TEST REPORT

Report Number. : R14634918-E4b

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 C

Date Of Issue:
2023-03-15

Prepared by:
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CERT #0751.06

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	2023-02-28	Initial Issue	Charles Moody
V2	2023-03-13	Updated KDB information in Section 3, updated output power and PSD, and antenna information.	Charles Moody
V3	2023-03-15	Added explanation in section 6.5 to justify 2Tx testing	Charles Moody

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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 NUMBER: QV70015FA, QV7700FRFN, QV7700E1FN

SAMPLE RECEIPT DATE: 2022-12-12, 2023-01-20

DATE TESTED: 2023-01-31 TO 2023-03-08

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	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:

Mike Antola
Staff Engineer
Consumer Technology Division
UL LLC

Prepared By:

Charles Moody
Engineer
Consumer Technology Division
UL LLC

2. TEST RESULTS SUMMARY

This report contains data provided by the applicant 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 provided by the customer:
1) Antenna gain and type (see section 6.3)
2) Cable loss (see sections 9.3 and 9.4

FCC Clause	Requirement	Result	Comment
See Comment	Duty Cycle	Reporting purposes only	ANSI C63.10 Section 11.6.
15.247 (a) (2)	6dB BW	Compliant	None
15.247 (b) (3)	Output Power		
See Comment	Average power	Reporting purposes only	Per ANSI C63.10, Section 11.9.2.3.2.
15.247 (e)	PSD	Compliant	None
15.247 (d)	Conducted Spurious Emissions		
15.209, 15.205	Radiated Emissions		
15.207	AC Mains Conducted Emissions		

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2013, KDB 558074 D01 15.247 Meas Guidance v05r02, KDB 414788 D01 Radiated Test Site v01r01.

The scope of this report covers the 802.11ax modes in the 2.4GHz band.

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 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 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
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

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 testing for 2.4 GHz WLAN for modulation types 802.11ax.

6.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

2.4GHz BAND 802.11 ax MODE 2TX

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2TX CDD			
2412 - 2462	802.11ax HE20 RU size 242T	24.02	252.35
2412 - 2462	802.11ax HE20 RU size 106T	23.98	250.03
2412 - 2462	802.11ax HE20 RU size 52T	21.19	131.52
2412 - 2462	802.11ax HE20 RU size 26T	18.62	72.78

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes two antennas for diversity, with the following types and maximum gains:

Chain	Designation in Documentation	Type	Frequency Range (MHz)	Maximum Gain (dBi)
0	WiFi Main	Loop	2402-2480	-0.43
1	WiFi Sub	Monopole	2402-2480	-4.44

6.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was 0.81 for the radiated sample and 0.293 for the conducted sample

6.5. WORST-CASE CONFIGURATION AND MODE

WORST-CASE CONFIGURATION AND MODE FOR FINAL TEST

Radiated emissions below 1GHz, above 18GHz, and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario. This was found to be HE20 106T, 2437 MHz.

Based on pretesting, 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.

Band edge was performed with the EUT set to transmit on low and high channels. Radiated spurious and harmonic emissons between 1GHz and 18GHz were performed with the EUT set to transmit at the worst-case mode/channel based on power and PSD. For this report the worst-case Radiated Emissions from 1-18GHz was found to be HE20 106T. For the worst-case CCK modulation scheme Radiated Emissions testing, data can be found in R14634918-E4a.

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

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

802.11ax HE20 mode: MCS0 (Nss = 1)

Preliminary Investigation scans were completed to compare Full RU Tone modes and Single User Tone modes. It was found that Full RU Tone modes were worst case over Single User in every instance. Therefore, only full tone was tested as it is representative of SU worst case scenario.

802.11ax modes were determined by the following:

802.11ax HE20 26T, 52T, 106T, and 242T modes tested.

6.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Laptop	Dell	Inspiron 15 3000	5KPQJP3	-
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	Non-Shielded	<3m	Connected to power supply
2	3.5mm	1	AUX	Non-Shielded	<3m	Connected to headphones

TEST SETUP

The EUT is connected to a test laptop during the tests. Test software exercised the radio card.

SETUP DIAGRAM

Please refer to R14634918-EP2 for setup diagrams

7. MEASUREMENT METHOD

On Time and Duty Cycle: ANSI C63.10, Section 11.6 : Zero-Span Spectrum Analyzer Method.

6 dB BW: ANSI C63.10 Subclause -11.8.1

Output Power: ANSI C63.10 Subclause -11.9.1.3 Method PKPM1 Peak-reading power meter
ANSI C63.10 Subclause -11.9.2.3.2 Method AVGPM-G (Measurement using a gated RF average-reading power meter)

PSD: ANSI C63.10 Subclause -11.10.2 Method PKPSD (peak PSD)

Radiated emissions non-restricted frequency bands: ANSI C63.10 Subclause -11.11 and 6.10.4

Radiated emissions restricted frequency bands: ANSI C63.10 Subclause -11.12.1 and 6.10.5

General Radiated Spurious Emissions: ANSI C63.10-2013 Section 6.3 to 6.6

AC Power-line conducted emissions: ANSI C63.10-2013, Section 6.2.

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	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
	Additional Equipment used				
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
CBL099	Micro-Coax UTiFLEX Cable Assembly, Low Loss,40Ghz, 39.3", Connectors 2	Carlisle Interconnect Technologies	UFA147A-0-0180-200200	2023-02-17	2024-02-17
CBL105	Micro-Coax UTiFLEX Cable Assembly, Low Loss	Carlisle Interconnect Technologies	UFB-197C-0-0160-300300	2023-02-17	2024-02-17
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
226564	SMA Coaxial 10dB Attenuator 25MHz-18GHz	CentricRF	C18S2-10	2023-02-16	2024-02-16
226559	SMA Coaxial 10dB Attenuator 25MHz-18GHz	CentricRF	C18S2-10	2023-02-16	2024-02-16

*NOTE: Testing performed with this equipment occurred prior to 2023-02-15 and therefore all equipment was calibrated at the time of testing.

Test Equipment Used - Line-Conducted Emissions – Voltage (Morrisville – Conducted 1)

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
CBL087	Coax cable, RG223, N-male to BNC-male, 20-ft.	Pasternack	PE3W06143-240	2022-04-05	2023-04-05
HI0091	Environmental Meter	Fisher Scientific	15-077-963	2022-07-20	2023-07-20
LISN003	LISN, 50-ohm/50-uH, 250uH 2-conductor, 25A	Fischer Custom Com.	FCC-LISN-50/250-25-2-01	2022-08-01	2023-08-01
75141	EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESCI 7	2022-08-03	2023-08-03
ATA222	Transient Limiter, 0.009-100MHz	Electro-Metrics	EM-7600	2022-04-05	2023-04-05
PS214	AC Power Source	Elgar	CW2501M (s/n 1523A02396)	NA	NA
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
	Miscellaneous (if needed)				
CDECABLE001	ANSI C63.4 1m extension cable.	UL	Per Annex B of ANSI C63.4	2022-09-12	2023-09-12

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

Equip. ID	Description	Manufacturer/Brand	Model Number	Last Cal.	Next Cal.
	0.009-30MHz				
135144	Active Loop Antenna	ETS-Lindgren	6502	2023-01-17	2024-01-17
	30-1000 MHz				
AT0074	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB3	2022-09-07	2023-09-07
	1-18 GHz				
206211	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2022-03-21	2023-03-21
	18-40 GHz				
204704	Horn Antenna, 18-26.5GHz	Com-Power	AH-626	2022-07-11	2023-07-11
	Gain-Loss Chains				
C2-SAC01	Gain-loss string: 0.009-30MHz	Various	Various	2022-05-10	2023-05-10
C2-SAC02	Gain-loss string: 25-1000MHz	Various	Various	2022-05-10	2023-05-10
C2-SAC03	Gain-loss string: 1-18GHz	Various	Various	2022-05-10	2023-05-10
C2-SAC04	Gain-loss string: 18-40GHz	Various	Various	2022-05-10	2023-05-10
	Receiver & Software				
197955	Spectrum Analyzer	Rohde & Schwarz	ESW44	2022-03-08	2023-03-08
SA0020	Spectrum Analyzer	Agilent	E4446A	2022-06-08	2023-06-08
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

9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

PROCEDURE

ANSI C63.10 Section 11.6

KDB 558074 D01 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)
2.4GHz Band						
802.11ax HE20 OFDMA, RU size 242T, Chain 0	0.924	0.986	0.937	93.68%	0.57	1.083
802.11ax HE20 OFDMA, RU size 106T, Chain 0	1.269	1.349	0.941	94.07%	0.53	0.788
802.11ax HE20 OFDMA, RU size 52T, Chain 0	1.269	1.349	0.941	94.07%	0.53	0.788
802.11ax HE20 OFDMA, RU size 26T, Chain 0	2.329	2.464	0.945	94.52%	0.49	0.429
802.11ax HE20 OFDMA, RU size 242T, Chain 1	0.924	0.986	0.936	93.64%	0.57	1.083
802.11ax HE20 OFDMA, RU size 106T, Chain 1	1.269	1.349	0.941	94.07%	0.53	0.788
802.11ax HE20 OFDMA, RU size 52T, Chain 1	1.268	1.349	0.940	94.00%	0.54	0.789
802.11ax HE20 OFDMA, RU size 26T, Chain 1	2.328	2.464	0.945	94.48%	0.49	0.430

DUTY CYCLE PLOTS

Chain 0 (CDD OFDMA MIMO Mode)

802.11ax HE20 OFDMA, RU index 242T MODE,2TX

802.11ax HE20 OFDMA, RU index 106T MODE,2TX

802.11ax HE20 OFDMA, RU index 52T MODE,2TX

802.11ax HE20 OFDMA, RU index 26T MODE,2TX

Chain 1 (CDD OFDMA MIMO Mode)

802.11ax HE20 OFDMA, RU index 242T MODE,2TX

802.11ax HE20 OFDMA, RU index 106T MODE,2TX

802.11ax HE20 OFDMA, RU index 52T MODE,2TX

802.11ax HE20 OFDMA, RU index 26T MODE,2TX

9.2. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

The minimum 6 dB bandwidth shall be at least 500 kHz.

