

TEST REPORT

of

FCC Part 15 Subpart E §15.407
IC RSS-247 Issue 3 and RSS-Gen Issue 5

FCC ID: BEJLANR41
IC Certification: 2703H-LANR41

Equipment Under Test : CONT ASSY-AV
Model Name : LANR41
Variant Model Name(s) : -
Applicant : FCC: LG Electronics USA, Inc.
IC: LG ELECTRONICS INC.
Manufacturer : LG Electronics Co., Ltd.
Date of Receipt : 2024.07.04
Date of Test(s) : 2024.09.05 ~ 2024.11.11
Date of Issue : 2024.11.14

In the configuration tested, the EUT complied with the standards specified above. This test report does not assure KOLAS accreditation.

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- 2) The SGS Korea is not responsible for the sampling, the results of this test report apply to the sample as received.
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- 4) The data marked ※ in this report was provided by the customer and may affect the validity of the test results.

We are responsible for all the information of this test report except for the data(※) provided by the customer.

Tested by:



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Technical
Manager:



Jinhyoung Cho

SGS Korea Co., Ltd. Gunpo Laboratory

INDEX

Table of contents

1. General Information -----	3
2. Transmitter Radiated Spurious Emissions -----	14
3. 26 dB Bandwidth & 99 % Bandwidth -----	38
4. 6 dB Bandwidth -----	56
5. Maximum Conducted Output Power -----	61
6. Maximum Power Spectral Density -----	68
7. Antenna Requirement -----	80

1. General Information

1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)

- 10-2, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
- 4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
- Designation number: KR0150

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1.2. Details of Applicant

FCC Applicant : LG Electronics USA, Inc.

FCC Address : 111 Sylvan Avenue, North Building, Englewood Cliffs, New Jersey, United States, 07632

IC Applicant : LG ELECTRONICS INC.

IC Address : 222, LG-ro, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do, Korea (Republic of), 451-713

Contact Person : Kim, David

Phone No. : +1 201 470 2696

1.3. Details of Manufacturer

Company : LG Electronics Inc.

Address : 128, Yeoui-daero, Yeongdeungpo-gu, Seoul, Republic of Korea, 07336

Factory 1 : LG Electronics Inc.

Factory 1 Address : 222 LG-ro, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do, 17709, Republic of Korea

Factory 2 : LG Electronics Vietnam Haiphong Co., Ltd.

Factory 2 Address : Lots CN2, Trang Due Industrial Park, Le Loi Commune, An Duong District, Hai Phong City, Vietnam

Factory 3 : LG Electronics Reynosa S.A. de C.V.

Factory 3 Address : Av. Olimpia #2342, Parque Industrial Santa Maria 2da Etapa, 25903 Ramos Arizpe, Coahuila, Mexico

1.4. Description of EUT

Kind of Product	CONT ASSY-AV	
Model Name	LANR41	
Serial Number	Conducted: 001 Radiated: 002	
Power Supply	DC 12 V	
Frequency Range	5 180 MHz ~ 5 240 MHz (Band 1: 11a/n_HT20, 11ac_VHT20) 5 190 MHz ~ 5 230 MHz (Band 1: 11n_HT40, 11ac_VHT40) 5 210 MHz (Band 1: 11ac_VHT80) 5 745 MHz ~ 5 805 MHz (Band 3: 11a/n_HT20, 11ac_VHT20) 5 755 MHz ~ 5 795 MHz (Band 3: 11n_HT40, 11ac_VHT40) 5 775 MHz (Band 3: 11ac_VHT80)	
Modulation Technique	OFDM	
Number of Channels	4 channels (Band 1: 11a/n_HT20, 11ac_VHT20) 2 channels (Band 1: 11n_HT40, 11ac_VHT40) 1 channel (Band 1: 11ac_VHT80) 4 channels (Band 3: 11a/n_HT20, 11ac_VHT20) 2 channels (Band 3: 11n_HT40, 11ac_VHT40) 1 channel (Band 3: 11ac_VHT80)	
Antenna Type	Ant. 1: Internal Dielectric Chip Antenna	Ant. 2: External PIFA
Antenna Gain ※	Ant. 1 BT: 2 400 MHz ~ 2 483.5 MHz: 2.20 dB i WLAN5: 5 150 MHz ~ 5 250 MHz: 4.60 dB i 5 725 MHz ~ 5 875 MHz: 3.50 dB i	Ant. 2 WLAN2: 2 400 MHz ~ 2 483.5 MHz: 0.25 dB i
H/W Version	1.0	
S/W Version	1.0	
FVIN	1.0	

1.5. Declaration by the Manufacturer

- The EUT supports transmit power control (TPC).
- The EUT only supports UNII-1 Band and UNII-3 Band.
- The EUT does not support channel 165.
- BT, BLE and WLAN 5 GHz utilize internal Dielectric Chip Antenna, whereas WLAN 2 GHz employs an external PIFA.

1.6. Automatically Discontinue Transmission

1.6.1. Limit of Automatically Discontinue Transmission

The device shall automatically discontinue transmission in case of either absence of information to transmit or operating failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

1.6.2. Test Result of Automatically Discontinue Transmission

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

1.7. Test Equipment List

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Interval	Cal. Due
Signal Generator	R&S	SMA100B	106887	Oct. 11, 2024	Annual	Oct. 11, 2025
Spectrum Analyzer	R&S	FSV30	103453	Oct. 29, 2024	Annual	Oct. 29, 2025
Spectrum Analyzer	R&S	FSW67	103242	Jul. 19, 2024	Annual	Jul. 19, 2025
Spectrum Analyzer	Agilent	N9020A	MY53421758	Sep. 10, 2024	Annual	Sep. 10, 2025
Spectrum Analyzer	Agilent	N9030A	US51350132	Nov. 27, 2024	Annual	Nov. 27, 2025
Power Meter	Anritsu	ML2495A	1223004	May 29, 2024	Annual	May 29, 2025
Power Sensor	Anritsu	NRP-Z81	100669	May 17, 2024	Annual	May 17, 2025
Attenuator	AEROFLEX / INMET	40AH2W-10	40G-1	Jun. 19, 2024	Annual	Jun. 19, 2025
Low Pass Filter	Mini-Circuits	NLP-1200+	V 8979400903-2	Feb. 07, 2024	Annual	Feb. 07, 2025
Low Pass Filter	WT MICROWAVE INC	WT-A1700-LS	WT151207001	Apr. 08, 2024	Annual	Apr. 08, 2025
High Pass Filter	Wainwright Instrument GmbH	WHKX6.0/18G-10SS	51	Jul. 26, 2024	Annual	Jul. 26, 2025
High Pass Filter	Wainwright Instrument GmbH	WHNX7.5/26.5G-6SS	15	Jun. 07, 2024	Annual	Jun. 07, 2025
DC Power Supply	R&S	HMP2020	022802107	Oct. 31, 2024	Annual	Oct. 31, 2025
Preamplifier	H.P.	8447F	2944A03909	Aug. 09, 2024	Annual	Aug. 09, 2025
Signal Conditioning Unit	R&S	SCU-18F	101058	Dec. 07, 2023	Annual	Dec. 07, 2024
Preamplifier	MITEQ Inc.	JS44-18004000-35-8P	1546891	Oct. 14, 2024	Annual	Oct. 14, 2025
Loop Antenna	Schwarzbeck Mess-Elektronik	FMZB 1519	1519-039	Aug. 21, 2023	Biennial	Aug. 21, 2025
Bilog Antenna	Schwarzbeck Mess-Elektronik	VULB 9163	9163-396	Apr. 02, 2024	Biennial	Apr. 02, 2026
Horn Antenna	R&S	HF906	100326	Feb. 19, 2024	Annual	Feb. 19, 2025
Horn Antenna	Schwarzbeck Mess-Elektronik	BBHA 9170	BBHA9170223	Oct. 14, 2024	Annual	Oct. 14, 2025
Test Receiver	R&S	ESU26	100109	Jan. 16, 2024	Annual	Jan. 16, 2025
Turn Table	Innco systems GmbH	DS 1200 S	N/A	N.C.R.	N/A	N.C.R.
Controller	Innco systems GmbH	CONTROLLER CO3000-4P	CO3000/963/383 30516/L	N.C.R.	N/A	N.C.R.
Antenna Mast	Innco systems GmbH	MA4640-XP-ET	MA4640/536/383 30516/L	N.C.R.	N/A	N.C.R.
Anechoic Chamber	SY Corporation	L × W × H (9.6 m × 6.4 m × 6.6 m)	N/A	N.C.R.	N/A	N.C.R.
Coaxial Cable	SENSORVIEW	NMST-13A26-NMST-5 m	TPC2402190004	Oct. 04, 2024	Semi-Annual	Apr. 04, 2025
Coaxial Cable	SENSORVIEW	NMST-13A26-NMST-10 m	TPC2402190001	Oct. 04, 2024	Semi-Annual	Apr. 04, 2025
Coaxial Cable	RFONE	PL360P-292M292M-1.5M-A	20200324002	Oct. 11, 2024	Semi-Annual	Apr. 11, 2025

Note;

- For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.

1.8. Summary of Test Result

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15 Subpart E, IC RSS-247 Issue 3 and RSS-Gen Issue 5			
Section in FCC	Section in IC	Test Item(s)	Result
15.205(a) 15.209(a) 15.407(b)(1) 15.407(b)(4)	RSS-Gen Issue 5 8.9 RSS-247 Issue 3 6.2.1.2 RSS-247 Issue 3 6.2.4.3	Transmitter Radiated Spurious Emissions	Pass
15.407(a)	RSS-Gen Issue 5 6.7	26 dB Bandwidth & 99 % Bandwidth	Pass
15.407(e)	RSS-247 Issue 3 6.2.4.2	6 dB Bandwidth	Pass
15.407(a)(1) 15.407(a)(3)	RSS-247 Issue 3 6.2.1.1 RSS-247 Issue 3 6.2.4.2	Maximum Conducted Output Power	Pass
15.407(a)(1) 15.407(a)(3)	RSS-247 Issue 3 6.2.1.1 RSS-247 Issue 3 6.2.4.2	Maximum Power Spectral Density	Pass
15.207	RSS-Gen Issue 5 8.8	AC Power Line Conducted Emission	N/A ¹⁾

Note;

- 1) The AC power line test was not performed because the EUT use battery power for operation and which do not operate from the AC power lines.

