RF TEST REPORT

SIEMIC
A Bureau Veritas Group Company

Report No.: FCC_IC_RF_SL18032902-ZBR-011_UNII
Supersede Report No.: None

Applicant	:	Zebra Technologies Corporation
Host Product Name	:	Mobile Thermal Printer
Host Model No.	:	ZQ610 and ZQ620
Module Model No.	:	WYSBHVGXG
Test Standard	:	47 CFR 15.407 RSS-247 Issue 2, February 2017
Test Method	:	ANSI C63.10: 2013 RSS-Gen Issue 4, Nov 2014
FCC ID	:	I28MD-FXLAN11AC
IC ID	:	3798B-FXLAN11AC
Dates of test	:	04/19/2018 – 04/24/2018
Issue Date	:	04/30/2018
Test Result	:	☒ Pass ☐ Fail
Equipment complied with the specification [X] Equipment did not comply with the specification [ ]		

This Test Report is Issued Under the Authority of:	
Rachana Khanduri	**Chen Ge**
Test Engineer	Engineer Reviewer
This test report may be reproduced in full only **Test result presented in this test report is applicable to the tested sample only**	

Issued By:
SIEMIC Laboratories
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ilac-MRA
ACCREDITED
TESTING CERT # 2742-01

Laboratory Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.

In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

Accreditations for Conformity Assessment

Country/Region	Accreditation Body	Scope
USA	FCC, A2LA	EMC, RF/Wireless, Telecom
Canada	IC, A2LA, NIST	EMC, RF/Wireless, Telecom
Taiwan	BSMI, NCC, NIST	EMC, RF, Telecom, Safety
Hong Kong	OFTA, NIST	RF/Wireless, Telecom
Australia	NATA, NIST	EMC, RF, Telecom, Safety
Korea	KCC/RRA, NIST	EMI, EMS, RF, Telecom, Safety
Japan	VCCI, JATE, TELEC, RFT	EMI, RF/Wireless, Telecom
Mexico	NOM, COFETEL, Caniety	Safety, EMC, RF/Wireless, Telecom
Europe	A2LA, NIST	EMC, RF, Telecom, Safety
Israel	MOC, NIST	EMC, RF, Telecom, Safety

Accreditations for Product Certifications

Country	Accreditation Body	Scope
USA	FCC TCB, NIST	EMC, RF, Telecom
Canada	IC FCB, NIST	EMC, RF, Telecom
Singapore	iDA, NIST	EMC, RF, Telecom
EU	NB	EMC & Radio Equipment Directive (RED)
Japan	MIC (RCB 208)	RF, Telecom
Hong Kong	OFTA (US002)	RF, Telecom

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1 Report Revision History

Report No.	Report Version	Description	Issue Date
FCC_IC_RF_SL18032902-ZBR-011_UNII	None	Original	04/30/2018

2 Executive Summary

The purpose of this test program was to demonstrate compliance of following product

Company:	Zebra Technologies Corporation
Host Product Name:	Mobile Thermal Printer
Host Model No.:	ZQ610 and ZQ620
Module Model No.	WYSBHVGXG

against the current Stipulated Standards. The specified model product stated above has demonstrated compliance with the Stipulated Standard listed on 1st page.

3 Customer information

Applicant Name	Zebra Technologies Corp.
Applicant Address	3 Overlook Point, Lincolnshire, IL 60069
Manufacturer Name	Zebra Technologies Corp.
Manufacturer Address	3 Overlook Point, Lincolnshire, IL 60069

4 Test site information

Lab performing tests	SIEMIC Laboratories
Lab Address	775 Montague Expressway, Milpitas, CA 95035
FCC Test Site No.	881796
IC Test Site No.	4842D-2
VCCI Test Site No.	A0133

5 Modification

Index	Item	Description	Note
-	-	-	-

6 EUT Information

6.1 EUT Description

Host Product Name	Mobile Thermal Printer
Host Model No.	ZQ610 and ZQ620
Module Model No.	WYSBHVGXG
Trade Name	Zebra
Serial No.	XXZJJ181101055
Input Power	100-240VAC,50/60Hz
Power Adapter Manu/Model	FSP025-DYAA3
Power Adapter SN	N/A
Product Hardware version	N/A
Product Software version	39869
Radio Hardware version	N/A
Radio Software version	15.68.07.p62
Date of EUT received	04/19/2018
Equipment Class/ Category	DTS, UNII
Port/Connectors	USB
Remark	NONE

6.2 Radio Description

Radio Type	802.11a	802.11n-20M	802.11n-40M	802.11ac-80M
Operating Frequency	5180-5240MHz 5260-5320MHz 5500-5700MHz 5745-5825MHz	5180-5240MHz 5260-5320MHz 5500-5700MHz 5745-5825MHz	5190-5230MHz 5270-5310MHz 5510-5670MHz 5755-5795MHz	5210MHz,5290MHz 5530MHz,5690MHz 5775MHz
Modulation	OFDM (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Channel Spacing	20MHz	20MHz	40MHz	80MHz
Number of Channels	24	24	11	5
Antenna Type	Patch Antenna			
Antenna Gain (Peak)	3.19dBi (5GHz)			
Antenna Connector Type	U.FL connector			
Note	2.4GHz and 5GHz Radio does not transmit simultaneously			

7 Supporting Equipment/Software and cabling Description

7.1 Supporting Equipment

Item	Supporting Equipment Description	Model	Serial Number	Manufacturer	Note
1	Laptop	ThinkPad T420s	N/A	Lenovo	-

7.2 Cabling Description

Name	Connection Start		Connection Stop		Length / shielding Info		Note
	From	I/O Port	To	I/O Port	Length (m)	Shielding	
USB	EUT	I/O Port	Laptop	USB	2	Unshielded	-

7.3 Test Software Description

Test Item	Software	Description
RF Testing	Zebra Toolbox	Set the EUT to transmit continuously in diferent test mode

8 Test Summary

Test Item	Test standard		Test Method/Procedure		Pass / Fail
Antenna Requirement	FCC	15.203	FCC	ANSI C63.10 – 2013 558074 D01 DTS Meas. Guidance v03r02	☒ Pass ☐ N/A
	IC	-	IC		
Restricted Band of Operation	FCC	15.205	FCC	ANSI C63.4 – 2014 789033 D02 General UNII Test Procedures New Rules v01r02	☒ Pass ☐ N/A
	IC	RSS 247 (2.2)	IC		
AC Conducted Emissions Voltage	FCC	15.207(a)	FCC	ANSI C63.4 – 2014	☒ Pass* ☐ N/A
	IC	RSS Gen 8.8	IC	RSS Gen Issue 4.0, Nov 2014 (8.8)	

Test Item	Test standard		Test Method/Procedure		Pass / Fail
99% Bandwidth	FCC	-	FCC	-	☒ Pass* ☐ N/A
	IC	RSS 247 (A6.2)	IC	RSS Gen Issue 4.0, Nov 2014 (6.6)	
26 & 6 dB Emission Bandwidth	FCC	15.407 (a) (2)	FCC	789033 D02 General UNII Test Procedures New Rules v01r02	☒ Pass* ☐ N/A
	IC	RSS 247 (A6.2)	IC		
Maximum conducted Output Power	FCC	15.407 (a) (2)	FCC	789033 D02 General UNII Test Procedures New Rules v01r02	☒ *Pass ☐ N/A
	IC	RSS247 (5.4.4)	IC		
Power reduction (Antenna Gain > 6 dBi)	FCC	15.407 (a) (2)	FCC	-	☒ Pass* ☐ N/A
	IC		IC		
Band Edge and Radiated Spurious Emissions	FCC	15.407(b)(2), 15.407(b)(6)	FCC	ANSI C63.4 – 2014 789033 D02 General UNII Test Procedures New Rules v01r02	☒ Pass ☐ N/A
	IC	RSS 247(A6.3)	IC		
Power Spectral Density	FCC	15.407 (a) (2)	FCC	789033 D02 General UNII Test Procedures New Rules v01r02	☒ Pass* ☐ N/A
	IC	RSS 247 (A6.2)	IC		

Remark	1. All measurement uncertainties are not taken into consideration for all presented test result. 2. The applicant shall ensure frequency stability by showing that an emission is maintained within the band of operation under all normal operating conditions as specified in the user's manual. 3. Pass* : Please refer to FCC ID: I28MD-FXLAN11AC test report. 4. ZQ610 host printer was used for testing.The only difference between ZQ610 and ZQ620 is the print head size. The size of enclosures is slightly different in the neighborhood of 2" vs. 3".

9 Measurement Uncertainty

9.1 Conducted Emissions

The test is to measure the conducted emissions to the mains port of the EUT.
Some error sources that can contribute to the total uncertainty:

- Uncertainty of the receiver
- Uncertainty of the LISN
- Uncertainty of cables
- Uncertainty due to the mismatches
- Etc, see the below table for details

Source of Uncertainty	Value (dB)	Probability Distribution	Division	Sensitivity Coefficient	Expanded Uncertainty
Receiver Reading	0.12	Rectangular	1.732	1	0.069284
Cable Insertion Loss	0.21	Normal	2	1	0.105
Filter Insertion Loss	0.25	Normal	2	1	0.125
LISN Insertion Loss	0.40	Normal	2	1	0.20
Receiver CW accuracy	0.5	Rectangular	1.732	1	0.2886836
Pulse Amplitude Response	1.5	Rectangular	1.732	1	0.86605081
PRF Response	1.5	Rectangular	1.732	1	0.86605081
Mismatch LISN - Receiver	0.25	U-Shape	1.414	1	0.1768033
LISN Impedance	2.5	Triangular	2.449	1	1.0208248
Combined Standard Uncertainty					1.928133
Expanded Uncertainty (K=2)					**3.856266**

The total derived measurement uncertainty is +/- 3.86 dB.