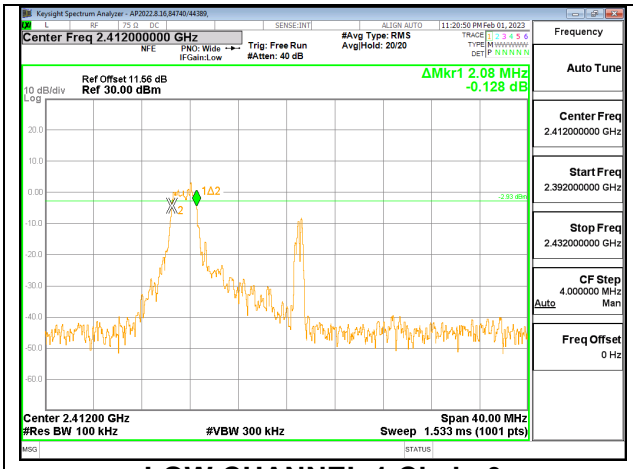
RESULTS

9.2.1. 802.11ax HE20 MODE 2TX

2TX Chain 0 + Chain 1 CDD OFDMA MODE: 26-Tones, RU Index 0

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 1	2412	2.08	2.12	0.5

LOW CHANNEL 1



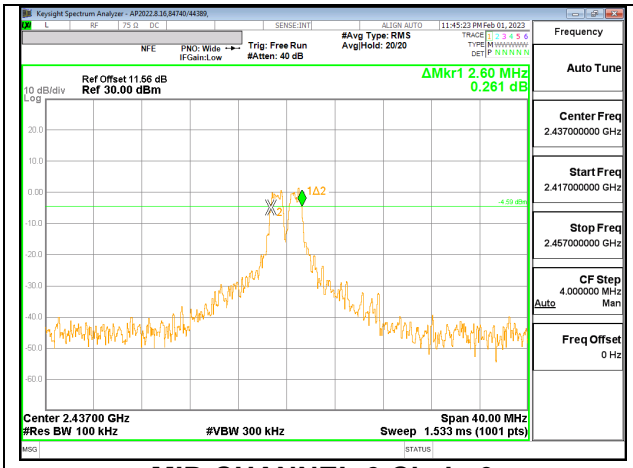
LOW CHANNEL 1 Chain 0

LOW CHANNEL 1 Chain 1

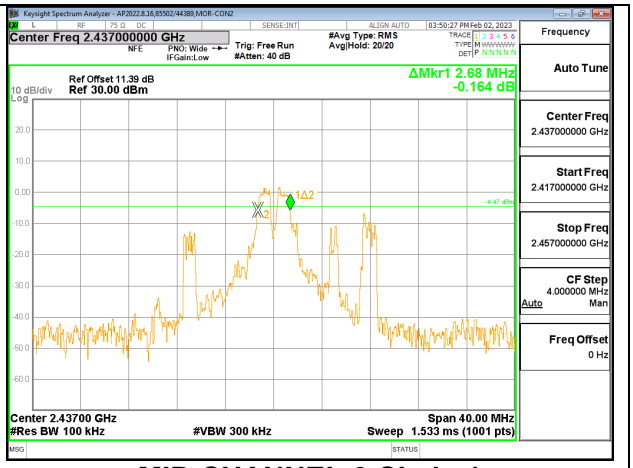
2TX Chain 0 + Chain 1 CDD OFDMA MODE: 26-Tones, RU Index 4

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Mid 6	2437	2.60	2.68	0.5

MID CHANNEL 6



MID CHANNEL 6 Chain 0

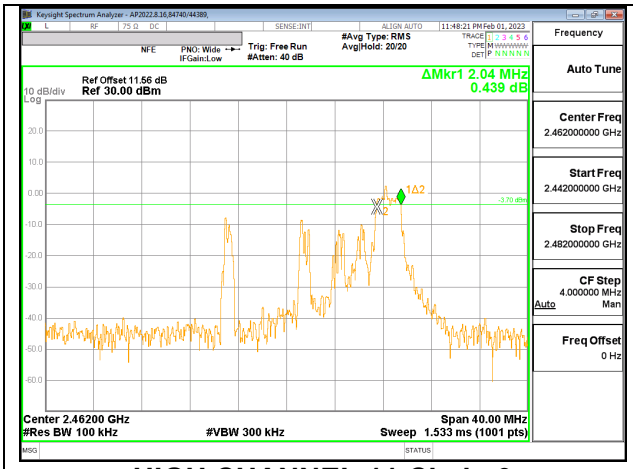


MID CHANNEL 6 Chain 1

2TX Chain 0 + Chain 1 CDD OFDMA MODE: 26-Tones, RU Index 8

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
High 11	2462	2.04	2.12	0.5

HIGH CHANNEL 11



HIGH CHANNEL 11 Chain 0

HIGH CHANNEL 1 Chain 1

2TX Chain 0 + Chain 1 CDD OFDMA MODE: 52-Tones, RU Index 37

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 1	2412	4.16	4.20	0.5

LOW CHANNEL 1

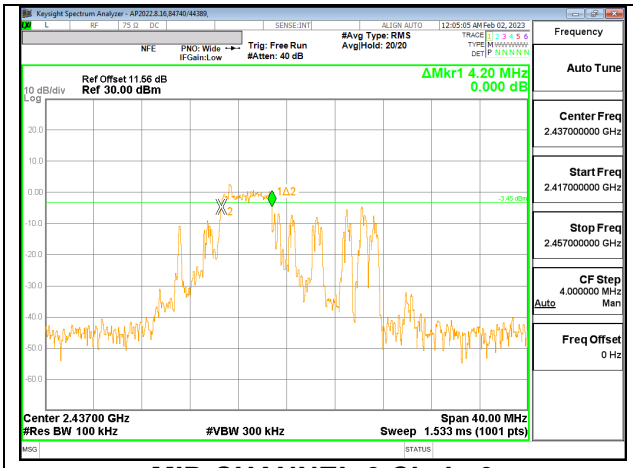
LOW CHANNEL 1 Chain 0

LOW CHANNEL 1 Chain 1

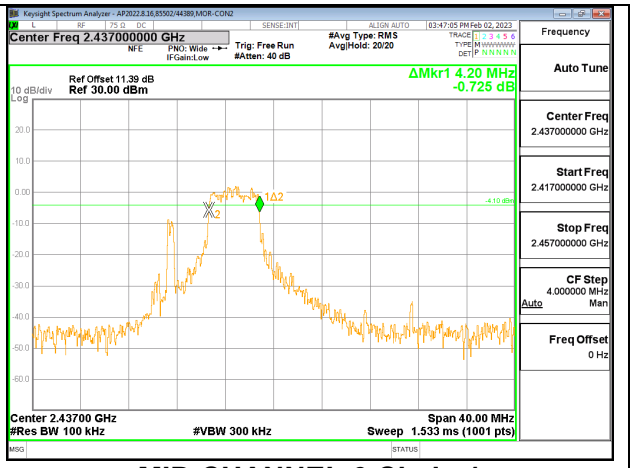
2TX Chain 0 + Chain 1 CDD OFDMA MODE: 52-Tones, RU Index 38

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Mid 6	2437	4.20	4.20	0.5

MID CHANNEL 6



MID CHANNEL 6 Chain 0



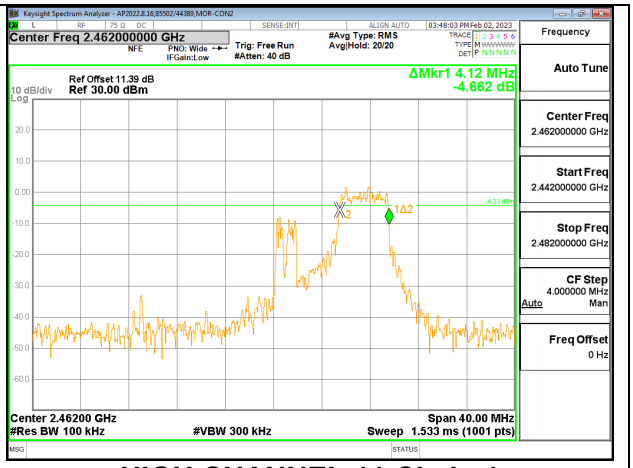
MID CHANNEL 6 Chain 1

2TX Chain 0 + Chain 1 CDD OFDMA MODE: 52-Tones, RU Index 40

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
High 11	2462	4.04	4.12	0.5

HIGH CHANNEL 11

HIGH CHANNEL 11 Chain 0

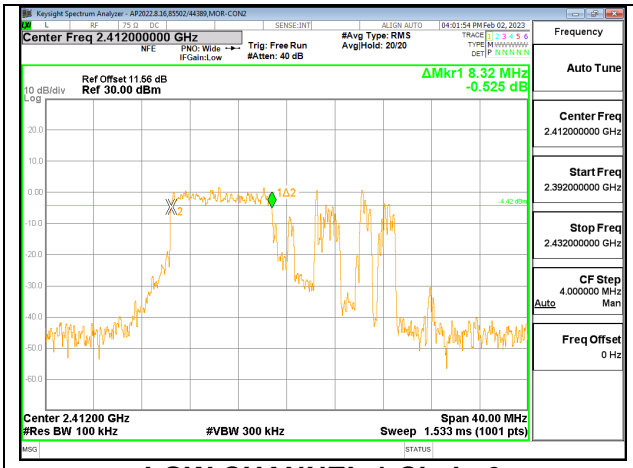


HIGH CHANNEL 11 Chain 1

2TX Chain 0 + Chain 1 CDD OFDMA MODE: 106-Tones, RU Index 53

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 1	2412	8.32	8.28	0.5
Mid 6	2437	8.20	8.44	0.5

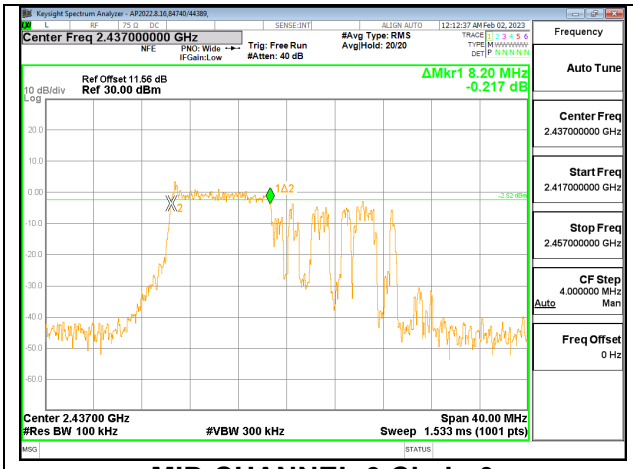
LOW CHANNEL 1



LOW CHANNEL 1 Chain 0

LOW CHANNEL 1 Chain 1

MID CHANNEL 6



MID CHANNEL 6 Chain 0

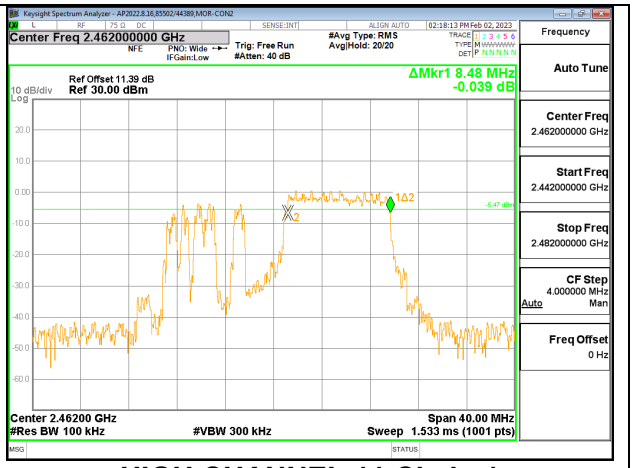
MID CHANNEL 6 Chain 1

2TX Chain 0 + Chain 1 CDD OFDMA MODE: 106-Tones, RU Index 54

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
High 11	2462	8.28	8.48	0.5

HIGH CHANNEL 11

HIGH CHANNEL 11 Chain 0

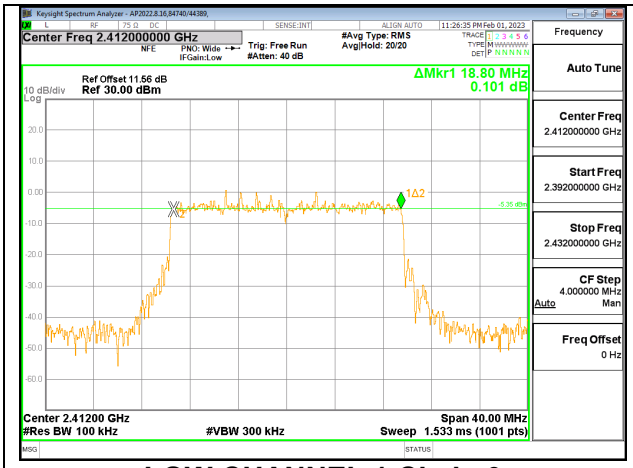


HIGH CHANNEL 11 Chain 1

2TX Chain 0 + Chain 1 CDD OFDMA MODE: 242-Tones, RU Index 61

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 1	2412	18.80	18.88	0.5
Mid 6	2437	19.16	19.00	0.5
High 11	2462	19.00	18.96	0.5

