



## Test Report

Date : 2022-04-26  
No. : HMD22040012

Page 1 of 52

**Applicant** : Hip Shing Electronics Limited  
Units 1.2&3,20/F., New Treasure Centre, 10., Ng Fong Street, San Po Kong, Kowloon, Hong Kong

**Supplier / Manufacturer** : Dongguan Zhi Cheng Electronic Products Co., Ltd.  
No.32 Shangbao Road, 188 Industrial Zone, Pingshan, Tangxia, Dongguan, Guangdong, China

**Description of Sample(s)** : Submitted sample(s) said to be  
Product: Internet, DAB/DAB+ and FM Digital Radio With Bluetooth  
Brand Name: REVO  
Model No.: SUPERCONNECT  
FCC ID: BZAIDFB2215H2X

**Date Samples Received** : 2022-04-08

**Date Tested** : 2022-04-08 to 2022-04-24

**Investigation Requested** : Perform Electro Magnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15 and ANSI C63.10:2013 for FCC Certification.

**Conclusions** : The submitted product COMPLIED with the requirements of Federal Communications Commission [FCC] Rules and Regulations Part 15. The tests were performed in accordance with the standards described above and on Section 2.2 in this Test Report.

**Remarks** : WIFI (802.11a/n20/n40)





## Test Report

Date : 2022-04-26  
No. : HMD22040012

Page 2 of 52

### CONTENT:

Cover	Page 1 of 52
Content	Page 2 of 52
<b><u>1.0 General Details</u></b>	
1.1 Test Laboratory	Page 3 of 52
1.2 Equipment Under Test [EUT] Description of EUT operation	Page 3 of 52
1.3 Antenna Details	Page 3 of 52
1.4 Date of Order	Page 3 of 52
1.5 Submitted Sample(s)	Page 3 of 52
1.6 Test Duration	Page 3 of 52
1.7 Country of Origin	Page 3 of 52
<b><u>2.0 Technical Details</u></b>	
2.1 Investigations Requested	Page 4-5 of 52
2.2 Test Standards and Results Summary	Page 6 of 52
<b><u>3.0 Test Results</u></b>	
3.1 Emission	Page 7-46 of 52
<b><u>Appendix A</u></b>	
List of Measurement Equipment	Page 47 of 52
<b><u>Appendix B</u></b>	
Photograph(s) of Product	Page 48-52 of 52

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## Test Report

Date : 2022-04-26  
No. : HMD22040012

Page 3 of 52

### 1.0 General Details

#### **1.1 Test Laboratory**

The Hong Kong Standards and Testing Centre Ltd.  
EMC Laboratory  
10 Dai Wang Street, Taipo Industrial Estate, New Territories, Hong Kong  
Telephone: 852 2666 1888  
Fax: 852 2664 4353

#### **1.2 Equipment Under Test [EUT]**

##### **Description of Sample(s)**

Product: Internet, DAB/DAB+ and FM Digital Radio With Bluetooth  
Manufacturer: Dongguan Zhi Cheng Electronic Products Co., Ltd.  
No.32 Shangbao Road, 188 Industrial Zone, Pingshan, Tangxia, Dongguan, Guangdong, China  
Brand Name: REVO  
Model Number: SUPERCONNECT  
Rating: 18.0Vd.c. by adapter  
The AC/DC adapter was provided by the applicant with following details:  
Brand name: REVO, Model no.: GPE024L-A180133-Z  
Input: 100-240Va.c. 50/60Hz 0.75A, Output: 18.0Vd.c. 1.33A 23.94W

#### **1.2.1 Description of EUT Operation**

The Equipment Under Test (EUT) is an Internet, DAB/DAB+ and FM Digital Radio With Bluetooth. The transmission signal is digital modulated with channel frequency range 5150-5250MHz.

#### **1.3 Antenna Details**

Antenna Type: PCB antenna  
Antenna Gain: 3.5dBi

#### **1.4 Date of Order**

2022-04-08

#### **1.5 Submitted Sample(s):**

1 Sample

#### **1.6 Test Duration**

2022-04-08 to 2022-04-24

#### **1.7 Country of Origin**

China

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## Test Report

Date : 2022-04-26  
No. : HMD22040012

Page 4 of 52

### 2.0 Technical Details

#### 2.1 Investigations Requested

Perform Electromagnetic Interference measurements in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15 Regulations and ANSI C63.10:2013 for FCC Certification. According FCC KDB 789033D02 Measurement Guidance, Duty cycle  $\geq 98\%$ . The test mode sample is provided by manufacturer.

#### 2.1.0 Operating conditions for the EUT

The sample went into test mode handled by the manufacturer using the software.



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Date : 2022-04-26  
 No. : HMD22040012

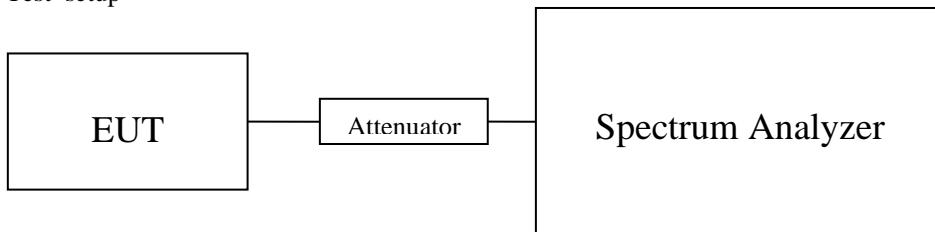
Page 5 of 52

### 2.1.1 EUT Duty cycle

The EUT shall be configured or modified to transmit continuously. The intent is to test at 100% duty cycle; however, a small reduction in duty cycle (to no lower than 98%) is permitted if required by the EUT for amplitude control purposes.

The test mode sample is provided by manufacturer.

Test setup

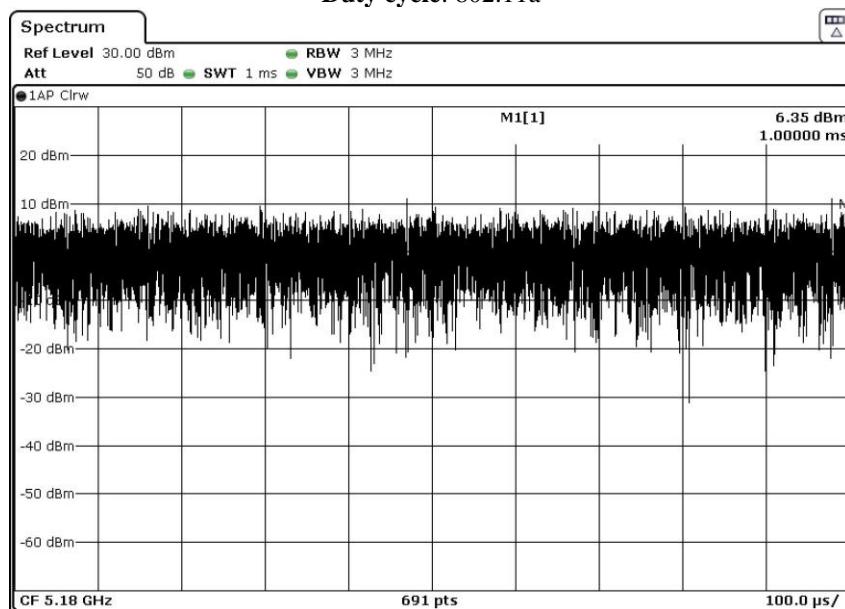


#### Results

Mode	On Time (msec)	Period (msec)	Duty Cycle X (Linear)	Duty Cycle (%) <sup>*</sup>
802.11a	1	1	1	100
802.11n20	1	1	1	100
802.11n40	1	1	1	100

<sup>\*</sup>: If a specific emission is demonstrated to be continuous (100% duty cycle) rather than turning ON and OFF with the transmit cycle, then no duty cycle correction is required for that emission.

**Duty cycle: 802.11a**





## Test Report

Date : 2022-04-26  
No. : HMD22040012

Page 6 of 52

### 2.2 Test Standards and Results Summary Tables

EMISSION Results Summary						
Test Condition	Test Requirement	Test Method	Class / Severity	Test Result		
				Pass	Failed	N/A
Maximum Peak Output Power	15.407(a)(1)	ANSI C63.10:2013	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Radiated Emissions	15.205(a) 15.209 15.407(b)	ANSI C63.10:2013	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conducted Emissions	FCC 47CFR 15.207	ANSI C63.10:2013	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Power Spectral Density	15.407(a)	ANSI C63.10:2013	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26 dB Bandwidth and 99%Occupied Bandwidth	15.407(a)	ANSI C63.10:2013	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Antenna requirement	FCC 47CFR 15.203	N/A	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Note: N/A - Not Applicable

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## Test Report

Date : 2022-04-26  
No. : HMD22040012

Page 7 of 52

### 3.0 Test Results

#### 3.1 Emission

##### 3.1.1 Maximum Peak Output Power

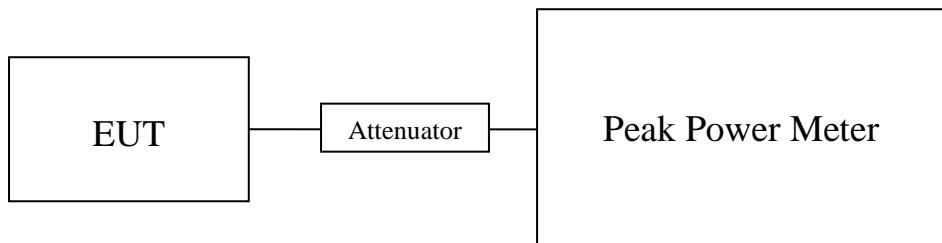
Test Requirement: FCC 47CFR 15.407(a)(1)  
Test Method: ANSI C63.10: 2013/ KDB 789033D02  
Test Date: 2022-04-18  
Mode of Operation: WIFI Tx mode

Ambient Temperature: 25°C      Relative Humidity: 51%      Atmospheric Pressure: 101 kPa

#### Test Method:

The RF output of the EUT was connected to the peak power meter. All the attenuation or cable loss will be added to the measured maximum output power. The results are recorded in Watt.

#### Test Setup:



Note: a temporary antenna connector was soldered to the RF output.

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## Test Report

Date : 2022-04-26  
No. : HMD22040012

Page 8 of 52

### Limits for Peak Output Power of Fundamental & Harmonics Emissions [FCC 47CFR 15.247]:

For Digital Transmission systems in 5150-5250 MHz Band: 0.25 Watt (24dBm)

#### Results of WiFi mode 802.11 a, (5150MHz to 5250MHz) : Pass (TX Unit) Maximum conducted output power

Channel	Frequency (MHz)	Output Power (Watt)
Low	5180	0.01264
Middle	5200	0.01012
High	5240	0.01194

#### Results of WiFi mode 802.11 n20, (5150MHz to 5250MHz) : Pass (TX Unit) Maximum conducted output power

Channel	Frequency (MHz)	Output Power (Watt)
Low	5180	0.01309
Middle	5200	0.01057
High	5240	0.01264

#### Results of WiFi mode 802.11 n40, (5190MHz to 5230MHz): Pass (TX Unit) Maximum conducted output power

Channel	Frequency (MHz)	Output Power (Watt)
Low	5190	0.01159
High	5230	0.01147

Calculated measurement uncertainty : 30MHz to 1GHz 1.7dB  
1GHz to 26GHz 1.7dB

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## Test Report

Date : 2022-04-26  
No. : HMD22040012

Page 9 of 52

### 3.1.2 Radiated Emissions

Test Requirement: FCC 47CFR 15.209 & 15.407(b)  
Test Method: ANSI C63.10:2013/ KDB 789033D02  
Test Date: 2022-04-19  
Mode of Operation: WIFI Tx mode

Ambient Temperature: 24°C      Relative Humidity: 52%      Atmospheric Pressure: 101 kPa

#### Test Method:

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

\* Semi-Anechoic chamber located on the G/F of The Hong Kong Standards and Testing Centre Ltd. with a metal ground plane filed with the FCC pursuant to section 2.948 of the FCC rules, with Registration Number: 607756.

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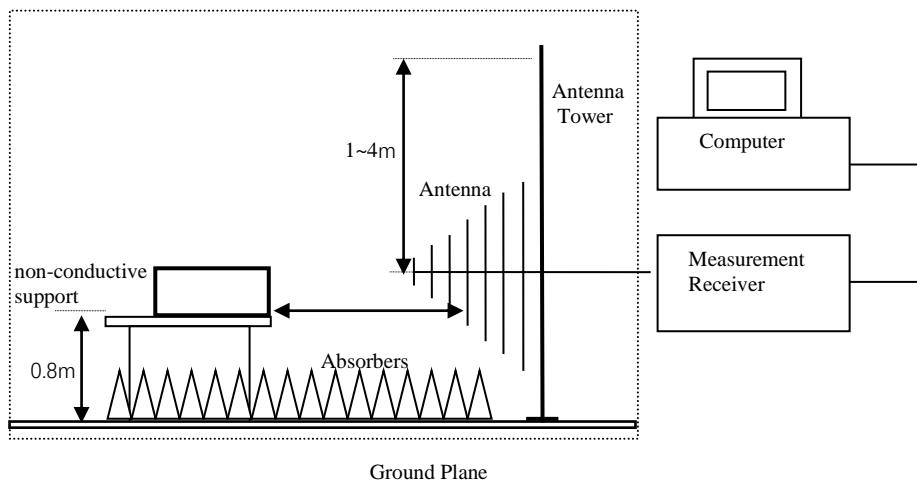
Date : 2022-04-26  
 No. : HMD22040012

Page 10 of 52

### **Spectrum Analyzer Setting:**

9KHz – 30MHz (Pk & Av)	RBW: 10kHz VBW: 30kHz Sweep: Auto Span: Fully capture the emissions being measured Trace: Max. hold
30MHz – 1GHz (QP)	RBW: 120kHz VBW: 120kHz Sweep: Auto Span: Fully capture the emissions being measured Trace: Max. hold
Above 1GHz (Pk)	RBW: 1MHz VBW: 1MHz Sweep: Auto Span: Fully capture the emissions being measured Trace: Max. hold
Above 1GHz (Av)	RBW: 1MHz VBW: 10Hz Sweep: Auto Span: Fully capture the emissions being measured Trace: Max. hold

### **Test Setup:**



- Absorbers placed on top of the ground plane are for measurements above 1000MHz only.
- Measurements between 30MHz to 1000MHz made with Bi-log antennas, above 1000MHz horn antennas are used.



