



Report No.: PTC23080209102E-FC03

FCC TEST REPORT

FCC ID: 2BDIP-DR158W

Product	:	Portable display DR158W
Model Name	:	DR158W
Brand	:	N/A
Report No.	:	PTC23080209102E-FC03
Prepared for		
Shenzhen Yuko Technology Co., Ltd		
4F, 6F A Building A9, 6F, 4F A, 4F B Building A4, Tianrui Industrial Park, No. 35, Fuyuan 1st Road, Zhancheng Community, Fuhai Street, Baoan District, Shenzhen, Guangdong		
Prepared by		
Precise Testing & Certification Co., Ltd		
Building 1, No. 6, Tongxin Road, Dongcheng Street, Dongguan, Guangdong, China		



1 TEST RESULT CERTIFICATION

Applicant's name : Shenzhen Yuko Technology Co., Ltd
Address : 4F, 6F A Building A9, 6F, 4F A, 4F B Building A4, Tianrui Industrial Park, No. 35, Fuyuan 1st Road, Zhancheng Community, Fuhai Street, Baoan District, Shenzhen, Guangdong
Manufacture's name : Shenzhen Yuko Technology Co., Ltd
Address : 4F, 6F A Building A9, 6F, 4F A, 4F B Building A4, Tianrui Industrial Park, No. 35, Fuyuan 1st Road, Zhancheng Community, Fuhai Street, Baoan District, Shenzhen, Guangdong
Product name : Portable display DR158W
Model name : DR158W
Standards : FCC CFR47 Part 15 Section 15.407
Test procedure : ANSI C63.10:2013
Test Date : Oct. 15, 2023 to Oct. 27, 2023
Date of Issue : Dec. 05, 2023
Test Result : Pass

This device described above has been tested by PTC, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

This report shall not be reproduced except in full, without the written approval of PTC, this document may be altered or revised by PTC, personal only, and shall be noted in the revision of the document.

Test Engineer:

A handwritten signature in black ink, appearing to read 'Jack Zhou'.

Jack Zhou / Engineer

Technical Manager:

A handwritten signature in black ink, appearing to read 'Simon Pu'.

Simon Pu/ Manager



Contents

	Page
1 TEST RESULT CERTIFICATION	2
2 TEST SUMMARY	5
3 GENERAL INFORMATION	6
3.1 GENERAL DESCRIPTION OF E.U.T.	6
3.2 CHANNEL LIST	7
3.3 TEST SITE	23
4 EQUIPMENT DURING TEST	24
4.1 EQUIPMENTS LIST	24
4.2 MEASUREMENT UNCERTAINTY	26
4.3 DESCRIPTION OF SUPPORT UNITS	27
5 CONDUCTED EMISSION	28
5.1 E.U.T. OPERATION	28
5.2 EUT SETUP	28
5.3 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	29
5.4 MEASUREMENT PROCEDURE	29
5.5 CONDUCTED EMISSION LIMIT	29
5.6 MEASUREMENT DESCRIPTION	29
5.7 CONDUCTED EMISSION TEST RESULT	29
6 RADIATED SPURIOUS EMISSIONS	32
6.1 EUT OPERATION	33
6.2 TEST SETUP	34
6.3 SPECTRUM ANALYZER SETUP	35
6.4 TEST PROCEDURE	36
6.5 SUMMARY OF TEST RESULTS	37
6.6 BAND EDGE MEASUREMENTS	75
7 EMISSION BANDWIDTH AND OCCUPIED BANDWIDTH	89
7.1 TEST PROCEDURE	89
7.2 TEST SETUP	90
7.3 TEST RESULT	90
8 MAXIMUM CONDUCTED OUTPUT POWER	106



8.1 TEST PROCEDURE	106
8.2 TEST SETUP	106
8.3 TEST RESULT	107
9 POWER SPECTRAL DENSITY	108
9.1 TEST PROCEDURE	109
9.2 TEST SETUP	109
9.3 TEST RESULT	110
9.4 ANTENNA REQUIREMENT	125
9.5 RESULT	125
10 FREQUENCY STABILITY	126
10.1 TEST PROCEDURE	126
10.2 TEST SETUP	126
10.3 TEST RESULT	126
11 TEST SETUP	128
12 EUT PHOTOS	130



2 Test Summary

Test Items	Test Requirement	Result
Conduct Emission	15.207	PASS
Radiated Spurious Emissions	15.205(a) 15.209 15.407(b)	PASS
Emission and Occupied Bandwidth	15.407(a)(e)	PASS
Maximum Peak Output Power	15.407(a)	PASS
Power Spectral Density	15.407(a)	PASS
Frequency stability	15.407 (g)	PASS
Antenna Requirement	15.203	PASS



3 General Information

3.1 General Description of E.U.T.

Product Name	:	Portable display DR158W
Model Name	:	DR158W
Additional model	:	DR138, DR138W, DR139, DR139W, DR1461, DR1461W, DR148, DR148W, DR149, DR149W, DR1561, DR1561P, DR1561PRO, DR1561Q, DR158, DR159, DR159W
Model difference	:	The difference between each model is only the model name and appearance size are different, the other are the same.
Specification	:	802.11 a/n20/n40/ac20/ac40/ac80
Operation Frequency	:	5G WIFI: 5150-5250 MHz 5.8G WIFI: 5725MHz~5850MHz
Number of Channel	:	4 channels for 802.11a/n20/ac20 5150-5250 MHz 5 channels for 802.11a/n20/ac20 5725MHz~5850MHz 2 channels for 802.11n40/ac40 5150-5250 MHz 2 channels for 802.11n40/ac40 5725MHz~5850MHz 1 channels for 802.11 ac80
Type of Modulation	:	OFDM with BPSK/QPSK/16QAM/64QAM for 802.11a/n/ac
Antenna installation	:	PIFA Antenna
Antenna Gain	:	3.22 dBi
Power supply	:	Input: DC 12V/3A
Hardware Version/HMN:		DR158W_MB_V1.1
Software Version/FVIN :		DR158W-20230421
Test Sample No.	:	PTC23080209102E-1/2, PTC23080209102E-2/2



3.2 Channel List

The EUT has been tested under its typical operating condition.

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

Test of channel included the lowest and middle and highest frequency to perform the test, then record on this report.

Pre-defined engineering program for regulatory testing used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

Frequency and Channel list for 802.11 a/N20/N40/AC20/AC40

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	46	5230	153	5765
38	5190	48	5240	157	5785
40	5200	149	5745	159	5795
44	5220	151	5755	161	5805
				165	5825

Frequency and Channel list for 802.11 ac80:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
42	5210	155	5775	/	/

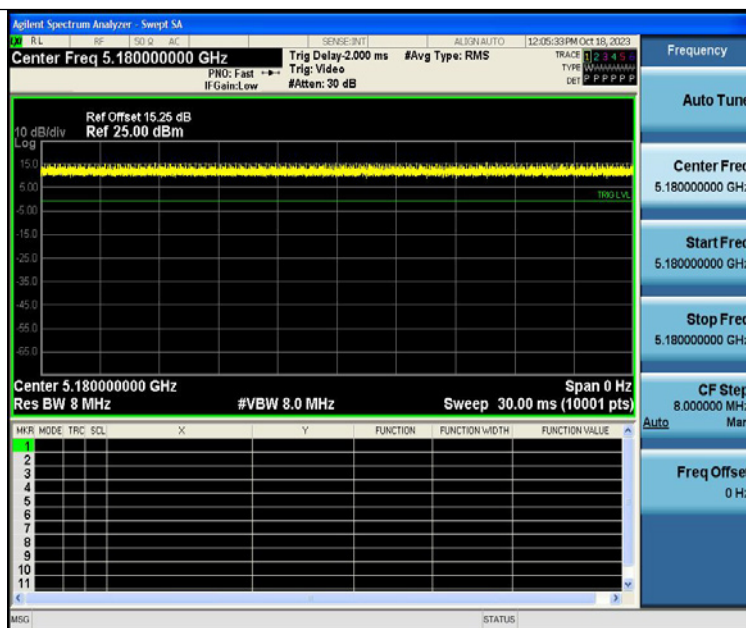


The maximum duty cycle as following table:

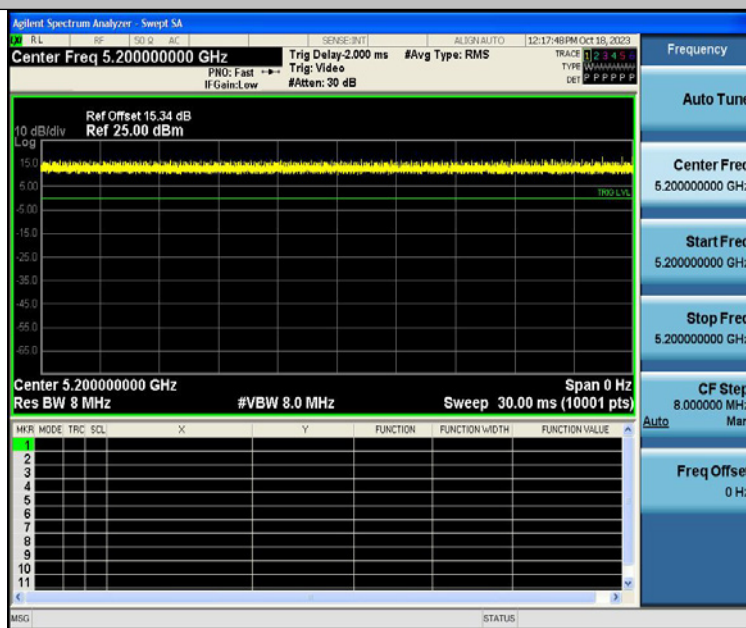
Test Mode	Antenna	Frequency[MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]
11A	Ant1	5180	30.00	30.00	100.00
11A	Ant1	5200	30.00	30.00	100.00
11A	Ant1	5240	30.00	30.00	100.00
11A	Ant1	5745	30.00	30.00	100.00
11A	Ant1	5785	30.00	30.00	100.00
11A	Ant1	5825	30.00	30.00	100.00
11N20SISO	Ant1	5180	30.00	30.00	100.00
11N20SISO	Ant1	5200	30.00	30.00	100.00
11N20SISO	Ant1	5240	30.00	30.00	100.00
11N20SISO	Ant1	5745	30.00	30.00	100.00
11N20SISO	Ant1	5785	30.00	30.00	100.00
11N20SISO	Ant1	5825	30.00	30.00	100.00
11N40SISO	Ant1	5190	30.00	30.00	100.00
11N40SISO	Ant1	5230	30.00	30.00	100.00
11N40SISO	Ant1	5755	30.00	30.00	100.00
11N40SISO	Ant1	5795	30.00	30.00	100.00
11AC20SISO	Ant1	5180	30.00	30.00	100.00
11AC20SISO	Ant1	5200	30.00	30.00	100.00
11AC20SISO	Ant1	5240	30.00	30.00	100.00
11AC20SISO	Ant1	5745	30.00	30.00	100.00
11AC20SISO	Ant1	5785	30.00	30.00	100.00
11AC20SISO	Ant1	5825	30.00	30.00	100.00
11AC40SISO	Ant1	5190	30.00	30.00	100.00
11AC40SISO	Ant1	5230	30.00	30.00	100.00
11AC40SISO	Ant1	5755	30.00	30.00	100.00
11AC40SISO	Ant1	5795	30.00	30.00	100.00
11AC80SISO	Ant1	5210	30.00	30.00	100.00
11AC80SISO	Ant1	5775	30.00	30.00	100.00



