

MEASUREMENT REPORT

FCC PART 15 Subpart E WLAN 802.11a/n/ac/ax

Report No.: S20230316528501E07

Issue Date: 05-07-2023

Applicant: Xi'an NovaStar Tech Co., Ltd.
Address: 101 Block D-F, 01 Square, Xi'an Software Park, No.72,
2nd Keji Road, Xi'an, Shaanxi, China
FCC ID: 2AG8JTU20P
Product: LED Playback Control Processor
Model No.: TU20 Pro, TU15 Pro
FCC Classification: Unlicensed National Information Infrastructure (UNII)
FCC Rule Part(s): Part 15 Subpart E (Section 15.407)
Test Procedure(s): ANSI C63.10-2013, KDB 789033 D02v02r01,
KDB 662911 D01v02r01
Item Receipt date: Mar 16, 2023
Test Date: Mar 17 ~ May 06, 2023

Compiled By Amos Xia
(Amos Xia)
Senior Test Engineer
Approved By Line Chen
(Line Chen)
Engineer Manager

The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in KDB 789033 D02v02r01. Test results reported herein relate only to the item(s) tested.

The test report shall not be reproduced except in full without the written approval of Fangguang Inspection & Testing Co., Ltd. Wuxi Branch

The test report must not be used by the client to claim product certifications, approval, or endorsement by NVLAP, NIST or any agency of U.S. Government.

Revision History

Report No.	Version	Description	Issue Date
S20230316528501E07	Rev. 01	/	05-07-2023

CONTENTS

Description	Page
§2.1033 General Information	6
1. INTRODUCTION	7
1.1. Scope	7
1.2. Fangguang Test Location	7
2. PRODUCT INFORMATION	8
2.1. Equipment Description	8
2.2. Product Specification Subjective to this Report	8
2.3. Operation Frequencies and Channel List	9
2.4. Description of Available Antennas	10
2.5. Device Capabilities	10
2.6. Test Software	16
2.7. Test Mode	16
2.8. Test Configuration	17
2.9. EMI Suppression Device(s)/Modifications	17
2.10. Labeling Requirements	17
3. DESCRIPTION OF TEST	18
3.1. Evaluation Procedure	18
3.2. AC Line Conducted Emissions	18
3.3. Radiated Emissions	19
4. ANTENNA REQUIREMENTS	20
5. TEST EQUIPMENT CALIBRATION DATE	21
6. MEASUREMENT UNCERTAINTY	22
7. TEST RESULT	23
7.1. Summary	23
7.2. 26dB Bandwidth Measurement and 99% Bandwidth	24
7.2.1. Test Limit	24
7.2.2. Test Procedure used	24
7.2.3. Test Setting	24
7.2.4. Test Setup	24
7.2.5. Test Result	25
7.3. 6dB Bandwidth Measurement	30
7.3.1. Test Limit	30

7.3.2. Test Procedure used	30
7.3.3. Test Setting	30
7.3.4. Test Setup	30
7.3.5. Test Result	31
7.4. Output Power Measurement	34
7.4.1. Test Limit	34
7.4.2. Test Procedure Used	35
7.4.3. Test Setting	35
7.4.4. Test Setup	35
7.4.5. Test Rate Assessment	36
7.4.6. Test Result	37
7.5. Transmit Power Control	43
7.5.1. Test Limit	43
7.5.2. Test Procedure Used	43
7.5.3. Test Setting	43
7.5.4. Test Setup	43
7.5.5. Test Result	43
7.6. Power Spectral Density Measurement	44
7.6.1. Test Limit	44
7.6.2. Test Procedure Used	45
7.6.3. Test Setting	45
7.6.4. Test Setup	46
7.6.5. Test Result	47
7.7. Frequency Stability Measurement	53
7.7.1. Test Limit	53
7.7.2. Test Procedure Used	53
7.7.3. Test Setup	53
7.7.4. Test Result	54
7.8. Radiated Spurious Emission Measurement	111
7.8.1. Test Limit	111
7.8.2. Test Procedure Used	111
7.8.3. Test Setting	111
7.8.4. Test Setup	112
7.8.5. Test Result	114
7.9. Radiated Restricted Band Edge Measurement	128
7.9.1. Test Limit	128
7.9.2. Test Result	132
7.10. AC Conducted Emissions Measurement	202

7.10.1. Test Limit	202
7.10.2. Test Procedure	202
7.10.3. Test Setup	203
7.10.4. Test Result	204
8. CONCLUSION	212

§2.1033 General Information

Applicant:	Xi'an NovaStar Tech Co., Ltd.
Applicant Address:	101 Block D-F, 01 Square, Xi'an Software Park, No.72, 2nd Keji Road, Xi'an, Shaanxi, China
Manufacturer:	Xi'an NovaStar Tech Co., Ltd.
Manufacturer Address:	101 Block D-F, 01 Square, Xi'an Software Park, No.72, 2nd Keji Road, Xi'an, Shaanxi, China
Test Site:	Fangguang Inspection & Testing Co., Ltd.
LAB ID:	CN5037
Test Site Address:	G9 Building, China Sensor Network International Innovation Park No.200, Linghu Avenue Wuxi, Jiangsu 214000 China
FCC Rule Part(s):	Part 15 Subpart C (15.247)
FCC ID:	2AG8JTU20P
Test Device Serial No.:	S/N.: 2KKA02B12N0A10000059 ☐ Production ☒ Pre-Production ☐ Engineering
FCC Classification:	Unlicensed National Information Infrastructure (UNII)

1. INTRODUCTION

1.1. Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Innovation, Science and Economic Development Canada.

1.2. Fangguang Test Location

These measurement tests were performed at the Fangguang Inspection and testing Co.,LTD located at 200 Linghu Avenue, Xinwu District, Wuxi City. The detailed description of the measurement facility was found to be in compliance with the requirements of ANSI C63.4-2014.

2. PRODUCT INFORMATION

2.1. Equipment Description

Product Name:	LED Playback Control Processor								
Model Name:	TU20 Pro								
Additional Model:	TU15 Pro								
Model Description:	TU20 Pro and TU15 Pro are the same on the board, Schematic, Hardware version, Software version and internal photos are same, only port structure and the model name are different. <table><tr><td>Model</td><td>TU15 Pro</td><td>TU20 Pro</td></tr><tr><td>Number of RJ45 ports equipped</td><td>4</td><td>6</td></tr></table>			Model	TU15 Pro	TU20 Pro	Number of RJ45 ports equipped	4	6
Model	TU15 Pro	TU20 Pro							
Number of RJ45 ports equipped	4	6							
Trade Mark:									
Input Voltage Range:	DC 12V,3A								
Wi-Fi Specification:	802.11a/n-HT20/n-HT40/ac-VHT20/ac-VHT40/ac-VHT80/ax-HE20/ax-HE40/ax-HE80(The sample has two WiFi Modules, one for WIFI-STA function and that supports a/n20/n40/ac20/ac40/ac80, and the other for WiFi -AP function that support a/n20/n40/ac20/ac40/ac80/ax20/ax40/ax80)								

2.2. Product Specification Subjective to this Report

Frequency Range:	For 802.11a/n-HT20/ac-VHT20/ax-HE20: 5180~5240MHz, 5745~5825MHz For 802.11n-HT40/ac-VHT40/ax-HE40: 5190~5230MHz, 5755~5795MHz For 802.11ac-VHT80/ax-HE80: 5210MHz, 5775MHz
Type of Modulation:	802.11a/n/ac/ax:CCK/OFDM/BPSK/QPSK/DBPSK/DQPSK/16QAM/64QAM/256QAM/1024QAM
Data Rate:	802.11a: 6/9/12/18/24/36/48/54Mbps 802.11n: up to 150Mbps 802.11ac: up to 433.3Mbps 802.11ax: up to 600Mbps
Antenna Type:	Dipole Antenna
Antenna Gain:	WIFI-STA-Ant 0:2.83dBi WIFI-AP-Ant1:2.83dBi, Ant2:2.83dBi

2.3. Operation Frequencies and Channel List

802.11a/n-HT20/ac-VHT20/ax-HE20

Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180 MHz	40	5200 MHz	44	5220 MHz
48	5240 MHz	149	5745 MHz	153	5765 MHz
157	5785 MHz	161	5805 MHz	165	5825 MHz

802.11n-HT40/ac-VHT40/ax-HE40

Channel	Frequency	Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz	151	5755 MHz
159	5795 MHz	--	--	--	--

802.11ac-VHT80/ax-HE80

Channel	Frequency	Channel	Frequency	Channel	Frequency
42	5210 MHz	155	5775 MHz	--	--

2.4. Description of Available Antennas

Antenna	Frequency Band (GHz)	Product Number	Tx Paths	Antenna
Dipole Antenna	2.4&5	WIFI-STA	1	Ant 0
Dipole Antenna	2.4&5	WIFI-AP	2	Ant 1+Ant 2

Antenna	Frequency Band (MHz)	Tx Paths	Per Chain Max Antenna Gain (dBi)		Beam Forming Directional Gain (dBi)	CDD Directional Gain (dBi)
			Ant 0	Ant 1		
WIFI-AP Ant 1+Ant 2	2412 ~2462	2	2.27	2.27	Nonsupport	5.28
	5150 ~ 5250 5725 ~ 5850	2	2.83	2.83	Nonsupport	5.84

Note:

Unequal Antenna gains, with equal transmit powers. For Antenna gains given by $G_1, G_2, \dots, G_N$ dBi transmit signals are correlated, then

- Directional gain = $10 \cdot \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2 / N_{ANT}]$ dBi [Note the “20”s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]
- Directional Gain(2.4G) = $10 \cdot \log[(10^{6.22/20} + 10^{3.61/20})^2 / 2] = 8.02$ dBi
- Directional Gain(5G) = $10 \cdot \log[(10^{4.48/20} + 10^{6.15/20})^2 / 2] = 8.37$ dBi

2.5. Device Capabilities

This device contains the following capabilities:

2.4GHz WLAN (DTS)&5GHz WLAN (UNII)&Bluetooth (5.0)

Note: 5GHz (NII) operation is possible in 20MHz, 40MHz and 80MHz channel bandwidths. The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 8MHz, and detector = average per the guidance of Section B)2)b) of KDB 789033 D02v02r01. The RBW and VBW were both greater than $50/T$, where T is the minimum transmission duration, and the number of sweep points across T was greater than 100. The duty cycles are as follows:

Test Mode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor
11A	Ant0	5180	1.39	1.49	0.9329	93.29	0.30
		5200	1.39	1.50	0.9267	92.67	0.33
		5240	1.40	1.50	0.9333	93.33	0.30
		5745	1.39	1.49	0.9329	93.29	0.30
		5785	1.39	1.50	0.9267	92.67	0.33
		5825	1.40	1.50	0.9333	93.33	0.30
11N20SISO	Ant0	5180	1.31	1.41	0.9291	92.91	0.32
		5200	1.30	1.40	0.9286	92.86	0.32
		5240	1.30	1.41	0.9220	92.20	0.35
		5745	1.30	1.40	0.9286	92.86	0.32
		5785	1.30	1.40	0.9286	92.86	0.32
		5825	1.31	1.40	0.9357	93.57	0.29
11AC20SISO	Ant0	5180	1.32	1.42	0.9296	92.96	0.32
		5200	1.32	1.42	0.9296	92.96	0.32
		5240	1.32	1.42	0.9296	92.96	0.32
		5745	1.31	1.41	0.9291	92.91	0.32
		5785	1.32	1.42	0.9296	92.96	0.32
		5825	1.31	1.41	0.9291	92.91	0.32
11AC40SISO	Ant0	5190	0.66	0.76	0.8684	86.84	0.61
		5230	0.66	0.76	0.8684	86.84	0.61
		5755	0.66	0.76	0.8684	86.84	0.61
		5795	0.66	0.76	0.8684	86.84	0.61
11AC80SISO	Ant0	5210	0.32	0.42	0.7619	76.19	1.18
		5775	0.32	0.42	0.7619	76.19	1.18

Test Mode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor
11A	Ant1	5180	1.40	1.50	0.9333	93.33	0.30
	Ant2	5180	1.39	1.50	0.9267	92.67	0.33
	Ant1	5200	1.40	1.49	0.9396	93.96	0.27
	Ant2	5200	1.39	1.49	0.9329	93.29	0.30
	Ant1	5240	1.39	1.49	0.9329	93.29	0.30
	Ant2	5240	1.39	1.49	0.9329	93.29	0.30
	Ant1	5745	1.39	1.49	0.9329	93.29	0.30
	Ant2	5745	1.39	1.49	0.9329	93.29	0.30
	Ant1	5785	1.39	1.50	0.9267	92.67	0.33

	Ant2	5785	1.40	1.50	0.9333	93.33	0.30
	Ant1	5825	1.39	1.49	0.9329	93.29	0.30
	Ant2	5825	1.39	1.49	0.9329	93.29	0.30
11N20SISO	Ant1	5180	1.31	1.41	0.9291	92.91	0.32
	Ant2	5180	1.31	1.41	0.9291	92.91	0.32
	Ant1	5200	1.30	1.40	0.9286	92.86	0.32
	Ant2	5200	1.31	1.41	0.9291	92.91	0.32
	Ant1	5240	1.30	1.40	0.9286	92.86	0.32
	Ant2	5240	1.31	1.40	0.9357	93.57	0.29
	Ant1	5745	1.31	1.41	0.9291	92.91	0.32
	Ant2	5745	1.30	1.40	0.9286	92.86	0.32
	Ant1	5785	1.30	1.40	0.9286	92.86	0.32
	Ant2	5785	1.31	1.41	0.9291	92.91	0.32
	Ant1	5825	1.31	1.40	0.9357	93.57	0.29
	Ant2	5825	1.31	1.40	0.9357	93.57	0.29
11N40SISO	Ant1	5190	0.64	0.74	0.8649	86.49	0.63
	Ant2	5190	0.64	0.74	0.8649	86.49	0.63
	Ant1	5230	0.65	0.75	0.8667	86.67	0.62
	Ant2	5230	0.65	0.75	0.8667	86.67	0.62
	Ant1	5755	0.65	0.75	0.8667	86.67	0.62
	Ant2	5755	0.65	0.74	0.8784	87.84	0.56
	Ant1	5795	0.65	0.75	0.8667	86.67	0.62
	Ant2	5795	0.65	0.75	0.8667	86.67	0.62
11AC20SISO	Ant1	5180	1.32	1.42	0.9296	92.96	0.32
	Ant2	5180	1.31	1.41	0.9291	92.91	0.32
	Ant1	5200	1.32	1.42	0.9296	92.96	0.32
	Ant2	5200	1.32	1.42	0.9296	92.96	0.32
	Ant1	5240	1.32	1.42	0.9296	92.96	0.32
	Ant2	5240	1.31	1.41	0.9291	92.91	0.32
	Ant1	5745	1.31	1.42	0.9225	92.25	0.35
	Ant2	5745	1.32	1.42	0.9296	92.96	0.32
	Ant1	5785	1.31	1.41	0.9291	92.91	0.32
	Ant2	5785	1.31	1.42	0.9225	92.25	0.35
	Ant1	5825	1.32	1.42	0.9296	92.96	0.32
	Ant2	5825	1.31	1.41	0.9291	92.91	0.32
11AC40SISO	Ant1	5190	0.66	0.76	0.8684	86.84	0.61
	Ant2	5190	0.65	0.75	0.8667	86.67	0.62

