

# **FCC REPORT**

Applicant: SKANNEX AS

Address of Applicant: Gaustadalleen 21, Oslo, 0349, Norway

**Equipment Under Test (EUT)** 

Product Name: Tablet PC

Model No.: RL-SM02BD

Additional Model No.: N/A

Trade mark: N/A

FCC ID: 2AD7E-RLSM02BD

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

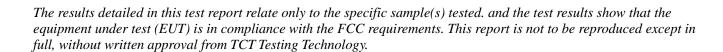
Date of sample receipt: Jan. 27, 2015

**Date of Test:** Jan. 28 – Feb. 25, 2015

**Date of report issued:** Feb. 26, 2015

Test Result: PASS \*

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





# 2 Version

Version No.	Date	Descr	ription
00	Feb. 26, 2015	Orig	ginal
			_,

Prepared by:

Date:

Feb. 26, 2015

Report Clerk

EMC Manager

Reviewed by:

Date:

Feb. 26, 2015

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# 4. Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203/15.247 (c)	Pass
AC Power Line Conducted Emission	15.207	Pass
Conducted Peak Output Power	15.247 (b)(3)	Pass
6dB Emission Bandwidth	mission Bandwidth 15.247 (a)(2)	
Power Spectral Density	15.247 (e)	Pass
Band Edge	15.247(d)	Pass
Spurious Emission	15.205/15.209	Pass

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



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# 5. General Information

# **5.1 Client Information**

Applicant:	SKANNEX AS
Address of Applicant:	Gaustadalleen 21, Oslo, 0349, Norway
Manufacturer:	SKANNEX AS
Address of Manufacturer:	Gaustadalleen 21, Oslo, 0349, Norway

# 5.2 General Description of E.U.T.

Model No.: Additional Model No.:	RL-SM02BD N/A
Trade mark:	N/A
Operation Frequency:	2412MHz~2462MHz (802.11b/802.11g/802.11n(H20)) 2422MHz~2452MHz (802.11n(H40))
Channel numbers:	11 for 802.11b/802.11g/802.11n(H20) 7 for 802.11n(H40)
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:	2dBi
Power supply:	Rechargeable Li-ion Battery DC 3.7V
AC adapter:	

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Operation	Operation Frequency each of channel For 802.11b/g/n(H20)						
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		

Operation	Operation Frequency each of channel For 802.11n(H40)						
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
		4	2427MHz	7	2442MHz		
		5	2432MHz	8	2447MHz		
3	2422MHz	6	2437MHz	9	2452MHz	5)	(4

#### Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

802.11b/802.11g/802.11n (H20)

Channel	Frequency
The lowest channel	2412MHz
The middle channel	2437MHz
The Highest channel	2462MHz

### 802.11n (H40)

Channel	Frequency
The lowest channel	2422MHz
The middle channel	2437MHz
The Highest channel	2452MHz

# 5.3 Measurement uncertainty

The reported uncertainty of measurement y  $\pm$  U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2,providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Conducted Emission	±3.28dB
2	RF power,conducted	±0.12dB
3	Spurious emissions,conducted	±0.11dB
4	All emissions,radiated(<1G)	±4.88dB
5	All emissions,radiated(>1G)	±4.88dB
6	Temperature	±0.5°C
7	Humidity	±2%

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#### 5.4 Test environment and mode

Operating Environment:						
Temperature:	24.0 °C					
Humidity:	54 % RH	(,c)	(,0)			
Atmospheric Pressure:	1010 mbar					
Test mode:						
Operation mode	Keep the EU	Keep the EUT in continuous transmitting with modulation				

The sample was placed 0.8m 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:

#### Per-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.

Mode	Data rate
802.11b	1Mbps
802.11g	6Mbps
802.11n(H20)	6.5Mbps
802.11n(H40)	13.5Mbps

#### **Final Test Mode:**

According to ANSI C63.4 standards, the test results are both the "worst case" and "worst setup" 1Mbps for 802.11b, 6Mbps for 802.11g, 6.5Mbps for 802.11n(H20) and 13.5 Mbps for 802.11n(H40). Duty cycle setting during the transmission is 98.5% with maximum power setting for all modulations.

# 5.5 Description of Support Units

Manufacturer	Description	Model	S/N	FCC ID/DoC
FICO	Adapter	JD-050200	N/A	N/A
Edifier	Earphone	H275P	N/A	N/A



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# 5.6 Laboratory Facility

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

FCC - Registration No.: 572331

Shenzhen TCT Testing Technology Co., Ltd., Shenzhen EMC Laboratory: Shenzhen Tongce Testing Lab

The 3m Semi-anechoic chamber has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

IC - Registration No.: 10668A-1

The 3m Semi-anechoic chamber of Shenzhen TCT Testing Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

CNAS - Registration No.: CNAS L6165

Shenzhen TCT Testing Technology 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 L6165.

# 5.7 Laboratory Location

Shenzhen Tongce Testing Lab

Address: 1F, Leinuo Watch Building, Fuyong Town, Baoan Dist, Shenzhen, China

Tel: 13410377511

Fax: --



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# 5.8 Test Instruments list

Radia	Radiated Emission:								
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)			
1	ESPI Test Receiver	ROHDE&SCHWARZ	ESVD	100008	Sep.17, 2014	Sep.16, 2015			
2	Spectrum Analyzer	ROHDE&SCHWARZ	FSEM	848597/001	Sep.17, 2014	Sep.16, 2015			
3	Spectrum Analyzer	ROHDE&SCHWARZ	FSU3	1166.1660.03	Sep.17, 2014	Sep.16, 2015			
4 Pre-amplifier		EM Electronics Corporation CO.,LTD	EM30265	07032613	Sep.17, 2014	Sep.16, 2015			
-5	Pre-amplifier	HP	8447D	2727A05017	Sep.17, 2014	Sep.16, 2015			
6	Loop antenna	ZHINAN	ZN30900A	12024	Dec.15, 2014	Dec.14, 2015			
7	Broadband Antenna	Schwarzbeck	VULB9163	340	Sep.17, 2014	Sep.16, 2015			
8	Horn Antenna	Schwarzbeck	BBHA 9120D	631	Sep.17, 2014	Sep.16, 2015			
9	Loop antenna	ZHINAN	ZN30900A	12024	Dec.15, 2014	Dec.14, 2015			
10	Coax cable	тст	N/A	N/A	Sep.14, 2014	Sep.15, 2015			
11	Coax cable	тст	N/A	N/A	Sep.14, 2014	Sep.15, 2015			
12	Coax cable	тст	N/A	N/A	Sep.14, 2014	Sep.15, 2015			
13	Coax cable	тст	N/A	N/A	Sep.14, 2014	Sep.15, 2015			
14	EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A	N/A			

Cond	lucted Emission:	$(C_{\mathcal{O}})$	(C)			
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
1	EMI Test Receiver	R&S	ESCS30	100139	Sep.17, 2014	Sep.16, 2015
2	LISN-1	AFJ	LS16C	16010947251	Sep.17, 2014	Sep.16, 2015
3	LISN-2	Schwarzbeck	NSLK 8126	8126453	Sep.17, 2014	Sep.16, 2015
4	Coax cable	ТСТ	N/A	164080	Sep.17, 2014	Sep.16, 2015
5	EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A	N/A

Cond	Conducted method test:									
Item Test Equipment		Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)				
1	Spectrum Analyzer	ROHDE&SCHWARZ	FSU3	200054	Sep.17, 2014	Sep.16, 2015				
2	Spectrum Analyzer	Agilent	N9020A	MY49100060	Oct. 22, 2014	Oct. 23, 2015				
3	Pulse Power Senor	Anritsu	MA2411B	0917070	Dec. 12 2014	Dec. 11, 2015				
4	Power Meter	Anritsu	ML2495A	1005002	Dec. 12 2014	Dec. 11, 2015				

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# 6. Test results and Measurement Data

# 6.1 Antenna requirement:

#### Standard requirement:

FCC Part15 C Section 15.203 /247(c)

15.203 requirement:

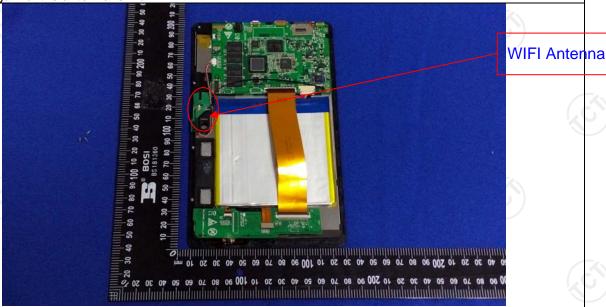
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit 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(c) (1)(i) requirement:

(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

#### **E.U.T Antenna:**

The antenna is one built-in smart omnidirectional antenna which cannot replace by end-user, the best case gain of the antenna is 2 dBi.