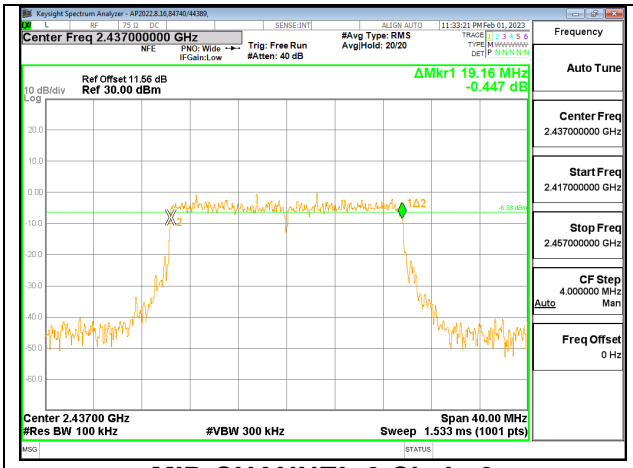
LOW CHANNEL 1



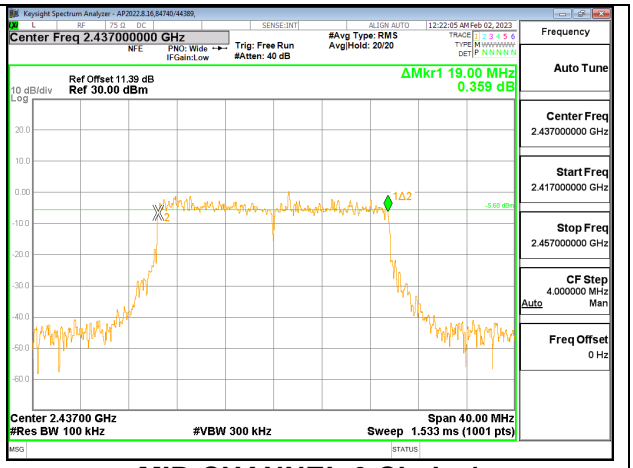
LOW CHANNEL 1 Chain 0

LOW CHANNEL 1 Chain 1

MID CHANNEL 6

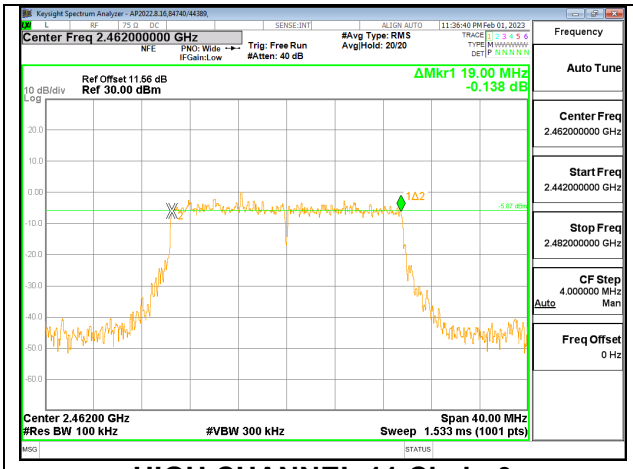


MID CHANNEL 6 Chain 0

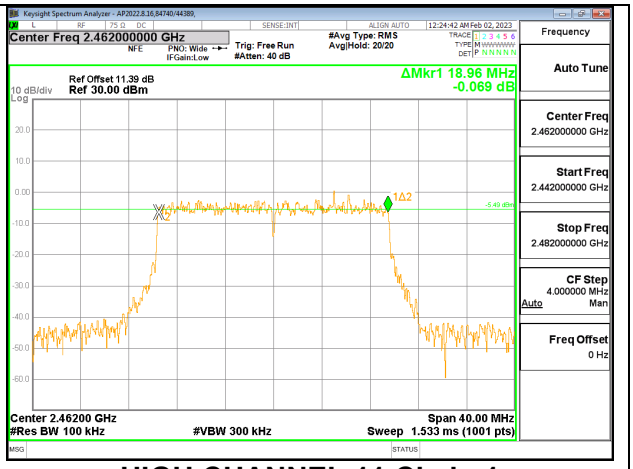


MID CHANNEL 6 Chain 1

HIGH CHANNEL 11



HIGH CHANNEL 11 Chain 0



HIGH CHANNEL 11 Chain 1

9.3. POWER SPECTRAL DENSITY

LIMITS

FCC §15.407 (e)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

RESULTS

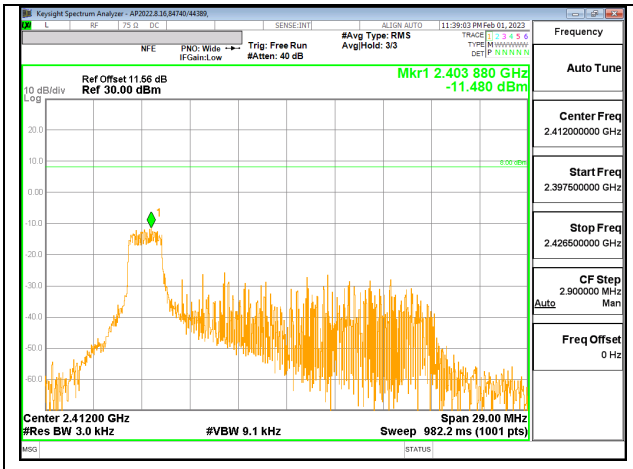
9.3.1. 802.11ax HE20 MODE 2TX

2TX Chain 0 + Chain 1 CDD OFDMA MODE: 26-Tones, RU Index 0

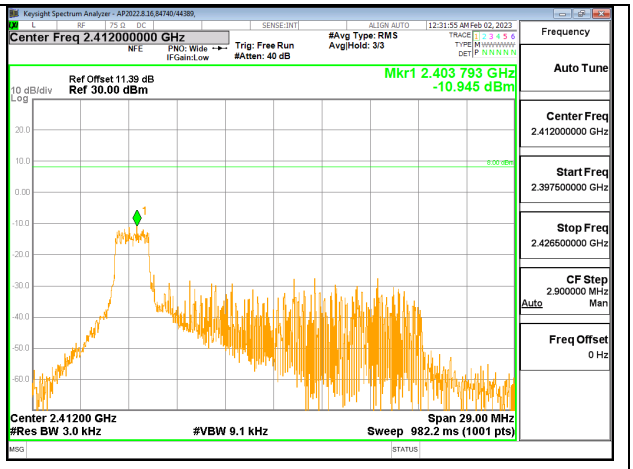
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 3kHz)	Chain 1 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-11.480	-10.945	-8.19	8.0	-16.2

LOW CHANNEL 1



LOW CHANNEL 1 Chain 0



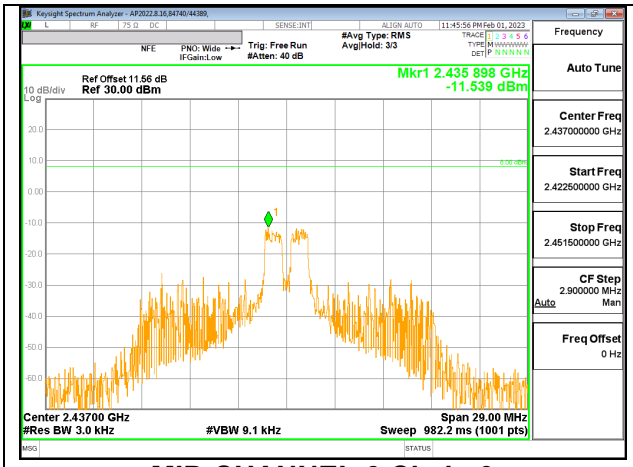
LOW CHANNEL 1 Chain 1

2TX Chain 0 + Chain 1 CDD OFDMA MODE: 26-Tones, RU Index 4

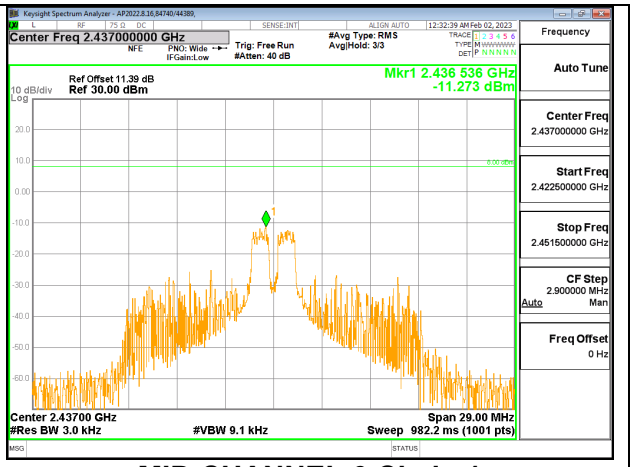
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 3kHz)	Chain 1 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Mid 6	2437	-11.539	-11.273	-8.39	8.0	-16.4