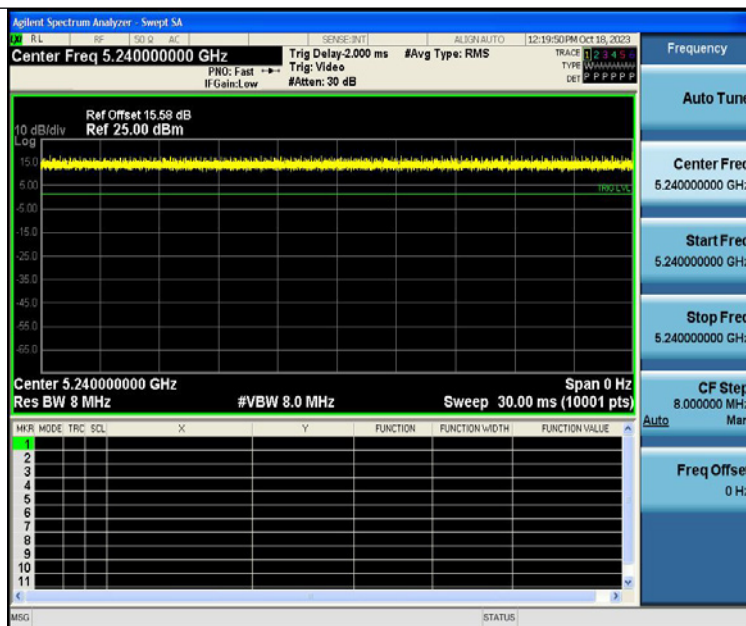
Test graphs



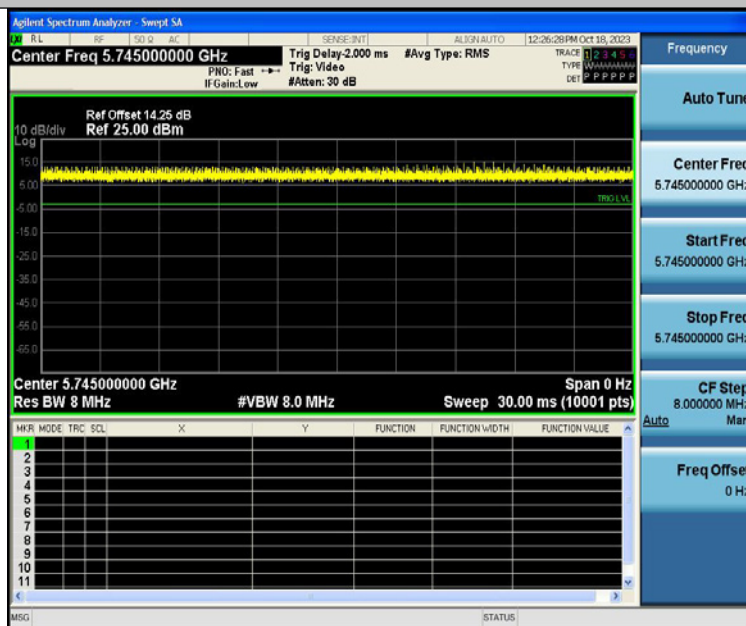
NTNV-11A-Ant1-5180



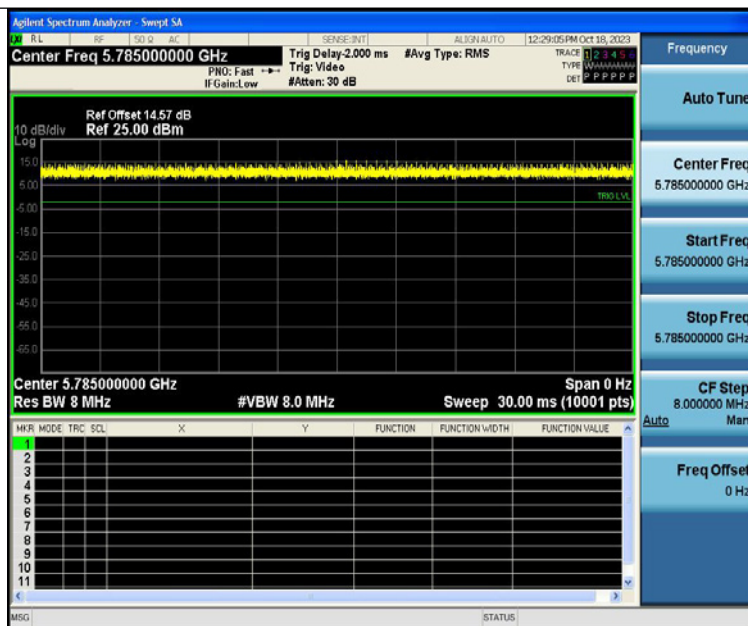
NTNV-11A-Ant1-5200



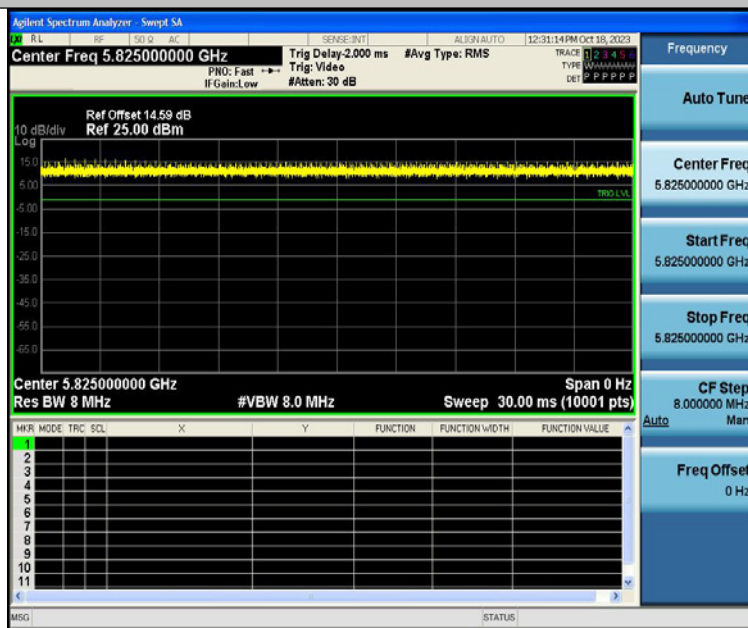
NTNV-11A-Ant1-5240



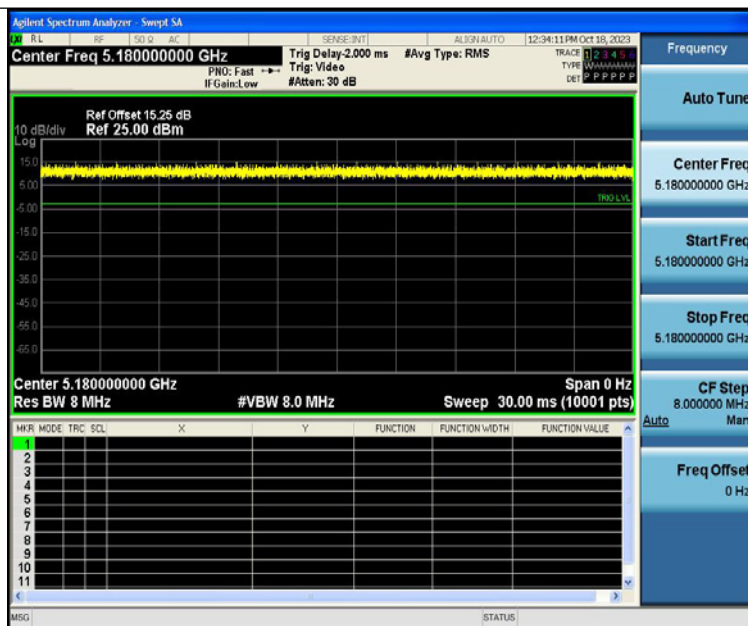
NTNV-11A-Ant1-5745



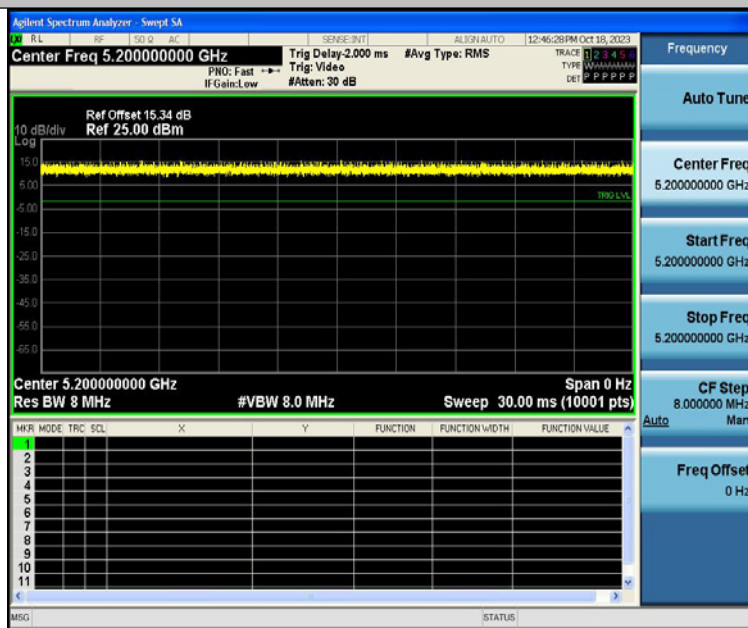
NTNV-11A-Ant1-5785



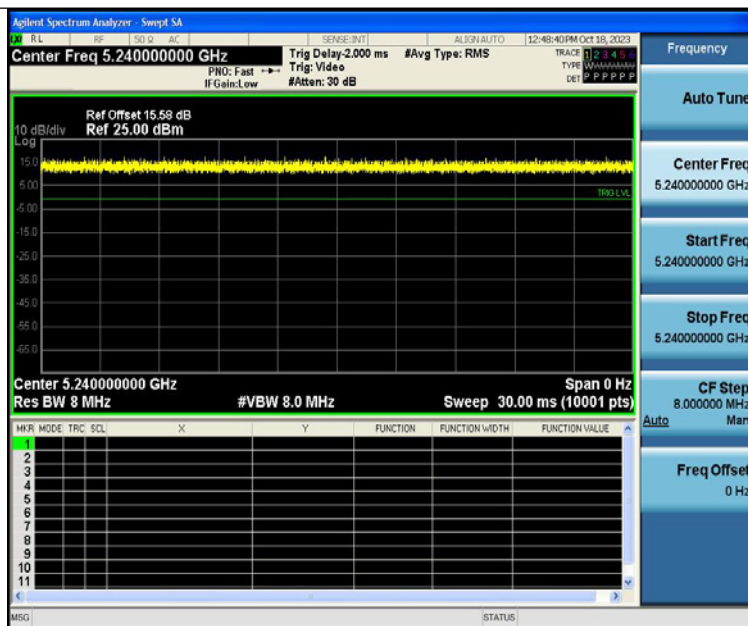
NTNV-11A-Ant1-5825



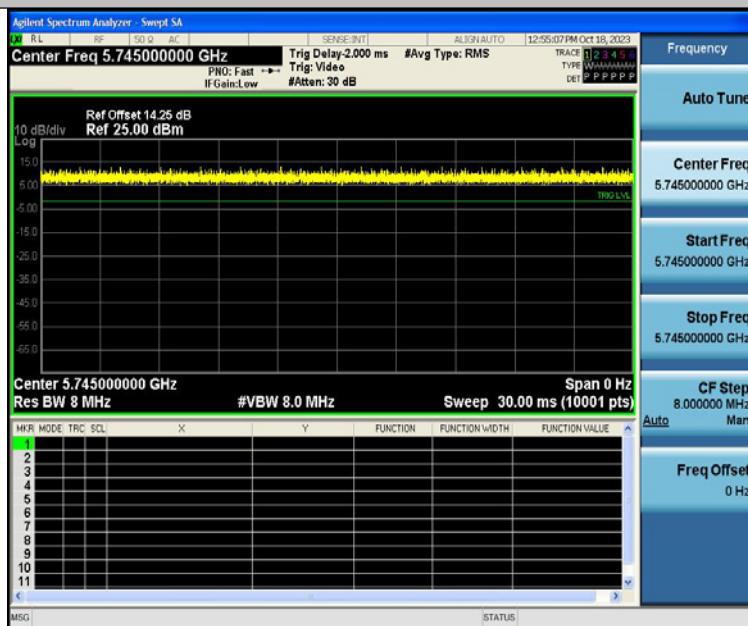
NTVN-11N20SISO-Ant1-5180



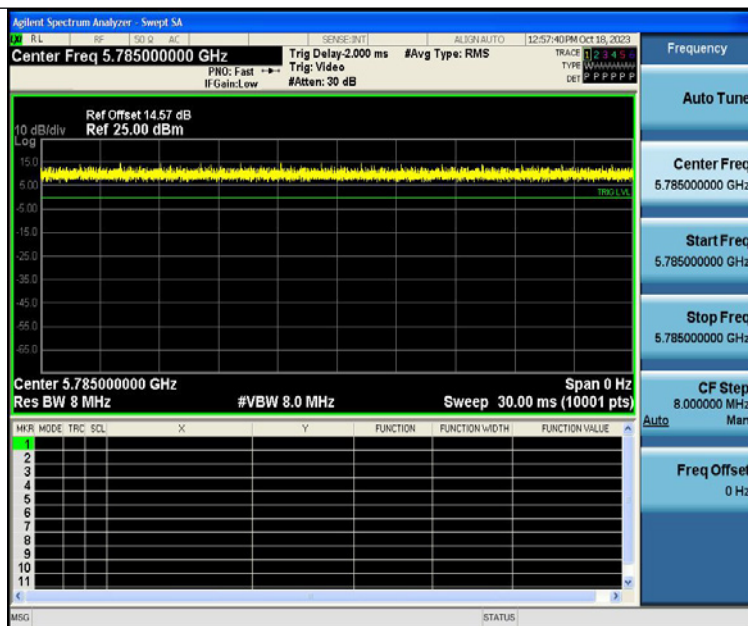
NTVN-11N20SISO-Ant1-5200



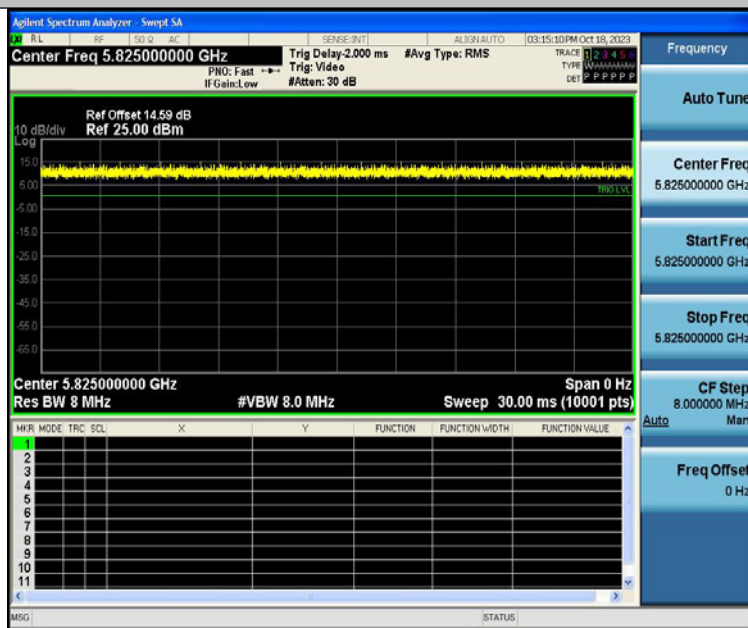
NTNV-11N20SISO-Ant1-5240



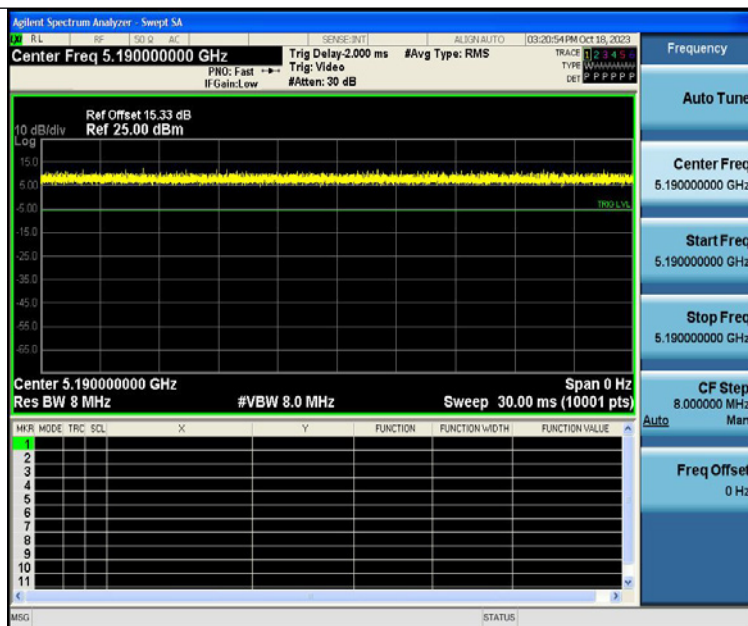
NTNV-11N20SISO-Ant1-5745



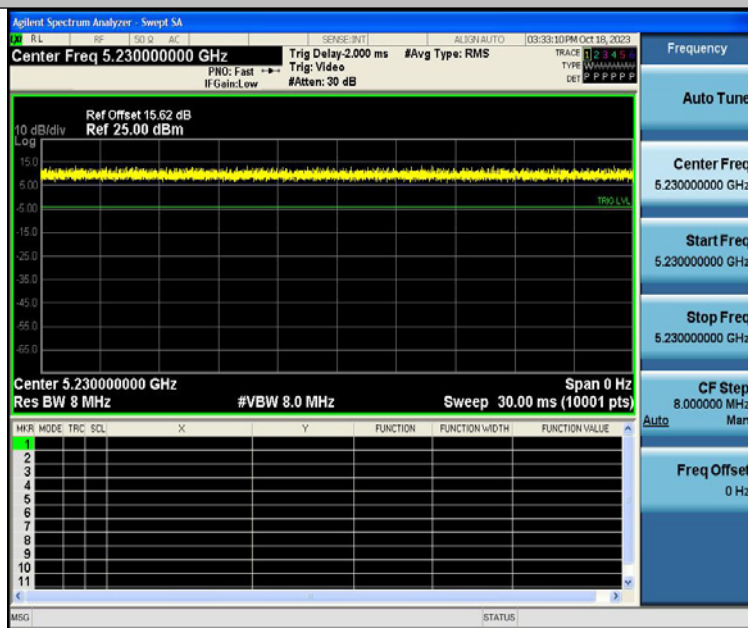
NTVN-11N20SISO-Ant1-5785



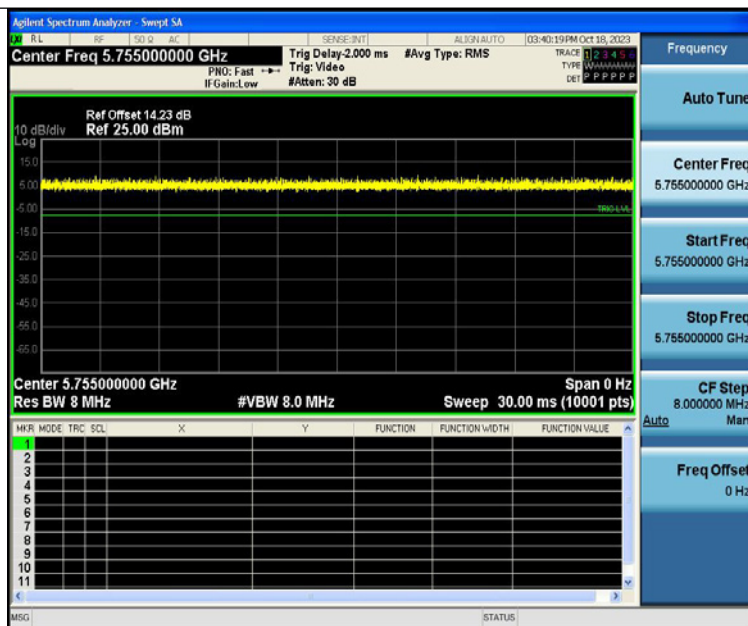
NTVN-11N20SISO-Ant1-5825



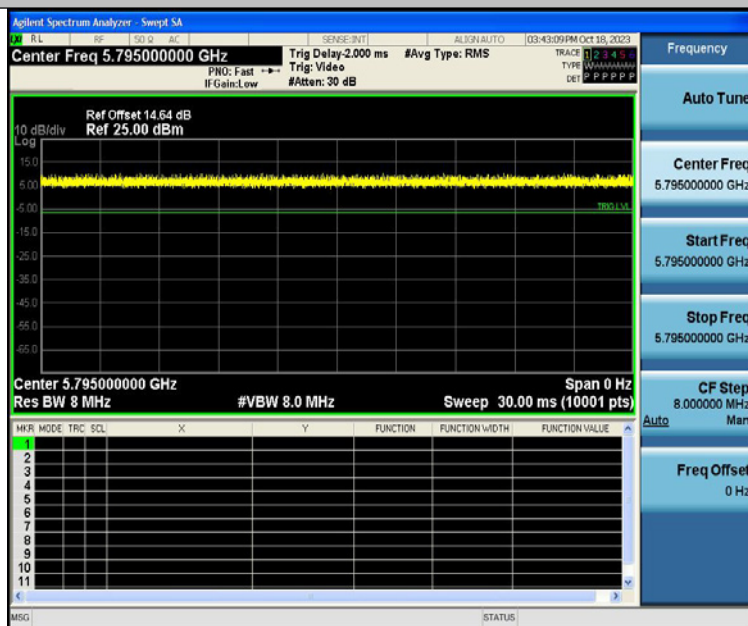
NTVN-11N40SISO-Ant1-5190



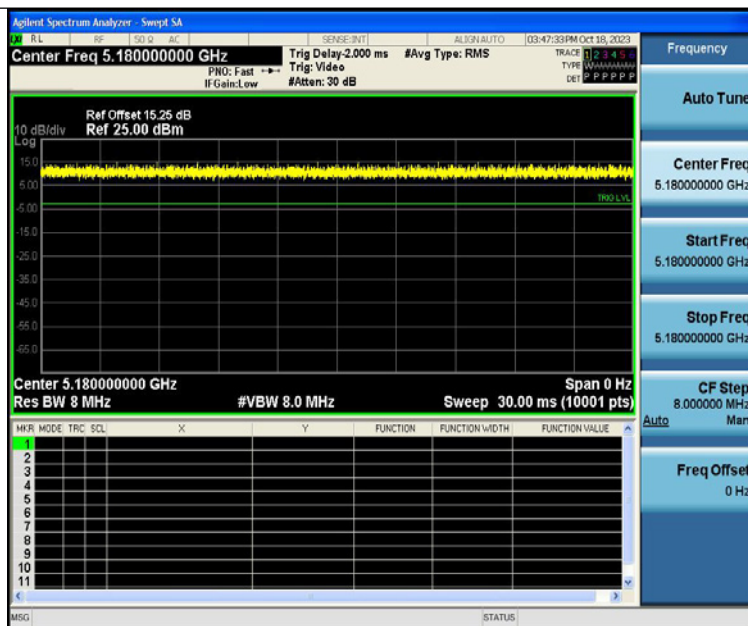
NTVN-11N40SISO-Ant1-5230



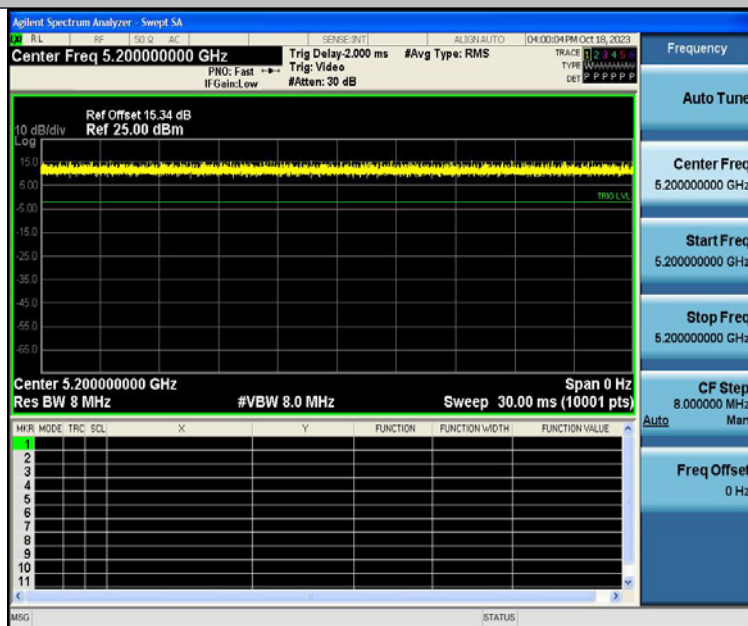
NTVN-11N40SISO-Ant1-5755



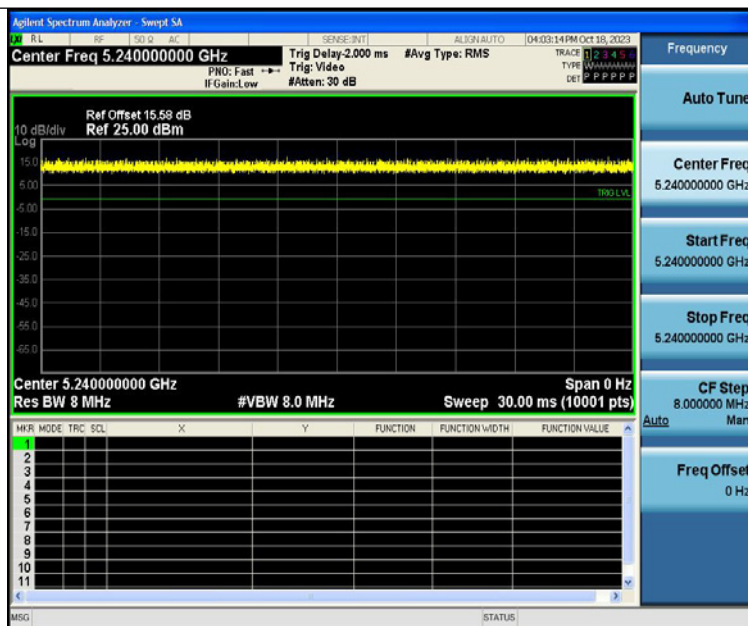
NTVN-11N40SISO-Ant1-5795



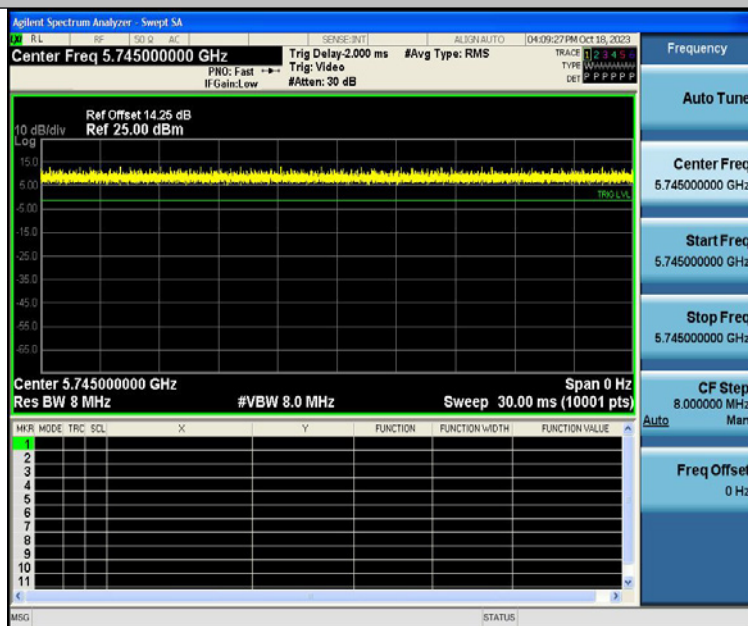