1.9. Test Procedure(s)

The measurement procedures described in the American National Standard of Procedures for Compliance Testing of unlicensed Wireless Devices (ANSI C63.10-2013) and the guidance provided in KDB 789033 D02 General UNII Test Procedures New Rules v02r01 were used in the measurement of the DUT.

1.10. Sample Calculation

Where relevant, the following sample calculation is provided:

1.10.1. Conducted Test

Offset value (dB) = Attenuator (dB) + Cable loss (dB)

1.10.2. Radiation Test

Field strength level (dB μ V/m)

= Measured level (dB μ V) + Antenna factor (dB/m) + Cable loss (dB) - Amplifier gain (dB)

1.11. Information of Software for test

- Using the software of Android Debug Bridge v1.0.31 to test WLAN.

1.12. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Parameter	Uncertainty	
Maximum Conducted Output Power	0.34 dB	
Maximum Power Spectral Density	0.65 dB	
99 % Bandwidth	0.03 MHz	
26 dB Bandwidth	0.03 MHz	
6 dB Bandwidth	0.06 MHz	
Radiated Emission, 9 kHz to 30 MHz	H	3.40 dB
	V	3.40 dB
Radiated Emission, below 1 GHz	H	4.60 dB
	V	5.00 dB
Radiated Emission, above 1 GHz	H	3.60 dB
	V	3.60 dB

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

1.13. Test Report Revision

Revision	Report Number	Date of Issue	Description
0	F690501-RF-RTL005568	2024.11.14	Initial

1.14. Device Capabilities

Antenna	Bluetooth Low Energy	Bluetooth	WLAN 2 GHz	WLAN 5 GHz
External PIFA	X	X	O	X
Internal Dielectric Chip Antenna	O	O	X	O

1.15. Worst-Case Configuration and Test Mode

Mode	Frequency (MHz)	Average Power (dBm)
11n_HT20	5 180	<u>5.86</u>
11ac_VHT20		5.76
11n_HT40	5 190	<u>5.58</u>
11ac_VHT40		5.40

Mode	Bandwidth (MHz)	Data rate with highest output power
11a	20	6 Mbps
11n_HT20	20	MCS0
11n_HT40	40	MCS0
11ac_VHT80	80	MCS0

*For duplicate test items among 802.11n_HT20, HT40, 802.11ac_VHT20 and VHT40 mode, the test mode with the highest power level was tested.

Radiated emission below 1 GHz was performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

Radiated emission above 1 GHz was performed with the EUT set to transmit Low/Middle/High Channels.

Conducted tests were performed with the EUT set to transmit Low/Middle/High channels with highest output power.

1.16. Duty Cycle of EUT

Regarding to KDB 789033 D02 General UNII Test Procedures New Rules v02r01, II.B, the maximum duty cycles of all modes were investigated and set the spectrum analyzer as below.
Set RBW $\geq$ EBW if possible; otherwise, set RBW to the largest available value, Set VBW $\geq$ RBW.
Set detector = peak or average. The zero-span measurement method shall not be used unless both RBW and VBW are $> 50/T$ and the number of sweep points across duration T exceeds 100.

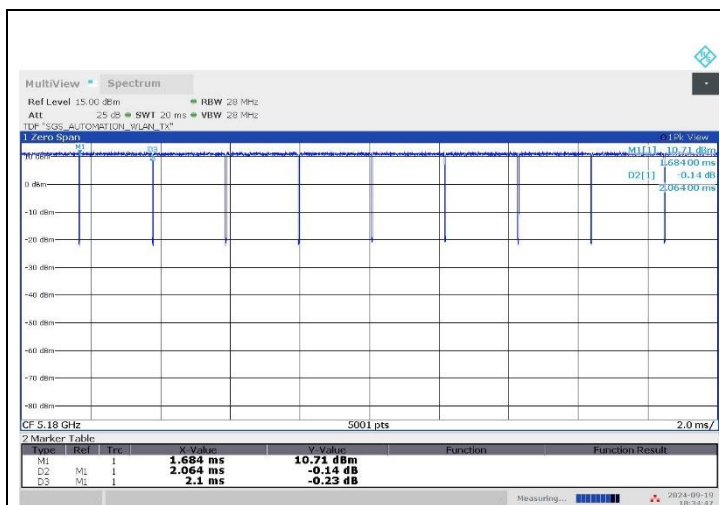
Mode	Data Rate	Duty Cycle (%)	Correction Factor (dB)
11a	6 Mbps	98.29	-
11n_HT20	MCS0	86.54	0.63
11n_HT40	MCS0	76.45	1.17
11ac_VHT80	MCS0	58.59	2.32

Remark;

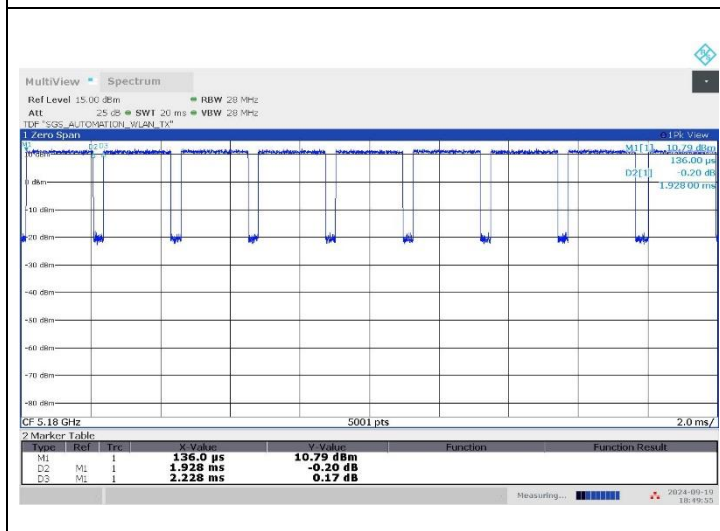
1. As measured duty cycles of EUT, all of mode and data rate keep constant period and are converted to log scale (power averaging) to compensate correction factor to result of average test items.
2. $\text{Duty Cycle (\%)} = (\text{Tx on time} / \text{Tx on} + \text{off time}) \times 100$
3. $\text{Correction Factor (dB)} = 10 \log (1 / \text{Duty Cycle})$
4. Duty cycle is over 98 %, compensation is no required.

