

TEST REPORT

of

FCC Part 15 Subpart C §15.407

FCC ID: TQ8-VCSA0ZZZXX

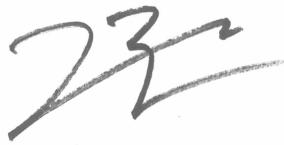
Equipment Under Test : Car Infotainment System
Model Name : VCSA0ZZZXX
Variant Model Name(s) : Refer to page 4
Applicant : HYUNDAI MOBIS CO., LTD.
Manufacturer : Hyundai Mobis Co., Ltd.
Date of Receipt : 2025.12.04
Date of Test(s) : 2025.12.08 ~ 2026.05.08
Date of Issue : 2026.05.21

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

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

Tested by:



Dave Kim

Technical Manager:



Jinhyoung Cho

SGS Korea Co., Ltd. Gunpo Laboratory

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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

Applicant : HYUNDAI MOBIS CO., LTD.

Address : 203, Teheran-ro Gangnam-gu Seoul, South Korea, 135-977

Contact Person : Choe, Seung-hoon

Phone No. : +82 31 899 1788

1.3. Details of Manufacturer

Company : Hyundai Mobis Co., Ltd.

Address : 203, Teheran-ro Gangnam-gu Seoul, Republic of Korea, 06141

1.4. Description of EUT

Kind of Product	Car Infotainment System
Model Name	VCSA0ZZZXX
Variant Model Names	VCS40ZZZXX, VCS50ZZZXX, VCS60ZZZXX, VCS80ZZZXX, VCS90ZZZXX, VCSA0ZZZAN, VCS40ZZZAN, VCS50ZZZAN, VCS60ZZZAN, VCS80ZZZAN, VCS90ZZZAN, VCSA0ZZZKN, VCS40ZZZKN, VCS50ZZZKN, VCS60ZZZKN, VCS80ZZZKN, VCS90ZZZKN, VCSA0ZZZFN, VCS40ZZZFN, VCS50ZZZFN, VCS60ZZZFN, VCS80ZZZFN, VCS90ZZZFN
Serial Number	Conducted: C-0001 Radiated: R-0001
Power Supply	DC 14.4 V
Frequency Range	5 180 MHz ~ 5 240 MHz (U-NII 1: 11a/n_HT20, 11ac_VHT20) 5 190 MHz ~ 5 230 MHz (U-NII 1: 11n_HT40, 11ac_VHT40) 5 210 MHz (U-NII 1: 11ac_VHT80) 5 745 MHz ~ 5 805 MHz (U-NII 3: 11a/n_HT20, 11ac_VHT20) 5 755 MHz ~ 5 795 MHz (U-NII 3: 11n_HT40, 11ac_VHT40) 5 775 MHz (U-NII 3: 11ac_VHT80)
Modulation Technique	OFDM
Number of Channels	4 channels (U-NII 1: 11a/n_HT20, 11ac_VHT20) 2 channels (U-NII 1: 11n_HT40, 11ac_VHT40) 1 channel (U-NII 1: 11ac_VHT80) 4 channels (U-NII 3: 11a/n_HT20, 11ac_VHT20) 2 channels (U-NII 3: 11n_HT40, 11ac_VHT40) 1 channel (U-NII3: 11ac_VHT80)
Antenna Type	Ant.1: PCB Pattern Antenna Ant.2: PCB Pattern Antenna Ant.3: PCB Pattern Antenna
Antenna Gain ※	Ant. 1 BT&BLE: 2 402 MHz ~ 2 480 MHz: 3.90 dB i WLAN5: 5 180 MHz ~ 5 240 MHz: 2.80 dB i 5 745 MHz ~ 5 805 MHz: 0.40 dB i
	Ant. 2 BT&BLE: 2 402 MHz ~ 2 480 MHz: 2.70 dB i WLAN5: 5 180 MHz ~ 5 240 MHz: 2.00 dB i 5 745 MHz ~ 5 805 MHz: 3.70 dB i
	Ant. 3 WLAN2: 2 412 MHz ~ 2 462 MHz: -0.20 dB i WLAN5: 5 180 MHz ~ 5 240 MHz: 3.90 dB i 5 745 MHz ~ 5 805 MHz: 2.00 dB i
H/W Version	1.0
S/W Version	1.0

1.5. Declaration by the Manufacturer

- This device operates as both an AP (Access Point) and a Client mode, and it maintains the same output power regardless of the operating mode
- 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.
- The EUT has three ports and supports MIMO operation only for ANT 1+2 in the WLAN 5GHz band, while IEEE 802.11a operates in SISO mode only.

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	10/20/2025	Annual	10/20/2026
Spectrum Analyzer	R&S	FSW8	101659	05/23/2025	Annual	05/23/2026
Spectrum Analyzer ¹⁾	R&S	FSV30	101004	12/18/2024 12/17/2025	Annual	12/18/2025 12/17/2026
Spectrum Analyzer	Agilent	N9020A	MY53421758	09/10/2025	Annual	09/10/2026
Spectrum Analyzer	Agilent	N9030A	US51350132	12/03/2025	Annual	12/03/2026
Attenuator ²⁾	AEROFLEX / INMET	40AH2W-6	1	03/11/2025 03/09/2026	Annual	03/11/2026 03/09/2027
High Pass Filter	Wainwright Instrument GmbH	WLKX10-6320-8000-26500-40CC	6	10/22/2025	Annual	10/22/2026
High Pass Filter	Wainwright Instrument GmbH	WHNX7.5/26.5G-6SS	15	06/09/2025	Annual	06/09/2026
Low Pass Filter	MINI-CIRCUITS	NLP-1200+	V8979400903-1	05/23/2025	Annual	05/23/2026
Power Sensor	R&S	NRP-Z81	100669	05/24/2025	Annual	05/24/2026
Power Sensor ³⁾	Anritus	MA24408A	11841	04/08/2025 03/30/2026	Annual	04/08/2026 03/30/2027
DC Power Supply	R&S	HMP2020	022802107	10/24/2025	Annual	10/24/2026
Preamplifier	H.P.	8447F	2944A03909	08/07/2025	Annual	08/07/2026
Signal Conditioning Unit ⁴⁾	R&S	SCU-18F	100959	07/13/2023 01/05/2026	Annual	07/13/2024 01/05/2027
Preamplifier	TESTEK	JS44-18004000-35-8P	1546891	10/20/2025	Annual	10/20/2026
Loop Antenna	Schwarzbeck Mess-Elektronik	FMZB 1519	1519-039	10/01/2025	Biennial	10/01/2027
Bilog Antenna	Schwarzbeck Mess-Elektronik	VULB9163	01126	03/05/2025	Biennial	03/05/2027
Horn Antenna ⁵⁾	R&S	HF906	100326	02/24/2025 03/03/2026	Annual	02/24/2026 03/03/2027
Horn Antenna	Schwarzbeck Mess-Elektronik	BBHA 9170	BBHA9170223	10/24/2025	Annual	10/24/2026
EMI Test Receiver ⁶⁾	R&S	ESU26	100109	01/13/2025 01/21/2026	Annual	01/13/2026 01/21/2027
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	CO3000/963/38330516/L	N.C.R.	N/A	N.C.R.
Antenna Mast	Innco systems GmbH	MA4640-XP-ET	MA4640/536/38330516/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 ⁷⁾	SENSORVIEW	NMST-13A26-NMST-5 m	TPC2402190004	10/13/2025 04/17/2026	Semi-Annual	04/13/2026 10/17/2026
Coaxial Cable ⁷⁾	SENSORVIEW	NMST-13A26-NMST-10 m	TPC2402190001	10/13/2025 04/17/2026	Semi-Annual	04/13/2026 10/17/2026
Coaxial Cable ⁸⁾	Qualwave	QT50P-40-KK-1.5	24270074	10/10/2025 04/10/2026	Semi-Annual	04/10/2026 10/10/2026

Note;

- 1) The equipment was not used for testing during the period from 12/15/2025 to 12/19/2025
- 2) The equipment was not used for testing during the period from 03/03/2026 to 03/09/2026
- 3) The equipment was not used for testing during the period from 03/27/2026 to 04/02/2026
- 4) The equipment was used for testing only after its calibration was completed on 01/05/2026
- 5) The equipment was not used for testing during the period from 02/24/2026 to 03/05/2026
- 6) The equipment was not used for testing during the period from 01/13/2026 to 01/22/2026
- 7) The equipment was not used for testing during the period from 04/12/2026 to 04/17/2026
- 8) The equipment was not used for testing during the period from 04/09/2026 to 04/10/2026

1.8. Summary of Test Result

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15 Subpart E		
Section in FCC	Test Item(s)	Result
15.205(a) 15.209(a) 15.407(b)(1) 15.407(b)(4)	Transmitter Radiated Spurious Emissions	Pass
15.407(a)	26 dB Bandwidth & 99 % Bandwidth	Pass
15.407(e)	6 dB Bandwidth	Pass
15.407(a)(1) 15.407(a)(3)	Maximum Conducted Output Power	Pass
15.407(a)(1) 15.407(a)(3)	Maximum Power Spectral Density	Pass
15.207	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 Procedure for Compliance Testing of Unlicensed Wireless Devices (ANSI C63.10-2020), as well as 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)
+ Duty factor (dB)

1.11. Information of power setting and software for test

- The operating software of the EUT has an integrated test interface and transmits at its maximum rated output power setting

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	0.39 dB	
Maximum Power Spectral Density	0.62 dB	
99 % Bandwidth	0.02 MHz	
26 dB Bandwidth	0.03 MHz	
6 dB Bandwidth	0.02 MHz	
Radiated Emission, 9 kHz to 30 MHz	H	3.60 dB
	V	3.60 dB
Radiated Emission, below 1 GHz	H	5.50 dB
	V	5.10 dB
Radiated Emission, above 1 GHz	H	3.50 dB
	V	3.40 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-RTL006996	2026.5.21	Initial

1.14. Directional Gain Information

Band	Antenna Gain (dB i)			Directional Gain (dB i)
	Ant. 1	Ant. 2	Ant. 3	Ant. 1+2
UNII 1	2.80	2.00	3.90	5.42
UNII 3	0.40	3.70	2.00	5.22

Remark;

1) According to KDB 662911 D01 Multiple Transmitter Output v02r01 F)2)d(i),
Port 1 + Port 2 Antenna Gain = $10 * \log[(10^{G_1/10} + 10^{G_2/10})^2 / N_{ANT}]$

Where,

G_1 = antenna gain of port 1,
 G_2 = antenna gain of port 2,
 N_{ANT} = the number of antennas