9.2 Radiated Emissions (30MHz to 1GHz)

The test is to measure the radiated emissions of the EUT.
Some error sources that can contribute to the total uncertainty:

- Uncertainty of the receiver
- Uncertainty of the antenna
- Uncertainty of cables
- Uncertainty due to the mismatches
- NSA Calibration
- Etc., details see the below table

Source of Uncertainty	Value (dB)	Probability Distribution	Division	Sensitivity Coefficient	Expanded Uncertainty
Receiver Reading	0.12	Rectangular	1.732	1	0.069284
Cable Insertion Loss	0.21	Normal	2	1	0.105
Filter Insertion Loss	0.25	Normal	2	1	0.125
Antenna Factor	0.65	Normal	2	1	0.325
Receiver CW accuracy	0.5	Rectangular	1.732	1	0.2886836
Pulse Amplitude Response	1.5	Rectangular	1.732	1	0.86605081
PRF Response	1.5	Rectangular	1.732	1	0.86605081
Mismatch Filter - Receiver	0.25	U-Shape	1.414	1	0.1768033
NSA Calibration	4.0	U-Shape	1.414	1	2.8288543
Combined Standard Uncertainty					3.0059131
Expanded Uncertainty (K=2)					**6.0118262**

The total derived measurement uncertainty is +/- 6.00 dB.

9.3 Radiated Emissions (1GHz to 40GHz)

The test is to measure the radiated emissions of the EUT.

Some error sources that can contribute to the total uncertainty:
- Uncertainty of the receiver
- Uncertainty of the antenna
- Uncertainty of cables
- Uncertainty due to the mismatches
- VSWR Calibration
- Etc., details see the below table

Source of Uncertainty	Value (dB)	Probability Distribution	Division	Sensitivity Coefficient	Expanded Uncertainty
Receiver Reading	0.12	Rectangular	1.732	1	0.0692840
Cable Insertion Loss	0.21	Normal	2	1	0.1050000
Filter Insertion Loss	0.25	Normal	2	1	0.1250000
Antenna Factor	0.65	Normal	2	1	0.3250000
Receiver CW accuracy	0.5	Rectangular	1.732	1	0.2886836
Pulse Amplitude Response	1.5	Rectangular	1.732	1	0.8660508
PRF Response	1.5	Rectangular	1.732	1	0.8660508
Mismatch Filter - Receiver	0.25	U-Shape	1.414	1	0.1768033
VSWR Calibration	2.0	U-Shape	1.414	1	1.4144272
Combined Standard Uncertainty					4.2363
Expanded Uncertainty (K=2)					**8.4726**

The total derived measurement uncertainty is +/- 8.47 dB.

9.4 RF conducted measurement

The test is to measure the RF output power from the EUT.

Some error sources that can contribute to the total uncertainty:

- Uncertainty of the Reference Level Uncertainty
- Uncertainty of variable attenuators
- Uncertainty of cables
- Uncertainty due to the mismatches

Source of Uncertainty	Value (dB)	Probability Distribution	Division	Sensitivity Coefficient	Expanded Uncertainty
Reference Level	0.12	Rectangular	1.732	1	0.069284
Cable Insertion Loss	0.21	Normal	2	1	0.105
Attenuator	0.25	Normal	2	1	0.125
Mismatch	0.25	U-Shape	1.414	1	0.1768033
Combined Standard Uncertainty					0.476087
Expanded Uncertainty (K=2)					**0.952174**

The total derived measurement uncertainty is +/- 0.95 dB.

10 Measurements, Examination and Derived Results

10.1 Antenna Requirement

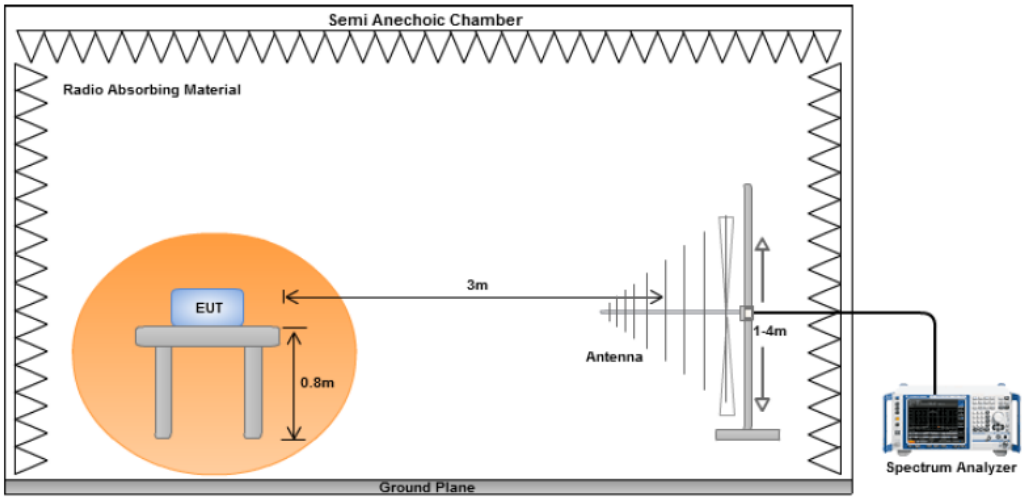
Spec	Requirement	Applicable
§15.203	An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. Antenna requirement must meet at least one of the following: a) Antenna must be permanently attached to the device. b) The antenna must use a unique type of connector to attach to the device. c) Device must be professionally installed. The installer shall be responsible for ensuring that the correct antenna is employed by the device.	☒
Remark	The EUT uses a u.fl connector for antenna connection which meet the requirement.	
Result	☒ PASS ☐ FAIL	

10.2 Radiated Emissions below 1GHz

Requirement(s):

Spec	Requirement	Applicable
47CFR§ 15.407(b) 15.209 (a) RSS Gen	Except higher limit as specified elsewhere in other section, the emissions from the low-power radio-frequency devices shall not exceed the field strength levels specified in the following table and the level of any unwanted emissions shall not exceed the level of the fundamental emission. The tighter limit applies at the band edges	☒

Frequency range (MHz)	Field Strength (uV/m)
30 – 88	100
88 – 216	150
216 960	200
Above 960	500

Test Setup	
Procedure	1. The EUT was switched on and allowed to warm up to its normal operating condition. 2. The test was carried out at the selected frequency points obtained from the EUT characterisation. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner: a. Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen. b. The EUT was then rotated to the direction that gave the maximum emission. c. Finally, the antenna height was adjusted to the height that gave the maximum emission. 3. A Quasi-peak measurement was then made for that frequency point. 4. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.
Remark	The EUT was scanned up to 1GHz. Both horizontal and vertical polarities were investigated. The results show only the worst case.
Result	☒ Pass ☐ Fail

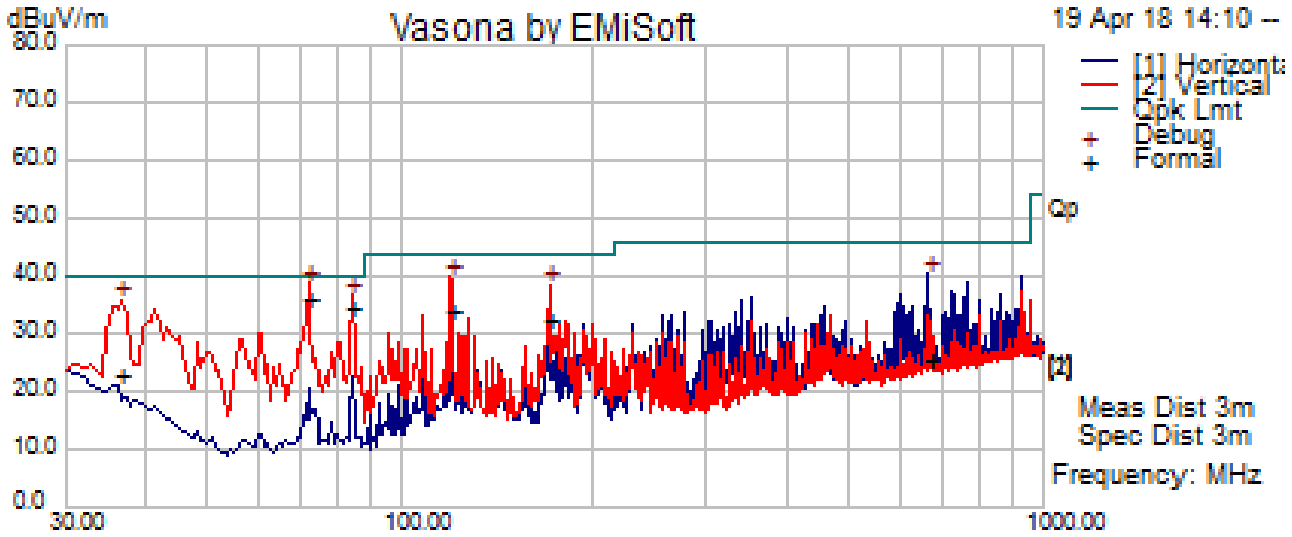
Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test was done by Rachana Khanduri at 10m chamber.