- Test plots

11a



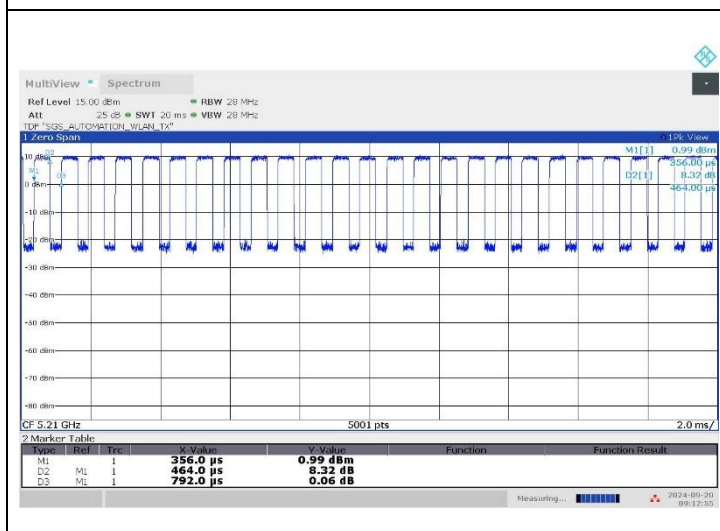
11n_HT20



11n_HT40



11ac_VHT80

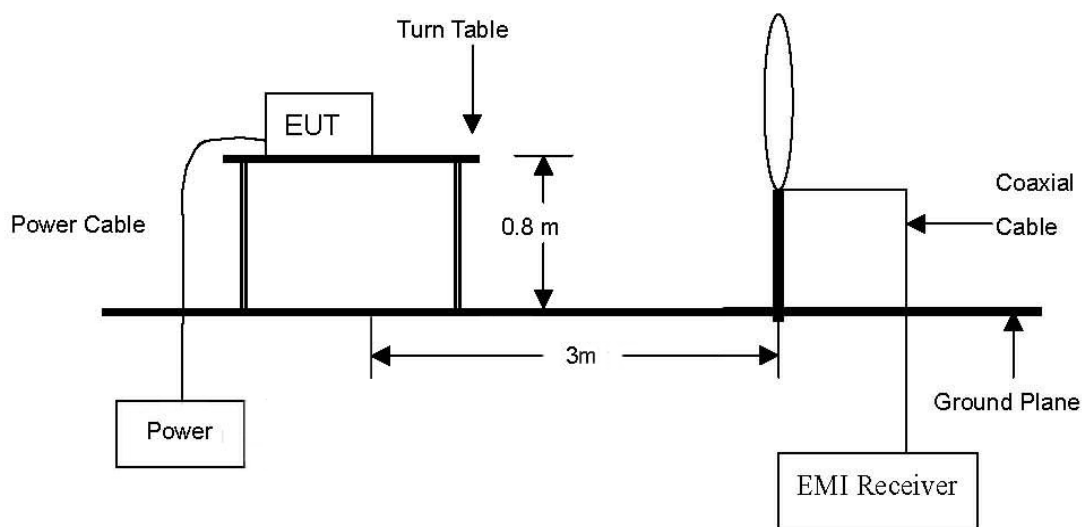


2. Transmitter Radiated Spurious Emissions

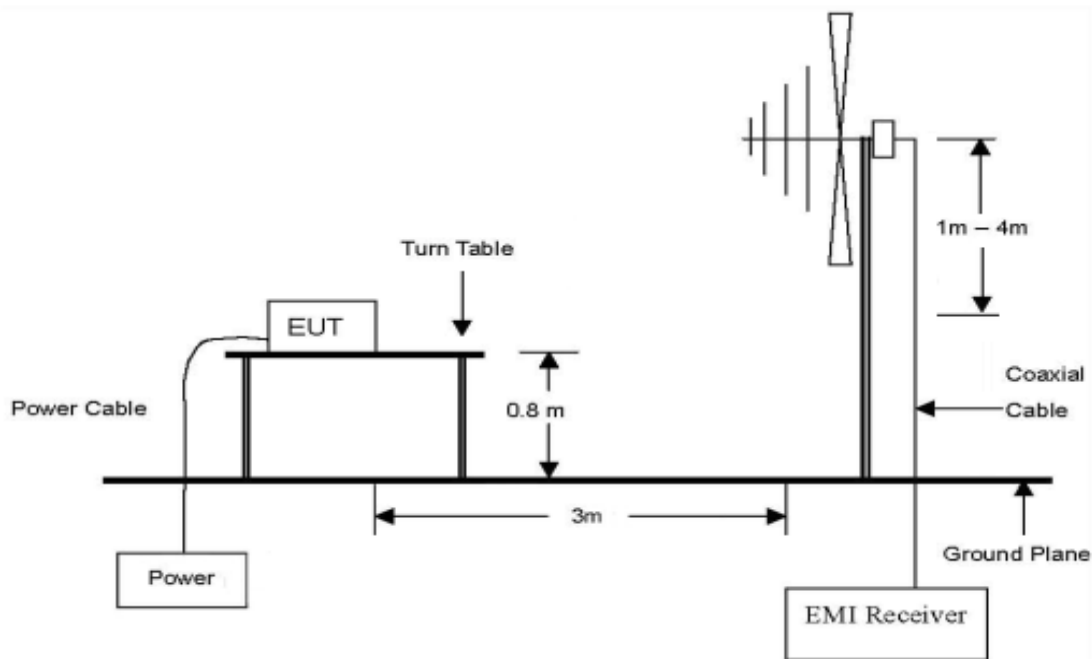
2.1. Test Setup

2.1.1. Transmitter radiated spurious emissions

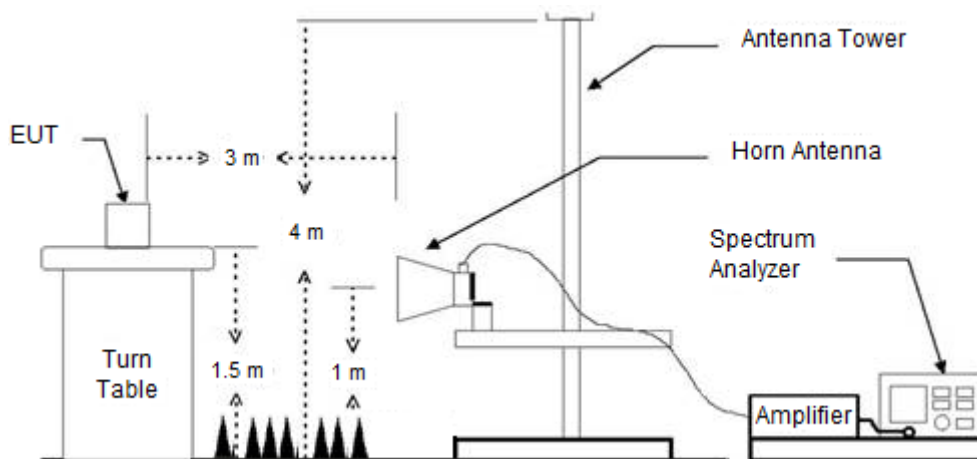
The diagram below shows the test setup that is utilized to make the measurements for emission from 9 kHz to 30 MHz emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 30 MHz to 1 GHz emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission. The spurious emissions were investigated from 1 GHz to the 10th harmonic of the highest fundamental frequency or 40 GHz, whichever is lower.



2.2. Limit

2.2.1. FCC

According to § 15.407(b)

(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 dB m/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band:

(i) All emissions shall be limited to a level of -27 dB m/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dB m/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dB m/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dB m/MHz at the band edge.

According to § 15.209(a), except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (Meters)
0.009-0.490	2 400/F(kHz)	300
0.490-1.705	24 000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§15.231 and 15.241.

2.2.2. IC

According to RSS-247 Issue 3,

6.2.1.2 Frequency band 5 150-5 250 MHz

For transmitters with operating frequencies in the band 5 150-5 250 MHz, all emissions outside the band 5 150-5 350 MHz shall not exceed -27 dBm/MHz e.i.r.p. Any unwanted emissions that fall into the band 5 250-5 350 MHz shall be attenuated below the channel power by at least 26 dB, when measured using a resolution bandwidth between 1 and 5 % of the occupied bandwidth (i.e. 99% bandwidth), above 5 250 MHz. The 26 dB bandwidth may fall into the 5 250-5 350 MHz band; however, if the occupied bandwidth also falls within the 5 250- 5350 MHz band, the transmission is considered as intentional and the devices shall comply with all requirements in the band 5 250-5 350 MHz including implementing dynamic frequency selection (DFS) and TPC, on the portion of the emission that resides in the 5 250-5 350 MHz band.

6.2.4.3 Frequency band 5 725-5 850 MHz

Devices operating in the band 5 725-5 850 MHz shall have comply with the following e.i.r.p. spectral density limits:

- a) 27 dBm/MHz at frequencies from the band edges decreasing linearly to 15.6 dBm/MHz at 5 MHz above or below the band edges;
- b) 15.6 dBm/MHz at 5 MHz above or below the band edges decreasing linearly to 10 dBm/MHz at 25 MHz above or below the band edges;
- c) 10 dBm/MHz at 25 MHz above or below the band edges decreasing linearly to -27 dBm/MHz at 75 MHz above or below the band edges; and
- d) -27 dBm/MHz at frequencies more than 75 MHz above or below the band edges.

2.3. Test Procedures

Radiated spurious emissions from the EUT were measured according to the dictates in section G of KDB 789033 D02 General UNII Test Procedures New Rules v02r01 and ANSI C63.10-2013.

2.3.1. Test Procedures for emission below 30 MHz

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter anechoic chamber test site. The table was rotated 360 degrees to determine the position of the highest radiation.
2. Then antenna is a loop antenna is fixed at one meter above the ground to determine the maximum value of the field strength. Both parallel and perpendicular of the antenna are set to make the measurement.
3. For each suspected emission, the EUT was arranged to its worst case and then the table was turned from 0 degrees to 360 degrees to find the maximum reading.
4. The test-receiver system was set to average or quasi peak detect function and Specified Bandwidth with Maximum Hold Mode.

2.3.2. Test Procedures for emission from above 30 MHz

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter anechoic chamber test site below 1 GHz and 1.5 meter above the ground at a 3 meter anechoic chamber test site above 1 GHz. The table was rotated 360 degrees to determine the position of the highest radiation.
2. During performing radiated emission below 1 GHz, the EUT was set 3 meters away from the interference receiving antenna, which was mounted on the top of a variable-height antenna tower. During performing radiated emission above 1 GHz, the EUT was set 3 meter away from the interference-receiving antenna.
3. The antenna is a bi-log antenna, a horn antenna and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. For measurements below 1 GHz resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.
6. For measurements Above 1 GHz resolution bandwidth is set to 1 MHz, the video bandwidth is set to 3 MHz for peak measurements and as applicable for average measurements.

- II.G.4. Unwanted emissions measurements below 1 GHz.

Compliance shall be demonstrated using CISPR quasi-peak detection; however, peak detection is permitted as an alternative to quasi-peak detection.

- II.G.5. Unwanted maximum emissions measurements above 1 GHz.

Peak emission levels are measured by setting the analyzer as follows:

Set to RBW = 1 MHz, VBW ≥ 3 MHz, Detector = Peak, Sweep time = auto, Trace mode = Max hold.

- II.G.6. Average unwanted emissions measurements above 1 GHz.

Set to RBW = 1 MHz, VBW ≥ 3 MHz, Detector = power averaging (rms), Averaging type = power averaging (rms), Sweep time = auto, Perform a trace average of at least 100 traces. If the transmission is continuous, If the transmission is not continuous, the number of traces shall be increased by a factor of 1/x, where x is the duty cycle. For example, with 50 % duty cycle, at least 200 traces shall be averaged.

If tests are performed with the EUT transmitting at a duty cycle less than 98 %, a correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 % duty cycle. The correction factor is computed as follows:

- If power averaging (rms) mode was used in II.G.6.c)(iv), the correction factor is $10 \log (1 / x)$, where x is the duty cycle. For example, if the transmit duty cycle was 50 %, then 3 dB must be added to the measured emission levels.

- The radiation test of the EUT was investigated in three orthogonal orientations X, Y, and Z described in the test setup photo. All radiated testing of EUT was performed with worst case axis.

2.4. Test Result

Ambient temperature : (23 ± 1) °C
Relative humidity : 47 % R.H.

