

CERTIFICATION TEST REPORT

Report Number. : S-4791706372-E8V2

Applicant : SAMSUNG ELECTRONICS CO., LTD.
129 SAMSUNG-RO, YEONGTONG-GU, SUWON-SI,
GYEONGGI-DO, 16677, KOREA

Model : SM-L335U, SM-L335F

FCC ID : A3LSML335

EUT Description : WCDMA/LTE Smart Wearable + BT/BLE, DTS/UNII a/b/g/n

Test Standard(s) : FCC 47 CFR PART 15 SUBPART E

Date Of Issue:

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Revision History

Rev.	Issue Date	Revisions	Revised By
V1	2025-04-17	Initial issue	Jaejin Lee
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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.

EUT DESCRIPTION: WCDMA/LTE Smart Wearable + BT/BLE, DTS/UNII a/b/g/n

MODEL NUMBER: SM-L335U, SM-L335F

SERIAL NUMBER: R3AY1007LZR, R3AY1007ZRB (CONDUCTED);
R3AY3006XFX, R3AY3006X7W (RADIATED)

DATE TESTED: 2025-03-18 - 2025-04-17

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart E	Complies

UL KOREA LTD. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL KOREA LTD. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

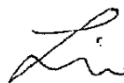
Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL KOREA LTD. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL KOREA LTD. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by IAS, any agency of the Federal Government, or any agency of any government.

Approved & Released For
UL KOREA LTD. By:



Seokhwan Hong
Suwon Lab Engineer
UL KOREA LTD.

Tested By:



Jaejin Lee
Suwon Lab Engineer
UL KOREA LTD.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with following methods.

1. FCC CFR 47 Part 2.
2. FCC CFR 47 Part 15.
3. KDB 789033 D02 General UNII Test Procedures New Rules v02r01
4. KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02
5. KDB 905462 D03 UNII Clients Without Radar Detection New Rules v01r02
6. KDB 291074 D02 v01
7. ANSI C63.10-2020.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea. Line conducted emissions are measured only at the 218 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

218 Maeyeong-ro	
☒	Chamber 1(3m semi-anechoic chamber)
☒	Chamber 2(3m semi-anechoic chamber)
☒	Chamber 3(3m semi-anechoic chamber)
☐	Chamber 4(3m Full-anechoic chamber)
☐	Chamber 5(3m Full-anechoic chamber)

UL KOREA LTD. is accredited by IAS, Laboratory Code TL-637. The full scope of accreditation can be viewed at <https://www.iasonline.org/wp-content/uploads/2017/05/TL-637-cert-New.pdf>.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamplifier Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

$$\begin{aligned} \text{AC Corrected Reading (dBuV)} &= \text{Measured Voltage (dBuV)} + \text{Extension Cord} \\ &\text{Loss (dB)} + \text{Cable Loss (dB)} \\ 44.72 \text{ dBuV} &= 34.72 \text{ dBuV} + 9.9 \text{ dB} + 0.1 \text{ dB} \end{aligned}$$

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
RF Output Power	0.69 dB
Power Spectral Density	1.40 dB
Time(Duty cycle and DFS)	0.60 %
Occupied Bandwidth	0.04 %
Conducted Disturbance, 0.15 to 30 MHz	1.84 dB
Radiated Disturbance, 9 kHz to 30 MHz	2.41 dB
Radiated Disturbance, 30 MHz to 1 GHz	3.69 dB
Radiated Disturbance, 1 GHz to 18 GHz	5.18 dB
Radiated Disturbance, 18 GHz to 40 GHz	5.07 dB

Uncertainty figures are valid to a confidence level of 95%.

4.4. DECISION RULE

Decision rule for statement(s) of conformity is based on Clause 4.4.3 in IEC Guide 115:2023.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a WCDMA/LTE Smart Wearable + BT/BLE, DTS/UNII a/b/g/n.
This test report addresses the NII (WLAN) operational mode.

Representative model	Difference	Derivative model
		SM-L335F
SM-L335U	Hardware	Same
	Software	The UI has changed according to Service Provider

The model SM-L335U used for final testing and is representative of the test results in this report.

WiFi operating mode

Frequency rage	Mode	ANT1
5GHz (5150 MHz ~ 5925 MHz)	802.11a SISO	TX/RX
	802.11n HT20 SISO	TX/RX

MAXIMUM OUTPUT POWER

The transmitter has a maximum total conducted average output power as follows except UNII-4 listed is based on EIRP as noted:

Band	Frequency Range [MHz]	Mode	Output Power [dBm]	Output Power [mW]
UNII-1	5180 - 5240	802.11a SISO	16.18	41.50
		802.11n(HT20) SISO	16.22	41.88
UNII-2A	5260 - 5320	802.11a SISO	16.20	41.69
		802.11n(HT20) SISO	16.11	40.83
UNII-2C	5500 - 5720	802.11a SISO	16.33	42.95
		802.11n(HT20) SISO	16.28	42.46
UNII-3	5745 - 5825	802.11a SISO	16.30	42.66
		802.11n(HT20) SISO	16.34	43.05
UNII-4	5845 - 5885	802.11a SISO	6.23	4.20
		802.11n(HT20) SISO	6.15	4.12

5.2. DESCRIPTION OF AVAILABLE ANTENNAS

An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

The internal antenna was Permanently attached.

Therefore this E.U.T Complies with the requirement of §15.203.

The radio utilizes a internal antenna, with a maximum gain of:

UNII Band	Frequency Range[MHz]	ANT1 Gain [dBi]
UNII 1	5150 - 5250	-9.20
UNII 2A	5250 - 5350	-10.50
UNII 2C	5470 - 5725	-9.90
UNII 3	5725 - 5850	-10.00
UNII 4	5850 - 5925	-10.00

5.3. WORST-CASE CONFIGURATION AND MODE

The fundamentals of the EUT were investigated in three orthogonal orientations X, Y and Z on 1TX SISO mode. It was determined that Z orientation was the worst-case for 1TX SISO mode.

Worst case of antenna axis: Z

Radiated and power line conducted tests were performed with EUT connected to AC power adapter and strap as the worst-case configuration. Radiated harmonics spurious 1~18 GHz Low/Mid/High channels, 18-40GHz were performed with the EUT set at the worst mode. Radiated emission below 1GHz and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

For Radiated spurious test, 802.11a 1TX mode has equal or higher output power and PSD results than other modes and therefore, it was set for full test. Spot-check was performed in 802.11n 1TX.

For Radiated band-edge test, 802.11a 1TX, 802.11n 1TX.

Simultaneous transmission with the Bluetooth and Wi-Fi were investigated, and no noticeable emission was found.

Based on the baseline scan, the worst-case data rates were:

802.11a mode: 6 Mbps 1TX

802.11n HT20 mode: MCS0 1TX

5.4. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Charger	SAMSUNG	EP-TA800	R37XBMJF8FBDKA	N/A
Wireless Charger	SAMSUNG	EP-OL300	-	-

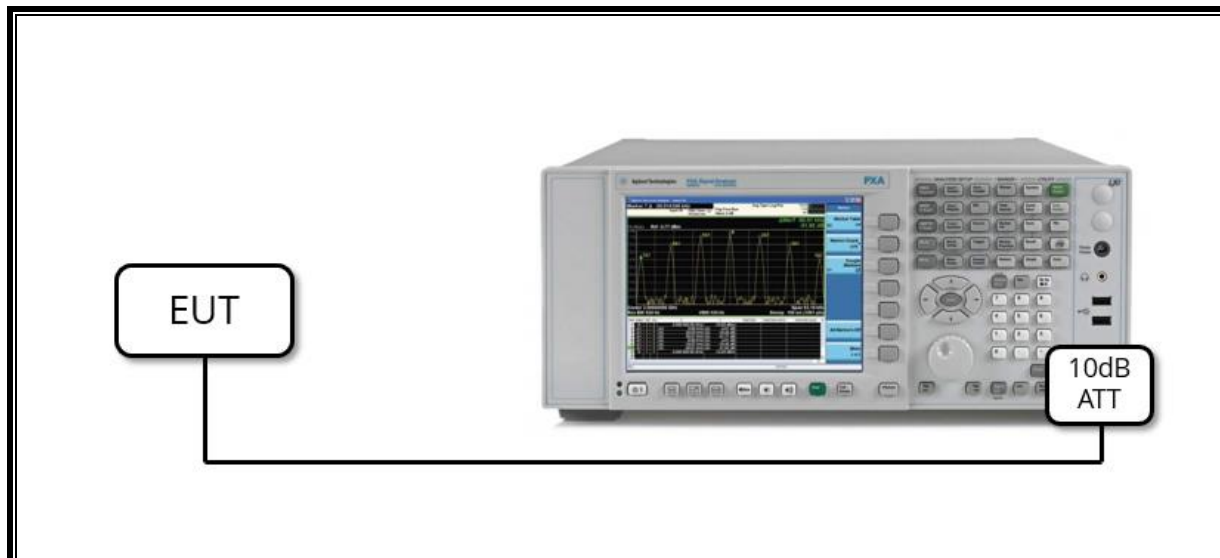
I/O CABLE

I/O Cable List						
Cable No.	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC Power	1	C Type	Shielded	0.8 m	N/A

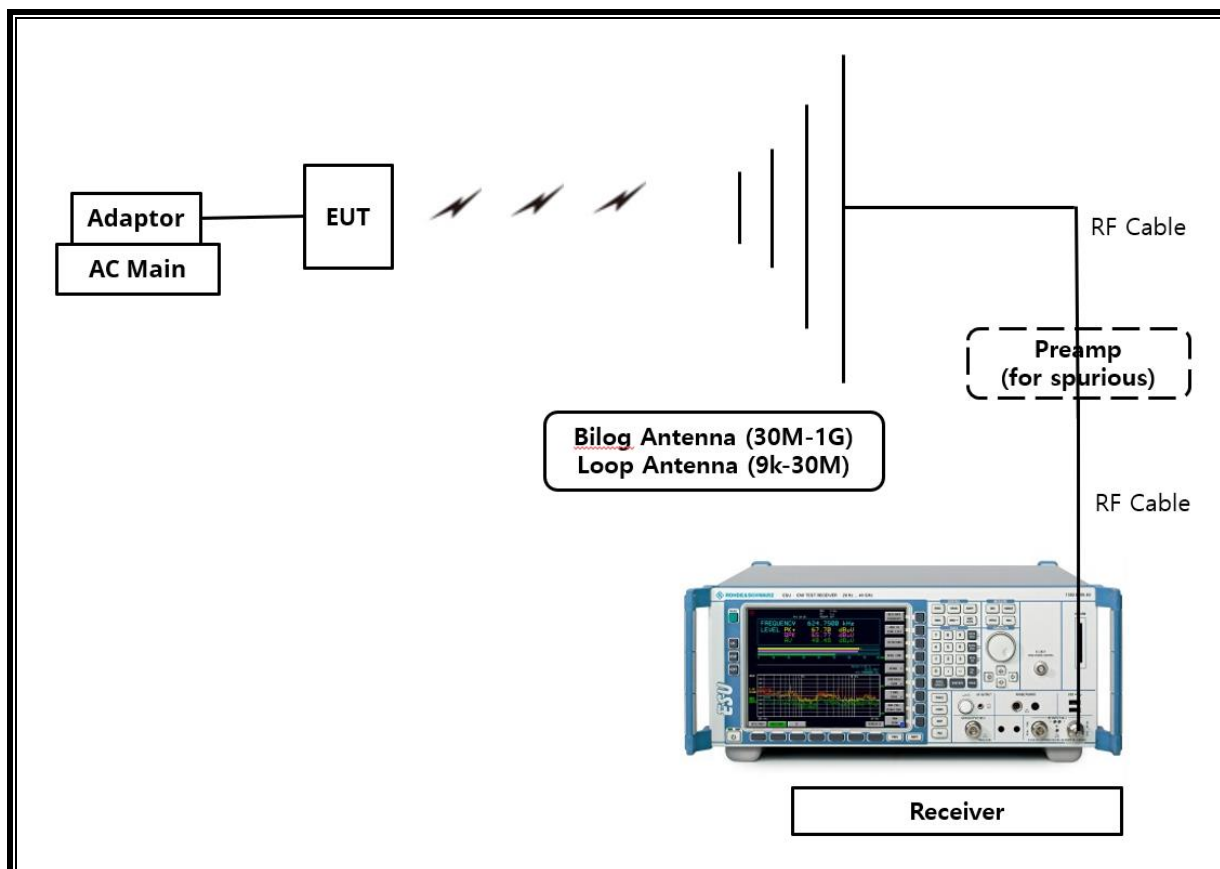
TEST SETUP

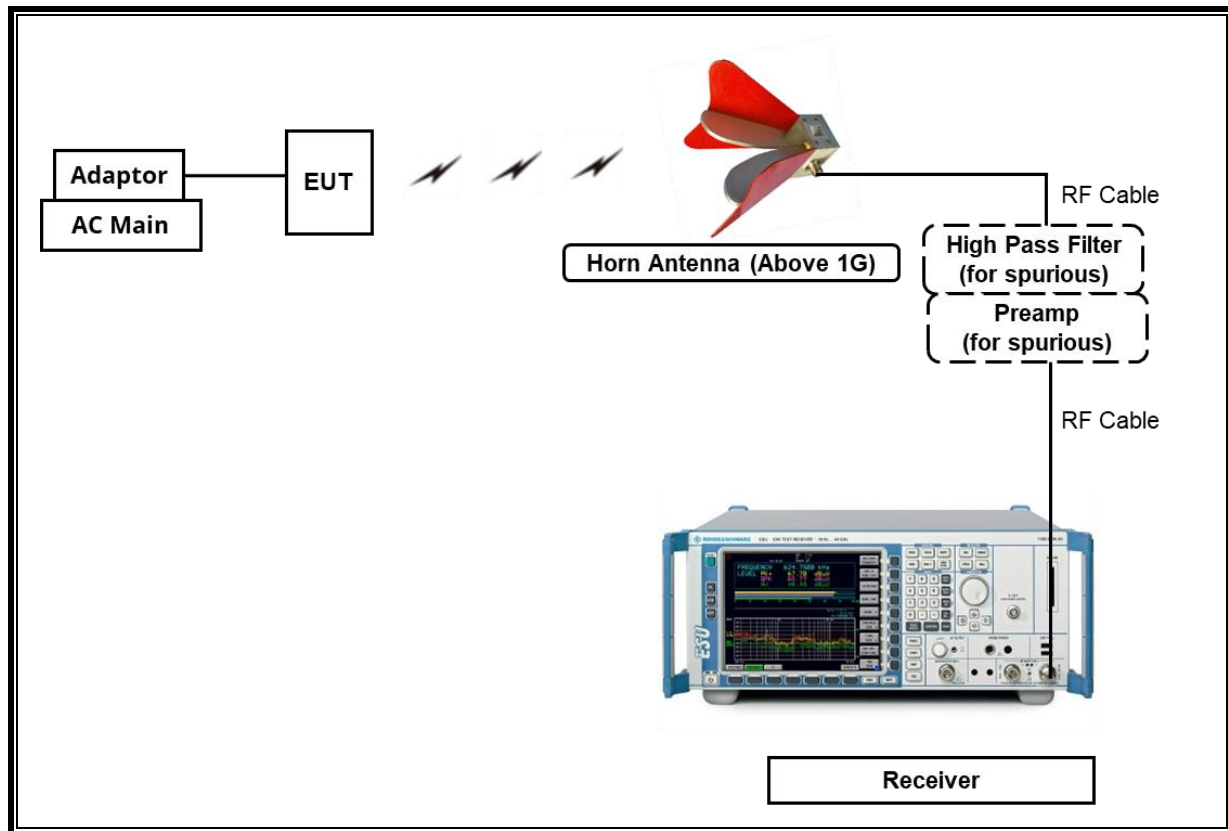
The EUT is a stand-alone unit during the tests.
Test software exercised the EUT to enable NII mode.

SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)





6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment List				
Description	Manufacturer	Model	S/N	Cal Due
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB 9163	749	2026-08-12
Antenna, Horn, 18 GHz	ETS	3117	00168717	2026-07-17
Antenna, Horn, 18 GHz	ETS	3117	00218957	N/A
Antenna, Horn, 40 GHz	ETS	3116C	00166155	2026-07-23
Preamplifier	ETS	3116C-PA	00168841	2025-07-25
Preamplifier, 1000 MHz	Sonoma	310N	341282	2025-07-22
Preamplifier, 18 GHz	B&Z Technologies, LLC	BZR-01001800-231040-181515	23576	2025-07-25
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	2029169	2025-07-23
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54170614	2025-07-24
Spectrum Analyzer, 44 GHz	KEYSIGHT	N9030B	MY60070693	2026-01-02
Average Power Sensor	Agilent / HP	U2000A	MY54270007	2025-07-23
Average Power Sensor	Agilent / HP	U2000A	MY54260010	2025-07-23
Attenuator	PASTERNAK	PE7087-10	A001	2025-07-23
Attenuator	PASTERNAK	PE7087-10	A008	2025-07-23
Attenuator	PASTERNAK	PE7004-10	2	2025-07-23
Attenuator	PASTERNAK	PE7087-10	A009	2025-07-23
EMI Test Receive, 40 GHz	R&S	ESU40	100439	2025-07-23
EMI Test Receive, 40 GHz	R&S	ESU40	100457	2025-07-22
EMI Test Receive, 3 GHz	R&S	ESR 3	101832	2025-07-22
Notch Filter	Micro-Tronics	BRM50702-02	G037	2025-07-24
Notch Filter	Micro-Tronics	BRM50716-2	006	2025-07-23
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	020	2025-07-23
High Pass Filter 3GHz	Micro-Tronics	HPM17543	20	2025-07-23
High Pass Filter 6GHz	Micro-Tronics	HPS17542	009	2025-07-22
LISN	R&S	ENV216	101836	2025-07-22
Antenna, Loop, 9kHz-30MHz	R&S	HFH2-Z2	100418	2025-09-07
Termination	WEINSCHL	M1406A	T09	2025-07-23
Attenuator	WEINSCHL	WA76-30-21	A015	2025-07-23
UL Software				
Description	Manufacturer	Model	Version	
Radiated software	UL	UL EMC	Ver 9.5	
AC Line Conducted software	UL	UL EMC	Ver 9.5	

7. SUMMARY TABLE

FCC Part Section	Test Description	Test Limit	Test Condition	Test Result
15.407(e)	6dB Band width (5.8GHz)	> 500kHz	Conducted	Complies
15.407 (a)(1)(iv)	TX Cond. Power (5.150-5.250)	< 24dBm		Complies
15.407 (a)(2)	TX Cond. Power (5.250-5.350 & 5.470-5.725)	< 24dBm or 11+10Log(26dB BW)		Complies
15.407 (a)(3)(i)	TX Cond. Power (5.725-5.850)	< 30dBm		Complies
15.407 (a)(3)(iii)	TX Cond. Power (5.850-5.895)	< 30dBm e.i.r.p.		Complies
15.407 (a)(1)(iv) & (a)(2)	PSD (5.150-5.250 5.250-5.350 & 5.470-5.725)	< 11dBm/MHz		Complies
15.407 (a)(3)	PSD (5.725-5.850)	< 30dBm/500kHz		Complies
15.407 (a)(3)(iii)	PSD (5.850-5.895)	< 14dBm/MHz e.i.r.p.		Complies
15.207 (a)	AC Power Line conducted emissions	Section 13	Radiated	Complies
15.407 (b) & 15.209	Radiated Spurious Emission	< 74dBuV/m PK < 54dBuV/m AV		Complies
15.407 (h)(2)	Dynamic Frequency Selection	N/A	Condcuted	Complies

8. MEASUREMENT METHODS

On-Time and Duty Cycle : KDB 789033 D02 v02r01, Section II.B.

6dB Emission BW : KDB 789033 D02 v02r01, Section II.C.2.

26dB Emission BW : ANSI C63.10-2020, Section 12.5.2.

99% Occupied BW : KDB 789033 D02 v02r01, Section II.D.

Conducted Output Power : KDB 789033 D02 v02r01, Section II.E.3.a(Method PM)

Power Spectral Density : KDB 789033 D02 v02r01, Section II.F.

Unwanted emissions in restricted bands : KDB 789033 D02 v02r01, Section II.G.3 – II.G.6.