Radiated Emission Test Results (Below 1GHz)

Test specification	Below 1GHz			
Environmental Conditions:	Temp (°C):	23	Result	Pass
	Humidity (%)	46		
	Atmospheric (mbar):	1017		
Mains Power:	120VAC, 60Hz			
Tested by:	Rachana Khanduri			
Test Date:	04/19/2018			
Remarks:	802.11ac-5210			



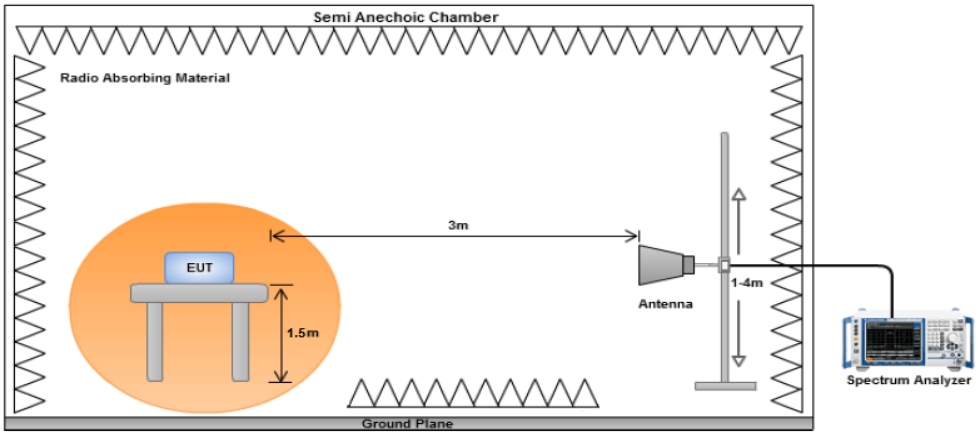
Quasi Max Measurement

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
36.51	30.49	11.23	-18.60	23.12	Quasi Max	V	101.00	293.00	40.00	-16.88	Pass
72.01	52.54	11.60	-27.69	36.45	Quasi Max	V	119.00	294.00	40.00	-3.55	Pass
84.02	50.91	11.72	-28.02	34.61	Quasi Max	V	110.00	144.00	40.00	-5.39	Pass
119.97	44.96	12.07	-22.87	34.16	Quasi Max	V	114.00	116.00	43.50	-9.34	Pass
170.10	44.33	12.35	-24.15	32.53	Quasi Max	V	104.00	328.00	43.50	-10.97	Pass
665.12	27.19	15.03	-16.73	25.48	Quasi Max	H	110.00	238.00	46.00	-20.52	Pass

Note: Both horizontal and vertical polarities were investigated. The results above show only the worst case.

10.3 Radiated Spurious Emissions above 1GHz

Requirement(s):

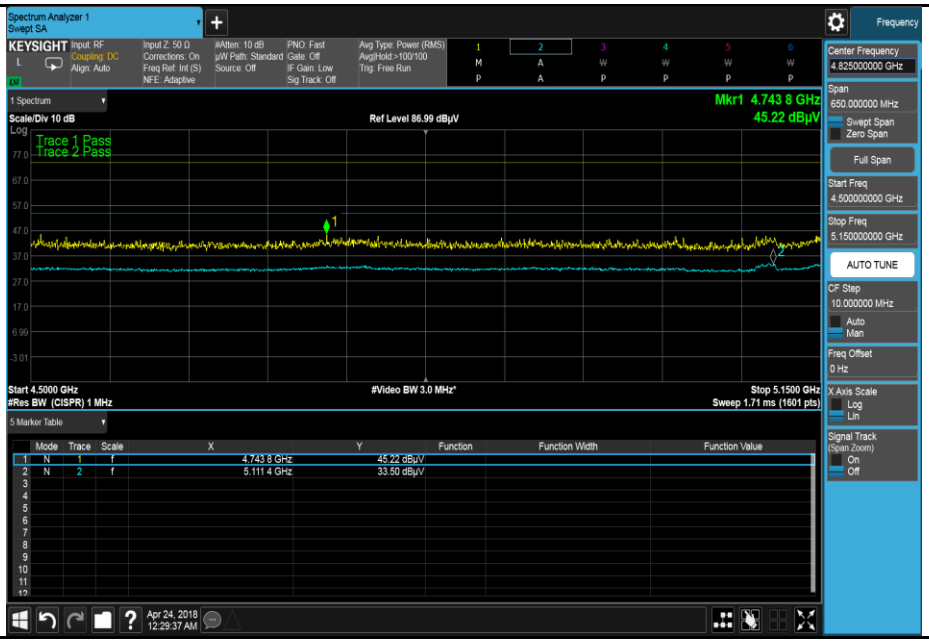
Spec	Item	Requirement	Applicable
47CFR§ 15.407(b)(2), 15.407(b)(6) RSS 247 Issue 2, 2017	(1)	For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.	☒
	(2)	For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15-5.25 GHz band.	☒
	(3)	For transmitters operating in the 5.47-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of −27 dBm/MHz.	☒
	(4)	For transmitters operating in the 5.725-5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27 dBm/MHz.	☒
	(5)	Restricted band, emission must also comply with the radiated emission limits specified in 15.209	☒
Test Setup			
Procedure	1. The EUT was switched on and allowed to warm up to its normal operating condition. 2. The test was carried out at the selected frequency points obtained from the EUT characterisation. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner: a. Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen. b. The EUT was then rotated to the direction that gave the maximum emission. c. Finally, the antenna height was adjusted to the height that gave the maximum emission. 3. An average measurement was then made for that frequency point. 4. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.		
Remark	The EUT was scanned up to 40GHz. Both horizontal and vertical polarities were investigated. The results show only the worst case.		
Result	☒ Pass ☐ Fail		

Test Data ☐ Yes (See below) ☒ N/A

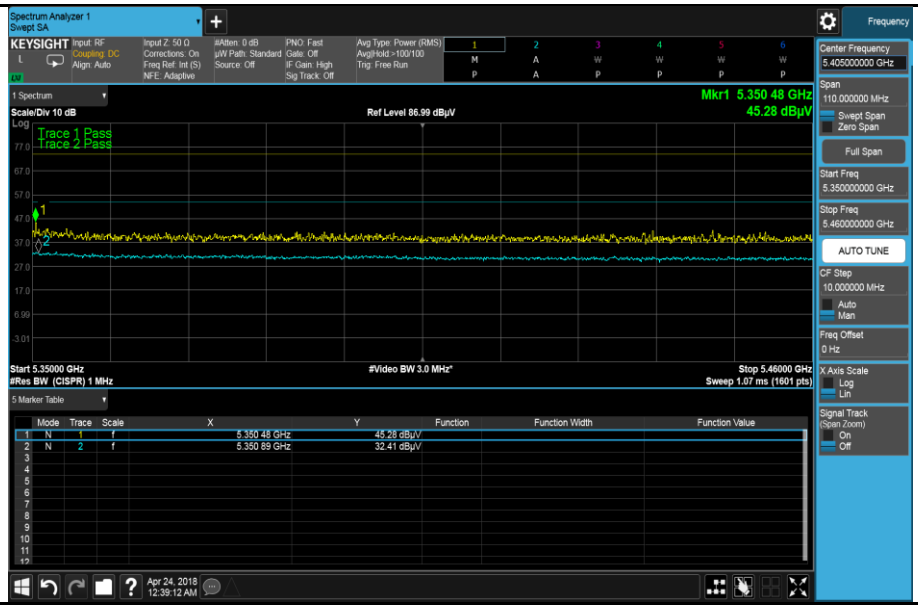
Test Plot ☒ Yes (See below) ☐ N/A

Test was done by Rachana Khanduri at 10m chamber.

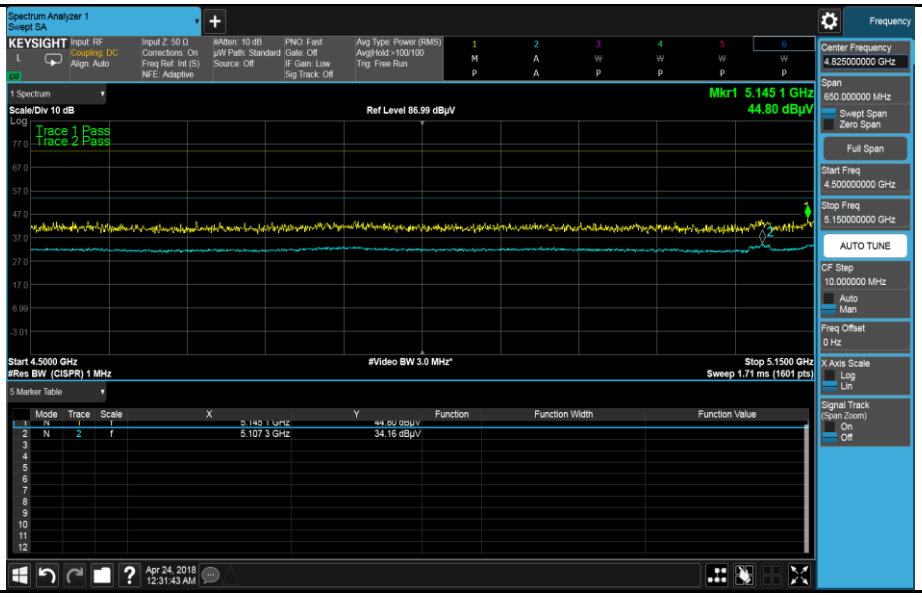
Restricted Band Measurement Plots:



