

Prüfbericht-Nr.: <i>Test report no.:</i>	CN22PK9E 001	Auftrags-Nr.: <i>Order no.:</i>	168392703	Seite 1 von 23 <i>Page 1 of 23</i>
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	2022-09-28	
Auftraggeber: <i>Client:</i>	Degrii, Inc. 8 The Green, Ste A, Dover, DE 19901, United States			
Prüfgegenstand: <i>Test item:</i>	Degrii Smart Thermostat			
Bezeichnung / Typ-Nr.: <i>Identification / Type no.:</i>	THM (Trademark: Degrii)			
Auftrags-Inhalt: <i>Order content:</i>	FCC and IC approval			
Prüfgrundlage: <i>Test specification:</i>	CFR47 FCC Part 15: Subpart C Section 15.247 RSS-247 Issue 2 February 2017 CFR47 FCC Part 15: Subpart C Section 15.207 RSS-Gen Issue 5 February 2021 CFR47 FCC Part 15: Subpart C Section 15.209 RSS-102 Issue 5 February 2021 CFR47 FCC Part 2: Section 2.1091			
Wareneingangsdatum: <i>Date of sample receipt:</i>	2022-10-10	Please refer to photo documents		
Prüfmuster-Nr.: <i>Test sample no.:</i>	A003345059-001 to 003			
Prüfzeitraum: <i>Testing period:</i>	2022-10-11 – 2022-10-31			
Ort der Prüfung: <i>Place of testing:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von: <i>tested by:</i>	genehmigt von: <i>authorized by:</i>			
Datum: <i>Date:</i> 2022-12-01	 Signed by: Alex Lan		 Signed by: Lin Lin	
Stellung / Position	Assistant Project Manager	Ausstellungsdatum: <i>Issue date:</i> 2022-12-02		
Stellung / Position		Reviewerr		
Sonstiges / Other:				
FCC ID: 2A82N-DEGRIITHM IC: 29487-DEGRIITHM HVIN: THM				
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>		Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged:</i>		
* Legende: 1 = sehr gut 2 = gut 3 = befriedigend 4 = ausreichend 5 = mangelhaft P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet Legend: 1 = very good 2 = good 3 = satisfactory 4 = sufficient 5 = poor P(ass) = passed a.m. test specifications(s) F(ail) = failed a.m. test specifications(s) N/A = not applicable N/T = not tested				
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. <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

5.1.1 ANTENNA REQUIREMENT

RESULT: Pass

5.1.2 MAXIMUM CONDUCTED PEAK OUTPUT POWER

RESULT: Pass

5.1.3 CONDUCTED POWER SPECTRAL DENSITY

RESULT: Pass

5.1.4 99%dB BANDWIDTH

RESULT: Pass

5.1.5 6dB BANDWIDTH

RESULT: Pass

5.1.6 CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 KHz BANDWIDTH

RESULT: Pass

5.1.7 RADIATED SPURIOUS EMISSION

RESULT: Pass

5.1.8 CONDUCTED EMISSION ON AC MAINS

RESULT: Pass

6.1.1 ELECTROMAGNETIC FIELDS

RESULT: Pass

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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: Photographs of the Test Set-up.

Appendix B: Test Results.

2 Test Sites

2.1 Test Facilities

TÜV Rheinland (Shenzhen) Co., Ltd.

No. 362 Huanguan Road Middle, Longhua District, Shenzhen 518110, People's Republic of China

FCC Registration No.: 694916

IC Registration No.: 25069 and the CAB identifier is CN0078.

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Radio Spectrum Testing (TS8997)				
Equipment	Manufacturer	Model	Serial No.	Cal. until
Signal Analyzer	R&S	FSV 40	101441	2023-08-01
OSP	R&S	OSP 150	101017	2023-12-01
Control PC	DELL	OptiPlex 7050	FTJZ9P2	N/A
Test Software	R&S	WMS32 (V11.00.00)	N/A	N/A
Power Meter	R&S	NRP2	107105	2023-12-01
Wideband Power Sensor	R&S	NRP-Z81	105677	2023-08-01
Shielding Room 8#	Albatross	SR8	APC17151-SR8	2024-06-22
Unwanted Emission Testing (TS9975)				
Equipment	Manufacturer	Model	Serial No.	Cal. until
EMI Test Receiver	R&S	ESR 7	102021	2023-08-02
Signal Analyzer	R&S	FSV 40	101439	2023-08-01
System Controller Interface	R&S	SCI-100	S10010038	N/A
Filterbank	R&S	Wlan	100759	2023-08-01
OSP	R&S	OSP 120	102040	N/A
Pre-amplifier	R&S	SCU08F1	08320031	2023-08-02
Amplifier	R&S	SCU-18F	180070	2023-08-02
Amplifier	R&S	SCU40A	100475	2023-08-02
Trilog Broadband Antenna (30 MHz - 7 GHz)	Schwarzbeck	VULB 9162	193	2024-08-06
Double-Ridged Antenna (1 -18 GHz)	ETS-LINDGREN	3117	00218717	2024-08-06
Wideband Ridged Horn Antenna (18-40 GHz)	Steatite	QMS-00880	19067	2024-08-27
Active Loop Antenna	Schwarzbeck	FMZB 1513	302	2023-08-06
Test software	R&S	EMC32 (V10.60.10)	N/A	N/A
Control PC	Dell	OptiPlex 7050	36NV9P2	N/A
3m Semi-Anechoic Chamber	Albatross	SAC-3m	APC17151-SAC	2024-06-22

Conducted Emissions				
Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
EMI Test Receiver	R&S	ESR3	102680	2023-02-27
Artificial Mains Network	R&S	ENV216	101445	2023-02-27
EMC32 test software	R&S	EMC32(Ver.10.50.00)	N/A	N/A

2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table.

Parameter	Uncertainty (k=2)
RF output power, conducted	± 0.99 dB
Occupied Channel Bandwidth	± 2.08 %
RF power density, conducted	± 0.99 dB
Unwanted Emissions, conducted	± 0.89 dB
Radiated Emission of Transmitter, valid up to 26.5 GHz	± 4.17 dB
Radiated Emission of Receiver, valid up to 26.5 GHz	± 4.17 dB
Conducted Emission, (9kHz to 150kHz)/(150kHz to 30MHz)	± 3.70 dB / ± 3.30 dB

2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix A & B of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) file for certification follow-up purposes.

2.7 Status of Facility Used for Testing

The TÜV Rheinland (Shenzhen) Co., Ltd. Test facility located at No. 362 Huanguan Road Middle, Longhua District, Shenzhen 518110, People's Republic of China. is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

3 General Product Information

3.1 Product Function and Intended Use

The EUT is Smart Thermostat which supported IEEE 802.11 b/g/n 2.4GHz Wi-Fi and Bluetooth Low Energy.

This product built-in two wireless module:

Module	Technology	Antenna type	Antenna gain
ESP32	BLE	PCB layout antenna	3.97dBi
WBR1	BLE	FPC antenna	4.88dBi
	2.4GHz Wi-Fi	FPC antenna	4.88dBi

The Wi-Fi and BLE supported Simultaneous transmission.

For details refer to the User Manual, Technical Description and Circuit Diagram.

3.2 Ratings and System Details

Table 2: Technical Specification of EUT

General Information of EUT	Value
Kind of Equipment	Degrii Smart Thermostat
Type Designation	THM
Trade Mark	Degrii
FCC ID	2A82N-DEGRIITHM
IC	29487-DEGRIITHM
HVIN	THM
Operating Voltage	AC 24V, 60Hz

Technical Specification of Wi-Fi 802.11 b/g/n (WBR1)	
Operating Frequency	2412 - 2462 MHz for 802.11b/g/n(HT20)
Type of Modulation	DSSS(DBPSK/DQPSK/CCK) OFDM(BPSK/QPSK/16QAM/64QAM)
Data Rate	1/2/5.5/11 Mbps for 802.11b 6/9/12/18/24/36/48/54 Mbps for 802.11g MCS0 ~ MCS7 for 802.11n
Channel Number	11 channels for 802.11b/g/n(HT20)
Channel Separation	5 MHz
Number of Antenna:	1
Antenna type	FPC antenna
Antenna Gain:	4.88dBi

Technical Specification of Bluetooth Low Energy (WBR1)	
Operating Frequency	2402 – 2480 MHz
Data rate	1Mbps
Channel Number	40 channels
Channel separation	2MHz
Modulation	GFSK
Number of Antenna	1
Antenna Type	FPC antenna
Antenna Gain	4.88dBi

Technical Specification of Bluetooth Low Energy (ESP32)	
Operating Frequency	2402 – 2480 MHz
Data rate	1Mbps
Channel Number	40 channels
Channel separation	2MHz
Modulation	GFSK
Number of Antenna	1
Antenna Type	PCB Layout antenna
Antenna Gain	3.97dBi

Table 3: RF Channel and Frequency of Wi-Fi 802.11 b/g/n

RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
01	2412	05	2432	09	2452
02	2417	06	2437	10	2457
03	2422	07	2442	11	2462
04	2427	08	2447	/	/

Table 4: RF Channel and Frequency of Bluetooth Low Energy

RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
00	2402.00	10	2422.00	20	2442.00	30	2462.00
01	2404.00	11	2424.00	21	2444.00	31	2464.00
02	2406.00	12	2426.00	22	2446.00	32	2466.00
03	2408.00	13	2428.00	23	2448.00	33	2468.00
04	2410.00	14	2430.00	24	2450.00	34	2470.00
05	2412.00	15	2432.00	25	2452.00	35	2472.00
06	2414.00	16	2434.00	26	2454.00	36	2474.00
07	2416.00	17	2436.00	27	2456.00	37	2476.00
08	2418.00	18	2438.00	28	2458.00	38	2478.00
09	2420.00	19	2440.00	29	2460.00	39	2480.00

3.3 Independent Operation Modes

The basic operation modes are:

- A. On, Wi-Fi transmitting mode
 - 1) Low Channel
 - 2) Middle Channel
 - 3) High Channel
- B. On (Bluetooth and Wi-Fi connected)
- C. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

3.5 Submitted Documents

- | | |
|----------------------------------|------------------|
| - Application Form | - Photo Document |
| - Block Diagram | - Schematics |
| - FCC/IC Label and Location Info | - User Manual |
| - Operation Description | |

4 Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

Radio Spectrum: The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5. All testing were performed according to the procedures in ANSI C63.10: 2013.

Table 5: List of Frequencies under Test, 802.11b/g/n

802.11b/g/n-HT20			
Test Channel	Channel Number	Frequency (MHz)	Remark
Low	1	2412	802.11b: 1Mbps 802.11g: 6Mbps 802.11n-HT20: MCS0
Middle	6	2437	
High	11	2462	

Note: All test modes have been pre-scanning test and only the worst case of test mode.

4.3 Special Accessories and Auxiliary Equipment

Table 6: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N	Rating
Laptop	Lenovo	T480	N/A	N/A
AC Adapter	N/A	K24-300	N/A	Input: 120VAC/60Hz, 18W Output: 24VAC 300mA

4.4 Countermeasures to Achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Technical Construction File (TCF).

No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

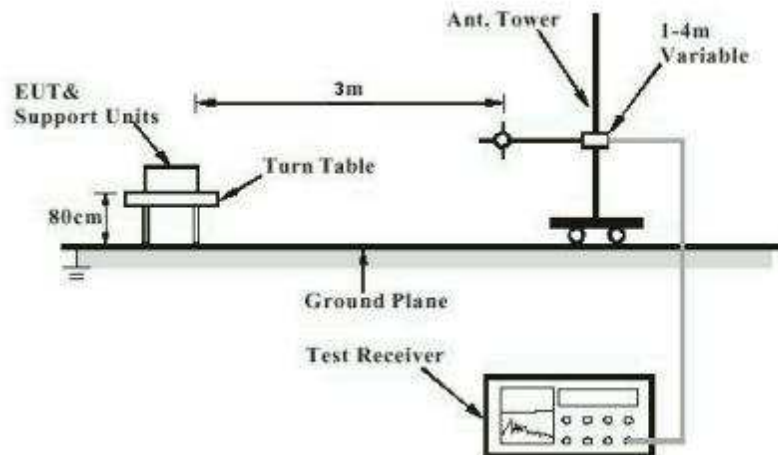


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

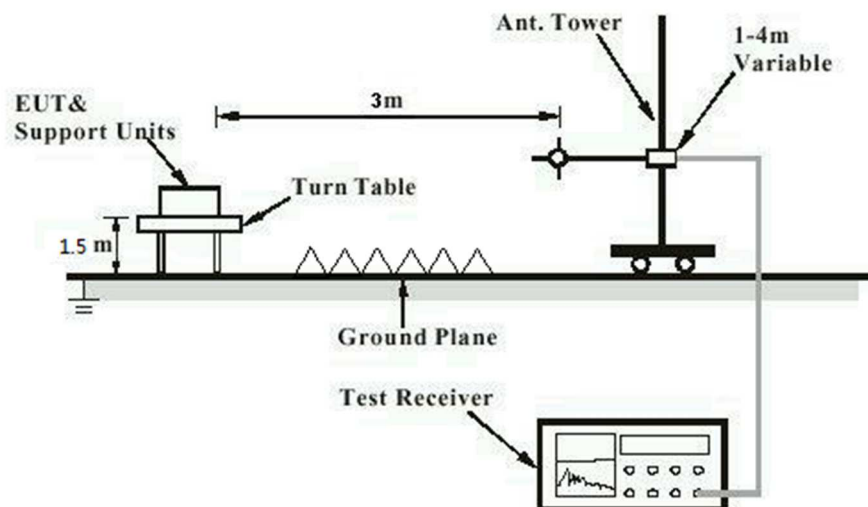


Diagram of Measurement Configuration for Mains Conduction Measurement

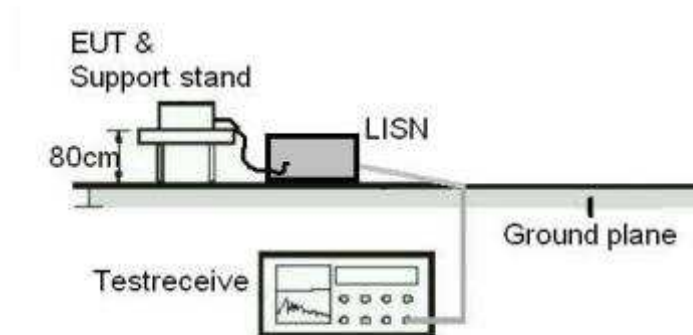
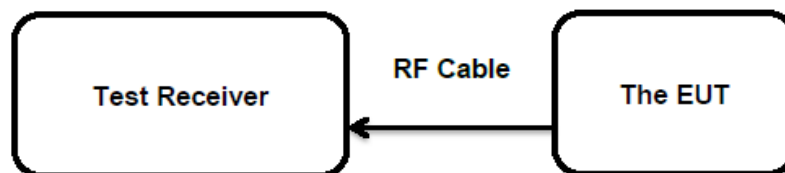


Diagram of Measurement Configuration for Conducted Transmitter Measurement



5 Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT:**Pass****Test Specification**

Test standard : FCC Part 15.247(b)(4) and Part 15.203
RSS-Gen Clause 6.7
Limit : the use of antennas with directional gains that do not
exceed 6 dBi

According to the manufacturer declared, the EUT has two antenna, the maximum directional gain of antenna are 4.88 dBi and 3.97dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to comply with the provision.

Refer to EUT Photo for further details.

5.1.2 Maximum Conducted Peak Output Power

RESULT:
Pass
Test Specification

Test standard : FCC Part 15.247(b)(3)
 : RSS-247 Clause 5.4(2)&(4)
 Basic standard : ANSI C63.10: 2013
 Limits : < 1 Watt (Maximum Conducted Peak Power)
 : e.i.r.p. <4W
 Kind of test site : Shielded Room

Test Setup

Date of testing : 2022-10-24
 Input voltage : AC 120V, 60Hz
 Operation mode : A
 Test channel : Low / Middle / High
 Ambient temperature : 24.8 °C
 Relative humidity : 55 %
 Atmospheric pressure : 101 kPa

For details refer to following test result.

Table 7: Test Result of Maximum Conducted Peak Output Power

Test mode	Test channel (MHz)	Maximum Conducted Peak power (dBm)
802.11b	2412	23.2
	2437	20.3
	2462	19.0
802.11g	2412	24.0
	2437	24.5
	2462	23.0
802.11n-HT20	2412	22.6
	2437	23.4
	2462	22.9

Note: The cable loss is taken into account in results and the e.i.r.p. is 29.38 dBm and them less than 4W (36 dBm).

5.1.3 Conducted Power Spectral Density

RESULT:**Pass****Test Specification**

Test standard	: FCC Part 15.247(e)
	: RSS-247 Clause 5.2(2)
Basic standard	: ANSI C63.10: 2013
Limits	: 8 dBm / 3kHz
Kind of test site	: Shielded Room

Test Setup

Date of testing	: 2022-10-21 to 2022-10-24
Input voltage	: AC 120V, 60Hz
Operation mode	: A
Test channel	: Low / Middle / High
Ambient temperature	: 24.8 °C
Relative humidity	: 55 %
Atmospheric pressure	: 101 kPa

Table 8: Test Result of Power Spectral Density

Test mode	Test channel (MHz)	Measured Peak Power Spectral Density (dBm/3KHz)
802.11b	2412	-1.35
	2437	-4.42
	2462	-4.70
802.11g	2412	-7.84
	2437	-7.80
	2462	-9.86
802.11n-HT20	2412	-8.99
	2437	-8.74
	2462	-8.77

Note: The cable loss is taken into account in results.

For the measurement records, refer to the appendix B.

5.1.4 99%dB Bandwidth

RESULT:**Pass****Test Specification**

Test standard : RSS-Gen clause 6.7
Basic standard : ANSI C63.10: 2013
Kind of test site : Shielded Room

Test Setup

Date of testing : 2022-10-11
Input voltage : AC 120V, 60Hz
Operation mode : A
Test channel : Low / Middle / High
Ambient temperature : 24.8 °C
Relative humidity : 55 %
Atmospheric pressure : 101 kPa

Table 9: Test Result of 99% Bandwidth

Test Mode	Frequency (MHz)	99% Bandwidth (MHz)	Limit (MHz)
802.11b	2412	14.10	/
	2437	14.10	
	2462	14.10	
802.11g	2412	16.70	
	2437	16.70	
	2462	16.70	
802.11n (HT20)	2412	17.80	
	2437	17.80	
	2462	17.80	

For the measurement records, refer to the appendix B.

5.1.5 6dB Bandwidth

RESULT:**Pass****Test Specification**

Test standard	: FCC Part 15.247(a)(2)
	: RSS-247 Clause 5.2(a)
Basic standard	: ANSI C63.10: 2013
Limits	: > 500 KHz
Kind of test site	: Shielded Room

Test Setup

Date of testing	: 2022-10-11
Input voltage	: AC 120V, 60Hz
Operation mode	: A
Test channel	: Low / Middle / High
Ambient temperature	: 24.8 °C
Relative humidity	: 55 %
Atmospheric pressure	: 101 kPa

For details refer to following test result.

Table 10: Test Result of 6dB Bandwidth

Test Mode	Frequency (MHz)	-6dB Bandwidth (MHz)	Limit (KHz)
802.11b	2412	9.15	> 500
	2437	9.20	
	2462	9.20	
802.11g	2412	16.65	
	2437	16.60	
	2462	16.65	
802.11n (HT20)	2412	17.85	
	2437	17.85	
	2462	17.85	

For the measurement records, refer to the appendix B.

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5.1.6 Conducted Spurious Emissions Measured in 100 kHz Bandwidth**RESULT:****Pass****Test Specification**

Test standard	: FCC Part 15.247(d) RSS-247 Clause 5.5
Basic standard	: ANSI C63.10: 2013
Limits	: 20dB (below that in the 100kHz bandwidth within the band that contains the highest level of the desired power); In addition, radiated emissions which fall in the restricted bands, must also comply with the radiated emission limits specified in 15.209(a)
Kind of test site	: Shielded Room

Test Setup

Date of testing	: 2022-10-21 to 2022-10-24
Input voltage	: AC 120V, 60Hz
Operation mode	: A
Test channel	: Low / Middle / High
Ambient temperature	: 24.8 °C
Relative humidity	: 55 %
Atmospheric pressure	: 101 kPa

Test results of 100kHz Bandwidth of Frequency Band Edge by Conducted method refer to test plots, and compliance is achieved as well.

For the measurement records, refer to the appendix B.

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5.1.7 Radiated Spurious Emission

RESULT:**Pass****Test Specification**

Test standard	: FCC Part 15.247(d) & FCC Part 15.205 RSS-247 Clause 3.3 & 5.5
Basic standard	: ANSI C63.10: 2013
Limits	: Refer to 15.209(a) of FCC part 15.247(d) RSS-Gen Table 4 & Table 5
Kind of test site	: 3m Semi-anechoic Chamber

Test Setup

Date of testing	: 2022-10-20 to 2022-10-21
Input voltage	: AC 120V, 60Hz
Operation mode	: A, B
Test channel	: Low / Middle / High
Ambient temperature	: 23 °C
Relative humidity	: 56 %
Atmospheric pressure	: 101 kPa

Remark:

Testing was carried out within frequency range 9kHz to the tenth harmonics. Only the worst case spurious emissions configuration of the each mode were reported.

For the measurement records, refer to the appendix B.

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5.1.8 Conducted Emission on AC Mains

RESULT:**Pass****Test Specification**

Test standard	: FCC Part 15.207(a)
	: RSS-Gen Clause 8.8
Basic standard	: ANSI C63.10: 2013
Frequency range	: 0.15 – 30MHz
Limits	: FCC Part 15.207(a)
	: RSS-Gen Table 4
Kind of test site	: Shielded Room

Test Setup

Date of testing	: 2022-10-31
Input voltage	: AC 120V, 60Hz
Operation mode	: B
Earthing	: Not connected
Ambient temperature	: 24.6 °C
Relative humidity	: 49.5 %
Atmospheric pressure	: 101 kPa

For the measurement records, refer to the appendix B.

6 Safety Human Exposure

6.1 Radio Frequency Exposure Compliance

6.1.1 Electromagnetic Fields

RESULT:
Pass
Test Specification

Test standard : FCC KDB Publication 447498 v06
CFR47 FCC Part 2: Section 2.1091
CFR47 FCC Part 1: Section 1.1310
RSS-102 Issue 5 February 2021

➤ **FCC requirements**

FCC requirement: Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 20cm normally can be maintained between the user and the device.

MPE Calculation Method according to KDB 447498 v06

Power Density: $S_{(mW/cm^2)} = PG/4\pi R^2$ or $EIRP/4\pi R^2$

Where:

S = power density (mW/cm²)

P = power input to the antenna (mW)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna (cm)

From the peak RF output power, the minimum mobile separation distance, d=20 cm, as well as the antenna gain, the RF power density can be calculated as below:

$$S_{(mW/cm^2)} = PG/4\pi R^2$$

a) EUT RF Exposure Evaluation standalone operations

Test Mode	Maximum conducted Power		Antenna Gain (dBi)	Measured e.i.r.p		$S_{(mW/cm^2)} = PG/4\pi R^2$	Limit (mW/cm ²)
	(dBm)	(mW)		(dBm)	(mW)		
BLE (ESP)	18.7	74.131	3.97	22.67	184.927	0.037	1.0
BLE (WBR1)	5.4	3.467	4.88	10.28	10.666	0.002	1.0
2.4GHz Wi-Fi	24.5	281.838	4.88	29.38	866.962	0.17	1.0

b) EUT RF Exposure Evaluation simultaneous transmission operations

Simultaneous transmission mode	The sum of the ratios	Result
BLE(ESP32) + BLE (WBR1) + 2.4GHz Wi-Fi	$0.037/1 + 0.17/1 < 1$	Pass

➤ **IC requirements:** The EUT shall comply with the requirement of RSS-102 section 2.5.2.

Exemption from Routine Evaluation Limits – RF Exposure Evaluation

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2} f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;

- RF exposure evaluation exempted power: 2.670 W

a) EUT RF Exposure Evaluation standalone operations:

Test Mode	Measured Peak Power		Antenna Gain (dBi)	Measured e.i.r.p (mW)	
	(dBm)	(mW)		(dBm)	(mW)
BLE (ESP)	18.7	74.131	3.97	22.67	184.927
BLE (WBR1)	5.4	3.467	4.88	10.28	10.666
2.4GHz Wi-Fi	24.5	281.838	4.88	29.38	866.962

b) EUT RF Exposure Evaluation simultaneous transmission operations

Simultaneous transmission mode	The sum of the ratios	Result
BLE(ESP32) + BLE (WBR1) + 2.4GHz Wi-Fi	$0.18/2.67 + 0.867/2.67 < 1$	Pass

The e.i.r.p. for BLE and DTSS are less than the RF exposure evaluation exempted power. So RF exposure evaluation is not required.

“RF Radiation Exposure Statement Caution: This Transmitter must be installed to provide a separation distance of at least 20 cm from all persons.”

7 Photographs of the Test Set-Up

For photographs of the test set-up, refer to the appendix A.