Unwanted emissions in non-restricted bands : KDB 789033 D02 v02r01, Section II.G.3 – II.G.6.

AC Power Line Conducted Emission : ANSI C63.10-2020, Section 6.2.

9. REFERENCE MEASUREMENTS RESULTS

9.1. ON TIME AND DUTY CYCLE RESULTS

Mode	On Time [ms]	Period [ms]	Duty Cycle X [Linear]	Duty Cycle X [%]	Duty Cycle Correction Factor[dB]
802.11a SISO	2.790	2.936	0.9503	95.03	0.22
802.11n(HT20) SISO	5.368	5.520	0.9725	97.25	0.12

Note. If the duty cycle is over 98%, compensation is not included in average measurement.

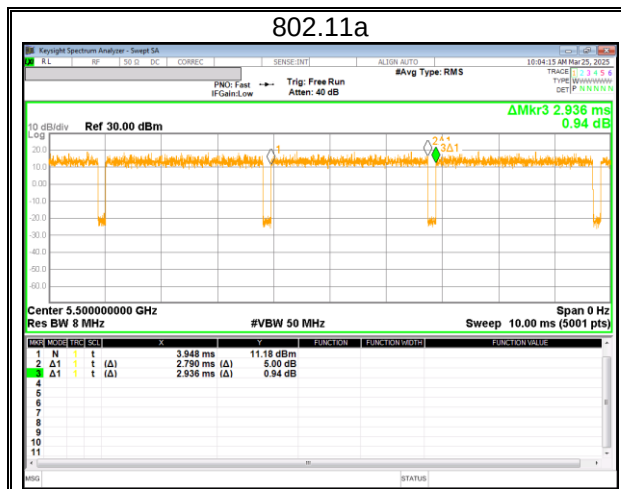
LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 789033 D02 v02r01 Zero-Span Spectrum Analyzer Method.

DUTY CYCLE SAMPLE PLOTS



9.2. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

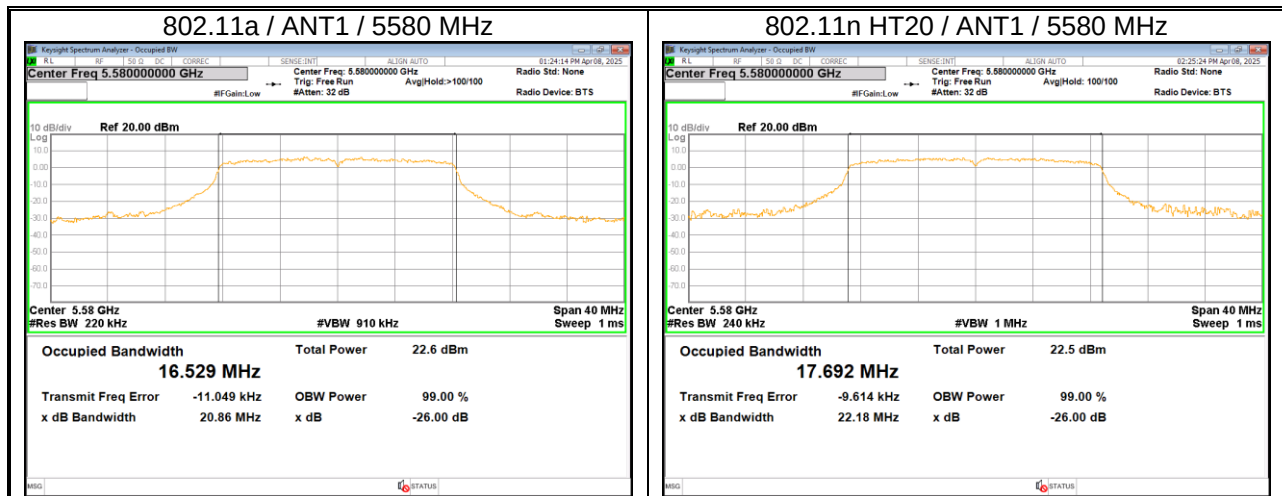
TEST PROCEDURE

Reference to ANSI C63.10-2020, Section 12.5.2: The transmitter output is connected to a spectrum analyzer with the RBW set to a value in the range of 1% to 5% of the emission bandwidth, the VBW > RBW, peak detector and max hold.

RESULTS

- Please refer to the next page

WORST CASE TEST PLOTS



9.2.1. 802.11a

Band	Channel	Center Freq. [MHz]	26 dB BW [MHz]	Worst	99% BW [MHz]
			ANT1		ANT1
UNII-1 ^{Note}	36	5180	21.67	21.02	16.57
	40	5200	21.02		16.55
	48	5240	21.05		16.54
UNII-2A ^{Note}	52	5260	21.18	21.01	16.53
	60	5300	21.04		16.55
	64	5320	21.01		16.54
UNII-2C	100	5500	20.89	20.86	
	116	5580	20.86		
	140	5700	21.08		

Note. As a result of 99% bandwidth test, the bandwidth of UNII-1 does not interfere with UNII-2A.

9.2.2. 802.11n HT20

Band	Channel	Center Freq. [MHz]	26 dB BW [MHz]	Worst	99% BW [MHz]
			ANT1		ANT1
UNII-1 ^{Note}	36	5180	22.97	22.97	17.71
	40	5200	25.37		17.76
	48	5240	23.44		17.76
UNII-2A ^{Note}	52	5260	23.55	22.83	17.75
	60	5300	23.29		17.76
	64	5320	22.83		17.71
UNII-2C	100	5500	22.54	22.18	
	116	5580	22.18		
	140	5700	28.82		

Note. As a result of 99% bandwidth test, the bandwidth of UNII-1 does not interfere with UNII-2A.

9.2.3. STRADDLE CHANNEL

Mode	Channel	Center Freq. [MHz]	26 dB BW [MHz]	
			ANT1	
			UNII-2C	UNII-3
802.11a	Straddle	5720	15.96	5.37
802.11n HT20	Straddle	5720	16.90	6.42

10. ANTENNA PORT TEST RESULTS

10.1. 6 dB BANDWIDTH

LIMITS

FCC §15.407

The minimum 6 dB bandwidth shall be at least 500 kHz.

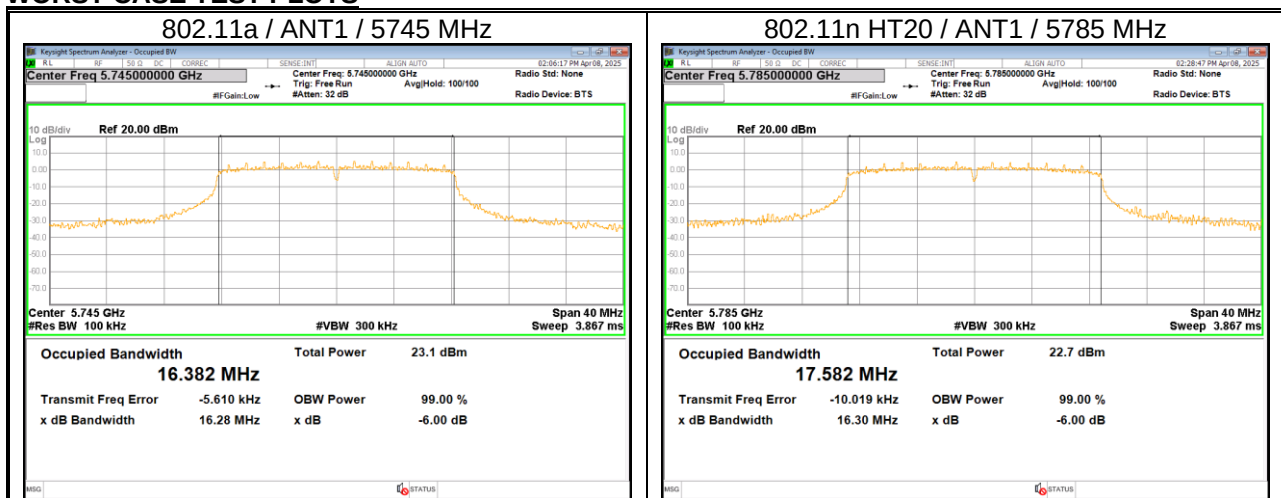
TEST PROCEDURE

Reference to 789033 D02 General UNII Test Procedures New Rules v02r01: The transmitter output is connected to a spectrum analyzer with the RBW set to 100kHz, the VBW $\geq 3 \times$ RBW, peak detector and max hold.

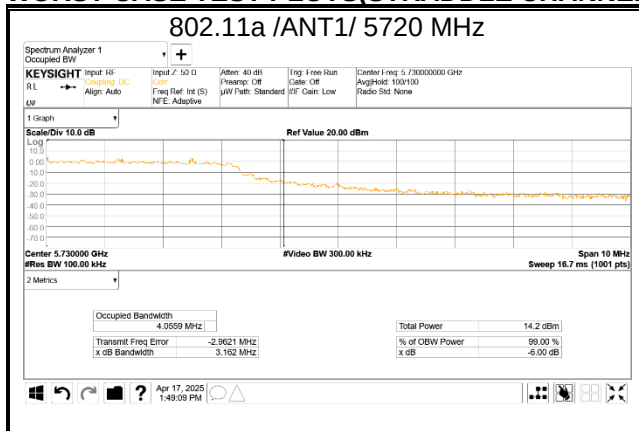
RESULTS

- Please refer to the next page

WORST CASE TEST PLOTS



WORST CASE TEST PLOTS(STRADDLE CHANNELS)



10.1.1. STRADDLE CHANNEL

Mode	Channel	Center Freq. [MHz]	6 dB BW [MHz]
			UNII-3
			ANT1
802.11a	Straddle	5720	3.16
802.11n HT20	Straddle	5720	3.74

10.1.2. UNII-3 BAND & 4 BAND

Mode	Channel	Center Freq. [MHz]	6 dB BW [MHz]	Worst	Minimum Limit [MHz]
			ANT1		
802.11a	149	5745	16.28	16.28	0.5
	157	5785	16.32		
	165	5825	16.29		
	169	5845	16.28		
	173	5865	16.30		
	177	5885	16.31		
802.11n HT20	149	5745	16.56	16.30	
	157	5785	16.30		
	165	5825	17.07		
	169	5845	16.69		
	173	5865	16.67		
	177	5885	16.67		

10.2. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a)(1)(iv), (a)(2), (a)(3)(i)

FCC

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

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For client devices operating under the control of an indoor access point in the 5.850-5.895 GHz band, the maximum power spectral density must not exceed 14 dBm e.i.r.p. in any 1-megahertz band, and the maximum e.i.r.p. over the frequency band of operation must not exceed 30 dBm. Client devices operating on a channel that spans the 5.725-5.850 GHz and 5.850-5.895 GHz bands must not exceed an e.i.r.p. of 30 dBm.

TEST PROCEDURE

KDB 789033 Method PM is used for output power. Duty correction factor has already been applied to the power meter and the average power value is measured.

KDB 789033 Method SA-2 is used for PSD. RBW set to 1MHz(500kHz for the band 5.725-5.85 GHz, the VBW $\geq 3 \times$ RBW, RMS detector and trace averaging).

Straddle Channel(UNII-2C&3)

KDB 789033 Method PM is used for output power of straddle channel.
(verification that both limit of UNII-2C and UNII-3 power are satisfied)

KDB 789033 Method SA-2 is used for PSD of straddle channel. RBW set to 1MHz, VBW $\geq 3 \times$ RBW, RMS detector and trace averaging. Peak marker value of the spectrum is used for PSD. Considering the PSD's RBW setting and test limit, the UNII-2C measurement method (RBW 1MHz) covers UNII-3 (RBW 500kHz).

Straddle Channel(UNII-3&4)

KDB 789033 Method PM is used for total power of straddle channel.
(verification that both limit of UNII-3 and UNII-4 power & e.i.r.p. are satisfied)

KDB 789033 Method SA-2 is used for PSD of straddle channel. RBW set to 1MHz, VBW $\geq 3 \times$ RBW, RMS detector and trace averaging. Peak marker value of the spectrum is used for PSD. Considering the PSD's RBW setting and test limit, the UNII-4 measurement method (RBW 1MHz) covers UNII-3 (RBW 500kHz).

DIRECTIONAL ANTENNA GAIN

For OUTPUT POWER and PSD: The TX chains are correlated and the antenna gains are unequal among the chains. The directional gain is:

Frequency Band [MHz]	ANT Gain [dBi]
UNII 1 5150 - 5250	-9.20
UNII 2A 5250 - 5350	-10.50
UNII 2C 5470 - 5725	-9.90
UNII 3 5725 - 5850	-10.00
UNII 4 5850 - 5925	-10.00

OUTPUT POWER AND PSD CALCULATION FORMULA

For OUTPUT POWER :

Average Power(dBm)
= Meas Power(dBm) + DCCF(dB)

Average Power(dBm)(e.i.r.p.) (in case of UNII-4: added directional gain)
= Meas Power(dBm) + DCCF(dB) + Directional Gain(dBi)

For PSD :

PSD (conducted)
= Meas PSD + DCCF(dB)

PSD(e.i.r.p.) (in case of UNII-4: added directional gain)
= Meas PSD + DCCF(dB) + Directional Gain(dBi)

10.2.1. 802.11a MODE

Output Power Results

Band	Channel	Center Freq. [MHz]	Average Power [dBm]	Direct. Gain [dBi]	Corr'd Power [dBm]	Limit [dBm]
			ANT1			
UNII-1	36	5180	15.95		15.95	23.98
	40	5200	16.18		16.18	
	48	5240	16.13		16.13	
UNII-2A	52	5260	16.04		16.04	23.98
	60	5300	16.20		16.20	
	64	5320	15.89		15.89	
UNII-2C	100	5500	16.33		16.33	23.98
	116	5580	15.78		15.78	
	140	5700	16.07		16.07	
UNII-2C&3	144 Straddle	5720	15.97		15.97	23.98 or 30.00
UNII-3	149	5745	16.30		16.30	30.00
	157	5785	16.25		16.25	
	165	5825	16.09		16.09	
UNII-3&4	169	5845	16.18		16.18	30.00
		5845	16.18	-10.00	6.18	30.00 _(e.i.r.p)
UNII-4	173	5865	16.23	-10.00	6.23	30.00 _(e.i.r.p)
	177	5885	15.97	-10.00	5.97	

PSD Results

Band	Channel	Center Freq. [MHz]	Meas PSD [dBm/MHz]	DCCF.	Direct. Gain [dBi]	Corr'd PSD [dBm]	Limit [dBm/MHz]
			ANT1				
UNII-1	36	5180	5.00	0.22		5.22	11.00
	40	5200	5.14	0.22		5.37	
	48	5240	5.31	0.22		5.53	
UNII-2A	52	5260	5.02	0.22		5.24	11.00
	60	5300	5.05	0.22		5.28	
	64	5320	5.02	0.22		5.24	
UNII-2C	100	5500	5.26	0.22		5.48	11.00
	116	5580	5.11	0.22		5.33	
	140	5700	5.19	0.22		5.41	
UNII-2C&3	144 Straddle	5720	5.11	0.22		5.33	11.00
UNII-3	149	5745	2.51 _{/500kHz}	0.22		2.73	30.00 _{/500kHz}
	157	5785	2.65 _{/500kHz}	0.22		2.88	
	165	5825	2.60 _{/500kHz}	0.22		2.82	
UNII-3&4	169	5845	5.21	0.22		5.44	14.00 _(e.i.r.p.)
		5845	5.21	0.22	-10.00	-4.56	
UNII-4	173	5865	5.16	0.22	-10.00	-4.62	14.00 _(e.i.r.p.)
	177	5885	4.92	0.22	-10.00	-4.86	

10.2.1. 802.11n HT20 MODE

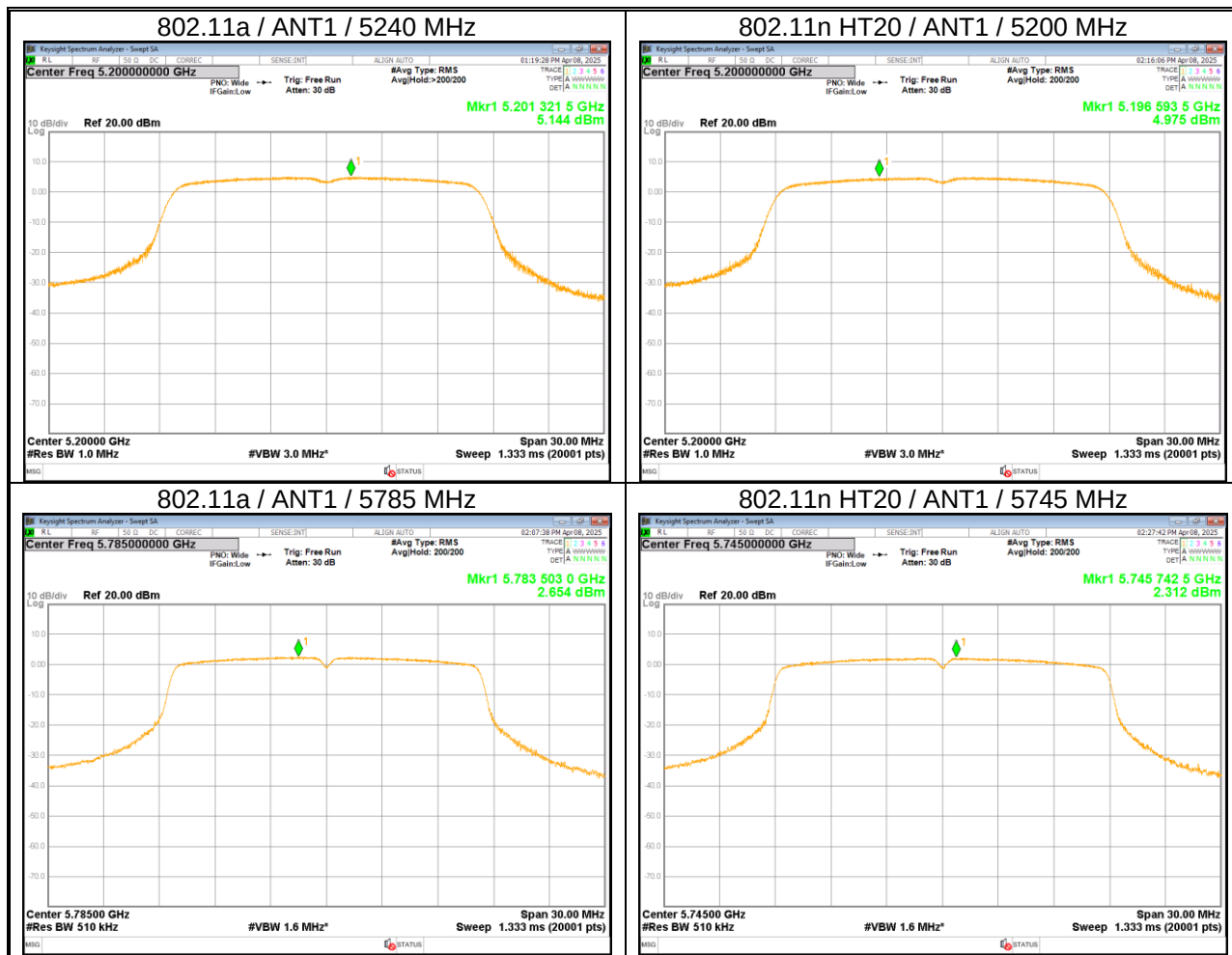
Output Power Results

Band	Channel	Center Freq. [MHz]	Average Power [dBm]	Direct. Gain [dBi]	Corr'd Power [dBm]	Limit [dBm]
			ANT1			
UNII-1	36	5180	15.89		15.89	23.98
	40	5200	16.22		16.22	
	48	5240	16.24		16.24	
UNII-2A	52	5260	16.06		16.06	23.98
	60	5300	16.11		16.11	
	64	5320	16.07		16.07	
UNII-2C	100	5500	16.28		16.28	23.98
	116	5580	16.00		16.00	
	140	5700	16.23		16.23	
UNII-2C&3	144 Straddle	5720	15.99		15.99	23.98 or 30.00
UNII-3	149	5745	16.32		16.32	30.00
	157	5785	16.34		16.34	
	165	5825	16.14		16.14	
UNII-3&4	169	5845	16.15		16.15	30.00
		5845	16.15	-10.00	6.15	30.00 _(e.i.r.p.)
UNII-4	173	5865	15.87	-10.00	5.87	30.00 _(e.i.r.p.)
	177	5885	15.70	-10.00	5.70	

PSD Results

Band	Channel	Center Freq. [MHz]	Meas PSD [dBm/MHz]	DCCF.	Direct. Gain [dBi]	Corr'd PSD [dBm]	Limit [dBm/MHz]
			ANT1				
UNII-1	36	5180	4.41	0.12		4.54	11.00
	40	5200	4.98	0.12		5.10	
	48	5240	4.65	0.12		4.77	
UNII-2A	52	5260	4.84	0.12		4.96	11.00
	60	5300	4.94	0.12		5.06	
	64	5320	4.51	0.12		4.63	
UNII-2C	100	5500	4.81	0.12		4.93	11.00
	116	5580	4.64	0.12		4.76	
	140	5700	4.95	0.12		5.07	
UNII-2C&3	144 Straddle	5720	4.62	0.12		4.74	11.00
UNII-3	149	5745	2.31/500kHz	0.12		2.43	30.00/500kHz
	157	5785	2.02/500kHz	0.12		2.14	
	165	5825	2.02/500kHz	0.12		2.14	
UNII-3&4	169	5845	4.46	0.12		4.58	14.00 _(e.i.r.p.)
		5845	4.46	0.12	-10.00	-5.42	
UNII-4	173	5865	4.44	0.12	-10.00	-5.44	14.00 _(e.i.r.p.)
	177	5885	4.33	0.12	-10.00	-5.55	

10.2.2. OUTPUT POWER AND PPSD PLOTS(WORST CASE)



11. TRANSMITTER ABOVE 1 GHz

LIMITS

FCC §15.205 and §15.209

Limits for radiated disturbance of an intentional radiator		
Frequency range (MHz)	Limits (µV/m)	Measurement Distance (m)
0.009 – 0.490	2400 / F (kHz)	300
0.490 – 1.705	24000 / 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.

