

RF TEST REPORT



Report No.: FCC_RF_SL15032701-AER-004_DTS_2.4GHz_Rev.1.0

Supersede Report No.: None

Applicant	Aerohive Networks, Inc.		
Product Name	AP1130 with AH-ACC-1130-ANT-SEC		
Model No.	AP1130		
Test Standard	47 CFR 15.247		
Test Method	ANSI C63.10: 2013 558074 D01 DTS Meas Guidance v03r03		
FCC ID	WBV-AP1130		
IC ID	774A-AP1130		
Date of test	11/30/2015-01/06/2016		
Issue Date	02/18/2016		
Test Result	<u>Pass</u> Fail		
Equipment complied with the specification			

Issued By:
SIEMIC Laboratories
775 Montague Expressway, Milpitas, 95035 CA



775 Montague Expressway, Milpitas, CA 95035, USA • Phone: (+1) 408 526 1188 • Facsimile (+1) 408 526 1088

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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	EMC, RF/Wireless, Telecom, Safety
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 & R&TTE Directive
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_RF_SL15032701-AER-004_DTS_2.4GHz	None	Original	01/19/2016
FCC_RF_SL15032701-AER-004_DTS_2.4GHz_Rev.1.0	Rev.1.0	Removed IC test data	02/18/2016

2 Executive Summary

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

Company: Aerohive Networks, Inc.
Product: AP1130 with AH-ACC-1130-ANT-SEC
Model: AP1130

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	Aerohive Networks, Inc.
Applicant Address	330 Gibraltar Dr. Sunnyvale, CA 94089, USA
Manufacturer Name	SmartAnt Telecom Co., Ltd.
Manufacturer Address	3F, No.58, Park Avenue II, Science-based Industrial Park, Hsinchu 30075, Taiwan

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

Product Name	:	AP1130 with AH-ACC-1130-ANT-SEC
Model No.	:	AP1130
Trade Name	:	Aerohive
Serial No.	:	N/A
Host Model No.	:	N/A
Input Power	:	100-240VDC, 50/60Hz
Power Adapter Manu/Model	:	N/A
Power Adapter SN	:	N/A
Date of EUT received	:	09/30/2015
Equipment Class/ Category	:	DTS, UNII
Clock Frequencies	:	N/A
Port/Connectors	:	PoE, Ethernet

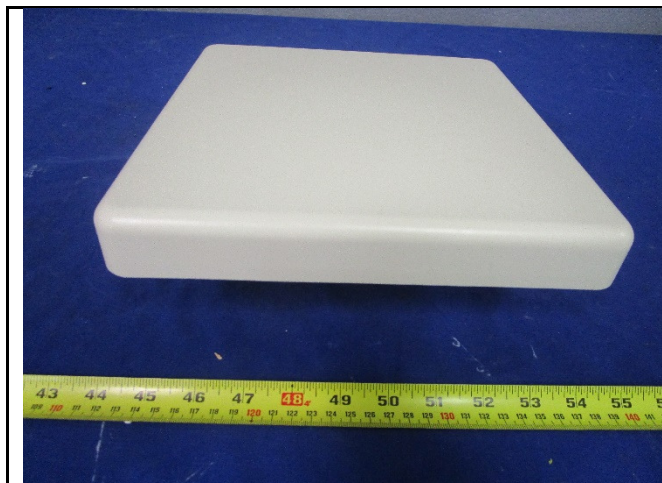
6.2 Radio Description

Radio Type	802.11b	802.11g	802.11a	802.11n-20M	802.11n-40M	802.11ac-80M
Operating Frequency	2412-2462MHz	2412-2462MHz	5180-5240MHz 5260-5320MHz 5500-5700MHz 5725-5825MHz	2412-2462MHz 5180-5240MHz 5240-5320MHz 5500-5700MHz 5725-5825MHz	5190-5230MHz 5270-5310MHz 5510-5670MHz 5755-5795MHz	5210MHz, 5290MHz 5530MHz, 5610MHz, 5690MHz,5775MHz
Modulation	DSSS (CCK, DQPSK, DBPSK)	OFDM-CCK (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM)
Channel Spacing	5MHz	5MHz	20MHz	5MHz(2.4GHz), 20MHz (5GHz)	40MHz	80MHz
Number of Channels	11	11	22	11(2.4GH) 22 (5GHz)	10(5GHz)	6 (5GHz)
Antenna Type	Directional Antenna					
Antenna Gain (Peak)	5dBi (for 2.4GHz) 5.5dBi (5GHz)					
Antenna Connector Type	N Jack x 4					
Remarks	2.4GHz and 5GHz Radio can transmit simultaneously					

EUT Power level setting

Mode	Frequency (MHz)	Power setting
802.11-b	2412	Default
802.11-b	2437	Default
802.11-b	2462	Default
802.11-g	2412	Default
802.11-g	2437	Default
802.11-g	2462	Default
802.11-n-20	2412	Default
802.11-n-20	2437	Default
802.11-n-20	2462	Default

