

<b>Prüfbericht-Nr.:</b> <i>Test report no.:</i>	CN224FC7 (P15E-WiFi) 001	<b>Auftrags-Nr.:</b> <i>Order no.:</i>	238540837	Seite 1 von 41 Page 1 of 41	
<b>Kunden-Referenz-Nr.:</b> <i>Client reference no.:</i>	N/A	<b>Auftragsdatum:</b> <i>Order date:</i>	2022-03-16		
<b>Auftraggeber:</b> <i>Client:</i>	DEXATEK TECHNOLOGY LTD. 16F, No. 81, Sec. 1, Xintai 5th Rd., Xizhi Dist., New Taipei City 221, Taiwan R.O.C.				
<b>Prüfgegenstand:</b> <i>Test item:</i>	DK9185				
<b>Bezeichnung / Typ-Nr.:</b> <i>Identification / Type no.:</i>	DK9185				
<b>Auftrags-Inhalt:</b> <i>Order content:</i>	FCC Part 15E Test report (WiFi 5GHz)				
<b>Prüfgrundlage:</b> <i>Test specification:</i>	FCC 47CFR Part 15: Subpart E Section 15.407				
<b>Wareneingangsdatum:</b> <i>Date of sample receipt:</i>	2022-03-14				
<b>Prüfmuster-Nr.:</b> <i>Test sample no.:</i>	A003226793-004 A003226793-003				
<b>Prüfzeitraum:</b> <i>Testing period:</i>	2022-03-18 - 2022-05-16				
<b>Ort der Prüfung:</b> <i>Place of testing:</i>	EMC/RF Taipei Testing Site				
<b>Prüflaboratorium:</b> <i>Testing laboratory:</i>	Taipei Testing Laboratories				
<b>Prüfergebnis*:</b> <i>Test result*:</i>	Pass				
<b>überprüft von:</b> <i>compiled by:</i>	<i>Jack Wang</i>	<b>genehmigt von:</b> <i>authorized by:</i>	<i>Brenda Chen</i>		
<b>Datum:</b> <i>Date:</i>	2022-05-20	<b>Ausstellungsdatum:</b> <i>Issue date:</i>	2022-05-20		
<b>Stellung / Position:</b>	Project Manager	<b>Stellung / Position:</b>	Senior Project Manager		
<b>Sonstiges / Other:</b>					
<b>Zustand des Prüfgegenstandes bei Anlieferung:</b> <i>Condition of the test item at delivery:</i>	Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>				
* Legende:	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend N/A = nicht anwendbar	4 = ausreichend N/T = nicht getestet	5 = mangelhaft
* Legend:	1 = very good P(ass) = passed a.m. test specification(s)	2 = good F(ail) = failed a.m. test specification(s)	3 = satisfactory N/A = not applicable	4 = sufficient N/T = not tested	5 = poor
<b>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.</b> <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>					

## TEST SUMMARY

Report Section	FCC Clause	Test Item	Result
5.1.1	15.407(a) & 15.203	Antenna Requirement	Pass
5.1.2	15.407(a)	Maximum Conducted Output Power	Pass
5.1.3	15.407 (h)(1)	Transmit Power Control (TPC)	Pass
5.1.4	15.407(a)	26 dB Bandwidth	Pass
5.1.4	2.1049	99% Occupied Bandwidth	Pass
5.1.5	15.407(e)	6 dB Bandwidth (U-NII-3 Band only)	Pass
5.1.6	15.407(g)	Frequency Stability	Pass
5.1.7	15.407(a)	Power Spectral Density	Pass
5.1.8	15.407(b) & 15.205 & 15.209	Radiated Spurious Emissions and Band Edges	Pass
5.1.9	15.407(h) & KDB 905462 D02	Dynamic Frequency Selection	Pass
5.2.1	15.207	Mains Conducted Emission	Pass

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

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**APPENDIX A - TEST RESULT OF CONDUCTED**

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

**APPENDIX SP - PHOTOGRAPHS OF TEST SETUP**

**APPENDIX EP - PHOTOGRAPHS OF EUT**

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## HISTORY OF THIS TEST REPORT

Report No.	Description	Date Issued
CN224FC7 (P15E-WiFi) 001	Original Release	2022-05-20

## 1. General Remarks

### 1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

**Appendix A - Test Result of Conducted**

**Appendix B - Test Result of Radiated Emissions & Mains Conducted Emission**

**Appendix SP - Photographs of Test Setup**

**Appendix EP - Photographs of EUT**

### Applied Standard and Test Levels

Radio
FCC 47CFR Part 15: Subpart E Section 15.407
FCC 47CFR Part 2: Subpart J Section 2.1049
ANSI C63.10:2013
KDB 789033 D02 General UNII Test Procedures New Rules v02r01
KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02

### 1.2 Decision Rule of Conformity

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

## 2. Test Sites

### 2.1 Test Laboratory

Taipei Testing Laboratories

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

### 2.2 Test Facility

Taipei Testing Laboratories

No.458-18, Sec. 2, Fenliao Rd., Linkou Dist.,  
New Taipei City 244  
Taiwan (R.O.C.)  
FCC Registration No.: 226631  
ISED Registration No.: 25563

## 2.3 Traceability

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

## 2.4 Calibration

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

## 2.5 Measurement Uncertainty

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

### Emission Measurement Uncertainty

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



### 3. General Product Information

#### 3.1 Product Function and Intended Use

The EUT is a DK9185. It contains a WLAN compatible module enabling the user to communicate data through a Wireless interface.

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

#### 3.2 System Details and Ratings

##### Basic Information of EUT

Item	EUT information
Kind of Equipment/Test Item	DK9185
Type Identification	DK9185
FCC ID	SZY-DK9185

##### Technical Specification of EUT

Item	EUT information
Operating Frequency	Band 1: 5180 MHz ~ 5240 MHz Band 2: 5260 MHz ~ 5320 MHz Band 3: 5500 MHz ~ 5720 MHz Band 4: 5745 MHz ~ 5825 MHz
Channel Number	Band 1: 4 for 802.11a, 802.11n HT20 2 for 802.11n HT40 Band 2: 4 for 802.11a, 802.11n HT20 2 for 802.11n HT40 Band 3: 12 for 802.11a, 802.11n HT20 6 for 802.11n HT40 Band 4: 5 for 802.11a, 802.11n HT20 2 802.11n HT40
Data Rate	802.11a: 54.0 / 48.0 / 36.0 / 24.0 / 18.0 / 12.0 / 9.0 / 6.0 Mbps 802.11n: up to MCS7
Operation Voltage	3.3 Vdc
Modulation	OFDM (BPSK, QPSK, 16QAM, 64QAM)
Maximum Output Power (mW)	5180 ~ 5240 MHz: 54.08 5260 ~ 5320 MHz: 61.09 5500 ~ 5720 MHz: 80.17 5745 ~ 5825 MHz: 81.28
Maximum EIRP (mW)	5260 ~ 5320 MHz: 73.45 5500 ~ 5720 MHz: 167.49
DFS Mode	Slave without radar detection
TPC Function	Not Supported
Antenna Information	Refer to 5.1.1
Accessory Device	Refer to 4.4

### **3.3 Noise Generating and Noise Suppressing Parts**

Refer to the Circuit Diagram.

### **3.4 Submitted Documents**

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

## 4. Test Set-up and Operation Modes

### 4.1 Principle of Configuration Selection

The test modes were adapted accordingly in reference to the instructions for use.

