

Report No.: KSCR220500072901

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## TEST REPORT

Application No.:KSCR2205000729ATFCC ID:2ADTD-KH6320WTDE1IC:20199-KH6320WTDE1

Applicant: Hangzhou Hikvision Digital Technology Co., Ltd.

Address of Applicant: No.555 Qianmo Road, Binjiang District Hangzhou 310052, China

Manufacturer: Hangzhou Hikvision Digital Technology Co., Ltd.

Address of Manufacturer: No.555 Qianmo Road, Binjiang District Hangzhou 310052, China

**Factory:** 1.Hangzhou Hikvision Technology Co., Ltd. 2.Hangzhou Hikvision Electronics Co., Ltd.

3.Hangzhou Hikvision Digital Technology Co., Ltd. 4.Chongqing Hikvision Technology Co., Ltd.,

Address of Factory: 1.No.700, Dongliu Road, Binjiang District, Hangzhou Ctiy, Zhejiang, 310052, China

2.No.299,Qiushi Road,Tonglu Economic Development Zone,Tonglu County,

Hangzhou, Zhejiang, 310052, China.

3.No.555 Qianmo Road, Binjiang District Hangzhou 310052, China 4.NO.118. Haikang Road, Area C, Jiangiao Industrial Park, Dadukou

District, Chongqing, 401325, China

**Equipment Under Test (EUT):** 

**EUT Name:** IP Video Intercom Indoor Station

Model No.: DS-KH6320-WTDE1, DS-KH6320-WTDE1UHK, DS-KH6320-WTDE1CKV,

DS-KH6320-WTDE1UVS, DS-KH6320-WTDE1KVO, DS-KH6320-

WTDE1HUN¤

For IC Model No.: DS-KH6320-WTDE1

Please refer to section 2 of this report which indicates which model was

actually tested and which were electrically identical.

Trade Mark: HIKVISION

Standard(s): 47 CFR Part 15, Subpart C 15.247

RSS-247 Issue 2, February 2017

RSS-Gen Issue 5 Amendment 2 (February 2021)

**Date of Receipt:** 2022-05-16

**Date of Test:** 2022-05-20 to 2022-05-21

**Date of Issue:** 2022-06-15

Test Result: Pass\*

Eric Lin Laboratory Manager

Ina Si



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<sup>\*</sup> In the configuration tested, the EUT complied with the standards specified above.



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	Revision Record							
Version Chapter Date Modifier Ren								
01		2022-06-15		Original				

Authorized for issue by:		
	Tonnie Tang	
	Tommie_Tang/Project Engineer	
	Eni fri	
	Eric Lin/Reviewer	-



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## 2 Test Summary

Radio Spectrum Technical Requirement						
Item	Standard	Method	Requirement	Result		
Antenna Requirement	47 CFR Part 15, Subpart C 15.247	N/A	47 CFR Part 15, Subpart C 15.203 & 15.247(b)(4)	Customer Declaration		

Radio Spectrum Matter Part						
Item	FCC Requirement	IC Requirement	Method	Result		
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart C 15.207	RSS-Gen Clause 8.8	ANSI C63.10 (2013) Section 6.2	Pass		
Conducted Peak Output Power	47 CFR Part 15, Subpart C 15.247(b)(3)	RSS-247 Clause 5.4(d)	ANSI C63.10 (2013) Section 11.9.2	Pass		
Minimum 6dB Bandwidth	47 CFR Part 15, Subpart C 15.247a(2)	RSS-247 Clause 5.2(a)	ANSI C63.10 (2013) Section 11.8.1	Pass		
Power Spectrum Density	47 CFR Part 15, Subpart C 15.247(e)	RSS-247 Clause 5.2(b)	ANSI C63.10 (2013) Section 11.10.3	Pass		
Conducted Band Edges Measurement	47 CFR Part 15, Subpart C 15.247(d)	RSS-247 Clause 5.5	ANSI C63.10 (2013) Section 11.13.3.2	Pass		
Conducted Spurious Emissions	47 CFR Part 15, Subpart C 15.247(d)	RSS-247 Clause 5.5	ANSI C63.10 (2013) Section 11.11	Pass		
Radiated Emissions which fall in the restricted bands	47 CFR Part 15, Subpart C 15.209 & 15.247(d)	RSS-247 Section 3.3 & RSS-Gen Section 8.9	ANSI C63.10 (2013) Section 6.10.5	Pass		
Radiated Spurious Emissions Below 1GHz	ANSI C63.10 (2013) Section 6.4,6.5	RSS-247 Section 3.3 & RSS-Gen Section 8.9	ANSI C63.10 (2013) Section 6.10.5	Pass		
Radiated Spurious Emissions Above 1GHz	ANSI C63.10 (2013) Section 6.6	RSS-247 Section 3.3 & RSS-Gen Section 8.9	ANSI C63.10 (2013) Section 6.4,6.5,6.6	Pass		
99% Bandwidth	-	RSS-Gen Section 6.7	ANSI C63.10 Section 6.9.3	Pass		

### **Declaration of EUT Family Grouping:**

Note: There are series models mentioned in this report, and they are the identical in electrical and electronic characters. Only the model DS-KH6320-WTDE1 was tested since their differences were the model number.



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### 4 General Information

#### 4.1 Details of E.U.T.

Power supply:	DC 12V,1A or DC 37-57V,0.35A by PoE
Serial Number:	Q13188210
Firmware Version:	V2.1.42build 220427
Operation Frequency:	802.11b/g/n(HT20): 2412MHz to 2462MHz;802.11n(HT40): 2422MHz to 2452MHz
Modulation Type:	802.11b: DSSS (CCK, DQPSK, DBPSK);802.11g/n: OFDM (64QAM, 16QAM, QPSK, BPSK)
Number of Channels:	802.11b/g/n(HT20):11;802.11n(HT40):7
Channel Spacing:	5MHz
Antenna Type:	PCB Antenna
Antenna Gain:	2.55dBi(Provided by the manufacturer)

#### 4.2 Power level setting using in test:

	The first section will be seen that the section of					
Channal	802.11b	802.11g	802.11n(HT20)			
Channel	Ant 1	Ant 1	Ant 1			
1	43	52	52			
6	44	53	53			
11	45	54	54			
Channal	802.11n(HT40)					
Channel	Ant 1					
3	49					
6	50					
9	51					

#### 4.3 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Notebook	LENOVO	K27	/
SecureCRT	VanDyke	V 6.2.0	/
Serial port adapter plate	/	Test Plate 3	/
Adapter	SHENZHEN HONOR ELECTRONIC CO., LTD.	ADS-12AM-12 12012EPCU	/
POE POWER SUPPLY	1	GRT-480050A-FW	/



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#### 4.4 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	8.4 x 10 <sup>-8</sup>
2	Timeout	2s
3	Duty Cycle	0.37%
4	Occupied Bandwidth	3%
5	RF Conducted Power	0.6dB
6	RF Power Density	2.9dB
7	Conducted Spurious Emissions	0.75dB
8	DE Dadiated Dawer	5.2dB (Below 1GHz)
0	RF Radiated Power	5.9dB (Above 1GHz)
		4.2dB (Below 30MHz)
9	Dadiated Courieus Emission Test	4.5dB (30MHz-1GHz)
9	Radiated Spurious Emission Test	5.1dB (1GHz-18GHz)
		5.4dB (Above 18GHz)
10	Temperature Test	1°C
11	Humidity Test	3%
12	Supply Voltages	1.5%
13	Time	3%

Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



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#### 4.5 Test Location

All tests were performed at:

Compliance Certification Services (Kunshan) Inc.

No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China.

Tel: +86 512 5735 5888 Fax: +86 512 5737 0818

No tests were sub-contracted.

Note:

1.SGS is not responsible for wrong test results due to incorrect information (e.g. max. clock frequency, highest internal frequency, antenna gain, cable loss, etc.) is provided by the applicant. (if applicable).

2.SGS is not responsible for the authenticity, integrity and the validity of the conclusion based on results of the data provided by applicant. (if applicable).

#### 4.6 Test Facility

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

#### CNAS (No. CNAS L4354)

CNAS has accredited Compliance Certification Services (Kunshan) Inc. to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

#### A2LA (Certificate No. 2541.01)

Compliance Certification Services (Kunshan) Inc. is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 2541.01.

#### • FCC (Designation Number: CN1172)

Compliance Certification Services (Kunshan) Inc. has been recognized as an accredited testing laboratory.

Designation Number: CN1172.ISED (CAB identifier: CN0072)

Compliance Certification Services (Kunshan) Inc. has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory.

Company Number: 2324E
• VCCI (Member No.: 1938)

The 3m and 10m Semi-anechoic chamber and Shielded Room of Compliance Certification Services (Kunshan) Inc. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-20134, R-11600, C-11707, T-11499, G-10216 respectively.

