

JAPAN SPECIFIED RADIO EQUIPMENT

TEST REPORT

For

WiFi+Bluetooth 5.2 System on Module

Trade Name: TechNexion

Model: PIXI-IW416

Issued to

TechNexion Ltd.

16F-5, No. 736, Zhongzheng Road, ZhongHe District, 23511, New Taipei City, Taiwan

Issued by

Compliance Certification Services Inc.

Wugu Laboratory

No.11, Wugong 6th Rd., Wugu Dist.,

New Taipei City, Taiwan

Issued Date: August 7, 2023

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	August 7, 2023	Initial Issue	ALL	Allison Chen

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1. TEST RESULT CERTIFICATION

Applicant: TechNexion Ltd.
16F-5, No. 736, Zhongzheng Road, ZhongHe District,
23511, New Taipei City, Taiwan

Manufacturer: TechNexion Ltd.
16F-5, No. 736, Zhongzheng Road, ZhongHe District,
23511, New Taipei City, Taiwan

Equipment Under Test: WiFi+Bluetooth 5.2 System on Module

Trade Name: TechNexion

Model Number: PIXI-IW416

Detailed EUT Description: See Item 3 of this report

Date of Test: May 16, 2023

EUT Receive Date May 23~24, 2023

APPLICABLE STANDARDS	
CLASSIFICATION	TEST RESULT
ARIB STD T-71 Ver 7.0	Compliance
Statements of Conformity	
Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.	

The above equipment was tested by Compliance Certification Services Inc. for compliance with the requirements set forth in ARIB STD T-71 Ver 7.0. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Approved by:



Shawn Wu
Supervisor
Compliance Certification Services Inc.

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2. SUMMARY OF TEST RESULTS

2.1 WLAN IEEE 802.11a (W52 & W53 & W56)

APPLIED STANDARD: ARIB STD T-71 Ver 7.0			
Standard Section	Report Section	Test Type and Limit	Test Result
General provisions			
5	6.2	Frequency Tolerance	PASS
6	6.3	Occupied Bandwidth	PASS
7	6.5	Out-Band Leakage Power & Unwanted Emission Strength	PASS
Transmitting equipment			
14	6.1	RF output power	PASS
14.2	-	SAR	-
Transmitting antenna			
20	4.2	Type, Configuration, etc., of Transmitting Antenna	PASS
22	-	Direction Pattern of Transmitting Antenna (Provided at Individual Antenna Report)	PASS
Receiving antenna			
24	6.6	Secondarily Emitted Radio Wave Strength	PASS
26	4.2	Refer to All Articles for Transmitting Antenna	PASS
Operating frequency 5180 ~ 5240MHz (20MHz Space 4 Channels)			
49.20(3);a	4.3	RF Shielding Method	PASS
49.20(3);b	3/4	Communication Method	PASS
49.20(3);c	3/4	Modulation Method	PASS
49.20(3);d	3/4	Signal Transmission Rate	PASS
49.20(3);e	6.7	Transmission Burst Length	PASS
49.20(3);f	6.1	RF output power	PASS
49.20(3);g	2.1	Equivalent Isotropic Radiated Power	PASS
49.20(3);h	-	Number of Carriers	PASS
49.20(3);i	-	Spreading Factor	PASS
49.20(3);j	6.5	Out-Band Leakage Power & Unwanted Emission Strength	PASS
49.20(3);j	6.4	Adjacent Channel Leakage Power	PASS
49.20(3);k	-	Comply with The Technical Conditions	PASS
-	9	Interference Prevention Function	PASS

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2.2 WLAN IEEE 802.11n HT 20 (W52 & W53 & W56)

APPLIED STANDARD: ARIB STD T-71 Ver 7.0			
Standard Section	Report Section	Test Type and Limit	Test Result
General provisions			
5	7.2	Frequency Tolerance	PASS
6	7.3	Occupied Bandwidth	PASS
7	7.5	Out-Band Leakage Power & Unwanted Emission Strength	PASS
Transmitting equipment			
14	7.1	RF output power	PASS
14.2	-	SAR	-
Transmitting antenna			
20	4.2	Type, Configuration, etc., of Transmitting Antenna	PASS
22	-	Direction Pattern of Transmitting Antenna (Provided at Individual Antenna Report)	PASS
Receiving antenna			
24	7.6	Secondarily Emitted Radio Wave Strength	PASS
26	4.2	Refer to All Articles for Transmitting Antenna	PASS
Operating frequency 5180 ~ 5240MHz (20MHz Space 4 Channels)			
49.20(3);a	4.3	RF Shielding Method	PASS
49.20(3);b	3/4	Communication Method	PASS
49.20(3);c	3/4	Modulation Method	PASS
49.20(3);d	3/4	Signal Transmission Rate	PASS
49.20(3);e	7.7	Transmission Burst Length	PASS
49.20(3);f	7.1	RF output power	PASS
49.20(3);g	2.1	Equivalent Isotropic Radiated Power	PASS
49.20(3);h	-	Number of Carriers	PASS
49.20(3);i	-	Spreading Factor	PASS
49.20(3);j	7.5	Out-Band Leakage Power & Unwanted Emission Strength	PASS
49.20(3);j	7.4	Adjacent Channel Leakage Power	PASS
49.20(3);k	-	Comply with The Technical Conditions	PASS
-	9	Interference Prevention Function	PASS

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2.3 WLAN IEEE 802.11n HT 40 (W52 & W53 & W56)

APPLIED STANDARD: ARIB STD T-71 Ver 7.0			
Standard Section	Report Section	Test Type and Limit	Test Result
General provisions			
5	8.2	Frequency Tolerance	PASS
6	8.3	Occupied Bandwidth	PASS
7	8.5	Out-Band Leakage Power & Unwanted Emission Strength	PASS
Transmitting equipment			
14	8.1	RF output power	PASS
14.2	-	SAR	-
Transmitting antenna			
20	4.2	Type, Configuration, etc., of Transmitting Antenna	PASS
22	-	Direction Pattern of Transmitting Antenna (Provided at Individual Antenna Report)	PASS
Receiving antenna			
24	8.6	Secondarily Emitted Radio Wave Strength	PASS
26	4.2	Refer to All Articles for Transmitting Antenna	PASS
Operating frequency 5190 ~ 5230MHz (20MHz Space 2 Channels)			
49.20(3);a	4.3	RF Shielding Method	PASS
49.20(3);b	3/4	Communication Method	PASS
49.20(3);c	3/4	Modulation Method	PASS
49.20(3);d	3/4	Signal Transmission Rate	PASS
49.20(3);e	8.7	Transmission Burst Length	PASS
49.20(3);f	8.1	RF output power	PASS
49.20(3);g	2.1	Equivalent Isotropic Radiated Power	PASS
49.20(3);h	-	Number of Carriers	PASS
49.20(3);i	-	Spreading Factor	PASS
49.20(3);j	8.5	Out-Band Leakage Power & Unwanted Emission Strength	PASS
49.20(3);j	8.4	Adjacent Channel Leakage Power	PASS
49.20(3);k	-	Comply with The Technical Conditions	PASS
-	9	Interference Prevention Function	PASS

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3 EUT DESCRIPTION

Product Name	WiFi+Bluetooth 5.2 System on Module												
Model Name	PIXI-IW416												
Trade Name	TechNexion												
Power Supply	5VDC from Host PC Power Supply												
Model Discrepancy	N/A												
Frequency Range	IEEE 802.11a (W52 / CH36~48): 5180~5240 MHz IEEE 802.11a (W53 / CH52~64): 5260~5320 MHz IEEE 802.11a (W56 / CH100~144):5500~5720 MHz IEEE 802.11n HT20 (W52 / CH36~48): 5180~5240 MHz IEEE 802.11n HT20 (W53 / CH52~64): 5260~5320 MHz IEEE 802.11n HT20 (W56 / CH100~144):5500~5720 MHz IEEE 802.11n HT40 (W52 / CH38~46): 5190~5230 MHz IEEE 802.11n HT40 (W53 / CH54~62): 5270~5310 MHz IEEE 802.11n HT40 (W56 / CH102~142):5510~5710 MHz												
Rated Antenna Power (mW/MHz)	<table border="1"> <tr> <td>IEEE 802.11a (W52 / CH36~48 & W53 / CH52~64)</td> <td>1.768</td> </tr> <tr> <td>IEEE 802.11a (W56 / CH100~144)</td> <td>1.673</td> </tr> <tr> <td>IEEE 802.11n HT20 (W52 / CH36~48 & W53 / CH52~64)</td> <td>1.841</td> </tr> <tr> <td>IEEE 802.11n HT20 (W56 / CH100~144)</td> <td>1.622</td> </tr> <tr> <td>IEEE 802.11n HT40 (W52 / CH38~46 & W53 / CH54~62)</td> <td>0.930</td> </tr> <tr> <td>IEEE 802.11n HT40 (W56 / CH102~142)</td> <td>0.750</td> </tr> </table>	IEEE 802.11a (W52 / CH36~48 & W53 / CH52~64)	1.768	IEEE 802.11a (W56 / CH100~144)	1.673	IEEE 802.11n HT20 (W52 / CH36~48 & W53 / CH52~64)	1.841	IEEE 802.11n HT20 (W56 / CH100~144)	1.622	IEEE 802.11n HT40 (W52 / CH38~46 & W53 / CH54~62)	0.930	IEEE 802.11n HT40 (W56 / CH102~142)	0.750
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Measured Antenna Power (mW/MHz)	<table border="1"> <tr> <td>IEEE 802.11a (W52 / CH36~48 & W53 / CH52~64)</td> <td>1.768</td> </tr> <tr> <td>IEEE 802.11a (W56 / CH100~144)</td> <td>1.673</td> </tr> <tr> <td>IEEE 802.11n HT20 (W52 / CH36~48 & W53 / CH52~64)</td> <td>1.841</td> </tr> <tr> <td>IEEE 802.11n HT20 (W56 / CH100~144)</td> <td>1.622</td> </tr> <tr> <td>IEEE 802.11n HT40 (W52 / CH38~46 & W53 / CH54~62)</td> <td>0.930</td> </tr> <tr> <td>IEEE 802.11n HT40 (W56 / CH102~142)</td> <td>0.750</td> </tr> </table>	IEEE 802.11a (W52 / CH36~48 & W53 / CH52~64)	1.768	IEEE 802.11a (W56 / CH100~144)	1.673	IEEE 802.11n HT20 (W52 / CH36~48 & W53 / CH52~64)	1.841	IEEE 802.11n HT20 (W56 / CH100~144)	1.622	IEEE 802.11n HT40 (W52 / CH38~46 & W53 / CH54~62)	0.930	IEEE 802.11n HT40 (W56 / CH102~142)	0.750
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IEEE 802.11n HT40 (W56 / CH102~142)	0.750												

Modulation Technique	IEEE 802.11a: OFDM (QPSK, BPSK, 16-QAM, 64-QAM) IEEE 802.11n: OFDM (QPSK, BPSK, 16-QAM, 64-QAM)
Number of Channels	IEEE 802.11a (W52 / CH36~48): 4 channels IEEE 802.11a (W53 / CH52~64): 4 channels IEEE 802.11a (W56 / CH100~144): 12 channels IEEE 802.11n HT20 (W52 / CH36~48): 4 channels IEEE 802.11n HT20 (W53 / CH52~64): 4 channels IEEE 802.11n HT20 (W56 / CH100~144): 12 channels IEEE 802.11n HT40 (W52 / CH38~46): 2 channels IEEE 802.11n HT40 (W53 / CH54~62): 2 channels IEEE 802.11n HT40 (W56 / CH102~142): 6 channels
Antenna Specification	1. Dipole Antenna / Gain: 6 dBi (*Worst) 2. PIFA Antenna / Gain: 3 dBi
Hardware Version	A1
Software Version	1.0

Remark:

1. For more details, please refer to the User's manual of the EUT.
2. Disclaimer: Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.

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4 TEST METHODOLOGY & CONDITIONS

4.1 TEST CONDITIONS

Temperature: 24.3~24.8°C **Test date:** May 23~24, 2023
Humidity: 50~52% RH **Tested by:** David Li

	unit		Limit	Result
Environment of Test Room Temperature	°C	24.3-24.8	≧ 5	PASS
			≦ 35	
Environment of Test Room Humidity	%	50-52	≧ 45	PASS
			≦ 85	
Input Power Voltage	VDC	3.30	---	---
The reason why the tests are performed only at rated voltage:	When the input voltage to receiver RF circuit varies below ± 1% as the input voltage from the external power supply to the receiver varies ± 10% (excluding power supply).			

Voltage Fluctuation Test	Normal Voltage	High Voltage + 10% of Normal Voltage	Low Voltage - 10% of Normal Voltage
Input DC Power	3.3	3.63	2.97
Output DC Power	3.3	3.3	3.3
Voltage Variation (%)	0	0	0

Note: Voltage Variation (%) = (Output High or Low Voltage - Output Normal Voltage)/Output Normal Voltage X 100

During the input supply voltage to the EUT from the external power source is varied by +/- 10%, if output voltage had been confirmed that the fluctuation of power supply to the RF circuit of EUT (excluding power source) is equal to or less than +/- 1%. Exempt extremely high and low supply voltage condition tests, EUT only operated in normal voltage to test all regulations.

4.2 DESCRIPTION OF TEST MODES

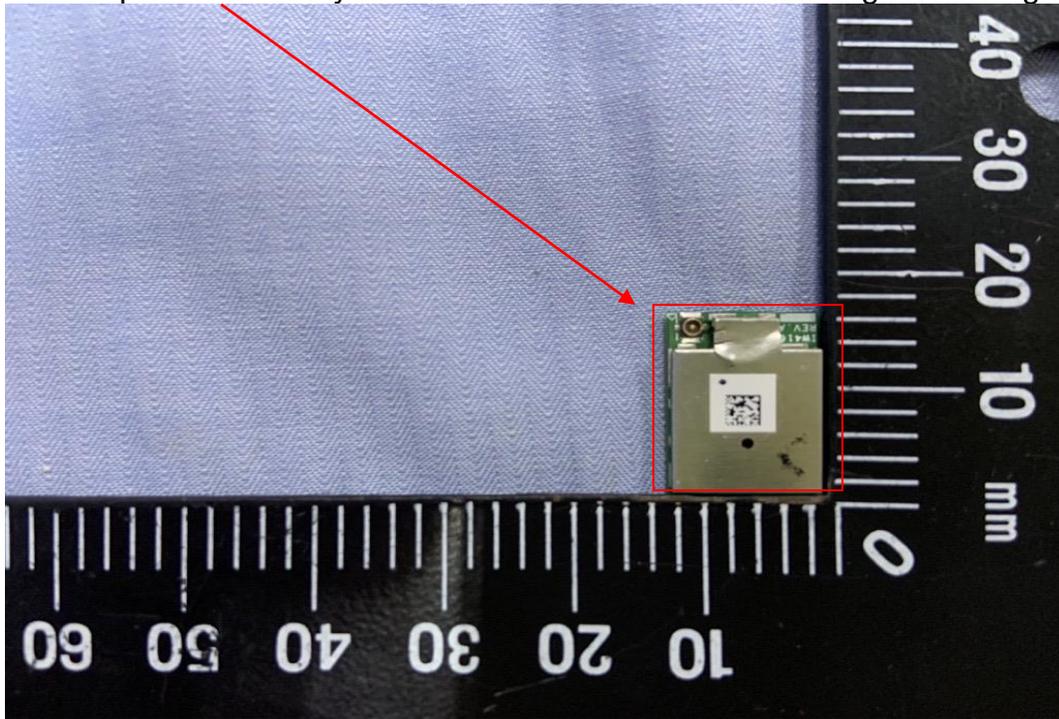
The EUT (Model: PIXI-IW416) had been tested under operating condition. Software used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

The worst case data rate is determined as the data rate with highest output power.

Measurement was conducted by the following test method:
the test method of Ordinance Concerning Technical Regulations
Conformity Certification etc. of Specified Radio Equipment in Annex 1,
the Ministry of Internal Affairs and Communication notification in
Annex "45" of Article 88, Paragraph 1 or the test method more than equivalent.

4.3 RF SHIELDING METHOD

The RF part is not easily accessible because the EUT is using a shielding case as below.



4.4 SETUP OF EQUIPMENT UNDER TEST

Setup Diagram

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

Support Equipment

No	Equipment	Trade Name	Model	Serial No.	FCC ID
1.	NB(G)	Lenovo	T460P	N/A	N/A

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5 INSTRUMENT AND CALIBRATION

5.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

5.2 TEST AND MEASUREMENT EQUIPMENT

The following list contains measurement equipment used for testing. The equipment conforms to the requirement of CISPR 16-1, ANSI C63.2 and other equivalent standards.

Calibration of all test and measurement, including any accessories that may effect such calibration, is checked frequently to ensure the accuracy. Adjustments are made and correction factors are applied in accordance with the instructions contained in the respective manual.

Equipment Used for Emission Measurement

Conducted Emission Test Site								
Name of Equipment	Manufacturer	Model	Serial Number	Cal Date	Cal Due	Calibration Lab.	Accreditation Organization of the Cal. Lab	Calibration Method
SG	Keysight	E8257C	US42340383	2022-06-29	2023-06-28	ETC	TAF	c
Power Meter	Anritsu	ML2496A	2136002	2022-11-24	2023-11-23	ETC	TAF	c
EXA Signal Analyzer	Keysight	N9010B	MY60242460	2023-02-02	2024-02-01	ETC	TAF	c
Power Sensor	Anritsu	MA2411B	1911386	2022-08-08	2023-08-07	ETC	TAF	c
Power Sensor	Anritsu	MA2411B	1911387	2022-08-08	2023-08-07	ETC	TAF	c
Software	Radio Test Software Ver. 21							

Remark:

1. Each piece of equipment is scheduled for calibration once a year.
2. Calibration Method:
 - a) Calibration conducted by the National Institute of Information and Communications Technology (NICT) (hereinafter referred to as "NICT") or a designated calibration agency under Article 102-18 paragraph (1)
 - b) Correction conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Law (Law No. 51 of 1992)
 - c) Calibration conducted in foreign countries, which shall be equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph (1)
 - d) Calibration conducted by using measuring instruments and other equipment listed in the right column of Table No. 3 attached hereto, which shall have been given any of calibration, etc. listed above from a) to c)

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5.3 MEASUREMENT UNCERTAINTY

For the test methods, according to the present document, the measurement uncertainty figures shall be calculated in accordance with TR 100 028-1 [2] and shall correspond to an expansion factor (coverage factor) $k = 1,96$ or $k = 2$ (which provide confidence levels of respectively 95 % and 95,45 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)).

Table 6 is based on such expansion factors.

Table: Maximum measurement uncertainty

PARAMETER	UNCERTAINTY
RF Output Power	± 1.871 dB
Frequency Tolerance	± 0.03 ppm
Occupied Bandwidth(99%)	± 1.9 %
Adjacent channel leakage power	± 1.873 dB
Out-Band leakage power & Unwanted emission strength	± 1.875 dB
Secondarily emitted radio wave strength	± 1.875 dB

Remark:

- 1.This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$
2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.

6 TEST RESULT FOR IEEE 802.11a (W52 & W53 & W56)

6.1 RF OUTPUT POWER

TEST RESULTS

W52

802.11a_W52_20MHz	unit	---	---	---	Limit	Result	
Measurement Center Frequency	MHz	5180	5220	5240	---	---	
Channel Number	Ch.	36	44	48	---	---	
Declaration Output Power	mW/MHz	1.768			≤	10.000	PASS
Declaration Output Power	dBm/MHz	2.450	2.398	2.317	≤	10.000	PASS
E.I.R.P.	dBm/MHz	8.450	8.397	8.316	≤	10.000	PASS
Peak Antenna Gain (Chain0)	dBi	6			---	---	
Tested Circuit Insertion Loss (Chain0)	dB	11.00			---	---	
Tested Circuit Insertion Loss (RX_Chain0)	dB	1.00			---	---	
RF Output Power							
802.11a_W52_20MHz	unit	---	---	---	Limit	Result	
Measurement Center Frequency	MHz	5180	5220	5240	---	---	
Channel Number	Ch.	36	44	48	---	---	
RF Output Power (Chain0) (*1)	mW/MHz	1.758	1.737	1.705	---	---	
RF Output Power Tolerance (Chain0)	%	-0.57	-1.75	-3.56	≤ -80 ≥ 20	PASS	
Total Output Power (Chain0)	dBm	2.4496	2.3973	2.3163	---	---	
(*1): included calculation of burst ratio							

W53

802.11a_W53_20MHz	unit	---	---	---	Limit	Result	
Measurement Center Frequency	MHz	5260	5300	5320	---	---	
Channel Number	Ch.	52	60	64	---	---	
Declaration Output Power	mW/MHz	1.768			≤	10.000	PASS
Declaration Output Power	dBm/MHz	2.475	2.122	2.009	≤	10.000	PASS
E.I.R.P.	dBm/MHz	8.475	8.122	8.009	≤	10.000	PASS
Peak Antenna Gain (Chain0)	dBi	6			---	---	
Tested Circuit Insertion Loss (Chain0)	dB	11.00			---	---	
Tested Circuit Insertion Loss (RX_Chain0)	dB	1.00			---	---	
RF Output Power							
802.11a_W53_20MHz	unit	---	---	---	Limit	Result	
Measurement Center Frequency	MHz	5260	5300	5320	---	---	
Channel Number	Ch.	52	60	64	---	---	
RF Output Power (Chain0) (*1)	mW/MHz	1.768	1.630	1.588	---	---	
RF Output Power Tolerance (Chain0)	%	0.00	-7.81	-10.18	≥ ≤	-80 20	PASS
Total Output Power (Chain0)	dBm	2.4750	2.1224	2.0086	---	---	
(*1): included calculation of burst ratio							

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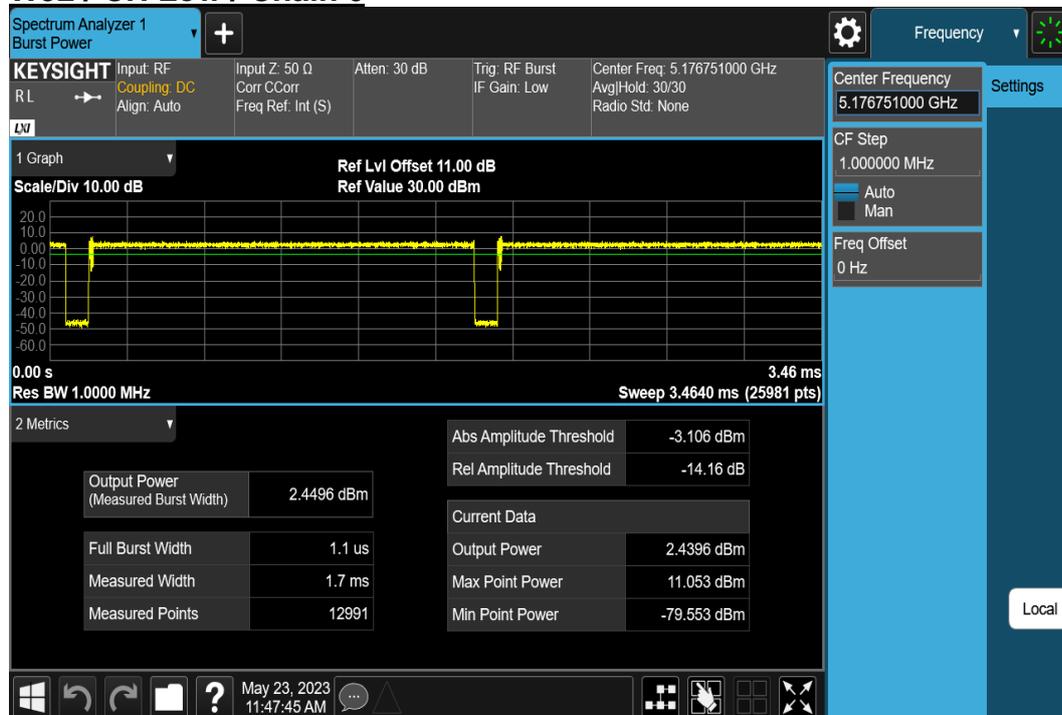
W56

802.11a_W56_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5500	5600	5720	---	---
Channel Number	Ch.	100	120	144	---	---
Declaration Output Power	mW/MHz	1.673			≤ 10.000	PASS
Declaration Output Power	dBm/MHz	2.019	1.673	2.235	≤ 10.000	PASS
E.I.R.P.	dBm/MHz	8.020	7.674	8.236	≤ 16.990	PASS
Peak Antenna Gain (Chain0)	dBi	6			---	---
Tested Circuit Insertion Loss (Chain0)	dB	11.00			---	---
Tested Circuit Insertion Loss (RX_Chain0)	dB	1.00			---	---
RF Output Power						
802.11a_W56_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5500	5600	5720	---	---
Channel Number	Ch.	100	120	144	---	---
RF Output Power (Chain0) (*1)	mW/MHz	1.592	1.470	1.673	---	---
RF Output Power Tolerance (Chain0)	%	-4.84	-12.13	0.00	≥ -50 ≤ 50	PASS
Total Output Power (Chain0)	dBm	2.0196	1.6742	2.2355	---	---
(*1): included calculation of burst ratio						

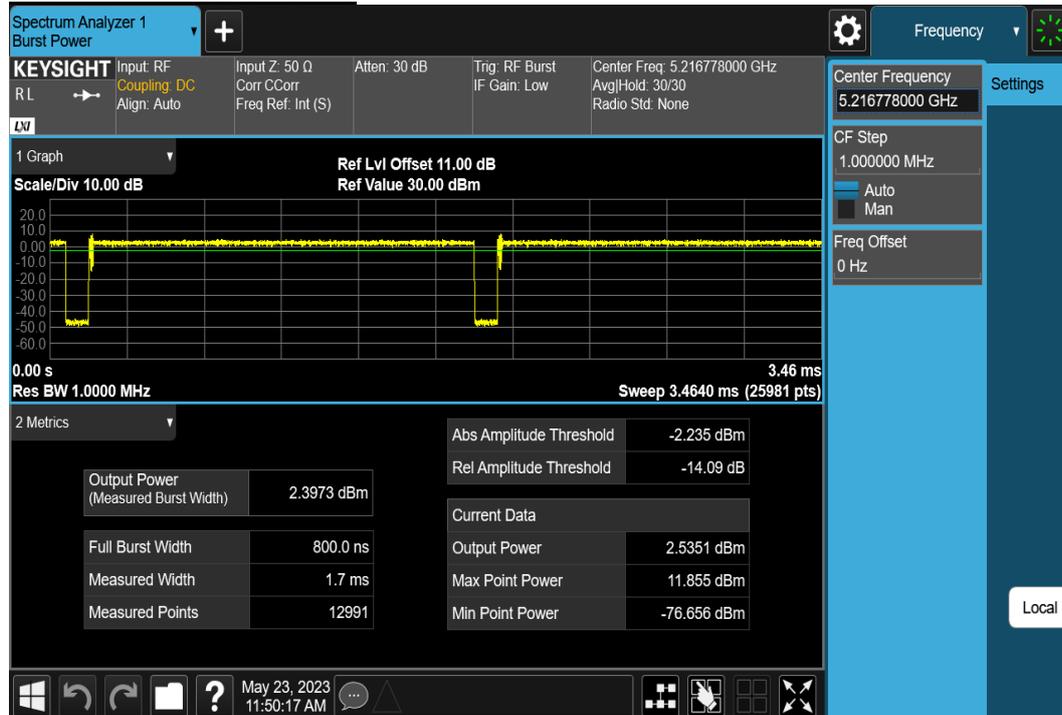
Report No.: TMWK2305001504KR

TEST PLOTS

W52 / CH Low / Chain 0

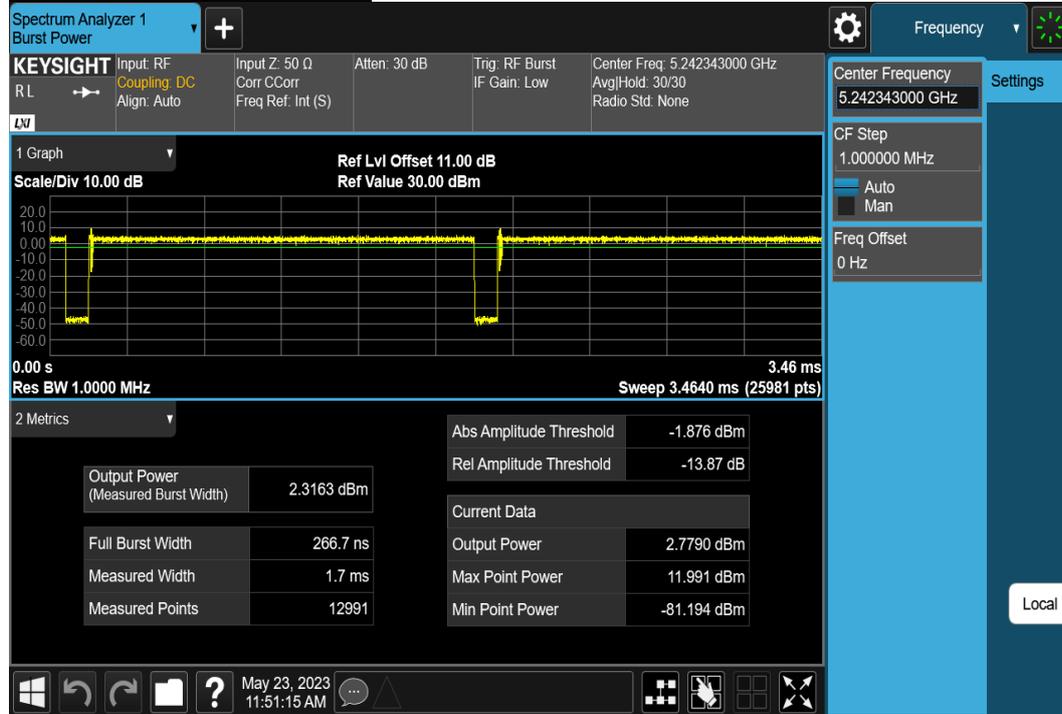


W52 / CH Mid / Chain 0



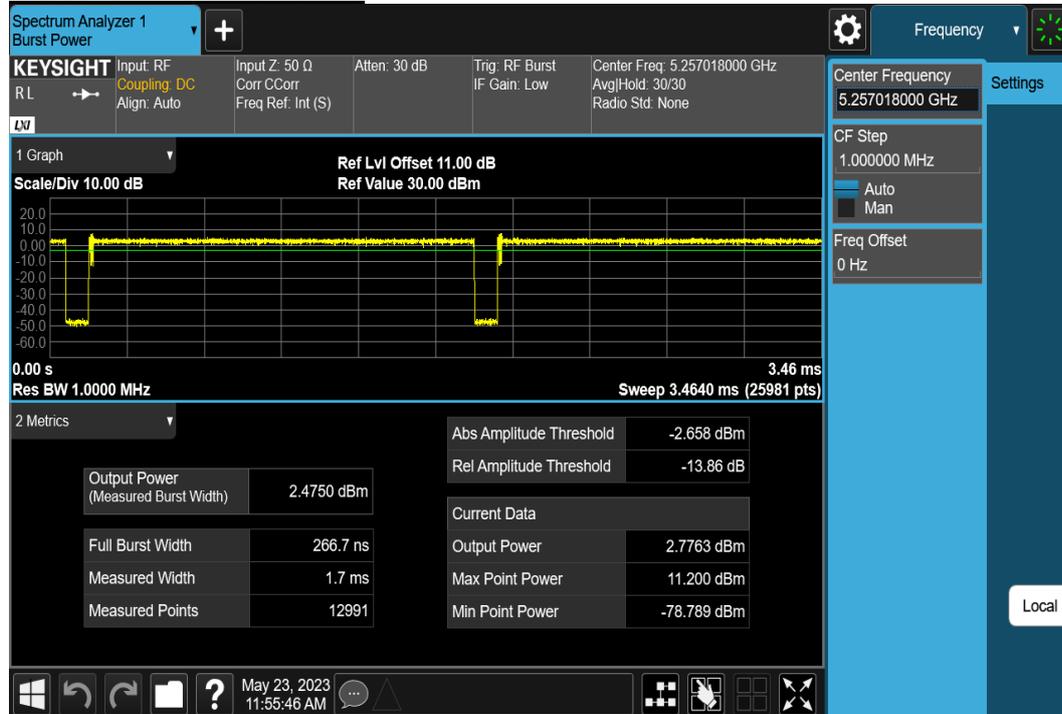
Report No.: TMWK2305001504KR

W52 / CH High / Chain 0

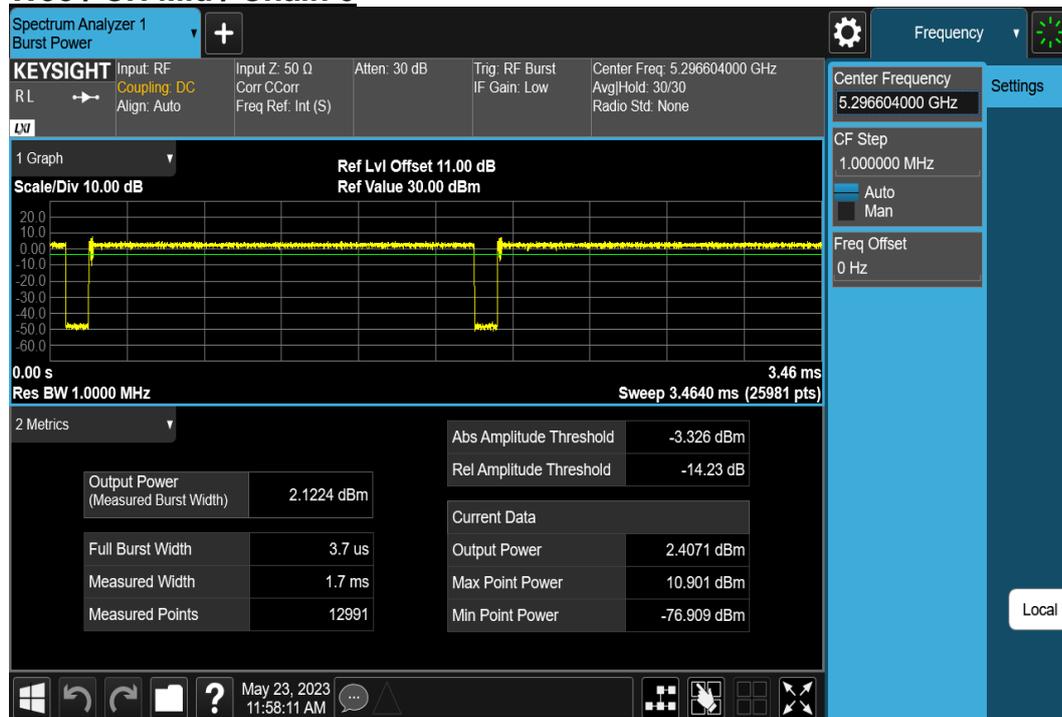


Report No.: TMWK2305001504KR

W53 / CH Low / Chain 0

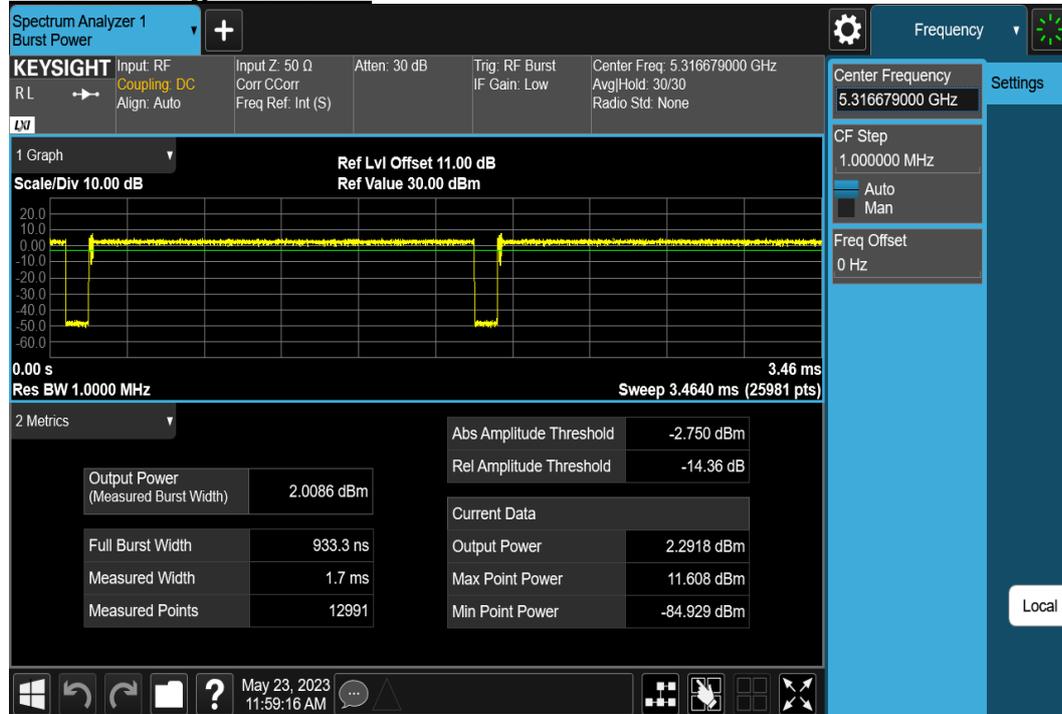


W53 / CH Mid / Chain 0



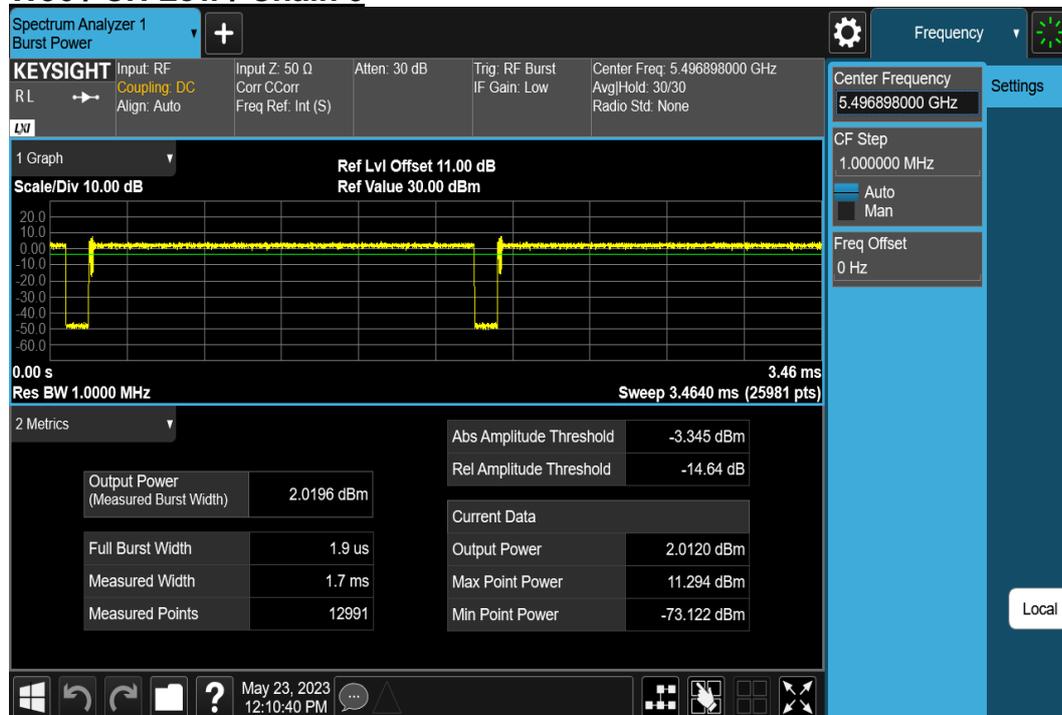
Report No.: TMWK2305001504KR

W53 / CH High / Chain 0

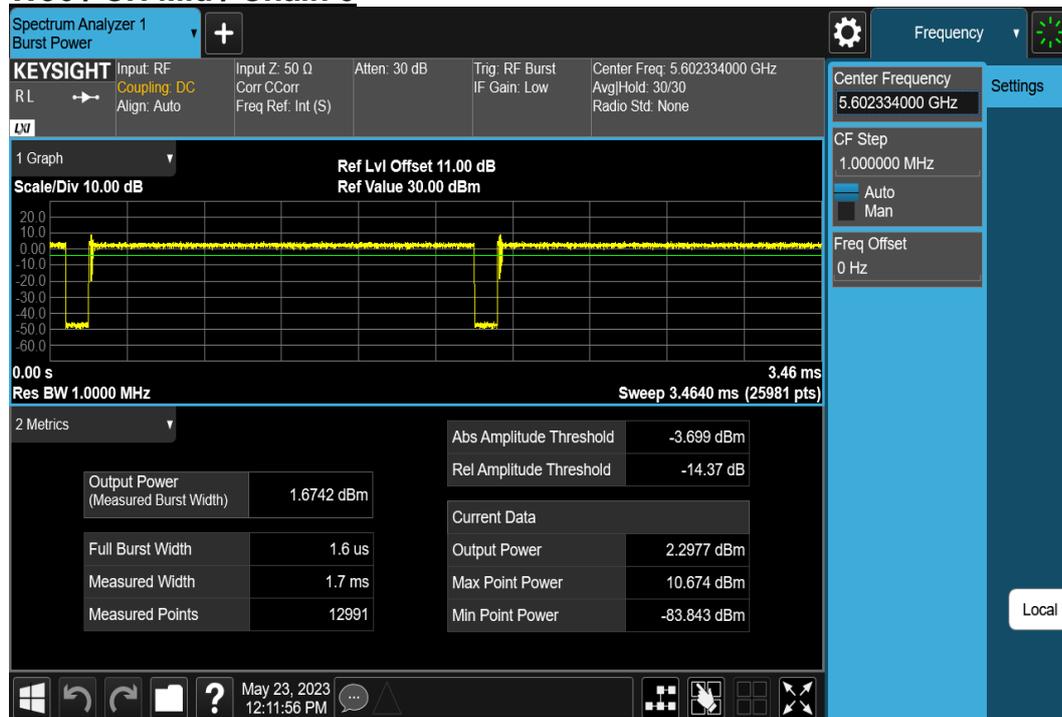


Report No.: TMWK2305001504KR

W56 / CH Low / Chain 0

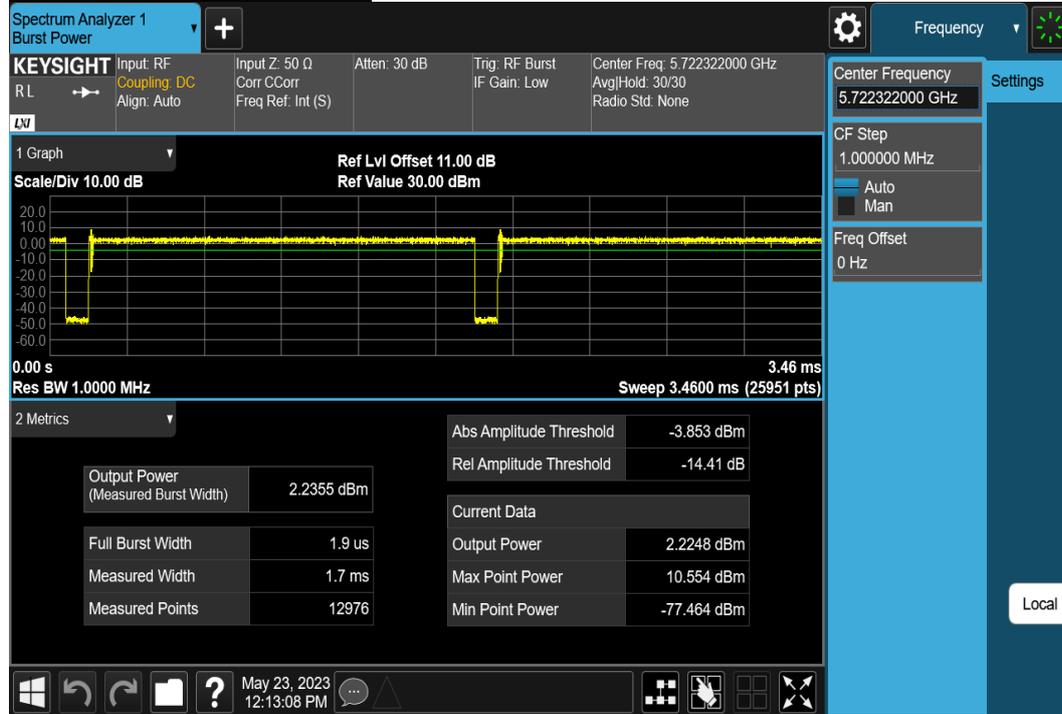


W56 / CH Mid / Chain 0



Report No.: TMWK2305001504KR

W56 / CH High / Chain 0



Report No.: TMWK2305001504KR

6.2 FREQUENCY TOLERANCE

TEST RESULT

W52

Frequency Tolerance						
802.11a_W52_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5180	5220	5240	---	---
Channel Number	Ch.	36	44	48	---	---
Reading Frequency (Chain0)	MHz	5180.0340	5220.0320	5240.0330	---	PASS
Frequency Tolerance (Chain0)	ppm	6.5637	6.1303	6.2977	±20	

W53

Frequency Tolerance						
802.11a_W53_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5260	5300	5320	---	---
Channel Number	Ch.	52	60	64	---	---
Reading Frequency (Chain0)	MHz	5260.0340	5300.0320	5320.0340	---	PASS
Frequency Tolerance (Chain0)	ppm	6.4639	6.0377	6.3910	±20	

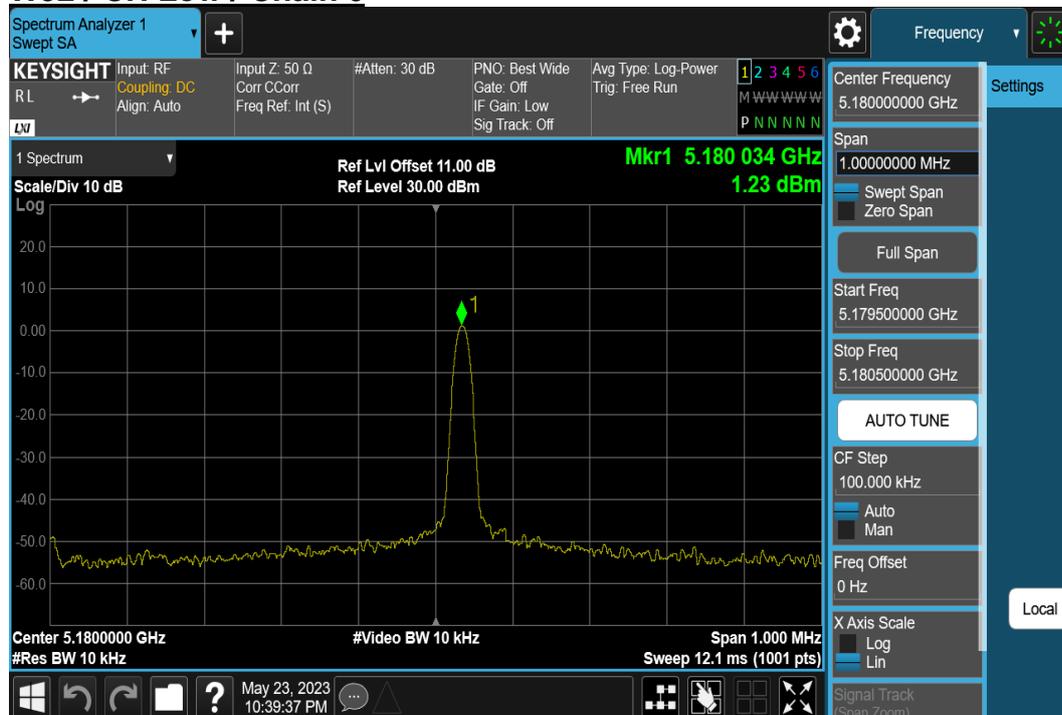
W56

Frequency Tolerance						
802.11a_W56_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5500	5600	5720	---	---
Channel Number	Ch.	100	120	144	---	---
Reading Frequency (Chain0)	MHz	5500.035	5600.033	5720.035	---	PASS
Frequency Tolerance (Chain0)	ppm	6.3636	5.8929	6.1189	±20	

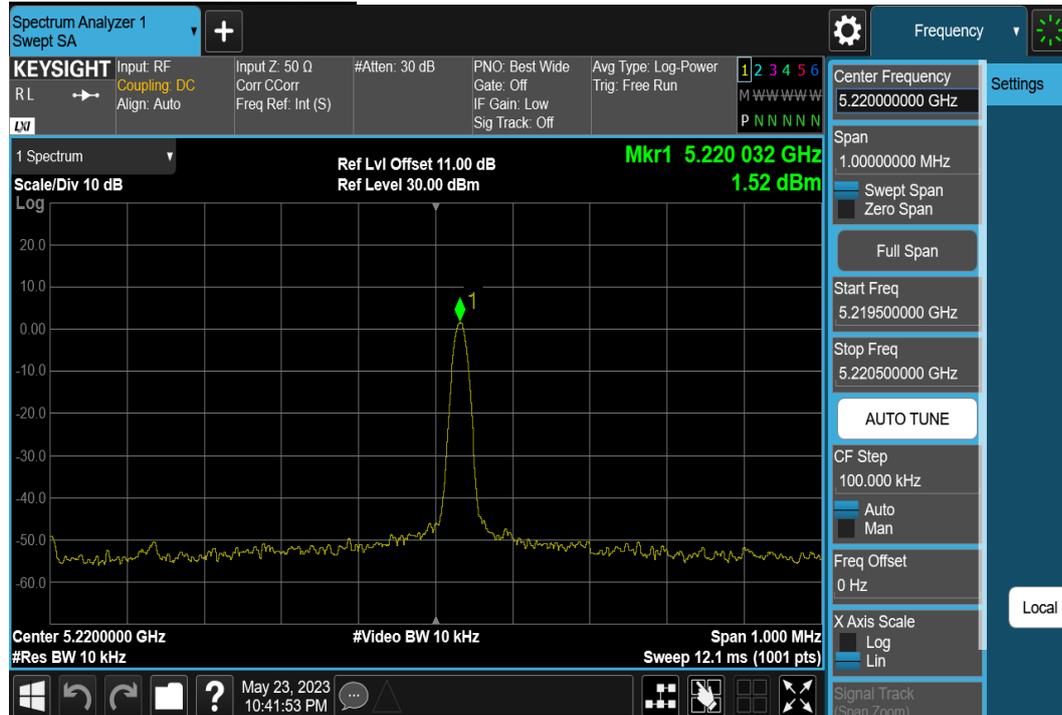
Report No.: TMWK2305001504KR

TEST PLOTS

W52 / CH Low / Chain 0

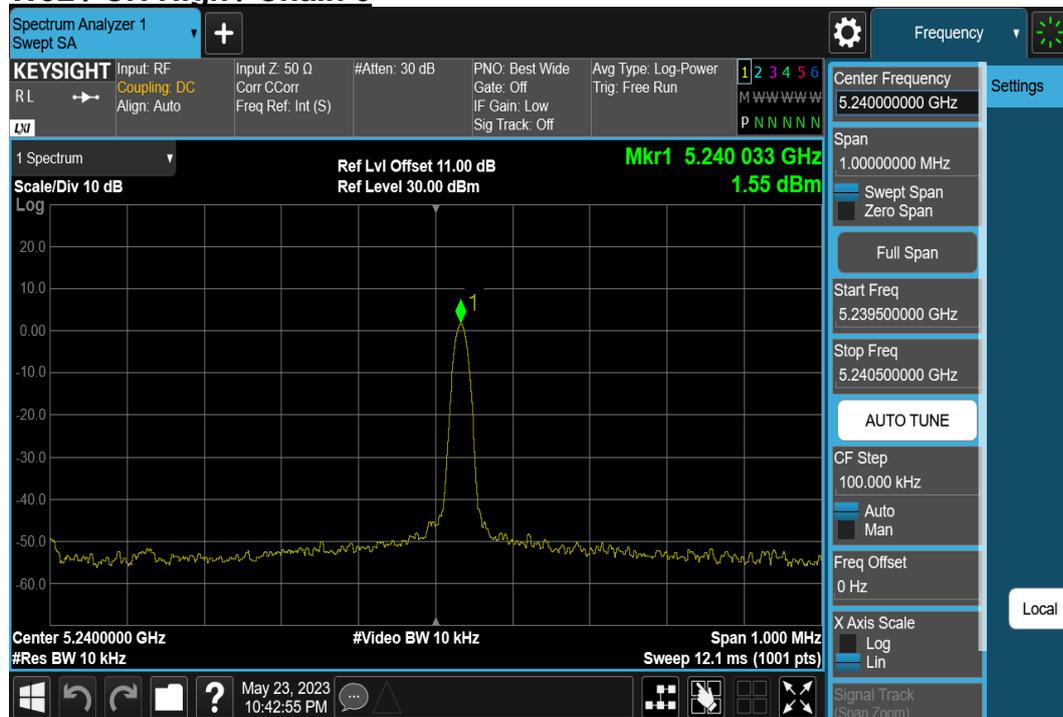


W52 / CH Mid / Chain 0



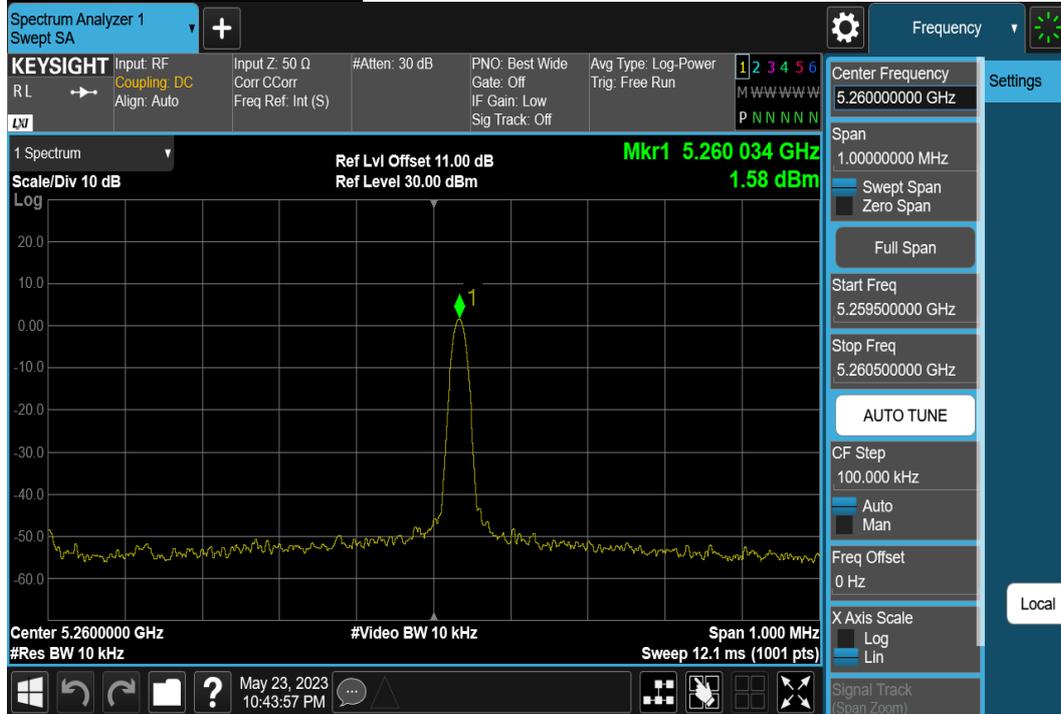
Report No.: TMWK2305001504KR

W52 / CH High / Chain 0

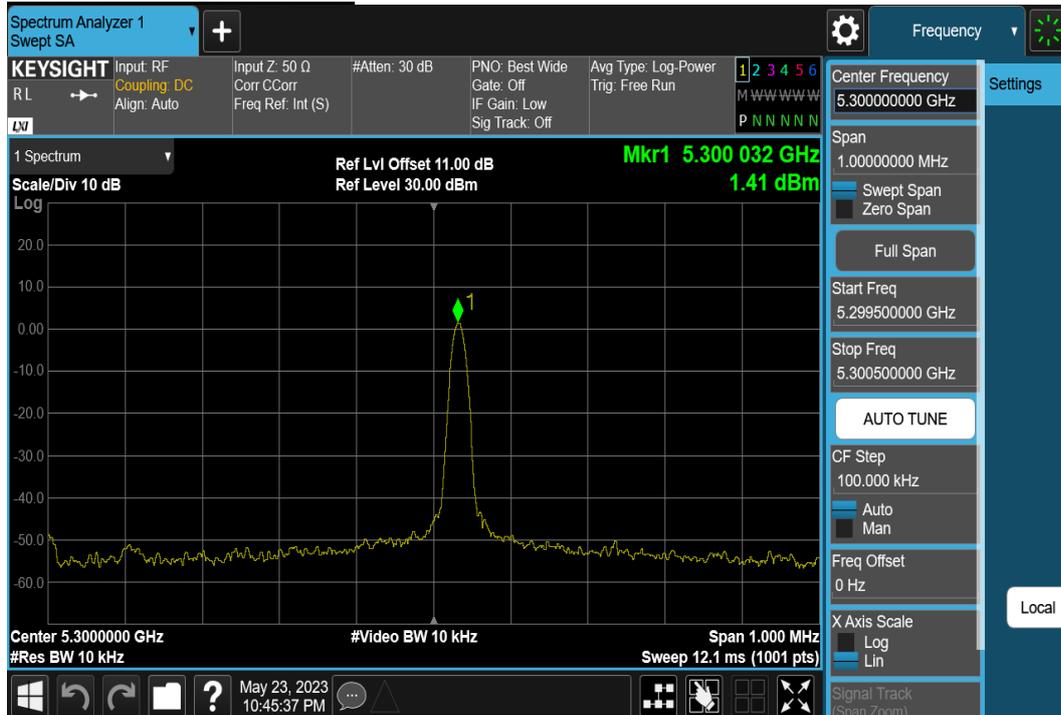


Report No.: TMWK2305001504KR

W53 / CH Low / Chain 0

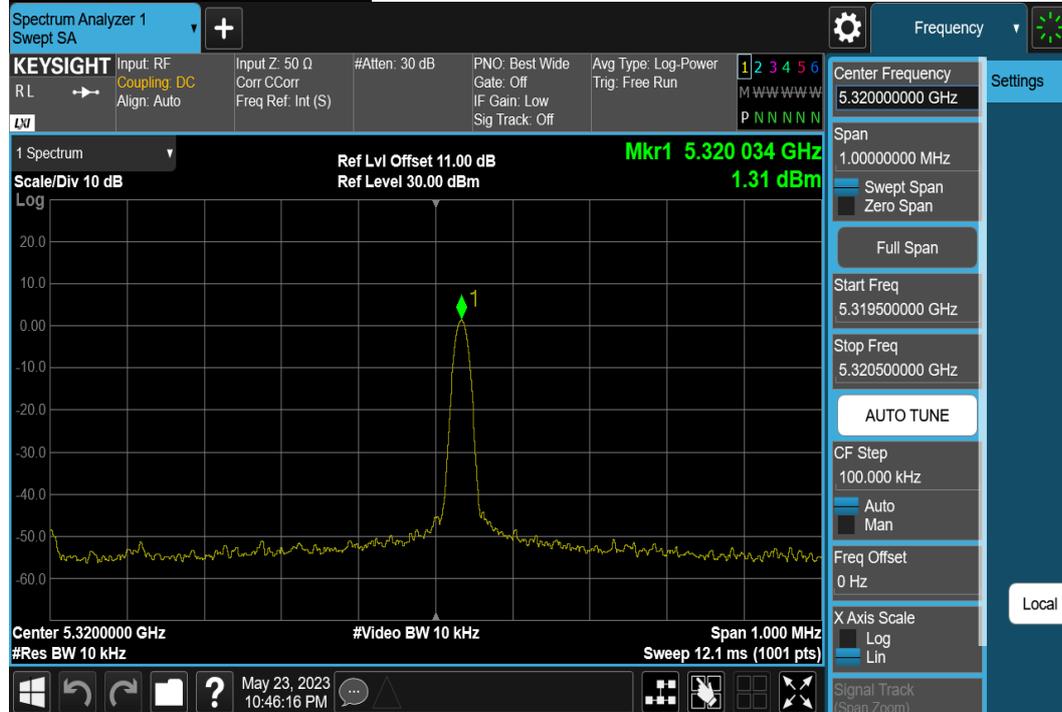


W53 / CH Mid / Chain 0



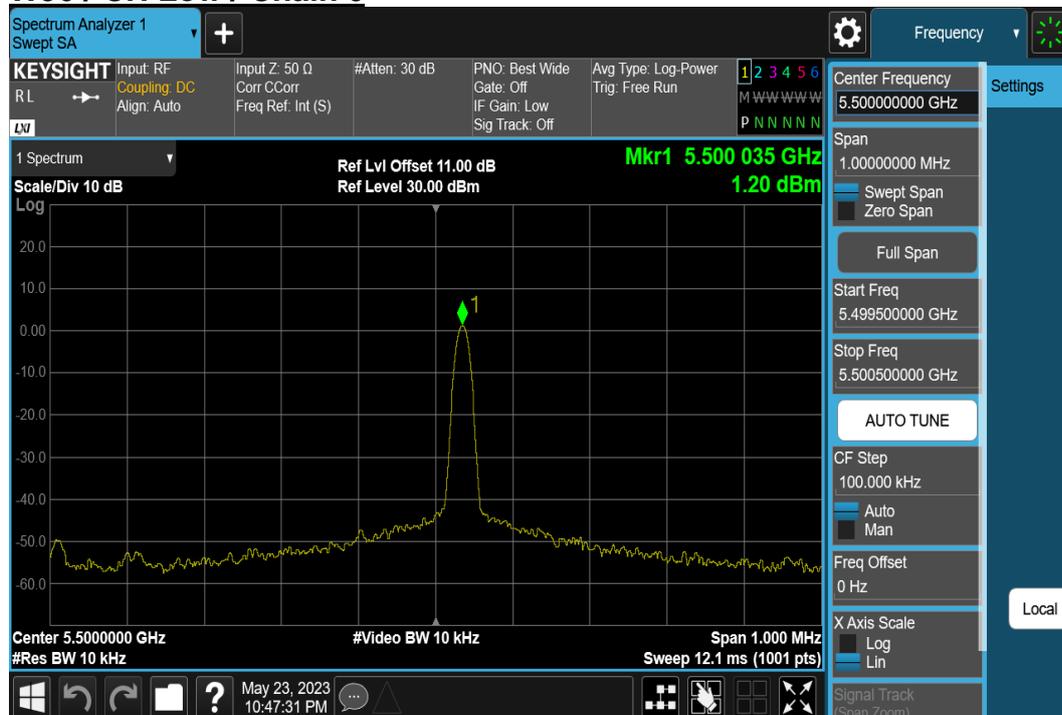
Report No.: TMWK2305001504KR

W53 / CH High / Chain 0

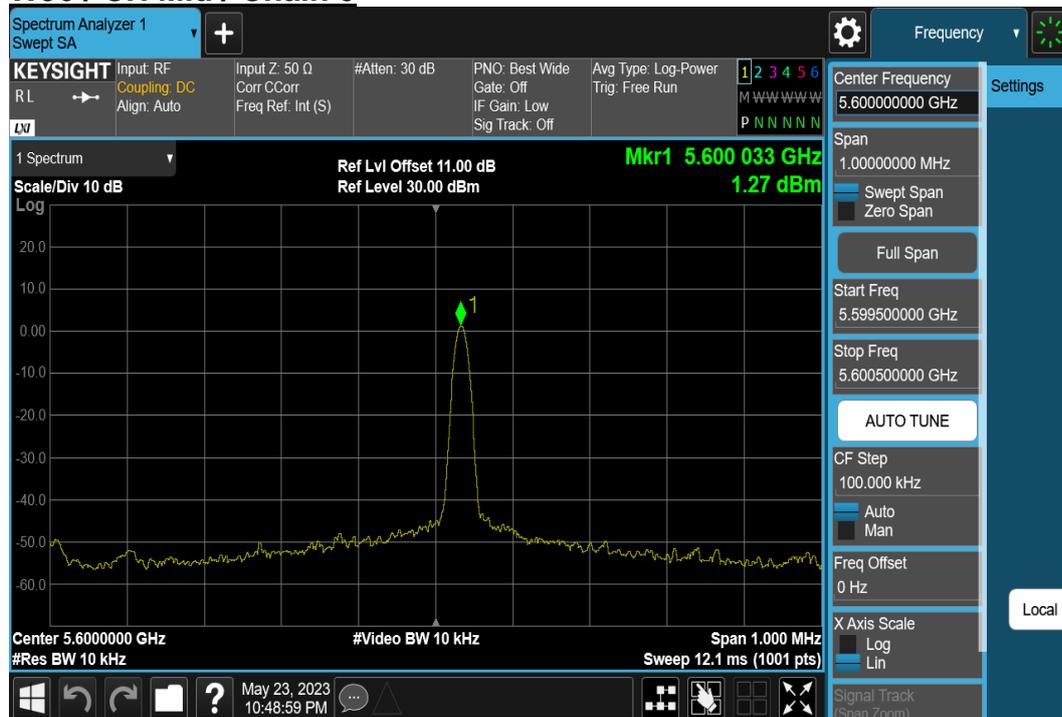


Report No.: TMWK2305001504KR

W56 / CH Low / Chain 0

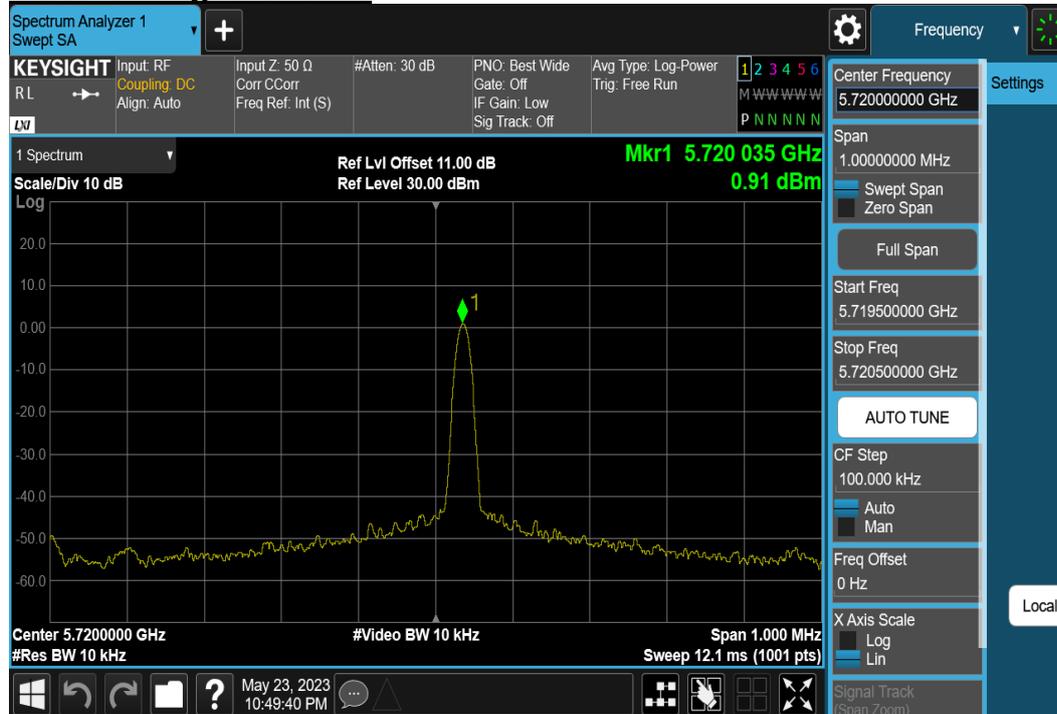


W56 / CH Mid / Chain 0



Report No.: TMWK2305001504KR

W56 / CH High / Chain 0



Report No.: TMWK2305001504KR

6.3 OCCUPIED BANDWIDTH (99%)

TEST RESULT

W52

Occupied Bandwidth						
802.11a_W52_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5180	5220	5240	---	---
Channel Number	Ch.	36	44	48	---	---
Occupied Bandwidth (Chain0)	MHz	16.7600	16.6060	16.5580	≤ 20	PASS

W53

Occupied Bandwidth						
802.11a_W53_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5260	5300	5320	---	---
Channel Number	Ch.	52	60	64	---	---
Occupied Bandwidth (Chain0)	MHz	16.5880	16.5680	16.5560	≤ 20	PASS

W56

Occupied Bandwidth						
802.11a_W56_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5500	5600	5720	---	---
Channel Number	Ch.	100	120	144	---	---
Occupied Bandwidth (Chain0)	MHz	16.581	16.564	16.551	≤ 20	PASS

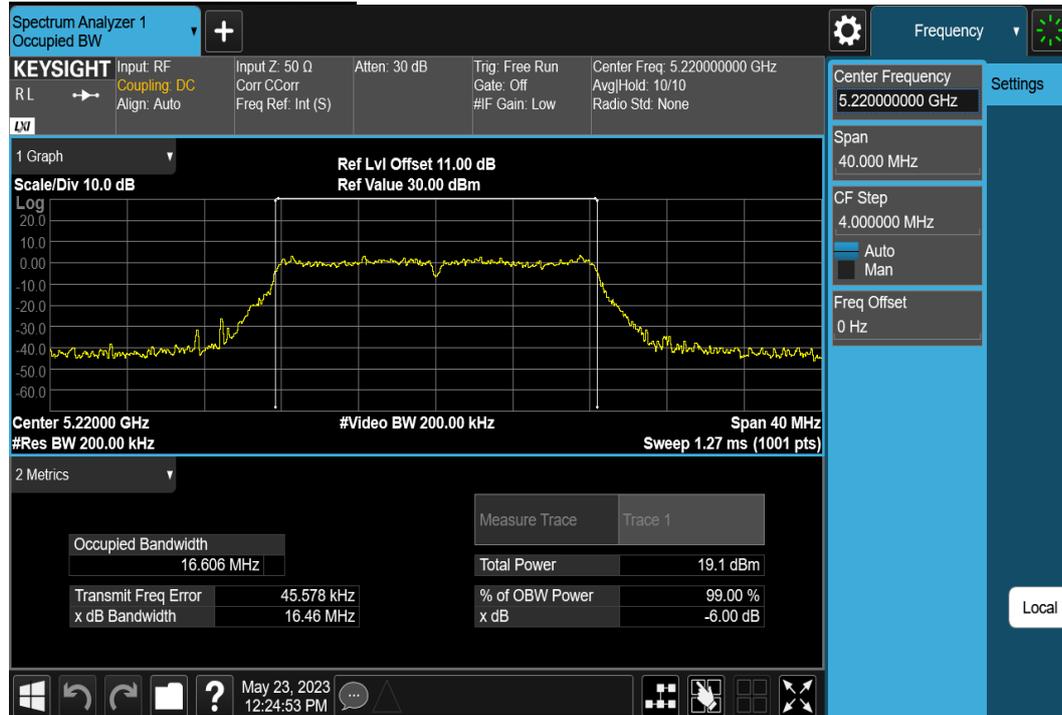
Report No.: TMWK2305001504KR

TEST PLOTS

W52 / CH Low / Chain 0

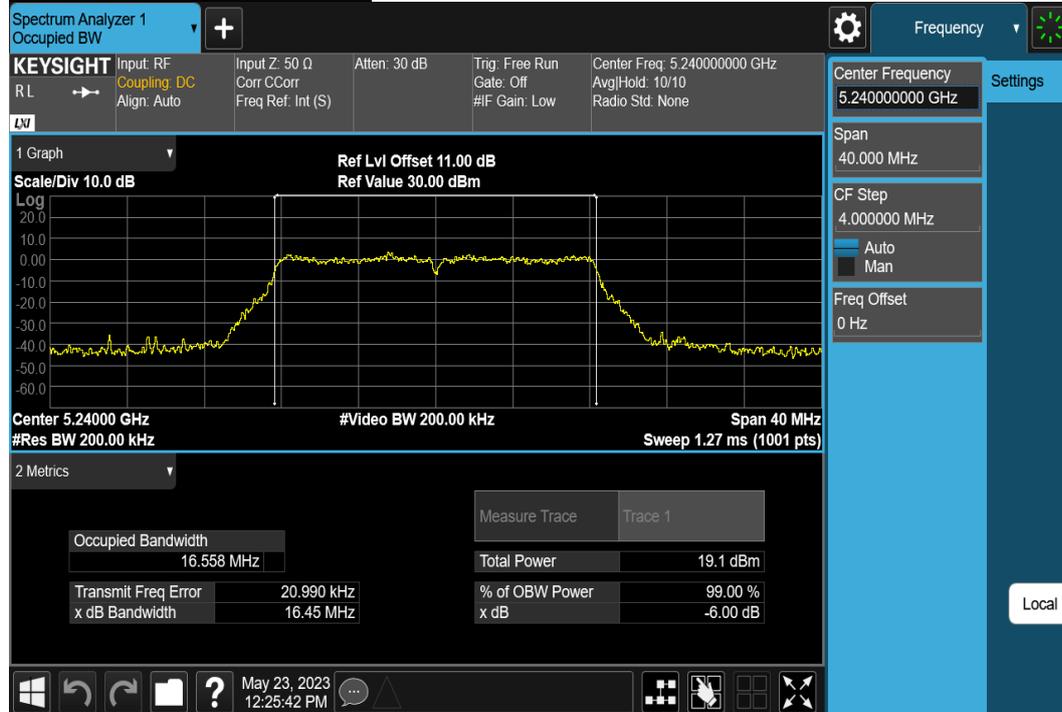


W52 / CH Mid / Chain 0



Report No.: TMWK2305001504KR

W52 / CH High / Chain 0

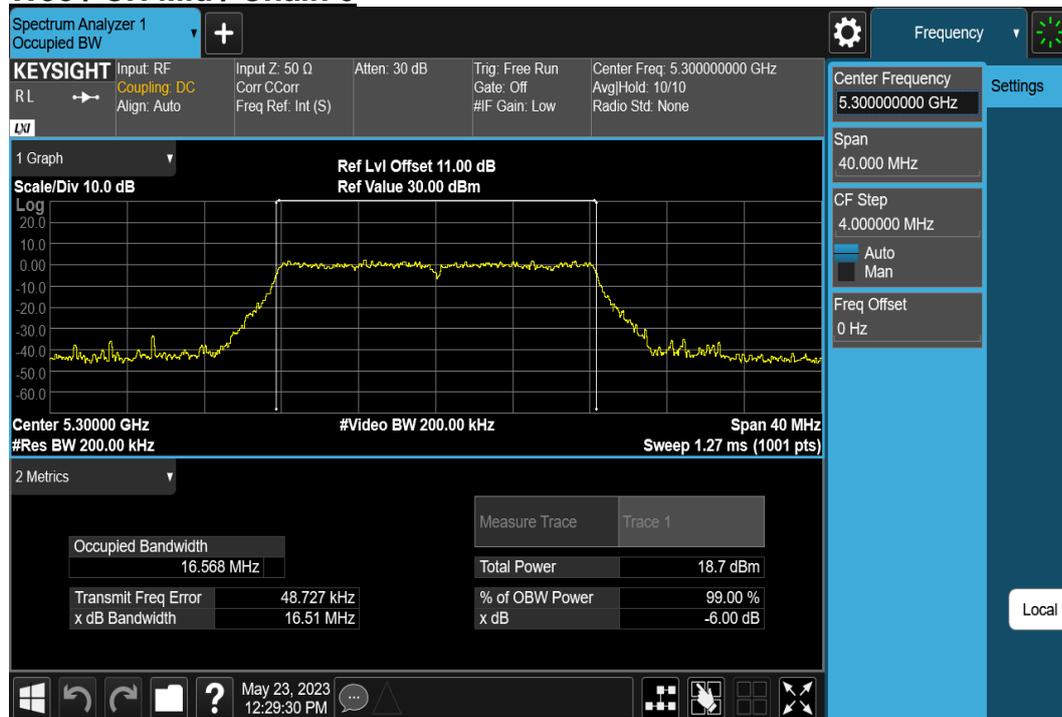


Report No.: TMWK2305001504KR

W53 / CH Low / Chain 0

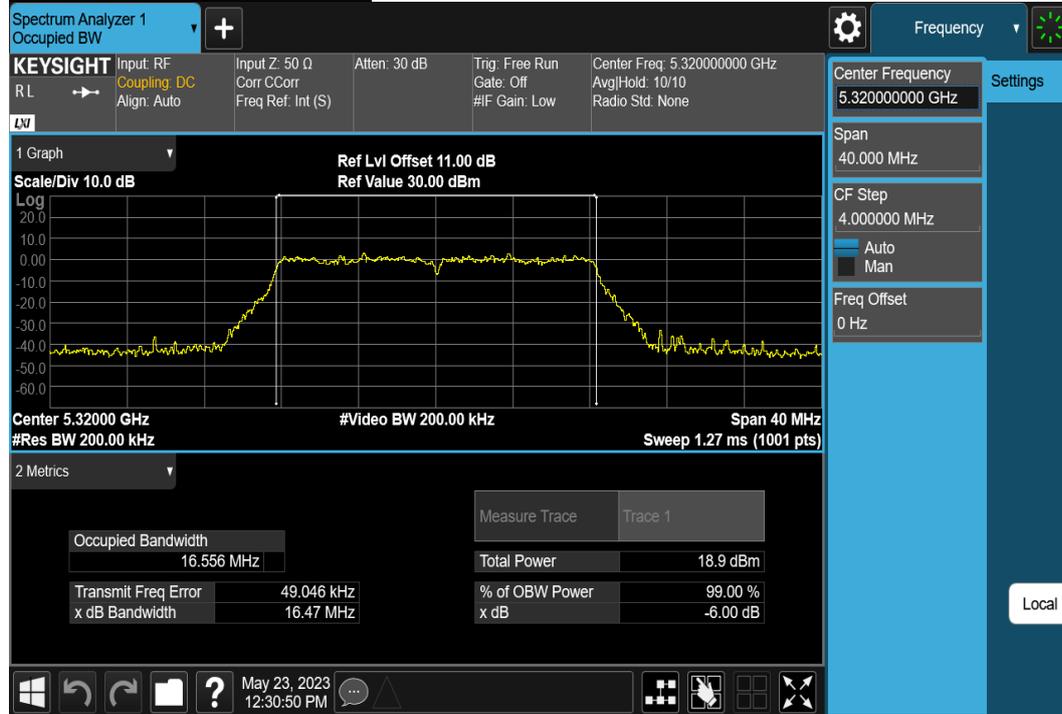


W53 / CH Mid / Chain 0



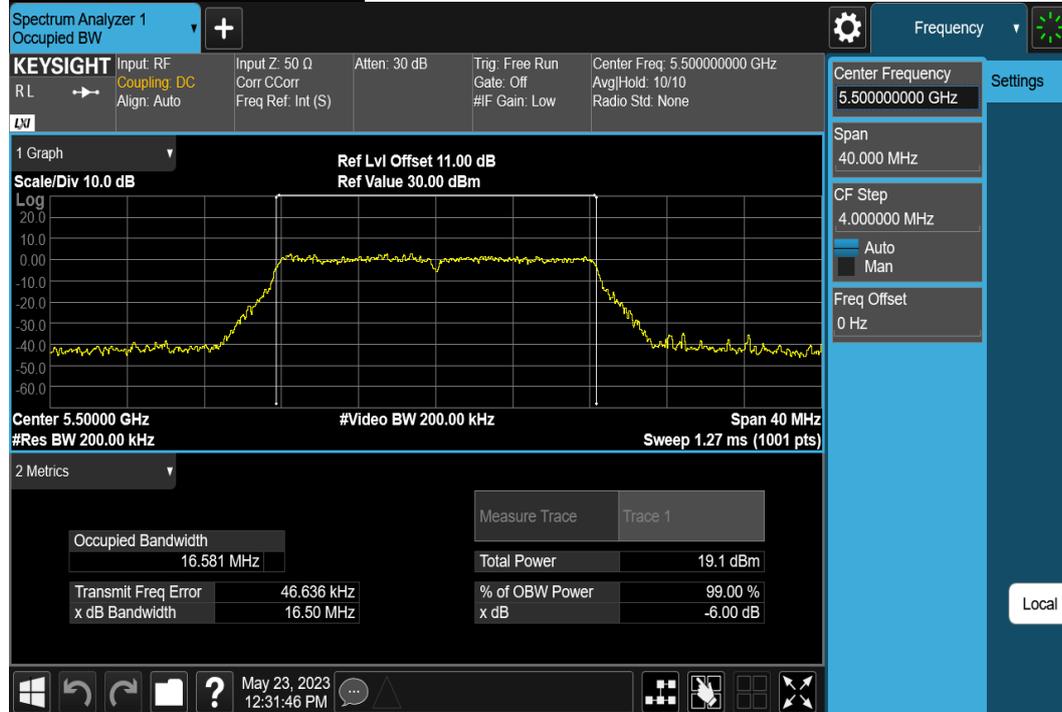
Report No.: TMWK2305001504KR

W53 / CH High / Chain 0



Report No.: TMWK2305001504KR

W56 / CH Low / Chain 0

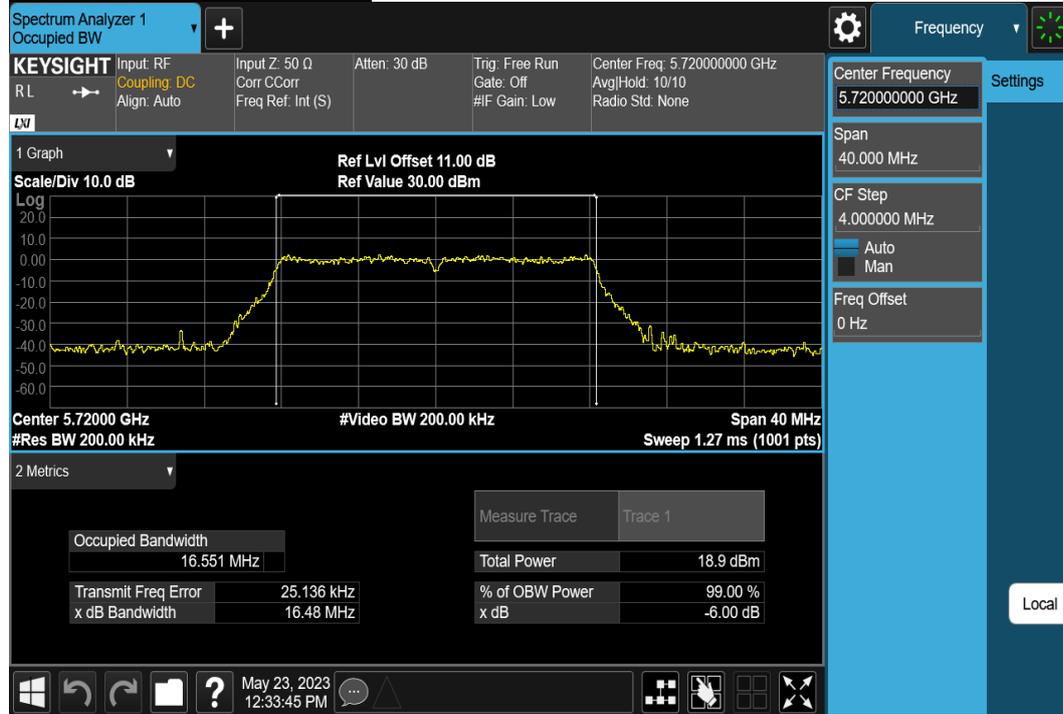


W56 / CH Mid / Chain 0



Report No.: TMWK2305001504KR

W56 / CH High / Chain 0



Report No.: TMWK2305001504KR

6.4 ADJACENT CHANNEL LEAKAGE POWER

TEST RESULT

W52

Adjacent Channel Leakage Power						
802.11a_W52_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5180	5220	5240	---	---
Channel Number	Ch.	36	44	48	---	---
CF-40MHz (± 10 MHz)(Chain0)	dBc	-46.47	-46.72	-46.71	\leq -40	PASS
CF-20MHz (± 10 MHz)(Chain0)	dBc	-42.06	-41.27	-42.03	\leq -25	PASS
CF+20MHz (± 10 MHz)(Chain0)	dBc	-41.74	-41.15	-40.69	\leq -25	PASS
CF+40MHz (± 10 MHz)(Chain0)	dBc	-46.75	-47.27	-47.44	\leq -40	PASS