6.3 EUT Photos-External



EUT - Front View



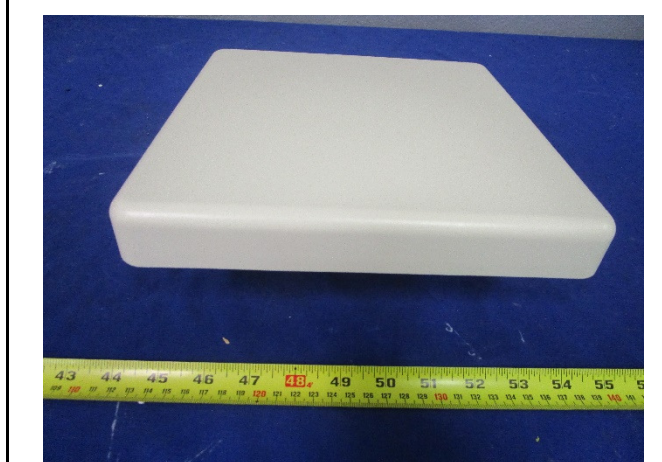
EUT - Rear View



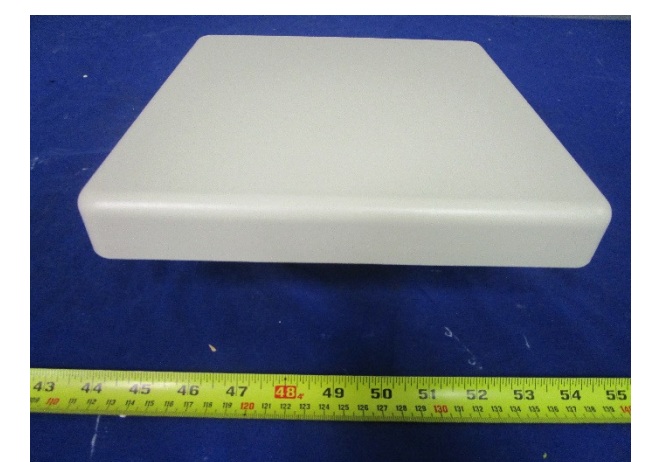
EUT - Top View



EUT - Bottom View



EUT - Left Side View



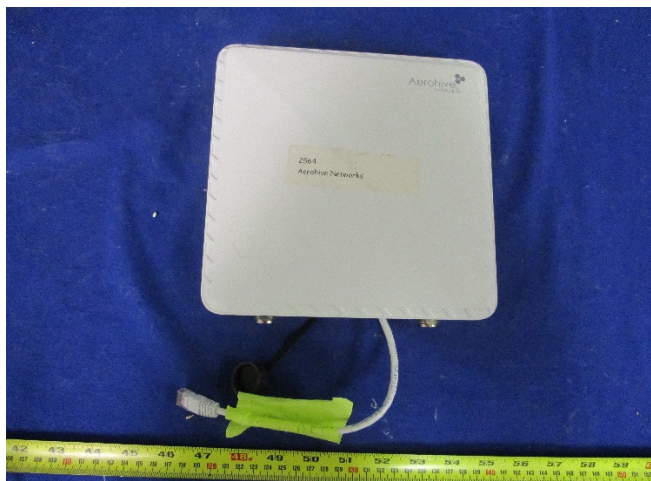
EUT - Right Side View



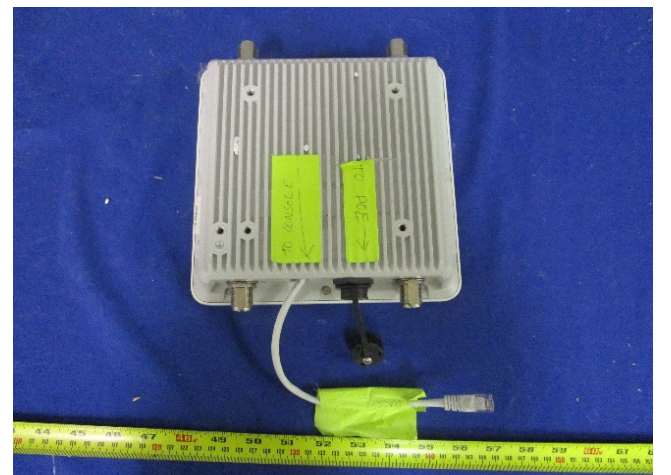
Access Point - Front View



Access Point - Rear View



Access Point - Top View



Access Point- Bottom View



Access Point- Left Side View

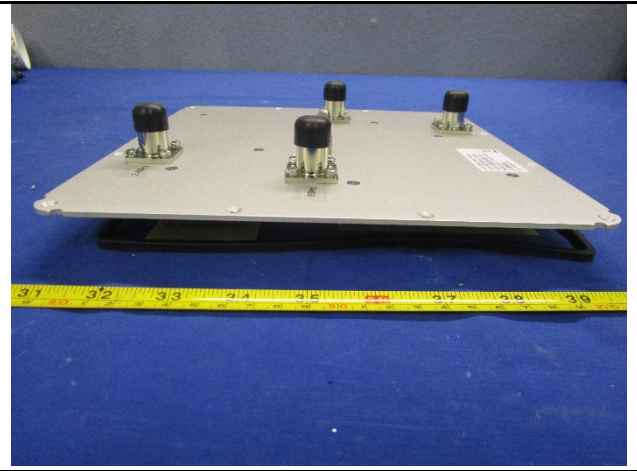


Access Point- Right Side View

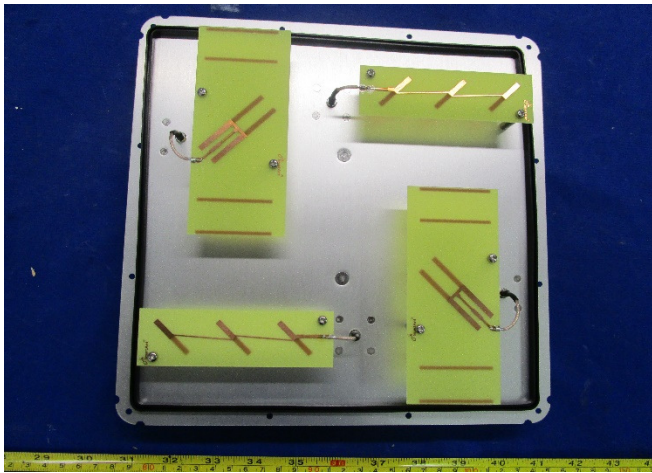
6.4 EUT Photos (Internal)



