TEST REPORT

Report Number: R14176139-E5aV3

Applicant	:	Sony Corporation 1-7-1 Konan Minato-ku Tokyo, 108-0076, Japan
FCC ID	:	PY7-83262V
EUT Description	:	GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac/ax, GPS, WPT & NFC
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART E

Date Of Issue:
2022-03-28

Prepared by:
UL LLC
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CERT #0751.06

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	2022-03-16	Initial Issue	Noah Bennett
V2	2022-03-16	Harmonized all antenna descriptors to read as chain 0 and chain 1. Removed FCC from headers. Removed 5.6/5.8 gains from section 9.3	Brian Kiewra
V3	2022-03-28	Addressed TCB Feedback: -Updated Company name in Section 1 -Updated reference to UL E5bV2 Reports.	Noah Bennett

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Sony Corporation
1-7-1 Konan Minato-ku
Tokyo, 108-0076, Japan

EUT DESCRIPTION: GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac/ax, GPS, WPT & NFC

SERIAL NUMBERS: QV770083B8, QV77003RB8, QV770028AQ

SAMPLE RECEIPT DATE: 2022-01-13

DATE TESTED: 2022-02-09 to 2022-03-07

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart E	Complies

UL LLC tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this reportply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC will constitute fraud and shall nullify the document.

Approved & Released For
UL LLC. By:

Jeff Moser
Operations Manager
Consumer Technology Division
UL LLC.

Prepared By:

Noah Bennett
Engineer
Consumer Technology Division
UL LLC.

2. TEST RESULT SUMMARY

This report contains data provided by theplicant which can impact the validity of results. UL LLC is only responsible for the validity of results after the integration of the data provided by the customer.

Note - This report pertains to the 802.11a/n/ac mode in the 5.2 and 5.3 GHz band requirements of the EUT.

FCC Clause	Requirement	Result	Comment
See Comment	Duty Cycle	Reporting purposes only	Per ANSI C63.10, Section 12.2.
See Comment	26dB BW/99% OBW	Reporting purposes only	Per ANSI C63.10 Sections 6.9.2 and 6.9.3
15.407 (a) (1-2, (h) (1)	Output Power	Pass	None.
15.407 (a) (1-2)	PSD	Pass	None.
15.209, 15.205, 15.407 (b)	Radiated Emissions	Pass	None.
15.207	AC Mains Conducted Emissions	Pass	None.

3. METHODOLOGY

The tests documented in this report were performed in accordance with;

- FCC CFR 47 Part 2
- FCC CFR 47 Part 15,
- FCC KDB 662911 D01 v02r01,
- FCC KDB 905462 D06 v02
- FCC KDB 789033 D02 v02r01,
- KDB 414788 D01 Radiated Test Site v01r01
- ANSI C63.10-2013

4. FACILITIES AND ACCREDITATION

UL LLC is accredited by A2LA, certification # 0751.06, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

	Address	ISED CABID	ISED Company Number	FCC Registration
☐	Building: 12 Laboratory Dr RTP, NC 27709, U.S.A	US0067	2180C	825374
☒	Building: 2800 Perimeter Park Dr. Suite B Morrisville, NC 27560, U.S.A		27265	

5. DECISION RULES AND MEASUREMENT UNCERTAINTY

5.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and whereplicable is traceable to recognized national standards.

5.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

5.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on theparatus:

PARAMETER	U_{Lab}
Radio Frequency (Spectrum Analyzer)	141.2 Hz
Occupied Channel Bandwidth	1.22%
RF output power, conducted	1.3 dB (PK) 0.45 dB (AV)
Power Spectral Density, conducted	2.47 dB
Unwanted Emissions, conducted	1.94 dB
All emissions, radiated	6.01 dB
Conducted Emissions (0.150-30MHz) - LISN	3.40 dB
Temperature	0.57°C
Humidity	3.39%
DC Supply voltages	1.70%

Uncertainty figures are valid to a confidence level of 95%.

5.4. SAMPLE CALCULATION

RADIATED EMISSIONS
Where relevant, the following sample calculation is provided:
Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

MAINS CONDUCTED EMISSIONS
Where relevant, the following sample calculation is provided:
Final Voltage (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Limiter Factor (dB) + LISN Insertion Loss.
36.5 dBuV + 0 dB +10.1 dB+ 0 dB = 46.6 dBuV

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6. EQUIPMENT UNDER TEST

6.1. EUT DESCRIPTION

The EUT is a GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac/ax, GPS, WPT & NFC. Note - This report pertains to the 802.11a/n/ac mode in the 5.2 and 5.3 band requirements of the EUT.

6.2. MAXIMUM OUTPUT POWER

The transmitter has a summed maximum conducted output power as follows:

5.2 GHz BAND (FCC)

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5.2 GHz band, 2TX			
5180-5240	802.11a CDD	13.59	22.86
5180-5240	802.11n HT20 CDD	13.42	21.98
5190-5230	802.11n HT40 CDD	13.33	21.53
5210	802.11ac VHT80 CDD	13.18	20.80

5.3 GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5.3 GHz band, 2TX			
5260 - 5320	802.11a CDD	13.28	21.28
5260 - 5320	802.11n HT20 CDD	13.22	20.99
5270 - 5310	802.11n HT40 CDD	13.23	21.04
5290	802.11ac VHT80 CDD	12.90	19.50
5250	802.11ac VHT160 CDD	13.30	21.38

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

The peak antenna(s) gain and type, as provided by the manufacturer' are as follows:

Chain	Frequency Range (MHz)	Maximum Gain (dBi)
0	5180-5320	2.0
1	5180-5320	-6.4

	Theory of Operation	Antenna	Manufacturer Tolerance	Block Diagram
Chain 0	WLAN Main/Bluetooth #1	WLAN Main/Bluetooth #1	Chain 0	WLAN Main/Bluetooth #1
Chain 1	WLAN Sub/Bluetooth #2	WLAN Sub/Bluetooth #2	Chain 1	WLAN Sub/Bluetooth #2

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6.4. SOFTWARE AND FIRMWARE

The firmware version used during testing was 0.428.

6.5. WORST-CASE CONFIGURATION AND MODE

The fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that Z orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Z orientation.

Band edge was performed with the EUT set to transmit on low and high channels. Radiated spurious and harmonic emissions between 1GHz and 18GHz were performed with the EUT set to transmit at the worst-case mode/channel based on power and PSD and can be found in report R14176139-E5bV3.

Radiated emissions below 1GHz, above 18GHz, and power line conducted emission were performed with the EUT set to transmit at the channel/mode with highest output power/PSD as worst-case scenario and can be found in report R14176139-E5fV2.

Worst-case data rates as provided by the client were:

- 802.11a mode: 6 Mbps
- 802.11n HT20mode: MCS0
- 802.11n HT40mode: MCS0
- 802.11ac VHT80 mode: MCS0 (Nss = 1)
- 802.11ac VHT160 mode: MCS0 (Nss = 1)

All testing performed in 2Tx mode (NSS=1), where power per chain is equivalent to the 1Tx power on each chain. This allows 2Tx testing to cover all 1Tx testing.

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6.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Laptop	HP	14-dk1003dx	5CG016B4XM	TX2-RTL8821CE
NFC Tags	Hicarer	NTAG215	B091Z6NtN8	NA
Headphones	Sony	MDR-EX15AP	NA	NA
AC Adapter	Sony	XQZ-UC11-010-236-21	1821W34209742	NA
AC Adapter	Sony	XQZ-UC11-010-236-21	1821W34209856	NA
USB Cable Type C	Sony	XQZ-UB1	NA	NA

I/O CABLES

I/O Cable List						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	USB	1	USB-C	Non-Shielded	<3m	Connected to Power Supply
2	3.5mm	1	3.5mm Audio	Non-Shielded	<1m	Connected to headphones

TEST SETUP

The EUT is connected to a host laptop computer and configured via test software before the tests. Test software exercised the radio card.

SETUP DIAGRAMS

Please refer to R14176139-EP2 for setup diagrams

7. MEASUREMENT METHOD

On Time and Duty Cycle: KDB 789033 D02 v02r01, Section B.

26 dB Emission BW: KDB 789033 D02 v02r01, Section C.1

Conducted Output Power: KDB 789033 D02 v02r01, Section E.3.b (Method PM-G) and KDB 789033 D02 v02r01

Power Spectral Density: KDB 789033 D02 v02r01, Section F

Unwanted emissions in restricted bands: KDB 789033 D02 v02r01, Sections G.3, G.5, and G.6.

Unwanted emissions in non-restricted bands: KDB 789033 D02 v02r01, Sections G.3 and G.5.

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8. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment Used - Wireless Conducted Measurement Equipment

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
	Common Equipment				
	Conducted Room 2				
SA0025	Spectrum Analyzer	Keysight Technologies	N9030A	2021-04-01	2022-04-01
PWM003	RF Power Meter	Keysight Technologies	N1911A	2021-08-30	2022-08-30
PWS006	Peak and Avg Power Sensor, 50MHz to 6GHz	Keysight Technologies	N1921a	2021-12-17	2022-12-17
76023 (EC0225)	Temp/Humid Chamber	Cincinnati Sub-Zero	ZPH-8-3.5-SCT/AC	2021-05-27	2022-05-27
HI0090	Environmental Meter	Fisher Scientific	15-077-963	2021-07-12	2022-07-12
76021	DC Regulated Power Supply	CircuitSpecialists.Com	CSI3005X5	NA	NA
SOFTEMI	Antenna Port Software	UL	Version 2021.11.3, 2022.02.16	NA	NA
	Additional Equipment used				
MM0167 (PRE0126458)	True RMS Multimeter	Agilent	U1232A	2021-08-17	2023-08-17

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Test Equipment Used - Radiated Disturbance Emissions Test Equipment (Morrisville – Chamber 4)

Equip. ID	Description	Manufacturer/Brand	Model Number	Last Cal.	Next Cal.
	1-18 GHz				
206211	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2021-03-11	2022-03-11
	Gain-Loss Chains				
C4-SAC03	Gain-loss string: 1-18GHz	Various	Various	2021-05-07	2022-05-07
	Receiver & Software				
SA0026	Spectrum Analyzer	Agilent	N9030A	2021-07-16	2022-07-16
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
	Additional Equipment used				
210642	Environmental Meter	Fisher Scientific	210701942	2021-8-16	2023-08-16

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Test Equipment Used - Radiated Disturbance Emissions Test Equipment (Morrisville – Chamber 2)

Equip. ID	Description	Manufacturer/Brand	Model Number	Last Cal.	Next Cal.
	1-18 GHz				
AT0072	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2021-05-03	2022-05-03
	Gain-Loss Chains				
C2-SAC03	Gain-loss string: 1-18GHz	Various	Various	2021-07-09	2022-07-09
	Receiver & Software				
197955	Spectrum Analyzer	Rohde & Schwarz	ESW44	2021-03-10	2022-03-10
SA0020	Spectrum Analyzer	Agilent	E4446A	2021-05-25	2022-05-25
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
	Additional Equipment used				
s/n 181474409	Environmental Meter	Fisher Scientific	15-077-963	2021-09-27	2022-09-27

9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

PROCEDURE

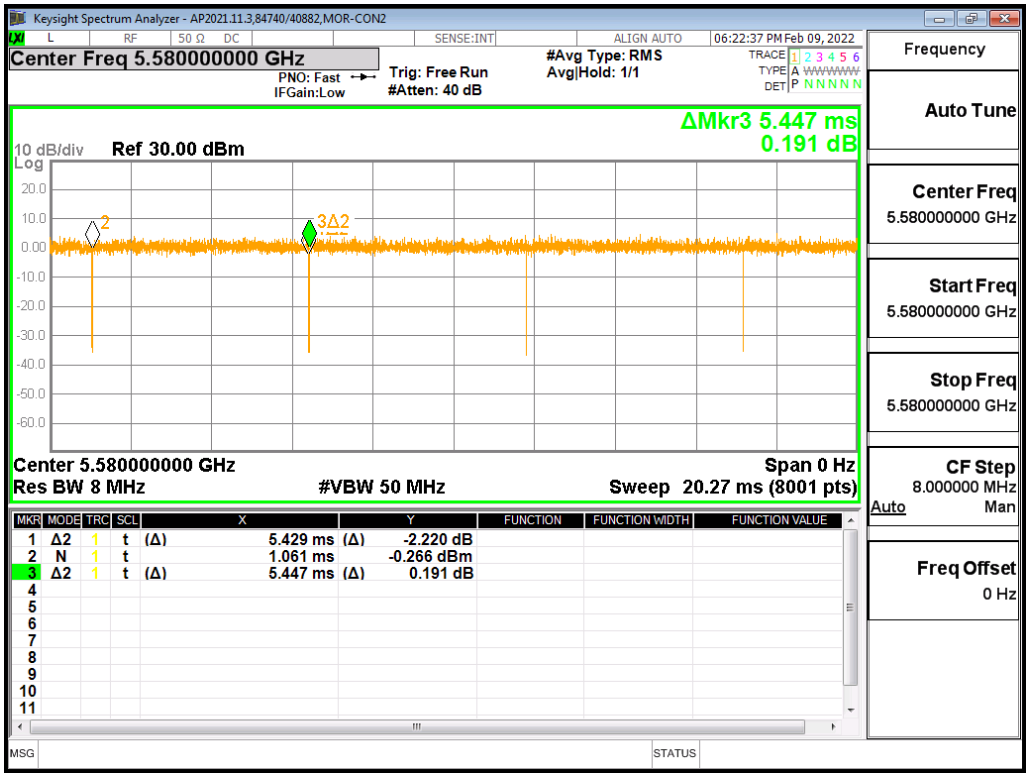
KDB 558074 Zero-Span Spectrum Analyzer Method.

ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
802.11a CDD	2.096	2.113	0.992	99.20	0.00	0.010
802.11n HT20 CDD	5.429	5.447	0.997	99.67	0.00	0.010
802.11n HT40 CDD	5.4260	5.4440	0.997	99.67	0.00	0.010
802.11ac VHT80 CDD	5.426	5.444	0.997	99.67	0.00	0.010
802.11ac VHT160 CDD	5.4290	5.4440	0.997	99.72	0.00	0.010

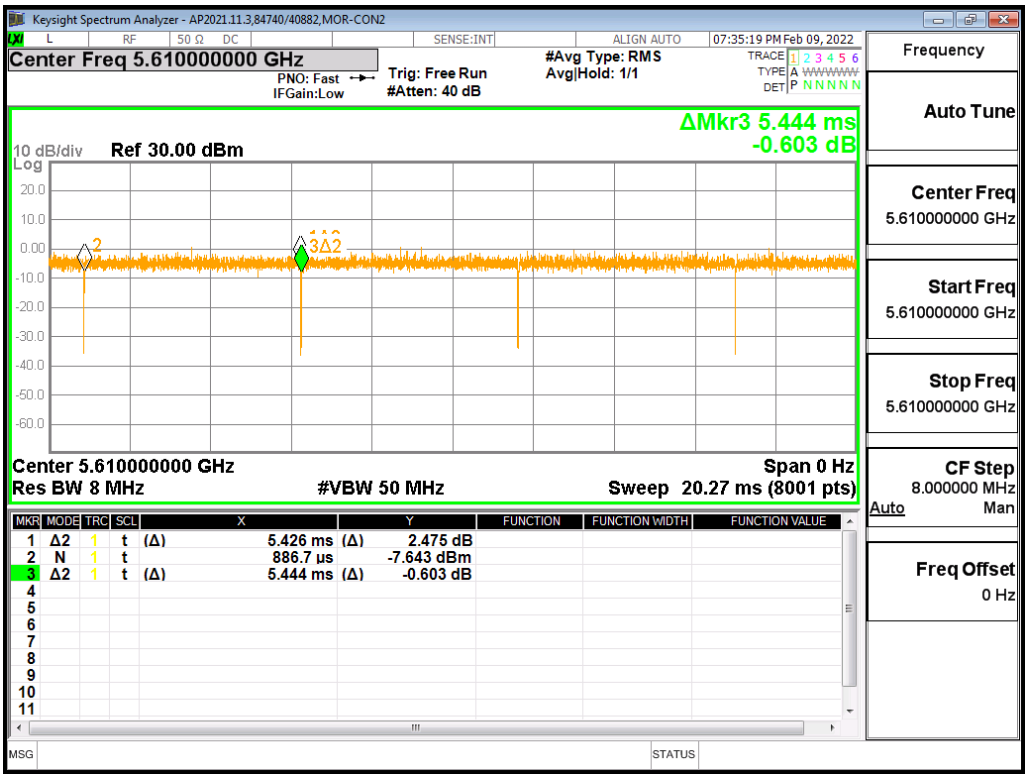
DUTY CYCLE PLOTS

DUTY CYCLE 802.11a CDD MODE



DUTY CYCLE 802.11n HT20 MODE

DUTY CYCLE 802.11n HT40 MODE



DUTY CYCLE 802.11ac VHT80 MODE

9.2. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

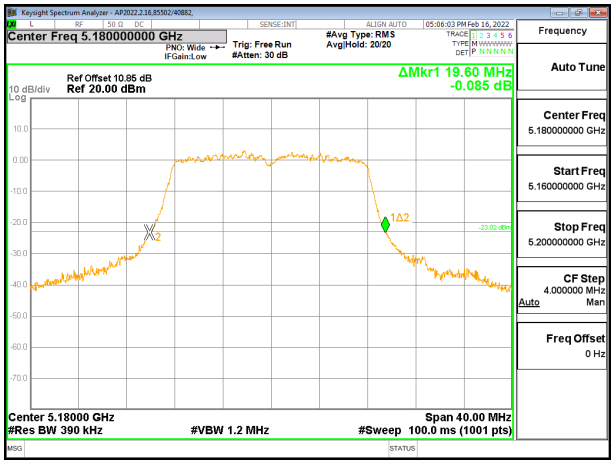
RESULTS

9.2.1. 802.11a MODE IN THE 5.2 GHz BAND

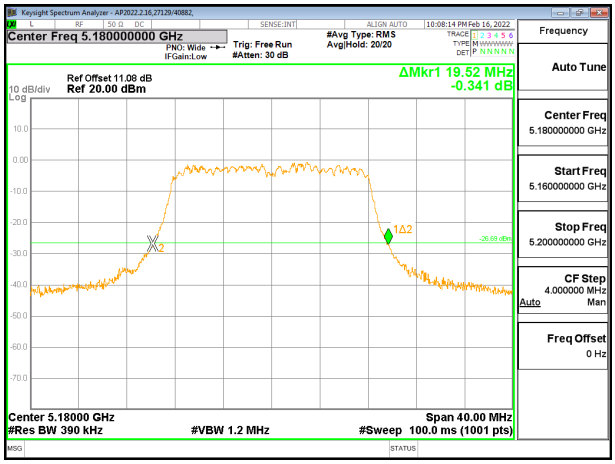
2TX Chain 0 + Chain 1 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5180	19.60	19.52
Mid	5200	19.88	19.44
High	5240	19.76	19.48