1.15. Description of variant model

Model Name		DMB / DAB	HUD	HUD	Internal AMP 4ch	Internal AMP 2ch	Internal AMP 1ch	External AMP	RVM / SVM	Built-in Cam	ICMU	ICMC (cargo view)
Basic Model	VCSA0ZZZXX	○	○	○	○	○	○	○	○	○	○	○
Variant Model	VCS40ZZZXX		X	X	○	X	X	X	○	○	○	X
	VCS50ZZZXX		X	X	○	○	○	X	○	○	○	X
	VCS60ZZZXX		X	X	X	X	X	○	○	○	○	X
	VCS80ZZZXX		○	○	○	○	○	X	○	○	○	X
	VCS90ZZZXX		○	○	X	X	X	○	○	○	○	X
	VCSA0ZZZAN	X	○	○	○	○	○	○	○	○	○	○
	VCS40ZZZAN		X	X	○	X	X	X	○	○	○	X
	VCS50ZZZAN		X	X	○	○	○	X	○	○	○	X
	VCS60ZZZAN		X	X	X	○	○	○	○	○	○	X
	VCS80ZZZAN		○	○	○	○	○	X	○	○	○	X
	VCS90ZZZAN		○	○	X	○	○	○	○	○	○	X
	VCSA0ZZZKN		○	○	○	○	○	○	○	○	○	○
	VCS40ZZZKN		X	X	○	X	X	X	○	○	○	X
	VCS50ZZZKN		X	X	○	○	○	X	○	○	○	X
	VCS60ZZZKN		X	X	X	○	○	○	○	○	○	X
	VCS80ZZZKN		○	○	○	○	○	X	○	○	○	X
	VCS90ZZZKN		○	○	X	○	○	○	○	○	○	X
	VCSA0ZZZFN		○	○	○	○	○	○	○	○	○	○
	VCS40ZZZFN		X	X	○	X	X	X	○	○	○	X
	VCS50ZZZFN		X	X	○	○	○	X	○	○	○	X
	VCS60ZZZFN		X	X	X	○	○	○	○	○	○	X
	VCS80ZZZFN		○	○	○	○	○	X	○	○	○	X
	VCS90ZZZFN		○	○	X	○	○	○	○	○	○	X

Note;

- The all test items performed with basic model

1.16. Device Capabilities

Mode	SISO			CDD / MIMO
	Ant. 1	Ant. 2	Ant. 3	Ant. 1 + Ant. 2
Bluetooth Low Energy	O	O	X	X
Bluetooth	O	O	X	X
WLAN 2 GHz	X	X	O	X
WLAN 5 GHz	O	O	O	O

Note;

- The EUT has three ports and supports MIMO operation only for ANT 1+2 in the WLAN 5GHz band, while IEEE 802.11a operates in SISO mode only.

1.17. Worst-Case Configuration and Test Mode

Band	Mode	Frequency (MHz)	Average Power (dBm)			
			SISO			MIMO
			Ant.1	Ant.2	Ant. 3	Ant.1+Ant.2
UNII-1	11n_HT20	5 180	7.10	5.46	<u>7.51</u>	9.32
	11ac_VHT20		7.08	5.30	7.28	<u>9.34</u>
	11n_HT40	5 230	6.97	5.78	<u>6.85</u>	<u>9.10</u>
	11ac_VHT40		6.88	5.53	6.67	9.04
	11ac_VHT80	5 210	5.28	5.06	<u>6.69</u>	<u>8.96</u>
UNII-3	11n_HT20	5 745	7.77	7.50	<u>7.88</u>	9.39
	11ac_VHT20		7.61	7.38	7.51	<u>9.44</u>
	11n_HT40	5 755	7.06	6.78	<u>7.96</u>	<u>8.85</u>
	11ac_VHT40		7.02	6.54	7.58	8.68
	11ac_VHT80	5 775	6.43	6.51	<u>6.78</u>	<u>9.12</u>

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.

The MIMO configuration was selected for testing as the worst-case scenario for modes supporting both SISO and MIMO operation.

All test modes were conducted at the data rate with the highest output power.

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.

1.18. 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.

SISO

Mode	Data Rate	Duty Cycle (%)	Correction Factor (dB)
11a	48 Mbps	62.37	2.05
11n_HT20	MCS 5	65.00	1.87
11n_HT40	MCS 5	51.85	2.85
11ac_VHT80	MCS 5	43.33	3.63

MIMO

Mode	Data Rate	Duty Cycle (%)	Correction Factor (dB)
11ac_VHT20	MCS 5	53.95	2.68
11n_HT40	MCS 6	42.70	3.70
11ac_VHT80	MCS 5	43.29	3.64

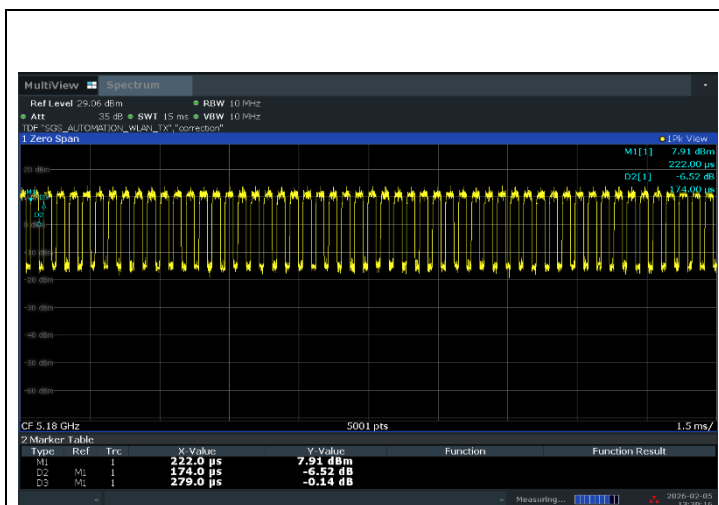
Remark;

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. Duty Cycle (%) = (Tx on time / Tx on + off time) x 100
3. Correction Factor (dB) = 10 log (1 / Duty Cycle)
4. Duty cycle is over 98 %, compensation is no required.
5. Among all antenna ports, only the worst-case measurement results are reported.

