Report No.: FR262610AI

FCC Test Report

Equipment : 11n/a&11n/g/b Concurrent Smart model

11n/a,11n/g/b Single Smart model

Brand Name : BUFFALO

Model No. : WAPS-APG600H/WAPS-AG300H

FCC ID : FDI04604022-0

Standard : 47 CFR FCC Part 15.247

Frequency Range : 5725 MHz - 5850 MHz

Applicant : Buffalo Inc.

AKAMONDORI Bldg, 30-20, Ohsu 3-chome,

Naka-ku, Nagoya,460-8315, Japan

Manufacturer : EDIMAX TECHNOLOGY CO., LTD.

No.3, Wu Chuan 3rd Road, Wu-Ku Industrial

Park. Taipei Hsien, Taiwan

The product sample received on Jun. 27, 2012 and completely tested on Aug. 01, 2012. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2009 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:

Wayne Hsu // Assistant Manager

Ilac-MRA



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TEL: 886-3-327-3456 FAX: 886-3-327-0973

Summary of Test Result

Report No. : FR262610AI

		Conforr	nance Test Specifications		
Report Clause	Ref. Std. Clause	Description	Measured	Limit	Result
1.1.2	15.203	Antenna Requirement	Antenna connector mechanism complied	FCC 15.203	Complied
3.1	15.207	AC Power-line Conducted Emissions	0.72MHz: 28.24dBuV (17.76dB) - AV 27.89dBuV (28.11dB) - QP	FCC 15.207	Complied
3.2	15.247(a)	6dB Bandwidth	6dB Bandwidth [MHz] 5745-5825MHz(20M): 17.44 5755-5795MHz(40M): 35.28	≥500kHz	Complied
3.3	15.247(b)	RF Output Power (Maximum Peak Conducted Output Power)	Power [dBm] 5745-5825MHz: 22.45 5755-5795MHz: 22.64	Power [dBm] 5745-5825MHz: 30 5755-5795MHz: 30	Complied
3.4	15.247(d)	Power Spectral Density	PSD [dBm/3kHz] 5745-5825MHz: -14.86 5755-5795MHz: -17.57	PSD [dBm/3kHz] 5745-5825MHz: 8 5755-5795MHz: 8	Complied
3.5	15.247(c)	Transmitter Radiated Bandedge Emissions	Non-Restricted Bands: 5720.60MHz: 22.45dB Bandedge emissions not fall in restricted bands.	Non-Restricted Bands: > 20 dBc Restricted Bands: FCC 15.209	Complied
3.6	15.247(c)	Transmitter Radiated Unwanted Emissions	Restricted Bands [dBuV/m at 3m]: 43.58MHz: 36.85 (Margin 3.15dB) - PK	Non-Restricted Bands: > 20 dBc Restricted Bands: FCC 15.209	Complied

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Revision History

Report No.	Version	Description	Issued Date
FR262610AI	Rev. 01	Initial issue of report	Aug. 30, 2012

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1 General Description

1.1 Information

1.1.1 RF General Information

RF General Information							
Frequency Range (MHz)	IEEE Std. 802.11 Protocol	Ch. Frequency (MHz)	Channel Number	RF Output Power (dBm)	Designation of Emission		
5725-5850	а	5745-5825	149-165 [5]	22.19	16M5D1D		
5725-5850	n (HT20)	5745-5825	149-165 [5]	22.45	17M5D1D		
5725-5850	n (HT40)	5755-5795	151-159 [2]	22.64	36M2D1D		

Note 1: IEEE Std. 802.11-2007 modulation consists of IEEE Std. 802.11a-1999.

Note 2: IEEE Std. 802.11n-2009 modulation consists of HT20 and HT40 (HT: High Throughput). Then EUT support HT20 and HT40.

Note 3: RF output power specifies that Maximum Peak Conducted Output Power.

Transmitter Chains & Receiver Chains Information							
IEEE Std. 802.11 Protocol	Number of Transmit Chains (N _{TX})	Number of Receive Chains (N _{RX})	Correlation Signals with Multiple N _{TX}	99% Emission Bandwidth (MHz)	Co-location		
а	2	2	Correlated	16.47	Yes		
n (HT20)	2	2	Uncorrelated	17.49	Yes		
n (HT40)	2	2	Uncorrelated	36.18	Yes		

Note 1: Co-location, Co-location is generally defined as simultaneously transmitting (co-transmitting) antennas within 20 cm of each other. (i.e., EUT has simultaneously co-transmitting that operating 2.4GHz and 5GHz.)

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1.1.2 Antenna Information

					Antenna Cat	egory			
	Equi	pment place	d on the m	narket withou	ıt antennas				
	Integ	ıral antenna	(antenna	permanently	attached)				
	☐ Temporary RF connector provided								
		Transmit ch measureme	ains bypa nt. In cas	e of conduc	and soldered ted measure	I temporary RF connements the transmitted and correct for all loss	er shall	be connec	
	External antenna (dedicated antennas)								
		Single power	r level wit	h correspond	ding antenna(s). Power Level (PL):	1		
	\boxtimes	Multiple pow	ver level a	nd correspor	nding antenna	a(s). Power Level (PL): 1~2		
		No RF conn	ector prov	ided					
		connec	cted meas cted to the	surement. In	case of co	soldered temporary inducted measureme a a suitable attenuato	ents the	transmitte	r shall be
		RF connecto	or provide	d					
		Unique	antenna o	connector. (e	.g., MMCX, L	J.FL, IPX, and RP-SM	1A, RP-1	√l type)	
	Ī	Standa	rd antenna	a connector.	(e.g., SMA, N	I, BNC, and TNC type	e)		
				Anter	nna General	Information			
Ante	nna	Port (Total	2 Port)		1(TX/RX), 2	(TX/RX)			
Maxi	mun	n RF Output	Power L	evel (PL)	1				
Tran	smit	Chains Pov	wer Distri	bution		rical distribution 🗌 a	symmet	trical distrib	ution
Ant. No.	PL	Ant. Port [Ant No. X connect to Ant. Port Y]	Ant. Cat.	Ant. Type	Brand	Model	G _{ANT} (dBi)	DG (dBi) [correlated] N _{TX} = 1	DG (dBi) [uncorrelated] N _{TX} = 2
1	1	1	Internal	Dipole	-	-	2.89	5.9	2.9
2	2 1 2 Internal Dipole - 2.89								
\boxtimes	☐ The equipment is normally installed and point-to-point or point-to-multipoint systems: Ant. No. <u>1,2</u>								
	Note 1: For all transmitter outputs with equal antenna gains, directional gain is to be computed as follows: Any transmit signals are correlated, Directional Gain (DG) = G_{ANT} + 10 log(N) dBi All transmit signals are completely uncorrelated, Directional Gain (DG)= G_{ANT} Note 2: For all transmitter outputs with unequal antenna gains, directional gain is to be computed as follows: Any transmit signals are correlated, Directional Gain (DG) = $10 \log[(10^{G1/20} + 10^{G2/20} + + 10^{GN/20})^2/N]$ dBi All transmit signals are completely uncorrelated, Directional Gain (DG) = $10 \log[(10^{G1/10} + 10^{G2/10} + + 10^{GN/10})/N]$ dBi								

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1.1.3 Type of EUT

	Identify EUT			
EU	Γ Serial Number	N/A		
Pre	sentation of Equipment	☐ Production ; ☐ Prototype		
		Type of EUT		
\boxtimes	Stand-alone			
	Combined (EUT where the	e radio part is fully integrated within another device)		
	Combined Equipment - B	rand Name / Model No.:		
	Plug-in radio (EUT intended for a variety of host systems)			
	Host System - Brand Name / Model No.:			
	Other:			

1.1.4 Test Signal Duty Cycle

	Operated Mode for Worst Duty Cycle				
	Operated normally mode for worst dut	ty cycle			
\boxtimes	Operated test mode for worst duty cyc	cle			
	Test Signal Duty Cycle (x)	Power Duty Factor [dB] – (10 log 1/x)	Voltage Duty Factor [dB] – (20 log 1/x)		
\boxtimes	100% - IEEE 802.11a	0	0		
\boxtimes	100% - IEEE 802.11n (HT20)	0	0		
	100% - IEEE 802.11n (HT40)	0	0		

1.1.5 EUT Operational Condition

Supply Voltage	☐ DC	
Type of DC Source	☐ External DC adapter	☐ Battery

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1.2 Accessories and Support Equipment

Accessories					
No.	Equipment	Brand Name	Model Name	Serial No.	
1	AC Adapter	APD	DA-48P12	-	

	Support Equipment - Conducted Emissions						
No.	Equipment	Brand Name	Model Name	Serial No.			
1	USB Flash 1	TDK	16G	N/A			
2	USB Flash 2	LITEON	2G	N/A			
3	Notebook	DELL	E5520	DoC			
4	iPod	Apple	A1199	DoC			
5	USB Mouse	Microsoft	1113	DoC			
6	Notebook (Remote Workstation)	DELL	VOSTRO 3350	DoC			
7	POE (Remote Workstation)	D-Link	DWL-P200	DoC			

	Support Equipment - Radiated Emissions						
No.	Equipment	Brand Name	Model Name	Serial No.			
1	USB Flash 1	TDK	16G	N/A			
2	USB Flash 2	LITEON	2G	N/A			
3	Notebook	DELL	E5520	DoC			
4	USB Mouse	Microsoft	1113	DoC			
5	iPod	Apple	A1199	DoC			
6	Notebook (Remote Workstation)	DELL	E5520	DOC			
7	POE (Remote Workstation)	D-Link	DWL-P200	DoC			

1.3 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR FCC Part 15
- ANSI C63.10-2009
- FCC KDB 558074 Guidance for Performing Compliance Measurements on DTS
- FCC KDB 662911 Emissions Testing of Transmitters with Multiple Outputs
- FCC KDB 412172 Guidelines for Determining the ERP and EIRP

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1.4 Testing Location Information

				Testing Location		
\boxtimes	HWA YA	ADD	. No. 52, Hwa Y Hsien, Taiwan,		hnology Park, Kwei-Sh	an Hsiang, Tao Yuan
		TEL	: 886-3-327-345	66 FAX : 886	6-3-327-0973	
1	Гest Conditi	on	Test Site No.	Test Engineer	Test Environment	Test Date
Co	nducted Emi	ssion	CO01-HY	David	25.9°C / 53.6%	30-Jun-12
	RF Conduct	ed	TH01-HY	lan	24.6°C / 44%	01-Aug-12
Ra	adiated Emis	sion	03CH02-HY	Hsiao	24.1°C / 64%	17-Jul-12

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1.5 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

Me	easurement Uncertainty	,	
Test Item		Uncertainty	Limit
AC power-line conducted emissions		±2.26 dB	N/A
Emission bandwidth, 6dB bandwidth		±1.42 %	N/A
RF output power, conducted		±0.63 dB	N/A
Power density, conducted		±0.81 dB	N/A
Unwanted emissions, conducted	30 – 1000 MHz	±0.51 dB	N/A
	1 – 18 GHz	±0.67 dB	N/A
	18 – 40 GHz	±0.83 dB	N/A
	40 – 200 GHz	N/A	N/A
All emissions, radiated	30 – 1000 MHz	± 2.54 dB	N/A
	1 – 18 GHz	±3.59 dB	N/A
	18 – 40 GHz	±3.82 dB	N/A
	40 – 200 GHz	N/A	N/A
Temperature	•	±0.8 °C	N/A
Humidity		±3 %	N/A
DC and low frequency voltages		±3 %	N/A
Time		±1.42 %	N/A
Duty Cycle		±1.42 %	N/A

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2 Test Configuration of EUT

2.1 The Worst Case Modulation Configuration

	Wo	orst Modulation	used for Con	formance Test	ing	
Power	r Level	1				
IEEE 802.11 Protocol	Number of Transmit Chains (N _{TX})	Data Rate / MCS	Worst Data Rate / MCS	Worst Modulation Mode	RF Output Power (dBm)	Power Spectral Density (dBm/3kHz)
а	1	6-54 Mbps	6Mbps	11A5.8G-20M	22.19	-15.80
n (HT20)	2	MCS 0-15	MCS 8	11N5.8G-20M	22.45	-14.86
n (HT40)	2	MCS 0-15	MCS 8	11N5.8G-40M	22.64	-17.57

Note 1: IEEE Std. 802.11-2007 modulation consists of IEEE Std. 802.11a-1999.