Cover off View 1



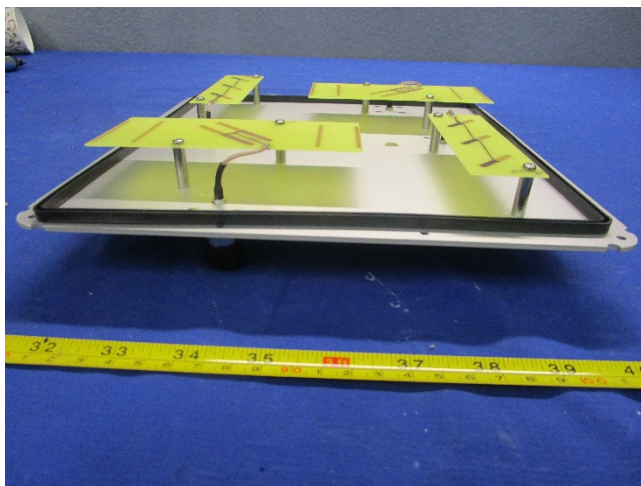
Cover off View 2



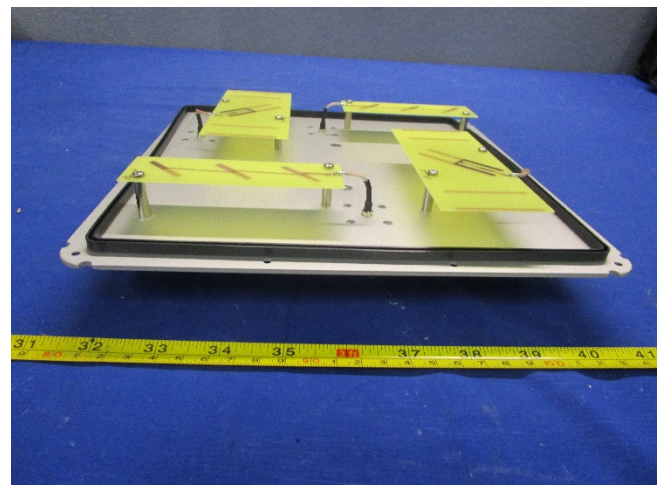
PCBA 1 Top View



PCBA 1 RearView



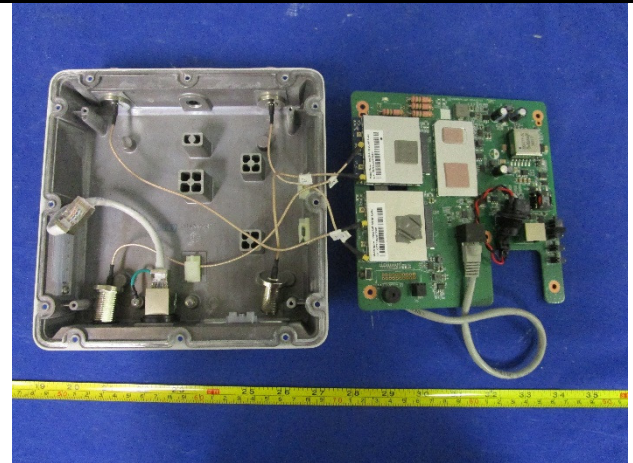
PCBA 1 Left Side View



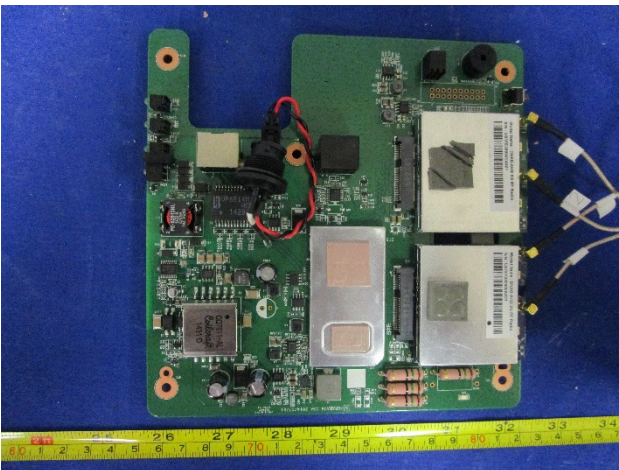
PCBA 1 Right Side View



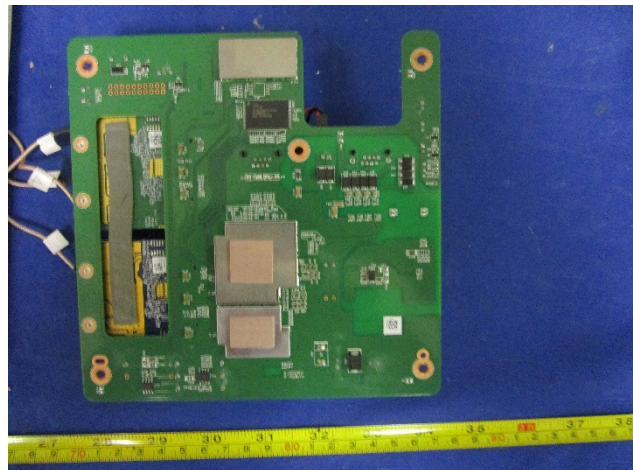
AP Cover off View 1



AP View 2



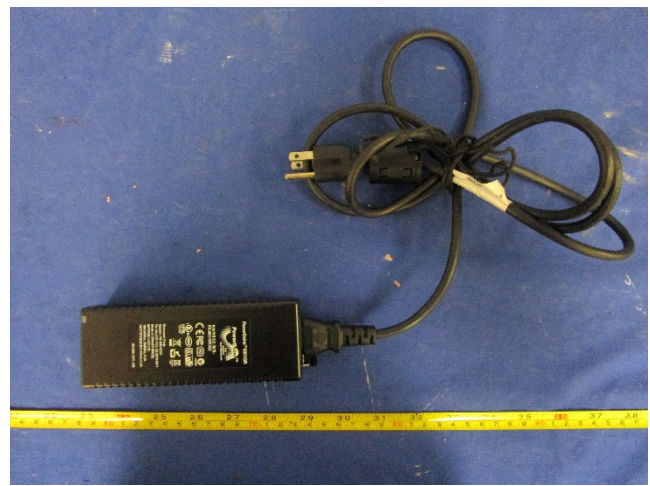
AP PCBA Top View



AP PCBA RearView

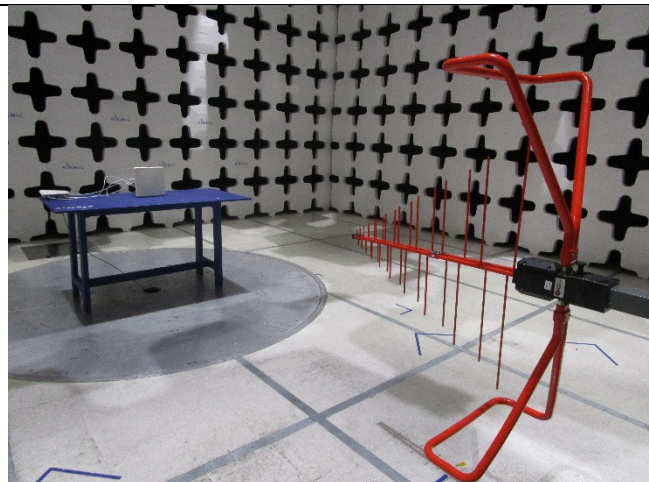


Support Equipment Power Supply Top View

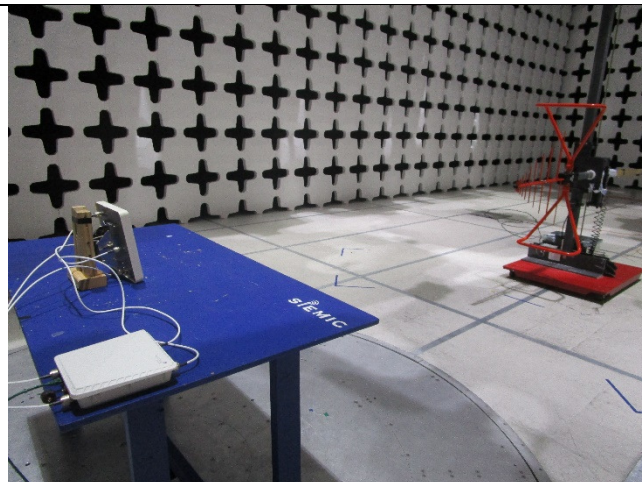


Support Equipment Power Supply Bottom View

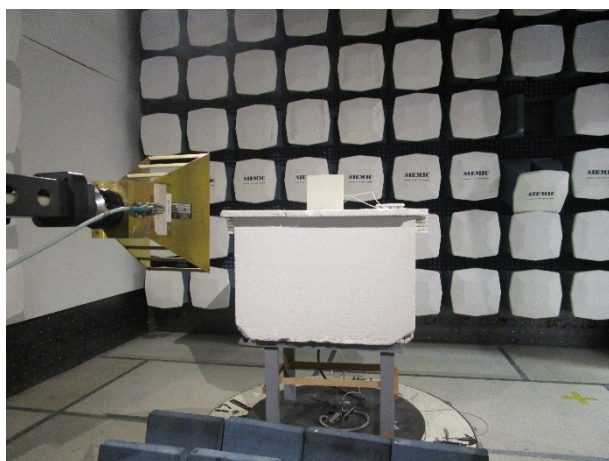
6.5 EUT Test Setup Photos



Radiated Emissions (<1GHz) – Front View



Radiated Emissions (<1GHz) – Rear View



Radiated Emissions (>1GHz) – Front View



Radiated Emissions (>1GHz) – Rear View

7 Supporting Equipment/Software and cabling Description

7.1 Supporting Equipment

Item	Supporting Equipment Description	Model	Serial Number	Manufacturer	Note
1.	Laptop	PP18L Latitude D620	-	Dell	-

7.2 Cabling Description

Name	Connection Start		Connection Stop		Length / shielding Info		Note
	From	I/O Port	To	I/O Port	Length (m)	Shielding	
RJ45	AP	RJ45	POE	RJ45	2	Unshielded	-
N-Jack	EUT	N-Jack	AP	N-Jack	1	Unshielded	-

7.3 Test Software Description

Test Item	Software	Description
RF Testing	Putty.exe	Set the EUT to different modulation and channel

8 Test Summary

Test Item	Test standard		Test Method/Procedure		Pass / Fail