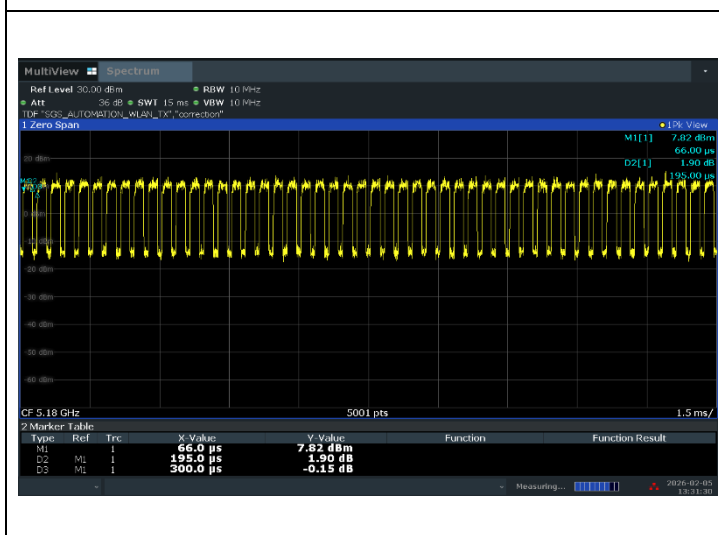
- Test plots

SISO

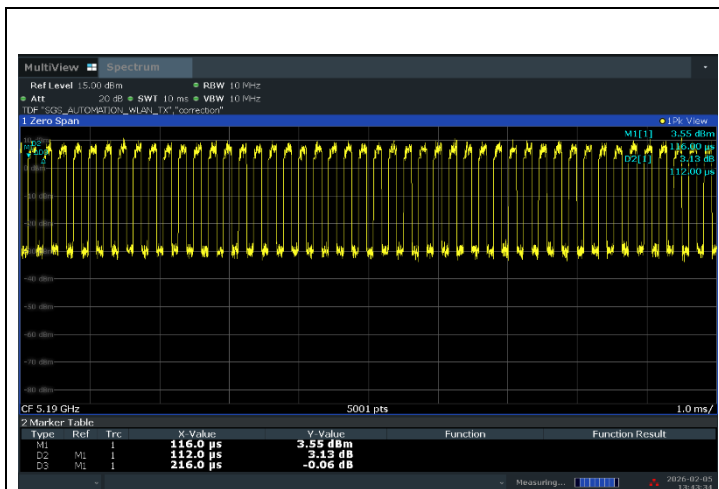
11a



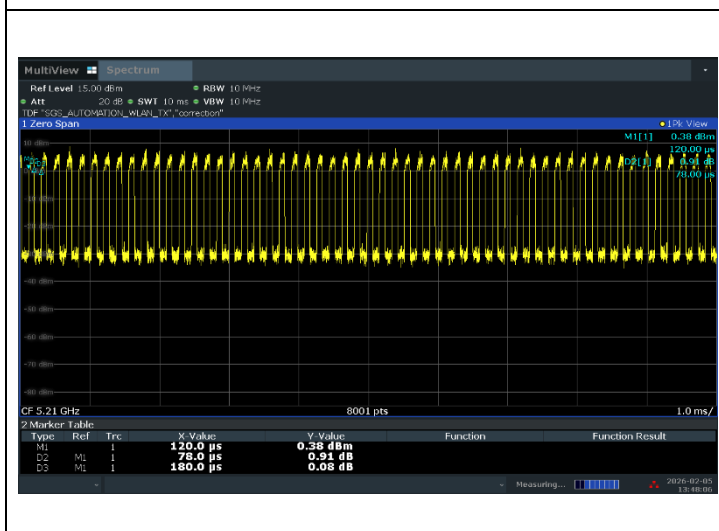
11n_HT20



11n_HT40

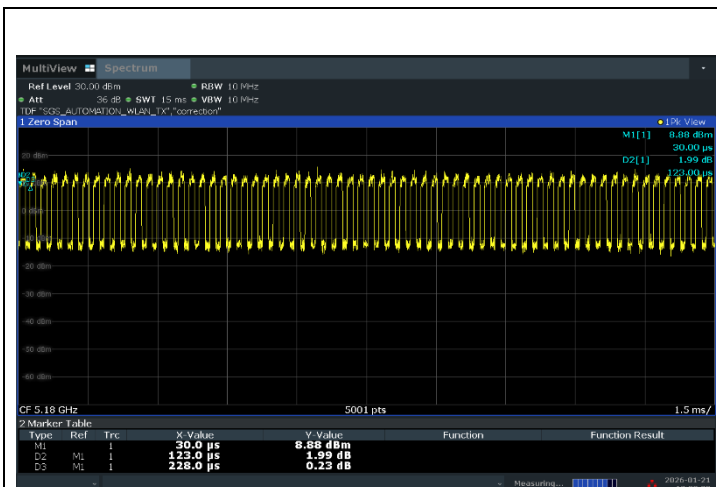


11ac_VHT80

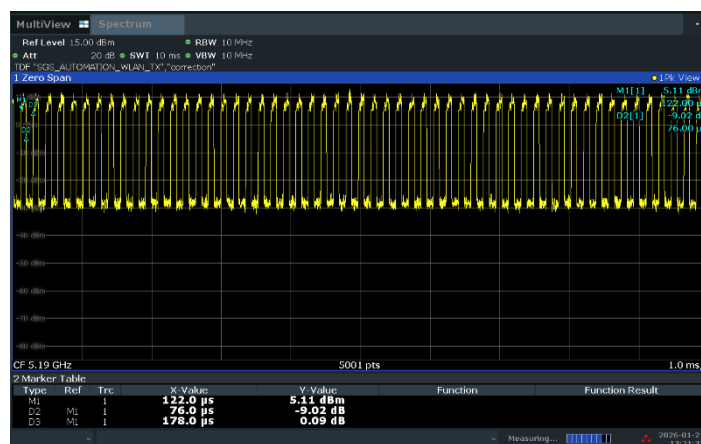


MIMO

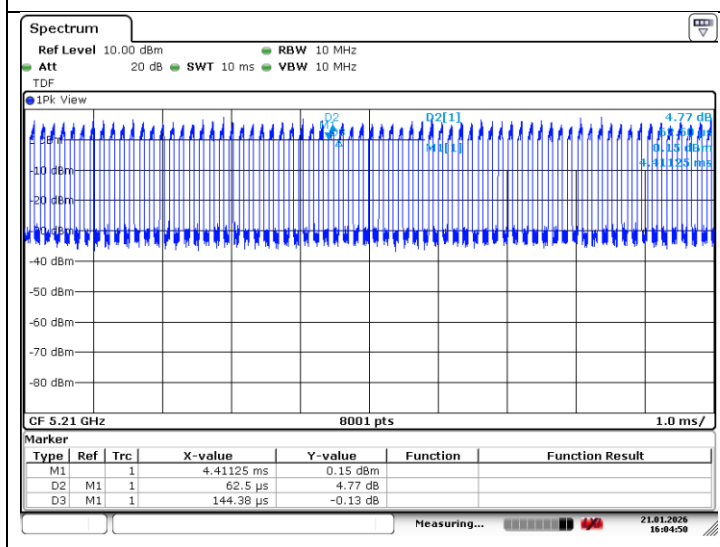
11ac_VHT20



11n_HT40



11ac_VHT80

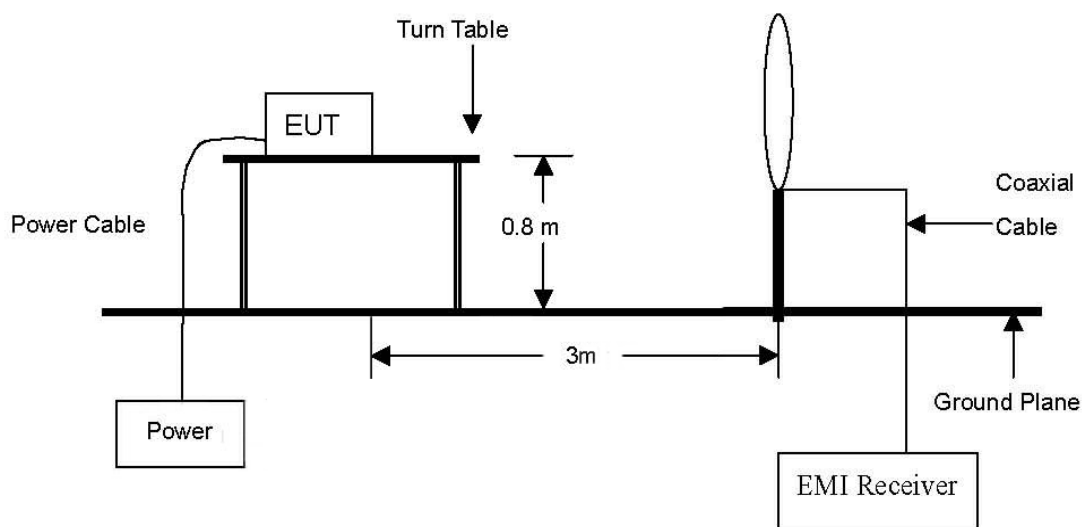


2. Transmitter Radiated Spurious Emissions

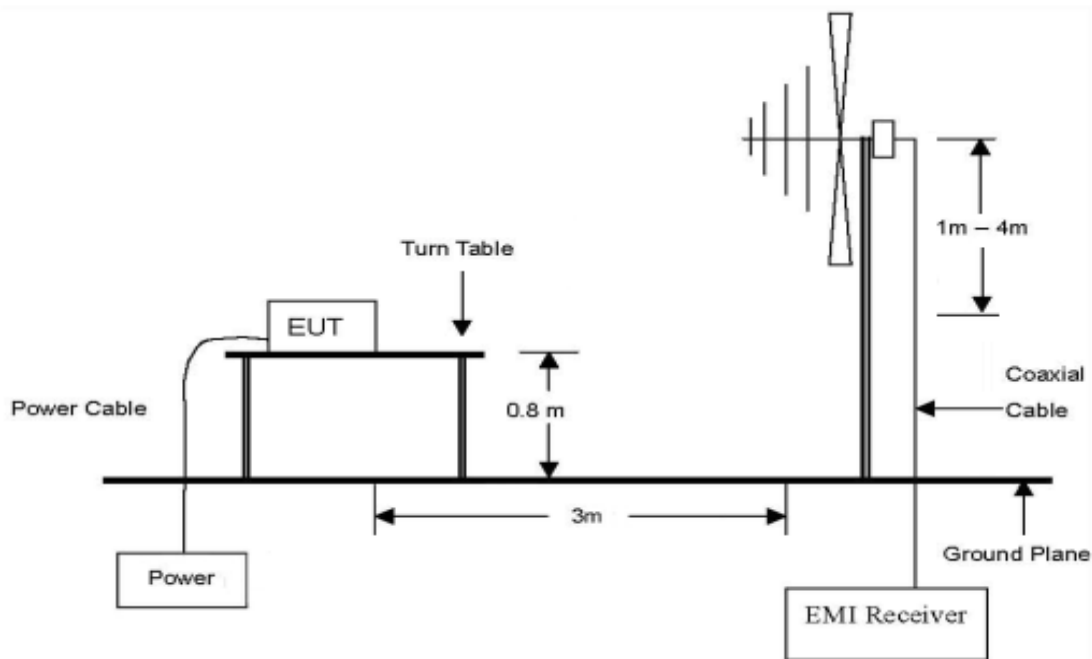
2.1. Test Setup

2.1.1. Transmitter radiated spurious emissions

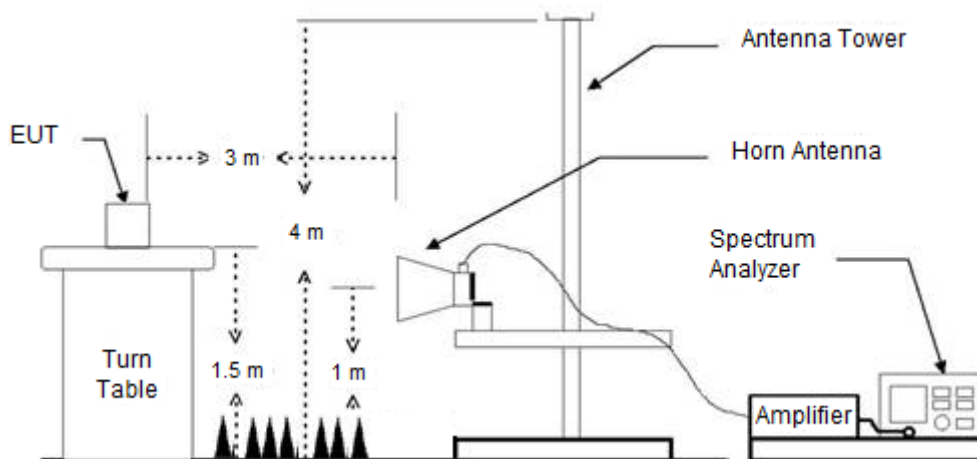
The diagram below shows the test setup that is utilized to make the measurements for emission from 9 kHz to 30 MHz emissions.



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

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.

2.3. 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 C63.10-2020.

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 : $(23 \pm 1) ^\circ\text{C}$

Relative humidity : 47 %

2.4.1. Radiated Spurious Emission below 1 000 MHz

The frequency spectrum from 9 kHz to 1 000 MHz was investigated.

Ant. 1

Radiated Emissions			Ant.	Correction (dB/m)	Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.		Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Below 30.00	Not detected	-	-	-	-	-	-
Above 30.00	Not detected	-	-	-	-	-	-

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 **11a (U-NII 3) / High 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.

Ant. 2

Radiated Emissions			Ant.	Correction (dB/m)	Total	Limit	
Frequency (MHz)	Reading (dBμV)	Detect Mode	Pol.		Actual (dBμV/m)	Limit (dBμV/m)	Margin (dB)
452.87	29.81	Quasi Peak	V	-3.24	26.57	46.00	19.43
Above 500.00	Not detected	-	-	-	-	-	-

Remark;

1. Spurious emissions for all channels and modes were investigated and almost the same below 1 GHz.
2. Test from 30 MHz to 1 000 MHz was performed using the software of ELEKTRA(V5.02) from Rohde & Schwarz GmbH & Co. KG.
3. Reported spurious emissions are in **11a (U-NII 3) / High channel** as worst case among other modes.
4. Radiated spurious emission measurement as below.
 (Actual = Reading + Correction)
 (Correction = Antenna Factor + AMP Factor + Cable Loss)
5. According to §15.31(o), emission levels are not report much lower than the limits by over 20 dB.

Ant. 3

Radiated Emissions			Ant.	Correction (dB/m)	Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.		Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
50.26	28.21	Quasi Peak	H	-7.49	20.72	40.00	19.28
Above 100.00	Not detected	-	-	-	-	-	-

Remark;

1. Spurious emissions for all channels and modes were investigated and almost the same below 1 GHz.
2. Test from 30 MHz to 1 000 MHz was performed using the software of ELEKTRA(V5.02) from Rohde & Schwarz GmbH & Co. KG.
3. Reported spurious emissions are in **11a (U-NII 3) / Middle channel** as worst case among other modes.
4. Radiated spurious emission measurement as below.
 (Actual = Reading + Correction)
 (Correction = Antenna Factor + AMP Factor + Cable Loss)
5. According to §15.31(o), emission levels are not report much lower than the limits by over 20 dB.