	Ant1	5230	0.66	0.76	0.8684	86.84	0.61
	Ant2	5230	0.66	0.76	0.8684	86.84	0.61
	Ant1	5755	0.65	0.75	0.8667	86.67	0.62
	Ant2	5755	0.66	0.76	0.8684	86.84	0.61
	Ant1	5795	0.66	0.76	0.8684	86.84	0.61
	Ant2	5795	0.66	0.76	0.8684	86.84	0.61
11AC80SISO	Ant1	5210	0.33	0.43	0.7674	76.74	1.15
	Ant2	5210	0.32	0.42	0.7619	76.19	1.18
	Ant1	5775	0.32	0.42	0.7619	76.19	1.18
	Ant2	5775	0.32	0.42	0.7619	76.19	1.18
11AX20SISO	Ant1	5180	1.02	1.12	0.9107	91.07	0.41
	Ant2	5180	1.02	1.12	0.9107	91.07	0.41
	Ant1	5200	1.02	1.12	0.9107	91.07	0.41
	Ant2	5200	1.02	1.12	0.9107	91.07	0.41
	Ant1	5240	1.02	1.12	0.9107	91.07	0.41
	Ant2	5240	1.02	1.12	0.9107	91.07	0.41
	Ant1	5745	1.02	1.12	0.9107	91.07	0.41
	Ant2	5745	1.02	1.12	0.9107	91.07	0.41
	Ant1	5785	1.03	1.12	0.9196	91.96	0.36
	Ant2	5785	1.02	1.12	0.9107	91.07	0.41
	Ant1	5825	1.02	1.12	0.9107	91.07	0.41
	Ant2	5825	1.02	1.12	0.9107	91.07	0.41
11AX40SISO	Ant1	5190	0.54	0.64	0.8438	84.38	0.74
	Ant2	5190	0.54	0.64	0.8438	84.38	0.74
	Ant1	5230	0.54	0.64	0.8438	84.38	0.74
	Ant2	5230	0.54	0.64	0.8438	84.38	0.74
	Ant1	5755	0.54	0.64	0.8438	84.38	0.74
	Ant2	5755	0.54	0.64	0.8438	84.38	0.74
	Ant1	5795	0.54	0.64	0.8438	84.38	0.74
	Ant2	5795	0.54	0.64	0.8438	84.38	0.74
11AX80SISO	Ant1	5210	0.29	0.39	0.7436	74.36	1.29
	Ant2	5210	0.29	0.39	0.7436	74.36	1.29
	Ant1	5775	0.29	0.39	0.7436	74.36	1.29
	Ant2	5775	0.30	0.39	0.7692	76.92	1.14
11N20MIMO	Ant1	5180	1.31	1.41	0.9291	92.91	0.32
	Ant2	5180	1.31	1.40	0.9357	93.57	0.29
	Ant1	5200	1.31	1.41	0.9291	92.91	0.32

	Ant2	5200	1.31	1.41	0.9291	92.91	0.32
	Ant1	5240	1.31	1.41	0.9291	92.91	0.32
	Ant2	5240	1.31	1.40	0.9357	93.57	0.29
	Ant1	5745	1.31	1.41	0.9291	92.91	0.32
	Ant2	5745	1.31	1.40	0.9357	93.57	0.29
	Ant1	5785	1.31	1.41	0.9291	92.91	0.32
	Ant2	5785	1.31	1.41	0.9291	92.91	0.32
	Ant1	5825	1.30	1.41	0.9220	92.20	0.35
	Ant2	5825	1.30	1.40	0.9286	92.86	0.32
11N40MIMO	Ant1	5190	0.65	0.75	0.8667	86.67	0.62
	Ant2	5190	0.65	0.75	0.8667	86.67	0.62
	Ant1	5230	0.65	0.75	0.8667	86.67	0.62
	Ant2	5230	0.65	0.75	0.8667	86.67	0.62
	Ant1	5755	0.65	0.75	0.8667	86.67	0.62
	Ant2	5755	0.65	0.75	0.8667	86.67	0.62
	Ant1	5795	0.65	0.75	0.8667	86.67	0.62
	Ant2	5795	0.65	0.75	0.8667	86.67	0.62
11AC20MIMO	Ant1	5180	1.32	1.42	0.9296	92.96	0.32
	Ant2	5180	1.31	1.41	0.9291	92.91	0.32
	Ant1	5200	1.31	1.41	0.9291	92.91	0.32
	Ant2	5200	1.32	1.43	0.9231	92.31	0.35
	Ant1	5240	1.31	1.41	0.9291	92.91	0.32
	Ant2	5240	1.32	1.42	0.9296	92.96	0.32
	Ant1	5745	1.31	1.41	0.9291	92.91	0.32
	Ant2	5745	1.32	1.42	0.9296	92.96	0.32
	Ant1	5785	1.31	1.41	0.9291	92.91	0.32
	Ant2	5785	1.31	1.41	0.9291	92.91	0.32
	Ant1	5825	1.32	1.42	0.9296	92.96	0.32
	Ant2	5825	1.31	1.41	0.9291	92.91	0.32
11AC40MIMO	Ant1	5190	0.65	0.75	0.8667	86.67	0.62
	Ant2	5190	0.65	0.75	0.8667	86.67	0.62
	Ant1	5230	0.65	0.75	0.8667	86.67	0.62
	Ant2	5230	0.66	0.76	0.8684	86.84	0.61
	Ant1	5755	0.66	0.76	0.8684	86.84	0.61
	Ant2	5755	0.66	0.76	0.8684	86.84	0.61
	Ant1	5795	0.66	0.76	0.8684	86.84	0.61
	Ant2	5795	0.66	0.75	0.8800	88.00	0.56

11AC80MIMO	Ant1	5210	0.32	0.42	0.7619	76.19	1.18
	Ant2	5210	0.32	0.42	0.7619	76.19	1.18
	Ant1	5775	0.32	0.42	0.7619	76.19	1.18
	Ant2	5775	0.32	0.42	0.7619	76.19	1.18
11AX20MIMO	Ant1	5180	1.02	1.12	0.9107	91.07	0.41
	Ant2	5180	1.02	1.12	0.9107	91.07	0.41
	Ant1	5200	1.02	1.12	0.9107	91.07	0.41
	Ant2	5200	1.02	1.12	0.9107	91.07	0.41
	Ant1	5240	1.02	1.12	0.9107	91.07	0.41
	Ant2	5240	1.03	1.12	0.9196	91.96	0.36
	Ant1	5745	1.03	1.12	0.9196	91.96	0.36
	Ant2	5745	1.02	1.12	0.9107	91.07	0.41
	Ant1	5785	1.02	1.12	0.9107	91.07	0.41
	Ant2	5785	1.02	1.12	0.9107	91.07	0.41
	Ant1	5825	1.02	1.12	0.9107	91.07	0.41
	Ant2	5825	1.02	1.12	0.9107	91.07	0.41
11AX40MIMO	Ant1	5190	0.54	0.64	0.8438	84.38	0.74
	Ant2	5190	0.54	0.64	0.8438	84.38	0.74
	Ant1	5230	0.54	0.64	0.8438	84.38	0.74
	Ant2	5230	0.54	0.64	0.8438	84.38	0.74
	Ant1	5755	0.54	0.64	0.8438	84.38	0.74
	Ant2	5755	0.54	0.64	0.8438	84.38	0.74
	Ant1	5795	0.54	0.64	0.8438	84.38	0.74
	Ant2	5795	0.54	0.64	0.8438	84.38	0.74
11AX80MIMO	Ant1	5210	0.29	0.39	0.7436	74.36	1.29
	Ant2	5210	0.29	0.39	0.7436	74.36	1.29
	Ant1	5775	0.29	0.39	0.7436	74.36	1.29
	Ant2	5775	0.30	0.39	0.7692	76.92	1.14

Test Graphs see Appendix D.

2.6. Test Software

The test utility software used during testing was “wl tool”, Power Parameter Value:

Test Mode	ANT1	ANT2	CDD
A	17	17	13
N	17	17	13
AC	17	17	13
AX	17	17	13

2.7. Test Mode

Test Mode	Mode 1: Transmit by 802.11a Ant 0
	Mode 2: Transmit by 802.11n-HT20 Ant 0
	Mode 3: Transmit by 802.11n-HT40 Ant 0
	Mode 4: Transmit by 802.11ac-VHT20 Ant 0
	Mode 5: Transmit by 802.11ac-VHT40 Ant 0
	Mode 6: Transmit by 802.11ac-VHT80 Ant 0
	Mode 7: Transmit by 802.11a Ant 1
	Mode 8: Transmit by 802.11n-HT20 Ant 1
	Mode 9: Transmit by 802.11n-HT40 Ant 1
	Mode 10: Transmit by 802.11ac-VHT20 Ant 1
	Mode 11: Transmit by 802.11ac-VHT40 Ant 1
	Mode 12: Transmit by 802.11ac-VHT80 Ant 1
	Mode 13: Transmit by 802.11ax-HE20 Ant 1
	Mode 14: Transmit by 802.11ax-HE40 Ant 1
	Mode 15: Transmit by 802.11ax-HE80 Ant 1
	Mode 16: Transmit by 802.11a Ant 2
	Mode 17: Transmit by 802.11n-HT20 Ant 2
	Mode 18: Transmit by 802.11n-HT40 Ant 2
	Mode 19: Transmit by 802.11ac-VHT20 Ant 2
	Mode 20: Transmit by 802.11ac-VHT40 Ant 2
	Mode 21: Transmit by 802.11ac-VHT80 Ant 2
	Mode 22: Transmit by 802.11ax-HE20 Ant 2
	Mode 23: Transmit by 802.11ax-HE40 Ant 2
	Mode 24: Transmit by 802.11ax-HE80 Ant 2
	Mode 25: Transmit by 802.11n-HT20 CDD(HT20 Ant0 transmit simultaneously)
	Mode 26: Transmit by 802.11n-HT40 CDD(HT40 Ant0 transmit simultaneously)

	Mode 27: Transmit by 802.11ac-VHT20 CDD(VHT20 Ant0 transmit simultaneously)
	Mode 28: Transmit by 802.11ac-VHT40 CDD(VHT40 Ant0 transmit simultaneously)
	Mode 29: Transmit by 802.11ac-VHT80 CDD(VHT80 Ant0 transmit simultaneously)
	Mode 30: Transmit by 802.11ax-HE20 CDD
	Mode 31: Transmit by 802.11ax-HE40 CDD
	Mode 32: Transmit by 802.11ax-HE80 CDD

For 802.11ax mode, the min. RU and max. RU are measured, only records the worst case: max. RU.

2.8. Test Configuration

The EUT was tested per the guidance of KDB 789033 D02v02r01. ANSI C63.10-2013 was used to reference the appropriate EUT setup for radiated spurious emissions testing and AC line conducted testing.

2.9. EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and/or no modifications were made during testing.

2.10. Labeling Requirements

Per 2.1074 & 15.19; Docket 95-19

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase.

However, when the device is so small wherein placement of the label with specified statement is not practical, only the FCC ID must be displayed on the device per Section 15.19(a)(5). Please see attachment for FCC ID label and label location.

3. DESCRIPTION OF TEST

3.1. Evaluation Procedure

The measurement procedures described in the American National Standard for Testing Unlicensed Wireless Devices (ANSI C63.10-2013), and the guidance provided in KDB 789033 D02v02r01 were used in the measurement of the EUT.

Deviation from measurement procedure.....None

3.2. AC Line Conducted Emissions

The line-conducted facility is located inside a 9'x4'x3' shielded enclosure. A 1m x 2m wooden table 80cm high is placed 40cm away from the vertical wall and 80cm away from the sidewall of the shielded room. Two 10kHz-30MHz, 50Ω/50uH Line-Impedance Stabilization Networks (LISNs) are bonded to the shielded room floor. Power to the LISNs is filtered by external high-current high-insertion loss power line filters. These filters attenuate ambient signal noise from entering the measurement lines. These filters are also bonded to the shielded enclosure.

The EUT is powered from one LISN and the support equipment is powered from the second LISN. All interconnecting cables more than 1 meter were shortened to a 1 meter length by non-inductive bundling (serpentine fashion) and draped over the back edge of the test table. All cables were at least 40cm above the horizontal reference ground-plane. Power cables for support equipment were routed down to the second LISN while ensuring that that cables were not draped over the second LISN.

Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the receiver and exploratory measurements were made to determine the frequencies producing the maximum emission from the EUT. The receiver was scanned from 150kHz to 30MHz. The detector function was set to peak mode for exploratory measurements while the bandwidth of the analyzer was set to 9kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Each emission was also maximized by varying: power lines, the mode of operation or data exchange speed, or support equipment whichever determined the worst-case emission. Once the worst case emissions have been identified, the one EUT cable configuration/arrangement and mode of operation that produced these emissions are used for final measurements on the same test site. The analyzer is set to CISPR quasi-peak and average detectors with a 9kHz resolution bandwidth for final measurements.

An extension cord was used to connect to a single LISN which powered by EUT. The extension cord was calibrated with LISN, the impedance and insertion loss are compliance with the requirements as stated in ANSI C63.10-2013.

Line conducted emissions test results are shown in Section 7.11.

3.3. Radiated Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. For measurements above 1GHz absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1GHz, the absorbers are removed. An MF Model 210SS turntable is used for radiated measurement. It is a continuously rotatable, remote controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80cm high PVC support structure is placed on top of the turntable.

For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30MHz up to the upper frequency shown in 15.33(b)(1) depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies above 1GHz, linearly polarized double ridge horn antennas were used. For frequencies below 30MHz, a calibrated loop antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up for frequencies below 1GHz was placed on top of the 0.8 meter high, 1 x 1.5 meter table; and test set-up for frequencies 1-40GHz was placed on top of the 1.5 meter high, 1 x 1.5 meter table. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, clock speed, mode of operation or video resolution, if applicable, turntable azimuth, and receive antenna height was noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn antennas. The test setup was configured to the setup that produced the worst case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT was rotated through 360 degrees and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive antenna, whichever produced the worst-case emissions. According to 3dB Beam-Width of horn antenna, the horn antenna should be always directed to the EUT when rising height.

4. ANTENNA REQUIREMENTS

Excerpt from §15.203 of the FCC Rules/Regulations:

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.”

- Use a unique coupling to the intentional radiator.

5. TEST EQUIPMENT CALIBRATION DATE

Conducted Emissions

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR3	FWXGJC-2016-181	1 year	2024/03/14
Two-Line V-Network	R&S	ENV 216	FWXGJC-2016-182	1 year	2023/06/01
Thermohygrometer	Yuhuaze	HTC-1	FWXDA-2016-385	1 year	2024/03/21

Radiated Emission

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Loop Antenna	Schwarzbeck	FMZB 1519B	FWXGJC-2018-015	3 year	2024/08/13
Bi-Log Antenna	R&S	HL562E	FWXGJC-2016-267-06	3 year	2024/03/10
Broadband Horn Antenna	R&S	HF907	FWXGJC-2016-267-07	1 year	2024/03/02
Broadband Horn Antenna	Schwarzbeck	BBHA9170	FWXGJC-2018-016	3 year	2024/06/04
EMI Receiver	R&S	ESR26	FWXGJC-2016-267-01	1 year	2023/11/08
Pre-Amplifier	R&S	SCU-18D	FWXGJC-2016-267-05	1 year	2023/11/17
Pre-Amplifier	R&S	EMC184055 SE	FWXGJC-2018-018	3 year	2025/04/13
Thermohygrometer	Yuhuaze	HTC-1	FWXDA-2016-386	1 year	2023/11/21
Anechoic Chamber	Aimuke	EMCCT-3	FWXGJC-2016-270	1 year	2025/06/07

Conducted Test Equipment

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EXA Signal Analyzer	Keysight	N9010B	FWXGJC-2018-010	1 year	2023/04/13
RF Control Unit	Toncend	JS0806-2	FWXGJC-2018-013	1 year	2023/06/30
Thermohygrometer	Yuhuaze	HTC-1	FWXDA-2016-385	1 year	2023/11/21

Test Software	Manufacturer	Version	Asset No.	Function
EMI Test Software	tonscend	/	/	/

6. MEASUREMENT UNCERTAINTY

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.