Note 2: IEEE Std. 802.11n-2009 modulation consists of HT20 and HT40 (HT: High Throughput). Then EUT support HT20 and HT40. Worst modulation mode of Guard Interval (GI) is 400ns.

Note 3: Modulation modes consist of 11A5.8-G-20M, 11N5.8G-20M, 11N5.8G-40M: 11A5.8G: IEEE 802.11a (5.8GHz Band), 11N5.8G: IEEE 802.11n (5.8GHz Band) 20M/40M: Channel Bandwidth 20MHz/40MHz

Note 4: RF output power specifies that Maximum Peak Conducted Output Power.

2.2 Test Channel Frequencies Configuration

Tes	t Channel Frequencies Configura	ation
IEEE 802.11 Protocol	Worst Modulation Mode	Test Channel Frequencies (MHz) – FX (Frequencies Abbreviations)
а	11A5.8G-20M	5745-(F1), 5785-(F2), 5825-(F3)
n (HT20)	11N5.8G-20M	5745-(F1), 5785-(F2), 5825-(F3)
n (HT40)	11N5.8G-40M	5755-(F4), 5795-(F5)

Note 1: Modulation modes consist of 11A5.8-G-20M, 11N5.8G-20M, 11N5.8G-40M: 11A5.8G: IEEE 802.11a (5.8GHz Band), 11N5.8G: IEEE 802.11n (5.8GHz Band) 20M/40M: Channel Bandwidth 20MHz/40MHz

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2.3 The Worst Case Power Setting Parameter

	The	Worst Case Pow	er Setting Parame	eter	
Power	Level	1			
Test Softwa	are Version	RT 3883 QA_1.0.	4.5		
Worst Modulation Mode	Number of Transmit Chains (N _{TX})	Frequency (MHz)	Power Setting	Worst Data Rate / MCS	RF Output Power (dBm)
11A5.8G-20M	2	5745	13,11	6 Mbps	21.95
11A5.8G-20M	2	5785	15,14	6 Mbps	21.99
11A5.8G-20M	2	5825	17,18	6 Mbps	22.19
11N5.8G-20M	2	5745	14,12	MCS 8	22.35
11N5.8G-20M	2	5785	16,15	MCS 8	22.45
11N5.8G-20M	2	5825	17,18	MCS 8	22.34
11N5.8G-40M	2	5755	16,14	MCS 8	22.64
11N5.8G-40M	2	5795	16,16	MCS 8	22.46

Note 1: Modulation modes consist of 11A5.8-G-20M, 11N5.8G-20M, 11N5.8G-40M: 11A5.8G: IEEE 802.11a (5.8GHz Band), 11N5.8G: IEEE 802.11n (5.8GHz Band) 20M/40M: Channel Bandwidth 20MHz/40MHz

Note 2: RF output power specifies that Maximum Peak Conducted Output Power.

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2.4 The Worst Case Measurement Configuration

	The Worst Case Mode for Following Co	onformance Tests		
Tests Item	AC power-line conducted emissions			
Condition	AC power-line conducted measurement for line and	neutral		
Operating Mode	Operating Mode Description	Worst Modulation Mode	Test Freq.	Power Level
1	Normal TX + Adapter Mode	11N5.8G-20M	F2	1
2	Normal TX + POE Mode	11N5.8G-40M	F5	1
For operatin	g mode 1 is the worst case and it was record in this t	est report.		•

	The Worst Case N	lode for Following C	onformance Tests	
Tests Item	RF Output Power Power Spectral Dens 6dB Bandwidth	ity		
Test Condition	Conducted measurer	ment at transmit chains	S	
Worst Modulation Mode	Number of Transmit Chains (N _{TX})	Worst Data Rate / MCS	Test Frequency	Power Level
11A5.8G-20M	2	6Mbps	F1, F2, F3	1
11N5.8G-20M	2	MCS 8	F1, F2, F3	1
11N5.8G-40M	2	MCS 8	F4, F5	1

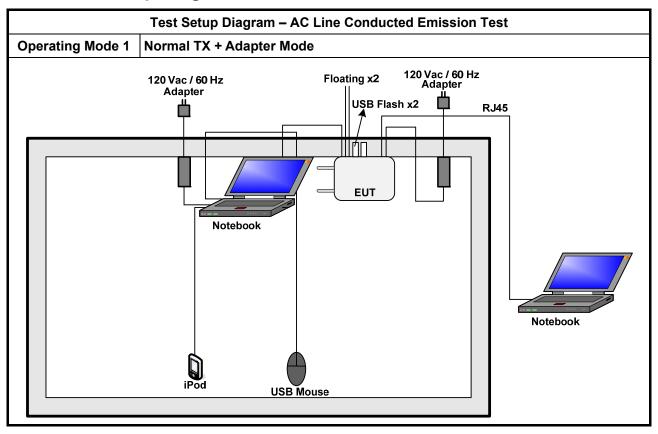
	The Worst Case N	lode for Following C	onformance Tests	
Tests Item	Transmitter Radiated	Bandedge Emissions		
Test Condition	Radiated measureme	ent		
Worst Modulation Mode	Number of Transmit Chains (N _{TX})	Worst Data Rate / MCS	Test Frequency	Power Level
11A5.8G-20M	2	6Mbps	F1, F3	1
11N5.8G-20M	2	MCS 8	F1, F3	1
11N5.8G-40M	2	MCS 8	F4, F5	1

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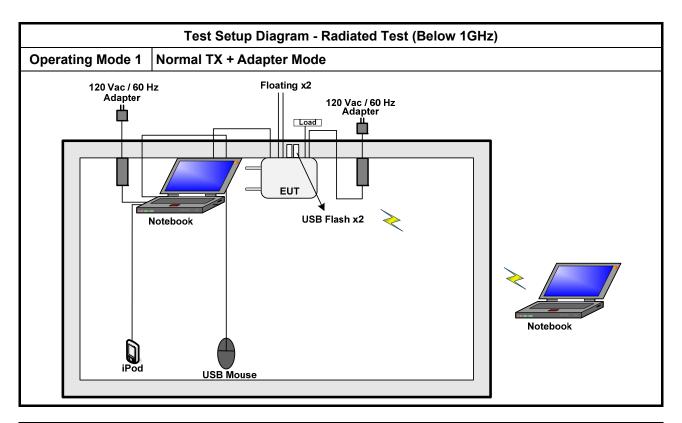
	The Wo	rst Case Mode	for Following	Conformance	Tests	
Tests Item	Transmitter Ra	adiated Unwant	ed Emissions			
Test Condition	Radiated meas	surement				
	⊠ EUT will b	e placed in fixe	ed position.			
User Position		oe placed in mo d two or three o		d operating multes.	tiple positions.	EUT shall be
				attery-powered of two or three		
Operating	□ 1. Norm	al TX + Adapte	r Mode			
Mode < 1GHz	2. Norm	al TX + POE M	ode			
Worst Modulation Mode	Number of Transmit Chains (N _{TX})	Worst Data Rate / MCS	Test Frequency	Power Level	Ant No.	Worst Orthogonal Planes of EUT
11A5.8G-20M	2	6Mbps	F1, F2, F3	1	1,2	X Plane
11N5.8G-20M	2	MCS 8	F1, F2,F3	1	1,2	X Plane
11N5.8G-40M	2	MCS 8	F4, F5	1	1,2	X Plane
	X PI	lane	ΥP	lane	ZΡ	lane
Orthogonal Planes of EUT						
For operating mo	ode 1 is the wor	st case and it w	as record in thi	s test report.		

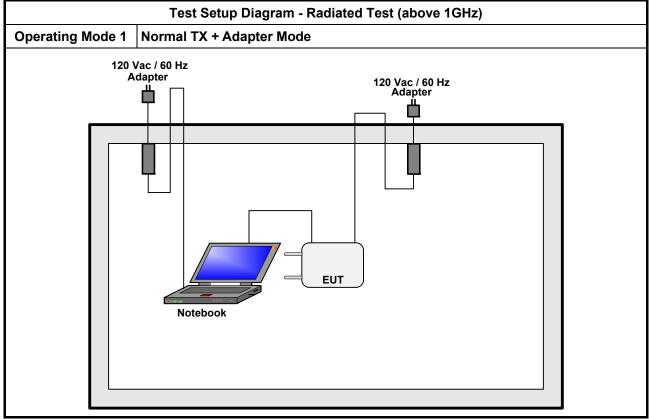
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2.5 Test Setup Diagram



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3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

AC Po	wer-line Conducted Emissions	Limit
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50
Note 1: * Decreases with the logarithm	n of the frequency.	

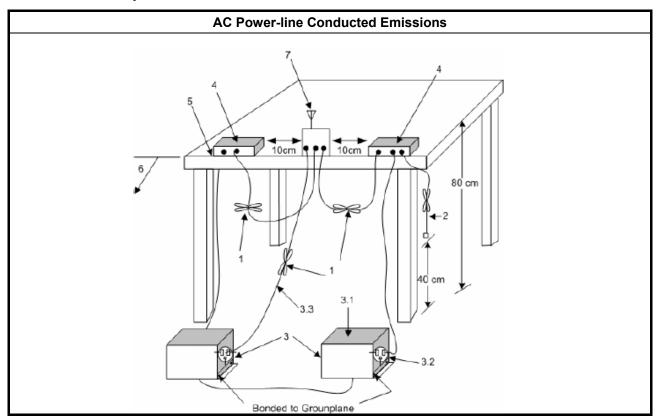
3.1.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

	Test Method
\boxtimes	Refer as ANSI C63.10-2009, clause 6.2 for AC power-line conducted emissions.

3.1.4 Test Setup



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3.1.5 Test Result of AC Power-line Conducted Emissions

