TEST REPORT

Report Number: 13336566-E5V2 & E6V2

Applicant	:	APPLE INC. 1 APPLE PARK WAY CUPERTINO, CA 95014, U.S.A
Model	:	A2406
FCC ID	:	BCG-E3546A
IC	:	579C-E3546A
EUT Description	:	SMARTPHONE
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART E ISED RSS-247 ISSUE 2 ISED RSS-GEN ISSUE 5

Date of Issue:
September 23, 2020

Prepared by:
UL Verification Services Inc.
47173 Benicia Street
Fremont, CA 94538 U.S.A.
TEL: (510) 319-4000
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NVLAP TESTING

NVLAP Lab code: 200065-0

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	9/21/2020	Initial Issue	Chin Pang
V2	9/23/2020	Updated TCB comments	Chin Pang

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UL VERIFICATION SERVICES INC.
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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: APPLE INC.
1 APPLE PARK WAY
CUPERTINO, CA 95014, U.S.A

EUT DESCRIPTION: SMARTPHONE

MODEL: A2406

SERIAL NUMBER: (Original): G6TCP01UQ5R9, G6TCM020Q5T6
(Spot Check): G6TCN00GQ5W0, G6TCN00KQ5W0

DATE TESTED: JULY 25, 2020 – AUGUST 14, 2020

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart E	Complies
ISED RSS-247 Issue 2	Complies
ISED RSS-GEN Issue 5	Complies

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. 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 NVLAP, NIST, any agency of the Federal Government, or any agency of the U.S. government.

Approved & Released For
UL Verification Services Inc. By:

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Consumer Technology Division
UL Verification Services Inc.

Prepared By:

Francisco Guarnero
Test Engineer
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UL Verification Services Inc.

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2. TEST RESULT SUMMARY

FCC Clause	ISED Clause	Requirement	Result	Comment
15.209, 15.205, 15.407 (b)	RSS-GEN 8.9, 8.10, RSS-247 6.2	Radiated Emissions	Complies	None.

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, FCC KDB 662911 D01 v02r01, FCC KDB 789033 D02 v02r01, ANSI C63.10-2013, RSS-GEN Issue 5, and RSS-247 Issue 2

4. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, and 47658 Kato Road, Fremont, California, USA. Line conducted emissions are measured only at the 47173 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.

47173 Benicia Street	47266 Benicia Street	47658 Kato Rd.
☐ Chamber A (IC:2324B-1)	☐ Chamber D (IC:22541-1)	☒ Chamber I (IC: 2324A-5)
☐ Chamber B (IC:2324B-2)	☐ Chamber E (IC:22541-2)	☐ Chamber J (IC: 2324A-6)
☐ Chamber C (IC:2324B-3)	☐ Chamber F (IC:22541-3)	☒ Chamber K (IC: 2324A-1)
	☐ Chamber G (IC:22541-4)	☒ Chamber L (IC: 2324A-3)
	☐ Chamber H (IC:22541-5)	☐ Chamber M (IC: 2324A-2)

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers above are covered under Industry Canada company address and respective code: 2324A.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0

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5. DECISION RULES AND MEASUREMENT UNCERTAINTY

5.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards.

5.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

5.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	U_{Lab}
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.39 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.07 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	2.52 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	4.88 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.24 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.37 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.17 dB

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

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6. RADIATED TEST RESULTS

LIMITS

FCC §15.205 and §15.209 -Restriced bands

FCC §15.407(b)(1-3) -Un-Restriced bands

RSS 247 Issue 2 Sections
6.2.1.2 (for 5150-5250 MHz band)
6.2.2.2 (for 5250-5350 MHz band)
6.2.3.2 (for 5470-5600 MHz and 5650-5725 MHz bands)
6.2.4.2 (for 5725-5850 MHz band)

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For final measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and as applicable for average measurements.

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.

KDB 414788 Open Field Site(OFS) and Chamber Correlation Justification

Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

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7. INTRODUCTION OF TEST DATA REUSE

7.1. EUT DESCRIPTION

The Apple iPhone is a smartphone with multimedia functions (music, application support, and video), cellular GSM, GPRS, EGPRS, UMTS, LTE, TD-SCDMA, CDMA, IEEE 802.11a/b/g/n/ac/ax, Bluetooth, Ultra-Wide band, GPS and NFC. All models support at least one UICC based SIM. The second SIM, if present, is either UICC based pSIM (physical SIM) or e-SIM (electronic SIM). The device has a built-in inductive charging receiver. The rechargeable battery is also not user accessible.

7.2. INTRODUCTION

This application for certification is leveraging the data reuse procedures from KDB 484596 D01 based on reference FCC ID: BCG-E3545A, IC: 579C-E3545A to cover variant model BCG-E3546A, 579C-E3546A. The major difference between the parent/reference model and the variant model is the depopulation in the variant model of the mmWave transmitter. All other circuitry and features are identical. The data reuse test plan was approved via manufacturer KDB inquiry.

7.3. SPOT CHECK VERIFICATION RESULTS SUMMARY

Spot check verification has been done on device model A2406, FCC ID: BCG-E3546A, IC: 579C-E3546A for radiated spurious and radiated band-edge in accordance with the Test Plan that was approved via KDB inquiry.

BCG-E3546A, 579C-E3545A SPOT CHECK RESULTS										
Technology	Mode	Test Item	Channel	Measured	Original model		Spot check model		Delta (dB)	
					BCG-E3545A 579C-E3545A		BCG-E3546A 579C-E3546A			
					A2341		A2406			
				Frequency (MHz)	Peak (dBuV)	Ave (dBuV)	Peak (dBuV)	Ave (dBuV)	Peak (dBuV)	Ave (dBuV)
WiFi (5GHz)	HE20, 5.2/5.3	RBE	Low	5150	62.49	50.85	64.02	48.66	1.53	-2.19
			High	5350	64.55	50.74	63.97	48.82	-0.58	-1.92
	HE20, 5.6	RBE	Low	5459	57.52	46.64	57.39	45.15	-0.13	-1.49
	HE20, 5.8	RBE	High	5990	-32.59 (EIRP)		-32.17 (EIRP)		0.42 (EIRP)	
	HE20, 5.3/5.6/5.8	RSE	60 (5300)	10606	51.08	39.58	47.47	36.7	-3.61	-2.88
			116 (5580)	11152	50.69	39.74	51.27	40.84	0.58	1.1
			157 (5785)	11578	51.25	39.53	NF	NF	NA	NA

Comparison of the models, upper deviation is within 3dB for the worst case measurements relative to the limit (note some peak values are more than 3dB higher but the corresponding average value, which has less margin relative to the average limit for emissions, is within 3dB of the reference model) and all measurements are under FCC/IC Technical Limits.

Note: The output powers were verified on model A2406 to match with model A2341 before radiated emissions spot check was performed.