MID CHANNEL 6



MID CHANNEL 6 Chain 0



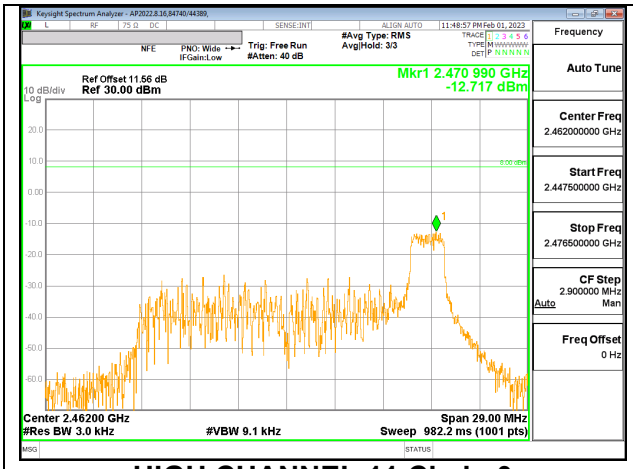
MID CHANNEL 6 Chain 1

2TX Chain 0 + Chain 1 CDD OFDMA MODE: 26-Tones, RU Index 8

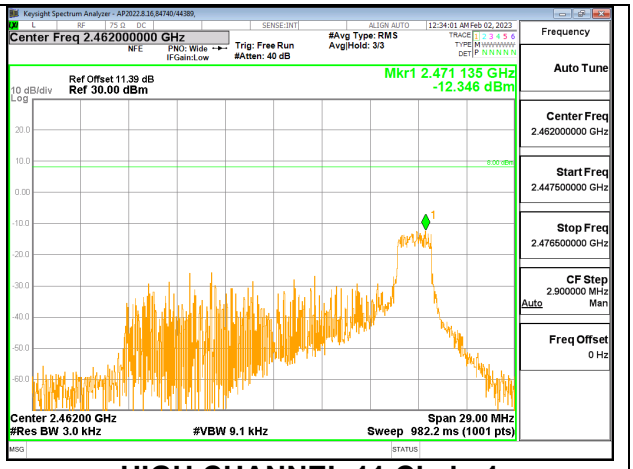
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 3kHz)	Chain 1 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
High 11	2462	-12.717	-12.346	-9.52	8.0	-17.5

HIGH CHANNEL 11



HIGH CHANNEL 11 Chain 0



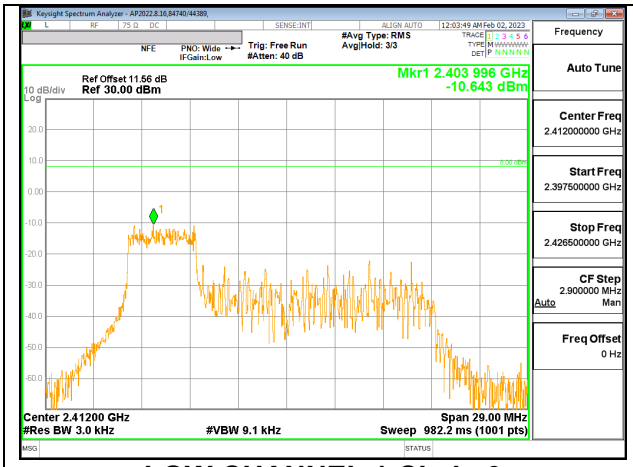
HIGH CHANNEL 11 Chain 1

2TX Chain 0 + Chain 1 CDD OFDMA MODE: 52-Tones, RU Index 37

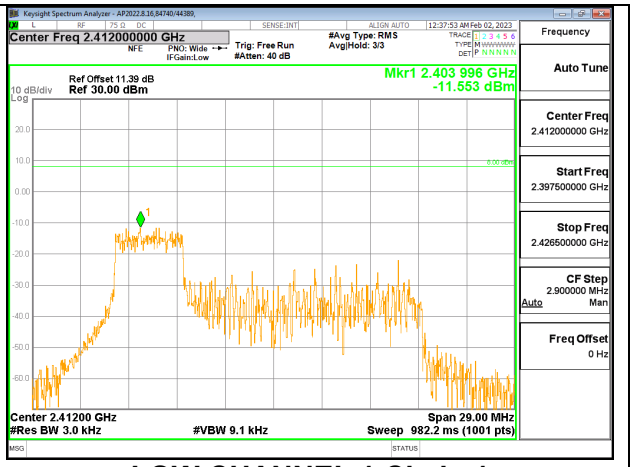
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 3kHz)	Chain 1 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-10.643	-11.553	-8.06	8.0	-16.1

LOW CHANNEL 1



LOW CHANNEL 1 Chain 0



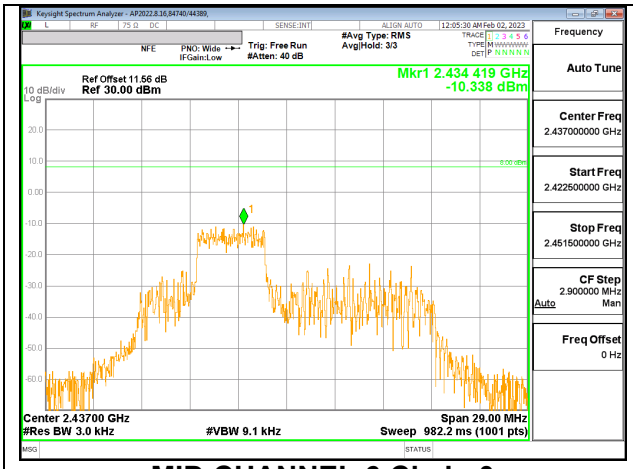
LOW CHANNEL 1 Chain 1

2TX Chain 0 + Chain 1 CDD OFDMA MODE: 52-Tones, RU Index 38

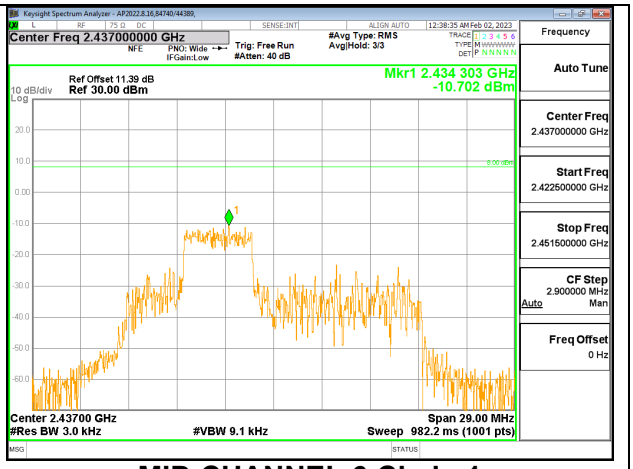
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 3kHz)	Chain 1 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Mid 6	2437	-10.338	-10.702	-7.51	8.0	-15.5

MID CHANNEL 6



MID CHANNEL 6 Chain 0



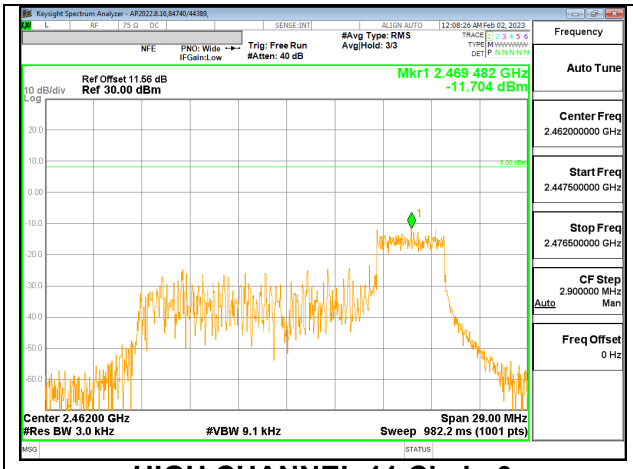
MID CHANNEL 6 Chain 1

2TX Chain 0 + Chain 1 CDD OFDMA MODE: 52-Tones, RU Index 40

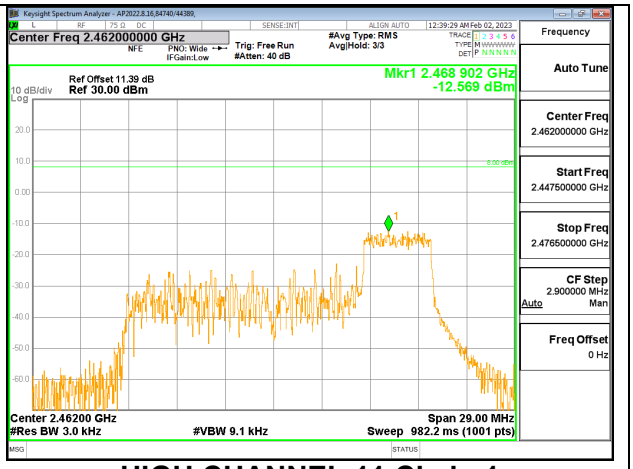
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 3kHz)	Chain 1 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
High 11	2462	-11.704	-12.569	-9.10	8.0	-17.1

HIGH CHANNEL 11



HIGH CHANNEL 11 Chain 0



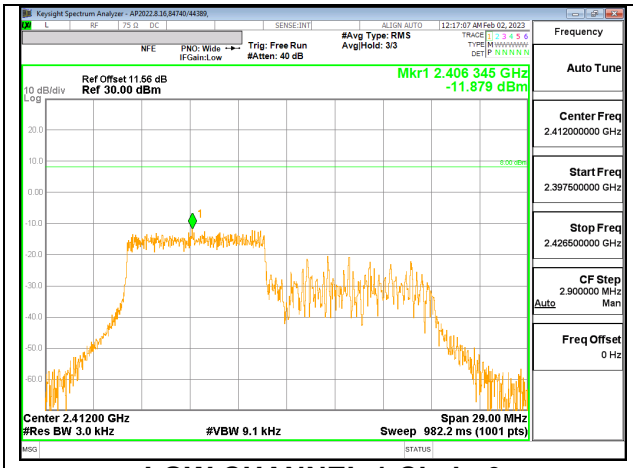
HIGH CHANNEL 11 Chain 1

2TX Chain 0 + Chain 1 CDD OFDMA MODE: 106-Tones, RU Index 53

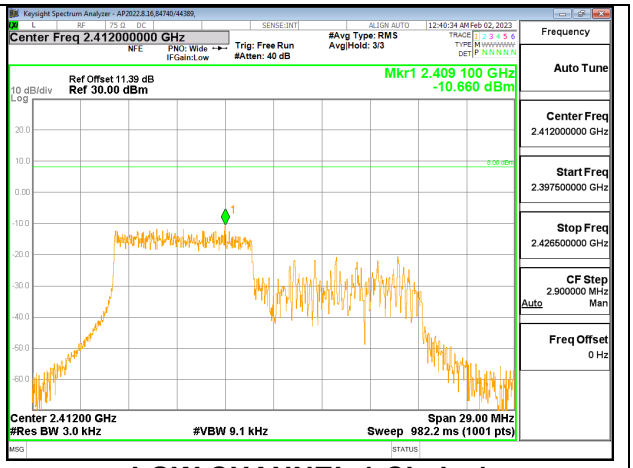
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 3kHz)	Chain 1 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-11.879	-10.660	-8.22	8.0	-16.2
Mid 6	2437	-11.132	-10.000	-7.52	8.0	-15.5

