

TEST REPORT

Report Number: 14982436-E7V3

Applicant : APPLE INC.
1 APPLE PARK WAY
CUPERTINO, CA 95014, U.S.A.

Model : A3083 (Parent Model)
A3292, A3293, A3294 (Variant Models)

Brand : APPLE

FCC ID : BCG-E8666A (Parent Model)
BCG-E8667A, BCG-E8668A, BCG-E8683A (Variant Models)

IC ID : 579C-E8666A (Parent Model)
579C-E8667A, 579C-E8668A, 579C-E8683A (Variant Models)

EUT Description : SMARTPHONE

Test Standard(s) : FCC 47 CFR PART 15 SUBPART E
ISED RSS-247 ISSUE 3
ISED RSS-GEN ISSUE 5 + A1 + A2

Date Of Issue:
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REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	2024/07/08	Initial Review	Tony Li
V2	2024/07/09	Addressed TCB Feedback on Sections 9 and 10	Tony Li
V3	2024/08/17	Addressed TCB Feedback on Sections 6.5 and 10	Tony Li

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1. ATTESTATION OF TEST RESULTS

Applicant Name and Address	APPLE INC. 1 APPLE PARK WAY CUPERTINO, CA 95014, U.S.A.
Model	A3083 (Parent Model) A3292, A3293, A3294 (Variant Models)
Brand	APPLE
FCC ID	BCG-E8666A (Parent Model) BCG-E8667A, BCG-E8668A, BCG-E8683A (Variant Models)
IC ID	579C-E8666A (Parent Model) 579C-E8667A, 579C-E8668A, 579C-E8683A (Variant Models)
EUT Description	Smartphone
Serial Number	C07GYF0008T0000FDV, C07H4F0015B0000FDT, QKPYHGJC7L, XK3DWHQHQQW.
Sample Receipt Date	2023/12/19
Date Tested	2023/12/20 to 2024/06/20
Applicable Standards	CFR 47 Part 15 Subpart E ISED RSS-247 Issue 3 ISED RSS-GEN Issue 5 + A1 + A2
Test Results	COMPLIES
UL Verification Services Inc. 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 Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by A2LA, NIST, any agency of the Federal Government, or any agency of the U.S. government.	
Approved & Released By:	Prepared & Reviewed By:
	
Francisco DeAnda Staff Engineer UL Verification Services, Inc.	Tony Li Lead Test Engineer UL Verification Services, Inc.

2. TEST RESULT SUMMARY

This report contains data provided by the customer which can impact the validity of results. UL Verification Services Inc. is only responsible for correctly integrating customer-provided data with measurements performed by UL Verification Services Inc.

Below is a list of the data provided by the customer:

1. Antenna gain and type (see section 6.2)
2. Cable loss (see section 6.2)

FCC	ISED Clause	Requirement	Result	Comment
See Comment	See Comment	Duty Cycle	Reporting purposes only	Per ANSI C63.10, Section 12.2.
See Comment	RSS-GEN 6.7	26dB BW/99% OBW	Reporting purposes only	Per ANSI C63.10 Sections 6.9.2 and 6.9.3
5.407 (e)	RSS-247 6.2.4.1	6 dB BW	Complies	None.
15.407 (a) (1 & 3)	RSS-247 6.2	Output Power	Complies	None.
15.407 (a) (1 & 3)	RSS-247 6.2	PSD	Complies	None.
15.209, 15.205, 15.407 (b)	RSS-GEN 8.9, 8.10, RSS-247 6.2.1.2	Radiated Emissions	Complies	None.
15.207	RSS-Gen 8.8	AC Mains Conducted Emissions	Complies	None.

3. TEST METHODOLOGY

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

- FCC CFR 47 Part 2
- FCC CFR 47 Part 15
- FCC KDB 662911 D01 v02r01
- FCC KDB 789033 D02 v02r01
- FCC KDB 644545 D03 v01
- ANSI C63.10-2013
- KDB 414788 D01 Radiated Test Site v01r01
- ANSI C63.10-2013
- RSS-GEN Issue 5 + A1 +A2
- RSS-247 Issue 3.

4. FACILITIES AND ACCREDITATION

UL Verification Services Inc. is accredited by A2LA, certification #0751.05, 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 1: 47173 Benicia Street, Fremont, CA 94538, USA	US0104	2324A	550739
☒	Building 2: 47266 Benicia Street, Fremont, CA 94538, USA			
☒	Building 3: 843 Auburn Court, Fremont, CA 94538, USA			
☒	Building 4: 47658 Kato Rd, Fremont, CA 94538, USA			
☒	Building 5: 47670 Kato Rd, Fremont, CA 94538, USA			

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}
Conducted Antenna Port Emission Measurement	1.94
Power Spectral Density	2.466
Time Domain Measurements Using SA	3.39
RF Power Measurement Direct Method Using Power Meter	0.450 (Peak), 1.3 (Ave)
Radio Frequency (Spectrum Analyzer)	141.16 Hz
Occupied Bandwidth	1.2%
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.78 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.40 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	2.87 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	6.01 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.73 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.51 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.29 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)
 $36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} = 28.9 \text{ dBuV/m}$

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.
 $36.5 \text{ dBuV} + 0 \text{ dB} + 10.1 \text{ dB} + 0 \text{ dB} = 46.6 \text{ dBuV}$

6. EQUIPMENT UNDER TEST

6.1. EUT DESCRIPTION

The Apple iPhone is a smartphone with cellular GSM, GPRS, EGPRS, WCDMA, LTE, 5G NR1, 5G NR2, IEEE 802.11a/b/g/n/ac/ax/be, Bluetooth (BT), Ultra-Wideband (UWB), Global Positioning System (GPS), Near-Field Communication (NFC), Narrow-Band (NB) UNII, 802.15.4, 802.15.4ab-Narrow Band (NB), Wireless Power Transfer (WPT) and Mobile Satellite Service (MSS) technologies. The rechargeable battery is not user accessible. This device is not user-serviceable and requires special tools to disassemble.

6.2. DESCRIPTION OF AVAILABLE ANTENNAS

Antenna Type is IFA.

The antennas' gains, as provided by the manufacturer, are as follows:

Frequency Range (MHz)	Antenna 6 (dBi)	Antenna 5 (dBi)	Uncorrelated Chains (dBi)	Correlated Chains (dBi)
5150 - 5250 UNII - 1	-0.40	-4.00	-1.84	1.00
5725 - 5825 UNII 3	-1.20	-1.00	-1.10	1.91

Frequency Range (MHz)	Cable Loss	
	Antenna 6 (dB)	Antenna 5 (dB)
5150 - 5250 UNII - 1	2.70	2.88
5725 - 5825 UNII 3	2.80	2.98

Cable loss was used for RF antenna port tests was included in offset of the test equipment during testing.

Note: ANT1 and ANT2 indicated in the test result sections are representative of ANT6 and ANT5, respectively.

6.3. SOFTWARE AND FIRMWARE

The EUT firmware and software installed during testing was 2219.0.0.100.1~40.74.46.

6.4. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

5.2 GHz BAND (FCC)

Frequency Range (MHz)	Mode	Antenna	Configuration	Output Power (dBm)	Output Power (mW)
5162 - 5245 (UNII-1)	BDR	ANT 6	High Power	9.98	9.95
			Low Power	6.48	4.45
		ANT 5	High Power	9.98	9.95
			Low Power	4.97	3.14
		BF ANT 6 + ANT 5	High Power	9.96	9.91
			Low Power	8.75	7.50
	HDR 4	ANT 6	High Power	11.46	14.00
			Low Power	-0.02	1.00
		ANT 5	High Power	11.45	13.96
			Low Power	-1.55	0.70
		BF ANT 6 + ANT 5	High Power	11.43	13.90
			Low Power	2.30	1.70
	HDR 8	ANT 6	High Power	13.91	24.60
			Low Power	-0.01	1.00
		ANT 5	High Power	13.93	24.72
			Low Power	-1.54	0.70
		BF ANT 6 + ANT 5	High Power	13.97	24.95
			Low Power	2.23	1.67

5.2 GHz BAND (IC)

Frequency Range (MHz)	Mode	Antenna	Configuration	Output Power (dBm)	Ant Gain (dBi)	Output Power (EIRP) (mW)
5162 - 5245 (UNII-1)	BDR	ANT6	High Power	8.94	-0.40	7.14
			Low Power	6.48	-0.40	4.06
		ANT5	High Power	12.97	-4.00	7.89
			Low Power	4.97	-4.00	1.25
		BFANT6+ANT5	High Power	8.39	1.00	8.69
			Low Power	7.05	1.00	6.38
	HDR 4	ANT6	High Power	10.98	-0.40	11.43
			Low Power	-0.02	-0.40	0.91
		ANT5	High Power	14.41	-4.00	10.99
			Low Power	-1.55	-4.00	0.28
		BFANT6+ANT5	High Power	10.04	1.00	12.71
			Low Power	2.3	1.00	2.14
	HDR 8	ANT6	High Power	12.97	-0.40	18.07
			Low Power	-0.01	-0.40	0.91
		ANT5	High Power	14.98	-4.00	12.53
			Low Power	-1.54	-4.00	0.28
		BFANT6+ANT5	High Power	12.41	1.00	21.93
			Low Power	2.23	1.00	2.10

5.8 GHz BAND (FCC/IC)

Frequency Range (MHz)	Mode	Antenna	Configuration	Output Power (dBm)	Output Power (mW)
5733 - 5844 (UNII-3)	BDR	ANT 6	High Power	15.48	35.32
			Low Power	7.48	5.60
		ANT 5	High Power	15.48	35.32
			Low Power	5.92	3.91
		BF, ANT 6 + ANT 5	High Power	18.47	70.31
			Low Power	9.77	9.48
	HDR 4	ANT 6	High Power	15.48	35.32
			Low Power	0.91	1.23
		ANT 5	High Power	15.48	35.32
			Low Power	-0.53	0.89
		BF, ANT 6 + ANT 5	High Power	18.48	70.47
			Low Power	3.29	2.13
	HDR 8	ANT 6	High Power	15.47	35.24
			Low Power	0.98	1.25
		ANT 5	High Power	15.48	35.32
			Low Power	-0.52	0.89
		BF, ANT 6 + ANT 5	High Power	18.48	70.47
			Low Power	3.22	2.10

6.5. WORST-CASE CONFIGURATION AND MODE

The EUT was investigated in three orthogonal orientations X, Y and Z on ANT 6, ANT 5 and 2TX, it was determined that Z (Portrait) was the worst-case orientation for both ANT 6 and ANT 5. And Y (Landscape) orientation for 2TX beamforming.

2TX Beamforming modes was used to perform on radiated harmonic spurious final test to cover all SISO modes. Max power was tuned to maximum based on among all the modes. For testing purposes, radiated harmonics spurious below 1GHz, 1-18GHz L/M/H channels, 18-40GHz, and power line conducted emissions were performed with the EUT set at the 2TX Beamforming mode with power setting to the maximum level among FCC/ISED SISO modes as worst-case scenario.

Below 30MHz, 30-1000MHz emissions spurious tests were performed with EUT connected to AC power adapter and EUT set at x orientation as the worst case; and for above 1GHz, the worst-case configuration reported was tested with EUT only. For AC line conducted emission, test was investigated with AC power adapter and with laptop. There were no emissions found below 30MHz within 20dB of the limit.

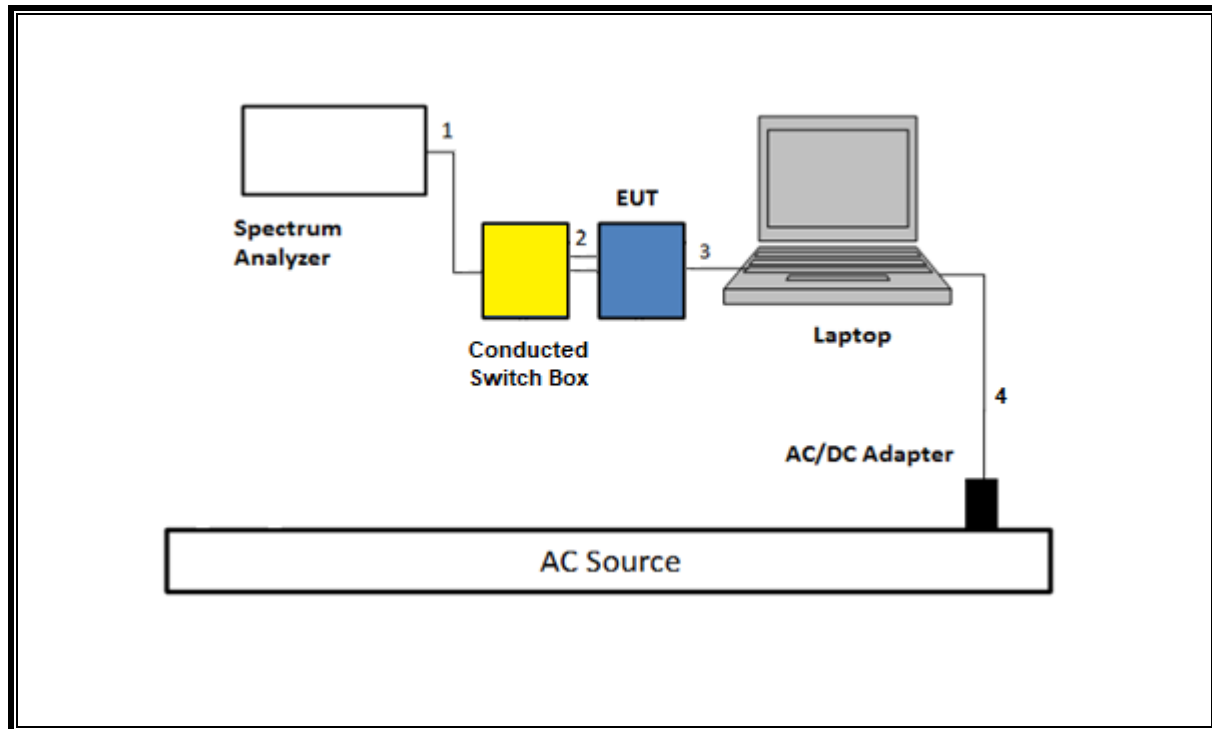
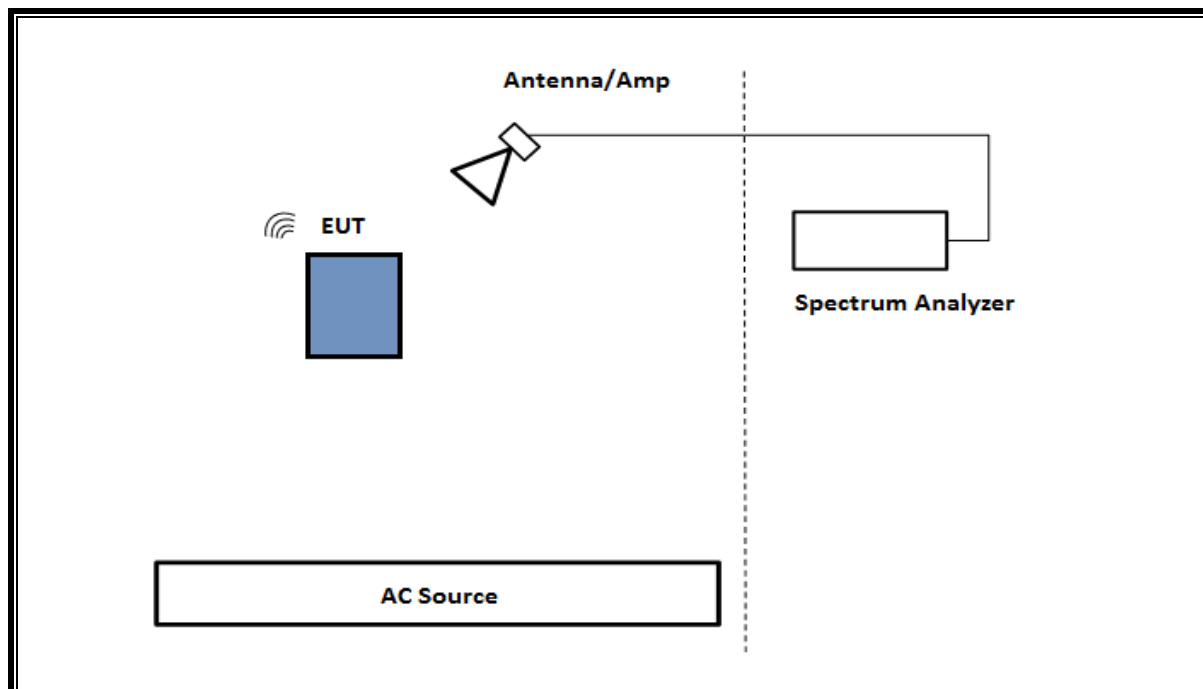
For simultaneous transmission of multiple channels in the WI-FI 2.4GHz and 5GHz NB UNII bands, no noticeable emission was found.

