TEST REPORT

Report Number: R14634918-E5a

Applicant	:	Sony Corporation 1-7-1 Konan Minato-ku Tokyo, 108-0075, Japan
FCC ID	:	PY7-12907W
EUT Description	:	GSM/WCDMA/LTE/5G 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:
2023-03-16

Prepared by:
UL LLC
12 Laboratory Dr.
Research Triangle Park, NC 27709 U.S.A.
TEL: (919) 549-1400

CERT #0751.06

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	2023-02-24	Initial Issue	Brian Kiewra
V2	2023-03-08	Corrected typos throughout report. Removed <30MHz note in Section 10 since this testing is found in another report	Brian Kiewra
V3	2023-03-16	Added clarification to the 2Tx covering 1Tx note in section 6.5	Brian Kiewra

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Sony Corporation
1-7-1 Konan Minato-ku
Tokyo, 108-0075, Japan

EUT DESCRIPTION: GSM/WCDMA/LTE/5G Phone with BT, DTS/UNII a/b/g/n/ac/ax, GPS, WPT & NFC

SERIAL NUMBERS: QV7700E1FN, QV7700FRFN, QV70015FA

SAMPLE RECEIPT DATE: 2022-12-12

DATE TESTED: 2023-01-31 to 2023-02-13

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 report apply 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:

Michael Antola
Staff Engineer
Consumer, Medical and IT Segment
UL LLC

Prepared By:

Brian Kiewra
Project Engineer
Consumer, Medical and IT Segment
UL LLC

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2. TEST RESULT SUMMARY

This report contains data/info provided by the customer 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.
Below is a list of the data/info provided by the customer:
1) Antenna gain and type (see section 6.3)
2) Worst-case data rates (see section 6.5)

Note - This report covers the 802.11a/n/ac mode in the 5.2 and 5.3GHz bands testing 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	Reporting purposes only	Per ANSI C63.10 Sections 6.9.2
15.407 (a) (1-2), (h) (1)	Output Power	Compliant	None
15.407 (a) (1-2)	PSD		
15.209, 15.205, 15.407 (b)	Radiated Emissions		
15.207	AC Mains Conducted Emissions	See comment	Results report in UL test report R14634918-E5b.

3. METHODOLOGY

The tests documented in this report were performed in accordance with;
- FCC 47 CFR Part 2
- FCC 47 CFR 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	

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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 where applicable 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 the apparatus:

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

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/5G Phone with BT, DTS/UNII a/b/g/n/ac/ax, GPS, WPT & NFC. This report covers the 802.11a/n/ac mode in the 5.2 and 5.3GHz bands testing 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	13.36	21.68
5180-5240	802.11n HT20 CDD	13.33	21.53
5190-5230	802.11n HT40 CDD	13.85	24.27
5210	802.11ac VHT80 CDD	13.43	22.03

5.3 GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5.3 GHz band, 2TX			
5260 - 5320	802.11a CDD	13.18	20.80
5260 - 5320	802.11n HT20 CDD	13.18	20.80
5270 - 5310	802.11n HT40 CDD	13.76	23.77
5290	802.11ac VHT80 CDD	13.11	20.46
5250	802.11ac VHT160 CDD	13.41	21.93

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

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

Chain	Designation in Documentation	Type	Frequency Range (MHz)	Maximum Gain (dBi)
0	WiFi Main	Loop	5180-5320	-0.29
1	WiFi Sub	Monopole	5180-5320	0.61

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6.4. SOFTWARE AND FIRMWARE

The firmware version used during testing was 0.81.

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 Y orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Y 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 R14634918-E5b.

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 R14634918-E5b.

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. Based on preliminary testing, 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	Dell	Inspiron 15 3000	5KPQJP3	NA
AC Adaptor	Sony	XQZ-UC1	1821W34209742	NA
Headphones	Sony	MDR-EX15AP	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-C	1	USB-C	Shielded	<3m	XQZ-UB1
2	Aux	1	AUX	Shielded	<3m	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 R14634918-EP5 for setup diagrams

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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)

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.
SA0025	Spectrum Analyzer	Keysight Technologies	N9030A	2022-05-02	2023-05-02
PWM005	RF Power Meter	Keysight Technologies	N1912A	2022-09-02	2024-09-02
PWM001 (PRE0136343)	RF Power Meter	Keysight Technologies	N1912A	2022-08-30	2023-08-30
PWS001 (PRE0137347)	Peak and Avg Power Sensor, 50MHz to 18GHz	Keysight Technologies	N1921A	2022-07-07	2023-07-07
PWS002	Peak and Avg Power Sensor, 50MHz to 18GHz	Keysight Technologies	N1921A	2022-09-27	2023-09-27
PWS005	Peak and Avg Power Sensor, 50MHz to 18GHz	Keysight Technologies	N1921A	2022-06-15	2023-06-15
HI0090	Environmental Meter	Fisher Scientific	15-077-963	2022-07-20	2023-07-20
76021	DC Regulated Power Supply	CircuitSpecialists.Com	CSI3005X5	NA	NA
SOFTEMI	Antenna Port Software	UL	Version 2022.8.16	NA	NA
MM0167 (PRE0126458)	True RMS Multimeter	Agilent	U1232A	2021-08-17	2023-08-17
CBL091	Micro-Coax UTiFLEX Cable Assembly, Low Loss,40Ghz	Carlisle Interconnect Technologies	UFA147A-2-0360-200200	2022-02-15	2023-02-15
CBL092	Micro-Coax UTiFLEX Cable Assembly, Low Loss,40Ghz	Carlisle Interconnect Technologies	UFA147A-2-0360-200200	2022-02-15	2023-02-15
226561	SMA Coaxial 10dB Attenuator 25MHz-18GHz	CentricRF	C18S2-10	2022-05-03	2023-05-03
226563	SMA Coaxial 10dB Attenuator 25MHz-18GHz	CentricRF	C18S2-10	2022-05-03	2023-05-03

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Test Equipment Used - Radiated Disturbance Emissions Test Equipment (Morrisville – Chamber 1)

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
1-18 GHz					
AT0072	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2022-05-11	2023-05-11
Gain-Loss Chains					
C1-SAC03	Gain-loss string: 1-18GHz	Various	Various	2022-12-02	2023-12-02
Receiver & Software					
206496	Spectrum Analyzer	Rohde & Schwarz	ESW44	2022-02-15	2023-02-15
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
Additional Equipment used					
200539	Environmental Meter	Fisher Scientific	15-077-963 s/n 181474341	2022-10-05	2023-10-05

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

Equipment 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	2022-03-21	2023-03-21
Gain-Loss Chains					
C2-SAC03	Gain-loss string: 1-18GHz	Various	Various	2022-05-10	2023-05-10
Receiver & Software					
197955	Spectrum Analyzer	Rohde & Schwarz	ESW44	2022-03-08	2023-03-08
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
Additional Equipment used					
210642	Environmental Meter	Fisher Scientific	15-077-963 s/n 210701942	2021-08-16	2023-08-16

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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)
802.11a CDD	2.094	2.114	0.991	99.05	0.00
802.11n HT20 CDD	5.429	5.447	0.997	99.67	0.00
802.11n HT40 CDD	5.426	5.447	0.996	99.61	0.00
802.11ac VHT80 CDD	5.429	5.447	0.997	99.67	0.00
802.11ac VHT160 CDD	5.426	5.447	0.996	99.61	0.00

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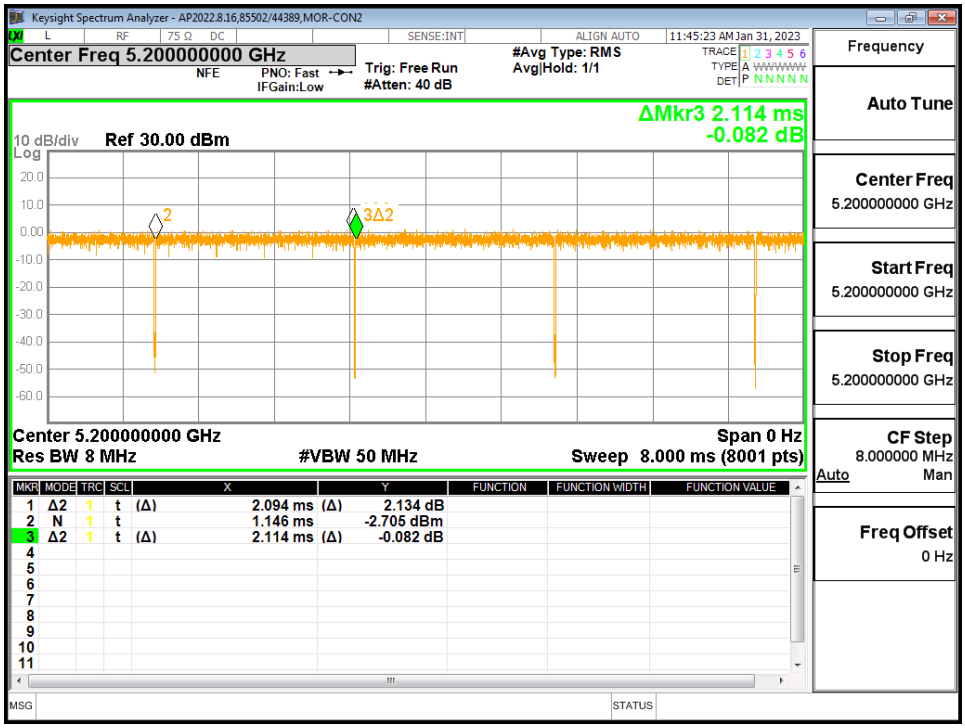
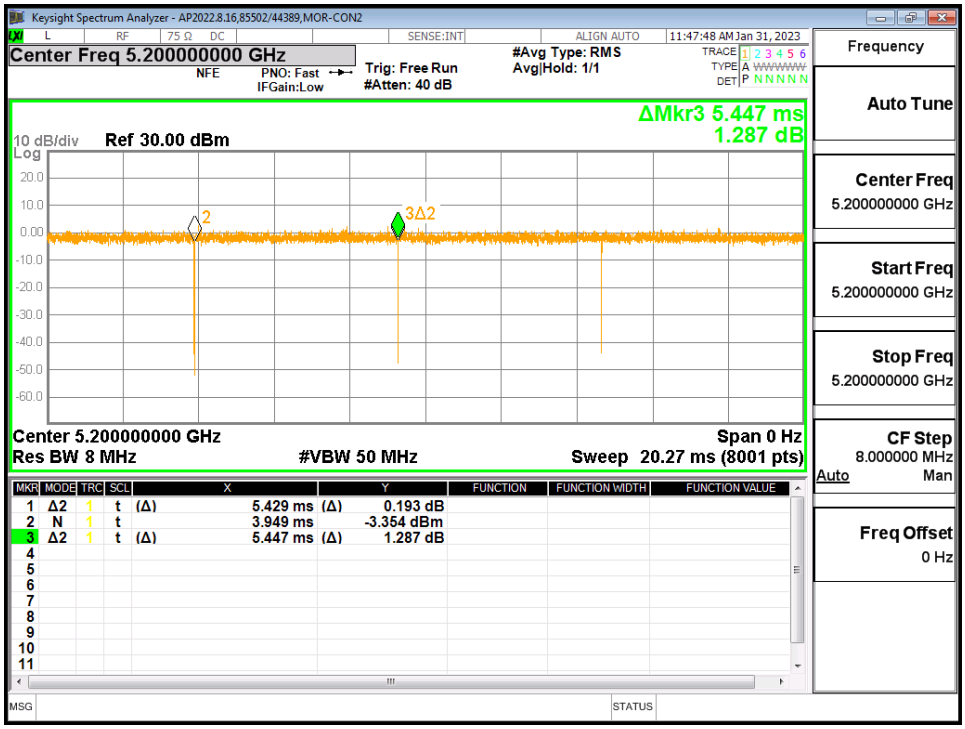
DUTY CYCLE PLOTS



DUTY CYCLE 802.11a CDD MODE



DUTY CYCLE 802.11n HT20 MODE

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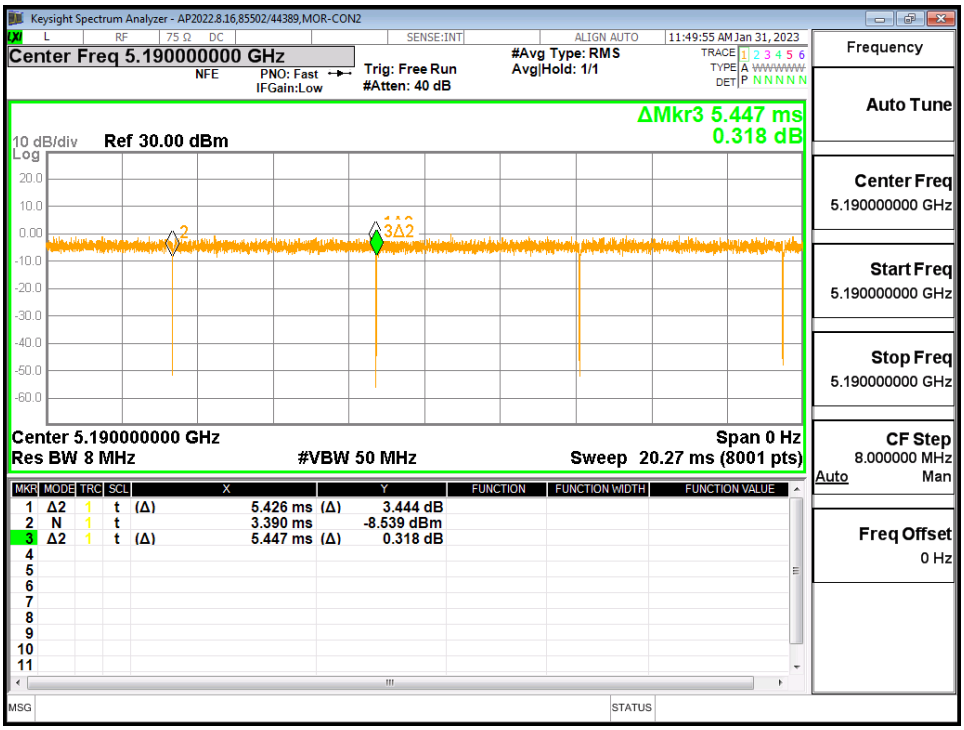
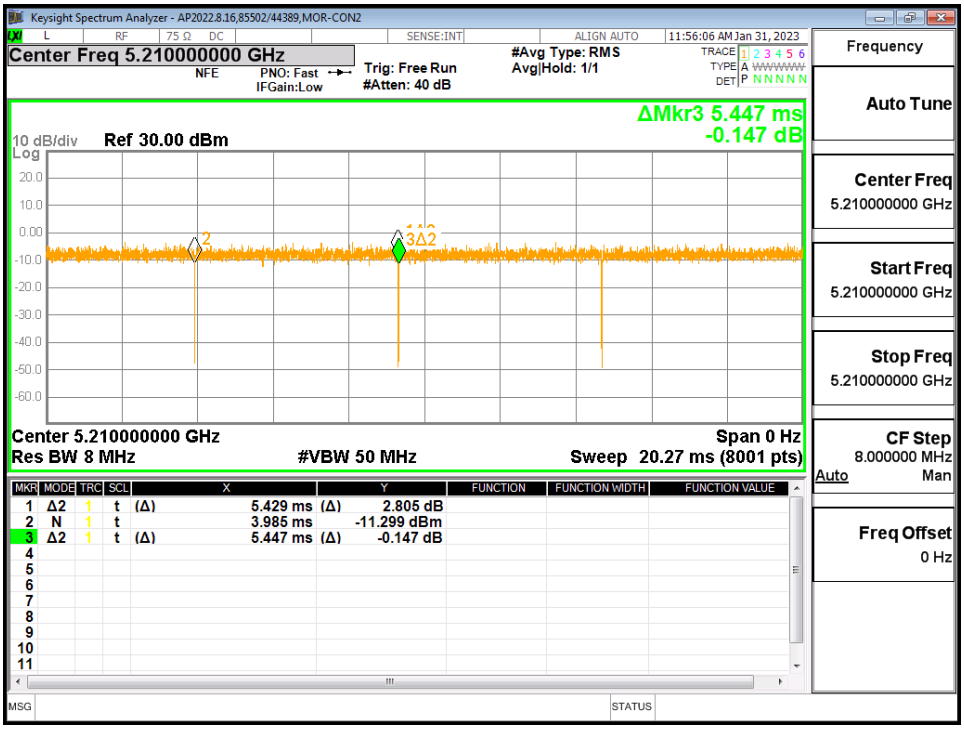


DUTY CYCLE 802.11n HT40 MODE



DUTY CYCLE 802.11ac VHT80 MODE

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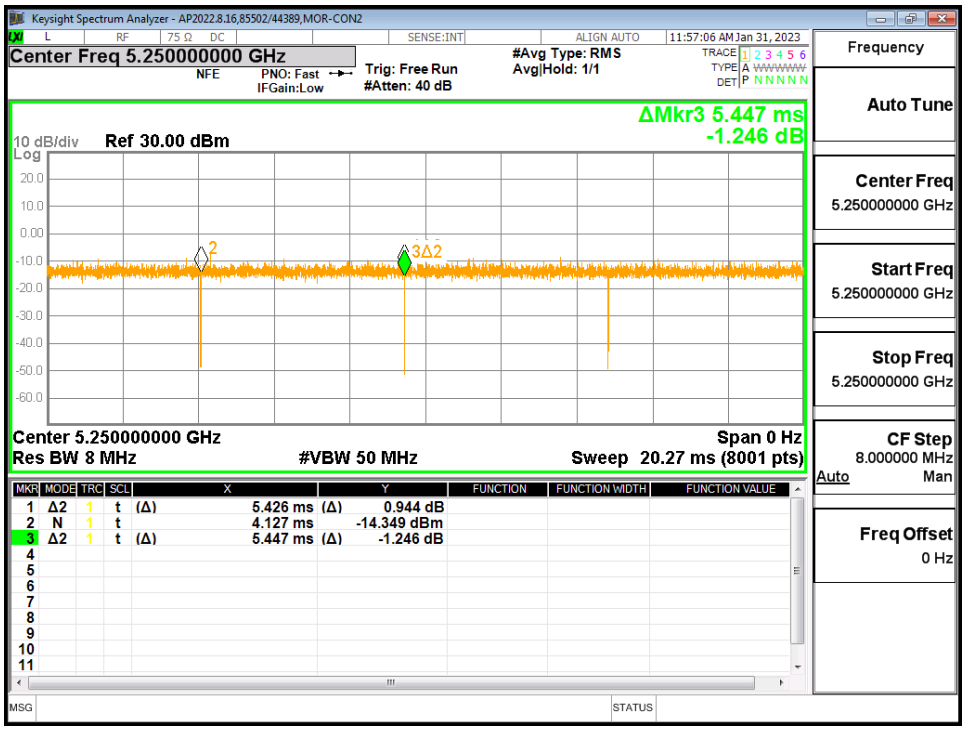

DUTY CYCLE 802.11ac VHT160 MODE

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9.2. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

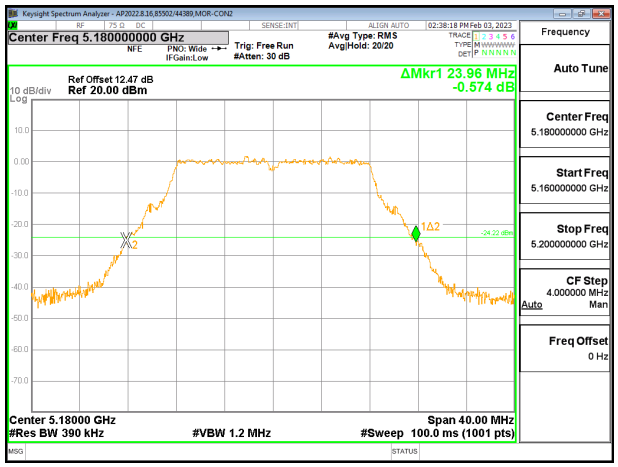
RESULTS

9.2.1. 802.11a MODE IN THE 5.2 GHz BAND

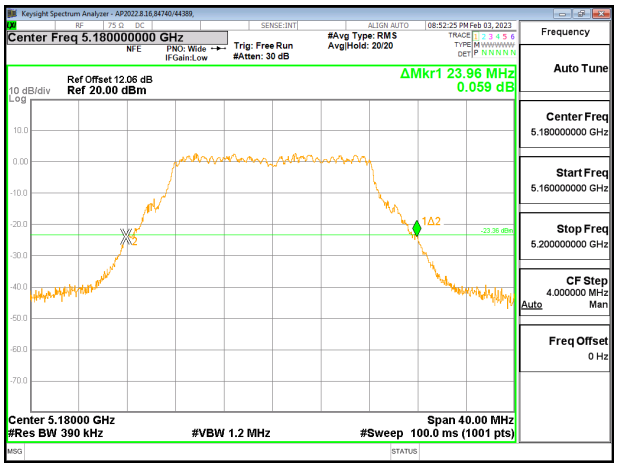
2TX Chain 0 + Chain 1 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5180	23.96	23.96
Mid	5200	23.96	23.76
High	5240	23.92	23.72