Ant. 1 + Ant. 2

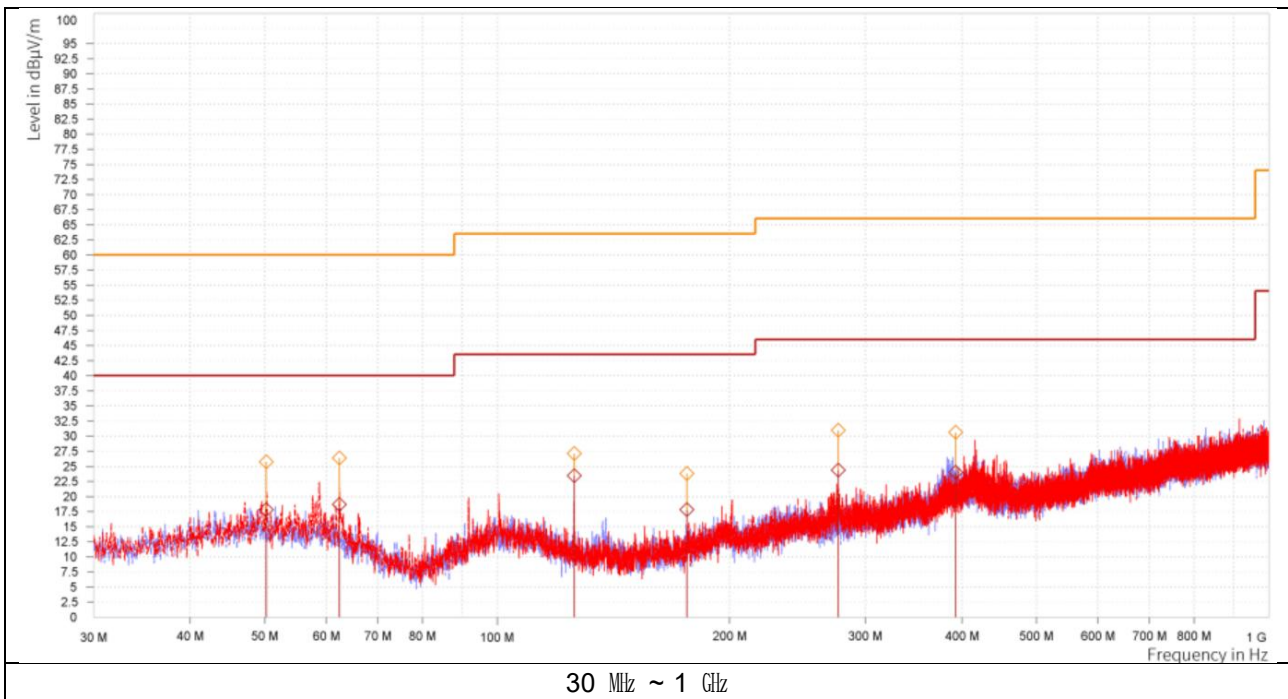
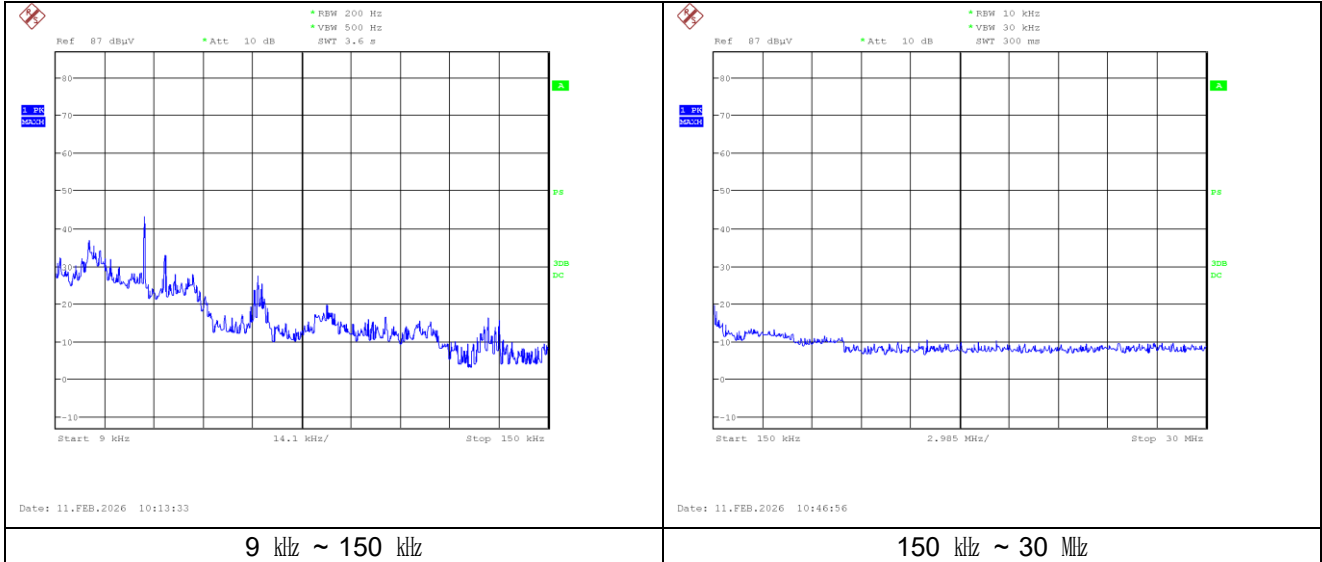
Radiated Emissions			Ant.	Correction (dB/m)	Total	Limit	
Frequency (MHz)	Reading (dBμV)	Detect Mode	Pol.		Actual (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Below 30.00	Not detected	-	-	-	-	-	-
Above 30.00	Not Detected	-	-	-	-	-	-

Remark;

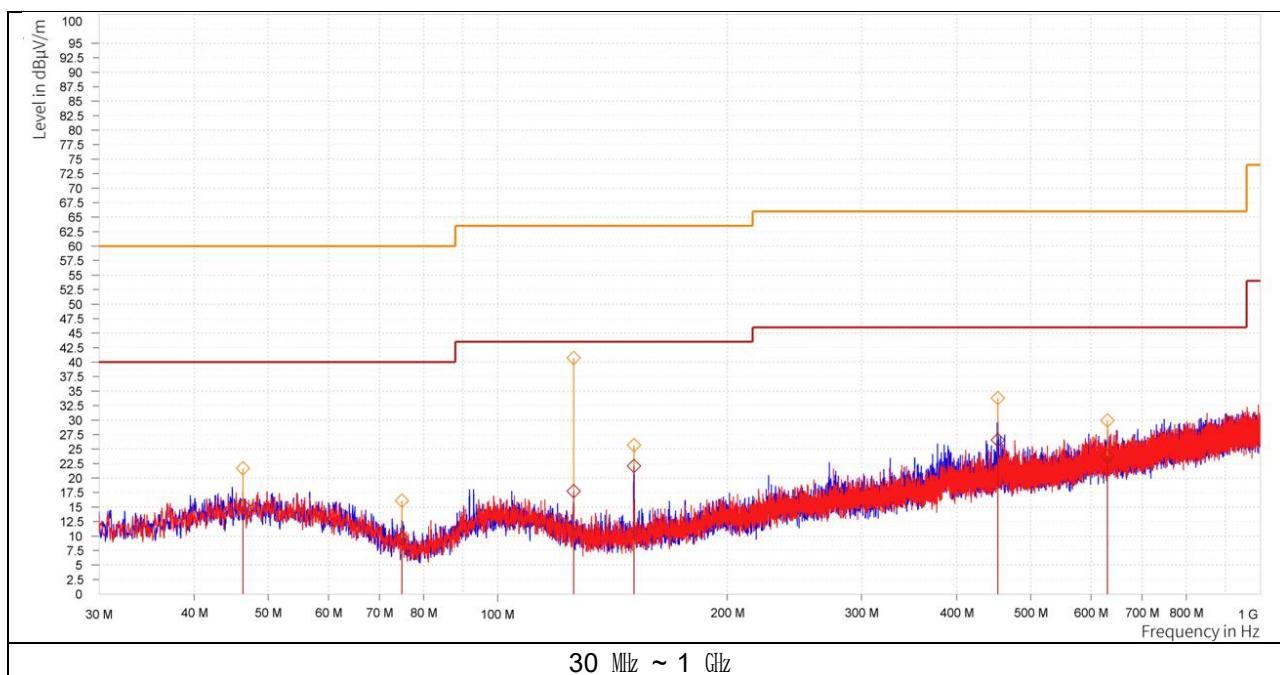
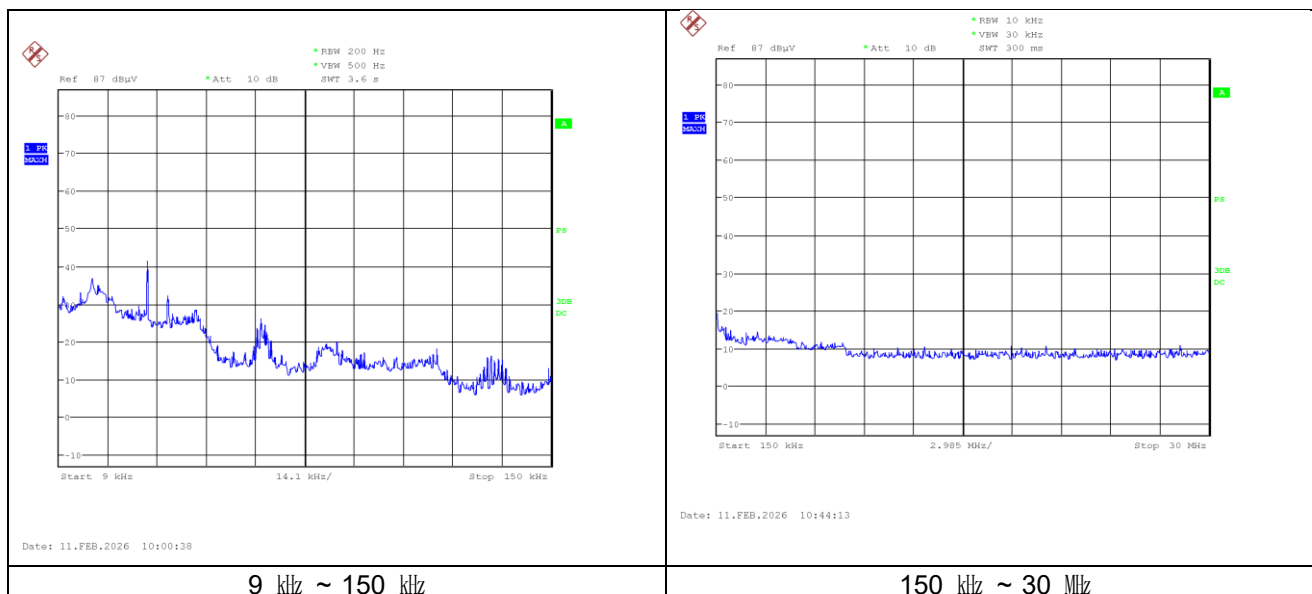
1. Spurious emissions for all channels and modes were investigated and almost the same below 1 GHz.
2. Test from 30 MHz to 1 000 MHz was performed using the software of ELEKTRA(V5.02) from Rohde & Schwarz GmbH & Co. KG.
3. Reported spurious emissions are in **11a (U-NII 3) / Low channel** as worst case among other modes.
4. Radiated spurious emission measurement as below.
 (Actual = Reading + Correction)
 (Correction = Antenna Factor + AMP Factor + Cable Loss)
5. According to §15.31(o), emission levels are not report much lower than the limits by over 20 dB.