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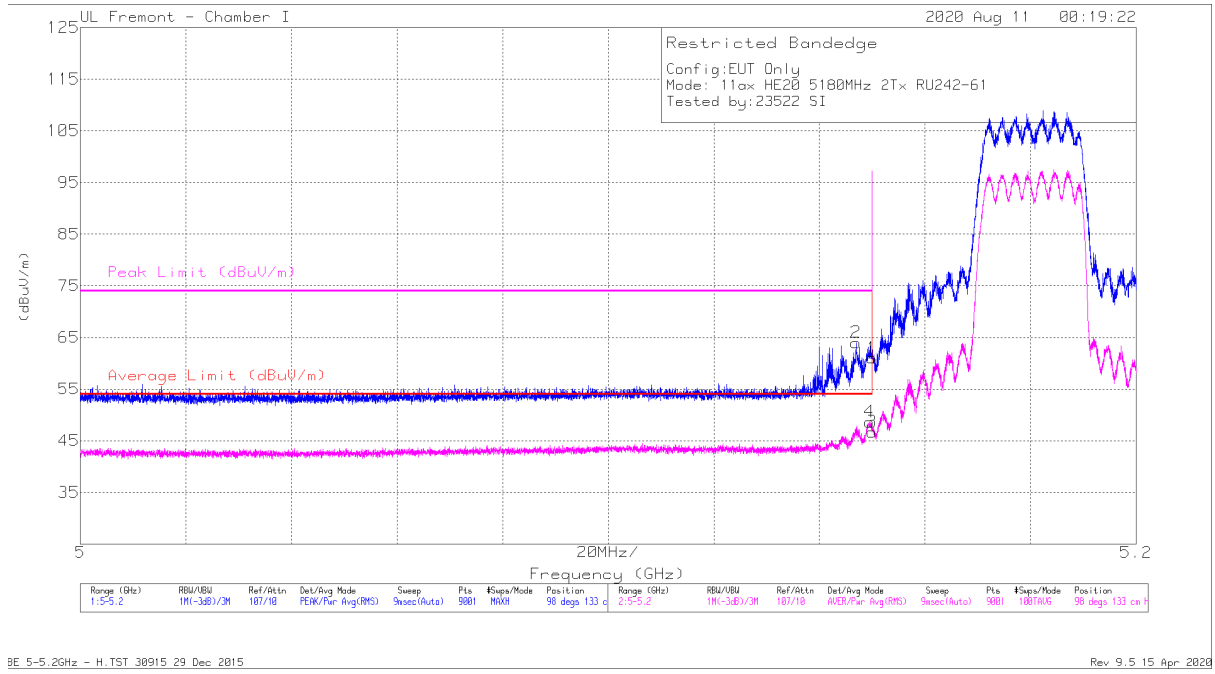
SPOT CHECK

7.3.1. TX ABOVE 1 GHz 802.11ax HE20 MODE IN THE 5.2 GHz BAND

2TX Antenna 5 + Antenna 6 OFDMA MODE 242 Tones, RU Index 61

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	41.52	Pk	34.3	-14.8	61.02	-	-	74	-12.98	98	133	H
2	* 5.14693	44.62	Pk	34.2	-14.8	64.02	-	-	74	-9.98	98	133	H
3	* 5.15	27.21	RMS	34.3	-14.8	46.71	54	-7.29	-	-	98	133	H
4	* 5.14949	29.26	RMS	34.2	-14.8	48.66	54	-5.34	-	-	98	133	H

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

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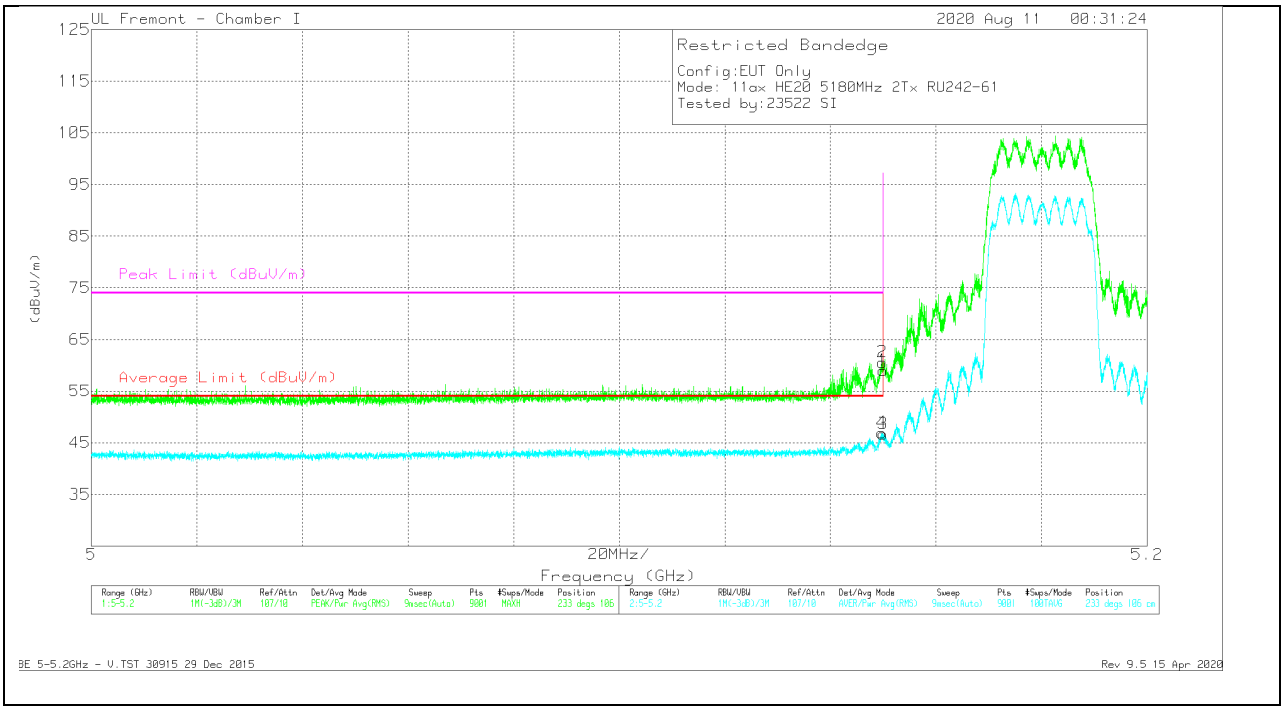
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	39.49	Pk	34.3	-14.8	58.99	-	-	74	-15.01	233	106	V
2	* 5.14987	41.11	Pk	34.3	-14.8	60.61	-	-	74	-13.39	233	106	V
3	* 5.15	27.22	RMS	34.3	-14.8	46.72	54	-7.28	-	-	233	106	V
4	* 5.14973	27.42	RMS	34.3	-14.8	46.92	54	-7.08	-	-	233	106	V

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RMS - RMS detection

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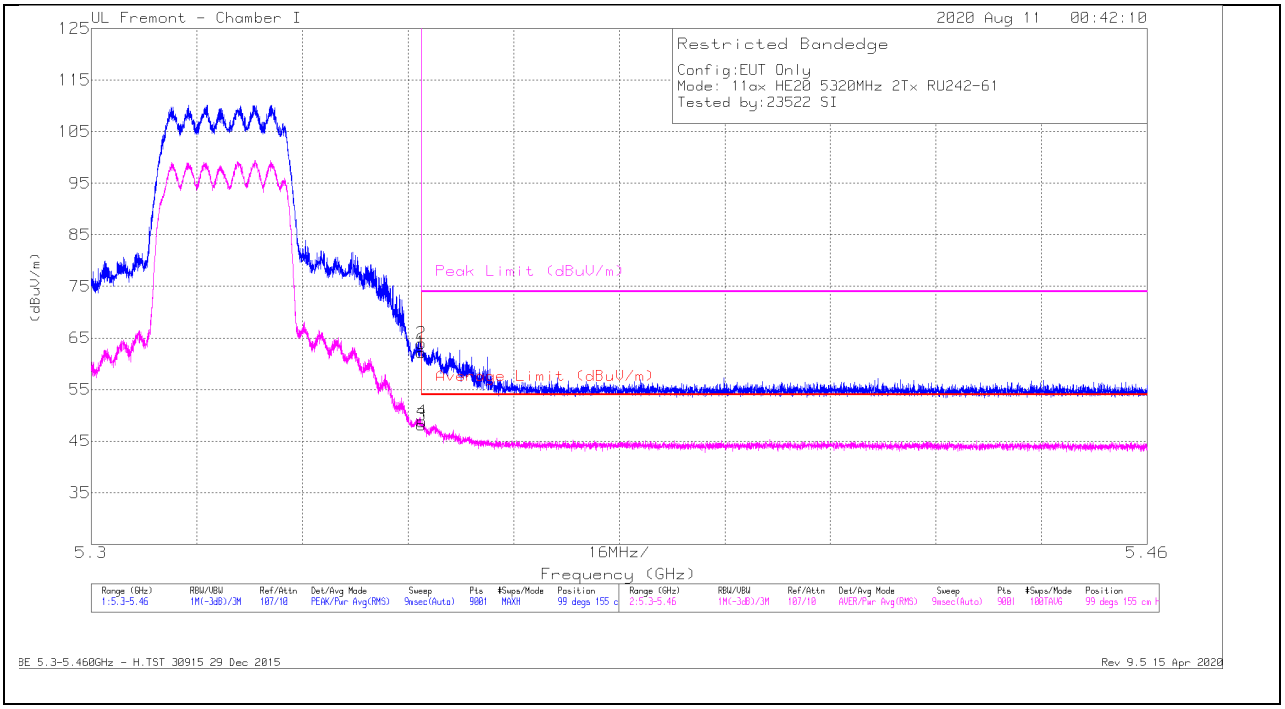
7.3.2. TX ABOVE 1 GHz 802.11ax HE20 MODE IN THE 5.3 GHz BAND