802.11a-5180MHz



802.11a-5320MHz



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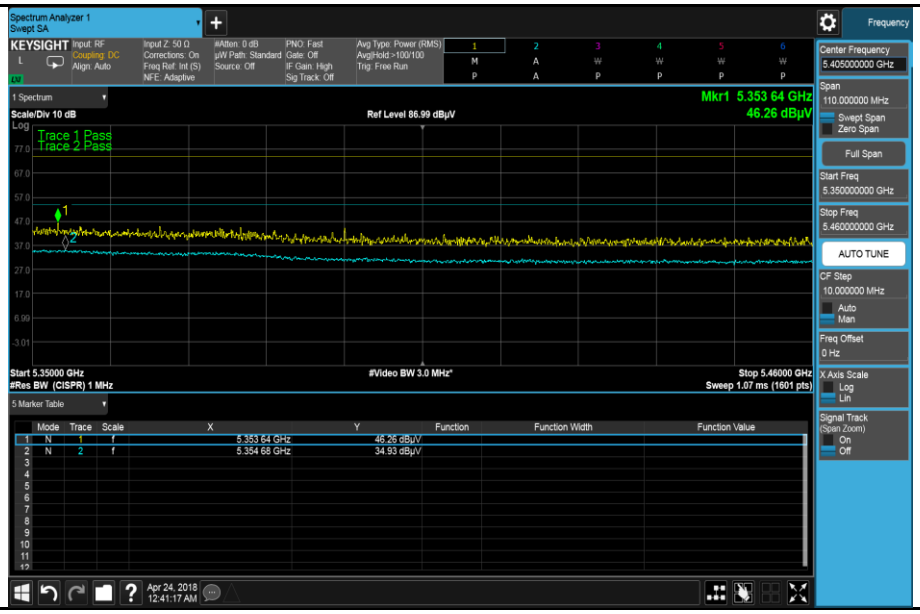

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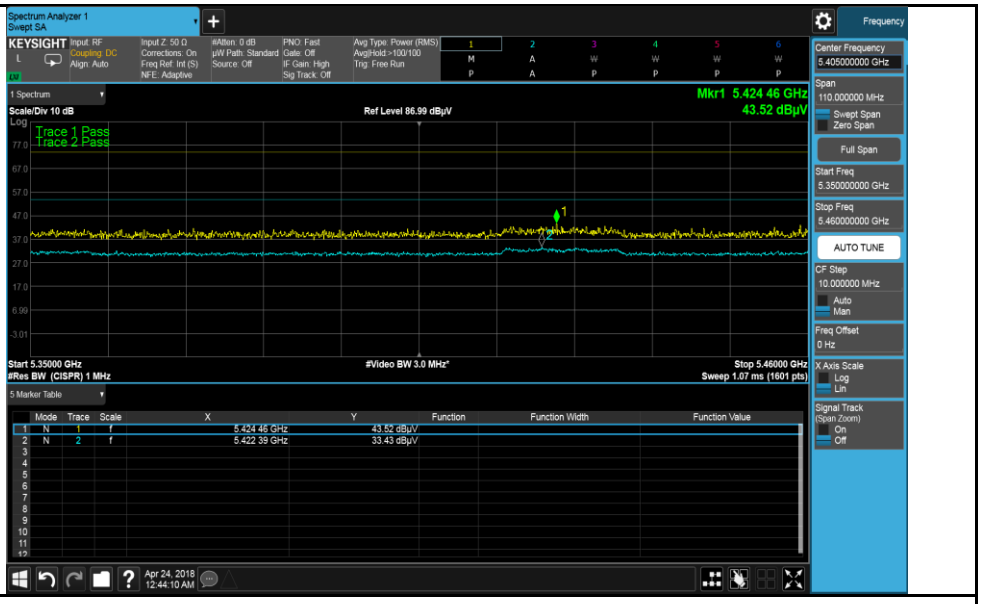
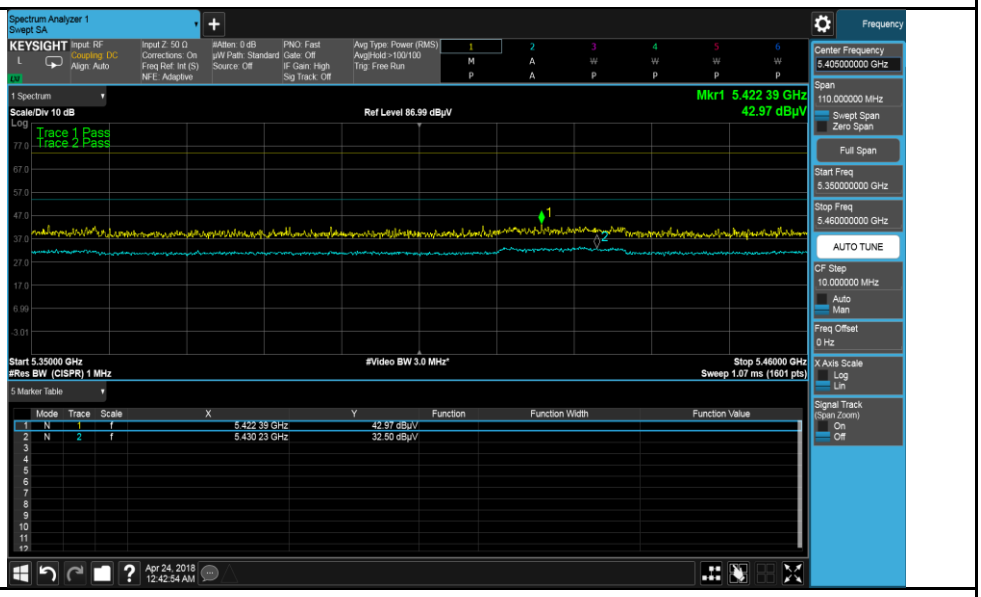
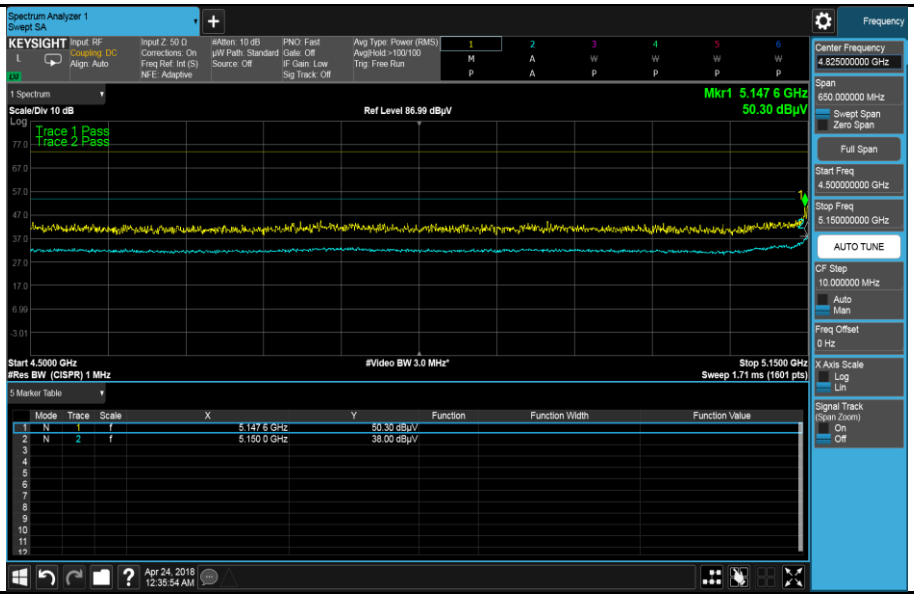


802.11a-5500MHz



802.11n-HT20 5500MHz



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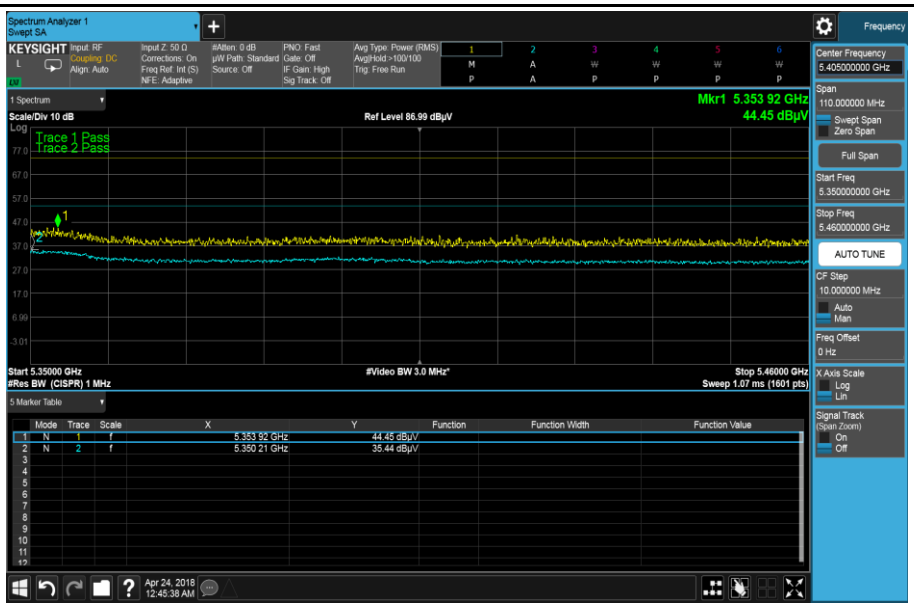