lodulation Mo	ode	11N5.8	3G-20N	1	Powe	er Leve	i 1			Test Freq	. (FX)	F2
perating Mod	le	1			Ant.	No.	1	,2		Power Ph	ase	Neutral
perating Fundament	ction	Norma	l TX +	Adapte	er Mod	le				•		
8	Level (d	BuV)	310 310		N - 15		310		Da	nte: 2012-06-30	ſime:	40
				1-1-1-								
		-						430		CNS/VCC	I/CISPR-B	
	-		_									
	200	-			-					CNS/VCCI/CIS	PR -B AV	
4	ю	3										
		5		10				og <mark>t</mark> to		and it		
		A I	1	1		da		A Land	k	L. L. MILITARY	de de	
	Y MAL			k n		A PRINT		JPW JWY	MAY	MANAGE LINE	4 1 1	N.
	1	Marilland	WINKL	VIIIALA	Ababash	Washington All			3/1 3/8	No.	100	1
	13	2.00	ar IV and old	de class	and a study	distribution of	as he	35				
	0											
	0.15 0.2		0.5		1	2 Frequenc	v (MHz)	5		10	20	30
	0.15 0.2		0.5			2 Frequenc	y (MHz)	5		10	20	30
	0.15 0.2		0.5				y (MHz)	5		10	20	30
	0 0.15 0.2		0.5				y (MHz)	5		10	20	30
	0 0.15 0.2		0.5				y (MHz)	5		10	20	30
	0 0.15 0.2		0.5				y (MHz)	5		10	20	30
	0 0.15 0.2		0.5				y (MHz)	5		10	20	30
	0 0.15 0.2		0.5				y (MHz)	5		10	20	30
	0 0.15 0.2			Limit		Frequenc		5		10	20	30
		Level	0ver	Limit Line		Frequenc Probe	Cable	5 Remark		10	20	30
	Freq		Over Limit	Line	Read Level	Probe Factor	Cable Loss			10	20	30
		Level dBuV	0ver		Read	Frequenc Probe	Cable			10	20	30
	Freq MHz	dBu∀	Over Limit	Line dBuV	Read Level	Probe Factor	Cable Loss	Remark		10	20	30
	Freq MHz	dBuV 37.69	Over Limit	Line dBuV 64.72	Read Level dBuV	Probe Factor	Cable Loss dB	Remark		10	20	30
1 2 3	Freq MHz 0.175 0.175 0.232	dBuV 37.69 26.51 35.01	Over Limit dB -27.03 -28.21 -27.37	dBuV 64.72 54.72 62.38	Read Level dBuV 37.47 26.29 34.79	Probe Factor dB 0.12 0.12 0.12	Cable Loss dB 0.10 0.10 0.10	Remark OP Average OP		10	20	30
1 2 3 4	Freq MHz 0.175 0.175 0.232 0.232	dBuV 37.69 26.51 35.01 26.78	Over Limit dB -27.03 -28.21 -27.37 -25.60	dBuV 64.72 54.72 62.38 52.38	Read Level dBuV 37.47 26.29 34.79 26.56	Probe Factor dB 0.12 0.12 0.12 0.12 0.12	Cable Loss dB 0.10 0.10 0.10 0.10 0.10	Remark OP Average OP Average		10	20	30
1 2 3 4 5	Freq MHz 0.175 0.175 0.232 0.232 0.232	dBuV 37.69 26.51 35.01 26.78 28.57	Over Limit dB -27.03 -28.21 -27.37 -25.60 -31.93	dBuV 64.72 54.72 62.38 52.38 60.50	Read Level dBuV 37.47 26.29 34.79 26.56 28.35	Probe Factor dB 0.12 0.12 0.12 0.12 0.12 0.12	Cable Loss dB 0.10 0.10 0.10 0.10 0.10 0.10	Remark OP Average QP Average QP		10	20	30
1 2 3 4 5 6	Freq MHz 0.175 0.175 0.232 0.232 0.232 0.291	dBuV 37.69 26.51 35.01 26.78 28.57 22.73	Over Limit dB -27.03 -28.21 -27.37 -25.60 -31.93 -27.77	dBuV 64.72 54.72 62.38 52.38 60.50 50.50	Read Level dBuV 37.47 26.29 34.79 26.56 28.35 22.51	Probe Factor dB 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.1	Cable Loss dB 0.10 0.10 0.10 0.10 0.10 0.10 0.10	Remark QP Average QP Average QP Average		10	20	30
1 2 3 4 5 6 7	Freq MHz 0.175 0.175 0.232 0.232 0.291 0.291 0.406	dBuV 37.69 26.51 35.01 26.78 28.57 22.73 27.91	Over Limit dB -27.03 -28.21 -27.37 -25.60 -31.93 -27.77 -29.82	dBuV 64.72 54.72 62.38 52.38 60.50 50.50 57.73	Read Level dBuV 37.47 26.29 34.79 26.56 28.35 22.51 27.69	Probe Factor dB 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.1	Cable Loss dB 0.10 0.10 0.10 0.10 0.10 0.10 0.10	Remark OP Average OP Average QP Average		10	20	30
1 2 3 4 5 6 7 8	Freq MHz 0.175 0.175 0.232 0.291 0.291 0.406 0.406	dBuV 37.69 26.51 35.01 26.78 28.57 22.73 27.91 24.00	Over Limit dB -27.03 -28.21 -27.37 -25.60 -31.93 -27.77 -29.82 -23.73	dBuV 64.72 54.72 62.38 52.38 60.50 50.50 57.73 47.73	Read Level dBuV 37.47 26.29 34.79 26.56 28.35 22.51 27.69 23.78	Probe Factor dB 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.1	Cable Loss dB 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.	Remark OP Average OP Average OP Average OP Average		10	20	30
1 2 3 4 5 6 7 8 9	Freq 0.175 0.175 0.232 0.232 0.291 0.291 0.406 0.406 0.720	dBuV 37.69 26.51 35.01 26.78 28.57 22.73 27.91 24.00 27.89	Over Limit -27.03 -28.21 -27.37 -25.60 -31.93 -27.77 -29.82 -23.73 -28.11	dBuV 64.72 54.72 62.38 52.38 60.50 50.50 57.73 47.73 56.00	Read Level 37.47 26.29 34.79 26.56 28.35 22.51 27.69 23.78 27.65	Probe Factor dB 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.1	Cable Loss dB 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.	Remark OP Average OP Average OP Average OP Average OP Average		10	20	30
1 2 3 4 5 6 7 8 9	Freq 0.175 0.175 0.232 0.232 0.291 0.406 0.406 0.720 0.720	dBuV 37.69 26.51 35.01 26.78 28.57 22.73 27.91 24.00 27.89 28.24	Over Limit dB -27.03 -28.21 -27.37 -25.60 -31.93 -27.77 -29.82 -23.73 -28.11 -17.76	dBuV 64.72 54.72 62.38 52.38 60.50 50.50 57.73 47.73 56.00 46.00	Read Level dBuV 37.47 26.29 34.79 26.56 28.35 22.51 27.69 23.78 27.65 28.00	Probe Factor dB 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.14	Cable Loss dB 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.	Remark OP Average OP Average OP Average OP Average OP Average		10	20	30
1 2 3 4 5 6 7 8 9	Freq 0.175 0.175 0.232 0.232 0.291 0.291 0.406 0.406 0.720 0.720 3.680	dBuV 37.69 26.51 35.01 26.78 28.57 22.73 27.91 24.00 27.89 28.24 27.31	Over Limit -27.03 -28.21 -27.37 -25.60 -31.93 -27.77 -29.82 -23.73 -28.11	dBuV 64.72 54.72 62.38 52.38 60.50 50.50 57.73 47.73 56.00	Read Level dBuV 37.47 26.29 34.79 26.56 28.35 22.51 27.69 23.78 27.65 28.00 27.00	Probe Factor dB 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.1	Cable Loss 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0	Remark OP Average OP Average OP Average OP Average OP Average		10	20	30

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit. Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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perating Mo	ode	1			Ant.	No.	1,	,2	Power Phase	Line
perating Fu	nction	Norma	al TX +	Adapte	er Mod	le			•	1
	Level (d	lBuV)							Date: 2012-06-30 Time:	
	80									1
		-						100	CNS/VCCI/CISPR-E	3
	-			-						
		-			-				CNS/VCCI/CISPR -B AV	1
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		Level	Over		Read	Frequency	Cable	5 Remark	10 20	30
-		Level dBuV	Over		Read	Frequency Probe	Cable		10 20	30
	Freq MHz	dBuV	Over Limit	Line dBuV	Read Level	Probe Factor	Cable Loss dB	Remark	10 20	30
1 2	Freq MHz 0.196	dBuV	Over Limit	Line dBuV 63.78	Read Level dBuV 27.06	Probe	Cable Loss dB 0.10	Remark ———	10 20	30
	Freq MHz 0.196 0.196 0.233	dBuV 27.24 25.90 27.98	Over Limit dB -36.54 -27.88 -24.36	dBuV 63.78 53.78 52.34	Read Level dBuV 27.06 25.72 27.80	Probe Factor dB	Cable Loss dB 0.10 0.10 0.10	Remark OP Average Average	10 20	30
2 3 4	Freq MHz 0.196 0.196 0.233 0.233	dBuV 27.24 25.90 27.98 31.13	Over Limit dB -36.54 -27.88 -24.36 -31.21	dBuV 63.78 53.78 52.34 62.34	Read Level dBuV 27.06 25.72 27.80 30.95	Probe Factor dB -	Cable Loss dB 0.10 0.10 0.10 0.10	Remark QP Average Average QP	10 20	30
2 3 4 5	Freq MHz 0.196 0.196 0.233 0.233 0.724	dBuV 27.24 25.90 27.98 31.13 28.02	Over Limit dB -36.54 -27.88 -24.36 -31.21 -27.98	dBuV 63.78 53.78 52.34 62.34 56.00	Read Level dBuV 27.06 25.72 27.80 30.95 27.81	Probe Factor dB - 0.08 0.08 0.08 0.08 0.08	Cable Loss dB 0.10 0.10 0.10 0.10 0.10 0.10	Remark OP Average Average OP OP	10 20	30
2 3 4 5 6	Freq MHz 0.196 0.233 0.233 0.724 0.724	dBuV 27.24 25.90 27.98 31.13 28.02 28.16	Over Limit —36.54 -27.88 -24.36 -31.21 -27.98 -17.84	dBuV 63.78 53.78 52.34 62.34 56.00 46.00	Read Level dBuV 27.06 25.72 27.80 30.95 27.81 27.95	Probe Factor dB - 0.08 0.08 0.08 0.08 0.11 0.11	Cable Loss dB 0.10 0.10 0.10 0.10 0.10 0.10 0.10	Remark OP Average Average OP OP Average	10 20	30
2 3 4 5 6 7	Freq MHz 0.196 0.233 0.233 0.724 0.724 1.600	dBuV 27.24 25.90 27.98 31.13 28.02 28.16 26.90	Over Limit dB -36.54 -27.88 -24.36 -31.21 -27.98 -17.84 -19.10	dBuV 63.78 53.78 52.34 62.34 56.00 46.00	Read Level dBuV 27.06 25.72 27.80 30.95 27.81 27.95 26.67	Probe Factor dB - 0.08 0.08 0.08 0.01 0.11 0.13	Cable Loss dB 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10	Remark OP Average Average OP OP Average	10 20	30
2 3 4 5 6 7 8	Freq 0.196 0.196 0.233 0.233 0.724 0.724 1.600 1.600	dBuV 27.24 25.90 27.98 31.13 28.02 28.16 26.90 34.90	Over Limit dB -36.54 -27.88 -24.36 -31.21 -27.98 -17.84 -19.10 -21.10	dBuV 63.78 53.78 52.34 62.34 56.00 46.00 46.00 56.00	Read Level dBuV 27.06 25.72 27.80 30.95 27.81 27.95 26.67 34.67	Probe Factor dB 0.08 0.08 0.08 0.08 0.11 0.11 0.13 0.13	Cable Loss dB 0.10 0.10 0.10 0.10 0.10 0.10	Remark OP Average Average OP Average Average	10 20	30
2 3 4 5 6 7	Freq 0.196 0.196 0.233 0.233 0.724 0.724 1.600 1.600 3.620	dBuV 27.24 25.90 27.98 31.13 28.02 28.16 26.90 34.90 25.81	Over Limit dB -36.54 -27.88 -24.36 -31.21 -27.98 -17.84 -19.10 -21.10 -30.19	dBuV 63.78 53.78 52.34 62.34 56.00 46.00 56.00 56.00	Read Level 27.06 25.72 27.80 30.95 27.81 27.95 26.67 34.67 25.53	Probe Factor dB - 0.08 0.08 0.08 0.08 0.01 0.11 0.11 0.13 0.13 0.18	Cable Loss dB 0.10 0.10 0.10 0.10 0.10 0.10 0.10	Remark OP Average Average OP Average Average Average Average	10 20	30
2 3 4 5 6 7 8 9	Freq 0.196 0.196 0.233 0.233 0.724 1.600 1.600 3.620 3.620	dBuV 27.24 25.90 27.98 31.13 28.02 28.16 26.90 34.90 25.81 18.81	Over Limit dB -36.54 -27.88 -24.36 -31.21 -27.98 -17.84 -19.10 -21.10	dBuV 63.78 53.78 52.34 62.34 62.34 646.00 46.00 56.00 46.00	Read Level 27.06 25.72 27.80 30.95 27.81 27.95 26.67 34.67 25.53 18.53	Probe Factor dB 0.08 0.08 0.08 0.08 0.11 0.11 0.13 0.13	Cable Loss dB 0.10 0.10 0.10 0.10 0.10 0.10 0.10	Remark OP Average Average OP OP Average OP Average OP OP Average	10 20	30

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3.2 6dB Bandwidth

3.2.1 6dB Bandwidth Limit

6dB Bandwidth Limit									
Systems using digital modulation techniques:									
6 dB bandwidth ≥ 500 kHz.									