LOW CHANNEL



LOW CHANNEL CHAIN 0



LOW CHANNEL CHAIN 1

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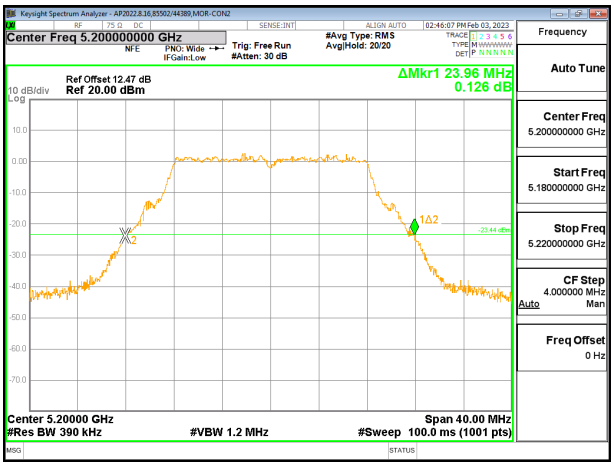
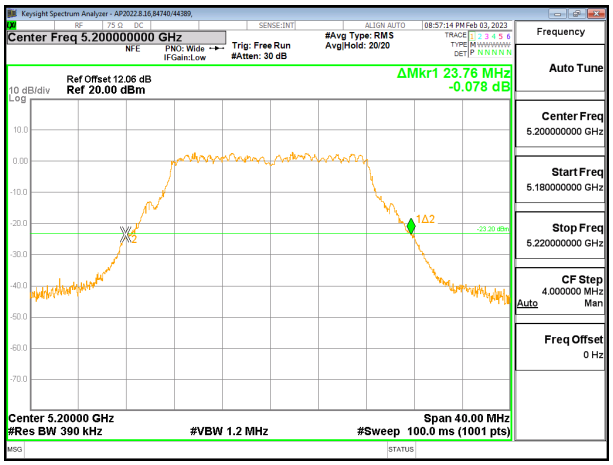
MID CHANNEL

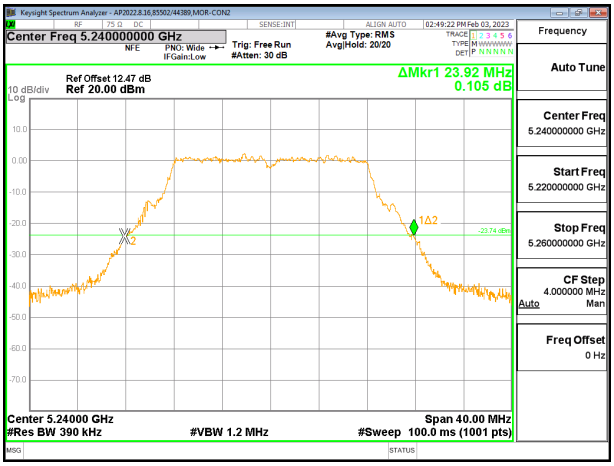


MID CHANNEL CHAIN 0

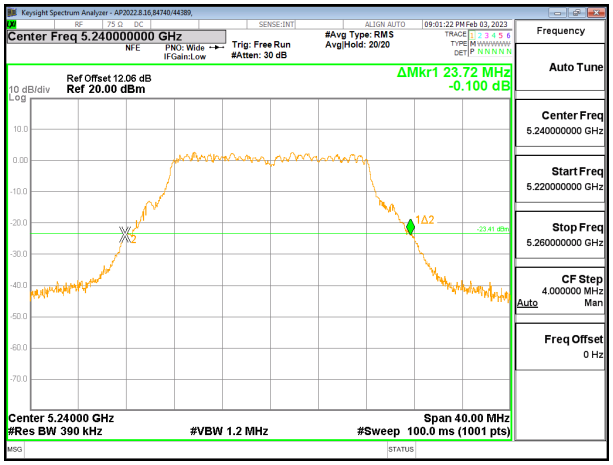


MID CHANNEL CHAIN 1

HIGH CHANNEL



HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1

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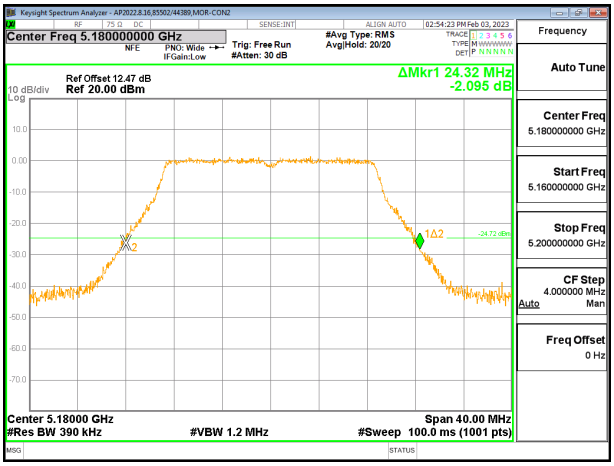
9.2.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

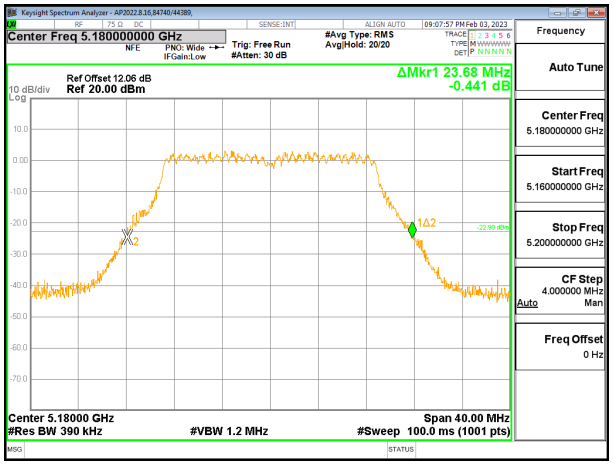
2TX Chain 0 + Chain 1 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5180	24.32	23.68
Mid	5200	24.28	23.68
High	5240	24.44	24.04

LOW CHANNEL

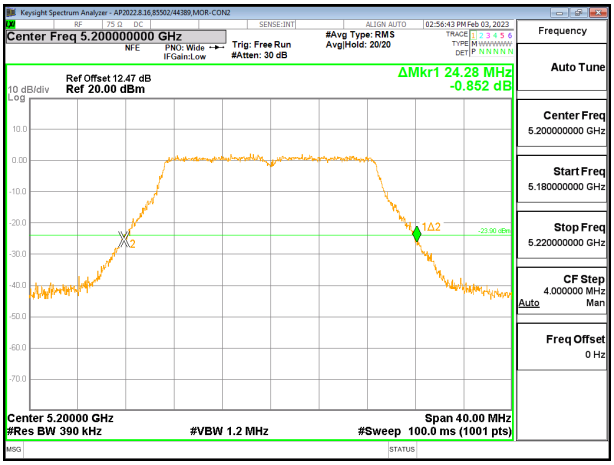


LOW CHANNEL CHAIN 0



LOW CHANNEL CHAIN 1

MID CHANNEL



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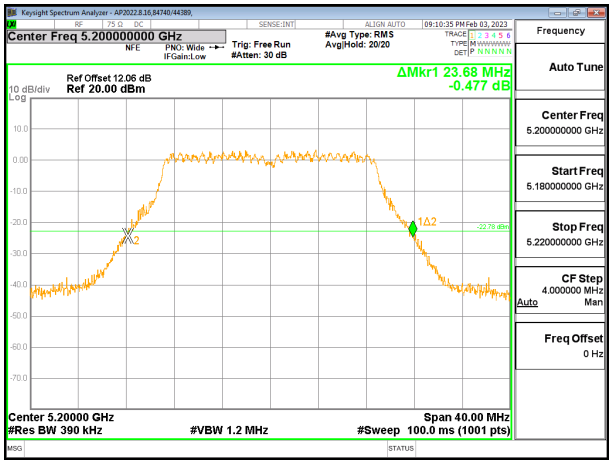

MID CHANNEL CHAIN 1

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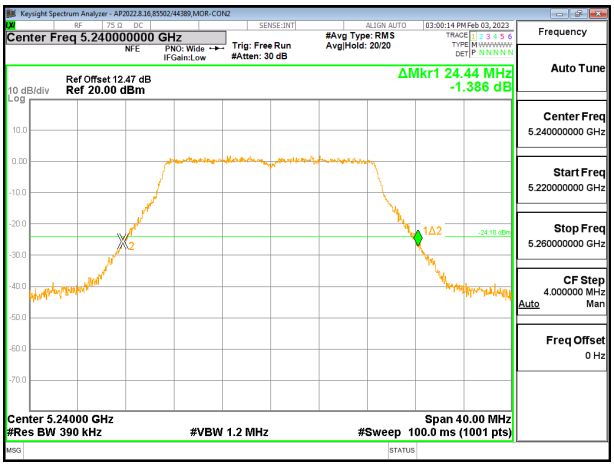
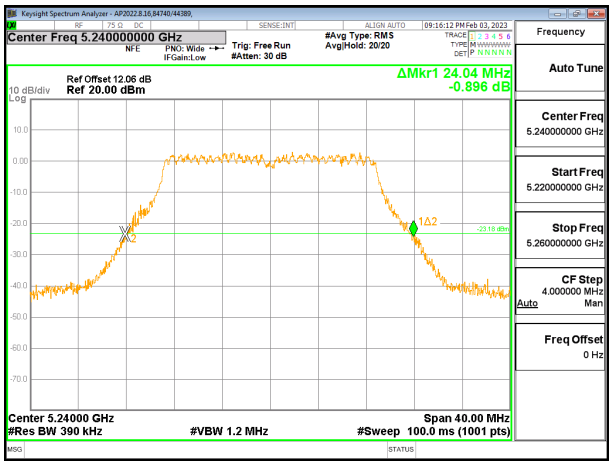
HIGH CHANNEL



HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1

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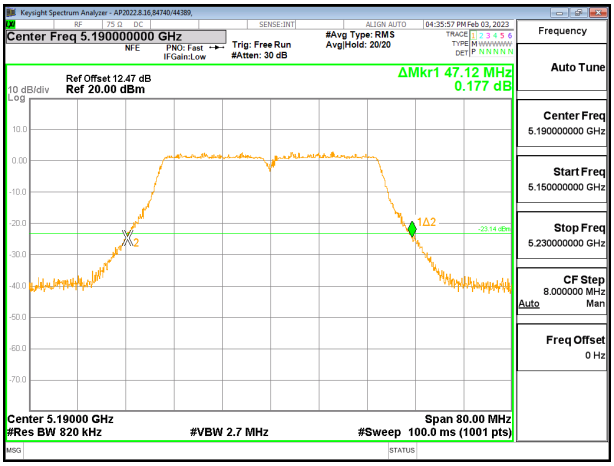
9.2.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

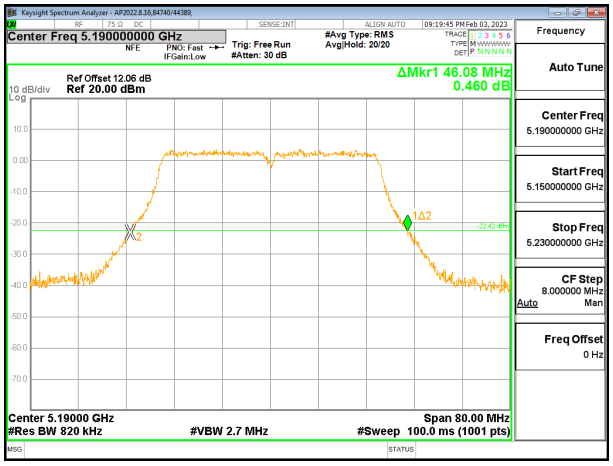
2TX Chain 0 + Chain 1 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5190	47.12	46.08
High	5230	46.80	46.32

LOW CHANNEL

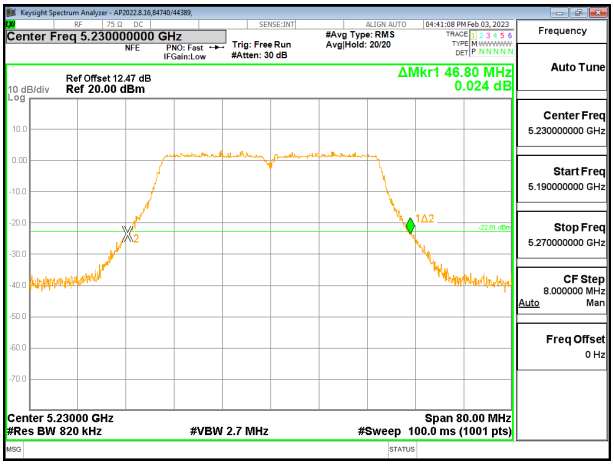


LOW CHANNEL CHAIN 0

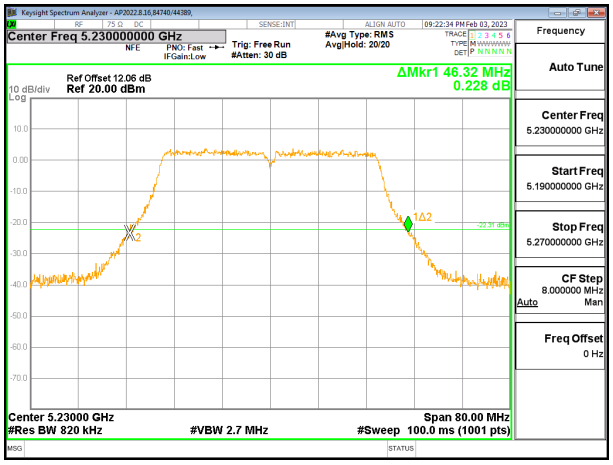


LOW CHANNEL CHAIN 1

HIGH CHANNEL



HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1

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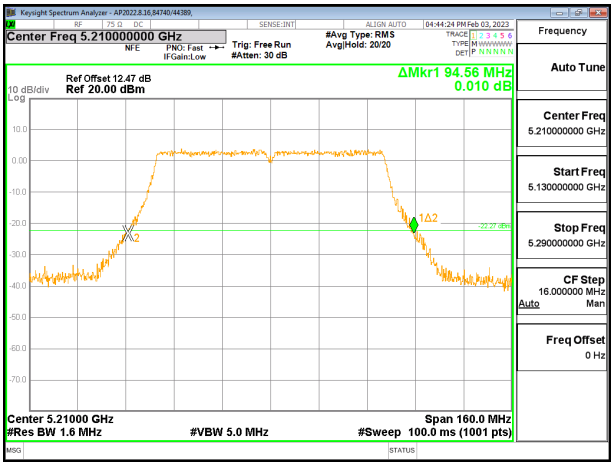
9.2.4. 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

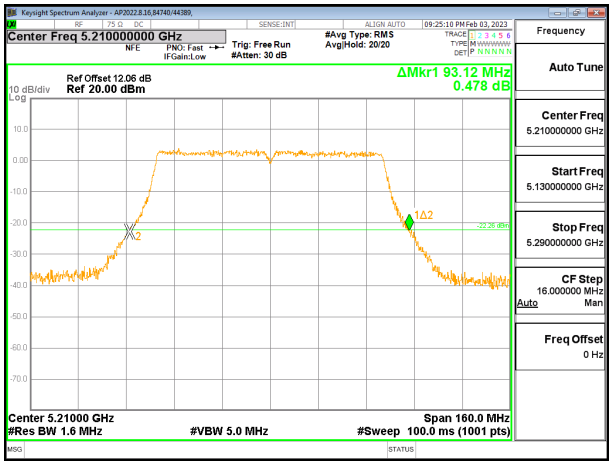
2TX Chain 0 + Chain 1 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5210	94.56	93.12

MID CHANNEL



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

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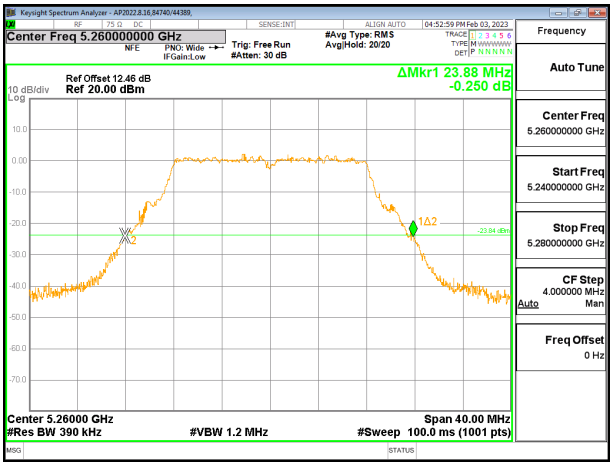
9.2.5. 802.11a MODE IN THE 5.3 GHz BAND

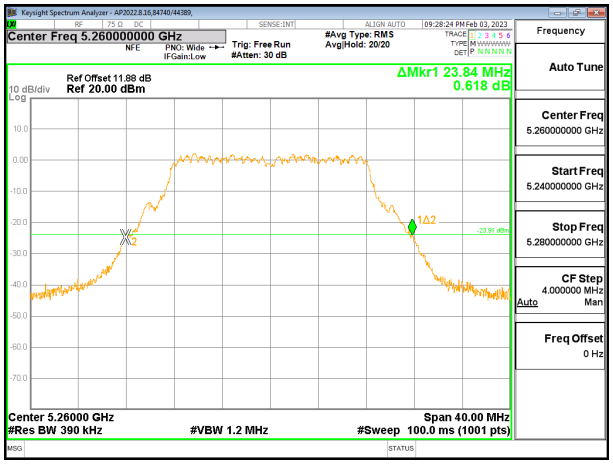
2TX Chain 0 + Chain 1 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5260	23.88	23.84
Mid	5300	24.00	23.60
High	5320	24.00	23.56

LOW CHANNEL

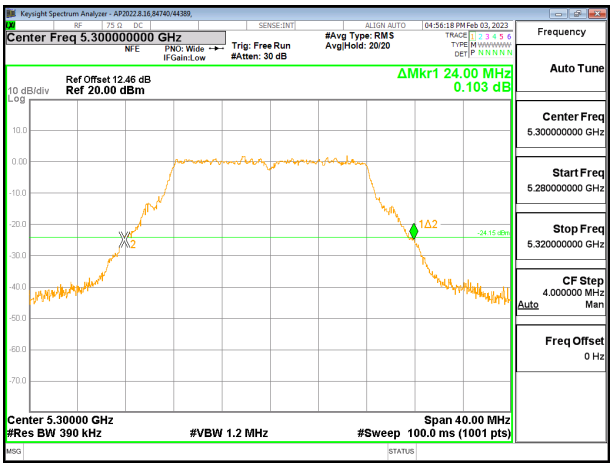


LOW CHANNEL CHAIN 0

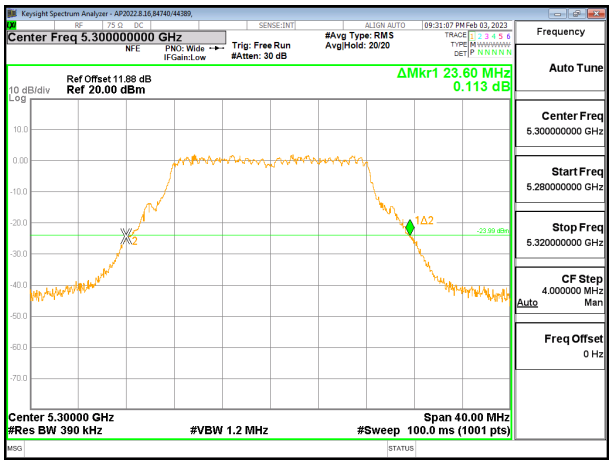


LOW CHANNEL CHAIN 1

MID CHANNEL



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

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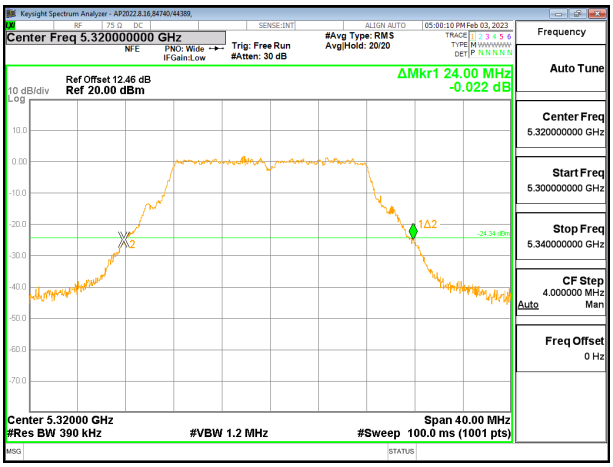
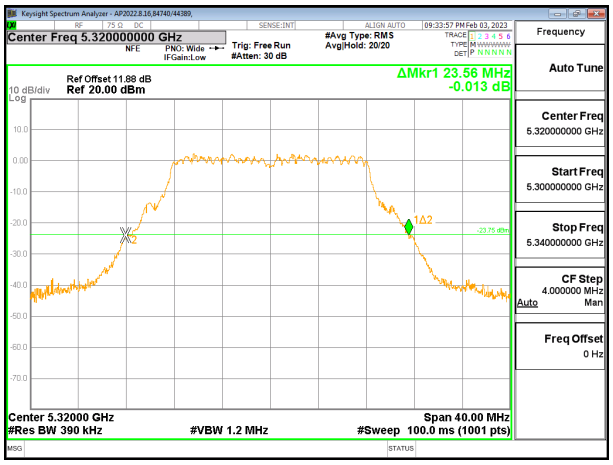
HIGH CHANNEL



HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1

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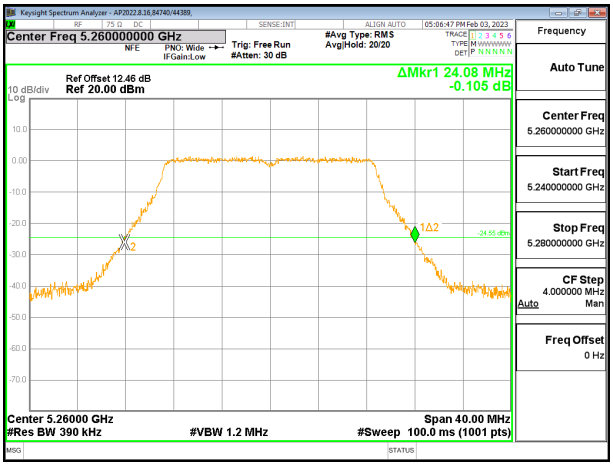
9.2.6. 802.11n HT20 MODE IN THE 5.3 GHz BAND

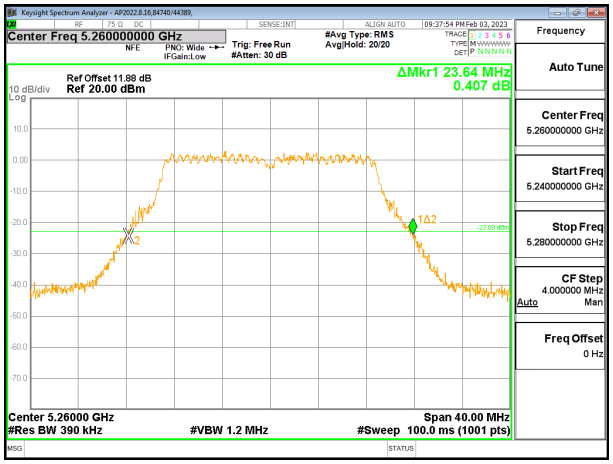
2TX Chain 0 + Chain 1 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5260	24.08	23.64
Mid	5300	24.20	24.20
High	5320	23.96	23.56

LOW CHANNEL

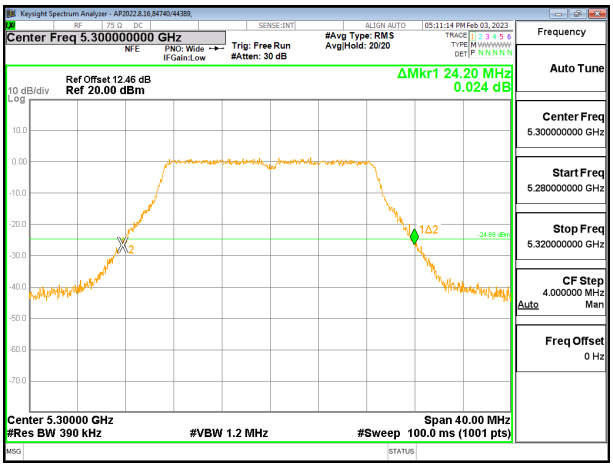


LOW CHANNEL CHAIN 0

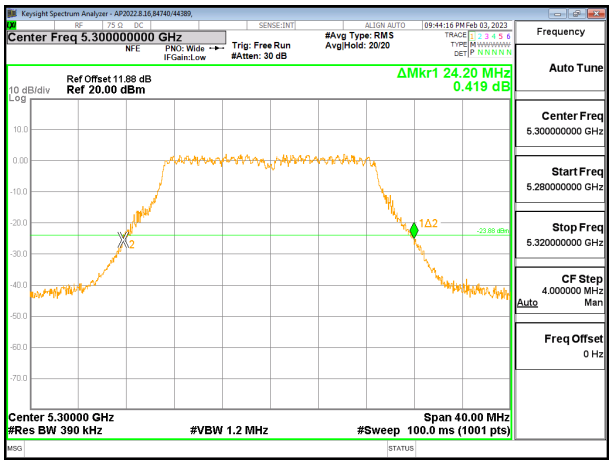


LOW CHANNEL CHAIN 1

MID CHANNEL



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

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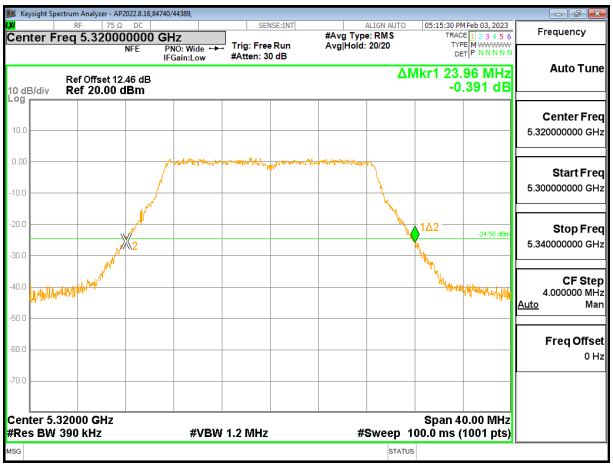
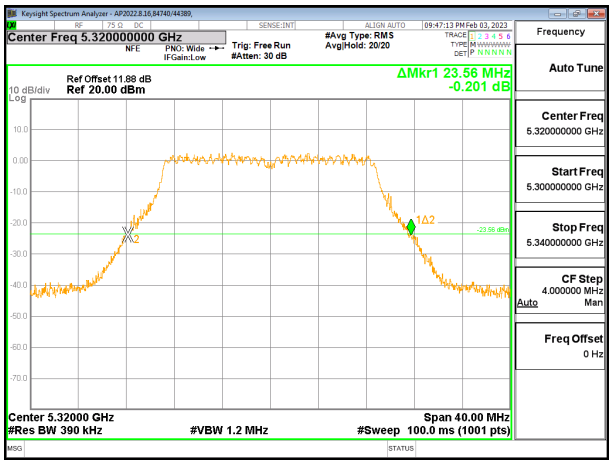
HIGH CHANNEL



HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1

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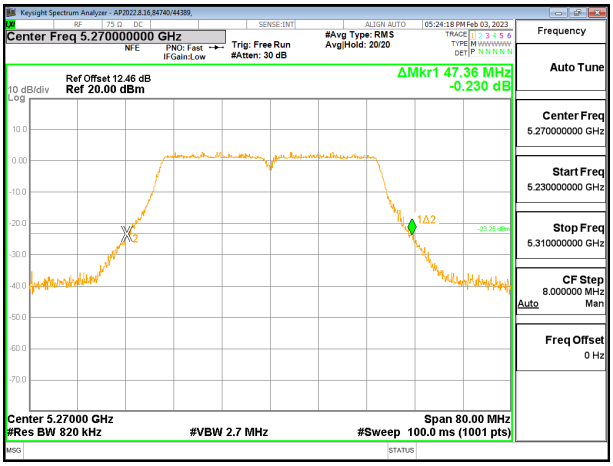
9.2.7. 802.11n HT40 MODE IN THE 5.3 GHz BAND

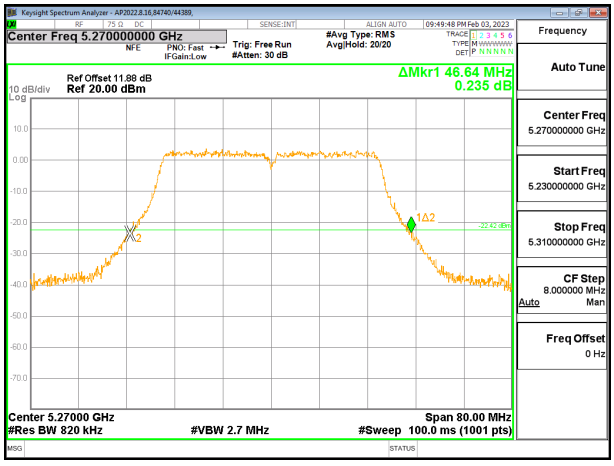
2TX Chain 0 + Chain 1 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Low	5270	47.36	46.64
High	5310	46.72	46.24

LOW CHANNEL

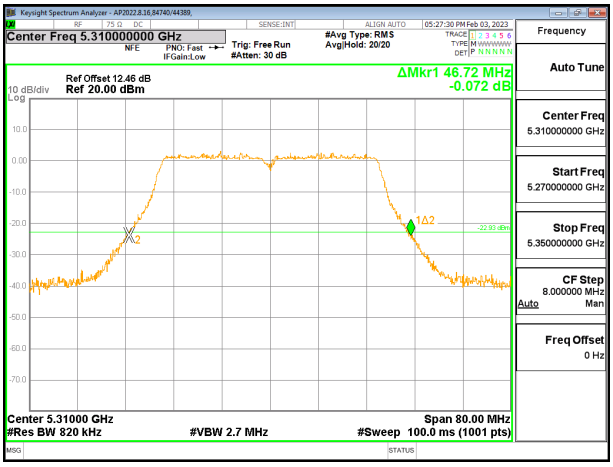


LOW CHANNEL CHAIN 0

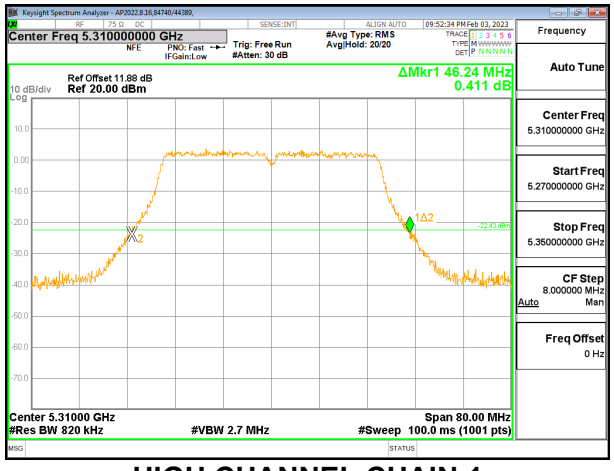


LOW CHANNEL CHAIN 1

HIGH CHANNEL



HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1

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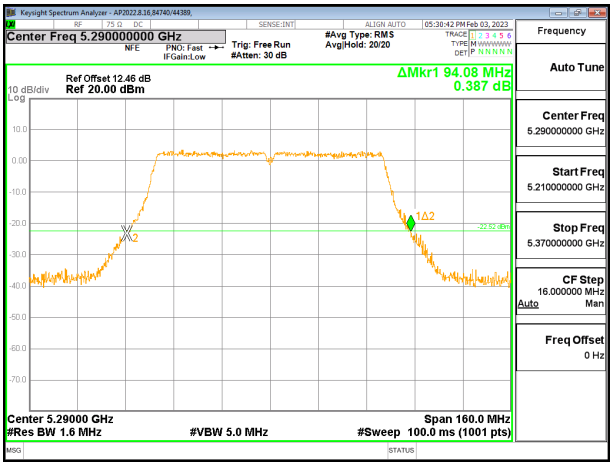
9.2.8. 802.11ac VHT80 MODE IN THE 5.3 GHz BAND

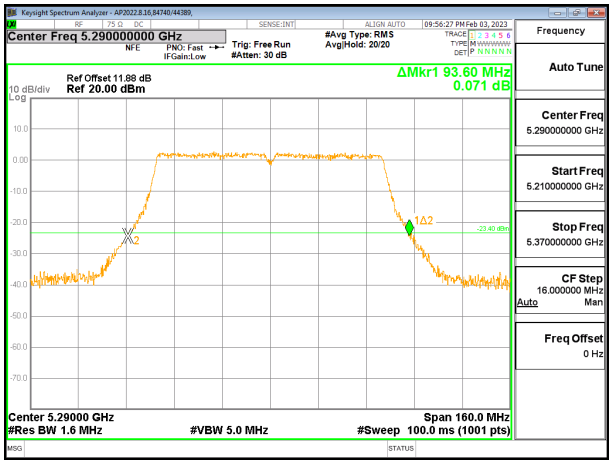
2TX Chain 0 + Chain 1 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5290	94.08	93.60

MID CHANNEL



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

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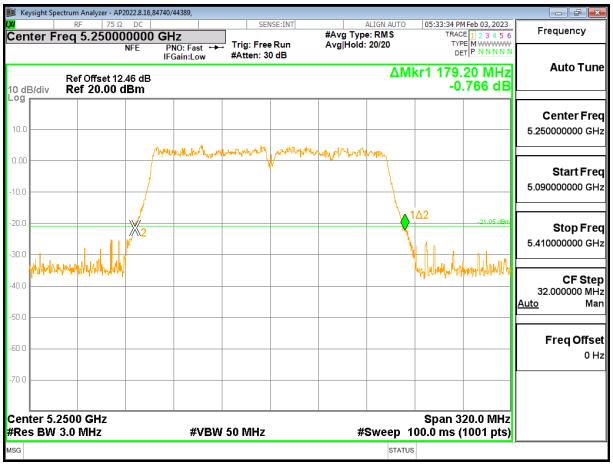
9.2.9. 802.11ac VHT160 MODE IN THE 5.2/5.3 GHz BAND

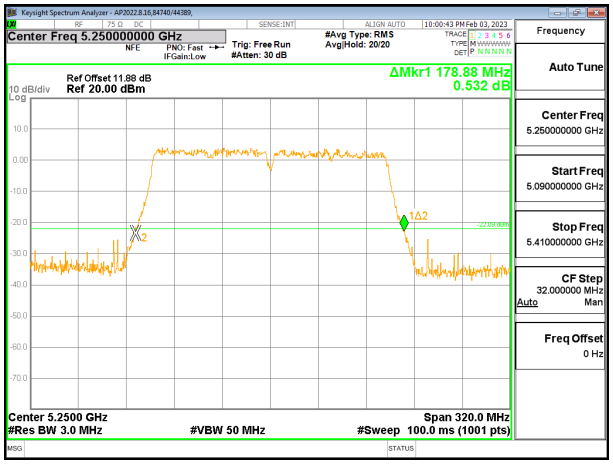
2TX Chain 0 + Chain 1 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Chain 0 (MHz)	26 dB Bandwidth Chain 1 (MHz)
Mid	5250	179.20	178.88

MID CHANNEL



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

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9.3. OUTPUT POWER AND PSD

LIMITS

FCC §15.407

Band 5.15–5.25 GHz
(a)(1)(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
(a)(2)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 (MHz)	Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)	Correlated Chains Directional Gain (dBi)
5180-5320	-0.29	0.61	0.18	3.18

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RESULTS

9.3.1. 802.11a MODE IN THE 5.2 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

Test Engineer:	85502/44389, 84740/44389
Test Date:	2023-02-02 to 2023-02-03

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	0.18	3.18	24.00	11.00
Mid	5200	0.18	3.18	24.00	11.00
High	5240	0.18	3.18	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	9.63	10.06	12.86	24.00	-11.14
Mid	5200	10.43	10.26	13.36	24.00	-10.64
High	5240	10.27	10.16	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	5180	-2.68	-2.18	0.59	11.00	-10.41
Mid	5200	-1.96	-1.97	1.04	11.00	-9.96
High	5240	-2.25	-2.16	0.80	11.00	-10.20

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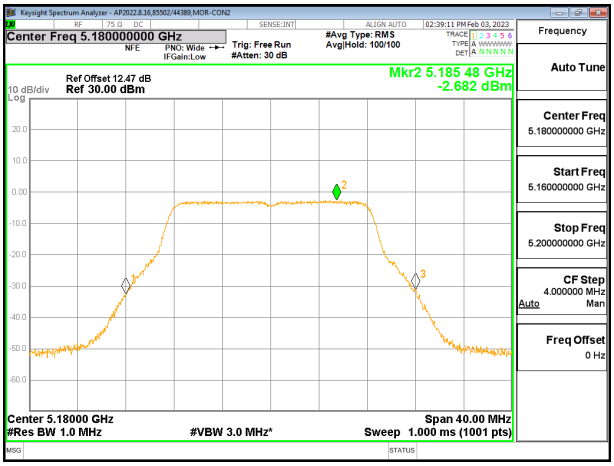
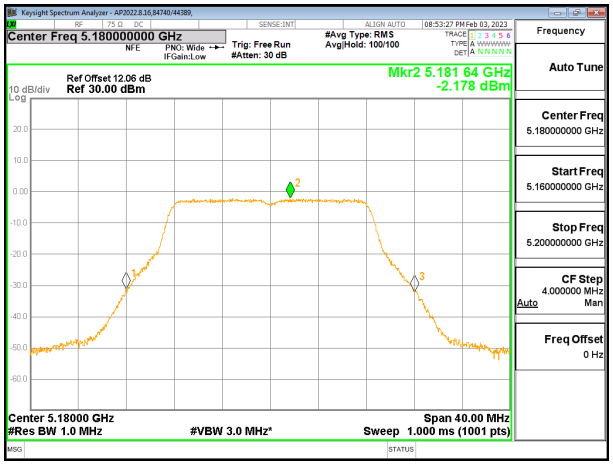
LOW CHANNEL

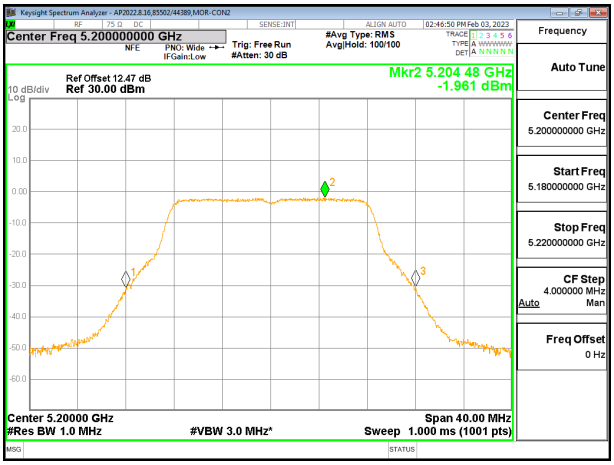


LOW CHANNEL CHAIN 0

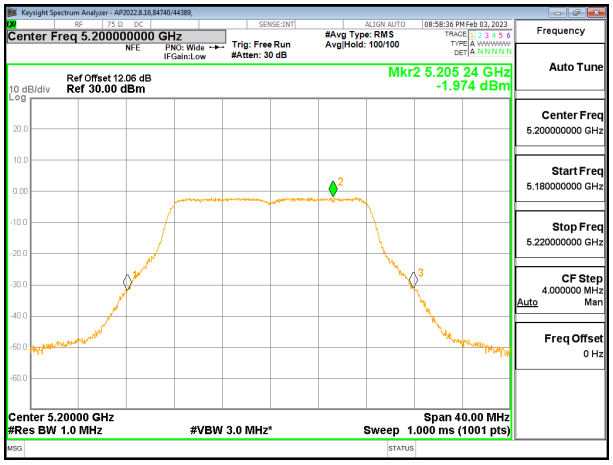


LOW CHANNEL CHAIN 1

MID CHANNEL



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

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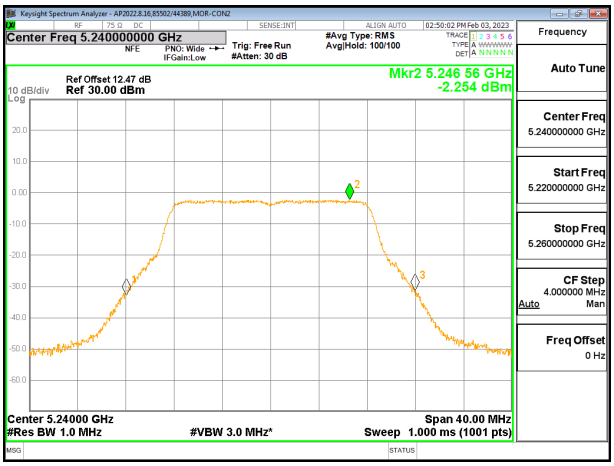
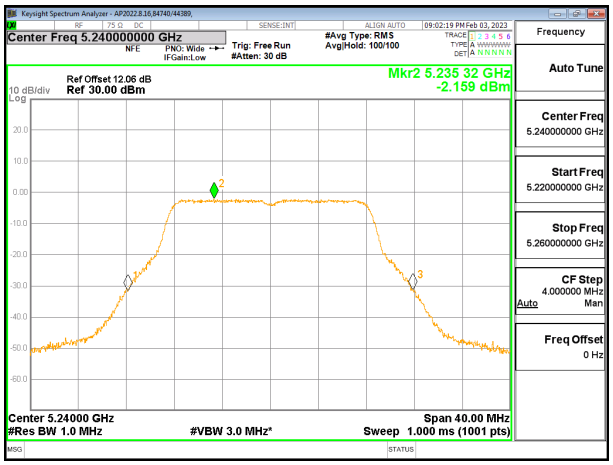
HIGH CHANNEL



HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1

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9.3.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

Test Engineer:	85502/44389, 84740/44389
Test Date:	2023-02-02 to 2023-02-03

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	0.18	3.18	24.00	11.00
Mid	5200	0.18	3.18	24.00	11.00
High	5240	0.18	3.18	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	9.67	10.01	12.85	24.00	-11.15
Mid	5200	10.47	10.17	13.33	24.00	-10.67
High	5240	10.29	10.14	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	5180	-2.89	-2.33	0.41	11.00	-10.59
Mid	5200	-2.03	-2.20	0.90	11.00	-10.10
High	5240	-2.32	-2.40	0.65	11.00	-10.35

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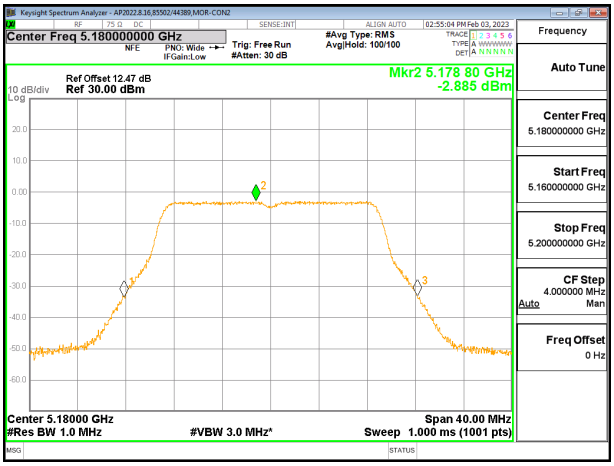
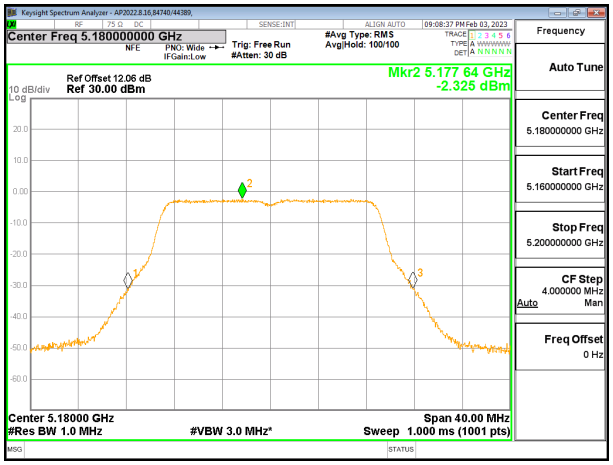
LOW CHANNEL

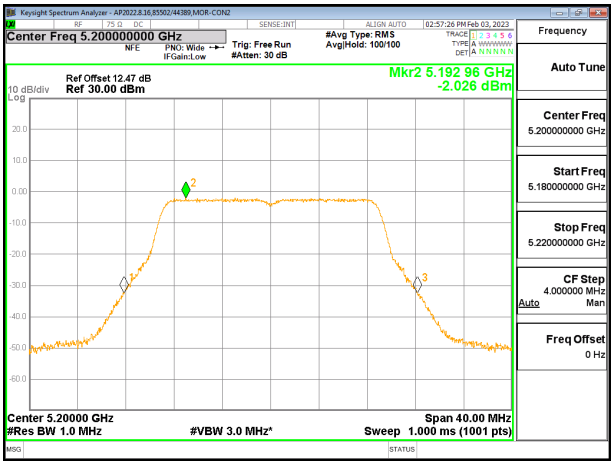


LOW CHANNEL CHAIN 0

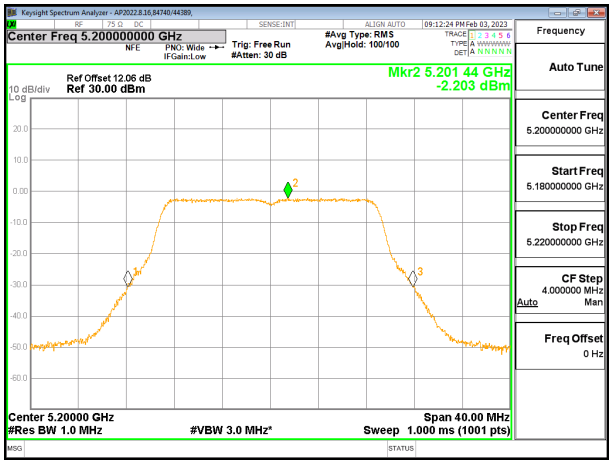


LOW CHANNEL CHAIN 1

MID CHANNEL



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

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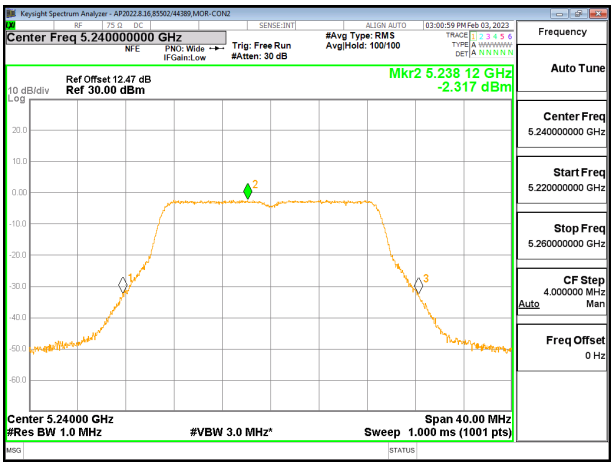
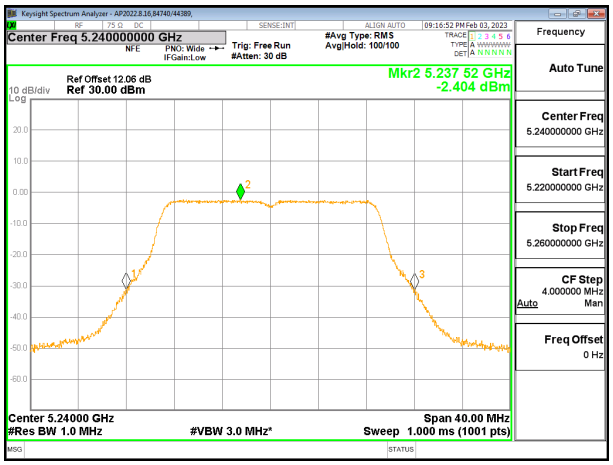
HIGH CHANNEL



HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1

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9.3.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

Test Engineer:	85502/44389, 84740/44389
Test Date:	2023-02-02 to 2023-02-03

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	0.18	3.18	24.00	11.00
High	5230	0.18	3.18	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	10.56	10.61	13.60	24.00	-10.40
High	5230	10.82	10.85	13.85	24.00	-10.15

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	-5.09	-4.98	-2.02	11.00	-13.02
High	5230	-4.83	-4.62	-1.71	11.00	-12.71

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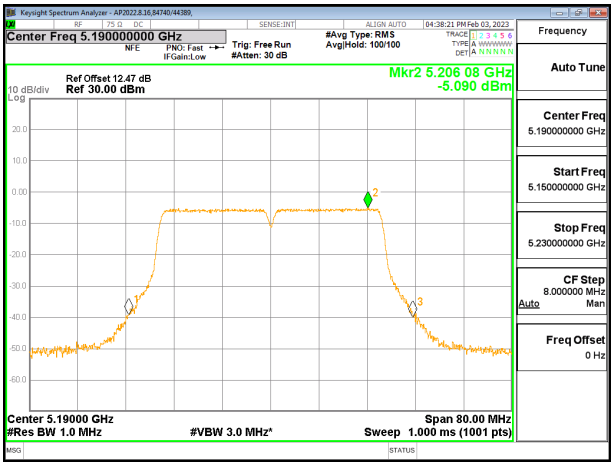
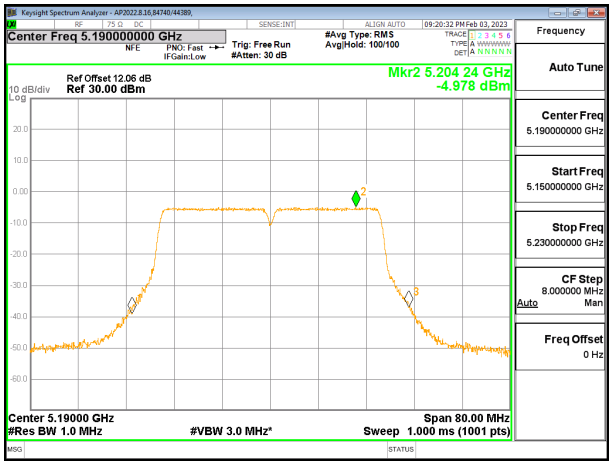
LOW CHANNEL

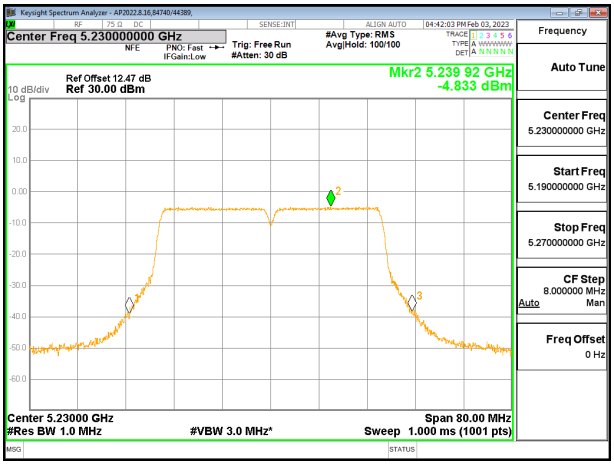


LOW CHANNEL CHAIN 0

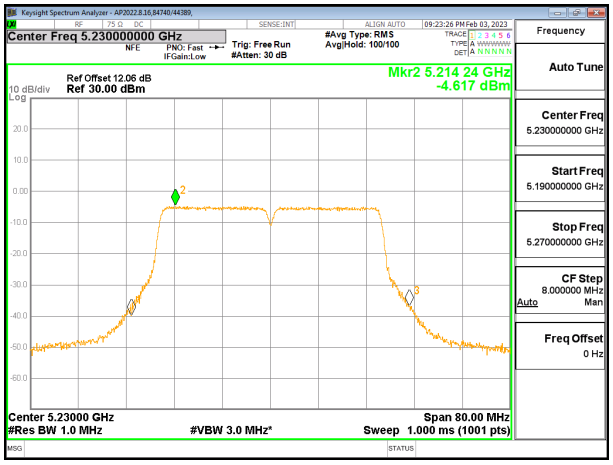


LOW CHANNEL CHAIN 1

HIGH CHANNEL



HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1

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9.3.4. 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

Test Engineer:	85502/44389, 84740/44389
Test Date:	2023-02-02 to 2023-02-03

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	0.18	3.18	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	10.46	10.37	13.43	24.00	-10.57

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	-8.15	-8.28	-5.20	11.00	-16.20

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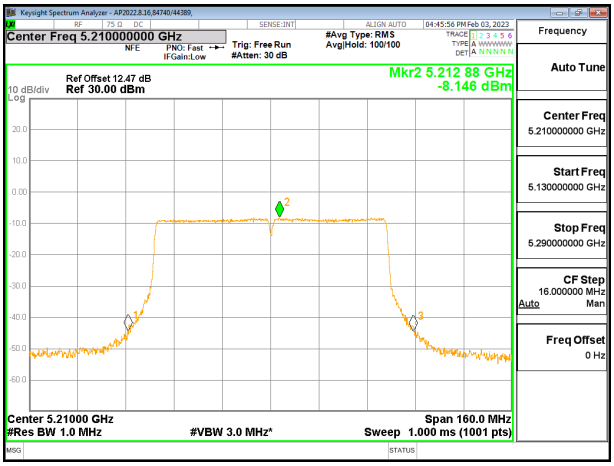
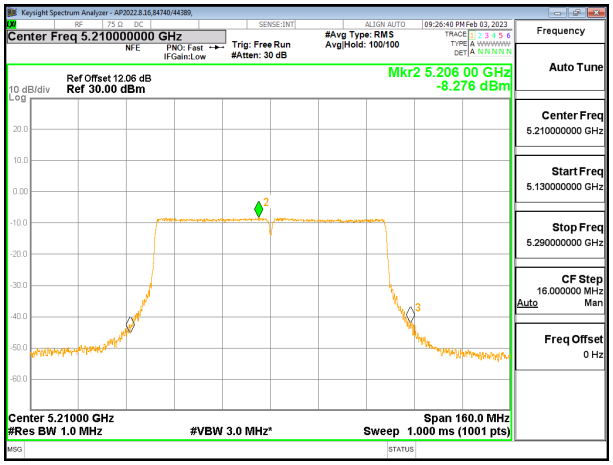
MID CHANNEL



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

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9.3.5. 802.11a MODE IN THE 5.3 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

Test Engineer:	85502/44389, 84740/44389
Test Date:	2023-02-02 to 2023-02-03

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	23.84	0.18	3.18	24.00	11.00
Mid	5300	23.60	0.18	3.18	24.00	11.00
High	5320	23.56	0.18	3.18	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	10.25	9.80	13.04	24.00	-10.96
Mid	5300	10.08	9.74	12.92	24.00	-11.08
High	5320	10.21	10.12	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)
Low	5260	-2.06	-2.43	0.77	11.00	-10.23
Mid	5300	-2.57	-2.39	0.53	11.00	-10.47
High	5320	-2.58	-2.52	0.46	11.00	-10.54

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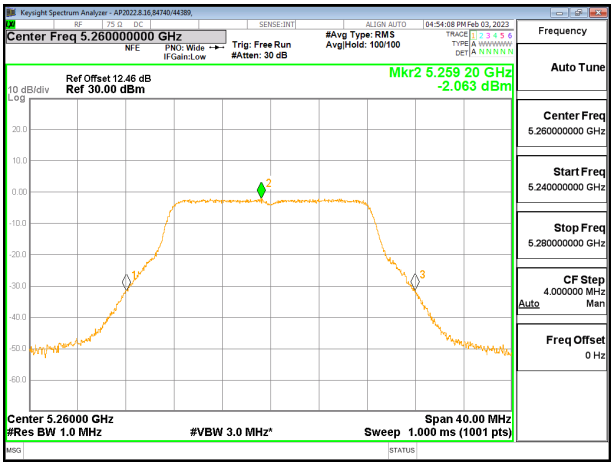
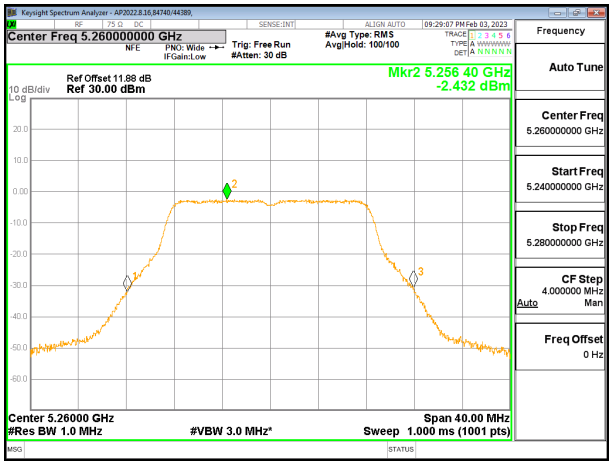
LOW CHANNEL

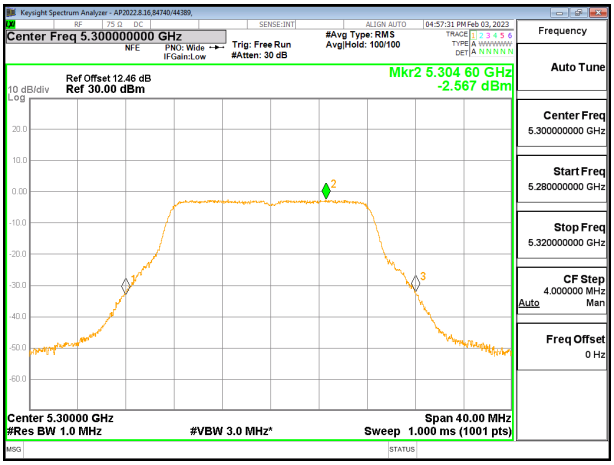


LOW CHANNEL CHAIN 0

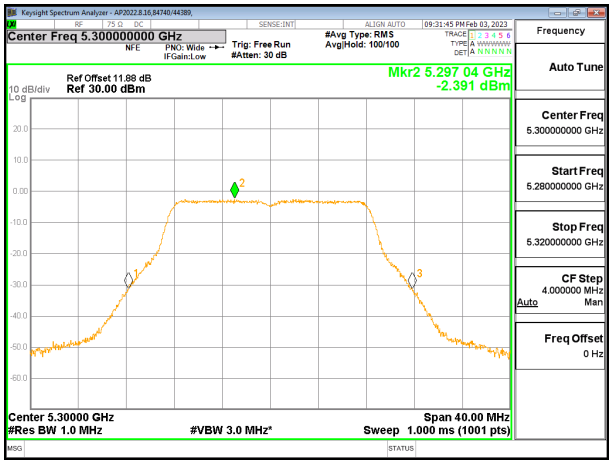


LOW CHANNEL CHAIN 1

MID CHANNEL



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

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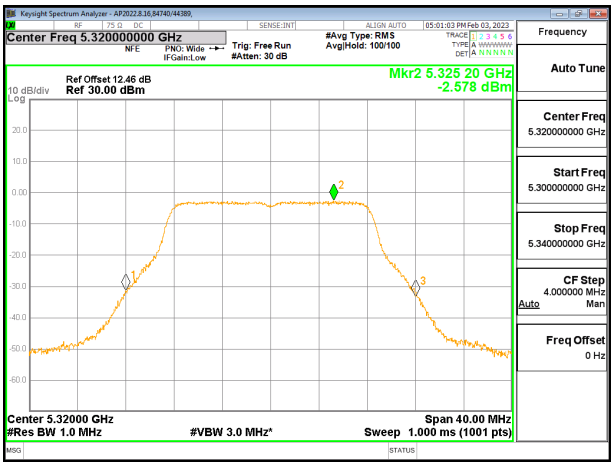
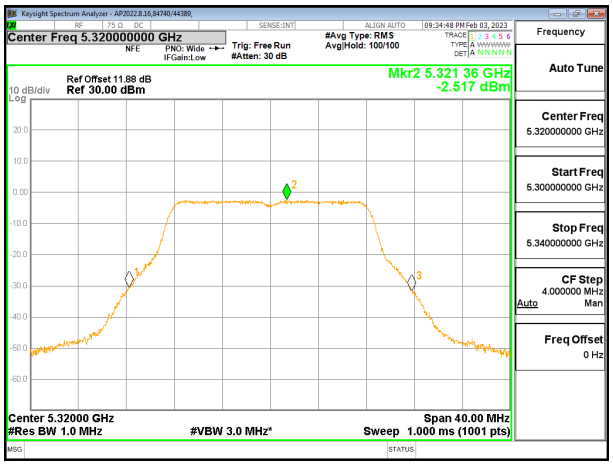
HIGH CHANNEL



HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1

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9.3.6. 802.11n HT20 MODE IN THE 5.3 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