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

#### Table for Parameters of Test Software Setting

802.11a		802.11n HT20		802.11n HT40	
Channel	Power Setting	Channel	Power Setting	Channel	Power Setting
36	125	36	123	38	108
40	127	40	127	46	122
48	114	48	112	54	124
52	114	52	112	62	114
60	121	60	124	102	99
64	121	64	122	110	114
100	110	100	111	134	112
116	112	116	113	142	116
140	112	140	112	151	118
144	113	144	114	159	122
149	115	149	116		
157	119	157	120		
165	121	165	120		

## 4.2 Carrier Frequency and Channel

Band	Channel	Frequency (MHz)	802.11a 802.11n HT20	802.11n HT40
U-NII-1 (Band 1)	36	5180	V	
	38	5190		V
	40	5200	V	
	42	5210		
	44	5220	V	
	46	5230		V
	48	5240	V	
U-NII-2A (Band 2)	52	5260	V	
	54	5270		V
	56	5280	V	
	58	5290		
	60	5300	V	
	62	5310		V
	64	5320	V	
U-NII-2C (Band 3)	100	5500	V	
	102	5510		V
	104	5520	V	
	106	5530		
	108	5540	V	
	110	5550		V
	112	5560	V	
	116	5580	V	
	118	5590		V
	120	5600	V	
	122	5610		
	124	5620	V	
	126	5630		V
	128	5640	V	
	132	5660	V	
	134	5670		V
	136	5680	V	
140	5700	V		
Straddle Channel	138	5690		
	142	5710		V
	144	5720	V	
U-NII-3 (Band 4)	149	5745	V	
	151	5755		V
	153	5765	V	
	155	5775		
	157	5785	V	
	159	5795		V
	161	5805	V	
	165	5825	V	

### 4.3 Test Operation and Test Software

Setup for testing: Test samples are provided with a USB interface which makes it possible to control them through a test software installed on a notebook computer.  
 This software was running on the laptop computer connected to the EUT. It was used to enable the operation modes listed as below.

Test Software	AmebaD_mptool_2V0
---------------	-------------------

The samples were used as follows:

A003226793-004

A003226793-003

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

EUT Configure Mode	Applicable To				Description
	Antenna Port Conducted Measurement	Radiated Spurious Emissions above 1 GHz	Radiated Spurious Emissions below 1 GHz	Mains Conducted Emission	
-	√	√	√	√	-

Note:

1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when position on **Z-plane**.
2. "-" means no effect.

#### Antenna Port Conducted Measurement

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

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

EUT Configure Mode	Mode	Frequency (MHz)	Available Channel	Tested Channel	Date Rate (Mbps)
-	802.11a	5180-5240	36 to 48	36, 40, 48	6.0
-		5260-5320	52 to 64	52, 60, 64	
-		5500-5720	100 to 144	100, 116, 140, 144	
-		5745-5825	149 to 165	149, 157, 165	
-	802.11n HT20	5180-5240	36 to 48	36, 40, 48	6.0
-		5260-5320	52 to 64	52, 60, 64	
-		5500-5720	100 to 144	100, 116, 140, 144	
-		5745-5825	149 to 165	149, 157, 165	
-	802.11n HT40	5180-5240	38 to 46	38, 46	MCS0
-		5260-5320	54 to 62	54, 62	
-		5500-5720	102 to 142	102, 110, 134, 142	
-		5745-5825	151 to 159	151, 159	

**Radiated Spurious Emissions (Above 1 GHz)**

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

EUT Configure Mode	Mode	Frequency (MHz)	Available Channel	Tested Channel	Date Rate (Mbps)
-	802.11a	5180-5240	36 to 48	36, 40, 48	6.0
-		5260-5320	52 to 64	52, 60, 64	
-		5500-5720	100 to 144	100, 116, 140, 144	
-		5745-5825	149 to 165	149, 157, 165	
-	802.11n HT20	5180-5240	36 to 48	36, 40, 48	MCS0
-		5260-5320	52 to 64	52, 60, 64	
-		5500-5720	100 to 144	100, 116, 140, 144	
-		5745-5825	149 to 165	149, 157, 165	
-	802.11n HT40	5180-5240	38 to 46	38, 46	MCS0
-		5260-5320	54 to 62	54, 62	
-		5500-5720	102 to 142	102, 110, 134, 142	
-		5745-5825	151 to 159	151, 159	

**Radiated Spurious Emissions (Below 1 GHz)**

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

EUT Configure Mode	Mode	Frequency (MHz)	Available Channel	Tested Channel	Date Rate (Mbps)
-	802.11a	5500-5720	102 to 142	116	6.0

**Mains Conducted Emission Test**

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

EUT Configure Mode	Mode	Frequency (MHz)	Available Channel	Tested Channel	Date Rate (Mbps)
-	802.11a	5500-5720	102 to 142	116	6.0

**Test Condition**

Test Item	Ambient Temperature	Relative Humidity	Tested by
Conducted Measurement	18-23 °C	59-68 %	Stanislas Charles & Andy Chen
Radiated Spurious Emissions above 1 GHz	20.1-20.8 °C	56-59 %	Ray Huang
Radiated Spurious Emissions below 1 GHz	20.1-20.8 °C	56-59 %	Ray Huang
Mains Conducted Emission	21.9 °C	59 %	Ray Huang