AC Conducted Emission Measurement
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 2.05dB
Radiated Emission Measurement
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 30MHz-1GHz: 3.06dB 1GHz-12.75GHz: 4.13dB
Spurious Emissions, Conducted
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 30MHz-1GHz: 1.00 dB 1GHz-26.5GHz: 1.30 dB
Output Power
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 0.60dB
Power Spectrum Density
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 0.80dB
Occupied Bandwidth
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 0.20MHz

7. TEST RESULT

7.1. Summary

FCC Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.407(a)	26dB Bandwidth	N/A	Conducted	Pass	Section 6.2
15.407(e)	6dB Bandwidth	$\geq 500\text{kHz}$		Pass	Section 6.3
15.407(a)(1)(iv), (2), (3)	Maximum Conducted Output Power	$\leq 24\text{ dBm U-NII-1 \& U-NII-2}$ $\leq 30\text{ dBm U-NII-3}$		Pass	Section 6.4
15.407(h)(1)	Transmit Power Control	$\leq 24\text{ dBm}$		Pass	Section 6.5
15.407(a)(1)(iv), (2), (3), (5)	Peak Power Spectral Density	$\leq 11\text{ dBm/MHz U-NII-1 \& U-NII-2}$ $\leq 30\text{ dBm/500kHz U-NII-3}$		Pass	Section 6.6
15.407(g)	Frequency Stability	N/A		Pass	Section 6.7
15.407(b)(1), (2), (3), (4)(i)	Undesirable Emissions	$\leq -27\text{dBm/MHz EIRP}$ Detail see section 7.9	Radiated	Pass	Section 6.8 & 6.9
15.205, 15.209 15.407(b)(5), (6), (7)	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions in restricted bands must meet the radiated limits detailed in 15.209		Pass	
15.207	AC Conducted Emissions 150kHz - 30MHz	< FCC 15.207 limits	Line Conducted	Pass	Section 6.10

Notes:

- 1) All channels, modes, and modulations/data rates were investigated among all UNII bands. The test results shown in the following sections represent the worst case emissions.
- 2) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.

7.2. 26dB Bandwidth Measurement and 99% Bandwidth

7.2.1. Test Limit

N/A

7.2.2. Test Procedure used

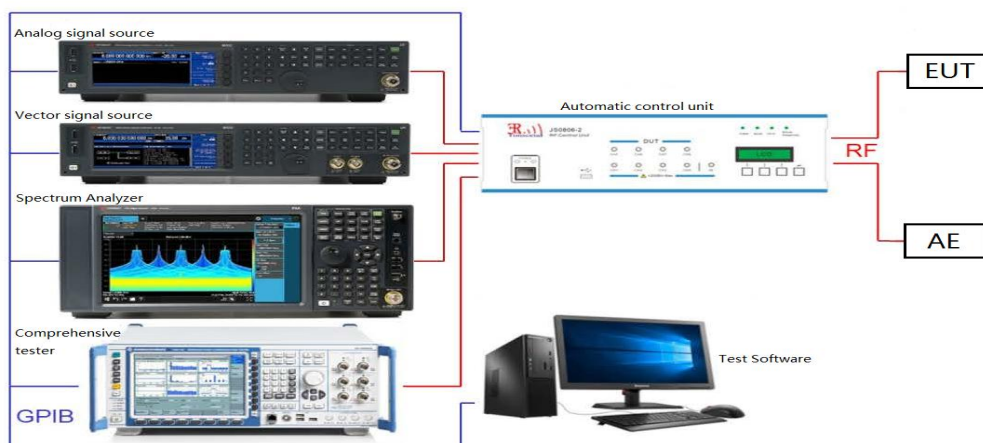
KDB 789033 D02v02r01 – Section C.1

ANSI C63.10-2013 D02v02r01 – Section C

7.2.3. Test Setting

1. The analyzers' automatic bandwidth measurement capability was used to perform the 26dB bandwidth measurement. The "X" dB bandwidth parameter was set to $X = 26$. The automatic bandwidth measurement function also has the capability of simultaneously measuring the 99% occupied bandwidth. The bandwidth measurement was not influenced by any intermediated power nulls in the fundamental emission.
2. RBW = approximately 1% of the emission bandwidth.
3. VBW $\geq 3 \times$ RBW.
4. Detector = Peak.
5. Trace mode = max hold.

7.2.4. Test Setup



7.2.5. Test Result

Test Mode	Antenna	Channel	26db EBW [MHz]	FL[MHz]	FH[MHz]	OCB [MHz]
11A	Ant0	5180	22.440	5168.400	5190.840	17.745
		5200	25.840	5185.960	5211.800	18.150
		5240	26.160	5225.920	5252.080	17.970
		5745	22.880	5734.280	5757.160	17.657
		5785	23.680	5774.600	5798.280	17.888
		5825	22.440	5814.520	5836.960	17.715
11N20SISO	Ant0	5180	29.040	5164.760	5193.800	18.854
		5200	29.240	5188.120	5217.360	18.610
		5240	29.240	5226.720	5255.960	18.838
		5745	26.400	5733.120	5759.520	18.626
		5785	25.480	5774.000	5799.480	18.625
		5825	22.600	5814.440	5837.040	18.478
11AC20SISO	Ant0	5180	27.400	5163.800	5191.200	18.921
		5200	26.520	5186.440	5212.960	18.737
		5240	25.120	5229.160	5254.280	18.635
		5745	27.560	5733.120	5760.680	18.681
		5785	26.800	5773.320	5800.120	18.731
		5825	23.600	5814.440	5838.040	18.522
11AC40SISO	Ant0	5190	64.800	5154.000	5218.800	37.195
		5230	65.520	5199.840	5265.360	37.587
		5755	53.600	5733.080	5786.680	37.121
		5795	63.040	5768.200	5831.240	37.110
11AC80SISO	Ant0	5210	115.840	5135.440	5251.280	76.377
		5775	127.040	5710.520	5837.560	76.481

Test Mode	Antenna	Channel	26db EBW [MHz]	FL[MHz]	FH[MHz]	OCB [MHz]
11A	Ant1	5180	29.840	5163.480	5193.320	18.478
	Ant2	5180	23.600	5169.240	5192.840	17.573
	Ant1	5200	26.720	5185.880	5212.600	18.209
	Ant2	5200	20.920	5189.680	5210.600	17.352
	Ant1	5240	23.920	5229.320	5253.240	17.778
	Ant2	5240	23.680	5229.360	5253.040	17.931
	Ant1	5745	23.680	5734.000	5757.680	17.816
	Ant2	5745	23.720	5734.400	5758.120	17.593

	Ant1	5785	23.560	5774.400	5797.960	17.582
	Ant2	5785	23.440	5774.520	5797.960	17.460
	Ant1	5825	21.200	5814.520	5835.720	17.462
	Ant2	5825	23.880	5814.560	5838.440	17.568
11N20SISO	Ant1	5180	33.280	5161.520	5194.800	19.150
	Ant2	5180	21.560	5169.240	5190.800	18.565
	Ant1	5200	29.560	5184.240	5213.800	18.825
	Ant2	5200	21.440	5189.320	5210.760	18.370
	Ant1	5240	24.520	5228.720	5253.240	18.725
	Ant2	5240	25.840	5227.680	5253.520	18.666
	Ant1	5745	23.600	5733.760	5757.360	18.661
	Ant2	5745	23.880	5734.520	5758.400	18.426
	Ant1	5785	25.680	5774.560	5800.240	18.575
	Ant2	5785	24.640	5774.280	5798.920	18.500
	Ant1	5825	24.000	5814.280	5838.280	18.566
	Ant2	5825	23.800	5814.480	5838.280	18.557
11N40SISO	Ant1	5190	68.000	5152.480	5220.480	37.362
	Ant2	5190	57.920	5163.440	5221.360	36.800
	Ant1	5230	60.240	5202.160	5262.400	37.194
	Ant2	5230	49.120	5209.760	5258.880	36.947
	Ant1	5755	57.440	5730.760	5788.200	37.077
	Ant2	5755	49.200	5735.240	5784.440	36.875
	Ant1	5795	60.080	5772.840	5832.920	36.967
	Ant2	5795	49.520	5775.240	5824.760	36.621
11AC20SISO	Ant1	5180	32.960	5161.200	5194.160	19.198
	Ant2	5180	21.560	5169.160	5190.720	18.571
	Ant1	5200	26.680	5187.160	5213.840	18.732
	Ant2	5200	23.240	5189.120	5212.360	18.526
	Ant1	5240	26.520	5227.160	5253.680	18.716
	Ant2	5240	22.120	5229.280	5251.400	18.618
	Ant1	5745	25.040	5734.280	5759.320	18.734
	Ant2	5745	22.720	5734.400	5757.120	18.524
	Ant1	5785	23.600	5774.360	5797.960	18.642
	Ant2	5785	22.400	5774.440	5796.840	18.474
	Ant1	5825	21.520	5814.240	5835.760	18.434
	Ant2	5825	23.520	5814.400	5837.920	18.540
11AC40SISO	Ant1	5190	61.520	5155.840	5217.360	37.265

	Ant2	5190	50.320	5170.080	5220.400	36.844
	Ant1	5230	71.680	5197.520	5269.200	37.577
	Ant2	5230	47.120	5210.000	5257.120	36.944
	Ant1	5755	57.600	5729.400	5787.000	37.076
	Ant2	5755	51.120	5735.000	5786.120	36.901
	Ant1	5795	55.440	5774.840	5830.280	37.211
	Ant2	5795	47.280	5775.160	5822.440	36.683
11AC80SISO	Ant1	5210	93.600	5157.680	5251.280	76.267
	Ant2	5210	81.760	5169.200	5250.960	75.983
	Ant1	5775	120.160	5709.240	5829.400	76.375
	Ant2	5775	101.600	5732.120	5833.720	75.921
11AX20SISO	Ant1	5180	26.160	5164.680	5190.840	19.230
	Ant2	5180	20.920	5169.360	5190.280	19.092
	Ant1	5200	26.920	5184.120	5211.040	19.234
	Ant2	5200	21.200	5189.400	5210.600	19.003
	Ant1	5240	21.520	5229.400	5250.920	19.121
	Ant2	5240	22.080	5229.640	5251.720	19.156
	Ant1	5745	25.160	5734.040	5759.200	19.192
	Ant2	5745	25.000	5734.440	5759.440	19.082
	Ant1	5785	26.960	5774.560	5801.520	19.172
	Ant2	5785	22.880	5774.560	5797.440	19.105
	Ant1	5825	21.720	5814.440	5836.160	19.087
	Ant2	5825	21.160	5814.400	5835.560	19.091
11AX40SISO	Ant1	5190	73.280	5153.120	5226.400	38.322
	Ant2	5190	45.360	5170.160	5215.520	38.046
	Ant1	5230	74.880	5192.560	5267.440	38.407
	Ant2	5230	57.440	5204.320	5261.760	38.174
	Ant1	5755	74.640	5717.400	5792.040	38.316
	Ant2	5755	57.200	5735.080	5792.280	37.950
	Ant1	5795	63.920	5769.720	5833.640	38.432
	Ant2	5795	56.880	5775.400	5832.280	37.910
11AX80SISO	Ant1	5210	105.120	5155.440	5260.560	78.028
	Ant2	5210	81.760	5169.200	5250.960	77.601
	Ant1	5775	133.760	5708.280	5842.040	77.932
	Ant2	5775	80.800	5734.680	5815.480	77.474
11N20MIMO	Ant1	5180	39.160	5160.080	5199.240	21.730
	Ant2	5180	21.400	5169.400	5190.800	18.449

	Ant1	5200	27.960	5185.360	5213.320	19.062
	Ant2	5200	21.080	5189.560	5210.640	18.346
	Ant1	5240	30.640	5224.640	5255.280	18.873
	Ant2	5240	28.480	5227.480	5255.960	18.820
	Ant1	5745	27.680	5732.680	5760.360	18.848
	Ant2	5745	26.080	5733.760	5759.840	18.617
	Ant1	5785	26.080	5773.400	5799.480	18.693
	Ant2	5785	25.040	5774.560	5799.600	18.519
	Ant1	5825	24.160	5814.400	5838.560	18.568
	Ant2	5825	24.360	5814.280	5838.640	18.548
11N40MIMO	Ant1	5190	61.440	5155.360	5216.800	37.310
	Ant2	5190	44.240	5170.160	5214.400	36.805
	Ant1	5230	63.600	5198.640	5262.240	37.375
	Ant2	5230	49.200	5210.160	5259.360	36.906
	Ant1	5755	58.080	5730.680	5788.760	37.246
	Ant2	5755	46.640	5734.760	5781.400	36.767
	Ant1	5795	62.320	5771.800	5834.120	37.296
	Ant2	5795	51.600	5775.320	5826.920	36.615
11AC20MIMO	Ant1	5180	33.160	5161.720	5194.880	19.178
	Ant2	5180	21.520	5169.400	5190.920	18.487
	Ant1	5200	30.600	5182.400	5213.000	18.933
	Ant2	5200	22.800	5189.320	5212.120	18.377
	Ant1	5240	26.400	5227.920	5254.320	18.850
	Ant2	5240	24.200	5228.960	5253.160	18.806
	Ant1	5745	30.440	5731.480	5761.920	18.821
	Ant2	5745	24.000	5734.360	5758.360	18.624
	Ant1	5785	24.120	5774.480	5798.600	18.636
	Ant2	5785	22.040	5774.400	5796.440	18.462
	Ant1	5825	23.600	5814.480	5838.080	18.621
	Ant2	5825	24.600	5814.560	5839.160	18.568
11AC40MIMO	Ant1	5190	70.880	5155.440	5226.320	37.387
	Ant2	5190	40.720	5170.080	5210.800	36.868
	Ant1	5230	68.320	5194.560	5262.880	37.759
	Ant2	5230	47.360	5210.320	5257.680	36.983
	Ant1	5755	57.600	5728.680	5786.280	37.289
	Ant2	5755	48.960	5735.240	5784.200	36.847
	Ant1	5795	59.600	5771.800	5831.400	37.392

	Ant2	5795	53.840	5775.080	5828.920	36.658
11AC80MIMO	Ant1	5210	103.680	5147.280	5250.960	76.450
	Ant2	5210	80.960	5169.680	5250.640	75.969
	Ant1	5775	135.360	5701.720	5837.080	76.465
	Ant2	5775	87.040	5734.200	5821.240	75.977
11AX20MIMO	Ant1	5180	26.080	5165.800	5191.880	19.270
	Ant2	5180	21.160	5169.520	5190.680	19.098
	Ant1	5200	26.160	5189.400	5215.560	19.106
	Ant2	5200	22.440	5189.560	5212.000	19.025
	Ant1	5240	22.560	5229.560	5252.120	19.084
	Ant2	5240	21.640	5229.480	5251.120	19.165
	Ant1	5745	25.280	5734.280	5759.560	19.209
	Ant2	5745	21.160	5734.280	5755.440	19.159
	Ant1	5785	25.040	5774.520	5799.560	19.214
	Ant2	5785	21.040	5774.640	5795.680	19.075
	Ant1	5825	22.240	5814.560	5836.800	19.093
	Ant2	5825	21.120	5814.560	5835.680	19.088
11AX40MIMO	Ant1	5190	73.920	5152.640	5226.560	38.396
	Ant2	5190	66.560	5161.120	5227.680	38.120
	Ant1	5230	69.280	5193.600	5262.880	38.523
	Ant2	5230	74.800	5192.640	5267.440	38.273
	Ant1	5755	75.680	5717.400	5793.080	38.551
	Ant2	5755	69.360	5723.560	5792.920	38.134
	Ant1	5795	66.400	5768.600	5835.000	38.900
	Ant2	5795	59.920	5772.360	5832.280	38.035
11AX80MIMO	Ant1	5210	101.920	5156.560	5258.480	77.955
	Ant2	5210	81.600	5169.680	5251.280	77.632
	Ant1	5775	145.760	5698.840	5844.600	78.073
	Ant2	5775	80.800	5734.680	5815.480	77.336

Test Graphs see Appendix A1 and Appendix A2.