LOW CHANNEL

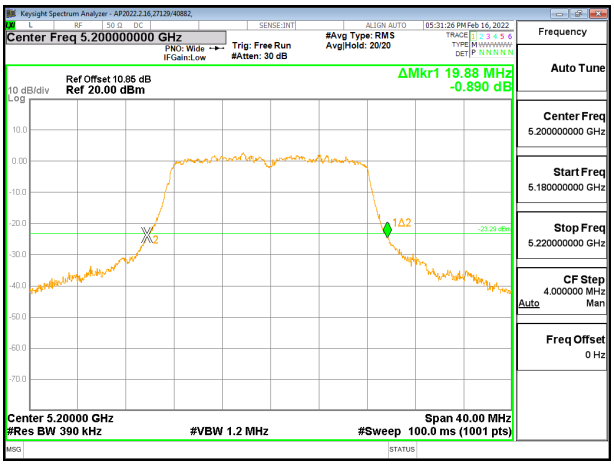


LOW CHANNEL CHAIN 0

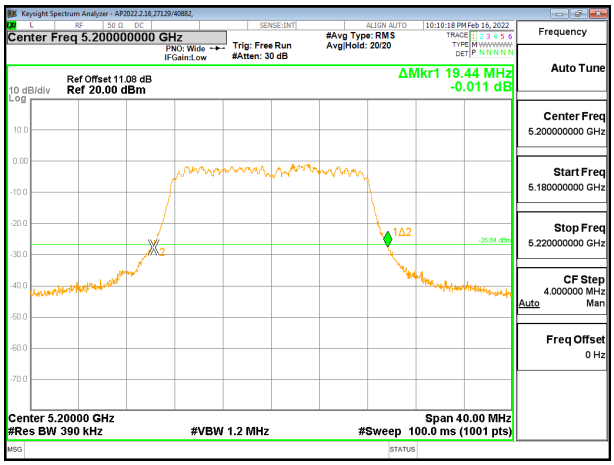


LOW CHANNEL CHAIN 1

MID CHANNEL

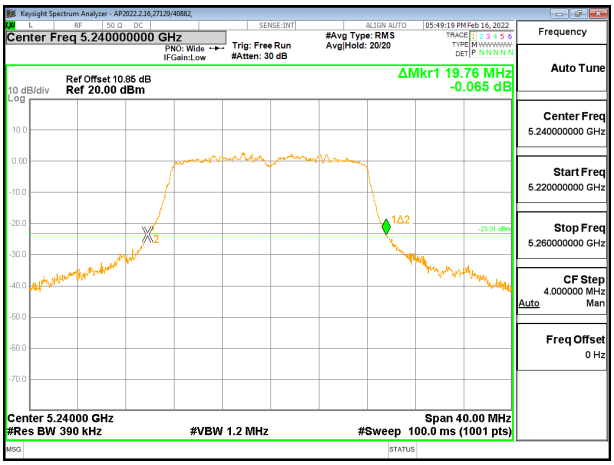


MID CHANNEL CHAIN 0

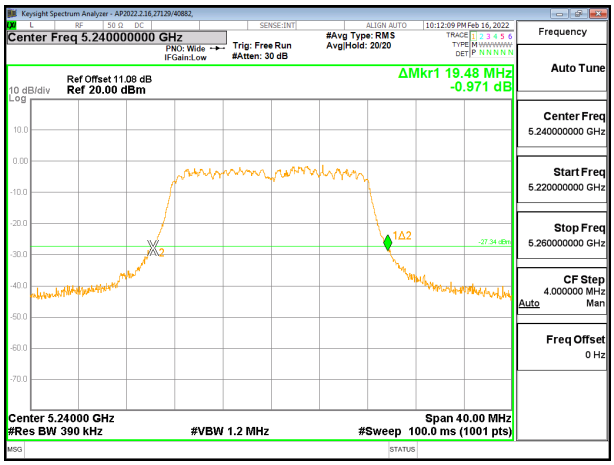


MID CHANNEL CHAIN 1

HIGH CHANNEL



HIGH CHANNEL CHAIN 0



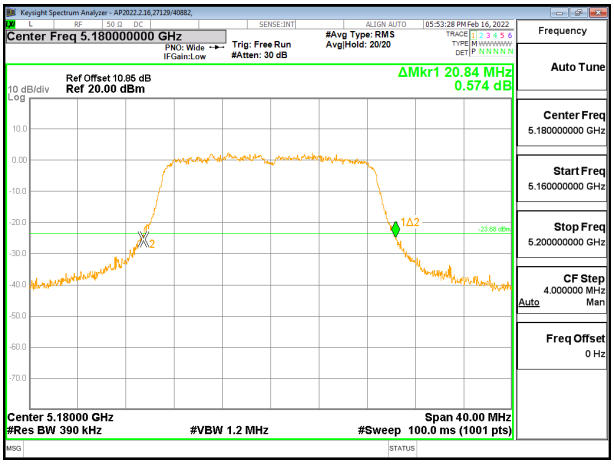
HIGH CHANNEL CHAIN 1

9.2.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

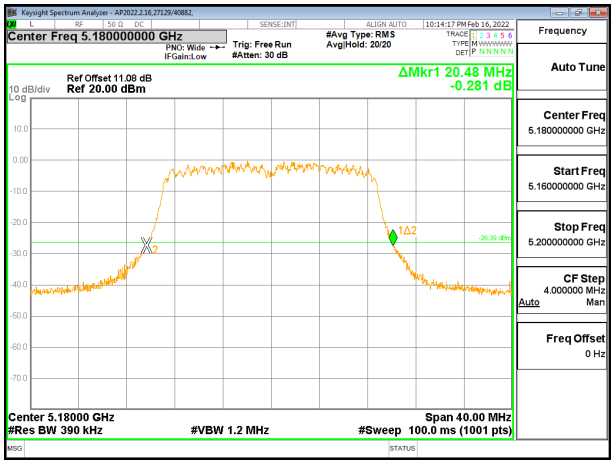
2TX Chain 0 + Chain 1 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5180	20.84	20.48
Mid	5200	20.92	20.16
High	5240	20.84	20.16

LOW CHANNEL

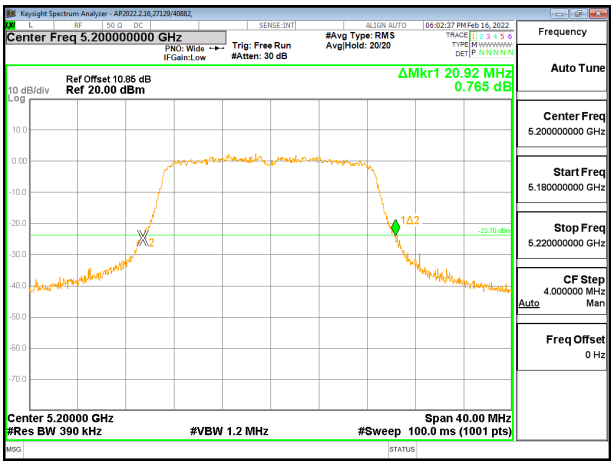


LOW CHANNEL CHAIN 0

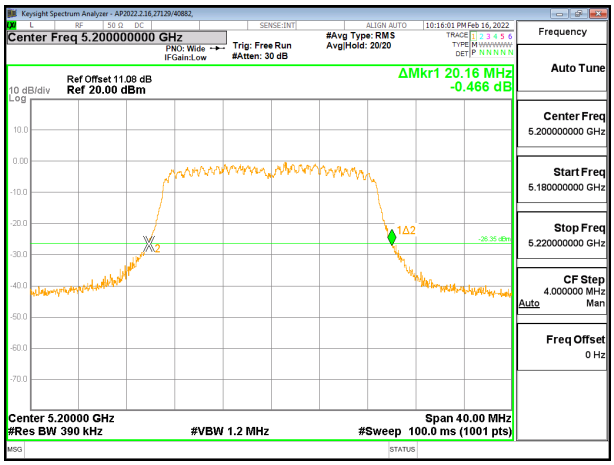


LOW CHANNEL CHAIN 1

MID CHANNEL

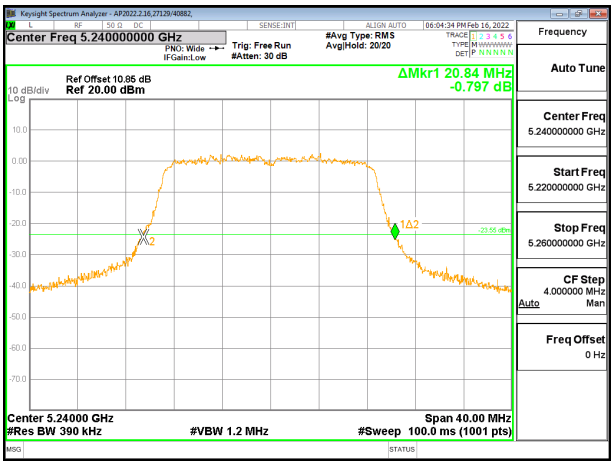


MID CHANNEL CHAIN 0

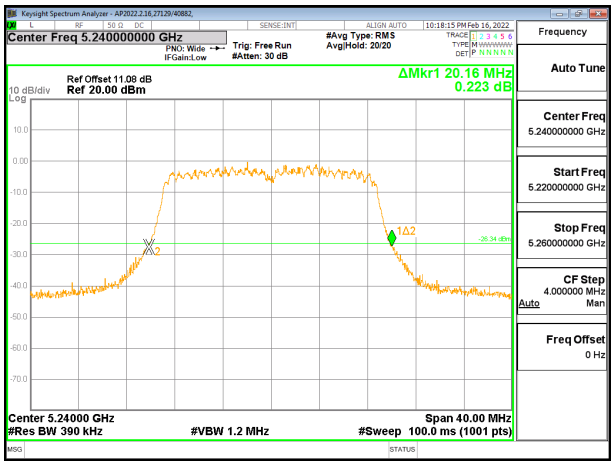


MID CHANNEL CHAIN 1

HIGH CHANNEL



HIGH CHANNEL CHAIN 0



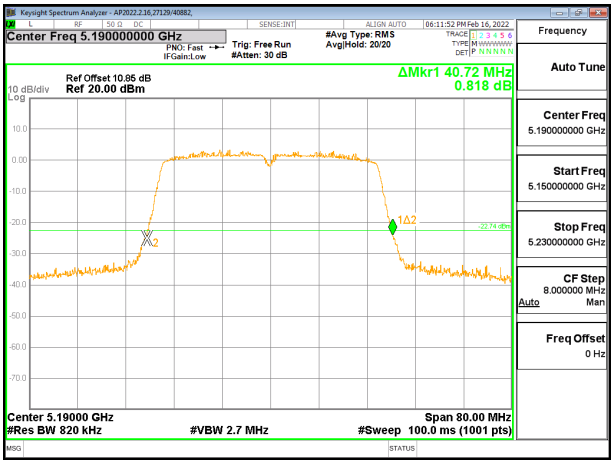
HIGH CHANNEL CHAIN 1

9.2.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

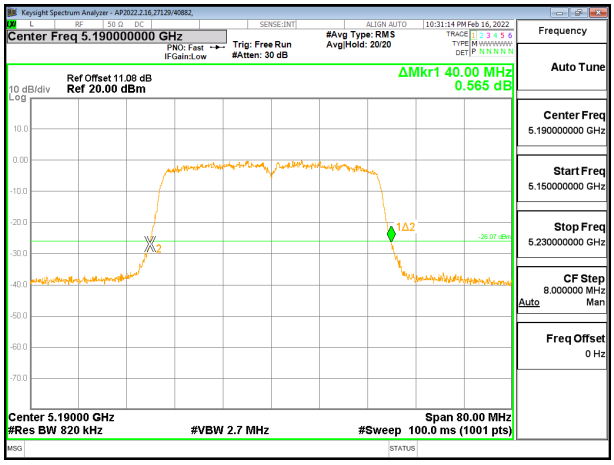
2TX Chain 0 + Chain 1 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5190	40.72	40.00
High	5230	40.64	40.16

LOW CHANNEL

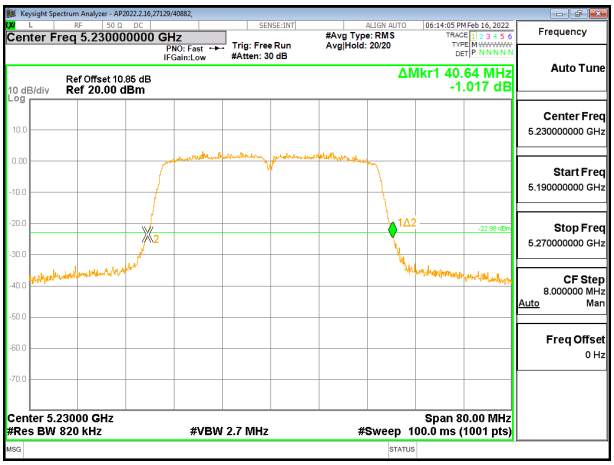


LOW CHANNEL CHAIN 0

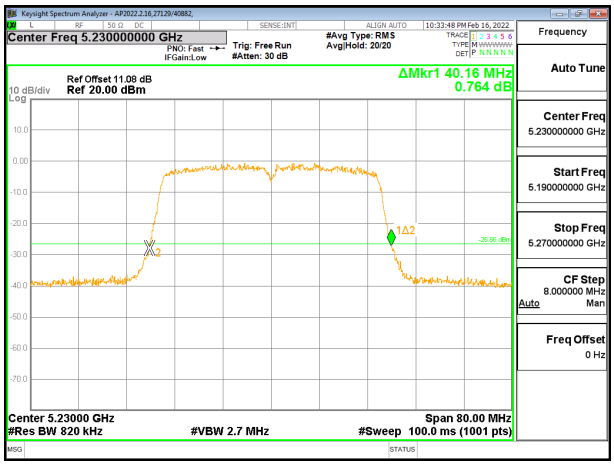


LOW CHANNEL CHAIN 1

HIGH CHANNEL



HIGH CHANNEL CHAIN 0



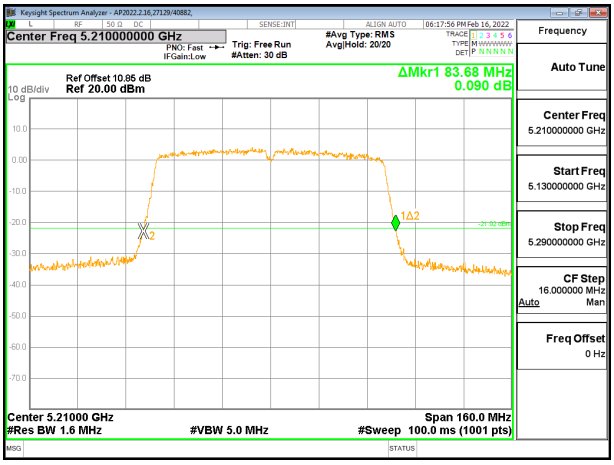
HIGH CHANNEL CHAIN 1

9.2.4. 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

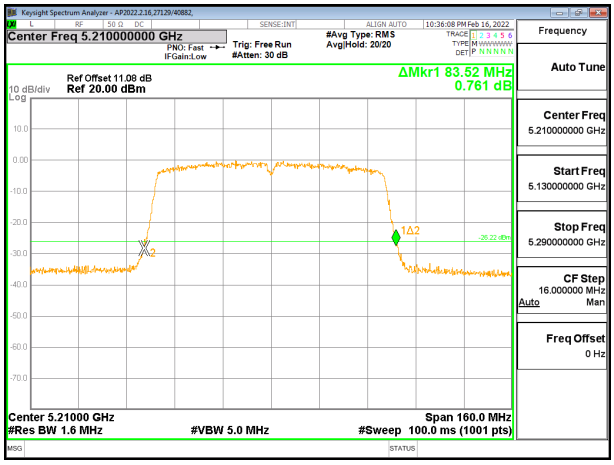
2TX Chain 0 + Chain 1 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5210	83.68	83.52

MID CHANNEL



MID CHANNEL CHAIN 0



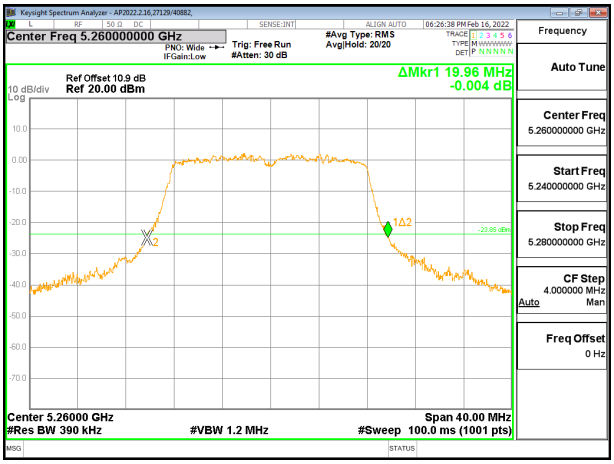
MID CHANNEL CHAIN 1

9.2.5. 802.11a MODE IN THE 5.3 GHz BAND

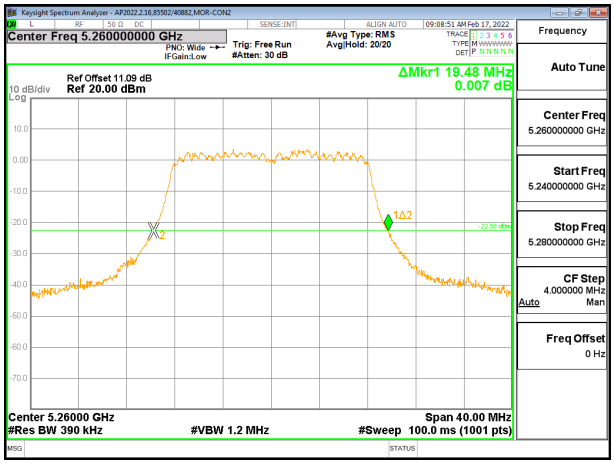
2TX Chain 0 + Chain 1 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5260	19.96	19.48
Mid	5300	19.64	19.56
High	5320	19.64	19.52

LOW CHANNEL

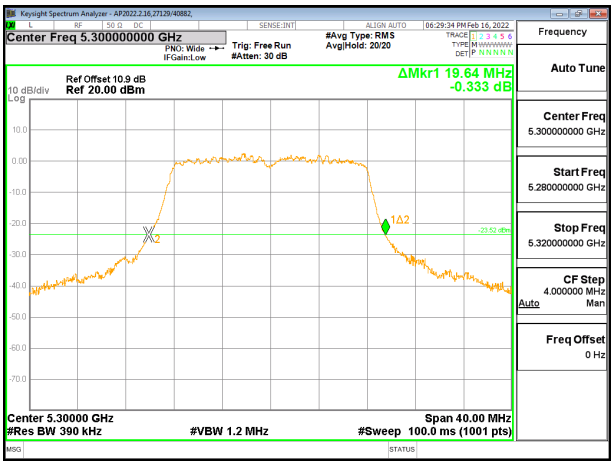


LOW CHANNEL CHAIN 0

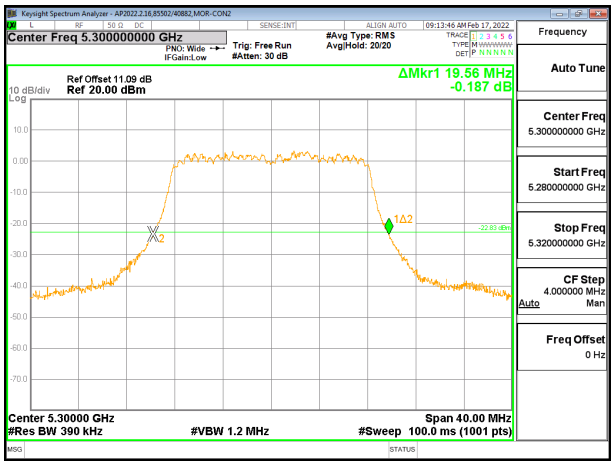


LOW CHANNEL CHAIN 1

MID CHANNEL

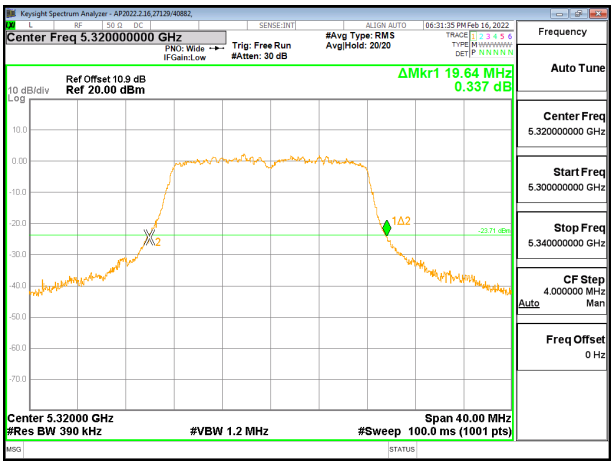


MID CHANNEL CHAIN 0

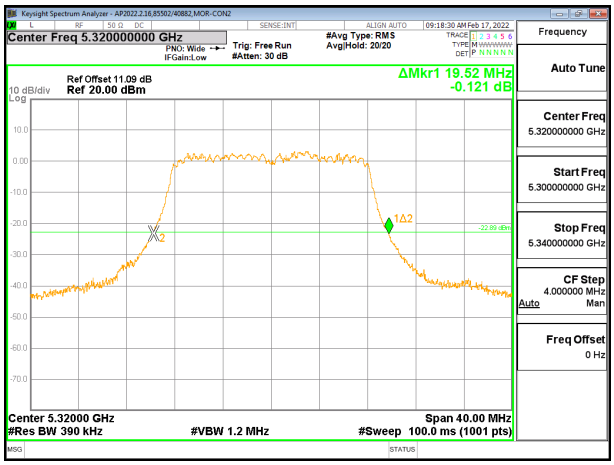


MID CHANNEL CHAIN 1

HIGH CHANNEL



HIGH CHANNEL CHAIN 0



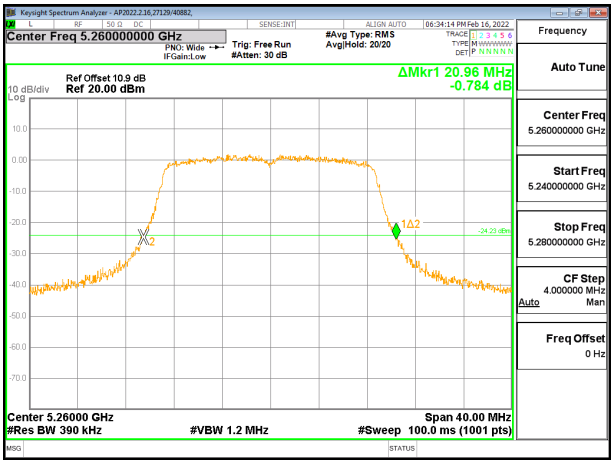
HIGH CHANNEL CHAIN 1

9.2.6. 802.11n HT20 MODE IN THE 5.3 GHz BAND

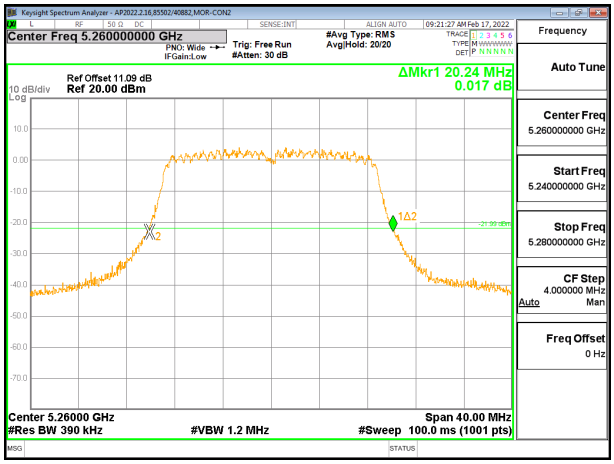
2TX Chain 0 + Chain 1 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5260	20.96	20.24
Mid	5300	21.16	20.32
High	5320	20.84	20.28

