TEST REPORT

Product Name	:	**AUTOMOTIVE DIAGNOSIS & ANALYSIS SYSTEM**
Model Number	:	**MaxiPro MX808S-TS, MaxiPro MK808S-TS, MaxiPro TS608S, MaxiPro DS808S-TS, MaxiPro MP808- TS, MaxiPro MK808S-BT, MaxiPro DS808S-BT, MaxiPro MP808S-BT**
FCC ID	:	**WQ8- MX808S-TS2152**

Prepared for	:	Autel Intelligent Technology Corp.,Ltd.
Address	:	7th-8th,10th Floor, Building B1, Zhiyuan, Xueyuan Rd, Xili, Nanshan, Shenzhen,518055 China
Prepared by	:	EMTEK (SHENZHEN) CO., LTD.
Address	:	Bldg 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China Tel: (0755) 26954280 Fax: (0755) 26954282

Report Number	:	ENS2202170034W01203R
Date(s) of Tests	:	February 22, 2022 to March 14, 2022
Date of Issue	:	May 26, 2022

1 TEST RESULT CERTIFICATION

Applicant	:	Autel Intelligent Technology Corp.,Ltd.
Address :		7th-8th,10th Floor, Building B1, Zhiyuan, Xueyuan Rd, Xili, Nanshan, Shenzhen,518055 China
Manufacturer	:	Autel Intelligent Technology Corp.,Ltd.
Address :		7th-8th,10th Floor, Building B1, Zhiyuan, Xueyuan Rd, Xili, Nanshan, Shenzhen,518055 China
EUT	:	AUTOMOTIVE DIAGNOSIS & ANALYSIS SYSTEM
Model Name	:	MaxiCheck MX808S-TS, MaxiCOM MK808S-TS, MaxiTPMS TS608S, MaxiDAS DS808S-TS, MaxiPRO MP808S-TS, MaxiPRO MK808BT Pro, MaxiDAS DS808S-BT, MaxiPRO MP808BT Pro (Note: all models are different for model name, the others are the same.)
Trademark	:	AUTEL

Measurement Procedure Used:

APPLICABLE STANDARDS	
STANDARD	**TEST RESULT**
FCC 47 CFR Part 2, Subpart J FCC 47 CFR Part 15, Subpart E	**PASS**

The above equipment was tested by EMTEK (SHENZHEN) CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 2 and Part 15.407

The test results of this report relate only to the tested sample identified in this report.

Date of Test	:	February 22, 2022 to March 14, 2022
Prepared by	:	Una Yu/Editor
Reviewer	:	Joe Xia/Supervisor
Approved & Authorized Signer	:	Lisa Wang/Manager

EMTEK (SHENZHEN) CO., LTD. TESTING

Modified Information

Version	Report No.	Revision Date	Summary
Ver.1.0	ENS2202170034W01203R	/	Original Report
Ver.2.0	ENS2202170034W01203R	May 26, 2022	Update Models

TABLE OF CONTENTS

1 TEST RESULT CERTIFICATION 2

2 EUT TECHNICAL DESCRIPTION 5

3 SUMMARY OF TEST RESULT 6

4 TEST METHODOLOGY 7

4.1 GENERAL DESCRIPTION OF APPLIED STANDARDS 7
4.2 MEASUREMENT EQUIPMENT USED 7
4.3 DESCRIPTION OF TEST MODES 8

5 FACILITIES AND ACCREDITATIONS 10

5.1 FACILITIES 10
5.2 LABORATORY ACCREDITATIONS AND LISTINGS 10

6 TEST SYSTEM UNCERTAINTY 11

7 SETUP OF EQUIPMENT UNDER TEST 12

7.1 RADIO FREQUENCY TEST SETUP 12
7.2 RADIO FREQUENCY TEST SETUP 12
7.3 CONDUCTED EMISSION TEST SETUP 14
7.4 BLOCK DIAGRAM CONFIGURATION OF TEST SYSTEM 15
7.5 SUPPORT EQUIPMENT 15

8 TEST REQUIREMENTS 16

8.1 BANDWIDTH MEASUREMENT 16
8.2 MAXIMUM CONDUCTED OUTPUT POWER 41
8.3 MAXIMUM PEAK POWER DENSITY 45
8.4 FREQUENCY STABILITY 62
8.5 UNDESIRABLE RADIATED SPURIOUS EMISSION 69
8.6 POWER LINE CONDUCTED EMISSIONS 88
8.7 ANTENNA APPLICATION 91

2 EUT TECHNICAL DESCRIPTION

Characteristics	Description	
Product	AUTOMOTIVE DIAGNOSIS & ANALYSIS SYSTEM	
Model Number	MaxiCheck MX808S-TS, MaxiCOM MK808S-TS, MaxiTPMS TS608S, MaxiDAS DS808S-TS, MaxiPRO MP808S-TS, MaxiPRO MK808BT Pro, MaxiDAS DS808S-BT, MaxiPRO MP808BT Pro (Note: all models are different for model name, the others are the same.)	
Wifi Type	☒ UNII-1: 5150MHz-5250MHz Band ☒ UNII-3 with 5725MHz-5850MHz Band	
WLAN Supported	☒ 802.11a ☒ 802.11n(20MHz channel bandwidth) ☒ 802.11n(40MHz channel bandwidth) ☒ 802.11ac(20MHz channel bandwidth) ☒ 802.11ac(40MHz channel bandwidth) ☒ 802.11ac(80MHz channel bandwidth)	
Data Rate	802.11a:54/48/36/24/18/12/9/6Mbps 802.11n:up to 600 Mbps 802.11ac:up to 1.733Gbps	
Modulation	☒ OFDM with BPSK/QPSK/16QAM/64QAM for 802.11a/n ☒ OFDM with BPSK/QPSK/16QAM/64QAM/256QAM for 802.11ac	
Frequency Range	☒ UNII-1: 5150MHz-5250MHz Band	
	☒ 5180-5240MHz for 802.11a ☒ 5180-5240MHz for 802.11n(HT20) ☒ 5180-5240MHz for 802.11ac(HT20)	☒ 5190-5230MHz for 802.11n(HT40) ☒ 5190-5230MHz for 802.11ac(HT40) ☒ 5210MHz for 802.11ac(HT80)
	☒ UNII-3 with 5725MHz-5850MHz Band	
	☒ 5745-5825MHz for 802.11a ☒ 5745-5825MHz for 802.11n(HT20) ☒ 5745-5825MHz for 802.11ac(HT20)	☒ 5755-5795MHz for 802.11n(HT40) ☒ 5755-5795MHz for 802.11ac(HT40) ☒ 5775MHz for 802.11ac(HT80)
TPC Function	☒ Applicable	☐ Not Applicable
Antenna Type	Integrated Antenna	
Antenna Gain	3.7dBi	
Power Supply	Battery 3.7V, 5000mAh, 18.5Wh Adapter: Model: GME10C-050200FUu Input: 100~240V, 50/60Hz, 0.28A Output: 5V, 2A	

Note: *for more details, please refer to the user's manual of the EUT.*

3 SUMMARY OF TEST RESULT

FCC Part Clause	Test Parameter	Verdict	Remark
15.407 (a) 15.407 (e)	99% , 6dB and 26dB Bandwidth	PASS	
15.407 (a)	Maximum Conducted Output Power	PASS	
15.407 (a)	Peak Power Spectral Density	PASS	
15.407 (b)	Radiated Spurious Emission	PASS	
15.407(g)	Frequency Stability	PASS	
15.407 (b)(6) 15.207	Power Line Conducted Emission	PASS	
15.407(a) 15.203	Antenna Application	PASS	
NOTE1: N/A (Not Applicable). NOTE2: According to FCC OET KDB 789033 D2 General UNII Test Procedures New Rules v02r01, In addition, the radiated test is also performed to ensure the emissions emanating from the device cabinet also comply with the applicable limits.			

RELATED SUBMITTAL(S) / GRANT(S):
This submittal(s) (test report) is intended for FCC ID: WQ8- MX808S-TS2152 filing to comply with Section 15.247 of the FCC Part 15, Subpart E Rules.