2.4.1. Radiated Spurious Emission below 1 000 MHz

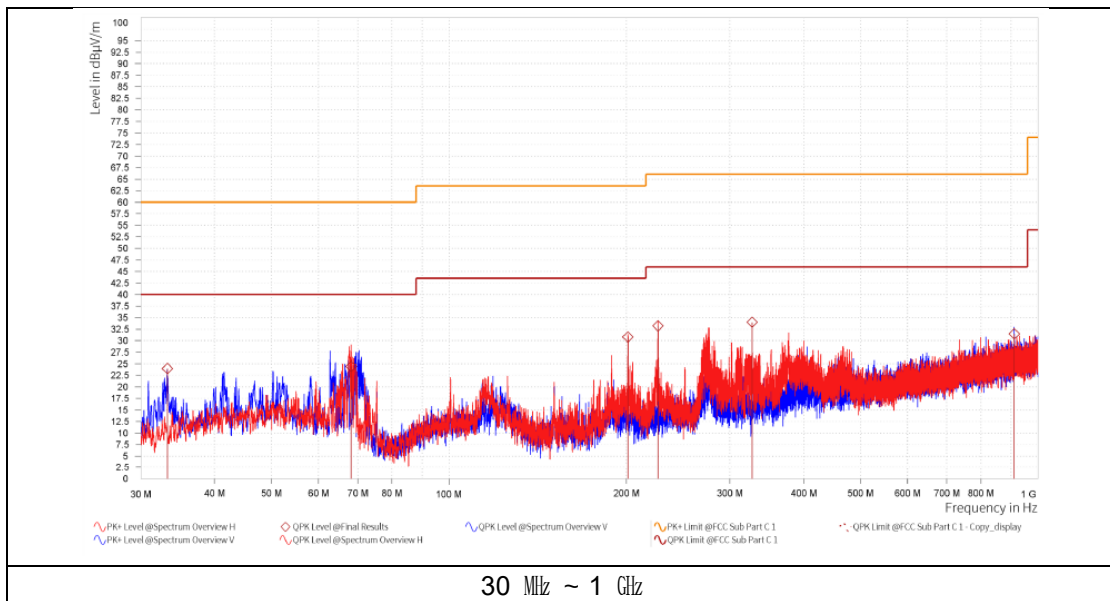
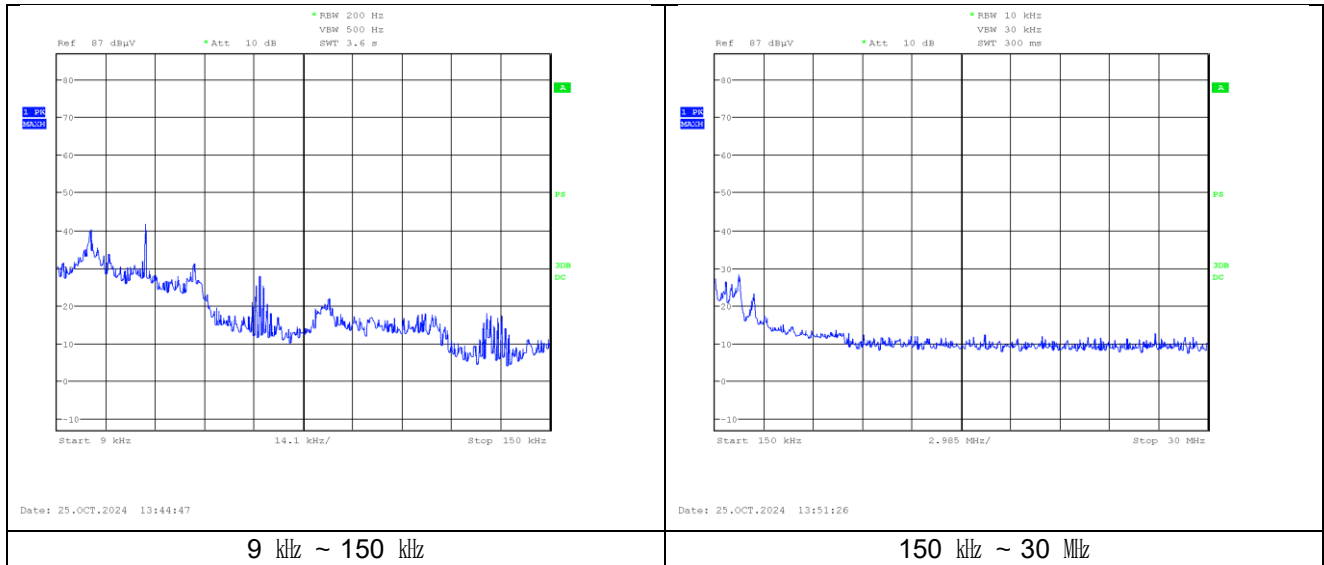
The frequency spectrum from 9 MHz to 1 000 MHz was investigated. All reading values are peak values.

Radiated Emissions			Ant	Correction (dB/m)	Total	Limit	
Frequency (MHz)	Reading (dBμV)	Detect Mode	Pol.		Actual (dBμV/m)	Limit (dBμV/m)	Margin (dB)
33.27	34.93	Quasi Peak	V	-10.98	23.95	40.00	16.05
68.22	35.59	Quasi Peak	H	-11.18	24.41	40.00	15.59
201.24	39.84	Quasi Peak	H	-9.08	30.76	43.50	12.74
226.36	41.32	Quasi Peak	H	-8.11	33.21	46.00	12.79
327.21	39.48	Quasi Peak	H	-5.52	33.96	46.00	12.04
911.34	27.68	Quasi Peak	V	3.80	31.48	46.00	14.52

Remark;

- Spurious emissions for all channels and modes were investigated and almost the same below 1 GHz.
- Test from 30 MHz to 1 000 MHz was performed using the software of ELEKTRA(V5.02) from Rohde & Schwarz GmbH & Co. KG.
- Reported spurious emissions are in **11ac_VHT80 (Band 1) / MCS0 / Low channel** as worst case among other modes.
- Radiated spurious emission measurement as below.
(Actual = Reading + Correction)
(Correction = Antenna Factor + AMP Factor + Cable Loss)
- According to §15.31(o), emission levels are not report much lower than the limits by over 20 dB.

- Test plots



30 MHz ~ 1 GHz

2.4.2. Radiated Spurious Emission above 1 000 MHz

11a (Band 1)

A. Low Channel (5 180 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dBμV)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dBμV/m)	Limit (dBμV/m)	Margin (dB)
*4 500.00	14.23	Peak	V	32.00	10.85	57.08	74.00	16.92
*4 500.00	4.82	Average	V	32.00	10.85	47.67	54.00	6.33
*5 018.01	16.79	Peak	V	33.40	11.14	61.33	74.00	12.67
*4 666.46	5.16	Average	V	32.17	10.76	48.09	54.00	5.91
*5 150.00	15.04	Peak	V	33.60	11.39	60.03	74.00	13.97
*5 150.00	4.96	Average	V	33.60	11.39	49.95	54.00	4.05

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dBμV)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

B. Middle Channel (5 220 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dBμV)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

C. High Channel (5 240 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dBμV)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

11a (Band 3)

A. Low Channel (5 745 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
5 616.54	16.87	Peak	V	34.10	11.33	62.30	68.23	5.93
5 698.40	17.42	Peak	V	34.10	12.18	63.70	104.04	40.34
5 704.76	16.83	Peak	V	34.11	12.14	63.08	106.56	43.48
5 720.75	14.89	Peak	V	34.14	12.00	61.03	112.54	51.51

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

B. Middle Channel (5 785 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

C. High Channel (5 805 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
5 850.00	16.21	Peak	V	34.40	12.42	63.03	122.23	59.20
5 859.54	17.54	Peak	V	34.44	12.32	64.30	109.56	45.26
5 913.59	18.41	Peak	V	34.60	12.05	65.06	76.67	11.61
5 946.25	19.27	Peak	V	34.60	12.04	65.91	68.23	2.32

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

11n_HT20 (Band 1)

A. Low Channel (5 180 MHz)

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	DF (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*4 500.00	14.36	Peak	V	32.00	10.85	-	57.21	74.00	16.79
*4 500.00	4.87	Average	V	32.00	10.85	0.63	48.35	54.00	5.65
*4 651.45	16.04	Peak	V	32.11	10.44	-	58.59	74.00	15.41
*4 633.28	5.32	Average	V	32.07	10.41	0.63	48.43	54.00	5.57
*5 150.00	13.69	Peak	V	33.60	11.39	-	58.68	74.00	15.32
*5 150.00	4.90	Average	V	33.60	11.39	0.63	50.52	54.00	3.48

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	DF (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

B. Middle Channel (5 220 MHz)

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	DF (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

C. High Channel (5 240 MHz)

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	DF (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

11n_HT20 (Band 3)

A. Low Channel (5 745 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
5 610.80	15.95	Peak	V	34.10	11.41	61.46	68.23	6.77
5 689.79	16.20	Peak	V	34.10	12.19	62.49	97.67	35.18
5 719.52	16.22	Peak	V	34.14	12.01	62.37	110.69	48.32
5 723.82	16.09	Peak	V	34.15	11.98	62.22	119.54	57.32

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

B. Middle Channel (5 785 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

B. High Channel (5 805 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
5 851.26	15.95	Peak	V	34.41	12.41	62.77	119.35	56.58
5 869.20	18.03	Peak	V	34.48	12.22	64.73	106.85	42.12
5 888.29	18.03	Peak	V	34.55	12.13	64.71	95.39	30.68
5 931.76	18.00	Peak	V	34.60	12.01	64.61	68.23	3.62

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

11n_HT40 (Band 1)

A. Low Channel (5 190 MHz)

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	DF (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*4 500.00	14.71	Peak	V	32.00	10.85	-	57.56	74.00	16.44
*4 500.00	4.95	Average	V	32.00	10.85	1.17	48.97	54.00	5.03
*4 619.85	17.13	Peak	V	32.04	10.37	-	59.54	74.00	14.46
*4 660.14	5.32	Average	V	32.14	10.63	1.17	49.26	54.00	4.74
*5 150.00	15.08	Peak	V	33.60	11.39	-	60.07	74.00	13.93
*5 150.00	5.34	Average	V	33.60	11.39	1.17	51.50	54.00	2.50

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	DF (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

B. High Channel (5 230 MHz)

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	DF (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

11n_HT40 (Band 3)

A. Low Channel (5 755 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
5 620.43	16.35	Peak	V	34.10	11.27	61.72	68.23	6.51
5 661.30	16.38	Peak	V	34.10	11.81	62.29	76.59	14.30
5 719.72	15.08	Peak	V	34.14	12.01	61.23	110.75	49.52
5 722.39	14.99	Peak	V	34.14	11.99	61.12	116.28	55.16

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

B. High Channel (5 795 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
5 855.00	14.27	Peak	V	34.42	12.37	61.06	110.83	49.77
5 862.40	14.56	Peak	V	34.45	12.29	61.30	108.76	47.46
5 916.78	15.60	Peak	V	34.60	12.03	62.23	74.31	12.08
5 967.65	17.18	Peak	V	34.64	11.81	63.63	68.43	4.80

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

11ac_VHT80 (Band 1)