LOW CHANNEL

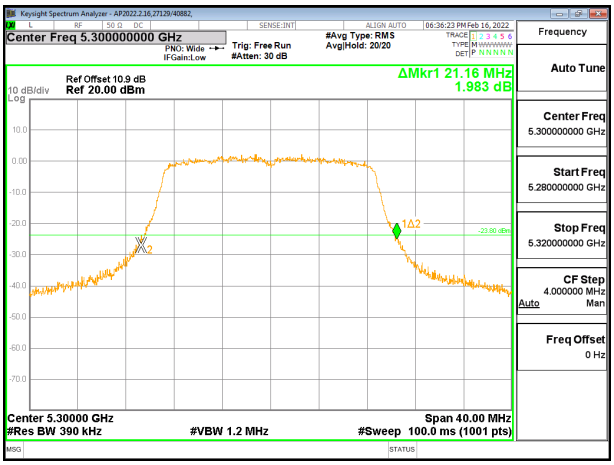


LOW CHANNEL CHAIN 0

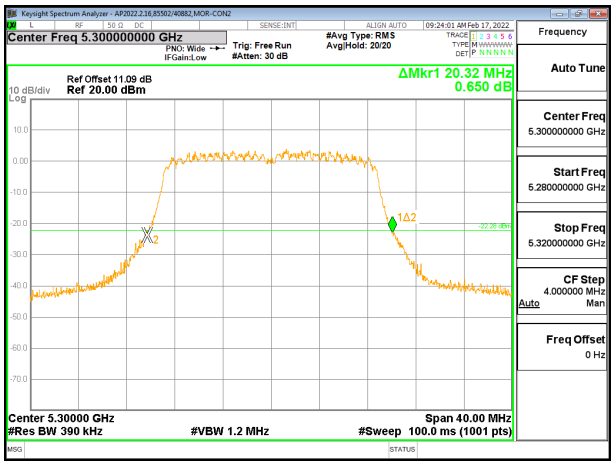


LOW CHANNEL CHAIN 1

MID CHANNEL

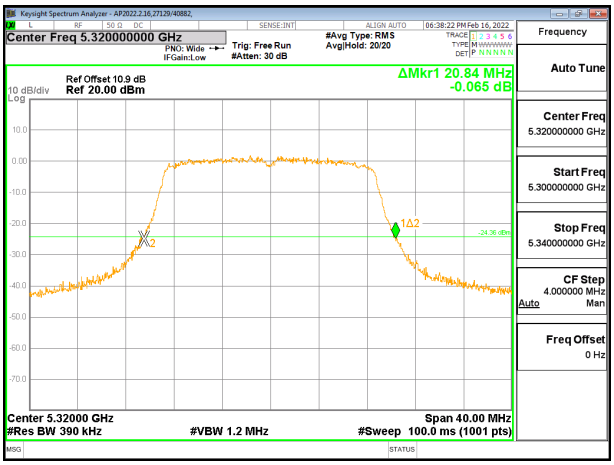


MID CHANNEL CHAIN 0

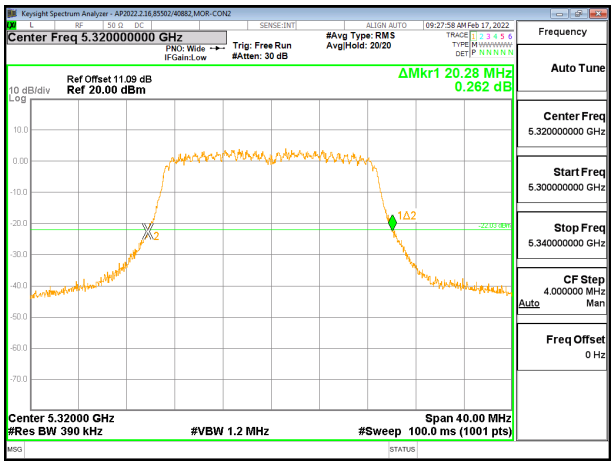


MID CHANNEL CHAIN 1

HIGH CHANNEL



HIGH CHANNEL CHAIN 0



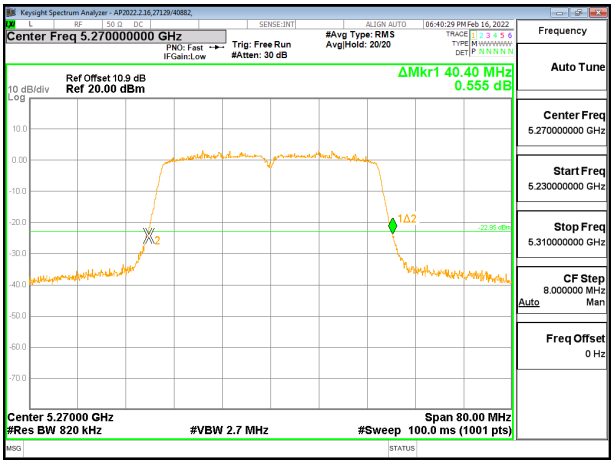
HIGH CHANNEL CHAIN 1

9.2.7. 802.11n HT40 MODE IN THE 5.3 GHz BAND

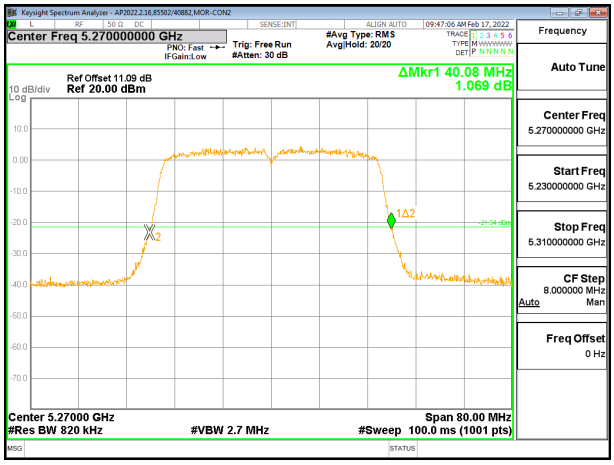
2TX Chain 0 + Chain 1 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5270	40.40	40.08
High	5310	40.56	40.00

LOW CHANNEL

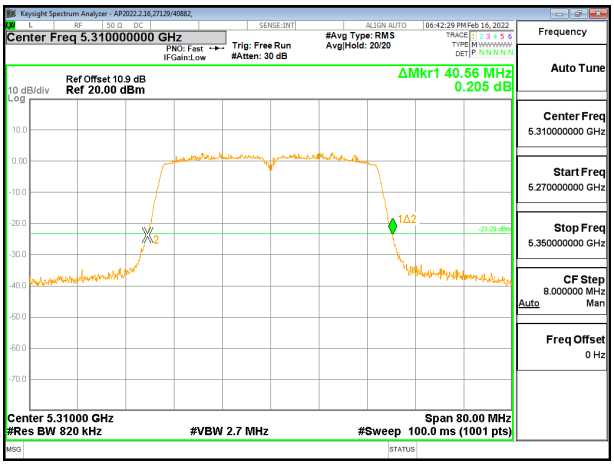


LOW CHANNEL CHAIN 0

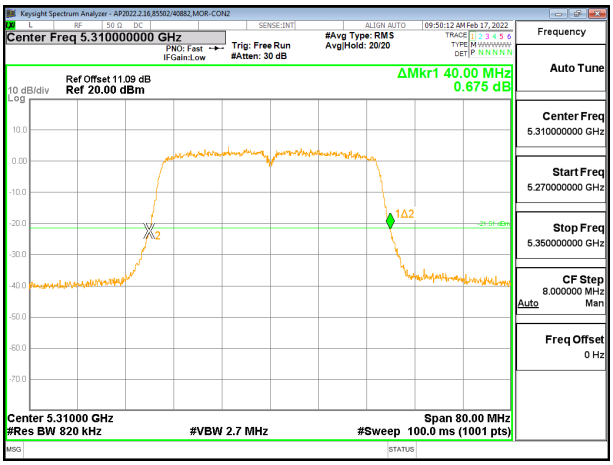


LOW CHANNEL CHAIN 1

HIGH CHANNEL



HIGH CHANNEL CHAIN 0



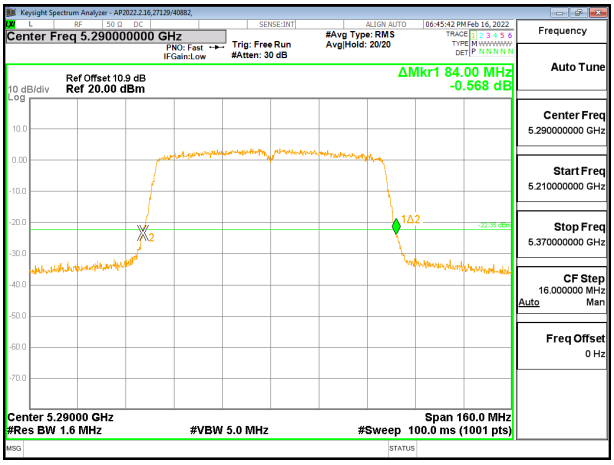
HIGH CHANNEL CHAIN 1

9.2.8. 802.11ac VHT80 MODE IN THE 5.3 GHz BAND

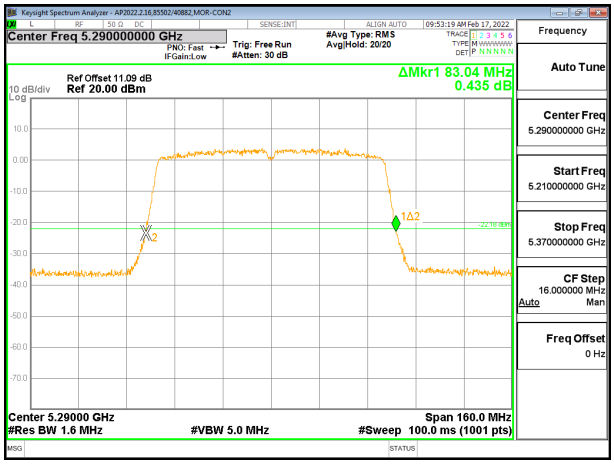
2TX Chain 0 + Chain 1 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5290	84.00	83.04

MID CHANNEL



MID CHANNEL CHAIN 0



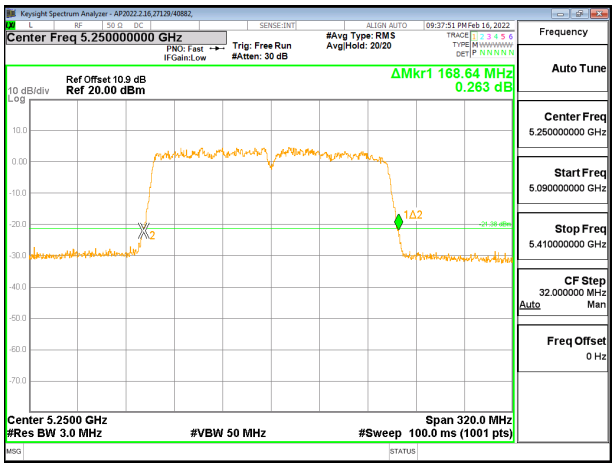
MID CHANNEL CHAIN 1

9.2.9. 802.11ac VHT160 MODE IN THE 5.2/5.3 GHz BAND

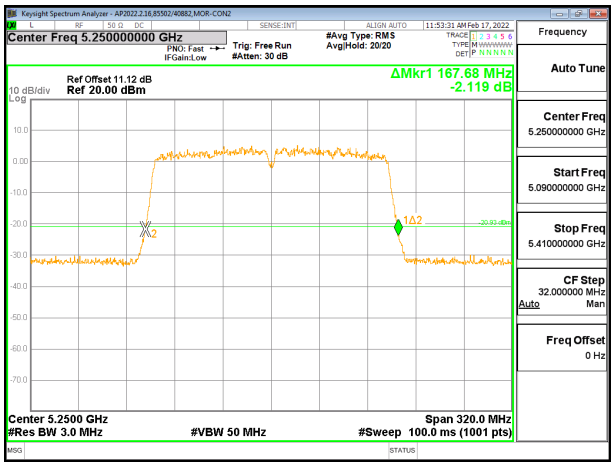
2TX Chain 0 + Chain 1 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5250	168.64	167.68

MID CHANNEL



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

9.3. OUTPUT POWER AND PSD

LIMITS

FCC §15.407

Band 5.15–5.25 GHz (pick the section thatplies to your product)
(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Bands 5.25-5.35 GHz and 5.47-5.725 GHz
The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The measurement method used for output power is KDB 789033 D02 v02r01, Section E.3.b (Method PM-G).

The measurement method used for power spectral density is KDB 789033 D02 v02r01, Section F

DIRECTIONAL ANTENNA GAIN
For 2 TX:

Tx chains are uncorrelated for power and correlated for PSD due to the device supporting CDD in all MIMO modes. The directional gains are as follows:

Band (GHz)	Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)	Correlated Chains Directional Gain (dBi)
5.2	2.00	-6.40	-0.42	1.79
5.3	2	-6.4	-0.42	1.79

UL LLC
12 Laboratory Dr., RTP, NC 27709; USA TEL: (919) 549-1364

RESULTS

9.3.1. 802.11a MODE IN THE 5.2 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

Test Engineer:	85502/40882
Test Date:	2022-02-15

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Low	5180	-0.42	1.79	24.00	11.00
Mid	5200	-0.42	1.79	24.00	11.00
High	5240	-0.42	1.79	24.00	11.00

Duty Cycle CF (dB)	0.00	**Included in Calculations of Corr'd PSD**

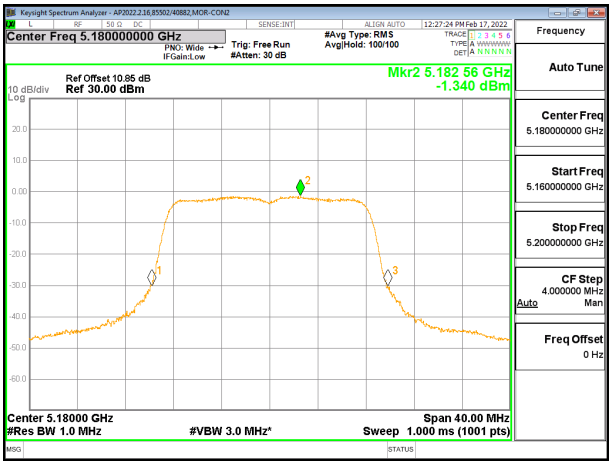
Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	10.14	10.97	13.59	24.00	-10.41
Mid	5200	10.01	10.82	13.44	24.00	-10.56
High	5240	10.27	10.55	13.42	24.00	-10.58

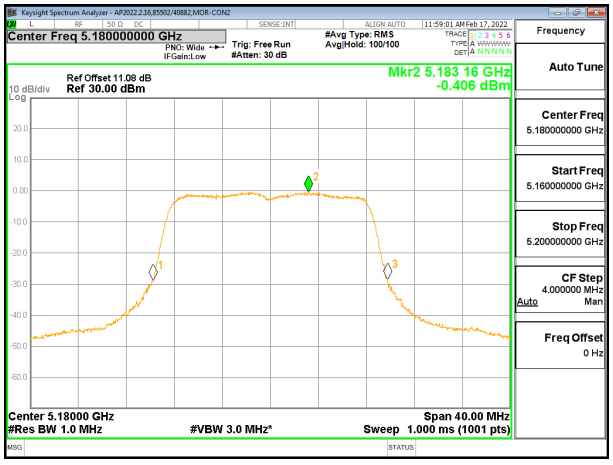
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm/1MHz)	Chain 1 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Low	5180	-1.34	-0.41	2.16	11.00	-8.84
Mid	5200	-1.49	-0.43	2.09	11.00	-8.91
High	5240	-1.14	-0.95	1.97	11.00	-9.03

LOW CHANNEL

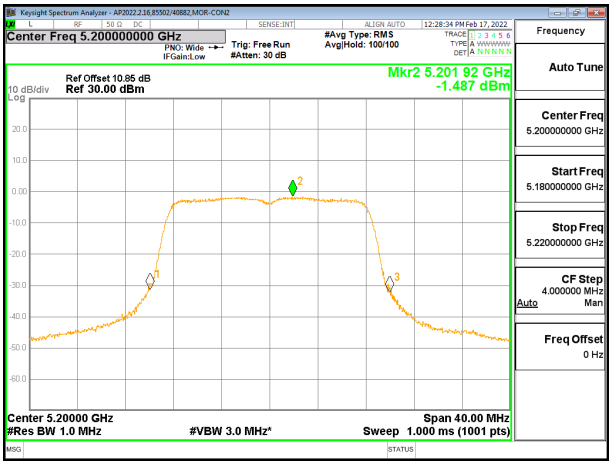


LOW CHANNEL CHAIN 0

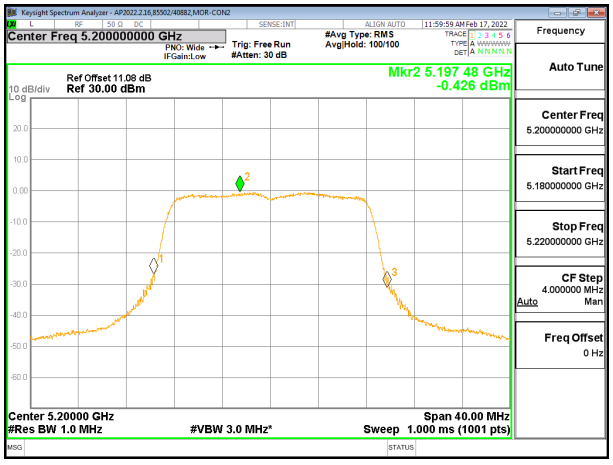


LOW CHANNEL CHAIN 1

MID CHANNEL

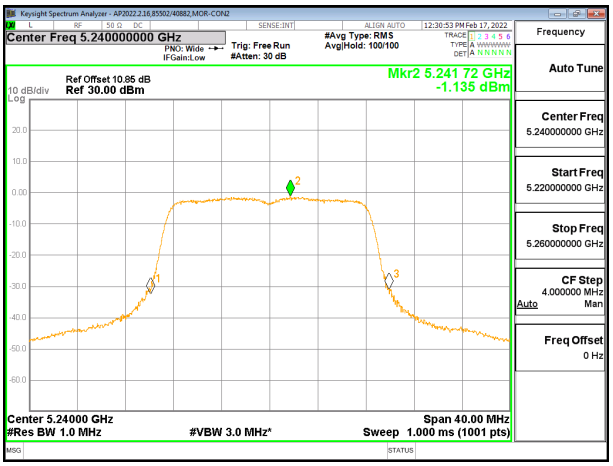


MID CHANNEL CHAIN 0

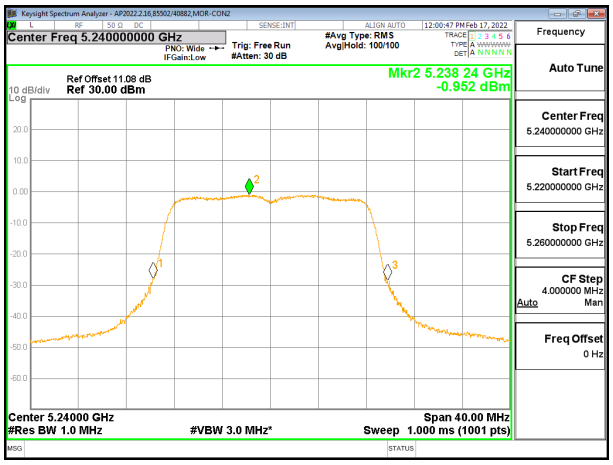


MID CHANNEL CHAIN 1

HIGH CHANNEL



HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1

9.3.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

Test Engineer:	85502/40882
Test Date:	2022-02-17

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Low	5180	-0.42	1.79	24.00	11.00
Mid	5200	-0.42	1.79	24.00	11.00
High	5240	-0.42	1.79	24.00	11.00

Duty Cycle CF (dB)	0.00	**Included in Calculations of Corr'd PSD**

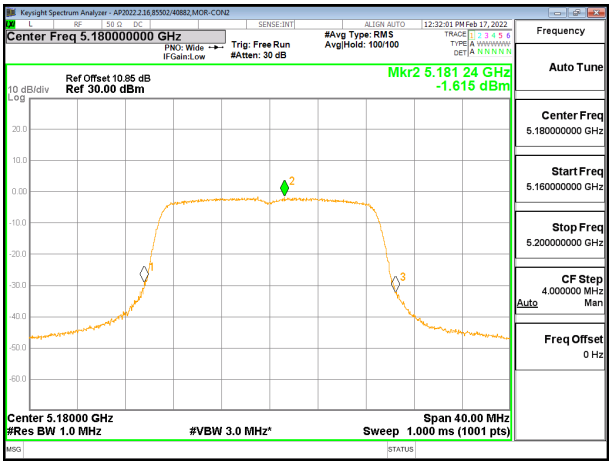
Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	10.03	10.75	13.42	24.00	-10.58
Mid	5200	9.90	10.68	13.32	24.00	-10.68
High	5240	10.10	10.45	13.29	24.00	-10.71