8 List of Tables

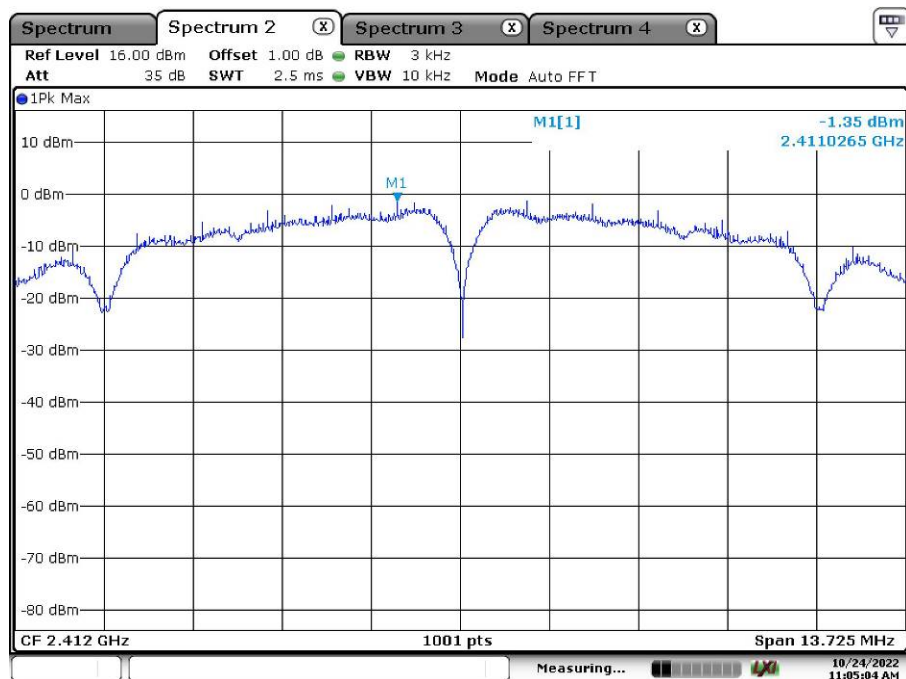
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Appendix B: Test Results of Wi-Fi 802.11 b/g/n

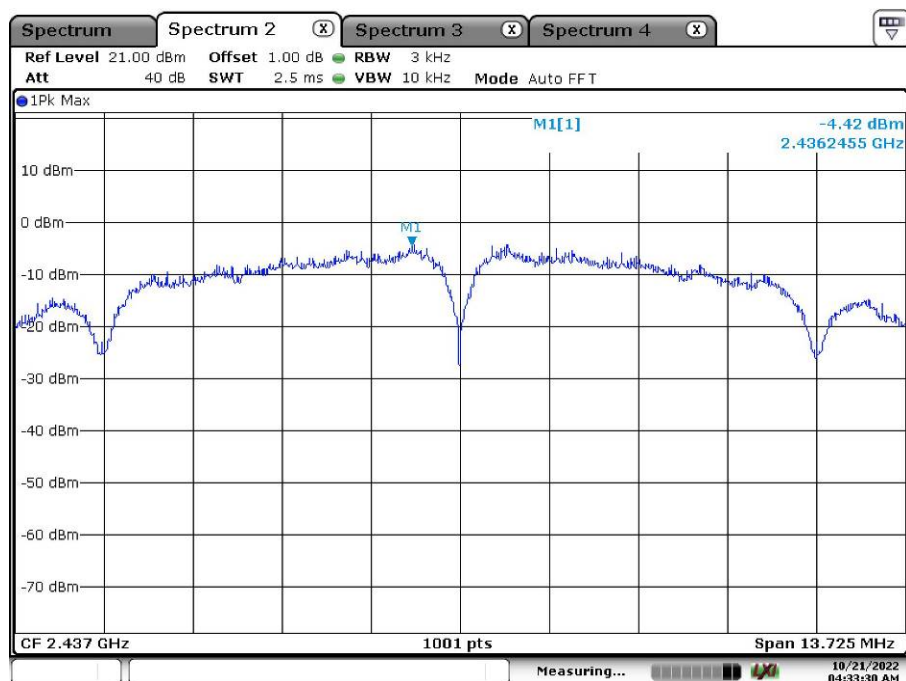
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Appendix B.1: Test Results of Conducted Power Spectral Density

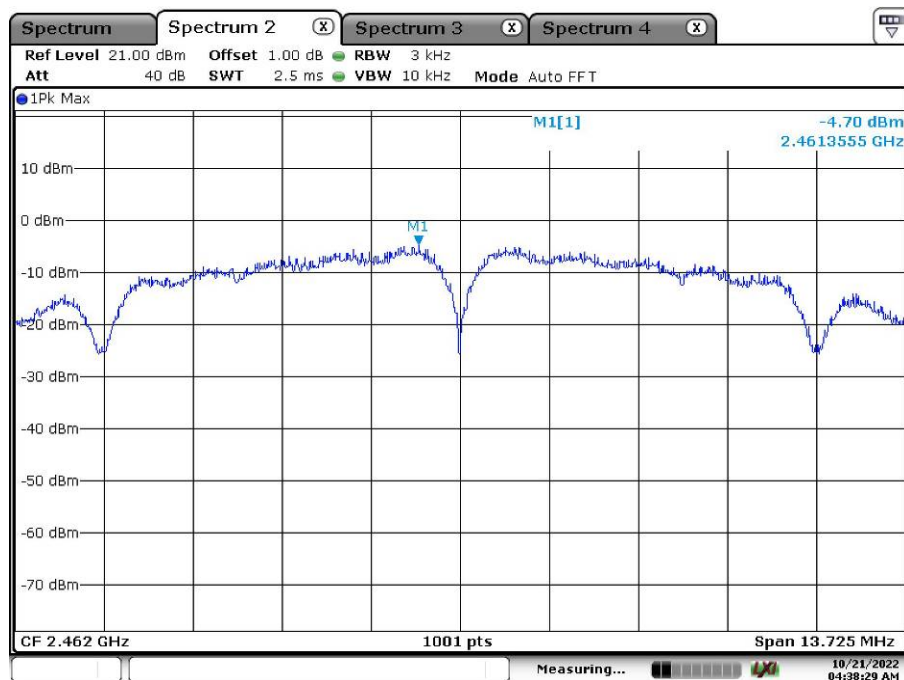
Wi-Fi 802.11 b mode, 1 Mbps



Date: 24.OCT.2022 11:05:05

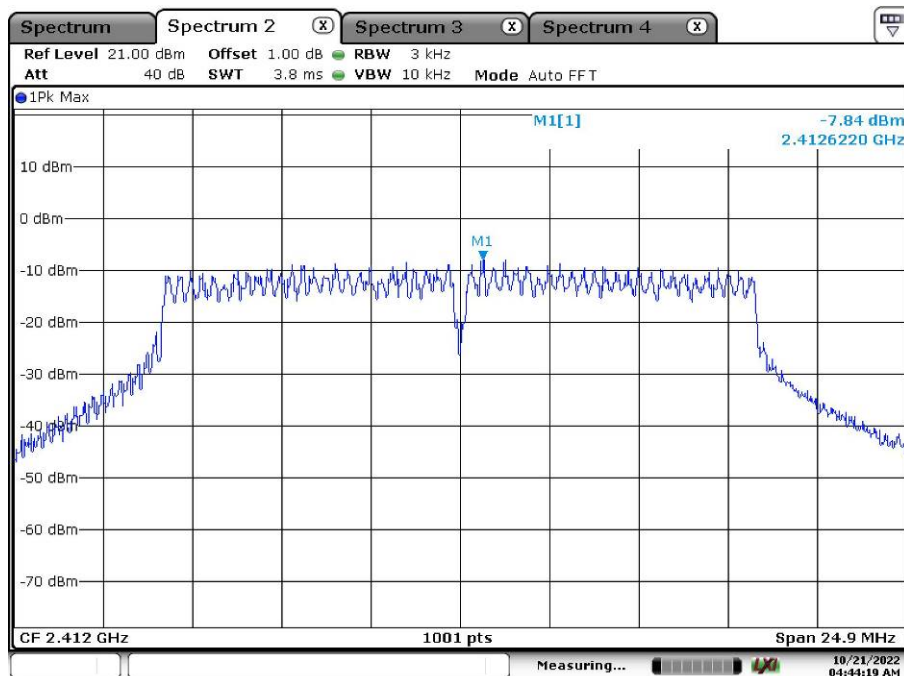


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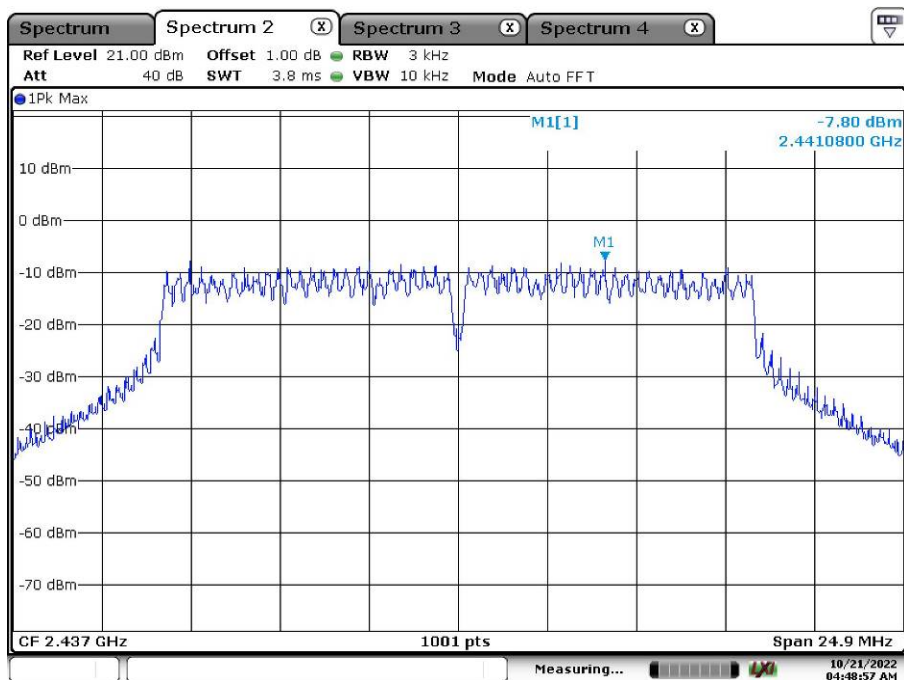


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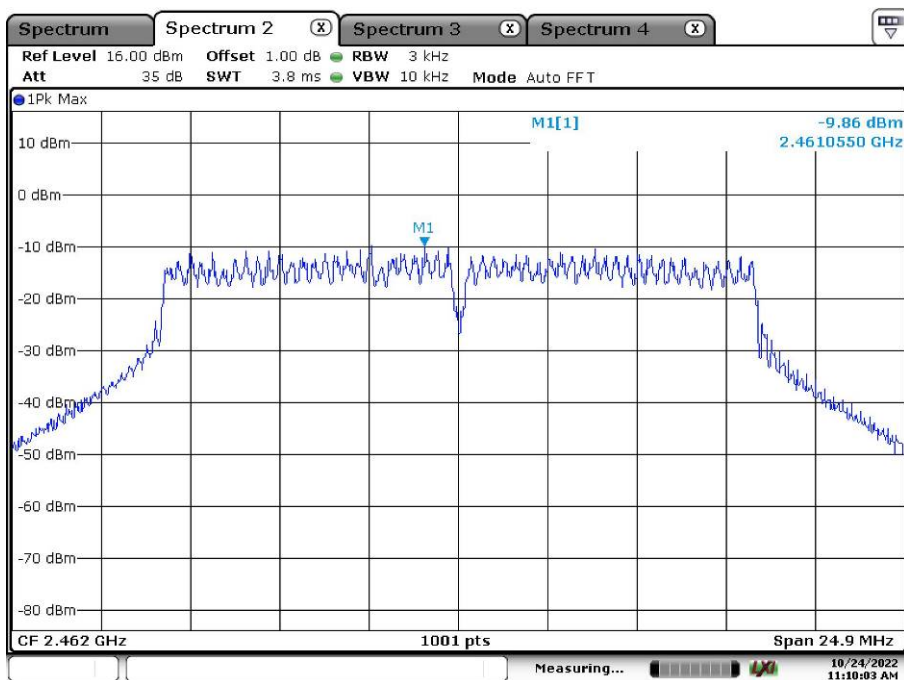
Wi-Fi 802.11 g mode, 6 Mbps



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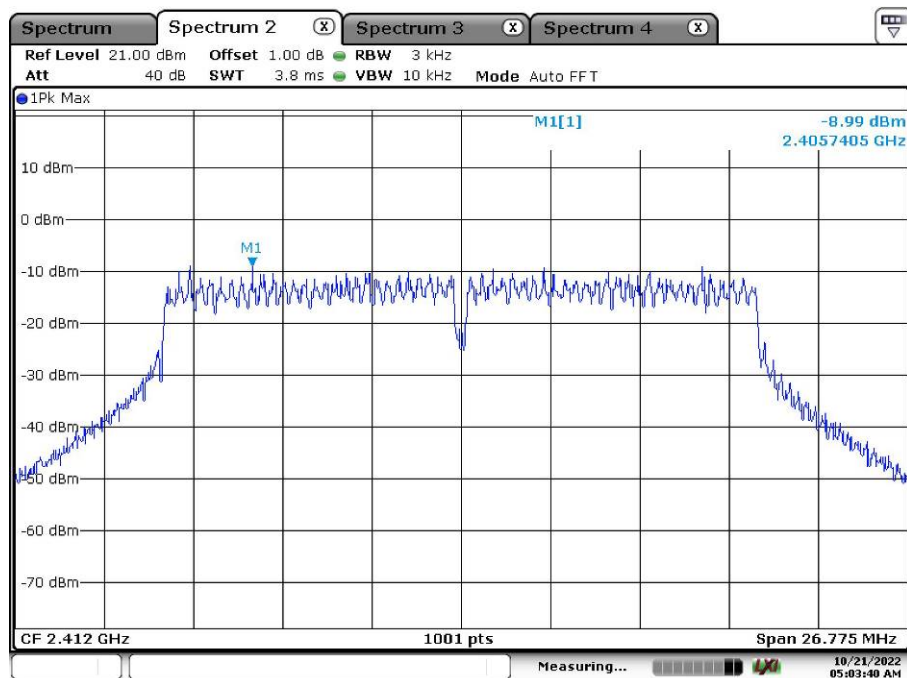


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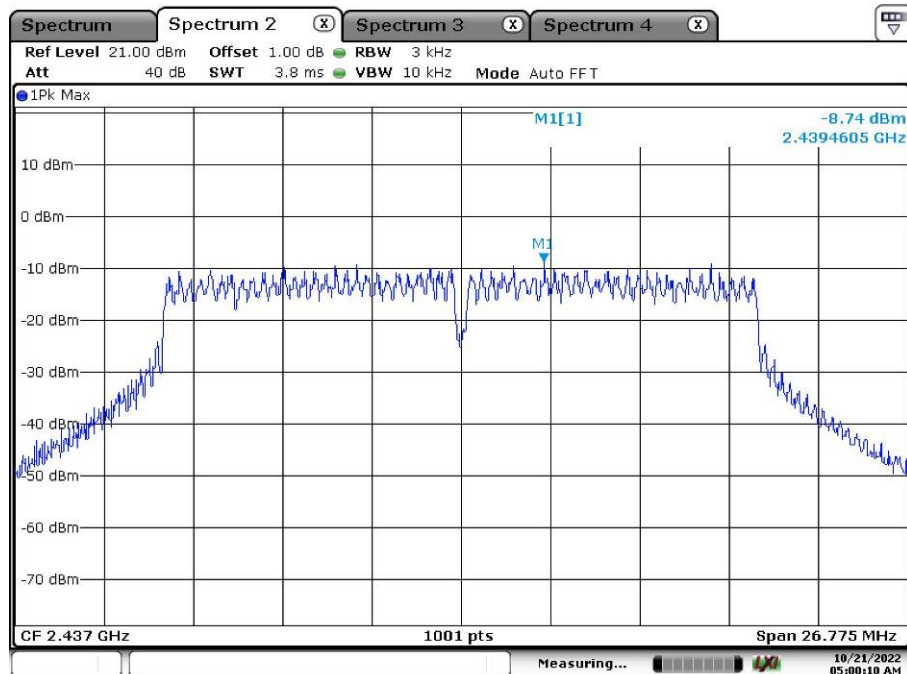


Date: 24.OCT.2022 11:10:03

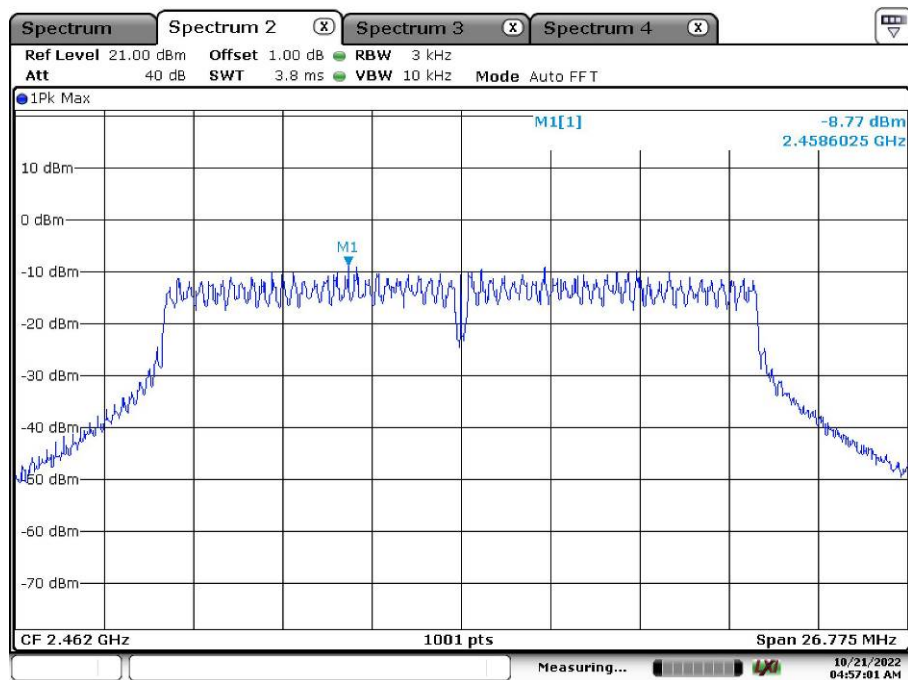
Wi-Fi 802.11 n(HT20) mode, MCS0



Date: 21.OCT.2022 05:03:40



Date: 21.OCT.2022 05:00:10



Date: 21.OCT.2022 04:57:01

Appendix B.2: Test Results of 6dB Bandwidth

Wi-Fi 802.11 b mode, 1 Mbps

Minimum Emission Bandwidth 6 dB (2412 MHz; 30.000 dBm; 20 MHz(11b_20Mhz))

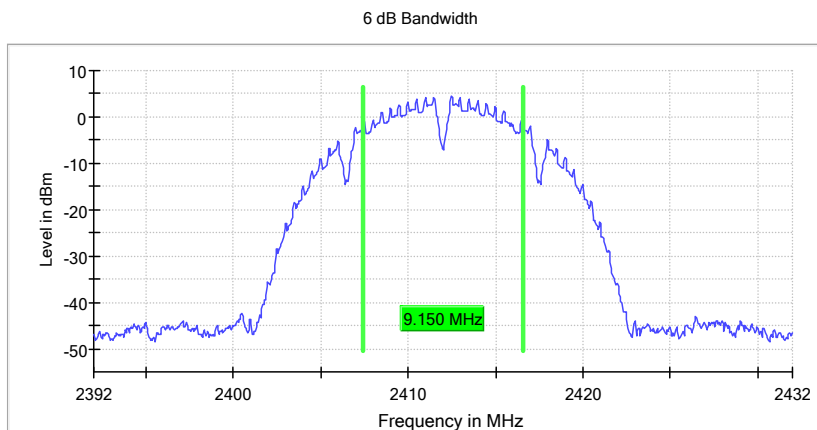
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2412.000000	9.150000	0.500000	---	2407.425000	2416.575000

(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2412.000000	4.4	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.39200 GHz	2.39200 GHz
Stop Frequency	2.43200 GHz	2.43200 GHz
Span	40.000 MHz	40.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	800	~ 800
Sweeptime	94.922 µs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	11 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.27 dB	0.50 dB

Minimum Emission Bandwidth 6 dB (2437 MHz; 30.000 dBm; 20 MHz(11b_20Mhz))

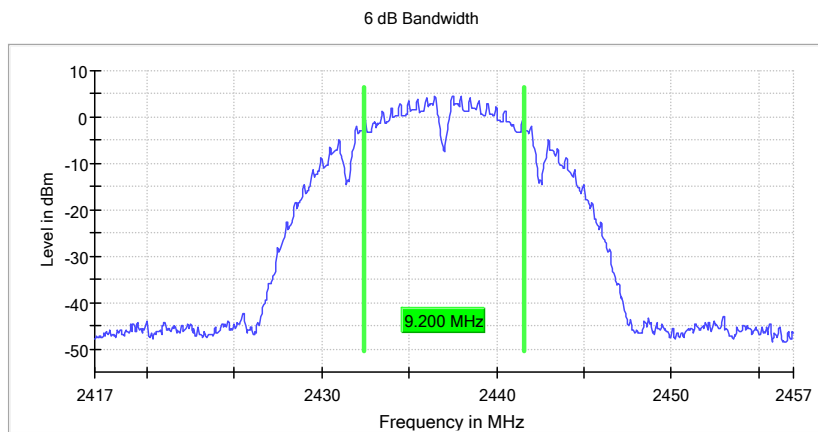
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2437.000000	9.200000	0.500000	---	2432.375000	2441.575000

(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2437.000000	4.5	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.41700 GHz	2.41700 GHz
Stop Frequency	2.45700 GHz	2.45700 GHz
Span	40.000 MHz	40.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	800	~ 800
Sweeptime	94.922 µs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	8 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.27 dB	0.50 dB

Minimum Emission Bandwidth 6 dB (2462 MHz; 30.000 dBm; 20 MHz(11b_20Mhz))

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

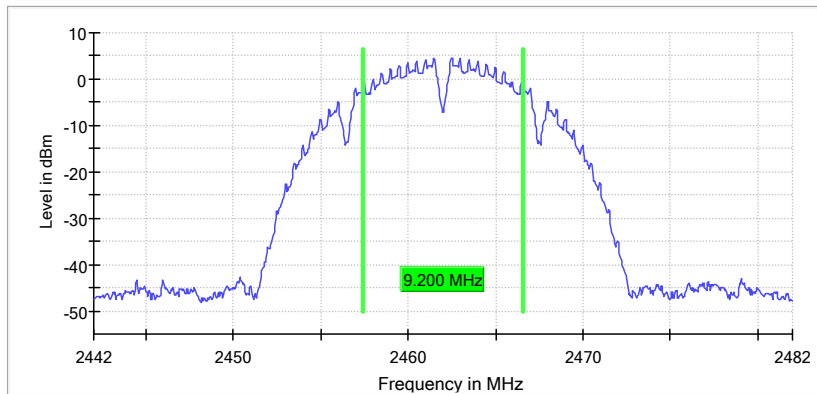
6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2462.000000	9.200000	0.500000	---	2457.375000	2466.575000

(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2462.000000	4.6	PASS

6 dB Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.44200 GHz	2.44200 GHz
Stop Frequency	2.48200 GHz	2.48200 GHz
Span	40.000 MHz	40.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	800	~ 800
SweepTime	94.922 µs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	10 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.03 dB	0.50 dB

Wi-Fi 802.11 g mode, 6 Mbps

Minimum Emission Bandwidth 6 dB (2412 MHz; 30.000 dBm; 20 MHz(11g_20Mhz))

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

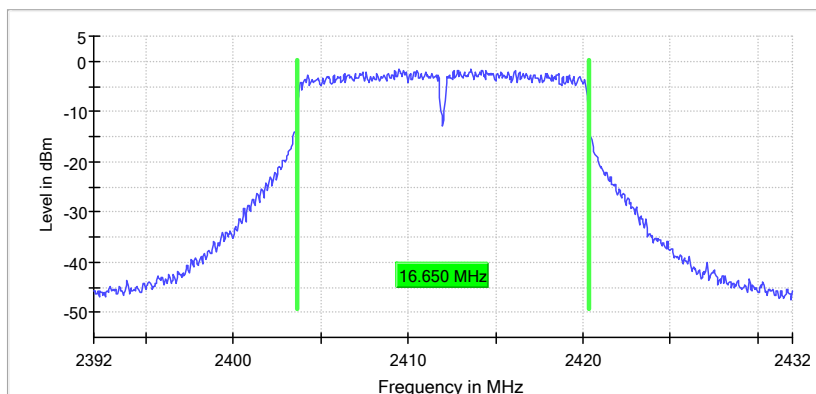
6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2412.000000	16.650000	0.500000	---	2403.675000	2420.325000

(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2412.000000	-1.6	PASS

6 dB Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.39200 GHz	2.39200 GHz
Stop Frequency	2.43200 GHz	2.43200 GHz
Span	40.000 MHz	40.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	800	~ 800
Sweeptime	94.922 µs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	21 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.08 dB	0.50 dB

Minimum Emission Bandwidth 6 dB (2437 MHz; 30.000 dBm; 20 MHz(11g_20Mhz))

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

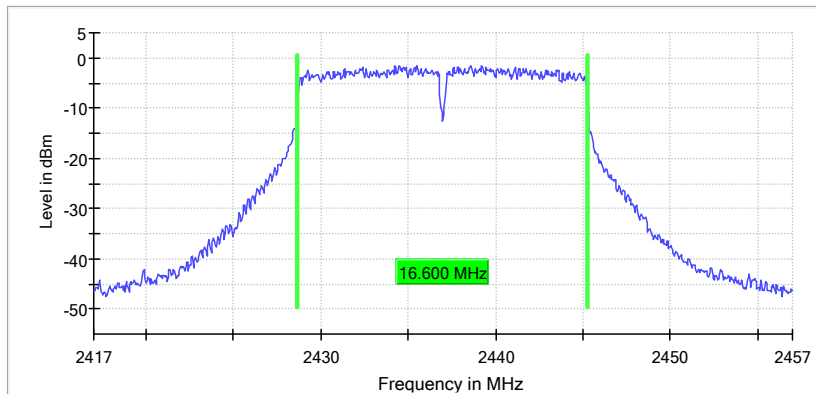
6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2437.000000	16.600000	0.500000	---	2428.675000	2445.275000

(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2437.000000	-1.5	PASS

6 dB Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.41700 GHz	2.41700 GHz
Stop Frequency	2.45700 GHz	2.45700 GHz
Span	40.000 MHz	40.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	800	~ 800
Sweptime	94.922 µs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	16 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.33 dB	0.50 dB

Minimum Emission Bandwidth 6 dB (2462 MHz; 30.000 dBm; 20 MHz(11g_20Mhz))

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

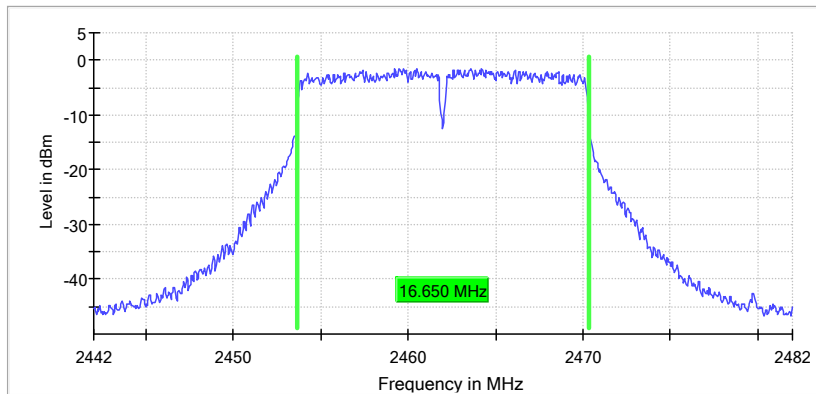
6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2462.000000	16.650000	0.500000	---	2453.675000	2470.325000

(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2462.000000	-1.5	PASS

6 dB Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.44200 GHz	2.44200 GHz
Stop Frequency	2.48200 GHz	2.48200 GHz
Span	40.000 MHz	40.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	800	~ 800
Sweptime	94.922 µs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	15 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.26 dB	0.50 dB

Wi-Fi 802.11 n(HT20) mode, MCS0

Minimum Emission Bandwidth 6 dB (2412 MHz; 30.000 dBm; 20 MHz(11n_20Mhz))

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

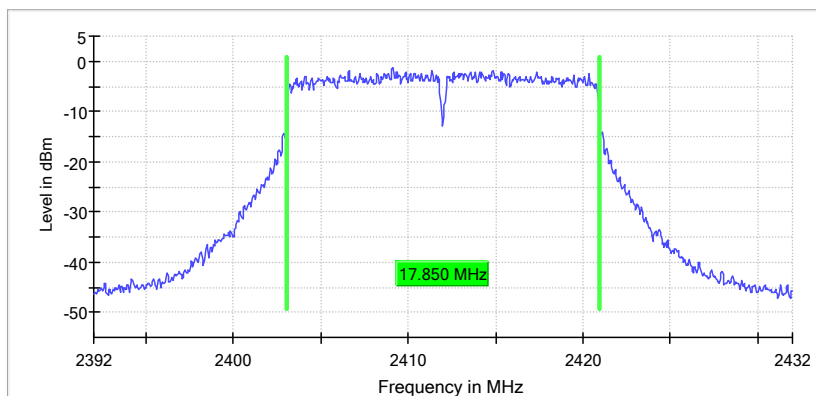
6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2412.000000	17.850000	0.500000	---	2403.075000	2420.925000

(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2412.000000	-1.2	PASS

6 dB Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.39200 GHz	2.39200 GHz
Stop Frequency	2.43200 GHz	2.43200 GHz
Span	40.000 MHz	40.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	800	~ 800
SweepTime	94.922 µs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	18 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.43 dB	0.50 dB

Minimum Emission Bandwidth 6 dB (2437 MHz; 30.000 dBm; 20 MHz(11n_20MHz))

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

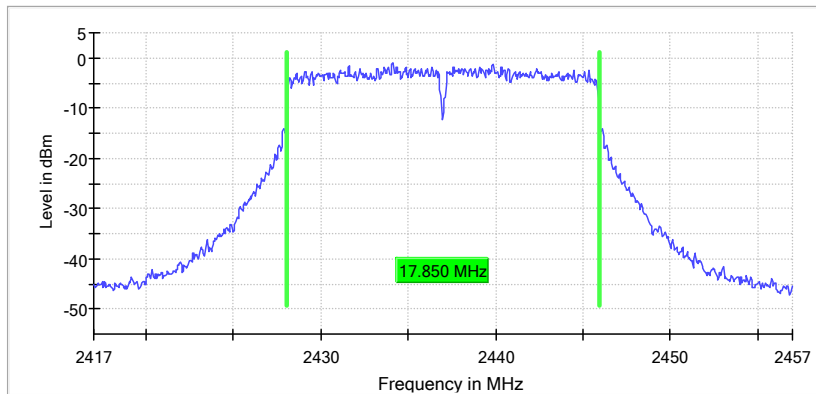
6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2437.000000	17.850000	0.500000	---	2428.075000	2445.925000