#### 4.7 Deviation from Standards

None

#### 4.8 Abnormalities from Standard Conditions

None



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## 5 Equipment List

Item	Equipment	Manufacturer	Model	Inventory No	Cal Date	Cal. Due Date	
Cond	Conducted Emission at Mains Terminals (150kHz-30MHz)						
EMI Test Receive		R&S	ESCI	KS301101	01/22/2022	01/21/2023	
	LISN	R&S	ENV216	KS301197	01/22/2022	01/21/2023	
	LISN	Schwarzbeck	NNLK 8129	KS301091	01/22/2022	01/21/2023	
	Pulse Limiter	R&S	ESH3-Z2	KUS1902E001	01/22/2022	01/21/2023	
	CE test Cable	Thermax	/	CZ301102	11/14/2021	11/13/2022	
	Test Software	Farad	EZ-EMC	/	N.C.R	N.C.R	
RF Co	onducted Test		l .				
1	Spectrum Analyzer	Keysight	N9020A	KUS1911E004-2	10/11/2021	10/10/2022	
2	Spectrum Analyzer	Keysight	N9020A	KUS2001M001-2	09/17/2021	09/16/2022	
3	Spectrum Analyzer	Keysight	N9030B	KSEM021-1	01/22/2022	01/21/2023	
4	Signal Generator	R&S	SMW200A	KSEM020-1	10/12/2021	10/11/2022	
5	Signal Generator	Agilent	N5182A	KUS2001M001-1	08/27/2021	08/26/2022	
6	Radio Communication Test Station	Anritsu	MT8000A	KSEM001-1	09/23/2021	09/22/2022	
7	Radio Communication Analyzer	Anritsu	MT8821C	KSEM002-1	04/01/2022	03/31/2023	
8	Universal Radio Communication Tester	R&S	CMW500	KUS1911E004-1	10/12/2021	10/11/2022	
9	Switcher	CCSRF	FY562	KUS2001M001-3	10/12/2021	10/11/2022	
10	AC Power Source	EXTECH	6605	KS301178	N.C.R	N.C.R	
11	DC Power Supply	Aglient	E3632A	KS301180	N.C.R	N.C.R	
12	Conducted Test Cable	Thermax	RF01-RF04	CZ301111- CZ301120	01/16/2022	01/15/2023	
13	Temp. / Humidity Chamber	TERCHY	MHK-120AK	KS301190	04/01/2021	03/31/2023	
14	Temperature & Humidity Recorder	Renke Control	RS-WS- N01-6J	KSEM024-5	04/01/2021	03/31/2023	
15	Software	BST	TST-PASS	/	N/A	N/A	
RF Ra	RF Radiated Test						
1	Spectrum Analyzer	R&S	FSV40	KUS1806E003	10/11/2021	10/10/2022	
2	Universal Radio Communication Tester	R&S	CMW500	KSEM009-1	04/01/2022	03/31/2023	
3	Signal Generator	Agilent	E8257C	KS301066	10/18/2021	10/17/2022	
4	Loop Antenna	COM-POWER	AL-130R	KUS1806E001	04/13/2021	04/12/2023	



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5	Bilog Antenna	TESEQ	CBL 6112D	KUS1806E005	06/29/2021	06/28/2023
6	Bilog Antenna	SCHWARZBECK	VULB9160	CZ301016	04/13/2021	04/12/2024
7	Horn-antenna(1-18GHz)	Schwarzbeck	BBHA9120D	KS301079	10/26/2020	10/25/2022
8	Horn-antenna(1-18GHz)	ETS-LINDGREN	3117	KS301186	02/22/2021	02/21/2023
9	Horn Antenna(18-40GHz)	Schwarzbeck	BBHA9170	CZ301058	03/22/2022	03/21/2023
10	Amplifier(30MHz~18GHz)	PANSHAN TECHNOLOGY	LNA:1~18G	KSEM010-1	01/22/2022	01/21/2023
11	Amplifier(18~40GHz)	COM-POWER	PAM-840A	KUS1710E001	01/22/2022	01/21/2023
12	RE Test Cable	REBES MICROWAVE	/	CZ301097	11/14/2021	11/13/2022
13	Temperature & Humidity Recorder	Renke Control	RS-WS- N01-6J	KSEM024-4	01/04/2022	31/03/2023
14	Software	Faratronic	EZ_EMC-v 3A1	1	N/A	N/A



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## 6 Radio Spectrum Technical Requirement

#### 6.1 Antenna Requirement

#### 6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203 & 15.247(b)(4)

#### 6.1.2 Conclusion

#### Standard Requirement:

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

#### 15.247(b) (4) requirement:

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

#### EUT Antenna:

The antenna is PCB Antenna on the main PCB and no consideration of replacement. The best case gain of the antenna is 2.55dBi.

Antenna location: Refer to internal photo.



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## 7 Radio Spectrum Matter Test Results

#### 7.1 Conducted Emissions at AC Power Line (150kHz-30MHz)

Test Requirement 47 CFR Part 15, Subpart C 15.207 Test Method: ANSI C63.10 (2013) Section 6.2

#### Limit:

Frequency of	Conducted limit(dBµV)				
emission(MHz)	Quasi-peak	Average			
0.15-0.5	66 to 56*	56 to 46*			
0.5-5	56	46			
5-30	60	50			
*Decreases with the logarithm of the frequency.					
Detector: Peak for pre-scan (9k	Hz resolution bandwidth) 0.15M	to 30MHz			

#### 7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 50 % RH Atmospheric Pressure: 1010 mbar

#### 7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Powered by adapter and keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.
Pre-scan	01	TX mode_Powered by PoE and keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.



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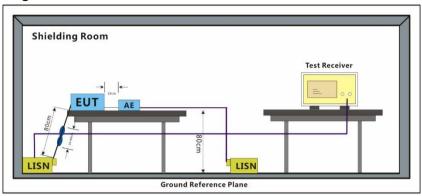
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#### 7.1.3 Test Setup Diagram



#### 7.1.4 Measurement Procedure and Data

- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a  $50 \text{ohm}/50 \mu\text{H} + 5 \text{ohm}$  linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane.
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
- 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

Remark: Level=Read Level+ Cable Loss+ LISN Factor



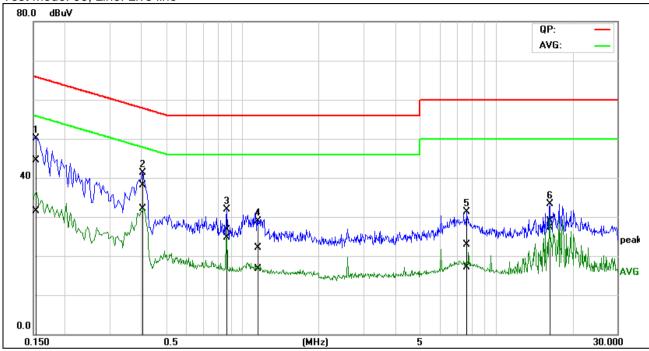
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Test Mode: 00; Line: Live line



No.	Frequency	QuasiPeak	Average	Correction	QuasiPeak	Average	QuasiPeak	Average	QuasiPeak	Average	Remark
		reading	reading	factor	result	result	limit	limit	margin	margin	
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1558	24.93	12.08	19.50	44.43	31.58	65.68	55.68	-21.25	-24.10	Pass
2*	0.4066	18.60	12.61	19.54	38.14	32.15	57.72	47.72	-19.58	-15.57	Pass
3	0.8694	7.11	5.16	19.59	26.70	24.75	56.00	46.00	-29.30	-21.25	Pass
4	1.1437	2.50	-2.94	19.61	22.11	16.67	56.00	46.00	-33.89	-29.33	Pass
5	7.6675	2.89	-2.78	19.98	22.87	17.20	60.00	50.00	-37.13	-32.80	Pass
6	16.2248	8.67	7.10	20.25	28.92	27.35	60.00	50.00	-31.08	-22.65	Pass



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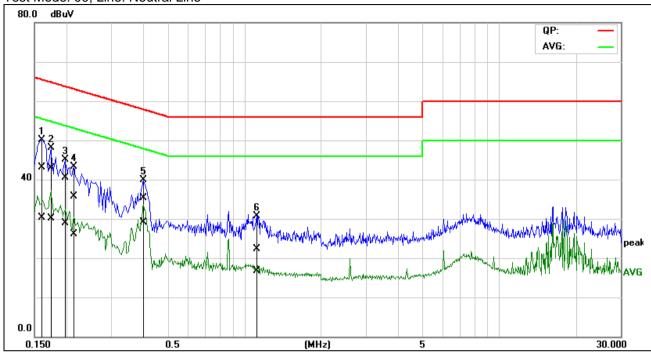
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Test Mode: 00; Line: Neutral Line



No.	Frequency	QuasiPeak	Average	Correction	QuasiPeak	Average	QuasiPeak	Average	QuasiPeak	Average	Remark
		reading	reading	factor	result	result	limit	limit	margin	margin	
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1586	23.60	10.77	19.48	43.08	30.25	65.53	55.54	-22.45	-25.29	Pass
2	0.1746	23.34	10.66	19.48	42.82	30.14	64.73	54.74	-21.91	-24.60	Pass
3	0.1971	20.97	9.36	19.49	40.46	28.85	63.73	53.73	-23.27	-24.88	Pass
4	0.2118	16.27	6.56	19.49	35.76	26.05	63.13	53.13	-27.37	-27.08	Pass
5*	0.4053	15.68	9.47	19.54	35.22	29.01	57.74	47.74	-22.52	-18.73	Pass
6	1.1168	2.66	-2.87	19.61	22.27	16.74	56.00	46.00	-33.73	-29.26	Pass



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#### 7.2 Conducted Peak Output Power

Test Requirement 47 CFR Part 15, Subpart C 15.247(b)(3)
Test Method: ANSI C63.10 (2013) Section 11.9.2

Limit:

Frequency range(MHz)	Output power of the intentional radiator(watt)
	1 for ≥50 hopping channels
902-928	0.25 for 25≤ hopping channels <50
	1 for digital modulation
	1 for ≥75 non-overlapping hopping channels
2400-2483.5	0.125 for all other frequency hopping systems
	1 for digital modulation
5725-5850	1 for frequency hopping systems and digital modulation

#### 7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 50 % RH Atmospheric Pressure: 1010 mbar

#### 7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description					
Final test	00	TX mode_Powered by adapter and keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.					