- Test plots

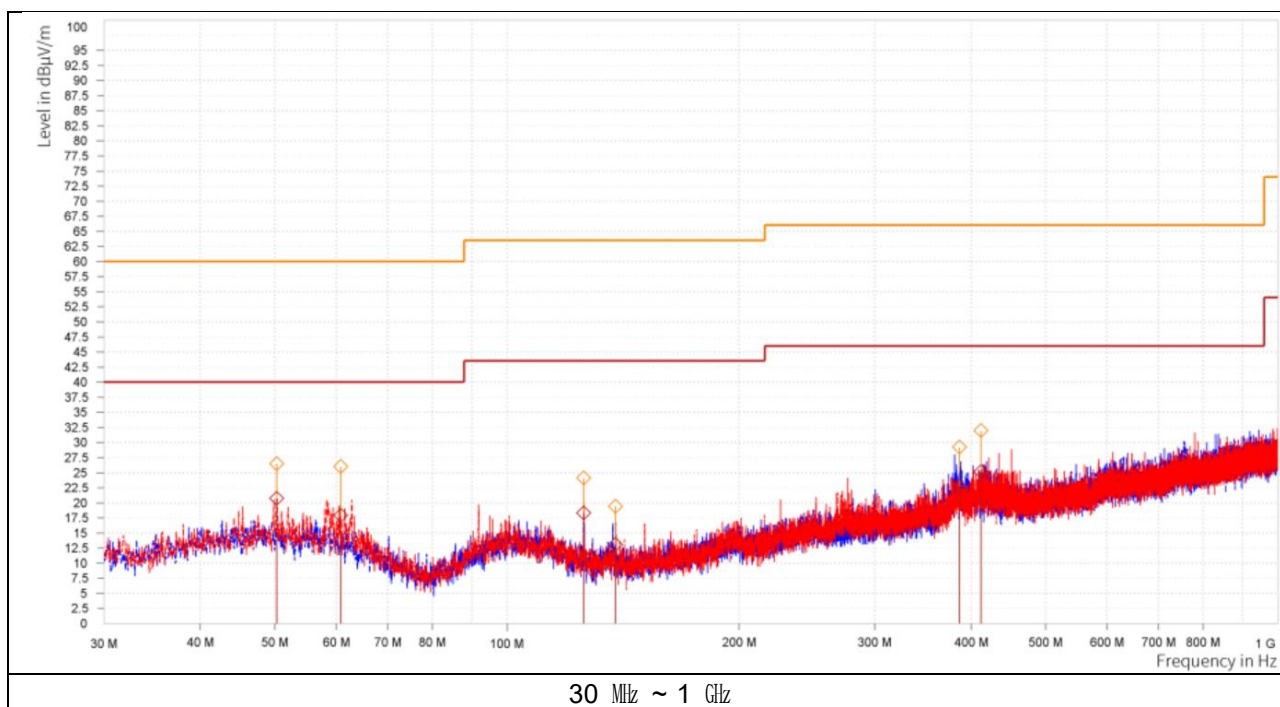
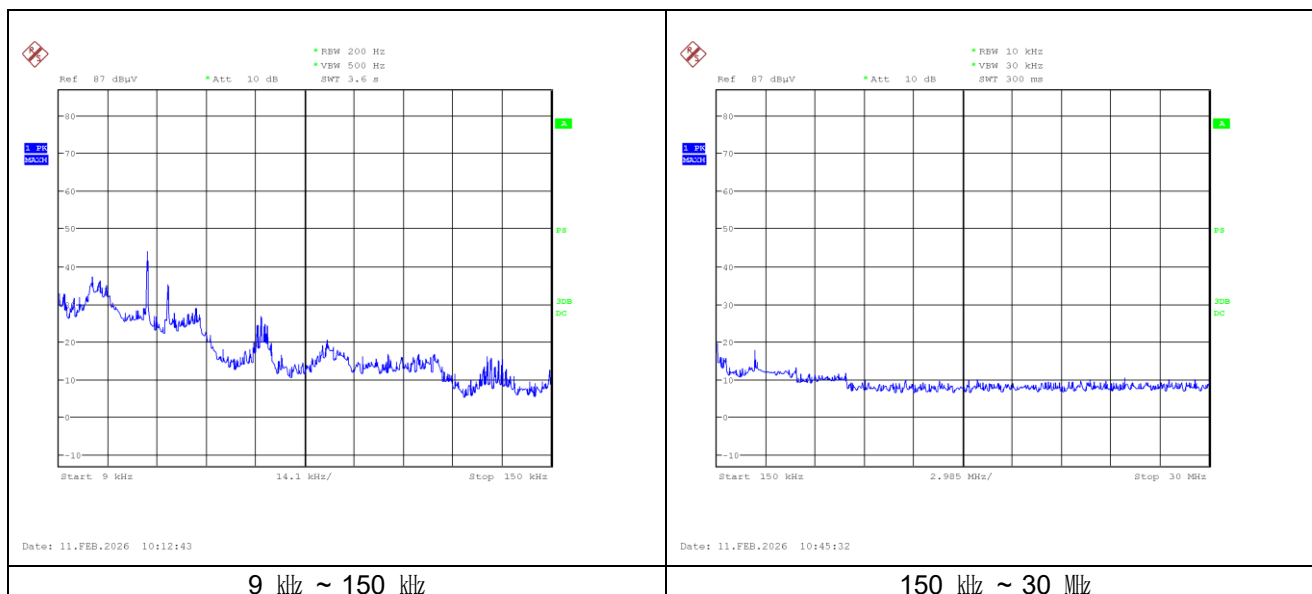
Ant. 1



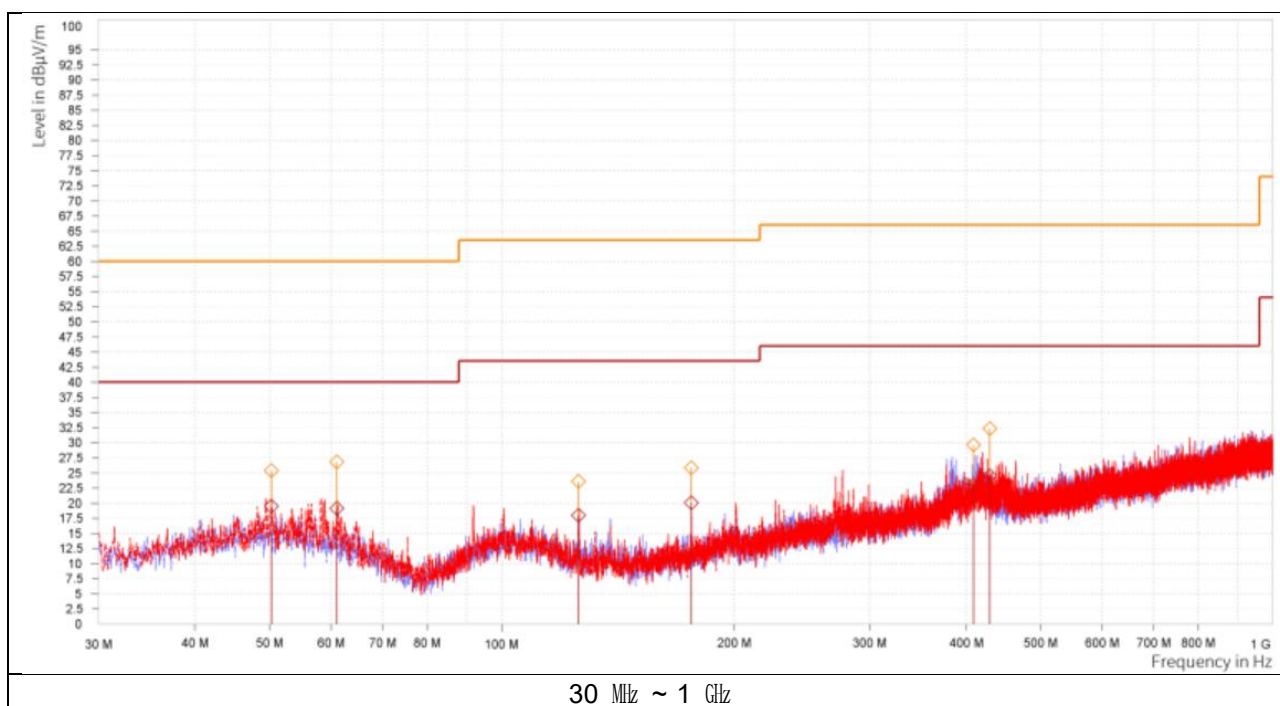
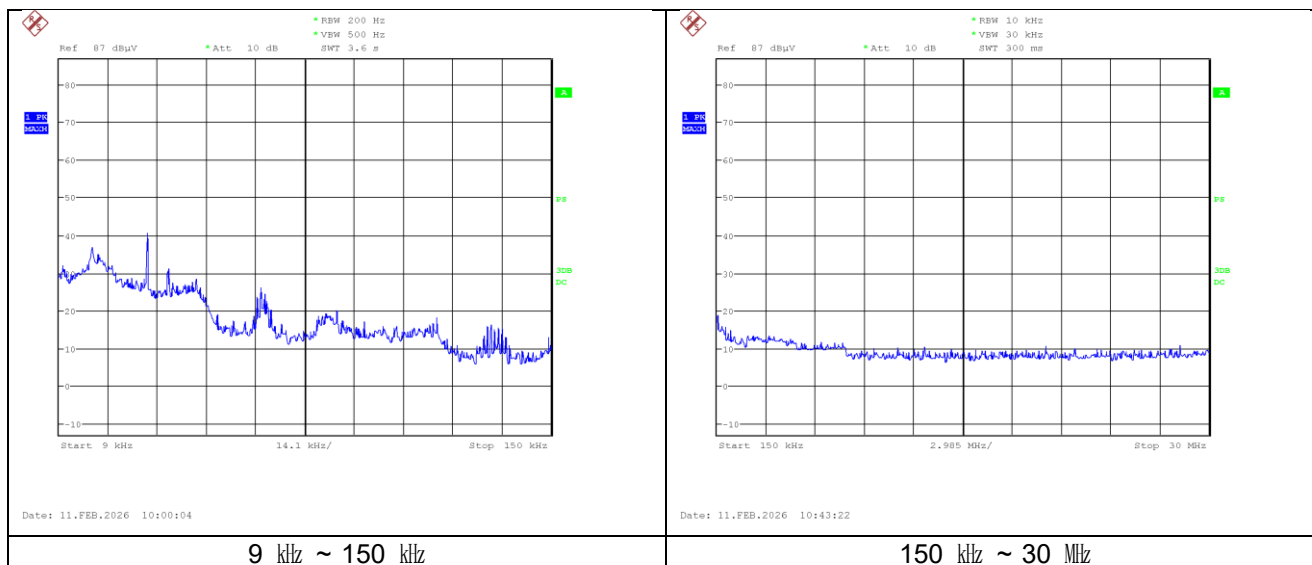
Ant. 2



Ant. 3



Ant. 1 + Ant. 2



2.4.2. Radiated Spurious Emission above 1 000 MHz

- Ant. 1

11a (U-NII 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)	DF (dB)	Actual (dBμV/m)	Limit (dBμV/m)	Margin (dB)
*4 500.00	11.57	Peak	V	32.00	10.90	-	54.47	74.00	19.53
*4 500.00	0.83	Average	V	32.00	10.90	2.05	45.78	54.00	8.22
*4 650.00	11.71	Peak	V	32.10	10.54	-	54.35	74.00	19.65
*4 635.60	1.03	Average	V	32.04	10.42	2.05	45.54	54.00	8.46
*5 150.00	11.79	Peak	V	33.60	12.65	-	58.04	74.00	15.96
*5 150.00	0.92	Average	V	33.60	12.65	2.05	49.22	54.00	4.78

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

11a (U-NII 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)
5 626.17	12.77	Peak	V	34.10	12.42	59.29	68.23	8.94
5 674.83	12.39	Peak	V	34.15	13.24	59.78	86.60	26.82
5 720.00	12.27	Peak	V	34.20	13.36	59.83	110.83	51.00
5 722.80	11.28	Peak	V	34.20	13.39	58.87	117.21	58.34

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)
5 850.33	10.31	Peak	V	34.40	13.52	58.23	121.48	63.25
5 862.29	10.73	Peak	V	34.42	13.30	58.45	108.79	50.34
5 921.20	12.01	Peak	V	34.50	12.91	59.42	71.04	11.62
5 959.58	12.80	Peak	V	34.52	12.29	59.61	68.34	8.73

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	-	-	-	-	-	-	-

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.