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# 6.2 Conducted Emission

Test Requirement:	FCC Part15 C Section 15.207	7		
Test Method:	ANSI C63.4: 2003			
Test Frequency Range:	150 kHz to 30 MHz			
Class / Severity:	Class B			
Receiver setup:	RBW=9 kHz, VBW=30 kHz			
Limit:	[ [ [ ] ] ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]	Limit (c	dBuV)	
	Frequency range (MHz)	Quasi-peak	Average	
	0.15-0.5	66 to 56*	56 to 46*	
	0.5-5	56	46	
	5-30	60	50	
Test procedure	<ul><li>* Decreases with the logarithr</li><li>1. The E.U.T and simulators</li></ul>	7 7		
	<ol> <li>50ohm/50uH coupling im</li> <li>The peripheral devices a a LISN that provides a 50 termination. (Please refe photographs).</li> <li>Both sides of A.C. line are interference. In order to f positions of equipment and according to the condition of the coupling of the</li></ol>	re also connected to the common of the block diagram of the checked for maximum ind the maximum emis all of the interface common of the control of the contr	e main power through npedance with 50ohm of the test setup and m conducted sion, the relative	
	measurement.	NSI C63.4: 2003 on cor		
Test setup:	measurement.	ence Plane		
Test setup:	measurement.  Reference LISN 40cm	BOCM LISN Filt	nducted	
Test setup:  Test Instruments:	Reference LISN 40cm AUX Equipment E.	BOCM LISN Filts U.T EMI Receiver	nducted	
	Reference LISN 40cm  AUX Equipment E.  Test table/Insulation plate  Remark E.U.T. Equipment Under Test LISN Line Impedence Stabilization Test table height=0.8m	U.T EMI Receiver	nducted	

#### **Measurement Data**

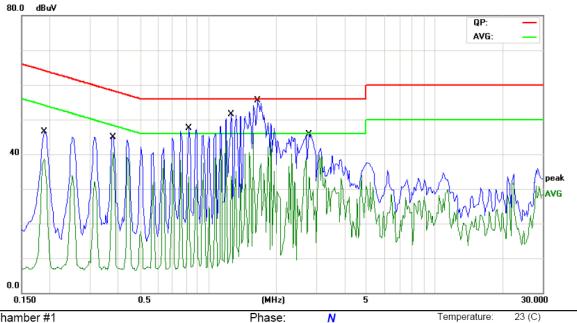
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Humidity:



### Conducted Emission on Neutral Terminal of the power line (150 kHz to 30MHz)



Site Chamber #1

Limit: FCC PART15 Conduction(QP)

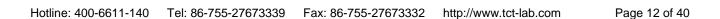
EUT: Tablet PC M/N: RL-SM02BD Mode: Tx Mode

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1891	33.15	11.49	44.64	64.07	-19.43	QP	
2		0.1891	24.72	11.49	36.21	54.07	-17.86	AVG	
3		0.3766	32.65	11.37	44.02	58.35	-14.33	QP	
4	*	0.3766	27.38	11.37	38.75	48.35	-9.60	AVG	
5		0.8219	27.59	11.20	38.79	56.00	-17.21	QP	
6		0.8219	12.02	11.20	23.22	46.00	-22.78	AVG	
7		1.2672	11.49	11.32	22.81	56.00	-33.19	QP	
8		1.2672	-0.97	11.32	10.35	46.00	-35.65	AVG	
9		1.6500	14.37	11.51	25.88	56.00	-30.12	QP	
10		1.6500	-1.92	11.51	9.59	46.00	-36.41	AVG	
11		2.7906	23.25	11.41	34.66	56.00	-21.34	QP	
12		2.7906	3.71	11.41	15.12	46.00	-30.88	AVG	

Power:

AC 120V/60Hz

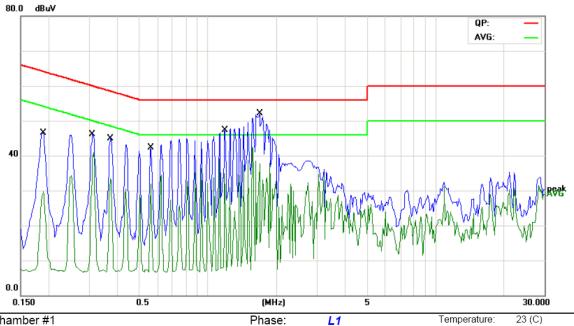




Humidity:



#### Conducted Emission on Line Terminal of the power line (150 kHz to 30MHz)



AC 120V/60Hz

Site Chamber #1

Limit: FCC PART15 Conduction(QP)

EUT: Tablet PC M/N: RL-SM02BD Mode: Tx Mode

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1891	32.22	11.47	43.69	64.07	-20.38	QP	
2		0.1891	19.79	11.47	31.26	54.07	-22.81	AVG	
3		0.3102	33.47	11.40	44.87	59.96	-15.09	QP	
4		0.3102	20.96	11.40	32.36	49.96	-17.60	AVG	
5		0.3727	32.27	11.36	43.63	58.44	-14.81	QP	
6		0.3727	21.73	11.36	33.09	48.44	-15.35	AVG	
7		0.5602	26.34	11.27	37.61	56.00	-18.39	QP	
8		0.5602	15.41	11.27	26.68	46.00	-19.32	AVG	
9		1.1852	34.14	11.26	45.40	56.00	-10.60	QP	
10		1.1852	23.65	11.26	34.91	46.00	-11.09	AVG	
11	*	1.6812	37.82	11.51	49.33	56.00	-6.67	QP	
12		1.6812	26.49	11.51	38.00	46.00	-8.00	AVG	

Power:

#### Notes:

- 1. An initial pre-scan was performed on the line and neutral terminal of the power line with peak detector.
- 2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- 3. Final Level =Receiver Read level + Correct Factor
- 4. \* is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz

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# **6.3 Conducted Output Power**

Test Requirement:	FCC Part15 C Section 15.247 (b)(3)				
Test Method:	ANSI C63.4:2003 and KDB558074				
Limit:	30dBm				
Test setup:					
Test Instruments:	Power Meter Attenuator  Refer to section 5.7 for details				
	The testing follows the Measurement Procedure of FCC KDB No.				
Test procedure:	<ul> <li>558074 DTS D01 Meas. Guidance v03r02.</li> <li>2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.</li> </ul>				
	<ul><li>3. Set to the maximum power setting and enable the EUT transmit continuously.</li><li>4. Measure the conducted output power and record the results in the test report.</li></ul>				
Test results:	Passed				

# Measurement Data

T ( O) !	Max	kimum Conduct	L' - ''/ ID - '	D		
Test CH	802.11b	802.11g	802.11n(H20)	802.11n(H40)	Limit(dBm)	Result
Lowest	9.88	8.79	8.24	8.20		
Middle	9.97	9.95	9.48	9.23	30.00	Pass
Highest	9.86	8.93	9.65	8.75		

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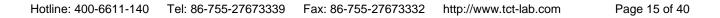
# 6.4 Emission Bandwidth

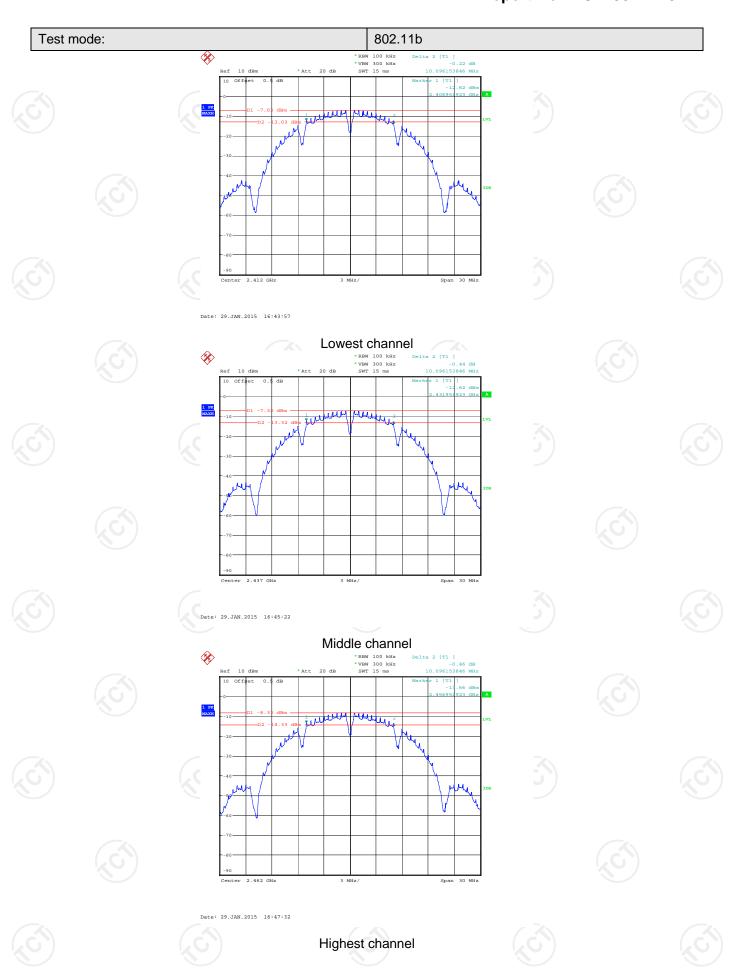
Test Requirement:	FCC Part15 C Section 15.247 (a)(2)
Test Method:	ANSI C63.4:2003 and KDB558074
Limit:	>500kHz
Test setup:	Spectrum Analyzer EUT
Test Instruments:	Refer to section 5.7 for details
Test procedure:	<ol> <li>The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v03r02.</li> <li>The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v03r02.</li> <li>Set to the maximum power setting and enable the EUT transmit continuously.</li> <li>Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6dB bandwidth must be greater than 500 kHz.</li> <li>Measure and record the results in the test report.</li> </ol>
Test results:	Passed