## 4.4 Special Accessories and Auxiliary Equipment

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

### Accessory of EUT

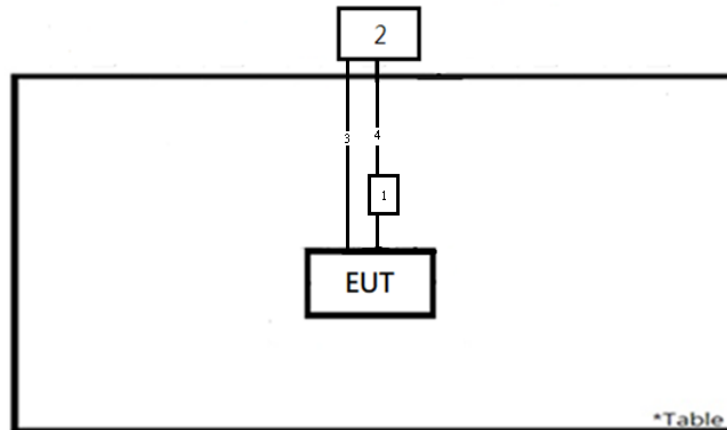
None

### Support Unit

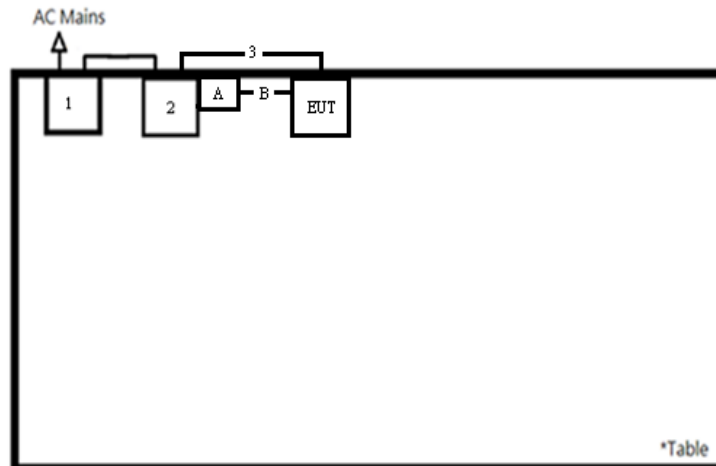
Support Unit								
No	Description	Brand	Model	S/N	Shielded	Ferrite Core (Qty)	Length (cm)	Remark
1	Fixture	BSH	N/A	N/A	-	-	-	Radiated
2	Notebook	Lenovo	81BL	MP1DCD6Y	-	-	-	
3	USB to Micro	TUV	TUV-01	N/A	NO	NO	200	
4	USB to USB	TUV	TUV-02	N/A	NO	NO	300	
A	Fixture	Dexatek	Dexatek-01	N/A	-	-	-	Mains Conducted
B	Fixture Cable	Dexatek	Dexatek-02	N/A	NO	NO	10	
1	Adapter	HP	PPP009D	N/A	YES	NO	179	
2	Notebook	Lenovo	81BL	MP1DCD6Y	-	-	-	
3	USB to Micro	TUV	TUV-01	N/A	NO	NO	200	

## 4.5 Test Setup Diagram

<Radiated Spurious Emissions mode>



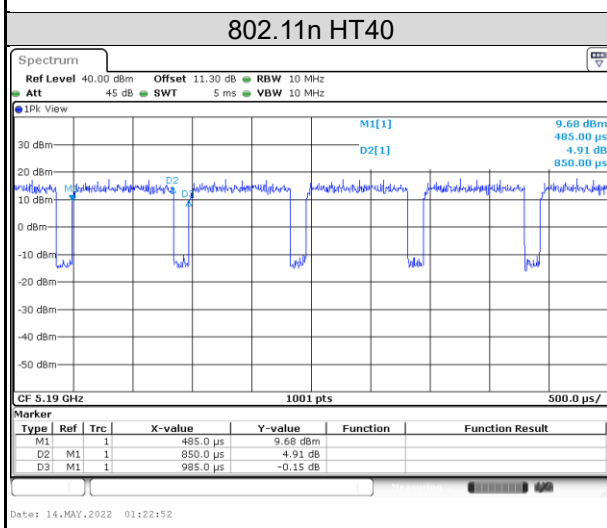
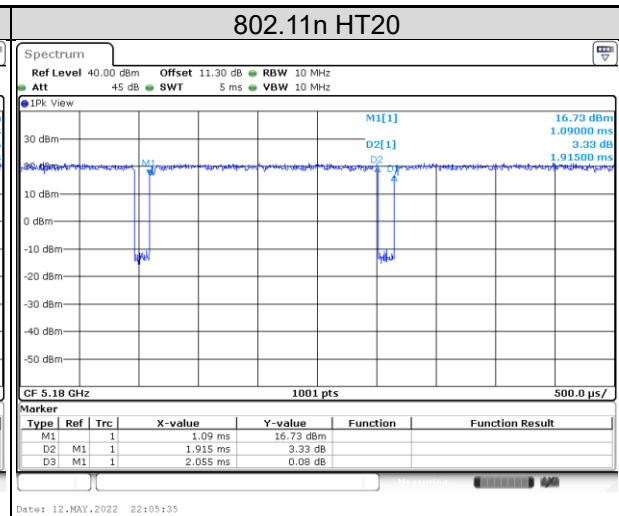
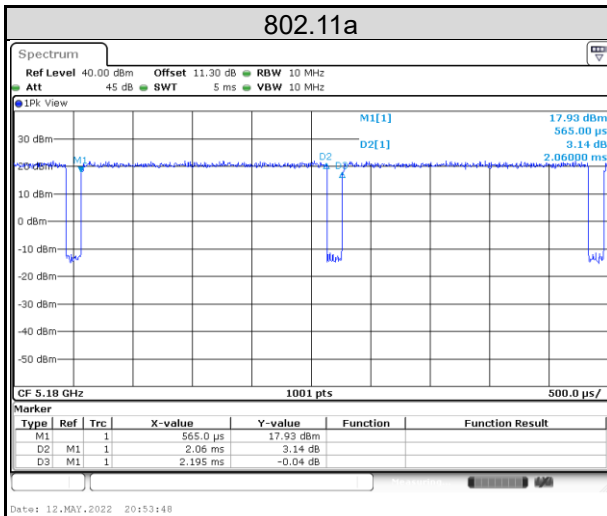
<Mains Conducted Emission mode>





## 4.6 Duty Cycle of Test Signal

Mode	On + Off Time (ms)	On Time (ms)	Duty Cycle (%)	Duty Factor (dB)
802.11a	2.195	2.06	93.85	0.28
802.11n HT20	2.055	1.915	93.19	0.31
802.11n HT40	0.985	0.85	86.29	0.64



## 5. Test Results

### 5.1 Transmitter Requirement & Test Suites

#### 5.1.1 Antenna Requirement

**Requirement** Use of approved antennas only

According to the manufacturer declaration, the EUT's antenna specifications are described as below. The antenna is used with no possibility of replacement with a non-approved antenna by the end-user. Therefore, the EUT is considered to comply with this provision.

Chip antenna with 0.8 dBi gain (5180 ~ 5240 MHz)  
Chip antenna with 0.8 dBi gain (5260 ~ 5320 MHz)  
Chip antenna with 3.2 dBi gain (5500 ~ 5720 MHz)  
Chip antenna with 0.2 dBi gain (5745 ~ 5825 MHz)

Refer to EUT photo for details.

## 5.1.2 Maximum Conducted Output Power

### Limit

Operation Band	EUT Category	Limit
U-NII-1	Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p $\leq$ 125 mW (21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
	Fixed point-to-point Access Point	1 Watt (30 dBm)
	Indoor Access Point	1 Watt (30 dBm)
	Mobile and Portable client device	250 mW (24 dBm)
U-NII-2A	---	250 mW (24 dBm) or 11 dBm + 10 log B*
U-NII-2C	---	250 mW (24 dBm) or 11 dBm + 10 log B*
U-NII-3	---	1 Watt (30 dBm)

Note: B\* is the 26 dB emission bandwidth in megahertz

**Kind of Test Site**                      Shielded room

### Test Setup



### Test Instruments

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date	Test Date	
						From	Until
Power Meter	Anritsu	ML2495A	1901008	2022/3/15	2023/3/14	2022/3/18	2022/5/14
Power Sensor	Anritsu	MA2411B	1725269	2022/3/15	2023/3/14	2022/3/18	2022/5/14

### Test Procedures

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst and set the detector to AVERAGE. Duty factor is not added to measured value.