7.3. 6dB Bandwidth Measurement

7.3.1. Test Limit

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

7.3.2. Test Procedure used

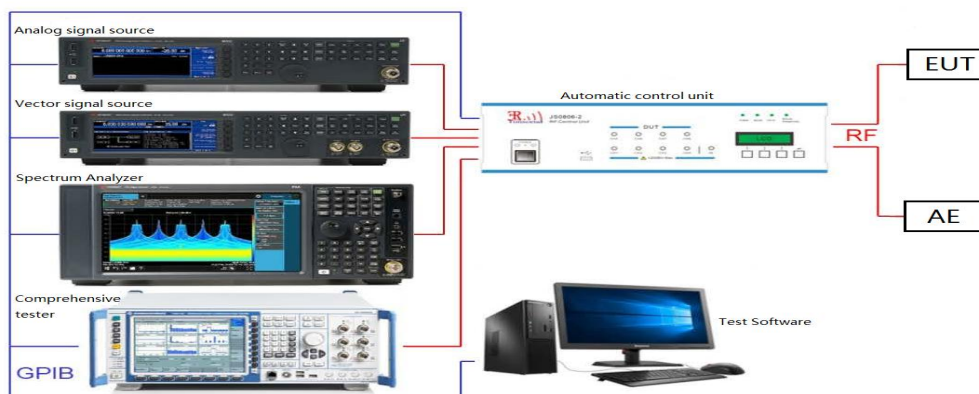
KDB 789033 D02v02r01 – Section C.2

ANSI C63.10-2013 – Section C

7.3.3. Test Setting

1. Set center frequency to the nominal EUT channel center frequency.
2. RBW = 100 kHz.
3. VBW $\geq 3 \times$ RBW.
4. Detector = Peak.
5. Trace mode = max hold.
6. Sweep = auto couple.
7. Allow the trace to stabilize.
8. 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.

7.3.4. Test Setup



7.3.5. Test Result

Test Mode	Antenna	Channel	6db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant0	5745	16.040	5736.880	5752.920	0.5	PASS
		5785	16.320	5776.880	5793.200	0.5	PASS
		5825	16.320	5816.880	5833.200	0.5	PASS
11N20SISO	Ant0	5745	16.560	5736.640	5753.200	0.5	PASS
		5785	17.520	5776.280	5793.800	0.5	PASS
		5825	16.680	5817.120	5833.800	0.5	PASS
11AC20SISO	Ant0	5745	17.040	5736.560	5753.600	0.5	PASS
		5785	16.360	5777.440	5793.800	0.5	PASS
		5825	17.080	5816.520	5833.600	0.5	PASS
11AC40SISO	Ant0	5755	35.360	5737.160	5772.520	0.5	PASS
		5795	35.120	5777.480	5812.600	0.5	PASS
11AC80SISO	Ant0	5775	75.200	5737.400	5812.600	0.5	PASS

Test Mode	Antenna	Channel	6db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	16.320	5736.880	5753.200	0.5	PASS
	Ant2	5745	16.320	5736.880	5753.200	0.5	PASS
	Ant1	5785	16.280	5776.920	5793.200	0.5	PASS
	Ant2	5785	16.320	5776.880	5793.200	0.5	PASS
	Ant1	5825	16.320	5816.880	5833.200	0.5	PASS
	Ant2	5825	16.280	5816.920	5833.200	0.5	PASS
11N20SISO	Ant1	5745	17.600	5736.240	5753.840	0.5	PASS
	Ant2	5745	17.200	5736.640	5753.840	0.5	PASS
	Ant1	5785	17.160	5776.640	5793.800	0.5	PASS
	Ant2	5785	17.520	5776.280	5793.800	0.5	PASS
	Ant1	5825	17.280	5816.520	5833.800	0.5	PASS
	Ant2	5825	16.920	5816.880	5833.800	0.5	PASS
11N40SISO	Ant1	5755	35.280	5737.480	5772.760	0.5	PASS
	Ant2	5755	35.360	5737.560	5772.920	0.5	PASS
	Ant1	5795	35.280	5777.560	5812.840	0.5	PASS
	Ant2	5795	34.960	5777.560	5812.520	0.5	PASS
11AC20SISO	Ant1	5745	17.520	5736.280	5753.800	0.5	PASS
	Ant2	5745	16.840	5736.560	5753.400	0.5	PASS
	Ant1	5785	17.000	5776.640	5793.640	0.5	PASS
	Ant2	5785	17.280	5776.520	5793.800	0.5	PASS

	Ant1	5825	16.800	5816.640	5833.440	0.5	PASS
	Ant2	5825	16.880	5816.920	5833.800	0.5	PASS
11AC40SISO	Ant1	5755	34.640	5737.160	5771.800	0.5	PASS
	Ant2	5755	35.440	5737.480	5772.920	0.5	PASS
	Ant1	5795	33.920	5778.680	5812.600	0.5	PASS
	Ant2	5795	33.760	5778.760	5812.520	0.5	PASS
11AC80SISO	Ant1	5775	75.200	5737.400	5812.600	0.5	PASS
	Ant2	5775	75.200	5737.400	5812.600	0.5	PASS
11AX20SISO	Ant1	5745	18.720	5735.760	5754.480	0.5	PASS
	Ant2	5745	16.720	5736.640	5753.360	0.5	PASS
	Ant1	5785	16.600	5776.800	5793.400	0.5	PASS
	Ant2	5785	18.120	5776.280	5794.400	0.5	PASS
	Ant1	5825	16.680	5817.760	5834.440	0.5	PASS
	Ant2	5825	17.920	5816.160	5834.080	0.5	PASS
11AX40SISO	Ant1	5755	37.360	5736.440	5773.800	0.5	PASS
	Ant2	5755	37.440	5736.440	5773.880	0.5	PASS
	Ant1	5795	37.520	5776.280	5813.800	0.5	PASS
	Ant2	5795	36.880	5776.280	5813.160	0.5	PASS
11AX80SISO	Ant1	5775	77.120	5736.440	5813.560	0.5	PASS
	Ant2	5775	76.480	5736.600	5813.080	0.5	PASS
11N20MIMO	Ant1	5745	17.040	5736.520	5753.560	0.5	PASS
	Ant2	5745	17.280	5736.520	5753.800	0.5	PASS
	Ant1	5785	17.120	5776.680	5793.800	0.5	PASS
	Ant2	5785	17.040	5776.520	5793.560	0.5	PASS
	Ant1	5825	16.880	5816.560	5833.440	0.5	PASS
	Ant2	5825	17.520	5816.280	5833.800	0.5	PASS
11N40MIMO	Ant1	5755	35.280	5737.320	5772.600	0.5	PASS
	Ant2	5755	35.760	5737.160	5772.920	0.5	PASS
	Ant1	5795	35.120	5777.480	5812.600	0.5	PASS
	Ant2	5795	34.880	5777.560	5812.440	0.5	PASS
11AC20MIMO	Ant1	5745	17.560	5736.240	5753.800	0.5	PASS
	Ant2	5745	17.280	5736.520	5753.800	0.5	PASS
	Ant1	5785	15.680	5777.760	5793.440	0.5	PASS
	Ant2	5785	16.000	5777.440	5793.440	0.5	PASS
	Ant1	5825	16.920	5816.880	5833.800	0.5	PASS
	Ant2	5825	16.680	5816.920	5833.600	0.5	PASS
11AC40MIMO	Ant1	5755	35.120	5737.480	5772.600	0.5	PASS

	Ant2	5755	36.000	5737.160	5773.160	0.5	PASS
	Ant1	5795	35.120	5777.480	5812.600	0.5	PASS
	Ant2	5795	35.120	5777.480	5812.600	0.5	PASS
11AC80MIMO	Ant1	5775	75.520	5737.080	5812.600	0.5	PASS
	Ant2	5775	75.040	5737.560	5812.600	0.5	PASS
11AX20MIMO	Ant1	5745	18.280	5735.920	5754.200	0.5	PASS
	Ant2	5745	18.360	5735.760	5754.120	0.5	PASS
	Ant1	5785	18.320	5775.840	5794.160	0.5	PASS
	Ant2	5785	16.360	5777.480	5793.840	0.5	PASS
	Ant1	5825	16.680	5817.000	5833.680	0.5	PASS
	Ant2	5825	15.040	5817.440	5832.480	0.5	PASS
11AX40MIMO	Ant1	5755	37.440	5736.360	5773.800	0.5	PASS
	Ant2	5755	37.280	5736.440	5773.720	0.5	PASS
	Ant1	5795	37.520	5776.280	5813.800	0.5	PASS
	Ant2	5795	36.560	5776.760	5813.320	0.5	PASS
11AX80MIMO	Ant1	5775	77.280	5736.280	5813.560	0.5	PASS
	Ant2	5775	75.840	5736.920	5812.760	0.5	PASS

Test Graphs see Appendix A3.

7.4. Output Power Measurement

7.4.1. Test Limit

For FCC Power Measurement Limit

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.

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 (23.98dBm) or $11\text{dBm} + 10 \log(26\text{dB BW})$.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm).

If transmitting antennas of directional gain greater than 6dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

For IC Power Measurement Limit

For the band 5.15-5.25 GHz, the maximum e.i.r.p. shall not exceed 200 mW (23.01dBm) or $10 + 10 \log_{10} B$, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power shall not exceed 250 mW (23.98dBm) or $11 + 10 \log_{10} B$, dBm, whichever power is less. The maximum e.i.r.p. shall not exceed 1.0 W (30dBm) or $17 + 10 \log_{10} B$, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.

For the 5.725-5.85 GHz band, the maximum conducted output power shall not exceed 1 W.

If transmitting antennas of directional gain greater than 6dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

7.4.2. Test Procedure Used

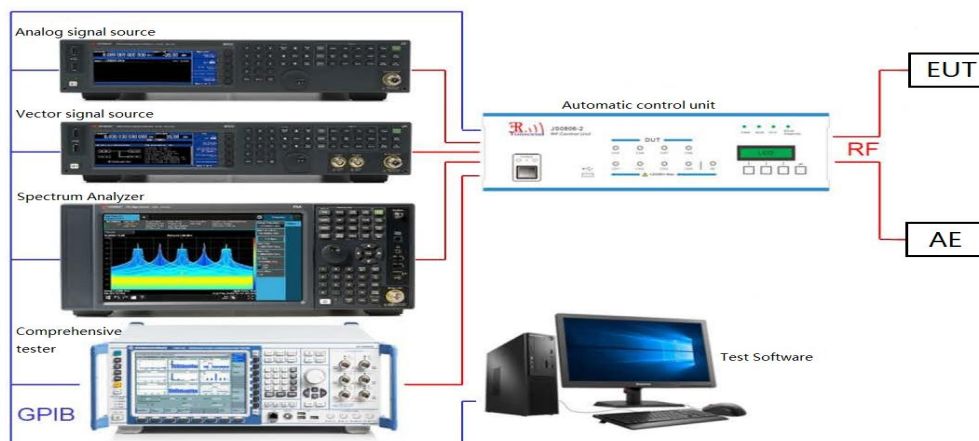
KDB 789033 D02v02r01 - Section E) 3) b) Method PM-G

ANSI C63.10-2013 – Section 12.3.3.2 Method PM-G

7.4.3. Test Setting

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter. The trace was averaged over 100 traces to obtain the final measured average power.

7.4.4. Test Setup



7.4.5. Test Rate Assessment

Power output test was verified over all data rates of each mode shown as below, and then choose the maximum power output (yellow marker) for final test of each channel.

N _{Tx}	802.11a	MCS Index for 802.11n	Data Rate (Mbps)			
			20MHz Bandwidth		40MHz Bandwidth	
			800ns GI	400ns GI	800ns GI	400ns GI
2	6	8	13.0	14.4	27.0	30.0
2	9	9	26.0	28.9	54.0	60.0
2	12	10	39.0	43.3	81.0	90.0
2	18	11	52.0	57.8	108.0	120.0
2	24	12	78.0	86.7	162.0	180.0
2	36	13	104.0	115.6	216.0	240.0
2	48	14	117.0	130.0	243.0	270.0
2	54	15	130.0	144.4	270.0	300.0

N _{Tx}	MCS Index for 802.11ac	Data Rate (Mbps)					
		20MHz Bandwidth		40MHz Bandwidth		80MHz Bandwidth	
		800ns GI	400ns GI	800ns GI	400ns GI	800ns GI	400ns GI
2	0	13.0	14.4	27.0	30.0	58.6	65.0
2	1	26.0	28.8	54.0	60.0	117.0	130.0
2	2	39.0	43.4	81.0	90.0	175.6	195.0
2	3	52.0	57.8	108.0	120.0	234.0	260.0
2	4	78.0	86.6	162.0	180.0	351.0	390.0
2	5	104.0	115.6	216.0	240.0	468.0	520.0
2	6	117.0	130.0	243.0	270.0	526.6	585.0
2	7	130.0	144.4	270.0	300.0	585.0	650.0
2	8	156.0	173.4	324.0	360.0	702.0	780.0
2	9	--	--	360.0	400.0	780.0	866.6

Note: Power output test was verified over all data rates of each mode shown as above, and then choose the maximum power output (yellow marker) for final test of each channel.