## Test Report

Date : 2022-04-26  
No. : HMD22040012

Page 11 of 52

### Limits for Radiated Emissions FCC 47 CFR 15.407 ]:

- (1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (2) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209. Further.
- (3) The provisions of §15.205 apply to intentional radiators operating under this section.

Frequency Range [MHz]	Quasi-Peak Limits [ $\mu$ V/m]
0.009-0.490	2400/F (kHz)
0.490-1.705	24000/F (kHz)
1.705-30	30
30-88	100
88-216	150
216-960	200
Above 960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

### Result of Tx mode (5180.0 MHz) (802.11a) (9kHz – 30MHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level dB $\mu$ V	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Field Strength $\mu$ V/m	Limit $\mu$ V/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

### Result of Tx mode (5180.0 MHz) (802.11a) (1GHz-40GHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dB $\mu$ V	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB	E-Field Polarity
10360.0	48.9	8.90	57.8	68.2	10.5	Vertical
10360.0	47.9	8.70	56.6	68.2	11.6	Horizontal
15540.0	45.6	11.80	57.4	68.2	10.8	Vertical
15540.0	44.3	11.90	56.2	68.2	12.0	Horizontal
20720.0	44.1	12.20	56.3	68.2	12.0	Vertical
20720.0	43.2	12.40	55.6	68.2	12.6	Horizontal
25900.0	43.0	13.10	56.1	68.2	12.2	Vertical
25900.0	43.2	13.30	56.5	68.2	11.8	Horizontal

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## Test Report

Date : 2022-04-26  
No. : HMD22040012

Page 12 of 52

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dB $\mu$ V	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB	E-Field Polarity
10360.0	32.3	8.90	41.2	54.0	12.9	Vertical
10360.0	31.6	8.70	40.3	54.0	13.7	Horizontal
15540.0	30.6	11.80	42.4	54.0	11.6	Vertical
15540.0	31.5	11.90	43.4	54.0	10.7	Horizontal
20720.0	30.1	12.20	42.3	54.0	11.7	Vertical
20720.0	30.2	12.40	42.6	54.0	11.4	Horizontal
25900.0	30.3	13.10	43.4	54.0	10.7	Vertical
25900.0	31.1	13.30	44.4	54.0	9.6	Horizontal

**Result of Tx mode (5200 MHz) (802.11a) (9kHz – 30MHz): Pass**

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level dB $\mu$ V	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Field Strength $\mu$ V/m	Limit $\mu$ V/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

**Result of Tx mode (5200 MHz) (802.11a) (1GHz-40GHz): Pass**

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dB $\mu$ V	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB	E-Field Polarity
10400.0	48.6	8.90	57.5	68.2	10.7	Vertical
10400.0	47.1	8.70	55.8	68.2	12.4	Horizontal
15600.0	45.3	11.80	57.1	68.2	11.2	Vertical
15600.0	43.1	11.90	55.0	68.2	13.3	Horizontal
20800.0	44.2	12.20	56.4	68.2	11.9	Vertical
20800.0	44.0	12.40	56.4	68.2	11.9	Horizontal
26000.0	42.3	13.10	55.4	68.2	12.9	Vertical
26000.0	41.0	13.30	54.3	68.2	13.9	Horizontal

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## Test Report

Date : 2022-04-26

No. : HMD22040012

Page 13 of 52

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dB $\mu$ V	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB	E-Field Polarity
10400.0	33.4	8.90	42.3	54.0	11.7	Vertical
10400.0	30.3	8.70	39.0	54.0	15.0	Horizontal
15600.0	31.1	11.80	42.9	54.0	11.1	Vertical
15600.0	30.0	11.90	41.9	54.0	12.1	Horizontal
20800.0	30.0	12.20	42.2	54.0	11.8	Vertical
20800.0	28.9	12.40	41.3	54.0	12.7	Horizontal
26000.0	28.0	13.10	41.1	54.0	12.9	Vertical
26000.0	28.1	13.30	41.4	54.0	12.6	Horizontal

Result of Tx mode (5240 MHz) (802.11a) (9kHz – 30MHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level dB $\mu$ V	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Field Strength $\mu$ V/m	Limit $\mu$ V/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

Result of Tx mode (5240 MHz) (802.11a) (1GHz-25GHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dB $\mu$ V	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB	E-Field Polarity
10480.0	50.0	8.90	58.9	68.2	9.3	Vertical
10480.0	48.8	8.70	57.5	68.2	10.8	Horizontal
17520.0	45.0	11.80	56.8	68.2	11.4	Vertical
17520.0	44.3	11.90	56.2	68.2	12.0	Horizontal
20960.0	43.4	12.20	55.6	68.2	12.7	Vertical
20960.0	44.0	12.40	56.4	68.2	11.8	Horizontal
26200.0	43.7	13.10	56.8	68.2	11.5	Vertical
26200.0	43.2	13.30	56.5	68.2	11.8	Horizontal

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## Test Report

Date : 2022-04-26

No. : HMD22040012

Page 14 of 52

Field Strength of Spurious Emissions						
Average Value						
Frequency MHz	Measured Level @3m dB $\mu$ V	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB	E-Field Polarity
10480.0	31.1	8.90	40.0	54.0	14.0	Vertical
10480.0	32.1	8.70	40.8	54.0	13.2	Horizontal
17520.0	30.0	11.80	41.8	54.0	12.2	Vertical
17520.0	30.1	11.90	42.0	54.0	12.1	Horizontal
20960.0	28.9	12.20	41.1	54.0	13.0	Vertical
20960.0	29.1	12.40	41.5	54.0	12.5	Horizontal
26200.0	27.5	13.10	40.6	54.0	13.4	Vertical
26200.0	27.5	13.30	40.8	54.0	13.2	Horizontal

Result of Tx mode (5180 MHz) (802.11n20) (9kHz – 30MHz): Pass

Field Strength of Spurious Emissions						
Peak Value						
Frequency MHz	Measured Level dB $\mu$ V	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Field Strength $\mu$ V/m	Limit $\mu$ V/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

Result of Tx mode (5180 MHz) (802.11n20) (1GHz-40GHz): Pass

Field Strength of Spurious Emissions						
Peak Value						
Frequency MHz	Measured Level @3m dB $\mu$ V	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB	E-Field Polarity
10360.0	48.3	8.90	57.2	68.2	11.0	Vertical
10360.0	47.7	8.70	56.4	68.2	11.8	Horizontal
15540.0	43.3	11.80	55.1	68.2	13.1	Vertical
15540.0	44.0	11.90	55.9	68.2	12.3	Horizontal
20720.0	42.6	12.20	54.8	68.2	13.5	Vertical
20720.0	44.2	12.40	56.6	68.2	11.6	Horizontal
25900.0	42.2	13.10	55.3	68.2	13.0	Vertical
25900.0	42.3	13.30	55.6	68.2	12.7	Horizontal

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## Test Report

Date : 2022-04-26

No. : HMD22040012

Page 15 of 52

Field Strength of Spurious Emissions						
Average Value						
Frequency MHz	Measured Level @3m dB $\mu$ V	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB	E-Field Polarity
10360.0	33.0	8.90	41.9	54.0	12.1	Vertical
10360.0	32.1	8.70	40.8	54.0	13.2	Horizontal
15540.0	30.6	11.80	42.4	54.0	11.6	Vertical
15540.0	29.5	11.90	41.4	54.0	12.6	Horizontal
20720.0	28.8	12.20	41.0	54.0	13.0	Vertical
20720.0	27.8	12.40	40.2	54.0	13.8	Horizontal
25900.0	28.3	13.10	41.4	54.0	12.6	Vertical
25900.0	29.0	13.30	42.3	54.0	11.7	Horizontal

Result of Tx mode (5200 MHz) (802.11n20) (1GHz-40GHz): Pass

Field Strength of Spurious Emissions						
Peak Value						
Frequency MHz	Measured Level dB $\mu$ V	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Field Strength $\mu$ V/m	Limit $\mu$ V/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

Result of Tx mode (5200 MHz) (802.11n20) (1GHz-40GHz): Pass

Field Strength of Spurious Emissions						
Peak Value						
Frequency MHz	Measured Level @3m dB $\mu$ V	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB	E-Field Polarity
10400.0	47.9	8.90	56.8	68.2	11.4	Vertical
10400.0	46.4	8.70	55.1	68.2	13.1	Horizontal
15600.0	42.3	11.80	54.1	68.2	14.2	Vertical
15600.0	43.3	11.90	55.2	68.2	13.0	Horizontal
20800.0	44.1	12.20	56.3	68.2	12.0	Vertical
20800.0	43.3	12.40	55.7	68.2	12.5	Horizontal
26000.0	41.6	13.10	54.7	68.2	13.6	Vertical
26000.0	42.7	13.30	56.0	68.2	12.3	Horizontal

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## Test Report

Date : 2022-04-26

No. : HMD22040012

Page 16 of 52

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dB $\mu$ V	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB	E-Field Polarity
10400.0	33.6	8.90	42.5	54.0	11.5	Vertical
10400.0	31.3	8.70	40.0	54.0	14.1	Horizontal
15600.0	31.1	11.80	42.9	54.0	11.1	Vertical
15600.0	30.0	11.90	41.9	54.0	12.1	Horizontal
20800.0	28.9	12.20	41.1	54.0	12.9	Vertical
20800.0	28.5	12.40	40.9	54.0	13.1	Horizontal
26000.0	27.9	13.10	41.0	54.0	13.0	Vertical
26000.0	27.7	13.10	40.8	54.0	13.2	Horizontal

Result of Tx mode (5240 MHz) (802.11n20) (1GHz-40GHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level dB $\mu$ V	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Field Strength $\mu$ V/m	Limit $\mu$ V/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

Result of Tx mode (5240 MHz) (802.11n20) (1GHz-40GHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dB $\mu$ V	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB	E-Field Polarity
10480.0	47.0	8.90	55.9	68.2	12.4	Vertical
10480.0	47.5	8.70	56.2	68.2	12.0	Horizontal
17520.0	44.6	11.80	56.4	68.2	11.8	Vertical
17520.0	44.8	11.90	56.7	68.2	11.5	Horizontal
20960.0	43.4	12.20	55.6	68.2	12.7	Vertical
20960.0	43.3	12.40	55.7	68.2	12.6	Horizontal
26200.0	44.6	13.10	57.7	68.2	10.5	Vertical
26200.0	43.3	13.30	56.6	68.2	11.6	Horizontal

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## Test Report

Date : 2022-04-26

No. : HMD22040012

Page 17 of 52

Field Strength of Spurious Emissions						
Average Value						
Frequency MHz	Measured Level @3m dB $\mu$ V	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB	E-Field Polarity
10480.0	32.3	8.90	41.2	54.0	12.9	Vertical
10480.0	33.1	8.70	41.8	54.0	12.2	Horizontal
17520.0	29.9	11.80	41.7	54.0	12.3	Vertical
17520.0	29.7	11.90	41.6	54.0	12.4	Horizontal
20960.0	30.0	12.40	42.4	54.0	11.6	Vertical
20960.0	29.3	12.40	41.7	54.0	12.3	Horizontal
26200.0	28.9	13.10	42.0	54.0	12.0	Vertical
26200.0	28.0	13.30	41.3	54.0	12.7	Horizontal

Result of Tx mode (5190.0 MHz) (802.11n40) (9kHz – 30MHz): Pass

Field Strength of Spurious Emissions						
Peak Value						
Frequency MHz	Measured Level dB $\mu$ V	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Field Strength $\mu$ V/m	Limit $\mu$ V/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

Result of Tx mode (5190 MHz) (802.11n40) (1GHz-40GHz): Pass

Field Strength of Spurious Emissions						
Peak Value						
Frequency MHz	Measured Level @3m dB $\mu$ V	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB	E-Field Polarity
10380.0	47.6	8.90	56.5	68.2	11.7	Vertical
10380.0	46.6	8.70	55.3	68.2	12.9	Horizontal
15570.0	44.2	11.80	56.0	68.2	12.3	Vertical
15570.0	43.3	11.90	55.2	68.2	13.1	Horizontal
20760.0	43.1	12.20	55.3	68.2	13.0	Vertical
20760.0	44.1	12.40	56.5	68.2	11.8	Horizontal
25950.0	44.2	13.10	57.3	68.2	11.0	Vertical
25950.0	44.3	13.30	57.6	68.2	10.6	Horizontal