**Test Result**
**<802.11a>**

Channel	Channel Frequency (MHz)	Average Output Power		Limit (dBm)
		(dBm)	(mW)	
36	5180	16.44	44.06	24.00
40	5200	17.33	54.08	24.00
48	5240	14.99	31.55	24.00
52	5260	15.02	31.77	24.00
60	5300	17.76	59.70	24.00
64	5320	17.67	58.48	24.00
100	5500	18.53	71.29	24.00
116	5580	19.04	80.17	24.00
140	5700	18.66	73.45	24.00
144	5720 (U-NII-2C)	18.60	72.44	24.00
144	5720 (U-NII-3)	18.60	72.44	30.00
149	5745	18.74	74.82	30.00
157	5785	18.57	71.94	30.00
165	5825	18.87	77.09	30.00

**Note:**
**For U-NII-2A, U-NII-2C Band:**

1.  $11 \text{ dBm} + 10\log(35.88) = 26.55 \text{ dBm} > 24 \text{ dBm}$ .
2.  $11 \text{ dBm} + 10\log(39.64) = 26.98 \text{ dBm} > 24 \text{ dBm}$ .
3.  $11 \text{ dBm} + 10\log(43.08) = 27.34 \text{ dBm} > 24 \text{ dBm}$ .
4.  $11 \text{ dBm} + 10\log(40.52) = 27.08 \text{ dBm} > 24 \text{ dBm}$ .
5.  $11 \text{ dBm} + 10\log(38.84) = 26.89 \text{ dBm} > 24 \text{ dBm}$ .
6.  $11 \text{ dBm} + 10\log(40.60) = 27.09 \text{ dBm} > 24 \text{ dBm}$ .
7.  $11 \text{ dBm} + 10\log(24.98) = 24.98 \text{ dBm} > 24 \text{ dBm}$ .

**<802.11n HT20>**

Channel	Channel Frequency (MHz)	Average Output Power		Limit (dBm)
		(dBm)	(mW)	
36	5180	15.88	38.73	24.00
40	5200	17.11	51.40	24.00
48	5240	14.42	27.67	24.00
52	5260	14.64	29.11	24.00
60	5300	17.86	61.09	24.00
64	5320	17.59	57.41	24.00
100	5500	18.60	72.44	24.00
116	5580	18.57	71.94	24.00
140	5700	18.43	69.66	24.00
144	5720 (U-NII-2C)	18.45	69.98	24.00
144	5720 (U-NII-3)	18.45	69.98	30.00
149	5745	18.83	76.38	30.00
157	5785	18.67	73.62	30.00
165	5825	18.27	67.14	30.00

**Note:**
**For U-NII-2A, U-NII-2C Band:**

1.  $11 \text{ dBm} + 10\log(35.01) = 26.44 \text{ dBm} > 24 \text{ dBm}$ .
2.  $11 \text{ dBm} + 10\log(43.64) = 27.40 \text{ dBm} > 24 \text{ dBm}$ .
3.  $11 \text{ dBm} + 10\log(43.24) = 27.36 \text{ dBm} > 24 \text{ dBm}$ .
4.  $11 \text{ dBm} + 10\log(42.92) = 27.33 \text{ dBm} > 24 \text{ dBm}$ .
5.  $11 \text{ dBm} + 10\log(42.12) = 27.24 \text{ dBm} > 24 \text{ dBm}$ .
6.  $11 \text{ dBm} + 10\log(41.08) = 27.14 \text{ dBm} > 24 \text{ dBm}$ .
7.  $11 \text{ dBm} + 10\log(24.82) = 24.95 \text{ dBm} > 24 \text{ dBm}$ .

**<802.11n HT40>**

Channel	Channel Frequency (MHz)	Average Output Power		Limit (dBm)
		(dBm)	(mW)	
38	5190	12.16	16.44	24.00
46	5230	16.17	41.40	24.00
54	5270	17.46	55.72	24.00
62	5310	15.61	36.39	24.00
102	5510	15.56	35.97	24.00
110	5550	18.55	71.61	24.00
134	5670	18.37	68.71	24.00
142	5710 (U-NII-2C)	18.61	72.61	24.00
142	5710 (U-NII-3)	18.61	72.61	30.00
151	5755	19.10	81.28	30.00
159	5795	18.90	77.62	30.00

**Note:**
**For U-NII-2A, U-NII-2C Band:**

1.  $11 \text{ dBm} + 10\log(87.75) = 30.43 \text{ dBm} > 24 \text{ dBm}$ .
2.  $11 \text{ dBm} + 10\log(69.69) = 29.43 \text{ dBm} > 24 \text{ dBm}$ .
3.  $11 \text{ dBm} + 10\log(64.42) = 29.09 \text{ dBm} > 24 \text{ dBm}$ .
4.  $11 \text{ dBm} + 10\log(83.28) = 30.21 \text{ dBm} > 24 \text{ dBm}$ .
5.  $11 \text{ dBm} + 10\log(83.44) = 30.21 \text{ dBm} > 24 \text{ dBm}$ .
6.  $11 \text{ dBm} + 10\log(56.24) = 28.50 \text{ dBm} > 24 \text{ dBm}$ .

### 5.1.3 Transmit Power Control (TPC)

#### Requirement

U-NII devices operating in the 5.25-5.35 GHz band and the 5.47-5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p of less than 500 mW.

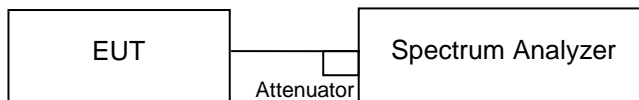
Maximum EIRP of this device is 167.49 mW which less than 500 mW, therefor it's not require TPC function.

TPC	E.I.R.P.	15.407 (h)(1)
	> 500 mW	The TPC mechanism is required for system with an E.I.R.P. of above 500 mW
V	< 500 mW	--

### 5.1.4 26 dB Bandwidth and 99% Occupied Bandwidth

**Kind of Test Site**                      Shielded room

**Test Setup**



**Test Instruments**

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date	Test Date	
						From	Until
Spectrum Analyzer	R&S	FSV40	101512	2022/2/24	2023/2/23	2022/3/18	2022/5/14

**Test Procedure**

- a. Set RBW = approximately 1% of the emission bandwidth.
- b. Set the VBW > RBW.
- c. Detector = Peak.
- d. Trace mode = max hold.
- e. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.
- f. For 99% Bandwidth Measurement, the transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth and set the detector to PEAK. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean power of a given emission.

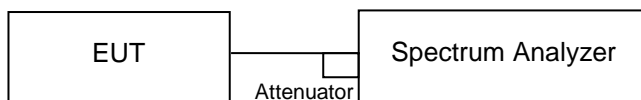
**Test Results**

Please refer to Appendix A

### 5.1.5 6 dB Bandwidth (5725-5850MHz)

**Kind of Test Site**                      Shielded room

**Test Setup**



**Test Instruments**

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date	Test Date	
						From	Until
Spectrum Analyzer	R&S	FSV40	101512	2022/2/24	2023/2/23	2022/3/18	2022/5/14

**Test Procedure**

MEASUREMENT PROCEDURE REF

- a. Set resolution bandwidth (RBW) = 100 kHz
- b. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
- c. Trace mode = max hold.
- d. Sweep = auto couple.
- e. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

**Test Results**

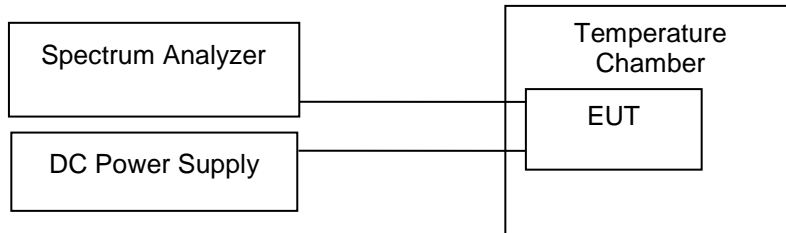
Please refer to Appendix A



### 5.1.6 Frequency Stability Measurement

**Kind of Test Site**                      Shielded room

**Test Setup**



**Test Instruments**

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date	Test Date	
						From	Until
Spectrum Analyzer	R&S	FSV40	101512	2022/2/24	2023/2/23	2022/3/18	2022/5/14