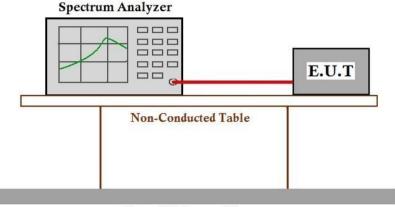
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#### 7.2.3 Test Setup Diagram



Ground Reference Plane

#### 7.2.4 Measurement Procedure and Data

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#### 7.3 Minimum 6dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.247a(2)
Test Method: ANSI C63.10 (2013) Section 11.8.1

Limit:

≥500 kHz

#### 7.3.1 E.U.T. Operation

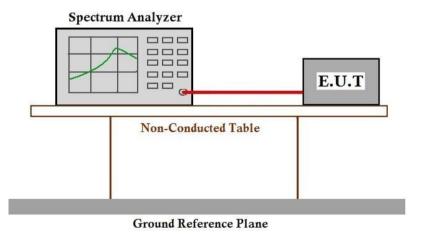
Operating Environment:

Temperature: 25 °C Humidity: 50 % RH Atmospheric Pressure: 1010 mbar

#### 7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Powered by adapter and keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.

#### 7.3.3 Test Setup Diagram



#### 7.3.4 Measurement Procedure and Data

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#### 7.4 Power Spectrum Density

Test Requirement 47 CFR Part 15, Subpart C 15.247(e)
Test Method: ANSI C63.10 (2013) Section 11.10.2

Limit:

≤8dBm in any 3 kHz band during any time interval of continuous transmission

#### 7.4.1 E.U.T. Operation

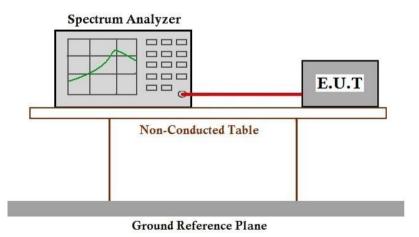
**Operating Environment:** 

Temperature: 25 °C Humidity: 50 % RH Atmospheric Pressure: 1010 mbar

#### 7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Powered by adapter and keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.

#### 7.4.3 Test Setup Diagram



#### 7.4.4 Measurement Procedure and Data

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#### 7.5 Conducted Band Edges Measurement

Test Requirement 47 CFR Part 15, Subpart C 15.247(d)
Test Method: ANSI C63.10 (2013) Section 11.13.3.2

#### Limit:

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c).

#### 7.5.1 E.U.T. Operation

**Operating Environment:** 

Temperature: 25 °C Humidity: 50 % RH Atmospheric Pressure: 1010 mbar

#### 7.5.2 Test Mode Description

	· · · · · · · · · · · · · · · · · · ·						
Pre-scan / Final test	Mode Code	Description					
Final test	00	TX mode_Powered by adapter and keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.					



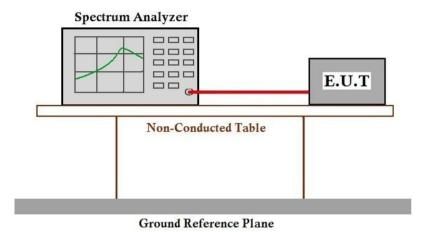
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#### 7.5.3 Test Setup Diagram



#### 7.5.4 Measurement Procedure and Data

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#### 7.6 Conducted Spurious Emissions

Test Requirement 47 CFR Part 15, Subpart C 15.247(d)
Test Method: ANSI C63.10 (2013) Section 11.11

#### Limit:

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c).

#### 7.6.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 50 % RH Atmospheric Pressure: 1010 mbar

#### 7.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description					
Final test	00	TX mode_Powered by adapter and keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.					



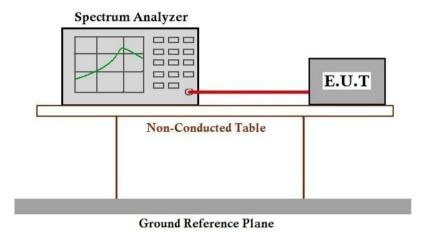
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#### 7.6.3 Test Setup Diagram



#### 7.6.4 Measurement Procedure and Data

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#### 7.7 Radiated Emissions which fall in the restricted bands

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209

Test Method: ANSI C63.10 (2013) Section 6.10.5

#### Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

#### 7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 22.9 °C Humidity: 54.1 % RH Atmospheric Pressure: 1010 mbar

#### 7.7.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Powered by adapter and keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.
Pre-scan	01	TX mode_Powered by PoE and keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.



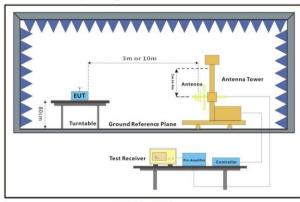
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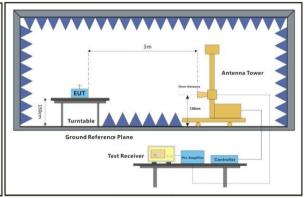


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#### 7.7.3 Test Setup Diagram





30MHz-1GHz Above 1GHz



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#### 7.7.4 Measurement Procedure and Data

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- h. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- j. Repeat above procedures until all frequencies measured was complete.

Remark 1: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

Remark 2: For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.



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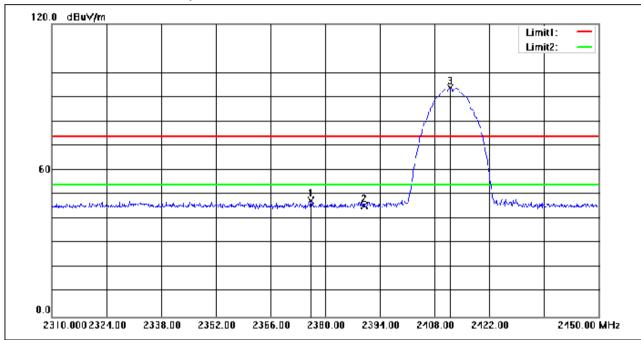
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Report No.: KSCR220500072901

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Test Mode: 00; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2376.360	61.50	-14.05	47.45	74.00	-26.55	peak
<u>'</u>							<u>'</u>
2	2390.000	59.56	-14.01	45.55	74.00	-28.45	peak
3	2412.060	107.77	-13.94	93.83	74.00	19.83	peak



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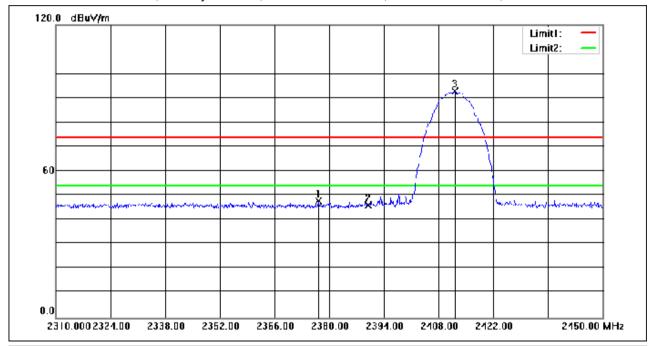
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Test Mode: 00; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
	(IVIITZ)	(ubuv)	lactor(db/fff)	(abuv/III)	(ubuv/m)	(ub)	
1	2377.200	61.75	-14.05	47.70	74.00	-26.30	peak
2	2390.000	60.09	-14.01	46.08	74.00	-27.92	peak
3	2412.200	106.89	-13.94	92.95	74.00	18.95	peak



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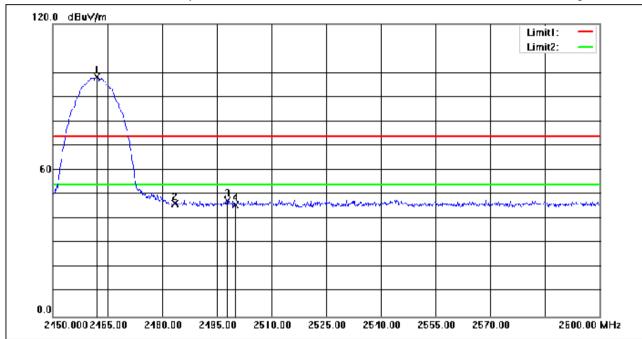
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Test Mode: 00; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:High