7.4.6. Test Result

Test Mode	Antenna	Channel	Power [dBm]	Limit [dBm]	Verdict
11A	Ant0	5180	10.99	≤30.00	PASS
		5200	11.55	≤30.00	PASS
		5240	11.30	≤30.00	PASS
		5745	12.68	≤30.00	PASS
		5785	11.45	≤30.00	PASS
		5825	10.66	≤30.00	PASS
11N20SISO	Ant0	5180	11.33	≤30.00	PASS
		5200	11.45	≤30.00	PASS
		5240	11.48	≤30.00	PASS
		5745	12.47	≤30.00	PASS
		5785	11.36	≤30.00	PASS
		5825	10.37	≤30.00	PASS
11AC20SISO	Ant0	5180	11.30	≤30.00	PASS
		5200	11.52	≤30.00	PASS
		5240	11.25	≤30.00	PASS
		5745	12.93	≤30.00	PASS
		5785	11.27	≤30.00	PASS
		5825	10.41	≤30.00	PASS
11AC40SISO	Ant0	5190	12.29	≤30.00	PASS
		5230	12.29	≤30.00	PASS
		5755	13.11	≤30.00	PASS
		5795	12.11	≤30.00	PASS
11AC80SISO	Ant0	5210	11.35	≤30.00	PASS
		5775	11.80	≤30.00	PASS

Test Mode	Antenna	Channel	Power [dBm]	Limit [dBm]	Verdict
11A	Ant1	5180	11.40	≤30.00	PASS
	Ant2	5180	11.10	≤30.00	PASS
	Ant1	5200	11.74	≤30.00	PASS
	Ant2	5200	11.85	≤30.00	PASS
	Ant1	5240	11.41	≤30.00	PASS
	Ant2	5240	12.71	≤30.00	PASS

	Ant1	5745	13.18	≤30.00	PASS
	Ant2	5745	10.54	≤30.00	PASS
	Ant1	5785	11.63	≤30.00	PASS
	Ant2	5785	9.74	≤30.00	PASS
	Ant1	5825	10.92	≤30.00	PASS
	Ant2	5825	8.29	≤30.00	PASS
11N20SISO	Ant1	5180	11.36	≤30.00	PASS
	Ant2	5180	11.13	≤30.00	PASS
	Ant1	5200	11.57	≤30.00	PASS
	Ant2	5200	11.93	≤30.00	PASS
	Ant1	5240	11.50	≤30.00	PASS
	Ant2	5240	12.42	≤30.00	PASS
	Ant1	5745	12.61	≤30.00	PASS
	Ant2	5745	10.66	≤30.00	PASS
	Ant1	5785	11.26	≤30.00	PASS
	Ant2	5785	9.93	≤30.00	PASS
	Ant1	5825	10.29	≤30.00	PASS
	Ant2	5825	8.19	≤30.00	PASS
11N40SISO	Ant1	5190	12.17	≤30.00	PASS
	Ant2	5190	12.71	≤30.00	PASS
	Ant1	5230	12.11	≤30.00	PASS
	Ant2	5230	13.09	≤30.00	PASS
	Ant1	5755	13.22	≤30.00	PASS
	Ant2	5755	11.14	≤30.00	PASS
	Ant1	5795	11.90	≤30.00	PASS
	Ant2	5795	10.26	≤30.00	PASS
11AC20SISO	Ant1	5180	11.22	≤30.00	PASS
	Ant2	5180	11.14	≤30.00	PASS
	Ant1	5200	11.25	≤30.00	PASS
	Ant2	5200	12.18	≤30.00	PASS
	Ant1	5240	11.29	≤30.00	PASS
	Ant2	5240	12.54	≤30.00	PASS
	Ant1	5745	12.88	≤30.00	PASS
	Ant2	5745	10.95	≤30.00	PASS
	Ant1	5785	11.36	≤30.00	PASS
	Ant2	5785	9.93	≤30.00	PASS
	Ant1	5825	10.43	≤30.00	PASS

	Ant2	5825	8.38	≤30.00	PASS
11AC40SISO	Ant1	5190	12.24	≤30.00	PASS
	Ant2	5190	12.48	≤30.00	PASS
	Ant1	5230	12.40	≤30.00	PASS
	Ant2	5230	13.00	≤30.00	PASS
	Ant1	5755	13.27	≤30.00	PASS
	Ant2	5755	11.05	≤30.00	PASS
	Ant1	5795	12.21	≤30.00	PASS
	Ant2	5795	10.22	≤30.00	PASS
11AC80SISO	Ant1	5210	11.22	≤30.00	PASS
	Ant2	5210	11.82	≤30.00	PASS
	Ant1	5775	11.86	≤30.00	PASS
	Ant2	5775	9.94	≤30.00	PASS
11AX20SISO	Ant1	5180	11.34	≤30.00	PASS
	Ant2	5180	11.28	≤30.00	PASS
	Ant1	5200	11.61	≤30.00	PASS
	Ant2	5200	12.01	≤30.00	PASS
	Ant1	5240	11.60	≤30.00	PASS
	Ant2	5240	12.61	≤30.00	PASS
	Ant1	5745	13.24	≤30.00	PASS
	Ant2	5745	10.80	≤30.00	PASS
	Ant1	5785	11.69	≤30.00	PASS
	Ant2	5785	9.63	≤30.00	PASS
	Ant1	5825	10.88	≤30.00	PASS
	Ant2	5825	8.00	≤30.00	PASS
11AX40SISO	Ant1	5190	12.69	≤30.00	PASS
	Ant2	5190	12.68	≤30.00	PASS
	Ant1	5230	12.63	≤30.00	PASS
	Ant2	5230	13.20	≤30.00	PASS
	Ant1	5755	13.34	≤30.00	PASS
	Ant2	5755	11.06	≤30.00	PASS
	Ant1	5795	12.47	≤30.00	PASS
	Ant2	5795	10.46	≤30.00	PASS
11AX80SISO	Ant1	5210	11.64	≤30.00	PASS
	Ant2	5210	12.65	≤30.00	PASS
	Ant1	5775	12.10	≤30.00	PASS
	Ant2	5775	10.23	≤30.00	PASS

11N20MIMO	Ant1	5180	11.81	≤30.00	PASS
	Ant2	5180	10.95	≤30.00	PASS
	total	5180	14.41	≤30.00	PASS
	Ant1	5200	11.86	≤30.00	PASS
	Ant2	5200	11.75	≤30.00	PASS
	total	5200	14.82	≤30.00	PASS
	Ant1	5240	11.68	≤30.00	PASS
	Ant2	5240	12.72	≤30.00	PASS
	total	5240	15.24	≤30.00	PASS
	Ant1	5745	13.17	≤30.00	PASS
	Ant2	5745	10.79	≤30.00	PASS
	total	5745	15.15	≤30.00	PASS
	Ant1	5785	11.84	≤30.00	PASS
	Ant2	5785	9.91	≤30.00	PASS
	total	5785	13.99	≤30.00	PASS
	Ant1	5825	10.71	≤30.00	PASS
	Ant2	5825	8.49	≤30.00	PASS
	total	5825	12.75	≤30.00	PASS
11N40MIMO	Ant1	5190	12.21	≤30.00	PASS
	Ant2	5190	12.40	≤30.00	PASS
	total	5190	15.32	≤30.00	PASS
	Ant1	5230	12.34	≤30.00	PASS
	Ant2	5230	13.12	≤30.00	PASS
	total	5230	15.76	≤30.00	PASS
	Ant1	5755	13.17	≤30.00	PASS
	Ant2	5755	11.23	≤30.00	PASS
	total	5755	15.32	≤30.00	PASS
	Ant1	5795	11.84	≤30.00	PASS
	Ant2	5795	10.35	≤30.00	PASS
	total	5795	14.17	≤30.00	PASS
11AC20MIMO	Ant1	5180	11.18	≤30.00	PASS
	Ant2	5180	11.09	≤30.00	PASS
	total	5180	14.15	≤30.00	PASS
	Ant1	5200	11.49	≤30.00	PASS
	Ant2	5200	11.95	≤30.00	PASS
	total	5200	14.74	≤30.00	PASS
	Ant1	5240	11.60	≤30.00	PASS

	Ant2	5240	12.76	≤30.00	PASS
	total	5240	15.23	≤30.00	PASS
	Ant1	5745	13.06	≤30.00	PASS
	Ant2	5745	10.80	≤30.00	PASS
	total	5745	15.09	≤30.00	PASS
	Ant1	5785	11.49	≤30.00	PASS
	Ant2	5785	9.70	≤30.00	PASS
	total	5785	13.70	≤30.00	PASS
	Ant1	5825	10.71	≤30.00	PASS
	Ant2	5825	8.49	≤30.00	PASS
	total	5825	12.75	≤30.00	PASS
11AC40MIMO	Ant1	5190	12.27	≤30.00	PASS
	Ant2	5190	12.16	≤30.00	PASS
	total	5190	15.23	≤30.00	PASS
	Ant1	5230	12.34	≤30.00	PASS
	Ant2	5230	12.80	≤30.00	PASS
	total	5230	15.59	≤30.00	PASS
	Ant1	5755	13.24	≤30.00	PASS
	Ant2	5755	11.09	≤30.00	PASS
	total	5755	15.31	≤30.00	PASS
	Ant1	5795	12.29	≤30.00	PASS
	Ant2	5795	10.13	≤30.00	PASS
	total	5795	14.35	≤30.00	PASS
11AC80MIMO	Ant1	5210	11.47	≤30.00	PASS
	Ant2	5210	11.76	≤30.00	PASS
	total	5210	14.63	≤30.00	PASS
	Ant1	5775	11.79	≤30.00	PASS
	Ant2	5775	9.77	≤30.00	PASS
	total	5775	13.91	≤30.00	PASS
11AX20MIMO	Ant1	5180	11.51	≤30.00	PASS
	Ant2	5180	11.43	≤30.00	PASS
	total	5180	14.48	≤30.00	PASS
	Ant1	5200	11.82	≤30.00	PASS
	Ant2	5200	12.51	≤30.00	PASS
	total	5200	15.19	≤30.00	PASS
	Ant1	5240	11.62	≤30.00	PASS
	Ant2	5240	12.66	≤30.00	PASS

	total	5240	15.18	≤30.00	PASS
	Ant1	5745	12.88	≤30.00	PASS
	Ant2	5745	10.83	≤30.00	PASS
	total	5745	14.99	≤30.00	PASS
	Ant1	5785	11.71	≤30.00	PASS
	Ant2	5785	9.71	≤30.00	PASS
	total	5785	13.83	≤30.00	PASS
	Ant1	5825	10.43	≤30.00	PASS
	Ant2	5825	8.53	≤30.00	PASS
	total	5825	12.59	≤30.00	PASS
11AX40MIMO	Ant1	5190	12.70	≤30.00	PASS
	Ant2	5190	12.91	≤30.00	PASS
	total	5190	15.82	≤30.00	PASS
	Ant1	5230	12.48	≤30.00	PASS
	Ant2	5230	13.49	≤30.00	PASS
	total	5230	16.02	≤30.00	PASS
	Ant1	5755	13.56	≤30.00	PASS
	Ant2	5755	11.32	≤30.00	PASS
	total	5755	15.59	≤30.00	PASS
	Ant1	5795	12.38	≤30.00	PASS
	Ant2	5795	10.47	≤30.00	PASS
	total	5795	14.54	≤30.00	PASS
11AX80MIMO	Ant1	5210	11.57	≤30.00	PASS
	Ant2	5210	12.46	≤30.00	PASS
	total	5210	15.05	≤30.00	PASS
	Ant1	5775	12.03	≤30.00	PASS
	Ant2	5775	10.19	≤30.00	PASS
	total	5775	14.22	≤30.00	PASS

Test Graphs see Appendix B.

The Duty Cycle Factor is compensated in the Offset of graph..

7.5. Transmit Power Control

7.5.1. Test Limit

The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm.

7.5.2. Test Procedure Used

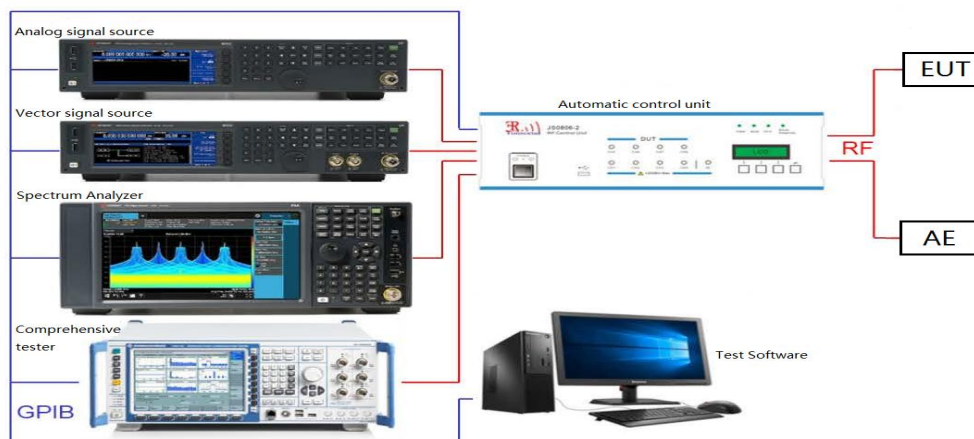
KDB 789033 D02v02r01 - Section E) 3) b) Method PM-G

ANSI C63.10-2013 – Section 12.3.3.2 Method PM-G

7.5.3. Test Setting

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter. The trace was averaged over 100 traces to obtain the final measured average power.

7.5.4. Test Setup



7.5.5. Test Result

A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

7.6. Power Spectral Density Measurement

7.6.1. Test Limit

For FCC

For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

If transmitting antennas of directional gain greater than 6dBi are used, the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

For IC

For the band 5.15-5.25 GHz, the e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

For the 5.725-5.85 GHz band, the power spectral density shall not exceed 30 dBm in any 500 kHz band.

7.6.2. Test Procedure Used

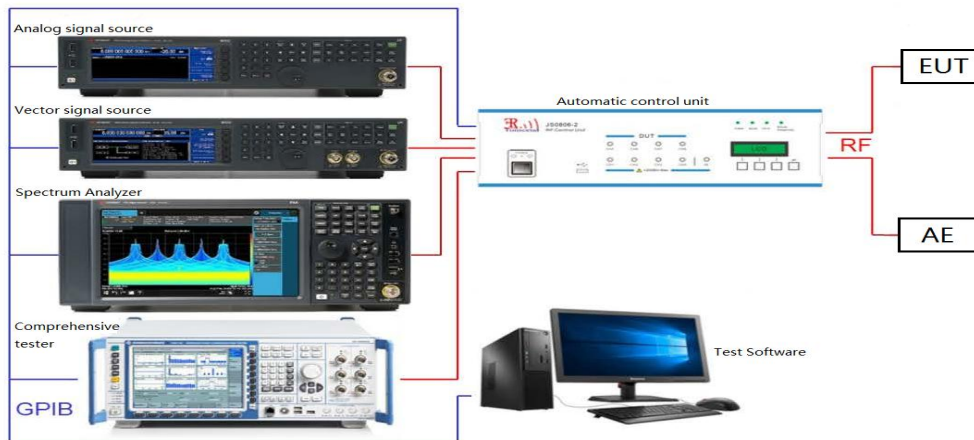
KDB 789033 D02v02r01 - Section F

ANSI C63.10-2013 - Section 12.3.2.2

7.6.3. Test Setting

1. Analyzer was set to the center frequency of the UNII channel under investigation
2. Span was set to encompass the entire 26dB EBW of the signal.
3. RBW = 1MHz
4. VBW = 3MHz
5. Number of sweep points $\geq 2 \times (\text{span} / \text{RBW})$
6. Detector = power averaging (Average)
7. Sweep time = auto
8. Trigger = free run
9. Use the peak search function on the instrument to find the peak of the spectrum and record its value.
10. Add $10 \cdot \log(1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on and off times of the transmission). For example, add $10 \cdot \log(1/0.25) = 6$ dB if the duty cycle is 25 percent.
11. When the measurement bandwidth of Maximum PSD is specified in 500 kHz, add a constant factor $10 \cdot \log(500\text{kHz}/100\text{kHz}) = 7$ dB to the measured result

7.6.4. Test Setup



7.6.5. Test Result

Test Mode	Antenna	Channel	Power [dBm/MHz]	Limit [dBm/MHz]	Verdict
11A	Ant0	5180	2.02	≤17.00	PASS
		5200	2.65	≤17.00	PASS
		5240	2.11	≤17.00	PASS
		5745	0.71	≤30.00	PASS
		5785	-0.1	≤30.00	PASS
		5825	-1.32	≤30.00	PASS
11N20SISO	Ant0	5180	1.58	≤17.00	PASS
		5200	1.85	≤17.00	PASS
		5240	2.35	≤17.00	PASS
		5745	0.45	≤30.00	PASS
		5785	-0.02	≤30.00	PASS
		5825	-1.59	≤30.00	PASS
11AC20SISO	Ant0	5180	1.74	≤17.00	PASS
		5200	1.93	≤17.00	PASS
		5240	2.21	≤17.00	PASS
		5745	0.94	≤30.00	PASS
		5785	-0.98	≤30.00	PASS
		5825	-1.75	≤30.00	PASS
11AC40SISO	Ant0	5190	-0.22	≤17.00	PASS
		5230	0.13	≤17.00	PASS
		5755	-1.64	≤30.00	PASS
		5795	-3.23	≤30.00	PASS
11AC80SISO	Ant0	5210	-2.88	≤17.00	PASS
		5775	-6.07	≤30.00	PASS

Test Mode	Antenna	Channel	Power [dBm/MHz]	Limit [dBm/MHz]	Verdict
11A	Ant1	5180	2.47	≤17.00	PASS
	Ant2	5180	0.2	≤17.00	PASS
	Ant1	5200	2.3	≤17.00	PASS
	Ant2	5200	1.05	≤17.00	PASS
	Ant1	5240	1.63	≤17.00	PASS