A. Middle Channel (5 210 MHz)

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	DF (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*4 500.00	13.94	Peak	V	32.00	10.85	-	56.79	74.00	17.21
*4 500.00	4.37	Average	V	32.00	10.85	2.32	49.54	54.00	4.46
*5 131.80	17.63	Peak	V	33.56	11.13	-	62.32	74.00	11.68
*5 138.48	5.36	Average	V	33.58	11.23	2.32	52.49	54.00	1.51
*5 150.00	16.77	Peak	V	33.60	11.39	-	61.76	74.00	12.24
*5 150.00	5.20	Average	V	33.60	11.39	2.32	52.51	54.00	1.49

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	DF (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

11ac_VHT80 (Band 3)

A. Middle Channel (5 775 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dBμV)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dBμV/m)	Limit (dBμV/m)	Margin (dB)
5 639.57	16.19	Peak	V	34.10	11.37	61.66	68.23	6.57
5 659.32	16.97	Peak	V	34.10	11.75	62.82	75.12	12.30
5 706.08	14.67	Peak	V	34.11	12.13	60.91	106.93	46.02
5 721.07	15.03	Peak	V	34.14	12.00	61.17	113.27	52.10
5 850.00	14.12	Peak	V	34.40	12.42	60.94	122.23	61.29
5 865.66	15.53	Peak	V	34.46	12.26	62.25	107.84	45.59
5 885.34	16.33	Peak	V	34.54	12.13	63.00	97.58	34.58
5 927.62	16.39	Peak	V	34.60	12.01	63.00	68.23	5.23

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dBμV)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

Remark;

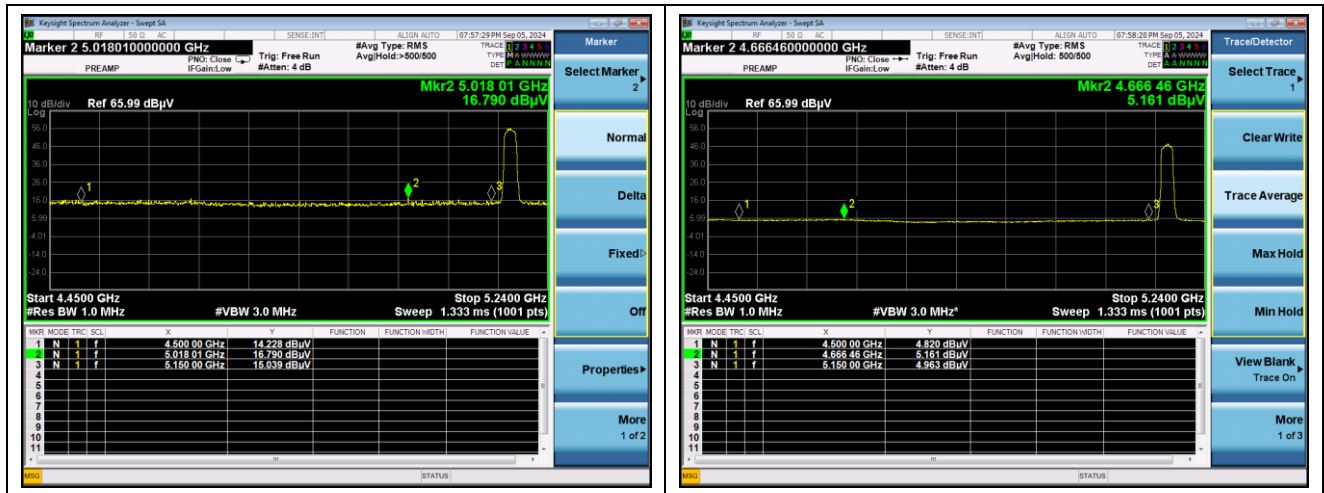
1. “*” means the restricted band.
2. Radiated emissions measured in frequency above 1 000 MHz were made with an instrument using Peak / average detector mode if frequency was in restricted band. Otherwise the frequency was out of restricted band, only peak detector should be used.
3. Actual = Reading + AF + CL + (DF) or Reading + AF + AMP + CL + (DF).
4. If frequency was out of restricted band, the calculation method for peak limit is same as below.
 $68.23 \text{ dB}\mu\text{V/m} = \text{EIRP} - 20 \log(d) + 104.77 = -27 - 20 \log(3) + 104.77$
5. In case of the emissions within $\pm 75 \text{ MHz}$ from band edge of band 3, limit should be adjusted to emission mask of 15.407(4)(i).
6. According to § 15.31(o), emission levels are not reported much lower than the limits by over 20 dB.
7. The maximized peak measured value complies with the average limit, to perform an average measurement is unnecessary.