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2462.000	112.06	-13.78	98.28	74.00	24.28	peak
2	2483.500	60.13	-13.71	46.42	74.00	-27.58	peak
3	2497.850	61.34	-13.66	47.68	74.00	-26.32	peak
4	2500.000	59.47	-13.64	45.83	74.00	-28.17	peak



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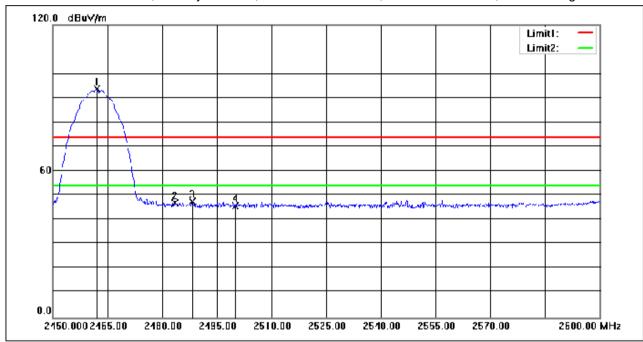
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Test Mode: 00; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:High



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2462.000	107.43	-13.78	93.65	74.00	19.65	peak
2	2483.500	60.59	-13.71	46.88	74.00	-27.12	peak
3	2488.250	61.37	-13.68	47.69	74.00	-26.31	peak
4	2500.000	59.41	-13.64	45.77	74.00	-28.23	peak



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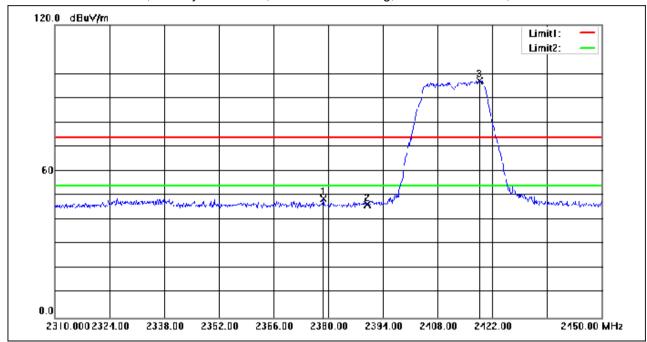
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Test Mode: 00; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:Low



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2378.740	62.90	-14.05	48.85	74.00	-25.15	peak
2	2390.000	60.23	-14.01	46.22	74.00	-27.78	peak
3	2418.640	110.97	-13.91	97.06	74.00	23.06	peak



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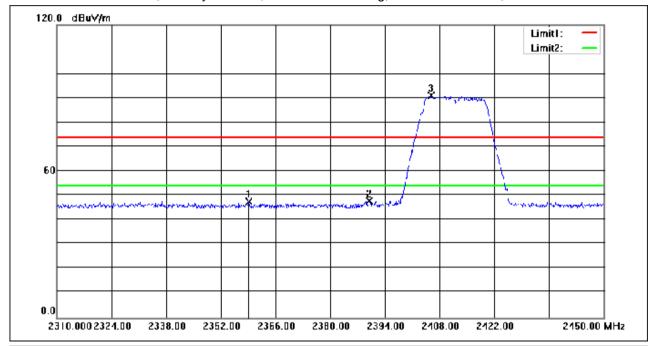
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Test Mode: 00; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:Low



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2359.140	61.53	-14.10	47.43	74.00	-26.57	peak
2	2390.000	61.89	-14.01	47.88	74.00	-26.12	peak
3	2405.760	104.95	-13.97	90.98	74.00	16.98	peak



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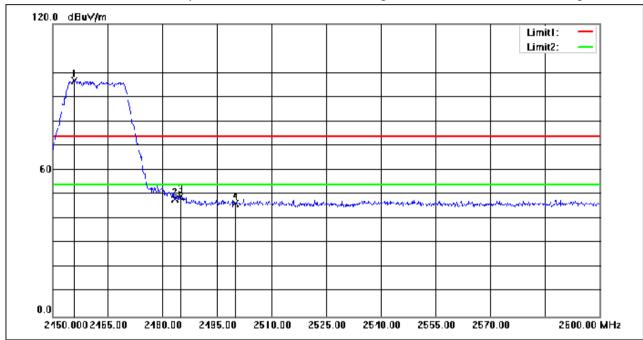
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Test Mode: 00; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:High



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2455.850	110.67	-13.79	96.88	74.00	22.88	peak
2	2483.500	61.93	-13.71	48.22	74.00	-25.78	peak
3	2485.100	62.99	-13.70	49.29	74.00	-24.71	peak
4	2500.000	60.08	-13.64	46.44	74.00	-27.56	peak



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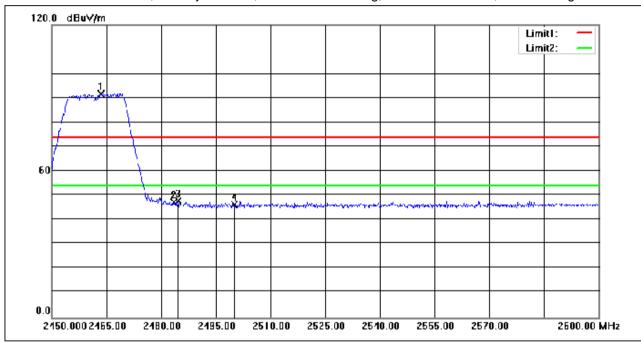
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Test Mode: 00; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:High



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2463.500	105.53	-13.77	91.76	74.00	17.76	peak
2	2483.500	60.83	-13.71	47.12	74.00	-26.88	peak
3	2484.650	61.42	-13.70	47.72	74.00	-26.28	peak
4	2500.000	59.87	-13.64	46.23	74.00	-27.77	peak



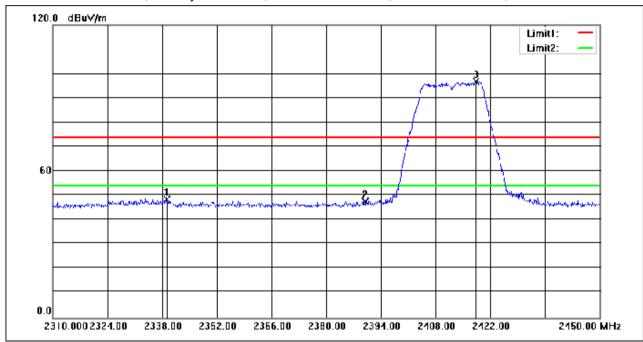
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Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2339.120	62.52	-14.17	48.35	74.00	-25.65	peak
2							<u>'</u>
2	2390.000	61.62	-14.01	47.61	74.00	-26.39	peak
3	2418.360	110.74	-13.92	96.82	74.00	22.82	peak



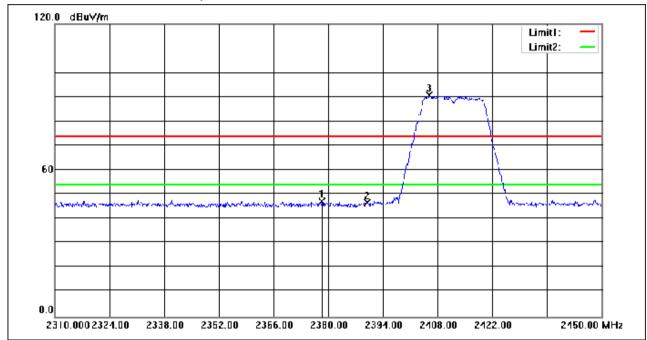
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Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2378.460	61.34	-14.05	47.29	74.00	-26.71	peak
2	2390.000	60.65	-14.01	46.64	74.00	-27.36	peak
3	2405.760	104.60	-13.97	90.63	74.00	16.63	peak



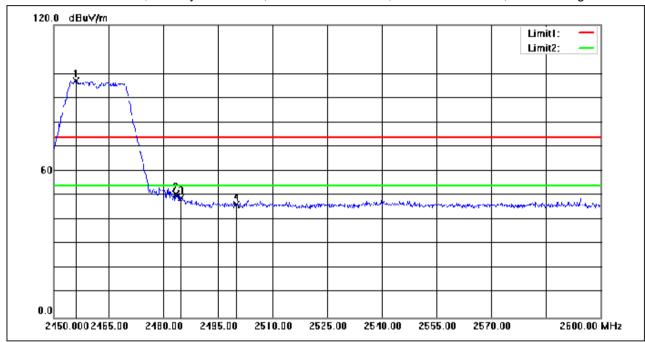
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Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2456.000	110.93	-13.79	97.14	74.00	23.14	peak
2	2483.500	64.38	-13.71	50.67	74.00	-23.33	peak
3	2484.800	62.63	-13.70	48.93	74.00	-25.07	peak
4	2500.000	59.87	-13.64	46.23	74.00	-27.77	peak