W53

Adjacent Channel Leakage Power						
802.11a_W53_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5260	5300	5320	---	---
Channel Number	Ch.	52	60	64	---	---
CF-40MHz (± 10 MHz)(Chain0)	dBc	-46.74	-46.81	-46.77	\leq -40	PASS
CF-20MHz (± 10 MHz)(Chain0)	dBc	-42.40	-42.16	-42.21	\leq -25	PASS
CF+20MHz (± 10 MHz)(Chain0)	dBc	-41.46	-42.49	-41.96	\leq -25	PASS
CF+40MHz (± 10 MHz)(Chain0)	dBc	-47.55	-47.63	-47.45	\leq -40	PASS

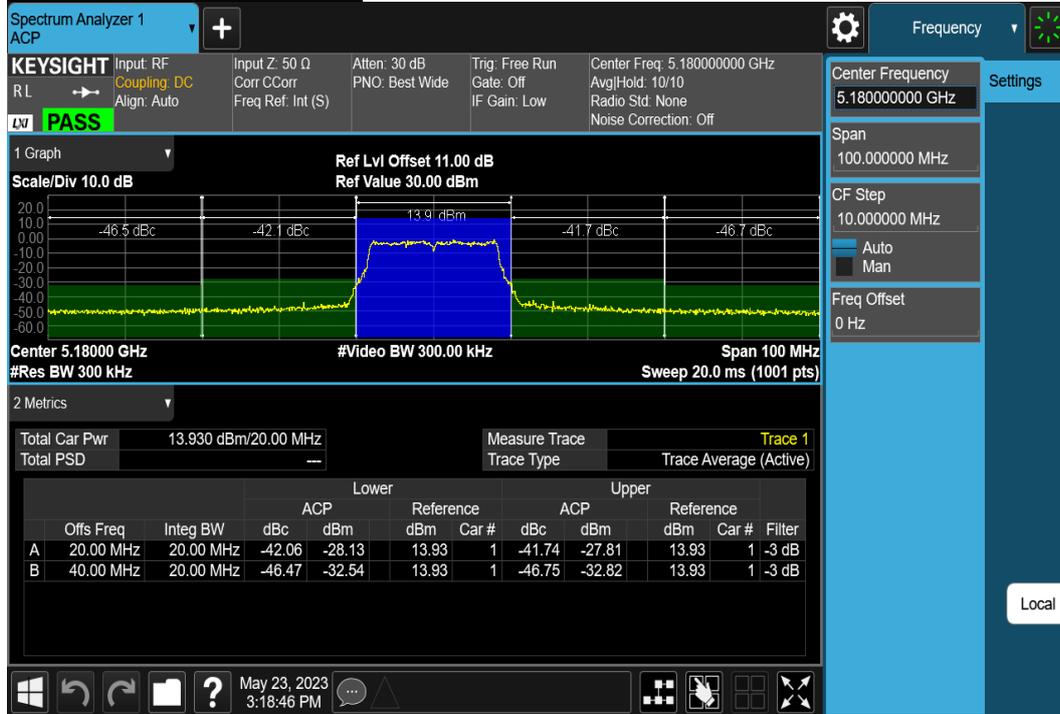
W56

Adjacent Channel Leakage Power						
802.11a_W56_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5500	5600	5720	---	---
Channel Number	Ch.	100	120	144	---	---
CF-40MHz (± 10 MHz)(Chain0)	dBc	-47.34	-46.96	-46.80	\leq -40	PASS
CF-20MHz (± 10 MHz)(Chain0)	dBc	-41.72	-41.50	-41.89	\leq -25	PASS
CF+20MHz (± 10 MHz)(Chain0)	dBc	-41.35	-41.11	-41.89	\leq -25	PASS
CF+40MHz (± 10 MHz)(Chain0)	dBc	-46.55	-46.33	-46.52	\leq -40	PASS

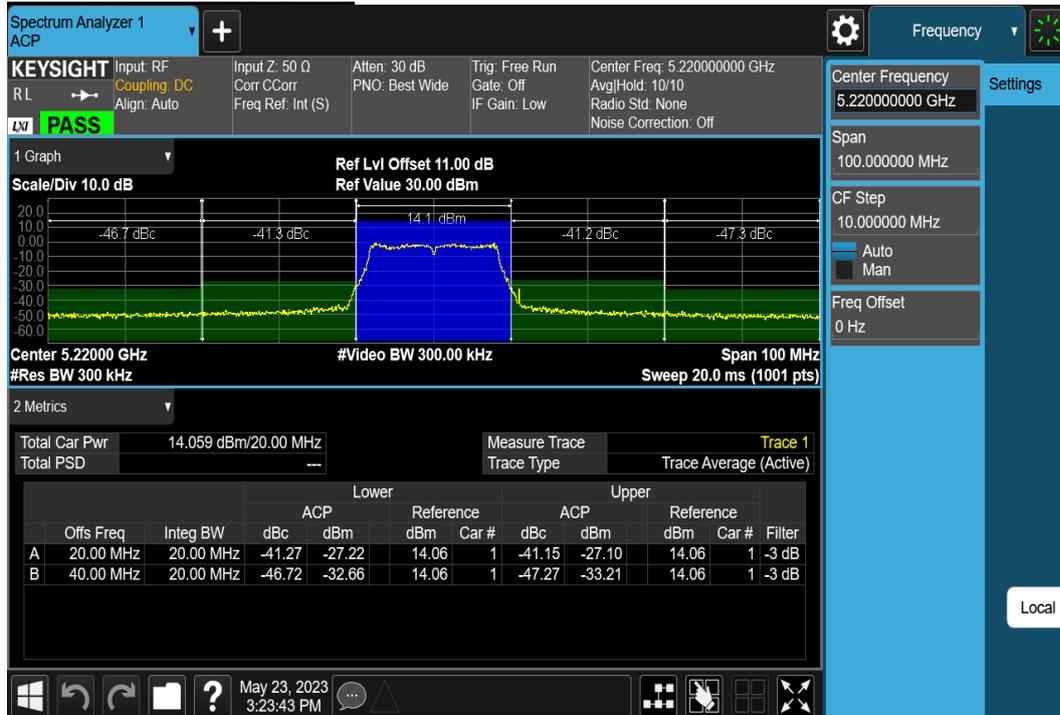
Report No.: TMWK2305001504KR

TEST PLOTS

W52 / CH Low / Chain 0



W52 / CH Mid / Chain 0



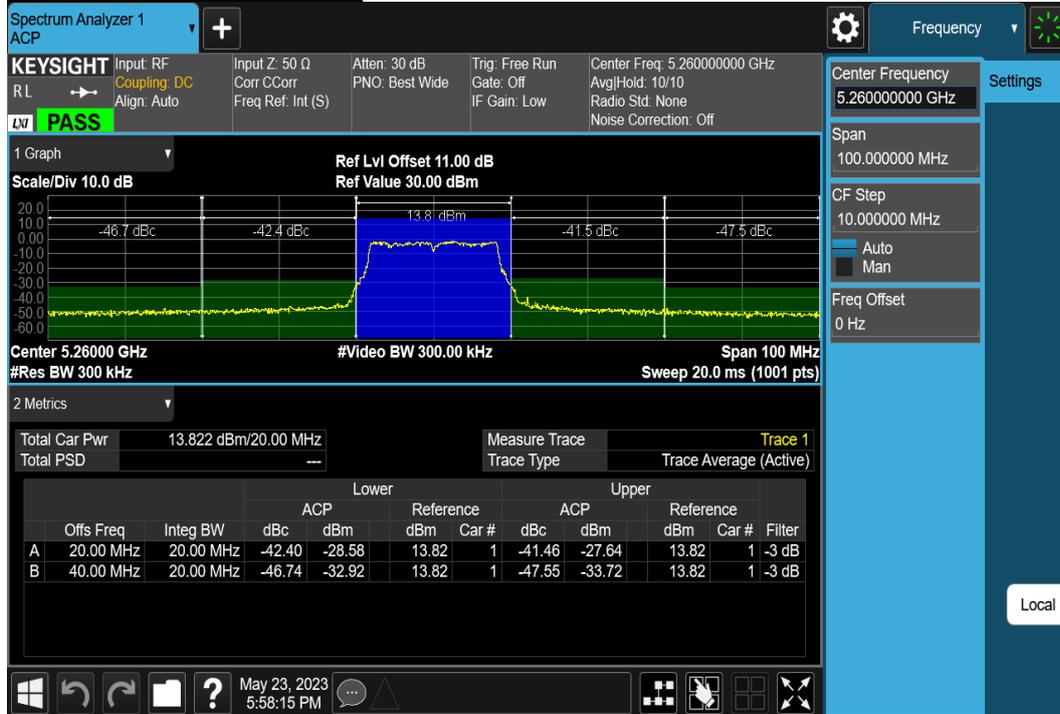
Report No.: TMWK2305001504KR

W52 / CH High / Chain 0

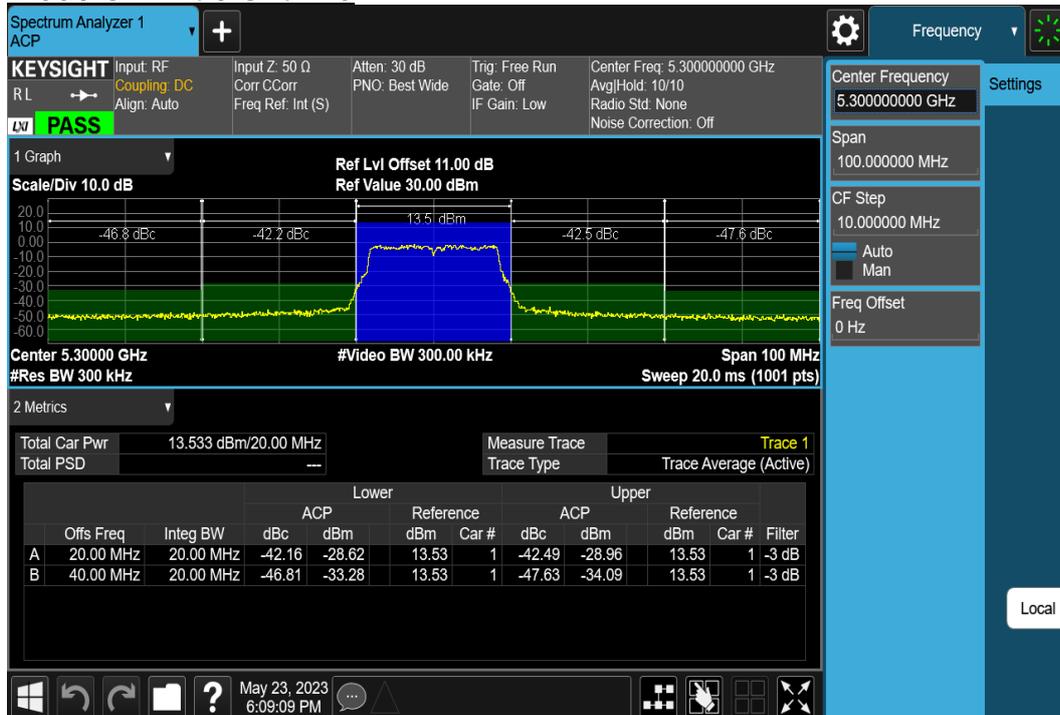


Report No.: TMWK2305001504KR

W53 / CH Low / Chain 0

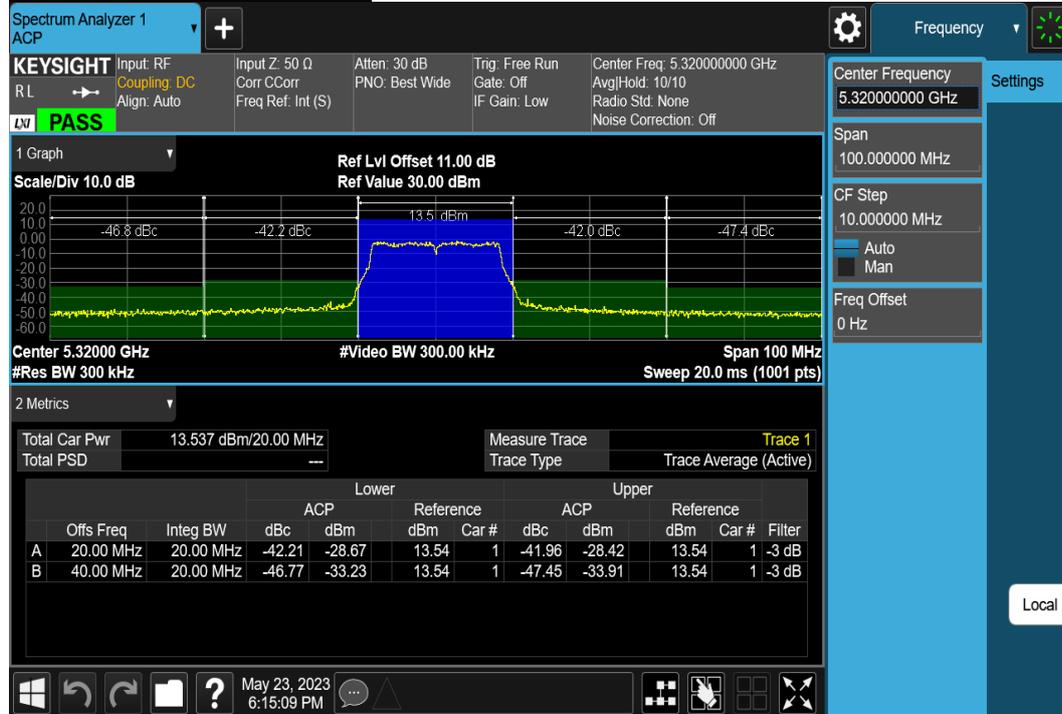


W53 / CH Mid / Chain 0



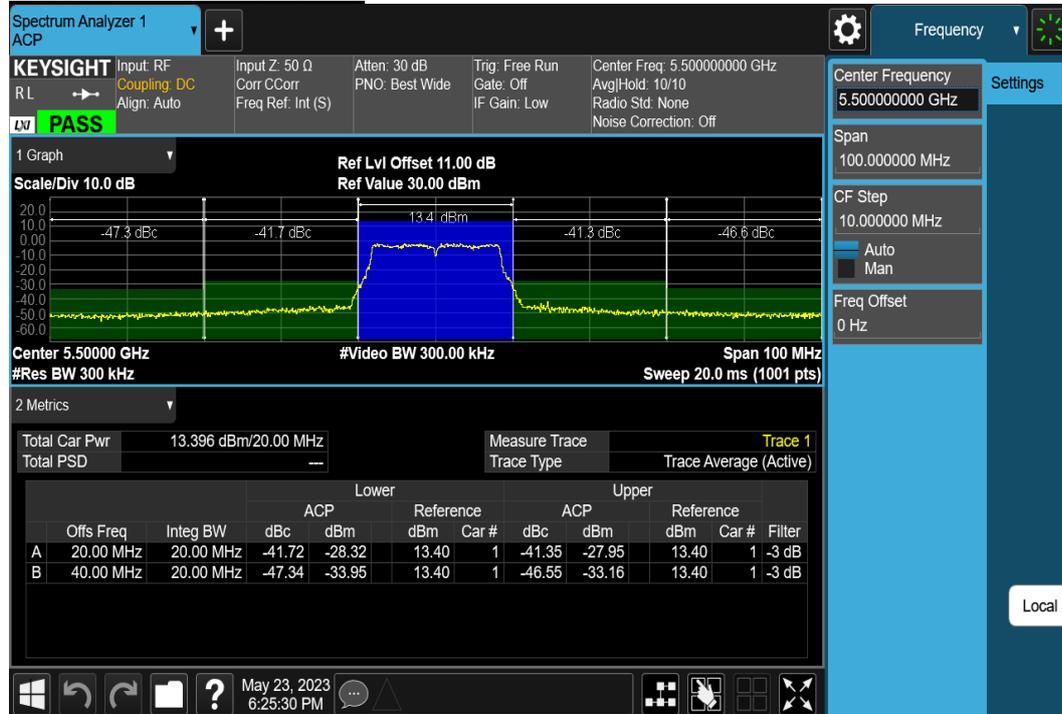
Report No.: TMWK2305001504KR

W53 / CH High / Chain 0

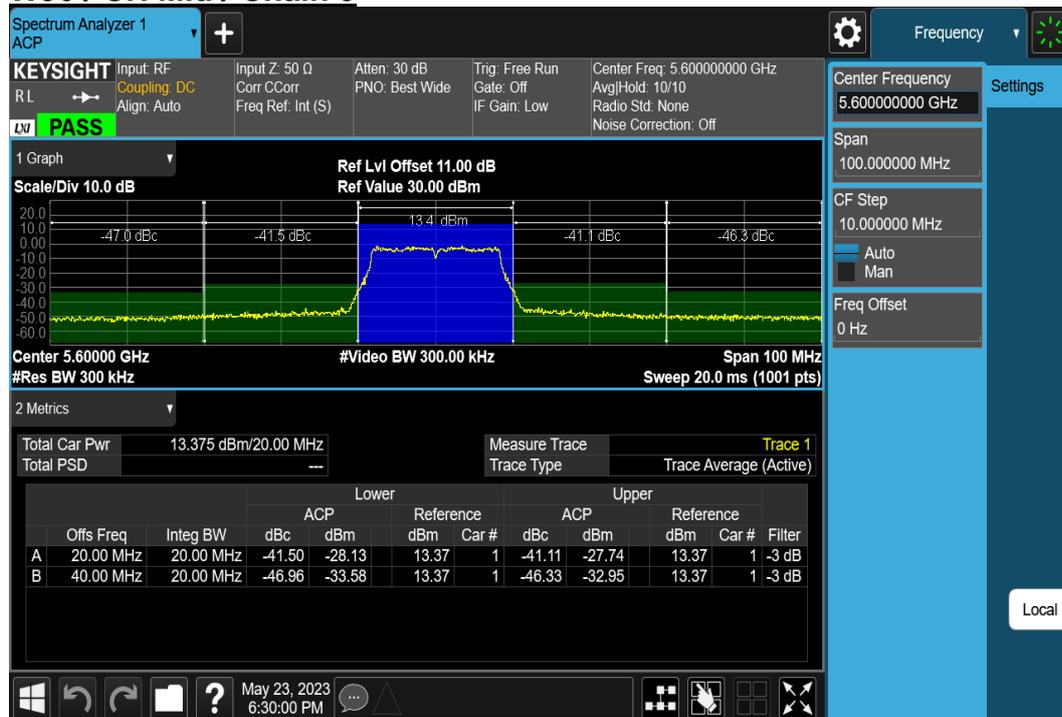


Report No.: TMWK2305001504KR

W56 / CH Low / Chain 0

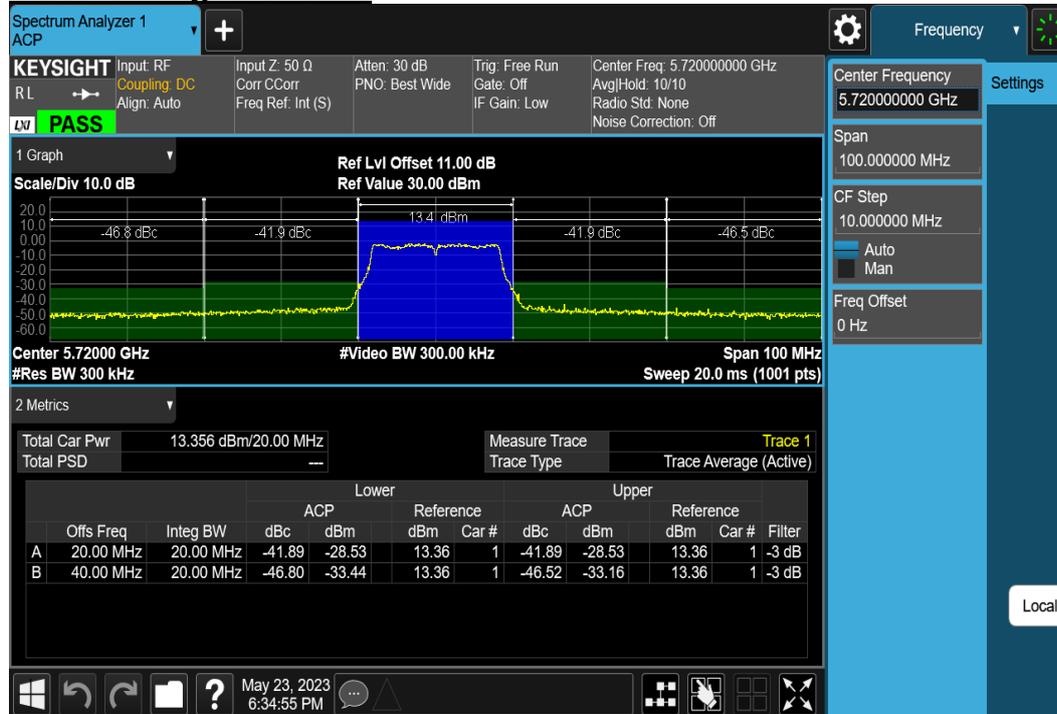


W56 / CH Mid / Chain 0



Report No.: TMWK2305001504KR

W56 / CH High / Chain 0



Report No.: TMWK2305001504KR

6.5 OUT-BAND LEAKAGE POWER & UNWANTED EMISSION STRENGTH

TEST RESULT

W52

Unwanted Emission Strength						
802.11a_W52_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5180	5220	5240	---	---
Channel Number	Ch.	36	44	48	---	---
30 ~ 5142MHz(Chain 0)	μW/MHz	0.3999	0.2361	0.4236	≤ 2.500	PASS
	MHz	5134.30	4971.30	4987.90		---
5142 ~ 5150MHz(Chain 0)	μW/MHz	1.0053	0.2238	0.2169	≤ 15.000	PASS
	MHz	5146.98	5149.38	5148.59		---
5250 ~ 5251MHz(Chain 0)	μW/MHz	0.2139	1.6665	1.0447	≤ 100 ~ 1000	PASS
	MHz	5250.923	5250.996	5250.960		---
5251 ~ 5260MHz(Chain 0)	μW/MHz	0.3000	1.1105	0.1972	≤ 15.85 ~ 100	PASS
	MHz	5259.84	5257.27	5254.03		---
5260 ~ 5266.7MHz(Chain 0)	μW/MHz	0.2129	0.8272	0.0646	≤ 2.49 ~ 15.85	PASS
	MHz	5266.64	5262.82	5266.70		---
5266.7 ~ 26000MHz(Chain 0)	μW/MHz	0.2686	0.3249	0.0643	≤ 2.500	PASS
	MHz	25833.00	5268.00	5266.70		---

W53

Unwanted Emission Strength						
802.11a_W53_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5260	5300	5320	---	---
Channel Number	Ch.	52	60	64	---	---
30 ~ 5233.3MHz(Chain 0)	μW/MHz	0.5754	0.2965	0.4150	≦ 2.500	PASS
	MHz	5231.20	5085.00	5069.90		---
5233.3 ~ 5240MHz(Chain 0)	μW/MHz	1.6095	0.1785	0.1616	≦ 2.49 ~ 15.85	PASS
	MHz	5233.58	5233.34	5233.50		---
5240 ~ 5249MHz(Chain 0)	μW/MHz	0.1211	0.2081	0.2570	15.85 ~ 100	PASS
	MHz	5244.55	5240.43	5242.19		---
5249 ~ 5250MHz(Chain 0)	μW/MHz	0.9141	0.4317	0.3042	≦ 100 ~ 1000	PASS
	MHz	5249.076	5249.023	5249.063		---
5350 ~ 26000MHz(Chain 0)	μW/MHz	0.2467	0.4244	0.6213	≦ 2.500	PASS
	MHz	25827.00	5357.00	5368.00		---

W56

Unwanted Emission Strength						
802.11a_W56_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5500	5600	5720	---	---
Channel Number	Ch.	100	120	144	---	---
30 ~ 5460MHz(Chain 0)	μW/MHz	0.6546	0.5559	0.3141	≦ 2.500	PASS
	MHz	5229	5348	5425		---
5460 ~ 5470MHz(Chain 0)	μW/MHz	1.0659	0.1304	0.3891	≦ 12.500	PASS
	MHz	5468.64	5468.18	5464.90		---
5745 ~ 5765MHz(Chain 0)	μW/MHz	0.4625	0.1644	2.4417	≦ 12.500	PASS
	MHz	5751.91	5755.22	5746.57		---
5765 ~ 26000MHz(Chain 0)	μW/MHz	0.2522	0.2671	0.4600	≦ 2.500	PASS
	MHz	25808	5840	5978		---

Report No.: TMWK2305001504KR

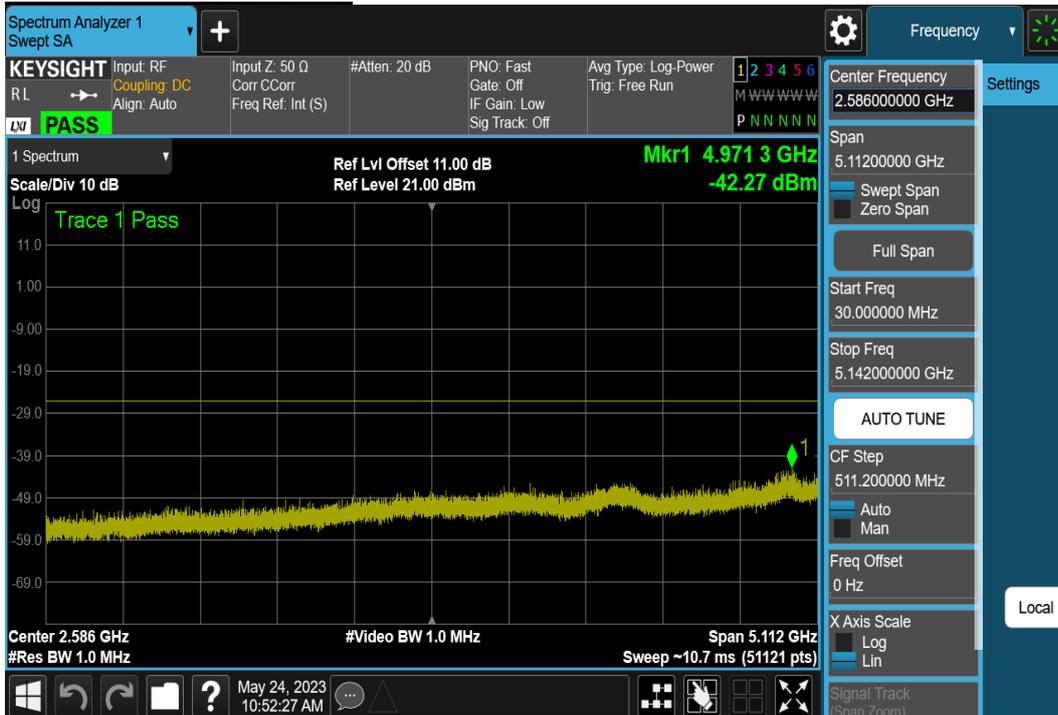
TEST PLOTS

(1) 30MHz ~ 5142MHz

W52 / CH Low / Chain 0



W52 / CH Mid / Chain 0



W52 / CH High / Chain 0

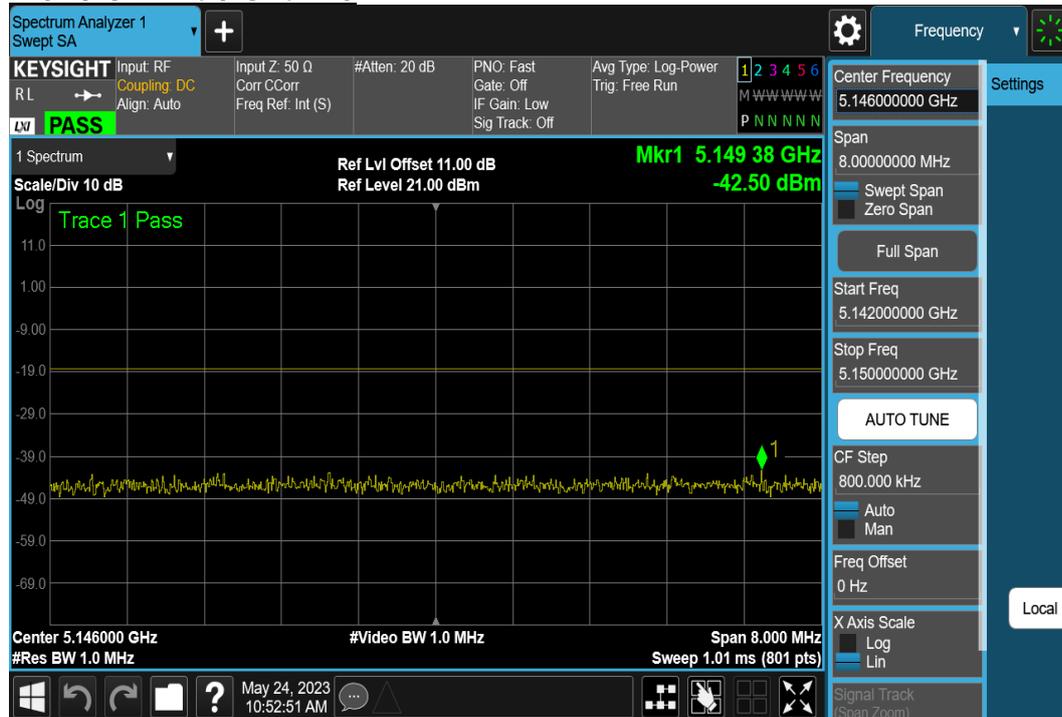


Report No.: TMWK2305001504KR

(2) 5142MHz ~5150MHz W52 / CH Low / Chain 0



W52 / CH Mid / Chain 0



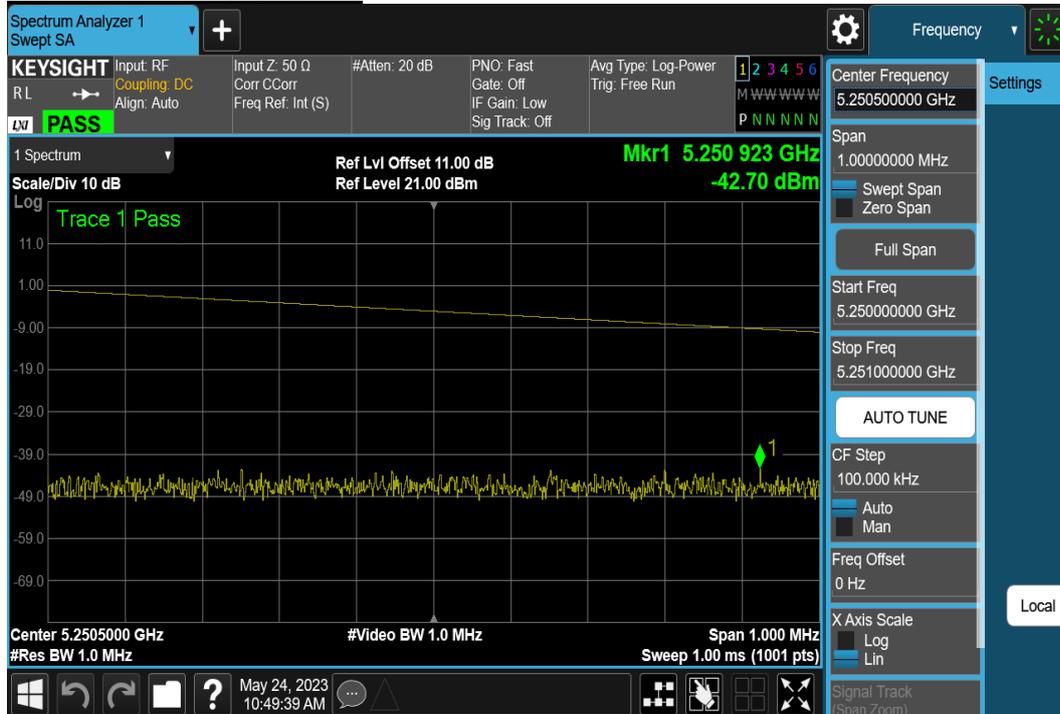
Report No.: TMWK2305001504KR

W52 / CH High / Chain 0

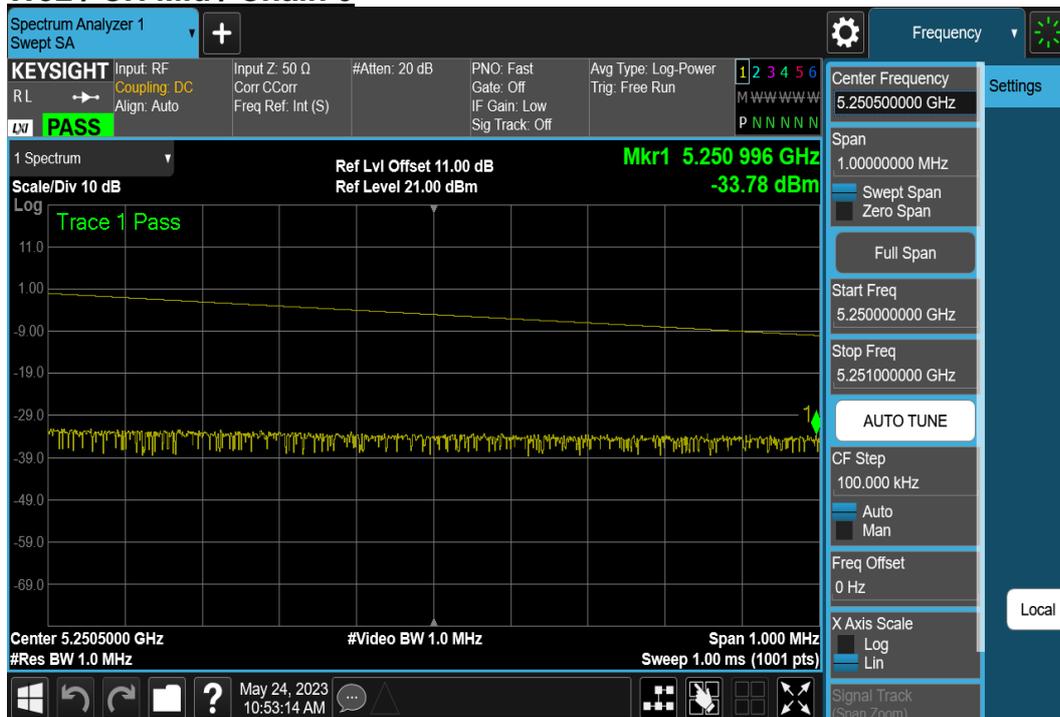


Report No.: TMWK2305001504KR

(3) 5250MHz ~ 5251MHz W52 / CH Low / Chain 0

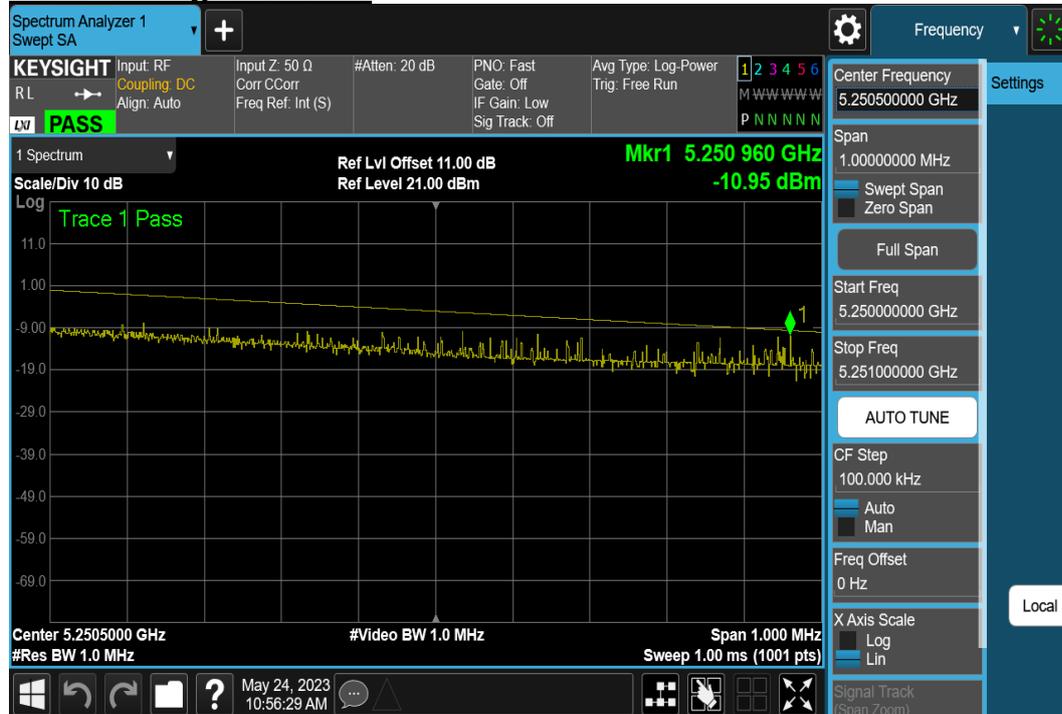


W52 / CH Mid / Chain 0

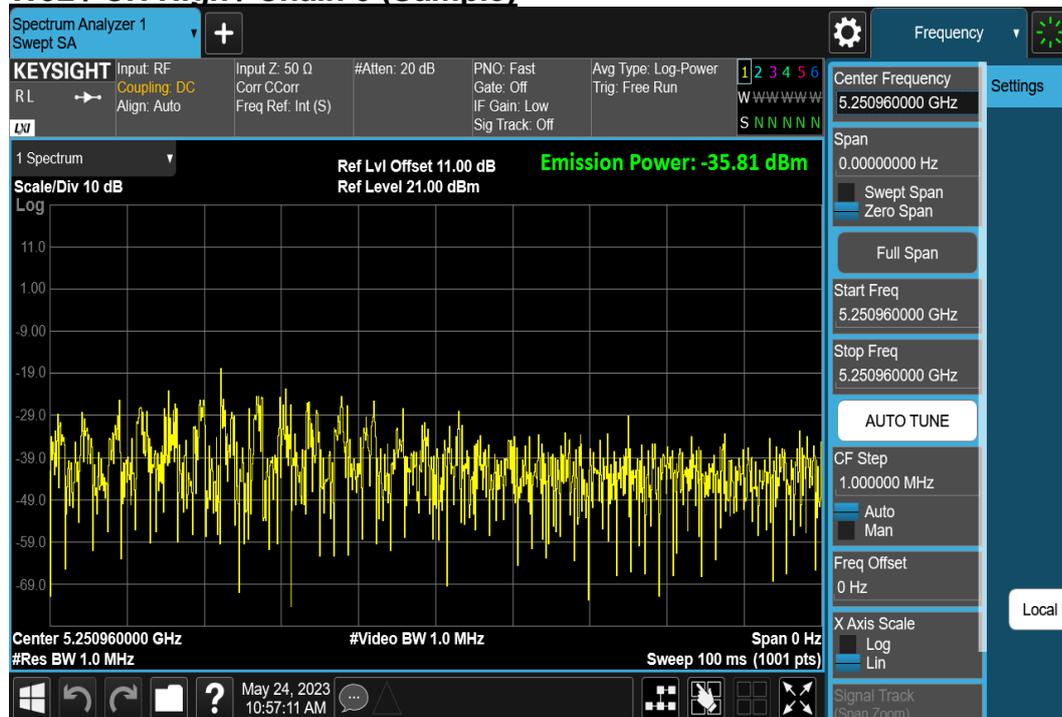


Report No.: TMWK2305001504KR

W52 / CH High / Chain 0

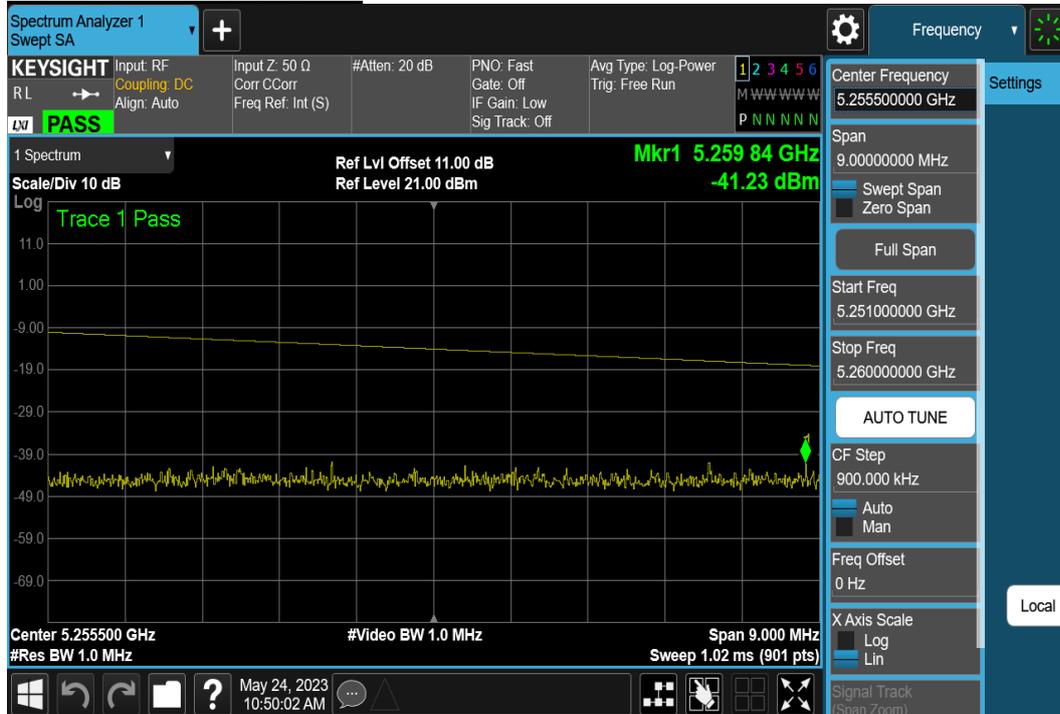


W52 / CH High / Chain 0 (Sample)

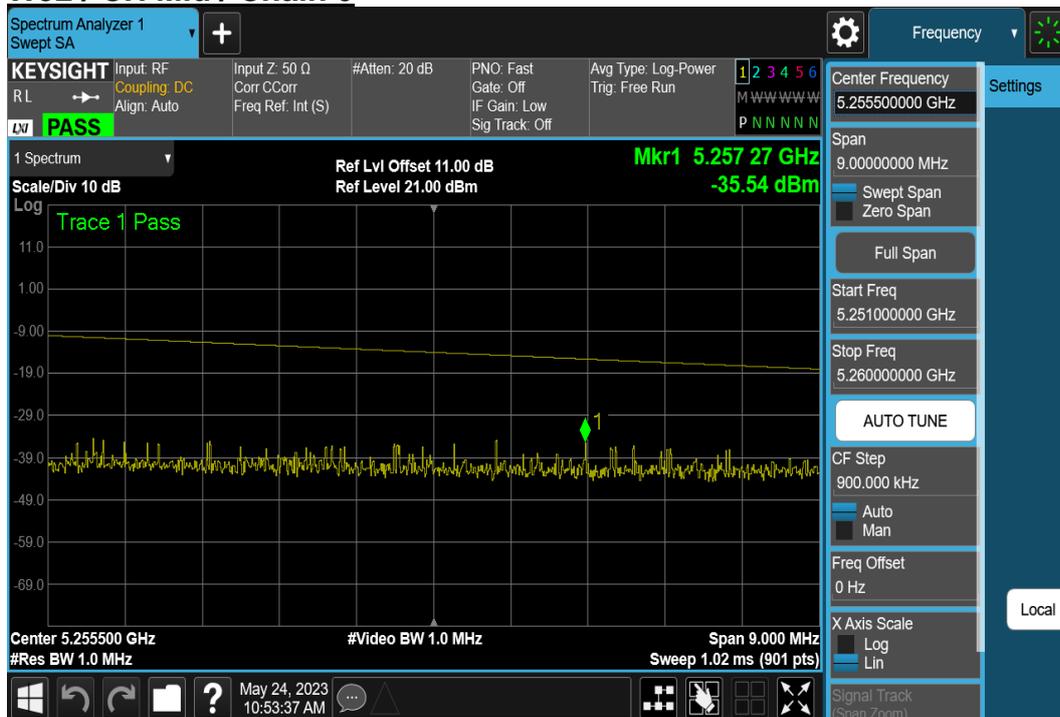


Report No.: TMWK2305001504KR

(4) 5251MHz ~ 5260MHz W52 / CH Low / Chain 0



W52 / CH Mid / Chain 0

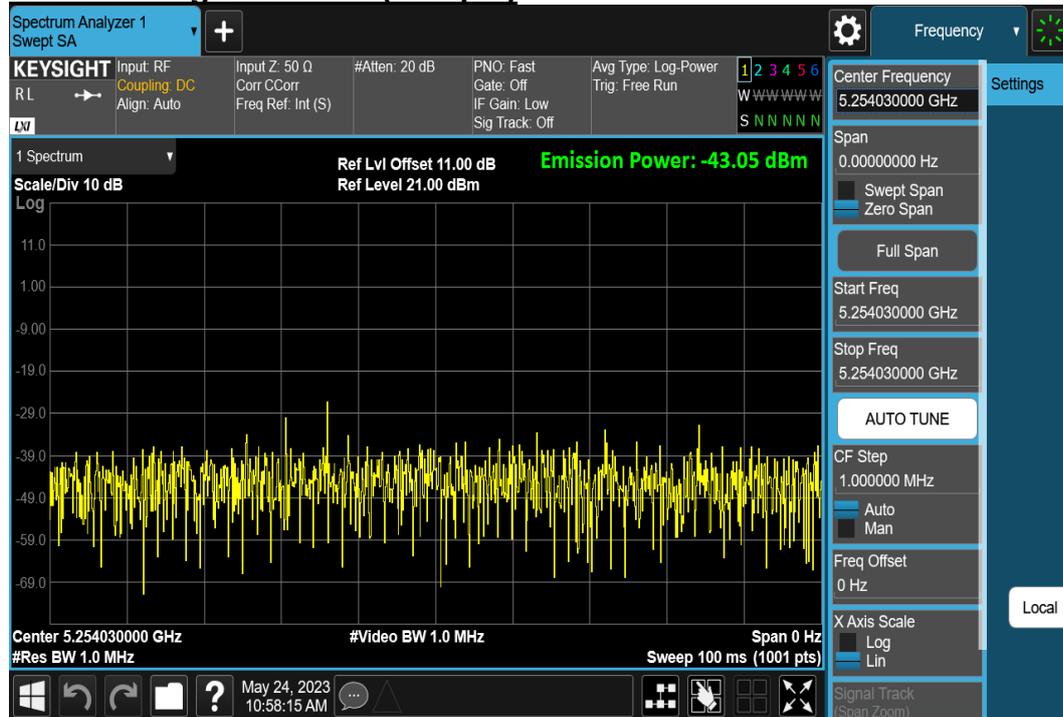


Report No.: TMWK2305001504KR

W52 / CH High / Chain 0

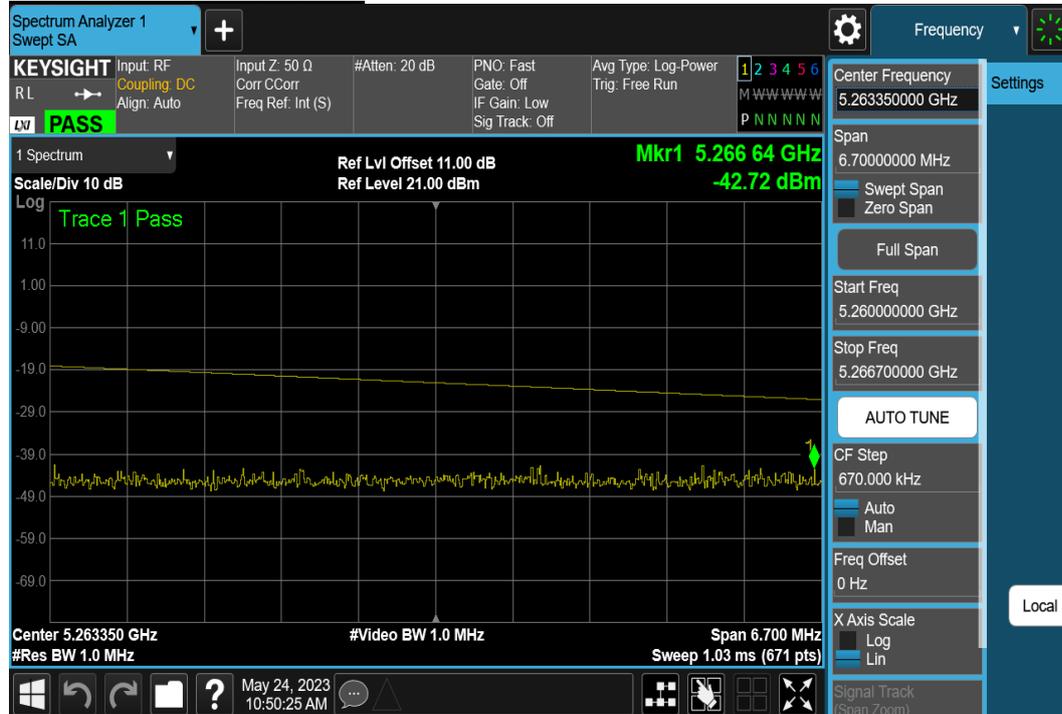


W52 / CH High / Chain 0 (Sample)

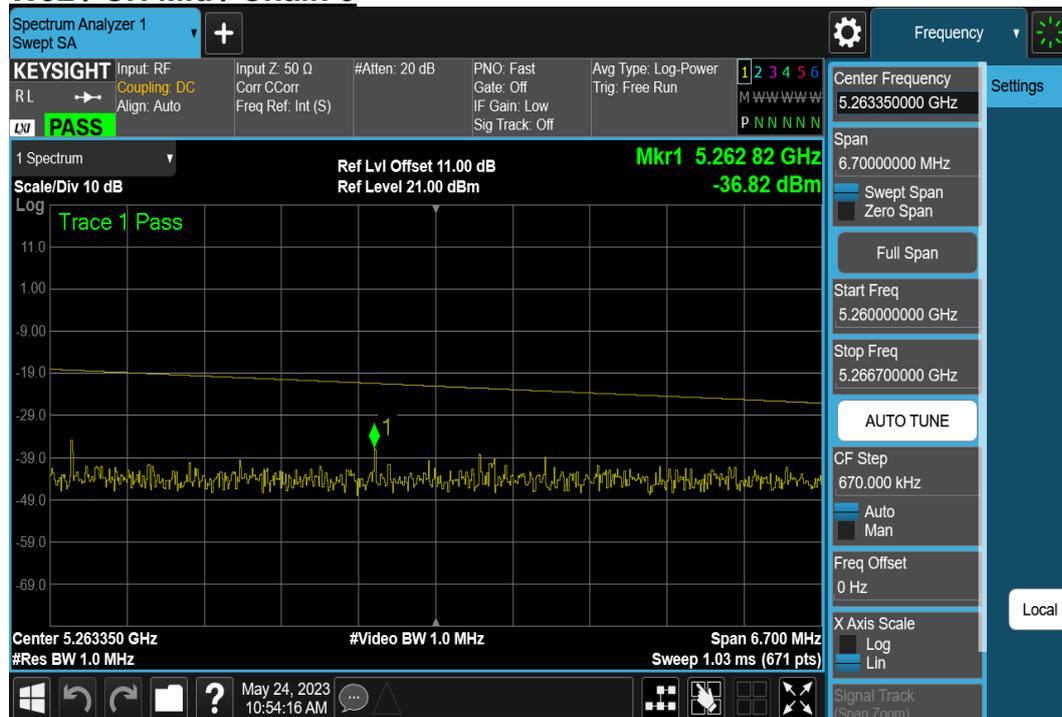


Report No.: TMWK2305001504KR

(5) 5260MHz ~ 5266.7MHz W52 / CH Low / Chain 0



W52 / CH Mid / Chain 0

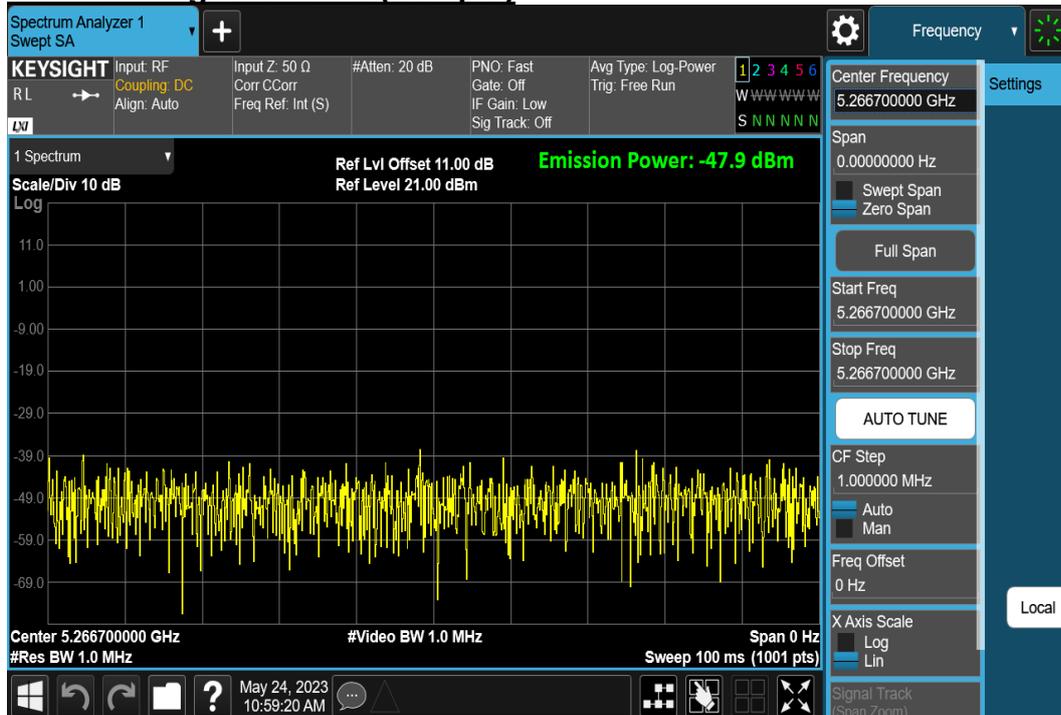


Report No.: TMWK2305001504KR

W52 / CH High / Chain 0

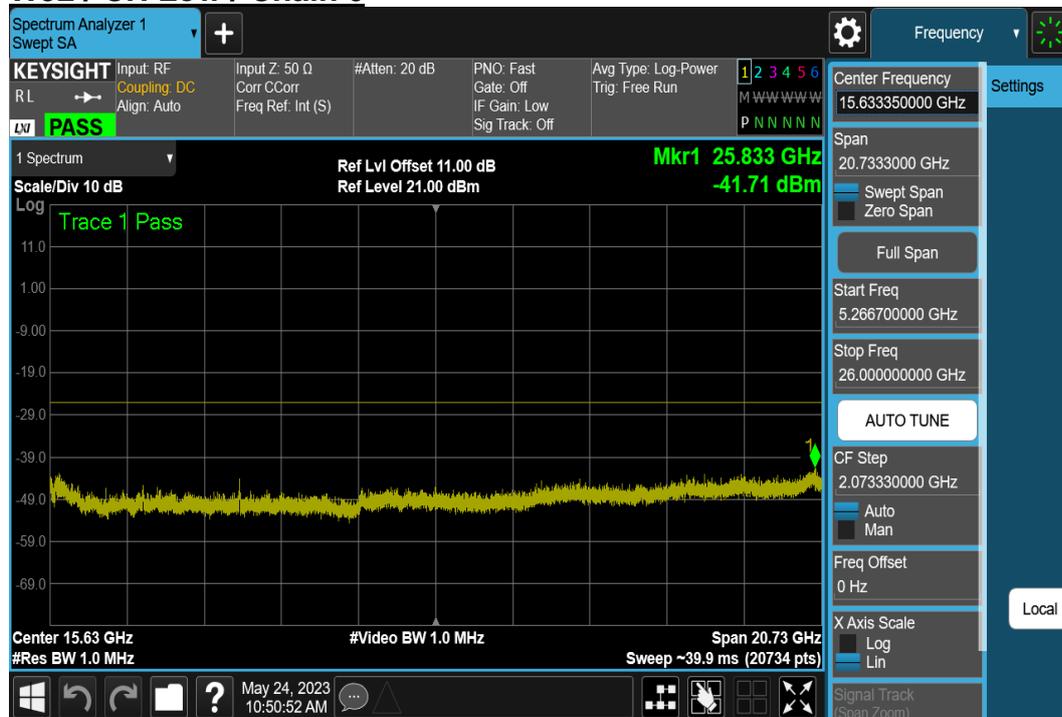


W52 / CH High / Chain 0 (Sample)



Report No.: TMWK2305001504KR

(6) 5266.7MHz ~ 26000MHz W52 / CH Low / Chain 0

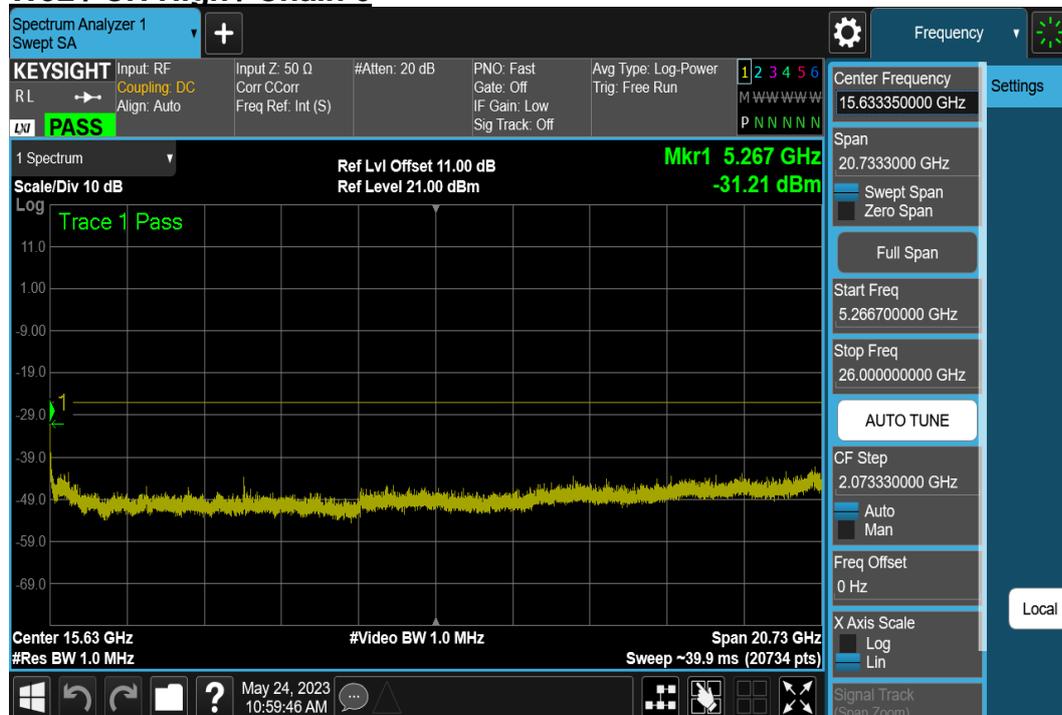


W52 / CH Mid / Chain 0

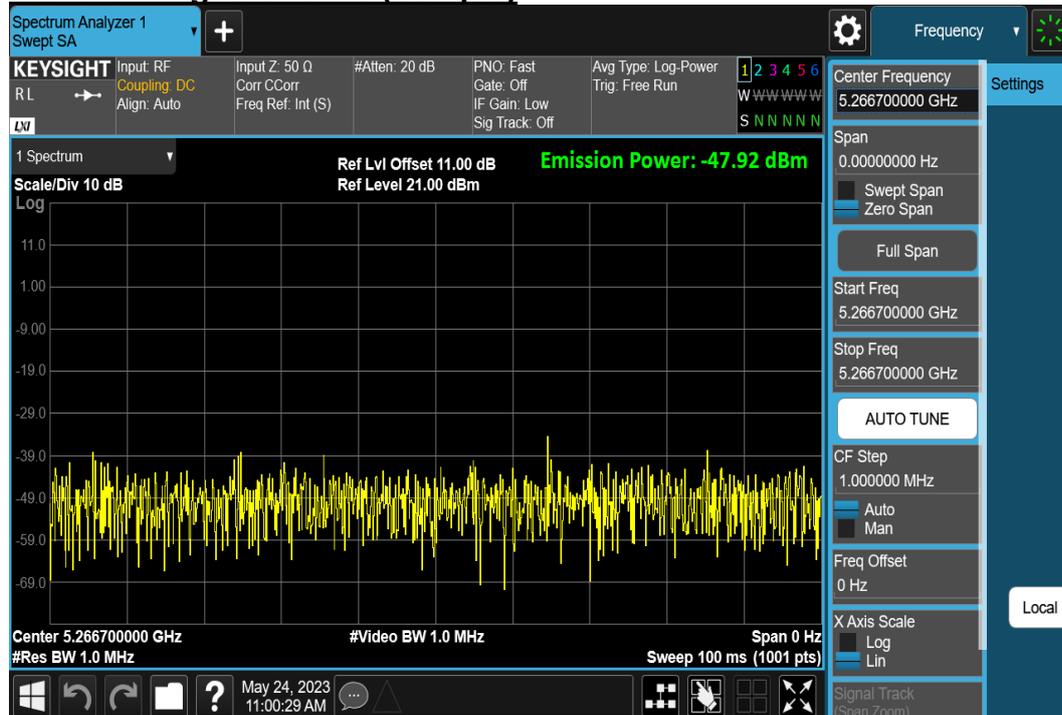


Report No.: TMWK2305001504KR

W52 / CH High / Chain 0



W52 / CH High / Chain 0 (Sample)

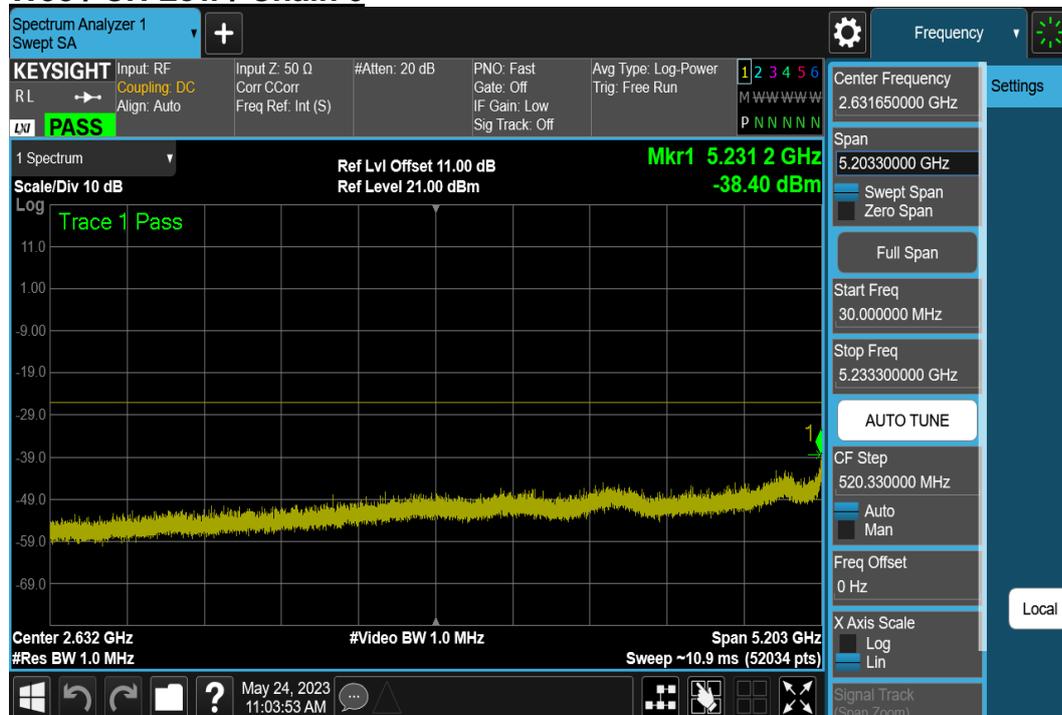


Report No.: TMWK2305001504KR

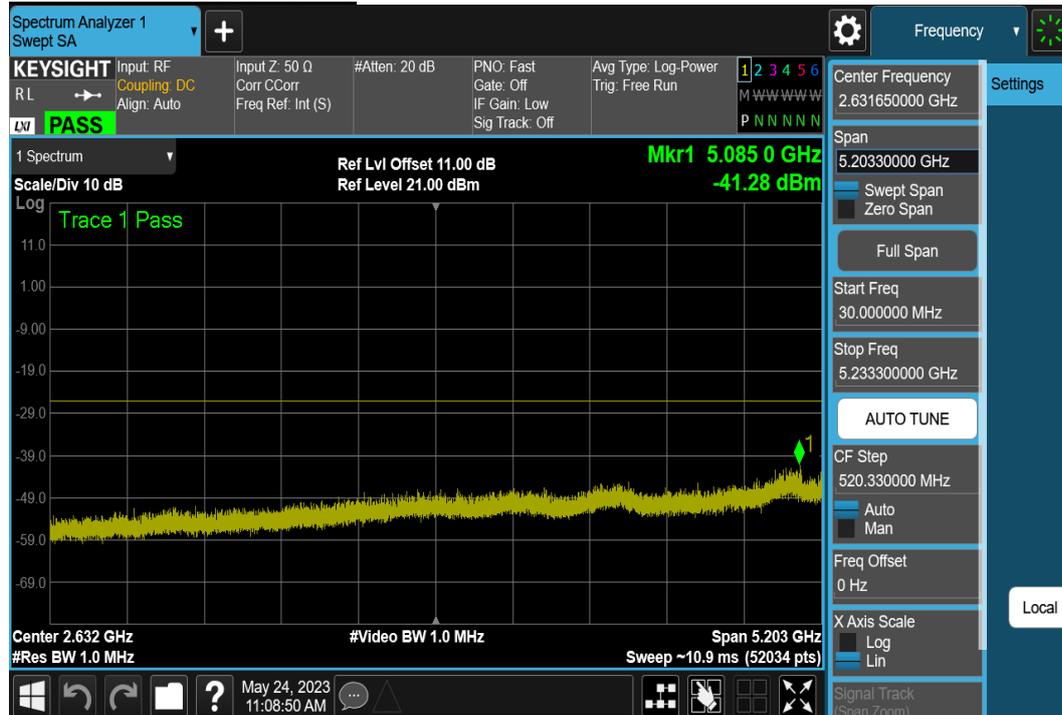
TEST PLOTS

(1) 30MHz ~ 5233.3MHz

W53 / CH Low / Chain 0



W53 / CH Mid / Chain 0



Report No.: TMWK2305001504KR

W53 / CH High / Chain 0

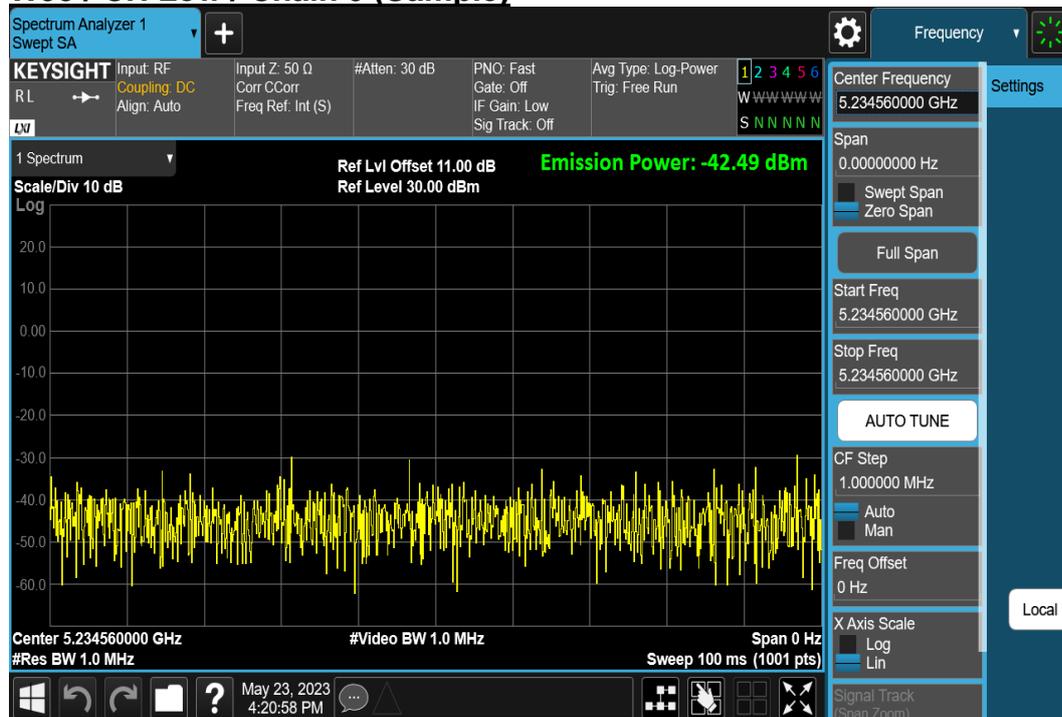


Report No.: TMWK2305001504KR

(2) 5233.3MHz ~ 5240MHz W53 / CH Low / Chain 0



W53 / CH Low / Chain 0 (Sample)

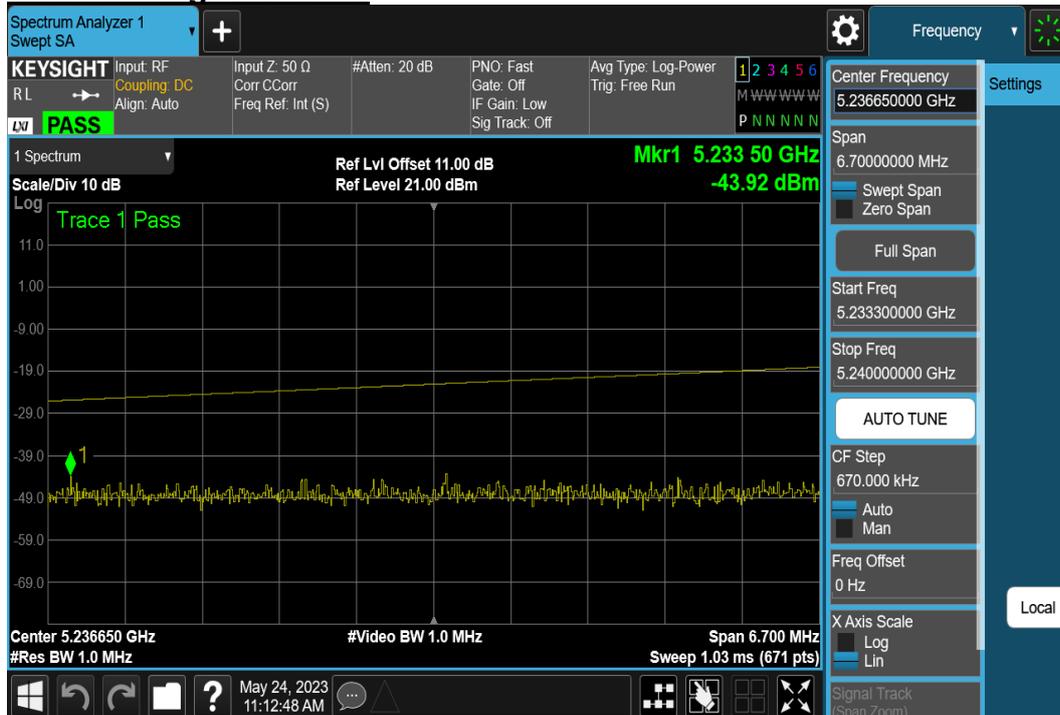


Report No.: TMWK2305001504KR

W53 / CH Mid / Chain 0

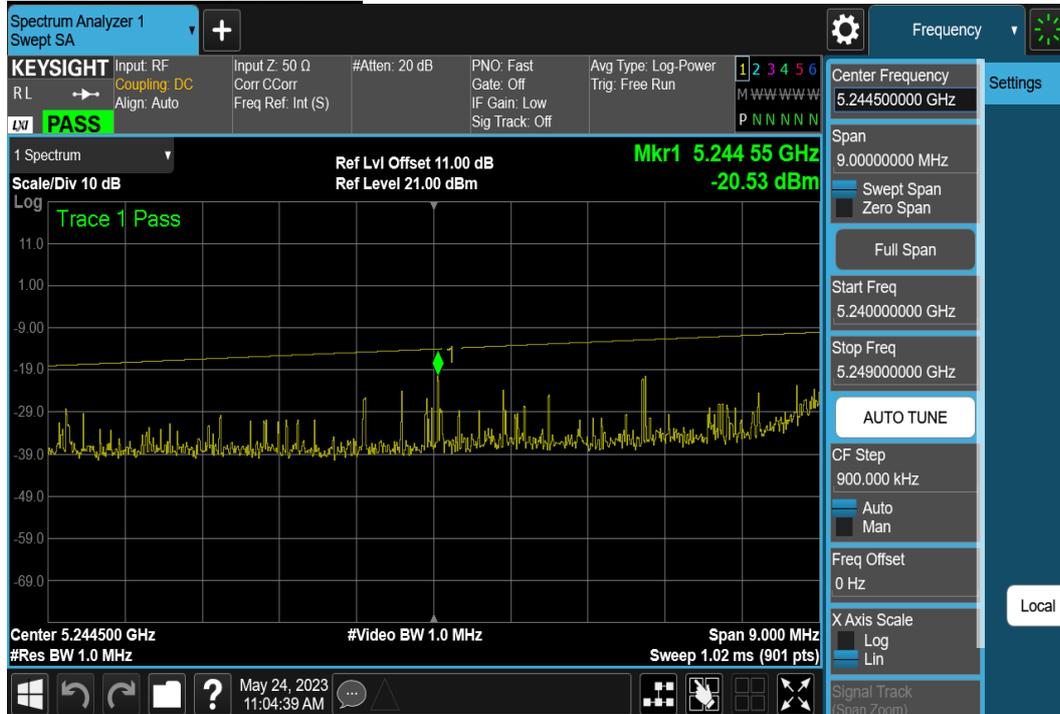


W53 / CH High / Chain 0

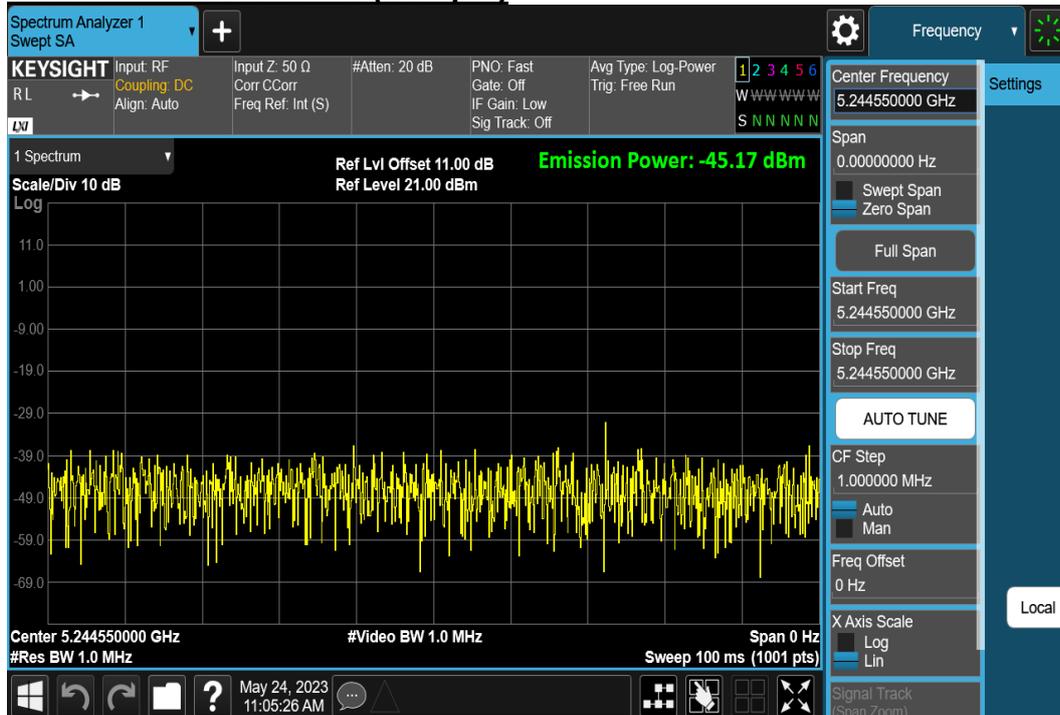


Report No.: TMWK2305001504KR

(3) 5240MHz ~ 5249MHz W53 / CH Low / Chain 0

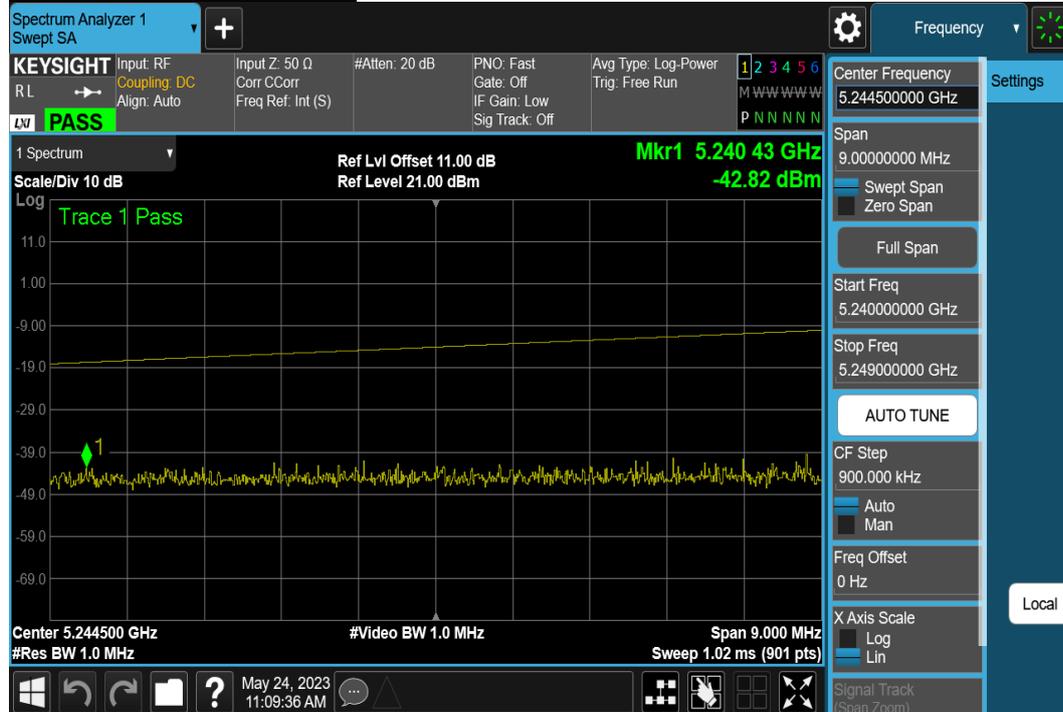


W53 / CH Low / Chain 0 (Sample)