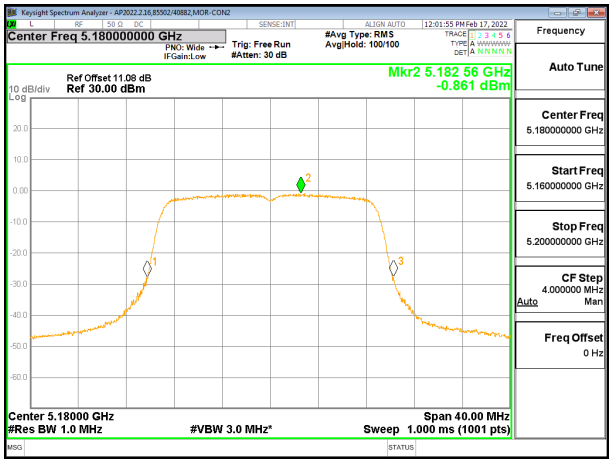
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm/1MHz)	Chain 1 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5180	-1.62	-0.86	1.79	11.00	-9.21
Mid	5200	-2.08	-1.08	1.46	11.00	-9.54
High	5240	-1.88	-1.51	1.32	11.00	-9.68

LOW CHANNEL

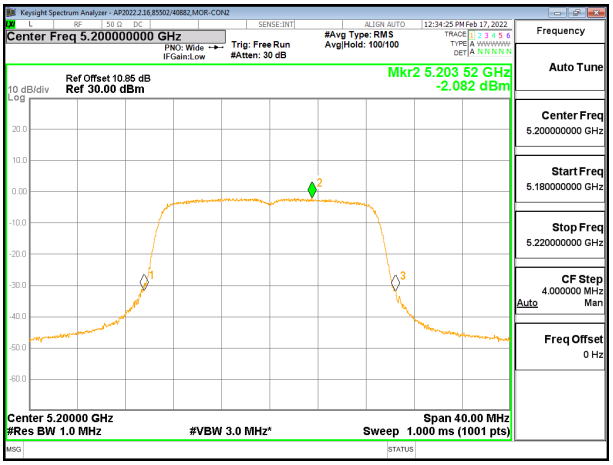


LOW CHANNEL CHAIN 0

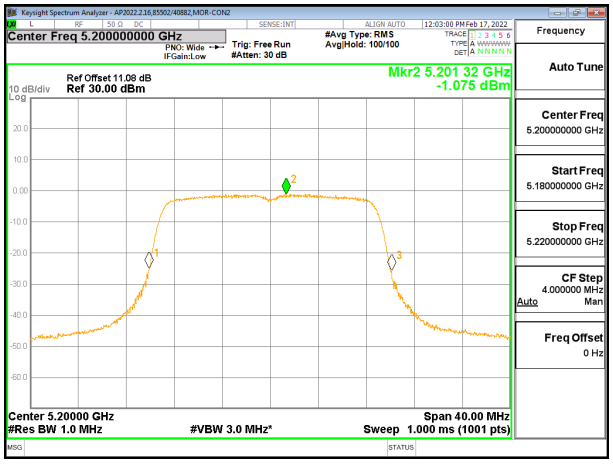


LOW CHANNEL CHAIN 1

MID CHANNEL

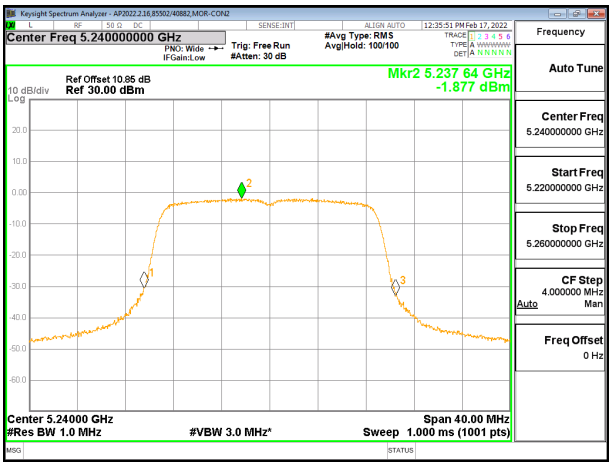


MID CHANNEL CHAIN 0

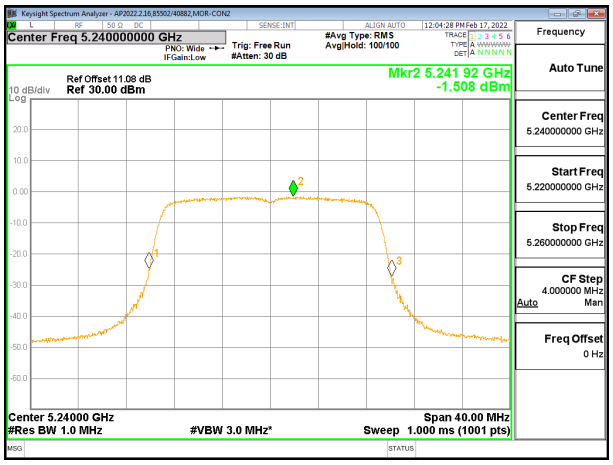


MID CHANNEL CHAIN 1

HIGH CHANNEL



HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1

9.3.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

Test Engineer:	85502/40882
Test Date:	2022-02-17

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Low	5190	-0.42	1.79	24.00	11.00
High	5230	-0.42	1.79	24.00	11.00

Duty Cycle CF (dB)	0.00	**Included in Calculations of Corr'd Power & PSD**

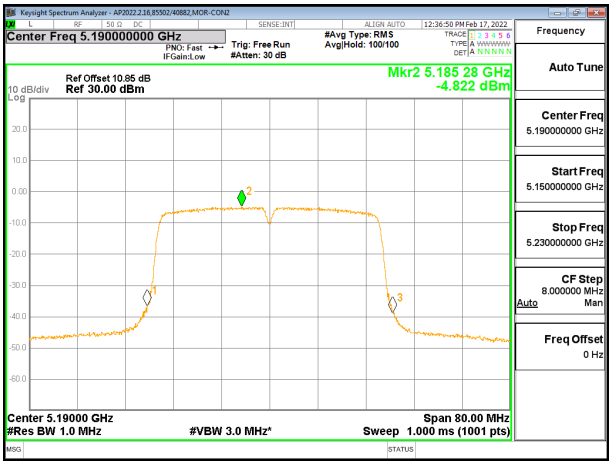
Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5190	9.99	10.63	13.33	24.00	-10.67
High	5230	9.92	10.32	13.13	24.00	-10.87

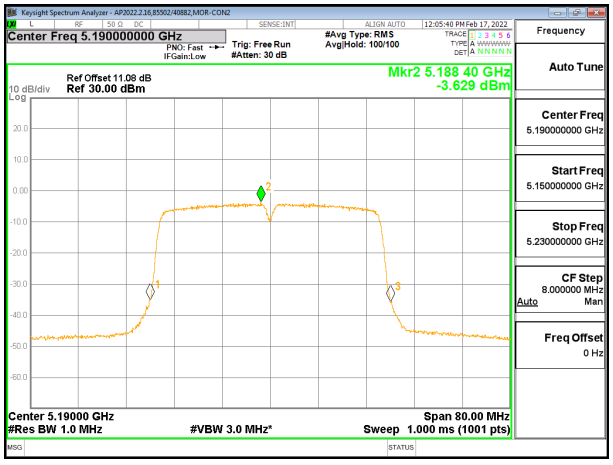
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm/ 1MHz)	Chain 1 Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5190	-4.82	-3.63	-1.17	11.00	-12.17
High	5230	-4.95	-4.07	-1.48	11.00	-12.48

LOW CHANNEL

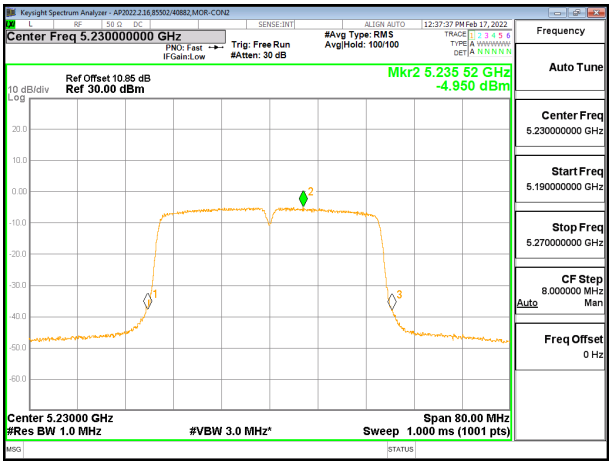


LOW CHANNEL CHAIN 0

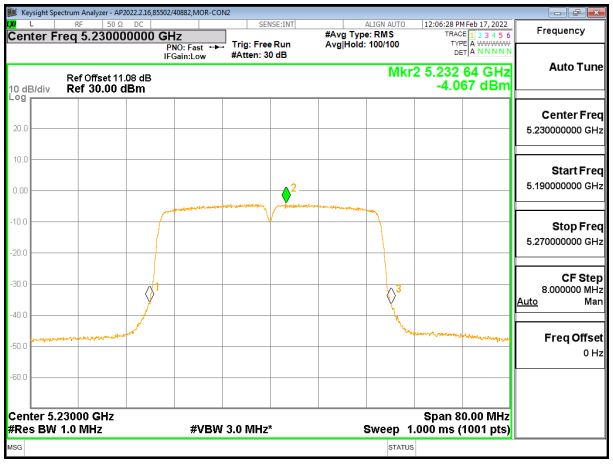


LOW CHANNEL CHAIN 1

HIGH CHANNEL



HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1

9.3.4. 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

Test Engineer:	85502/40882
Test Date:	2022-02-17

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBM/ 1MHz)
Mid	5210	-0.42	1.79	24.00	11.00

Duty Cycle CF (dB)	0.00	**Included in Calculations of Corr'd Power & PSD**

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5210	9.80	10.51	13.18	24.00	-10.82

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm/ 1MHz)	Chain 1 Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Mid	5210	-7.96	-7.17	-0.65	11.00	-11.65

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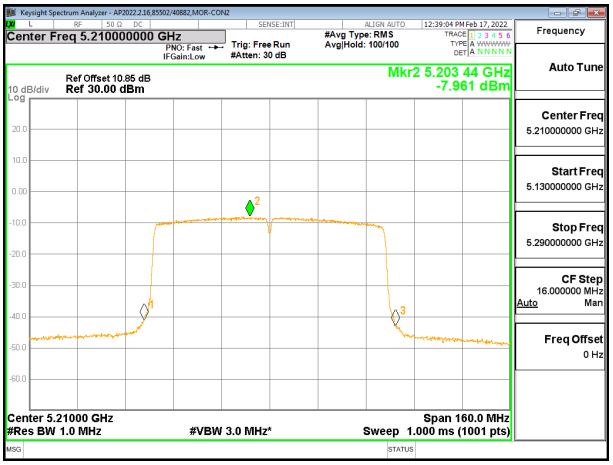
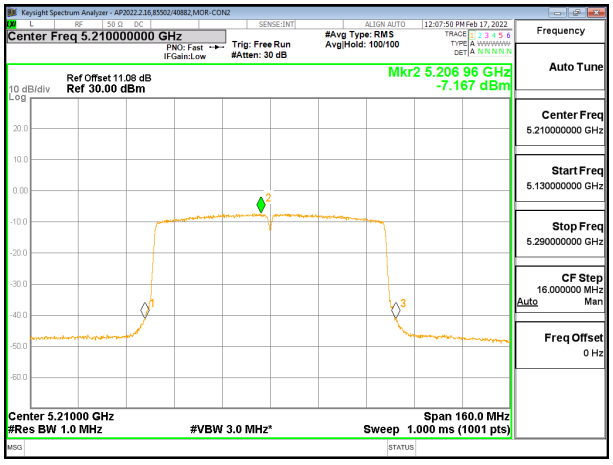
MID CHANNEL



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

9.3.5. 802.11a MODE IN THE 5.3 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

Test Engineer:	85502/40882
Test Date:	2022-02-15

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Low	5260	19.48	-0.42	1.79	23.90	11.00
Mid	5300	19.56	-0.42	1.79	23.91	11.00
High	5320	19.52	-0.42	1.79	23.90	11.00

Duty Cycle CF (dB)	0.00	**Included in Calculations of Corr'd PSD**

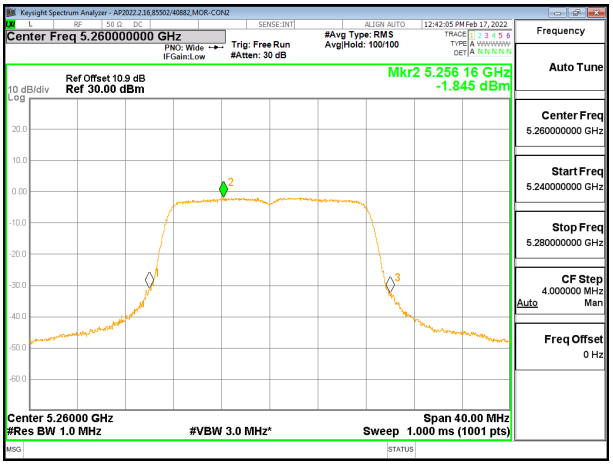
Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	9.92	10.44	13.20	23.90	-10.70
Mid	5300	10.10	10.44	13.28	23.91	-10.63
High	5320	9.90	10.56	13.25	23.90	-10.65

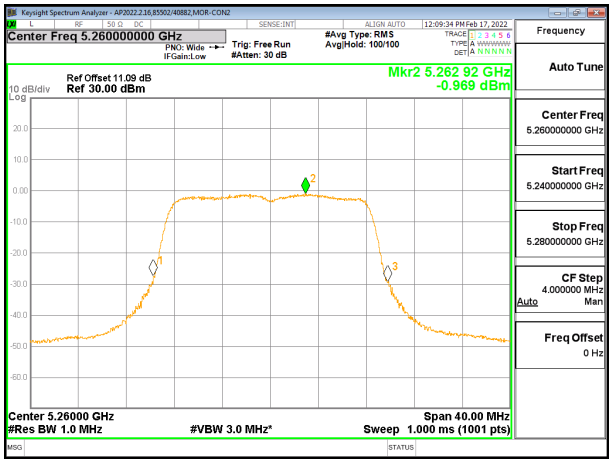
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm/1MHz)	Chain 1 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Low	5260	-1.85	-0.97	1.63	11.00	-9.37
Mid	5300	-1.73	-1.27	1.52	11.00	-9.48
High	5320	-2.10	-1.21	1.38	11.00	-9.62

LOW CHANNEL

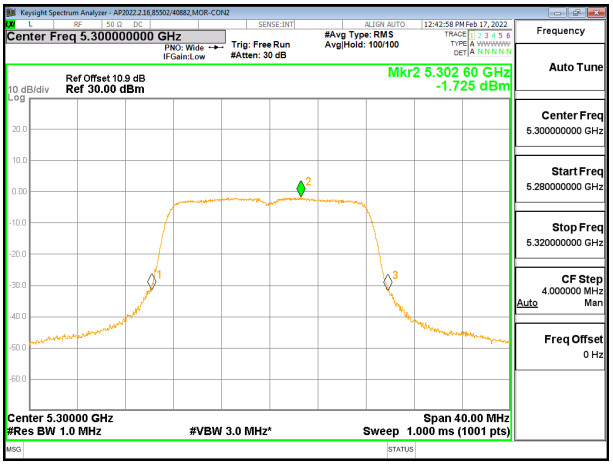


LOW CHANNEL CHAIN 0

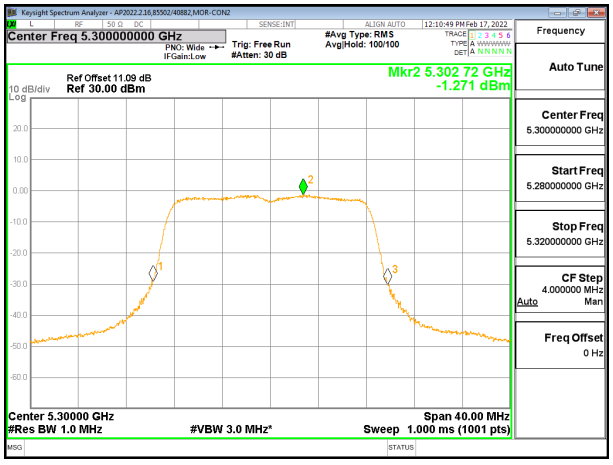


LOW CHANNEL CHAIN 1

MID CHANNEL

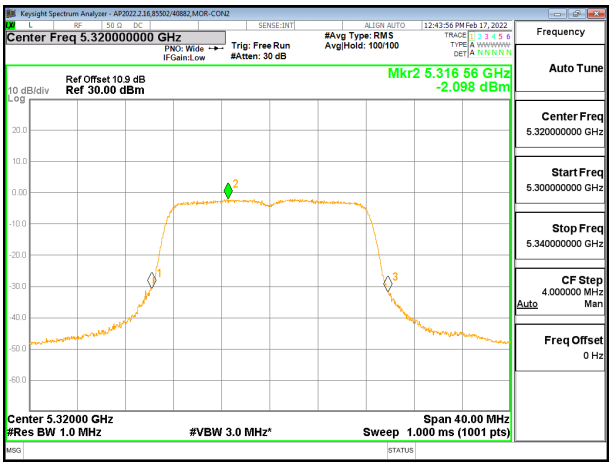


MID CHANNEL CHAIN 0

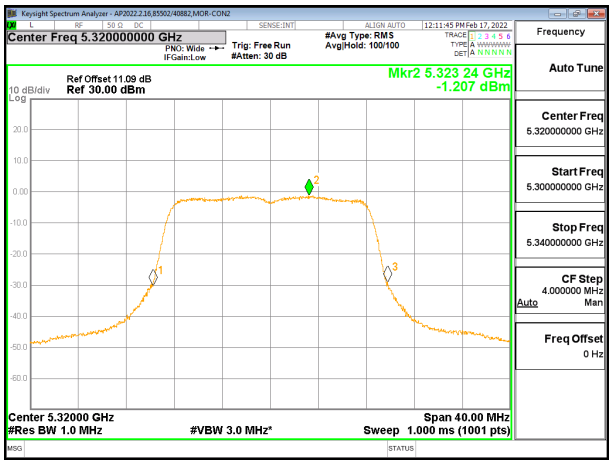


MID CHANNEL CHAIN 1

HIGH CHANNEL



HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1

9.3.6. 802.11n HT20 MODE IN THE 5.3 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

Test Engineer:	85502/40882
Test Date:	2022-02-15

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Low	5260	20.24	-0.42	1.79	24.00	11.00
Mid	5300	20.32	-0.42	1.79	24.00	11.00
High	5320	20.28	-0.42	1.79	24.00	11.00

Duty Cycle CF (dB)	0.00	**Included in Calculations of Corr'd PSD**

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	9.93	10.37	13.17	24.00	-10.83
Mid	5300	10.04	10.37	13.22	24.00	-10.78
High	5320	9.82	10.39	13.12	24.00	-10.88

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm/1MHz)	Chain 1 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Low	5260	-2.25	-1.52	1.14	11.00	-9.86
Mid	5300	-2.07	-1.78	1.09	11.00	-9.91
High	5320	-2.48	-1.61	0.99	11.00	-10.01

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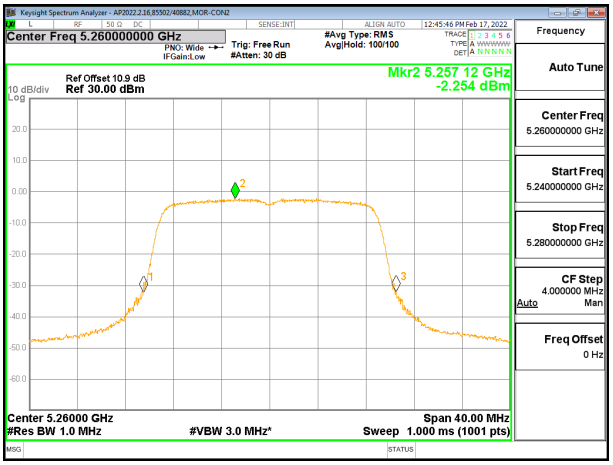
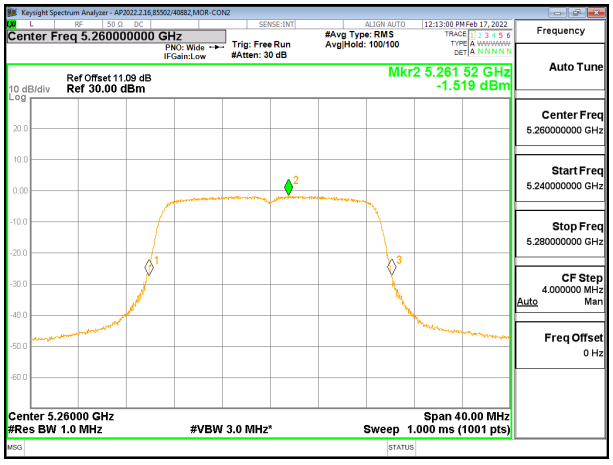
LOW CHANNEL