LOW CHANNEL 1

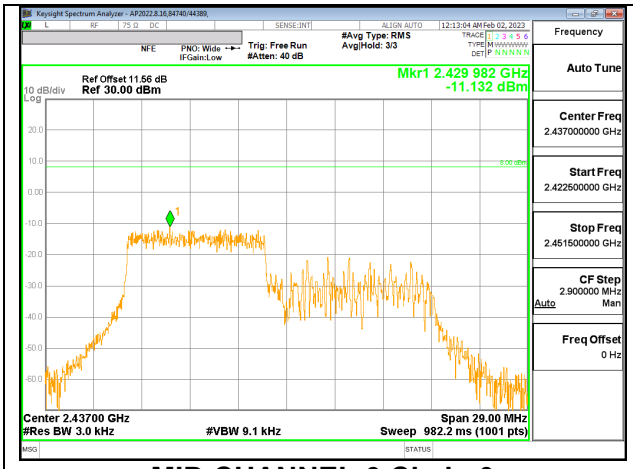


LOW CHANNEL 1 Chain 0

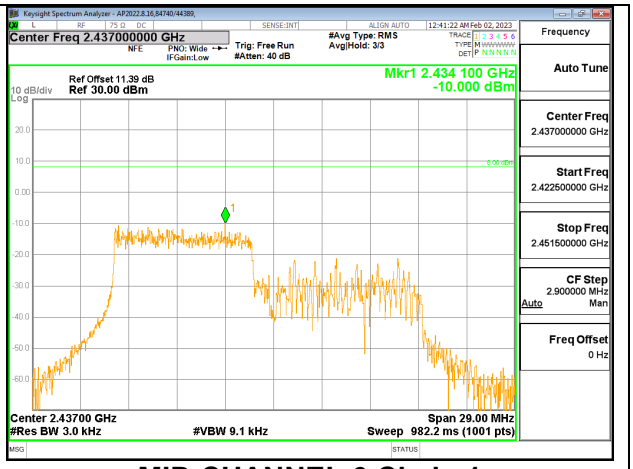


LOW CHANNEL 1 Chain 1

MID CHANNEL 6



MID CHANNEL 6 Chain 0



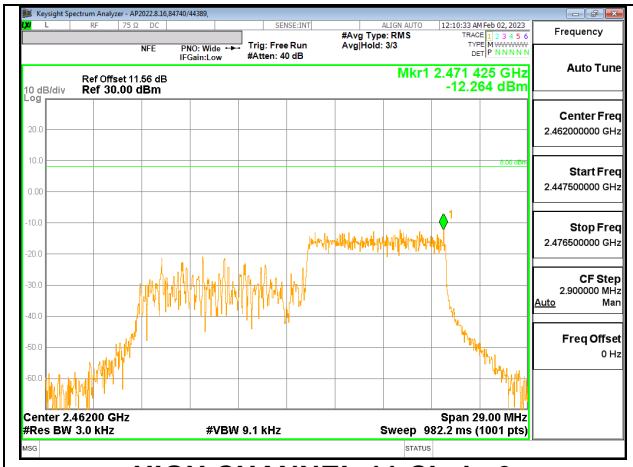
MID CHANNEL 6 Chain 1

2TX Chain 0 + Chain 1 CDD OFDMA MODE: 106-Tones, RU Index 54

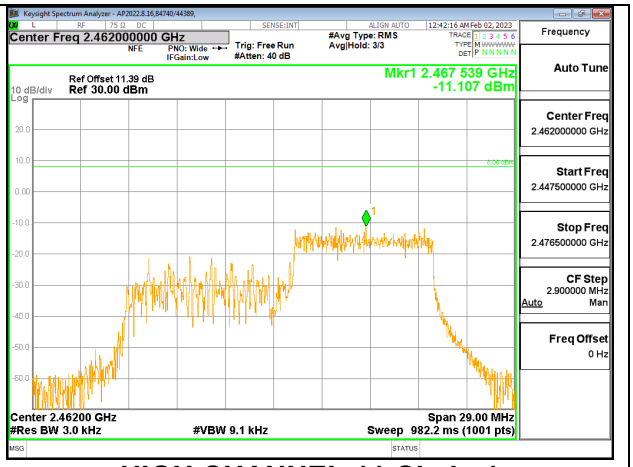
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 3kHz)	Chain 1 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
High 11	2462	-12.264	-11.107	-8.64	8.0	-16.6

HIGH CHANNEL 11



HIGH CHANNEL 11 Chain 0



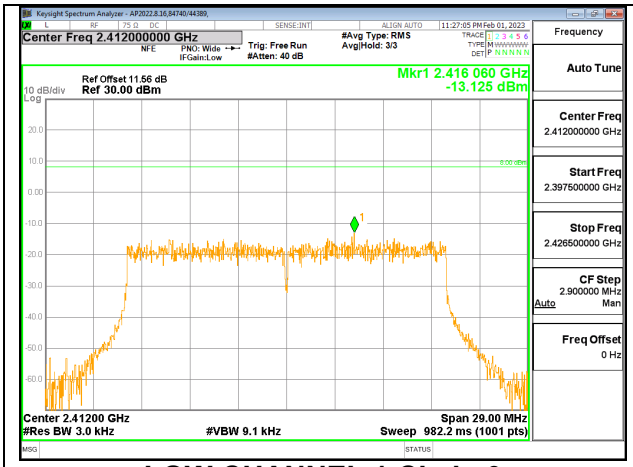
HIGH CHANNEL 11 Chain 1

2TX Chain 0 + Chain 1 CDD OFDMA MODE: 242-Tones, RU Index 61

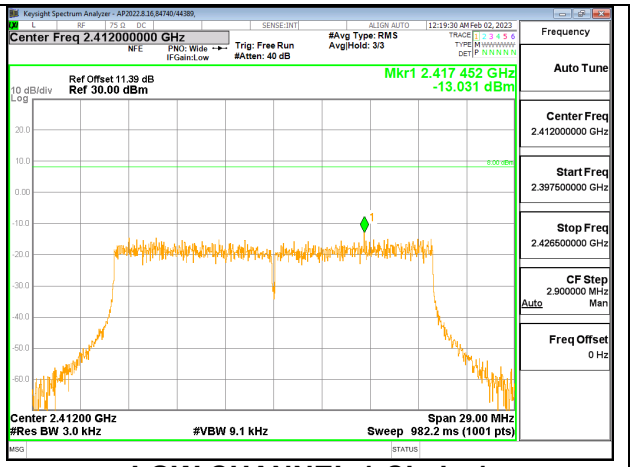
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 3kHz)	Chain 1 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-13.125	-13.031	-10.07	8.0	-18.1
Mid 6	2437	-14.031	-13.949	-10.98	8.0	-19.0
High 11	2462	-14.192	-13.813	-10.99	8.0	-19.0

LOW CHANNEL 1

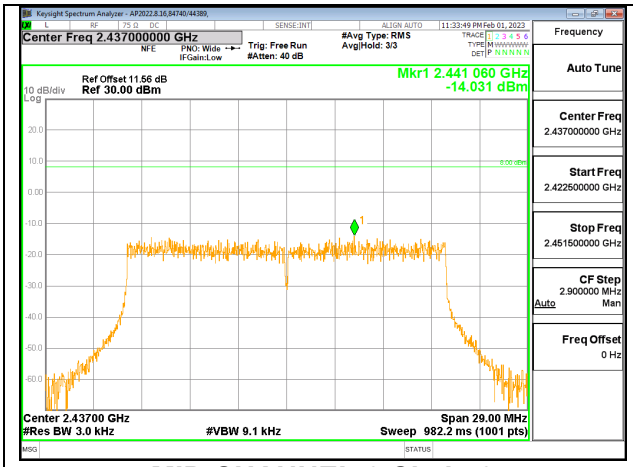


LOW CHANNEL 1 Chain 0

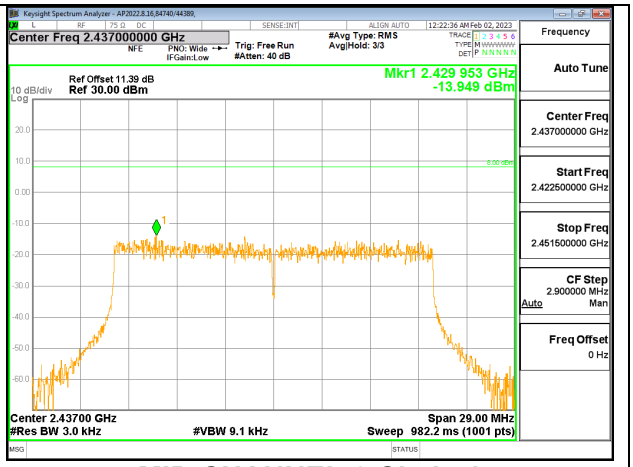


LOW CHANNEL 1 Chain 1

MID CHANNEL 6

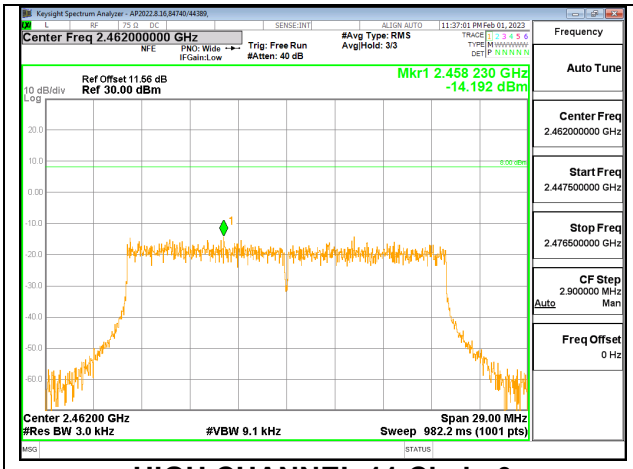


MID CHANNEL 6 Chain 0

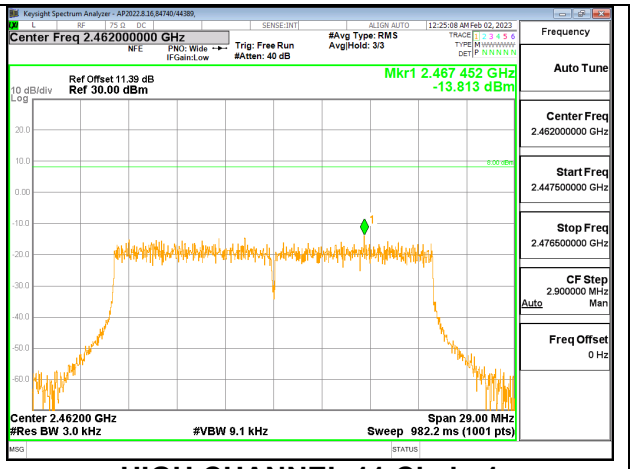


MID CHANNEL 6 Chain 1

HIGH CHANNEL 11



HIGH CHANNEL 11 Chain 0



HIGH CHANNEL 11 Chain 1

9.4. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.407 (d)

(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

PROCEDURE

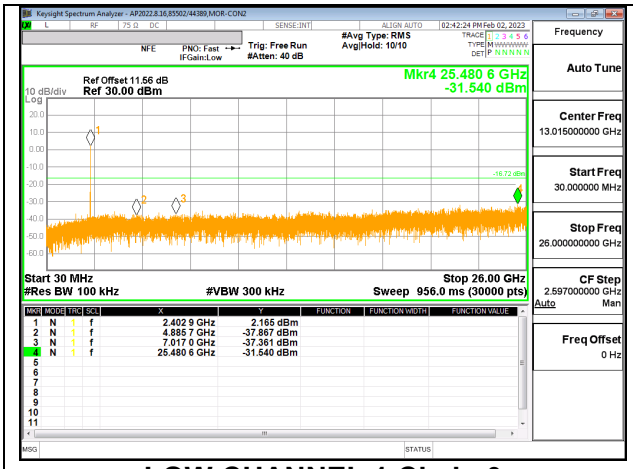
Output power was measured based on the use of peak measurement, therefore the required attenuation is -20 dBc.