- Ant. 2

11a (U-NII 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	10.88	Peak	V	32.00	10.90	-	53.78	74.00	20.22
*4 500.00	0.84	Average	V	32.00	10.90	2.05	45.79	54.00	8.21
*4 596.40	11.23	Peak	V	31.90	10.44	-	53.57	74.00	20.43
*4 577.20	0.94	Average	V	31.90	10.41	2.05	45.30	54.00	8.70
*5 150.00	10.88	Peak	V	33.60	12.65	-	57.13	74.00	16.87
*5 150.00	1.15	Average	V	33.60	12.65	2.05	49.45	54.00	4.55

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	-	-	-	-	-	-	-	-

11a (U-NII 3)

A. Low Channel (5 745 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)
5 618.99	13.06	Peak	V	34.10	12.48	59.64	68.23	8.59
5 670.11	11.87	Peak	V	34.14	13.15	59.16	83.11	23.95
5 708.86	11.80	Peak	V	34.20	13.23	59.23	107.71	48.48
5 725.00	11.08	Peak	V	34.20	13.42	58.70	122.23	63.53

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 (5 785 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 (5 805 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)
5 855.00	10.56	Peak	V	34.41	13.43	58.40	110.83	52.43
5 863.99	11.55	Peak	V	34.43	13.27	59.25	108.31	49.06
5 909.05	12.52	Peak	V	34.50	12.96	59.98	80.03	20.05
5 928.23	13.05	Peak	V	34.50	12.83	60.38	68.23	7.85

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)

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.

- Ant. 3

11a (U-NII 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	10.04	Peak	V	32.00	10.90	-	52.94	74.00	21.06
*4 500.00	0.97	Average	V	32.00	10.90	2.05	45.92	54.00	8.08
*4 585.20	11.84	Peak	V	31.90	10.42	-	54.16	74.00	19.84
*5 133.20	1.14	Average	V	33.57	12.40	2.05	49.16	54.00	4.84
*5 150.00	10.45	Peak	V	33.60	12.65	-	56.70	74.00	17.30
*5 150.00	1.10	Average	V	33.60	12.65	2.05	49.40	54.00	4.60

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	-	-	-	-	-	-	-	-

11a (U-NII 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)
5 610.44	16.92	Peak	V	34.10	12.58	63.60	68.23	4.63
5 695.51	15.91	Peak	V	34.19	13.15	63.25	101.90	38.65
5 704.72	15.47	Peak	V	34.20	13.19	62.86	106.55	43.69
5 720.00	14.45	Peak	V	34.20	13.36	62.01	110.83	48.82

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)
5 853.15	14.33	Peak	V	34.41	13.47	62.21	115.05	52.84
5 857.95	15.41	Peak	V	34.42	13.38	63.21	110.00	46.79
5 889.37	16.44	Peak	V	34.48	13.03	63.95	94.59	30.64
5 959.01	16.25	Peak	V	34.52	12.30	63.07	68.33	5.26

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 (U-NII 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	9.60	Peak	V	32.00	10.90	-	52.50	74.00	21.50
*4 500.00	0.96	Average	V	32.00	10.90	1.87	45.73	54.00	8.27
*5 137.20	11.52	Peak	V	33.57	12.46	-	57.55	74.00	16.45
*5 137.20	0.97	Average	V	33.57	12.46	1.87	48.87	54.00	5.13
*5 150.00	11.55	Peak	V	33.60	12.65	-	57.80	74.00	16.20
*5 150.00	1.05	Average	V	33.60	12.65	1.87	49.17	54.00	4.83

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 (U-NII 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)
5 647.95	16.04	Peak	V	34.10	12.71	62.85	68.23	5.38
5 689.56	15.57	Peak	V	34.18	13.18	62.93	97.50	34.57
5 717.43	13.97	Peak	V	34.20	13.33	61.50	110.11	48.61
5 723.21	14.54	Peak	V	34.20	13.40	62.14	118.15	56.01

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	-	-	-	-	-	-	-

A. 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)
5 851.45	14.49	Peak	V	34.40	13.50	62.39	118.92	56.53
5 868.89	15.77	Peak	V	34.44	13.19	63.40	106.94	43.54
5 906.14	15.55	Peak	V	34.50	12.97	63.02	82.18	19.16
5 933.74	15.88	Peak	V	34.50	12.73	63.11	68.23	5.12

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 (U-NII 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	11.31	Peak	V	32.00	10.90	-	54.21	74.00	19.79
*4 500.00	0.94	Average	V	32.00	10.90	2.85	46.69	54.00	7.31
*4 618.80	13.09	Peak	V	31.98	10.37	-	55.44	74.00	18.56
*4 596.40	0.74	Average	V	31.90	10.44	2.85	45.93	54.00	8.07
*5 150.00	10.79	Peak	V	33.60	12.65	-	57.04	74.00	16.96
*5 150.00	0.92	Average	V	33.60	12.65	2.85	50.02	54.00	3.98

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 (U-NII 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)
5 609.41	16.21	Peak	V	34.10	12.59	62.90	68.23	5.33
5 700.00	16.31	Peak	V	34.20	13.13	63.64	105.23	41.59
5 702.26	15.87	Peak	V	34.20	13.16	63.23	105.86	42.63
5 723.21	15.57	Peak	V	34.20	13.40	63.17	118.15	54.98

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)
5 852.66	13.92	Peak	V	34.41	13.48	61.81	116.16	54.35
5 875.00	15.64	Peak	V	34.45	13.08	63.17	105.23	42.06
5 920.96	15.61	Peak	V	34.50	12.91	63.02	71.22	8.20
5 943.46	16.48	Peak	V	34.50	12.54	63.52	68.23	4.71

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 (U-NII 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	11.26	Peak	V	32.00	10.90	-	54.16	74.00	19.84
*4 500.00	0.42	Average	V	32.00	10.90	3.63	46.95	54.00	7.05
*4 570.94	12.54	Peak	V	31.90	10.38	-	54.82	74.00	19.18
*4 632.56	1.16	Average	V	32.03	10.40	3.63	47.22	54.00	6.78
*5 150.00	10.52	Peak	V	33.60	12.65	-	56.77	74.00	17.23
*5 150.00	1.06	Average	V	33.60	12.65	3.63	50.94	54.00	3.06

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 (U-NII 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)
5 637.91	15.75	Peak	V	34.10	12.58	62.43	68.23	5.80
5 676.65	16.90	Peak	V	34.15	13.24	64.29	87.95	23.66
5 716.81	14.82	Peak	V	34.20	13.33	62.35	109.93	47.58
5 720.00	14.13	Peak	V	34.20	13.36	61.69	110.83	49.14
5 852.90	13.19	Peak	V	34.41	13.47	61.07	115.62	54.55
5 868.22	14.73	Peak	V	34.44	13.20	62.37	107.13	44.76
5 916.73	15.46	Peak	V	34.50	12.93	62.89	74.35	11.46
5 972.83	16.75	Peak	V	34.55	12.13	63.43	68.49	5.06

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 dBμV/m = EIRP - 20 log (d) + 104.77 = -27 - 20 log (3) + 104.77
5. In case of the emissions within ±75 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.

- Ant. 1 + Ant. 2

11ac_VHT20 (U-NII 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)	DF (dB)	Actual (dBμV/m)	Limit (dBμV/m)	Margin (dB)
*4 500.00	10.65	Peak	V	32.00	10.90	-	53.55	74.00	20.45
*4 500.00	0.99	Average	V	32.00	10.90	2.68	46.57	54.00	7.43
*4 645.20	12.43	Peak	V	32.08	10.50	-	55.01	74.00	18.99
*5 138.00	0.97	Average	V	33.58	12.47	2.68	49.70	54.00	4.30
*5 150.00	11.26	Peak	V	33.60	12.65	-	57.51	74.00	16.49
*5 150.00	1.23	Average	V	33.60	12.65	2.68	50.16	54.00	3.84

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

11ac_VHT20 (U-NII 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)
5 623.35	16.23	Peak	V	34.10	12.43	62.76	68.23	5.47
5 684.23	15.47	Peak	V	34.17	13.21	62.85	93.56	30.71
5 711.07	15.23	Peak	V	34.20	13.26	62.69	108.33	45.64
5 722.18	14.61	Peak	V	34.20	13.39	62.20	115.80	53.60

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)
5 852.43	13.21	Peak	V	34.40	13.48	61.09	116.69	55.60
5 866.10	14.67	Peak	V	34.43	13.24	62.34	107.72	45.38
5 917.67	15.96	Peak	V	34.50	12.93	63.39	73.65	10.26
5 958.73	15.78	Peak	V	34.52	12.30	62.60	68.33	5.73

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 (U-NII 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	11.30	Peak	V	32.00	10.90	-	54.20	74.00	19.80
*4 500.00	0.92	Average	V	32.00	10.90	3.70	47.52	54.00	6.48
*4 602.80	13.20	Peak	V	31.91	10.44	-	55.55	74.00	18.45
*4 625.20	0.52	Average	V	32.00	10.34	3.70	46.56	54.00	7.44
*5 150.00	12.43	Peak	V	33.60	12.65	-	58.68	74.00	15.32
*5 150.00	0.66	Average	V	33.60	12.65	3.70	50.61	54.00	3.39

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 (U-NII 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)
5 617.41	16.06	Peak	V	34.10	12.50	62.66	68.23	5.57
5 697.15	16.11	Peak	V	34.19	13.15	63.45	103.12	39.67
5 700.00	15.55	Peak	V	34.20	13.13	62.88	105.23	42.35
5 722.59	14.68	Peak	V	34.20	13.39	62.27	116.73	54.46