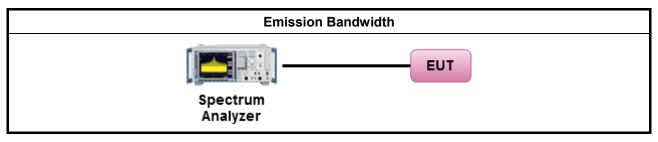
3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.2.3 Test Procedures

			Test Method
\boxtimes	For	the e	mission bandwidth shall be measured using one of the options below:
	\boxtimes	Refe	er as FCC KDB 558074, clause 5.1.1 Option 1 for 6 dB bandwidth measurement.
		Refe	er as FCC KDB 558074, clause 5.1.2 Option 2 for 6 dB bandwidth measurement.
		Refe	er as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.
\boxtimes	For	cond	ucted measurement.
		The	EUT supports single transmit chain and measurements performed on this transmit chain.
	\boxtimes	The	EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
	\boxtimes	The	EUT supports multiple transmit chains using options given below:
			Option 1: Multiple transmit chains measurements need to be performed on one of the active transmit chains (antenna outputs). All measurement had be performed on transmit chains 1.
			Option 2: Multiple transmit chains measurements need to be performed on each transmit chains individually (antenna outputs). All measurement had be performed on all transmit chains.
			Option 3: A power splitter/combiner shall be used to combine all the transmit chains (antenna outputs) into a single test point and record a single test point EBW.
			ted measurement. The equipment to be measured and the test antenna shall be oriented to emaximum emitted power level.

3.2.4 Test Setup

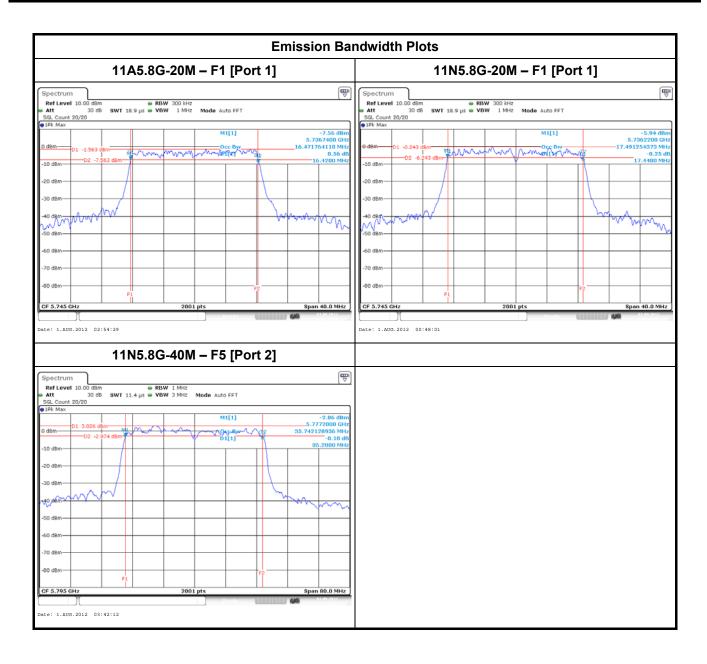


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3.2.5 Test Result of Emission Bandwidth

			Em	ission Ba	andwidth	Result				
Power Level		1			Emis	sion Bar	ndwidth (MHz)		
Modulation		Eroa		99% Ba	ndwidth			6dB Bar	ndwidth	
Mode	N _{TX}	Freq. (MHz)	Chain- Port 1	Chain- Port 2	-	-	Chain- Port 1	Chain- Port 2	-	-
11A5.8G-20M	2	5745	16.47	16.31	-	-	16.42	16.08	-	-
11A5.8G-20M	2	5785	16.41	16.47	-	-	16.26	16.36	-	-
11A5.8G-20M	2	5825	16.39	16.37	-	-	16.36	16.28	-	-
11N5.8G-20M	2	5745	17.49	17.45	-	-	17.44	17.04	-	-
11N5.8G-20M	2	5785	17.43	17.29	-	-	17.12	16.54	-	-
11N5.8G-20M	2	5825	17.41	17.37	-	-	17.06	16.84	-	-
11N5.8G-40M	2	5755	35.38	36.18	-	-	34.32	33.92	-	-
11N5.8G-40M	2	5795	35.78	35.74	-	-	33.80	35.28	-	-
Lim	it			N	/A			≥500	kHz	
Result Complied										
Note 1: N _{TX} = Nur	nber c	of Transm	it Chains							

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3.3 RF Output Power

3.3.1 RF Output Power Limit

	RF Output Power Limit
Max	kimum Peak Conducted Output Power or Maximum Conducted Output Power Limit
	902-928 MHz Band:
	☐ If $G_{TX} \le 6$ dBi, then $P_{Out} \le 30$ dBm (1 W)
	If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm
	2400-2483.5 MHz Band:
	☐ If $G_{TX} \le 6$ dBi, then $P_{Out} \le 30$ dBm (1 W)
	Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm
	Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	Smart antenna system (SAS):
	Single beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	Overlap beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	Aggregate power on all beams: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3 + 8$ dB dBm
\boxtimes	5725-5850 MHz Band:
	☐ If $G_{TX} \le 6$ dBi, then $P_{Out} \le 30$ dBm (1 W)
	Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm
	Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30$ dBm
e.i.r	.p. Power Limit:
	902-928 MHz Band: P _{eirp} ≤ 36 dBm (4 W)
	2400-2483.5 MHz Band
	Point-to-multipoint systems (P2M): P _{eirp} ≤ 36 dBm (4 W)
	Point-to-point systems (P2P): $P_{eirp} \le MAX(36, [P_{Out} + G_{TX}]) dBm$
	Smart antenna system (SAS)
	☐ Single beam: $P_{eirp} \le MAX(36, P_{Out} + G_{TX}) dBm$
	☐ Overlap beam: P _{eirp} ≤ MAX(36, P _{Out} + G _{TX}) dBm
	☐ Aggregate power on all beams: P _{eirp} ≤ MAX(36, [P _{Out} + G _{TX} + 8]) dBm
	5725-5850 MHz Band
	Point-to-multipoint systems (P2M): P _{eirp} ≤ 36 dBm (4 W)
	Point-to-point systems (P2P): N/A
G_{TX}	= maximum peak conducted output power or maximum conducted output power in dBm, = the maximum transmitting antenna directional gain in dBi. ₅ = e.i.r.p. Power in dBm.

3.3.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

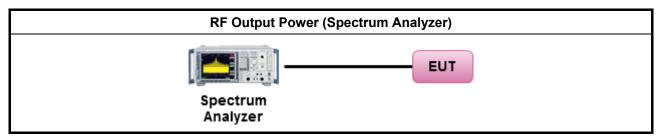
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3.3.3 Test Procedures

		Test Method
\boxtimes	Max	imum Peak Conducted Output Power
		Refer as FCC KDB 558074, clause 5.2.1.1 Option 1 (RBW ≥ EBW method).
	\boxtimes	Refer as FCC KDB 558074, clause 5.2.1.2 Option 2 (integrated band power method).
		Refer as ANSI C63.10, clause 6.10.2.1 a) for peak power meter.
		Refer as ANSI C63.10, clause 6.10.2.1 a) for spectrum analyzer - (RBW ≥ EBW).
		Refer as ANSI C63.10, clause 6.10.2.1 b) for spectrum analyzer - BW correction factor.
\boxtimes	Max	imum Conducted (Average) Output Power
		Refer as FCC KDB 558074, clause 5.2.2.1 Option 1 (RMS detection with slow sweep speed).
	\boxtimes	Refer as FCC KDB 558074, clause 5.2.2.2 Option 2 (spectral trace averaging).
		Refer as ANSI C63.10, clause 6.10.3.1 for spectrum analyzer - Method 1 (trace averaging).
		Refer as ANSI C63.10, clause 6.10.3.2 for spectrum analyzer - Method 2 (zero-span averaging).
		Refer as ANSI C63.10, clause 6.10.3.2 for spectrum analyzer - Method 3 (band power max-hold).
\boxtimes	Refe	er as FCC KDB 558074, clause 2 for conducted measurement.
		The EUT supports single transmit chain and measurements performed on this transmit chain.
	\boxtimes	The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
		For conducted measurements on devices with multiple transmit chains: Refer as FCC KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them.
	\boxtimes	If multiple transmit chains, EIRP calculation could be following as methods:
		Method 1: $EIRP_1 = P_1 + G_{ANT1}; EIRP_2 = P_2 + G_{ANT2}; EIRP_n = Pn + G_{ANTn}$ $EIRP_{total} = EIRP_1 + EIRP_2 + + EIRP_n$ $(calculated in linear unit [mW] and transfer to log unit [dBm])$
		Method 2: P _{total} = P ₁ + P ₂ + + P _n (calculated in linear unit [mW] and transfer to log unit [dBm]) EIRP _{total} = P _{total} + DG
	Refe	er as FCC KDB 558074, clause 2 for radiated measurement.

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3.3.4 Test Setup



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3.3.5 Test Result of Maximum Peak Conducted Output Power

		Maxin	num Peal	(Conduc	ted Outp	ut Powe	r Result						
Power Leve	ı	1		DE Output Dower (dPm)									
Directional Gain (dBi) 5.9													
Modulation Mode	N _{TX}	Freq. (MHz)	Chain- Port 1										
11A5.8G-20M	2	5745	18.87	19.00	-	-	21.95	30.0	27.85	36.0			
11A5.8G-20M	2	5785	18.84	19.11	-	-	21.99	30.0	27.89	36.0			
11A5.8G-20M	2	5825	19.16	19.20	-	-	22.19	30.0	28.09	36.0			
Res	Result Complied												
Note 1: N _{TX} = Nun	nber of	Transmit	Chains										

	Maximum Peak Conducted Output Power Result																				
Power Leve	I	1			DE	O.,45,.4 [Dower (dl	2m\													
Directional Gain	rectional Gain (dBi) 2.89 RF Output Power (dBm)																				
Modulation Mode	N _{TX}	Freq. (MHz)	Chain- Port 1																		
11N5.8G-20M	2	5745	19.03	19.63	-	-	22.35	30.0	25.24	36.0											
11N5.8G-20M	2	5785	19.37	19.51	-	-	22.45	30.0	25.34	36.0											
11N5.8G-20M	2	5825	19.28	19.37	-	-	22.34	30.0	25.23	36.0											
Resi	Result Complied																				
Note 1: N _{TX} = Nun	nber of	Transmit	Chains							ote 1: N _{TX} = Number of Transmit Chains											

		Maxin	num Peak	c Conduc	ted Outp	ut Powe	er Result				
Power Leve	I	1		DE Output Dower (dPm)							
Directional Gain	(dBi)	2.89	RF Output Power (dBm)								
Modulation Mode	N _{TX}	Freq. (MHz)	Chain- Port 1								
11N5.8G-40M	2	5755	19.56	19.70	-	-	22.64	30.0	25.53	36.0	
11N5.8G-40M	2	5825	19.31	19.59	-	-	22.46	30.0	25.35	36.0	
Resi	ult					Com	plied				
Note 1: N _{TX} = Num	nber of	Transmit	Chains								

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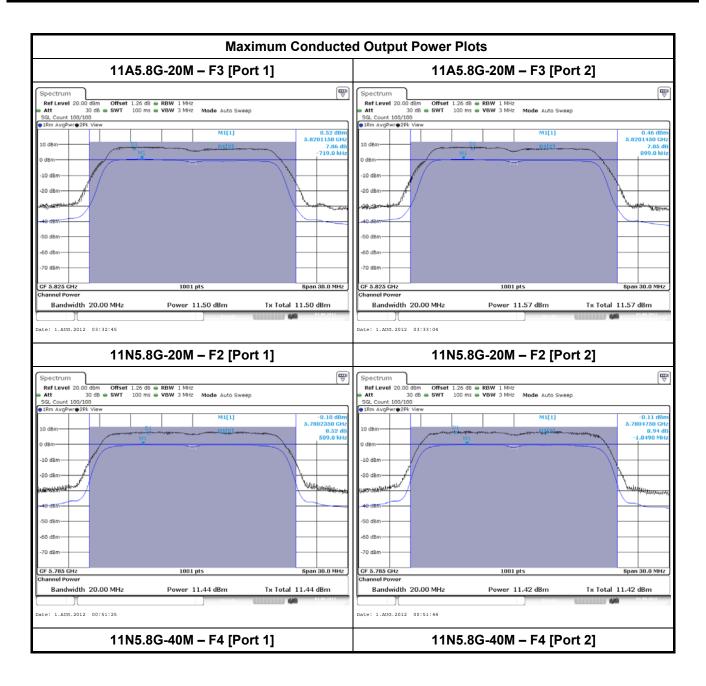
3.3.6 Test Result of Maximum Conducted (Average) Output Power