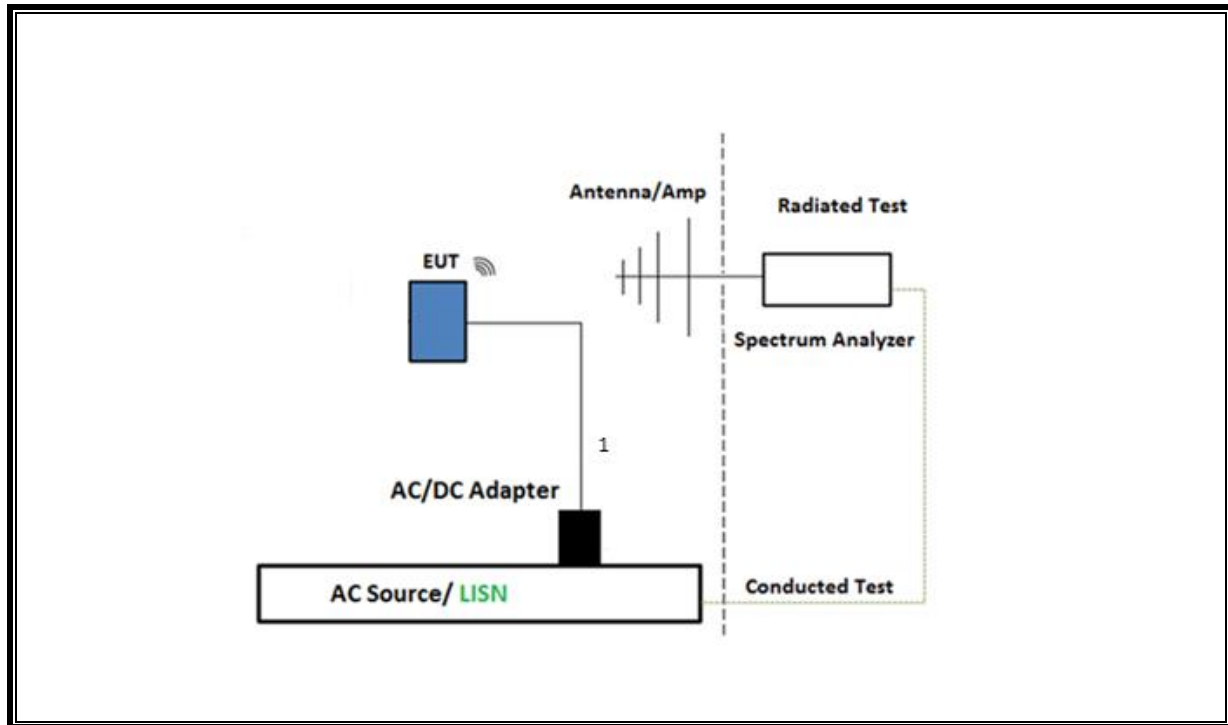
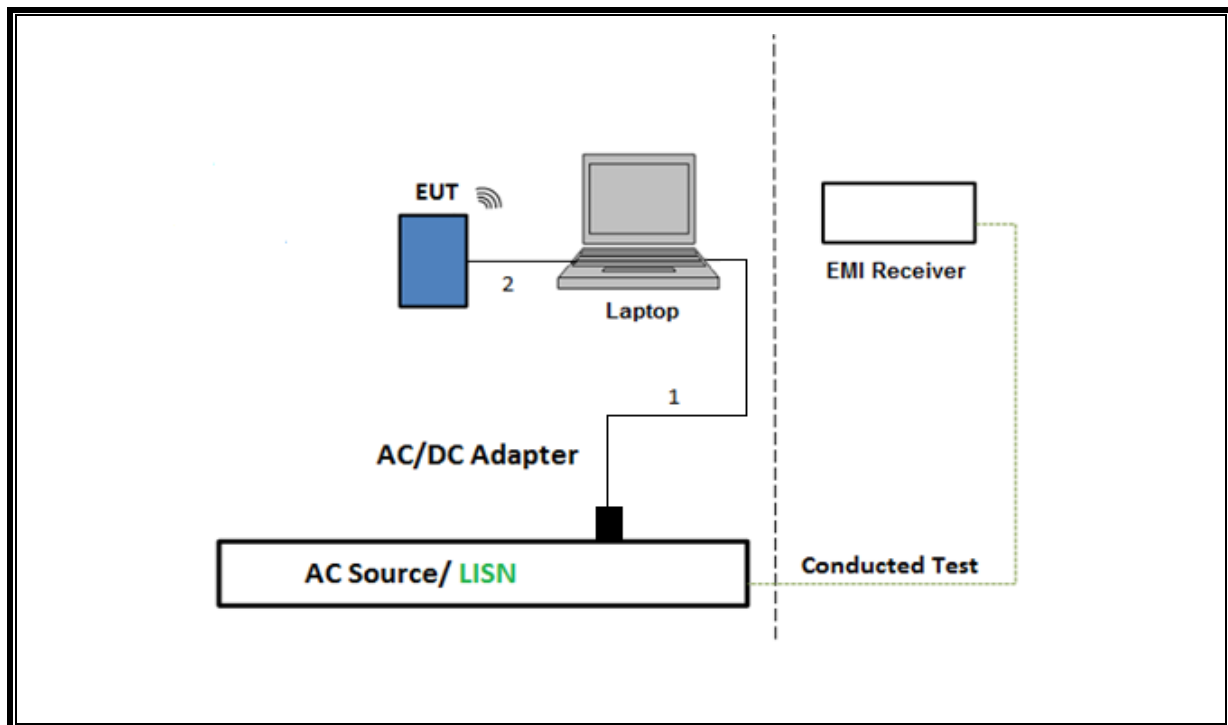
6.6. DESCRIPTION OF TEST SETUP

SUPPORT TEST EQUIPMENT						
Description		Manufacturer	Model	Serial Number		FCC ID/ DoC
Laptop		Apple	Macbook Pro	C02VD7SAHV22		BCGA1708
Laptop AC/DC adapter		Liteon Technology	A1424	NSW25679		DoC
EUT AC/DC adapter		Apple	A1720	C3D8417A7R93KVPA8		DoC
Conducted Switch Box		UL	n/a	208281		N/A
I/O CABLES (RF CONDUCTED TEST)						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	SMA	1	SMA	Shielded	0.75	To spectrum Analyzer
2	Antenna	2	SMA	Un-shielded	0.2	To Conducted Switch Box
3	USB-C	1	USB-C	Shielded	1.0	N/A
4	DC	1	DC	Shielded	2	N/A
I/O CABLES (RF RADIATED AND AC LINE CONDUCTED TEST)						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC	1	DC	Un-shielded	2	N/A
2	USB	1	USB-C	Shielded	1	N/A

TEST SETUP

The EUT setup is shown as below. Test software exercised the radio card.

SETUP DIAGRAM FOR CONDUCTED TESTS**SETUP DIAGRAM FOR RADIATED TESTS Above 1 GHz (1-40GHz)**

SETUP DIAGRAM FOR 30-1000MHz and AC LINE CONDUCTED TEST**TEST SETUP- AC LINE CONDUCTED: LAPTOP CONFIGURATION**

7. TEST AND MEASUREMENT EQUIPMENT

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

Description	Manufacturer	Model	ID Num	Cal Due	Last Cal
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	223084	2024/10/31	2023/10/31
RF Filter Box, 1-18GHz, 12 Port.	UL-FR1	Frankenstein	216812	2025/01/30	2024/01/30
*EMI Receiver	Rohde & Schwarz	ESW44	235670	2024/04/30	2023/04/30
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	226673	2025/01/25	2024/01/25
RF Filter Box, 1-18GHz	UL-FR1	NA	171389	2025/03/31	2024/03/31
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	223461	2024/08/29	2023/08/29
RF Filter Box, 1-18GHz, 8 Port	UL-FR1	SAC 8 port rf box 1	197920	2025/03/31	2024/03/31
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	41112	2024/10/31	2023/10/31
RF Filter Box, 1-18GHz	UL-FR1	SAC 8 port rf box 1	171875	2025/03/31	2024/03/31
Antenna, Broadband Hybrid, 30MHz to 3GHz	Sunol Sciences Corp	JB3	80714	2024/10/31	2023/10/31
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	81887	2025/03/31	2024/03/31
RF Filter Box, 1-18GHz, 17 Port.	UL-FR1	RATS 2	226781	2025/04/30	2024/04/30
EMI Receiver	Rohde & Schwarz	ESW44	235670	2024/04/30	2023/04/30
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	80403	2024/06/30	2023/06/30
RF Filter Box, 1-18GHz, 12 Port.	UL-FR1	Frankenstein	231874	2024/08/30	2023/08/30
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	200896	2025/02/28	2024/02/28
AMP26G40-65	AMPLICAL	AMP26G40-65	172346	2025/03/14	2024/03/14
*Antenna Horn, 18 to 26.5GHz	ARA	MWH-1826/B	172353	2024/06/30	2023/06/30
RF Amplifier Assembly, 18-26.5GHz, 60dB Gain	AMPLICAL	AMP18G26.5-60	171583	2025/03/31	2024/03/31
Antenna, Horn 26.5 to 40GHz	ARA	MWH-2640/B	81105	2024/08/31	2023/08/31
Power Meter, P-series single channel	Keysight Technologies Inc	N1911A	90731	2025/01/31	2024/01/31
Power Sensor, P - series, 50MHz to 18GHz, Wideband	Keysight Technologies Inc	N1921A	80120	2025/01/31	2024/01/31
Power Meter, P-series single channel	Keysight Technologies Inc	N1911A	90719	2025/01/31	2024/01/31
Power Sensor, P - series, 50MHz to 18GHz, Wideband	Keysight Technologies Inc	N1921A	90389	2025/01/31	2024/01/31
10dB Fixed Attenuator	Pasternack Enterprises	PE7087-10	178557	Verified Before Use	
10dB Fixed Attenuator	Pasternack Enterprises	PE7087-10	178558	Verified Before Use	
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight Technologies Inc	N9030A	80397	2025/01/31	2024/01/31
Spectrum Analyzer, PXA, 3Hz to 50GHz w/Ext. Mixer	Keysight Technologies Inc	N9030A	80400	2025/02/02	2024/02/02
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight Technologies Inc	N9030A	125178	2025/01/31	2024/01/31
*Conducted Switch Box	N/A	CSB	208281	2024/04/30	2023/04/30
Conducted Switch Box	N/A	CSB	208281	2025/05/08	2024/05/08
Antenna, Passive Loop 30Hz to 1MHz	Electro-Metrics	EM-6871	170013	2024/07/31	2023/07/31
Antenna, Passive Loop 100KHz - 30MHz	ELECTRO-METRICS	EM-6872	170015	2024/07/31	2023/07/31

AC Line Conducted					
Description	Manufacturer	Model	ID Num	Cal Due	Last Cal
EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESR	93091	2025/02/28	2024/02/28
LISN for Conducted Emissions CISPR-16	FISCHER CUSTOM COMMUNICATIONS	FCC-LISN- 50/250-25-2-01- 480V	175765	2025/01/31	2024/01/31
Transient Limiter	TE	TBFL1	207996	2024/08/31	2023/08/31
UL AUTOMATION SOFTWARE					
Radiated Software	UL	UL EMC	Ver 9.5, May 1 , 2023		
Conducted Software	UL	UL EMC	2023.2.23		
AC Line Conducted Software	UL	UL EMC	Ver 9.5, Mar 3, 2023		

*Testing was completed before equipment calibration date

8. MEASUREMENT METHODS

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

6 dB Emission BW: KDB 789033 D02 v02r01, Section C.2

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

99% Occupied BW: KDB 789033 D02 v02r01, Section D.

Conducted Output Power: KDB 789033 D02 v02r01

Power Spectral Density: KDB 789033 D02 v02r01, Section F

Unwanted emissions in restricted bands: KDB 789033 D02 v02r01, Sections G.3, G.4, G.5, and G.6.

Unwanted emissions in non-restricted bands: KDB 789033 D02 v02r01, Sections G.3, G.4, and G.5.

AC Power Line Conducted Emissions: ANSI C63.10-2013, Section 6.2.

Radiated Spurious Emissions Below 30MHz: ANSI C63.10-2013 Section 6.4

9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

PROCEDURE

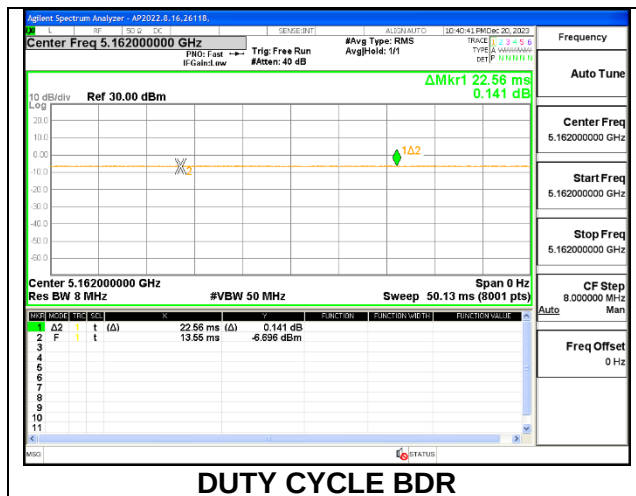
ANSI C63.10, Section 12.2: Zero-Span Spectrum Analyzer Method.

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/T Minimum VBW (kHz)
BDR	22.56	22.56	1.000	100.0%	0.00	0.010
HDR4	24.90	24.90	1.000	100.0%	0.00	0.010
HDR8	25.50	25.50	1.000	100.0%	0.00	0.010

Note: There are the same DCCF on 1TX and 2TX.

DUTY CYCLE PLOTS



9.2. 26 dB AND 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

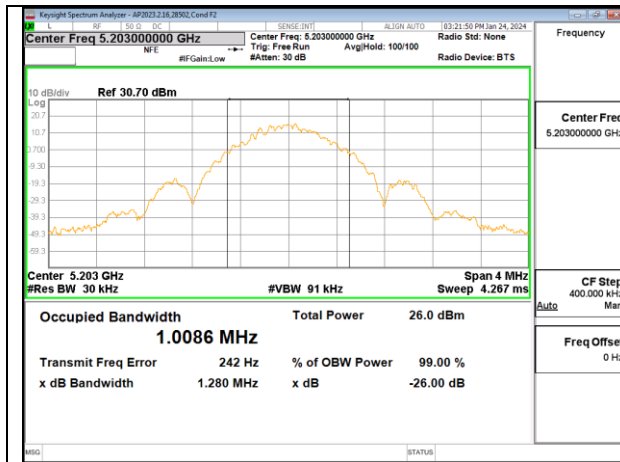
The transmitter output is connected to a spectrum analyzer. The RBW is set to $\geq 1\%$ of the 26 dB bandwidth. The VBW is set to $\geq 3 \times \text{RBW}$. The sweep time is coupled.

RESULTS

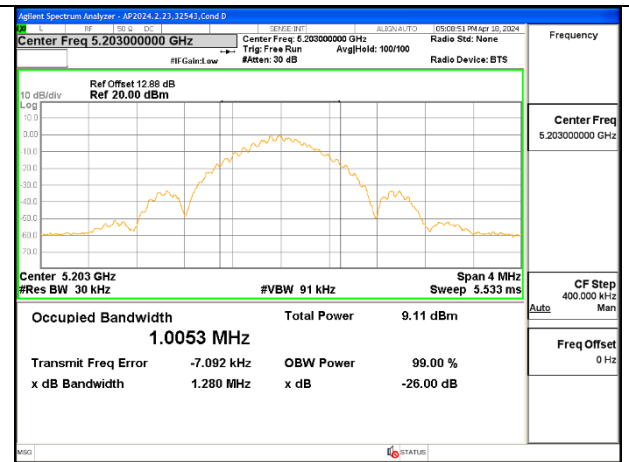
Only High-Power modes result is reported, it covers all Low Power modes. Only Mid channel plot is reported to show setting parameters complies with testing method/procedure.

9.2.1. HIGH POWER SISO MODE

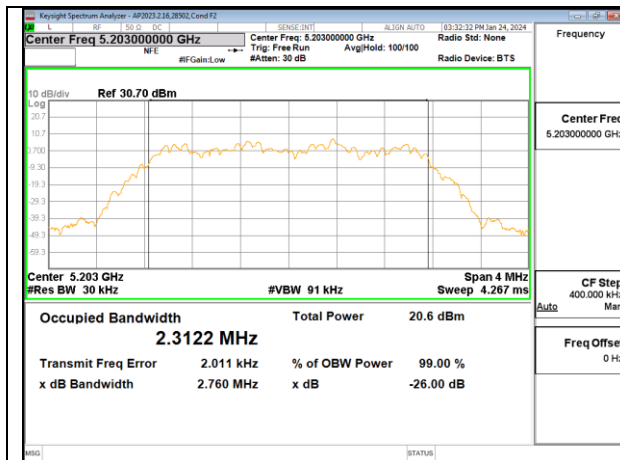
(SISO)	Frequency (MHz)	Channel Number	26 dB Bandwidth (MHz)		99% Bandwidth (MHz)	
			Ant 6	Ant 5	Ant 6	Ant 5
BDR (UNII-1)	5162	Low	1.273	1.283	1.0060	0.9924
	5203	Mid	1.280	1.280	1.0086	1.0053
	5245	High	1.277	1.279	1.0068	0.9946
HDR 4 (UNII-1)	5162	Low	2.750	2.731	2.3130	2.3132
	5203	Mid	2.760	2.734	2.3122	2.3115
	5245	High	2.760	2.736	2.3145	2.3131
HDR 8 (UNII-1)	5162	Low	5.688	5.688	4.8344	4.8346
	5203	Mid	5.697	5.699	4.8347	4.8368
	5245	High	5.693	5.696	4.8375	4.8375
BDR (UNII-3)	5733	Low	1.279	1.285	1.0550	1.0066
	5788	Mid	1.278	1.272	1.0073	1.0003
	5844	High	1.278	1.285	1.0035	1.0020
HDR 4 (UNII-3)	5733	Low	2.774	2.741	2.3199	2.3207
	5788	Mid	2.775	2.739	2.3219	2.3181
	5844	High	2.772	2.781	2.3106	2.3282
HDR 8 (UNII-3)	5733	Low	5.714	5.727	4.8508	4.8524
	5788	Mid	5.731	5.724	4.8507	4.8513
	5844	High	5.730	5.733	4.8523	4.8518