Restricted Band of Operation	FCC	15.205	FCC	ANSI C63.10:2013 558074 D01 DTS Meas Guidance v03r03	☒ Pass ☐ N/A
AC Conducted Emissions	FCC	15.207(a)	FCC	ANSI C63.10:2013	☐ Pass ☒ N/A

Test Item	Test standard		Test Method/Procedure		Pass / Fail
99% Occupied Bandwidth	-	-	-	-	☐ Pass ☒ N/A
6dB Bandwidth	FCC	15.247(a)(2)	FCC	558074 D01 DTS Meas Guidance v03r03	☐ Pass ☒ N/A
Band Edge and Radiated Spurious Emissions	FCC	15.247(d)	FCC	ANSI C63.10:2013 558074 D01 DTS Meas Guidance v03r03	☒ Pass ☐ N/A
Output Power	FCC	15.247(b)	FCC	558074 D01 DTS Meas Guidance v03r03	☐ Pass ☒ N/A
Antenna Gain > 6 dBi	FCC	15.247(e)	FCC	-	☐ Pass ☒ N/A
Power Spectral Density	FCC	15.247(e)	FCC	558074 D01 DTS Meas Guidance v03r03	☐ Pass ☒ N/A
RF Exposure requirement	FCC	15.247(i)	FCC	-	☐ Pass ☒ N/A
Remark	1. All measurement uncertainties do not take into consideration for all presented test results. 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.				
Note	Only Radiated Spurious Emission was tested for AP1130 with sector antenna. Please refer to the report FR472301AA (Sporton Lab) for rest of the items.				

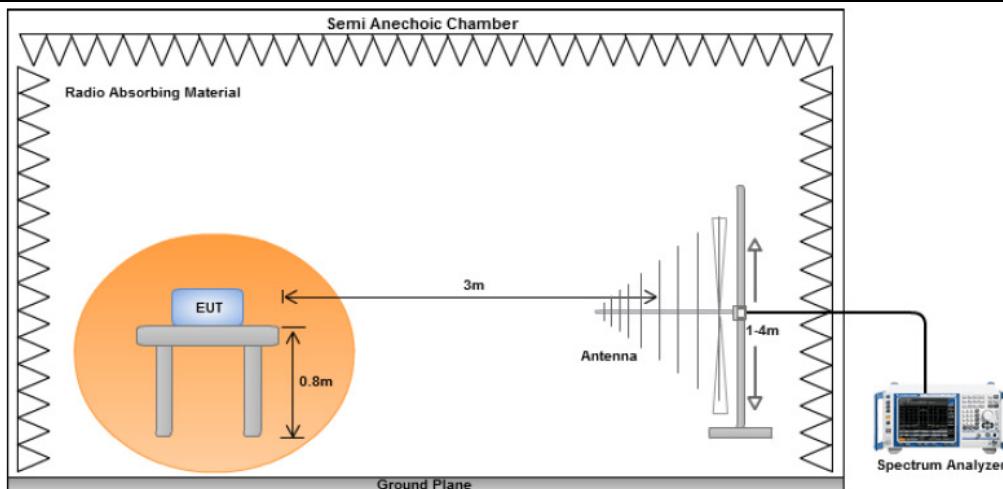
9 Measurement Uncertainty

Emissions			
Test Item	Frequency Range	Description	Uncertainty
Band Edge and Radiated Spurious Emissions	30MHz – 1GHz	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m)	+5.6dB/-4.5dB
Band Edge and Radiated Spurious Emissions	1GHz – 40GHz	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m)	+4.3dB/-4.1dB

10 Measurements, Examination and Derived Results

10.1 Radiated Emissions below 1GHz

Requirement(s):

