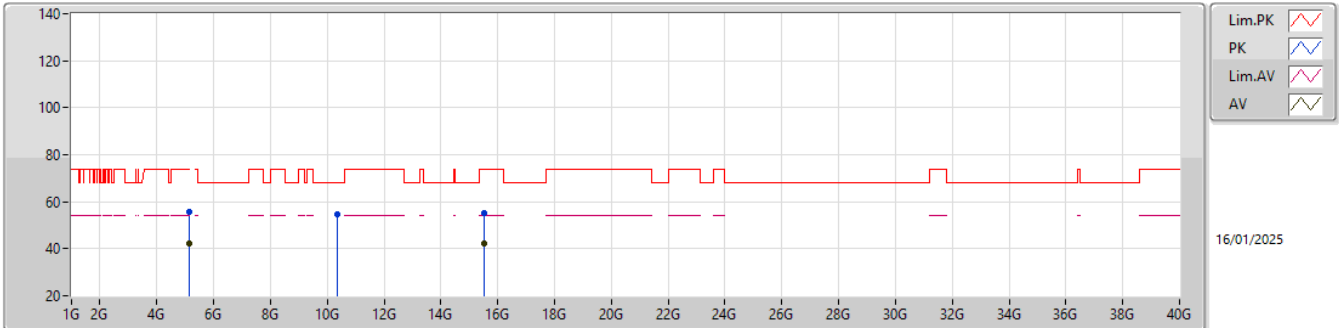
5180MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB/m)	CL (dB)	PA (dB)			
AV	5.15G	42.38	54.00	-11.62	42.08	3	Horizontal	19	1.98	-	32.00	7.00	38.70			
PK	5.15G	54.24	74.00	-19.76	53.94	3	Horizontal	19	1.98	-	32.00	7.00	38.70			
PK	10.36G	54.04	68.20	-14.16	46.31	3	Horizontal	203	1.00	-	39.82	9.99	42.08			
AV	15.54G	42.23	54.00	-11.77	38.20	3	Horizontal	128	1.00	-	38.30	11.40	45.67			
PK	15.54G	55.36	74.00	-18.64	51.33	3	Horizontal	128	1.00	-	38.30	11.40	45.67			

5.15-5.25GHz_802.11ac VHT20_Nss1,(MCS0)_2TX

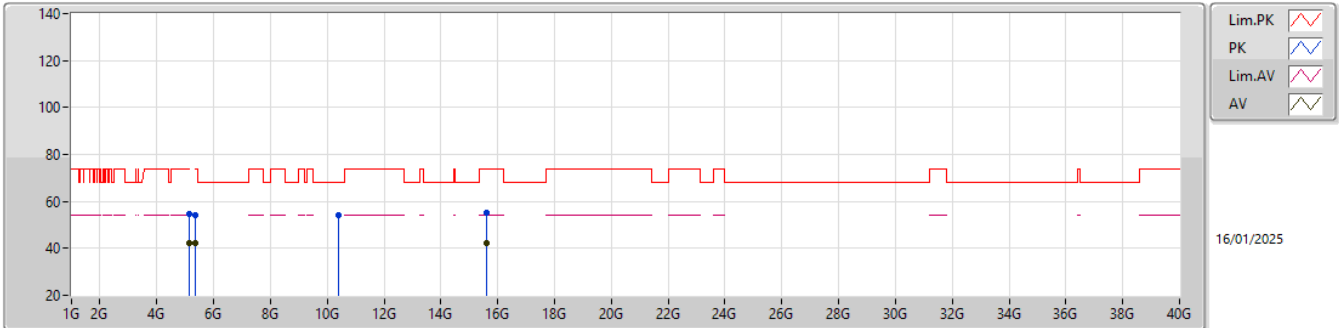
5180MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB/m)	CL (dB)	PA (dB)			
AV	5.15G	42.31	54.00	-11.69	42.01	3	Vertical	351	1.32	-	32.00	7.00	38.70			
PK	5.15G	55.53	74.00	-18.47	55.23	3	Vertical	351	1.32	-	32.00	7.00	38.70			
PK	10.36G	54.86	68.20	-13.34	47.13	3	Vertical	155	1.00	-	39.82	9.99	42.08			
AV	15.54G	42.13	54.00	-11.87	38.10	3	Vertical	164	1.00	-	38.30	11.40	45.67			
PK	15.54G	55.34	74.00	-18.66	51.31	3	Vertical	164	1.00	-	38.30	11.40	45.67			