RESULTS

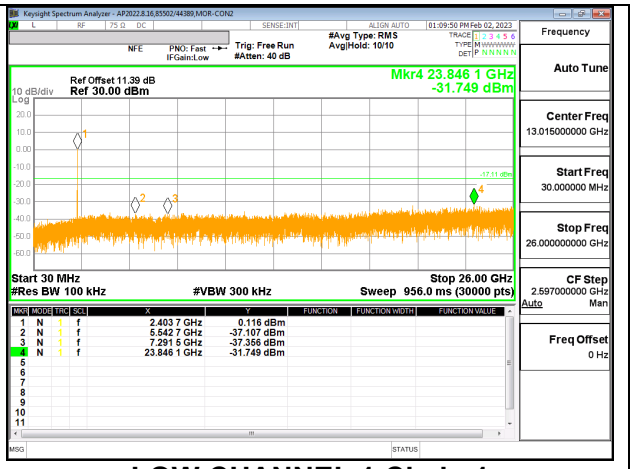
9.4.1. 802.11ax HE20 MODE 2TX

2TX Chain 0 + Chain 1 CDD OFDMA MODE: 26-Tones, RU Index 0

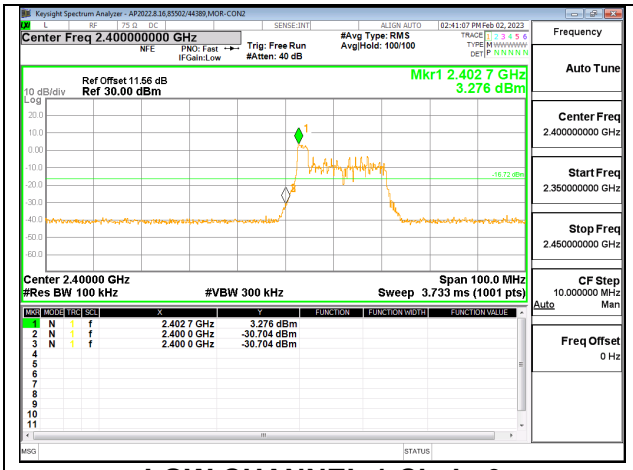
LOW CHANNEL 1



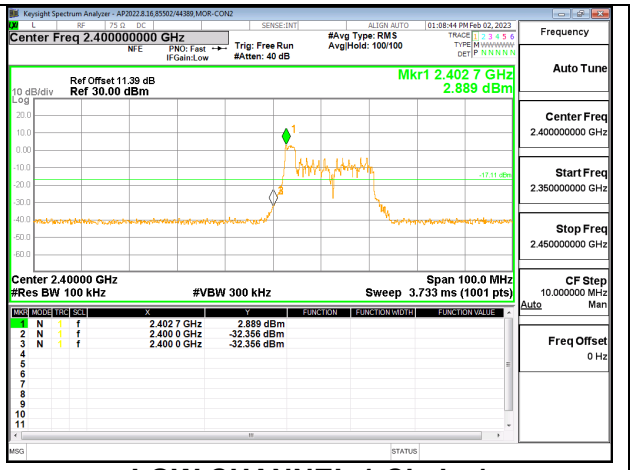
LOW CHANNEL 1 Chain 0



LOW CHANNEL 1 Chain 1



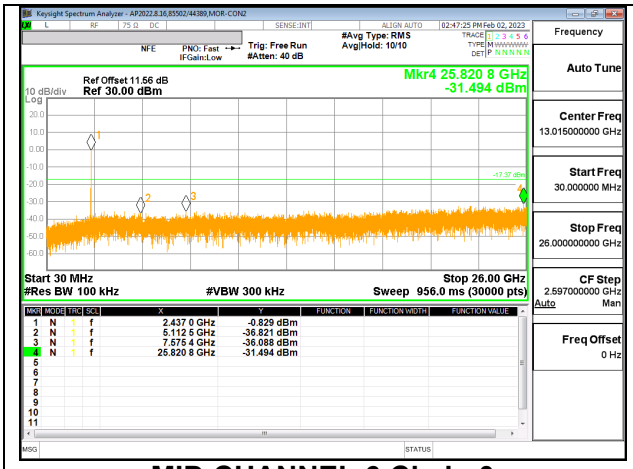
LOW CHANNEL 1 Chain 0



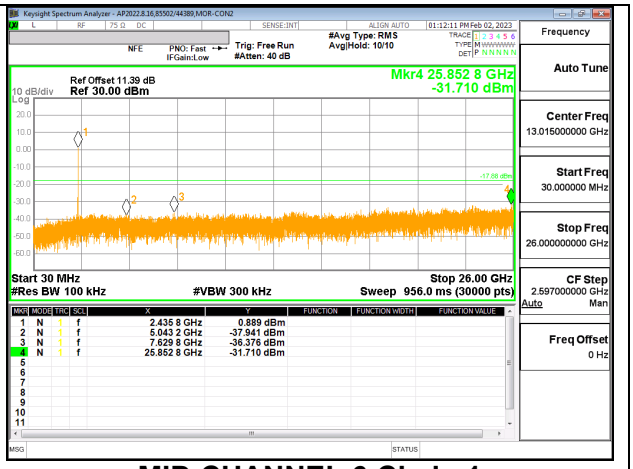
LOW CHANNEL 1 Chain 1

2TX Chain 0 + Chain 1 CDD OFDMA MODE: 26-Tones, RU Index 4

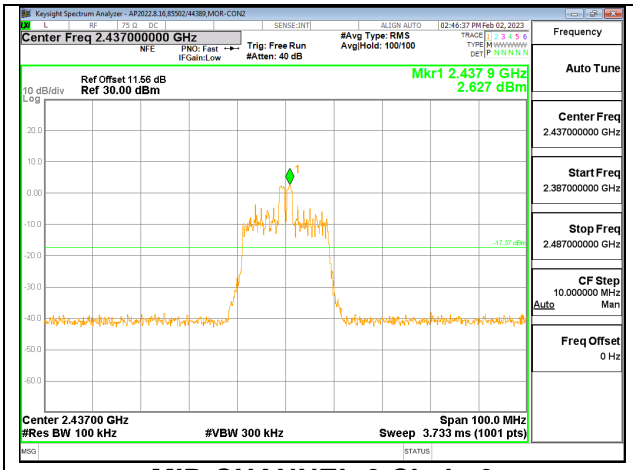
MID CHANNEL 6



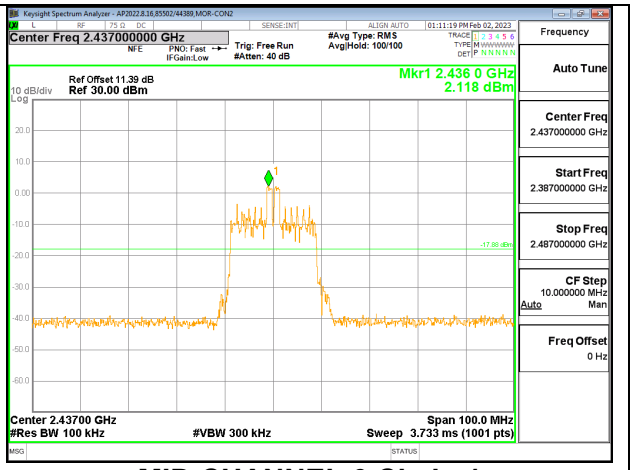
MID CHANNEL 6 Chain 0



MID CHANNEL 6 Chain 1



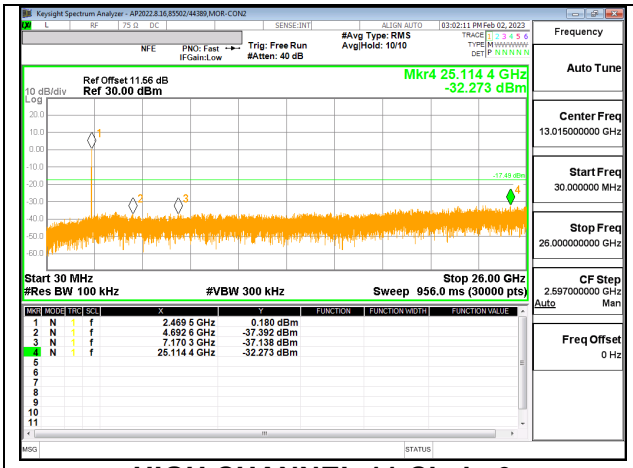
MID CHANNEL 6 Chain 0



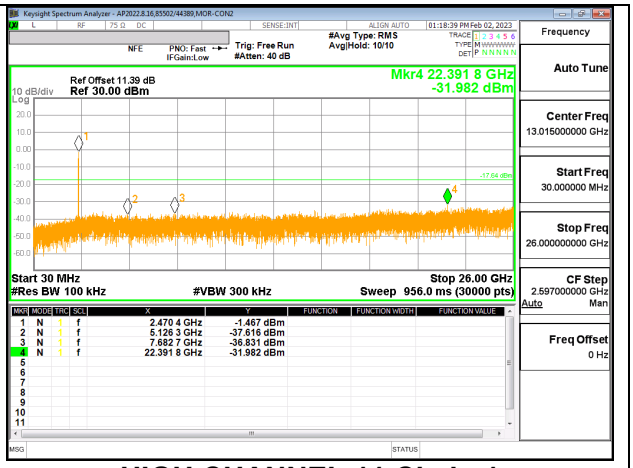
MID CHANNEL 6 Chain 1

2TX Chain 0 + Chain 1 CDD OFDMA MODE: 26-Tones, RU Index 8

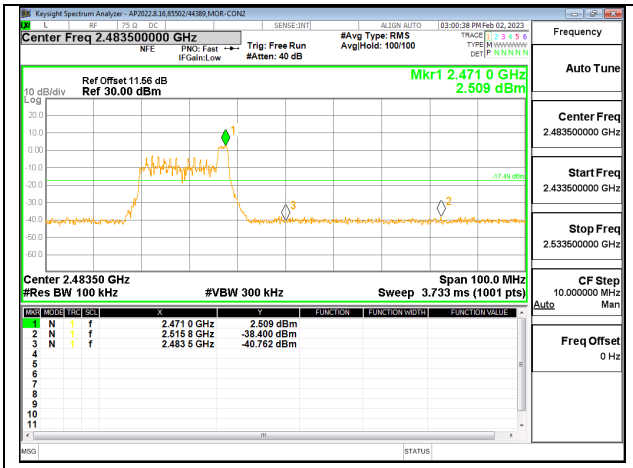
HIGH CHANNEL 11