**Test Procedure**

- a. To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
- b. The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10 dB lower than the measured peak value.
- c. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

**Test Results**

Frequency (MHz)	5180			
Voltage (V)	Measurement Frequency (MHz)			Max. Deviation (ppm)
5.5	5180.02142			4.135
5	5180.02229			4.303
4.5	5180.02402			4.637
Temperature (°C)	Measurement Frequency (MHz)			
	0 Minute	2 Minute	5 Minute	10 Minute
50	5180.0246	5180.04573	5180.04805	5180.0521
40	5180.022422	5180.040491	5180.052022	5180.058577
30	5180.022344	5180.037253	5180.052076	5180.061075
20	5180.02229	5180.03705	5180.0521	5180.06136
10	5180.024088	5180.037695	5180.052208	5180.061352
0	5180.025727	5180.038423	5180.052424	5180.06136
-10	5180.035801	5180.03969	5180.053239	5180.061167
-20	5180.06628	5180.06194	5180.06107	5180.06107
Max. Deviation (ppm)	12.795	11.958	11.790	11.846

Frequency (MHz)	5320			
Voltage (V)	Measurement Frequency (MHz)			Max. Deviation (ppm)
5.5	5320.04515			8.487
5	5320.04718			8.868
4.5	5320.04139			7.780
Temperature (°C)	Measurement Frequency (MHz)			
	0 Minute	2 Minute	5 Minute	10 Minute
50	5320.033	5320.0466	5320.04978	5320.04834
40	5320.037438	5320.053146	5320.053872	5320.056908
30	5320.046538	5320.054181	5320.056843	5320.058294
20	5320.04718	5320.0547	5320.05731	5320.05876
10	5320.047503	5320.054778	5320.057383	5320.05892
0	5320.047311	5320.054727	5320.057479	5320.05887
-10	5320.047809	5320.054778	5320.057363	5320.058827
-20	5320.06599	5320.06339	5320.06339	5320.06339
Max. Deviation (ppm)	12.404	11.915	11.915	11.915

Frequency (MHz)	5580			
Voltage (V)	Measurement Frequency (MHz)			Max. Deviation (ppm)
5.5	5580.03357			6.016
5	5580.03415			6.120
4.5	5580.03213			5.758
Temperature (°C)	Measurement Frequency (MHz)			
	0 Minute	2 Minute	5 Minute	10 Minute
50	5580.03271	5580.03444	5580.03329	5580.03386
40	5580.033497	5580.03407	5580.033025	5580.032749
30	5580.034111	5580.033344	5580.032149	5580.031889
20	5580.03415	5580.03329	5580.03213	5580.03184
10	5580.035464	5580.034075	5580.033401	5580.033207
0	5580.03562	5580.034114	5580.033271	5580.033098
-10	5580.0351	5580.034612	5580.032431	5580.032362
-20	5580.07265	5580.06802	5580.06773	5580.06773
Max. Deviation (ppm)	14.025	13.131	13.075	13.075

Frequency (MHz)	5785			
Voltage (V)	Measurement Frequency (MHz)			Max. Deviation (ppm)
5.5	5785.02808			4.854
5	5785.02952			5.103
4.5	5785.02605			4.503
Temperature (°C)	Measurement Frequency (MHz)			
	0 Minute	2 Minute	5 Minute	10 Minute
50	5785.03502	5785.03849	5785.03936	5785.03907
40	5785.032522	5785.036327	5785.039076	5785.039594
30	5785.029586	5785.035637	5785.038511	5785.03964
20	5785.02952	5785.0356	5785.03849	5785.03965
10	5785.030745	5785.036002	5785.039588	5785.039674
0	5785.02984	5785.036974	5785.039454	5785.04095
-10	5785.029695	5785.03657	5785.038819	5785.04036
-20	5785.07352	5785.07178	5785.07178	5785.07178
Max. Deviation (ppm)	13.820	13.492	13.492	13.492

## 5.1.7 Power Spectral Density

### Limit

For the 5.15~5.25GHz Bands:

For mobile and portable client devices in the 5.15~5.25GHz band, the Maximum Power spectral density shall not exceed 11dBm/MHz. For an indoor access point operating in the band 5.15~5.25GHz, the maximum power spectral density shall not exceed 17dBm/MHz.

For the 5.25~5.35GHz and 5.47~5.725GHz Bands:

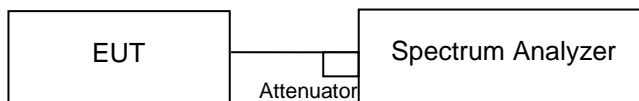
The maximum power spectral density shall not exceed 11dBm/MHz.

For the 5.745~5.85GHz Bands:

The maximum power spectral density shall not exceed 30dBm/500kHz.

**Kind of Test Site**                      Shielded room

### Test Setup



### Test Instruments

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date	Test Date	
						From	Until
Spectrum Analyzer	R&S	FSV40	101512	2022/2/24	2023/2/23	2022/3/18	2022/5/14

**Test Procedure****For U-NII-1, U-NII-2A, U-NII-2C band:**

Using method SA-2

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW  $\geq$  3 MHz, Detector = RMS
3. Sweep time = auto, trigger set to "free run".
4. Trace average at least 100 traces in power averaging mode.
5. Record the max value and add 10 log (1/duty cycle)

**※For U-NII-3:**

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 500 kHz, Set VBW  $\geq$  3 RBW, Detector = RMS
3. Use the peak marker function to determine the maximum power level in any 500 kHz band segment within the fundamental EBW.
4. Sweep time = auto, trigger set to "free run".
5. Trace average at least 100 traces in power averaging mode.
6. Record the max value and add 10 log (1/duty cycle)

**Test Results**

Please refer to Appendix A

## 5.1.8 Radiated Spurious Emissions

### Limit

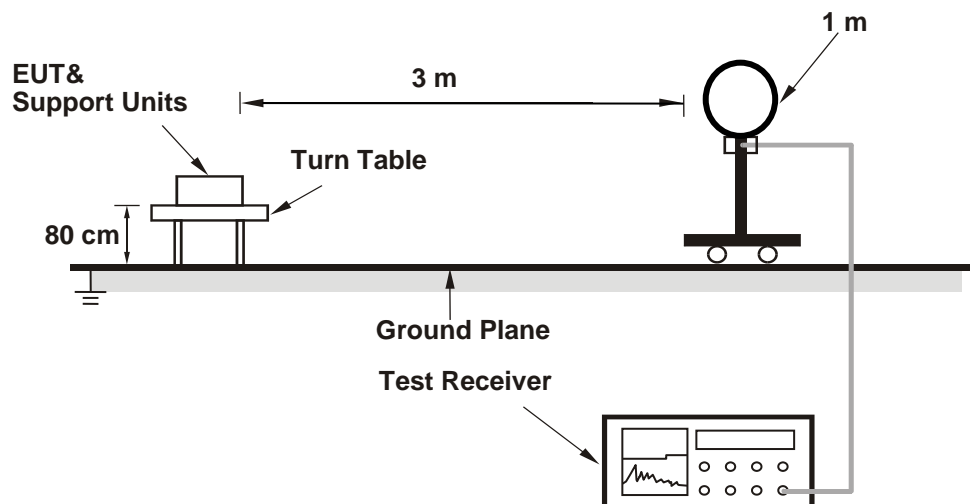
Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must comply with the radiated emission limits specified in §15.209(a).