2TX Antenna 5 + Antenna 6 OFDMA MODE 242 Tones, RU Index 61

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.35001	41.49	Pk	34.7	-14	62.19	-	-	74	-11.81	99	155	H
2	* 5.35005	43.27	Pk	34.7	-14	63.97	-	-	74	-10.03	99	155	H
3	* 5.35001	27.41	RMS	34.7	-14	48.11	54	-5.89	-	-	99	155	H
4	* 5.35013	28.12	RMS	34.7	-14	48.82	54	-5.18	-	-	99	155	H

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

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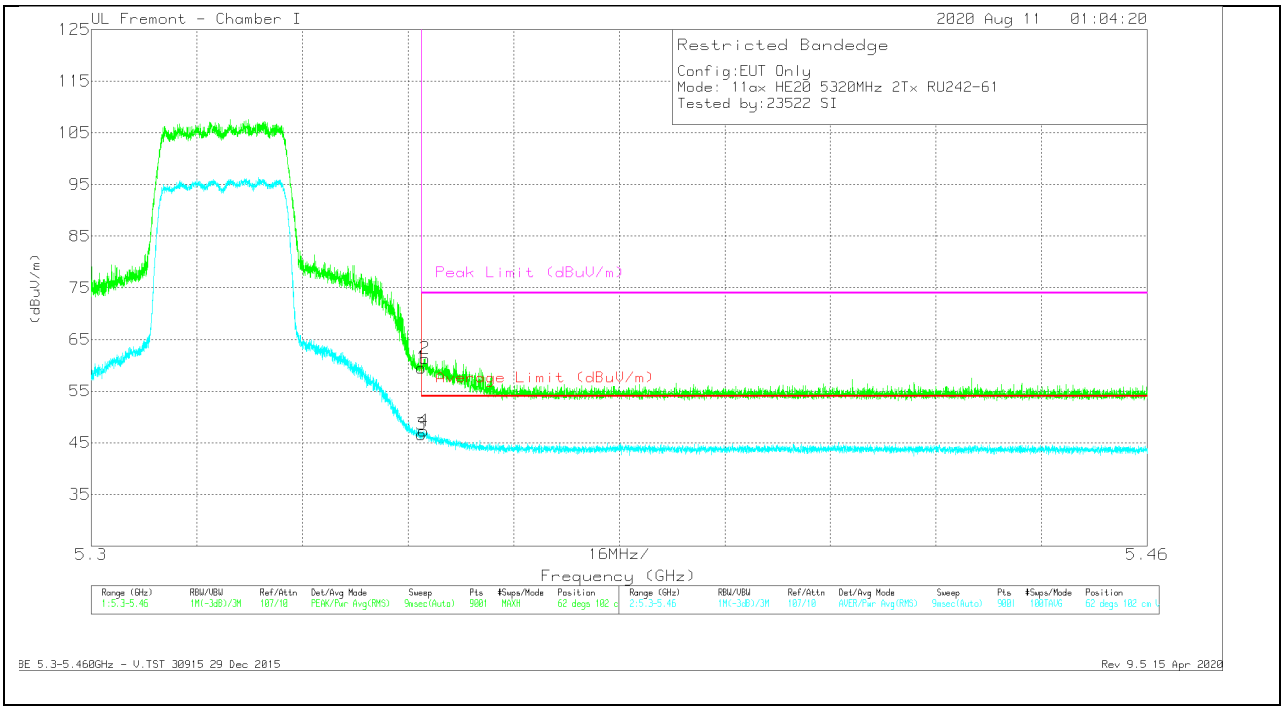
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.35001	38.77	Pk	34.7	-14	59.47	-	-	74	-14.53	62	102	V
2	* 5.35058	40.62	Pk	34.7	-14	61.32	-	-	74	-12.68	62	102	V
3	* 5.35001	25.93	RMS	34.7	-14	46.63	54	-7.37	-	-	62	102	V
4	* 5.35035	26.61	RMS	34.7	-14	47.31	54	-6.69	-	-	62	102	V

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

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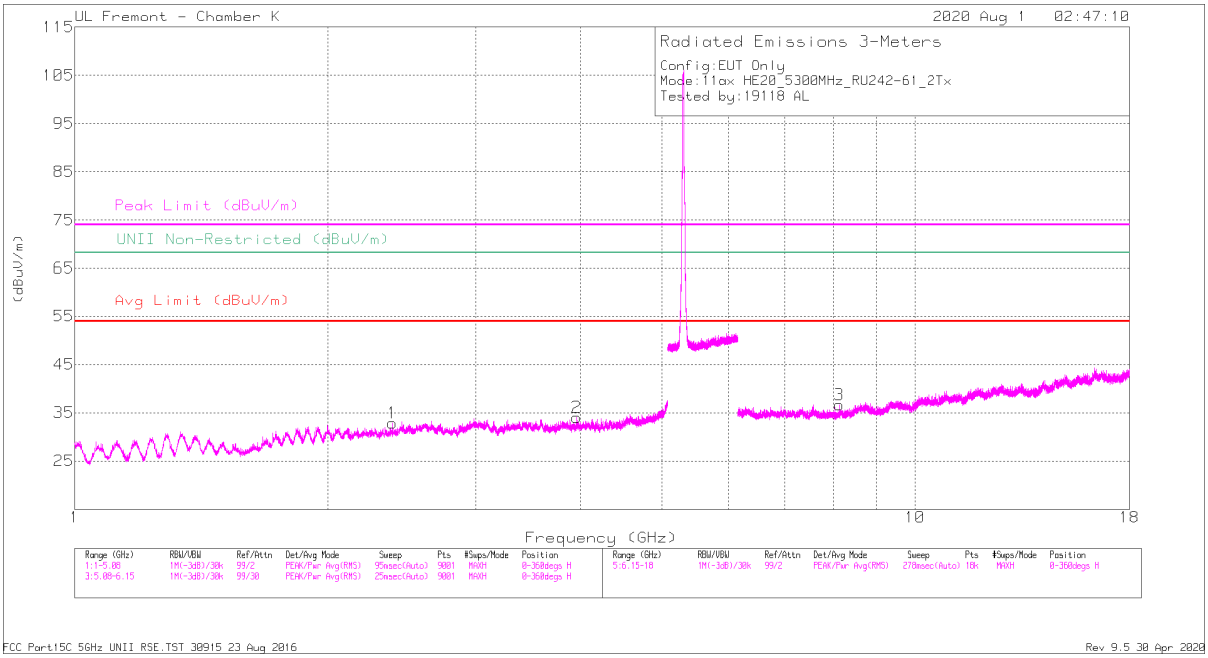
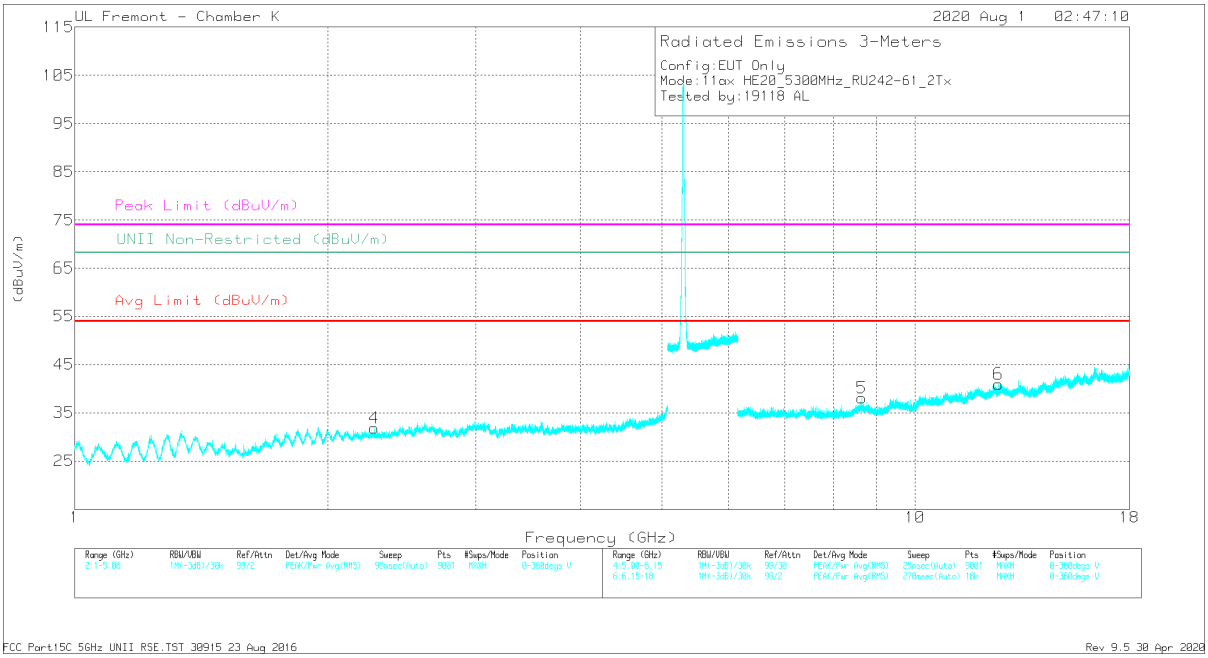
HARMONICS AND SPURIOUS EMISSIONS

MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF EMC4294 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.38883	51.6	PK-U	31.9	-45	38.5	-	-	74	-35.5	-	-	280	301	H
	* 2.38921	42.22	ADR	31.9	-45	29.12	54	-24.88	-	-	-	-	280	301	H
2	* 3.96052	48.83	PK-U	33.3	-41.9	40.23	-	-	74	-33.77	-	-	79	207	H
	* 3.96092	37.99	ADR	33.3	-41.9	29.39	54	-24.61	-	-	-	-	79	207	H
4	* 2.27522	53.51	PK-U	31.5	-45.2	39.81	-	-	74	-34.19	-	-	319	342	V
	* 2.27187	42.91	ADR	31.5	-45.2	29.21	54	-24.79	-	-	-	-	319	342	V
3	* 8.11979	45.66	PK-U	35.9	-37.8	43.76	-	-	74	-30.24	-	-	66	235	H
	* 8.12052	35.72	ADR	35.9	-37.8	33.82	54	-20.18	-	-	-	-	66	235	H
5	8.64812	46.32	PK-U	35.9	-37.6	44.62	-	-	-	-	68.2	-23.58	14	266	V
6	* 12.56908	43.57	PK-U	39	-35.1	47.47	-	-	74	-26.53	-	-	95	194	V
	* 12.56508	32.7	ADR	39	-35	36.7	54	-17.3	-	-	-	-	95	194	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

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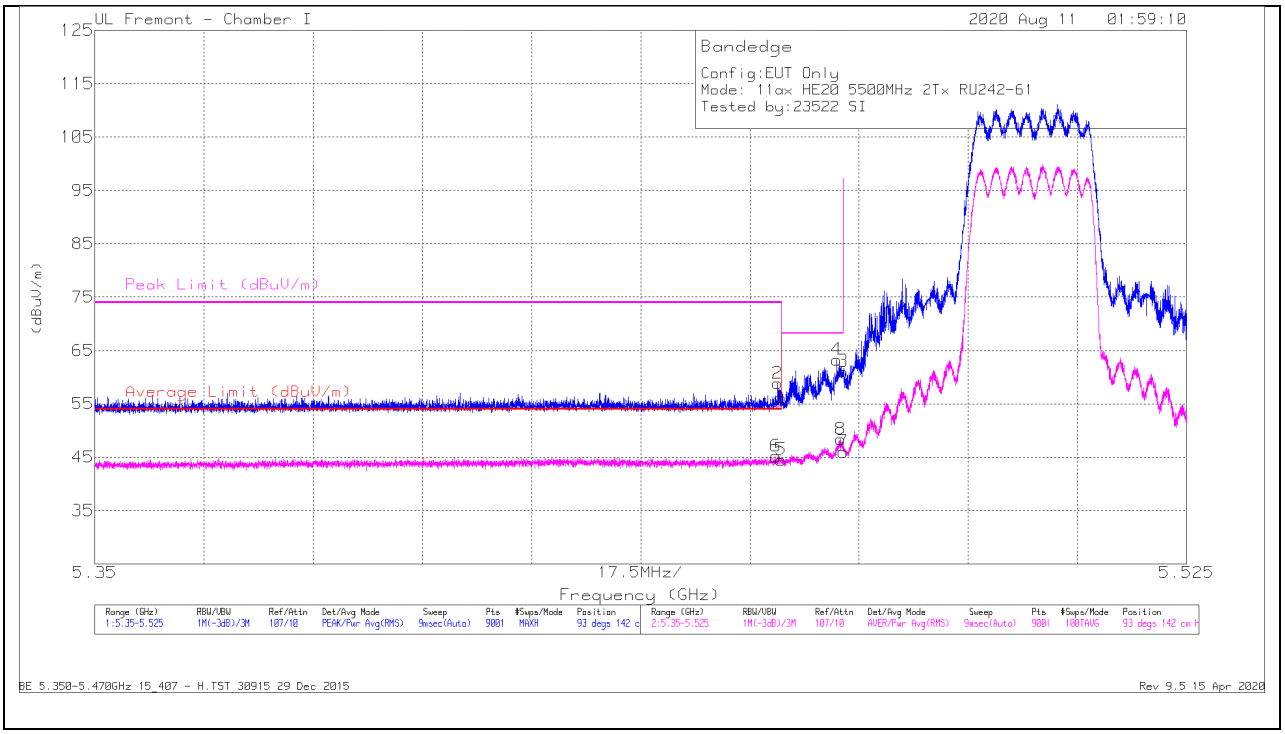
7.3.3. TX ABOVE 1 GHz 802.11ax HE20 MODE IN THE 5.6 GHz BAND

2TX Antenna 5 + Antenna 6 OFDMA MODE 242 Tones, RU Index 61

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.45999	35.41	Pk	34.6	-13.8	56.21	-	-	74	-17.79	93	142	H
2	* 5.45939	40.49	Pk	34.7	-13.8	57.39	-	-	74	-16.61	93	142	H
3	5.46999	40.18	Pk	34.7	-13.8	61.08	-	-	68.2	-7.12	93	142	H
4	5.4689	42.45	Pk	34.6	-13.8	63.25	-	-	68.2	-4.95	93	142	H
5	* 5.45999	23.72	RMS	34.6	-13.8	44.52	54	-9.48	-	-	93	142	H
6	* 5.45916	24.25	RMS	34.7	-13.8	45.15	54	-8.85	-	-	93	142	H
7	5.46999	25.11	RMS	34.7	-13.8	46.01	-	-	-	-	93	142	H
8	5.4695	27.56	RMS	34.6	-13.8	48.36	-	-	-	-	93	142	H