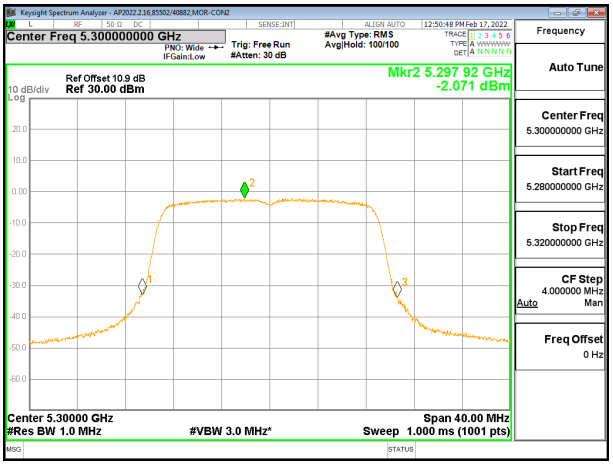


LOW CHANNEL CHAIN 0

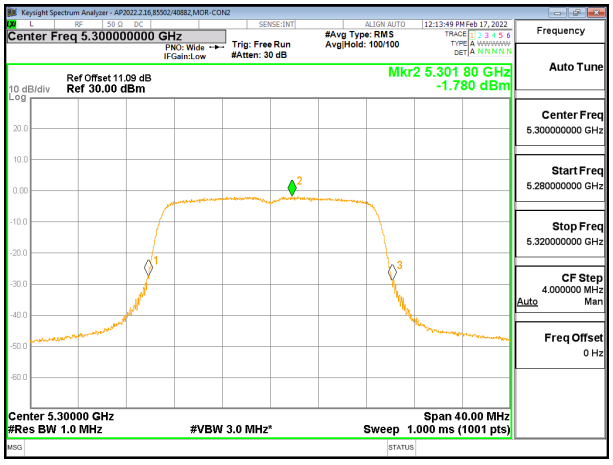


LOW CHANNEL CHAIN 1

MID CHANNEL

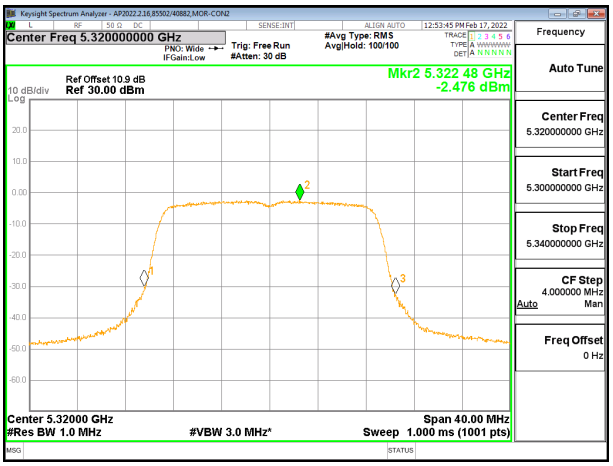


MID CHANNEL CHAIN 0

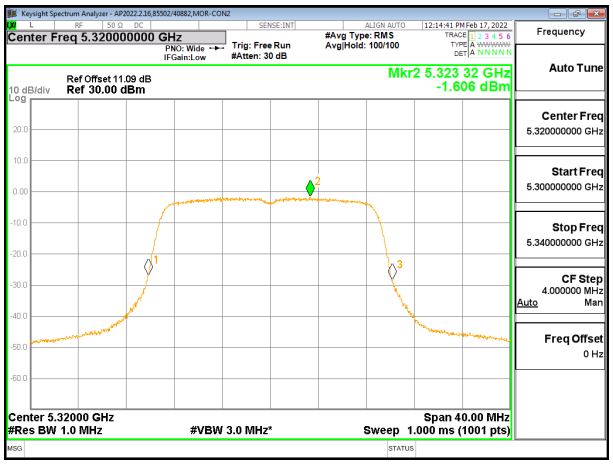


MID CHANNEL CHAIN 1

HIGH CHANNEL



HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1

9.3.7. 802.11n HT40 MODE IN THE 5.3 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

Test Engineer:	85502/40882
Test Date:	2022-02-15

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Low	5270	40.08	-0.42	1.79	24.00	11.00
High	5310	40.00	-0.42	1.79	24.00	11.00

Duty Cycle CF (dB)	0.00	**Included in Calculations of Corr'd PSD**

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5270	9.99	10.32	13.17	24.00	-10.83
High	5310	9.98	10.45	13.23	24.00	-10.77

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm/1MHz)	Chain 1 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Low	5270	-5.00	-4.59	-1.78	11.00	-12.78
High	5310	-5.38	-4.63	-1.98	11.00	-12.98

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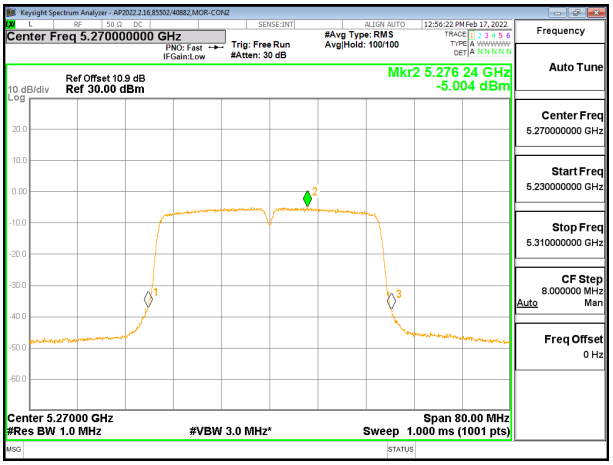
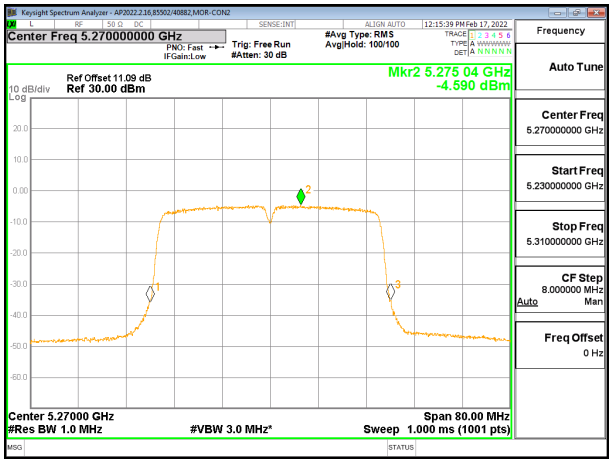
LOW CHANNEL

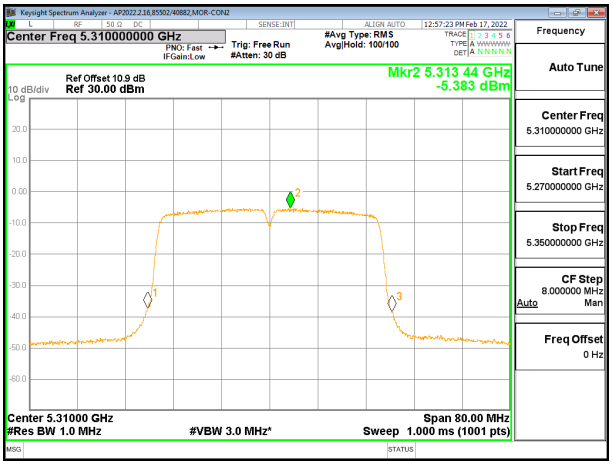


LOW CHANNEL CHAIN 0

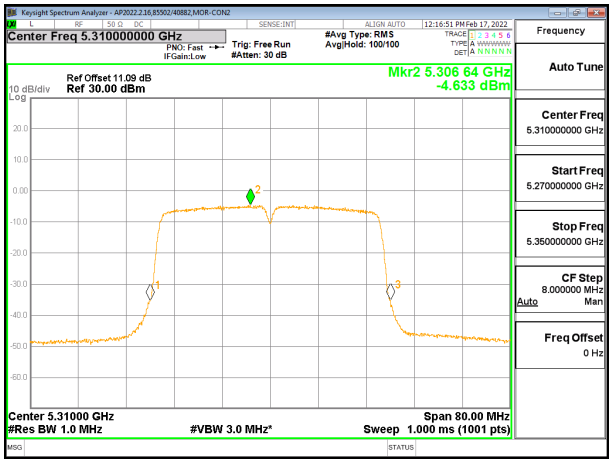


LOW CHANNEL CHAIN 1

HIGH CHANNEL



HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1

9.3.8. 802.11ac VHT80 MODE IN THE 5.3 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

Test Engineer:	85502/40882
Test Date:	2022-02-15

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Mid	5290	83.04	-0.42	1.79	24.00	11.00

Duty Cycle CF (dB)	0.00	**Included in Calculations of Corr'd PSD**

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5290	9.80	9.97	12.90	24.00	-11.10

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm/1MHz)	Chain 1 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Mid	5290	-8.32	-7.90	-5.09	11.00	-16.09

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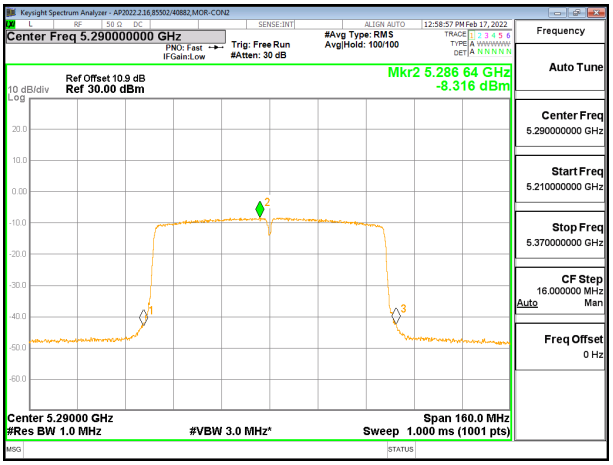
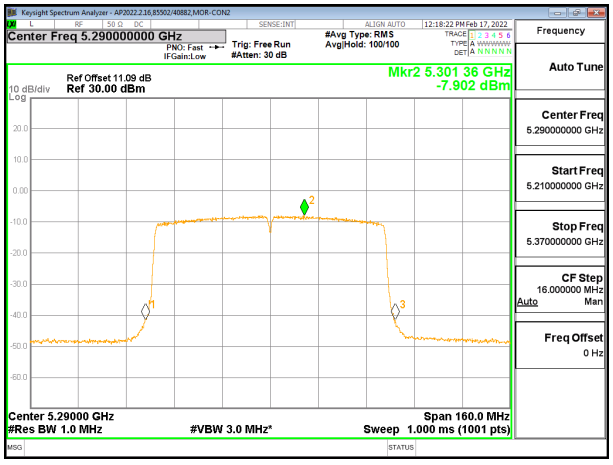
MID CHANNEL



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

9.3.9. 802.11ac VHT160 MODE IN THE 5.2/5.3 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

Test Engineer:	85502/40882
Test Date:	2022-02-15

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Mid	5250	167.68	-0.42	1.79	24.00	11.00

Duty Cycle CF (dB)	0.00	**Included in Calculations of Corr'd PSD**

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5250	10.25	10.32	13.30	24.00	-10.70

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm/1MHz)	Chain 1 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Mid	5250	-10.67	-10.50	-7.57	11.00	-18.57

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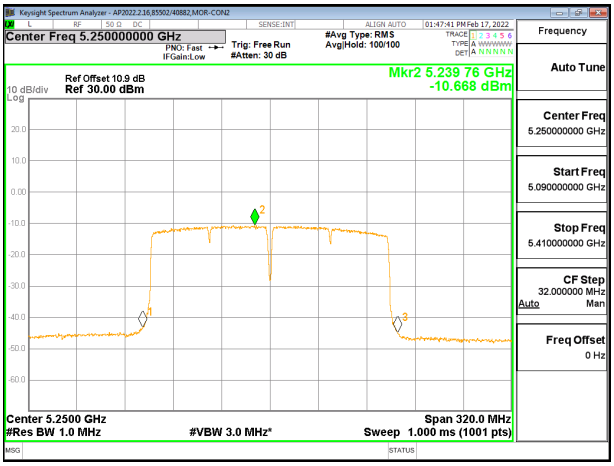
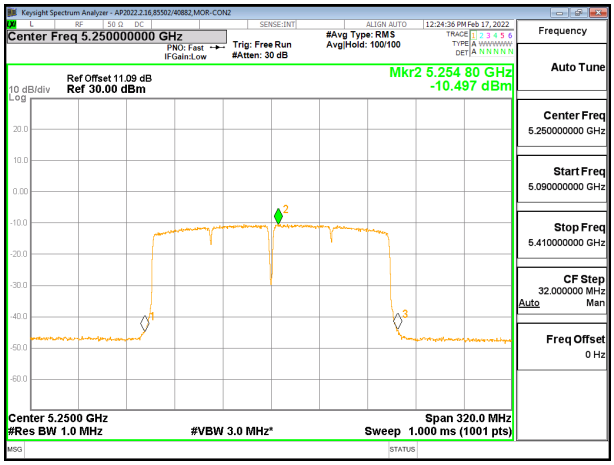
MID CHANNEL



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

10. RADIATED TEST RESULTS

LIMITS

FCC §15.205 and §15.209 -Restriced bands

FCC §15.407(b)(1-3) -Un-Restriced bands

After January 01, 2019 for Outside of the Restricted Bands Emissions

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

The EUT is placed on a non-conducting table 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For pre-scans above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements.

For final measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and applicable for average measurements.

The spectrum from 1GHz to 18GHz was set to the lowest, middle, and highest channels in the 5 GHz bands.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

3D antenna use - For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel).

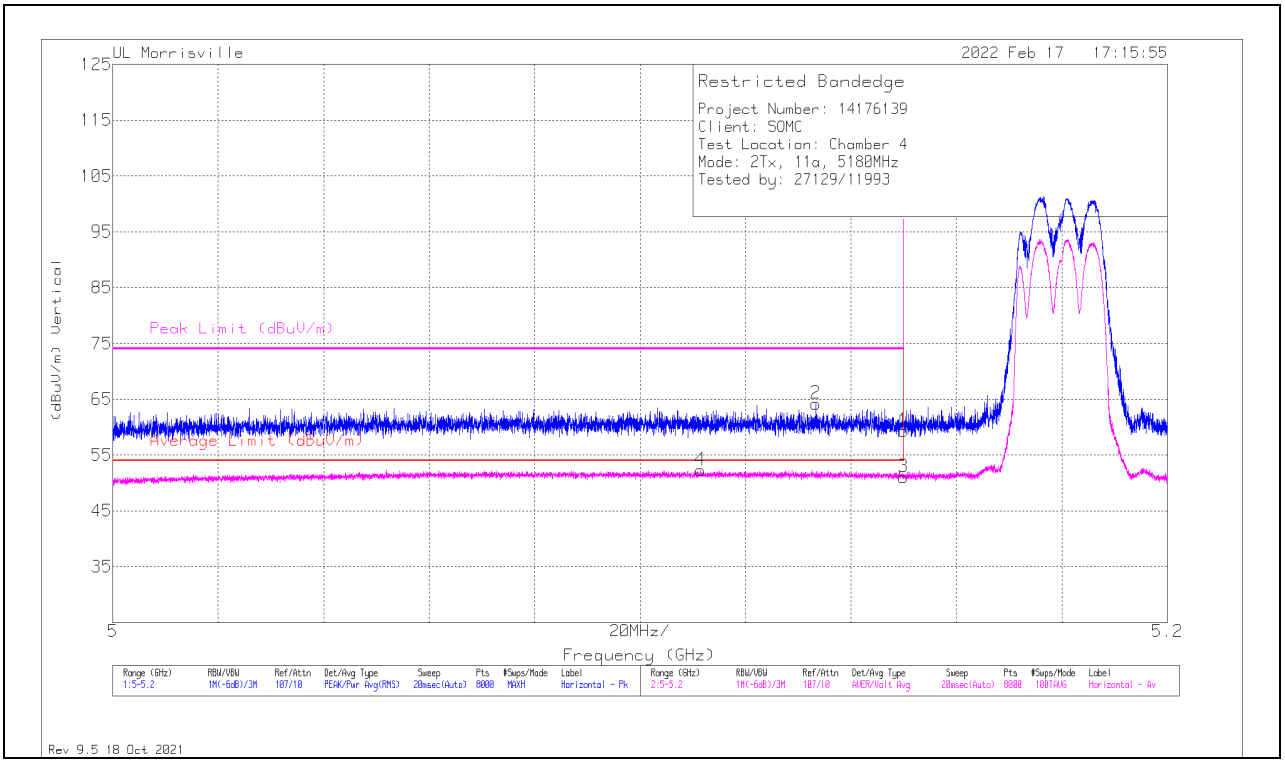
10.1. TRANSMITTER ABOVE 1 GHz

10.1.1. TX ABOVE 1 GHz 802.11a MODE IN THE 5.2 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

BANDEDGE (LOW CHANNEL)

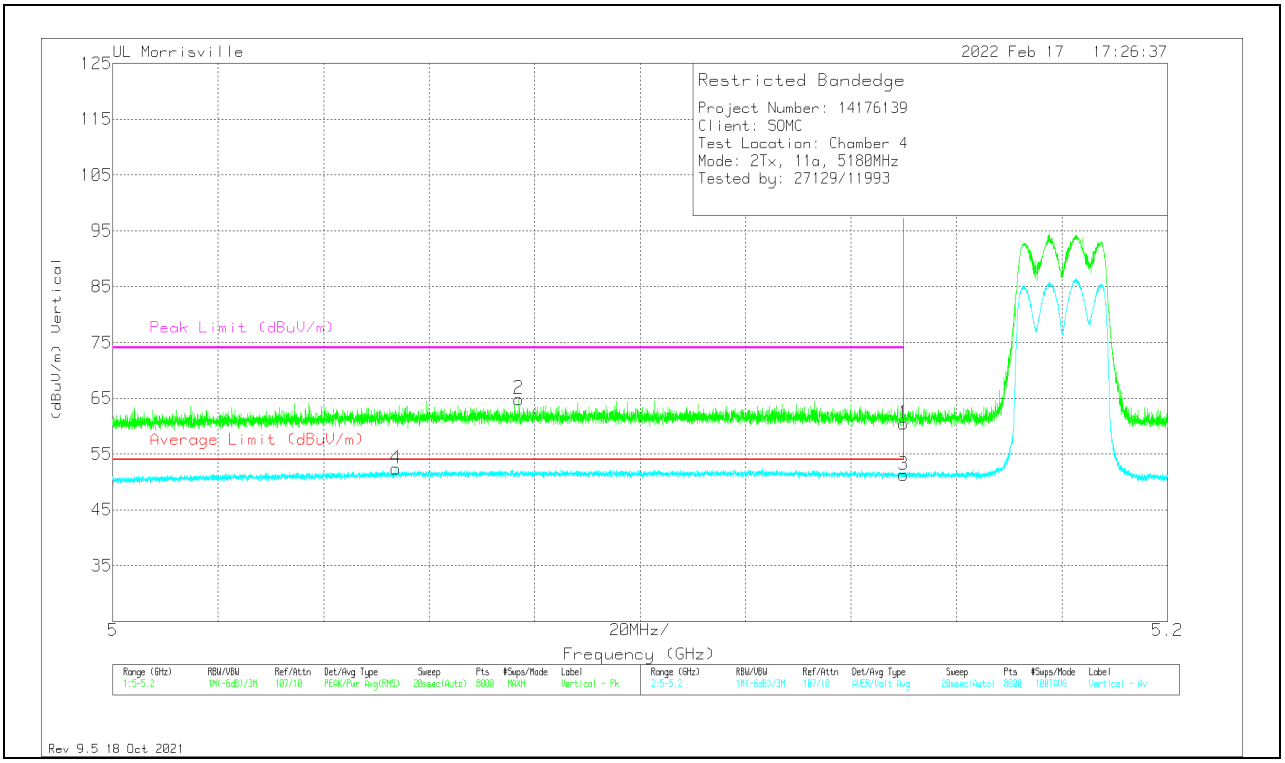
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 5.14999	35.41	Pk	34.2	-10.3	59.31	-	-	74	-14.69	350	100	H
2	* ** 5.13334	40.21	Pk	34.2	-10.2	64.21	-	-	74	-9.79	350	100	H
3	* ** 5.14999	27.11	ADV	34.2	-10.3	51.01	54	-2.99	-	-	350	100	H
4	* ** 5.11144	28.37	ADV	34.1	-10.2	52.27	54	-1.73	-	-	350	100	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - U-NII AD primary method, Linear Voltage Average

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 5.14999	36.57	Pk	34.2	-10.3	60.47	-	-	74	-13.53	77	238	V
2	* ** 5.07703	40.98	Pk	34.1	-10.2	64.88	-	-	74	-9.12	77	238	V
3	* ** 5.14999	27.38	ADV	34.2	-10.3	51.28	54	-2.72	-	-	77	238	V
4	* ** 5.05373	28.63	ADV	34	-10.2	52.43	54	-1.57	-	-	77	238	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - U-NII AD primary method, Linear Voltage Average