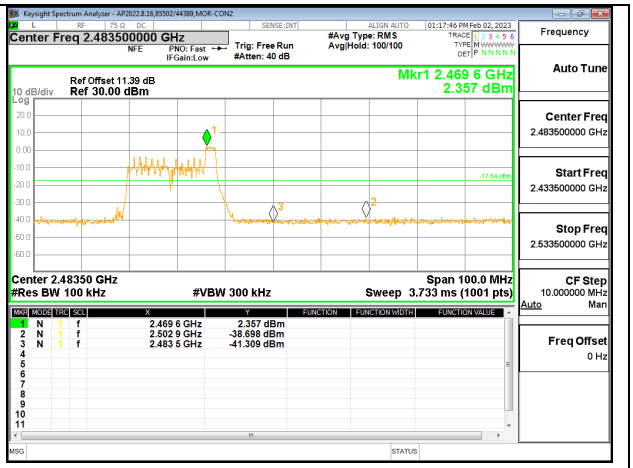
HIGH CHANNEL 11 Chain 0



HIGH CHANNEL 11 Chain 1



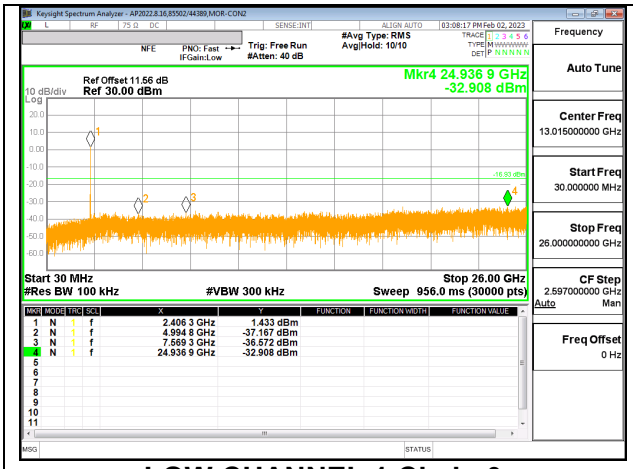
HIGH CHANNEL 11 Chain 0



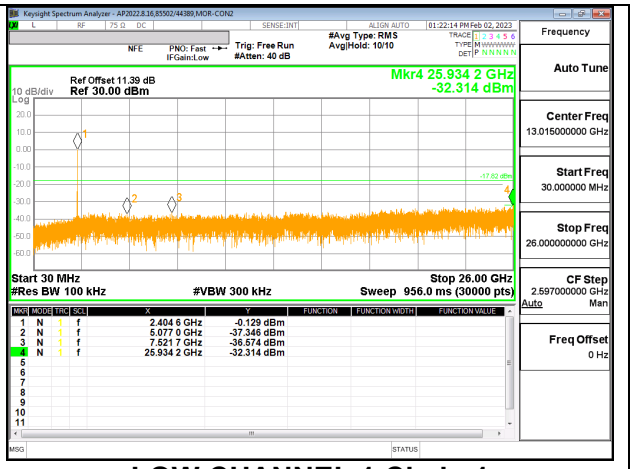
HIGH CHANNEL 11 Chain 1

2TX Chain 0 + Chain 1 CDD OFDMA MODE: 52-Tones, RU Index 37

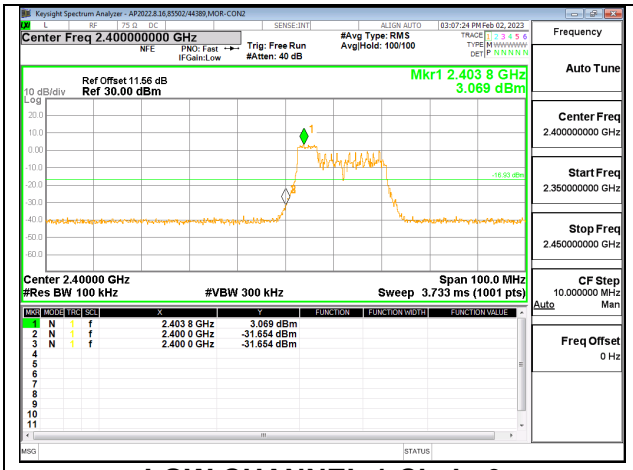
LOW CHANNEL 1



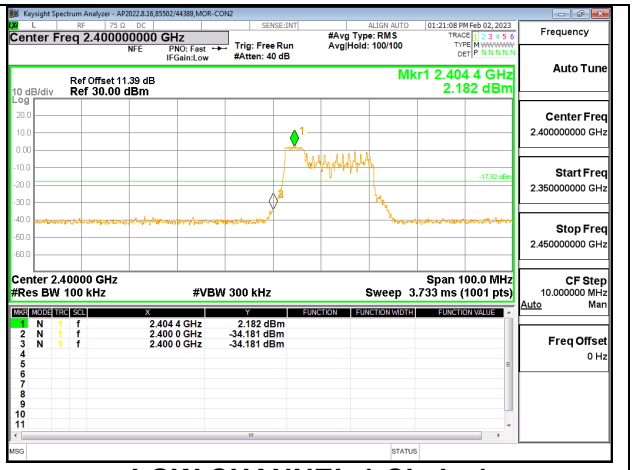
LOW CHANNEL 1 Chain 0



LOW CHANNEL 1 Chain 1



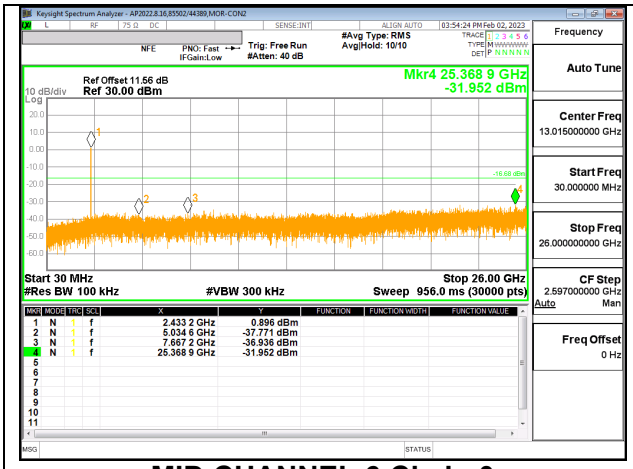
LOW CHANNEL 1 Chain 0



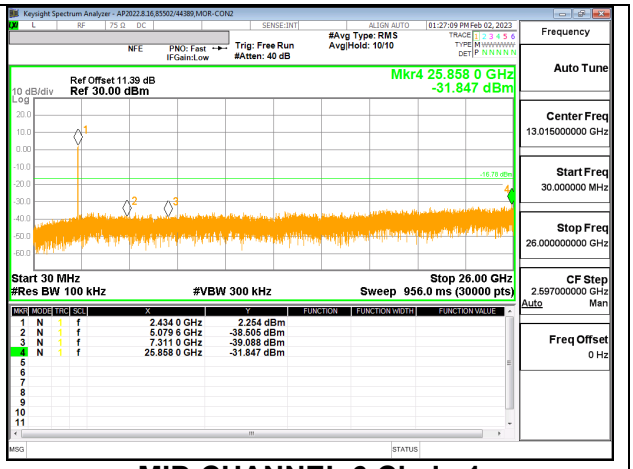
LOW CHANNEL 1 Chain 1

2TX Chain 0 + Chain 1 CDD OFDMA MODE: 52-Tones, RU Index 38

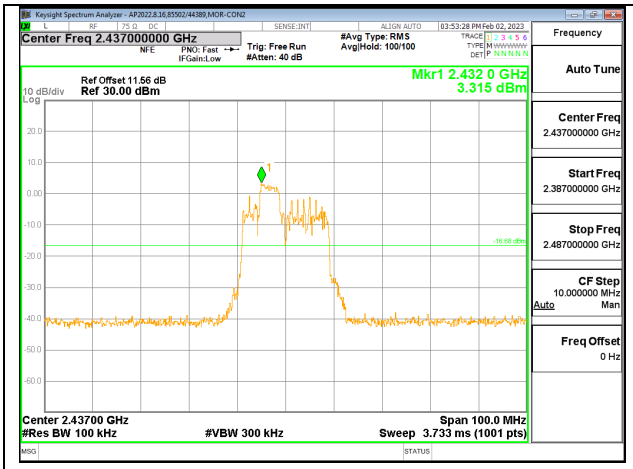
MID CHANNEL 6



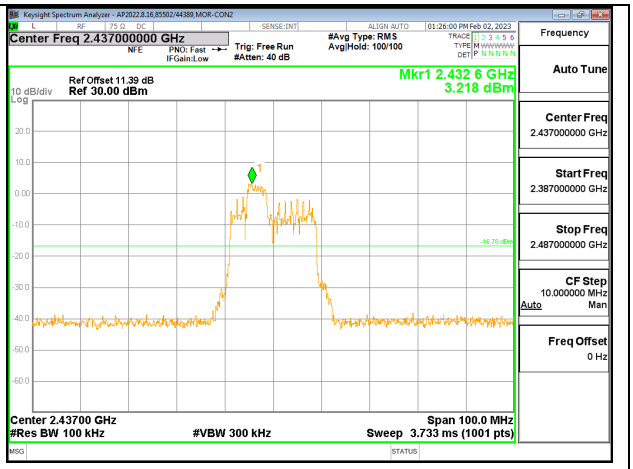
MID CHANNEL 6 Chain 0



MID CHANNEL 6 Chain 1



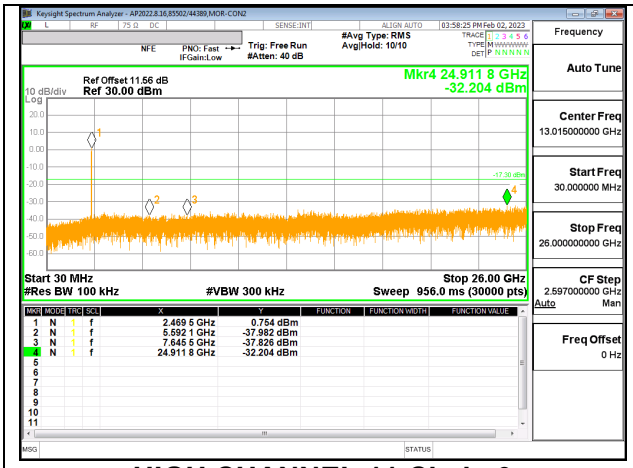
MID CHANNEL 6 Chain 0



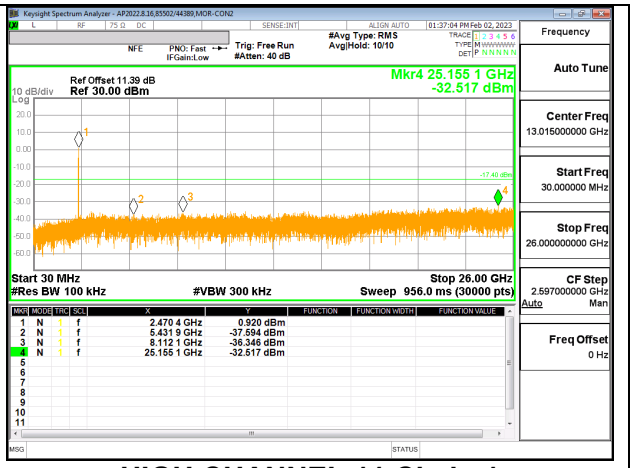
MID CHANNEL 6 Chain 1