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

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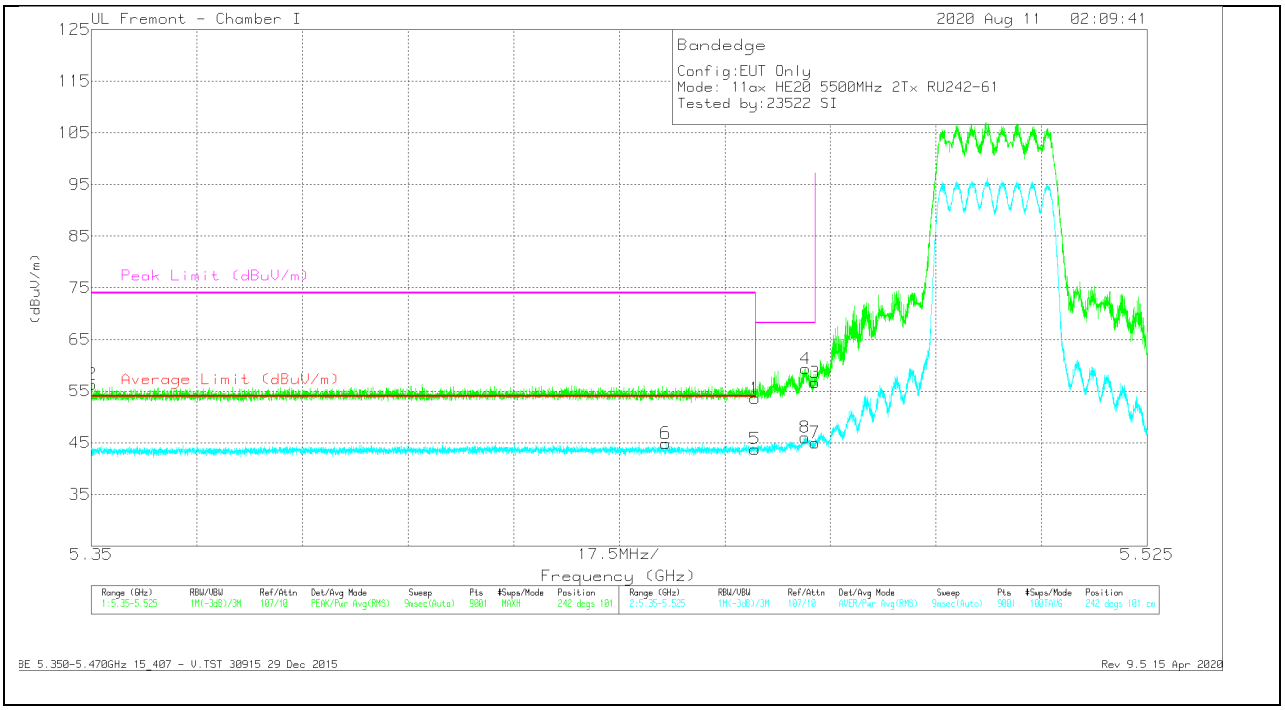
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.45999	32.78	Pk	34.6	-13.8	53.58	-	-	74	-20.42	242	101	V
2	* 5.35008	35.62	Pk	34.7	-14	56.32	-	-	74	-17.68	242	101	V
3	5.46999	35.73	Pk	34.7	-13.8	56.63	-	-	68.2	-11.57	242	101	V
4	5.46841	38.52	Pk	34.6	-13.8	59.32	-	-	68.2	-8.88	242	101	V
5	* 5.45999	23	RMS	34.6	-13.8	43.8	54	-10.2	-	-	242	101	V
6	* 5.4452	23.87	RMS	34.7	-13.7	44.87	54	-9.13	-	-	242	101	V
7	5.46999	24.07	RMS	34.7	-13.8	44.97	-	-	-	-	242	101	V
8	5.4683	25.22	RMS	34.6	-13.8	46.02	-	-	-	-	242	101	V

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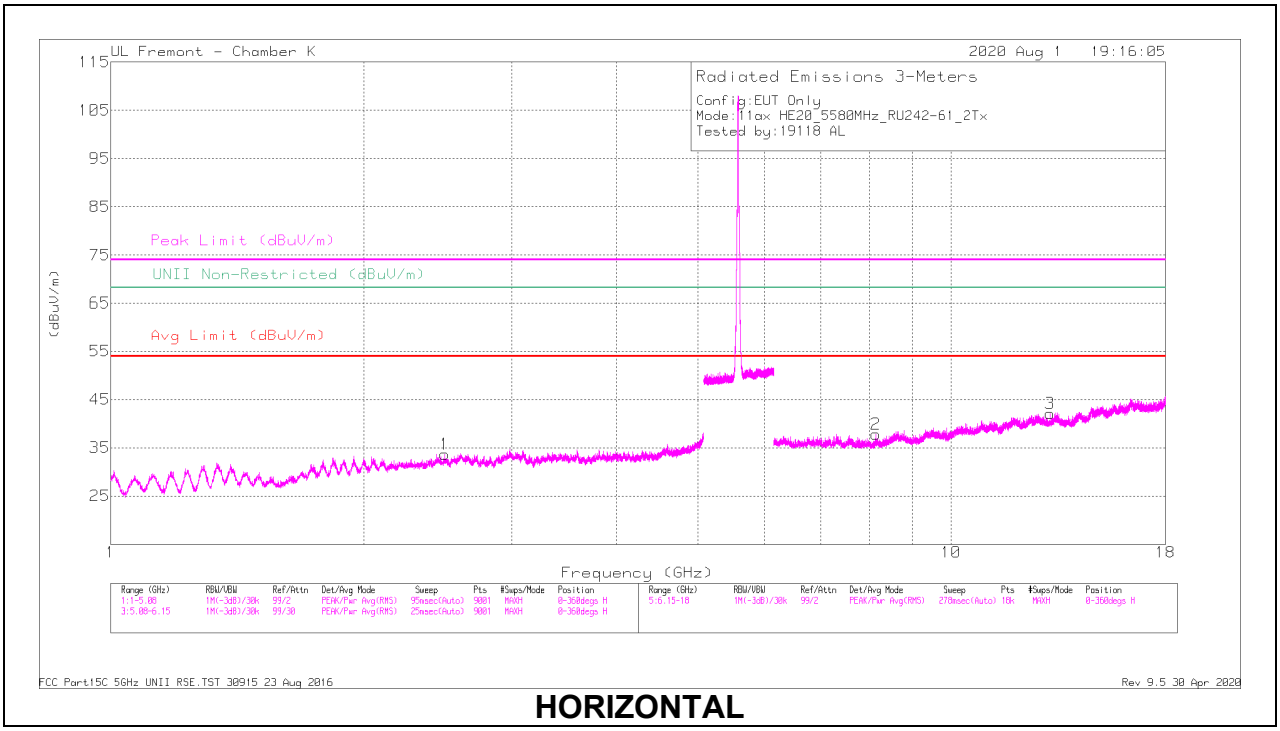
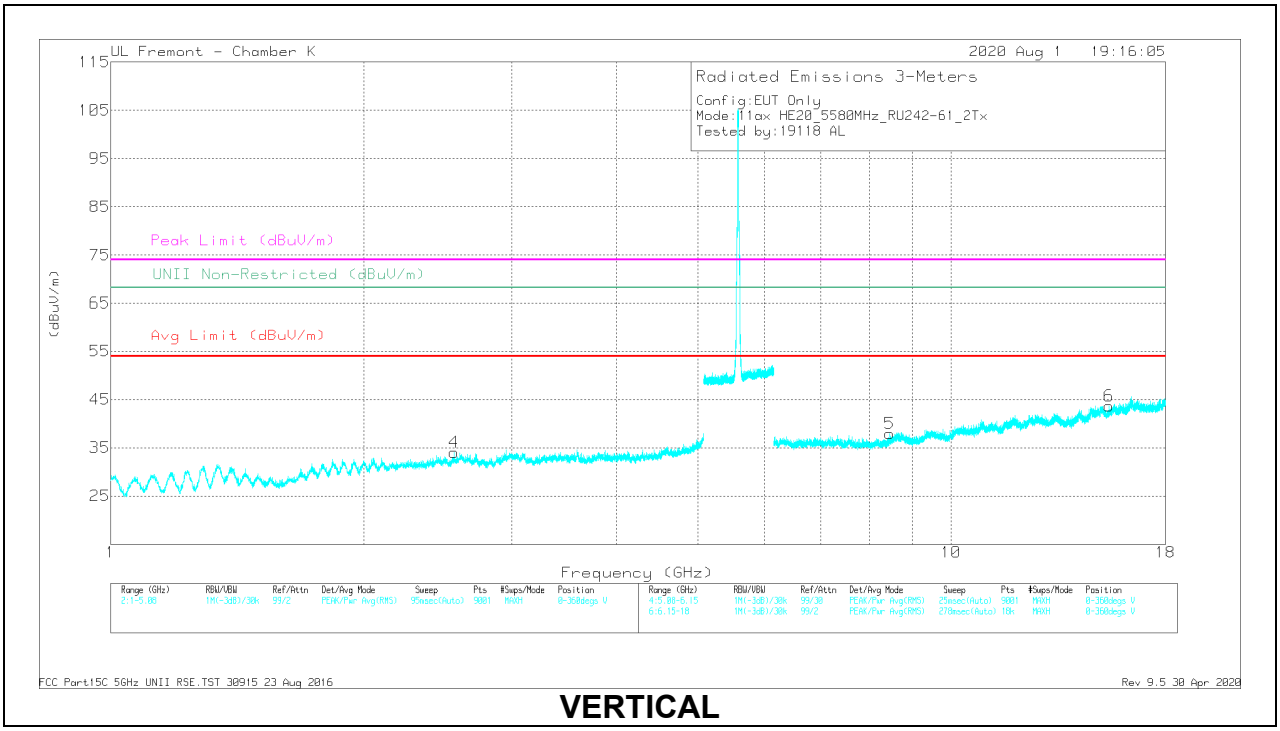
HARMONICS AND SPURIOUS EMISSIONS

MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF EMC4294 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.49897	52.41	PK-U	32.4	-44.5	40.31	-	-	74	-33.69	-	-	275	275	H
	* 2.49897	42.65	ADR	32.4	-44.5	30.55	54	-23.45	-	-	-	-	275	275	H
4	2.56186	54.97	PK-U	32.5	-44.4	43.07	-	-	-	-	68.2	-25.13	117	144	V
2	* 8.13375	46.13	PK-U	35.8	-37.8	44.13	-	-	74	-29.87	-	-	0	232	H
	* 8.13335	35.73	ADR	35.9	-37.8	33.83	54	-20.17	-	-	-	-	0	232	H
3	13.11807	45.2	PK-U	39	-35.1	49.1	-	-	-	-	68.2	-19.1	185	203	H
5	* 8.45979	47.28	PK-U	35.9	-37.5	45.68	-	-	74	-28.32	-	-	215	387	V
	* 8.45801	35.87	ADR	35.9	-37.5	34.27	54	-19.73	-	-	-	-	215	387	V
6	* 15.42124	44.67	PK-U	40.1	-33.5	51.27	-	-	74	-22.73	-	-	321	239	V
	* 15.42088	34.24	ADR	40.1	-33.5	40.84	54	-13.16	-	-	-	-	321	239	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

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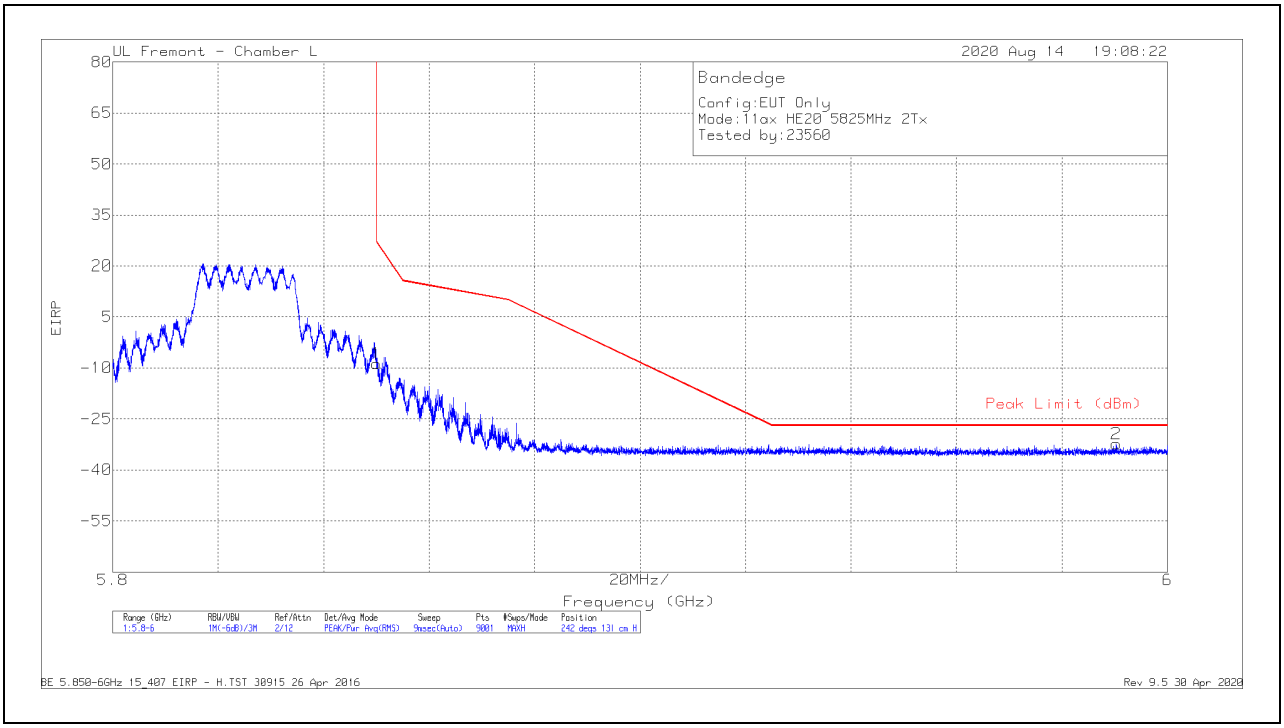
7.3.4. TX ABOVE 1 GHz 802.11ax HE20 MODE IN THE 5.8 GHz BAND

2TX Antenna 5 + Antenna 6 OFDMA MODE 242 Tones, RU Index 61

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF 344 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85002	-48.73	Pk	35	-6.8	11.8	-8.73	26.95	-35.68	242	131	H
2	5.99031	-73.29	Pk	35.3	-6.2	11.8	-32.39	-27	-5.39	242	131	H

Pk - Peak detector

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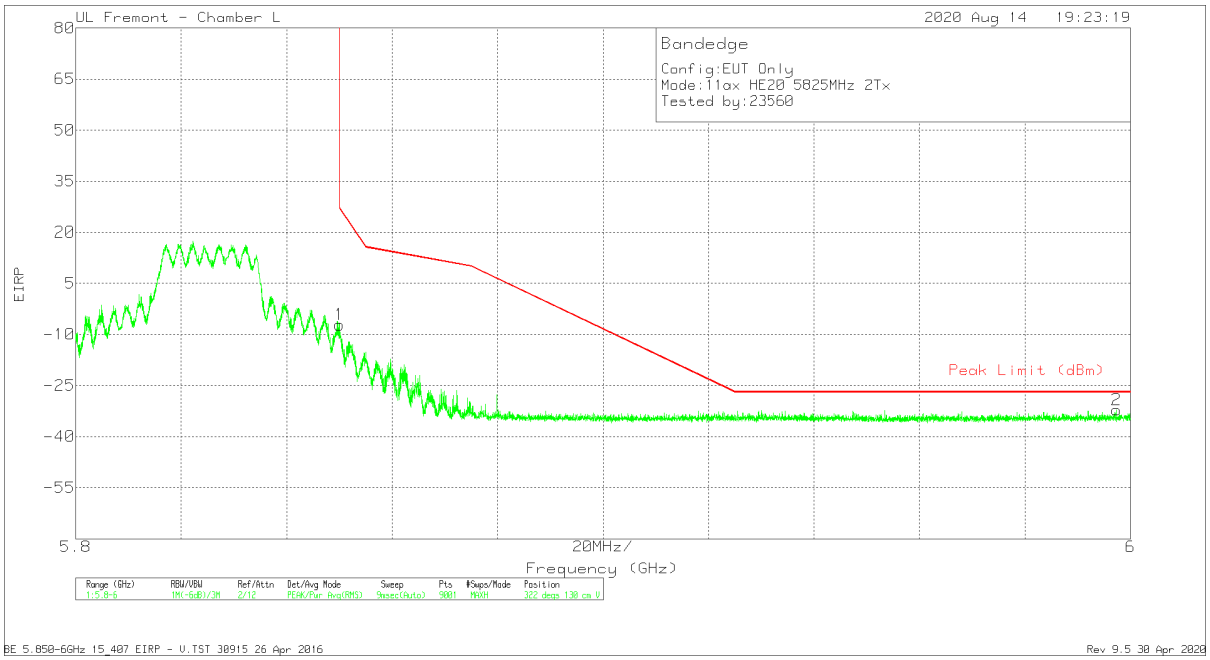
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF 344 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85002	-47.17	Pk	35	-6.8	11.8	-7.17	26.95	-34.12	322	130	V
2	5.99738	-73.07	Pk	35.3	-6.2	11.8	-32.17	-27	-5.17	322	130	V

