RF TEST REPORT



Report No.: FCC IC_RF_SL19010903-CSC-001_DTS Supersede Report No.:

Applicant	:	Cisco Systems Inc		
Product Name	:	Cisco Wireless Router		
FCC Host Model No.	:	C1121X-8PLTEPWB		
IC Host Model No.	:	C1121X-8PLTEPWA		
Test Standard		47 CFR 15.247		
Test Standard	•	RSS 247 Iss 2: Feb 2017		
		ANSI C63.10: 2013		
Test Method	:	RSS Gen Iss 5: Apr 2018		
		558074 D01 DTS Meas Guidance v05r01		
Module FCC ID	:	LDKC11011757		
Module IC	:	2461N-11011757		
Dates of test	:	03/01/2019 – 03/10/2019		
Issue Date	•••	03/15/2019		
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:	
Dem	\mathcal{A}
Deon Dai	Chen Ge
Test Engineer	Engineer Reviewer

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



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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 comorning 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 Conformity Assessment

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 IC_RF_SL19010903-CSC-001_DTS	None	Original	03/15/2019

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2 Executive Summary

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

Company:	Cisco Systems, Inc.
Product:	Cisco Wireless Router
FCC Host Model:	C1121X-8PLTEPWB
IC Host Model:	C1121X-8PLTEPWA

against the current Stipulated Standards. The specified model product stated above has demonstrated compliance with the Stipulated Standard listed on 1st page. This test report covers the radiated emissions requirements of the standards referenced in the report to allow system level approval of the module in specified Hosts.

3 Customer information

Applicant Name	:	Cisco Systems, Inc.
Applicant Address	:	125 West Tasman Dr. San Jose, CA 95134
Manufacturer Name	:	Cisco Systems, Inc.
Manufacturer Address	:	125 West Tasman Dr. San Jose, CA 95134

4 Test site information

Lab performing tests	SIEMIC Inc.
Lab Address	775 Montague Expressway, Milpitas, CA 95035
FCC Test Site No.	540430
IC Test Site No.	4842D-2
VCCI Test Site No.	A0133

5 Modification

Index	ltem	Description	Note
-	-	-	-

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6 **EUT Information**

6.1 EUT Description

Product Name	Cisco Wireless Router
FCC Host Model No.	C1121X-8PLTEPWB
IC Host Model No.	C1121X-8PLTEPWA
Trade Name	Cisco
Serial No.	FGL224410BU
Host Model No.	N/A
Input Power	12V AC/DC 6A
Power Adapter Manu/Model	DELTA ELECTRONICS, INC / ADP-150BR B
Power Adapter SN	N/A
Date of EUT received	01/14/2019
Equipment Class/ Category	DTS
Clock Frequencies	N/A
Port/Connectors	Power Port, Lan Port, USB Port, Micro-USB Port

Radio Description <u>6.2</u>

Radio Type	802.11b/g/n/ac-20M
Operating Frequency	2412-2462MHz
Modulation	DSSS (CCK, DQPSK, DBPSK)
Channel Spacing	5MHz
Number of Channels	11
Antenna Type	Internal PIFA Antenna
Antenna Gain (Peak)	2.14 dBi
Antenna Connector Type	U.FL Connector
Note	-

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7 <u>Supporting Equipment/Software and cabling Description</u>

7.1 Supporting Equipment

Item	Supporting Equipment Description	Model	Serial Number	Manufacturer	Note
1	Laptop	ThinkPad T420s	N/A	Lenovo	-
2	Console Cable	USB to RJ45 Cable	-	Moyina	-
3	Power Adapter	ADP-150BR B	-	DELTA ELECTRONICS, INC	-

7.2 Cabling Description

Name	Connection Start		Connection Stop		Length / shielding Info		Note
Name	From	I/O Port	То	I/O Port	Length (m)	Shielding	NOLE
Console Cable	EUT	Micro-USB Port	Laptop	USB	1.8	Unshielded	-

7.3 Test Software Description

Test Item	Software	Description
RF Testing	Tera Term	Set the EUT to transmit continuously in different test modes

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Test Summary 8

Test Item	Test standard			Test Method/Procedure	
Destricted Pand of Operation	FCC	15.205	FCC	ANSI C63.10:2013	⊠ Pass*
Restricted Band of Operation	IC	RSS Gen 8.10	IC	558074 D01 DTS Meas Guidance v05r01	□ N/A
AC Conducted Emissions	FCC	15.207(a)	FCC	ANSI C63.10:2013	⊠ Pass*
AC Conducted Emissions	IC	RSS Gen 8.8	IC	RSS Gen Issue 5: 2018	□ N/A

DTS Band Requirement

Те	est Item		Test standard		Test Method/Procedure		
	99% Occupied Bandwidth		-	-	-	⊠ Pass*	
		IC	RSS Gen 6.7	IC	RSS Gen Issue 5: 2018	□ N/A	
6dB I	Bandwidth	FCC	15.247(a)(2)	FCC	558074 D01 DTS Meas Guidance v05r01	⊠ Pass*	
0001	Sanawiati	IC	RSS247 (5.2.a)	IC		□ N/A	
	e and Radiated	FCC	15.247(d)	FCC	ANSI C63.10:2013	⊠ Pass	
Spuriou	is Emissions	IC	RSS247 (5.5)	IC	558074 D01 DTS Meas Guidance v05r01	□ N/A	
Maximum c	onducted Output	FCC	15.247(b)	FCC	558074 D01 DTS Meas Guidance v05r01	⊠ Pass*	
F	Power		RSS247 (5.4.d)	IC	556074 DOT DTS Meas Guidance V05101	□ N/A	
Receiver Spurious Emissions		IC	RSS Gen (7.3)	IC	RSS Gen Issue 5: 2018	⊠ Pass □ N/A	
Antonno	Gain > 6 dBi	FCC	15.247(e)	FCC	-	⊠ Pass*	
Antenna	Gain > 0 ubi	IC	-	IC	-	□ N/A	
Power Sr	pectral Density	FCC	15.247(e)	FCC	558074 D01 DTS Meas Guidance v05r01	⊠ Pass*	
ruwei op	Dectral Density	IC	RSS247 (5.2.b)	IC	556074 DOT DTS Meas Guidance V05101	□ N/A	
		FCC	15.247(i)	FCC	-	⊠ Pass	
RF Exposi	ure requirement	IC	RSS Gen(3.4)	IC	RSS Gen Issue 5: 2018	🗆 N/A	
	1. All mea	asurement	uncertainties do not take	e into cons	sideration for all presented test results.		
					owing that an emission is maintained within the band	of operation	
Remark			operating conditions as s				
		Band Edge and Radiated Spurious Emissions was testing for specific host in this test report.					
	4. Pass*	: Please re	fer to original filing test re	eports: El	DCS – 12057781		