FCC Part 15.205 (a) : Only spurious emissions are permitted in any of the frequency bands listed below :

MHz	MHz	MHz	MHz	GHz	GHz
0.009 ~ 0.110	8.41425 ~ 8.41475	108 ~ 121.94	1300 ~ 1427	4.5 ~ 5.15	14.47 ~ 14.5
0.495 ~ 0.505	12.29 ~ 12.293	123 ~ 138	1435 ~ 1626.5	5.35 ~ 5.46	15.35 ~ 16.2
2.1735 ~ 2.1905	12.51975 ~ 12.52025	149.9 ~ 150.05	1645.5 ~ 1646.5	7.25 ~ 7.75	17.7 ~ 21.4
4.125 ~ 4.128	12.57675 ~ 12.57725	156.52475 ~ 156.52525	1660 ~ 1710	8.025 ~ 8.5	22.01 ~ 23.12
4.17725 ~ 4.17775	13.36 ~ 13.41	156.7 ~ 156.9	1718.8 ~ 1722.2	9.0 ~ 9.2	23.6 ~ 24.0
4.20725 ~ 4.20775	16.42 ~ 16.423	162.0125 ~ 167.17	2200 ~ 2300	9.3 ~ 9.5	31.2 ~ 31.8
6.215 ~ 6.218	16.69475 ~ 16.69525	167.72 ~ 173.2	2310 ~ 2390	10.6 ~ 12.7	36.43 ~ 36.5
6.26775 ~ 6.26825	16.80425 ~ 16.80475	240 ~ 285	2483.5 ~ 2500	13.25 ~ 13.4	Above 38.6
6.31175 ~ 6.31225	25.5 ~ 25.67	322 ~ 335.4	2655 ~ 2900		
8.291 ~ 8.294	37.5 ~ 38.25	399.90 ~ 410	3260 ~ 3267		
8.362 ~ 8.366	73 ~ 74.6	608 ~ 614	3332 ~ 3339		
8.37625 ~ 8.38675	74.8 ~ 75.2	960 ~ 1240	3345.8 ~ 3358		
			3600 ~ 4400		

▪ FCC Part 15.205(b) : The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

FCC §15.407 (b)

(b) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

- (1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (4) For transmitters operating solely in the 5.725–5.850 GHz band:
 - (i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/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 dBm/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 dBm/MHz at the band edge.
- (5) For transmitters operating solely in the 5.850-5.895 GHz band or operating on a channel that spans across 5.725-5.895 GHz:
 - (ii) For a client device, all emissions at or above 5.895 GHz shall not exceed an e.i.r.p. of -5 dBm/MHz and shall decrease linearly to an e.i.r.p. of -27 dBm/MHz at or above 5.925 GHz.
 - (iii) For a client device or indoor access point or subordinate device, all emissions below 5.725 GHz shall not exceed an e.i.r.p. of -27 dBm/MHz at 5.65 GHz increasing linearly to 10 dBm/MHz at 5.7 GHz, and from 5.7 GHz increasing linearly to a level of 15.6 dBm/MHz at 5.72 GHz, and from 5.72 GHz increasing linearly to a level of 27 dBm/MHz at 5.725 GHz.
- (6) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.
- (7) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.
- (8) The provisions of §15.205 apply to intentional radiators operating under this section.
- (9) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits.

Note

- Limit translation to field strength level (FCC §15.407)

$$E[\text{dBuV/m}] = \text{EIRP}[\text{dBm}] + 95.2 = -27\text{dBm} + 95.2 = 68.2\text{dBuV/m}$$

$$E[\text{dBuV/m}] = \text{EIRP}[\text{dBm}] + 95.2 = -17\text{dBm} + 95.2 = 78.2\text{dBuV/m}$$

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1GHz and 150 cm for above 1GHz. EUT is set 3 meters away from the receiving antenna and scan from 1m to 4m to find out the highest emission.

The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the 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.

Reference to KDB 789033 D02 v02r01 UNII part G) 6) c) Method AD:

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and add duty cycle factor to the reading offset for average measurements. In UNII-4, unwanted emissions outside of restricted bands are measured with an RMS detector.

Pre-scans to detect harmonic and spurious emissions, the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 kHz for peak measurements.

The spectrum from 1GHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

(From 30MHz to 1GHz, test was performed with the EUT set to transmit at the channel with highest output power)

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

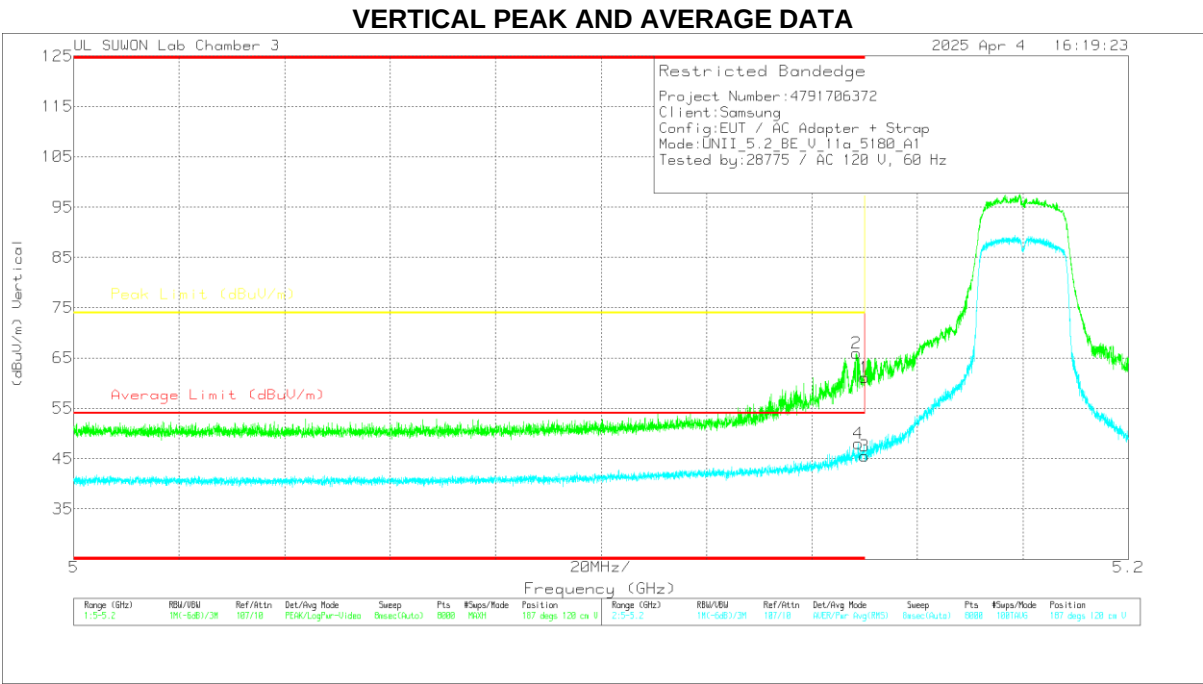
Note : Emission was pre-scanned from 9kHz to 30MHz; No emissions were detected which was at least 20dB below the specification limit (consider distance correction factor).
Per FCC part 15.31(o), test results were not reported.

Although these tests were performed other than open field test site, adequate comparison measurements were confirmed against 30 m open area test site.

Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the one of tests made in an open field based on KDB 414788.

11.1. TX ABOVE 1GHz 1TX MODE IN THE 5.2GHz BAND

BANDEDGE (WORST CASE: 802.11a / 5180 MHz)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_Factor (dBm)	10dB_Path Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Pk Margin (dB)	Altitude (Degs)	Height (cm)	Polarity
1	* 5.14999	47.19	Pk	34.4	-20.5	0	61.09	-	-	74	-12.91	187	120	V
2	* 5.14842	52.11	Pk	34.4	-20.5	0	66.01	-	-	74	-7.99	187	120	V
3	* 5.14999	31.36	RMS	34.4	-20.5	-22	45.48	54	-8.52	-	-	187	120	V
4	* 5.14872	33.89	RMS	34.4	-20.5	-22	48.01	54	-5.99	-	-	187	120	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

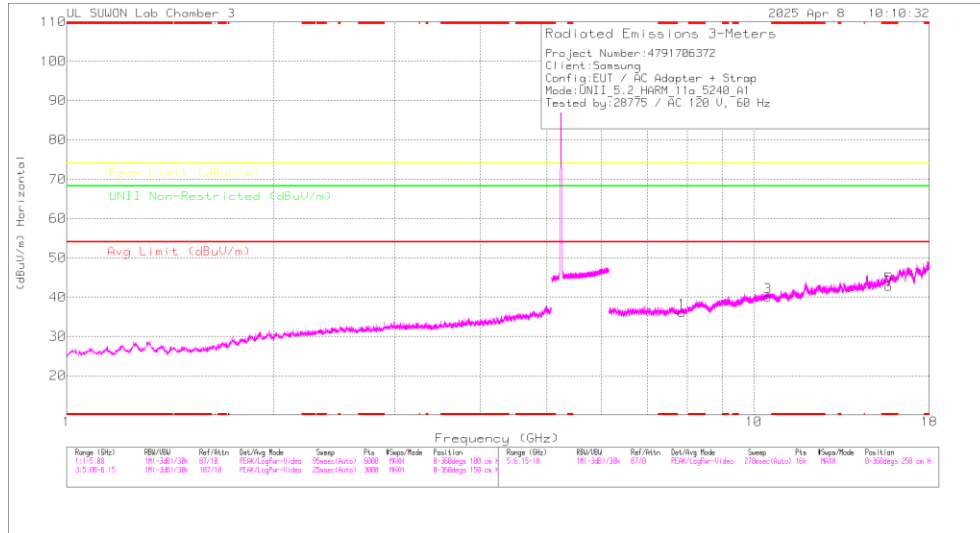
Bandedge Test Data

Mode	Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/m]	Loss [dB]	DC Corr [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degr]	Height [cm]	Polarity
802.11a	5180	ANT1	* 5.14999	45.80	Pk	34.40	-20.50	0.00	59.70	-	-	74.00	-14.30	144	103	H
			* 5.14857	50.48	Pk	34.40	-20.50	0.00	64.38	-	-	74.00	-9.62	144	103	H
			* 5.14999	29.43	RMS	34.40	-20.50	0.22	43.55	54.00	-10.45	-	-	144	103	H
			* 5.14954	31.12	RMS	34.40	-20.50	0.22	45.24	54.00	-8.76	-	-	144	103	H
			* 5.14999	47.19	Pk	34.40	-20.50	0.00	61.09	-	-	74.00	-12.91	187	120	V
			* 5.14842	52.11	Pk	34.40	-20.50	0.00	66.01	-	-	74.00	-7.99	187	120	V
			* 5.14999	31.36	RMS	34.40	-20.50	0.22	45.48	54.00	-8.52	-	-	187	120	V
			* 5.14872	33.89	RMS	34.40	-20.50	0.22	48.01	54.00	-5.99	-	-	187	120	V
			* 5.14999	43.97	Pk	34.40	-20.50	0.00	57.87	-	-	74.00	-16.13	157	397	H
			* 5.14849	44.08	Pk	34.40	-20.50	0.00	57.98	-	-	74.00	-16.02	157	397	H
802.11n (HT20)	5180	ANT1	* 5.14999	28.04	RMS	34.40	-20.50	0.12	42.06	54.00	-11.94	-	-	157	397	H
			* 5.14959	28.97	RMS	34.40	-20.50	0.12	42.99	54.00	-11.01	-	-	157	397	H
			* 5.14999	45.01	Pk	34.40	-20.50	0.00	58.91	-	-	74.00	-15.09	200	113	V
			* 5.14752	48.62	Pk	34.40	-20.50	0.00	62.52	-	-	74.00	-11.48	200	113	V
			* 5.14999	30.98	RMS	34.40	-20.50	0.12	45.00	54.00	-9.00	-	-	200	113	V
			* 5.14997	32.11	RMS	34.40	-20.50	0.12	46.13	54.00	-7.87	-	-	200	113	V

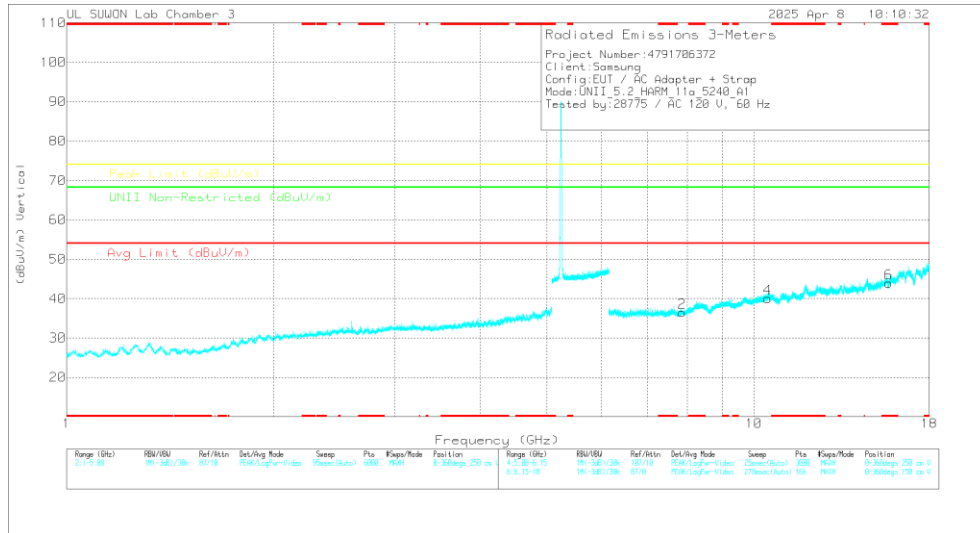
Note1. Pk - Peak detector, RMS - RMS detector

Note2. * - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

HARMONICS AND SPURIOUS EMISSIONS(WORST CASE: 802.11a / 5240 MHz)
5240 MHz HORIZONTAL



5240 MHz VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

5240 MHz DATA

Radiated Emissions

Frequency (GHz)	Meas Reading (dBuV)	Det	Antenna Factor (dBm)	SCNt_Hst_Path Loss(dB)	DC Cor (dB)	Corrected Reading (dBuV)	Avg Limit (dBuV)	Margn (dB)	Peak Limit (dBuV)	Margn (dB)	UNII Non-Restricted (dBuV)	Margn (dB)	Antenna (Dip)	Height (cm)	Polarity
7.85869	34.81	PK-U	35.9	-24	0	46.71	-	-	-	-	68.2	-21.49	0	100	H
7.85906	34.9	PK-U	35.9	-24	0	46.8	-	-	-	-	68.2	-21.4	0	100	V
10.48445	33.46	PK-U	37.6	-20.9	0	50.35	-	-	-	-	68.2	-17.84	0	100	H
10.48014	34.25	PK-U	37.6	-20.9	0	50.95	-	-	-	-	68.2	-17.25	0	100	V
* 15.72271	34.1	PK-U	40.4	-20.5	0	54	-	-	74	-20	-	-	0	100	H
* 15.72295	23.63	ADR	40.4	-20.5	0.22	43.15	54	-10.25	-	-	-	-	0	100	H
* 15.72295	34.22	PK-U	40.4	-20.5	0	54.12	-	-	74	-19.88	-	-	0	100	V
* 15.72353	23.52	ADR	40.4	-20.5	0.22	43.64	54	-10.35	-	-	-	-	0	100	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

HARMONICS AND SPURIOUS EMISSIONS TEST DATA

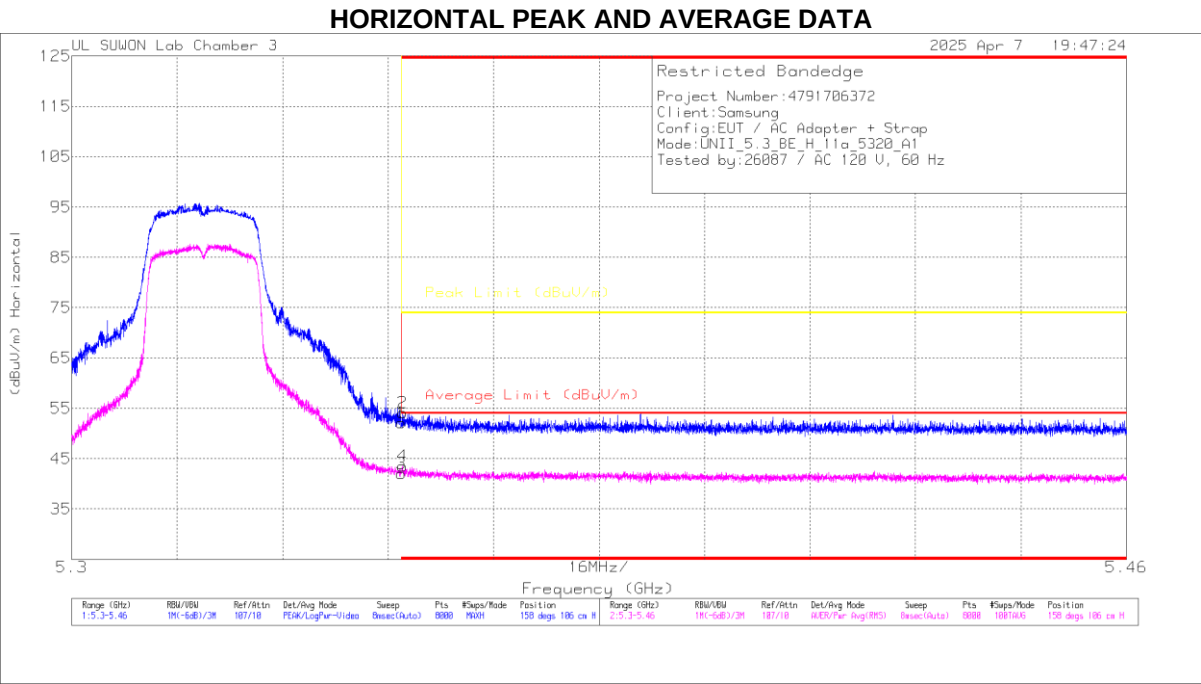
Mode	Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/m]	Loss [dB]	DC Corr [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Non-Restricted [dBuV/m]	Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
802.11a	5180	ANT1	7.769	35.21	PK-U	35.90	-24.50	0.00	46.61	-	-	-	-	68.20	-21.59	0	100	H
			7.769	35.76	PK-U	35.90	-24.50	0.00	47.16	-	-	-	-	68.20	-21.04	0	100	V
			10.359	33.55	PK-U	37.50	-20.80	0.00	50.25	-	-	-	-	68.20	-17.95	0	100	H
			10.361	33.89	PK-U	37.50	-20.80	0.00	50.59	-	-	-	-	68.20	-17.61	0	100	V
			* 15.54072	34.80	PK-U	40.10	-21.00	0.00	53.90	-	-	74.00	-20.10	-	-	0	100	H
			* 15.54029	23.39	ADR	40.10	-21.00	0.22	42.71	54.00	-11.29	-	-	-	-	0	100	H
			* 15.5394	35.87	PK-U	40.10	-20.90	0.00	55.07	-	-	74.00	-18.93	-	-	0	100	V
			* 15.5393	23.18	ADR	40.10	-20.90	0.22	42.60	54.00	-11.40	-	-	-	-	0	100	V
	5200	ANT1	7.798	34.98	PK-U	35.90	-24.30	0.00	46.58	-	-	-	-	68.20	-21.62	0	100	H
			7.797	35.08	PK-U	35.90	-24.30	0.00	46.68	-	-	-	-	68.20	-21.52	0	100	V
			10.397	33.52	PK-U	37.50	-20.70	0.00	50.32	-	-	-	-	68.20	-17.88	0	100	H
			10.396	33.76	PK-U	37.50	-20.80	0.00	50.46	-	-	-	-	68.20	-17.74	0	100	V
			* 15.60413	35.51	PK-U	40.20	-20.90	0.00	54.81	-	-	74.00	-19.19	-	-	0	100	H
			* 15.59599	23.91	ADR	40.20	-20.90	0.22	43.43	54.00	-10.57	-	-	-	-	0	100	H
			* 15.60318	35.53	PK-U	40.20	-20.80	0.00	54.93	-	-	74.00	-19.07	-	-	0	100	V
			* 15.60318	23.75	ADR	40.20	-20.80	0.22	43.37	54.00	-10.63	-	-	-	-	0	100	V
	5240	ANT1	7.859	34.81	PK-U	35.90	-24.00	0.00	46.71	-	-	-	-	68.20	-21.49	0	100	H
			7.859	34.90	PK-U	35.90	-24.00	0.00	46.80	-	-	-	-	68.20	-21.40	0	100	V
			10.484	33.46	PK-U	37.60	-20.80	0.00	50.26	-	-	-	-	68.20	-17.94	0	100	H
			10.480	34.25	PK-U	37.60	-20.90	0.00	50.95	-	-	-	-	68.20	-17.25	0	100	V
			* 15.72271	34.10	PK-U	40.40	-20.50	0.00	54.00	-	-	74.00	-20.00	-	-	0	100	H
			* 15.72295	23.63	ADR	40.40	-20.50	0.22	43.75	54.00	-10.25	-	-	-	-	0	100	H
			* 15.72296	34.22	PK-U	40.40	-20.50	0.00	54.12	-	-	74.00	-19.88	-	-	0	100	V
			* 15.72353	23.52	ADR	40.40	-20.50	0.22	43.64	54.00	-10.36	-	-	-	-	0	100	V