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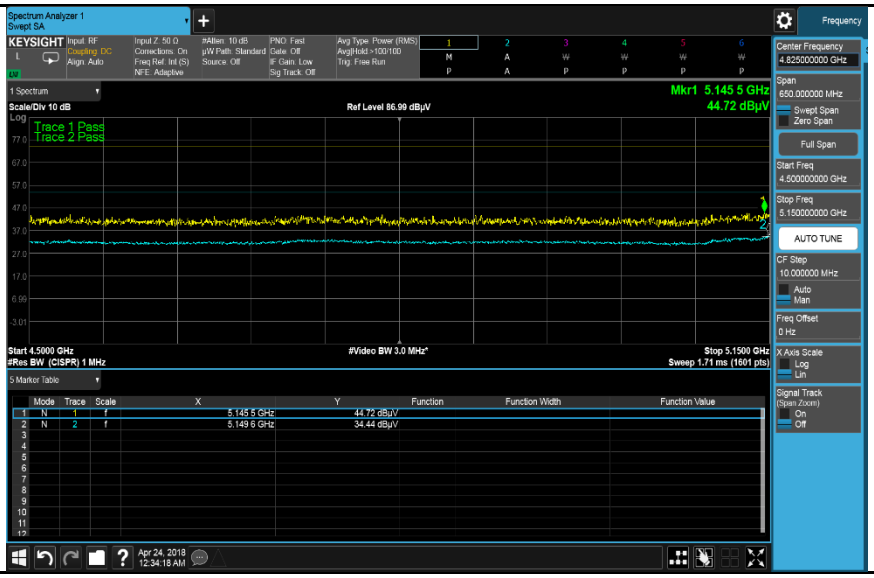
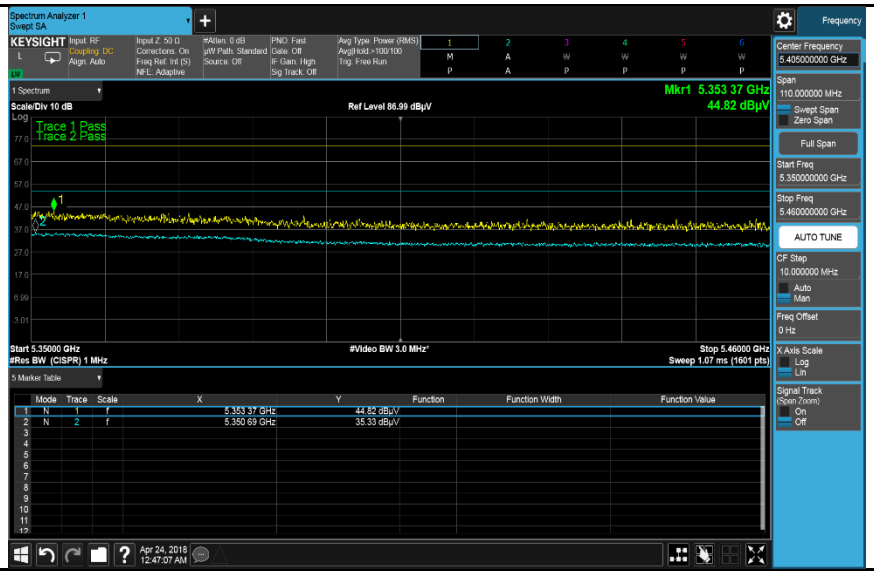
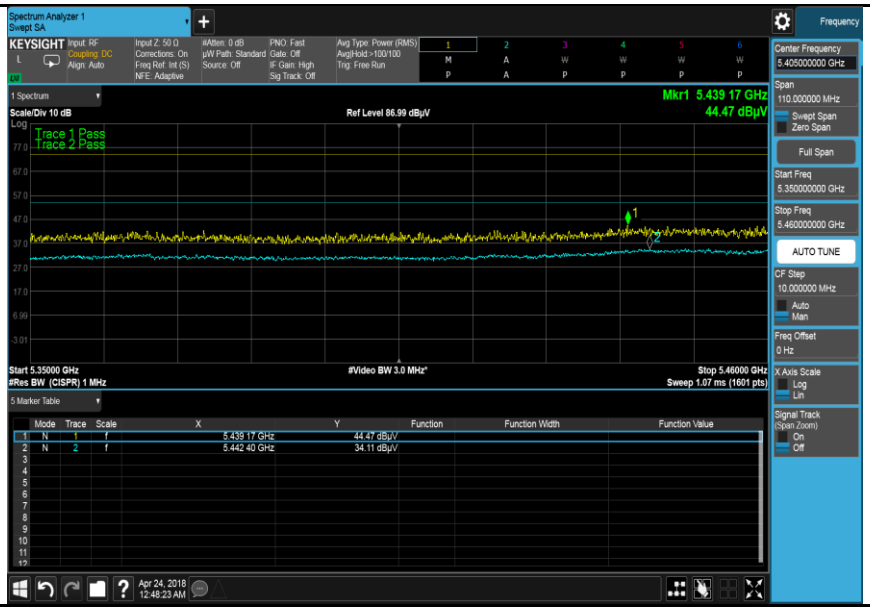


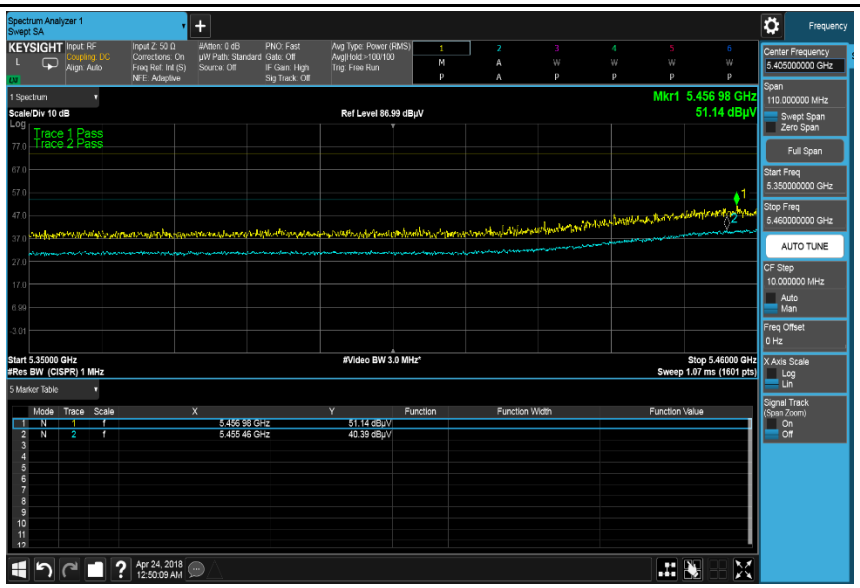
802.11n-HT40 5190MHz



802.11n-HT40-5310MHz



802.11n-HT40-5510MHz



802.11ac-VHT80-5530MHz

Radiated Emission Test Results (Above 1GHz)

1GHz-40GHz – 802.11a – 5180MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
3466.77	50.32	3.56	-1.73	52.15	Peak Max	H	246	119	74	-21.85	Pass
10360.54	37.85	6.00	3.25	47.10	Peak Max	V	236	97	74	-26.55	Pass
1920.45	43.46	2.69	-2.68	43.47	Peak Max	V	226	357	74	-30.53	Pass
3466.77	47.69	3.56	-1.73	49.52	Average Max	H	246	119	54	-4.48	Pass
10360.54	26.29	6.00	3.25	35.54	Average Max	V	236	97	54	-18.11	Pass
1920.45	29.36	2.69	-2.68	29.36	Average Max	V	226	357	54	-24.64	Pass

1GHz-40GHz – 802.11a – 5200MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
10408.95	38.74	6.31	3.06	48.10	Peak Max	V	289	254	74	-25.90	Pass
1917.77	29.50	2.69	-2.67	29.52	Peak Max	V	184	302	74	-44.48	Pass
7392.76	38.80	5.14	-0.51	43.43	Peak Max	V	205	200	74	-30.58	Pass
10408.95	25.72	6.31	3.06	35.09	Average Max	V	289	254	54	-18.91	Pass
1917.77	27.01	2.69	-2.67	27.03	Average Max	V	184	302	54	-26.97	Pass
7392.76	6.17	5.14	-0.51	30.79	Average Max	V	205	200	54	-23.21	Pass

1GHz-40GHz – 802.11a – 5240MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
10561.38	38.05	6.32	3.11	47.48	Peak Max	V	149	126	74	-26.52	Pass
9097.92	34.45	5.69	0.13	40.26	Peak Max	V	284	295	74	-33.74	Pass
1917.55	28.56	2.69	-2.67	28.57	Peak Max	V	269	84	74	-45.43	Pass
10561.38	25.93	6.32	3.11	35.36	Average Max	V	149	126	54	-18.64	Pass
9097.92	20.79	5.69	0.13	26.60	Average Max	V	284	295	54	-27.40	Pass
1917.55	7.11	2.69	-2.67	7.13	Average Max	V	269	84	54	-46.87	Pass

1GHz-40GHz – 802.11a – 5260MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
7134.28	50.73	5.11	-7.70	48.14	Peak Max	V	350	100	74	-25.86	Pass
11127.98	42.09	6.08	-3.11	45.06	Peak Max	H	105	22	74	-28.94	Pass
4822.28	49.07	4.12	-10.92	42.27	Peak Max	H	303	93	74	-31.73	Pass
7134.28	35.93	5.11	-7.70	33.34	Average Max	V	350	100	54	-20.66	Pass
11127.98	29.60	6.08	-3.11	32.57	Average Max	H	105	22	54	-21.43	Pass
4822.28	36.39	4.12	-10.92	29.59	Average Max	H	303	93	54	-24.41	Pass

1GHz-40GHz – 802.11a – 5280MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11070.80	42.27	6.10	-3.10	45.28	Peak Max	H	143	336	74	-28.73	Pass
2653.89	50.72	3.10	-14.04	39.77	Peak Max	H	351	27	74	-34.23	Pass
7209.63	44.38	5.15	-7.72	41.80	Peak Max	H	246	228	74	-32.20	Pass
11070.80	29.47	6.10	-3.10	32.47	Average Max	H	143	336	54	-21.53	Pass
2653.89	38.44	3.10	-14.04	27.50	Average Max	H	351	27	54	-26.50	Pass
7209.63	31.53	5.15	-7.72	28.95	Average Max	H	246	228	54	-25.05	Pass