		Maximu	m Condu	cted (Ave	erage) O	utput Po	wer Resu	ilt				
Power Leve	ı	1	RF Output Power (dBm)									
Directional Gain	(dBi)	5.9			KF	Output F	ower (ai))				
Modulation Mode	N _{TX}	Freq. (MHz)	Chain- Port 1									
11A5.8G-20M	2	5745	11.14	11.37	-	-	14.27	30.0	20.17	36.0		
11A5.8G-20M	2	5785	11.15	11.38	-	-	14.28	30.0	20.18	36.0		
11A5.8G-20M	2	5825	11.50	11.57	-	-	14.55	30.0	20.45	36.0		
Result Complied												
Note 1: N _{TX} = Num	nber of	Transmit	Chains									

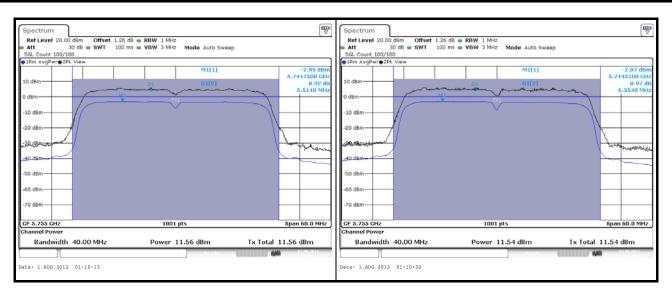
		Maximu	m Condu	cted (Ave	erage) O	utput Po	wer Resu	ılt				
Power Leve	I	1	RF Output Power (dBm)									
Directional Gain	(dBi)	2.89	9 RF Output Fower (dBill)									
Modulation Mode	N _{TX}	Freq. (MHz)	Chain- Port 1									
11N5.8G-20M	2	5745	11.16	11.47	-	-	14.33	30.0	17.22	36.0		
11N5.8G-20M	2	5785	11.44	11.42	-	-	14.44	30.0	17.33	36.0		
11N5.8G-20M	2	5825	11.40	11.34	-	-	14.38	30.0	17.27	36.0		
Res	Result Complied											
Note 1: N _{TX} = Nun	nber of	Transmit	Chains									

		Maximui	m Condu	cted (Ave	erage) Oı	utput Po	wer Resu	ılt				
Power Leve	I	1	DE Output Dower (dPm)									
Directional Gain	(dBi)	2.89	2.89 RF Output Power (dBm)									
Modulation Mode	N _{TX}	Freq. (MHz)	Chain- Port 1									
11N5.8G-40M	2	5755	11.56	11.54	-	-	14.56	30.0	17.45	36.0		
11N5.8G-40M	2	5795	11.32	11.46	-	-	14.40	30.0	17.29	36.0		
Resu												
Note 1: N _{TX} = Num	nber of	Transmit	Chains									

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3.4 Power Spectral Density

3.4.1 Power Spectral Density Limit

	Power Spectral Density Limit						
\boxtimes	Power Spectral Density (PSD) ≤ 8 dBm/3kHz						

3.4.2 Measuring Instruments

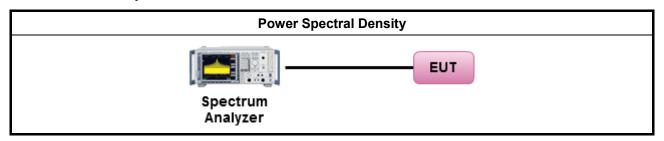
Refer a test equipment and calibration data table in this test report.

3.4.3 Test Procedures

		Test Method						
	Power spectral density procedures that the same method as used to determine the conducted output power shall be used to determine the power spectral density. In addition, the use of a peak PSD procedure will always result in a "worst-case" measured level for comparison to the limit. Therefore, whenever the DTS bandwidth exceeds 500 kHz, it is acceptable to utilize the peak PSD procedure to demonstrate compliance to the PSD limit, regardless of how the fundamental output power was measured. For the power spectral density shall be measured using below options:							
	\boxtimes	Refer as FCC KDB 558074, clause 5.3.1 Option 1 (peak PSD; BWCF=-15.2dB).						
		Refer as FCC KDB 558074, clause 5.3.2 Option 2 (average PSD; BWCF=-15.2dB).						
		Refer as ANSI C63.10, clause 6.11.2.3 for PSD for DTS - (RBW=3kHz; sweep=100s).						
		Refer as ANSI C63.10, clause 6.11.2.4 for Alternative PSD for DTS - (RBW=3kHz; average=100)						
\boxtimes	Refe	er as FCC KDB 558074, clause 2 for conducted measurement.						
		The EUT supports single transmit chain and measurements performed on this transmit chain.						
	\boxtimes	The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.						
	\boxtimes	The EUT supports multiple transmit chains using options given below:						
		Option 1: Measure and sum the spectra across the outputs. Refer as FCC KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the N _{TX} output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace. The new data trace samples added 100 kHz segment and found the highest value of each 100 kHz segments. Add the bandwidth correction factor (BWCF) adjusting in power spectral density per 3kHz.						
		Option 2: Measure and add 10 log(N) dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with 10 log(N). Or each transmit chains shall be add 10 log(N) to compared with the limit.						
	Refe	er as FCC KDB 558074, clause 2 for radiated measurement.						

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3.4.4 Test Setup



3.4.5 Test Result of Power Spectral Density

Power Spectral Density Result							
Power Leve	1	Dower Spectral Density (dBm/2kHz)					
Directional Gain	(dBi)	5.9	Power Spectral Density (dBm/3kHz)				
Modulation Mode N _{TX}		Freq. (MHz)	Sum All Chains	-	-	-	PSD Limit
11A5.8G-20M	2	5745	-15.80	-	-	-	8
11A5.8G-20M	2	5785	-16.20	-	-	-	8
11A5.8G-20M 2		5825	-15.90	-	-	-	8
Resi	ult				Complied		

Note 1: N_{TX} = Number of Transmit Chains

Note 2: PPSD [dBm/MHz] = sum each transmit chains by bin-to-bin PPSD [dBm/MHz]

Power Spectral Density Result							
Power Leve	ı	1	Dower Spectral Density (dPm/2kHz)				
Directional Gain	2.89	Power Spectral Density (dBm/3kHz)					
Modulation N _{TX}		Freq. (MHz)	Sum All Chains	-	-	-	PSD Limit
11N5.8G-20M	2	5745	-15.23	-	-	-	8
11N5.8G-20M	2	5785	-14.86	-	-	-	8
11N5.8G-20M	2	5825	-15.05	-	-	-	8
Resi	ult				Complied		

Note 1: N_{TX} = Number of Transmit Chains

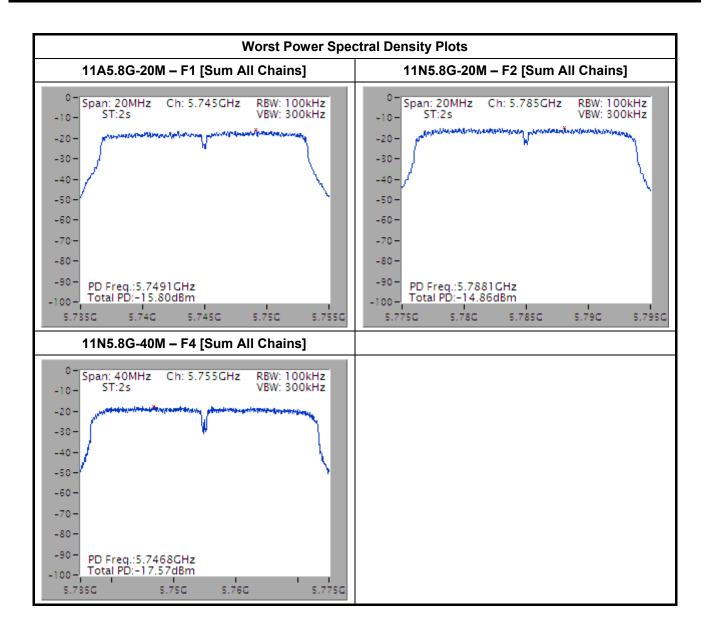
Note 2: PPSD [dBm/MHz] = sum each transmit chains by bin-to-bin PPSD [dBm/MHz]

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Power Spectral Density Result								
Power Level 1			Davier Chartral Daneitre (dDm/2kl)					
Directional Gain	(dBi)	2.89	Power Spectral Density (dBm/3kHz)					
Modulation Mode	N _{TX}	Freq. (MHz)	Sum All Chains	-	-	-	PSD Limit	
11N5.8G-40M	2	5755	-17.57	-	-	-	8	
11N5.8G-40M 2		5795	-18.62	-	-	-	8	
Resi	ult				Complied			

Note 1: N_{TX} = Number of Transmit Chains Note 2: PPSD [dBm/MHz] = sum each transmit chains by bin-to-bin PPSD [dBm/MHz]

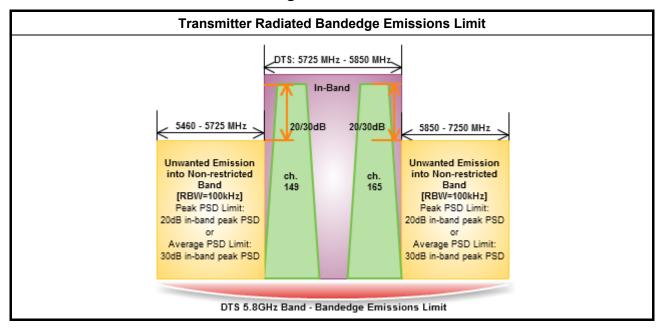
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3.5 Transmitter Radiated Bandedge Emissions

3.5.1 Transmitter Radiated Bandedge Emissions Limit



3.5.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.5.3 Test Procedures

	Test Method – General Information									
	The	The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].								
		Refer as ANSI C63.10, clause 6.9.2.2 bandedge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.								
\boxtimes	For	or the transmitter unwanted emissions shall be measured using following options below:								
	\boxtimes	Refer as FCC KDB 558074, clause 5.4.1 for unwanted emissions into non-restricted bands.								
	\boxtimes	Refer as FCC KDB 558074, clause 5.4.2 for unwanted emissions into restricted bands.								
		Refer as FCC KDB 558074, clause 5.4.2.2.2.1 Option 1 (Power Averaging).								
		Refer as FCC KDB 558074, clause 5.4.2.2.2.2 Option 2 (Trace Averaging).								
		Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW) - Duty cycle ≥ 98%.								
		Refer as ANSI C63.10, clause 4.2.3.2.4 average value of pulsed emissions.								
		Refer as FCC KDB 558074, clause 5.4.2.2.1.1 measurement procedure peak limit.								
		Refer as ANSI C63.10, clause 4.2.3.2.2 measurement procedure peak limit.								
\boxtimes	For	the transmitter bandedge emissions shall be measured using following options below:								
		Refer as FCC KDB 558074, clause 5.4.2.2.4 for narrower resolution bandwidth using the band power and summing the spectral levels (i.e., 100 kHz or 1 MHz).								
	\boxtimes	Refer as ANSI C63.10, clause 6.9.2 for band-edge testing.								
		Refer as ANSI C63.10, clause 6.9.3 for marker-delta method for band-edge measurements.								

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reduced with 10 log(N). Or each transmit chains shall be add 10 log(N) to compared with

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Refer as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz.

Refer as ANSI C63.10, clause 6.5 for radiated emissions from above 1 GHz.

Refer as ANSI C63.10, clause 6.5 for radiated emissions from 30 MHz to 1000 MHz.