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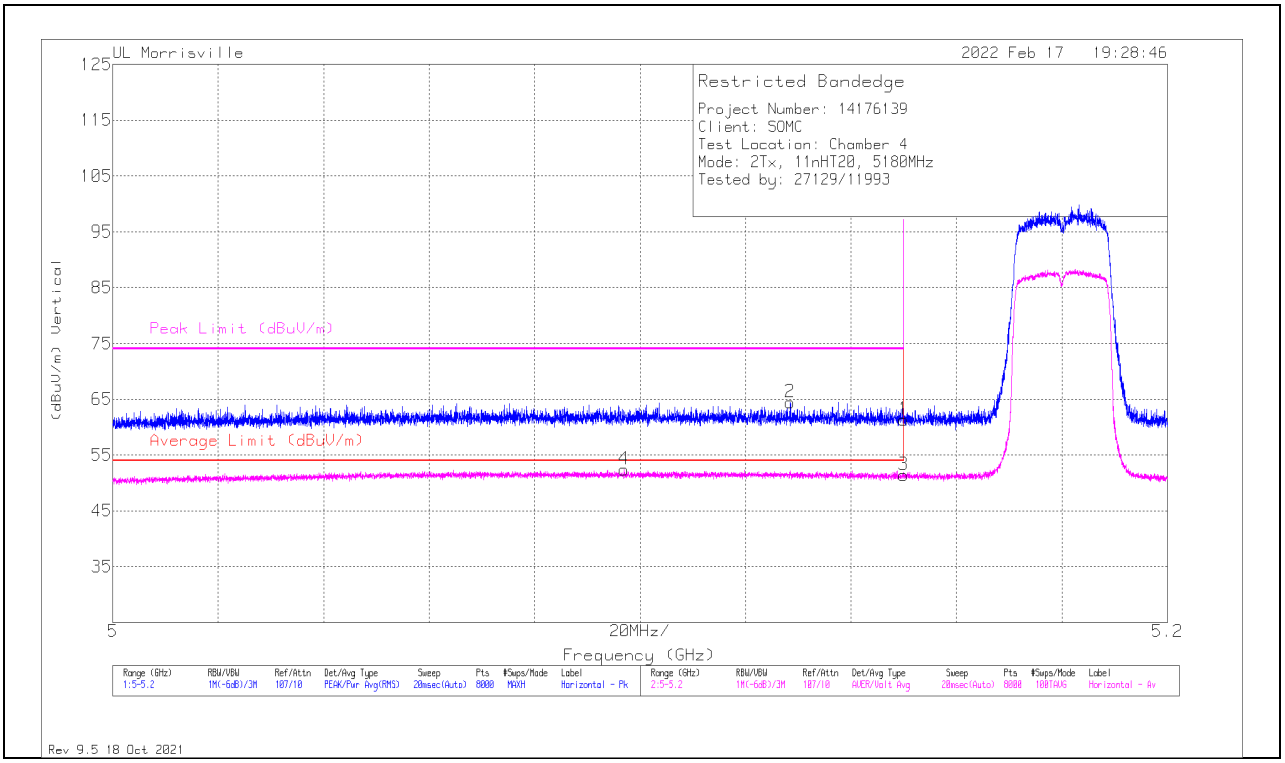
10.1.2. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.2 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

BANDEDGE (LOW CHANNEL)

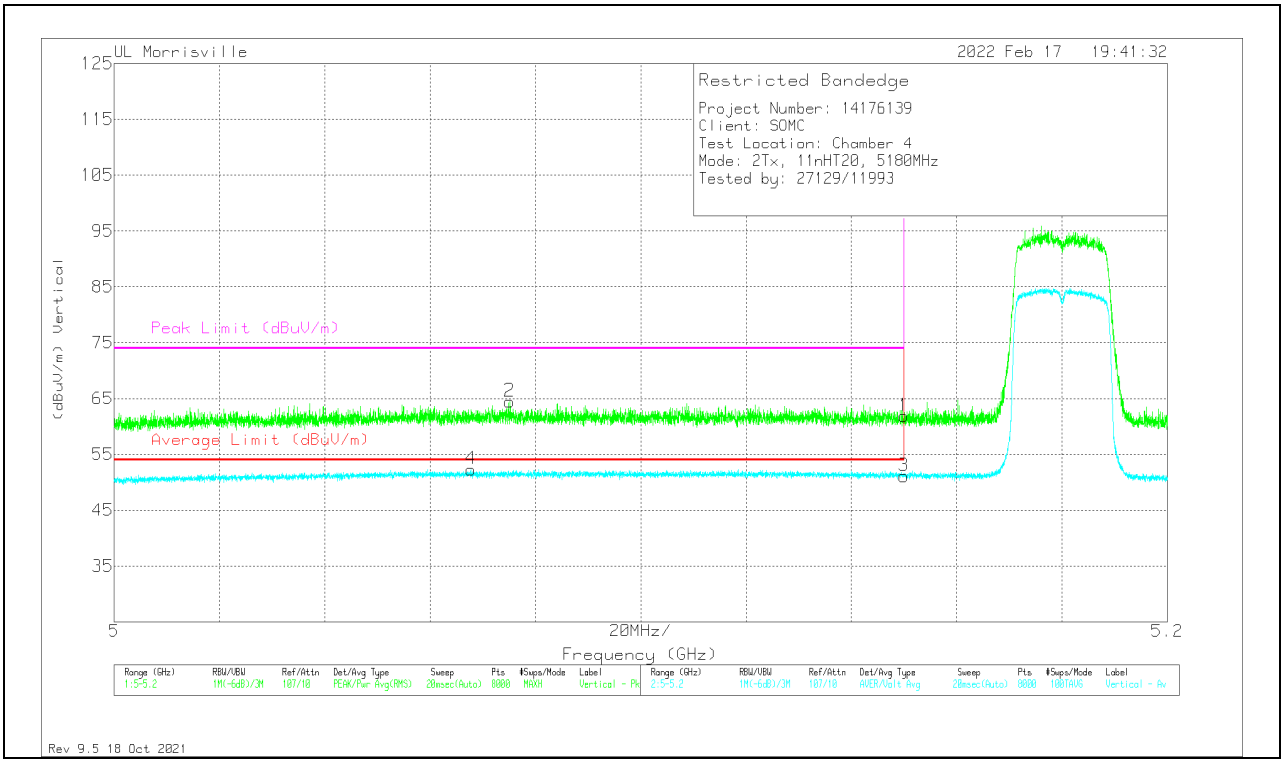
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 5.14999	37.44	Pk	34.2	-10.3	61.34	-	-	74	-12.66	331	127	H
2	* ** 5.12849	40.54	Pk	34.1	-10.2	64.44	-	-	74	-9.56	331	127	H
3	* ** 5.14999	27.47	ADV	34.2	-10.3	51.37	54	-2.63	-	-	331	127	H
4	* ** 5.09701	28.6	ADV	34.1	-10.3	52.4	54	-1.6	-	-	331	127	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - U-NII AD primary method, Linear Voltage Average

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 5.14999	37.96	Pk	34.2	-10.3	61.86	-	-	74	-12.14	359	100	V
2	* ** 5.07508	40.57	Pk	34.1	-10.2	64.47	-	-	74	-9.53	359	100	V
3	* ** 5.14999	27.23	ADV	34.2	-10.3	51.13	54	-2.87	-	-	359	100	V
4	* ** 5.06773	28.42	ADV	34.1	-10.2	52.32	54	-1.68	-	-	359	100	V

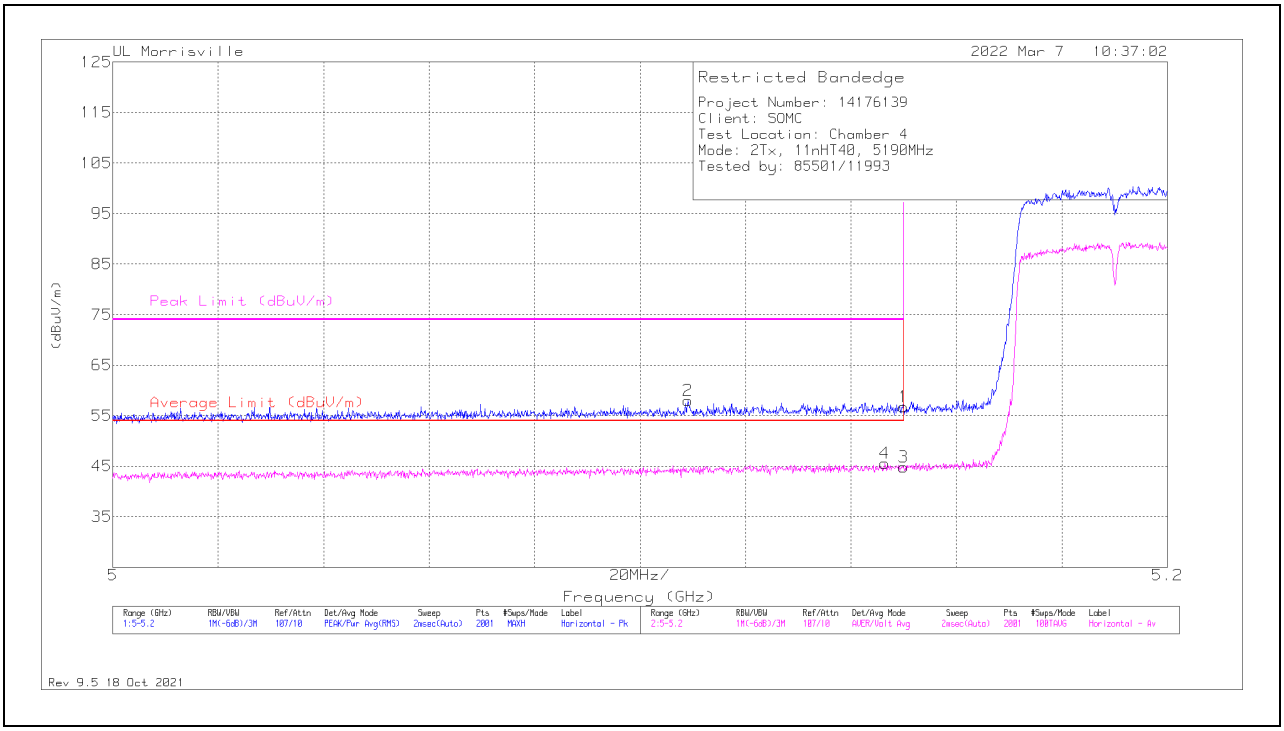
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - U-NII AD primary method, Linear Voltage Average

10.1.3. TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 5.2 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

BANDEDGE (LOW CHANNEL)

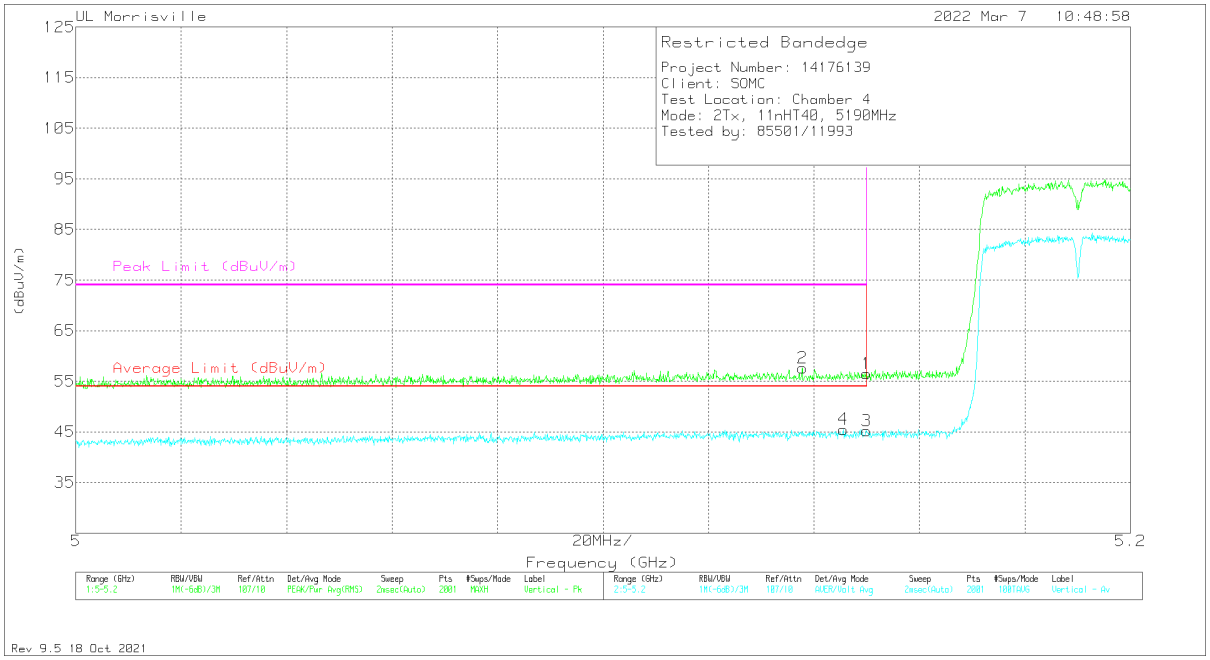
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 5.15	32.8	Pk	34.2	-10.3	56.7	-	-	74	-17.3	350	154	H
2	* ** 5.1091	34.24	Pk	34.1	-10.3	58.04	-	-	74	-15.96	350	154	H
3	* ** 5.15	20.89	ADV	34.2	-10.3	44.79	54	-9.21	-	-	350	154	H
4	* ** 5.1464	21.64	ADV	34.2	-10.3	45.54	54	-8.46	-	-	350	154	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - U-NII AD primary method, Linear Voltage Average

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 5.15	32.6	Pk	34.2	-10.3	56.5	-	-	74	-17.5	9	100	V
2	* ** 5.1378	33.66	Pk	34.2	-10.2	57.66	-	-	74	-16.34	9	100	V
3	* ** 5.15	21.35	ADV	34.2	-10.3	45.25	54	-8.75	-	-	9	100	V
4	* ** 5.1456	21.61	ADV	34.2	-10.3	45.51	54	-8.49	-	-	9	100	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - U-NII AD primary method, Linear Voltage Average

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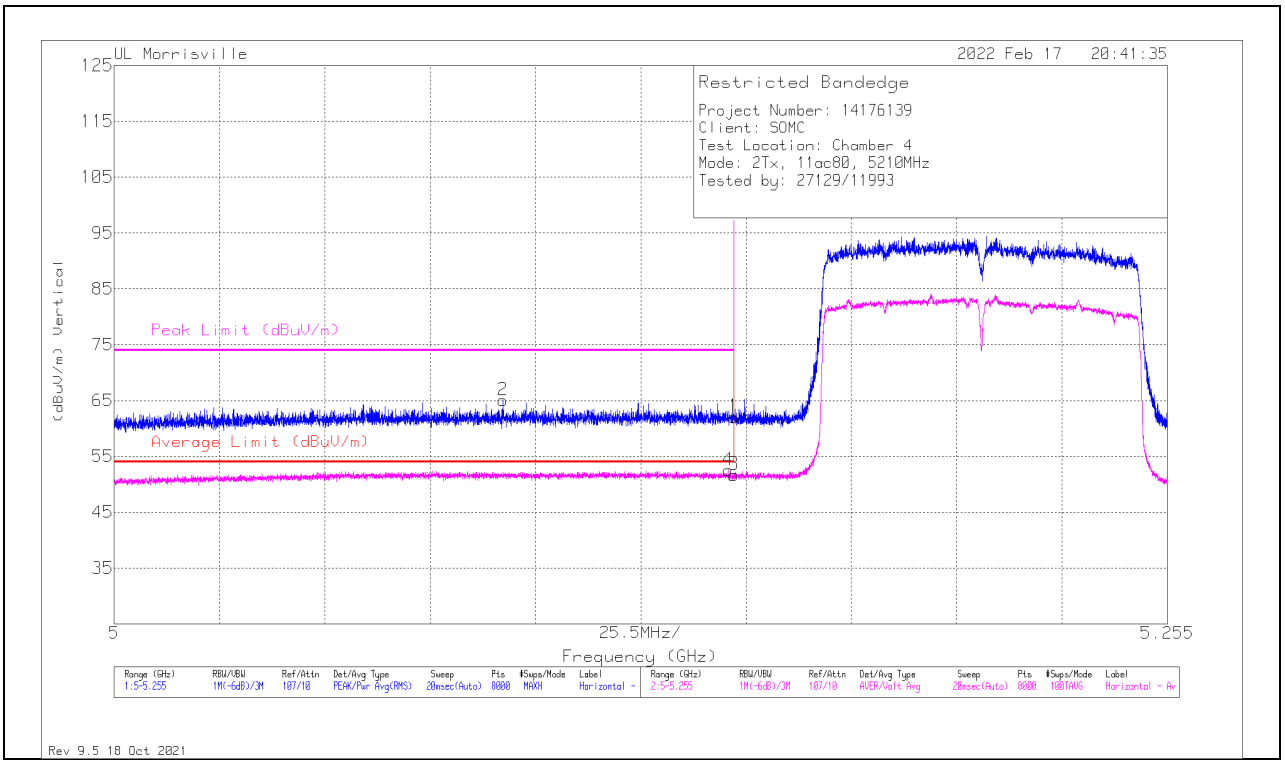
10.1.4. TX ABOVE 1 GHz 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

BANDEDGE (MID CHANNEL)

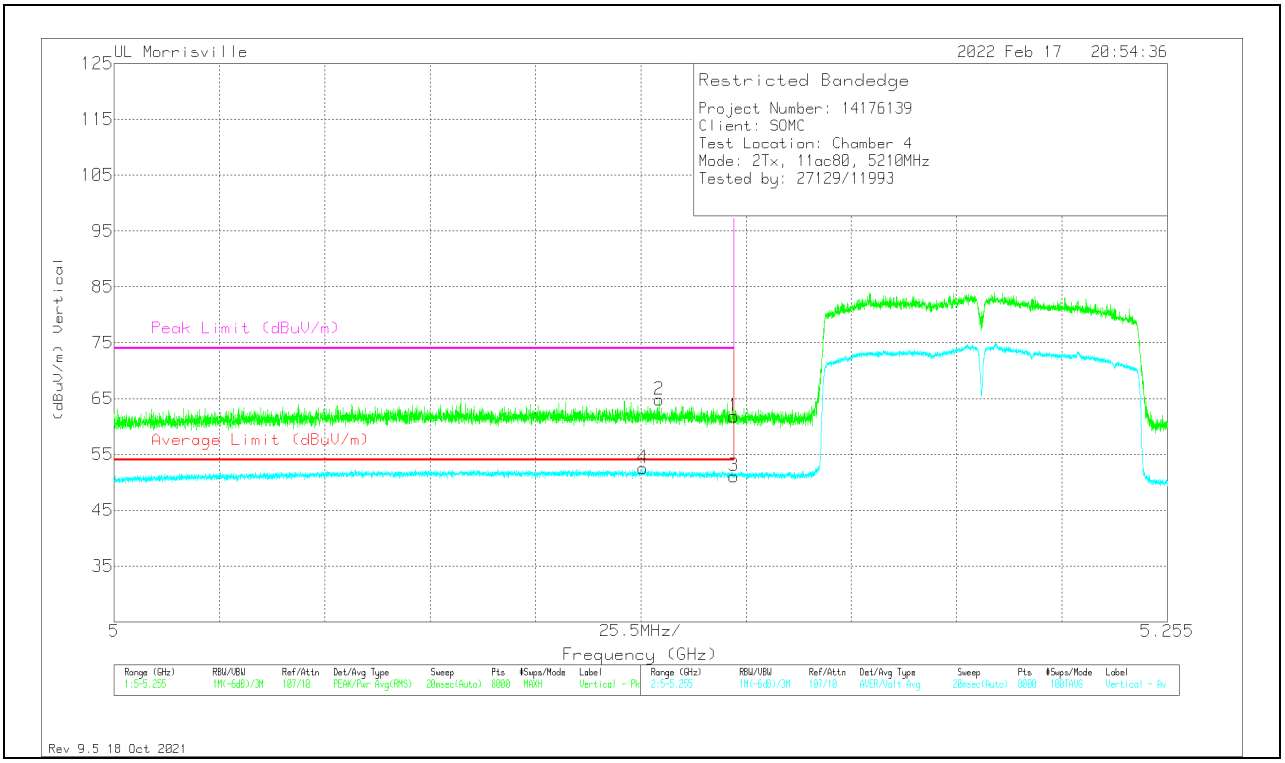
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 5.14999	38.16	Pk	34.2	-10.3	62.06	-	-	74	-11.94	349	100	H
2	* ** 5.09414	41.24	Pk	34.1	-10.3	65.04	-	-	74	-8.96	349	100	H
3	* ** 5.14999	27.79	ADV	34.2	-10.3	51.69	54	-2.31	-	-	349	100	H
4	* ** 5.14865	28.61	ADV	34.2	-10.3	52.51	54	-1.49	-	-	349	100	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - U-NII AD primary method, Linear Voltage Average

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 5.14999	37.94	Pk	34.2	-10.3	61.84	-	-	74	-12.16	73	207	V
2	* ** 5.13192	40.8	Pk	34.2	-10.2	64.8	-	-	74	-9.2	73	207	V
3	* ** 5.14999	27.2	ADV	34.2	-10.3	51.1	54	-2.9	-	-	73	207	V
4	* ** 5.12799	28.62	ADV	34.1	-10.2	52.52	54	-1.48	-	-	73	207	V