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9 **Measurement Uncertainty**

Emissions						
Test Item	Frequency Range	Description	Uncertainty			
AC Conducted Emissions	150KHz – 30MHz	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2	±3.5dB			
RF conducted measurement	150KHz – 40GHz	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2	±0.95dB			
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)	±6dB			
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)	±6dB			

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10 Measurements, Examination and Derived Results

10.1 Radiated Spurious Emissions in restricted band

Requirement(s):

Spec	Item	Requirement	Applicable	
47CFR§15.247(d), RSS247(5.5)	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 			
Test Setup		Semi Anechoic Chamber Radio Absorbing Material	pectrum Analyzer	
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 charma Maximization of the emissions, was carried out by rotating the EUT, changing the anter and adjusting the antenna height in the following manner: a. Vertical or horizontal polarisation (whichever gave the higher emission level 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 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 measured. 	enna polarization l over a full n. um emission.	
Remark				
Result	⊠ Pass	□ Fail		
Test Data	ee below) eon Dai a			
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Restricted Band Measurement Plots:

Spectrum Analyzer 1			Trace	- * 崇
KEYSIGHT Input: RF Input: Z: 50 Ω R L Coupling: DC Corrections: Off Ext Gain: -36.00 dB Freq Ref: Int (S)	#Atten: 0 dB PNO: Fast µW Path: Standard Gate: Off Source: Off IF Gain: High	Avg Type: Power (RMS) 1 2 3 4 5 6 Avg Hold:>100/100 Trig: Free Run	Select Trace Trace 1	▼.
PASS Align: Auto NFE: Adaptive Spectrum Scale/Div 10 dB	Sig Track: Off	Mkr1 2.385 12 GHz 61.72 dBµV	Trace Type Clear / Write	Trace Control
Log Trace 1 Pass 77.0 Trace 2 Pass 57.0 Trace 2 Pass	Nach II washing a safety and a s	¹	 Trace Average Max Hold 	Math
47.0 37.0 27.0 17.0			Min Hold	Trace Function Normalize
6.99 -3.01 Start 2.31000 GHz	#Video BW 1.0 MHz*		Restart Max Hold View/Blank Active	
#Res BW 1.0 MHz 5 Marker Table		Stop 2.39000 GHz Sweep 1.00 ms (1001 pts)		
Mode Trace Scale X 1 N 1 f 2.385 12 GF 2 N 2 f 2.378 64 GF 3	Iz 61.72 dBµV	Function Width Function Value	Blank Background	
4 5 6			Trace Settings Table	
Mar 08, 2019 9:22:16 AM	\square			
	802.11b-241	2MHz		
Spectrum Analyzer 1			Marker	· 未
Swept SA Τ KEYSIGHT Input RF Input Z: 50 Ω Coupling: DC Corrections: Off RL Ext Gain: -36 00 dB Freq Ref. Int (S)	#Atten: 0 dB PNO Best Wide µW Path: Standard Gate: Off Source: Off IF Gain: High Sig Track: Off	Avg Type: Power (RMS) 1 2 3 4 5 6 Avg Hold>100/100 Trig: Free Run P A N N N N	Select Marker Marker 2	· *
Swept SA T KEYSIGHT Input: RF Input: Z5 0 0 Corrections: Off Ext Gain: -36 00 dB Freq Ref. Int (S) Zu PASS Align: Auto 1 Spectrum Y Scale/Div 10 dB	µW Path: Standard Gate: Off Source: Off IF Gain: High	Avg Hold:>100/100 Trig: Free Run	Select Marker Marker 2 Marker Frequency 2.483978500 GHz	 V Settings Peak Search
Swept SA T KEYSIGHT Input: RF Input Z: 50 0 Corrections: Off Corrections: Off Ext Gain: -38 00 dB Freq Ref. Int (S) VI PASS Align: Auto 1 Spectrum V Scale/Div 10 dB Log 70 Frace Pass	µW Path: Standard Gate: Off Source: Off IF Gain: High Sig Track: Off	Avg Hold:>100/100 Trig: Free Run P A N N N N Mkr2 2.483 978 5 GHz	Select Marker Marker 2 Marker Frequency	Peak Search Pk Search
Swept SA Imput Z 50 Ω KEYSIGHT Input RF Compling DC Corrections: 001 Ext Gain: -36 00 dB Freq Ref. Int (S) Imput Z 50 Ω Corrections: 001 Imput Z 50 Ω Corrections: 001 <th>µW Path: Standard Gate: Off Source: Off IF Gain: High Sig Track: Off</th> <th>Avg Hold:>100/100 Trig: Free Run P A N N N N Mkr2 2.483 978 5 GHz</th> <th>Select Marker Marker 2 Marker Frequency 2.483978500 GHz Peak Search</th> <th>Peak Search</th>	µW Path: Standard Gate: Off Source: Off IF Gain: High Sig Track: Off	Avg Hold:>100/100 Trig: Free Run P A N N N N Mkr2 2.483 978 5 GHz	Select Marker Marker 2 Marker Frequency 2.483978500 GHz Peak Search	Peak Search
Sweet SA T KEYSIGHT Input: RF Input: Z 50 0 RL Coupling DC Corrections: Off Ext Gain: -36 00 dB Freq Ref Int (S) V PASS Align: Auto NFE: Adaptive Scale/Div 10 dB Cop Frace 1 Pass 77:0 Frace 2 Pass 77:0 2 Cop 77:0 2 Cop 70 2 Cop	µW Path: Standard Gate: Off Source: Off IF Gain: High Sig Track: Off	Avg Hold:>100/100 Trig: Free Run P A N N N N Mkr2 2.483 978 5 GHz	Select Marker Marker 2 Marker Frequency 2.483978500 GHz Peak Search Next Peak	Peak Search Pk Search Config
Swept SA KEYSIGHT Input: RF Ext Gain: -36 00 dB Freq Ref Int (S) COT PASS Align: Auto NFE: Adaptive 1 Spectrum Scale/Div 10 dB Log 770 770 770 770 770 770 770 77	pW Path: Standard Gate: Off IF Gain: High Sig Track: Off Ref Level 86.99 dBµV	Avg Hold >100/100 M A/WWWW Trig: Free Run M A/WWWW P A N N N N Mkr2 2.483 978 5 GHz 48.875 dBµV Image: State of the st	Select Marker Marker 2 Marker Frequency 2.483978500 GHz Peak Search Next Peak Next Pk Right Next Pk Left Minimum Peak	Peak Search Pk Search Config Properties Marker
Swept SA T KEYSIGHT Input: RF Input Z: 50 0 Corrections: Off Corrections: Off Ext Gain: 38 00 dB Freq Ref. Int (S) V PASS Align: Auto 1 Spectrum Scale/Div 10 dB 70 710 70 710 70 710 710 710 710 710 710 710 301 Start 2.483500 GHz #Res EW 1.0 MHz	µW Path: Standard Gate: Off Source: Off IF Gain: High Sig Track: Off	Avg Hold:>100/100 Trig: Free Run P A N N N N Mkr2 2.483 978 5 GHz	Select Marker Marker Z Marker Frequency 2.483978500 GHz Peak Search Next Peak Next Pk Right Next Pk Right Next Pk Left Minimum Peak Pk-Pk Search	Peak Search Pk Search Config Properties Marker Function
Swept SA Image: Constraint of the system o	W Path: Standard Gate. Off IF Gain: High Sig Track: Off Ref Level 86.99 dBµV	Avg Hold ≥ 100/100 M A ₩ ₩₩₩ Trig: Free Run M A ₩ ₩₩₩ M A ₩ ₩ ₩ P A N N N Mkr2 2.483 978 5 GHz 48.875 dBµV Image: Arrow of the second secon	Select Marker Marker 2 Marker Frequency 2.483978500 GHz Peak Search Next Peak Next Pk Right Next Pk Left Minimum Peak Pk-Pk Search Marker Delta	Peak Search Pk Search Config Properties Marker Function Marker→
Swept SA T KEYSIGHT Input: RF Input Z 50 0 Corrections: Off Corrections: Off Corrections: Off T Spectrum V Scale/Div 10 dB NE: Adaptive Scale/Div 10 dB V Scale/Div 10 dB V Scale/Div 10 dB V Scale/Div 10 dB V Start 2:483500 GHz #Res BW 1:0 MHz Start 2:483500 GHz Start 2:483500 GHz V Mode V Mode Trace Scale/Div 3:846 5:GH X 1 N 1 f 2:483 3978 5:GH	W Path: Standard Gate. Off IF Gain: High Sig Track: Off Ref Level 86.99 dBµV #Video BW 1.0 MHz* Y Function F tz 59.95 dBµV	Avg Hold ≥100/100 M A ₩ ₩ ₩ W P A N N N M A ₩ ₩ ₩ W P A N N N M A ₩ ₩ ₩ W M Kr2 2.483 978 5 GHz 48.875 dBµV 48.875 dBµV Stop 2.500000 GHz 500000 GHz	Select Marker Marker 2 Marker Frequency 2.483978500 GHz Peak Search Next Peak Next Pk Right Next Pk Left Minimum Peak Pk-Pk Search Marker Delta MkrxCF	Peak Search Pk Search Config Properties Marker Function Marker→
Swept SA Imput Z 50 0 RL Ext Gain: -36 00 dB Frag Ref Int (S) COT PASS Align: Auto NFE: Adaptive 1 Spectrum Scale/Div 10 dB Comparison Imput Z 50 0 Comparison NFE: Adaptive 1 Spectrum Imput Z 50 0 Comparison Imput Z 50 0 Start 2.483500 GHz Imput Z 50 0 Imput Z 483500 GHz Imput Z 50 0 Imput Z 483500 GHz Imput Z 483 846 5 GH	W Path: Standard Gate. Off IF Gain: High Sig Track: Off Ref Level 86.99 dBµV #Video BW 1.0 MHz* Y Function F tz 59.95 dBµV	Avg Hold ≥ 100/100 M A ₩ ₩₩₩ Trig: Free Run M A ₩ ₩₩₩ M A ₩ ₩ ₩ P A N N N Mkr2 2.483 978 5 GHz 48.875 dBµV Image: Arrow of the second secon	Select Marker Marker 2 Marker Frequency 2.483978500 GHz Peak Search Next Peak Next Pk Right Next Pk Left Minimum Peak Pk-Pk Search Marker Delta Mkr→CF Mkr→Ref Lvl Continuous Peak Search	Peak Search Pk Search Config Properties Marker Function Marker→
Swept SA T KEYSIGHT Input: RF Input Z: 50 0 Corrections: Off Corrections: Off Ext Gain: 38 00 dB Freq Ref. Int (S) VI PASS Align: Auto 1 Spectrum V Scale/Div1 dB V C00 PASS 70 V 710 Carrections: Off 70 Carrections: Off 70 <td< th=""><th>W Path: Standard Gate. Off IF Gain: High Sig Track: Off Ref Level 86.99 dBµV #Video BW 1.0 MHz* Y Function F tz 59.95 dBµV</th><th>Avg Hold >100/100 Trig: Free Run MAWWWW PANNN Mkr2 2.483 978 5 GHz 48.875 dBµV Asset to the second second</th><th>Select Marker Marker 2 Marker Frequency 2.483978600 GHz Peak Search Next Peak Next Peak Next Pk Right Next Pk Left Minimum Peak Pk-Pk Search Marker Delta Mkr→CF Mkr→Ref Lvl Continuous Peak</th><th>Peak Search Pk Search Config Properties Marker Function Marker→</th></td<>	W Path: Standard Gate. Off IF Gain: High Sig Track: Off Ref Level 86.99 dBµV #Video BW 1.0 MHz* Y Function F tz 59.95 dBµV	Avg Hold >100/100 Trig: Free Run MAWWWW PANNN Mkr2 2.483 978 5 GHz 48.875 dBµV Asset to the second	Select Marker Marker 2 Marker Frequency 2.483978600 GHz Peak Search Next Peak Next Peak Next Pk Right Next Pk Left Minimum Peak Pk-Pk Search Marker Delta Mkr→CF Mkr→Ref Lvl Continuous Peak	Peak Search Pk Search Config Properties Marker Function Marker→