Measurement Data

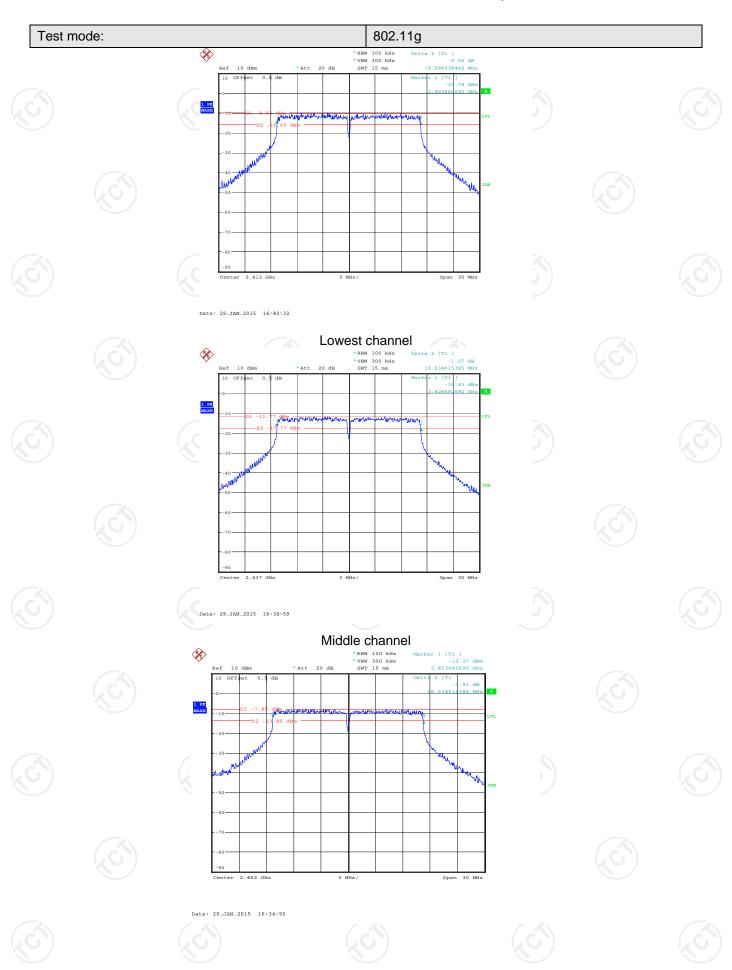
	nedodiement Data							
	T (0)		6dB Emission	Bandwidth (MHz	)		<b>.</b>	
	Test CH	802.11b	802.11g	802.11n(H20)	802.11n(H40)	Limit(kHz)	Result	
	Lowest	10.10	16.59	17.88	36.54			
	Middle	10.10	16.63	17.84	36.54	>500	Pass	
5	Highest	10.10	16.63	17.84	36.54		(	

Test plot as follows:



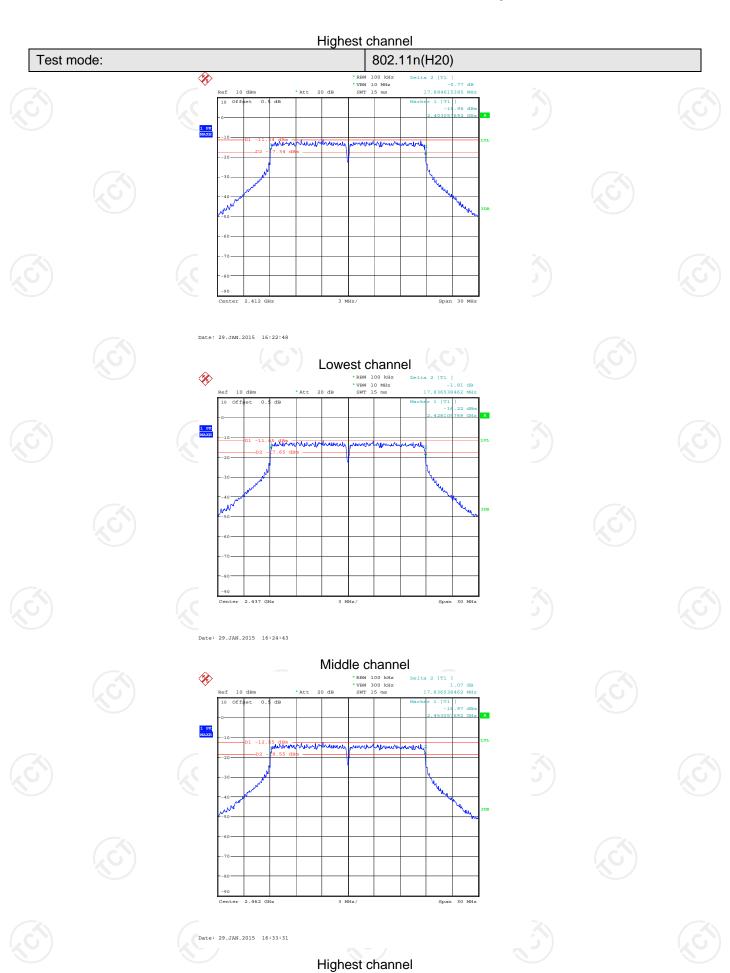


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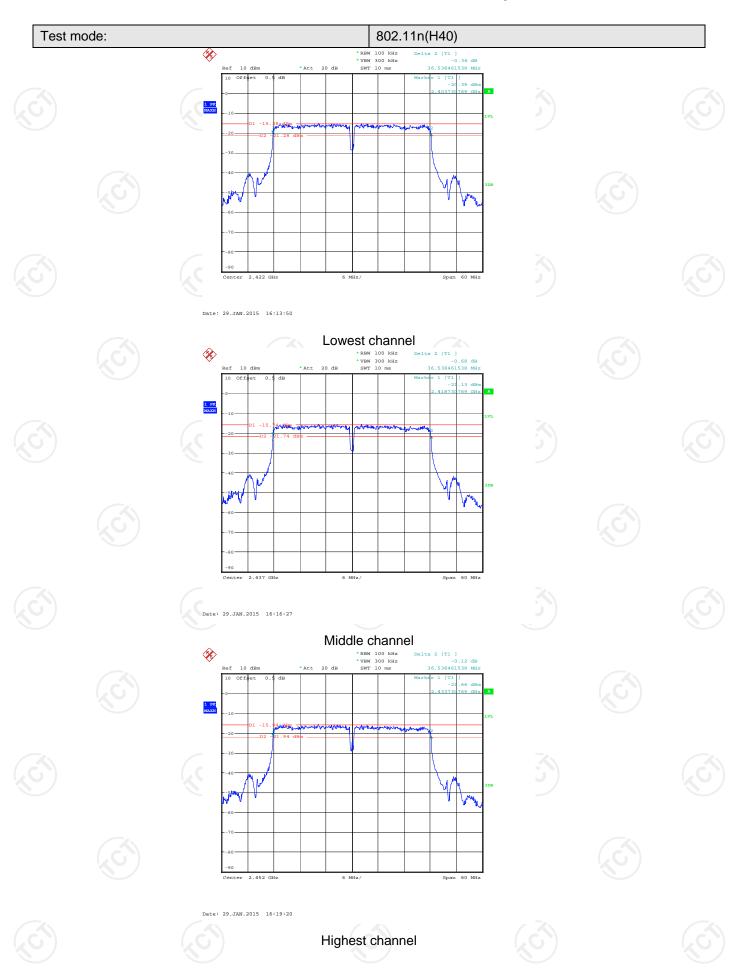


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# 6.5 Power Spectral Density

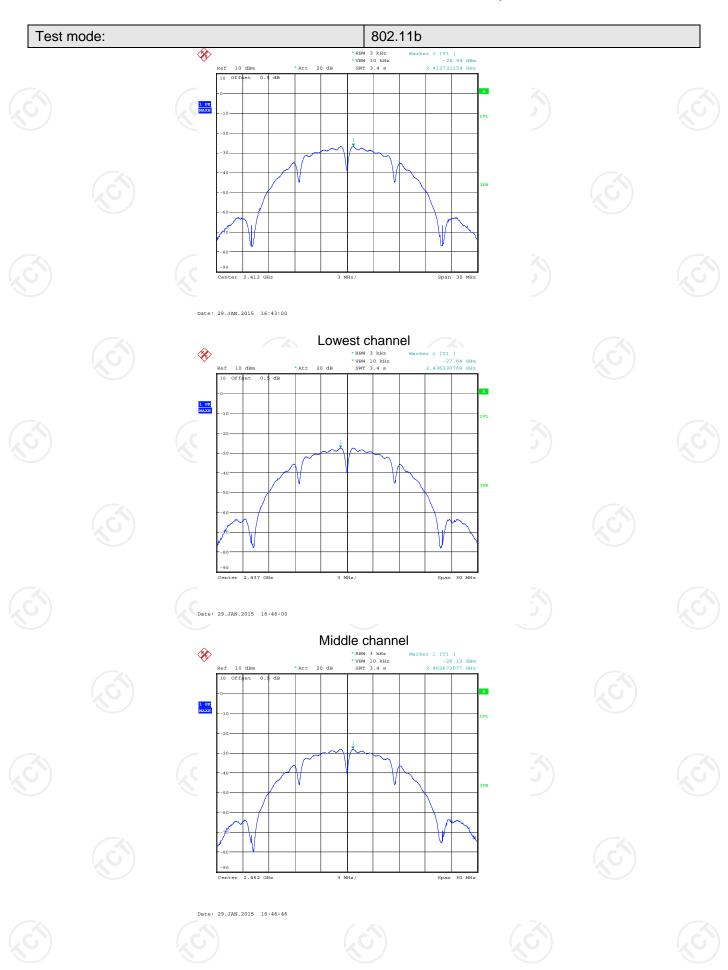
Test Requirement:	FCC Part15 C Section 15.247 (e)
Test Method:	ANSI C63.4:2003 and KDB558074
Limit:	The peak power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.
Test setup:	Spectrum Analyzer EUT
Test Instruments:	Refer to section 5.7 for details
Test mode:	<ol> <li>The testing follows Measurement Procedure 10.2 Method PKPSD of FCC KDB Publication No.558074 D01 DTS Meas. Guidance v03r02</li> <li>The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.</li> <li>Set to the maximum power setting and enable the EUT transmit continuously.</li> <li>Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)</li> <li>Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.</li> <li>Measure and record the results in the test report.</li> </ol>
Test results:	Passed
rest results.	1 40000