5.15-5.25GHz_802.11ac VHT20_Nss1,(MCS0)_2TX

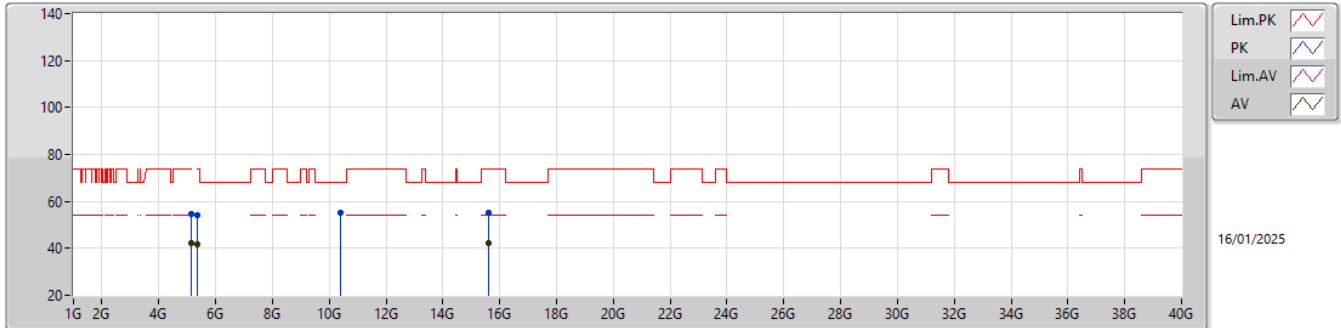
5200MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB/m)	CL (dB)	PA (dB)				
AV	5.15G	42.50	54.00	-11.50	42.20	3	Horizontal	21	1.99	-	32.00	7.00	38.70				
PK	5.15G	54.58	74.00	-19.42	54.28	3	Horizontal	21	1.99	-	32.00	7.00	38.70				
AV	5.35G	42.00	54.00	-12.00	42.31	3	Horizontal	21	1.99	-	31.30	7.17	38.78				
PK	5.35G	53.90	74.00	-20.10	54.21	3	Horizontal	21	1.99	-	31.30	7.17	38.78				
PK	10.4G	54.27	68.20	-13.93	46.48	3	Horizontal	223	1.00	-	39.90	10.00	42.11				
AV	15.6G	42.14	54.00	-11.86	38.33	3	Horizontal	157	1.00	-	38.00	11.45	45.64				
PK	15.6G	55.10	74.00	-18.90	51.29	3	Horizontal	157	1.00	-	38.00	11.45	45.64				

5.15-5.25GHz_802.11ac VHT20_Nss1,(MCS0)_2TX

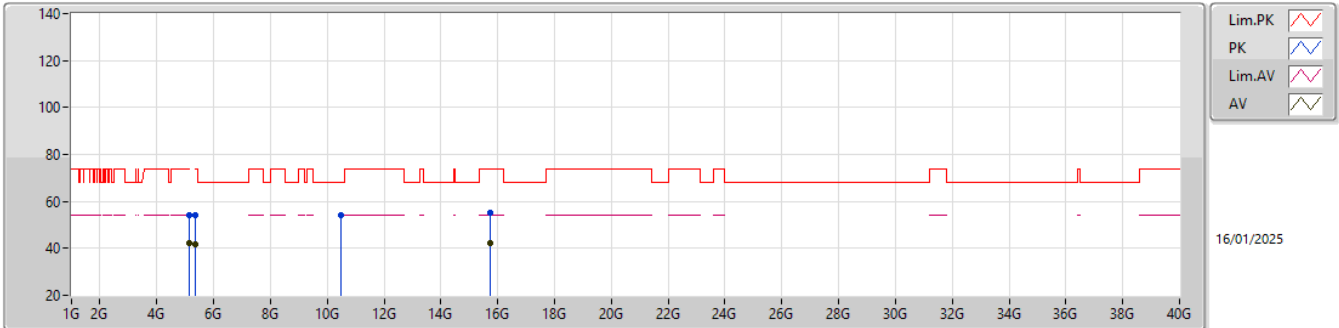
5200MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB/m)	CL (dB)	PA (dB)			
AV	5.15G	42.43	54.00	-11.57	42.13	3	Vertical	351	1.26	-	32.00	7.00	38.70			
PK	5.15G	54.59	74.00	-19.41	54.29	3	Vertical	351	1.26	-	32.00	7.00	38.70			
AV	5.35G	41.88	54.00	-12.12	42.19	3	Vertical	351	1.26	-	31.30	7.17	38.78			
PK	5.35G	54.25	74.00	-19.75	54.56	3	Vertical	351	1.26	-	31.30	7.17	38.78			
PK	10.4G	55.08	68.20	-13.12	47.29	3	Vertical	133	1.00	-	39.90	10.00	42.11			
AV	15.6G	42.02	54.00	-11.98	38.21	3	Vertical	203	1.00	-	38.00	11.45	45.64			
PK	15.6G	55.35	74.00	-18.65	51.54	3	Vertical	203	1.00	-	38.00	11.45	45.64			