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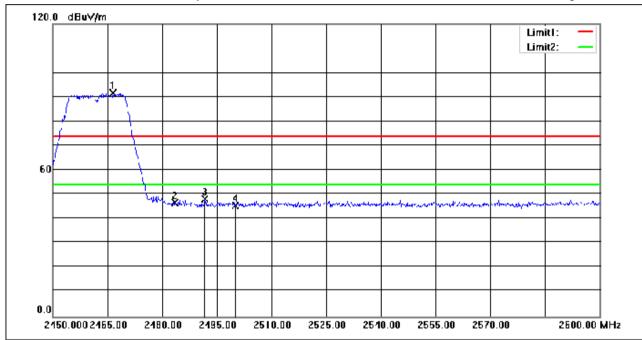
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Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2466.500	105.29	-13.76	91.53	74.00	17.53	peak
2	2483.500	60.44	-13.71	46.73	74.00	-27.27	peak
3	2491.700	61.71	-13.68	48.03	74.00	-25.97	peak
4	2500.000	59.15	-13.64	45.51	74.00	-28.49	peak



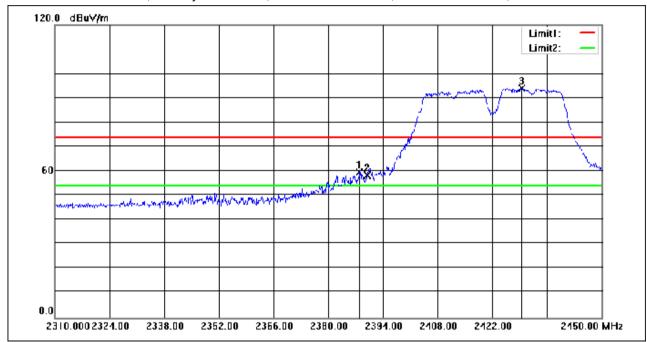
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Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4	\ /		` '	\	,	\ /	
1	2387.980	73.63	-14.02	59.61	74.00	-14.39	peak
2	2390.000	72.50	-14.01	58.49	74.00	-15.51	peak
3	2429.560	107.84	-13.88	93.96	74.00	19.96	peak



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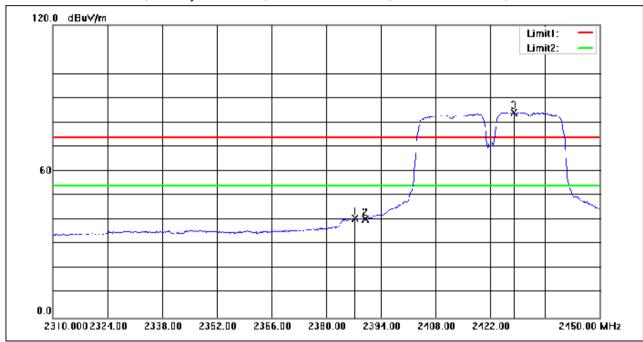
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Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2387.420	54.65	-14.02	40.63	54.00	-13.37	AVG
-							
2	2390.000	54.49	-14.01	40.48	54.00	-13.52	AVG
3	2428.020	97.97	-13.89	84.08	54.00	30.08	AVG



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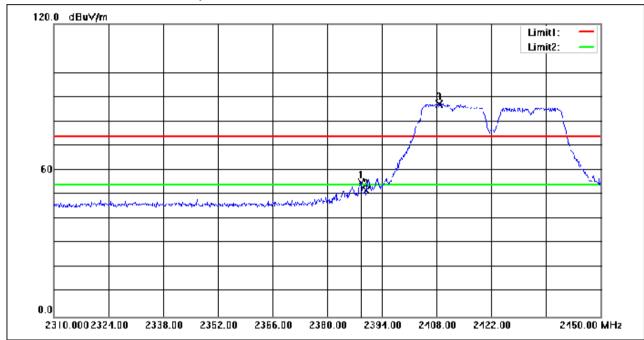
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Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2388.680	69.18	-14.01	55.17	74.00	-18.83	peak
2	2390.000	65.66	-14.01	51.65	74.00	-22.35	peak
3	2408.700	101.08	-13.95	87.13	74.00	13.13	peak



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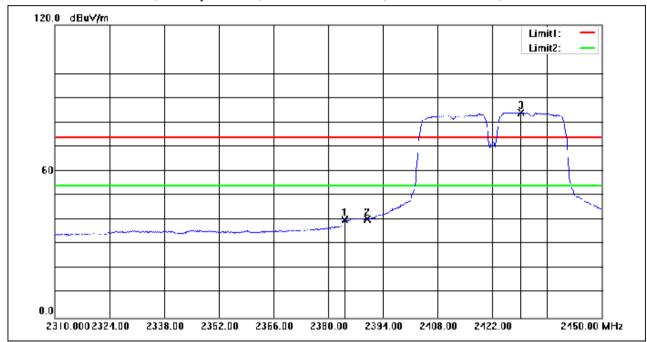
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Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2384.200	53.95	-14.03	39.92	54.00	-14.08	AVG
2	2390.000	54.42	-14.01	40.41	54.00	-13.59	AVG
3	2429.420	97.89	-13.88	84.01	54.00	30.01	AVG



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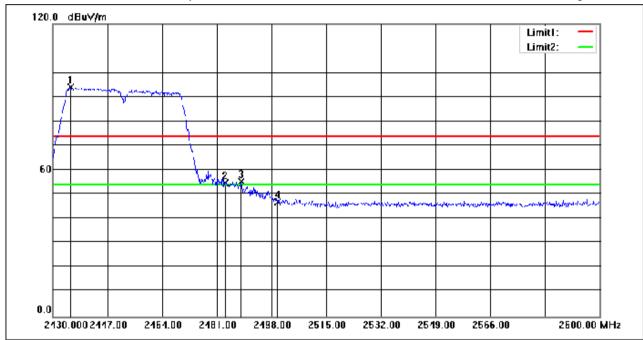
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Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:High



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2435.610	107.93	-13.86	94.07	74.00	20.07	peak
2	2483.500	68.47	-13.71	54.76	74.00	-19.24	peak
3	2488.650	69.04	-13.68	55.36	74.00	-18.64	peak
4	2500.000	60.60	-13.64	46.96	74.00	-27.04	peak



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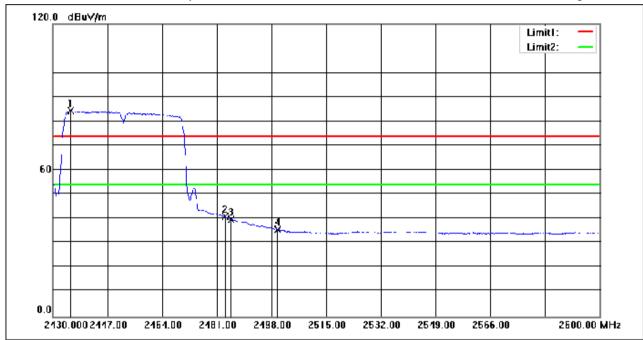
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Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:High



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2435.440	98.17	-13.86	84.31	54.00	30.31	AVG
2	2483.500	54.56	-13.71	40.85	54.00	-13.15	AVG
3	2485.420	53.49	-13.70	39.79	54.00	-14.21	AVG
4	2500.000	49.26	-13.64	35.62	54.00	-18.38	AVG



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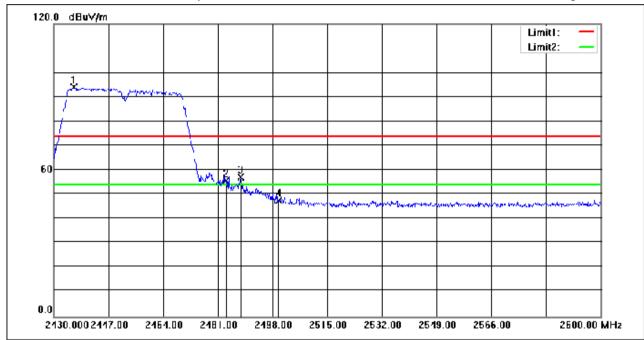
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Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:High



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2436.120	107.81	-13.86	93.95	74.00	19.95	peak
2	2483.500	69.42	-13.71	55.71	74.00	-18.29	peak
3	2488.140	70.74	-13.69	57.05	74.00	-16.95	peak
4	2500.000	61.17	-13.64	47.53	74.00	-26.47	peak



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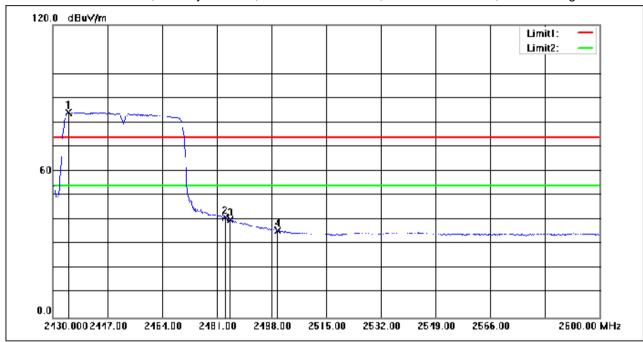
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Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:High



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2434.930	98.15	-13.86	84.29	54.00	30.29	AVG
2	2483.500	54.79	-13.71	41.08	54.00	-12.92	AVG
3	2485.250	53.77	-13.70	40.07	54.00	-13.93	AVG
4	2500.000	49.19	-13.64	35.55	54.00	-18.45	AVG



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#### 7.8 Radiated Spurious Emissions Below 1GHz

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209

Test Method: ANSI C63.10 (2013) Section 6.4,6.5

#### Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
960-1000	500	3

#### 7.8.1 E.U.T. Operation

Operating Environment:

Temperature: 22.9 °C Humidity: 54.1 % RH Atmospheric Pressure: 1010 mbar

#### 7.8.2 Test Mode Description

11012 100111	7.0.2 Test mode Description							
Pre-scan / Final test	Mode Code	Description						
Final test	00	TX mode_Powered by adapter and keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.						
Pre-scan	01	TX mode_Powered by PoE and keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.						