NTNV-11AC20SISO-Ant1-5180



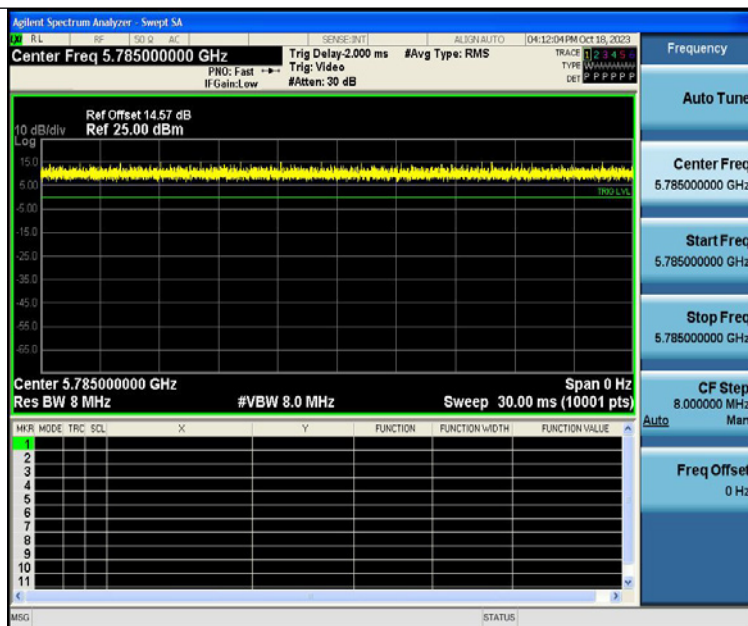
NTNV-11AC20SISO-Ant1-5200



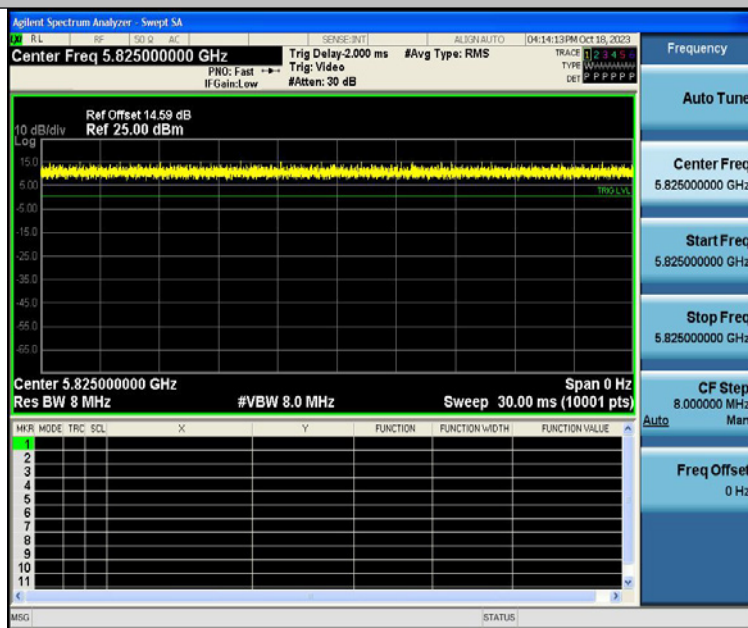
NTNV-11AC20SISO-Ant1-5240



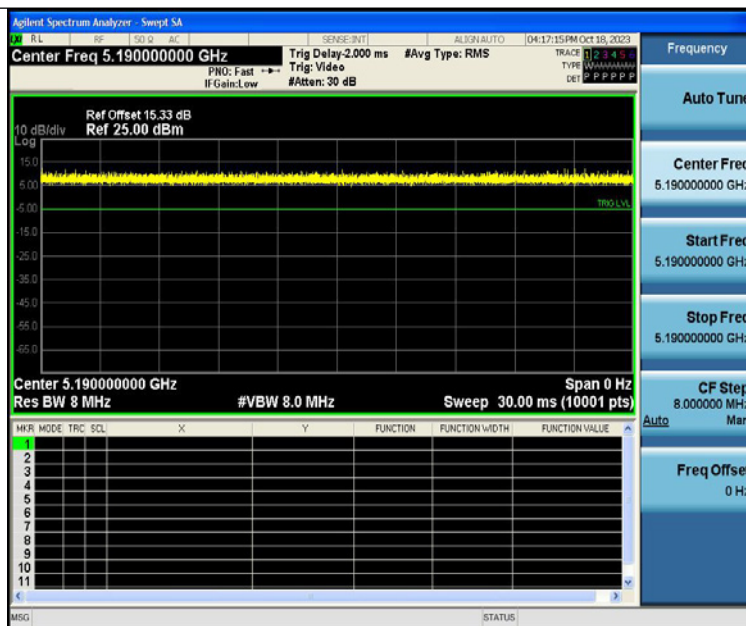
NTNV-11AC20SISO-Ant1-5745



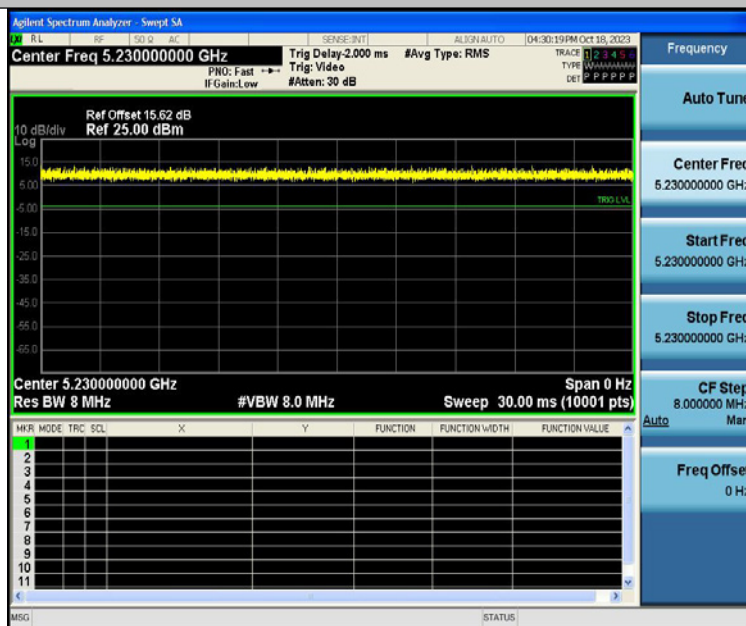
NTNV-11AC20SISO-Ant1-5785



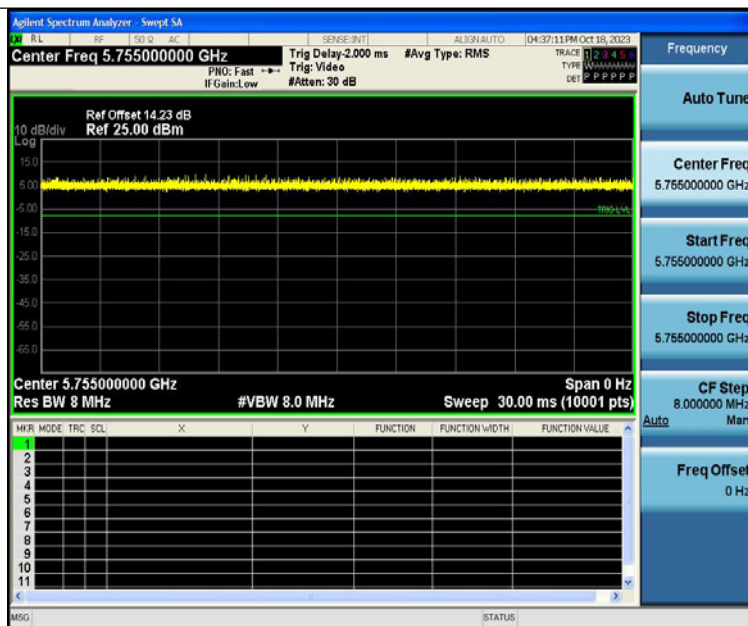
NTNV-11AC20SISO-Ant1-5825



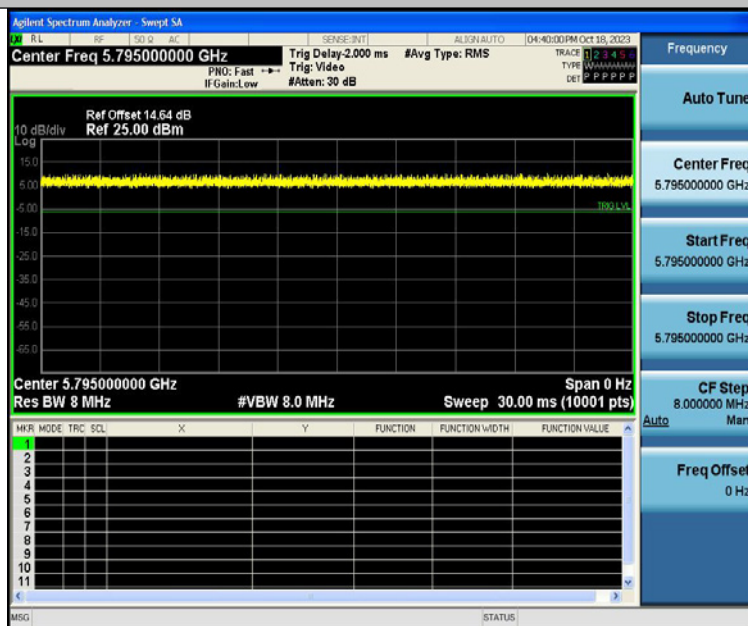
NTNV-11AC40SISO-Ant1-5190



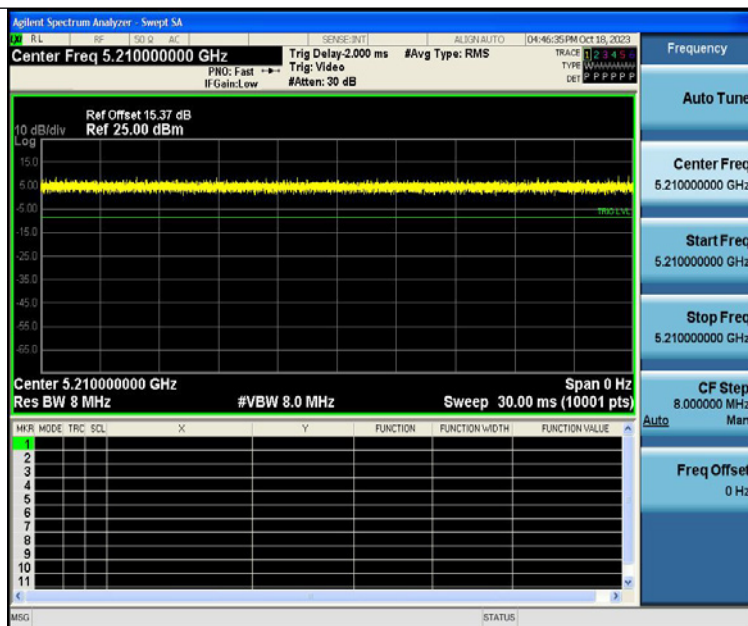
NTNV-11AC40SISO-Ant1-5230



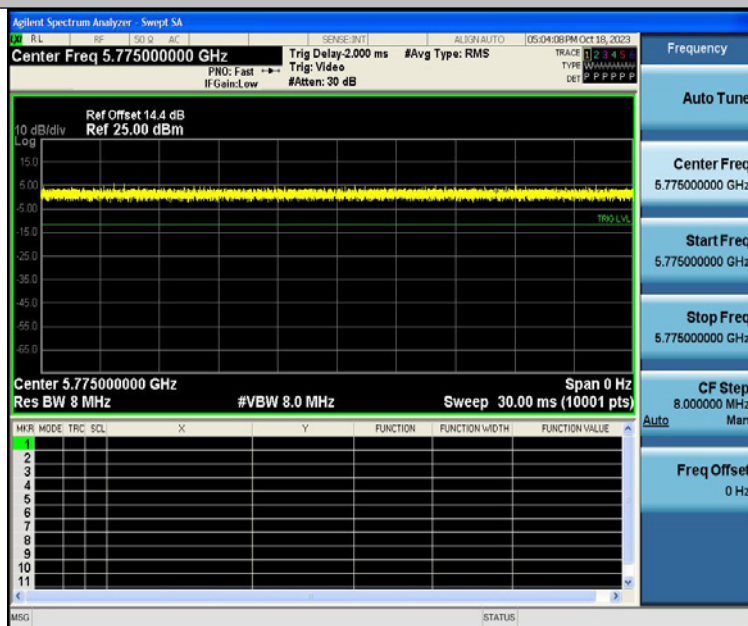
NTNV-11AC40SISO-Ant1-5755



NTNV-11AC40SISO-Ant1-5795



NTNV-11AC80SISO-Ant1-5210



NTNV-11AC80SISO-Ant1-5775



Report No.: PTC23080209102E-FC03

3.3 Test Site

Precise Testing & Certification Co., Ltd

Address: Building 1, No. 6, Tongxin Road, Dongcheng Street, Dongguan, Guangdong, China

FCC Registration Number: 790290

Designation Number: CN1219

A2LA Certificate No.: 4408.01

IC Registration Number: 12191A

CAB identifier: CN0080



4 Equipment During Test

4.1 Equipments List

RF Conducted Test

Name of Equipment	Manufacturer	Model	Serial No.	Characteristics	Calibration Date	Calibration period