### Measurement Data

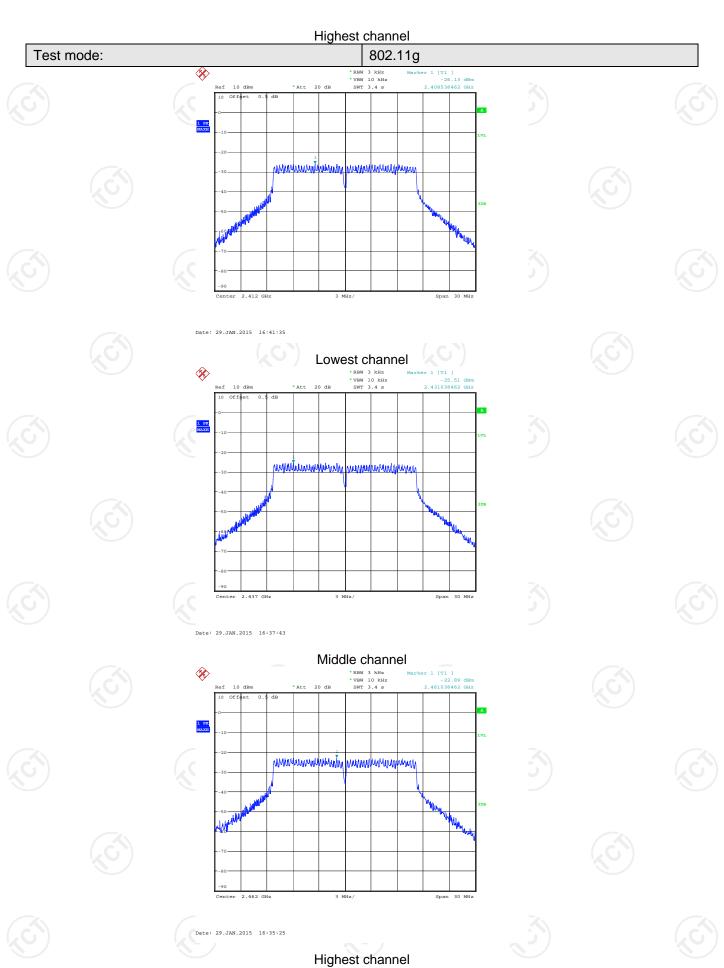
T O		Power Spec	tral Density (dBn	n)		<b>D</b> "
Test CH	802.11b	802.11g	802.11n(H20)	802.11n(H40)	Limit(dBm)	Result
Lowest	-26.94	-26.13	-25.22	-27.52		
Middle	-27.64	-25.51	-25.71	-28.32	8.00	Pass
Highest	-28.12	-22.89	-26.44	-28.37	, v	

Test plot as follows:

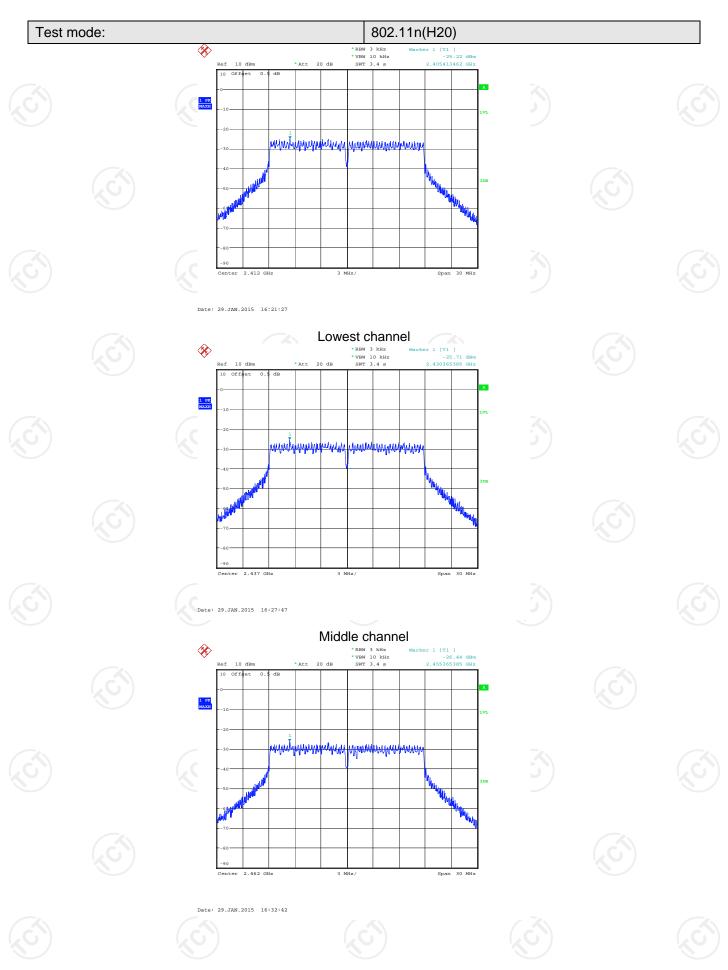
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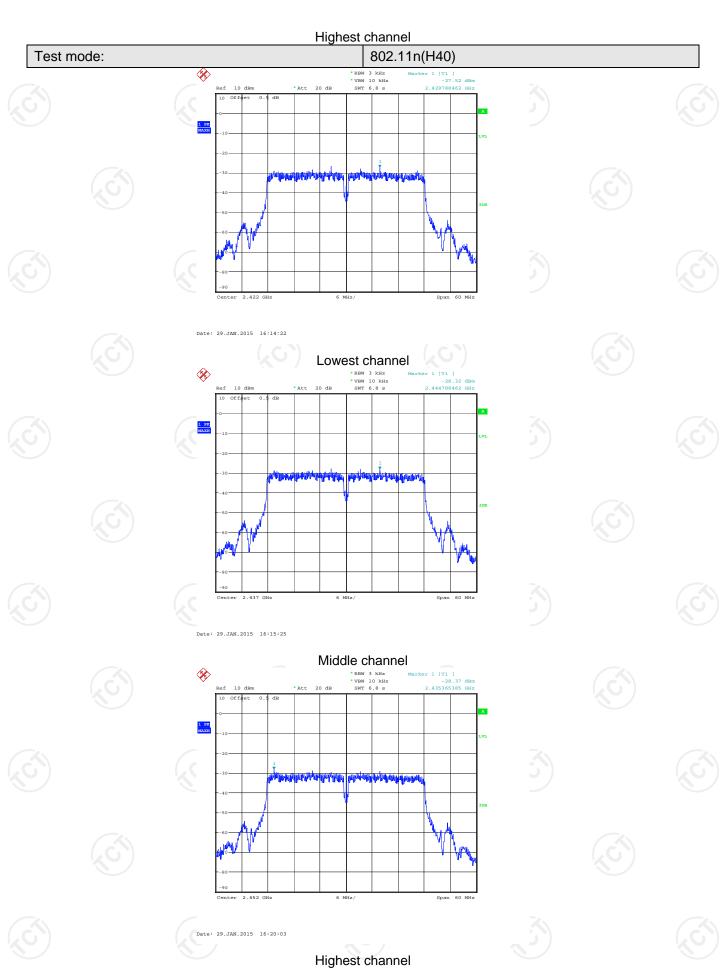