Report No.: TMWK2305001504KR

W53 / CH Mid / Chain 0

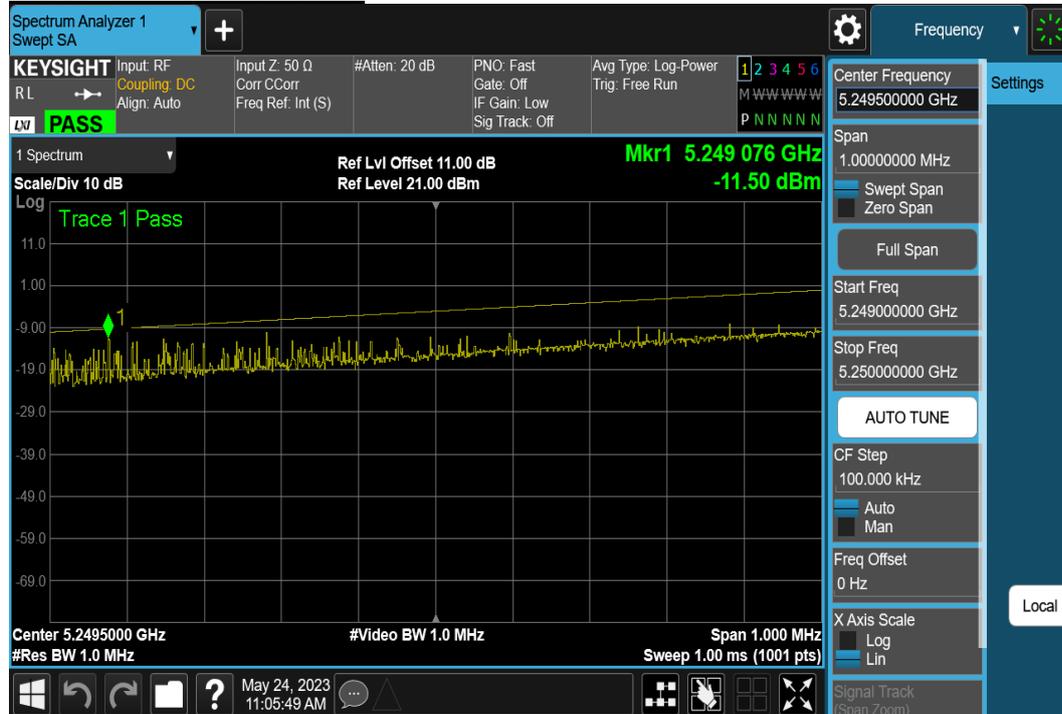


W53 / CH High / Chain 0

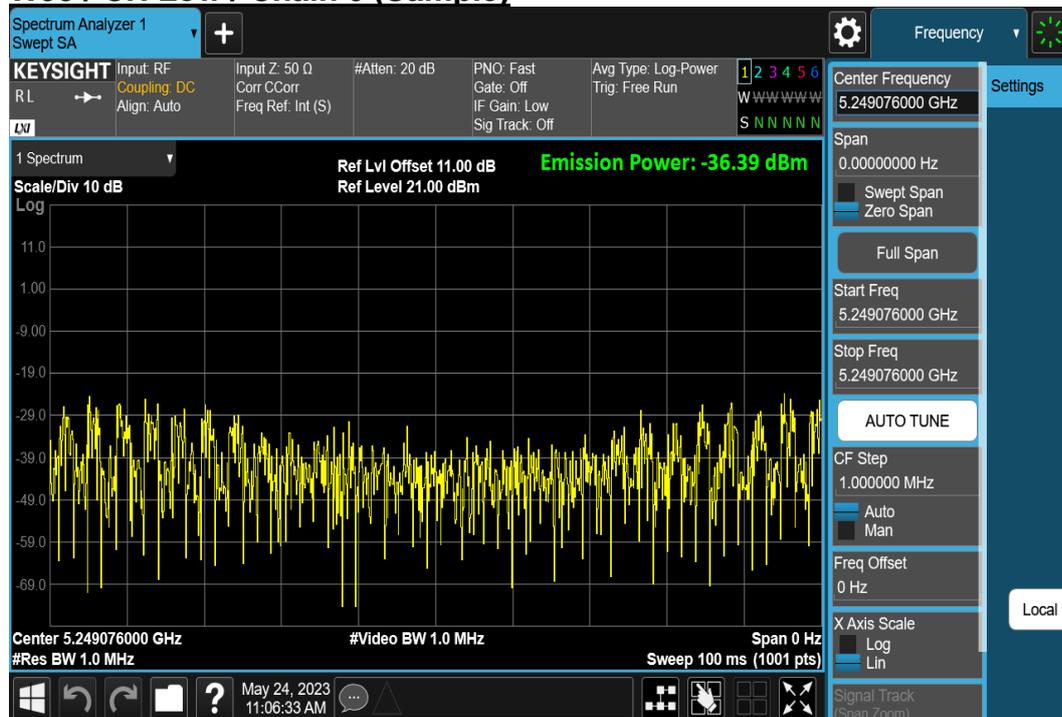


Report No.: TMWK2305001504KR

(4) 5249MHz ~ 5250MHz W53 / CH Low / Chain 0

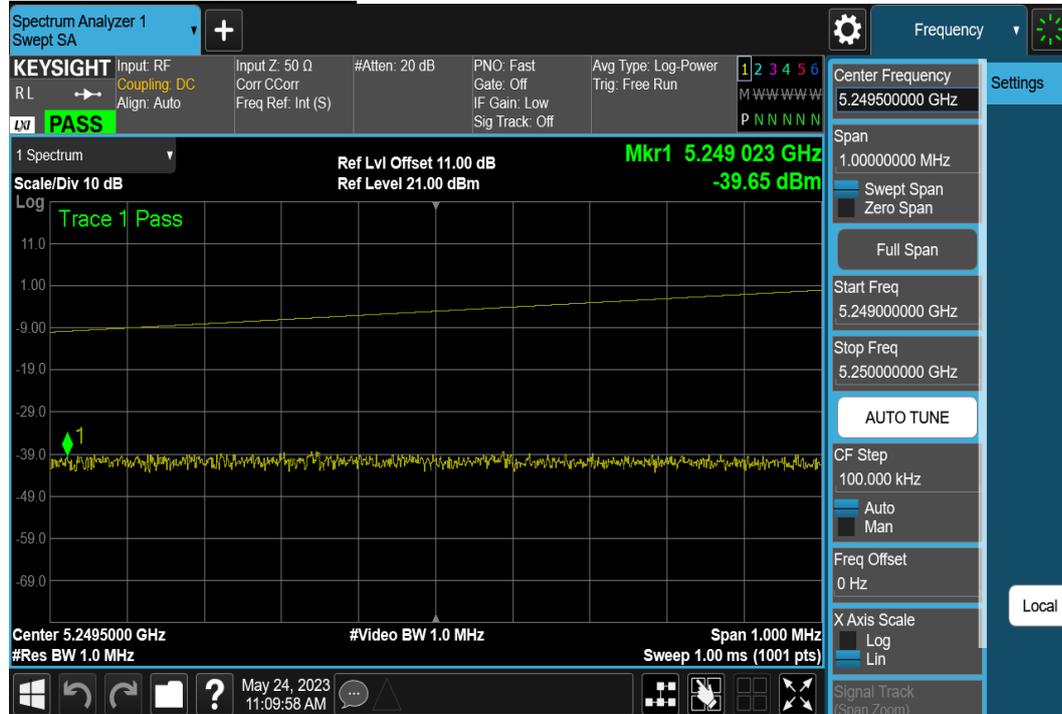


W53 / CH Low / Chain 0 (Sample)

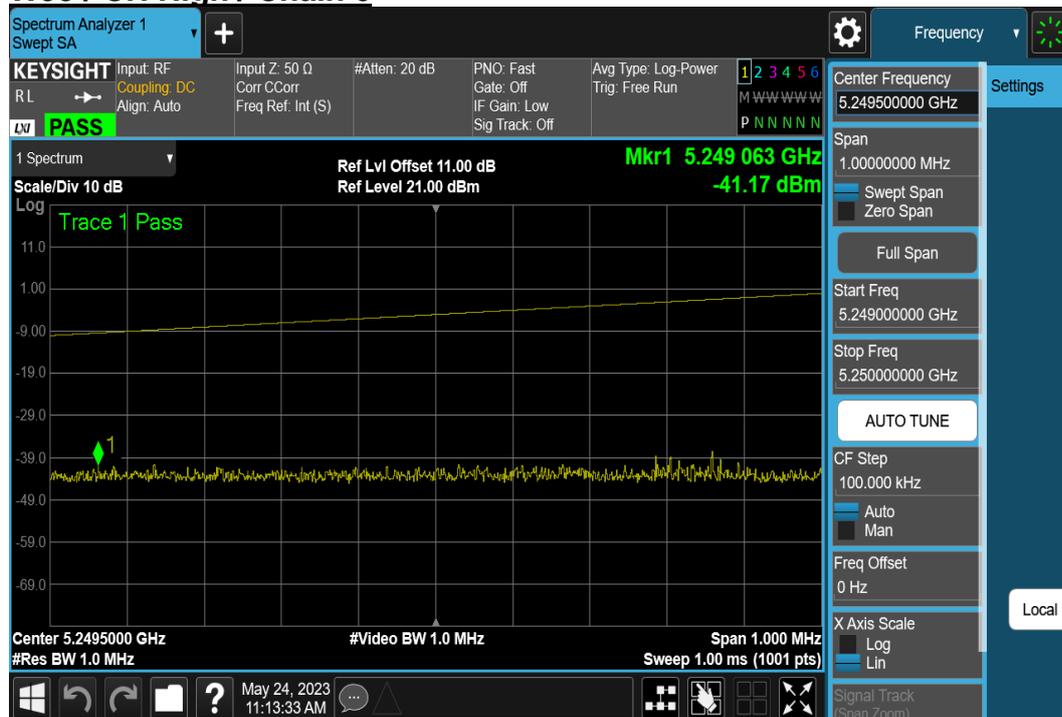


Report No.: TMWK2305001504KR

W53 / CH Mid / Chain 0

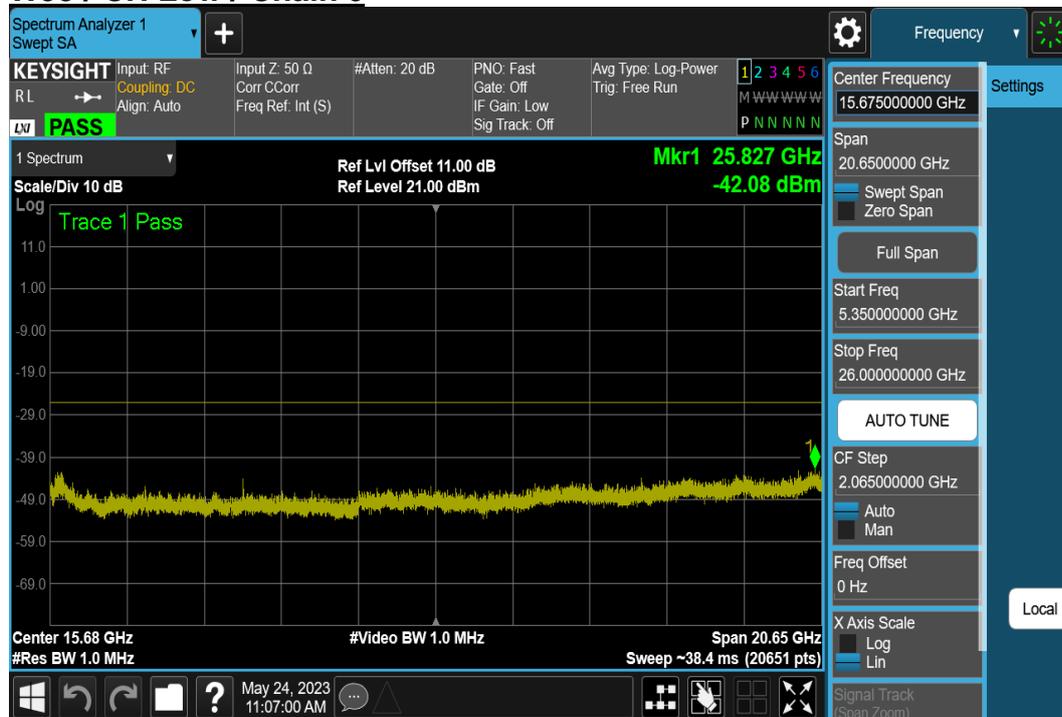


W53 / CH High / Chain 0

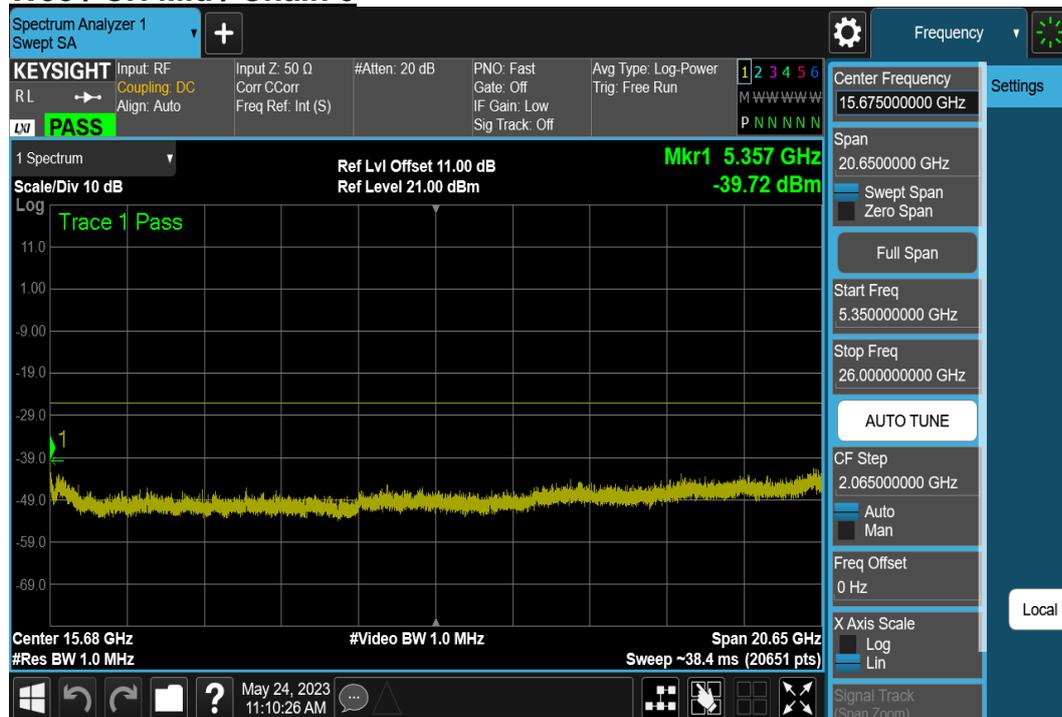


Report No.: TMWK2305001504KR

(5) 5350MHz ~ 26000MHz W53 / CH Low / Chain 0



W53 / CH Mid / Chain 0



Report No.: TMWK2305001504KR

W53 / CH High / Chain 0



Report No.: TMWK2305001504KR

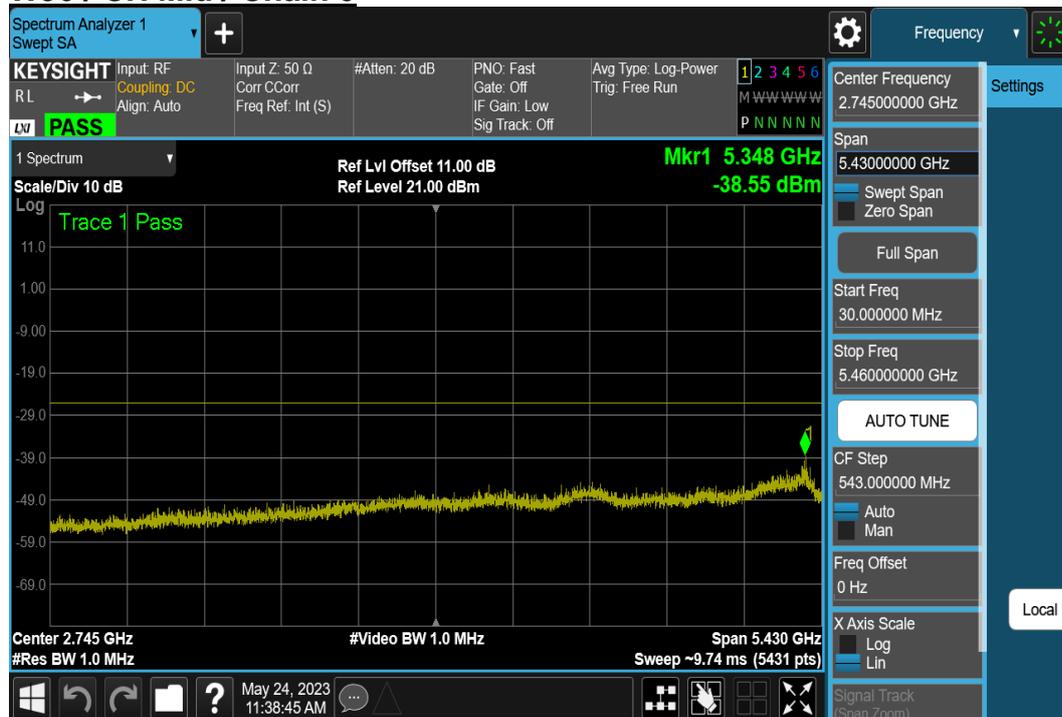
TEST PLOTS

(1) 30MHz ~ 5460MHz

W56 / CH Low / Chain 0



W56 / CH Mid / Chain 0



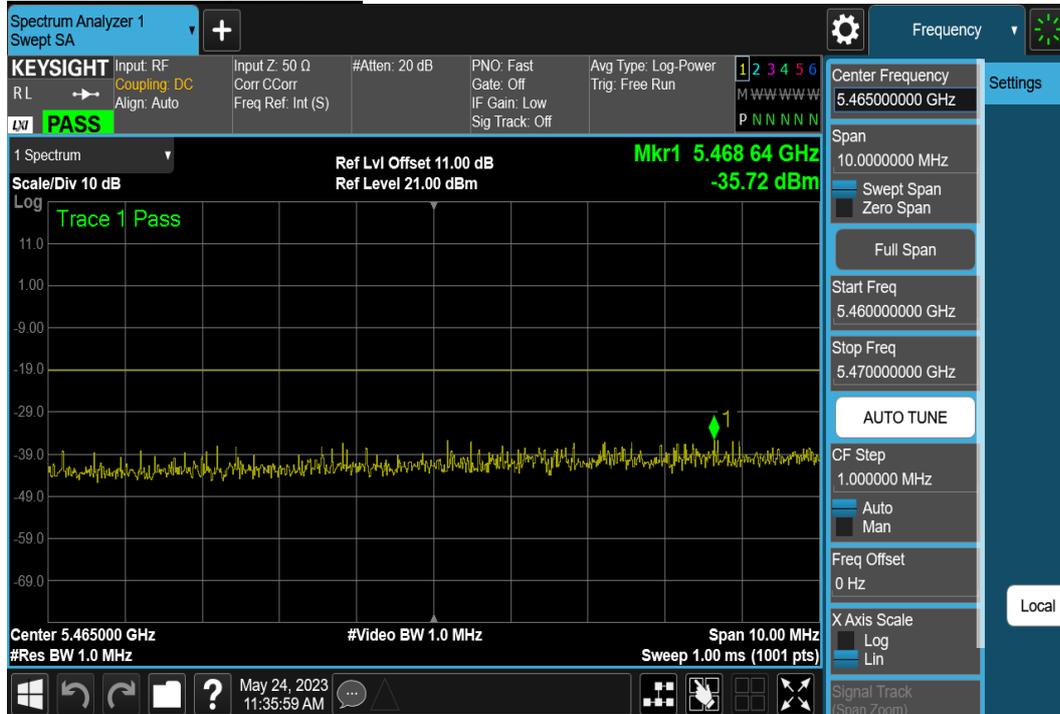
Report No.: TMWK2305001504KR

W56 / CH High / Chain 0

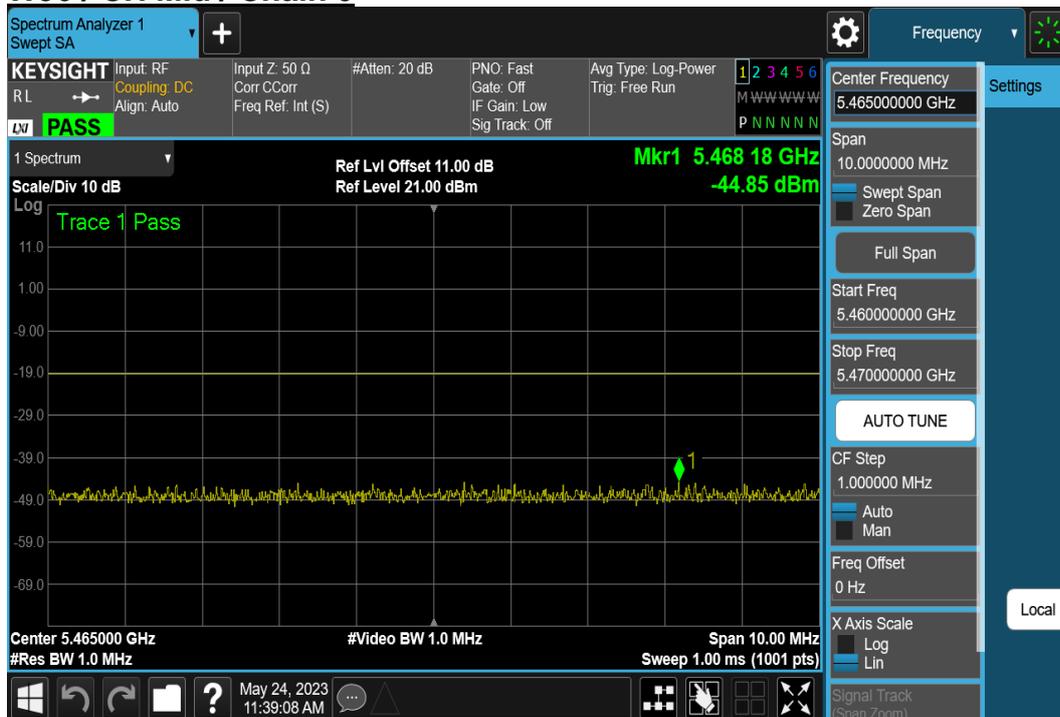


Report No.: TMWK2305001504KR

(2) 5460MHz ~ 5470MHz W56 / CH Low / Chain 0



W56 / CH Mid / Chain 0



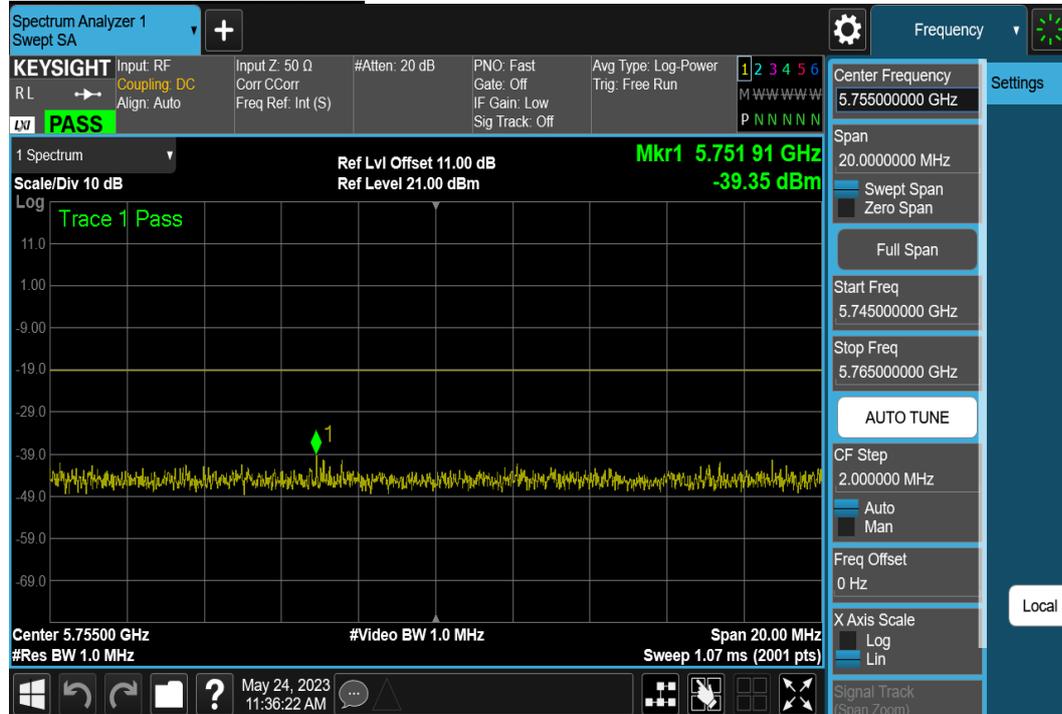
Report No.: TMWK2305001504KR

W56 / CH High / Chain 0

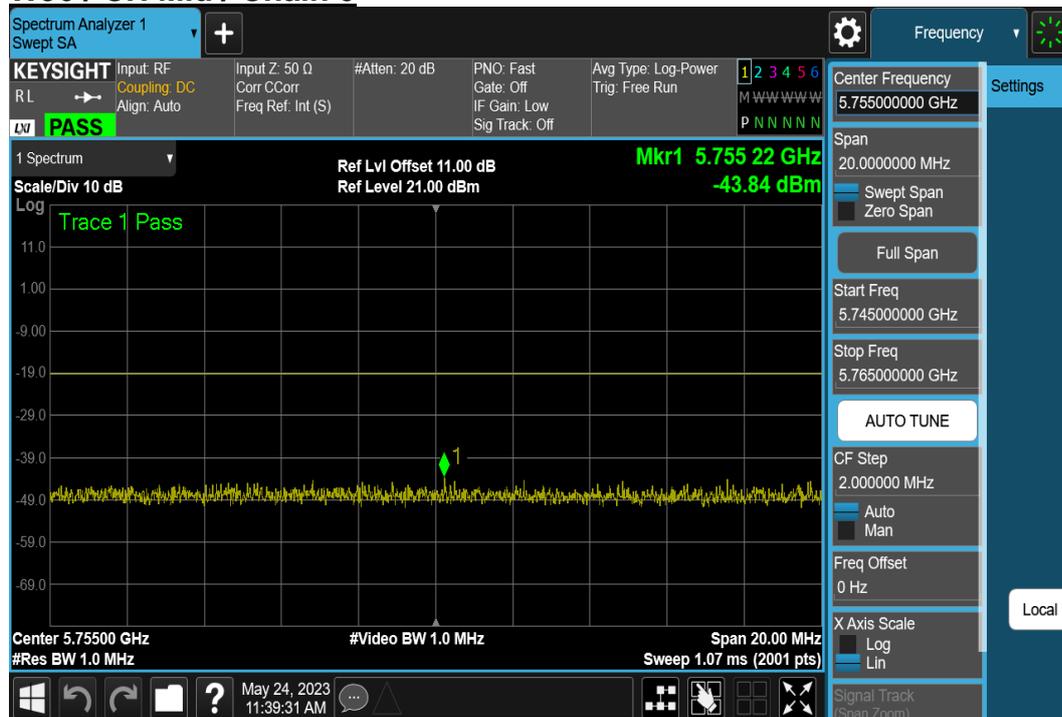


Report No.: TMWK2305001504KR

(3) 5745MHz ~ 5765MHz W56 / CH Low / Chain 0

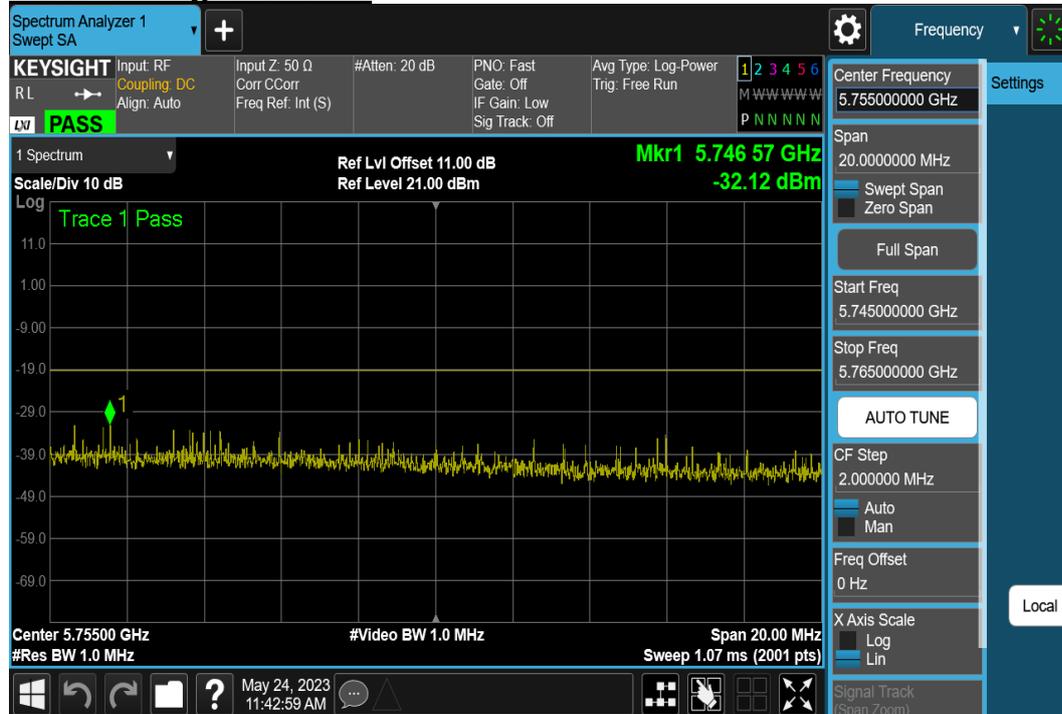


W56 / CH Mid / Chain 0



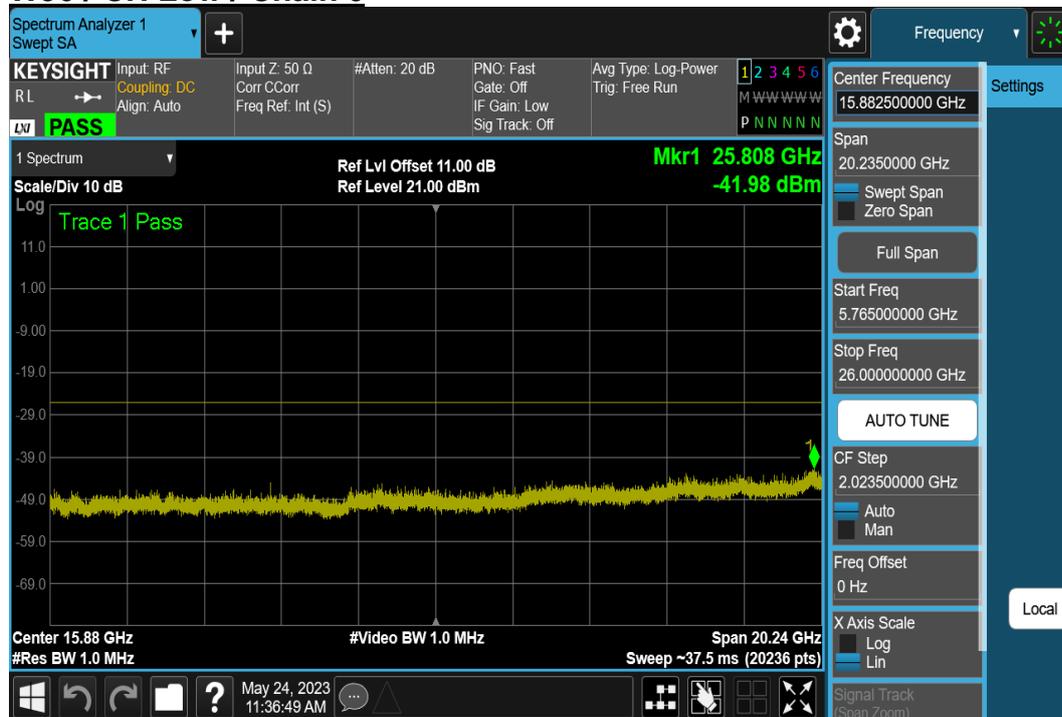
Report No.: TMWK2305001504KR

W56 / CH High / Chain 0

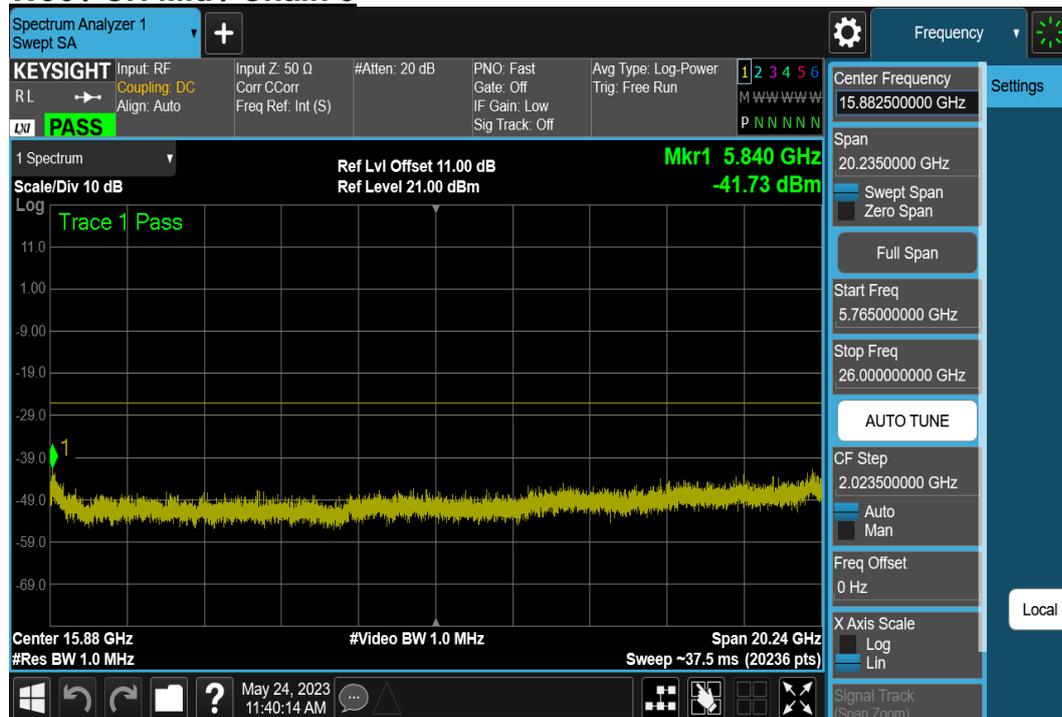


Report No.: TMWK2305001504KR

(4) 5765MHz ~ 26000MHz W56 / CH Low / Chain 0



W56 / CH Mid / Chain 0



Report No.: TMWK2305001504KR

W56 / CH High / Chain 0



Report No.: TMWK2305001504KR

6.6 SECONDARILY EMITTED RADIO WAVE STRENGTH

TEST RESULT

W52

Secondarily emitted radio wave strength						
802.11a_W52_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5180	5220	5240	---	---
Channel Number	Ch.	36	44	48	---	---
Under 1GHz (Chain0)	nW	0.011	0.008	0.011	≦ 4.00	PASS
	MHz	106.000	106.000	106.000	---	---
1 ~ 26GHz (Chain0)	nW	0.082	0.088	0.082	≦ 20.00	PASS
	MHz	3807.000	3807.000	3807.000	---	---

W53

Secondarily emitted radio wave strength						
802.11a_W53_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5260	5300	5320	---	---
Channel Number	Ch.	52	60	64	---	---
Under 1GHz (Chain0)	nW	0.007	0.007	0.008	≦ 4.00	PASS
	MHz	106.000	106.000	106.000	---	---
1 ~ 26GHz (Chain0)	nW	0.082	0.072	0.078	≦ 20.00	PASS
	MHz	3807.000	3807.000	3807.000	---	---

W56

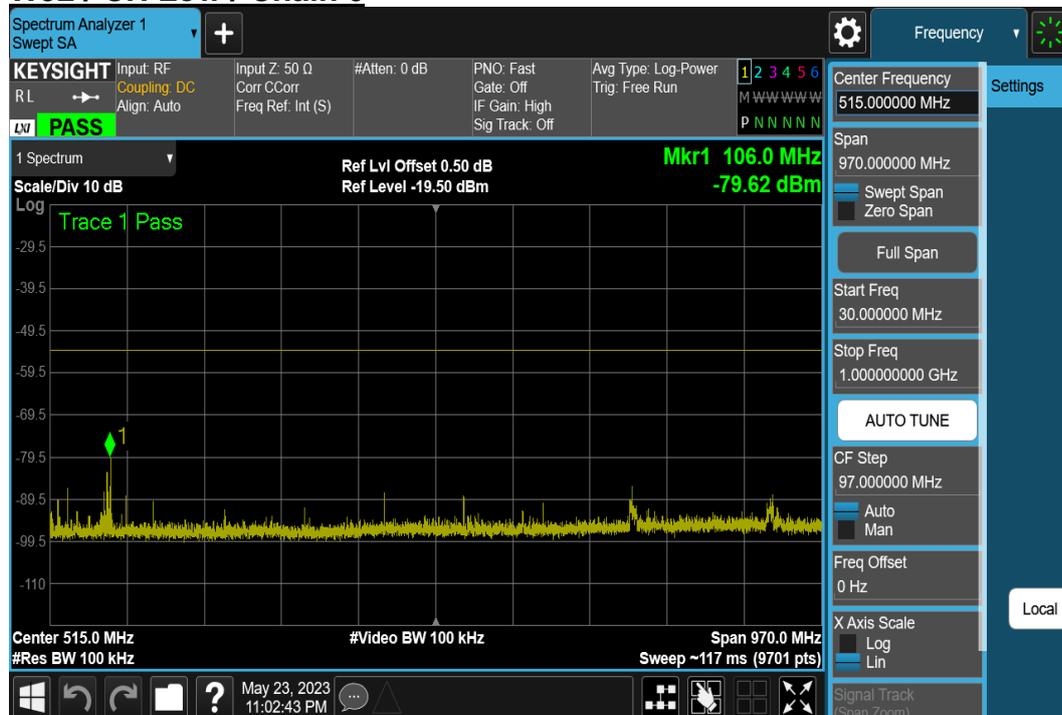
Secondarily emitted radio wave strength						
802.11a_W56_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5500	5600	5720	---	---
Channel Number	Ch.	100	120	144	---	---
Under 1GHz (Chain0)	nW	0.007	0.009	0.008	≦ 4.00	PASS
	MHz	105.9	106.0	106.0	---	---
1 ~ 26GHz (Chain0)	nW	0.082	0.069	0.068	≦ 20.00	PASS
	MHz	3807	3807	3806	---	---

Report No.: TMWK2305001504KR

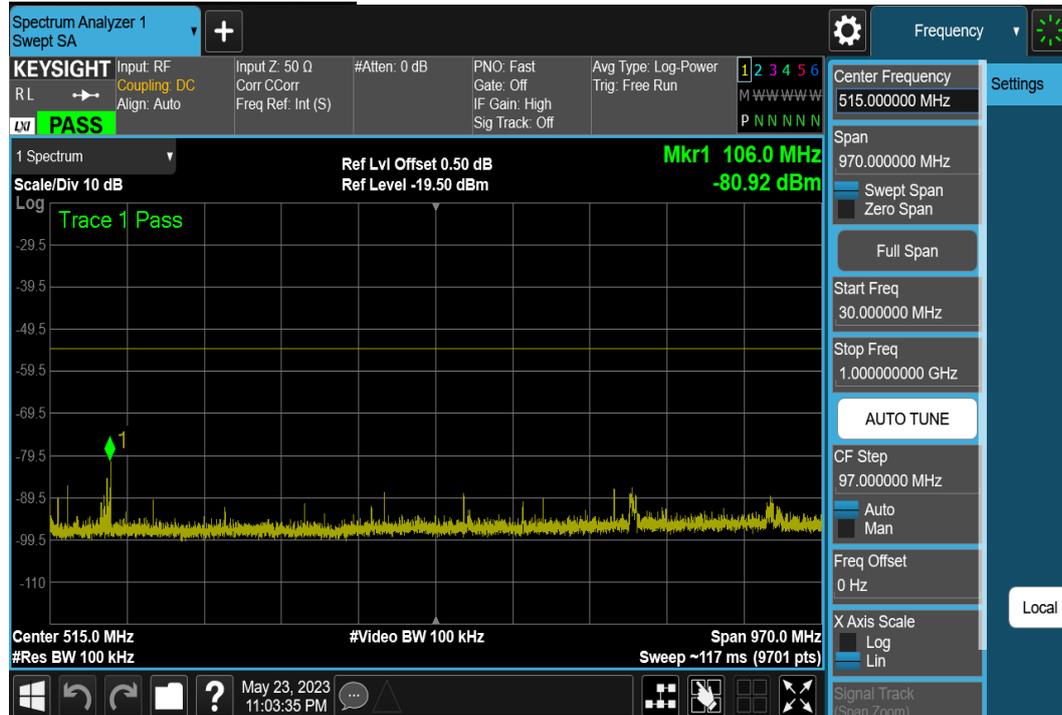
TEST PLOTS

(1) Under 1GHz

W52 / CH Low / Chain 0

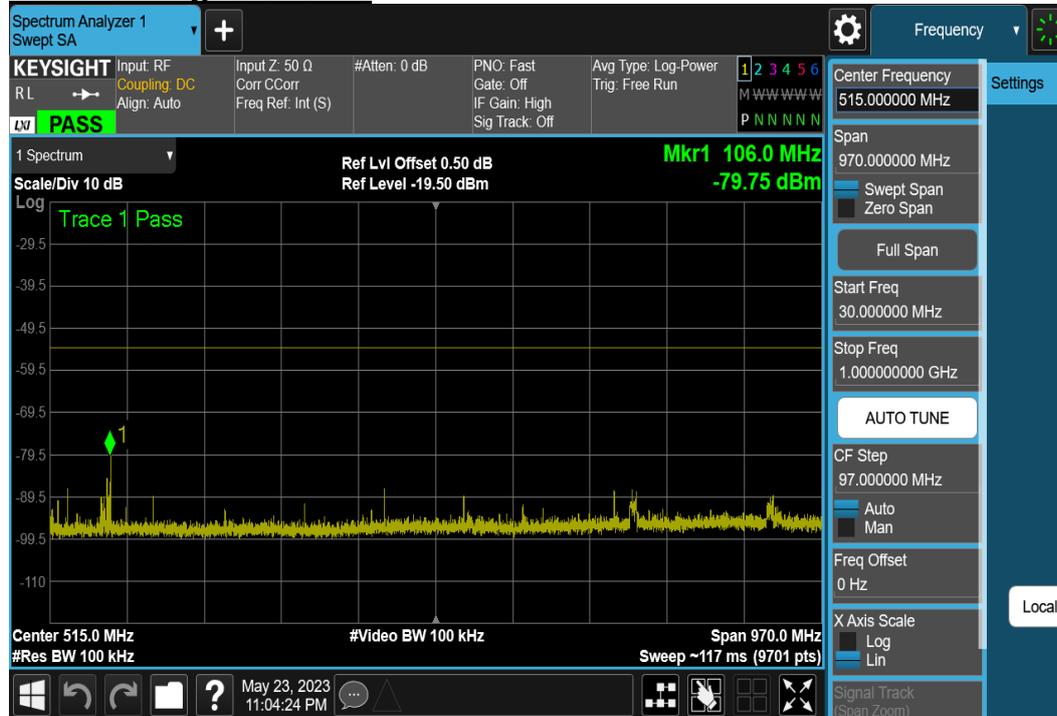


W52 / CH Mid / Chain 0



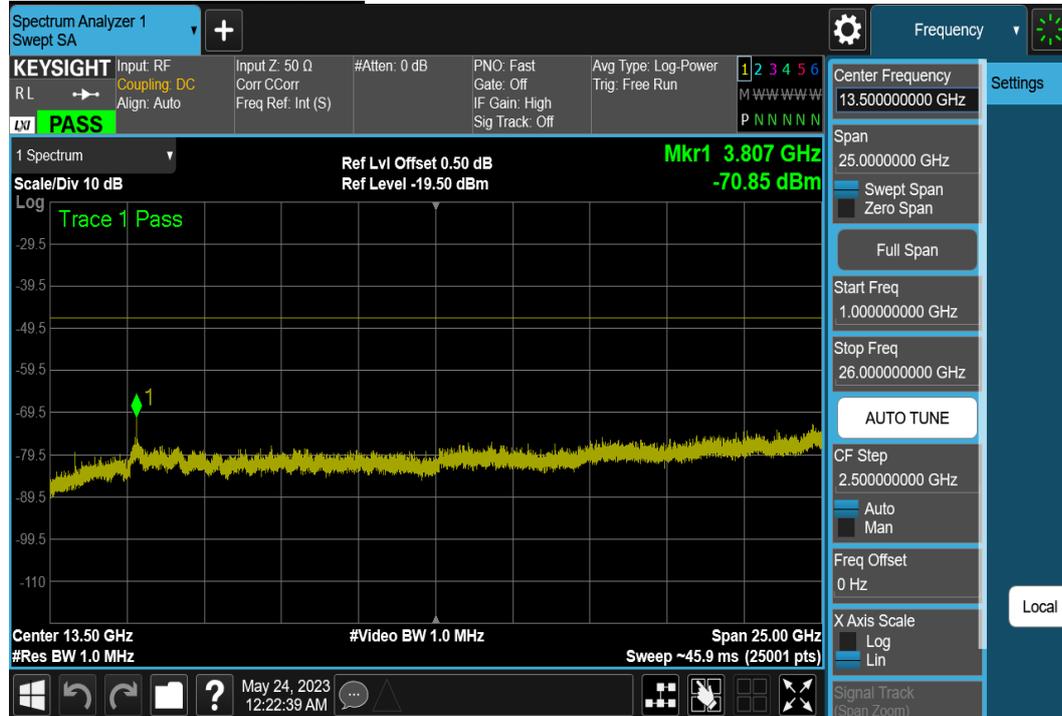
Report No.: TMWK2305001504KR

W52 / CH High / Chain 0



Report No.: TMWK2305001504KR

(2) 1GHz ~ 26GHz W52 / CH Low / Chain 0

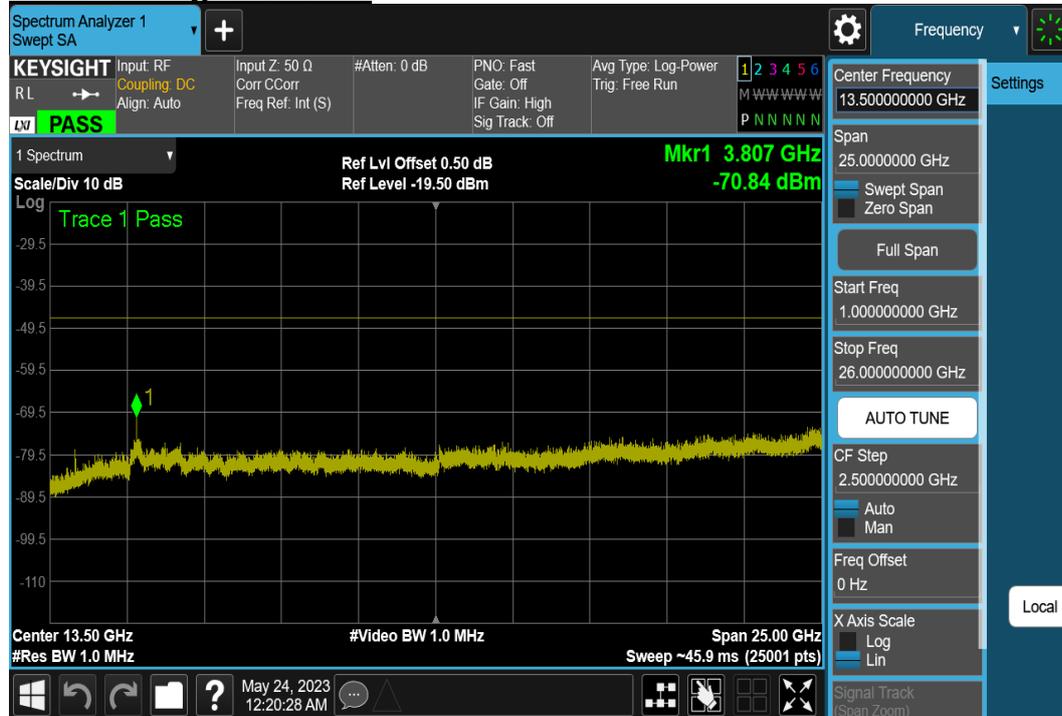


W52 / CH Mid / Chain 0



Report No.: TMWK2305001504KR

W52 / CH High / Chain 0

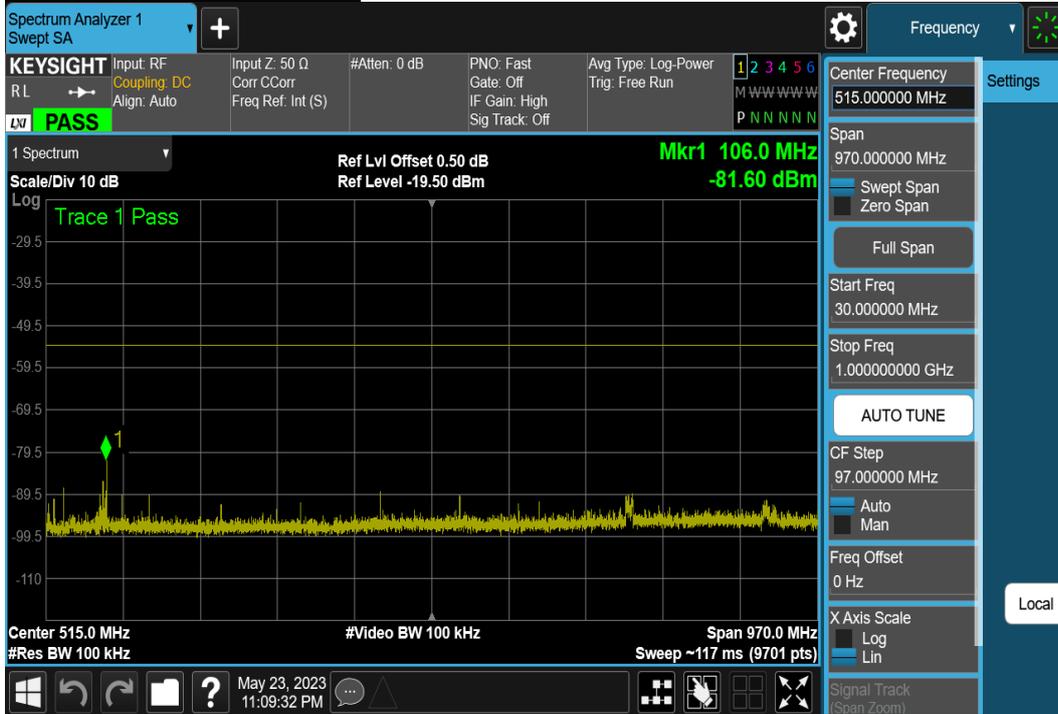


Report No.: TMWK2305001504KR

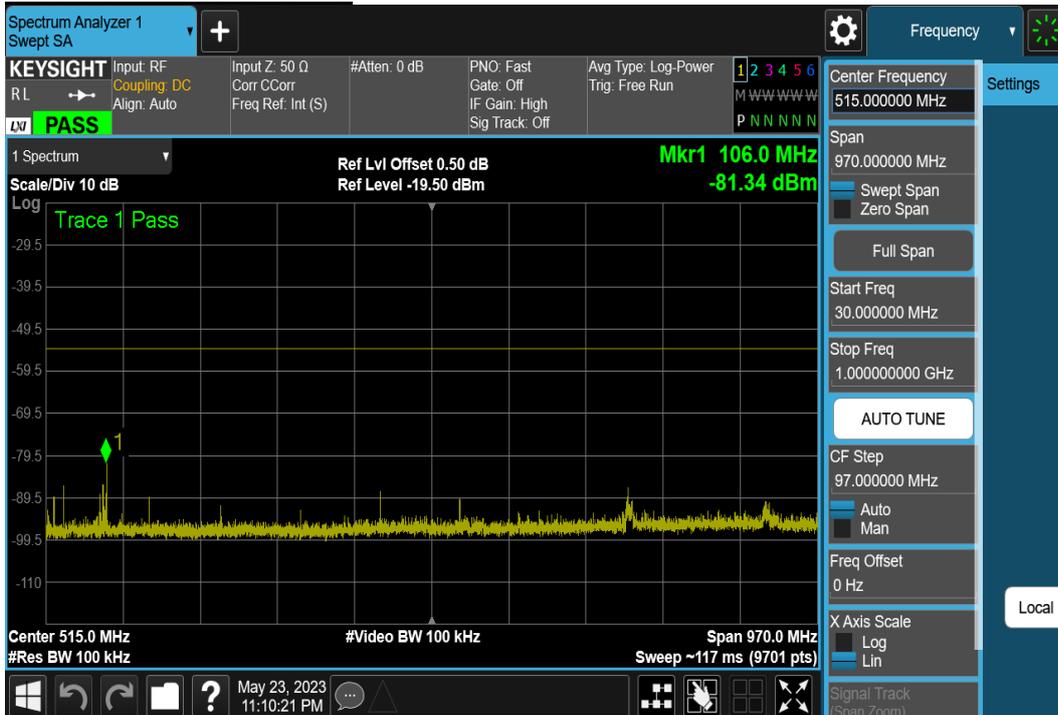
TEST PLOTS

(1) Under 1GHz

W53 / CH Low / Chain 0

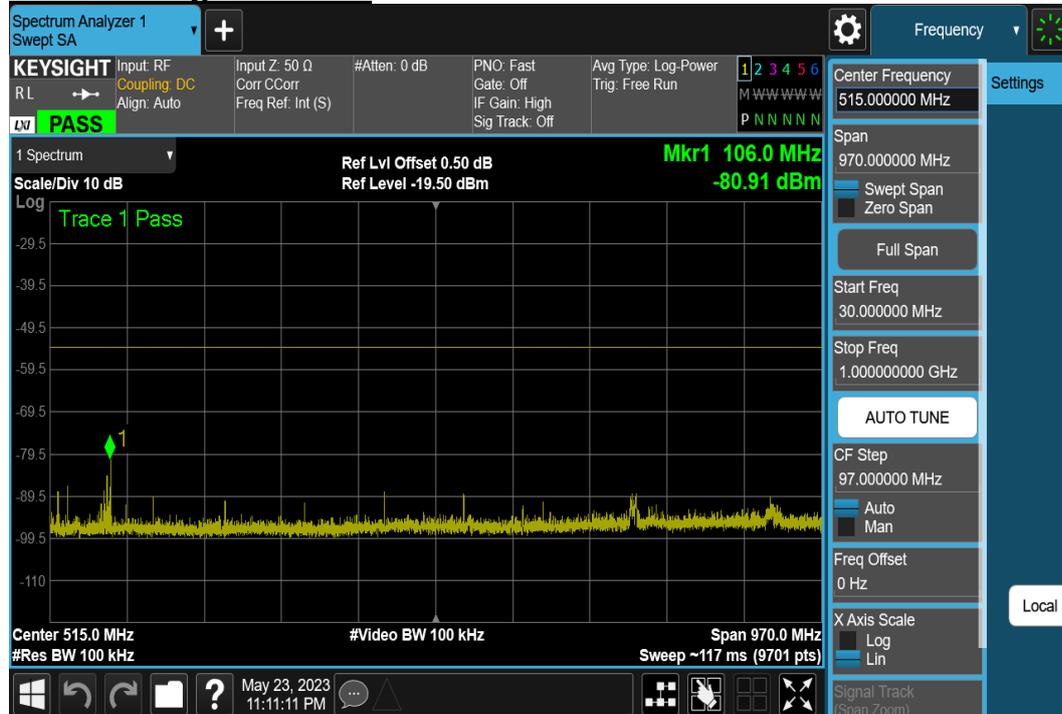


W53 / CH Mid / Chain 0



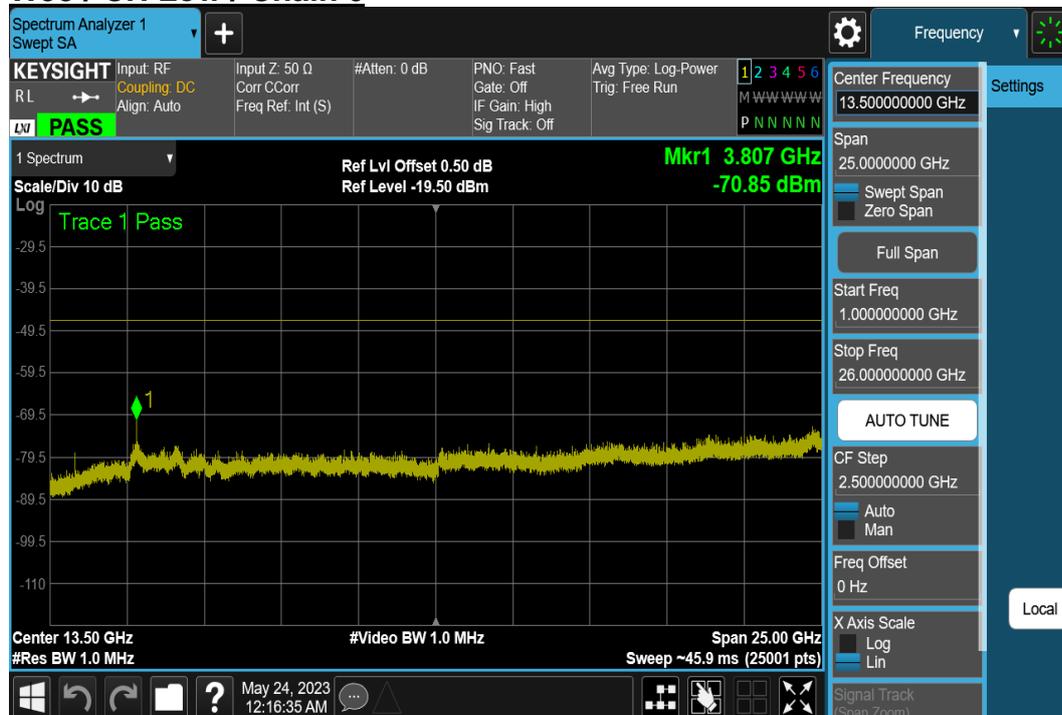
Report No.: TMWK2305001504KR

W53 / CH High / Chain 0

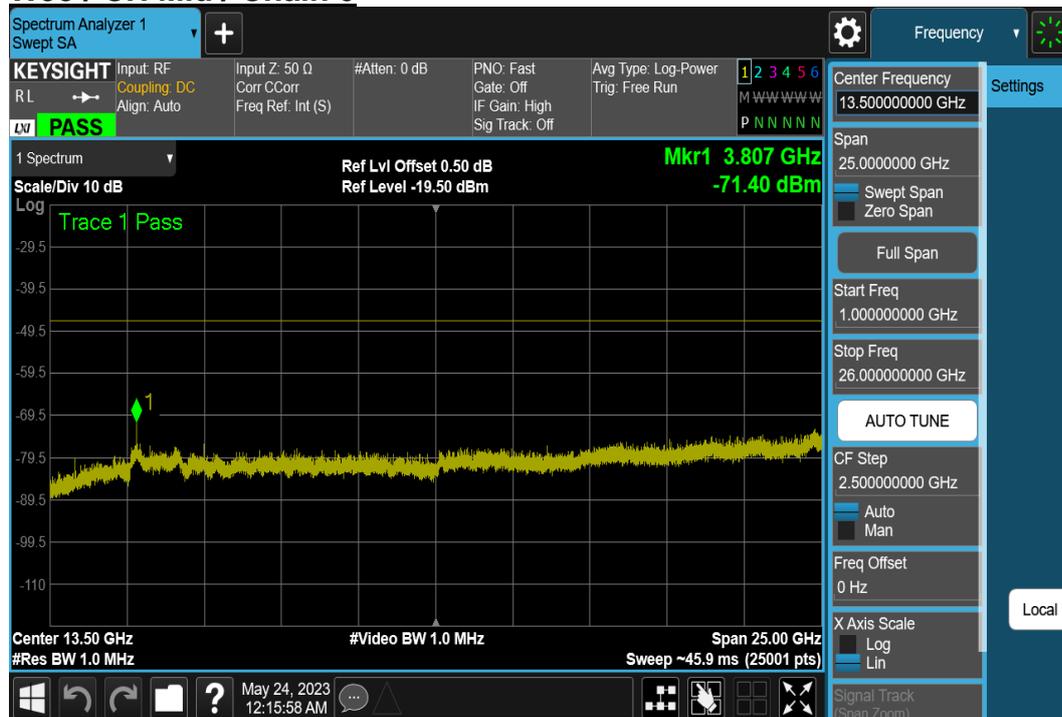


Report No.: TMWK2305001504KR

(2) 1GHz ~ 26GHz W53 / CH Low / Chain 0

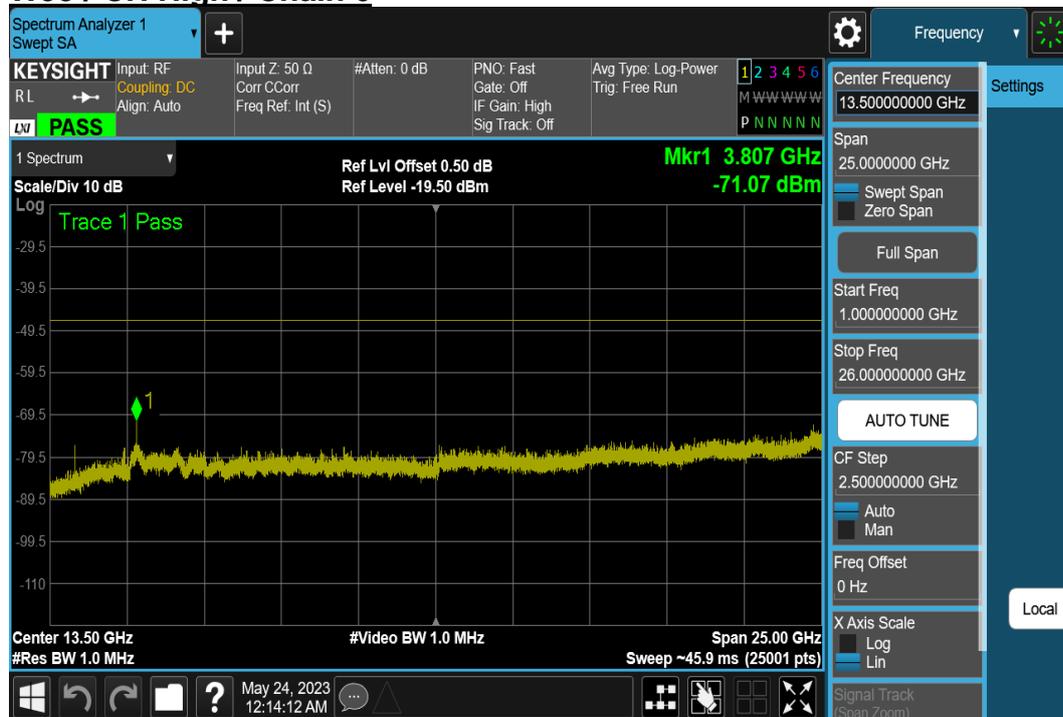


W53 / CH Mid / Chain 0



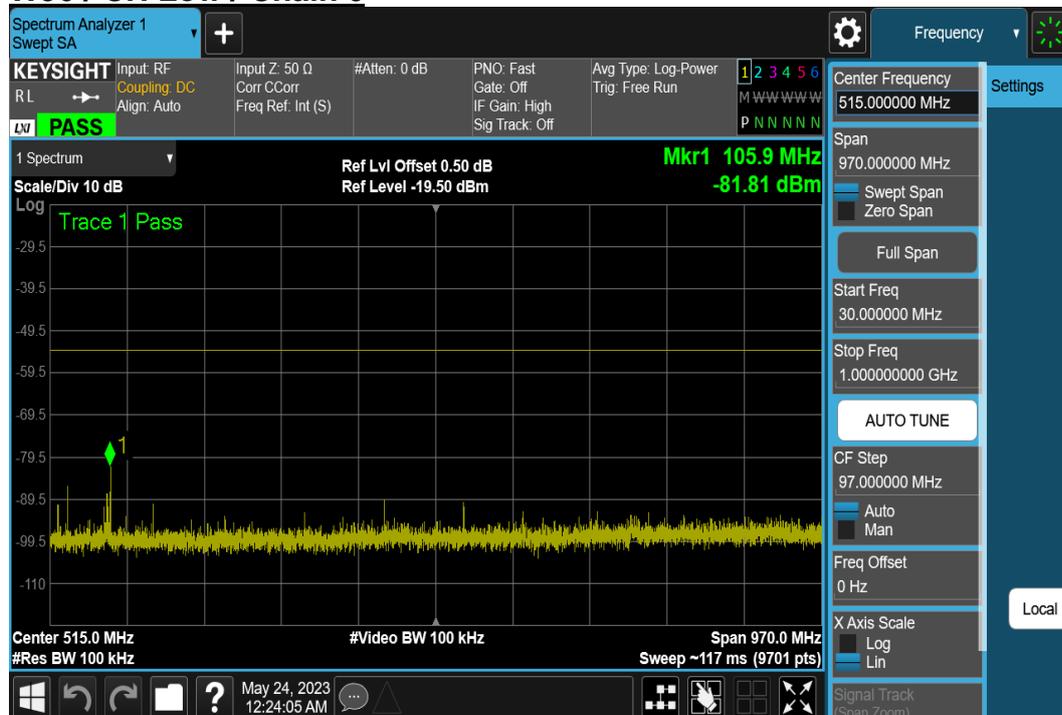
Report No.: TMWK2305001504KR

W53 / CH High / Chain 0

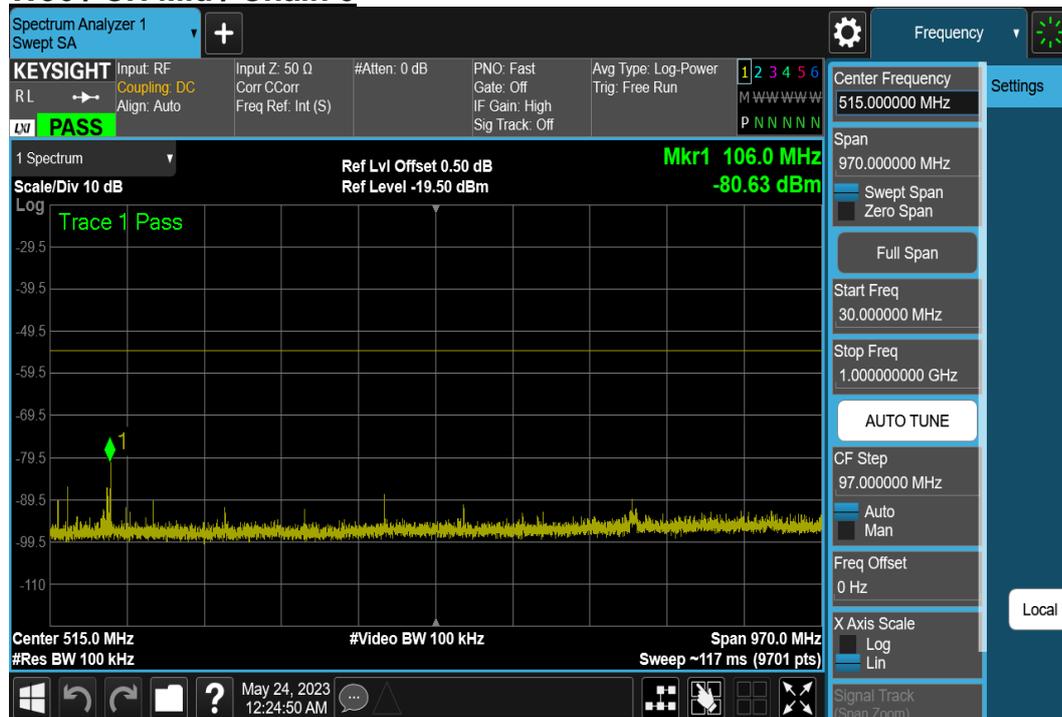


Report No.: TMWK2305001504KR

TEST POLTS (1) Under 1GHz W56 / CH Low / Chain 0

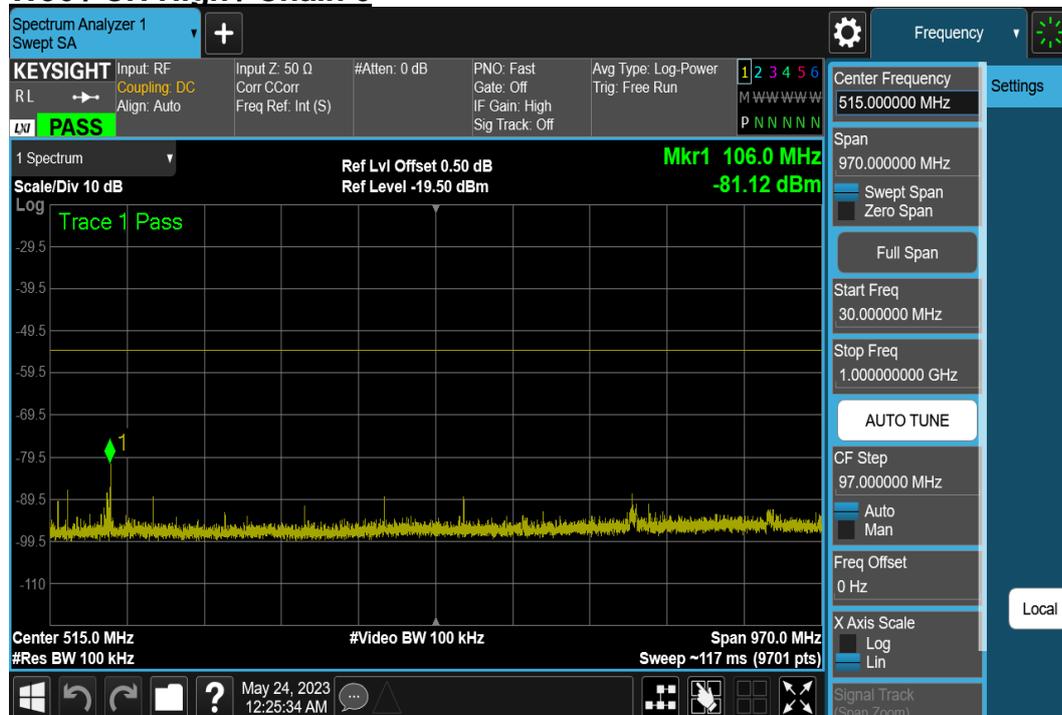


W56 / CH Mid / Chain 0



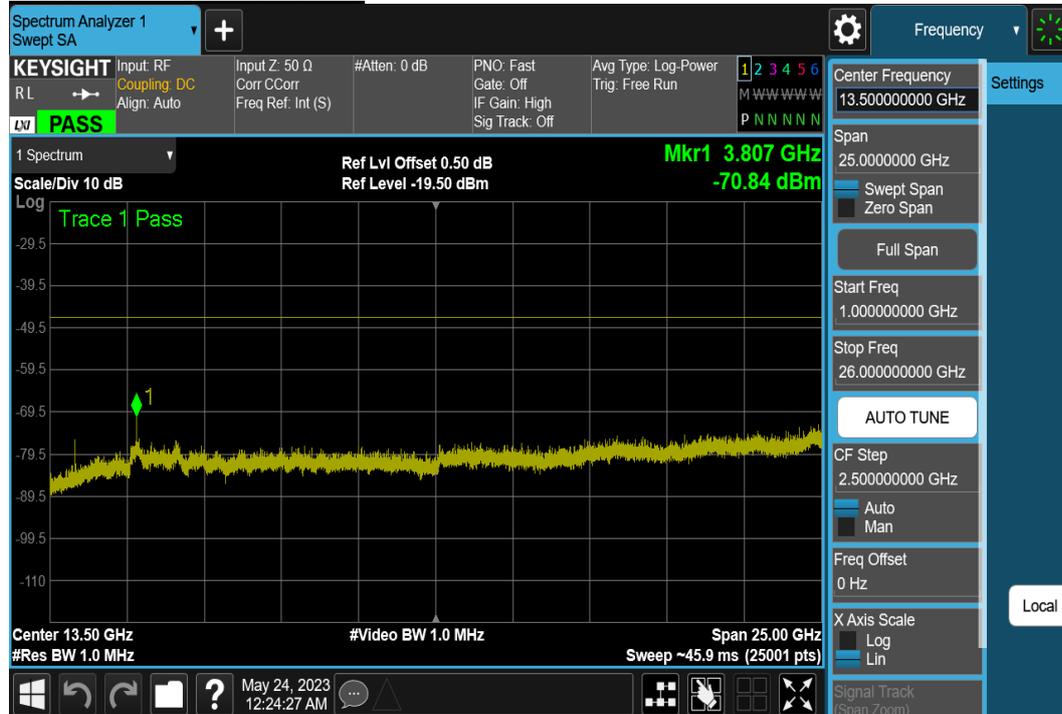
Report No.: TMWK2305001504KR

W56 / CH High / Chain 0



Report No.: TMWK2305001504KR

(2) 1GHz ~ 26GHz W56 / CH Low / Chain 0



W56 / CH Mid / Chain 0



Report No.: TMWK2305001504KR

W56 / CH High / Chain 0



Report No.: TMWK2305001504KR

6.7 TRANSMITTER BURST LENGTH & CARRIER SENSE CAPABILITY

TEST RESULTS

W52

Burst	Modulation	---	BPSK			---	---
	On Time	msec	1.732			≤ 8	PASS
	Off Time	msec	0.102			---	---
	Ratio	%	94.44			---	---
802.11a_W52_20MHz		unit	---	---	---	Limit	Result
Measurement Center Frequency		MHz	5180	5220	5240	---	---
Channel Number		Ch.	36	44	48	---	---
Carrier Sensing Function		---	Good	Good	Good	---	PASS
Threshold Level (TX RX) (Chain0)		dBm				---	---
DFS Function		---				---	PASS
Burst Length of Transmitted Signals		---	Good	Good	Good	---	PASS
Interference Prevention Function		---	Good	Good	Good	---	PASS

W53

Burst	Modulation	---	BPSK			---	---
	On Time	msec	1.732			≤ 8	PASS
	Off Time	msec	0.102			---	---
	Ratio	%	94.44			---	---
802.11a_W53_20MHz		unit	---	---	---	Limit	Result
Measurement Center Frequency		MHz	5260	5300	5320	---	---
Channel Number		Ch.	52	60	64	---	---
Carrier Sensing Function		---	Good	Good	Good	---	PASS
Threshold Level (TX RX) (Chain0)		dBm				---	---
DFS Function		---				---	PASS
Burst Length of Transmitted Signals		---	Good	Good	Good	---	PASS
Interference Prevention Function		---	Good	Good	Good	---	PASS

Report No.: TMWK2305001504KR

W56

Burst	Modulation	---	BPSK			---	---
	On Time	msec	1.730			≤ 8	PASS
	Off Time	msec	0.102			---	---
	Ratio	%	94.43			---	---
802.11a_W56_20MHz		unit	---	---	---	Limit	Result
Measurement Center Frequency		MHz	5500	5600	5720	---	---
Channel Number		Ch.	100	120	144	---	---
Carrier Sensing Function		---	Good	Good	Good	---	PASS
Threshold Level (TX RX) (Chain0)		dBm				---	---
DFS Function		---				---	PASS
Burst Length of Transmitted Signals		---	Good	Good	Good	---	PASS
Interference Prevention Function		---	Good	Good	Good	---	PASS

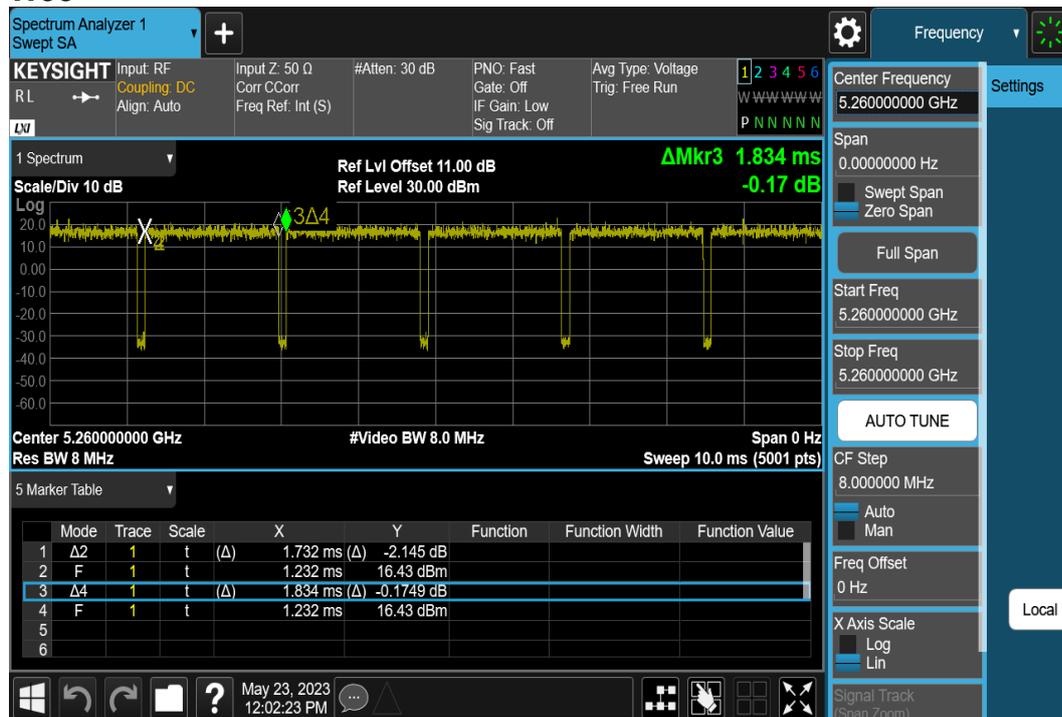
Report No.: TMWK2305001504KR

TEST PLOTS

W52

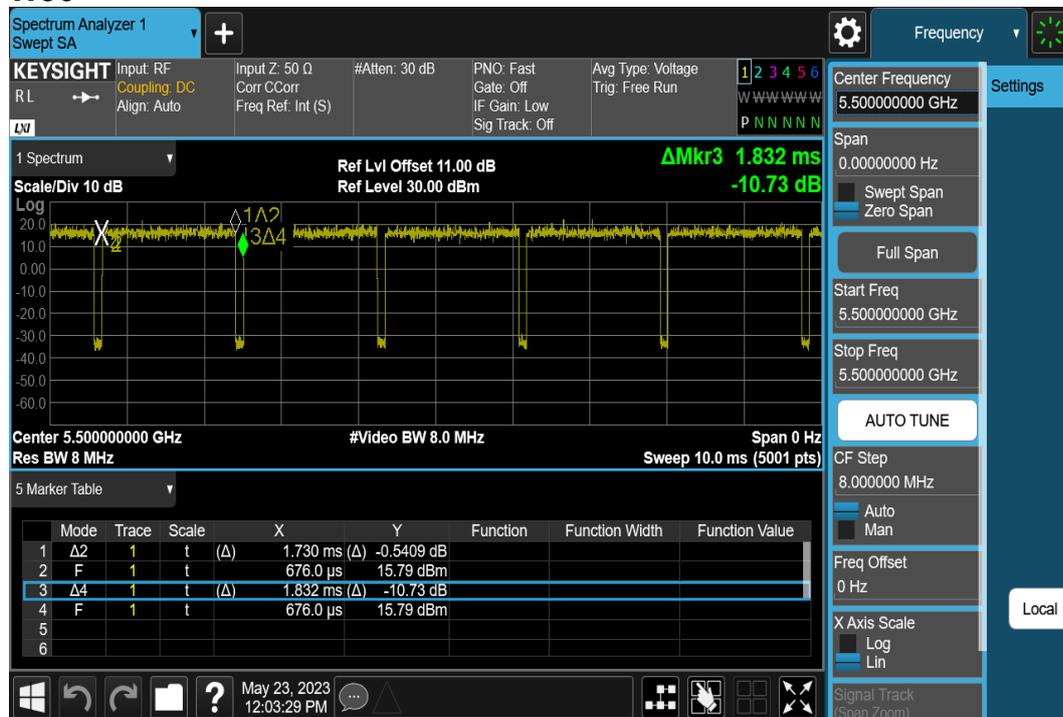


W53



Report No.: TMWK2305001504KR

W56



Report No.: TMWK2305001504KR

7 TEST RESULT FOR IEEE 802.11n HT20 (W52 & W53 & W56)

7.1 RF OUTPUT POWER

TEST RESULTS

W52

802.11n_W52_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5180	5220	5240	---	---
Channel Number	Ch.	36	44	48	---	---
Declaration Output Power	mW/MHz	1.841			≤ 10.000	PASS
Declaration Output Power	dBm/MHz	2.475	2.591	2.651	≤ 10.000	PASS
E.I.R.P.	dBm/MHz	8.475	8.592	8.649	≤ 10.000	PASS
Peak Antenna Gain (Chain0)	dBi	6			---	---
Tested Circuit Insertion Loss (Chain0)	dB	11.00			---	---
Tested Circuit Insertion Loss (RX_Chain0)	dB	1.00			---	---
RF Output Power						
802.11n_W52_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5180	5220	5240	---	---
Channel Number	Ch.	36	44	48	---	---
RF Output Power (Chain0) (*1)	mW/MHz	1.768	1.816	1.841	---	---
RF Output Power Tolerance (Chain0)	%	-3.97	-1.36	0.00	≥ -80 ≤ 20	PASS
Total Output Power (Chain0)	dBm	2.4751	2.5920	2.6494	---	---
(*1): included calculation of burst ratio						

Report No.: TMWK2305001504KR

W53

802.11n_W53_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5260	5300	5320	---	---
Channel Number	Ch.	52	60	64	---	---
Declaration Output Power	mW/MHz	1.841			≤ 10.000	PASS
Declaration Output Power	dBm/MHz	2.320	2.390	1.850	≤ 10.000	PASS
E.I.R.P.	dBm/MHz	8.321	8.390	7.849	≤ 10.000	PASS
Peak Antenna Gain (Chain0)	dBi	6			---	---
Tested Circuit Insertion Loss (Chain0)	dB	11.00			---	---
Tested Circuit Insertion Loss (RX_Chain0)	dB	1.00			---	---
RF Output Power						
802.11n_W53_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5260	5300	5320	---	---
Channel Number	Ch.	52	60	64	---	---
RF Output Power (Chain0) (*1)	mW/MHz	1.706	1.734	1.531	---	---
RF Output Power Tolerance (Chain0)	%	-7.33	-5.81	-16.84	≥ -80 ≤ 20	PASS
Total Output Power (Chain0)	dBm	2.3206	2.3902	1.8488	---	---
(*1): included calculation of burst ratio						

Report No.: TMWK2305001504KR

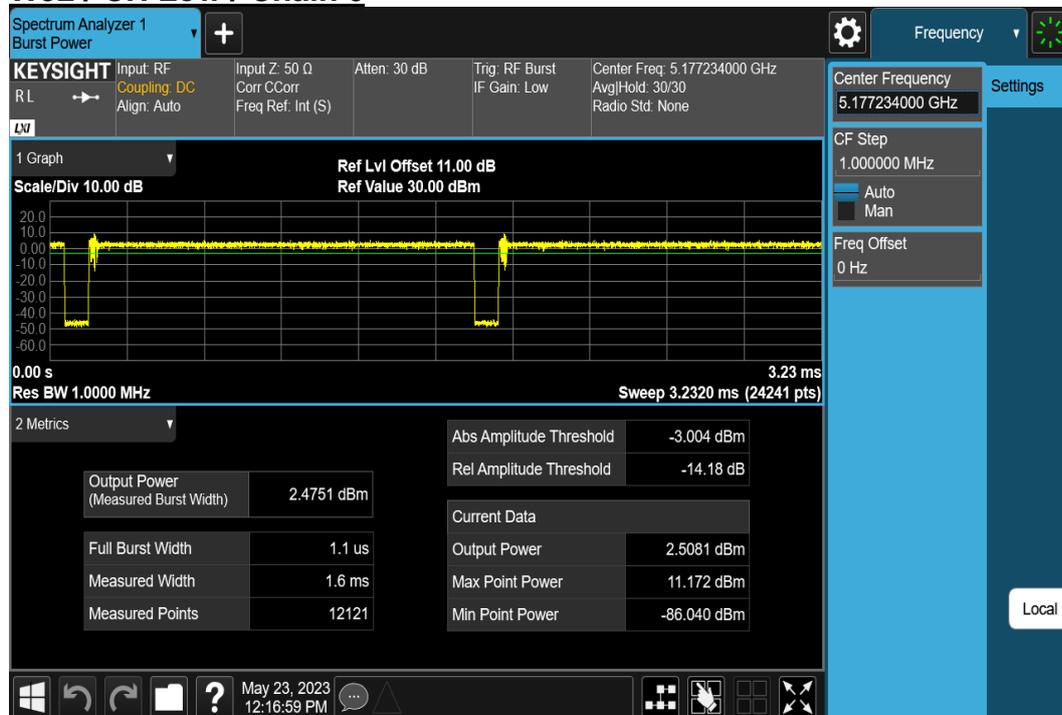
W56

802.11n_W56_20MHz	unit	---	---	---	Limit	Result	
Measurement Center Frequency	MHz	5500	5600	5720	---	---	
Channel Number	Ch.	100	120	144	---	---	
Declaration Output Power	mW/MHz	1.622			≤	10.000	PASS
Declaration Output Power	dBm/MHz	1.784	2.101	1.758	≤	10.000	PASS
E.I.R.P.	dBm/MHz	7.785	8.101	7.758	≤	16.990	PASS
Peak Antenna Gain (Chain0)	dBi	6			---	---	
Tested Circuit Insertion Loss (Chain0)	dB	11.00			---	---	
Tested Circuit Insertion Loss (RX_Chain0)	dB	1.00			---	---	
RF Output Power							
802.11n_W56_20MHz	unit	---	---	---	Limit	Result	
Measurement Center Frequency	MHz	5500	5600	5720	---	---	
Channel Number	Ch.	100	120	144	---	---	
RF Output Power (Chain0) (*1)	mW/MHz	1.508	1.622	1.499	---	---	
RF Output Power Tolerance (Chain0)	%	-7.03	0.00	-7.58	≥	-50	PASS
					≤	50	
Total Output Power (Chain0)	dBm	1.7851	2.1008	1.7583	---	---	
(*1): included calculation of burst ratio							