Emissions radiated outside the restricted and authorized frequency bands must either comply with the radiated emission limits specified for the restricted bands or in §15.407(b).

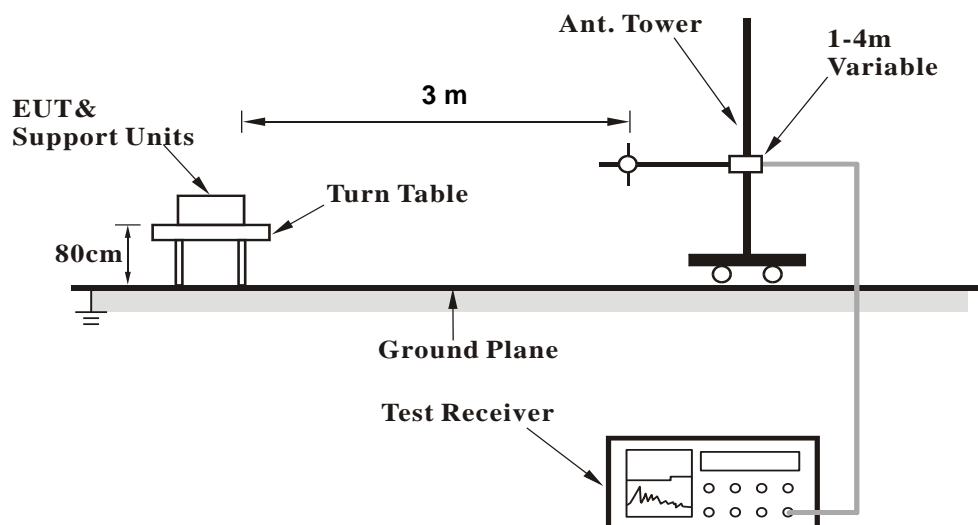
**Kind of Test Site**                      3m Semi-Anechoic Chamber

### Test Setup

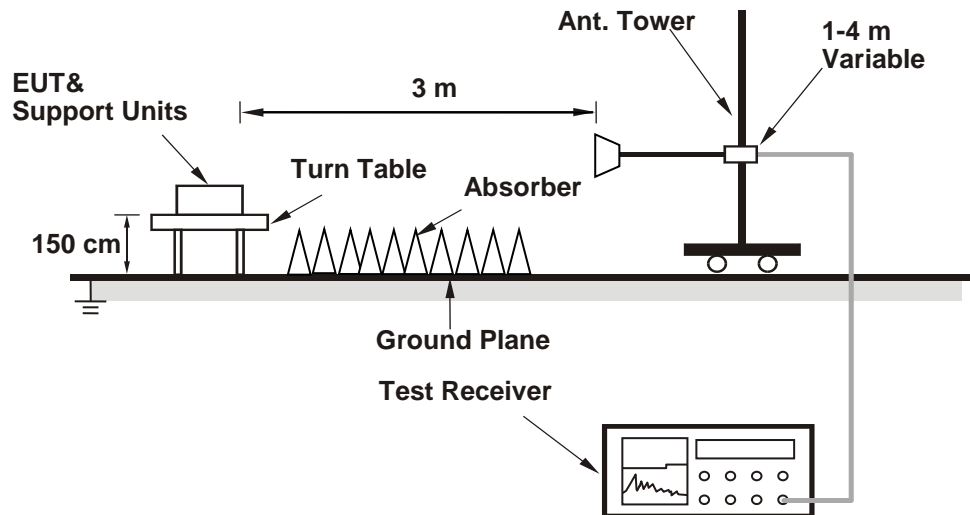
**<Radiated Emissions below 30 MHz>**



**<Radiated Emissions 30 MHz to 1 GHz>**



## &lt;Radiated Emissions above 1 GHz&gt;



For the actual test configuration, please refer to the attached file (Test Setup Photo).

**Test Instruments**

Test Period: 2022-04-14 ~ 2022-05-14

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date
<b>Above 1 GHz</b>					
Signal Analyzer	R&S	FSV40	101513	2021/5/28	2022/5/27
Horn Antenna	ETS-Lindgren	3117	00218929	2021/11/25	2022/11/24
HF-AMP + AC source	EMCI	EMC051845SE	980635	2022/1/20	2023/1/19
HF-AMP + AC source	EMCI	EMC184045SE	980656	2022/1/20	2023/1/19
Horn Antenna	SCHWARZBECK	BBHA 9170	00887	2022/3/29	2023/3/28
Test Software	Audix E3	15914a_20191106 tuv	PK-001087	N/A	N/A
<b>30 MHz ~ 1 GHz</b>					
Receiver	R&S	ESR7	102109	2022/2/25	2023/2/24
Bilog Antenna	SCHWARZBECK	VULB-9168	00949	2021/5/30	2022/5/29
LF-AMP	Agilent	8447D	2727A05146	2022/2/16	2023/2/15
Test Software	Audix E3	15914a_20191106 tuv	PK-001087	N/A	N/A
<b>Below 30 MHz</b>					
Receiver	R&S	ESR7	102109	2022/2/25	2023/2/24
Microwave Cable	SUCOFLEX 104EA	800056/4EA	804680/4	2022/3/22	2023/3/21
Loop Antenna	SCHWARZBECK	FMZB 1519B	00215	2021/12/8	2022/12/7
Test Software	Audix E3	15914a_20191106 tuv	PK-001087	N/A	N/A



**Test Procedures****For Radiated Emissions below 30 MHz**

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel (OPEN), perpendicular (CLOSE), and ground-parallel (GROUND) orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

## Note:

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

**For Radiated Emissions above 30 MHz**

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

## Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is  $\geq 1/T$  (Duty cycle < 98 %) or 10 Hz (Duty cycle  $\geq 98$  %) for Average detection (AV) at frequency above 1 GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.
5. The Radiated Emissions testing was performed in the X(E1), Y(H) and Z(E2) axis orientation. The worst-case Axis orientation is recorded in this test report.

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**Test Results**

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

Please refer to Appendix B.

## 5.1.9 Dynamic Frequency Selection

### Limit

<DFS Detection Thresholds for Master Devices and Client Devices with Radar Detection>

Maximum Transmit Power	Value (See Notes 1, 2, and 3)
EIRP $\geq$ 200 milliwatt	-64 dBm
EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz	-62 dBm
EIRP < 200 milliwatt that do not meet the power spectral density requirement	-64 dBm