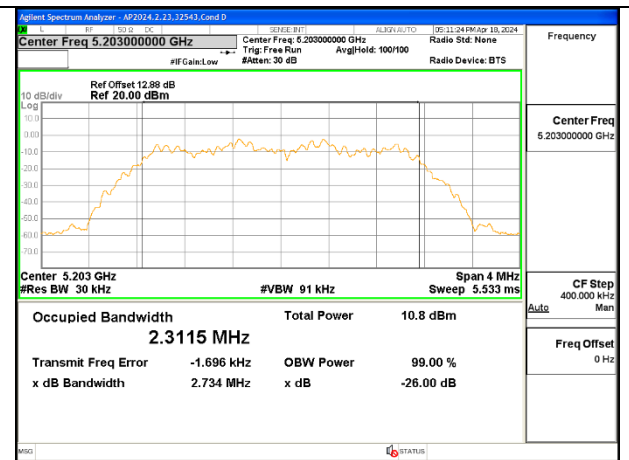
Mid Channel (UNII-1 BDR) – Ant 1



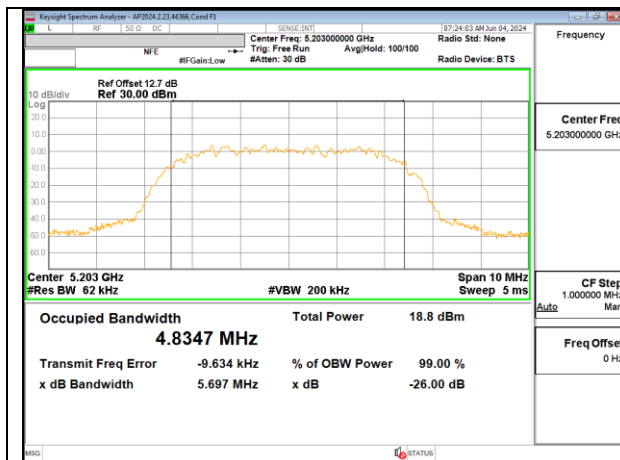
Mid Channel (UNII-1 BDR) – Ant 2



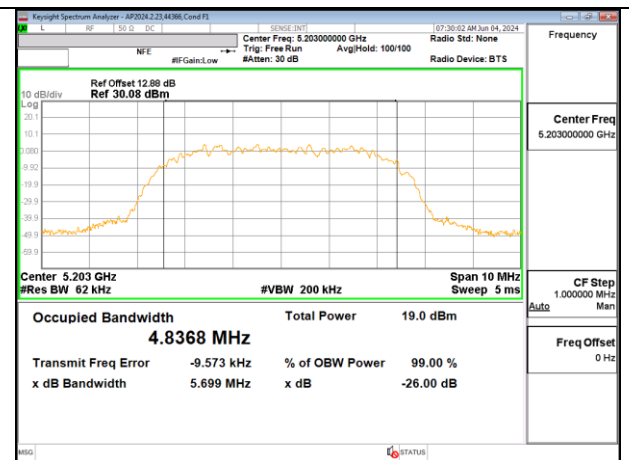
Mid Channel (UNII-1 HDR4) – Ant 1



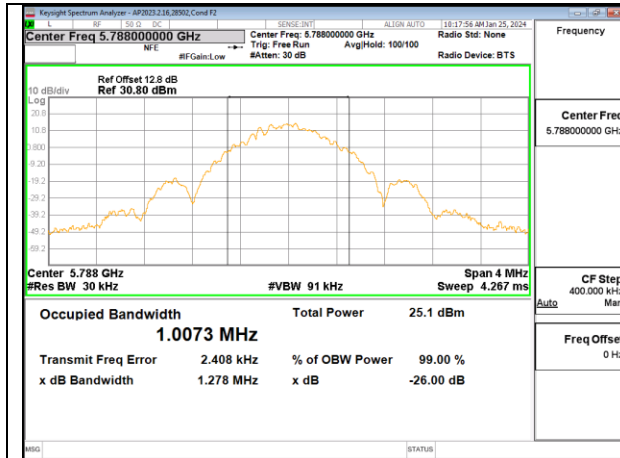
Mid Channel (UNII-1 HDR4) – Ant 2



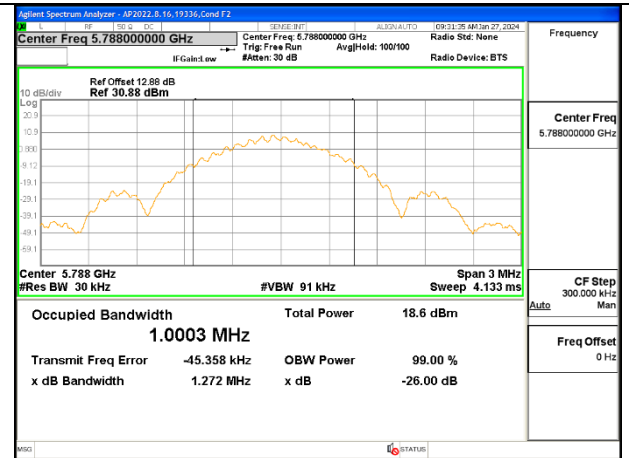
Mid Channel (UNII-1 HDR8) – Ant 1



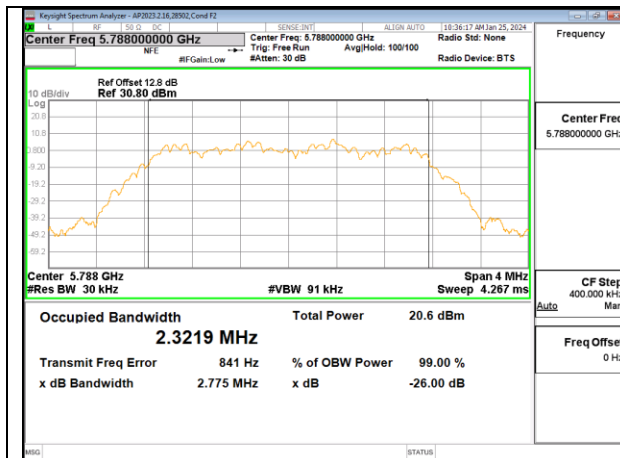
Mid Channel (UNII-1 HDR8) – Ant 2



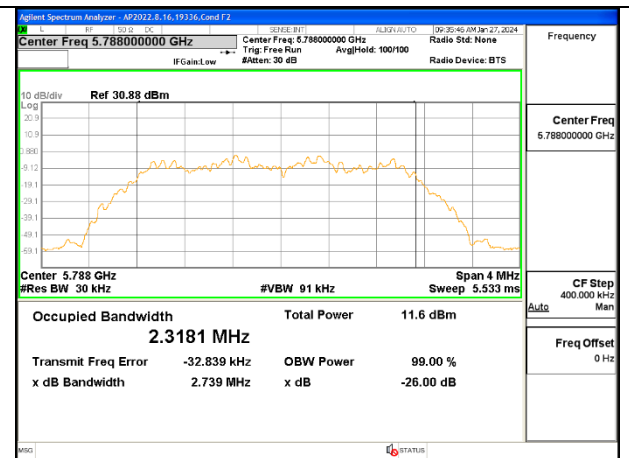
Mid Channel (UNII-3 BDR) – Ant 1



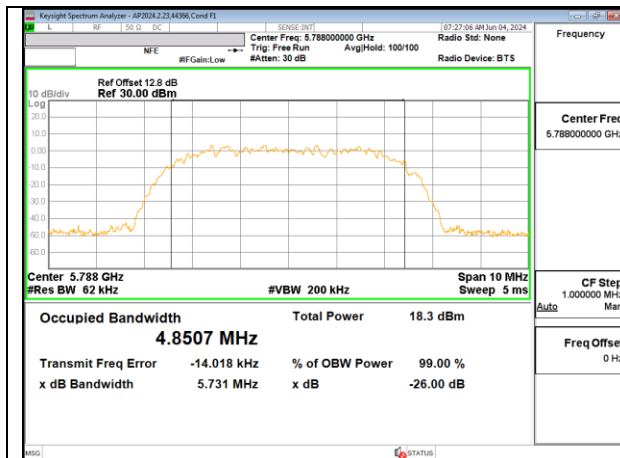
Mid Channel (UNII-3 BDR) – Ant 2



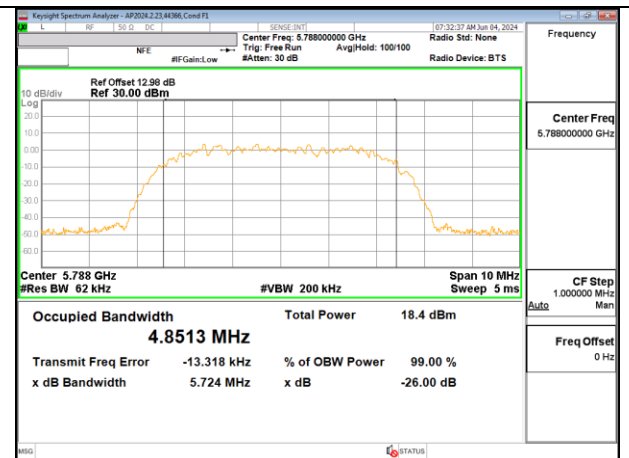
Mid Channel (UNII-3 HDR4) – Ant 1



Mid Channel (UNII-3 HDR4) – Ant 2



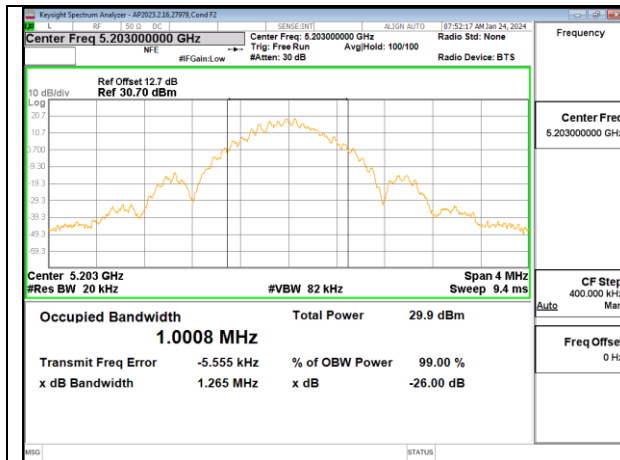
Mid Channel (UNII-3 HDR8) – Ant 1



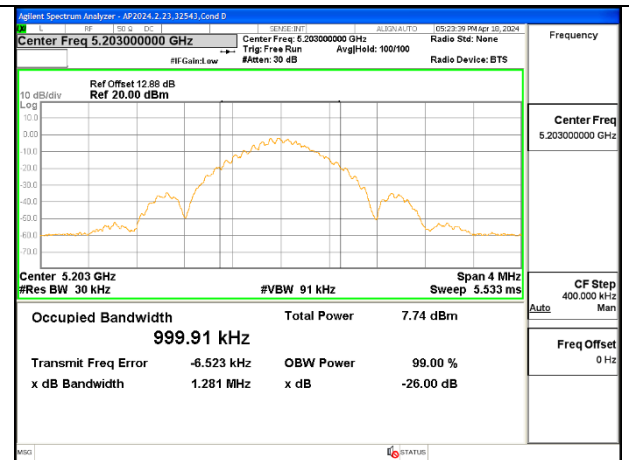
Mid Channel (UNII-3 HDR8) – Ant 2

9.2.2. HIGH POWER TXBF MODE

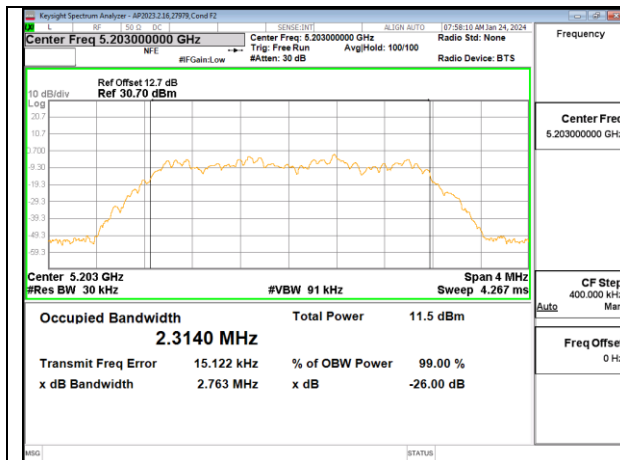
(MIMO BF)	Frequency (MHz)	Channel Number	26 dB Bandwidth (MHz)		99% Bandwidth (MHz)		
			Ant 6	Ant 5	Ant 6	Ant 5	Min BW
BDR (UNII-1)	5162	Low	1.267	1.276	1.0025	1.0013	1.0013
	5203	Mid	1.265	1.281	1.0008	0.9999	0.99991
	5245	High	1.267	1.281	1.0015	1.0007	1.0007
HDR 4 (UNII-1)	5162	Low	2.768	2.738	2.3146	2.3134	2.3134
	5203	Mid	2.763	2.737	2.3140	2.3125	2.3125
	5245	High	2.769	2.730	2.3151	2.3104	2.3104
HDR 8 (UNII-1)	5162	Low	5.708	5.683	4.8331	4.8345	4.8331
	5203	Mid	5.689	5.715	4.8336	4.8371	4.8336
	5245	High	5.704	5.701	4.8392	4.8394	4.8392
BDR (UNII-3)	5733	Low	1.268	1.280	1.0081	1.0066	--
	5788	Mid	1.267	1.280	1.0029	1.0133	--
	5844	High	1.268	1.280	1.0036	1.0048	--
HDR 4 (UNII-3)	5733	Low	2.777	2.736	2.3218	2.3253	--
	5788	Mid	2.779	2.777	2.3211	2.3249	--
	5844	High	2.778	2.742	2.3245	2.3204	--
HDR 8 (UNII-3)	5733	Low	5.721	5.726	4.8599	4.8516	--
	5788	Mid	5.717	5.720	4.8582	4.8511	--
	5844	High	5.721	5.730	4.8592	4.8537	--



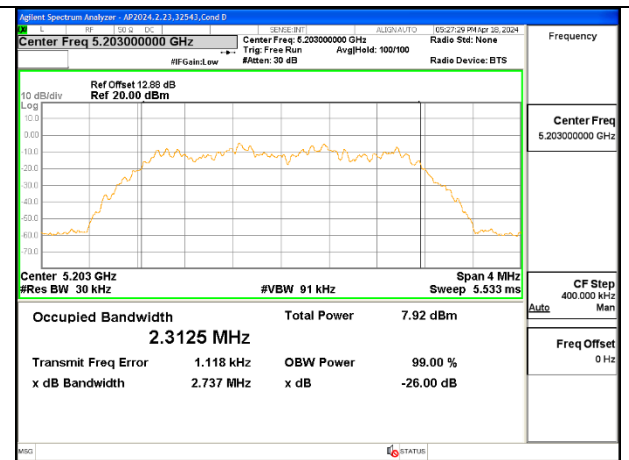
Mid Channel (UNII-1 BDR) – Ant 6



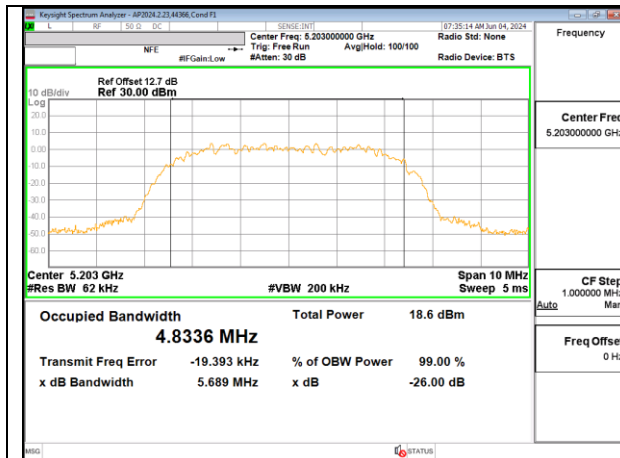
Mid Channel (UNII-1 BDR) – Ant 5



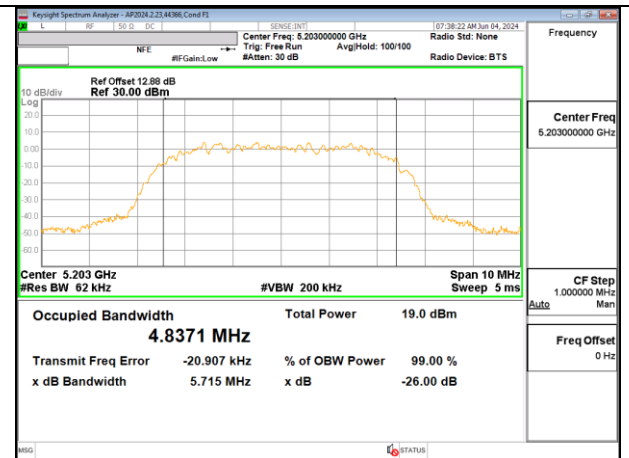
Mid Channel (UNII-1 HDR4) – Ant 6



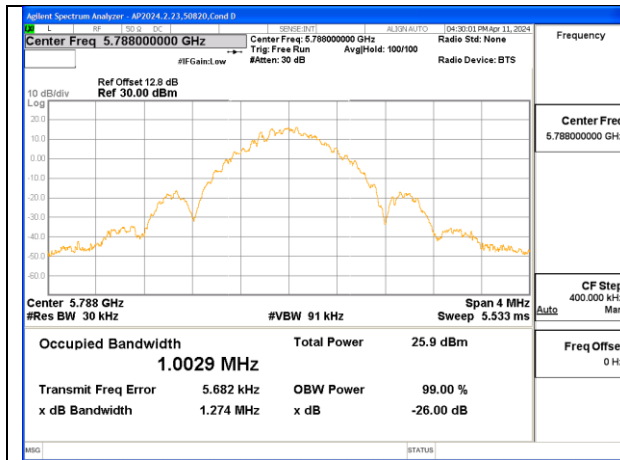
Mid Channel (UNII-1 HDR4) – Ant 5



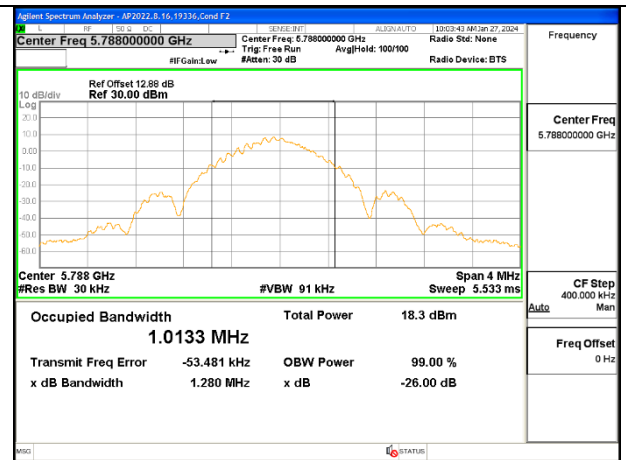
Mid Channel (UNII-1 HDR8) – Ant 6



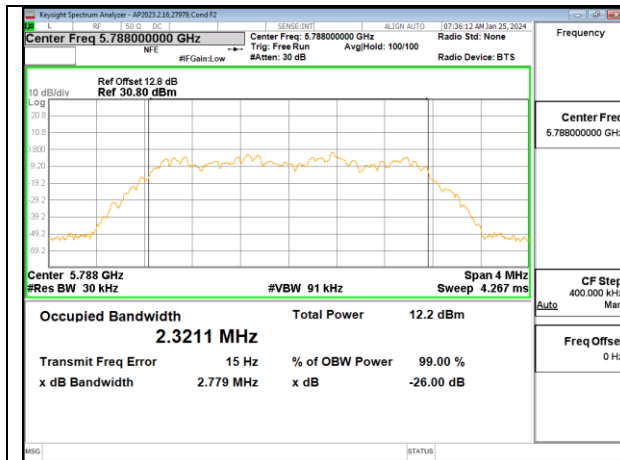
Mid Channel (UNII-1 HDR8) – Ant 5



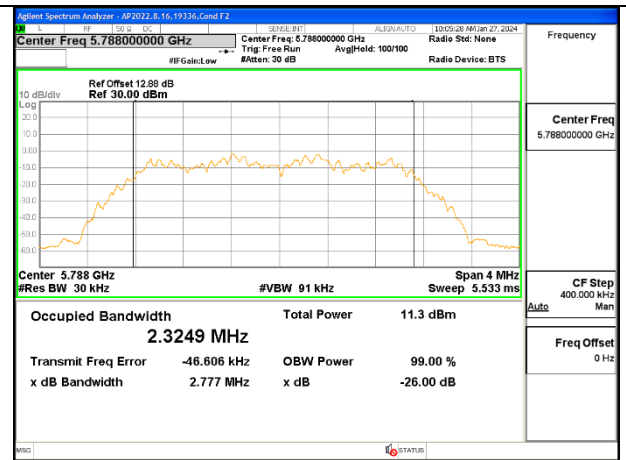
Mid Channel (UNII-3 BDR) – Ant 6



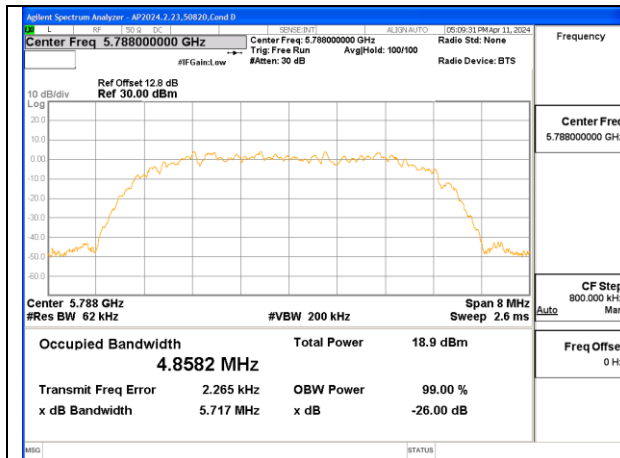
Mid Channel (UNII-3 BDR) – Ant 5



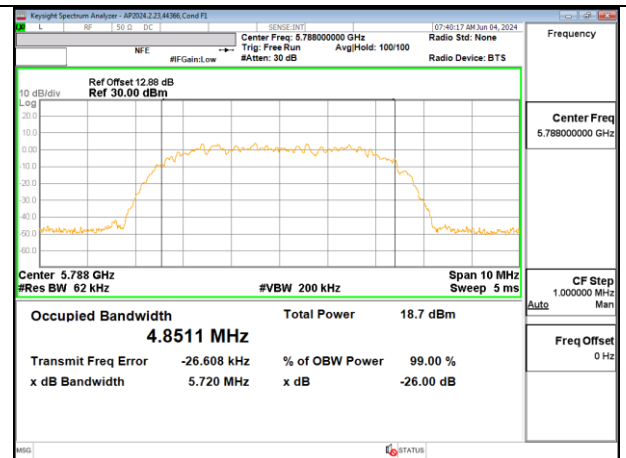
Mid Channel (UNII-3 HDR4) – Ant 6



Mid Channel (UNII-3 HDR4) – Ant 5



Mid Channel (UNII-3 HDR8) – Ant 6



Mid Channel (UNII-3 HDR8) – Ant 5

9.3. 6 dB BANDWIDTH

LIMITS

FCC §15.407 (e)