Report No.: TMWK2305001504KR

TEST PLOTS

W52 / CH Low / Chain 0



W52 / CH Mid / Chain 0



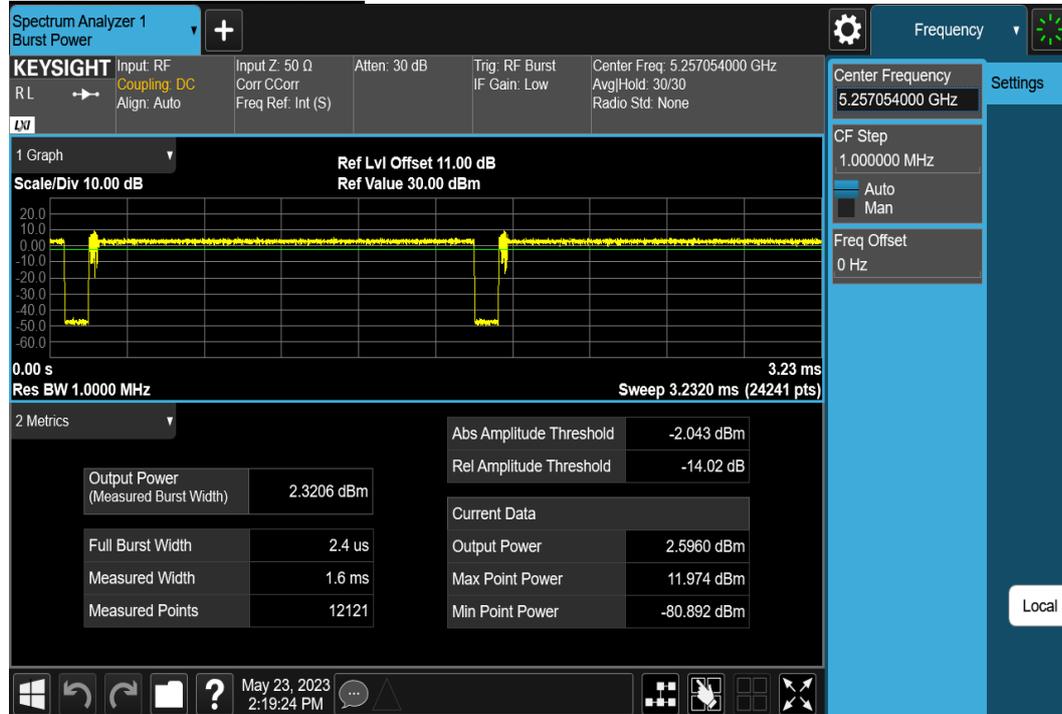
Report No.: TMWK2305001504KR

W52 / CH High / Chain 0

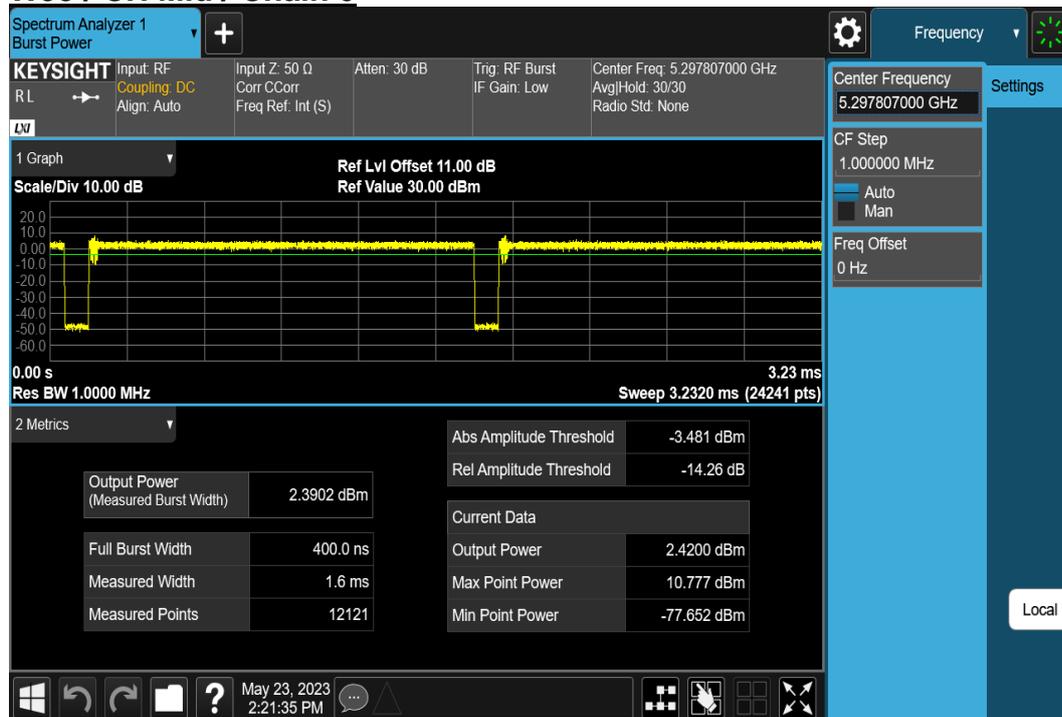


Report No.: TMWK2305001504KR

W53 / CH Low / Chain 0

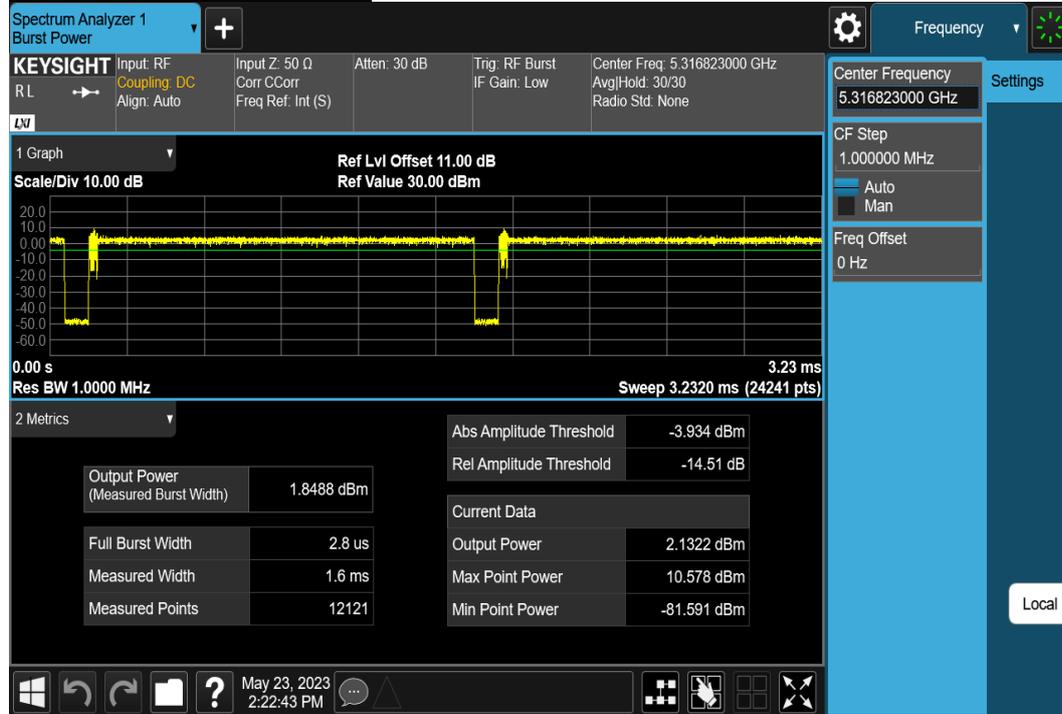


W53 / CH Mid / Chain 0



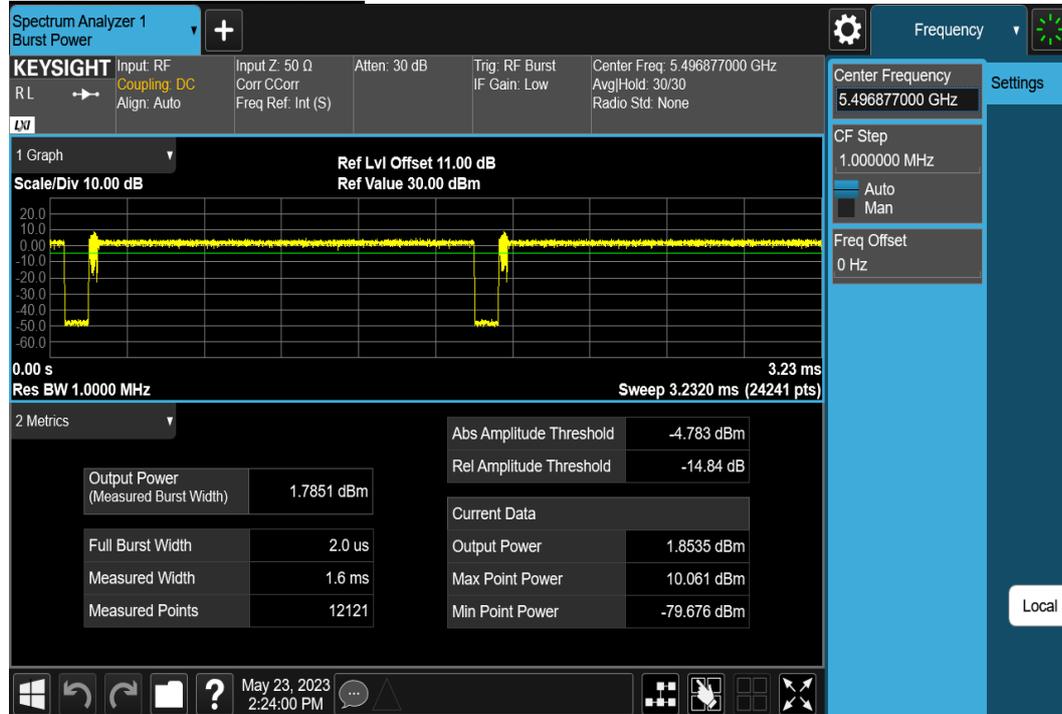
Report No.: TMWK2305001504KR

W53 / CH High / Chain 0

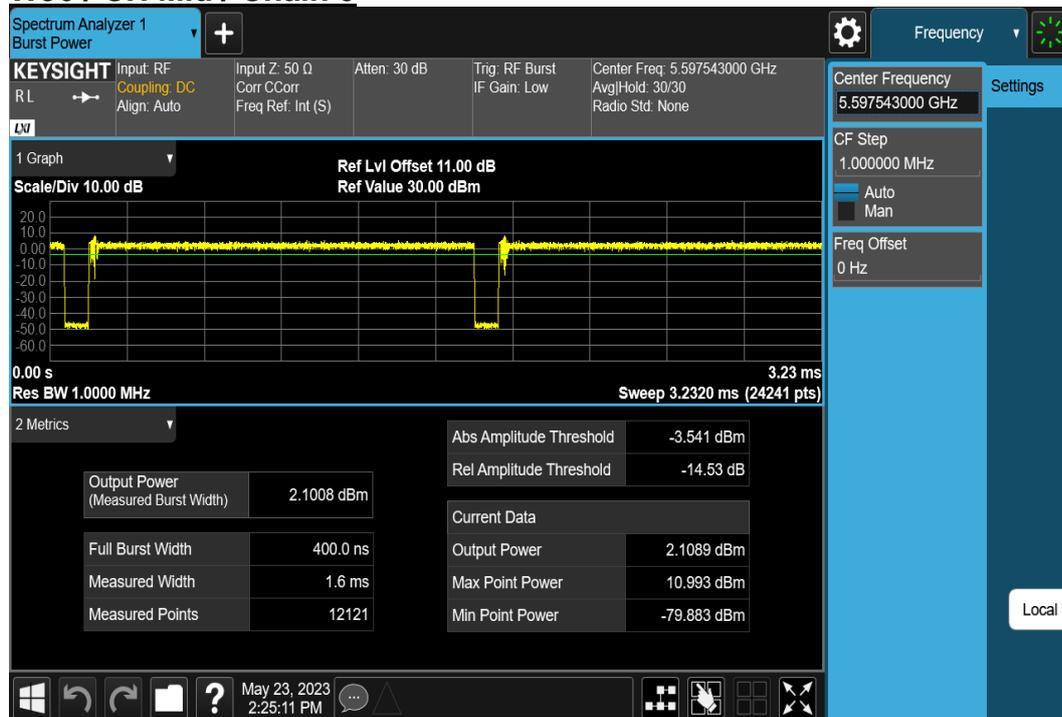


Report No.: TMWK2305001504KR

W56 / CH Low / Chain 0



W56 / CH Mid / Chain 0



Report No.: TMWK2305001504KR

W56 / CH High / Chain 0



Report No.: TMWK2305001504KR

7.2 FREQUENCY TOLERANCE

TEST RESULT

W52

Frequency Tolerance						
802.11n_W52_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5180	5220	5240	---	---
Channel Number	Ch.	36	44	48	---	---
Reading Frequency (Chain0)	MHz	5180.014	5220.031	5240.032	---	PASS
Frequency Tolerance (Chain0)	ppm	2.7027	5.9387	6.1069	±20	

W53

Frequency Tolerance						
802.11n_W53_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5260	5300	5320	---	---
Channel Number	Ch.	52	60	64	---	---
Reading Frequency (Chain0)	MHz	5260.032	5300.034	5320.032	---	PASS
Frequency Tolerance (Chain0)	ppm	6.0837	6.4151	6.0150	±20	

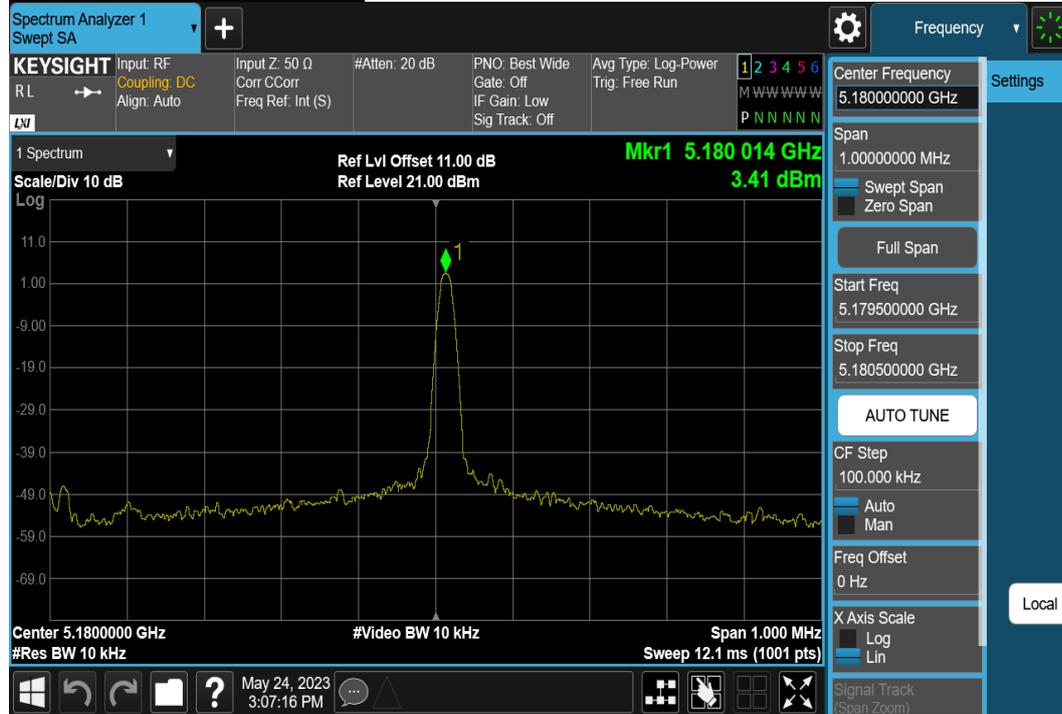
W56

Frequency Tolerance						
802.11n_W56_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5500	5600	5720	---	---
Channel Number	Ch.	100	120	144	---	---
Reading Frequency (Chain0)	MHz	5500.033	5600.035	5720.035	---	PASS
Frequency Tolerance (Chain0)	ppm	6.0000	6.2500	6.1189	±20	

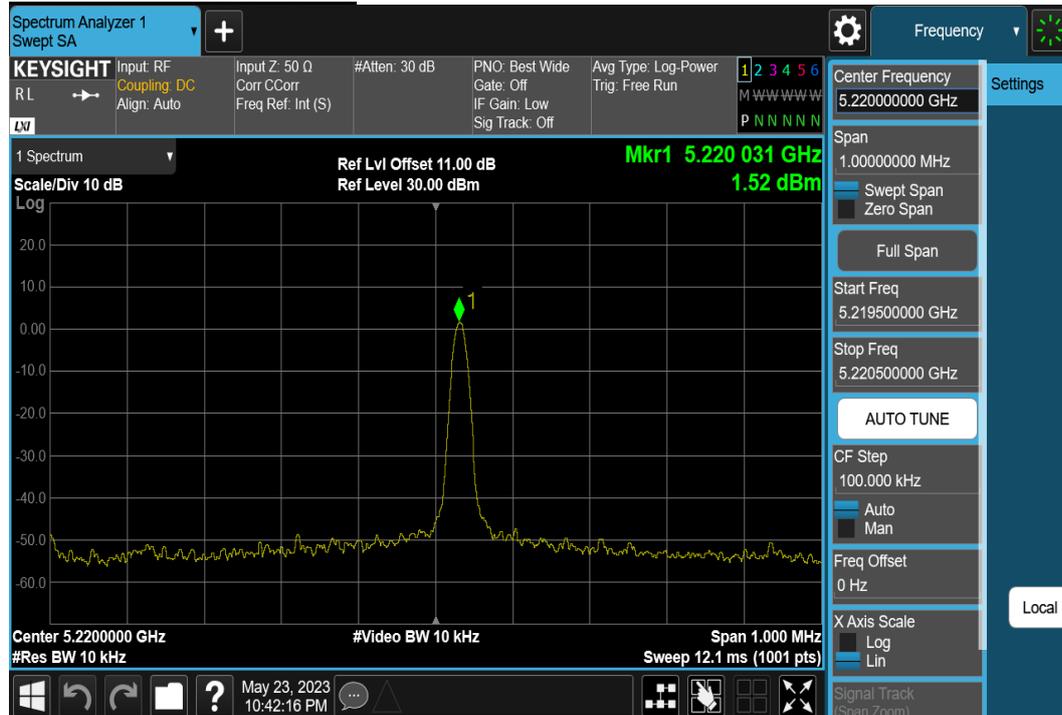
Report No.: TMWK2305001504KR

TEST PLOTS

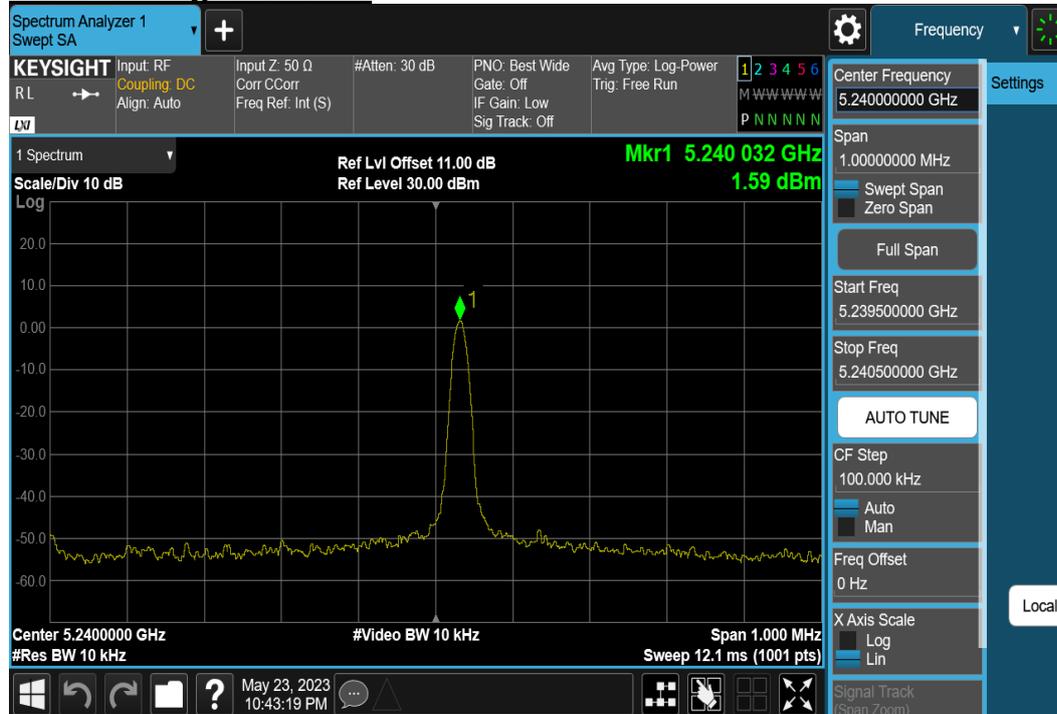
W52 / CH Low / Chain 0



W52 / CH Mid / Chain 0

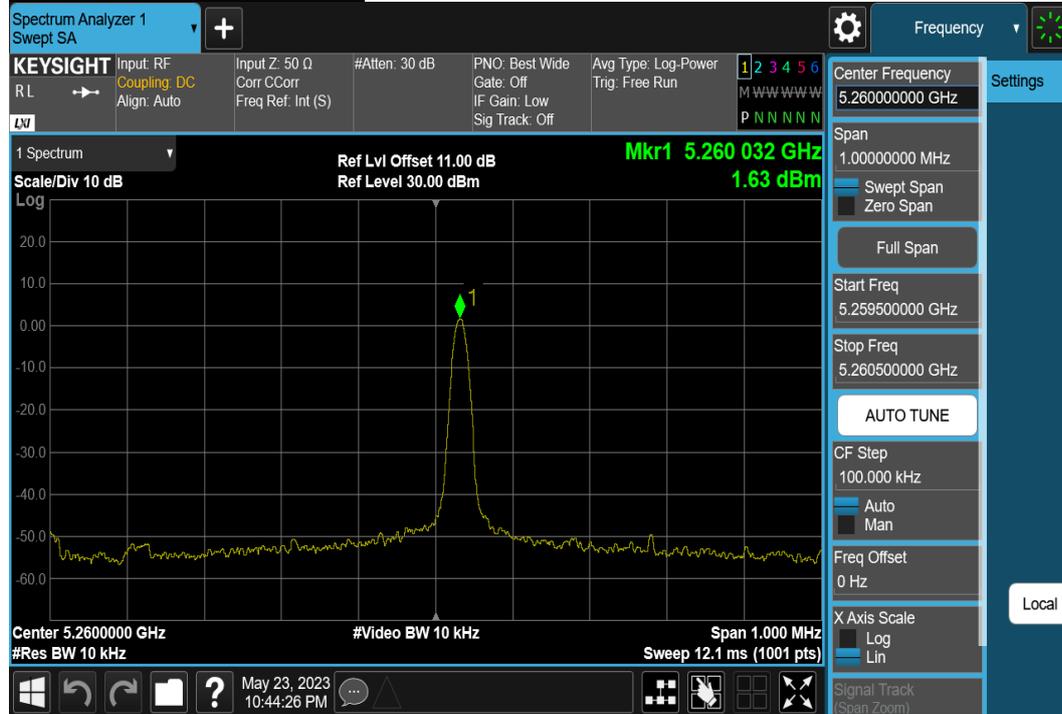


W52 / CH High / Chain 0

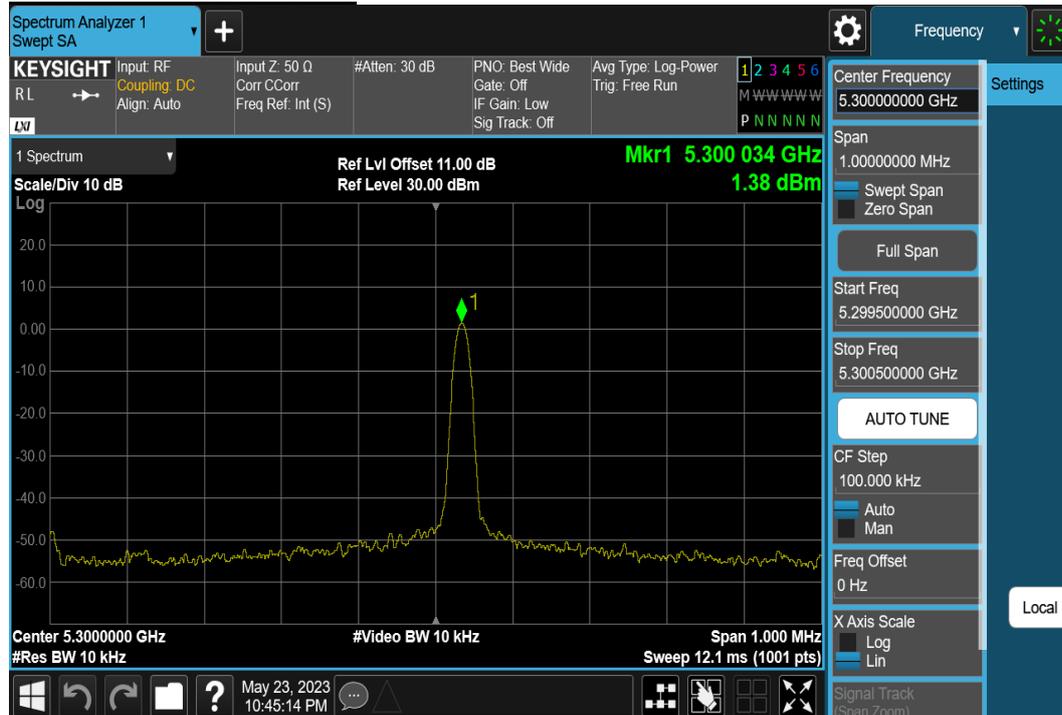


Report No.: TMWK2305001504KR

W53 / CH Low / Chain 0

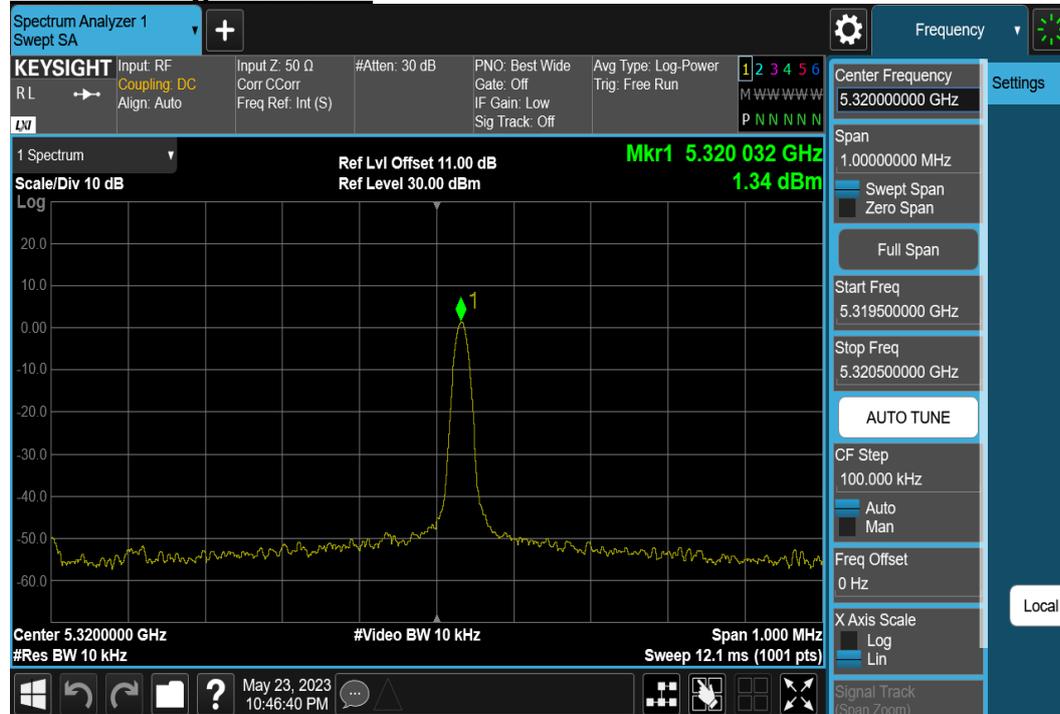


W53 / CH Mid / Chain 0



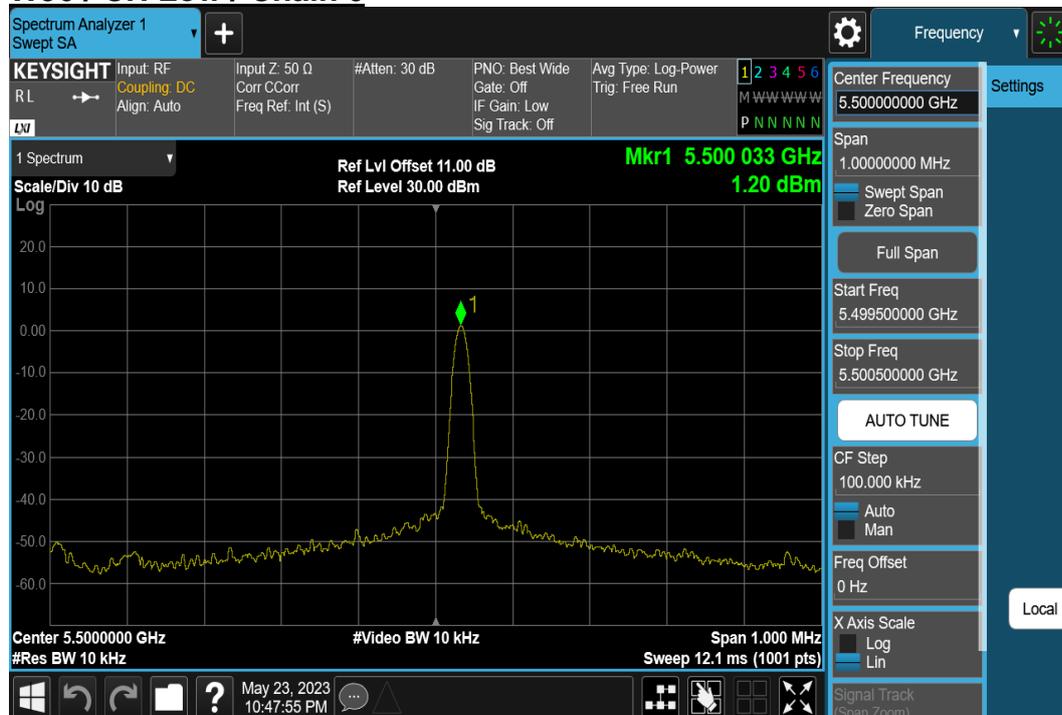
Report No.: TMWK2305001504KR

W53 / CH High / Chain 0

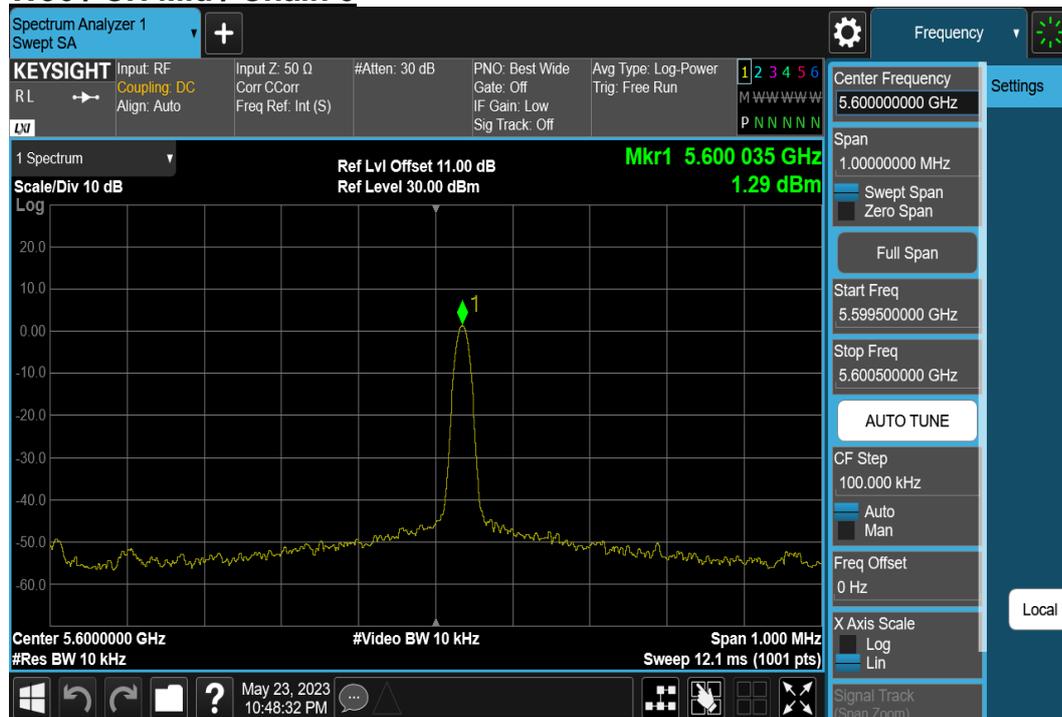


Report No.: TMWK2305001504KR

W56 / CH Low / Chain 0



W56 / CH Mid / Chain 0



Report No.: TMWK2305001504KR

W56 / CH High / Chain 0



Report No.: TMWK2305001504KR

7.3 OCCUPIED BANDWIDTH (99%)

TEST RESULT

W52

Occupied Bandwidth						
802.11n_W52_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5180	5220	5240	---	---
Channel Number	Ch.	36	44	48	---	---
Occupied Bandwidth (Chain0)	MHz	17.669	17.643	17.637	≤ 20	PASS

W53

Occupied Bandwidth						
802.11n_W53_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5260	5300	5320	---	---
Channel Number	Ch.	52	60	64	---	---
Occupied Bandwidth (Chain0)	MHz	17.645	17.659	17.648	≤ 20	PASS

W56

Occupied Bandwidth						
802.11n_W56_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5500	5600	5720	---	---
Channel Number	Ch.	100	120	144	---	---
Occupied Bandwidth (Chain0)	MHz	17.666	17.681	17.660	≤ 20	PASS

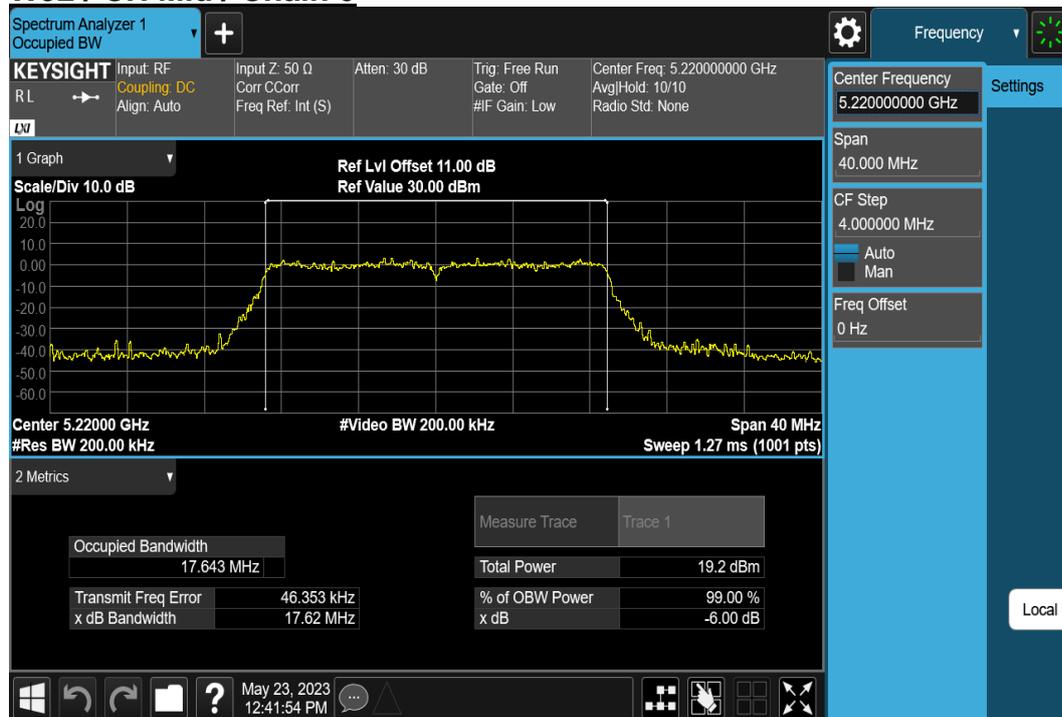
Report No.: TMWK2305001504KR

TEST PLOTS

W52 / CH Low / Chain 0

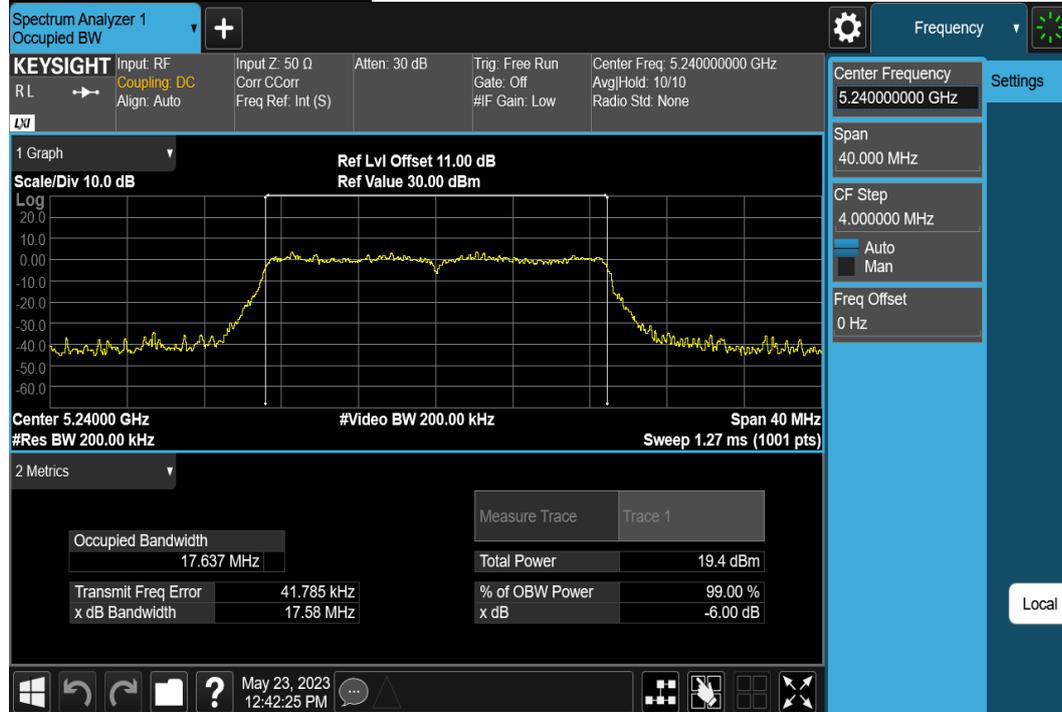


W52 / CH Mid / Chain 0



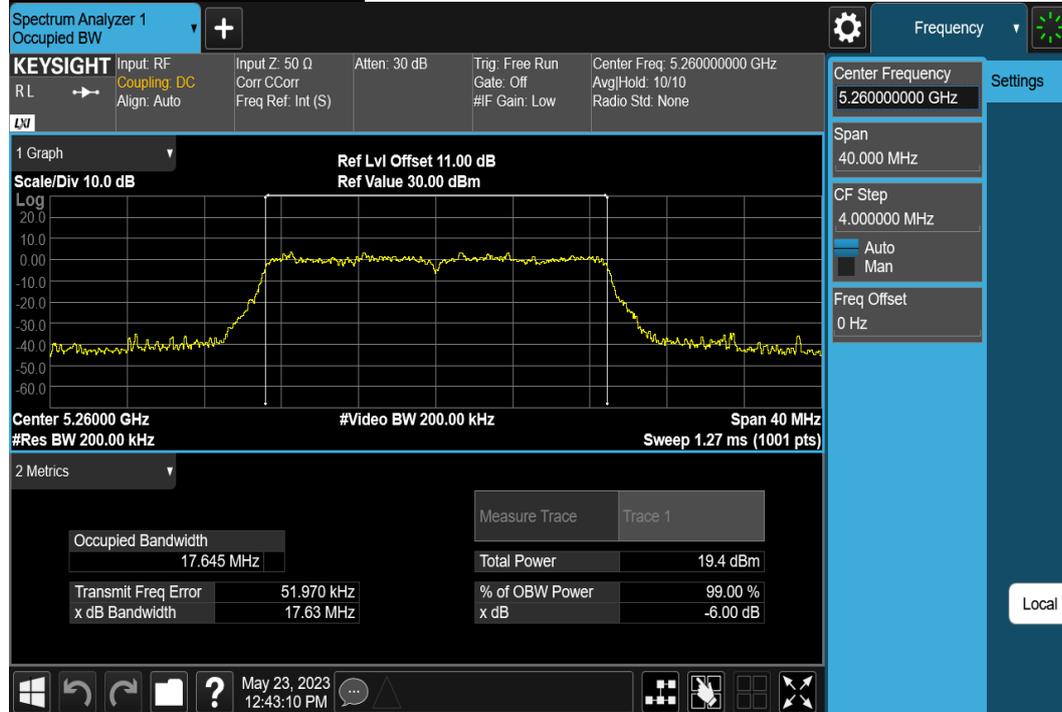
Report No.: TMWK2305001504KR

W52 / CH High / Chain 0

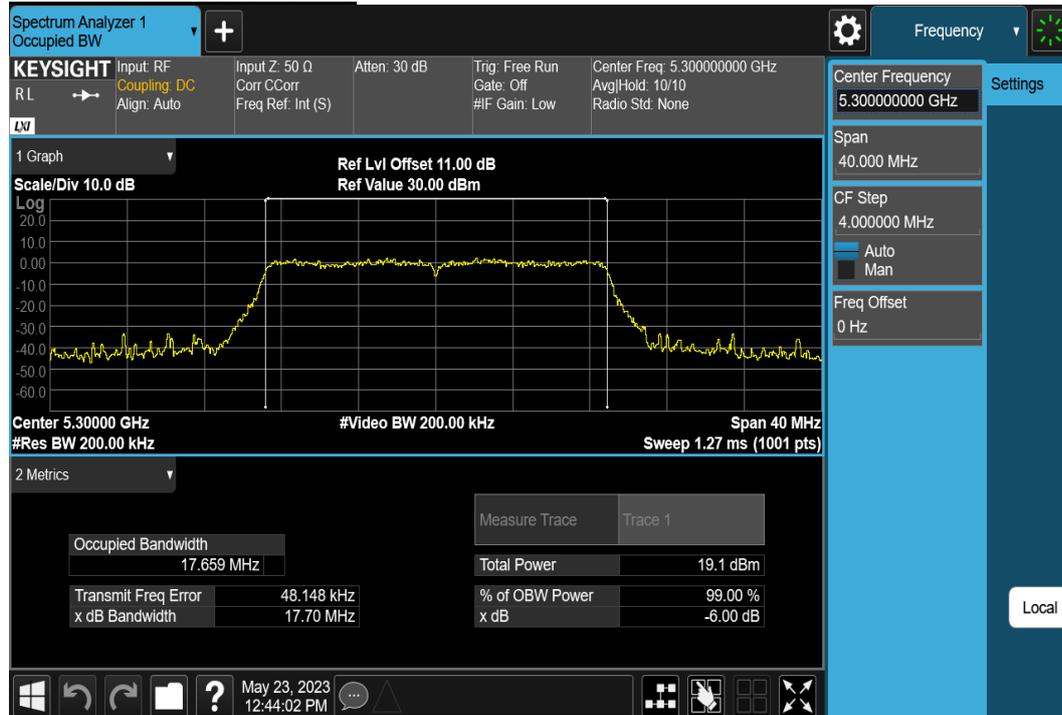


Report No.: TMWK2305001504KR

W53 / CH Low / Chain 0



W53 / CH Mid / Chain 0



Report No.: TMWK2305001504KR

W53 / CH High / Chain 0

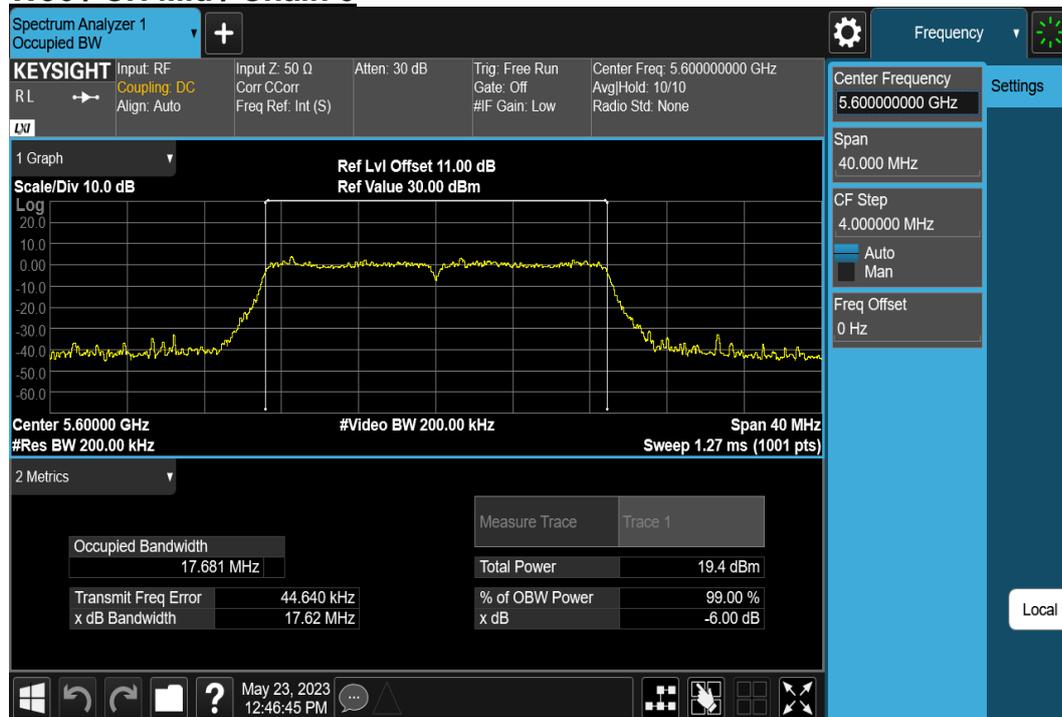


Report No.: TMWK2305001504KR

W56 / CH Low / Chain 0

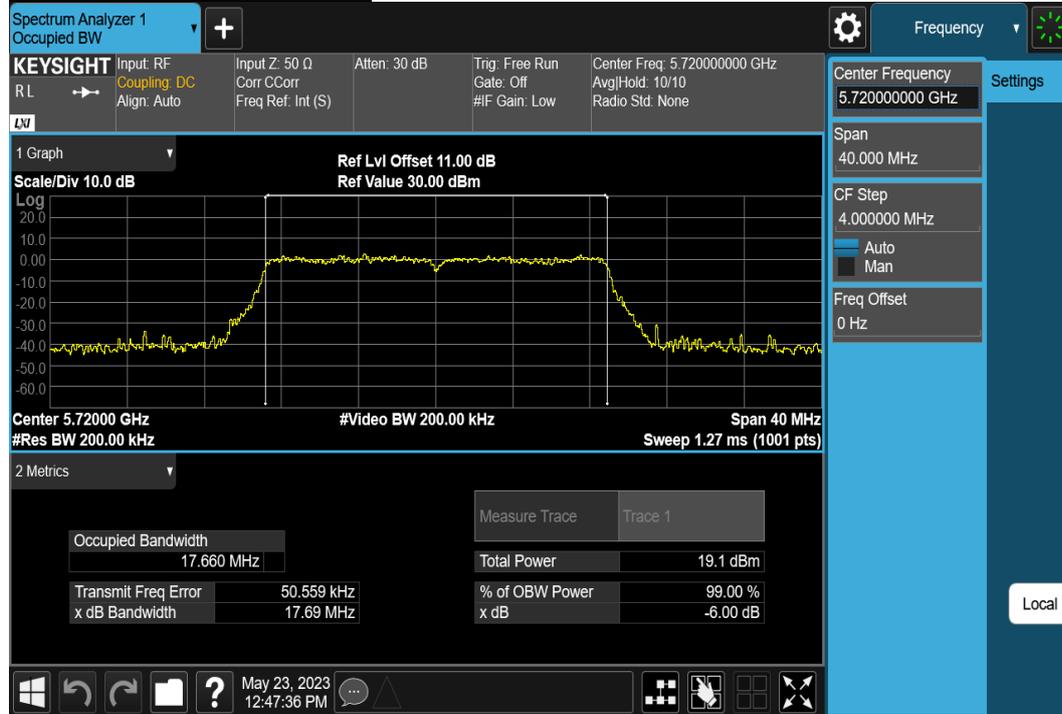


W56 / CH Mid / Chain 0



Report No.: TMWK2305001504KR

W56 / CH High / Chain 0



7.4 ADJACENT CHANNEL LEAKAGE POWER

TEST RESULT

W52

Adjacent Channel Leakage Power						
802.11n_W52_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5180	5220	5240	---	---
Channel Number	Ch.	36	44	48	---	---
CF-40MHz (± 10 MHz)(Chain0)	dBc	-46.21	-46.86	-46.89	\leq -40	PASS
CF-20MHz (± 10 MHz)(Chain0)	dBc	-41.43	-41.69	-41.40	\leq -25	PASS
CF+20MHz (± 10 MHz)(Chain0)	dBc	-40.96	-40.77	-41.41	\leq -25	PASS
CF+40MHz (± 10 MHz)(Chain0)	dBc	-46.46	-47.36	-47.41	\leq -40	PASS

W53

Adjacent Channel Leakage Power						
802.11n_W53_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5260	5300	5320	---	---
Channel Number	Ch.	52	60	64	---	---
CF-40MHz (± 10 MHz)(Chain0)	dBc	-47.17	-47.26	-47.25	\leq -40	PASS
CF-20MHz (± 10 MHz)(Chain0)	dBc	-42.20	-41.93	-42.49	\leq -25	PASS
CF+20MHz (± 10 MHz)(Chain0)	dBc	-40.83	-41.77	-41.08	\leq -25	PASS
CF+40MHz (± 10 MHz)(Chain0)	dBc	-47.91	-47.67	-47.63	\leq -40	PASS

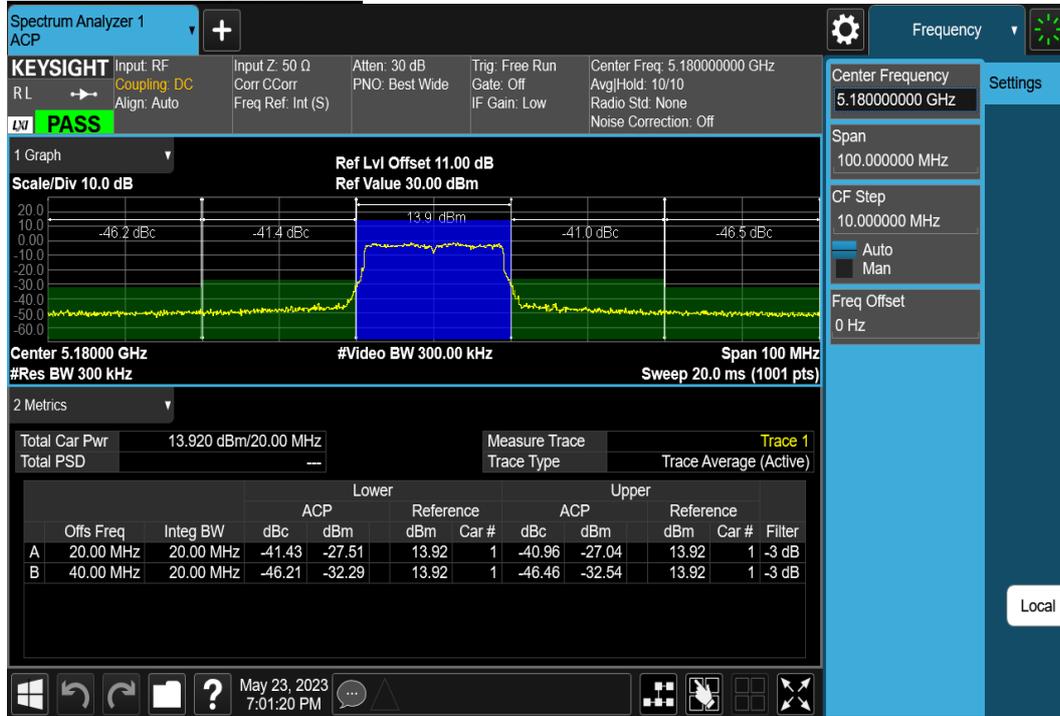
W56

Adjacent Channel Leakage Power						
802.11n_W56_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5500	5600	5720	---	---
Channel Number	Ch.	100	120	144	---	---
CF-40MHz (± 10 MHz)(Chain0)	dBc	-47.15	-47.27	-46.64	\leq -40	PASS
CF-20MHz (± 10 MHz)(Chain0)	dBc	-41.60	-41.29	-41.56	\leq -25	PASS
CF+20MHz (± 10 MHz)(Chain0)	dBc	-40.93	-40.10	-40.79	\leq -25	PASS
CF+40MHz (± 10 MHz)(Chain0)	dBc	-46.49	-46.67	-46.34	\leq -40	PASS

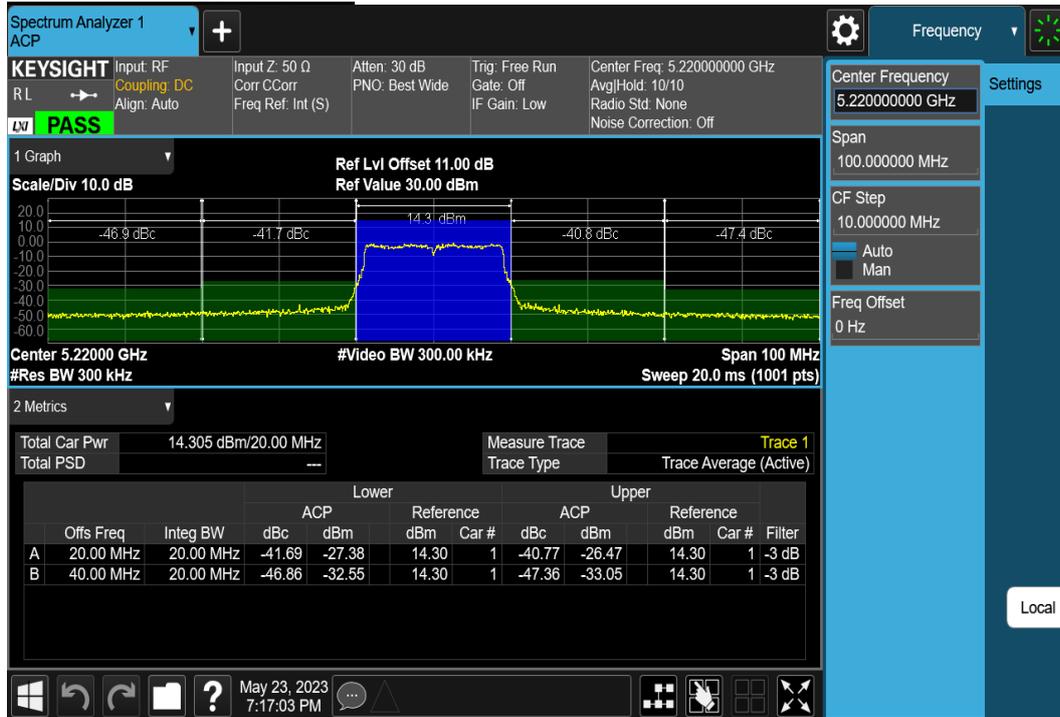
Report No.: TMWK2305001504KR

TEST PLOTS

W52 / CH Low / Chain 0

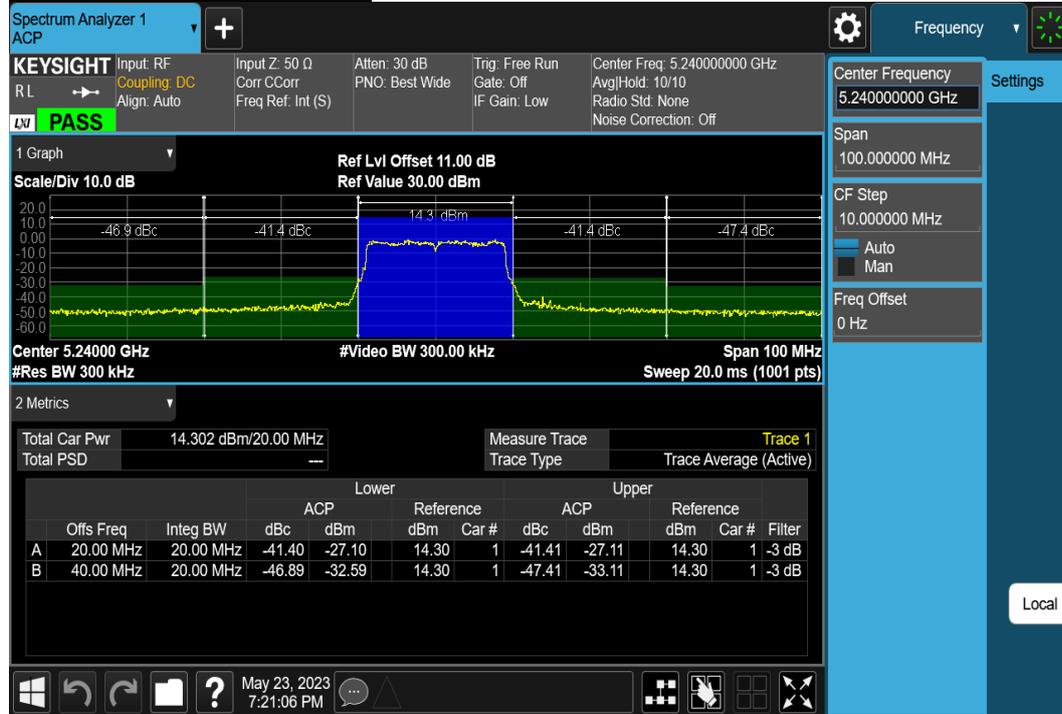


W52 / CH Mid / Chain 0



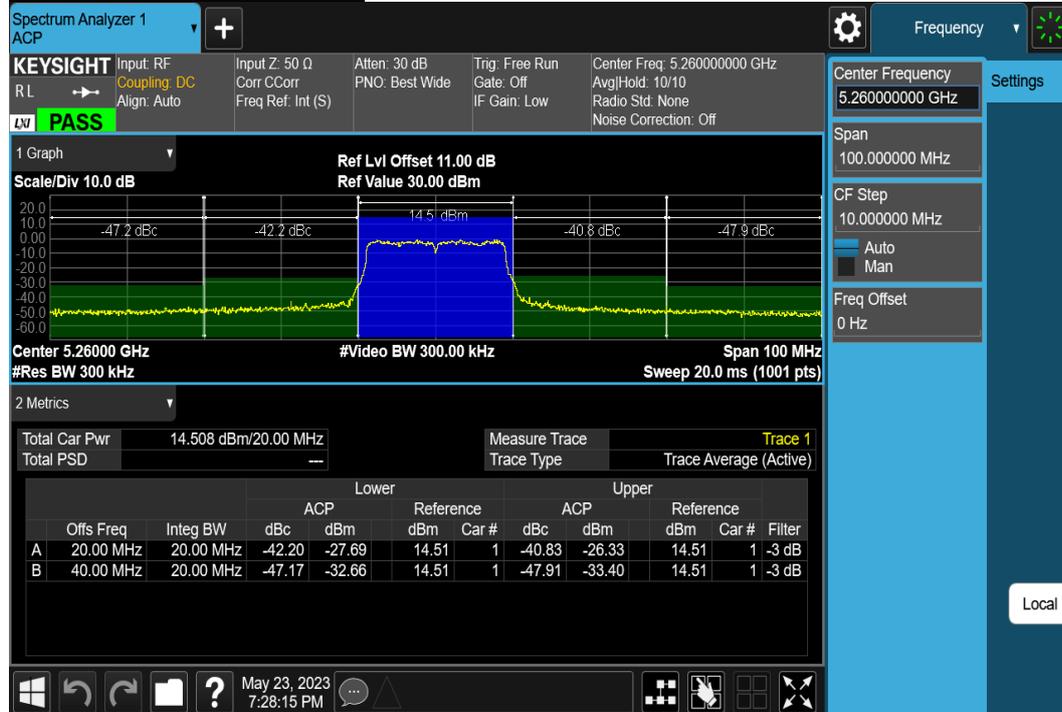
Report No.: TMWK2305001504KR

W52 / CH High / Chain 0

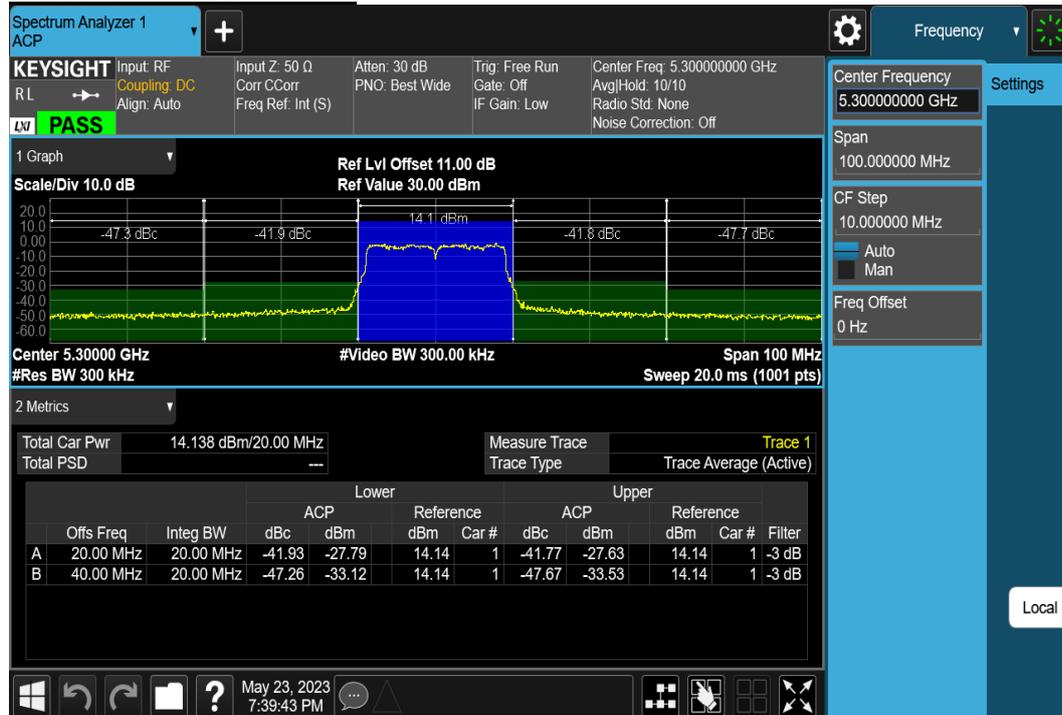


Report No.: TMWK2305001504KR

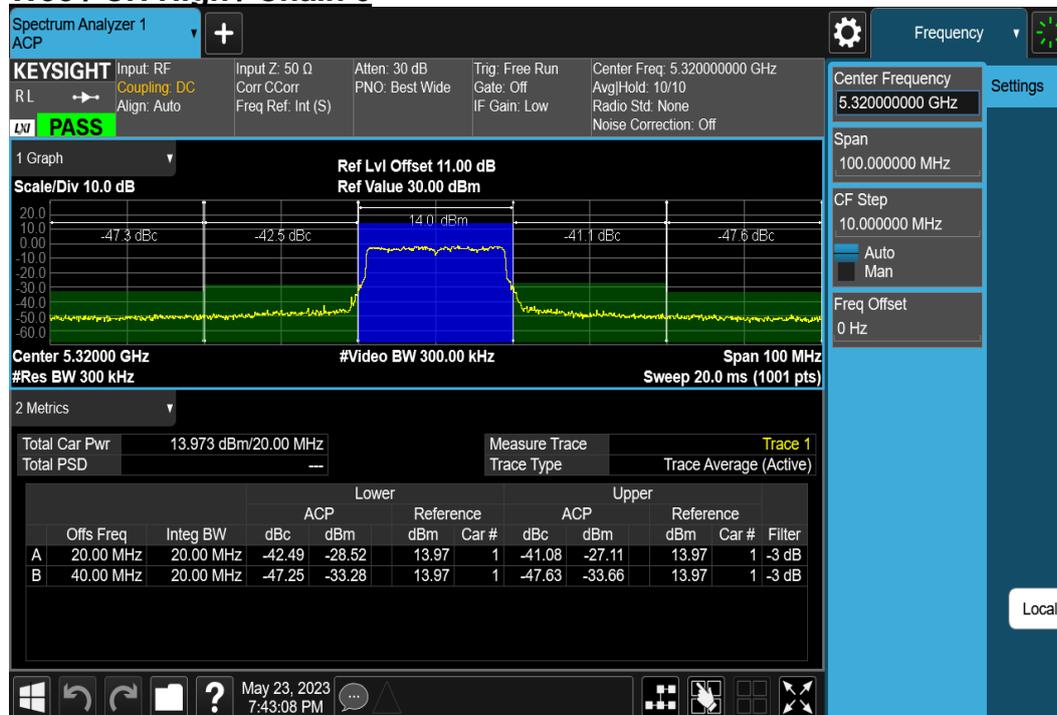
W53 / CH Low / Chain 0



W53 / CH Mid / Chain 0

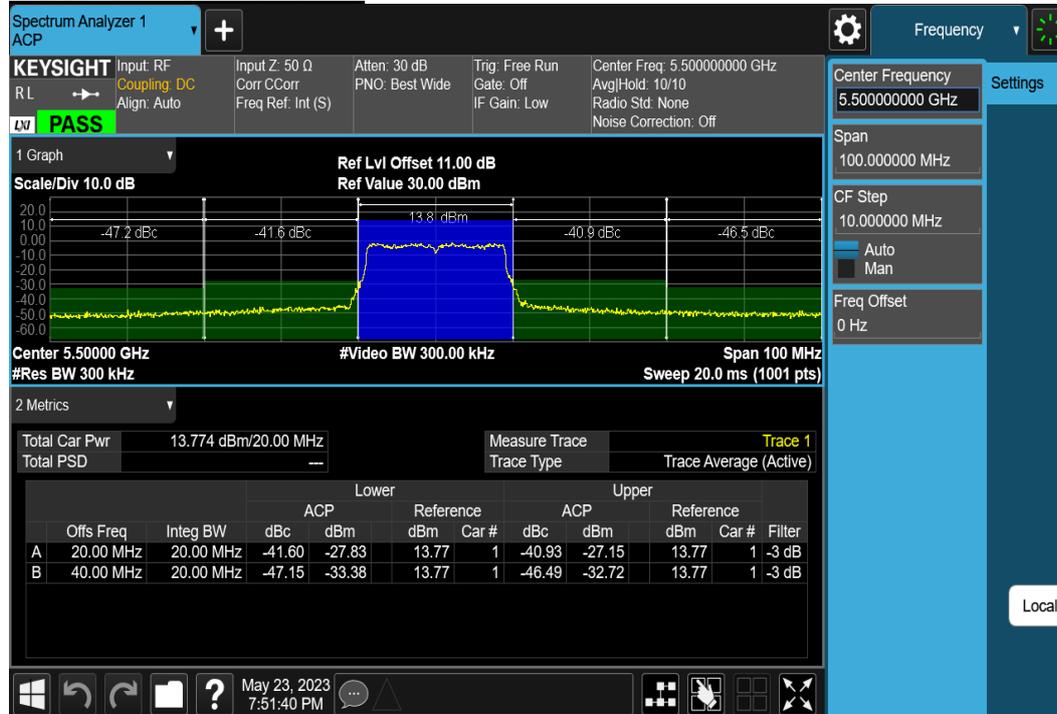


W53 / CH High / Chain 0



Report No.: TMWK2305001504KR

W56 / CH Low / Chain 0

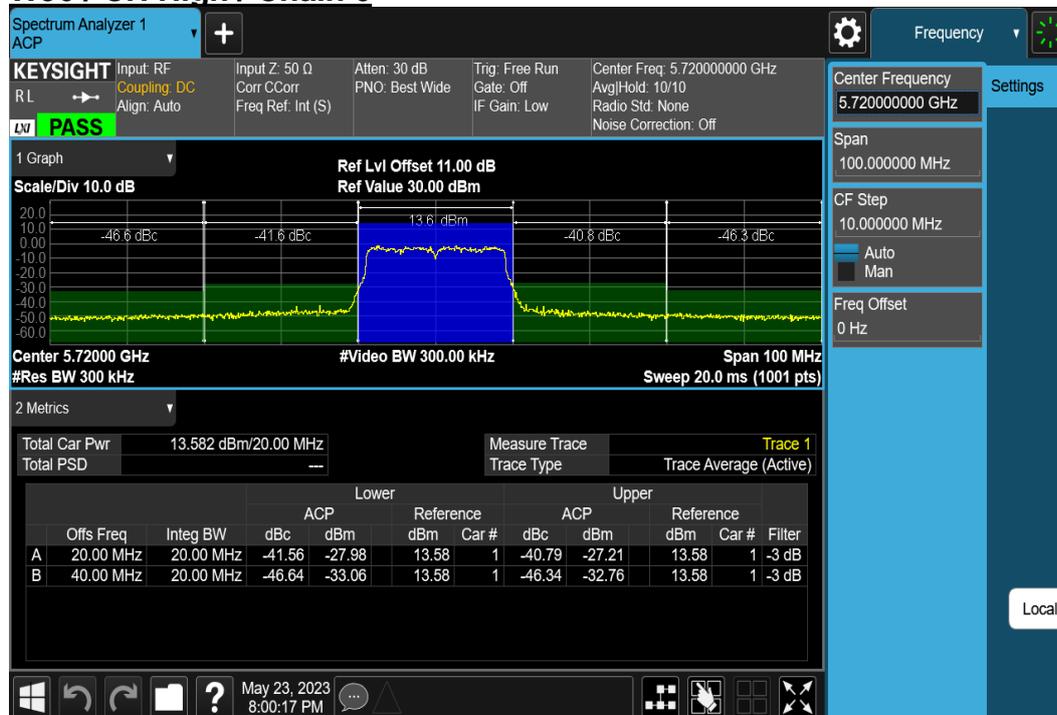


W56 / CH Mid / Chain 0



Report No.: TMWK2305001504KR

W56 / CH High / Chain 0



Report No.: TMWK2305001504KR

7.5 OUT-BAND LEAKAGE POWER & UNWANTED EMISSION STRENGTH

TEST RESULT

W52

Unwanted Emission Strength						
802.11n_W52_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5180	5220	5240	---	---
Channel Number	Ch.	36	44	48	---	---
30 ~ 5142MHz(Chain 0)	μW/MHz	1.2677	1.3274	1.6827	≤ 2.500	PASS
	MHz	3842.1	5023.3	3813.5		---
5142 ~ 5150MHz(Chain 0)	μW/MHz	1.7824	1.1033	1.1891	≤ 15.000	PASS
	MHz	5148.06	5146.80	5143.00		---
5250 ~ 5251MHz(Chain 0)	μW/MHz	1.2685	3.0130	2.5177	≤ 100 ~ 1000	PASS
	MHz	5250.906	5250.923	5250.868		---
5251 ~ 5260MHz(Chain 0)	μW/MHz	0.7509	1.7976	0.5297	≤ 15.85 ~ 100	PASS
	MHz	5259.90	5259.60	5251.56		---
5260 ~ 5266.7MHz(Chain 0)	μW/MHz	0.7824	1.1495	0.1288	≤ 2.49 ~ 15.85	PASS
	MHz	5266.27	5266.58	5266.58		---
5266.7 ~ 26000MHz(Chain 0)	μW/MHz	0.2213	0.2114	0.2178	≤ 2.500	PASS
	MHz	25710	25685	25748		---

W53

Unwanted Emission Strength						
802.11n_W53_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5260	5300	5320	---	---
Channel Number	Ch.	52	60	64	---	---
30 ~ 5233.3MHz(Chain 0)	μW/MHz	1.5206	1.5417	1.3900	≤ 2.500	PASS
	MHz	5225.2	3837.3	30.2		---
5233.3 ~ 5240MHz(Chain 0)	μW/MHz	0.1355	0.8117	0.6978	≤ 2.49 ~ 15.85	PASS
	MHz	5234.07	5233.50	5233.40		---
5240 ~ 5249MHz(Chain 0)	μW/MHz	0.8590	0.9264	0.8760	15.85 ~ 100	PASS
	MHz	5248.74	5240.50	5240.64		---
5249 ~ 5250MHz(Chain 0)	μW/MHz	3.0690	1.0937	1.0787	≤ 100 ~ 1000	PASS
	MHz	5249.489	5249.011	5249.037		---
5350 ~ 26000MHz(Chain 0)	μW/MHz	0.2312	0.2128	0.2056	≤ 2.500	PASS
	MHz	25701	25722	25713		---

W56

Unwanted Emission Strength						
802.11n_W56_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5500	5600	5720	---	---
Channel Number	Ch.	100	120	144	---	---
30 ~ 5460MHz(Chain 0)	μW/MHz	1.5776	1.5276	1.3836	≤ 2.500	PASS
	MHz	5097	5168	3793		---
5460 ~ 5470MHz(Chain 0)	μW/MHz	1.7861	0.6320	0.9209	≤ 12.500	PASS
	MHz	5469.11	5465.21	5463.91		---
5745 ~ 5765MHz(Chain 0)	μW/MHz	0.9745	0.9382	2.5978	≤ 12.500	PASS
	MHz	5755.57	5758.66	5746.76		---
5765 ~ 26000MHz(Chain 0)	μW/MHz	0.2301	0.2051	0.2089	≤ 2.500	PASS
	MHz	25705	25795	25832		---