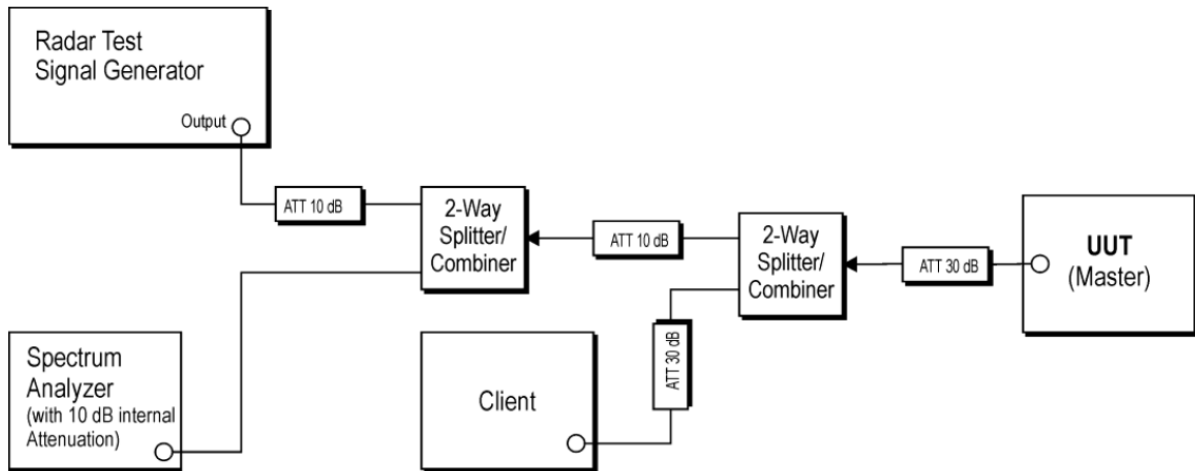
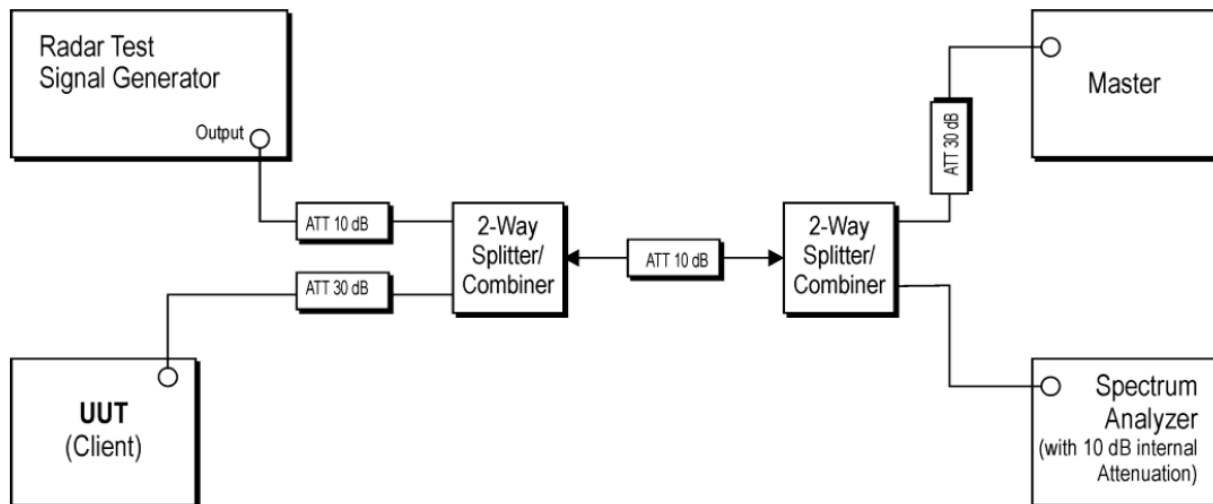
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna.  
 Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.  
 Note 3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.

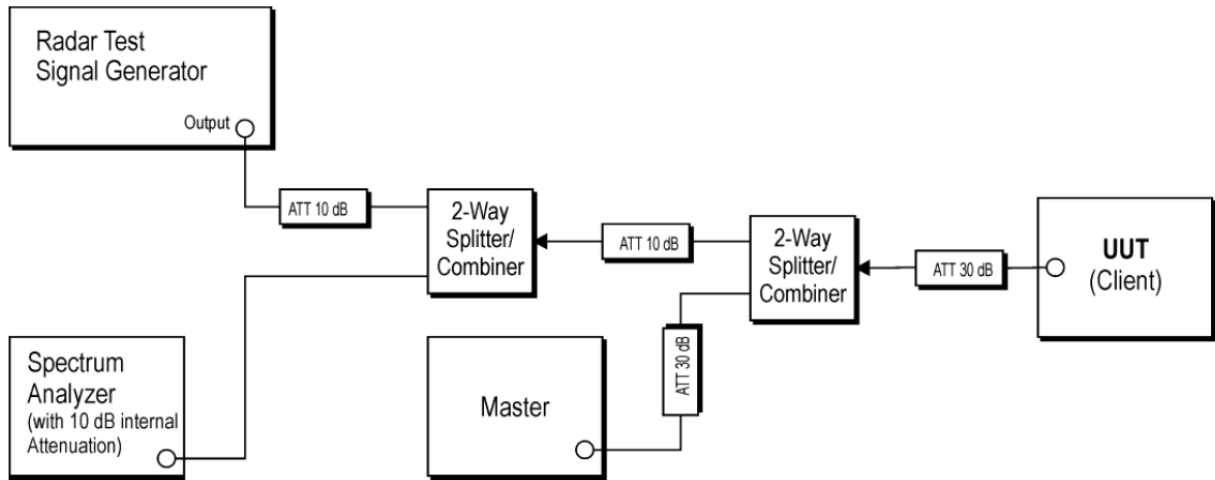
<DFS Response Requirement Values>

Parameter	Value
<i>Non-occupancy period</i>	Minimum 30 minutes
<i>Channel Availability Check Time</i>	60 seconds
<i>Channel Move Time</i>	10 seconds See Note 1.
<i>Channel Closing Transmission Time</i>	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
<i>U-NII Detection Bandwidth</i>	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.

Note 1: *Channel Move Time* and the *Channel Closing Transmission Time* should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.  
 Note 2: The *Channel Closing Transmission Time* is comprised of 200 milliseconds starting at the beginning of the *Channel Move Time* plus any additional intermittent control signals required to facilitate a *Channel* move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.  
 Note 3: During the *U-NII Detection Bandwidth* detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

**Kind of Test Site**                      Shielded room

**Test Setup**
**<Setup for Master with injection at the Master>**

**<Setup for Client with injection at the Master>**


**<Setup for Client with injection at the Client>**

**Test Instruments**

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date	Test Date	
						From	Until
Spectrum Analyzer	Agilent	N9010A	MY53470241	2021/6/15	2022/6/14	2022/4/11	2022/4/11
MXG Vector Signal Generator	Agilent	N5182B	MY53050524	2022/3/9	2023/3/8	2022/4/11	2022/4/11

**Requirement**

Requirement	Operational Mode	
	Master Device or Client with Radar Detection	Client Without Radar Detection
<i>DFS Detection Threshold</i>	Yes	Not required
<i>Channel Closing Transmission Time</i>	Yes	Yes
<i>Channel Move Time</i>	Yes	Yes
<i>U-NII Detection Bandwidth</i>	Yes	Not required

Additional requirements for devices with multiple bandwidth modes	Master Device or Client with Radar Detection	Client Without Radar Detection
<i>U-NII Detection Bandwidth and Statistical Performance Check</i>	All BW modes must be tested	Not required
<i>Channel Move Time and Channel Closing Transmission Time</i>	Test using widest BW mode available	Test using the widest BW mode available for the link
<i>All other tests</i>	Any single BW mode	Not required

Note: Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.