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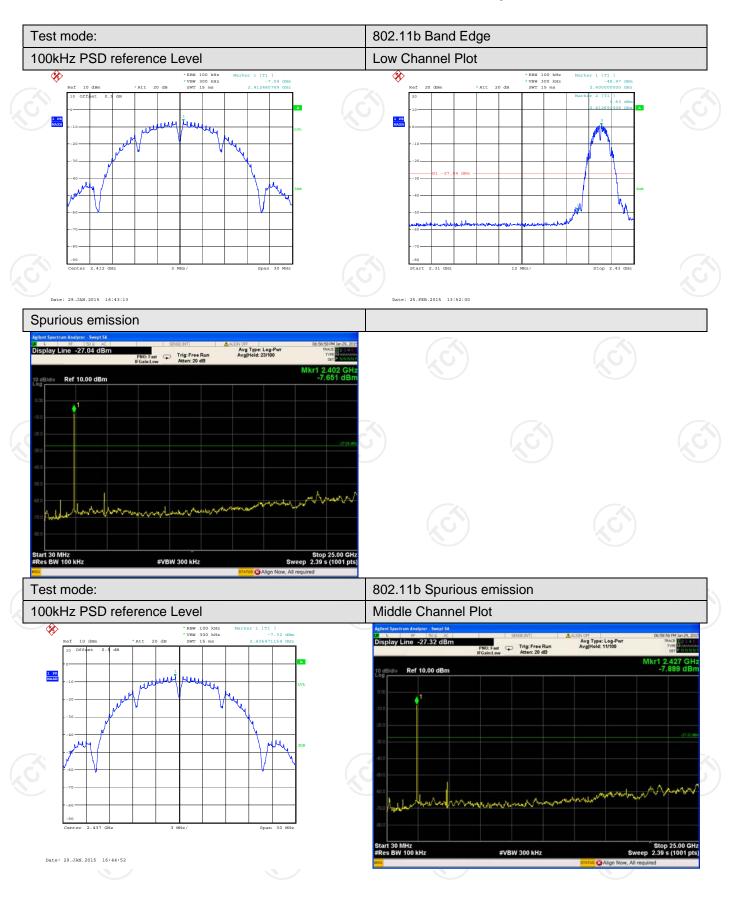


# 6.6 Conducted Band Edges and Spurious Emission Measurement

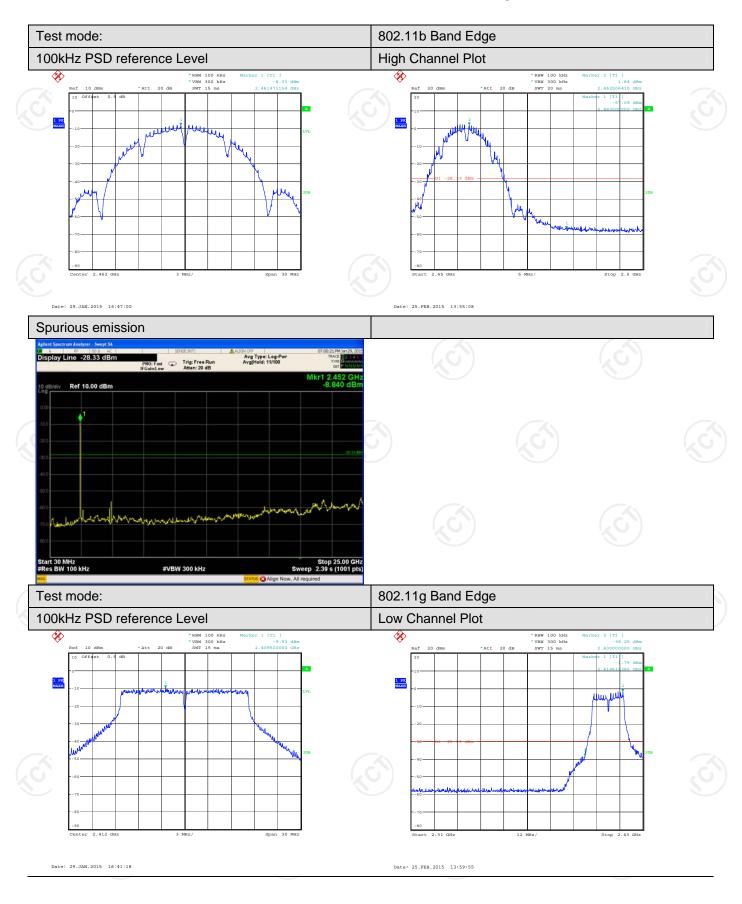
Test Requirement:  FCC Part15 C Section 15.247 (d)  Test Method:  ANSI C63.4:2003 and KDB558074  Limit:  In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement and radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).  Test setup:  Test Instruments:  Refer to section 5.7 for details  Test procedure:  1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02.  2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.  3. Set to the maximum power setting and enable the EUT transmit continuously.  4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).  5. Measure and record the results in the test report.  6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.		
Limit:  In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement and radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).  Test setup:  Test Instruments:  Refer to section 5.7 for details  Test procedure:  1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02.  2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.  3. Set to the maximum power setting and enable the EUT transmit continuously.  4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).  5. Measure and record the results in the test report.  6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.	Test Requirement:	FCC Part15 C Section 15.247 (d)
emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement and radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).  Test setup:    Spectrum Analyzer	Test Method:	ANSI C63.4:2003 and KDB558074
Test Instruments:  Refer to section 5.7 for details  1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02.  2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.  3. Set to the maximum power setting and enable the EUT transmit continuously.  4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).  5. Measure and record the results in the test report.  6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.	Limit:	emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement and radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with
Test procedure:  1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02.  2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.  3. Set to the maximum power setting and enable the EUT transmit continuously.  4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).  5. Measure and record the results in the test report.  6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.	Test setup:	
Guidance v03r02.  2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.  3. Set to the maximum power setting and enable the EUT transmit continuously.  4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).  5. Measure and record the results in the test report.  6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.	Test Instruments:	Refer to section 5.7 for details
	Test procedure:	<ol> <li>Guidance v03r02.</li> <li>The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.</li> <li>Set to the maximum power setting and enable the EUT transmit continuously.</li> <li>Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).</li> <li>Measure and record the results in the test report.</li> <li>The RF fundamental frequency should be excluded against the limit line</li> </ol>
	Test results:	Passed

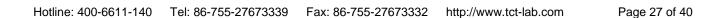
Test plot as follows:

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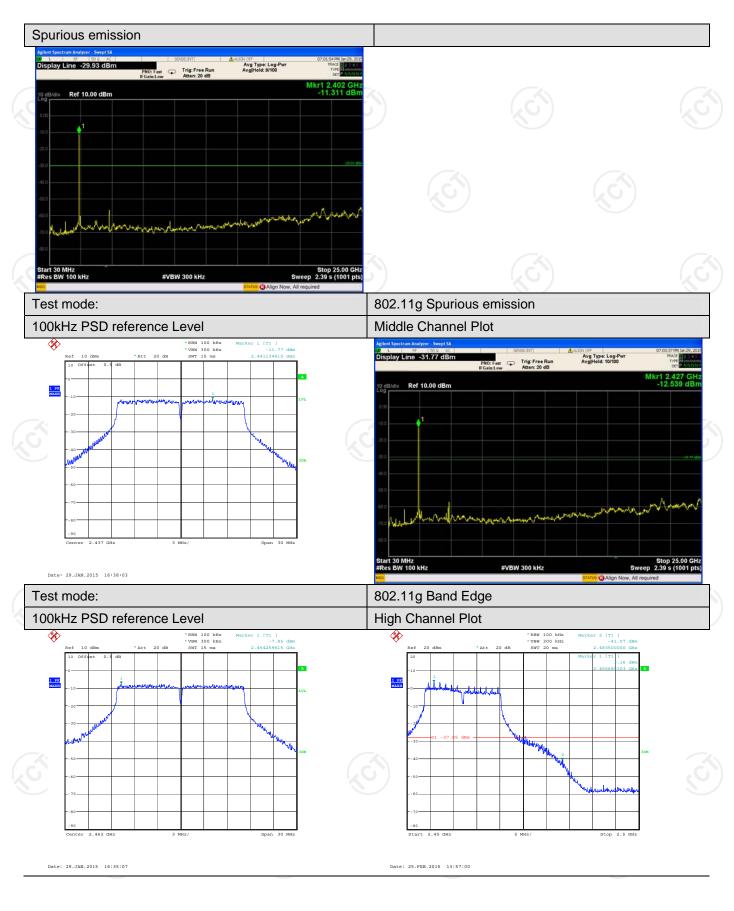


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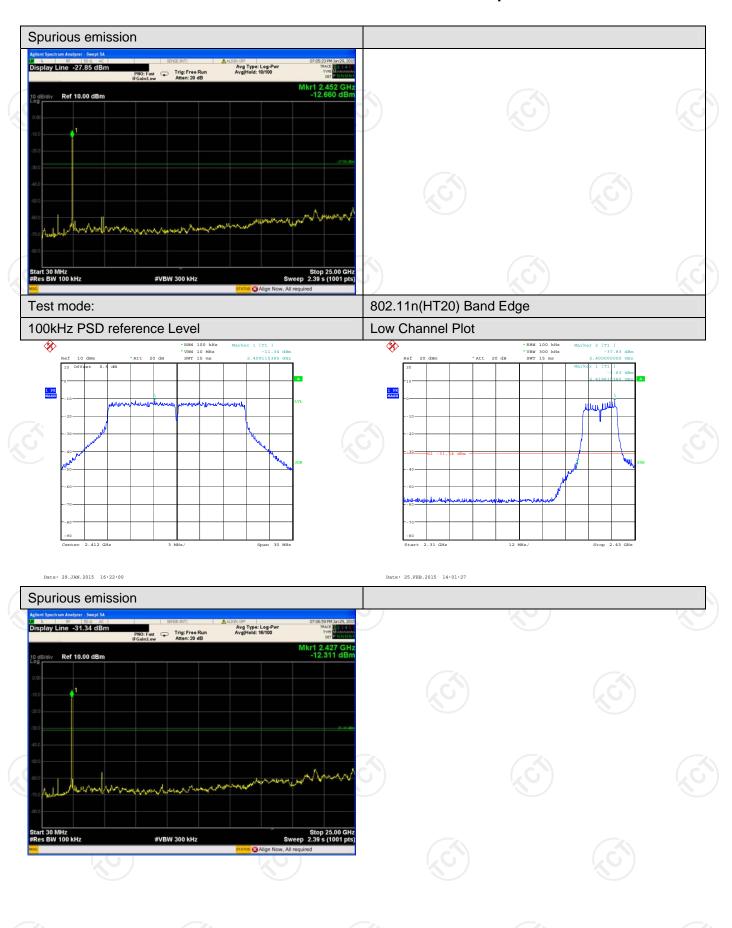