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## Test Report

Date : 2022-04-26

No. : HMD22040012

Page 18 of 52

Field Strength of Spurious Emissions						
Average Value						
Frequency MHz	Measured Level @3m dB $\mu$ V	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB	E-Field Polarity
10380.0	32.7	8.90	41.6	54.0	12.4	Vertical
10380.0	33.3	8.70	42.0	54.0	12.0	Horizontal
15570.0	30.3	11.80	42.1	54.0	11.9	Vertical
15570.0	30.5	11.90	42.4	54.0	11.6	Horizontal
20760.0	31.0	12.20	43.2	54.0	10.8	Vertical
20760.0	30.2	12.40	42.6	54.0	11.5	Horizontal
25950.0	29.0	13.10	42.1	54.0	11.9	Vertical
25950.0	28.4	13.30	41.7	54.0	12.4	Horizontal

Result of Tx mode (5230 MHz) (802.11n40) (9kHz – 30MHz): Pass

Field Strength of Spurious Emissions						
Peak Value						
Frequency MHz	Measured Level dB $\mu$ V	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Field Strength $\mu$ V/m	Limit $\mu$ V/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

Result of Tx mode (5230 MHz) (802.11n40) (1GHz-40GHz): Pass

Field Strength of Spurious Emissions						
Peak Value						
Frequency MHz	Measured Level @3m dB $\mu$ V	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB	E-Field Polarity
10460.0	47.9	8.90	56.8	68.2	11.5	Vertical
10460.0	46.3	8.70	55.0	68.2	13.2	Horizontal
15690.0	44.3	11.80	56.1	68.2	12.2	Vertical
15690.0	43.8	11.90	55.7	68.2	12.6	Horizontal
20920.0	44.0	12.20	56.2	68.2	12.0	Vertical
20920.0	45.2	12.40	57.6	68.2	10.6	Horizontal
26150.0	44.3	13.10	57.4	68.2	10.8	Vertical
26150.0	43.6	13.30	56.9	68.2	11.4	Horizontal

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## Test Report

Date : 2022-04-26

No. : HMD22040012

Page 19 of 52

Field Strength of Spurious Emissions						
Average Value						
Frequency MHz	Measured Level @3m dB $\mu$ V	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB	E-Field Polarity
10460.0	32.3	8.90	41.2	54.0	12.8	Vertical
10460.0	33.3	8.70	42.0	54.0	12.0	Horizontal
15690.0	30.6	11.80	42.4	54.0	11.6	Vertical
15690.0	31.0	11.90	42.9	54.0	11.1	Horizontal
20920.0	30.0	12.20	42.2	54.0	11.8	Vertical
20920.0	30.0	12.40	42.4	54.0	11.6	Horizontal
26150.0	28.6	13.10	41.7	54.0	12.3	Vertical
26150.0	29.1	13.30	42.4	54.0	11.6	Horizontal

### Remarks:

No additional spurious emissions found between lowest internal used/generated frequency and 30 MHz

\* Denotes restricted band of operation.

Measurements were made using a peak detector. Any emission less than 1000MHz and falling within the restricted bands of FCC Rules Part 15 Section 15.205 and the limits of FCC Rules Part 15 Section 15.209 were applied.

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement  
uncertainty  
(9kHz-30MHz): 2.0dB  
(30MHz -1GHz): 4.9dB  
(1GHz -26GHz): 4.02dB

Emissions in the vertical and horizontal polarizations have been investigated and the worst-case test results are recorded in this report.

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## Test Report

Date : 2022-04-26  
 No. : HMD22040012

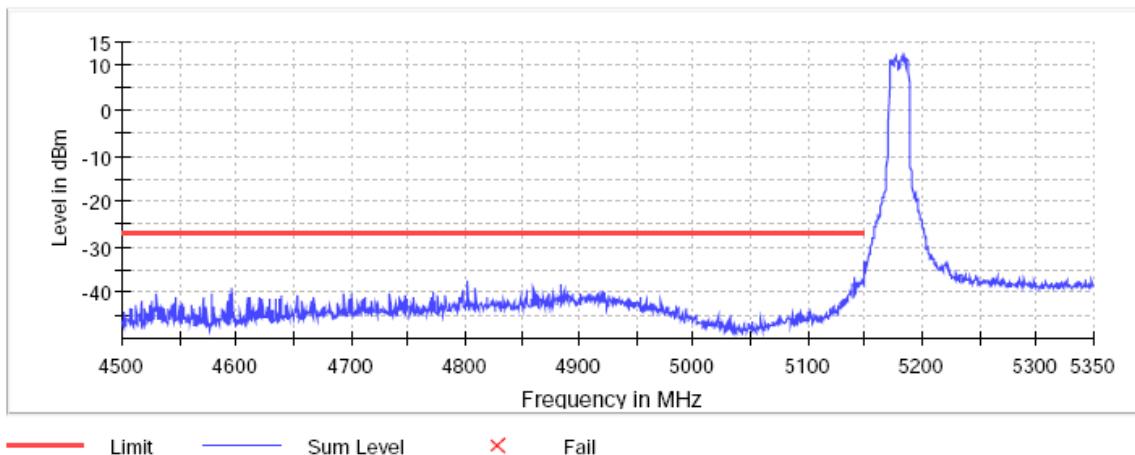
Page 20 of 52

Undesirable emission:

**Result: (Lowest)-802.11a 5180MHz,Undesirable emission of Band-edge Compliance**

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5140.250000	-36.4	9.4	-27.0	PASS
5147.250000	-36.9	9.9	-27.0	PASS
5148.250000	-37.3	10.3	-27.0	PASS
5149.750000	-37.3	10.3	-27.0	PASS
4802.750000	-37.3	10.3	-27.0	PASS
5149.250000	-37.4	10.4	-27.0	PASS
5146.750000	-37.5	10.5	-27.0	PASS
5144.750000	-37.7	10.7	-27.0	PASS
5143.250000	-37.8	10.8	-27.0	PASS
5145.750000	-37.8	10.8	-27.0	PASS
5145.250000	-37.8	10.8	-27.0	PASS
5142.750000	-37.9	10.9	-27.0	PASS
5148.750000	-38.1	11.1	-27.0	PASS
5139.250000	-38.1	11.1	-27.0	PASS
5147.750000	-38.2	11.2	-27.0	PASS

Band Edge





## Test Report

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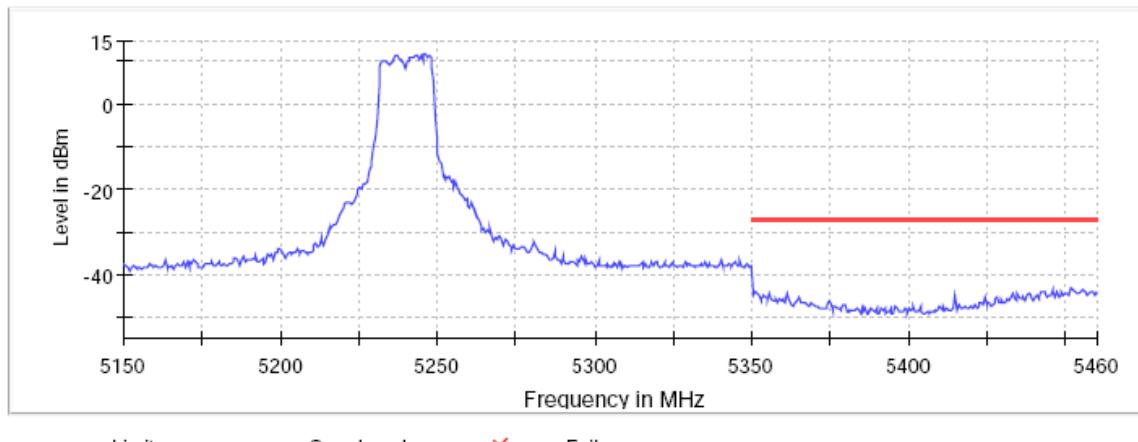
No. : HMD22040012

Page 21 of 52

Result: (High)-802.11a 5240MHz, Undesirable emission of Band-edge Compliance

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5451.750000	-43.2	16.2	-27.0	PASS
5445.750000	-43.5	16.5	-27.0	PASS
5455.250000	-43.6	16.6	-27.0	PASS
5455.750000	-43.7	16.7	-27.0	PASS
5452.250000	-43.7	16.7	-27.0	PASS
5456.250000	-43.9	16.9	-27.0	PASS
5446.250000	-43.9	16.9	-27.0	PASS
5447.250000	-44.0	17.0	-27.0	PASS
5350.250000	-44.0	17.0	-27.0	PASS
5453.250000	-44.0	17.0	-27.0	PASS
5454.750000	-44.0	17.0	-27.0	PASS
5460.000000	-44.0	17.0	-27.0	PASS
5459.750000	-44.0	17.0	-27.0	PASS
5458.750000	-44.1	17.1	-27.0	PASS
5442.250000	-44.1	17.1	-27.0	PASS

Band Edge



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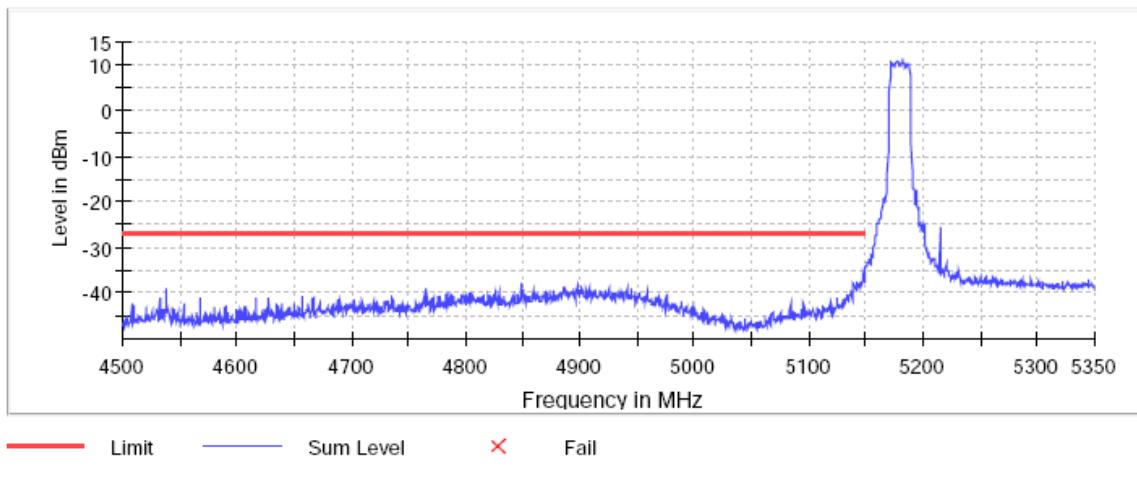
No. : HMD22040012

Page 22 of 52

Result: (Lowest)-802.11n20 5180MHz, Undesirable emission of Band-edge Compliance

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5148.250000	-36.0	9.0	-27.0	PASS
5148.750000	-37.2	10.2	-27.0	PASS
5147.750000	-37.3	10.3	-27.0	PASS
5149.750000	-37.3	10.3	-27.0	PASS
5146.750000	-37.4	10.4	-27.0	PASS
5145.750000	-37.4	10.4	-27.0	PASS
5147.250000	-37.5	10.5	-27.0	PASS
4848.250000	-37.8	10.8	-27.0	PASS
5149.250000	-37.8	10.8	-27.0	PASS
5142.750000	-37.9	10.9	-27.0	PASS
5145.250000	-37.9	10.9	-27.0	PASS
5139.250000	-38.0	11.0	-27.0	PASS
5143.250000	-38.1	11.1	-27.0	PASS
5144.750000	-38.2	11.2	-27.0	PASS
5146.250000	-38.5	11.5	-27.0	PASS

Band Edge



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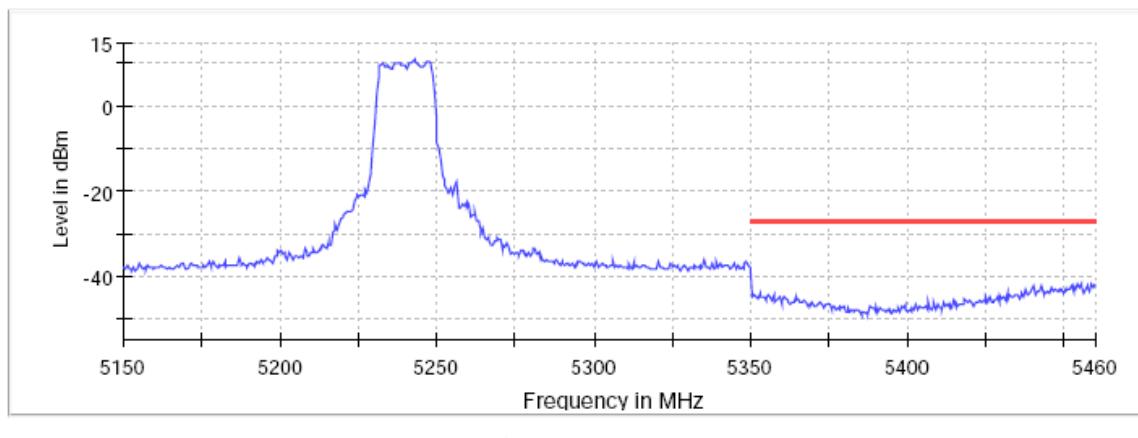
Date : 2022-04-26  
No. : HMD22040012