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Spectrum Analyzer 1 + Swept SA • KEYSIGHT Input RF Input Z: 50 Ω RL Compling DC Corrections: Off Fxt Game 28 00 dB Erea Def Int (S) Fxt Game Def Int (S)	#Atten: 0 dB PNO: Fast µW Path: Standard Gate: Off	Avg Type: Power (RMS) 12 3 4 5 6 Avg Hold⇒100/100 M A W WW W	Marker	
DVI PASS Align: Auto NFE: Adaptive 1 Spectrum v	Source: Off IF Gain: High Sig Track: Off	Thig: Free Run MANNAW W PANNNN PANNNN Mkr2 2.388 16 GHz 48.689 dBµV 10	Marker Frequency Settings 2.388160000 GHz Peak Marker Mode Peak Search Normal Pk Search Config Delta (Δ)	
37 0 27 0 17 0 	#Video BW 1.0 MHz*	Stop 2.39000 GHz Sweep 1.00 ms (1001 pts)	Fixed Properties Off Marker Function Delta Marker (Reset Delta) Marker → (Reset Delta) Counter On	
5 Marker Table v Mode Trace Scale X 1 N 1 f 2.389 60 GHz 2 N 2 f 2.388 16 GHz 3 4 5 6 6 9 923 01 AM	Y Function F 59.72 dBµV 48.68 dBµV	unction Width Function Value	Off Marker Settings Diagram All Markers Off Couple Markers On Off	
9:23:01 AM	802.11g-241			
Spectrum Analyzer 1 Swept SA Imput RF Input Z: 50 Ω KEYSIGHT Input: RF Corrections: Off Corrections: Off RL Ext Gain: 36.00 dB Freq Ref. Int (S) ZUT PASS Align: Auto NFE. Adaptive	#Atten: 0 dB PNO: Best Wide µW Path: Standard Gate: Off Source: Off IF Gain: High Sig Track: Off	Avg Type: Power (RMS) 12 3 4 5 6 Avg Hold>100/100 M A₩₩₩₩ Trig: Free Run P A N N N N	Select Marker Marker Marker 1	-
1 Spectrum	Ref Level 86.99 dBµV	Mkr1 2.484 638 5 GHz 61.90 dBµV	Marker Frequency Settings 2.48638500 GHz Peak Marker Mode Peak Marker Mode Peak Onrmal Pk Search Delta (Δ) Properties Fixed Marker Off Marker →	s
Start 2.483500 GHz #Res BW 1.0 MHz 5 Marker Table Mode r Mode Trace Scale X 1 1 f 2 N 2 f 2 N 2 f	61.90 dBµV	Stop 2.500000 GHz Sweep 1.00 ms (1001 pts) unction Width Function Value	Counter Marker Table On Off Marker Settings Diagram	
2 N 2 f 2.483 731 0 GHz 3 4 5 6 6 9 Mar 08, 2019 9:30:42 AM	48.66 dBµV		All Markers Off Couple Markers On Off	
	802.11g-246			