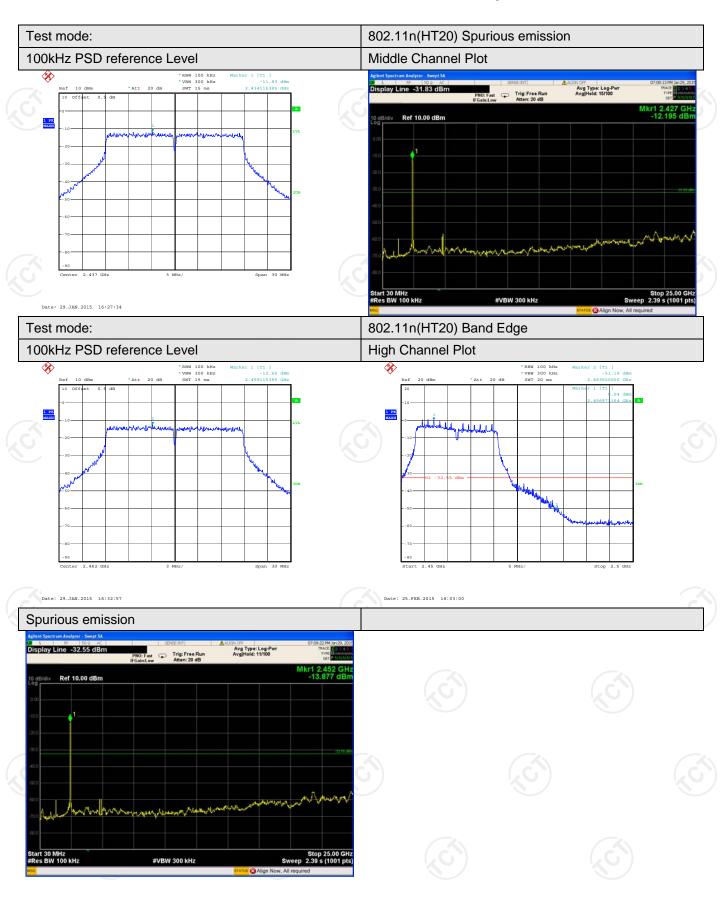




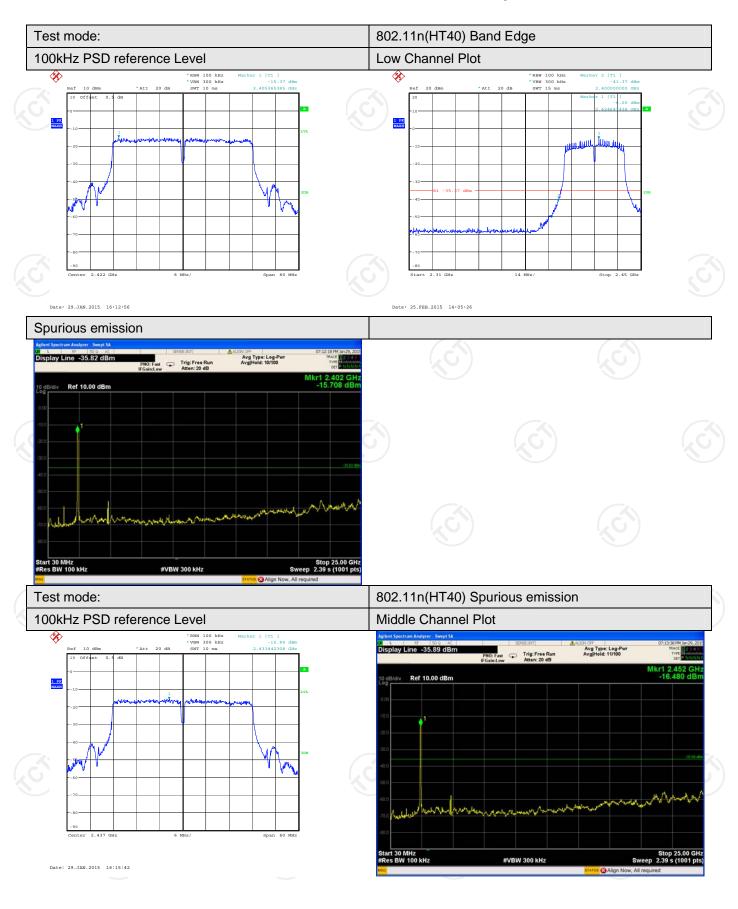
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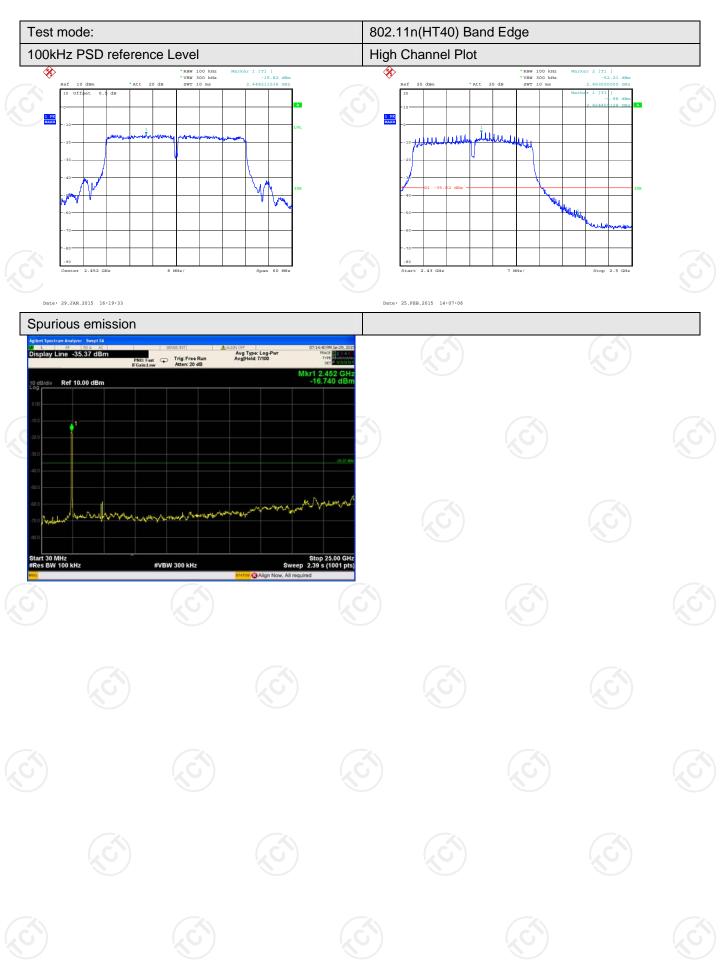


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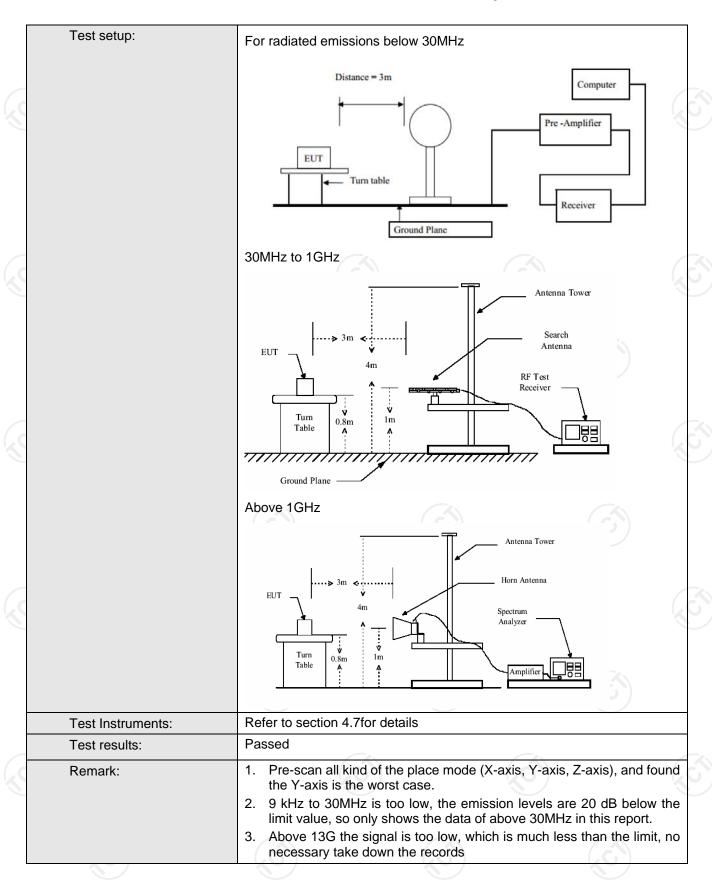


