



	300000				
Prüfbericht-Nr.: Test report no.:	CN23OW7Q (P15C-WiFi) 001	Auftrags-Nr.: Order no.:	48200107	Seite 1 von 29 Page 1 of 29	
Kunden-Referenz-Nr.: Client reference no.:	N/A	Auftragsdatum: Order date:	2023-04-14		
Auftraggeber: Client:	Eve Systems LLC 100 Pine St., Suite 1250, Sar	n Francisco CA 9411	I1 USA		
Prüfgegenstand: Test item:	Eve Cam				
Bezeichnung / Typ-Nr.: Identification / Type no.:	20ECJ9901				
Auftrags-Inhalt: Order content.	FCC Part 15C Test report (W	iFi 2.4GHz)			
Prüfgrundlage: Test specification:	FCC 47CFR Part 15: Subpart	t C Section 15.247			
Wareneingangsdatum: Date of sample receipt:	2023-04-17				
Prüfmuster-Nr.: Test sample no:	A003457889-002 A003457889-015				
Prüfzeitraum: Testing period:	2023-05-10 - 2023-05-31				
Ort der Prüfung: Place of testing:	EMC/RF Taipei Testing Site				
Prüflaboratorium: Testing laboratory:	Taipei Testing Laboratories				
Prüfergebnis*: Test result*:	Pass				
zusammengestellt von: compiled by:		genehmigt von: authorized by:	Λ		
Datum:	1 da	Ausstellungsdat	um: Scerte		
Stellung / Position	Ryan Chen Senior Project Manager	Issue date: 2023 Stellung / Positio	-06-09 Brer n: Senior Pr	nda Chen roiect Manager	
Sonstiges / Other	Bernor i Tojeet Manager	Otending / 1 Ositio		ojeet Manager	
Zustand des Prüfgegenstandes bei Anlieferung: Prüfmuster vollständig und unbeschädigt					
Condition of the test item a	at delivery:	Test item complete a	and undamaged	E merelle (
P(ass) = entspricht o.	z = gui $3 = perriedigendg. Prüfgrundlage(n) F(ail) = entspricht r$	nicht o.g. Prüfgrundlage(n)	4 = ausreicnend N/A = nicht anwendbar	o = mangeinaft N/T = nicht getestet	
Legena: 1 = very good P(ass) = passed a.m.	2 = good $3 = satisfactorytest specification(s) F(ail) = failed a.m.$	test specification(s)	4 = sumcient N/A = not applicable	5 = poor N/T = not tested	
Dieser Prüfbericht bez auszugsweise vervie This test report only relates to	Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be				
vos dupi	icaleu in extracts. This test report (uces not entitle to carr	y any lest mark.		



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TEST SUMMARY

Report Section	FCC Clause	Test Item	Result
5.1.1	15.247(b) & 15.203	Antenna Requirement	Pass
5.1.2	15.247(b)(3)	Peak Output Power	Pass
5.1.3	15.247(a)(2)	6 dB Bandwidth	Pass
5.1.3	2.1049	99% Occupied Bandwidth	Pass
5.1.4	15.247(e)	Power Spectral Density	Pass
5.1.5	15.247(d)	Conducted Spurious Emissions and Band Edges	Pass
5.1.6	15.247(d) & 15.205 & 15.209	Radiated Spurious Emissions and Band Edges	Pass
5.2.1	15.207	Mains Conducted Emission	Pass

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.



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APPENDIX A - TEST RESULT OF CONDUCTED

APPENDIX B - TEST RESULT OF RADIATED EMISSIONS & MAINS CONDUCTED EMISSION

APPENDIX SP - PHOTOGRAPHS OF TEST SETUP

APPENDIX EP - PHOTOGRAPHS OF EUT



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HISTORY OF THIS TEST REPORT

Report No.	Description	Date Issued
CN23OW7Q (P15C-WiFi) 001	Original Release	2023-06-09



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1. General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix: **Appendix A - Test Result of Conducted Appendix B - Test Result of Radiated Emissions & Mains Conducted Emission Appendix SP - Photographs of Test Setup**

Appendix EP - Photographs of EUT

Applied Standard and Test Levels

Radio

FCC 47CFR Part 15: Subpart C Section 15.247 FCC 47CFR Part 2: Subpart J Section 2.1049 ANSI C63.10:2013 KDB 558074 D01 15.247 Meas Guidance v05r02

1.2 Decision Rule of Conformity

The decision rule of conformity of this test report is following the requirements of the requested standard in the quotation, and agreed among testing laboratory and manufacturer (applicant) to exclude the consideration of Measurement Uncertainty, unless it is required by the specific standard.



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2. Test Sites

2.1 Test Laboratory

Taipei Testing Laboratories

11F. No.758, Sec. 4, Bade Rd., Songshan Dist. Taipei City 105 Taiwan (R.O.C.)