RSS-247 6.2.4.1

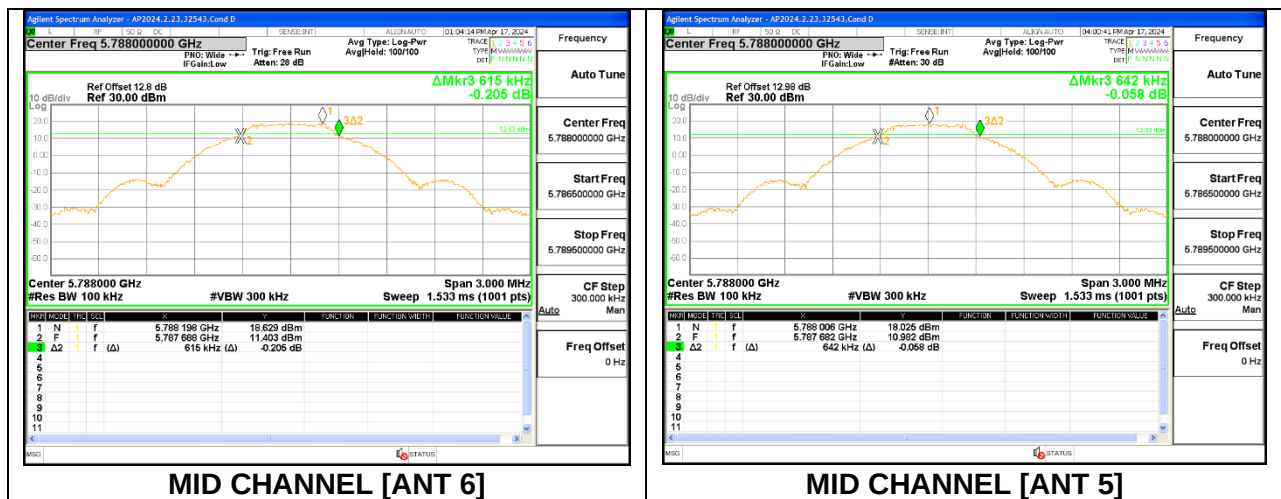
The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

Only High Power at BDR mode result is reported, it covers all Low Power modes. Only Mid channel plot is reported to show setting parameter complies with testing method/procedure.

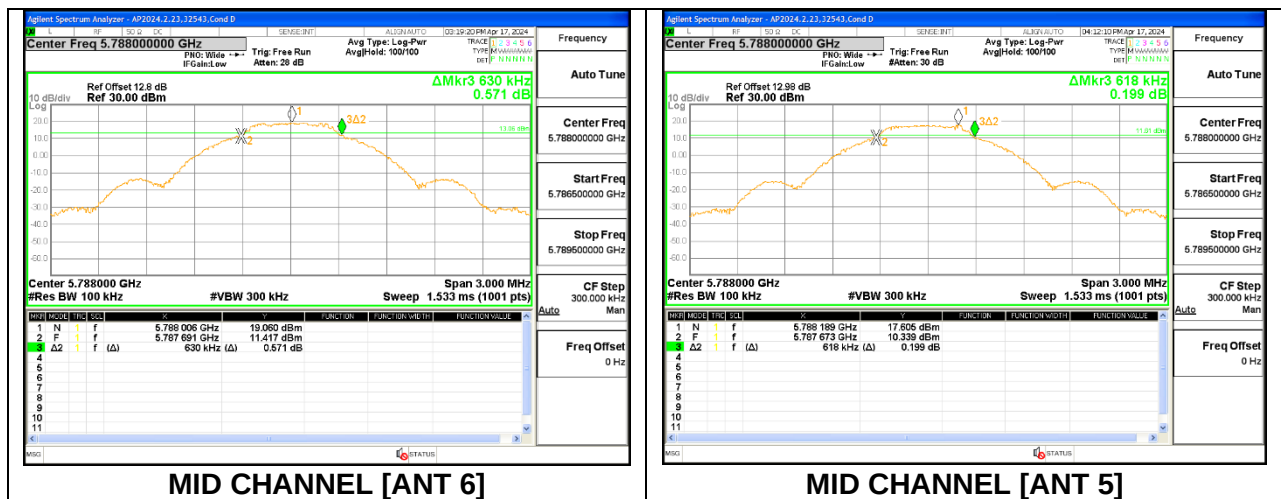
9.3.1. HIGH OUTPUT BDR SISO MODE IN THE UNII-3 BAND

UNII-3 (SISO)	Frequency (MHz)	Channel Number	6 dB BW (MHz)	
			Ant 1	Ant 2
BDR	5733	Low	0.627	0.603
	5788	Mid	0.615	0.642
	5844	High	0.600	0.609



9.3.2. HIGH OUTPUT BDR TXBF MODE IN THE UNII-3 BAND

UNII-3 (MIMO BF)	Frequency (MHz)	Channel Number	6 dB BW (MHz)	
			Ant 1	Ant 2
BDR	5733	Low	0.618	0.603
	5788	Mid	0.630	0.618
	5844	High	0.612	0.624



9.4. OUTPUT POWER AND PSD

LIMITS

FCC §15.407

Band 5.15–5.25 GHz

(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.

Band 5.725-5.85 GHz

The maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz 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. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information.

RSS-247

Band 5.15-5.25 GHz

The maximum e.i.r.p. shall not exceed 200 mW or $10 + 10 \log_{10} B$, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

Band 5.725-5.85 GHz

The maximum conducted output power shall not exceed 1 W. The power spectral density shall not exceed 30 dBm in any 500 kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications and multiple collocated transmitters transmitting the same information.

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 1 TX:

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

For 2 TX:

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

Band (GHz)	ANT 6 Gain (dBi)	ANT 5 Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)	Correlated Chains Directional Gain (dBi)
UNII-1, 5.2GHz	-0.40	-4.00	-1.84	1.00
UNII-3, 5.8GHz	-1.20	-1.00	-1.10	1.91

RESULTS:**DIRECTIONAL GAIN CALCULATION:**

ANSI C63.10-2013 section 14.4.3

Uncorrelated directional gain= $10 \cdot \text{LOG}((10^{(\text{Ant6}/10)} + 10^{(\text{Ant5}/10)})/2)$

Correlated directional Gain= $10 \cdot \text{LOG}(((10^{(\text{Ant6}/20)} + 10^{(\text{Ant5}/20)})^2)/2)$

Sample Calculation:

Ant6=-0.40, Ant5=-4.00

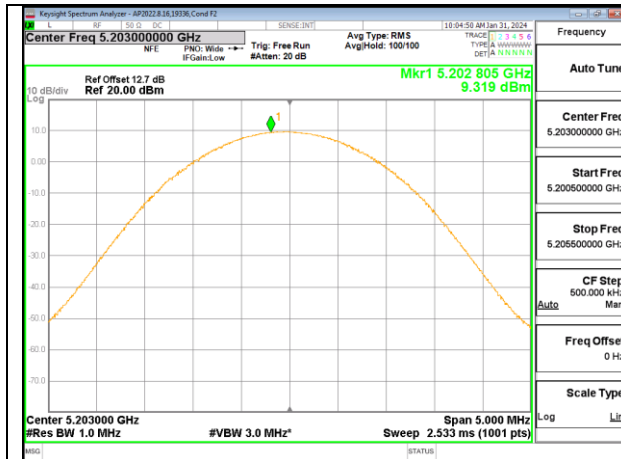
Uncorrelated Antenna gain= $10 \log[(10^{(-0.40/10)} + 10^{(-4.00/10)})/2] = -1.84 \text{dBi}$

Correlated Antenna gain= $10 \log[(10^{(-0.40/20)} + 10^{(-4.00/20)})^2/2] = 1.00 \text{dBi}$

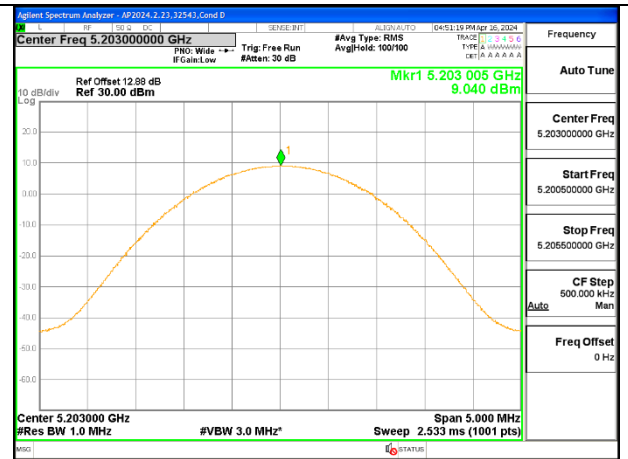
9.4.1. UNII-1 BAND SISO MODE

UNII-1 (SISO) (5162 - 5245MHz)	
DCCF (dB)	0.00
Ant 1 (dBi)	-0.40
Ant 2 (dBi)	-4.00

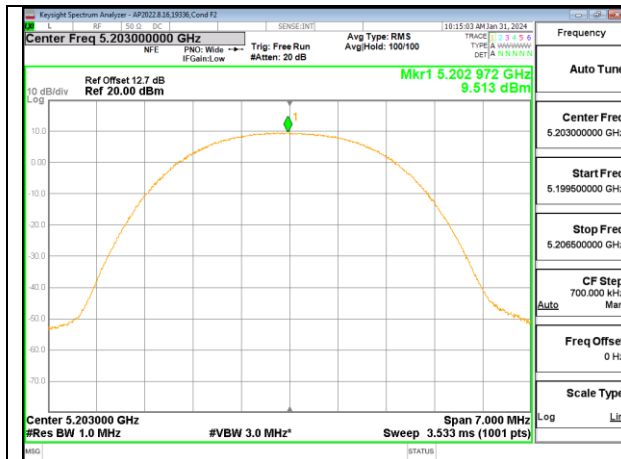
UNII-1 (SISO)	Power Config.	Freq (MHz)	Ch. #	Minimum Bandwidth (MHz)		Power Limit (dBm)		Output Power (Gated) (dBm)		Total Corrected Power (dBm)		PSD Limit (dBm/MHz)		PSD (dBm/MHz)		Total Corrected PSD (dBm/MHz)	
				Ant 6	Ant 5	Ant 6	Ant 5	Ant 6	Ant 5	Ant 6	Ant 5	Ant 6	Ant 5	Ant 6	Ant 5	Ant 6	Ant 5
BDR (FCC)	High	5162	Low	--	24	24		9.94	9.90	9.94	9.90	11	11	9.366	9.014	9.366	9.014
		5203	Mid					9.98	9.91	9.98	9.91			9.319	9.040	9.319	9.040
		5245	High					9.90	9.98	9.90	9.98			9.362	9.286	9.362	9.286
BDR (FCC)	Low	5162	Low					6.48	4.97	6.48	4.97			6.264	4.805	6.264	4.805
		5203	Mid					6.32	4.88	6.32	4.88			6.034	4.726	6.034	4.726
		5245	High					6.46	4.93	6.46	4.93			6.445	4.948	6.445	4.948
HDR 4 (FCC)	High	5162	Low					11.42	11.45	11.42	11.45			9.347	9.544	9.347	9.544
		5203	Mid					11.46	11.34	11.46	11.34			9.513	9.454	9.513	9.454
		5245	High					11.44	11.33	11.44	11.33			9.401	9.405	9.401	9.405
HDR 4 (FCC)	Low	5162	Low					-0.02	-1.59	-0.02	-1.59			-2.512	-3.830	-2.512	-3.830
		5203	Mid					-0.10	-1.55	-0.10	-1.55			-2.590	-3.738	-2.590	-3.738
		5245	High					-0.14	-1.57	-0.14	-1.57			-2.824	-4.195	-2.824	-4.195
HDR 8 (FCC)	High	5162	Low					13.91	13.92	13.91	13.92			8.574	8.775	8.574	8.775
		5203	Mid					13.87	13.89	13.87	13.89			8.438	8.506	8.438	8.506
		5245	High					13.82	13.93	13.82	13.93			8.396	8.531	8.396	8.531
HDR 8 (FCC)	Low	5162	Low					-0.17	-1.58	-0.17	-1.58			-5.186	-6.286	-5.186	-6.286
		5203	Mid					-0.27	-1.64	-0.27	-1.64			-5.132	-6.308	-5.132	-6.308
		5245	High					-0.01	-1.54	-0.01	-1.54			-5.453	-6.506	-5.453	-6.506
BDR (IC)	High	5162	Low	1.01	0.99	10.43	13.97	8.94	12.89	8.94	12.89	10.40	14.00	8.959	13.098	8.959	13.098
		5203	Mid	1.01	1.01	10.44	14.02	8.81	12.97	8.81	12.97			8.637	12.981	8.637	12.981
		5245	High	1.01	0.99	10.43	13.98	8.89	12.94	8.89	12.94			8.564	12.894	8.564	12.894
BDR (IC)	Low	5162	Low	1.00	0.94	10.42	13.74	6.48	4.97	6.48	4.97			6.264	4.805	6.264	4.805
		5203	Mid	1.01	0.97	10.43	13.87	6.32	4.88	6.32	4.88			6.034	4.726	6.034	4.726
		5245	High	1.01	0.96	10.43	13.84	6.46	4.93	6.46	4.93			6.445	4.948	6.445	4.948
HDR 4 (IC)	High	5162	Low	2.31	2.31	14.04	17.64	10.98	14.40	10.98	14.40			8.764	12.058	8.764	12.058
		5203	Mid	2.31	2.31	14.04	17.64	10.92	14.41	10.92	14.41			8.694	12.145	8.694	12.145
		5245	High	2.31	2.31	14.04	17.64	10.94	14.37	10.94	14.37			8.603	11.794	8.603	11.794
HDR 4 (IC)	Low	5162	Low	2.31	2.32	14.04	17.65	-0.02	-1.59	-0.02	-1.59			-2.512	-3.830	-2.512	-3.830
		5203	Mid	2.31	2.32	14.04	17.66	-0.10	-1.55	-0.10	-1.55			-2.590	-3.738	-2.590	-3.738
		5245	High	2.32	2.31	14.05	17.64	-0.14	-1.57	-0.14	-1.57			-2.824	-4.195	-2.824	-4.195
HDR 8 (IC)	High	5162	Low	4.83	4.83	17.24	20.84	12.92	14.91	12.92	14.91			7.807	9.898	7.807	9.898
		5203	Mid	4.83	4.84	17.24	20.85	12.94	14.98	12.94	14.98			7.897	9.887	7.897	9.887
		5245	High	4.84	4.84	17.25	20.85	12.97	14.92	12.97	14.92			7.667	10.145	7.667	10.145
HDR 8 (IC)	Low	5162	Low	4.84	4.80	17.25	20.81	-0.17	-1.58	-0.17	-1.58			-5.186	-6.286	-5.186	-6.286
		5203	Mid	4.84	4.82	17.25	20.83	-0.27	-1.64	-0.27	-1.64			-5.132	-6.308	-5.132	-6.308



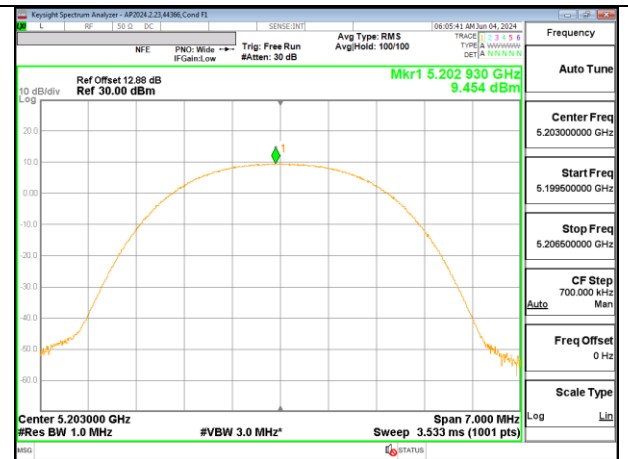
HIGH POWER Mid Channel
(UNII-1 BDR) – Ant 6 - FCC



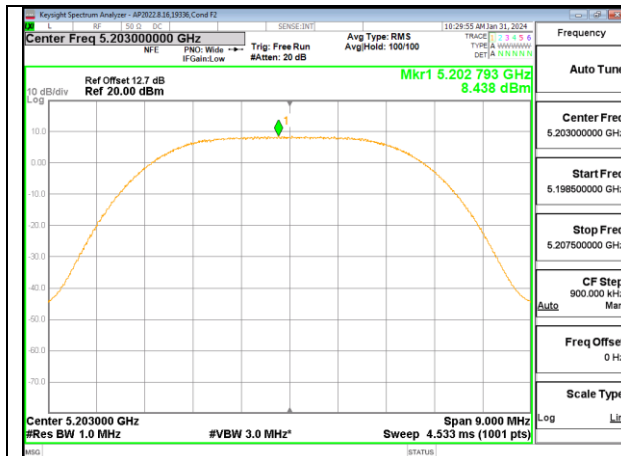
HIGH POWER Mid Channel
Mid Channel (UNII-1 BDR) – Ant 5 - FCC



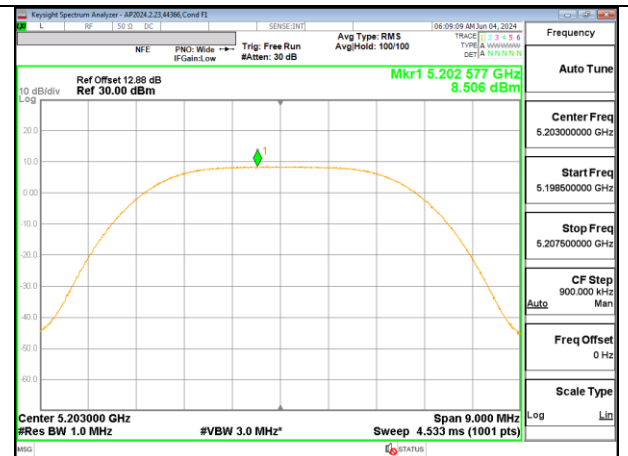
HIGH POWER Mid Channel
Mid Channel (UNII-1 HDR4) – Ant 6 - FCC