MXG Signal Analyzer	Agilent	N9020A	SER MY5111038	10Hz-30GHz	Aug. 21, 2023	1 year
Coaxial Cable	CDS	79254	46107086	10Hz-30GHz	Aug. 21, 2023	1 year
Power Meter	Anritsu	ML2495A	0949003	300MHz-40GHz	Aug. 21, 2023	1 year
Power Sensor	Anritsu	MA2411B	0917017	300MHz-40GHz	Aug. 21, 2023	1 year
Signal Analyzer 40GHz	Rohde&Schwarz	FSV40	101456	10Hz-40GHz	Aug. 21, 2023	1 year

Remark: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

Name of Equipment	Manufacturer	Model	Serial No.	Characteristics	Calibration Date	Calibration period
EMI Test Receiver	Rohde&Schwarz	ESCI	101417	9KHz-3GHz	Aug. 21, 2023	1 year
Loop Antenna	Schwarzbeck	FMZB 1519	012	9 KHz -30MHz	Aug. 21, 2023	1 year
Bilog Antenna	SCHWARZBECK	VULB9160	9160-3355	25MHz-2GHz	Aug. 21, 2023	1 year
Preamplifier (low frequency)	SCHWARZBECK	BBV 9475	9745-0013	1MHz-1GHz	Aug. 21, 2023	1 year
Cable	Schwarzbeck	PLF-100	549489	9KHz-3GHz	Aug. 21, 2023	1 year
Spectrum Analyzer	Agilent	E4407B	MY45109572	9KHz-40GHz	Aug. 21, 2023	1 year
Horn Antenna	SCHWARZBECK	9120D	9120D-1246	1GHz-18GHz	Aug. 21, 2023	1 year
Power Amplifier	LUNAR EM	LNA1G18-40	J10100000081	1GHz-26.5GHz	Aug. 21, 2023	1 year