Pk - Peak detector

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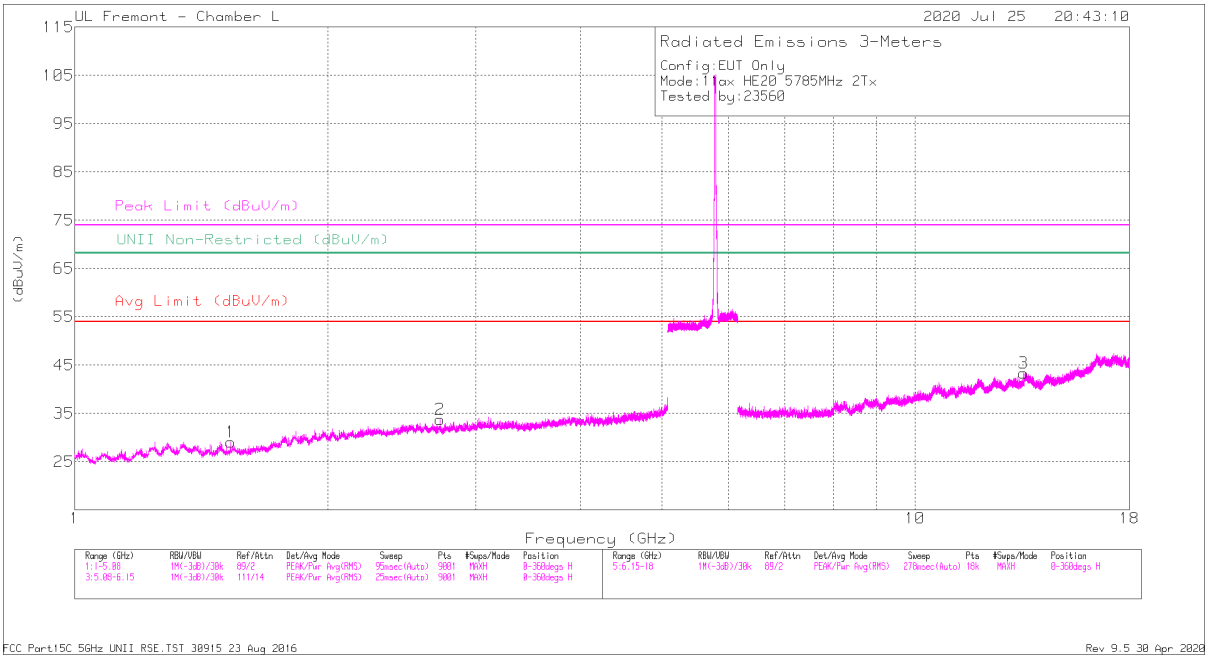
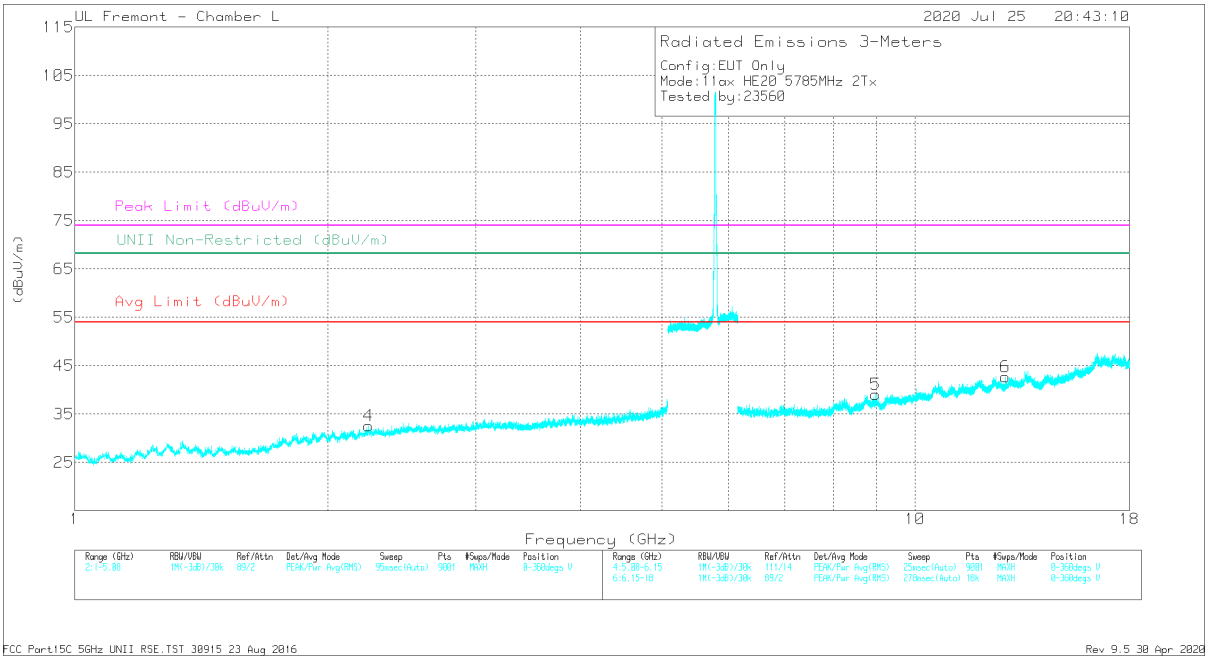
HARMONICS AND SPURIOUS EMISSIONS

MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Mark e	Frequency (GHz)	Meter Readin g (dBuV)	Det	AF 344 (dB/m)	Amp/Cb l/Fltr/Pa d (dB)	Correct ed Readin g (dBuV/ m)	Avg Limit (dBuV/ m)	Margin (dB)	Peak Limit (dBuV/ m)	PK Margin (dB)	UNII Non- Restrict ed (dBuV/ m)	PK Margin (dB)	Azimut h (Degs)	Height (cm)	Polarity
1	* 1.53324	41.28	PK-U	28.1	-32.2	37.18	-	-	74	-36.82	-	-	347	182	H
	* 1.53089	29.67	ADR	28.1	-32.2	25.57	54	-28.43	-	-	-	-	347	182	H
2	* 2.72395	39.81	PK-U	32.2	-30.5	41.51	-	-	74	-32.49	-	-	274	240	H
	* 2.72442	28.47	ADR	32.2	-30.5	30.17	54	-23.83	-	-	-	-	274	240	H
4	* 2.23773	39.31	PK-U	31.7	-31.2	39.81	-	-	74	-34.19	-	-	349	306	V
	* 2.2385	28.76	ADR	31.7	-31.2	29.26	54	-24.74	-	-	-	-	349	306	V
3	13.4594	30.97	PK-U	39.1	-19.6	50.47	-	-	-	-	68.2	-17.73	140	174	H
5	8.98436	29.4	PK-U	36.1	-20.2	45.3	-	-	-	-	68.2	-22.9	97	254	V
6	12.81229	30.43	PK-U	39.1	-19.8	49.73	-	-	-	-	68.2	-18.47	286	154	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

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7.4. REFERENCE DETAIL

Reference application that contains the reused reference data which is attached to this report in the Appendixes.