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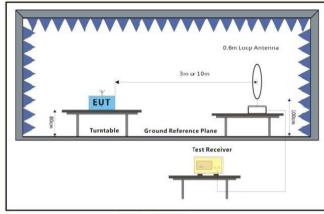
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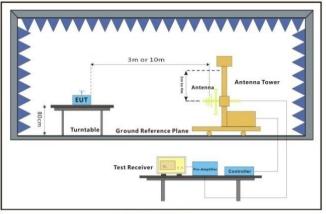


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#### 7.8.3 Test Setup Diagram





Below 30MHz 30MHz-1GHz



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#### 7.8.4 Measurement Procedure and Data

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using quasi-peak method as specified and then reported in a data sheet.
- g. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- i. Repeat above procedures until all frequencies measured was complete. Remark:
- 1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
- 2. Scan from 9kHz to 30MHz, the disturbance below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
- 3. The disturbance below 1GHz was very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.



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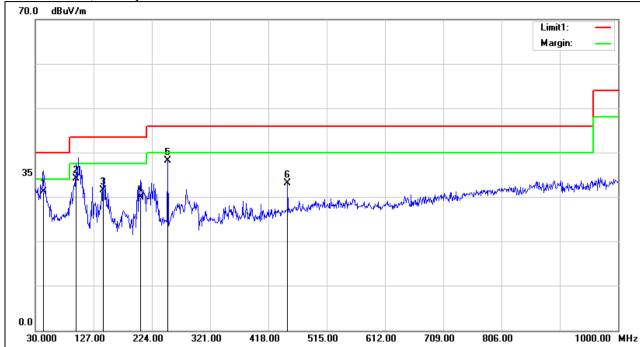
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Test Mode: 00; Polarity: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	43.5800	10.84	20.44	31.28	40.00	-8.72	QP
2	97.9000	17.53	16.67	34.20	43.50	-9.30	QP
3	142.5200	13.37	18.29	31.66	43.50	-11.84	QP
4	205.5700	13.10	16.97	30.07	43.50	-13.43	QP
5	250.1900	18.51	19.78	38.29	46.00	-7.71	QP
6	450.0100	8.98	24.25	33.23	46.00	-12.77	QP



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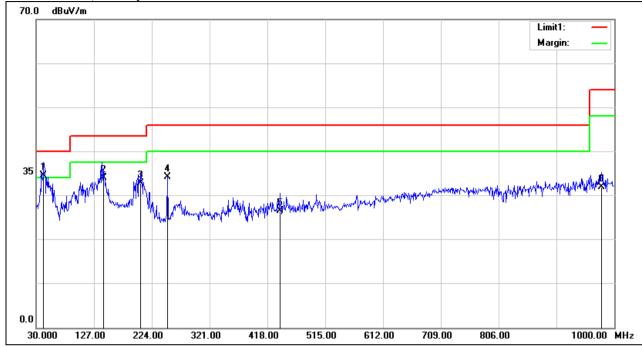
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No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	42.6100	13.61	20.94	34.55	40.00	-5.45	QP
2	142.5200	15.77	18.29	34.06	43.50	-9.44	QP
3	205.5700	15.89	16.97	32.86	43.50	-10.64	QP
4	250.1900	14.43	19.78	34.21	46.00	-11.79	QP
5	439.3400	2.42	24.02	26.44	46.00	-19.56	QP
6	978.6600	29.47	2.47	31.94	54.00	-22.06	QP



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#### 7.9 Radiated Spurious Emissions Above 1GHz

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209

Test Method: ANSI C63.10 (2013) Section 6.6

Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
Above 1000	500	3

#### 7.9.1 E.U.T. Operation

Operating Environment:

Temperature: 22.9 °C Humidity: 54.0 % RH Atmospheric Pressure: 1010 mbar

#### 7.9.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Powered by adapter and keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.
Pre-scan	01	TX mode_Powered by PoE and keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.



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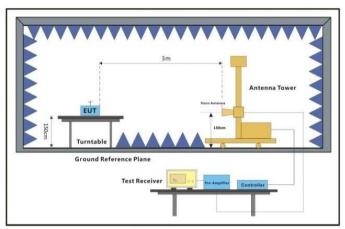
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#### 7.9.3 Test Setup Diagram



Above 1GHz



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#### 7.9.4 Measurement Procedure and Data

- a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet.
- g. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- i. Repeat above procedures until all frequencies measured was complete. Remark:
- 1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
- 2. Scan from 1GHz to 25GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
- 3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.



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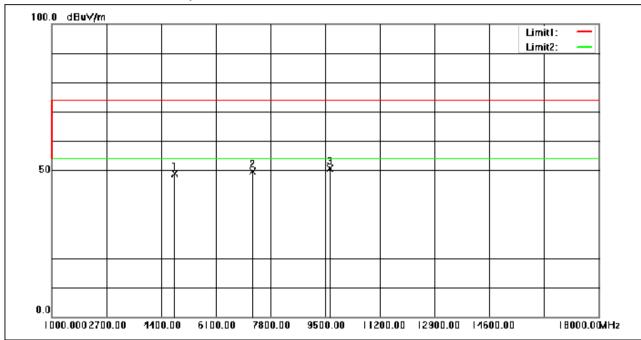
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Test Mode: 00; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4824.000	57.76	-8.78	48.98	74.00	-25.02	peak
2	7236.000	55.51	-5.86	49.65	74.00	-24.35	peak
3	9648.000	52.01	-1.31	50.70	74.00	-23.30	peak



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Test Mode: 00; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4824.000	57.02	-8.78	48.24	74.00	-25.76	peak
2	7236.000	55.15	-5.86	49.29	74.00	-24.71	peak
3	9648.000	51.75	-1.31	50.44	74.00	-23.56	peak



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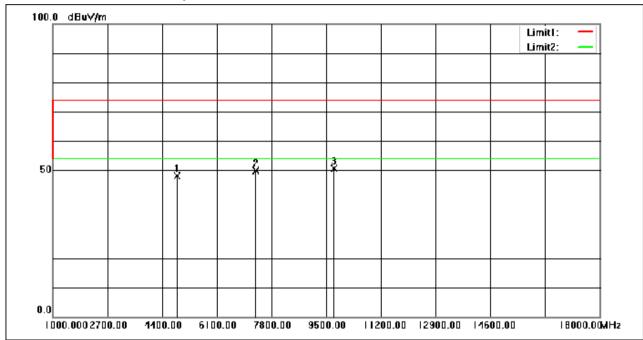
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Test Mode: 00; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:middle



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4874.000	56.72	-8.61	48.11	74.00	-25.89	peak
2	7311.000	55.56	-5.78	49.78	74.00	-24.22	peak
3	9748.000	52.17	-1.43	50.74	74.00	-23.26	peak



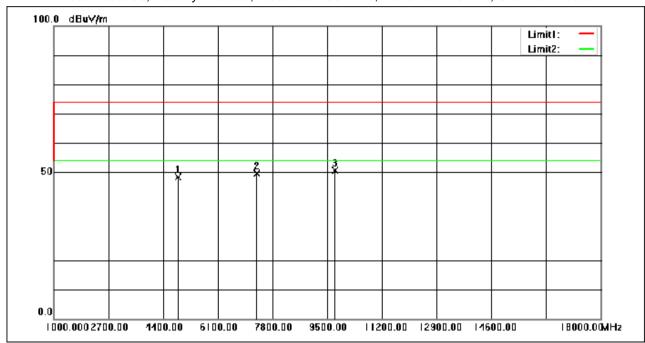
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Test Mode: 00; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:middle



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4874.000	56.92	-8.61	48.31	74.00	-25.69	peak
2	7311.000	55.46	-5.78	49.68	74.00	-24.32	peak
3	9748.000	52.06	-1.43	50.63	74.00	-23.37	peak



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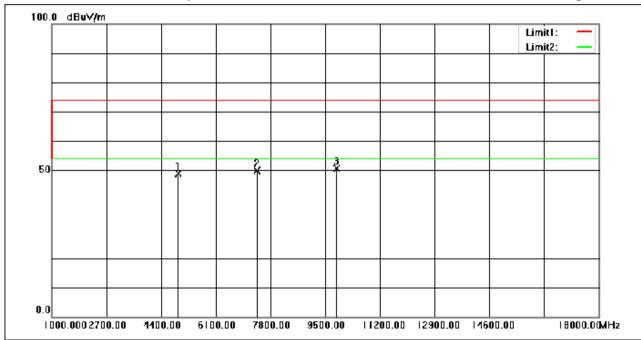
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Test Mode: 00; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:High