Note1. PK-U - U-NII: Maximum Peak

Note2. * - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

11.2. TX ABOVE 1GHz 1TX MODE IN THE 5.3GHz BAND

BANDEDGE (WORST CASE: 802.11a / 5320 MHz Upper)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_Factor (dBm)	10dB_Path Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Altitude (m)	Height (cm)	Polarity
1	* 5.35001	37.50	PK	34.7	-20.1	0	52.18	-	-	74	-21.82	158	106	H
2	* 5.35015	39.95	PK	34.7	-20.1	0	54.15	-	-	74	-19.85	158	106	H
3	* 5.35001	27.25	RMS	34.7	-20.1	22	42.07	54	-11.93	-	-	158	106	H
4	* 5.35023	28.68	RMS	34.7	-20.1	22	43.5	54	-10.5	-	-	158	106	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK - Peak detector

RMS - RMS detection

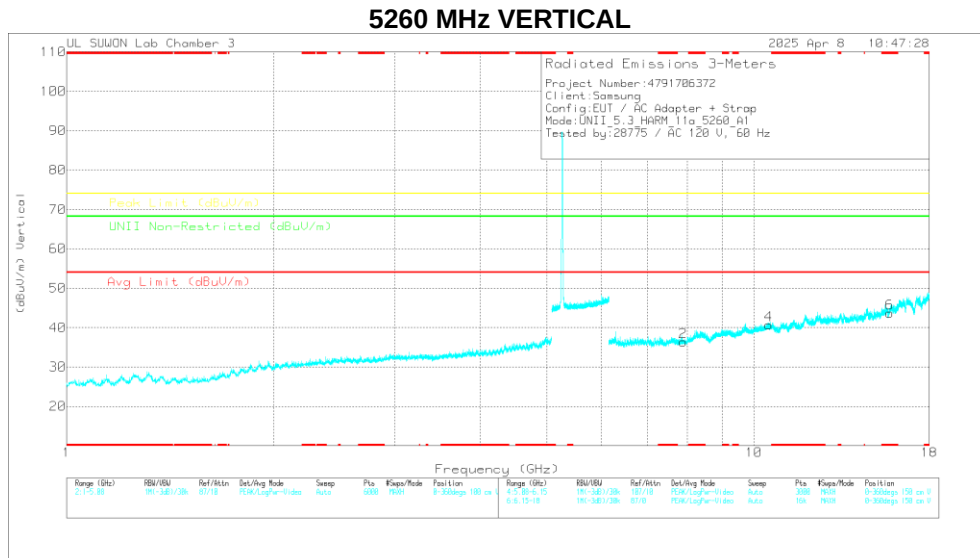
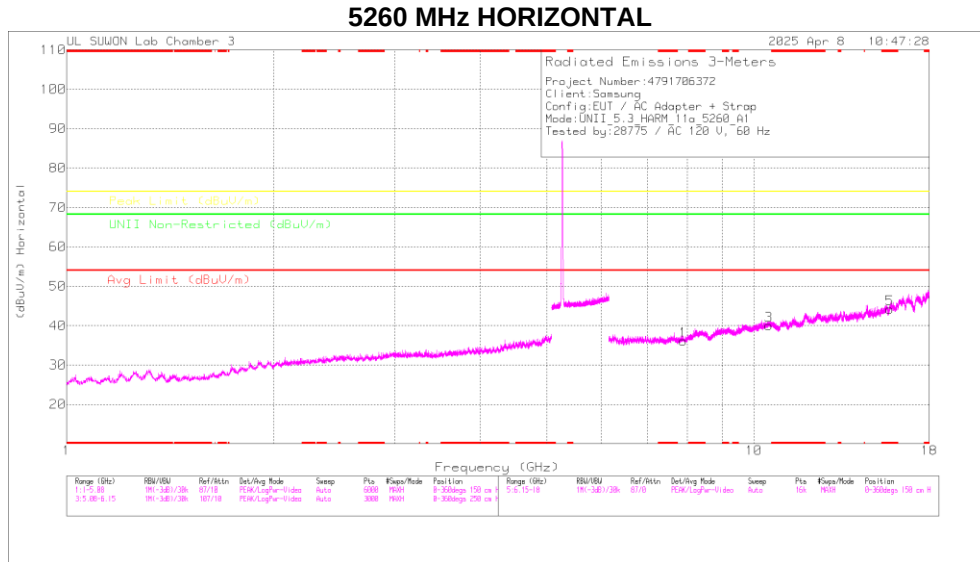
Bandedge Test Data

Mode	Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/m]	Loss [dB]	DC Corr [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
802.11a	5320	ANT1	* 5.35001	37.58	Pk	34.70	-20.10	0.00	52.18	-	-	74.00	-21.82	158	106	H
			* 5.35015	39.55	Pk	34.70	-20.10	0.00	54.15	-	-	74.00	-19.85	158	106	H
			* 5.35001	27.25	RMS	34.70	-20.10	0.22	42.07	54.00	-11.93	-	-	158	106	H
			* 5.35023	28.68	RMS	34.70	-20.10	0.22	43.50	54.00	-10.50	-	-	158	106	H
			* 5.35001	38.19	Pk	34.70	-20.10	0.00	52.79	-	-	74.00	-21.21	219	147	V
			* 5.35011	39.26	Pk	34.70	-20.10	0.00	53.86	-	-	74.00	-20.14	219	147	V
			* 5.35001	27.47	RMS	34.70	-20.10	0.22	42.29	54.00	-11.71	-	-	219	147	V
			* 5.35185	28.02	RMS	34.70	-20.20	0.22	42.74	54.00	-11.26	-	-	219	147	V
802.11n (HT20)	5320	ANT1	* 5.35001	38.77	Pk	34.70	-20.10	0.00	53.37	-	-	74.00	-20.63	158	108	H
			* 5.35055	40.81	Pk	34.70	-20.20	0.00	55.31	-	-	74.00	-18.69	158	108	H
			* 5.35001	27.64	RMS	34.70	-20.10	0.12	42.36	54.00	-11.64	-	-	158	108	H
			* 5.35297	28.12	RMS	34.70	-20.20	0.12	42.74	54.00	-11.26	-	-	158	108	H
			* 5.35001	39.40	Pk	34.70	-20.10	0.00	54.00	-	-	74.00	-20.00	219	300	V
			* 5.35111	41.71	Pk	34.70	-20.20	0.00	56.21	-	-	74.00	-17.79	219	300	V
			* 5.35001	27.72	RMS	34.70	-20.10	0.12	42.44	54.00	-11.56	-	-	219	300	V
			* 5.35109	28.69	RMS	34.70	-20.20	0.12	43.31	54.00	-10.69	-	-	219	300	V

Note1. Pk - Peak detector, RMS - RMS detector

Note2. * - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

HARMONICS AND SPURIOUS EMISSIONS(WORST CASE: 802.11a / 5260 MHz)



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

5260 MHz DATA

Radiated Emissions

Frequency (GHz)	Meas Reading (dBuV)	Det	Antenna Factor (dBm)	GHz_HP_Path Loss(dB)	DC Cor (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Deg)	Height (m)	Polarity
7.889	34.79	PK-U	35.9	-23.9	0	46.79	-	-	-	-	68.2	-21.41	0	100	H
7.89304	35.16	PK-U	35.9	-23.9	0	47.16	-	-	-	-	68.2	-21.04	0	100	V
10.51804	33.68	PK-U	37.6	-20.7	0	50.98	-	-	-	-	68.2	-17.62	0	100	H
10.5192	33.18	PK-U	37.6	-20.8	0	49.98	-	-	-	-	68.2	-18.22	0	100	V
* 15.78182	34.04	PK-U	40.6	-20.3	0	54.34	-	-	74	-19.66	-	-	0	100	H
* 15.78142	22.64	ADR	40.6	-20.3	0.22	43.16	54	-10.84	-	-	-	-	0	100	H
* 15.77878	33.84	PK-U	40.6	-20.4	0	54.04	-	-	74	-19.96	-	-	0	100	V
* 15.78254	23.12	ADR	40.6	-20.3	0.22	43.64	54	-10.36	-	-	-	-	0	100	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

HARMONICS AND SPURIOUS EMISSIONS TEST DATA

Mode	Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/m]	Loss [dB]	DC Corr [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Non-Restricted [dBuV/m]	Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
802.11a	5260	ANT1	7.889	34.79	PK-U	35.90	-23.90	0.00	46.79	-	-	-	-	68.20	-21.41	0	100	H
			7.893	35.16	PK-U	35.90	-23.90	0.00	47.16	-	-	-	-	68.20	-21.04	0	100	V
			10.516	33.68	PK-U	37.60	-20.70	0.00	50.58	-	-	-	-	68.20	-17.62	0	100	H
			10.519	33.18	PK-U	37.60	-20.80	0.00	49.98	-	-	-	-	68.20	-18.22	0	100	V
			* 15.78182	34.04	PK-U	40.60	-20.30	0.00	54.34	-	-	74.00	-19.66	-	-	0	100	H
			* 15.78142	22.64	ADR	40.60	-20.30	0.22	43.16	54.00	-10.84	-	-	-	-	0	100	H
			* 15.77878	33.84	PK-U	40.60	-20.40	0.00	54.04	-	-	74.00	-19.96	-	-	0	100	V
			* 15.78254	23.12	ADR	40.60	-20.30	0.22	43.64	54.00	-10.36	-	-	-	-	0	100	V
	5300	ANT1	7.955	35.18	PK-U	35.90	-24.20	0.00	46.88	-	-	-	-	68.20	-21.32	0	100	H
			7.946	35.00	PK-U	35.90	-24.20	0.00	46.70	-	-	-	-	68.20	-21.50	0	100	V
			* 10.60906	33.88	PK-U	37.70	-20.80	0.00	50.78	-	-	74.00	-23.22	-	-	0	100	H
			* 10.60245	34.00	PK-U	37.70	-20.80	0.00	50.90	-	-	74.00	-23.10	-	-	0	100	V
			* 15.90227	33.43	PK-U	40.80	-19.80	0.00	54.43	-	-	74.00	-19.57	-	-	0	100	H
			* 15.90395	21.88	ADR	40.80	-19.90	0.22	43.00	54.00	-11.00	-	-	-	-	0	100	H
			* 15.90084	33.62	PK-U	40.80	-19.80	0.00	54.62	-	-	74.00	-19.38	-	-	0	100	V
			* 15.9024	21.81	ADR	40.80	-19.90	0.22	42.93	54.00	-11.07	-	-	-	-	0	100	V
	5320	ANT1	7.983	34.62	PK-U	35.90	-24.20	0.00	46.32	-	-	-	-	68.20	-21.88	0	100	H
			7.981	35.17	PK-U	35.90	-24.20	0.00	46.87	-	-	-	-	68.20	-21.33	0	100	V
			* 10.6397	33.49	PK-U	37.70	-20.70	0.00	50.49	-	-	74.00	-23.51	-	-	0	100	H
			* 10.64377	33.55	PK-U	37.70	-20.70	0.00	50.55	-	-	74.00	-23.45	-	-	0	100	V
			* 15.96009	33.54	PK-U	40.90	-19.90	0.00	54.54	-	-	74.00	-19.46	-	-	0	100	H
			* 15.96264	22.07	ADR	40.90	-20.00	0.22	43.19	54.00	-10.81	-	-	-	-	0	100	H
			* 15.96006	34.27	PK-U	40.90	-19.90	0.00	55.27	-	-	74.00	-18.73	-	-	0	100	V
			* 15.96117	22.08	ADR	40.90	-20.00	0.22	43.20	54.00	-10.80	-	-	-	-	0	100	V

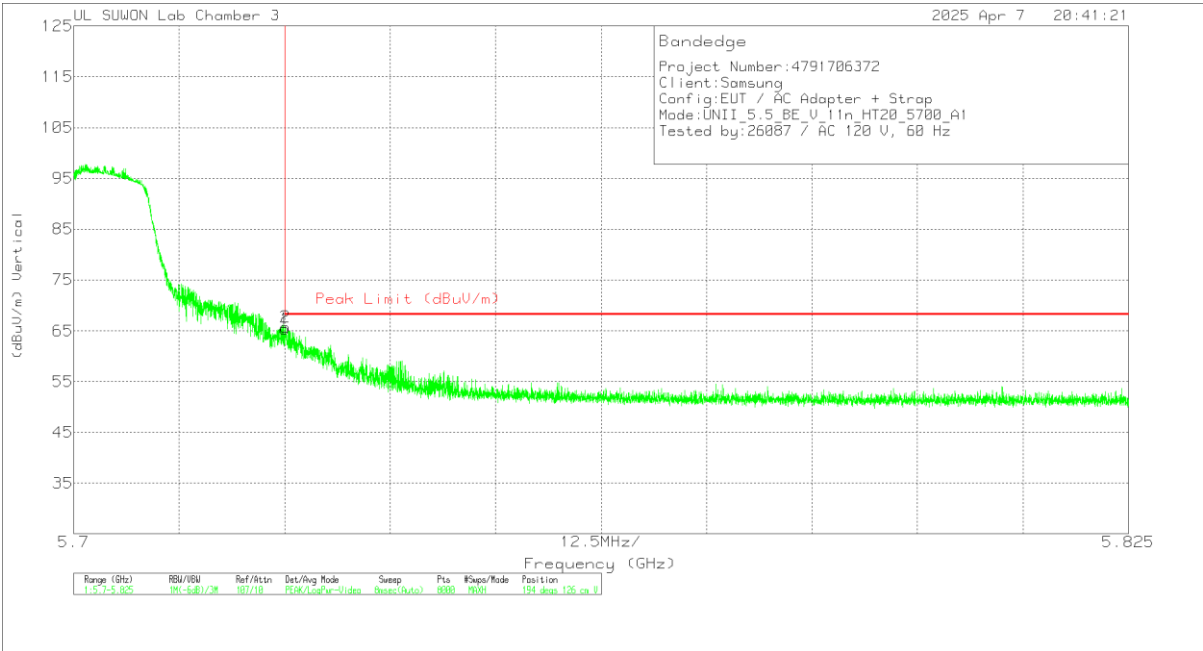
Note1. PK-U - U-NII: Maximum Peak / ADR - U-NII AD primary method, RMS average

Note2. * - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

11.3. TX ABOVE 1GHz 1TX MODE IN THE 5.5 GHz BAND

BANDEDGE (WORST CASE: 802.11n HT20 / 5700 MHz)

VERTICAL PEAK DATA



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_Factor (dB/m)	10dB_Path Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.725	49.86	Pk	35	-19.5	0	65.36	68.2	-2.84	194	126	V
2	5.72508	50.27	Pk	35	-19.5	0	65.77	68.2	-2.43	194	126	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

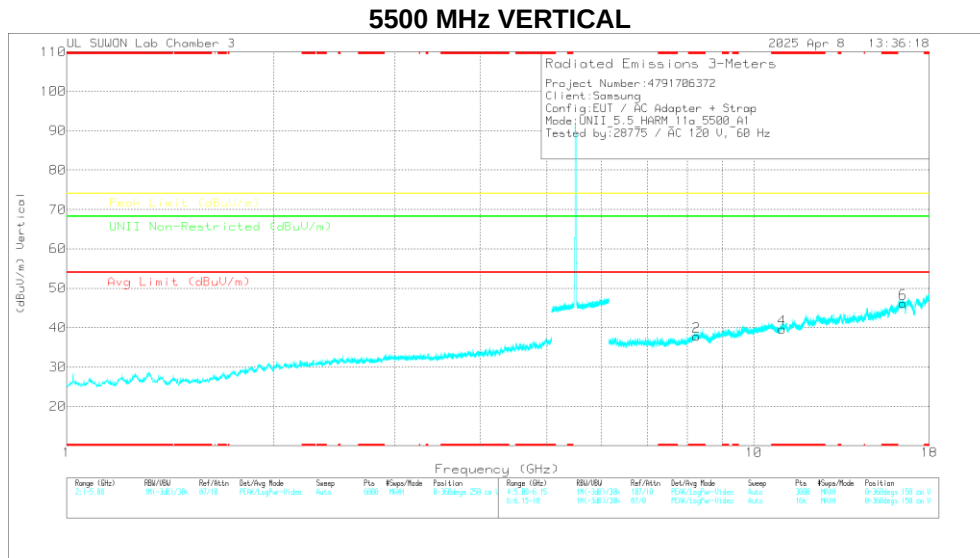
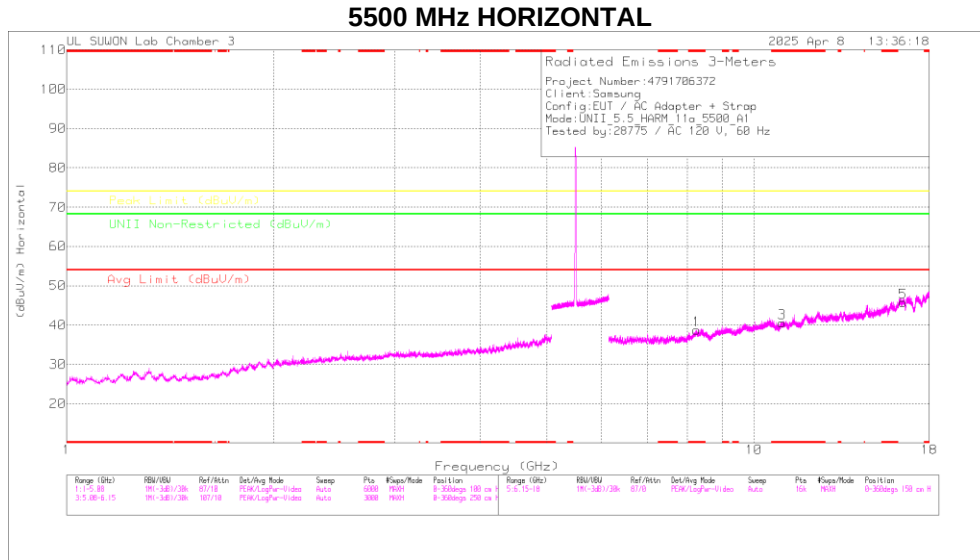
Bandedge Test Data