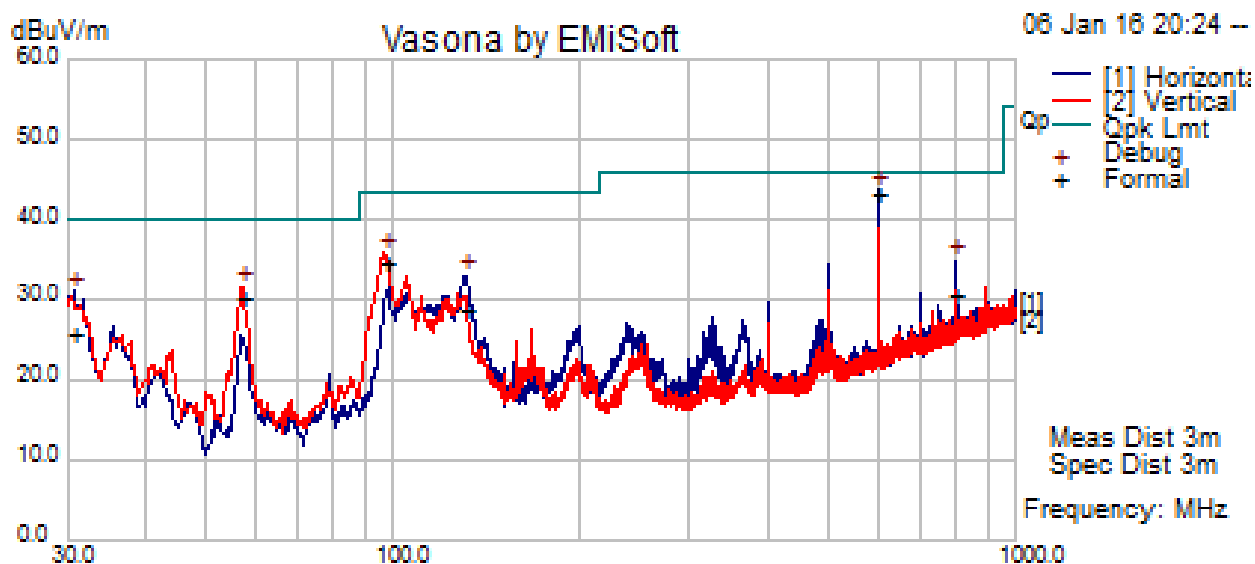
Spec	Item	Requirement	Applicable										
47CFR§15.247(d)	a)	Except higher limit as specified elsewhere in other section, the emissions from the low-power radio-frequency devices shall not exceed the field strength levels specified in the following table and the level of any unwanted emissions shall not exceed the level of the fundamental emission. The tighter limit applies at the band edges <table><tr><th>Frequency range (MHz)</th><th>Field Strength (uV/m)</th></tr><tr><td>30 – 88</td><td>100</td></tr><tr><td>88 – 216</td><td>150</td></tr><tr><td>216 960</td><td>200</td></tr><tr><td>Above 960</td><td>500</td></tr></table>	Frequency range (MHz)	Field Strength (uV/m)	30 – 88	100	88 – 216	150	216 960	200	Above 960	500	☒
Frequency range (MHz)	Field Strength (uV/m)												
30 – 88	100												
88 – 216	150												
216 960	200												
Above 960	500												
Test Setup													
Procedure	1. 2. 3. 4. The EUT was switched on and allowed to warm up to its normal operating condition. 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. b. c. A Quasi-peak measurement was then made for that frequency point. 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

Radiated Emission Test Results (Below 1GHz)

Test specification	below 1GHz			
Environmental Conditions:	Temp (°C):	26.1	Result	Pass
	Humidity (%)	47.5		
	Atmospheric (mbar):	1020		
Mains Power:	120VAC, 60Hz			
Tested by:	Rachana Khanduri			
Test Date:	01/06/2016			
Remarks:	2.4GHz 11n-20 2437MHz			

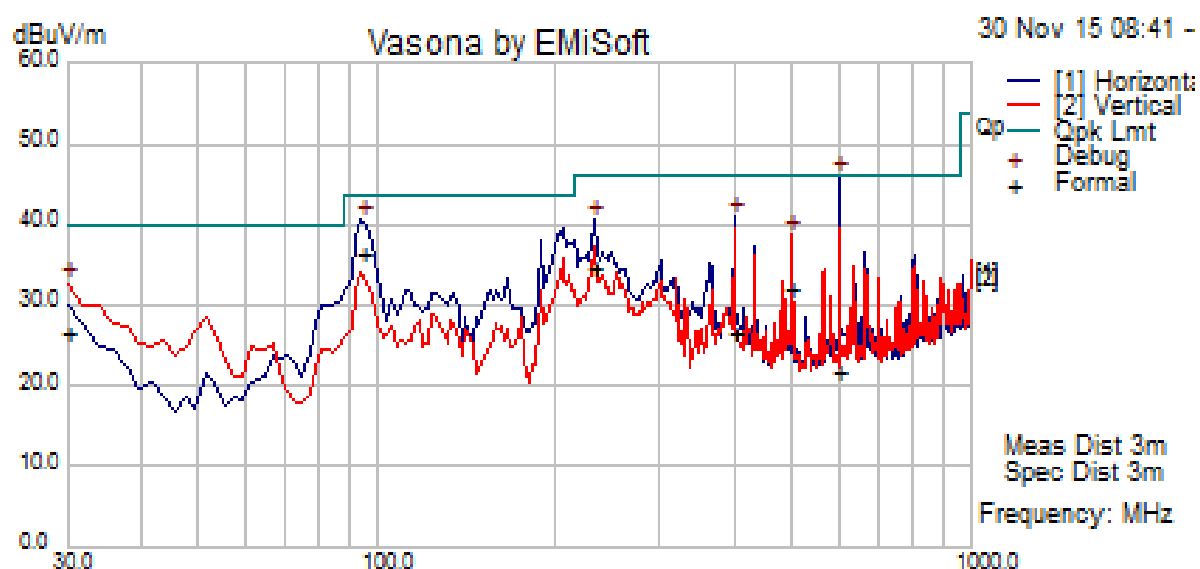


Quasi Max Measurement

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
600.00	58.43	4.25	-19.66	43.02	Quasi Max	H	180.00	9.00	46.02	-3.00	Pass
96.76	62.19	1.61	-29.17	34.63	Quasi Max	V	100.00	69.00	43.52	-8.89	Pass
57.38	59.11	1.17	-29.99	30.30	Quasi Max	V	101.00	344.00	40.00	-9.70	Pass
30.70	39.92	0.81	-15.04	25.69	Quasi Max	H	106.00	200.00	40.00	-14.31	Pass
130.32	51.46	1.90	-24.60	28.75	Quasi Max	H	142.00	225.00	43.52	-14.77	Pass
799.98	42.48	5.01	-17.07	30.42	Quasi Max	H	110.00	336.00	46.02	-15.60	Pass