	Ant2	5240	1.86	≤ 17.00	PASS
	Ant1	5745	1.21	≤ 30.00	PASS
	Ant2	5745	-3.06	≤ 30.00	PASS
	Ant1	5785	-0.19	≤ 30.00	PASS
	Ant2	5785	-4.17	≤ 30.00	PASS
	Ant1	5825	-1.1	≤ 30.00	PASS
	Ant2	5825	-5.3	≤ 30.00	PASS
11N20SISO	Ant1	5180	1.42	≤ 17.00	PASS
	Ant2	5180	1.47	≤ 17.00	PASS
	Ant1	5200	2.19	≤ 17.00	PASS
	Ant2	5200	3.37	≤ 17.00	PASS
	Ant1	5240	2.18	≤ 17.00	PASS
	Ant2	5240	3.06	≤ 17.00	PASS
	Ant1	5745	0.97	≤ 30.00	PASS
	Ant2	5745	-1.5	≤ 30.00	PASS
	Ant1	5785	-1.24	≤ 30.00	PASS
	Ant2	5785	-1.86	≤ 30.00	PASS
	Ant1	5825	-2.19	≤ 30.00	PASS
	Ant2	5825	-3.78	≤ 30.00	PASS
11N40SISO	Ant1	5190	-0.55	≤ 17.00	PASS
	Ant2	5190	0.62	≤ 17.00	PASS
	Ant1	5230	-0.73	≤ 17.00	PASS
	Ant2	5230	0.73	≤ 17.00	PASS
	Ant1	5755	-1.79	≤ 30.00	PASS
	Ant2	5755	-3.19	≤ 30.00	PASS
	Ant1	5795	-2.9	≤ 30.00	PASS
	Ant2	5795	-4.27	≤ 30.00	PASS
11AC20SISO	Ant1	5180	2.08	≤ 17.00	PASS
	Ant2	5180	1.68	≤ 17.00	PASS
	Ant1	5200	1.91	≤ 17.00	PASS
	Ant2	5200	3.13	≤ 17.00	PASS
	Ant1	5240	1.35	≤ 17.00	PASS
	Ant2	5240	3.36	≤ 17.00	PASS
	Ant1	5745	0.77	≤ 30.00	PASS
	Ant2	5745	-0.71	≤ 30.00	PASS
	Ant1	5785	-0.79	≤ 30.00	PASS
	Ant2	5785	-2.4	≤ 30.00	PASS

	Ant1	5825	-1.39	≤30.00	PASS
	Ant2	5825	-3.67	≤30.00	PASS
11AC40SISO	Ant1	5190	-0.65	≤17.00	PASS
	Ant2	5190	-0.12	≤17.00	PASS
	Ant1	5230	-0.63	≤17.00	PASS
	Ant2	5230	0.76	≤17.00	PASS
	Ant1	5755	-1.62	≤30.00	PASS
	Ant2	5755	-3.56	≤30.00	PASS
	Ant1	5795	-2.84	≤30.00	PASS
	Ant2	5795	-4.84	≤30.00	PASS
11AC80SISO	Ant1	5210	-3.71	≤17.00	PASS
	Ant2	5210	-2.84	≤17.00	PASS
	Ant1	5775	-6.97	≤30.00	PASS
	Ant2	5775	-8.19	≤30.00	PASS
11AX20SISO	Ant1	5180	2.09	≤17.00	PASS
	Ant2	5180	2.79	≤17.00	PASS
	Ant1	5200	2.64	≤17.00	PASS
	Ant2	5200	3.73	≤17.00	PASS
	Ant1	5240	2.65	≤17.00	PASS
	Ant2	5240	3.15	≤17.00	PASS
	Ant1	5745	1.51	≤30.00	PASS
	Ant2	5745	-0.81	≤30.00	PASS
	Ant1	5785	-0.15	≤30.00	PASS
	Ant2	5785	-1.66	≤30.00	PASS
	Ant1	5825	-1.16	≤30.00	PASS
	Ant2	5825	-3.01	≤30.00	PASS
11AX40SISO	Ant1	5190	0.04	≤17.00	PASS
	Ant2	5190	-0.27	≤17.00	PASS
	Ant1	5230	-0.5	≤17.00	PASS
	Ant2	5230	0	≤17.00	PASS
	Ant1	5755	-1.97	≤30.00	PASS
	Ant2	5755	-4.45	≤30.00	PASS
	Ant1	5795	-2.87	≤30.00	PASS
	Ant2	5795	-4.76	≤30.00	PASS
11AX80SISO	Ant1	5210	-4.18	≤17.00	PASS
	Ant2	5210	-3.16	≤17.00	PASS
	Ant1	5775	-6.77	≤30.00	PASS

	Ant2	5775	-8.29	≤30.00	PASS
11N20MIMO	Ant1	5180	0.84	≤17.00	PASS
	Ant2	5180	-3.54	≤17.00	PASS
	total	5180	2.19	≤17.00	PASS
	Ant1	5200	1.68	≤17.00	PASS
	Ant2	5200	-0.31	≤17.00	PASS
	total	5200	3.81	≤17.00	PASS
	Ant1	5240	0.54	≤17.00	PASS
	Ant2	5240	-1.55	≤17.00	PASS
	total	5240	2.63	≤17.00	PASS
	Ant1	5745	0.54	≤30.00	PASS
	Ant2	5745	-3.35	≤30.00	PASS
	total	5745	2.03	≤30.00	PASS
	Ant1	5785	0.13	≤30.00	PASS
	Ant2	5785	-4.49	≤30.00	PASS
	total	5785	1.42	≤30.00	PASS
	Ant1	5825	-1.51	≤30.00	PASS
	Ant2	5825	-5.49	≤30.00	PASS
	total	5825	-0.05	≤30.00	PASS
11N40MIMO	Ant1	5190	-0.72	≤17.00	PASS
	Ant2	5190	-2.16	≤17.00	PASS
	total	5190	1.63	≤17.00	PASS
	Ant1	5230	-0.12	≤17.00	PASS
	Ant2	5230	-1.36	≤17.00	PASS
	total	5230	2.31	≤17.00	PASS
	Ant1	5755	-2.29	≤30.00	PASS
	Ant2	5755	-6.56	≤30.00	PASS
	total	5755	-0.91	≤30.00	PASS
	Ant1	5795	-3.12	≤30.00	PASS
	Ant2	5795	-7.11	≤30.00	PASS
	total	5795	-1.66	≤30.00	PASS
11AC20MIMO	Ant1	5180	0.74	≤17.00	PASS
	Ant2	5180	-0.2	≤17.00	PASS
	total	5180	3.31	≤17.00	PASS
	Ant1	5200	1.12	≤17.00	PASS
	Ant2	5200	-0.85	≤17.00	PASS
	total	5200	3.26	≤17.00	PASS

	Ant1	5240	-0.43	≤ 17.00	PASS
	Ant2	5240	-1.32	≤ 17.00	PASS
	total	5240	2.16	≤ 17.00	PASS
	Ant1	5745	0.84	≤ 30.00	PASS
	Ant2	5745	-3.31	≤ 30.00	PASS
	total	5745	2.25	≤ 30.00	PASS
	Ant1	5785	-0.79	≤ 30.00	PASS
	Ant2	5785	-4.6	≤ 30.00	PASS
	total	5785	0.72	≤ 30.00	PASS
	Ant1	5825	-0.28	≤ 30.00	PASS
	Ant2	5825	-5.53	≤ 30.00	PASS
	total	5825	0.85	≤ 30.00	PASS
11AC40MIMO	Ant1	5190	-0.77	≤ 17.00	PASS
	Ant2	5190	-2.06	≤ 17.00	PASS
	total	5190	1.64	≤ 17.00	PASS
	Ant1	5230	-0.37	≤ 17.00	PASS
	Ant2	5230	-1.32	≤ 17.00	PASS
	total	5230	2.19	≤ 17.00	PASS
	Ant1	5755	-1.76	≤ 30.00	PASS
	Ant2	5755	-6.42	≤ 30.00	PASS
	total	5755	-0.48	≤ 30.00	PASS
	Ant1	5795	-2.66	≤ 30.00	PASS
	Ant2	5795	-6.91	≤ 30.00	PASS
	total	5795	-1.27	≤ 30.00	PASS
11AC80MIMO	Ant1	5210	-4	≤ 17.00	PASS
	Ant2	5210	-5	≤ 17.00	PASS
	total	5210	-1.46	≤ 17.00	PASS
	Ant1	5775	-6.11	≤ 30.00	PASS
	Ant2	5775	-10.33	≤ 30.00	PASS
	total	5775	-4.72	≤ 30.00	PASS
11AX20MIMO	Ant1	5180	0.91	≤ 17.00	PASS
	Ant2	5180	1.01	≤ 17.00	PASS
	total	5180	3.97	≤ 17.00	PASS
	Ant1	5200	0.53	≤ 17.00	PASS
	Ant2	5200	-0.8	≤ 17.00	PASS
	total	5200	2.93	≤ 17.00	PASS
	Ant1	5240	-0.16	≤ 17.00	PASS

	Ant2	5240	0.23	≤ 17.00	PASS
	total	5240	3.05	≤ 17.00	PASS
	Ant1	5745	1.12	≤ 30.00	PASS
	Ant2	5745	-0.95	≤ 30.00	PASS
	total	5745	3.22	≤ 30.00	PASS
	Ant1	5785	0	≤ 30.00	PASS
	Ant2	5785	-2.46	≤ 30.00	PASS
	total	5785	1.95	≤ 30.00	PASS
	Ant1	5825	-1.76	≤ 30.00	PASS
	Ant2	5825	-3.84	≤ 30.00	PASS
	total	5825	0.33	≤ 30.00	PASS
11AX40MIMO	Ant1	5190	0.01	≤ 17.00	PASS
	Ant2	5190	0.15	≤ 17.00	PASS
	total	5190	3.09	≤ 17.00	PASS
	Ant1	5230	-0.66	≤ 17.00	PASS
	Ant2	5230	0.43	≤ 17.00	PASS
	total	5230	2.93	≤ 17.00	PASS
	Ant1	5755	-2.55	≤ 30.00	PASS
	Ant2	5755	-4.63	≤ 30.00	PASS
	total	5755	-0.46	≤ 30.00	PASS
	Ant1	5795	-2.29	≤ 30.00	PASS
	Ant2	5795	-4.76	≤ 30.00	PASS
	total	5795	-0.34	≤ 30.00	PASS
11AX80MIMO	Ant1	5210	-3.91	≤ 17.00	PASS
	Ant2	5210	-2.19	≤ 17.00	PASS
	total	5210	0.04	≤ 17.00	PASS
	Ant1	5775	-6.56	≤ 30.00	PASS
	Ant2	5775	-8.29	≤ 30.00	PASS
	total	5775	-4.33	≤ 30.00	PASS

Test Graphs see Appendix C.

The Result and Limit Unit is dBm/500 kHz in the band 5.725–5.85 GHz, The Factor= $10 \cdot \log(500/300)=2.22$ is compensated in the Offset of graph.

The Duty Cycle Factor is compensated in the Offset of graph.

7.7. Frequency Stability Measurement

7.7.1. Test Limit

Manufactures 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 user's manual.

7.7.2. Test Procedure Used

Frequency Stability Under Temperature Variations:

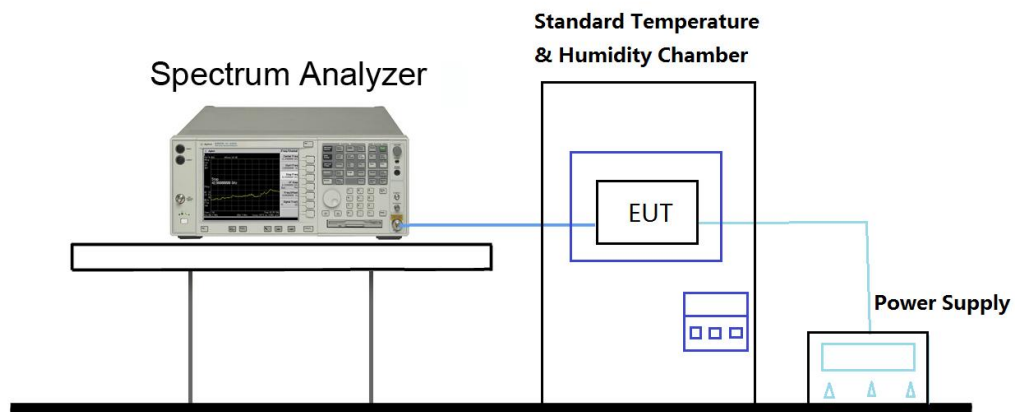
The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to highest. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C decreased per stage until the lowest temperature reached.

Frequency Stability Under Voltage Variations:

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation ($\pm 15\%$) and endpoint, record the maximum frequency change.

7.7.3. Test Setup



7.7.4. Test Result

Voltage								
Test Mode	Antenna	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
11A	Ant0	5180	NV	NT	0.00	0.000000	20	PASS
			LV	NT	20000.00	3.861004	20	PASS
			HV	NT	20000.00	3.861004	20	PASS
		5200	NV	NT	20000.00	3.846154	20	PASS
			LV	NT	40000.00	7.692308	20	PASS
			HV	NT	40000.00	7.692308	20	PASS
		5240	NV	NT	60000.00	11.450382	20	PASS
			LV	NT	40000.00	7.633588	20	PASS
			HV	NT	40000.00	7.633588	20	PASS
		5745	NV	NT	40000.00	6.962576	20	PASS
			LV	NT	20000.00	3.481288	20	PASS
			HV	NT	20000.00	3.481288	20	PASS
		5785	NV	NT	40000.00	6.914434	20	PASS
			LV	NT	40000.00	6.914434	20	PASS
			HV	NT	40000.00	6.914434	20	PASS
		5825	NV	NT	40000.00	6.866953	20	PASS
			LV	NT	40000.00	6.866953	20	PASS
			HV	NT	20000.00	3.433476	20	PASS
11N20SIS O	Ant0	5180	NV	NT	40000.00	7.722008	20	PASS
			LV	NT	20000.00	3.861004	20	PASS
			HV	NT	40000.00	7.722008	20	PASS
		5200	NV	NT	40000.00	7.692308	20	PASS
			LV	NT	40000.00	7.692308	20	PASS
			HV	NT	40000.00	7.692308	20	PASS
		5240	NV	NT	40000.00	7.633588	20	PASS
			LV	NT	60000.00	11.450382	20	PASS
			HV	NT	40000.00	7.633588	20	PASS
		5745	NV	NT	40000.00	6.962576	20	PASS
			LV	NT	40000.00	6.962576	20	PASS
			HV	NT	40000.00	6.962576	20	PASS
		5785	NV	NT	40000.00	6.914434	20	PASS
			LV	NT	20000.00	3.457217	20	PASS
			HV	NT	40000.00	6.914434	20	PASS