(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2437.000000	-1.0	PASS

6 dB Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.41700 GHz	2.41700 GHz
Stop Frequency	2.45700 GHz	2.45700 GHz
Span	40.000 MHz	40.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	800	~ 800
SweepTime	94.922 µs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	23 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.19 dB	0.50 dB

Minimum Emission Bandwidth 6 dB (2462 MHz; 30.000 dBm; 20 MHz(11n_20Mhz))

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

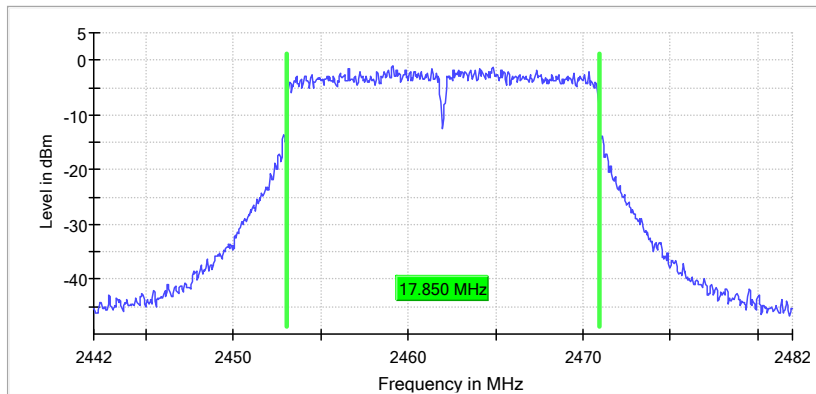
6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2462.000000	17.850000	0.500000	---	2453.075000	2470.925000

(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2462.000000	-1.0	PASS

6 dB Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.44200 GHz	2.44200 GHz
Stop Frequency	2.48200 GHz	2.48200 GHz
Span	40.000 MHz	40.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	800	~ 800
SweepTime	94.922 µs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	24 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.32 dB	0.50 dB

Appendix B.3: Test Results of 99% Bandwidth

Wi-Fi 802.11 b mode, 1 Mbps

Occupied Channel Bandwidth 99% (2412 MHz; 30.000 dBm; 20 MHz(11b_20Mhz))

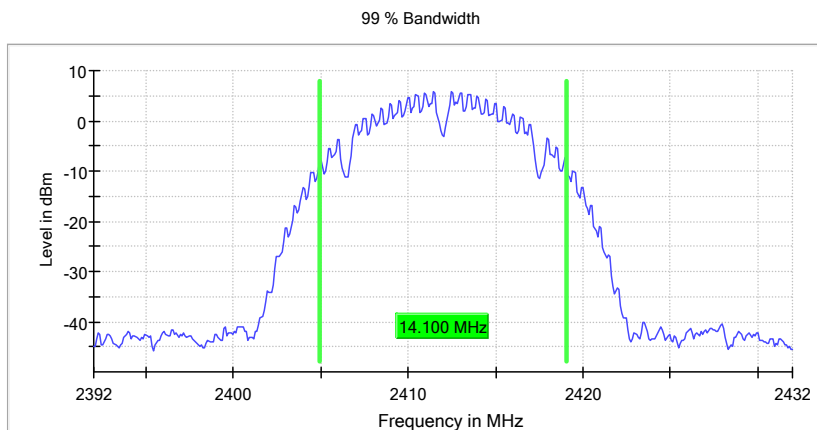
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2412.000000	14.100000	---	---	2404.950000	2419.050000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2412.000000	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.39200 GHz	2.39200 GHz
Stop Frequency	2.43200 GHz	2.43200 GHz
Span	40.000 MHz	40.000 MHz
RBW	200.000 kHz	>= 200.000 kHz
VBW	1.000 MHz	>= 600.000 kHz
SweepPoints	400	~ 400
SweepTime	47.266 µs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	8 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.08 dB	0.30 dB

Occupied Channel Bandwidth 99% (2437 MHz; 30.000 dBm; 20 MHz(11b_20Mhz))

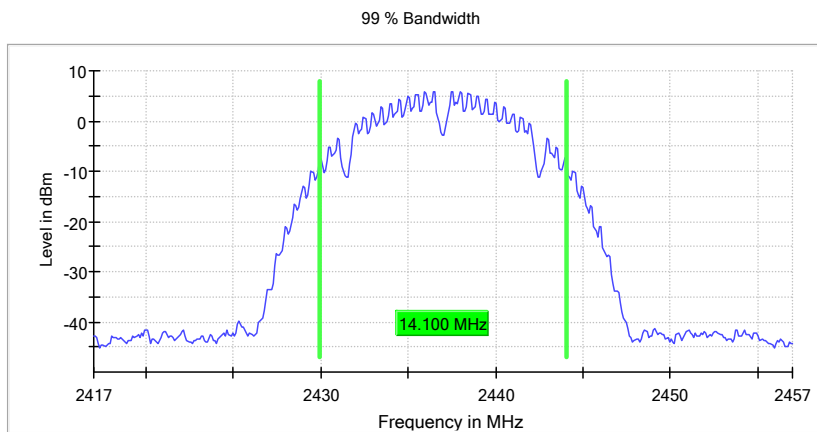
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2437.000000	14.100000	---	---	2429.950000	2444.050000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2437.000000	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.41700 GHz	2.41700 GHz
Stop Frequency	2.45700 GHz	2.45700 GHz
Span	40.000 MHz	40.000 MHz
RBW	200.000 kHz	>= 200.000 kHz
VBW	1.000 MHz	>= 600.000 kHz
SweepPoints	400	~ 400
Sweeptime	47.266 µs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	10 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.00 dB	0.30 dB

Occupied Channel Bandwidth 99% (2462 MHz; 30.000 dBm; 20 MHz(11b_20Mhz))

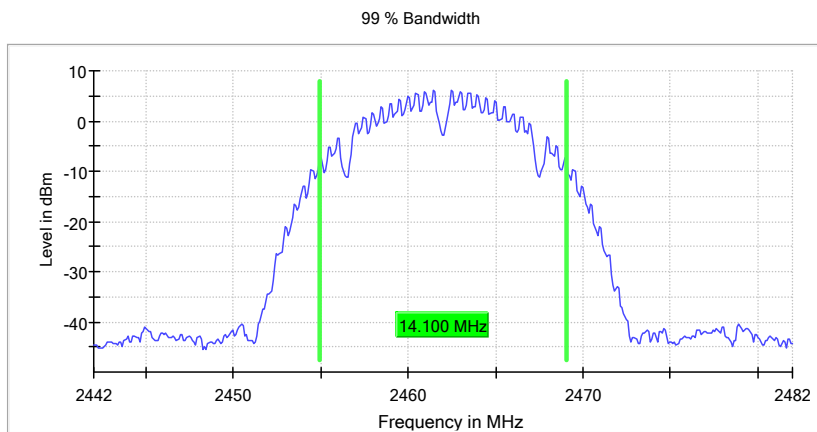
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2462.000000	14.100000	---	---	2454.950000	2469.050000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2462.000000	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.44200 GHz	2.44200 GHz
Stop Frequency	2.48200 GHz	2.48200 GHz
Span	40.000 MHz	40.000 MHz
RBW	200.000 kHz	>= 200.000 kHz
VBW	1.000 MHz	>= 600.000 kHz
SweepPoints	400	~ 400
Sweeptime	47.266 µs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	6 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.25 dB	0.30 dB

Wi-Fi 802.11 g mode, 6 Mbps

Occupied Channel Bandwidth 99% (2412 MHz; 30.000 dBm; 20 MHz(11g_20Mhz))

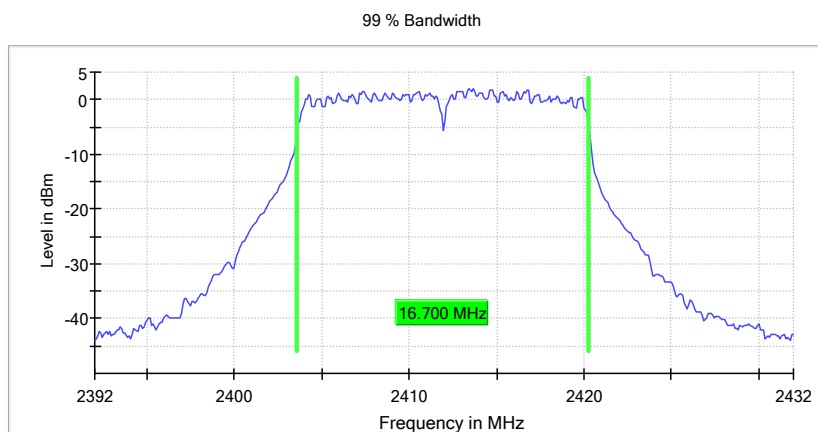
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2412.000000	16.700000	---	---	2403.550000	2420.250000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2412.000000	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.39200 GHz	2.39200 GHz
Stop Frequency	2.43200 GHz	2.43200 GHz
Span	40.000 MHz	40.000 MHz
RBW	200.000 kHz	>= 200.000 kHz
VBW	1.000 MHz	>= 600.000 kHz
SweepPoints	400	~ 400
Sweeptime	47.266 µs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preampl	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	19 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.07 dB	0.30 dB

Occupied Channel Bandwidth 99% (2437 MHz; 30.000 dBm; 20 MHz(11g_20Mhz))

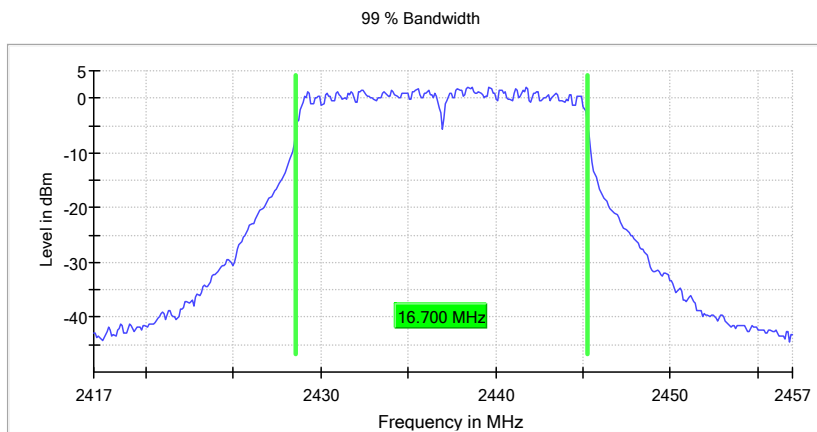
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2437.000000	16.700000	---	---	2428.550000	2445.250000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2437.000000	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.41700 GHz	2.41700 GHz
Stop Frequency	2.45700 GHz	2.45700 GHz
Span	40.000 MHz	40.000 MHz
RBW	200.000 kHz	>= 200.000 kHz
VBW	1.000 MHz	>= 600.000 kHz
SweepPoints	400	~ 400
SweepTime	47.266 µs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	24 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.02 dB	0.30 dB

Occupied Channel Bandwidth 99% (2462 MHz; 30.000 dBm; 20 MHz(11g_20Mhz))

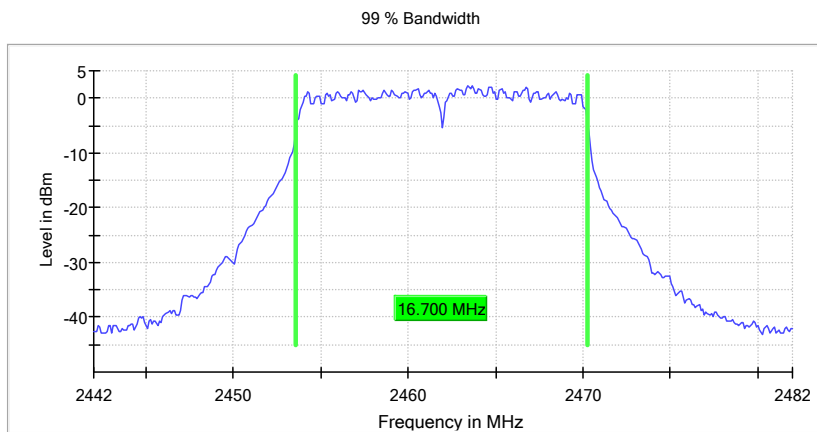
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2462.000000	16.700000	---	---	2453.550000	2470.250000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2462.000000	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.44200 GHz	2.44200 GHz
Stop Frequency	2.48200 GHz	2.48200 GHz
Span	40.000 MHz	40.000 MHz
RBW	200.000 kHz	>= 200.000 kHz
VBW	1.000 MHz	>= 600.000 kHz
SweepPoints	400	~ 400
Sweeptime	47.266 µs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	19 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.11 dB	0.30 dB

Wi-Fi 802.11 n(HT20) mode, MCS0

Occupied Channel Bandwidth 99% (2412 MHz; 30.000 dBm; 20 MHz(11n_20Mhz))

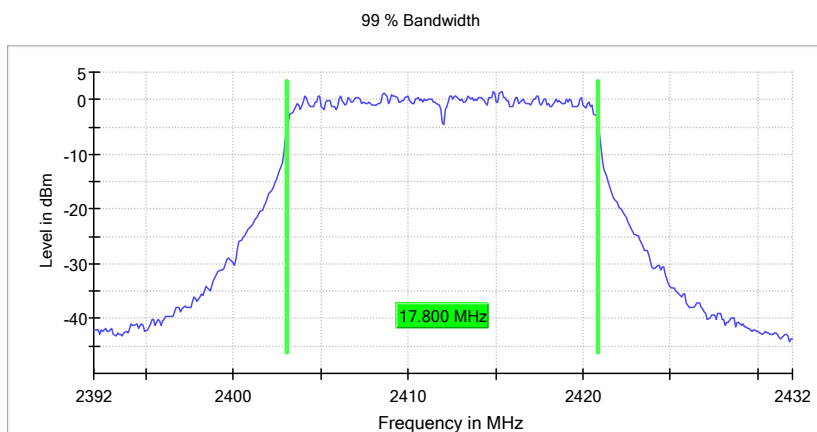
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2412.000000	17.800000	---	---	2403.050000	2420.850000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2412.000000	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.39200 GHz	2.39200 GHz
Stop Frequency	2.43200 GHz	2.43200 GHz
Span	40.000 MHz	40.000 MHz
RBW	200.000 kHz	>= 200.000 kHz
VBW	1.000 MHz	>= 600.000 kHz
SweepPoints	400	~ 400
SweepTime	47.266 µs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	21 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.23 dB	0.30 dB

Occupied Channel Bandwidth 99% (2437 MHz; 30.000 dBm; 20 MHz(11n_20Mhz))

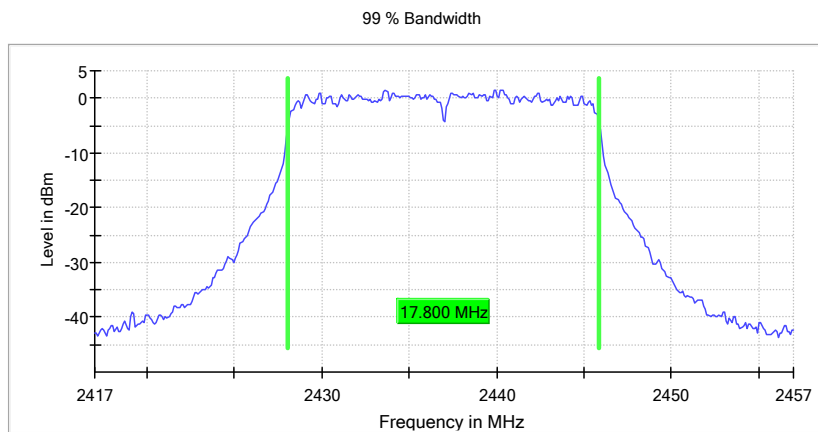
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2437.000000	17.800000	---	---	2428.050000	2445.850000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2437.000000	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.41700 GHz	2.41700 GHz
Stop Frequency	2.45700 GHz	2.45700 GHz
Span	40.000 MHz	40.000 MHz
RBW	200.000 kHz	>= 200.000 kHz
VBW	1.000 MHz	>= 600.000 kHz
SweepPoints	400	~ 400
Sweptime	47.266 µs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	25 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.12 dB	0.30 dB

Occupied Channel Bandwidth 99% (2462 MHz; 30.000 dBm; 20 MHz(11n_20Mhz))

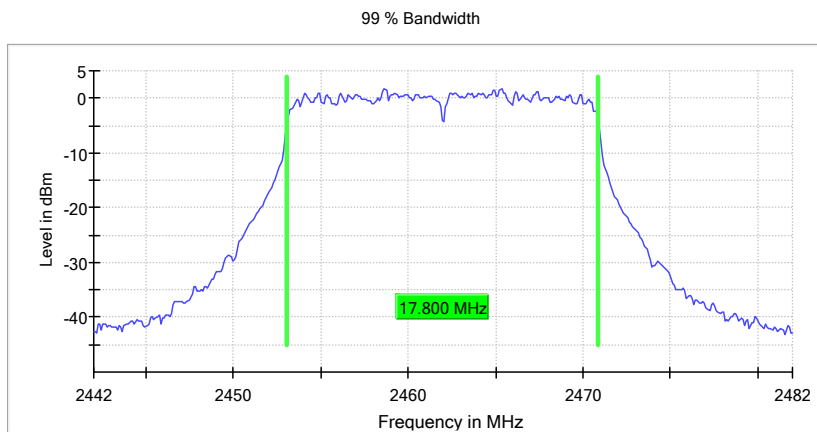
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2462.000000	17.800000	---	---	2453.050000	2470.850000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2462.000000	PASS



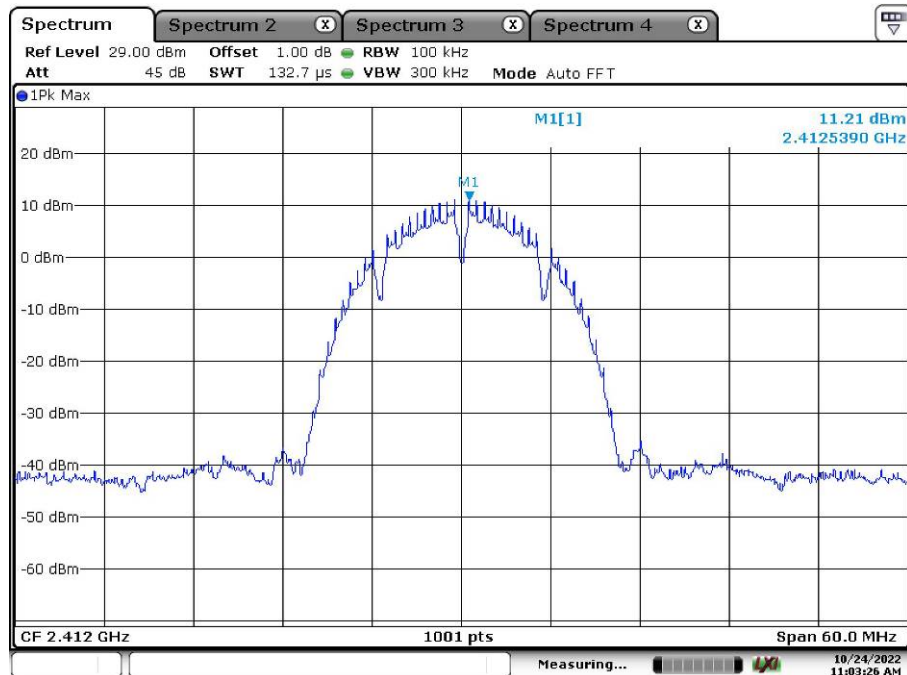
Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.44200 GHz	2.44200 GHz
Stop Frequency	2.48200 GHz	2.48200 GHz
Span	40.000 MHz	40.000 MHz
RBW	200.000 kHz	>= 200.000 kHz
VBW	1.000 MHz	>= 600.000 kHz
SweepPoints	400	~ 400
Sweptime	47.266 µs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	35 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.19 dB	0.30 dB

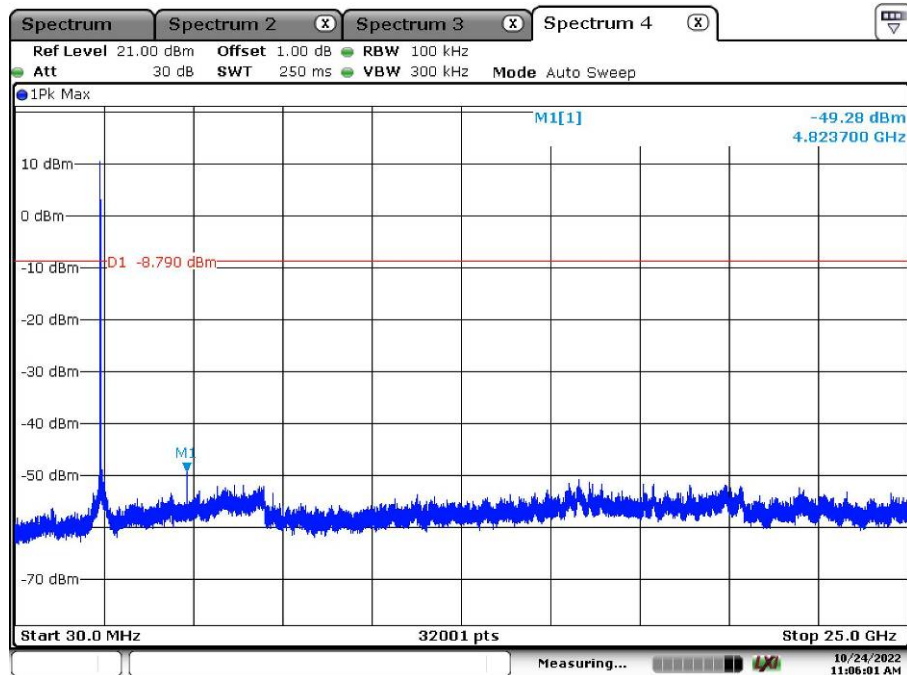
Appendix B.4: Test Results of Conducted Spurious Emissions Measured in 100 kHz Bandwidth

Wi-Fi 802.11 b mode, 1 Mbps

Low Channel:

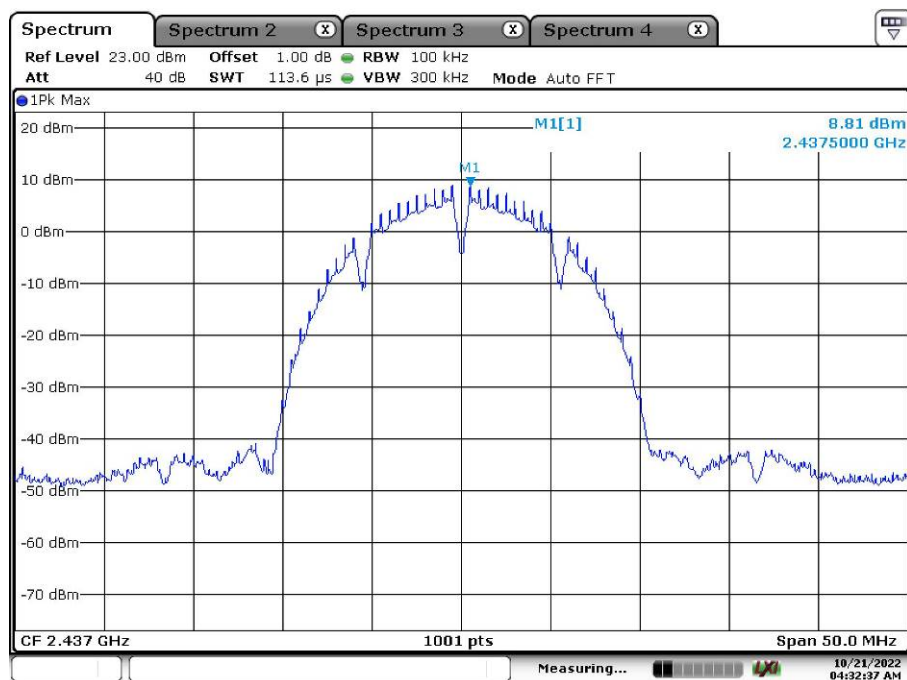


Date: 24.OCT.2022 11:03:27

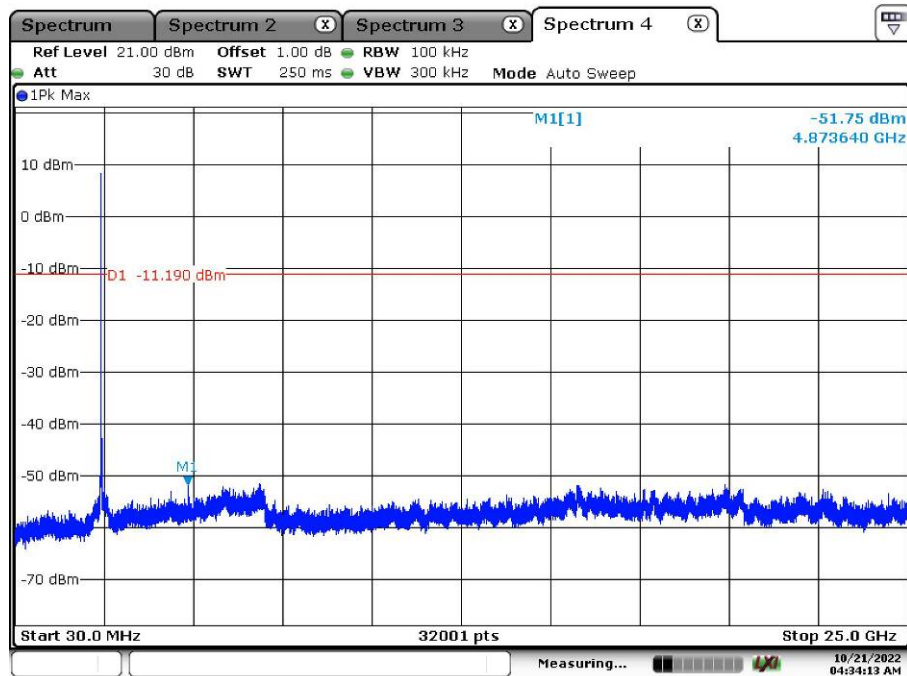


Date: 24.OCT.2022 11:06:02

Middle Channel:

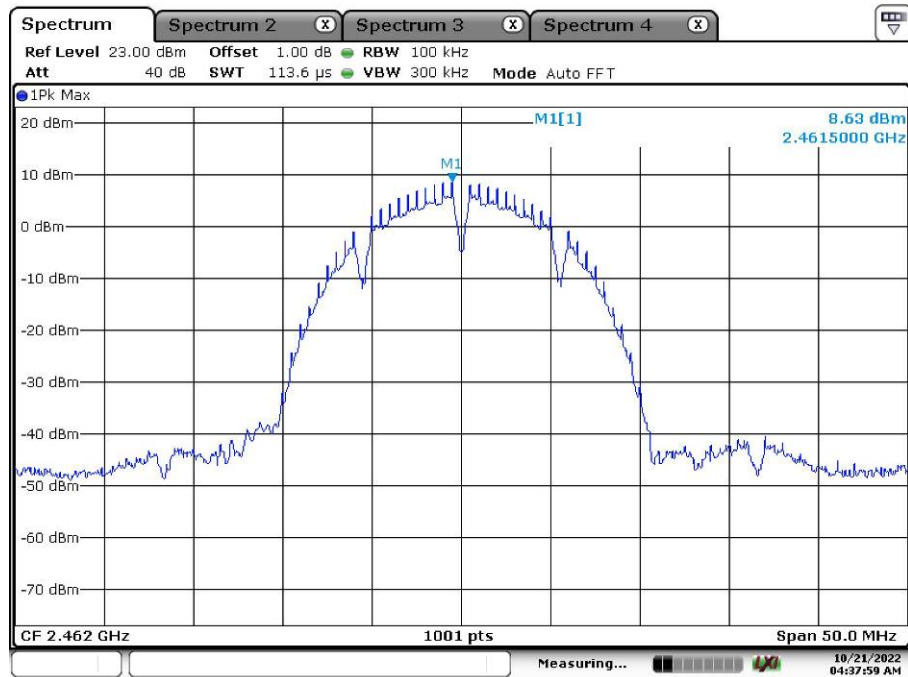


Date: 21.OCT.2022 04:32:37

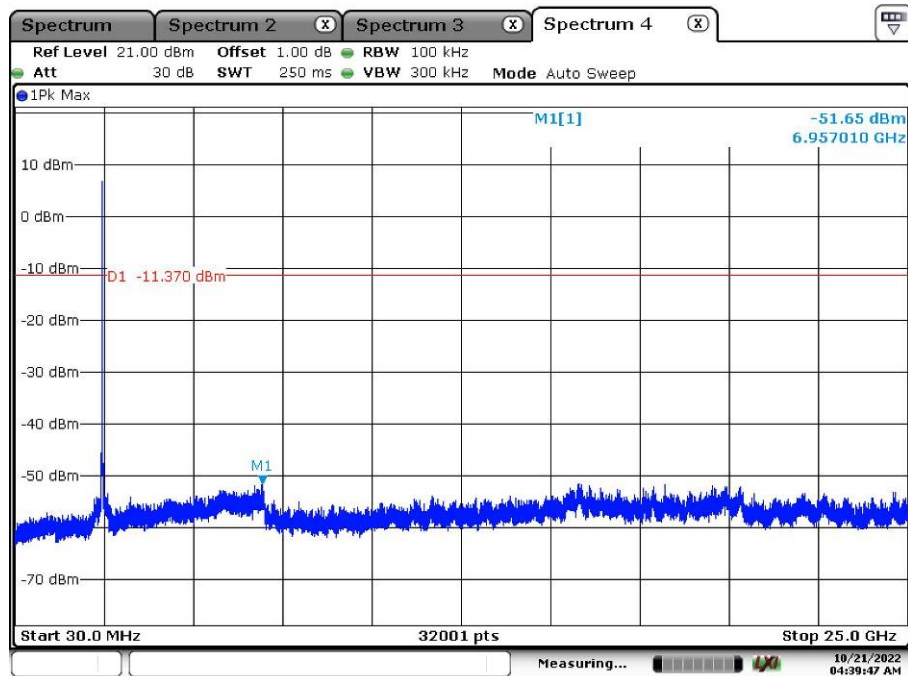


Date: 21.OCT.2022 04:34:13

High Channel:

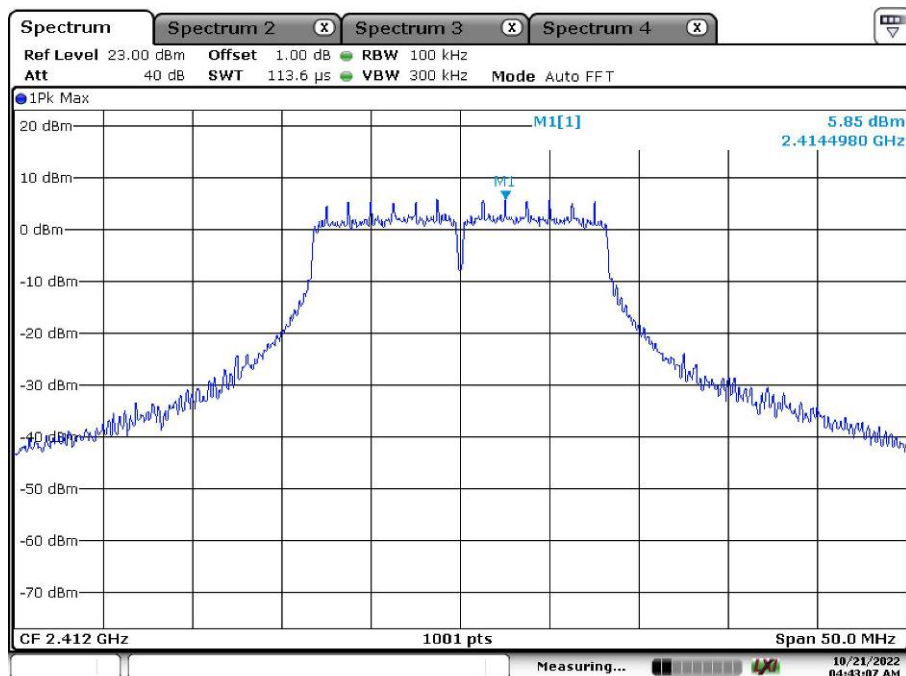


Date: 21.OCT.2022 04:37:59

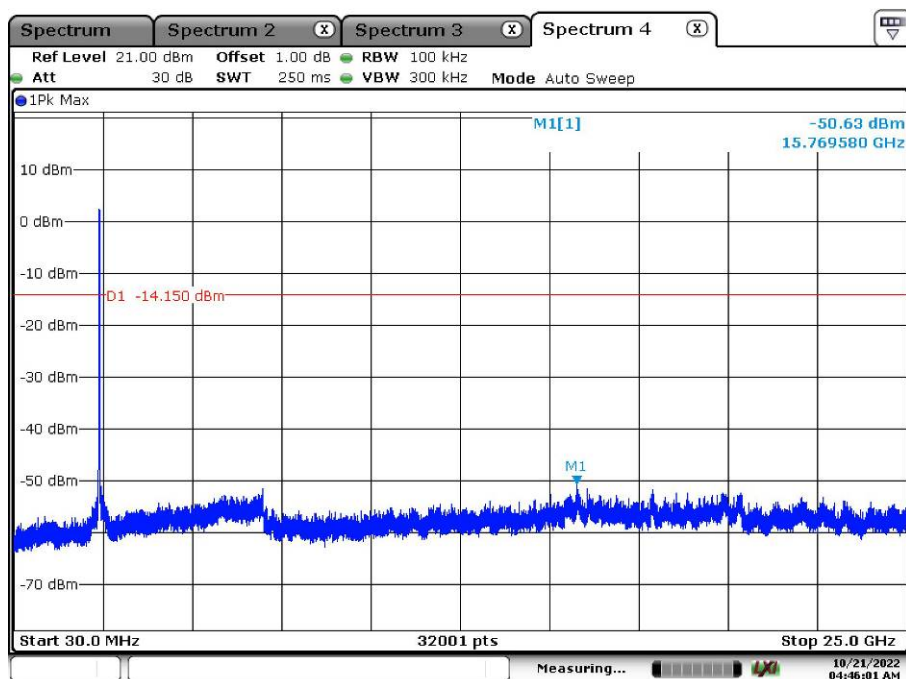


Date: 21.OCT.2022 04:39:47

Wi-Fi 802.11 g mode, 6 Mbps
Low Channel:

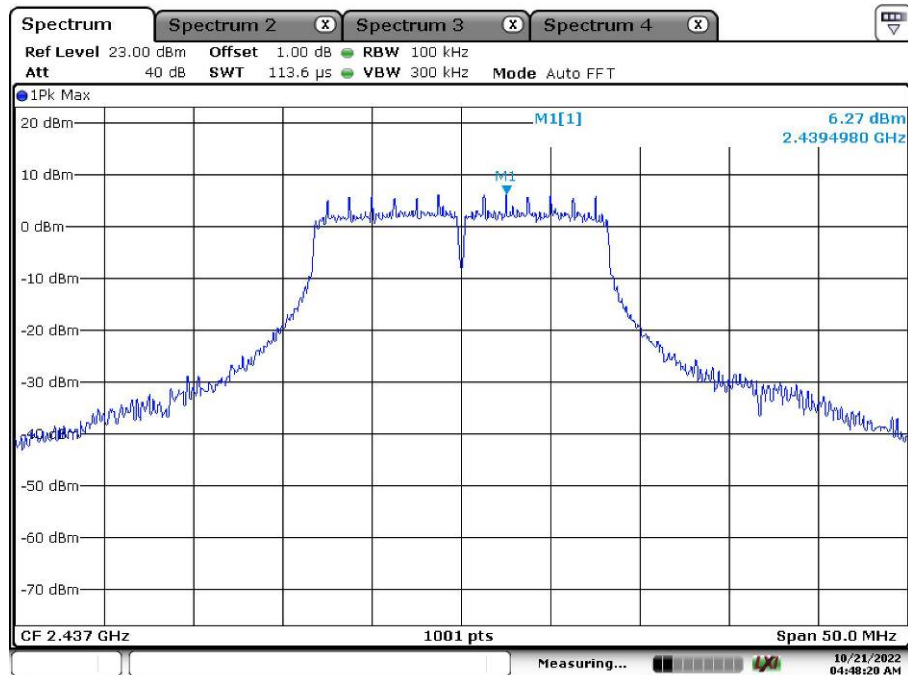


Date: 21.Oct.2022 04:43:07

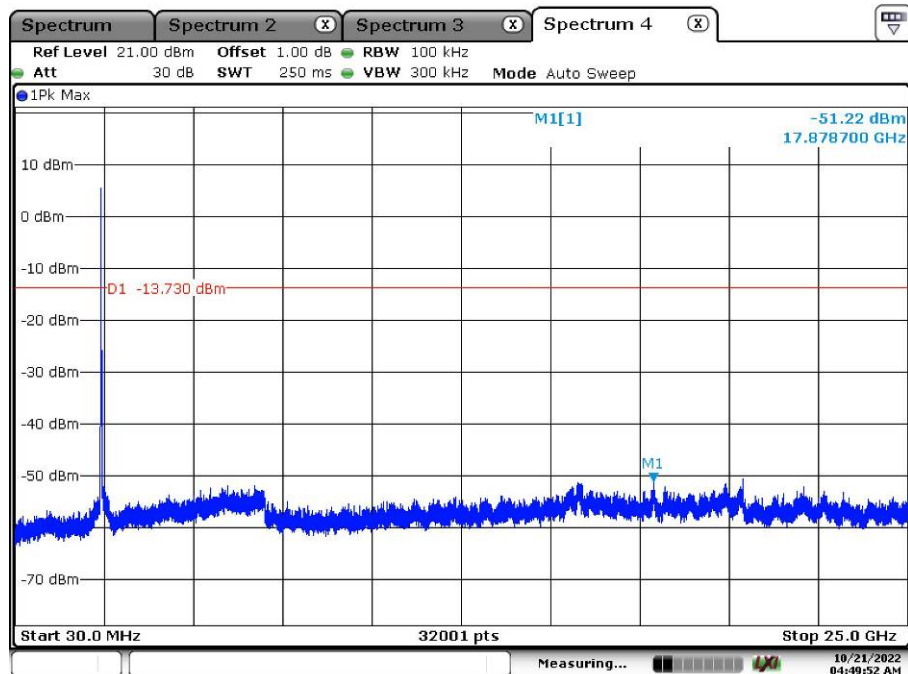


Date: 21.Oct.2022 04:46:01

Middle Channel:

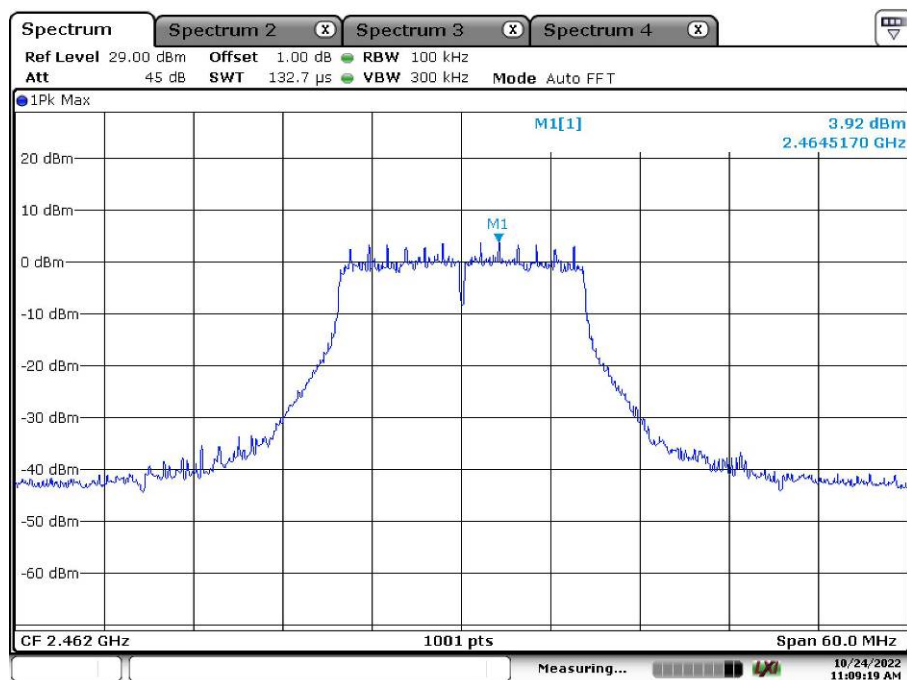


Date: 21.OCT.2022 04:48:20

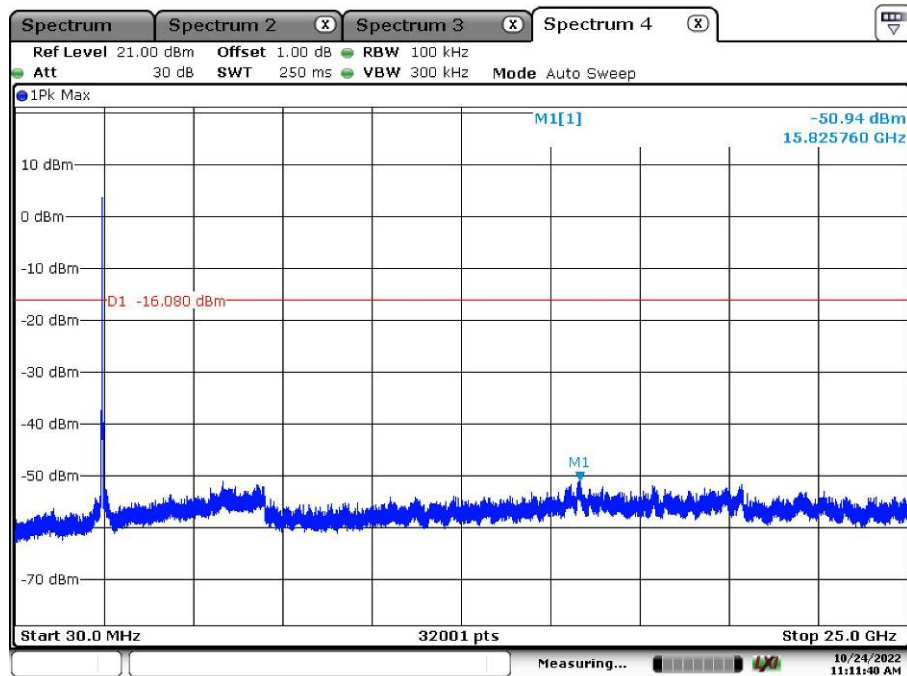


Date: 21.OCT.2022 04:49:52

High Channel:

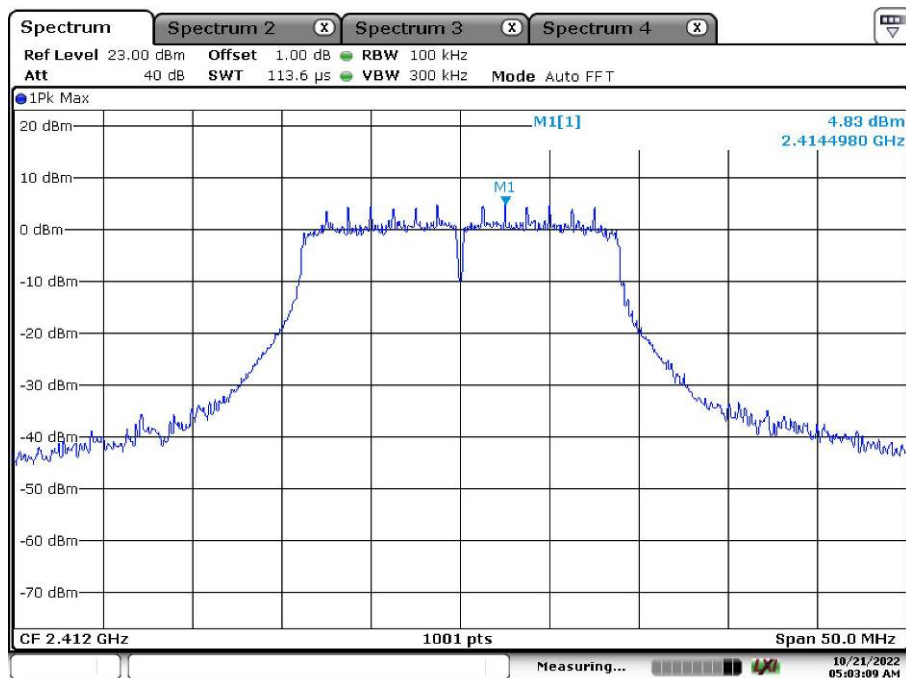


Date: 24.OCT.2022 11:09:19

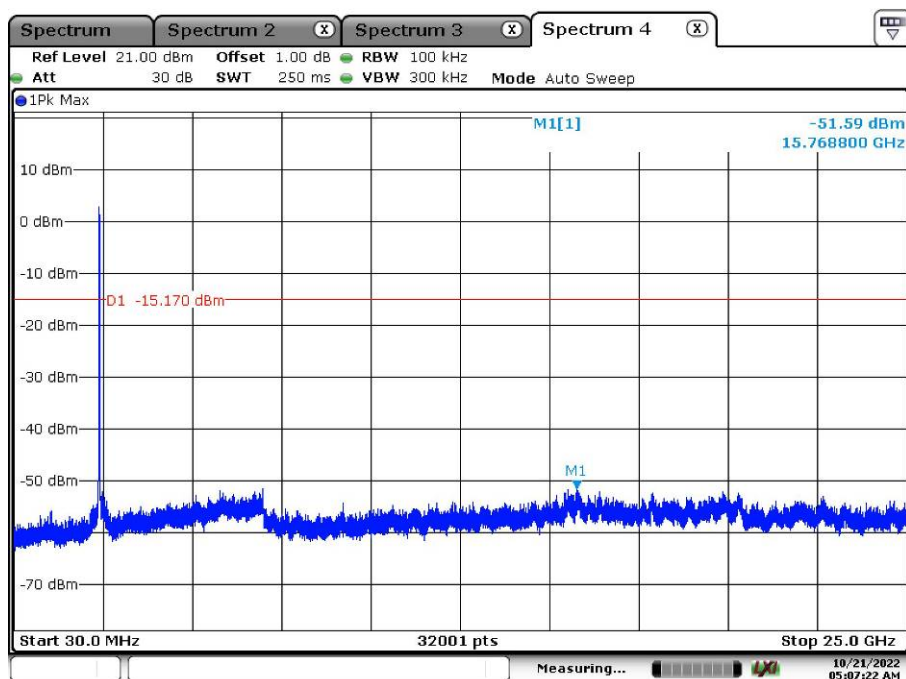


Date: 24.OCT.2022 11:11:41

Wi-Fi 802.11 n(HT20) mode, MCS0
Low Channel:

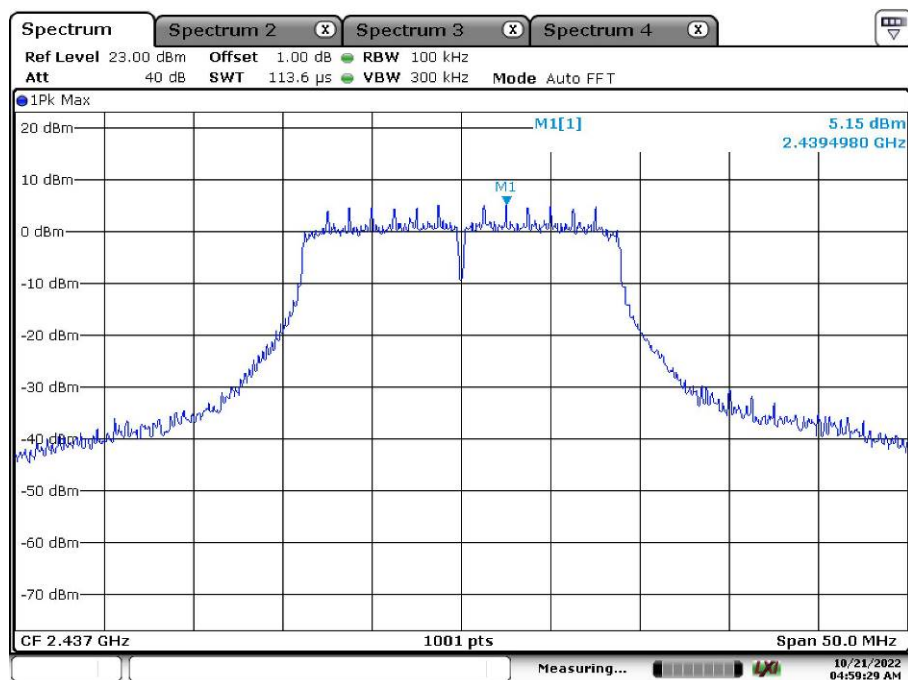


Date: 21.Oct.2022 05:03:09

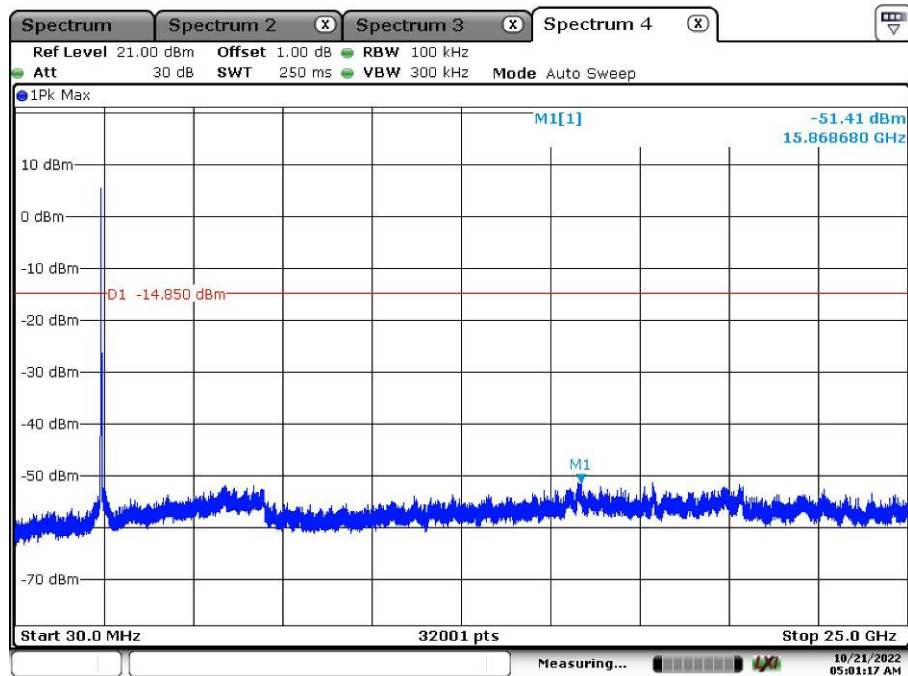


Date: 21.Oct.2022 05:07:22

Middle Channel:

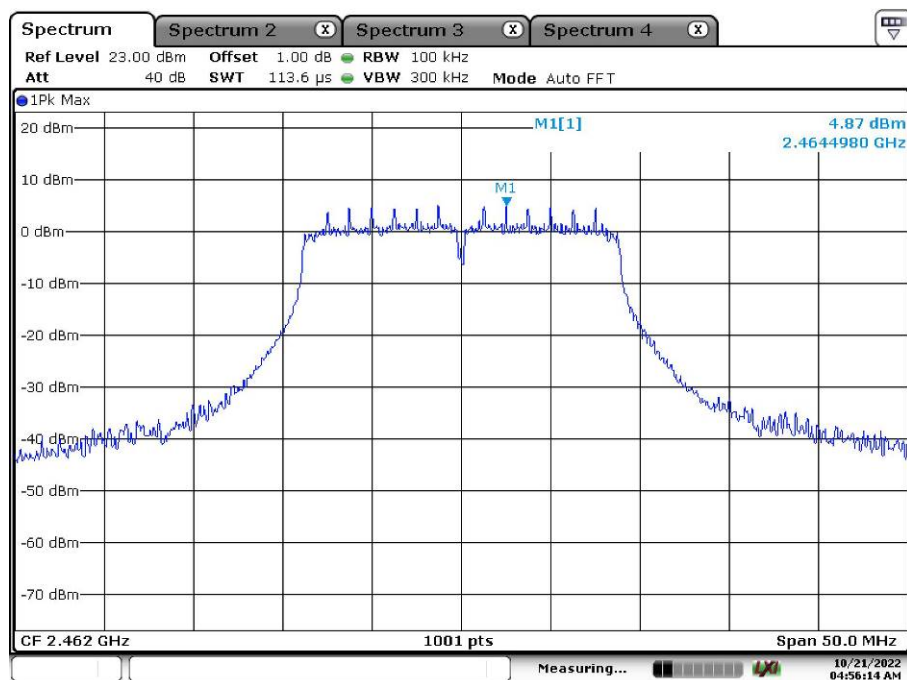


Date: 21.OCT.2022 04:59:29

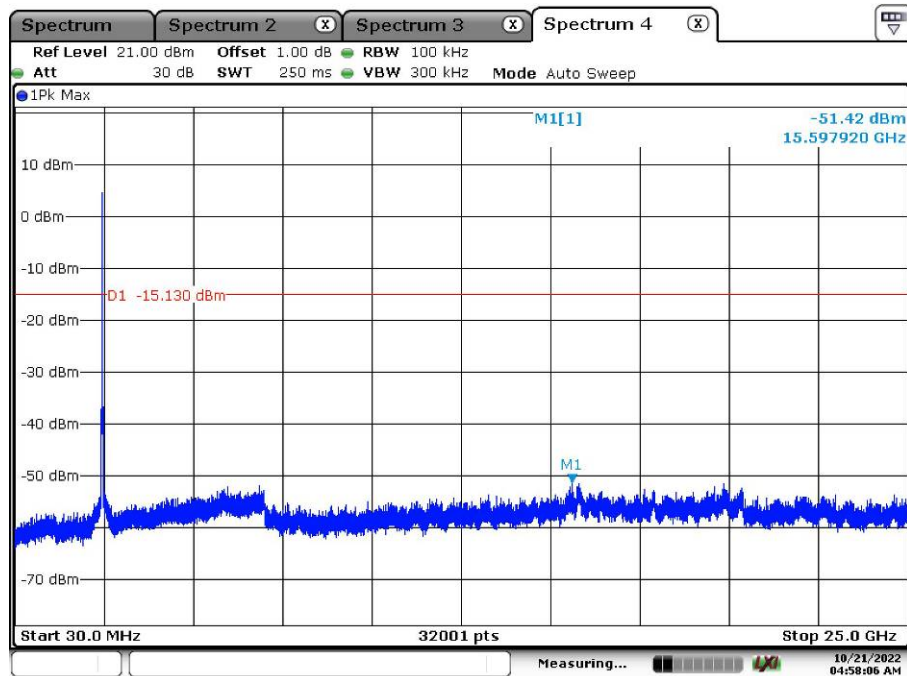


Date: 21.OCT.2022 05:01:17

High Channel:

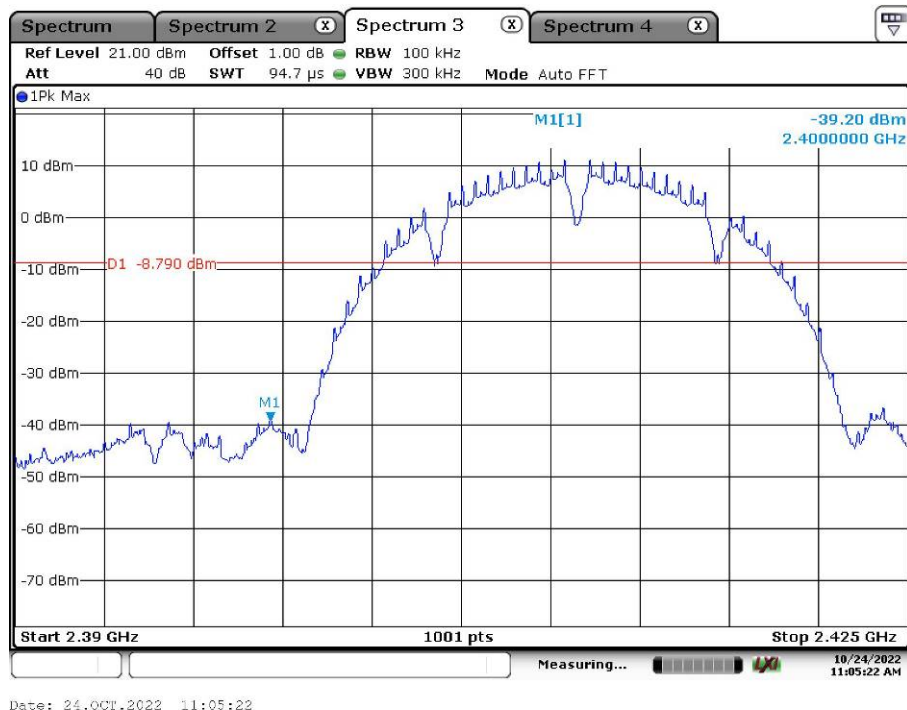


Date: 21.OCT.2022 04:56:14

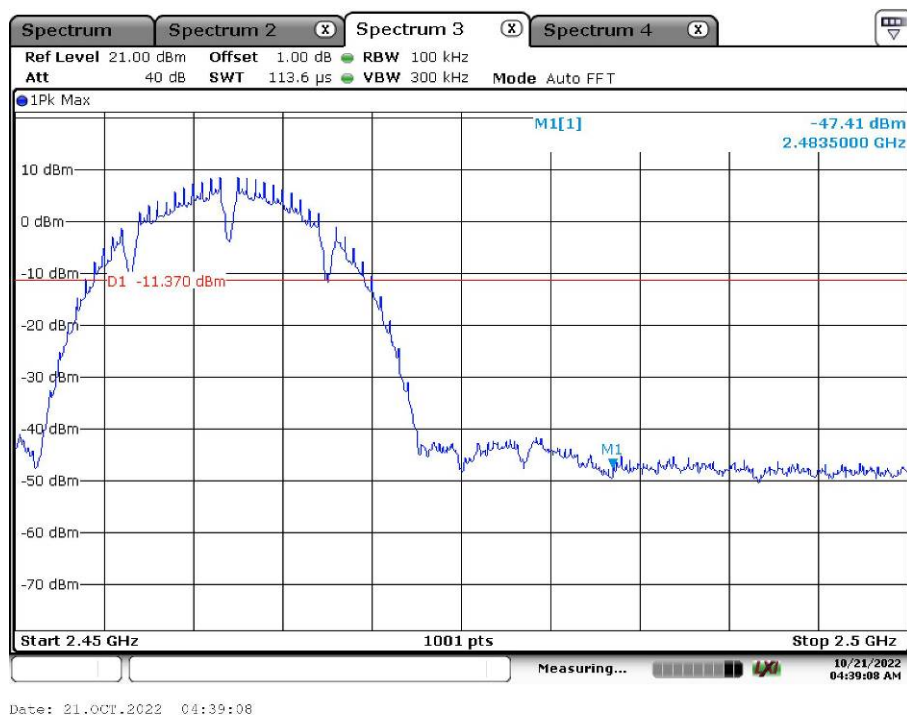


Date: 21.OCT.2022 04:58:06

Wi-Fi 802.11 b mode, Band Edge
Low Channel:

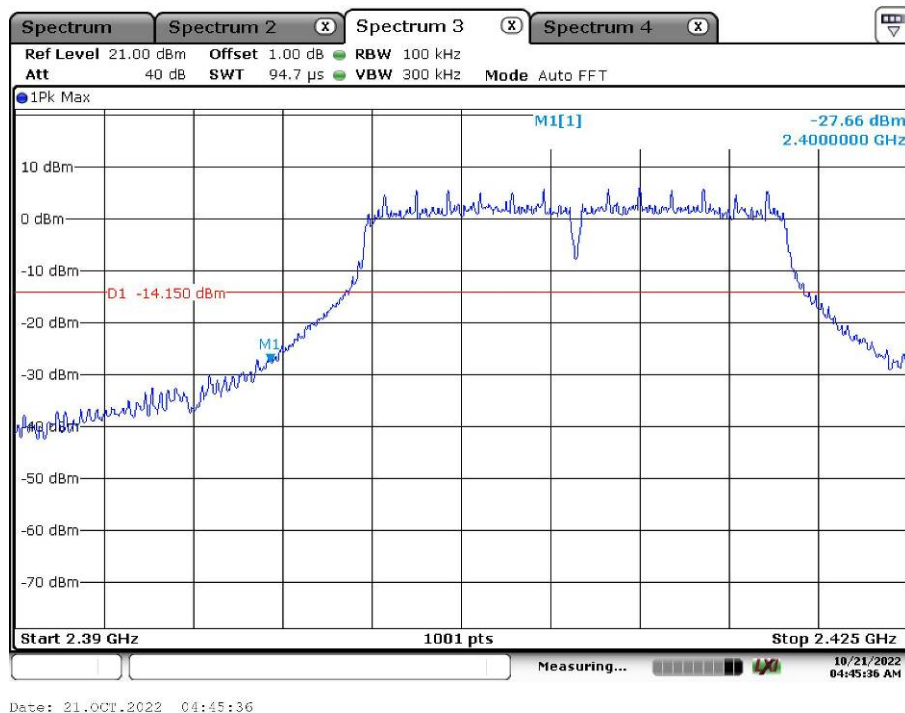


High Channel:

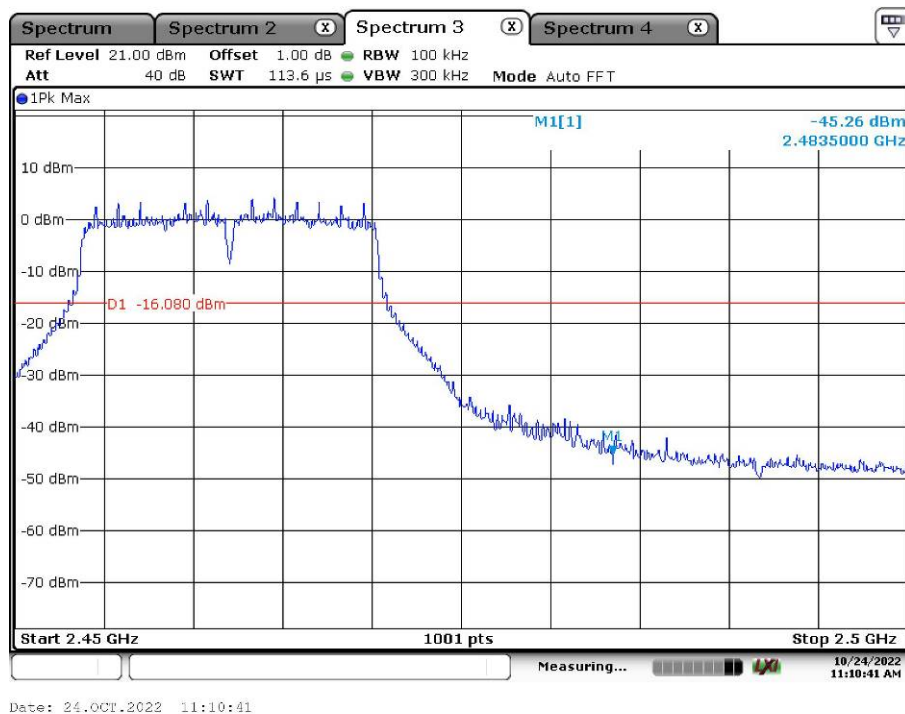


Wi-Fi 802.11 g mode, Band Edge

Low Channel:

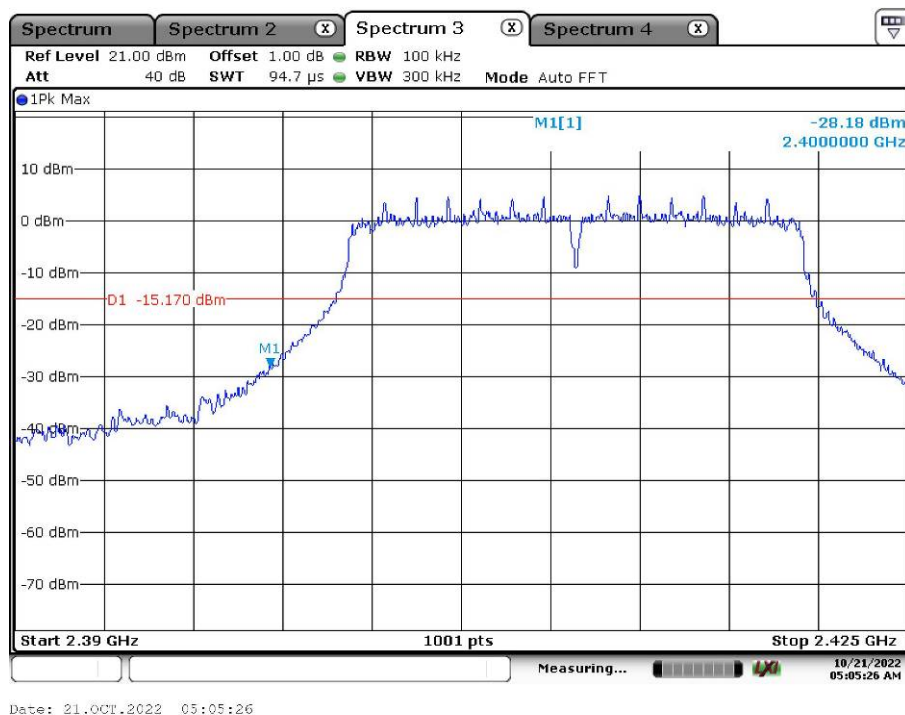


High Channel:

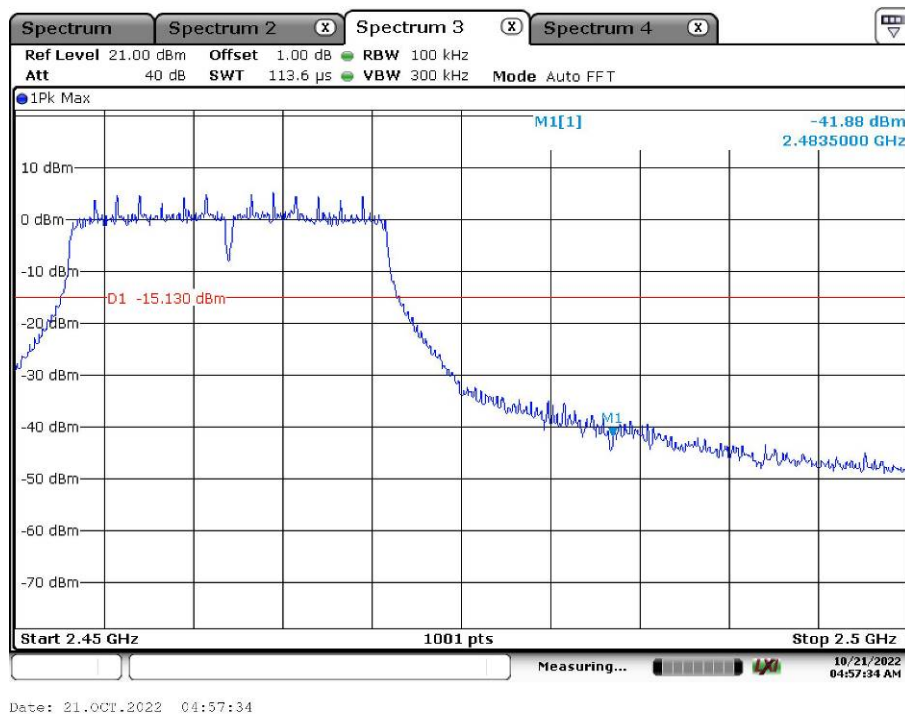


Wi-Fi 802.11 n(HT20) mode, Band Edge

Low Channel:



High Channel:



Note 1: Testing was carried out within frequency range 9 kHz to the tenth harmonics. The measurement results below 30MHz and above 18GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 18GHz were reported.

Note 2: All test modes (802.11 b/g/n) have been pre-scanning test and only the worst case of test mode (802.11b) for Radiated Spurious Emissions were reported.

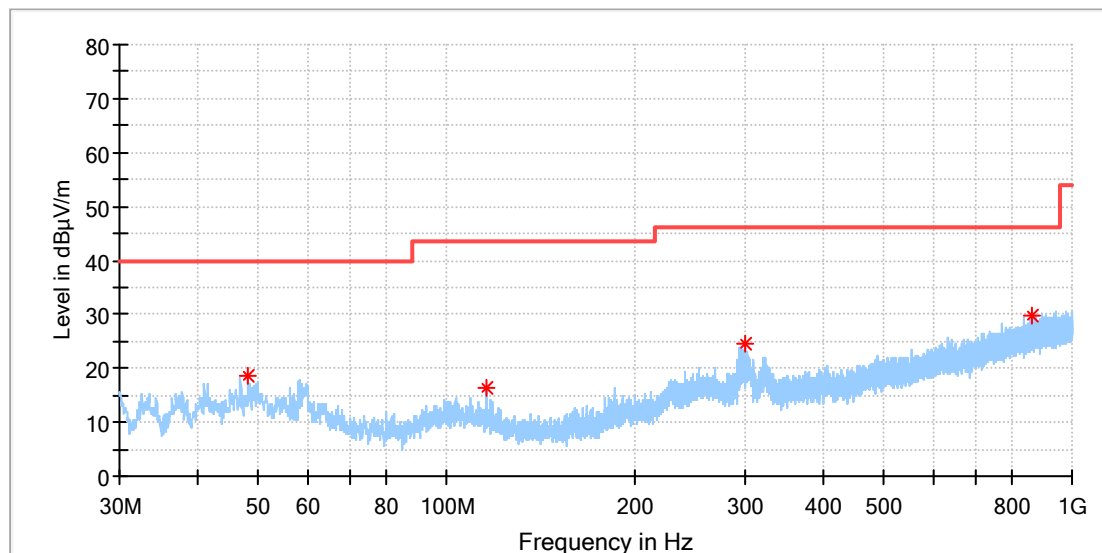
Appendix B.5: Test Results of Radiated Spurious Emissions

Standalone transmission operations

30MHz - 1GHz (Worst case)

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	WIFI 2.4G_11b_Ch6
Order No/Sample No:	168392703/A003345059-001
Test Voltage:	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

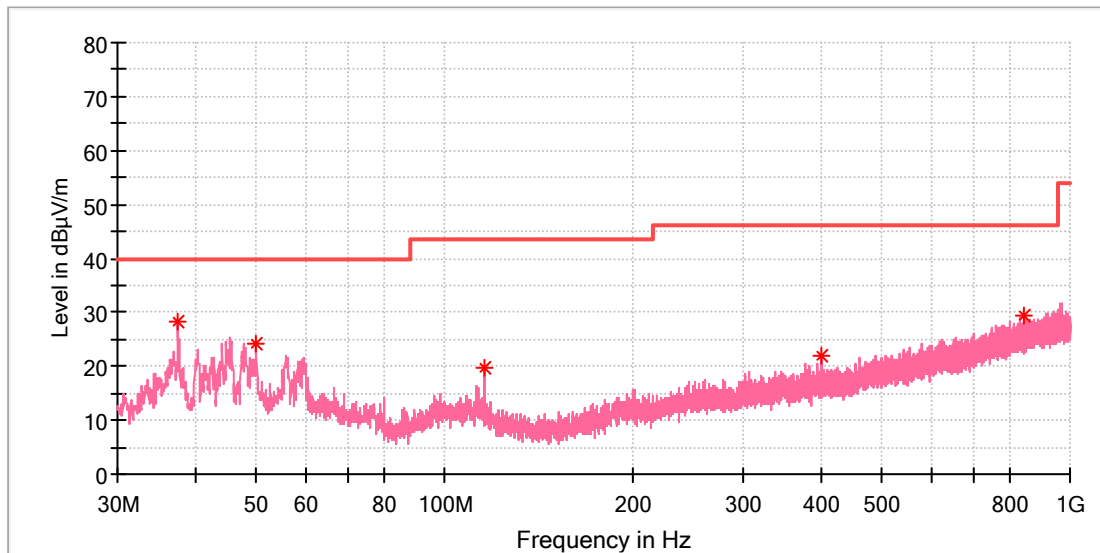


Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
48.236000	18.75	40.00	21.25	100.0	H	318.0	-18.4
115.651000	16.56	43.50	26.94	100.0	H	213.0	-19.9
299.999500	24.38	46.00	21.62	100.0	H	199.0	-16.3
860.271500	29.89	46.00	16.11	100.0	H	245.0	-5.3

EUT Information

EUT Name: Degrii Smart Thermostat
Model: THM
Test Mode: WIFI 2.4G_11b_Ch6
Order No/Sample No: 168392703/A003345059-001
Test Voltage: 120V/60Hz
Remark: Temp 23 Humi:56%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
37.517500	28.17	40.00	11.83	100.0	V	135.0	-21.0
50.030500	24.14	40.00	15.86	100.0	V	90.0	-18.3
115.602500	19.63	43.50	23.87	100.0	V	55.0	-19.9
400.006500	22.07	46.00	23.93	100.0	V	41.0	-13.6
841.065500	29.56	46.00	16.44	100.0	V	0.0	-5.7

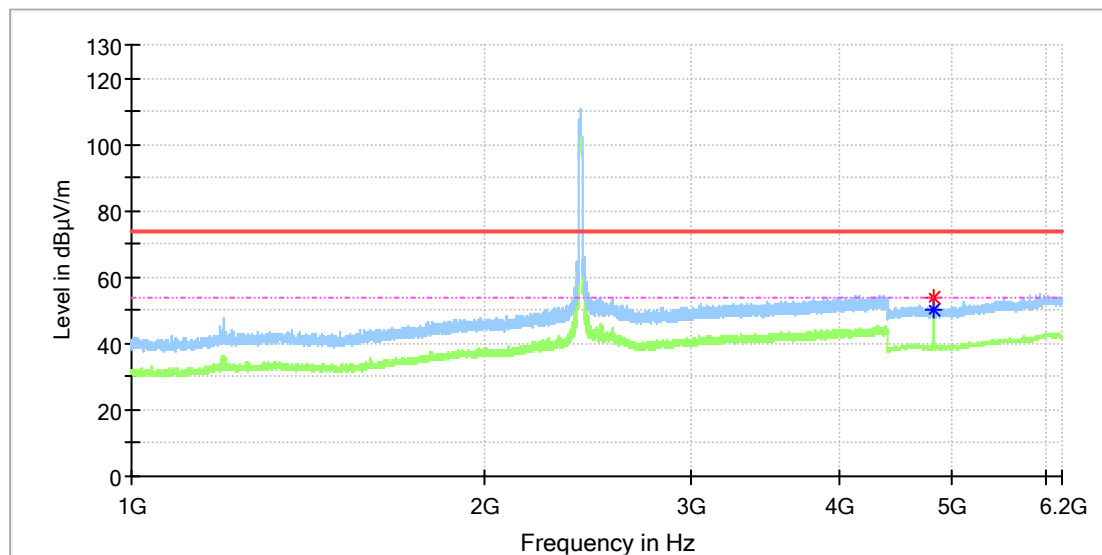
1GHz - 18GHz

Note: The highest waveform in the figure is Wi-Fi Fundamental.

Wi-Fi 802.11 b mode, 1 Mbps

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	WIFI 2.4G_11b_Ch1
Order No/Sample No:	168392703/A003345059-001
Test Voltage:	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

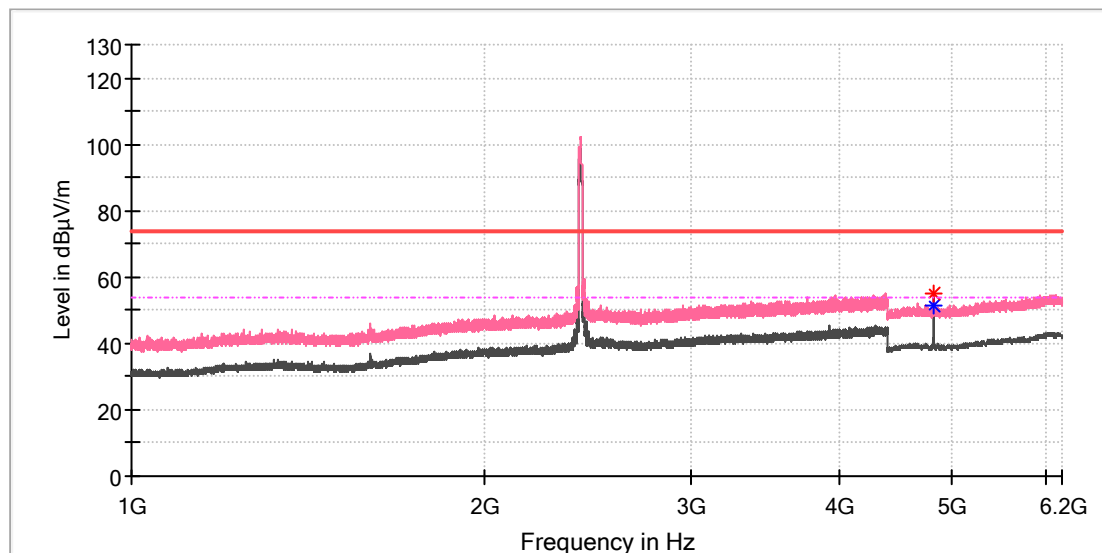


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4824.000000	54.06	---	74.00	19.94	100.0	H	108.0	11.8
4824.000000	---	50.15	54.00	3.85	100.0	H	108.0	11.8

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	WIFI 2.4G_11b_Ch1
Order No/Sample No:	168392703/A003345059-001
Test Voltage:	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

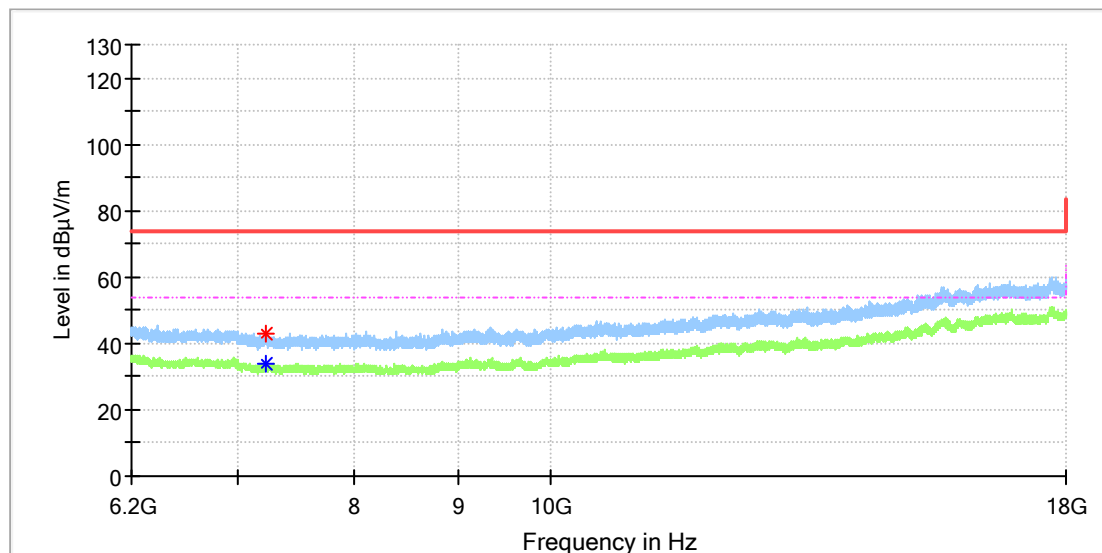


Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4824.000000	55.11	---	74.00	18.89	100.0	V	52.0	11.8
4824.000000	---	51.18	54.00	2.82	100.0	V	52.0	11.8

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	WIFI 2.4G_11b_Ch1
Order No/Sample No:	168392703/A003345059-001
Test Voltage:	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

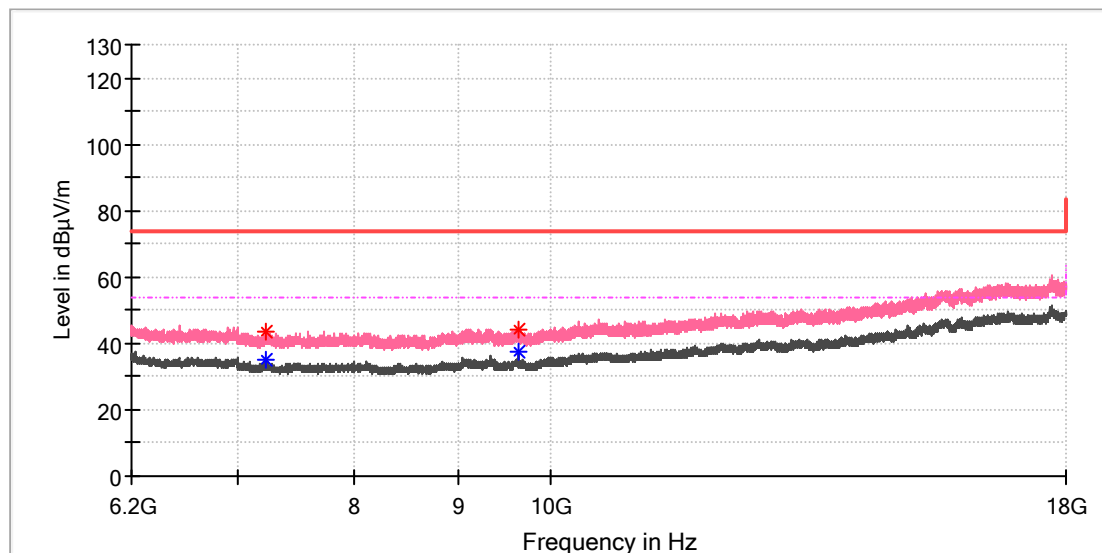


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7225.616667	---	34.06	54.00	19.94	100.0	H	2.0	8.7
7229.058333	42.75	---	74.00	31.26	100.0	H	134.0	8.6

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	WIFI 2.4G_11b_Ch1
Order No/Sample No:	168392703/A003345059-001
Test Voltage:	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

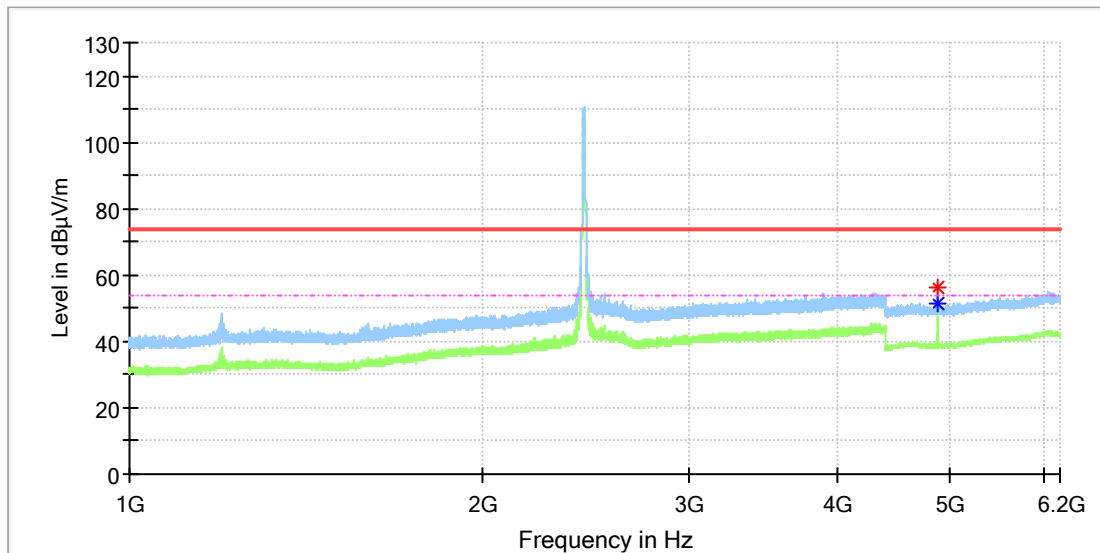


Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7229.058333	43.59	---	74.00	30.41	100.0	V	189.0	8.6
7233.975000	---	35.14	54.00	18.86	100.0	V	189.0	8.6
9648.058333	44.36	---	74.00	29.64	100.0	V	175.0	10.4
9648.058333	---	37.51	54.00	16.49	100.0	V	175.0	10.4