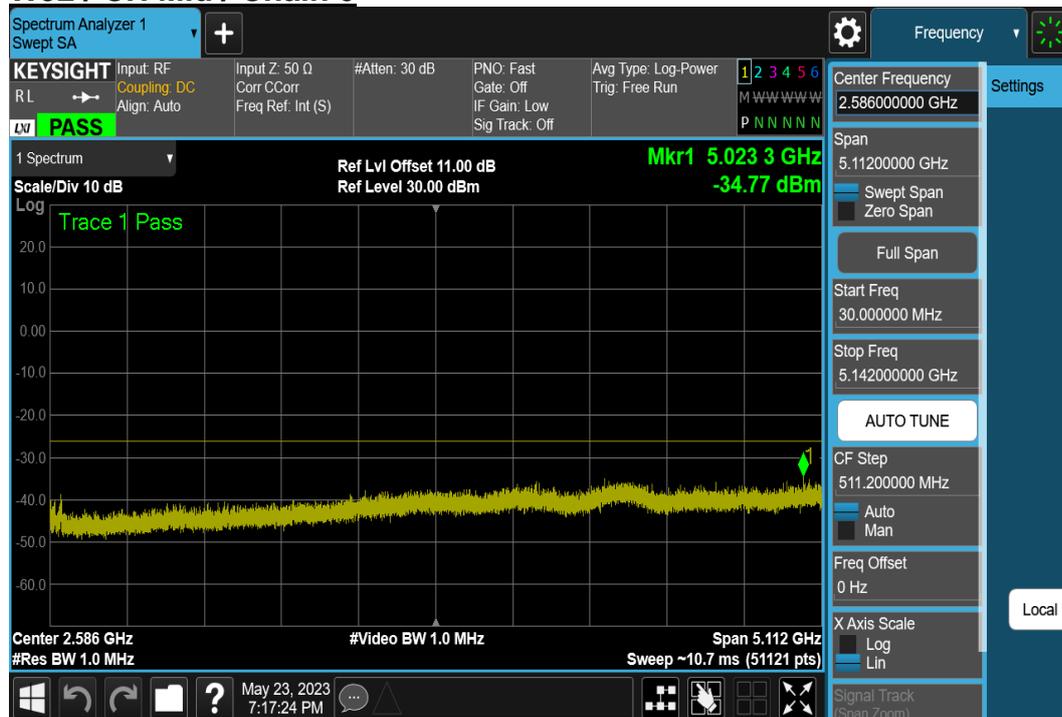
Report No.: TMWK2305001504KR

TEST PLOTS

(1) 30MHz ~ 5142MHz
W52 / CH Low / Chain 0



W52 / CH Mid / Chain 0



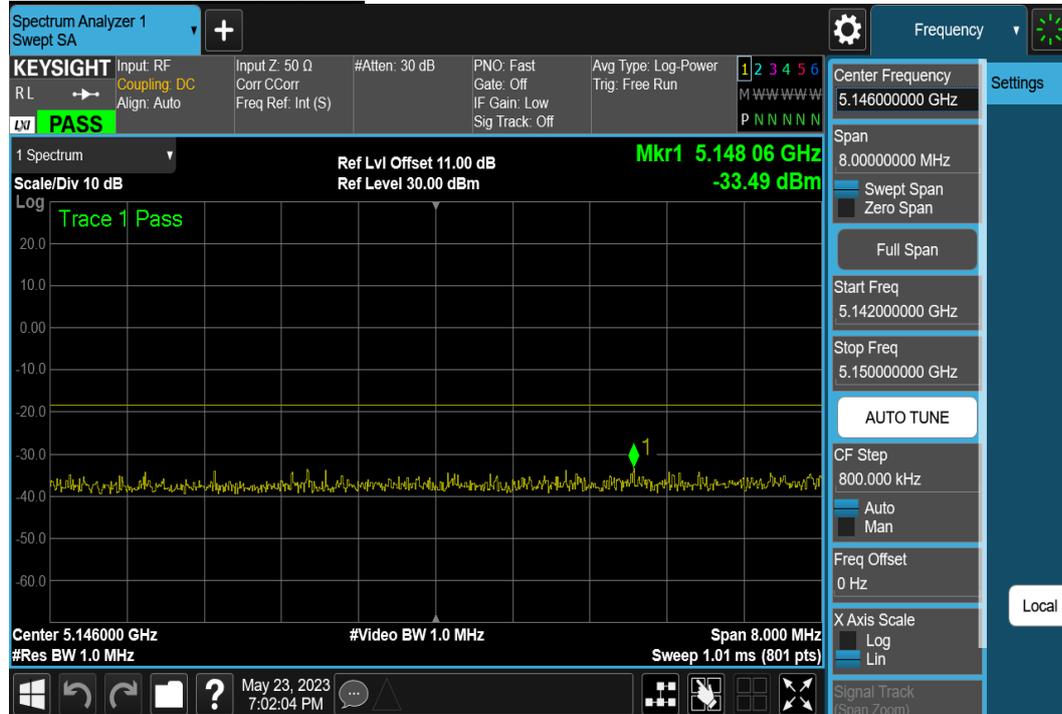
Report No.: TMWK2305001504KR

W52 / CH High / Chain 0

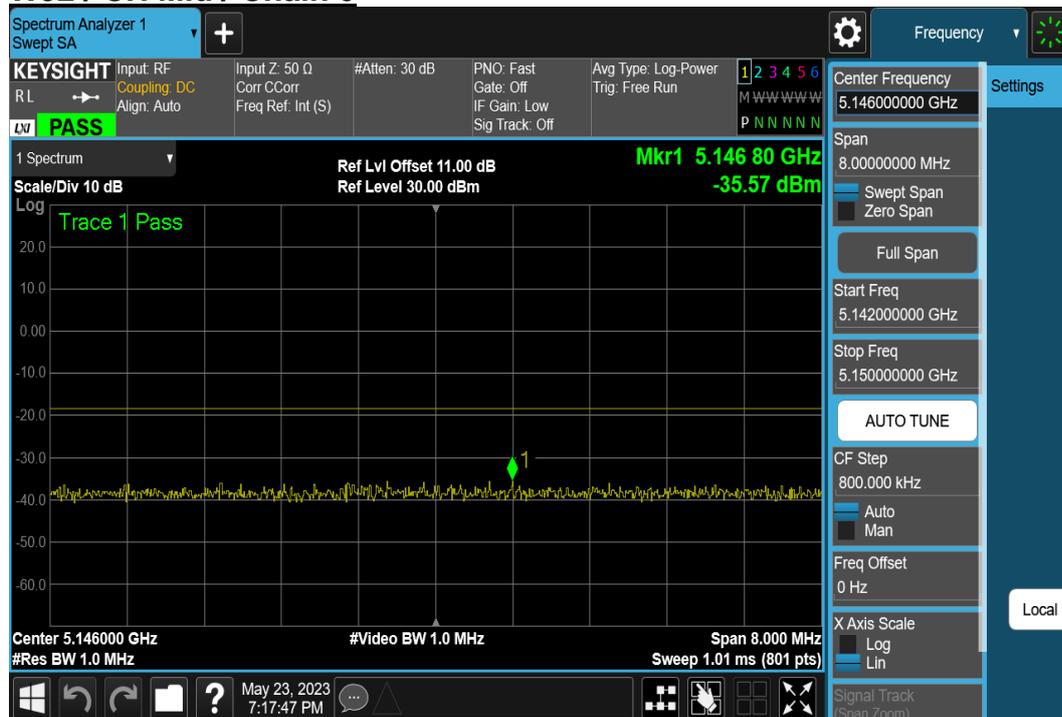


Report No.: TMWK2305001504KR

(2) 5142MHz ~5150MHz W52 / CH Low / Chain 0

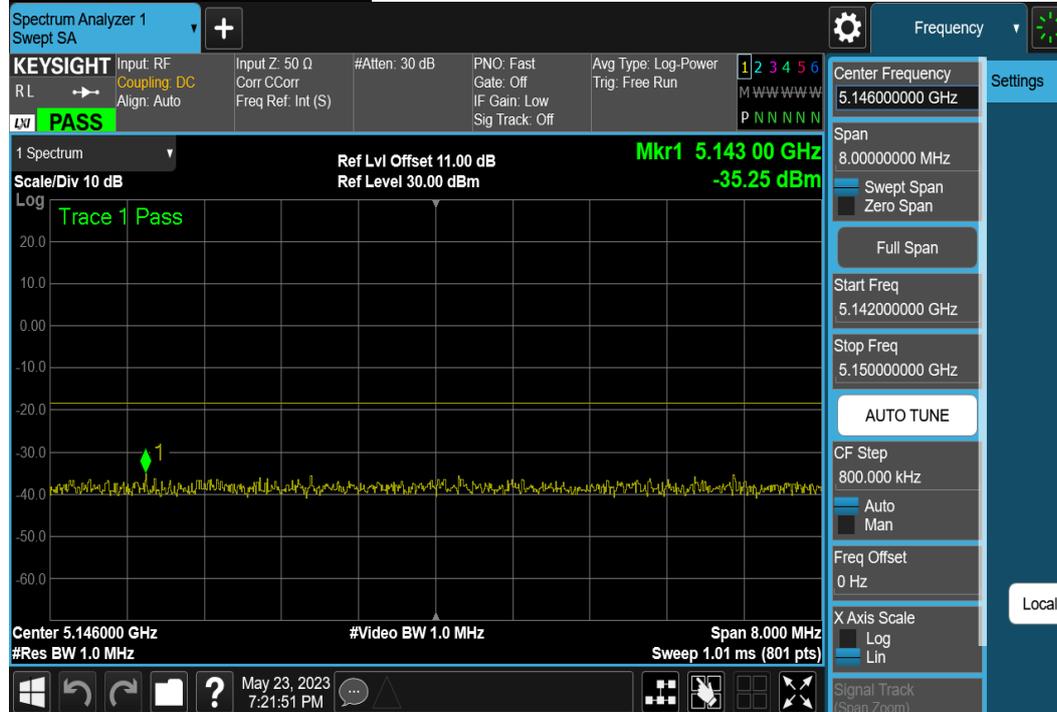


W52 / CH Mid / Chain 0



Report No.: TMWK2305001504KR

W52 / CH High / Chain 0

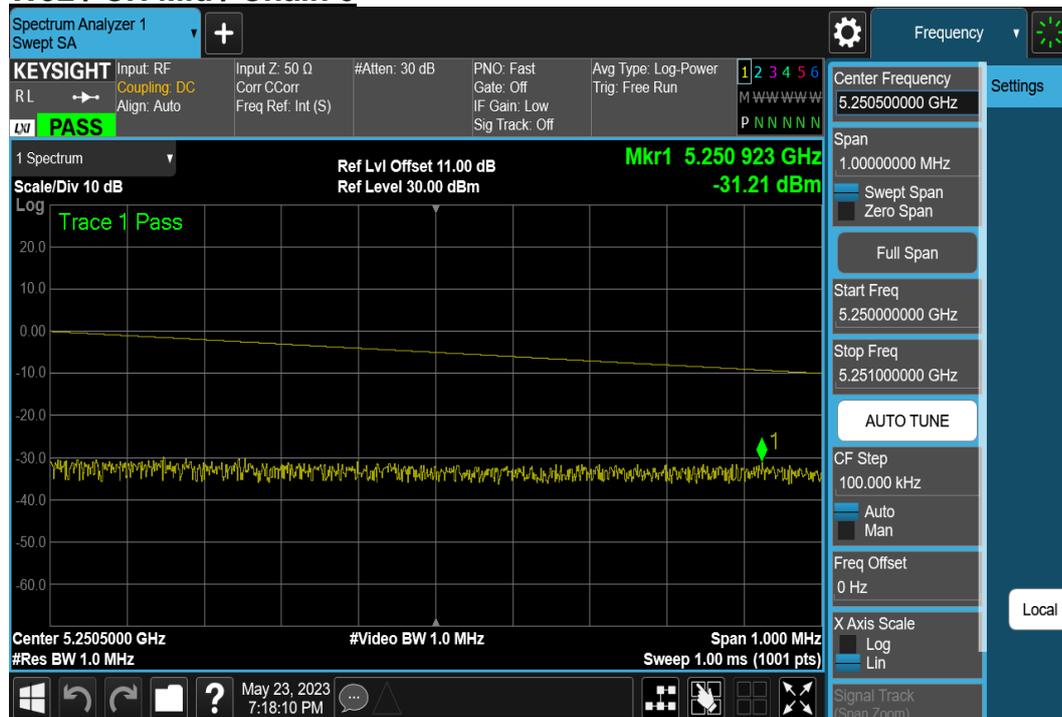


Report No.: TMWK2305001504KR

(3) 5250MHz ~ 5251MHz W52 / CH Low / Chain 0

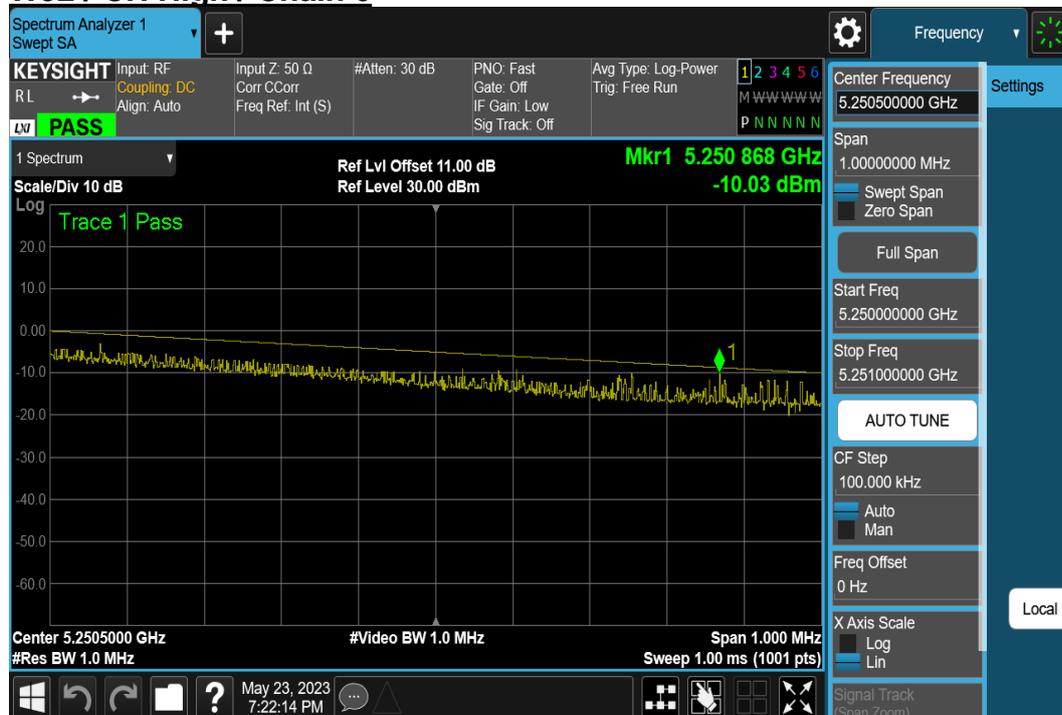


W52 / CH Mid / Chain 0

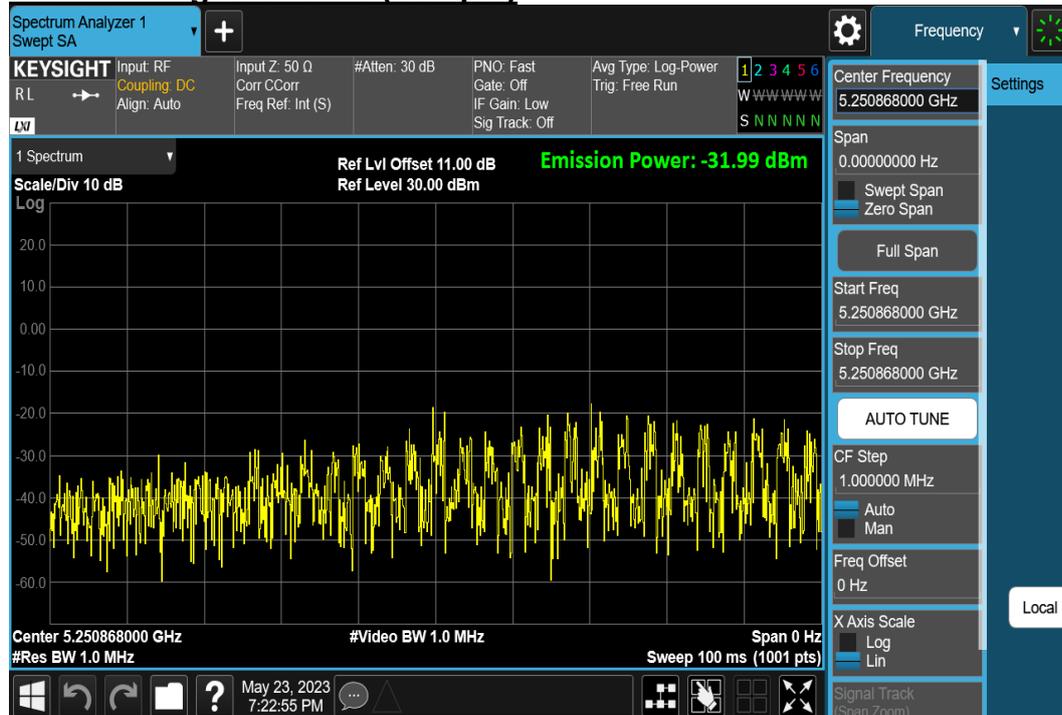


Report No.: TMWK2305001504KR

W52 / CH High / Chain 0

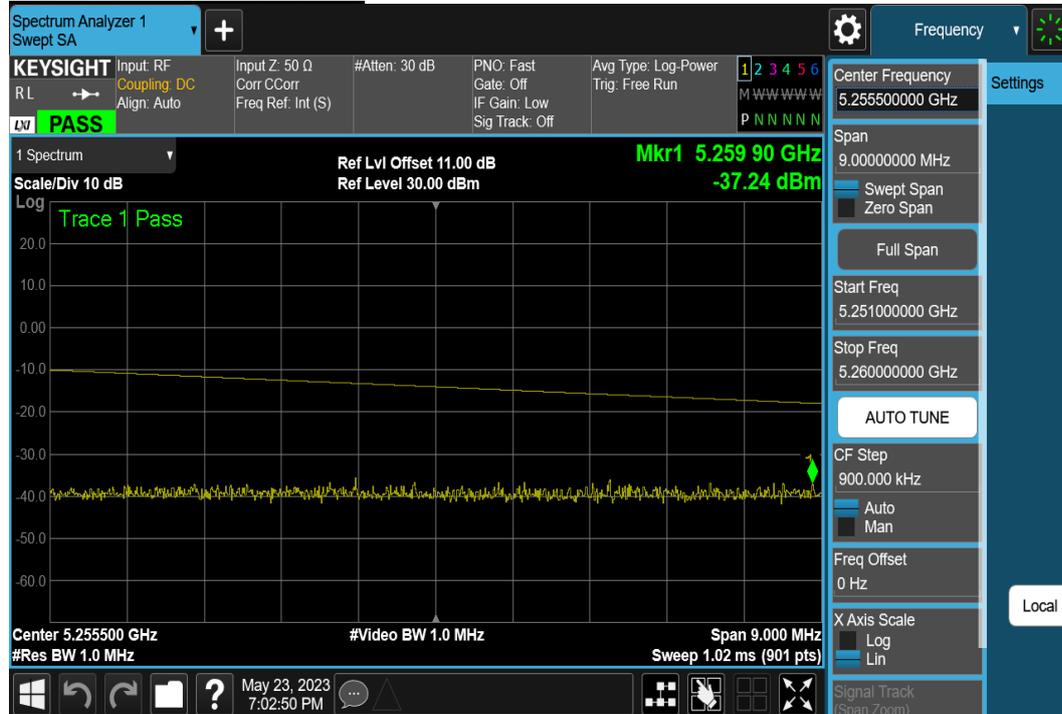


W52 / CH High / Chain 0 (Sample)

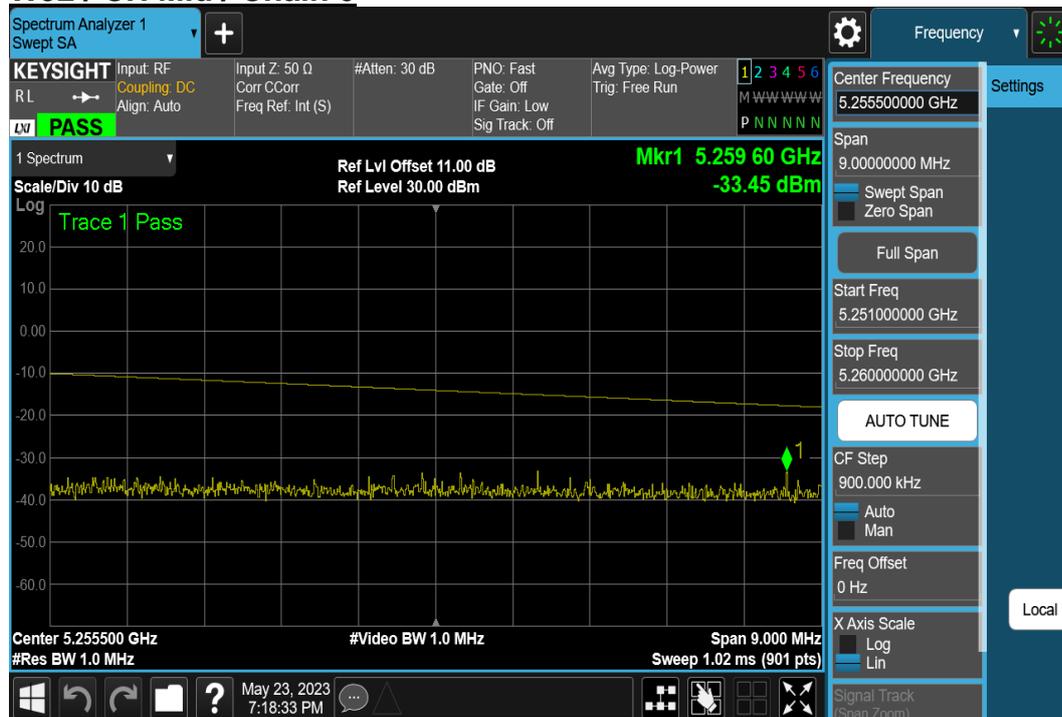


Report No.: TMWK2305001504KR

(4) 5251MHz ~ 5260MHz W52 / CH Low / Chain 0

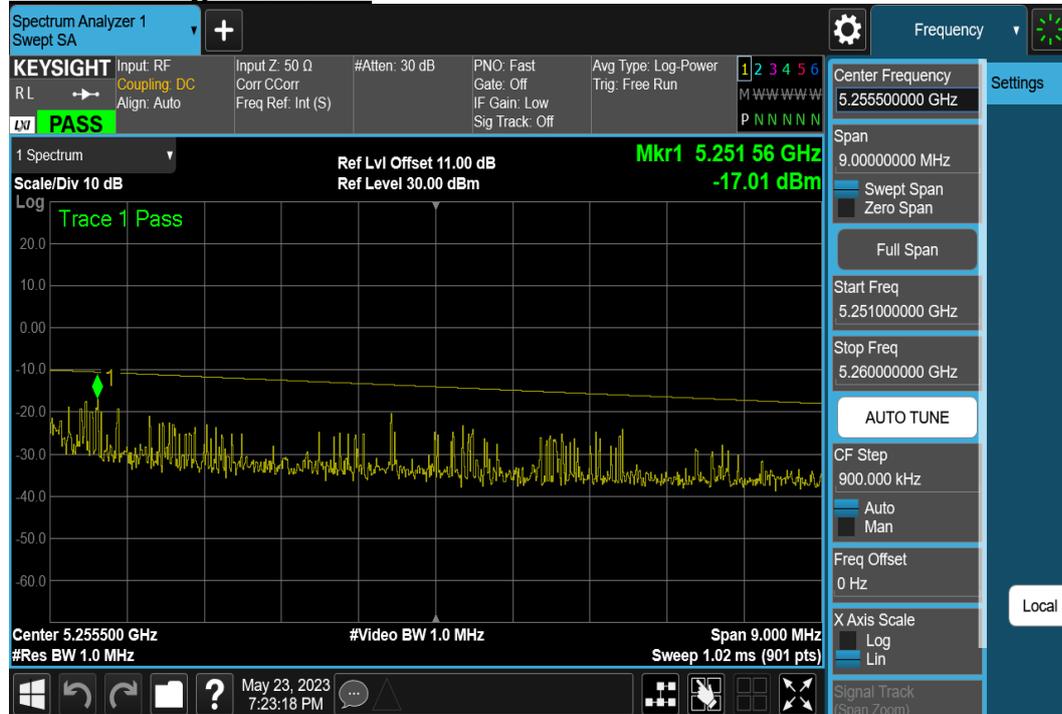


W52 / CH Mid / Chain 0

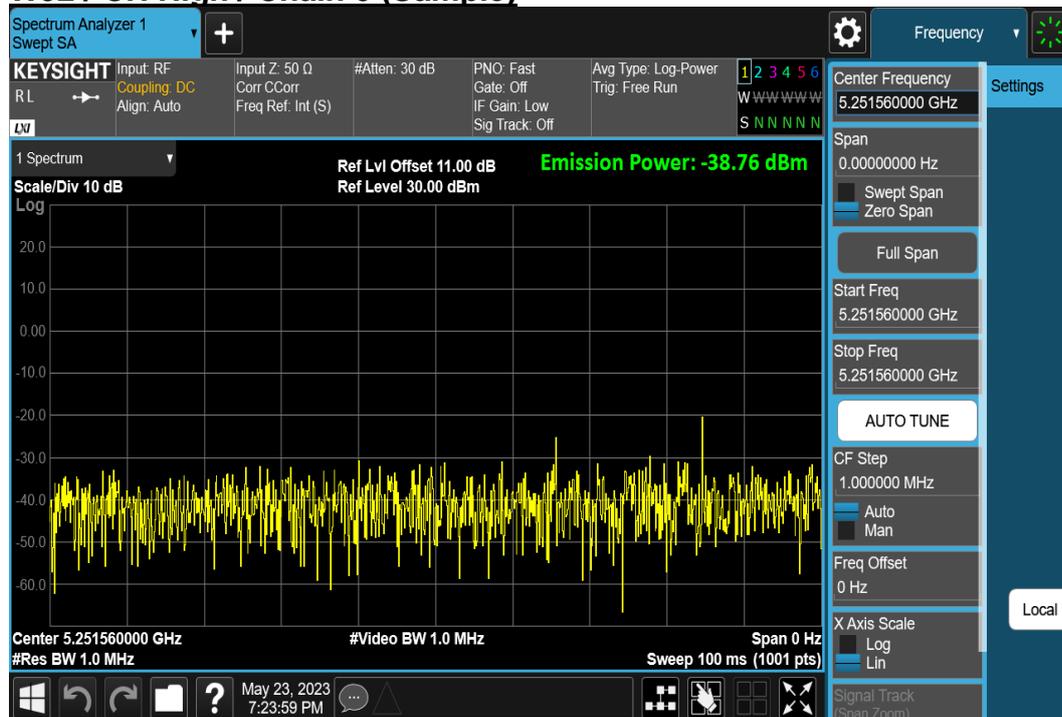


Report No.: TMWK2305001504KR

W52 / CH High / Chain 0

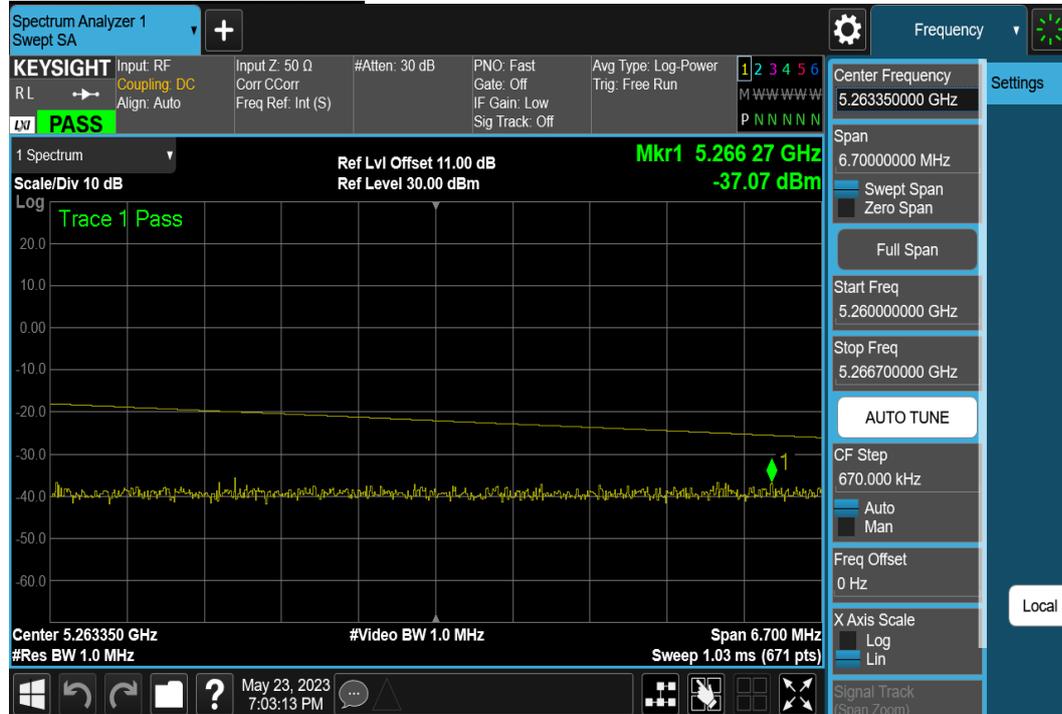


W52 / CH High / Chain 0 (Sample)

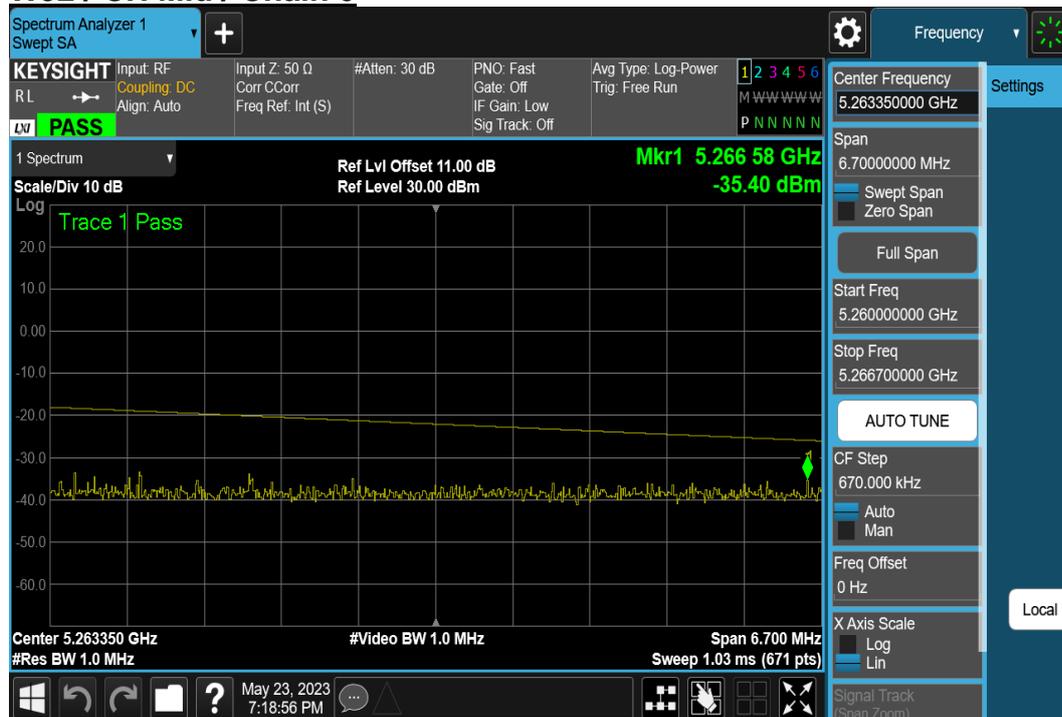


Report No.: TMWK2305001504KR

(5) 5260MHz ~ 5266.7MHz W52 / CH Low / Chain 0

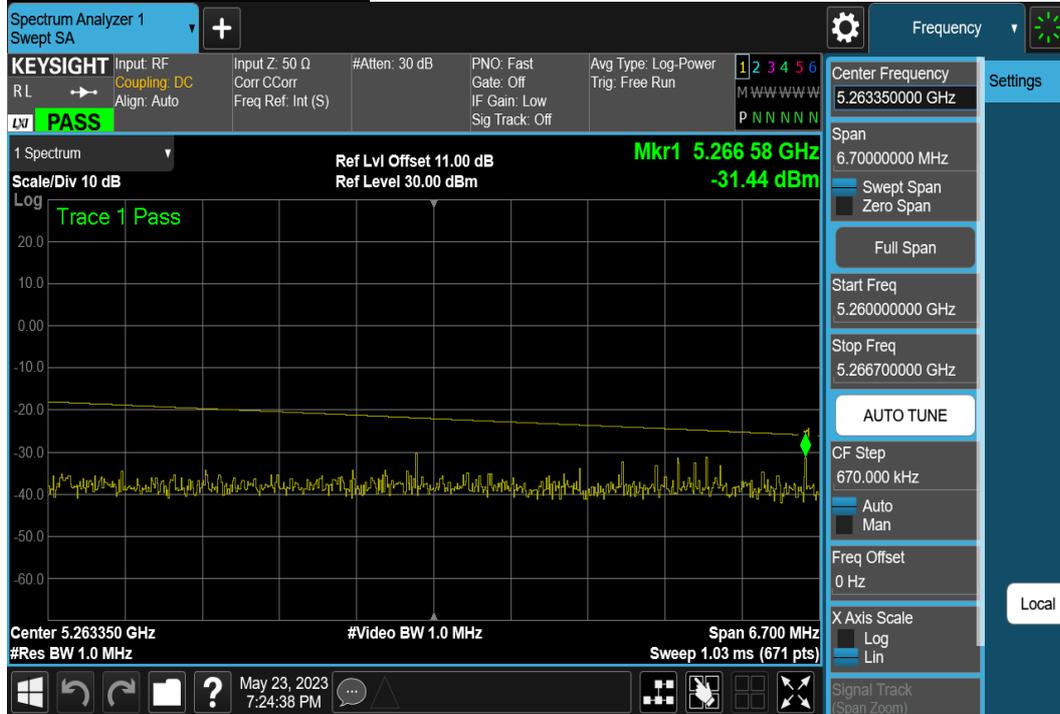


W52 / CH Mid / Chain 0

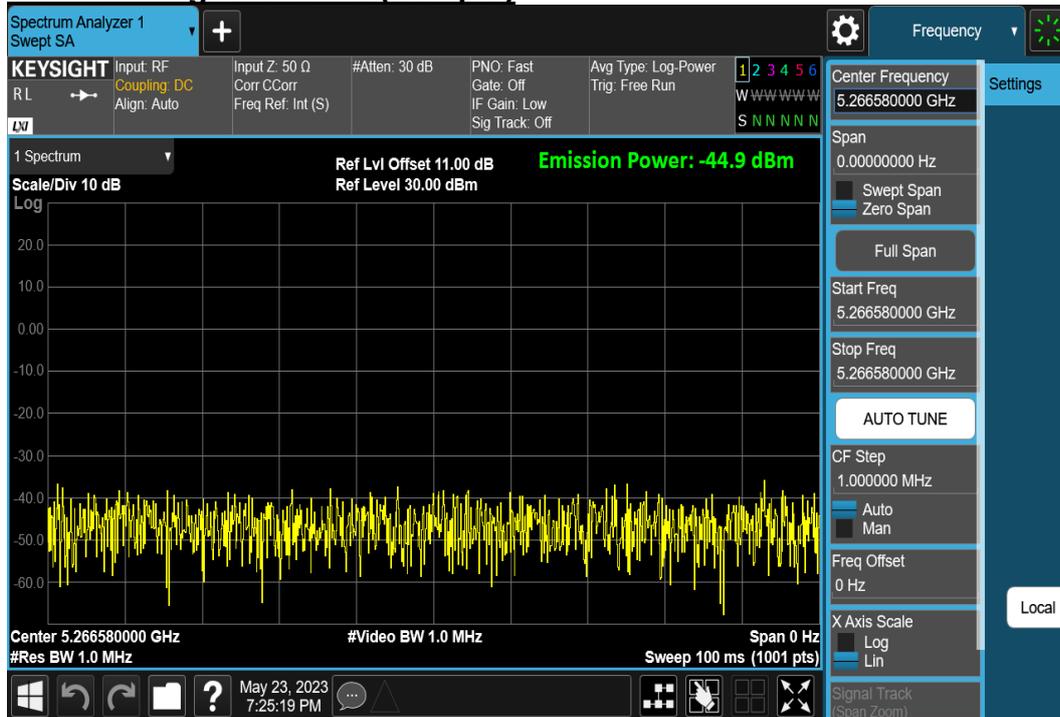


Report No.: TMWK2305001504KR

W52 / CH High / Chain 0



W52 / CH High / Chain 0 (Sample)

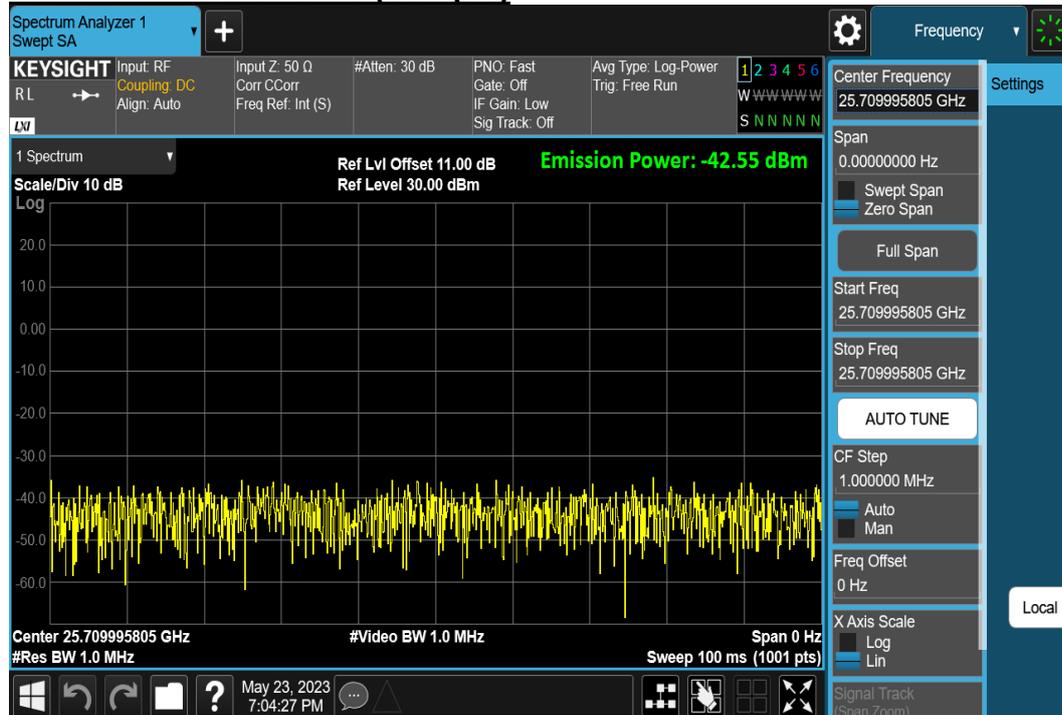


Report No.: TMWK2305001504KR

(6) 5266.7MHz ~ 26000MHz W52 / CH Low / Chain 0

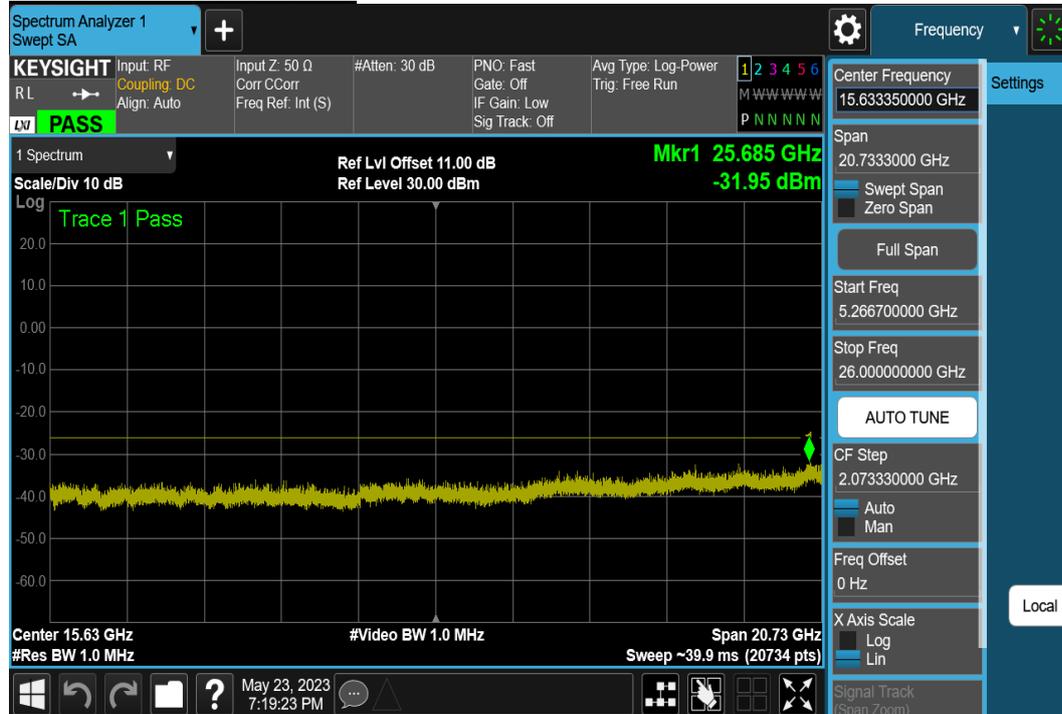


W52 / CH Low / Chain 0 (Sample)

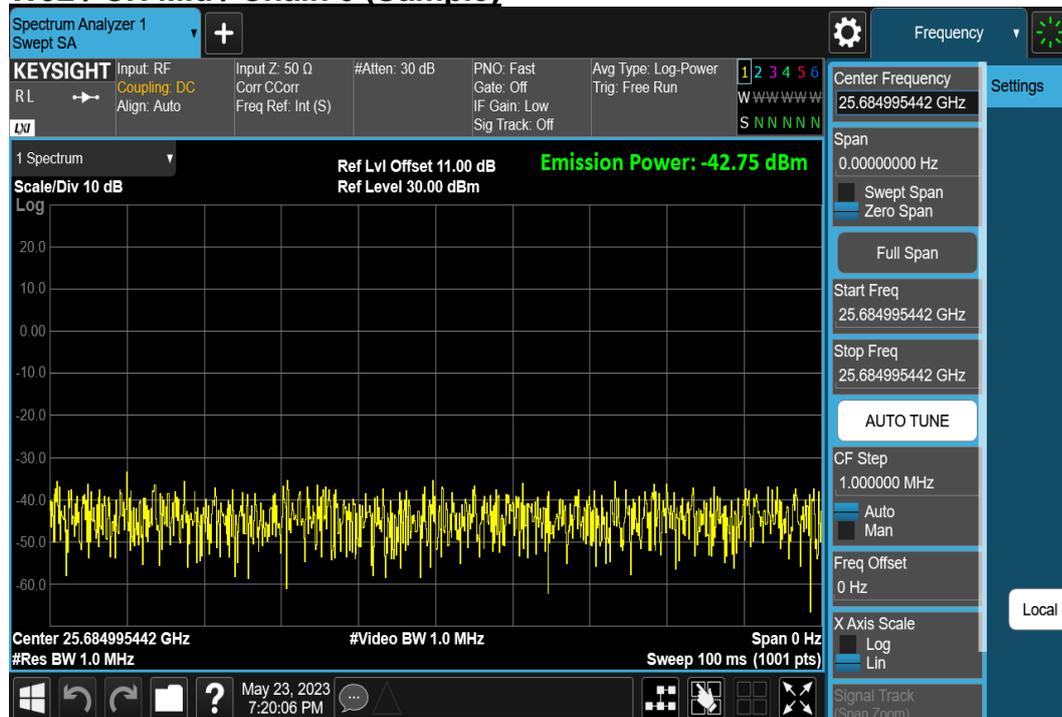


Report No.: TMWK2305001504KR

W52 / CH Mid / Chain 0



W52 / CH Mid / Chain 0 (Sample)

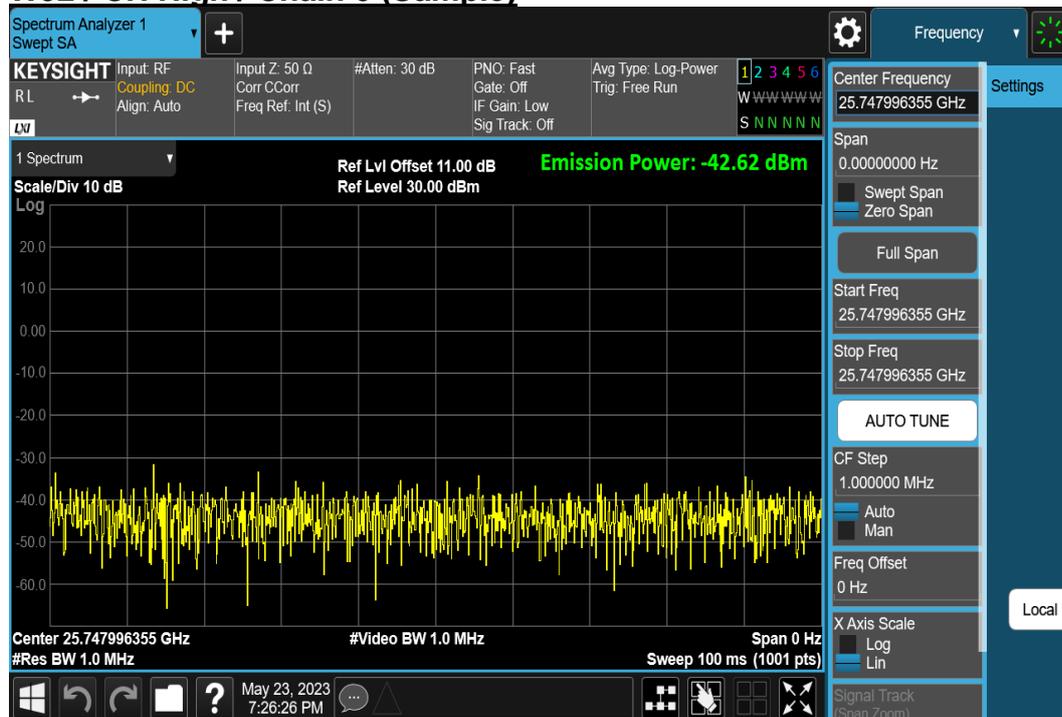


Report No.: TMWK2305001504KR

W52 / CH High / Chain 0



W52 / CH High / Chain 0 (Sample)



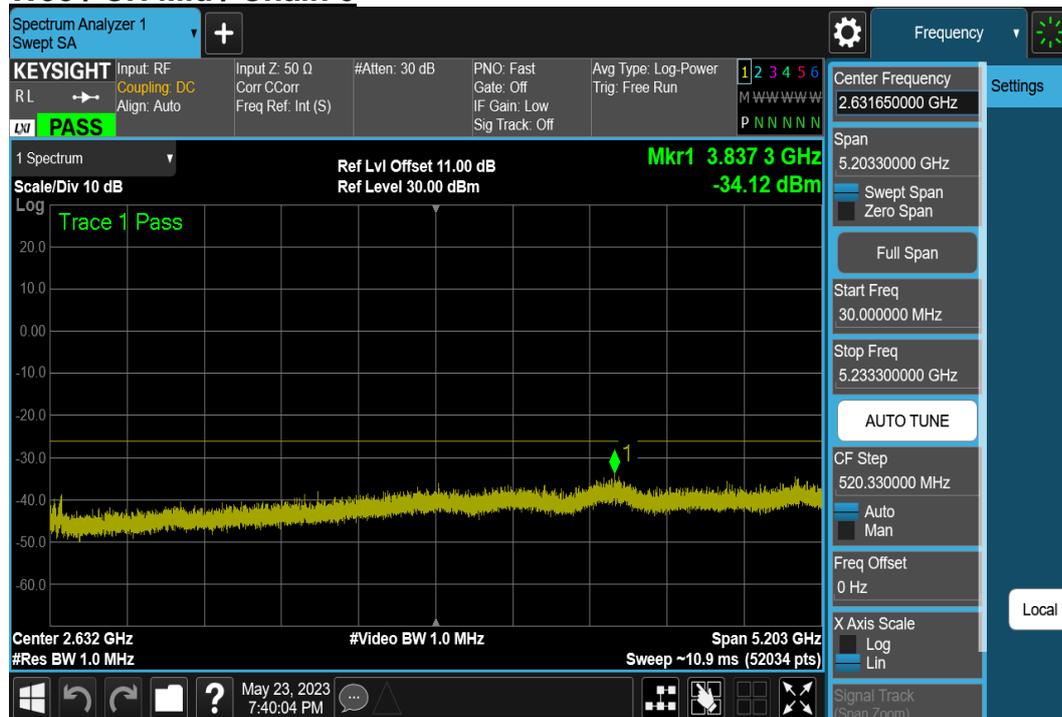
Report No.: TMWK2305001504KR

TEST PLOTS

(1) 30MHz ~ 5233.3MHz
W53 / CH Low / Chain 0

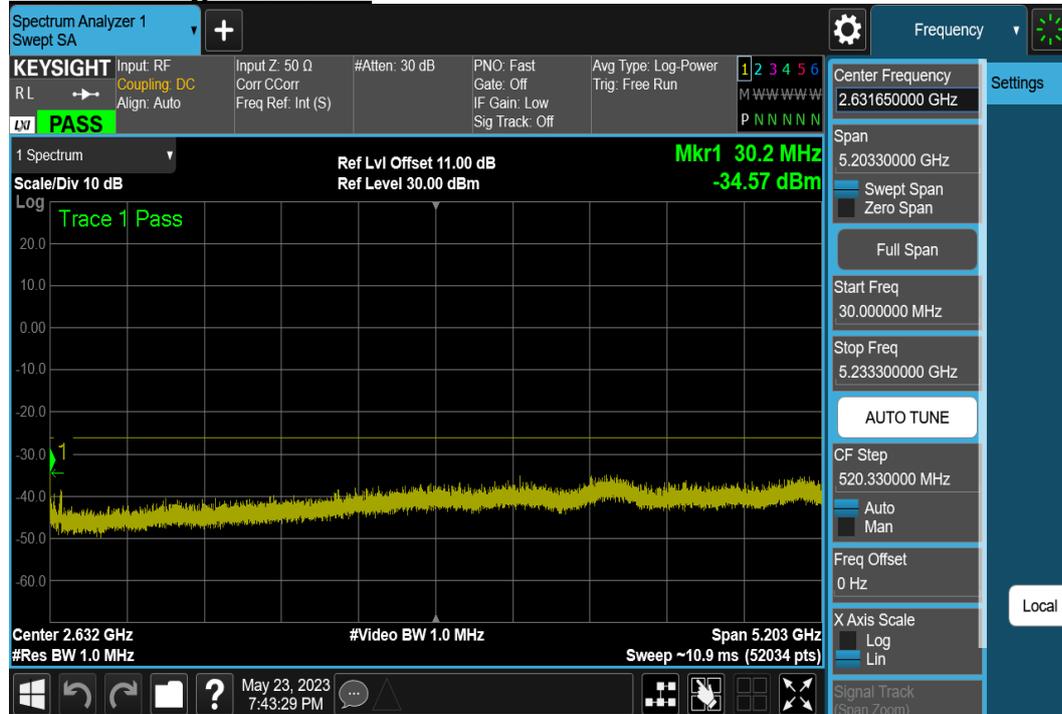


W53 / CH Mid / Chain 0



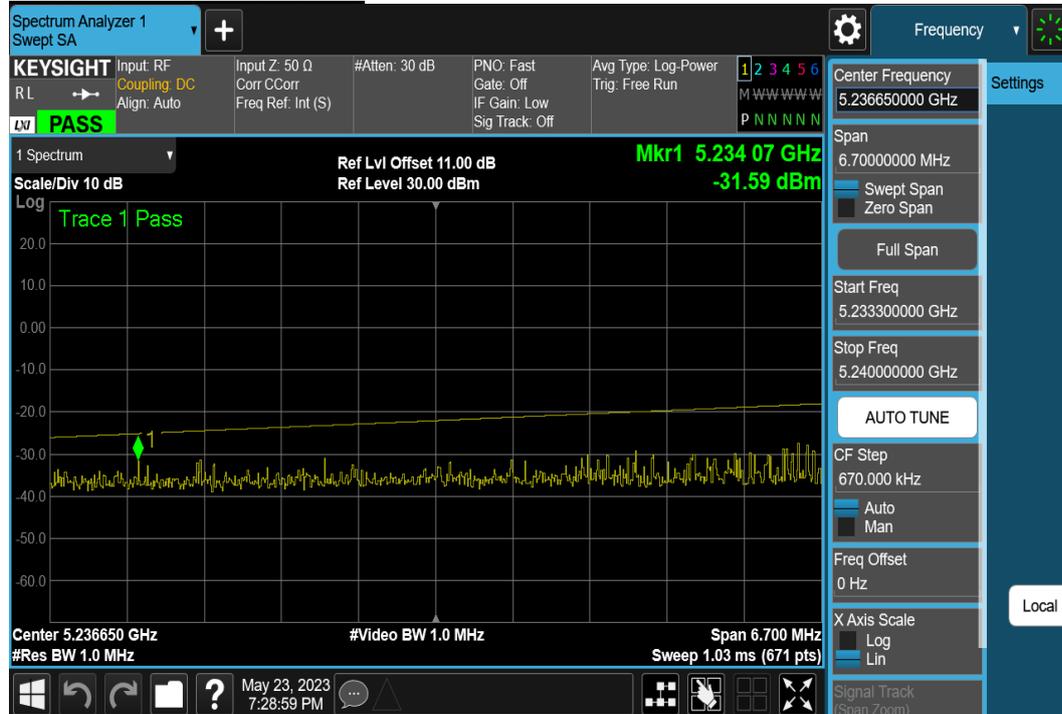
Report No.: TMWK2305001504KR

W53 / CH High / Chain 0

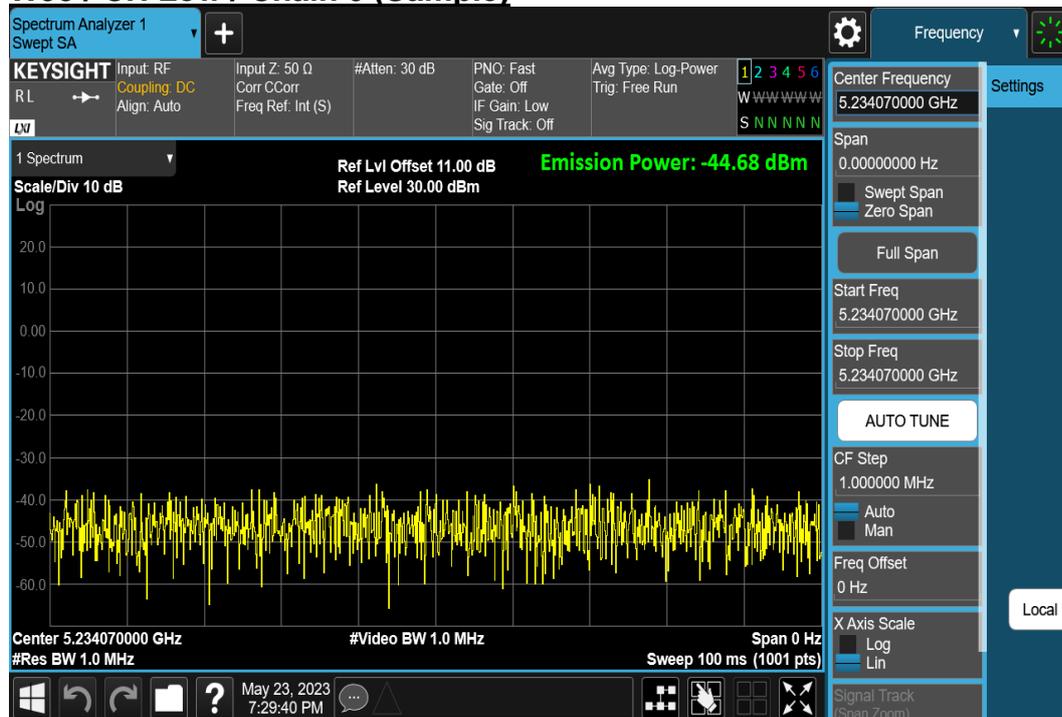


Report No.: TMWK2305001504KR

(2) 5233.3MHz ~ 5240MHz W53 / CH Low / Chain 0



W53 / CH Low / Chain 0 (Sample)

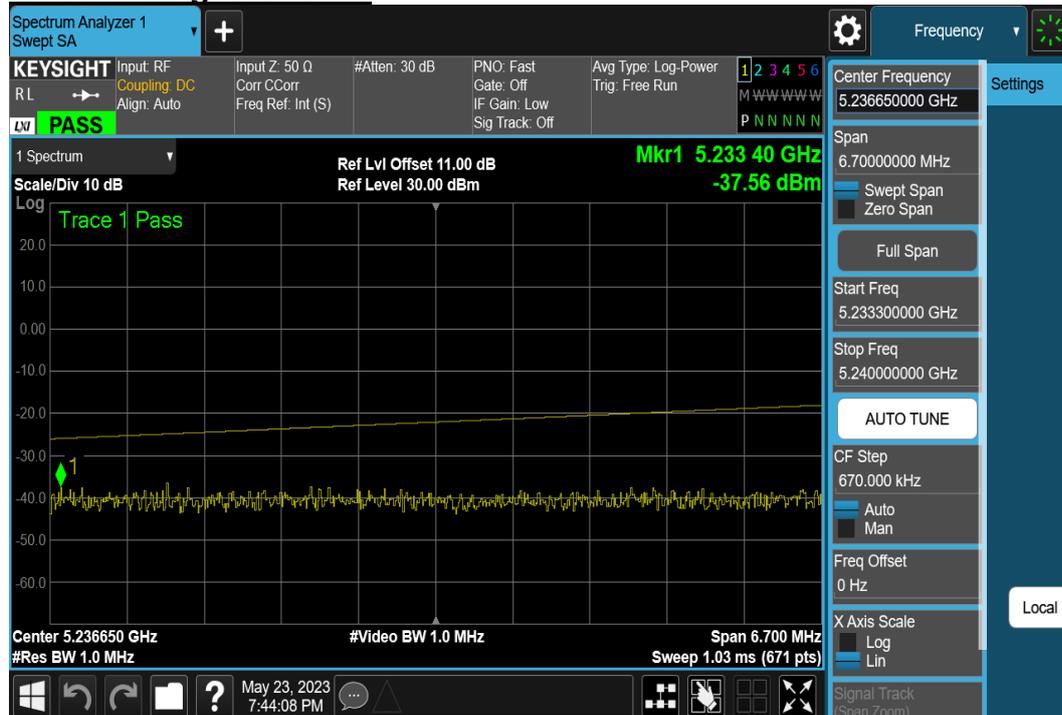


Report No.: TMWK2305001504KR

W53 / CH Mid / Chain 0



W53 / CH High / Chain 0

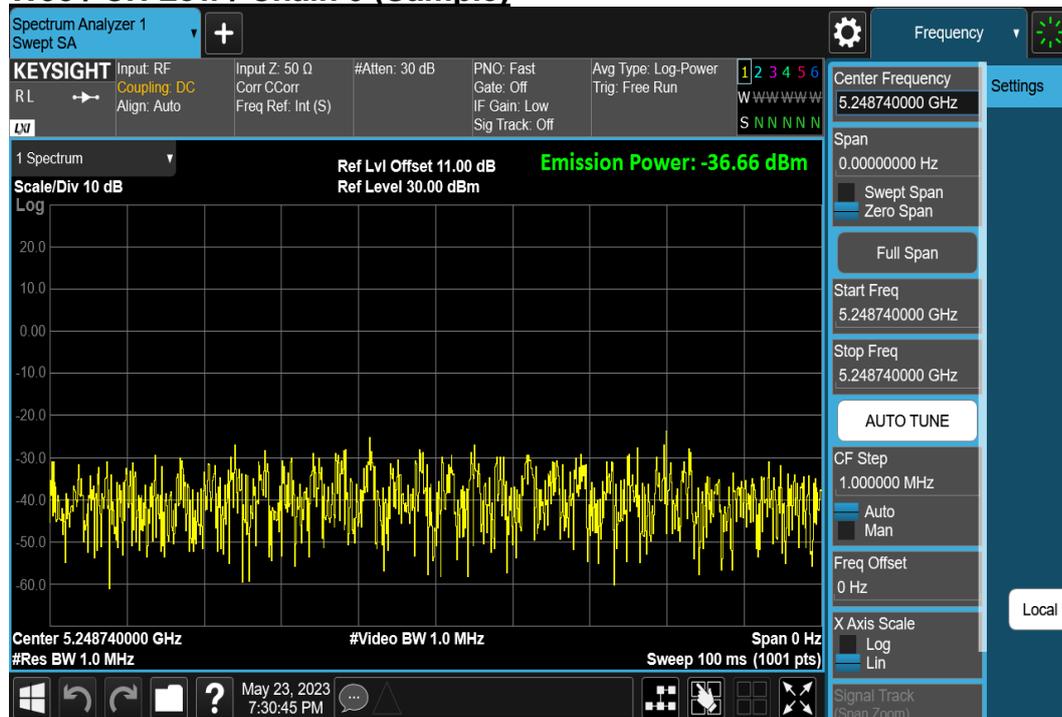


Report No.: TMWK2305001504KR

(3) 5240MHz ~ 5249MHz W53 / CH Low / Chain 0



W53 / CH Low / Chain 0 (Sample)

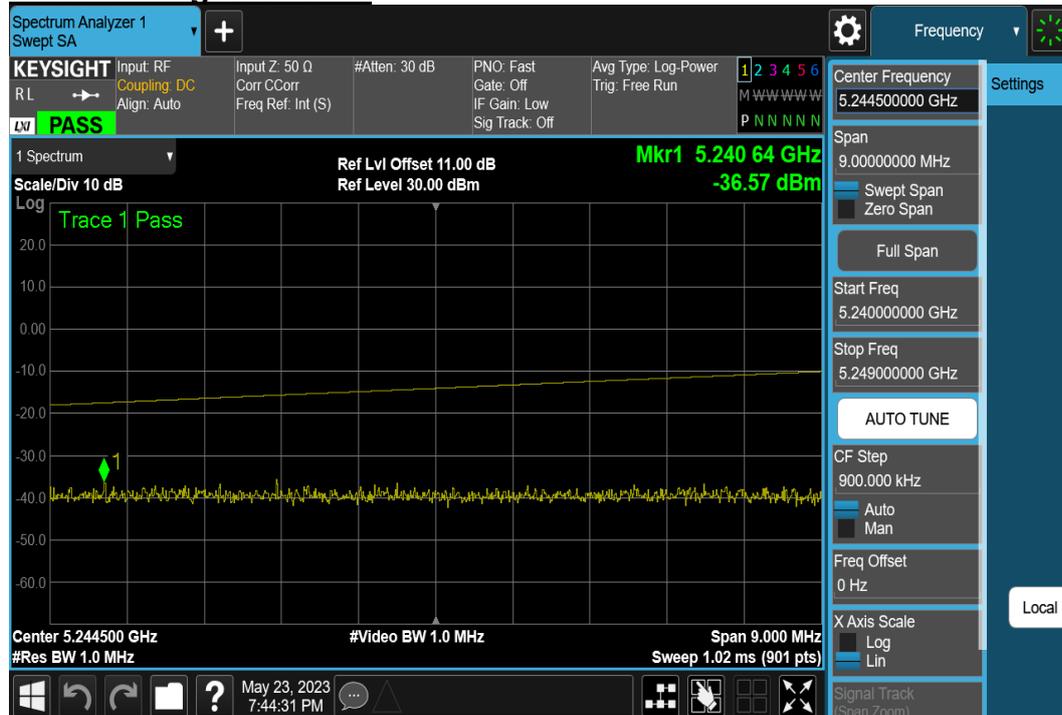


Report No.: TMWK2305001504KR

W53 / CH Mid / Chain 0



W53 / CH High / Chain 0

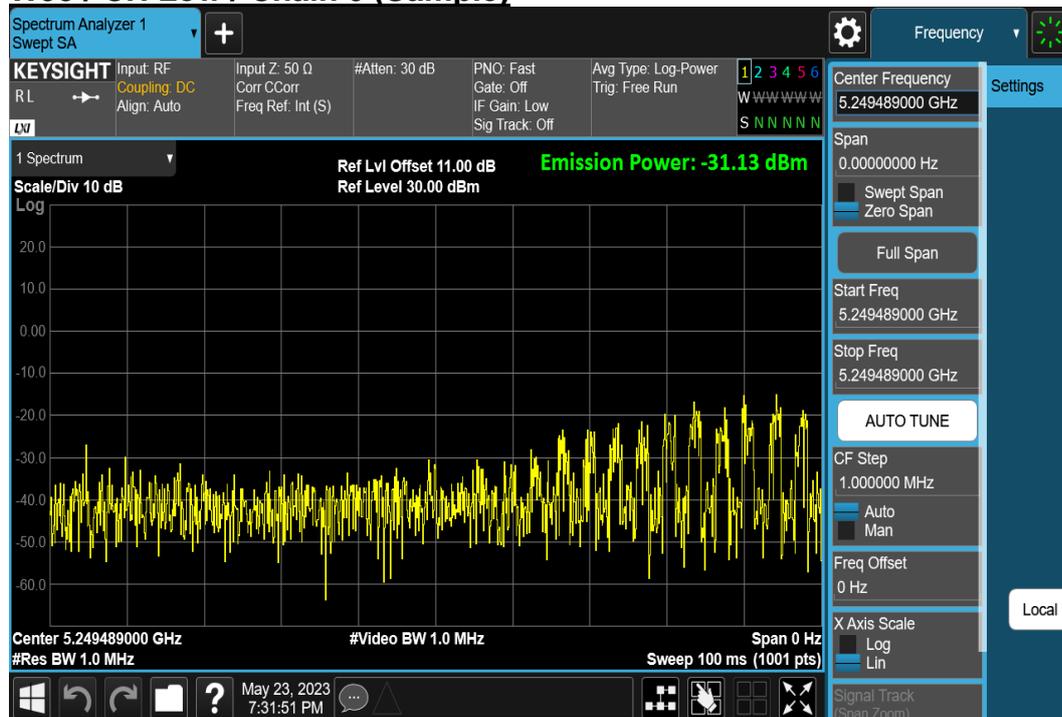


Report No.: TMWK2305001504KR

(4) 5249MHz ~ 5250MHz W53 / CH Low / Chain 0

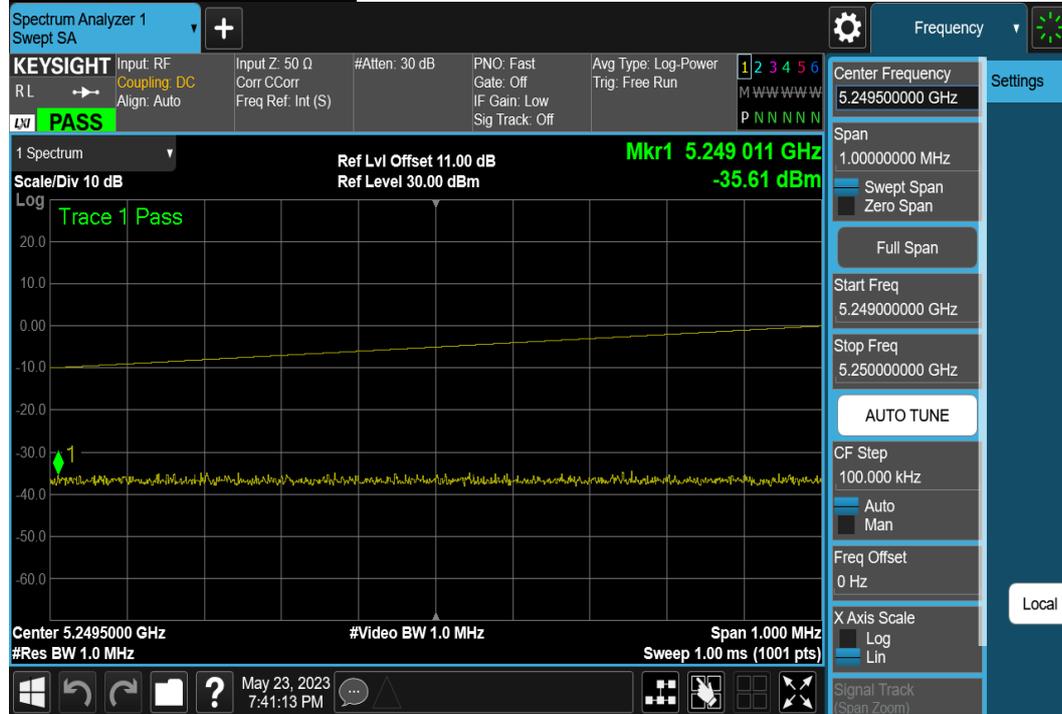


W53 / CH Low / Chain 0 (Sample)

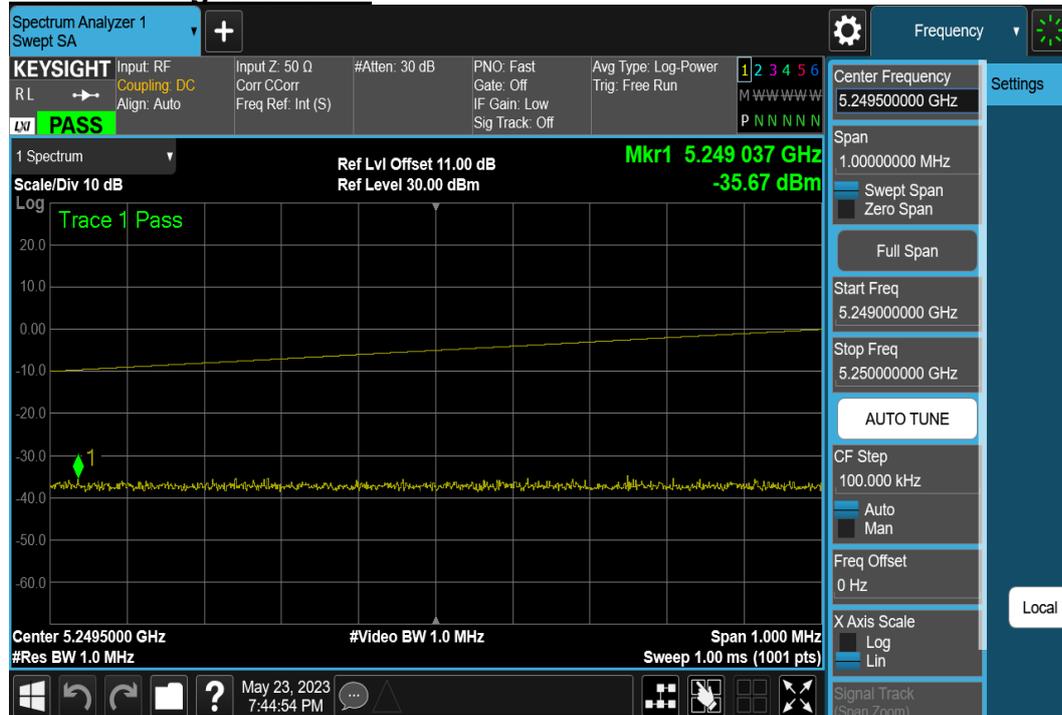


Report No.: TMWK2305001504KR

W53 / CH Mid / Chain 0

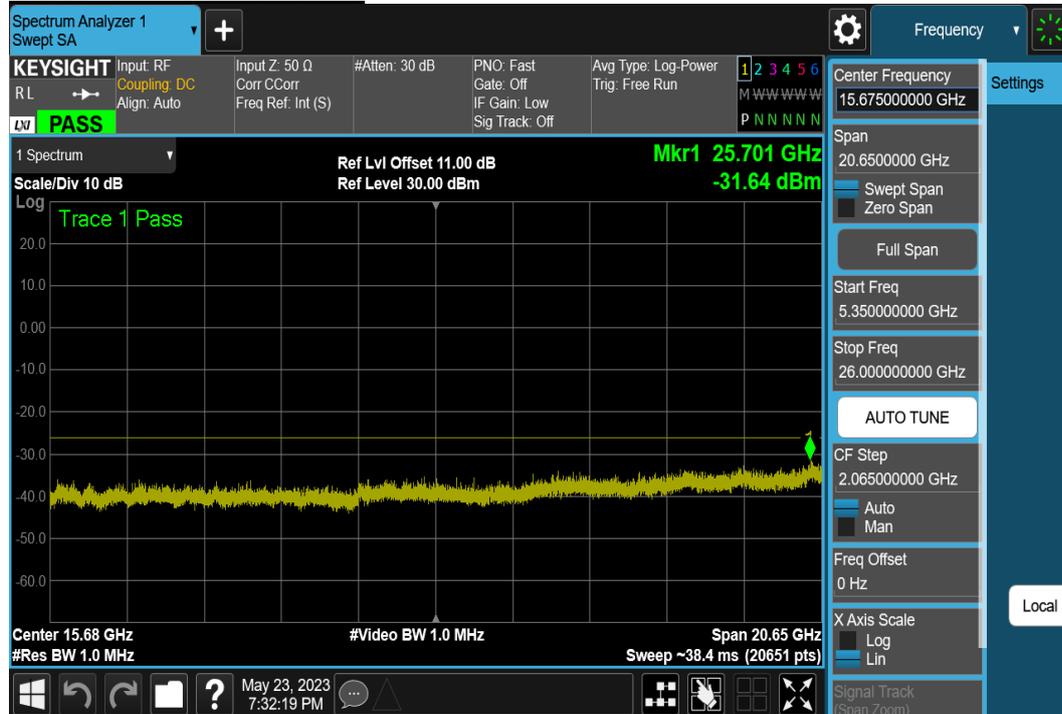


W53 / CH High / Chain 0

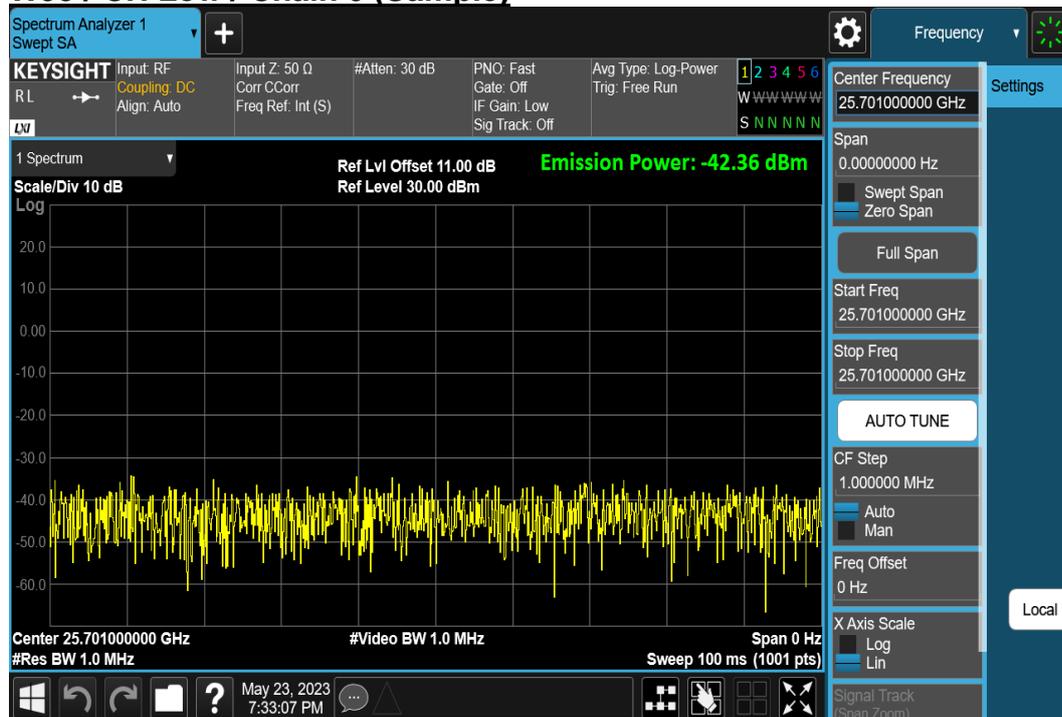


Report No.: TMWK2305001504KR

(5) 5350MHz ~ 26000MHz W53 / CH Low / Chain 0

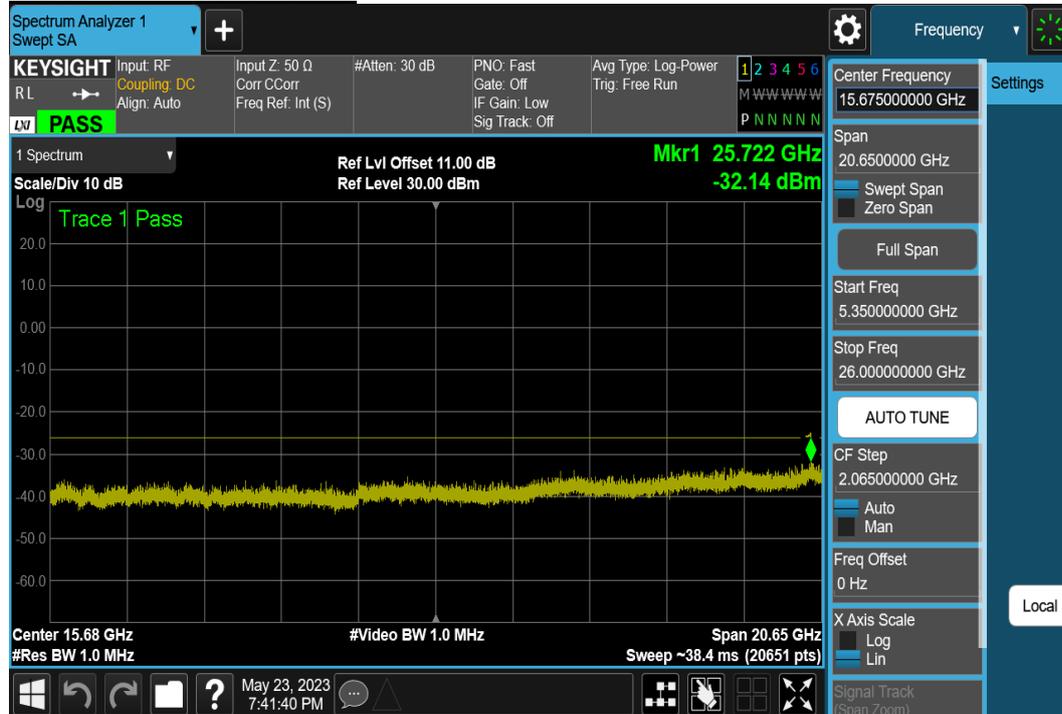


W53 / CH Low / Chain 0 (Sample)

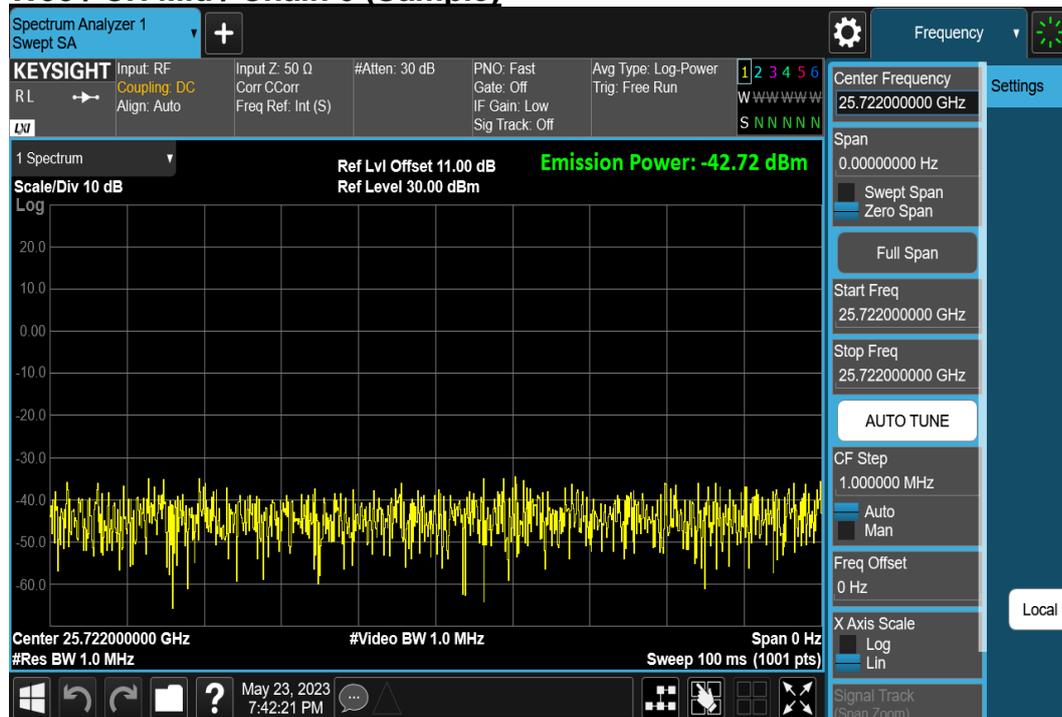


Report No.: TMWK2305001504KR

W53 / CH Mid / Chain 0

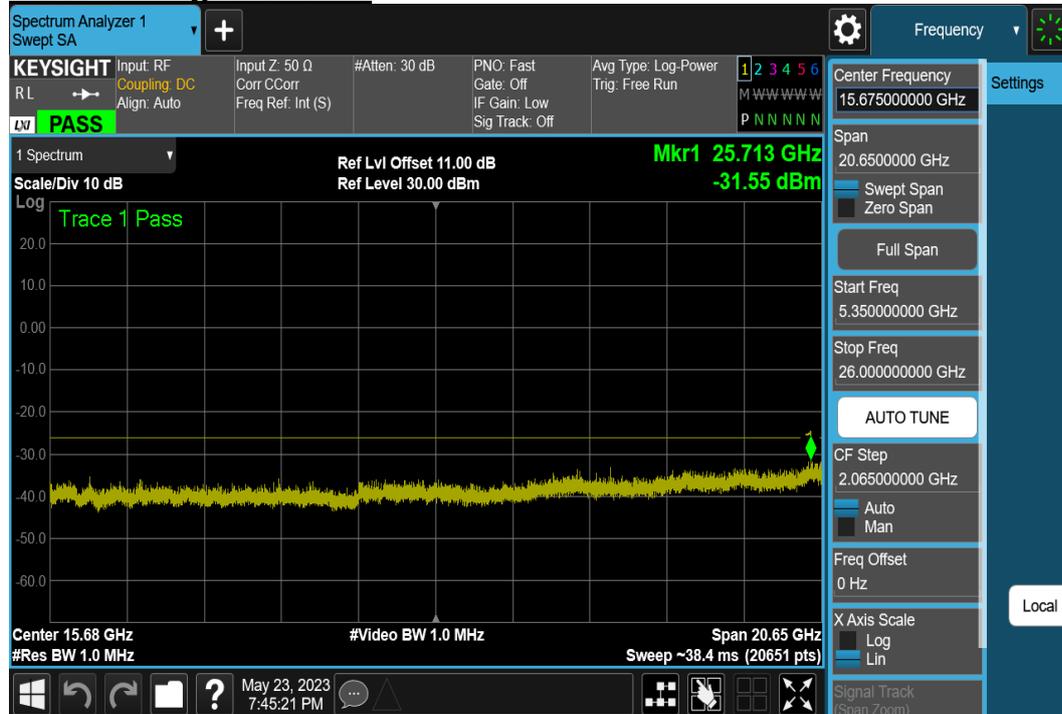


W53 / CH Mid / Chain 0 (Sample)

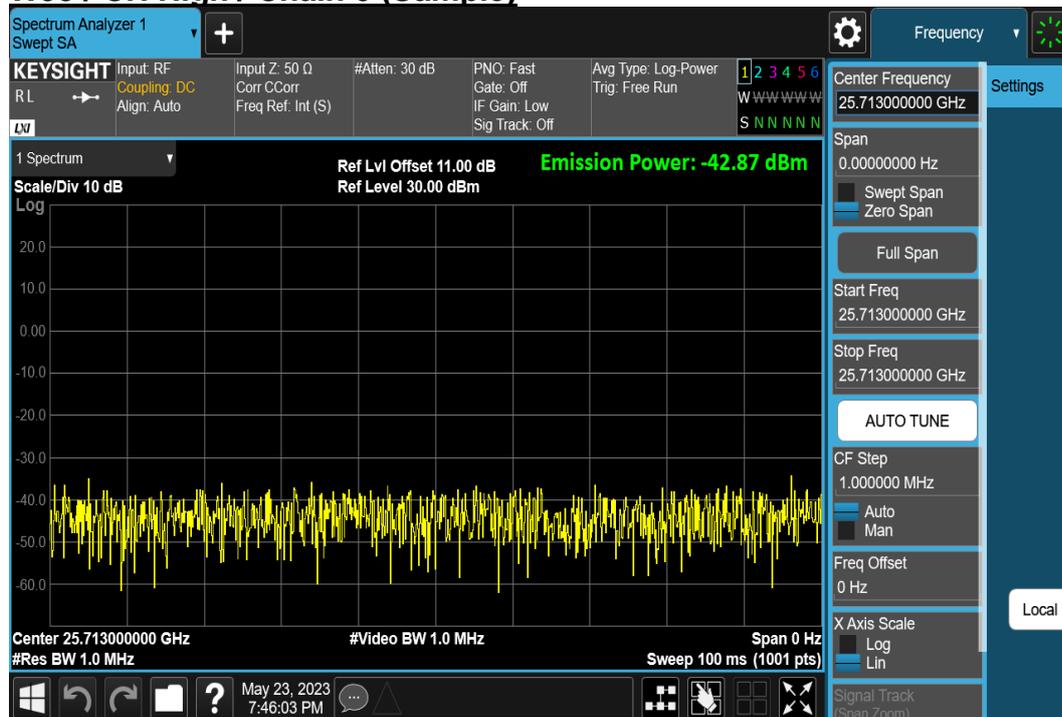


Report No.: TMWK2305001504KR

W53 / CH High / Chain 0



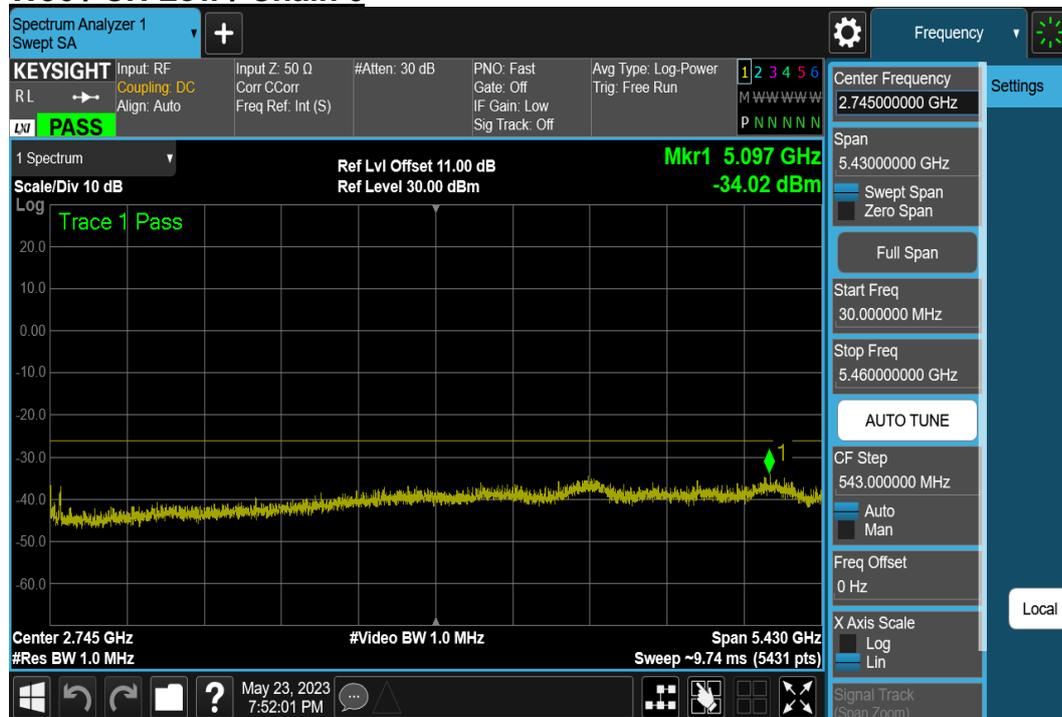
W53 / CH High / Chain 0 (Sample)