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)
5 853.84	13.40	Peak	V	34.41	13.45	61.26	113.47	52.21
5 868.45	14.51	Peak	V	34.44	13.20	62.15	107.06	44.91
5 920.02	15.55	Peak	V	34.50	12.92	62.97	71.91	8.94
5 945.57	15.47	Peak	V	34.50	12.50	62.47	68.23	5.76

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 (U-NII 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	11.04	Peak	V	32.00	10.90	-	53.94	74.00	20.06
*4 500.00	1.16	Average	V	32.00	10.90	3.64	47.70	54.00	6.30
*4 538.00	13.10	Peak	V	31.92	10.56	-	55.58	74.00	18.42
*5 136.40	0.61	Average	V	33.57	12.45	3.64	50.27	54.00	3.73
*5 150.00	9.85	Peak	V	33.60	12.65	-	56.10	74.00	17.90
*5 150.00	0.74	Average	V	33.60	12.65	3.64	50.63	54.00	3.37

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 (U-NII 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)
5 609.82	16.44	Peak	V	34.10	12.59	63.13	68.23	5.10
5 700.00	15.73	Peak	V	34.20	13.13	63.06	105.23	42.17
5 720.00	15.43	Peak	V	34.20	13.36	62.99	110.83	47.84
5 723.41	14.91	Peak	V	34.20	13.40	62.51	118.60	56.09
5 851.96	14.43	Peak	V	34.40	13.49	62.32	117.76	55.44
5 866.57	15.71	Peak	V	34.43	13.23	63.37	107.59	44.22
5 901.22	15.80	Peak	V	34.50	12.99	63.29	85.82	22.53
5 958.03	15.92	Peak	V	34.52	12.31	62.75	68.32	5.57

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 dBμV/m = EIRP - 20 log (d) + 104.77 = -27 - 20 log (3) + 104.77
5. In case of the emissions within ±75 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.

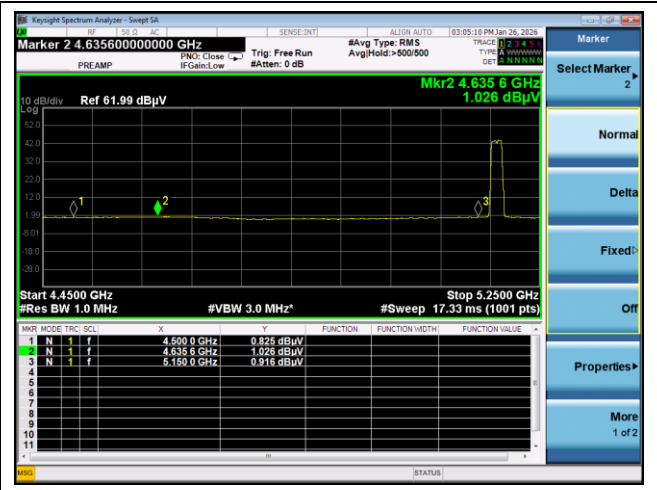
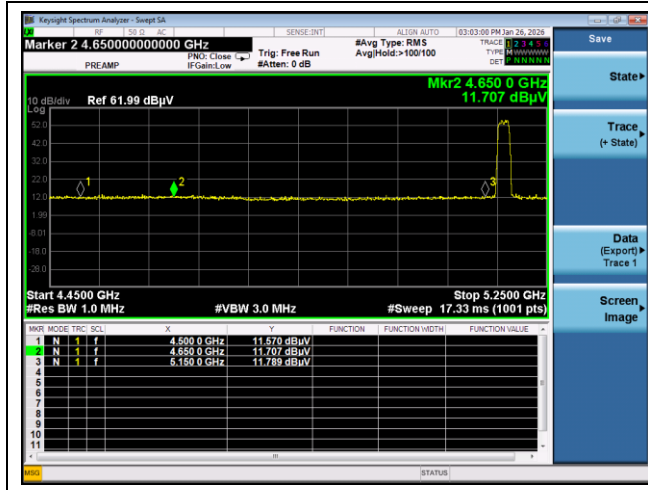
Test plots

- Ant. 1

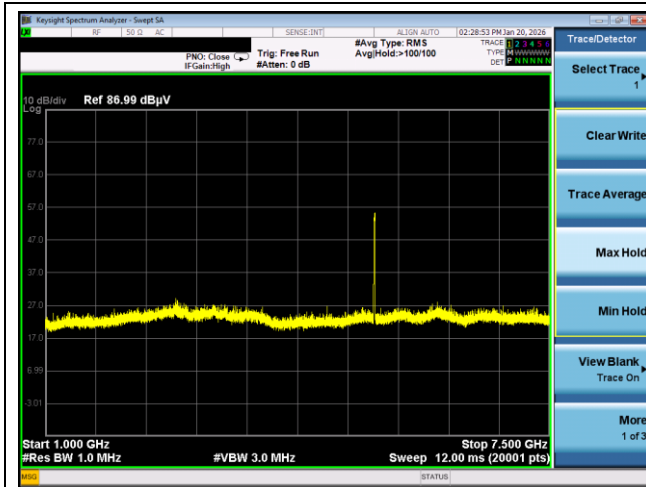
11a

Low channel Band edge (Peak) – U-NII 1

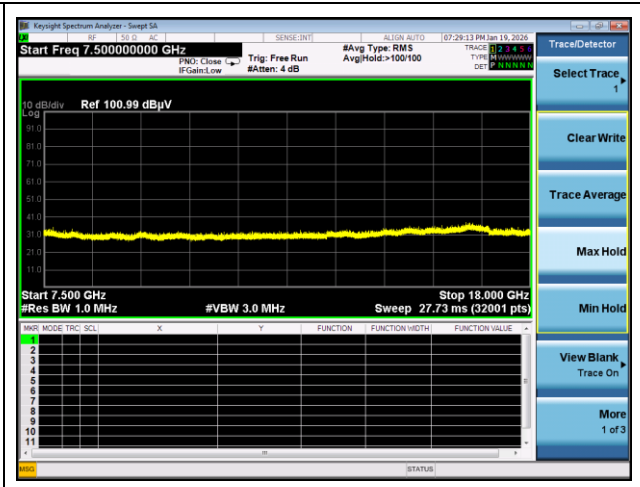
Low channel Band edge (Average) - U-NII 1



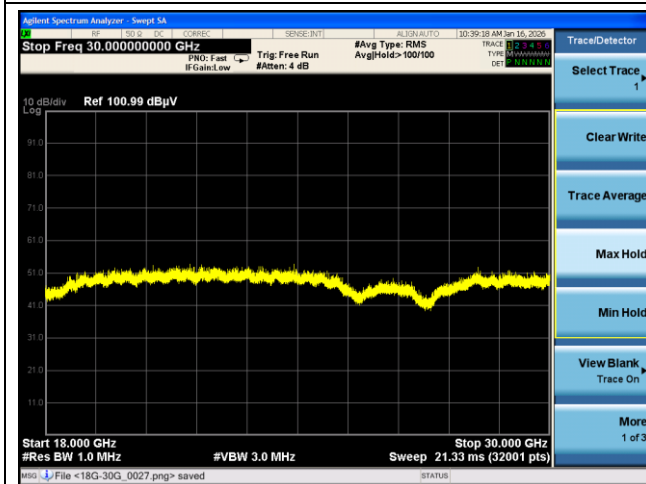
Radiated Spurious Emissions



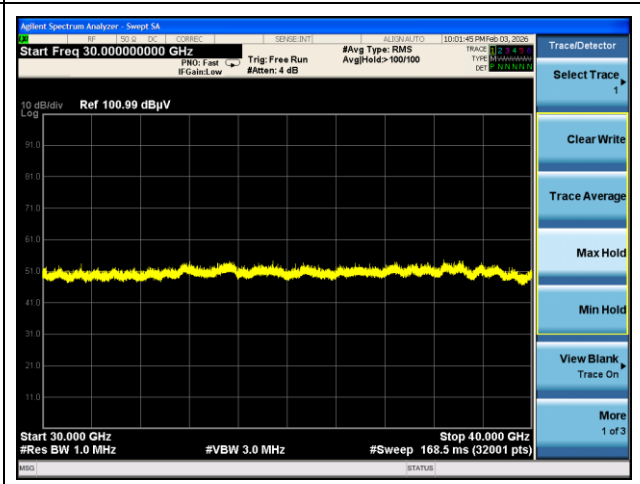
1 GHz ~ 7.5 GHz



7.5 GHz ~ 18 GHz



18 GHz ~ 30 GHz

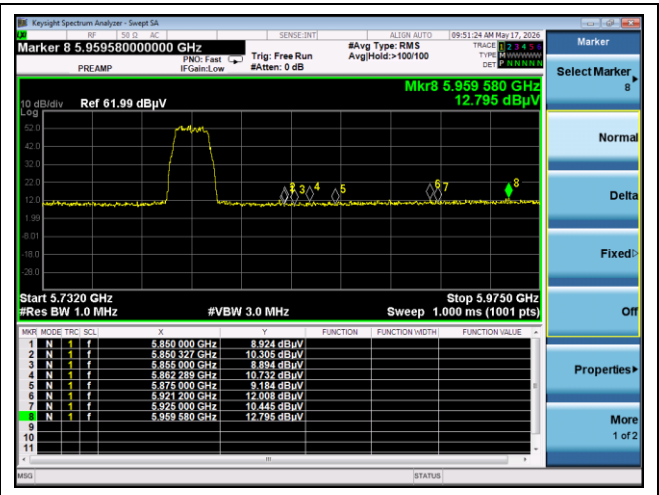
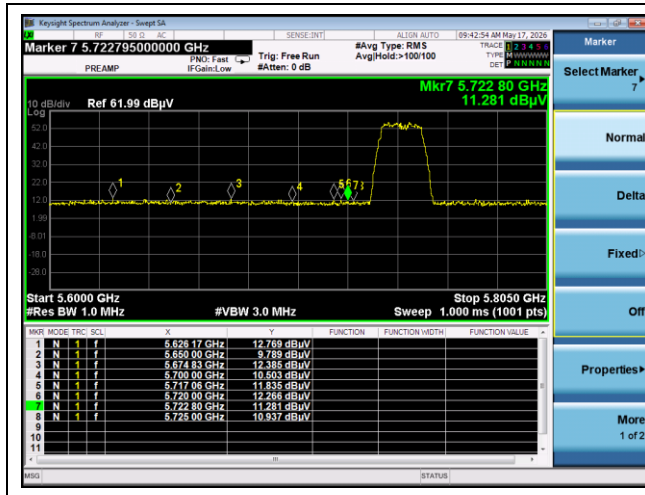