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webr SA	+							Marker	
EYSIGHT Input: RF Coupling: DC Ext Gain: -36.00	Input Z: 50 Ω Corrections: Off dB Freq Ref: Int (S)	#Atten: 0 dB µW Path: Standar Source: Off	PNO: Fast rd Gate: Off IF Gain: High	Avg Type: Pow Avg Hold:>100 Trig: Free Run	/100	3 4 5 6 ₩₩₩₩₩	Select Ma Marker 2	ırker	
PASS Align: Auto	NFE: Adaptive		Sig Track: Off		P A	NNNN	Marker F	requency	Settings
Spectrum V				Mkr	2 2.389 0 48.649			0000 GHz	
cale/Div 10 dB .og 77.0 Trace 1 Pass	R	tef Level 86.99 c	аври		40.043	νцыμν	Marker N	lode	Peak Search
Trace 2 Pass						∂ 1	Norm	al	Pk Searc Config
57.0	and the second						Delta	(Δ)	
37.0							Fixed		Propertie
							Off		Marker Function
3.99 3.01							- -	a Marker	Marker→
tart 2.31000 GHz	#	↓ ↓ ¢Video BW 1.0 N	MHz*		Stop 2.39		(Res	et Delta)	Counter
Res BW 1.0 MHz Marker Table				Swee	ep 1.00 ms (TOUT pts)	Marker Ta	able	Counter
Mode Trace Scale	Х	Y	Function	Function Width	Function	Value	Off	r Cotting	
1 N 1 f 2 N 2 f	2.384 40 GHz 2.389 04 GHz	60.43 dBµ∨ 48.64 dBµ∨						er Settings agram	
3 4							All M	arkers Off	
5 6							Couple M On	larkers	
	Mar 08, 2019								
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pectrum Analyzer 1	+	80	2.11n20-2	412MHz			Ç	Marker	¥ -
eectrum Analyzer 1 wept SA EYSIGHT Input: RF Couping. DC Ext Gain: -36.00		80 #Atten: 0 dB μW Path: Standar Source: Off	PNO: Best Wide		M A	2 3 4 5 6 \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Select Ma Marker 2	ırker	, J
ectrum Analyzer 1 wept SA EYSIGHT Input: RF Coupling: DC EX Gain: -36 00 7 PASS Align: Auto Spectrum	Input Z: 50 Ω Corrections: Off dB Freq Ref: Int (5) NFE: Adaptive	#Atten: 0 dB μW Path: Standar Source: Off	PNO: Best Wid rd Gate: Off IF Gain: High Sig Track: Off	e Avg Type: Pow Avg Hold:>100 Trig: Free Run	ми Ри .483 896	WWWW NNNN 0 GHz	Select Ma Marker 2 Marker F	ırker	Settings
ectrum Analyzer 1 vept SA EYSIGHT Input RF Coupling: DC EX Gain: -36 00 7 PASS Align: Auto Spectrum GUIDY 10 dB	Input Z: 50 Ω Corrections: Off dB Freq Ref: Int (5) NFE: Adaptive	#Atten: 0 dB µW Path: Standaı	PNO: Best Wid rd Gate: Off IF Gain: High Sig Track: Off	e Avg Type: Pow Avg Hold:>100 Trig: Free Run	/100 M # P #	WWWW NNNN 0 GHz	Select Ma Marker 2 Marker F 2.483890 Marker M	irker requency 5000 GHz lode	Settings Peak Search
Dectrum Analyzer 1 Vert SA Vert SA Vert SA EYSIGHT Input: RF Coupling: DC Ext Gain: -36.00 7 PASS Spectrum vert SA 90 Frace 70 Frace 70 Frace 70 Frace	Input Z: 50 Ω Corrections: Off dB Freq Ref: Int (5) NFE: Adaptive	#Atten: 0 dB μW Path: Standar Source: Off	PNO: Best Wid rd Gate: Off IF Gain: High Sig Track: Off	e Avg Type: Pow Avg Hold:>100 Trig: Free Run	ми Ри .483 896	WWWW NNNN 0 GHz	Select Ma Marker 2 Marker F 2.483896	irker requency 5000 GHz lode	Peak Search Pk Searc
pectrum Analyzer 1 wept SA EYSIGHT Input: RF Coupling: DC Ext Gain: -36 00 g PASS Align: Auto Spectrum cale/Div 10 dB g Face 1 Pass 70 Face 2 Pass 70 Face 2 Pass 70 Face 1 Pass	Input Z: 50 Ω Corrections: Off dB Freq Ref: Int (5) NFE: Adaptive	#Atten: 0 dB μW Path: Standar Source: Off	PNO: Best Wid rd Gate: Off IF Gain: High Sig Track: Off	e Avg Type: Pow Avg Hold:>100 Trig: Free Run	ми Ри .483 896	WWWW NNNN 0 GHz	Select Ma Marker 2 Marker F 2.483890 Marker M	irker requency 5000 GHz lode al	Peak Search Pk Searc Config
pectrum Analyzer 1 wept SA EYSIGHT Input: RF Coupling: DC ET Can: - 36 00 7 PASS Align: Auto Spectrum cale/Div 10 dB og 70 Trace 1 Pass 770 Trace 2 Pass 770 Trace 2 Pass 770 Trace 1 Pass 770 Trace 1 Pass 770 Trace 1 Pass	Input Z: 50 Ω Corrections: Off dB Freq Ref: Int (5) NFE: Adaptive	#Atten: 0 dB μW Path: Standar Source: Off	PNO: Best Wid rd Gate: Off IF Gain: High Sig Track: Off	e Avg Type: Pow Avg Hold:>100 Trig: Free Run	ми Ри .483 896	WWWW NNNN 0 GHz	Select Ma Marker 2 Marker F 2.483890 Marker M Norm	irker requency 5000 GHz lode al	Peak Search Pk Searc Config
pectrum Analyzer 1 wept SA EYSIGHT Input: RF Couping: DC Ext Gain: -36.00 T PASS Align: Auto Spectrum cale/Div 10 dB Trace 1 Pass 70 Trace 2 Pass 70 Trace 7 Pass 70 Trace 7 Trace 7 T	Input Z: 50 Ω Corrections: Off dB Freq Ref: Int (5) NFE: Adaptive	#Atten: 0 dB μW Path: Standar Source: Off	PNO: Best Wid rd Gate: Off IF Gain: High Sig Track: Off	e Avg Type: Pow Avg Hold:>100 Trig: Free Run	ми Ри .483 896	WWWW NNNN 0 GHz	Select Ma Marker 2 Marker F 2.483896 Marker M Norm Delta	irker requency 5000 GHz lode al	Peak Search Pk Searc Config Propertie
pectrum Analyzer 1 wept SA EYSIGHT Input: RF Coupling: DC EX Cain: 36 00 T PASS Align: Auto Spectrum Cale/Div 10 dB Trace 1 Pass 70 Trace 2 Pass 70 70 70 70 70 70 70 70 70 70 70 70 70	Input Z: 50 Ω Corrections: Off dB Freq Ref. Int (S) NFE: Adaptive	#Atten: 0 dB µW Path: Standar Source: Off	PNO: Best Wild rd Gate: Off IF Gain: High Sig Track: Off	e Avg Type: Pow Avg Hold:>100 Trig: Free Run	A 483 896 48.774	O GHZ	Select Ma Marker 2 Marker F 2.48389t Marker M Norm Deita Fixed Off Deit	rker requency 5000 GHz lode al (Δ) a Marker	Peak Search Pk Searc Config Propertie Marker Function
pectrum Analyzer 1 wept SA CEYSIGHT Input: RF Coupling DC Ext Gain: -36.00 T PASS Align: Auto Spectrum cale/Dir 10 dB Cale/Dir	Input Z: 50 Ω Corrections: Off dB Freq Ref. Int (S) NFE: Adaptive	#Atten: 0 dB μW Path: Standar Source: Off	PNO: Best Wild rd Gate: Off IF Gain: High Sig Track: Off	e Avg Type: Pow Avg Hold >100 Trg: Free Run Mkr2 2	ми Ри .483 896		Select Ma Marker 2 Marker F 2.483890 Marker M O Norm Deita Fixed Off Dett (Res	rker requency 5000 GHz lode al (Δ) a Marker ret Delta)	Peak Search Pk Searc Config Propertie Marker Function
pectrum Analyzer 1 wept SA EYSIGHT Input: RF Coupling: DC Ext Gain: -36.00 g PASS Align: Auto Spectrum cale/Div 10 dB	Input Z: 50 Ω Corrections: Off dB Freq Ref. Int (S) NFE: Adaptive	#Atten: 0 dB µW Path: Standar Source: Off	PNO: Best Wild rd Gate: Off IF Gain: High Sig Track: Off	e Avg Type: Pow Avg Hold >100 Trg: Free Run Mkr2 2	ми м д 2.483 896 48.774 48.774 5top 2.500		Select Ma Marker 2 Marker F 2.483890 Marker M Delta Fixed Off Delta Rest Marker Ta Off	rker requency 5000 GHz lode al (Δ) a Marker ret Delta)	Peak Search Pk Searc Config Propertie Marker Marker→
pectrum Analyzer 1 wept SA EYSIGHT Input: RF Coupling: DC Ext Gain: -36 00 T PASS Align: Auto Spectrum Cale/Div 10 dB Coupling: DC Cale/Div 10	t input Z: 50 Ω Corrections: Off dB Freq Ref. Int (S) NFE: Adaptive R K K K	#Atten: 0 dB µW Path: Standar Source: Off Ref Level 86.99 (PNO: Best Wild rd Gate: Off IF Gain: High Sig Track: Off	e Avg Type: Pow Avg Hold >100 Trg: Free Run Mkr2 2	ми м д 2.483 896 48.774 48.774 5top 2.500	0 GHz 0 GHz 0 GHz 0 GHz 1 dBµV	Select Ma Marker 2 Marker F 2.483899 Marker M Norm Delta Fixed Off Delt (Res Marker Ta On Off	rker requency 5000 GHz lode al (Δ) a Marker tet Delta) able er Settings	Peak Search Pk Searc Config Propertie Marker Marker→
pectrum Analyzer 1 wept SA CEYSIGHT L → Cauping DC Ext Gain: -36.00 T PASS Align: Auto Spectrum • cale/Div 10 dB 	Input Z: 50 Ω Corrections: Off dB Freq Ref. Int (S) NFE: Adaptive	#Atten: 0 dB µW Path: Standar Source: Off	PNO: Best Wild rd Gate: Off IF Gatn: High Sig Track. Off	e Avg Type Pow Avg[Hold >100 Trg: Free Run MKr2 2	м д. 483 896 48.774 5 top 2.500 p 1.00 ms (0 GHz 0 GHz 0 GHz 0 GHz 1 dBµV	Select Ma Marker 2 Marker F 2.483894 Marker W Norm Delta Fixed Off Delt (Res Marker T Off Off	rker requency 5000 GHz lode al (Δ) a Marker iet Delta) able er Settings agram	Peak Search Pk Searc Config Propertie Marker Marker→
Pectrum Analyzer 1 wept SA CEYSIGHT L PASS Align: Auto Spectrum Cale/Div 10 dB Cale/Div	tinput Z: 50 Ω Corrections: Off dB Freq Ref. Int (S) NFE: Adaptive R 4 4 4 4 4 4 4 4 4 4 4 4	#Atten: 0 dB µW Path: Standar Source: Off tef Level 86.99 d FVideo BW 1.0 M Y 60.36 dBµV	PNO: Best Wild rd Gate: Off IF Gatn: High Sig Track. Off	e Avg Type Pow Avg[Hold >100 Trg: Free Run MKr2 2	м д. 483 896 48.774 5 top 2.500 p 1.00 ms (0 GHz 0 GHz 0 GHz 0 GHz 1 dBµV	Select Ma Marker P 2.433894 Marker M O Norm Delta Fixed Off Delt (Res Marker Ti Off All M	rker requency 5000 GHz lode al (Δ) a Marker et Delta) able ar Settings agram	Peak Search Pk Searc Config Propertie Marker Marker→
pectrum Analyzer 1 wept SA EYSIGHT Input: RF Coupling: DC T PASS Align: Auto Spectrum Cate/Div 10 dB PASS Align: Auto Spectrum Trace 1 Pass Trace 2 Pass Trace2	Input Z: 50 Ω Corrections: Off dB Freq Ref. Int (S) NFE: Adaptive	#Atten: 0 dB µW Path: Standar Source: Off tef Level 86.99 d FVideo BW 1.0 M Y 60.36 dBµV	PNO: Best Wild rd Gate: Off IF Gatn: High Sig Track. Off	e Avg Type Pow Avg[Hold >100 Trg: Free Run MKr2 2	м д. 483 896 48.774 5 top 2.500 p 1.00 ms (0 GHz 0 GHz 0 GHz 0 GHz 1 dBµV	Select Ma Marker F 2.483890 Marker M O Norm Delta Off Delta Off Marker Ta Off All M Couple M	rker requency 5000 GHz lode al (Δ) a Marker et Delta) able ar Settings agram	Peak Search Pk Searc Config Propertie Marker Marker→
Pectrum Analyzer 1 wept SA EYSIGHT L PASS Align Auto Spectrum PASS Align Auto Spectrum Auto A	Input Z: 50 Ω Corrections: Off dB Freq Ref. Int (S) NFE: Adaptive	#Atten: 0 dB µW Path: Standar Source: Off tef Level 86.99 d FVideo BW 1.0 M Y 60.36 dBµV	PNO: Best Wild rd Gate: Off IF Gatn: High Sig Track. Off	e Avg Type Pow Avg[Hold >100 Trg: Free Run MKr2 2	48.774 Stop 2.500 P / P / P / P / P / P / P / P / P / P /	0 GHz 0 GHz 0 GHz 0 GHz 1 dBµV	Select Ma Marker 2 Marker F 2.483890 Marker M O Deita Deita Off Deita Off Cherker Ta Off Marker Ta Off Marker Ta Off All M Couple M	rker requency 5000 GHz lode al (Δ) a Marker et Delta) able ar Settings agram	Peak Search Pk Searc Config Propertie Marker Function Marker→

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10.2 Radiated Spurious Emissions below 1GHz

Requirement(s):

Spec	Item	Requirement		Applicable
47CFR§15.247(d) RSS247 (5.5)	a)	Except higher limit as specified elsewhere in low-power radio-frequency devices shall no specified in the following table and the level exceed the level of the fundamental emission edges Frequency range (MHz) 30 – 88 88 – 216 216 960 Above 960	t exceed the field strength levels of any unwanted emissions shall not	
Test Setup		Semi Anechoic Char Radio Absorbing Material	Antenna	spectrum Analyzer
Procedure	1. 2. 3. 4.	b. The EUT was then rotated to the	quency points obtained from the EUT cha dout by rotating the EUT, changing the an ght in the following manner: (whichever gave the higher emission leve direction that gave the maximum emissic adjusted to the height that gave the maxim le for that frequency point.	racterisation. tenna el over a full on. num emission.
Remark		JT was scanned up to 1GHz. Both horizontal nly the worst case.	and vertical polarities were investigated.	The results
Remark	0.1011 0	7		

Test Data	oxtimes Yes (See below)	🗆 N/A

Test was done by Deon Dai at 10m chamber.

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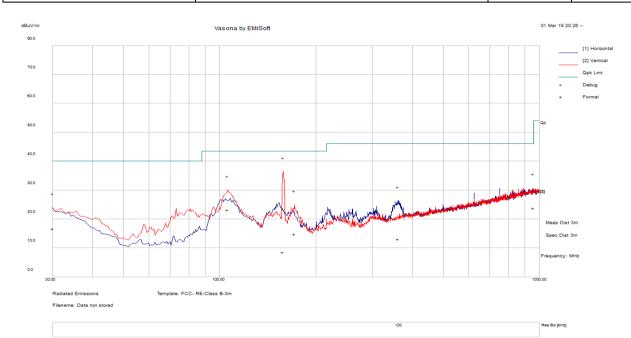
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Radiated Emission Test Results (Below 1GHz)

Test specification	below 1GHz			
	Temp (°C):			
Environmental Conditions:	Humidity (%)	47		
	Atmospheric (mbar):	1020		
Mains Power:	120VAC, 60Hz		Result	Pass
Tested by:	Deon Dai			
Test Date:	03/01/2019			
Remarks:	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
157.70	19.65	12.25	-23.3	8.6	Quasi Max	V	218	258	43.5	-34.9	Pass
105.62	35.56	11.92	-24.31	23.17	Quasi Max	V	176	263	43.5	-20.34	Pass
957.61	20.29	16.08	-12.52	23.85	Quasi Max	Н	344	68	46	-22.15	Pass
30.02	17.72	11.12	-12.1	16.73	Quasi Max	V	212	142	40	-23.27	Pass
171.02	26.48	12.36	-24.01	14.84	Quasi Max	V	176	7	43.5	-28.66	Pass
361.56	20.19	13.57	-20.66	13.1	Quasi Max	Н	143	292	46	-32.9	Pass

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

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10.3 Radiated Spurious Emissions between 1GHz – 25GHz

Requirement(s):

Dec	Item Requirement	Applicable
47CFR§15.247(d), RSS247(5.5)	 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	Radio Absorbing Material But the second sec	Spectrum Analyzer
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 cha Maximization of the emissions, was carried out by rotating the EUT, changing the ar and adjusting the antenna height in the following manner: Vertical or horizontal polarisation (whichever gave the higher emission lev rotation of the EUT) was chosen. 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 maxin 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 measured. 	racterisation. tenna polarizati el over a full on. num emission.
Remark		
Result	⊠ Pass □ Fail	
Test Data ⊠ Yes (Set Test Plot □ Yes (Set Test was done by Det		
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Radiated Emission Test Results (Above 1GHz)

Above 1GHz-25GHz - 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
3178.19	48.09	3.41	-13.79	37.71	Peak Max	V	207	293	74	-36.29	Pass
4824.63	48.63	4.12	-10.92	41.83	Peak Max	Н	220	34	74	-32.17	Pass
8748.59	49.94	5.63	-6.49	49.08	Peak Max	V	163	149	74	-24.92	Pass
3178.19	41.73	3.41	-13.79	31.35	Average Max	V	207	293	54	-22.65	Pass
4824.63	37.03	4.12	-10.92	30.23	Average Max	Н	220	34	54	-23.77	Pass
8748.59	38.5	5.63	-6.49	37.64	Average Max	V	163	149	54	-16.36	Pass

Above 1GHz-25GHz- 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
3728.45	48.34	3.57	-13.15	38.76	Peak Max	V	208	296	74	-35.24	Pass
4873.77	48.35	4.17	-11.01	41.51	Peak Max	Н	223	32	74	-32.49	Pass
8331.66	49.74	5.41	-7.04	48.11	Peak Max	Н	165	145	74	-25.89	Pass
3728.45	42.56	3.57	-13.15	32.98	Average Max	V	208	296	54	-21.02	Pass
4873.77	37.32	4.17	-11.01	30.48	Average Max	Н	223	32	54	-23.52	Pass
8331.66	38.34	5.41	-7.04	36.71	Average Max	Н	165	145	54	-17.29	Pass

Above 1GHz-25GHz – 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
3634.99	47.71	3.57	-13.43	37.85	Peak Max	Н	204	294	74	-36.15	Pass
4924.29	48.25	4.22	-11.11	41.36	Peak Max	Н	224	32	74	-32.64	Pass
8495.09	49.22	5.53	-6.86	47.89	Peak Max	V	169	149	74	-26.11	Pass
3634.99	41.99	3.57	-13.43	32.13	Average Max	Н	204	294	54	-21.87	Pass
4924.29	36.43	4.22	-11.11	29.54	Average Max	Н	224	32	54	-24.46	Pass
8495.09	38.04	5.53	-6.86	36.71	Average Max	V	169	149	54	-17.29	Pass

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Above 1GHz-25GHz- 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
3332.66	47.56	3.51	-13.74	37.33	Peak Max	Н	210	300	74	-36.67	Pass
4824.63	48.63	4.12	-10.92	41.83	Peak Max	V	215	32	74	-32.17	Pass
8292.38	50.53	5.38	-7.08	48.83	Peak Max	Н	167	154	74	-25.17	Pass
3332.66	41.05	3.51	-13.74	30.82	Average Max	Н	210	300	54	-23.18	Pass
4824.63	37.16	4.12	-10.92	30.36	Average Max	V	215	32	54	-23.64	Pass
8292.38	38.58	5.38	-7.08	36.88	Average Max	Н	167	154	54	-17.12	Pass

Above 1GHz-25GHz – 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
3246.09	48.4	3.47	-13.75	38.12	Peak Max	V	205	295	74	-35.88	Pass
4873.36	48.36	4.17	-11.01	41.52	Peak Max	Н	216	25	74	-32.48	Pass
8024.73	50.71	5.42	-7.04	49.09	Peak Max	Н	163	148	74	-24.91	Pass
3246.09	42.81	3.47	-13.75	32.53	Average Max	V	205	295	54	-21.47	Pass
4873.36	36.5	4.17	-11.01	29.66	Average Max	Н	216	25	54	-24.34	Pass
8024.73	38.98	5.42	-7.04	37.36	Average Max	Н	163	148	54	-16.64	Pass

Above 1GHz-25GHz- 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
3314.99	47.31	3.5	-13.74	37.07	Peak Max	Н	212	298	74	-36.93	Pass
4924.80	48.28	4.22	-11.11	41.39	Peak Max	V	217	33	74	-32.61	Pass
8882.27	49.92	5.62	-6.17	49.37	Peak Max	V	170	153	74	-24.63	Pass
3314.99	41.75	3.5	-13.74	31.51	Average Max	Н	212	298	54	-22.49	Pass
4924.80	37.14	4.22	-11.11	30.25	Average Max	V	217	33	54	-23.75	Pass
8882.27	38.55	5.62	-6.17	38	Average Max	V	170	153	54	-16	Pass

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Above 1GHz-25GHz- 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
3275.86	48.32	3.48	-13.75	38.05	Peak Max	Н	204	299	74	-35.95	Pass
4824.98	48.6	4.12	-10.92	41.8	Peak Max	Н	220	31	74	-32.2	Pass
8655.98	49.72	5.59	-6.64	48.67	Peak Max	Н	163	151	74	-25.33	Pass
3275.86	42.09	3.48	-13.75	31.82	Average Max	Н	204	299	54	-22.18	Pass
4824.98	37.38	4.12	-10.92	30.58	Average Max	Н	220	31	54	-23.42	Pass
8655.98	37.94	5.59	-6.64	36.89	Average Max	Η	163	151	54	-17.11	Pass

Above 1GHz-25GHz - 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
3278.64	47.88	3.48	-13.75	37.61	Peak Max	V	210	300	74	-36.39	Pass
4873.34	48.36	4.17	-11.01	41.52	Peak Max	V	221	30	74	-32.48	Pass
8378.13	50.79	5.44	-6.99	49.24	Peak Max	Н	169	150	74	-24.76	Pass
3278.64	42.64	3.48	-13.75	32.37	Average Max	V	210	300	54	-21.63	Pass
4873.34	37.07	4.17	-11.01	30.23	Average Max	V	221	30	54	-23.77	Pass
8378.13	39.08	5.44	-6.99	37.53	Average Max	Н	169	150	54	-16.47	Pass

Above 1GHz-25GHz- 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
3126.08	47.45	3.37	-13.82	37	Peak Max	Н	204	294	74	-37	Pass
4924.84	48.29	4.22	-11.11	41.4	Peak Max	Н	224	32	74	-32.6	Pass
8969.07	49.78	5.62	-5.98	49.42	Peak Max	V	166	153	74	-24.58	Pass
3126.08	41.43	3.37	-13.82	30.98	Average Max	Н	204	294	54	-23.02	Pass
4924.84	36.44	4.22	-11.11	29.55	Average Max	Н	224	32	54	-24.45	Pass
8969.07	38.18	5.62	-5.98	37.82	Average Max	V	166	153	54	-16.18	Pass

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10.4 Receiver Spurious Emissions

Requirement(s):

Spec	Item	Requirement	Applicable								
RSS GEN 7.3	a)	shown in table 3									
		Frequency range (MHz) Field Strength (uV/m) 30 - 88 100 88 - 216 150 216 - 960 200 Above 960 500									
Test Setup		Semi Anechoic Chamber Radio Absorbing Material	Spectrum Analyzer								
Test Setup		Semi Anechoic Chamber Radio Absorbing Material EUT 1.5m Ground Plane	Spectrum Analyzer								

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Proce	dure	2. Th Ma pol a. b. c. 3. A C 4. Ste	e test was carried out at aximization of the emissi larization, and adjusting Vertical or horizo rotation of the EU The EUT was th Finally, the anter Quasi-peak measureme	the selected frequency prons, was carried out by roothe antenna height in the portal polarisation (whichev UT) was chosen. en rotated to the direction has height was adjusted to the direction has then made for that	ver gave the higher emission level over a full that gave the maximum emission. o the height that gave the maximum emission.
Rem	nark				
Res	Result 🛛 Pass 🗆 Fail				
Test Data	🖂 Yes ((See below)	□ N/A		
Test Plot	🖂 Yes (See below)	□ N/A		

Test was done by Deon Dai at 10m chamber.

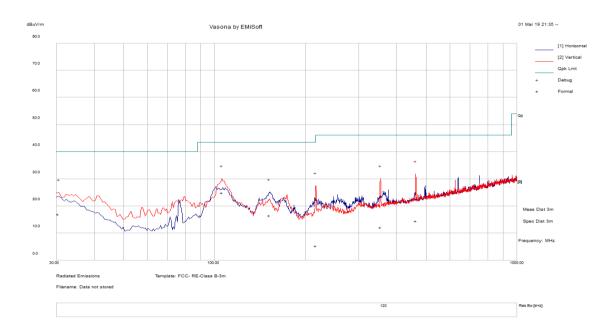
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Radiated Emission Test Results (Below 1GHz)

Test specification	below 1GHz				
	Temp (°C):				
Environmental Conditions:	Humidity (%)	47	1		
	Atmospheric (mbar):				
Mains Power:	120VAC, 60Hz	120VAC, 60Hz			
Tested by:	Deon Dai				
Test Date:	03/01/2019	03/01/2019			
Remarks:	Receiver mode				



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
105.92	37.23	11.92	-24.25	24.91	Quasi Max	V	110	219	43.5	-18.59	Pass
462.82	19.21	14.13	-18.84	14.49	Quasi Max	V	249	137	46	-31.51	Pass
30.39	18.42	11.12	-12.46	17.07	Quasi Max	V	101	112	40	-22.93	Pass
353.65	19.49	13.54	-20.8	12.23	Quasi Max	V	121	173	46	-33.78	Pass
151.88	27.62	12.21	-23.33	16.5	Quasi Max	Н	133	253	43.5	-27	Pass
215.97	17.49	12.77	-24.96	5.3	Quasi Max	V	130	91	43.5	-38.2	Pass

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

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Radiated Emission Test Results (Above 1GHz)

Receiver mode

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
1595.52	46.58	2.43	-6.03	42.98	Peak Max	Н	190	305	74	-31.02	Pass
3189.59	44.46	3.42	-1.49	46.39	Peak Max	V	180	178	74	-27.62	Pass
1064.40	57.56	1.94	-7.85	51.65	Peak Max	V	120	201	74	-22.35	Pass
1944.44	48.18	2.7	-2.76	48.12	Peak Max	V	102	208	74	-25.88	Pass
1595.52	29.75	2.43	-6.03	26.16	Average Max	Н	190	305	54	-27.84	Pass
3189.59	29.16	3.42	-1.49	31.08	Average Max	V	180	178	54	-22.92	Pass
1064.40	32.88	1.94	-7.85	26.97	Average Max	V	120	201	54	-27.03	Pass
1944.44	29.96	2.7	-2.76	29.9	Average Max	V	102	208	54	-24.1	Pass

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Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Cycle	Cal Due	In use
Radiated Emissions					1	
Keysight EXA 44GHz Spectrum Analyzer	N9030B(PXA)	MY57140374	08/20/2018	1 Year	08/20/2019	~
Bi-Log antenna (30MHz~6GHz)	JB6	A111717	08/12/2018	1 Year	08/12/2019	>
Horn Antenna (1GHz~26GHz)	3115	100059	01/26/2019	1 Year	01/26/2020	~
Horn Antenna (26GHz~40GHz)	AH-840	101013	08/28/2018	1 Year	08/28/2019	~
Pre-Amplifier(0.3MHz-6.5GHz)	LPA-6-30	11170602	02/06/2019	1 Year	02/06/2020	~
Pre-Amplifier (1-26.5GHz)	8449B	3008A00715	08/16/2018	1 Year	08/16/2019	~
Pre-Amp (10MHz~50GHz)	RAMP00M50GA	17032300047	02/10/2019	1 Year	02/10/2020	~

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Annex B. SIEMIC Accreditation

Accreditations	Document	Scope / Remark
ISO 17025 (A2LA)	A	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	A	Radio & Telecommunications Terminal Equipment: EN45001 – EN ISO/IEC 17025
		Electromagnetic Compatibility: EN45001 – EN ISO/IEC 17025
Singapore iDA CB(Certification Body)	đđ	Phase I, Phase II
Vietnam MIC CAB Accreditation	R	Please see the document for the detailed scope
Hong Kong OFCA		(Phase II) OFCA Foreign Certification Body for Radio and Telecom
	Ā	(Phase I) Conformity Assessment Body for Radio and Telecom
Industry Canada CAB	Ā	Radio: Scope A – All Radio Standard Specification in Category I
	14	Telecom: CS-03 Part I, II, V, VI, VII, VIII

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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
		 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
Korea CAB Accreditation		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	R	LP0002, PSTN01, ADSL01, ID0002, IS6100, CNS14336, PLMN07, PLMN01, PLMN08
Taiwan BSMI CAB Recognition	A	CNS 13438
Japan VCCI	R	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	A	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

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