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	WIFI 2.4G_11b_Ch6
Order No/Sample No:	168392703/A003345059-001
Test Voltage:	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

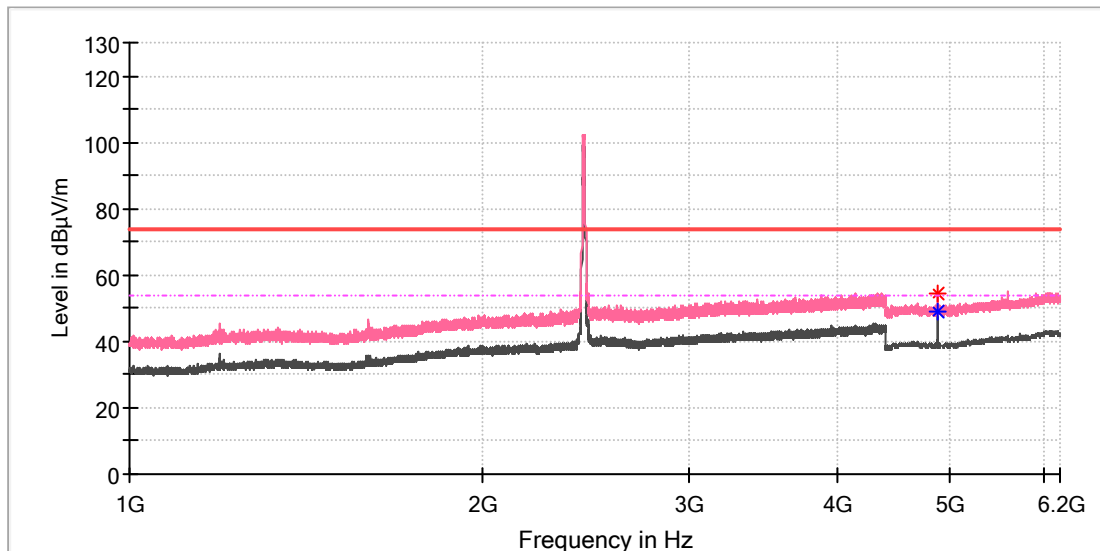


Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4873.500000	---	51.36	54.00	2.64	100.0	H	337.0	11.8
4874.000000	56.24	---	74.00	17.76	100.0	H	63.0	11.8

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	WIFI 2.4G_11b_Ch6
Order No/Sample No:	168392703/A003345059-001
Test Voltage:	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

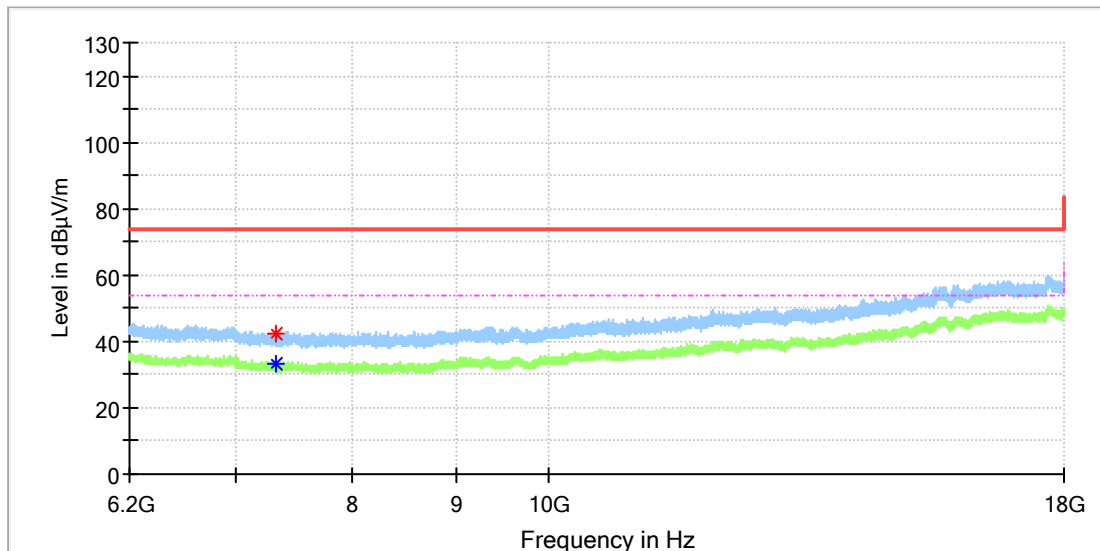


Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4874.000000	54.53	---	74.00	19.47	100.0	V	107.0	11.8
4874.000000	---	49.23	54.00	4.77	100.0	V	107.0	11.8

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	WIFI 2.4G_11b_Ch6
Order No/Sample No:	168392703/A003345059-001
Test Voltage:	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

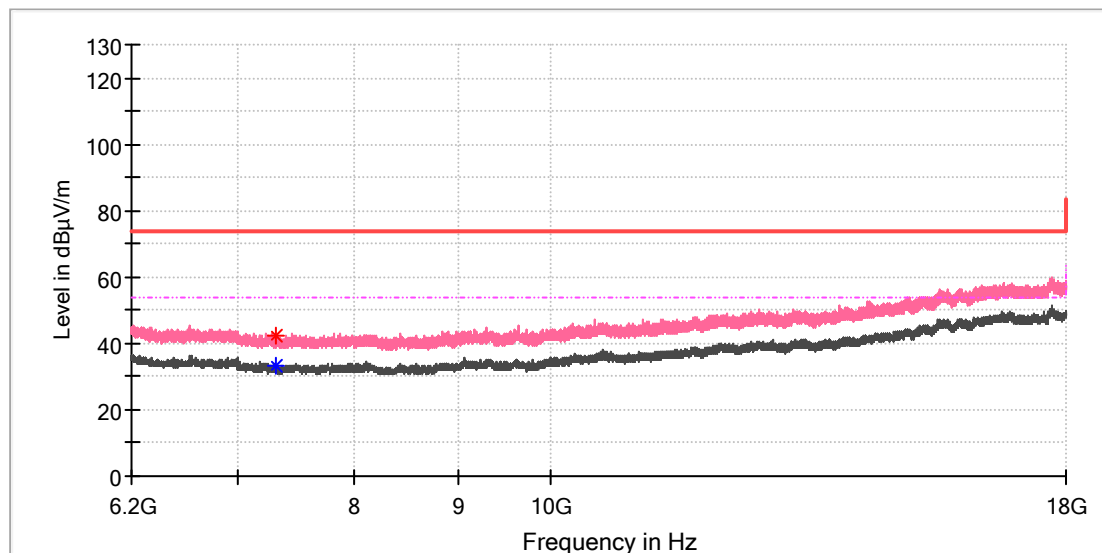


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7321.491667	42.13	---	74.00	31.87	100.0	H	0.0	8.2
7324.441667	---	33.37	54.00	20.63	100.0	H	48.0	8.2

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	WIFI 2.4G_11b_Ch6
Order No/Sample No:	168392703/A003345059-001
Test Voltage:	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

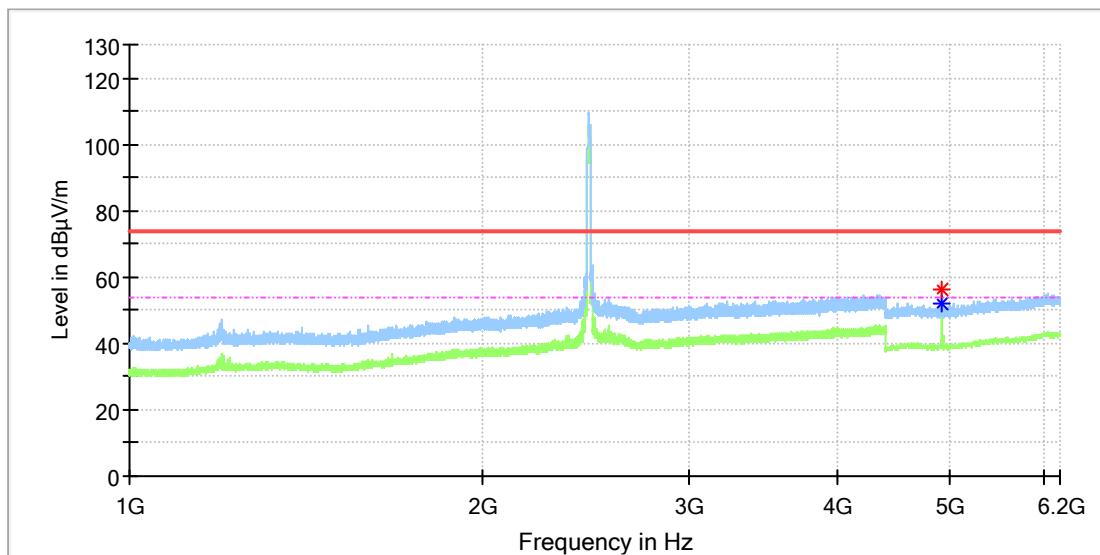


Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7308.708333	42.48	---	74.00	31.52	100.0	V	188.0	8.2
7313.133333	---	33.24	54.00	20.76	100.0	V	260.0	8.2

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	WIFI 2.4G_11b_Ch11
Order No/Sample No:	168392703/A003345059-001
Test Voltage:	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

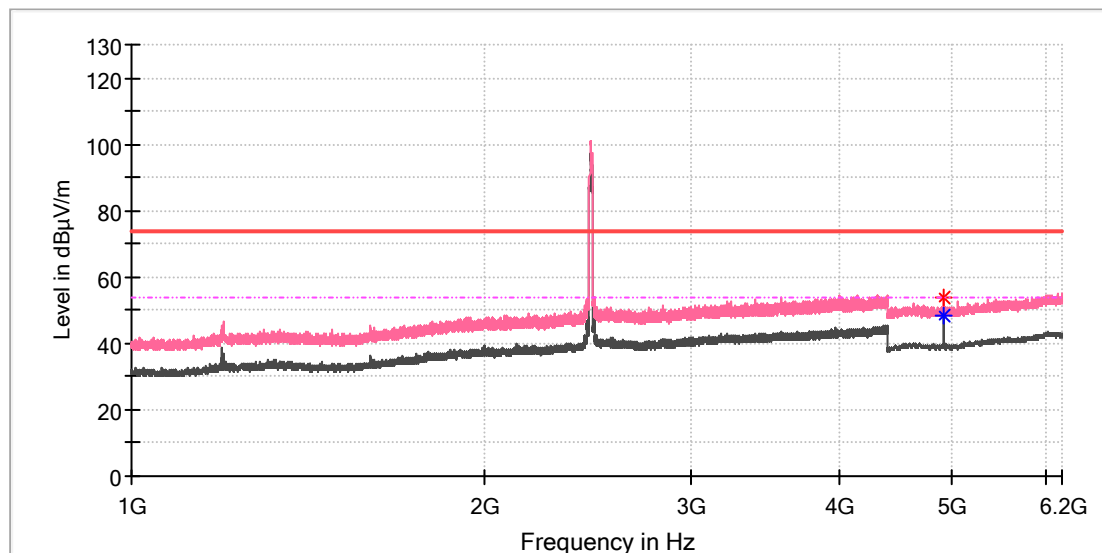


Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4924.000000	55.99	---	74.00	18.01	100.0	H	64.0	11.8
4924.000000	---	51.92	54.00	2.08	100.0	H	64.0	11.8

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	WIFI 2.4G_11b_Ch11
Order No/Sample No:	168392703/A003345059-001
Test Voltage:	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

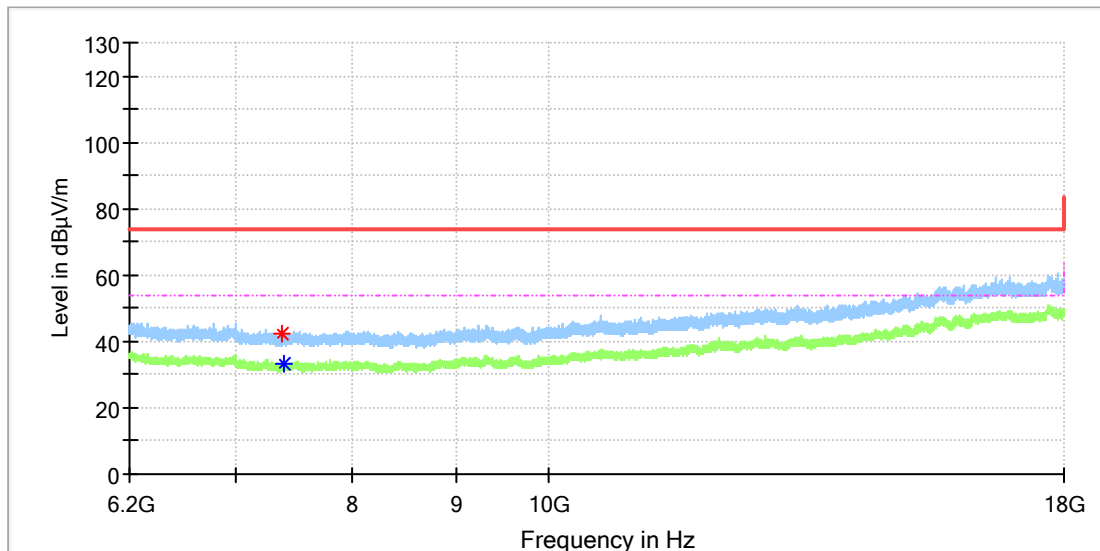


Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4924.000000	53.60	---	74.00	20.40	100.0	V	115.0	11.8
4924.000000	---	48.34	54.00	5.66	100.0	V	115.0	11.8

EUT Information

EUT Name: Degrii Smart Thermostat
Model: THM
Test Mode: WIFI 2.4G_11b_Ch11
Order No/Sample No: 168392703/A003345059-001
Test Voltage: 120V/60Hz
Remark: Temp 23 Humi:56%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin

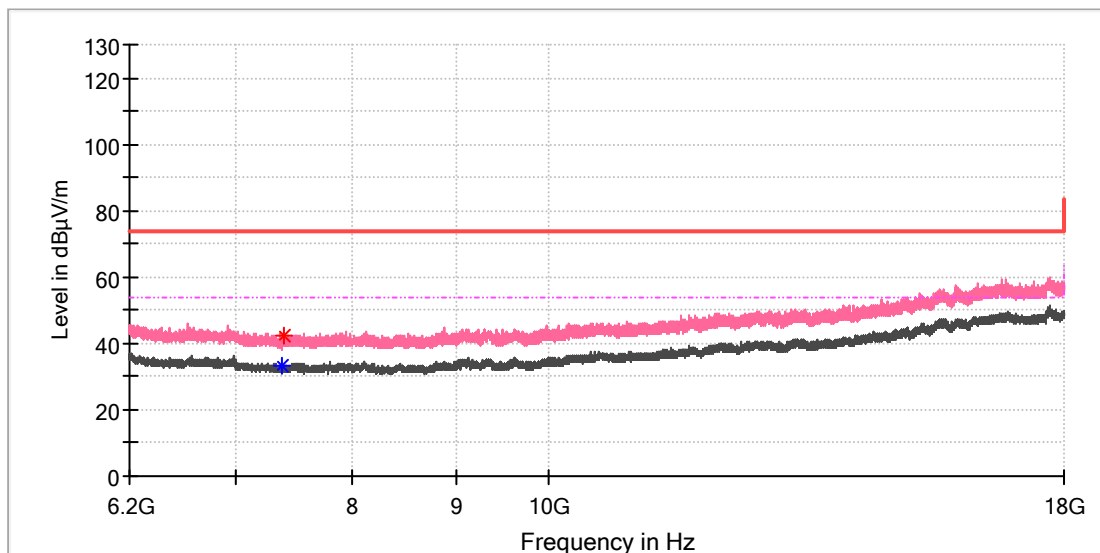


Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7369.183333	42.03	---	74.00	31.97	100.0	H	26.0	8.2
7386.391667	---	33.45	54.00	20.55	100.0	H	49.0	8.2

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	WIFI 2.4G_11b_Ch11
Order No/Sample No:	168392703/A003345059-001
Test Voltage:	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



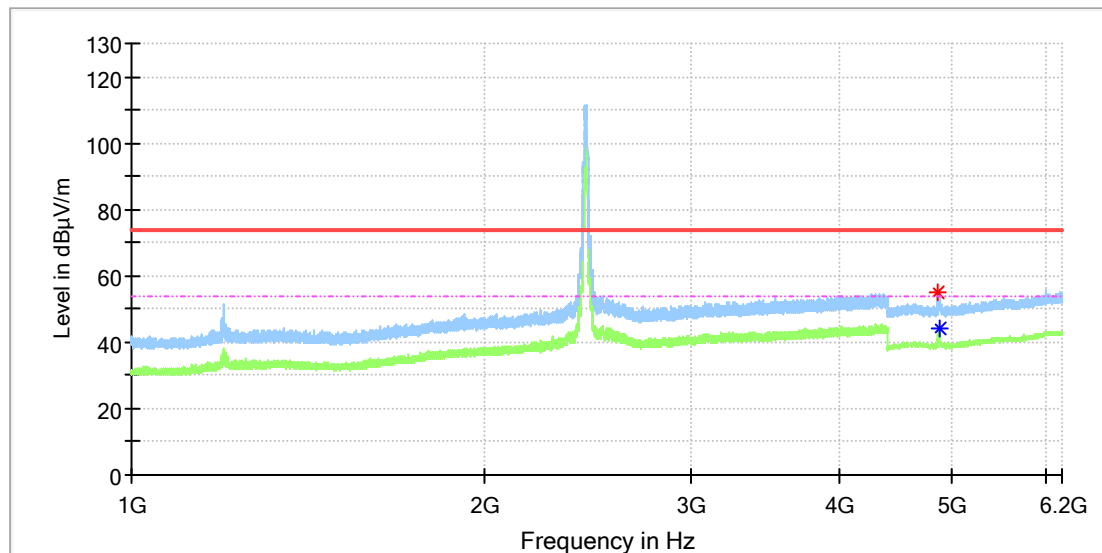
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7384.916667	---	33.43	54.00	20.57	100.0	V	158.0	8.2
7400.650000	42.28	---	74.00	31.72	100.0	V	337.0	8.3

Wi-Fi 802.11 g mode, 6 Mbps

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	WIFI 2.4G_11g_Ch6
Order No/Sample No:	168392703/A003345059-001
Test Voltage:	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

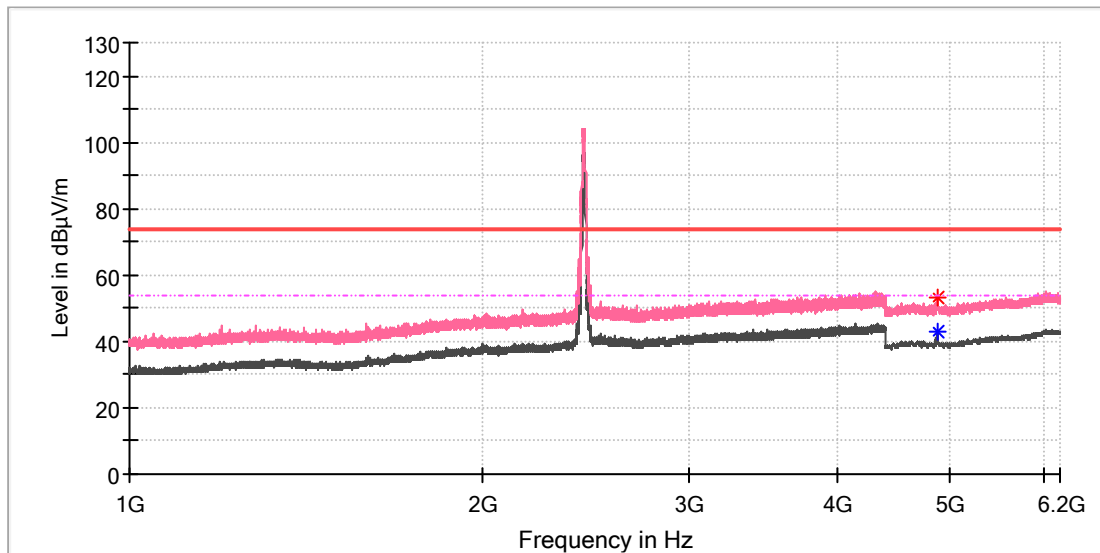


Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4867.500000	54.86	---	74.00	19.14	100.0	H	65.0	11.8
4874.500000	---	43.92	54.00	10.08	100.0	H	65.0	11.8

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	WIFI 2.4G_11g_Ch6
Order No/Sample No:	168392703/A003345059-001
Test Voltage:	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

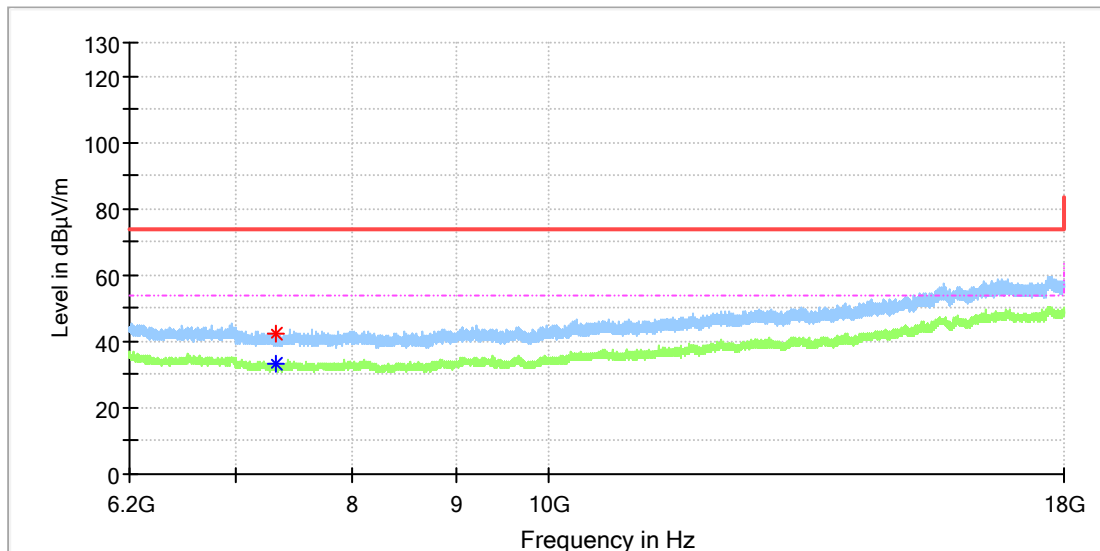


Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4869.000000	53.38	---	74.00	20.62	100.0	V	56.0	11.8
4872.000000	---	42.89	54.00	11.11	100.0	V	56.0	11.8

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	WIFI 2.4G_11g_Ch6
Order No/Sample No:	168392703/A003345059-001
Test Voltage:	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

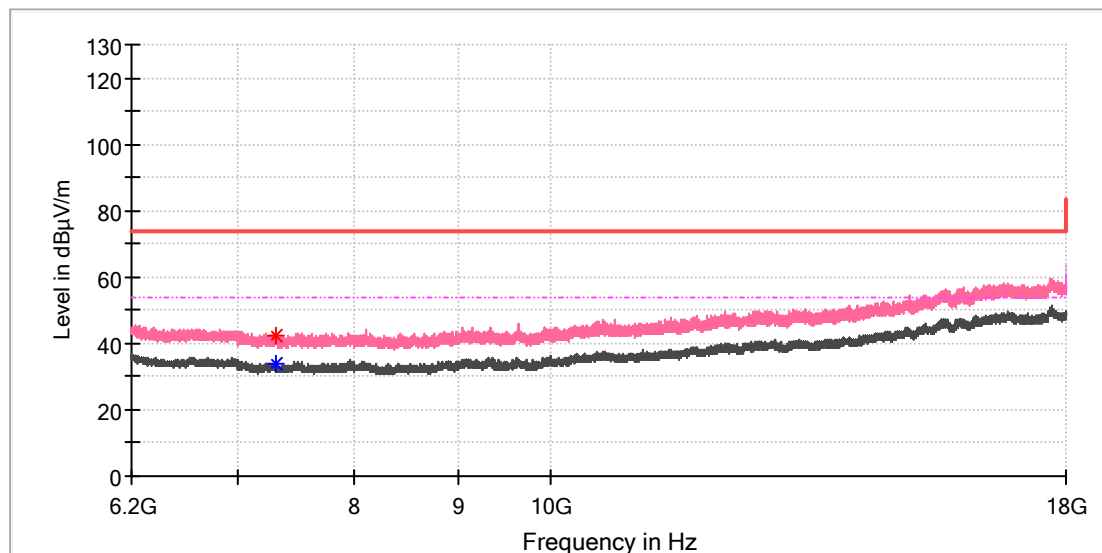


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7321.491667	42.18	---	74.00	31.82	100.0	H	115.0	8.2
7322.475000	---	33.15	54.00	20.85	100.0	H	262.0	8.2

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	WIFI 2.4G_11g_Ch6
Order No/Sample No:	168392703/A003345059-001
Test Voltage:	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



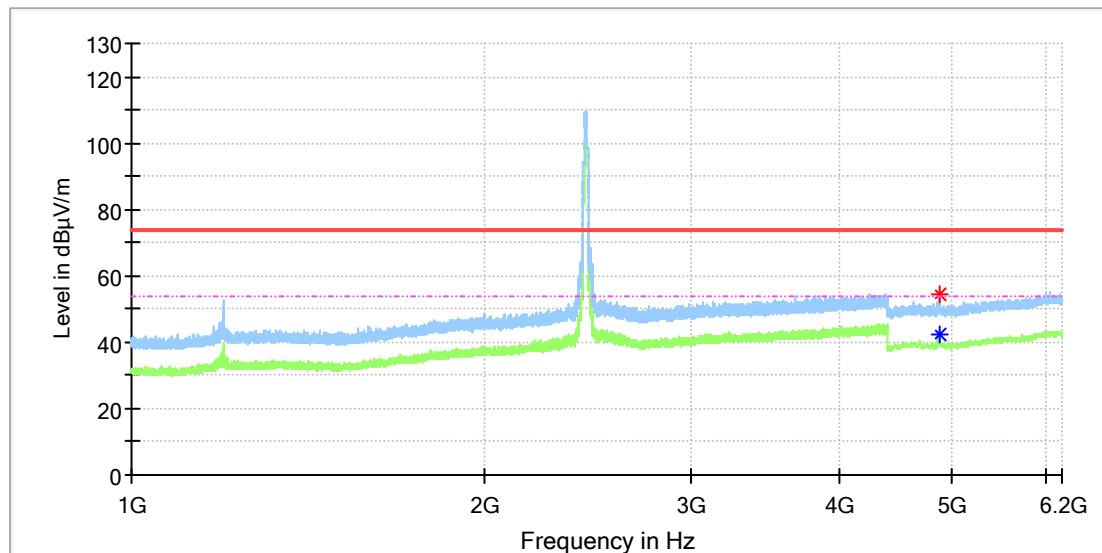
Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7303.300000	42.18	---	74.00	31.82	100.0	V	193.0	8.3
7305.758333	---	33.84	54.00	20.16	100.0	V	170.0	8.3