1GHz-40GHz – 802.11a – 5320MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
1967.06	50.98	2.72	-15.01	38.69	Peak Max	H	172	140	74	-35.31	Pass
11164.29	41.28	6.06	-3.12	44.22	Peak Max	H	259	46	74	-29.78	Pass
7166.05	44.49	5.13	-7.74	41.88	Peak Max	H	149	312	74	-32.12	Pass
1967.06	39.76	2.72	-15.01	27.47	Average Max	H	172	140	54	-26.53	Pass
11164.29	29.65	6.06	-3.12	32.59	Average Max	H	259	46	54	-21.41	Pass
7166.05	31.64	5.13	-7.74	29.03	Average Max	H	149	312	54	-24.97	Pass

1GHz-40GHz – 802.11a – 5500MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11000.04	41.62	6.13	-3.08	44.67	Peak Max	H	154	178	74	-29.33	Pass
1967.15	50.88	2.72	-15.01	38.59	Peak Max	V	209	298	74	-35.41	Pass
4230.34	44.93	3.93	-12.63	36.23	Peak Max	H	265	346	74	-37.77	Pass
11000.04	29.55	2.72	-15.01	17.26	Average Max	H	154	178	54	-36.74	Pass
1967.15	40.12	3.57	-13.13	30.56	Average Max	V	209	298	54	-23.44	Pass
4230.34	30.84	3.93	-12.63	22.14	Average Max	H	265	346	54	-31.86	Pass

1GHz-40GHz – 802.11a – 5580MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11160.23	40.89	6.07	-3.12	43.84	Peak Max	H	238	266	74	-30.16	Pass
7189.34	44.35	5.14	-7.73	41.76	Peak Max	H	190	143	74	-32.24	Pass
4278.15	43.76	3.97	-12.58	35.15	Peak Max	H	276	185	74	-38.85	Pass
11160.23	28.93	6.07	-3.12	31.88	Average Max	H	238	266	54	-22.12	Pass
7189.34	31.78	5.14	-7.73	29.19	Average Max	H	190	143	54	-24.81	Pass
4278.15	31.05	3.97	-12.58	22.44	Average Max	H	276	185	54	-31.56	Pass

1GHz-40GHz – 802.11a – 5700MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11400.21	40.19	6.05	-2.88	43.36	Peak Max	V	231	142	74	-30.64	Pass
4198.78	44.67	3.92	-12.63	35.96	Peak Max	V	208	168	74	-38.04	Pass
1889.20	50.31	2.67	-15.21	37.77	Peak Max	V	116	287	74	-36.23	Pass
11400.21	28.73	6.05	-2.88	31.90	Average Max	V	231	142	54	-22.10	Pass
4198.78	37.28	3.92	-12.63	28.57	Average Max	V	208	168	54	-25.43	Pass
1889.20	39.85	2.67	-15.21	27.31	Average Max	V	116	287	54	-26.69	Pass

1GHz-40GHz – 802.11a – 5745MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
3800.08	62.12	3.62	-12.98	52.77	Peak Max	V	185	324	74	-21.23	Pass
11388.05	41.85	6.05	-2.91	45.00	Peak Max	V	268	141	74	-29.00	Pass
7067.84	45.00	5.10	-7.78	42.33	Peak Max	V	237	168	74	-31.68	Pass
3800.08	60.04	3.62	-12.98	50.69	Average Max	V	185	324	54	-3.31	Pass
11388.05	29.34	6.05	-2.91	32.49	Average Max	V	268	141	54	-21.51	Pass
7067.84	31.80	5.10	-7.78	29.12	Average Max	V	237	168	54	-24.88	Pass

1GHz-40GHz – 802.11a – 5785MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
3800.03	62.09	3.62	-12.98	52.74	Peak Max	V	181	325	74	-21.26	Pass
11998.26	40.97	6.38	-2.30	45.04	Peak Max	V	350	167	74	-28.96	Pass
1983.66	52.02	2.73	-14.86	39.88	Peak Max	V	182	211	74	-34.12	Pass
3800.03	60.04	3.62	-12.98	50.69	Average Max	V	181	325	54	-3.31	Pass
11998.26	28.90	6.38	-2.30	32.97	Average Max	V	350	167	54	-21.03	Pass
1983.66	39.41	2.73	-14.86	27.27	Average Max	V	182	211	54	-26.73	Pass

1GHz-40GHz – 802.11a – 5825MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11001.13	41.32	6.13	-3.08	44.38	Peak Max	V	138	143	74	-29.62	Pass
1872.61	53.50	2.66	-15.42	40.74	Peak Max	V	278	28	74	-33.26	Pass
7391.84	43.87	5.14	-7.61	41.40	Peak Max	V	264	174	74	-32.60	Pass
11001.13	29.40	6.13	-3.08	32.45	Average Max	V	138	143	54	-21.55	Pass
1872.61	41.85	2.66	-15.42	29.08	Average Max	V	278	28	54	-24.92	Pass
7391.84	31.51	5.14	-7.61	29.05	Average Max	V	264	174	54	-24.95	Pass

1GHz-40GHz – 802.11n-20M – 5180MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
3466.47	62.67	3.56	-13.72	52.51	Peak Max	H	100	116	74	-21.49	Pass
10360.92	42.12	6.00	3.25	51.37	Peak Max	V	250	241	74	-22.63	Pass
7102.24	44.43	5.11	-7.77	41.78	Peak Max	V	322	154	74	-32.22	Pass
3466.47	60.60	3.56	-13.72	50.44	Average Max	H	100	116	54	-3.57	Pass
10360.92	29.25	6.00	3.25	38.50	Average Max	V	250	241	54	-15.50	Pass
7102.24	32.05	5.11	-7.77	29.40	Average Max	V	322	154	54	-24.60	Pass

1GHz-40GHz – 802.11n-20M – 5200MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
10461.81	42.00	6.14	-3.15	44.99	Peak Max	V	349	302	74	-29.01	Pass
2634.65	52.68	3.08	-14.07	41.69	Peak Max	V	206	197	74	-32.31	Pass
7418.22	44.27	5.14	-7.59	41.82	Peak Max	V	292	238	74	-32.18	Pass
10461.81	29.64	6.14	-3.15	32.63	Average Max	V	349	302	54	-21.38	Pass
2634.65	39.16	3.08	-14.07	28.17	Average Max	V	206	197	54	-25.83	Pass
7418.22	31.20	5.14	-7.59	28.75	Average Max	V	292	238	54	-25.25	Pass

1GHz-40GHz – 802.11n-20M – 5240MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
3493.58	60.96	3.58	-13.72	50.81	Peak Max	V	298	309	74	-23.19	Pass
11094.90	41.10	6.09	-3.10	44.09	Peak Max	V	125	12	74	-29.91	Pass
7373.27	44.33	5.14	-7.62	41.86	Peak Max	V	228	294	74	-32.14	Pass
3493.58	58.46	3.58	-13.72	48.31	Average Max	V	298	309	54	-5.69	Pass
11094.90	29.46	6.09	-3.10	32.45	Average Max	V	125	12	54	-21.55	Pass
7373.27	31.76	5.14	-7.62	29.28	Average Max	V	228	294	54	-24.72	Pass

1GHz-40GHz – 802.11n-20M – 5260MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11040.59	41.56	6.12	-3.09	44.59	Peak Max	H	159	344	74	-29.41	Pass
7165.70	44.14	5.13	-7.74	41.53	Peak Max	H	268	69	74	-32.47	Pass
1967.68	54.07	2.72	-15.01	41.78	Peak Max	H	199	29	74	-32.22	Pass
11040.59	29.48	6.12	-3.09	32.51	Average Max	H	159	344	54	-21.49	Pass
7165.70	31.60	5.13	-7.74	29.00	Average Max	H	268	69	54	-25.00	Pass
1967.68	43.44	2.72	-15.01	31.14	Average Max	H	199	29	54	-22.86	Pass

1GHz-40GHz – 802.11n-20M – 5280MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11191.46	41.99	6.05	-3.13	44.92	Peak Max	H	245	87	74	-29.08	Pass
7290.28	44.94	5.15	-7.68	42.42	Peak Max	H	312	340	74	-31.58	Pass
4882.60	45.75	4.18	-11.04	38.89	Peak Max	H	117	43	74	-35.11	Pass
11191.46	29.43	6.05	-3.13	32.36	Average Max	H	245	87	54	-21.65	Pass
7290.28	31.74	5.15	-7.68	29.21	Average Max	H	312	340	54	-24.79	Pass
4882.60	31.28	4.18	-11.04	24.43	Average Max	H	117	43	54	-29.58	Pass

1GHz-40GHz – 802.11n-20M – 5320MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
10569.85	41.51	6.11	-3.69	43.93	Peak Max	V	261	217	74	-30.07	Pass
6733.47	44.58	5.00	-8.05	41.53	Peak Max	H	102	291	74	-32.47	Pass
1988.24	52.01	2.73	-14.82	39.92	Peak Max	H	184	4	74	-34.08	Pass
10569.85	29.46	6.11	-3.69	31.88	Average Max	V	261	217	54	-22.12	Pass
6733.47	32.04	5.00	-8.05	28.99	Average Max	H	102	291	54	-25.01	Pass
1988.24	39.38	2.73	-14.82	27.29	Average Max	H	184	4	54	-26.71	Pass