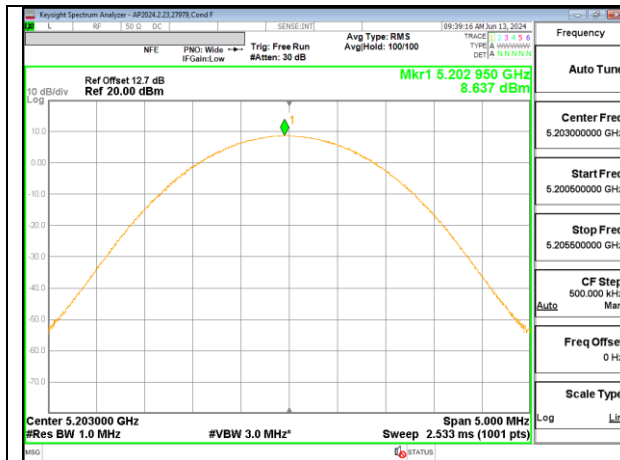
HIGH POWER Mid Channel
Mid Channel (UNII-1 HDR4) – Ant 5 - FCC



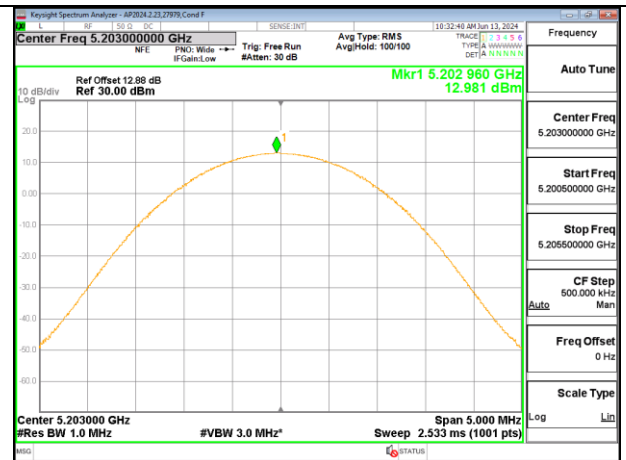
HIGH POWER Mid Channel
Mid Channel (UNII-1 HDR8) – Ant 6 - FCC



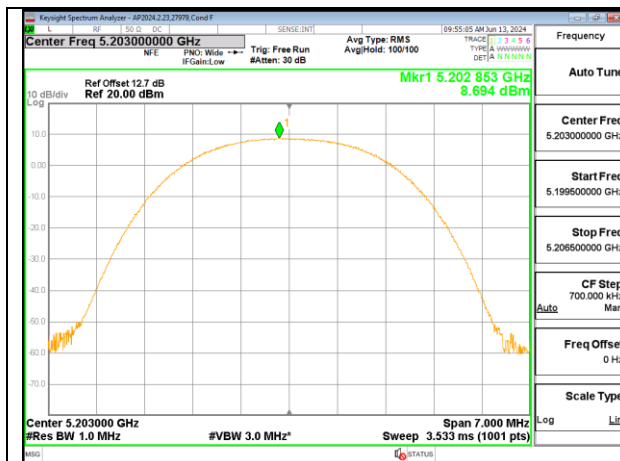
HIGH POWER Mid Channel
Mid Channel (UNII-1 HDR8) – Ant 5 - FCC



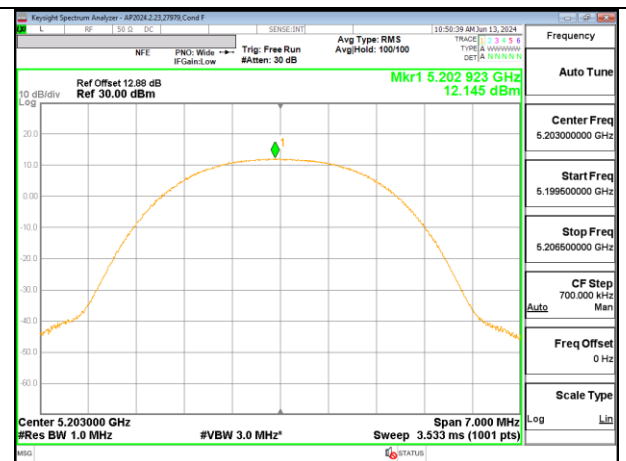
HIGH POWER Mid Channel
(UNII-1 BDR) – Ant 6 - IC



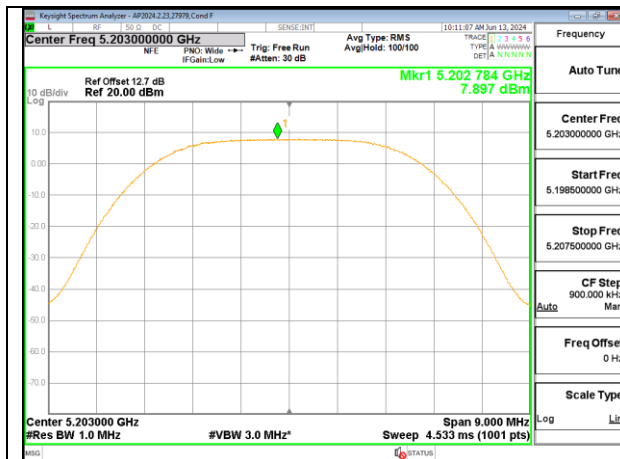
HIGH POWER Mid Channel
Mid Channel (UNII-1 BDR) – Ant 5 - IC



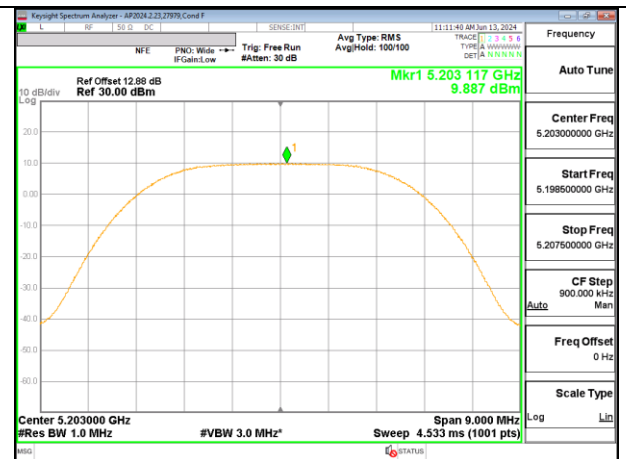
HIGH POWER Mid Channel
Mid Channel (UNII-1 HDR4) – Ant 6 - IC



HIGH POWER Mid Channel
Mid Channel (UNII-1 HDR4) – Ant 5 - IC



HIGH POWER Mid Channel
Mid Channel (UNII-1 HDR8) – Ant 6 - IC

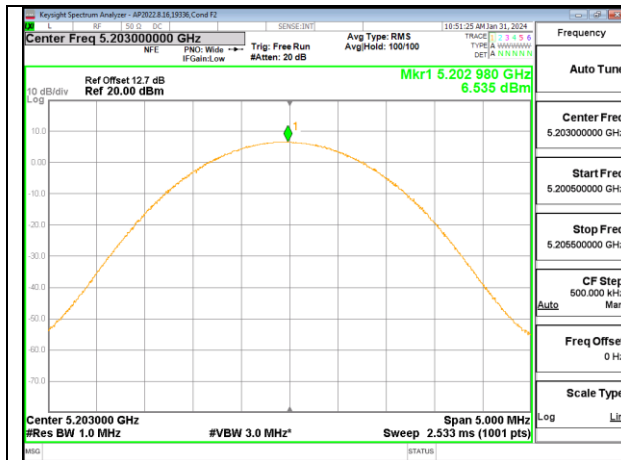


HIGH POWER Mid Channel
Mid Channel (UNII-1 HDR8) – Ant 5 - IC

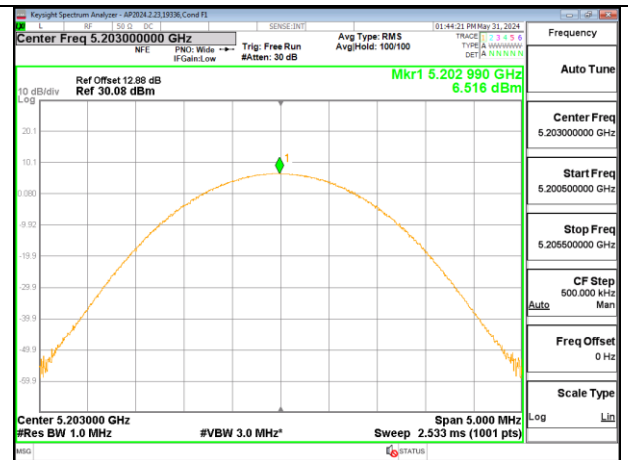
9.4.2. UNII-1 BAND MIMO TXBF MODE

UNII-1 (MIMO BF) (5162 - 5245MHz)											
DCCF (dB)						0.00					
Un-Correlated Gain (dBi)						-1.84					
Correlated Gain (dBi)						1.00					

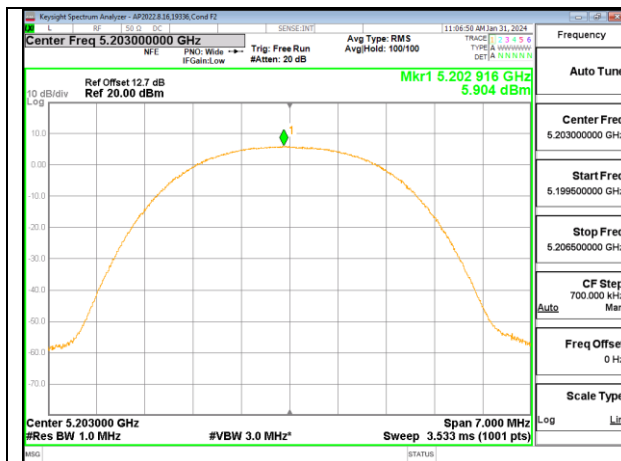
UNII-1 (MIMO BF)	Power Config.	Freq (MHz)	Ch. #	Min BW (MHz)	Power Limit (dBm)	Output Power (Gated) (dBm)		Total MIMO Corrected Power (dBm)	PSD Limit (dBm/MHz)	PSD (dBm/MHz)		Total MIMO Corrected PSD (dBm/MHz)
						Ant 6	Ant 5			Ant 6	Ant 5	
BDR (FCC)	High	5162	Low	--	24	6.90	6.94	9.93	11	6.478	6.423	9.461
		5203	Mid			6.92	6.93	9.94		6.535	6.516	9.536
		5245	High			6.95	6.94	9.96		6.880	6.437	9.674
BDR (FCC)	Low	5162	Low			6.46	4.87	8.75		6.112	4.798	8.515
		5203	Mid			6.47	4.85	8.75		6.449	4.980	8.787
		5245	High			6.41	4.93	8.74		6.373	4.908	8.712
HDR4 (FCC)	High	5162	Low			8.42	8.40	11.42		6.271	6.068	9.181
		5203	Mid			8.21	8.40	11.32		5.904	6.191	9.060
		5245	High			8.41	8.42	11.43		6.197	6.049	9.134
HDR4 (FCC)	Low	5162	Low			-0.03	-1.51	2.30		-2.545	-4.077	-0.233
		5203	Mid			-0.24	-1.68	2.11		-2.612	-4.443	-0.421
		5245	High			-0.34	-1.55	2.11		-2.221	-4.052	-0.030
HDR8 (FCC)	High	5162	Low			10.85	10.88	13.88		5.469	5.552	8.521
		5203	Mid			10.98	10.93	13.97		5.622	5.678	8.660
		5245	High			10.85	10.96	13.92		5.546	5.596	8.581
HDR8 (FCC)	Low	5162	Low			-0.12	-1.57	2.23		-5.311	-6.642	-2.915
		5203	Mid			-0.45	-1.69	1.98		-5.318	-6.910	-3.031
		5245	High			-0.13	-1.56	2.22		-5.495	-6.570	-2.989
BDR (IC)	High	5162	Low	1.00	9.01	2.89	6.94	8.38	9.00	2.981	6.423	8.045
		5203	Mid	1.00	9.00	2.93	6.93	8.39		2.959	6.516	8.102
		5245	High	1.00	9.00	2.91	6.94	8.39		2.705	6.437	7.970
BDR (IC)	Low	5162	Low	0.96	11.68	2.96	4.87	7.03		2.845	4.798	6.941
		5203	Mid	0.96	8.84	2.97	4.85	7.02		2.838	4.980	7.050
		5245	High	0.96	8.84	2.91	4.93	7.05		2.585	4.908	6.910
HDR4 (IC)	High	5162	Low	2.31	12.64	4.96	8.40	10.02		2.698	6.068	7.712
		5203	Mid	2.31	12.64	4.95	8.40	10.02		2.633	6.191	7.777
		5245	High	2.31	12.64	4.97	8.42	10.04		2.480	6.049	7.632
HDR4 (IC)	Low	5162	Low	2.31	12.64	-0.03	-1.51	2.30		-2.545	-4.077	-0.233
		5203	Mid	2.31	12.64	-0.24	-1.68	2.11		-2.612	-4.443	-0.421
		5245	High	2.31	12.64	-0.34	-1.55	2.11		-2.221	-4.052	-0.030
HDR8 (IC)	High	5162	Low	4.83	15.84	6.94	10.88	12.35		1.924	5.552	7.117
		5203	Mid	4.83	15.84	6.98	10.93	12.40		1.763	5.678	7.158
		5245	High	4.84	15.85	6.94	10.96	12.41		1.645	5.596	7.065
HDR8 (IC)	Low	5162	Low	4.81	15.82	-0.12	-1.57	2.23		-5.311	-6.642	-2.915
		5203	Mid	4.81	15.82	-0.45	-1.69	1.98		-5.318	-6.910	-3.031
		5245	High	4.81	15.82	-0.13	-1.56	2.22		-5.495	-6.570	-2.989



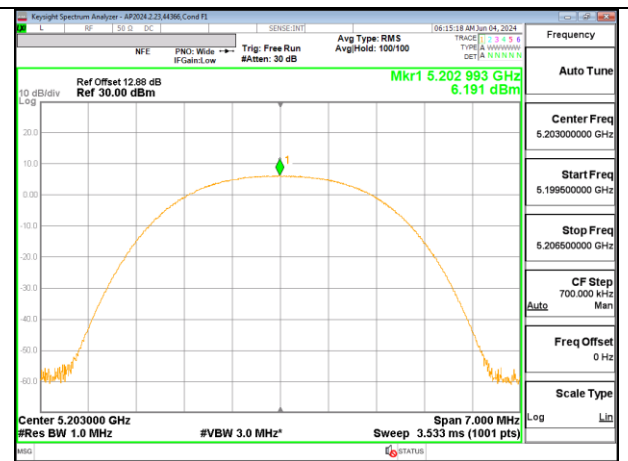
HIGH POWER Mid Channel
Mid Channel (UNII-1 BDR) – Ant 6 - FCC



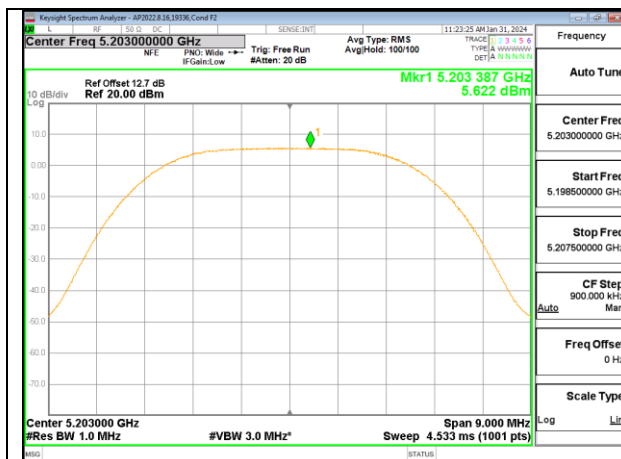
HIGH POWER Mid Channel
Mid Channel (UNII-1 BDR) – Ant 5 - FCC



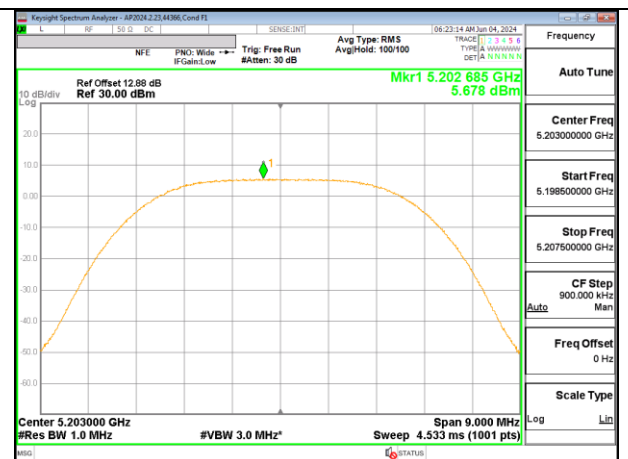
HIGH POWER Mid Channel
Mid Channel (UNII-1 HDR4) – Ant 6 - FCC



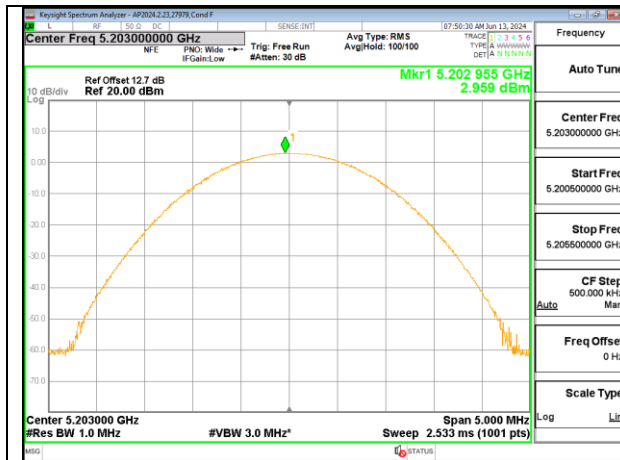
HIGH POWER Mid Channel
Mid Channel (UNII-1 HDR4) – Ant 5 - FCC



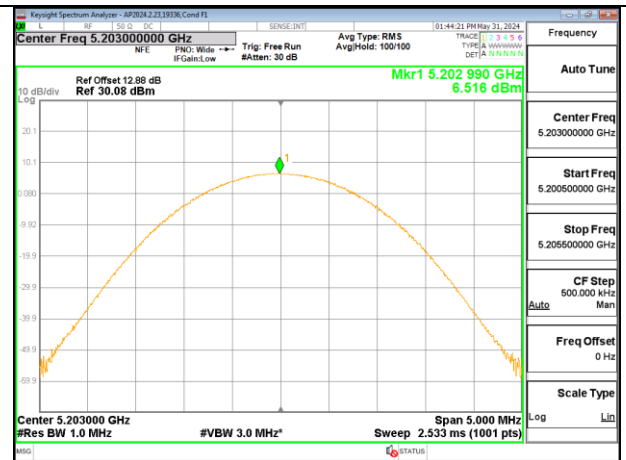
HIGH POWER Mid Channel
Mid Channel (UNII-1 HDR8) – Ant 6 - FCC