Wi-Fi 802.11 n(HT20) mode, MCS0

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	WIFI 2.4G_11n20_Ch6
Order No/Sample No:	168392703/A003345059-001
Test Voltage:	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

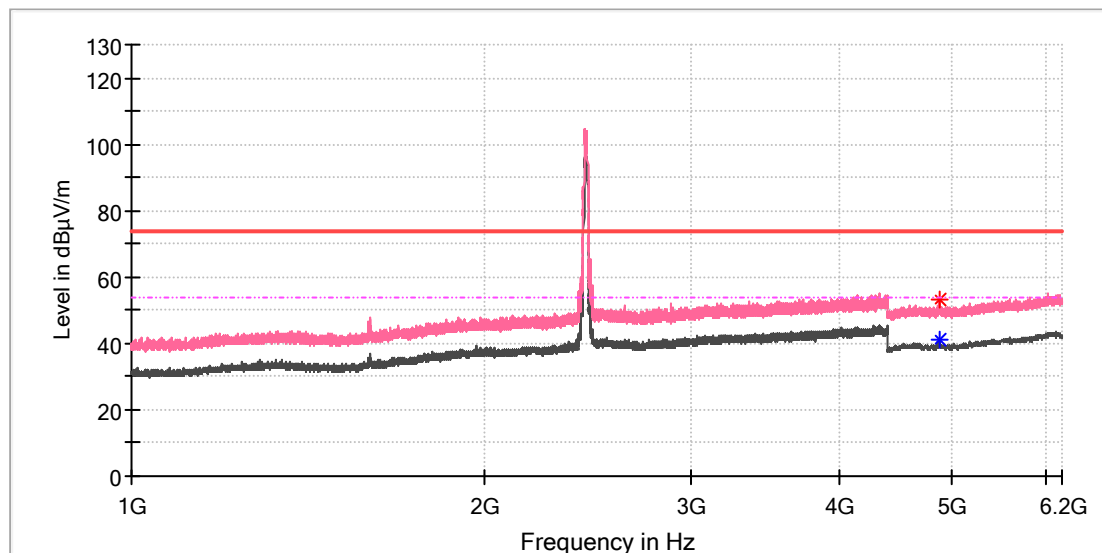


Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4872.000000	---	42.13	54.00	11.87	100.0	H	70.0	11.8
4875.000000	54.27	---	74.00	19.73	100.0	H	70.0	11.8

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	WIFI 2.4G_11n20_Ch6
Order No/Sample No:	168392703/A003345059-001
Test Voltage:	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

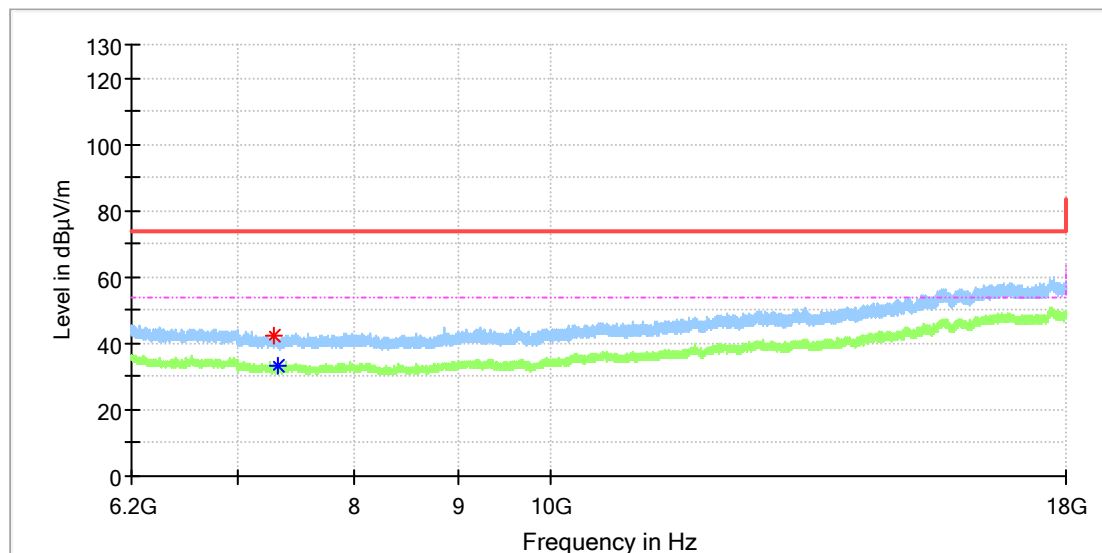


Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4869.000000	53.15	---	74.00	20.85	100.0	V	53.0	11.8
4873.000000	---	41.12	54.00	12.88	100.0	V	53.0	11.8

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	WIFI 2.4G_11n20_Ch6
Order No/Sample No:	168392703/A003345059-001
Test Voltage:	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

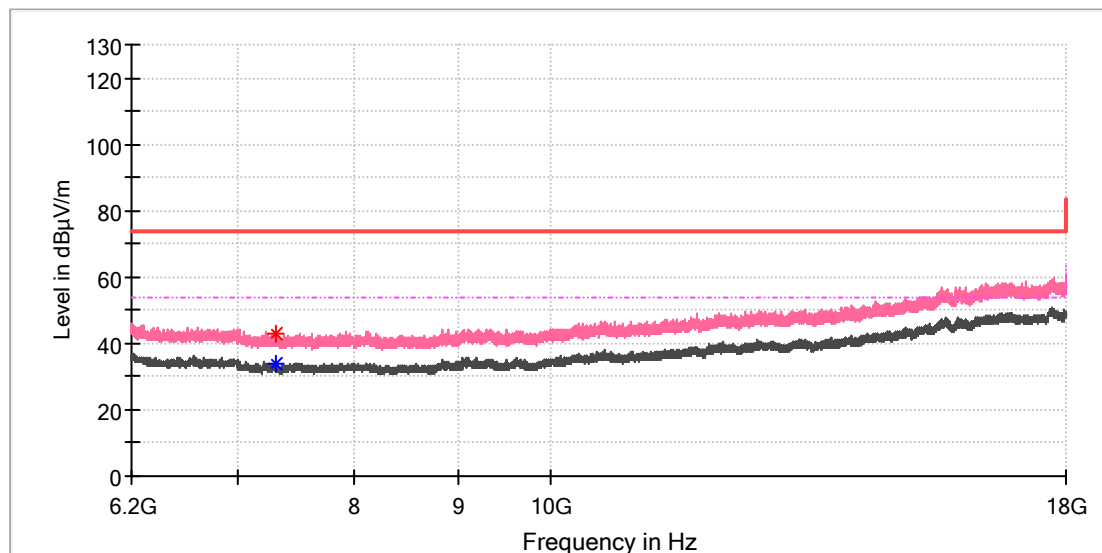


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7301.333333	42.61	---	74.00	31.39	100.0	H	0.0	8.3
7321.000000	---	33.16	54.00	20.84	100.0	H	3.0	8.2

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	WIFI 2.4G_11n20_Ch6
Order No/Sample No:	168392703/A003345059-001
Test Voltage:	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



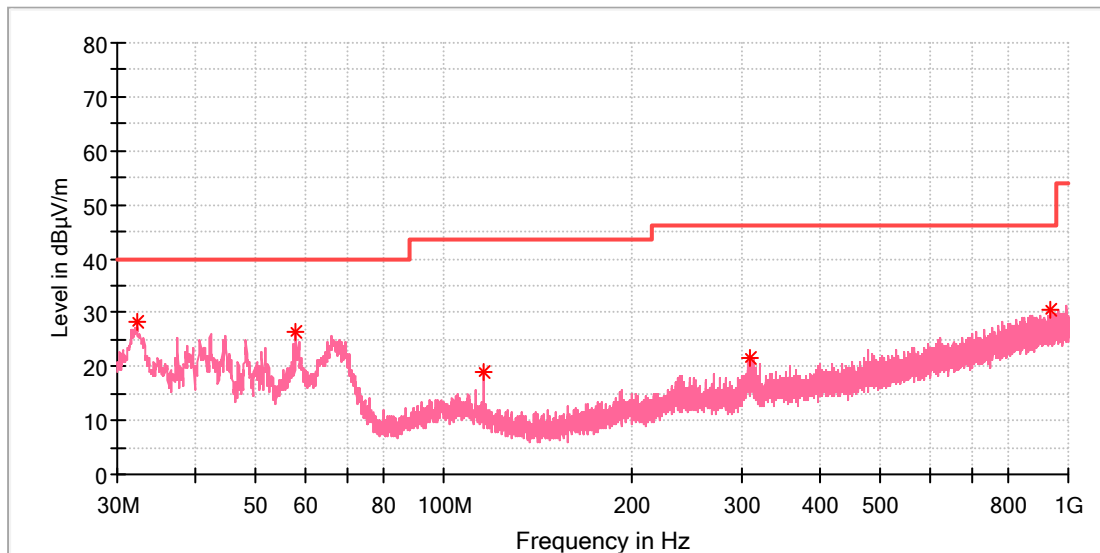
Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7302.316667	42.80	---	74.00	31.20	100.0	V	348.0	8.3
7306.741667	---	33.72	54.00	20.28	100.0	V	215.0	8.3

simultaneous transmission operations

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	BLE 1M+WIFI 2.4G
Order No/Sample No:	168392703/A003345059-001
Test Voltage::	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

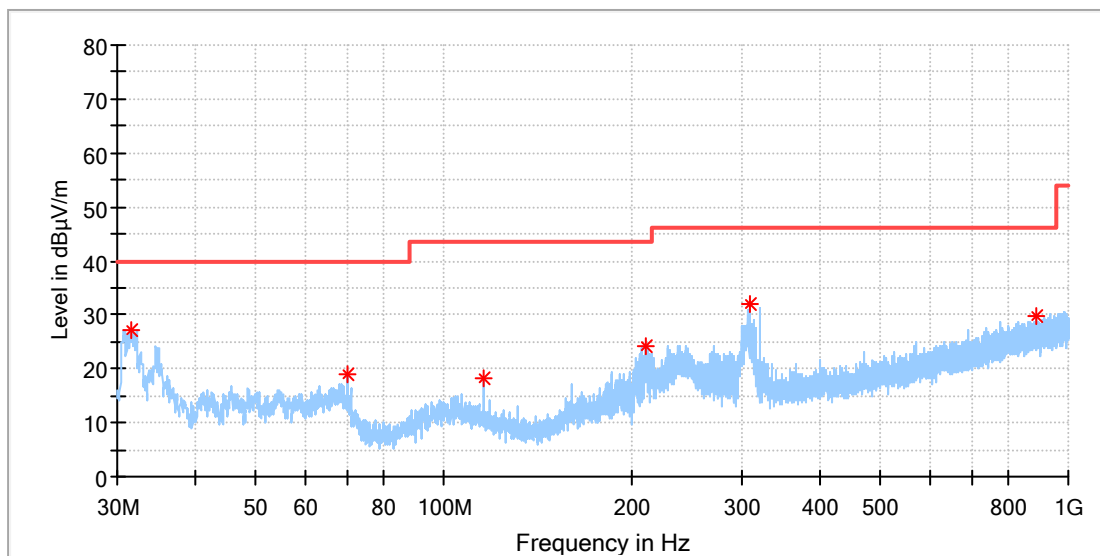


Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
32.231000	28.10	40.00	11.90	100.0	V	128.0	-22.6
58.033000	26.48	40.00	13.52	100.0	V	295.0	-18.8
115.602500	18.91	43.50	24.59	100.0	V	70.0	-19.9
309.166000	21.64	46.00	24.36	100.0	V	98.0	-16.0
935.737500	30.58	46.00	15.42	100.0	V	21.0	-4.6

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	BLE 1M+WIFI 2.4G
Order No/Sample No:	168392703/A003345059-001
Test Voltage::	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

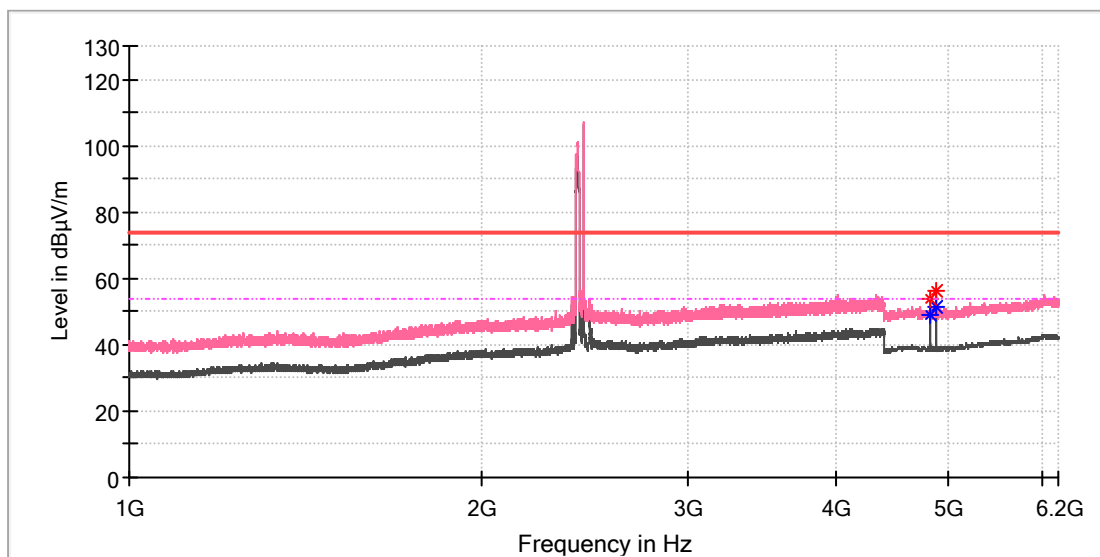


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
31.552000	27.19	40.00	12.81	100.0	H	297.0	-22.8
70.158000	18.83	40.00	21.17	100.0	H	163.0	-21.9
115.602500	18.24	43.50	25.26	100.0	H	70.0	-19.9
210.032000	24.02	43.50	19.48	100.0	H	46.0	-18.9
308.778000	31.91	46.00	14.09	100.0	H	70.0	-16.0
888.886500	29.90	46.00	16.10	100.0	H	52.0	-5.1

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	BLE 1M+WIFI 2.4G
Order No/Sample No:	168392703/A003345059-001
Test Voltage::	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

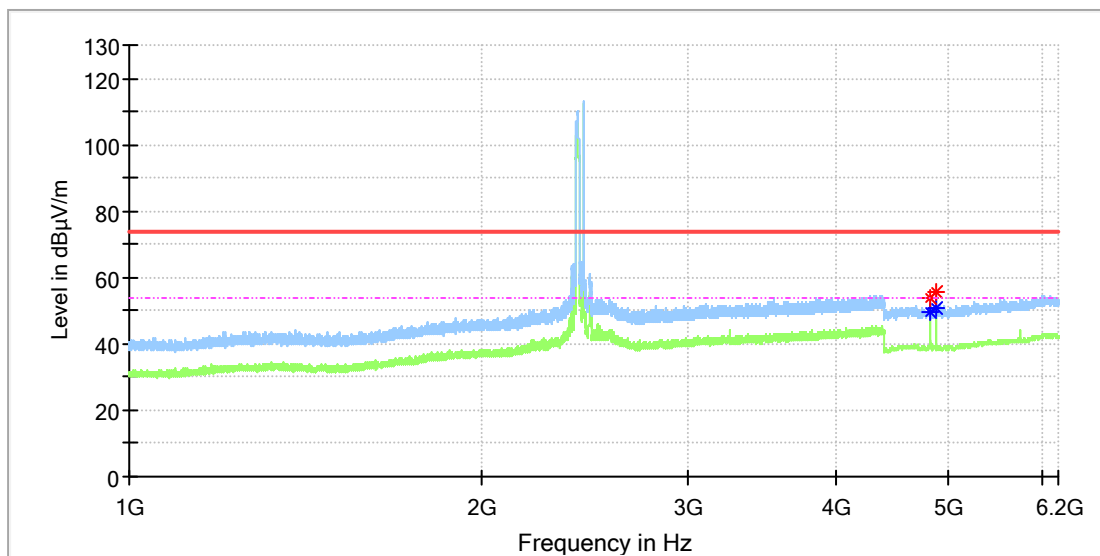


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4824.000000	53.63	---	74.00	20.37	100.0	V	130.0	11.8
4824.000000	---	48.98	54.00	5.02	100.0	V	130.0	11.8
4883.500000	56.21	---	74.00	17.79	100.0	V	224.0	11.8
4884.000000	---	51.58	54.00	2.42	100.0	V	224.0	11.8

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	BLE 1M+WIFI 2.4G
Order No/Sample No:	168392703/A003345059-001
Test Voltage::	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

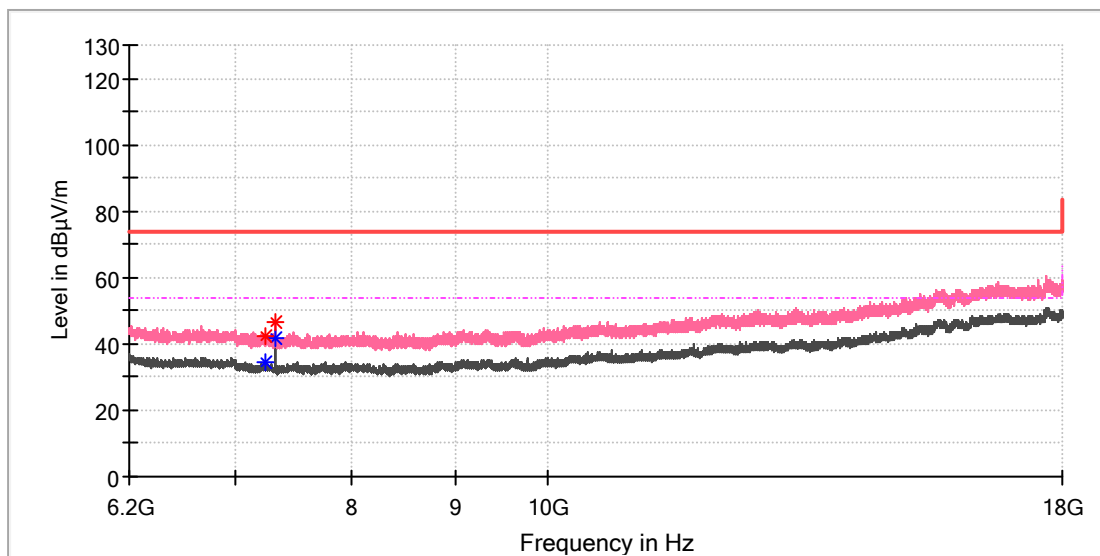


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4824.000000	54.04	---	74.00	19.96	100.0	H	164.0	11.8
4824.000000	---	49.79	54.00	4.21	100.0	H	164.0	11.8
4883.500000	55.75	---	74.00	18.25	100.0	H	1.0	11.8
4884.000000	---	50.61	54.00	3.39	100.0	H	1.0	11.8

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	BLE 1M+WIFI 2.4G
Order No/Sample No:	168392703/A003345059-001
Test Voltage::	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

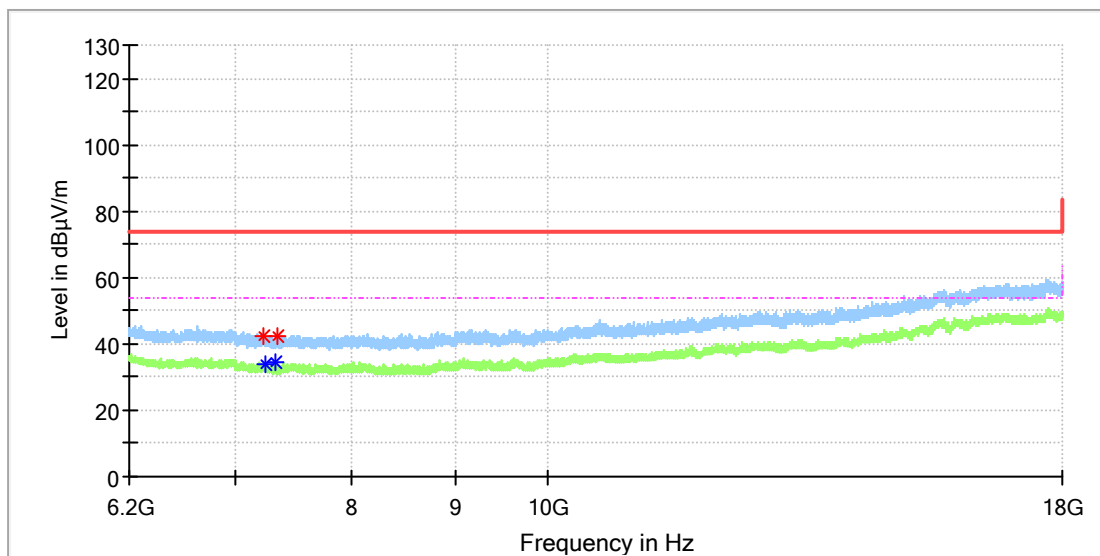


Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7237.416667	---	34.20	54.00	19.80	100.0	V	272.0	8.6
7244.300000	42.55	---	74.00	31.45	100.0	V	0.0	8.6
7325.425000	---	41.86	54.00	12.14	100.0	V	184.0	8.2
7325.916667	46.40	---	74.00	27.60	100.0	V	184.0	8.2

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	BLE 1M+WIFI 2.4G
Order No/Sample No:	168392703/A003345059-001
Test Voltage::	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

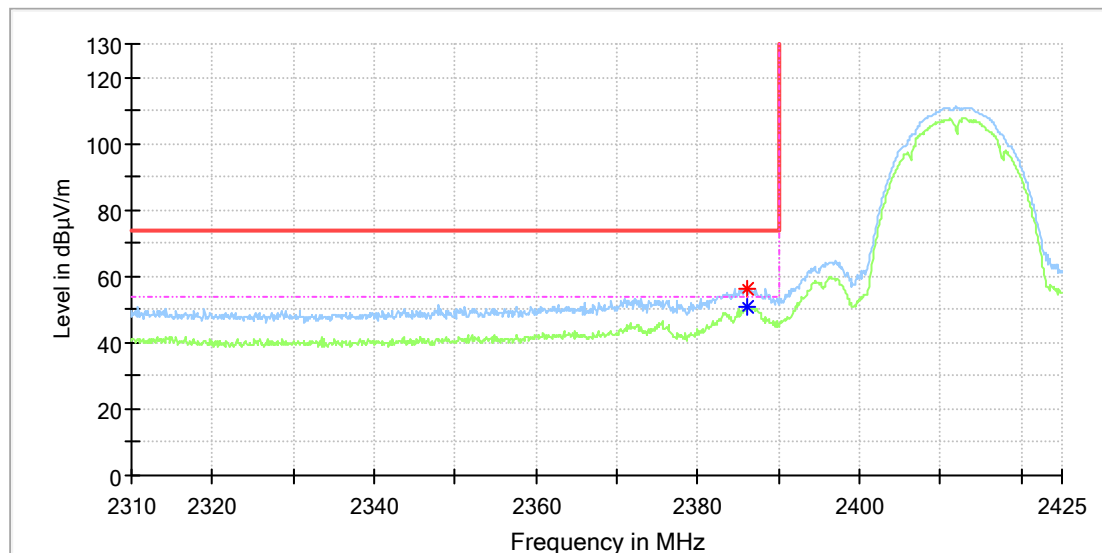
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7232.008333	42.61	---	74.00	31.39	100.0	H	41.0	8.6
7236.925000	---	33.57	54.00	20.43	100.0	H	236.0	8.6
7326.408333	---	34.25	54.00	19.75	100.0	H	125.0	8.1
7344.108333	42.09	---	74.00	31.91	100.0	H	28.0	8.1

Appendix B.6: Test Results of Radiated Emissions in Restricted Bands

Wi-Fi 802.11 b mode, 1 Mbps

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	WIFI 2.4G_11b_Ch1
Order No/Sample No:	168392703/A003345059-001
Test Voltage:	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

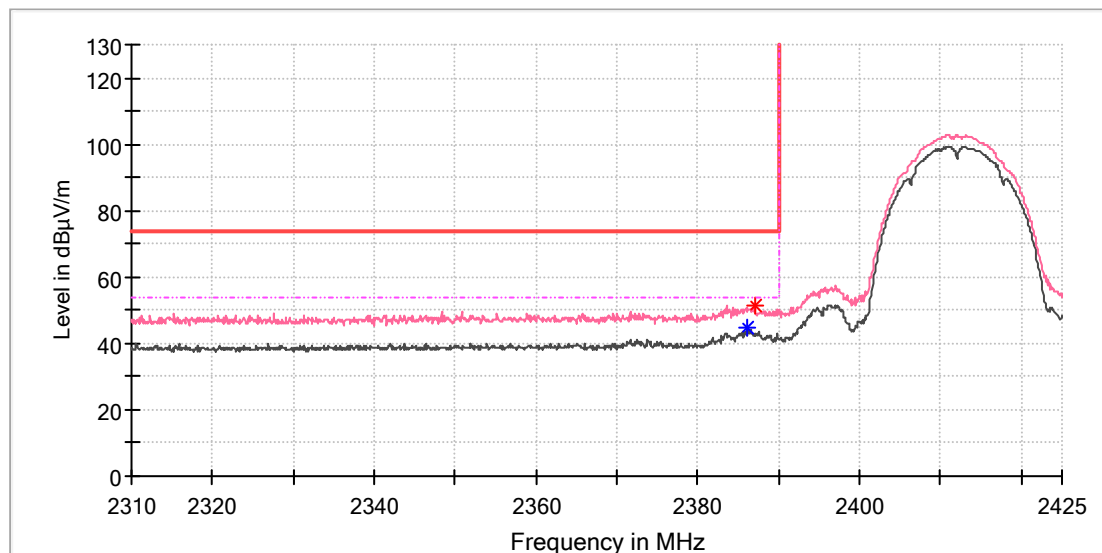


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2386.100000	56.38	---	74.00	17.62	100.0	H	203.0	7.0
2386.200000	---	50.94	54.00	3.06	100.0	H	203.0	7.0

EUT Information

EUT Name: Degrii Smart Thermostat
Model: THM
Test Mode: WIFI 2.4G_11b_Ch1
Order No/Sample No: 168392703/A003345059-001
Test Voltage: 120V/60Hz
Remark: Temp 23 Humi:56%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin

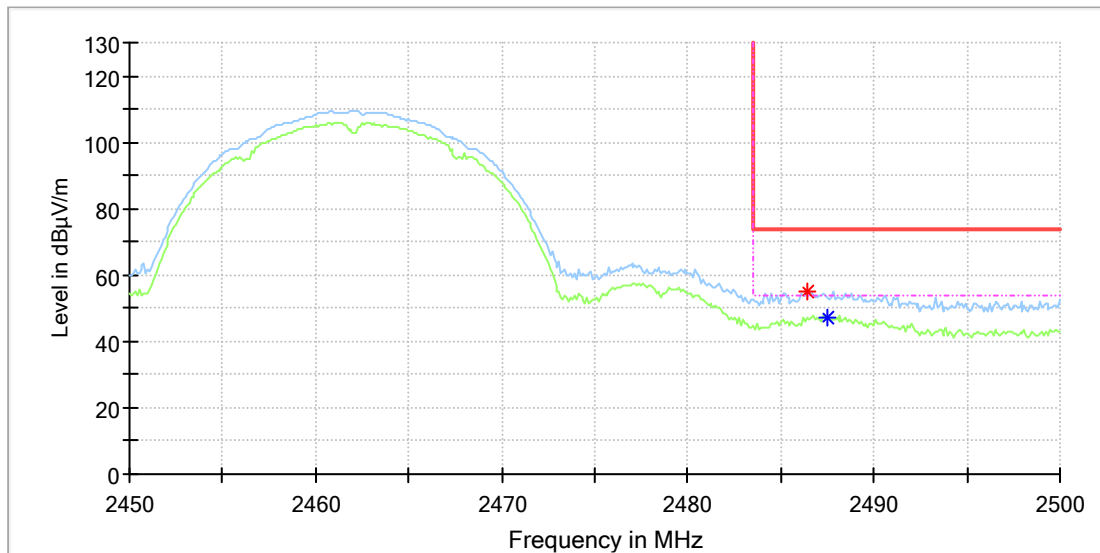


Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2386.200000	---	44.82	54.00	9.18	100.0	V	122.0	7.0
2387.100000	51.21	---	74.00	22.79	100.0	V	114.0	7.0