2TX Chain 0 + Chain 1 CDD OFDMA MODE: 52-Tones, RU Index 40

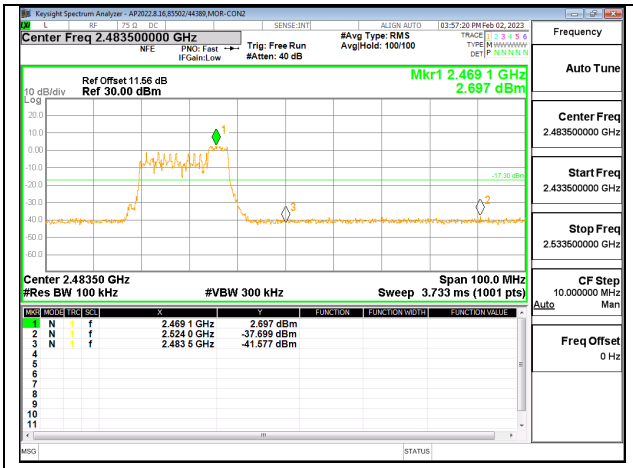
HIGH CHANNEL 11



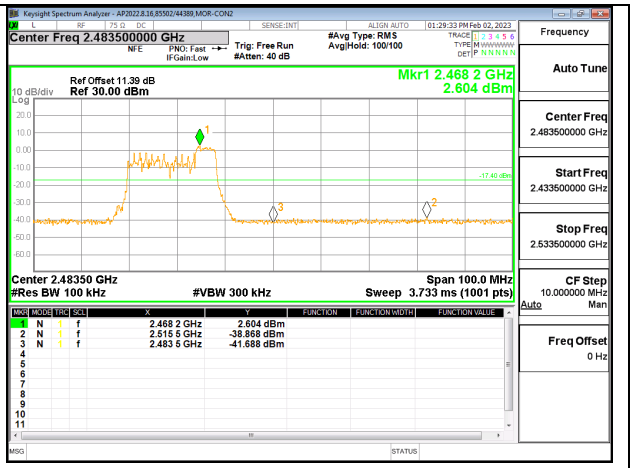
HIGH CHANNEL 11 Chain 0



HIGH CHANNEL 11 Chain 1



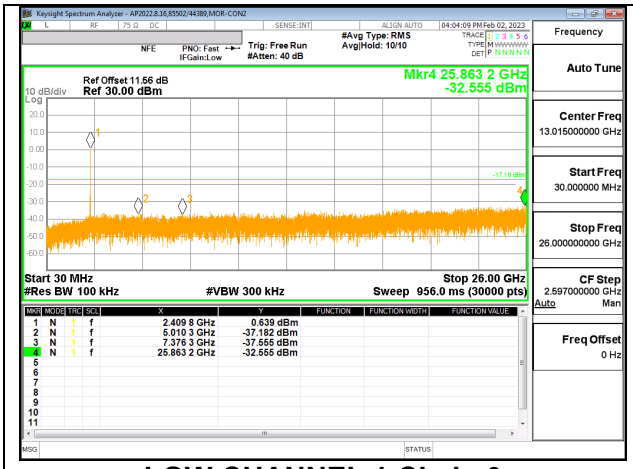
HIGH CHANNEL 11 Chain 0



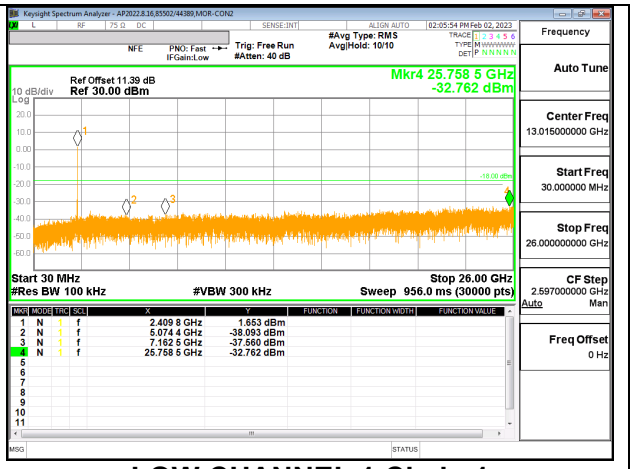
HIGH CHANNEL 11 Chain 1

2TX Chain 0 + Chain 1 CDD OFDMA MODE: 106-Tones, RU Index 53

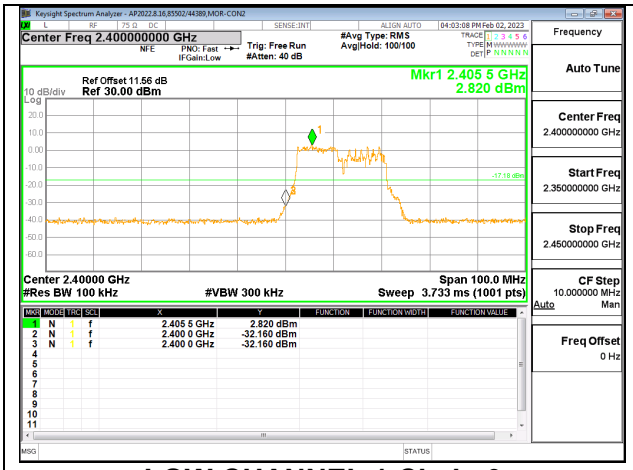
LOW CHANNEL 1



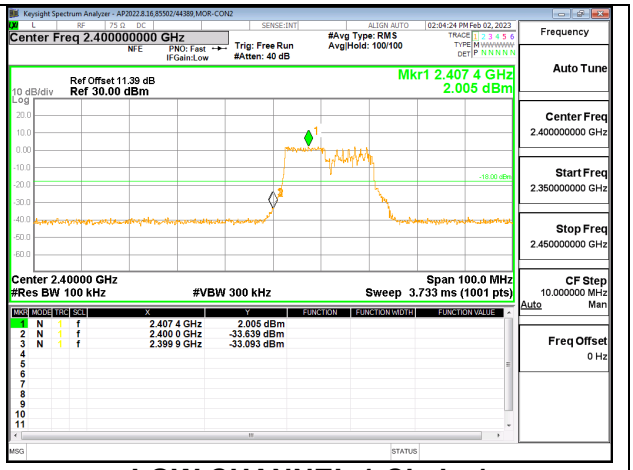
LOW CHANNEL 1 Chain 0



LOW CHANNEL 1 Chain 1

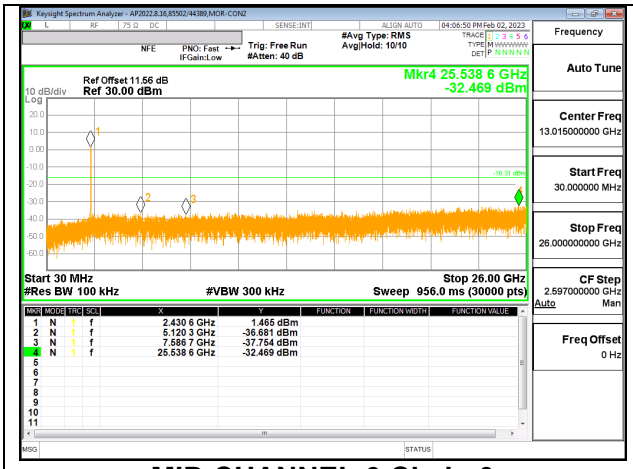


LOW CHANNEL 1 Chain 0

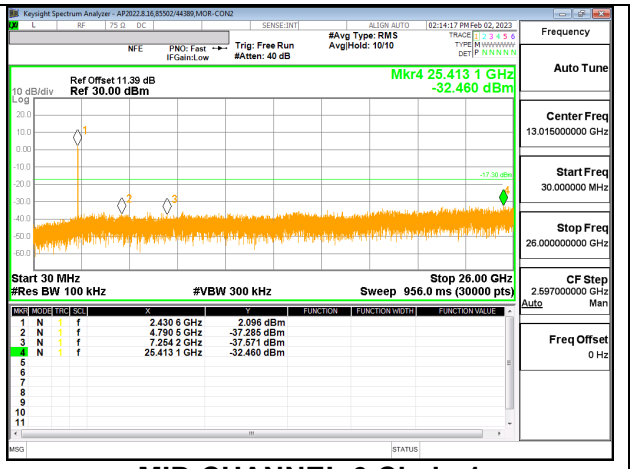


LOW CHANNEL 1 Chain 1

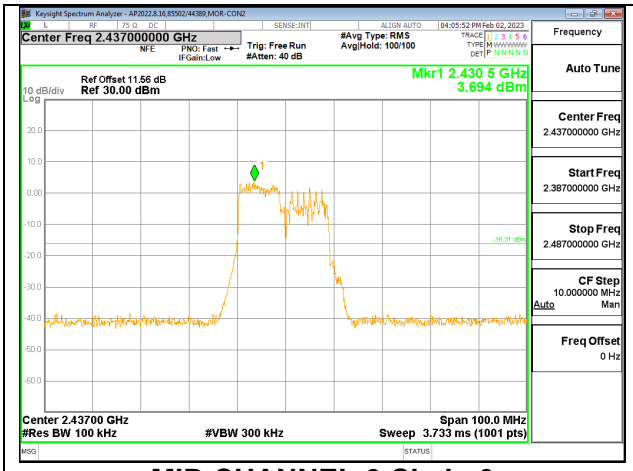
MID CHANNEL 6



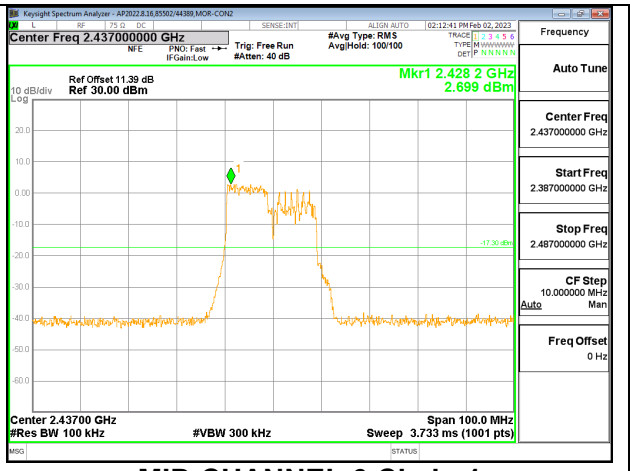
MID CHANNEL 6 Chain 0



MID CHANNEL 6 Chain 1



MID CHANNEL 6 Chain 0



MID CHANNEL 6 Chain 1