Report No.: PTC23080209102E-FC03

Horn Antenna	SCHWARZBEC K	BBHA 9170	9170-181	14GHz- 40GHz	Aug. 21, 2023	1 year
Amplifier	SCHWARZBEC K	BBV 9721	9721-205	18GHz- 40GHz	Aug. 21, 2023	1 year
Cable	H+S	CBL-26	N/A	1GHz- 26.5GHz	Aug. 21, 2023	1 year
RF Cable	R&S	R204	R21X	1GHz-40GHz	Aug. 21, 2023	1 year

Conducted Emissions

Name of Equipment	Manufacturer	Model	Serial No.	Characteristics	Calibration Date	Calibration period
EMI Test Receiver	Rohde&Schwarz	ESCI	101417	9KHz-3GHz	Aug. 21, 2023	1 year
Artificial Mains Network	Rohde&Schwarz	ENV216	102453	9KHz-300MHz	Aug. 21, 2023	1 year
Artificial Mains Network	Rohde&Schwarz	ENV216	101342	9KHz-300MHz	Aug. 21, 2023	1 year



4.2 Measurement Uncertainty

Parameter	Uncertainty
RF output power, conducted	$\pm 1.0\text{dB}$
Power Spectral Density, conducted	$\pm 2.2\text{dB}$
Radio Frequency	$\pm 1 \times 10^{-6}$
Bandwidth	$\pm 1.5 \times 10^{-6}$
Time	$\pm 2\%$
Duty Cycle	$\pm 2\%$
Temperature	$\pm 1^\circ\text{C}$
Humidity	$\pm 5\%$
DC and low frequency voltages	$\pm 3\%$
Conducted Emissions (150kHz~30MHz)	$\pm 3.64\text{dB}$
Radiated Emission(9kHz~30MHz)	$\pm 3.15\text{dB}$
Radiated Emission(30MHz~1GHz)	$\pm 5.03\text{dB}$
Radiated Emission(1GHz~18GHz)	$\pm 4.74\text{dB}$
Radiated Emission(18GHz~40GHz)	$\pm 3.20\text{dB}$



Report No.: PTC23080209102E-FC03

4.3 Description of Support Units

Equipment	Model No.	Series No.
N/A	N/A	N/A

5 Conducted Emission

Test Requirement:	: FCC CFR 47 Part 15 Section 15.207
Test Method	: ANSI C63.10: 2013
Test Result	: PASS
Frequency Range	: 150kHz to 30MHz
Class/Severity	: Class B

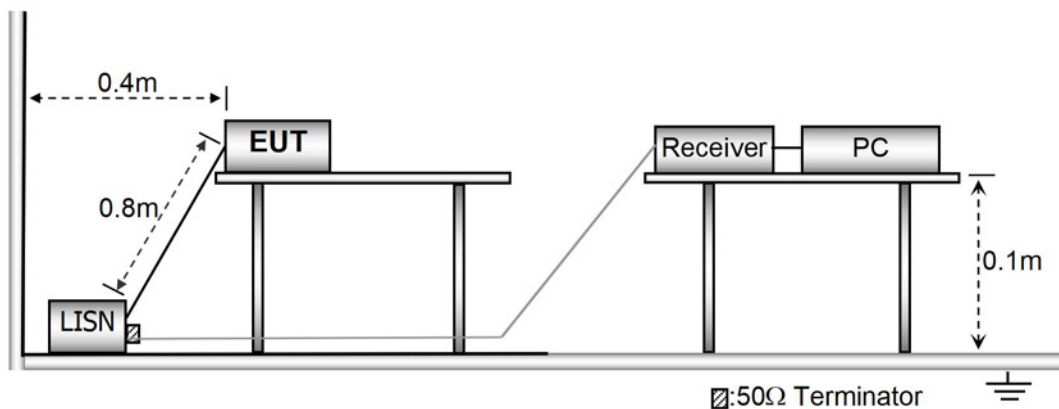
5.1 E.U.T. Operation

Operating Environment :

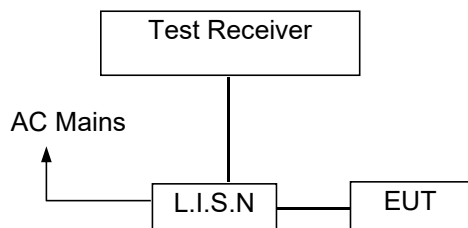
Temperature	: 23.9 °C
Humidity	: 51.4 % RH
Atmospheric Pressure	: 101.21kPa

5.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10:2013.



5.3 Test SET-UP (Block Diagram of Configuration)



5.4 Measurement Procedure

1. The EUT was placed on a table, which is 0.1m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured was complete.

5.5 Conducted Emission Limit

Conducted Emission

Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

Note:

1. The lower limit shall apply at the transition frequencies
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

5.6 Measurement Description

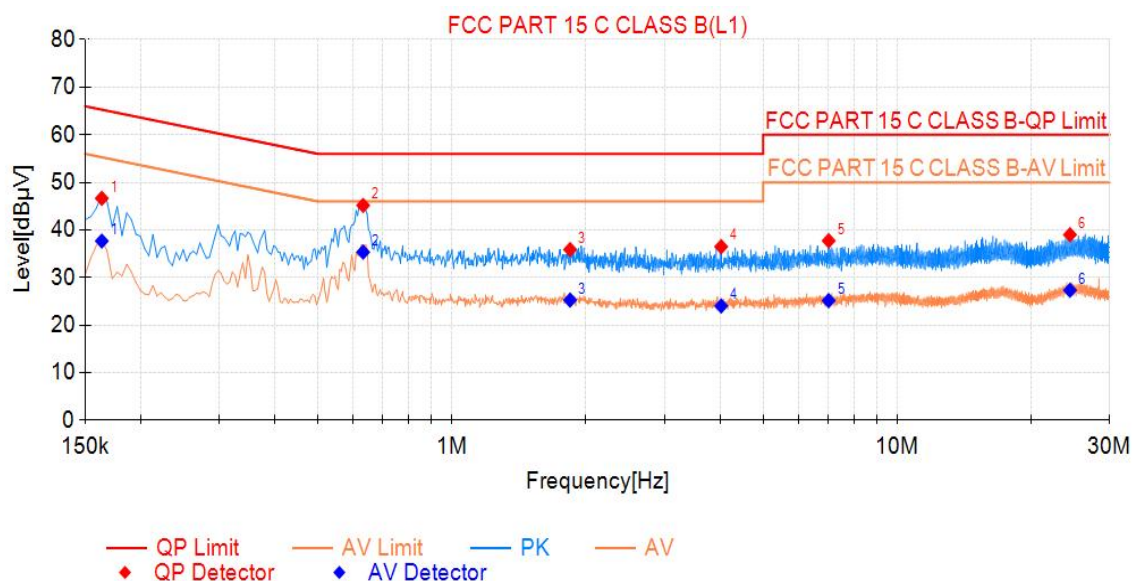
The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

5.7 Conducted Emission Test Result

Pass.

All the modulation modes were tested the data of the worst mode (AC 120V/60Hz, TX 5180MHz) are recorded in the following pages and the others modulation methods do not exceed the limits.

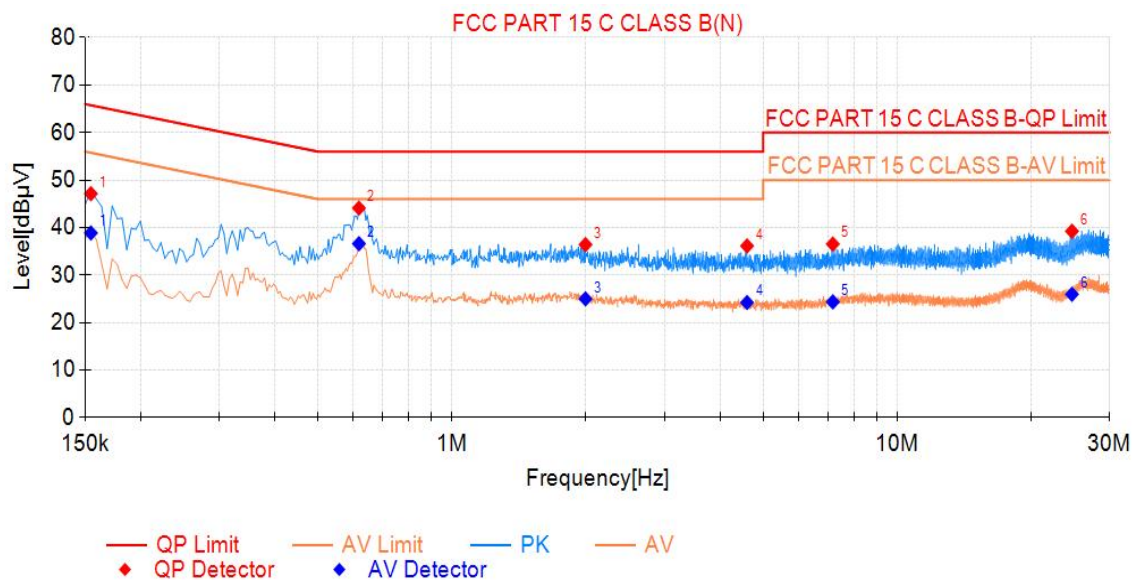
Line-AC 120V/60Hz



Final Data List

NO.	Freq. [MHz]	QP Value	QP Limit	QP Margin	AV Value	AV Limit	AV Margin	Verdict
1	0.164	46.65	65.28	18.63	37.68	55.28	17.60	PASS
2	0.632	45.16	56.00	10.84	35.36	46.00	10.64	PASS
3	1.842	35.89	56.00	20.11	25.27	46.00	20.73	PASS
4	4.025	36.49	56.00	19.51	24.03	46.00	21.97	PASS
5	7.017	37.74	60.00	22.26	25.16	50.00	24.84	PASS
6	24.446	39.01	60.00	20.99	27.34	50.00	22.66	PASS

Neutral-AC 120V/60Hz



Final Data List

NO.	Freq.	QP	QP	QP	AV	AV	AV	Verdict
	[MHz]	Value	Limit	Margin	Value	Limit	Margin	
1	0.155	47.15	65.75	18.60	38.87	55.75	16.88	PASS
2	0.618	44.10	56.00	11.90	36.62	46.00	9.38	PASS
3	1.995	36.43	56.00	19.57	25.00	46.00	21.00	PASS
4	4.601	36.15	56.00	19.85	24.24	46.00	21.76	PASS
5	7.170	36.54	60.00	23.46	24.37	50.00	25.63	PASS
6	24.693	39.24	60.00	20.76	25.96	50.00	24.04	PASS



6 Radiated Spurious Emissions

Test Requirement	:	FCC CFR47 Part 15 Section 15.209 & 15.407(b)
Test Method	:	ANSI C63.10:2013
Test Result	:	PASS
Measurement Distance	:	3m
Limit		

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band:

(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

(ii) Devices certified before March 2, 2017 with antenna gain greater than 10 dBi may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease by March 2, 2018. Devices certified before March 2, 2018 with antenna gain of 10 dBi or less may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease before March 2, 2020.

(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

Further.

(7) The provisions of §15.205 apply to intentional radiators operating under this section.

(8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits. As per FCC §15.35(d): Unless otherwise specified, on any frequency or frequencies above 1000 MHz, the radiated emission limits are based on the use of measurement instrumentation employing an average detector function. Unless otherwise specified, measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1MHz



As per FCC §15.209(a): Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	$2400/F(\text{kHz})$	300	$10000 * 2400/F(\text{kHz})$	$20\log^{(2400/F(\text{kHz}))} + 80$
0.490 ~ 1.705	$24000/F(\text{kHz})$	30	$100 * 24000/F(\text{kHz})$	$20\log^{(24000/F(\text{kHz}))} + 40$
1.705 ~ 30	30	30	$100 * 30$	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

6.1 EUT Operation

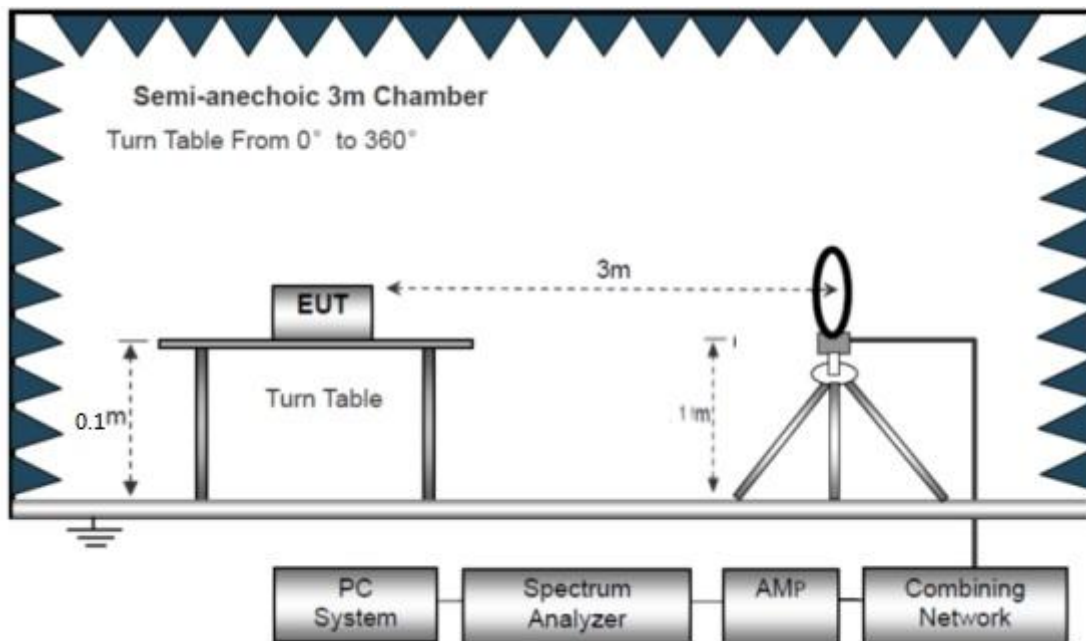
Operating Environment :