Test Engineer:	85502/44389, 84740/44389
Test Date:	2023-02-02 to 2023-02-03

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	23.64	0.18	3.18	24.00	11.00
Mid	5300	24.20	0.18	3.18	24.00	11.00
High	5320	23.56	0.18	3.18	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	10.25	9.91	13.09	24.00	-10.91
Mid	5300	10.14	9.85	13.01	24.00	-10.99
High	5320	10.14	10.19	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)
Low	5260	-2.24	-2.70	0.55	11.00	-10.45
Mid	5300	-2.91	-2.87	0.12	11.00	-10.88
High	5320	-2.84	-2.37	0.41	11.00	-10.59

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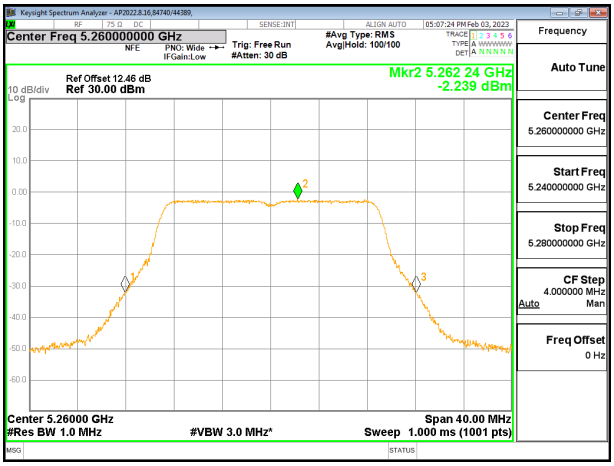
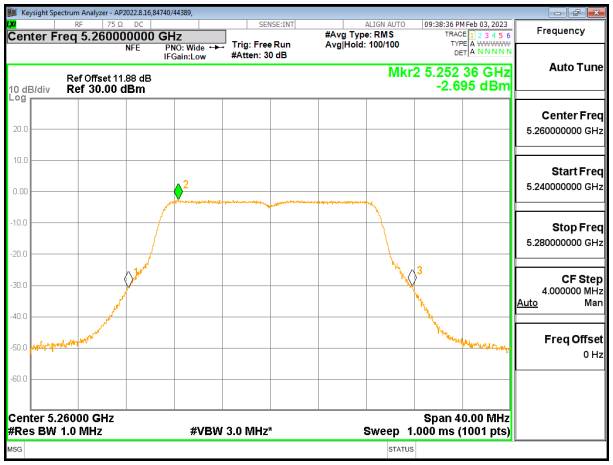
LOW CHANNEL

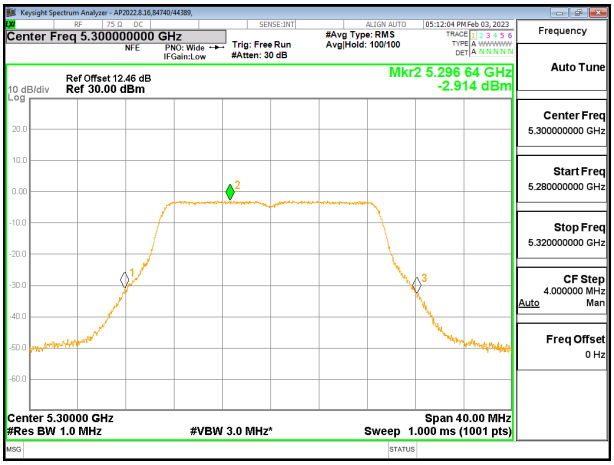


LOW CHANNEL CHAIN 0

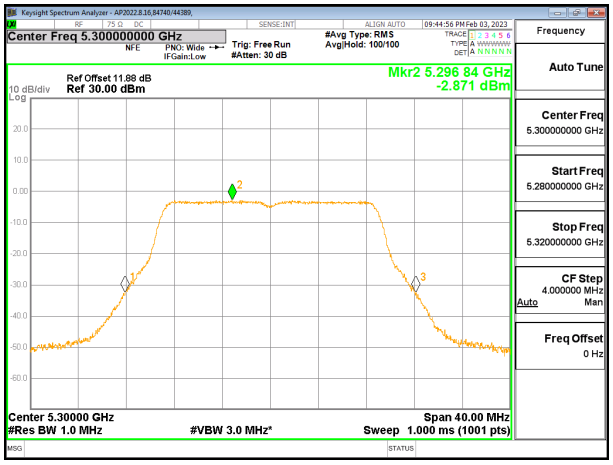


LOW CHANNEL CHAIN 1

MID CHANNEL



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

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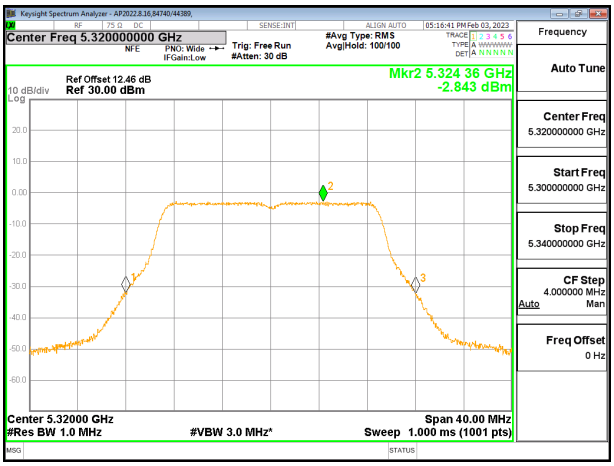
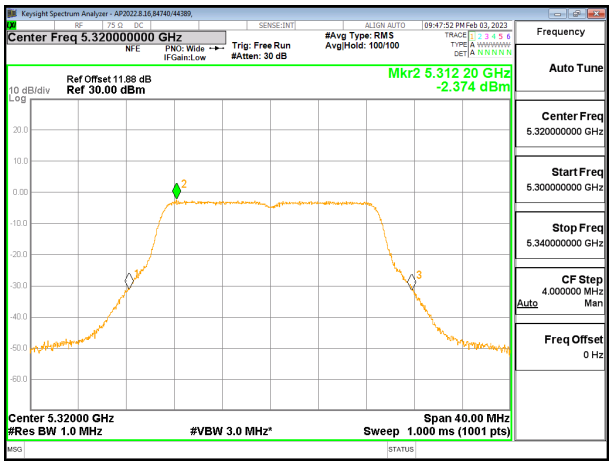
HIGH CHANNEL



HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1

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9.3.7. 802.11n HT40 MODE IN THE 5.3 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

Test Engineer:	85502/44389, 84740/44389
Test Date:	2023-02-02 to 2023-02-03

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	46.64	0.18	3.18	24.00	11.00
High	5310	46.24	0.18	3.18	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	10.81	10.48	13.66	24.00	-10.34
High	5310	10.76	10.73	13.76	24.00	-10.24

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	-5.08	-5.01	-2.04	11.00	-13.04
High	5310	-5.20	-5.02	-2.10	11.00	-13.10

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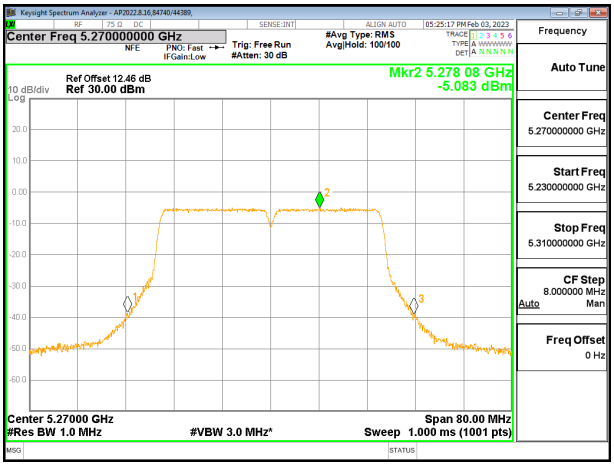
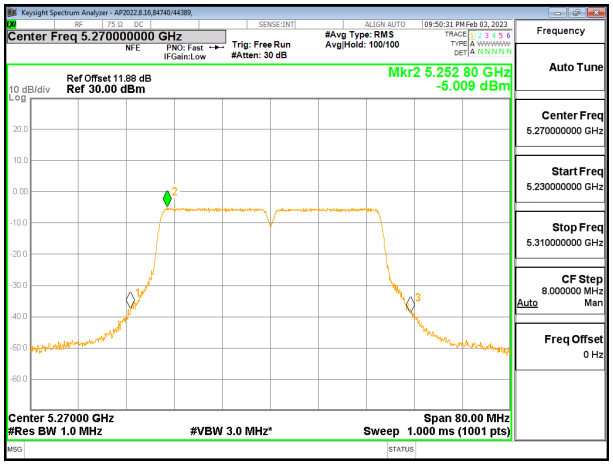
LOW CHANNEL

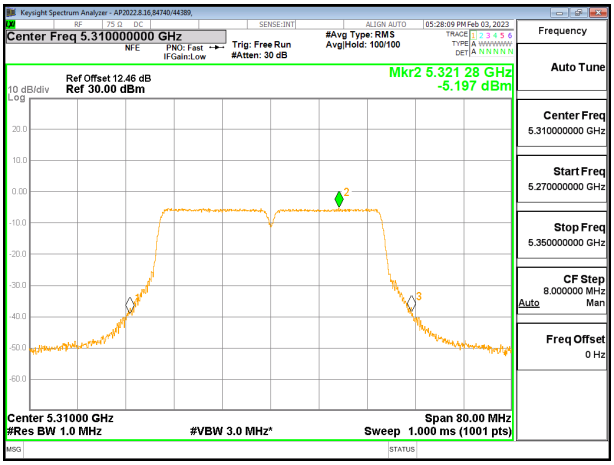


LOW CHANNEL CHAIN 0

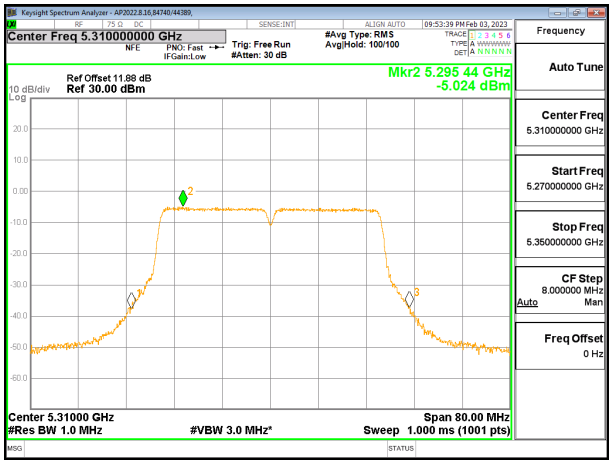


LOW CHANNEL CHAIN 1

HIGH CHANNEL



HIGH CHANNEL CHAIN 0



HIGH CHANNEL CHAIN 1

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9.3.8. 802.11ac VHT80 MODE IN THE 5.3 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

Test Engineer:	85502/44389, 84740/44389
Test Date:	2023-02-02 to 2023-02-03

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	93.60	0.18	3.18	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	10.41	9.77	13.11	24.00	-10.89

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	-8.54	-8.97	-5.74	11.00	-16.74

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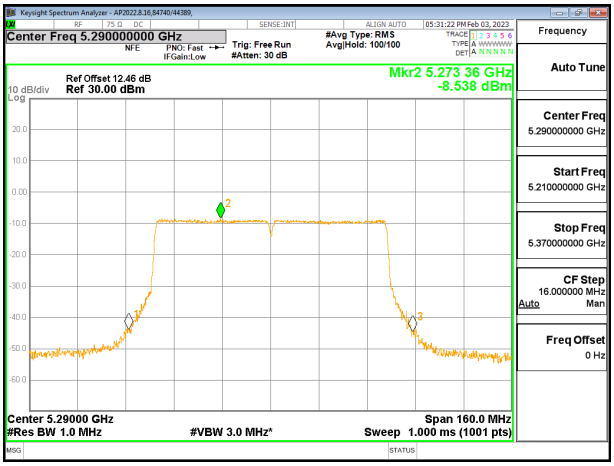
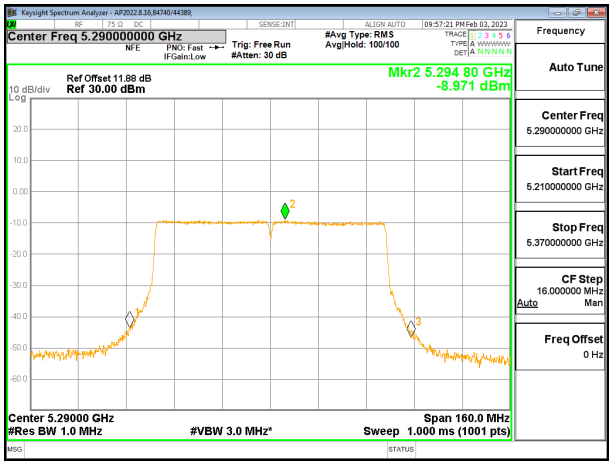
MID CHANNEL



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

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

2TX Chain 0 + Chain 1 CDD MODE

Test Engineer:	85502/44389, 84740/44389
Test Date:	2023-02-02 to 2023-02-03

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	178.88	0.18	3.18	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	10.58	10.22	13.41	24.00	-10.59

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	-11.01	-10.88	-7.94	11.00	-18.94

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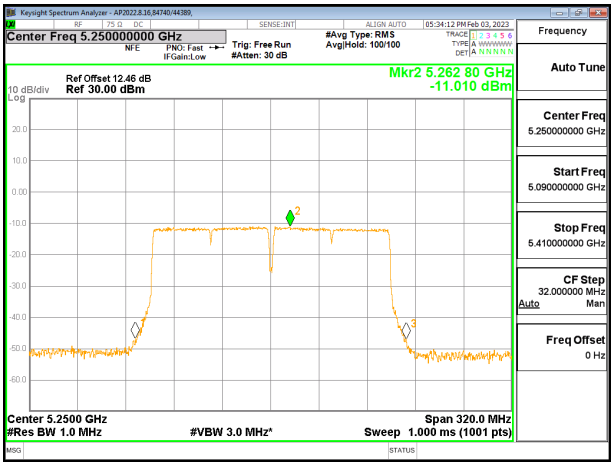
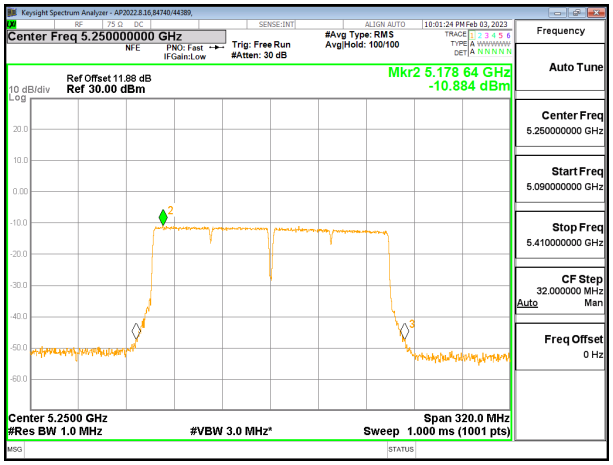
MID CHANNEL



MID CHANNEL CHAIN 0



MID CHANNEL CHAIN 1

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10. RADIATED TEST RESULTS

LIMITS

FCC §15.205 and §15.209 - Restricted bands

FCC §15.407(b)(1-2) - Unrestricted 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.

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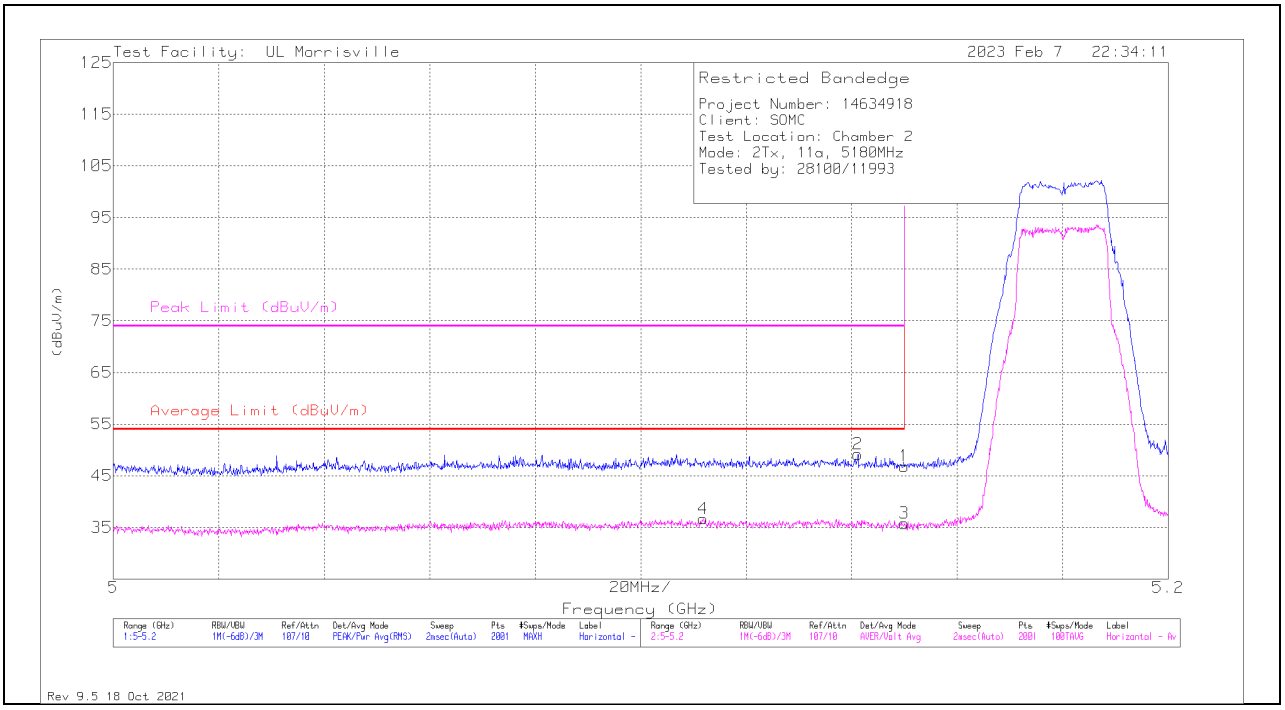
10.1. TRANSMITTER ABOVE 1 GHz

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)	Gain/Loss (dB)	DC Corr (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	35.24	Pk	34.2	-22.6	0	46.84	-	-	74	-27.16	179	113	H
2	* ** 5.1411	37.47	Pk	34.2	-22.5	0	49.17	-	-	74	-24.83	179	113	H
3	* ** 5.15	24.17	ADV	34.2	-22.6	0	35.77	54	-18.23	-	-	179	113	H
4	* ** 5.1118	24.85	ADV	34.2	-22.4	0	36.65	54	-17.35	-	-	179	113	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - Linear Voltage Average

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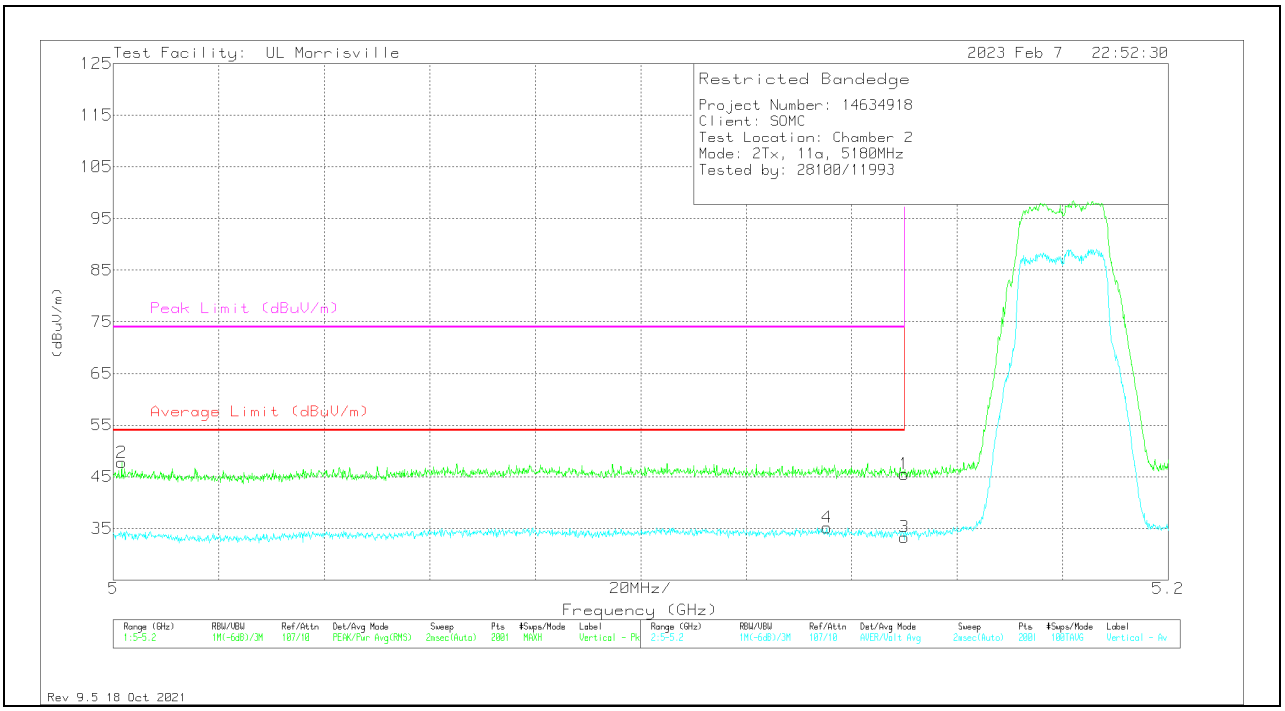
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	DC Corr (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	33.92	Pk	34.2	-22.6	0	45.52	-	-	74	-28.48	78	107	V
2	* ** 5.0016	35.85	Pk	34	-22.1	0	47.75	-	-	74	-26.25	78	107	V
3	* ** 5.15	21.72	ADV	34.2	-22.6	0	33.32	54	-20.68	-	-	78	107	V
4	* ** 5.1353	23.26	ADV	34.2	-22.3	0	35.16	54	-18.84	-	-	78	107	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - Linear Voltage Average