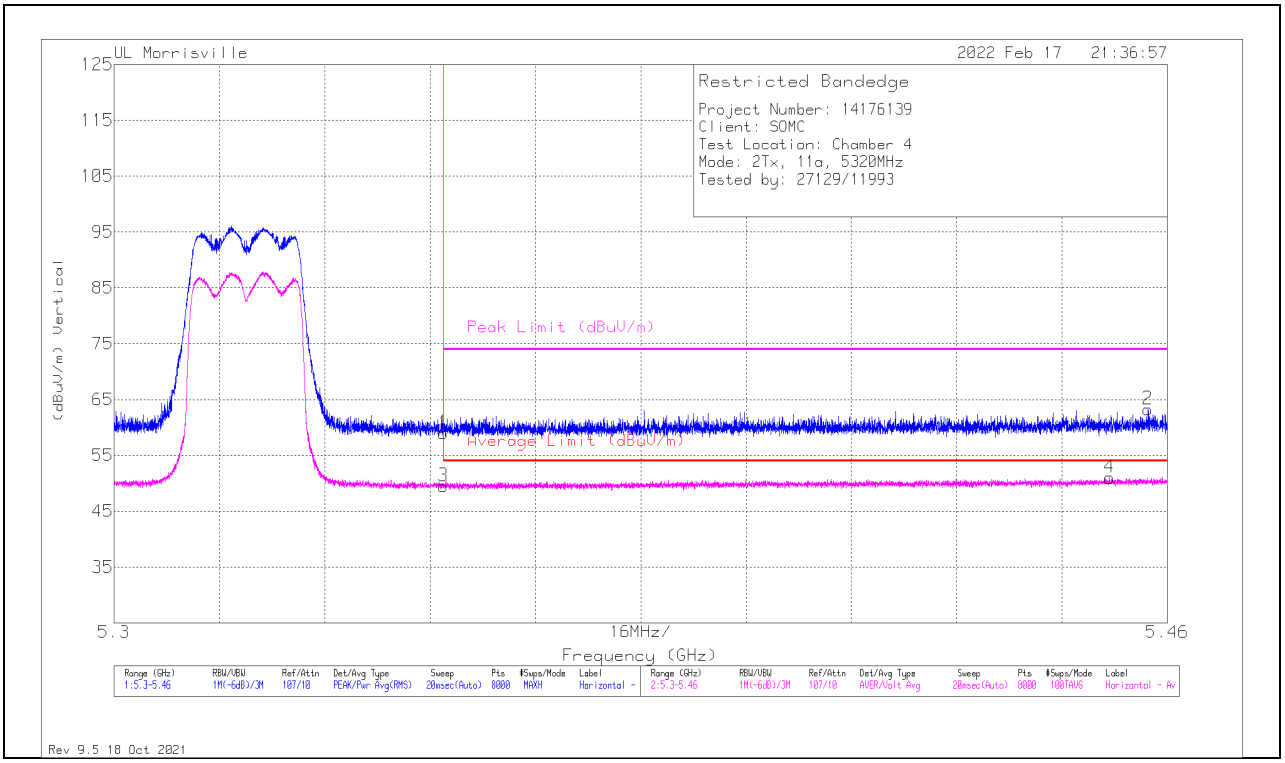
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - U-NII AD primary method, Linear Voltage Average

10.1.5. TX ABOVE 1 GHz 802.11a MODE IN THE 5.3 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

BANDEDGE (HIGH CHANNEL)

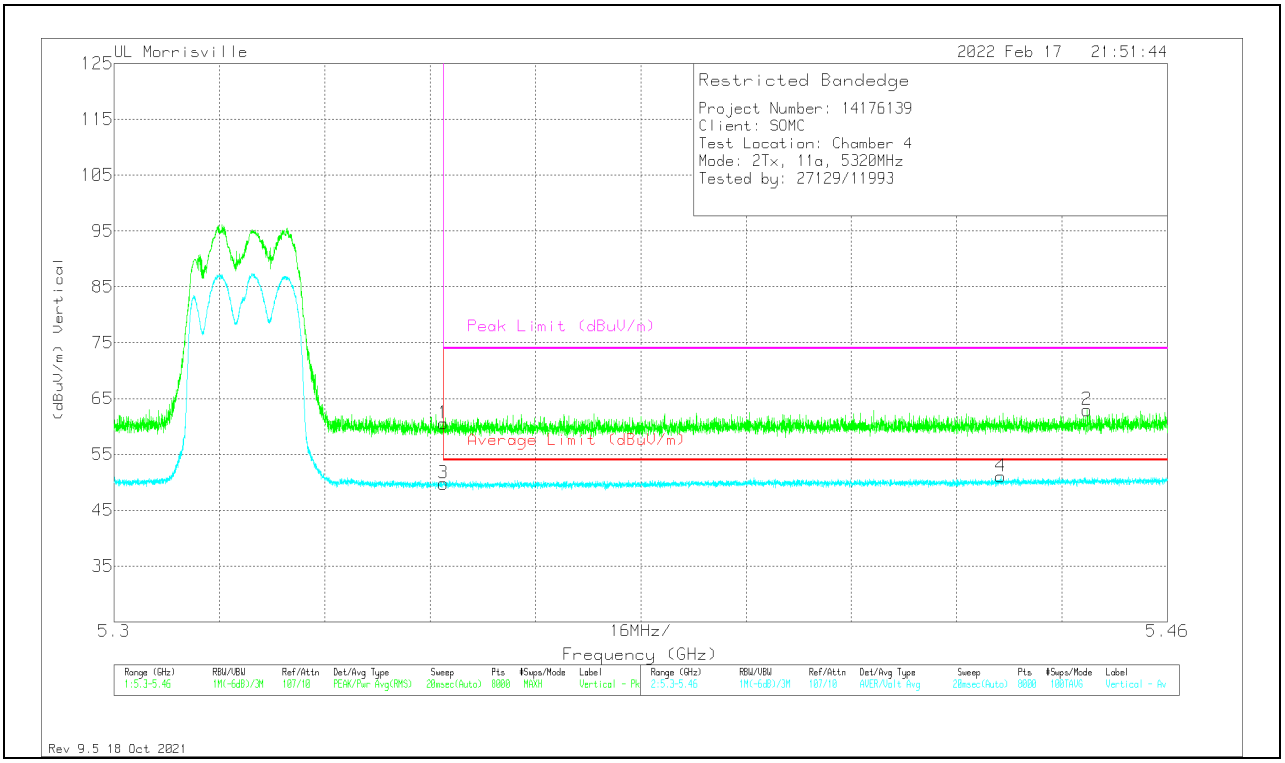
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 5.35001	34.58	Pk	34.5	-10.1	58.98	-	-	74	-15.02	317	195	H
2	* ** 5.45706	38.65	Pk	34.4	-9.8	63.25	-	-	74	-10.75	317	195	H
3	* ** 5.35001	25.08	ADV	34.5	-10.1	49.48	54	-4.52	-	-	317	195	H
4	* ** 5.45124	26.41	ADV	34.4	-9.8	51.01	54	-2.99	-	-	317	195	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - U-NII AD primary method, Linear Voltage Average

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 5.35001	36.12	Pk	34.5	-10.1	60.52	-	-	74	-13.48	350	112	V
2	* ** 5.44782	38.35	Pk	34.4	-9.8	62.95	-	-	74	-11.05	350	112	V
3	* ** 5.35001	25.39	ADV	34.5	-10.1	49.79	54	-4.21	-	-	350	112	V
4	* ** 5.4347	26.52	ADV	34.4	-9.9	51.02	54	-2.98	-	-	350	112	V

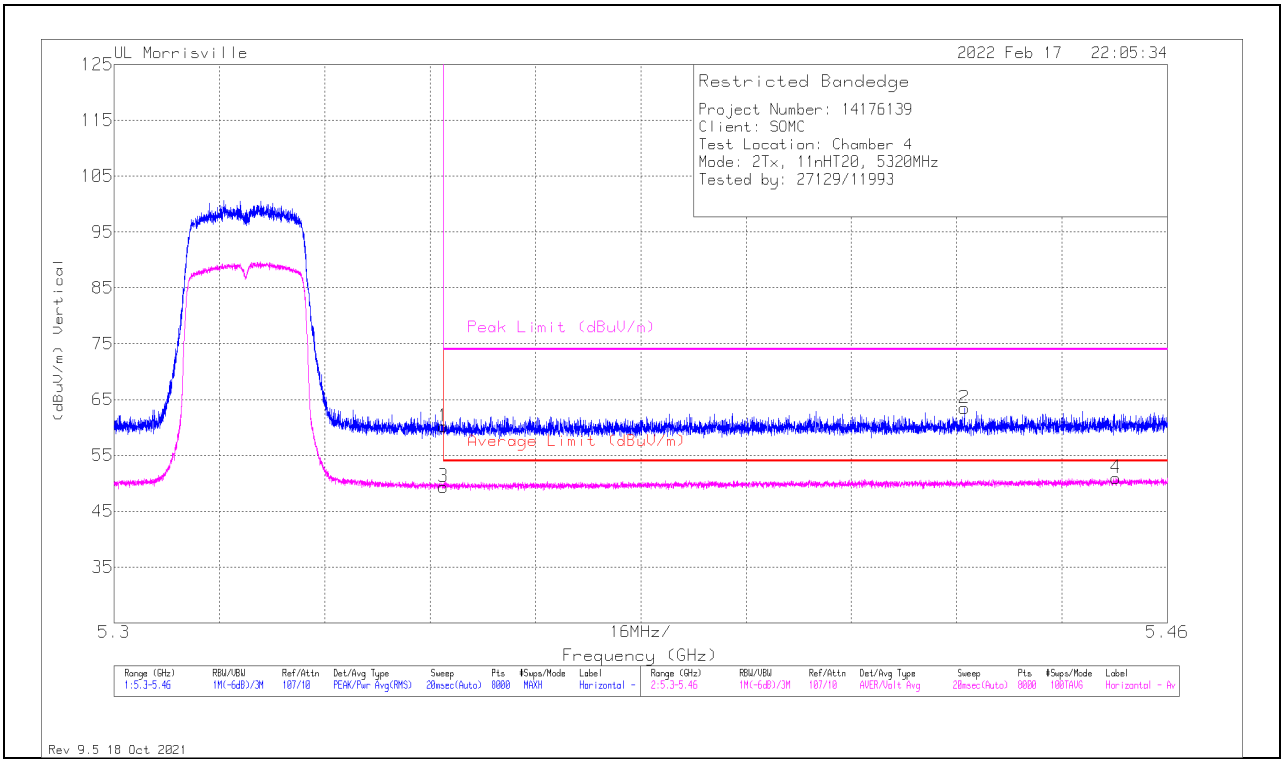
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - U-NII AD primary method, Linear Voltage Average

10.1.6. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.3 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

BANDEDGE (HIGH CHANNEL)

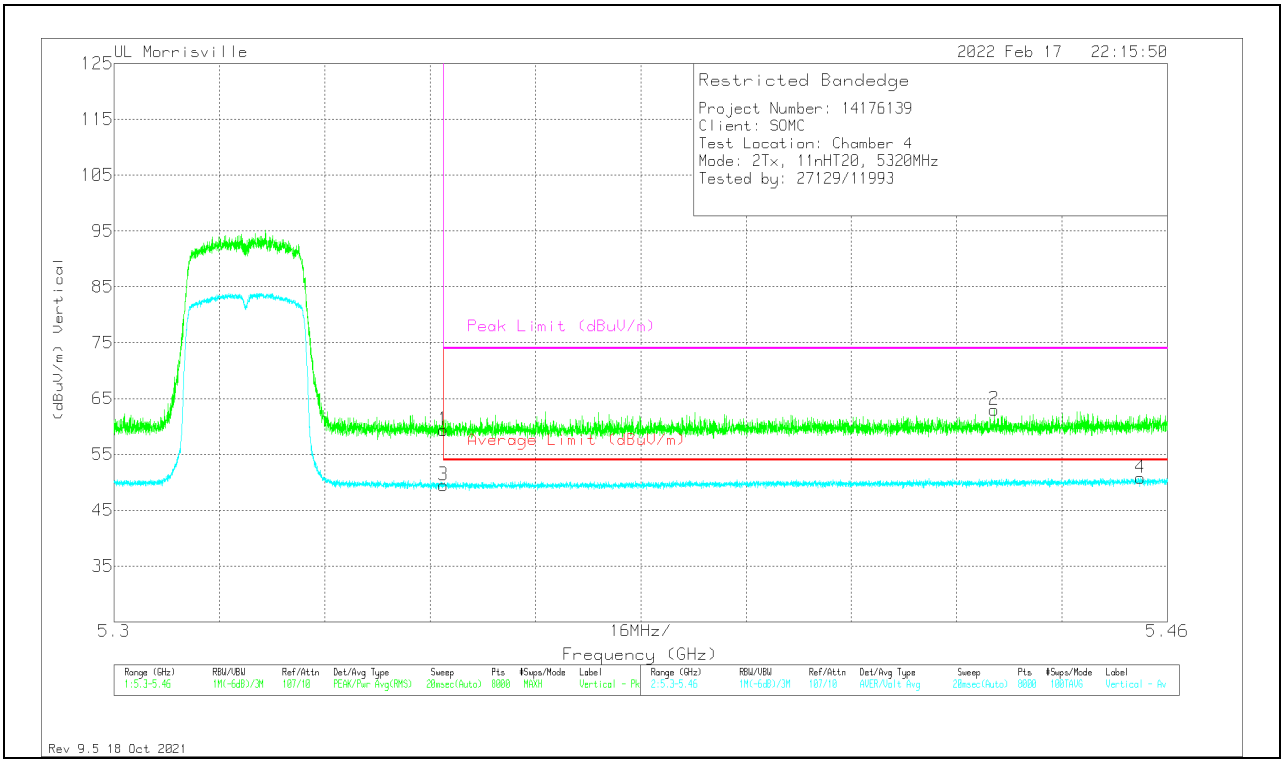
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 5.35001	35.76	Pk	34.5	-10.1	60.16	-	-	74	-13.84	350	100	H
2	* ** 5.42916	38.97	Pk	34.4	-9.9	63.47	-	-	74	-10.53	350	100	H
3	* ** 5.35001	24.96	ADV	34.5	-10.1	49.36	54	-4.64	-	-	350	100	H
4	* ** 5.4522	26.34	ADV	34.4	-9.8	50.94	54	-3.06	-	-	350	100	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - U-NII AD primary method, Linear Voltage Average

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 5.35001	34.96	Pk	34.5	-10.1	59.36	-	-	74	-14.64	2	100	V
2	* ** 5.43366	38.53	Pk	34.4	-9.9	63.03	-	-	74	-10.97	2	100	V
3	* ** 5.35001	25.08	ADV	34.5	-10.1	49.48	54	-4.52	-	-	2	100	V
4	* ** 5.45588	26.18	ADV	34.4	-9.8	50.78	54	-3.22	-	-	2	100	V

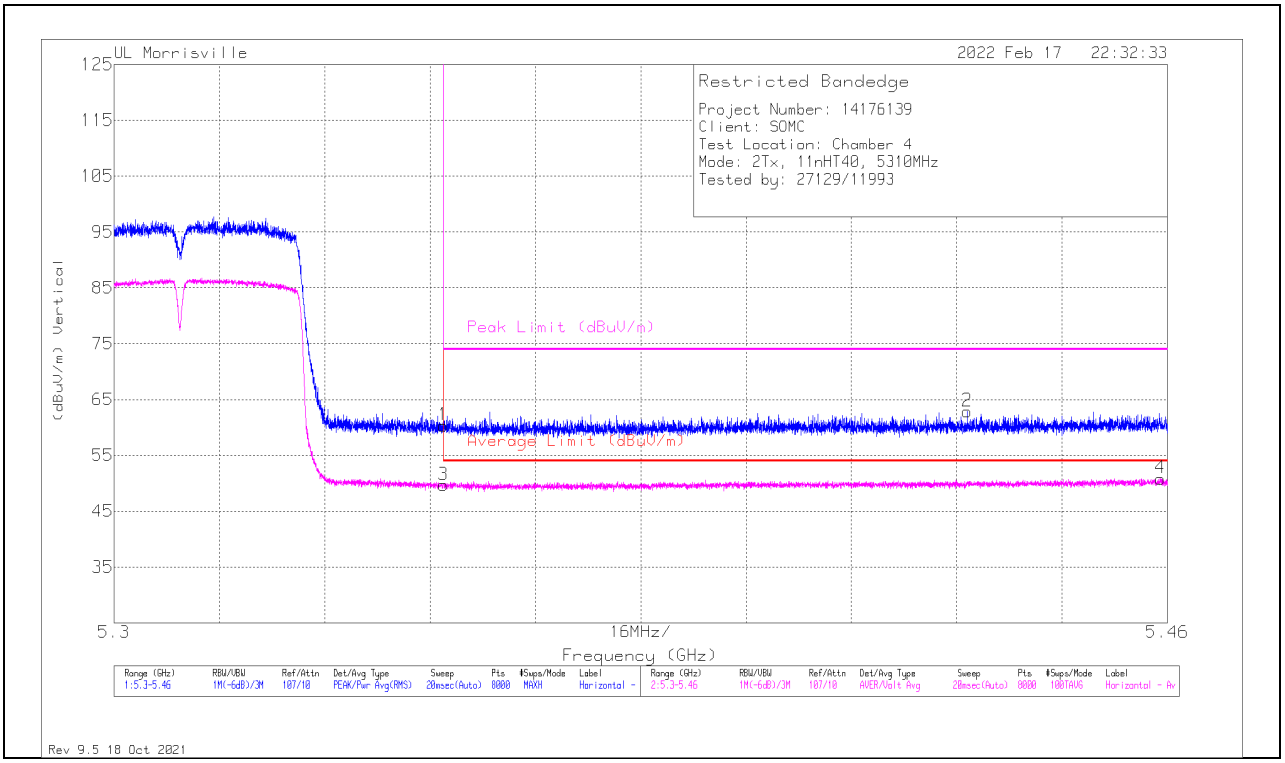
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - U-NII AD primary method, Linear Voltage Average

10.1.7. TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 5.3 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

BANDEDGE (HIGH CHANNEL)

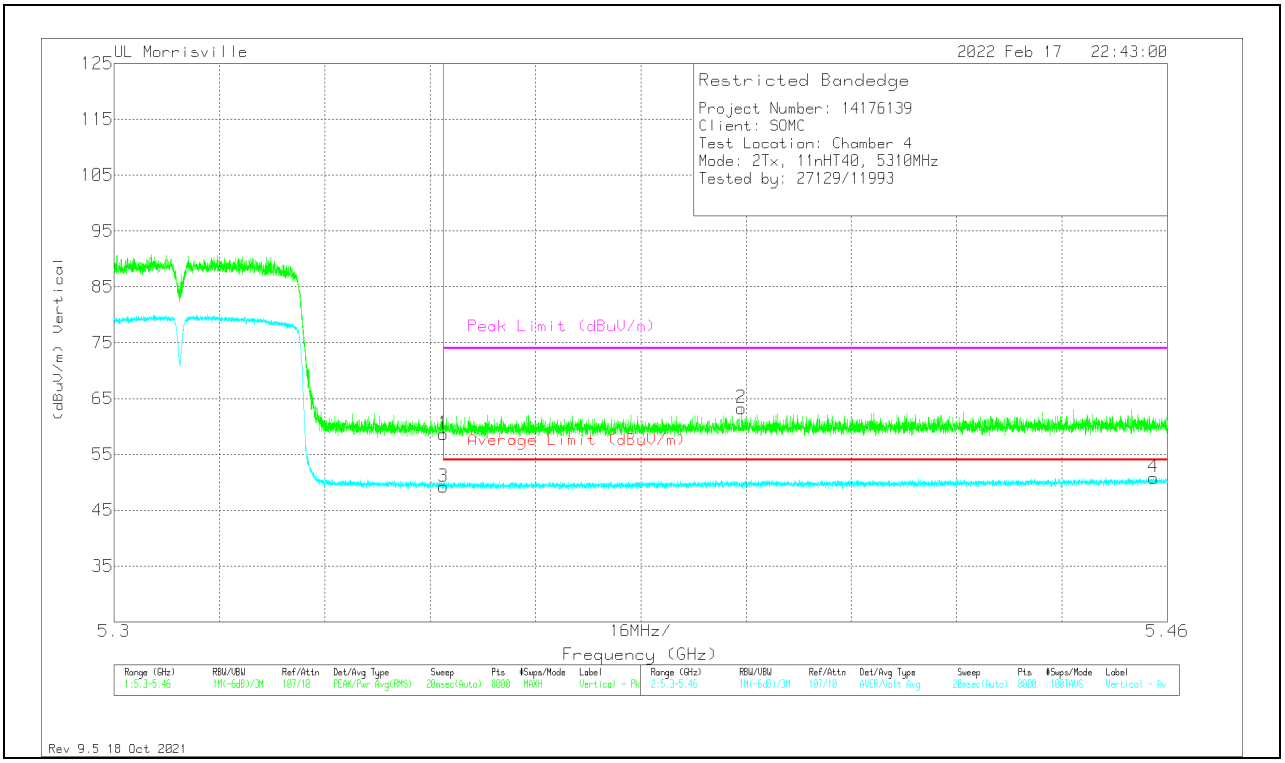
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 5.35001	35.97	Pk	34.5	-10.1	60.37	-	-	74	-13.63	1	103	H
2	* ** 5.42958	38.38	Pk	34.4	-9.9	62.88	-	-	74	-11.12	1	103	H
3	* ** 5.35001	25.28	ADV	34.5	-10.1	49.68	54	-4.32	-	-	1	103	H
4	* ** 5.45896	26.16	ADV	34.4	-9.7	50.86	54	-3.14	-	-	1	103	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - U-NII AD primary method, Linear Voltage Average