EUT Information

EUT Name: Degrii Smart Thermostat
Model: THM
Test Mode: WIFI 2.4G_11b_Ch11
Order No/Sample No: 168392703/A003345059-001
Test Voltage: 120V/60Hz
Remark: Temp 23 Humi:56%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin

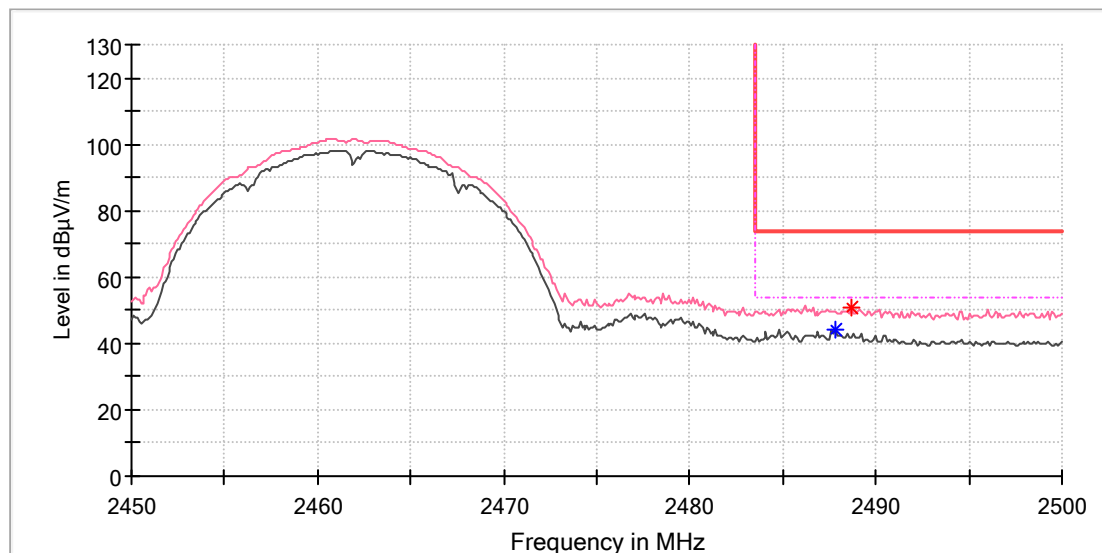


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2486.400000	54.84	---	74.00	19.16	100.0	H	54.0	7.4
2487.500000	---	47.41	54.00	6.59	100.0	H	54.0	7.4

EUT Information

EUT Name: Degrii Smart Thermostat
Model: THM
Test Mode: WIFI 2.4G_11b_Ch11
Order No/Sample No: 168392703/A003345059-001
Test Voltage: 120V/60Hz
Remark: Temp 23 Humi:56%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



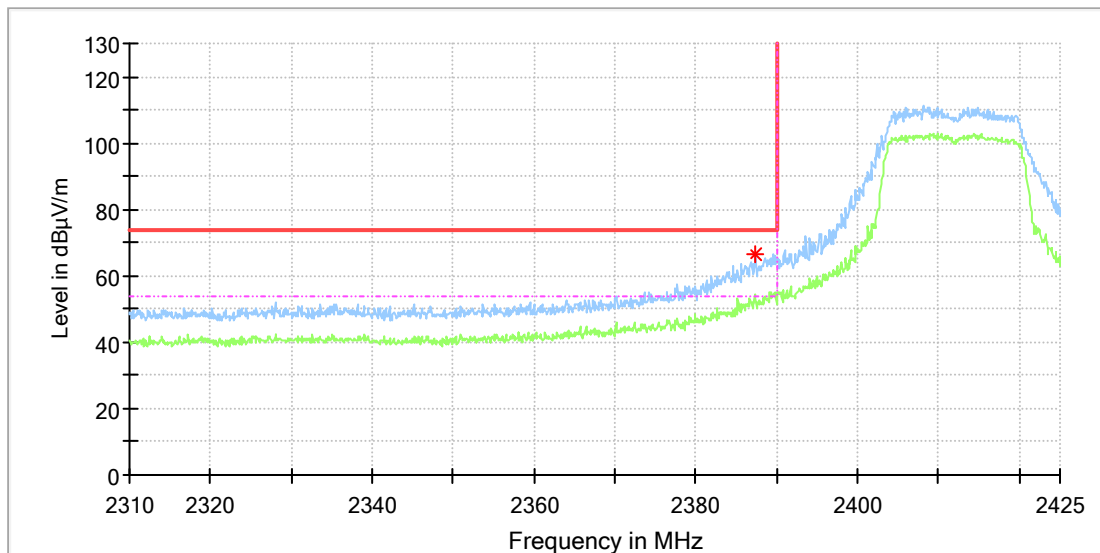
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2487.800000	---	44.24	54.00	9.76	100.0	V	253.0	7.4
2488.700000	51.09	---	74.00	22.91	100.0	V	291.0	7.4

Wi-Fi 802.11 g mode, 6 Mbps

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	WIFI 2.4G_11g_Ch1
Order No/Sample No:	168392703/A003345059-001
Test Voltage:	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

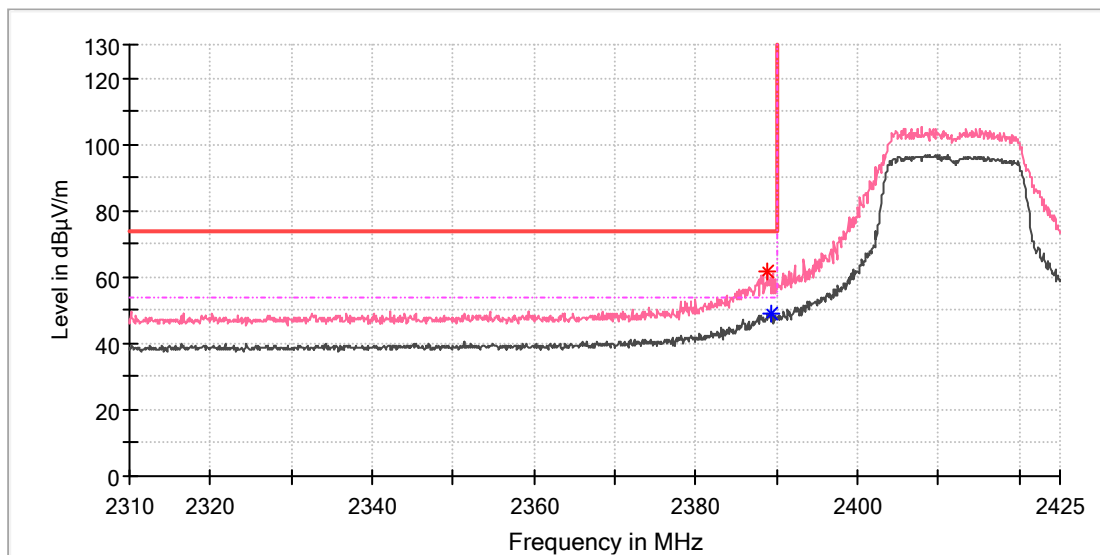


Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2387.400000	66.33	---	74.00	7.67	100.0	H	69.0	7.0
2389.700000	---	51.88	54.00	2.12	100.0	H	69.0	7.0

EUT Information

EUT Name: Degrii Smart Thermostat
Model: THM
Test Mode: WIFI 2.4G_11g_Ch1
Order No/Sample No: 168392703/A003345059-001
Test Voltage: 120V/60Hz
Remark: Temp 23 Humi:56%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin

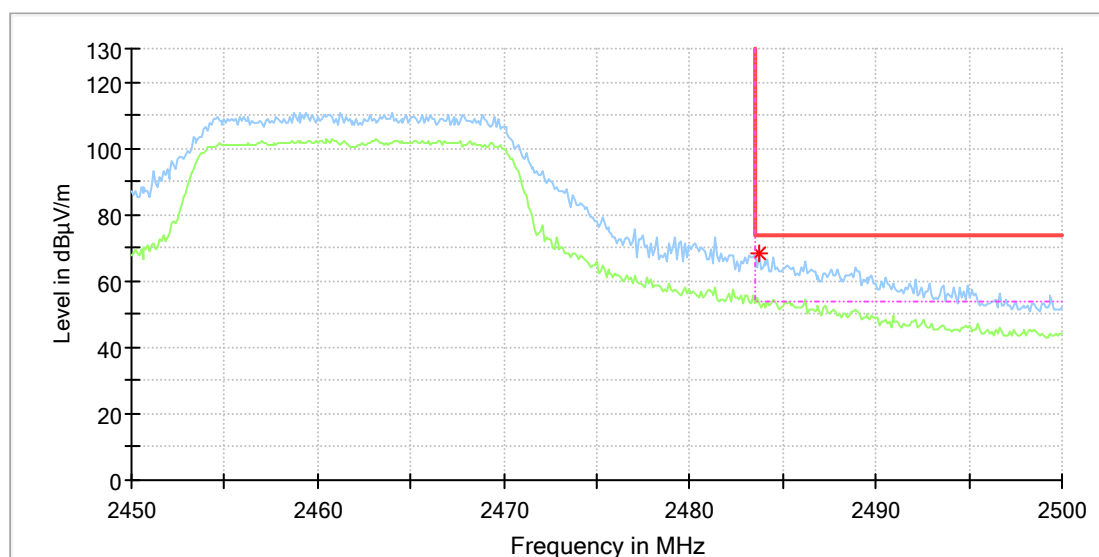


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2388.900000	61.48	---	74.00	12.52	100.0	V	116.0	7.0
2389.200000	---	49.11	54.00	4.89	100.0	V	101.0	7.0

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	WIFI 2.4G_11g_Ch11
Order No/Sample No:	168392703/A003345059-001
Test Voltage:	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

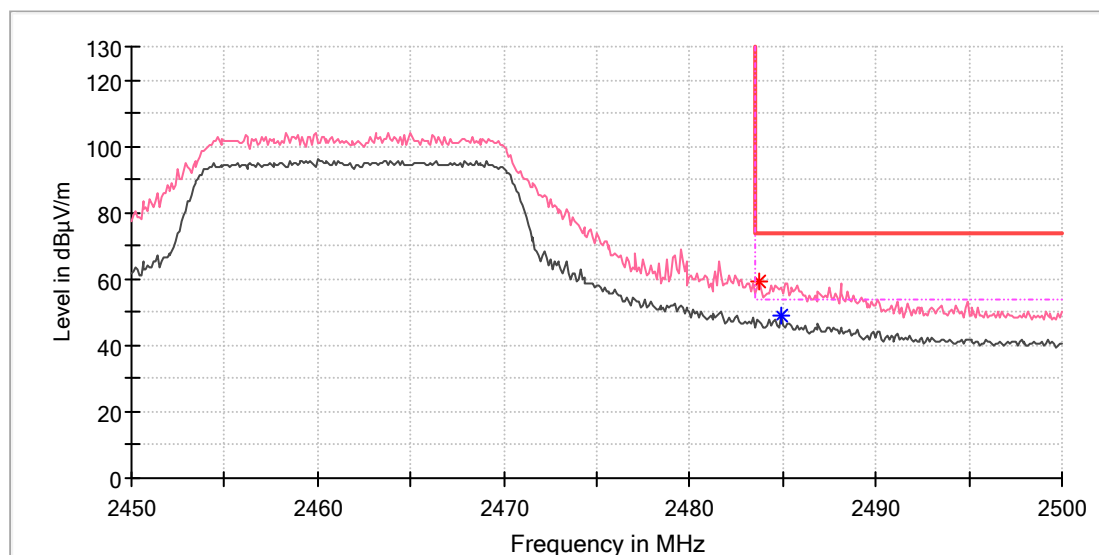


Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.700000	68.56	---	74.00	5.44	100.0	H	48.0	7.4
2483.600000	---	51.20	54.00	2.80	100.0	H	315.0	7.4

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	WIFI 2.4G_11g_Ch11
Order No/Sample No:	168392703/A003345059-001
Test Voltage:	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



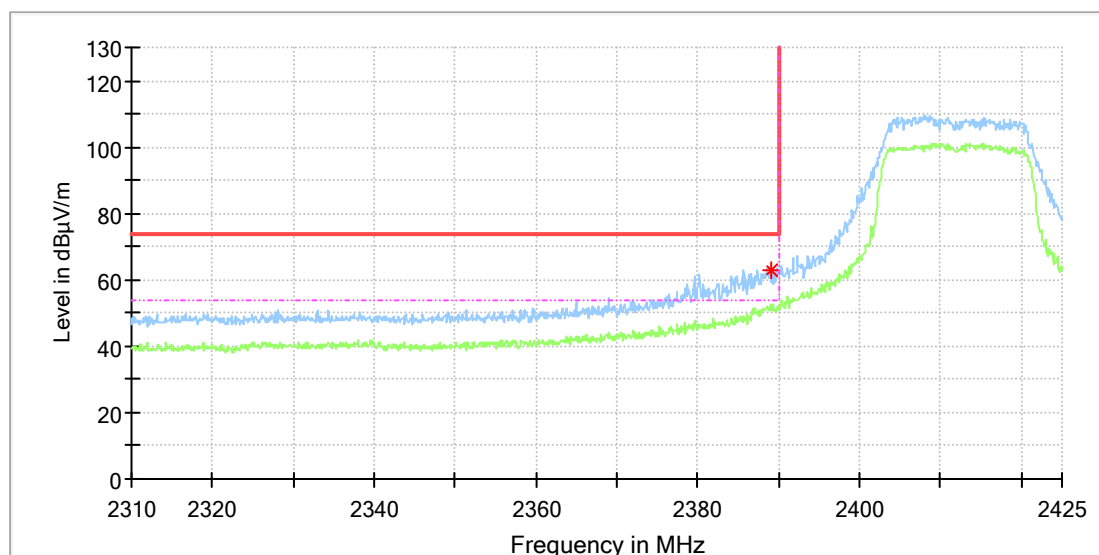
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.700000	59.01	---	74.00	14.99	100.0	V	111.0	7.4
2484.900000	---	48.84	54.00	5.16	100.0	V	118.0	7.4

Wi-Fi 802.11 n(HT20) mode, MCS0

EUT Information

EUT Name:	Degrii Smart Thermostat
Model:	THM
Test Mode:	WIFI 2.4G_11n20_Ch1
Order No/Sample No:	168392703/A003345059-001
Test Voltage:	120V/60Hz
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

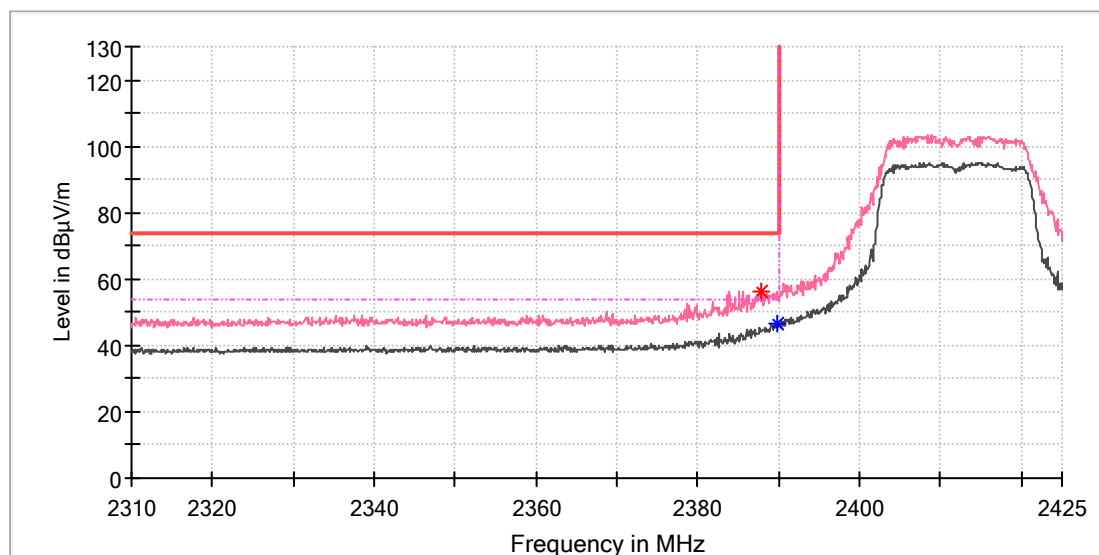


Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2389.000000	63.04	---	74.00	10.96	100.0	H	53.0	7.0
2389.200000	---	51.42	54.00	2.58	100.0	H	73.0	7.0

EUT Information

EUT Name: Degrii Smart Thermostat
Model: THM
Test Mode: WIFI 2.4G_11n20_Ch1
Order No/Sample No: 168392703/A003345059-001
Test Voltage: 120V/60Hz
Remark: Temp 23 Humi:56%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin

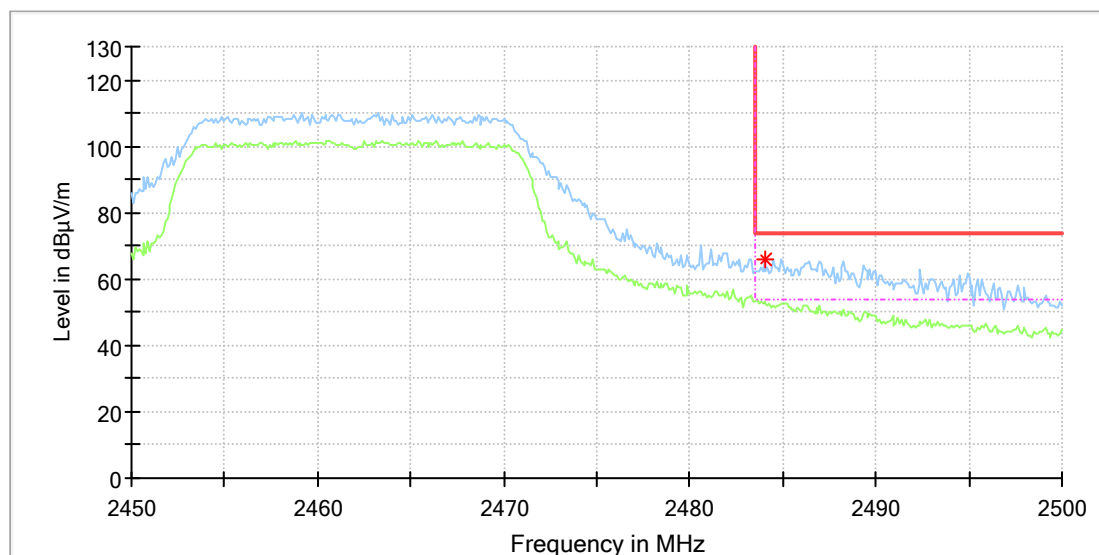


Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2387.800000	56.11	---	74.00	17.89	100.0	V	99.0	7.0
2389.700000	---	46.62	54.00	7.38	100.0	V	107.0	7.0

EUT Information

EUT Name: Degrii Smart Thermostat
Model: THM
Test Mode: WIFI 2.4G_11n20_Ch11
Order No/Sample No: 168392703/A003345059-001
Test Voltage: 120V/60Hz
Remark: Temp 23 Humi:56%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin

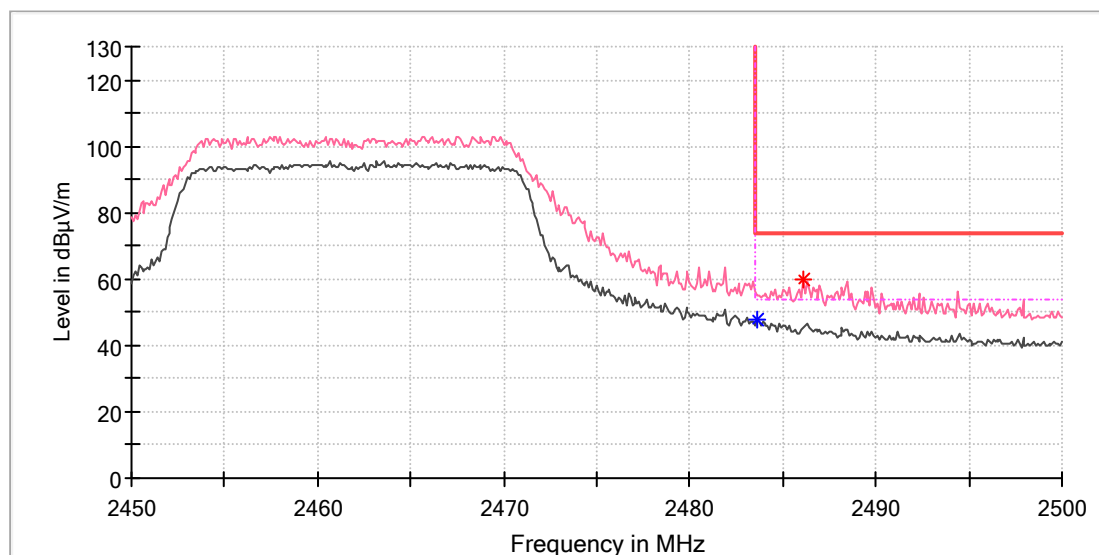


Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2484.000000	65.99	---	74.00	8.01	100.0	H	59.0	7.4
2483.600000	51.94	---	54.00	2.06	100.0	H	59.0	7.4

EUT Information

EUT Name: Degrii Smart Thermostat
Model: THM
Test Mode: WIFI 2.4G_11n20_Ch11
Order No/Sample No: 168392703/A003345059-001
Test Voltage: 120V/60Hz
Remark: Temp 23 Humi:56%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



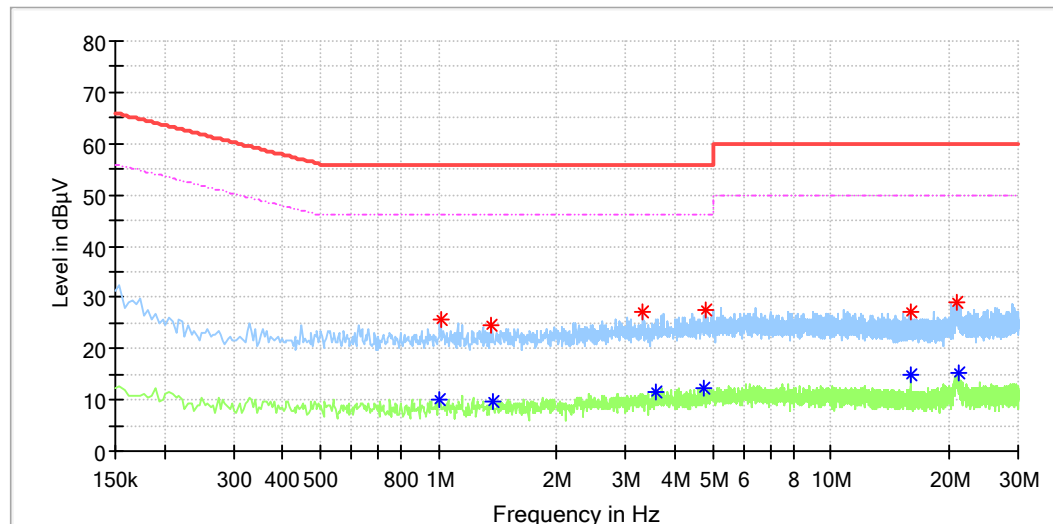
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.600000	---	47.49	54.00	6.51	100.0	V	142.0	7.4
2486.100000	59.78	---	74.00	14.22	100.0	V	97.0	7.4

Appendix B.7: Test Results of Conducted Emission on AC Mains

EUT Information

EUT Name:	Degrii Smart Thermostat
Order Number:	168392703
Model:	THM
Test Mode:	ON (Bluetooth and wifi connected)
Test Voltage:	AC 120V/60Hz
Test By:/Review By:	Kevin Zhou/Gary Chen
Test Standard:	FCC Part 15
Tem./Hum./Pressure:	24.6°C/49.5%/101kPa
Remark:	SR2

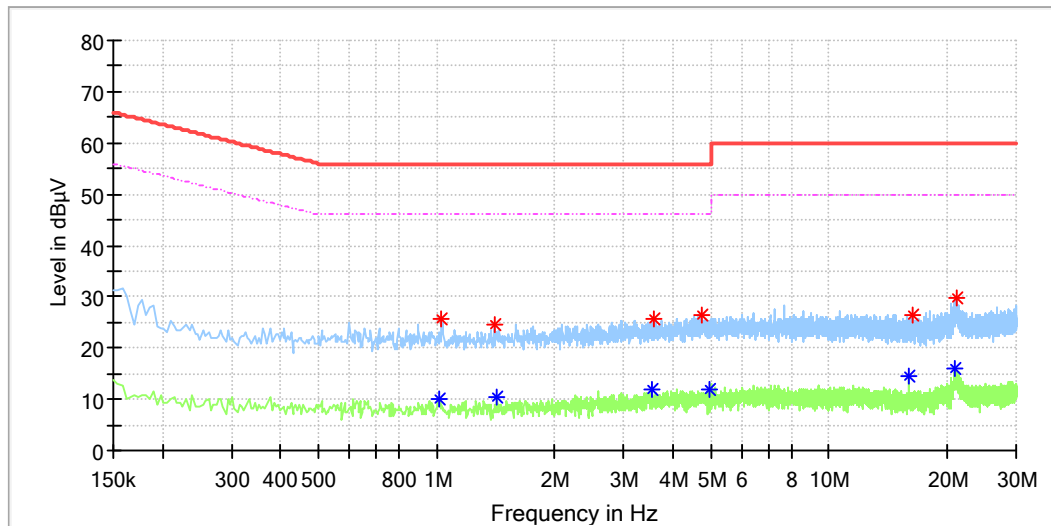


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
1.006000	---	9.92	46.00	36.08	L1	10.0
1.010000	25.82	---	56.00	30.18	L1	10.0
1.366000	24.48	---	56.00	31.52	L1	10.1
1.374000	---	9.78	46.00	36.22	L1	10.1
3.326000	27.00	---	56.00	29.00	L1	10.2
3.594000	---	11.71	46.00	34.29	L1	10.2
4.758000	---	12.29	46.00	33.71	L1	10.2
4.774000	27.53	---	56.00	28.47	L1	10.2
16.002000	---	14.81	50.00	35.19	L1	10.4
16.002000	27.06	---	60.00	32.94	L1	10.4
20.854000	29.08	---	60.00	30.92	L1	10.4
21.118000	---	15.40	50.00	34.60	L1	10.4

EUT Information

EUT Name: Degrii Smart Thermostat
Order Number: 168392703
Model: THM
Test Mode: ON (Bluetooth and wifi connected)
Test Voltage: AC 120V/60Hz
Test By:/Review By: Kevin Zhou/Gary Chen
Test Standard: FCC Part 15
Tem./Hum./Pressure: 24.6°C/49.5%/101kPa
Remark: SR2



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
1.018000	---	10.13	46.00	35.87	N	9.8
1.030000	25.60	---	56.00	30.40	N	9.8
1.402000	24.57	---	56.00	31.43	N	9.8
1.430000	---	10.33	46.00	35.67	N	9.8
3.554000	---	11.81	46.00	34.19	N	9.9
3.574000	25.63	---	56.00	30.37	N	9.9
4.750000	26.31	---	56.00	29.69	N	9.9
4.962000	---	12.07	46.00	33.93	N	9.9
15.998000	---	14.66	50.00	35.34	N	10.2
16.374000	26.38	---	60.00	33.62	N	10.2
20.962000	---	16.04	50.00	33.96	N	10.3
21.178000	29.94	---	60.00	30.06	N	10.3