Temperature: : 24.5 °C
 Humidity: : 52 % RH
 Atmospheric Pressure: : 101.3kPa
 Test Voltage : AC 120V 60Hz

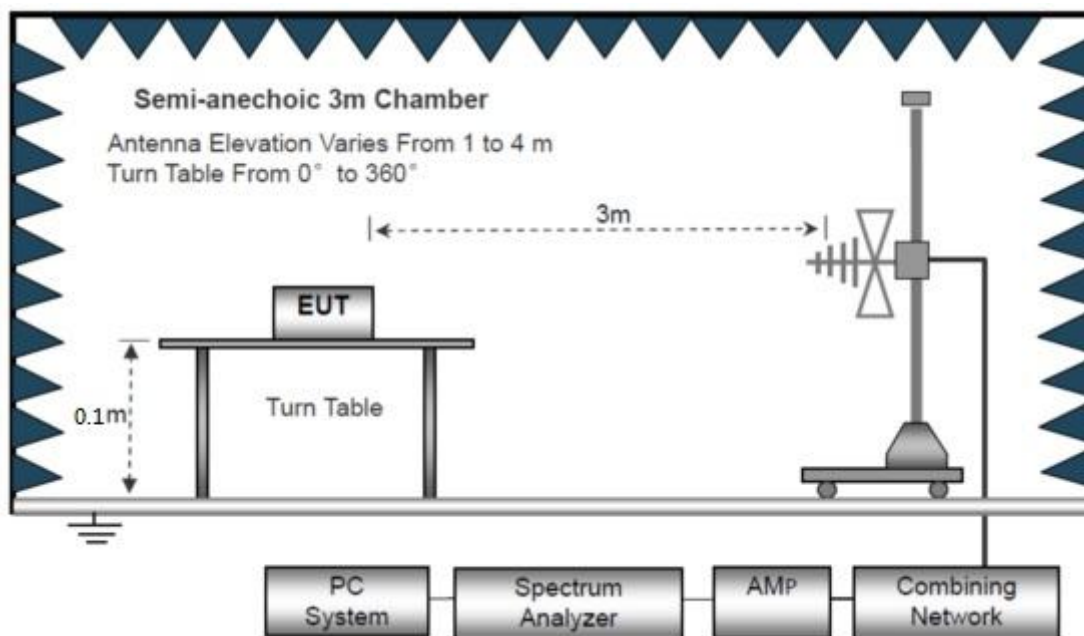
6.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site

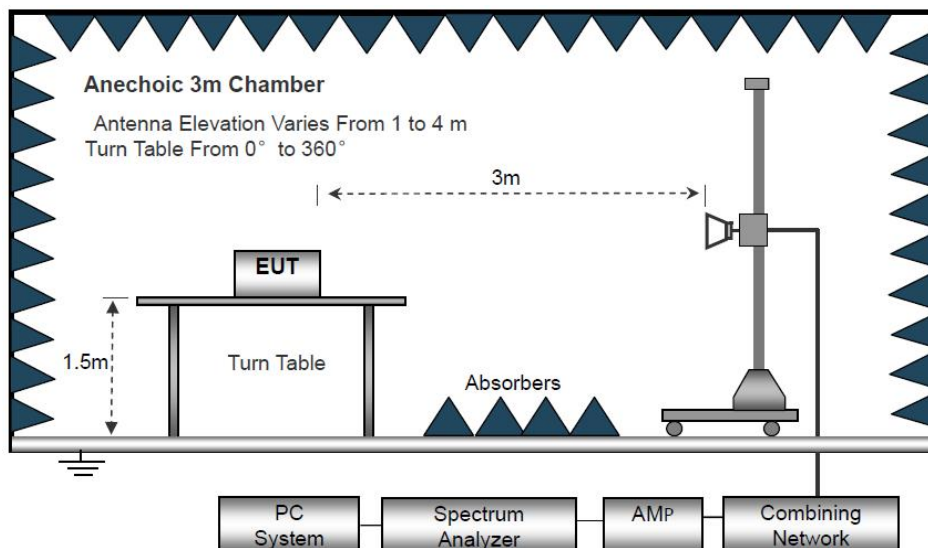
The test setup for emission measurement below 30MHz



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz



6.3 Spectrum Analyzer Setup

	Frequency	Detector	RBW	VBW	Remark
Receiver Setup	Below 30MHz	--	10kHz	10kHz	--
	30MHz ~ 1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		RMS	1MHz	3MHz	Average Value



6.4 Test Procedure

1. Below 1000MHz, The EUT was placed on a turn table which is 0.8m above ground plane, And above 1000MHz, The EUT was placed on a styrofoam table which is 1.5m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions. The spectrum was investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.
8. The test above 1GHz must be use the fully anechoic room, and the test below 1GHz use the half anechoic room



6.5 Summary of Test Results

Test Frequency: 9KHz-30MHz

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Over (dB)
--	--	--	--	>20

Note:

The amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

Distance extrapolation factor = $40\log(\text{Specific distance} / \text{test distance})$ (dB);

Limit line = Specific limits (dBuV) + distance extrapolation factor.

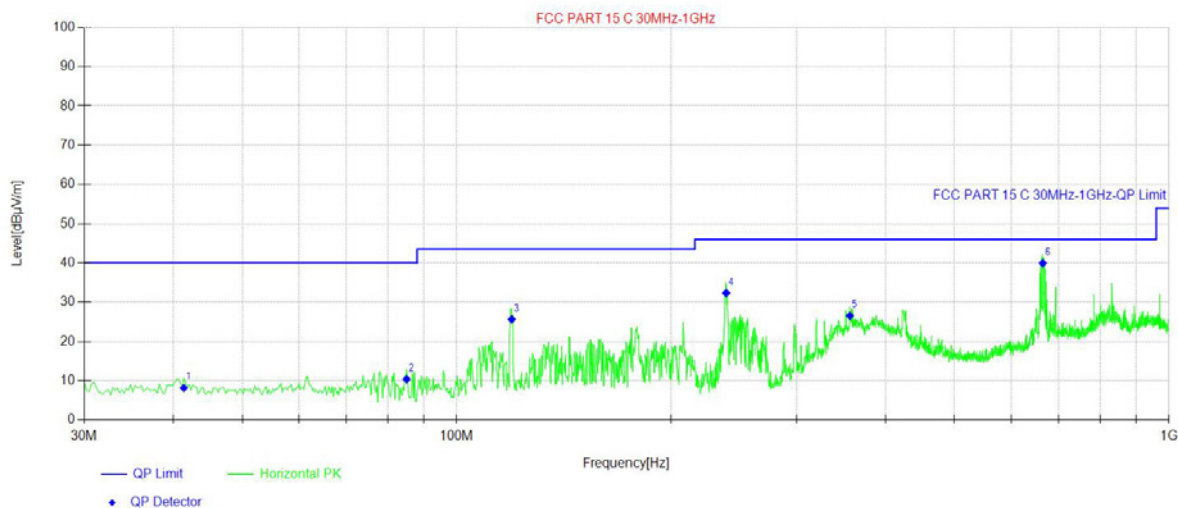
Test Frequency: 30MHz ~ 1GHz

All the modulation modes were tested the data of the worst mode (TX 802.11a Channel 36) are recorded in the following pages and the others modulation methods do not exceed the limits.

Please refer to the following test plots:



Antenna Polarization: Horizontal(CH36):

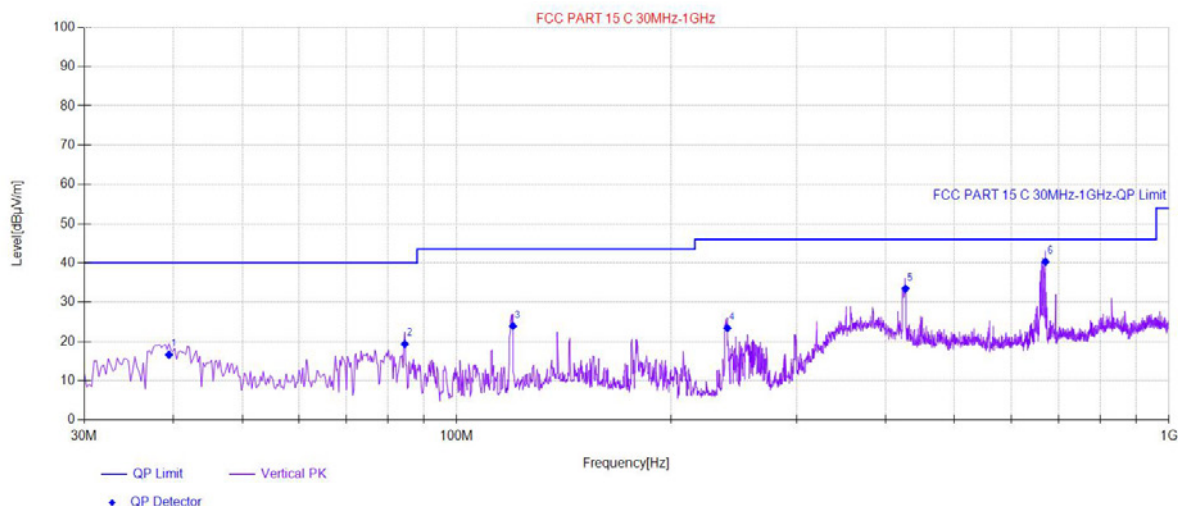


Final Data List[QP]							
NO.	Freq. [MHz]	QP Reading [dBμV/m]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Polarity
1	41.40	25.97	-17.79	8.18	40.00	31.82	Horizontal
2	85.05	31.32	-20.91	10.41	40.00	29.59	Horizontal
3	119.48	43.7	-18.08	25.62	43.50	17.88	Horizontal
4	239.04	49.88	-17.52	32.36	46.00	13.64	Horizontal
5	356.41	40.76	-14.21	26.55	46.00	19.45	Horizontal
6	665.11	46.46	-6.52	39.94	46.00	6.06	Horizontal

Remark:Emission Level=Reading+Cable Loss+ANT Factor-AMP Factor



Antenna Polarization: Vertical (CH36)



Final Data List[QP]							
NO.	Freq. [MHz]	QP Reading [dBμV/m]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Polarity
1	39.46	34.4	-17.74	16.66	40.00	23.34	Vertical
2	84.56	40.31	-20.96	19.35	40.00	20.65	Vertical
3	119.97	41.97	-18.03	23.94	43.50	19.56	Vertical
4	240.01	40.88	-17.48	23.40	46.00	22.60	Vertical
5	426.73	45.47	-12.03	33.44	46.00	12.56	Vertical
6	670.69	46.69	-6.40	40.29	46.00	5.71	Vertical

Remark: Emission Level = Reading + Cable Loss + ANT Factor - AMP Factor

Note: only the worst case recorded in the report.



Test Frequency: From 1GHz to 40GHz

Pre-scan all test modes

Only the worst case Main test data.

802.11a

Test Mode: 5180					Test channel: Lowest			
Peak Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
10360	46.83	35.63	5.36	31.25	56.57	68.20	-11.63	V
15540	42.63	35.91	7.85	30.63	55.76	68.20	-12.44	V
20720	42.47	39.67	8.56	34.95	55.75	68.20	-12.45	V
10360	48.32	34.25	5.36	31.25	56.68	68.20	-11.52	H
15540	42.93	37.02	7.85	30.63	57.17	68.20	-11.03	H
20720	40.76	38.88	8.56	34.95	53.25	68.20	-14.95	H
Average Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
10360	33.48	35.22	5.36	31.25	42.81	54.00	-11.19	V
15540	30.35	35.96	7.85	30.63	43.53	54.00	-10.47	V
20720	29.88	39.12	8.56	34.95	42.61	54.00	-11.39	V
10360	33.59	34.12	5.36	31.25	41.82	54.00	-12.18	H
15540	24.84	36.52	7.85	30.63	38.58	54.00	-15.42	H
20720	25.19	40.01	8.56	34.95	38.81	54.00	-15.19	H



802.11a

Test Mode:5200					Test channel: Middle			
Peak Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
10400	46.02	35.63	5.36	31.25	55.76	68.20	-12.44	V
15600	43.64	35.91	7.85	30.63	56.77	68.20	-11.43	V
20800	41.58	39.67	8.56	34.95	54.86	68.20	-13.34	V
10400	46.03	34.25	5.36	31.25	54.39	68.20	-13.81	H
15600	42.13	37.02	7.85	30.63	56.37	68.20	-11.83	H
20800	43.46	38.88	8.56	34.95	55.95	68.20	-12.25	H
Average Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
10400	31.89	35.63	5.36	31.25	41.63	54.00	-12.37	V
15600	29.45	35.91	7.85	30.63	42.58	54.00	-11.42	V
20800	26.41	39.67	8.56	34.95	39.69	54.00	-14.31	V
10400	33.16	34.25	5.36	31.25	41.52	54.00	-12.48	H
15600	26.12	37.02	7.85	30.63	40.36	54.00	-13.64	H
20800	30.12	38.88	8.56	34.95	42.61	54.00	-11.39	H