- Test plots

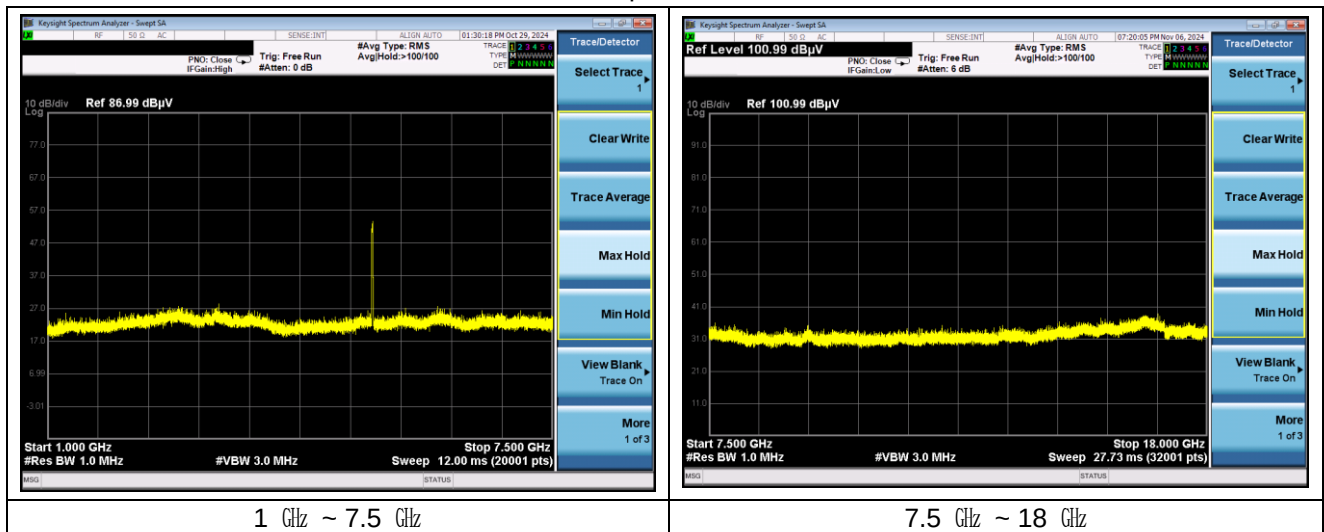
11a

Low channel Band edge (Peak) - Band 1

Low channel Band edge (Average) - Band 1

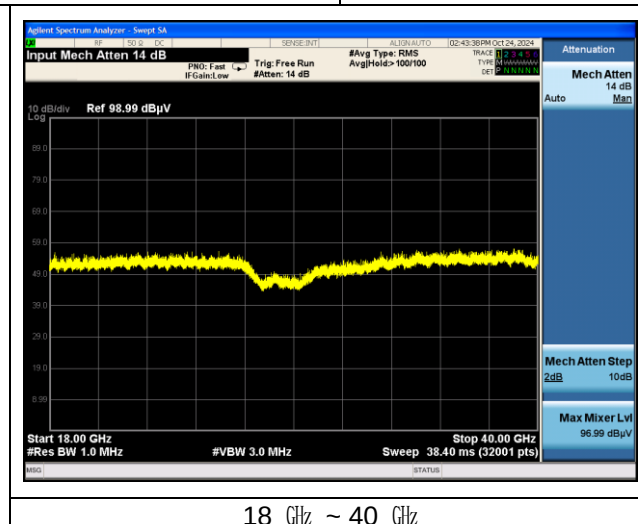


Radiated Spurious Emissions



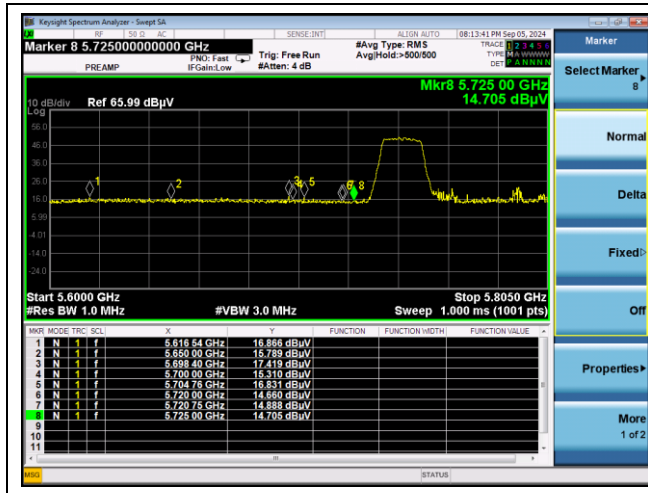
1 GHz ~ 7.5 GHz

7.5 GHz ~ 18 GHz

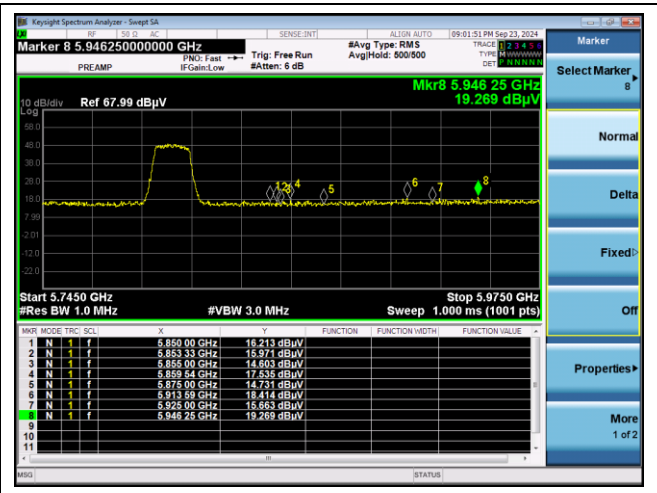


18 GHz ~ 40 GHz

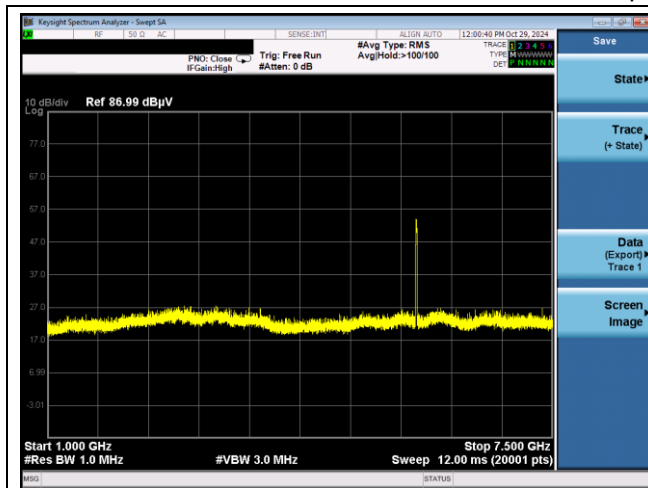
Low channel Band edge (Peak) - Band 3



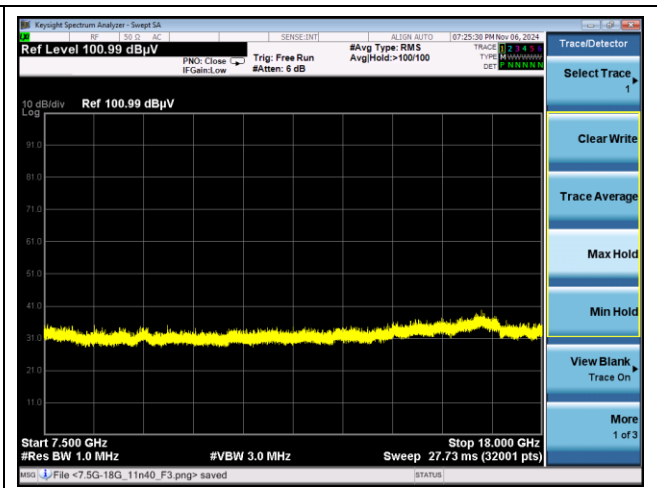
High channel Band edge (Peak) - Band 3



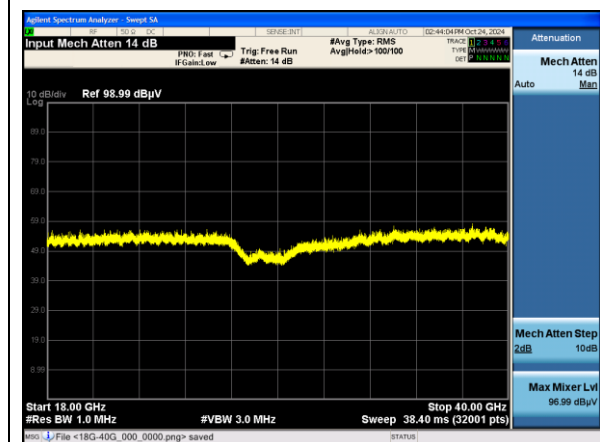
Radiated Spurious Emissions



1 GHz ~ 7.5 GHz



7.5 GHz ~ 18 GHz

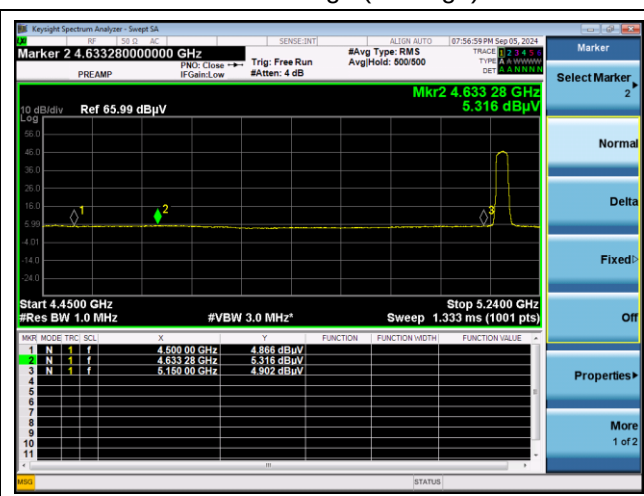
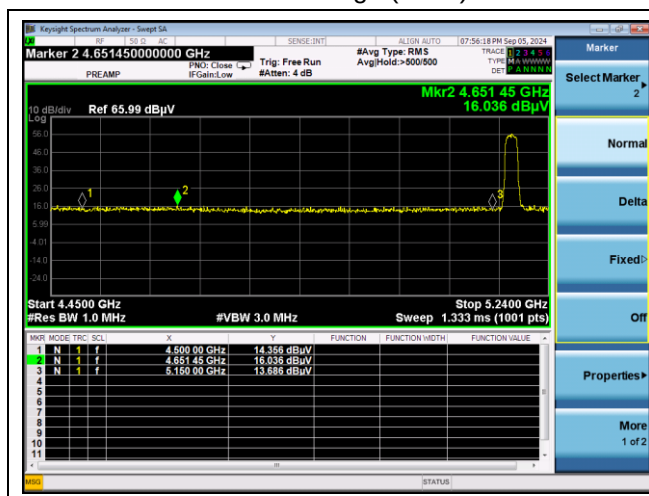


18 GHz ~ 40 GHz

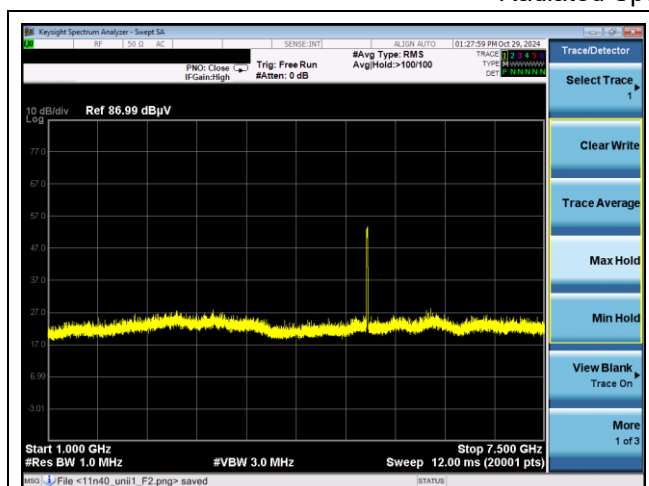
11n_HT20

Low channel Band edge (Peak) - Band 1

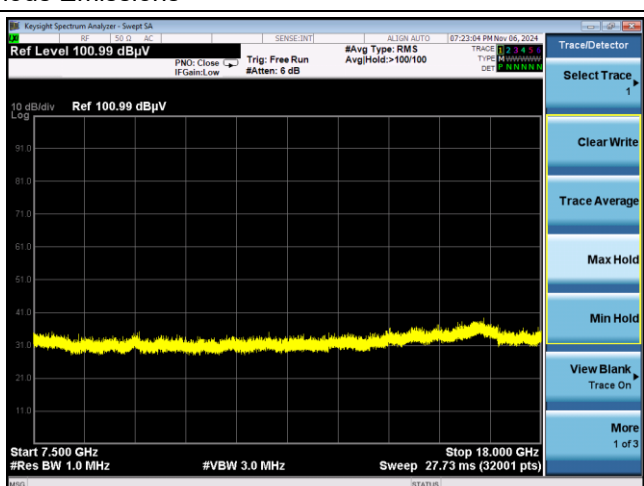
Low channel Band edge (Average) - Band 1