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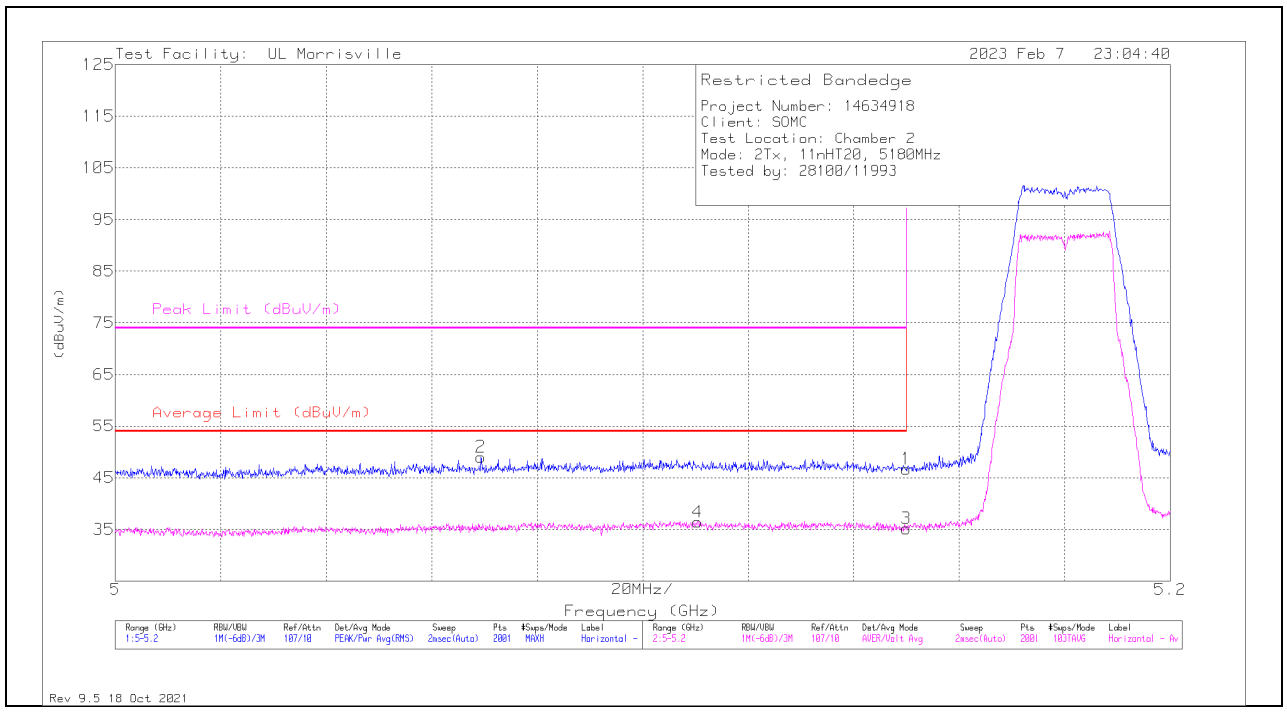
10.1.2. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.2 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	DC Corr (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	35.08	Pk	34.2	-22.6	0	46.68	-	-	74	-27.32	179	118	H
2	* ** 5.0693	37.31	Pk	34.1	-22.4	0	49.01	-	-	74	-24.99	179	118	H
3	* ** 5.15	23.58	ADV	34.2	-22.6	0	35.18	54	-18.82	-	-	179	118	H
4	* ** 5.1104	24.61	ADV	34.2	-22.4	0	36.41	54	-17.59	-	-	179	118	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - Linear Voltage Average

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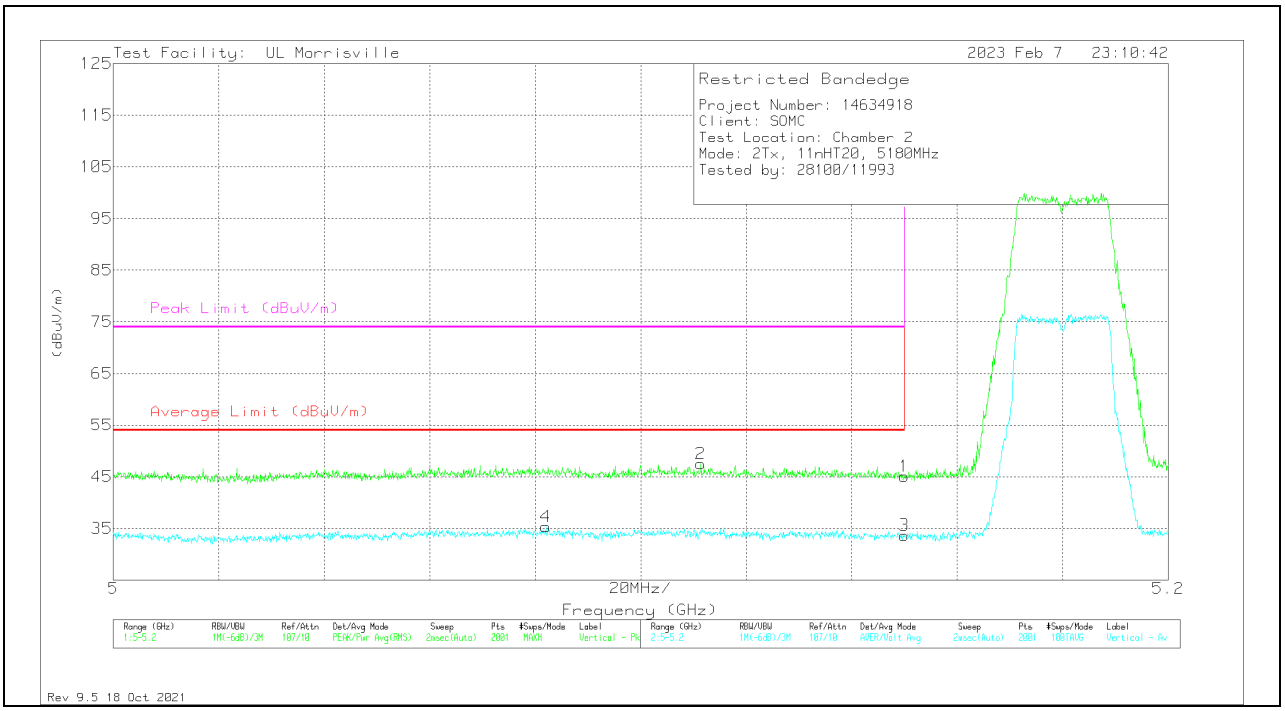
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	DC Corr (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	33.48	Pk	34.2	-22.6	0	45.08	-	-	74	-28.92	179	118	V
2	* ** 5.1114	35.7	Pk	34.2	-22.4	0	47.5	-	-	74	-26.5	179	118	V
3	* ** 5.15	22.04	ADV	34.2	-22.6	0	33.64	54	-20.36	-	-	179	118	V
4	* ** 5.082	23.42	ADV	34.1	-22.2	0	35.32	54	-18.68	-	-	179	118	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - Linear Voltage Average

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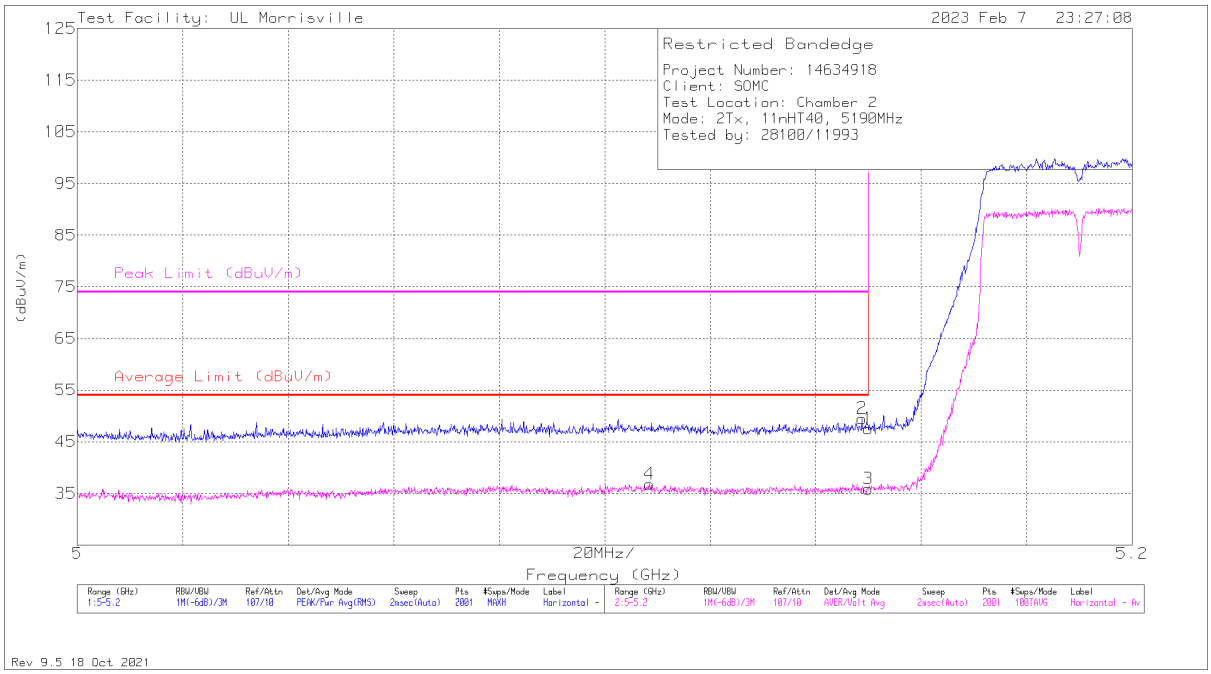
10.1.3. TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 5.2 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	DC Corr (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	35.97	Pk	34.2	-22.6	0	47.57	-	-	74	-26.43	179	111	H
2	* ** 5.1488	37.91	Pk	34.2	-22.6	0	49.51	-	-	74	-24.49	179	111	H
3	* ** 5.15	24.29	ADV	34.2	-22.6	0	35.89	54	-18.11	-	-	179	111	H
4	* ** 5.1085	24.93	ADV	34.2	-22.3	0	36.83	54	-17.17	-	-	179	111	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - Linear Voltage Average

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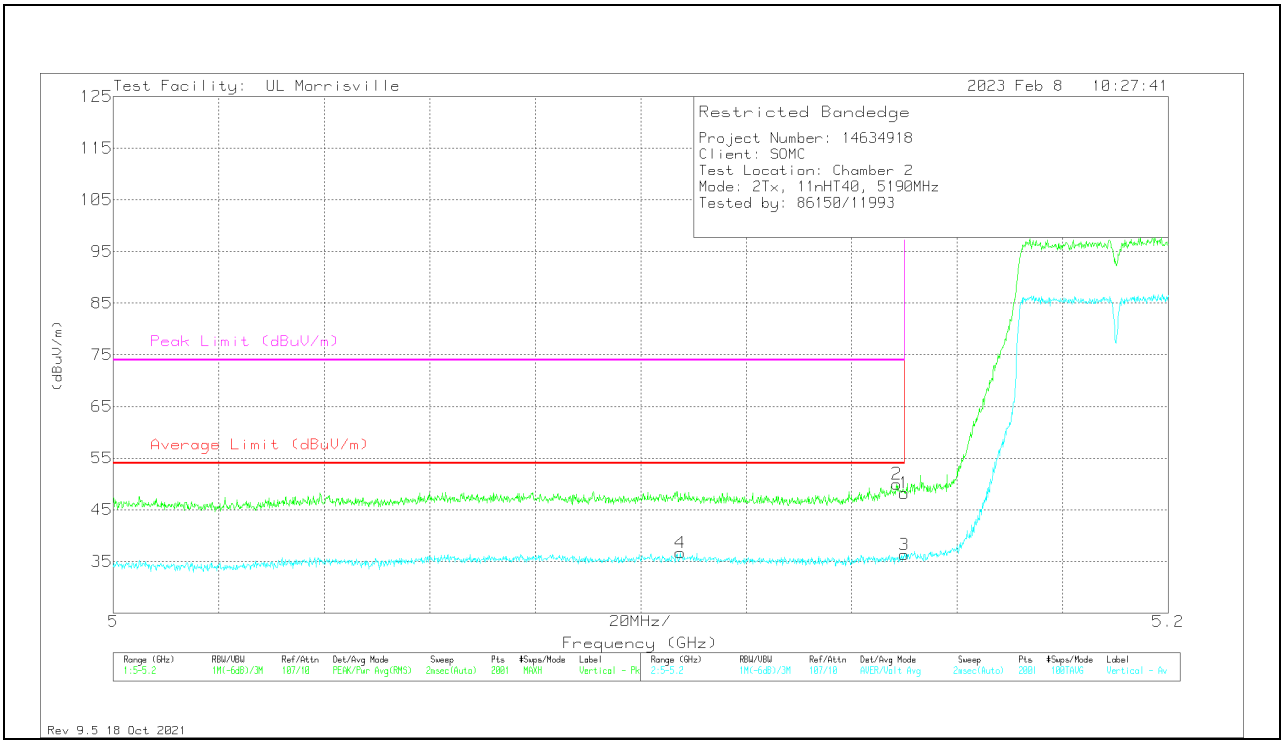
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (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	36.61	Pk	34.2	-22.6	48.21	-	-	74	-25.79	26	107	V
2	* ** 5.1485	38.37	Pk	34.2	-22.6	49.97	-	-	74	-24.03	26	107	V
3	* ** 5.15	24.68	ADV	34.2	-22.6	36.28	54	-17.72	-	-	26	107	V
4	* ** 5.1075	24.77	ADV	34.2	-22.3	36.67	54	-17.33	-	-	26	107	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - Linear Voltage Average

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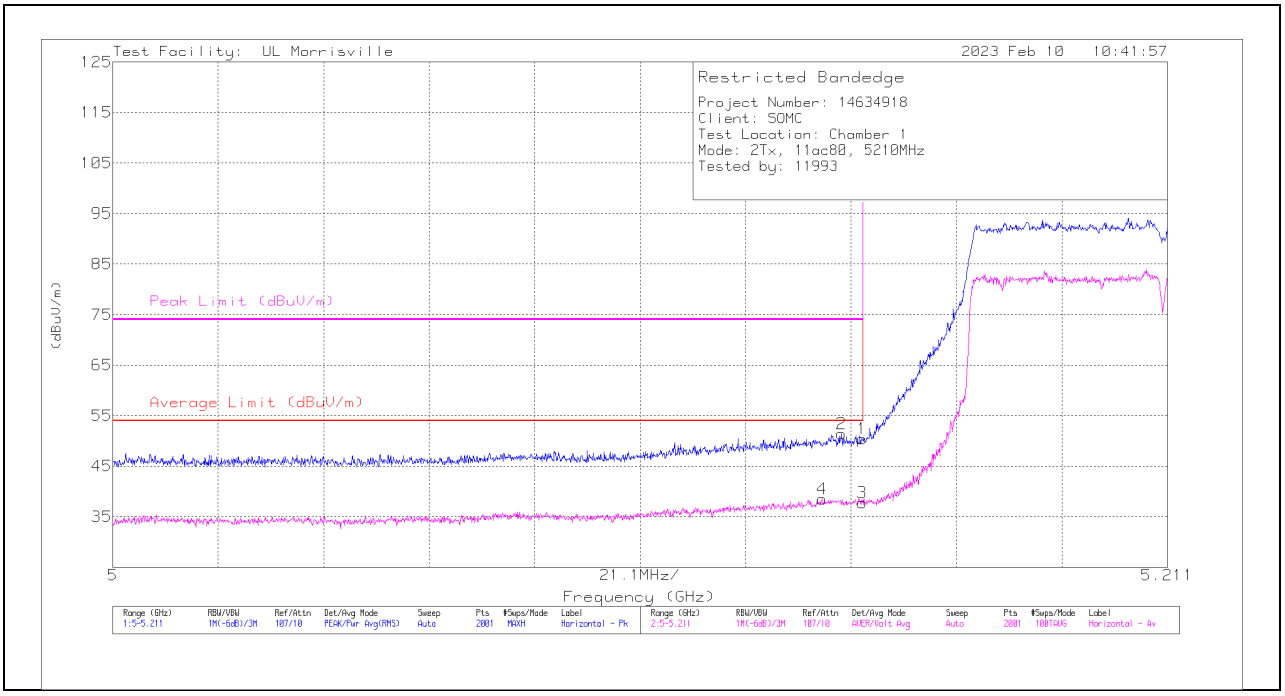
10.1.4. TX ABOVE 1 GHz 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

BANDEDGE (MID CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 5.14992	38.01	Pk	34.3	-21.9	50.41	-	-	74	-23.59	268	149	H
2	* ** 5.1458	38.75	Pk	34.3	-21.6	51.45	-	-	74	-22.55	268	149	H
3	* ** 5.14992	25.32	ADV	34.3	-21.9	37.72	54	-16.28	-	-	268	149	H
4	* ** 5.1419	25.62	ADV	34.3	-21.4	38.52	54	-15.48	-	-	268	149	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - Linear Voltage Average

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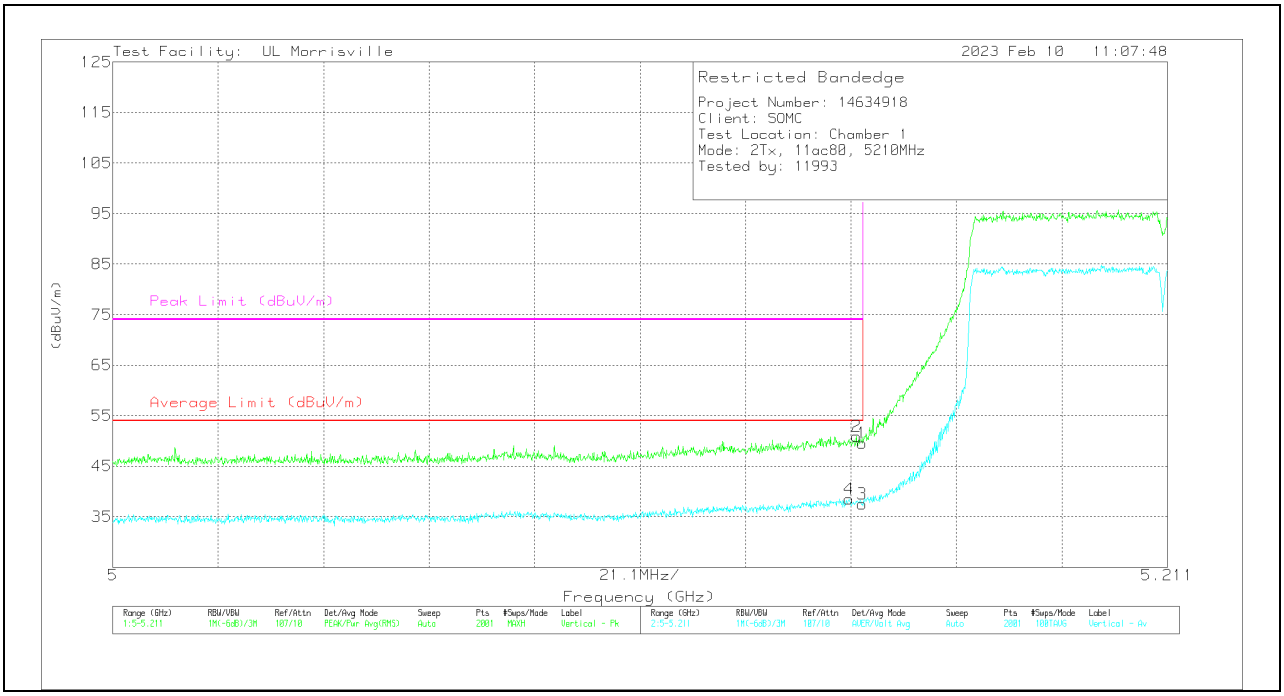
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 5.14992	37.09	Pk	34.3	-21.9	49.49	-	-	74	-24.51	314	116	V
2	* ** 5.14876	38.43	Pk	34.3	-21.8	50.93	-	-	74	-23.07	314	116	V
3	* ** 5.14992	25.11	ADV	34.3	-21.9	37.51	54	-16.49	-	-	314	116	V
4	* ** 5.14728	25.94	ADV	34.3	-21.7	38.54	54	-15.46	-	-	314	116	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - Linear Voltage Average