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

Test specification	Below 1GHz			
Environmental Conditions:	Temp (°C):	26.1	Result	Pass
	Humidity (%)	47.5		
	Atmospheric (mbar):	1020		
Mains Power:	120VAC, 60Hz			
Tested by:	Rachana Khanduri			
Test Date:	11/30/2015			
Remarks:	2.4GHz and 5GHz transmitting simultaneously			



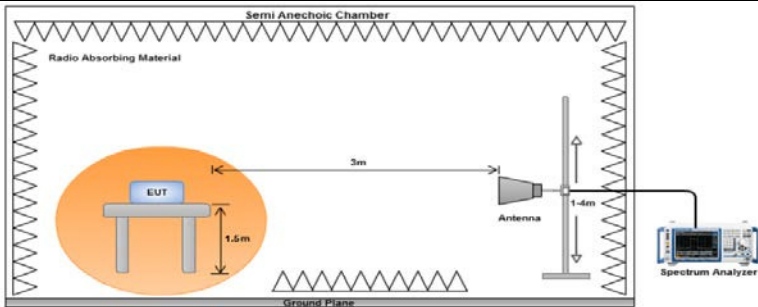
Quasi Max Measurement

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
599.73	37.19	4.25	-19.66	21.78	Quasi Max	H	117	233	46.02	-24.24	Pass
94.21	64.47	1.55	-29.79	36.23	Quasi Max	H	196	356	43.52	-7.29	Pass
399.42	46.14	3.49	-23.10	26.53	Quasi Max	H	177	206	46.02	-19.49	Pass
232.09	58.99	2.62	-27.12	34.49	Quasi Max	H	101	204	46.02	-11.53	Pass
498.72	49.12	4.00	-21.07	32.05	Quasi Max	V	112	27	46.02	-13.97	Pass
30.00	40.12	0.81	-14.38	26.54	Quasi Max	V	139	30	40.00	-13.46	Pass

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

10.2 Radiated Spurious Emissions above 1GHz

Requirement(s):

Spec	Item	Requirement	Applicable
47CFR§15.247(d)	a)	For non-restricted band, In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB or 30dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, determined by the measurement method on output power to be used. Attenuation below the general limits specified in § 15.209(a) is not required ☒ 20 dB down ☐ 30 dB down	☒
	b)	or restricted band, emission must also comply with the radiated emission limits specified in 15.209	☒
Test Setup			
Procedure	- The EUT was switched on and allowed to warm up to its normal operating condition. - 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: - Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen. - The EUT was then rotated to the direction that gave the maximum emission. - Finally, the antenna height was adjusted to the height that gave the maximum emission. - An average measurement was then made for that frequency point. - Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.		
Test Date	02/18/2015 – 02/25/2015	Environmental condition	Temperature 23°C Relative Humidity 42% Atmospheric Pressure 1021mbar
Remark	The EUT was scanned up to 25GHz. Both horizontal and vertical polarities were investigated. The results show only the worst case. For spurious emission measurement, if the peak emission is below 54 dBuV/m average limit, the average value is not be measured. Both horizontal and vertical polarization have been verified.		
Result	☒ Pass ☐ Fail		

Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Radiated Spurious Emission Test Results (Above 1GHz)

Above 1GHz – 802.11b – 2412MHz

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
6120.21	36.23	10.63	10.78	57.64	Peak Max	H	109.00	49.00	74.00	-16.36	Pass
1051.42	42.78	3.43	9.60	55.81	Peak Max	V	113.00	130.00	74.00	-18.20	Pass
2085.07	40.17	4.36	11.21	55.73	Peak Max	V	128.00	208.00	74.00	-18.27	Pass
6120.21	24.59	10.63	10.78	46.00	Average Max	H	109.00	49.00	54.00	-8.00	Pass
1051.42	31.28	3.43	9.60	44.30	Average Max	V	113.00	130.00	54.00	-9.70	Pass
2085.07	28.25	4.36	11.21	43.81	Average Max	V	128.00	208.00	54.00	-10.19	Pass

Above 1GHz – 802.11b – 2437MHz

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
17489.26	34.67	16.79	10.37	61.82	Peak Max	V	119.00	202.00	74.00	-12.18	Pass
4252.16	36.82	9.13	11.14	57.09	Peak Max	H	172.00	202.00	74.00	-16.91	Pass
6290.36	35.97	10.84	10.37	57.18	Peak Max	V	122.00	265.00	74.00	-16.82	Pass
17489.26	23.27	16.79	10.37	50.42	Average Max	V	119.00	202.00	54.00	-3.58	Pass
4252.16	25.59	9.13	11.14	45.85	Average Max	H	172.00	202.00	54.00	-8.15	Pass
6290.36	24.46	10.84	10.37	45.67	Average Max	V	122.00	265.00	54.00	-8.33	Pass

Above 1GHz – 802.11b – 2462MHz

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
4058.63	37.71	8.65	11.97	58.33	Peak Max	H	118.00	323.00	74.00	-15.67	Pass
17543.91	34.83	16.71	10.44	61.99	Peak Max	H	114.00	52.00	74.00	-12.01	Pass
6057.25	35.84	10.55	10.93	57.33	Peak Max	V	210.00	260.00	74.00	-16.68	Pass
4058.63	25.43	8.65	11.97	46.05	Average Max	H	118.00	323.00	54.00	-7.95	Pass
17543.91	23.24	16.71	10.44	50.39	Average Max	H	114.00	52.00	54.00	-3.61	Pass
6057.25	24.40	10.55	10.93	45.88	Average Max	V	210.00	260.00	54.00	-8.12	Pass

Above 1GHz – 802.11g – 2412MHz

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
17575.74	35.73	16.66	10.48	62.87	Peak Max	V	117.00	126.00	74.00	-11.13	Pass
4239.98	37.25	9.10	11.19	57.54	Peak Max	V	208.00	107.00	74.00	-16.46	Pass
6215.72	35.66	10.75	10.55	56.96	Peak Max	H	122.00	86.00	74.00	-17.04	Pass
17575.74	23.17	16.66	10.48	50.31	Average Max	V	117.00	126.00	54.00	-3.69	Pass
4239.98	25.61	9.10	11.19	45.90	Average Max	V	208.00	107.00	54.00	-8.10	Pass
6215.72	24.57	10.75	10.55	45.86	Average Max	H	122.00	86.00	54.00	-8.14	Pass