30 GHz ~ 40 GHz

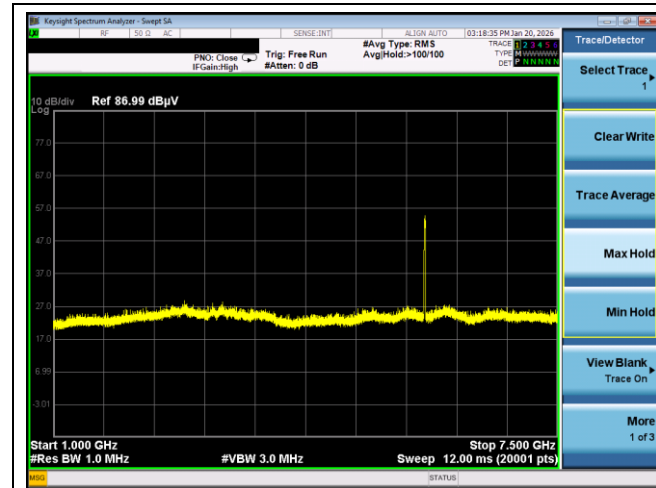
11a

Low channel Band edge (Peak) - U-NII 3

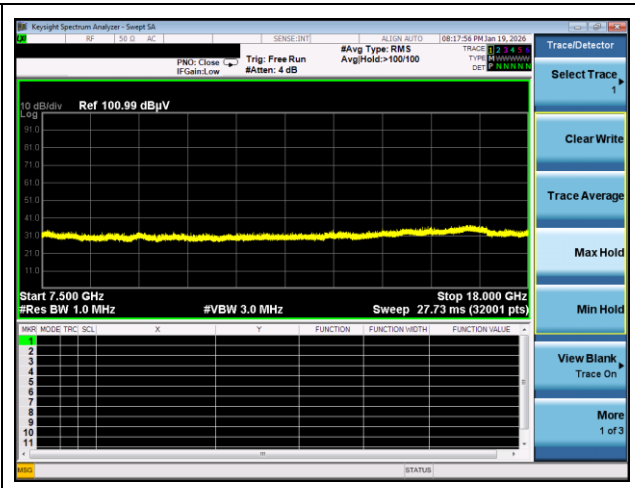
High channel Band edge (Peak) - U-NII 3



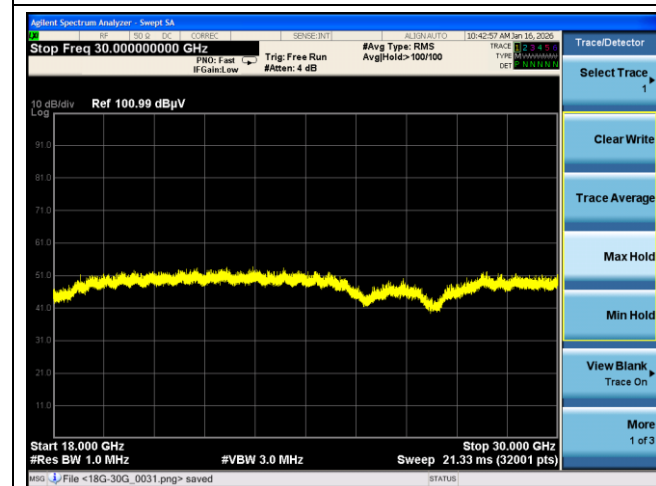
Radiated Spurious Emissions



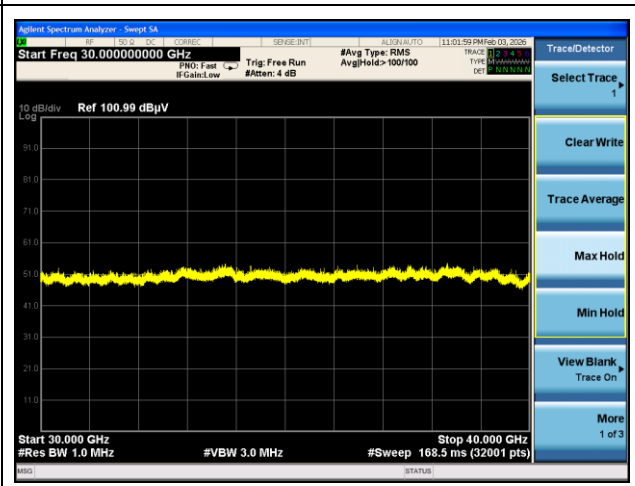
1 GHz ~ 7.5 GHz



7.5 GHz ~ 18 GHz



18 GHz ~ 30 GHz

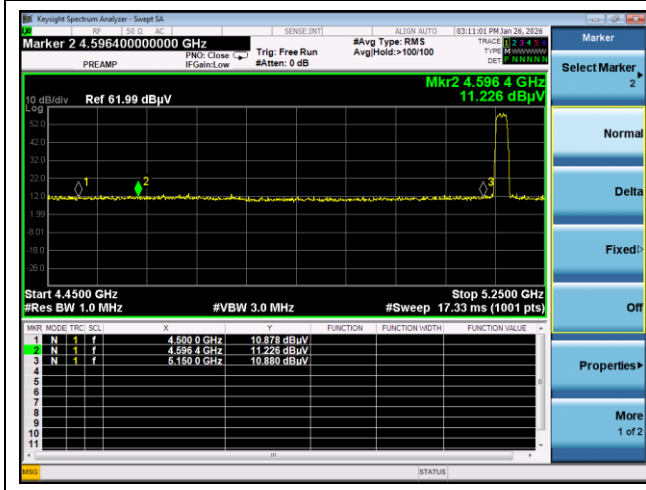


30 GHz ~ 40 GHz

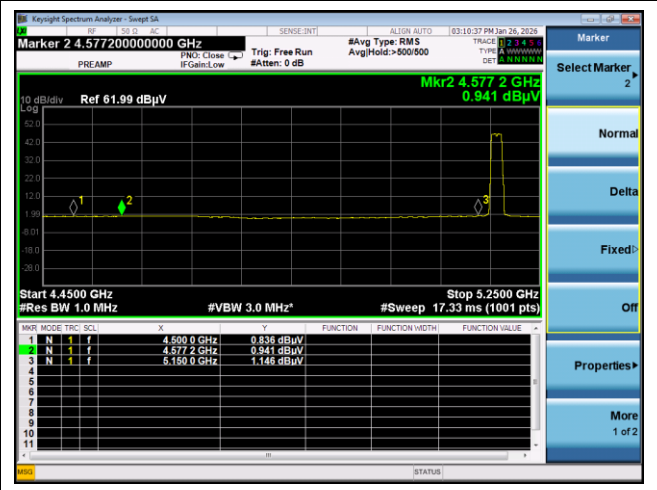
- Ant. 2

11a

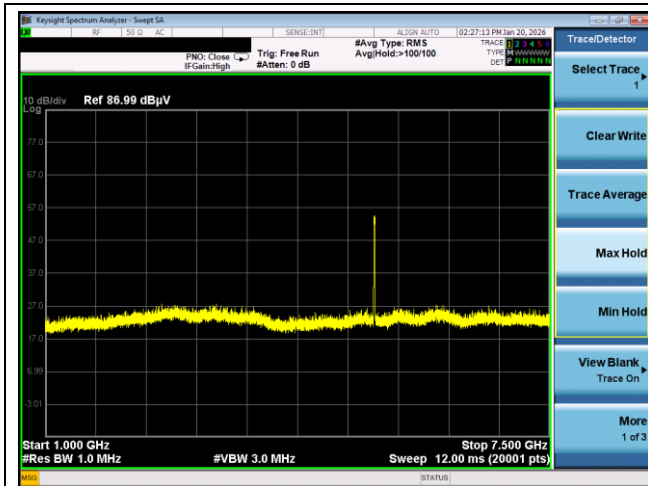
Low channel Band edge (Peak) - U-NII 1



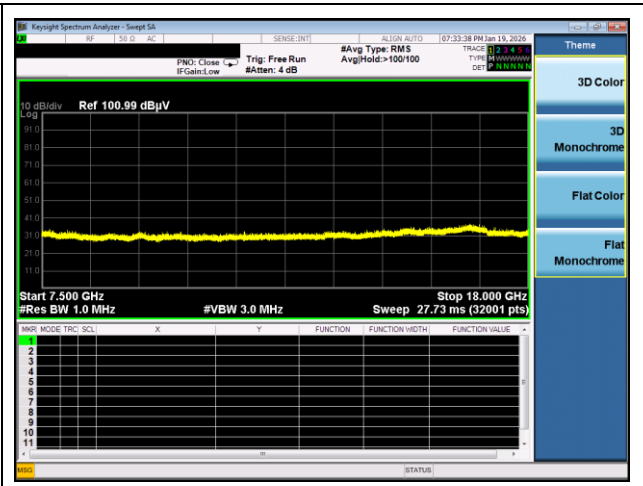
Low channel Band edge (Average) - U-NII 1



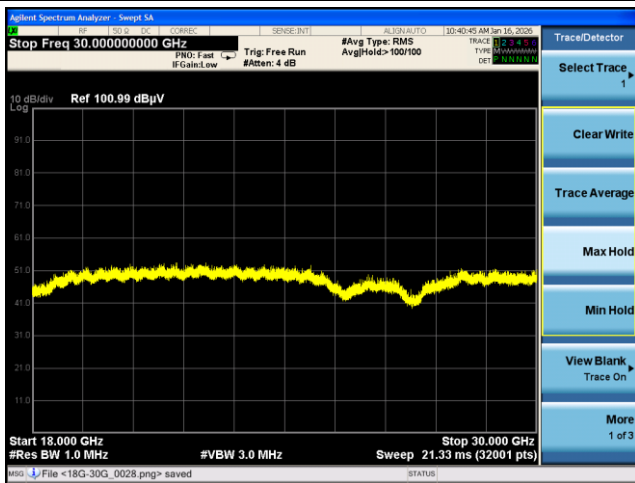
Radiated Spurious Emissions



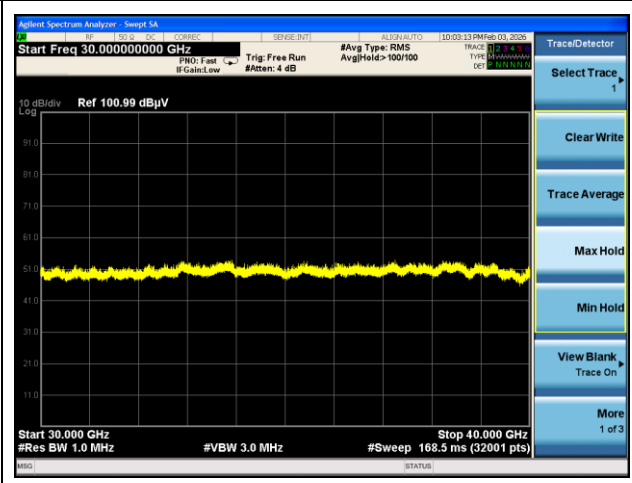
1 GHz ~ 7.5 GHz



7.5 GHz ~ 18 GHz



18 GHz ~ 30 GHz



30 GHz ~ 40 GHz