Equipment Class	Reference FCC ID & IC	Reference Report	Report Title/Section
NII	BCG-E3545A 579C-E3545A	13259315-E5 FCC) 13259315-E6 (IC) 13259315-E5 & E6	FCC IC_UNII Report / All sections

*-E5 report is conducted measurements for FCC, -E6 is conducted for Canada, -E5 & E6 contains radiated emissions data.

7.5. DESCRIPTION OF AVAILABLE ANTENNAS

Frequency Range (GHz)	ANT 6 (dBi)	ANT 5 (dBi)
5150-5250	0.3	-2.6
5250-5350	1.4	-1.2
5500-5700	0.6	-0.2
5725-5825	-0.6	-1.7

7.6. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was 20_10_619_14

7.7. WORST-CASE CONFIGURATION AND MODE

For radiated bandedge and spurious 1-18GHz L/M/H channels were performed with the EUT set at the 2TX CDD mode based on model A2341 with power setting equal or higher than SISO modes as worst-case scenario.

There are two vendors of the WiFi/Bluetooth radio modules: variant 1 and variant 2. The Wi-Fi/Bluetooth radio modules have the same mechanical outline (e.g., the same package dimension and pin-out layout), use the same on-board antenna matching circuit, have an identical antenna structure, and are built and tested to conform to the same specifications and to operate within the same tolerances.

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7.8. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Laptop	Apple	A1989	C02YL3ZMJHC8	BCGA1989
Laptop 61W USBC-C AC/DC adapter	Liteon Technology	A1718	C4N711404U3GN8RAW	NA
EUT AC Adapter	Apple	A2305	D292365CDYADHLHC3	NA

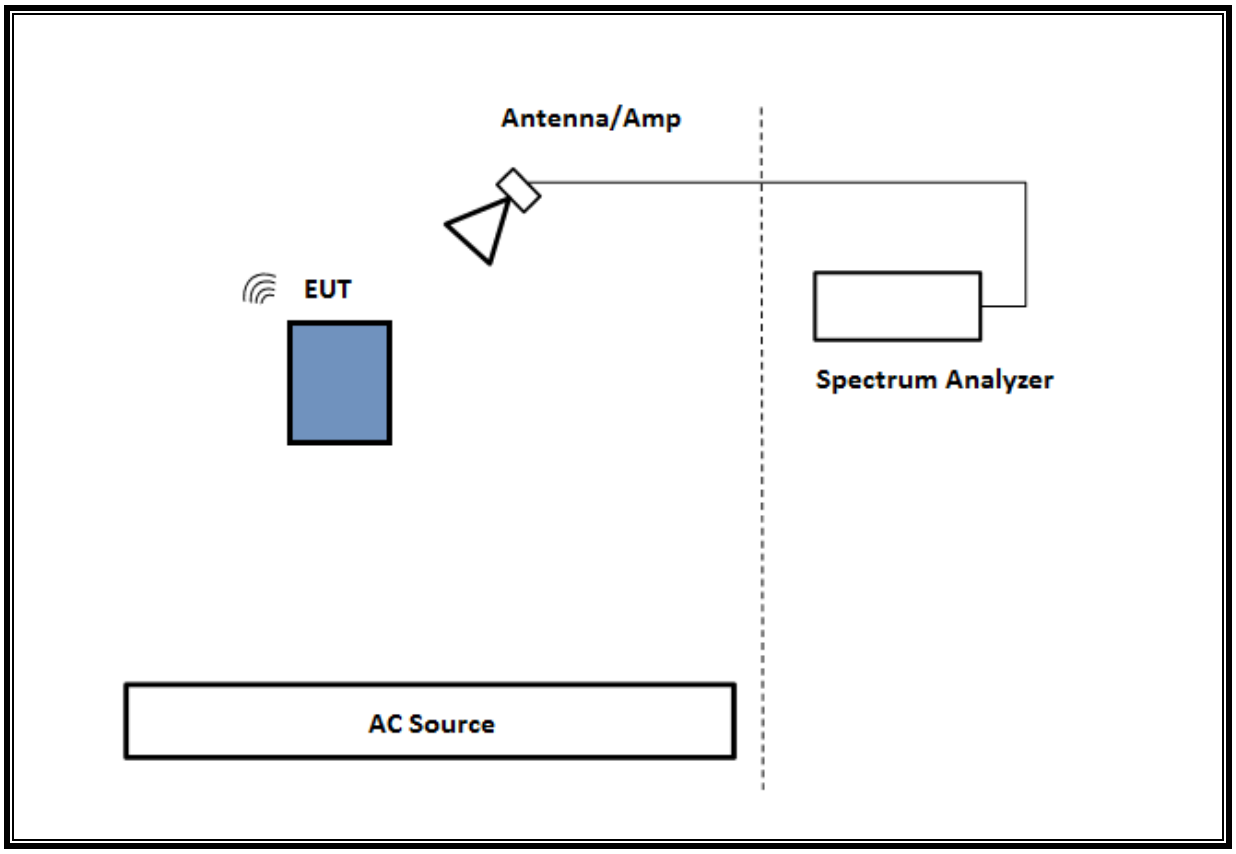
I/O CABLES (RADIATED ABOVE 1 GHZ)

I/O Cable List						
Cable No	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
NA						

TEST SETUP

The EUT is connected to a test laptop during the tests. Test software exercised the radio card.

SETUP DIAGRAM FOR RADIATED TESTS Above 1GHz



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8. MEASUREMENT METHOD

Test Item	Test Method
Unwanted emissions in restricted bands:	KDB 789033 D02 v02r01, Sections G.3, G.4, G.5, and G.6.
Unwanted emissions in non-restricted bands	KDB 789033 D02 v02r01, Sections G.3, G.4, and G.5.
Band-edge	ANSI C63.10-2013, Section 6.10.

9. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST					
Description	**Manufacturer**	**Model**	**ID Num**	**Cal Due**	**Last Cal**
Antenna, Horn 1-18GHz	ETS Lindgren	3117	T346	07/20/2021	07/20/2020
Amplifier, 1 to 18GHz	Miteq	AFS42-00101800-25-S-42	T931	05/11/2021	05/11/2020
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	PRE0179522	02/20/2021	02/20/2020
Antenna, Horn 1-18GHz	ETS Lindgren	3117	EMC4294	11/01/2020	11/01/2019
Amplifier, 1 to 18GHz, 35dB	AMPLICAL	AMP1G18-35	T1569	01/30/2021	01/30/2020
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	PRE0179376	04/03/2021	04/03/2020
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T344	05/26/2021	05/26/2020
Amplifier, 1 to 18GHz, 35dB	AMPLICAL	AMP1G18-35	T1569	01/30/2021	01/30/2020
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	PRE0180917	02/26/2021	02/26/2020
Power Meter, P-series single channel	Keysight	N1911A	PRE0177682	01/21/2021	01/21/2020
Power Sensor	Keysight	N1921A	T1226	02/13/2021	02/13/2020

UL AUTOMATION SOFTWARE			
Radiated Software	UL	UL EMC	Ver 9.5, Mar 6, 2020

10. SETUP PHOTOS

Please refer to 13259315-EP1 for setup photos

END OF TEST REPORT

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Appendix A - Conducted Data for FCC Part 15 E

Attached is the test report (13259315-E5) containing the reference data form the parent model as detailed in section 7.4. This data will only be included in the report submitted for FCC filing

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Appendix B - Conducted Data for ISED RSS 247

This data will only be included in the report (13259315-E6) submitted for ISED filing.

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Appendix C - Radiated Data (13259315-E5 & E6)

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