802.11a

Test Mode:5240					Test channel: High			
Peak Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
10480	46.11	34.68	5.36	31.25	54.90	68.20	-13.3	V
17520	40.23	36.52	7.85	30.63	53.97	68.20	-14.23	V
20960	43.98	38.77	8.56	34.95	56.36	68.20	-11.84	V
10480	46.65	33.99	5.36	31.25	54.75	68.20	-13.45	H
17520	44.37	36.84	7.85	30.63	58.43	68.20	-9.77	H
20960	46.01	39.93	8.56	34.95	59.55	68.20	-8.65	H
Average Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
10480	33.06	34.68	5.36	31.25	41.85	54.00	-12.15	V
17520	29.01	36.52	7.85	30.63	42.75	54.00	-11.25	V
20960	30.05	38.77	8.56	34.95	42.43	54.00	-11.57	V
10480	32.64	33.99	5.36	31.25	40.74	54.00	-13.26	H
17520	27.59	36.84	7.85	30.63	41.65	54.00	-12.35	H
20960	29.09	39.93	8.56	34.95	42.63	54.00	-11.37	H



802.11a

Test Mode: 5745					Test channel: Lowest			
Peak Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
11490	48.02	35.26	5.42	31.75	56.95	68.23	-11.28	V
17235	42.26	36.88	7.32	30.96	55.50	68.23	-12.73	V
22980	44.25	39.14	8.85	35.25	56.99	68.23	-11.24	V
11490	49.99	34.21	5.42	31.75	57.87	68.23	-10.36	H
17235	42.00	37.52	7.32	30.96	55.88	68.23	-12.35	H
22980	44.26	39.88	8.85	35.25	57.74	68.23	-10.49	H
Average Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
11490	32.24	35.26	5.42	31.75	41.17	54.00	-12.83	V
17235	28.12	36.88	7.32	30.96	41.36	54.00	-12.64	V
22980	29.72	39.14	8.85	35.25	42.46	54.00	-11.54	V
11490	31.47	34.21	5.42	31.75	39.35	54.00	-14.65	H
17235	28.73	37.52	7.32	30.96	42.61	54.00	-11.39	H
22980	28.00	39.88	8.85	35.25	41.48	54.00	-12.52	H



802.11a

Test Mode:5785					Test channel: Middle			
Peak Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
11570	49.10	35.26	5.42	31.75	58.03	68.23	-10.2	V
17355	43.44	36.88	7.32	30.96	56.68	68.23	-11.55	V
23140	46.04	39.14	8.85	35.25	58.78	68.23	-9.45	V
11570	48.59	34.21	5.42	31.75	56.47	68.23	-11.76	H
17355	43.02	37.52	7.32	30.96	56.90	68.23	-11.33	H
23140	42.58	39.88	8.85	35.25	56.06	68.23	-12.17	H
Average Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
11570	32.28	35.26	5.42	31.75	41.21	54.00	-12.79	V
17355	29.44	36.88	7.32	30.96	42.68	54.00	-11.32	V
23140	28.90	39.14	8.85	35.25	41.64	54.00	-12.36	V
11570	34.40	34.21	5.42	31.75	42.28	54.00	-11.72	H
17355	29.26	37.52	7.32	30.96	43.14	54.00	-10.86	H
23140	28.91	39.88	8.85	35.25	42.39	54.00	-11.61	H



802.11a

Test Mode:5825					Test channel: High			
Peak Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
11650	47.66	35.26	5.42	31.75	56.59	68.23	-11.64	V
17475	44.87	36.88	7.32	30.96	58.11	68.23	-10.12	V
23300	46.21	39.14	8.85	35.25	58.95	68.23	-9.28	V
11650	50.00	34.21	5.42	31.75	57.88	68.23	-10.35	H
17475	44.17	37.52	7.32	30.96	58.05	68.23	-10.18	H
23300	44.90	39.88	8.85	35.25	58.38	68.23	-9.85	H
Average Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
11650	34.45	35.26	5.42	31.75	43.38	54.00	-10.62	V
17475	28.58	36.88	7.32	30.96	41.82	54.00	-12.18	V
23300	30.13	39.14	8.85	35.25	42.87	54.00	-11.13	V
11650	33.73	34.21	5.42	31.75	41.61	54.00	-12.39	H
17475	27.74	37.52	7.32	30.96	41.62	54.00	-12.38	H
23300	28.29	39.88	8.85	35.25	41.77	54.00	-12.23	H

Note:

1. The testing has been conformed to 10*5825MHz=58250MHz.
2. All other emissions more than 30dB below the limit.
3. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Emission Level = Reading + Factor
Margin=Emission Level-Limit
4. X-Axis, Y-Axis and Z-Axis were investigated. The results above show only the worst case.



Conducted Spurious Emission

Test Mode	Antenna	Frequency[MHz]	FreqRange [MHz]	Max. Fre [MHz]	Max. Level [dBm]	Limit [dBm]	Verdict
11A	Ant1	5180	30~5140	3225.28	-39.46	≤-27	PASS
11A	Ant1	5180	5360~40000	25639.57	-32.52	≤-27	PASS
11A	Ant1	5200	30~5140	3428.49	-39.54	≤-27	PASS
11A	Ant1	5200	5360~40000	25721.08	-32.31	≤-27	PASS
11A	Ant1	5240	30~5140	3175.72	-39.6	≤-27	PASS
11A	Ant1	5240	5360~40000	25659.04	-32.96	≤-27	PASS
11A	Ant1	5745	30~5650	5323.85	-41.3	≤-27	PASS
11A	Ant1	5745	5925~40000	25771.33	-29.41	≤-27	PASS
11A	Ant1	5785	30~5650	3229.09	-41.61	≤-27	PASS
11A	Ant1	5785	5925~40000	25665.25	-29.21	≤-27	PASS
11A	Ant1	5825	30~5650	3282.11	-40.42	≤-27	PASS
11A	Ant1	5825	5925~40000	25790.3	-30.17	≤-27	PASS
11N20SISO	Ant1	5180	30~5140	2667.61	-40.22	≤-27	PASS
11N20SISO	Ant1	5180	5360~40000	25814.85	-33.29	≤-27	PASS
11N20SISO	Ant1	5200	30~5140	3301.08	-40.14	≤-27	PASS
11N20SISO	Ant1	5200	5360~40000	25068.99	-33.75	≤-27	PASS
11N20SISO	Ant1	5240	30~5140	3089.36	-39.51	≤-27	PASS
11N20SISO	Ant1	5240	5360~40000	25726.13	-32.73	≤-27	PASS
11N20SISO	Ant1	5745	30~5650	3894.69	-41.17	≤-27	PASS
11N20SISO	Ant1	5745	5925~40000	25744.63	-30.29	≤-27	PASS
11N20SISO	Ant1	5785	30~5650	3440.03	-40.8	≤-27	PASS
11N20SISO	Ant1	5785	5925~40000	25153.83	-29.64	≤-27	PASS
11N20SISO	Ant1	5825	30~5650	3034.64	-41.43	≤-27	PASS
11N20SISO	Ant1	5825	5925~40000	25677.9	-30.59	≤-27	PASS
11N40SISO	Ant1	5190	30~5140	3157.49	-40.07	≤-27	PASS
11N40SISO	Ant1	5190	5360~40000	25804.75	-32.94	≤-27	PASS
11N40SISO	Ant1	5230	30~5140	3020.71	-39.73	≤-27	PASS
11N40SISO	Ant1	5230	5360~40000	25171.42	-32.77	≤-27	PASS
11N40SISO	Ant1	5755	30~5650	3188.63	-41.53	≤-27	PASS
11N40SISO	Ant1	5755	5925~40000	25200.2	-29.22	≤-27	PASS
11N40SISO	Ant1	5795	30~5650	3222.53	-40.94	≤-27	PASS
11N40SISO	Ant1	5795	5925~40000	25772.03	-29.25	≤-27	PASS
11AC20SISO	Ant1	5180	30~5140	3051.03	-39.5	≤-27	PASS
11AC20SISO	Ant1	5180	5360~40000	25680.68	-33.01	≤-27	PASS
11AC20SISO	Ant1	5200	30~5140	3304.15	-39.56	≤-27	PASS
11AC20SISO	Ant1	5200	5360~40000	25697.99	-32.98	≤-27	PASS
11AC20SISO	Ant1	5240	30~5140	3048.31	-39.56	≤-27	PASS
11AC20SISO	Ant1	5240	5360~40000	25748.49	-32.8	≤-27	PASS
11AC20SISO	Ant1	5745	30~5650	3047.57	-40.89	≤-27	PASS
11AC20SISO	Ant1	5745	5925~40000	25643.47	-30.21	≤-27	PASS
11AC20SISO	Ant1	5785	30~5650	3031.64	-40.96	≤-27	PASS
11AC20SISO	Ant1	5785	5925~40000	25717.24	-29.4	≤-27	PASS
11AC20SISO	Ant1	5825	30~5650	3036.89	-40.88	≤-27	PASS
11AC20SISO	Ant1	5825	5925~40000	26279.94	-28.98	≤-27	PASS
11AC40SISO	Ant1	5190	30~5140	3888.39	-40.51	≤-27	PASS
11AC40SISO	Ant1	5190	5360~40000	25682.85	-33.27	≤-27	PASS
11AC40SISO	Ant1	5230	30~5140	3045.58	-39.29	≤-27	PASS
11AC40SISO	Ant1	5230	5360~40000	25110.11	-32.41	≤-27	PASS
11AC40SISO	Ant1	5755	30~5650	3077.54	-40.36	≤-27	PASS
11AC40SISO	Ant1	5755	5925~40000	25172.1	-30.17	≤-27	PASS
11AC40SISO	Ant1	5795	30~5650	3026.02	-41	≤-27	PASS
11AC40SISO	Ant1	5795	5925~40000	25763.6	-29.95	≤-27	PASS
11AC80SISO	Ant1	5210	30~5140	5129.78	-37.81	≤-27	PASS



11AC80SISO	Ant1	5210	5360~40000	26285.88	-33.67	≤-27	PASS
11AC80SISO	Ant1	5775	30~5650	3190.13	-41.11	≤-27	PASS
11AC80SISO	Ant1	5775	5925~40000	25725.67	-29.93	≤-27	PASS