2.2 Test Facility

Taipei Testing Laboratories

No.458-18, Sec. 2, Fenliao Rd., Linkou Dist., New Taipei City 244 Taiwan (R.O.C.) FCC Registration No.: 180491 ISED Registration No.: 25563



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2.3 Traceability

All measurement equipment calibrations are traceable to NML(Taiwan)/NIST(USA) or where calibration is performed outside Taiwan, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically in a suitably accredited Calibration Lab. Additionally all equipment is verified for proper performance on a regular basics using in house standards or comparisons.

2.5 Measurement Uncertainty

All measurement uncertainty values are shown with a coverage factor of k=2 to indicate a 95% level of confidence.

Emission Measurement Uncertainty

Parameter	Uncertainty
Radiated Emission (9 kHz ~ 30 MHz)	± 1.15 dB
Radiated Emission (30 MHz ~ 200 MHz)	± 1.30 dB
Radiated Emission (200 MHz ~ 1 GHz)	± 1.30 dB
Radiated Emission (1 GHz ~ 18 GHz)	± 1.54 dB
Radiated Emission (18 GHz ~ 40 GHz)	± 2.52 dB
Mains Conducted Emission	± 1.65 dB



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3. General Product Information

3.1 Product Function and Intended Use

The EUT is an Eve Cam. It contains a WLAN compatible module enabling the user to communicate data through a Wireless interface.

For details refer to the User Guide, Data Sheet and Circuit Diagram.

3.2 System Details and Ratings

Basic Information of EUT

Item	EUT information
Kind of Equipment/Test Item	Eve Cam
Type Identification	20ECJ9901
FCC ID	SNE-IDC-002

Technical Specification of EUT

Item	EUT information
Operating Frequency	2412 MHz ~ 2462 MHz
Channel Number	802.11b/g/n HT20: 11 802.11n HT40: 7
Data Rate	802.11b: 11.0 / 5.5 / 2.0 / 1.0 Mbps 802.11g: 54.0 / 48.0 / 36.0 / 24.0 / 18.0 / 12.0 / 9.0 / 6.0 Mbps 802.11n: up to MCS7
Operation Voltage	5Vdc
Modulation	DSSS (DBPSK, DQPSK, CCK) OFDM (BPSK, QPSK, 16QAM, 64QAM)
	802.11b: 232.81
	802.11g: 361.41
Maximum Output Power (mw)	802.11n HT20: 334.97
	802.11n HT40: 167.49
Antenna Information	Refer to 5.1.1
Accessory Device	Refer to 4.4



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3.3 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

3.4 Submitted Documents

- Circuit Diagram
- Instruction Manual
- Rating Label
- Technical Description



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4. Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

The test modes were adapted accordingly in reference to the instructions for use. During testing, Channel and Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output expected by the customer and is going to be fixed on the firmware of the final end product.

Table for Parameters of Test Software Setting

802	.11b	802	11g 802.11n HT20 802.11n HT40		802.11n HT20		n HT40
Channel	Power Setting	Channel	Power Setting	Channel	Power Setting	Channel	Power Setting
1	47	1	49	1	46	3	43
6	51	6	60	2	52	6	48
11	47	11	50	6	60	9	44
				10	54		
				11	44		

4.2 Carrier Frequency and Channel

802.11b, 802.11g and 802.11n HT20:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	8	2447
2	2417	9	2452
3	2422	10	2457
4	2427	11	2462
5	2432		
6	2437		
7	2442		

802.11n HT40:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
3	2422	7	2442
4	2427	8	2447
5	2432	9	2452
6	2437		



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4.3 Test Operation and Test Software

Setup for testing: Test samples are provided with UART interface which makes it possible to control them through a test software installed on a notebook computer.

This software was running on the laptop computer connected to the EUT. It was used to enable the operation modes listed as below.

Test Software	rtwpriv command
---------------	-----------------

The samples were used as follows:

A003457889-002

A003457889-015

Full test was applied on all test modes, but only worst case was shown.

		Applica	able To		
EUT Configure Mode	Antenna Port Conducted Measurement Radiated Spurious Emissions above 1 GHz Radiated Spurious Emissions below 1 GHz Mains Conducted Emissions below 1			Mains Conducted Emission	Description
-	\checkmark	\checkmark	\checkmark	\checkmark	-

Note:

1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when position on Y-plane.

2. "-" means no effect.

Antenna Port Conducted Measurement

Pre-Scan full test was applied on all test modes, but only worst case was shown.

Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Date Rate (Mbps)
-	802.11b	1 to 11	1, 6, 11	1.0
-	802.11g	1 to 11	1, 6, 11	6.0
-	802.11n HT20	1 to 11	1, 2, 6, 10, 11	MCS0
-	802.11n HT40	3 to 9	3, 6, 9	MCS0

Radiated Spurious Emissions (Above 1 GHz)

Pre-Scan full test was applied on all test modes, but only worst case was shown.

Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Date Rate (Mbps)
-	802.11b	1 to 11	1, 6, 11	1.0
-	802.11g	1 to 11	1, 6, 11	6.0
-	802.11n HT20	1 to 11	1, 2, 6, 10, 11	MCS0
-	802.11n HT40	3 to 9	3, 6, 9	MCS0

Radiated Spurious Emissions (Below 1 GHz)

Pre-Scan full test was applied on all test modes, but only worst case was shown.

Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Date Rate (Mbps)
-	802.11n HT40	3 to 9	6	MCS0



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Mains Conducted Emission

- Pre-Scan full test was applied on all test modes, but only worst case was shown.
- Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Date Rate (Mbps)
-	802.11n HT40	3 to 9	6	MCS0

Test Condition

Test Item	Ambient Temperature	Relative Humidity	Tested by
Conducted Measurement	18-23 °C	56-68 %	Blake Wang
Radiated Spurious Emissions above 1 GHz	23.9-24.8 °C	53-54 %	Ivan Chiang
Radiated Spurious Emissions below 1 GHz	23.9-24.8 °C	53-54 %	Ivan Chiang
Mains Conducted Emission	21.1-24.9 °C	51.7-54.9 %	Roger Liao

4.4 Special Accessories and Auxiliary Equipment

The product has been tested together with the following additional accessories:

Accessory of EUT

None.

Support Unit

No	Description	Brand	Model	S/N	Shielded	Ferrite Core (Qty)	Length (cm)	Remark
			Radiated	Test				
Α	Adapter	ULLPOWER	ICP06C-050-1000B	-	NO	NO	-	
В	USB Cable	DEXATEK	-	-	NO	NO	220	
1	Notebook	HP	15s-du0007TX	CND93662WV	-	-	-	
2	UART	TUV	-	-	-	-	-	
			Mains Condu	ction Test				
-	Uart	MODULES	CP2102	-	-	-	-	
			Conducte	d Test				
-	Notebook	HP	TPN-C139	CND93662WT	-	-	-	NB-07

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4.6 Duty Cycle of Test Signal

Mode	On + Off Time (ms)	On Time (ms)	Duty Cycle (%)	Duty Factor (dB)
802.11b	12.54	12.44	99.20	0.03
802.11g	2.20	2.07	93.86	0.28
802.11n HT20	1.99	1.93	96.73	0.14
802.11n HT40	1.10	0.94	85.82	0.66

		802.	11b							802.	11g				
Spectrum	<u>٦</u>				Ē	Spectru	m				0				Ē
RefLevel 30.0 Att	00 dBm Offset : 40 dB ⊜ SWT	11.00 dB • RBW 10 M 20 ms • VBW 10 M	Hz Hz		(*)	Ref Lev	el 30.00 dBm 40 dB	Offset S SWT	11.00 dB e 5 ms e	 RBW 10 MH VBW 10 MH 	Hz Hz				(*,
9 1Pk Clrw						SGL 1Pk Clrw									
	M1		D3[1]		0.02 dB						D3[1	1			-0.36 dB
20 dBm			M1[1]		12.5400 ms 21.45 dBm	.88.d804.A	-	-	Howard	munthmy	www.	D2 MAR DXM	mountime	molecul	2.20000 ms
10 dBm					4.7600 ms	10 dBm-		1				· •			1.15000 ms
U dBm						U dBm-									
-10 dBm						-10 dBm—									
-20 dBm-						-20 dBm—		No.				1.1			
-20 d8m						-20 d8m-									
-30 dbm						-30 ubii									
-40 dBm						-40 dBm—									
-50 dBm						-50 dBm—									_
-60 dBm						-60 d8m-									
CF 2.412 GHz		1001	pts		2.0 ms/	CF 2.412	ĠHz			1001	pts				500.0 µs/
Marker	v V-value	Y-value	Eunction	Eunction Result	. 1	Marker	of Tro	V-value	a 1	Y-value	Eunctio	n	Eupo	tion Recu	
M1 M1	1 4.	76 ms 21.45 dBr	m	T directori Rosali		M1 M1	1	1	.15 ms	15.86 dBr	n		T une		
D2 M1 D3 M1	1 12.	44 ms -1.04 d 54 ms 0.02 d	B			D2 D3	M1 1 M1 1	2.	2.2 ms	3.38 d -0.36 d	B				
				teady Children W	6		1					Reat			10
		802.11r	ו HT20						80	02.11r	<u>ו HT40 וווי H</u>)			
Spectrum)	802.11r	n HT20			Spectru	m		80	02.11r	ו HT40)			
Spectrum Ref Level 30.0 Att	00 dBm Offset : 40 dB e SWT	802.11r				Spectru Ref Lev	m el 30.00 dBm 40 dB	Offset	11.00 dB • 2 ms •	02.11r)			
Spectrum Ref Level 30.0 Att SGL	00 dBm Offset : 40 dB ⊜ SWT	802.11r	<u>א HT20</u>			Spectru Ref Lev Att SGL	m el 30.00 dBm 40 dB	Offset S SWT	8(11.00 dB • 2 ms •	02.11r	1 HT4()			
Spectrum Ref Level 30.0 • Att SGL • IPk Cirw	00 dBm Offset : +0 dB ⊕ SWT	802.11r			(₩ ▽)	Spectru Ref Leve Att SGL IPk Clrw	m al 30.00 dBm 40 dB	Offset S SWT	11.00 dB 2 ms	02.11r		J			(₩ ▽
Spectrum Ref Level 30.0 Att SGL IPk Cirw 2B.d87000.04.000	00 dBm Offset : 40 dB ● SWT	802.11r	HT20	urana Brazonan haana	0.19 dB 1.99000 ms	Spectru Ref Leve Att SGL 1Pk Clrw 20 dBm	m el 30.00 dBm 40 dB	Offset S SWT	8(11.00 dB = 2 ms =	02.11r		1 1			0.14 dB 1.10000 ms 10.19 dBm
Spectrum Ref Level 30.0 Att SGL 1Pk Cirw 2P. dom, w. w. w. 10 dbm	00 dBm Offset : 40 dB • SWT	802.11r	HT20	แก้นการเกม 200 มีเมือง เมาะ มีเป็นไปไปไป 1	0.19 dB 1.99000 ms M.414H-frant 1.75500 ms	Spectru Ref Lev Att SGL 1Pk Clrw 20 dBm 10 dBm	m el 30.00 dBm 40 dB	Offset ■ SWT	11.00 dB = 2 ms =	02.11r	HT4(2 1 1)34 july-ralk	0.14 dB 1.10000 ms 10.49 dBm
Spectrum Ref Level 30.0 Att SGL 1Pk Cirw 20.480 pp. 44.44 10 dbm	00 dBm Offset : 40 dB • SWT	802.11r	n HT20 Hz Hz D3[1]	แก่งการเมืองระจากระการเรื่องการเรา เป็นการเป็น รู้รู้รู้รู้รู้รู้รู้รู้รู้รู้รู้รู้รู้ร	(₩ 0.19 db 1.99000 ms M.494 dbrtt 1.75500 ms	Spectru Ref Levi Att SGL 1Pk Clrw 20 dBm— 10 dBm—	m el 30.00 dBm 40 dB	Offset	8(11.00 dB 2 ms	02.11r	HT4() 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	M ² □). Stjølen velk	0.14 dB 1.10000 ms 10.19 dBm ₩ 808.900 iss
Spectrum Ref Level 30.0 SGL 1Pk Cirw 28 damma scutt 10 dBm 0 dBm	00 dBm Offset : 40 dB • SWT	802.11r		unite the second s	0.19 dB 1.99000 ms M.4.941-dram 1.75500 ms	Spectru Ref Leve Att SGL 1Pk Clrw 20 dBm 10 dBm 0 dBm	m el 30.00 dBm 40 dB	Offset	8(02.11r	D3[1 HZ HZ D3[1 M1[1] M1[1]) 1 Mariana	×₩ ² □). Sheliyo valik	0.14 dB 1.10000 ms 10.19 dBm Plate to Pps
Spectrum Ref Level 30.0 SGL 91Pk Cirw 20.4577100000000000000000000000000000000000	00 dBm Offset : 40 dB © SWT	802.11r	D3(1)	wares of same ward and a	0.19 dB 1,99000 ms M.494H-dant 1.75500 ms	Spectru Ref Leve Att SGL 1Pk Cirw 20 dBm 10 dBm 0 dBm -10 dBm	m 130.00 dBm 40 dB	Minimum	8(11.00 dB 2 ms	02.11r	D3[1 HZ D3[1 mst/mst/state(wst)	3 1 1		<u>ા ગ</u> ામાં આવ્યો છે.	0.14 dB 1.10000 ms 10.19 dBm Milado 500 ps
Spectrum Ref Level 30.0 Att SGL 91Pk Clrw 20.4% 10 dBm -10 dBm -20 dBm	00 dBm Offset : 40 dB e SWT	802.11r	n HT20		0.19 dB 1.99000 ms N.410H-diant 1.75500 ms	Spectru Ref Levi SGL 1Pk Clrw 20 dBm 0 dBm -10 dBm -20 dBm	m	0 Offset ● SWT M1 M1 M1 M1 M1 M1 M1 M1 M1 M1	8(02.11r	1 HT4(1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		3144.×14	0.14 dB 1.10000 ms 10.19 dBm Wikiter.com
Spectrum Rof Level 30.0 Att SGL IPK Clrw 2B.4300 pp.00.000 0 dBm -10 dBm -20 dBm	00 dBm Offset : 40 dB • SWT	802.11r	D3(1)		0.19 db 1,99000 ms N.4494/49971 1.75500 ms	Spectru Ref Lev. Att SGL IPk Cirw 20 dBm- 0 dBm- -10 dBm- -20 dBm-	el 30.00 dBm 40 dB	M1 MM	8(02.11r		С 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1)3jjeljva,∿ali	0.14 dB 1.10000 ms 10,19 dBm Mitida 594355
Spectrum Ref Level 30.0 • Att SGL • IPA Conv • IPA Conv • IPA Conv • ID dBm -10 dBm -20 dBm -30 dBm	00 dbm Offset 1 40 db e SwT	802.11r	h HT20		0.19 dB 1.99000 ms 1.75500 ms	Spectru Ref Levi Ref Levi Att SGL IPk Clrw 20 dBm Ib dBm 10 dBm -10 dBm -20 dBm -30 dBm	m 130.00 dBm 40 dB	M1ANN	8(02.11r		2 .1 .1 .1 		j3jjeltraventa I	0.14 dB 1.10000 ms 10.49 dBm /////b///ps
Spectrum Ref Level 30.0 • Att SGL • IPK Clrw 20.48m 10 dBm -10 dBm -20 dBm -30 dBm	40 db · SWT	802.11r	n HT20		(₩ 0.19 db) 1.99000 ms Metabli-danii 1.75500 ms	Spectru Ref Levi Att SGL 20 dBm- 10 dBm- -10 dBm- -20 dBm- -30 dBm- -40 dBm-	1 30.00 dBm 40 dB	Offset	8(02.11r	<u>н НТ4(</u> +12 	ס ז לאינעאיש	wik ² c	jejjeljsegova/te	0.14 dB 1.10000 ms 10.4 y dBm 44346.004 pS
Spectrum Ref Level 30.0 Att SGL IPK Chw 20.49mmmet.us 10 dbm -10 dbm -20 dbm -30 dbm -50 dbm	40 dbm Offset 3 40 db SWT	802.11r	HT20		(₩) 0.19 dB 1.99000 ms 1.4500 ms	Spectru Ref Lev. Att SGL SGL 1Pk Cirw 20 dBm 10 dBm -10 dBm -20 dBm -30 dBm -50 dBm	m 20.00 dBm 40 dB	M1 M1 M1 M1 M1 M1	8(02.11r	1 HT4() 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		⊃3jjeltrasvalta T	0.14 dB 0.14 dB 1.10000 ms 10.49 dBm 4 ⁴⁵ Md (64 pk)
Spectrum Rof Level 30.0 • Att • DFk Clw • DFk Clw • DBm • 10 dBm • -10 dBm • -20 dBm • -30 dBm • -50 dBm	40 dBm Offset 3 40 dB SWT	802.11r			(Spectru Ref Lev: Att SGL 9 1Pk Cirw 20 dBm 10 dBm 0 dBm -10 dBm - -20 dBm - -30 dBm - -50 dBm - -50 dBm -	m 20.00 dBm 40 dB	Mi M	8(02.11r		ס ז לאינעויינ-ע		⊇jjeltrasvala I	0.14 dB 1.10000 ms 1.049 dBm #1840:04989
Spectrum Ref Level 30.0 • Att • Drk Crw • Itk Crw • Drk Crw <td< td=""><td>40 dbm Offset : 40 db e SWT</td><td>802.11r</td><td>h HT20</td><td></td><td>(</td><td>Spectru Ref Lev. Att SGL 9 IPk Cirw 20 dBm 10 dBm - -10 dBm - -20 dBm - -30 dBm - -50 dBm - -60 dBm -</td><td>m li 30.00 dism 40 de</td><td>Minute Andread</td><td>8(</td><td>02.11r</td><td>h HT4(42 42 </td><td>D 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1</td><td>ઓરિટ ા પ્રાપ્ય અપ્રત્ય</td><td>3444×11</td><td>0.14 d0 1.10000 ms 10.09 dbm 478 dbm 4</td></td<>	40 dbm Offset : 40 db e SWT	802.11r	h HT20		(Spectru Ref Lev. Att SGL 9 IPk Cirw 20 dBm 10 dBm - -10 dBm - -20 dBm - -30 dBm - -50 dBm - -60 dBm -	m li 30.00 dism 40 de	Minute Andread	8(02.11r	h HT4(42 42 	D 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ઓરિટ ા પ્રાપ્ય અપ્રત્ય	3444×11	0.14 d0 1.10000 ms 10.09 dbm 478 dbm 4
Spectrum Ref Level 30.0 Att SGL ID PLC Irw ID dBm -10 dBm -20 dBm -30 dBm -50 dBm -50 dBm -60 dBm	40 dBm Offset : 40 dB SWT	802.11r	h HT20		0.19 dB 1.99000 ms 1.99000 ms 1.75500 ms	Spectru Ref Lev. Att SGL IPk Cirw 20 dBm 10 dBm -10 dBm -20 dBm -30 dBm -30 dBm -60 dBm -60 dBm -60 dBm	al 30.00 dBm 40 dB	M3 when he had h	8(11.00 dB = 2 ms =	02.11r		D 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	wilk ² c	334444	0.14 dB 1.10000 ms 10.49 dBm 44 dF 0.49 dF 0.4
Spectrum Ref Level 30.0 * Att SGL Ø IPK Chw 28.4%(3),0,0,0,0,0,0 10 dBm -10 dBm -20 dBm -30 dBm -60 dBm -60 dBm -50 dBm -50 dBm -50 dBm -50 dBm -10 dBm	20 dbm Offset : 40 db SWT	802.11r	HT20		0.19 db 1.9900 ms N4404 Aard 1.75500 ms	Spectru Ref Lev. Att SGL 9.1Pk Cirw 1Pk Cirw 20 dBm 10 dBm -10 dBm -20 dBm -30 dBm -30 dBm -50 dBm -60 dBm -50 dBm -57 dBm -50 dBm -50 dBm -50 dBm -57 dBm	m lat 30.00 diam 40 dia diaman	M1AM	8(02.11r	b HT40		Firm	i in Resu	0.14 dB 1.10000 ms 10,49 dBn 49 dBn 40 dBn 4
Spectrum Ref Level 30.0 * Att SGL * IPK Cfw * IPK Cfw * IPK Cfw 0 dBm -10 dBm -20 dBm -30 dBm -60 dBm -60 dBm -60 dBm -79 dBm	C X-value 1 1.7	802.11r	h HT20	Function Result	(0.19 db) 1.9000 ms 1.75500 ms 1.75500 ms 0.19 db) 1.75500 ms 0.19 db) 1.75500 ms 0.19 db) 0.19 db) 0.1	Spectru Ref Lev. Att SGL 9 PK Clrw 20 dBm 10 dBm 0 dBm -20 dBm -30 dBm -30 dBm -50 dBm -50 dBm -60 dBm -50 dBm -60 dBm -60 dBm -70 dBm -80 dBm -70 dBm -90 dBm -70 dB	61 30.00 dBm 40 dB 61 30.00 dBm 40 dB 40 d	M1. W	8(11.00 dB = 2 ms = 	02.11r	h HT4(D	Func	tion Resu	0.14 dB 1.10000 ms 10.49 dBm 475467.04965 200.0 µs/
Spectrum Ref Level 30.0 • Att SGL • IPK Clw 2B.4987900000000000000000000000000000000000	c X-value 1 1.7 1 1.9	802.11r	h HT20	Function Result	(Spectru Ref Lev. • Att SGL • IPK Clrw. 20 dBm · 10 dBm 0 dBm · 20 dBm - · 30 dBm - · 40 dBm - · 50 dBm - · 60 dBm - · 60 dBm - · 70 dBm - · 90 dBm - · 90 dBm -		Offset SwT	8(11.00 dB = 2 ms = 	02.11r	h HT4(Func	side and a second	0.14 db 1.10000 ms 10.19 dbm 475 dbm
Spectrum Ref Level 30.0 Att SGL IPR Chw ID OB 10 dBm -10 dBm -20 dBm -30 dBm -60 dBm -60 dBm -50 dBm -50 dBm -80 dBm -90 dBm -30 dBm -30 dBm -50 dBm -50 dBm -50 dBm -50 dBm -60 dBm -10 dBm -20 dBm -30 dBm -3	C X-value 1 1.7 1 1.	802.11r 1.00 dB = RBW 10 M 5 ms = VBW 10 M	HT20 Hz	Function Result	0.19 dB 1.9900 ms N4.44/4 mm 1.75500 ms 500.0 µs/	Spectru Ref Lev. Att SGL 1Pk Cirw 20 dBm 10 dBm -10 dBm -20 dBm -30 dBm -30 dBm -30 dBm -60 dBm -60 dBm -50 dBm -50 dBm -50 dBm -30 dBm -60 dBm -30 dBm -50 dBm -30 dBm -50 dBm -30 dBm -60 dBm -30 dBm -50 dBm -30 d	al 30.00 dBm 40 dB 40 dB 40 dB </td <td>Offset SWT</td> <td>8(11.00 dB = 2 ms = </td> <td>1001 VBW 10 MH VBW 1</td> <td>hHT4(42 43 44 44 44 44 44 44 44 44 44 44 44 44 44 44 44 44 44 44</td> <td></td> <td>Func</td> <td>3)////www/h</td> <td>0.14 dB 1.10000 ms 10.49 dBm 475.447 obt y24 200.0 µs/ it</td>	Offset SWT	8(11.00 dB = 2 ms = 	1001 VBW 10 MH VBW 1	hHT4(42 43 44 44 44 44 44 44 44 44 44 44 44 44 44 44 44 44 44 44		Func	3)////www/h	0.14 dB 1.10000 ms 10.49 dBm 475.447 obt y24 200.0 µs/ it



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5. Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

Requirement

Use of approved antennas only

According to the manufacturer declaration, the EUT has an antenna with a directional gain of 3.03 dBi. The antenna is a PCB antenna with no possibility of replacement with a non-approved antenna by the end-user. Therefore, the EUT is considered to comply with this provision.

Refer to EUT photo for details.



Prüfbericht - Nr.: CN23OW7Q (P15C-WiFi) 001 Seite 17 von 29 Page 17 of 29 5.1.2 Peak Output Power Imit 1 watt (30 dBm) Kind of Test Site Shielded room Test Setup EUT Power Sensor EUT Power Sensor Power Meter

Test Instruments

Kind of	Monufacturar	Turpo	C/N	Calibration	Calibration	Test	Date
Equipment	Manufacturer	туре	3/11	Date	Due Date	From	Until
Power Meter	Anritsu	ML2495A	1901008	2023/3/17	2024/3/15	2023/5/21	2023/5/22
Power Sensor	Anritsu	MA2411B	1725269	2023/3/17	2024/3/15	2023/5/21	2023/5/22

Test Procedures

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

Average power sensor was used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.



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Test Result

Peak Output Power

<802.11b>

Channel	Channel	Peak Out	put Power	Limit
Channel	(MHz)	(dBm)	(mW)	(dBm)
1	2412	22.43	174.98	30
6	2437	23.67	232.81	30
11	2462	22.17	164.82	30

<802.11g>

Channel	Channel	Peak Out	put Power	Limit
Channel	(MHz)	(dBm)	(mW)	(dBm)
1	2412	23.69	233.88	30
6	2437	25.58	361.41	30
11	2462	23.71	234.96	30

<802.11n HT20>

Channel	Channel	Peak Out	put Power	Limit
Channel	(MHz)	(dBm)	(mW)	(dBm)
1	2412	22.36	172.19	30
2	2417	23.63	230.67	30
6	2437	25.25	334.97	30
10	2457	23.91	246.04	30
11	2462	21.26	133.66	30

<802.11n HT40>

Channel	Channel	Peak Out	out Power	Limit
Channer	(MHz)	(dBm)	(mW)	(dBm)
3	2422	21.45	139.64	30
6	2437	22.24	167.49	30
9	2452	21.01	126.18	30



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Average Power (For Reference)

<802.11b>

Channel	Channel Frequency	Average Power		
Channel	(MHz)	(dBm)	(mW)	
1	2412	20.31	107.40	
6	2437	21.62	145.21	
11	2462	19.92	98.17	

<802.11g>

Channel	Channel Frequency	Average Power		
Channer	(MHz)	(dBm)	(mW)	
1	2412	16.26	42.27	
6	2437	20.63	115.61	
11	2462	16.65	46.24	

<802.11n HT20>

Channel	Channel Frequency	Average Power		
Channel	(MHz)	(dBm)	(mW)	
1	2412	14.89	30.83	
2	2417	17.29	53.58	
6	2437	19.75	94.41	
10	2457	18.12	64.86	
11	2462	13.66	23.23	

<802.11n HT40>

Channel	Channel Frequency	Average Power		
	(MHz)	(dBm)	(mW)	
3	2422	13.41	21.93	
6	2437	15.53	35.73	
9	2452	13.95	24.83	



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5.1.3 6 dB Bandwidth and 99% Occupied Bandwidth

Limit

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

Kind of Test Site

Shielded room

Test Setup



Test Instruments

Kind of	Monufacturar	Turne	S/N	Calibration	Calibration	Test	Date
Equipment	Manufacturer	туре	3/N	Date	Due Date	From	Until
Spectrum Analyzer	R&S	FSV	101512	2023/2/23	2024/2/22	2023/5/21	2023/5/22

Test Procedure

- Set resolution bandwidth (RBW) = 100 kHz a.
- Set the video bandwidth (VBW) \ge 3 x RBW, Detector = Peak. b.
- C. Trace mode = max hold.
- Sweep = auto couple. d.
- Measure the maximum width of the emission that is constrained by the frequencies associated with e. the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.
- For 99% occupied bandwidth measurement, the transmitter output was connected to the spectrum f. analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth and set the detector to PEAK. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean power of a given emission.

Test Results

Please refer to Appendix A.



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5.1.4 Power Spectral Density

Limit

The power spectral density shall not be greater than 8 dBm in any 3 kHz band.

Kind of Test Site

Shielded room

Test Setup



Test Instruments

Kind of	Monufacturar	Turno	C/N	Calibration	Calibration	Test Date	
Equipment	Manufacturer	Type	5/17	Date	Due Date	From	Until
Spectrum Analyzer	R&S	FSV	101512	2023/2/23	2024/2/22	2023/5/21	2023/5/22

Test Procedure

- a. Set analyzer center frequency to DTS channel center frequency.
- b. Set the span to 1.5 times the DTS bandwidth.
- c. Set the RBW to: $3 \text{ kHz} \le \text{RBW} \le 100 \text{ kHz}$.
- d. Set the VBW \geq 3 × RBW.
- e. Detector = peak.
- f. Sweep time = auto couple.
- g. Trace mode = max hold.
- h. Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level within the RBW. i.

Test Results

Please refer to Appendix A.



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5.1.5 Co Measure	nducted S d in 100 kH	purious Iz Band ^y	Emission width	s and Fr	equency	Band E	dges	
Limit								
20 dB (below power.)	that in the 100	kHz bandwi	dth within the	band that cor	ntains the hig	hest level of	f the desired	
Kind of Test	Site	Shielde	ed room					
Test Setup								
Et Test Instrum	JT Atter	nuator Spe	ectrum Analyze	9r				
Kind of Equipment	Manufacturer	Туре	S/N	Calibration Date	Calibration Due Date	Test From	Date Until	
Spectrum Analyzer	R&S	FSV	101512	2023/2/23	2024/2/22	2023/5/21	2023/5/22	

Test Procedure

Measurement procedure REF

- 1. Set the RBW = 100 kHz.
- 2. Set the VBW \geq 300 kHz.
- 3. Detector = peak.
- 4. Sweep time = auto couple.
- 5. Trace mode = max hold.
- 6. Allow trace to fully stabilize.
- 7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

Measurement procedure OOBE

- 1. Set RBW = 100 kHz.
- 2. Set VBW ≥ 300 kHz.
- 3. Detector = peak.
- 4. Sweep = auto couple.
- 5. Trace Mode = max hold.
- 6. Allow trace to fully stabilize.
- 7. Use the peak marker function to determine the maximum amplitude level.

Test Results

Please refer to Appendix A.











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Test Instruments

2023/5/10 ~ 2023/5/25

Kind of Equipment	Manufacturer	Туре	S/N	Calibration Date	Calibration Due Date				
Above 1 GHz									
Signal Analyzer	R&S	FSV40	101508	2023/4/20	2024/4/18				
Horn Antenna	ETS-Lindgren	3117	00218929	2022/12/8	2023/12/7				
HF-AMP + AC source	EMCI	EMC051845SE	980633	2023/2/22	2024/2/21				
HF-AMP + AC source	EMCI	EMC184045SE	980657	2023/2/16	2024/2/15				
Horn Antenna	SCHWARZBECK	BBHA 9170	00218930	2022/12/8	2023/12/7				
Test Software	Audix E3	15914a_20191106 tuv	PK-001087	N/A	N/A				
		30 MHz ~ 1 GH	lz						
Receiver	R&S	ESR7	102109	2023/2/24	2024/2/23				
Bilog Antenna	SCHWARZBECK	VULB-9168	00951	2023/3/31	2024/3/29				
LF-AMP	Agilent	8447D	2944A107722	2023/3/22	2024/3/20				
Test Software	Audix E3	15914a_20191106 tuv	PK-001087	N/A	N/A				
Below 30 MHz									
Receiver	R&S	ESR7	102109	2023/2/24	2024/2/23				
Loop Antenna	SCHWARZBECK	FMZB 1519B	00215	2023/1/4	2024/1/3				



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Test Procedures

For Radiated Emissions below 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel (OPEN), perpendicular (CLOSE), and ground-parallel (GROUND) orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. The test-receiver system was set to peak and average detected function and specified bandwidth with maximum hold mode when the test frequency are 9-90 kHz, 110-490 kHz and above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

- 1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz at frequency below 30 MHz.
- 2. All modes of operation were investigated and the worst-case emissions are reported.

For Radiated Emissions above 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30 MHz ~ 1 GHz) / 1.5 meters (for above 1 GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detected function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

- 1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
- 2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
- The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98 %) or 10 Hz (Duty cycle ≥ 98 %) for Average detection (AV) at frequency above 1 GHz.
- 4. All modes of operation were investigated and the worst-case emissions are reported.



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- 5. The Radiated Emissions testing was performed in the X(E1), Y(H) and Z(E2) axis orientation. The worst-case Axis orientation is recorded in this test report.
- 6. The emission levels of other frequencies (including the 10th harmonic of the highest fundamental frequency) are very lower than the limit and are not shown in the test report.

Test Results

Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) Level (dBuV/m) = Reading (dBuV) + Factor (dB/m)

Please refer to Appendix B.







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Test Procedures

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/50 uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit 20 dB) was not recorded.

Note: The resolution bandwidth and video bandwidth of test receiver is 9 kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15 MHz – 30 MHz.

Test Results

Please refer to Appendix B.