4 TEST METHODOLOGY

4.1 GENERAL DESCRIPTION OF APPLIED STANDARDS

According to its specifications, the EUT must comply with the requirements of the following standards:
FCC 47 CFR Part 2, Subpart J
FCC 47 CFR Part 15, Subpart E
FCC KDB 789033 D2 General UNII Test Procedures New Rules v02r01

4.2 MEASUREMENT EQUIPMENT USED

For Conducted Emission Test Equipment

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
EMI Test Receiver	Rohde & Schwarz	ESCI	101045	2021/5/15	1Year
PULSE LIMTER	Rohde & Schwarz	ESH3-Z2	100107	2021/5/15	1Year
AMN	Rohde & Schwarz	ESH3-Z5	100191	2021/5/15	1Year
AMN	Schwarzbeck	NNLK 8129	8129203	2021/5/15	1Year
V-Network	Rohde & Schwarz	ESH3-Z6	100011	2021/5/15	1Year
V-Network	Rohde & Schwarz	ESH3-Z6	100253	2021/5/16	1Year

For Spurious Emissions Test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Pre-Amplifier	HP	8447F	2944A07999	2021/5/15	1Year
EMI Test Receiver	Rohde & Schwarz	ESCI	101414	2021/5/15	1Year
Bilog Antenna	Schwarzbeck	VULB9163	712	2021/7/5	2 Year
Horn antenna	Schwarzbeck	BBHA9120D	9120D-1178	2020/7/4	2 Year
Pre-Amplifie	Lunar EM	LNA1G18-48	J1011131010001	2021/5/15	1Year
Spectrum Analyzer	Rohde & Schwarz	FSV40	100967	2021/5/15	1Year
Horn antenna	Schwarzbeck	BBHA9170	9170-399	2021/6/12	2 Year
Loop Antenna	Schwarzbeck	FMZB1519	1519-012	2021/6/12	2 Year

For other test items:

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Signal Analyzer	Agilent	N9010A	MY53470879	2021/5/16	1Year
Spectrum Analyzer	Rohde & Schwarz	FSV40	100967	2021/5/15	1Year
Power Meter	\	PS-X10-100	\	2021/5/15	1Year
Temp/ Humidity Chamber	ESPEC	EL-02KA	12107166	2021/7/3	1Year

4.3 DESCRIPTION OF TEST MODES

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.

☒ Wifi 5G with UNII Band I
Frequency and Channel list for 802.11a/n (HT20)/802.11ac (HT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220		
40	5220	48	5240		

Frequency and Channel list for 802.11n (HT40)/ 802.11ac (HT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190				
46	5230				

Frequency and Channel list for 802.11ac Wave2 (HT80):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
42	5210				

Test Frequency and Channel for 802.11a/n (HT20)/802.11ac (HT20):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	40	5220	48	5240

Test Frequency and channel for 802.11n (HT40)/ 802.11ac (HT40):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	N/A	N/A	46	5230

Test Frequency and channel for 802.11ac Wave2 (HT80):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
42	5210	N/A	N/A	N/A	N/A

☒ Wifi 5G with UNII Band III

Frequency and Channel list for 802.11a/n (HT20)/802.11ac (HT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	157	5785	165	5825
153	5765	161	5805		

Frequency and Channel list for 802.11n (HT40)/ 802.11ac (HT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755				
159	5795				

Frequency and Channel list for 802.11ac (HT80):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
155	5775				

Test Frequency and Channel for 802.11a/n (HT20)/802.11ac (HT20):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	157	5785	165	5825

Test Frequency and channel for 802.11n (HT40)/ 802.11ac (HT40):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	N/A	N/A	159	5795

Test Frequency and channel for 802.11ac (HT80):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
155	5775				

5 FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

Bldg 69, Majialong Industry Zone District, Nanshan District, Shenzhen, China
The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10 and CISPR Publication 22.

5.2 LABORATORY ACCREDITATIONS AND LISTINGS

Site Description

EMC Lab. : **Accredited by CNAS**
The Certificate Registration Number is L2291
The Laboratory has been assessed and proved to be in compliance with CNAS-CL01 (identical to ISO/IEC 17025:2017)

Accredited by FCC
Designation Number: CN1204
Test Firm Registration Number: 882943

Accredited by A2LA
The Certificate Number is 4321.01

Accredited by Industry Canada
The Conformity Assessment Body Identifier is CN0008

Name of Firm : EMTEK (SHENZHEN) CO., LTD.

Site Location : Building 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China

6 TEST SYSTEM UNCERTAINTY

The following measurement uncertainty levels have been estimated for tests performed on the apparatus:

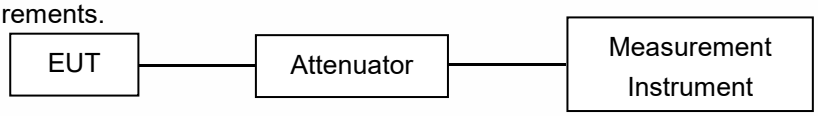
Parameter	Uncertainty
Radio Frequency	±1x10^-5
Maximum Peak Output Power Test	±1.0dB
Conducted Emissions Test	±2.0dB
Radiated Emission Test	±2.0dB
Power Density	±2.0dB
Occupied Bandwidth Test	±1.0dB
Band Edge Test	±3dB
All emission, radiated	±3dB
Antenna Port Emission	±3dB
Temperature	±0.5℃
Humidity	±3%

Measurement Uncertainty for a level of Confidence of 95%

7 SETUP OF EQUIPMENT UNDER TEST

7.1 RADIO FREQUENCY TEST SETUP

The WLAN component's antenna ports(s) of the EUT are connected to the measurement instrument per an appropriate attenuator. The EUT is controlled by PC/software to emit the specified signals for the purpose of measurements.



7.2 RADIO FREQUENCY TEST SETUP

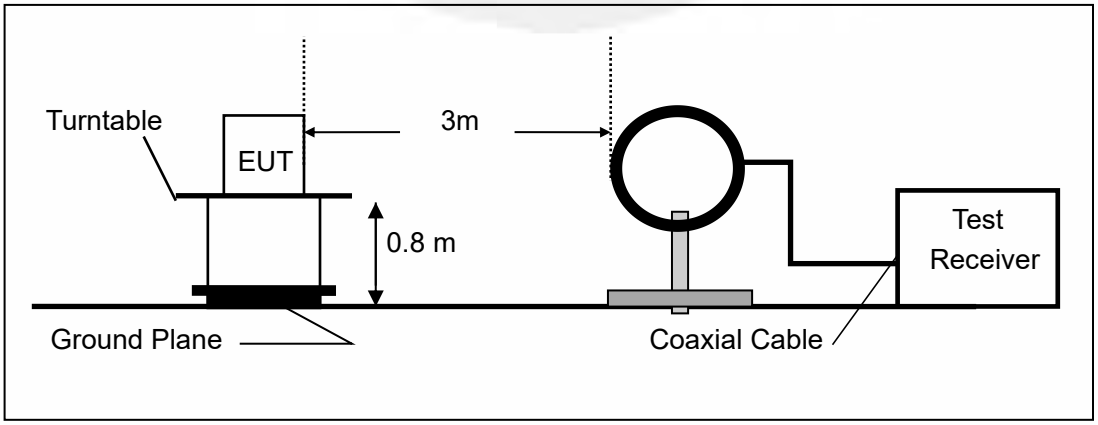
The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.10. The test distance is 3m.The setup is according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 and CAN/CSA-CEI/IEC CISPR 22.

Below 30MHz：
The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna (loop antenna). The Antenna should be positioned with its plane vertical at the specified distance from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. The center of the loop shall be 1 m above the ground. For certain applications, the loop antenna plane may also need to be positioned horizontally at the specified distance from the EUT.

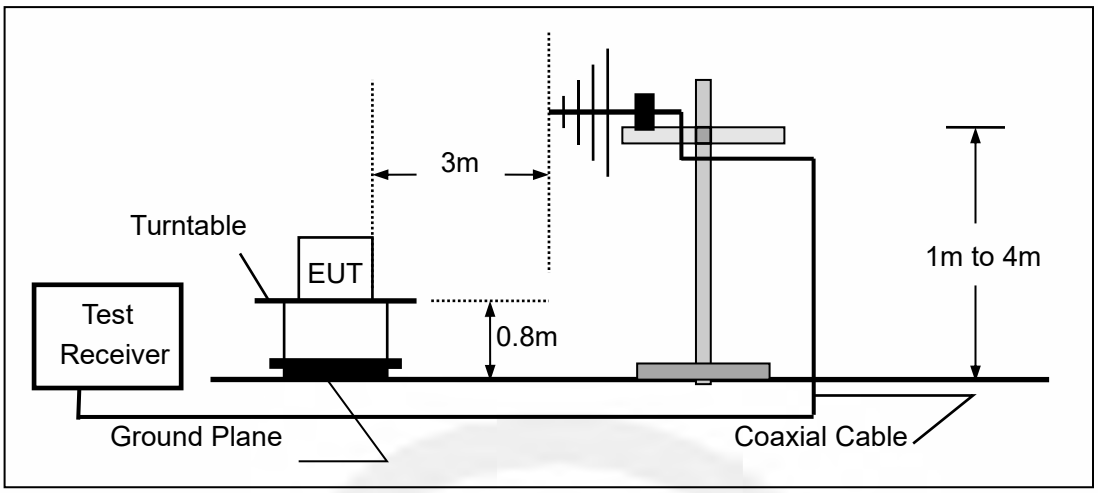
Above 30MHz：
The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).

Above 1GHz：
(Note: the FCC's permission to use 1.5m as an alternative per TCBC Conf call of Dec. 2, 2014.)
The EUT is placed on a turntable 1.5 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).