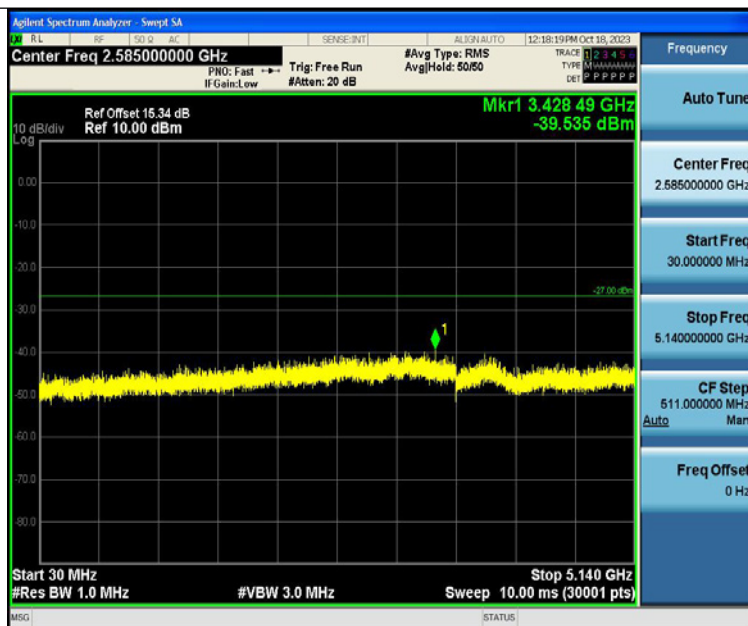
Test Graphs



11A-Ant1-5180-30~5140-PASS



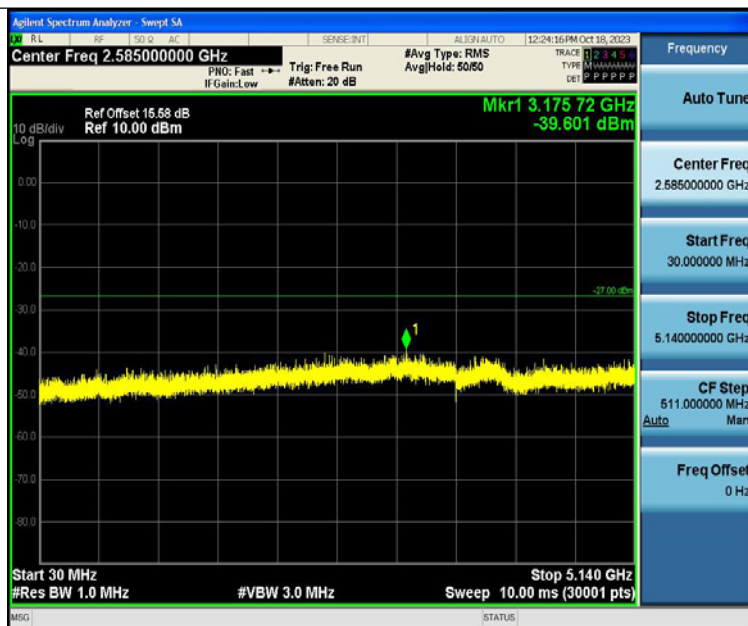
11A-Ant1-5180-5360~40000-PASS



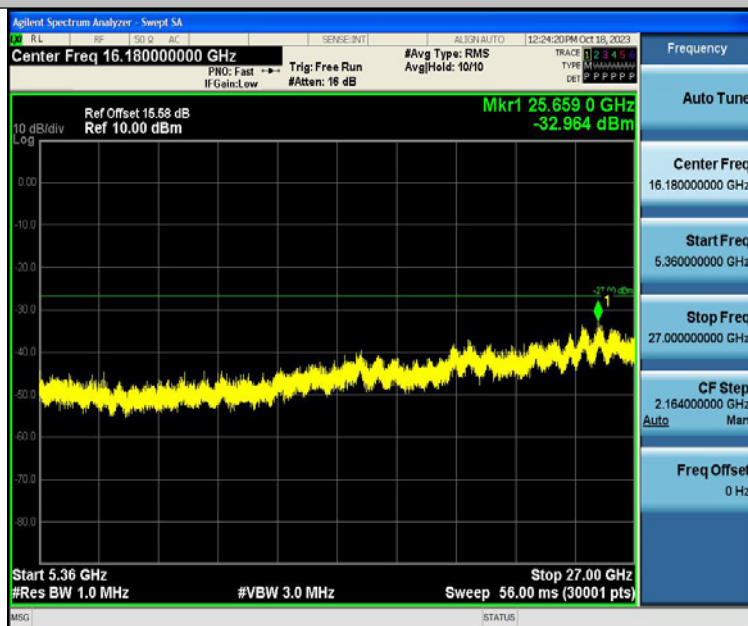
11A-Ant1-5200-30~5140-PASS



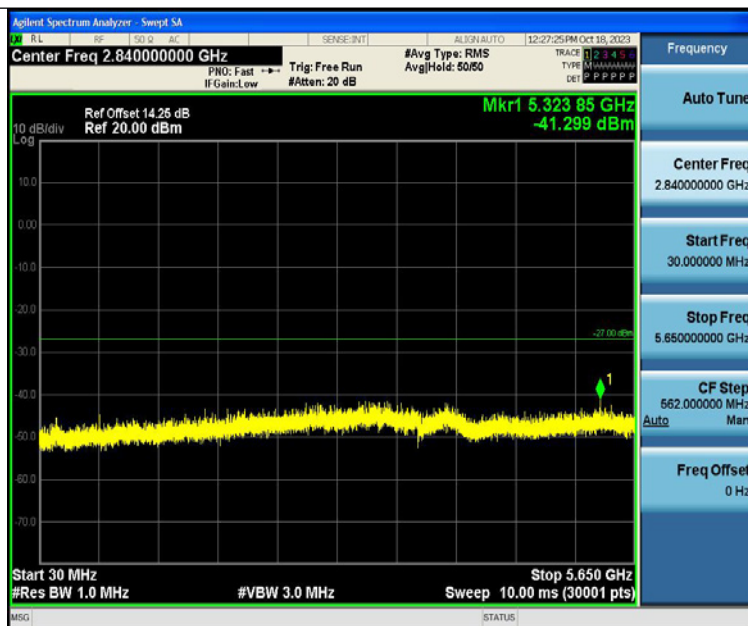
11A-Ant1-5200-5360~40000-PASS



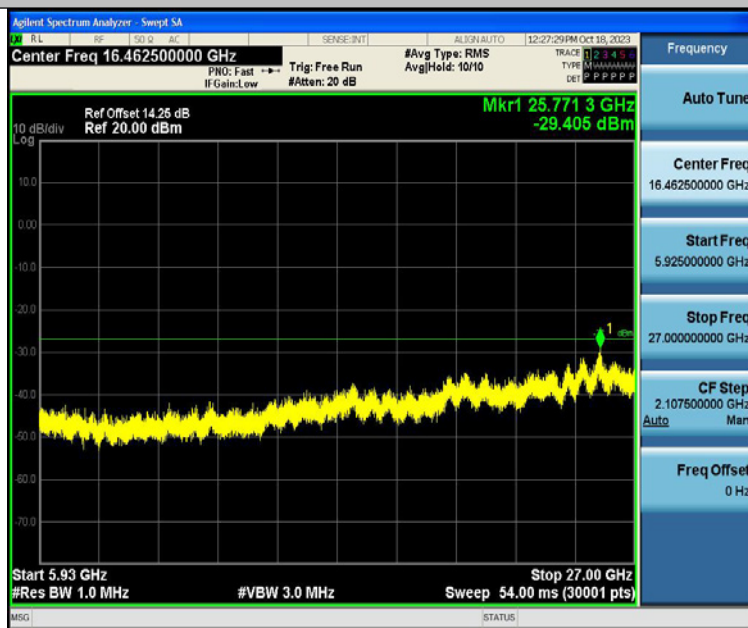
11A-Ant1-5240-30~5140-PASS



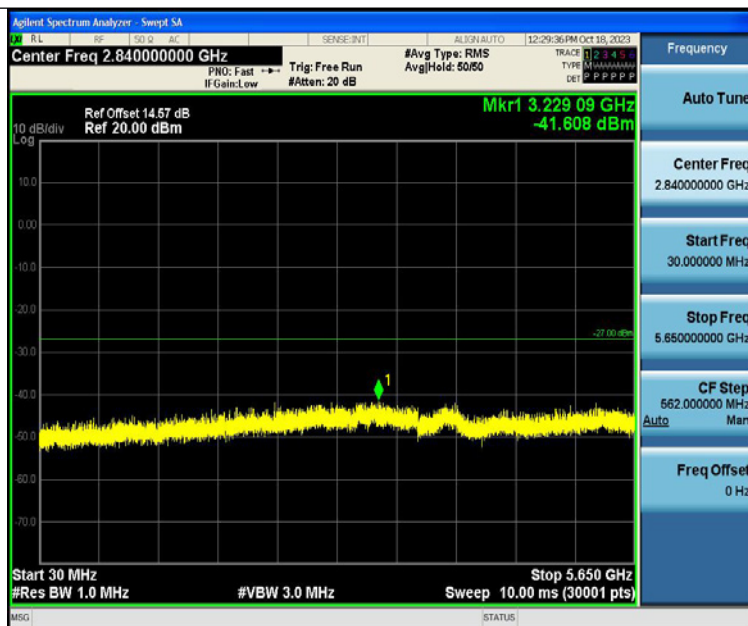
11A-Ant1-5240-5360~40000-PASS



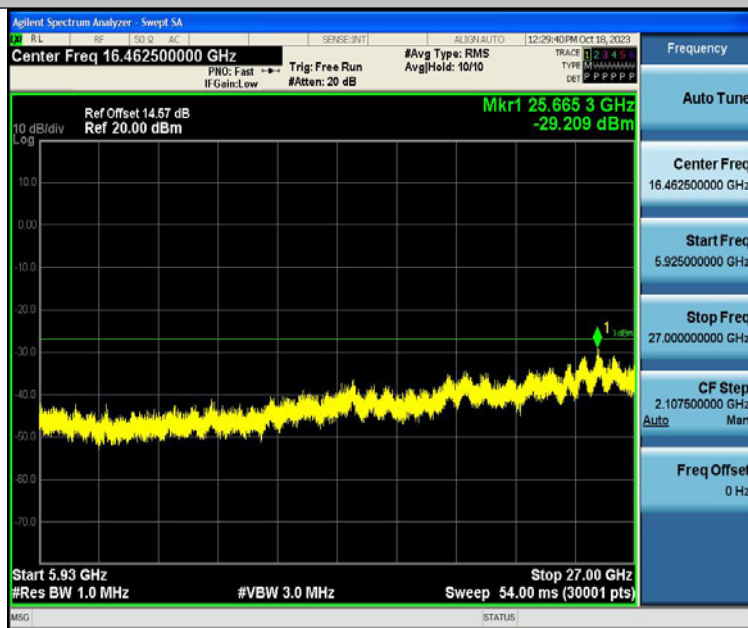
11A-Ant1-5745-30~5650-PASS



11A-Ant1-5745-5925~40000-PASS



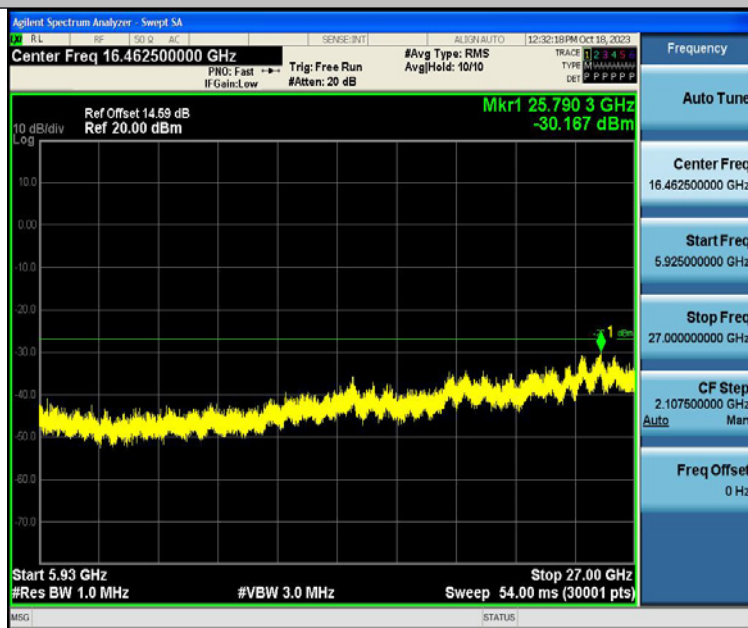
11A-Ant1-5785-30~5650-PASS



11A-Ant1-5785-5925~40000-PASS



11A-Ant1-5825-30~5650-PASS



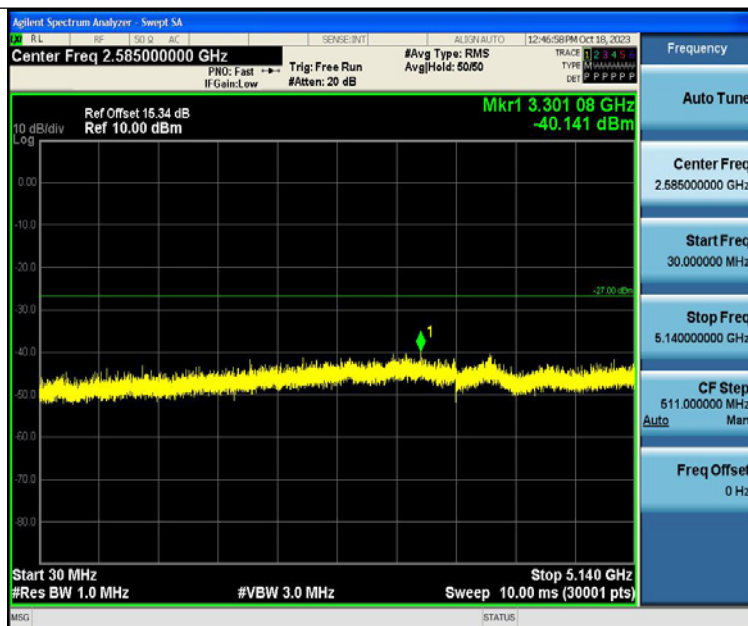
11A-Ant1-5825-5925~40000-PASS



11N20SISO-Ant1-5180-30~5140-PASS



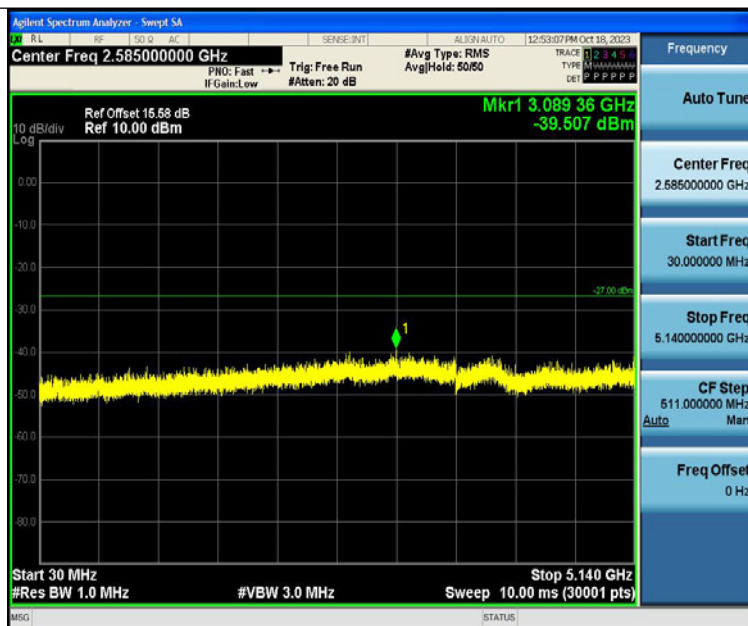
11N20SISO-Ant1-5180-5360~40000-PASS



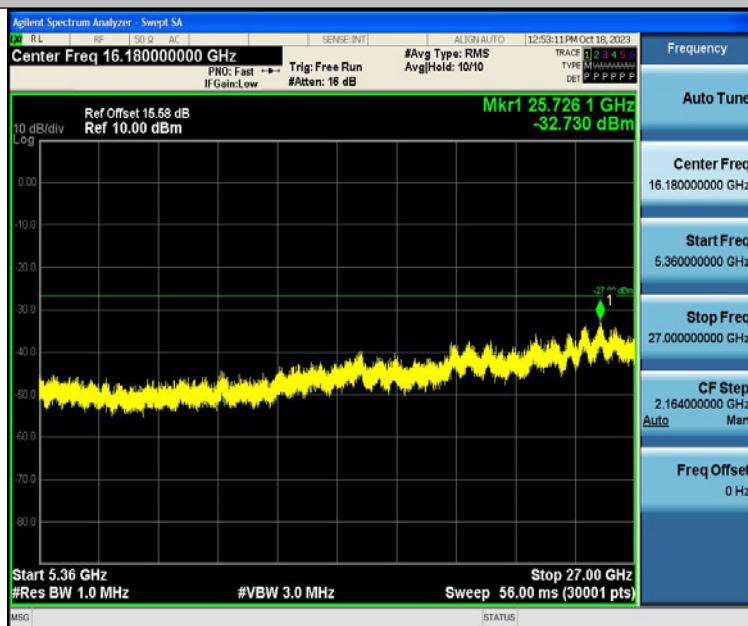
11N20SISO-Ant1-5200-30~5140-PASS



11N20SISO-Ant1-5200-5360~40000-PASS



11N20SISO-Ant1-5240-30~5140-PASS



11N20SISO-Ant1-5240-5360~40000-PASS