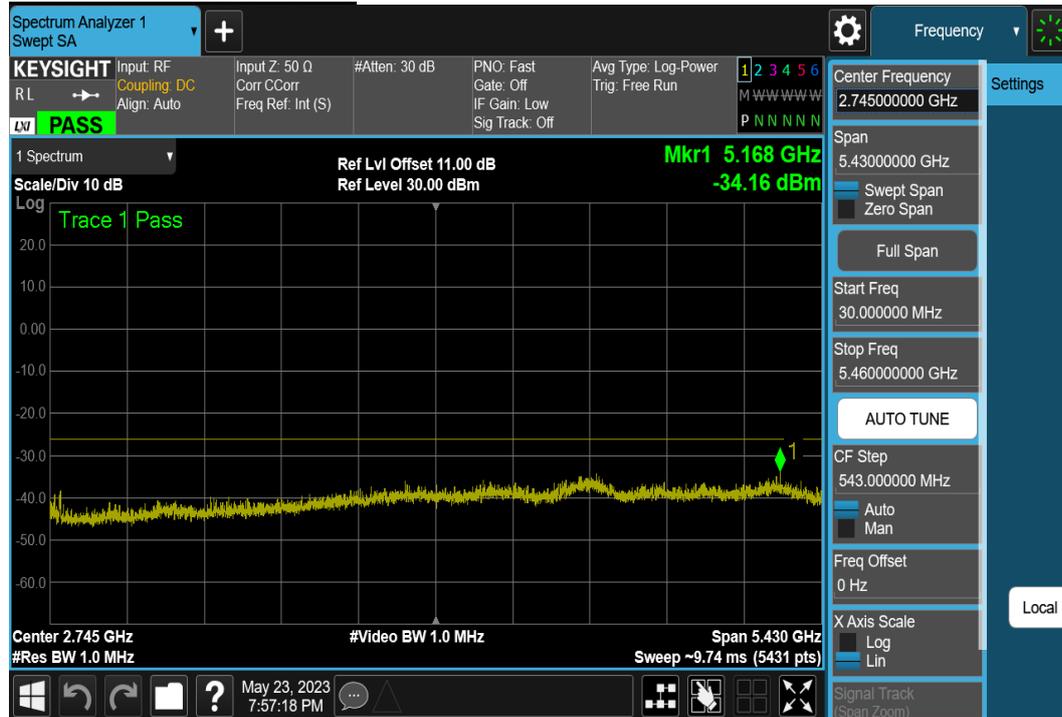
Report No.: TMWK2305001504KR

TEST PLOTS

(1) 30MHz ~ 5460MHz
W56 / CH Low / Chain 0



W56 / CH Mid / Chain 0

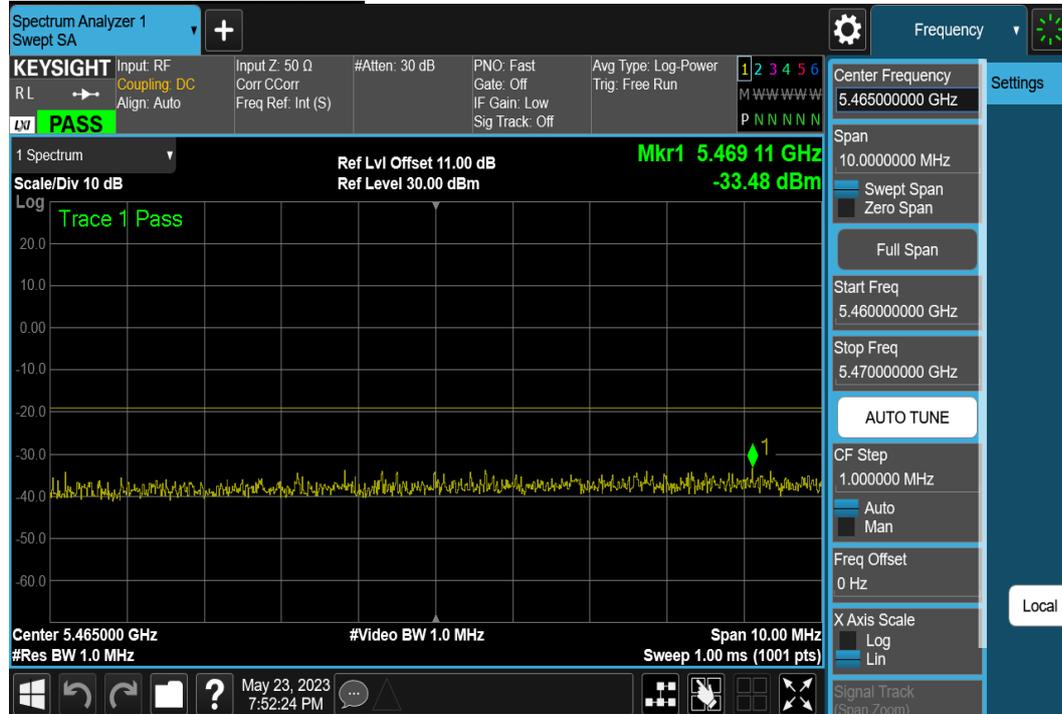


W56 / CH High / Chain 0

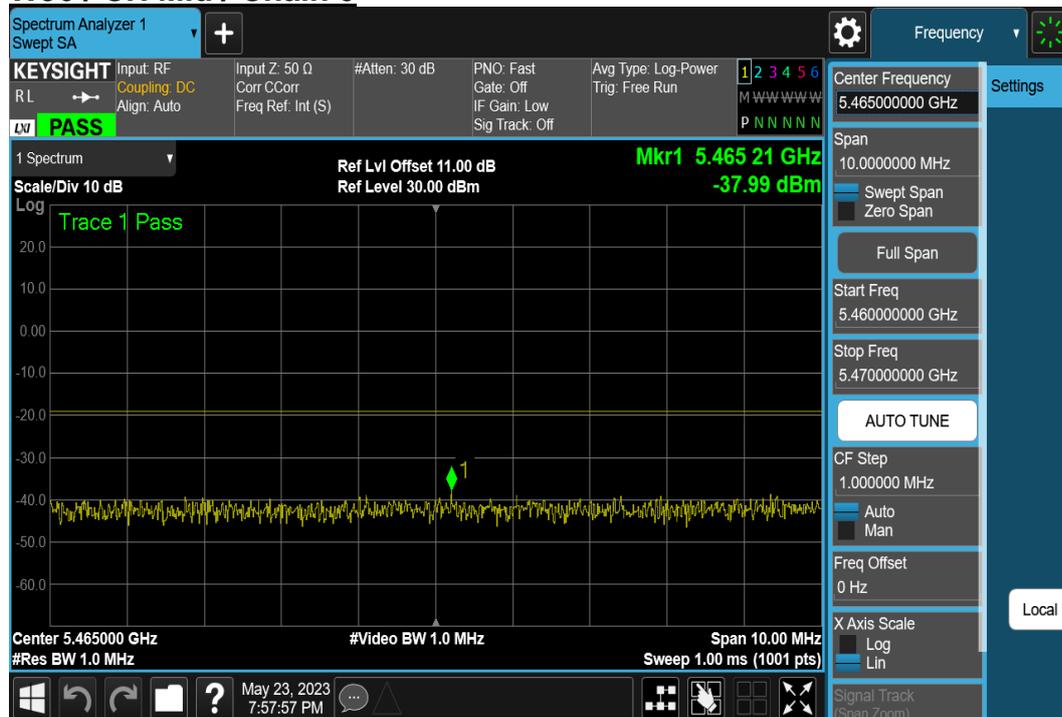


Report No.: TMWK2305001504KR

(2) 5460MHz ~ 5470MHz W56 / CH Low / Chain 0

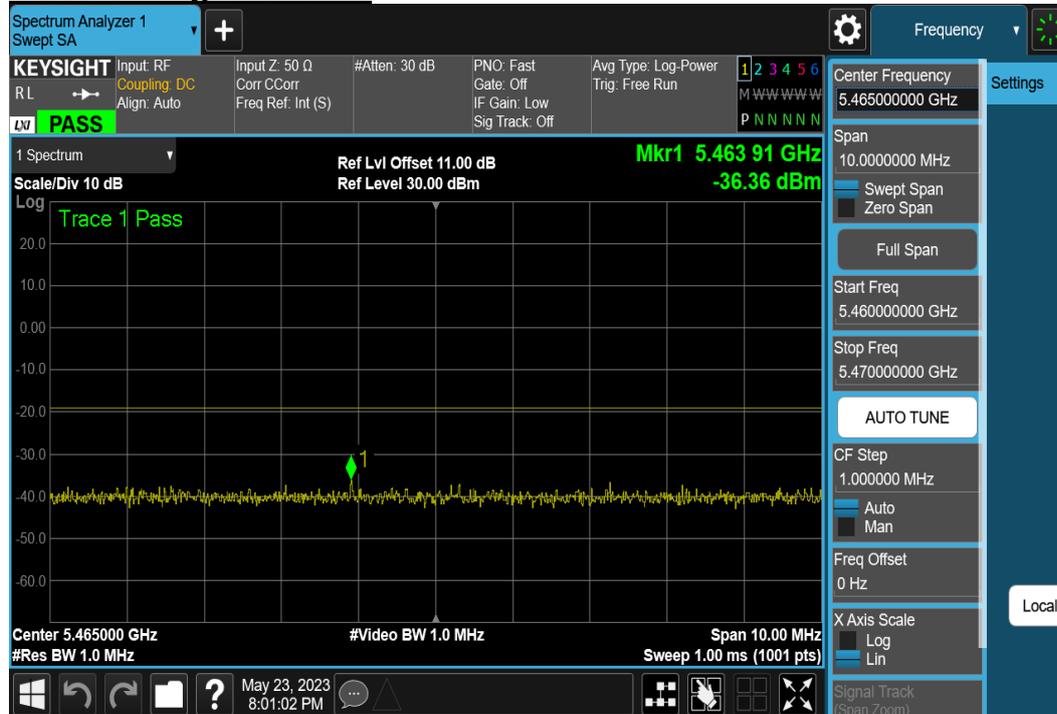


W56 / CH Mid / Chain 0



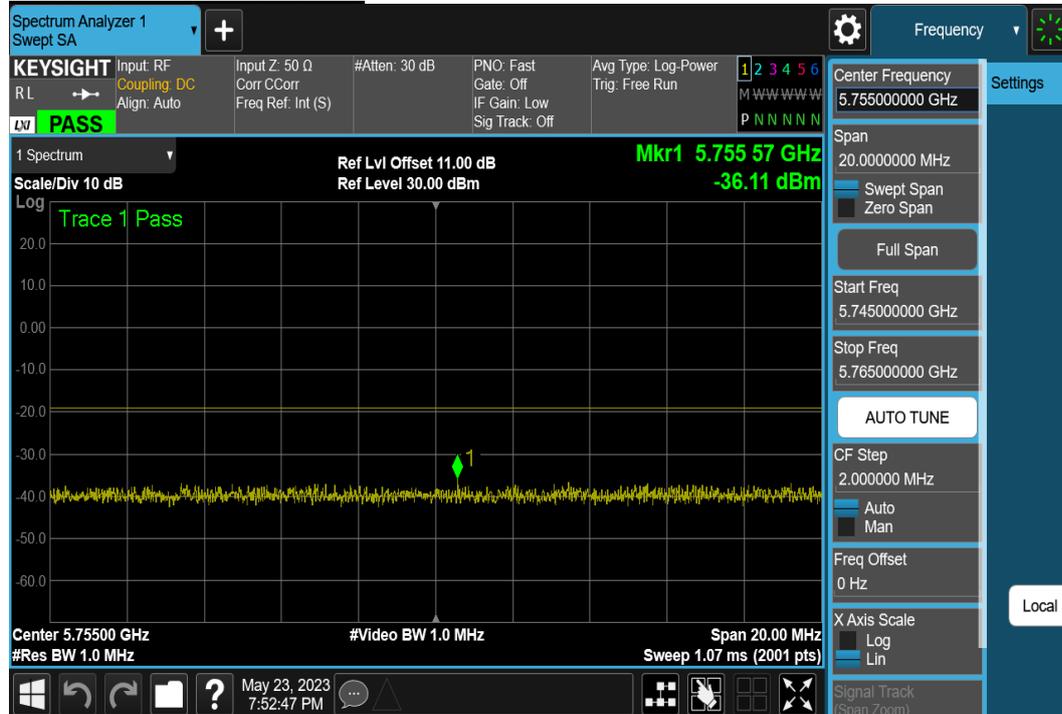
Report No.: TMWK2305001504KR

W56 / CH High / Chain 0

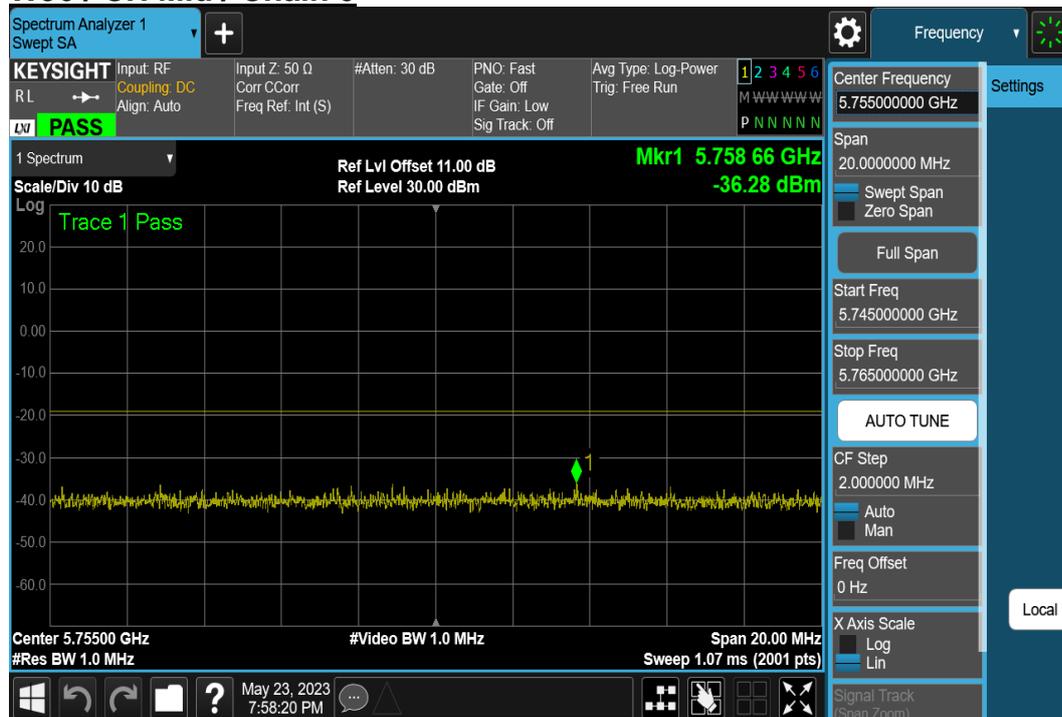


Report No.: TMWK2305001504KR

(3) 5745MHz ~ 5765MHz W56 / CH Low / Chain 0

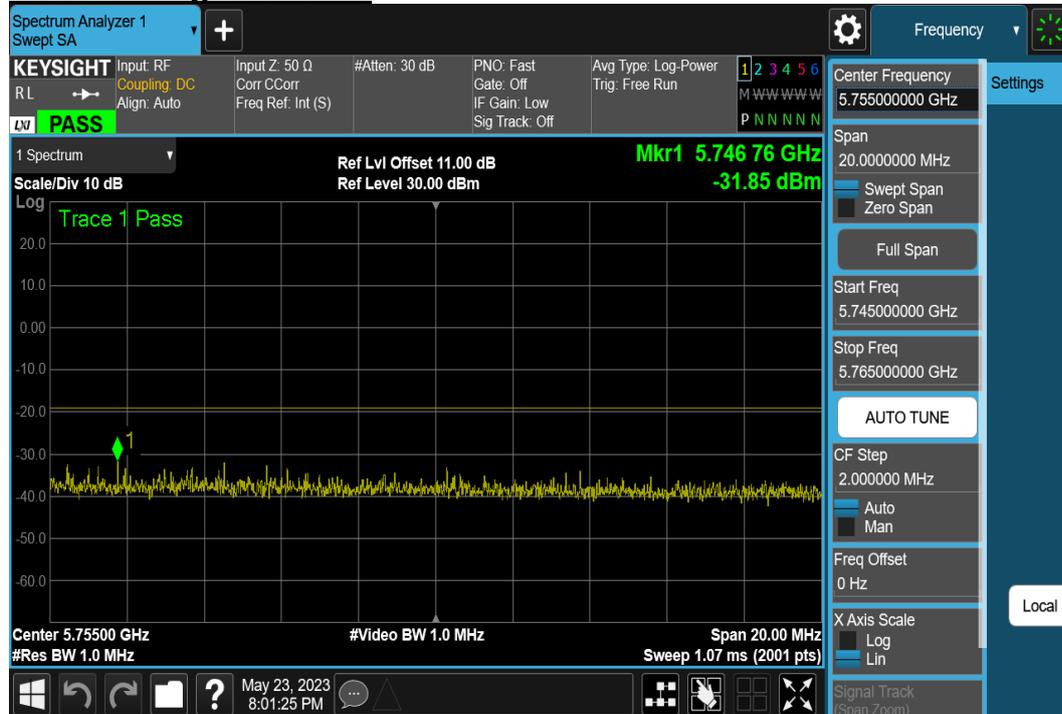


W56 / CH Mid / Chain 0



Report No.: TMWK2305001504KR

W56 / CH High / Chain 0

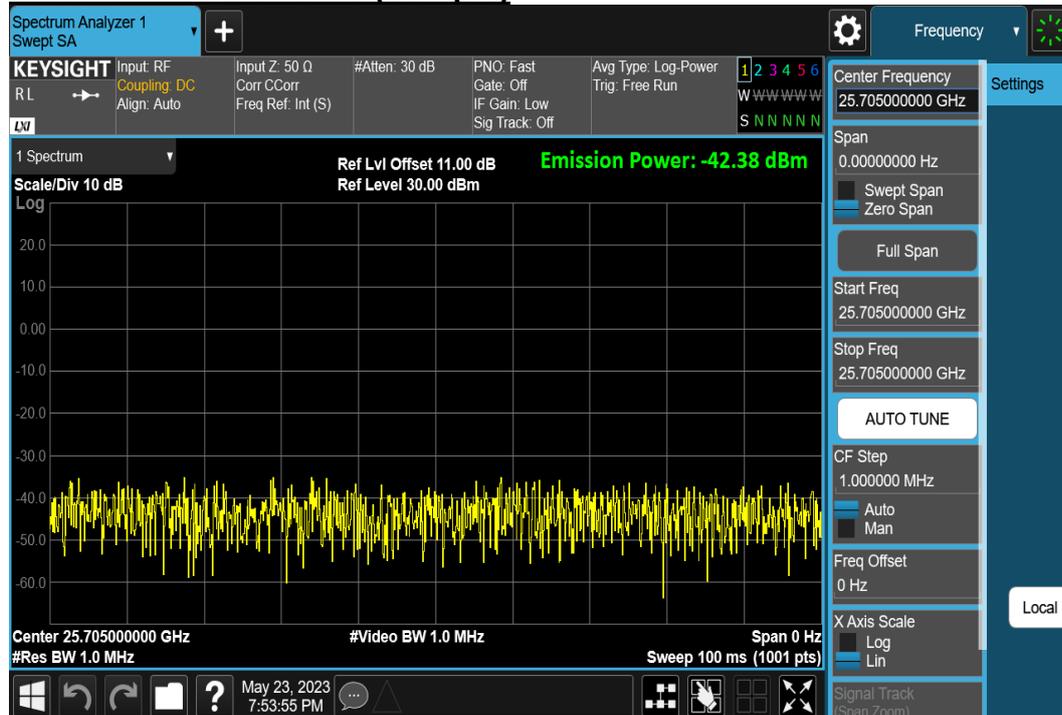


Report No.: TMWK2305001504KR

(4) 5765MHz ~ 26000MHz W56 / CH Low / Chain 0

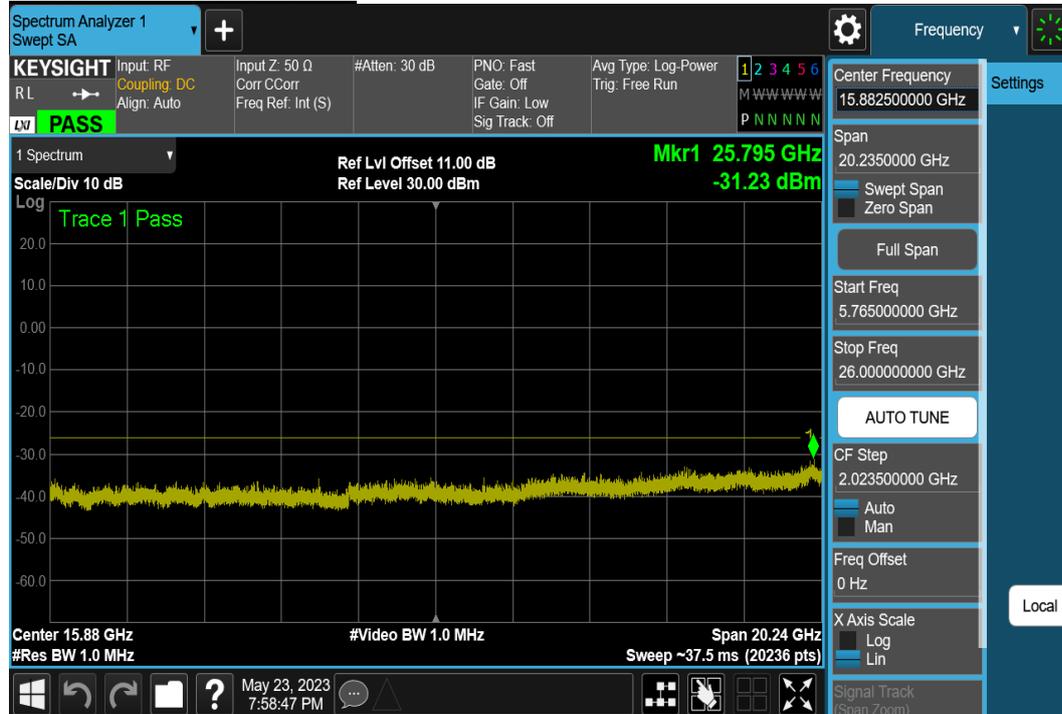


W56 / CH Low / Chain 0 (Sample)

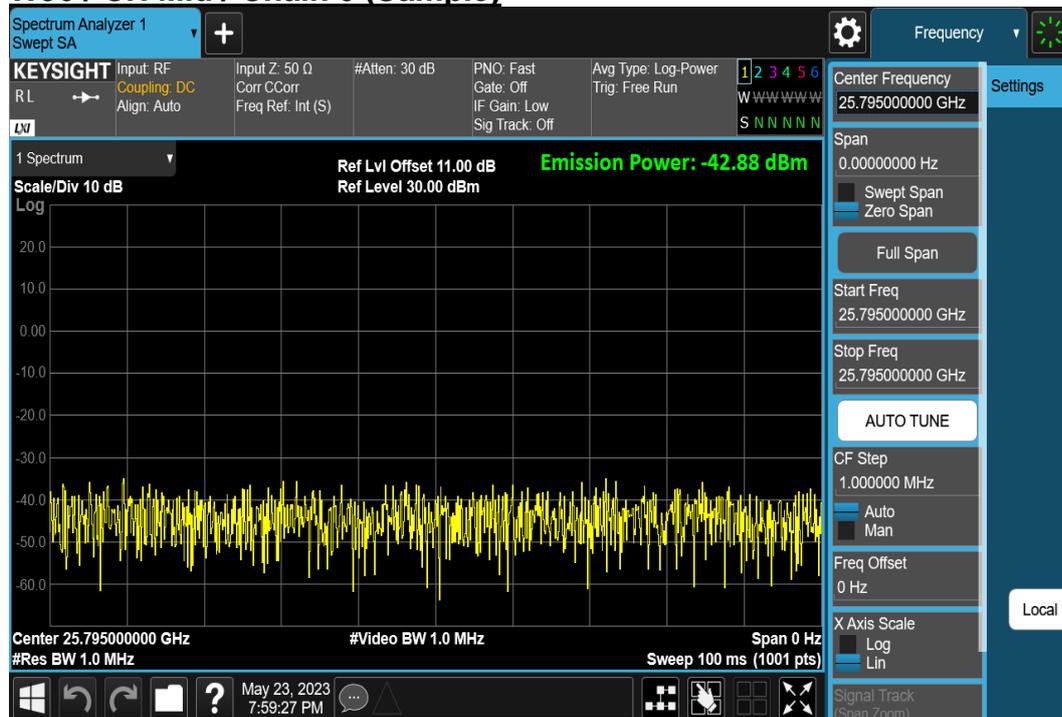


Report No.: TMWK2305001504KR

W56 / CH Mid / Chain 0



W56 / CH Mid / Chain 0 (Sample)

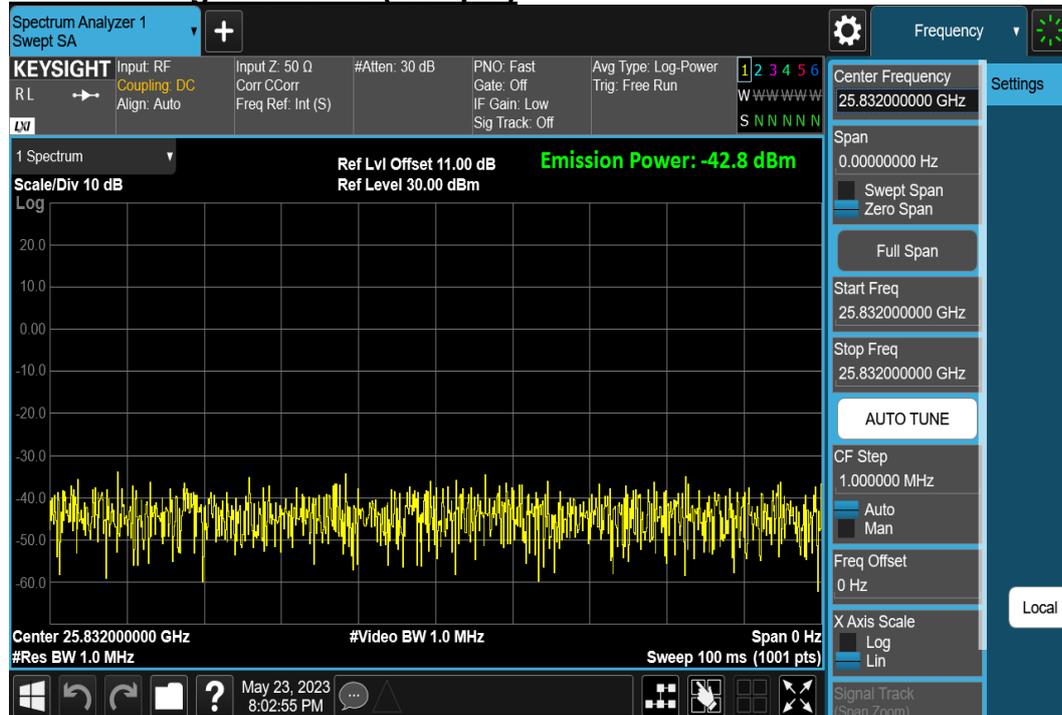


Report No.: TMWK2305001504KR

W56 / CH High / Chain 0



W56 / CH High / Chain 0 (Sample)



Report No.: TMWK2305001504KR

7.6 SECONDARILY EMITTED RADIO WAVE STRENGTH

TEST RESULT

W52

Secondarily emitted radio wave strength						
802.11n_W52_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5180	5220	5240	---	---
Channel Number	Ch.	36	44	48	---	---
Under 1GHz (Chain0)	nW	0.010	0.011	0.008	≦ 4.00	PASS
	MHz	106.0	106.0	106.0	---	---
1 ~ 26GHz (Chain0)	nW	0.070	0.060	0.080	≦ 20.00	PASS
	MHz	3807	3807	3807	---	---

W53

Secondarily emitted radio wave strength						
802.11n_W53_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5260	5300	5320	---	---
Channel Number	Ch.	52	60	64	---	---
Under 1GHz (Chain0)	nW	0.010	0.011	0.007	≦ 4.00	PASS
	MHz	106.0	106.0	106.0	---	---
1 ~ 26GHz (Chain0)	nW	0.076	0.074	0.081	≦ 20.00	PASS
	MHz	3807	3807	3807	---	---

W56

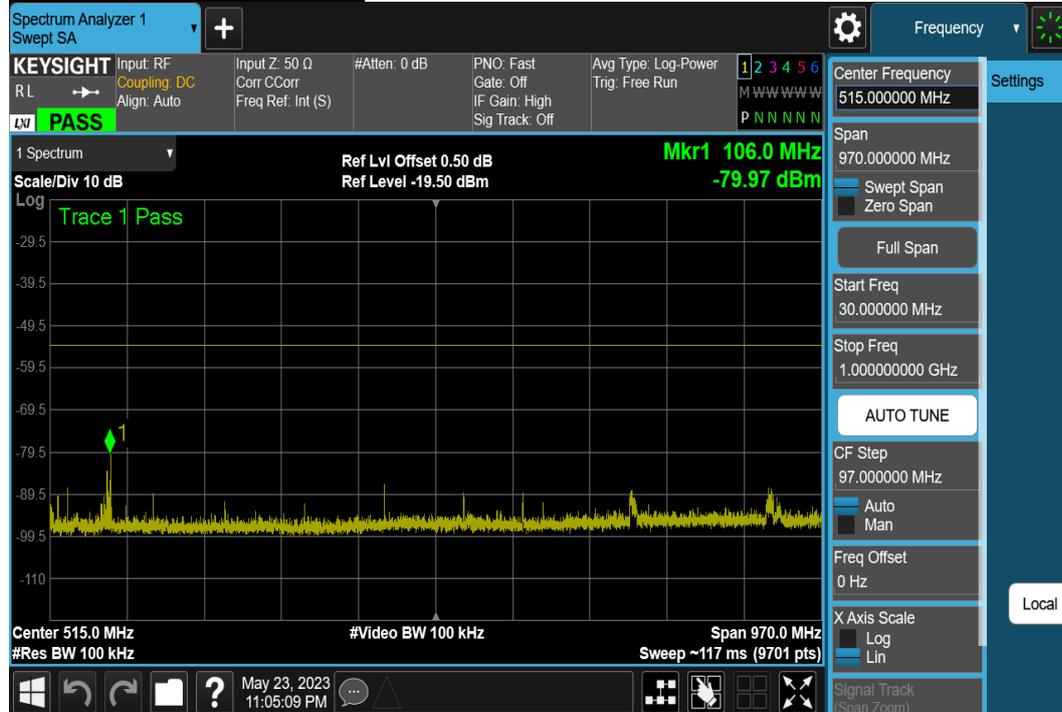
Secondarily emitted radio wave strength						
802.11n_W56_20MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5500	5600	5720	---	---
Channel Number	Ch.	100	120	144	---	---
Under 1GHz (Chain0)	nW	0.008	0.007	0.008	≦ 4.00	PASS
	MHz	106.0	105.9	106.0	---	---
1 ~ 26GHz (Chain0)	nW	0.073	0.079	0.072	≦ 20.00	PASS
	MHz	3807	3807	3807	---	---

Report No.: TMWK2305001504KR

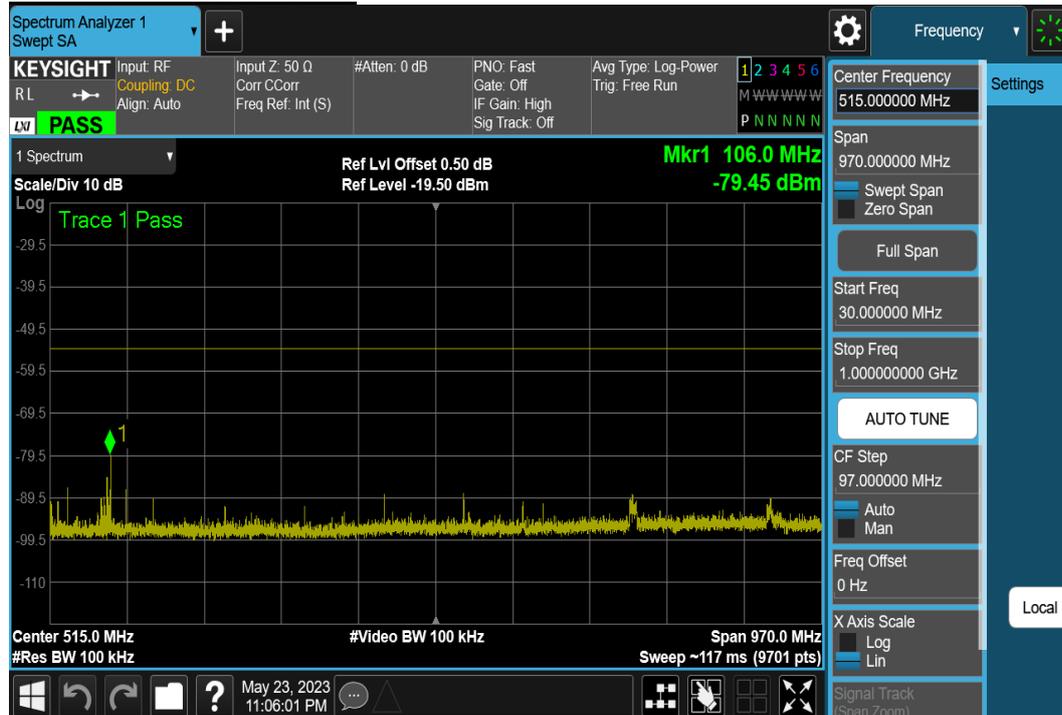
TEST PLOTS

(1) Under 1GHz

W52 / CH Low / Chain 0

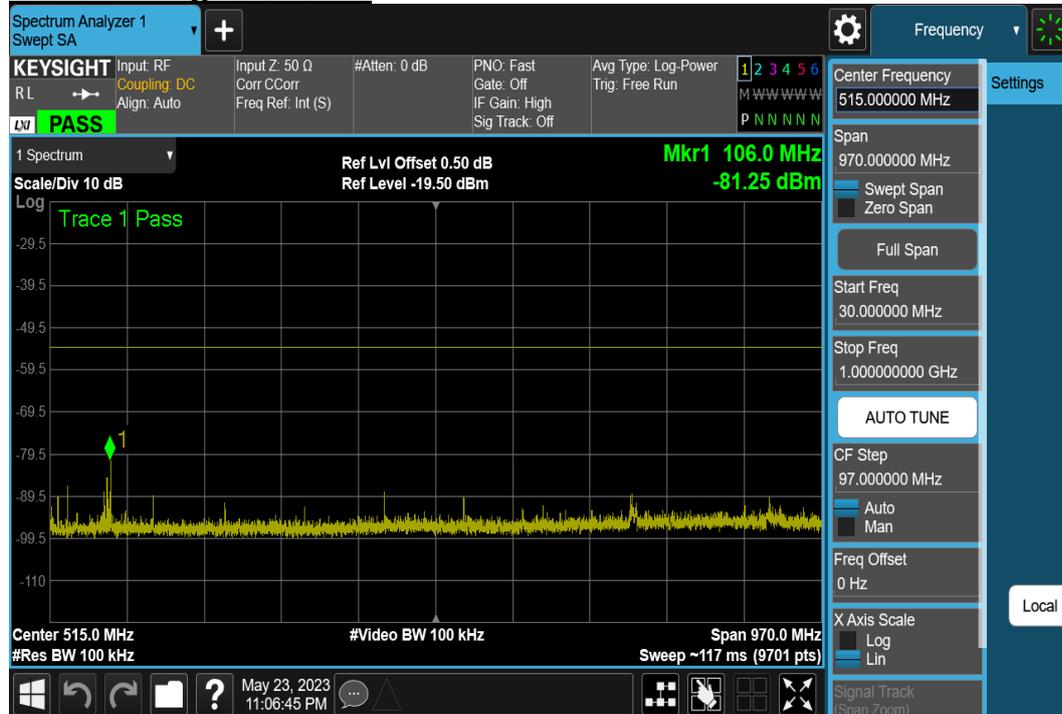


W52 / CH Mid / Chain 0



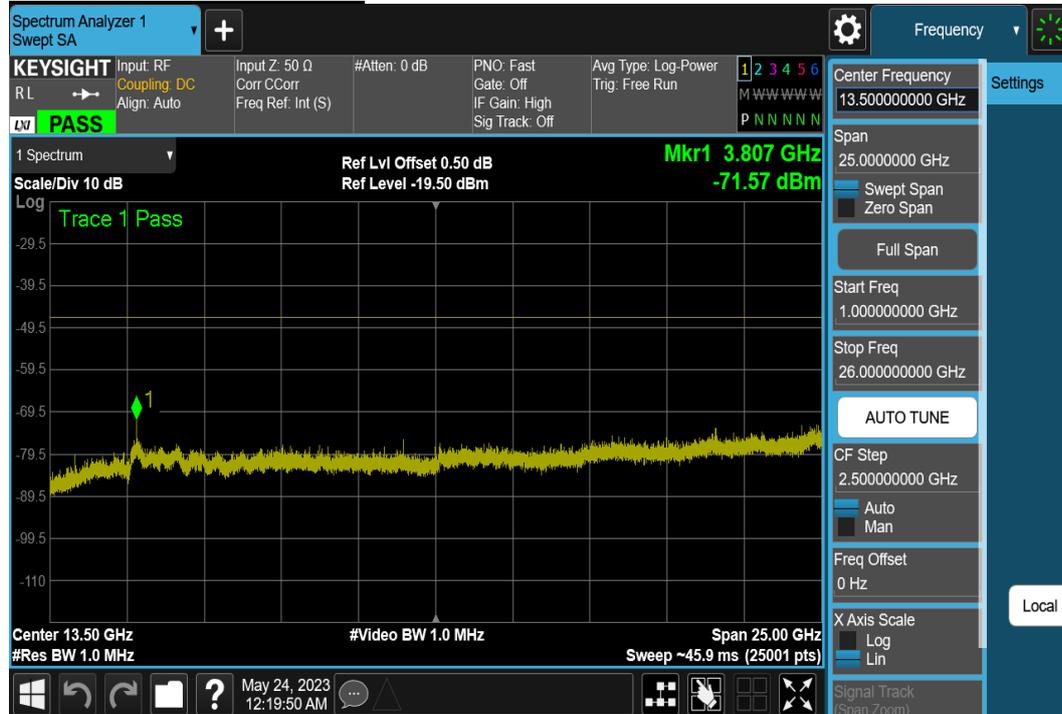
Report No.: TMWK2305001504KR

W52 / CH High / Chain 0

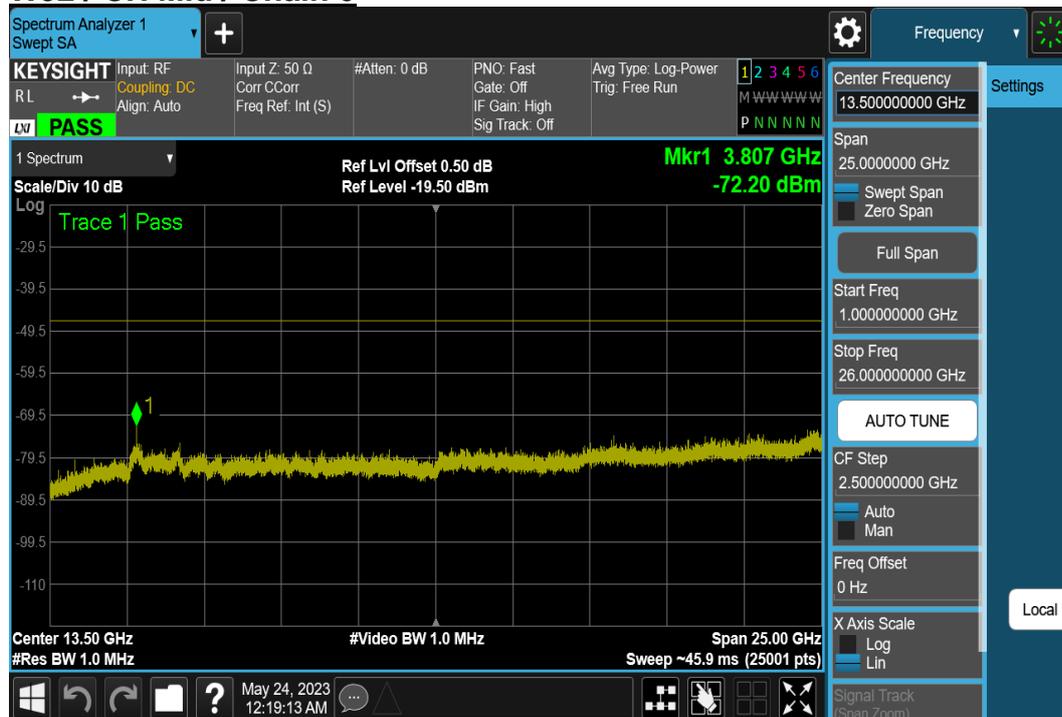


Report No.: TMWK2305001504KR

(2) 1GHz ~ 26GHz W52 / CH Low / Chain 0



W52 / CH Mid / Chain 0



Report No.: TMWK2305001504KR

W52 / CH High / Chain 0

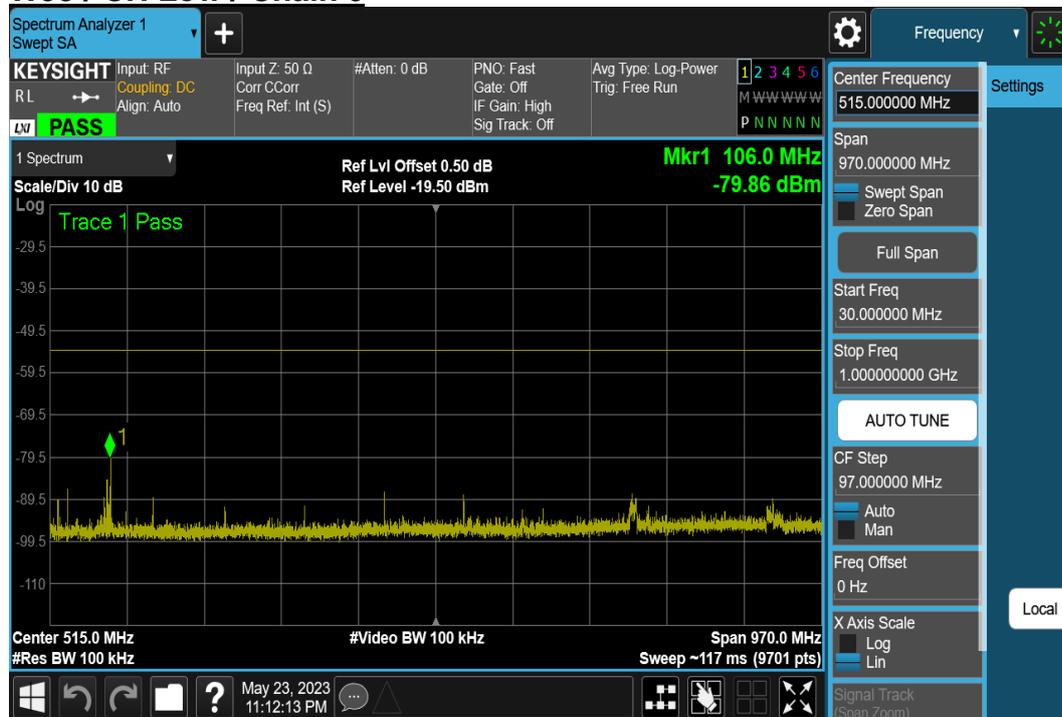


Report No.: TMWK2305001504KR

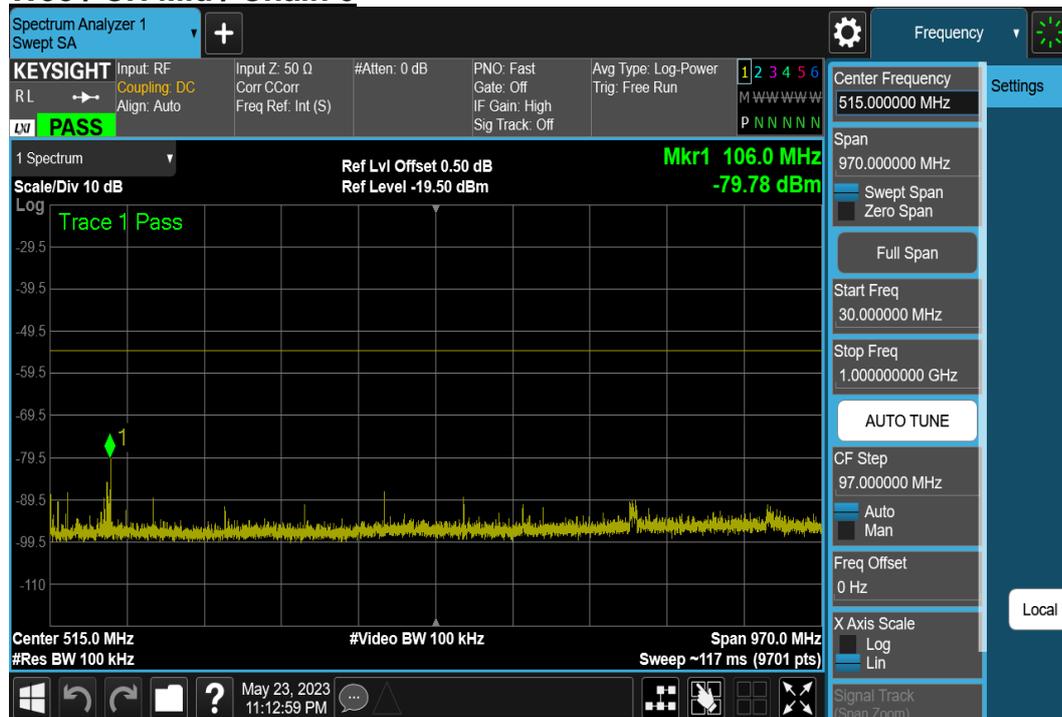
TEST PLOTS

(1) Under 1GHz

W53 / CH Low / Chain 0

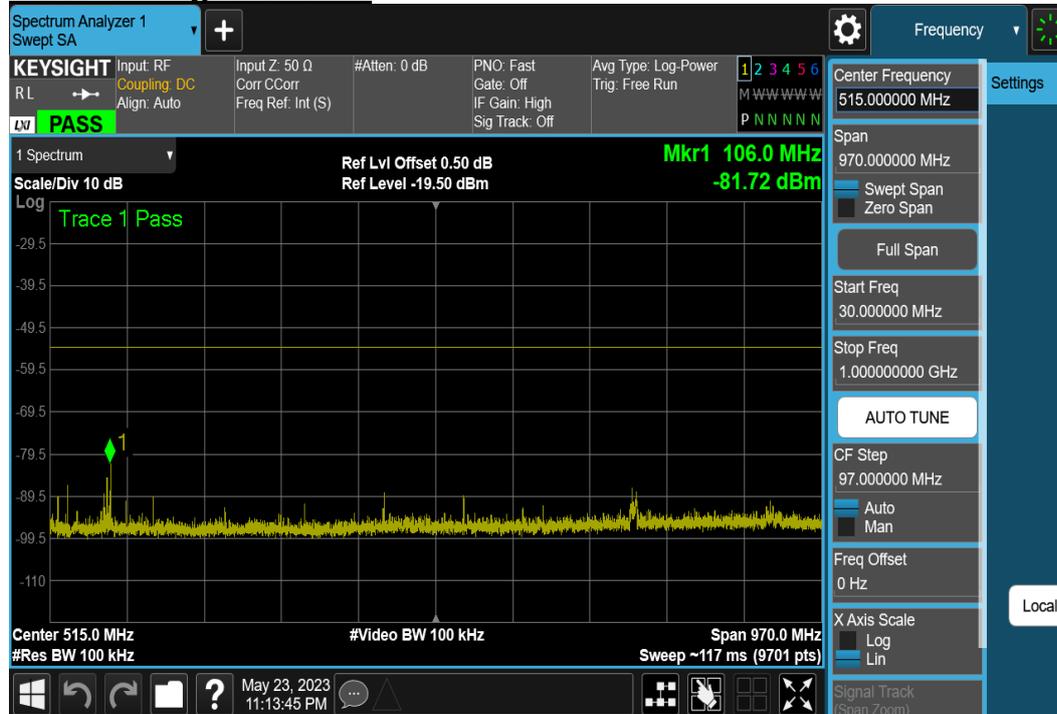


W53 / CH Mid / Chain 0



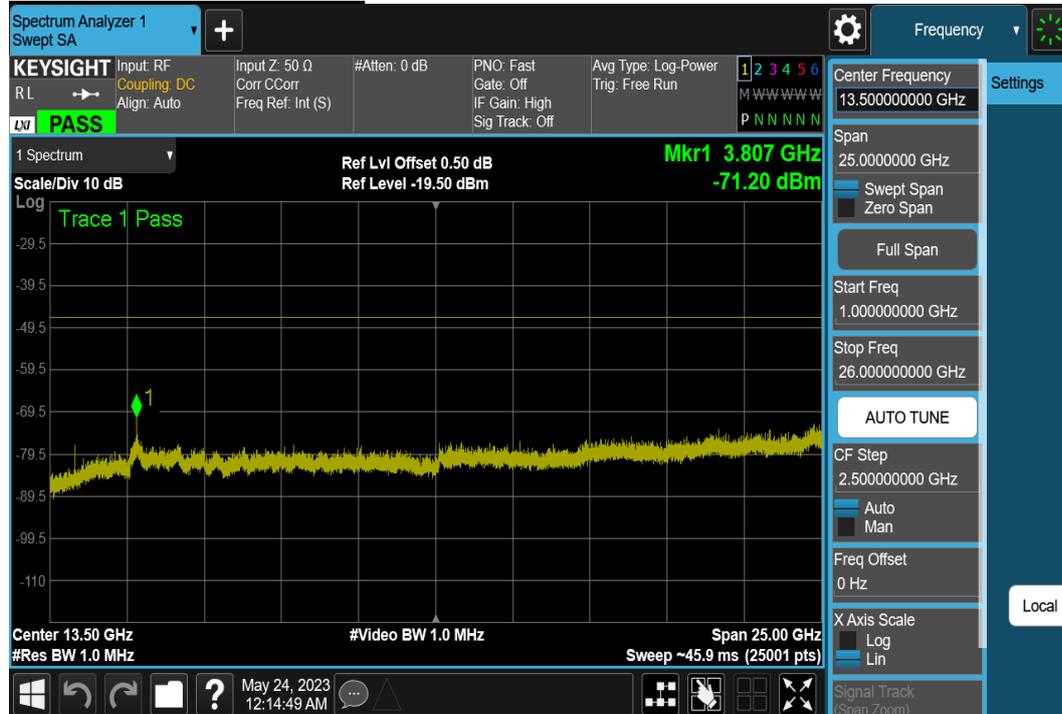
Report No.: TMWK2305001504KR

W53 / CH High / Chain 0



Report No.: TMWK2305001504KR

(2) 1GHz ~ 26GHz W53 / CH Low / Chain 0

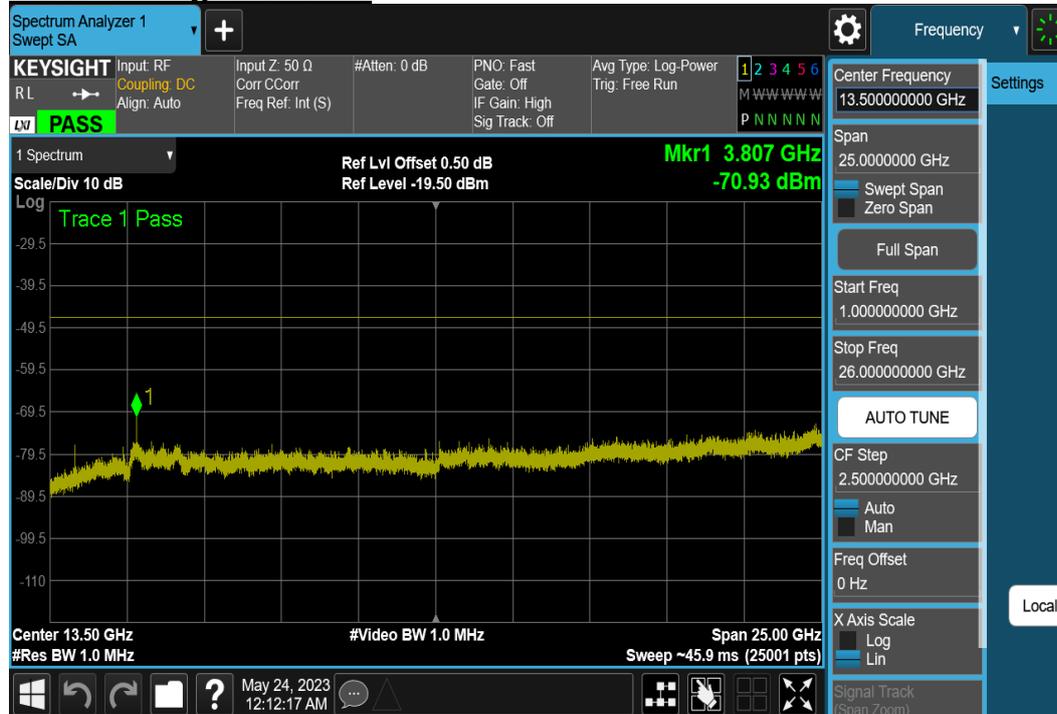


W53 / CH Mid / Chain 0



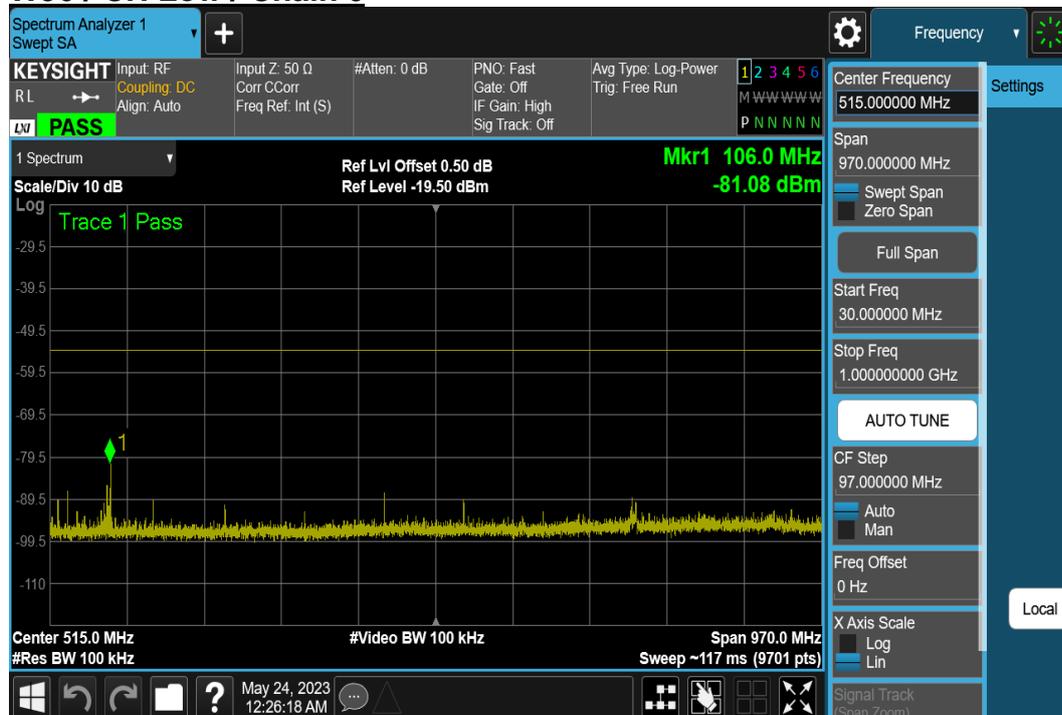
Report No.: TMWK2305001504KR

W53 / CH High / Chain 0

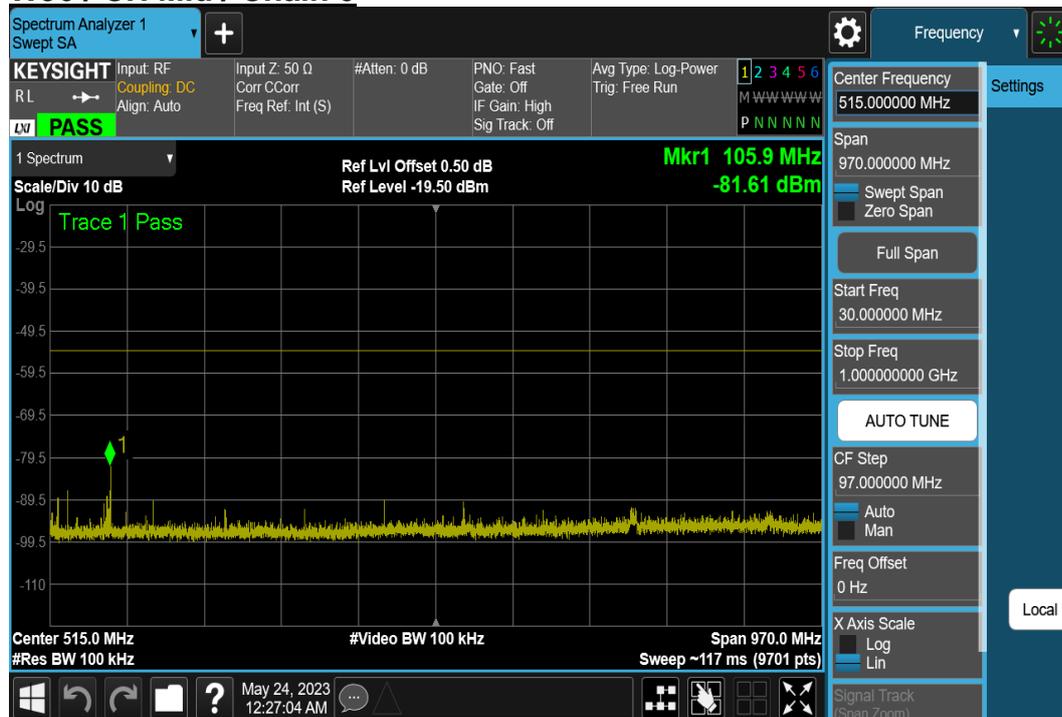


Report No.: TMWK2305001504KR

TEST POLTS (1) Under 1GHz W56 / CH Low / Chain 0

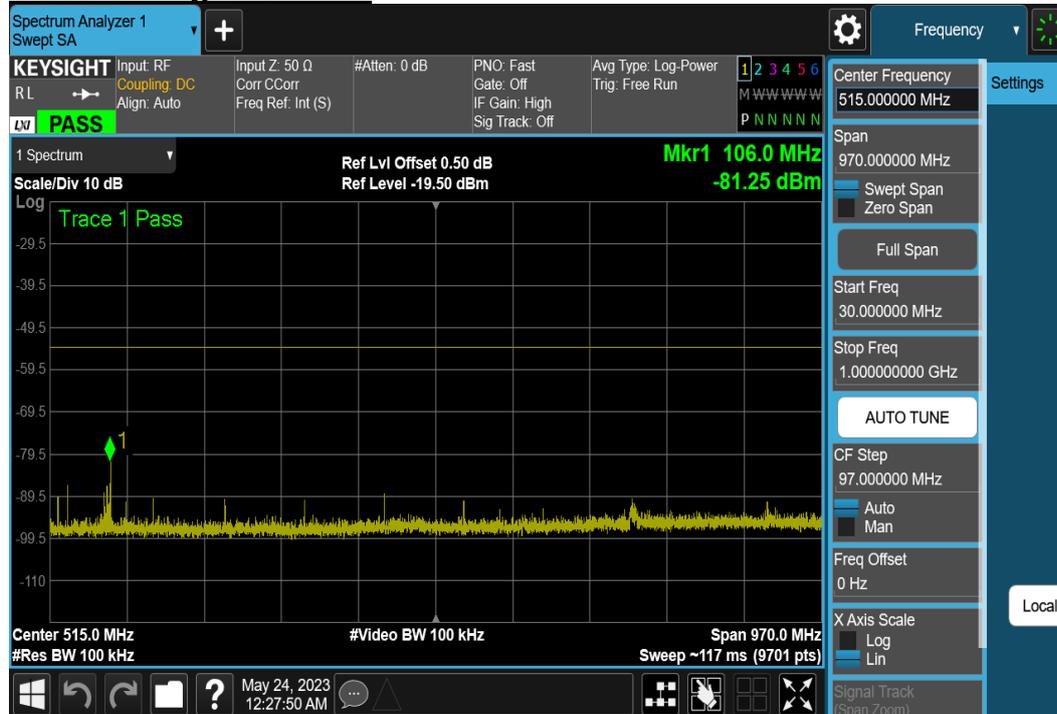


W56 / CH Mid / Chain 0



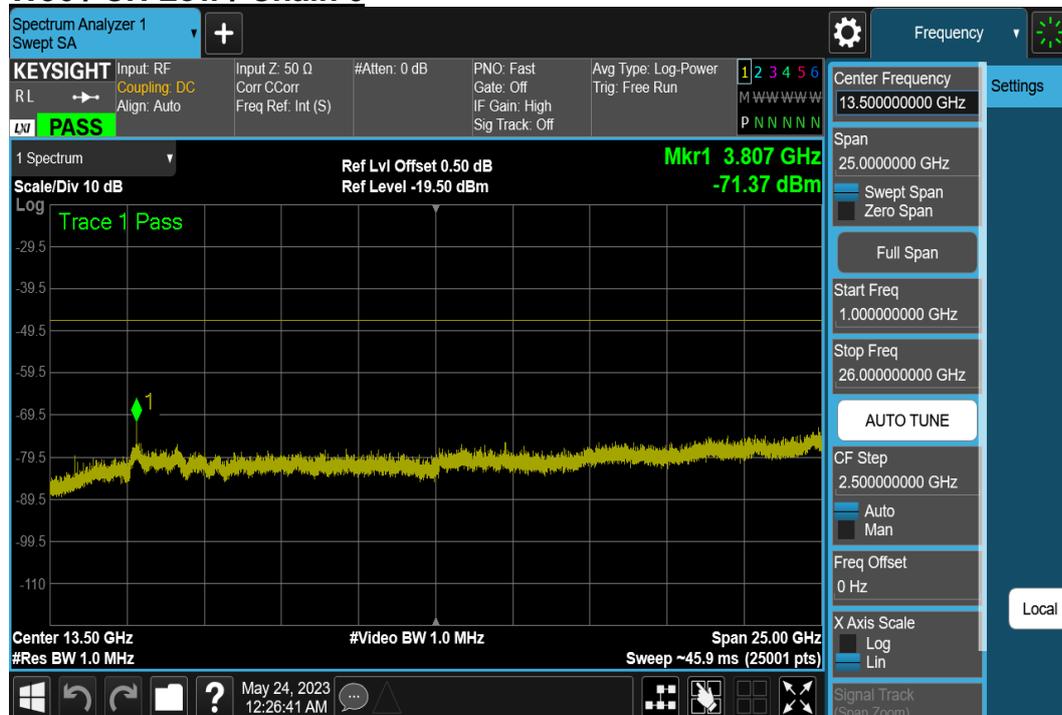
Report No.: TMWK2305001504KR

W56 / CH High / Chain 0



Report No.: TMWK2305001504KR

(2) 1GHz ~ 26GHz W56 / CH Low / Chain 0

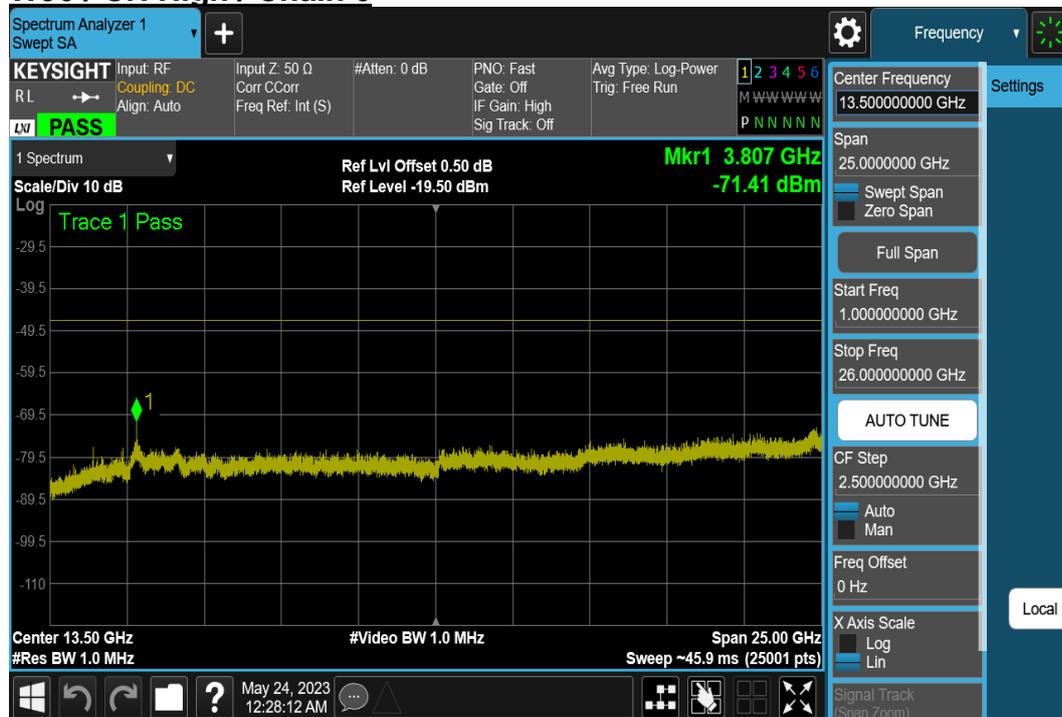


W56 / CH Mid / Chain 0



Report No.: TMWK2305001504KR

W56 / CH High / Chain 0



7.7 TRANSMITTER BURST LENGTH & CARRIER SENSE CAPABILITY

TEST RESULTS

W52

Burst	Modulation	---	BPSK			---	---
	On Time	msec	1.616			≤ 8	PASS
	Off Time	msec	0.102			---	---
	Ratio	%	94.06			---	---
802.11n_W52_20MHz		unit	---	---	---	Limit	Result
Measurement Center Frequency		MHz	5180	5220	5240	---	---
Channel Number		Ch.	36	44	48	---	---
Carrier Sensing Function		---	Good	Good	Good	---	PASS
Threshold Level (TX RX) (Chain0)		dBm				---	---
DFS Function		---				---	PASS
Burst Length of Transmitted Signals		---	Good	Good	Good	---	PASS
Interference Prevention Function		---	Good	Good	Good	---	PASS

W53

Burst	Modulation	---	BPSK			---	---
	On Time	msec	1.616			≤ 8	PASS
	Off Time	msec	0.102			---	---
	Ratio	%	94.06			---	---
802.11n_W53_20MHz		unit	---	---	---	Limit	Result
Measurement Center Frequency		MHz	5260	5300	5320	---	---
Channel Number		Ch.	52	60	64	---	---
Carrier Sensing Function		---	Good	Good	Good	---	PASS
Threshold Level (TX RX) (Chain0)		dBm				---	---
DFS Function		---				---	PASS
Burst Length of Transmitted Signals		---	Good	Good	Good	---	PASS
Interference Prevention Function		---	Good	Good	Good	---	PASS

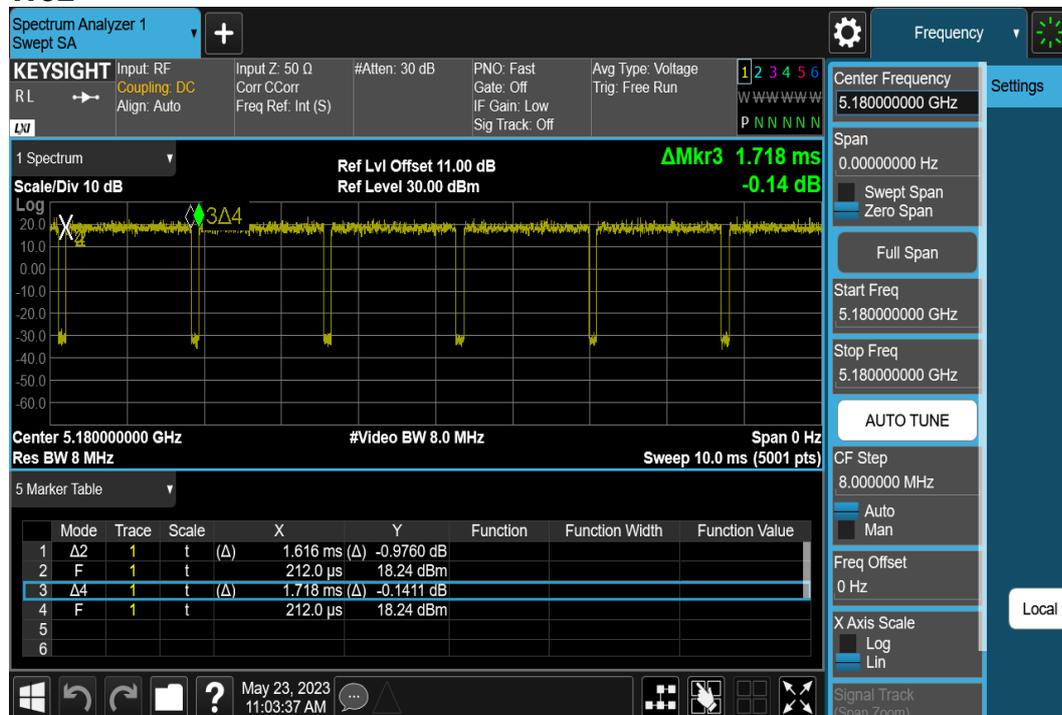
W56

Burst	Modulation	---	BPSK			---	---
	On Time	msec	1.616			≤ 8	PASS
	Off Time	msec	0.102			---	---
	Ratio	%	94.06			---	---
802.11n_W56_20MHz		unit	---	---	---	Limit	Result
Measurement Center Frequency		MHz	5500	5600	5720	---	---
Channel Number		Ch.	100	120	144	---	---
Carrier Sensing Function		---	Good	Good	Good	---	PASS
Threshold Level (TX RX) (Chain0)		dBm				---	---
DFS Function		---				---	PASS
Burst Length of Transmitted Signals		---	Good	Good	Good	---	PASS
Interference Prevention Function		---	Good	Good	Good	---	PASS

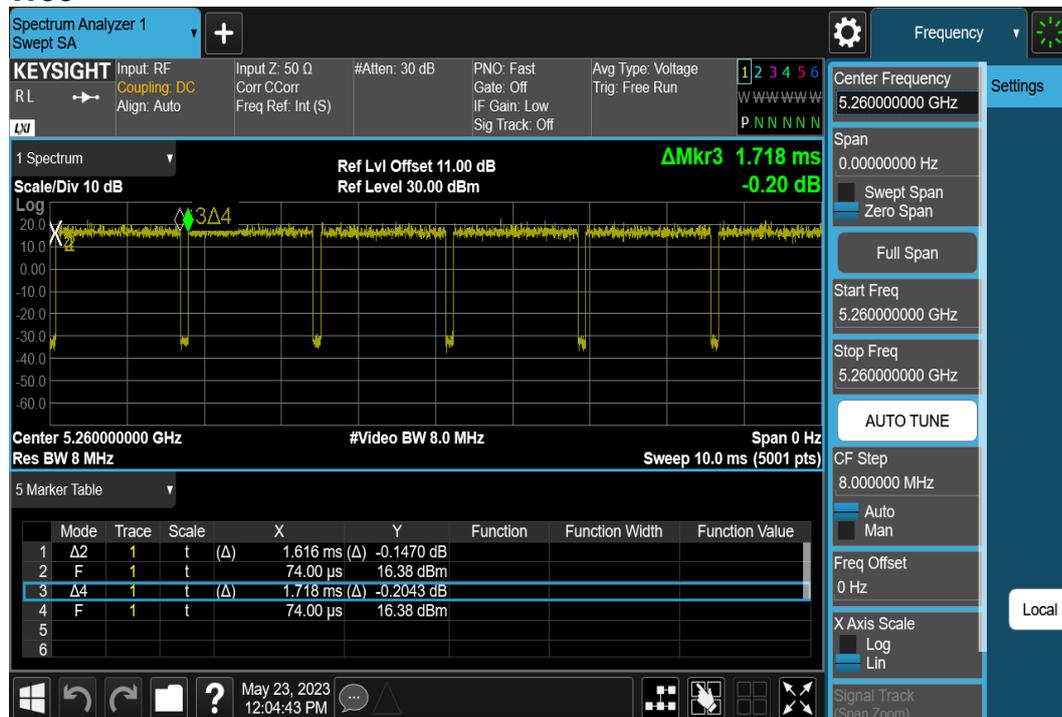
Report No.: TMWK2305001504KR

TEST PLOTS

W52

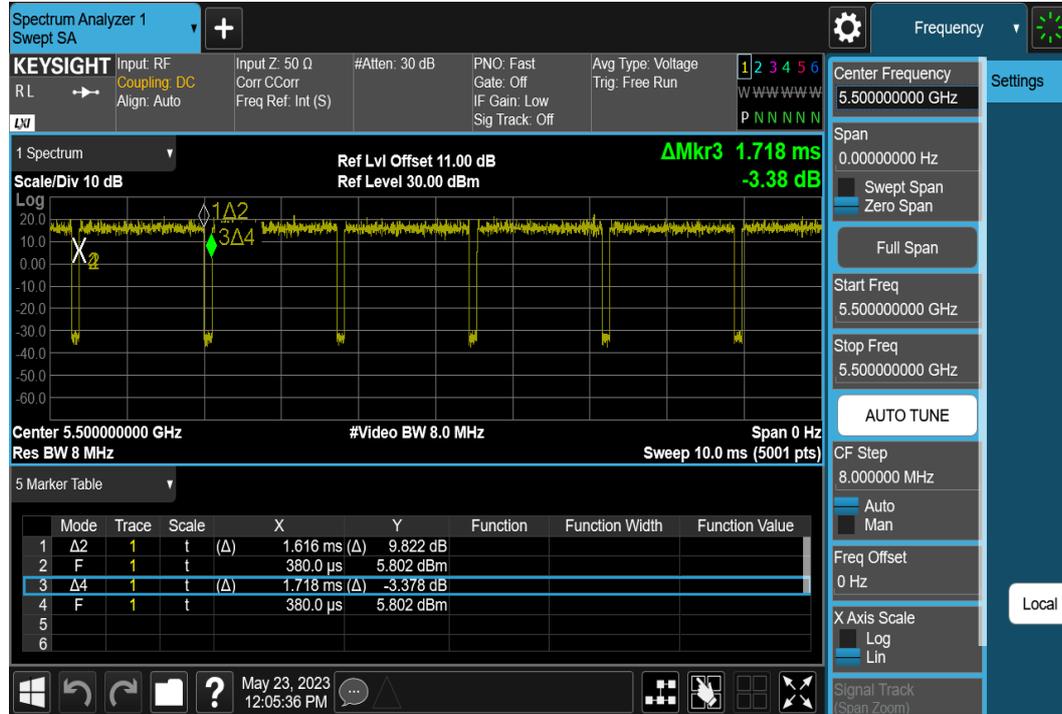


W53



Report No.: TMWK2305001504KR

W56



8. TEST RESULT FOR IEEE 802.11n HT40 (W52 & W53 & W56)

8.1 RF OUTPUT POWER

TEST RESULTS

W52

802.11n_W52_40MHz	unit	---	---	---	Limit	Result	
Measurement Center Frequency	MHz	5190	5230	-	---	---	
Channel Number	Ch.	38	46	-	---	---	
Declaration Output Power	mW/MHz	0.930			≤	5.000	PASS
Declaration Output Power	dBm/MHz	-0.610	-0.737	-	≤	6.990	PASS
E.I.R.P.	dBm/MHz	5.391	5.263	-	≤	6.990	PASS
Peak Antenna Gain (Chain0)	dBi	6				---	---
Tested Circuit Insertion Loss (Chain0)	dB	11.00				---	---
Tested Circuit Insertion Loss (RX_Chain0)	dB	1.00				---	---
RF Output Power							
802.11n_W52_40MHz	unit	---	---	---	Limit	Result	
Measurement Center Frequency	MHz	5190	5230	-	---	---	
Channel Number	Ch.	38	46	-	---	---	
RF Output Power (Chain0) (*1)	mW/MHz	0.869	0.844	-	---	---	
RF Output Power Tolerance (Chain0)	%	-6.56	-9.25	-	≤ -80 ≥ 20	PASS	
Total Output Power (Chain0)	dBm	-0.60924	-0.73711	-	---	---	
(*1): included calculation of burst ratio							

W53

802.11n_W53_40MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5270	5310	-	---	---
Channel Number	Ch.	54	62	-	---	---
Declaration Output Power	mW/MHz	0.930		-	∞ 5.000	PASS
Declaration Output Power	dBm/MHz	-0.315	-0.610	-	∞ 6.990	PASS
E.I.R.P.	dBm/MHz	5.683	5.390	-	∞ 6.990	PASS
Peak Antenna Gain (Chain0)	dBi	6		-	---	---
Tested Circuit Insertion Loss (Chain0)	dB	11.00		-	---	---
Tested Circuit Insertion Loss (RX_Chain0)	dB	1.00		-	---	---
RF Output Power						
802.11n_W53_40MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5270	5310	-	---	---
Channel Number	Ch.	54	62	-	---	---
RF Output Power (Chain0) (*1)	mW/MHz	0.930	0.869	-	---	---
RF Output Power Tolerance (Chain0)	%	0.00	-6.56	-	∞ -80	PASS
					∞ 20	
Total Output Power (Chain0)	dBm	-0.31740	-0.61044	-	---	---
(*1): included calculation of burst ratio						

W56

802.11n_W56_40MHz	unit	---	---	---	Limit	Result	
Measurement Center Frequency	MHz	5510	5590	5710	---	---	
Channel Number	Ch.	102	118	142	---	---	
Declaration Output Power	mW/MHz	0.750			≤	5.000	PASS
Declaration Output Power	dBm/MHz	-1.427	-1.249	-1.494	≤	6.990	PASS
E.I.R.P.	dBm/MHz	4.572	4.752	4.504	≤	13.979	PASS
Peak Antenna Gain (Chain0)	dBi	6			---	---	
Tested Circuit Insertion Loss (Chain0)	dB	11.00			---	---	
Tested Circuit Insertion Loss (RX_Chain0)	dB	1.00			---	---	
RF Output Power							
802.11n_W56_40MHz	unit	---	---	---	Limit	Result	
Measurement Center Frequency	MHz	5510	5590	5710	---	---	
Channel Number	Ch.	102	118	142	---	---	
RF Output Power (Chain0) (*1)	mW/MHz	0.720	0.750	0.709	---	---	
RF Output Power Tolerance (Chain0)	%	-4.00	0.00	-5.47	≥	-50	PASS
					≤	50	
Total Output Power (Chain0)	dBm	-1.4279	-1.2478	-1.4962	---	---	
(*1): included calculation of burst ratio							

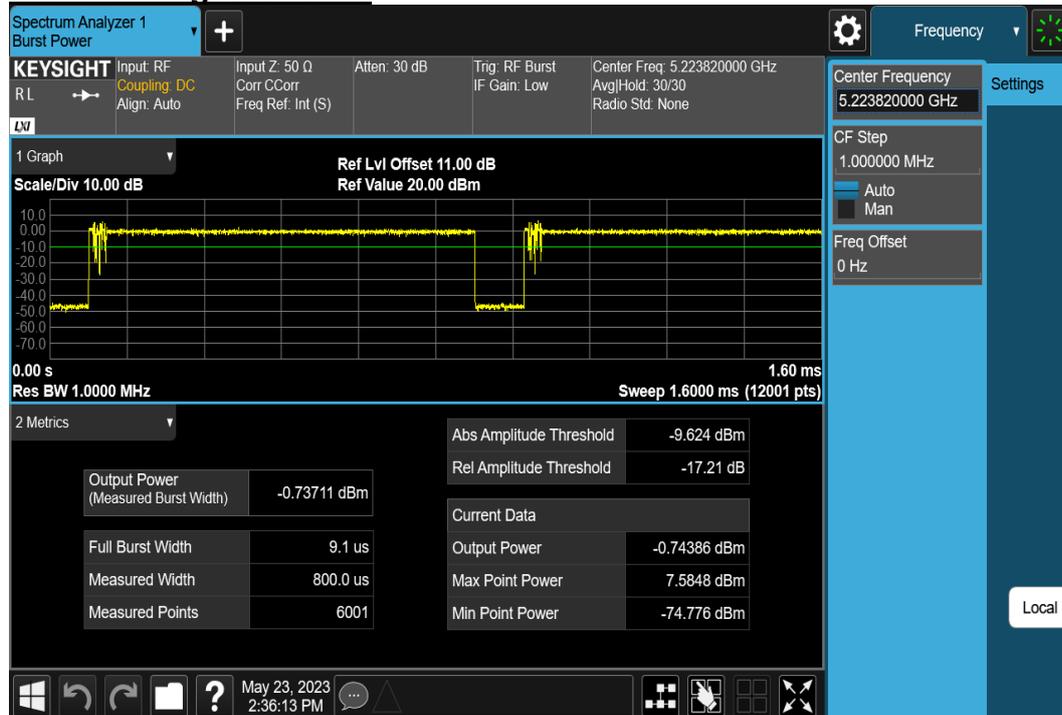
Report No.: TMWK2305001504KR

TEST PLOTS

W52 / CH Low / Chain 0

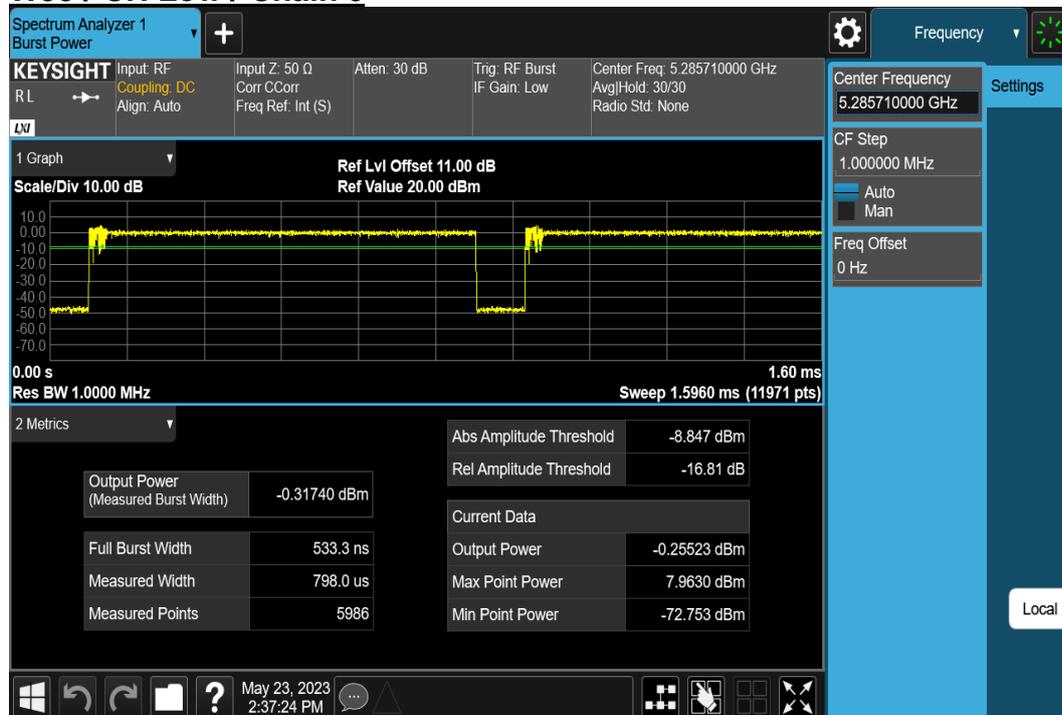


W52 / CH High / Chain 0

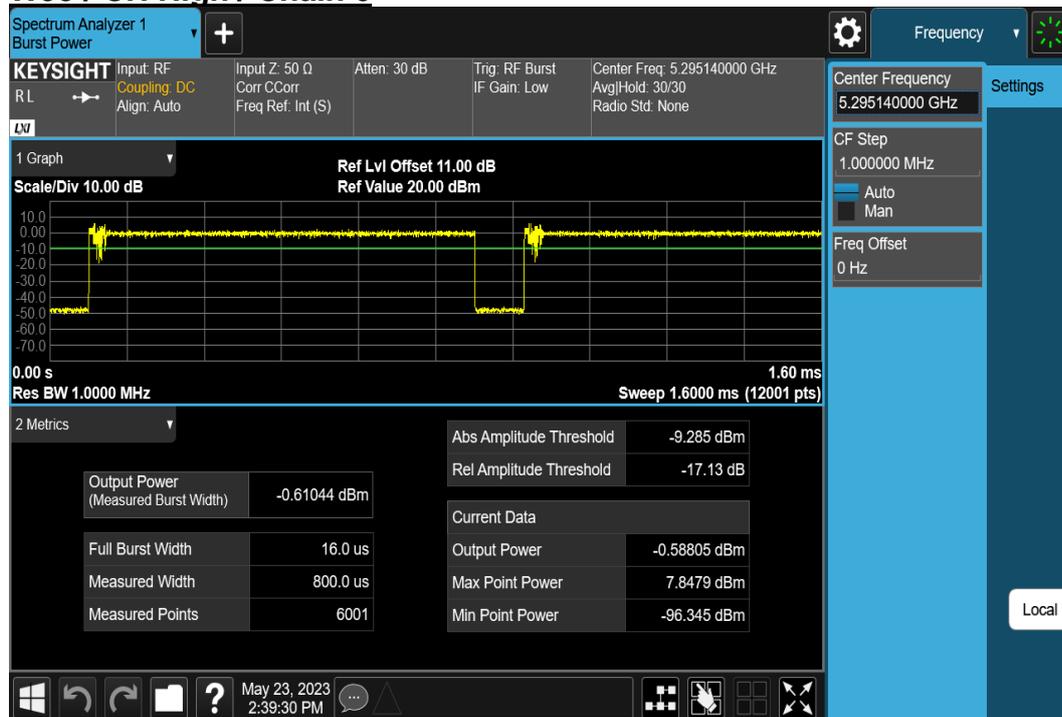


Report No.: TMWK2305001504KR

W53 / CH Low / Chain 0



W53 / CH High / Chain 0

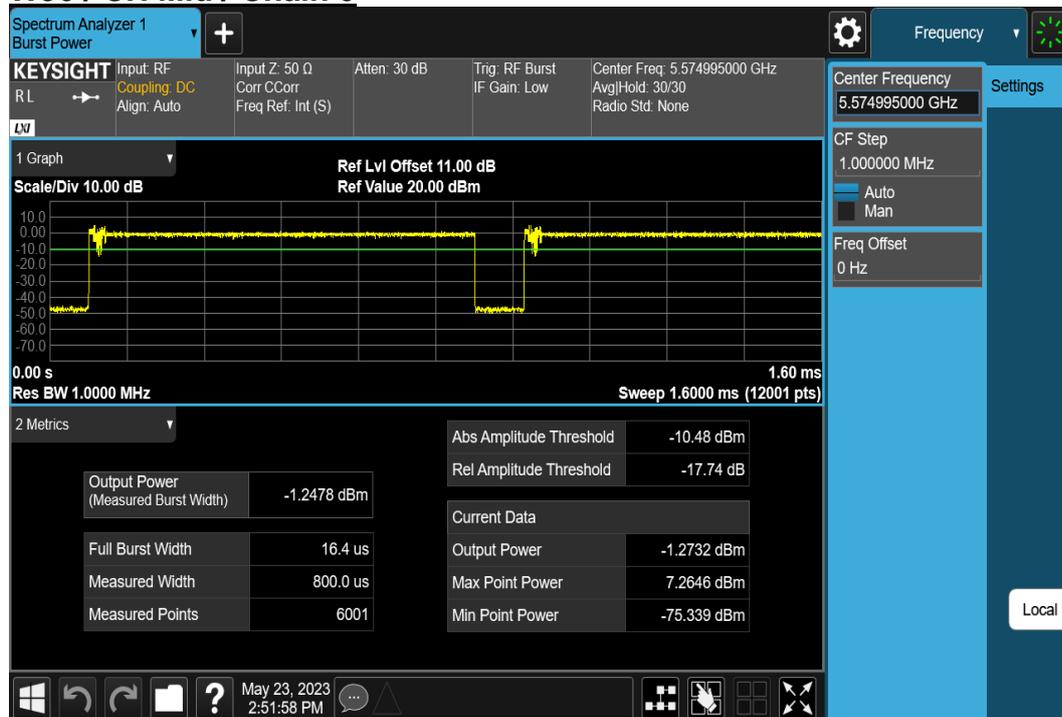


Report No.: TMWK2305001504KR

W56 / CH Low / Chain 0

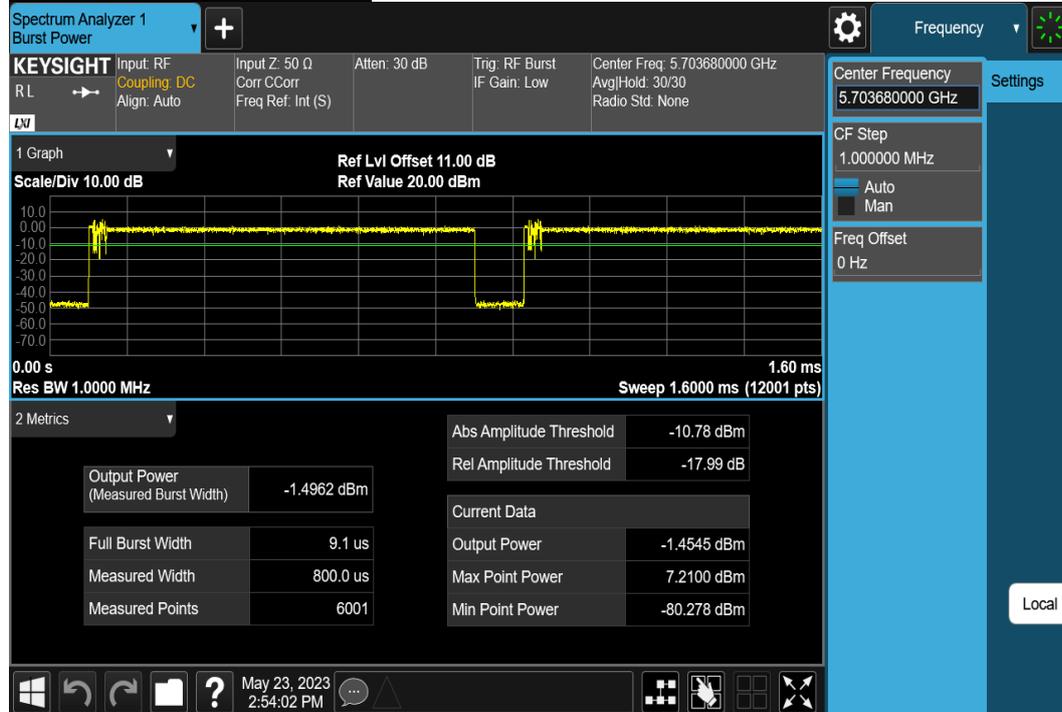


W56 / CH Mid / Chain 0



Report No.: TMWK2305001504KR

W56 / CH High / Chain 0



Report No.: TMWK2305001504KR

8.2 FREQUENCY TOLERANCE

TEST RESULT

W52

Frequency Tolerance						
802.11n_W52_40MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5190	5230	-	---	---
Channel Number	Ch.	38	46	-	---	---
Reading Frequency (Chain0)	MHz	5190.034	5230.033	-	---	PASS
Frequency Tolerance (Chain0)	ppm	6.5511	6.3098	-	±20	