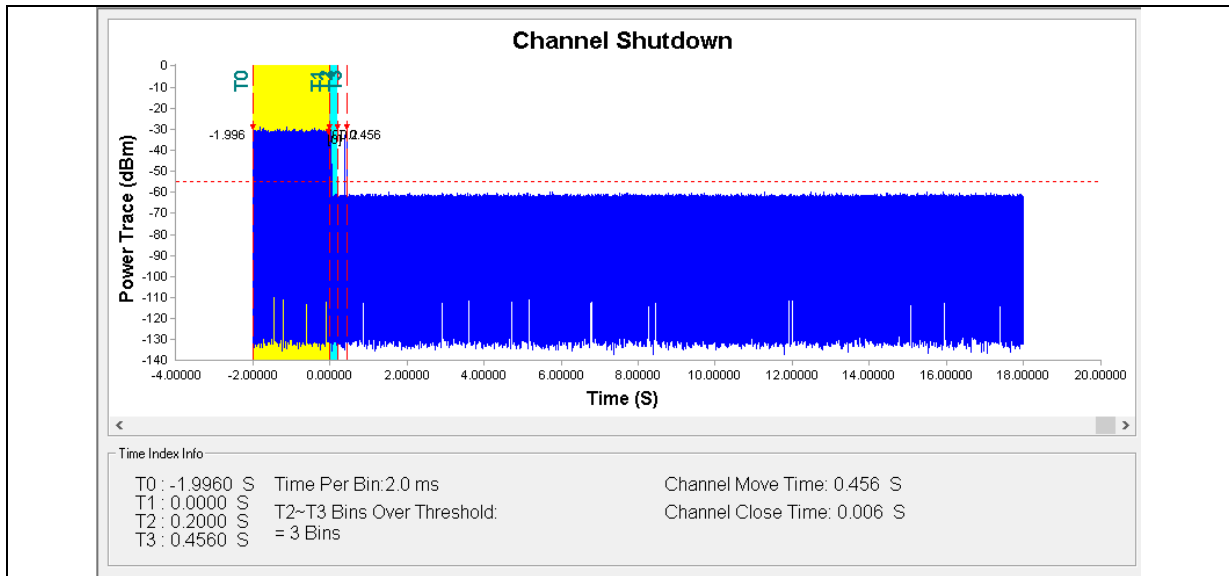
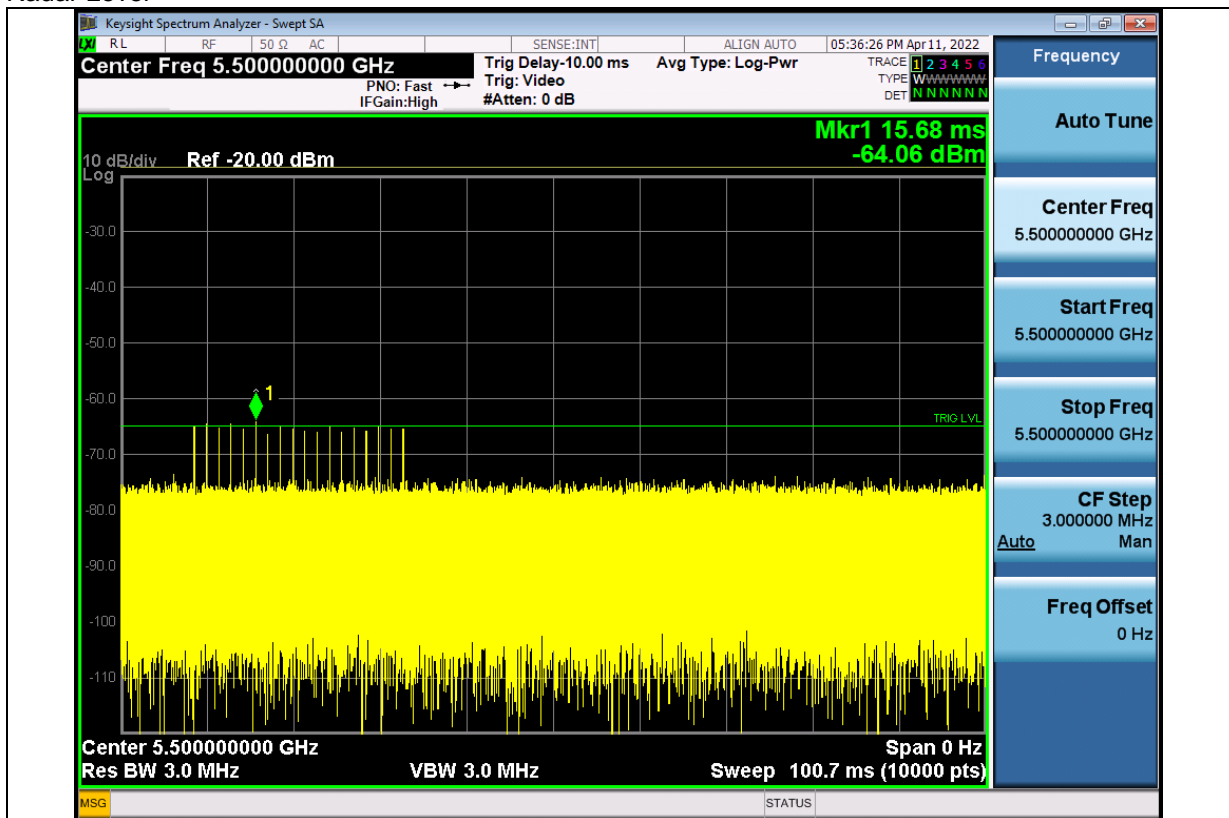


**Channel Moving Time**

Channel (MHz)	Channel Move Time (s)	Limit (s)	Result
5510	0.456	10	Pass

**Channel Closing Transmission Time**

Channel (MHz)	Channel Closing Transmission Time (ms)	Limit (ms)	Result
5500	0.006	60	Pass


**Radar Level**


## 5.2 Mains Emission

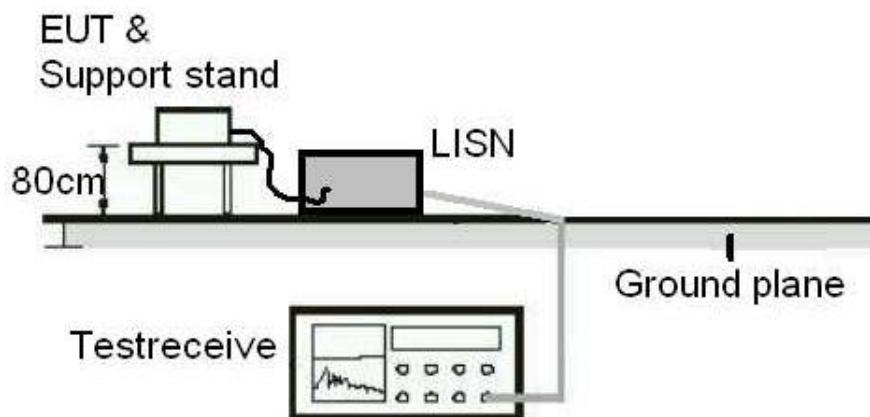
### 5.2.1 Mains Conducted Emission

#### Limit

Mains Conducted emissions as defined in §15.207 must comply with the mains conducted emission limits.

**Kind of Test Site**                      Shielded room

#### Test Setup



#### Test Instruments

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date
Two-Line V-Network	Rohde & Schwarz	ENV216	101938	2021/9/23	2022/9/22
EMI Test Receiver	R&S	ESCI	1816063	2021/11/15	2022/11/14



#### **Test Procedures**

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

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

#### **Test Results**

Please refer to Appendix B.