Page 23 of 52

Result: (High)-802.11n20 5240MHz, Undesirable emission of Band-edge Compliance

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5458.750000	-41.9	14.9	-27.0	PASS
5460.000000	-41.9	14.9	-27.0	PASS
5459.750000	-41.9	14.9	-27.0	PASS
5454.250000	-42.0	15.0	-27.0	PASS
5455.250000	-42.0	15.0	-27.0	PASS
5455.750000	-42.4	15.4	-27.0	PASS
5440.250000	-42.4	15.4	-27.0	PASS
5453.250000	-42.4	15.4	-27.0	PASS
5452.250000	-42.4	15.4	-27.0	PASS
5457.250000	-42.5	15.5	-27.0	PASS
5442.750000	-42.5	15.5	-27.0	PASS
5454.750000	-42.6	15.6	-27.0	PASS
5457.750000	-42.8	15.8	-27.0	PASS
5445.750000	-42.8	15.8	-27.0	PASS
5459.250000	-42.9	15.9	-27.0	PASS

Band Edge



— Limit    — Sum Level    ✕ Fail

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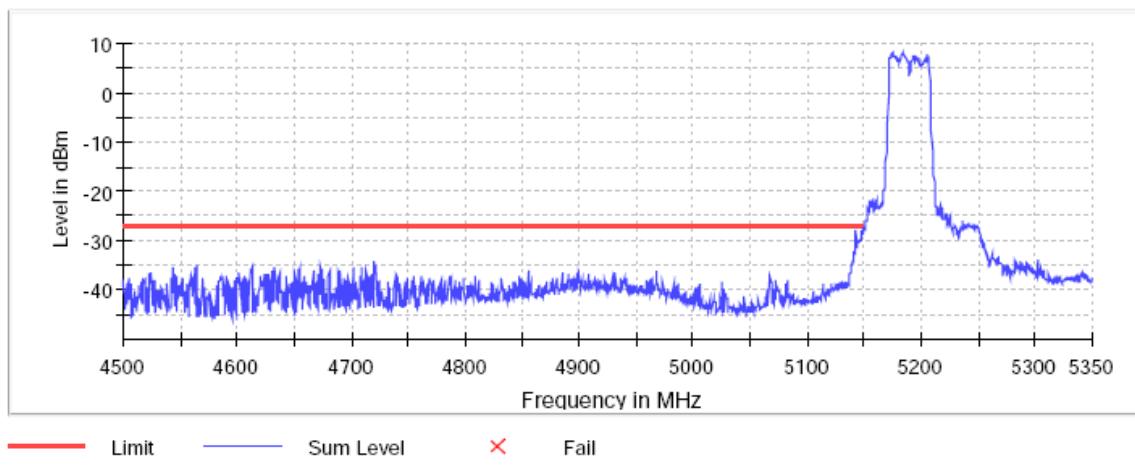
No. : HMD22040012

Page 24 of 52

Result: (Lowest)-802.11n40 5190MHz, Undesirable emission of Band-edge Compliance

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5149.250000	-27.3	0.3	-27.0	PASS
5142.750000	-27.7	0.7	-27.0	PASS
5149.750000	-27.8	0.8	-27.0	PASS
5147.750000	-28.0	1.0	-27.0	PASS
5148.750000	-28.5	1.5	-27.0	PASS
5148.250000	-28.9	1.9	-27.0	PASS
5147.250000	-29.8	2.8	-27.0	PASS
5146.250000	-30.0	3.0	-27.0	PASS
5145.250000	-30.0	3.0	-27.0	PASS
5146.750000	-30.3	3.3	-27.0	PASS
5145.750000	-30.3	3.3	-27.0	PASS
5144.750000	-30.6	3.6	-27.0	PASS
5143.750000	-30.8	3.8	-27.0	PASS
5143.250000	-31.0	4.0	-27.0	PASS
5144.250000	-31.6	4.6	-27.0	PASS

Band Edge



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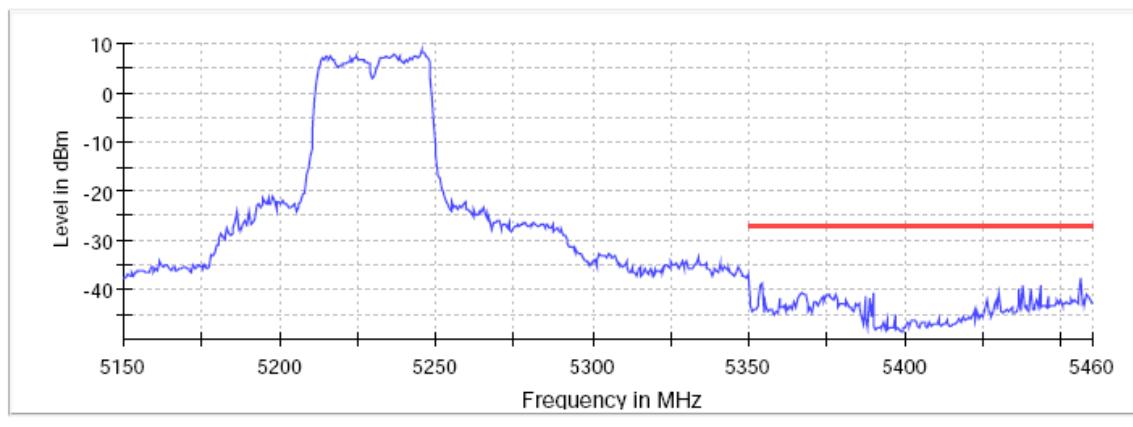
No. : HMD22040012

Page 25 of 52

**Result: (High)-802.11n40 5230MHz,Undesirable emission of Band-edge Compliance**

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5456.250000	-37.8	10.8	-27.0	PASS
5354.250000	-38.8	11.8	-27.0	PASS
5353.750000	-39.0	12.0	-27.0	PASS
5443.250000	-39.1	12.1	-27.0	PASS
5437.750000	-39.3	12.3	-27.0	PASS
5436.750000	-39.8	12.8	-27.0	PASS
5440.250000	-39.9	12.9	-27.0	PASS
5430.250000	-40.4	13.4	-27.0	PASS
5366.750000	-40.6	13.6	-27.0	PASS
5367.250000	-40.6	13.6	-27.0	PASS
5389.750000	-40.7	13.7	-27.0	PASS
5375.750000	-40.9	13.9	-27.0	PASS
5377.750000	-40.9	13.9	-27.0	PASS
5366.250000	-41.0	14.0	-27.0	PASS
5367.750000	-41.1	14.1	-27.0	PASS

Band Edge



— Limit      — Sum Level      ✕ Fail

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## Test Report

Date : 2022-04-26  
No. : HMD22040012

Page 26 of 52

### Limits for Radiated Emissions FCC 47 CFR 15.247]:

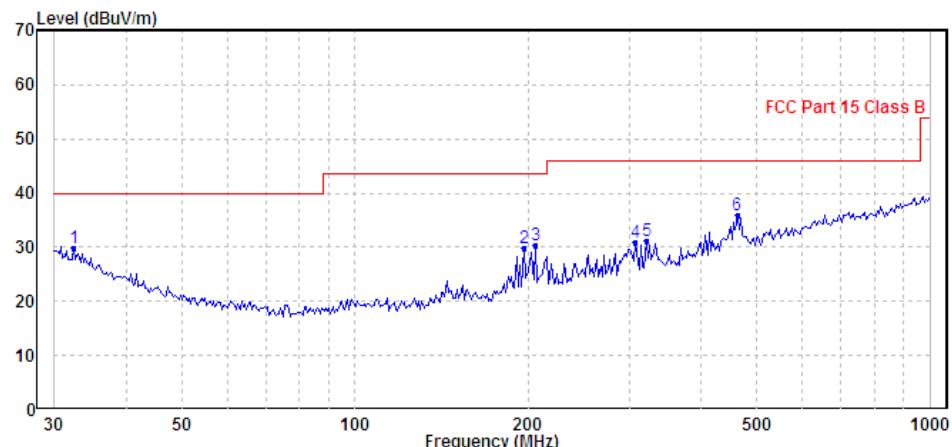
Frequency Range [MHz]	Quasi-Peak Limits [ $\mu$ V/m]
0.009-0.490	2400/F (kHz)
0.490-1.705	24000/F (kHz)
1.705-30	30
30-88	100
88-216	150
216-960	200
Above 960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

### Results of WIFI TX mode: Pass

Please refer to the following table for result details (The data is the worst cases)

Horizontal



Ambient Temperature: 25C

Relative Humidity : 50%

Freq	Level	Limit		Over	Remark	Pol/Phase
		Line	Limit			
MHz dBuV/m dBuV/m dB						
1	32.406	29.76	40.00	-10.24	QP	Horizontal
2	196.510	29.75	43.50	-13.75	QP	Horizontal
3	206.398	30.32	43.50	-13.18	QP	Horizontal
4	307.831	30.81	46.00	-15.19	QP	Horizontal
5	321.061	31.18	46.00	-14.82	QP	Horizontal
6	462.346	35.85	46.00	-10.15	QP	Horizontal

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## Test Report

Date : 2022-04-26  
No. : HMD22040012

Page 27 of 52

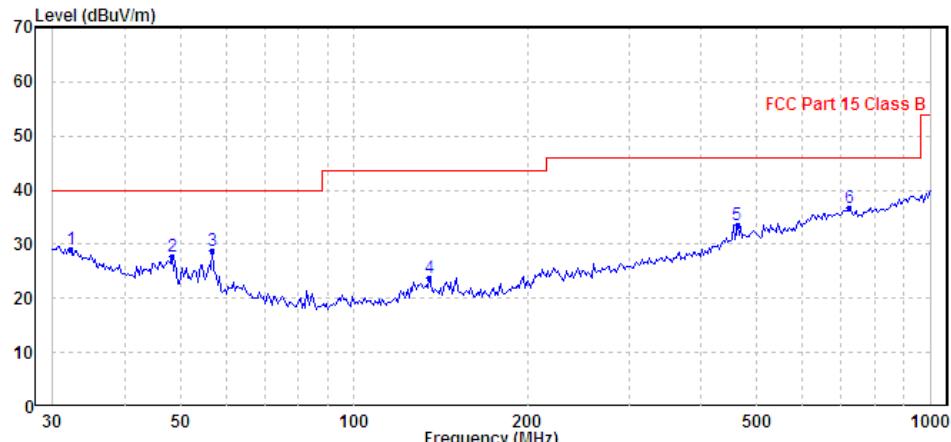
### Limits for Radiated Emissions FCC 47 CFR 15.247 Class B:

Frequency Range [MHz]	Quasi-Peak Limits [ $\mu$ V/m]
0.009-0.490	2400/F (kHz)
0.490-1.705	24000/F (kHz)
1.705-30	30
30-88	100
88-216	150
216-960	200
Above 960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

### Results of WIFI TX mode: Pass

Please refer to the following table for result details (The data is the worst cases)  
Vertical



Ambient Temperature: 25°C

Relative Humidity : 50%

Freq	Level	Limit		Over	Remark	Pol/Phase
		Line	Limit			
1	32.179	29.19	40.00	-10.81	QP	Vertical
2	48.332	27.81	40.00	-12.19	QP	Vertical
3	56.792	28.77	40.00	-11.23	QP	Vertical
4	135.506	23.71	43.50	-19.79	QP	Vertical
5	462.346	33.67	46.00	-12.33	QP	Vertical
6	724.261	36.78	46.00	-9.22	QP	Vertical

Remarks: Calculated measurement uncertainty (30MHz – 1GHz): 4.9dB

Emissions in the vertical and horizontal polarizations have been investigated and the worst-case test results are recorded in this report.

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## Test Report

Date : 2022-04-26  
 No. : HMD22040012

Page 28 of 52

### 3.1.3 AC Mains Conducted Emissions (0.15MHz to 30MHz)

Test Requirement:	FCC 47CFR 15.207
Test Method:	ANSI C63.10:2013
Test Date:	2022-04-11
Mode of Operation:	WIFI TX mode
Test Voltage:	120V a.c. 60Hz

Ambient Temperature: 25°C      Relative Humidity: 51%      Atmospheric Pressure: 101 kPa

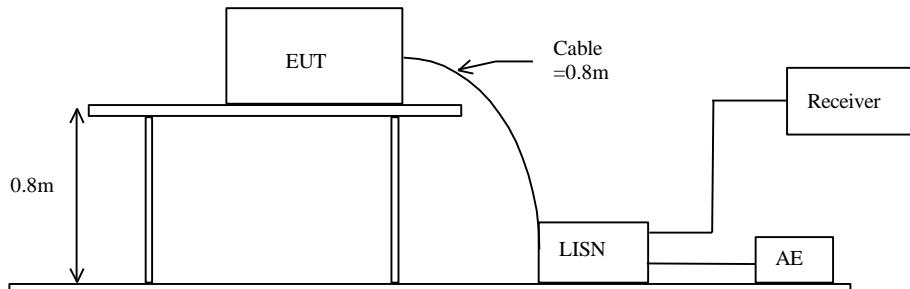
#### Test Method:

The test was performed in accordance with ANSI C63.10:2013, with the following: an initial measurement was performed in peak and average detection mode on the live line, any emissions recorded within 30dB of the relevant limit line were re-measured using quasi-peak and average detection on the live and neutral lines with the worst case recorded in the table of results.

#### Receiver Setting:

Bandw. = 9 kHz, Meas. Time= 10.0 ms, Step Width = 5.0kHz  
 Detector = MaxPeak and CISPR AV

#### Test Setup:



#### Limits for Conducted Emissions (FCC 47 CFR 15.207):

Frequency Range [MHz]	Quasi-Peak Limits [dB $\mu$ V]	Average [dB $\mu$ V]
0.15-0.5	66 to 56*	56 to 46*
0.5-5.0	56	46
5.0-30.0	60	50

\* Decreases with the logarithm of the frequency.

#### Remarks:

Calculated measurement uncertainty (0.15MHz – 30MHz): 3.25dB

-\* Emission(s) that is far below the corresponding limit line.