Above 1GHz – 802.11g – 2437MHz

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
17360.71	35.40	16.77	9.98	62.15	Peak Max	V	174.00	200.00	74.00	-11.85	Pass
4185.72	38.31	8.97	11.42	58.69	Peak Max	V	222.00	262.00	74.00	-15.31	Pass
6153.85	36.73	10.67	10.70	58.10	Peak Max	V	108.00	162.00	74.00	-15.90	Pass
17360.71	23.15	16.77	9.98	49.90	Average Max	V	174.00	200.00	54.00	-4.10	Pass
4185.72	25.96	8.97	11.42	46.35	Average Max	V	222.00	262.00	54.00	-7.65	Pass
6153.85	24.93	10.67	10.70	46.30	Average Max	V	108.00	162.00	54.00	-7.70	Pass

Above 1GHz – 802.11g – 2462MHz

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
17437.66	34.92	16.78	10.21	61.91	Peak Max	V	165.00	272.00	74.00	-12.09	Pass
4930.50	36.27	10.58	9.56	56.41	Peak Max	V	248.00	333.00	74.00	-17.59	Pass
1000.64	43.03	3.35	9.68	56.06	Peak Max	H	175.00	338.00	74.00	-17.94	Pass
17437.66	23.21	16.78	10.21	50.21	Average Max	V	165.00	272.00	54.00	-3.79	Pass
4930.50	24.25	10.58	9.56	44.40	Average Max	V	248.00	333.00	54.00	-9.60	Pass
1000.64	31.74	3.35	9.68	44.77	Average Max	H	175.00	338.00	54.00	-9.23	Pass

Above 1GHz – 802.11n20 – 2412MHz

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
17530.63	35.95	16.74	10.43	63.12	Peak Max	H	109.00	192.00	74.00	-10.88	Pass
6131.75	35.27	10.65	10.75	56.66	Peak Max	H	235.00	103.00	74.00	-17.34	Pass
4176.33	37.13	8.94	11.46	57.53	Peak Max	H	237.00	51.00	74.00	-16.47	Pass
17530.63	23.39	16.74	10.43	50.56	Average Max	H	109.00	192.00	54.00	-3.44	Pass
6131.75	24.26	10.65	10.75	45.66	Average Max	H	235.00	103.00	54.00	-8.34	Pass
4176.33	25.92	8.94	11.46	46.32	Average Max	H	237.00	51.00	54.00	-7.68	Pass

Above 1GHz – 802.11n20 – 2437MHz

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
17586.71	35.56	16.64	10.49	62.69	Peak Max	V	213.00	219.00	74.00	-11.31	Pass
4080.56	38.09	8.70	11.87	58.67	Peak Max	V	237.00	336.00	74.00	-15.33	Pass
6100.45	36.97	10.61	10.82	58.40	Peak Max	V	177.00	30.00	74.00	-15.60	Pass
17586.71	23.23	16.64	10.49	50.36	Average Max	V	213.00	219.00	54.00	-3.64	Pass
4080.56	26.03	8.70	11.87	46.61	Average Max	V	237.00	336.00	54.00	-7.39	Pass
6100.45	24.61	10.61	10.82	46.04	Average Max	V	177.00	30.00	54.00	-7.96	Pass

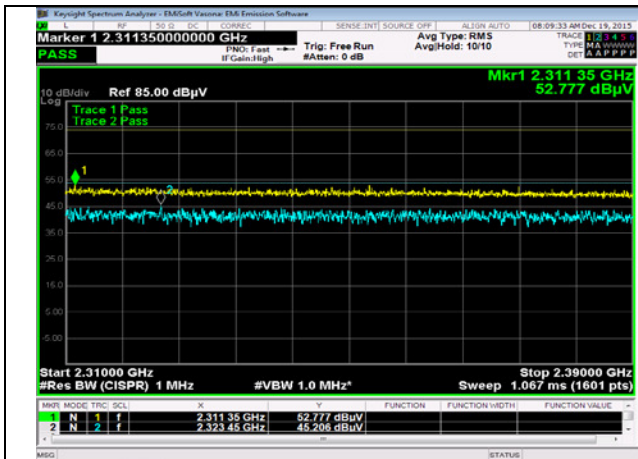
Above 1GHz – 802.11n20 – 2462MHz

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
17416.65	35.10	16.78	10.15	62.02	Peak Max	H	188.00	34.00	74.00	-11.98	Pass
4092.21	37.37	8.73	11.82	57.92	Peak Max	V	227.00	325.00	74.00	-16.08	Pass
6162.38	37.39	10.68	10.68	58.75	Peak Max	H	180.00	309.00	74.00	-15.25	Pass
17416.65	23.21	16.78	10.15	50.13	Average Max	H	188.00	34.00	54.00	-3.87	Pass
4092.21	25.75	8.73	11.82	46.31	Average Max	V	227.00	325.00	54.00	-7.69	Pass
6162.38	24.71	10.68	10.68	46.07	Average Max	H	180.00	309.00	54.00	-7.93	Pass

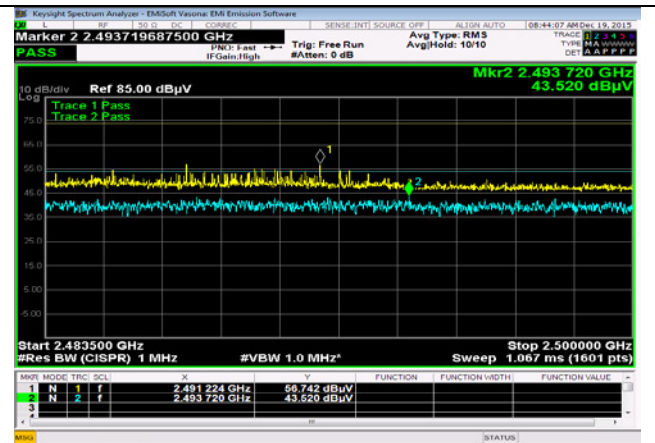
Above 1GHz – 2.4GHz and 5GHz transmitting simultaneously

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
4292.15	38.45	9.22	14.49	62.16	Peak Max	V	137	151	74.00	-11.84	Pass
6140.89	36.7	10.66	14.25	61.60	Peak Max	V	193	165	74.00	-12.40	Pass
1040.53	43.53	3.41	13.13	60.08	Peak Max	H	179	266	74.00	-13.92	Pass
4292.15	26.22	9.22	14.49	49.94	Average Max	V	137	151	54.00	-4.06	Pass
6140.89	25.42	10.66	14.25	50.32	Average Max	V	193	165	54.00	-3.68	Pass
1040.53	31.35	3.41	13.13	47.90	Average Max	H	179	266	54.00	-6.10	Pass

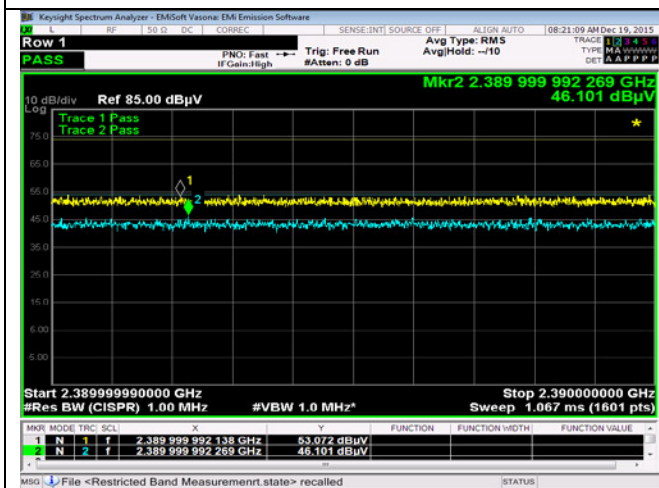
Radiated Restricted Band Test Results (Above 1GHz)



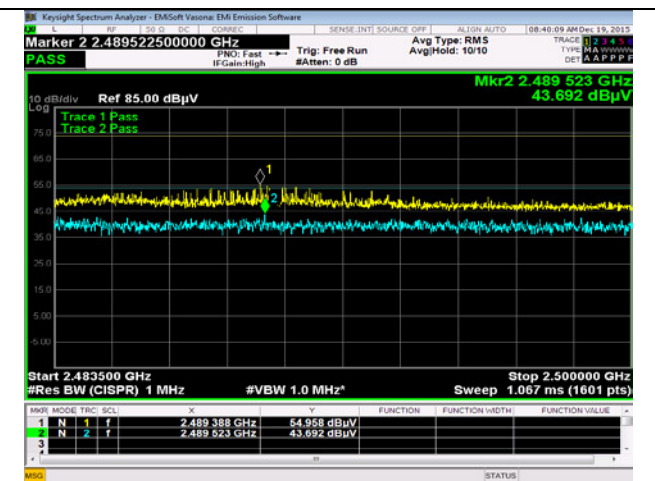
Lower Band (802.11b-2412MHz)



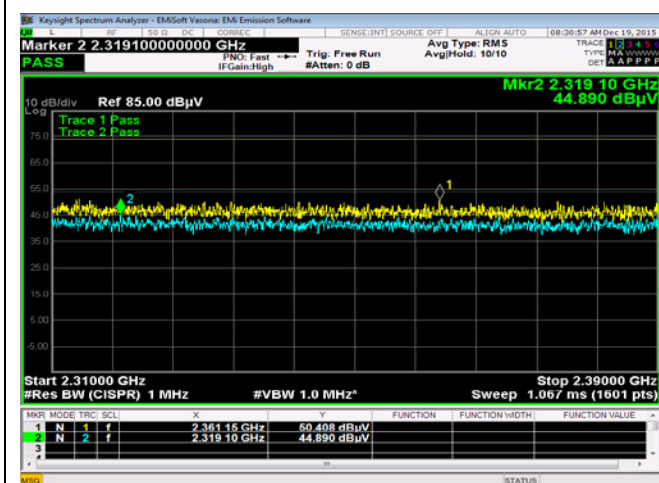
Higher Band (802.11b-2462MHz)



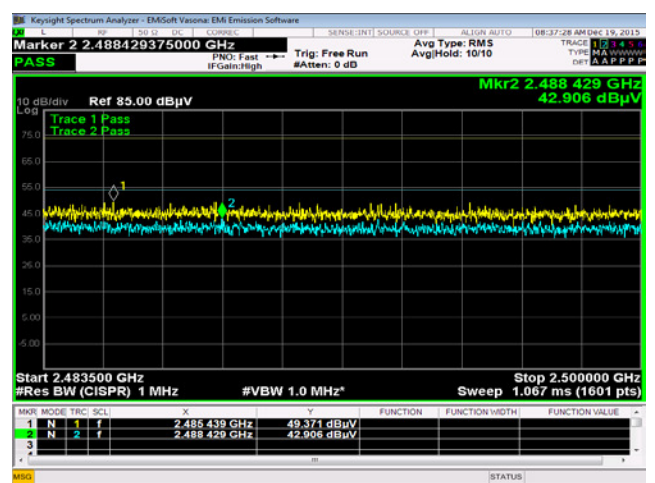
Lower Band (802.11g-2412MHz)



Higher Band (802.11g-2462MHz)



Lower Band (802.11n20 2412MHz)



Higher Band (802.11n20-2462MHz)

Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Cycle	Cal Due	In use
Conducted Emissions						
R & S Receiver	ESIB 40	100179	05/23/2015	1 Year	05/23/2016	☐
CHASE LISN	MN2050B	1018	08/07/2015	1 Year	08/07/2016	☐
Radiated Emissions						
R & S Receiver	ESL6	100178	05/27/2015	1 Year	05/27/2016	☒
R & S Receiver	ESIB 40	100179	05/23/2015	1 Year	05/23/2016	☒
ETS-Lingren Loop Antenna	6512	00049120	05/12/2015	1 Year	05/12/2016	☐
Bi-Log antenna (30MHz~2GHz)	JB1	A030702	08/12/2015	1 Year	08/12/2016	☒
Horn Antenna (1-26.5GHz)	3115	10SL0059	08/11/2015	1 Year	08/11/2016	☒
Horn Antenna (18-40 GHz)	AH-840	101013	08/11/2015	1 Year	08/11/2016	☒
3 Meters SAC	3M	N/A	08/08/2015	1 Year	08/08/2016	☒
10 Meters SAC	10M	N/A	09/05/2015	1 Year	09/05/2016	☒
RF Conducted Measurement						
Spectrum Analyzer	N9010A	10SL0219	08/20/2015	1 Year	08/20/2016	☐
R & S Receiver	ESIB 40	100179	05/23/2015	1 Year	05/23/2016	☐
Test Equity Environment Chamber	1007H	61201	07/31/2015	1 Year	07/31/2016	☐
USB RF Power Sensor	7002-006	10SL0190	09/03/2015	1 Year	09/03/2016	☐

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 & Telecommunications Terminal Equipment: EN45001 – EN ISO/IEC 17025
		Electromagnetic Compatibility: EN45001 – EN ISO/IEC 17025
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 Measurement
Australia CAB Recognition		EMC: AS/NZS CISPR 11, AS/NZS CISPR 14.1, AS/NZS CISPR22, AS/NZS 61000.6.3, AS/NZS 61000.6.4 Radio communications: 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