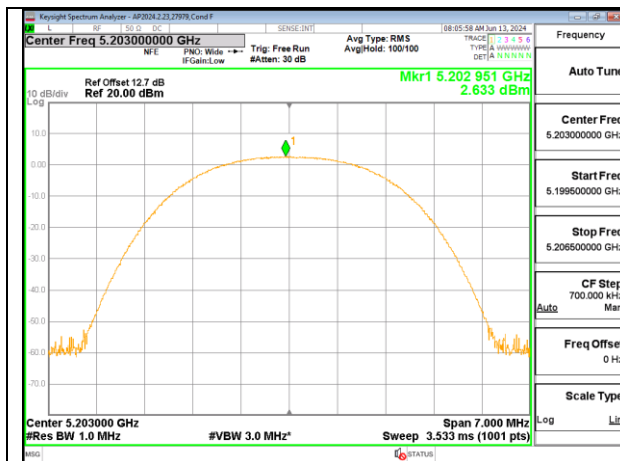
HIGH POWER Mid Channel
Mid Channel (UNII-1 HDR8) – Ant 5 - FCC



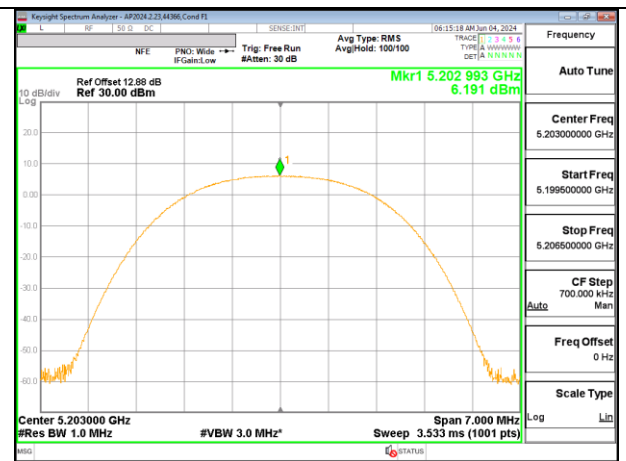
HIGH POWER Mid Channel
Mid Channel (UNII-1 BDR) – Ant 6 - IC



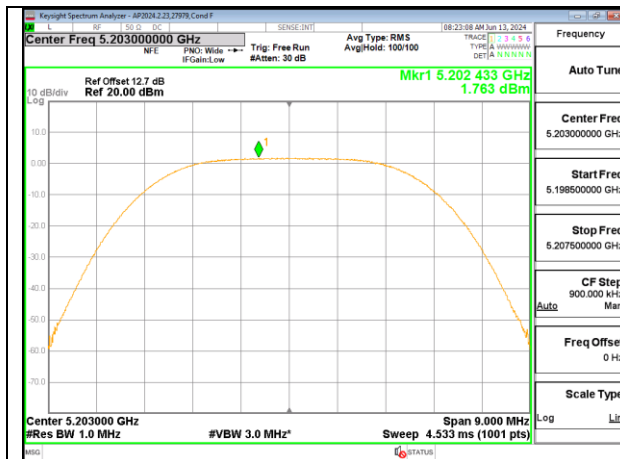
HIGH POWER Mid Channel
Mid Channel (UNII-1 BDR) – Ant 5 - IC



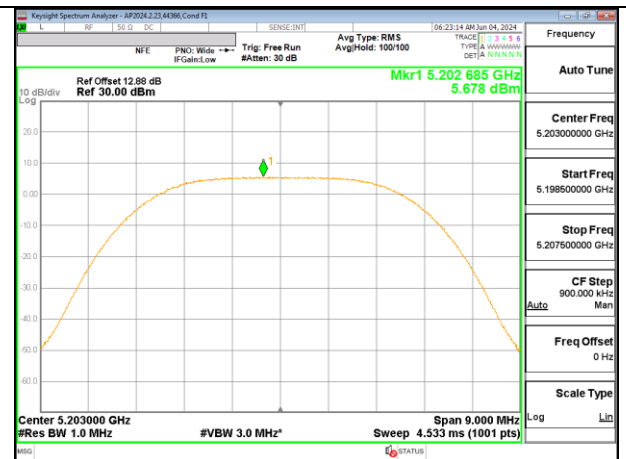
HIGH POWER Mid Channel
Mid Channel (UNII-1 HDR4) – Ant 6 - IC



HIGH POWER Mid Channel
Mid Channel (UNII-1 HDR4) – Ant 5 - IC



HIGH POWER Mid Channel
Mid Channel (UNII-1 HDR8) – Ant 6 - IC

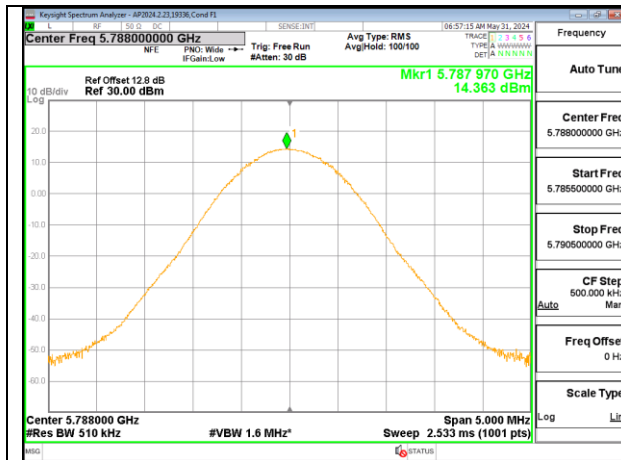


HIGH POWER Mid Channel
Mid Channel (UNII-1 HDR8) – Ant 5 - IC

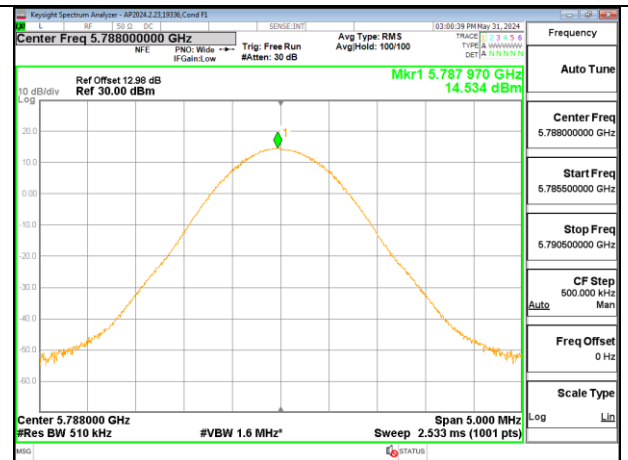
9.4.3. UNII-3 BAND SISO MODE

UNII-3 (SISO) (5733- 5844MHz)	
DCCF (dB)	0.00
Ant 1 (dBi)	-1.20
Ant 2 (dBi)	-1.00

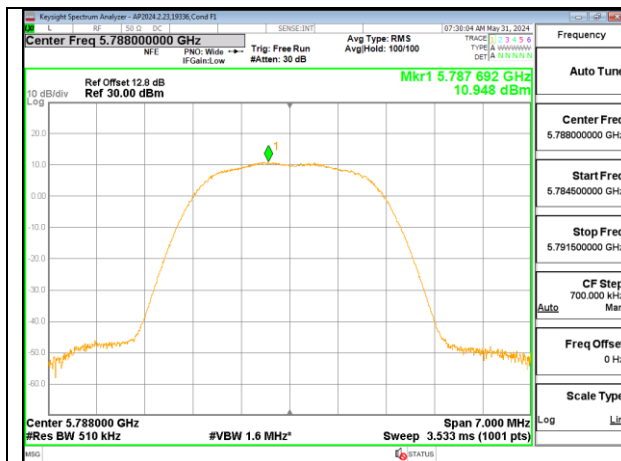
UNII-3 (SISO)	Power Config.	Freq (MHz)	Ch. #	Power Limit (dBm)		Output Power (Gated) (dBm)		Total Corrected Power (dBm)		PSD Limit (dBm/500kHz)		PSD (dBm/MHz)		Total Corrected PSD (dBm/500kHz)	
				Ant 6	Ant 5	Ant 6	Ant 5	Ant 6	Ant 5	Ant 6	Ant 5	Ant 6	Ant 5	Ant 6	Ant 5
BDR	High	5733	Low	30	30	15.48	15.46	15.48	15.46	30	30	14.805	14.681	14.805	14.681
		5788	Mid			15.47	15.45	15.47	15.45			14.363	14.534	14.363	14.534
		5844	High			15.43	15.48	15.43	15.48			14.903	14.807	14.903	14.807
	Low	5733	Low			7.42	5.92	7.42	5.92			6.258	5.289	6.258	5.289
		5788	Mid			7.48	5.91	7.48	5.91			6.486	5.260	6.486	5.260
		5844	High			7.46	5.90	7.46	5.90			6.401	4.928	6.401	4.928
HDR 4	High	5733	Low			15.41	15.42	15.41	15.42			10.865	11.053	10.865	11.053
		5788	Mid			15.47	15.48	15.47	15.48			10.948	10.991	10.948	10.991
		5844	High			15.48	15.43	15.48	15.43			10.781	10.699	10.781	10.699
	Low	5733	Low			0.81	-0.53	0.81	-0.53			-3.550	-5.453	-3.550	-5.453
		5788	Mid			0.91	-0.56	0.91	-0.56			-3.251	-5.467	-3.251	-5.467
		5844	High			0.88	-0.72	0.88	-0.72			-3.429	-5.691	-3.429	-5.691
HDR 8	High	5733	Low			15.47	15.46	15.47	15.46			7.924	7.924	7.924	7.924
		5788	Mid			15.43	15.42	15.43	15.42			7.691	7.925	7.691	7.925
		5844	High			15.40	15.48	15.40	15.48			7.757	7.723	7.757	7.723
	Low	5733	Low			0.86	-0.52	0.86	-0.52			-6.715	-8.413	-6.715	-8.413
		5788	Mid			0.98	-0.62	0.98	-0.62			-6.438	-8.678	-6.438	-8.678
		5844	High			0.98	-0.54	0.98	-0.54			-6.479	-8.598	-6.479	-8.598



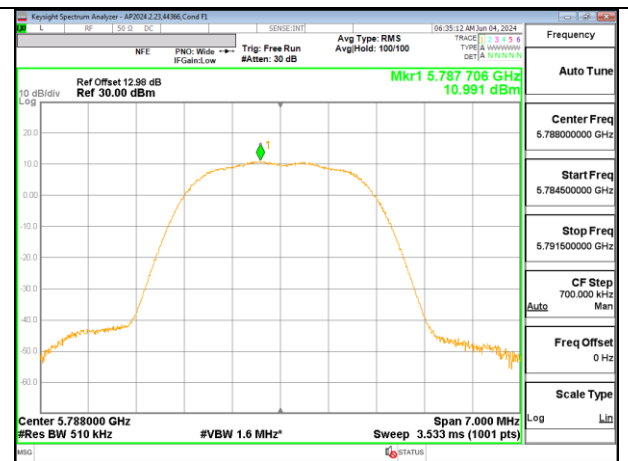
HIGH POWER Mid Channel
Mid Channel (UNII-3 BDR) – Ant 6



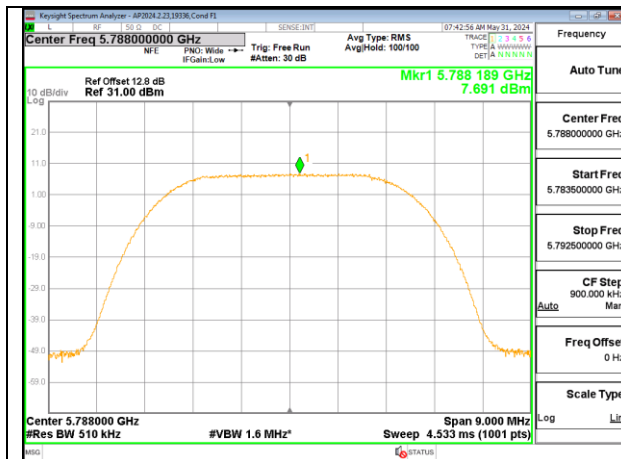
HIGH POWER Mid Channel
Mid Channel (UNII-3 BDR) – Ant 5



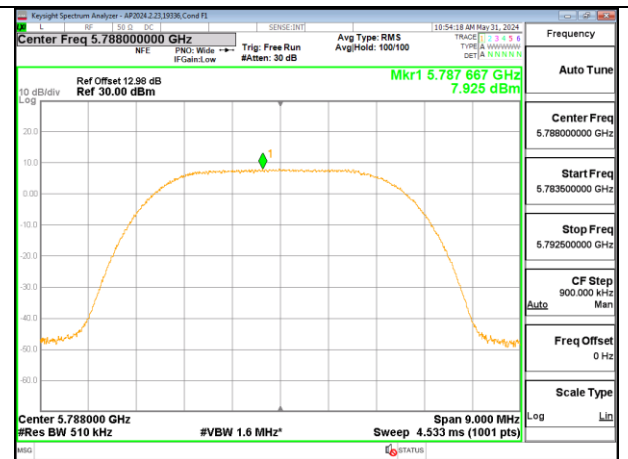
HIGH POWER Mid Channel
Mid Channel (UNII-3 HDR4) – Ant 6



HIGH POWER Mid Channel
Mid Channel (UNII-3 HDR4) – Ant 5



HIGH POWER Mid Channel
Mid Channel (UNII-3 HDR8) – Ant 6

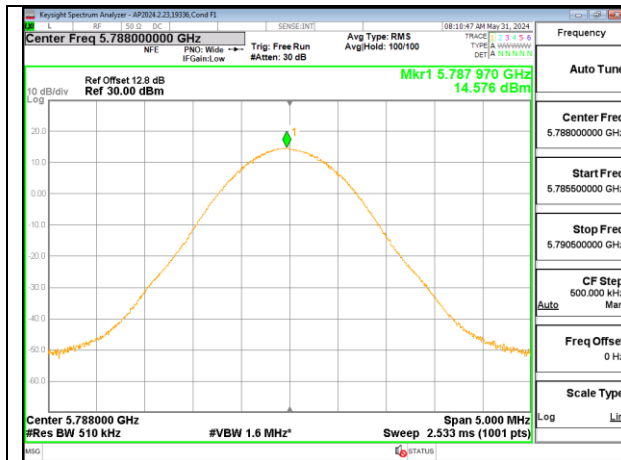


HIGH POWER Mid Channel
Mid Channel (UNII-3 HDR8) – Ant 5

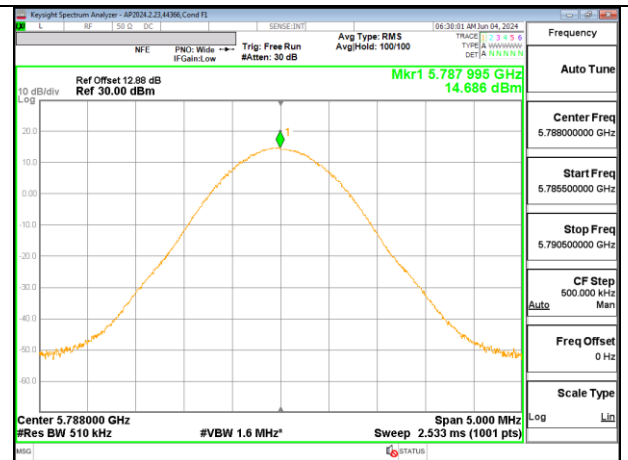
9.4.4. UNII-3 BAND MIMO TXBF MODE

UNII-3 (MIMO BF) (5733- 5844MHz)	
DCCF (dB)	0.00
Un-Correlated Gain (dBi)	-1.10
Correlated Gain (dBi)	1.91

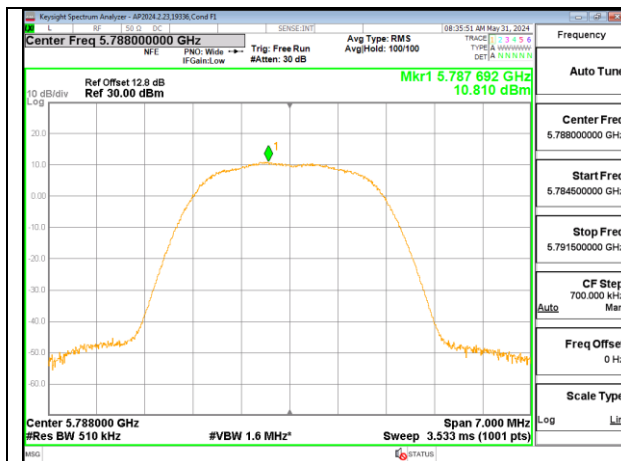
UNII-3 (MIMO BF)	Power Config.	Freq (MHz)	Ch. #	Power Limit (dBm)	Output Power (Gated) (dBm)		Total MIMO Corrected Power (dBm)	PSD Limit (dBm/500kHz)	PSD (dBm/MHz)		Total MIMO Corrected PSD (dBm/500kHz)
					Ant 6	Ant 5			Ant 6	Ant 5	
BDR	High	5733	Low	30	15.41	15.45	18.44	30	14.620	14.608	17.624
		5788	Mid		15.46	15.45	18.47		14.576	14.686	17.642
		5844	High		15.47	15.43	18.46		14.365	14.436	17.411
	Low	5733	Low		7.33	5.92	9.69		6.532	5.892	9.234
		5788	Mid		7.46	5.93	9.77		6.426	5.598	9.042
		5844	High		7.19	5.93	9.62		6.161	5.591	8.896
HDR 4	High	5733	Low		15.48	15.45	18.48		10.758	10.976	13.879
		5788	Mid		15.43	15.44	18.45		10.810	11.107	13.971
		5844	High		15.43	15.47	18.46		10.769	10.799	13.794
	Low	5733	Low		0.96	-0.53	3.29		-3.936	-5.143	-1.487
		5788	Mid		0.92	-0.51	3.27		-3.565	-5.417	-1.383
		5844	High		0.98	-0.57	3.28		-3.861	-5.292	-1.508
HDR 8	High	5733	Low		15.46	15.46	18.47		7.628	7.797	10.724
		5788	Mid		15.41	15.42	18.43		7.653	7.990	10.835
		5844	High		15.48	15.46	18.48		7.517	7.556	10.547
	Low	5733	Low		0.73	-0.76	3.06		-7.439	-8.493	-4.924
		5788	Mid		0.87	-0.56	3.22		-7.229	-8.462	-4.792
		5844	High		0.76	-0.59	3.15		-7.398	-8.360	-4.842



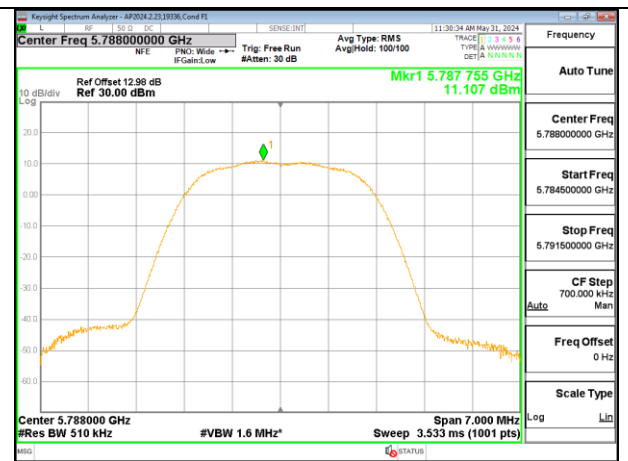
HIGH POWER Mid Channel
Mid Channel (UNII-3 BDR) – Ant 6