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4924.000	57.30	-8.44	48.86	74.00	-25.14	peak
2	7386.000	55.57	-5.69	49.88	74.00	-24.12	peak
3	9848.000	51.92	-1.27	50.65	74.00	-23.35	peak



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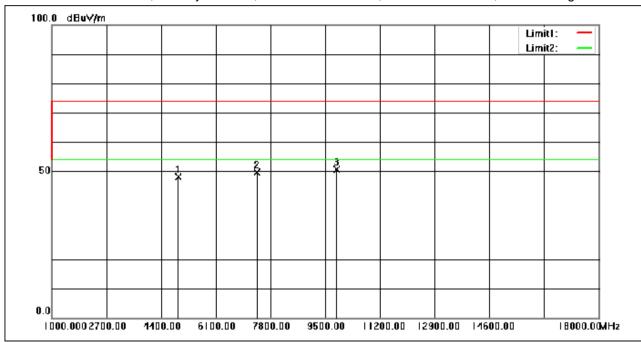
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Test Mode: 00; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:High



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4924.000	56.65	-8.44	48.21	74.00	-25.79	peak
2	7386.000	55.35	-5.69	49.66	74.00	-24.34	peak
3	9848.000	51.90	-1.27	50.63	74.00	-23.37	peak



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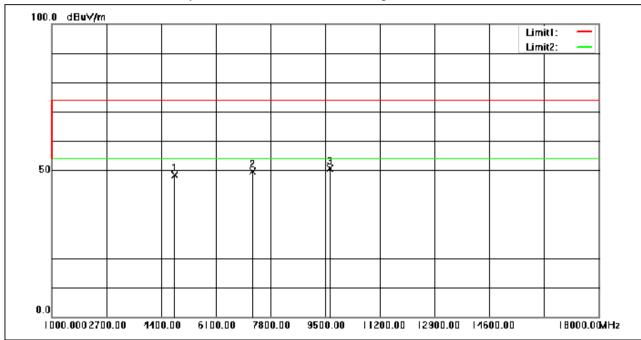
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Test Mode: 00; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4			` '	\	,	\ /	
1	4824.000	57.28	-8.78	48.50	74.00	-25.50	peak
2	7236.000	55.59	-5.86	49.73	74.00	-24.27	peak
3	9648.000	51.93	-1.31	50.62	74.00	-23.38	peak



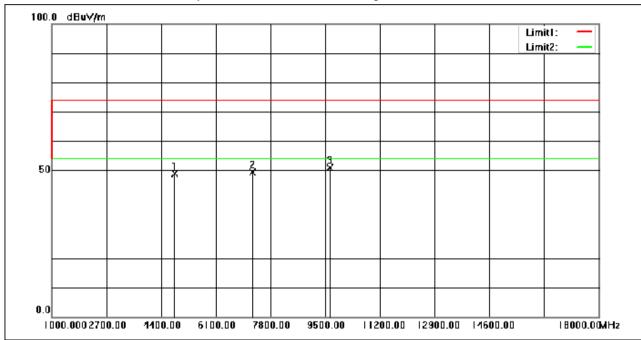
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Test Mode: 00; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:Low



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4824.000	57.70	-8.78	48.92	74.00	-25.08	peak
2	7236.000	55.22	-5.86	49.36	74.00	-24.64	peak
3	9648.000	52.25	-1.31	50.94	74.00	-23.06	peak



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Test Mode: 00; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:middle



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4874.000	57.04	-8.61	48.43	74.00	-25.57	peak
2	7311.000	55.63	-5.78	49.85	74.00	-24.15	peak
3	9748.000	51.80	-1.43	50.37	74.00	-23.63	peak



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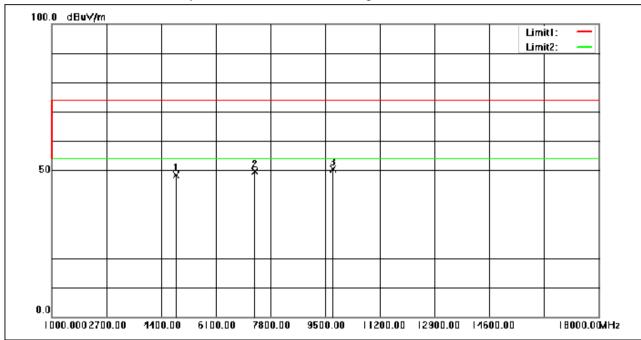
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Test Mode: 00; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:middle



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4	4874.000		, ,	\	, ,	-25.50	no ale
1	4074.000	57.11	-8.61	48.50	74.00	-20.00	peak
2	7311.000	55.38	-5.78	49.60	74.00	-24.40	peak
3	9748.000	51.88	-1.43	50.45	74.00	-23.55	peak



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Test Mode: 00; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:High



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4924.000	56.44	-8.44	48.00	74.00	-26.00	peak
2	7386.000	55.52	-5.69	49.83	74.00	-24.17	peak
3	9848.000	51.85	-1.27	50.58	74.00	-23.42	peak



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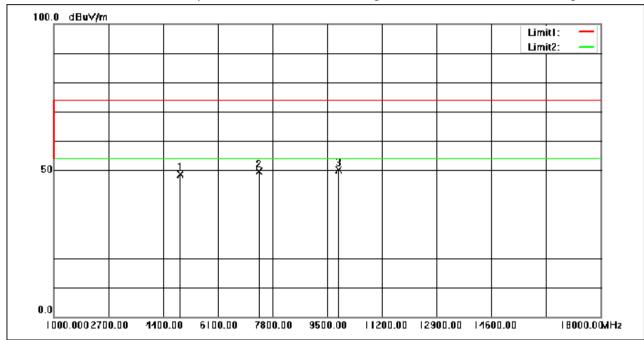
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Test Mode: 00; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:High



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4924.000	57.17	-8.44	48.73	74.00	-25.27	peak
2	7386.000	55.23	-5.69	49.54	74.00	-24.46	peak
3	9848.000	51.48	-1.27	50.21	74.00	-23.79	peak



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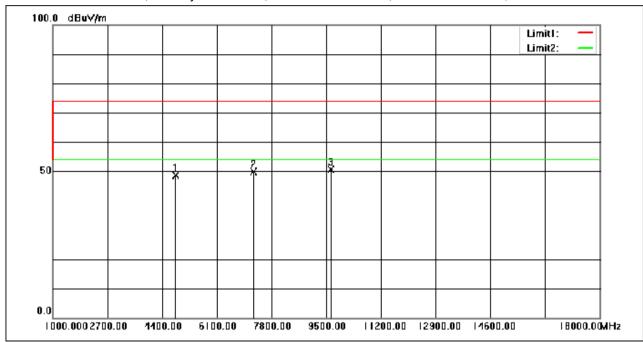
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Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4824.000	57.32	-8.78	48.54	74.00	-25.46	peak
2	7236.000	55.66	-5.86	49.80	74.00	-24.20	peak
3	9648.000	51.94	-1.31	50.63	74.00	-23.37	peak



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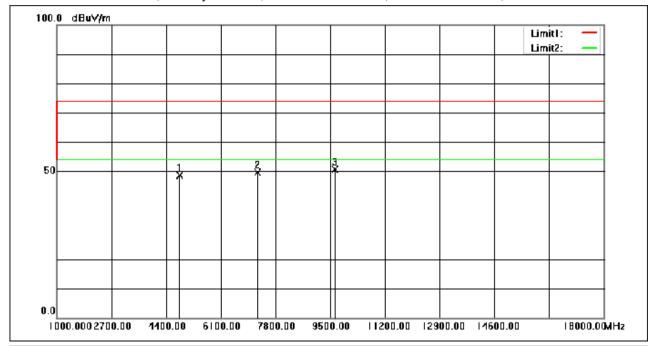
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Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



No.	Frequency	Reading	Correction	Result (dBuV/m)	Limit (dBuV/m)	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(abuv/m)	(abuv/m)	(dB)	
1	4824.000	57.30	-8.78	48.52	74.00	-25.48	peak
2	7236.000	55.40	-5.86	49.54	74.00	-24.46	peak
3	9648.000	51.87	-1.31	50.56	74.00	-23.44	peak



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Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:middle



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4874.000	56.98	-8.61	48.37	74.00	-25.63	peak
2	7311.000	54.80	-5.78	49.02	74.00	-24.98	peak
3	9748.000	51.63	-1.43	50.20	74.00	-23.80	peak



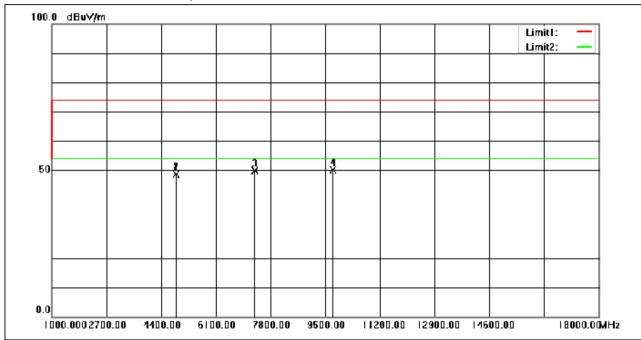
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Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:middle