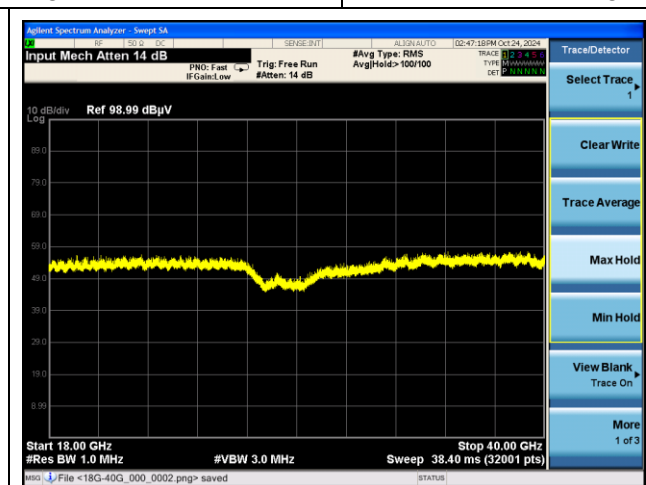
Radiated Spurious Emissions



1 GHz ~ 7.5 GHz

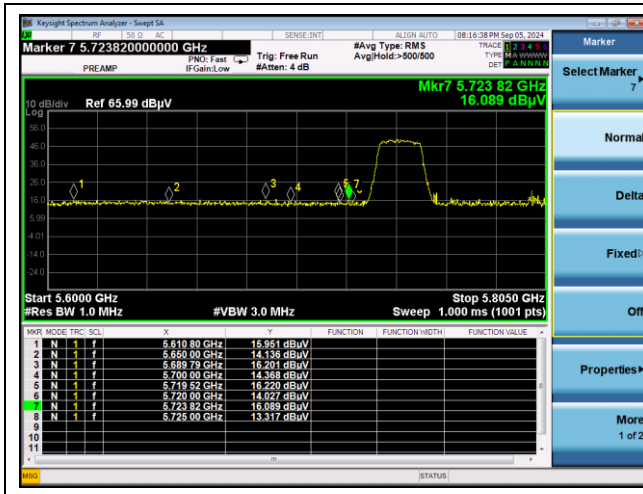


7.5 GHz ~ 18 GHz

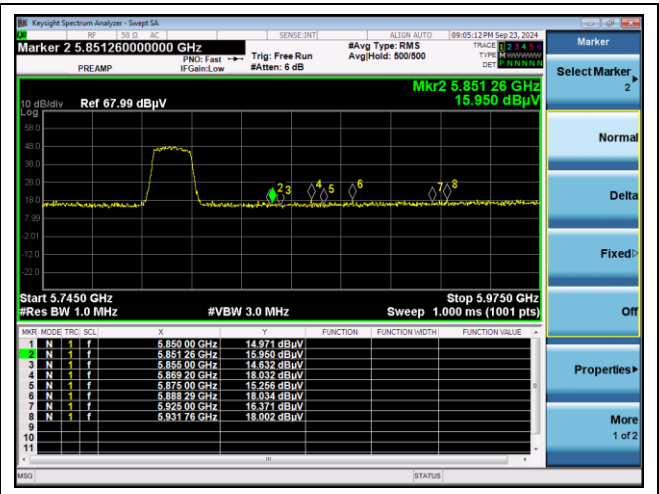


18 GHz ~ 40 GHz

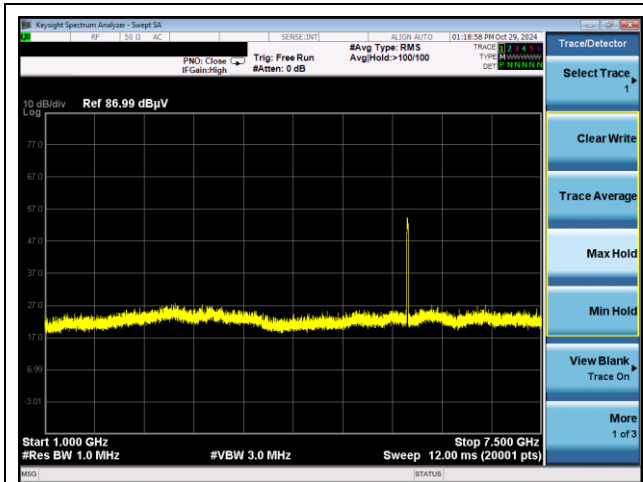
Low channel Band edge (Peak) - Band 3



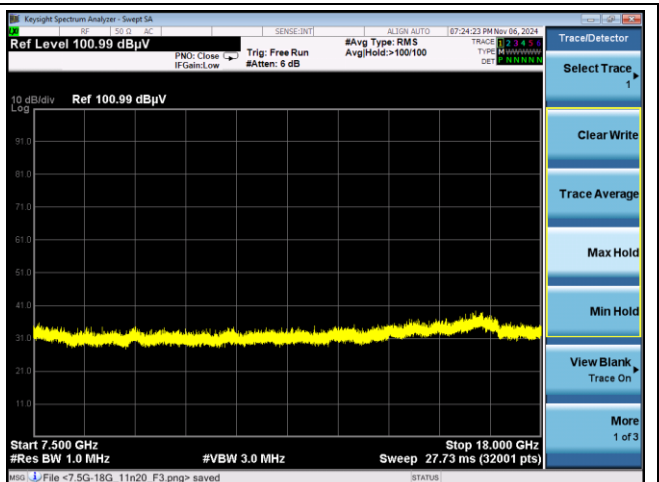
High channel Band edge (Peak) - Band 3



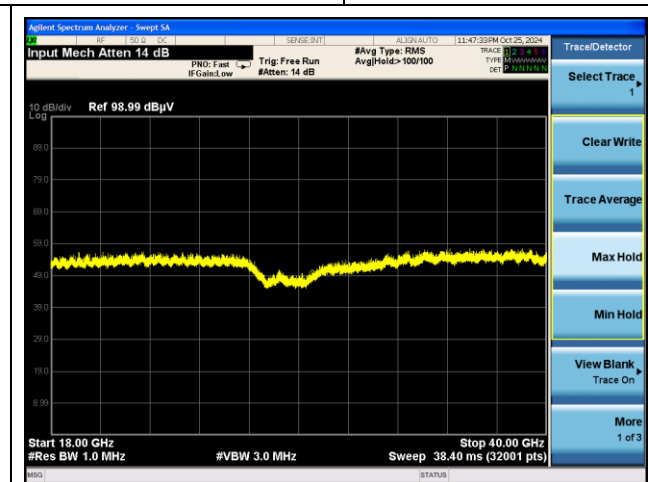
Radiated Spurious Emissions



1 GHz ~ 7.5 GHz



7.5 GHz ~ 18 GHz

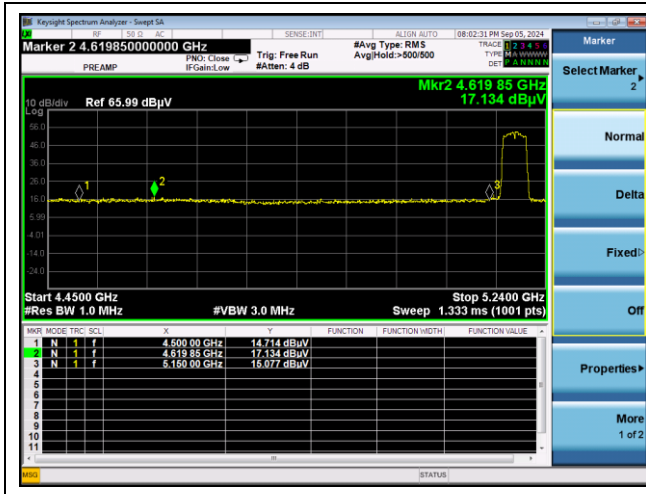


18 GHz ~ 40 GHz

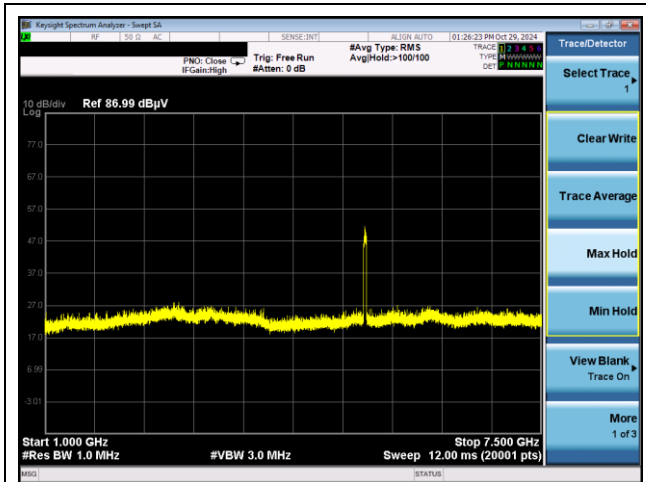
11n_HT40

Low channel Band edge (Peak) - Band 1

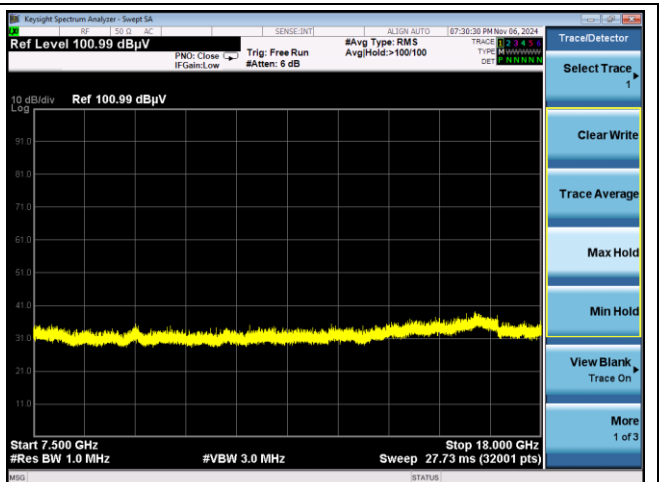
Low channel Band edge (Average) - Band 1