Mode	Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/m]	Loss [dB]	DC Corr [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
802.11a	5500	ANT1	* 5.45998	38.69	Pk	34.90	-20.00	0.00	53.59	-	-	74.00	-20.41	134	100	H
			* 5.45195	39.23	Pk	34.90	-20.00	0.00	54.13	-	-	74.00	-19.87	134	100	H
			5.46998	42.60	Pk	34.90	-20.00	0.00	57.50	-	-	68.20	-10.70	134	100	H
			5.46989	43.50	Pk	34.90	-20.00	0.00	58.40	-	-	68.20	-9.80	134	100	H
			* 5.45998	27.34	RMS	34.90	-20.00	0.22	42.46	54.00	-11.54	-	-	134	100	H
			* 5.4576	28.31	RMS	34.90	-20.10	0.22	43.33	54.00	-10.67	-	-	134	100	H
			5.46998	28.68	RMS	34.90	-20.00	0.22	43.80	-	-	-	-	134	100	H
			5.46897	29.46	RMS	34.90	-20.00	0.22	44.58	-	-	-	-	134	100	H
			* 5.45998	39.75	Pk	34.90	-20.00	0.00	54.65	-	-	74.00	-19.35	176	127	V
			* 5.45926	41.67	Pk	34.90	-20.00	0.00	56.57	-	-	74.00	-17.43	176	127	V
			5.46998	46.93	Pk	34.90	-20.00	0.00	61.83	-	-	68.20	-6.37	176	127	V
			5.46978	49.08	Pk	34.90	-20.00	0.00	63.98	-	-	68.20	-4.22	176	127	V
			* 5.45998	29.08	RMS	34.90	-20.00	0.22	44.20	54.00	-9.80	-	-	176	127	V
			* 5.45856	30.09	RMS	34.90	-20.00	0.22	45.21	54.00	-8.79	-	-	176	127	V
			5.46998	32.49	RMS	34.90	-20.00	0.22	47.61	-	-	-	-	176	127	V
			5.46893	33.08	RMS	34.90	-20.00	0.22	48.20	-	-	-	-	176	127	V
	5700	ANT1	5.72500	44.38	Pk	35.00	-19.50	0.00	59.88	-	-	68.20	-8.32	143	100	H
			5.72564	46.25	Pk	35.00	-19.50	0.00	61.75	-	-	68.20	-6.45	143	100	H
			5.72500	47.42	Pk	35.00	-19.50	0.00	62.92	-	-	68.20	-5.28	194	100	V
			5.72557	49.26	Pk	35.00	-19.50	0.00	64.76	-	-	68.20	-3.44	194	100	V
802.11n (HT20)	5500	ANT1	* 5.45998	37.89	Pk	34.90	-20.00	0.00	52.79	-	-	74.00	-21.21	149	106	H
			* 5.45633	39.37	Pk	34.90	-20.10	0.00	54.17	-	-	74.00	-19.83	149	106	H
			5.46998	40.05	Pk	34.90	-20.00	0.00	54.95	-	-	68.20	-13.25	149	106	H
			5.46956	43.61	Pk	34.90	-20.00	0.00	58.51	-	-	68.20	-9.69	149	106	H
			* 5.45998	26.87	RMS	34.90	-20.00	0.12	41.89	54.00	-12.11	-	-	149	106	H
			* 5.45486	27.94	RMS	34.90	-20.10	0.12	42.86	54.00	-11.14	-	-	149	106	H
			5.46998	28.83	RMS	34.90	-20.00	0.12	43.85	-	-	-	-	149	106	H
			5.46991	29.41	RMS	34.90	-20.00	0.12	44.43	-	-	-	-	149	106	H
			* 5.45998	39.92	Pk	34.90	-20.00	0.00	54.82	-	-	74.00	-19.18	175	120	V
			* 5.45775	42.55	Pk	34.90	-20.10	0.00	57.35	-	-	74.00	-16.65	175	120	V
			5.46998	44.13	Pk	34.90	-20.00	0.00	59.03	-	-	68.20	-9.17	175	120	V
			5.46650	46.48	Pk	34.90	-20.10	0.00	61.28	-	-	68.20	-6.92	175	120	V
			* 5.45998	28.53	RMS	34.90	-20.00	0.12	43.55	54.00	-10.45	-	-	175	120	V
			* 5.45994	29.39	RMS	34.90	-20.00	0.12	44.41	54.00	-9.59	-	-	175	120	V
			5.46998	32.26	RMS	34.90	-20.00	0.12	47.28	-	-	-	-	175	120	V
			5.46996	32.39	RMS	34.90	-20.00	0.12	47.41	-	-	-	-	175	120	V
	5700	ANT1	5.72500	47.33	Pk	35.00	-19.50	0.00	62.83	-	-	68.20	-5.37	142	100	H
			5.72519	48.53	Pk	35.00	-19.50	0.00	64.03	-	-	68.20	-4.17	142	100	H
			5.72500	49.86	Pk	35.00	-19.50	0.00	65.36	-	-	68.20	-2.84	194	126	V
			5.72508	50.27	Pk	35.00	-19.50	0.00	65.77	-	-	68.20	-2.43	194	126	V

Note1. Pk - Peak detector, RMS - RMS detector

Note2. * - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

HARMONICS AND SPURIOUS EMISSIONS(WORST CASE: 802.11a / 5500 MHz)



Note. Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

5500 MHz DATA

Radiated Emissions

Frequency (GHz)	Meas. Reading (dBuV)	Det	Antenna Factor (dBm)	GHz_HF_Path Loss(dB)	DC Cor (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Actual (dBm)	Height (cm)	Polarity
* 8.25037	36.15	PK-U	36	-23.8	0	48.95	-	-	74	-25.05	-	-	0	100	H
* 8.25037	35.07	PK-U	36	-23.8	0	48.27	-	-	74	-25.73	-	-	0	100	V
* 11.00292	33.31	PK-U	36	-21	0	50.31	-	-	74	-23.69	-	-	0	100	H
* 11.00111	33.59	PK-U	36	-20.9	0	50.69	-	-	74	-23.31	-	-	0	100	V
16.50217	34.38	PK-U	41.6	-18.8	0	57.18	-	-	-	-	68.2	-11.02	0	100	H
16.50211	34.28	PK-U	41.6	-18.8	0	57.08	-	-	-	-	68.2	-11.12	0	100	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

HARMONICS AND SPURIOUS EMISSIONS TEST DATA

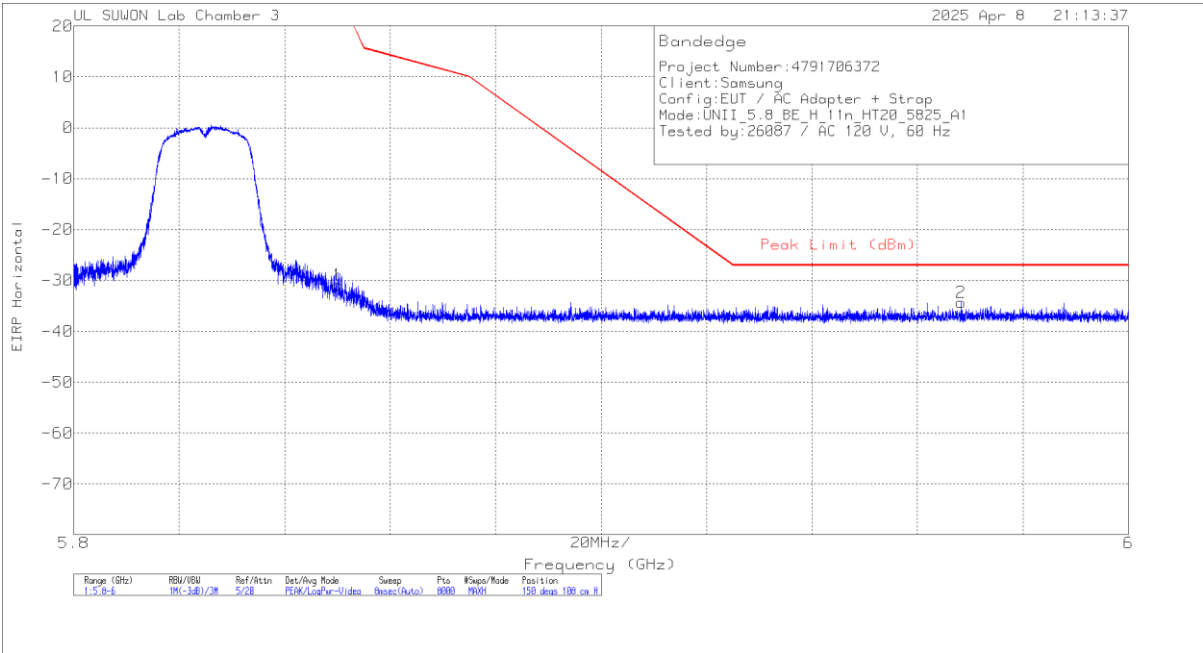
Mode	Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/m]	Loss [dB]	DC Corr [dB]	Result dBuV/m	AV Limit dBuV/m	AV Margin [dB]	PK Limit dBuV/m	PK Margin [dB]	Non-Restricted [dBuV/m]	Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
802.11a	5500	ANT1	* 8.25037	36.15	PK-U	36.00	-23.80	0.00	48.35	-	-	74.00	-25.65	-	-	0	100	H
			* 8.25037	36.07	PK-U	36.00	-23.80	0.00	48.27	-	-	74.00	-25.73	-	-	0	100	V
			* 11.00292	33.31	PK-U	38.00	-21.00	0.00	50.31	-	-	74.00	-23.69	-	-	0	100	H
			* 11.00111	33.59	PK-U	38.00	-20.90	0.00	50.69	-	-	74.00	-23.31	-	-	0	100	V
			16.502	34.38	PK-U	41.60	-18.80	0.00	57.18	-	-	-	-	68.20	-11.02	0	100	H
			16.502	34.28	PK-U	41.60	-18.80	0.00	57.08	-	-	-	-	68.20	-11.12	0	100	V
	5580	ANT1	* 8.37076	37.61	PK-U	36.00	-23.80	0.00	50.01	-	-	74.00	-23.99	-	-	0	100	H
			* 8.37097	35.99	PK-U	36.00	-23.80	0.00	48.39	-	-	74.00	-25.61	-	-	0	100	V
			* 11.16492	34.23	PK-U	38.10	-21.20	0.00	51.13	-	-	74.00	-22.87	-	-	0	100	H
			* 11.15707	33.91	PK-U	38.10	-21.20	0.00	50.81	-	-	74.00	-23.19	-	-	0	100	V
			16.739	32.79	PK-U	41.80	-18.20	0.00	56.39	-	-	-	-	68.20	-11.81	0	100	H
			16.737	32.90	PK-U	41.80	-18.30	0.00	56.40	-	-	-	-	68.20	-11.80	0	100	V
	5700	ANT1	8.550	35.50	PK-U	36.00	-22.80	0.00	48.70	-	-	-	-	68.20	-19.50	0	100	H
			8.550	34.58	PK-U	36.00	-22.80	0.00	47.78	-	-	-	-	68.20	-20.42	0	100	V
			* 11.39919	33.10	PK-U	38.10	-21.00	0.00	50.20	-	-	74.00	-23.80	-	-	0	100	H
			* 11.40047	33.00	PK-U	38.10	-21.00	0.00	50.10	-	-	74.00	-23.90	-	-	0	100	V
			17.104	31.53	PK-U	41.40	-17.60	0.00	55.33	-	-	-	-	68.20	-12.87	0	100	H
			17.097	31.70	PK-U	41.40	-17.50	0.00	55.60	-	-	-	-	68.20	-12.60	0	100	V
	5720	ANT1	8.579	34.44	PK-U	36.00	-22.90	0.00	47.54	-	-	-	-	68.20	-20.66	0	100	H
			8.576	33.94	PK-U	36.00	-22.80	0.00	47.14	-	-	-	-	68.20	-21.06	0	100	V
			* 11.43745	33.23	PK-U	38.20	-21.00	0.00	50.43	-	-	74.00	-23.57	-	-	0	100	H
			* 11.43702	33.12	PK-U	38.20	-21.00	0.00	50.32	-	-	74.00	-23.68	-	-	0	100	V
			17.165	31.87	PK-U	41.30	-17.30	0.00	55.87	-	-	-	-	68.20	-12.33	0	100	H
			17.156	31.78	PK-U	41.30	-17.30	0.00	55.78	-	-	-	-	68.20	-12.42	0	100	V

Note1. PK-U - U-NII: Maximum Peak / ADR - U-NII AD primary method, RMS average
Note2. * - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

11.4. TX ABOVE 1GHz 1TX MODE IN THE 5.8 GHz BAND

BANDEDGE (WORST CASE: 802.11n HT20 / 5825 MHz)

HORIZONTAL PEAK DATA



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	Antenna Factor (dB/m)	10dB Path Loss (dB)	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85001	-58.47	Pk	35.2	-19.4	11.8	0	-30.87	26.99	-57.86	150	108	H
2	5.96832	-62.42	Pk	35.6	-19.3	11.8	0	-34.32	-27	-7.32	150	108	H

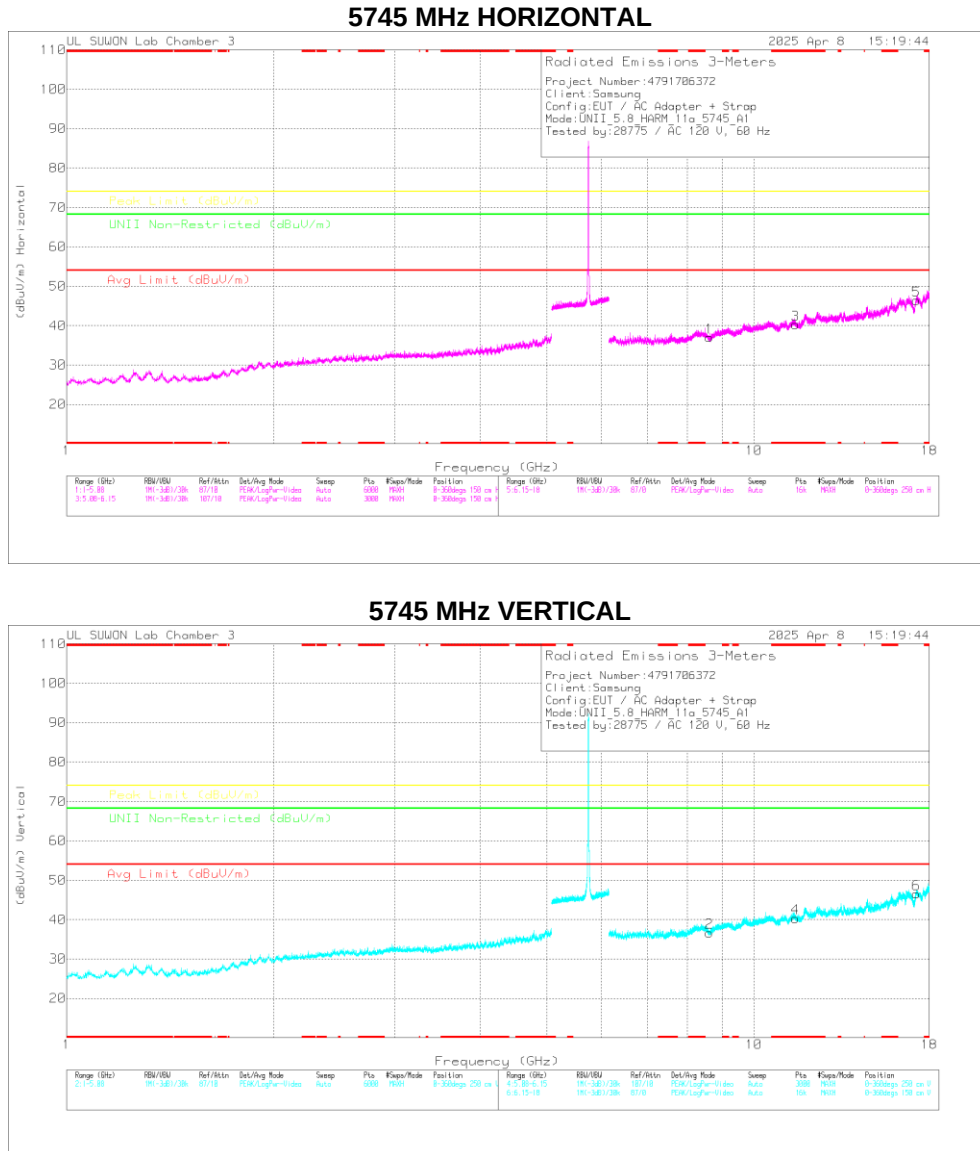
Pk - Peak detector

BANDEDGE TEST DATA

Mode	Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBm]	Detector Mode	ANT Factor [dB/m]	Loss [dB]	Conv. F [dB]	DC Corr [dB]	Result [dBm]	PK Limit [dBm]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
802.11a	5745	ANT1	5.72500	-54.49	Pk	34.90	-19.50	11.80	0.00	-27.29	27.00	-54.29	155	100	H
			5.63194	-64.88	Pk	34.90	-19.90	11.80	0.00	-38.08	-27.00	-11.08	155	100	H
			5.72500	-49.48	Pk	34.90	-19.50	11.80	0.00	-22.28	27.00	-49.28	201	106	V
			5.64470	-64.80	Pk	34.90	-19.80	11.80	0.00	-37.90	-27.00	-10.90	201	106	V
	5825	ANT1	5.85001	-61.30	Pk	35.20	-19.40	11.80	0.00	-33.70	26.99	-60.69	149	108	H
			5.93882	-62.84	Pk	35.60	-19.40	11.80	0.00	-34.84	-27.00	-7.84	149	108	H
			5.85001	-58.46	Pk	35.20	-19.40	11.80	0.00	-30.86	26.99	-57.85	194	137	V
			5.99565	-65.11	Pk	35.70	-19.30	11.80	0.00	-36.91	-27.00	-9.91	194	137	V
802.11n (HT20)	5745	ANT1	5.72500	-53.80	Pk	34.90	-19.50	11.80	0.00	-26.60	27.00	-53.60	154	100	H
			5.64944	-64.86	Pk	34.90	-19.80	11.80	0.00	-37.96	-27.00	-10.96	154	100	H
			5.72500	-49.95	Pk	34.90	-19.50	11.80	0.00	-22.75	27.00	-49.75	202	104	V
			5.64639	-64.65	Pk	34.90	-19.80	11.80	0.00	-37.75	-27.00	-10.75	202	104	V
	5825	ANT1	5.85001	-58.47	Pk	35.20	-19.40	11.80	0.00	-30.87	26.99	-57.86	150	108	H
			5.96832	-62.42	Pk	35.60	-19.30	11.80	0.00	-34.32	-27.00	-7.32	150	108	H
			5.85001	-53.27	Pk	35.20	-19.40	11.80	0.00	-25.67	26.99	-52.66	183	100	V
			5.99385	-65.04	Pk	35.70	-19.20	11.80	0.00	-36.74	-27.00	-9.74	183	100	V

Note. Pk - Peak detector

HARMONICS AND SPURIOUS EMISSIONS(WORST CASE: 802.11a / 5745 MHz)