## Test Report

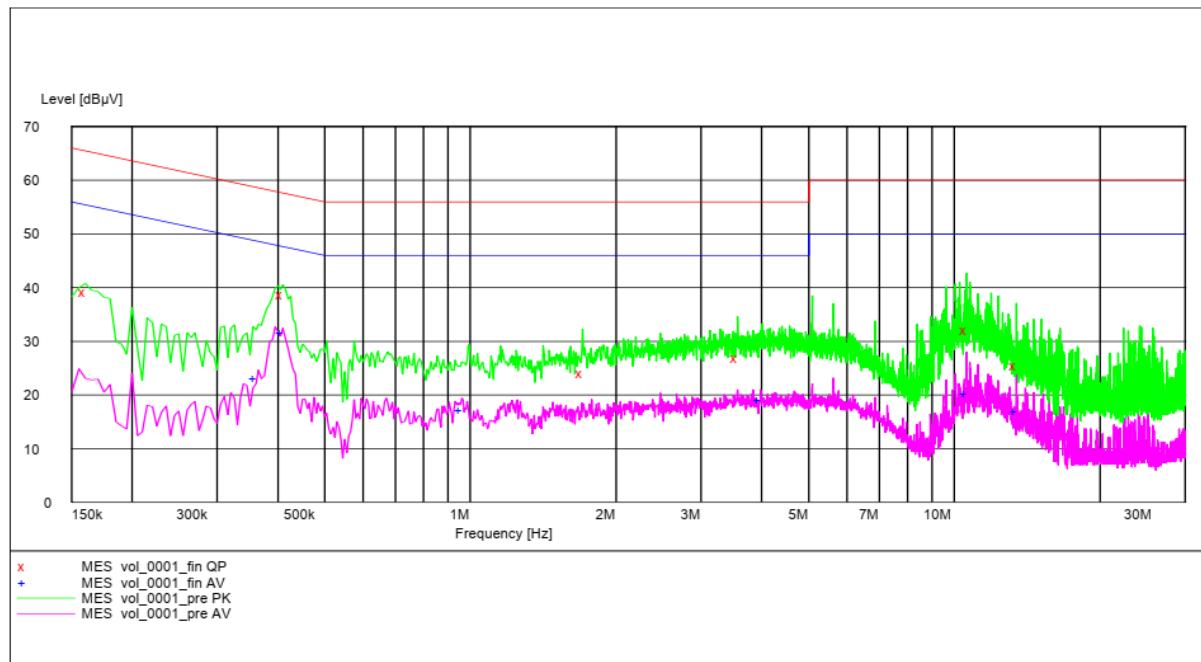
Date : 2022-04-26

No. : HMD22040012

Page 29 of 52

### Results of WIFI TX mode (L): PASS

Please refer to the following diagram for individual results.



#### **MEASUREMENT RESULT: "vol\_0001\_fin QP"**

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dB $\mu$ V	dB	dB $\mu$ V	dB		
0.160000	39.2	9.7	65.5	26.3	L1	GND
0.410000	38.7	9.7	57.6	18.9	L1	GND
1.705000	24.1	9.8	56.0	31.9	L1	GND
3.570000	26.8	9.8	56.0	29.2	L1	GND
10.620000	32.1	10.0	60.0	27.9	L1	GND
13.450000	25.6	10.2	60.0	34.4	L1	GND

#### **MEASUREMENT RESULT: "vol\_0001\_fin AV"**

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dB $\mu$ V	dB	dB $\mu$ V	dB		
0.360000	23.1	9.7	48.7	25.6	L1	GND
0.410000	31.6	9.7	47.6	16.0	L1	GND
0.960000	17.2	9.7	46.0	28.8	L1	GND
3.975000	19.0	9.8	46.0	27.0	L1	GND
10.620000	20.3	10.0	50.0	29.7	L1	GND
13.450000	17.0	10.2	50.0	33.0	L1	GND

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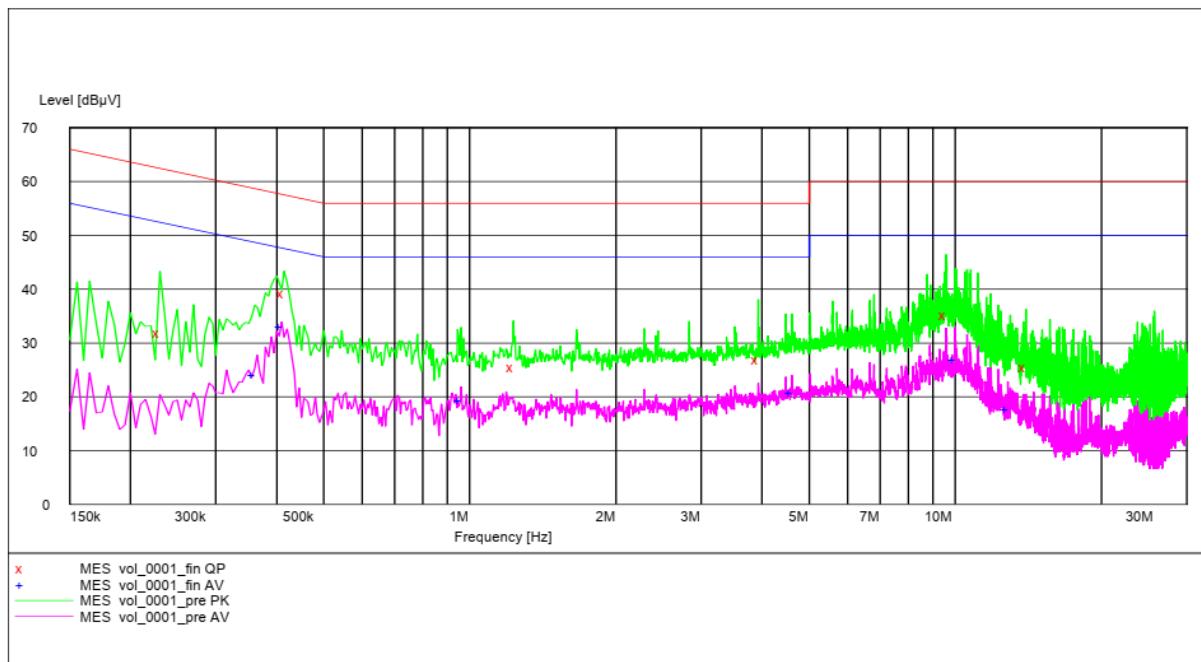
Date : 2022-04-26

No. : HMD22040012

Page 30 of 52

### Results of WIFI TX mode (N): PASS

Please refer to the following diagram for individual results.



#### MEASUREMENT RESULT: "vol\_0001\_fin QP"

Frequency MHz	Level dB $\mu$ V	Transd dB	Limit dB $\mu$ V	Margin dB	Line	PE
0.230000	31.9	9.7	62.4	30.5	N	GND
0.415000	39.2	9.7	57.5	18.3	N	GND
1.230000	25.5	9.7	56.0	30.5	N	GND
3.925000	26.9	9.8	56.0	29.1	N	GND
9.580000	35.1	10.0	60.0	24.9	N	GND
13.980000	25.4	10.2	60.0	34.6	N	GND

#### MEASUREMENT RESULT: "vol\_0001\_fin AV"

Frequency MHz	Level dB $\mu$ V	Transd dB	Limit dB $\mu$ V	Margin dB	Line	PE
0.360000	24.1	9.7	48.7	24.6	N	GND
0.410000	33.1	9.7	47.6	14.5	N	GND
0.960000	19.5	9.7	46.0	26.5	N	GND
4.610000	20.8	9.8	46.0	25.2	N	GND
10.005000	26.8	10.0	50.0	23.2	N	GND
12.835000	17.8	10.1	50.0	32.2	N	GND

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## Test Report

Date : 2022-04-26  
No. : HMD22040012

Page 31 of 52

### 3.1.4 Power Spectral Density

Test Requirement: FCC 47CFR 15.407(a)  
Test Method: ANSI C63.10:2013/ KDB 789033D02  
Test Date: 2022-04-21  
Mode of Operation: WIFI TX mode

Ambient Temperature: 25°C      Relative Humidity: 51%      Atmospheric Pressure: 101 kPa

#### Test Method:

The RF output of the EUT was connected to the spectrum analyzer. Set the fundamental frequency as the center frequency of the spectral analyzer. Use RBW=1000kHz , VBW= 3000KHz , Set the span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.  
. Detector = rms, Sweep time = auto couple . Measure the Power Spectral Density (PSD) and record the results in dBm.

#### Test Setup:

As Test Setup of clause 3.1.1 in this test report.

#### Test Limit:

For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi



## Test Report

Date : 2022-04-26

No. : HMD22040012

Page 32 of 52

### **Results of WIFI TX Mode 802.11 a (Tx:5150MHz to 5250MHz): Pass (TX Unit)**

**Maximum power spectral density**

Transmitter Frequency (MHz)	Maximum Power spectral density level / 1MHz band (dBm)	Maximum Power spectral density / 1MHz band limit
5150.0	0.992	11dBm
5220.0	0.305	11dBm
5240.0	1.291	11dBm

### **Results of WIFI TX Mode 802.11 n20 (Tx:5150MHz to 5250MHz): Pass (TX Unit)**

**Maximum power spectral density**

Transmitter Frequency (MHz)	Maximum Power spectral density level / 1MHz band (dBm)	Maximum Power spectral density / 1MHz band limit
5150.0	0.299	11dBm
5220.0	-0.436	11dBm
5240.0	0.184	11dBm

### **Results of WIFI TX Mode 802.11 n40 (Tx:5190MHz to 5230MHz): Pass (TX Unit)**

**Maximum power spectral density**

Transmitter Frequency (MHz)	Maximum Power spectral density level / 1MHz band (dBm)	Maximum Power spectral density / 1MHz band limit
5190.0	-2.666	11dBm
5230.0	-2.646	11dBm

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No. : HMD22040012

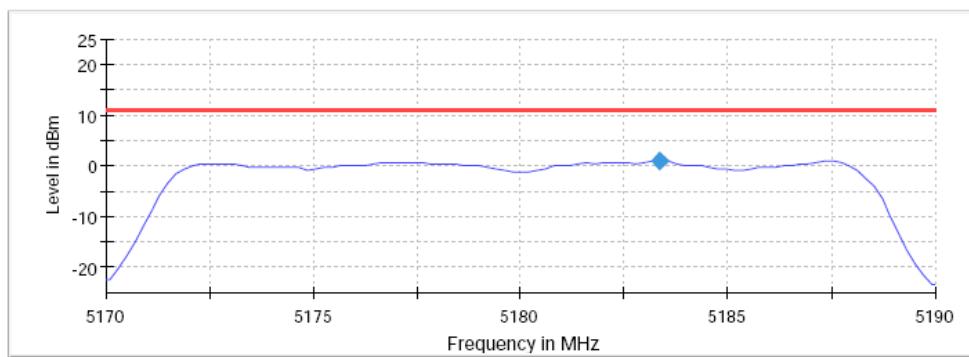
Page 33 of 52

WiFi mode 802.11 a

CH 36 (5180.0 MHz)

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
5180.000000	5183.366337	0.992	11.0	PASS

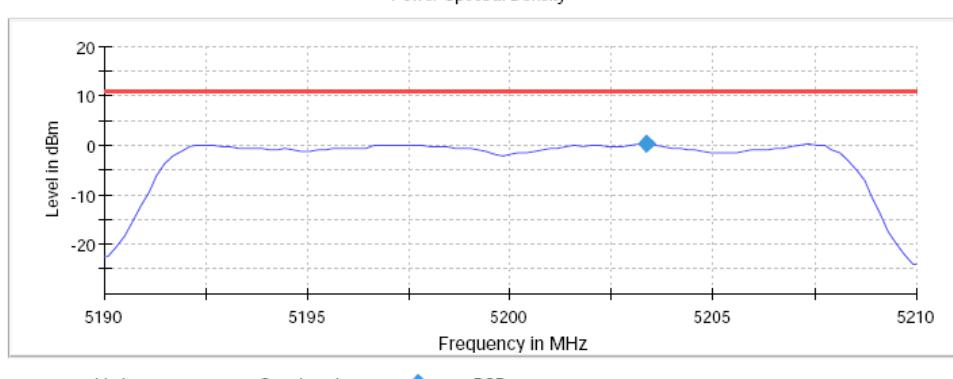
Power Spectral Density



CH 40 (5200.0 MHz)

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
5200.000000	5203.366337	0.305	11.0	PASS

Power Spectral Density



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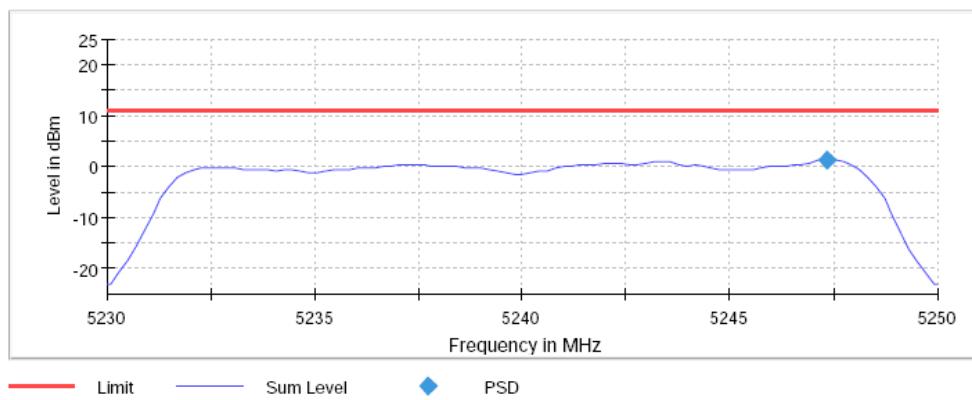
Date : 2022-04-26  
 No. : HMD22040012