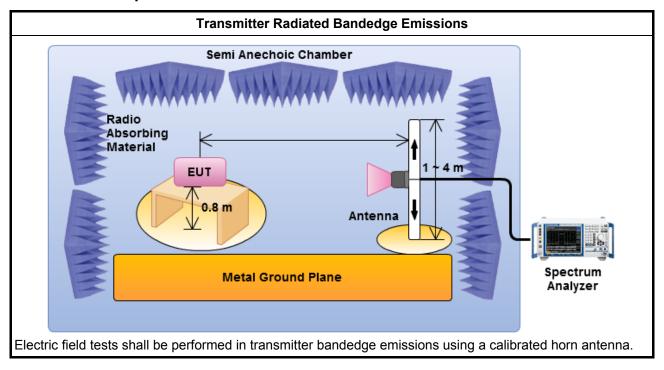
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 \boxtimes

the limit.

Refer as FCC KDB 558074, clause 2 for radiated measurement.

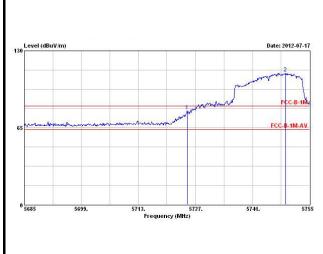
3.5.4 Test Setup



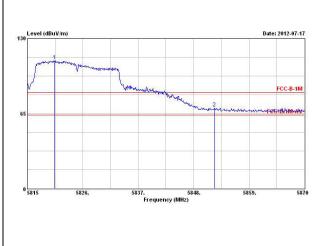
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3.5.5 Test Result of Transmitter Radiated Bandedge Emissions

Transmitter Radiated Bandedge Emissions Result										
Power Level	1	Gain (dBi)	5.9	Non-restricted Band Emissions						
Modulation		11A5.8G	G-20M		Non-resur	cteu banu i	-1111551011	•		
Non-restricted Band (MHz)	N _{TX}	Test Ch. Freq. (MHz)	In-band PSD [i] (dBuV/100kHz)	NBE Freq. (MHz)	Out-band PSD [o] (dBuV/100kHz)	[i] – [o] (dB)	Limit (dB)	Level Type	Pol.	
5460-5725	2	5745	111.10	5724.97	79.04	31.06	20	PK	V	
5850-7250	2	5825	110.60	5852.13	69.85	40.75	20	PK	V	



Low Band



Up Band

Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical)

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		ıransm	nitter Radiate	ea Ba	naeag	C LIIII33IOII					
Power Level	1	Gain (dBi)	2.89			Non rostri	eted Band I	Emission	6		
Modulation	11N5.8G-20M			Non-restricted Band Emissions							
lon-restricted Band (MHz)	N _{TX}	Test Ch. Freq. (MHz)	In-band PSD [i] (dBuV /100kHz)	NBE Freq. (MHz)		Out-band PSD [o] (dBuV /100kHz)	[i] – [o] (dB)	Limit (dB)	Level Type	Po	
5460-5725	2	5745	112.05	572	4.69	84.49	27.56	20	PK	V	
5850-7250	2	5825	109.09	585	1.47	70.53	38.56	20	PK	٧	
	Lc	w Band					Up Bar	nd			
	100 90000	40.00									
36 Level (dBuV'm)		1 mark	Date: 20 2 2 months of the second of the	12-06-28 C-B-1M	130 Level	(dBuV im)	7		Date: 201		
30 Level (dBuV'm)	and according to sell to	-MANAY	more supering	C-B-1M	130 Level	1	7	drama 2			

Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical)

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Power Level	1	Gain (dBi)	2.89			Non rootri	oted Bend I	-mississ	_			
Modulation		11N5.8G	G-40M		Non-restricted Band Emissions							
Non-restricted Band (MHz)	N _{TX}	Test Ch. Freq. (MHz)	In-band PSD [i] (dBuV /100kHz)	[i] (MI		NBE Fred (MHz)		Out-band PSD [o] (dBuV /100kHz)	[i] – [o] (dB)	Limit (dB)	Level Type	Pol
5460-5725	2	5755	109.29	5720	0.60	86.84	22.45	20	PK	V		
5850-7250	2	5795	107.31	585	3.70	69.44	37.87	20	PK	٧		
	1.0	w Band					Up Bar	nd				
a Level (dBuV/m) 30 ⊏			Date: :	2012-06-28	Leve	l (dBuV/m)	ор Баг		Date: 20	12-06-28		
30		, min	mmypmmmm		130	I (dBuV/m)	donny			C P 4W		
Level (dBuV im) 65		, min	mary promonent		130	1	donny	manufacion		C P 444		

Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical)

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3.6 Transmitter Radiated Unwanted Emissions

3.6.1 Transmitter Radiated Unwanted Emissions Limit

	Restricted Band	Emissions Limit	
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

- Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).
- Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

Un-restricted Band Emissions Limit						
RF output power procedure	Limit (dB)					
Peak output power procedure	20					
Average output power procedure	30					

- Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.
- Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.

3.6.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

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3.6.3 Test Procedures

		Test Method – General Information
	perfo equi extra dista	surements may be performed at a distance other than the limit distance provided they are not bring or the near field and the emissions to be measured can be detected by the measurement pment. When performing measurements at a distance other than that specified, the results shall be applated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear ince for field-strength measurements, inverse of linear distance-squared for power-density surements).
	\boxtimes	Measurements in the frequency range 5 GHz - 10GHz are typically made at a closer distance 1m, because the instrumentation noise floor is typically close to the radiated emission limit.
		Measurements in the frequency range 10 GHz - 18GHz are typically made at a closer distance 1m, because the instrumentation noise floor is typically close to the radiated emission limit.
	\boxtimes	Measurements in the frequency range above 18 GHz - 40GHz are typically made at a closer distance 0.5m, because the instrumentation noise floor is typically close to the radiated emission limit.
\boxtimes	The	average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].
\boxtimes	Fort	the transmitter unwanted emissions shall be measured using following options below:
	\boxtimes	Refer as FCC KDB 558074, clause 5.4.1 for unwanted emissions into non-restricted bands.
	\boxtimes	Refer as FCC KDB 558074, clause 5.4.2 for unwanted emissions into restricted bands.
		Refer as FCC KDB 558074, clause 5.4.2.2.2.1 Option 1 (Power Averaging).
		Refer as FCC KDB 558074, clause 5.4.2.2.2 Option 2 (Trace Averaging).
		Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW) – Duty ≥ 98%.
		Refer as ANSI C63.10, clause 4.2.3.2.4 average value of pulsed emissions.
		Refer as FCC KDB 558074, clause 5.4.2.2.1.1 measurement procedure peak limit.
		Refer as ANSI C63.10, clause 4.2.3.2.2 measurement procedure peak limit.

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Report No. : FR262610AI

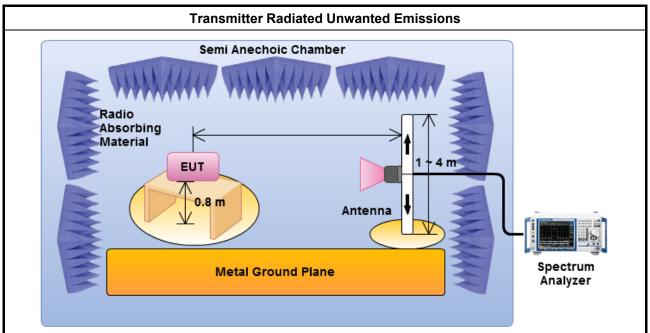
For radiated measurement.

the limit.

- Refer as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz.
- Refer as ANSI C63.10, clause 6.5 for radiated emissions from 30 MHz to 1000 MHz.
- Refer as ANSI C63.10, clause 6.5 for radiated emissions from above 1 GHz.

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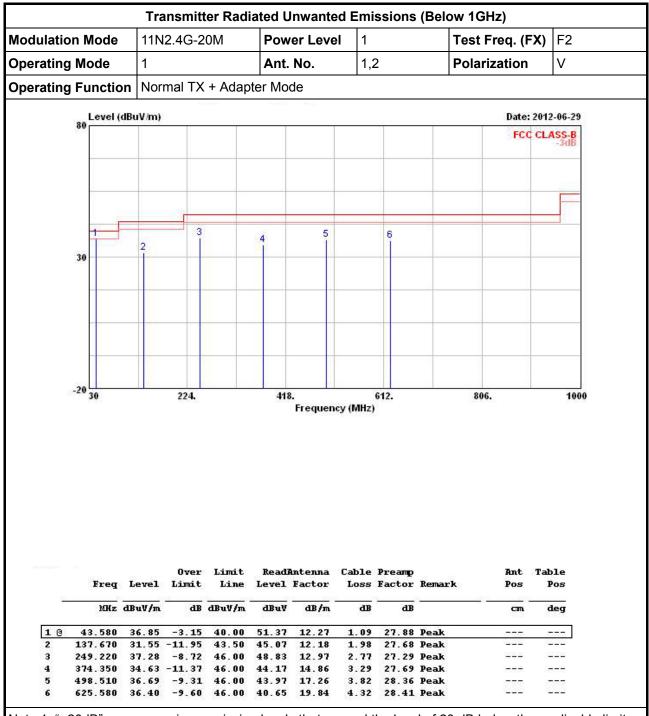
3.6.4 Test Setup



Magnetic field tests shall be performed in the frequency range of 9 kHz to 30 MHz using a calibrated loop antenna. Electric field tests shall be performed in the frequency range of 30 MHz to 1000 MHz using a calibrated bi-log antenna and the frequency range of 1 GHz to 40 GHz using a calibrated horn antenna.

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3.6.5 Test Result of Transmitter Radiated Unwanted Emissions (Below 1GHz)



Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

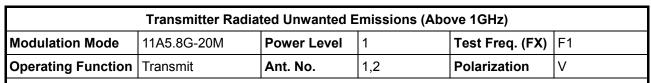
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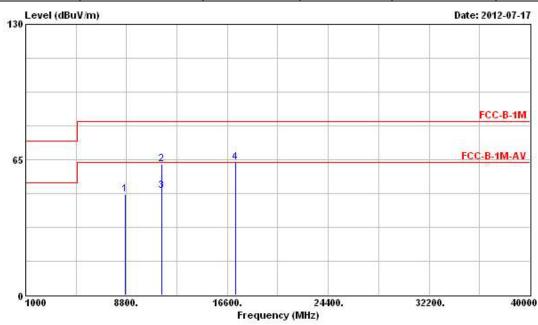
	tion Mode	111	N2.4G-2	20M	Pow	er Leve	1		Tes	t Freq. (FX)) F2
erati	ng Mode	1			Ant.	No.	1,2	2	Pol	arization	Н
erati	ng Functi	on No	rmal T>	(+ Adar	oter Mo	de	•		1		•
	_ Level (dBuV/m)								Date: 2	012-06-29
	80									FCC (CLASS-B
						5				6	
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				Ĭ							
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		Level	Over			Frequen	cy (MHz Cable	Preamp	Remark		
	Freq	Level	Over Limit		Readi	Frequen	cy (MHz Cable	Preamp	Remark	Ant 1	'able
, i	Freq MHz 40.670	dBuV/m 34.18	Over Limit dB	Line dBuV/m 40.00	Readi Level dBuV 48.02	Antenna Factor dB/m 13.01	Cable Loss dB	Preamp Factor dB	Remark Peak	Ant 1 Pos	'able Pos
2	Freq MHz 40.670 249.220	dBuV/m 34.18 36.87	Over Limit dB -5.82	Line dBuV/m 40.00 46.00	ReadF Level dBuV 48.02 48.42	Intenna Factor dB/m 13.01 12.97	Cable Loss dB 1.05 2.77	Preamp Factor dB 27.90 27.29	Remark Peak Peak	Ant 1 Pos	'able Pos
	Freq MHz 40.670	dBuV/m 34.18 36.87	Over Limit dB	Line dBuV/m 40.00 46.00 46.00	Readi Level dBuV 48.02	Antenna Factor dB/m 13.01	Cable Loss dB	Preamp Factor dB	Peak Peak Peak	Ant 1 Pos	'able Pos

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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3.6.6 Test Result of Transmitter Radiated Unwanted Emissions (Above 1GHz)