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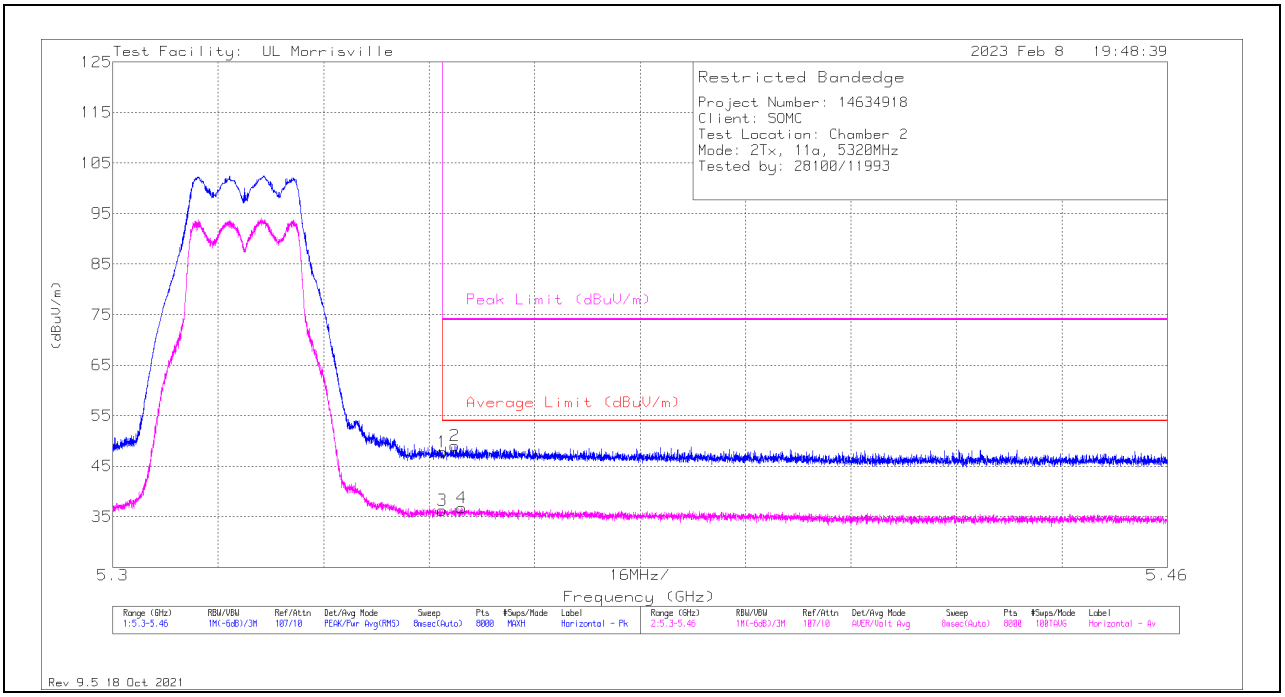
10.1.5. TX ABOVE 1 GHz 802.11a MODE IN THE 5.3 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	DC Corr (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	35.9	Pk	34.6	-22.7	0	47.8	-	-	74	-26.2	96	103	H
2	* ** 5.35193	37.17	Pk	34.6	-22.7	0	49.07	-	-	74	-24.93	96	103	H
3	* ** 5.35001	24.39	ADV	34.6	-22.7	0	36.29	54	-17.71	-	-	96	102	H
4	* ** 5.35297	24.81	ADV	34.6	-22.7	0	36.71	54	-17.29	-	-	96	102	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - Linear Voltage Average

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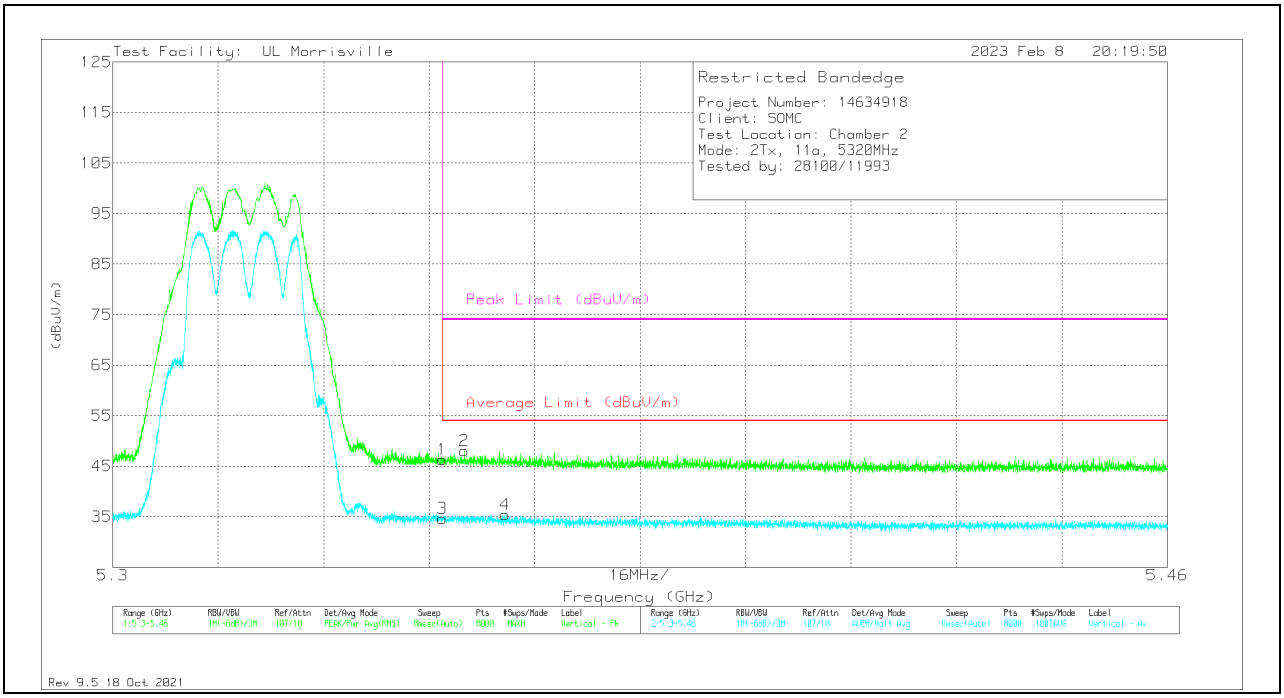
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	DC Corr (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	34.4	Pk	34.6	-22.7	0	46.3	-	-	74	-27.7	38	101	V
2	* ** 5.35335	36.16	Pk	34.6	-22.7	0	48.06	-	-	74	-25.94	38	101	V
3	* ** 5.35001	22.75	ADV	34.6	-22.7	0	34.65	54	-19.35	-	-	38	101	V
4	* ** 5.35951	23.84	ADV	34.5	-22.9	0	35.44	54	-18.56	-	-	38	101	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - Linear Voltage Average

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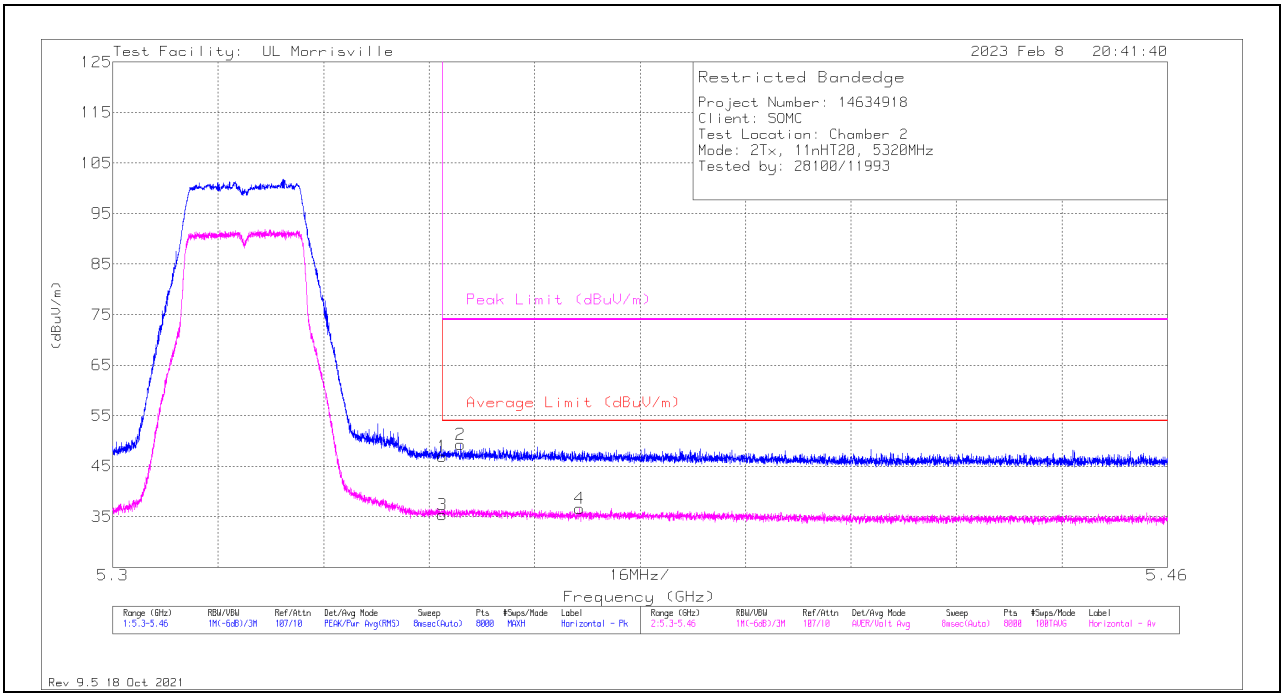
10.1.6. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.3 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	DC Corr (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	34.99	Pk	34.6	-22.7	0	46.89	-	-	74	-27.11	89	101	H
2	* ** 5.35273	37.42	Pk	34.6	-22.7	0	49.32	-	-	74	-24.68	89	101	H
3	* ** 5.35001	23.52	ADV	34.6	-22.7	0	35.42	54	-18.58	-	-	89	101	H
4	* ** 5.37083	25.29	ADV	34.5	-23.2	0	36.59	54	-17.41	-	-	89	101	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - Linear Voltage Average

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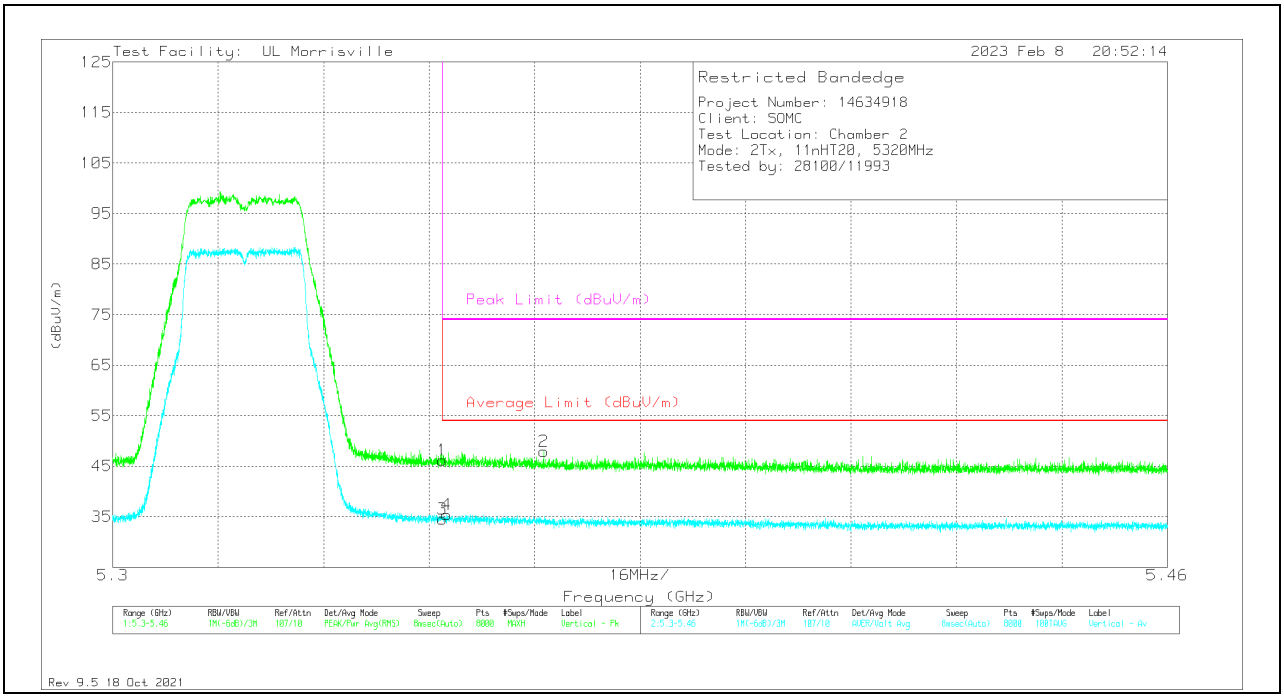
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	DC Corr (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	34.26	Pk	34.6	-22.7	0	46.16	-	-	74	-27.84	40	126	V
2	* ** 5.36537	36.5	Pk	34.5	-23.1	0	47.9	-	-	74	-26.1	40	126	V
3	* ** 5.35001	22.59	ADV	34.6	-22.7	0	34.49	54	-19.51	-	-	40	126	V
4	* ** 5.35069	23.49	ADV	34.6	-22.7	0	35.39	54	-18.61	-	-	40	126	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - Linear Voltage Average

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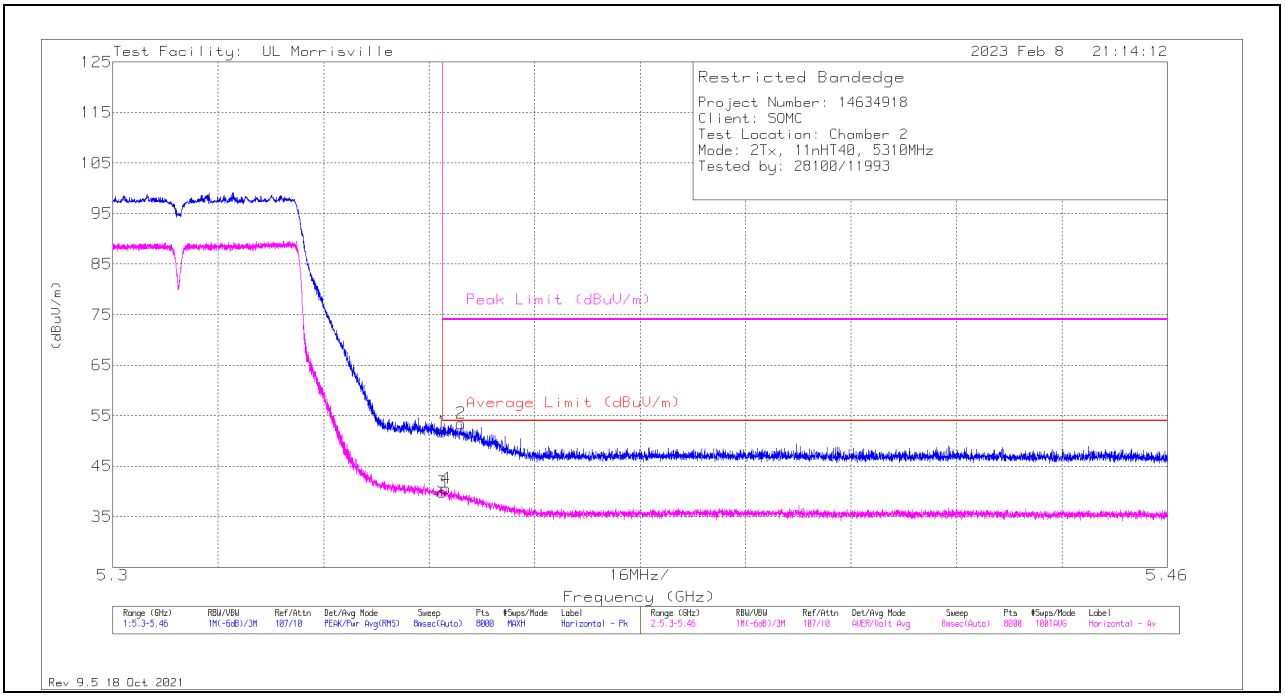
10.1.7. TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 5.3 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	DC Corr (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	39.88	Pk	34.6	-22.7	0	51.78	-	-	74	-22.22	89	105	H
2	* ** 5.35287	41.56	Pk	34.6	-22.7	0	53.46	-	-	74	-20.54	89	105	H
3	* ** 5.35001	27.99	ADV	34.6	-22.7	0	39.89	54	-14.11	-	-	89	105	H
4	* ** 5.35059	28.66	ADV	34.6	-22.7	0	40.56	54	-13.44	-	-	89	105	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - Linear Voltage Average

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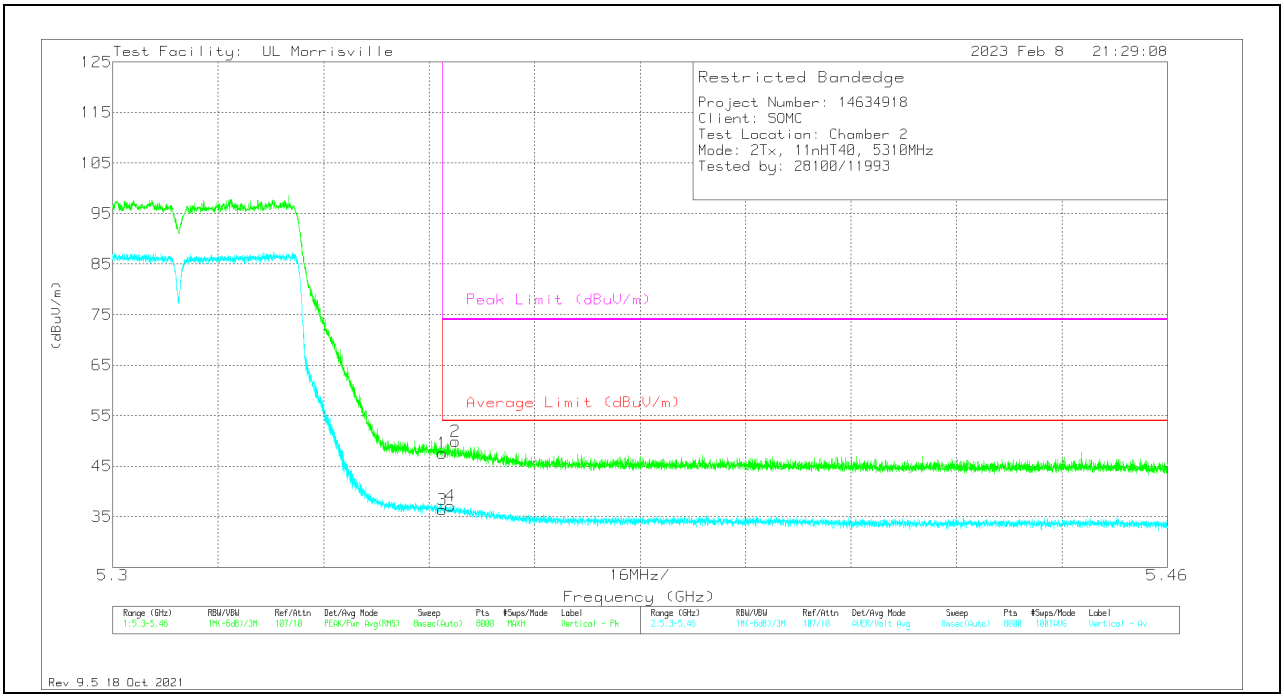
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	DC Corr (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	35.64	Pk	34.6	-22.7	0	47.54	-	-	74	-26.46	3	102	V
2	* ** 5.35197	38.03	Pk	34.6	-22.7	0	49.93	-	-	74	-24.07	3	102	V
3	* ** 5.35001	24.49	ADV	34.6	-22.7	0	36.39	54	-17.61	-	-	3	102	V
4	* ** 5.35125	25.18	ADV	34.6	-22.7	0	37.08	54	-16.92	-	-	3	102	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - Linear Voltage Average