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

5745 MHz DATA

Radiated Emissions

Frequency (GHz)	Meas. Reading (dBuV)	Det	Antenna Factor (dBm)	GHz_HF_Path_Loss(dB)	DC Cor (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Deg)	Height (cm)	Polarity
8.61492	34.3	PK-U	36	-22.9	0	47.4	-	-	-	-	68.2	-20.8	0	100	H
8.61825	34.59	PK-U	36	-23	0	47.59	-	-	-	-	68.2	-20.61	0	100	V
* 11.48892	33.39	PK-U	38.2	-21.1	0	50.49	-	-	74	-23.51	-	-	0	100	H
* 11.49277	33.32	PK-U	38.2	-21.1	0	50.42	-	-	74	-23.58	-	-	0	100	V
17.23089	31.85	PK-U	41.1	-16.7	0	56.25	-	-	-	-	68.2	-11.95	0	100	H
17.23015	32.61	PK-U	41.1	-16.7	0	57.01	-	-	-	-	68.2	-11.19	0	100	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

HARMONICS AND SPURIOUS EMISSIONS TEST DATA

Mode	Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/m]	Loss [dB]	DC Corr [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Non-Restricted [dBuV/m]	Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
802.11a	5745	ANT1	8.615	34.30	PK-U	36.00	-22.90	0.00	47.40	-	-	-	-	68.20	-20.80	0	100	H
			8.618	34.59	PK-U	36.00	-23.00	0.00	47.59	-	-	-	-	68.20	-20.61	0	100	V
			* 11.48992	33.39	PK-U	38.20	-21.10	0.00	50.49	-	-	74.00	-23.51	-	-	0	100	H
			* 11.49277	33.32	PK-U	38.20	-21.10	0.00	50.42	-	-	74.00	-23.58	-	-	0	100	V
			17.231	31.85	PK-U	41.10	-16.70	0.00	56.25	-	-	-	-	68.20	-11.95	0	100	H
			17.230	32.61	PK-U	41.10	-16.70	0.00	57.01	-	-	-	-	68.20	-11.19	0	100	V
	5785	ANT1	8.682	34.28	PK-U	36.10	-22.80	0.00	47.58	-	-	-	-	68.20	-20.62	0	100	H
			8.675	34.27	PK-U	36.10	-22.80	0.00	47.57	-	-	-	-	68.20	-20.63	0	100	V
			* 11.57374	34.02	PK-U	38.20	-21.20	0.00	51.02	-	-	74.00	-22.98	-	-	0	100	H
			* 11.57274	33.57	PK-U	38.20	-21.20	0.00	50.57	-	-	74.00	-23.43	-	-	0	100	V
			17.356	32.63	PK-U	41.10	-16.80	0.00	56.93	-	-	-	-	68.20	-11.27	0	100	H
			17.355	32.57	PK-U	41.10	-16.80	0.00	56.87	-	-	-	-	68.20	-11.33	0	100	V
	5825	ANT1	8.738	34.01	PK-U	36.10	-22.60	0.00	47.51	-	-	-	-	68.20	-20.69	0	100	H
			8.737	34.22	PK-U	36.10	-22.60	0.00	47.72	-	-	-	-	68.20	-20.48	0	100	V
			* 11.65121	34.00	PK-U	38.30	-21.10	0.00	51.20	-	-	74.00	-22.80	-	-	0	100	H
			* 11.65493	33.49	PK-U	38.30	-21.10	0.00	50.69	-	-	74.00	-23.31	-	-	0	100	V
			17.471	32.13	PK-U	41.10	-16.30	0.00	56.93	-	-	-	-	68.20	-11.27	0	100	H
			17.474	32.04	PK-U	41.10	-16.40	0.00	56.74	-	-	-	-	68.20	-11.46	0	100	V
802.11n (HT20) Spot-Check	5785	ANT1	8.681	33.83	PK-U	36.10	-22.80	0.00	47.13	-	-	-	-	68.20	-21.07	0	100	H
			8.677	34.71	PK-U	36.10	-22.80	0.00	48.01	-	-	-	-	68.20	-20.19	0	100	V
			* 11.57005	33.55	PK-U	38.20	-21.20	0.00	50.55	-	-	74.00	-23.45	-	-	0	100	H
			* 11.57443	34.16	PK-U	38.20	-21.20	0.00	51.16	-	-	74.00	-22.84	-	-	0	100	V
			17.351	32.30	PK-U	41.10	-16.80	0.00	56.60	-	-	-	-	68.20	-11.60	0	100	H
			17.352	32.16	PK-U	41.10	-16.80	0.00	56.46	-	-	-	-	68.20	-11.74	0	100	V

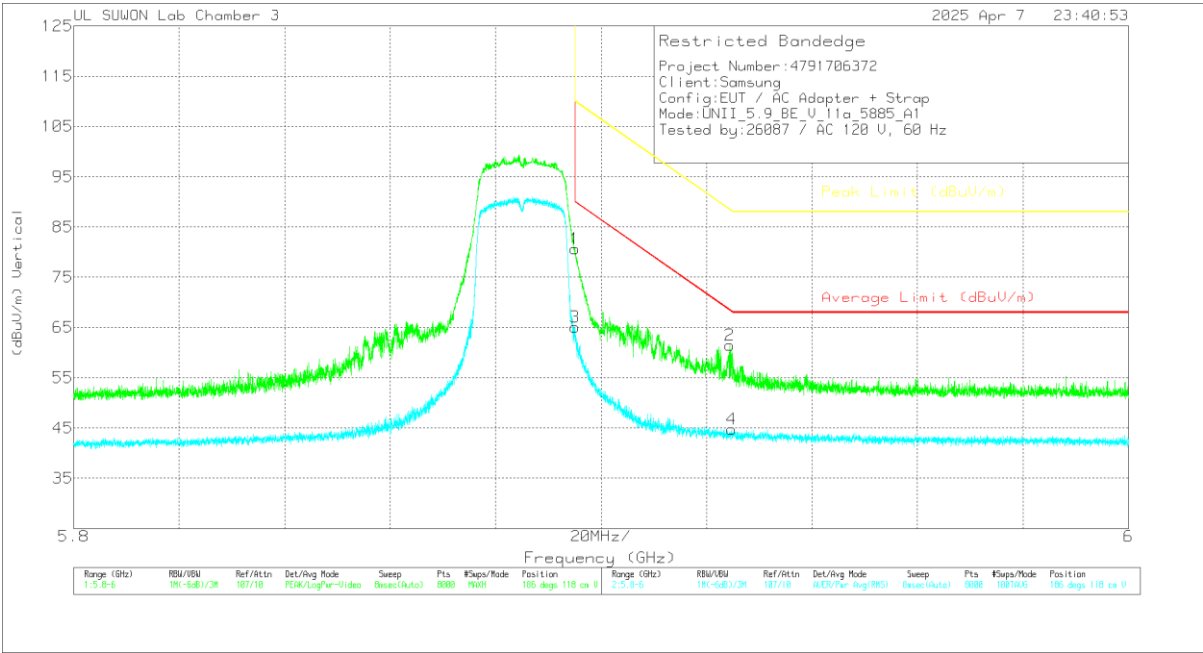
Note1. PK-U - U-NII: Maximum Peak / ADR - U-NII AD primary method, RMS average

Note2. * - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

11.1. TX ABOVE 1GHz 1TX MODE IN THE 5.9 GHz BAND

BANDEDGE (WORST CASE: 802.11a / 5885 MHz)

VERTICAL PEAK AND AVERAGE DATA



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_Factor (dBm)	10dB_Path_Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Altitude (m)	Height (cm)	Polarity
1	5.89501	64.67	PK	35.4	-19.4	0	80.67	-	-	109.99	-29.32	186	119	V
2	5.92439	45.3	PK	35.5	-19.3	0	61.5	-	-	88.45	-26.95	186	118	V
3	5.89501	48.91	RMS	35.4	-19.4	.22	65.13	89.99	-24.86	-	-	186	118	V
4	5.92482	28.5	RMS	35.5	-19.4	.22	44.82	68.14	-23.32	-	-	186	118	V

PK - Peak detector
RMS - RMS detection

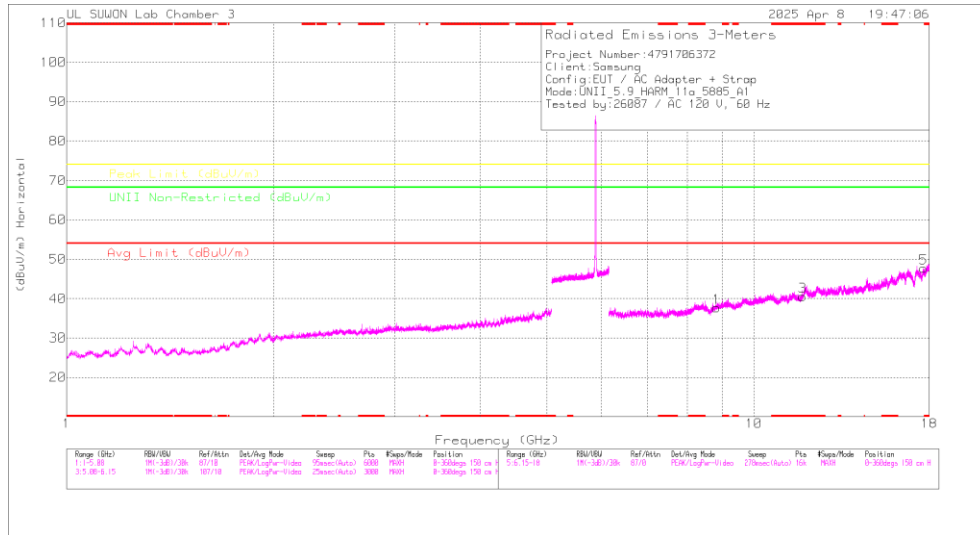
Bandedge Test Data

Mode	Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/m]	Loss [dB]	DC Corr [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
802.11a	5885	ANT1	5.895	58.52	Pk	35.40	-19.40	0.00	74.52	-	-	109.99	-35.47	153	100	H
			5.924	40.27	Pk	35.50	-19.30	0.00	56.47	-	-	88.50	-32.03	153	100	H
			5.895	44.35	RMS	35.40	-19.40	0.22	60.57	89.99	-29.42	-	-	153	100	H
			5.953	26.98	RMS	35.60	-19.30	0.22	43.50	68.00	-24.50	-	-	153	100	H
			5.895	64.67	Pk	35.40	-19.40	0.00	80.67	-	-	109.99	-29.32	186	118	V
			5.924	45.30	Pk	35.50	-19.30	0.00	61.50	-	-	88.45	-26.95	186	118	V
			5.895	48.91	RMS	35.40	-19.40	0.22	65.13	89.99	-24.86	-	-	186	118	V
			5.925	28.50	RMS	35.50	-19.40	0.22	44.82	68.14	-23.32	-	-	186	118	V
			5.895	61.27	Pk	35.40	-19.40	0.00	77.27	-	-	109.99	-32.72	152	100	H
			5.923	41.56	Pk	35.50	-19.30	0.00	57.76	-	-	89.22	-31.46	152	100	H
802.11n (HT20)	5885	ANT1	5.895	43.09	RMS	35.40	-19.40	0.12	59.21	89.99	-30.78	-	-	152	100	H
			5.929	27.45	RMS	35.50	-19.40	0.12	43.67	68.00	-24.33	-	-	152	100	H
			5.895	62.12	Pk	35.40	-19.40	0.00	78.12	-	-	109.99	-31.87	152	100	V
			5.895	62.17	Pk	35.40	-19.40	0.00	78.17	-	-	109.95	-31.78	152	100	V
			5.895	43.68	RMS	35.40	-19.40	0.12	59.80	89.99	-30.19	-	-	152	100	V
			5.927	27.14	RMS	35.50	-19.40	0.12	43.36	68.00	-24.64	-	-	152	100	V

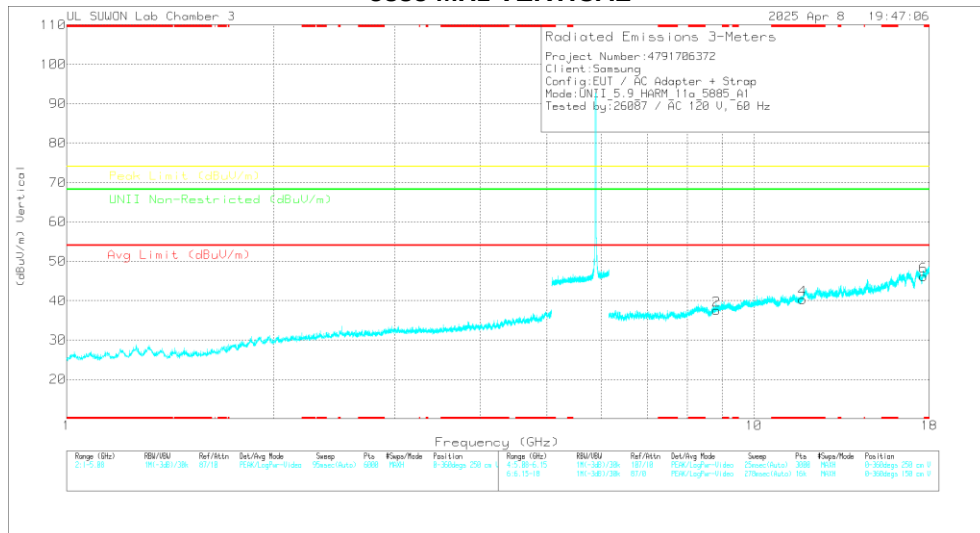
Note. Pk - Peak detector, RMS - RMS detector

HARMONICS AND SPURIOUS EMISSIONS(WORST CASE: 802.11a / 5885 MHz)

5885 MHz HORIZONTAL



5885 MHz VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

5885 MHz DATA

Radiated Emissions

Frequency (GHz)	Meas Reading (dBuV)	Det	Antenna_Factor (dBm)	5GHz_HP_Path Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
8.82754	34.35	PK-U	36.1	-22.2	0	48.25	-	-	-	-	68.2	-19.95	0	100	H
8.82649	34.37	PK-U	36.1	-22.2	0	48.27	-	-	-	-	68.2	-19.93	0	100	V
*11.7748	33.9	PK-U	38.4	-21.2	0	51.1	-	-	74	-22.9	-	0	100	H	
*11.7692	34.89	PK-U	38.4	-21.2	0	52.09	-	-	74	-21.91	-	0	100	V	
17.65479	30.82	PK-U	41.3	-15.4	0	56.72	-	-	-	-	68.2	-11.48	0	100	H
17.65516	31.37	PK-U	41.3	-15.4	0	57.27	-	-	-	-	68.2	-10.93	0	100	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

HARMONICS AND SPURIOUS EMISSIONS TEST DATA

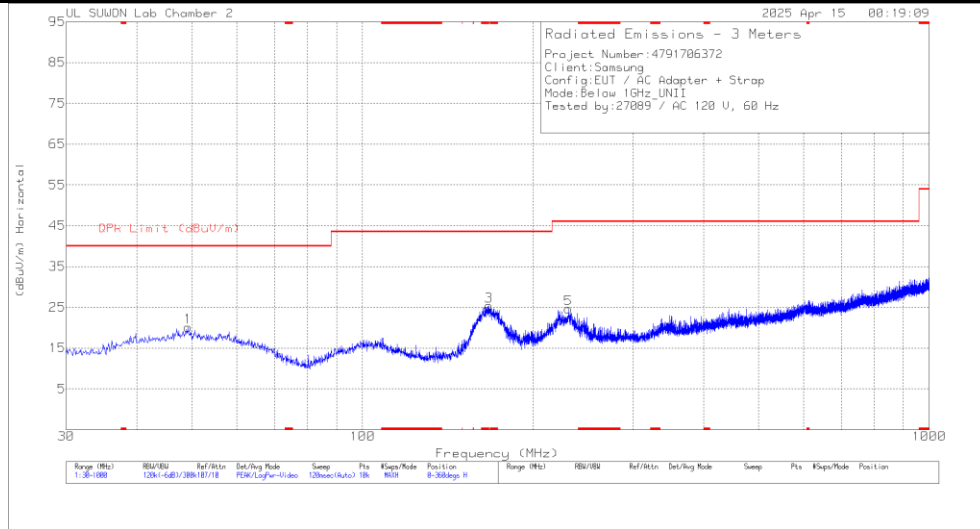
Mode	Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/m]	Loss [dB]	DC Corr [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Non-Restricted [dBuV/m]	Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
802.11a	5845	ANT1	8.763	34.16	PK-U	36.10	-22.50	0.00	47.76	-	-	-	-	68.20	-20.44	0	100	H
			8.769	34.39	PK-U	36.10	-22.40	0.00	48.09	-	-	-	-	68.20	-20.11	0	100	V
			* 11.69308	33.82	PK-U	38.40	-21.10	0.00	51.12	-	-	74.00	-22.88	-	-	0	100	H
			* 11.68631	33.64	PK-U	38.40	-21.20	0.00	50.84	-	-	74.00	-23.16	-	-	0	100	V
			17.531	32.04	PK-U	41.20	-16.60	0.00	56.64	-	-	-	-	68.20	-11.56	0	100	H
			17.534	31.81	PK-U	41.20	-16.50	0.00	56.51	-	-	-	-	68.20	-11.69	0	100	V
	5865	ANT1	8.799	34.19	PK-U	36.10	-22.20	0.00	48.09	-	-	-	-	68.20	-20.11	0	100	H
			8.797	34.35	PK-U	36.10	-22.30	0.00	48.15	-	-	-	-	68.20	-20.05	0	100	V
			* 11.72927	34.28	PK-U	38.40	-21.40	0.00	51.28	-	-	74.00	-22.72	-	-	0	100	H
			* 11.73011	34.14	PK-U	38.40	-21.40	0.00	51.14	-	-	74.00	-22.86	-	-	0	100	V
			17.592	31.45	PK-U	41.30	-16.20	0.00	56.55	-	-	-	-	68.20	-11.65	0	100	H
			17.597	31.59	PK-U	41.30	-16.10	0.00	56.79	-	-	-	-	68.20	-11.41	0	100	V
	5885	ANT1	8.828	34.35	PK-U	36.10	-22.20	0.00	48.25	-	-	-	-	68.20	-19.95	0	100	H
			8.826	34.37	PK-U	36.10	-22.20	0.00	48.27	-	-	-	-	68.20	-19.93	0	100	V
			* 11.7748	33.90	PK-U	38.40	-21.20	0.00	51.10	-	-	74.00	-22.90	-	-	0	100	H
			* 11.7692	34.89	PK-U	38.40	-21.20	0.00	52.09	-	-	74.00	-21.91	-	-	0	100	V
			17.655	30.82	PK-U	41.30	-15.40	0.00	56.72	-	-	-	-	68.20	-11.48	0	100	H
			17.655	31.37	PK-U	41.30	-15.40	0.00	57.27	-	-	-	-	68.20	-10.93	0	100	V

Note1. PK-U - U-NII: Maximum Peak / ADR - U-NII AD primary method, RMS average

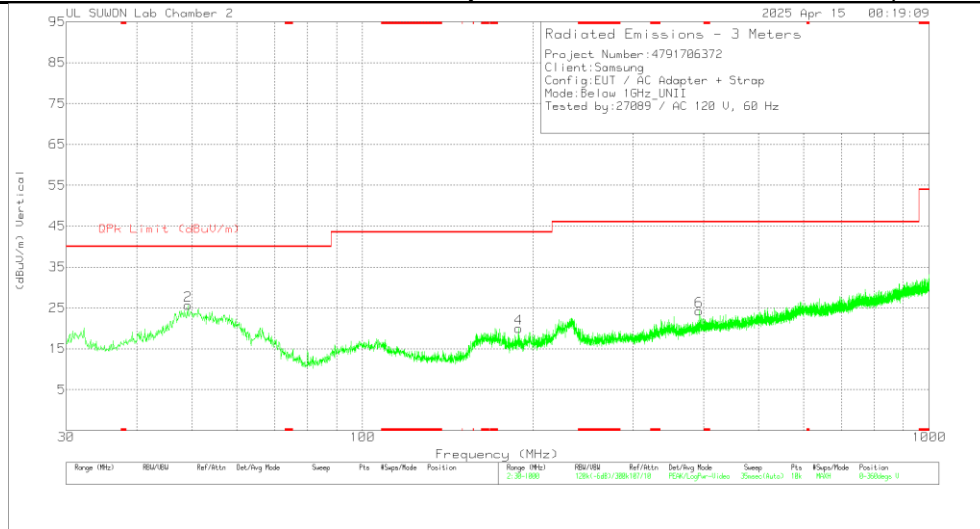
Note2. * - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

12. WORST-CASE BELOW 1 GHz

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)



SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)



Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Antenna_Factor (dB/m)	Below_1G_Path Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	QPK Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	49.206	32.15	Pk	19.7	-31.7	0	20.15	40	-19.85	0-360	200	H
3	* 167.061	41.83	Pk	14.4	-30.9	0	25.33	43.52	-18.19	0-360	100	H
5	230.693	37.68	Pk	17.6	-30.7	0	24.58	46.02	-21.44	0-360	100	H
2	49.206	37.62	Pk	19.7	-31.7	0	25.62	40	-14.38	0-360	100	V
4	188.498	34.73	Pk	16.1	-30.8	0	20.03	43.52	-23.49	0-360	100	V
6	392.78	33.22	Pk	21.1	-30.1	0	24.22	46.02	-21.8	0-360	100	V

Pk - Peak detector

13. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)
IC RSS-GEN Clause 8.8

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 ⁺	56 to 46 ⁺
0.5-5	56	46
5-30	60	50

⁺ Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

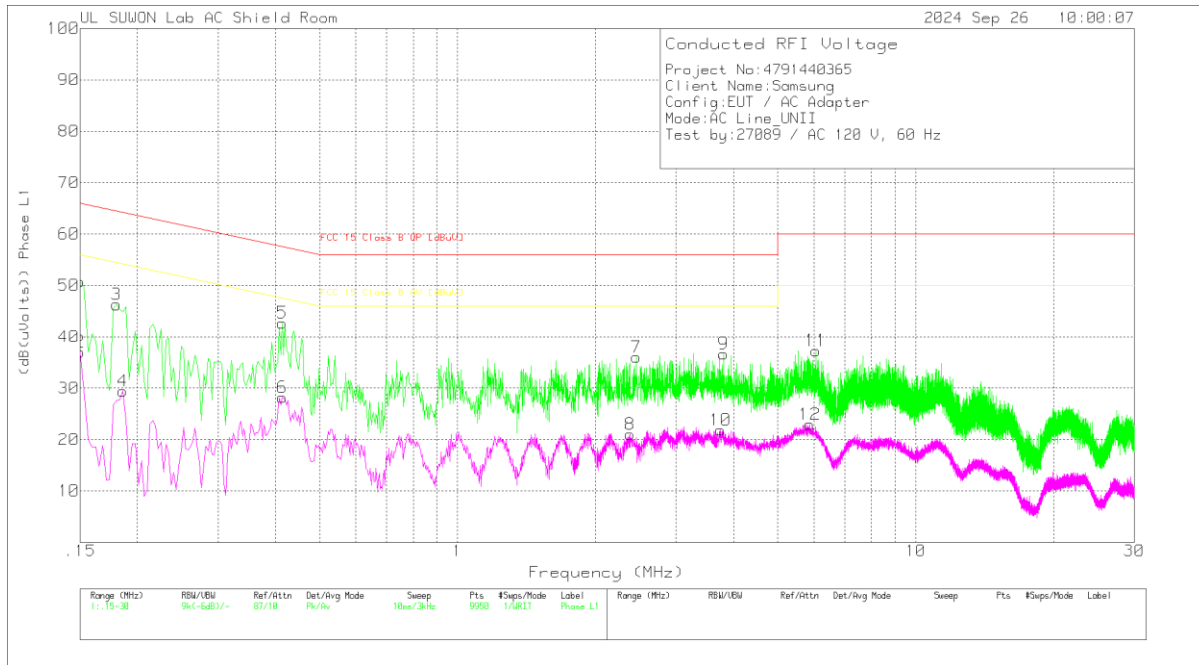
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

WORST EMISSIONS

LINE 1 DATA



Trace Markers

Range 1: Phase L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101836_Wit h EX_L1 [dB]	Cable Loss [dB]	Corrected Reading (dB(uVolts))	FCC 15 Class B QP [dBuV]	Margin (dB)	FCC 15 Class B AV [dBuV]	Margin (dB)
1	.306	35.55	Pk	9.7	.1	45.35	60.08	-14.73	-	-
2	.306	14.02	Av	9.7	.1	23.82	-	-	50.08	-26.26
3	.528	30.86	Pk	9.9	.1	40.86	56	-15.14	-	-
4	.534	17.18	Av	9.9	.1	27.18	-	-	46	-18.82
5	.624	36.17	Pk	9.8	.1	46.07	56	-9.93	-	-
6	.624	22.59	Av	9.8	.1	32.49	-	-	46	-13.51
7	1.125	24.56	Pk	9.7	.1	34.36	56	-21.64	-	-
8	1.128	12.66	Av	9.7	.1	22.46	-	-	46	-23.54
9	2.181	24.78	Pk	9.7	.1	34.58	56	-21.42	-	-
10	2.181	10.91	Av	9.7	.1	20.71	-	-	46	-25.29
11	23.064	23.54	Pk	10.3	.3	34.14	60	-25.86	-	-
12	23.064	13.51	Av	10.3	.3	24.11	-	-	50	-25.89

Pk - Peak detector

Av - Average detection

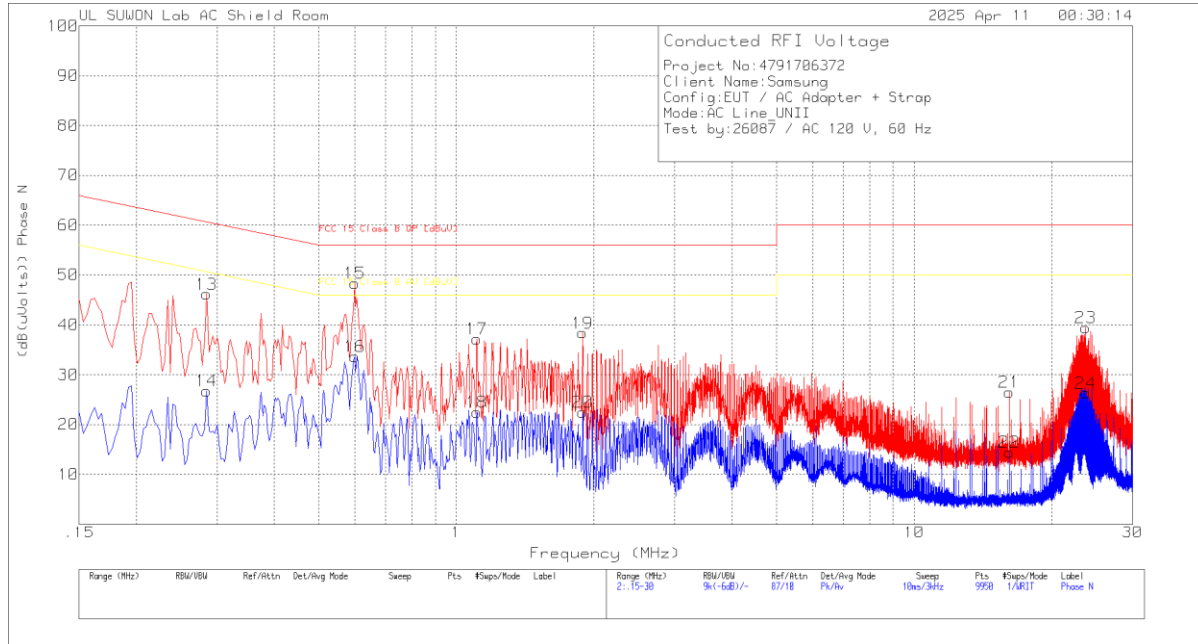
Quasi-Peak Emissions

Range 1: Phase L1 .15 - 30MHz

Frequency (MHz)	Meter Reading (dBuV)	Det	101836_Wit h EX_L1 [dB]	Cable Loss [dB]	Corrected Reading (dB(uVolts))	FCC 15 Class B QP [dBuV]	Margin (dB)	FCC 15 Class B AV [dBuV]	Margin (dB)
.62475	28.94	Qp	9.8	.1	38.84	56	-17.16	-	-

Qp - Quasi-Peak detector

LINE 2 DATA



Trace Markers

Range 2: Phase N .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101836_Wit h EX_N [dB]	Cable Loss [dB]	Corrected Reading (dB(uVolts))	FCC 15 Class B QP [dBuV]	Margin (dB)	FCC 15 Class B AV [dBuV]	Margin (dB)
13	.285	36.36	Pk	9.7	.1	46.16	60.67	-14.51	-	-
14	.285	16.9	Av	9.7	.1	26.7	-	-	50.67	-23.97
15	.6	38.44	Pk	9.8	.1	48.34	56	-7.66	-	-
16	.6	23.81	Av	9.8	.1	33.71	-	-	46	-12.29
17	1.11	27.42	Pk	9.7	.1	37.22	56	-18.78	-	-
18	1.11	12.65	Av	9.7	.1	22.45	-	-	46	-23.55
19	1.887	28.57	Pk	9.7	.1	38.37	56	-17.63	-	-
20	1.89	12.68	Av	9.7	.1	22.48	-	-	46	-23.52
21	16.134	16.08	Pk	10.1	.3	26.48	60	-33.52	-	-
22	16.137	4	Av	10.1	.3	14.4	-	-	50	-35.6
23	23.688	28.75	Pk	10.4	.3	39.45	60	-20.55	-	-
24	23.688	15.61	Av	10.4	.3	26.31	-	-	50	-23.69

Pk - Peak detector

Av - Average detection

Quasi-Peak Emissions

Range 2: Phase N .15 - 30MHz

Frequency (MHz)	Meter Reading (dBuV)	Det	101836_Wit h EX_N [dB]	Cable Loss [dB]	Corrected Reading (dB(uVolts))	FCC 15 Class B QP [dBuV]	Margin (dB)	FCC 15 Class B AV [dBuV]	Margin (dB)
.60015	30.57	Qp	9.8	.1	40.47	56	-15.53	-	-

Qp - Quasi-Peak detector

14. DYNAMIC FREQUENCY SELECTION

14.1. OVERVIEW

14.1.1. LIMITS

FCC

§15.407 (h), FCC KDB 905462 D02 “COMPLIANCE MEASUREMENT PROCEDURES FOR UNLICENSED-NATIONAL INFORMATION INFRASTRUCTURE DEVICES OPERATING IN THE 5250-5350 MHz AND 5470-5725 MHz BANDS INCORPORATING DYNAMIC FREQUENCY SELECTION” and KDB 905462 D03 “U-NII CLIENT DEVICES WITHOUT RADAR DETECTION CAPABILITY”.

Table 1: Applicability of DFS requirements prior to use of a channel

Requirement	Operational Mode		
	Master	Client (without radar detection)	Client (with radar detection)
Non-Occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
U-NII Detection Bandwidth	Yes	Not required	Yes

Table 2: Applicability of DFS requirements during normal operation

Requirement	Operational Mode		
	Master	Client (without DFS)	Client (with DFS)
DFS Detection Threshold	Yes	Not required	Yes
Channel Closing Transmission Time	Yes	Yes	Yes
Channel Move Time	Yes	Yes	Yes
U-NII Detection Bandwidth	Yes	Not required	Yes

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

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

Table 3: Interference Threshold values, Master or Client incorporating In-Service Monitoring

Maximum Transmit Power	Value (see notes)
E.I.R.P. $\geq$ 200 mill watt	-64 dBm
E.I.R.P. < 200 mill watt and power spectral density < 10 dBm/MHz	-62 dBm
E.I.R.P. < 200 mill watt that do not meet power spectral density requirement	-64 dBm
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response. Note 3: E.I.R.P. is based on the highest antenna gain. For SISO devices refer to KDB publication 662911 D01.	

Table 4: DFS Response requirement values

Parameter	Value
<i>Non-occupancy period</i>	30 minutes
<i>Channel Availability Check Time</i>	60 seconds
<i>Channel Move Time</i>	10 seconds (See Note 1)
<i>Channel Closing Transmission Time</i>	200 milliseconds + approx. 60 milliseconds over remaining 10 second period. (See Notes 1 and 2)
<i>U-NII Detection Bandwidth</i>	Minimum 100% of the U- NII 99% transmission power bandwidth. (See Note 3)
Note 1: <i>Channel Move Time</i> and the <i>Channel Closing Transmission Time</i> should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst. Note 2: The <i>Channel Closing Transmission Time</i> is comprised of 200 milliseconds starting at the beginning of the <i>Channel Move Time</i> plus any additional intermittent control signals required to facilitate a <i>Channel</i> move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions. Note 3: During the <i>U-NII Detection Bandwidth</i> detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.	

Table 5 – Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (usec)	PRI (usec)	Pulses	Minimum Percentage of Successful Detection	Minimum Trials
0	1	1428	18	See Note 1	See Note 1
1	1	Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in table 5a	Roundup: $(1/360) \times (19 \times 10^6 \text{ PRI}_{\text{usec}})$	60%	30
		Test B: 15 unique PRI values randomly selected within the range of 518-3066 usec. With a minimum increment of 1 usec, excluding PRI values selected in Test A			
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120
Note 1: Short Pulse Radar Type 0 should be used for the <i>Detection Bandwidth</i> test, <i>Channel Move Time</i> , and <i>Channel Closing Time</i> tests.					

Table 6 – Long Pulse Radar Test Signal

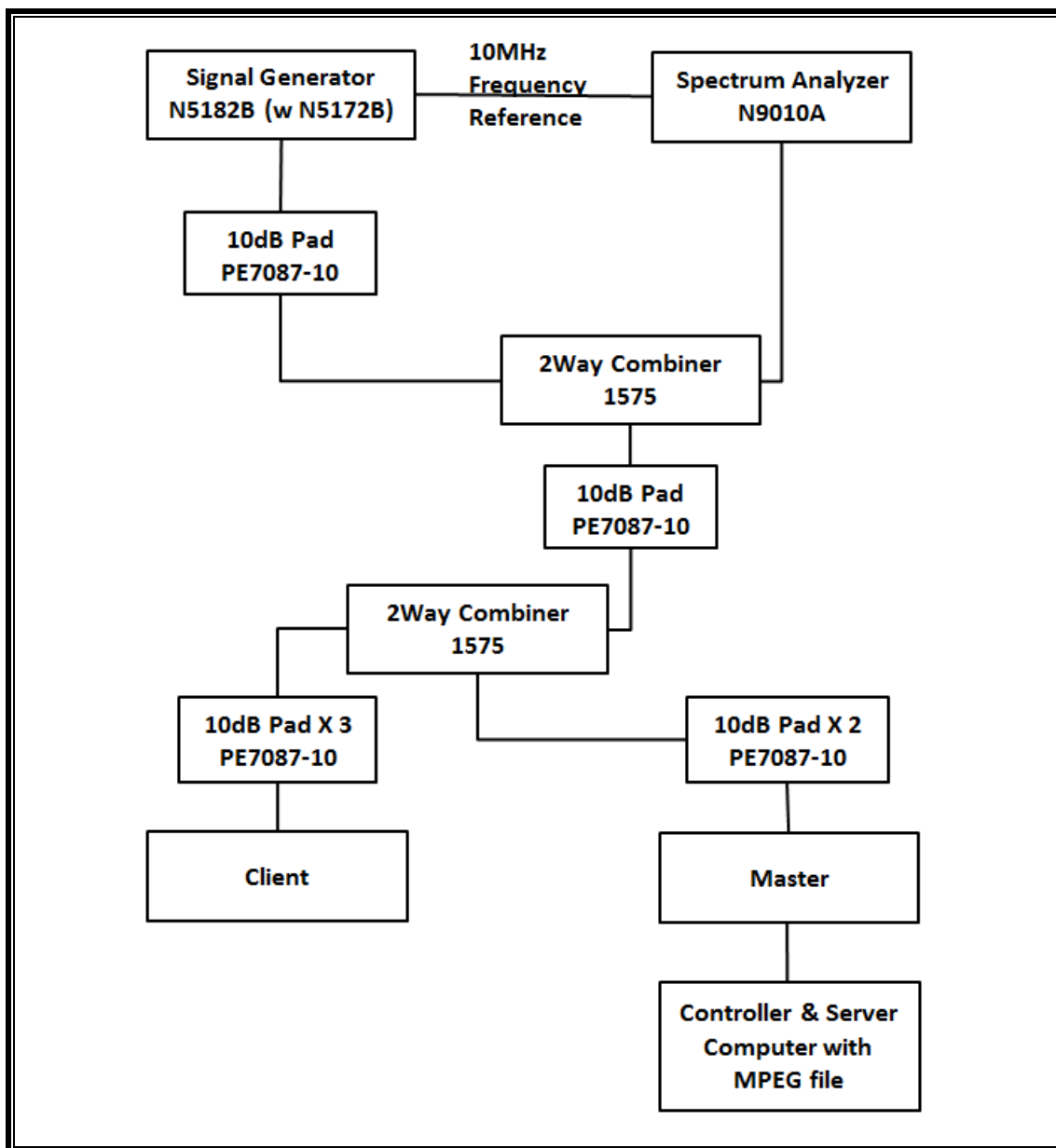
Radar Waveform Type	Pulse Width (μsec)	Chirp Width (MHz)	PRI (μsec)	Pulses per Burst	Number of Bursts	Minimum Percentage of Successful Detection	Minimum Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

Table 7 – Frequency Hopping Radar Test Signal

Radar Waveform Type	Pulse Width (μsec)	PRI (μsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Trials
6	1	333	9	0.333	300	70%	30

14.1.2. TEST AND MEASUREMENT SYSTEM

CONDUCTED METHOD SYSTEM BLOCK DIAGRAM



SYSTEM OVERVIEW

The short pulse and long pulse signal generating system utilizes the Keysite Signal Studio for Pulse Building as N5172B. The Vector Signal Generator has been validated by the NTIA. The hopping signal generating system utilizes the CCS simulated hopping method and system, which has been validated by the DoD, FCC and NTIA. The software selects waveform parameters from within the bounds of the signal type on a random basis using uniform distribution.

The short pulse types 1, 2, 3 and 4, and the long pulse type 5 parameters are randomized at run-time.

The hopping type 6 pulse parameters are fixed while the hopping sequence is based on the August 2005 NTIA Hopping Frequency List. The initial starting point randomized at run-time and each subsequent starting point is incremented by 475. Each frequency in the 100-length segment is compared to the boundaries of the EUT Detection Bandwidth and the software creates a hopping burst pattern in accordance with Section 7.4.1.3 Method #2 Simulated Frequency Hopping Radar Waveform Generating Subsystem of KDB 905462 D02. The frequency of the signal generator is incremented in 1 MHz steps from F_L to F_H for each successive trial. This incremental sequence is repeated as required to generate a minimum of 30 total trials and to maintain a uniform frequency distribution over the entire Detection Bandwidth.

The signal monitoring equipment consists of a spectrum analyzer. The aggregate ON time is calculated by multiplying the number of bins above a threshold during a particular observation period by the dwell time per bin, with the analyzer set to peak detection and max hold.

SYSTEM CALIBRATION

A 50-ohm load is connected in place of the spectrum analyzer, and the spectrum analyzer is connected to a horn antenna via a coaxial cable, with the reference level offset set to (horn antenna gain – coaxial cable loss). The signal generator is set to CW mode. The amplitude of the signal generator is adjusted to yield a level of –64 dBm as measured on the spectrum analyzer.

Without changing any of the instrument settings, the spectrum analyzer is reconnected to the Common port of the Spectrum Analyzer Combiner/Divider. The Reference Level Offset of the spectrum analyzer is adjusted so that the displayed amplitude of the signal is –64 dBm.

The spectrum analyzer displays the level of the signal generator as received at the antenna ports of the Master Device. The interference detection threshold may be varied from the calibrated value of –64 dBm and the spectrum analyzer will still indicate the level as received by the Master Device.

ADJUSTMENT OF DISPLAYED TRAFFIC LEVEL

A link is established between the Master and Slave and the distance between the units is adjusted as needed to provide a suitable received level at the Master and Slave devices. The video test file is streamed to generate WLAN traffic. The monitoring antenna is adjusted so that the WLAN traffic level, as displayed on the spectrum analyzer, is at lower amplitude than the radar detection threshold.