W53

Frequency Tolerance						
802.11n_W53_40MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5270	5310	-	---	---
Channel Number	Ch.	54	62	-	---	---
Reading Frequency (Chain0)	MHz	5270.034	5310.032	-	---	PASS
Frequency Tolerance (Chain0)	ppm	6.4516	6.0264	-	±20	

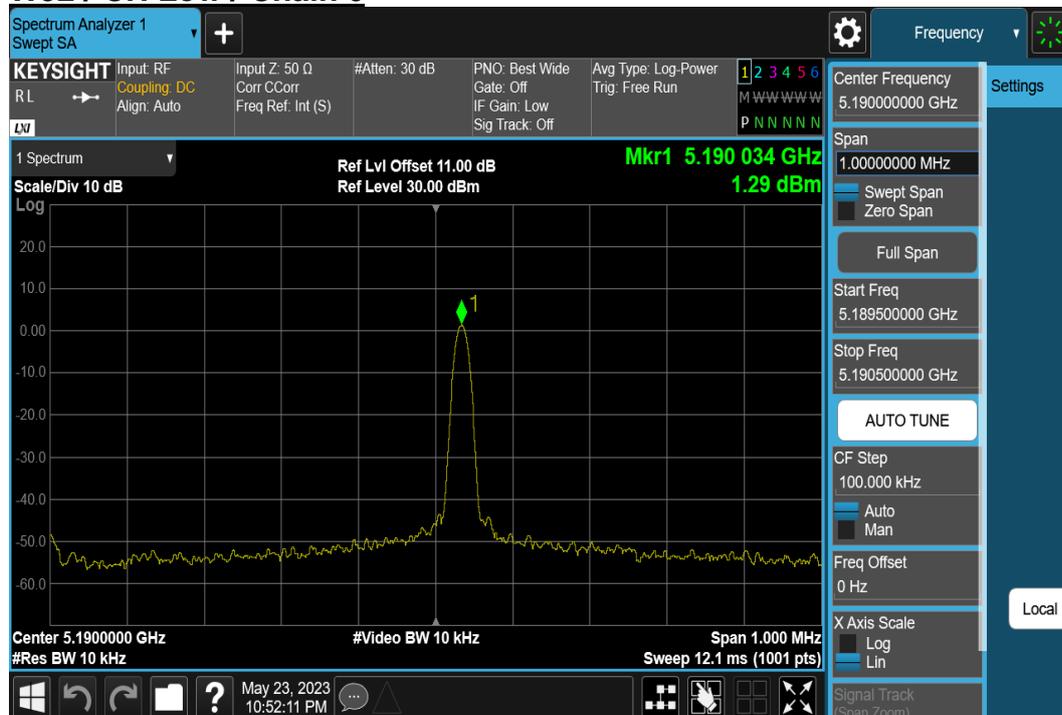
W56

Frequency Tolerance						
802.11n_W56_40MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5510	5590	5710	---	---
Channel Number	Ch.	102	118	142	---	---
Reading Frequency (Chain0)	MHz	5510.034	5590.035	5710.037	---	PASS
Frequency Tolerance (Chain0)	ppm	6.1706	6.2612	6.4799	±20	

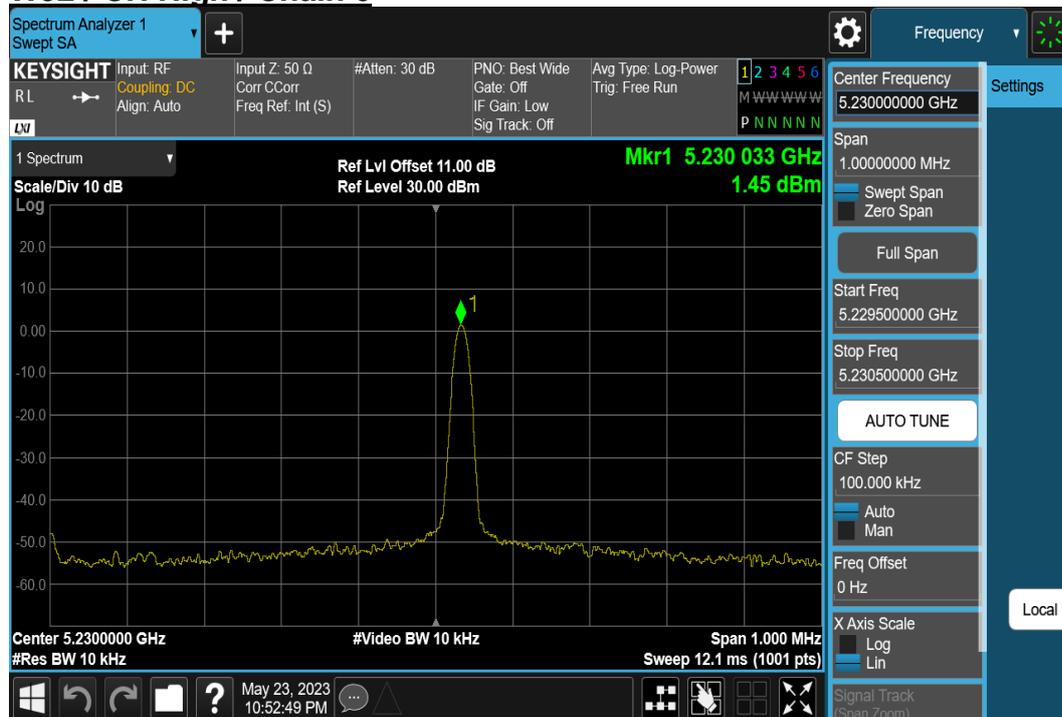
Report No.: TMWK2305001504KR

TEST PLOTS

W52 / CH Low / Chain 0

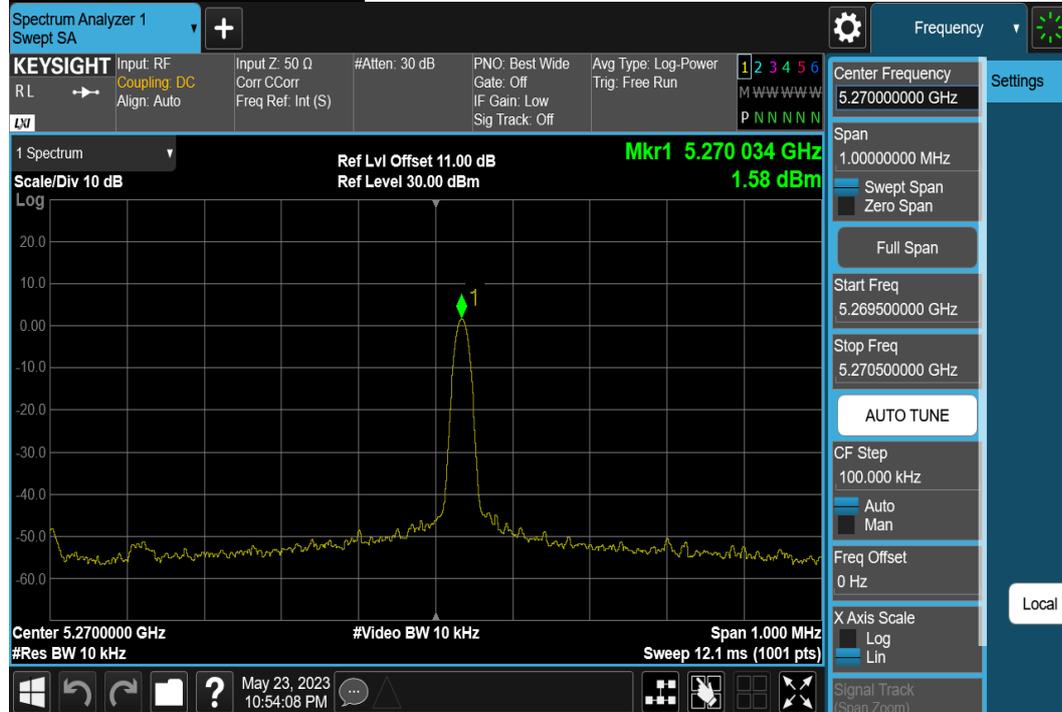


W52 / CH High / Chain 0

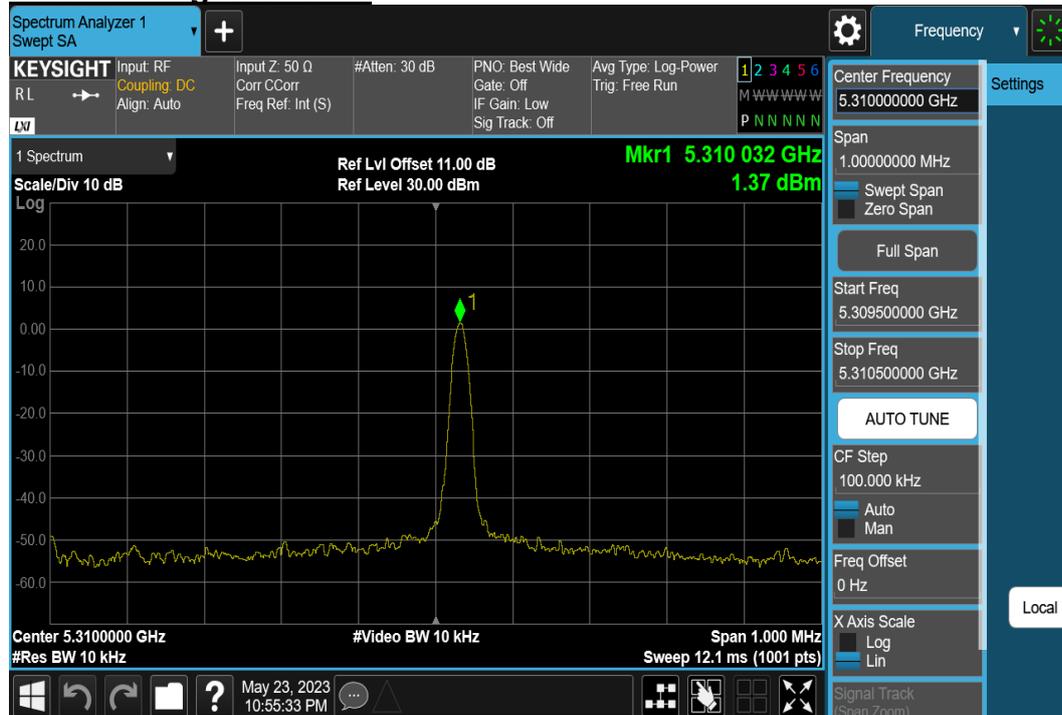


Report No.: TMWK2305001504KR

W53 / CH Low / Chain 0



W53 / CH High / Chain 0

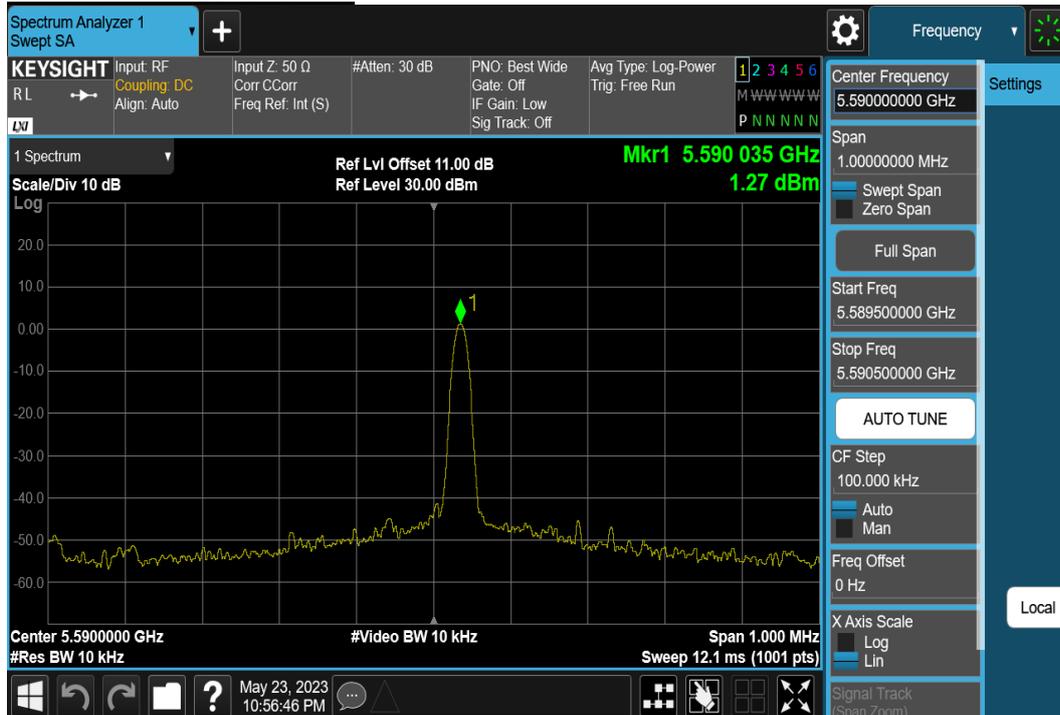


Report No.: TMWK2305001504KR

W56 / CH Low / Chain 0



W56 / CH Mid / Chain 0



Report No.: TMWK2305001504KR

W56 / CH High / Chain 0



Report No.: TMWK2305001504KR

8.3 OCCUPIED BANDWIDTH (99%)

TEST RESULT

W52

Occupied Bandwidth						
802.11n_W52_40MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5190	5230	-	---	---
Channel Number	Ch.	38	46	-	---	---
Occupied Bandwidth (Chain0)	MHz	36.185	36.214	-	≤ 40	PASS

W53

Occupied Bandwidth						
802.11n_W53_40MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5270	5310	-	---	---
Channel Number	Ch.	54	62	-	---	---
Occupied Bandwidth (Chain0)	MHz	36.226	36.153	-	≤ 40	PASS

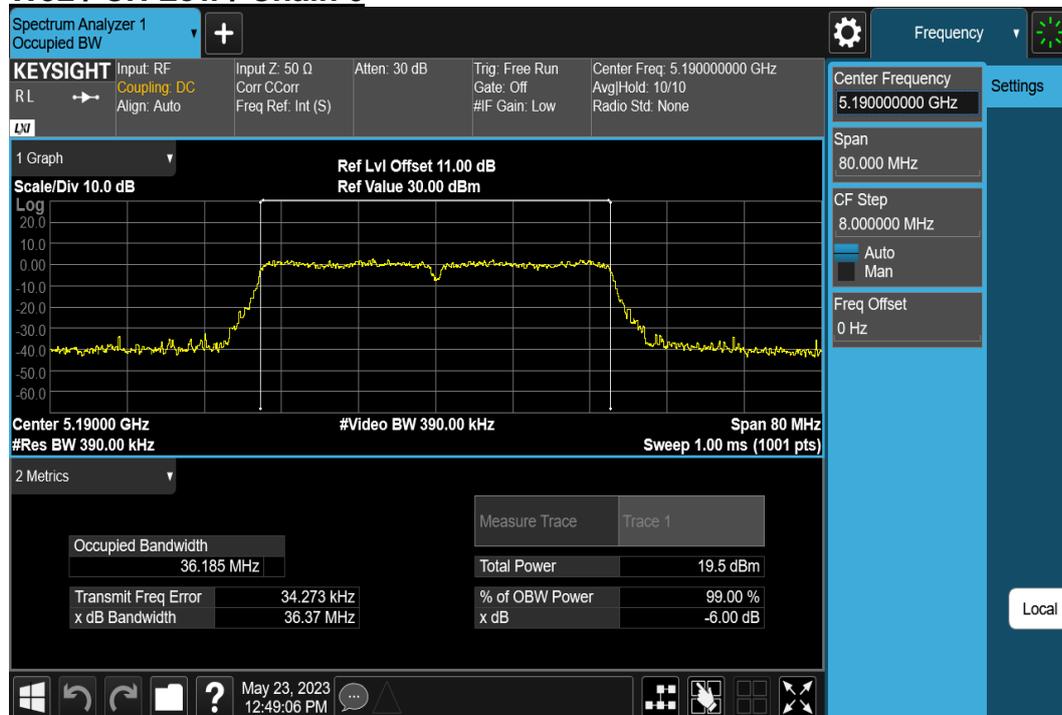
W56

Occupied Bandwidth						
802.11n_W56_40MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5510	5590	5710	---	---
Channel Number	Ch.	102	118	142	---	---
Occupied Bandwidth (Chain0)	MHz	36.208	36.156	36.160	≤ 40	PASS

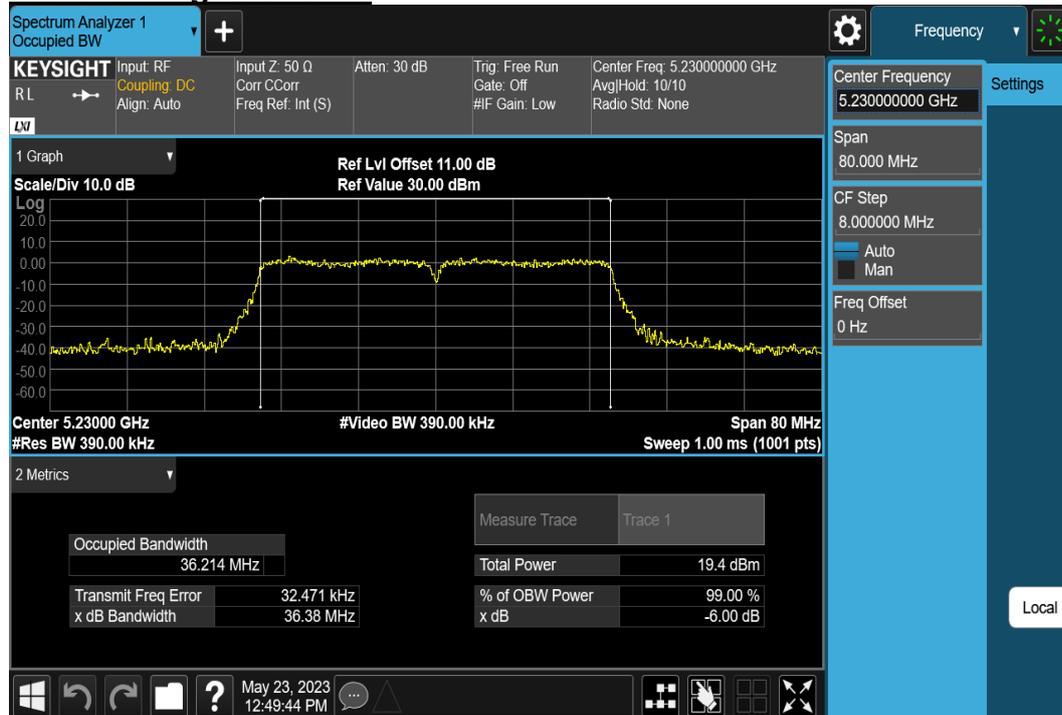
Report No.: TMWK2305001504KR

TEST PLOTS

W52 / CH Low / Chain 0



W52 / CH High / Chain 0



Report No.: TMWK2305001504KR

W53 / CH Low / Chain 0



W53 / CH High / Chain 0

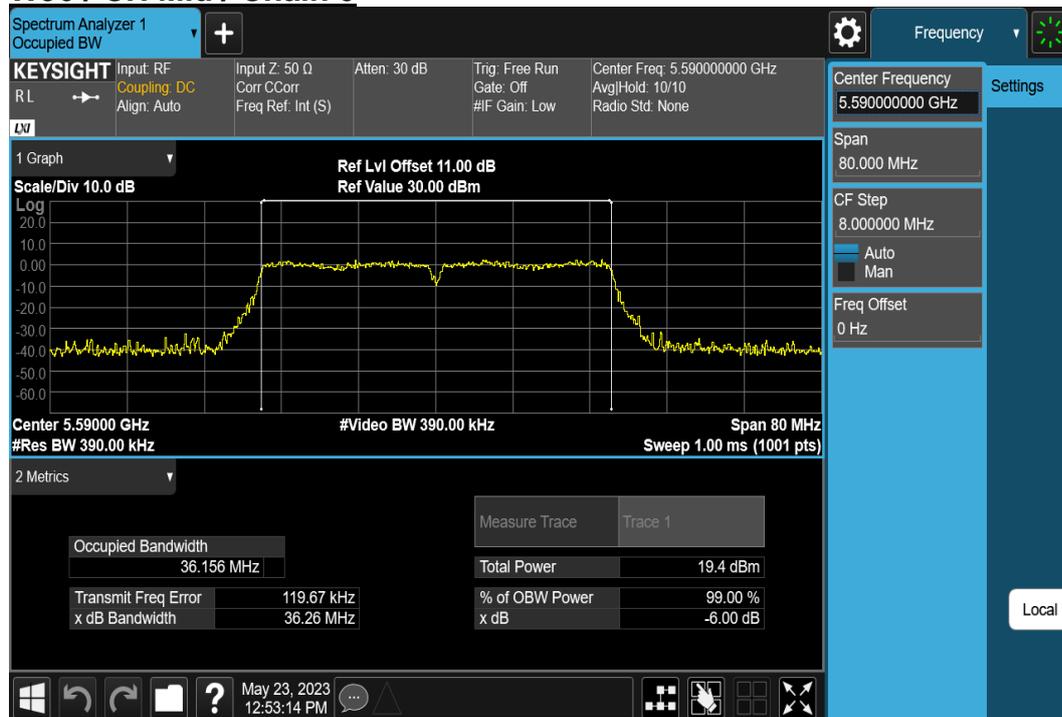


Report No.: TMWK2305001504KR

W56 / CH Low / Chain 0



W56 / CH Mid / Chain 0



Report No.: TMWK2305001504KR

W56 / CH High / Chain 0



Report No.: TMWK2305001504KR

8.4 ADJACENT CHANNEL LEAKAGE POWER

TEST RESULT

W52

Adjacent Channel Leakage Power						
802.11n_W52_40MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5190	5230	-	---	---
Channel Number	Ch.	38	46	-	---	---
CF-80MHz (± 20 MHz)(Chain0)	dBc	-43.48	-43.66	-	\leq -40	PASS
CF-40MHz (± 20 MHz)(Chain0)	dBc	-40.95	-40.47	-	\leq -25	PASS
CF+40MHz (± 20 MHz)(Chain0)	dBc	-39.84	-40.98	-	\leq -25	PASS
CF+80MHz (± 20 MHz)(Chain0)	dBc	-44.65	-45.21	-	\leq -40	PASS

W53

Adjacent Channel Leakage Power						
802.11n_W53_40MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5270	5310	-	---	---
Channel Number	Ch.	54	62	-	---	---
CF-80MHz (± 20 MHz)(Chain0)	dBc	-43.95	-43.90	-	\leq -40	PASS
CF-40MHz (± 20 MHz)(Chain0)	dBc	-40.72	-40.56	-	\leq -25	PASS
CF+40MHz (± 20 MHz)(Chain0)	dBc	-41.16	-40.69	-	\leq -25	PASS
CF+80MHz (± 20 MHz)(Chain0)	dBc	-45.48	-45.07	-	\leq -40	PASS

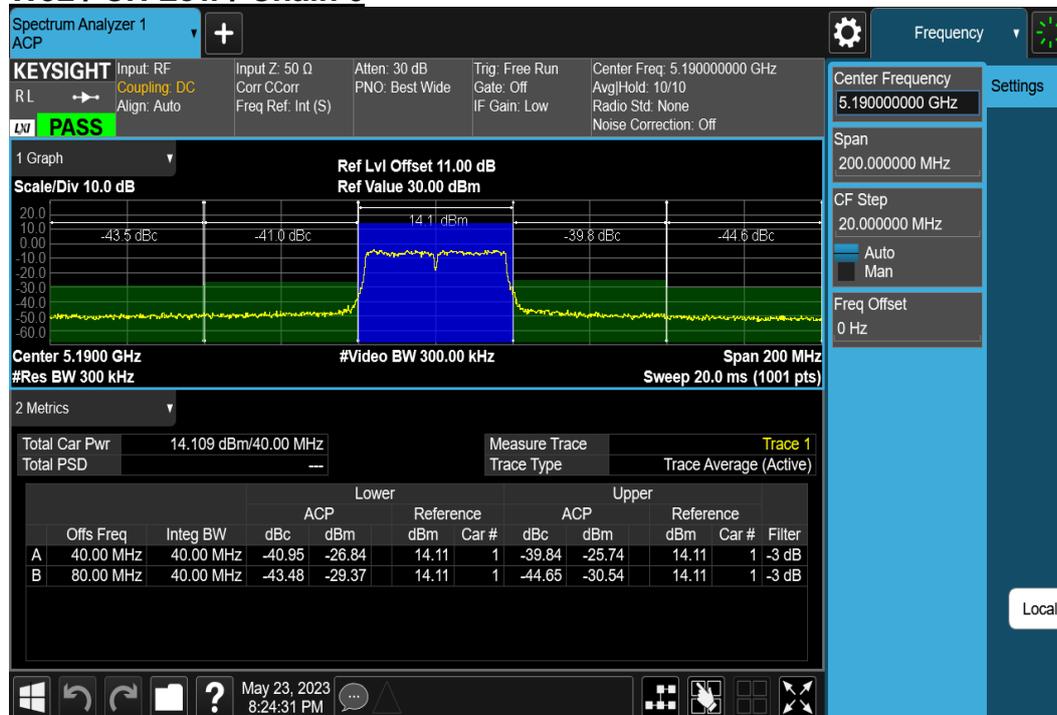
W56

Adjacent Channel Leakage Power						
802.11n_W56_40MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5510	5590	5710	---	---
Channel Number	Ch.	102	118	142	---	---
CF-80MHz (± 20 MHz)(Chain0)	dBc	-44.98	-45.05	-44.08	\leq -40	PASS
CF-40MHz (± 20 MHz)(Chain0)	dBc	-40.37	-40.50	-40.29	\leq -25	PASS
CF+40MHz (± 20 MHz)(Chain0)	dBc	-40.13	-39.93	-40.84	\leq -25	PASS
CF+80MHz (± 20 MHz)(Chain0)	dBc	-43.57	-44.00	-43.85	\leq -40	PASS

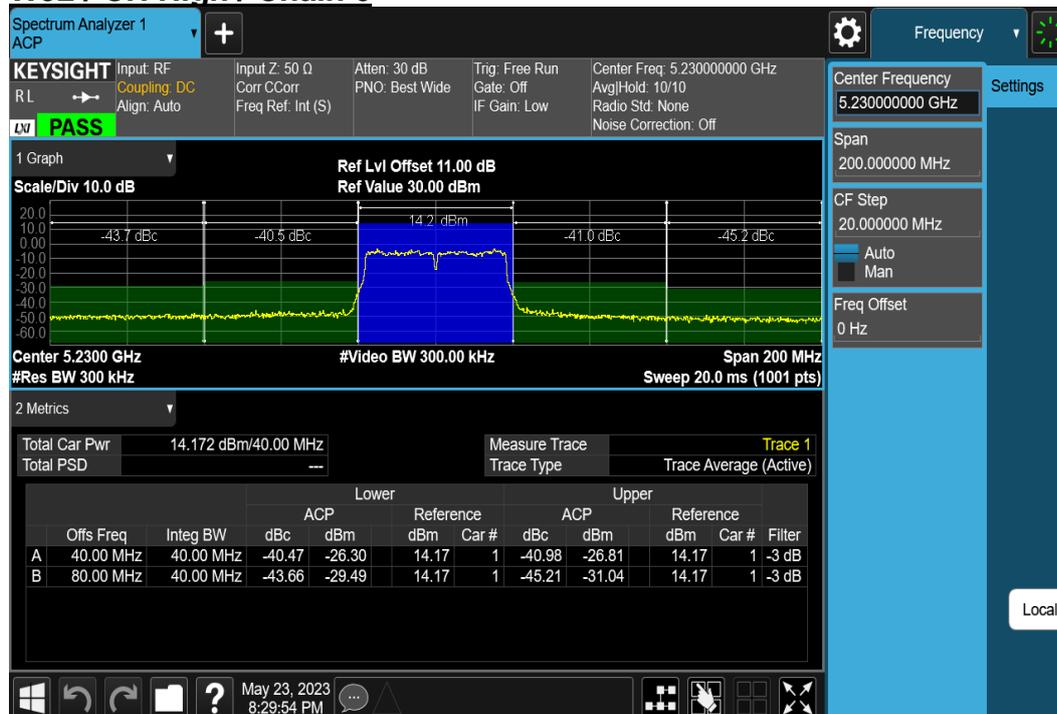
Report No.: TMWK2305001504KR

TEST PLOTS

W52 / CH Low / Chain 0

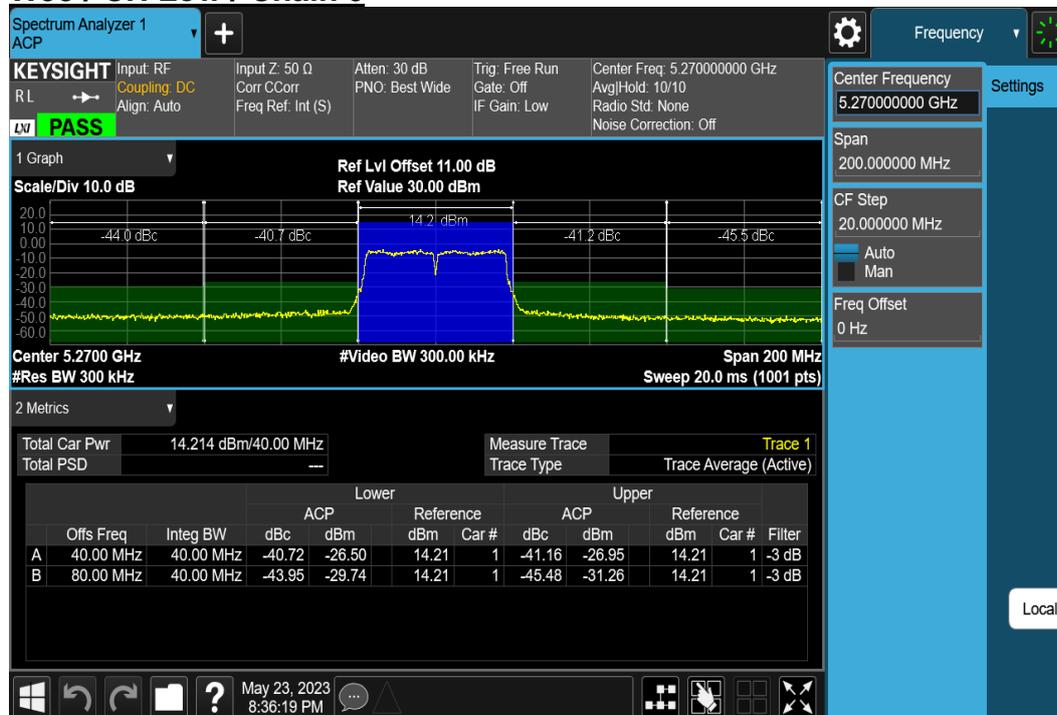


W52 / CH High / Chain 0

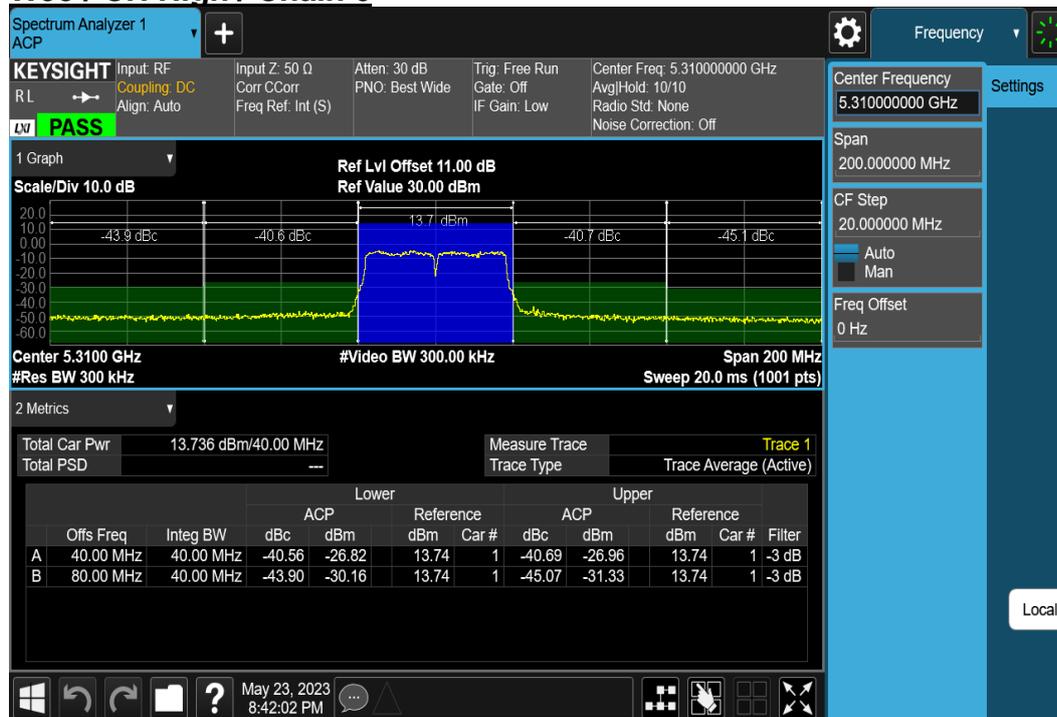


Report No.: TMWK2305001504KR

W53 / CH Low / Chain 0

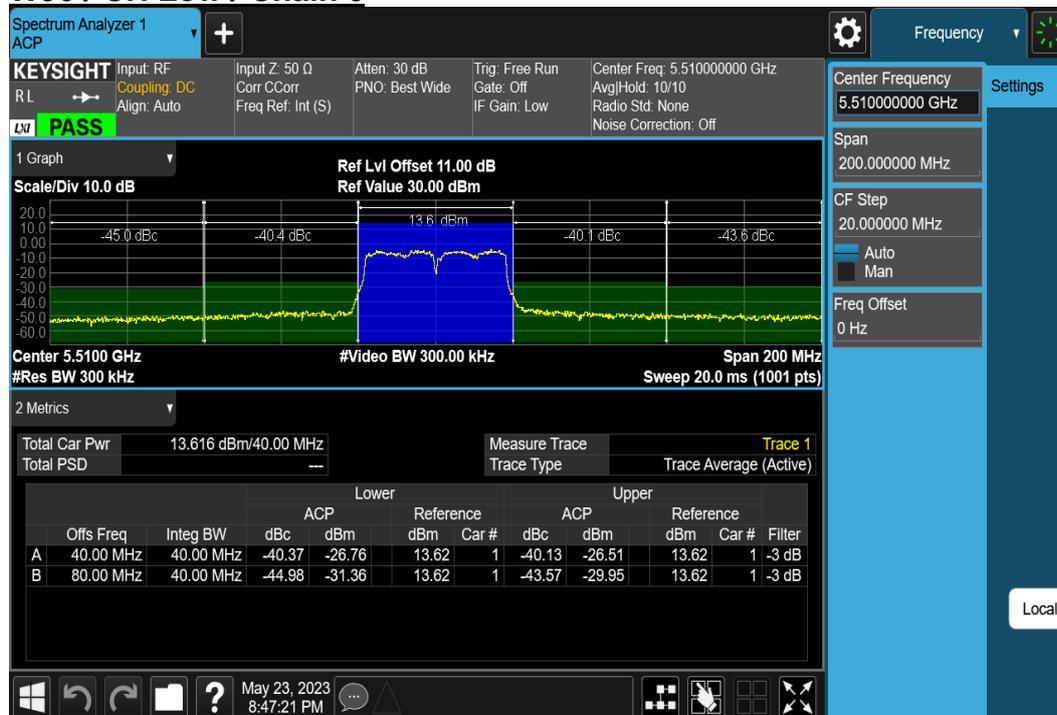


W53 / CH High / Chain 0

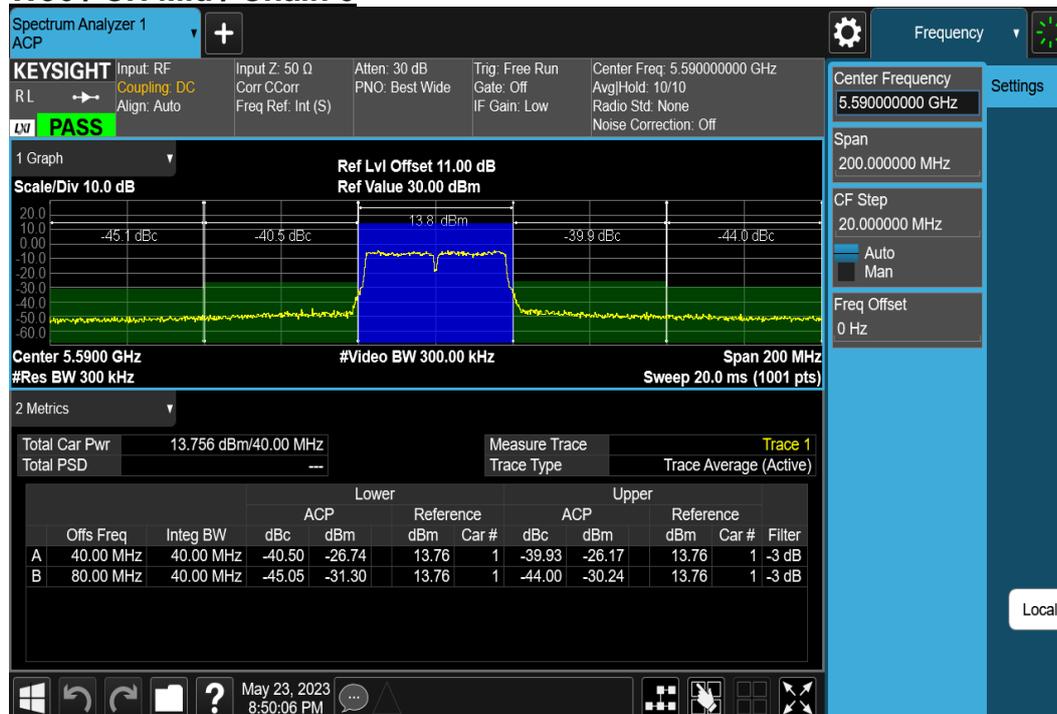


Report No.: TMWK2305001504KR

W56 / CH Low / Chain 0

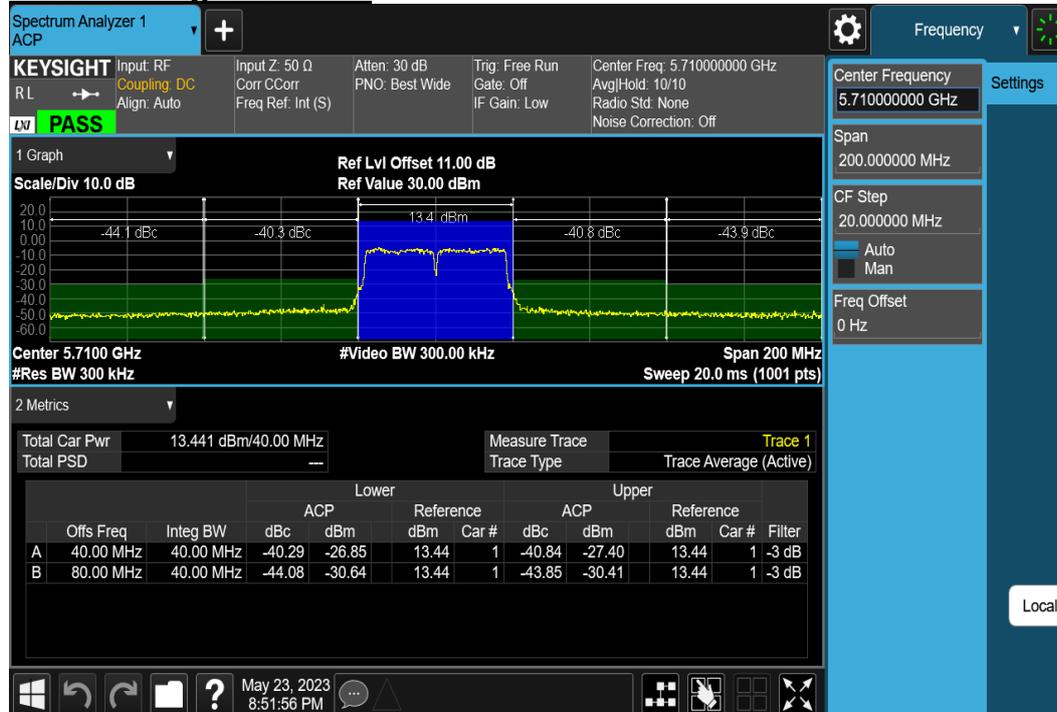


W56 / CH Mid / Chain 0



Report No.: TMWK2305001504KR

W56 / CH High / Chain 0



8.5 OUT-BAND LEAKAGE POWER & UNWANTED EMISSION STRENGTH

TEST RESULT

W52

Unwanted Emission Strength						
802.11n_W52_40MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5190	5230	-	---	---
Channel Number	Ch.	38	46	-	---	---
30 ~ 5141.6MHz(Chain 0)	μW/MHz	1.2246	1.4322	-	≦ 2.500	PASS
	MHz	5064.9	3757.3	-		---
5141.6 ~ 5150MHz(Chain 0)	μW/MHz	4.6752	1.4849	-	≦ 15.000	PASS
	MHz	5147.82	5147.10	-		---
5250 ~ 5251MHz(Chain 0)	μW/MHz	2.5439	0.9818	-	≦ 50 ~ 500	PASS
	MHz	5250.996	5250.994	-		---
5251 ~ 5270MHz(Chain 0)	μW/MHz	1.3035	28.5825	-	≦ 7.92 ~ 50	PASS
	MHz	5268.44	5251.46	-		---
5270 ~ 5278.4MHz(Chain 0)	μW/MHz	0.8678	1.8741	-	≦ 2.48 ~ 7.92	PASS
	MHz	5277.80	5277.85	-		---
5278.4 ~ 26000MHz(Chain 0)	μW/MHz	0.2213	0.2388	-	≦ 2.500	PASS
	MHz	25696	25751	-		---

W53

Unwanted Emission Strength						
802.11n_W53_40MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5270	5310	-	---	---
Channel Number	Ch.	54	62	-	---	---
30 ~ 5221.6MHz(Chain 0)	μW/MHz	1.4825	1.4488	-	≤ 2.500	PASS
	MHz	3700.6	3813.3	-		---
5221.6 ~ 5230MHz(Chain 0)	μW/MHz	0.1445	0.8600	-	≤ 2.48 ~ 7.92	PASS
	MHz	5225.70	5222.40	-		---
5230 ~ 5249MHz(Chain 0)	μW/MHz	33.9000	0.8059	-	≤ 7.92 ~ 50	PASS
	MHz	5248.44	5230.46	-		---
5249 ~ 5250MHz(Chain 0)	μW/MHz	1.4928	1.5018	-	≤ 50 ~ 500	PASS
	MHz	5249.300	5249.038	-		---
5350 ~ 5358.4MHz(Chain 0)	μW/MHz	0.8310	3.0381	-	≤ 15.000	PASS
	MHz	5350.79	5350.53	-		---
5358.4 ~ 26000MHz(Chain 0)	μW/MHz	0.2234	0.2018	-	≤ 2.500	PASS
	MHz	25694	25846	-		---

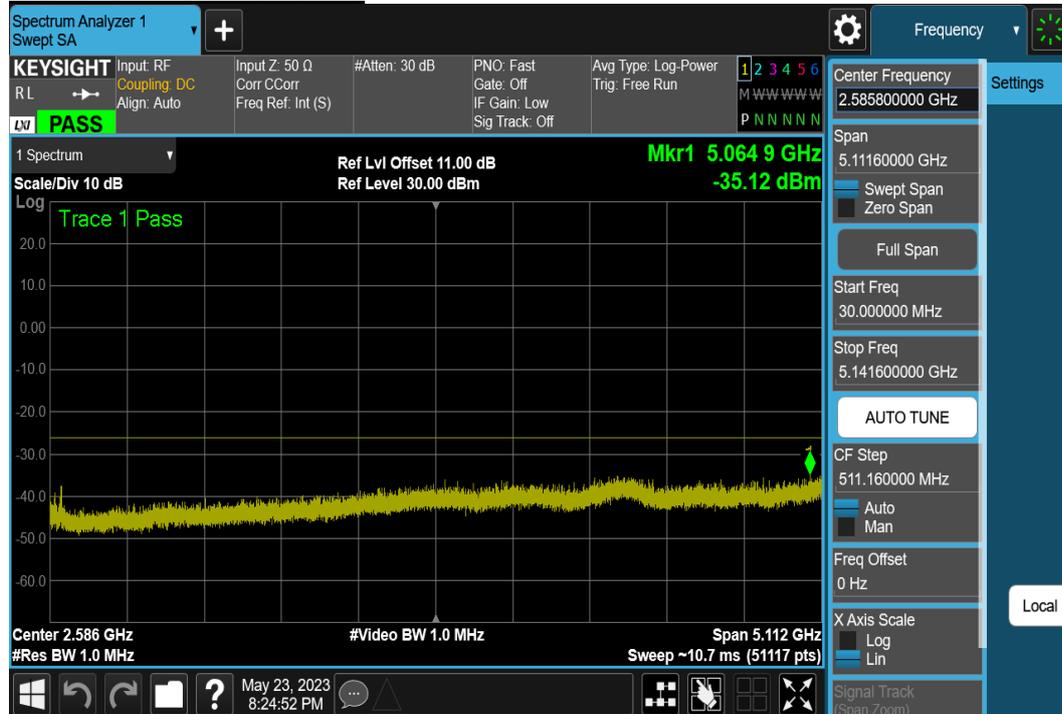
W56

Unwanted Emission Strength						
802.11n_W56_40MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5510	5590	5710	---	---
Channel Number	Ch.	102	118	142	---	---
30 ~ 5460MHz(Chain 0)	μW/MHz	1.4355	1.5311	1.5346	≤ 12.500	PASS
	MHz	3833	33	3787		---
5460 ~ 5470MHz(Chain 0)	μW/MHz	6.9072	0.7763	0.8050	≤ 50.000	PASS
	MHz	5467.68	5464.19	5468.79		---
5770 ~ 26000MHz(Chain 0)	μW/MHz	2.5692	2.5539	3.2802	≤ 12.500	PASS
	MHz	25944	25776	25695		---

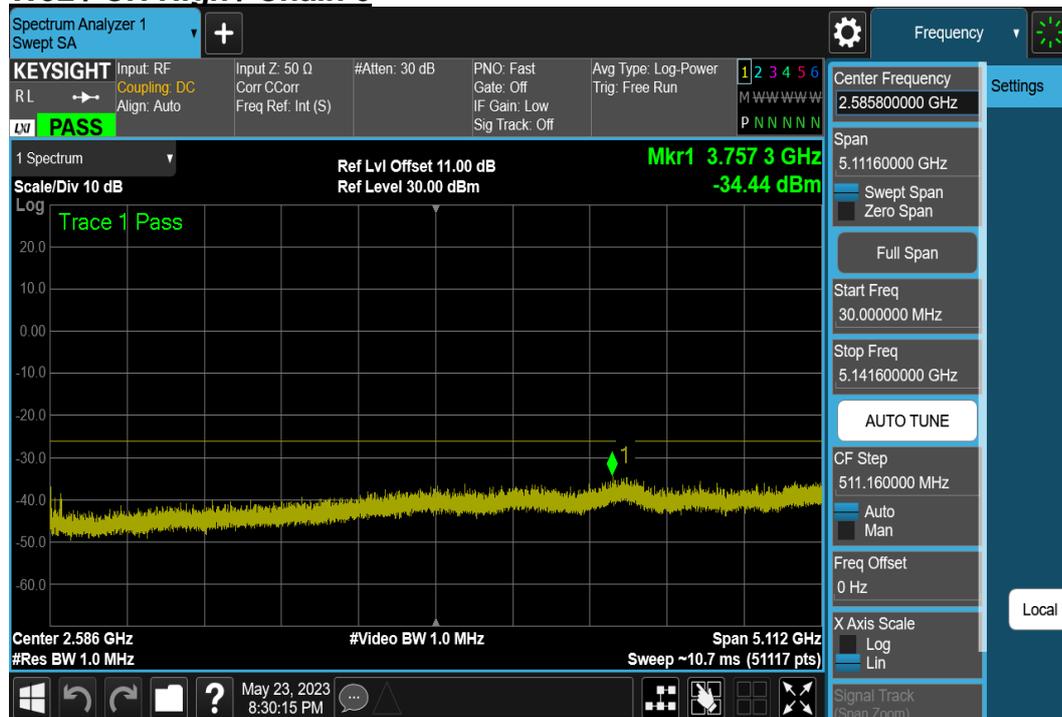
Report No.: TMWK2305001504KR

TEST PLOTS

(1) 30MHz ~ 5141.6MHz
W52 / CH Low / Chain 0

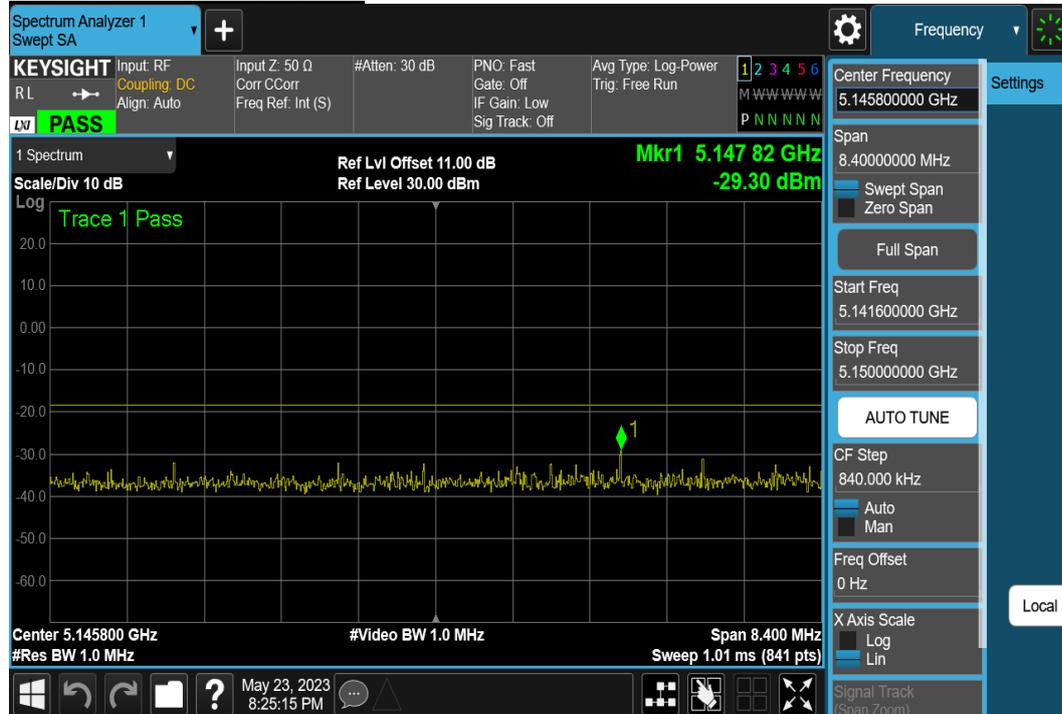


W52 / CH High / Chain 0

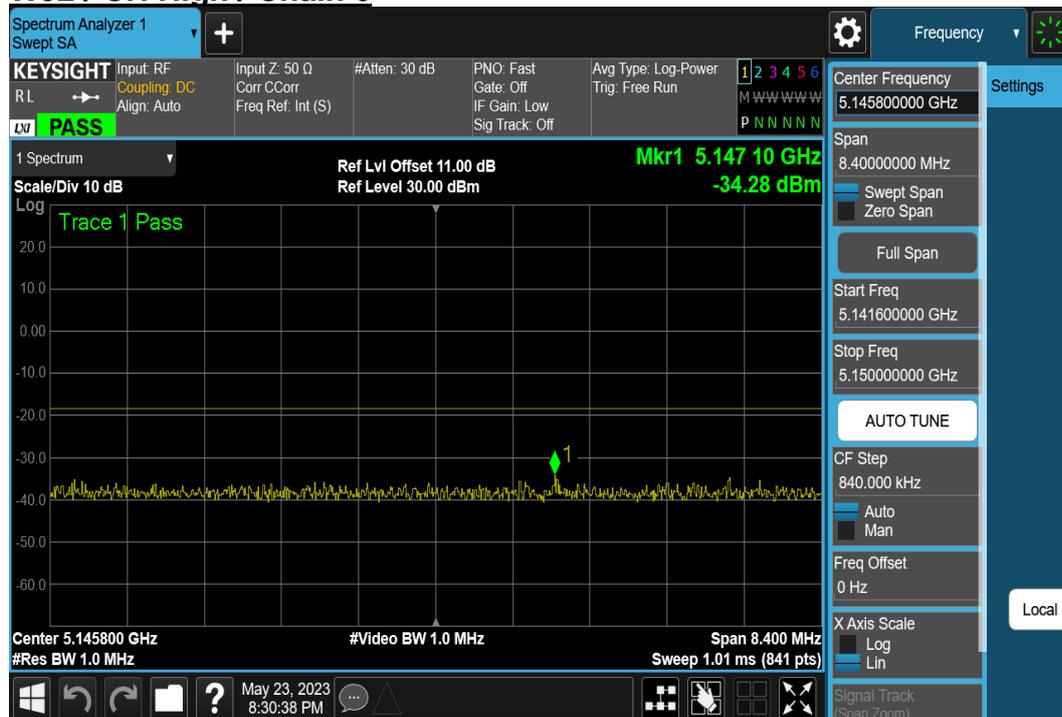


Report No.: TMWK2305001504KR

(2) 5141.6MHz ~ 5150MHz W52 / CH Low / Chain 0

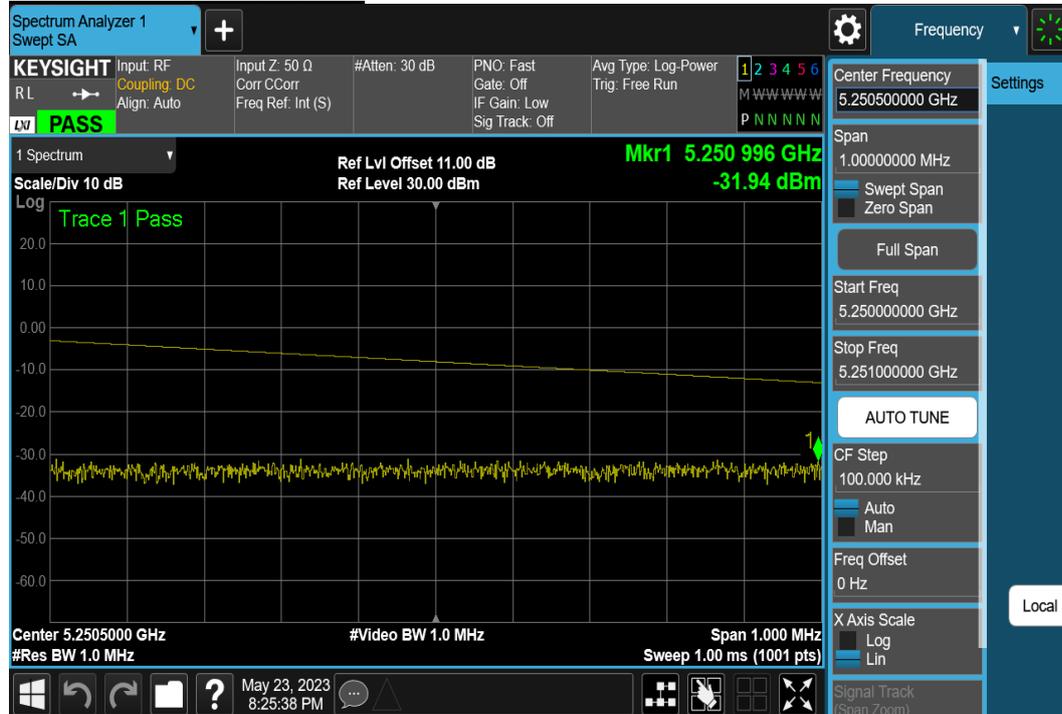


W52 / CH High / Chain 0



Report No.: TMWK2305001504KR

(3) 5250MHz ~ 5251MHz W52 / CH Low / Chain 0

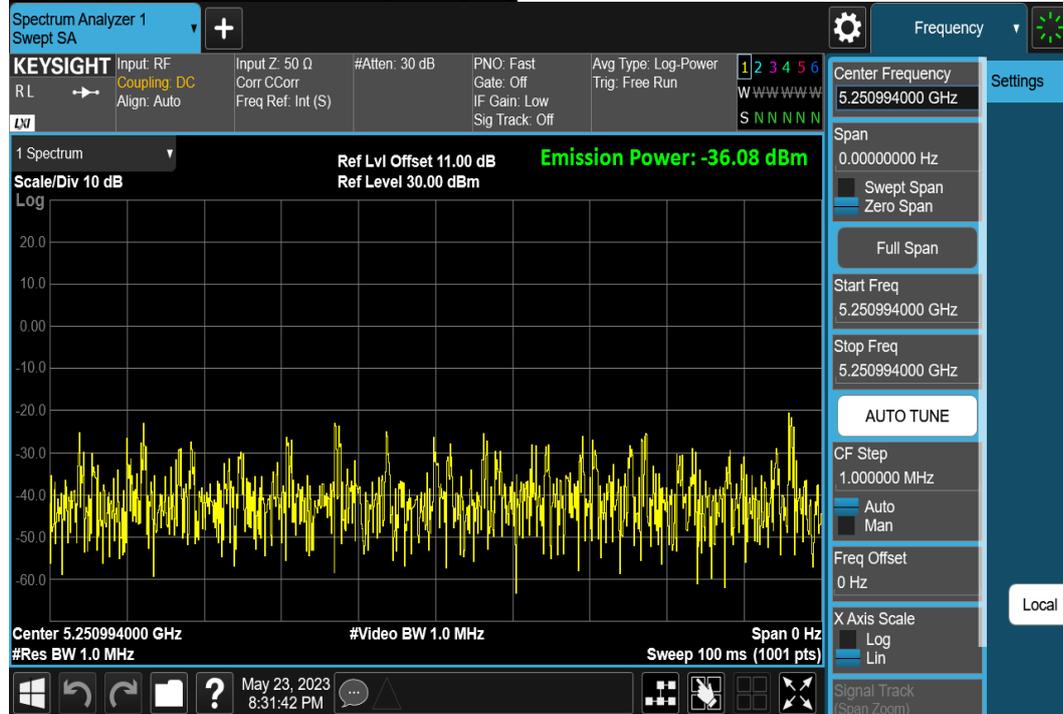


W52 / CH High / Chain 0



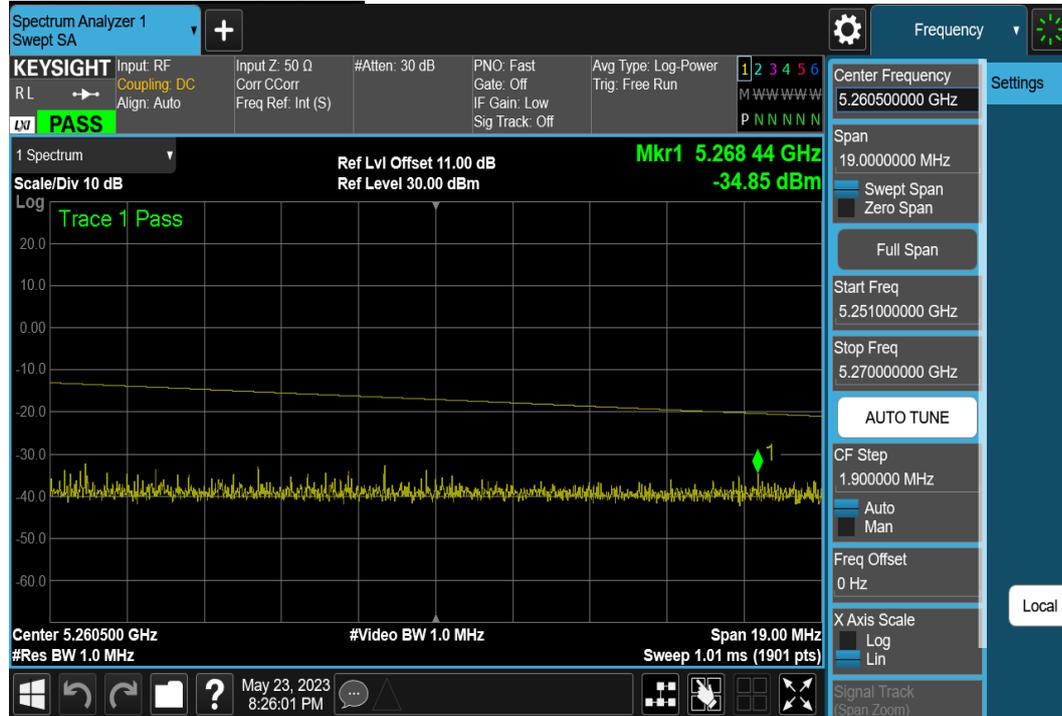
Report No.: TMWK2305001504KR

W52 / CH High / Chain 0 (Sample)



Report No.: TMWK2305001504KR

(4) 5251MHz ~ 5270MHz W52 / CH Low / Chain 0

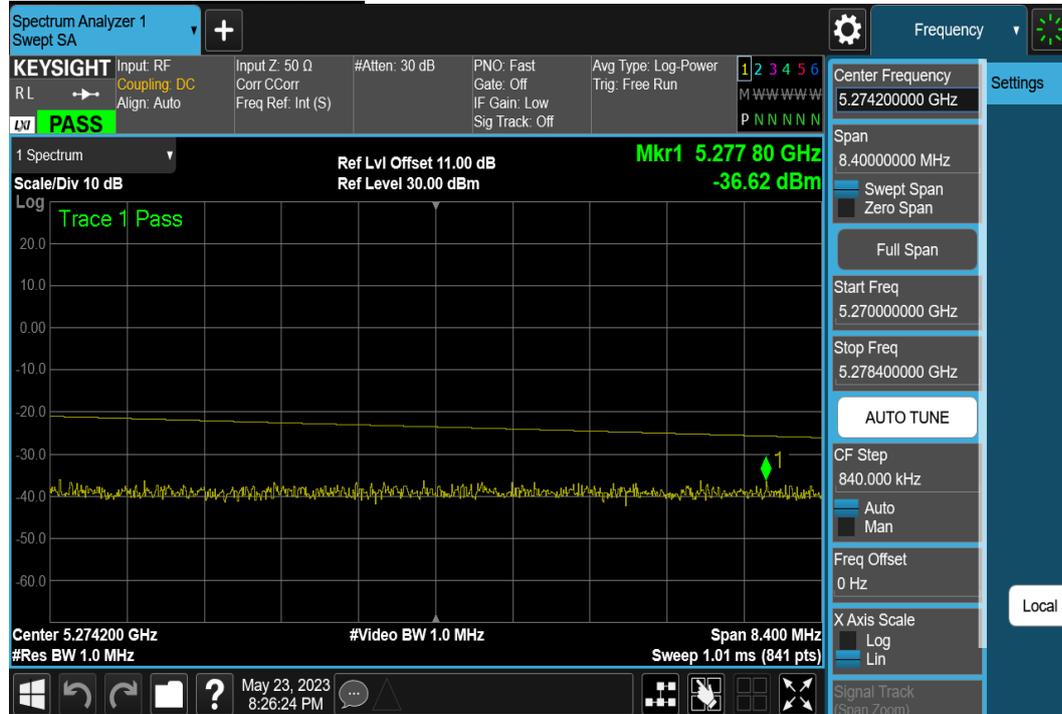


W52 / CH High / Chain 0

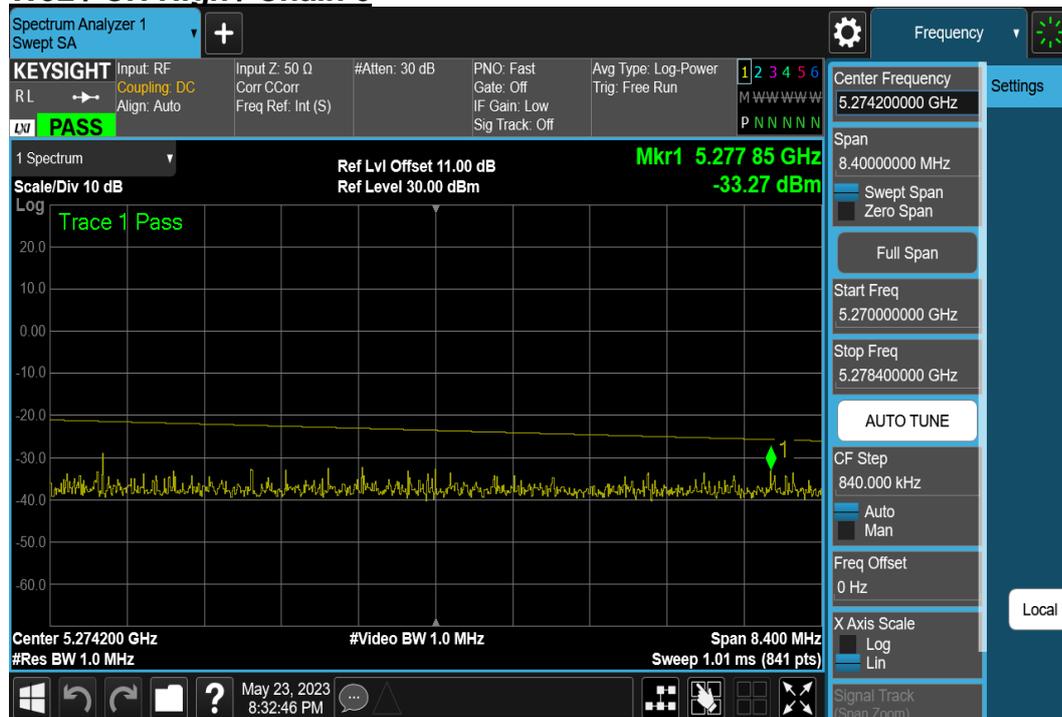


Report No.: TMWK2305001504KR

(5) 5270MHz ~ 5278.4MHz W52 / CH Low / Chain 0



W52 / CH High / Chain 0

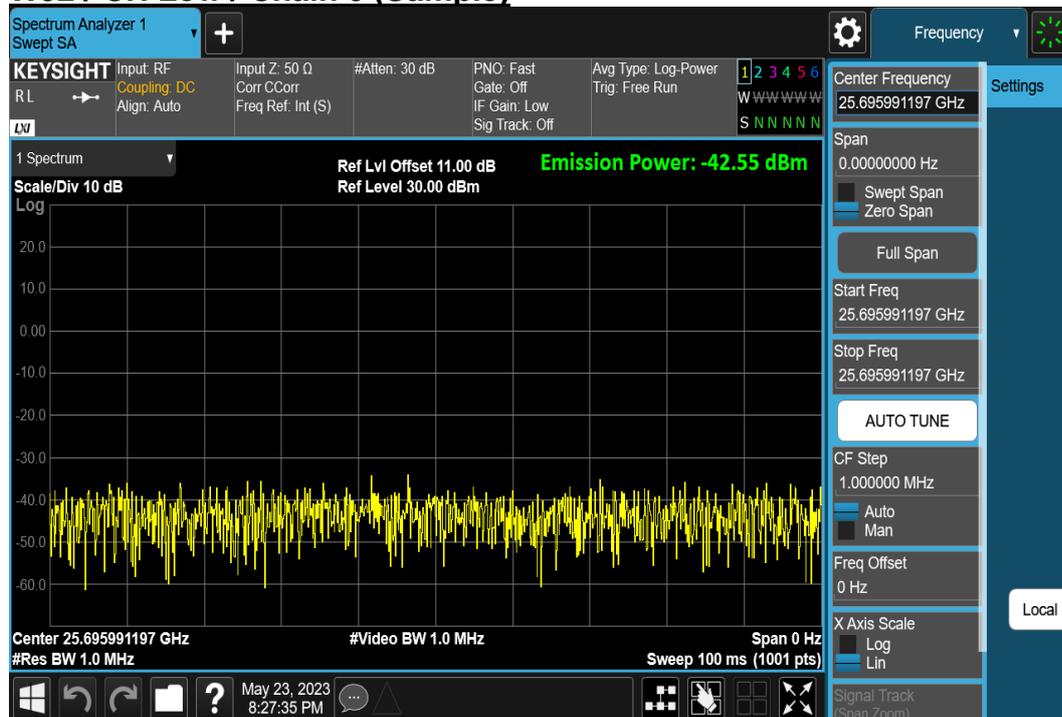


Report No.: TMWK2305001504KR

(6) 5278.4MHz ~ 26000MHz W52 / CH Low / Chain 0

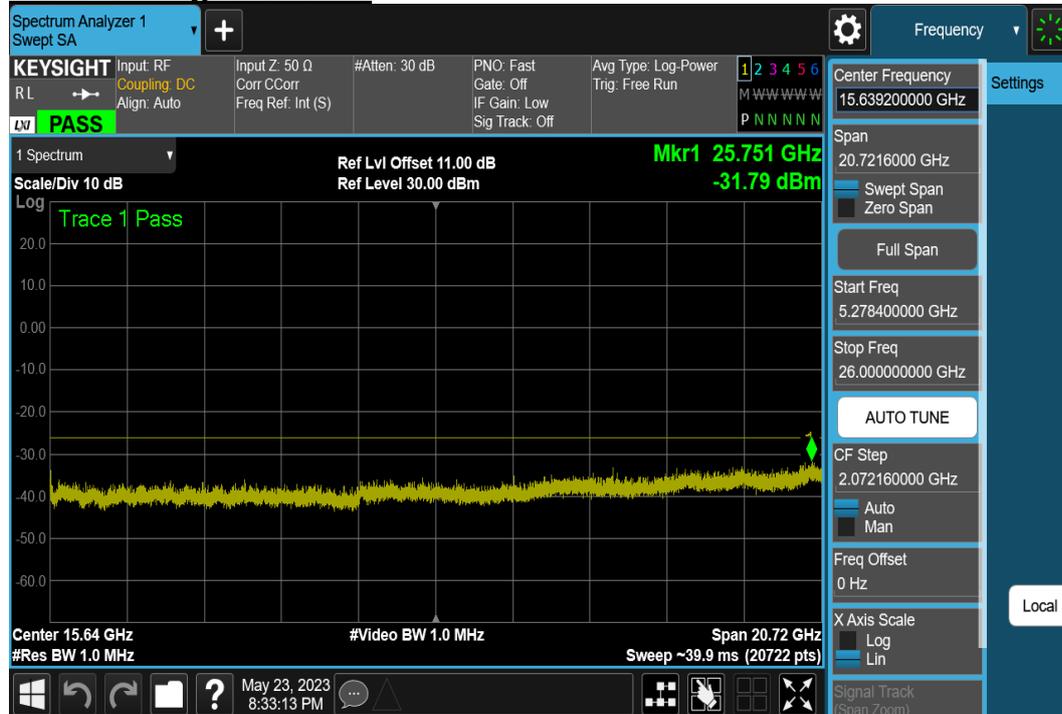


W52 / CH Low / Chain 0 (Sample)

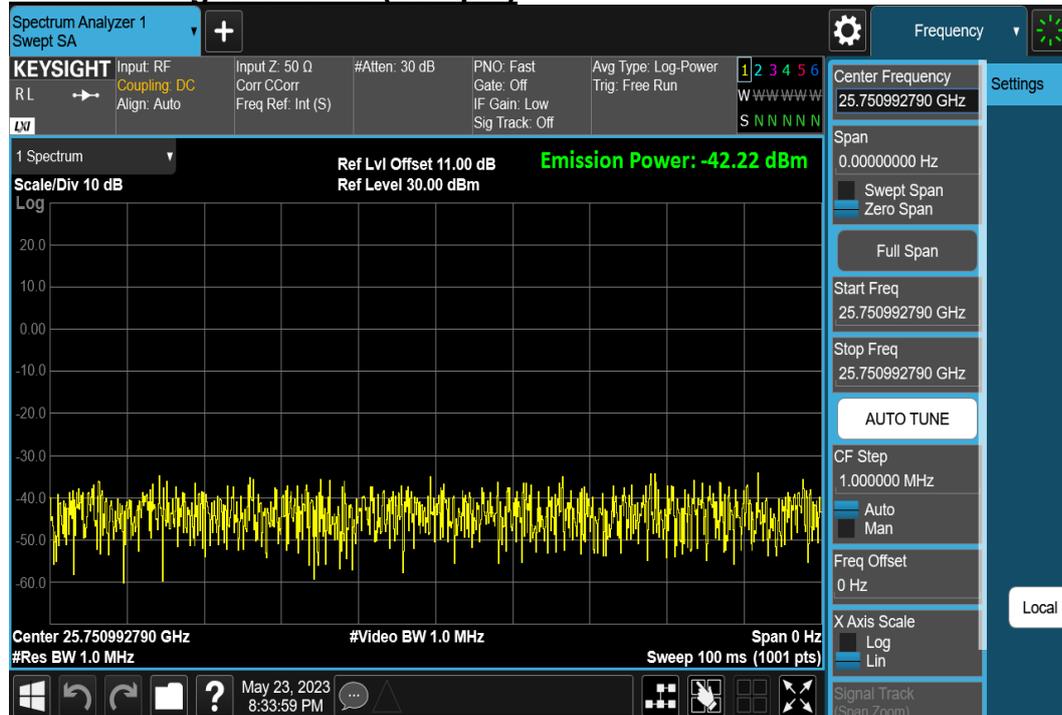


Report No.: TMWK2305001504KR

W52 / CH High / Chain 0



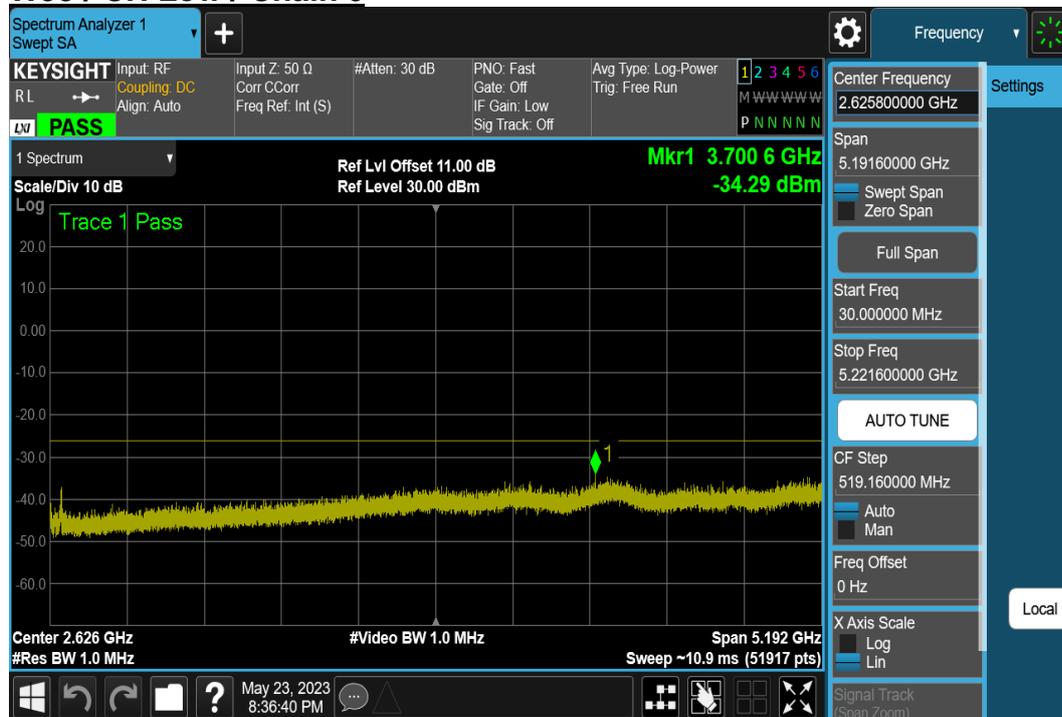
W52 / CH High / Chain 0 (Sample)