1GHz-40GHz – 802.11n-20M – 5500MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11000.36	41.03	6.13	-3.08	44.08	Peak Max	V	230	177	74	-29.92	Pass
7226.19	43.47	5.15	-7.72	40.90	Peak Max	V	189	204	74	-33.10	Pass
4378.25	43.28	4.09	-12.23	35.14	Peak Max	V	114	284	74	-38.86	Pass
11000.36	28.76	6.13	-3.08	31.81	Average Max	V	230	177	54	-22.19	Pass
7226.19	32.10	5.15	-7.72	29.53	Average Max	V	189	204	54	-24.47	Pass
4378.25	36.28	4.09	-12.23	28.14	Average Max	V	114	284	54	-25.86	Pass

1GHz-40GHz – 802.11n-20M – 5580MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11159.27	41.65	6.07	-3.12	44.60	Peak Max	V	211	309	74	-29.40	Pass
6758.24	43.22	5.01	-8.02	40.21	Peak Max	V	159	243	74	-33.79	Pass
1933.56	49.53	2.70	-15.14	37.09	Peak Max	V	174	155	74	-36.91	Pass
11159.27	28.57	6.07	-3.12	31.52	Average Max	V	211	309	54	-22.48	Pass
6758.24	32.34	5.01	-8.02	29.33	Average Max	V	159	243	54	-24.67	Pass
1933.56	39.26	2.70	-15.14	26.82	Average Max	V	174	155	54	-27.18	Pass

1GHz-40GHz – 802.11n-20M – 5700MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11158.84	41.38	6.07	-3.12	44.33	Peak Max	V	122	157	74	-29.67	Pass
7334.12	44.26	5.15	-7.65	41.76	Peak Max	V	167	276	74	-32.24	Pass
4478.37	43.56	4.21	-11.83	35.94	Peak Max	V	251	315	74	-38.06	Pass
11158.84	28.66	6.07	-3.12	31.61	Average Max	V	122	157	54	-22.39	Pass
7334.12	32.43	5.15	-7.65	29.93	Average Max	V	167	276	54	-24.07	Pass
4478.37	36.77	4.21	-11.83	29.15	Average Max	V	251	315	54	-24.85	Pass

1GHz-40GHz – 802.11n-20M – 5745MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
3800.03	61.80	3.62	-12.98	52.45	Peak Max	V	183	328	74	-21.55	Pass
11896.89	41.63	6.34	-2.27	45.69	Peak Max	H	201	209	74	-28.31	Pass
7500.86	44.14	5.13	-7.53	41.74	Peak Max	V	271	233	74	-32.26	Pass
3800.03	59.71	3.62	-12.98	50.36	Average Max	V	183	328	54	-3.64	Pass
11896.89	29.16	6.34	-2.27	33.23	Average Max	H	201	209	54	-20.77	Pass
7500.86	31.16	5.13	-7.53	28.75	Average Max	V	271	233	54	-25.25	Pass

1GHz-40GHz – 802.11n-20M – 5785MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
10452.85	41.66	6.06	-3.83	43.89	Peak Max	V	224	167	74	-30.11	Pass
7671.63	43.46	5.19	-7.31	41.34	Peak Max	V	281	85	74	-32.66	Pass
1982.32	51.73	2.72	-14.87	39.58	Peak Max	V	214	299	74	-34.42	Pass
10452.85	29.69	6.06	-3.83	31.92	Average Max	V	224	167	54	-22.08	Pass
7671.63	31.01	5.19	-7.31	28.89	Average Max	V	281	85	54	-25.11	Pass
1982.32	39.35	2.72	-14.87	27.20	Average Max	V	214	299	54	-26.80	Pass

1GHz-40GHz – 802.11n-20M – 5825MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11954.43	40.96	6.36	-2.29	45.02	Peak Max	V	276	209	74	-28.98	Pass
4312.03	48.43	4.02	-12.49	39.96	Peak Max	V	147	67	74	-34.04	Pass
1899.68	51.96	2.67	-15.06	39.58	Peak Max	V	116	265	74	-34.42	Pass
11954.43	29.12	6.36	-2.29	33.19	Average Max	V	276	209	54	-20.81	Pass
4312.03	35.46	4.02	-12.49	26.99	Average Max	V	147	67	54	-27.01	Pass
1899.68	40.45	2.67	-15.06	28.07	Average Max	V	116	265	54	-25.93	Pass

1GHz-40GHz – 802.11n-40M – 5190MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11776.89	41.41	6.29	-2.26	45.44	Peak Max	V	187	35	74	-28.56	Pass
7421.09	43.97	5.14	-7.59	41.52	Peak Max	V	333	108	74	-32.48	Pass
2665.49	50.28	3.10	-14.09	39.29	Peak Max	V	317	341	74	-34.72	Pass
11776.89	28.83	6.29	-2.26	32.87	Average Max	V	187	35	54	-21.14	Pass
7421.09	31.13	5.14	-7.59	28.68	Average Max	V	333	108	54	-25.32	Pass
2665.49	37.69	3.10	-14.09	26.70	Average Max	V	317	341	54	-27.30	Pass

1GHz-40GHz – 802.11n-40M – 5230MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
3493.62	60.61	3.58	-13.72	50.47	Peak Max	V	297	313	74	-23.54	Pass
11097.30	42.29	6.09	-3.10	45.28	Peak Max	V	259	222	74	-28.72	Pass
2005.10	51.54	2.74	-14.75	39.53	Peak Max	V	224	109	74	-34.47	Pass
3493.62	57.89	3.58	-13.72	47.75	Average Max	V	297	313	54	-6.25	Pass
11097.30	29.43	6.09	-3.10	32.42	Average Max	V	259	222	54	-21.58	Pass
2005.10	38.70	2.74	-14.75	26.69	Average Max	V	224	109	54	-27.31	Pass

1GHz-40GHz – 802.11n-40M – 5270MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
10999.43	41.59	6.13	-3.08	44.65	Peak Max	H	130	208	74	-29.35	Pass
6752.09	44.43	5.01	-8.03	41.41	Peak Max	H	121	215	74	-32.59	Pass
1895.72	52.91	2.67	-15.11	40.47	Peak Max	H	347	75	74	-33.53	Pass
10999.43	29.41	6.13	-3.08	32.47	Average Max	H	130	208	54	-21.53	Pass
6752.09	31.89	5.01	-8.03	28.87	Average Max	H	121	215	54	-25.13	Pass
1895.72	39.89	2.67	-15.11	27.45	Average Max	H	347	75	54	-26.55	Pass

1GHz-40GHz – 802.11n-40M – 5310MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
10619.63	41.29	6.13	-3.62	43.80	Peak Max	V	200	134	74	-30.20	Pass
6880.12	43.24	5.05	-7.91	40.38	Peak Max	V	154	100	74	-33.62	Pass
4176.23	45.73	3.91	-12.63	37.01	Peak Max	V	232	333	74	-36.99	Pass
10619.63	29.56	6.13	-3.62	32.07	Average Max	V	200	134	54	-21.93	Pass
6880.12	32.11	5.05	-7.91	29.25	Average Max	V	154	100	54	-24.75	Pass
4176.23	31.29	3.91	-12.63	22.57	Average Max	V	232	333	54	-31.43	Pass

1GHz-40GHz – 802.11n-40M – 5510MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11021.05	42.37	6.12	-3.08	45.41	Peak Max	V	177	193	74	-28.59	Pass
6734.41	43.18	5.00	-8.05	40.13	Peak Max	V	219	280	74	-33.87	Pass
1878.20	51.69	2.66	-15.35	39.00	Peak Max	V	156	328	74	-35.00	Pass
11021.05	28.76	6.12	-3.08	31.80	Average Max	V	177	193	54	-22.20	Pass
6734.41	32.51	5.00	-8.05	29.46	Average Max	V	219	280	54	-24.54	Pass
1878.20	39.83	2.66	-15.35	27.14	Average Max	V	156	328	54	-26.86	Pass

1GHz-40GHz – 802.11n-40M – 5550MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11100.31	41.77	6.09	-3.10	44.76	Peak Max	V	218	123	74	-29.24	Pass
4298.75	44.29	4.00	-12.54	35.75	Peak Max	V	209	299	74	-38.25	Pass
1922.07	49.68	2.69	-15.12	37.25	Peak Max	V	153	345	74	-36.75	Pass
11100.31	29.11	6.09	-3.10	32.10	Average Max	V	218	123	54	-21.90	Pass
4298.75	36.40	4.00	-12.54	27.86	Average Max	V	209	299	54	-26.14	Pass
1922.07	39.72	2.69	-15.12	27.29	Average Max	V	153	345	54	-26.71	Pass

1GHz-40GHz – 802.11n-40M – 5670MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11340.49	41.39	6.04	-3.01	44.42	Peak Max	V	193	214	74	-29.58	Pass
7289.32	42.51	5.16	-7.68	39.99	Peak Max	V	208	287	74	-34.01	Pass
4329.18	44.16	4.04	-12.42	35.78	Peak Max	V	167	322	74	-38.22	Pass
11340.49	30.02	6.04	-3.01	33.05	Average Max	V	193	214	54	-20.95	Pass
7289.32	32.66	5.16	-7.68	30.14	Average Max	V	208	287	54	-23.86	Pass
4329.18	36.53	4.04	-12.42	28.15	Average Max	V	167	322	54	-25.85	Pass