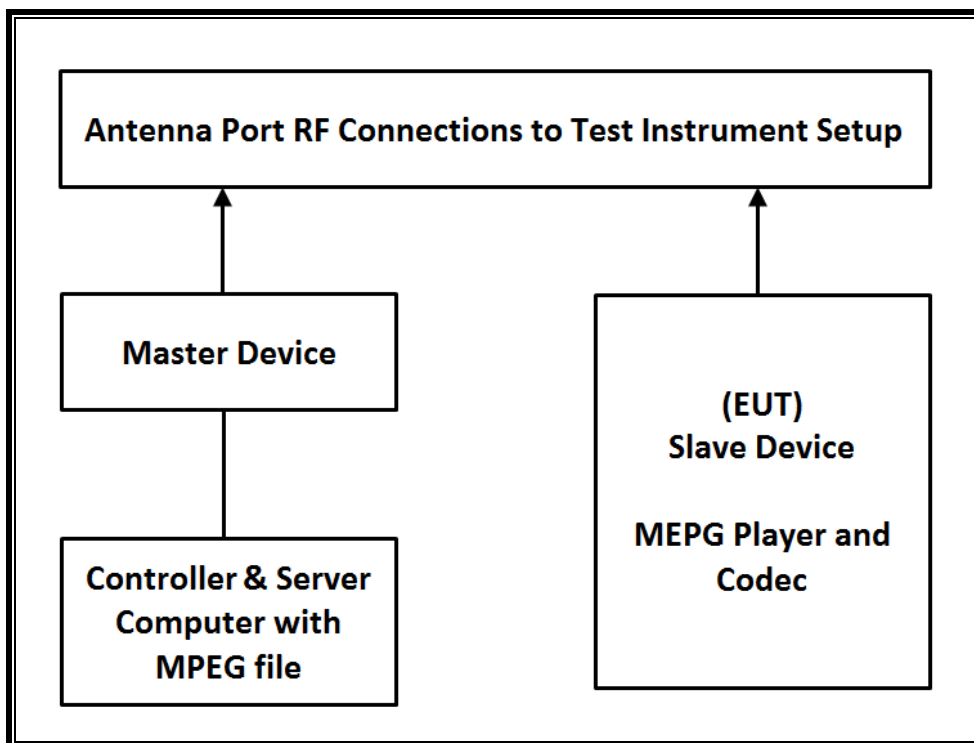
TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the DFS tests documented in this report:

TEST EQUIPMENT LIST				
Description	Manufacturer	Model	S/N	Next Cal Due
Spectrum Analyzer, 44 GHz	KEYSIGHT	N9030B	MY60070693	2026-01-02
Vector Signal Generator, 6GHz	Agilent / HP	N5182B	MY53051241	2025-07-24
Combiner	WEINSCHEL	WA1534	UL001	2026-01-03
Combiner	WEINSCHEL	WA1534	UL003	2026-01-03

14.1.3. SETUP OF EUT

CONDUCTED METHOD EUT TEST SETUP



SUPPORT EQUIPMENT

The following support equipment was utilized for the DFS tests documented in this report:

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
Wireless Access Point	ASUS	GT-AXE11000	M3IAJF200742	MSQ-RTAXJF00
Notebook PC (Controller/Server)	HP	HP EliteDesk 800 G1 TWR	CZC4125J25	DoC

14.1.4. DESCRIPTION OF EUT

The EUT operates over the 5250-5350 MHz and 5470-5725 MHz ranges.

The EUT is a Slave Device without Radar Detection.

The highest power level of the widest bandwidth (802.11n HT20) within these bands is 16.11 dBm in the 5250-5350 MHz band and 16.28 dBm in the 5470-5725 MHz band.

The antenna assembly utilized two antenna.

Gain of ANT1 : -10.50 dBi for UNII 2A and -9.90 dBi for UNII 2C.

The rated output power of the Master unit is > 23dBm (EIRP). Therefore the required interference threshold level is -64 dBm. After correction for procedural adjustments, the required conducted threshold at the antenna port is $-64 + 1 = -63$ dBm.

The calibrated radiated DFS Detection Threshold level is set to -64 dBm. The tested level is lower than the required level hence it provides a margin to the limit.

The EUT uses one transmitter/receiver chain connected to an antenna to perform radiated tests. WLAN traffic that meets or exceeds the minimum required loading was generated by transferring a data stream from the controller/server PC to the EUT using iPerf version 2.0.5 software package.

TPC is not required since the maximum EIRP is less than 500 mW (27 dBm).

The EUT utilizes the 802.11 architecture. 1 nominal channel bandwidth are implemented: 20 MHz.

The software installed in the access point is 12.4(25d)JA1.

UNIFORM CHANNEL SPREADING

This requirement is not applicable to Slave radio devices.

OVERVIEW OF MASTER DEVICE WITH RESPECT TO §15.407 (h) REQUIREMENTS

The Master Device is a ASUS Access Point, FCC ID: MSQ-RTAXJF00. The minimum antenna gain for the Master Device is 6 dBi.

The rated output power of the Master unit is > 23dBm (EIRP). Therefore the required interference threshold level is -64 dBm. After correction for procedural adjustments, the required radiated threshold at the antenna port is $-64 + 1 = -63$ dBm.

The calibrated radiated DFS Detection Threshold level is set to -64 dBm. The tested level is lower than the required level hence it provides a margin to the limit.

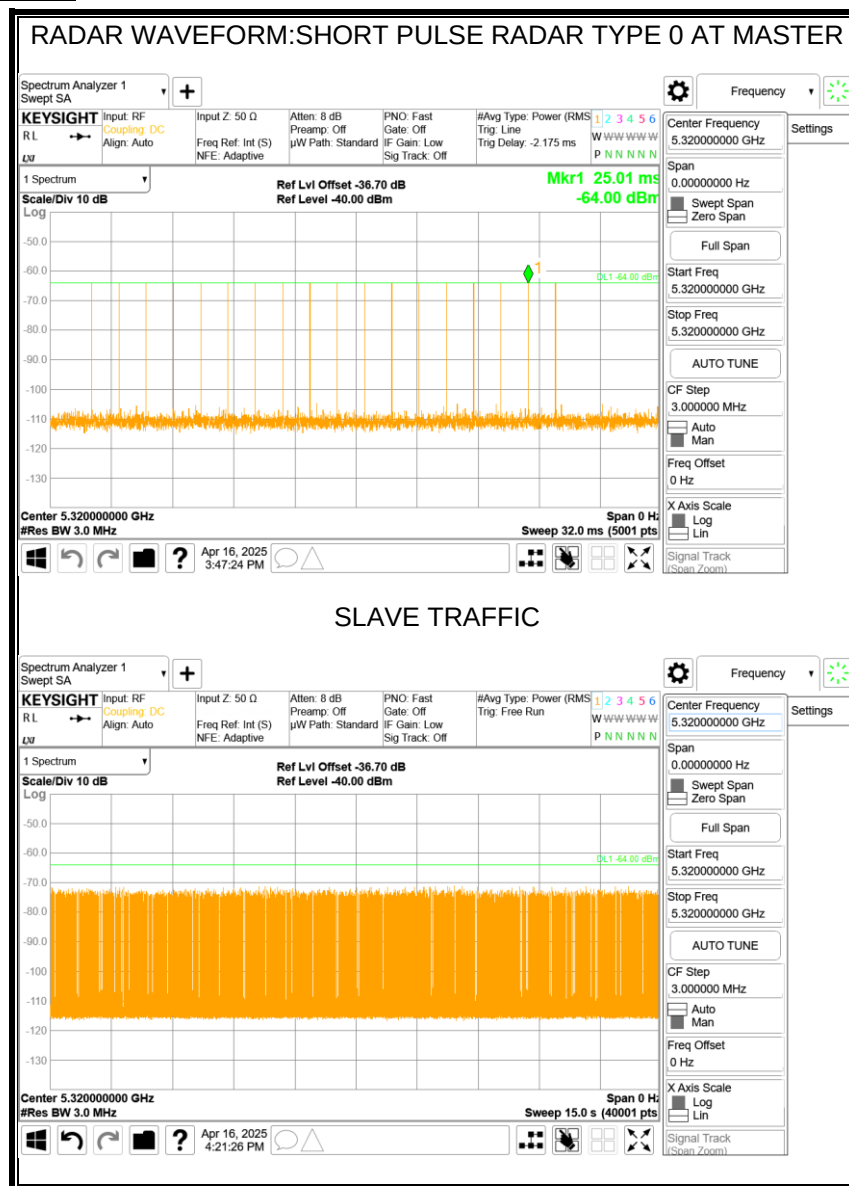
14.2. RESULTS FOR 20 MHz BANDWIDTH (UNII-2A BAND)

14.2.1. TEST CHANNEL

All tests were performed at a channel center frequency of 5320 MHz.

14.2.2. RADAR WAVEFORM AND TRAFFIC

RADAR WAVEFORM



14.2.3. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

14.2.4. MOVE AND CLOSING TIME

REPORTING NOTES

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time =
(Number of analyzer bins showing transmission) * (dwell time per bin)

The observation period over which the aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

RESULTS

Channel Move Time (sec)	Limit (sec)
0.746	10

Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
3.750	60

MOVE TIME & CHANNEL CLOSING TIME

AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

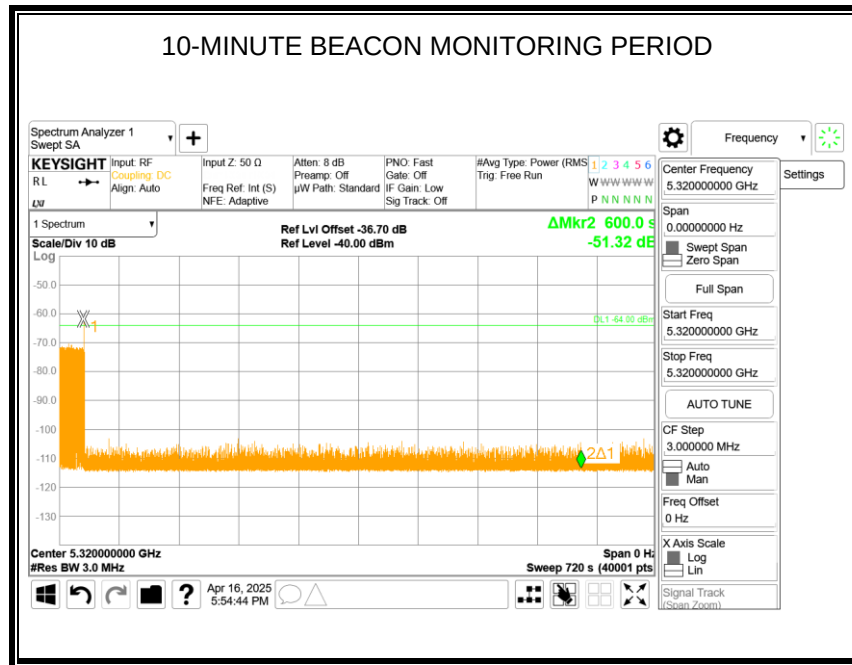
No transmissions are observed during the aggregate monitoring period.



NON-OCCUPANCY PERIOD

RESULTS

No EUT transmissions were observed on the test channel during the 10-minute observation time.



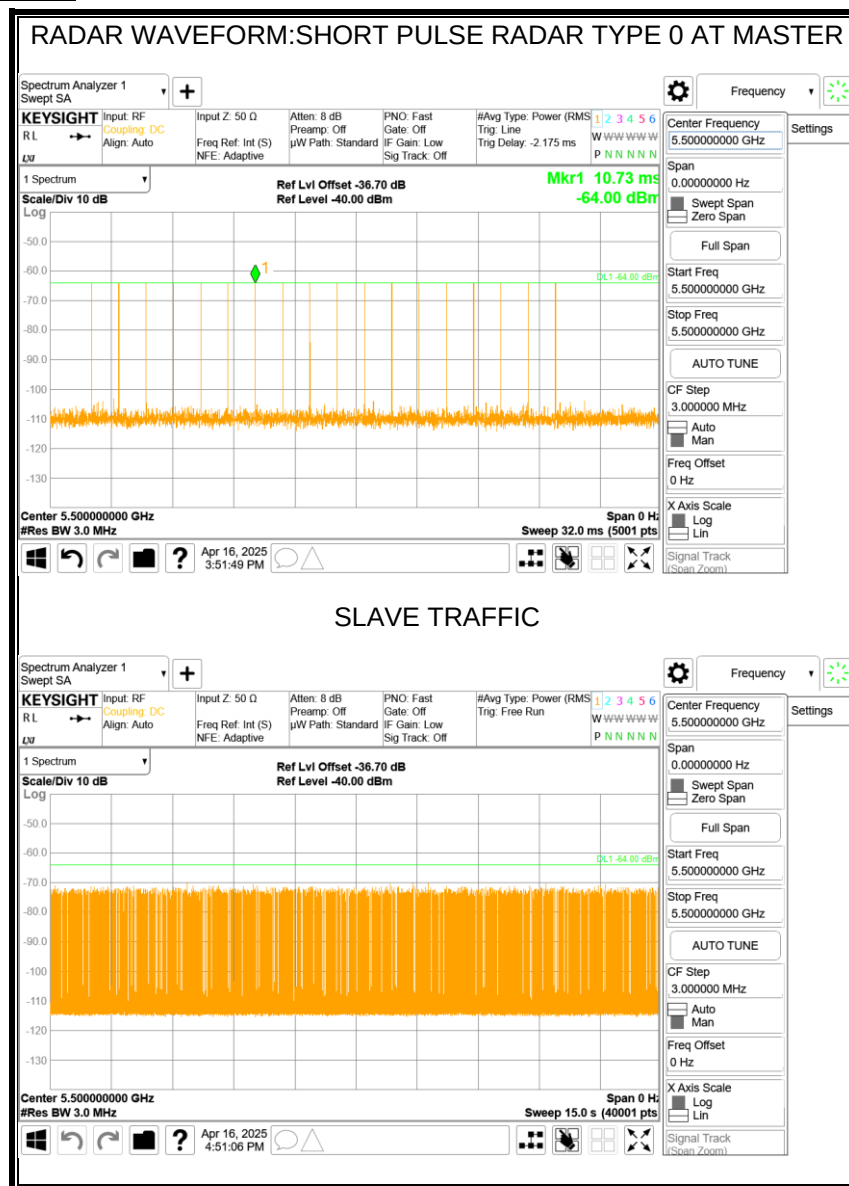
14.1. RESULTS FOR 20 MHz BANDWIDTH (UNII-2C BAND)

14.1.1. TEST CHANNEL

All tests were performed at a channel center frequency of 5500 MHz.

14.1.2. RADAR WAVEFORM AND TRAFFIC

RADAR WAVEFORM



14.1.3. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

14.1.4. MOVE AND CLOSING TIME

REPORTING NOTES

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time =
(Number of analyzer bins showing transmission) * (dwell time per bin)

The observation period over which the aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

RESULTS

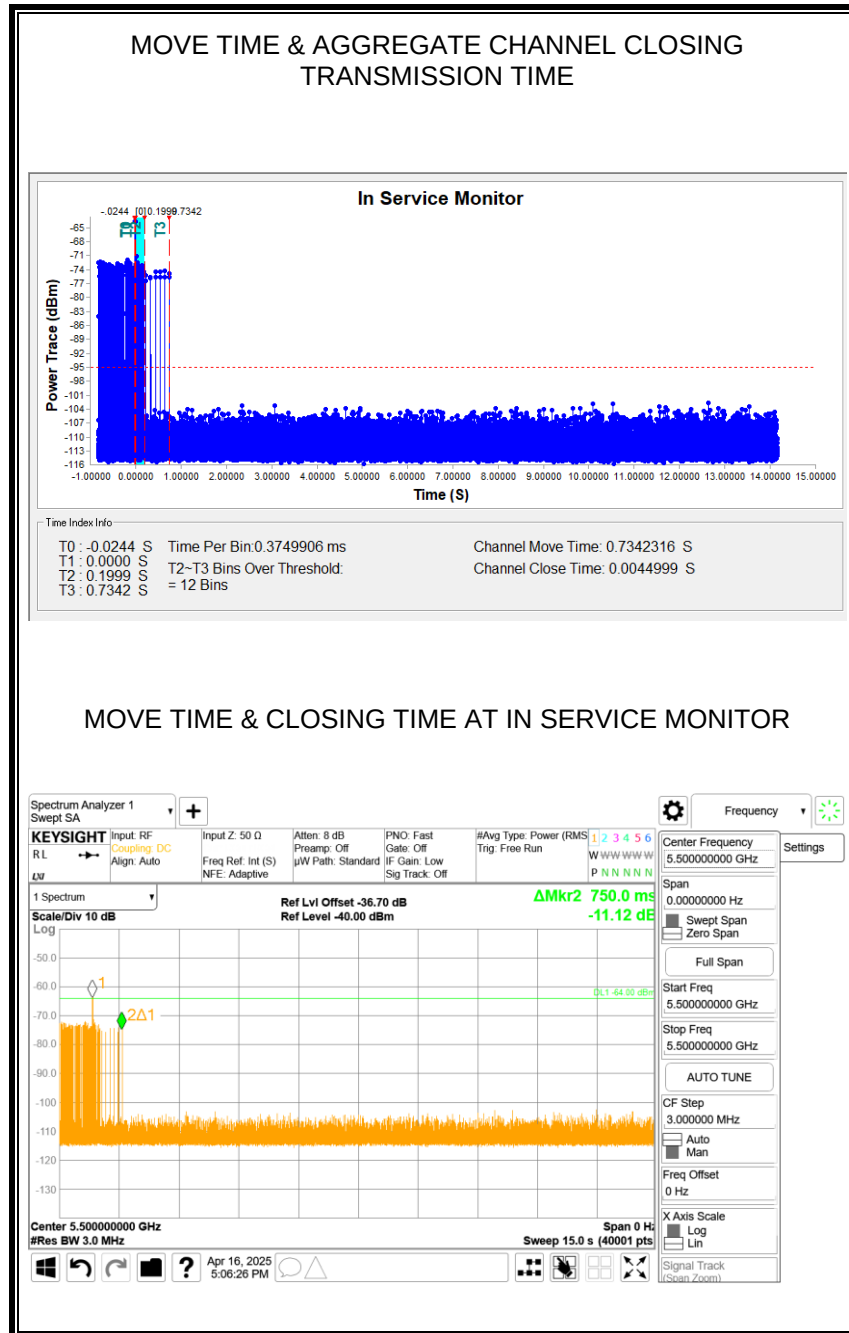
Channel Move Time (sec)	Limit (sec)
0.734	10

Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
4.500	60

MOVE TIME & CHANNEL CLOSING TIME

AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

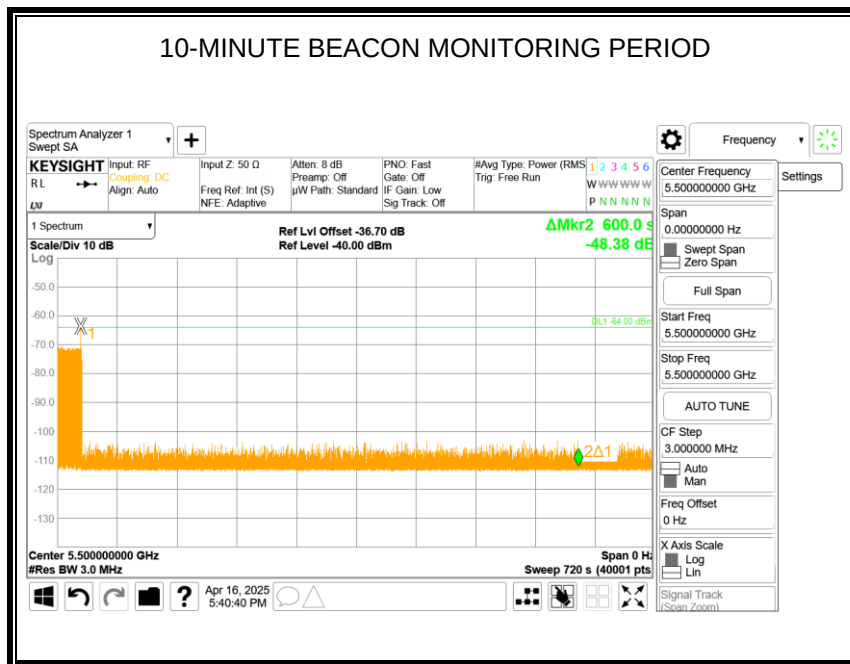
No transmissions are observed during the aggregate monitoring period.



NON-OCCUPANCY PERIOD

RESULTS

No EUT transmissions were observed on the test channel during the 10-minute observation time.



END OF TEST REPORT