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 5.35001	34.25	Pk	34.5	-10.1	58.65	-	-	74	-15.35	4	384	V
2	* ** 5.39525	38.78	Pk	34.4	-9.9	63.28	-	-	74	-10.72	4	384	V
3	* ** 5.35001	24.8	ADV	34.5	-10.1	49.2	54	-4.8	-	-	4	384	V
4	* ** 5.45786	26.26	ADV	34.4	-9.8	50.86	54	-3.14	-	-	4	384	V

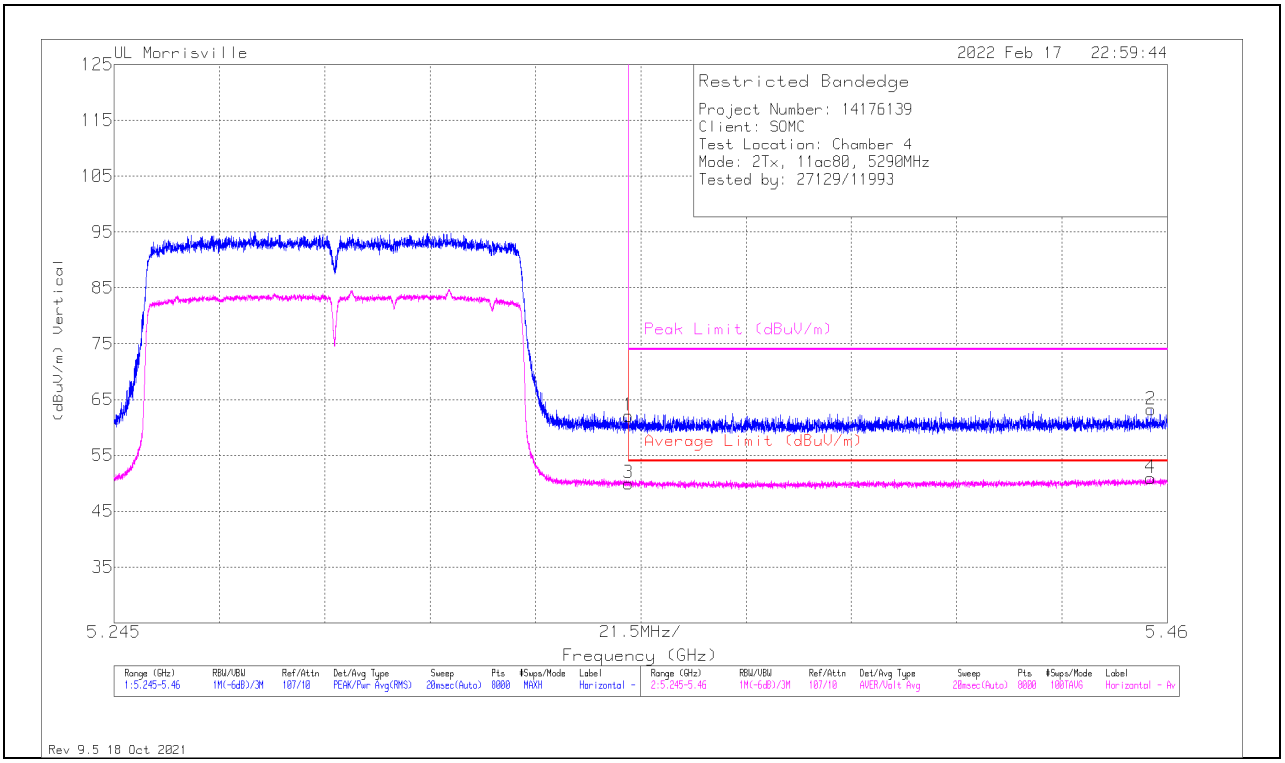
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - U-NII AD primary method, Linear Voltage Average

10.1.8. TX ABOVE 1 GHz 802.11ac VHT80 MODE IN THE 5.3 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

BANDEDGE (MID CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 5.35001	37.68	Pk	34.5	-10.1	62.08	-	-	74	-11.92	345	113	H
2	* ** 5.45664	38.63	Pk	34.4	-9.8	63.23	-	-	74	-10.77	345	113	H
3	* ** 5.35001	25.61	ADV	34.5	-10.1	50.01	54	-3.99	-	-	345	113	H
4	* ** 5.45658	26.37	ADV	34.4	-9.8	50.97	54	-3.03	-	-	345	113	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - U-NII AD primary method, Linear Voltage Average

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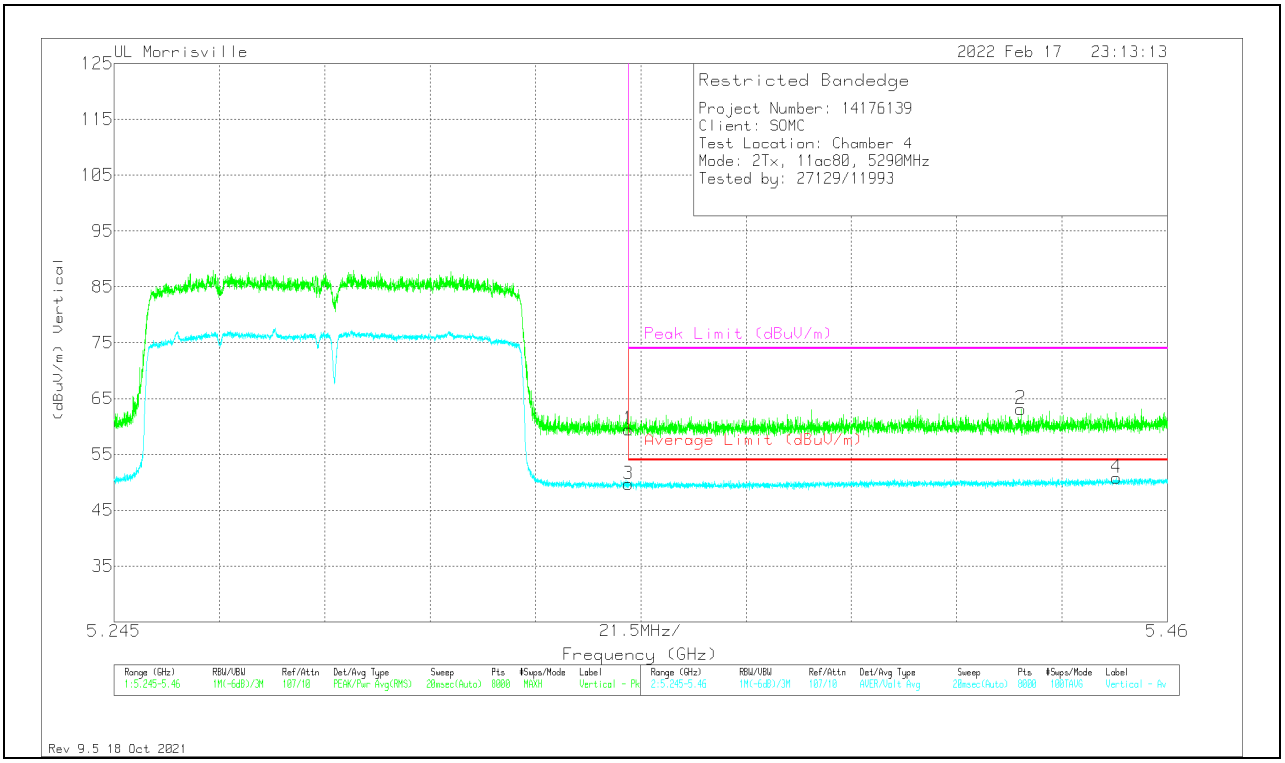
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 5.35001	35.1	Pk	34.5	-10.1	59.5	-	-	74	-14.5	357	100	V
2	* ** 5.43008	38.62	Pk	34.4	-9.9	63.12	-	-	74	-10.88	357	100	V
3	* ** 5.35001	25.3	ADV	34.5	-10.1	49.7	54	-4.3	-	-	357	100	V
4	* ** 5.44965	26.24	ADV	34.4	-9.8	50.84	54	-3.16	-	-	357	100	V

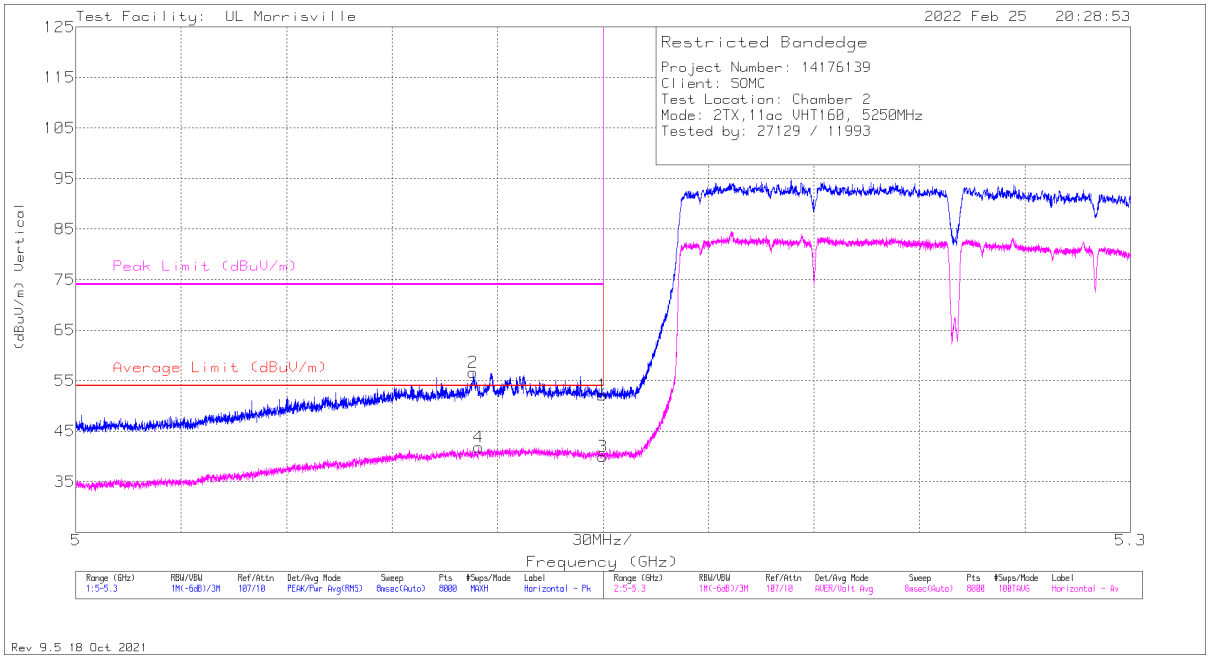
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - U-NII AD primary method, Linear Voltage Average

10.1.9. TX ABOVE 1 GHz 802.11ac VHT160 MODE IN THE 5.2/5.3 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

BANDEDGE (MID CHANNEL – 5.2 GHz BAND)

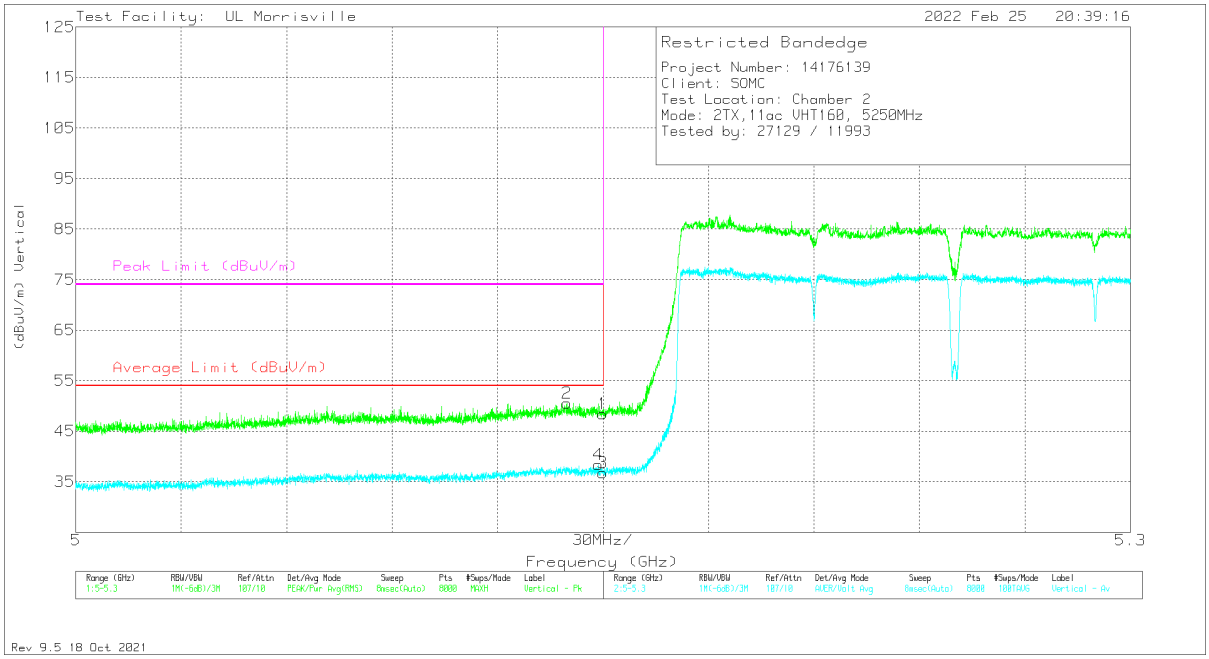
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Amp/Cbl/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 5.14998	40.25	Pk	34.1	-22.2	52.15	-	-	74	-21.85	349	200	H
2	* ** 5.11304	44.69	Pk	34.3	-22.4	56.59	-	-	74	-17.41	349	200	H
3	* ** 5.14998	28.12	ADV	34.1	-22.2	40.02	54	-13.98	-	-	349	200	H
4	* ** 5.11454	29.92	ADV	34.3	-22.4	41.82	54	-12.18	-	-	349	200	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - U-NII AD primary method, Linear Voltage Average

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Amp/Cbl/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 5.14998	36.49	Pk	34.1	-22.2	48.39	-	-	74	-25.61	222	305	V
2	* ** 5.13982	38.36	Pk	34.2	-22	50.56	-	-	74	-23.44	222	305	V
3	* ** 5.14998	24.9	ADV	34.1	-22.2	36.8	54	-17.2	-	-	222	305	V
4	* ** 5.14863	26.56	ADV	34.1	-22.3	38.36	54	-15.64	-	-	222	305	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - U-NII AD primary method, Linear Voltage Average

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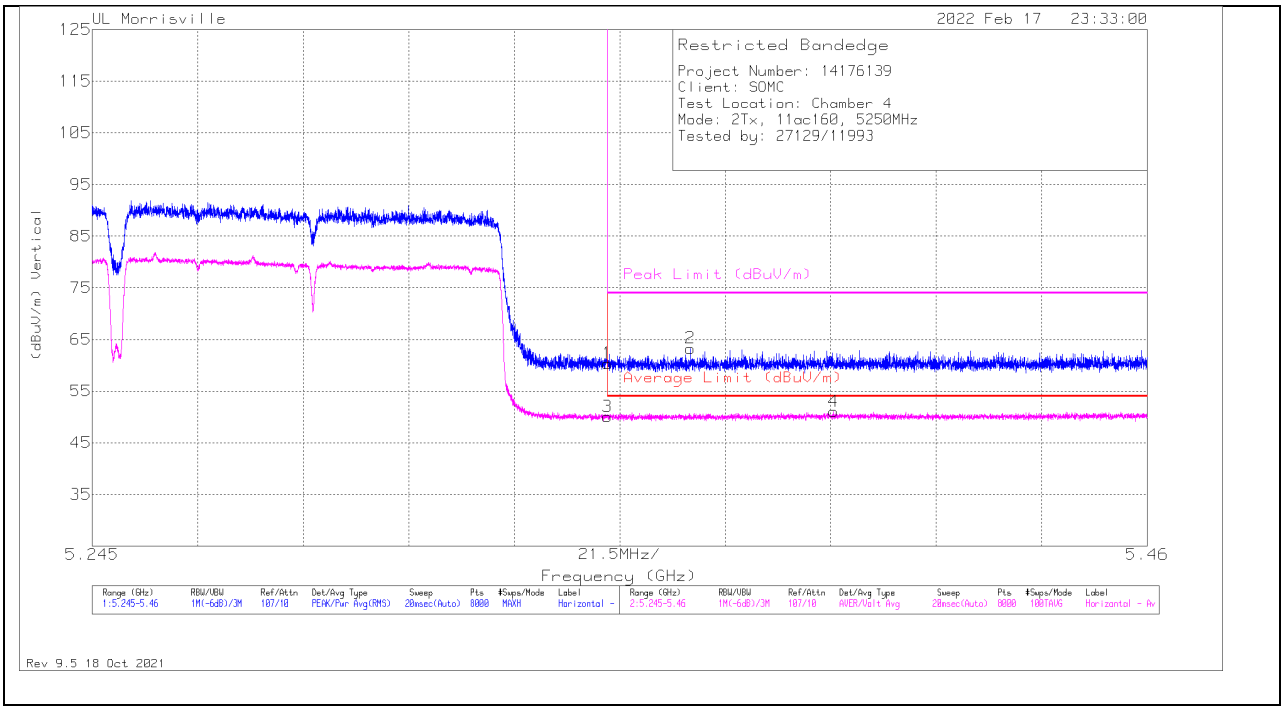
2TX Chain 0 + Chain 1 CDD MODE

BANDEDGE (MID CHANNEL – 5.3 GHz BAND)

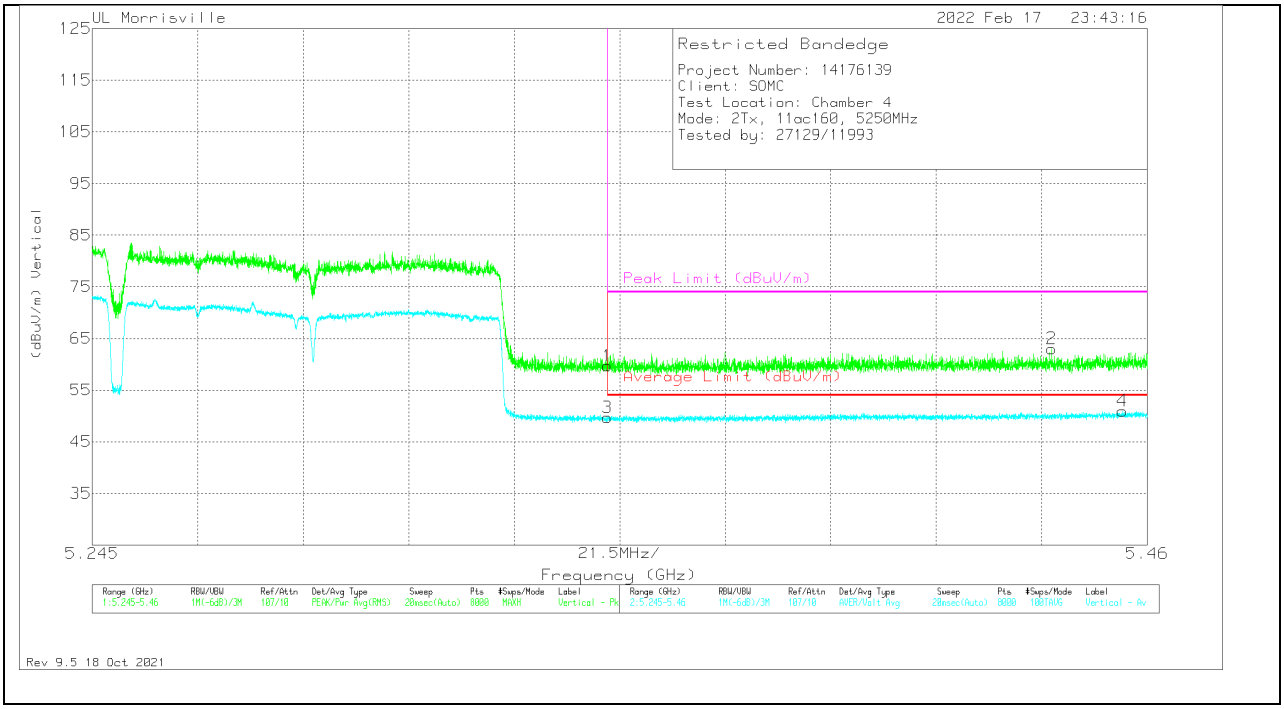
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 5.35001	35.93	Pk	34.5	-10.1	60.33	-	-	74	-13.67	335	100	H
2	* ** 5.36689	38.89	Pk	34.5	-10.1	63.29	-	-	74	-10.71	335	100	H
3	* ** 5.35001	25.66	ADV	34.5	-10.1	50.06	54	-3.94	-	-	335	100	H
4	* ** 5.39611	26.42	ADV	34.4	-9.8	51.02	54	-2.98	-	-	335	100	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - U-NII AD primary method, Linear Voltage Average

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 5.35001	35.27	Pk	34.5	-10.1	59.67	-	-	74	-14.33	23	215	V
2	* ** 5.44048	38.52	Pk	34.4	-9.9	63.02	-	-	74	-10.98	23	215	V
3	* ** 5.35001	25.29	ADV	34.5	-10.1	49.69	54	-4.31	-	-	23	215	V
4	* ** 5.45494	26.34	ADV	34.4	-9.8	50.94	54	-3.06	-	-	23	215	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
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11. SETUP PHOTOS

Please refer to R14176139-EP2 for setup photos

END OF TEST REPORT

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