Page 34 of 52

**CH 48 (5240.0 MHz)**

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
5240.000000	5247.326733	1.291	11.0	PASS

Power Spectral Density

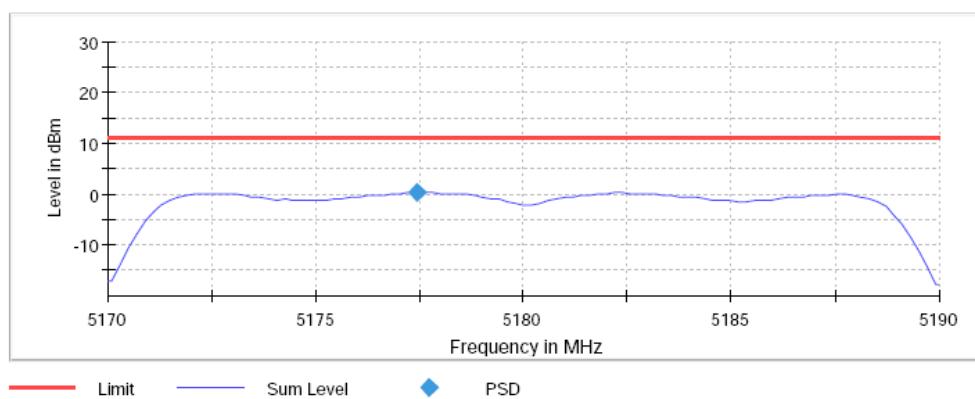


**WiFi mode 802.11 n20**

**CH 36 (5180.0 MHz)**

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
5180.000000	5177.425743	0.299	11.0	PASS

Power Spectral Density



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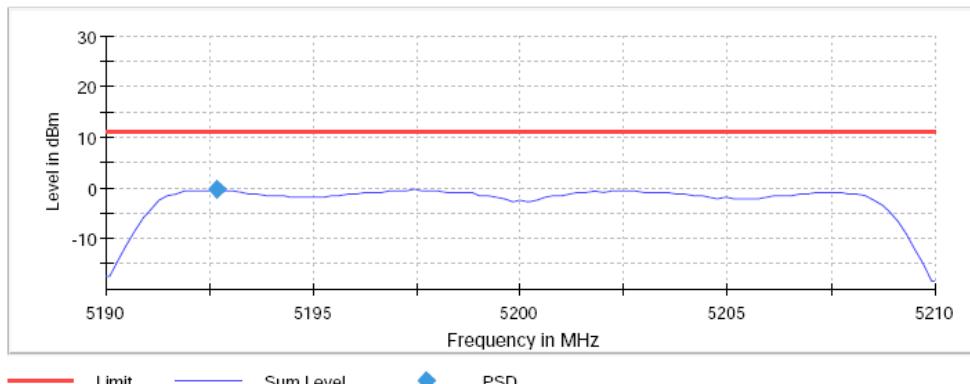
Date : 2022-04-26  
No. : HMD22040012

Page 35 of 52

### CH 40 (5200.0 MHz)

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
5200.000000	5192.673267	-0.436	11.0	PASS

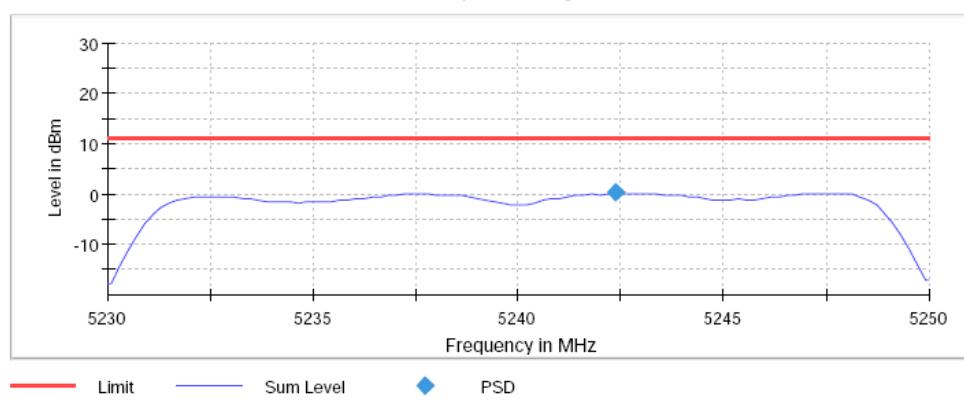
Power Spectral Density



### CH 48 (5240.0 MHz)

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
5240.000000	5242.376238	0.184	11.0	PASS

Power Spectral Density



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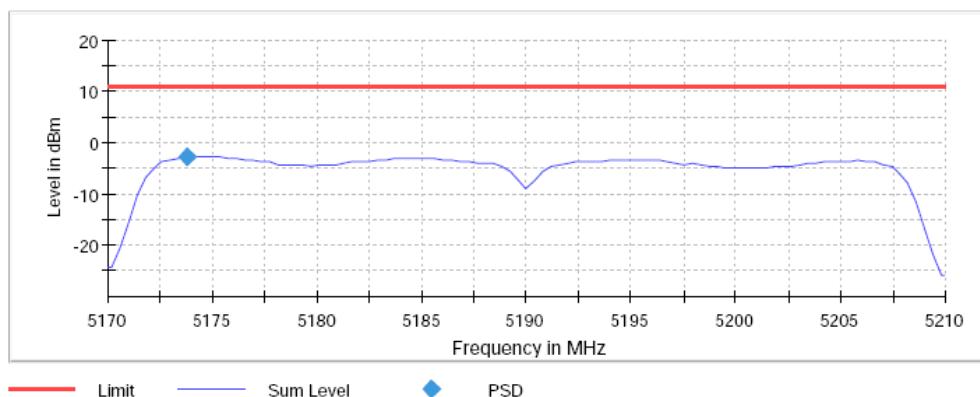
Date : 2022-04-26  
 No. : HMD22040012

Page 36 of 52

WiFi mode 802.11 n40  
 CH 38 (5190.0 MHz)

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
5190.000000	5173.762376	-2.666	11.0	PASS

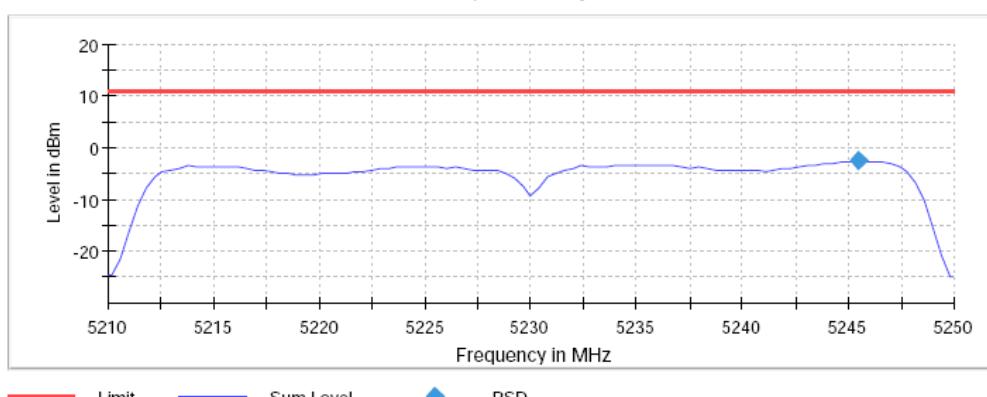
Power Spectral Density



CH 46 (5230.0 MHz)

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
5230.000000	5245.445545	-2.646	11.0	PASS

Power Spectral Density



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## Test Report

Date : 2022-04-26  
No. : HMD22040012

Page 37 of 52

### **3.1.5 26 dB Bandwidth and 99%Occupied Bandwidth Measurement**

Test Requirement: FCC 47CFR 15.407(a) / KDB 789033D02

Test Method: ANSI C63.10:2013

Test Date: 2022-04-22

Mode of Operation: WIFI TX mode

Ambient Temperature: 25°C

Relative Humidity: 51%

Atmospheric Pressure: 101 kPa

#### **Test Method:**

The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

#### **Spectrum Analyzer Setting:**

RBW = 1% to 5% of the OBW

VBW  $\geq$  3\*RBW, Sweep = Auto couple

Detector = Peak, Trace = Max. hold

#### **Test Setup:**

As Test Setup of clause 3.1.1 in this test report.

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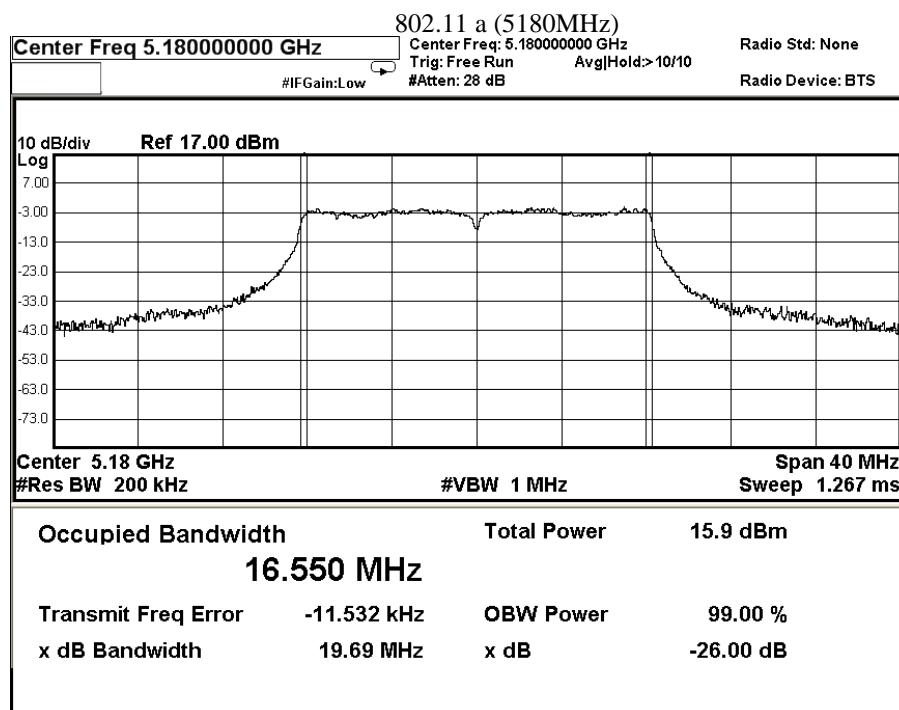
## Test Report

Date : 2022-04-26  
No. : HMD22040012

Page 38 of 52

### 26 dB Bandwidth and 99% Occupied Bandwidth Measurement:

Center Frequency [MHz]	26dB Bandwidth [MHz]	99% Bandwidth [MHz]
5180.0	19.69	16.55



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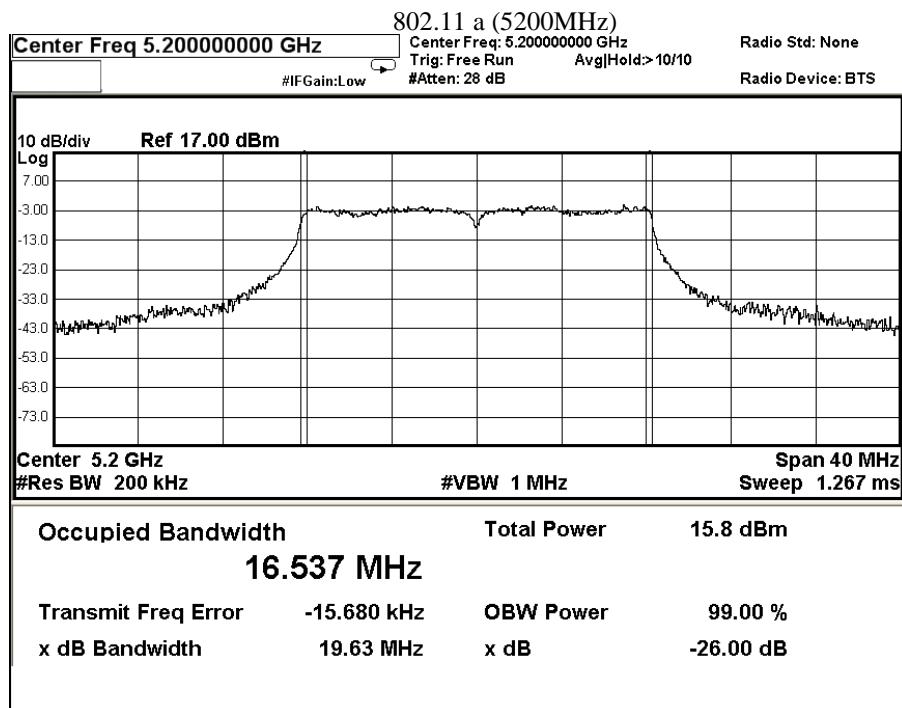
## Test Report

Date : 2022-04-26  
No. : HMD22040012

Page 39 of 52

### 26 dB Bandwidth and 99% Occupied Bandwidth Measurement:

Center Frequency [MHz]	26dB Bandwidth [MHz]	99% Bandwidth [MHz]
5200.0	19.63	16.537