		5825	NV	NT	60000.00	10.300429	20	PASS
			LV	NT	40000.00	6.866953	20	PASS
			HV	NT	40000.00	6.866953	20	PASS
11AC20SI SO	Ant0	5180	NV	NT	40000.00	7.722008	20	PASS
			LV	NT	40000.00	7.722008	20	PASS
			HV	NT	20000.00	3.861004	20	PASS
		5200	NV	NT	40000.00	7.692308	20	PASS
			LV	NT	60000.00	11.538462	20	PASS
			HV	NT	40000.00	7.692308	20	PASS
		5240	NV	NT	40000.00	7.633588	20	PASS
			LV	NT	40000.00	7.633588	20	PASS
			HV	NT	40000.00	7.633588	20	PASS
		5745	NV	NT	60000.00	10.443864	20	PASS
			LV	NT	20000.00	3.481288	20	PASS
			HV	NT	20000.00	3.481288	20	PASS
		5785	NV	NT	40000.00	6.914434	20	PASS
			LV	NT	40000.00	6.914434	20	PASS
			HV	NT	40000.00	6.914434	20	PASS
		5825	NV	NT	40000.00	6.866953	20	PASS
			LV	NT	40000.00	6.866953	20	PASS
			HV	NT	40000.00	6.866953	20	PASS
11AC40SI SO	Ant0	5190	NV	NT	40000.00	7.707129	20	PASS
			LV	NT	40000.00	7.707129	20	PASS
			HV	NT	0.00	0.000000	20	PASS
		5230	NV	NT	40000.00	7.648184	20	PASS
			LV	NT	40000.00	7.648184	20	PASS
			HV	NT	40000.00	7.648184	20	PASS
		5755	NV	NT	40000.00	6.950478	20	PASS
			LV	NT	0.00	0.000000	20	PASS
			HV	NT	0.00	0.000000	20	PASS
		5795	NV	NT	40000.00	6.902502	20	PASS
			LV	NT	40000.00	6.902502	20	PASS
			HV	NT	40000.00	6.902502	20	PASS
11AC80SI SO	Ant0	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								
Test Mode	Antenna	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
11A	Ant0	5180	NV	-30	20000.00	3.861004	20	PASS
			NV	-20	20000.00	3.861004	20	PASS
			NV	-10	20000.00	3.861004	20	PASS
			NV	0	20000.00	3.861004	20	PASS
			NV	10	20000.00	3.861004	20	PASS
			NV	20	40000.00	7.722008	20	PASS
			NV	30	40000.00	7.722008	20	PASS
			NV	40	20000.00	3.861004	20	PASS
			NV	50	40000.00	7.722008	20	PASS
		5200	NV	-30	40000.00	7.692308	20	PASS
			NV	-20	40000.00	7.692308	20	PASS
			NV	-10	40000.00	7.692308	20	PASS
			NV	0	20000.00	3.846154	20	PASS
			NV	10	20000.00	3.846154	20	PASS
			NV	20	20000.00	3.846154	20	PASS
			NV	30	20000.00	3.846154	20	PASS
			NV	40	20000.00	3.846154	20	PASS
			NV	50	40000.00	7.692308	20	PASS
		5240	NV	-30	20000.00	3.816794	20	PASS
			NV	-20	20000.00	3.816794	20	PASS
			NV	-10	40000.00	7.633588	20	PASS
			NV	0	20000.00	3.816794	20	PASS
			NV	10	40000.00	7.633588	20	PASS
			NV	20	20000.00	3.816794	20	PASS
			NV	30	40000.00	7.633588	20	PASS
			NV	40	40000.00	7.633588	20	PASS
			NV	50	20000.00	3.816794	20	PASS
		5745	NV	-30	20000.00	3.481288	20	PASS
			NV	-20	40000.00	6.962576	20	PASS
			NV	-10	20000.00	3.481288	20	PASS
			NV	0	40000.00	6.962576	20	PASS

			NV	10	20000.00	3.481288	20	PASS
			NV	20	20000.00	3.481288	20	PASS
			NV	30	40000.00	6.962576	20	PASS
			NV	40	20000.00	3.481288	20	PASS
			NV	50	20000.00	3.481288	20	PASS
		5785	NV	-30	40000.00	6.914434	20	PASS
			NV	-20	20000.00	3.457217	20	PASS
			NV	-10	20000.00	3.457217	20	PASS
			NV	0	40000.00	6.914434	20	PASS
			NV	10	40000.00	6.914434	20	PASS
			NV	20	40000.00	6.914434	20	PASS
			NV	30	40000.00	6.914434	20	PASS
			NV	40	20000.00	3.457217	20	PASS
			NV	50	40000.00	6.914434	20	PASS
		5825	NV	-30	40000.00	6.866953	20	PASS
			NV	-20	20000.00	3.433476	20	PASS
			NV	-10	40000.00	6.866953	20	PASS
			NV	0	40000.00	6.866953	20	PASS
			NV	10	20000.00	3.433476	20	PASS
			NV	20	40000.00	6.866953	20	PASS
			NV	30	40000.00	6.866953	20	PASS
			NV	40	40000.00	6.866953	20	PASS
			NV	50	40000.00	6.866953	20	PASS
		5180	NV	-30	20000.00	3.861004	20	PASS
			NV	-20	40000.00	7.722008	20	PASS
			NV	-10	40000.00	7.722008	20	PASS
			NV	0	40000.00	7.722008	20	PASS
			NV	10	20000.00	3.861004	20	PASS
			NV	20	40000.00	7.722008	20	PASS
			NV	30	40000.00	7.722008	20	PASS
			NV	40	40000.00	7.722008	20	PASS
			NV	50	0.00	0.000000	20	PASS
		5200	NV	-30	40000.00	7.692308	20	PASS
			NV	-20	40000.00	7.692308	20	PASS
			NV	-10	40000.00	7.692308	20	PASS
			NV	0	60000.00	11.538462	20	PASS
			NV	10	40000.00	7.692308	20	PASS

			NV	20	40000.00	7.692308	20	PASS
			NV	30	40000.00	7.692308	20	PASS
			NV	40	60000.00	11.538462	20	PASS
			NV	50	80000.00	15.384615	20	PASS
		5240	NV	-30	40000.00	7.633588	20	PASS
			NV	-20	40000.00	7.633588	20	PASS
			NV	-10	40000.00	7.633588	20	PASS
			NV	0	40000.00	7.633588	20	PASS
			NV	10	40000.00	7.633588	20	PASS
			NV	20	40000.00	7.633588	20	PASS
			NV	30	20000.00	3.816794	20	PASS
			NV	40	40000.00	7.633588	20	PASS
			NV	50	40000.00	7.633588	20	PASS
		5745	NV	-30	40000.00	6.962576	20	PASS
			NV	-20	20000.00	3.481288	20	PASS
			NV	-10	40000.00	6.962576	20	PASS
			NV	0	40000.00	6.962576	20	PASS
			NV	10	40000.00	6.962576	20	PASS
			NV	20	40000.00	6.962576	20	PASS
			NV	30	40000.00	6.962576	20	PASS
			NV	40	40000.00	6.962576	20	PASS
			NV	50	40000.00	6.962576	20	PASS
		5785	NV	-30	40000.00	6.914434	20	PASS
			NV	-20	40000.00	6.914434	20	PASS
			NV	-10	40000.00	6.914434	20	PASS
			NV	0	20000.00	3.457217	20	PASS
			NV	10	40000.00	6.914434	20	PASS
			NV	20	40000.00	6.914434	20	PASS
			NV	30	40000.00	6.914434	20	PASS
			NV	40	40000.00	6.914434	20	PASS
			NV	50	40000.00	6.914434	20	PASS
		5825	NV	-30	40000.00	6.866953	20	PASS
			NV	-20	60000.00	10.300429	20	PASS
			NV	-10	40000.00	6.866953	20	PASS
			NV	0	40000.00	6.866953	20	PASS
			NV	10	40000.00	6.866953	20	PASS
			NV	20	40000.00	6.866953	20	PASS

			NV	30	40000.00	6.866953	20	PASS
			NV	40	40000.00	6.866953	20	PASS
			NV	50	40000.00	6.866953	20	PASS
11AC20SI SO	Ant0	5180	NV	-30	20000.00	3.861004	20	PASS
			NV	-20	20000.00	3.861004	20	PASS
			NV	-10	20000.00	3.861004	20	PASS
			NV	0	40000.00	7.722008	20	PASS
			NV	10	20000.00	3.861004	20	PASS
			NV	20	40000.00	7.722008	20	PASS
			NV	30	40000.00	7.722008	20	PASS
			NV	40	20000.00	3.861004	20	PASS
			NV	50	40000.00	7.722008	20	PASS
		5200	NV	-30	40000.00	7.692308	20	PASS
			NV	-20	60000.00	11.538462	20	PASS
			NV	-10	40000.00	7.692308	20	PASS
			NV	0	40000.00	7.692308	20	PASS
			NV	10	40000.00	7.692308	20	PASS
			NV	20	40000.00	7.692308	20	PASS
			NV	30	40000.00	7.692308	20	PASS
			NV	40	40000.00	7.692308	20	PASS
			NV	50	40000.00	7.692308	20	PASS
		5240	NV	-30	40000.00	7.633588	20	PASS
			NV	-20	40000.00	7.633588	20	PASS
			NV	-10	40000.00	7.633588	20	PASS
			NV	0	40000.00	7.633588	20	PASS
			NV	10	40000.00	7.633588	20	PASS
			NV	20	40000.00	7.633588	20	PASS
			NV	30	40000.00	7.633588	20	PASS
			NV	40	40000.00	7.633588	20	PASS
			NV	50	40000.00	7.633588	20	PASS
		5745	NV	-30	40000.00	6.962576	20	PASS
			NV	-20	60000.00	10.443864	20	PASS
			NV	-10	40000.00	6.962576	20	PASS
			NV	0	40000.00	6.962576	20	PASS
			NV	10	40000.00	6.962576	20	PASS
			NV	20	40000.00	6.962576	20	PASS
			NV	30	40000.00	6.962576	20	PASS

			NV	40	40000.00	6.962576	20	PASS
			NV	50	40000.00	6.962576	20	PASS
		5785	NV	-30	40000.00	6.914434	20	PASS
			NV	-20	40000.00	6.914434	20	PASS
			NV	-10	40000.00	6.914434	20	PASS
			NV	0	40000.00	6.914434	20	PASS
			NV	10	60000.00	10.371651	20	PASS
			NV	20	40000.00	6.914434	20	PASS
			NV	30	20000.00	3.457217	20	PASS
			NV	40	40000.00	6.914434	20	PASS
			NV	50	40000.00	6.914434	20	PASS
		5825	NV	-30	40000.00	6.866953	20	PASS
			NV	-20	40000.00	6.866953	20	PASS
			NV	-10	40000.00	6.866953	20	PASS
			NV	0	60000.00	10.300429	20	PASS
			NV	10	40000.00	6.866953	20	PASS
			NV	20	40000.00	6.866953	20	PASS
			NV	30	40000.00	6.866953	20	PASS
			NV	40	40000.00	6.866953	20	PASS
			NV	50	20000.00	3.433476	20	PASS
11AC40SI SO	Ant0	5190	NV	-30	40000.00	7.707129	20	PASS
			NV	-20	40000.00	7.707129	20	PASS
			NV	-10	40000.00	7.707129	20	PASS
			NV	0	40000.00	7.707129	20	PASS
			NV	10	0.00	0.000000	20	PASS
			NV	20	40000.00	7.707129	20	PASS
			NV	30	40000.00	7.707129	20	PASS
			NV	40	40000.00	7.707129	20	PASS
			NV	50	40000.00	7.707129	20	PASS
		5230	NV	-30	40000.00	7.648184	20	PASS
			NV	-20	40000.00	7.648184	20	PASS
			NV	-10	40000.00	7.648184	20	PASS
			NV	0	40000.00	7.648184	20	PASS
			NV	10	40000.00	7.648184	20	PASS
			NV	20	40000.00	7.648184	20	PASS
			NV	30	40000.00	7.648184	20	PASS
			NV	40	40000.00	7.648184	20	PASS

			NV	50	40000.00	7.648184	20	PASS
			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	6.950478	20	PASS
			NV	30	0.00	0.000000	20	PASS
			NV	40	40000.00	6.950478	20	PASS
			NV	50	80000.00	13.900956	20	PASS
			NV	-30	40000.00	6.902502	20	PASS
			NV	-20	40000.00	6.902502	20	PASS
			NV	-10	40000.00	6.902502	20	PASS
			NV	0	40000.00	6.902502	20	PASS
			NV	10	0.00	0.000000	20	PASS
			NV	20	40000.00	6.902502	20	PASS
			NV	30	0.00	0.000000	20	PASS
			NV	40	40000.00	6.902502	20	PASS
			NV	50	80000.00	13.805004	20	PASS
11AC80SI SO	Ant0	5210	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	80000.00	15.355086	20	PASS
			NV	50	0.00	0.000000	20	PASS
		5775	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

Voltage								
Test Mode	Antenna	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
11A	Ant1	5180	NV	NT	20000.00	3.861004	20	PASS
			LV	NT	20000.00	3.861004	20	PASS
			HV	NT	20000.00	3.861004	20	PASS
	Ant2	5180	NV	NT	40000.00	7.722008	20	PASS
			LV	NT	20000.00	3.861004	20	PASS
			HV	NT	20000.00	3.861004	20	PASS
	Ant1	5200	NV	NT	20000.00	3.846154	20	PASS
			LV	NT	40000.00	7.692308	20	PASS
			HV	NT	40000.00	7.692308	20	PASS
	Ant2	5200	NV	NT	0.00	0.000000	20	PASS
			LV	NT	0.00	0.000000	20	PASS
			HV	NT	0.00	0.000000	20	PASS
	Ant1	5240	NV	NT	40000.00	7.633588	20	PASS
			LV	NT	40000.00	7.633588	20	PASS
			HV	NT	40000.00	7.633588	20	PASS
	Ant2	5240	NV	NT	0.00	0.000000	20	PASS
			LV	NT	0.00	0.000000	20	PASS
			HV	NT	0.00	0.000000	20	PASS
	Ant1	5745	NV	NT	20000.00	3.481288	20	PASS
			LV	NT	40000.00	6.962576	20	PASS
			HV	NT	20000.00	3.481288	20	PASS
	Ant2	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
	Ant1	5785	NV	NT	40000.00	6.914434	20	PASS
			LV	NT	40000.00	6.914434	20	PASS
			HV	NT	40000.00	6.914434	20	PASS
	Ant2	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
	Ant1	5825	NV	NT	40000.00	6.866953	20	PASS
			LV	NT	40000.00	6.866953	20	PASS
			HV	NT	40000.00	6.866953	20	PASS

	Ant2	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
11N20SISO	Ant1	5180	NV	NT	40000.00	7.722008	20	PASS
			LV	NT	40000.00	7.722008	20	PASS
			HV	NT	40000.00	7.722008	20	PASS
	Ant2	5180	NV	NT	20000.00	3.861004	20	PASS
			LV	NT	40000.00	7.722008	20	PASS
			HV	NT	40000.00	7.722008	20	PASS
	Ant1	5200	NV	NT	20000.00	3.846154	20	PASS
			LV	NT	40000.00	7.692308	20	PASS
			HV	NT	40000.00	7.692308	20	PASS
	Ant2	5200	NV	NT	40000.00	7.692308	20	PASS
			LV	NT	40000.00	7.692308	20	PASS
			HV	NT	40000.00	7.692308	20	PASS
	Ant1	5240	NV	NT	40000.00	7.633588	20	PASS
			LV	NT	40000.00	7.633588	20	PASS
			HV	NT	20000.00	3.816794	20	PASS
	Ant2	5240	NV	NT	40000.00	7.633588	20	PASS
			LV	NT	60000.00	11.450382	20	PASS
			HV	NT	40000.00	7.633588	20	PASS
	Ant1	5745	NV	NT	40000.00	6.962576	20	PASS
			LV	NT	40000.00	6.962576	20	PASS
			HV	NT	20000.00	3.481288	20	PASS
	Ant2	5745	NV	NT	40000.00	6.962576	20	PASS
			LV	NT	20000.00	3.481288	20	PASS
			HV	NT	60000.00	10.443864	20	PASS
	Ant1	5785	NV	NT	60000.00	10.371651	20	PASS
			LV	NT	40000.00	6.914434	20	PASS
			HV	NT	40000.00	6.914434	20	PASS
	Ant2	5785	NV	NT	40000.00	6.914434	20	PASS
			LV	NT	40000.00	6.914434	20	PASS
			HV	NT	40000.00	6.914434	20	PASS
	Ant1	5825	NV	NT	40000.00	6.866953	20	PASS
			LV	NT	40000.00	6.866953	20	PASS
			HV	NT	40000.00	6.866953	20	PASS
	Ant2	5825	NV	NT	40000.00	6.866953	20	PASS