1GHz-40GHz – 802.11n-40M – 5755MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
10492.68	41.97	6.08	-3.81	44.24	Peak Max	V	174	80	74	-29.76	Pass
7122.82	44.25	5.12	-7.76	41.62	Peak Max	V	106	47	74	-32.38	Pass
2663.63	50.47	3.10	-14.08	39.49	Peak Max	V	107	243	74	-34.52	Pass
10492.68	29.69	6.08	-3.81	31.96	Average Max	V	174	80	54	-22.05	Pass
7122.82	31.35	5.12	-7.76	28.71	Average Max	V	106	47	54	-25.29	Pass
2663.63	37.79	3.10	-14.08	26.81	Average Max	V	107	243	54	-27.20	Pass

1GHz-40GHz – 802.11n-40M – 5795MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
10452.50	42.93	6.06	-3.83	45.16	Peak Max	V	247	38	74	-28.84	Pass
7103.75	44.42	5.11	-7.77	41.77	Peak Max	V	220	197	74	-32.23	Pass
2814.44	51.20	3.18	-14.39	39.99	Peak Max	V	159	19	74	-34.01	Pass
10452.50	29.70	6.06	-3.83	31.93	Average Max	V	247	38	54	-22.08	Pass
7103.75	31.84	5.11	-7.77	29.19	Average Max	V	220	197	54	-24.81	Pass
2814.44	38.55	3.18	-14.39	27.34	Average Max	V	159	19	54	-26.66	Pass

1GHz-40GHz – 802.11ac-80M – 5210MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
3473.46	63.07	3.57	-13.72	52.91	Peak Max	H	100	116	74	-21.09	Pass
11959.99	41.69	6.36	-2.29	45.76	Peak Max	V	151	184	74	-28.24	Pass
8035.10	44.63	5.42	-7.04	43.00	Peak Max	V	103	195	74	-31.00	Pass
3473.46	60.97	3.57	-13.72	50.81	Average Max	H	100	116	54	-3.19	Pass
11959.99	29.10	6.36	-2.29	33.17	Average Max	V	151	184	54	-20.83	Pass
8035.10	31.02	5.42	-7.04	29.40	Average Max	V	103	195	54	-24.60	Pass

1GHz-40GHz – 802.11ac-80M – 5290MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
10579.87	42.09	6.11	-3.67	44.53	Peak Max	H	145	214	74	-29.47	Pass
7265.26	44.19	5.16	-7.70	41.65	Peak Max	H	189	345	74	-32.35	Pass
1920.32	51.34	2.70	-15.14	38.90	Peak Max	V	200	278	74	-35.10	Pass
10579.87	28.99	6.11	-3.67	31.43	Average Max	H	145	214	54	-22.57	Pass
7265.26	31.54	5.16	-7.70	29.00	Average Max	H	189	345	54	-25.00	Pass
1920.32	40.11	2.70	-15.14	27.67	Average Max	V	200	278	54	-26.33	Pass

1GHz-40GHz – 802.11ac-80M – 5530MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11060.45	41.79	6.11	-3.09	44.81	Peak Max	V	210	195	74	-29.19	Pass
9826.22	41.45	5.62	-4.54	42.53	Peak Max	V	186	266	74	-31.47	Pass
1930.09	49.12	2.7	-15.13	36.69	Peak Max	V	193	327	74	-37.31	Pass
11060.45	29.41	6.11	-3.09	32.43	Average Max	V	210	195	54	-21.57	Pass
9826.22	29.78	5.62	-4.54	30.86	Average Max	V	186	266	54	-23.14	Pass
1930.09	38.90	2.7	-15.13	26.47	Average Max	V	193	327	54	-27.53	Pass

1GHz-40GHz – 802.11ac-80M – 5610MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11219.89	41.48	6.04	-3.14	44.38	Peak Max	V	136	273	74	-29.62	Pass
4489.15	44.38	4.23	-11.79	36.82	Peak Max	V	159	324	74	-37.18	Pass
1978.35	49.22	2.73	-14.91	37.04	Peak Max	V	217	304	74	-36.96	Pass
11219.89	29.67	6.04	-3.14	32.57	Average Max	V	136	273	54	-21.43	Pass
4489.15	36.51	4.23	-11.79	28.95	Average Max	V	159	324	54	-25.05	Pass
1978.35	39.24	2.73	-14.91	27.06	Average Max	V	217	304	54	-26.94	Pass

1GHz-40GHz – 802.11ac-80M – 5775MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (V/H)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11096.34	41.96	6.09	-3.10	44.95	Peak Max	V	255	145	74	-29.05	Pass
4017.64	50.05	3.86	-12.62	41.29	Peak Max	V	159	144	74	-32.71	Pass
9049.17	42.84	5.66	-5.84	42.66	Peak Max	V	239	163	74	-31.34	Pass
11096.34	29.38	6.09	-3.10	32.37	Average Max	V	255	145	54	-21.63	Pass
4017.64	35.43	3.86	-12.62	26.67	Average Max	V	159	144	54	-27.33	Pass
9049.17	30.01	5.66	-5.84	29.83	Average Max	V	239	163	54	-24.18	Pass

Note: Both horizontal and vertical polarities were investigated. The results above show only the worst case.

Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Cycle	Cal Due	In use
Radiated Emissions						
Keysight EXA 44GHz Spectrum Analyzer	N9030B(PXA)	MY57140374	09/06/2017	1 Year	09/06/2018	☑
Bi-Log antenna (30MHz~2GHz)	JB1	A030702	03/09/2018	2 Year	03/09/2020	☑
Horn Antenna (1GHz~26GHz)	3115	100059	11/09/2017	1 Year	11/09/2018	☑
Horn Antenna (18GHz~40GHz)	PA-840	181251	06/23/2017	1 Year	06/23/2018	☑
Preamplifier (100KHz-7GHz)	LPA-6-30	11170602	05/09/2017	1 Year	05/09/2018	☑
Pre-Amplifier (1-26.5GHz)	8449B	3008A00715	08/16/2017	1 Year	08/16/2018	☑

Annex B. SIEMIC Accreditation

Accreditations	Document	Scope / Remark
ISO 17025 (A2LA)		Please see the documents for the detailed scope
ISO Guide 65 (A2LA)		Please see the documents for the detailed scope
TCB Designation		A1, A2, A3, A4, B1, B2, B3, B4, C
FCC DoC Accreditation		FCC Declaration of Conformity Accreditation
FCC Site Registration		3 meter site
FCC Site Registration		10 meter site
IC Site Registration		3 meter site
IC Site Registration		10 meter site
EU NB		**Radio Equipment: EN45011:** EN ISO/IEC 17065
		Electromagnetic Compatibility: EN45011 – EN ISO/IEC 17065
Singapore iDA CB(Certification Body)		Phase I, Phase II
Vietnam MIC CAB Accreditation		Please see the document for the detailed scope
Hong Kong OFCA		**(Phase II)** OFCA Foreign Certification Body for Radio and Telecom
		(Phase I) Conformity Assessment Body for Radio and Telecom
Industry Canada CAB		**Radio:** Scope A – All Radio Standard Specification in Category I
		Telecom: CS-03 Part I, II, V, VI, VII, VIII

Japan Recognized Certification Body Designation		**Radio**: A1. Terminal equipment for purpose of calling **Telecom**: B1. Specified radio equipment specified in Article 38-2, Paragraph 1, Item 1 of the Radio Law
Korea CAB Accreditation		**EMI:** KCC Notice 2008-39, RRL Notice 2008-3: CA Procedures for EMI KN22: Test Method for EMI **EMS:** KCC Notice 2008-38, RRL Notice 2008-4: CA Procedures for EMS KN24, KN61000-4-2, -4-3, -4-4, -4-5, -4-6, -4-8, -4-11: Test Method for EMS
		Radio: RRL Notice 2008-26, RRL Notice 2008-2, RRL Notice 2008-10, RRL Notice 2007-49, RRL Notice 2007-20, RRL Notice 2007-21, RRL Notice 2007-80, RRL Notice 2004-68
		Telecom: President Notice 20664, RRL Notice 2007-30, RRL Notice 2008-7 with attachments 1, 3, 5, 6; President Notice 20664, RRL Notice 2008-7 with attachment 4
Taiwan NCC CAB Recognition		LP0002, PSTN01, ADSL01, ID0002, IS6100, CNS14336, PLMN07, PLMN01, PLMN08
Taiwan BSMI CAB Recognition		CNS 13438
Japan VCCI		R-3083: Radiation 3 meter site C-3421: Main Ports Conducted Interference Measurement T-1597: Telecommunication Ports Conducted Interference Measuremet
Australia CAB Regocnition		**EMC:** AS/NZS CISPR 11, AS/NZS CISPR 14.1, AS/NZS CISPR22, AS/NZS 61000.6.3, AS/NZS 61000.6.4
		Radiocommunications: AS/NZS 4281, AS/NZS 4268, AS/NZS 4280.1, AS/NZS 4280.2, AS/NZS 4295, AS/NZS 4582, AS/NZS 4583, AS/NZS 4769.1, AS/NZS 4769.2, AS/NZS 4770, AS/NZS 4771
		Telecommunications: AS/ACIF S002:05, AS/ACIF S003:06, AS/ACIF S004:06 AS/ACIF S006:01, AS/ACIF S016:01, AS/ACIF S031:01, AS/ACIF S038:01, AS/ACIF S040:01, AS/ACIF S041:05, AS/ACIF S043.2:06, AS/ACIF S60950.1
Australia NATA Recognition		AS/ACIF S002, AS/ACIF S003, AS/ACIF S004, AS/ACIF S006, AS/ACIF S016,AS/ACIF S031, AS/ACIF S038, AS/ACIF S040, AS/ACIF S041, AS/ACIF S043.2