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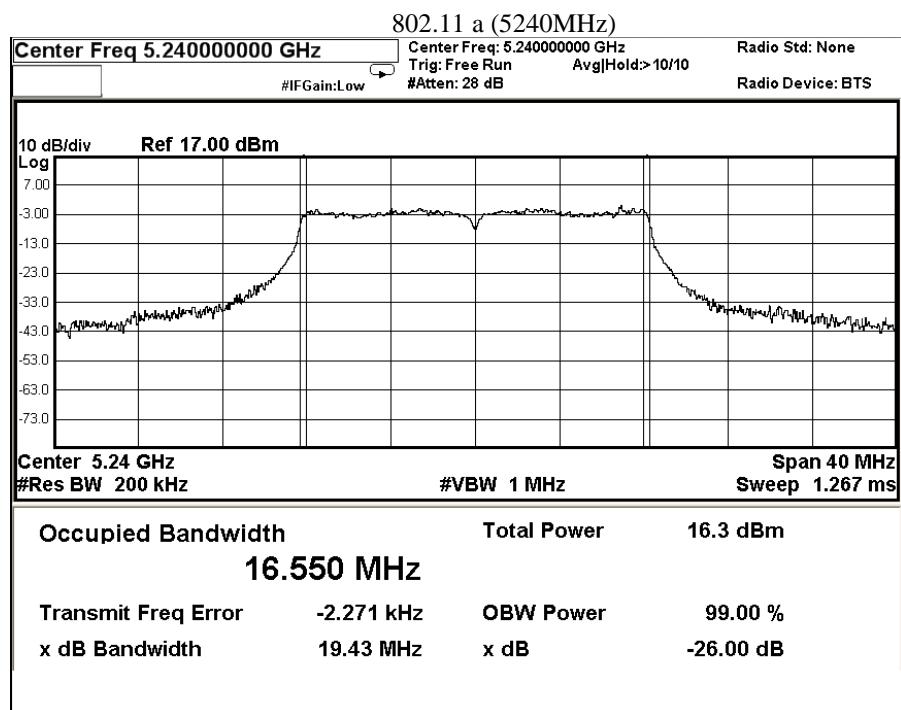
## Test Report

Date : 2022-04-26  
No. : HMD22040012

Page 40 of 52

### 26 dB Bandwidth and 99% Occupied Bandwidth Measurement:

Center Frequency [MHz]	26dB Bandwidth [MHz]	99% Bandwidth [MHz]
5240.0	19.43	16.55



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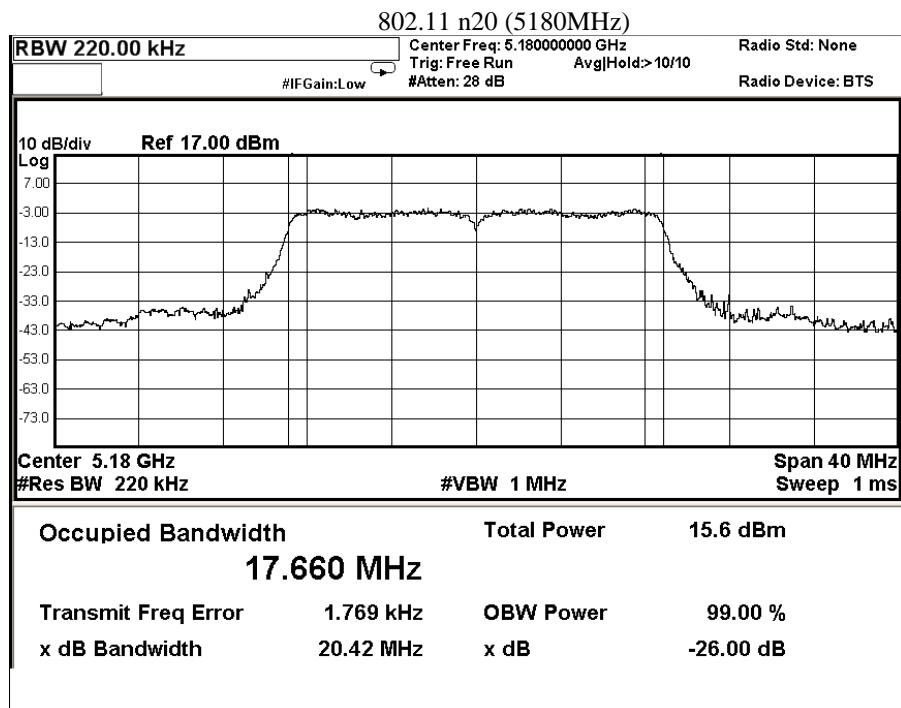
## Test Report

Date : 2022-04-26  
No. : HMD22040012

Page 41 of 52

### 26 dB Bandwidth and 99% Occupied Bandwidth Measurement:

Center Frequency [MHz]	26dB Bandwidth [MHz]	99% Bandwidth [MHz]
5180.0	20.42	17.66



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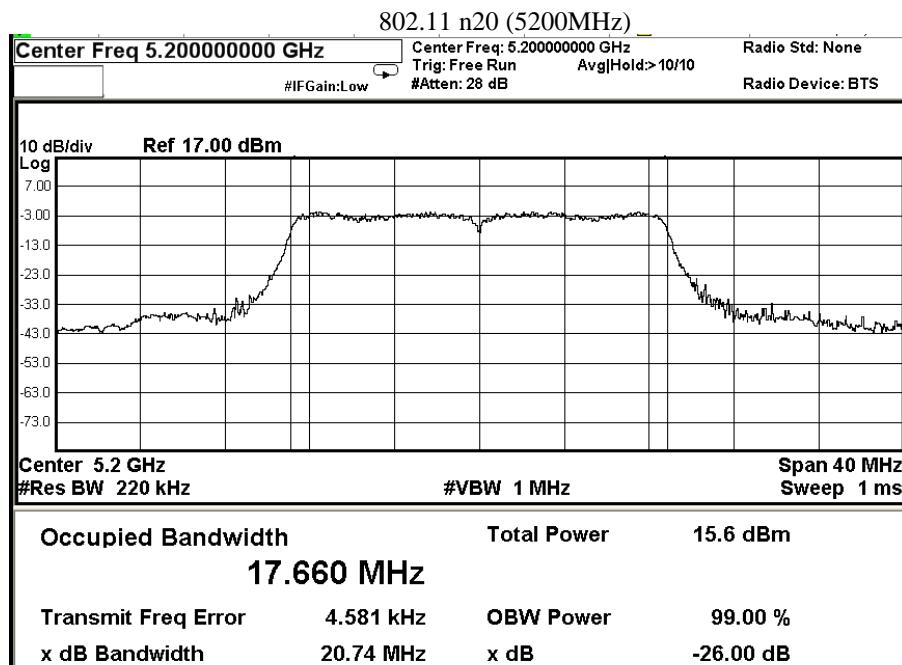
## Test Report

Date : 2022-04-26  
 No. : HMD22040012

Page 42 of 52

### 26 dB Bandwidth and 99% Occupied Bandwidth Measurement:

Center Frequency [MHz]	26dB Bandwidth [MHz]	99% Bandwidth [MHz]
5200.0	20.74	17.66



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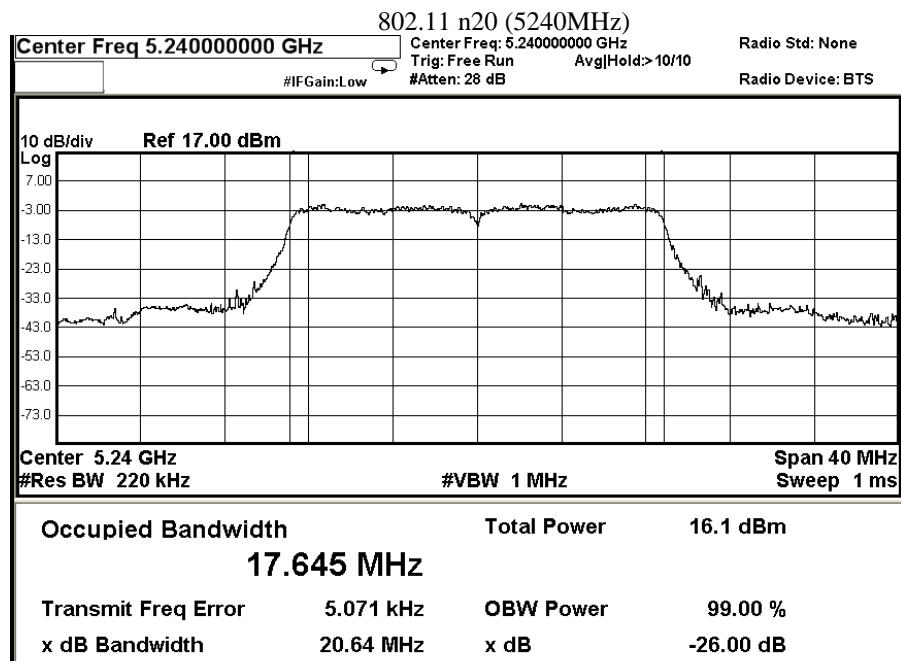
## Test Report

Date : 2022-04-26  
 No. : HMD22040012

Page 43 of 52

### 26 dB Bandwidth and 99% Occupied Bandwidth Measurement:

Center Frequency [MHz]	26dB Bandwidth [MHz]	99% Bandwidth [MHz]
5240.0	20.64	17.645



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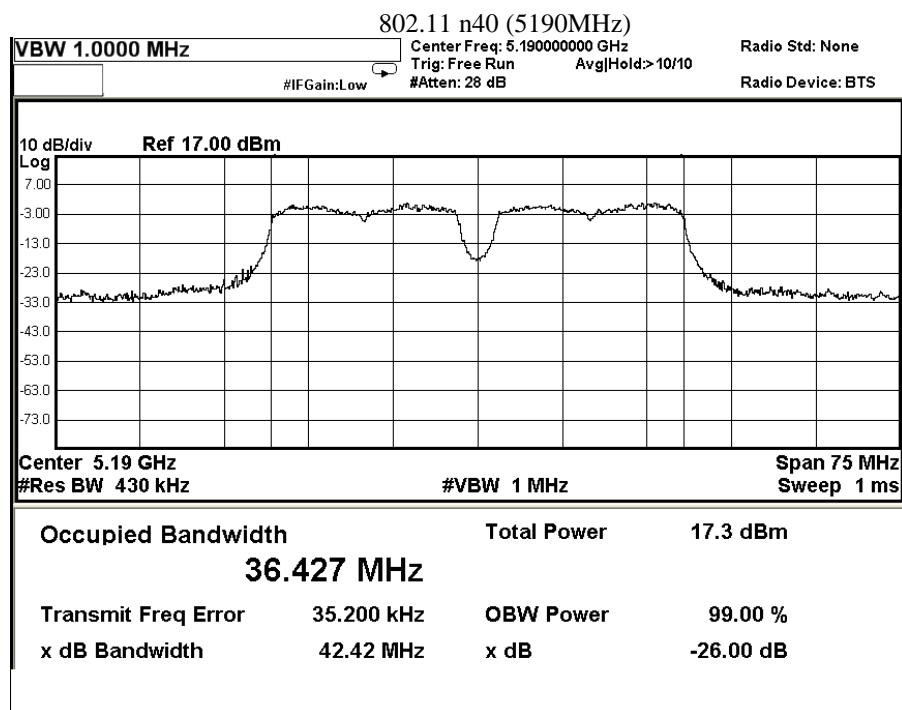
## Test Report

Date : 2022-04-26  
No. : HMD22040012

Page 44 of 52

### 26 dB Bandwidth and 99% Occupied Bandwidth Measurement:

Center Frequency [MHz]	26dB Bandwidth [MHz]	99% Bandwidth [MHz]
5190.0	42.42	36.427



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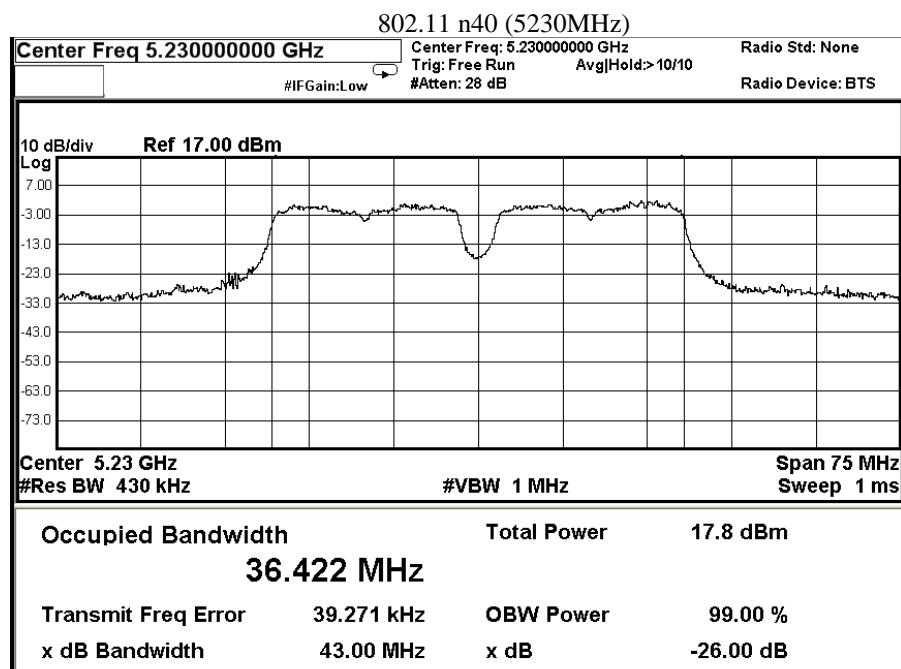
## Test Report

Date : 2022-04-26  
No. : HMD22040012

Page 45 of 52

### 26 dB Bandwidth and 99% Occupied Bandwidth Measurement:

Center Frequency [MHz]	26dB Bandwidth [MHz]	99% Bandwidth [MHz]
5230.0	43.00	36.422



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## Test Report

Date : 2022-04-26  
No. : HMD22040012

Page 46 of 52

### 3.1.6 Antenna Requirement

Ambient Temperature: 25°C      Relative Humidity: 51%      Atmospheric Pressure: 101 kPa

#### Test Requirements: § 15.203

#### Test Specification:

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 shall be considered sufficient to comply with the provisions of this section. 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.