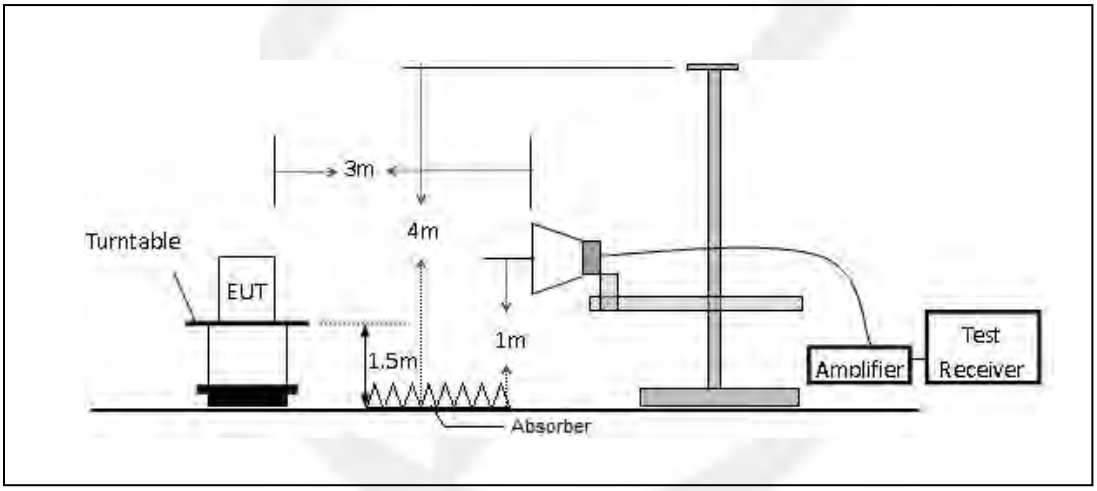
(a) Radiated Emission Test Set-Up, Frequency Below 30MHz



(b) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(c) Radiated Emission Test Set-Up, Frequency above 1000MHz

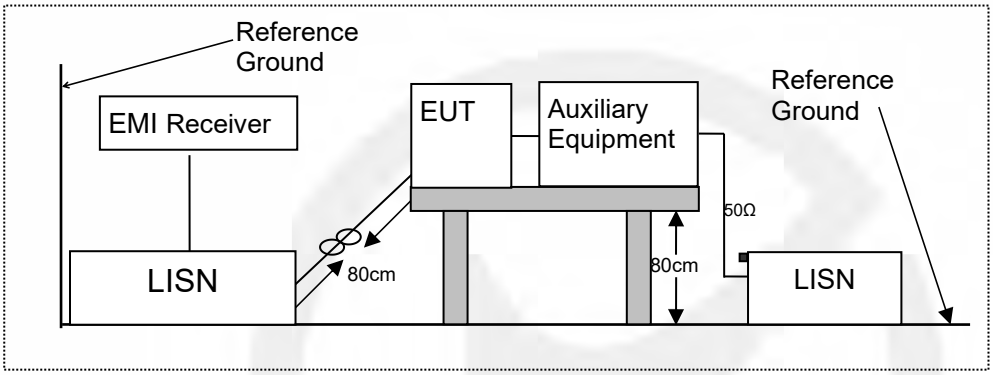


7.3 CONDUCTED EMISSION TEST SETUP

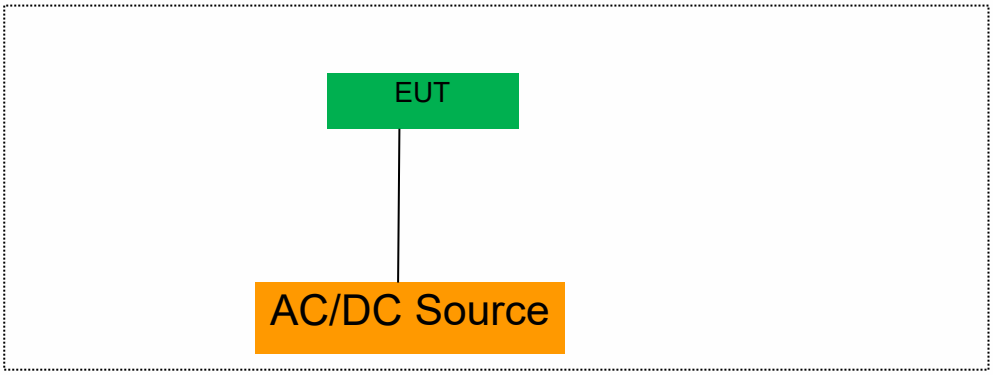
The mains cable of the EUT (maybe per AC/DC Adapter) must be connected to LISN. The LISN shall be placed 0.8 m from the boundary of EUT and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance is between the closest points of the LISN and the EUT. All other units of the EUT and associated equipment shall be at least 0.8m from the LISN.

Ground connections, where required for safety purposes, shall be connected to the reference ground point of the LISN and, where not otherwise provided or specified by the manufacturer, shall be of same length as the mains cable and run parallel to the mains connection at a separation distance of not more than 0.1 m.

According to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode.



7.4 BLOCK DIAGRAM CONFIGURATION OF TEST SYSTEM



7.5 SUPPORT EQUIPMENT

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite

Auxiliary Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number

Notes:

1.All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.

2.Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

8 TEST REQUIREMENTS

8.1 BANDWIDTH MEASUREMENT

8.1.1 Applicable Standard

According to FCC Part 15.407(a)(1) for UNII Band I
According to FCC Part 15.407(a)(2) for UNII Band II-A and UNII Band II-C
According to FCC Part 15.407(a)(3) for UNII Band III
According to FCC Part 15.407(e) for UNII Band III
According to 789033 D02 Section II(C)
According to 789033 D02 Section II(D)

8.1.2 Conformance Limit

(1) For the band 5.15-5.25 GHz.
(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(e) Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

8.1.3 Test Configuration

Test according to clause 6.1 radio frequency test setup

8.1.4 Test Procedure

According to 789033 D02 v02r01 section C&D, the following is the measurement procedure.

1. Emission Bandwidth (EBW)
a) Set RBW = approximately 1% of the emission bandwidth.
b) Set the VBW > RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission.

Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

2. Minimum Emission Bandwidth for the band 5.725-5.85 GHz
Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.715-5.85 GHz. The following procedure shall be used for measuring this bandwidth:
a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3 × RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.
Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described above.

D. 99 Percent Occupied Bandwidth
The 99-percent occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5 % of the total mean power of the given emission. Measurement of the 99-percent occupied bandwidth is required only as a condition for using the optional band-edge measurement techniques described in section II.G.3.d). Measurements of 99-percent occupied bandwidth may also optionally be used in lieu of the EBW to 789033 D02 v01r02 General UNII Test Procedures New Rules v01 define the minimum frequency range over which the spectrum is integrated when measuring maximum conducted output power as described in section II.E. However, the EBW must be measured to determine bandwidth dependent limits on maximum conducted output power in accordance with 15.407(a).

The following procedure shall be used for measuring (99 %) power bandwidth:
1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set VBW ≥ 3 • RBW
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
6. Use the 99 % power bandwidth function of the instrument (if available).
7. If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.

8.1.5 Test Results

UNII Band I: *5150-5250MHz*

Test Mode	Test Channel MHz		26 dB Bandwidth MHz	99% Bandwidth MHz	Verdict
802.11a	CH36	5180	21.160	17.211	Pass
	CH40	5220	21.240	17.249	Pass
	CH48	5240	21.360	17.193	Pass
802.11n-HT20	CH36	5180	21.240	18.257	Pass
	CH40	5220	21.480	18.232	Pass
	CH48	5240	21.640	18.261	Pass
802.11ac(HT20)	CH36	5180	21.560	18.202	Pass
	CH40	5220	21.200	18.213	Pass
	CH48	5240	21.400	18.171	Pass
802.11n-HT40	CH38	5190	45.520	36.469	Pass
	CH46	5230	43.760	36.379	Pass
802.11ac(HT40)	CH38	5190	44.640	36.394	Pass
	CH46	5230	43.920	36.391	Pass
802.11ac(HT80)	CH42	5210	99.040	76.057	Pass

Emission Bandwidth&99% Occupied Bandwidth		UNII Band I	
Test Model	802.11a	Frequency(MHz)	5180

Emission Bandwidth&99% Occupied Bandwidth		UNII Band I	
Test Model	802.11a	Frequency(MHz)	5220

Emission Bandwidth&99% Occupied Bandwidth		UNII Band I	
Test Model	802.11a	Frequency(MHz)	5240

Emission Bandwidth&99% Occupied Bandwidth		UNII Band I	
Test Model	802.11n-HT20	Frequency(MHz)	5180

Emission Bandwidth&99% Occupied Bandwidth		UNII Band I	
Test Model	802.11n-HT20	Frequency(MHz)	5220

Emission Bandwidth&99% Occupied Bandwidth		UNII Band I	
Test Model	802.11n-HT20	Frequency(MHz)	5240

Emission Bandwidth&99% Occupied Bandwidth		UNII Band I	
Test Model	802.11ac(HT20)	Frequency(MHz)	5180

Emission Bandwidth&99% Occupied Bandwidth		UNII Band I	
Test Model	802.11ac(HT20)	Frequency(MHz)	5220

Emission Bandwidth&99% Occupied Bandwidth	UNII Band I		
Test Model	802.11ac(HT20)	Frequency(MHz)	5240

Emission Bandwidth&99% Occupied Bandwidth	UNII Band I		
Test Model	802.11n-HT40	Frequency(MHz)	5190

Emission Bandwidth&99% Occupied Bandwidth	UNII Band I		
Test Model	802.11n-HT40	Frequency(MHz)	5230

Emission Bandwidth&99% Occupied Bandwidth	UNII Band I		
Test Model	802.11ac(HT40)	Frequency(MHz)	5190

Emission Bandwidth&99% Occupied Bandwidth	UNII Band I		
Test Model	802.11ac(HT40)	Frequency(MHz)	5230

Emission Bandwidth&99% Occupied Bandwidth	UNII Band I		
Test Model	802.11ac 80	Frequency(MHz)	5210

UNII Band III: *5725-5850MHz*

Test Mode	Test Channel MHz		6 dB Bandwidth MHz	26dB Bandwidth MHz	99% Bandwidth MHz	Limit kHz
802.11a	CH149	5745	16.080	21.240	17.200	≥500
	CH157	5785	16.320	21.360	17.163	≥500
	CH165	5825	16.320	21.040	17.129	≥500
802.11n-HT20	CH149	5745	17.560	21.480	18.188	≥500
	CH157	5785	17.560	21.320	18.131	≥500
	CH165	5825	17.520	21.720	18.240	≥500
802.11ac(HT20)	CH149	5745	35.040	21.480	18.162	≥500
	CH157	5785	35.520	21.400	18.174	≥500
	CH165	5825	17.320	21.360	18.198	≥500
802.11n-HT40	CH151	5755	17.280	45.280	36.528	≥500
	CH159	5795	17.560	44.960	36.381	≥500
802.11ac(HT40)	CH151	5755	35.600	40.400	36.376	≥500
	CH159	5795	35.440	40.000	36.479	≥500
802.11ac(HT80)	CH155	5775	75.200	81.600	75.989	≥500

99% Occupied Bandwidth		UNII Band III	
Test Model	802.11a	Frequency(MHz)	5745

99% Occupied Bandwidth		UNII Band III	
Test Model	802.11a	Frequency(MHz)	5785

99% Occupied Bandwidth		UNII Band III	
Test Model	802.11a	Frequency(MHz)	5825

99% Occupied Bandwidth		UNII Band III	
Test Model	802.11n-HT20	Frequency(MHz)	5745

99% Occupied Bandwidth		UNII Band III	
Test Model	802.11n-HT20	Frequency(MHz)	5785

99% Occupied Bandwidth		UNII Band III	
Test Model	802.11n-HT20	Frequency(MHz)	5825

99% Occupied Bandwidth		UNII Band III	
Test Model	802.11ac(HT20)	Frequency(MHz)	5745

99% Occupied Bandwidth		UNII Band III	
Test Model	802.11ac(HT20)	Frequency(MHz)	5785

99% Occupied Bandwidth		UNII Band III	
Test Model	802.11ac(HT20)	Frequency(MHz)	5825

99% Occupied Bandwidth		UNII Band III	
Test Model	802.11n-HT40	Frequency(MHz)	5755

99% Occupied Bandwidth		UNII Band III	
Test Model	802.11n-HT40	Frequency(MHz)	5795

99% Occupied Bandwidth		UNII Band III	
Test Model	802.11ac(HT40)	Frequency(MHz)	5755

99% Occupied Bandwidth		UNII Band III	
Test Model	802.11ac(HT40)	Frequency(MHz)	5795

99% Occupied Bandwidth		UNII Band III	
Test Model	802.11ac 80	Frequency(MHz)	5775

6db Emission Bandwidth		UNII Band III	
Test Model	802.11a	Frequency(MHz)	5745

6db Emission Bandwidth		UNII Band III	
Test Model	802.11a	Frequency(MHz)	5785

6db Emission Bandwidth		UNII Band III	
Test Model	802.11a	Frequency(MHz)	5825

6db Emission Bandwidth		UNII Band III	
Test Model	802.11n-HT20	Frequency(MHz)	5745

6db Emission Bandwidth		UNII Band III	
Test Model	802.11n-HT20	Frequency(MHz)	5785

6db Emission Bandwidth		UNII Band III	
Test Model	802.11n-HT20	Frequency(MHz)	5825

6db Emission Bandwidth		UNII Band III	
Test Model	802.11ac(HT20)	Frequency(MHz)	5745

6db Emission Bandwidth		UNII Band III	
Test Model	802.11ac(HT20)	Frequency(MHz)	5785

6db Emission Bandwidth		UNII Band III	
Test Model	802.11ac(HT20)	Frequency(MHz)	5825

6db Emission Bandwidth		UNII Band III	
Test Model	802.11n-HT40	Frequency(MHz)	5755

6db Emission Bandwidth		UNII Band III	
Test Model	802.11n-HT40	Frequency(MHz)	5795

6db Emission Bandwidth		UNII Band III	
Test Model	802.11ac(HT40)	Frequency(MHz)	5755

6db Emission Bandwidth		UNII Band III	
Test Model	802.11ac(HT40)	Frequency(MHz)	5795

6db Emission Bandwidth		UNII Band III	
Test Model	802.11ac 80	Frequency(MHz)	5775

8.2 MAXIMUM CONDUCTED OUTPUT POWER

8.2.1 Applicable Standard

According to FCC Part 15.407(a)(1) for UNII Band I
According to FCC Part 15.407(a)(2) for UNII Band II-A and UNII Band II-C
According to FCC Part 15.407(a)(3) for UNII Band III
According to 789033 D02 Section II(E)

8.2.2 Conformance Limit

■ For the band 5.15-5.25 GHz,

(a) (1) (i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(a) (1) (ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(a) (1) (iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(a) (1) (iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

■ For the 5.25-5.35 GHz and 5.47-5.725 GHz bands

(a) (2) the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

■ For the band 5.725-5.85 GHz

(a) (3)For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

8.2.3 Test Configuration

Test according to clause 6.1 radio frequency test setup

8.2.4 Test Procedure

The maximum average conducted output power can be measured using Method PM-G (Measurement using a gated RF average power meter):
Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

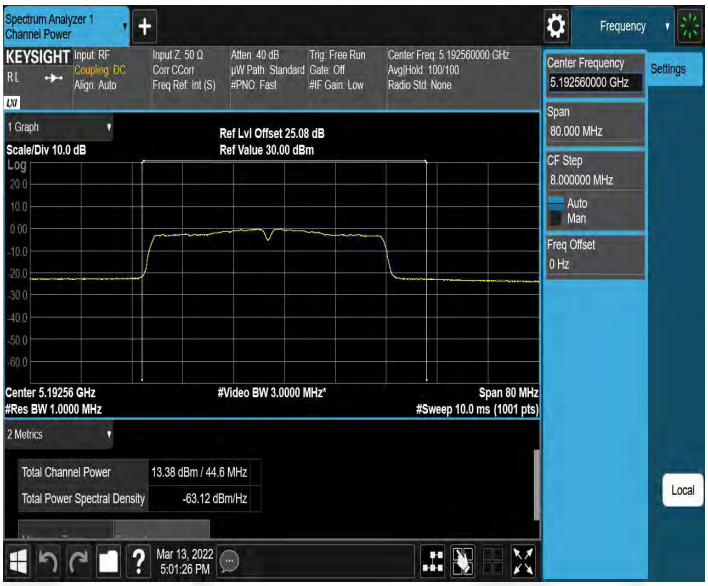
a. The Transmitter output (antenna port) was connected to the power meter.
b. Turn on the EUT and power meter and then record the power value.
c. Repeat above procedures on all channels needed to be tested.

8.2.5 Test Results

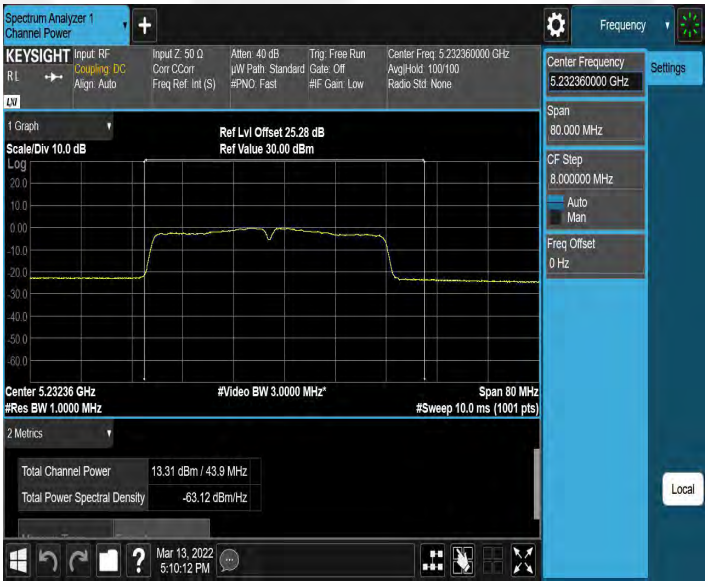
Temperature : 28℃			Test By: HYD				
Humidity : 65 %							
Band	Channel Number	Channel Freq. (MHz)	Conducted Power dBm	Antenna Gain dBi	EIRP dBm	Limit (dBm)	Verdict
802.11a	CH36	5180	13.35	3.70	17.05	23	Pass
	CH40	5220	13.22	3.70	16.92	23	Pass
	CH48	5240	13.18	3.70	16.88	23	Pass
	CH149	5745	13.62	3.70	17.32	30	Pass
	CH157	5785	13.27	3.70	16.97	30	Pass
	CH165	5825	13.38	3.70	17.08	30	Pass
802.11n (VHT20)	CH36	5180	13.02	3.70	16.72	23	Pass
	CH40	5220	12.89	3.70	16.59	23	Pass
	CH48	5240	12.81	3.70	16.51	23	Pass
	CH149	5745	13.15	3.70	16.85	30	Pass
	CH157	5785	12.93	3.70	16.63	30	Pass
	CH165	5825	13.07	3.70	16.77	30	Pass
802.11n (VHT40)	CH38	5190	13.31	3.70	17.01	23	Pass
	CH46	5230	13.25	3.70	16.95	23	Pass
	CH151	5755	13.54	3.70	17.24	30	Pass
	CH159	5795	13.55	3.70	17.25	30	Pass
802.11AC (VHT20)	CH36	5180	13.07	3.70	16.77	23	Pass
	CH40	5220	12.84	3.70	16.54	23	Pass
	CH48	5240	12.87	3.70	16.57	23	Pass
	CH149	5745	13.12	3.70	16.82	30	Pass
	CH157	5785	12.94	3.70	16.64	30	Pass
	CH165	5825	13.15	3.70	16.85	30	Pass
802.11AC (VHT40)	CH38	5190	13.38	3.70	17.08	23	Pass
	CH46	5230	13.31	3.70	17.01	23	Pass
	CH151	5755	13.62	3.70	17.32	30	Pass
	CH159	5795	13.63	3.70	17.33	30	Pass
802.11AC (VHT80)	CH42	5210	13.15	3.70	16.85	23	Pass
	CH155	5775	13.25	3.70	16.95	30	Pass
Note: The limit (dBm) = min(10log200,10+10logB)=23dBm							

For 802.11ac (VHT40) Test Plots see the follow pages.

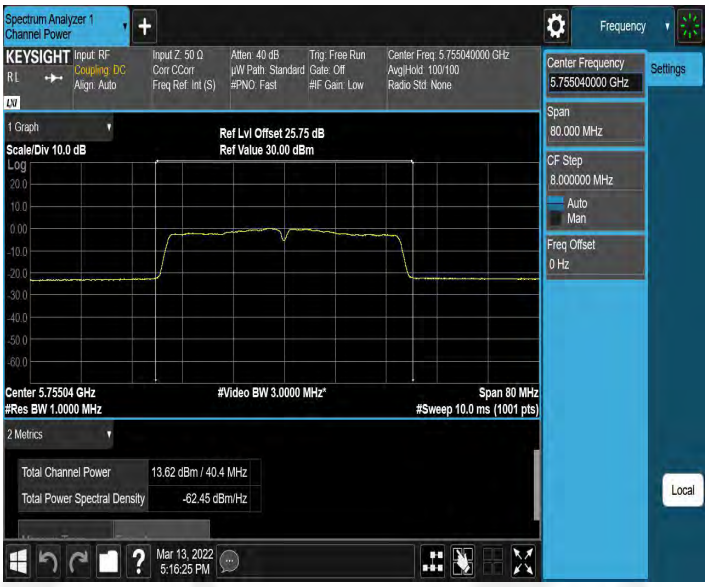
MAXIMUM CONDUCTED OUTPUT POWER		UNII Band I	
Test Model	802.11ac(VHT40) mode	Frequency(MHz)	5190



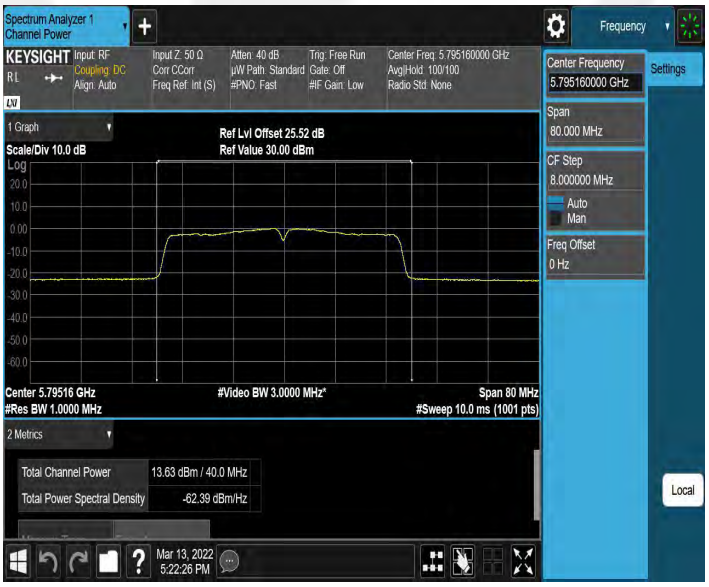
MAXIMUM CONDUCTED OUTPUT POWER		UNII Band II-A	
Test Model	802.11ac(VHT40) mode	Frequency(MHz)	5230



MAXIMUM CONDUCTED OUTPUT POWER		UNII Band II-C	
Test Model	802.11ac(VHT40) mode	Frequency(MHz)	5755



MAXIMUM CONDUCTED OUTPUT POWER		UNII Band II-C	
Test Model	802.11ac(VHT40) mode	Frequency(MHz)	5795



8.3 MAXIMUM PEAK POWER DENSITY

8.3.1 Applicable Standard

According to FCC Part 15.407(a)(1) for UNII Band I
According to FCC Part 15.407(a)(2) for UNII Band II-A and UNII Band II-C
According to FCC Part 15.407(a)(3) for UNII Band III
According to 789033 D02 Section II(F)

8.3.2 Conformance Limit

■ For the band 5.15-5.25 GHz,
(a) (1) (i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).
(a) (1) (ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
(a) (1) (iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.
(a) (1) (iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

■ For the 5.25-5.35 GHz and 5.47-5.725 GHz bands
(b) (2) the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

■ For the band 5.725-5.85 GHz
(a) (3)For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

8.3.3 Test Configuration

Test according to clause 6.1 radio frequency test setup

8.3.4 Test Procedure

Methods refer to FCC KDB 789033

For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, "provided that the measured power is integrated over the full reference bandwidth" to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 KHz bandwidth, the following adjustments to the procedures apply:

a) Set RBW ≥ 1/T, where T is defined in section II.B.I.a).

b) Set VBW ≥ 3 RBW.

c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10log(500kHz/RBW) to the measured result, whereas RBW (< 500 KHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add 10log(1MHz/RBW) to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.

e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note: As a practical matter, it is recommended to use reduced RBW of 100 KHz for the sections

5.c) and 5.d) above, since RBW=100 KHZ is available on nearly all spectrum analyzers.

8.3.5 Test Results

Temperature :	28℃	Test By:	HYD
Humidity :	65 %		

TestMode	Frequency[MHz]	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
11A	5180	2.99	≤11.00	PASS
	5220	2.97	≤11.00	PASS
	5240	2.95	≤11.00	PASS
	5745	0.57	≤30.00	PASS
	5785	0.28	≤30.00	PASS
	5825	0.43	≤30.00	PASS
11N20SISO	5180	2.34	≤11.00	PASS
	5220	2.36	≤11.00	PASS
	5240	2.39	≤11.00	PASS
	5745	-0.05	≤30.00	PASS
	5785	-0.32	≤30.00	PASS
	5825	-0.27	≤30.00	PASS
11N40SISO	5190	-0.06	≤11.00	PASS
	5230	-0.2	≤11.00	PASS
	5755	-2.78	≤30.00	PASS
	5795	-2.75	≤30.00	PASS
11AC20SISO	5180	2.46	≤11.00	PASS
	5220	2.3	≤11.00	PASS
	5240	2.31	≤11.00	PASS
	5745	-0.07	≤30.00	PASS
	5785	-0.24	≤30.00	PASS
	5825	-0.1	≤30.00	PASS
11AC40SISO	5190	0.08	≤11.00	PASS
	5230	-0.22	≤11.00	PASS
	5755	-2.73	≤30.00	PASS
	5795	-2.68	≤30.00	PASS
11AC80SISO	5210	-2.98	≤11.00	PASS
	5775	-6.09	≤30.00	PASS

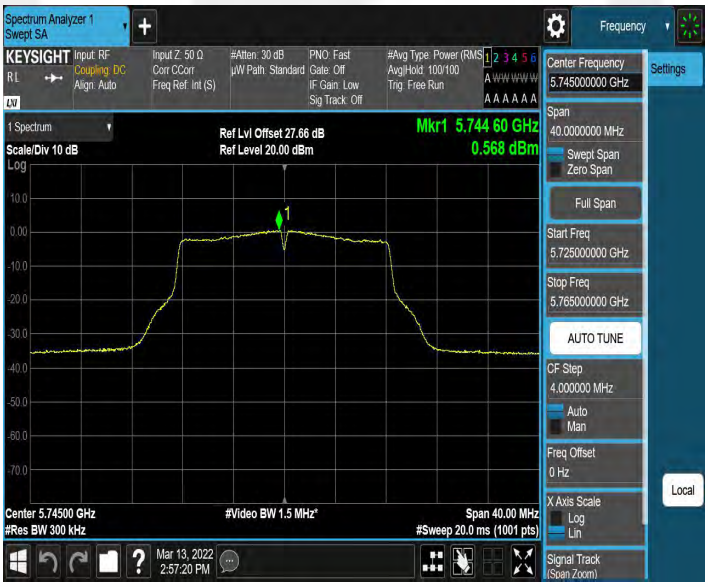
Note:
UNII Band I limit: EIRP-PSD ≤10dBm/1MHz
UNII Band III Limit: Conducted-PSD ≤30dBm /500KHz

Power Spectral Density		UNII Band I	
Test Model	802.11a	Frequency(MHz)	5180

Power Spectral Density		UNII Band I	
Test Model	802.11a	Frequency(MHz)	5220

Power Spectral Density		UNII Band I	
Test Model	802.11a	Frequency(MHz)	5240

Power Spectral Density		UNII Band III	
Test Model	802.11a	Frequency(MHz)	5745



Power Spectral Density		UNII Band III	
Test Model	802.11a	Frequency(MHz)	5785

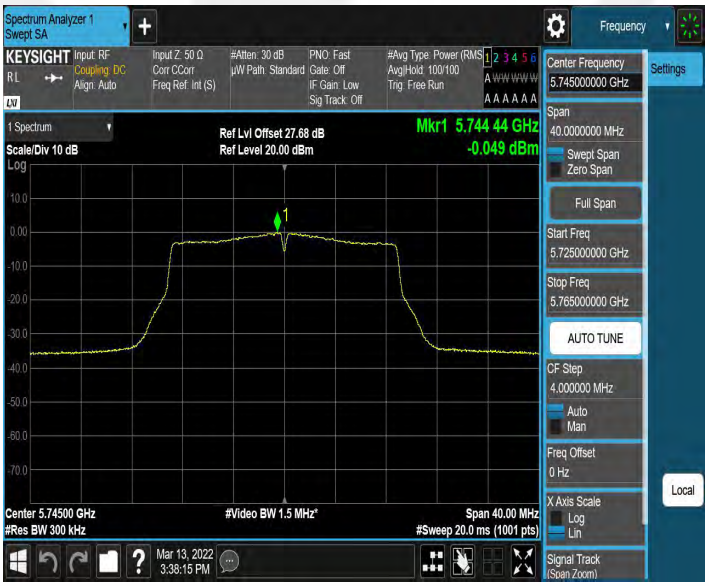
Power Spectral Density		UNII Band III	
Test Model	802.11a	Frequency(MHz)	5825

Power Spectral Density		UNII Band I	
Test Model	802.11n(HT20) mode	Frequency(MHz)	5180

Power Spectral Density		UNII Band I	
Test Model	802.11n(HT20) mode	Frequency(MHz)	5220

Power Spectral Density		UNII Band I	
Test Model	802.11n(HT20) mode	Frequency(MHz)	5240

Power Spectral Density		UNII Band III	
Test Model	802.11n(HT20) mode	Frequency(MHz)	5745



Power Spectral Density		UNII Band III	
Test Model	802.11n(HT20) mode	Frequency(MHz)	5785

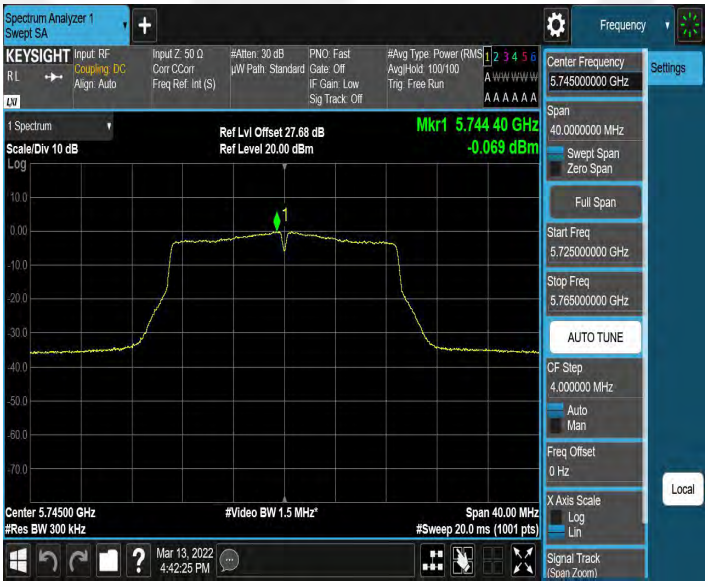
Power Spectral Density		UNII Band III	
Test Model	802.11n(HT20) mode	Frequency(MHz)	5825

Power Spectral Density		UNII Band I	
Test Model	802.11ac(VHT20) mode	Frequency(MHz)	5180

Power Spectral Density		UNII Band I	
Test Model	802.11ac(VHT20) mode	Frequency(MHz)	5220

Power Spectral Density		UNII Band I	
Test Model	802.11ac(VHT20) mode	Frequency(MHz)	5240

Power Spectral Density		UNII Band III	
Test Model	802.11ac(VHT20) mode	Frequency(MHz)	5745



Power Spectral Density		UNII Band III	
Test Model	802.11ac(VHT20) mode	Frequency(MHz)	5785

Power Spectral Density		UNII Band III	
Test Model	802.11ac(VHT20) mode	Frequency(MHz)	5825

Power Spectral Density		UNII Band I	
Test Model	802.11n(HT40) mode	Frequency(MHz)	5190

Power Spectral Density		UNII Band I	
Test Model	802.11n(HT40) mode	Frequency(MHz)	5230

Power Spectral Density		UNII Band III	
Test Model	802.11n(HT40) mode	Frequency(MHz)	5755

Power Spectral Density		UNII Band III	
Test Model	802.11n(HT40) mode	Frequency(MHz)	5795

Power Spectral Density		UNII Band I	
Test Model	802.11ac(VHT40) mode	Frequency(MHz)	5190

Power Spectral Density		UNII Band I	
Test Model	802.11ac(VHT40) mode	Frequency(MHz)	5230

Power Spectral Density		UNII Band III	
Test Model	802.11ac(VHT40) mode	Frequency(MHz)	5755

Power Spectral Density		UNII Band III	
Test Model	802.11ac(VHT40) mode	Frequency(MHz)	5795

Power Spectral Density		UNII Band I	
Test Model	802.11ac(VHT80) mode	Frequency(MHz)	5210

Power Spectral Density		UNII Band III	
Test Model	802.11ac(VHT80) mode	Frequency(MHz)	5775

8.4 FREQUENCY STABILITY

8.4.1 Applicable Standard

According to FCC Part 15.407(g)
ANSI C63.10 Section 6.8

8.4.2 Conformance Limit

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.

8.4.3 Test Configuration

Test according to clause 6.1 radio frequency test setup

8.4.4 Test Procedure

The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
Set to the maximum power setting and enable the EUT transmit continuously
Set RBW = 10 kHz.
Set Span= Entire absence of modulation emissions band
Set the video bandwidth (VBW) =30 kHz. width
Set Detector = Peak.
Set Trace mode = max hold.
Set Sweep = auto couple.
Allow the trace to stabilize.
The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value.
Beginning at each temperature level specified in user manual , the frequency shall be measured within one minute after application of primary power to the transmitter and at intervals of no more than one minute thereafter until ten minutes have elapsed or until sufficient measurements are obtained to indicate clearly that the frequency has stabilized within the applicable tolerance, whichever time period is greater. During each test, the ambient temperature shall not be allowed to rise more than 10° centigrade above the respective beginning ambient temperature level
Measure and record the results in the test report.

8.4.5 Test Results

Voltage							
TestMode	Frequency[MHz]	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
11A	5180	NV	NT	0.00	0.000000	20	PASS
		LV	NT	0.00	0.000000	20	PASS
		HV	NT	0.00	0.000000	20	PASS
	5220	NV	NT	0.00	0.000000	20	PASS
		LV	NT	0.00	0.000000	20	PASS
		HV	NT	0.00	0.000000	20	PASS
	5240	NV	NT	0.00	0.000000	20	PASS
		LV	NT	-20000.00	-3.816794	20	PASS
		HV	NT	-20000.00	-3.816794	20	PASS
	5745	NV	NT	0.00	0.000000	20	PASS
		LV	NT	0.00	0.000000	20	PASS
		HV	NT	-20000.00	-3.481288	20	PASS
	5785	NV	NT	-20000.00	-3.457217	20	PASS
		LV	NT	-20000.00	-3.457217	20	PASS
		HV	NT	0.00	0.000000	20	PASS
	5825	NV	NT	-20000.00	-3.433476	20	PASS

		LV	NT	0.00	0.000000	20	PASS
		HV	NT	0.00	0.000000	20	PASS
11N20SISO	5180	NV	NT	0.00	0.000000	20	PASS
		LV	NT	0.00	0.000000	20	PASS
		HV	NT	0.00	0.000000	20	PASS
	5220	NV	NT	0.00	0.000000	20	PASS
		LV	NT	0.00	0.000000	20	PASS
		HV	NT	0.00	0.000000	20	PASS
	5240	NV	NT	0.00	0.000000	20	PASS
		LV	NT	-20000.00	-3.816794	20	PASS
		HV	NT	0.00	0.000000	20	PASS
	5745	NV	NT	0.00	0.000000	20	PASS
		LV	NT	0.00	0.000000	20	PASS
		HV	NT	0.00	0.000000	20	PASS
	5785	NV	NT	0.00	0.000000	20	PASS
		LV	NT	0.00	0.000000	20	PASS
		HV	NT	0.00	0.000000	20	PASS
	5825	NV	NT	0.00	0.000000	20	PASS
		LV	NT	0.00	0.000000	20	PASS
		HV	NT	0.00	0.000000	20	PASS
11N40SISO	5190	NV	NT	0.00	0.000000	20	PASS
		LV	NT	0.00	0.000000	20	PASS
		HV	NT	0.00	0.000000	20	PASS
	5230	NV	NT	0.00	0.000000	20	PASS
		LV	NT	0.00	0.000000	20	PASS
		HV	NT	0.00	0.000000	20	PASS
	5755	NV	NT	0.00	0.000000	20	PASS
		LV	NT	0.00	0.000000	20	PASS
		HV	NT	0.00	0.000000	20	PASS
	5795	NV	NT	0.00	0.000000	20	PASS
		LV	NT	0.00	0.000000	20	PASS
		HV	NT	0.00	0.000000	20	PASS
11AC20SISO	5180	NV	NT	0.00	0.000000	20	PASS
		LV	NT	0.00	0.000000	20	PASS
		HV	NT	0.00	0.000000	20	PASS
	5220	NV	NT	0.00	0.000000	20	PASS
		LV	NT	-20000.00	-3.831418	20	PASS
		HV	NT	0.00	0.000000	20	PASS
	5240	NV	NT	0.00	0.000000	20	PASS
		LV	NT	-20000.00	-3.816794	20	PASS
		HV	NT	0.00	0.000000	20	PASS
	5745	NV	NT	0.00	0.000000	20	PASS
		LV	NT	0.00	0.000000	20	PASS
		HV	NT	-20000.00	-3.481288	20	PASS
	5785	NV	NT	0.00	0.000000	20	PASS
		LV	NT	0.00	0.000000	20	PASS
		HV	NT	0.00	0.000000	20	PASS
	5825	NV	NT	0.00	0.000000	20	PASS
		LV	NT	0.00	0.000000	20	PASS
		HV	NT	0.00	0.000000	20	PASS
11AC40SISO	5190	NV	NT	0.00	0.000000	20	PASS
		LV	NT	0.00	0.000000	20	PASS
		HV	NT	0.00	0.000000	20	PASS
	5230	NV	NT	0.00	0.000000	20	PASS
		LV	NT	0.00	0.000000	20	PASS
		HV	NT	0.00	0.000000	20	PASS
	5755	NV	NT	0.00	0.000000	20	PASS
		LV	NT	0.00	0.000000	20	PASS
		HV	NT	0.00	0.000000	20	PASS
	5795	NV	NT	0.00	0.000000	20	PASS
		LV	NT	0.00	0.000000	20	PASS

		HV	NT	0.00	0.000000	20	PASS
11AC80S ISO	5210	NV	NT	0.00	0.000000	20	PASS
		LV	NT	0.00	0.000000	20	PASS
		HV	NT	0.00	0.000000	20	PASS
	5775	NV	NT	0.00	0.000000	20	PASS
		LV	NT	0.00	0.000000	20	PASS
		HV	NT	0.00	0.000000	20	PASS

Temperature							
TestMode	Frequency[MHz]	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
11A	5180	NV	-30	0.00	0.000000	20	PASS
		NV	-20	20000.00	3.861004	20	PASS
		NV	-10	0.00	0.000000	20	PASS
		NV	0	0.00	0.000000	20	PASS
		NV	10	-20000.00	-3.861004	20	PASS
		NV	20	-20000.00	-3.861004	20	PASS
		NV	30	20000.00	3.861004	20	PASS
		NV	40	0.00	0.000000	20	PASS
		NV	50	20000.00	3.861004	20	PASS
	5220	NV	-30	0.00	0.000000	20	PASS
		NV	-20	0.00	0.000000	20	PASS
		NV	-10	-20000.00	-3.831418	20	PASS
		NV	0	0.00	0.000000	20	PASS
		NV	10	0.00	0.000000	20	PASS
		NV	20	-20000.00	-3.831418	20	PASS
		NV	30	-20000.00	-3.831418	20	PASS
		NV	40	0.00	0.000000	20	PASS
		NV	50	-20000.00	-3.831418	20	PASS
	5240	NV	-30	20000.00	3.816794	20	PASS
		NV	-20	-20000.00	-3.816794	20	PASS
		NV	-10	-20000.00	-3.816794	20	PASS
		NV	0	-20000.00	-3.816794	20	PASS
		NV	10	-20000.00	-3.816794	20	PASS
		NV	20	-20000.00	-3.816794	20	PASS
		NV	30	20000.00	3.816794	20	PASS
		NV	40	-20000.00	-3.816794	20	PASS
		NV	50	0.00	0.000000	20	PASS
	5745	NV	-30	0.00	0.000000	20	PASS
		NV	-20	0.00	0.000000	20	PASS
		NV	-10	-20000.00	-3.481288	20	PASS
		NV	0	-20000.00	-3.481288	20	PASS
		NV	10	-20000.00	-3.481288	20	PASS
		NV	20	0.00	0.000000	20	PASS
		NV	30	-20000.00	-3.481288	20	PASS
		NV	40	-20000.00	-3.481288	20	PASS
		NV	50	-20000.00	-3.481288	20	PASS
	5785	NV	-30	0.00	0.000000	20	PASS
		NV	-20	-20000.00	-3.457217	20	PASS
		NV	-10	-20000.00	-3.457217	20	PASS
		NV	0	0.00	0.000000	20	PASS
		NV	10	0.00	0.000000	20	PASS
		NV	20	-20000.00	-3.457217	20	PASS
		NV	30	0.00	0.000000	20	PASS
		NV	40	-20000.00	-3.457217	20	PASS
		NV	50	0.00	0.000000	20	PASS
	5825	NV	-30	0.00	0.000000	20	PASS
		NV	-20	0.00	0.000000	20	PASS
		NV	-10	-20000.00	-3.433476	20	PASS

		NV	0	0.00	0.000000	20	PASS
		NV	10	-20000.00	-3.433476	20	PASS
		NV	20	0.00	0.000000	20	PASS
		NV	30	-20000.00	-3.433476	20	PASS
		NV	40	0.00	0.000000	20	PASS
		NV	50	0.00	0.000000	20	PASS
11N20SI SO	5180	NV	-30	0.00	0.000000	20	PASS
		NV	-20	0.00	0.000000	20	PASS
		NV	-10	0.00	0.000000	20	PASS
		NV	0	0.00	0.000000	20	PASS
		NV	10	0.00	0.000000	20	PASS
		NV	20	0.00	0.000000	20	PASS
		NV	30	-20000.00	-3.861004	20	PASS
		NV	40	0.00	0.000000	20	PASS
		NV	50	0.00	0.000000	20	PASS
	5220	NV	-30	-20000.00	-3.831418	20	PASS
		NV	-20	0.00	0.000000	20	PASS
		NV	-10	0.00	0.000000	20	PASS
		NV	0	0.00	0.000000	20	PASS
		NV	10	20000.00	3.831418	20	PASS
		NV	20	0.00	0.000000	20	PASS
		NV	30	0.00	0.000000	20	PASS
		NV	40	0.00	0.000000	20	PASS
		NV	50	0.00	0.000000	20	PASS
	5240	NV	-30	0.00	0.000000	20	PASS
		NV	-20	0.00	0.000000	20	PASS
		NV	-10	0.00	0.000000	20	PASS
		NV	0	0.00	0.000000	20	PASS
		NV	10	-20000.00	-3.816794	20	PASS
		NV	20	0.00	0.000000	20	PASS
		NV	30	-20000.00	-3.816794	20	PASS
		NV	40	-20000.00	-3.816794	20	PASS
		NV	50	-20000.00	-3.816794	20	PASS
	5745	NV	-30	0.00	0.000000	20	PASS
		NV	-20	0.00	0.000000	20	PASS
		NV	-10	0.00	0.000000	20	PASS
		NV	0	0.00	0.000000	20	PASS
		NV	10	0.00	0.000000	20	PASS
		NV	20	0.00	0.000000	20	PASS
		NV	30	0.00	0.000000	20	PASS
		NV	40	0.00	0.000000	20	PASS
		NV	50	0.00	0.000000	20	PASS
	5785	NV	-30	0.00	0.000000	20	PASS
		NV	-20	0.00	0.000000	20	PASS
		NV	-10	0.00	0.000000	20	PASS
		NV	0	0.00	0.000000	20	PASS
		NV	10	20000.00	3.457217	20	PASS
		NV	20	0.00	0.000000	20	PASS
		NV	30	0.00	0.000000	20	PASS
		NV	40	0.00	0.000000	20	PASS
		NV	50	0.00	0.000000	20	PASS
	5825	NV	-30	0.00	0.000000	20	PASS
		NV	-20	0.00	0.000000	20	PASS
		NV	-10	0.00	0.000000	20	PASS
		NV	0	0.00	0.000000	20	PASS
		NV	10	0.00	0.000000	20	PASS
		NV	20	0.00	0.000000	20	PASS
		NV	30	0.00	0.000000	20	PASS
		NV	40	0.00	0.000000	20	PASS
		NV	50	-20000.00	-3.433476	20	PASS
11N40SI	5190	NV	-30	0.00	0.000000	20	PASS

SO		NV	-20	0.00	0.000000	20	PASS
		NV	-10	0.00	0.000000	20	PASS
		NV	0	0.00	0.000000	20	PASS
		NV	10	0.00	0.000000	20	PASS
		NV	20	0.00	0.000000	20	PASS
		NV	30	0.00	0.000000	20	PASS
		NV	40	0.00	0.000000	20	PASS
		NV	50	0.00	0.000000	20	PASS
	5230	NV	-30	0.00	0.000000	20	PASS
		NV	-20	0.00	0.000000	20	PASS
		NV	-10	0.00	0.000000	20	PASS
		NV	0	-40000.00	-7.648184	20	PASS
		NV	10	0.00	0.000000	20	PASS
		NV	20	0.00	0.000000	20	PASS
		NV	30	0.00	0.000000	20	PASS
		NV	40	0.00	0.000000	20	PASS
		NV	50	0.00	0.000000	20	PASS
	5755	NV	-30	0.00	0.000000	20	PASS
		NV	-20	0.00	0.000000	20	PASS
		NV	-10	0.00	0.000000	20	PASS
		NV	0	0.00	0.000000	20	PASS
		NV	10	0.00	0.000000	20	PASS
		NV	20	0.00	0.000000	20	PASS
		NV	30	0.00	0.000000	20	PASS
		NV	40	0.00	0.000000	20	PASS
		NV	50	0.00	0.000000	20	PASS
	5795	NV	-30	0.00	0.000000	20	PASS
		NV	-20	0.00	0.000000	20	PASS
		NV	-10	0.00	0.000000	20	PASS
		NV	0	0.00	0.000000	20	PASS
		NV	10	0.00	0.000000	20	PASS
		NV	20	0.00	0.000000	20	PASS
		NV	30	0.00	0.000000	20	PASS
		NV	40	0.00	0.000000	20	PASS
		NV	50	0.00	0.000000	20	PASS
11AC20S ISO	5180	NV	-30	0.00	0.000000	20	PASS
		NV	-20	0.00	0.000000	20	PASS
		NV	-10	0.00	0.000000	20	PASS
		NV	0	0.00	0.000000	20	PASS
		NV	10	-20000.00	-3.861004	20	PASS
		NV	20	0.00	0.000000	20	PASS
		NV	30	0.00	0.000000	20	PASS
		NV	40	0.00	0.000000	20	PASS
		NV	50	0.00	0.000000	20	PASS
	5220	NV	-30	0.00	0.000000	20	PASS
		NV	-20	0.00	0.000000	20	PASS
		NV	-10	0.00	0.000000	20	PASS
		NV	0	0.00	0.000000	20	PASS
		NV	10	0.00	0.000000	20	PASS
		NV	20	0.00	0.000000	20	PASS
		NV	30	0.00	0.000000	20	PASS
		NV	40	-20000.00	-3.831418	20	PASS
		NV	50	0.00	0.000000	20	PASS
	5240	NV	-30	0.00	0.000000	20	PASS
		NV	-20	0.00	0.000000	20	PASS
		NV	-10	0.00	0.000000	20	PASS
		NV	0	0.00	0.000000	20	PASS
		NV	10	0.00	0.000000	20	PASS
		NV	20	0.00	0.000000	20	PASS
		NV	30	0.00	0.000000	20	PASS
		NV	40	0.00	0.000000	20	PASS

		NV	50	0.00	0.000000	20	PASS
	5745	NV	-30	0.00	0.000000	20	PASS
		NV	-20	-20000.00	-3.481288	20	PASS
		NV	-10	0.00	0.000000	20	PASS
		NV	0	-20000.00	-3.481288	20	PASS
		NV	10	0.00	0.000000	20	PASS
		NV	20	0.00	0.000000	20	PASS
		NV	30	0.00	0.000000	20	PASS
		NV	40	0.00	0.000000	20	PASS
		NV	50	0.00	0.000000	20	PASS
	5785	NV	-30	0.00	0.000000	20	PASS
		NV	-20	0.00	0.000000	20	PASS
		NV	-10	0.00	0.000000	20	PASS
		NV	0	0.00	0.000000	20	PASS
		NV	10	0.00	0.000000	20	PASS
		NV	20	0.00	0.000000	20	PASS
		NV	30	0.00	0.000000	20	PASS
		NV	40	0.00	0.000000	20	PASS
		NV	50	-20000.00	-3.457217	20	PASS
	5825	NV	-30	0.00	0.000000	20	PASS
		NV	-20	0.00	0.000000	20	PASS
		NV	-10	0.00	0.000000	20	PASS
		NV	0	0.00	0.000000	20	PASS
		NV	10	0.00	0.000000	20	PASS
		NV	20	0.00	0.000000	20	PASS
		NV	30	0.00	0.000000	20	PASS
		NV	40	0.00	0.000000	20	PASS
		NV	50	0.00	0.000000	20	PASS
11AC40S ISO	5190	NV	-30	0.00	0.000000	20	PASS
		NV	-20	0.00	0.000000	20	PASS
		NV	-10	0.00	0.000000	20	PASS
		NV	0	0.00	0.000000	20	PASS
		NV	10	0.00	0.000000	20	PASS
		NV	20	0.00	0.000000	20	PASS
		NV	30	0.00	0.000000	20	PASS
		NV	40	0.00	0.000000	20	PASS
		NV	50	0.00	0.000000	20	PASS
	5230	NV	-30	0.00	0.000000	20	PASS
		NV	-20	0.00	0.000000	20	PASS
		NV	-10	0.00	0.000000	20	PASS
		NV	0	0.00	0.000000	20	PASS
		NV	10	-40000.00	-7.648184	20	PASS
		NV	20	0.00	0.000000	20	PASS
		NV	30	0.00	0.000000	20	PASS
		NV	40	0.00	0.000000	20	PASS
		NV	50	-40000.00	-7.648184	20	PASS
	5755	NV	-30	0.00	0.000000	20	PASS
		NV	-20	0.00	0.000000	20	PASS
		NV	-10	0.00	0.000000	20	PASS
		NV	0	-40000.00	-6.950478	20	PASS
		NV	10	0.00	0.000000	20	PASS
		NV	20	0.00	0.000000	20	PASS
		NV	30	0.00	0.000000	20	PASS
		NV	40	0.00	0.000000	20	PASS
		NV	50	0.00	0.000000	20	PASS
	5795	NV	-30	0.00	0.000000	20	PASS
		NV	-20	0.00	0.000000	20	PASS
		NV	-10	0.00	0.000000	20	PASS
		NV	0	0.00	0.000000	20	PASS
		NV	10	0.00	0.000000	20	PASS
		NV	20	-40000.00	-6.902502	20	PASS