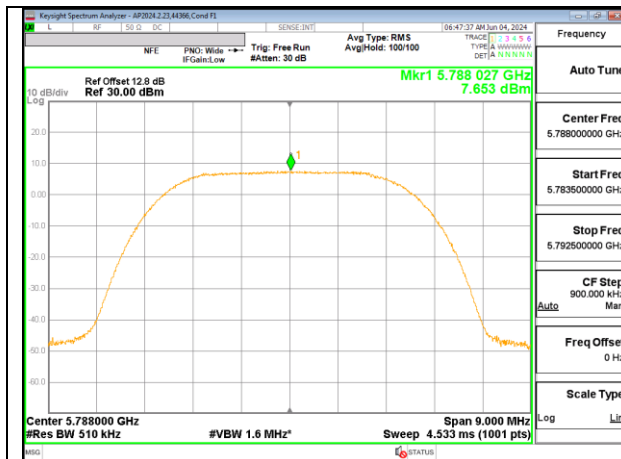
HIGH POWER Mid Channel
Mid Channel (UNII-3 BDR) – Ant 5



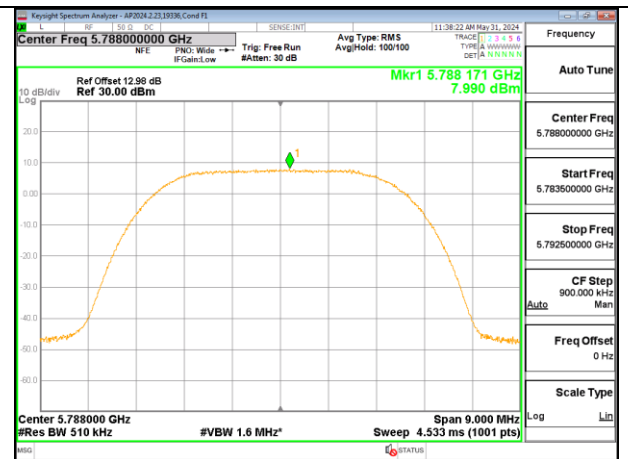
HIGH POWER Mid Channel
Mid Channel (UNII-3 HDR4) – Ant 6



HIGH POWER Mid Channel
Mid Channel (UNII-3 HDR4) – Ant 5



HIGH POWER Mid Channel
Mid Channel (UNII-3 HDR8) – Ant 6



HIGH POWER Mid Channel
Mid Channel (UNII-3 HDR8) – Ant 5

10. RADIATED TEST RESULTS

LIMITS

FCC §15.205 and §15.209 -Restricted bands

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

RSS 247 Issue 3 Sections

6.2.1.2 (for 5150-5250 MHz band)

6.2.4.2 (for 5725-5850 MHz band)

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 80 cm above the ground plane for measurement below 1GHz and 1.5 meters 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 measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements in the 30-1000MHz range, 9kHz for peak and/or quasi-peak detection measurements in the 0.15-30MHz range and 200Hz for peak and/or quasi-peak detection measurements in the 9 to 150kHz range. Peak detection is used unless otherwise noted as quasi-peak or average (9-90kHz and 110-490kHz).

For pre-scans above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 KHz 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 as applicable for average measurements.

The spectrum from 30 MHz to 1GHz and 18GHz to 40 GHz is investigated with the transmitter set to transmit at the channel with highest output power as worst-case scenario. 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.

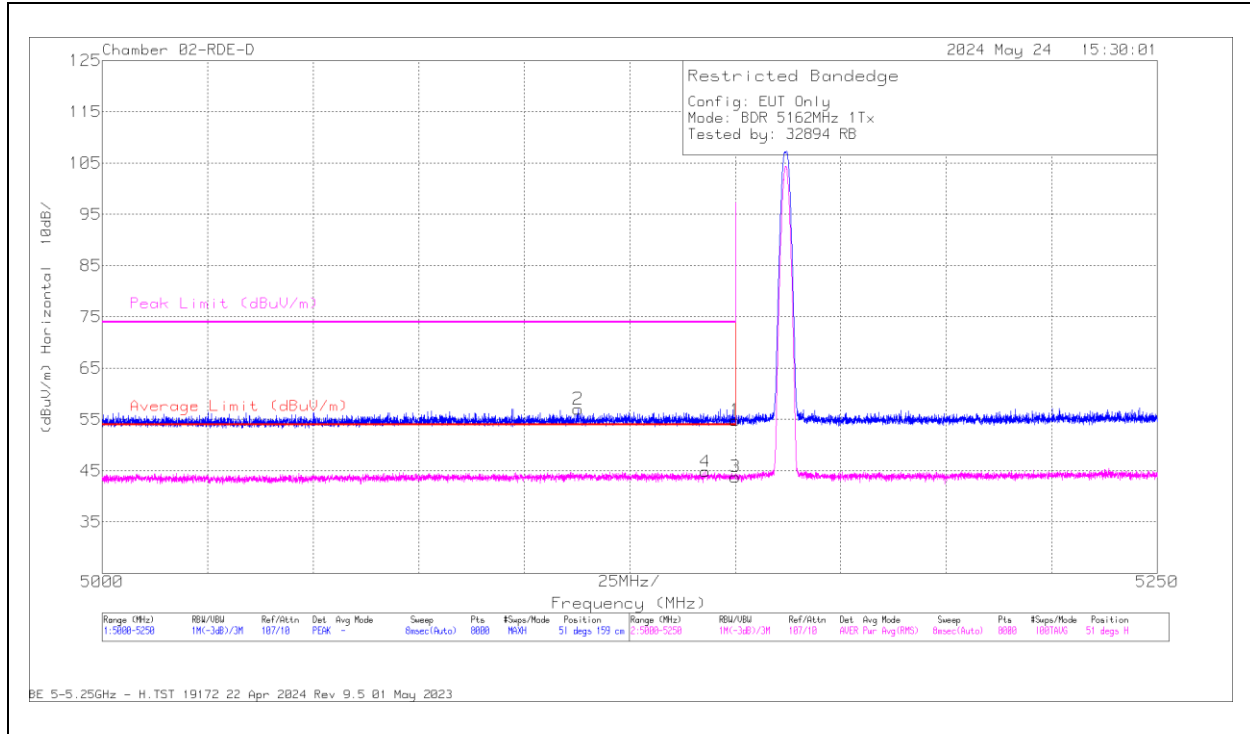
Note: The limits in CFR 47, Part 15, Subpart C, paragraph 15.209(a), are identical to those in RSS-Gen section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as report in the table) using free space impedance of 377 Ohms. For example, the measurement at frequency X kHz resulted in a level of Y dBuV/m, which is equivalent to $Y - 51.5 = Z$ dBuA/m, which has the same margin, W dB to the corresponding RSS-Gen Table 6 limit as it has to 15.209(a) limit.

KDB 414788 Open Field Site(OFS) and Chamber Correlation Justification

Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

OFS and chamber correlation testing had been performed and chamber measured test result is the worst-case test result.

RESULTS

10.1. TRANSMITTER ABOVE 1 GHz**10.1.1. BDR, HIGH POWER UNII-1 BANDEGE****ANT 6****BANDEGE (LOW CHANNEL)****HORIZONTAL RESULT**

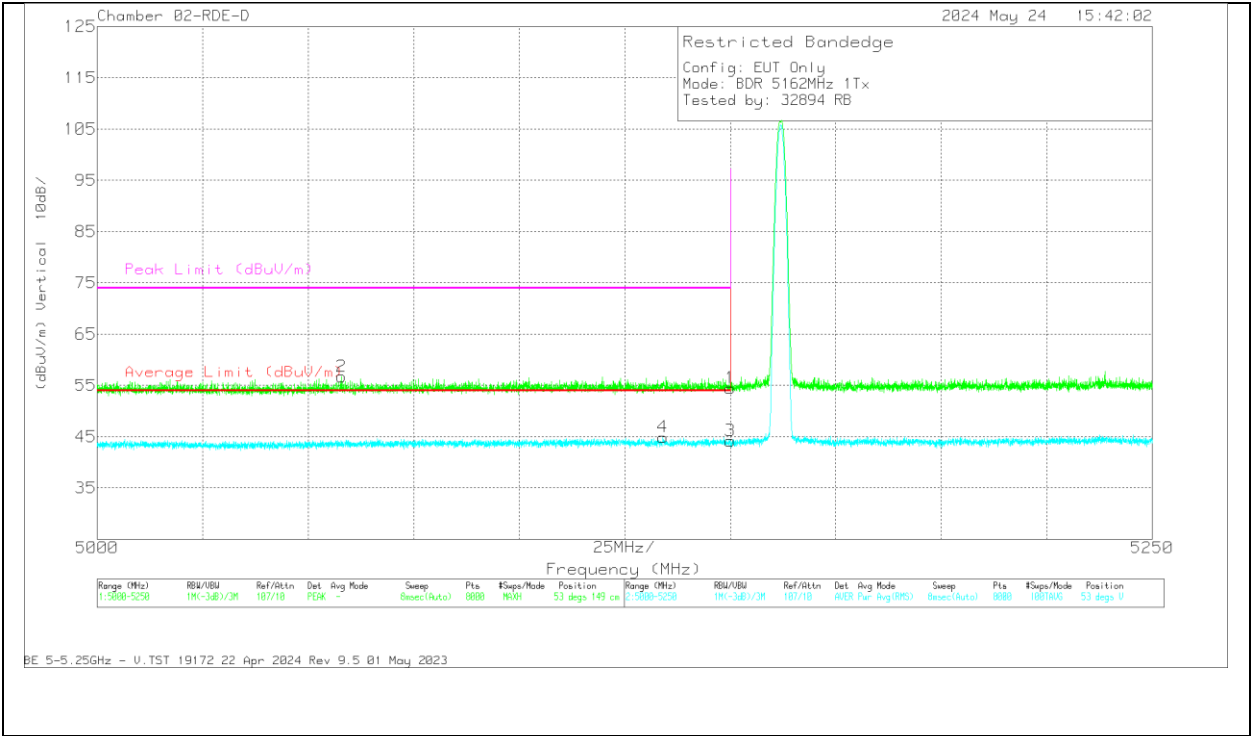
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	200896 ACF(dBm)	Ampl/Cbl (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5150	37.32	Pk	34.1	-16.6	54.82	-	-	74	-19.18	51	159	H
2	* 5112.764	39.72	Pk	34	-16.7	57.02	-	-	74	-16.98	51	159	H
3	* 5150	26.3	RMS	34.1	-16.6	43.8	54	-10.2	-	-	51	159	H
4	* 5142.925	27.23	RMS	34.1	-16.5	44.83	54	-9.17	-	-	51	159	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

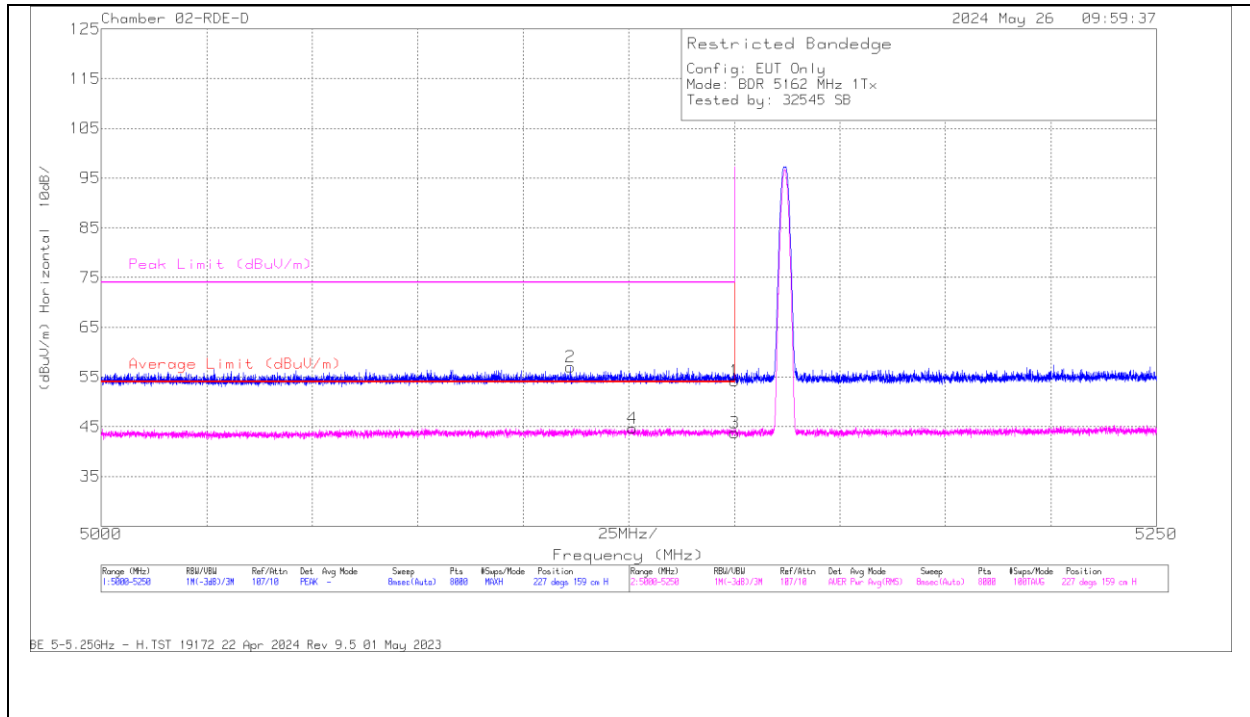
RMS - RMS detection

VERTICAL RESULT



Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	200896 ACF(dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5150	36.98	Pk	34.1	-16.6	54.48	-	-	74	-19.52	53	149	V
2	* 5057.882	39.52	Pk	33.9	-16.7	56.72	-	-	74	-17.28	53	149	V
3	* 5150	26.68	RMS	34.1	-16.6	44.18	54	-9.82	-	-	53	149	V
4	* 5134.048	27.41	RMS	34	-16.5	44.91	54	-9.09	-	-	53	149	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

ANT 5**BANDEGE (LOW CHANNEL)****HORIZONTAL RESULT**

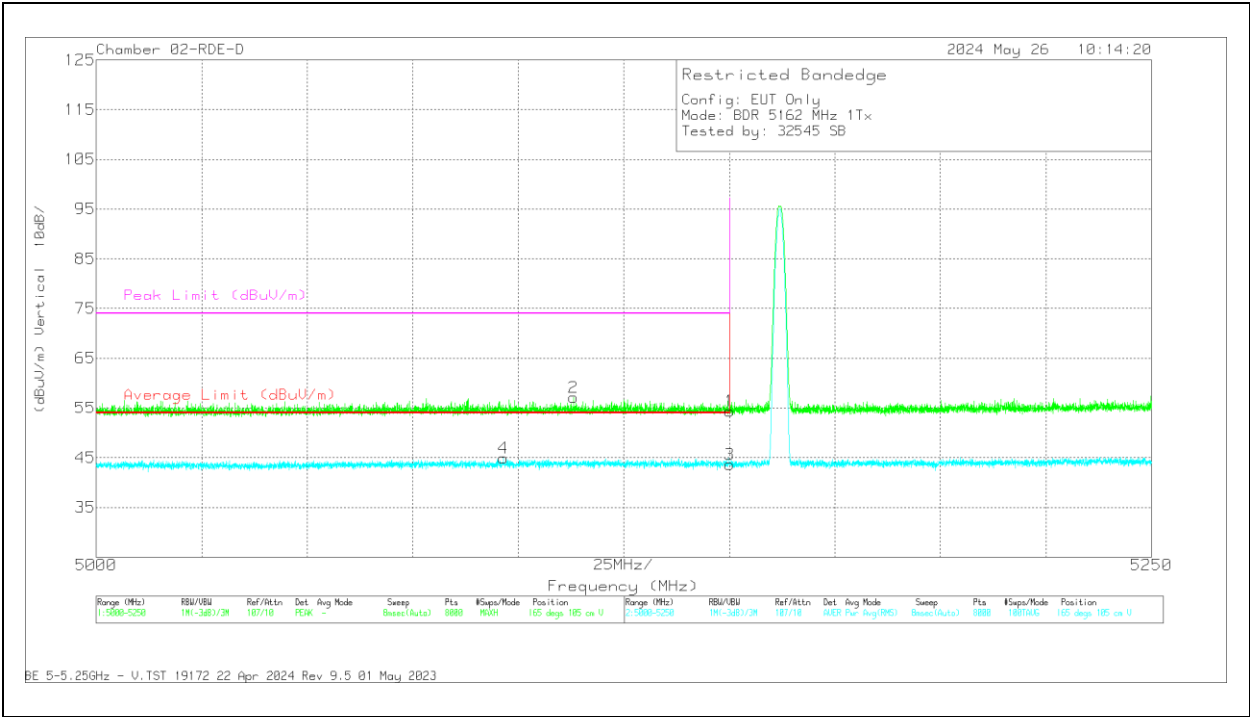
Marker	Frequency (MHz)	Meter Reading (dBUV)	Det	200896 ACF(dB/m)	Amp/Cbl (dB)	Corrected Reading (dBUV/m)	Average Limit (dBUV/m)	Margin (dB)	Peak Limit (dBUV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5150	36.79	Pk	34.1	-16.6	54.29	-	-	74	-19.71	227	159	H
2	* 5111.139	39.76	Pk	34	-16.7	57.06	-	-	74	-16.94	227	159	H
3	* 5150	26.31	RMS	34.1	-16.6	43.81	54	-10.19	-	-	227	159	H
4	* 5125.829	27.31	RMS	34	-16.6	44.71	54	-9.29	-	-	227	159	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT

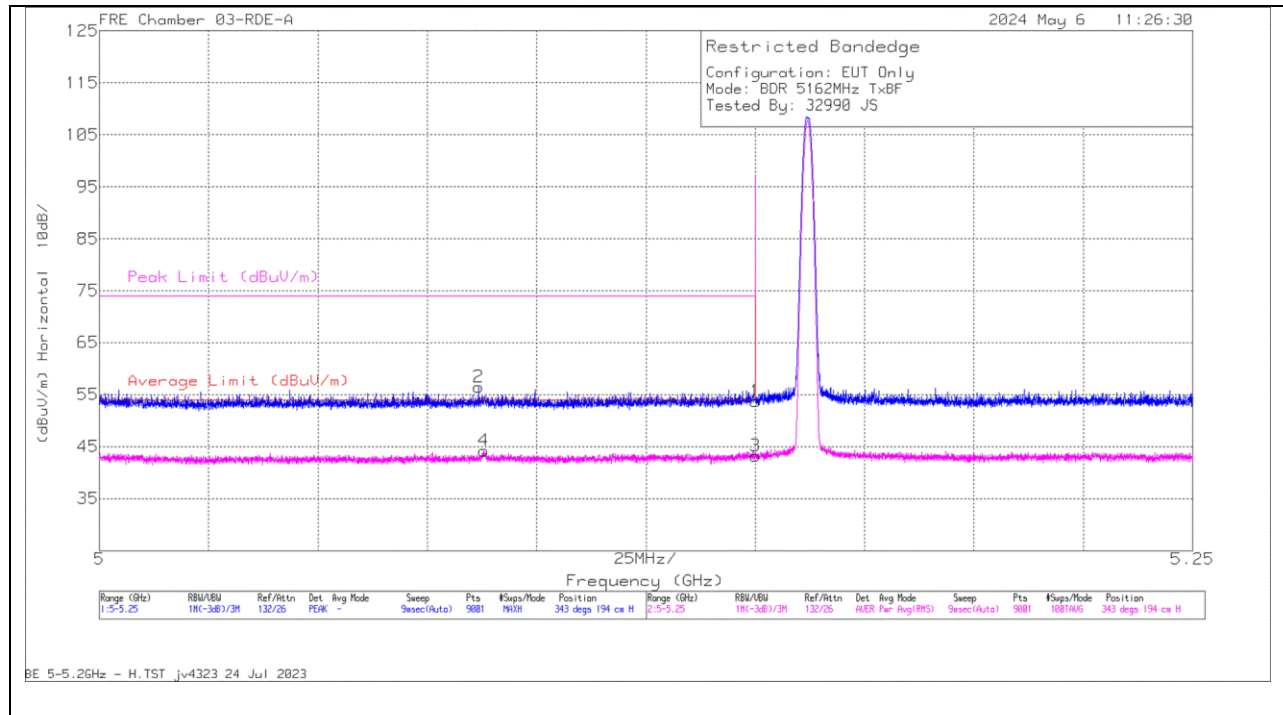


Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	200896 ACF(dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5150	36.84	Pk	34.1	-16.6	54.34	-	-	74	-19.66	165	105	V
2	* 5113.108	39.79	Pk	34	-16.7	57.09	-	-	74	-16.91	165	105	V
3	* 5150	26.1	RMS	34.1	-16.6	43.6	54	-10.4	-	-	165	105	V
4	* 5096.512	27.8	RMS	34	-16.9	44.9	54	-9.1	-	-	165	105	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

2TX Antenna 6 + Antenna 5 TX BF MODE**BANDEDGE (LOW CHANNEL)****HORIZONTAL RESULT**

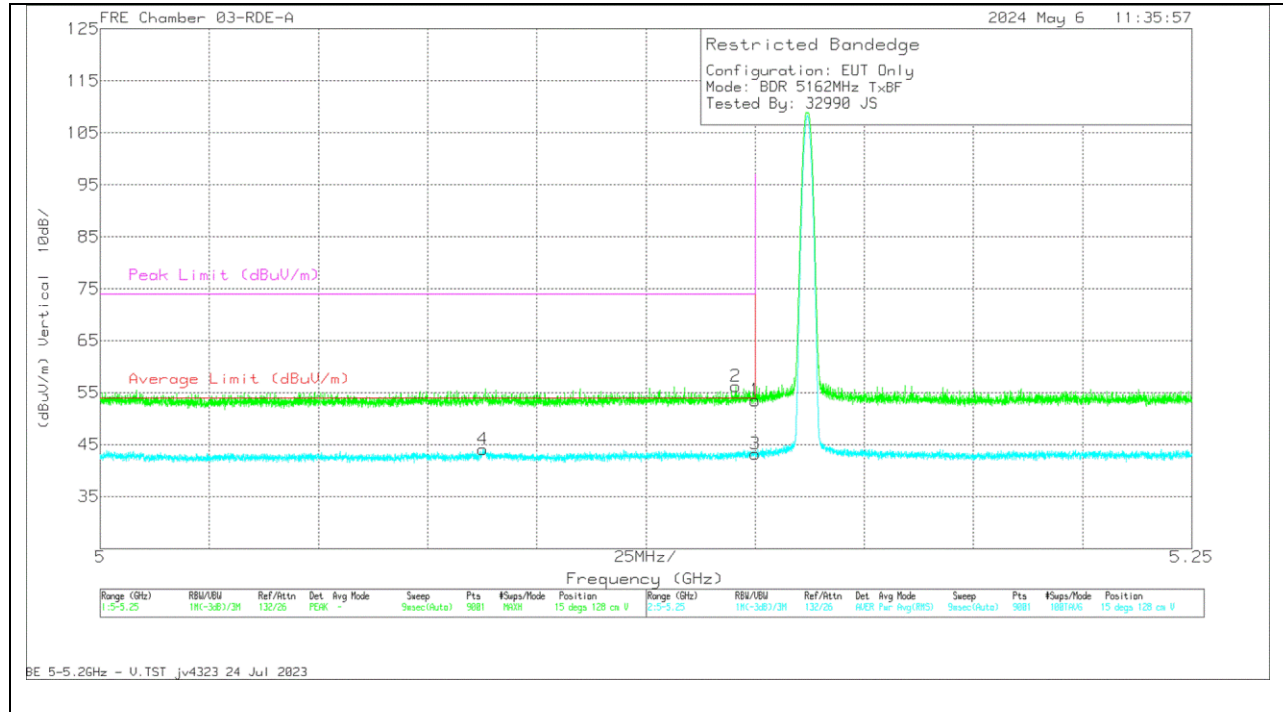
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226673 ACF (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	57.8	Pk	34.2	-38.28	53.72	-	-	74	-20.28	343	194	H
2	* 5.086751	60.8	Pk	34.1	-38.42	56.48	-	-	74	-17.52	343	194	H
3	* 5.15	47.27	RMS	34.2	-38.28	43.19	54	-10.81	-	-	343	194	H
4	* 5.08789	48.55	RMS	34.1	-38.42	44.23	54	-9.77	-	-	343	194	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226673 ACF (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	57.62	Pk	34.2	-38.28	53.54	-	-	74	-20.46	15	128	V
2	* 5.145612	60.26	Pk	34.2	-38.28	56.18	-	-	74	-17.82	15	128	V
3	* 5.15	47.27	RMS	34.2	-38.28	43.19	54	-10.81	-	-	15	128	V
4	* 5.087695	48.45	RMS	34.1	-38.42	44.13	54	-9.87	-	-	15	128	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

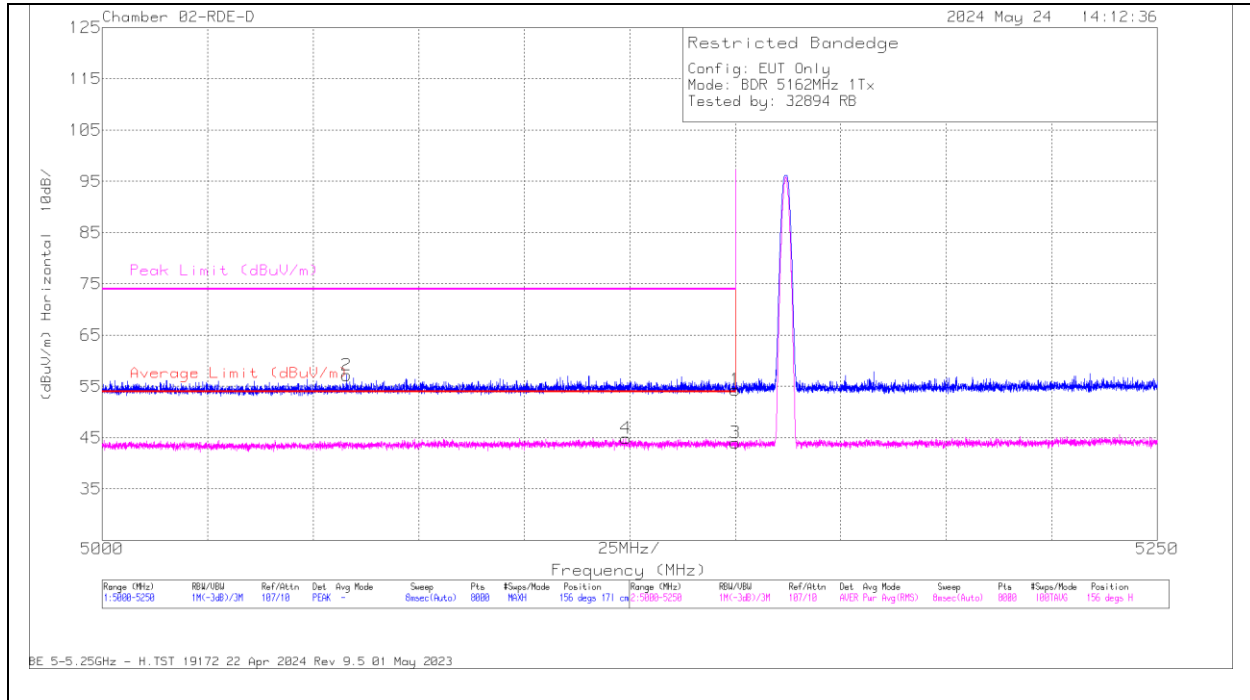
RMS - RMS detection

10.1.2. BDR, LOW POWER UNII-1 BANDEDGE

ANT 6

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



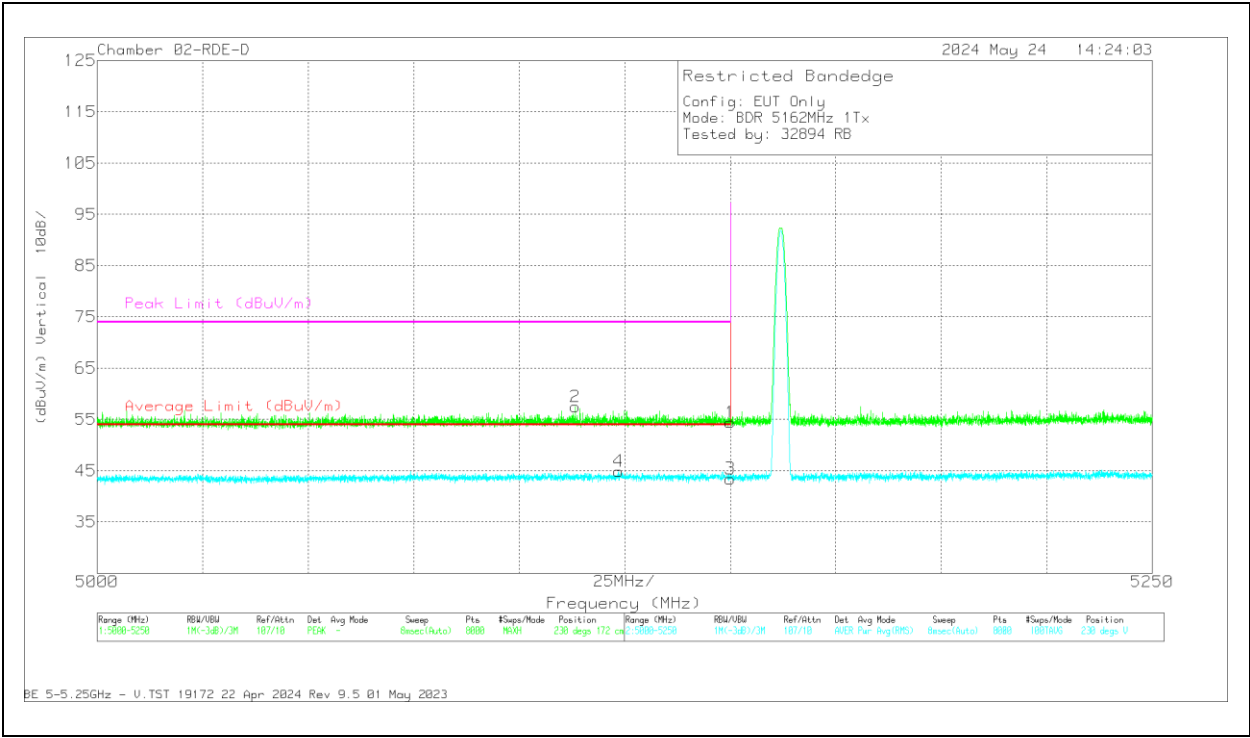
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	200896 ACF(dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5150	36.83	Pk	34.1	-16.6	54.33	-	-	74	-19.67	156	171	H
2	* 5057.851	40.01	Pk	33.9	-16.7	57.21	-	-	74	-16.79	156	171	H
3	* 5150	26.53	RMS	34.1	-16.6	44.03	54	-9.97	-	-	156	171	H
4	* 5124.078	27.49	RMS	34	-16.6	44.89	54	-9.11	-	-	156	171	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

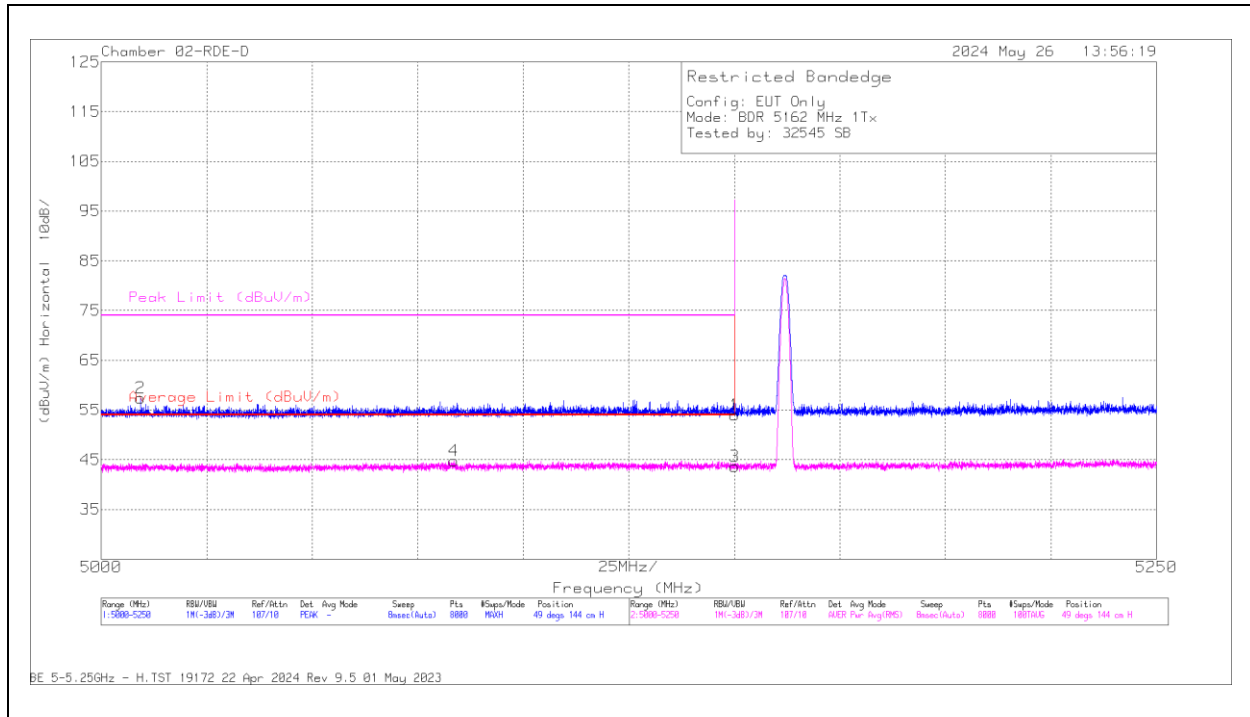
RMS - RMS detection

VERTICAL RESULT



Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	200896 ACF(dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5150	36.89	Pk	34.1	-16.6	54.39	-	-	74	-19.61	230	172	V
2	* 5113.265	40.19	Pk	34	-16.7	57.49	-	-	74	-16.51	230	172	V
3	* 5150	25.93	RMS	34.1	-16.6	43.43	54	-10.57	-	-	230	172	V
4	* 5123.516	27.48	RMS	34	-16.6	44.88	54	-9.12	-	-	230	172	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

ANT 5**BANDEGE (LOW CHANNEL)****HORIZONTAL RESULT**

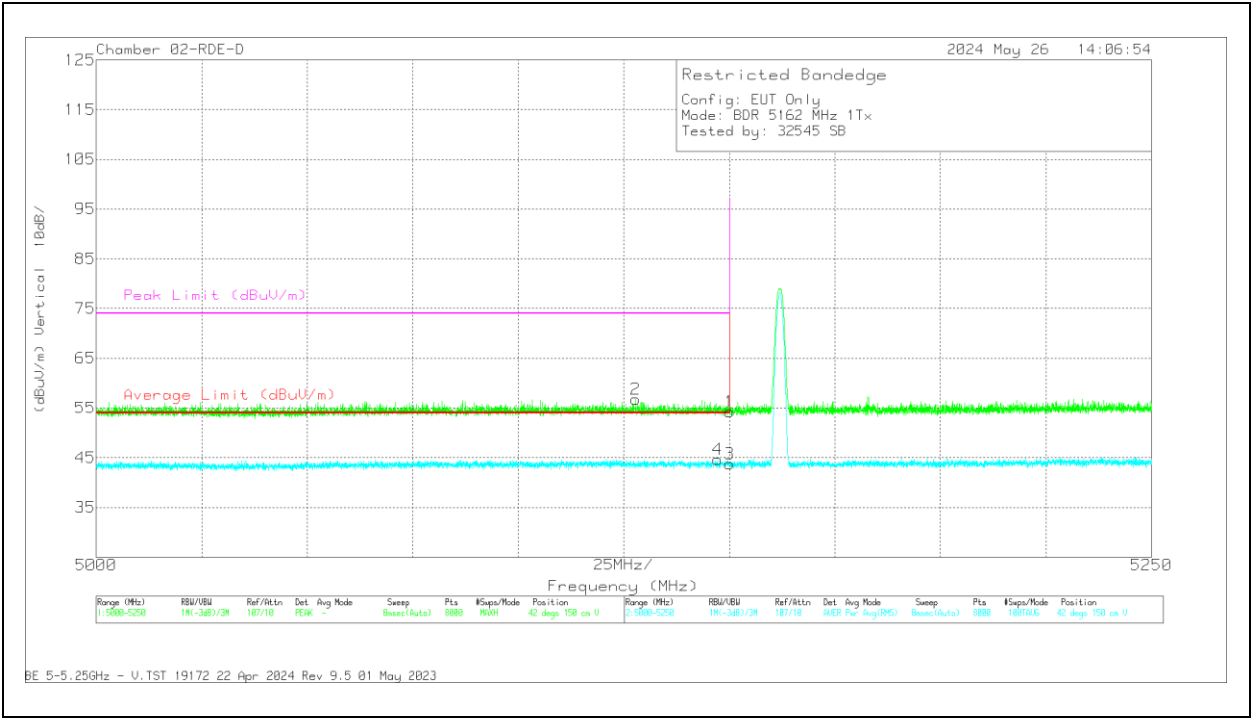
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	200896 ACF(dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5150	36.49	Pk	34.1	-16.6	53.99	-	-	74	-20.01	49	144	H
2	* 5009.314	40.04	Pk	33.8	-16.4	57.44	-	-	74	-16.56	49	144	H
3	* 5150	26.16	RMS	34.1	-16.6	43.66	54	-10.34	-	-	49	144	H
4	* 5083.511	27.69	RMS	33.9	-16.8	44.79	54	-9.21	-	-	49	144	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT



Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	200896 ACF(dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5150	36.74	Pk	34.1	-16.6	54.24	-	-	74	-19.76	42	150	V
2	* 5127.829	39.46	Pk	34	-16.7	56.76	-	-	74	-17.24	42	150	V
3	* 5150	26.27	RMS	34.1	-16.6	43.77	54	-10.23	-	-	42	150	V
4	* 5147.206	27.12	RMS	34.1	-16.6	44.62	54	-9.38	-	-	42	150	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection