

🥇 Shenzhen Zhongjian Nanfang Testing Co., Ltd.

Report No: CCISE181100604

FCC REPORT

Applicant: GNJ Manufacturing Inc

Address of Applicant: 5811 West Hallandale Beach Blve. West Park, FL 33023

Equipment Under Test (EUT)

Product Name: Cool Duo

Model No.: Cool Duo

Trade mark: CellAllure

FCC ID: 2AAE9CAPHG52

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247

Date of sample receipt: 06 Nov., 2018

Date of Test: 06 Nov., to 28 Nov., 2018

Date of report issued: 29 Nov., 2018

Test Result: PASS*

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Bruce Zhang Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Report No: CCISE18110064

2 Version

Version No.	Date	Description
00	29 Nov., 2018	Original

Tested by: Mike DU Date: 29 Nov., 2018

Test Engineer

Reviewed by: 29 Nov., 2018

Project Engineer



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4 Test Summary

Test Items	Section in CFR 47	Result		
Antenna requirement	15.203 & 15.247 (b)	Pass		
AC Power Line Conducted Emission	15.207	Pass		
Conducted Peak Output Power	15.247 (b)(3)	Pass		
6dB Emission Bandwidth 99% Occupied Bandwidth	15.247 (a)(2)	Pass		
Power Spectral Density	15.247 (e)	Pass		
Band Edge	15.247 (d)	Pass		
Spurious Emission	15.205 & 15.209	Pass		
Page: The ELIT complies with the apportial requirements in the standard				

Pass: The EUT complies with the essential requirements in the standard.

N/A: N/A: Not Applicable.



5 General Information

5.1 Client Information

Applicant:	GNJ Manufacturing Inc
Address:	5811 West Hallandale Beach Blve. West Park, FL 33023
Manufacturer/ Factory:	Shenzhen Tugao Intelligent Co., Ltd.
Address:	7th/8th/10th Floor, Bldg A, Jingang Science & Technology Park, Yongfu Road, Fuyong, Bao'an District, Shenzhen, China 518103

5.2 General Description of E.U.T.

Product Name:	Cool Duo	
Model No.:	Cool Duo	
Operation Frequency:	2412MHz~2462MHz (802.11b/802.11g/802.11n(HT20)) 2422MHz~2452MHz (802.11n(HT40))	
Channel numbers:	11 for 802.11b/802.11g/802.11(HT20) 7 for 802.11n(HT40)	
Channel separation:	5MHz	
Modulation technology: (IEEE 802.11b)	Direct Sequence Spread Spectrum (DSSS)	
Modulation technology: (IEEE 802.11g/802.11n)	Orthogonal Frequency Division Multiplexing(OFDM)	
Data speed (IEEE 802.11b):	1Mbps, 2Mbps, 5.5Mbps, 11Mbps	
Data speed (IEEE 802.11g):	6Mbps, 9Mbps, 12Mbps, 18Mbps, 24Mbps, 36Mbps, 48Mbps, 54Mbps	
Data speed (IEEE 802.11n):	Up to 150Mbps	
Antenna Type:	Internal Antenna	
Antenna gain:	-2.0 dBi	
Power supply:	Rechargeable Li-ion Polymer Battery DC3.8V-2200mAh	
AC adapter:	Model: 853-5010 Input: AC100-240V, 50/60Hz, 150mA Output: DC 5.0V, 1A	
Test Sample Condition:	The test samples were provided in good working order with no visible defects.	

Operation Frequency each of channel for 802.11b/g/n(HT20)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz		

Note:

- 1. For 802.11n-HT40 mode, the channel number is from 3 to 9;
- 2. Channel 1, 6 & 11 selected for 802.11b/g/n-HT20 as Lowest, Middle and Highest channel, Channel; 3, 6 & 9 selected for 802.11n-HT40 as Lowest, Middle and Highest channel, Channel.

Shenzhen Zhongjian Nanfang Testing Co., Ltd.
No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road, Bao'an District, Shenzhen, Guangdong, China
Telephone: +86 (0) 755 23118282 Fax: +86 (0) 755 23116366

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5.3 Test environment and test mode

Operating Environment:			
Temperature:	24.0 °C		
Humidity:	54 % RH		
Atmospheric Pressure:	1010 mbar		
Test mode:	·		

Transmitting mode Keep the EUT in continuous transmitting with modulation

The sample was placed 0.8m (below 1GHz)/1.5m (above 1GHz) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

- 1				
Per-scan all kind of data rate, the follow list were the worst case.				
Mode Data rate				
802.11b	1Mbps			
802.11g	6Mbps			
802.11n(HT20)	6.5Mbps			
802.11n(HT40)	13.5Mbps			

5.4 Description of Support Units

The EUT has been tested as an independent unit.

5.5 Measurement Uncertainty

Parameters	Expanded Uncertainty
Conducted Emission (9kHz ~ 30MHz)	±2.22 dB (k=2)
Radiated Emission (9kHz ~ 30MHz)	±2.76 dB (k=2)
Radiated Emission (30MHz ~ 1000MHz)	±4.28 dB (k=2)
Radiated Emission (1GHz ~ 18GHz)	±5.72 dB (k=2)
Radiated Emission (18GHz ~ 40GHz)	±2.88 dB (k=2)

5.6 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC - Registration No.: 727551

Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been accredited as a testing laboratory by FCC (Federal Communications Commission). The Registration No. is 727551.

IC - Registration No.: 10106A-1

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

CNAS - Registration No.: CNAS L6048

Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.

A2LA - Registration No.: 4346.01

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: https://portal.a2la.org/scopepdf/4346-01.pdf

Shenzhen Zhongjian Nanfang Testing Co., Ltd. No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road, Bao'an District, Shenzhen, Guangdong, China Telephone: +86 (0) 755 23118282 Fax: +86 (0) 755 23116366



5.7 Laboratory Location

Shenzhen Zhongjian Nanfang Testing Co., Ltd.

Address: No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,

Bao'an District, Shenzhen, Guangdong, China Tel: +86-755-23118282, Fax: +86-755-23116366

Email: info@ccis-cb.com, Website: http://www.ccis-cb.com

5.8 Test Instruments list

Radiated Emission:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	SAEMC	9m*6m*6m	966	07-22-2017	07-21-2020
Loop Antenna	SCHWARZBECK	FMZB1519B	00044	03-16-2018	03-15-2019
BiConiLog Antenna	SCHWARZBECK	VULB9163	497	03-16-2018	03-15-2019
Horn Antenna	SCHWARZBECK	BBHA9120D	916	03-16-2018	03-15-2019
Horn Antenna	SCHWARZBECK	BBHA9120D	1805	06-22-2017	06-21-2020
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170582	11-21-2017	11-20-2018
Hom Antenna	SOHWARZBEOK	DDITA 9170	BB11A9170302	11-21-2018	11-20-2019
EMI Test Software	AUDIX	E3	Version: 6.110919b		b
Pre-amplifier	HP	8447D	2944A09358	03-07-2018	03-06-2019
Pre-amplifier	CD	PAP-1G18	11804	03-07-2018	03-06-2019
Spectrum analyzer	Rohde & Schwarz	FSP30	101454	03-07-2018	03-06-2019
Spectrum analyzer	Rohde & Schwarz	FSP40	100363	11-21-2017	11-20-2018
Spectrum analyzer	Ronde & Schwarz	1 31 40	100303	11-21-2018	11-20-2019
EMI Test Receiver	Rohde & Schwarz	ESRP7	101070	03-07-2018	03-06-2019
Cable	ZDECL	Z108-NJ-NJ-81	1608458	03-07-2018	03-06-2019
Cable	MICRO-COAX	MFR64639	K10742-5	03-07-2018	03-06-2019
Cable	SUHNER	SUCOFLEX100	58193/4PE	03-07-2018	03-06-2019
RF Switch Unit	MWRFTEST	MW200	N/A	N/A	N/A
Test Software	MWRFTEST	MTS8200		Version: 2.0.0.0	

Conducted Emission:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
EMI Test Receiver	Rohde & Schwarz	ESCI	101189	03-07-2018	03-06-2019
Pulse Limiter	SCHWARZBECK	OSRAM 2306	9731	03-07-2018	03-06-2019
LISN	CHASE	MN2050D	1447	03-19-2018	03-18-2019
LISN	Rohde & Schwarz	ESH3-Z5	8438621/010	07-21-2018	07-20-2019
Cable	HP	10503A	N/A	03-07-2018	03-06-2019
EMI Test Software	AUDIX	E3	Version: 6.110919b		



6 Test results and Measurement Data

6.1 Antenna requirement

Standard requirement: FCC Part 15 C Section 15.203 /247(b)

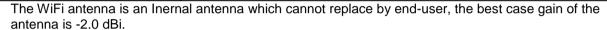
15.203 requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(b) (4) requirement:

(4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

E.U.T Antenna:





6.2 Conducted Emission

Test Requirement:	FCC Part 15 C Section 1	5.207		
Test Method:	ANSI C63.10: 2013			
Test Frequency Range:	150 kHz to 30 MHz			
Class / Severity:	Class B			
		 ⊔-,		
Receiver setup:	RBW=9 kHz, VBW=30 k		dD\/\	
Limit:	Frequency range (MHz)	Limit (Quasi-peak	Average	
	0.15-0.5	66 to 56*	56 to 46*	
	0.5-5	56	46	
	5-30	60	50	
	* Decreases with the log	arithm of the frequency.		
Test procedure	 The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.), which provides a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement. 			
Test setup:	Reference Plane LISN 40cm 80cm Filter AC power Equipment E.U.T Test table/Insulation plane Remark E.U.T. Equipment Under Test LISN: Line Impedence Stabilization Network Test table height=0.8m			
Test Instruments:	Refer to section 5.8 for d	etails		
Test mode:	Refer to section 5.3 for details			
Test results:	Passed			



Measurement Data:

Product name:		Cool Duo		Prod	luct model:		Cool Duo			
Test by:		Alex		Test	mode:	V	Wi-Fi Tx mode			
Test frequency:		150 kHz ~ 3	0 MHz	Phas	Phase:					
Test voltage:		AC 120 V/60) Hz	Envi	ronment:	7	emp: 22.5℃	Huni: 55%		
Level (c	IBuV)									
100	July									
90										
80										
70										
60							FCC P	ART 15.247 QP		
50	-7						FCC P	ART 15.247 AV		
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0.15 .2		.5	1	2		5	10	20		
Trace: 13				Frequenc	cy (MHz)					
		Read	LISN	Cable		Limit	Over			
	Freq	Level	Factor	Loss	Level	Line	Limit	Remark		
	MHz	dBu∜	<u>dB</u>	dB	dBu₹	dBu∜	<u>d</u> B			
1	0.150	43.88	0.18	10.78	54.84	66.00	-11.16	QP		
2 1	0.150	27.25	0.18	10.78	38.21	56.00	-17.79	Average		
3 1	0.170	43.56	0.17	10.77	54.50	64.94	-10.44	QP		

10.77

10.76

10.76

10.75

10.75

10.74

10.74

10.74

10.88

40.49

49.87

35.32

50.37

34.31

41.70

28.21

24.85

39.19

0.17

0.15

0.15

0.14

0.14

0.13

0.13

0.12

0.19

Notes:

5

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- 1. An initial pre-scan was performed on the line and neutral lines with peak detector.
- 2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- 3. Final Level =Receiver Read level + LISN Factor + Cable Loss.

29.55

38.96

24.41

39.48

23.42

30.83

17.34

13.99

28.12

0.170

0.206

0.206

0.242

0.242

0.307

0.310

0.447

4.361

54.94 -14.45 Average

53.36 -18.04 Average

52.04 -17.73 Average

49.97 -21.76 Average 46.93 -22.08 Average

63.36 -13.49 QP

62.04 -11.67 QP

60.06 -18.36 QP

56.00 -16.81 QP



Product na	Cool Duo Product model:									
Test by:		Alex		Test	mode:		Wi-Fi Tx mode			
Test freque	ency:	150 kHz ~ 3	150 kHz ~ 30 MHz Phase: Neutra					Neutral		
Test voltaç	ge:	AC 120 V/60	0 Hz	Env	ironment:		Temp: 22.5°C Huni: 55%			
1.50		1		•		•				
100	Level (dBuV)								7	
90										
80										
									1	
70							ECC	PART 15.247 Q	0	
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0										
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0				Frequen	cy (MHz)			20	3	
0	15	Read	LISN	Frequen Cable	cy (MHz)	Limit	Over		3	
0		Read		Frequen	cy (MHz)		Over	20 Remark	3	
0	15	Read	LISN	Frequen Cable	cy (MHz)	Limit	Over Limit		3	
0	Freq	Read Level ———————————————————————————————————	LISN Factor	Frequen Cable Loss dB	cy (MHz) Level dBuV	Limit Line dBuV	Over Limit ———————————————————————————————————	Remark	3	
0 Trace:	Freq MHz	Read Level dBuV	LISN Factor dB	Cable Loss dB	Level dBuV	Limit Line dBuV 64.94	Over Limit ———————————————————————————————————	Remark 	3	
0 Trace:	Freq MHz 0.170 0.174	Read Level dBuV 42.20 28.47	LISN Factor dB 0.96 0.95	Cable Loss dB	Level dBuV 53.93 40.19	Limit Line dBuV 64.94 54.77	Over Limit 	Remark QP Average	3	
0 Trace:	Freq MHz 0.170 0.174 0.211	Read Level ———————————————————————————————————	LISN Factor dB 0.96 0.95 0.93	Cable Loss dB 10.77 10.77 10.76	Level dBuV 53.93 40.19 51.75	Limit Line dBuV 64.94 54.77 63.18	Over Limit 	Remark QP Average QP	3	
1 2 3 4	Freq MHz 0.170 0.174	Read Level dBuV 42.20 28.47	LISN Factor dB 0.96 0.95	Cable Loss dB 10.77 10.77 10.76 10.76	Level dBuV 53.93 40.19	Limit Line dBuV 64.94 54.77 63.18 53.18	Over Limit 	Remark QP Average QP Average	3	
1 2 3 4	Freq MHz 0.170 0.174 0.211 0.221 0.222 0.238	Read Level dBuV 42.20 28.47 40.06 24.01 38.39 23.10	LISN Factor dB 0.96 0.95 0.93 0.93 0.93 0.93	Cable Loss dB 10.77 10.77 10.76 10.76 10.76 10.76	Level	Limit Line dBuV 64.94 54.77 63.18 53.18 62.74 52.17	Over Limit 	Remark QP Average QP Average QP Average QP Average	3	
1 2 3 4	Freq MHz 0.170 0.174 0.211 0.211 0.222 0.238 0.242	Read Level dBuV 42.20 28.47 40.06 24.01 38.39 23.10 35.96	LISN Factor dB 0.96 0.95 0.93 0.93 0.93 0.94 0.94	Cable Loss dB 10.77 10.77 10.76 10.76 10.76 10.75	Cy (MHz) Level	Limit Line dBuV 64.94 54.77 63.18 53.18 62.74 52.17 62.04	Over Limit -11.01 -14.58 -11.43 -17.48 -12.66 -17.38 -14.39	Remark QP Average QP Average QP Average QP Average QP	3	
1 2 3 4 5 6 7 8	Freq MHz 0.170 0.174 0.211 0.211 0.222 0.238 0.242 0.377	Read Level dBuV 42.20 28.47 40.06 24.01 38.39 23.10 35.96 16.12	LISN Factor 	Frequent Cable Loss dB 10.77 10.77 10.76 10.76 10.76 10.75 10.75 10.75	Cy (MHz) Level	Limit Line dBuV 64.94 54.77 63.18 53.18 62.74 52.17 62.04 48.34	Over Limit -11.01 -14.58 -11.43 -17.48 -12.66 -17.38 -14.39 -20.53	Remark QP Average QP Average QP Average QP Average QP Average	3	
1 2 3 4 5 6 7 8	Freq 0.170 0.174 0.211 0.221 0.222 0.238 0.242 0.377 0.381	Read Level 	LISN Factor dB 0.96 0.95 0.93 0.93 0.93 0.94 0.94 0.97 0.97	Trequent Cable Loss dB 10.77 10.77 10.76 10.76 10.76 10.75 10.75 10.72 10.72	Cy (MHz) Level dBuV 53.93 40.19 51.75 35.70 50.08 34.79 47.65 27.81 41.26	Limit Line dBuV 64.94 54.77 63.18 53.18 62.74 52.17 62.04 48.34 58.25	Over Limit -11.01 -14.58 -11.43 -17.48 -12.66 -17.38 -14.39 -20.53 -16.99	Remark QP Average QP Average QP Average QP Average QP Average	3	
1 2 3 4 5 6 7 8 9 10	Freq 0.170 0.174 0.211 0.221 0.222 0.238 0.242 0.377 0.381 0.555	Read Level dBuV 42.20 28.47 40.06 24.01 38.39 23.10 35.96 16.12 29.57 15.78	LISN Factor 	Frequent Cable Loss	Cy (MHz) Level	Limit Line dBuV 64.94 54.77 63.18 53.18 62.74 52.17 62.04 48.34 58.25 46.00	Over Limit -11.01 -14.58 -11.43 -17.48 -12.66 -17.38 -14.39 -20.53 -16.99 -18.49	Remark QP Average QP Average QP Average QP Average QP Average QP Average	3	
1 2 3 4 5 6 7 8	Freq 0.170 0.174 0.211 0.221 0.222 0.238 0.242 0.377 0.381	Read Level 	LISN Factor dB 0.96 0.95 0.93 0.93 0.93 0.94 0.94 0.97 0.97	Trequent Cable Loss dB 10.77 10.77 10.76 10.76 10.76 10.75 10.75 10.72 10.72	Cy (MHz) Level dBuV 53.93 40.19 51.75 35.70 50.08 34.79 47.65 27.81 41.26	Limit Line dBuV 64.94 54.77 63.18 53.18 62.74 52.17 62.04 48.34 58.25 46.00 56.00	Over Limit -11.01 -14.58 -11.43 -17.48 -12.66 -17.38 -14.39 -20.53 -16.99 -18.49 -13.91	Remark QP Average QP Average QP Average QP Average QP Average QP Average	3	

Notes

- 1. An initial pre-scan was performed on the line and neutral lines with peak detector.
- 2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- 3. Final Level =Receiver Read level + LISN Factor + Cable Loss.



6.3 Conducted Output Power

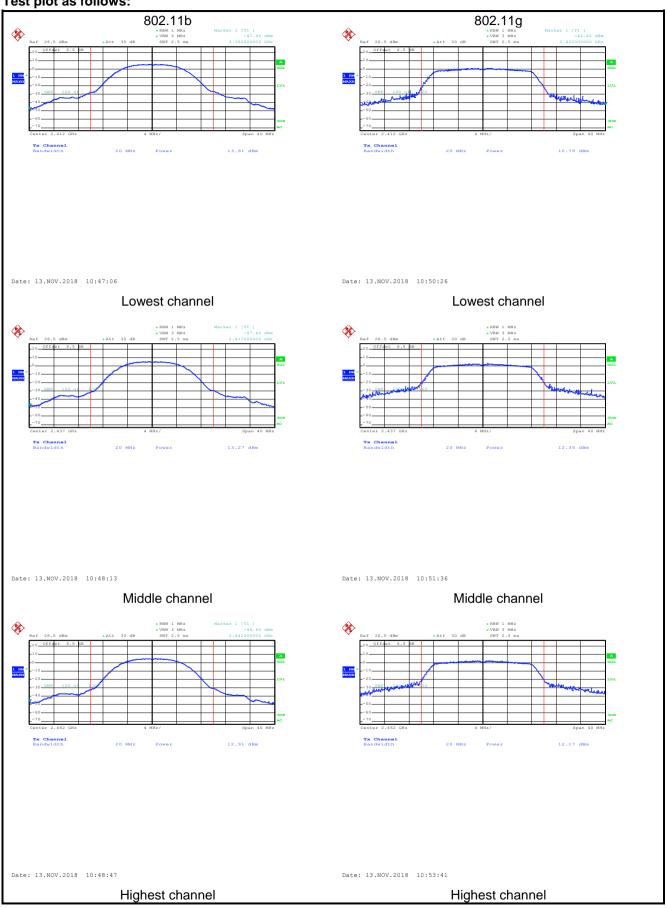
Test Requirement:	FCC Part 15 C Section 15.247 (b)(3)
Test Method:	ANSI C63.10:2013 and KDB 558074
Limit:	30dBm
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data:

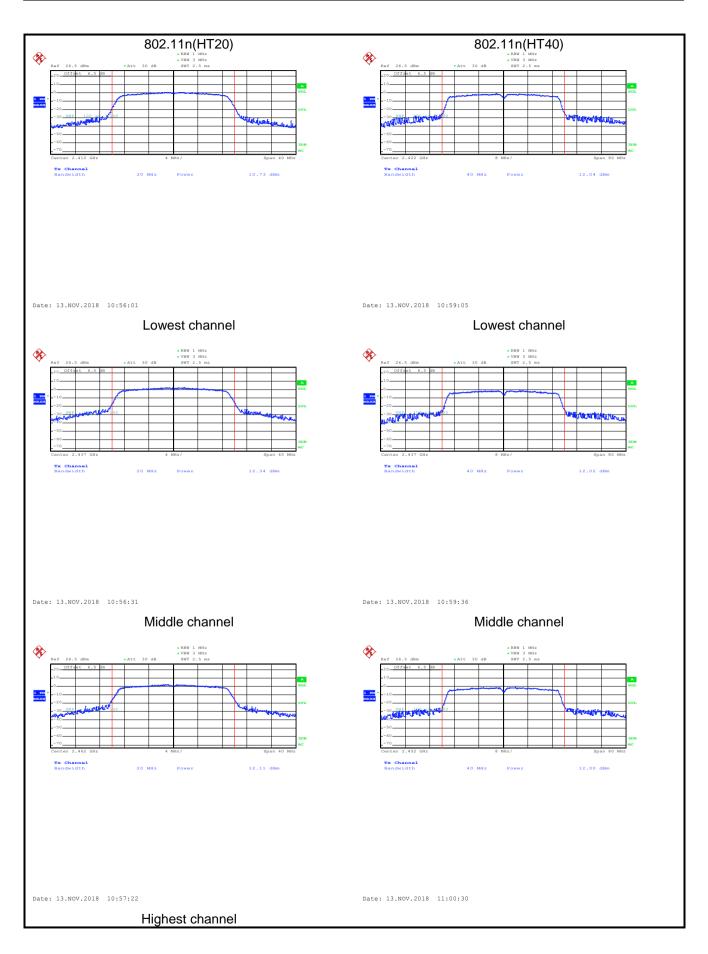
Toot CU	N	Maximum Conducte	ed Output Power (d	dBm)	Limit(dDm)	Popult
Test CH	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)	Limit(dBm)	Result
Lowest	13.91	10.79	10.73	12.04		
Middle	13.27	12.35	12.34	12.02	30.00	Pass
Highest	12.91	12.17	12.11	12.00		



Test plot as follows:









6.4 Occupy Bandwidth

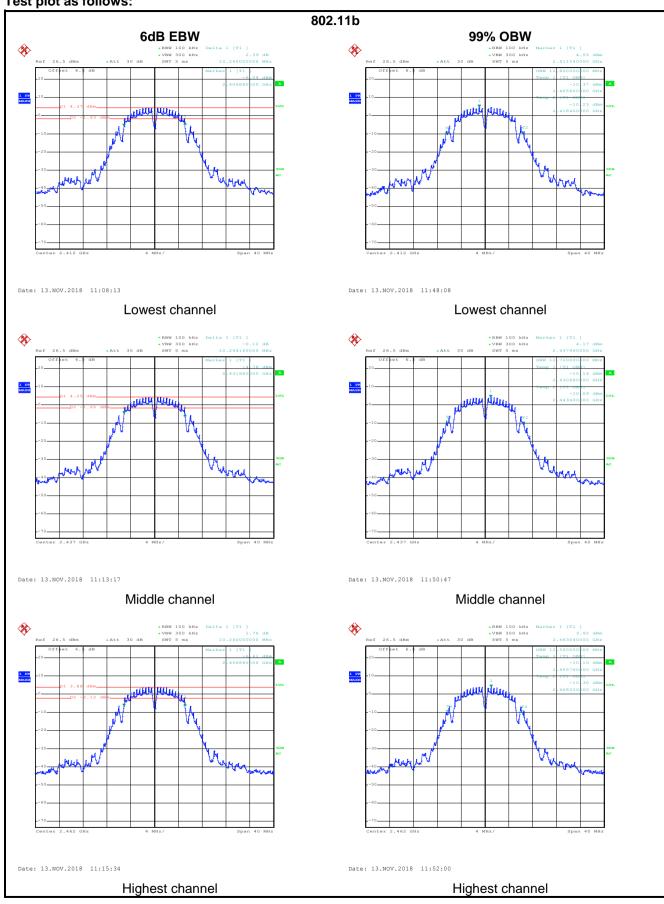
Test Requirement:	FCC Part 15 C Section 15.247 (a)(2)
Test Method:	ANSI C63.10:2013 and KDB 558074
Limit:	>500kHz
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data:

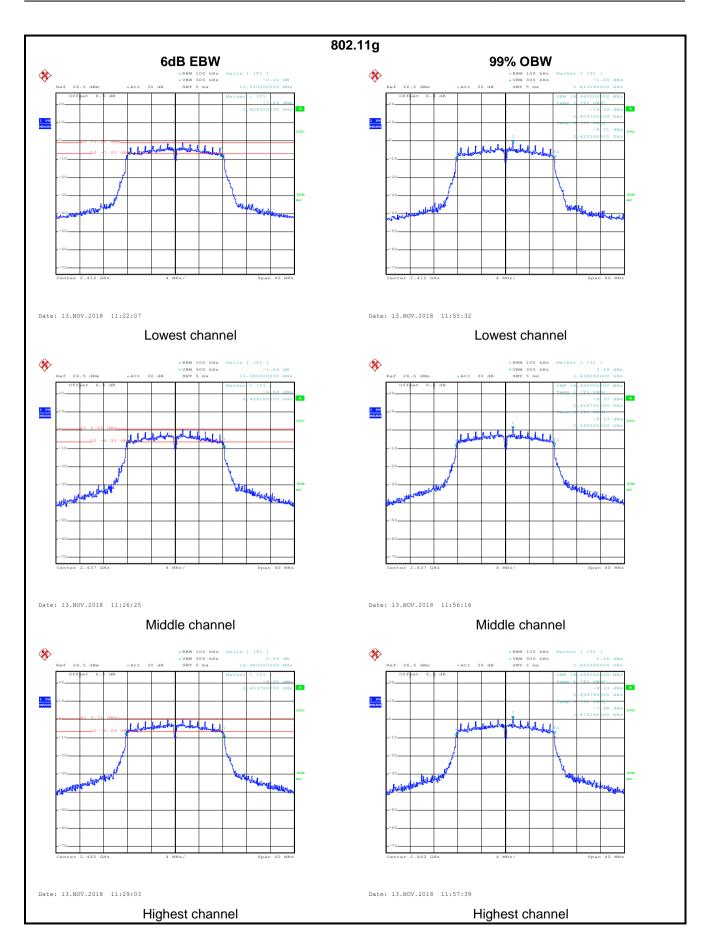
Test CH		6dB Emission	Bandwidth (MHz)		Limit/kU=)	Result	
Test CH	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)	Limit(kHz)	Result	
Lowest	10.24	15.52	15.36	35.52			
Middle	10.24	16.08	15.28	35.53	>500	Pass	
Highest	10.24	16.48	15.28	35.52			
Test CH		99% Occupy I	Bandwidth (MHz)	Limit/kU=)	Result		
Test CH	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)	Limit(kHz)	Result	
Lowest	12.80	16.48	17.60	16.00			
Middle	12.72	16.48	17.60	36.00	N/A	N/A	
Highest	12.56	16.48	17.60	35.84			



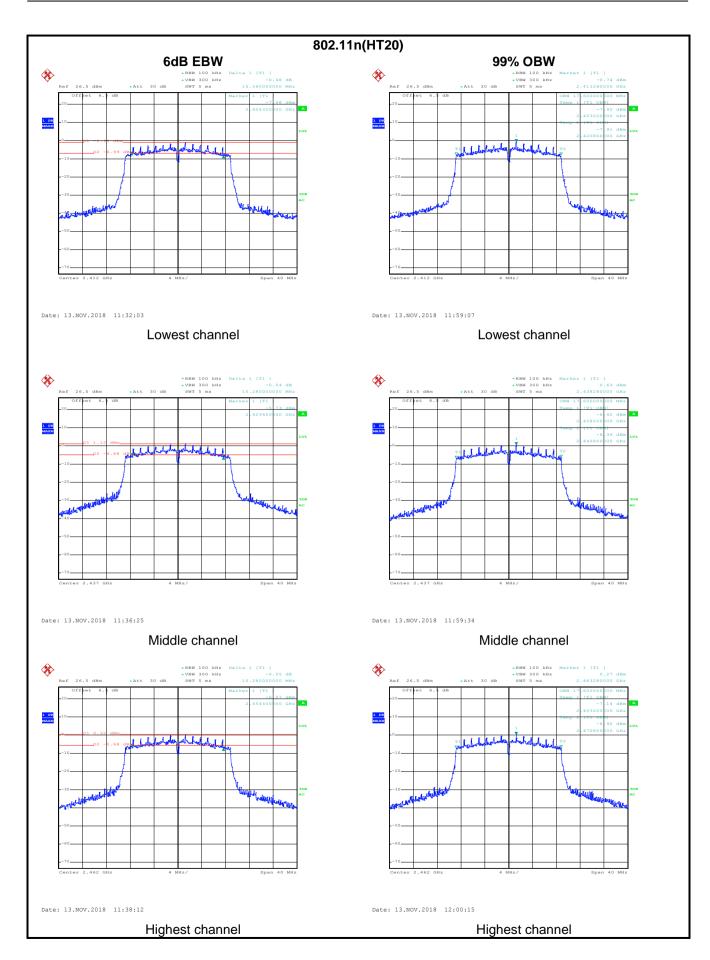
Test plot as follows:



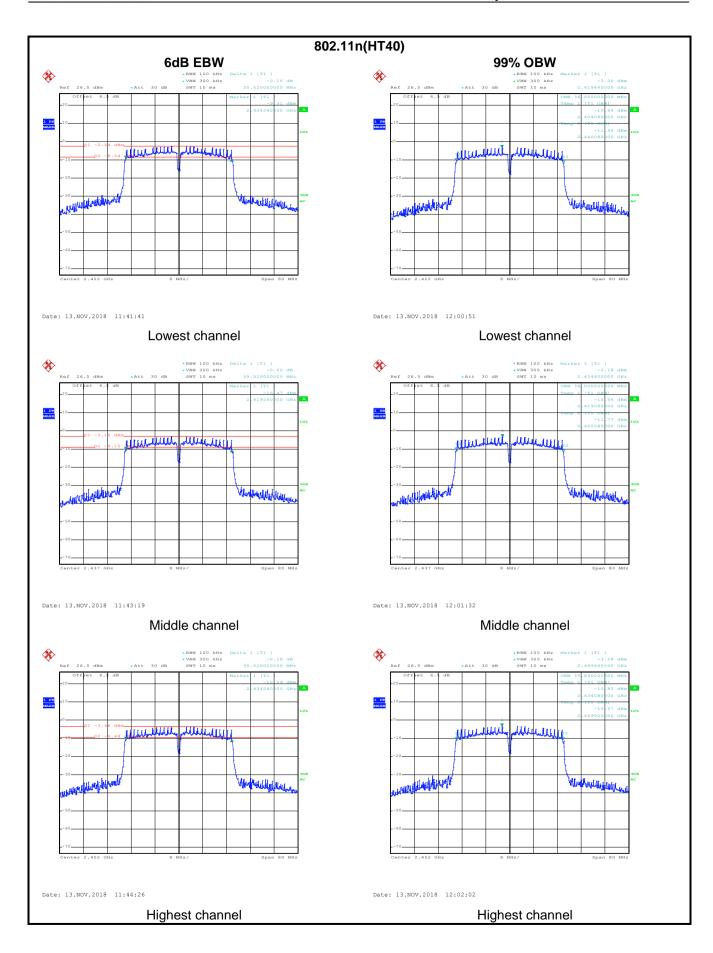














6.5 Power Spectral Density

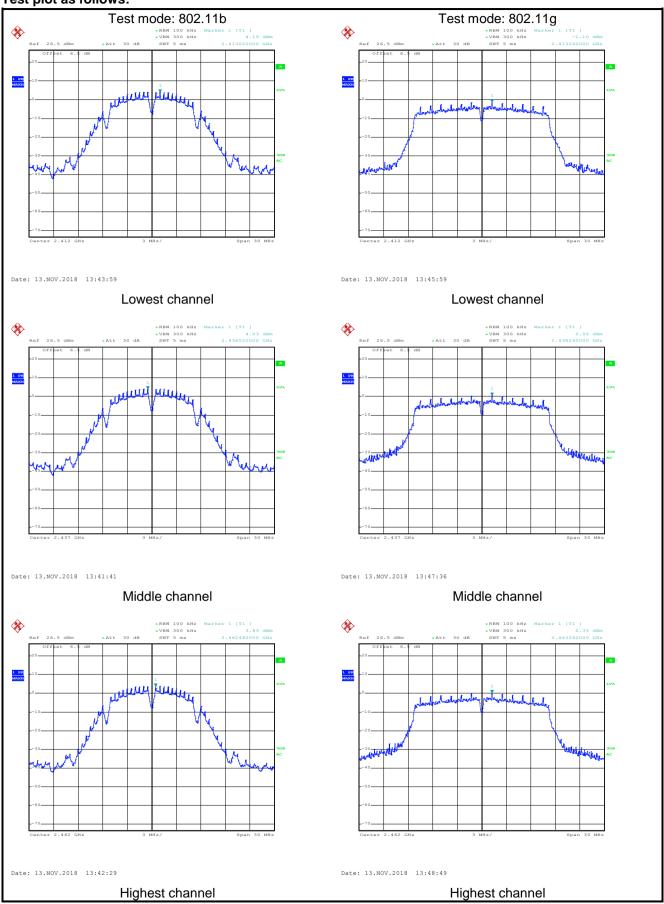
Test Requirement:	FCC Part 15 C Section 15.247 (e)
Test Method:	ANSI C63.10:2013 and KDB 558074
Limit:	8dBm
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data:

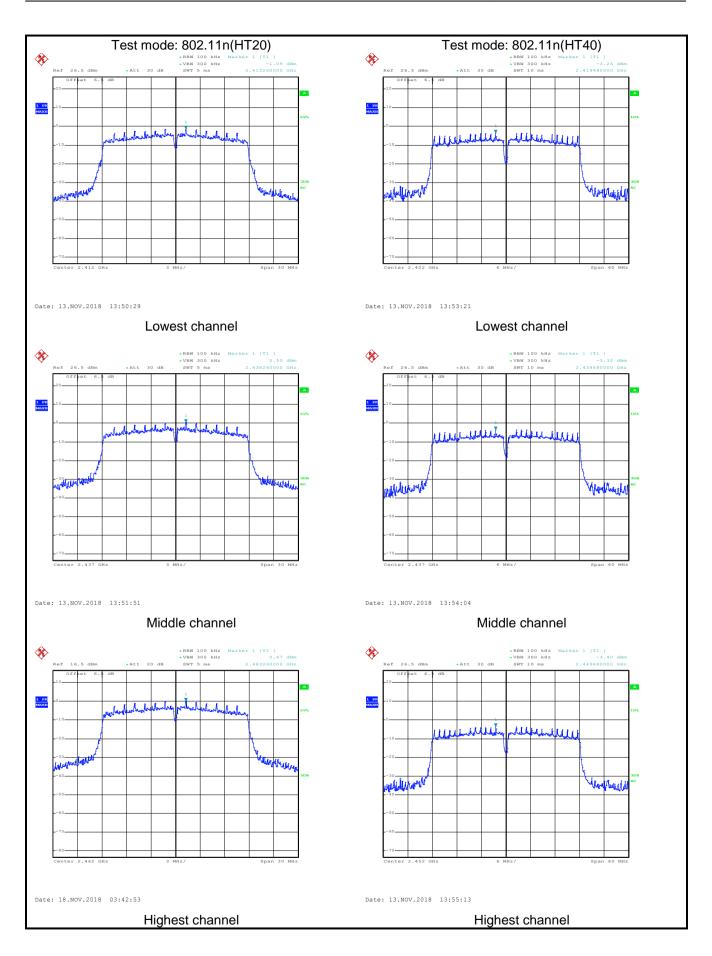
Toot CU		Power Spectra	al Density (dBm)	Limit(dDm)	Dogult	
Test CH	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)	Limit(dBm)	Result
Lowest	4.19	-1.10	-1.09	-3.26		
Middle	4.03	0.56	0.55	-3.32	8.00	Pass
Highest	3.89	0.35	0.47	-3.40		



Test plot as follows:









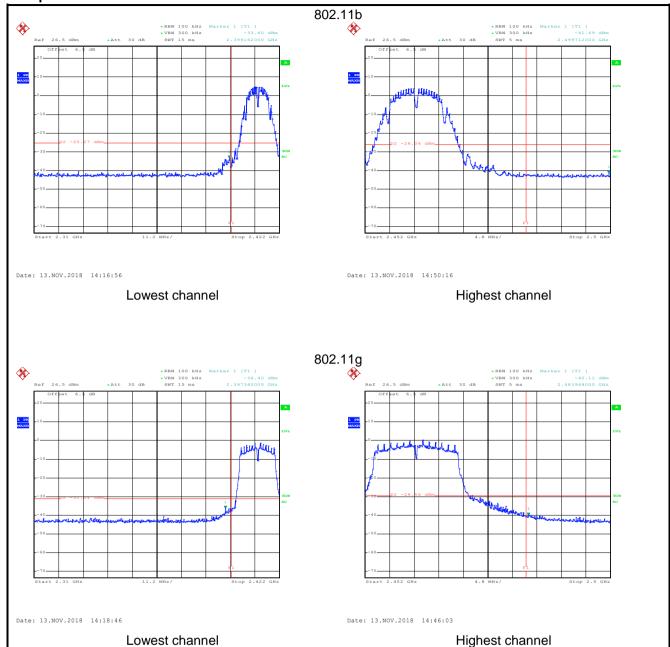
6.6 Band Edge

6.6.1 Conducted Emission Method

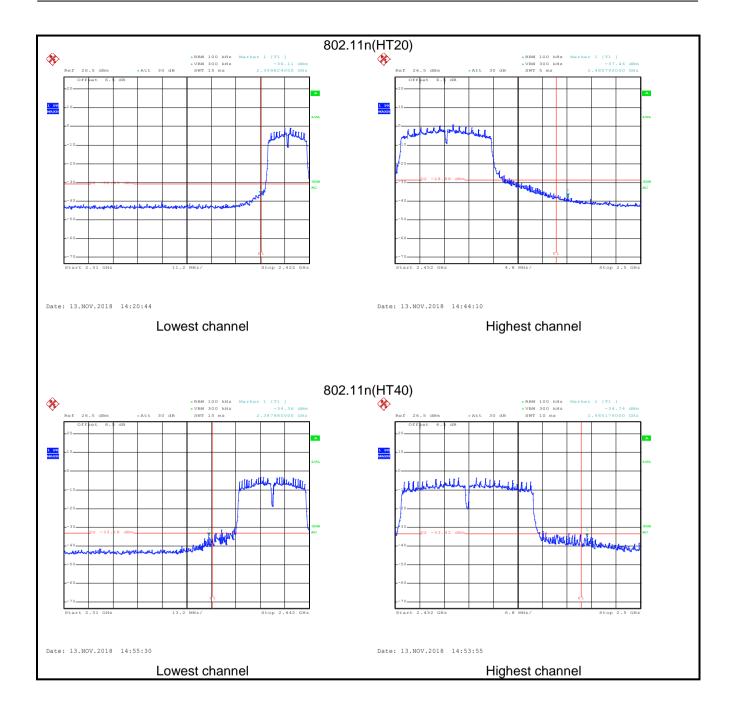
0.0.1 Oonducted Ennission						
Test Requirement:	FCC Part 15 C Section 15.247 (d)					
Test Method:	ANSI C63.10:2013 and KDB 558074					
Limit:	n any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a adiated measurement.					
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane					
Test Instruments:	Refer to section 5.8 for details					
Test mode:	Refer to section 5.3 for details					
Test results:	Passed					



Test plot as follows:









6.6.2 Radiated Emission Method

0.0.2	Radiated Emission We									
	Test Requirement:	FCC Part 15 C Section 15.209 and 15.205								
	Test Method:	ANSI C63.10: 2013 and KDB 558074								
	Test Frequency Range:	2.3GHz to 2.5GHz								
	Test Distance:	3m								
	Receiver setup:	Frequency	Detec	tor	RBW	V	VBW Remark			
		Above 1GHz	Peal		1MHz		ИНz	Peak Value		
			RMS		1MHz		MHz	Average Value		
	Limit:	Frequenc	у	Lin	nit (dBuV/m @ 54.00	3m)	Λ,	Remark		
		Above 1G	Hz		74.00			verage Value Peak Value		
	Test Procedure:	 The EUT was placed on the top of a rotating table 1.5 meters at the ground at a 3 meter camber. The table was rotated 360 do to determine the position of the highest radiation. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height are tower. The antenna height is varied from one meter to four meters abe the ground to determine the maximum value of the field streng Both horizontal and vertical polarizations of the antenna are seemake the measurement. For each suspected emission, the EUT was arranged to its wo case and then the antenna was tuned to heights from 1 meter meters and the rota table was turned from 0 degrees to 360 do to find the maximum reading. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. If the emission level of the EUT in peak mode was 10dB lower the limit specified, then testing could be stopped and the peak of the EUT would be reported. Otherwise the emissions that di have 10dB margin would be re-tested one by one using peak, peak or average method as specified and then reported in a day. 					ce-receiving e-height antenna meters above ield strength. nna are set to d to its worst n 1 meter to 4 s to 360 degrees nction and OdB lower than d the peak values ons that did not sing peak, quasi-			
	Test setup:	\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	AE E	. 1/	Hor 3m Ground Reference Plane	n Antenna	Antenna Tox	wer		
	Test Instruments:	Refer to section 5.8 for details								
	Test mode:	Refer to section	5.3 for c	letail	S					
	Test results:	Passed								





802.11b mode:

Product	t Name:	Cool Duc)		Pr	oduct Mod	lel:	Cool Duo	
Test By:	est By:		Alex			est mode:		802.11b Tx mode	
Test Ch	annel:	Lowest channel			Po	olarization:		Vertical	
Test Vo	Itage:	AC 120/60	OHz		Er	nvironment	::	Temp: 24°C Huni: 57%	
110 Le	vel (dBuV/m)								
100									m
80								F¢CF	PART 15 (PK)
60		-	~	A			~ 1 ~/	FCC F	PART 15 (AV)
40	and the second for	Andrew Comment		marro.		VII. VII. VII. VII. VII. VII. VII. VII.	2		
20									3-8
023	10 2320		235		uency (MHz	2)			2422
	Freq	ReadA Level	ntenna Factor	Cable	Preamp	10 000	Limit Line	Over Limit	Remark
	MHz	dBu∀	dB/m	₫B		$\overline{dBuV/m}$	dBuV/m	<u>ap</u>	
1 2	2390,000 2390,000	20.18 9.39	27.37 27.37	4.69 4.69	0.00			-21.76 -12.55	

Remark:

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	Name:	ame: Cool Duo		Pr	oduct Mod	lel:	Cool Duo		
Test By	:	Alex Test mode: 802.11b Tx mode				k mode			
Test Ch	annel:	Lowest channel			Po	olarization:	:	Horizontal	
Test Vo	Itage:	AC 120/60)Hz		Er	nvironmen	t:	Temp: 24°C Huni: 57°	
Lo	vol (dDuV/m)				<u> </u>		'		
110	vel (dBuV/m)								
100									~~
								1	
80								FOCE	ART 15 (PK)
								1	10 (10)
60								Jeco B	PART 15 (AV)
~	and the same	~~~~~	many	man	~~~	man	mino	mad FULF	AKT 15 (AV)
40							2		
20									
20									
0									
23	10 2320		2350		ency (MHz)				2422
		Readú	ntenna	- TO THE RESERVE OF THE PARTY O			Limit	Over	
	Freq	Level						Limit	Remark
	MHz	—dBu₹		<u>ab</u>		$\overline{dB}\overline{u}\overline{V}/\overline{m}$	dBuV/m	<u>d</u> B	
1	2390.000	18.97	27.37	4.69	0.00	51.03	74.00	-22.97	Peak
1 2	2390.000	8.01	27.37	4.69	0.00				Average

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product Name:	Cool Du	Cool Duo			roduct Mo	del:	Cool Duo			
Гest By:	Alex Highest channel			T	est mode:		802.11b Tx mode			
Test Channel:				Р	olarization	:	Vertical			
Test Voltage:	AC 120/6	60Hz		E	nvironmen	t:	Temp: 24°	C Huni: 57%		
110 Level (dBuV/m)										
110										
100										
		1								
80		1					FO	2 DADT 45 (DIA)		
							FCI	C PART 15 (PK)		
60			Jan 1							
60				~		1	FC	C PART 15 (AV)		
					~~		~~~			
40						2		8		
20								12		
0										
2452			Erov	quency (MH	171			2500		
	Pand	Intenna				Limit	Over			
Fre	q Level						Limit	Remark		
	3				44.00					
ME	lz dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB			
1 2483.50		27.57	4.81	0.00 0.00	50.80	74.00	-23.20	Peak		
2 2483.50		27.57	4.81	0.00	40, 82	54.00	-13.18	Average		

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



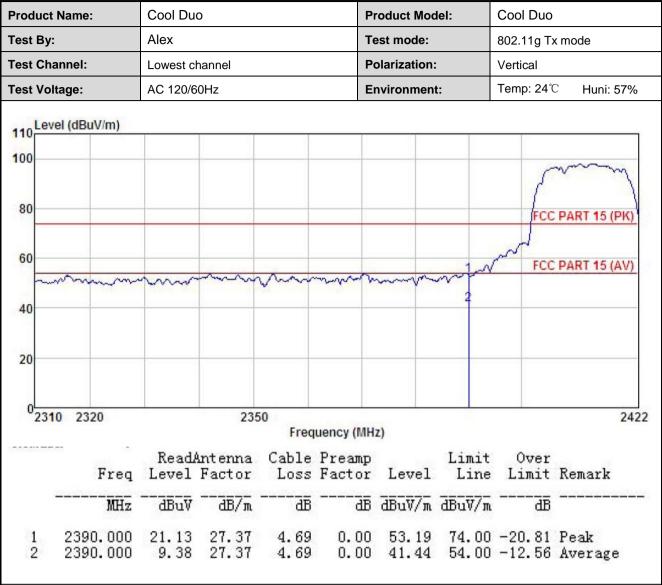
Name:	Cool Due	0		Pr	roduct Mod	lel:	Cool Duo			
	Alex			Te	est mode:		802.11b Tx mode			
nnel:	Highest c	hannel		Po	olarization:		Horizontal			
age:	AC 120/6	0Hz		Eı	nvironment	::	Temp: 24℃	Huni: 57%		
						1				
vel (dBuV/m)								-0		
		~								
		1								
		- 1	1					D. DT. 45 (D)(1)		
/			1				FCC	PART 15 (PK)		
			~	my						
					1	~	FCC	PART 15 (AV)		
								~ ~~~		
						TO.				
F2						×1		250		
52			Fre	quency (MH	Hz)			250		
70 77	ReadA	ntenna	Cable	Preamp		Limit	Over			
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark		
MHz	dBu₹	<u>dB</u> /m	<u>d</u> B	<u>dB</u>	$\overline{dBuV/m}$	dBuV/m	<u>dB</u>			
2483, 500	18.57	27.57	4.81	0.00	50.95	74.00	-23.05	Peak		
2483.500	8.92	27. 57	4.81	0.00	41.30	54.00	-12.70	Average		
	nnel: age: vel (dBuV/m) 52 Freq MHz	Alex Innel: Highest c age: AC 120/6 vel (dBuV/m) 52 ReadA Level MHz dBuV	Alex Innel: Highest channel AC 120/60Hz Vel (dBuV/m) Freq ReadAntenna Level Factor MHz dBuV dB/m	Alex Innel: Highest channel AC 120/60Hz Vel (dBuV/m) Freq ReadAntenna Cable Level Factor Loss MHz dBuV dB/m dB	Alex Innel: Highest channel Politicage: AC 120/60Hz Vel (dBuV/m) Frequency (MF) ReadAntenna Cable Preamp Level Factor Loss Factor MHz dBuV dB/m dB dB	Alex Innel: Highest channel Polarization: age: AC 120/60Hz Environment vel (dBuV/m) Frequency (MHz) ReadAntenna Cable Preamp Freq Level Factor Loss Factor Level MHz dBuV dB/m dB dB dBuV/m	Alex Test mode: nnel: Highest channel Polarization: age: AC 120/60Hz Environment: vel (dBuV/m) Frequency (MHz) ReadAntenna Cable Preamp Limit Level Factor Loss Factor Level Line MHz dBuV dB/m dB dB dBuV/m dBuV/m	Alex Test mode: 802.11b Tx nnel: Highest channel Polarization: Horizontal age: AC 120/60Hz Environment: Temp: 24°C vel (dBuV/m) FCC FCC Frequency (MHz) ReadAntenna Cable Preamp Limit Over Freq Level Factor Loss Factor Level Line Limit MHz dBuV dB/m dB dB dBuV/m dBuV/m dBuV/m dB		

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.





802.11g mode:



Remark:

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



roduc	oduct Name: Cool Duo				P	roduct Mod	del:	Cool Duo 802.11g Tx mode		
est By	y:	Alex				est mode:				
est Ch	hannel:	: Lowest channel Po			olarization	:	Horizontal			
est Vo	oltage:	AC 120/60Hz				nvironmen	t:	Temp: 24°	C Huni: 57%	
Lo	evel (dBuV/m)									
110	ever (dbdv/iii)									
100										
								- 5	money	
80										
_								FCC	PART 15 (PK)	
								Ircc	PART 15 (AV)	
60								WILL	PART 13 (AV)	
60	~~~~	~~~	m	~~~~	m	~~~~~	my	NICC	PART IS (AV)	
60	m	mm	~~~	~~~~	www	~~~~	more	JA FELL	PART IS (AV)	
-~	m	mm	~~~	~~~~	~~~~	~~~~~		J. NFCC	PART 13 (AV)	
40	m	·······	~~~	~~~~	m	www		NACC.	PART IS (AV)	
-~	m	mm.	~~~	~~~~	· m	www		JAN POL	PART IS (AV)	
40	m		~~~	m	~~~~	www		NA FEE	PART 13 (AV)	
40	310 2320		235	50	~~~~	www		NACC.	242	
40	310 2320		235		Juency (MH	nanana Iz)		- NATION		
40		ReadA	ntenna	Freq Cable	Preamp		Limit			
40		ReadA Level	ntenna	Freq Cable	Preamp			Over	242	
40		ReadA Level	ntenna	Freq Cable	Preamp Factor		Line	Over Limit	242	
40	Freq	Level	ntenna Factor — dB/m	Freq Cable Loss	Preamp Factor dB	Level	Line dBuV/m	Over Limit	242 Remark	

^{1.} Final Level = Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor.

^{2.} The emission levels of other frequencies are very lower than the limit and not show in test report.



Product Name:	ct Name: Cool Duo			Р	Product Model:			Cool Duo		
Test By:	Alex	Alex			est mode:		802.11g Tx mode			
Test Channel:	Highest	channel		Р	olarization	:	Vertical			
Test Voltage:	AC 120/	60Hz		Е	nvironmen	ıt:	Temp: 24°0	C Huni: 57%		
Loyal (dBuV/m										
110 Level (dBuV/n	1)							7		
100	~~~	~~~								
		3								
80							FCC	PART 15 (PK)		
			1	M	reaches to					
60					~	1	FCC	PART 15 (AV)		
						~	~	~~~		
40			-							
20										
02452								2500		
2432			Fre	quency (Mi	Hz)			2500		
		Antenna				Limit				
Fr	eq Level	Factor	Loss	Factor	Level	Line	Limit	Remark		
	Hz dBuV	<u>dB</u> /m		dB	dBuV/m	dBu√/m	<u>dB</u>			
1 2483.5		27.57	4.81				-17.73			
2 2483.5	00 11.98	27.57	4.81	0.00	44.36	54.00	-9.64	Average		

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product Name: Test By: Test Channel:		Cool Duo Alex			P	roduct Mod	del:	Cool Duo 802.11g Tx mode		
					To	est mode:				
		Highest c	hannel		P	olarization		Horizontal		
Test Vo	oltage:	AC 120/6	0Hz		E	nvironmen	t:	Temp: 24°	Huni: 57%	
Lo	aval /dPu\//m\									
110	evel (dBuV/m)									
100		~~~	~~~						-	
1	5			1						
80/								FCC	PART 15 (PK)	
					~~	1	Lan I			
60							M	FCC	PART 15 (AV)	
						2		1		
40						-				
20										
0	152								2500	
0 24	152			Freq	uency (MH:	z)			2500	
024		ReadA	nt enna	Cable	Preamp		Limit			
0_24		ReadA Level	ntenna Factor	Cable	Preamp			Over Limit		
024		ReadA Level	ntenna Factor	Cable	Preamp Factor		Line	Limit		
0 24	Freq	Level ——dBuV	Factor	Cable Loss	Preamp Factor dB	Level	Line	Limit	Remark	

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.





802.11n(HT20):

oduc	t Name:	Cool Duo			Pr	oduct Mod	el:	Cool Duo 802.11n(HT20) Tx mode		
est By	y:	Alex	Alex			st mode:				
est Cl	hannel:	Lowest ch	annel		Po	olarization:		Vertical		
est Vo	oltage:	AC 120/60	OHz		Er	vironment	:	Temp: 24℃	Huni: 57%	
	avel (dDullim)									
110	evel (dBuV/m)									
100							-		an/_	
								Co		
80								FCC	PART 15 (PK)	
-								I CC F	ART 15 (FR)	
60								m) recor	ADT 45 (ALD	
2	mornin	m	many	mm	www	war wa	V-for	FLCF	PART 15 (AV)	
40					- A C - A C		2			
20										
20										
23	310 2320		235		ionou /Mila	,	N)		2422	
		D 14		-	uency (MHz					
	Freq		ntenna Factor				Limit Line	Over Limit	Remark	
	MHz	dBu⊽	<u>dB</u> /π	dB		dBuV/m				
	11012	and,								
1 2	2390.000 2390.000	19.51 9.92	27.37 27.37	4.69				-22.43	Peak Average	
4	2390.000	0.94	41.31	4.09	0.00	41.90	04.00	-12.UZ	WASTIBLE	

Remark:

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



Produc	t Name:	Cool D	uo			Product M	odel:	Cool Duo			
Test By	/ :	Alex				Test mode	:	802.11n	802.11n(HT20) Tx mode		
Test Ch	nannel:	Lowest	Lowest channel				n:	Horizont	al		
Test Vo	oltage:	AC 120/	60Hz			Environme	ent:	Temp: 2	4°C Huni: 57%		
10	wol (dDu\//m)							•			
110	evel (dBuV/m)										
100											
									mr. my		
80								#	CC PART 15 (PK)		
60							-	FI	CC PART 15 (AV)		
~	man	many	your	~~~~	mound	mm	month	~ ·			
40							4				
20											
023	10 2320		2:	350					2422		
				Fre	equency (M	IHz)					
	Freq	Read/ Level	Intenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark		
	MHz	dBu₹	dB/m		<u>dB</u>	dBu√/m	dBuV/m	<u>dB</u>			
1 2	2390.000 2390.000	19.39 8.35	27.37	4.69	0.00	51.45	74.00	-22.55 -13.50	Peak Average		
-		0.00		1.00	0.00		0 4. 00	10.00			

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product Name:	Cool Duo		Product N	lodel:	Cool Duo						
Гest By:	Alex		Test mode	e:	802.11n(HT	20) Tx mode					
Test Channel:	Highest channel		Polarizatio	on:	Vertical Temp: 24°C Huni: 579			Vertical			
est Voltage:	AC 120/60Hz		Environm	ent:							
110 Level (dBuV/m)											
100	~~~~~										
80											
					FCC	PART 15 (PK)					
60			~~	1	FCC I	PART 15 (AV)					
40				2 ~~	~~						
20											
0 2452						2500					
		17.00	cy (MHz)								
Freq	ReadAntenna Level Factor	Cable Pr Loss Fa	eamp ictor Leve	Limit el Line		Remark					
MHz	$-\overline{dB}u\overline{V} - \overline{dB}/\overline{m}$	<u>d</u> B	dB dBuV/	/m dBuV/m	<u>dB</u>						
1 2483.500 2 2483.500	27.20 27.57 13.66 27.57	4.81 4.81	0.00 59.5 0.00 46.0	58 74.00 04 54.00	-14.42 -7.96	Peak Average					

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- The emission levels of other frequencies are very lower than the limit and not show in test report.



Product Name					Pi	Product Model:			Cool Duo			
Гest By:		Alex			Test mode: 802.11n(HT20)			802.11n(HT20) Tx mode				
Test Channel:		Highest c	hannel		Po	Polarization:		Horizontal		Horizontal		
Test Voltage:		AC 120/6	0Hz		E	nvironmen	t:	Temp: 24°C Huni:				
Lavel /dF	Deal Class I			E-2			77 ==					
110 Level (dE	ouv/iii)											
100		~~~	~~					1				
80								FCC P	ART 15 (PK)			
				6.50	~~~	1						
60						1	V	∼EGÇ P	ART 15 (AV)			
40												
40												
20												
20												
0												
2452				Frequ	uency (MHz)			2500			
	Freq	ReadA Level	intenna Factor	Cable Loss	Preamp Factor	Level	Limit Line		Remark			
	MHz	dBu₹			<u>d</u> B	$\overline{dBuV/m}$	$\overline{dBuV/m}$	<u>d</u> B				
	3.500		27.57	4.81				-13.29				
2 248	3.500	17.50	27.57	4.81	0.00	49.88	54.00	-4.12	Average			

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.





802.11n(HT40):

Product	t Name:	Cool Duc)		P	roduct Mod	del:	Cool Duo		
Test By	:	Alex			Te	est mode:		802.11n(H	Γ40) Tx mode	
Test Ch	annel:	Lowest ch	nannel		P	olarization		Vertical		
Test Vo	Itage:	AC 120/60	0Hz		E	nvironmen	t:	Huni: 57%		
Lou	vel (dBuV/m)									
110	rei (dbuviii)		9							
100						-	-			
							Jan	mount	mary	
80							+	FCC	PART 15 (PK)	
							1			
60						marty or	~~/ ~~/	FCC	PART 15 (AV)	
1	www	many	Mann	Man	worm	2		100	PART TO (AV)	
40	, - , ,	,	10.							
5915										
20										
20										
0										
231	10 2320		2350	Fron	uency (MH	7)			2442	
		ReadA	ntenna	AND THE PARTY OF		P.C.	Limit	Over		
	Freq							Limit	Remark	
	MHz	—dBu∀	<u>d</u> B/π			dBuV/m	dBu√/m	ā		
1	2390,000	23.34	27.37	4.69	0.00	55.40	74.00	-18.60	Peak	

Remark

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



roduct Name:	luct Name: Cool Duo				roduct Mod	lel:	Cool Duo			
est By:	Alex			Te	est mode:		802.11n(HT40) Tx mode Horizontal			
est Channel:	Lowest	channel		Po	olarization					
est Voltage:	AC 120/	60Hz		Eı	Environment: Temp: 24°C			Huni: 57%		
Lavel (dDull)										
110 Level (dBuV/m)									
100										
						~	ww	Lowers		
80						-+-	FCC	PART 15 (PK)		
60					4 .0	N	FCC	PART 15 (AV)		
mm	12 m	~ ~ · · ·	a an area.	- A As	more		100	HALL IS (HE)		
MAN MANAN	- W	was your		- hedra . h.	4					
40	r w ~	n-vel nu		- 440-14	2					
	- W %	N-VA			2					
	, W. W.	way man			2					
40		www sun			2					
20		www Sun			2					
40		2350	Freq					244		
20			170-20-00-00-00-00-00-00-00-00-00-00-00-00	uency (MH:	z)		Over	244		
20 2310 2320		Antenna	Cable	uency (MH: Preamp	z)	Limit				
20 0 2310 2320 Fr	Read	Antenna Factor	Cable	uency (MH: Preamp Factor	z)	Limit Line	Limit			
20 0 2310 2320 Fr	Readeq Level	Antenna Factor dB/m	Cable Loss	uency (MH: Preamp Factor dB	z) Level dBuV/m 52.71	Limit Line dBuV/m	Limit	Remark		

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	Name:	ool Duo			oduct Mode	el:	Cool Duo				
est By:		Alex			Tes	Test mode: 802.			40) Tx mode		
est Cha	nnel:	Highest ch	nannel		Ро	larization:	,	Vertical			
est Vol	tage:	AC 120/60)Hz		En	vironment:	-	Temp: 24°C Huni:			
	1000 100 1	l .									
110 Le	vel (dBuV/m)										
100											
	~~~~	mm	V	w.	my						
80						1		FCC F	PART 15 (PK)		
/						1-	4	1001	AKT TO (TK)		
60				_		and	~~	Wroce	MOT 45 (AVA		
							2	VVIOLE	ANT TOTAVI		
40											
20											
20											
24	32	245	50	F			ni die		2500		
		Readú	int enna		ency (MHz	c.	Limit	Over			
	Freq		Factor					Limit	Remark		
	MHz	dBu₹	<u>d</u> B/m ·	āB	<u>d</u> B	dBuV/m	dBuV/m				
1	2483.500	30.79	27.57	4.81	0.00	63.17	74 00	-10.83	Peak		

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



roduct N	ame:	Cool Du	0		F	Product Mo	del:	Cool Duo 802.11n(HT40) Tx mode			
est By:		Alex			Т	est mode:					
est Chan	nel:	Highest of	Highest channel Polarization:						al		
est Volta	ge:	AC 120/6	0Hz		Е	nvironme	nt:	Temp: 24℃ Huni:			
Laval	(dDed thee)				·						
110 Level	(dBuV/m)										
100			Jaka alika	200							
1	mm	~~~	~~`								
80						1		FC	CC PART 15 (PK)		
	-	-		7		1	_	1	C PART 15 (PR)		
60						4.4	v	my	1		
								P FC	C PART 15 (AV)		
								I			
40											
20											
02432		24	50	11.			11.	100	250		
		2-1	30	Fre	quency (M	Hz)			230		
2.02			ntenna		Preamp		Limit	Over	5 <u>0</u> 87 US		
	800						T	1+	Pomovie		
	Freq		Factor	Loss	Factor	Level	Line	LIMIC	Remark		
	Freq MHz			Loss dB		dBuV/m		dB			
	MHz	Level	Factor —dB/m			dBuV/m					

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



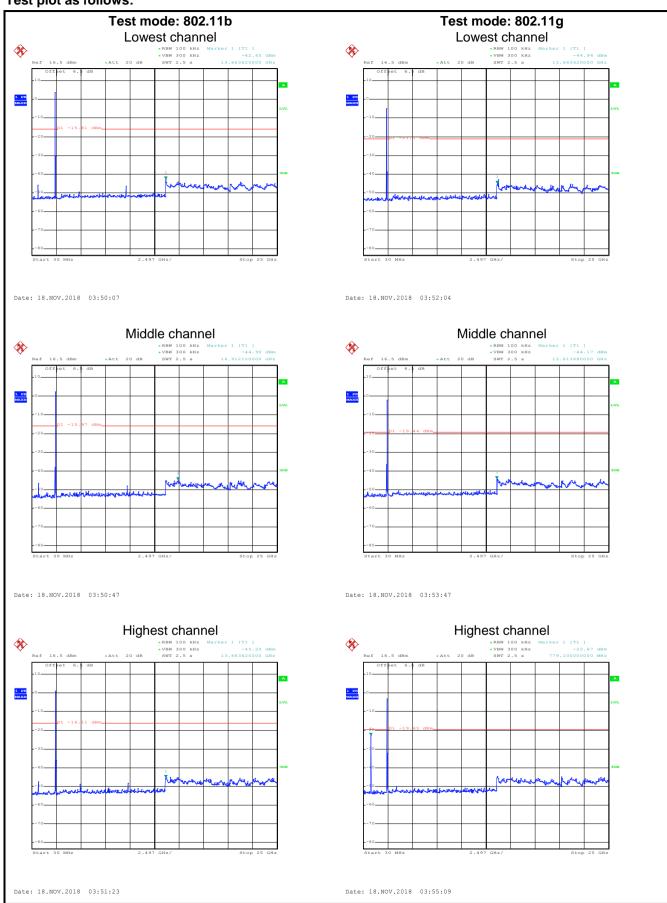
# 6.7 Spurious Emission

# 6.7.1 Conducted Emission Method

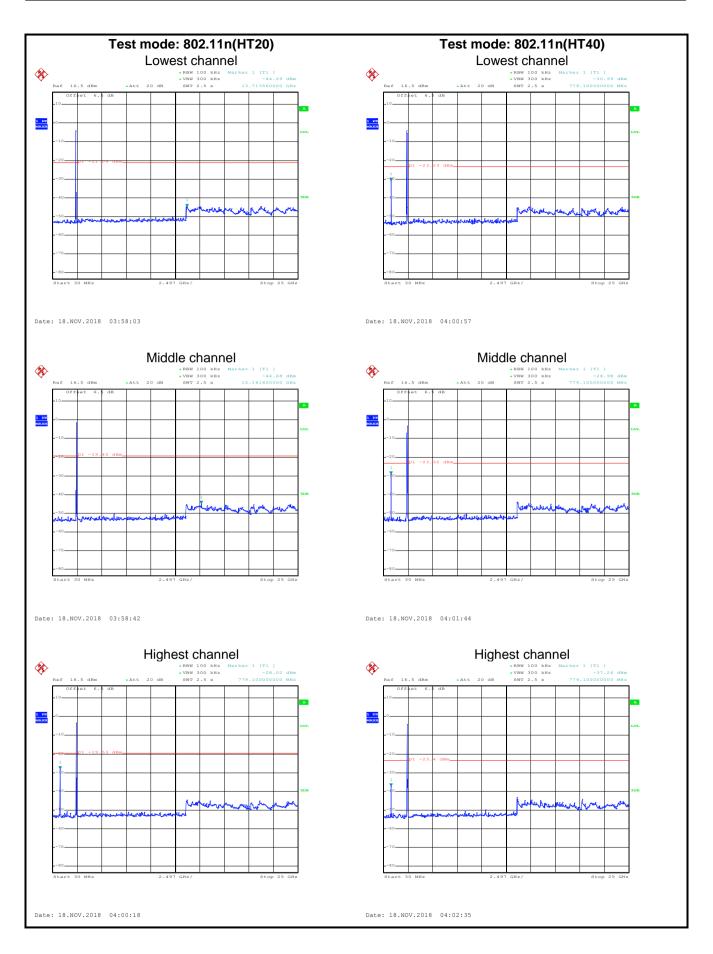
0.7.1 Conducted Linission						
Test Requirement:	FCC Part 15 C Section 15.247 (d)					
Test Method:	ANSI C63.10:2013 and KDB 558074					
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph(b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.					
Test setup:						
	Spectrum Analyzer  E.U.T  Non-Conducted Table  Ground Reference Plane					
Test Instruments:	Refer to section 5.8 for details					
Test mode:	Refer to section 5.3 for details					
Test results:	Passed					



# Test plot as follows:





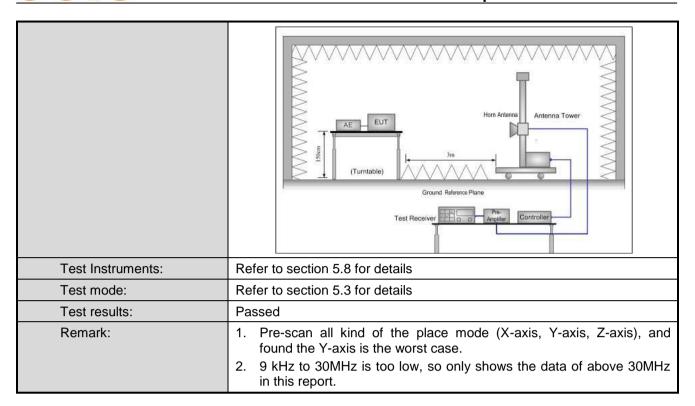




# 6.7.2 Radiated Emission Method

6.7.2 Radiated Emission M	etiloa								
Test Requirement:	FCC Part 15 C S	ection 15.209	and 15.205						
Test Method:	ANSI C63.10:201	3							
Test Frequency Range:	9kHz to 25GHz								
Test Distance:	3m								
Receiver setup:	Frequency	Detector	RBW	VB	W	Remark			
· ·	30MHz-1GHz	Quasi-peak	120KHz	300k	KHz	Quasi-peak Value			
	Above 1GHz	Peak	1MHz	3MI		Peak Value			
	RMS   1MHz   3MHz   Average Va								
Limit:	Frequency 30MHz-88MH		nit (dBuV/m @3 40.0	sm)	0	Remark Jasi-peak Value			
	88MHz-216MH		43.5			uasi-peak Value			
	216MHz-960M		46.0			uasi-peak Value			
	960MHz-1GH		54.0			uasi-peak Value			
			54.0			Average Value			
	Above 1GHz		74.0 the top of a rot			Peak Value			
	The table was highest radia?  The EUT was antenna, who tower.  The antenna the ground to Both horizon make the med.  For each suscase and the meters and to find the med.  The test-reconspecified Base.  If the emission the limit spend the EUT we have 10dB med.	as rotated 36 ation. s set 3 mete ich was mount height is vand determine ital and vertice asurement. Spected emisen the antenriche rota table aximum reacher system and width with on level of the cified, then to would be reponargin would	of degrees to do degrees to do degrees to do degrees to do de degree de degr	he interport of a volume of a volume or as of the was are or heigh om 0 de ak Dete ld Mode a mode e stoppe se the cone by cone by cone by cone by cone by cone and a volume of the cone by con	rferent variable o four of the fe e ante rrange nts from egree ect Furies was 1 ed and emissione us	meters above field strength. enna are set to ed to its worst m 1 meter to 4 s to 360 degrees unction and 10dB lower than d the peak values ions that did not sing peak, quasi-			
Test setup:	Below 1GHz  EUT  Turn Table  Ground P  Above 1GHz	minni			_				







# Measurement Data (worst case):

# Below 1GHz:

Product Name:	Cool Duo		Product Model:	Cool Duo	
Test By:	Alex		Test mode:	Wi-Fi Tx mode	)
Test Frequency:	st Frequency: 30 MHz ~ 1 GHz Polarization:				
Гest Voltage:	AC 120/60H	<u>.</u>	Environment:	Temp: 24℃	Huni: 57%
Level (dBuV/m)					
80 Lever (dBdv/m)					
70					
60				FCC D.	ART 15.247
50				1001	10.247
40			<u> </u>		
30				5	1
20	M	my lad.	Mary may be a property of the state of the s	branish of appropriate both and providing the	- Andrews - Company
10 harman harpet har		A ANAL WAY	Married		
030 50	)	100	200	500	100

	Freq		Intenna Factor						Remark
-	MHz	dBu₹	dB/m		<u>dB</u>	$\overline{dBuV/m}$	$\overline{dBuV/m}$	d <u>B</u>	
1	63.092	39.33	11.32	1.38	29.76	22.27	40.00	-17.73	QP
2	109.796	37.28	12.29	2.05	29.46	22.16	43.50	-21.34	QP
2 3 4 5	166.068	33.09	9.28	2.63	29.08	15.92	43.50	-27.58	QP
4	250.301	32.87	13.30	2.81	28.54	20.44	46.00	-25.56	QP
5	665.804	29.36	19.80	3.96	28.74	24.38	46.00	-21.62	QP
6	1000.000	28.26	22.80	4.47	27.43	28.10	54.00	-25.90	QP

Frequency (MHz)

#### Remark:

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



Prod	uct N	lame:		Cool	Du	0				Pro	oduct Mod	el:	Cool Duo				
Test	By:			Alex Test mode: Wi-Fi Tx mo					Test mode:				ode				
Test	Freq	uency:		30 MI	30 MHz ~ 1 GHz					Polarization:				Horiz	zontal		
Test	Volta	age:		AC 12	20/6	0Hz				Environment:				Tem	p: 24°(	C	Huni: 57
	Lovo	L/dD _v A	Hen \														
80	Leve	l (dBu\	(AIII)	7													
70																	
70																	
60			-		-	-				-			-		500	DART	45.047
50															FCC	PART	15.247
50																	
40			_	_	+					F			H				
											4 5						6
30								2		3	Mr. W						MALES AND STREET
20				1	-		1	<b>.</b>	what	MM.	MANNE MANNE	Whates	Lin	- Hateley	equipos traction	hoper appear	
1000		hat the March	word water	Mary	الو	اسمياليهما	and the same	White	ALL DIV			in the					
10	"W/W"	oftela II.			10,												
0	30		50			ш,	100			200				50	0		100
2.00	30		30				100	Freq	uency	REAL PROPERTY.	z)			30	0		100
		2				Ant en		Cable				Lim			Over		19
			Freq	Lev	el	Fact	or	Loss	Fact	or	Level	Lı	ne	L:	ımıt	Rem	ark
	_		MHz	dB	ū₹	₫B	7m			ďВ	dBuV/m	₫BuV	7m		₫B		
1		55	. 027	31.	21	13.	21	1.36	29.	80	15.98	40.	00	-24	4.02	QP	
	2	112	.920	39.	76	11.	67	2.09	29.	44	24.08	43.	50	-1	9.42	QP	
2			. 745	39.		11. 12.		2.81 2.83		89 64							
3	i	020	E 20				11	7.00	76.	na	70. (h	40.	UU	-1	1. 24	WP	
2 3 4 5			.532 .316	41. 41.		13.		2.94		45	29.90						

^{1.} Final Level = Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor.

^{2.} The emission levels of other frequencies are very lower than the limit and not show in test report.





#### **Above 1GHz**

Above 1GHz								
				802.11b				
				annel: Lowe				
		1	De	tector: Peak	Value			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4824.00	53.72	30.94	6.81	41.82	49.65	74.00	-24.35	Vertical
4824.00	51.44	30.94	6.81	41.82	47.37	74.00	-26.63	Horizontal
			Dete	ctor: Averag	ge Value			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4824.00	38.54	30.94	6.81	41.82	34.47	54.00	-19.53	Vertical
4824.00	43.70	30.94	6.81	41.82	39.63	54.00	-14.37	Horizontal
				annel: Mido				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4874.00	51.87	31.20	6.85	41.84	48.08	74.00	-25.92	Vertical
4874.00	49.80	31.20	6.85	41.84	46.01	74.00	-27.99	Horizontal
			Dete	ctor: Averaç	ge Value			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4874.00	41.87	31.20	6.85	41.84	38.08	54.00	-15.92	Vertical
4874.00	39.80	31.20	6.85	41.84	36.01	54.00	-17.99	Horizontal
			Test ch	annel: Highe	est channel			
			De	tector: Peak	Value			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4924.00	51.98	31.46	6.89	41.86	48.47	74.00	-25.53	Vertical
4924.00	48.60	31.46	6.89	41.86	45.09	74.00	-28.91	Horizontal
			Dete	ctor: Averaç	e Value			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4924.00	42.00	31.46	6.89	41.86	38.49	54.00	-15.51	Vertical
4924.00	38.60	31.46	6.89	41.86	35.09	54.00	-18.91	Horizontal
·	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·			·		

# Remark:

^{1.} Final Level = Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor.

^{2.} The emission levels of other frequencies are very lower than the limit and not show in test report.





802.11g									
Test channel: Lowest channel									
Detector: Peak Value									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4824.00	46.56	30.94	6.81	41.82	42.49	74.00	-31.51	Vertical	
4824.00	46.87	30.94	6.81	41.82	42.80	74.00	-31.20	Horizontal	
Detector: Average Value									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4824.00	38.23	30.94	6.81	41.82	34.16	54.00	-19.84	Vertical	
4824.00	37.46	30.94	6.81	41.82	33.39	54.00	-20.61	Horizontal	
Tot showed Middle showed									
Test channel: Middle channel  Detector: Peak Value									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4874.00	46.84	31.20	6.85	41.84	43.05	74.00	-30.95	Vertical	
4874.00	48.46	31.20	6.85	41.84	44.67	74.00	-29.33	Horizontal	
				ctor: Averag					
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4874.00	36.89	31.20	6.85	41.84	33.10	54.00	-20.90	Vertical	
4874.00	38.42	31.20	6.85	41.84	34.63	54.00	-19.37	Horizontal	
Test channel: Highest channel									
				tector: Peak					
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4924.00	46.72	31.46	6.89	41.86	43.21	74.00	-30.79	Vertical	
4924.00	47.09	31.46	6.89	41.86	43.58	74.00	-30.42	Horizontal	
Detector: Average Value									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4924.00	37.61	31.46	6.89	41.86	34.10	54.00	-19.90	Vertical	
4924.00	37.34	31.46	6.89	41.86	33.83	54.00	-20.17	Horizontal	
Remark:  1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.									

Shenzhen Zhongjian Nanfang Testing Co., Ltd.

No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road, Bao'an District, Shenzhen, Guangdong, China

2. The emission levels of other frequencies are very lower than the limit and not show in test report.

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802.11n(HT20)									
Test channel: Lowest channel									
Detector: Peak Value									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4824.00	47.21	36.06	6.81	41.82	48.26	74.00	-25.74	Vertical	
4824.00	46.58	36.06	6.81	41.82	47.63	74.00	-26.37	Horizontal	
Detector: Average Value									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4824.00	37.64	36.06	6.81	41.82	38.69	54.00	-15.31	Vertical	
4824.00	37.38	36.06	6.81	41.82	38.43	54.00	-15.57	Horizontal	
Test channel: Middle channel									
Detector: Peak Value									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4874.00	46.92	36.32	6.85	41.84	48.25	74.00	-25.75	Vertical	
4874.00	48.46	36.32	6.85	41.84	49.79	74.00	-24.21	Horizontal	
			Dete	ctor: Averag	ge Value				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4874.00	37.06	36.32	6.85	41.84	38.39	54.00	-15.61	Vertical	
4874.00	38.23	36.32	6.85	41.84	39.56	54.00	-14.44	Horizontal	
Test channel: Highest channel									
				tector: Peak	Value				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4924.00	46.73	36.58	6.89	41.86	48.34	74.00	-25.66	Vertical	
4924.00	47.11	36.58	6.89	41.86	48.72	74.00	-25.28	Horizontal	
Detector: Average Value									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4924.00	36.84	36.58	6.89	41.86	38.45	54.00	-15.55	Vertical	
4924.00	37.56	36.58	6.89	41.86	39.17	54.00	-14.83	Horizontal	
Remark:  1 Final Level = Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor									

^{1.} Final Level = Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor.

^{2.} The emission levels of other frequencies are very lower than the limit and not show in test report.





802.11n(HT40)									
Test channel: Lowest channel									
Detector: Peak Value									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4844.00	47.30	36.06	6.81	41.82	48.35	74.00	-25.65	Vertical	
4844.00	46.45	36.06	6.81	41.82	47.50	74.00	-26.50	Horizontal	
Detector: Average Value									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4844.00	38.65	36.06	6.81	41.82	39.70	54.00	-14.30	Vertical	
4844.00	37.64	36.06	6.81	41.82	38.69	54.00	-15.31	Horizontal	
Test channel: Middle channel									
Detector: Peak Value									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4874.00	47.04	36.32	6.85	41.84	48.37	74.00	-25.63	Vertical	
4874.00	48.81	36.32	6.85	41.84	50.14	74.00	-23.86	Horizontal	
			Dete	ctor: Averag	ge Value		<u>'</u>		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4874.00	37.93	36.32	6.85	41.84	39.26	54.00	-14.74	Vertical	
4874.00	38.28	36.32	6.85	41.84	39.61	54.00	-14.39	Horizontal	
Test channel: Highest channel									
		1 - 1		tector: Peak	Value		I		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4904.00	46.20	36.45	6.87	41.85	47.67	74.00	-26.33	Vertical	
4904.00	47.75	36.45	6.87	41.85	49.22	74.00	-24.78	Horizontal	
Detector: Average Value									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4904.00	39.46	36.45	6.87	41.85	40.93	54.00	-13.07	Vertical	
4904.00	37.10	36.45	6.87	41.85	38.57	54.00	-15.43	Horizontal	
Remark:  1 Final Level = Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor									

^{1.} Final Level = Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor.

^{2.} The emission levels of other frequencies are very lower than the limit and not show in test report.