# 6.7 Radiated Band Edges and Spurious Emission Measurement

Test Requirement:	FCC Part15 C S	Section 15.209	and 15.205					
Test Method:	ANSI C63.4:200	03						
Test Frequency Range:	9KHz to 25GHz				(			
Test site:	Measurement D	istance: 3m						
Receiver setup:								
Neceiver setup.	Frequency	Detector	RBW	VBW	Remark			
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value			
	$(C_{G})$	Peak	1MHz	3MHz	Peak Value			
	Above 1GHz	Peak	1MHz	10Hz	Average Value			
Limit:								
	Freque	ncy	Limit (dBuV	/m @3m)	Remark			
	30MHz-8	BMHz	40.	0	Quasi-peak Value			
	88MHz-21	6MHz	43.	5 (0)	Quasi-peak Value			
	216MHz-9		46.	0	Quasi-peak Value			
	960MHz-	1GHz	54.0 54.0		Quasi-peak Value			
	Above 1	Average Value						
	74.0  1. The testing follows FCC KDB Publication No. 55807				Peak Value			
	which was mo 5. Corrected Re Preamp Facto 6. For measurer measured by the peak emis measurement reported. 7. Use the follow (1) Span shall measured (2) Set RBW= Detector fo (3) Set RBW: measurem	ounted on the to ading: Antenna or = Level ment below 1GI the peak detect sion level will be will be repeated ving spectrum at wide enough to the total total wing total total wide enough total the total total total wide enough total the total total total wide enough total total the total total total total the total total total total the total total total total total the total total total total total total the total t	op of a variate Factor + CHz, If the ertor is 3 dB I be reported using the analyzer set o fully captured 1 GHz; VB Trace = ma	able height a sable Loss + mission leve ower than the Otherwise, a quasi-peak tings: ure the emis  W > RBW; ax hold;	Read Level - el of the EUT ne applicable limit, the emission a detector and ession being  Sweep = auto;			
	<ul> <li>For average measurement:</li> <li>VBW = 10 Hz, when duty cycle is no less than 98 percent.</li> <li>VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.</li> </ul>							

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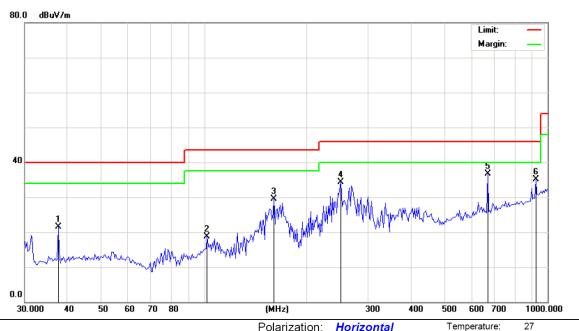


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#### **Below 1GHz**

#### Horizontal:



Site

Limit: FCC Part 15B Class B RE\_3 m

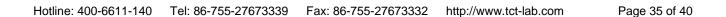
EUT: Tablet PC M/N: RL-SM02BD Mode: Tx Mode

Note:

Polarization: *Horizontal* Temperature: 22
Power: AC 120V/60Hz Humidity: 50 %

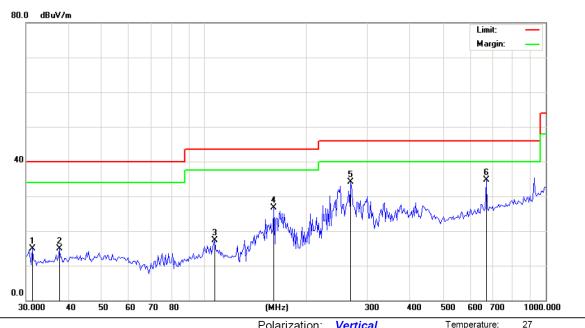
Distance: 3m

No.	Mk.	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		37.5648	34.24	-12.78	21.46	40.00	-18.54	peak		0	
2		101.8932	30.21	-11.53	18.68	43.50	-24.82	peak		0	
3		159.7586	44.07	-14.47	29.60	43.50	-13.90	peak		0	
4		250.4860	44.27	-9.94	34.33	46.00	-11.67	peak		0	
5	*	669.9523	37.28	-0.49	36.79	46.00	-9.21	peak		0	
6		925.6132	31.47	3.54	35.01	46.00	-10.99	peak		0	





#### Vertical:



Limit: FCC Part 15B Class B RE\_3 m

EUT: Tablet PC M/N: RL-SM02BD Mode: Tx Mode

Note:

Site

Polarization: Vertical

Power: AC 120V/60Hz

Temperature: 2

Humidity: 50 %

Distance: 3m

No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		31.2920	28.55	-13.56	14.99	40.00	-25.01	peak		0	
2		37.5648	27.75	-12.78	14.97	40.00	-25.03	peak		0	
3		107.0306	29.16	-11.83	17.33	43.50	-26.17	peak		0	
4		159.7586	41.24	-14.47	26.77	43.50	-16.73	peak		0	
5		268.7212	43.50	-9.32	34.18	46.00	-11.82	peak		0	
6	*	669.9523	35.20	-0.49	34.71	46.00	-11.29	peak		0	

Note: Measurements were conducted in all three channels (high, middle, low), and the worst case (11b Middle channel) was submitted only.  $\bullet$ 





#### **Above 1GHz**

Freq.	Ant. Pol.	Peak	AV Correctio Emission		n Level	Peak limit	AV limit	Margin	
(MHz)	H/V	reading (dBuV)	reading (dBuV)	n Factor (dB)	Peak (dBuV/m)	AV (dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)
2387.50	Н	65.82		-4.20	61.62		74.00	54.00	-12.38
2387.50	Н		50.31	-4.20		46.11	74.00	54.00	-7.89
4824.00	Н	46.20		-3.94	42.26		74.00	54.00	-11.74
7236.00	Н	45.00		0.52	45.52		74.00	54.00	-8.48
	- <del></del>		<del></del>		/			<b>/</b> _	
	70)		KO.					KO)	
2387.50	V	68.23		-4.20	64.03		74.00	54.00	-9.97
2387.50	V		51.74	-4.20		47.54	74.00	54.00	-6.46
4824.00	V	48.42		-3.94	44.48		74.00	54.00	-9.52
7236.00	V	45.47		0.52	45.99		74.00	54.00	-8.01
)				/2 (	) )		(2 C1 )		\2

IEEE 802.	11b mode:	Middle cha	annel: 2437	7 MHz					
Freq. (MHz)	Ant. Pol. H/V	Peak reading (dBuV)	AV reading (dBuV)	Correctio n Factor (dB)	Emissic Peak (dBuV/m)	n Level AV (dBuV/m)	Peak limit (dBuV/m)	AV limit (dBuV/m)	Margin (dB)
4874.00	Н	48.78		-3.98	44.8		74.00	54.00	-9.2
7311.00	Н	46.20		0.57	46.77		74.00	54.00	-7.23
4874.00	V	49.64		-3.98	45.66		74.00	54.00	-8.34
7311.00	V	48.21		0.57	48.78		74.00	54.00	-5.22

Freq.	Ant. Pol.	Peak	AV	Correcti	Emissio	n Level	Peak limit	AV limit	Margin
(MHz)	H/V	reading (dBuV)	reading (dBuV)	on Factor (dB)	Peak (dBuV/m)	AV (dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)
2486.58	Н	65.43		-2.38	63.05		74.00	54.00	-10.95
2486.58	Н	\	51.56	-2.38	9)	49.18	74.00	54.00	-4.82
4924.00	Н	50.76		-3.98	46.78		74.00	54.00	-7.22
7386.00	Н	47.42		0.57	47.99		74.00	54.00	-6.01
									\
2483.51	V	69.63	750	-2.38	67.25	KO-4	74.00	54.00	-6.75
2483.51	٧		50.22	-2.38		47.84	74.00	54.00	-6.16
4924.00	V	50.97		-3.98	46.99		74.00	54.00	-7.01
7386.00	V	46.29		0.57	46.86		74.00	54.00	-7.14
<b></b>				(					/

Notes: 1) Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency.