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4874.000	57.16	-8.61	48.55	74.00	-25.45	peak
2	4874.000	57.16	-8.61	48.55	74.00	-25.45	peak
3	7311.000	55.59	-5.78	49.81	74.00	-24.19	peak
4	9748.000	51.62	-1.43	50.19	74.00	-23.81	peak



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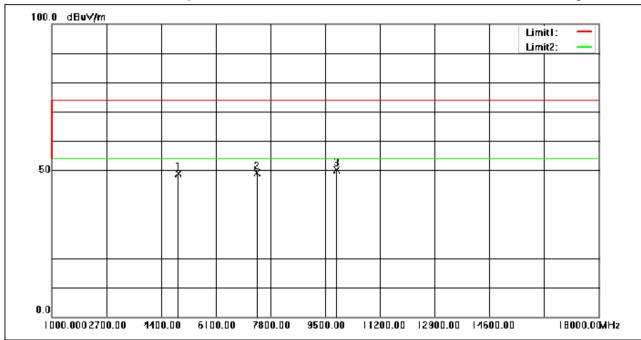
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Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4924.000	57.33	-8.44	48.89	74.00	-25.11	peak
2	7386.000	54.90	-5.69	49.21	74.00	-24.79	peak
3	9848.000	51.44	-1.27	50.17	74.00	-23.83	peak



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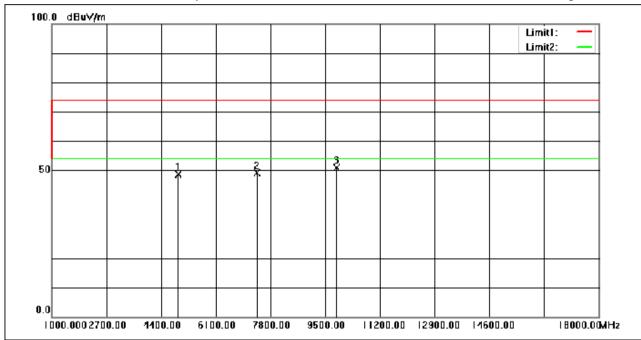
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Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4924.000	57.14	-8.44	48.70	74.00	-25.30	peak
2	7386.000	54.75	-5.69	49.06	74.00	-24.94	peak
3	9848.000	52.11	-1.27	50.84	74.00	-23.16	peak



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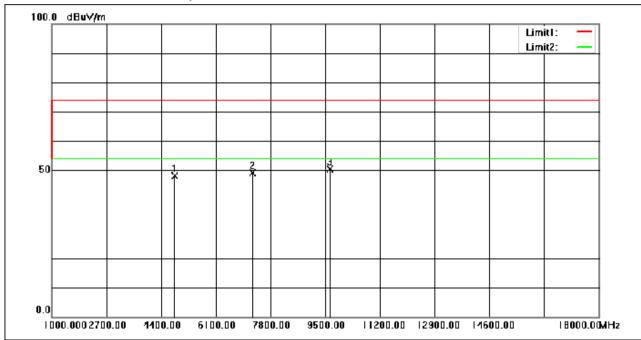
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Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4824.000	57.01	-8.78	48.23	74.00	-25.77	peak
2	7236.000	54.97	-5.86	49.11	74.00	-24.89	peak
3	9648.000	51.71	-1.31	50.40	74.00	-23.60	peak



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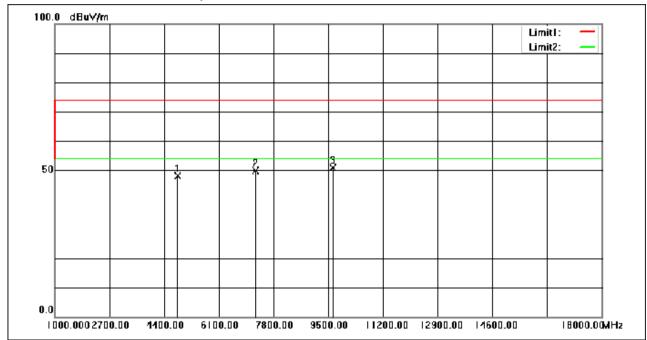
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Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4824.000	56.83	-8.78	48.05	74.00	-25.95	peak
2	7236.000	55.70	-5.86	49.84	74.00	-24.16	peak
3	9648.000	52.27	-1.31	50.96	74.00	-23.04	peak



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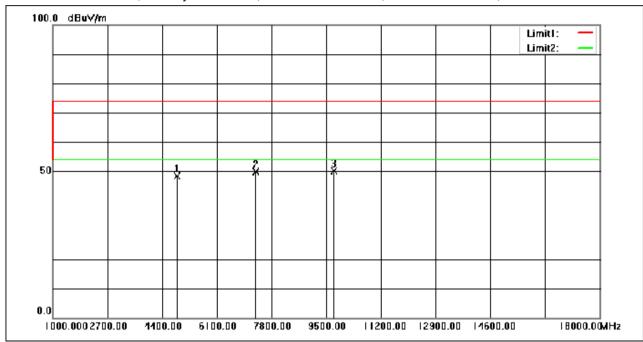
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Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:middle



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4874.000	57.01	-8.61	48.40	74.00	-25.60	peak
2	7311.000	55.64	-5.78	49.86	74.00	-24.14	peak
3	9748.000	51.67	-1.43	50.24	74.00	-23.76	peak



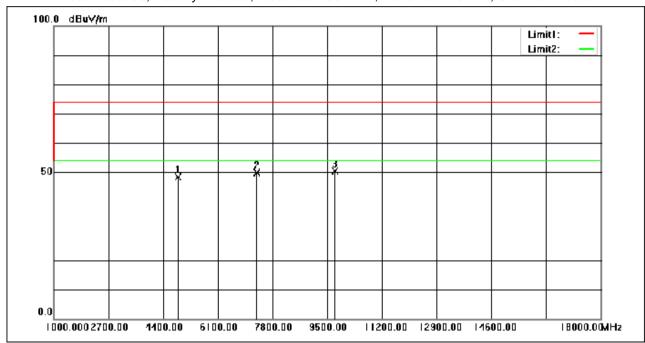
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Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:middle



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4874.000	56.93	-8.61	48.32	74.00	-25.68	peak
2	7311.000	55.76	-5.78	49.98	74.00	-24.02	peak
3	9748.000	51.74	-1.43	50.31	74.00	-23.69	peak



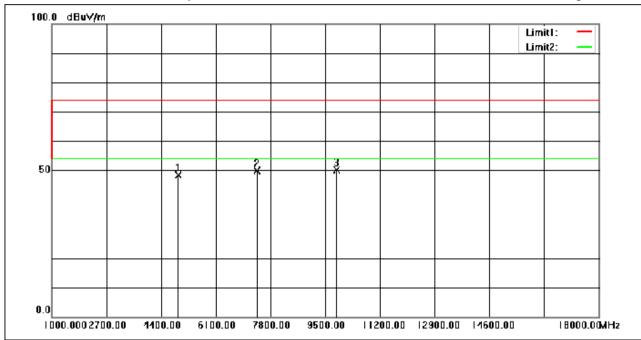
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Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:High



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4924.000	56.92	-8.44	48.48	74.00	-25.52	peak
2	7386.000	55.53	-5.69	49.84	74.00	-24.16	peak
3	9848.000	51.50	-1.27	50.23	74.00	-23.77	peak



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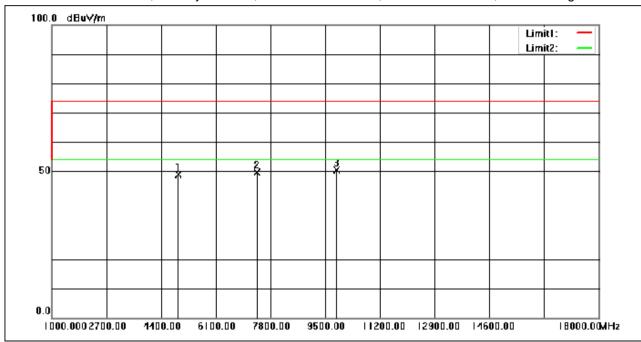
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Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:High



No.	Frequency	Reading	Correction	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4924.000	57.29	-8.44	48.85	74.00	-25.15	peak
2	7386.000	55.35	-5.69	49.66	74.00	-24.34	peak
3	9848.000	51.60	-1.27	50.33	74.00	-23.67	peak



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#### 7.10 99% Bandwidth

Test Requirement RSS-Gen Section 6.7
Test Method: ANSI C63.10 Section 6.9.3

#### 7.10.1 E.U.T. Operation

Operating Environment:

Temperature: 22.9 °C Humidity: 54.0 % RH Atmospheric Pressure: 1010 mbar

#### 7.10.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Powered by adapter and keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.

#### 7.10.3 Test Setup Diagram

#### 7.10.4 Measurement Procedure and Data

Please Refer to Appendix A for KSCR220500072901



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### 8 Test Setup Photo

Refer to Appendix - Test Setup Photo for KSCR2205000729AT

## 9 EUT Constructional Details (EUT Photos)

Refer to Appendix - Photographs of EUT Constructional Details for KSCR2205000729AT

- End of the Report -



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