			LV	NT	40000.00	6.866953	20	PASS
			HV	NT	60000.00	10.300429	20	PASS
11N40SISO	Ant1	5190	NV	NT	0.00	0.000000	20	PASS
			LV	NT	40000.00	7.707129	20	PASS
			HV	NT	0.00	0.000000	20	PASS
	Ant2	5190	NV	NT	40000.00	7.707129	20	PASS
			LV	NT	40000.00	7.707129	20	PASS
			HV	NT	40000.00	7.707129	20	PASS
	Ant1	5230	NV	NT	40000.00	7.648184	20	PASS
			LV	NT	40000.00	7.648184	20	PASS
			HV	NT	0.00	0.000000	20	PASS
	Ant2	5230	NV	NT	40000.00	7.648184	20	PASS
			LV	NT	40000.00	7.648184	20	PASS
			HV	NT	40000.00	7.648184	20	PASS
	Ant1	5755	NV	NT	40000.00	6.950478	20	PASS
			LV	NT	40000.00	6.950478	20	PASS
			HV	NT	40000.00	6.950478	20	PASS
	Ant2	5755	NV	NT	0.00	0.000000	20	PASS
			LV	NT	40000.00	6.950478	20	PASS
			HV	NT	40000.00	6.950478	20	PASS
	Ant1	5795	NV	NT	80000.00	13.805004	20	PASS
			LV	NT	80000.00	13.805004	20	PASS
			HV	NT	0.00	0.000000	20	PASS
	Ant2	5795	NV	NT	40000.00	6.902502	20	PASS
			LV	NT	0.00	0.000000	20	PASS
			HV	NT	80000.00	13.805004	20	PASS
11AC20SISO	Ant1	5180	NV	NT	40000.00	7.722008	20	PASS
			LV	NT	40000.00	7.722008	20	PASS
			HV	NT	20000.00	3.861004	20	PASS
	Ant2	5180	NV	NT	40000.00	7.722008	20	PASS
			LV	NT	40000.00	7.722008	20	PASS
			HV	NT	40000.00	7.722008	20	PASS
	Ant1	5200	NV	NT	40000.00	7.692308	20	PASS
			LV	NT	40000.00	7.692308	20	PASS
			HV	NT	40000.00	7.692308	20	PASS
	Ant2	5200	NV	NT	60000.00	11.538462	20	PASS
			LV	NT	40000.00	7.692308	20	PASS

	Ant1	5240	HV	NT	20000.00	3.846154	20	PASS
			NV	NT	40000.00	7.633588	20	PASS
			LV	NT	40000.00	7.633588	20	PASS
			HV	NT	40000.00	7.633588	20	PASS
	Ant2	5240	NV	NT	40000.00	7.633588	20	PASS
			LV	NT	20000.00	3.816794	20	PASS
			HV	NT	40000.00	7.633588	20	PASS
	Ant1	5745	NV	NT	40000.00	6.962576	20	PASS
			LV	NT	40000.00	6.962576	20	PASS
			HV	NT	40000.00	6.962576	20	PASS
	Ant2	5745	NV	NT	40000.00	6.962576	20	PASS
			LV	NT	40000.00	6.962576	20	PASS
			HV	NT	40000.00	6.962576	20	PASS
	Ant1	5785	NV	NT	40000.00	6.914434	20	PASS
			LV	NT	40000.00	6.914434	20	PASS
			HV	NT	40000.00	6.914434	20	PASS
	Ant2	5785	NV	NT	60000.00	10.371651	20	PASS
			LV	NT	60000.00	10.371651	20	PASS
			HV	NT	40000.00	6.914434	20	PASS
	Ant1	5825	NV	NT	40000.00	6.866953	20	PASS
			LV	NT	40000.00	6.866953	20	PASS
			HV	NT	40000.00	6.866953	20	PASS
	Ant2	5825	NV	NT	40000.00	6.866953	20	PASS
			LV	NT	40000.00	6.866953	20	PASS
			HV	NT	20000.00	3.433476	20	PASS
11AC40SIS O	Ant1	5190	NV	NT	40000.00	7.707129	20	PASS
			LV	NT	0.00	0.000000	20	PASS
			HV	NT	40000.00	7.707129	20	PASS
	Ant2	5190	NV	NT	0.00	0.000000	20	PASS
			LV	NT	0.00	0.000000	20	PASS
			HV	NT	40000.00	7.707129	20	PASS
	Ant1	5230	NV	NT	0.00	0.000000	20	PASS
			LV	NT	0.00	0.000000	20	PASS
			HV	NT	40000.00	7.648184	20	PASS
	Ant2	5230	NV	NT	0.00	0.000000	20	PASS
			LV	NT	80000.00	15.296367	20	PASS
			HV	NT	40000.00	7.648184	20	PASS

	Ant1	5755	NV	NT	0.00	0.000000	20	PASS
			LV	NT	40000.00	6.950478	20	PASS
			HV	NT	40000.00	6.950478	20	PASS
	Ant2	5755	NV	NT	40000.00	6.950478	20	PASS
			LV	NT	80000.00	13.900956	20	PASS
			HV	NT	80000.00	13.900956	20	PASS
	Ant1	5795	NV	NT	40000.00	6.902502	20	PASS
			LV	NT	0.00	0.000000	20	PASS
			HV	NT	40000.00	6.902502	20	PASS
	Ant2	5795	NV	NT	40000.00	6.902502	20	PASS
			LV	NT	0.00	0.000000	20	PASS
			HV	NT	0.00	0.000000	20	PASS
11AC80SIS O	Ant1	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
	Ant2	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
	Ant1	5775	NV	NT	0.00	0.000000	20	PASS
			LV	NT	0.00	0.000000	20	PASS
			HV	NT	80000.00	13.852814	20	PASS
	Ant2	5775	NV	NT	80000.00	13.852814	20	PASS
			LV	NT	80000.00	13.852814	20	PASS
			HV	NT	0.00	0.000000	20	PASS
11AX20SIS O	Ant1	5180	NV	NT	20000.00	3.861004	20	PASS
			LV	NT	40000.00	7.722008	20	PASS
			HV	NT	40000.00	7.722008	20	PASS
	Ant2	5180	NV	NT	40000.00	7.722008	20	PASS
			LV	NT	40000.00	7.722008	20	PASS
			HV	NT	40000.00	7.722008	20	PASS
	Ant1	5200	NV	NT	40000.00	7.692308	20	PASS
			LV	NT	60000.00	11.538462	20	PASS
			HV	NT	40000.00	7.692308	20	PASS
	Ant2	5200	NV	NT	40000.00	7.692308	20	PASS
			LV	NT	40000.00	7.692308	20	PASS
			HV	NT	40000.00	7.692308	20	PASS
	Ant1	5240	NV	NT	40000.00	7.633588	20	PASS

			LV	NT	40000.00	7.633588	20	PASS
			HV	NT	40000.00	7.633588	20	PASS
	Ant2	5240	NV	NT	40000.00	7.633588	20	PASS
			LV	NT	40000.00	7.633588	20	PASS
			HV	NT	40000.00	7.633588	20	PASS
	Ant1	5745	NV	NT	40000.00	6.962576	20	PASS
			LV	NT	40000.00	6.962576	20	PASS
			HV	NT	40000.00	6.962576	20	PASS
	Ant2	5745	NV	NT	40000.00	6.962576	20	PASS
			LV	NT	40000.00	6.962576	20	PASS
			HV	NT	40000.00	6.962576	20	PASS
	Ant1	5785	NV	NT	40000.00	6.914434	20	PASS
			LV	NT	40000.00	6.914434	20	PASS
			HV	NT	40000.00	6.914434	20	PASS
	Ant2	5785	NV	NT	40000.00	6.914434	20	PASS
			LV	NT	40000.00	6.914434	20	PASS
			HV	NT	40000.00	6.914434	20	PASS
	Ant1	5825	NV	NT	40000.00	6.866953	20	PASS
			LV	NT	40000.00	6.866953	20	PASS
			HV	NT	40000.00	6.866953	20	PASS
	Ant2	5825	NV	NT	40000.00	6.866953	20	PASS
			LV	NT	40000.00	6.866953	20	PASS
			HV	NT	40000.00	6.866953	20	PASS
11AX40SIS O	Ant1	5190	NV	NT	40000.00	7.707129	20	PASS
			LV	NT	40000.00	7.707129	20	PASS
			HV	NT	40000.00	7.707129	20	PASS
	Ant2	5190	NV	NT	40000.00	7.707129	20	PASS
			LV	NT	40000.00	7.707129	20	PASS
			HV	NT	40000.00	7.707129	20	PASS
	Ant1	5230	NV	NT	40000.00	7.648184	20	PASS
			LV	NT	40000.00	7.648184	20	PASS
			HV	NT	40000.00	7.648184	20	PASS
	Ant2	5230	NV	NT	40000.00	7.648184	20	PASS
			LV	NT	40000.00	7.648184	20	PASS
			HV	NT	40000.00	7.648184	20	PASS
	Ant1	5755	NV	NT	40000.00	6.950478	20	PASS
			LV	NT	40000.00	6.950478	20	PASS

	Ant2	5755	HV	NT	0.00	0.000000	20	PASS
			NV	NT	40000.00	6.950478	20	PASS
			LV	NT	40000.00	6.950478	20	PASS
			HV	NT	40000.00	6.950478	20	PASS
	Ant1	5795	NV	NT	40000.00	6.902502	20	PASS
			LV	NT	40000.00	6.902502	20	PASS
			HV	NT	40000.00	6.902502	20	PASS
	Ant2	5795	NV	NT	40000.00	6.902502	20	PASS
			LV	NT	40000.00	6.902502	20	PASS
			HV	NT	40000.00	6.902502	20	PASS
11AX80SIS O	Ant1	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
	Ant2	5210	NV	NT	80000.00	15.355086	20	PASS
			LV	NT	0.00	0.000000	20	PASS
			HV	NT	80000.00	15.355086	20	PASS
	Ant1	5775	NV	NT	0.00	0.000000	20	PASS
			LV	NT	80000.00	13.852814	20	PASS
			HV	NT	80000.00	13.852814	20	PASS
	Ant2	5775	NV	NT	80000.00	13.852814	20	PASS
			LV	NT	80000.00	13.852814	20	PASS
			HV	NT	80000.00	13.852814	20	PASS
11N20MIM O	Ant1	5180	NV	NT	40000.00	7.722008	20	PASS
			LV	NT	20000.00	3.861004	20	PASS
			HV	NT	0.00	0.000000	20	PASS
	Ant2	5180	NV	NT	60000.00	11.583012	20	PASS
			LV	NT	60000.00	11.583012	20	PASS
			HV	NT	60000.00	11.583012	20	PASS
	Ant1	5200	NV	NT	60000.00	11.538462	20	PASS
			LV	NT	40000.00	7.692308	20	PASS
			HV	NT	40000.00	7.692308	20	PASS
	Ant2	5200	NV	NT	60000.00	11.538462	20	PASS
			LV	NT	60000.00	11.538462	20	PASS
			HV	NT	100000.00	19.230769	20	PASS
	Ant1	5240	NV	NT	40000.00	7.633588	20	PASS
			LV	NT	40000.00	7.633588	20	PASS
			HV	NT	40000.00	7.633588	20	PASS

	Ant2	5240	NV	NT	100000.00	19.083969	20	PASS
			LV	NT	60000.00	11.450382	20	PASS
			HV	NT	60000.00	11.450382	20	PASS
	Ant1	5745	NV	NT	20000.00	3.481288	20	PASS
			LV	NT	20000.00	3.481288	20	PASS
			HV	NT	20000.00	3.481288	20	PASS
	Ant2	5745	NV	NT	60000.00	10.443864	20	PASS
			LV	NT	40000.00	6.962576	20	PASS
			HV	NT	60000.00	10.443864	20	PASS
	Ant1	5785	NV	NT	40000.00	6.914434	20	PASS
			LV	NT	40000.00	6.914434	20	PASS
			HV	NT	40000.00	6.914434	20	PASS
	Ant2	5785	NV	NT	100000.00	17.286085	20	PASS
			LV	NT	100000.00	17.286085	20	PASS
			HV	NT	100000.00	17.286085	20	PASS
	Ant1	5825	NV	NT	40000.00	6.866953	20	PASS
			LV	NT	60000.00	10.300429	20	PASS
			HV	NT	40000.00	6.866953	20	PASS
	Ant2	5825	NV	NT	100000.00	17.167382	20	PASS
			LV	NT	100000.00	17.167382	20	PASS
			HV	NT	80000.00	13.733906	20	PASS
11N40MIM O	Ant1	5190	NV	NT	40000.00	7.707129	20	PASS
			LV	NT	0.00	0.000000	20	PASS
			HV	NT	40000.00	7.707129	20	PASS
	Ant2	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
	Ant1	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
	Ant2	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
	Ant1	5755	NV	NT	0.00	0.000000	20	PASS
			LV	NT	40000.00	6.950478	20	PASS
			HV	NT	40000.00	6.950478	20	PASS
	Ant2	5755	NV	NT	40000.00	6.950478	20	PASS

			LV	NT	0.00	0.000000	20	PASS
			HV	NT	0.00	0.000000	20	PASS
			NV	NT	80000.00	13.805004	20	PASS
	Ant1	5795	LV	NT	0.00	0.000000	20	PASS
			HV	NT	40000.00	6.902502	20	PASS
			NV	NT	40000.00	6.902502	20	PASS
	Ant2	5795	LV	NT	40000.00	6.902502	20	PASS
			HV	NT	40000.00	6.902502	20	PASS
			NV	NT	40000.00	6.902502	20	PASS
11AC20MI MO	Ant1	5180	NV	NT	40000.00	7.722008	20	PASS
			LV	NT	0.00	0.000000	20	PASS
			HV	NT	20000.00	3.861004	20	PASS
	Ant2	5180	NV	NT	20000.00	3.861004	20	PASS
			LV	NT	0.00	0.000000	20	PASS
			HV	NT	20000.00	3.861004	20	PASS
	Ant1	5200	NV	NT	20000.00	3.846154	20	PASS
			LV	NT	40000.00	7.692308	20	PASS
			HV	NT	40000.00	7.692308	20	PASS
	Ant2	5200	NV	NT	0.00	0.000000	20	PASS
			LV	NT	0.00	0.000000	20	PASS
			HV	NT	0.00	0.000000	20	PASS
	Ant1	5240	NV	NT	40000.00	7.633588	20	PASS
			LV	NT	40000.00	7.633588	20	PASS
			HV	NT	40000.00	7.633588	20	PASS
	Ant2	5240	NV	NT	-20000.00	-3.816794	20	PASS
			LV	NT	-40000.00	-7.633588	20	PASS
			HV	NT	-20000.00	-3.816794	20	PASS
	Ant1	5745	NV	NT	20000.00	3.481288	20	PASS
			LV	NT	40000.00	6.962576	20	PASS
			HV	NT	40000.00	6.962576	20	PASS
	Ant2	5745	NV	NT	-160000.00	-27.850305	20	FAIL
			LV	NT	-160000.00	-27.850305	20	FAIL
			HV	NT	0.00	0.000000	20	PASS
	Ant1	5785	NV	NT	40000.00	6.914434	20	PASS
			LV	NT	40000.00	6.914434	20	PASS
			HV	NT	40000.00	6.914434	20	PASS
	Ant2	5785	NV	NT	0.00	0.000000	20	PASS
			LV	NT	0.00	0.000000	20	PASS