	Freq	Level	Over Limit			Antenna Factor				Ant Pos	Table Pos
	MHz	dBuV/m		dBuV/m	dBuV	dB/m	dB	dB	9 <u></u>	cm.	deg
1	8738.000	48.26			41.06	36.44	6.04	35.28	Peak		
2	11490.000	62.87	-20.67	83.54	52.07	38.89	6.63	34.72	Peak	1000	
3	11490.000	50.21	-13.33	63.54	39.41	38.89	6.63	34.72	Average		
4	17235.000	63.61			47.43	41.61	8.55	33.98	Peak	-	1555

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

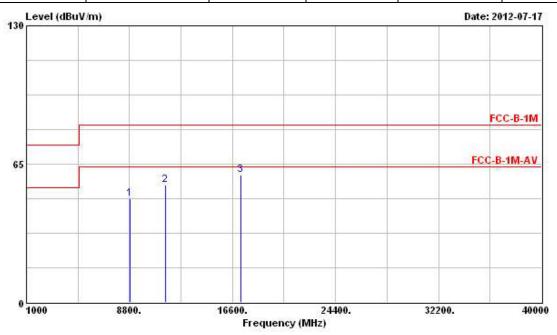
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: For un-restricted bands, unwanted emissions (item 1 and 4) shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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Transmitter Radiated Unwanted Emissions (Above 1GHz)									
Modulation Mode	11A5.8G-20M	Power Level	1	Test Freq. (FX)	F1				
Operating Function	Operating Function Transmit Ant. No. 1,2 Polarization H								



	Freq	Level	Over Limit			Antenna Factor			Remark	Ant Pos	Table Pos										
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	фВ	dB	3	cm.	deg										
1	8837.000	48.78			41.48	36.50	6.09	35.29	Peak	-											
2	@11490.000	55.09	55.09	55.09	55.09	55.09	55.09	55.09	55.09	55.09	55.09	55.09 -8.	-8.45	63.54	44.29	38.89	9 6.63	3 34.72 PK	PK	1000	200
3	17235.000	60.03			43.85	41.61	8.55	33.98	Peak												

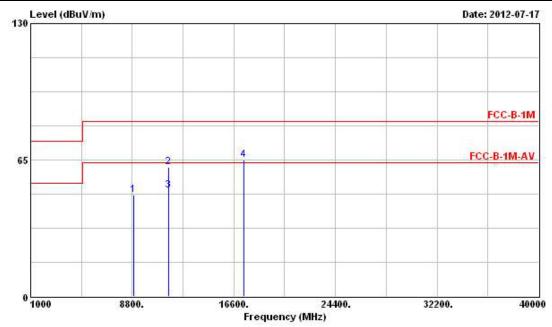
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: For un-restricted bands, unwanted emissions (item 1 and 3) shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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Transmitter Radiated Unwanted Emissions (Above 1GHz)									
Modulation Mode	11A5.8G-20M	Power Level	1	Test Freq. (FX)	F2				
Operating Function	Operating Function Transmit Ant. No. 1,2 Polarization V								



	Freq	Level	Over Limit			Antenna Factor			Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m		dВ	9	cm.	deg
1	8914.000	48.38			41.00	36.55	6.13	35.30	Peak		
2	11570.000	61.68	-21.86	83.54	50.87	38.94	6.63	34.76	Peak		
3	@11570.000	50.28	-13.26	63.54	39.47	38.94	6.63	34.76	Average		
4	17355 000	65 05			48 97	41 56	9 50	33 99	Dook		

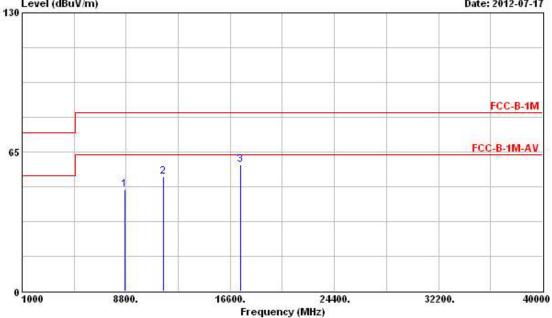
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: For un-restricted bands, unwanted emissions (item 1 and 4) shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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Transmitter Radiated Unwanted Emissions (Above 1GHz)										
Modulation Mode11A5.8G-20MPower Level1Test Freq. (FX)F2										
Operating Function	Transmit	Ant. No.	1,2	Polarization	Н					
Level (dBuV/m) Date: 2012-07-1										
100										



			0ver	Limit	Readi	Antenna	Cable	Preamp		Ant	Table
	Freq	Level	Limit	Line	Level	Factor	Loss	Factor	Remark	Pos	Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV/m dBuV	dB/m			89	cm.	deg
1	8683.000	47.44			40.28	36.41	6.02	35.27	Peak		
2	@11570.000	53.48	-10.06	63.54	42.67	38.94	6.63	34.76	PK	1000	2223
3	17355.000	59.19			43.11	41.56	8.50	33.98	Peak		

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: For un-restricted bands, unwanted emissions (item 3 and 4) shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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1000

8800.

40000

32200.

Transmitter Radi	ated Unwanted I	Emissions	s (Above 1GHz)	
11A5.8G-20M	Power Level	1	Test Freq. (FX)	F3
Transmit	Ant. No.	1,2	Polarization	V
/m)			Date: 2	012-07-17
			F	CC-B-1M
2	4		FCC-	B-1M-AV
3				
	11A5.8G-20M Transmit	11A5.8G-20M Power Level Transmit Ant. No.	11A5.8G-20M Power Level 1 Transmit Ant. No. 1,2	Transmit Ant. No. 1,2 Polarization Date: 2

	Freq	Level	Over Limit			Antenna Factor			Remark	Ant Pos	Table Pos
		dBuV/m	dB	dBuV/m	dBuV	dB/m		dB	S - 3	cm.	deg
1	8914.000	47.79			40.41	36.55	6.13	35.30	Peak		
2	11650.000	61.77	-21.77	83.54	50.96	38.98	6.64	34.81	Peak	2.22	
3	11650.000	49.91	-13.63	63.54	39.10	38.98	6.64	34.81	Average		
4	17475.000	61.54			45.57	41.51	8.44	33.98	Peak		

16600.

Frequency (MHz)

24400.

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

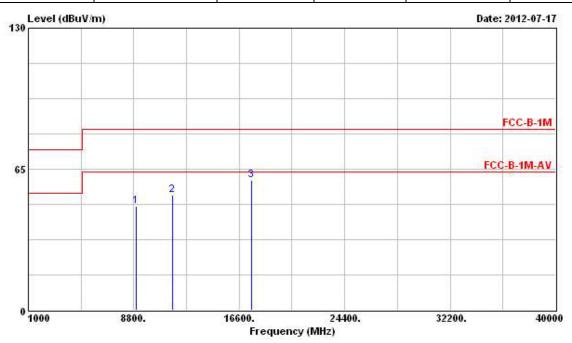
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: For un-restricted bands, unwanted emissions (item 1 and 4) shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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	Transmitter Radiated Unwanted Emissions (Above 1GHz)								
Modulation Mode11A5.8G-20MPower Level1Test Freq. (FX)F3									
Operating Function	Transmit	Ant. No.	1,2	Polarization	Н				



		Level	Over Limit			Antenna Factor			Remark	Ant Pos	Table Pos
	МН	dBuV/m	dВ	dBuV/m	dBuV	dB/m	ав	- dB	-	cm.	deg
1	8980.000	48.04			40.62	36.58	6.16	35.32	Peak	5.55	-
2	11650.000	52.96	-10.58	63.54	42.15	38.98	6.64	34.81	PK	1000	
3	17475.000	59.70			43.73	41.51	8.44	33.98	Peak		

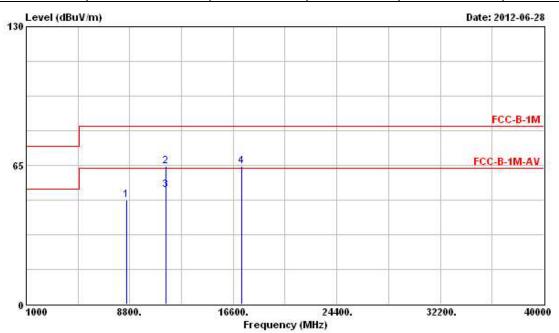
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: For un-restricted bands, unwanted emissions (item 1 and 3) shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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Transmitter Radiated Unwanted Emissions (Above 1GHz)								
Modulation Mode11N5.8G-20MPower Level1Test Freq. (FX)F1								
Operating Function	Transmit	Ant. No.	1,2	Polarization	V			



			0ver	Limit	Readi	Antenna	Cable	Preamp		Ant	Table
	Freq	Level	Limit	Line	Level	Factor	Loss	Factor	Remark	Pos	Pos
	MHz	dBuV/m	dВ	dBuV/m	dBuV	dB/m	ав	- dB	-	cm	deg
1	8573.000	48.83			41.77	36.34	5.97	35.25	Peak		10000
2	11490.000	64.43	-19.11	83.54	53.63	38.89	6.63	34.72	Peak		
3	11490.000	53.35	-10.19	63.54	42.55	38.89	6.63	34.72	Average		2272
4	17235.000	64.74			48.56	41.61	8.55	33.98	Peak		

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: For un-restricted bands, unwanted emissions (item 1 and 4) shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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1000

8800.

	Transmitter Radi	ated Unwanted E	Emissions	(Above 1GHz)	
Modulation Mode	11N5.8G-20M	Power Level	1	Test Freq. (FX)	F1
Operating Function	Transmit	Ant. No.	1,2	Polarization	Н
Level (dBuV	m)			Date:	2012-06-2
130					
					FCC-B-1M
65				FCC	-B-1M-AV
43	2	3			

		Level	Over Limit			Antenna Factor		Preamp Factor	Remark	Ant Pos	Table Pos
	MX	z dBuV/m	dB	dBuV/m	dBuV	dB/m	dВ	- дв	-	- cm	deg
1	8606.000	48.14			41.05	36.36	5.99	35.26	Peak	177.75	S TATE
2	11490.000	57.47	-6.07	63.54	46.67	38.89	6.63	34.72	PK	<u></u>	
3	17235.000	59.64			43.46	41.61	8.55	33.98	Peak		12774

16600.

Frequency (MHz)

24400.

32200.

40000

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

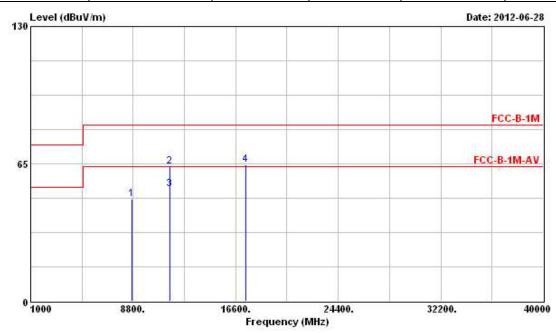
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: For un-restricted bands, unwanted emissions (item 1 and 3) shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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Transmitter Radiated Unwanted Emissions (Above 1GHz)								
Modulation Mode11N5.8G-20MPower Level1Test Freq. (FX)F2								
Operating Function	Transmit	Ant. No.	1,2	Polarization	V			



			0ver	Limit	Read	Antenna	Cable	Preamp		Ant	Table
	Freq	Level	Limit	Line	Level	Factor	Loss	Factor	Remark	Pos	Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	ав	dB	-	cm	deg
1	8705.000	48.41			41.22	36.42	6.04	35.27	Peak	777	
2	11570.000	63.51	-20.03	83.54	52.70	38.94	6.63	34.76	Peak		
3	11570.000	52.91	-10.63	63.54	42.10	38.94	6.63	34.76	Average		22774
4	17355.000	64.62			48.54	41.56	8.50	33.98	Peak		

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: For un-restricted bands, unwanted emissions (item 1 and 4) shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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	ulation Mode) 11N	15.8G-2	20M	Pow	ver Leve	I 1		Test	t Freq. (FX)	F2
Oper	ating Functi	on Tran	nsmit		Ant	. No.	1,2		Pola	arization	Н
	Level (dB	uV/m)								Date:	2012-06-2
	0 1000		8800.	2	1660	3 00. Frequence		4400.			FCC-B-1M -B-1M-AV
en penne mpen.	Freq I	Level L		Limit Line		Antenna Factor		POSE 113 277-	Remark	Ant Pos	Table Pos
90.04013.0040.	Freq I	Level L	Limit					POSE 113 277-	Remark		
1 2	MHz di	Level L BuV/m 49.37	dB	Line	Level	dB/m -	dB 6.09	Factor	Peak	Pos	Pos