#### Test Results:

This is monopole antenna. There is no external antenna, the antenna gain = 3.5dBi. User is unable to remove or changed the Antenna.

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## Test Report

Date : 2022-04-26  
No. : HMD22040012

Page 47 of 52

### Appendix A

#### List of Measurement Equipment

##### Radiated Emission

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUE CAL
EM215	MULTIDEVICE CONTROLLER	EMCO	2090	00024676	N/A	N/A
EM217	ELECTRIC POWERED TURNTABLE	EMCO	2088	00029144	N/A	N/A
EM218	ANECHOIC CHAMBER	ETS-LINDGREN	FACT-3	--	2019/04/16	2024/04/16
EM356	ANTENNA POSITIONING TOWER	ETS-LINDGREN	2171B	00150346	N/A	N/A
EM336	PRECISION CONICAL DIPOLE	SEIBERSDORF LABORATORIES	PCD 3100	6236/M	2020/05/30	2022/05/30
EM229	EMI TEST RECEIVER	R&S	ESIB40	100248	2020/05/13	2022/05/13
EM299	BROADBAND HORN ANTENNA	ETS-LINDGREN	3115	00114120	2020/11/24	2022/11/24
EM300	PYRAMIDAL STANDARD GAIN HORN ANTENNA	ETS-LINDGREN	3160-09	00130130	2020/11/25	2022/11/25
EM301	PYRAMIDAL STANDARD GAIN HORN ANTENNA	ETS-LINDGREN	3160-10	00130988	2020/11/25	2022/11/25
EM353	LOOP ANTENNA	ETS-LINDGREN	6502	00206533	2020/06/10	2022/06/10
EM355	Biconilog Antenna	ETS-Lindgren	3143B	00094856	2020/06/17	2022/06/17
EM200	DUAL CHANNEL POWER METER	R & S	NRVD	100592	2019/10/11	2022/10/11
EM012	PRE-AMPLIFIER	HP	HP8448B	3008A00262	2019/11/08	2022/11/08

##### Line Conducted

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUE CAL
EM119	LISN	R & S	ESH3-Z5	0831.5518.52	2020/06/30	2022/06/30
EM145	EMI TEST RECEIVER	R & S	ESIB7	100072	2020/05/13	2022/05/13
EM233	PULSE LIMITER	ROHDE & SCHWARZ	ESH3-Z2	100314	2021/01/18	2023/01/18
EM154	SHIELDING ROOM	SIEMENS MATSUSHITA COMPONENTS	N/A	803-740-057-99A	2022/02/02	2027/02/02
N/A	MEASUREMENT AND EVALUATION SOFTWARE	ROHDE & SCHWARZ	BSIB-K1	V1.20	N/A	N/A

##### Remarks:-

CM      Corrective Maintenance

N/A      Not Applicable

TBD      To Be Determined

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## Test Report

Date : 2022-04-26  
 No. : HMD22040012

Page 48 of 52

### Appendix B

#### Photographs of EUT

View of the product



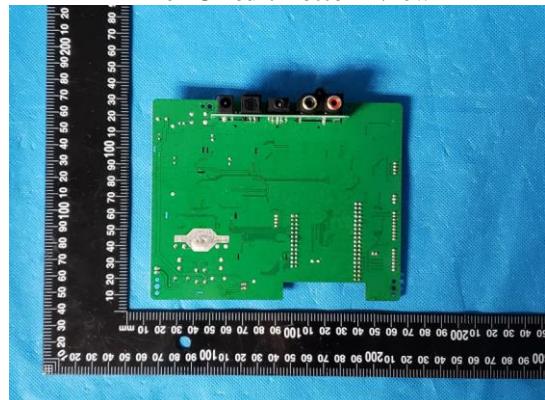
View of the product



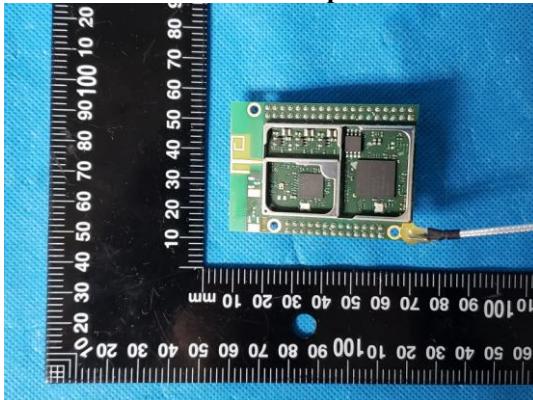
Inner Circuit Top View



Inner Circuit Bottom View



Inner Circuit Top View



Inner Circuit Bottom View



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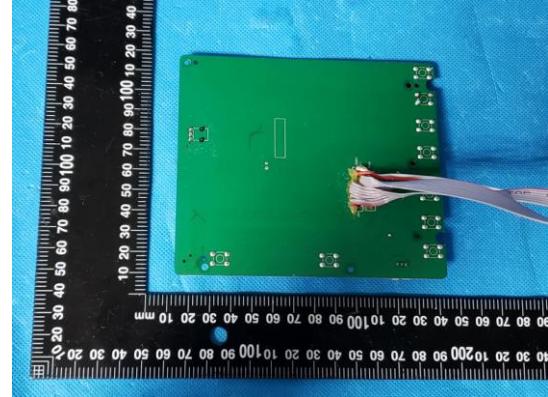
Page 49 of 52

### Photographs of EUT

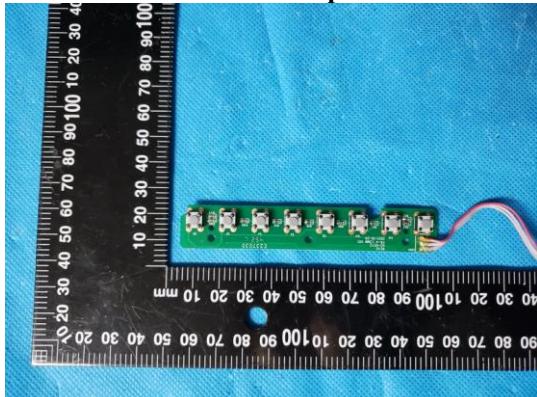
Inner Circuit Top View



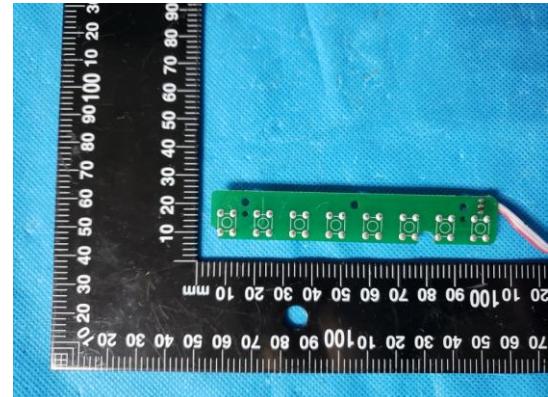
Inner Circuit Bottom View



Inner Circuit Top View



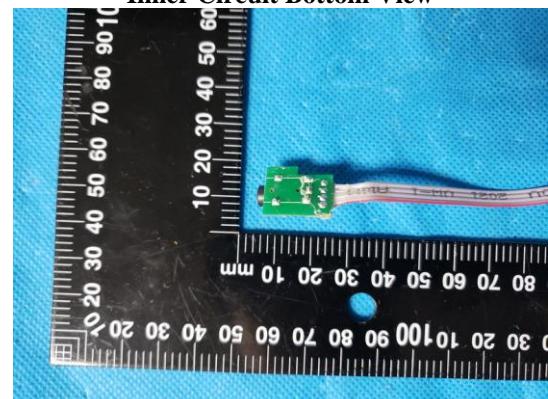
Inner Circuit Bottom View



Inner Circuit Top View



Inner Circuit Bottom View



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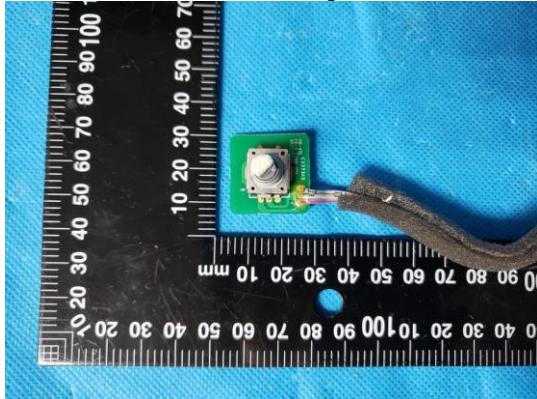
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No. : HMD22040012

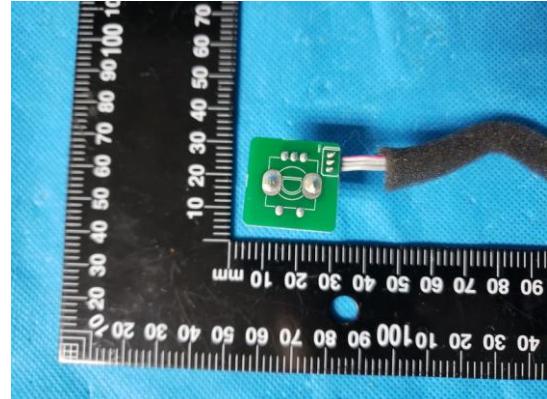
Page 50 of 52

### Photographs of EUT

Inner Circuit Top View



Inner Circuit Bottom View



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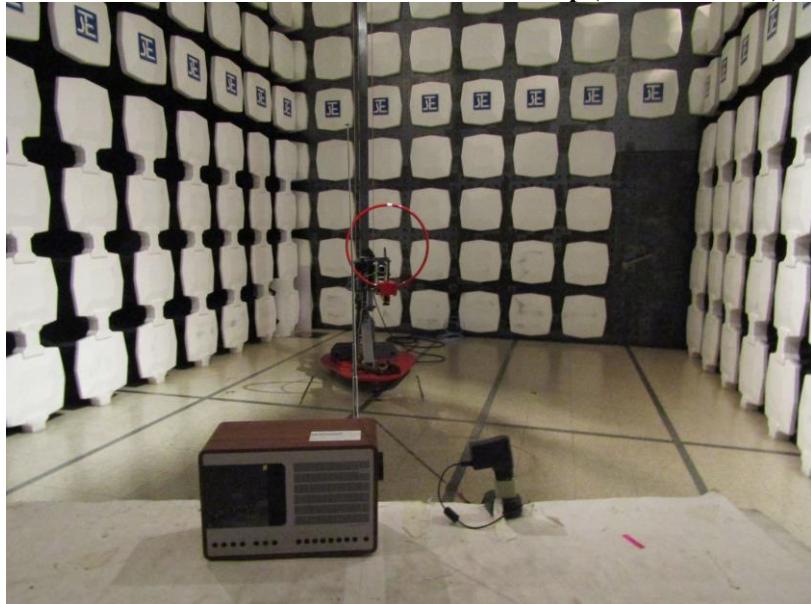
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No. : HMD22040012

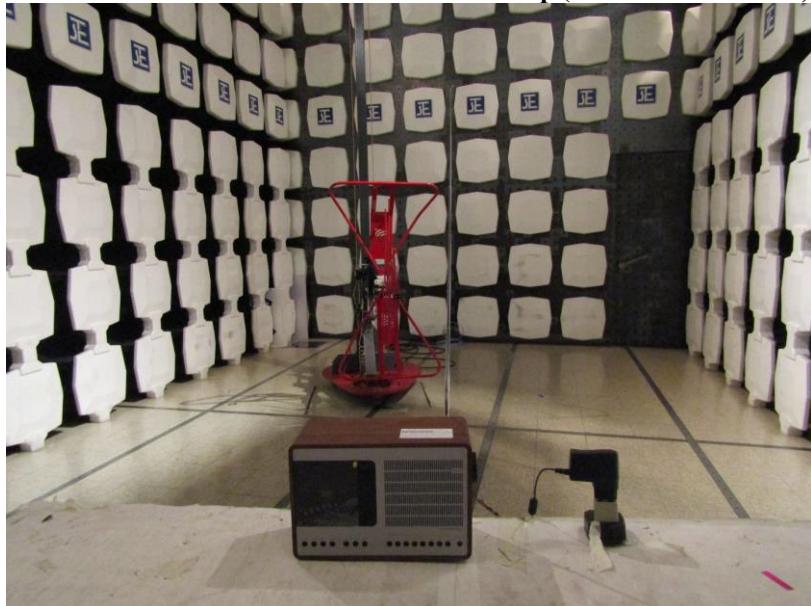
Page 51 of 52

### Photographs of EUT

Measurement of Radiated Emission Test Set Up (9kHz – 30MHz)



Measurement of Radiated Emission Test Set Up (30MHz to 1000MHz)



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## Test Report

Date : 2022-04-26  
No. : HMD22040012

Page 52 of 52

### Photographs of EUT

**Measurement of Radiated Emission Test Set Up (Above 1000MHz)**



**Measurement of Conducted Emission Test Set Up**



\*\*\*\*\* End of Test Report \*\*\*\*\*

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