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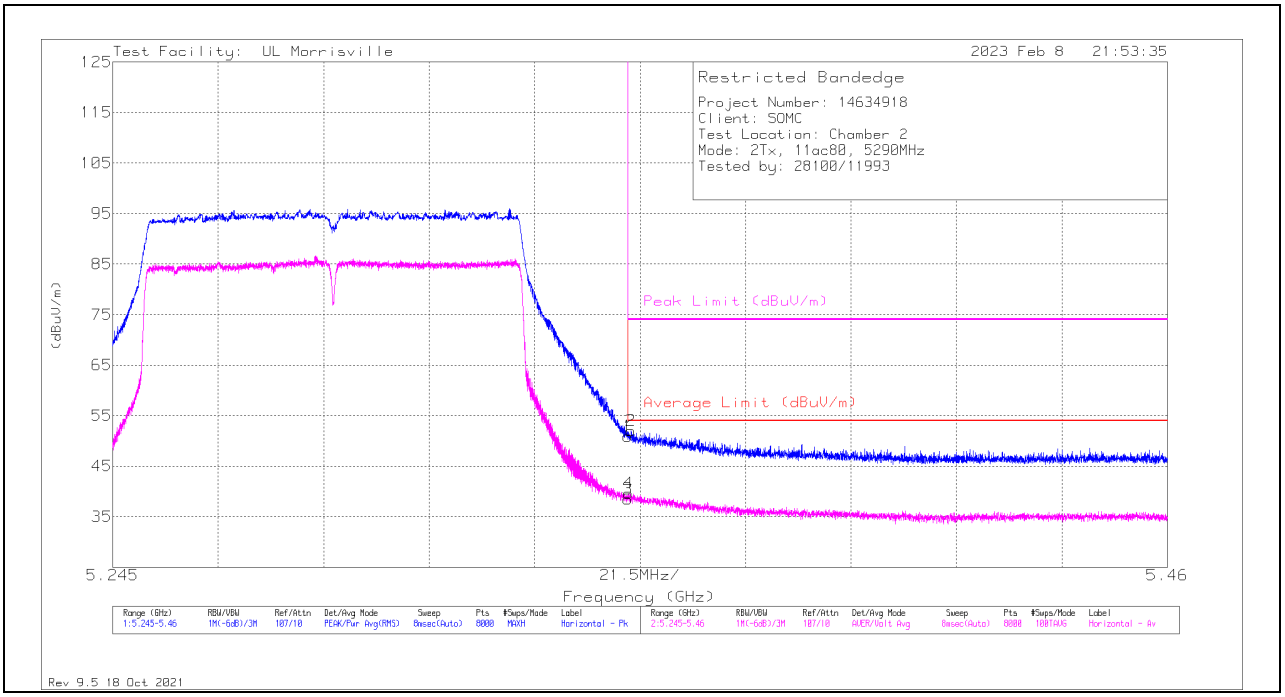
10.1.8. TX ABOVE 1 GHz 802.11ac VHT80 MODE IN THE 5.3 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

BANDEDGE (MID CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	DC Corr (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	39.04	Pk	34.6	-22.7	0	50.94	-	-	74	-23.06	92	103	H
2	* ** 5.35063	40.17	Pk	34.6	-22.7	0	52.07	-	-	74	-21.93	92	103	H
3	* ** 5.35001	26.62	ADV	34.6	-22.7	0	38.52	54	-15.48	-	-	92	103	H
4	* ** 5.35007	27.66	ADV	34.6	-22.7	0	39.56	54	-14.44	-	-	92	103	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - Linear Voltage Average

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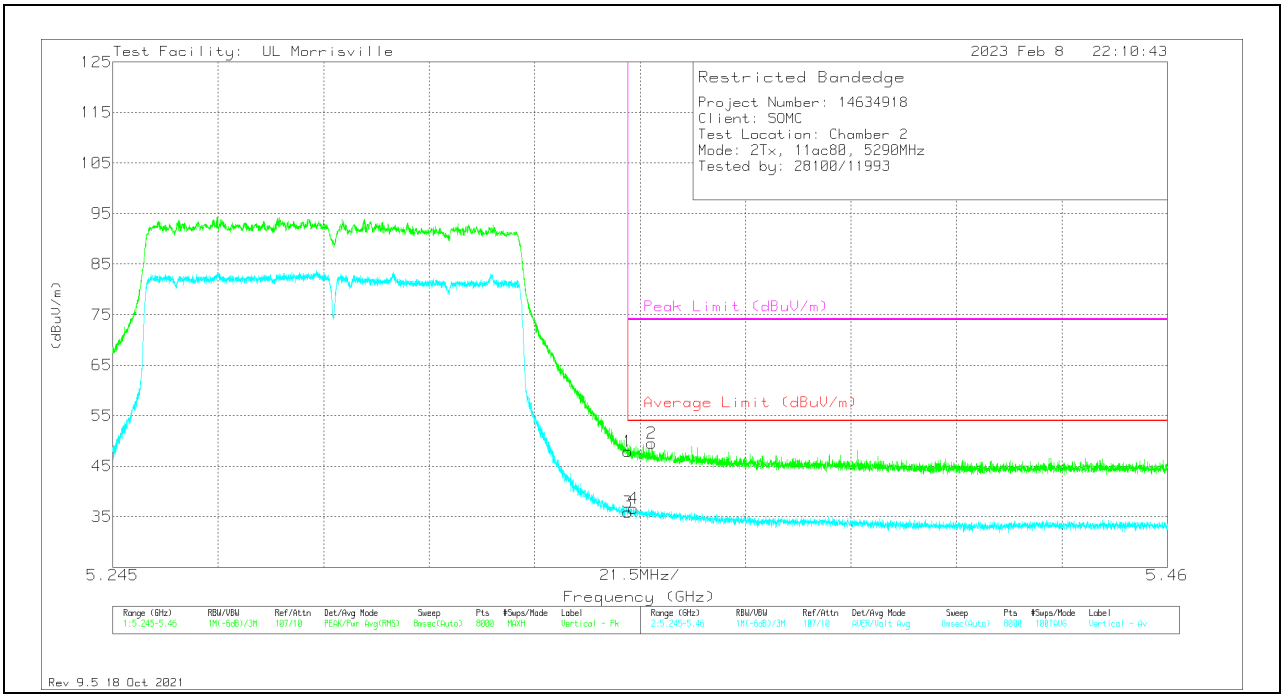
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	DC Corr (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	36.08	Pk	34.6	-22.7	0	47.98	-	-	74	-26.02	3	108	V
2	* ** 5.3549	37.74	Pk	34.6	-22.8	0	49.54	-	-	74	-24.46	3	108	V
3	* ** 5.35001	23.99	ADV	34.6	-22.7	0	35.89	54	-18.11	-	-	3	108	V
4	* ** 5.35114	24.76	ADV	34.6	-22.7	0	36.66	54	-17.34	-	-	3	108	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - Linear Voltage Average

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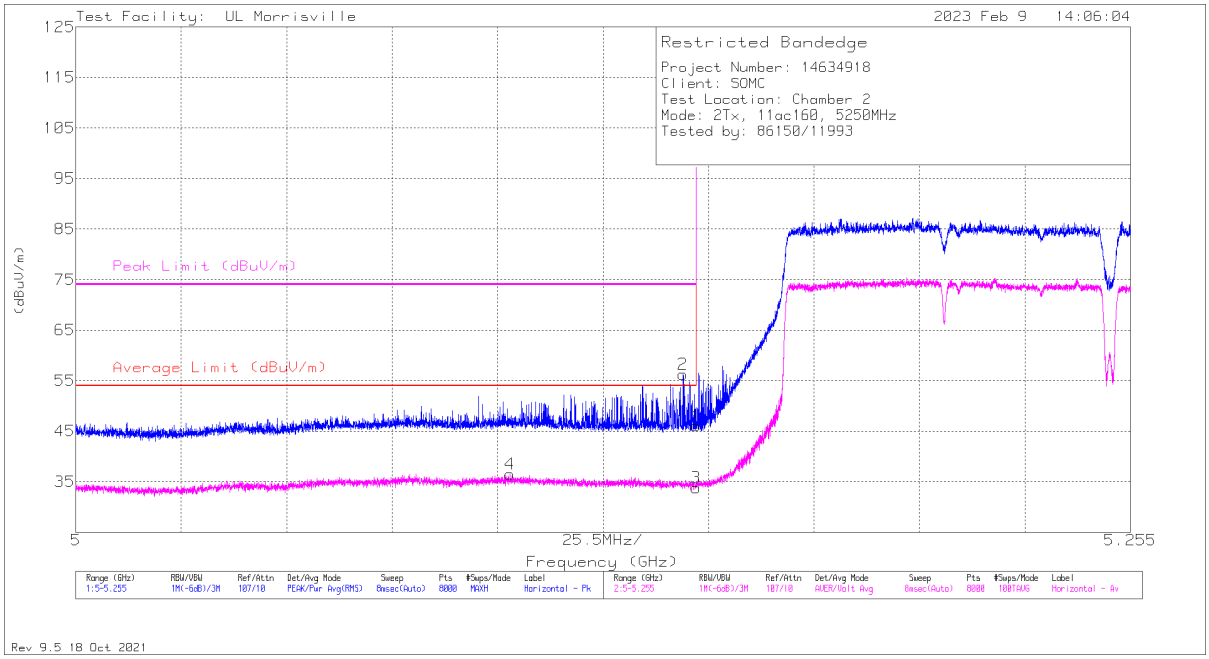
10.1.9. TX ABOVE 1 GHz 802.11ac VHT160 MODE IN THE 5.2/5.3 GHz BAND

2TX Chain 0 + Chain 1 CDD MODE

LOW BANDEDGE (MID CHANNEL – 5.2 GHz BAND)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (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	34.42	Pk	34.2	-22.6	46.02	-	-	74	-27.98	47	251	H
2	* ** 5.14687	44.68	Pk	34.2	-22.6	56.28	-	-	74	-17.72	47	251	H
3	* ** 5.14999	22.21	ADV	34.2	-22.6	33.81	54	-20.19	-	-	47	251	H
4	* ** 5.10501	24.6	ADV	34.2	-22.3	36.5	54	-17.5	-	-	47	251	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - Linear Voltage Average

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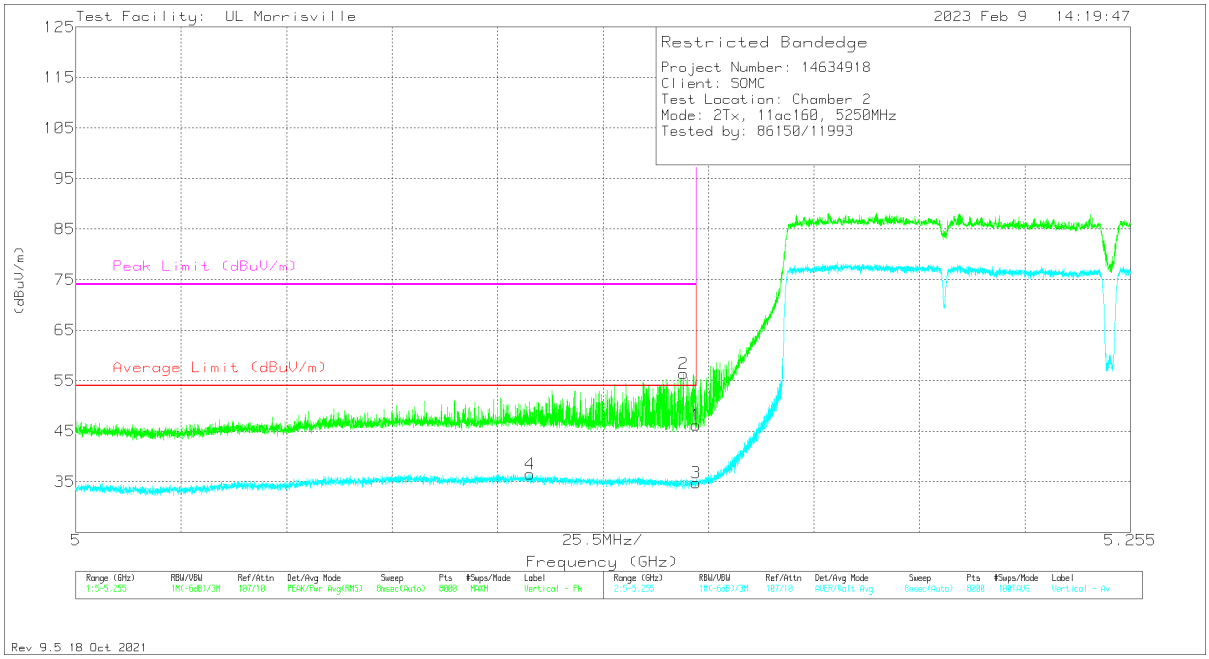
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (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	34.54	Pk	34.2	-22.6	46.14	-	-	74	-27.86	306	278	V
2	* ** 5.14699	44.75	Pk	34.2	-22.6	56.35	-	-	74	-17.65	306	278	V
3	* ** 5.14999	23.15	ADV	34.2	-22.6	34.75	54	-19.25	-	-	306	278	V
4	* ** 5.10979	24.68	ADV	34.2	-22.4	36.48	54	-17.52	-	-	306	278	V

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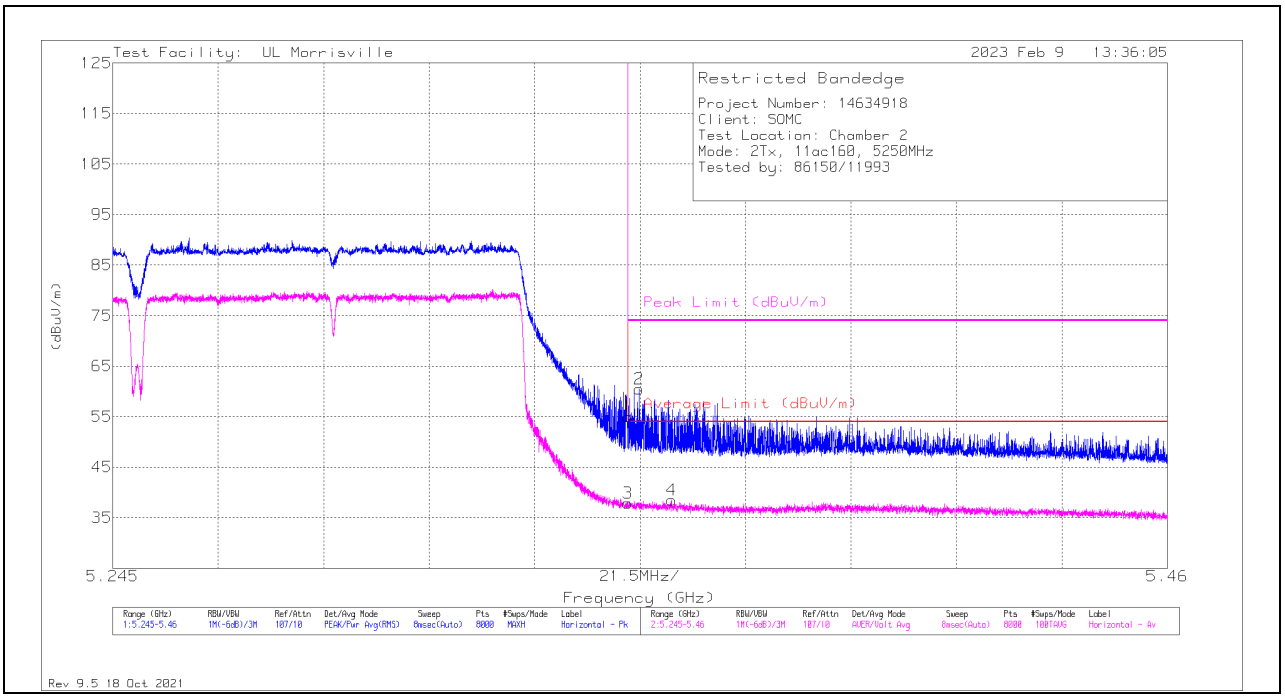
2TX Chain 0 + Chain 1 CDD MODE

HIGH BANDEDGE (MID CHANNEL – 5.3 GHz BAND)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (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	43.09	Pk	34.6	-22.7	54.99	-	-	74	-19.01	147	112	H
2	* ** 5.3523	48.53	Pk	34.6	-22.7	60.43	-	-	74	-13.57	147	112	H
3	* ** 5.35001	26.02	ADV	34.6	-22.7	37.92	54	-16.08	-	-	147	112	H
4	* ** 5.35888	26.75	ADV	34.5	-22.8	38.45	54	-15.55	-	-	147	112	H

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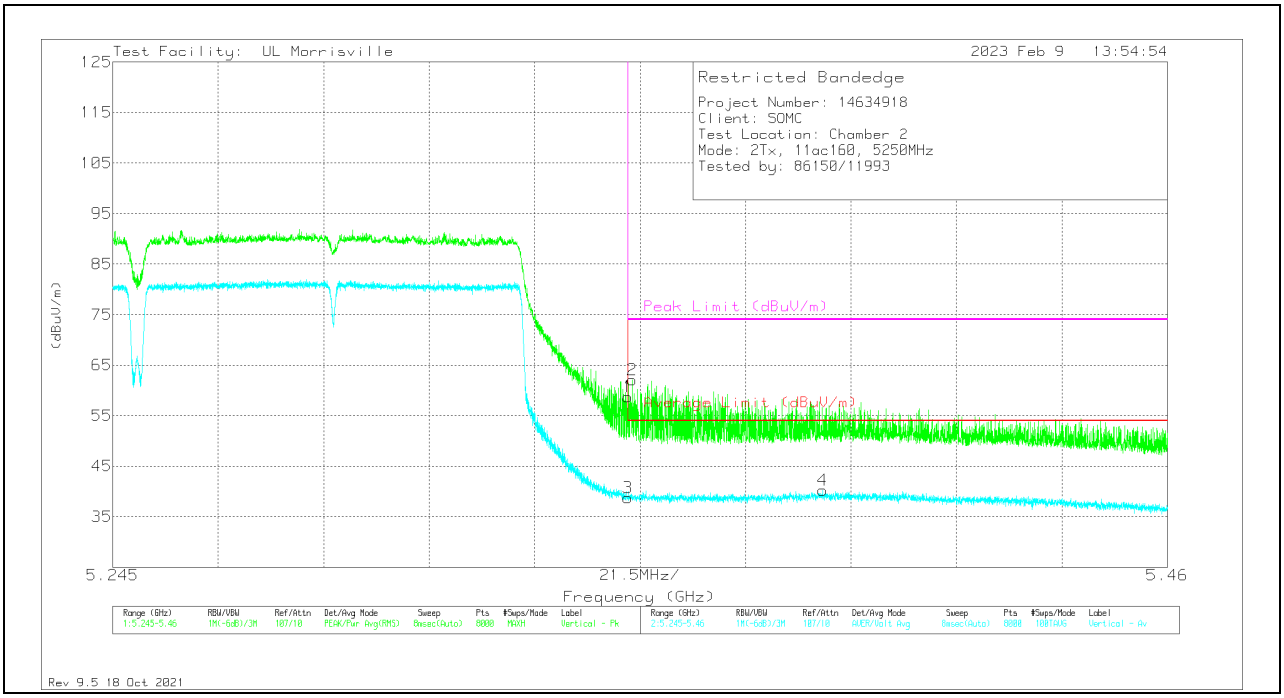
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (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	46.84	Pk	34.6	-22.7	58.74	-	-	74	-15.26	119	339	V
2	* ** 5.3509	50.15	Pk	34.6	-22.7	62.05	-	-	74	-11.95	119	339	V
3	* ** 5.35001	26.9	ADV	34.6	-22.7	38.8	54	-15.2	-	-	119	339	V
4	* ** 5.38976	28.79	ADV	34.5	-23.1	40.19	54	-13.81	-	-	119	339	V

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11. SETUP PHOTOS

Please refer to R14634918-EP5 for setup photos

END OF TEST REPORT

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