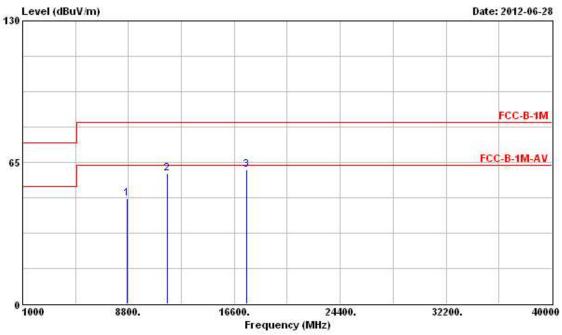
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: For un-restricted bands, unwanted emissions (item 1 and 3) shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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Transmitter Radiated Unwanted Emissions (Above 1GHz)										
Modulation Mode11N5.8G-20MPower Level1Test Freq. (FX)F3										
Operating Function	Transmit	Ant. No.	1,2	Polarization	V					
Lavial (dDaV)	57060M		Data: 1	042.06.20						



		Level	Over Limit	435-7		Antenna Factor				Ant Pos	Table Pos
	MHz	dBuV/m	ф	dBuV/m	dBuV	dB/m	dВ	dB	-	cm.	deg
1	8705.000	48.41		[41.22	36.42	6.04	35.27	Peak	575757	30000
2	11650.000	59.67	-3.87	63.54	48.86	38.98	6.64	34.81	PK	120000	2000
3	17475.000	61.70			45.73	41.51	8.44	33.98	Peak		100000

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: For un-restricted bands, unwanted emissions (item 1 and 3) shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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naratina Eurotian	11N5.8G	-20M	Pov	ver Leve	I 1		Test	Freq. (FX)	F3
perating Function	Transmit		Ant	. No.	1,2		Pola	rization	Н
Level (dBuV	m)							Date:	2012-06-2
0 1000	8800.	2	1660	3 00. Frequence		4400.		-	FCC-B-1M -B-1M-AV

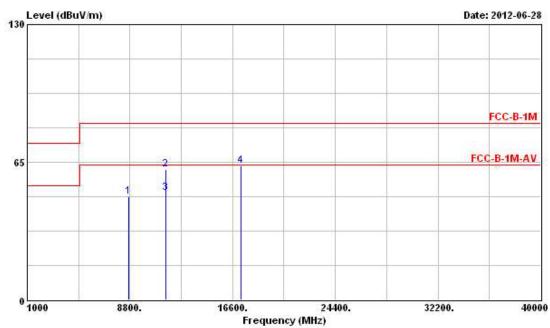
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: For un-restricted bands, unwanted emissions (item 1 and 3) shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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Transmitter Radiated Unwanted Emissions (Above 1GHz)									
Modulation Mode	11N5.8G-40M	1	Test Freq. (FX)	F4					
Operating Function	Transmit	Ant. No.	1,2	Polarization	V				



	Freq	Level	Over Limit	435.47		Antenna Factor			Remark	Ant Pos	Table Pos
		dBuV/m	dB	dBuV/m	dBuV	dB/m	dВ	dB	200	- — cm	deg
1	8694.000	48.63			41.46	36.42	6.02	35.27	Peak	57.00	1555
2	11510.000	61.40	-22.14	83.54	50.59	38.90	6.63	34.72	Peak		
3	11510.000	50.29	-13.25	63.54	39.48	38.90	6.63	34.72	Average		
4	17265.000	63.12			46.97	41.59	8.54	33.98	Peak		

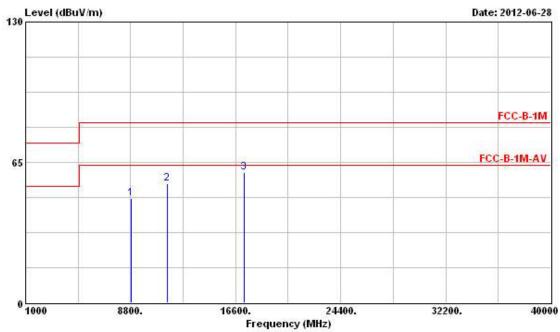
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: For un-restricted bands, unwanted emissions (item 1 and 4) shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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Transmitter Radiated Unwanted Emissions (Above 1GHz)									
Modulation Mode	11N5.8G-40M	Power Level	1 Test Freq. (FX)		F4				
Operating Function	Transmit	Ant. No.	1,2	Polarization	Н				



	Freq	Level		Limit Line		Antenna Factor				Ant Pos	Table Pos
		dBuV/m	dВ	dBuV/m	dBuV	dB/m	dВ	- dB	·	cm.	deg
1	8837.000	48.52			41.22	36.50	6.09	35.29	Peak		1000
2	11510.000	55.17	-8.37	63.54	44.36	38.90	6.63	34.72	PK		
3	17265.000	60.19			44.04	41.59	8.54	33.98	Peak		2224

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: For un-restricted bands, unwanted emissions (item 1 and 3) shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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1000

8800.

	Transmitter Rad	diated Unwanted	Emissions (Above 1GHz)	
Modulation Mode	11N5.8G-40M	Power Level	1	Test Freq. (FX)	F5
Operating Function	Transmit	Ant. No.	1,2	Polarization	V
Level (dBuV/	m)			Date	: 2012-06-28
130					
					FCC-B-1M
65				FC	C-B-1M-AV
**	2	3			
	221				

	Freq	Level	Over Limit			Antenna Factor			Remark	Ant Pos	Table Pos
		dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	- dB		cm	deg
1	8782.000	49.04			41.77	36.47	6.08	35.28	Peak		-
2	11590.000	56.49	-7.05	63.54	45.67	38.95	6.63	34.76	PK		<u></u>
3	17385.000	59.86			43.81	41.55	8.48	33.98	Peak		222

16600.

Frequency (MHz)

24400.

32200.

40000

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

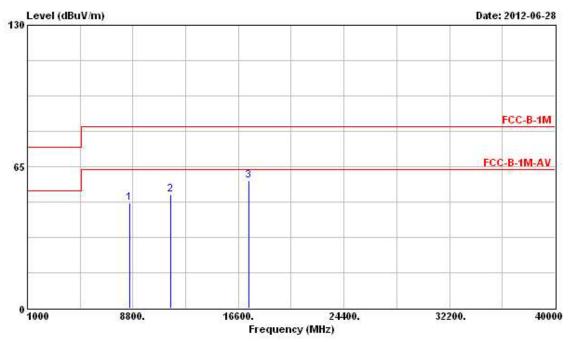
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: For un-restricted bands, unwanted emissions (item 1 and 3) shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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Transmitter Radiated Unwanted Emissions (Above 1GHz)									
Modulation Mode 11N5.8G-40M Power Level 1 Test Freq. (FX) F5									
Operating Function	Transmit	Ant. No.	1,2	Polarization	Н				



	4	Level	Over Limit			Antenna Factor			Remark	Ant Pos	Table Pos
		dBuV/m	BuV/m dB	dBuV/m dBuV	dB/m	dB	- dB	×	cm.	deg	
1	8573.000	48.32			41.26	36.34	5.97	35.25	Peak		1
2	11590.000	52.08	-11.46	63.54	41.26	38.95	6.63	34.76	PK	1213331	2000
3	17385.000	58.69			42.64	41.55	8.48	33.98	Peak	-++	

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: For un-restricted bands, unwanted emissions (item 1 and 3) shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver	R&S	ESCS 30	100174	9 kHz ~ 2.75 GHz	Mar. 23, 2012	Conduction (CO04-HY)
LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	8127-477	9kHz – 30MHz	Feb. 08, 2012	Conduction (CO04-HY)
LISN (Support Unit)	EMCO	3810/2NM	9703-1839	9 kHz ~ 30 MHz	Apr. 20, 2012	Conduction (CO04-HY)
RF Cable-CON	HUBER+SUHNER	RG213/U	CB049	9 kHz ~ 30 MHz	Apr. 25, 2012	Conduction (CO04-HY)

Note: Calibration Interval of instruments listed above is one year.

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSP 40	100305	9 KHz ~ 40 GHz	Feb. 21, 2012	Conducted (TH01-HY)
Temp. and Humidity Chamber	Giant Force	GTH-225-20-SP-SD	MAA1112-007	-20~100℃	Dec. 07, 2011	Conducted (TH01-HY)
Signal Generator	R&S	SMR40	100302	10MHz ~ 40GHz	Nov. 22, 2011	Conducted (TH01-HY)
Power Sensor	Anritsu	MA2411B	1027452	300MHz ~ 40GHz	Jan. 12, 2012	Conducted (TH01-HY)
Power Meter	Anritsu	ML2495A	1124009	300MHz ~ 40GHz	Jan. 12, 2012	Conducted (TH01-HY)
RF Cable-1m	Jye Bao	RG142	CB034-1m	20 MHz ~ 7 GHz	Dec. 03, 2011	Conducted (TH01-HY)
RF Cable-2m	Jye Bao	RG142	CB035-2m	20 MHz ~ 1 GHz	Dec. 03, 2011	Conducted (TH01-HY)

Note: Calibration Interval of instruments listed above is one year.

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
AC Power Source	HPC	HPA-500W	HPA-9100024	AC 0 ~ 300V	Jun. 09, 2011*	Conducted (TH01-HY)

Note: Calibration Interval of instruments listed above is two year.

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSP40	100593	9kHz ~ 40GHz	Sep. 01, 2011	Radiation (03CH02-HY)
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	30MHz ~ 1GHz 3m	May 10, 2012	Radiation (03CH02-HY)
Amplifier	Agilent	8447D	2944A11146	100kHz ~ 1.3GHz	Jul. 23, 2012	Radiation (03CH02-HY)
Amplifier	Agilent	8449B	3008A02373	1GHz ~ 26.5GHz	Aug. 06, 2012	Radiation (03CH02-HY)
Horn Antenna	ETS-LINDGREN	3117	00091920	1GHz ~ 18GHz	Nov. 15, 2011	Radiation (03CH02-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	30MHz ~ 1GHz	Nov. 11, 2011	Radiation (03CH02-HY)
RF Cable-high	SUHNER	SUCOFLEX106	03CH02-HY	1GHz ~ 40GHz	Mar. 06, 2012	Radiation (03CH02-HY)
Bilog Antenna	SCHAFFNER	CBL61128	2723	30MHz ~ 2GHz	Oct. 22, 2011	Radiation (03CH02-HY)
Turn Table	HD	DS 420	420/649/00	0~ 360 degree	N/A	Radiation (03CH02-HY)
Antenna Mast	HD	MA 240	240/559/00	1 ~ 4 m	N/A	Radiation (03CH02-HY)

Note: Calibration Interval of instruments listed above is one year.

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Loop Antenna	Teseq	HLA 6120	24155	9 kHz - 30 MHz	Sep. 09, 2010*	Radiation (03CH02-HY)

Note: Calibration Interval of instruments listed above is two year.

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5 Certification of TAF Accreditation



Certificate No.: L1190-120405

財團法人全國認證基金會 Taiwan Accreditation Foundation

Certificate of Accreditation

This is to certify that

Sporton International Inc.

EMC & Wireless Communications Laboratory

No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

is accredited in respect of laboratory

Accreditation Criteria :

ISO/IEC 17025:2005

Accreditation Number

1190

Originally Accredited

December 15, 2003

Effective Period

January 10, 2010 to January 09, 2013

Accredited Scope

Testing Field, see described in the Appendix

Specific Accreditation

Accreditation Program for Designated Testing Laboratory

Program

Accreditation Program for Telecommunication Equipment

for Commodities Inspection

Testing Laboratory

resting Laboratory

Accreditation Program for BSMI Mutual Recognition

Arrangment with Foreign Authorities

Jay-San Chen

President, Taiwan Accreditation Foundation

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Date: April 05, 2012

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