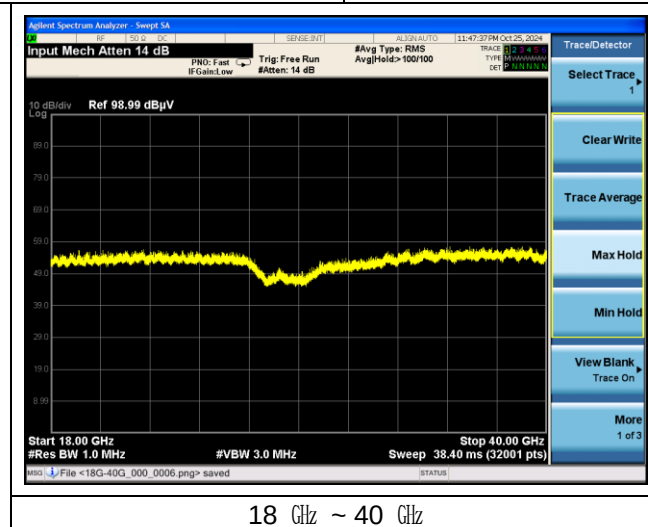
Radiated Spurious Emissions



1 GHz ~ 7.5 GHz

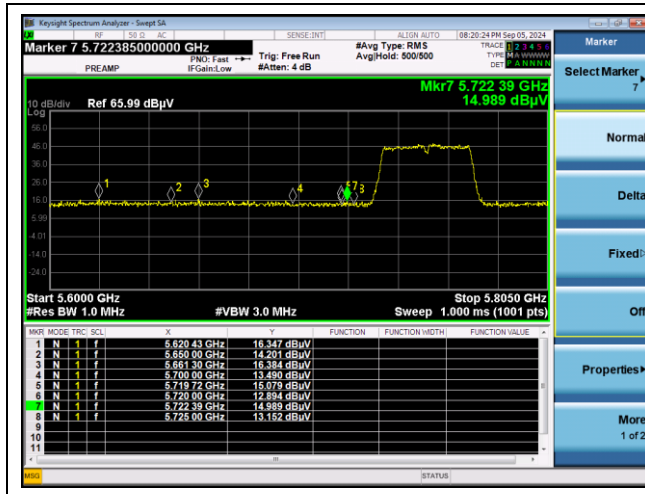


7.5 GHz ~ 18 GHz

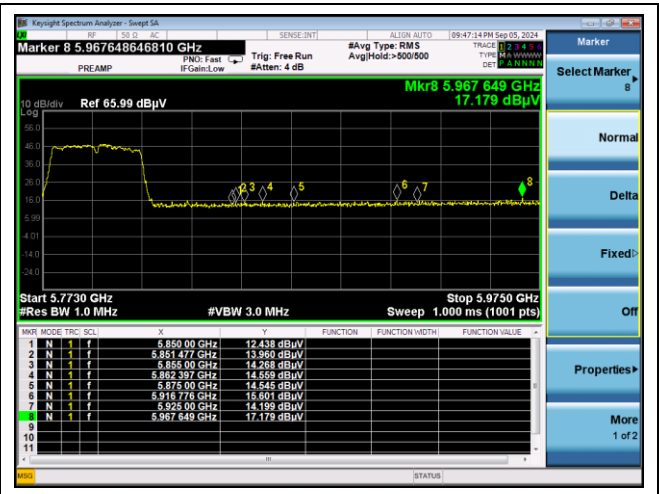


18 GHz ~ 40 GHz

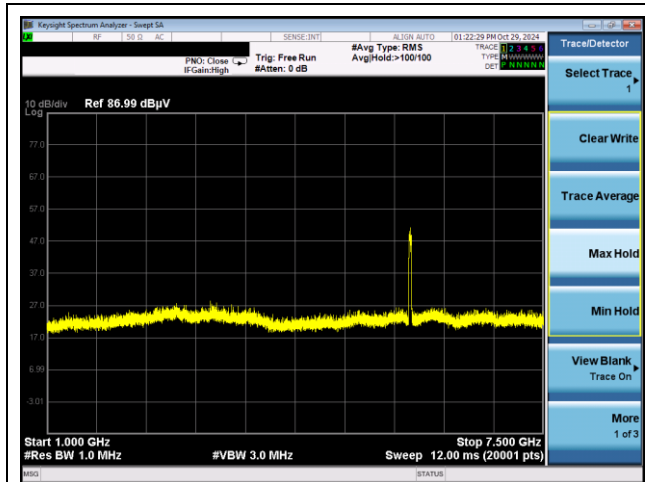
Low channel Band edge (Peak) - Band 3



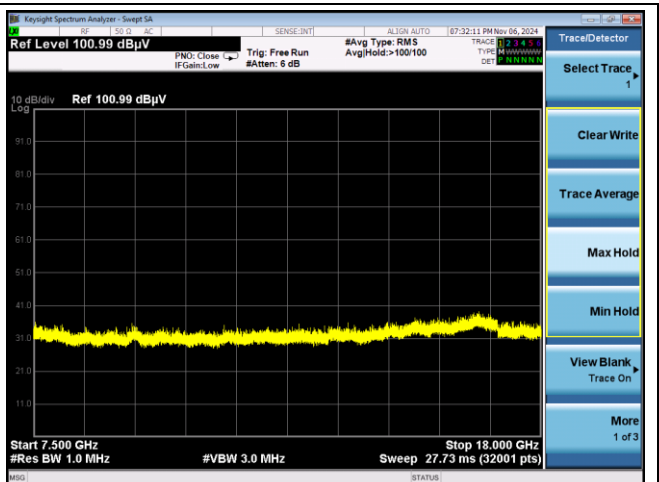
High channel Band edge (Peak) - Band 3



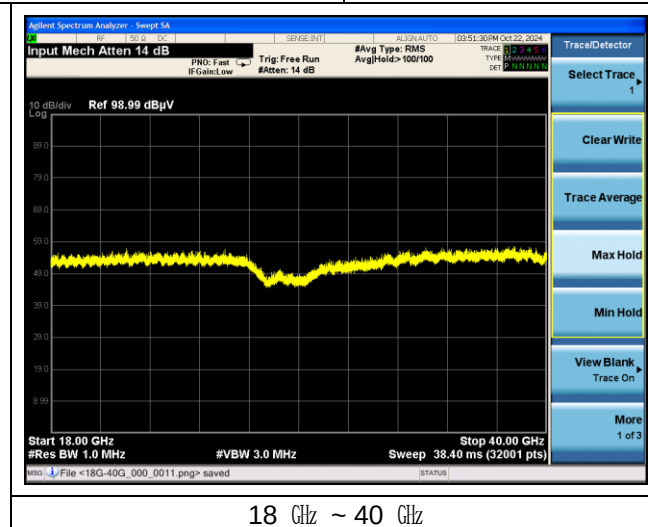
Radiated Spurious Emissions



1 GHz ~ 7.5 GHz



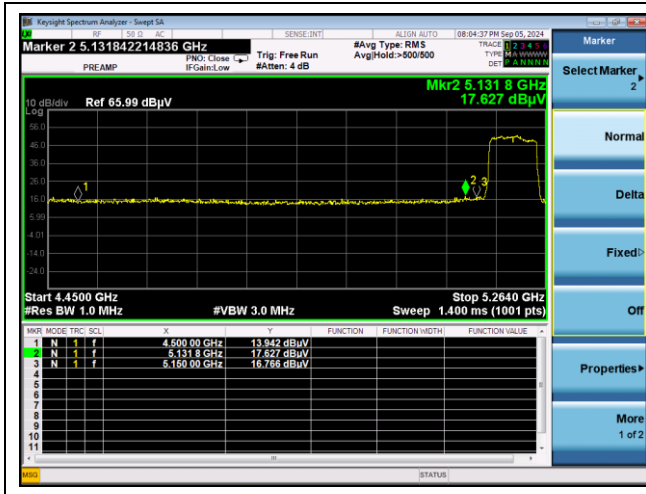
7.5 GHz ~ 18 GHz



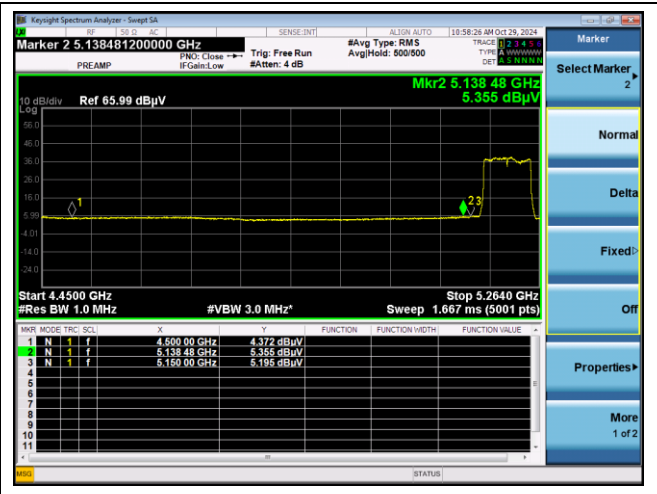
18 GHz ~ 40 GHz

11ac_VHT80

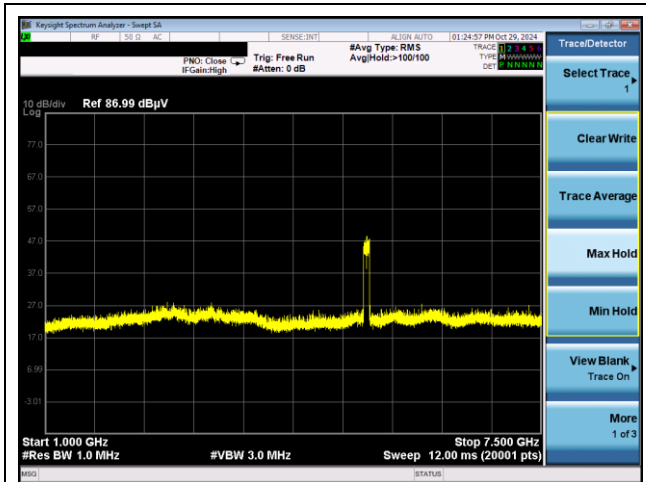
Middle channel Band edge (Peak) - Band 1



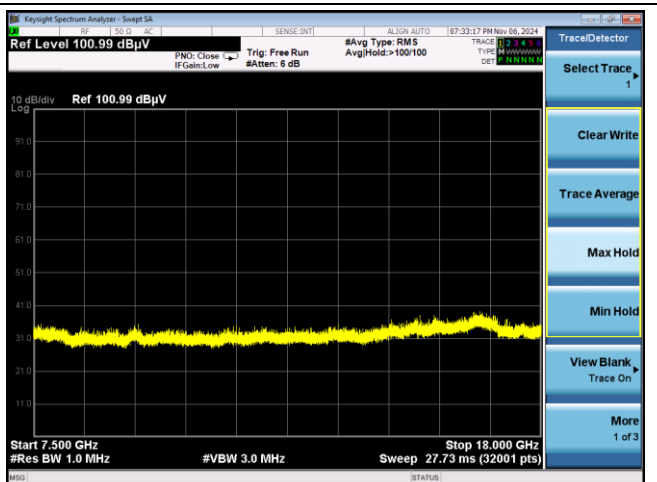
Middle channel Band edge (Average) - Band 1



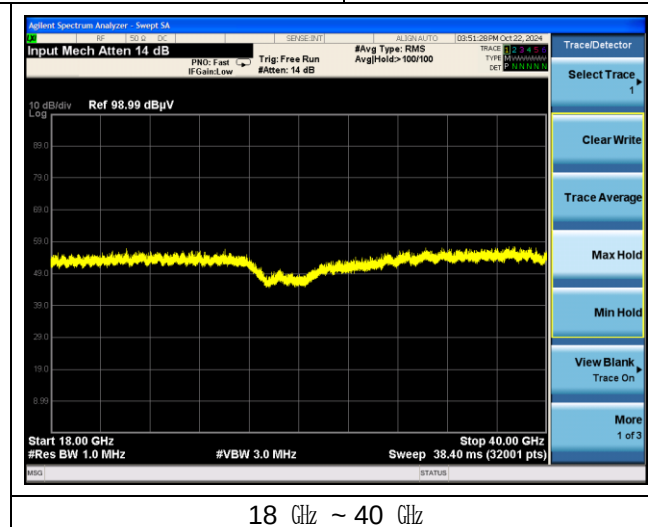
Radiated Spurious Emissions



1 GHz ~ 7.5 GHz



7.5 GHz ~ 18 GHz



18 GHz ~ 40 GHz