5.15-5.25GHz_802.11ac VHT20_Nss1,(MCS0)_2TX

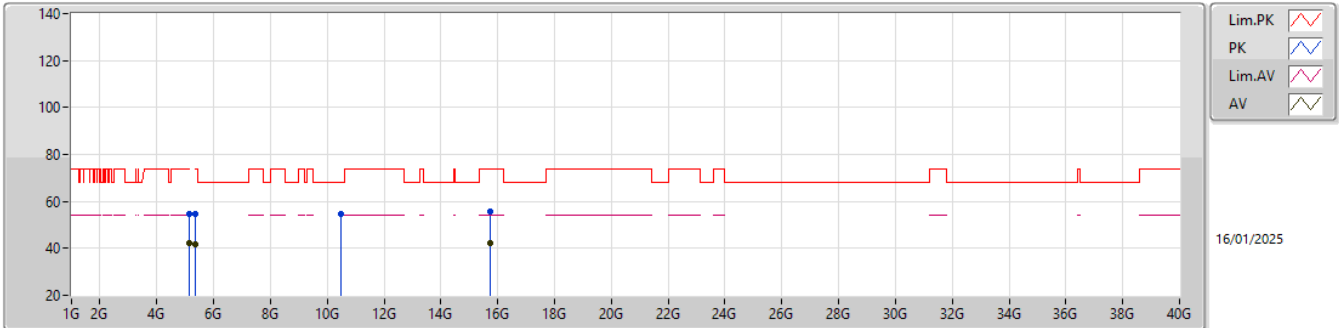
5240MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB/m)	CL (dB)	PA (dB)				
AV	5.15G	42.41	54.00	-11.59	42.11	3	Horizontal	23	2.02	-	32.00	7.00	38.70				
PK	5.15G	54.16	74.00	-19.84	53.86	3	Horizontal	23	2.02	-	32.00	7.00	38.70				
AV	5.35G	41.85	54.00	-12.15	42.16	3	Horizontal	23	2.02	-	31.30	7.17	38.78				
PK	5.35G	54.26	74.00	-19.74	54.57	3	Horizontal	23	2.02	-	31.30	7.17	38.78				
PK	10.48G	54.32	68.20	-13.88	46.57	3	Horizontal	158	1.00	-	39.90	10.02	42.17				
AV	15.72G	42.28	54.00	-11.72	38.33	3	Horizontal	223	1.00	-	37.98	11.55	45.58				
PK	15.72G	55.23	74.00	-18.77	51.28	3	Horizontal	223	1.00	-	37.98	11.55	45.58				

5.15-5.25GHz_802.11ac VHT20_Nss1,(MCS0)_2TX

5240MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB/m)	CL (dB)	PA (dB)			
AV	5.15G	42.40	54.00	-11.60	42.10	3	Vertical	351	1.33	-	32.00	7.00	38.70			
PK	5.15G	54.63	74.00	-19.37	54.33	3	Vertical	351	1.33	-	32.00	7.00	38.70			
AV	5.35G	41.75	54.00	-12.25	42.06	3	Vertical	351	1.33	-	31.30	7.17	38.78			
PK	5.35G	54.53	74.00	-19.47	54.84	3	Vertical	351	1.33	-	31.30	7.17	38.78			
PK	10.48G	54.86	68.20	-13.34	47.11	3	Vertical	123	1.00	-	39.90	10.02	42.17			
AV	15.72G	42.15	54.00	-11.85	38.20	3	Vertical	224	1.00	-	37.98	11.55	45.58			
PK	15.72G	55.51	74.00	-18.49	51.56	3	Vertical	224	1.00	-	37.98	11.55	45.58			



Frequency: 5200 MHz	Frequency Drift (ppm)			
Temperature (°C)	0 minute	2 minutes	5 minutes	10 minutes
T20°CVmax	3.12	3.50	3.71	3.80
T20°CVmin	4.63	4.79	4.78	4.55
T70°CVnom	6.97	7.10	7.42	7.56
T60°CVnom	6.06	5.83	5.87	6.52
T50°CVnom	6.86	6.73	6.59	6.79
T40°CVnom	4.04	4.10	3.94	4.27
T30°CVnom	3.55	3.43	2.90	3.34
T20°CVnom	3.97	3.81	4.08	3.98
T10°CVnom	3.93	4.22	4.23	4.19
T0°CVnom	3.92	3.52	3.68	4.32
T-10°CVnom	2.49	3.44	2.87	2.58
T-20°CVnom	2.01	1.96	2.59	2.53
T20°CVmax	3.12	3.50	3.71	3.80
Vnom [V]: 12	Vmax [V]: 16		Vmin [V]: 10	
Tnom [°C]: 20	Tmax [°C]: 70		Tmin [°C]: -20	