- 2) Radiated emissions measured in frequencies above 1GHz were made with peak detector and Average (AV) detector.
- 3) Average test would be performed if the peak readings were greater than the average limit.
- 4) Data of measurement shown "---"in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.
- 5) Emission Level=Peak (AV) Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss Pre-amplifier
- 6) Margin (dB) = Emission Level (Peak) (dBuV/m)-Average limit (dBuV/m)

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Freq.	Ant. Pol.	Peak	AV	Correction	Emission Level		Peak limit	AV limit	Margin
(MHz)	H/V	reading (dBuV)	reading (dBuV)	Factor (dB)	Peak (dBuV/m )	AV (dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)
2389.98	Н	59.68		-4.20	55.48		74.00	54.00	-18.52
2389.98	Н		51.31	-4.20	/	47.11	74.00	54.00	-6.89
4824.00	Н	51.32		-3.94	47.38		74.00	54.00	-6.62
7236.00	Н	49.64		0.52	50.16		74.00	54.00	-3.84
			-7- X			X		X	
	<sup>2</sup> (0,)		(,0)		()	( O.)		(, (), ()	
2389.98	V	58.79	-12	-4.20	54.59	<u></u>	74.00	54.00	-19.41
2389.98	V		48.57	-4.20		44.37	74.00	54.00	-9.63
4824.00	V	50.78		-3.94	46.84		74.00	54.00	-7.16
7236.00	V	44.32		0.52	44.84		74.00	54.00	-9.16
		(.6-)		(.C			C		(

IEEE 802.	11g mode:	Middle cha	annel: 2437	7 MHz					
Freq.	Ant. Pol.	Peak	AV	Correction	Emission	on Level	Peak limit	AV limit	Margin
(MHz)	H/V	reading	reading	Factor	Peak	AV	(dBuV/m)	(dBuV/m)	(dB)
		(dBuV)	(dBuV)	(dB)	(dBuV/m	(dBuV/m)		KO ,	
					)				
4874.00	Н	51.45		-3.98	47.47		74.00	54.00	-6.53
7311.00	Н	44.78		0.57	45.35		74.00	54.00	-8.65
X		<del></del> X\			<				
57)		(,G)		(,C			(,C))		(,(
4874.00	V	51.63		-3.98	47.65		74.00	54.00	-6.35
7311.00	V	48.21		0.57	48.78		74.00	54.00	-5.22

IEEE 802.	11g mode:	High chan	nel: 2462 N	ЛHz					
Freq. (MHz)	Ant. Pol. H/V	Peak reading (dBuV)	AV reading (dBuV)	Correction Factor (dB)	Emission Peak (dBuV/m)	n Level AV (dBuV/m)	Peak limit (dBuV/m)	AV limit (dBuV/m)	Margin (dB)
2488.34	Н	58.35		-2.38	55.97		74.00	54.00	-18.03
2488.34	Н		51.31	-2.38	) ·	48.93	74.00	54.00	-5.07
4924.00	Н	51.56		-3.98	47.58		74.00	54.00	-6.42
7386.00	Н	45.72		0.57	46.29		74.00	54.00	-7.71
			(6)						
2488.34	V	57.39		-2.38	55.01	<u> </u>	74	54.00	-18.99
2488.34	V		48.57	-2.38		46.19	74	54.00	-7.81
4924.00	V	50.72		-3.98	46.74		74.00	54.00	-7.26
7386.00	V	45.32		0.57	45.89		74.00	54.00	-8.11
					<i></i>		\(\frac{1}{2}\)		

Notes: 1) Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency.

- 2) Radiated emissions measured in frequencies above 1GHz were made with peak detector and Average (AV) detector.
- 3) Average test would be performed if the peak readings were greater than the average limit.
- 4) Data of measurement shown "---"in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.
- 5) Emission Level=Peak (AV) Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss Pre-amplifier
- 6) Margin (dB) = Emission Level (Peak) (dBuV/m)-Average limit (dBuV/m)

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Freq.	Ant. Pol.	Peak	AV	Correction	Emission	Emission Level		AV limit	Margin
(MHz)	H/V	reading (dBuV)	reading (dBuV)	Factor (dB)	Peak (dBuV/m )	AV (dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)
2388.01	Н	67.98		-4.20	63.78		74.00	54.00	-10.22
2388.01	Н		49.25	-4.20		45.05	74.00	54.00	-8.95
4824.00	Н	48.52		-3.94	44.58		74.00	54.00	-9.42
7236.00	Н	46.46	-/-	0.52	46.98		74.00	54.00	-7.02
	ДО- <del>)</del>		120	)		(O -}-		<del>,</del> -0	
				,					
2388.01	V	67.24		-4.20	63.04		74.00	54.00	-10.96
2388.01	V		48.57	-4.20		44.37	74.00	54.00	-9.63
4824.00	V	49.59		-3.94	45.65		74.00	54.00	-8.35
7236.00	V	45.50		0.52	46.02		74.00	54.00	-7.98
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IEEE 802.	IEEE 802.11n(HT20) mode: Middle channel: 2437 MHz										
Freq. (MHz)	Ant. Pol. H/V	Peak reading	AV reading	Correctio n Factor	Emission Level Peak AV		Peak limit (dBuV/m)	AV limit (dBuV/m)	Margin (dB)		
(		(dBuV)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(42417)	(4247,)	(42)		
4874.00	Н	49.70		-3.98	45.72		74.00	54.00	-8.28		
7311.00	Н	45.88		0.57	46.45		74.00	54.00	-7.55		
									(		
$\cup$		( U		K.	)				1		
4874.00	<b>V</b>	50.82		-3.98	46.84		74.00	54.00	-7.16		
7311.00	V	46.06		0.57	46.63		74.00	54.00	-7.37		

IEEE 802.	11n(HT20)	mode: Hig	h channel:	2462 MHz	,				
Freq. (MHz)	Ant. Pol. H/V	Peak reading	AV reading	Correctio n Factor	Peak	on Level AV	Peak limit (dBuV/m)	AV limit (dBuV/m)	Margin (dB)
2493.51	Н	(dBuV) 68.54	(dBuV) 	(dB) -2.38	(dBuV/m) 66.16	(dBuV/m)	74.00	54.00	-7.84
2493.51	Η	<u> </u>	51.97	-2.38	7 )	49.59	74.00	54.00	-4.41
4924.00	Н	51.34		-3.98	47.36		74.00	54.00	-6.64
7386.00	Н	46.53		0.57	47.1		74.00	54.00	-6.90
2493.51	V	69.54	70	-2.38	67.16	(O)	74.00	54.00	-6.84
2493.51	V		52.2	-2.38		49.82	74.00	54.00	-4.18
4924.00	V	50.97		-3.98	46.99		74.00	54.00	-7.01
7386.00	V	46.29		0.57	46.86		74.00	54.00	-7.14
(`` ر				(2)	J				(2

Notes: 1) Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency.

- 2) Radiated emissions measured in frequencies above 1GHz were made with peak detector and Average (AV) detector.
- 3) Average test would be performed if the peak readings were greater than the average limit.
- 4) Data of measurement shown "---"in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.
- 5) Emission Level=Peak (AV) Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss Pre-amplifier
- 6) Margin (dB) = Emission Level (Peak) (dBuV/m)-Average limit (dBuV/m)

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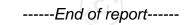
IEEE 802.	11n(HT40)	mode: Lov	v channel:	2422 MHz					
Freq.	Freq. Ant. Pol.		AV	Correctio	Emission Level		Peak limit	AV limit	Margin
(MHz)	H/V	reading (dBuV)	reading (dBuV)	n Factor (dB)	Peak (dBuV/m)	AV (dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)
2389.98	Н	68.28		-4.20	64.08		74.00	54.00	-9.92
2389.98	Н	<u> </u>	52.34	-4.20	) )	48.14	74.00	54.00	-5.86
4844.00	Н	52.75		-3.94	48.81		74.00	54.00	-5.19
7266.00	Н	47.63		0.52	48.15		74.00	54.00	-5.85
					/				
2389.98	V	68.68	170	-4.20	64.48	(O <del>-</del> }-	74.00	54.00	-9.52
2389.98	V		52.14	-4.20		47.94	74.00	54.00	-6.06
4844.00	V	52.62		-3.94	47.07		74.00	54.00	-6.93
7266.00	V	47.53		0.52	46.72		74.00	54.00	-7.28
					<b>~</b>				(

<b>IEEE 802</b> .	.11n(HT40)	mode: Mid	dle channe	el: 2437 MH	z				
Freq.	Ant. Pol.	Peak	AV	Correction	Emission Level		Peak limit	AV limit	Margin
(MHz)	H/V	reading	reading	Factor	Peak	AV	(dBuV/m)	(dBuV/m)	(dB)
		(dBuV)	(dBuV)	(dB)	(dBuV/m	(dBuV/m)			
	.C.`)		(.C)		)	.C.`)		(.C)	
4874.00	Н	53.55		-3.98	49.57		74.00	54.00	-4.43
7311.00	Н	49.32		0.57	49.89		74.00	54.00	-4.11
					7.		<i></i>		
4874.00	V	52.35		-3.98	48.37		74.00	54.00	-5.63
7311.00	V	47.32		0.57	47.89		74.00	54.00	-6.11

IEEE 802.	11n(H40) n	node: High	channel: 2	452 MHz					
Freq.	Ant. Pol.	Peak	Peak AV Correctio Emission Lev		on Level	Peak limit	AV limit	Margin	
(MHz)	H/V	reading	reading	n Factor	Peak	AV	(dBuV/m)	(dBuV/m)	(dB)
		(dBuV)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)			
2493.51	Н	67.45		-2.38	65.07		74.00	54.00	-8.93
2493.51	Н		51.08	-2.38		48.7	74.00	54.00	-5.30
4904.00	Н	53.24		-3.98	49.26		74.00	54.00	-4.74
7356.00	Н	48.52		0.57	49.09		74.00	54.00	-4.91
2493.51	V	68.54		-2.38	66.16		74.00	54.00	-7.84
2493.51	V		52.73	-2.38		50.35	74.00	54.00	-3.65
4904.00	Z O V	53.56	4.0	-3.98	49.58	ζO)	74.00	54.00	-4.42
7356.00	V	46.92		0.57	47.49		74.00	54.00	-6.51

Notes: 1) Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency.

- 2) Radiated emissions measured in frequencies above 1GHz were made with peak detector and Average (AV) detector.
- 3) Average test would be performed if the peak readings were greater than the average limit.
- 4) Data of measurement shown "---"in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.
- 5) Emission Level=Peak (AV) Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss Pre-amplifier
- 6) Margin (dB) = Emission Level (Peak) (dBuV/m)-Average limit (dBuV/m)



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