Report No.: TMWK2305001504KR

TEST PLOTS

(1) 30MHz ~ 5221.6MHz
W53 / CH Low / Chain 0



W53 / CH High / Chain 0

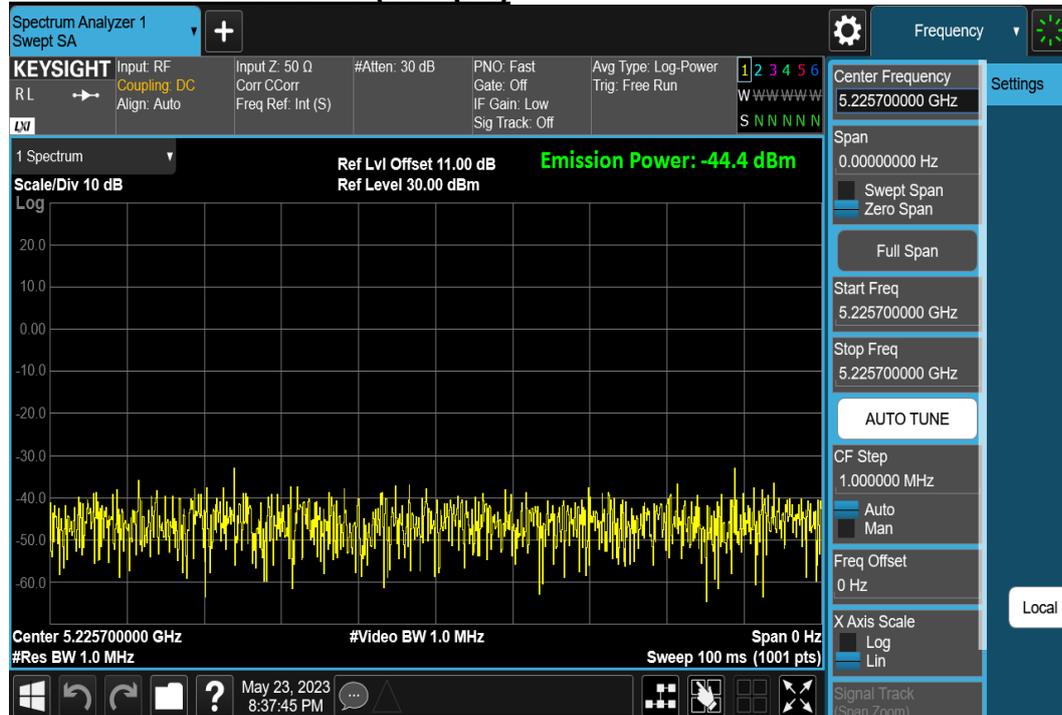


Report No.: TMWK2305001504KR

(2) 5221.6MHz ~ 5230MHz W53 / CH Low / Chain 0

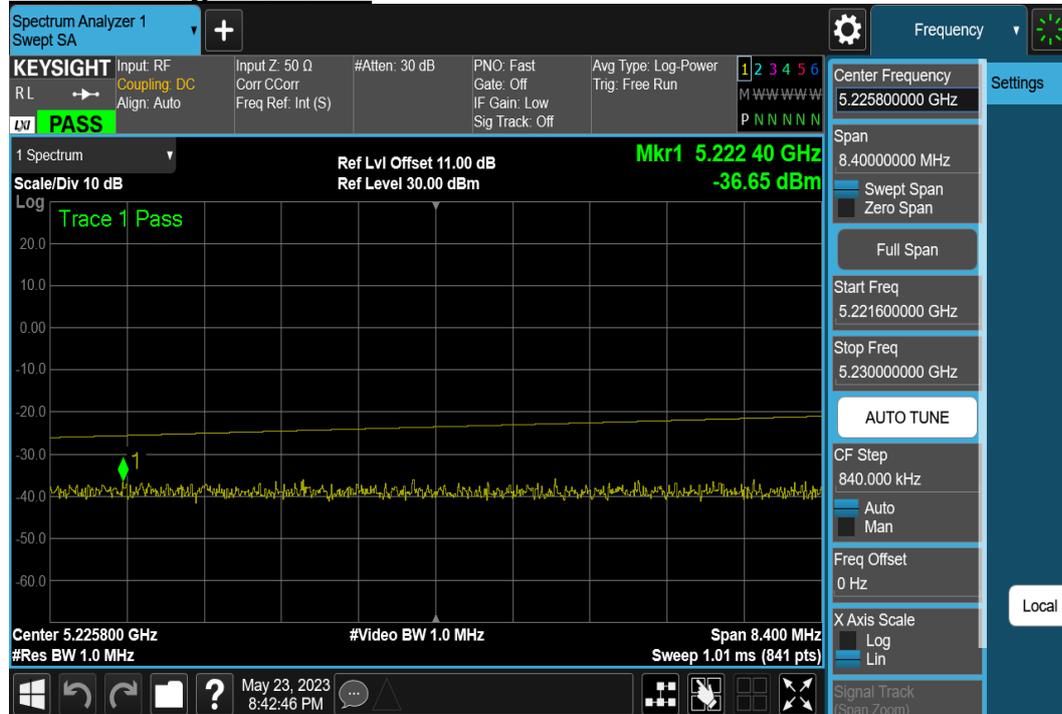


W53 / CH Low / Chain 0 (Sample)



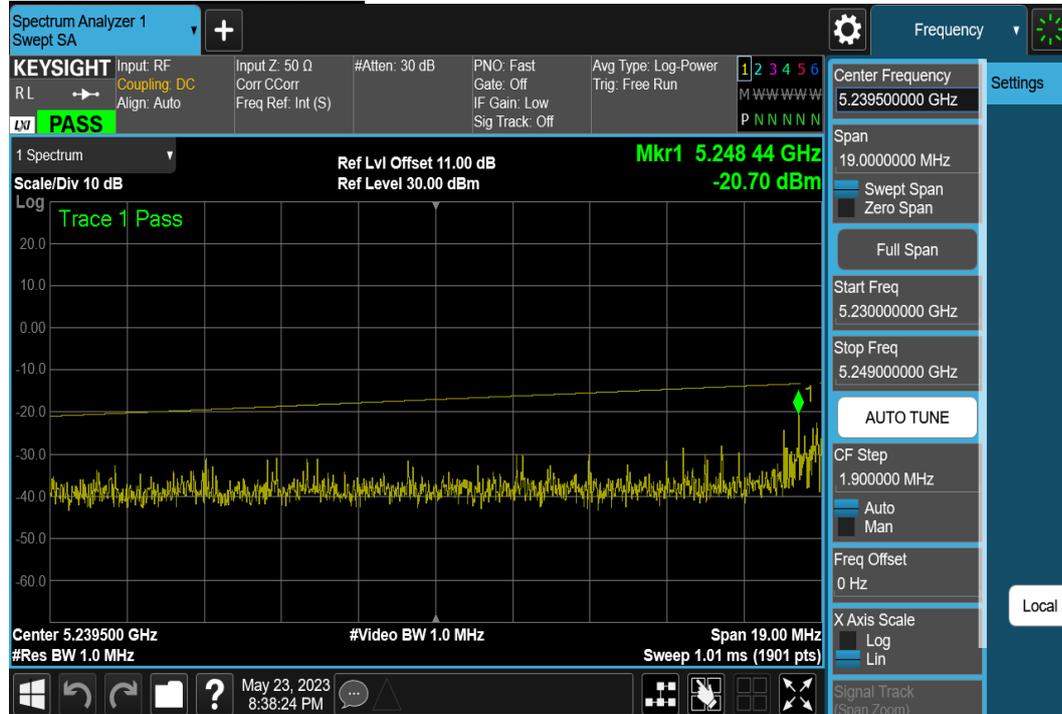
Report No.: TMWK2305001504KR

W53 / CH High / Chain 0

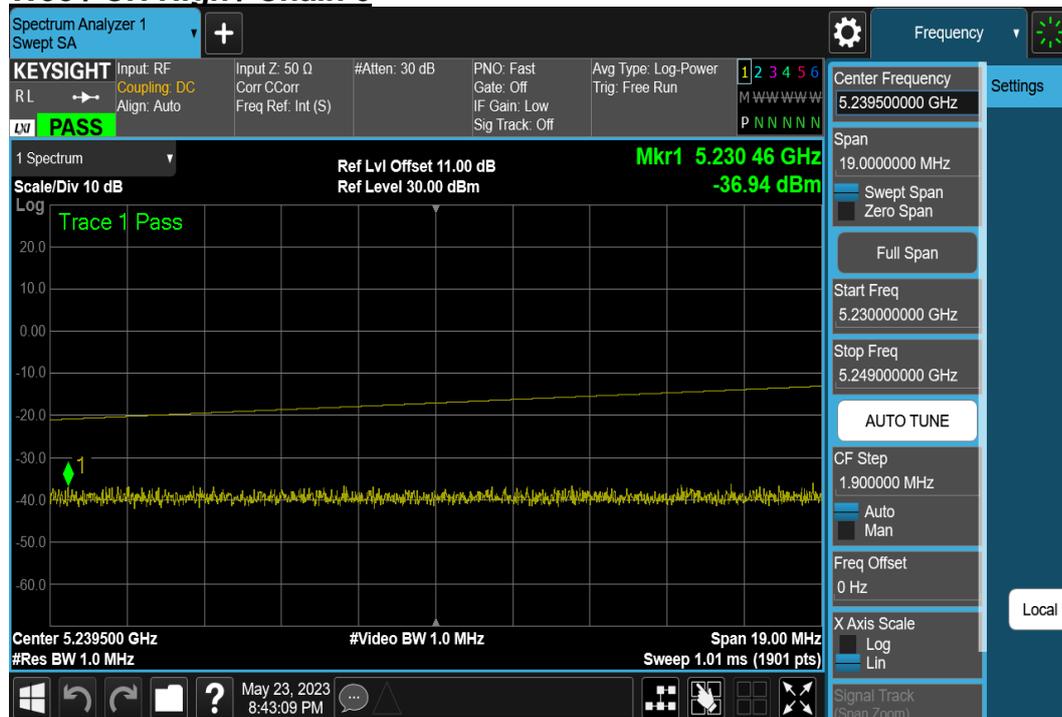


Report No.: TMWK2305001504KR

(3) 5230MHz ~ 5249MHz W53 / CH Low / Chain 0

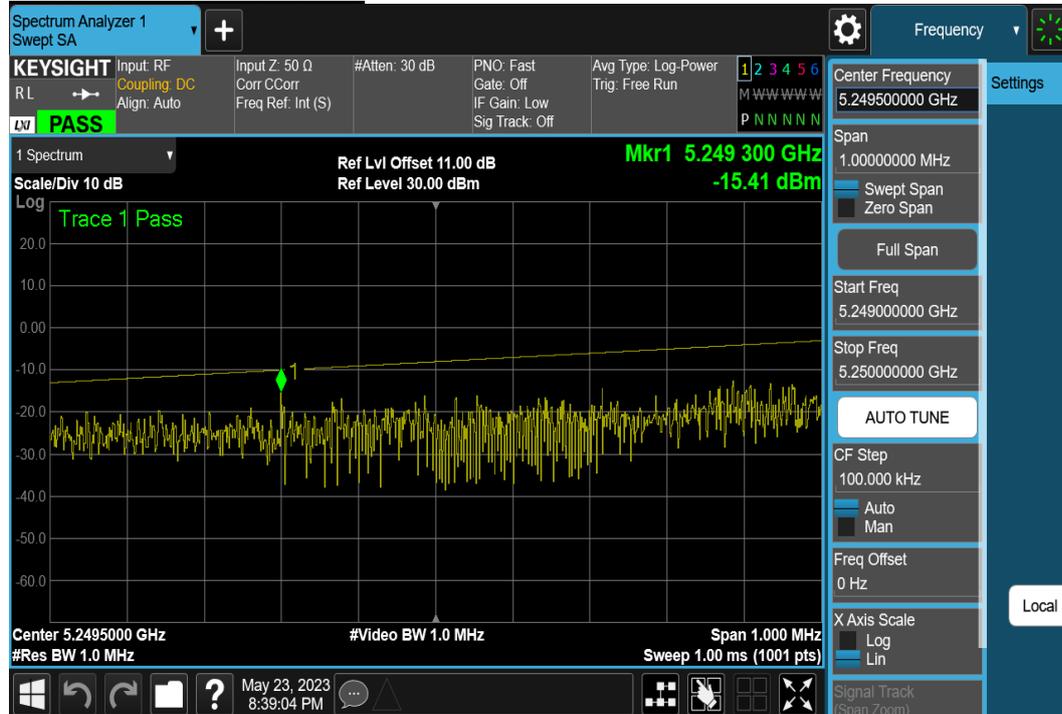


W53 / CH High / Chain 0

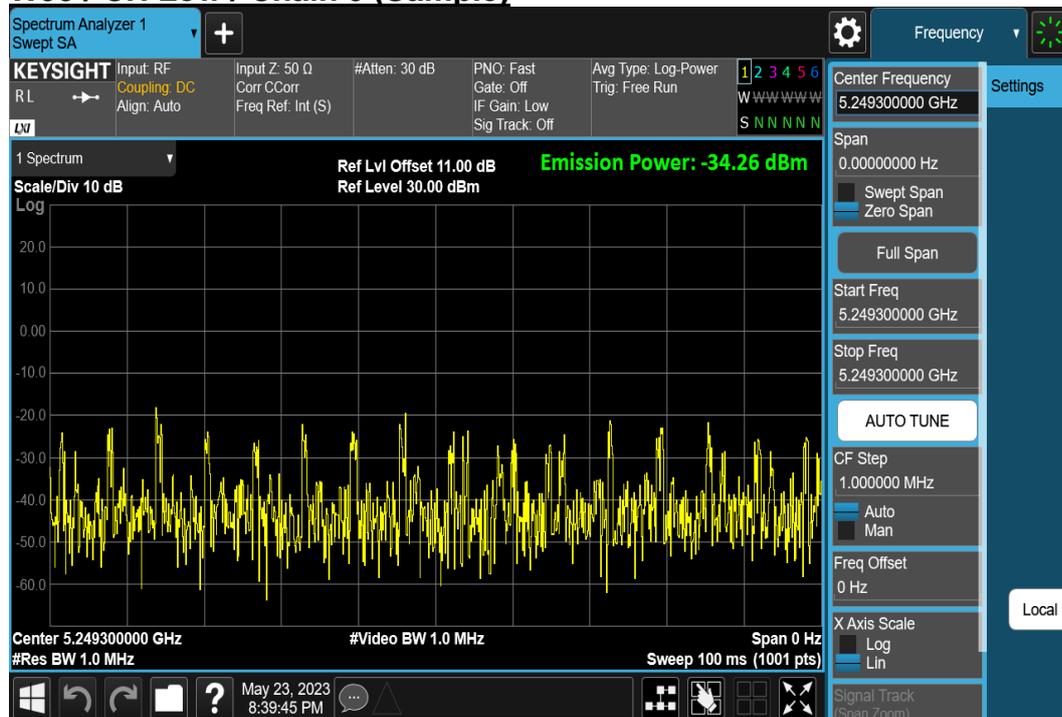


Report No.: TMWK2305001504KR

(4) 5249MHz ~ 5250MHz W53 / CH Low / Chain 0

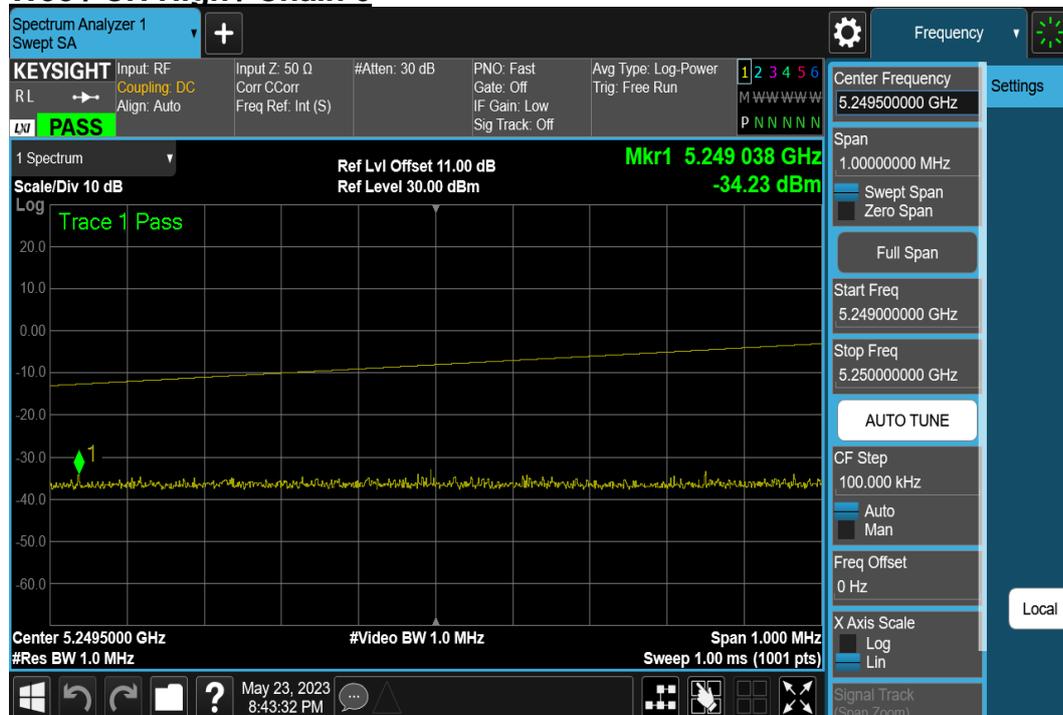


W53 / CH Low / Chain 0 (Sample)



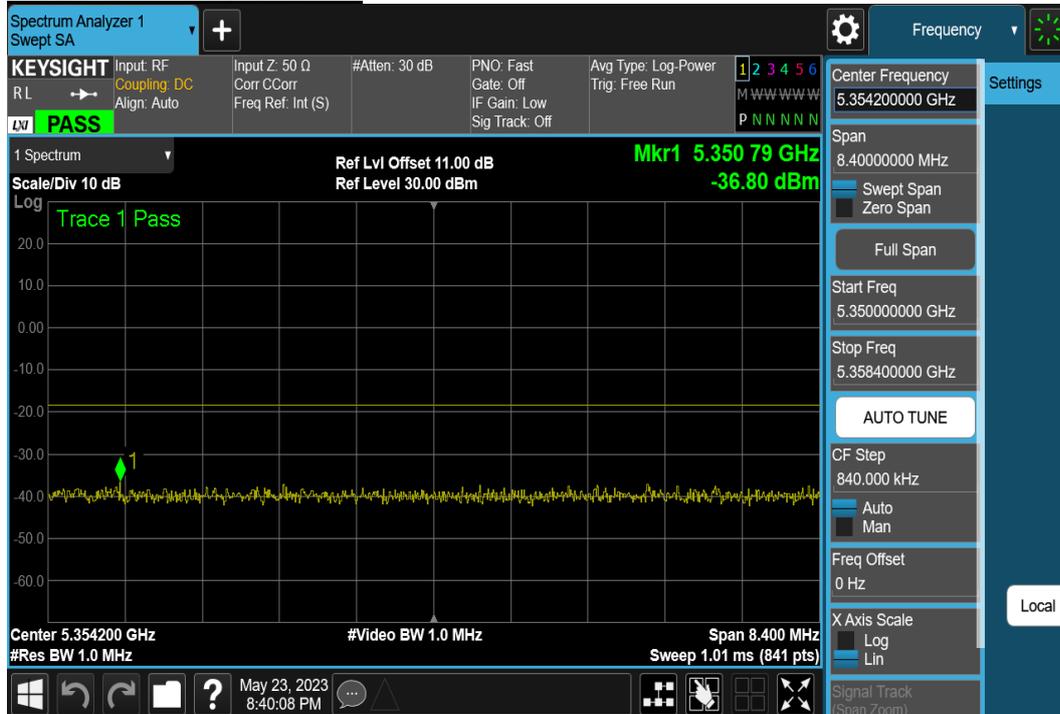
Report No.: TMWK2305001504KR

W53 / CH High / Chain 0

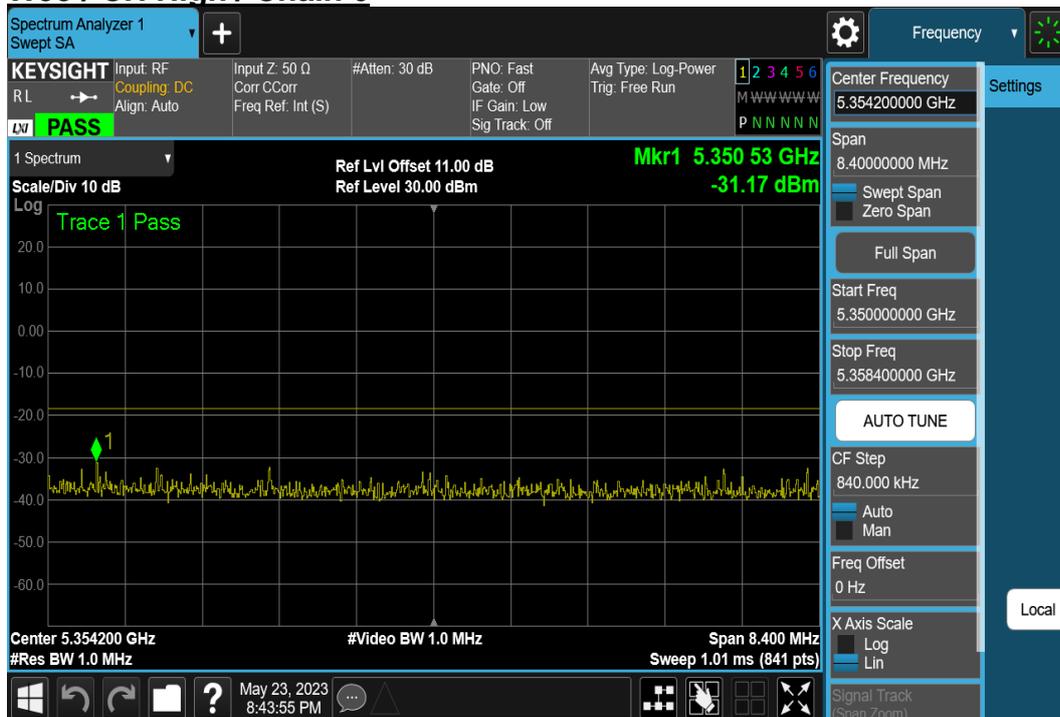


Report No.: TMWK2305001504KR

(5) 5350MHz ~ 5358.4MHz W53 / CH Low / Chain 0

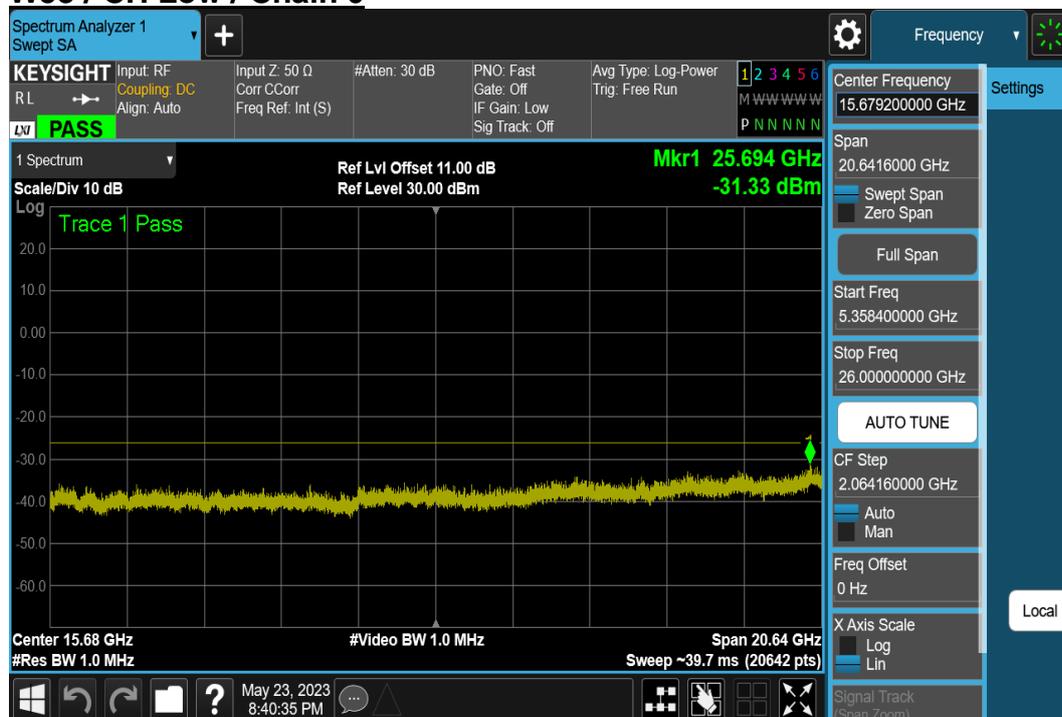


W53 / CH High / Chain 0

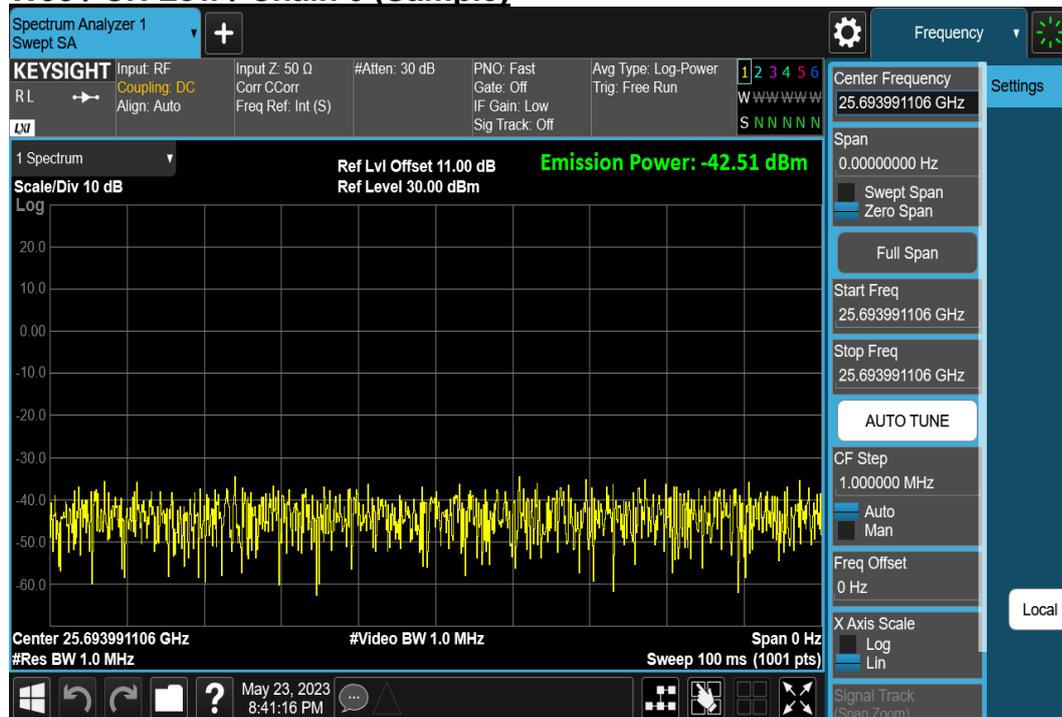


Report No.: TMWK2305001504KR

(6) 5358.4MHz ~ 26000MHz W53 / CH Low / Chain 0



W53 / CH Low / Chain 0 (Sample)

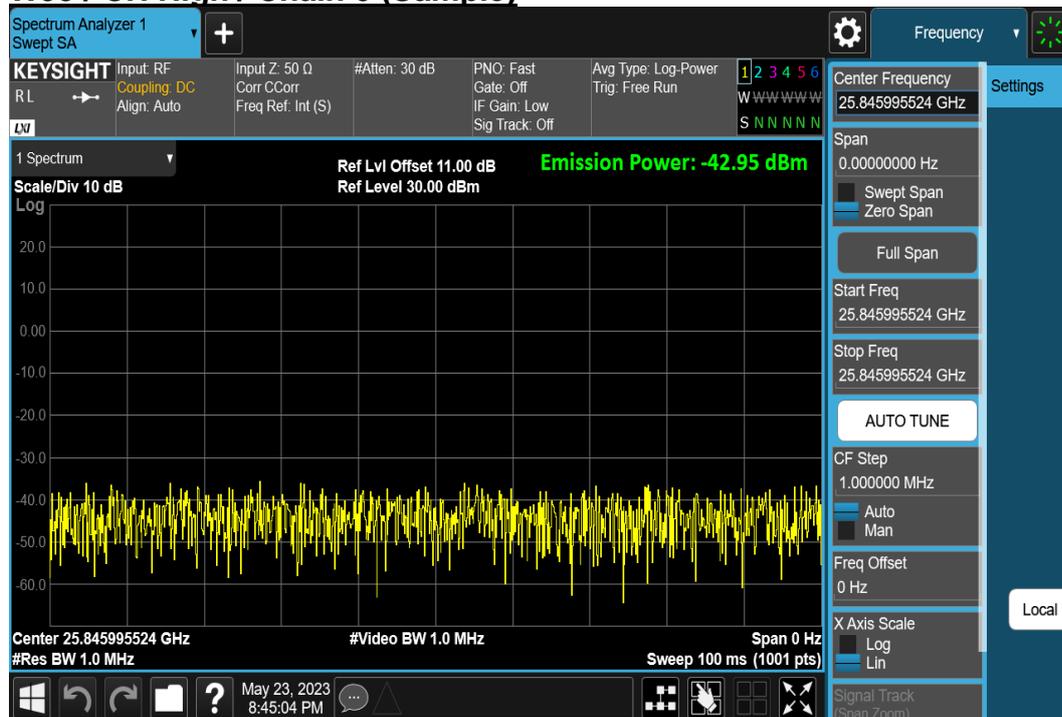


Report No.: TMWK2305001504KR

W53 / CH High / Chain 0



W53 / CH High / Chain 0 (Sample)

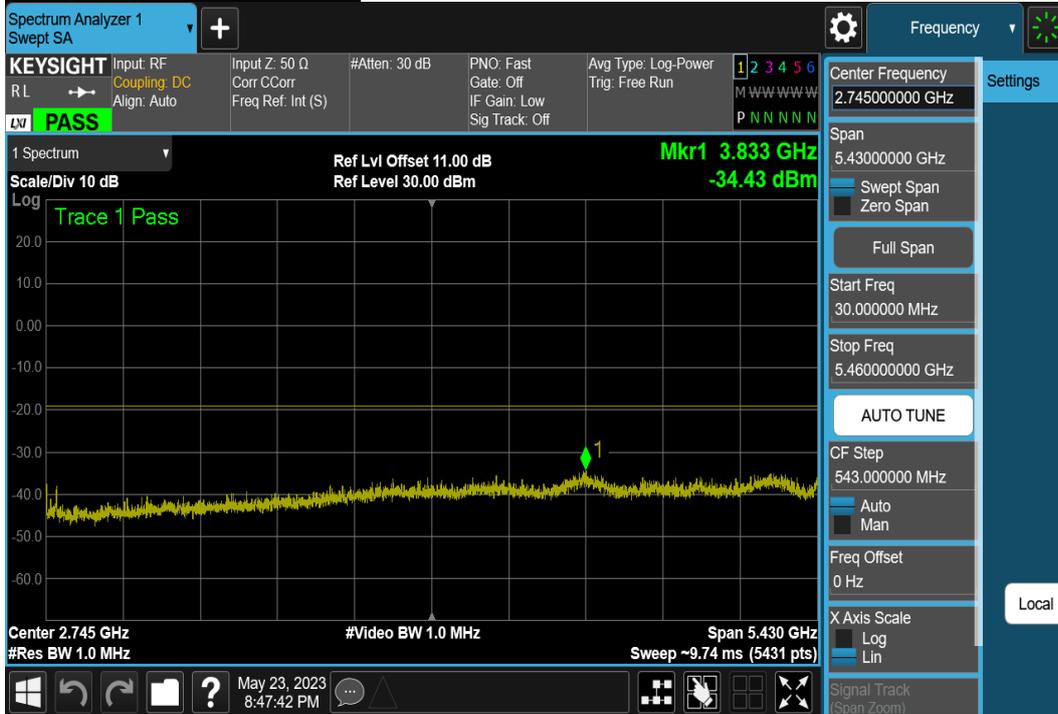


Report No.: TMWK2305001504KR

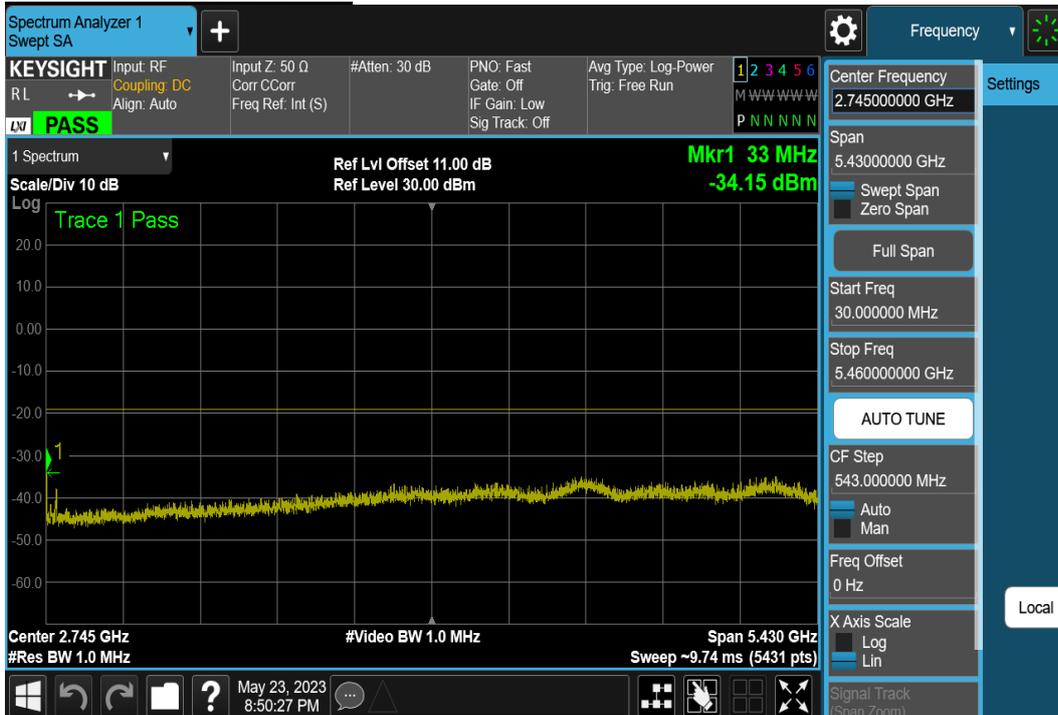
TEST PLOTS

(1) 30MHz ~ 5460MHz

W56 / CH Low / Chain 0

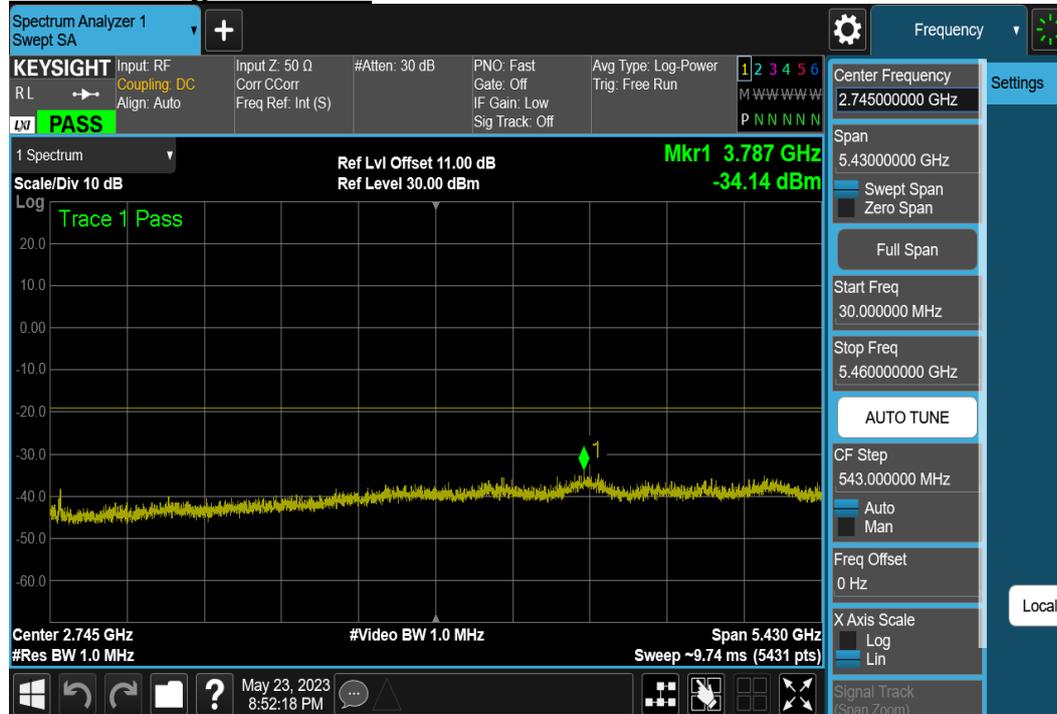


W56 / CH Mid / Chain 0



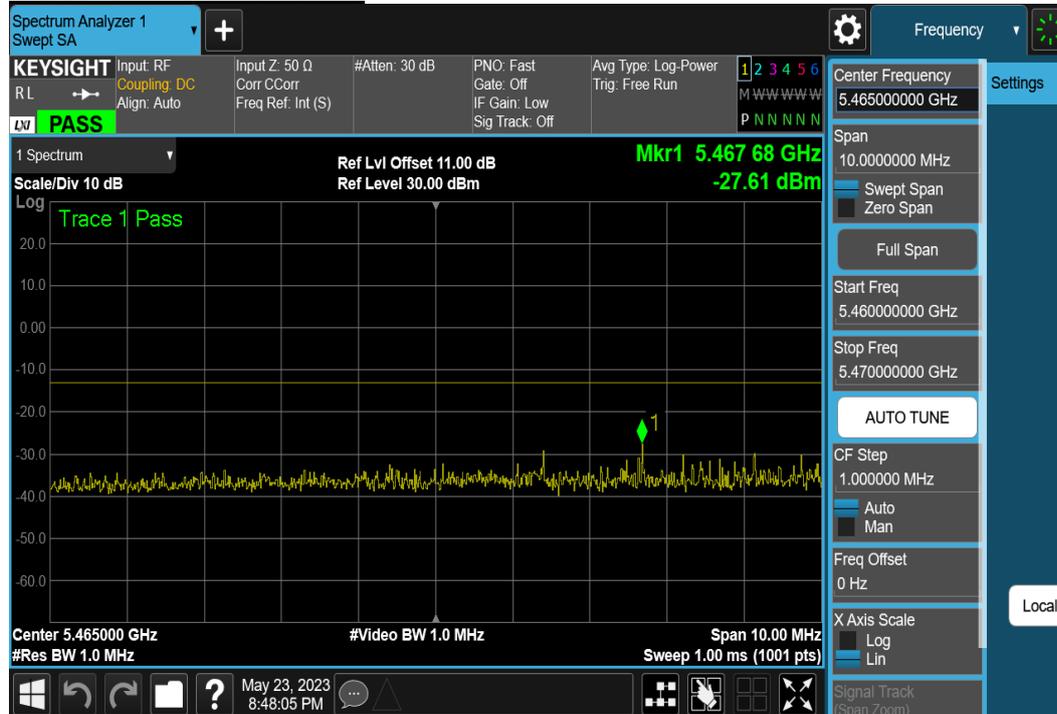
Report No.: TMWK2305001504KR

W56 / CH High / Chain 0

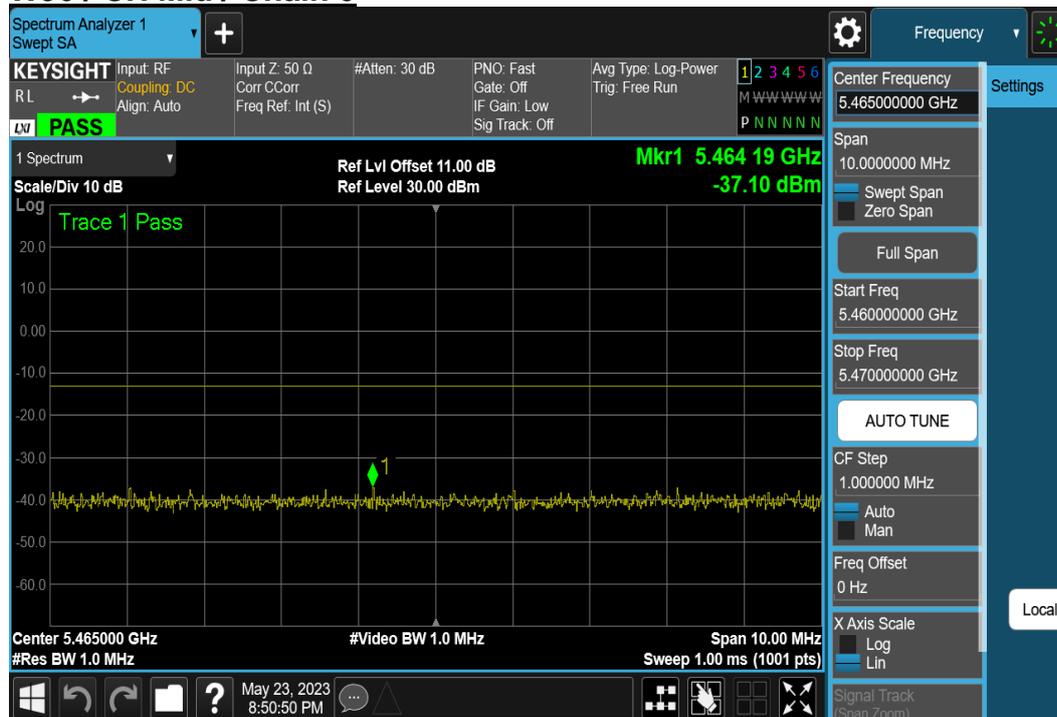


Report No.: TMWK2305001504KR

(2) 5460MHz ~ 5470MHz W56 / CH Low / Chain 0

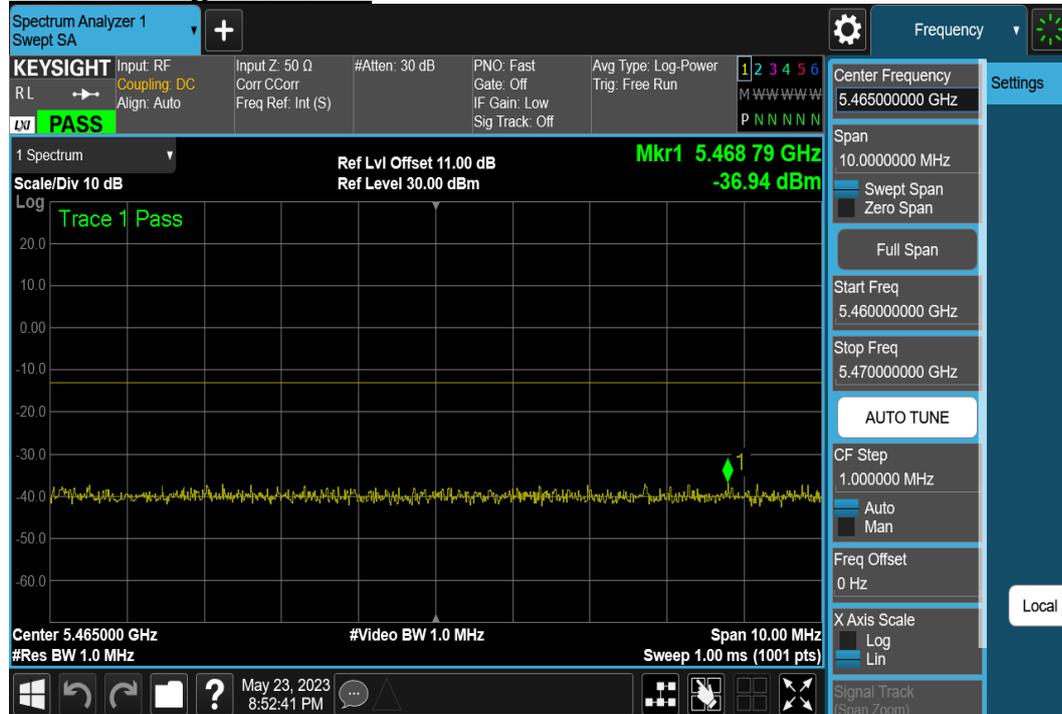


W56 / CH Mid / Chain 0



Report No.: TMWK2305001504KR

W56 / CH High / Chain 0

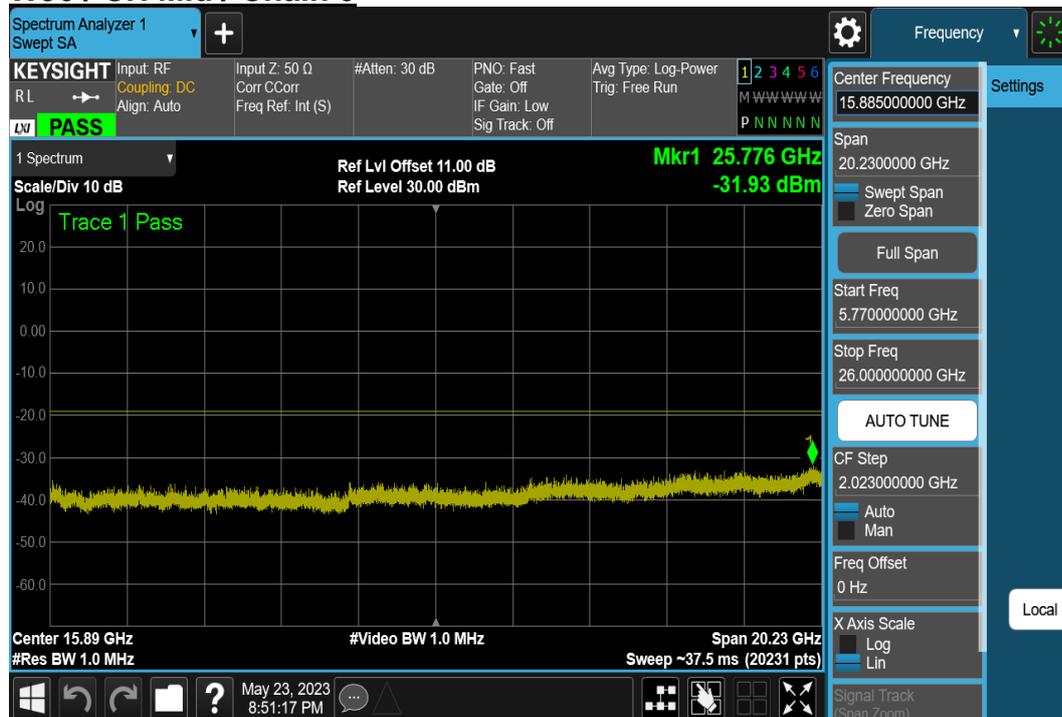


Report No.: TMWK2305001504KR

(3) 5770MHz ~ 26000MHz W56 / CH Low / Chain 0



W56 / CH Mid / Chain 0



Report No.: TMWK2305001504KR

W56 / CH High / Chain 0



Report No.: TMWK2305001504KR

8.6 SECONDARILY EMITTED RADIO WAVE STRENGTH

TEST RESULT

W52

Secondarily emitted radio wave strength						
802.11n_W52_40MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5190	5230	-	---	---
Channel Number	Ch.	38	46	-	---	---
Under 1GHz (Chain0)	nW	0.007	0.005	-	≦ 4.00	PASS
	MHz	106.0	105.9	-	---	---
1 ~ 26GHz (Chain0)	nW	0.065	0.081	-	≦ 20.00	PASS
	MHz	3807	3807	-	---	---

W53

Secondarily emitted radio wave strength						
802.11n_W53_40MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5270	5310	-	---	---
Channel Number	Ch.	54	62	-	---	---
Under 1GHz (Chain0)	nW	0.008	0.007	-	≦ 4.00	PASS
	MHz	106.0	106.0	-	---	---
1 ~ 26GHz (Chain0)	nW	3.589	0.070	-	≦ 20.00	PASS
	MHz	1760	3807	-	---	---

W56

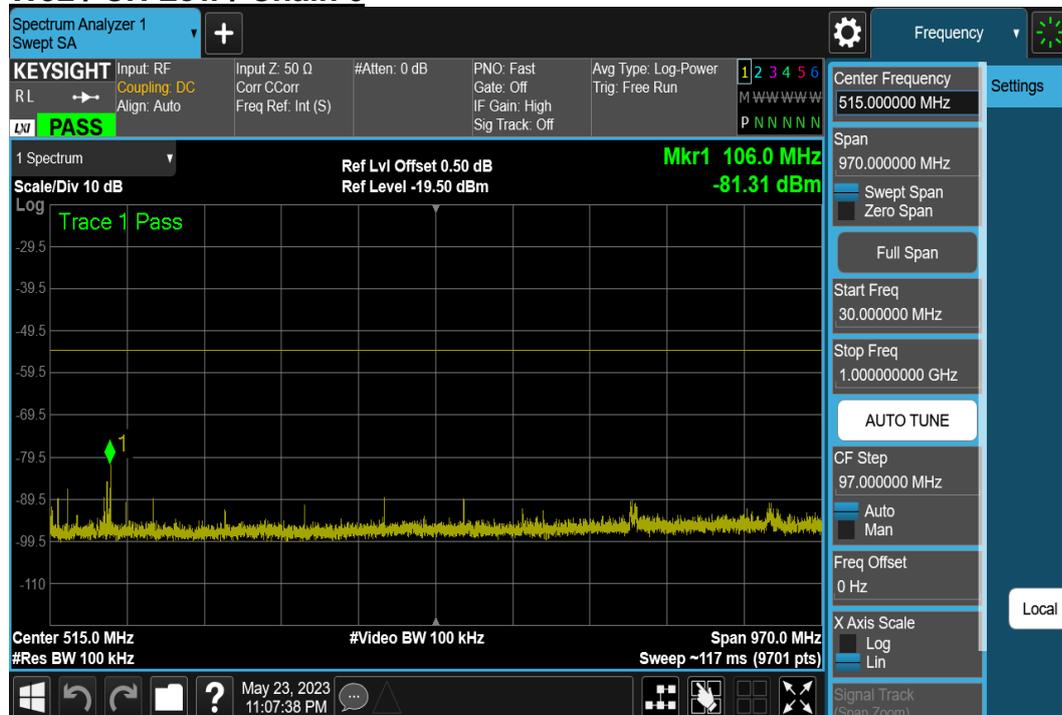
Secondarily emitted radio wave strength						
802.11n_W56_40MHz	unit	---	---	---	Limit	Result
Measurement Center Frequency	MHz	5510	5590	5710	---	---
Channel Number	Ch.	102	118	142	---	---
Under 1GHz (Chain0)	nW	0.007	0.007	0.008	≦ 4.00	PASS
	MHz	106.0	106.0	106.0	---	---
1 ~ 26GHz (Chain0)	nW	0.073	0.069	0.070	≦ 20.00	PASS
	MHz	3807	3807	3807	---	---

Report No.: TMWK2305001504KR

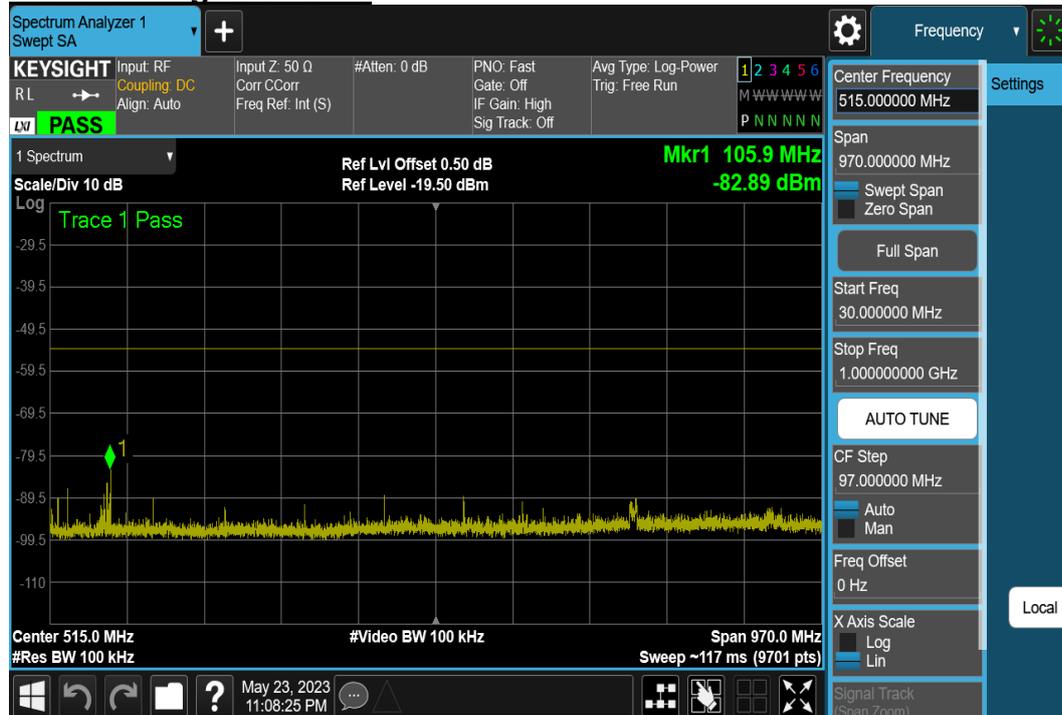
TEST PLOTS

(1) Under 1GHz

W52 / CH Low / Chain 0



W52 / CH High / Chain 0



Report No.: TMWK2305001504KR

(2) 1GHz ~ 26GHz W52 / CH Low / Chain 0



W52 / CH High / Chain 0

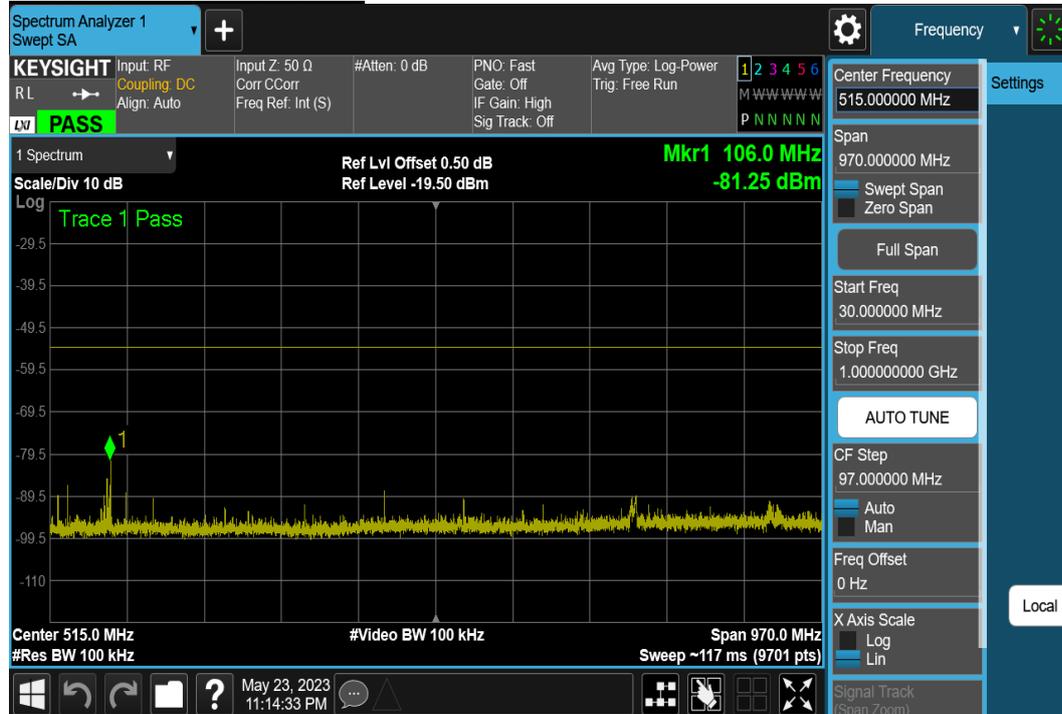


Report No.: TMWK2305001504KR

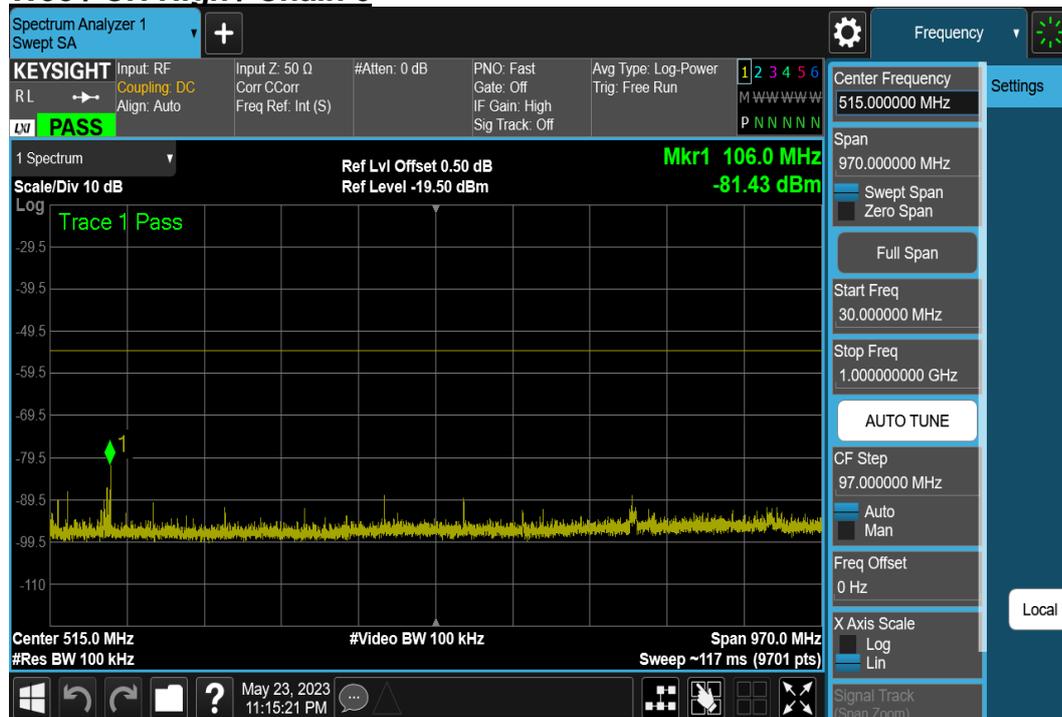
TEST PLOTS

(1) Under 1GHz

W53 / CH Low / Chain 0

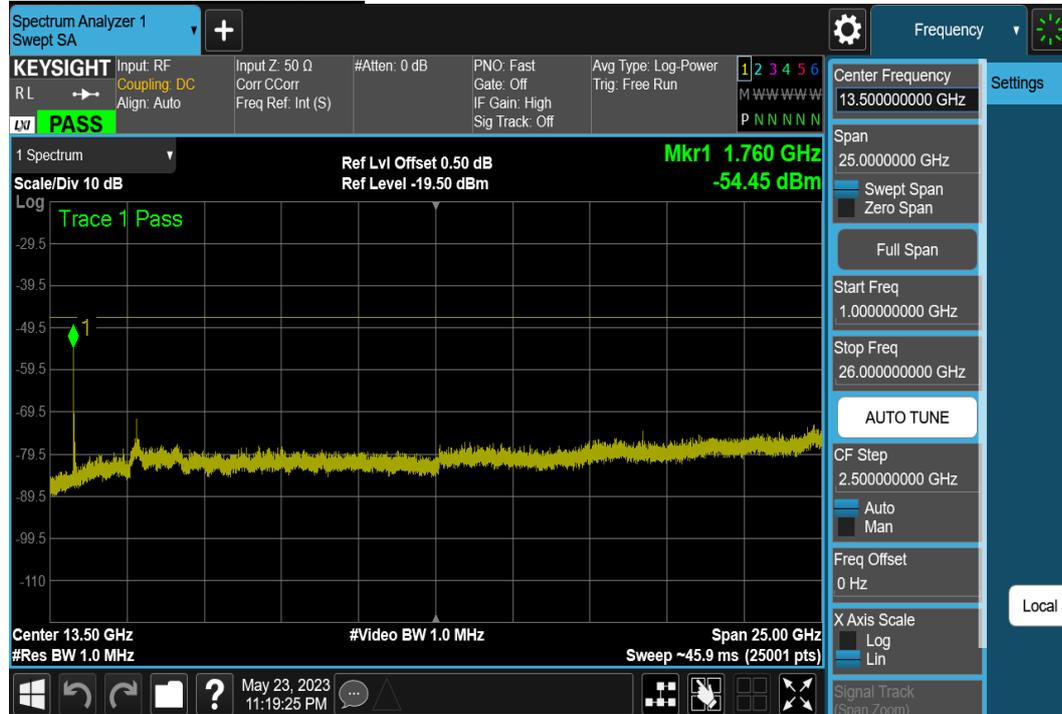


W53 / CH High / Chain 0

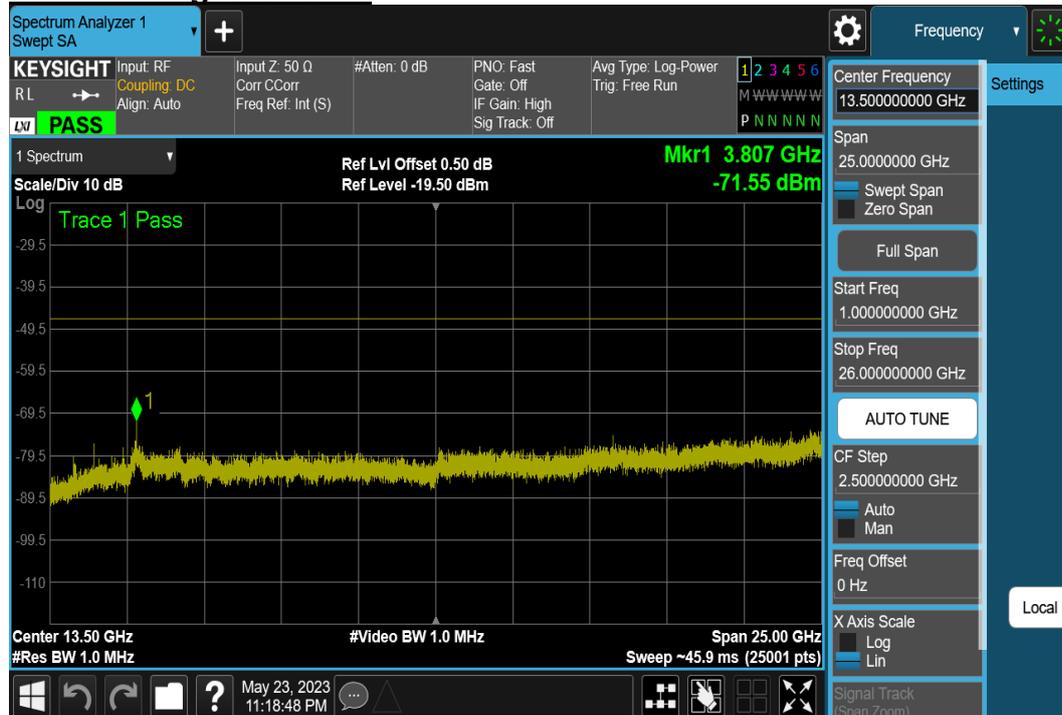


Report No.: TMWK2305001504KR

(2) 1GHz ~ 26GHz W53 / CH Low / Chain 0

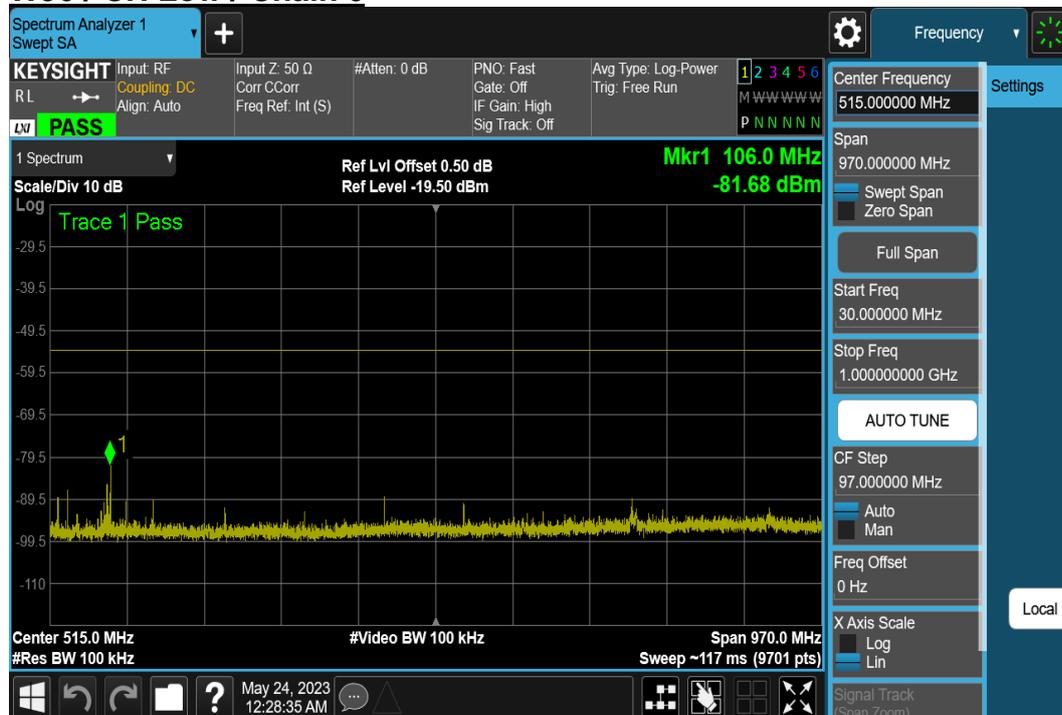


W53 / CH High / Chain 0

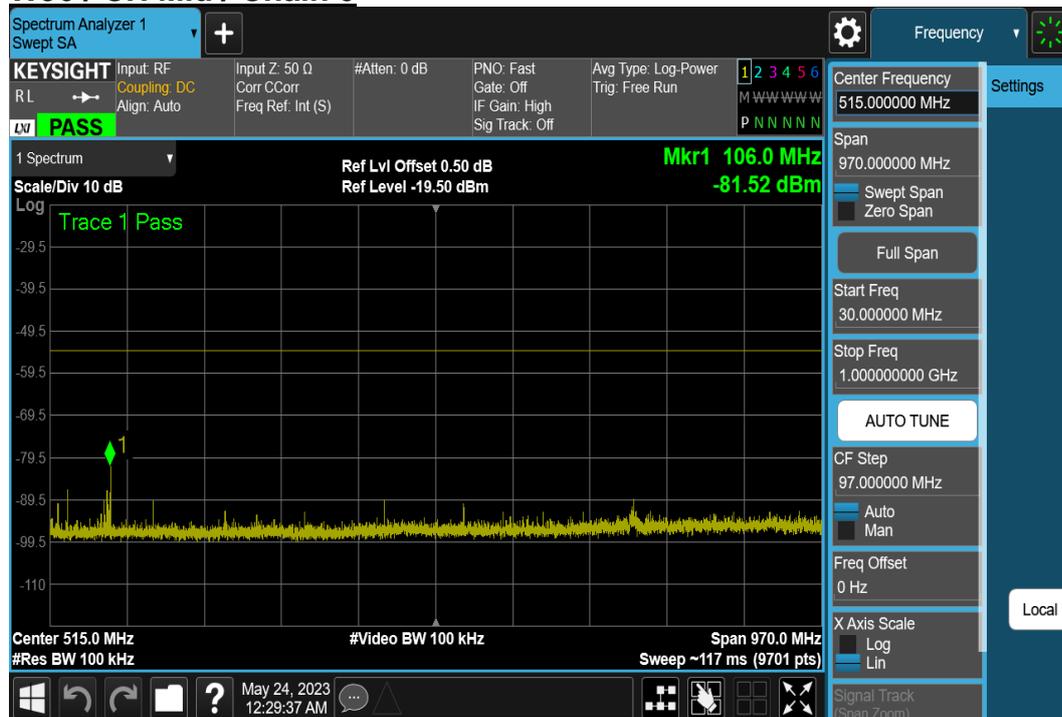


Report No.: TMWK2305001504KR

TEST POLTS (1) Under 1GHz W56 / CH Low / Chain 0

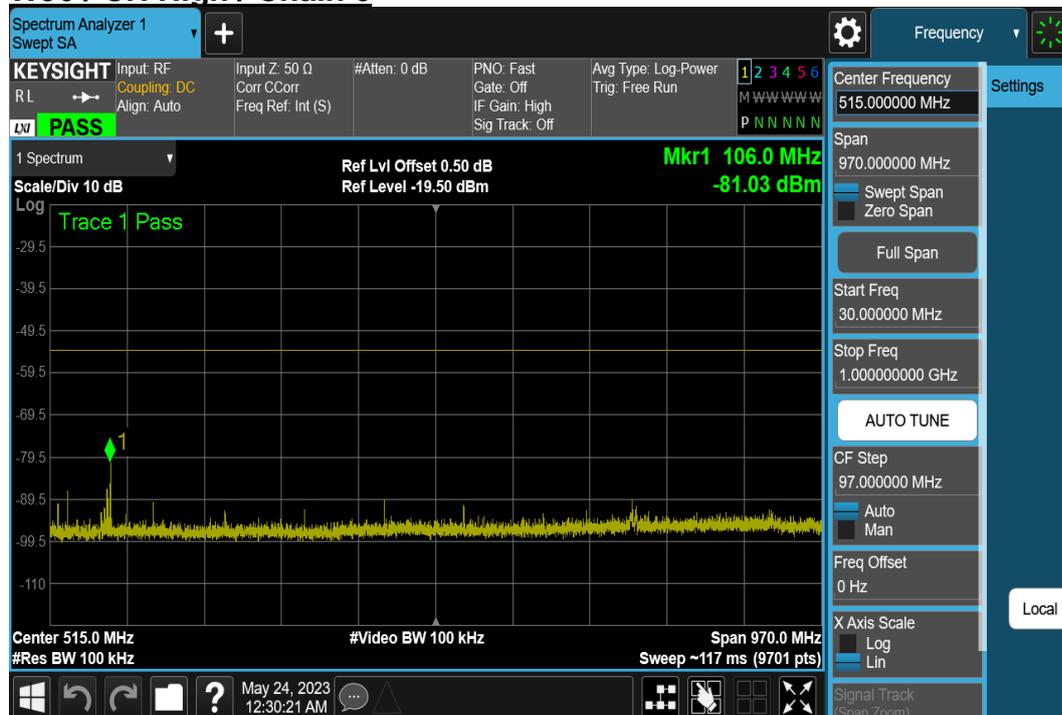


W56 / CH Mid / Chain 0



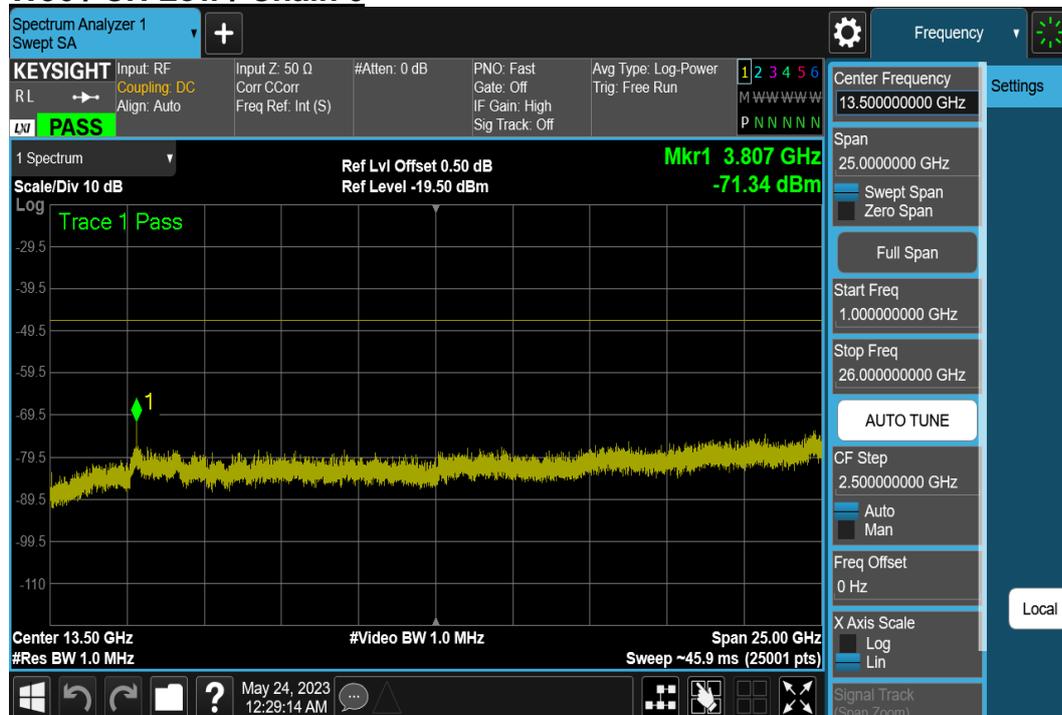
Report No.: TMWK2305001504KR

W56 / CH High / Chain 0



Report No.: TMWK2305001504KR

(2) 1GHz ~ 26GHz W56 / CH Low / Chain 0



W56 / CH Mid / Chain 0



Report No.: TMWK2305001504KR

W56 / CH High / Chain 0



Report No.: TMWK2305001504KR

8.7 TRANSMITTER BURST LENGTH & CARRIER SENSE CAPABILITY

TEST RESULTS

W52

Burst	Modulation	---	BPSK			---	---
	On Time	msec	0.800			≧ 8	PASS
	Off Time	msec	0.102			---	---
	Ratio	%	88.69			---	---
802.11n_W52_40MHz		unit	---	---	---	Limit	Result
Measurement Center Frequency		MHz	5190	5230	-	---	---
Channel Number		Ch.	38	46	-	---	---
Carrier Sensing Function		---	Good	Good	-	---	PASS
Threshold Level (TX RX) (Chain0)		dBm			-	---	---
DFS Function		---			-	---	PASS
Burst Length of Transmitted Signals		---	Good	Good	-	---	PASS
Interference Prevention Function		---	Good	Good	-	---	PASS

W53

Burst	Modulation	---	BPSK			---	---
	On Time	msec	0.800			≧ 8	PASS
	Off Time	msec	0.102			---	---
	Ratio	%	88.69			---	---
802.11n_W53_40MHz		unit	---	---	---	Limit	Result
Measurement Center Frequency		MHz	5270	5310	-	---	---
Channel Number		Ch.	54	62	-	---	---
Carrier Sensing Function		---	Good	Good	-	---	PASS
Threshold Level (TX RX) (Chain0)		dBm			-	---	---
DFS Function		---			-	---	PASS
Burst Length of Transmitted Signals		---	Good	Good	-	---	PASS
Interference Prevention Function		---	Good	Good	-	---	PASS

Report No.: TMWK2305001504KR

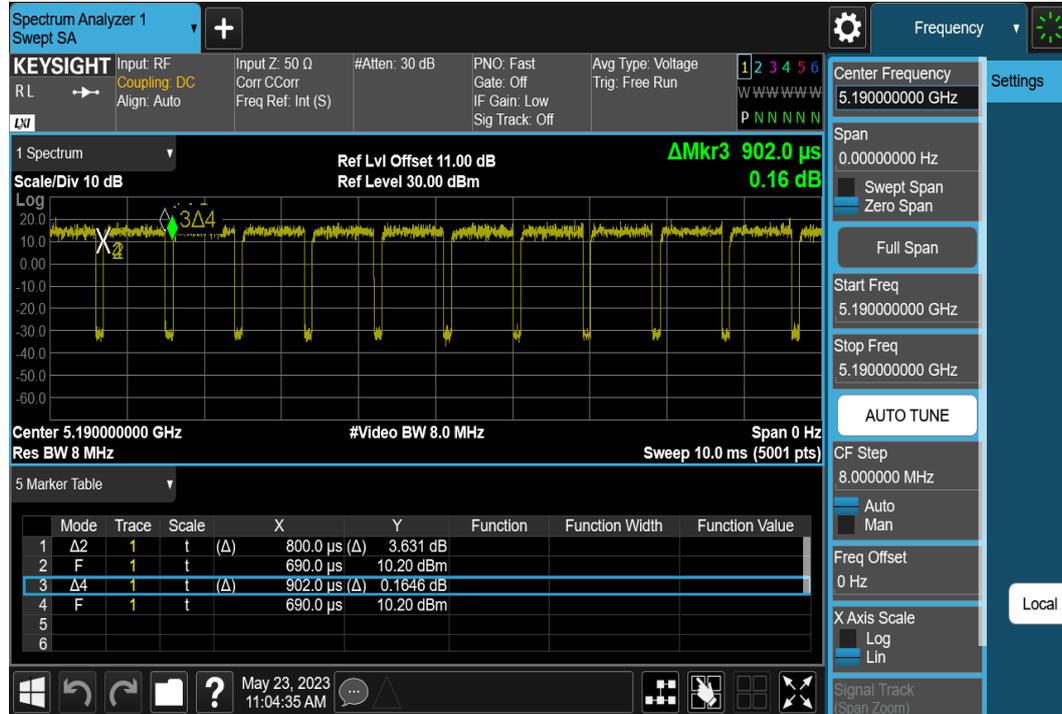
W56

Burst	Modulation	---	BPSK			---	---
	On Time	msec	0.800			≤ 8	PASS
	Off Time	msec	0.102			---	---
	Ratio	%	88.69			---	---
802.11n_W56_40MHz		unit	---	---	---	Limit	Result
Measurement Center Frequency		MHz	5510	5590	5710	---	---
Channel Number		Ch.	102	118	142	---	---
Carrier Sensing Function		---	Good	Good	Good	---	PASS
Threshold Level (TX RX) (Chain0)		dBm				---	---
DFS Function		---				---	PASS
Burst Length of Transmitted Signals		---	Good	Good	Good	---	PASS
Interference Prevention Function		---	Good	Good	Good	---	PASS

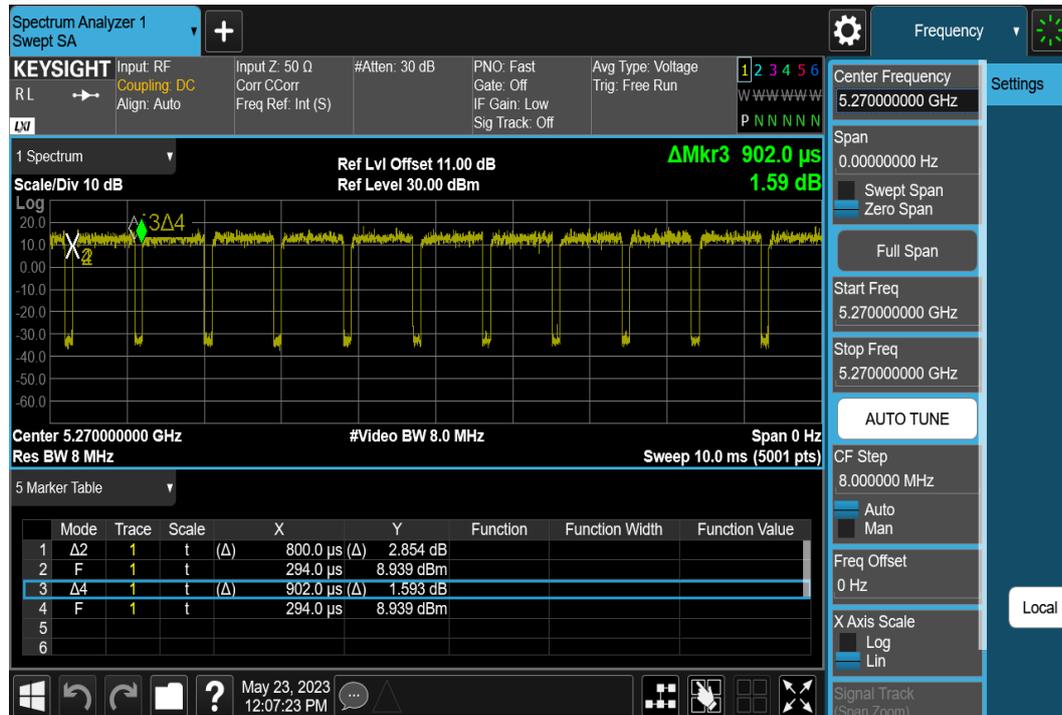
Report No.: TMWK2305001504KR

TEST PLOTS

W52

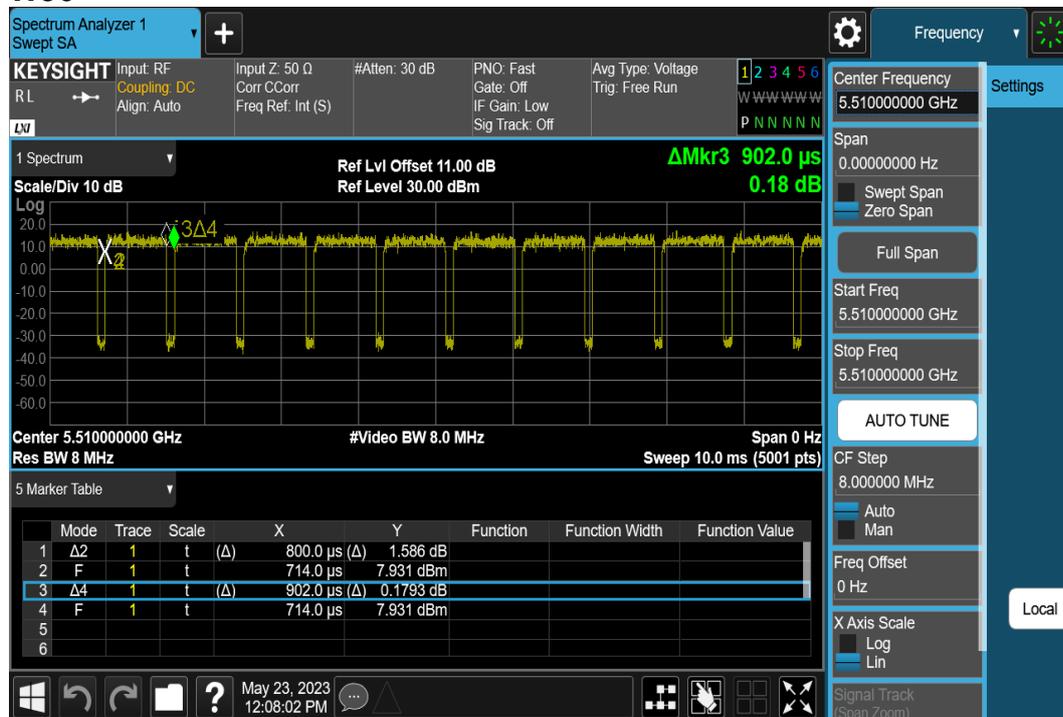


W53



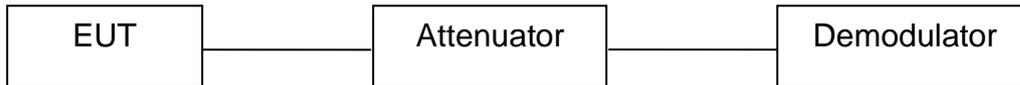
Report No.: TMWK2305001504KR

W56



Report No.: TMWK2305001504KR

9. INTERFERENCE PREVENTION FUNCTION



Interference Prevention Function	By identifying the characteristics of the modulation scheme of the received radio waves and others, shall be able to identify the reflected waves of the radio waves which local station transmitted and the radio waves transmitted by other radio stations.
MAC Address	00:1f:7b:1e:30:25
Result	PASS

- End of Test Report -

APPENDIX A - PHOTOGRAPHS OF TEST SETUP

